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# OFFICIAL GAZETTE

# UNITED STATES PATENT OFFICE

VOL 109

NO 1 THRU 9

MAR - APR - 1904

# OFFICIAL GAZETTE

OF THE

# UNITED STATES PATENT OFFICE.

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VOLUME CIX.

MARCH 1 TO APRIL 26, INCLUSIVE,

1904.

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WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1904.

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# ERRATA.

**753,521,** page 126, claim, line 5, for the word "smaller" read *small.*

**754,896,** page 766, in heading, assignment, name of assignee, for "Firm of Fahrzeugfabrik Eisenach" read *Firm of Fahrzeugfabrik Eisenach.*

**755,108,** page 868, in heading, after residence of patentees, insert *Josephine H. Barry executrix of said Thomas J. Barry, deceased.*

**755,491,** page 1014, in heading, name of patentee, for "Thomes H. Holman" read *Thomas H. Holman.*

**756,570,** page 1496, in heading, assignment, name of first-mentioned assignee, for "Isaac Pilser" read *Isaac Pieser.*

**756,572,** page 1497, first claim, line 3, for the word "extensive" read *extensible.*

**756,770,** page 1578, in heading, name of patentee, for "Eduard E. Adams" read *Edward E. Adams.*

**756,989,** page 1686, in heading, assignment, name of assignee, for "Samuel A. Saucier" read *Samuel A. Sancier.*

**757,373,** page 1853, in heading, name of administratrix, for "Maria L. Webster" read *Marie L. Webster.*

**757,744,** page 2083, in heading, after residence of patentee, insert *assignor to F. F. Pulver, trustee, Rochester, N. Y.*

**758,002,** page 2139, in heading, date of application filed, for "Aug. 6, 1903," read *Aug. 6, 1898.*

**758,189,** page 2242, in heading, assignment, name of assignee, for "Williams and Robinson, Limited," read *Willans and Robinson, Limited.*

**758,297,** page 2295, sixty-fourth claim, line 7, for the word "lever" read *pivoted member.*



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# OFFICIAL GAZETTE

OF THE

# UNITED STATES PATENT OFFICE.

MARCH—APRIL, 1904.

Patents Nos. 753,217 to 753,883.

# THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 109—No. 1. TUESDAY, MARCH 1, 1904. PRICE—$5 per year.

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TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 10 | 1 | Nevada | 1 | ---- |
| Alaska Territory | ---- | ---- | New Hampshire | 2 | ---- |
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| India | ---- | ---- | Victoria | 1 | ---- |
| Ireland | 1 | ---- | Western Australia | ---- | ---- |
| Italy | 1 | ---- | | | |
| Japan | ---- | ---- | Total to citizens of foreign countries | 61 | 6 |
| Java | ---- | ---- | | | |
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## Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., February 24, 1904.*

This Office has been advised by the Secretary of the Interior of the disbarment of the following attorneys from practice before the Department or any Bureau thereof: David F. Berryman, Philadelphia, Pa., January 22, 1904, and Charles T. Jackson, Swampscott, Mass., February 20, 1904.

C. M. IRELAN,
*Chief Clerk.*

## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., February 16, 1904.*

To the next of kin and legal representatives of Samuel B. Locklin, deceased, late of Boston, Mass.:

Notice is hereby given that on October 14, 1903, an interference was declared between the patent to Samuel B. Locklin, No. 706,574, August 12, 1902, and a pending application, the issue of the said interference being claims 1 to 4 of the patent.

Notice is further given that the time within which the statements demanded by Rule 110 must be filed has been extended to April 5, 1904.

This notice will be published in the OFFICIAL GAZETTE for six weeks.

F. I. ALLEN,
*Commissioner.*

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business February 25, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Feb. 10 | Feb. 9 | 148 |
| 150 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography. | Feb. 1 | Feb. 3 | 125 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Jan. 30 | Jan. 13 | 242 |
| 312 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Jan. 29 | Jan. 16 | 304 |
| 321 | I. Tillage, etc., and Fences | Jan. 28 | Jan. 27 | 210 |
| 148 | XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Jan. 26 | Jan. 27 | 301 |
| 12 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Jan. 26 | Nov. 27 | 363 |
| 178 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Jan. 25 | Feb. 9 | 201 |
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*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
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Total number of applications awaiting action.....10,597

| | *Under one month.* | | | |
|---|---|---|---|---|
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### Patents to Assignees.

RULE 200. In every case where it is desired that the patent shall issue to an assignee, the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 36.) The date of the record is the date of the receipt of the assignment at the Office.

### Foreign Patents.

RULE 29. The receipt of Letters Patent from a foreign government will not prevent the inventor from obtaining a patent in the United States, unless *the application on which the foreign patent was granted was filed more than twelve months prior to the filing of the application in this country, in which case no patent shall be granted in this country.*

### Access to Pending Applications.

RULE 18. Before any attorney, original or associate, will be allowed to inspect papers or take action of any kind, his power of attorney must be filed. But general powers given by a principal to an associate cannot be considered. In each application the written authorization must be filed. A power of attorney purporting to have been given to a firm or copartnership will not be recognized, either in favor of the firm or of any of its members, unless all its members shall be named in such power of attorney.

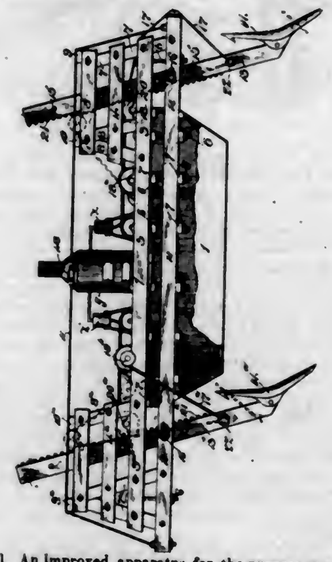
### Close of Weekly Issue of Patents.

**The weekly issue of patents will close on Thursday, and the patents of that issue will bear date as of the third Tuesday thereafter**

# PATENTS

## GRANTED MARCH 1, 1904.

**753,217. MEANS FOR REMOVING SAND-BARS. EUGENE H. ALLMAN, Mobile, Ala. Filed June 2, 1903. Serial No. 159,729. (No model.)**



*Claim.*—1. An improved apparatus for the purpose specified, comprising a float, a framework applied thereto, a series of standards supported in said framework, and a series of plows secured to the lower ends of the standards which are adapted to project below the float, substantially as described.

2. The improved apparatus for the purpose specified, comprising a float, a framework supported thereon and secured thereto, a series of standards supported vertically in said framework and adapted for vertical adjustment therein, means for effecting such adjustment, and a series of plows carried by said standards, substantially as described.

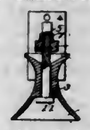
3. The improved apparatus for the purpose specified, comprising a float, a framework supported thereon and projecting beyond the end of the float, standards which are duly held in guide-slots in said framework and provided with plows attached to their lower ends, means for adjusting the said standards higher or lower for the purpose of working the plows at different depths, and a tension device connected with the lower portion of the standards, and means for regulating the tension corresponding to the vertical adjustment of the standards, substantially as shown and described.

4. The improved apparatus for the purpose specified, comprising a float, a framework composed of a series of longitudinal frames arranged vertically parallel and spaced apart and transverse connections whereby they are held rigidly in due position, a series of standards arranged in the spaces between the several frames, racks and pinions for adjusting the standards vertically, and plows carried by the said standards, substantially as shown and described.

5. In an apparatus for the purpose specified, the combination with a float and a series of sets of frames arranged longitudinally thereon and in parallel vertical planes of a series of standards arranged at the stern and bow in the portions of the framework projecting beyond the float, racks and pinions for adjusting the standards higher or lower, a securing bolt or shaft passing through the standards and also the frames transversely, the standards being provided with a series of holes, and a series of tension devices for the several standards each comprising a chain or equivalent connected with the lower portion of the standards and a winding-drum, the said chain passing intermediately over a guide on the projecting portion of the framework, substantially as shown and described.

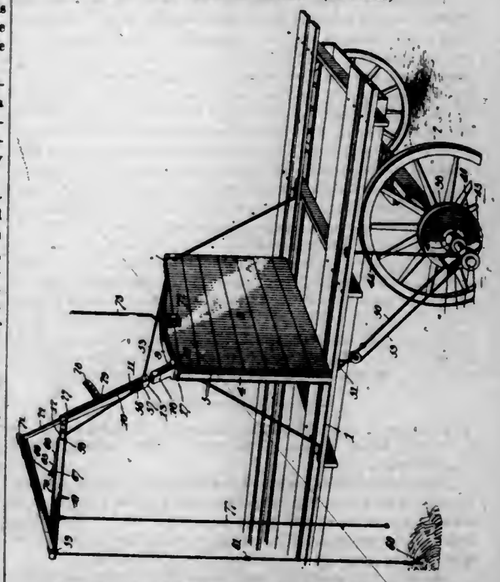
6. The improved apparatus for the purpose specified, comprising a float and framework supported thereon and projecting therefrom, standards which are vertically adjustable in said framework, means for effecting the adjustment, and plows attached to the lower ends of the standards and provided at their upper ends with a rearwardly and downwardly projecting hook, whereby they are adapted to engage and hold a torpedo or other cable, as shown and described.

**753,218. CLOTHES-LINE HANGER. RALPH ALPIN, Tarrytown, N. Y. Filed Feb. 8, 1902. Serial No. 93,113. (No model.)**



*Claim.*—The combination in a clothes-line pulley of a supporting-bracket, a bolt in the bracket secured thereto at an acute angle with the base of the bracket, a roller journaled on said bolt, a recess in the upper side of the roller, and a groove in the roller having a parabolic form giving to the lower end of the roller a greater diameter than the upper end, and the greatest depth of groove near the upper end, substantially as set forth.

**753,219. HAY-LOADER. ALBERT W. BAILEY, Janesville, Wis. Filed June 19, 1903. Serial No. 162,228. (No model.)**



*Claim.*—1. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick carried by the rack, a hoisting-

drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum for elevating the hay, and means adapted, when the hay reaches the proper elevation, to automatically release the drum and permit unwinding of the cable.

2. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick-frame carried by the rack, a derrick pivoted in the frame to swing in a vertical plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum, and means actuated by the swinging of the derrick to release the drum and permit unwinding of the cable.

3. In a hay-holder, the combination with a hay-rack having a ground-wheel, of a derrick-frame carried by the rack, a derrick pivoted to swing in a vertical plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum, means actuated by the swinging of the derrick to release the drum and permit unwinding of the cable, and means for locking the derrick against premature swinging.

4. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick-frame carried by the rack, a derrick pivoted to swing in a vertical plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum, means actuated by the swinging of the derrick to release the drum and permit unwinding of the cable, and automatically-releasable means for locking the derrick against premature swinging.

5. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick-frame carried by the rack, a derrick pivoted in the frame for swinging in a vertical plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum, means actuated by the swinging of the derrick to release the drum and permit unwinding of the cable, a pivoted roller carried by the derrick, and a latch-arm carried by the frame for engaging the roller to prevent premature swinging of the derrick.

6. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick carried by the rack and having an arm pivoted to swing in a horizontal plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum for elevating the hay, means adapted, when the hay reaches the proper elevation, to automatically release the drum and engage the cable to maintain the hay in suspension, and means actuated by the swinging of the arm to automatically release the cable and permit unwinding of the same from the drum.

7. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick-frame carried by the rack, a derrick pivoted in the frame to swing in a vertical plane and having an arm pivoted to swing in a horizontal plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum, means actuated by the swinging of the derrick to release the drum for permitting unwinding of the cable, means engaging the cable to maintain the hay in temporary suspension, and means actuated by the swinging of the arm to automatically release the cable and permit its unwinding from the drum.

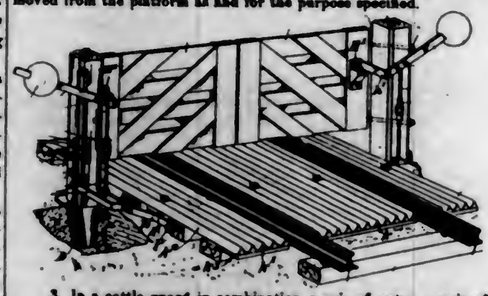
8. In a hay-loader, the combination with a hay-rack having a ground-wheel, of a derrick carried by the rack and having an arm pivoted to swing in a horizontal plane, a hoisting-drum in operative engagement with the ground-wheel and operable thereby, a hoisting-cable operable by the drum and provided with a stop member, a fixed member associated with the arm and adapted to engage in advance of the stop member, a pivoted member associated with the arm for engagement in rear of the stop member, automatically-operable means for releasing the drum to permit unwinding of the cable, and means actuated by the swinging of the arm for actuating the pivoted member to move it out of the path of the stop.

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**753,220. CATTLE-GUARD.** THOMAS J. BAILIE and SAMUEL ANDERSON, Ottawa, Canada. Filed Mar. 19, 1903. Serial No. 148,645. (No model.)

*Claim.*—1. In a cattle-guard, a hinged gate, a pivoted arm acting on said gate to hold it normally parallel with the track, a weight adjustably mounted on said arm, a depressible platform, an arm operated by the movement of said platform, and a link connecting said arm with the weighted arm, substantially as described.

2. In a cattle-guard the combination with a pair of gates suitably hinged to upright posts located at the sides of the track, of substantially L-shaped bars rotatably secured to the posts, connecting-rods each secured at one of its ends to the end of the bent portion, of one of the substantially L-shaped rods and at its other end to the one of the gates, a depressible platform and means interposed between the platform and the substantially L-shaped rod whereby the platform when depressed will rotate the substantially L-shaped rod thereby closing the gates and means for simultaneously raising the platform and rotating the substantially L-shaped rod in the opposite direction thereby opening the gates when the weight is removed from the platform as and for the purpose specified.



3. In a cattle-guard in combination a pair of gates, a pair of posts located at opposite sides of the track, said gates being suitably hinged to the posts, substantially L-shaped rods extending through the posts, the ends of their bent portions being connected to the gates by suitable rods or bars, levers rigidly secured to the ends of the substantially L-shaped bars, said levers being suitably weighted at their outer ends, a depressible platform suitably hinged to one of the sleepers, a horizontal bar extending transversely beneath the platform and journaled at its ends in suitable bearings, crank-arms rigidly secured to said horizontal bar at their inner ends and suitably secured to the platform at their opposite ends, bars rigidly secured to said horizontal bar in proximity to its ends, and connecting-rods secured at their upper ends to said levers and at their lower ends to said bars as and for the purpose specified.

4. The combination with the hinged gates and the means including the weighted levers for closing the gates when an animal endeavors to cross the guard, of sockets secured to the gates and bent portions formed at the inner ends of the levers, said bent portions being adapted to engage the sockets on the gates when the gates are just reaching the closed position as and for the purpose specified.

5. In a device of the class described, the combination with a swinging gate, the depressible platform, the post upon which the swinging gate is hinged, and the lever and connections whereby the lowering and raising of the platform operates to close and open the gates, of an auxiliary lever secured to said first-mentioned lever and having a slot in its end, a vertical rod slidably secured to the post and engaging the slot in the auxiliary lever, a pawl pivotally secured to said vertical rod, a notched projection secured to the gate and a locking-bar adapted to automatically engage said notched projection when the gate is in the open position, said pawl being adapted to release the locking-bar from engagement therewith when the platform is depressed as and for the purpose specified.

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**753,221. PROPORTIONAL DIVIDERS.** ARTURO BASOLA, New York, N. Y. Filed June 12, 1903. Serial No. 161,123. (No model.)

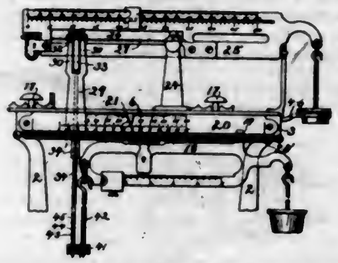


*Claim.*—1. A proportional divider comprising two members each having a long arm and a short arm formed therewith, and a longitudinal slot, two holding members, a longitudinally-adjustable pivot passing through the ends of the holding members and through the slots in the first-mentioned members, and means for adjustably securing the holding members to the first-mentioned members, substantially as described.

2. A proportional divider comprising two members each having a long arm and a short arm formed therewith and a longitudinal slot, two holding members each having a longitudinal slot, a longitudinally-adjustable pivot passing through the ends of the holding members and through the slots in the first-mentioned members, and clamping-screws carried by each of the first-mentioned members and passing through the slot in its holding member, substantially as described.



**753,222. PRICE OR MONEY WEIGHT-SCALE.** ALPHA R. BEAL, Pittsburg, Pa. Filed May 26, 1900. Serial No. 18,204. (No model.)



*Claim.*—1. In a price-scale, the combination of a carriage, a price-beam, a tare-beam, and securing means for the carriage constructed and arranged to simultaneously release the carriage and raise the load end of the tare-beam.

2. A price-scale including an adjustable computing-beam, a tare-beam, and mechanism operating to transfer the entire pull of the weighing-levers to the tare-beam while the computing or price beam is being set, substantially as described.

3. The combination of a carriage, a price-beam, a tare-beam, a separate steelyard-rod for each beam, securing means for the carriage, and means operating to raise the load end of the tare-beam when the carriage is released.

4. A price-scale including a price-beam, a tare-beam, and a steelyard-rod for each beam extending to and having independent connection with the nose-iron of the weighing-levers, the price-beam rod being locked on the nose-iron pivot and adapted to move upward therewith when lifted by the tare-beam rod, substantially as described.

5 A price-scale comprising a base, a price-beam and carriage therefor, a tare-beam, and carriage locking and releasing mechanism operating to depress the forward end of the tare-beam and hold the same depressed while the carriage is released, whereby the pull of the weighing-levers is thrown entirely on the tare-beam while setting the price-beam, substantially as described.

6. A price-scale comprising a base, a carriage, a price-beam on the carriage, a tare-beam, a price-beam steelyard-rod operatively connected to the tare-beam, a movable device operatively engaging the tare-beam for the purpose of throwing on the lower end of the latter the entire weight of the steelyard-rod, and carriage locking and releasing mechanism adapted to operatively engage said device when moving to and when in carriage-releasing position, whereby the computing-beam is relieved of weight save when in locked adjustment, substantially as described.

7. A price-scale comprising a base, a carriage supporting a price-beam, an elongated vertically-swinging bail in the base, a spring for resisting depression of the bail, a tare-beam adapted to be depressed by and with the bail, and carriage locking and releasing mechanism movable on the bail and operating to depress the bail and hold the same depressed while the carriage is released, substantially as described.

8. A price-scale comprising a base, a carriage therein supporting a price-beam, an elongated vertically-swinging bail in the base, a spring for resisting depression of the bail, a tare-beam adapted to be depressed by the bail, a rock-shaft in the carriage having a laterally-projecting arm adapted to depress the bail and traverse the same while depressed, and carriage-locking mechanism operated by the shaft, substantially as described.

9. A price-scale comprising a base, a carriage therein supporting a price-beam, an elongated vertically-swinging bail in the base, a spring for resisting depression of the bail, an elongated notched bar in the base, a rock-shaft in the carriage, a dog on the shaft adapted to engage the notched bar and hold the carriage locked, an arm projecting laterally from the shaft and adapted to depress the bail and traverse the same while depressed, and a tare-beam adapted to be depressed by the bail, substantially as described.

10. The combination of the spring-held bail, the rock-shaft, the arm on the shaft, and the roller on the arm adapted to ride on the bail, substantially as described.

11. The combination of the vertically-swinging spring-held bail, the rock-shaft above the bail, the arm projecting laterally from the shaft and over the bail, and the roller revoluble and slidable on the arm and adapted to depress and traverse the bail, substantially as described.

12. Improved teeth for the interlocking rack-bar and dog having their operative sides or edges straight or parallel a portion of their length, substantially as described.

13. Improved teeth for the interlocking rack-bar and dog having their operative sides or edges straight a portion of their length, each tooth being tapered abruptly at the extremity to form a point, substantially as described.

14. In a price-scale, a carriage, a price-beam mounted thereon provided with a pendent weight, means for locking and releasing the carriage, and mechanism intermediate the locking and releasing means and the pendent weight for sustaining the latter free of the price-beam when the carriage is released, substantially as described.

15. In a price-scale, a longitudinally-movable price-beam having a pendent weight, a steelyard-rod operatively connected to the beam and past which the beam is movable, and means for relieving the beam of the pull of said pendent weight while being adjusted with relation to the steelyard-rod, substantially as described.

16. In a price-scale, a carriage, a price-beam mounted thereon and provided with a pendent weight, a lever fulcrumed in the carriage and extending beneath the weight and means for oscillating the lever and causing it to lift the weight while the beam is being set, substantially as described.

17. In a price-scale, a carriage, a price-beam mounted thereon and provided with a pendent weight, a lever fulcrumed in the carriage and at its outer end adapted to sustain said weight free of the beam, the inner end of the lever provided with a horizontal extension, a rock-shaft in the carriage, and a cam on the shaft adapted to engage and depress the horizontal extension of the lever, thus raising the outer end of the lever and causing it to sustain said weight, substantially as described.

18. In a price-scale, a supplemental base, a carriage, a price-beam on the carriage, carriage-locking mechanism, a tare-beam adapted to be depressed for the purpose described, and a rock-shaft in the carriage operatively connected to the locking mechanism and to the tare-beam for depressing the latter, the shaft operating against the pressure of a spring, as set forth.

19. In a price-scale, a supplemental base, a carriage, a price-beam on the carriage provided with a pendent weight, carriage-locking mechanism, a tare-beam adapted to be depressed for the purpose described, a rock-shaft in the carriage operatively connected to the locking mechanism, an operative connection between the rock-shaft and tare-beam for depressing the latter, a support for the pendent weight of the price-beam operatively connected to the rock-shaft, and a spring for resisting rotation of the said shaft, substantially as described.

20. The combination with the slotted and indented price-beam, and the steelyard-rod, of the connecting block or head operatively connecting the beam and rod, rollers in the lower portion of the head to engage the indented surface of the beam, vertical depressions in the upper surface of the head, bearing-posts movable in said depressions and held normally in outwardly-extended position, and antifriction-rollers journaled between the bearing-posts and bearing upward on the top face of the beam-slot, substantially as described.

21. The combination with the connecting head or block formed with the depressions in its top, of the hollow bearing-posts fitting the depressions, coiled springs fitting the hollow posts and resisting inward movement thereof in the head depressions, and the rollers journaled between the bearing-posts, substantially as described.

22. The improved connecting-head, formed at opposite ends with the knife-edge bearings, and on opposite sides with the separated bearing-ears, and in the top with the depressions, the whole being of a single piece, substantially as described.

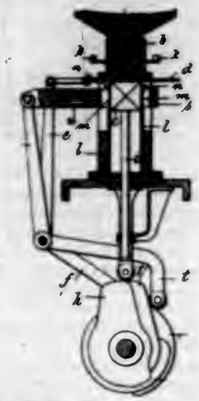
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**753,223. MATCH-BOX-FILLING MACHINE.** HANS BEES, Durlach, Germany, assignor to The Firm of Badische Maschinenfabrik & Eisengiesserei, vormals G. Sebold and Sebold & Neff, Durlach, Germany. Filed June 14, 1902. Serial No. 111,616. (No model.)

*Claim.*—1. In a match-box-filling machine the combination with a hopper provided with cut-off devices to drop predetermined quantities of matches, of a vertically-movable piston directly below the mouth of said hopper, of means to hold the dropped matches at the upper side of the piston and means to feed an inverted tray between the mouth of the hopper and the said piston substantially as described.

2. In a match-box-filling machine the combination with a hopper of means to feed empty trays along one side of the mouth of the hopper immediately adjacent thereto and means to feed the corresponding cases immediately adjacent to the opposite side of the hopper, and of a piston arranged on the same side of the hopper's mouth as a means for feeding the trays and adapted to push the trays un-

der the said mouth and after filling to push the same forward into the tray-cases substantially as described.



3. In a match-box-filling machine, the combination, with a hopper, of a piston mounted to reciprocate vertically directly below said hopper, means for holding the matches on said piston, and means for feeding trays between the piston and hopper, in a position in the direct line from the hopper to the piston.

4. In a match-box-filling machine, the combination, with a hopper, of a piston mounted to reciprocate below said hopper, spring-pressed flaps arranged to extend above the piston and to embrace the same, means for feeding trays on said flaps, and mechanism for lowering the flaps to enable the filled trays to be discharged.

5. In a match-box-filling machine the combination with a vertically-moving piston, of a vertically-moving sleeve inclosing the piston and of spring-flaps provided at the top of the sleeve and tending to swing inward into the path of the piston substantially as described.

6. In a match-box-filling machine, the combination, with a hopper, of opposing spring-pressed flaps located below said hopper and arranged to receive the matches between them, a piston arranged to reciprocate between said flaps, means for moving the flaps with the matches away from the hopper, means for feeding trays on said flaps while the latter are in their lower position, and means for raising the piston after a tray has been deposited on said flaps.

7. In a match-box-filling machine, the combination with a hopper, of opposing spring-pressed flaps located below said hopper and arranged to receive the matches between them, means for moving said flaps up and down toward and from the hopper, a slide arranged to be interposed between the hopper and the flaps when the latter are in their lower position, means for feeding trays on said flaps, a piston arranged to move between the flaps and means for actuating the piston to transfer the matches from between the flaps into the tray.

8. In a match-box-filling machine, the combination, with a hopper, of opposing spring-pressed flaps located below said hopper and provided with fillets adapted to serve as supports, means for depositing trays upon said fillets, and a piston for controlling the opening and closing of the flaps and for transferring the matches from between the flaps into the superimposed tray.

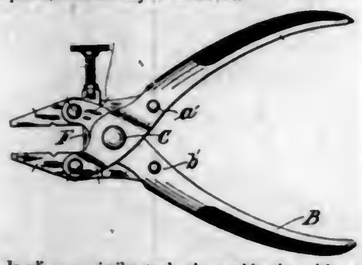
9. In a match-box-filling machine, the combination with a hopper, of a traveling carrier for conveying match-box parts to a point adjacent to said hopper, a plunger movable transversely of the carrier to transfer the match-box parts therefrom, and a detaining-flap arranged in the path of the plunger and adapted to be shifted by said plunger into engagement with the next match-box part.

10. In a match-box-filling machine, the combination of a piston adapted to hold and raise a quantity of matches, with a pistor having an intermittent motion and with means to feed trays and tray-cases at opposite sides of the piston, which by its first motion pushes a case over the piston and by its second motion pushes the tray into the tray-case.

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**753,224. PLIERS. WILLIAM A. BERNARD, New Haven, Conn., assignor to the William Schollhorn Company, New Haven, Conn., a Corporation of Connecticut. Filed Aug. 6, 1903. Serial No. 168,487. (No model.)**

*Claim.*—1. In pliers, or similar tools, the combination with cross-levers, one end of each forming a handle for the tool, and the other end bifurcated to form parallel plates; of parallel-moving jaws connected to said levers within said bifurcations, and forming with said plates an opening or passage within the tool; and a slotted clamp secured to the outside of one of said jaws and adapted to limit the movement of the other jaw, said clamp being within said parallel plates, substantially as described.



2. In pliers, or similar tools, the combination with cross-levers, each of which is bifurcated at one end to form parallel plates, which plates are fulcrumed together; of parallel-moving jaws, each of which has a connection with one of said cross-levers, at a point in front of said fulcrum, and with the other cross-lever at a point behind said fulcrum; a clamp secured to one of said jaws between its connections with said cross-levers, and having a slot in which the other jaw is adapted to slide; and a screw in said clamp adapted to bear on the outside of the sliding jaw at a point between its connections with said cross-levers, substantially as described.

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**753,225. COMB-CLEANER. FRANK P. BJÖRNCRANTZ, Grand Rapids, Mich. Filed May 7, 1903. Serial No. 156,050. (No model.)**

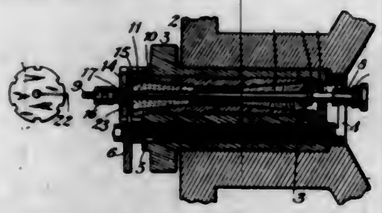


*Claim.*—1. The combination with a comb having grooves, of a cleaner having spring members with groove-engaging devices.

2. The combination of a comb, the back of which is formed with shoulders and having recesses, a comb-cleaner interposed between the teeth of the comb and provided with spring clamping members snugly fitting the comb back with the edges thereof abutting against the shoulders on the comb, and engaging devices carried by the cleaner and resting in the aforesaid seats.

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**753,226. IGNITING DEVICE FOR EXPLOSIVE-ENGINES. BORIS BOTKOWSKI, New York, N. Y., assignor to the De La Vergne Refrigerating Machine Company, New York, N. Y., a Corporation of New York. Filed Dec. 24, 1902. Renewed Aug. 1, 1903. Serial No. 167,946. (No model.)**



*Claim.*—1. The combination with a chamber for a medium to be ignited, of an igniting device comprising electrodes, an insulator-plug electrically separating the electrodes and normally closing an opening in the casing of the chamber, and a stopper for closing such opening and normally out of closing position, such stopper being connected with the insulator-plug, whereby the removal of the insulator-plug brings the stopper into closing position.

2. The combination with a chamber for a medium to be ignited, of an igniting device comprising a conductive stem and an electrode thereon, another electrode, an insulator-plug embracing the conductive stem and normally closing an opening in the casing of the chamber, and a stopper for closing such opening and normally out of closing position, such stopper being carried with the conductive stem and the conductive stem and insulator-plug being connected, whereby the removal of the insulator-plug brings the stopper into closing position.



3. The combination with a chamber for a medium to be ignited, of an igniting device comprising a conductive stem and an electrode thereon, another electrode, an insulator-plug embracing the conductive stem and normally closing an opening in the casing and engaging with the walls of such opening, a stopper for closing such opening and adapted to engage with the walls thereof and normally out of closing position, such stopper being carried by such conductive stem, and detachable means connecting the conductive stem and insulator-plug whereby the removal of the insulator-plug causes the stopper to engage with the walls of the opening and close the opening, the engaging part of the insulator-plug being of such length that the engagement of the stopper and the closing of the opening thereby will precede the disengagement of the insulator-plug.

4. An igniting device comprising an igniter-body, a sparking lever and sparking anvil carried thereby, an insulator-plug electrically separating the sparking lever and sparking anvil and normally closing an opening in the igniter-body, and a stopper for closing such opening and normally out of closing position, such stopper being connected with the insulator-plug, whereby the removal of the insulator-plug brings the stopper into closing position.

5. An igniting device comprising an igniter-body, a sparking lever carried thereby, a conductive stem and a sparking anvil on the conductive stem, an insulator-plug embracing the conductive stem and normally closing an opening in the igniter-body, a stopper for closing such opening and normally out of closing position, such stopper being carried by the conductive stem, and the conductive stem and insulator-plug being connected, whereby the removal of the insulator-plug brings the stopper into closing position.

6. An igniting device comprising an igniter-body, a sparking lever carried thereby, a conductive stem and a sparking anvil on the conductive stem, an insulator-plug embracing the conductive stem and normally closing an opening in the igniter-body and engaging with the walls of such opening, a stopper for closing such opening and adapted to engage with the walls thereof and normally out of closing position, such stopper being carried by such conductive stem, and detachable means connecting the conductive stem and the insulator-plug, whereby the removal of the insulator-plug causes the stopper to engage with the walls of the opening and close the opening, the engaging part of the insulator-plug being of such length and the engagement of the stopper and closing of the opening thereby will precede the disengagement of the insulator-plug.

7. The combination with a chamber for a medium to be ignited, of an igniting device comprising a conductive stem and an electrode thereon, another electrode, an insulator-plug embracing the conductive stem and normally closing an opening in the casing of the chamber, and engaging with the walls of such opening, a stopper for closing such opening and normally out of closing position, such stopper being carried by the conductive stem and adapted to engage with the walls of such opening, and detachable means for clamping the conductive stem to the insulator-plug.

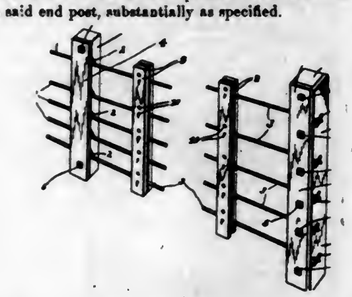
8. An igniting device comprising an igniter-body, a conductive stem and an electrode thereon, another electrode, an insulator-plug embracing the conductive stem and having a screw-threaded engagement with and normally closing an opening in the igniter-body, a stopper for closing such opening and normally out of closing position, such stopper being carried by the conductive stem and being screw-threaded for engagement with such opening, an exterior removable head for such conductive stem and detachable means for clamping the conductive stem to the insulator-plug, substantially as set forth.

9. An igniting device comprising the igniter-body 3 having an opening therethrough with a screw-threaded portion at the outer end thereof and another screw-threaded portion at the inner end thereof, the conductive stem 9, having the sparking anvil 8 thereon and also having the threaded part 18 and stopper 19, the threaded part 18 being adapted to engage with the threaded portion at the inner end of the opening in the igniter-body, the insulator-plug 10 having a threaded part adapted to engage with the threaded part at the outer end of the igniter-body and having insulators 11, 11, therein embracing the conductive stem 9, the removable head 14 of the conductive stem, detachable means for clamping the conductive stem to the insulator-plug, and a sparking lever carried by the igniter-body, substantially as set forth.

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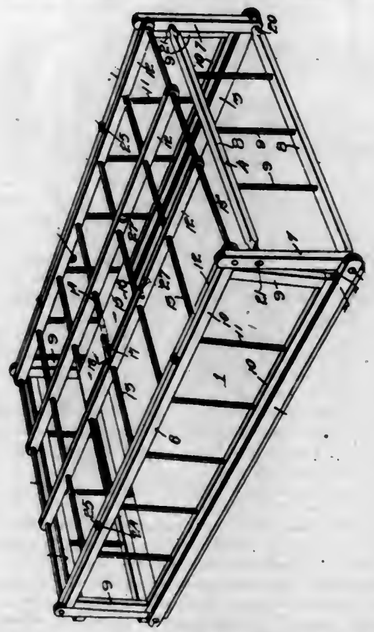
**753,227. FENCE. PERRY M. BOUNDS, Columbus, Ohio. Filed Feb. 1, 1902. Serial No. 92,101. (No model.)**

*Claim.*—In a fence, the combination with a plurality of posts 1 and wires connecting the same, of an end post 6 the latter having inclined wire-receiving recesses on one of its faces, a board $4^a$ secured to said recessed "face" and closing the mouths of said recesses and a board 7 on said end post at right angles with the board $4^a$, said board 7 being provided with openings through which are adapted to pass the ends of the fence-wires and means connected with the ends of said fence-wires to prevent the withdrawal of the same from said end post, substantially as specified.



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**753,228. CHICKEN-COOP. HALL R. BRIDGERS, Morganton, N. C., assignor of one-half to Richard H. Speight, Jr., Morganton, N. C. Filed Mar. 7, 1903. Serial No. 146,750. (No model.)**



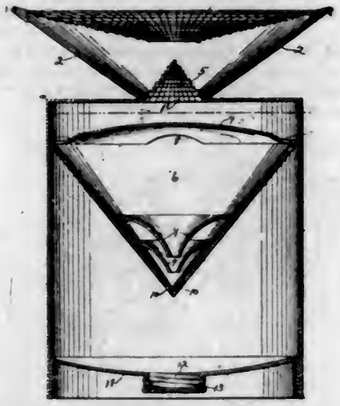
*Claim.*—In a crate, the combination with a bottom, of sills extending longitudinally thereof with their ends projecting beyond the same, ends comprising stiles pivoted to the projecting ends of the sills and a top connecting-bar, a top pivotally engaging the top connecting-bars of the ends and adapted to fold with the latter by a movement longitudinally of the bottom, and sides pivoted to the longitudinal sills and adapted normally to lie between and engage the end stiles to prevent folding of the parts.

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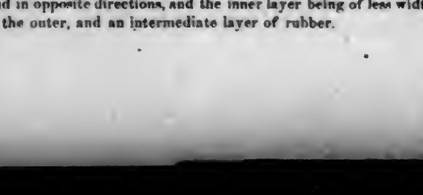
**753,229. CUSPIDOR. TIMOTHY J. BURNS and FREDERICK O. CASTEEL, Pittsburg, Pa.; said Casteel assignor to said Burns. Filed Sept. 28, 1903. Serial No. 174,999. (No model.)**

*Claim.*—In a device of the type set forth, the combination with the body of a cuspidor having a central opening therein, a guard arranged in the opening, a funnel-shaped trap arranged beneath said opening having a convex top provided with openings in the periphery thereof, said trap being further provided with openings near the

bottom thereof, and a series of guard-cups disposed one above the other near the lower end and above the openings in the trap, substantially as described.



753,230. HOSE. REGINALD R. CALCUTT, Chicago, Ill. Filed Nov. 6, 1903. Serial No. 180,084. (No model.)



*Claim.*—1. As an article of manufacture, a flexible hose having a layer of spirally-wound flat metal therein, and a layer of rubber one end of which extends beyond the adjacent end of the body of the hose.

2. As an article of manufacture, a flexible hose having an inner and an outer layer of spirally-wound flat metal bands, and a layer of rubber one end of which extends beyond the adjacent end of the body of the hose.

3. As an article of manufacture, a flexible hose having a layer of spirally-wound flat metal therein; a layer of rubber one end of which extends beyond the adjacent end of the body of the hose, and a fabric envelop for the latter.

4. As an article of manufacture, a flexible hose having an inner and an outer layer of spirally-wound flat metal bands, and an intermediate layer of rubber one end of which extends beyond the adjacent end of the body of the hose.

5. As an article of manufacture, a flexible hose comprising an inner and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber one end of which extends beyond the adjacent end of the body of the hose.

6. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber one end of which extends beyond the adjacent end of the body of the hose.

7. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber.

8. As an article of manufacture, a flexible hose comprising an inner and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, and a layer of rubber.

9. As an article of manufacture, a flexible hose having an inner and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and an intermediate layer of rubber.

10. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, and an intermediate layer of rubber.

11. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, and an intermediate layer of rubber.

12. As an article of manufacture, a flexible hose having an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, an intermediate layer of rubber, and a fabric envelop inclosing said layer of rubber.

13. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, an intermediate layer of rubber, and a fabric envelop inclosing said layer of rubber.

14. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, an intermediate layer of rubber, and a fabric envelop inclosing said layer of rubber.

15. As an article of manufacture, a flexible hose having an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, a layer of rubber one end of which extends beyond the adjacent end of the body of the hose, and a fabric envelop inclosing said layer of rubber.

16. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and the inner layer being of less width than the outer, a layer of rubber one end of which extends beyond the adjacent end of the body of the hose, and a fabric envelop inclosing said layer of rubber.

17. As an article of manufacture, a flexible hose comprising an inner layer and an outer layer of spirally-wound flat metal bands, having overlapping beveled edges, wound in opposite directions, and the inner layer being of less width than the outer, a layer of rubber one end of which extends beyond the adjacent end of the body of the hose, and a fabric envelop inclosing said layer of rubber.

18. As an article of manufacture a flexible hose comprising a layer of spirally-wound flat metal having overlapping edges.

19. As an article of manufacture a flexible hose comprising an outer layer of spirally-wound flat metal having overlapping edges.

20. As an article of manufacture, a flexible tube comprising an inner and an outer layer of spirally-wound flat metal bands, wound in opposite directions, and having overlapping edges.

753,231. MACHINE FOR MAKING AND REPAIRING ROADS. ARTHUR CAMERON, Chicago, Ill., assignor to National Drill and Manufacturing Company, Chicago, Ill., a Corporation of West Virginia. Filed July 9, 1903. Serial No. 164,906. (No model.)

*Claim.*—1. In a machine for making and repairing roads, a pair of independent, swinging, longitudinally-adjustable axle-sections for the rear wheels having pivotal connections with the body-frame respectively at opposite sides of a point between the rear wheels; and an oscillatory member having independent self-adjusting power-transmitting connections with the swinging extensible rear-axle section.

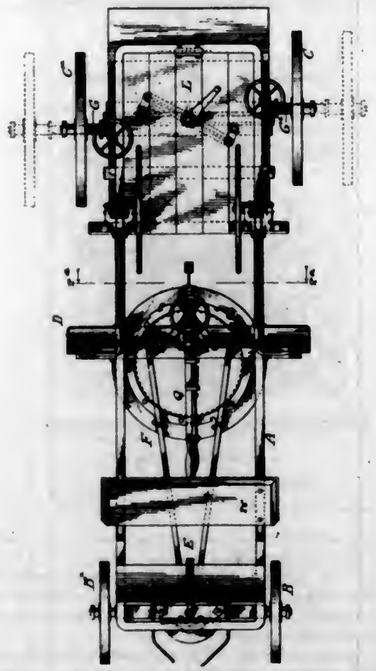
2. In a machine for making and repairing roads, a pair of independent, swinging, longitudinally-adjustable axle-sections for the rear wheels having pivotal connections with the body-frame respectively at opposite sides of a point between the rear wheels; an oscillatory member supported upon the body-frame and having self-adjusting power-transmitting connections with the swinging extensible rear-axle sections; and a rotary shaft for operating such oscillatory member.

3. In a machine for making and repairing roads, a wheeled body-frame provided with a scraper-blade; a pair of horizontally-swinging axle boxes or housings respectively pivoted at opposite sides of the body-frame, and axle portions having longitudinal shifting connections with such axle boxes or housings to form longitudinally-adjustable rear-axle portions, an oscillatory member supported to turn about a vertical axis between the two adjustable rear-axle portions and having self-adjusting power-transmitting connections with the swinging housings or axle-boxes.

4. In a machine for making and repairing roads, a wheeled body-frame provided with a scraper-blade; independent longitudinally-adjustable, swinging rear-axle portions; and a double-armed oscillatory member for swinging such axle portions having its arms respectively connected with one and the other of the two swinging rear-axle portions by self-adjusting power-transmitting connections.

5. In a machine for making and repairing roads, a wheeled body-frame having a transversely-arranged rack-bar secured thereto; a member supported upon and arranged to shift along the transversely-arranged rack-bar; a pinion connected with said shifting member and arranged to engage the rack-bar; a device for operating the pinion; a scraper-blade supported for movement toward opposite sides of the machine; and power-transmitting connection between the scraper-blade and said shifting member which is supported upon the rack-bar.





6. In a machine for making and repairing roads, a wheeled body-frame having a transversely-arranged rack-bar secured thereto; a slide supported on and arranged to shift along the rack-bar; a pinion mounted upon the slide; a device for operating the pinion; a scraper-blade; a laterally-movable carrier for the scraper-blade; and a connecting-rod between the carrier and the slide.

7. In a machine for making and repairing roads, a wheeled body-frame provided with a transversely-arranged rack; a bearing-support to shift along the rack and provided with a pinion by which the rack is engaged; a step-by-step-movement device for operating the pinion in opposite directions in alternation; a reciprocative member for actuating the step-by-step-movement device; a scraper-blade supported for shift toward opposite sides of the machine; and power-transmitting connection between the scraper-blade and the shifting bearing which carries the pinion.

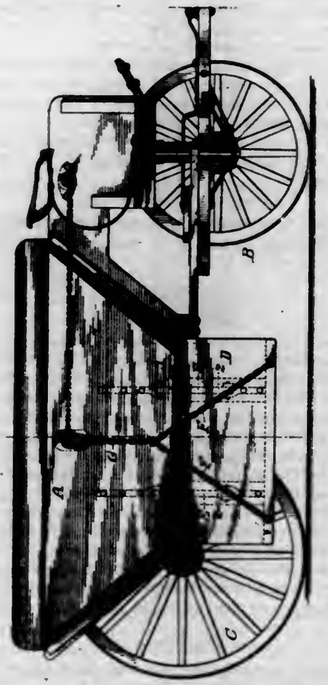
8. In a machine for making and repairing roads, a wheeled body-frame having a transversely-arranged rack secured thereto, and provided with a scraper-blade supported for side shift; a slide supported upon the rack-bar and provided with a pinion engaging the rack-bar; a double ratchet secured to the pinion and having two sets of teeth respectively right and left; a vibratory lever and a right-and-left pawl device arranged upon such lever and adapted for engaging the sets of ratchet-teeth in alternation.

9. In a machine for making and repairing roads, a wheeled body-frame having a transversely-arranged rack secured thereto, and provided with a scraper-blade supported for side shift; a slide supported upon the rack-bar and provided with a pinion arranged to engage the rack; a double ratchet secured to the pinion and having two sets of teeth respectively right and left; a vibratory lever provided with a double-armed pawl for engaging the two sets of ratchet-teeth in alternation; a thumb-latch pivoted to the lever and connected with the double-armed pawl; a spring arranged in opposition to the movement of the thumb-latch in one direction; and power-transmitting connection between the scraper-blade and the slide.

10. In a machine for making and repairing roads, a wheeled body-frame having a rack-bar secured thereto, and carrying a scraper-blade arranged for side shift; and a device for shifting the scraper-blade comprising a slide supported upon the rack-bar and connected with the scraper-blade; a pinion on the slide arranged to engage the rack-bar; a double pawl P on the pinion; a double-armed ratchet for operating the pawl; a hand-lever supporting the double-armed pawl; and a double-armed locking-pawl T also arranged upon the hand-lever.

11. In a machine for making and repairing roads, a wheeled body-frame having a transversely-arranged rack-bar secured thereto; clevis-shaped slide supported upon the rack-bar and having upper and lower portions affording bearings for a spindle; a pinion secured upon a vertical spindle and engaging the toothed portion of the rack-bar, said pinion being arranged between said upper and lower bearing portions and having its spindle engaging therein; a ratchet secured upon the spindle; and a pawl device for actuating the ratchet.

753,232. DUMPING-WAGON. ARTHUR CAMERON, Chicago, Ill., assignor to National Drill and Manufacturing Company, Chicago, Ill., a Corporation of West Virginia. Filed July 13, 1903. Serial No. 165,312. (No model.)



*Claim.*—1. In a dumping-wagon, a bottom for the wagon-body comprising longitudinal bottom sections hinged to the lower arm portions of swinging elbow-arms which have their upper arm portions pivotally supported at opposite sides of the wagon-body.

2. In a dumping-wagon, elbow-arms arranged with their upper arm portions pivotally or hinge supported at opposite sides of the wagon-body, and bottom sections hinged at points between their longitudinal edges upon the lower arm portions of such elbow-arms.

3. In a dumping-wagon, a bottom for the wagon-body comprising bottom sections hinged upon the lower arm portions of elbow-arms which have their upper arm portions pivotally or hinge supported at opposite sides of the wagon-body, and chains for operating the bottom sections attached to the latter at or near their free end portions.

4. In a dumping-wagon, elbow-arms having upper arm portions pivotally or hinge supported at opposite sides of the wagon-body; bottom sections hinged upon the lower arm portions of such elbow-arms, and chains F attached in pairs to the bottom sections and converging upwardly to and connected with chains G.

753,233. ROPE-GRAB. JOHN CARNEY, Salem, W. Va., assignor of one-half to Matthew McDermott, Martins Ferry, Ohio. Filed Feb. 26, 1903. Serial No. 145,120. (No model.)

*Claim.*—1. A well-fishing tool comprising a fixed jaw, pointed upwardly-projecting teeth carried by said jaw, said teeth arranged in pairs with an intervening space, a movable jaw hinged in front of said fixed jaw, teeth carried by said movable jaw, the last-mentioned teeth arranged to come in the said intervening spaces, substantially as described.



2. In a tool of the character described, the combination of a fixed jaw, a relatively movable jaw hinged to normally stand directly in front of said fixed jaw, teeth arranged in pairs on one of said jaws, and teeth arranged singly on the opposite jaw, the last-mentioned teeth adapted for interlocking with the teeth forming the pairs on the opposite jaw, substantially as described.

3. A well-fishing tool consisting of a pair of pointed jaws having convex outer faces, one of said jaws being relatively fixed and the other hinged and relatively movable, a plurality of teeth arranged in pairs carried by the fixed jaw, and a plurality of teeth carried by the movable jaw and arranged to interlock with the pairs of teeth on the opposite jaw, substantially as described.

4. A well-fishing tool comprising two similarly-formed jaws, one of said jaws being relatively fixed and the other relatively movable, said movable jaw hinged to operate directly in front of the fixed jaw, teeth arranged singly on said movable jaw, and teeth on the fixed jaw arranged in pairs adapted to straddle the points of the teeth on the movable jaw, substantially as and for the purposes set forth and described.

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**753,234. APPARATUS FOR MAKING HAIR-BRUSHES.** WALTER W. CARPENTER, Brooklyn, N. Y. Filed June 11, 1903. Serial No. 160,960. (No model.)



*Claim.*—The herein-described apparatus for making hair-brushes, comprising a mold-block the top of which is provided with a raised portion of the shape which it is desired to give the body of the brush, said raised portion being provided with a receptacle the bottom of which is beveled outwardly and upwardly from the central portion thereof to the edges thereof, said block being also provided with bores or passages which communicate with said receptacle and through which tufts of brush material are adapted to be passed, a plate adapted to be placed on said block and provided with a central opening which corresponds with the raised portion on said block and which is adapted to inclose the same, the top walls of said opening being beveled outwardly and upwardly, so as to form an enlargement of the receptacle in the mold-block, said receptacle being adapted to receive liquid cement, and a brush-back provided in the face thereof with holes or recesses, substantially as shown and described.

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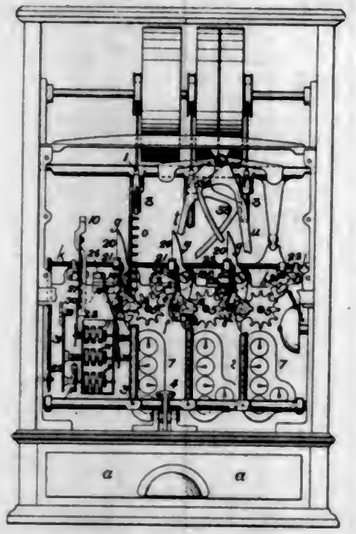
**753,235. CASH REGISTERING AND CHECKING APPARATUS.** JAMES M. CARSON, Manchester, England. Filed Jan. 21, 1901. Serial No. 44,200. (No model.)

*Claim.*—1. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3, and cash-drawer *a*, of the latch *b* to retain the drawer closed until the rack *o* is operated, the rocking lever *c* operated by the rack and the arm *d* by which the latch *b* is raised substantially as described.

2. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3 and cash-drawer *a* of the pivoted latch *b* pivoted above the back of the cash-drawer, the rocking lever *c*, and depending arm *d*, the lever *e* pivoted between the rack and the rocking lever and provided with a projection 15 at one end with which the rack engages and a projection 16 at the other end which rocks the lever *c* substantially as described.

3. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3 and cash-drawer *a*, of the latch *b* pivoted above the back of the cash-drawer *a*, to retain the drawer closed until the rack *o* is operated the rocking lever *c* operated by the rack, the arm to raise the latch, the change-pointer 10, the projecting arm 11, the connecting-link 12, and the rod 13 attached to the latch *b* by which it is raised to release the drawer substantially as described.

4. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3, and cash-drawer *a*, of the latch *b* pivoted above the rack of the cash-drawer *a* to retain the drawer closed until the rack *o* has operated the rocking lever *c* operated by the rack, the arm to raise the latch, the pivoted lever *g* provided with a tooth 19 to engage the rack and prevent a second movement of the rack.




5. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3, and cash-drawer *a*, of the latch *b*, the pivoted lever *g* provided with a tooth 19 to engage the rack to prevent a second movement thereof, and a stop-pin 21, and rocking bar *k*, to lift the lever *g* out of operation substantially as described.

6. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3, and cash-drawer *a*, and rocking lever *c*, of the catch *b* releasing-finger *d* connecting-link 26, pawl 37, and counting mechanism *m* to register the number of transactions substantially as described.

7. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3 and cash-drawer *a* and the change-pointer 10 of the rocking lever *c*, retaining-catch *b*, releasing-finger *d*, connecting-link 27, lever 28 and pawl 29 and counting mechanism *n* to register the number of operations, substantially as described.

8. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3, and cash-drawer *a*, and lid *r* of the rocking lever *c*, retaining-catch *b*, releasing-finger *d*, rod 30, lever 31, pawl 32 and counting mechanism *p* to register the number of times the lid *r* has been opened, substantially as described.

9. In a cash registering and checking apparatus the combination with the actuating-racks *o*, pointers 1, swinging rack-frame 3 and cash-drawer *a*, of the rocking lever *c*, retaining-catch *b*, releasing-finger *d*, lever *t* provided with a shoulder 33 and the lever *u* provided with a lever 34 substantially as described.

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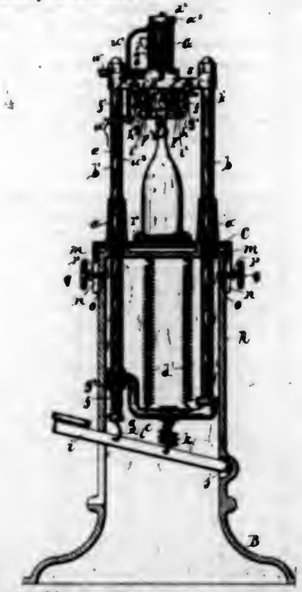
**753,236. BOTTLE-FILLING MACHINE.** PATRICK J. CAWLEY, Syracuse, N. Y. Filed May 11, 1903. Serial No. 156,510. (No model.)

*Claim.*—1. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a neck-receiving member, means for unseating the stopper, a filling-head, means for controlling the discharge from said head, means for seating the stopper, and means directly engaging and actuating the lever of the bail to lock the said stopper on the bottle substantially as described.

2. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head, means for controlling the discharge from said head, a collar carried on the head and formed with a neck-receiving chamber, means for the unseating and seating the stopper, a plunger disposed to directly engage and actuate the lever of the bail to lock the stopper on the bottle, and means for operating said plunger substantially as described.

3. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head provided with an inlet-port and with a discharge-port, a collar formed with a neck-receiving chamber and supported on the under side of said head, a valve operative for opening and closing said discharge-port, means for unseating and seating the stopper, and means directly engaging and actuating the lever of the bail to lock the stopper on the bottle substantially as described.





4. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head provided with an inlet-port and with a discharge-port, a laterally-movable collar formed with a neck-receiving chamber and carried on the bottom of the head, a valve for opening and closing said discharge-port, means for shifting the bottle-neck to carry the month to and from said discharge-port and thereby moving said collar to unseat and seat the stopper, and means actuating the lever of the bail to lock the stopper on the bottle substantially as described.

5. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head provided with a stopper-receiving opening and with an inlet-port, and a discharge-port at one side of the opening, a laterally-movable collar formed with a neck-receiving chamber and carried on the bottom of the head and formed with a valve for opening and closing said discharge-port, means for operating said collar to unseat and seat the stopper and for shifting the neck to carry the mouth thereof to and from said discharge-port, a vertically-movable plunger passing through said head and disposed to actuate the bail of the stopper to lock the latter on the bottle substantially as described.

6. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a vertically-movable filling-head provided with an inlet-port and a discharge-port, a laterally-movable collar carried on the bottom of said head and formed with a neck-receiving chamber, said collar being operative for opening and closing said discharge-port and for unseating and seating the stopper, a plunger movable vertically through the head and disposed to actuate the lever of the bail to lock the stopper on the bottle, and means for operating said head and plunger substantially as described.

7. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a vertically-movable filling-head provided with a stopper-receiving opening and with an inlet-port and a discharge-port, a laterally-movable collar carried on the bottom of said head and formed with a neck-receiving chamber and with a valve for opening and closing said discharge-port, means for shifting the bottle-neck to move the collar and thereby unseat and seat the stopper and carry the mouth of the bottle to and from the discharge-port, a vertically-movable plunger passing through said head and disposed to actuate the lever of the bail to lock the stopper on the bottle, and a lever for operating said filling-head and plunger substantially as described.

8. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head provided with an inlet-port and a discharge-port, a valve for opening and closing said discharge-port, a laterally-movable collar formed with a neck-receiving chamber and carried on said head, said head being formed with a stopper-receiving opening, a pair of hand-levers pivoted to the head and formed with cooperating clamps adapted to grip the neck of the bottle below the collar to shift the neck to carry the mouth thereof to and from the discharge-port, and to cause the neck to move the collar and thereby unseat and seat the stopper, and means for actuating the lever of the bail to lock the stopper on the bottle substantially as described.

9. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a vertically-movable filling-head provided with a stopper-receiving opening and with an inlet-port, and a discharge-port at one side of the opening, a laterally-movable collar carried on the bottom of said head and formed with a neck-receiving chamber and with a valve for opening and closing the discharge-port, a pair of levers pivoted to said head and formed with clamps for gripping the neck of the bottle below the collar, said levers being operative for shifting the neck to unseat and seat the stopper and to carry the mouth to and from said discharge-port and cause the neck to move the collar to open and close the latter port a vertically-movable plunger passing through the filling-head and disposed to actuate the lever of the bail to lock the stopper on the bottle, and a foot-lever for moving said filling-head and plunger substantially as described.

10. In a machine for filling bottles provided with bail-stoppers, the combination with a standard and the bottle-support thereon, of a pair of vertically-movable posts, a filling-head mounted on said posts and formed with an inlet-port and a discharge-port, means for opening and closing said discharge-port, a neck-receiving member carried on said head, means for unseating and seating the stopper, means directly engaging and actuating the lever of the bail to lock the stopper on the bottle, and means for operating the aforesaid posts substantially as described.

11. In a machine for filling bottles provided with bail-stoppers, the combination with a suitable standard, of a bottle-support, a pair of vertically-movable posts supported on said standard and extending above the bottle-support, a filling-head mounted on the said posts and provided with an inlet-port and a discharge-port and with a valve-seat on its bottom, a laterally-movable collar carried on the under side of said head and formed with a neck-receiving chamber and with a valve sliding on said seat, means for shifting the bottle-neck to carry the mouth to and from the discharge-port, whereby the collar is moved to open and close the latter port, means for unseating and seating the stopper, a plunger disposed to actuate the lever of the bail to lock the stopper on the bottle, springs drawing said posts and plunger upward, and a foot-lever for moving the same downward substantially as described.

12. In a machine for filling bottles provided with bail-stoppers, the combination with a standard, of a bottle-support, a pair of vertically-movable posts supported on the standard and extending above the bottle-support, one of said posts being tubular, a filling-head mounted on said posts and provided with an inlet-port and a discharge-port and with a stopper-receiving opening, a laterally-movable collar carried on the under side of said head and formed with a neck-receiving chamber and with a valve seated on the head, a pair of hand-levers pivoted to said head and provided with cooperating semicircular clamps adapted to grip the neck of the bottle below the collar, said levers being operative to shift the neck and thereby unseat and seat the stopper and carry the mouth to and from the discharge-port and move the collar to open and close said port, a vertical plunger passing through the head and disposed to actuate the lever of the bail to lock the stopper on the bottle, a rod sliding longitudinally in the aforesaid tubular post and connected to the plunger and supported by a spring, and a foot-lever connected to said posts and rod to operate the filling-head and plunger substantially as described.

13. In a machine for filling bottles provided with bail-stoppers, the combination of a filling-head provided with a stopper-receiving opening and with an inlet-port and a discharge-port and formed on its bottom with a valve-seat, a laterally-movable collar carried on the under side of said filling-head and provided with a neck-receiving chamber and formed with a valve on its upper face sliding on said seat, springs pressing the collar upward to retain the valve seated, means for shifting the bottle-neck to carry the mouth to and from the discharge-port and thereby move the collar to unseat and seat the stopper and open and close said latter port, and means for

actuating the bail to lock the stopper on the bottle substantially as described.

14. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a vertically-movable filling-head provided with a stopper-receiving opening and with an inlet-port, and a discharge-port at one side of the opening, a valve-seat formed on the bottom of said head, a laterally-movable collar below said head and formed with a neck-receiving chamber and with a valve on its upper face, springs pressing said collar upward and retaining the valve seated, horizontal guides for said collar, a pair of hand-levers pivoted to said head and disposed below the collar and formed with cooperating semicircular clamps adapted to grip the neck of the bottle, said levers being operative to shift the neck to carry the mouth to and from the discharge-port and to move the collar to unseat and seat the stopper and open and close the latter port, a plunger passing through the filling-head and disposed to actuate the lever of the bail to lock the stopper on the bottle, and means for operating said head and plunger substantially as described.

15. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a vertically-movable filling-head provided with a stopper-receiving opening and with an inlet-port, and a discharge-port at one side of the opening, and provided with a pair of oppositely-extending horizontal supporting-arms, pins projecting downwardly from said arms, a laterally-movable collar below said head and formed with a neck-receiving chamber and with horizontally-projecting slotted guide-arms engaging said pins, spiral springs surrounding said pins and bearing on the guide-arms to press the collar upward, a horizontally-disposed segmental track rigidly secured to the front of the head-supporting arms, a pair of hand-levers pivoted to the rear of the head and formed with coöperating clamps adapted to grip the neck of the bottle, and sliding on said track, said levers being operative to shift the neck to carry the mouth to and from the discharge-port and thereby move the collar to unseat and seat the stopper and open and close the latter port, a vertically-movable plunger passing through the head and disposed to actuate the bail to lock the stopper on the bottle, and means for operating said head and plunger substantially as described.

16. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head, a laterally-movable collar carried on the under side of said head and provided with a neck-receiving chamber, a pair of hand-levers pivoted to the head and formed with semicircular clamps disposed below the collar and adapted to grip the neck of the bottle, yielding ring-sections secured in said clamps, said levers operating to shift the neck and move the collar for the purpose set forth.

17. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head, a laterally-movable collar carried on the under side of said head and provided with a neck-receiving chamber, a snifting-cylinder communicating with said chamber, means for shifting the collar to unseat and seat the stopper, means for controlling the discharge from the head, and independent means for actuating the bail to lock the stopper on the bottle substantially as described.

18. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a filling-head, a chamber for receiving the neck of the bottle, a cylinder arranged to automatically sniff the air from the chamber, a piston in said cylinder, a spring forcing the piston toward the chamber, means for controlling the discharge from the head, means for shifting the bottle to unseat and seat the stopper, and means for actuating the bail-lever to lock the stopper on the bottle substantially as described.

19. In a machine for filling bottles provided with bail-stoppers, the combination of a bottle-support, a vertically-movable filling-head, a collar carried on the under side of said head to receive the neck of the bottle, said collar being movable to control the discharge from the head and to unseat and seat the stopper, a plunger disposed to actuate the bail to lock the stopper on the bottle, means for operating said head and plunger, and a cylinder mounted on top of the head for snifting the air during the operation of filling substantially as described.

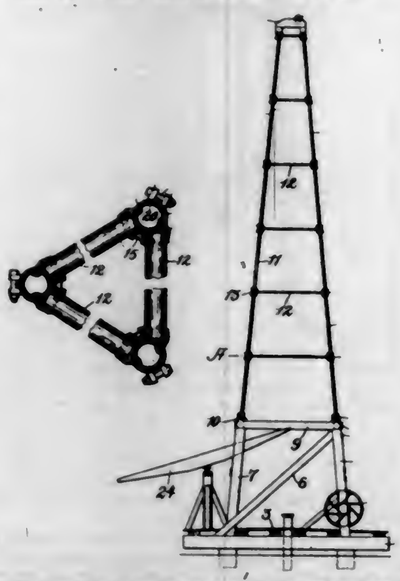
20. In a machine for filling bottles provided with bail-stoppers, the combination of a filling-head, a neck-receiving chamber below said head, means controlling the discharge from said head, means for unseating and seating the stopper, a plunger disposed to actuate the bail to lock the stopper on the bottle, a spring cushioning said plunger and means for operating the plunger substantially as described.

21. In a machine for filling bottles provided with bail-stoppers, the combination of a vertically-movable filling-head, a collar carried on the under side of said head and formed with a neck-receiving chamber, a bail-guard formed in said chamber, means for controlling the discharge from said head, means for unseating and seating the stopper, a vertically-movable plunger disposed above said bail-guard and adapted to engage the lever of the bail to lock the stopper on the bottle, and means for operating said head and plunger substantially as described.

22. In a machine for filling bottles provided with bail-stoppers, the combination with a suitable standard, of a vertically-adjustable bottle-supporting table on said standard, and provided with means adapting the same for bottles of different diameters, a vertically-movable filling-head supported above said table and provided with a laterally-movable collar adapted to receive the neck of the bottle, means for controlling the discharge from said head, means for shifting said collar to unseat and seat the stopper, means for locking the stopper on the bottle, and means for operating said head substantially as described.

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**758,237. DERRICK.** CHARLES R. B. CLAFLIN, Winthrop, Mass. Filed May 11, 1903. Serial No. 156,589. (No model.)



*Claim.*—1. In a knockdown derrick, the combination with upright sections, of cross-braces each having a half-clamp secured to each of its ends, each pair of half-clamps being formed to fit the adjacent ends of two upright sections and detachably secure them together.

2. In a knockdown derrick, a set of cross-braces each provided at each end with a half-clamp, each pair of half-clamps forming together a socket adapted to receive the adjacent ends of two upright sections and being provided with means for detachably securing them together.

3. In a knockdown derrick, a clamp comprising two halves and means for detachably securing them together, each of the half-clamps being provided with a socket extending therefrom at an angle to the meeting faces of said half-clamps.

4. In a knockdown derrick, a clamp composed of two similar halves, each provided with a socket and with an inwardly-projecting headed stud, and means for detachably securing said half-clamps together.

5. In a knockdown derrick, the combination with a hollow upright section, of caps inserted into the ends thereof and forming closures for the same.

6. In a knockdown derrick, a base comprising sills, uprights 4 4 and cross-pieces 5, in combination with slanting uprights 7, cross-piece 8 and braces 9, forming a series of triangles, substantially as described.

7. In a knockdown derrick, a base comprising sills, uprights 4 4, cross-pieces 5 and braces 6, in combination with slanting uprights 7, cross-piece 8 and braces 9, forming a series of triangles, substantially as described.

8. In a knockdown derrick, the combination with a base having a rectangular bottom and a substantially triangular top, supported at a distance above said bottom, of a superstructure composed of three columns of upright sections, means for detachably connecting the meeting ends of each pair of sections, and a triangular set of cross-braces secured to each set of connecting means.

9. In a knockdown derrick, the combination of three columns of upright sections, triangular sets of horizontal cross-braces, and devices for detachably connecting said sections and cross-braces, each of said devices being composed of two halves and each of said halves being secured to one end of one of said cross-braces.

10. In a knockdown derrick, the combination with upright sections provided respectively with notches, of cross-braces each carrying one or more headed studs, each of said studs being formed to enter one of said notches and to hook over the wall of a section.

11. In a knockdown derrick, the combination with upright sections, each provided at its lower end with notches, of cross-braces each having a half-clamp secured to each of its ends, and a headed stud carried by each half-clamp, and formed to fit one of the notches and to hook over the wall of the section next below it.

12. In a knockdown derrick, the combination of upright sections, the lower end of each section resting directly upon the upper end of the section next below, connecting devices each comprising two half-clamps which form a socket embracing the meeting ends of adjacent sections and provided with means for detachably securing said half-clamps together, and cross-braces each connected at each end to one of said half-clamps.

13. In a knockdown derrick, the combination of upright sections adapted to rest one upon another, one end of each section being provided with notches, two half-clamps surrounding the meeting ends of each pair of sections and provided with headed studs passing through said notches and hooking over the walls of said sections, cross-braces secured to said half-clamps, and means for detachably securing each pair of half-clamps together.

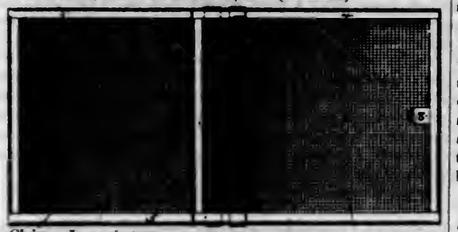
14. In a knockdown derrick, the combination of upright sections 11, each provided near its ends with cups 20, sets of cross-braces each having at each end a half-clamp provided with an inwardly-projecting headed stud which is adapted to hook over the walls of the corresponding upright section and its contained cup, and means for detachably securing the half-clamps of each pair together.

15. In a knockdown derrick, the combination of a base having a rectangular bottom and a substantially triangular top supported at a distance above said bottom, and a triangular superstructure supported on the triangular top of said base.

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**753,238. WINDOW-SCREEN.** WILLIAM R. COCHRAN, Jr., Delphos, Ohio, assignor of two-thirds to John S. Bowers, Decatur, Ind. Filed Nov. 25, 1903. Serial No. 182,644. (No model.)



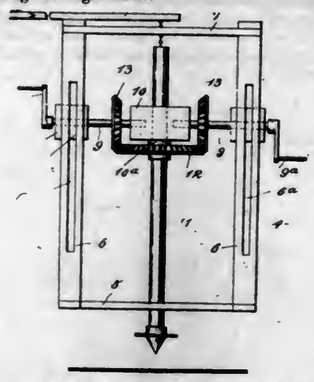
*Claim.*—In a window-screen, the combination of two members, each comprising metal edge strips folded twice longitudinally to clamp a screen or netting between them, three of said strips of each screen member folded to locate the double thickness of strip on the same side and the other edge strip folded in the reverse manner and strips secured to the top and bottom edge strips of both members and bent over the top and bottom strips of the adjacent member to give them sliding connection and hold the members with the faces thereof together which have the three single thicknesses of edge strips.

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**753,239. POST-HOLE BORER.** MEREDITH P. CURLEE, McKenzie, Ala. Filed Oct. 29, 1903. Serial No. 179,033. (No model.)

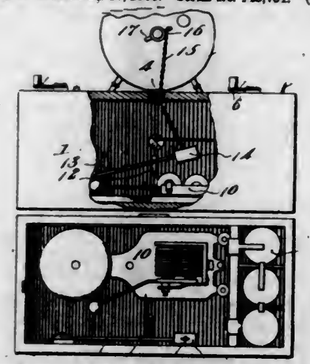
*Claim.*—1. A post-hole borer comprising a frame, alined driving-shafts vertically slidable therein, a swinging block between the driving-shafts and receiving the inner ends thereof, an auger-shaft extending through said block, and meshing gears on the driving and auger shafts.

2. A post-hole borer comprising a frame, alined driving-shafts, bearing-blocks therefor slidably mounted in the frame, a swinging block between the driving-shafts and receiving the inner ends thereof, an auger-shaft extending through said block, and meshing gears on the driving and auger shafts.



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**753,240. ELECTRIC ALARM-CLOCK.** LESLIE H. CUSHMAN, Lakewood, N. J. Filed Feb. 17, 1903. Serial No. 143,751. (No model.)



*Claim.*—In an attachment of the character described, the combination with an apertured casing having an incandescent lamp thereon, contacts, and switches adapted to bear upon the contacts, of an alarm in the casing, a source of electricity in the casing, a bracket, electrically connected to the source, a pivoted lever above and adapted to contact with the bracket, said lever being electrically connected with the switches, a weight upon the lever, a flexible strip secured to the weight and extending through the aperture in the casing, said strip being adapted to engage the alarm-wind of a clock and support the lever, electrical connections between the contacts and the bell and lamp respectively, electrical connections between the source and the alarm and lamp, respectively, and a circuit-closer between the lamp and source.

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**753,241. TOOL-HANDLE.** ISAAC S. DAVIDSON, Kansas City, Mo. Filed Sept. 5, 1903. Serial No. 172,153. (No model.)

*Claim.*—1. A tool-handle comprising a threaded compressible stock having a central longitudinal aperture, a stop disposed transversely of said aperture, an internally-threaded compression-shell for engagement with said threaded stock, and the tool to be held having a recess for engagement by said stop, substantially as specified.

2. A tool-handle comprising a threaded stock transversely divided longitudinally and with a central longitudinal aperture, a stop disposed transversely of said aperture, an internally-threaded shell for engagement with said stock, and the tool, to be held engaging said aperture and having a recess for engagement with said stop, substantially as specified.

3. A tool-handle comprising an externally-threaded transversely-divided stock having a conical extremity and central longitudinal aperture, a stop disposed transversely of said aperture, the tool to be held adapted for engagement with said aperture and having a recess for engagement with said stop, and an internally-threaded shell for engagement with said stock and having an internal conical portion for engagement with the conical extremity of said stock, substantially as specified.

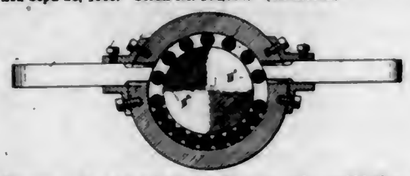
4. A tool-handle comprising an externally-threaded transversely-divided stock having a conical extremity and central longitudinal aperture, a stop disposed transversely of said aperture with its ends supported in the walls of said stock, a tool to be held engaging said aperture and having a recess for engagement with said stop, and an internally-threaded shell for engagement with said stock, substantially as specified.



5. A tool-handle comprising a threaded stock having transverse longitudinal clefts and a central longitudinal aperture, a stop disposed transversely of said aperture with its ends supported in said clefts, a tool to be held engaging said aperture and provided with a recess for engagement with said stop, and an internally-threaded shell for engagement with said stock, substantially as specified.

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753,242. JOURNAL. WILLIAM P. DEPPE, Cincinnati, Ohio. Filed Sept. 28, 1903. Serial No. 174,997. (No model.)



*Claim.*—1. In a journal-bearing box, an axle, antifriction devices between the axle and box, having a bearing engagement in the upper arc of their travel and a non-bearing relation in the lower arc of their travel, a magnet having a field of influence adapted to successively lift the antifriction devices from idle to working position as they revolve around the axle, substantially as described.

2. In a journal-bearing box, an axle, an intermediate annular chamber, being formed by the opposing surfaces of the box and axle, antifriction devices in said chamber in bearing engagement in the upper part of said chamber and non-bearing engagement in the lower part of said chamber, and magnets having fields of influence extending into said chamber above the idle position of said antifriction devices, adapted to successively lift said devices into bearing position as they revolve in either direction around the axle, substantially as described.

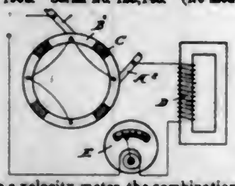
3. In a journal-bearing box, an axle, intermediate antifriction devices, and a magnet arranged for the purposes described.

4. In a journal-bearing an axle having the same center as the box, the lower arc of the box having a greater radius than the upper arc of the box, thereby forming between the axle and box an annular chamber narrower at the top, antifriction devices in said chamber adapted to substantially fit and form a bearing in the upper portion of the annular chamber, and to be free from bearing engagement in the lower portion of said chamber, and a magnet adapted to successively attract the antifriction devices into the narrower portion of said chamber, substantially as described.

5. In a journal-bearing an axle having the same center as the box, the lower arc of the box having a greater radius than the upper arc of the box, thereby forming between the axle and box an annular chamber narrower at the top, antifriction devices in said chamber adapted to substantially fit and form a bearing in the upper portion of the annular chamber, and to be free from bearing engagement in the lower portion of said chamber, and magnets interposed into said chamber above the wider portion thereof on each side, adapted to successively attract the antifriction devices in either direction of rotation from idle to bearing relation, substantially as described.

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753,243. VELOCITY-METER. GEORG DETTMAR, Frankfort-on-the-Main, Germany, assignor to Society of Electricitäts Action-Gesellschaft vorm. W. Lahmeyer & Co., Frankfort-on-the-Main, Germany. Filed Sept. 12, 1902. Serial No. 123,140. (No model.)




*Claim.*—1. In a velocity-meter, the combination with an electric circuit, of a circuit-varying device included in the circuit and adapted to move in any definite ratio to the movements of the body the movements of which are to be measured, a self-induction device included in the circuit, and an electromagnetic measuring instrument operatively associated with the circuit, substantially as described.

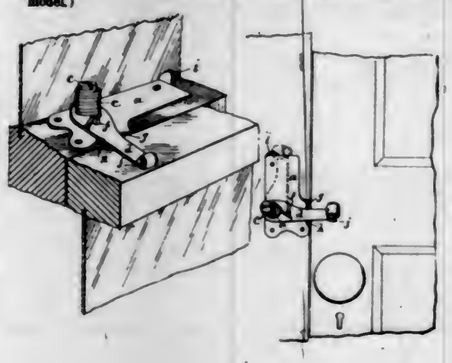
2. In a velocity-meter, the combination with an electric circuit, of a circuit-varying device included in the circuit and adapted to move in any definite ratio to the movements of the body the movements of which are to be measured, a self-induction device one coil of which is included in said circuit, and an electromagnetic measuring device connected in circuit with a second coil of the self-induction device, substantially as described.

3. In a velocity-meter, the combination with an electric circuit, of a circuit-varying device included in the circuit and adapted to move in any definite ratio to the movements of the body the movements of which are to be measured, a self-induction device included in the circuit, a resistance also included in the circuit, and an electromagnetic measuring instrument operatively associated with the circuit, substantially as described

4. In a velocity-meter, the combination with an electric circuit, of a circuit-varying device included in the circuit and adapted to move in any definite ratio to the movements of the body the movements of which are to be measured, a self-induction device included in the circuit, an adjustable resistance also included in the circuit, and an electromagnetic measuring instrument operatively associated with the circuit.

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753,244. BURGLAR-ALARM. CHARLES H. DE VOLL, San Francisco, Cal., assignor, by mesne assignments, to Henry S. Howland, New York, N. Y. Filed Feb. 16, 1903. Serial No. 143,474. (No model.)

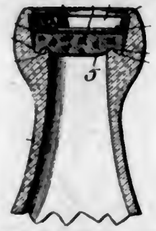




*Claim.*—An alarm comprising a flat metallic base, and a spring-actuated oscillatory arm mounted at its inner end upon said base to oscillate in a plane parallel with the base, said base constructed at one of the lateral edges thereof with an integral upturned shoulder to engage the arm intermediate the ends thereof and hold the arm in a set or open position, and with an integral upturned stop against which the outer end of said arm may impinge when released from its set position, the outer end of the arm turned to form a loop to hold a cartridge.

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753,245. BOTTLE-SEAL. WILLIAM S. DORMAN, New York, N. Y. Filed Sept. 15, 1903. Serial No. 173,238. (No model.)



*Claim.*—1. A bottle-seal formed with an integral laterally-expansible retaining-ring lying on the top of the stopper with its lower edge on the stopper and its other edge directed upward and outward.

2. A bottle-seal formed with an integral retaining-ring disposed in a vertically-curved direction on the top of the stopper with its lower edge resting on the stopper and its outer and upper edge extending beyond the perimeter thereof.

3. A bottle-seal formed with an integral retaining-ring curved in cross-section and directed upwardly and outwardly and disposed on top of the stopper with its upper edge extending beyond the perimetral edge of the stopper.

4. A bottle seal or stopper comprising a cap-disk, a retaining-ring having its base integral therewith and arranged to lie on the cap and curved in cross-section and standing with its upper and outer edge adapted to be resiliently expanded beyond the perimetral edge of the cap.

5. A bottle seal or stopper comprising a cap-disk, a retaining-ring having its base integral therewith and curved in cross-section and lying on the cap-disk with its lower portion, and with its upper portion directed outward and extending beyond the perimetral edge of the cap, and formed with an inwardly-turned flat finger-piece extending inwardly on the face of the cap.

6. A bottle-seal consisting of a stopper, a disk cap on the stopper, an expansive retaining-ring having one end integral with the cap and its body bent in cross-section and disposed with its lower edge on the face of the cap and its upper edge extending beyond the perimetral edge of the cap, and its free end extended to form a finger-piece adapted to lie flat on the surface of the cap.

7. A bottle-seal comprising a stopper of compressible material, a metal cap secured on the stopper, an expansive retaining-ring having its base integral with the cap and curved in cross-section to lie on one edge upon the cap with its upper edge reaching beyond the perimetral edge of the cap and having a flat extended free end portion adapted to lie flat upon the face of the cap, substantially as described.

8. A bottle having its neck formed with an interior annular recess having an overhanging shoulder at its upper end and a shoulder at its lower end formed with a bead or ridge, and a circular groove behind the ridge, combined with a stopper, and a cap into which the stopper is fitted formed with a retaining-ring lying on the cap and bent in cross-section to lie with one portion on the cap and the other extending outward and upward to expand and engage under the overhanging shoulder of the recess in the bottle-neck, substantially as described.

9. A locking-cap for a bottle-stopper, consisting of a flanged metal cap and an expansive retaining-ring having one end integral with the cap and formed of a strip of sheet metal bent in cross-section on a median line and arranged to overhang the edge of the cap, substantially as described.

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753,246. FUEL. HENRY R. DORR, Rutland, Vt. Filed Dec. 2, 1902. Serial No. 133,628. (No specimens.)

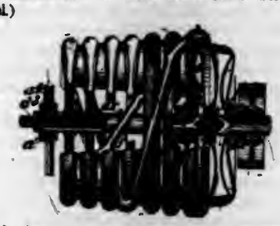
*Claim.*—1. A composite fuel composed of bituminous dust, anthracite dust, cement, and common salt in the proportions substantially as described.

2. A composite fuel composed of coal-dust, hydraulic cement, potash and a solution of common salt in the proportions substantially as described.

3. A composite fuel composed of coal-dust, cement, potash and sodium benzoate with a solution of common salt, substantially as described.

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753,247. APPARATUS FOR CONDENSING STEAM. HENRY A. DUC, Jr., Charleston, S. C. Filed Oct. 2, 1902. Serial No. 125,701. (No model.)



*Claim.*—1. An apparatus for condensing steam, comprising a series of rotatable chambers, means for introducing steam thereinto and means for diffusing over the exterior of said chambers a thin film of water.

2. An apparatus for condensing steam, comprising a series of rotatable chambers, means for directing air-currents around said chambers and means for diffusing over the exterior of said chambers a thin film of water.

3. An apparatus for condensing steam, comprising a series of gradually-enlarging chambers, into which the steam is admitted and means for cooling said chambers by applying water in thin films thereto.

4. An apparatus for condensing steam, comprising a series of gradually-enlarging chambers, means for cooling said chambers by applying water in thin films externally thereto, and means for directing jets of air thereagainst.

5. An apparatus for condensing steam, comprising a rotating chamber wherein the steam is expanded; means for introducing water onto the exterior surfaces of said chamber, and means for directing air-currents against the wetted exterior surfaces of said chamber to produce rapid evaporation of the water.

6. An apparatus for condensing steam, comprising a rotary series of condensing-chambers, means for introducing steam thereinto, and means for dissipating water in thin films upon the exterior surface of said chambers.

7. The herein-described apparatus for condensing steam, comprising a series of condensing-chambers, a receiving-chamber communicating with said condensing-chambers, jets adapted to admit steam into said receiving-chambers, and means to remove the water of condensation therefrom; with means for supplying water upon the exterior surface of said chambers, substantially as described.

8. The herein-described apparatus for condensing steam, comprising a series of rotatable condensing-chambers, a rotating casing communicating with each of said chambers, means for admitting steam into said casing and causing rotation thereof, and means within the rotating casing to remove the water of condensation therefrom, substantially as described.

9. The herein-described apparatus for condensing steam, comprising a series of rotatable condensing-chambers, a rotating casing communicating with each of said chambers, means for admitting steam into said casing and causing rotation thereof, and means within the rotating casing to remove the water of condensation therefrom; with means for directing water in fine streams upon the exterior surfaces of said chambers, and means for circulating air between the chambers.

10. The herein-described condenser-motor, comprising a rotatable casing, arms therein connected to main shaft and a rotatable condensing-chamber communicating with said casing, means for admitting steam from said casing into the central portions of the condensing-chamber, means for removing the water of condensation from the interior portions of said condensing-chamber to the casing, and means for removing the water of condensation from said casing; with means for applying water upon the exterior surfaces of the condensing-chamber, substantially as described.

11. The herein-described condenser-motor, comprising a rotatable casing, steam-inlet jets therein, a rotatable series of condensing-chambers communicating with said casing, means for admitting steam

from said casing into the condensing-chambers, and means for removing the water of condensation; with means for applying water upon the exterior surfaces of the condensing-chambers, and means for circulating air between said condensing-chambers and over the moist surfaces thereof, substantially as described.

12. An apparatus for condensing steam, comprising a chamber, means for introducing steam thereinto to cause relative movement of the steam-inlet and the chamber, means for condensing the steam in the chamber to produce a partial vacuum therein to induce the inflow of steam; and means for removing the water of condensation, substantially as described.

13. An apparatus for condensing steam comprising a rotatable chamber, means for introducing steam into said chamber so as to cause the latter to rotate, and means for cooling the chamber so as to condense the steam therein and produce a partial vacuum in the chamber, thereby inducing the steam to enter therein, substantially as described.

14. An apparatus for condensing steam, comprising a rotary chamber or vessel, means for introducing steam thereinto so as to cause rotation thereof, means for externally cooling the chamber to condense the steam therein thereby producing a partial vacuum in the chamber inducing the steam to enter it, and means for removing the water of condensation, substantially as described.

15. An apparatus for condensing steam, comprising a series of rotatable chambers, means for introducing steam thereinto, means for dissipating water on the exterior surface of said chamber, to condense the steam therein and produce a partial vacuum whereby the steam is induced to flow into the chamber, and means for removing the water of condensation, all substantially as described.

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753,248. **METHOD OF MAKING BELLS.** JOHN T. DUFF, Harmarville, Pa., assignor of one-half to Joseph McNaugher, Allegheny, Pa. Filed June 22, 1903. Serial No. 162,688. (No model.)

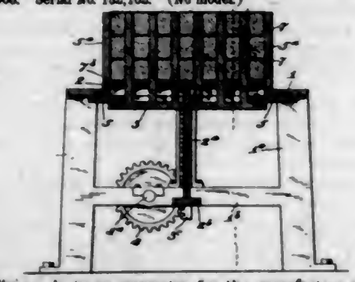


*Claim.*—1. The method of making a bell from a steel plate, consisting in subjecting the heated plate successively to the operations of several sets of dies, and chilling one portion while the adjoining portion is being formed.

2. The method of making a bell from a steel plate, consisting in subjecting the heated plate successively to the operation of several sets of dies, and before or during the operation of forming one portion of the bell chilling the adjoining portion.

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753,249. **APPARATUS FOR THE MANUFACTURE OF CONCRETE BRICKS, &c.** LEE J. DUNN, Columbus, Ohio. Filed Nov. 21, 1903. Serial No. 182,102. (No model.)



*Claim.*—1. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through the grid to form molds and a removable grid provided with knives to subdivide the material in the molds.

2. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through the grid to form molds and a movable grid provided with knives at one side to subdivide the material in the molds and to support material for additional brick or blocks at the other side.

3. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through the grid to form molds and a frame carrying laterally-movable side pieces movable vertically with the partitions.

4. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through the grid to form molds, and a frame carrying laterally-movable side and end pieces movable with the partitions.

5. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through said grid and side pieces movable with said partitions to form molds, the partitions being movable independently of the side pieces.

6. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a plate carrying a series of partitions adapted to fit and move through the interstices of said grid, mechanism for operating said plate, a frame carrying side pieces supported by said plate, the said frame being movable independently of the partitions.

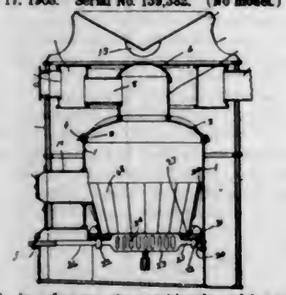
7. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through said grid, side pieces movable with said partitions and coöperating therewith to form molds, removable end blocks also coöperating with said partitions to form molds.

8. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through said grid, side pieces movable with said partitions and coöperating therewith to form molds, removable end blocks also coöperating with said partitions to form molds, and a removable grid adapted to fit between the partitions and form the bottom of an additional mold.

9. In an apparatus for the manufacture of brick or blocks, the combination of a relatively stationary grid, a series of partitions movable through said grid, side and end pieces movable with said partitions and coöperating therewith to form molds and a removable block adapted to fill the space between two of said partitions to form in conjunction with the partitions a core.

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753,250. **FURNACE.** DAVID A. ESHBAUGH, Columbus, Ohio. Filed Jan. 17, 1903. Serial No. 139,382. (No model.)

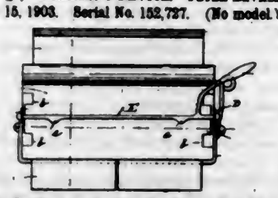


*Claim.*—1. In a furnace, the combination with a casing or drum 1, doorways communicating therewith, a dome surmounting said casing or drum, and a smoke-conducting flue above the drum communicating with the latter, of a grate-bar-supporting-frame ring mounted in said drum, said ring having a continuous groove in its upper side, a sectional fire-pot having its lower end seated in the groove of said ring and having a recessed top flange contacting with the inner surface of said drum and a ring-burner mounted on said grate-bar-frame ring about the base of said fire-pot, substantially as specified.

2. In a furnace, the combination with the furnace-body comprising an internal case or drum 1, an external case and doorways in the latter communicating with said internal drum, said internal case having an extension 16 which projects through the external case and doorway, a hinged door 18 in said extension, said hinged door having angular recesses formed at intervals in its under side, of a grate-frame ring mounted on the inner side of said internal casing and provided with depending bearing-lugs 22, a fire-pot rising from said ring and grate-bars arranged beneath said fire-pot and having end stems journaled in said ring-lugs, the forward stems being angular in cross-section and extending through the recesses of said door 18, substantially as specified.



753,251. **ABRADING DEVICE.** PETER EKVALL, Boston, Mass. Filed Apr. 15, 1903. Serial No. 152,727. (No model.)



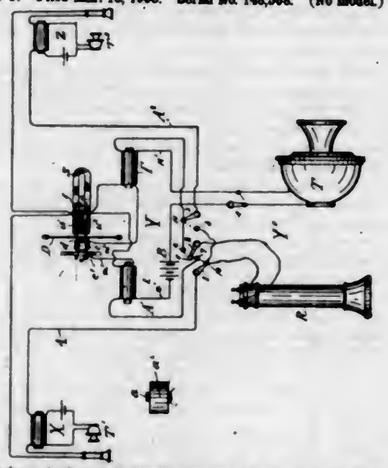
*Claim.*—1. In the herein-described abrading device, the combination with a pair of laterally-adjustable jaws, of a series of intermediate adjustable sheets or plates, means for guiding said jaws to and from each other and means for locking and securing said sheets between the jaws, substantially as and for the purpose set forth.

2. In the herein-described abrading device, the combination with a pair of laterally-adjustable jaws, of a series of intermediate adjustable sheets or plates, a locking device for securing the latter between the jaws, and an abrasive sheet or cloth, substantially as and for the purpose set forth.

3. In an abrading device, the combination of a pair of clamping-jaws, having offsets or recesses A', B', in their lower ends, combined with a series of intermediate adjustable sheets or plates C, C, having vertical slits C', in their lower portions and means for adjustably securing said sheets or plates between said jaws, substantially as and for the purpose set forth.

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753,252. **TELEPHONE-REPEATER.** MERRITT GALLY, Brooklyn, N. Y. Filed Mar. 18, 1903. Serial No. 148,368. (No model.)



*Claim.*—1. In a telephonic repeating device; a receiving-magnet having two cores, placed on one side of a receiving-diaphragm and having two wires wound on each core; connections for two main-line circuits for separately energizing the magnet to vibrate the diaphragm.

2. In a telephonic repeating device; a receiving-magnet having two cores, placed on one side of a receiving-diaphragm and having two wires wound on each core; connections for two main-line circuits for separately energizing the magnet to vibrate the diaphragm; and a retransmitting device in combination with the diaphragm.

3. In a telephonic repeating device; combined receiving and retransmitting means, comprising a plurality of doubly-wound magnet-cores; one of the wires of each, connected with one telephone-line, and the other wire connected with another telephone-line; and additional energizing means for reinforcing the main-line current.

4. In a telephonic repeating device; combined receiving and retransmitting means; comprising a plurality of doubly-wound coils; one of the wires of each, connecting with one telephone-line; and the other wire connected with another telephone-line; the two wires of each coil wound in the same direction and connected alike as to polarity of current; and additional energizing means for reinforcing the main-line current.

5. In a telephonic repeating device; two secondary induction-coils, each attached separately to one of two telephone-lines; a compound receiving and transmitting coil consisting of two wires wound together in the same direction; one of the wires connected to one of the telephone-lines and the other wire connected to the other telephone-line.

6. In a telephonic repeater comprising a repeating-magnet having two coils; to connect with different telephone-lines; a receiving-diaphragm, and a transmitting device operated by the diaphragm; an electrode having three supporting touch-pieces attached thereto or forming a part thereof, and arranged between the button-electrode and the diaphragm for supporting the button, and in touch with the diaphragm.

7. In a telephonic repeater; a diaphragm for receiving pulsations from one main line, and transmitting the same to another main line; and a bipolar magnet; the two pole-pieces doubly wound, both pieces with wire for connecting with both of the main lines.

8. In a telephonic repeater; the combination with its receiving-diaphragm, of the transmitting button-electrode, having three touch-pieces made of wood, and in touch with the diaphragm.

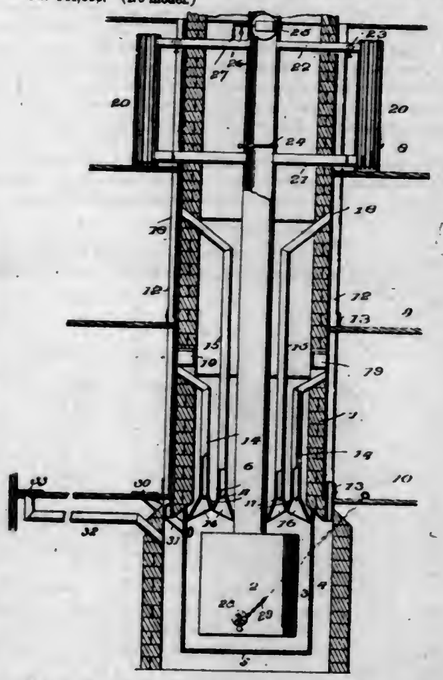
9. In a telephonic repeater, comprising a repeating-magnet having two coils, to connect with different telephone-lines; a receiving-diaphragm, and a transmitting device operated by the diaphragm; a button-electrode having three supporting touch-pieces attached thereto or forming a part thereof, and in touch with the diaphragm; a second electrode; and carbon granules placed between the electrodes.

10. In a telephonic repeater; a primary electric circuit; having therein means for primary induction; two secondary coils, with connections for two telephone-lines; a combined receiving and retransmitting device; the transmitting portion comprising a cup-electrode having carbon granules therein, a button-electrode in contact with the granules, and in loose contact with the receiving-diaphragm, the button having attached thereto or forming a part thereof three touch-pieces to preserve a free and even touch with the diaphragm.

11. In a telephonic repeater; a primary electric circuit having therein means for primary induction; two induction-coils with connections for two telephone-lines; a combined receiving and retransmitting device for repeating; and a local transmitter at the repeating-station with means for connecting said local transmitter with and to operate interchangeably the two telephone-lines.

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753,253. **SYSTEM OF HEATING BUILDINGS OR DWELLINGS.** LAFAYETTE M. GATES, Muscatine, Iowa. Filed Jan. 29, 1903. Serial No. 141,039. (No model.)

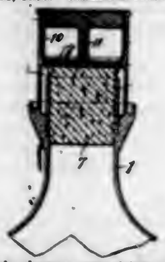


*Claim.*—In a system of heating buildings, a flue extended through the floors thereof, a heater located within the lower end of

the flue, a smoke-pipe extended centrally through the flue from the heater, hot and cold air drums surrounding the heater and in communication with each other at their lower ends, a cold-air pipe disposed exterior to the flue and extended from the upper floor of the building to the cold-air drum and in communication with each of the floors by means of a register, a plurality of hot-air pipes located within the flue and in communication at their upper ends with the respective floors and at their lower ends with the said hot-air drum, said hot-air pipes being arranged adjacent the smoke-pipe, and damper means for controlling the air passing through the several pipes aforesaid.

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753,254. **BOTTLE-CLOSURE.** ANDREW GAUL, Jr., New York, N. Y. Filed May 21, 1903. Serial No. 158,073. (No model.)



*Claim.*—1. A bottle-closure comprising a lower neck-section, a frangible upper neck-section having an inner annular flange, a cork engaging the lower neck-section and a cap having downwardly-extended locking-arms arranged to interlock with the said flange, and a centrally-located post depending from the cap and engaging the top of the cork for keeping it in position within the lower neck-section.

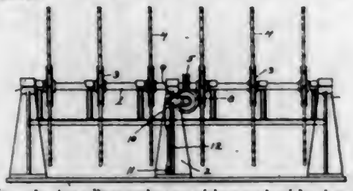
2. A bottle-closure comprising a lower neck-section, a frangible upper neck-section, a weakened connection between the upper and lower neck-sections and a guard and a mouth portion projecting upwardly from the lower neck-section exterior and interior to the upper neck-section to points above the weakened connection between the upper and lower neck-sections whereby the interior of the bottle is protected from broken glass and the user is protected from contact with the ragged edge formed by the breaking of the upper neck-section.

3. A bottle-closure comprising a lower neck-section having a mouth portion and an upwardly-projected peripheral guard below the top of the mouth portion and an upper neck portion having a weakened connection with the lower neck-section between the guard and mouth portion and below the top of the mouth portion, whereby the interior of the bottle is protected from broken glass when the upper neck-section is broken away from the lower neck-section.

4. A locking-cap for bottle-closures having downwardly-extended locking-arms arranged to engage the neck of a bottle and a centrally-located depending post arranged to engage the top of a cork when the cap is in position within the neck of the bottle.

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758,255. **COOLING-RACK FOR GALVANIZING PLANTS.** WILLIAM GIBSON, Vandergrift, Pa. Filed Mar. 18, 1903. Serial No. 148,402. (No model.)



*Claim.*—1. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other so as to support the article to be cooled at a plurality of points, and mechanism for imparting a slow rotary movement to said rack.

2. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other so as to support the article at a plurality of points, and mechanism for imparting a step-by-step rotary movement to said wheel.

3. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other so as to support the article at a plurality of points, mechanism for rotating said wheel, and means for delivering the articles from said wheel.

4. A cooling-rack comprising a horizontally-disposed shaft, a plurality of hubs or disks thereon, a series of radially-disposed fingers or arms on said hubs, and mechanism for rotating said shaft.

5. A cooling-rack comprising a horizontally-disposed shaft, a plurality of hubs or disks thereon each provided with a series of radially-disposed arms or fingers, and mechanism for imparting a step-by-step rotary movement to said shaft.

6. A cooling-rack comprising a horizontally-disposed shaft, a plurality of hubs or disks thereon each provided with a series of radially-disposed arms or fingers, mechanism for rotating said shaft, and means for delivering the articles from said rack.

7. A cooling-rack comprising a horizontally-disposed shaft, a series of radially-disposed arms or fingers carried thereby, mechanism for rotating said shaft, and stationary inclined guides projecting between said arms and serving to deliver the articles from the rack.

8. A cooling-rack comprising a horizontally-disposed shaft, a plurality of hubs or disks thereon each provided with a series of radially-disposed arms or fingers, mechanism for rotating said shaft, a series of stationary inclined guides projecting between said arms, and antifriction-wheels on said guides.

9. A cooling-rack comprising a horizontally-disposed shaft, a plurality of hubs or disks thereon each provided with a series of radially-disposed arms or fingers, mechanism for rotating said shaft, guide-bars hinged on the shaft and projecting beyond the ends of the arms or fingers, and adjustable means for supporting the outer ends of said guide-bars.

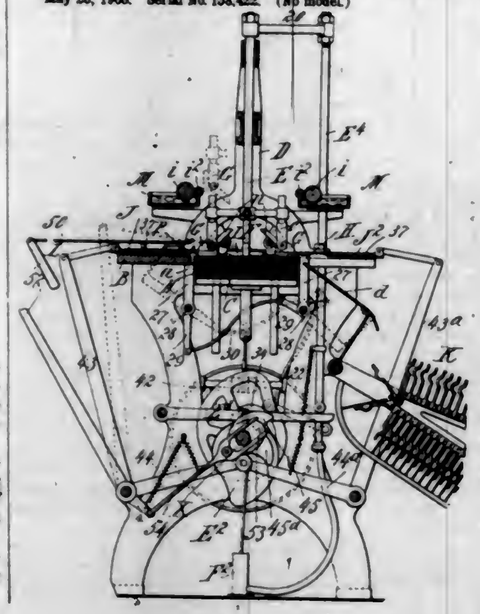
10. A cooling-rack comprising a rotary wheel having a plurality of series of radial projections, the projections of the several series being in line with each other so as to support the article at a plurality of points, a worm and worm-wheel for rotating said wheel, and mechanism for rotating said worm.

11. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other so as to support the article at a plurality of points, a worm-wheel connected to said wheel, a worm engaging said worm-wheel, and mechanism for imparting an intermittent rotary movement to said worm.

12. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other so as to support the article at several points, and mechanism for rotating said wheel, said mechanism comprising a ratchet-wheel and pawl, and a treadle for actuating said pawl.

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753,256. **ENVELOP-MACHINE.** SIDNEY A. GRANT, Springfield, Mass., assignor of one-third to Frank Grant, Westfield, Mass. Filed May 23, 1903. Serial No. 158,422. (No model.)





*Claim.*—1. In an envelop-machine, the combination with a blank-pile support, of front and rear flap gummers, and end-flap pickers, blank-retainers arranged to bear on the top blank of the pile and to move away therefrom, end-flap folders movable over the blank-pile support and front and rear flap folders also movable over said support.

2. In an envelop-machine, the combination with a blank-pile support, end-flap pickers and front and rear flap gummers, of flap-folders operable adjacent said support for folding the flaps of the uppermost blank of the pile on said support.

3. In an envelop-machine, the combination with a blank-pile support, and pickers for the end flaps of end-flap folders mounted for reciprocatory movement adjacent said support and movable toward and from each other, over and away from over said support, and means for imparting their movements successively.

4. In an envelop-machine, the combination with a blank-pile support and pickers for the front and rear flaps, of front and rear flap folders mounted for reciprocatory movements adjacent said support and movable toward and from each other over and away from over said support, and means for imparting their movements successively.

5. In an envelop-machine, the combination with the blank-pile support, end-flap pickers, and front and rear flap gummers, of end-flap folders located adjacent opposite ends of said support, and front and rear flap folders located adjacent the front and rear edges of said support, all said folders being mounted for reciprocatory movements, pairs thereof in lines at right angles to each other, and means for imparting the movements of said folders in succession over and away from over the support.

6. In an envelop-machine, the combination with a blank-pile support, of front and rear flap gummers, and end-flap pickers, blank-retainers arranged to bear on the top blank of the pile and to move away therefrom, end-flap folders movable over the blank-pile support, front and rear flap folders also movable over said support, a drier and means for pushing the completed envelops off from the pile successively into the drier.

7. In an envelop-machine, the combination with a blank-pile support, end-flap pickers and front and rear flap gummers, of flap-folders operable adjacent said support for folding the flaps of the blank on said support, and a device for pushing the envelop off from the pile.

8. In an envelop-machine, the combination with a blank-pile support, and pickers for end flaps of a blank-retainer movable to engage and disengage the top blank of the pile, and means for actuating it, end-flap folders mounted for reciprocatory movement adjacent said support and movable toward and from each other over and away from over said support, and means for imparting their movements successively.

9. In an envelop-machine, the combination with a blank-pile support and pickers for the front and rear flaps, of a blank-retainer movable to engage and disengage the top blank of the pile, means for actuating it, front and rear flap folders mounted for reciprocatory movements adjacent said support and movable toward and from each other over and away from over said support, and means for imparting their movements successively.

10. In an envelop-machine, the combination with the blank-pile support, end-flap pickers, and front and rear flap gummers, of end-flap folders located adjacent opposite ends of said support, and front and rear flap folders located adjacent the front and rear edges of said support, all said folders being mounted for reciprocatory movements, the pairs thereof in lines at right angles to each other, means for imparting the movements of said folders in succession, over and away from over the support, a drier located to the rear of and adjacent the pile-support, and a reciprocatory pusher operable to push the successively-completed envelops off from the pile into the drier.

11. In an envelop-machine, the combination with a support for a pile of blanks, of a front-flap gummer, means for folding the end flaps of the envelop operable at the pile, and a front-flap folder movable, over and away from over, the pile, and having a roller for pressing the gummed folded front flap upon the end flaps.

12. In an envelop-machine, the combination with the support for a pile of envelop-blanks, of a front-flap gummer, means for folding the end flaps operable at the pile, of a front-flap folder consisting of a reciprocatory plate movable over, and away from over, the pile, having an aperture therein and having a roller horizontally mounted for rotation on an axis at right angles to the line of movement of the plate, and having its under portion extended through said aperture, for the purpose set forth.

13. In an envelop-machine, the combination with the support for a pile of envelop-blanks, a pair of retainer members movable to engage and disengage the top blank of the pile, each having a straight edge and such edges arranged in separation corresponding to the length of the envelop to be made, front and rear flap gummers, and a pair of pneumatic pickers, arranged for reciprocation over, and toward and away from the front and rear portions and the opposite end portions of the pile, and respective means for imparting the reciprocatory movements to the gummers and the pickers, of end-flap folders arranged for back-and-forth movements over and away from over the top blank of the pile, to overturn and fold the end flaps on the lines defined by the opposite edges of said retainers, means for imparting the reciprocatory movements to the end-flap folders, and means for imparting the blank engaging and disengaging movements to the retainers.

14. In an envelop-machine, the combination with the support for a pile of envelop-blanks, reciprocatory gummers arranged over the front and rear portions of the pile, reciprocatory pickers arranged over the end portions of the pile, and respective means for imparting the reciprocatory movements to the gummers and pickers, of a pair of reciprocating end-flap folder-plates, having widths corresponding to the width of the envelop to be made, and front and rear flap folders operable relatively to the position of the pile to fold the front and rear flaps on longitudinal lines defined by the front and rear edges of the end-flap folders.

15. In an envelop-machine, the combination with the support for a pile of envelop-blanks, reciprocatory gummers arranged over the front and rear portions of the pile, a reciprocatory picker arranged over an end portion of the pile and respective means for imparting the reciprocatory movements to the gummers and to said picker, of a pair of reciprocating end-flap folder-plates, movable over and away from over the end portions of the blanks and each having an edge arranged to correspond with the folding-line of one of the long flaps of the envelops, a gummer for one of the long flaps, and a horizontally-reciprocating folder cooperating with the alined edges of the end-flap folders, to fold such long flap on the line defined by said alined edges.

16. In an envelop-machine, the combination with a support for a pile of blanks, of a front-flap gummer, means for folding the end flaps of the envelop operable at the pile, a front-flap folder marginally guided and movable over, and away from over, the pile, a cam, a lever operated thereby, and a link connecting the lever and the front-flap folder.

17. In an envelop-machine, the combination with the support for a pile of envelop-blanks, of a front-flap gummer, means for folding the end flaps operable at the pile, of a front-flap folder consisting of a reciprocatory plate movable over and away from over the pile, having an aperture therein and having a roller horizontally mounted for rotation on an axis at right angles to the line of movement of the plate, and downwardly spring-pressed and having the under portion of its periphery extending through said aperture for the purpose set forth.

18. In an envelop-machine, the combination with the support for a pile of envelop-blanks, of a pair of retainer members movable to engage and disengage the top blank of the pile and having straight edges and arranged in separation corresponding to the length of the envelop to be made, of endwise-located pneumatic pickers, end-flap folders operable in relation to the position of the blanks on said support, to overturn and fold the end flaps on the lines defined by said retainers, means for imparting the blank engaging and disengaging movement to the retainers, front and rear flap gummers and front and rear flap folders movable toward and away from each other over the pile, in a line at right angles to the movements of the end-flap folders.

19. In an envelop-machine, the combination with the support for a pile of envelop-blanks, a pair of reciprocatory pneumatic end-flap pickers, and front and rear flap reciprocatory gummers, respectively arranged over and for movements toward and away from the front and rear and the opposite end portions of the pile, and respective means for imparting vertical reciprocatory motions thereto, of a pair of reciprocating end-flap folder-plates, having widths corresponding to the width of the envelop to be made, and front and rear flap folders operable relatively to the position of the pile to fold the front and rear flaps on longitudinal lines defined by the front and rear edges of the end-flap folders, and a pusher for discharging the completed envelop from the top of the pile.

20. In an envelop-machine, the combination with the support for a pile of envelop-blanks, and a pair of reciprocating end-flap folder-plates, movable over and away from over the end portions of the blanks and having an edge located to correspond with the folding-line of one of the long flaps of the envelops, a gummer for one

of the long flaps, and a horizontally-reciprocating folder cooperating with the alined edges of the end-flap folders, to fold such long flap on the line defined by said alined edges, means for reciprocating the front-flap folders, a pair of rotary cams 42, the angular levers 40 cooperating therewith, and connections between arms of said lever and the end-flap folders.

21. In an envelop-machine, the combination with a blank-pile support, of front and rear flap gummers, and a pair of end-flap pickers, of the pair of end-flap folders movable toward and from each other over the pile, the front and rear flap folders having reciprocatory movements over the pile in a line at right angles to the movement of the end-flap folders, and a rod 50 arranged in the line of movement of the front-flap folder and adapted to engage under the folded rear flap adjacent its folding-line, and means for imparting reciprocatory movements to said rod.

22. In an envelop-machine, the combination with a blank-pile support, of front and rear flap gummers, and a pair of end-flap pickers, of the pair of end-flap folders movable toward and from each other over the pile, the front and rear flap folders having reciprocatory movements over the pile in a line at right angles to the movement of the end-flap folders, a rotary cam, a cam-operated lever, and a pair of rods 50 50 united and pivotally connected at the front of the machine and pivotally engaged with said cam-actuated lever.

23. In an envelop-machine, the combination with a support for the pile of envelop-blanks, a gum-roller mounted thereover and having means for supplying gum in conjunction therewith, of a vertical shaft having a reciprocatory movement in a vertical line and having at its lower end a transversely-extended gummer-support which is bodily movable with said shaft, a gummer pivotally mounted on said support to have bodily a vertically-reciprocating motion in unison therewith, and means for causing the gummer to have in its lowermost position, its gumming-face horizontal, and in its elevated position its gumming-face vertical, whereby in its rising movement its then vertical face will move in contact with the periphery of the gum-roller.

24. In an envelop-machine, the combination with a support for the pile of envelop-blanks, a pair of gum-boxes supported stationary opposite each other and over said support, a gum-roller having a peripheral portion extended beyond the side of each gum-box and means for supplying gum from the box onto each so-located roller, of a vertically-guided and vertically-reciprocating plunger-shaft having opposite horizontal extensions at its bottom movable in unison with said shaft, gummers pivotally mounted on said extensions and bodily movable in vertical paths in unison therewith, springs for causing the gummers to have normally positions on said extensions with their gumming-faces vertical, whereby on the elevation of the gummers they will have bearings vertically across the sides of the said gum-rollers, and stationary members relatively to which the gummers in their descent have impingements whereby they are swung on said extensions so that their gumming-faces are brought into horizontal planes, for the purposes set forth.

25. In an envelop-machine, the combination with a support for the pile of envelop-blanks, a gum-roller mounted thereover and having means for supplying gum in conjunction therewith, of a vertically-reciprocatory gummer-support, a gummer having a horizontal stud pivotally mounted on said support, a spring encircling the stud having one end connected thereto, and its other with said support, and means for swinging the gummer in its lowered position with its gumming-face horizontal.

26. In an envelop-machine, the combination with a blank-pile support and a reciprocatory plunger-shaft having on a member thereof a gummer pivotally mounted and having a lever member, of an abutment against which said gummer-lever member contacts in the descent of the plunger-shaft whereby the gumming-face of the gummer is caused to assume a horizontal position, and a spring applied to the gummer to cause on its ascent and withdrawal above said abutment, the gummer to be swung so that its gumming-face moves to a position angular to its working horizontal plane.

27. In an envelop-machine, the combination with a reciprocatory plunger-shaft having horizontal bracket 23, and depending fork-like member 24, of a gummer G comprising the gummer-body and an angular extension comprising the lever member *n*, and said extension having intermediately a pivot-stud *j* affixed thereto, said stud having bearings in and an extension beyond the fork-like member, the spiral spring *k* operative to force the gummer with its gumming-face vertical, and the stationary member *o* against which the lever extension of the gummer in its downward movement contacts, substantially as described.

28. In an envelop-machine, the combination with the support for the pile of envelop-blanks, of front and rear vertical shafts mounted for rotational, and for rising and falling, movements, and having horizontally-extending members, means for raising and lowering said shafts, and means for periodically imparting rotational movements thereto, for the purposes set forth.

29. In an envelop-machine, the combination with the support for the blank pile, and the gage-posts having positions edgewise adjacent the pile, and formed tubular, of shafts mounted for rotation and adapted for endwise movement in and through said tubular posts, and having horizontal retainer members at their upper ends, means for periodically raising and lowering the shafts, and means for periodically imparting rotational movements thereto.

30. In an envelop-machine, the combination with a blank-pile support and adjacent tubular bearing members, of the vertical shafts having horizontally-extending retainer members at their upper ends, and having pinions at their lower end portions, and a support P by which the lower ends of the shafts are sustained, racks in engagement with the pinions, means for reciprocating the racks, and means for imparting vertically-reciprocatory movements to said support P.

31. In an envelop-machine, the combination with the elevator-support for the pile of envelop-blanks, and front and rear vertical shafts mounted for rotational, and for rising and falling movements, and having horizontally-extending members, means for raising and lowering said shafts, and means for periodically imparting rotational movements thereto, of end-flap pickers and end-flap folders operable relatively to the top of the pile, and coacting in their folding operations with said horizontally-extending members.

32. In an envelop-machine, the combination with the elevator-support for the blank pile, and the four tubular gage-posts having positions edgewise adjacent the pile, the end pairs thereof having a separation approximately the same as the length of the envelop to be made, of shafts mounted for rotation and adapted for endwise movement in and through said tubular posts, and having horizontal retainer members $H^3$ at their upper ends, each having a straight edge 60, means for periodically raising and lowering the shafts, and means for periodically imparting rotational movements thereto.

33. In an envelop-machine, the combination with a blank-pile support and adjacent tubular bearing members, of the vertical shafts having horizontally-extending retainer members at their upper ends, having pinions at their lower end portions, and a platform P in which the lower ends of the shafts are supported to turn, racks in engagement with the pinions, means for reciprocating the racks, and rotary cams, which support and impart vertically-reciprocatory movements to said platform P.

34. In an envelop-machine, the combination with the blank-pile support C, and the adjacent front and rear pairs of vertical tubular stationary gage-posts A, of the vertical shafts 62 having horizontal members $H^3$ at their upper ends, each having a straight edge portion 60, end pairs thereof being separated corresponding to the length of the completed envelop, said shafts having the pinions 65, the platform P supporting the several shafts, the frame Q having the opposite side members thereof formed with offset portions and constructed with oppositely-facing rack-teeth, meshing into the relatively adjacent pinions at opposite sides thereof, the rotary shaft having one or more cams 64 constituting a raising and lowering support for the platform, and having a cam 69, a lever 68 operated by said cam and connected to the frame Q and a spring for moving said frame reversely of its cam-imparted movement.

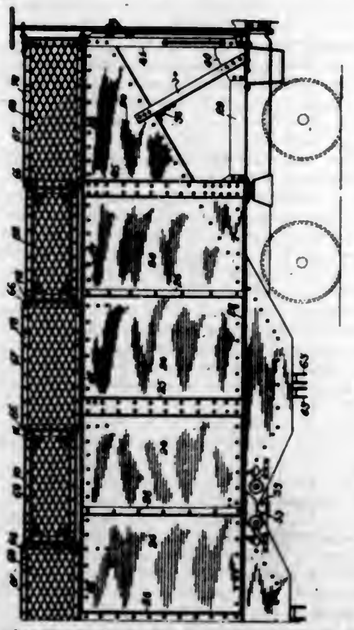
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**753,257. TRIPLE-HOPPER COKE-CAR. JOHN M. HAWEN, Pittsburg, Pa. Filed Aug. 19, 1903. Serial No. 170,007. (No model.)**

*Claim.*—1. In a hopper-bottom car, the combination with a center and side sills, of a diaphragm extending from the center sill to the side sills and secured to both, of inclined hopper-plates provided with flanges at their upper edges resting on and secured to said diaphragm, a cross-connection plate extending over the center sills and also secured to said diaphragm, and doors secured to the lower edges of said inclined plates.

2. In a hopper-bottom car, the combination with a center and side sills, of a diaphragm extending from the center sill to the side sills and secured to both, said diaphragm being provided with a top flange, of inclined hopper-plates provided with flanges at their upper edges and resting on the top flange of said diaphragm and sloping in opposite directions, a cross-connection plate extending over the center sills and overlapping the flanges of the inclined floor-plates and riveted through the same to the top flange of the diaphragm, and doors secured to the lower edges of said inclined plates.

3. In a hopper-bottom car, the combination with center sills and plate-girder sides and side sills, of diaphragms extending from the center sills to the car sides and secured to both, a transverse tie member extending across the center sill and secured to the diaphragm, and a longitudinal ridge over the center sills secured thereto and provided with openings for the passage of the transverse tie member.



4. In a hopper-car, the combination with body-bolsters, center sills and car sides, of diaphragms intermediate the body-bolsters and extending from the center sills to the car sides and secured to both, and being provided with top and bottom flanges, transverse tie members extending respectively above and below the center sills and secured respectively to the top and bottom flanges of said diaphragms, and a longitudinal ridge over the center sills and secured thereto, said ridge lying above the upper transverse tie member.

5. In a hopper-bottom car, the combination with the center sills and car sides, of diaphragms extending from the center sills to the car sides and secured to both, a transverse tie member extending across the center sills and secured to the diaphragms, a longitudinal ridge over the center sills and secured thereto, said ridge being formed in sections and spaced apart to permit of the passage of the transverse tie member, and cover plates or welts uniting the meeting ends of said sections.

6. In a metallic railway-car, the combination with the car sides and ends, of an extension-rack therefor comprising stationary sections of open metallic structure rigidly secured to the car sides, outwardly-projecting brackets on said sections provided with openings, movable sections of open metallic structure, and guide-rods secured to said movable section and passing through the holes in the brackets on the stationary sections.

7. A metallic railway-car comprising side and end walls, an extension-rack therefor comprising stationary sections formed of open metallic structures and rigidly secured to the car sides, brackets provided with openings secured to said stationary sections, movable sections composed of an angle-bar frame having inwardly-projecting flanges, an open metallic structure secured to said frame, guide-rods secured to the inwardly-projecting flanges of the angle-frame and passing through the openings in the bracket secured to the stationary sections and provided with extensions at one end, and means for locking said movable section in place.

8. A metallic railway-car comprising side and end walls, an extension-rack therefor comprising stationary sections rigidly secured to the car sides, outwardly-projecting brackets on said sections provided with openings, movable sections, guide-rods secured to said movable sections and passing through the holes in brackets on one stationary section and having extensions passing through the openings in the opposite stationary section, and a lock applied to said rods.

9. A metallic car comprising side and end walls, an extension-rack therefor comprising stationary sections rigidly secured to the car sides, movable sections, brackets secured to one of said sections and provided with holes in their outer ends, longitudinal guide-rods secured to the other section and passing through the holes in said brackets, and clips secured to the stationary section and provided with vertical portions arranged to engage the movable sections.

10. In a metallic railway-car, the combination with the side and end plates provided with strengthening-angles at their upper edges, said angles having the horizontal flange on top, an extension-rack for the said car comprising vertical angle-bars secured to the car sides, horizontal angle-bars connected to said vertical bars, the lower one of said horizontal bars being riveted to the top rail of the car sides, and metallic open mesh secured to said stakes and horizontal bars.

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**753,258. ELECTRIC SWITCH. GERALD W. HART, Hartford, Conn., assignor to the Hart Manufacturing Company, Hartford, Conn., a Corporation of New Jersey. Filed Nov. 23, 1903. Serial No. 182,276. (No model.)**



*Claim.*—1. In a device of the character described, a current-carrying blade or plate, a support therefor, a bushing affording a bearing for said plate, insulating material seated within said bushing and also located between said bushing and said support and means for securing said bushing to said support.

2. In a device of the character described, a current-carrying blade or plate, a support therefor, a metallic bushing affording a bearing for said plate, insulating material seated within said bushing and also located between said bushing and said support and means for securing said metallic bushing to said support said bushing and said support being insulated from each other at all times.

3. In a device of the character described, a current-carrying blade or plate, a support therefor, a metallic bushing affording a bearing for said plate, a supporting ledge or shoulder within said bushing, insulating material seated on said supporting ledge or shoulder and within said bushing and also located between and separating said bushing from said support and means for securing said bushing to said support said bushing and said support being insulated from each other at all times.

4. In a device of the character described, a current-carrying blade or plate, a support therefor, a bushing affording a bearing for said plate, insulating material seated within said bushing and also located between said bushing and said support, a rivet passing through said insulating material and said support but insulated from the former said rivet securing said parts together.

5. In a device of the character described, a current-carrying blade or plate, a support therefor, a bushing affording a bearing for said plate, insulating material seated within said bushing and also located between said bushing and said support and means for securing said bushing to said support said parts being insulated from each other at all times said blade or plate being loosely held in place by said bushing.

6. In a device of the character described, a supporting member, a bushing carried thereby, a current-carrying member loosely supported on said bushing but insulated from the support for said bushing.

7. In a device of the character described, a current-carrying blade or plate, a support therefor, a bushing affording a bearing and a support for said plate said plate being insulated from said bushing-support said insulation being located between said bushing-support and said bushing and means to securely hold said bushing to said support.

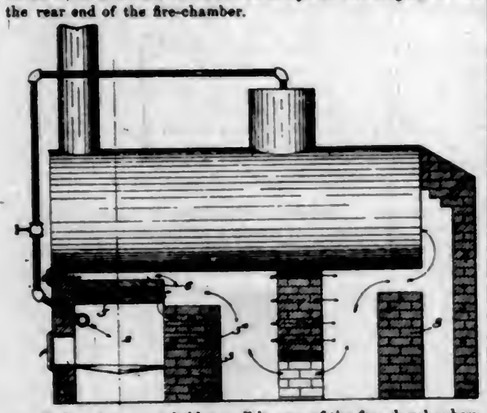
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**753,259. SMOKE-CONSUMING FURNACE. JAMES H. HAWES, Martinsburg, Ohio. Filed Aug. 3, 1903. Serial No. 168,050. (No model.)**

*Claim.*—1. In a furnace, the combination of a fire-chamber, a boiler vertically above and over the fire-chamber, an arch over the fire-chamber, an air-heating space 6 between the boiler and the arch, said air-heating space discharging near the top of the bridge-wall, and the bridge-wall having an air-heating passage discharging into the fire-chamber.

2. In a furnace, a fire-chamber, a boiler vertically above and over the fire-chamber, an arch over the fire-chamber, an air-heat-

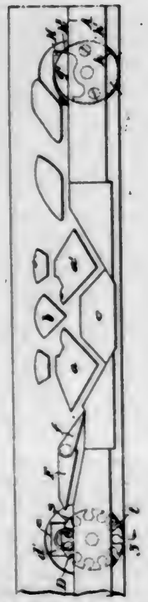
ing space 6 between the boiler and the arch, said air-heating space discharging near the top of the bridge-wall, and the bridge-wall, the latter having an air-heating passage discharging into the fire-chamber, in combination with a steam-injector discharging toward the rear end of the fire-chamber.



3. In a furnace, a bridge-wall in rear of the fire-chamber having an air-heating passage $3^a$ leading back and forth across the bridge-wall and opening above the fuel in several passages $3^b$ and $3^c$ of graduated size, substantially as described.

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753,260. **PATTERN-SWITCH FOR KNITTING-MACHINES.** EMIL A. HERNER, Allentown, Pa. Filed Dec. 7, 1901. Serial No. 85,040. (No model.)



*Claim.*—1. In a circular-knitting machine, a pattern-switch consisting of a wheel interposed segmentally in the needle-groove said wheel having transverse notches or recesses in its periphery at intervals corresponding to the spaces between the needle-hubs; a fixed rack outside the cam-cylinder; a pinion engaging said rack mounted on a shaft which carries another pinion which engages a third pinion upon the axis of the wheel, whereby its outer segment is caused to rotate in the same direction as the travel of the needle-hubs and at the same speed, substantially as described.

2. In a circular-knitting machine, the combination of the cam-cylinder having a needle-groove with stitch-cams interposed therein; a pattern-stitch consisting of a wheel the upper part of which is interposed segmentally in the needle-groove alongside of the leading stitch-cam, said wheel having small notches cut in its periphery by which the needle-hubs are delivered over the leading stitch-cam and large recesses cut in its periphery by which the needle-hubs are delivered below the leading stitch-cam, substantially as described.

3. In a circular-knitting machine, a rotating discoid cam interposed segmentally in the needle-groove of the cam-cylinder; a part of said disk, not less than the segment cut off by the cam-groove, being cut away; in combination with means for intermittently rotating said cam so as to present at intervals to the needles, either the intact or the cut-away portion, whereby the transition of the cam from one portion to the other can never leave any needle in a position intermediate between the extreme planes bounding its sphere of action, substantially as described.

4. In a circular-knitting machine, a rotating discoid cam interposed segmentally in the needle-groove of the cam-cylinder; a part of said disk, substantially equal to the segment cut off by the cam-groove, being cut away; in combination with means for intermittently rotating said cam so as to present at intervals to the needles, either the intact or the cut-away portion, whereby the transition of the cam from one position to the other can never leave any needle in a position intermediate between the extreme planes bounding its sphere of action, substantially as described.

5. In a circular-knitting machine, a pattern-switch consisting of a grooved wheel interposed segmentally in the needle-groove of the cam-cylinder, whereby certain of the needles are raised to a higher level than the others; in combination with a jack-cam consisting of a partially cut-away rotating disk also interposed segmentally in the needle-groove of the cam-cylinder, whereby the pattern-switch is rendered intermittent in its action, substantially as described.

6. In a circular-knitting machine, the combination of mechanism operating upon the needle-hubs of the needle-groove for sorting said needles according to a set pattern; a rotating jack-cam, also set in the needle-groove, consisting of a disk having part of its periphery cut way; and mechanism for partially rotating said jack-cam at intervals, whereby while the cut-away portion of the jack-cam is in line with the needle-groove, all of the needles are within reach of the sorting mechanism, and while the intact portion of the jack-cam is in line with the needle-groove all of the needles are thrown out of reach of the sorting mechanism, substantially as described.

7. In a circular-knitting machine, the combination of mechanism, operating upon the needle-hubs within the needle-groove, for sorting said needles according to a set pattern; a rotating jack-cam, also set in the needle-groove, consisting of a disk having part of its periphery cut away, and the intact portion toothed with a smooth cam-surface intervening among the teeth; mechanism for advancing the disk one or more teeth at set intervals; and stops whereby its further rotation by the action of the needle-hubs is caused to cease alternately at the cut-away portion and at the smooth cam-surface, the former leaving all of the needles within reach of the sorting mechanism and the latter throwing all of them out of reach of the sorting mechanism, substantially as described.

8. In a circular-knitting machine, a rotating discoid cam interposed segmentally in the needle-groove of the cam-cylinder, the periphery of said discoid cam presenting successively a cut-away portion, a single tooth, a partially-flattened cam-surface, and a series of teeth, substantially as described.

9. In a circular-knitting machine, a rotating discoid cam interposed segmentally in the needle-groove of the cam-cylinder, having a cut-away portion, a toothed portion, and a cam portion which occupies the balance of its periphery, substantially as described.

10. In a circular-knitting machine, a rotating discoid cam interposed segmentally in the needle-groove of the cam-cylinder, having a cut-away portion not less than its projecting segment, and a cam portion; means whereby it is normally sustained at rest with either the cut-away portion or the cam portion opposed to the advancing line of the needles; and one or more teeth intervening between the cam portion and the cut-away portion at either side, whereby a slight motion of rotation given it causes a tooth to meet the advancing needles, whereby its further intermittent rotation for the reversal of its position is effected by the needles themselves, substantially as described.

11. In a circular-knitting machine, a rotating discoid cam interposed segmentally in the needle-groove of the cam-cylinder, having a cut-away portion, and also a cam portion of which the part which first meets the advancing line of needles is flattened, substantially as described.

12. In a circular-knitting machine, a switch-cam consisting of a partial segment of a disk pivoted below the needle-groove of the cam-cylinder in a plane tangential to the periphery of the needle-cylinder; in combination with means for rotating said segment upon its pivot either to a position where it is wholly below the needle-groove, whereby the needles are allowed to pass it without action, or further to a position whereby a portion of its periphery forms a cam-incline which raises the needles above the needle-groove, substantially as described.



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753,261. **FLUID SYSTEM FOR PRESSES OR THE LIKE.** WATSON M. HOLMES, Hoosick Falls, N. Y., assignor, by mesne assignments, to Planters Compress Company, a Corporation of Maine. Filed Sept. 4, 1900. Serial No. 28,876. (No model.)

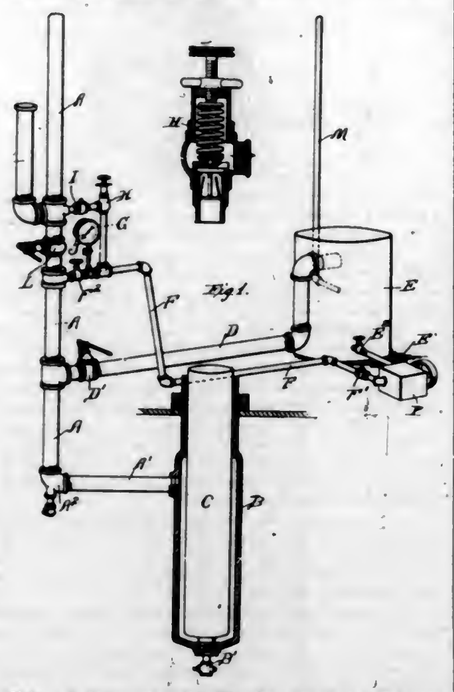


Fig. 1.

*Claim.*—1. In an apparatus of the class described, a jack comprising a cylinder and a plunger operating therein, a source of fluid-pressure communicating with the cylinder, means to close communication between said source of pressure and the cylinder, and a relief-valve from the cylinder to said source of pressure.

2. In an apparatus of the class described, a jack comprising a cylinder and a plunger operating therein, a source of fluid-pressure communicating with the cylinder, means to close communication between said source of pressure and the cylinder, a relief-valve from the cylinder to said source of pressure, and a discharge-pipe and valve therefor communicating with the cylinder.

3. In an apparatus of the class described, a jack comprising a cylinder and a plunger operating therein, a source of fluid-pressure communicating with the cylinder, a controlling-valve between said source of pressure and the cylinder, a relief-valve from the cylinder to said source of pressure, and a pressure-pump arranged to deliver fluid into the system on the cylinder side of the relief-valve.

4. In an apparatus of the class described, a jack comprising a cylinder and a plunger operating therein, a source of fluid-pressure communicating with the cylinder, a valve between said source of pressure and the cylinder, a relief-valve communicating with the cylinder, and a pressure-pump arranged to deliver into the system on the cylinder side of the first-mentioned valve.

5. In a fluid system for presses, a jack comprising a cylinder and a plunger operating therein, a stand-pipe delivering into said cylinder, a control-valve arranged in said stand-pipe, a branch pipe communicating with said stand-pipe on opposite sides of said control-valve, and a relief-valve arranged in said branch pipe, whereby a uniform and constant pressure may oppose the receding movement of said jack, as and for the purpose set forth.

6. In a fluid system for presses, a jack comprising a cylinder and a plunger operating therein, a stand-pipe delivering into said cylinder, a control-valve arranged in said stand-pipe, a by-pass around said control-valve, a pressure-gage and a relief-valve arranged in said by-pass, as and for the purpose set forth.

7. In a fluid system for presses, a jack comprising a cylinder and a plunger operating therein, a stand-pipe delivering into said cylinder, a control-valve arranged in said stand-pipe, a by-pass around said valve, a pressure-relief valve arranged in said by-pass, and a pump discharge-pipe communicating with said by-pass, as and for the purpose set forth.

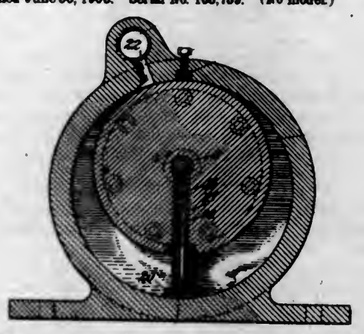
8. In a fluid system for presses, a jack comprising a cylinder and a plunger operating therein, a stand-pipe delivering into said cylinder, a control-valve arranged therein, a by-pass around said control-valve, a relief-valve arranged in said by-pass, a spill-tank, a discharge-pipe communicating with said cylinder and delivering into said tank, a pump discharge-pipe adapted to receive its supply from said spill-tank, and communicating with said by-pass, a control-valve arranged in said discharge-pipe, and check-valves arranged in said by-pass and in said pump discharge-pipe, as and for the purpose set forth.

9. In an apparatus of the class described, a jack comprising a cylinder and a plunger operating therein, a source of fluid-pressure communicating with the cylinder, and valve mechanism arranged to afford a free passage for fluid from the source of supply and an automatically-restricted passage in the reverse direction.

10. In an apparatus of the class described, a jack comprising a cylinder and a plunger operating therein; a source of fluid-pressure communicating with the cylinder; a valve arranged to afford a free passage for fluid from said source to the cylinder, a valve arranged to afford a restricted passage from the cylinder to said source; and a pressure-supply pump delivering into the system on the cylinder side of the valve mechanism.

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753,262. **ROTARY ENGINE.** JOHN J. HORAN, New York, N. Y. Filed June 30, 1903. Serial No. 163,739. (No model.)



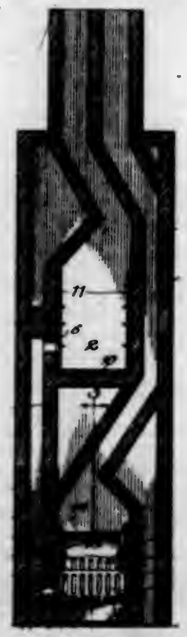
*Claim.*—1. A rotary engine comprising a cylinder, a rotary piston eccentrically mounted therein, the said piston having an axial opening, and a radial opening leading therefrom, a tubular shaft-section extended from one end of the piston and communicating with the axial opening, the said tubular shaft having a port for receiving steam, and a wing mounted to slide in said radial or outward opening, the said wing being provided with a plurality of ports.

2. A rotary engine comprising a cylinder, a rotary piston eccentrically mounted therein, the said piston having an axial opening and a radial opening therefrom, a tubular shaft-section extended from one end of the piston and communicating with the axial opening, the said tubular shaft having an outwardly-opening port, a steam-receiving sleeve surrounding said shaft, and a wing mounted to slide in said radial or outward opening, the said wing being provided with a plurality of ports.

3. A rotary engine comprising a cylinder, the inner surfaces of the heads thereof being provided with eccentric recesses, a piston having its ends extended into said recesses, the said piston having an axial opening and a radial opening leading therefrom, a piston-wing movable in the radial opening, the said wing having a plurality of ports, and a channel with which the outer ends of said ports communicate, and means for controlling the inlet of motive agent to the interior of said piston.

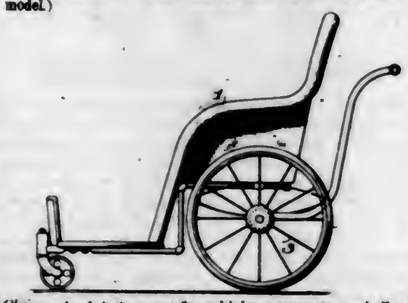
4. A rotary engine comprising a cylinder, a tubular piston mounted eccentrically therein, a tubular shaft member extended from one end of the piston, said shaft member having an outwardly-opening port, a sleeve surrounding the shaft member, a cut-off plate adjustable in said sleeve, and having teeth and an adjusting-rack engaging said teeth.

**753,263. GRATE AND FLUE THEREFOR.** ABRAHAM L. HOUSTON, Bellaire, Ohio. Filed Sept. 12, 1903. Serial No. 172,977. (No model.)



*Claim.*—The combination with a chimney having a plurality of fireplaces provided each with a combustion-chamber, of a smoke-duct leading from each combustion-chamber, an air-duct common to all the chambers and provided adjacent to each with an aperture leading to and delivering air beneath the same, a partial closure disposed in the duct above the lowermost aperture, and a complete closure situated in the duct above the uppermost aperture.

**753,264. HUB-GUARD FOR WHEELS.** JAMES B. HOWARD, Atlantic City, N. J. Filed June 26, 1903. Serial No. 163,176. (No model.)



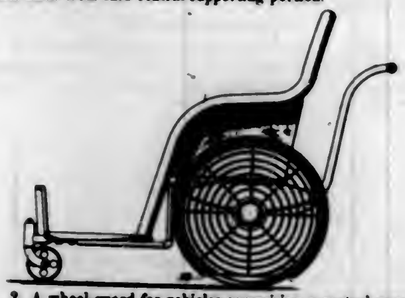
*Claim.*—1. A hub-guard for vehicles, comprising a shell or cap extending over and inclosing the hub and spoke flange on their outer sides, a nut for retaining the wheel upon the axle, and means for securing said shell or cap to said nut.

2. A hub-guard for vehicles, comprising a shell or cap extending over and inclosing the hub and spoke flange on their outer sides, a nut for securing the wheel upon the axle, said nut having a screw-threaded projection and means carried by said shell for engaging said screw-threaded projection.

3. A hub-guard for vehicles, comprising a shallow bell-shaped shell or cap having a central interior projection within which is a screw-threaded socket, a nut having a screw-threaded projection adapted to enter said socket, said nut being adapted to retain the wheel upon its axle and also to support said guard.

**753,265. WHEEL-GUARD.** JAMES B. HOWARD, Atlantic City, N. J. Filed June 26, 1903. Serial No. 163,177. (No model.)

*Claim.*—1. A wheel-guard for vehicles comprising a central supporting portion attached rigidly to the end of one wheel-axle, and a substantially circular guard carried thereby so as to inclose substantially the whole wheel, said guard being supported at no other points aside from said central supporting portion.



2. A wheel-guard for vehicles comprising a central supporting portion, means for attaching said portion to the end of one wheel-axle and a secondary adjustable portion extending therefrom so as to inclose substantially the entire wheel and tire.

3. A wheel-guard for vehicles comprising a central supporting portion, means for attaching said portion to the end of one wheel-axle and a secondary adjustable open-work portion extending therefrom so as to inclose substantially the entire wheel and tire.

4. A wheel-guard for vehicles comprising a central supporting portion adapted to be retained rigidly in relation to the end of the wheel-axle, a ring adjustably secured to said central portion and a secondary portion secured to the said ring and extending outwardly therefrom so as to inclose substantially the entire wheel and tire.

5. A wheel-guard for vehicles, comprising a central supporting-shell adapted to be retained rigidly in relation to the end of the wheel-axle, a ring adjustably secured to said shell and an outwardly-extending portion secured to said ring and carved so as to inclose substantially the entire wheel and tire.

6. A wheel-guard for vehicles, comprising a central shallow bell-shaped shell adapted to be retained rigidly in relation to the end of the wheel-axle, a flanged ring adjustably secured to said shell and an outwardly-extending portion secured to said ring so as to inclose substantially the entire wheel and tire.

7. A wheel-guard for vehicles, comprising a central supporting-shell having a socket therein for retaining said shell rigidly in relation to the end of the wheel-axle, a ring adjustably secured to said shell and an outwardly-extending portion secured to said ring so as to inclose substantially the entire wheel and tire.

8. A wheel-guard for vehicles, comprising a nut adapted to engage the end of the wheel-axle, said nut having a projection extending therefrom, a central supporting portion adapted to be retained rigidly upon said projection and a secondary portion of the guard secured to said central portion and extending outwardly therefrom so as to inclose substantially the entire wheel and tire.

9. A wheel-guard for vehicles, comprising a nut adapted to engage the end of the wheel-axle and having a screw-threaded projection, a central supporting portion having a socket adapted to engage said projection and a secondary portion adjustably secured to said central portion and extending outwardly therefrom so as to inclose substantially the entire wheel and tire.

10. A wheel-guard for vehicles, comprising means for retaining the wheel upon the end of one axle, a central supporting portion adapted to engage said retaining means and a secondary substantially circular portion secured to said central portion and extending outwardly therefrom so as to inclose substantially the entire wheel and tire.

11. A wheel-guard for vehicles, comprising a central bell-shaped shell adapted to be retained rigidly in relation to the end of the wheel-axle, a flanged ring adjustably secured to the said shell and an open-work portion secured to said ring and extending outwardly so as to inclose substantially the entire wheel and tire.

12. A wheel-guard for vehicles, comprising a central bell-shaped shell adapted to be retained rigidly in relation to the end of the wheel-axle, a flanged ring adjustably secured to the said shell and an open-work portion comprising circular and radially-extending wires secured to said ring and adapted to inclose substantially the entire wheel and tire.

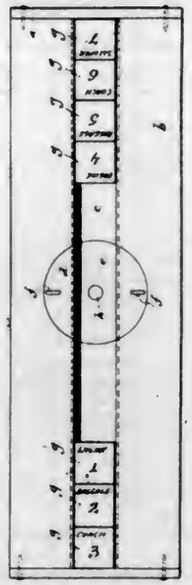
13. In a wheeled chair, the combination with the body of the chair and the running-gear, of a central supporting portion adapted to be rigidly attached to the end of one wheel-axle, and a substantially circular guard carried thereby so as to inclose substantially the whole wheel, said guard being unsupported at any point between the body of the chair and the wheel.

14. In a wheeled chair, the combination with the body of the chair and the running-gear, of a central supporting portion adapted to be attached to the end of one wheel-axle, and a secondary adjustable portion extending therefrom so as to inclose substantially the entire wheel and tire.

15. In a wheeled chair, the combination with the body of the chair and the running-gear, of a central supporting portion adapted to be attached rigidly to the end of one wheel-axle, a ring adjustably secured to said central portion and a secondary portion secured to said ring and extending outwardly therefrom so as to inclose substantially the entire wheel and tire.



**753,266. PUZZLE.** ORRIL L. HUBBARD, Waukesha, Wis., assignor of one-half to John J. McMahon, Lake Villa, Ill. Filed Apr. 21, 1902. Serial No. 103,870. (No model.)

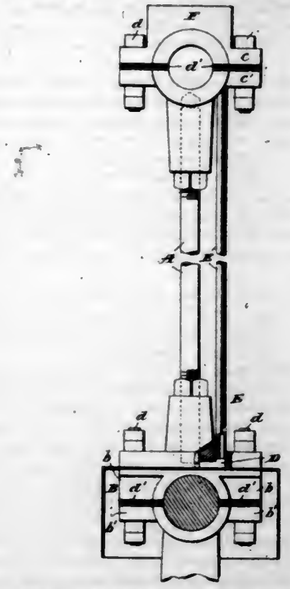


*Claim.*—A game apparatus, comprising a board having a longitudinal groove across the same, said groove being closed at each end, and the side walls of the groove being obliquely undercut, and said board having a central circular recess extending to a depth below the plane of said groove, in combination with a revoluble turn-table fitting in said central recess and formed with a transverse groove coinciding in width, depth, and side-wall inclination, to the longitudinal groove in said board, and series of wholly-disconnected sliding blocks formed with oblique side walls, said blocks having free longitudinal movement independently of each other within said grooves, but being incapable of removal therefrom, when the turn-table is in place, and the ends of the said longitudinal groove are closed, and one end of each block carrying a distinguishing-mark to indicate the direction in which said block must always point in the solution of the game or problem played or worked out with said apparatus, the parts being so proportioned that only two of said blocks can occupy the turn-table at any one time, and so that no more than five blocks can ever occupy the longitudinal groove on either side of said turn-table.

**753,267. PROCESS OF MAKING A SALVE.** JOHN F. HUNTER, New York, N. Y. Filed Dec. 11, 1903. Serial No. 184,819. (No specimens.)

*Claim.*—The process of making a salve which consists in mixing olive-oil with cocoa-butter and liquefied beef-marrow, and quickly freezing the mixture at a temperature of about 12° Fahrenheit to form a body containing a large number of fine crystals, substantially as specified.

**753,268. STONE-SAWING MACHINE.** GEORGE D. HUNTER, Bloomington, Ind. Filed May 26, 1903. Serial No. 158,960. (No model.)



*Claim.*—1. In combination with a swinging hanger-rod, a stationary bearing at one end thereof, a bearing carried by the free end thereof, a feed-tube leading from one bearing to the other, and an adjustable nipple adapted to bear against one end of the tube, substantially as and for the purposes described.

2. In combination with a swinging hanger-rod, a stationary bearing at one end thereof, a bearing carried by the free end thereof, and a feed-tube projecting from one bearing into the other, and a nipple having a screw-threaded engagement with one of the bearings adapted to project into one end of the tube and restrict the movement thereof, substantially as described.

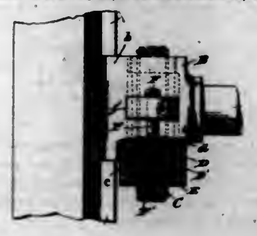
3. In combination with separated bearings, a feed-tube therebetween, and means for securing the tube in place including an adjustable nipple bearing against one end of the tube.

4. In combination with separated bearings, a feed-tube therebetween, and means for securing the tube in place including an adjustable nipple having a beveled end portion bearing against one end of the tube.

5. In combination with a swinging member, bearings at the upper and free ends thereof, said upper bearing comprising separated members, and means for securing the same together, and means for lubricating both bearings comprising a chamber integral with the upper surface of the top member of the upper bearing and feeding therethrough, and an independent feed-tube leading directly from said chamber to the lower bearing.

6. In combination with a vibrating saw-frame, a pivot-bearing for the upper end thereof having a vertically-disposed aperture therethrough arranged laterally beyond one side of its pivot, a bearing carried at the free end thereof, and an oil-supply conductor for said lower bearing leading therefrom upwardly into said vertical aperture in the pivot-bearing and through said bearing.

**753,269. STONE-SAWING MACHINE.** GEORGE D. HUNTER, Bloomington, Ind. Filed May 26, 1903. Serial No. 158,961. (No model.)



*Claim.*—1. In combination with a casting of the character described having a vertical opening therein, a non-rotatable interiorly-threaded sleeve removably inserted into the casting from one end thereof, and transversely movable therein in operation, and means at said end for retaining the sleeve in place, the opposite end of the sleeve being free.

2. In combination with a casting of the character described having a vertical opening therein, a non-rotatable interiorly-threaded sleeve removably inserted into the casting, and transversely movable therein in operation, and means at one end of the sleeve for retaining the same in place, the opposite end of said sleeve being free.

3. In combination with a casting of the character described having a vertical opening therein, a non-rotatable interiorly-threaded sleeve removably inserted into the casting from either end thereof, and transversely movable therein in operation, and means for engaging one end of the sleeve to secure the same in place, with the other end of the sleeve free.

4. In combination with a casting of the character described having a hollow interior, an interiorly-screw-threaded sleeve in said hollow interior, means engaging one end of said sleeve to secure the same in place with the opposite end thereof free.

5. In combination with a casting of the character described, having a longitudinally-disposed opening passing through one end thereof, a non-rotatable screw-threaded sleeve inserted through said end into said opening, and means for securing the sleeve in place, comprising a collar fitting thereover, and holding means for the collar engaging said open end of the casting, substantially as described.

6. In combination with a casting of the character described having a hollow interior, an interiorly-screw-threaded reversible sleeve in said hollow interior, means engaging one end of said sleeve to secure the same in place with the opposite end thereof free.

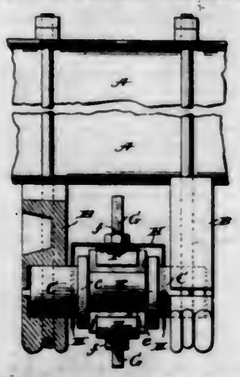
7. In combination with a casting of the character described, having a through-opening, oppositely-disposed ears projecting from the surface thereof, a screw-threaded sleeve inserted in said opening, and means for holding the sleeve in place comprising an angular head thereon, a cap having an angular recess engaging the said head, ears on the cap in alinement with the ears on the casting, and means for engaging the ears to secure the cap in position, substantially as described.

8. The combination of a casting of the character described having a longitudinally-disposed opening passing through both ends thereof, a non-rotatable screw-threaded sleeve inserted in said opening from either end, a cap adapted to engage the end of the casting for holding the sleeve in place, and means engaging the cap and casting for securing the cap in place, substantially as described.

9. In combination with a casting of the character described having a longitudinally-disposed passage opening through the end thereof, a sleeve of slightly-smaller diameter than the width of the passage in the casting inserted therein through the opening in the end thereof, means engaging the outer end of the sleeve for securing the same in place with the opposite end thereof free.

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753,270. **STONE-SAWING MACHINE.** GEORGE D. HUNTER, Bloomington, Ind. Filed May 26, 1903. Serial No. 158,863. (No model.)



*Claim.*—1. In a gang-saw stone-cutting machine, a saw-gang frame, a noddle-pin suitably supported by and journaled at its ends, flanges fixedly secured to said pin intermediate its bearings and connections between said pin and a moving part arranged between the flanges, substantially as described.

2. In a gang-saw stone-cutting machine, a saw-gang frame, a noddle-pin operatively associated therewith, journals for the pin, an actuating member connected with the pin intermediate its ends, and means fixedly secured to said pin interposed between the actuating member and the journal for maintaining them in separated positions, substantially as described.

3. In a gang-saw stone-cutting machine, a saw-gang frame, a noddle-pin operatively associated therewith, having annular flanges fixedly secured to said pin intermediate its ends, journals for the pin, and an actuating-pitman connected with the pin intermediate the flanges, substantially as described.

4. In a gang-saw stone-cutting machine, a saw-frame, a noddle-pin associated therewith, an actuating-pitman, a bearing-head carried by the pitman, and a housing for said bearing carried by the head and having depending portions cut away to receive the noddle-pin and the actuating-pitman, substantially as described.

5. In a gang-saw stone-cutting machine, a saw-gang frame, a noddle-pin operatively associated therewith, having flanges fixedly secured thereon, a pitman having a bearing connection with said pin intermediate the flanges and a housing taking over the bearing beyond the flanges, substantially as described.

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753,271. **AUTOMATIC STOP AND WASTE COCK.** JAY T. HUTTON, Bronson, Mich. Filed Apr. 2, 1902. Serial No. 101,110. (No model.)



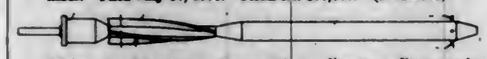
*Claim.*—1. The combination of a stop and waste cock; a device for closing said cock when released; and a vial containing liquid acting with the change of temperature to release said device, said vial having a means of closure subjected to the pressure of said device.

2. The combination of a stop and waste cock; a device for closing said cock when released; and the vial D provided with a stopper and arranged to prevent the operation of said device, said device exerting pressure on the vial in a direction tending to crowd the stopper into the vial.

3. The combination of a stop and waste cock having a hexagonally-shaped branch on its body; the lever having the end e arranged opposite one of the faces of the hexagonally-shaped branch; and the vial D between the end e and one of the surfaces of the hexagonal branch.

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753,272. **PROJECTILE.** JOHAN R. JACOBS, The Hague, Netherlands. Filed July 17, 1903. Serial No. 166,005. (No model.)



*Claim.*—1. A projectile for carrying a line to a distant point, comprising a rod provided with vanes and a body portion in which the rear end of the rod is rotatably mounted.

2. A projectile for carrying a line to a distant point, comprising a rod provided with vanes, pins for supporting the front end of the rod in a central position in the gun-barrel, a body portion in which the rear end of the rod is rotatably mounted and an annular projection on the body portion forming an expansion-ring.

3. A projectile for carrying a line to a distant point comprising a rod provided with vanes, pins having notches cut therein at the front end of the rod, a collar secured to the rear end of the rod, a body portion provided with an annular projection forming an expansion-ring, balls located between the collar and a shoulder in the body portion, a block in the rear end of the body portion and a tail-piece carried by the block.

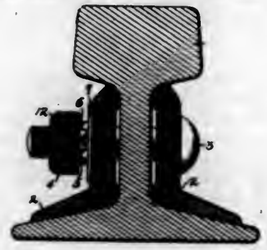
4. The combination with a projectile comprising a rod, a body portion in which the rod is rotatably mounted and an annular projection on the body portion, of a clip secured to the front end of the gun-barrel, a holder supported in the clip, a rope ring on the holder and a line attached to the rope ring.

5. The combination with a projectile comprising a rod having notched pins centering its front end, a body portion in which the rod is rotatably mounted, an annular projection on the body portion, of a clip secured to the front end of the gun-barrel, a holder supported in the clip and provided with a flange, a rope ring supported by the holder, a yielding ring between the holder-flange and the rope ring and a line attached to the rope ring.

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753,273. **NUT-LOCK.** NEHEMIAH JAMISON, Mansfield, Ohio. Filed Feb. 24, 1902. Serial No. 95,306. (No model.)



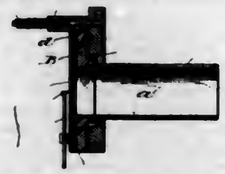
*Claim.*—1. A nut-lock embodying a nut having a concentric tubular boss upon the back thereof, the outer end of the boss being provided with ratchet-teeth, and a non-rotatable washer having a spring-tongue bent therefrom and disposed for engagement by the teeth of the nut, the boss forming a spacing device to maintain a space between the washer and the body of the nut to permit of the reception of an implement for springing the tongue out of engagement with the ratchet-teeth.

2. A nut-lock embodying a nut having a concentric tubular boss upon the back thereof, the outer end of the boss being provided with ratchet-teeth, and a non-rotatable washer having a bolt-opening and provided with a substantially radial slit intersecting the edge of the bolt-opening and another slit intersecting the radial slit, that portion of the washer in the angle between the two slits being bent outwardly to form a spring-tongue for engagement with the ratchet-teeth of the nut.

3. A nut-lock embodying a nut having a cylindrical concentric tubular boss upon the back thereof, the outer end of the boss being provided with ratchet-teeth, and a washer having one edge formed to bear against a stationary member and prevent rotation thereof, said washer also having a bolt-opening, a substantially radial slit intersecting said opening and another slit intersecting the radial slit, that portion of the washer in the angle between the two slits being bent out to form a spring-tongue for engagement with the ratchet-teeth of the nut, the spring-tongue being of a width to lie within the external periphery of the nut.

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753,274. **SOUND-BOX FOR TALKING-MACHINES.** ELDRIDGE R. JOHNSON, Philadelphia, Pa., assignor to Victor Talking Machine Company, a Corporation of New Jersey. Filed Jan. 20, 1900. Serial No. 2,174. (No model.)



*Claim.*—1. In a sound recorder and reproducer, a sound-box comprising a relatively stationary section adapted to carry the horn or trumpet, a diaphragm-holding section pivotally suspended on the stationary section and adapted to swing in a plane parallel to the face of the said stationary section, substantially as described.

2. In a sound recorder and reproducer, a sound-box comprising a stationary section adapted to carry the trumpet, a diaphragm-section pivotally suspended on the stationary section adapted to swing in a plane parallel to the face of the stationary section and means for limiting the swinging movement of the pivoted section substantially as described.

3. In a sound recorder and reproducer, a sound-box comprising a relatively stationary section adapted to carry the trumpet, a diaphragm-holding section pivotally suspended on the stationary section to one side of its vertical center and adapted to swing in a plane parallel to the face of the said stationary section, a stylus carried by the swinging section, and means for limiting the swinging movement of the said pivoted section, substantially as described.

4. In a sound recorder and reproducer, a relatively stationary disk having a connection thereon for the attachment of a trumpet, a circular recess formed in said disk, a diaphragm-holding disk pivotally suspended on the stationary disk out of line with its vertical center adapted to swing in a plane parallel to the face of said stationary disk, a circular flange formed on the rear face of the pivoted disk adapted to loosely fit in the recess of the stationary disk, a diaphragm supported in the pivoted disk, and a stylus-bar connected to said diaphragm, substantially as described.

5. In a sound recorder and reproducer, a relatively stationary disk vertically disposed and adapted to be connected with a trumpet, a diaphragm-holding disk eccentrically pivoted on the stationary disk in a plane parallel to the face of the stationary disk, a tension-spring on the pivot, and means for limiting the swinging movement of the said pivoted disk, substantially as described.

6. In a sound recorder and reproducer, the combination of a rigid disk having a tubular section connected thereto adapted to be connected with a trumpet, or other sound-conveying device, a smaller disk pivotally mounted on the rigid disk, a yielding connection at the pivotal point of the two disks, an annular recess formed on the front face of the rigid disk, a circular flange formed on the rear face of the smaller disk adapted to fit loosely in the circular recess of the said rigid disk, a diaphragm carried by the smaller disk and a stylus-bar connected with said diaphragm pivotally supported on the diaphragm-holding disk, substantially as described.

7. In a sound recorder and reproducer, a sound-box comprising an independent section adapted to be rigidly secured in the sound-box support, a diaphragm-holding section pivoted eccentrically to the face of the relatively stationary section in a plane parallel to the face of said section, and means for adjusting the positions of the pivoted sections with relation to the record-tablet for regulating the depth of the cut of the recording-stylus, substantially as described.

8. In a sound recorder and reproducer, the combination of a disk, having a tubular section for connection with the sound-conveying device, a diaphragm-holding section eccentrically pivoted to the face of the stationary disk so as to be capable of a slight swinging movement in a plane parallel to the face of the said stationary disk, means for limiting the extent of this movement, and mechanism for adjusting the position of the diaphragm-holding section with relation to the record-disk, substantially as described.

9. In a sound recorder and reproducer, the combination of the disk A, having a tubular section adapted to be held by the sound-box support, a diaphragm-holding section B eccentrically pivoted to the face of the disk A, to one side of its vertical diameter so as to be capable of a slight swinging movement in a plane parallel to the face of the relatively stationary disk, means for limiting the extent of this swinging movement, an outwardly-extending arm secured to the periphery of the pivoted disk said arm extending over and beyond the fulcrum-point, and a weight adjustable on said arm, substantially as described.

10. In a sound recorder and reproducer, the combination of the disk, A, having a tubular section for connection to the trumpet, a disk, B, eccentrically pivoted to the disk, A, a coiled spring A, surrounding the pivot for affording a yielding connection, a diaphragm supported in the disk, B, a stylus-bar secured to the said diaphragm and pivotally supported on the diaphragm-holding section and a recording-stylus secured to the lower end of the stylus-bar, substantially as described.

11. In a sound-box, the combination of a rigidly-held disk adapted to be connected with a sound-conveying device, a smaller disk pivoted eccentrically on the rigid disk, a circular recess formed on the face of the rigid disk eccentric thereto, a circular flange formed on the rear face of the smaller disk around a circular opening and concentric with said disk, said flange being of a diameter smaller than the circular recess and adapted to extend loosely therein, a diaphragm carried by the smaller disk, a stylus-bar secured to said diaphragm and pivotally supported on the diaphragm-holding section, said stylus-bar being arranged at an angle on a diametrical line with the center of the smaller disk and its pivotal point, substantially as described.

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753,275. **DISK CHUCK.** JAMES L. JOHNSON, Fort Madison, Iowa. Filed Dec. 12, 1901. Serial No. 85,674. (No model.)

*Claim.*—1. The combination with a hollow stock, of a mandrel movable within the stock, a rigid disk-socket carried by the stock and having an outstanding flange intersected by grooves, disk-clamping means carried by the stock and working in the grooves in the socket and means actuated by the mandrel to release the disk

2. The combination with a stock, of a mandrel, one of said members being movable relative to the other, a disk-socket carried by one of the members and provided with an outstanding flange to receive a disk, means for clamping the disk in the socket, and means actuated by the action of the movable member to displace the disk.



3. The combination with a stock, of a mandrel, one of said members being movable relative to the other, a disk-socket carried by one of the members, and having an outstanding flange intersected by radial slots, disk-clamping jaws movable in the openings and means actuated by the movement of the movable member to release the disk from the engagement of the jaws and socket.

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**753,276. LAMP SOCKET AND PLUG.** DANIEL A. KIMBARK, Chicago, Ill., assignor to Electric Specialty Co., Chicago, Ill., a Corporation of Illinois. Filed May 21, 1902. Serial No. 106,313. (No model.)



*Claim.*—1. In a device for the purpose described the combination with a socket comprising two insulated contacts, of a plug comprising a spring-actuated plunger adapted to connect with one of said contacts and a contact adapted to slide over and connect with the other of said contacts and conductors electrically communicating with said contacts and plug respectively, said insulated contacts being arranged successively in the line of movement of the plug whereby the said contact of the plug will slide over one of them while approaching the other and the two may be far removed from each other, substantially as set forth.

2. In a device for the purpose described the combination with a socket comprising two insulated contacts, of a plug comprising a contact adapted to engage with one of said contacts, a plunger-housing, a plunger in said housing, a contact-sleeve surrounding said housing and insulated therefrom and adapted to engage with the other one of said contacts in the socket, and conductors electrically communicating with said plunger-sleeve and contacts respectively, said insulated contacts being arranged in succession in the direction of bodily movement of the plug whereby the plug will slide against one while approaching the other and the two may be far removed from each other, substantially as set forth.

3. In a device for the purpose described the combination with a socket comprising two insulated contacts, of a plug comprising a plunger-housing, a plunger in said housing adapted to connect with one of said contacts, a contact-sleeve surrounding said housing and insulated therefrom and adapted to engage the other one of said contacts, said sleeve having a reduced end, a joint-stock surrounding said reduced end and insulated therefrom, means in connection with said joint-stock and socket for locking the joint-stock in the socket and conductors electrically communicating with said plunger, sleeve and contacts respectively, substantially as set forth.

4. In a device for the purpose described the combination with a socket comprising two insulated contacts, of a plug comprising a plunger-housing, a plunger in said housing adapted to engage one of said contacts, a contact-sleeve surrounding said housing and insulated from said plunger and adapted to engage the other one of said contacts, said sleeve having a reduced end, an insulating-sleeve surrounding said reduced end, a joint-stock surrounding said insulating-sleeve, and means in connection with said joint-stock and socket for locking the joint-stock in the socket, and conductors electrically communicating with said plunger, sleeve and contacts respectively, substantially as set forth.

5. In a device for the purpose described the combination with a socket comprising two insulated contacts, of a plug comprising a plunger-housing, a plunger in said housing adapted to engage one of said contacts, a contact-sleeve surrounding said housing and insulated from said plunger and adapted to engage the other one of said contacts, said contact-sleeve having a reduced end, an insulating-sleeve secured on said reduced end and being of substantially the same diameter as said contact-sleeve, a joint-stock secured on said insulating-sleeve and means in connection with said joint-stock and socket for locking the joint-stock in the socket and conductors electrically communicating with said plunger, contact-sleeve and contacts respectively, substantially as set forth.

6. In a device for the purpose described the combination with a socket comprising two insulated contacts and a face-plate secured to said socket and having a passage for a plug provided in its edge with one or more notches, of a plug comprising two contacts adapted to engage with the aforesaid contacts respectively and one or more pins radiating from said plug and adapted to pass through said notches and engage behind said face-plate for locking the plug in the socket, substantially as set forth.

7. In a device for the purpose described the combination with a socket comprising two insulated contacts, of a plug comprising a plunger-housing, a spring-actuated plunger in said housing, an insulating-sleeve surrounding said housing and having a tapered end, a contact-sleeve surrounding said insulating-sleeve and adapted to contact with one of the aforesaid contacts and having a reduced end and a tapered portion joining said reduced end to the main portion thereof, an insulating-sleeve surrounding said reduced end, a joint-stock surrounding said second insulating-sleeve, and means in connection with said joint-stock for securing the plug in said socket, and conductors electrically communicating with said plunger and contacts respectively, substantially as set forth.

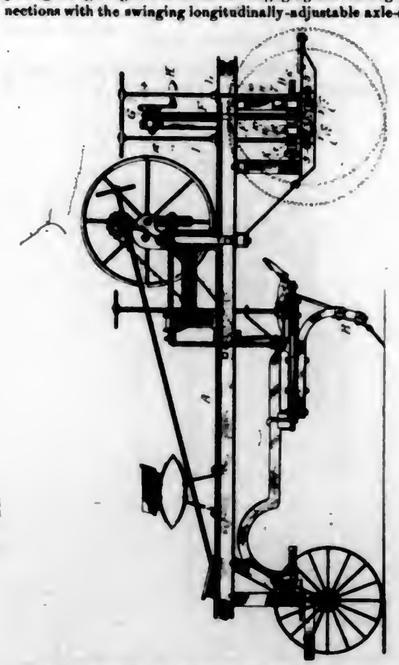
8. In a device for the purpose described the combination with a socket comprising a barrel having an internal flange or shoulder, an internal contact-collar seated in said barrel against said shoulder and having a flaring mouth, and a contact secured in said barrel and insulated from said collar, of a plug comprising a spring-actuated plunger adapted to fit against the last said contact and a contact-sleeve surrounding said plunger and insulated therefrom and adapted to fit into said contact-collar, substantially as set forth.

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**753,277. MACHINE FOR MAKING AND REPAIRING ROADS.** JOHN KROHN, Barberton, Ohio, assignor to National Drill and Manufacturing Company, Chicago, Ill., a Corporation of West Virginia. Filed Sept. 18, 1903. Serial No. 173,687. (No model.)

*Claim.*—1. In a machine for making and repairing roads, involving a carriage and a diagonally-adjustable scraper-blade, a pair of swinging axle-sections for the rear wheels; and an adjusting device having right and left screw-threaded portions respectively engaging nuts having swivel connections with the swinging axle-sections.

2. In a machine for making and repairing roads, involving a carriage and a diagonally-adjustable scraper-blade, a pair of swinging axle-sections for the rear wheels; and an adjusting device comprising a single right-and-left screw engaging nuts having swivel connections with the swinging longitudinally-adjustable axle-sections.



3. In a machine for making and repairing roads, involving a carriage and a diagonally-adjustable scraper-blade, a pair of swinging and longitudinally-adjustable axle-sections for the rear wheels; and an adjusting device comprising a right-and-left screw engaging nuts having swivel connections with the swinging longitudinally-adjustable axle-sections; and a device for operating said right-and-left screw.

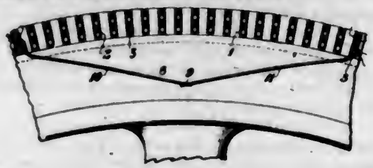
4. In a machine for making and repairing roads, involving a carriage and a digonally-adjustable scraper-blade, a pair of swinging and longitudinally-adjustable axle-sections for the rear wheels; and an adjusting device comprising a right-and-left screw engaging nuts having swivel connections with the swinging longitudinally-adjustable axle-sections; and a device for operating said right-and-left screw comprising sprockets whereof one is applied to the right-and-left screw, and belt connection between said sprockets.

5. In a machine for making and repairing roads, involving a carriage and a diagonally-adjustable scraper-blade, a pair of swinging and longitudinally-adjustable axle-sections for the rear wheels; and an adjusting device comprising a right-and-left screw engaging nuts which are swiveled upon bearings with which the axle-sections have shifting connection.

6. In a machine for making and repairing roads, involving a carriage and a diagonally-adjustable scraper-blade, a pair of swinging and longitudinally-adjustable axle-sections for the rear wheels; an adjusting device having right-and-left screw portions engaging nuts with which the axle-sections have shifting connection; and a gear for operating the right-and-left screw with a yielding connection between said gear and the axle-sections.

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**753,278. WINDING FOR ELECTRICAL MACHINES.** FREDERICK J. LINDSHAR, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Apr. 11, 1903. Serial No. 152,278. (No model.)



*Claim.*—1. In an electrical machine, the combination with a slotted core, of conducting-bars located in the core-slots and having projecting ends provided with slots that are transversely disposed with reference to the corresponding core radii and connectors having their ends seated in said bar-slots and soldered in position.

2. In an electrical machine having a slotted core, a winding comprising conducting-bars located in the core-slots and having slotted ends and strap-connectors having their ends bent into hook form and fitted into the slots in the ends of the bars.

3. In a winding for electrical machines, conducting-bars having slotted ends and strap-connectors having their ends bent to form hooks which fit into said slots and partially surround the adjacent portion of the bar.

4. In a winding for electrical machines, conducting-bars having slotted ends and strap-connectors having their ends located in said slots and bent adjacent thereto to engage the adjacent portions of the bars and solder for holding said parts together.

5. In an electrical machine, a slotted core having a winding comprising conducting-bars located in the core-slots and end-connectors having their ends bent to form hooks which grip the ends of the conductor-bars and solder for uniting said parts.

6. In an electrical machine, a slotted core having a winding comprising conductor-bars located in the core-slots and having slots in their ends and strap-connectors having their ends fitted into the slots in said bars and bent adjacent to said slots into engagement with the sides of the bars and solder for uniting said parts.

7. A winding for electrical machines, comprising conducting-bars having slotted ends and connectors having their ends bent into hook form and fitted into said slots.

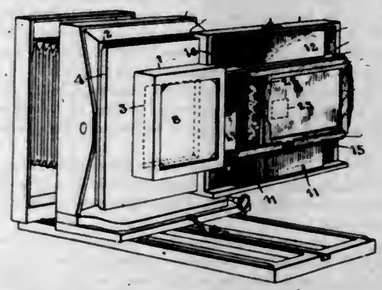
8. In an electrical machine having a slotted core, conducting-bars located in the core-slots and having laterally-slotted ends and strap-connectors having their ends bent into hook form and fitted into the slots in the ends of the bars.

9. A winding for electrical machines comprising bars having slots in their ends which are located nearer to one side of the bars than the other, strap-connectors which project into the slots and partially surround the thicker adjacent portions and solder for fastening said parts together.

10. A winding for electrical machines comprising bar-conductors having slotted ends, strap-connectors projecting through said slots and bent into engagement with the adjacent sides of the bars and solder for fastening said parts together.

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**753,279. MULTIPLE-VIEW BACK FOR CAMERAS.** ALBERT R. LIPP, Haddonfield, N. J. Filed Sept. 6, 1902. Serial No. 122,297. (No model.)



*Claim.*—1. In a photographic camera, the combination with a slidable frame and focusing-screen, of an adjustable back, and a plate-holder slidable vertically and horizontally upon said back and means for fixing said plate-holder in position vertically and horizontally whereby a plurality of negatives may be made upon a single plate, substantially as described.

2. In a photographic camera, the combination with a slidable frame and focusing-screen, of an adjustable back, a rectangular plate-holder frame slidable thereon, a plate-holder slidable in said frame, means for holding the plate-holder frame in different positions on the adjustable back and means for fixing the plate-holder in different positions in the frame whereby a plurality of negatives may be made upon a single plate, substantially as described.

3. In a photographic camera, the combination with a slidable frame and focusing-screen, of a square adjustable back adapted to be inserted in the frame in either of two positions, a transversely-slidable frame carried by said back, a plate-holder slidable in said

last-named frame, means for holding said frame in different positions on the adjustable back and means for holding the plate-holder in different positions in the frame whereby a plurality of negatives may be taken upon a single plate, substantially as described.

4. In a photographic camera, the combination of a slidable frame and focusing-screen, an adjustable back, a rectangular frame slidable thereon, a plate-holder slidable in said frame having notches in an edge thereof corresponding in number to definite fractions of the length of the plate-holder, a spring-pressed pin carried by said frame and adapted to engage said notches, an adjustable spring-pressed pin adapted to engage recesses in the adjustable back for fixing the position of said frame corresponding to transverse divisions of the plate-holder whereby a plurality of negatives may be made upon a single plate, substantially as described.

5. In a multiple-view back for cameras, a plate-holder mounted to slide thereon having a series of recesses corresponding to definite divisions or fractions of one dimension of said plate-holder and means carried by the back for engaging said recesses to allow of a series of exposures to be made upon any one of the divisions of a photographic plate carried by said plate-holder, substantially as described.

6. In a multiple-view back for cameras, a plate-holder mounted to slide thereon and having a series of recesses corresponding to definite divisions or fractions of one dimension of said plate-holder, a pin adapted to engage said recesses, a plate-spring for forcing said pin into said recesses and a lever for withdrawing said pin, substantially as described.

7. In a multiple-view back for cameras, a transversely-slidable plate-holder frame mounted thereon, an arm pivoted to said frame, a spring-pressed pin carried by said arm, there being a series of recesses in the back adapted to be engaged by said spring-pressed pin whereby said frame may be held in different positions, substantially as described.

8. In a multiple-view back for cameras, a slidable plate-holder frame, a plate carried by said frame, an arm pivoted to said plate, a spring-pressed pin carried by said arm, there being a series of recesses in the back adapted to be engaged by said spring-pressed pin whereby the frame may be held in different positions, substantially as described.

9. A multiple-view back for cameras comprising a square plate or board, a transversely-slidable plate-holder frame carried thereby, means for holding said plate-holder frame in different positions transversely, a plate-holder slidable transversely on said frame and means for holding the plate-holder in different positions upon said frame, substantially as described.

10. A multiple-view back for cameras, comprising a plate or board having an opening therein, a removable kit or screen for said opening, a transversely-slidable plate-holder frame carried by said back, means for holding said plate-holder frame in different positions transversely, a plate-holder slidable transversely upon said frame and means for holding said plate-holder in different positions upon said plate-holder frame, substantially as described.

11. In a photographic camera, the combination with a member movable with relation to the exposure-opening, of a plate-holder mounted upon said member and movable thereon in independent intersecting paths.

12. In a photographic camera, the combination with a member movable with relation to the exposure-opening, of a plate-holder mounted upon said member and slidable thereon in independent intersecting paths.

13. In a photographic camera, the combination with a member movable with relation to the exposure-opening, of a plate-holder frame slidable upon said member, and a plate-holder slidable upon said frame in a path at an angle to the path of said frame.

14. In a photographic camera, the combination with a member movable with relation to the exposure-opening, of a plate-holder mounted upon said member and movable thereon in independent intersecting paths, and means for fixing said plate-holder in different positions in said paths.

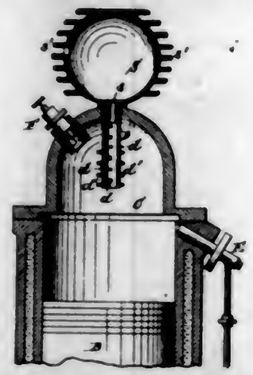
15. In a photographic camera, the combination with a member movable with relation to the exposure-opening, and a removable back carried by said member and having an opening, of a plate-holder upon said back and movable thereon in independent intersecting paths.

16. In a photographic camera, the combination with a member movable with relation to the exposure-opening, and an adjustable back mounted upon said member and having an opening, of a plate-holder mounted upon said back and movable thereon in independent intersecting paths.

17. In a photographic camera, the combination with a member movable with relation to the exposure-opening, and a back mounted upon said member and having an opening, of a plate-holder frame slidable upon said back, and a plate-holder slidable upon said frame at an angle to the path thereof.

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**753,280. IGNITER FOR EXPLOSIVE-ENGINES. ABBOT A. LOW, Horseshoe, N. Y. Filed Apr. 14, 1903. Serial No. 152,496. (No model.)**



*Claim.*—1. In an explosive-engine, the combination with the combustion-chamber, and an internal igniter, of an external supplementary chamber mounted on the combustion-chamber and communicating directly with the interior of said igniter.

2. In an explosive-engine, the combination with the combustion-chamber, and an internal igniter, of an external supplementary chamber mounted on the combustion-chamber and communicating directly with the interior of said igniter, said external supplementary chamber being formed with a series of external projections to increase its heat-radiating surface.

3. In an explosive-engine, the combination with the combustion-chamber, and an internal igniter, of an external supplementary chamber mounted on the combustion-chamber and communicating directly with the interior of said igniter, both the igniter and internal chamber being provided with a series of external projections.

4. In an explosive-engine, the combination with the combustion-chamber, and an internal igniter extending axially therein, of an external supplementary chamber secured within and communicating directly with said igniter.

5. In an explosive-engine, the combination with the combustion-chamber, and an internal igniter extending axially therein, of an external supplementary chamber secured within and communicating directly with said igniter, and having a multiplicity of external projections, as and for the purpose specified.

6. In an explosive-engine, the combination with the combustion-chamber, of an internal igniter secured therein, and an external supplementary chamber removably held within the outer end of said igniter whereby the said external chamber may be readily replaced by one of different capacity, as and for the purpose specified.

7. In an explosive-engine, the combination with the combustion-chamber, of an internal igniter secured therein, and an external supplementary chamber removably held within the outer end of said igniter, said external chamber being provided with a plurality of projections, as and for the purpose specified.

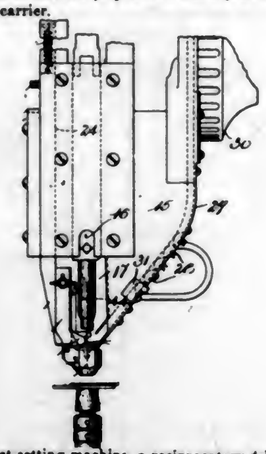
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**753,281. RIVET-SETTING MACHINE. ALBERT T. MARDEN, Waltham, Mass., assignor to Judson L. Thomson Manufacturing Company, a Corporation of Maine. Filed Sept. 24, 1903. Serial No. 174,426. (No model.)**

*Claim.*—1. In a rivet-setting machine, a reciprocatory driver, an anvil, a raceway, a rivet-carrier, and a rivet stop and holder located on the opposite side of said carrier from that upon which the rivets approach said carrier.

2. In a rivet-setting machine, a reciprocatory driver, an anvil, a raceway, a rivet-carrier and a rivet stop and holder located on the opposite side of said carrier from that upon which the rivets approach said carrier, and constructed to project over the top of a rivet resting upon said carrier.

3. In a rivet-setting machine, a reciprocatory driver, an anvil, a raceway, a reciprocatory rivet-carrier slide, a rivet-carrier supported upon said slide, and a rivet stop and holder fast to said carrier-slide and constructed to project over the top of a rivet resting upon said rivet-carrier.

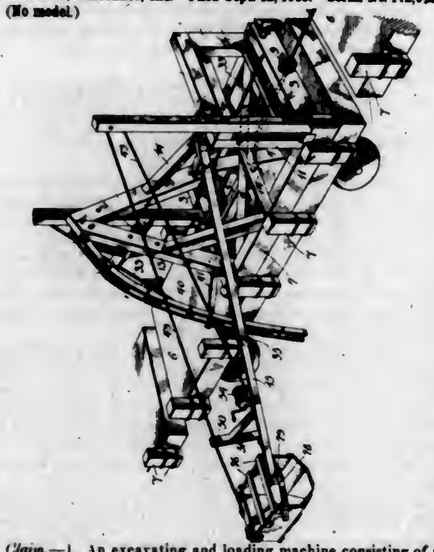


4. In a rivet-setting machine, a reciprocatory driver, an anvil, a raceway, a reciprocatory rivet-carrier slide, a rivet-carrier supported upon said slide, and a rivet stop and holder fast to said carrier-slide and constructed to project over the top of a rivet resting upon said rivet-carrier and into a slot provided in said driver.

5. In a rivet-setting machine, a reciprocatory driver, an anvil, a raceway, a rivet-carrier, and a rivet stop and holder located on the opposite side of said carrier from that upon which the rivets approach said carrier and constructed to project across the path of motion of said driver and above the head of a rivet resting upon said rivet-carrier.

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**753,282. EXCAVATING AND LOADING MACHINE. DANIEL H. MANOWEY, Vincennes, Ind. Filed Sept. 12, 1903. Serial No. 172,913 (No model.)**



*Claim.*—1. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, means for raising and lowering the boom, and an inclined guide for the movement of the boom said guide being formed of foldable sections.

2. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, means for raising and lowering the boom, an inclined foldable guide for the movement of the boom said guide being composed of two sections hinged together, the upper section being pivoted, and an adjustable brace-link for supporting the lower end of the lower guide-section in different positions.

3. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, a vertical post, a sheave at the upper end of the post, a sheave at the lower end of the post, a cable attached to the boom intermediately of the ends of the latter and passed directly around the upper sheave and thence around the lower sheave, and an adjustable guide for the movement of the boom.

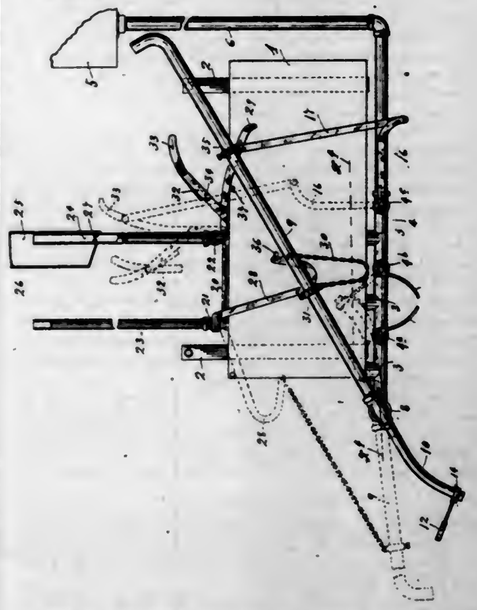
4. An excavating and loading machine consisting of a carrier, a boom, a scoop pivoted to the free end of the boom, means for raising and lowering the boom, an inclined guide for the movement of the boom, and a righting-cable for the scoop said cable being attached at one end to the scoop and at its other end to an adjusting means on the boom and intermediately passed about a sheave above the inner end of the boom.

5. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, said scoop having openings in its top, a door for the discharge end of the scoop, a hand-released spring-pressed locking means for the door, and means for raising and lowering the beam in an inclined plane.

6. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, a cable attached directly to the boom for raising and lowering it, and a righting-cord attached at its ends respectively to the scoop and boom and intermediately passed around a sheave on the carrier.

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**753,283. LIQUID-MEASURING APPARATUS. THOMAS R. MATHER, Minneapolis, Minn. Filed Oct. 24, 1902. Serial No. 128,639. (No model.)**



*Claim.*—1. The combination with a measuring-receptacle having inlet and outlet passages equipped, respectively, with supply and discharging valves, of an oscillating delivery-tube pivoted with respect to said receptacle and communicating with said discharging-valve, and connections whereby said supply-valve is closed and opened by the movements of said delivering-tube, respectively, to and from a delivering position, the said two valves receiving their opening and closing movements in reverse order under the movements of said tube, substantially as described.

2. The combination with a measuring-receptacle having inlet and outlet passages equipped, respectively, with supply and discharging valves, and having also a vent-passage equipped with a venting-valve, of an oscillating delivery-tube communicating with and connected to said discharging-valve, and operating the same, as described, and connections whereby the movement of said delivery-tube into a discharging position closes said supply-valve and opens said venting-valve, substantially as described.

3. The combination with a measuring-receptacle having inlet and outlet passages equipped, respectively, with supply and discharging valves and having also a pair of venting-pipes equipped with venting-valves arranged to operate in reverse order, of an oscillating de-

livery-tube, connections whereby said valve and one of the venting-valves will be closed and opened by the movements of said tube, respectively, to and from a discharging position, and connections whereby said discharging-valve and the other venting-valve will be opened and closed, by the movements of said tube, respectively, to and from a discharging position, said tube having communication with said discharging-valve, substantially as described.

4. The combination with a measuring-receptacle having inlet and outlet passages equipped, respectively, with supply and discharging valves, of an elevated supply-tank communicating with said supply-passage, a venting-pipe leading to an altitude above the bottom of said supply-tank and equipped with a venting-valve, an oscillating delivery-tube communicating with and connected to said discharging-valve and operating the same as described, connections whereby said supply-valve and venting-valve are closed and opened by the movements of said tube, respectively, to and from a discharging position, and a second venting device for affording a supply of air to said measuring-receptacle when said discharging-valve is opened and the said other two valves are closed, substantially as described.

5. The combination with a measuring-receptacle made up of several compartments and having inlet and outlet passages communicating with all of the compartments thereof and equipped, respectively, with supply and discharging valves, of cut-off valves in the communicating passages between the several compartments, said cut-off valves having arms by means of which they may be closed at will, a venting device leading from the several compartments of said measuring-receptacle, an oscillating delivery-tube communicating with and operating said discharging-valve, as described, connections whereby said supply-valve is closed and opened by the movements of said delivery-tube, respectively, to and from a discharging position, the said tube having a projection for action on the arms of said cut-off valves to automatically close the same when it is turned back to normal position, substantially as described.

6. The combination with a measuring-tank made up of compartments, of the pipe 4 communicating with said compartments through necks 3 and equipped with the cut-off valves $4^a$ $4^b$, supply-valve $4^c$ and discharging-valve 8, the elevated supply-tank 5 having the supply-pipe 6 leading to said valve $4^c$, the venting-tubes 23 and 24 and valve-seats 18 and 19 opening from said measuring-tank, the valves 21 and 22 mounted, respectively, in said seats 18 and 19 and provided, respectively, with the arms 28 and 29 the latter of which carries a dog 33 pivotally movable in one direction only, the venting-tube 20 affording communication between the several compartments of said measuring-tank, the cam-arms 15 on said cut-off valves $4^a$ and $4^b$, the arm 16 on said supply-valve $4^c$ connected to said valve-arm 29 by a link 17, the oscillating delivery-tube 9 connected to and communicating with said discharging-valve 8, the rod or extension 10 also carried by said valve 8, the dog 11 mounted for pivotal movement in one direction only on said extension 10 and acting on said cam-arms 15, as described, a flexible connection between said tube 9 and the valve-arm 28, and a projection from said tube 9 cooperating with the valve-arm 29 and its dog 33, as described.

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**753,284. ELECTRICALLY-PROPELLED VEHICLE.** HIRAM P. MAXIM, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Apr. 4, 1903. Serial No. 151,200. (No model.)

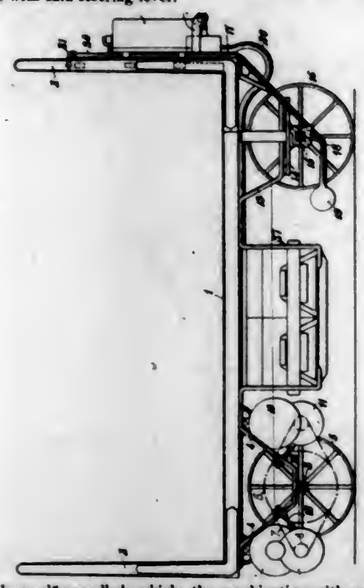
*Claim.*—1. A self-propelled vehicle having a pair of driving-wheels and their axle, in combination with a pair of electric motors suspended from the vehicle-body at opposite sides and adjacent to opposite ends of said axle and gearing between each of said motors and the corresponding wheel, said wheels, motors and gear members being movable on horizontal axes only.

2. A baggage-truck having a pair of driving-wheels and an axle therefor, in combination with a pair of motors respectively suspended from the truck-body at opposite sides of the axle and adjacent to the driving-wheels and gearing between each motor and the corresponding wheel, said wheels, motors and gear members being movable on horizontal axes only.

3. The combination with a vehicle-body, a pair of driving-wheels and a pair of steering-wheels, of one or more electric motors geared to the driving-wheels, a steering-lever and a motor-controller mounted upon said steering-lever.

4. In a self-propelled vehicle, the combination with one or more propelling-motors, of a steering-lever and a motor-controller attached to and movable with said steering-lever.

5. In a self-propelled vehicle, the combination with a body and two pairs of supporting-wheels, of one or more electric motors geared to one pair of said wheels, a steering-lever connected to the axle of the other pair of wheels and a motor-controller supported by and movable with said steering-lever.



6. In a self-propelled vehicle, the combination with a pair of wheels and one or more electric motors geared thereto, of a pair of steering-wheels, a steering-lever having a hinge connection with the axle of said steering-wheels and a motor-controller mounted upon said lever and movable with it.

7. A self-propelled vehicle comprising a body, driving-wheels, one or more motors geared to said wheels, steering-wheels, a steering-lever hinged to the axle of said steering-wheels and having a counterweight and a motor-controller attached to said lever and movable with it.

8. A baggage-truck comprising a body, propelling and steering wheels, electric motors geared to the driving-wheels, a steering-lever hinged to the axle of the steering-wheels and provided with a counterweight, a motor-controller mounted upon said lever and a latch for fastening the lever to the truck-body.

9. The combination with a truck-body and two pairs of wheels and their axles, of one or more motors geared to one of said pairs of wheels, a counterweighted steering-lever hinged to the other axle and a motor-controller supported upon said steering-lever.

10. The combination with a truck-body, a pair of wheels at one end and a pair of electric motors geared thereto, of a pair of steering-wheels at the other end, a steering-lever hinged to the axle of said steering-wheels and provided with a counterweight and a motor-controller supported by said steering-lever.

11. In a baggage-truck, the combination with a body having upright ends, one of which is provided with a hook or latch, of two axles provided with supporting-wheels and one of which is mounted to turn upon a vertical axis, one or more electric motors geared to one pair of wheels, a counterweighted steering-lever hinged to the other axle and a motor-controller mounted upon said lever.

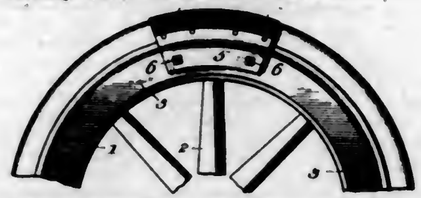
12. In a self-propelled vehicle, the combination with the vehicle-body, a pair of driving-wheels and a pair of steering-wheels, of one or more motors geared to the driving-wheels, a steering-lever hinged to the axle of the steering-wheels and located wholly outside the vehicle-body and a motor-controller mounted on said lever whereby the operation of the vehicle is controllable only by a pedestrian.

13. The combination with a vehicle-body having driving and steering wheels and axles therefor, of one or more motors geared to the driving-wheels, a steering-lever attached to the axle of the steering-wheels and located entirely outside the vehicle-body and a motor-controller mounted upon the steering-lever.

14. The combination with a vehicle-body having driving and steering wheels and axles therefor, of one or more motors geared to the driving-wheels, a steering-lever hinged to the axle of the steering-wheels and located entirely outside the vehicle-body, a motor-controller mounted on said lever and means for fastening said lever and controller to the vehicle-body when not in use.



**753,285. TRACTION-STRAP.** HIRAM P. MAXIM, Pittsburg, Pa. Filed Aug. 22, 1903. Serial No. 170,423. (No model.)



*Claim.*—1. In combination with a wheel, a traction-strap removably attached thereto and comprising a tread portion of foraminous formation, clamping members arranged on opposite sides of the wheel-rim and secured to the foraminous tread portion, and locking devices passing through the wheel-rim and clamping members.

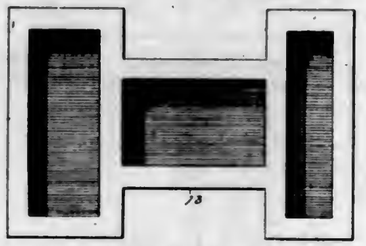
2. In combination with a wheel or the like, a traction device removably secured to said wheel and extending over the tread portion of the tire, said traction device being formed as to its tread portion of interwoven material, said material being secured to disk-like plates, and the plates of disk form arranged to be applied to opposite sides of the wheel-rim, and locking devices passing through the wheel-rim and plates.

3. In combination with a wheel or like part having a tire, a removable tread-surface adapted to overlie said tire and formed of interwoven wires, said wires terminating and secured to disk-like plates arranged upon opposite sides of the tire and means for securing said plates against movement.

4. In combination with a wheel or the like, a traction device removably secured to said wheel extending over the tread portion of the tire, said traction device consisting of a plurality of sections each formed as to their tread portion of interwoven material, said material terminating in, and secured by segmental plates and fastening devices for securing said plates in position on opposite sides of the tire of the wheel.

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**753,286. BUILDING-BLOCK.** JAMES D. MORRISON, Reinbeck, Iowa. Filed Apr. 24, 1903. Serial No. 154,117. (No model.)



*Claim.*—1. A building-block consisting of two quadrangular parts of uniform length and straight-faced at their ends and an integral part that connects said two parts at their central portions and each of said three parts provided with a chamber in its under side, as shown and described for the purposes stated.

2. A building-block composed of plastic material shaped in a mold and hardened, consisting of three quadrangular integral parts, with quadrangular openings at its opposite sides and open chambers on its bottom side, all so constructed and arranged that when a number of the blocks are laid in a wall they will produce a series of separate, distinct and disconnected dead-air spaces, substantially as shown and described and for the purposes stated.

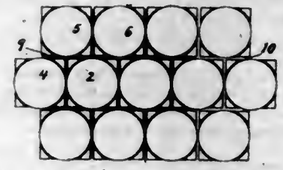
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**753,287. TILE AND TILE-SETTING.** JAMES H. MUNRO, New York, N. Y., assignor of one-half to John Milton Van Orden, Newark, N. J. Filed Apr. 4, 1903. Serial No. 151,153. (No model.)

*Claim.*—1. As an article of manufacture; a "dot-tile" or similar device provided with a filling-piece formed integrally therewith, and divided superficially therefrom by a kerf, or the like.

2. A tile presenting a face of polygonal contour having a central "dot" the periphery whereof extends beyond the sides of said polygon, substantially as described.

3. A "dot-tile," having a central dot portion, and four independent triangular projections integral with said dot portion, lying in the same plane, and forming therewith a substantially square structure.

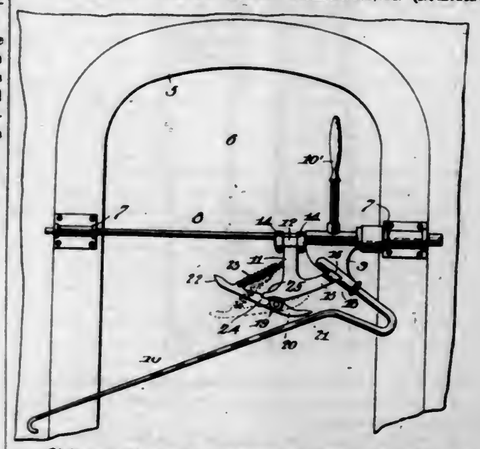


4. A substantially square tile divided by a curvilinear kerf, groove or depression into a central area occupying the major portion of the face of said tile, and complemental areas occupying the remainder of said face, said depression having lateral openings to permit the grouting in said depressions on adjacent tiles, when laid in a group, to unite with the grouting in the interstices of said group to lock said tiles together, substantially as described.

5. A tile-surface; comprising a plurality of tiles having "dot" portions and integral filling portions divided respectively from said dot portions by superficial depressions; and grouting filled in said depressions and between said tiles, forming a continuous interlocking medium, partly between, and partly upon, said tiles, substantially as described.

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**753,288. MAIL-BAG CATCHER.** WILLIAM D. MCCLELLAN, McHenry, Miss. Filed Nov. 18, 1903. Serial No. 181,731. (No model.)



*Claim.*—1. The combination with a catcher-arm and its supporting-rod, of a detachable bracket rigidly secured to the supporting-rod, and a spring-actuated locking-trigger carried by the bracket and cooperating with the catcher-arm.

2. The combination with a catcher-arm and its supporting-rod, of a bracket detachably secured to the supporting-rod, and forming a passage between the catcher-arm and said bracket and a spring-actuated locking-trigger pivoted to the bracket and normally closing the entrance to said passage.

3. The combination with a catcher-arm and its supporting-rod, of a bracket detachably secured to the supporting-rod, and forming a passage between the catcher-arm and said bracket, a spring-actuated locking-trigger pivoted to the bracket and normally closing the entrance to said passage, and means for limiting the downward movement of the locking-trigger.

4. The combination with a catcher-arm and its supporting-rod, of a bracket detachably secured to the supporting-rod, ears or lugs formed on the bracket, a locking-trigger pivoted between said ears or lugs, and a spring, one end of which is secured to the bracket, the opposite end thereof being fastened to the locking-trigger.

5. The combination with a catcher-arm and its supporting-rod, of a bracket provided with an angular extension detachably secured to the supporting-rod, a locking-trigger pivoted to the bracket, and means for yieldably holding the locking-trigger in engagement with the angular extension.

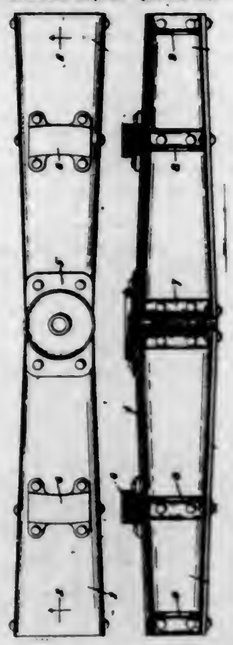
6. The combination with a catcher-arm and its supporting-rod, of a bracket provided with an angular extension detachably secured to the supporting-rod, a locking-trigger pivoted to the bracket,

there being a notch or recess formed in one end of said trigger adapted to engage the angular extension of the bracket.

7. The combination with a catcher and its supporting-rod, of a bracket having one end thereof provided with a grooved foot adapted to engage the supporting-rod, the opposite end thereof being inclined or beveled and provided with a groove or channel for the reception of the head of the catcher-arm, ears or lugs formed integral with the bracket, a locking-trigger pivoted between the ears or lugs, and a spring, one end of which is secured to the bracket, the opposite end thereof being fastened to the locking-trigger.

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**753,289. CAR-BOLSTER.** ALVIN C. McCORD, Chicago, Ill. Filed June 9, 1902. Serial No. 110,793. (No model.)



*Claim.*—1. A bolster formed of a rectangular metal blank bent into a hollow bolster structure wider at its ends than at its middle, substantially as described.

2. A bolster formed of a rectangular blank bent into a hollow bolster structure wider at its ends than at its middle, and deeper at its middle than at its ends, substantially as described.

3. A bolster formed of a rectangular metal blank bent into a tubular structure closed on three sides and partially closed on the fourth, but having a longitudinal opening on said fourth side, said tubular structure being wider at its ends than at its middle and deeper at its middle than at its ends, substantially as described.

4. A bolster formed of a sheet of metal bent into a bolster-shell, the top of the bolster-shell containing separated marginal portions 4', 4', a top plate 10 riveted to the marginal portions 4', 4', said top plate being provided with center and side bearings, substantially as described.

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**753,290. ART OF PRODUCING INTAGLIO PRINTING-FORMS ON CYLINDRICAL SURFACES.** GEORGE F. McLINDON and JAMES W. McLINDON, Boston, Mass., assignors of one-third to Arthur R. Whitney, Winchester, Mass. Filed Mar. 16, 1903. Serial No. 147,980. (No specimens.)

*Claim.*—The improvement in the art of producing intaglio printing-forms on cylindrical surfaces, for printing continuously upon paper or other flexible material, a representation of the surface of any selected piece of textile fabric, or other like flexible material, which consists in first preparing a metal cylinder to be developed into the desired printing-form; applying to said cylinder a thin coating of a substance that is sensitive to the rays of light; drying said sensitive coating; selecting a piece of textile fabric, or other like flexible material to serve as a basis; saturating said basis with a solution of glutinous material; drying said saturated basis by subjecting it to heat and pressure; securing said saturated basis in a fixed and extended position on a suitable supporting-bed, having an elastic surface; applying to said hardened basis a thin coating of a substance that is impervious to the action of the rays of light; transferring said light-resisting coating from said basis to the sensitized coating on the periphery of said cylinder; then exposing all parts of the periphery of said coated cylinder in succession to the concentrated actinic rays of light, whereby the uncovered portions of said sensitive coating of said cylinder are rendered insoluble by water; then washing off the light-resisting coating from said cylinder; then removing the portions of said sensitized coating that have not been affected by the action thereon of the actinic rays; then subjecting said cylinder to heat to render the remaining portions of said sensitized coating acid-resisting; then subjecting said cylinder to a bath of suitable etching fluid to etch the uncovered portions of said cylinder; and then removing the remaining portions of said hardened sensitized coating from said cylinder, substantially as described.

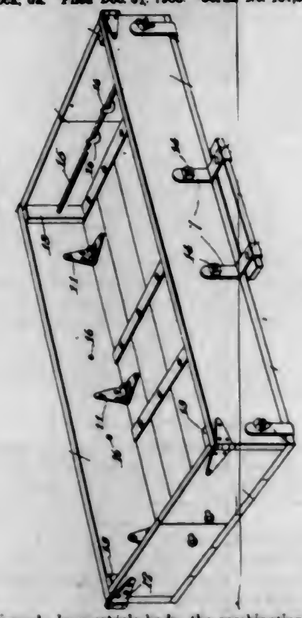
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**753,291. METHOD OF PRODUCING INTAGLIO PRINTING-FORMS ON CYLINDRICAL SURFACES.** GEORGE F. McLINDON and JAMES W. McLINDON, Boston, Mass., assignors of one-third to Arthur R. Whitney, Winchester, Mass. Filed Mar. 16, 1903. Serial No. 147,981. (No specimens.)

*Claim.*—The process of producing intaglio printing-forms on cylindrical surfaces, for printing continuously upon paper or other smooth flexible material, a representation of the surface of a selected piece of textile fabric or other like flexible material, which consists in first saturating a selected piece of such material of the desired size, shape, and configuration with a sizing, as a solution of glutinous material; drying said saturated material by subjecting it to heat and pressure; securing said saturated material in a fixed and extended position on a suitable supporting-bed having an elastic surface; applying to said saturated and dried fabric a thin coating of an acid-resisting paste-like material, capable of being spread by a printer's inking-roller; then passing said coated fabric with its supporting-bed beneath the cylinder that is to be developed into an intaglio printing-form, under pressure, and while said cylinder is being revolved, to transfer said acid-resisting material from the surface of said fabric to the periphery of said cylinder; and then subjecting said cylinder to the action of a bath of a suitable acid to etch the uncovered portions of its surface, to develop it into an intaglio printing-form; and then removing the acid-resisting material.

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**753,292. FOLDING WAGON-BODY.** FRANK B. McMURRAY, Pidcock, Ga. Filed Dec. 31, 1903. Serial No. 187,336. (No model.)



*Claim.*—1. In a vehicle-body, the combination with a bottom, of sides pivoted to fold downward thereon, ends pivoted to fold each upon one of the sides, primary engaging members associated with the bottom and removable tie-rods engaging the members for bracing the sides in unfolded position or securing the parts in folded position.

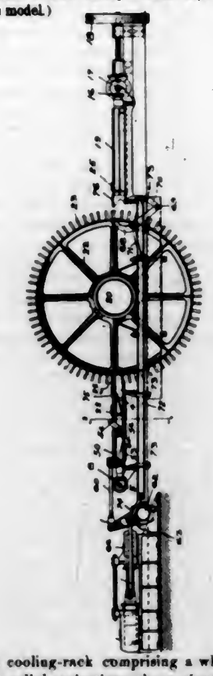
2. In a vehicle-body, the combination with a bottom, of sides pivoted to fold downward thereon, ends pivoted to fold each upon one of the sides, primary engaging members associated with the bottom, removable tie-rods engaging the members for bracing the sides in unfolded position or securing the parts in folded position, secondary engaging members associated with the bottom, and means for detachably connecting the sides with the secondary members.

3. In a vehicle-body, the combination with a bottom, of sides pivoted to fold downward thereon, ends pivoted to fold each upon one of the sides, straps extending transversely of and attached to the bottom, the ends of said straps being bent upwardly to produce respectively primary and secondary engaging members, tie-rods removably engaging the primary members and adapted to brace the sides in open or lock the parts in folded position, and bolts detachably securing the sides to the secondary members.



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**753,293. COOLING-RACK FOR BARS.** GEORGE G. McMURTRY, New York, N. Y., assignor to American Sheet Steel Co., Pittsburg, Pa., a Corporation of New Jersey. Filed Sept. 12, 1903. Serial No. 172,912. (No model.)



*Claim.*—1. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, gearing for rotating said wheel, and a power-motor for intermittently actuating said gearing.

2. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, a motor provided with a reciprocating element having a fixed amplitude of reciprocation, and intermediate clutch mechanism geared to the reciprocating element of the motor and to the wheel.

3. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, a driving-shaft gear to said wheel, a ratchet-clutch having one member connected to said driving-shaft, a motor provided with a reciprocating element having a fixed amplitude of reciprocation, and connecting gearing between said reciprocating element and the other member of said ratchet-clutch.

4. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, a worm-wheel connected to said wheel, a worm engaging said worm-wheel, a reciprocating motor, and intermittent clutch mechanism between the same and said worm.

5. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, a driving-shaft geared to said wheel, a ratchet-clutch one member of which is fast to said driving-shaft, a reciprocating rack operatively connected with the other member of said ratchet-clutch, and a reciprocating motor connected to said rack.

6. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, mechanism for rotating said wheel, means on one side of said wheel for pushing the article to be cooled onto said radial projections, and means on the other side of the wheel arranged to engage the articles and deliver the same from said wheel.

7. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, mechanism for rotating said wheel, a pusher on one side of said wheel for pushing the article to be cooled onto said radial projections, a pusher on the opposite side of the wheel for delivering the articles from said wheel, and connections between said pushers whereby they are operated in unison.

8. A cooling-rack comprising a wheel having a plurality of series of radial projections, the projections of the several series being in line with each other, mechanism for intermittently rotating said wheel through uniform distances, a support on one side of the wheel for the articles to be cooled, and a pusher arranged to push the articles from said support into the wheel.

9. A cooling-rack comprising a wheel having a plurality of series of radial projections, mechanism for rotating said wheel, a support on one side of the wheel for the articles to be cooled, a plurality of pushers arranged to move transversely of said support, a rock-shaft to which said pushers are connected, and mechanism for rocking said shaft.

10. A cooling-rack comprising a wheel having a plurality of series of radial projections, mechanism for intermittently rotating said wheel through uniform distances, a table at one side of said wheel, live rollers mounted in said table, a pusher moving transversely of said table, a yielding pushing-dog carried by said pusher, and mechanism for reciprocating said pusher.

11. A cooling-rack comprising a wheel having a plurality of series of radial projections, mechanism for rotating said wheel, a table at one side of said wheel, live rollers mounted in said table, stationary raised portions on said table adjacent to said wheel, and a pusher arranged to reciprocate transversely of said table.

12. A cooling-rack comprising a wheel having a plurality of series of radial projections, mechanism for rotating said wheel, a table at one side of said wheel, live rollers mounted in said table, said table having raised portions adjacent to said wheel, a pusher arranged to reciprocate transversely of said table, and a pivoted dog mounted in said pusher.

13. A cooling-rack comprising a shaft, a plurality of hubs or disks thereon, a series of radial projections on said hubs or disks, mechanism for rotating said shaft, a support on one side of said rack for receiving the articles to be cooled, a support on the opposite side upon which said articles are delivered, a pusher arranged to move transversely of the receiving-support, a pusher arranged between adjacent disks of the wheel on the side opposite the receiving-support, mechanism for actuating one of said pushers, and a rod connecting said mechanism with the other pusher.

14. A cooling-rack comprising a shaft, a plurality of hubs or disks on said shaft, radial projections on said hubs or disks, mechanism for rotating said shaft, a pusher-in on one side of the wheel arranged to move transversely with respect thereto, a rock-shaft from which said pusher-in is actuated, a bar projecting between adjacent hubs or disks, connections between the rock-shaft and said bar for reciprocating the same, a pusher-out located between adjacent hubs or disks on the side of the wheel opposite the pusher-in, and connections between the reciprocating bar and said pusher-out.

15. A cooling-rack comprising a shaft, a plurality of hubs or disks thereon, radial projections on said hubs or disks, mechanism for rotating said shaft, a reciprocating pusher-in on one side of the wheel arranged to move transversely with reference thereto, an oscillating pusher-out mounted between adjacent disks on the opposite side of the wheel, a reciprocating bar extending between adjacent hubs or disks, a link connecting said bar with the pusher-out, and mechanism for reciprocating said bar and said pusher-in.

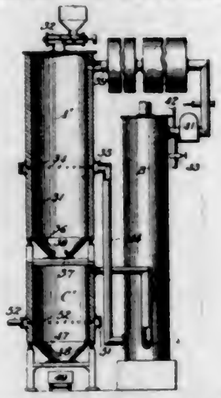
16. A cooling-rack comprising a shaft, a series of hubs or disks thereon, radial projections on said hubs or disks, mechanism for rotating said shaft, a plurality of reciprocating pushers-in mounted on one side of the wheel and movable transversely with reference thereto, a rock-shaft for reciprocating said pushers-in, a plurality of push-

ers-out on the opposite side of the wheel between adjacent disks thereof, and connections between said rock-shaft and said pushers-out.

17. In cooling apparatus, the combination with a receiving-table, a delivery-table, a rotating rack between said tables, mechanism for rotating said rack, mechanism for pushing the articles from the receiving-table into the rack, and means arranged to engage the articles and deliver the same from the rack to the delivery-table.

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**753,294. METHOD OF PRODUCING GAS. PAUL NAEF, New York, N. Y. Filed Mar. 14, 1899. Serial No. 709,100. (No specimens.)**

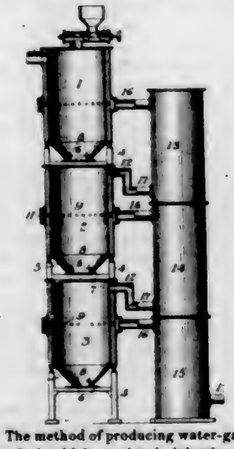


*Claim.*—1. The method of producing water-gas containing illuminating-hydrocarbons from bituminous fuel, which consists in first coking the fuel by continuously conducting heated water-gas through the same, second, removing by-products from the resultant gases, third, heating the water-gas and utilizing it in the first operation.

2. The continuous process, consisting in passing a heated mixture of gas and steam through a column of fuel, washing the gaseous resultant product to recover by-products, repeatedly reheating and repassing part of the washed gas through the fuel and mixing steam with it after each passage through the fuel, conducting the remaining portion of said washed gas to the point of utilization, and utilizing the refuse fuel for supplying heat required for heating the gas during the process.

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**753,295. METHOD OF MAKING GAS. PAUL NAEF, New York, N. Y. Filed Mar. 14, 1899. Serial No. 709,101. (No specimens.)**



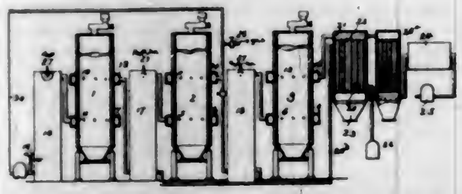
*Claim.*—1. The method of producing water-gas and by-products from bituminous fuel, which consists in injecting steam into a portion of a moving body of fuel, withdrawing the reaction products, reheating them and passing them through another portion of said moving body of fuel.

2. The method of producing water-gas and by-products, which consists in passing carbonaceous fuel successively through a number of superimposed communicating furnace-chambers, passing heated steam through the lower furnace-chamber and successively upward through the upper furnace-chambers and heating the gaseous reaction products as they pass from one furnace-chamber to another.

3. The method, which consists in withdrawing gaseous fluids at several points between the ends of a body of fuel and reintroducing said fluids to the body of fuel at points near those from which said fluids were withdrawn.

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**753,296. APPARATUS FOR MAKING GAS. PAUL NAEF, New York, N. Y. Filed May 14, 1900. Serial No. 16,668. (No model.)**



*Claim.*—1. The combination of several generators, means to pass fuel into and through each generator, means for heating a gaseous fluid and means to pass the heated gaseous fluid at suitable temperature through each of the generators successively.

2. The combination of several generators, means to pass gaseous fluid successively through the generators, means to pass bituminous fuel into the generators, through which the gaseous fluid passes first and means for heating the gaseous fluid before it enters each generator.

3. The combination with three generators, of means to pass gaseous fluid through them, means to charge coke into the generators at each end of the series and means to charge bituminous fuel into the intermediary generator and means for heating the gaseous fluid before it enters each generator.

4. The combination of several generators, means to produce a circulation of gaseous fluid through some of them in such a manner that the same fluid circulates repeatedly and means to pass gas through the last generator of the series once.

5. The combination of several generators, means for alternately injecting air into each generator and means for passing at intermediate periods steam into one generator and the gases thus produced successively through the other generators.

6. The combination of several generators, means for alternately conducting air into one generator and the gases produced successively through the other generators, means for adding air at the entrance into each generator and means for afterward conducting at intermediate periods gaseous fluid through the generators preferably from the other end of the series.

7. The combination of several generators, two systems of ducts and annular channels on each, both of said systems of ducts and annular channels being located a considerable distance from both ends of the generators, an air connection to each of the lower channels, a gas-outlet from each of the upper channels, means for successively passing gaseous fluid through the generators after shutting off the air connections.

8. The combination of several generators, means for heating the same, means for introducing at intermediate periods aqueous fluid into some of the generators and means for passing the gases produced successively through the other generators.

9. The combination of several generators, means for heating the same, means for afterward introducing aqueous fluid and oil into some of the generators and simultaneously conducting gaseous fluid through all the generators successively.

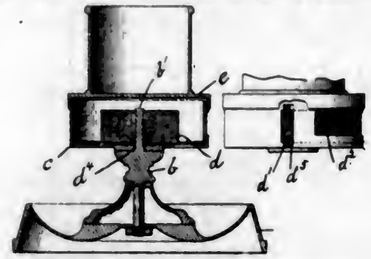
10. The combination of several generators, means for heating the first generators of the series, means for afterward conducting gaseous fluid successively through the whole series, means for passing bituminous fuel through the last generator and means for withdrawing coke from the same.

11. The combination of several generators, means for heating them, means for circulating afterward a mixture of gas and steam through part of the series in such a way that the same gas passes several times, means for conducting the gas through the last generator of the series.

12. The combination of several generators, means for heating them, means for successively passing gaseous fluid through part of the series, a pipe and a fan to return gas to the first generator of the series and means to conduct gas through the last generator.



**753,297. MATCH-RECEPTACLE. JACOB E. NEARE, Melrose, Mass. Filed Dec. 11, 1902. Serial No. 134,731. (No model.)**



*Claim.*—1. A match-box embracing in its construction a receptacle, a spring mounted therein to press against the wall of said receptacle, a disk for holding said spring in place, means for locking said disk against movement, and a flexible strip of igniting material passed between said spring and the wall of said receptacle so as to expose a portion of its surface to be scratched by matches.

2. A match-box embracing in its construction an annular receptacle provided with a transverse slot formed by striking in a portion of the annular wall of said receptacle to form a lip, a disk provided with a notch adapted to interlock with said lip, an annular spring carried by said disk and a strip of igniting material adapted to be contained in said receptacle and to be passed between said spring and said annular wall so as to expose a portion of its surface.

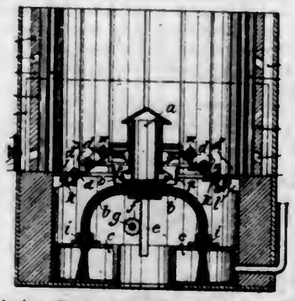
3. A match-safe embracing a supporting-base, a hollow chamber constructed to hold a coiled strip of igniting material in position to be scratched by matches, said chamber being supported on said base, a cover for said chamber, said cover being provided with a pocket for matches, substantially as described.

4. In a match-box the combination of a hollow casing constructed to contain a coiled strip, said casing being formed with an aperture in its wall, a coiled strip of material for igniting matches arranged with its outer end passed in front of said aperture, and a spring disposed to press said strip against the casing on either side of said aperture to hold it against displacement when matches are scratched against the strip, substantially as described.

5. In a match-box the combination of the hollow cylindrical casing provided with an elongated aperture in its peripheral wall, a strip of igniting material arranged to have its free end exposed at said aperture, a curved spring arranged to press outward against the peripheral wall of the casing to clamp the igniting-strip removably in place, substantially as described.

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**753,298. FURNACE-GRATE. FRIEDRICH H. R. C. NEBEL, Duesseldorf, Germany. Filed Nov. 24, 1902. Renewed Dec. 18, 1903. Serial No. 185,685. (No model.)**



*Claim.*—1. In a furnace-grate, the combination of a fire-box, a plurality of concentrical grate-rings therein, a vaporizer in the center thereof, bars radially arranged and pivoted to the said vaporizer and fire-box, means for continually supplying water to said vaporizer, other means for raising and lowering the vaporizer and grate-rings, a mantle of refractory material concentrically surrounding said grate-rings within said fire-box, vertical channels within said mantle each opening against the fire-room through narrow slots above the grate-rings and means for supplying air to said channels, substantially as for the purpose described.

2. In a furnace-grate, the combination of a fire-box, concentrically-arranged grate-rings therein, a mantle of refractory material within said box and surrounding the said grate-rings, vertical channels within said mantle, vertical slots on the inside of said channels and inwardly opening above the grate-rings, means for supplying air to said channels, a vaporizer in the center of said grate-rings, bars pivoted to said vaporizer and fire-box and supporting said grate-rings, a rack and pinion for raising and lowering said vaporizer and grate-rings, a water-tank on the bottom of said fire-box, pipes filled with asbestos wicks and arranged in adjustable connection with said vaporizer and tank, substantially as described.

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**753,299. LAMP-WICK. ALBERT H. NELSON, Lewiston, Me. Filed July 8, 1903. Serial No. 164,727. (No model.)**

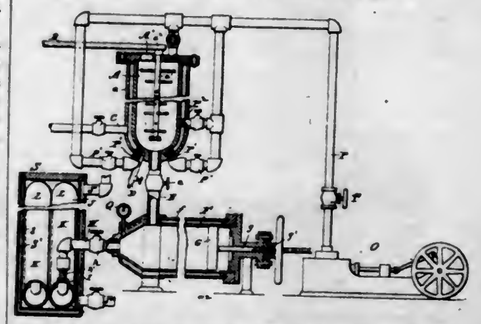


*Claim.*—1. The herein-described process of making an indestructible lamp-wick, consisting in cooking the end portion of a fiber wick in a solution of sal-ammoniac, boracic acid, sodium biborate and water in the proportions substantially as specified; drying the treated portion of the wick and afterward immersing the said treated portion of the wick in a boiling solution of sal-ammoniac, boracic acid, sodium biborate and water in the proportions substantially as specified.

2. A fiber wick having its end portion impregnated with sal-ammoniac, boracic acid and sodium biborate.

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**753,300. APPARATUS FOR THE MANUFACTURE OF VEHICLE-TIRES. MAX NIEDLINGER, Philadelphia, Pa. Filed May 21, 1900. Renewed July 21, 1903. Serial No. 166,498. (No model.)**



*Claim.*—1. In an apparatus for the manufacture of vehicle-tires, the combination of a mixing-kettle, means for heating the same, a stirring device within the kettle, a charging vessel, means for delivering the mixture from the kettle to the charging vessel, and a pressure device in the charging vessel to force the material into the tire, substantially as set forth.

2. In an apparatus for the manufacture of vehicle-tires, the combination of a mixing-kettle, a steam-jacket for heating the same, a stirring device within the kettle, a charging vessel, means for delivering the mixture from the kettle to the charging vessel, and a pressure device in the charging vessel to force the material into the tire.

3. In an apparatus for the manufacture of vehicle-tires, the combination of a mixing-kettle, an air-pressure device communicating with the kettle, a charging vessel communicating with the kettle, means for cutting off such communication, a pressure device adapted to act on the material within the charging vessel, and means for delivering the material from said charging vessel to the tire.

4. In an apparatus for the manufacture of vehicle-tires, the combination with the mixing-kettle and means for forcing air into the same, of a charging vessel communicating with the kettle, a piston within said charging vessel, and means for delivering the material from the charging vessel to the tire-tube.

5. In an apparatus for the manufacture of vehicle-tires, the combination of a mixing-kettle, means for aerating the mixture within the same, a pipe or duct for charging a tire from said kettle, a charging vessel interposed in said pipe, a pressure device within the charging vessel, and means for holding under pressure the aerated filling within the tire.

6. The combination of a mixing-kettle, means for aerating the mixture within the same, a duct for charging a tire from said ket-

tle, a charging vessel interposed in said duct, a pressure device in the charging vessel, and means for holding under pressure the aerated filling within the tire, consisting of a valve carried by said tire, and detachable from said duct.

7. In an apparatus for the manufacture of vehicle-tires, the combination of a mixing-kettle, a charging vessel having communication from the kettle, means for maintaining the tire-tube in a heated condition and a pipe or duct whereby the tire-tube may be charged from said kettle through the charging vessel.

8. In an apparatus for the manufacture of tires, the combination of a mixing kettle or vessel, a pipe or duct for charging a tire from said kettle, a charging vessel interposed in said pipe, and a heater adapted to receive and heat the tire while being charged.

9. In an apparatus for the manufacture of tires, the combination of a mixing kettle or vessel, a heater for the tire, a pipe or duct from said kettle extending within the heater, and a charging vessel interposed in the said pipe to force the material into the tire.

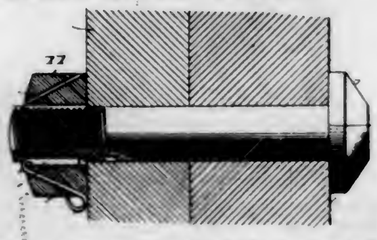
10. In an apparatus for the manufacture of tires, the combination of a mixing kettle or vessel, a heater for the tire, a pipe or duct leading from said kettle and extending within the heater, and means substantially as described for forcing material from the kettle through the duct, into the tire.

11. In an apparatus for the manufacture of tires, the combination of a heating kettle or vessel, a heater for the tire, a pipe or duct leading from the kettle and extending within said tire-heater, a charging vessel interposed in said duct, and means for forcing material from the charging vessel through said duct.

12. In an apparatus for the manufacture of tires, the combination of a heating vessel, a tire-charging duct leading from the same, means for forcing air into the material below its surface, and means for forcing the aerated filler through said duct into the tire.

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753,301. **LOCK-NUT.** FRANK OHOLA, Winnemucca, Nev., assignor of one-half to John Dorsey Vargas, Winnemucca, Nev. Filed Nov. 7, 1903. Serial No. 180,247. (No model.)




*Claim.*—1. In a nut-lock, a bolt having a longitudinal groove transversely of its threads, a nut having a longitudinal groove transversely of its threads for registration with the groove in said bolt, an aperture extending obliquely through the nut, and a U-shaped key with the legs thereof extending through the nut-aperture and into said registering grooves respectively, the leg which extends through the nut-aperture being of a length greater than the depth of the aperture and adapted to extend therethrough and engage the object through which the bolt is passed.

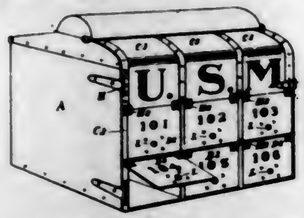
2. In a nut-lock, a bolt having a longitudinal groove transversely of its threads, a nut having a longitudinal groove transversely of its threads for registration with the groove in said bolt, an aperture through the nut spaced from the groove therein, and a U-shaped key with one of its leg members adapted for engagement with said registering apertures and the other leg for extension through said nut-aperture and bendable laterally in advance of the exit of the aperture, to prevent the removal of the key.

3. In a nut-lock, a bolt having a longitudinal groove transversely of its threads, a nut having a longitudinal groove transversely of its threads for registration with the groove in said bolt, an aperture through the nut spaced from the groove therein, and inclined outwardly and terminating through the side near the inner face of the nut, and a key of substantially U shape with one leg for engagement with said registering apertures and the other leg for extension through said inclined nut-aperture and bendable laterally in advance of the exit of the aperture.

4. In a nut-lock, a bolt having a longitudinal groove transversely of its threads, a nut having a longitudinal groove transversely of its threads for registration with the groove in said bolt, an aperture through the nut spaced from the groove therein, and inclined outwardly and terminating through the side near the inner face of the nut, and a key of substantially U shape with one leg for engagement with said registering apertures and the other leg of reduced size and adapted for extension through said inclined aperture and bendable laterally upon the body upon which the nut rests and against the outer surface of the nut.

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753,302. **MAIL-BOX.** MARY L. OGLE, Covington, Ky. Filed Aug. 31, 1903. Serial No. 171,413. (No model.)




*Claim.*—1. In a device of the character described, the combination with the body of a mail-box, of a series of small compartments formed therein and a large compartment extending entirely across the upper portion of the box above the small compartments and separated therefrom, a slot-frame arranged above the said upper compartment, drop means carried on said frame, and a door having a series of small doors mounted therein, each adapted to close one of the small compartments, and being provided with a curved upper portion adapted to engage the slot-frame to close the upper large compartment, substantially as described.

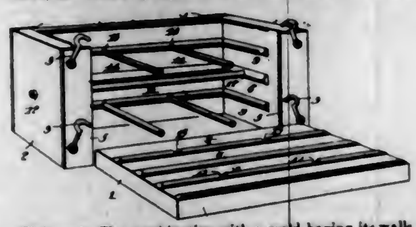
2. In a mail-box, a body having its front and a portion of the top open, small compartments formed in said body, a large compartment in said body formed above the small compartments extending across the entire upper portion of the body of the box, a slot-frame arranged above the large compartment, drop means carried thereby normally adapted to cover the slot thereof, a main door having a series of small doors therein adapted to close the small compartments when the main door is closed, and means projecting above said door adapted to close the top of the box and the upper compartment upon closing of the door, said means adapted to engage the slot-frame and lie beneath the drop means, substantially as described.

3. In combination with a mail-box having an open front and partially open top, a series of small compartments, a large upper compartment independent thereof formed across the upper portion of the body of the box, and a door hinged to the box and adapted to close the front thereof, and having a curved extension thereon adapted to close the top of the box and the upper compartment, substantially as described.

4. In a device of the character described, the combination with the body of mail-box, of a series of small compartments arranged therein, a large compartment extending entirely across the top of the box above the small compartments, a main door provided with a series of independent small doors for the small compartments, and a curved extension formed upon the upper portion of said door adapted to close the upper compartment upon closing the door, substantially as described.

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758,308. **MOLD FOR CEMENT BLOCKS.** WARREN G. PARK, Avon, Ill. Filed July 30, 1903. Serial No. 167,499. (No model.)



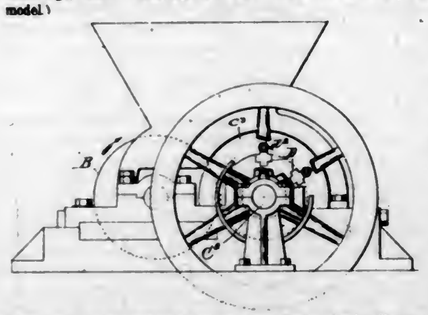
*Claim.*—1. The combination with a mold having its walls composed of separable parts, of a plurality of ribs associated with and wholly surrounding the inner face of the mold circumferentially thereof, a member extending longitudinally through the mold with its ends disposed centrally of one of the ribs, and a member extending transversely of the mold with its ends disposed centrally of another of the ribs.



2. The combination with a mold having its walls composed of separable parts, of a primary rib associated with and wholly surrounding the inner face of the mold circumferentially thereof, a member extending longitudinally through the mold with its ends disposed centrally of said rib, a pair of secondary ribs associated with and wholly surrounding the inner face of the mold circumferentially thereof upon opposite sides of the primary rib, and members extending transversely through the mold with their ends disposed centrally of the secondary ribs.

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753,304. **DISINTEGRATING-MACHINE.** WILLIAM A. PARRY, Cambridge, Mass. Filed Apr. 24, 1903. Serial No. 154,179. (No model.)



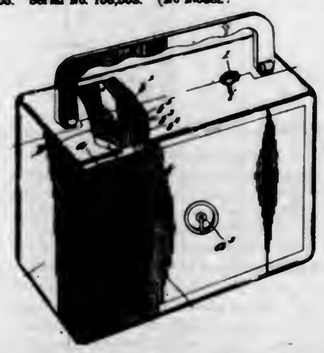

*Claim.*—1. In a machine of the class described, a feed-roller, and a cutter-carrying roller provided with a series of T-shaped grooves, combined with a series of cross-shaped blades having each a plurality of cutting edges, each edge of which may be used when desired and means for securing said blades in the grooves.

2. In a machine of the class described, a cutter-carrying roller provided with a series of T-shaped grooves and a series of cross-shaped cutters fitted in said grooves, said cutters having a plurality of cutting edges, and means to confine the cutters in said roller.

3. In a machine of the class described, a feed-roller, and a cutter-carrying roller having end flanges, the body of said rollers having end flanges extended beyond the periphery of said roller, the body of said roller having a series of T-shaped grooves and said flanges having cross-shaped passages, and a series of cross-shaped cutters inserted endwise into the passages of said flange and through said grooves in the body of the roller, each cutter having a plurality of cutting edges either of which may be used, the stock passing between said rollers being kept from contact with the shaft carrying said cutter-roller and from the bearings therefor.

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753,305. **SAVINGS-BANK.** IRA D. PERRY, Chicago, Ill., assignor, by mesne assignments, to C. D. Stevens, Muskegon, Mich. Filed Apr. 20, 1903. Serial No. 153,553. (No model.)



*Claim.*—1. A money-receptacle, provided with a horizontal ingress-slot leading horizontally to and terminating in a receiving-chamber having an inclined bottom wall and a lateral egress-slot, said slots and chamber combining to form a circuitous passage leading to the interior of said receptacle.

2. A money-receptacle, provided with a horizontal ingress-slot opening laterally through the side of a receiving-chamber having a permanently-inclined bottom wall and a lateral egress-slot, the said ingress-slot extending laterally and horizontally from the receiving-chamber in a direction at right angles to the line of inclination of said bottom wall, said slots and chamber combining to form a circuitous passage leading to the interior of said receptacle.

3. A money-receptacle provided with a round opening for paper money, said opening being provided with inwardly-projecting teeth to prevent the withdrawal of said money, said teeth being cut in the upper wall of said receptacle.

4. A money-receptacle comprising a suitable casing, a removable door for said casing, said door having a circular opening, a lock for said door to which access may be had through said circular opening, said opening being located directly over the keyhole of said lock, said door having a horizontal ingress-slot leading from said opening and terminating in a receiving-chamber having an inclined bottom wall and a lateral egress-slot, said slots and chamber combining to form a circuitous passage leading to the interior of said receptacle.

5. A money-receptacle provided with an opening for the admission of paper money, said opening being provided with inwardly and downwardly projecting teeth to prevent the withdrawal of said money, the said teeth being formed integral with the upper metal wall of said receptacle.

6. A money-receptacle provided with relatively large and relatively small chambers, the said relatively small chamber having a permanently-inclined bottom wall, perpendicular side walls and an inwardly-inclined end wall, and having also an ingress-slot leading horizontally through one of said side walls, the relatively small chamber being further provided with an egress-slot opening out from under said inclined end wall, said slots and relatively small chamber combining to form a circuitous passage leading to the said relatively large chamber.

7. A money-receptacle having relatively large and relatively small chambers, the said relatively small chamber having a permanently-inclined bottom wall, vertical side walls, and an inwardly-inclined end wall, and having also an ingress-slot leading horizontally through one of said side walls, the said relatively small chamber being further provided with an egress-slot opening out from under said end wall, the said slots and relatively small chamber forming a circuitous passage leading to the said relatively large chamber, a small rod extending horizontally just outside of said end wall, a plurality of independently-swinging curtain-sections mounted on said rod and hanging in front of said egress slot, and a protecting-wall arranged just outside of said curtain-sections.

8. A money-receptacle having relatively large and small chambers, the said relatively small chamber having a permanently-inclined bottom wall and vertically-disposed side and end walls, and having also an ingress-slot leading horizontally through the top of one of said vertically-disposed walls, the said relatively small chamber being further provided with an egress-slot opening out from under the said end wall, and the said slots and relatively small chamber providing a circuitous passage leading to the relatively large chamber.

9. A money-receptacle having relatively large and small chambers, the relatively small chamber having a permanently-inclined bottom wall and vertically-disposed side and end walls, and having also an ingress-opening leading horizontally through the top of one of said vertically-disposed walls, the relatively small chamber being further provided with an egress-slot opening out from under the said wall, and the said receptacle having also a removable door provided with a lock accessible only through said ingress-opening.

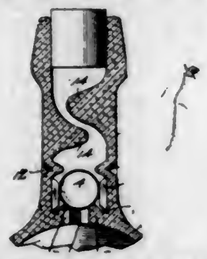
10. A money-receptacle having relatively large and small chambers, the said relatively small chamber being provided with a permanently-inclined bottom wall and vertically-disposed side and end walls, and having also an ingress-slot leading horizontally into the top of said relatively small chamber, the said relatively small chamber being provided with an egress-slot leading out through the bottom of said vertically-disposed walls, the direction of ingress to said relatively small chamber thereby being at right angles horizontally to the direction of egress therefrom, and the slots and relatively small chamber forming a circuitous passage leading to the said relatively large chamber.

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753,306. **NON-REFILLABLE BOTTLE.** JEREMIAH M. PETERSON, Canisteo, and FREDRICK F. HUTCHINS, Hornellsville, N. Y., assignors of one-third to Dora L. Wettlin, Hornellsville, N. Y. Filed Mar. 30, 1903. Serial No. 150,262. (No model.)

*Claim.*—1. The combination with a bottle and its neck, the latter formed integral with the bottle and having a discharge-opening, of a movable valve situated within the discharge-opening, a retaining member associated with the neck beneath the valve and provided

with a valve-seat and with a circumferential downwardly and outwardly extending recess, and integral retaining members formed upon the neck above the valve, said discharge-opening being permanently reduced in size above the upper retaining members.



2. The combination with a bottle and its neck, the latter formed integral with the bottle and having a discharge-opening provided with inner longitudinal spacing members, a movable valve situated within the discharge-opening, a retaining member formed integral with the neck beneath the valve and provided with a valve-seat, integral retaining members formed upon the neck above the valve, said neck having its discharge-opening permanently reduced in size and of irregular contour above the upper retaining members.

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**753,307. RAILROAD TIE AND CHAIR. JAMES J. PHILLIPS, Womelsdorf, W. Va., assignor of one-half to Crawford Scott, Coalton, W. Va. Filed Aug. 5, 1903. Serial No. 168,347. (No model.)**



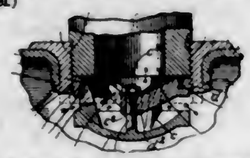
*Claim.*—1. The combination with a railway-tie comprising a web portion having vertical walls at its side edges, the upper face of the tie between the walls being slanted downwardly in both directions from a middle transverse line and the side walls having seats formed in their upper edges and terminating short of the upper face of the tie between the walls, of chair-plates fitted in the seats and spaced above the upper face of the tie between the side walls, said chair-plates having means for holding rails thereon.

2. The combination with a railway-tie comprising a web portion having vertical walls at its side edges, the upper face of the tie between the walls being slanted downwardly in both directions from a middle transverse line and the side walls having seats formed in their upper edges and terminating short of the upper face of the tie between the walls, of chair-plates fitted in the seats and spaced above the upper face of the tie between the side walls, said chair-plates having perforations therethrough, and clamping-bolts engaged through said perforations and having nuts at their lower ends below the chair-plates in threaded engagement to draw the bolts through the perforations.

3. A metallic railway-tie comprising a central longitudinal web portion having its lower face concaved and its upper face slanted downwardly and longitudinally in both directions from a middle transverse line, vertical walls at the side edges of the web portion having their outer faces concaved and the upper edges of the outer faces spaced a lesser distance than their lower edges.

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**753,308. VALVED BUNG FOR BARRELS OR SIMILAR RECEPTACLES. JOHN E. PHILLIPS, Joliet, Ill., assignor to Phillips Pressed Steel Company, Joliet, Ill. Filed Jan. 23, 1903. Serial No. 140,923. (No model.)**



*Claim.*—1. The combination of a receptacle having a metallic bung-hole, the edges whereof are turned in to form a flange, and a one-piece metal bushing having an annular flange adapted to rest upon the exterior surface of the receptacle around the bung-hole, and said bushing being beaded over upon the innermost extremity of said receptacle-flange whereby said receptacle-flange is retained between two opposing annular surfaces of said bushing for the purpose described.

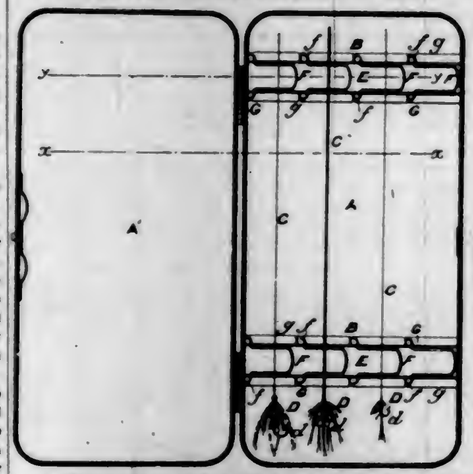
2. The combination, with the remaining parts of the receptacle, of a metal flange forming an integral part of the receptacle and extending thereinto to form a bung-hole; a metal bushing fitted into said bung-hole and having a flange resting upon the exterior surface of the receptacle around the bung-hole and said bushing being beaded over the innermost extremity of said receptacle-flange whereby the receptacle is held between opposing surfaces of said bushing.

3. The combination of a receptacle having a metallic bung-hole, the edges whereof are turned in to form a flange; a one-piece metal bushing having an annular flange adapted to rest upon the exterior surface of the receptacle around the bung-hole and said bushing being beaded over upon the innermost extremity of said receptacle-flange whereby said receptacle-flange is retained between two opposing annular surfaces of said bushing; and a slide-valve controlling the hole in said bushing.

4. In combination, a receptacle, the bung-hole portion whereof is of metal; a bung-hole in said receptacle, a bushing secured within said bung-hole and reinforcing the wall thereof; a valve-seat member secured within said bushing at the lower portion thereof, said valve-seat member being provided with grooves; a slide-valve movable in and seating upon said valve-seat member; guide members formed on said slide-valve and guided by the grooves in said valve-seat member; said guide members extending above the top of the valve-seat member when said valve is seated; and a spigot, one end of which is adapted to be inserted into the bung-hole for engaging the guide members on said valve to open said valve; and means for closing said valve.

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**753,309. APPARATUS FOR STORING OR CARRYING ANGLERS' ARTIFICIAL FLIES. GEORGE A. PICKARD, Altrincham, England. Filed July 28, 1902. Serial No. 117,331. (No model.)**



*Claim.*—1. A receptacle for storing and carrying anglers' artificial flies comprising in its construction, a case such as A, an elastic pad at both ends of such case, and spring-clips engaging the elastic pad, whereby and between which the gut lines are held straight and extended, substantially as described.

2. In a receptacle for storing and carrying anglers' artificial flies, the combination with the case A, of the elastic pads E, one placed at either end of the case A, and the spring-clips F which rest upon the elastic pads with a certain amount of pressure, and means for applying the pressure to the clip, substantially as described.

3. In a receptacle for storing and carrying anglers' artificial flies, the combination with the case A of two elastic pads E, means for securing same to the case, a plurality of spring-clips F which rest upon the elastic pads, means for pivoting the spring-clips, and means for applying pressure thereto, substantially as described.

4. A spring-clip for securing the gut lines of artificial flies constructed with a soft pad, means for securing the pad, a spring-wire resting thereon, and a spring G by which pressure is applied thereto substantially as described.



5. In a receptacle for storing and carrying anglers' artificial flies, the combination with the case A, of two elastic pads E, plates e to secure the same to the case provided with lugs e', spring-wire clips F pivoted in the lugs e' and resting upon the elastic pads, and springs G upon which the free ends f of the clips F rest and by which pressure is applied to the clips, substantially as described and shown.

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**753,310. COMPOSITION OF MATTER. WESTON A. PRICE, Cleveland, Ohio, assignor to the Electric and Dental Specialty Company, Cleveland, Ohio, a Corporation of Ohio. Filed Feb. 26, 1903. Serial No. 145,264. (No specimens.)**

*Claim.*—1. The herein-described composition of matter, consisting of a metallic compound of high molecular weight, and a binder composed of glue, glycerin, molasses and rubber, substantially as described.

2. The herein-described composition of matter, consisting of a metallic oxid, and a binder composed of glue, glycerin, molasses and rubber, substantially as described.

3. The herein-described composition of matter, consisting of red lead, and a binder composed of rubber, resin and turpentine, substantially as described.

4. The herein-described composition of matter, consisting of red lead, and a binder composed of resin, syrup, and rubber, substantially as described.

5. The herein-described composition of matter, consisting of red lead, and a binder composed of glue, glycerin, and molasses, substantially as described.

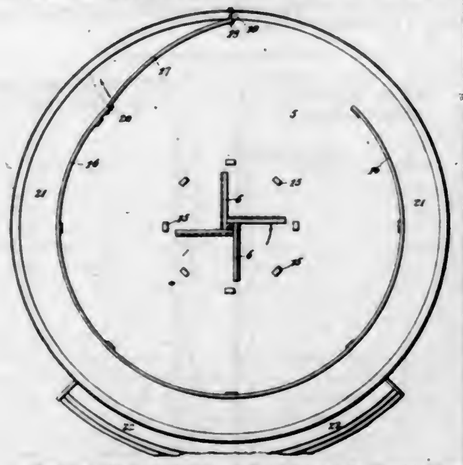
6. The herein-described composition of matter, consisting of red lead, and a binder composed of glycerin, molasses and rubber, substantially as described.

7. The herein-described composition of matter, consisting of red lead, and a binder composed of glue, glycerin, molasses and rubber, substantially as described.

8. The herein-described composition of matter, consisting of the following component parts in the following proportions by weight: red lead, ten parts; glue, one part; glycerin, one part; molasses, one-half of one part; and rubber, one-tenth of one-part, substantially as described.

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**753,311. PLEASURE-WATERWAY. ATTILIO PUSTERLA, New York, N. Y. Filed June 9, 1903. Serial No. 160,721. (No model.)**



*Claim.*—1. The combination with a substantially circular body of water, of means to circularly move or rotate the body of water and boats carried by the water, substantially as described.

2. The combination with a substantially circular body of water, of means to circularly move or rotate the body of water and a dead-water space, substantially as described.

3. The combination with a substantially circular body of water, of means to circularly move or rotate the body of water, a dead-water space, means to connect the dead-water space with the main moving body of water and boats carried by the water, substantially as described.

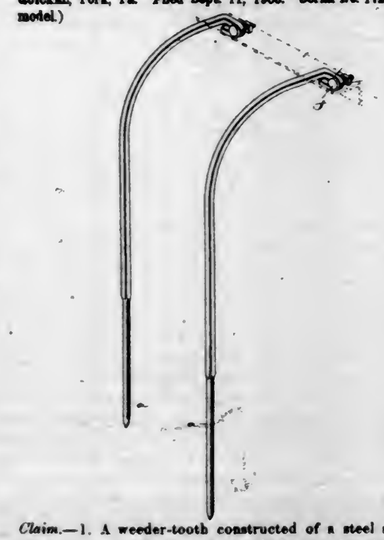
4. The combination with a substantially circular body of water, of means to circularly move or rotate the body of water, a body of substantially dead water in the basin connected at one end to the main body of water and means at the other end to admit moving water to the body of dead water, substantially as described.

5. The combination with a substantially circular basin and a body of water therein, of means to circularly move or rotate the body of water, an arcuate partition concentric with the basin to inclose substantially dead water and a gate to prevent moving water from entering between the partition and side of the basin, substantially as described.

6. The combination with a substantially circular body of water, of boats and means to circularly move or rotate the body of water to move the boats in a direction parallel to the direction of motion of the water, substantially as described.

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**753,312. WEEDER-TOOTH. EDWIN G. QUICKEL and ALLEN E. QUICKEL, York, Pa. Filed Sept. 11, 1903. Serial No. 172,769. (No model.)**



*Claim.*—1. A weeder-tooth constructed of a steel spring-bar square in cross-section and rounded and sharpened at its working end.

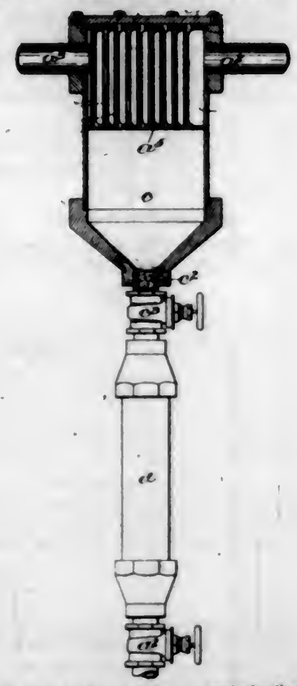
2. The combination, with a frame-bar angular in cross-section, of a weeder-tooth having formed in its upper end an open eye, the eye lying at an angle to the shank, said angle corresponding to the angle of the frame-bar, and the shank fitting in the angle of the bar, and a fastening device passing through said eye and the front flange of the bar.

3. The combination, with a frame-bar consisting of a depending front flange and a rearward-extending top flange, of a weeder-tooth provided with an open eye at its upper end, said eye lying at an angle to the shank of the tooth and consisting of connected members forming an open slot, the upper side of the shank bearing against the under side of the rearward-extending flange and the angularly-disposed eye portion bearing against the front flange, and a fastening device passing through the eye and engaging the front flange.

4. The combination, with a frame-bar having a rearward-extending flange and a front flange extending at an angle thereto, of a weeder-tooth having an eye formed on its upper end, this eye being formed by angularly bending the shank of the tooth first in one direction and then in the opposite direction, said angularly-bent eye bearing against the rear face of the front flange and the shank bearing against the adjacent face of the rearward-extending flange, and a fastening device passing through the eye and the front flange.

5. The combination, with a frame-bar consisting of a front flange and a rearward-extending flange lying at an angle to the front flange, of a weeder-tooth provided with an eye at its upper end, said eye being formed by laterally bending the upper end of the shank first in one direction and then in the opposite direction, so that said eye shall lie at an angle to the shank of the tooth corresponding to the angle formed by the two flanges of the frame-bar, and a fastening device passing through the eye and engaging the front flange, said eye being thereby clamped against the rear face of the front flange and the shank itself being held against the adjacent face of the rearward-extending flange.

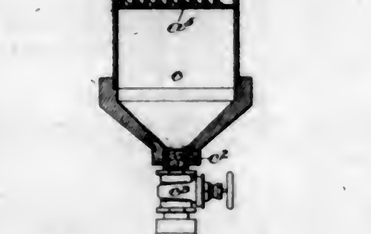
**753,313. SEPARATOR.** THOMAS H. RAY, Somerville, Mass. Filed Oct. 31, 1901. Serial No. 80,633. (No model.)



*Claim.*—1. A separator comprising a vertical cylindrical chamber provided with lateral inlet and outlet tubes, the outlet-tube projecting into the chamber beyond the wall thereof, a series of baffle-plates extending longitudinally through said chamber and secured in upper and lower plates, the lower plate substantially fitting the wall of the chamber and having an outlet-opening for each baffle-plate and a recess below the inlet-tube, and a shoulder to support the upper plate, the baffle-plate system thus being bodily removable from the chamber, as set forth.

2. A separator comprising a chamber having a gas-inlet and a gas-outlet; a series of baffle-plates consisting of pipes cut away at the sides, said pipes extending through and being secured in upper and lower plates or members, the lower member fitting the wall of the chamber; an annular shoulder formed near the top of said wall to support the upper plate or member; and means for securing said upper plate or member on said annular shoulder, as set forth.

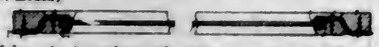
**753,314. HAT-FASTENER.** HANNAH V. RICHARD, Bayonne, N. J. Filed Sept. 15, 1902. Serial No. 123,431. (No model.)



*Claim.*—1. In a device for securing a head-covering the combination, of a clamp, a sliding carrier thereon, main walls on the carrier, a bridge connecting the said walls, wings extending from the walls to hold the carrier on the said clamp, and means connected to the said bridge to secure the carrier to a head-covering.

2. In a device for securing a head-covering the combination, of a clamp, a sliding carrier thereon, main walls on the carrier, a bridge connecting the said walls, wings extending from the walls to hold the carrier on the said clamp, and a fastening-pin extending from the said bridge to secure the carrier to a head-covering.

**753,315. FRAME OR SASH FOR WINDOWS.** HERMANN RONDORF, Bloomsbury, N. J. Filed Aug. 5, 1903. Serial No. 168,319. (No model.)



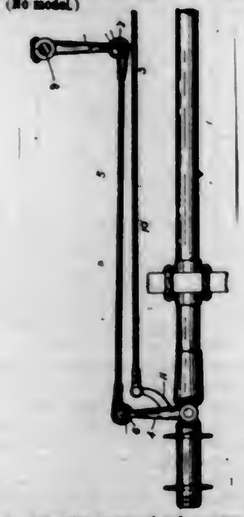
*Claim.*—1. A window sash or frame composed of the usual top and bottom rail and upright stiles, connecting the top and bottom rail, which stiles consist each of an almost or entirely Z-shaped piece preferably of metal, filled with wood or other material, secured thereto by means of screws or otherwise, so that one part of the Z-shaped piece of the upright stiles is visible on the outside of the window-sash and the other part is visible on the inside of the window-sash, the center part of the Z-shaped piece being covered by wood facing on both sides.

2. In a window sash or frame the upright stiles consisting each of an almost or entirely Z-shaped piece, preferably of metal or other strong, rigid and malleable material, and wood facings suitably secured thereto, so that the wood facings cover the center part of the Z-shaped piece on both sides and leave one part of it visible on the inside and the other part visible on the outside of the window-sash; the upright stiles being suitably connected to the top and bottom rails, preferably consisting of wood or other suitable material, and thus forming a strong and rigid window-sash.

3. In a window sash or frame upright stiles consisting each of a rigid Z-shaped metal stiffening-bar covered by wood or other suitable material so that one part of the Z-shaped piece or bar is visible on one side and the other part is visible on the other side of the window-sash, the center part being covered by the wood facing on both sides; the said stiles being either curved or straight, as may be required, to conform to the grooves provided in the window-casing, in which said grooves the window-sash slides when raised or lowered, and suitably secured to the top and bottom rails of the window-sash; the glass pane being preferably embedded in rubber or other yielding material, and by reason of the construction of the upright stiles may be set and held nearly or quite in the center of the window-sash.

4. In a window sash or frame upright stiles consisting each of a Z-bar, preferably of metal or other rigid and malleable material, and an inner and an outer wood facing, suitably secured thereto by means of screws or otherwise, and the usual top and bottom rails, forming a rigid window-sash; the glass pane being preferably embedded in rubber or other suitable yielding material and set between the Z-bar and the inner wood facing, and thereby held almost if not quite in the center of the window-sash.

**753,316. STEERING CONNECTION FOR MOTOR-VEHICLES.** EDWIN L. RUSSELL, Cleveland, Ohio. Filed May 4, 1903. Serial No. 156,470. (No model.)



*Claim.*—1. A steering connection for motor-vehicles comprising a socket of a single piece of metal and having a boss for making connection therewith, a ball inclosed in said socket, and an arm screwed into said ball, said socket having a slot for the movement of said arm.



2. A steering connection for motor-vehicles comprising a ball having an arm screwed therein and a socket of a single piece of metal inclosing said ball and having a boss integral therewith for making connection with a tie-rod, said socket having a slot therein for the movement of said arm.

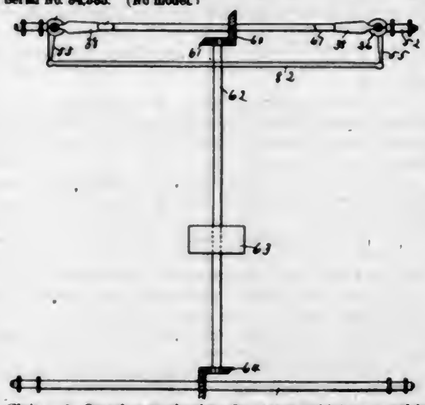
3. A steering connection for motor-vehicles comprising a ball having an arm attached thereto and a socket spherical in form and of a single piece of metal inclosing said ball and having a boss integral therewith, said socket having a slot for the movement of said arm.

4. A steering connection for motor-vehicles comprising a ball having an arm attached thereto and a socket of a single piece of metal inclosing said ball and having a boss integral therewith set off the center relative to said ball, a slot being made in said socket for the movement of said arm.

5. A steering connection for motor-vehicles comprising a ball having an arm attached thereto and a socket of a single piece of metal inclosing said ball and having a boss integral therewith and set off center relative to said ball, a slot being formed in said socket at an angle with said boss for said arm.

6. A steering connection for motor-vehicles comprising a ball having an arm attached thereto and a socket of a single piece of metal inclosing said ball and having a boss integral therewith and set off the center relative to said ball to be connected with a tie-rod, a slot being formed in said socket for said arm, said slot being formed at an angle to said boss to permit freedom of movement of steering the tie-rod.

**753,317. DRIVING AND STEERING MECHANISM FOR MOTOR-VEHICLES.** EDWIN L. RUSSELL, Dallas, Tex. Filed Dec. 2, 1901. Serial No. 84,383. (No model.)



*Claim.*—1. Steering mechanism for motor-vehicles comprising a fork mounted on the front axle of the vehicle, a bolt provided with a suitable nut mounted in the arms of said fork, a spindle for the wheel having a knuckle pivotally mounted on said bolt, and means for lubricating said bolt consisting of a combined lock-nut and bolt screwed into said first-named bolt and having an oil-cup therein and an oil-passage through said bolt and an oil-duct from said passage out of said first-named bolt to the surface thereof and onto an oil-well formed in said knuckle.

2. A steering mechanism for motor-vehicles comprising a fork mounted on the front axle of the vehicle, a bolt provided with a suitable nut mounted in the arms of said fork, a non-rotatable spindle for the wheel having a knuckle pivotally mounted on said bolt, and means for lubricating said bolt consisting of a combined lock-nut and bolt screwed into said first-named bolt and having an oil-cup therein and an oil-passage through said bolt and an oil-duct from said passage out of said first-named bolt to the surface thereof and onto an oil-well formed in the said knuckle.

3. A steerable driving mechanism for motor-vehicles comprising a fork mounted on the front axle of the vehicle, a bolt provided with a suitable nut mounted in the arms of said fork, a non-rotatable spindle for the wheel having a knuckle pivotally mounted on said bolt, and roller-bearings for said axle and fork consisting of a sleeve mounted in said fork, a sleeve pressed on said axle, and rollers provided with a suitable cage mounted between said sleeves.

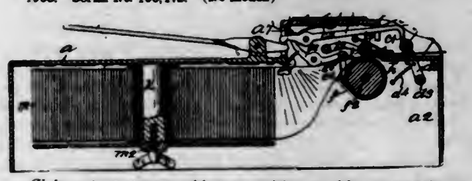
4. In a motor-vehicle provided with a suitable motor; means for transmitting power of said motor to the front wheels of the vehicle consisting of suitable gearing for driving the front axle, sleeves supporting said axle and having forks rigid therewith, non-rotatable spindles having knuckles rigid therewith for coacting with said forks, upright bolts connecting each knuckle with its coacting fork, gearing mounted on said axle, wheel-hubs mounted on said spindles, gearing having their hubs screwed in said wheel-hubs, set-screws for locking said hubs together, and gearing loosely mounted on said bolts and meshing with the gearing of said axle and of said hubs.

5. In a motor-vehicle provided with a steering and driving mechanism for the front axle of the vehicle consisting of forks loosely mounted on the front axle, an axle having spindles coupled to each end thereof, upright pivot-bolts for said spindles, and gearing mounted on said spindles and on said axles and intermediate gearing loosely mounted on said bolts; casings inclosing said gearing mounted on said bolts within said forks for the protection of said gearing, said casings having horizontal slots in the front and rear sides thereof to permit horizontal motion of said spindles.

6. In a motor-vehicle provided with steering mechanism consisting of forks loosely mounted on the front axle of the vehicle and non-rotatable spindles having knuckles integral therewith and pivotally mounted in said forks and having levers integral with said knuckles; means for driving said axle and means for transmitting power from said axle to wheels mounted on said spindles consisting of gearing mounted rigidly on said axle, gearing loosely mounted on said spindles and connected with the hubs of the wheels mounted on said spindles, set-screws locking said gearing and hubs rigidly together, and intermediate gearing loosely mounted on said knuckles and meshing with the gearing on said axle and with the gearing on said spindles.

7. In a motor-vehicle provided with steering mechanism consisting of forks mounted on the front axle of the vehicle and non-rotatable spindles having knuckles integral therewith and pivotally mounted in said forks and having levers integral with said knuckles; means for driving said axle and means for transmitting power from said axle to wheels mounted on said spindles consisting of gearing mounted on said axle, gearing loosely mounted on said spindles and having the hubs thereof connected to the inner ends of the hubs of wheels mounted on said spindles, set-screws locking said hubs rigidly together, and gearing loosely mounted on said knuckles and meshing with the gearing on said axle and the gearing on said spindles in whatever direction said spindles may be turned, and a casing for all of said gearing.

**753,318. STENOGRAPHIC TYPE-WRITING MACHINE.** ALOIS R. SALIGER, New York, N. Y., assignor to International Business Exchange, New York, N. Y., a Corporation of New York. Filed June 6, 1903. Serial No. 160,472. (No model.)



*Claim.*—1. A stenographic type-writing machine, comprising a casing, a neck portion connected therewith and higher than the body portion of said casing, a roll of paper ribbon mounted in said body portion, a plurality of key-bars pivoted on said body portion and extending into said neck portion, a plurality of type-bars pivoted in said neck portion, each of which is in operative connection with one of said key-bars, a type on each of said type-bars, devices for automatically inking said type and means for moving said paper ribbon a predetermined distance at each operation of one or more of said key-bars, substantially as shown and described.

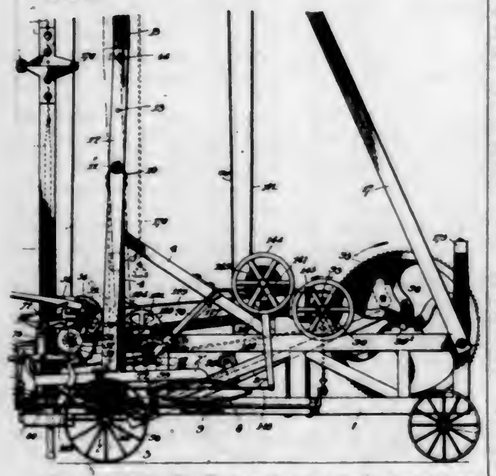
2. A stenographic type-writer, comprising a casing, a reduced neck portion thereon and higher than the body portion of said casing, a plurality of key-bars pivoted in a segment on said body portion, a roll of paper ribbon in said body portion and one end of which passes through said neck portion, a plurality of type-bars pivoted in said neck portion and each of which is in operative connection with one of said key-bars, a spring in operative connection with each of said type-bars, a type on each of said type-bars arranged over the outer end of said paper ribbon, an ink-roll pivotally mounted between said type and said paper ribbon and means for moving said paper ribbon, substantially as shown and described.

3. A stenographic type-writing machine, comprising a casing, a reduced neck portion thereon and higher than the body portion of said casing, a plurality of key-bars pivoted in a segment on said

body portion and extending into said neck portion, a roll of paper ribbon in said body portion and the outer end of which passes through said neck portion, a plurality of type-bars pivoted in said neck portion and each of which is in operative connection with one of said key-bars, a spring in operative connection with each of said type-bars, a type on each of said type-bars arranged over the free end of said paper ribbon, an ink-roll pivotally mounted between said type and said paper ribbon, a transverse bar resting on the inner ends of said type-bars, a dependent arm at each end of said transverse bar and pivoted in said neck portion, a spring in operative connection with each of said pivoted arms, a pawl pivoted to the outer end of each of said pivoted arms, a transverse roller mounted in said neck portion beneath said paper ribbon, a ratchet-wheel on each end of said roller and in operative connection with the corresponding one of said pawls, said pawls being adapted to revolve said roller a predetermined distance at each downward movement of said transverse bar and means for maintaining friction between said paper ribbon and said roller, substantially as shown and described.

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753,319. **WELL-DRILLING MACHINE.** DELBERT W. SAUNDERS, Maquoketa, Iowa. Filed Sept. 26, 1903. Serial No. 174,817. (No model.)



*Claim.*—1. In a well-drilling machine, a vertically-pivoted frame revoluble in a horizontal plane, means for imparting a step-by-step rotative movement thereto, a winding-drum carried by the frame, a drill-rope connected to the winding-drum and having a guiding means supported by the frame, a drill supported by the drill-rope, and means operable by downward movement of the drill for permitting release of the winding-drum to feed said drill.

2. In a well-drilling machine, a frame revolable in a horizontal plane, a winding-drum supported by the frame, a drill-rope, a vertically-guided sheave carried by the frame and over which the drill-rope passes, a drill secured to the drill-rope, means for raising and releasing the sheave, and means for imparting step-by-step rotative movement to the frame.

3. In a well-drilling machine, a frame having vertical pivots of which the lower is provided with an opening for the passage of the drill and drill-rope, a winding-drum supported by the frame, a drill and drill-rope of which the latter has one end connected to the winding-drum, a rope-guiding sheave supported by the frame and having vertical movement independent of said frame, and a vertically-movable rod for transmitting movement to the sheave, said rod forming the upper pivot of the frame.

4. In a well-drilling machine, a frame having vertical pivots of which the lower is provided with an opening for the passage of the drill-rope, a drill, a winding-drum carried by the frame, a drill-rope connected at one end to the drill and at the opposite end to the winding-drum, a pair of vertically-disposed guides arranged near the upper portion of the frame, a yoke adapted to the guides, a sheave carried by the yoke and supporting the drill-rope, and a vertically-movable bar connected to the yoke and serving also as the upper pivot of the frame.

5. In a well-drilling machine, a vertically-pivoted frame, of which the lower pivot is formed of a collar having a central opening for the passage of the drill and drill-rope, a winding-drum supported by the frame, a drill-rope connected at one end to the winding-drum and at the opposite end to the drill, a toothed annulus mounted on the collar and held in fixed engagement with the frame by the weight of said frame, a second collar surrounding the first and provided with a radially-disposed arm, a pawl carried by the arm and engaging the ratchet-annulus, and a drill-rod-operating means having operative connection with said arm.

6. In a well-drilling machine, a vertically-pivoted frame, a winding-drum carried thereby, a drill-rope having one end secured to the winding-drum, a drill secured to the opposite end of the rope, a rope-guiding sheave adapted to vertical guideways on the frame and serving as a support for the drill-rope, a derrick, a lever pivoted to the derrick and having one end operatively connected to the sheave, a pivoted lever connected to the derrick-lever, a cam for actuating said pivoted lever, a ratchet-wheel carried by the revoluble frame, a pawl engaging said ratchet-wheel, and a link connecting the pawl to the pivoted lever.

7. In a well-drilling machine, the combination with a drill, a drill-rope, an actuating means connected to and adapted to raise the drill-rope, said actuating means including a cam-operated lever, an operating-rope, means for transmitting the movements of the operating-rope to the drill-rope, a revoluble winding-shaft for taking up the slack of the operating-rope and to which one end of the latter is connected, means for preventing unwinding movement of said operating-rope, and a rope-guide carried by the lever.

8. In a well-drilling machine, a drill, a drill-rope, a vertically-movable sheave over which the drill-rope passes, a rocking lever having one end connected to the sheave, a cam-operated lever, a winding-shaft, an operating-rope extending therefrom to the opposite end of the cam-operated lever, and a plurality of guiding-sheaves carried by the cam-actuated lever and serving as guiding devices for the operating-rope.

9. In a well-drilling machine, a drill, a drill-rope, and a feeding means controllable by the strain exerted on the drill-rope by the falling drill.

10. In a well-drilling machine, a drill, a drill rope, a drill-rope feeding or releasing means, and mechanism controllable by the strain exerted on the drill-rope by the falling drill for governing said feeding means.

11. In a gravity drilling apparatus, a drill, and an automatic feeding means the speed of which is controlled by the cutting speed of the drill.

12. In a gravity drilling-machine, a feeding means, and means controllable by the degree of penetrability of the material being acted upon for governing the speed of the feeding means.

13. In a gravity drilling apparatus, a drill, a drill-rope, a drill-rope-feeding means, a movable derrick, and means for connecting the derrick to said feeding means, thereby to transmit movement of the derrick to said feeding means.

14. In a gravity drilling apparatus, a movable derrick, a drill, a drill-rope, a drill-rope-feeding means, an actuating means in part supported by the derrick, and means for connecting the derrick to the feeding means to thereby actuate the latter from movement of the derrick.

15. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-feeding means, and a vertically-movable derrick for actuating said feeding means.

16. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-feeding means, a yieldably-mounted derrick, and means for connecting the derrick to the feeding means.

17. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-feeding means, and a spring-supported derrick for actuating the feeding means.

18. In a gravity drilling-machine, a drill and drill-rope, a drill-rope-feeding means, a pair of pivoted levers on which the derrick rests, springs in part supporting said levers, and means for connecting the levers to the feeding means.

19. In a gravity drilling apparatus, a drill and drill-rope, a drill rope-winding drum, an escapement mechanism for governing the unwinding movement of the winding-drum, and means controlled by the extent of falling movement of the drill for releasing the escapement.

20. In a gravity drilling-machine, a drill and drill-rope, a drill-rope-feeding means including an escapement mechanism, a vertically-movable derrick, and means for connecting the derrick to the escapement mechanism.

21. In a gravity drilling apparatus, a drill and drill-rope, a drill rope-winding drum, an escapement mechanism for controlling the unwinding movement of the winding-drum, a vertically-movable derrick, a pair of yieldable levers on which the derrick rests, a cross-bar connecting said lever, and means for operatively connecting the cross-bars of the escapement mechanism.

22. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-winding drum, a toothed disk connected to the winding-drum, a pair of escapement anchors or pawls for alternately engaging said disk, and means for locking one of the pawls in inoperative position.

23. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-winding drum, a toothed disk geared to the winding drum, and a pair of pivotally-mounted and independently-movable pawls for engaging said disk.

24. In a gravity drilling apparatus, a drill and drill-rope, a toothed disk, a drill-rope-winding drum to which the disk is geared, a pair of pivotally-mounted pawls for engaging the disk, and means connecting the pawls and for permitting both neutral and independent movement thereof.

25. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-winding drum, a toothed disk and a friction-drum connected to the winding-drum, a locking-pawl engaging the disk, a band-brake encircling the friction-drum, and a single operating means connected to both the pawl and the brake.

26. In a gravity drilling apparatus, a drill and drill-rope, a drill-rope-feeding means, a pair of pivoted levers movable into operative engagement with the feeding means, a derrick resting on the levers and means for adjusting the foot of the derrick toward and from the fulcrum-point of said levers.

27. In a gravity drilling apparatus, a derrick comprising pivotally-connected upper and lower members, a pair of pivoted levers on which the lower members rest, means for adjusting the position of said lower members with respect to the fulcrum-points of the levers, a horizontally-revoluble drill-rope frame, a bracket extending from the upper member of the derrick and serving indirectly as a guide or support for the frame, a drill and drill-rope, a drill-rope windlass carried by the frame, means for controlling the unwinding movement of the drill-rope, and means for connecting the levers to said controlling means.

28. In a well-drilling machine, a main frame, a power-shaft having bearings thereon, a drill and drill-rope, a drill-rope-winding drum, a shaft carrying the same, a winding-shaft geared thereto, means for actuating the drill, a lever or bar fulcrumed adjacent to the power-shaft, an auxiliary winding-shaft carried by said lever or bar and adjustable into engagement with the winding-shaft, sprocket-wheels and a link belt serving as connections between the power and auxiliary shafts, and means for adjusting and for locking the bar in adjusted position.

29. In a well-drilling machine, a derrick, a movable frame having a linked connection with the derrick, a rock-shaft carried by the derrick, a rocker-arm connecting the shaft to the frame, a pair of rope-guides carried by the frame and disposed respectively at opposite ends thereof, a cleaning-bucket secured to one end of the rope, and a winding means for engaging the opposite end of the rope.

30. In a well-drilling machine, a derrick, a movable frame having a linked connection with the derrick, a rock-shaft carried by the derrick, a rocker-arm secured to the shaft and connected to the frame, a crank-arm secured to the rock-shaft and serving as a means for restoring the frame to inoperative position, sheaves disposed respectively at opposite ends of the frame, a bucket-hoisting rope passing over the sheave, a bucket secured to one end of the rope, and a hoisting means to which the opposite end of said rope is attached.

31. In a well-drilling machine, a main frame, a derrick formed of pivoted sections of which the upper may be lowered to rest on the main frame, and a drill-rope frame also formed of pivoted sections, the pivoting members of the latter being laterally extended in order to permit of the folding of the upper member thereof over the upper derrick member.

32. In a well-drilling machine, a vertically-pivoted frame revoluble in a horizontal plane, a lower pivot member formed by a collar or sleeve having a central opening for the passage of the drill-rod and drill-rope, an upper pivot member formed by a vertically-movable bar, a drill-rope windlass carried by the frame, a sheave supported by the bar and forming a guide and support for the drill-rope, the center of rotation of the sheave being in a plane to one side of the vertical pivoting plane of the frame and one portion of the rim of said sheave being disposed in said pivoting plane.

33. In a well-drilling machine, a supporting-frame including a derrick, a sleeve or collar having a central opening and revolubly mounted in the lower portion of the frame, a drill-operating lever fulcrumed to the upper portion of the derrick, a vertically-guided rod connected to one end of said lever, a drill-rope frame secured at one end to the collar or sleeve and pivoted at its upper end upon the rod, a winding-drum carried by said frame, a pair of tubular guides also carried by the frame, a yoke connected to the vertically-movable bar and having arms adapted to said guides, and a drill-rope-guiding sheave carried by the yoke and having a portion of its periphery in the vertical plane of the frame-pivots.

34. In a well-drilling machine, a drill-rope-winding drum, a shaft carrying the drum, a gear secured to said shaft, a winding-shaft having a pinion intermeshing with the gear, an escapement-wheel on said winding-shaft, said escapement-wheel having alternate teeth and spaces, in which the spaces at the root-line are of a width equal to the width of the roots of the teeth, and a pair of pawls or escapement-anchors for engaging said teeth.

35. In mechanism of the class described, the combination with the winding-drum, a shaft carrying the same, of a gear secured to the winding-shaft, a winding-shaft having a pinion intermeshing with the gear, an escapement-wheel secured to the winding-shaft, a pair of pivoted pawls adapted to alternately engage the escapement-wheel, means for connecting the pawls for mutual movement, and an operating-lever connected to said pawls.

36. In mechanism of the class described, a winding-drum, a shaft carrying the same, a winding-shaft, gearing connecting the two shafts, an escapement-wheel on the winding-shaft, a pair of pawls for engaging said escapement-wheel, a bar pivotally connected to one of said pawls and extending through an opening in the other, said bar having a tooth or lug for engagement against one side of the pawl, and a compression-spring carried by the bar and engaging the opposite side of the pawl.

37. In mechanism of the class described, a winding-drum, a shaft carrying the same, a gear on said shaft, a winding-shaft having a pinion intermeshing with the gear, an escapement-wheel secured to the winding-shaft, a pair of pawls for engaging the escapement-wheel, a connecting-bar extending between the two pawls and arranged to permit both mutual and independent movement thereof, and a locking-catch for retaining one of the pawls in inoperative position.

38. In mechanism of the class described, a winding-drum, a gear connected thereto, a winding-shaft having a pinion intermeshing with the gear, a ratchet-wheel carried by the winding-shaft, a pivoted pawl engaging said ratchet-wheel, a friction-drum carried by the winding-shaft, a band-brake embracing the friction-drum, a two-armed lever having one of its arms connected to one end of the brake-band, an operating-lever fulcrumed to the other arm of the lever and connected to the opposite end of the brake-band, and a connecting-rod extending between the lever and the pawl.

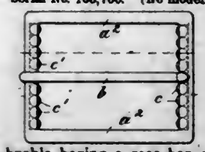
39. The combination with a supporting-frame, of a pair of pivotally-mounted levers, springs serving as supports for the rear ends of the levers, a derrick resting on the levers, a revolubly-mounted drill-rope frame, a drill and drill-rope supported thereby, a drill-rope-winding drum, an escapement mechanism for controlling the unwinding movement of the winding-drum, a stirrup or cross-bar connecting the two levers and having an annulus encircling the lower pivotal member of the drill-rope frame, and a vertically-guided escapement-operating bar carried by the lower portion of the drill-rope frame and arranged at all times above the annulus.

40. In mechanism of the class described, a derrick, a bucket-rope frame adjustably mounted thereon, a bucket and bucket-rope, and a bucket-rope-hoisting mechanism serving by the exertion of stress on the rope to adjust the position of the frame.

41. In mechanism of the class described, a derrick, an adjustably-mounted bucket-rope frame carried by the derrick, and means for moving said frame from inoperative to operative position, substantially as specified.

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753,320. **BUCKLE.** RALPH SCHEUER, New York, N. Y. Filed June 30, 1903. Serial No. 163,700. (No model.)



*Claim.*—1. A buckle having a rear bar, a front bar grooved along its inner side, antifriction-balls within the groove of the front bar, and a tongue pivoted to the rear bar and engaging the front bar, substantially as specified.

2. A buckle having a rear bar grooved along its inner side, antifriction-balls within the groove of said bar, a front bar, and a

tongue pivoted to the rear bar and engaging the front bar, substantially as specified.

3. A buckle having a grooved front bar, a grooved rear bar, a tongue pivoted to the rear bar, and antifriction-balls within the grooves of the front and rear bars, substantially as specified.

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**753,321. LAMP-SOCKET.** DUFF A. SCHUTT, Peru, Ind. Filed Apr. 7, 1903. Serial No. 151,503. (No model.)



*Claim.*—1. In a lamp-socket, the combination with an insulating-base, of an anchor-bar secured to the base and having connecting-terminals, with means for securing the shell thereto, substantially as set forth.

2. In a lamp-socket, the combination with an insulating-base, of an anchor-bar secured to the base and having oppositely-disposed connecting-terminals, a covering-shell and cap, and securing-screws passing therethrough, and into said terminals, substantially as set forth.

3. In a lamp-socket, the combination with a base of insulating material, of an anchor-bar embedded in the base and provided with oppositely-disposed connecting-terminals having securing-screws, and a holding-screw for the anchor-bar passing through the base and into the bar, substantially as set forth.

4. In a lamp-socket, the combination with a base of insulating material, of an anchor-bar embedded in the base and provided with oppositely-disposed connecting-terminals having securing-screws, a holding-screw for the anchor-bar passing through the base and into the bar, and a covering of cement or the like laid over the bar, substantially as set forth.

5. In a lamp-socket, the combination with an insulating-base, of a yoke provided with an outer and an inner stem-bearing and an outer wire-attaching terminal in alinement, a contact-spring, means for securing the yoke and spring to the base, and a turning stem provided with a rotatable tumbler mounted thereon, substantially as set forth.

6. In a lamp-socket, the combination with an insulating-base, of a yoke provided with an outer and an inner stem-bearing and an outer wire-attaching terminal in alinement, a contact-spring, means for securing the yoke and spring to the base, a turning stem provided with a rotatable tumbler mounted in the bearings, and a screw-ring secured to the base, with which the spring makes contact, substantially as set forth.

7. In a lamp-socket, the combination of an insulating-base, a contact-spring, a yoke having an outer and an inner stem-bearing and an outer wire-attaching terminal in alinement, means for securing the spring and yoke to the base, a screw-ring, a center contact member provided with a wire-attaching terminal, an anchor-bar secured to the base, and a covering-shell and cap inclosing the base and secured to the anchor-bar, substantially as set forth.

8. In a lamp-socket, the combination with a cylindrical insulating-base, of an anchor-bar having a half-round middle portion secured to the base and provided with shell-attaching terminals, substantially as set forth.

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**753,322. GARMENT.** JEREMIAH A. SCHIVER, New York, N. Y. Filed July 19, 1902. Serial No. 116,173. (No model.)



*Claim.*—1. A shirt fashioned of suitable body material and having an elastic insertion of varying width entirely dividing said body material from neck-opening of said shirt to the bottom opening of said shirt.

2. A shirt fashioned of suitable body material and having an elastic insertion of varying width entirely dividing said body material at the back of said shirt.

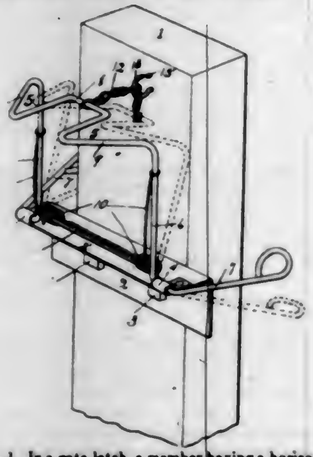
3. A shirt fashioned of suitable body material and having an elastic insertion wider at its ends than at its central portion and entirely dividing said body material from the neck-opening to the bottom opening of said shirt.

4. A shirt fashioned of suitable body material and having an elastic insertion entirely dividing said body material from the neck-opening to the bottom opening of said shirt, the upper end of said insertion having a flap of less width than the end proper of said insertion, which flap is folded over and attached to the main portion of said insertion to form a reinforce, leaving stripe of unreinforced insertion extending at either side of said reinforce to the neck-opening of said shirt.

5. A shirt fashioned of suitable body material and having an elastic insertion wider at its ends than at its central portion and entirely dividing said body material from the neck-opening to the bottom opening of said shirt, the upper end of said insertion having a flap of less width than the end proper of said insertion, which flap is folded over and attached to the main portion of said insertion to form a reinforce, leaving stripe of unreinforced insertion extending at either side of said reinforce to the neck-opening of said shirt.

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**753,323. GATE-LATCH.** WALTER A. SUBERS, Blissfield, Mich. Filed Oct. 19, 1903. Serial No. 177,570. (No model.)



*Claim.*—1. In a gate-latch, a member having a horizontally-disposed recess therein, beveled ways leading rearwardly from the mouth of said recess, and one or more vertically-disposed pivotally-mounted supporting-arms, means in engagement with said arms for normally retaining said member in one position, and means for limiting the oscillatory movement thereof, substantially as described.

2. In a gate-latch, a member having a horizontally-recessed portion and vertically-disposed pivotally-mounted supporting-arms, beveled ways leading rearwardly in opposite directions from said recess, a spring in engagement with said arms for normally retaining said member in one position, and means for limiting the oscillation of said member, substantially as described.

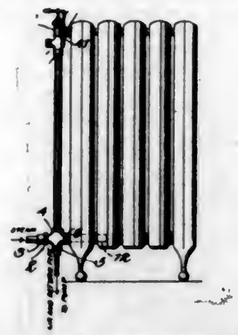
3. A gate-latch comprising a supporting-bracket, a vertically-disposed member pivoted thereto and having a recess in a portion thereof adapted to receive a contiguous object, beveled ways leading from the mouth of said recess, one or more arms on said member, means for normally retaining said member in one position, and adjustable means for limiting the oscillatory movement thereof, substantially as described.

4. In a gate-latch, a pivotally-mounted member having a horizontally-disposed recess in a portion thereof, means for normally retaining said member in one position, and adjustable means for limiting the oscillatory movement of said member.

5. A gate-latch comprising a gate-engaging member pivotally secured to a stationary object and having a recess therein adapted to receive and engage the contiguous edge of a gate, means for normally retaining said member in such engaged position, and adjustable means for limiting the pivotal movement of said member, substantially as described.



**753,324. STEAM-HEATING SYSTEM.** JOHN R. SHANKLIN, Charleston, W. Va. Filed Aug. 24, 1903. Serial No. 170,632. (No model.)



*Claim.*—1. In a steam-heating system, a thermostatic valve governing the passage of steam from the source of supply, said valve comprising a casing connected with, and having a cage extending laterally into, the lower part of a radiator, an expansible valve-carrying member within said cage, and an outlet for condense-water extending through said valve-casing and communicating with the interior of the radiator below the cage containing the expansible member.

2. In a steam-heating system, a valve-casing connected directly with the lower end of the radiator, a thermostatic valve within said casing controlling the passage of steam from the source of supply, and an exit for water of condensation extending through said valve-casing and communicating with the interior of the radiator.

3. In a steam-heating system, a radiator, a thermostatic valve connected with the lower end of said radiator and automatically governing the passage of steam from the source of supply, controlling means connected with the upper end of the radiator and comprising means for limiting the maximum steam-supply and additional manually-operated means for governing the supply to the regulator, and connecting means between said controlling means and the steam-exit of the casing containing the thermostatic valve.

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**753,325. PROCESS OF MAKING CHLOROFORM.** ALBERT W. SMITH, Cleveland, Ohio. Filed Oct. 9, 1902. Serial No. 126,451. (No specimens.)

*Claim.*—1. The process of manufacturing chloroform which consists in forming carbon disulfid by the action of heated sulfur upon heated carbon, forming carbon tetrachlorid by the action of sulfur chlorid upon such disulfid, and then treating such tetrachlorid with a metal and a substance containing hydrogen.

2. The process of manufacturing chloroform which consists in forming carbon disulfid by the action of heated sulfur upon heated carbon, forming carbon tetrachlorid by the action of sulfur chlorid upon such disulfid, and then subjecting such tetrachlorid to the action of water and a metal.

3. The process of manufacturing chloroform which consists in forming carbon disulfid by the action of heated sulfur upon heated carbon, forming carbon tetrachlorid by the action of sulfur chlorid upon such disulfid, and then subjecting such tetrachlorid to the action of water and iron.

4. The process of manufacturing chloroform which consists in agitating water, carbon tetrachlorid and a metal in a suitable receptacle.

5. The process of manufacturing chloroform which consists in agitating water, carbon tetrachlorid, and iron in a suitable receptacle.

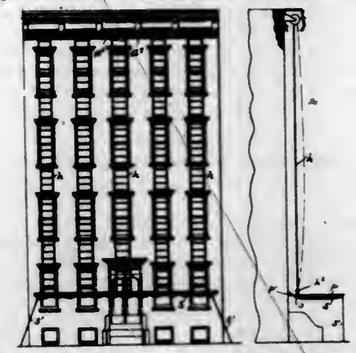
6. The process of manufacturing chloroform, which consists in heating carbon tetrachlorid containing carbon disulfid with sulfur and sulfur chlorid, fractionally distilling the product to produce pure carbon tetrachlorid and subjecting the resulting product to the action of a metal and substance containing hydrogen.

7. The process of manufacturing chloroform, which consists in heating carbon tetrachlorid containing carbon disulfid with sulfur and sulfur chlorid, fractionally distilling the product to produce pure carbon tetrachlorid and, subjecting the resulting product to the action of a metal and water.

8. The steps in the manufacture of chloroform which consists, in treating heated sulfur with heated carbon, treating the carbon disulfid thus formed with sulfur chlorid with the production of carbon tetrachlorid, purifying the tetrachlorid by heating with sulfur and sulfur chlorid, and fractionally distilling, and then subjecting it to the action of water and a metal.

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**753,326. FIRE-ESCAPE.** JAMES E. SMITH, Flatbush, N. Y. Filed Aug. 21, 1903. Serial No. 170,299. (No model.)



*Claim.*—1. In a fire-escape, the combination of one or more flexible ladders adapted to descend by gravity, and a life-net secured to the free ends of said ladders.

2. In a fire-escape, the combination of one or more flexible ladders adapted to descend by gravity, a life-net secured to the free ends of said ladders and means for spreading said net.

3. In a fire-escape, the combination of a rotating shaft or drum, two or more flexible supports wound thereupon, the free ends of said supports carrying a common transverse bar or rod, a life-net attached to said bar or rod, and means for spreading said net.

4. In a fire-escape, the combination of a rotating shaft or drum, two or more flexible supports wound thereupon, a transverse bar or rod attached to the free ends of said flexible supports, a life-net applied to said transverse bar or rod, locking and releasing means for said supports and attached parts, and means for spreading said net when in released position.

5. In a fire-escape, the combination of a suitable housing preferably located at or near the roof of a building, a horizontal shaft mounted therein, a plurality of flexible ladders reeled upon said shaft, a rod or bar connecting all the ladders together at their free ends, a movable member or cover hinged to said housing and adapted when closed to support said rod or bar and retain ladders in reeled condition, a deflecting-lip carried by said hinged member or cover and a suitable releasing mechanism, all substantially as and for the purpose set forth.

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**753,327. TUNING ATTACHMENT FOR STRINGED INSTRUMENTS.** EDWARD SPROTTE, St. Louis, Mo. Filed Jan. 16, 1902. Renewed Jan. 21, 1904. Serial No. 190,060. (No model.)



*Claim.*—A stringed instrument having a bracket located at the free end of the neck thereof, a deflected wall forming a part of said bracket, a tuning device mounted on said bracket, the individual sounding members of said device being located in the same vertical planes with the series of strings carried by the instrument, the deflected wall of the bracket having suitable inscriptions indicating the character of the string located opposite each sounding member of said tuning device, substantially as set forth.

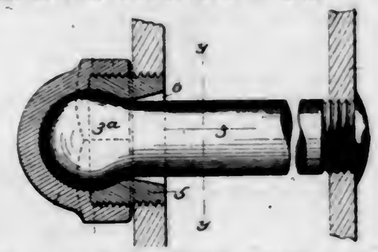
753,328. MANTLE-SUPPORT. TOWNSEND STITES, Philadelphia, Pa., assignor to Welsbach Light Company, Gloucester City, N. J., a Corporation of New Jersey. Filed Apr. 4, 1902. Serial No. 101,381. (No model.)



*Claim.*—1. A mantle-support consisting of a shank having a transverse portion curved downwardly and upwardly and backwardly to constitute one turn of a spiral and having its end curved downwardly and laterally to constitute a guard, substantially as described.

2. In combination a collar provided with a socket, a side support tightly secured to the socket and provided with a transverse portion curved downwardly and upwardly and backwardly to constitute one turn of a spiral and having its end curved downwardly and laterally to constitute a guard, and a mantle provided with a bale engaged by said spiral turn, the height of the mantle exceeding the distance between the top of the collar and the bottom of the spiral turn, substantially as described.

753,329. FLEXIBLE STAY-BOLT. JOHN B. TATE, Altoona, Pa. Filed Mar. 4, 1903. Serial No. 146,192. (No model.)



*Claim.*—1. A stay-bolt structure comprising a body portion threaded at one end, and a head at the other end of said body portion, the outer portion of said head being partly spherical and the inner portion thereof adjacent to and terminating at the body of the bolt having a curved contour reverse to that of partly-spherical portion of said head.

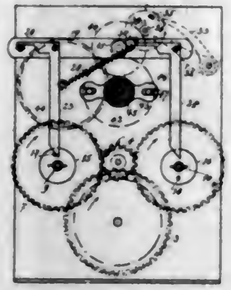
2. A stay-bolt structure comprising a body portion threaded at one end, a head at the other end of said body portion, the outer portion of said head being partly spherical and the inner portion having a curvature reverse to that of the outer portion, said reversely-curved inner portion terminating at the juncture of the head with the body portion of the bolt, and sectional coupling means constructed to receive said head and secure the same to a boiler-plate.

3. In a device of the character described, the combination with an outer and inner sheet, of an exteriorly-threaded bushing open to both ends and screwed into the outer sheet and provided with a half-spherical opening, and a flaring mouth in the inner or water side, a cap having a curved seat, secured on said bushing, and a spherically-headed bolt to fit said bushing and the seat in the cap, substantially as described.

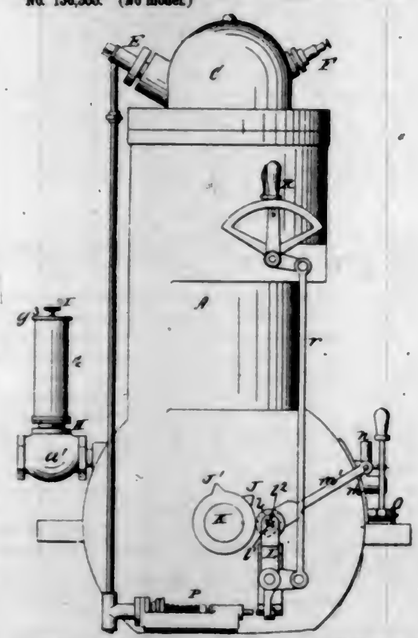
4. The combination with the outer and inner sheets or plates of a boiler, a threaded bushing screwed into the outer plate and having a semispherical socket in its outer portion and a flaring mouth in its inner portion, a bolt screwed into the inner plate and having a spherical head at its outer end to fit the socket in the bushing, and a recessed cap screwed onto the bushing and having a half-spherical socket to cooperate with the socket of the bushing and form a complete spherical socket for the bolt-head.

753,330. TIME GAS-LIGHTING MECHANISM. FRIEDRICH W. THIELENHAUS, EWALD THIELENHAUS, and CARL VOLLMANN, Elberfeld, Germany. Filed Aug. 30, 1[illegible] Serial No. 120,357. (No model.)

*Claim.*—In an apparatus of the class specified, the combination with a spring-barrel, a gear and two wheels turned by said gear, two dial-plates 11 and 12, shafts 9 and 10, pointers 13 and 14 adjustably mounted on said shafts and pointers 48 and 49, and a standard on which they are fastened, disks 15 and 16 seated on said shafts, a lever 19, studs 17 and 18, angle-levers 23 and 24, pawls 32 and 33 operated by the lever 19, the stop-wheel 36 caught and released by said pawls, a gear for turning the spring-barrel 44 and a plug 2 of a gas-pipe operated by said barrel, substantially as described and for the purpose set forth.



753,331. HYDROCARBON-VAPOR ENGINE. WILLIAM W. TUCK, Richmond Hill, and AUGUST WASSMANN, Astoria, N. Y., assignors to Abbot Augustus Low, Horseshoe, N. Y. Filed Dec. 26, 1902. Serial No. 136,555. (No model.)



*Claim.*—1. In a kerosene-engine, means for introducing oil into the combustion-chamber thereof, means independent thereof for automatically introducing alcohol into the induced air-supply, and means for automatically changing the time of oil feed.

2. In a kerosene-engine, means for introducing oil into the combustion-chamber thereof, means independent thereof for automatically introducing alcohol into the induced air-supply, and means for automatically changing the time of oil feed and throwing the sparking device into electric circuit.

3. In a kerosene-engine, means for introducing oil into the combustion-chamber, means for causing an induced air-supply, means in addition to the oil-introducing means, and independent thereof for introducing alcohol into the induced air-supply, and means for simultaneously changing the time of oil feed and throwing a sparking device into electric circuit.



4. In a kerosene-engine, means for introducing oil into the combustion-chamber, means for introducing alcohol into the induced air-supply, means for exploding the combined charge by an electric spark, and means for simultaneously changing the time of oil feed and throwing the sparking device into electric circuit, substantially as and for the purpose described.

753,332. VALVE. CHARLES L. TURNER, Winthrop, Mass., assignor to Rhodes Lockwood, William N. Lockwood, and Rhodes G. Lockwood, copartners doing business as Davidson Rubber Company, Boston, Mass. Filed Feb. 28, 1903. Serial No. 145,561. (No model.)

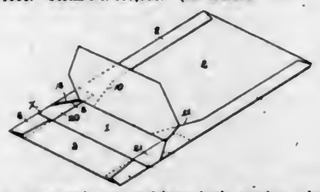


*Claim.*—1. The improved valve above described comprising a casing adapted to be grasped by one hand; a port through the casing; a valve for controlling said port, having its stem extended to the exterior of the casing to constitute a handle free to be directly engaged and depressed by the same hand, to open the valve; a spring for holding the valve normally closed; a normally inoperative graduated abutment adapted to act on said valve-stem in opposition to the spring, and means to effect relative rotary movement between the stem of the valve and the abutment when it is desired to cause the abutment to hold the valve open.

2. The improved valve above described comprising a casing adapted to be grasped by one hand; a port through the casing; a valve for controlling said port, having its stem extended to the exterior of the casing to constitute a handle free to be directly engaged and depressed by the same hand, to open the valve; a spring for holding the valve normally closed; a normally inoperative graduated abutment adapted to act on said valve-stem at a point between the ends of the latter and in opposition to said spring, and means to effect relative rotary movement between the stem of the valve and the abutment when it is desired to cause the abutment to hold the valve open.

3. The improved valve above described comprising a casing adapted to be grasped by one hand; a port through the casing; a valve for controlling said port having its stem extended to the exterior of the casing and adapted to be depressed by the same hand, to open the valve; an arm fast at one end to the stem; a headed pin projecting from the casing alongside the valve-stem on which the other end of the arm is loosely mounted; a spring on said pin between said arm and the valve-casing, and an adjustable graduated cam abutment mounted on the pin and adapted to act on the arm in opposition to said spring.

753,333. ENVELOP. LOUIS C. VANDERLIP, Elkhart, Ind. Filed Jan. 19, 1903. Serial No. 139,636. (No model.)



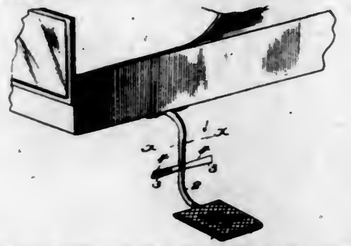
*Claim.*—1. An envelop comprising a body portion, a back piece having a tongue adapted to be folded over the body portion, a pocket at one end of the body portion to receive the tongue, and reinforcing side flaps pasted to the body portion and extending beyond and forming a continuation of the pocket to strengthen the body portion between the pocket and the tongue.

2. An envelop comprising a main or body portion, a back piece provided with slits to form a tongue, a pocket at one end of the body portion, side flaps on the body portion having extensions adapted to be pasted to the back piece in the rear of the tongue, the extensions so formed that when folded they aline with the slits in the back piece and extend transversely beyond the same to reinforce the division-point of the tongue and back piece.

3. A blank for the manufacture of an envelop comprising a main or body portion 1, an end flap 3 and reinforcing-flaps 20 and 21, adjoining side flaps 6 and 7, a back piece or tongue-section 2 provided with slits 8 and 9, side longitudinal flaps 4 and 5, provided with reinforcement extensions 10 and 11, which extensions are folded over upon the back piece so as to register with slits in the same.

4. An envelop comprising a main or body portion provided with a pocket at the end thereof, reinforcement-flaps forming a continuation of said pocket, a back piece provided with slits to form a tongue, side flaps on the body-section provided with extensions, the extensions so formed that when folded they aline with the slits in the back piece and extended transversely beyond the same to reinforce the division-point of the tongue and back piece.

753,334. ATTACHMENT FOR VEHICLE-STEPS. JAMES M VAUGHAN, Owensboro, Ky. Filed May 2, 1903. Serial No. 155,344 (No model.)



*Claim.*—1. In combination with a vehicle-step, a scraper applied to the standard of the step and comprising similar scraper extensions projected from the opposite side of the arm to provide a cleaner for each foot, said standard forming a stop to limit the lateral movemeot of the foot when drawing it across the scraper.

2. In combination with a vehicle-step, a scraper applied to the standard thereof and comprising similar scraper extensions or members projected from opposite sides of the standard to provide a scraper for each foot, said scraper members being adjustable toward and from the plane of the step, the standard forming a stop to limit the lateral movement of the foot when drawing it across the scraper.

3. In combination with a vehicle-step, a scraper applied to the standard of the step and comprising a bar, centrally deflected to form a socket to receive the standard and having its end portion extended upon opposite sides of the standard to form similar scraper members for each foot, a clamp-block secured upon the opposite side of the standard adjacent the deflected portion of the scraper-bar and secured to the latter so as to clamp the same to the standard, the said standard forming a stop to limit the lateral movement of the foot in drawing same across the scraper members.

753,335. TOY. ARTHUR P. WARD, New York, N. Y. Filed July 27, 1903. Serial No. 167,168. (No model.)



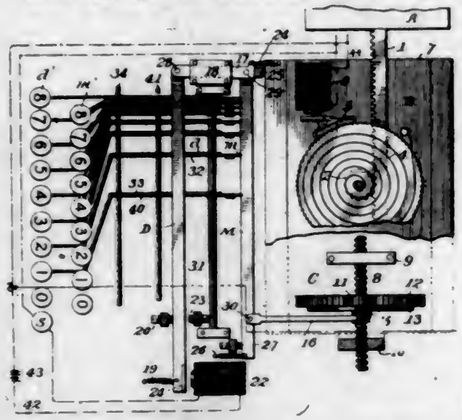
*Claim.*—1. A toy comprising a hollow body representing a whale having a pivoted jaw movable into open and closed position, and a pivoted rocker having one end disposed beneath and in the path of movement of the pivoted jaw into open position, the opposite end of the rocker being formed to support an object and movable into position to precipitate an object into the body when the rocker is moved by contact of the pivoted jaw therewith.

2. A toy comprising a hollow body representiag a whale having a pivoted jaw movable into open and closed position, means for holding the movable jaw normally and yieldably in closed position, a finger-piece attached to the movable jaw, a support attached to the body, a rocker pivoted to the support, said rocker having one end disposed in the path of opening movement of the pivoted jaw for engagement and movement thereby and the other end of the rocker having a loop formed therein and disposed for movement into position before the open mouth, and an image having a pin loosely

engaged in the loop, said image being movable with the rocker into position between the jaws when the lower jaw is moved into open position.

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**753,336. JUSTIFYING DEVICE FOR COMPOSING-MACHINES.** JAMES A. WATSON, Washington, D. C., assignor, by mesne assignments, to the Unitype Company, Manchester, Conn., a Corporation of New Jersey. Filed Aug. 24, 1897. Serial No. 649,350. (No model.)



*Claim.*—1. In a justifying mechanism for composing-machines, the combination of a dividing and a multiplying lever, means for applying a fulcrum to the dividing-lever at a point corresponding to the number of spaces in the line to be justified and means for applying a fulcrum to the multiplying-lever at a point corresponding to the variation-space, substantially as described.

2. In a justifying mechanism for composing-machines, the combination of multiplying and dividing levers, means for communicating movement from one lever to the other, and means for communicating movement from the second lever to the spacing mechanism substantially as described.

3. In a justifying mechanism for composing-machines, the combination of multiplying and dividing levers; the connecting-link between said levers and fulcra arranged to be applied to said levers at different points, substantially as described.

4. In a justifying mechanism for composing-machines, a slide, means, such as the spring 24, for drawing said slide in one direction, a dividing-lever pivoted to the slide at one end, means for moving the opposite end of the lever, and means for applying a fulcrum to said lever at fractional parts thereof, the fraction selected for any given line corresponding to the number of spaces in that line, substantially as described.

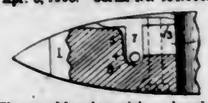
5. In a justifying mechanism for composing-machines, the combination of a main feeding device, a supplemental feeding device, and the multiplying and dividing levers connected to the supplemental feeding device, substantially as described.

6. In a justifying mechanism for composing-machines, the combination of a main feeding device mounted on a movable support and a supplemental feeding device arranged to move said support, substantially as described.

7. In a justifying mechanism for composing-machines, the combination of a main feeding device mounted upon a movable support, a supplemental feeding device adapted to move said support, a dividing-lever, means for applying fulcra to said dividing-lever at points corresponding to the number of spaces in a line to be justified and connections from said dividing-lever to the supplemental feeding device, substantially as described.

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**753,337. LOOM-SHUTTLE.** CHARLES B. WEBSTER, Fall River, Mass. Filed Apr. 8, 1903. Serial No. 151,660. (No model.)



*Claim.*—1. The combination with a shuttle having a longitudinal slot and a lateral recess, of a thread-guide in said recess having a tubular eye portion provided with a slit below the bottom of said slot.

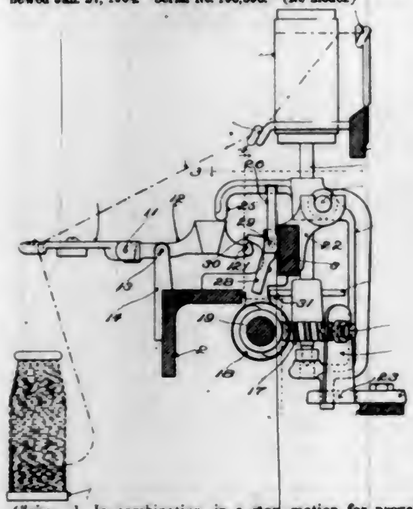
2. The combination with a shuttle having a longitudinal slot, a lateral recess, a hole through the side of the shuttle near the bottom of said lateral recess and a slit extending from the top of the shuttle down to said hole, of a thread-guide in said lateral recess having a tubular slitted eye portion at its lower end entering said hole.

3. A thread-guide for a shuttle having a head, a shank perpendicular thereto, and a tubular eye portion transverse to said shank and provided with a slit in its bottom.

4. A thread-guide for a shuttle having a head 6 chamfered off underneath at 15, a shank 7 perpendicular to said head, and a tubular eye portion 8 transverse to said shank and provided with a slit 9 and a cut-away portion 10 at the inner end of said slit.

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**753,338. STOP-MOTION FOR TWISTING-FRAMES.** CHANNING WHITAKER, Tyngsboro, Mass., assignor to Lowell Machine Shop, Lowell, Mass., a Corporation of Massachusetts. Filed Jan. 29, 1902. Renewed Jan. 27, 1904. Serial No. 190,898. (No model.)



*Claim.*—1. In combination, in a stop-motion for preventing waste in twisting and other frames, the delivery-roller, the swing-frame carrying the delivery-roller, the driving-gearing for the delivery-roller, one or more rotating projections, the detector-lever, the latch to hold the swing-frame in working position and the driving-gearing in mesh, the gravitating trip or trigger for engagement by said projection or projections in the rotation of the latter, having its substance in the plane of the blow from the rotating projections, strongly and pivotally mounted on said latch, and moved from its normal position by the contact of the detector-lever therewith, substantially as described.

2. In combination, in a stop-motion for preventing waste in twisting and other frames, the delivery-roller, its spindle having one or more projections, the driving-gearing for the said spindle, the swing-frame carrying the delivery-roller and having the arm, the detector-lever, the latch engaging with the said arm to hold the swing-frame in position to maintain working relations in the driving-gearing, and the trip or trigger, having its substance in the plane of the blow from the rotating projections, movably connected with the said latch, held by the contact of the detector-lever therewith out of the path of said projection or projections, and gravitating into said path when released by the detector-lever, substantially as described.

3. In combination, in a stop-motion for preventing waste in twisting and other frames, the delivery-roller, the swing-frame carrying the delivery-roller, the driving-gearing for the delivery-roller, one or more rotating projections, the detector-lever, the latch to hold the swing-frame in working position and the driving-gearing in working relations, a trip device having its substance in the plane of the blow from the rotating projections, movably connected with the said latch, operated by the detector-lever and moved on the release of the latter into the path of the projection or projections to thereby cause the latch to be tripped, and a stop device acting in the changed position of the swing-frame to arrest the rotation of the delivery-roller, substantially as described.

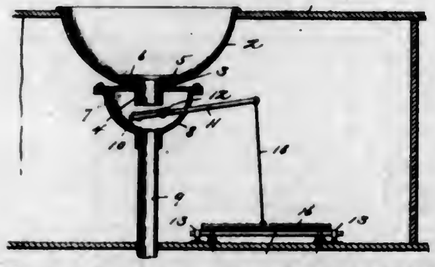


4. In combination, in a stop-motion for preventing waste in twisting and other frames, the delivery-roller, the swing-frame carrying the delivery-roller, the gear on the roller-spindle, the actuating worm or gear, the projections carried by the roller-spindle, the detector-lever, the latch to hold the swing-frame in working position and the driving parts in working relations, the trip or trigger having its substance in the plane of the blow from the rotating projections, movably connected with the said latch, operated by the detector-lever and permitted to move, on release of the latter, into the path of the projections on the spindle, to thereby cause the latch to be tripped, and the fixed stop to engage with the gear on the spindle, substantially as described.

5. In combination, in a stop-motion for preventing waste in twisting and other frames, the delivery-roller, the swing-frame carrying the delivery-roller, the gear on the roller-spindle, the actuating worm or gear, the projections carried by the roller-spindle, the detector-lever, the latch to hold the swing-frame in working position and the driving parts in working relations, the trip or trigger having its substance in the plane of the blow from the rotating projections, pivotally mounted on said latch, held by the contact of the detector-lever therewith out of the path of the said projections, and gravitating into said path when released by the detector-lever, and the fixed stop to engage with the gear on the spindle, substantially as described.

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**753,339. WASHSTAND.** THOMAS WIDDOP, Mountainview, Wyo. Filed Oct. 7, 1903. Serial No. 176,112. (No model.)



*Claim.*—1. The combination with a valve-casing and a basin thereon having an outlet, of a tube extending through the outlet and into the casing, a lever, a valve within the casing adapted to seal the tube, a platform connected to the valve, and means for holding the valve normally removed from the tube.

2. The combination with a casing having an inlet and an outlet, and a basin supported upon the casing and having an outlet, of a tube extending through the outlet of the basin and projecting into the casing, a lever fulcrumed within the casing, a disk at one end thereof and under the tube, a pivoted platform connected to the lever, and means for holding the disk normally removed from the tube.

3. The combination with the casing having an outlet and a basin supported upon the casing and having an outlet; of a tube arranged within the outlet in the basin and projecting into the casing, a lever fulcrumed within the casing, a disk at one end of the lever and below the tube, packing upon the disk, brackets, a yoke pivotally mounted upon the brackets, slats upon the yoke, a rod connecting the yoke with the lever and spring-supports for the yoke.

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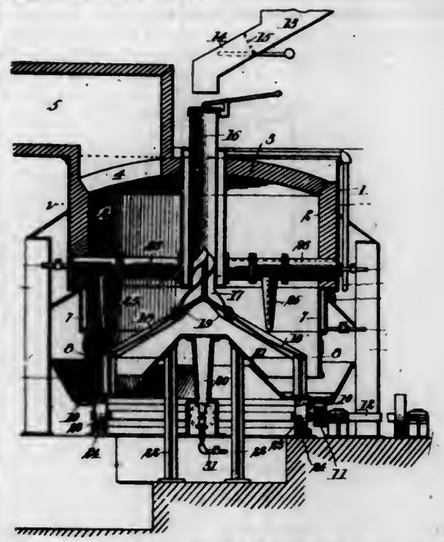
**753,340. GAS-PRODUCER.** JAMES M. WIGHT and HARRY HYATT, Cleveland, Ohio. Filed May 7, 1903. Serial No. 156,101. (No model.)

*Claim.*—1. In a gas-producer, the combination with a chamber, and a rotary conical grate therein, of a coal-feeding tube in the chamber above the grate, and means carried at the apex of the grate to feed the coal from the tube.

2. In a gas-producer, the combination with a chamber, and a rotary grate therein, of a coal-feeding tube extending downwardly into the chamber above the grate, and a feed-screw carried by the grate and working at the lower end of the tube.

3. In a gas-producer, the combination with a stationary chamber, and a traveling grate thereunder, of a stationary coal-feeding tube having hollow walls, extending into the chamber, and hollow pokers connected to the tube, said walls and pokers having a fluid circulation therethrough.

4. In a gas-producer, the combination with a rotatable grate, and an annular water-pan thereunder, of a fire-pot around the grate, and a blower-nozzle the mouth of which is under the grate and extending through the central opening in the pan, said pot and nozzle being water-sealed in the pan.



5. In a gas-producer, the combination with a grate and fire-pot relatively rotatable, of an annular water-pan below the grate, in which the pot is water-sealed, and a blower-nozzle extending upwardly through the opening in the pan, and water-sealed therein, the mouth of the nozzle being under the grate.

6. In a gas-producer, in combination, a chamber, a central fluid-cooled coal-feeding tube extending through the top of the chamber down to the fire, a rotating conical grate under the chamber, having a feed-screw at its apex extending into the tube, and stationary water-cooled pokers extending into the chamber over the grate.

7. In combination, a rotatable annular water-pan, a grate carried thereby, a blower extending through the opening in the water-pan and having a depending flange sealed in the pan and the nozzle of which opens underneath the grate, and a fire-pot above and around the grate and sealed in the pan.

8. In a gas-producer, the combination of an annular water-pan, a fire-pot the lower edge of which is sealed therein, a grate above the water-pan and carried thereby, and a blast-nozzle extending through the central opening of the pan and sealed therein, and opening under the grate.

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**753,341. SAFETY-GUARD ON ELECTRICAL CARS.** CHARLES A. WILLARD, St. Louis, Mo. Filed Jan. 29, 1903. Serial No. 91,750. (No model.)

*Claim.*—1. The combination with a car, of a safety-guard carried thereby, mechanical means operable independently of the brake-actuating means to move the guard to its obstructing position, and means adapted to automatically return the same to its normal unobstructing position.

2. The combination with a car, of a safety-guard carried thereby and adapted to normally occupy an unobstructing position beneath the rear end of the car, mechanical means operable independently of the brake-actuating means to move the guard to its obstructing position beyond the car, and means adapted to automatically return the same to its normal unobstructing position.

3. The combination with a car, of a safety-guard carried thereby and adapted to normally lie beneath the car and to be projected beyond the same, of mechanical means operable independently of the brake-actuating means to project the guard, and means adapted to automatically return the same to normal position.

4. The combination with a car, of a safety-guard carried thereby and adapted to normally lie beneath the rear end of the car and to be projected beyond the same, of mechanical means operable independently of the brake-actuating means to project the guard, and means for automatically returning the same to normal position.

5. The combination with a car, of a safety-guard carried thereby, a lever, operative connections between the lever and guard, said

lever and connections adapted to be operated independently of the brake-operating means to move the guard to an obstructing position beyond the car, and means for automatically returning the guard to its normal unobstructing position.



6. The combination with a car, of a safety-guard carried beneath the same and adapted to be projected beyond the car, a lever, operative connections between the lever and guard, said lever and connections adapted to be operated independently of the brake-actuating means to project the guard, and means for automatically returning the same to normal position.

7. The combination with a car, of a guard carried beneath the rear end of the same and adapted to be projected beyond the car, a lever, operative connections between the lever and guard, said lever and connections adapted to be operated independently of the brake-actuating means to project the guard, and a spring for automatically returning the same to normal position.

8. The combination with a car, of a lazy-tongs frame pivotally connected thereto and adapted to be projected beyond the car, means operatively connected with the inner end of the lazy-tongs adapted to project the same, and means for automatically returning the same to normal position.

9. The combination with a car, of a lazy-tongs frame pivotally connected thereto and adapted to be projected beyond the car, a lever, operative connections between the lever and lazy-tongs for projecting the same, and means for automatically returning the same to normal position.

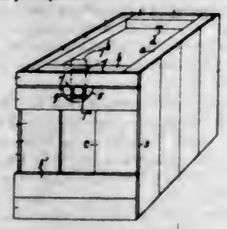
10. A device of the class described comprising a safety-guard consisting of a lazy-tongs frame, a pair of oppositely-disposed springs connected with the lazy-tongs frame and adapted to fold the lazy-tongs frame automatically, and means for extending the frame, substantially as described.

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**753,342. PACKING CASE OR CRATE.** WILLIAM WILSON, London township, and THOMAS W. BAKER, London, Canada. Filed June 20, 1902. Serial No. 112,455. (No model.)

*Claim.*—1. The combination with two oppositely-disposed hollow frames, the side and one end wall of the crate, a batten secured to the lower frame and to the adjacent slats of the side wall, a removable front, said front being composed of vertical and horizontal slats, the lower horizontal slat or bottom being arranged above the ends of the vertical slats whereby the same will engage the first-named batten and frames the lower ends of the vertical slats of the said fronts to engage in the first-named batten on its inner face, and means for securing the upper end of the said front for preventing outward movement thereof.

2. In combination with the top frame and front wall of the crate, said frame being formed with a pair of vertical grooves, a link arranged in said grooves, a batten extending over said grooves for holding said link in position, a yielding locking-strip secured to said front near one end thereof, and a batten extending over the said strip, said link having its lower portion terminating in a pair of arms which are angularly disposed to underlie the said strip.



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**753,343. TRAY FOR HOLDING EGGS OR FRUIT.** WILLIAM WILSON, London township, and THOMAS W. BAKER, London, Canada. Filed June 20, 1902. Serial No. 112,456. (No model.)



*Claim.*—1. In combination with the rigid ends, the resilient bottom and side walls, battens secured to the bottom, flaps secured to the side walls, cells arranged between the said side and end walls, said cells and end walls being formed with communicating openings, and means for holding the said flaps in a folded position, said means being pivoted to the side walls of the tray.

2. The combination with the rigid end walls and the removable cover-plate, of the resilient bottom and side walls and top flaps adapted to overlie said plate formed integral, and means for holding said flaps in engagement with said plate.

3. In a device of the type set forth, a box having side walls and a bottom, end walls, and flaps adapted to partly overlie upper edges of said ends, said side walls bottom and flaps being composed of a single strip of resilient material, in combination with means arranged in said box for supporting articles, a means for closing the upper end of the said last-named means, and means for holding the said flaps in engagement therewith.

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**753,344. PAPER-WINDING MACHINE.** GEORGE S. WITHAM, Millinocket, Me. Filed Sept. 23, 1903. Serial No. 174,892. (No model.)



*Claim.*—1. A winding-bar for paper-winding machines comprising a main section having its maximum diameter at its middle portion and two sliding sections resting on seats on the main section which are inclined in opposite directions from the middle portion of the bar toward the opposite ends thereof.

2. A winding-bar for paper-winding machines comprising a main section having its maximum diameter at its middle portion and two sliding sections resting on seats on the main section which are inclined in opposite directions from the middle portion of the bar toward the opposite end thereof and a tongue-and-groove connection between the sections.

3. A winding-bar for paper-winding machines comprising a main section having its maximum diameter at its middle portion, a sliding section resting on an inclined seat on the main section and a laterally-tapered dovetailed tongue-and-groove connection between the sections.

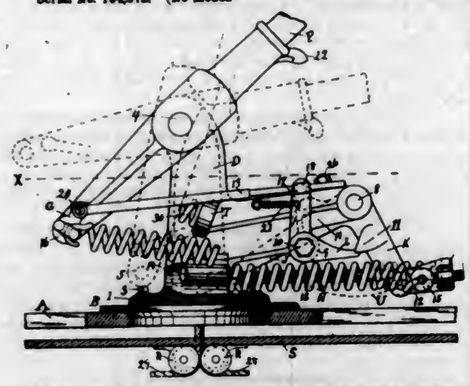
4. A winding-bar for paper-winding machines, comprising a main section and two sliding sections resting on seats on the main section which are inclined in opposite directions from the middle portion of the bar toward the opposite ends thereof and laterally-tapered dovetailed tongue-and-groove connections between the several sections.

5. A winding-bar for paper-winding machines comprising a main section and two sliding sections resting on seats on the main section, each of which comprises a series of inclines extending from the middle portion of the bar toward the end thereof and a laterally-tapered tongue-and-groove connection between the several sections.



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**753,345. AUTOMATIC RELEASING DEVICE FOR SAFETY-TROLLEYS.** ANDREW C. WOLFE, Pittsburg, Pa. Filed July 6, 1903. Serial No. 164,372. (No model.)



*Claim.*—1. In an automatic releasing device for safety-trolleys the combination, with a swivel-post and pivoted pole-fork, of a spring-bar; a pair of tension-springs connecting said fork with said spring-bar; a releasable support for said spring-bar; a pawl engaging said support; and releasing means from said fork to said pawl.

2. In an automatic releasing device for safety-trolleys, the combination, with sustaining-springs and counteracting springs, of a spring-bar connecting said springs; and a releasable spring-bar support.

3. In an automatic releasing device for safety-trolleys, the combination, with a swivel-post having substantially horizontally projecting arms and pivoted pole-fork, of a spring-bar support, pivotally secured in arms of said swivel-post; a spring-bar carried by said spring-bar support; tension-springs from said pole-fork to said spring-bar; a pawl to maintain said spring-bar in its extended position; and disengaging means from said pole-fork to said pawl.

4. In an automatic releasing device for safety-trolleys, the combination, with a swivel-post and pivoted pole-fork, of tension-springs; a spring-bar; counteracting springs; spring-bar guides; supporting means for said spring-bar; and a catch upon said supporting means, in position and adapted to engage said pole-fork and retain it in its lowered position.

5. In an automatic releasing device for trolley-base, the combination with a pivoted pole-fork, of a transverse spring-bar; adjustable eyes in the ends of said spring-bar; tension-springs from said eyes to said pole-fork; counteracting springs pushing against said spring-bar; guide-rods from said spring-bar, extending into openings in the swivel-post; a combined spring-bar support and returning-lever pivoted in arms of said swivel-post; and a retaining-pawl, to sustain said spring-bar support in its operative position.

6. In an automatic releasing device for safety-trolleys, the combination with a swivel-post and pivoted pole-fork, of sustaining-springs; a spring-bar; a releasable spring-bar support; and a buffer-spring on the side of said swivel-post, to engage one arm of said pole-fork.

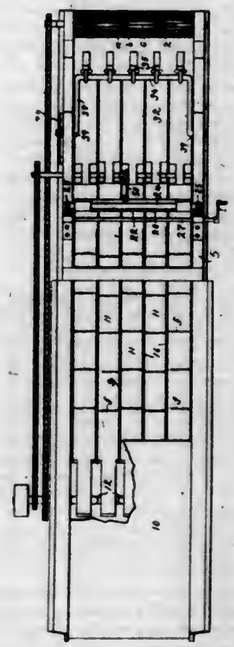
7. In an automatic releasing device for safety-trolleys, the combination, with a pivoted pole-fork, of a spring-bar; tension-springs from said pole-fork to said spring-bar; counteracting springs pushing against said spring-bar; guide-rods on said spring-bar, passing through said counteracting springs; and a releasable spring-bar support.

8. In an automatic releasing device for safety-trolleys, the combination with a swivel-post and support therefor, of arms on said swivel-post, sustaining at their ends a pin; a combined returning-lever and spring-bar support mounted on said pin; a pawl engaging said spring-bar support; a pivoted pole-fork; disengaging means from said pole-fork to said pawl; a spring-bar carried by said spring-bar support; adjusting-eyes in the end portions of said spring-bar; and tension-springs from said eyes to said pole-fork.

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**753,346. FEEDER FOR CORN-HUSKING MACHINES.** ALFRED YATES, Milton, Wis. Filed July 14, 1902. Serial No. 115,393. (No model.)

*Claim.*—1. The combination of the snapping-rollers of a corn-husking machine; of a multiple crank-shaft, having crank-arms extending in opposite directions; a set of feeding-bars journaled to the crank-arms; an elbow-plate located in the path of stalks advanced by said bars; and toothed band-cutting blades connected with the bars, said elbow-plate having its lower ends in such proximity to the bars as to prevent the passage of the bundles, while permitting the passage of the separated stalks.



2. The combination with the snapping-rollers of a corn-husking machine; of a multiple crank-shaft, having crank-arms extending in opposite directions; a set of feeding-bars journaled to the crank-arms; an elbow-plate located in the path of stalks advanced by said bars; toothed band-cutting blades connected with the bars, said elbow-plate having its lower ends in such proximity to the bars as to prevent the passage of the bundles, while permitting the passage of the separated stalks; and means for adjusting said plate.

3. The combination with the snapping-rollers of a corn-husking machine; of a multiple crank-shaft, having crank-arms extending in opposite directions; a set of feeding-bars journaled to the crank-arms; an elbow-plate located in the path of stalks advanced by said bars; toothed band-cutting blades connected with the bars, said elbow-plate having its lower ends in such proximity to the bars as to prevent the passage of the bundles, while permitting the passage of the separated stalks; and means for oscillating said plate longitudinally of the bars.

4. The combination with the snapping-rollers of a corn-husking machine; of a multiple crank-shaft, having crank-arms extending in opposite directions; a set of feeding-bars journaled to the crank-arms; an elbow-plate located in the path of stalks advanced by said bars; toothed band-cutting blades connected with the bars, said elbow-plate having its lower ends in such proximity to the bars as to prevent the passage of the bundles, while permitting the passage of the separated stalks; together with a multiple crank-shaft located above the bars between said plate and the snapping-rollers; rake-bars journaled to the cranks of said shaft near one end, and loosely linked at the other end to a transverse support, said rake-bars having teeth projecting downwardly in the direction of the stalk-advancing bars.

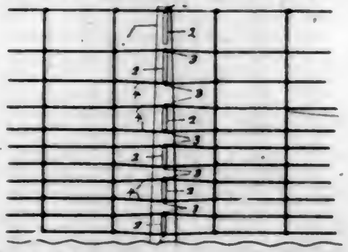
5. The combination with the snapping-rollers of a corn-husking machine; of a multiple crank-shaft, having crank-arms extending in opposite directions; a set of feeding-bars journaled to the crank-arms; an elbow-plate located in the path of stalks advanced by said bars; toothed band-cutting blades connected with the bars, said elbow-plate having its lower ends in such proximity to the bars as

to prevent the passage of the bundles, while permitting the passage of the separated stalks; together with a multiple crank-shaft located above the bars between said plate and the snapping-rollers; rake-bars journaled to the cranks of said shaft near one end, and loosely linked at the other end to an adjustable transverse support, said rake-bars having teeth projecting downwardly in the direction of the stalk-advancing bars.

6. The combination with the snapping-rollers of a corn-husking machine; of a multiple crank-shaft, having crank-arms extending in opposite directions; a set of feeding-bars journaled to the crank-arms; an elbow-plate located in the path of stalks advanced by said bars; toothed band-cutting blades connected with the bars, said elbow-plate having its lower ends in such proximity to the bars as to prevent the passage of the bundles, while permitting the passage of the separated stalks; together with a multiple crank-shaft located above the bars between said plate and the snapping-rollers; rake-bars journaled to the cranks of said shaft near one end, and loosely linked at the other end to an adjustable transverse support, said rake-bars having teeth projecting downwardly in the direction of the stalk-advancing bars; and a link connection between the rake-operating crank-shaft and the bundle-detaining plate, whereby the latter is oscillated.

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**753,347. FENCE-POST. ANDREW ADAM, Kendallville, Ind.**
Filed June 27, 1903. Serial No. 163,311. (No model.)



*Claim.*—1. A fence-post of cement having upon one face thereof a plurality of longitudinal lugs in substantial alinement, and having a series of hooks embedded therein, abutting the ends of said lugs, as described to relieve the hooks of the lateral strain incident to use.

2. The combination of a cement fence-post having upon one face thereof a plurality of longitudinal lugs; a series of hooks fixed in said post and abutting the respective ends of said lugs which resist the lateral strain on said hooks incident to use; and a series of horizontal fence-wires arranged in said hooks, all substantially as described.

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**753,348. TYPE-WRITER ALINING MECHANISM. JESSE ALEXANDER, Brooklyn, N. Y., assignor of one-half to Eric Nilson, New York, N. Y., and Julius August Lafrentz, Brooklyn, N. Y.** Filed Dec. 1, 1902. Serial No. 133,433. (No model.)



*Claim.*—1. An alining device for type-writing machines including a type-bar plate, a pair of guide-posts, each post having a recess in its end, a guide-ball in each recess, a helical spring for each ball for holding it in position, adjusting-screws operating in said posts for said springs and for adjusting their tension, said posts being pivoted to said plate.

2. An alining device for type-writing machines including a type-bar plate, a pair of guide-posts, each post having a recess in its end, a guide-ball in each recess, a helical spring for each ball for holding it in position, an adjusting-screw operating in said post for said springs, said posts being pivoted to said plate, an extension-arm from one of said posts, an adjusting-wedge cooperating therewith, and a screw passing through said arm and taking into said plate.

3. A horizontal alining device for a type-writing machine including a plate, a pair of guide-posts pivotally mounted thereon, extension-arms from said posts and wedge-shaped adjusting devices cooperating with said extensions.

4. Alining mechanism for a type-writing machine including a type-bar plate, radially-adjustable pivot-blocks, means for adjusting the same, and securing-screws, said type-bar plate having radial slots in which said securing-screws operate.

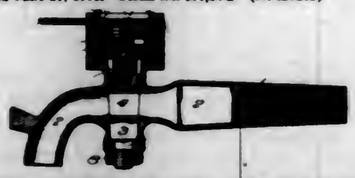
5. A vertical alining mechanism for type-writing machines including a type-bar plate, a ridge projecting therefrom, pivot-carrying blocks mounted on said plate and adjustable radially with respect thereto, means for effecting the adjustment of said blocks and securing-screws coacting with said blocks, said plate being slotted to permit the tightening of said screws at different radial positions of said blocks.

6. A vertical alining mechanism for a type-writing machine including a type-bar plate, radially-adjustable pivot-carrying blocks mounted thereon, screws and helical springs for effecting their adjustment, a securing-screw for each of said blocks for locking it in position, said plate being slotted to permit of the radial movement of said securing-screws.

7. A vertical alining mechanism for a type-writing machine including a type-bar plate, radially-adjustable pivot-carrying blocks mounted thereon, screws and helical springs for effecting their adjustment, a securing-screw for each of said blocks for locking it in position, said plate being slotted to permit of the radial movement of said securing-screws, all combined with a horizontal alining mechanism including yieldingly-mounted rotatable and adjustable guide-balls.

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**753,349. LOCK-FAUCET. BURWELL R. BACON, Frankfort, Ky.**
Filed June 29, 1903. Serial No. 163,574. (No model.)



*Claim.*—A lock-faucet embracing a casting or body with a longitudinal liquid passage-way therein and formed with a vertically-disposed barrel or cylindrical housing having a radial bolt slot or keeper; a rotative plug or valve having a diametric liquid passage-way therein and rotatively seated within the body of the faucet in line with the axis of the barrel or cylindrical housing, and formed with a pocket or recess in its upper end; a cylindrical lock receptacle or shell provided with interior diametric bolt and tumblers, and having at its lower end a projection adapted to lie within the recess or pocket in the plug a rotative escutcheon-plate provided with a radial handle and secured in fixed relation with the shell, and a ring-plate secured to the upper end of the housing to prevent fraudulent access to the connection between the escutcheon-plate and the lock-shell, substantially as hereinbefore set forth.

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**753,350. THRESHING-MACHINE. JOHN A. BEAN, Baden, Canada.** Filed Mar. 6, 1903. Serial No. 146,460. (No model.)



*Claim.*—1. In a threshing-machine, the combination with the threshing-cylinder, its concave and an endless straw-carrier, extending rearwardly therefrom, of a rotary separator comprising a cylinder having teeth curving backward in relation to the direction of rotation, said cylinder being arranged across said carrier and adapted to pick up the straw therefrom and throw it over, a rotary winged drum having teeth curving backward in relation to the direction of rotation between said threshing-cylinder and separator and a winged beater above and in rear of the separator and cooperating therewith.

2. In a threshing-machine, the combination with the threshing-cylinder, its concave and an endless straw-carrier, extending rearwardly therefrom, of a rotary separator comprising a cylinder having teeth curving backward in relation to the direction of rotation, said cylinder being arranged across said carrier and adapted to pick up the straw therefrom and throw it over, a rotary four-winged



drum between the threshing-cylinder and separator and a rotary four-winged beater above and in rear of said separator adapted to break up the straw and beat the grain therefrom as it goes over.

3. In a threshing-machine, the combination with the threshing-cylinder, its concave and an endless straw-carrier, extending rearwardly therefrom, of a rotary separator comprising a cylinder having teeth curving backward in relation to the direction of rotation said cylinder being arranged across said carrier and adapted to pick up the straw therefrom and throw it over, a rotary winged drum between said threshing and separator cylinders, and a rotary winged beater above and in rear of the first separator-roll, said drum and beater having teeth curving backward in relation to the direction of rotation for the purpose described.

4. In a threshing-machine, the combination with the threshing-cylinder, its concave and an endless straw-carrier, extending rearwardly therefrom, of a rotary separator comprising a cylinder having teeth curving backward in relation to the direction of rotation, said cylinder being arranged across said carrier and adapted to pick up the straw therefrom and throw it over, a rotary winged drum between the threshing-cylinder and separator and a rotary four-winged beater above and in rear of the separator having teeth curving backward in relation to the direction of rotation and cooperating with the teeth of the separator to break up the straw and beat the grain therefrom.

5. In a threshing-machine, the combination with the threshing-cylinder, its concave and an endless straw-carrier, extending rearwardly therefrom, of a rotary separator comprising a cylinder having teeth curving backward in relation to the direction of rotation, said cylinder being arranged across said carrier and adapted to pick up the straw therefrom and throw it over, a rotary winged drum arranged between said threshing and separator cylinders, a rotary winged beater above and in rear of said separator and a rotary wiper adjacent to and arranged at the bend of the endless carrier at its upper end.

6. In a threshing-machine, the combination with a threshing-cylinder, its concave and an endless straw-carrier extending rearwardly therefrom, of a series of rotary separators arranged above said carrier, each comprising a cylinder having teeth curving backward in relation to the direction of rotation, a cleaning comb or bar for each separator, a rotary drum arranged between the threshing-cylinder and the adjacent rotary separator, a series of radial wings carried by said drum and teeth curving backward in relation to the direction of rotation carried by said wings.

7. In a threshing-machine, the combination with a threshing-cylinder, its concave and an endless straw-carrier extending rearwardly therefrom, of a series of rotary separators arranged above said carrier, each comprising a cylinder having teeth curving backward in relation to the direction of rotation, a cleaning comb or bar for each separator, a rotary winged drum arranged between the threshing-cylinder and the adjacent rotary separator and a rotary winged beater arranged above and in rear of one of said separators, for the purpose described.

8. In a threshing-machine, the combination with a threshing-cylinder, its concave and an endless straw-carrier extending rearwardly therefrom, of a series of rotary separators arranged above said carrier, each comprising a cylinder having teeth curving backward in relation to the direction of rotation, a cleaning comb or bar for each separator, a rotary winged drum having teeth arranged between the threshing-cylinder and the adjacent rotary separator and a rotary four-winged beater arranged above and in rear of the separator and having teeth, said teeth curving backward in relation to the direction of rotation, for the purpose described.

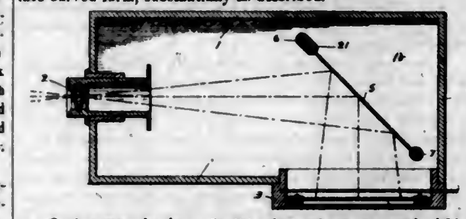
9. In a threshing-machine, the combination with a threshing-cylinder, its concave and an endless straw-carrier extending rearwardly therefrom, a series of rotary separators arranged above said carrier, each comprising a cylinder having teeth curving backward in relation to the direction of rotation, a cleaning comb or bar for each separator, a rotary winged drum arranged between the threshing and adjacent separator cylinder, a rotary winged beater arranged adjacent to said separator and a wiper arranged adjacent to and at the bend of the endless carrier.

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**753,351. CAMERA. GEORGE C. BEIDLER, Oklahoma, Okla.**
Filed Nov. 17, 1903. Serial No. 181,475. (No model.)

*Claim.*—1. A camera having a flexible plane mirror mounted within it for reflecting the rays of light from the lens onto the sensitized plate, and means for bending the mirror into curved form, substantially as described.

2. A camera having a flexible plane mirror mounted within it for reflecting the rays of light from the lens onto the sensitized plate, the mirror being supported at each end by a revoluble shaft, and means for revolving said shafts, whereby the mirror may be bent into curved form, substantially as described.



3. A camera having a flexible plane mirror mounted within it for reflecting the rays of light from the lens onto the sensitized plate, the ends of the mirror being secured to revoluble shafts, the ends of the shafts extending through a wall of the camera-box and having arms for revolving them, substantially as described.

4. A camera having a flexible mirror mounted within it for reflecting the rays of light from the lens onto the sensitized plate, the ends of the mirror being secured to revoluble shafts by extending diametrically through said shafts, the shafts extending through a wall of the camera-box and having arms for revolving them, the free ends of said arms projecting over a locking-plate having a series of holes for locking said arms in different positions, substantially as described.

5. A camera having a flexible mirror mounted within it, the ends of the mirror being secured to vertically-disposed revoluble shafts journaled in the top and bottom of the camera-box, the shafts being connected together above and below the mirror by straight elastic rods, means for revolving the shafts, substantially as described.

6. A camera having a flexible mirror mounted within it, the ends of the mirror extending through and being secured to vertically-disposed shafts, the shafts being journaled in the top and bottom of the camera-box, the upper ends of the shafts extending through the camera top and having arms for revolving them, a locking-plate mounted under the free ends of said arms and having holes for said ends to engage, the bearing-openings in which one of the revoluble shafts is journaled being elongated, substantially as described.

7. A camera having a flexible mirror mounted within it, the mirror being supported at its ends by revoluble shafts journaled in the camera-box, the ends of the shafts extending out through the wall of the camera and having arms for revolving them, the arms being so set as to lie in the same straight line when the mirror is in the form of a plane, a locking-plate for the free ends of said arms, substantially as described.

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**753,352. LAMP-BURNER. HENRY L. BOWLIN, Columbus, Miss.**
Filed Oct. 28, 1903. Serial No. 178,906. (No model.)



*Claim.*—1. In a lamp-burner, a shell or frame having a lateral chimney-supporting flange, and a chimney-seating portion rising therefrom, the flame-bell rising centrally from said shell and having spaced radial apertures intermediately disposed therein, and springs having their lower extremities fixed in said shell or frame and their upper extremities hook-shaped and engaging said flame-bell apertures, substantially as specified.

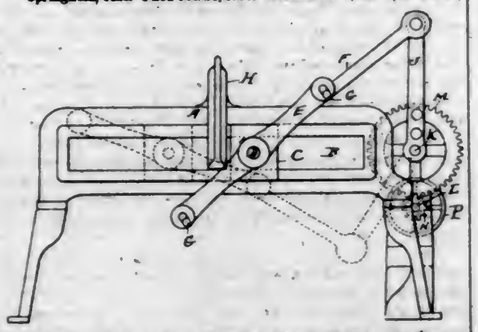
2. In a lamp-burner, a shell or frame having spaced radial apertures and formed with a lateral chimney-supporting flange and with a chimney-seating portion rising therefrom, the flame-bell rising centrally from said shell or frame and the threaded lamp-body-engaging portion depending therefrom, said flame-bell portion and threaded depending portion being provided with spaced radial aper-

tures in alinement with the apertures in said shell or frame, and springs engaged by their lower extremities in the apertures in said threaded depending portion and passing through the apertures in said shell or frame and fixed therein and with their upper extremities hook-shaped and engaging the apertures in said flame-bell portion, substantially as specified.

3. In a lamp-burner, a shell or frame having spaced radial apertures and formed with a lateral chimney-supporting flange and with a chimney-seating portion rising therefrom, the flame-bell rising centrally from said shell or frame and the threaded lamp-body-engaging portion depending therefrom, springs connected by their lower ends to said threaded depending portion and passing through the apertures in said shell or flange, an annular plate inclosing said threaded depending portion and having radiating arms provided with apertures for the passage of said springs and terminating in lateral spurs for clamping said springs to said shell or flange, substantially as specified.

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**753,353. CANDY-PULLING MACHINE.** JOHN G. BRECKENRIDGE, Springfield, Ohio. Filed Oct. 21, 1903. Serial No. 177,853. (No model.)



*Claim.*—1. In a candy-pulling machine, a frame, a stationary hook to support the candy while being pulled, a pulling-arm having hooks thereon to engage the candy held by the stationary hook and to pull the same in opposite directions, a slide upon which said arm is mounted, and a crank adapted to move said slide and to impart to the pulling-arm simultaneously a horizontal reciprocating and a reversed oscillating movement, whereby the candy held on the stationary hook is pulled in opposite directions, substantially as set forth.

2. In a candy-pulling machine, a frame having a longitudinal guide-slot therein, an arch projecting laterally from the median portion of said frame, an inwardly-projected stationary candy-hook on said arch adapted to hold the candy while being pulled in opposite directions, a pulling-arm having hooks on opposite points thereof to engage the candy to pull the same in opposite directions, a slide movable in the guide-slot in the frame and upon which the said arm is supported, and crank connections adapted to impart to said slide a longitudinal reciprocating movement and to impart to the pulling-arm an oscillating reciprocating movement, substantially as set forth.

3. In a candy-pulling machine, the combination with a frame having a longitudinal guide-slot, a stationary candy-hook projecting laterally from said frame, a slide movable in the guide-slot in said frame, a shaft loosely mounted in said slide, a pulling-arm secured to said shaft on one side of the slide, said pulling-arm having hooks projected outwardly therefrom, said hooks being adapted to pull the candy supported on the stationary hook in opposite directions, and crank connections between the shaft of the slide and pulling-arm and whereby longitudinal reciprocating and oscillating movements are simultaneously imparted to the pulling-hooks, substantially as set forth.

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**753,354. PLUMB AND LEVEL.** GEORGE C. BROWN, Fort Gaines, Ga. Filed May 1, 1903. Serial No. 155,166. (No model.)

*Claim.*—1. In a device of the character described, the combination with a stock or frame, a plumb-bob suspended thereon, and a lock-plate disposed upon the stock adjacent the plumb-bob and adapted to clamp the said bob against the stock or frame when the same is not in use.

2. In a device of the character described, the combination with a stock or frame, of a plumb-bob suspended thereon, a lock-plate pivoted to the stock or frame adjacent the bob and adapted to abut against the bob to clamp the same against the body of the stock or frame to prevent movement thereof.

3. In a device of the character described, a stock or frame having a transverse opening therein, a plumb-bob suspended upon the frame and disposed within the aforesaid opening, means for closing the opening upon the rear face of the frame, and a pivoted plate adapted to close the opening upon the front face of the frame of stock to lock the bob from movement thereon.



4. In a device of the character described, a stock or frame provided with a transverse opening therein, a bob suspended within the aforesaid opening, a plate for closing the opening upon the rear face of the stock and a cooperating plate pivoted to the stock or frame upon the front side thereof and adapted to close the opening aforesaid and to lock the bob from movement when same is not in use and to permit movement of the bob when manipulated so as to uncover the opening.

5. In a device of the class described, the combination of a stock provided with a longitudinal recess to receive the bob-line and having an opening at the lower portion thereof communicating with the said recess, a plumb-bob disposed within the opening, a plate closing the opening upon the rear face of the stock or frame and a second plate pivoted to the front face of the stock, said plate being provided with engaging means at the end opposite the point of pivot thereof, keepers disposed upon opposite sides of the opening and adapted to cooperate with the engaging ends of the pivoted plate when same is manipulated so as to uncover or close the opening.

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**753,355. PUZZLE-LOCK.** HENRY BRICK, New York, N. Y. Filed Oct. 31, 1903. Serial No. 179,286. (No model.)



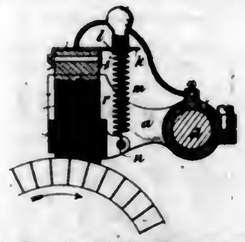
*Claim.*—1. A puzzle-lock composed of a rotatable hook having a pointed beak, a perforated ball adapted to be engaged thereby, a keeper adapted to be engaged by the ball, and means cooperating with the keeper for closing the lock, substantially as specified.

2. A puzzle-lock composed of a chamber having a transparent cover, a spindle traversing the same, a hook projecting from the spindle and having a pointed beak, a perforated ball adapted to be engaged by the beak, a keeper adapted to be engaged by the ball, and means cooperating with the keeper for closing the lock, substantially as specified.



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**753,356. BRUSH-HOLDER.** CHARLES O. BULOCK, Milwaukee, Wis., assignor to National Electric Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Aug. 21, 1903. Serial No. 170,330. (No model.)



*Claim.*—1. In a brush-holder the combination of a sleeve, a brush movable endwise therein and provided at its outer end with an overhanging slotted plate, and a spiral spring attached at one end to a part of the holder and adapted to be engaged with said plate between different turns of the spiral to vary the tension on the brush, substantially as described.

2. In a brush-holder the combination of a sleeve, a brush movable endwise therein and provided at its outer end with a projection overhanging the back side of the sleeve, and a tension-spring connecting said projection with a part of the holder on the back side of said sleeve, whereby the pull of the spring in connection with the action of the commutator prevents binding of the brush in the sleeve and insures constant and uniform contact of the brush with the commutator, substantially as described.

3. In a brush-holder the combination of a sleeve, a brush movable endwise therein and provided at its outer end with an overhanging slotted plate having a spring-seat cut by the slot and a spiral spring attached at one end to a part of the holder and adapted to be caught and held at different points by said plate, substantially as described.

4. In a brush-holder the combination of a sleeve, a brush movable endwise therein, a metal plate formed with ears which embrace and are secured to the outer end of the brush, and with a forked projection overhanging one side of the brush, and a spiral spring attached at one end to a part of the holder and adapted to be caught and held at different points between adjoining coils by said projection, substantially as described.

5. In a brush-holder the combination of a sleeve having longitudinal slots opening through its outer end on opposite sides thereof, a brush movable endwise therein and provided at the outer end with a plate having a forked projection which overhangs one side of the brush and ears attached to opposite sides of the brush in position to enter the slots in said sleeve, and a spiral spring attached at one end to a part of the holder and adapted to be caught and held at different points between adjoining coils on said projection, substantially as described.

6. In a brush-holder the combination of a sleeve, a brush fitting and movable endwise therein and provided at its outer end with an overhanging forked or slotted projection, and a tension-spring provided at its outer end with a knob or handle attached at its inner end to a part of the holder and adapted to be caught and held at different points between consecutive coils or turns upon said projection, substantially as described.

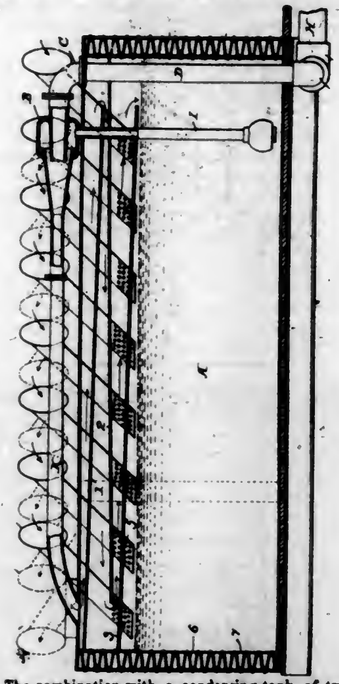
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**753,357. LOCOMOTIVE-TANK CONDENSER.** FRANK DUDGEON and HENRY M. WILLIAMS, Fort Wayne, Ind.; said Burger assignor of one-half of his right to said Williams. Filed Apr. 23, 1901. Serial No. 57,120. (No model.)

*Claim.*—1. A condensing-tank provided with a series of inclined perforated plates arranged one above the other, and alternately connected to the opposite walls of the tank combined with means for discharging steam onto the upper plate, substantially as described.

2. A condensing-tank provided with a series of perforated plates, arranged one above the other, and a series of funnels extending through the plates, combined with means for discharging exhaust-steam onto the upper plate, substantially as described.

3. A condensing-tank provided with a series of perforated plates, arranged one above the other and a series of funnels extending through the plates, said funnels having perforations to permit the discharge of air between the plates, combined with means for discharging exhaust-steam onto the upper plate, substantially as described.



4. The combination with a condensing-tank, of two series of funnels having their outer ends extending in opposite directions and their inner ends extending into the tank, combined with a series of perforated plates arranged one above the other within the tank, and means for discharging exhaust-steam onto the upper plate, substantially as described.

5. The combination with a condensing-tank, of a series of plates arranged one above the other within the tank, and two series of funnels, one having their inner ends extending through the plates and the other having their inner ends arranged above the plates, combined with means for discharging exhaust-steam onto the upper plate, substantially as described.

6. In a condensing-tank, the combination with a series of inclined perforated plates arranged one above the other and alternately mounted on the opposite ends of the tank, of two series of funnels having their open ends extending in opposite directions, one series being provided with tubular portions extending through the plates, whereby the air on entering one series of funnels passes through the plates and out through the other series of funnels, and means for discharging exhaust-steam onto the upper plate, substantially as described.

7. The combination with a condensing-tank, of ejectors connected to receive the exhaust-steam from the engine, pipes leading from the tank to the ejectors, a pipe leading from the ejectors to the rear end of the tank and delivering thereto, a series of inclined perforated plates, and a series of air-funnels extending through the plates and delivering air into the tank, substantially as described.

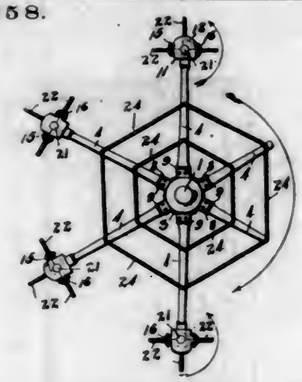
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**753,358. PADDLE-WHEEL.** THOMAS J. CAMPBELL, Economy, Pa. Filed June 29, 1903. Serial No. 163,545. (No model.)

*Claim.*—1. A paddle-wheel having revolable paddles, disposed concentrically of and with their axes parallel to its axis, said revolable paddles having radially-disposed blades, which converge and join at the axes of said paddles, substantially as described.

2. A paddle-wheel, comprising a shaft, hubs thereon spaced apart, radial spokes projecting from the hubs, braces connecting the spokes to the respective hubs, bearings in the spokes, and revoluble paddles, having shafts journaled in said bearings and disposed parallel with the shaft of the wheel, said revoluble paddles having radially-disposed blades, which converge to and are joined at their respective axes, substantially as described.

753,358.

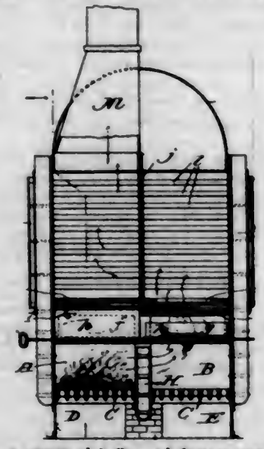


753,359. ANTIKICKER FOR COWS. JOHN CASEY, Casey, Minn. Filed July 31, 1903. Serial No. 167,677. (No model.)



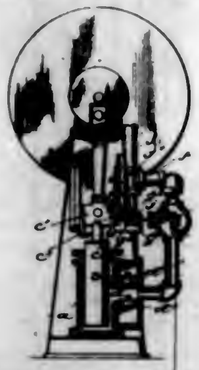
*Claim.*—An antikicker for cows, comprising the stiff curved bar 2 having at its upper and lower portions, respectively, the straps 3 and 4, the bow 5 secured to the intermediate portion of said bar 2, the chain 6 attached to one end of said bow 5, and the chain grappling-hook 7 at the other end of said bow 5, said parts operating to secure said bar to the animal's leg, substantially as described.

753,360. SMOKELESS BOILER. EPHRAIM CHAQUETTE, New Rochelle, N. Y. Filed June 4, 1903. Serial No. 160,010. (No model.)



*Claim.*—A combined boiler and furnace comprising two fire-pots arranged side by side, a water-leg serving as the dividing-wall between said fire-pots and spaced from the rear wall of the furnace so as to afford communication between the fire-pots, a boiler-section communicating with the water-leg and forming the roof of the fire-pots, water-tubes located above said section, a longitudinal partition extending from the front wall midway of the water-tubes to near the rear wall serving to divide said boiler-section into two passage-ways communicating at the rear, a smoke-exit leading from the front of one of said passage-ways and flues connecting the front of the other passage-way with the front of both of said fire-pots, and dampers in said flues by which communication is established with either of said fire-pots alternately as required.

753,361. POWER-PUMP. HENRY M. CHASE, Holyoke, Mass. Filed Mar. 27, 1902. Serial No. 100,236. (No model.)



*Claim.*—1. In a power-pump, the combination with two or more cylinders and pulsating-chambers, and a discharge-pipe, of an auxiliary chamber situated between one of the pulsating-chambers and the discharge-pipe, an automatically-operated valve arranged in the auxiliary chamber, whereby communication may be established between said pulsating-chamber and discharge-pipe through all or any part of the stroke, and by-pass connections between one or more of the cylinders and the suction-chamber or pipe.

2. In a power-pump, the combination with the pulsating-chamber and discharge-pipe, connected together by a suitable pipe, of a valve arranged to admit and cut off the supply of water to the pulsating-chamber, an angle-lever pivoted on a fixed part of the pump-frame, with one arm arranged to engage the stem of the valve, a projection on the cross-head of the plunger-rod arranged to strike the other arm of the angle-lever to open the valve, and means automatically operating to lock said valve in open position.

3. In a power-pump, the combination with the pulsating-chamber and discharge-pipe, of a valve situated between said pulsating-chamber and discharge-pipe, said valve arranged to admit and cut off the supply of water to the pulsating-chamber, an angle-lever pivoted on the fixed part of the pump-frame, having one arm arranged to engage the stem of the valve, a projection on the cross-head arranged to strike the other arm of said angle-lever, to open the valve, means automatically operating to lock said valve in open position, and means automatically operating to release the valve at any desired part of the return stroke to cut off the supply of water.

4. In a power-pump, the combination with the pulsating-chamber and discharge-pipe, connected together by a suitable pipe, of a valve arranged in said pipe to admit and cut off the supply of water to the pulsating-chamber, means automatically operating to open the valve, a pivoted lever arranged to automatically engage the stem of the valve and lock said valve in open position, and means automatically operating said lever to release the valve, at any desired part of the stroke, to cut off the supply of water.

5. In a power-pump, the combination with the pulsating-chamber and discharge-pipe, connected together by suitable pipe, of a valve arranged in said pipe to admit and cut off the supply of water to the pulsating-chamber, a pivoted angle-lever having one arm adapted to engage the stem of the valve, a pivoted lever arranged to lock the valve in open position, an adjustable stop on said lever, and a projection on the cross-head of the plunger-rod adapted to engage the free arm of the angle-lever on its downward stroke to open the valve, and to engage the adjustable stop on the return stroke to release the valve to cut off the supply of water.

753,362. BEDSTEAD BRACE-CLAMP. FRANK H. CHILDS, Stroud, Okla. Filed Dec. 20, 1902. Serial No. 187,913. (No model.)



*Claim.*—1. The herein-described clamp-brace for bedsteads comprising bars disposed in pairs and each pair united at their inner ends, one bar of each pair being longer than the other and extended laterally for engagement with the bedstead-rails and the shorter bars for engagement with the internal structure of the same, clamp-links slidably engaging said pairs of bars for compressing them upon the bed-rails, and means for adjustably coupling the inner ends of said pairs of bars, substantially as described.



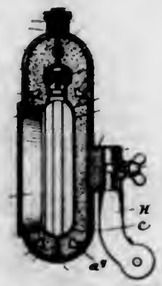
2. The herein-described clamp-brace for bedsteads comprising bars disposed in pairs and each pair united at their inner ends, and with means for detachably connecting the outer ends of said bars to the opposite bedstead-rails, one pair of said bars having a swinging hook adjustable longitudinally thereon and the other pair of said bars having an aperture for detachable engagement with said hook, and a sliding link for locking engagement with said hook when closed.

3. The herein-described clamp-brace for bedsteads comprising bars having at their outer ends means for detachable connection to the opposite rails and with a nut connected to the inner end of one of said bars and an aperture in the inner end of the other bar, a threaded rod adjustably engaging said nut and with a swinging hook in its outer end for engagement with the aperture in said brace member, and a sliding link for locking engagement with said hook when closed.

4. The herein-described clamp-brace for bedsteads comprising bars disposed in pairs and each pair united at their inner ends, and with means for detachably connecting the outer ends of said bars to the opposite bedstead-rails, clamp-links rotatively connected to one of said bars and slidable thereon and movably engaging the other bar by its free end and with an intermediate offset, whereby the link may be caused to couple differently-spaced bars.

5. The herein-described clamp-brace for bedsteads comprising bars disposed in pairs and each pair united at their inner ends, and with means for detachably connecting the outer ends of said bars to the opposite bedstead-rails, clamp-links formed with spaced sides and coupled rotatively at one end to one of said bars and slidable thereon and movably engaging the other bar by the free ends, each side having an intermediate offset, whereby the links may be caused to couple differently-spaced bars and prevented from displacement thereon.

753,363. WATCH-HOLDER. ALBERT M. CHURCH, Chicago, and EDWIN S. CHURCH, Oakpark, Ill.; said Edwin S. Church assignor to said Albert M. Church. Filed Aug. 18, 1902. Serial No. 120,000. (No model.)



*Claim.*—1. A watch-holder comprising an inclosing jacket formed of sections, and having a plastic filler mass therein, said mass having a watch-pocket formed therein.

2. A holder for watches comprising an inclosing jacket formed of sections fitting together and having a plastic filler mass in each of said sections and having a watch-pocket formed between the filler masses and a lining of soft material covering said filling and around said pocket.

3. A holder for watches comprising an inclosing jacket formed of sections and having a cement filling therein, and having a watch-pocket formed in the filling.

4. A holder for watches comprising an inclosing jacket formed of sections fitting together, and having a mass of cement filling secured in each of said sections, and having a watch-pocket formed between the filling mass, said jacket being formed of substantially the same contour as the watch to be held therein, and so the filling will be of substantially uniform thickness around said pocket.

5. A holder for watches comprising a jacket formed of sections fitting together and having a mass of cement filling secured in each of said sections, and having a watch-pocket formed between the filler-sections, and a lining of soft material covering said filling and around said pocket.

6. In a holder for watches, the combination with a jacket formed of sections, one of said sections being provided with a screw-threaded projection, a nut engaging both of said sections and serving to force said sections against each other and a filling of insulating material secured within each of said sections, a pocket being formed within the insulating material for the watch to be held therein.

7. In a holder for watches, the combination with a jacket formed of sections, one of said sections being provided with a screw-threaded projection, a nut serving to force said sections against each other, and a filling of insulating material secured within each of said sections, a pocket being formed within the insulating material for the watch to be held, said jacket corresponding substantially to the same shape as the watch to be held.

8. In a holder for watches, the combination with a jacket of a supporting-bracket comprising a lug, a screw whereby the bracket may be secured to a fixed part, an arm having one end pivotally and adjustably secured to said lug, a standard adjustably secured to the other end of said arm, said jacket being provided with a socket adapted to receive said standard, said holder being revolubly and removably held on said standard and means for securing said jacket in assigned position with respect to said standard.

753,364. EYEGLASS-MOUNTING. EDWARD CLARK, Dunkirk, N. Y., assignor of one-half to Frank F. Stapf, Dunkirk, N. Y. Filed Sept. 3, 1903. Serial No. 171,771. (No model.)



*Claim.*—1. An eyeglass-mounting comprising a flat strip of metal having its central portion curved to form a bridge-piece, and its end portions bent downwardly directly from the ends of the bridge-piece to form depending stud-post holders and then bent upwardly at the lower ends of the stud-post holders to form upturned nose-pieces disposed on the inner sides of and substantially in line with the stud-post holders and between the ends of the bridge-piece.

2. An eyeglass-mounting comprising a flat strip of metal having its central portion curved to form a bridge-piece, bent downwardly directly from the ends of the bridge-piece to form depending stud-post holders and then bent upwardly at the lower ends of the stud-post holders to form upturned nose-pieces disposed on the inner sides of and substantially in line with the stud-post holders and between the ends of the bridge-piece, in combination with the stud-post holders for the lenses secured to and adjustable on the stud-post holders.

753,365. ELECTROMAGNETIC SIGNAL. WILLIAM U. COLTHAR, Springfield, Ohio, assignor to John C. Gleason and James R. Von Schrilts, Springfield, Ohio. Filed July 24, 1903. Serial No. 166,817. (No model.)

*Claim.*—1. In an electromagnetic signal, the combination, with an electromagnet, of a signal, and a rolling armature controlling the signal, substantially as described.

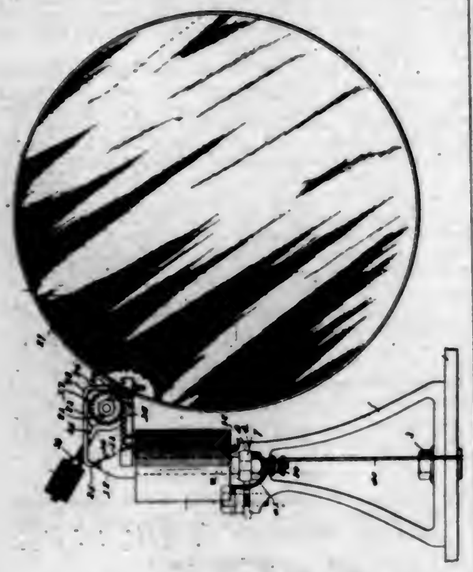
2. In an electromagnetic signal, the combination, with an electromagnet, of a signal, and an armature controlling the signal and rolling in a plane transverse to the plane of the magnet, substantially as described.

3. In an electromagnetic signal, the combination, with a substantially vertical electromagnet, of a signal, and an armature controlling the signal and rolling in a substantially horizontal plane, substantially as described.

4. In an electromagnetic signal, the combination, with an electromagnet, of a signal, and a rolling armature controlling the signal and normally remote from the magnet, said armature rolling toward the magnet when the latter is energized, and away from the magnet when the latter is inert, substantially as described.

5. In an electromagnetic signal, the combination, with an electromagnet, of a rolling armature, and a signal carried by and eccentrically related to said armature, substantially as described.

6. In an electromagnetic signal, the combination, with an electromagnet, of a rolling armature, and a signal carried by and eccentrically related to said armature, said signal being overweighted to roll the armature away from the magnet when the latter is inert, substantially as described.



7. In an electromagnetic signal, the combination, with a vertical electromagnet having laterally-extending pole-pieces, of a rolling armature supported so as to move over said pole-pieces, and a signal carried by said armature, substantially as described.

8. In an electromagnetic signal, the combination, with a vertical electromagnet having laterally-extending and outwardly-diminishing pole-pieces, of a rolling armature supported so as to move over said pole-pieces, and a signal carried by said armature, substantially as described.

9. In an electromagnetic signal, the combination, with a vertical electromagnet having laterally-extending pole-pieces and ways or tracks, of a rolling armature provided with a signal and supported on said ways or tracks above said pole-pieces, substantially as described.

10. In an electromagnetic signal, the combination, with an electromagnet having laterally-extending pole-pieces and diamagnetic tracks, of a rolling armature provided with a signal, and supported and guided by said tracks above said pole-pieces, substantially as described.

11. In an electromagnetic signal, the combination, with an electromagnet having laterally-extending pole-pieces and parallel tracks and rack, of a rolling armature provided with a signal and having grooved collars to fit said tracks and pinions to engage said racks, substantially as described.

12. In an electromagnetic signal, the combination, with an electromagnet having laterally-extending pole-pieces and tracks and ways, of a rolling armature provided with a signal and supported on said tracks or ways, and guards or retainers extending above said armature to maintain it in position on said tracks, substantially as described.

13. In an electromagnetic signal, the combination, with a vertical electromagnet having laterally and vertically extended pole-pieces, of a rolling armature traveling over said laterally-extended portions of the pole-pieces and toward and from the vertically-extended portions, substantially as described.

14. In an electromagnetic signal, the combination, with a vertical electromagnet having laterally and vertically extended pole-pieces, of a rolling armature traveling over the laterally-extending portions of said pole-pieces toward and from the vertically-extended portions thereof, and means for preventing said armature from contacting with said pole-pieces, substantially as described.

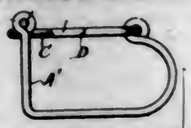
15. In an electromagnetic signal, the combination, with a vertical electromagnet, and a rolling armature provided with a signal and traveling on laterally-extending ways carried by said magnet, of a standard with which said magnet is adjustably connected, whereby the plane of travel of the armature may be adjusted, substantially as described.

16. In an electromagnetic signal, the combination, with an electromagnet, and a rolling armature, of a shaft concentric with the armature and partaking of its movements, and a signal carried by said shaft and eccentrically located relatively thereto, substantially as described.

17. In an electromagnetic signal, the combination, with a standard having a split clamping-collar, of an electromagnet having a cross-piece fitted and adjustable in said collar, and a rolling armature mounted on ways carried by said electromagnet, substantially as described.

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**753,366. CLEVIS. Benjamin W. Coon, Ingersoll, Mich. Filed May 7, 1903. Serial No. 156,056. (No model.)**

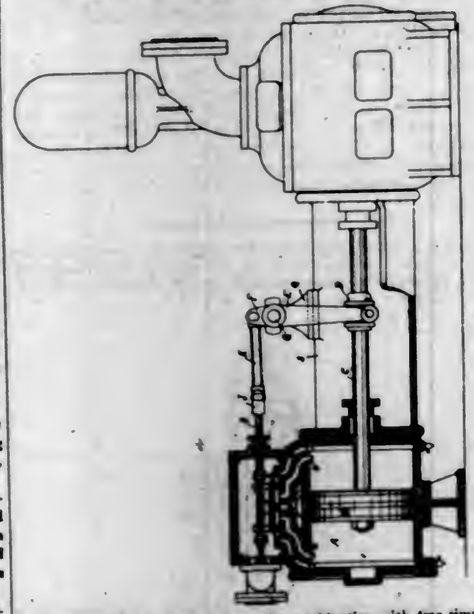



*Claim.*—1. In a clevis a body having a member bent to form a shoulder, a hak hinged to one end of the body and having an eye fitted over the shoulder and held frictionally.

2. In a clevis, a body having a member bent to form a shoulder, a link hinged to one end of the body and having an eye fitted over the shoulder and held frictionally and a supplemental retaining means comprising a pin, substantially as described

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**753,367. STEAM-PUMP. Fred R. Corey, Schenectady, N. Y. Filed June 7, 1901. Serial No. 63,566. (No model.)**



*Claim.*—1. In a duplex pump, the combination with two similar and parallel working cylinders, two pistons within the said cylinders, piston-rods in operative connection with the said pistons, and two dissimilar valves controlling the motion of the said pistons, of two similar levers for transmitting motion from the said piston-rods to the said valves, the said levers being supported by a single shaft and mutually interlocked to prevent endwise motion on the said shaft, substantially as described.

2. In a duplex pump, the combination, with two similar and parallel working cylinders, two pistons within the said cylinders, piston-rods in operative connection with the said pistons, and two dissimilar valves controlling the motion of the said pistons, of two interchangeably similar levers for transmitting motion from the said piston-rods to the said valves, the said levers being supported by a single shaft and held thereby in a mutually-interlocked position, substantially as described.

3. In a duplex pump, the combination with two parallel working cylinders and pistons therein, piston-rods in operative connection with the said pistons, and two valves for controlling the motion of the said pistons, of two similar and interlocking levers for transmitting motion from the said piston-rods to the said valves, the said levers having a common axis of oscillation, substantially as described.

4. In a duplex pump the combination with two parallel working cylinders and pistons therein, piston-rods in operative connection with the said pistons, and two valves for controlling the motion of the said pistons, of two interchangeably similar levers for transmitting motion from the said piston-rods to the said valves, the said levers being supported and interlocked by a single shaft, substantially as described.

5. In a duplex pump, the combination with two working cylinders and pistons therein, of valves for controlling the movement of the said pistons and two interchangeably similar levers for communicating motion between the said pistons and the said valves, the said levers being supported and interlocked upon a single shaft, substantially as described.

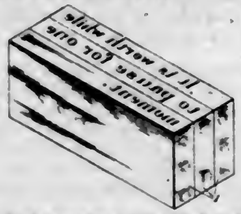
6. In a duplex pump, two parallel cylinders, movable pistons within the said cylinders, valves controlling the supply of working fluid to the said cylinders, and two similar levers, each of the said levers communicating motion from the piston of one cylinder to the valve of the complementary cylinder, the said levers being interchangeable and being supported by a single shaft and mutually interlocked thereon, substantially as described.

7. In a duplex pump, two interchangeable valve-actuating levers and a single shaft supporting the said levers, the two levers being mutually interlocked to prevent endwise motion of the said levers upon the said shaft, substantially as described.

8. In a duplex pump, two integral and mutually-interlocking valve-motion levers of similar construction, having a common axis of oscillation, substantially as described.

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**753,368. ART OF PLANOGRAPHIC PRINTING. George R. Cornwall, Rye, N. Y., assignor to American Planograph Company, New York, N. Y., a Corporation of West Virginia. Filed Nov. 11, 1903. Serial No. 180,927. (No model.)**



*Claim.*—1. A planographic printing-surface divisible into line members or elements.

2. A planographic printing-surface composed of a series of individual elements or members assembled to form a uniform surface, each element or member bearing a line or a portion of a line of typographic composition.

3. An element of a planographic printing-surface consisting of a strip or bar having a planographic printing-surface and bearing thereon a line or a portion of a line of typographic composition.

4. A planographic printing-surface having thereon a typographic composition, said surface being divisible into units or members each bearing a line or part of a line of composition, said line members being capable of rearrangement, transposition, substitution or removal, for the purpose of correcting, modifying or changing the composition, substantially as described

5. A planographic printing-surface having thereon a typographic composition, said surface constituted of a plurality of units or members assembled to form a uniform planographic surface, individual units of which bear a line or part of a line of the composition, said units capable of being disassembled, rearranged, transposed, and substituted by other similar units and reassembled into a uniform planographic surface, for the purposes described.

6. A form for planographic printing, the same consisting of a plurality of planographic printing-surfaces, each having imposed thereon an independent design representing a single line of typographic characters, substantially as set forth.



7. A planographic printing-surface comprising a series of strips or bars held together to form a uniform continuous planographic surface, each strip or bar bearing one line of typographic impressions.

8. A form for planographic printing, consisting of a series of planographic line-bars, each carrying a typographic design, substantially as set forth.

9. As a unit of composition for planographic printing, a planographic strip or bar containing a line of typographic design or designs, substantially as set forth.

10. A planographic printing-surface consisting of a single bar or strip carrying a line of justified typographic characters, as set forth.

11. A planographic printing-form consisting of a plurality of bars or strips, each carrying a justified line of typographic characters, as set forth.

12. A planographic printing-surface consisting of a bar or strip carrying a line of justified typographic characters and a bar or strip carrying a line of unjustified typographic characters.

13. A planographic printing-form consisting of a plurality of bars or strips, each carrying a justified line of typographic characters, and a plurality of bars or strips carrying lines of unjustified typographic characters, the whole constituting a uniform planographic surface.

14. The herein-described improvement in the art of planographic printing, a form composed of a series of planographic line bars or strips carrying typographic characters and provided with grooves and ribs arranged to interlock when the form is made up, substantially as set forth.

15. A form for planographic printing consisting of a series of parts adapted to have imposed thereon a typographic composition, in a manner to affix the printing-surface to each part by processes at once operating upon all or a plurality of the several parts composing the form, substantially as set forth.

16. As an improvement in the art of planographic printing, a planographic line-bar carrying a typographic design, said bar being provided with a groove upon one side and a rib registering with said groove upon the opposite side, substantially as set forth.

17. As an improvement in the art of planographic printing, a planographic line-bar carrying a typographic design, and provided with a notch upon one side and a registering rib upon the opposite side, and having the ends notched for the purpose herein described.

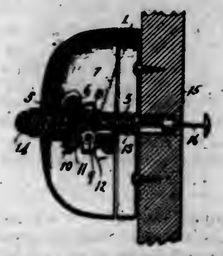
18. As an improvement in planographic printing-forms, a series of planographic bars, the outer arc of which conforms to the curvature of the form to be printed from, and the lesser arc to that of the bed or support, and each bar carrying a line of typographic characters, substantially as set forth.

19. As an improvement in the art of planographic printing, a form composed of a series of planographic sector-bars, each containing a typographic design, the outer arc of said bars conforming to the circle of the printing-form, and the lesser arc to the support or bed, substantially as set forth.

20. As an improvement in planographic printing, a planographic line-bar, the cross-section of which forms the section of a cylinder, the outer arc conforming to the curvature of the form to be printed from, and the lesser arc to that of the bed or support, said bar having a design of typographic matter imposed upon its outer surface, substantially as set forth.

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**753,369. BELL. Nathan W. Crandall, Meriden, Conn., assignor to the Russell & Erwin Mfg. Co., New Britain, Conn., a Corporation of Connecticut. Filed Oct. 29, 1903. Serial No. 179,080. (No model.)**



*Claim.*—1. A mechanism of the character described comprising a bell, a tubular post forming a support for said bell, a plunger in said post, a spring therefor, a striker, a gear projecting through a

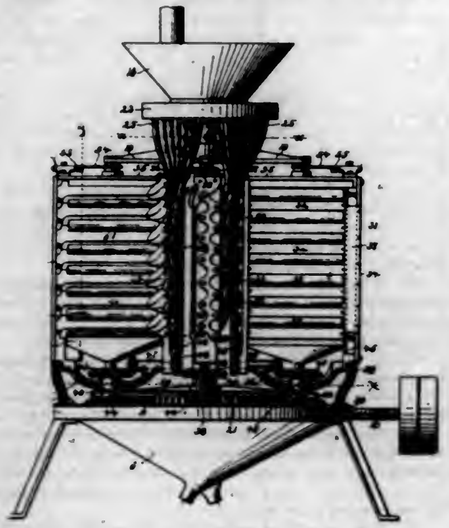
slot in said post and engaging the reciprocating member, and a second gear formed integrally with said first gear for giving a vibratory motion to the striker-arm.

2. A mechanism of the character described comprising a bell, a tubular post forming a support for said bell, a base for supporting said post, a cap screw-threaded on the outer end of said post for holding the bell in place, said post being secured to the base by a screw-threaded portion, a vibratory striking device mounted within said bell, a reciprocating member inside of said post, a removable spring for said member held in place by said cap and means for connecting the reciprocating member and the vibratory device.

3. A bell, a post-support therefor, a vibratory striking device, a reciprocating member coacting with said post, and a pair of gears formed from an integral piece of metal, one of said gears engaging said reciprocating member and the other of said gears engaging the striking device.

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**753,370. BEAN-PICKING MACHINE. GEORGE F. CRIPPEN, Ypsilanti, Mich. Filed Feb. 27, 1903. Serial No. 145,346. (No model.)**



*Claim.*—1. A centrifugal bean-picking machine having a passage formed by pairs of rolls with which the beans are adapted to travel in contact in passing therethrough, the rolls of said pairs being in different horizontal planes, and means for bodily rotating said roll approximately in the planes cut by their horizontal axes and by which the beans are fed by centrifugal force.

2. A centrifugal bean-picking machine having a passage one side of which is formed by a pair of rolls, and means to so rotate the rolls that the beans will be fed through the passage lengthwise of the rolls.

3. A centrifugal bean-picking machine having passages one or more sides of which are formed by a pair of rolls and means to so rotate the rolls as to feed the beans through said passages by centrifugal force in contact with the rolls, said rolls being disposed in different horizontal planes.

4. A centrifugal bean-picking machine having a passage one side of which is formed of a pair of rolls and means for rotation of the rolls bodily in such planes that there will be a tendency of the material fed to the passage to travel lengthwise thereof.

5. A centrifugal bean-picking machine having a passage formed by two revolving rolls, means to so rotate the rolls that the beans will be fed lengthwise of the passage, an inlet-opening at one end of the rolls and a discharge-passage at the other end of the rolls and a separate discharge-passage communicating with the space between the rolls.

6. A centrifugal bean-picking machine having a series of passages formed by pairs of rolls, and means to so rotate the said rolls that the beans will be fed lengthwise of the passage.

7. A centrifugal bean-picking machine, provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one side of said passages being formed by a pair of revolving rolls along which the beans are adapted to travel, and a discharge-passage communicating with said bean-passages beyond the ends of the rolls.

8. A centrifugal bean-picking machine, provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one side of said passages being formed by a pair of revolving rolls with their axes in the different horizontal planes along which the beans are adapted to travel, and a discharge-passage communicating with the passages beyond the ends of the rolls and a separate discharge-passage communicating with the space between the rolls.

9. A centrifugal bean-picking machine provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one side of said passages being formed by a pair of revolving rolls along which the beans are adapted to travel, and separate discharge-passages one for the good and one for the bad beans one arranged within the other and each one leading to a receptacle for receiving the beans.

10. A centrifugal bean-picking machine provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one side of said passages being formed by a pair of revolving rolls along which the beans are adapted to travel, and a discharge-passage communicating with the bean-passage beyond the ends of the rolls, and a separate discharge-passage communicating with the space between the rolls, each one of said discharge-passages leading to a separate receptacle for receiving the beans, the axes of said rolls being in different horizontal planes.

11. A centrifugal bean-picking machine, provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one wall of said passages being formed by a pair of revolving rolls along which the beans are fed in contact therewith, said rolls being arranged in different horizontal planes and a feed-hopper communicating with said passages.

12. A centrifugal bean-picking machine, provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one side of said passages being formed by revolving rolls, a hopper communicating with the passages at the inner ends of the rolls and a discharge-passage communicating with said passages beyond or at the outer end of the rolls.

13. A centrifugal bean-picking machine provided with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are fed by centrifugal force, one side of said passages being formed by revolving rolls, a hopper communicating with the passages at one end of the rolls and a discharge-passage at the other end and a separate discharge-passage communicating with the space between the rolls.

14. In a centrifugal bean-picking machine, a revolving rack formed with a series of passages, means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are carried by centrifugal force, the inner ends of said passages provided with means for feeding beans thereto, the outer ends leading into a common discharge-passage and a pair of revolving rolls forming the side of the passage with which the beans travel in contact in passing therethrough.

15. In a centrifugal bean-picking machine, a revolving rack formed with a series of passages through which the beans are carried by centrifugal force, said passages provided at one end with means for feeding the beans thereto and at the opposite end with a common discharge-passage, a pair of revolving rolls forming the side of the passage with which the beans travel in contact and a separate discharge-passage communicating with the space between the rolls.

16. A centrifugal bean-picking machine, having radial passages one or more sides of which are formed by a pair of rolls and means for bodily rotating the separating-rolls approximately in the planes cut by their longitudinal axes and by which the beans are adapted to be fed by centrifugal force in contact therewith and means for making the contact variable.

17. A centrifugal bean-picking machine, a revoluble rack, frames adjustably mounted in said rack having radial passages one side of which are formed by a pair of rolls across which the beans are adapted to be fed by centrifugal force in contact therewith.



18. In a centrifugal bean-picking machine, a revoluble rack, frames pivotally mounted in said rack, having radial passages one side of which are formed by a pair of rolls arranged in different horizontal planes and through which the beans are fed by centrifugal force, said passages leading from the inner to the outer circumference of the frames and means for adjusting the angularity of said frames.

19. In a centrifugal bean-picking machine, a revoluble rack, frames pivotally mounted in said rack having radial passages one side of which is formed by a pair of rolls across which the beans are adapted to be fed by centrifugal force and means for maintaining said passages at an angle to the radial line to vary the contact of the beans with the rolls.

20. In a centrifugal bean-picking machine, a revoluble rack, frames pivotally mounted in said rack formed with a series of passages through which the beans are carried by centrifugal force, said passages provided at one end with means for feeding the beans thereto and at the opposite end with a discharge-passage and a pair of revolving rolls forming one wall of the passage with which the beans are adapted to travel in contact.

21. In a centrifugal bean-picking machine, a revoluble rack; frames pivotally mounted in said rack formed with a series of passages through which the beans are carried by centrifugal force, the inner ends of said passages provided with means for feeding beans thereto, the outer ends leading into a common discharge-passage and a pair of revolving rolls forming the side of the passage with which the beans are adapted to travel in contact, and a separate discharge-passage communicating with the space between the rolls.

22. In a centrifugal bean-picking machine, a revoluble rack, frames carried by said rack formed with a series of passages through which the beans are carried by centrifugal force, a feed-hopper, tubes connecting said feed-hopper with the inner ends of said passages, a common discharge-passage connecting the outer ends of said passages, a pair of revolving rolls forming the side of the passage with which the beans are adapted to travel in contact, and mechanism for revolving said rolls and rack.

23. In a centrifugal bean-picking machine, a revoluble rack, frames pivotally mounted in said rack, formed with a series of passages through which the beans are fed by centrifugal force, the inner ends of said passages provided with means for feeding beans thereto, the outer ends leading into a common discharge-passage, a pair of revolving rolls forming part of the passage with which the beans are adapted to travel in contact and means for holding the frames in any of their adjusted positions to vary the contact of the beans with the rolls.

24. In a centrifugal bean-picking machine, a revoluble rack, frames pivotally mounted in said rack, having radial passages, one side of which are formed by a pair of rolls and through which the beans are fed by centrifugal force, said passages being adjustable at an angle to the radial line and means for maintaining the same at said angle.

25. In a centrifugal bean-picking machine, a revoluble rack, frames pivotally mounted in said rack, having passages, one side of which are formed by a pair of rolls and through which the beans are adapted to be fed, a feed-hopper, separate feed-tubes connecting the inner ends of said passages with the hopper, a common discharge-passage connecting the opposite ends of said passages with a common discharge-hopper, a separate discharge-passage connecting the spaces between the rolls with a separate hopper and means for adjusting the angularity of said frames.

26. In a centrifugal bean-picking machine, the combination of a plurality of rolls, swinging frames, and means for imparting motion to said separating-rolls and bodily rotate them approximately in the planes cut by their horizontal axes.

27. In a centrifugal bean-picking machine, the combination of a plurality of rolls, swinging frames, means for imparting motion to said separating-rolls and bodily rotate them approximately in the planes cut by their horizontal axes, and a feed-tube through which the beans are fed to said rolls.

28. In a centrifugal bean-picking machine, the combination of a plurality of rolls, swinging frames, means for imparting motion to said separating-rolls, a feed-tube through which the beans are fed to said rolls, and a rotatable pan to which said tubes are connected.

29. In a centrifugal bean-picking machine, the combination of a plurality of rolls, swinging frames, means for imparting motion to said separating-rolls, a feed-tube through which the beans are fed to said rolls, a rotatable pan to which said tubes are connected, a rotatable discharge-hopper, and a flexible tube connected with one of the discharge-passages thereof.

30. In a centrifugal bean-picking machine, the combination of a plurality of rolls, swinging frames, means for imparting motion to said separating-rolls, a feed-tube through which the beans are fed to said rolls, a rotatable pan to which said tubes are connected, a rotatable discharge-hopper, a flexible tube connected with one of the discharge-passages thereof, and a double discharge-hopper.

31. In a centrifugal bean-picking machine, the combination, of a plurality of rolls, swinging frames, means for imparting motion to said separating-rolls, a feed-tube through which the beans are fed to said rolls, a rotatable pan to which said tubes are connected, a rotatable discharge-hopper, a flexible tube connected with one of the discharge-passages thereof, and a double discharge-hopper, the spout of one passing through the body of the other.

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**753,371. LABEL. JOHAN A. DAWSON, Okarche, Okla. Filed Mar. 21, 1903. Serial No. 148,978. (No model.)**



*Claim.*—A sheet-metal label having an opening near its edge to receive an attaching-cord, and having a portion bordering upon said opening bent laterally from opposite sides to form a rounded edge and having a portion of the outer edge adjacent to the said opening similarly bent from opposite sides and indented, the rounded edges receiving the cord and preventing injury thereto, substantially as specified.

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**753,372. PROCESS OF MAKING CONDENSATION PRODUCTS FROM DICARBO ACIDS AND BROMATED PHTALIC ACIDS WITH NAPHTOLS. ANATOLE DESGOUIS and SAMUEL LEVINSOHN, Geneva, Switzerland. Filed June 5, 1903. Serial No. 160,184. (No specimens.)**

*Claim.*—1. The process herein described of producing condensation products from dicarboacids and bromated phtalic acids with naphtols, which consists in melting dicarboacids and bromated phtalic acids with naphtols in presence of boric acid, and then directly isolating the corresponding acids, substantially as set forth.

2. The process herein described of producing condensation products from dicarboacids and bromated phtalic acids with naphtols, which consists in melting dicarboacids and bromated phtalic acids with naphtols in presence of boric acid, and then converting the acids thus obtained by means of sulfuric acid into the corresponding respectively bromated oxynaphtacenchinons, substantially as set forth.

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**753,373. COTTON-SEED DELINTER. ROMAN DERDETH, Vicksburg, Miss. Filed May 2, 1902. Serial No. 105,612. (No model.)**



*Claim.*—1. In a delinter, a perforated casing and an abrading-roll located within said casing, said casing and said roll being shaped with relation to each other as described, whereby the chamber between said casing and said roll shall be smaller at one end than at the

other, said chamber having an inlet at its larger end and an outlet at its smaller end, and said abrading-roll comprising spirally-grooved abrading-sections and spiders having projecting arms, the advancing faces of which face toward the outlet of said chamber, whereby seed poured into the inlet will be simultaneously fed toward the outlet and abraded in transit, as described.

2. In a delinter, a seed-chamber larger at one end than at the other, an inlet located at the large end of said chamber, and an outlet located at its small end, an abrading-roll located within said chamber and comprising alternate sections of abrading material and spiders provided with projecting arms, the advancing faces of said projecting arms facing toward the inlet end of said seed-chamber, and said abrading-sections being provided with a spiral groove whereby the rotation of said abrading-roll may act not only to delint the seed, but also to feed it from the inlet to the outlet, as described.

3. In a delinter, a seed-chamber larger at one end than at the other, an inlet located at the large end of said chamber, and an outlet located at its small end, an abrading-roll located within said chamber and comprising alternate sections of abrading materal and spiders provided with projecting arms, the advancing faces of certain of said projecting arms facing toward the inlet end of said seed-chamber and the advancing faces of certain other arms facing toward the outlet end of said seed-chamber, and said abrading-sections being provided with a spiral groove whereby the rotation of said abrading-roll may act not only to delint the seed, but also to feed it from the inlet to the outlet, as described.

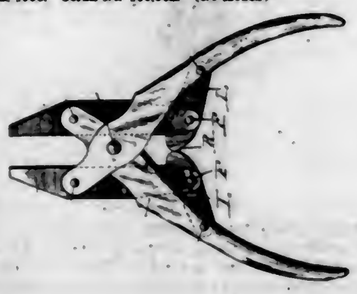
4. In a delinter, a seed-chamber larger at one end than at the other, an inlet located at the large end of said chamber and an outlet located at the small end thereof, an abrading-roll located within said chamber and comprising alternate sections of abrading material, and spiders provided with projecting arms, the advancing faces of said projecting arms facing toward the inlet of said seed-chamber, and means whereby the seed is fed to said seed-chamber, as set forth.

5. In a delinter, a perforated casing and an abrading-roll, both of substantially the dimensions described, said abrading-roll being located within said casing and forming therewith a seed-chamber larger at one end than at the other, said chamber being provided with an inlet at its large end and an outlet at its small end, and said abrading-roll being composed of a series of sections of grinding material, each section being provided with a spiral groove, spiders provided with arms located between said sections, certain of said arms having an advancing face facing toward the outlet of said seed-chamber, and certain of said arms having an advancing face facing toward the inlet of said chamber, whereby said abrading-roll and certain of said spider-arms will serve as a positive feed to the seed, and other of said spider-arms will serve as an obstruction to the travel of the seed, as described.

6. In a delinter, a perforated casing, an abrading-roll located within said casing, the chamber between said casing and said roll being smaller at one end than at the other, and said chamber having an inlet at its larger end and an outlet at its smaller end, said roll comprising a series of spirally-grooved abrading-sections, and a series of spiders having projecting arms, each spider being located between two of said abrading-sections, and the advancing faces of said spiders facing toward the outlet of said chamber and being at an angle with the axis of said roll differing from the pitch of the screw-threads thereon, whereby when said chamber is filled with seed and said roll is rotated said seed will be advanced by the action thereon of said spiral grooves and the projecting arms of said spiders, the rate of movement of said seed varying in the different parts of said chamber, as and for the purposes described.

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**753,374. WRENCH. ALLEN DE VILBISS, Jr., Toledo, Ohio. Filed Nov. 12, 1903. Serial No. 180,902. (No model.)**



*Claim.*—1. A parallel-jaw wrench comprising handles pivoted where they cross, jaws pivoted to the front ends of the handles, links pivoted to the handles in rear of their point of crossing and also pivoted to the rear ends of the jaws, and rocking faces at the inner ends of the links contacting with each other, as and for the purpose set forth.

2. A parallel-jaw wrench comprising handles pivoted where they cross, jaws pivoted to the front ends of the handles, links pivoted to the handles in rear of their point of crossing and also pivoted to the rear ends of the jaws, and rocking faces at the inner ends of the links struck on such lines that when they contact with each other they will preserve the parallelism of the jaws, substantially as described.

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**753,375. WELDING APPARATUS. HUGO DICKE, Frankfort-on-the-Main, Germany, assignor to Jacob Eduard Goldschmid, Frankfort-on-the-Main, Germany. Filed Apr. 12, 1901. Serial No. 55,439. (No model.)**



*Claim.*—1. In an apparatus for locally heating metal for welding purposes, the combination of a head provided with air and gas conduits, walls of refractory material supported in said head, and constituting a heating-chamber, said walls enveloping and confining the parts to be heated, air and gas mixing conduit terminating in burner-orifices in said walls, and conduits between the article to be heated and the adjacent walls to direct the escaping products of combustion against the metal.

2. In an apparatus for locally heating metal for welding purposes, consisting of a head formed of a fixed and a movable portion provided with air and gas conduits, walls of refractory material supported in said portions and constituting a heating-chamber, said walls enveloping and confining the parts to be heated, air and gas mixing conduits terminating in orifices in said walls, and conduits formed in the walls adjacent to the articles to be heated to permit the escape of the products of combustion in proximity to the latter.

3. In an apparatus for locally heating metal for welding purposes, the combination of a head comprising a metal twyer with walls of refractory material supported thereby and constituting the heating-chamber, said walls having channels in connection with the twyer forming air and gas mixing conduits terminating in burner-orifices opening in said chamber, whereby the unignited gas is led from the twyer to said burner, substantially as described.

4. In an apparatus for locally heating metal for welding purposes, the combination of one fixed ring forming one half of a circular welding-chamber, a movable ring formed of two movable sections forming the other half of the welding-chamber, and air and gas conduits in the respective rings substantially as described.

5. In an apparatus for locally heating metal for welding purposes, the combination of a fixed ring forming one half of a circular welding-chamber, a second ring formed of two movable sections forming the other half of said chamber, air and gas conduits in the respective rings opening into said welding-chamber, a frame in which the sections of said second ring are slidably mounted, and mechanism for moving said sections in said frame to open and close said chamber.

6. In an apparatus for locally heating metal for welding purposes, the combination of a fixed ring forming one half of a circular welding-chamber, a second ring formed of two movable sections forming the other half of said chamber, air and gas conduits in the respective rings opening into said welding-chamber, a frame in which the sections of said second ring are slidably mounted, screw-shafts connecting the movable ring-sections to the frame, and gearing connecting said screw-shafts to simultaneously advance and retract said movable ring-sections.

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**753,376. APPARATUS FOR DISTILLING WOOD. WILLIAM C. DOUGLAS, Raleigh, N. C. Filed Sept. 1, 1903. Serial No. 171,519. (No model.)**



*Claim.*—1. In a still, the combination with a plurality of retorts, of tubes communicating with and arranged between the retorts, a pipe connecting said tubes, a conducting-pipe leading from said connecting-pipe at one end thereof, a second conducting-pipe at the other end thereof, condensing means for said conducting-pipes, and means for heating said retorts and tubes to a degree preventing condensation of lighter vapors therein.



2. In a still, the combination with a plurality of retorts spaced apart, of heating means arranged centrally beneath the space between said retorts, tubes communicating between said retorts above said heating means, a pipe connecting said tubes, conducting-pipes leading from said connecting-pipe, and means for protecting said tubes and connecting-pipe against the cooling action of the atmosphere.

3. In a still, the combination with a plurality of retorts spaced apart, of tubes communicating with said retorts interposed between the same, intercommunicating means connecting said tubes, means for heating said retorts and tubes to a degree sufficient for preventing condensation of the lighter vapors therein, one of the tubes being at a greater distance from the source of heating than the others, and conducting-pipes leading from the intercommunicating means.

4. In a still, the combination with a retort, of a plurality of tubes extending from the same, a vertical pipe connecting said tubes, a conducting-pipe communicating with said vertical pipe near one end thereof, a second conducting-pipe communicating with said vertical pipe intermediate the length thereof, means for heating said vertical pipe and tubes to a degree preventing condensation of the lighter vapors therein, and means for protecting said pipes and tubes against the cooling action of the atmosphere.

5. In a still, the combination with a retort, of a plurality of tubes extending from said retort, a pipe connecting said tubes, walls partially surrounding said tubes and pipe for preventing the cooling action of the atmosphere thereon, conducting-pipes leading from various points on said connecting-pipe, means for heating said retort and tubes to a degree preventing condensation of the lighter vapors therein, and condensing means for said conducting-pipes.

6. In a still, the combination with retorts and means for heating the same, of a plurality of horizontal tubes communicating between said retorts and partially inclosed thereby, a vertical pipe connecting said tubes, upper, lower and intermediate conducting-pipes communicating with said vertical pipe extending beyond the retorts.

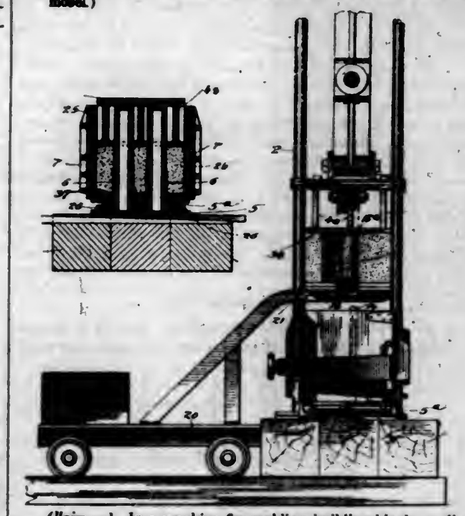
7. In a still, the combination with a retort, of a plurality of tubes leading therefrom, a partially-inclosed intercommunicating pipe connecting said tubes, an upper exposed conducting-pipe communicating with said intercommunicating pipe, partially-inclosed intermediate and lower conducting-pipes communicating with said intercommunicating pipe, and heating means for said retort and inclosed elements.

8. In a still, the combination with a retort, of a plurality of partially-inclosed tubes leading therefrom, an exposed tube leading therefrom, a pipe connecting all of said tubes and being exposed at that end connected with the exposed tube, conducting-pipes leading from said pipe, and means for heating the retort.

9. In a still, the combination with a plurality of retorts spaced apart, a furnace arranged beneath the space between said retorts, tubes communicating between said retorts above said furnace, a pipe connecting said tubes, conducting-pipes leading from said connecting-pipe, and a stack leading from said furnace and closing the space between said retorts and preventing atmospheric draft therebetween.

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**753,377. MACHINE FOR MOLDING BUILDING BLOCKS OR STONES. WALLACE L. DOW, Sioux Falls, S. D., assignor, by direct and mesne assignments, to Miracle Pressed Stone Company, a Corporation of South Dakota. Filed Mar. 4, 1903. Serial No. 146,180. (No model.)**



*Claim.*—1. In a machine for molding building-blocks, a die or mold form comprising, in combination with a fixed supporting-base having rigid with it cores for forming the cavities in the block; a platen bottom plate having apertures to correspond with the cores; two opposite lateral walls pivoted with respect to the base at a distance from the mold-cavity, and having beads forming exterior stops within which the other two opposite lateral walls are lodged, and means for clamping the two pivoted walls together onto the ends of the other two walls.

2. In a machine for molding building-blocks, a die or mold form comprising, in combination with a fixed supporting-base having rigid with it cores for forming the cavities in the block, a bottom platen apertured to correspond with the cores; two opposite lateral walls pivoted with respect to the fixed base, adapted to swing above the platen, the other two opposite walls connected to the first two walls respectively at one end, said first two walls having beads forming exterior stops within which the ends of the other two walls are lodged; a false bottom about which the four walls close up, and means for locking the four walls rigidly together about said false bottom.

3. In a machine for molding building-blocks, a die or mold form comprising a fixed supporting-base; cores rigidly connected with the base and extending up therefrom, for forming cavities in the block; lateral walls pivoted vertically and adapted to swing outward from the mold-cavity, and a false bottom or lining-plate about which the four walls close together, adapted to be removed from the mold with the molded body and means for lifting the false bottom to carry up the molded body thereon.

4. In a machine for molding building-blocks, a die or mold form comprising a fixed supporting-base having rigid with it cores for forming the cavities in the block; a bottom platen supported on the base having apertures corresponding to the cores and adapted to be lifted bodily from the base; lateral walls pivoted with respect to the fixed base at a distance from the mold-cavity and adapted to swing outward from the mold-cavity to clear the bottom platen; a follower-head and a plunger carried thereby for entering the mold-cavity to compress the molded body; latches carried by such follower adapted to engage the bottom platen beyond the mold-cavity when the lateral walls are swung clear of said platen, whereby the follower carries up the bottom platen and the molded body thereon clear of the lateral walls.

5. In a machine for molding building-blocks, a die or mold form comprising a fixed supporting-base having rigid with it cores for forming cavities in the block; lateral walls adapted to be closed up around the cavity by horizontally-swinging movement, and means for locking them together rigidly; a plunger for closing up the mold-cavity above; two opposite walls of the mold having each a vertical rib to form a vertical groove in the molded body, the plunger having a corresponding groove to accommodate the rib, said ribs being

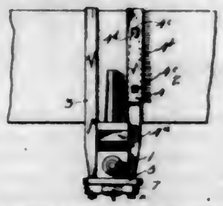
projected above the upper edges of the mold-walls to which they pertain, and beveled on the inner side, whereby they engage the grooves in the plunger to guide the latter into the mold-cavity.

6. In a die or mold form for molding building-blocks, a false bottom adapted to be removed with the molded body from the cavity, formed of corrugated sheet metal having a plain plate united to the crests of the corrugations at the side toward the mold-cavity.

7. In a die or mold form for molding building-blocks, a fixed supporting-base having cores for forming the cavities in the block, detachably united rigidly to the base; a plunger for closing up the mold at the top and compressing the substance therein, comprising a bottom plate apertured to admit the cores and vertical reinforcing-ribs extending in one direction back from the plate between the apertures; blocks for closing the apertures adapted to be introduced between the ribs and let down into the apertures from above and stopped on the upper side of the plate, and means for binding such blocks downward into the apertures, whereby any core may be removed to cause the omission of any aperture in the molded block, and the corresponding aperture in the plunger may be closed.

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**753,378. WAGON-BOX FASTENER. WILLIAM H. DULANEY, Leakey, Tex. Filed Nov. 20, 1902. Serial No. 132,085. (No model.)**



*Claim.*—In a wagon-box fastener, the combination with a vehicle-box, and its running-gear, of a yoke extending under a fixed part of the running-gear, a strap bearing upon one side of the said fixed part of the running-gear and having at its upper end a hook engaging the upper edge of the box and at its lower end a bolt portion connected to one end of the yoke, and a second strap disposed on the opposite side of the yoke and comprising sections, namely, a lower section having at its lower end a bolt portion connected to the other end of the yoke and at its upper end a hook, and an upper section having at its upper end a hook and below the same spaced openings, the two straps thus serving as braces to prevent longitudinal play of the box on the running-gear, the first-named strap forming a permanent fastening for the body, and the said openings in the upper section of the sectional strap being so disposed that the hook on the upper section thereof may engage the upper edge of the box or a box extension applied thereto, and so that when said hook is engaged with the box, the hook on the lower section will engage the uppermost opening in the upper section, and when said hook on the upper section is engaged with the edge of a box extension the hook on the lower section will engage the lowermost opening of the upper section, thus fastening the box or both the box and box extension upon the running-gear, substantially as described.

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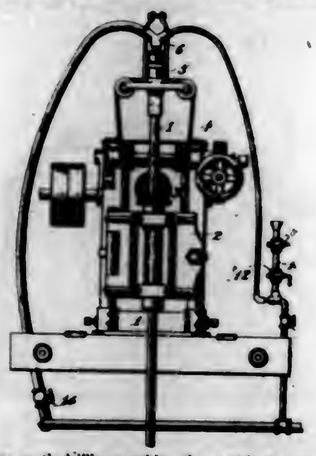
**753,379. SHOT-FEED APPARATUS FOR DRILLING-MACHINES. WALTER S. RASTON, Hilltick, Pa. Filed Feb. 17, 1903. Serial No. 143,798. (No model.)**

*Claim.*—1. In an earth-drilling machine, the combination with a hollow drill-rod, means for rotating same, and a water-swivel upon the said drill-rod at a point above said rotating means, of a water-pipe connected with such swivel, and means in connection with such pipe for introducing milling material therein.

2. In an earth-drilling machine, the combination with a drill-rod, means for rotating same, and a water-swivel upon said drill-rod at a point above said rotating means, of a water-pipe connected with such swivel and a water-lock connected to said pipe at a point below the level of the water-swivel adapted to permit the introduction of milling material into said pipe while the latter is under hydraulic pressure.

3. In an earth-drilling machine, the combination with a hollow drill-rod, and a water-swivel thereon having connections for two water-pipes, of two water-pipes, one of smaller diameter than the other, such smaller pipe provided with means for introducing solid milling material into the stream of feed-water, and causing the same to be carried into the drill-rod by the water in its movement.

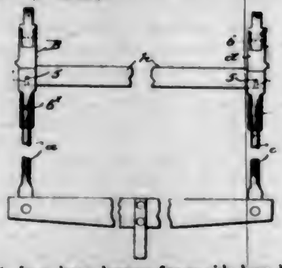
4. In an earth-drilling machine, the combination with a hollow drill-rod, and a water-swivel having connections for two water-pipes of two water-pipes, one of smaller diameter than the other, such smaller pipe provided with a water-lock for introducing solid milling material into said pipe while the latter is under hydraulic pressure.



5. In an earth-drilling machine, the combination with a hollow drill-rod, and a water-swivel thereon having a siamese coupling, of two water-pipes connected to said coupling, one of said pipes being of smaller diameter than the other and being provided with means for introducing solid milling material into the stream of feed-water and causing the same to be carried into the drill-rod by the water in its movement.

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**753,380. CLAMPING DEVICE FOR HEDDLE BARS OR SUPPORTS. JOHN C. EDWARDS, Brookline, Mass., assignor to Draper Company, Portland, Me., and Hopedale, Mass. Filed Nov. 4, 1903. Serial No. 179,762. (No model.)**



*Claim.*—1. In a loom harness-frame, side bars having heads each provided with a transverse depression forming a seat and an open entrance thereto in the face of the head, a detachable heddle-support the ends of which are adapted to enter and rest in the seats, and means on each head to close the entrance and maintain the heddle-support seated.

2. In a loom harness-frame, side bars having heads each provided in its interior with a transverse seat, and an entrance thereto in the front face of the head, the entrance being open throughout the length of the seat, a detachable heddle-support the ends of which are adapted to be passed through the entrances and inserted in said seats, and means on each head to positively engage and maintain the heddle-support seated.

3. In a loom harness-frame, side bars having heads each provided in its interior with a transverse seat, and a front entrance thereto immediately above and open throughout the length of the seat, a detachable heddle-support the ends of which are adapted to be seated in the seats, and means on each head to close the entrance and engage the top of the heddle-support to maintain it seated.

4. In a loom harness-frame, side bars provided with heads each having a transverse recess in its front face and a seat at the lower end of the recess, the latter forming a front entrance to the seat, a detachable heddle-support adapted to be sustained at its ends in the seats, and a spring-controlled device on each head to close the entrance and retain the heddle-support seated.

5. In a loom harness-frame, side bars provided with heads each having a transverse recess in its front face and a seat at the lower end of the recess, the latter forming a front entrance to the seat, a detachable heddle-support adapted to be sustained at its ends in the seats, and a pivotally-mounted device on each head to engage and retain the heddle-support in operative position.

6. In a loom harness-frame, side bars provided with heads each having a transverse seat in its interior and an open recess above and extending the length of the seat to form an entrance thereto, a detachable heddle-support the ends of which are adapted to enter the seats, and a device movably mounted on and positively connected with each head to engage and positively retain the heddle-bar seated.

7. In a loom harness-frame, side bars having heads each provided with a transverse seat and cut away above the seat from one to the other end thereof to form an entrance thereto, a downhold fulcrumed on each head above and out of alinement with the seat, a detachable heddle-support the ends of which are adapted to be sustained in the seats, and a spring cooperating with the downhold above its fulcrum, to retain said downhold in operative or inoperative position, said downhold when operative closing the opening or engaging the heddle-support to retain it seated.

8. In a loom harness-frame, side bars having heads each provided with a transverse seat and cut away above the seat from one to the other end thereof to form an entrance thereto, a detachable heddle-support adapted to be seated at its ends in the seats, a downhold fulcrumed on each head above and out of alinement with the seat, the lower end of each downhold when in operative position engaging the upper edge of and retaining the heddle-support seated, and a spring to cooperate with the downhold and retain it in operative position, upward pressure of the heddle-support on the downhold acting in conjunction with the spring.

9. In a loom harness-frame, side bars having heads each provided in its interior with a transverse seat, and a front entrance thereto immediately above and open throughout the length of the seat, a detachable heddle-support the ends of which are adapted to be seated in the seats, means to prevent lateral movement of the heads when said support is in place, and a swinging downhold on each head to engage the upper edge of and retain the heddle-support seated.

10. In a loom harness-frame, side bars provided with heads each having a transverse recess in its front face and a groove-like seat at the lower end of the recess extending from one to the other side of the head, the recess forming a front entrance to and above the seat, a detachable heddle-support adapted to be sustained at its ends in the seats and positioned by the walls thereof, and means on each head to engage the top of the heddle-support and maintain it seated.

11. In a loom harness-frame, side bars provided with heads each having an internal, transverse seat, and an open entrance thereto in the face of the head, a detachable heddle-support the ends of which are adapted to be passed through the entrances and seated in the seats, and means positively fulcrumed on each head to positively engage the top of the heddle-support and maintain it seated.

12. In a loom harness-frame, side bars provided with heads each having an internal, transverse seat extended from side to side of the head and having upwardly-convergent walls, and an open entrance thereto in the face of the head above the seat, a detachable heddle-support the ends of which are adapted to be passed through the entrances and depressed into the seats, the walls of the latter supporting the front and rear faces of said heddle-support, and means on each head to engage the top of and prevent lifting of the heddle-support when seated in said seats.

13. In a loom harness-frame, side bars provided with heads each having one of its faces recessed transversely, a transverse seat at the lower end of each recess, and in the interior of the head, a detachable heddle-support the ends of which are adapted to be passed through the recesses and be sustained by the seats, and means positively connected with each head to engage the seated heddle-support and prevent lifting thereof from the seats.

14. A harness-frame for looms, comprising side bars having heads each provided with an internal transverse seat for the ends of a heddle-support, and an open entrance for each seat formed in the face of the head above the seat, and means positively fulcrumed on each head to engage and maintain a heddle-support in position when seated.

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**753,381. BOX. BENNO VON BRUNN, Newark, N. J., assignor to Aug. Goertz & Co., Newark, N. J., a Firm. Filed Oct. 30, 1903. Serial No. 179,147. (Model.)**

*Claim.*—1. In a box, the combination, with the body of the box and its cover, the said body and cover being each provided with curled hinge members which register with each other, of a flat spring-bar arranged in said hinge members forming the pintle, and means connected with some of said hinge members for producing a twisted arrangement of the said spring-bar when the said cover is closed upon the body of the box, substantially as and for the purposes set forth.



2. In a box, the combination, with the body of the box and its cover, the said body and cover being each provided with curled hinge members which register with each other, of a flat spring-bar arranged in said hinge members forming the pintle, and means connected with some of said hinge members for producing a twisted arrangement of the said spring-bar when the said cover is closed upon the body of the box and also when the lid is arranged in its open position beyond a plane at right angles to the plane of the body of the box, the said spring-bar being in its normally untwisted relation when the said cover stands at right angles to the plane of the body of the box, substantially as and for the purposes set forth.

3. In a box, the combination, with a body having curled hinge members, and an indentation on one of said members, of a lid having curled hinge members registering with the hinge members of said body, and an indentation in one of the hinge members of said lid, and a spring-bar arranged in said hinge members, said bar having its end portions in fixed engagement with the projecting portions formed by said indentations upon the inner portions of the respective hinge members, whereby when the said lid is closed the spring-bar is twisted, but when the said lid is opened, the said spring-bar is in its normally untwisted state, substantially as and for the purposes set forth.

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**753,382. DRAFT-EQUALIZER. JOHN H. EBERT, Averyville, Ill. Filed Oct. 5, 1903. Serial No. 175,750. (No model.)**



*Claim.*—1. An equalizing apparatus, comprising a frame, a pair of levers fulcrumed in said frame, extended and overlapping plates of said levers, an evener, and connections between the opposite ends of the evener with the plates of the levers.

2. An equalizing apparatus, comprising a frame, a pair of differential levers fulcrumed in said frame, extended plates from the matching ends of the levers, an evener having its pivotal point in advance of the plates, and connections between the plates of the levers and evener.

3. An equalizing apparatus, comprising a frame, a pair of differential levers fulcrumed in said frame, a plate attached to the inner end of each lever and overlying each other, an evener having its pivotal point in advance of the lever, and reach connections from the plates of the opposite levers to the evener upon the opposite side of its pivot.

4. In an equalizer, the combination of a pair of levers having overlying portions, an evener pivotally supported in advance of the overlying portions of the lever, and connections between the free ends of the levers and portions of the evener.

5. In an equalizer, the combination of a pair of levers fulcrumed in a suitable frame, overlying portions of said levers between their respective fulcrum-points, an evener pivotally supported in advance of the overlying ends of said levers, and connections between the ends of the levers and evener.

6. In an equalizer, the combination of a frame, a pair of levers fulcrumed in said frame, overlying plates secured to the matching ends of the levers, said plates having hook-shaped end portions, an evener, a pair of reaches attached to opposite portions of said evener and their opposite ends attached to the hooked end of the opposite levers.

7. In an equalizer, the combination of a frame, a clevis, means for fixedly securing the frame to the clevis, a pair of levers pivoted

at unequal distances from the center of the frame and thereto, overlying plates attached to said levers, a semicircular evener provided with an internal gear, a pinion meshing with said gear, and a pair of reaches attached to said evener and their opposite ends attached to the free ends of the overlying plates of the levers.

8. In combination with a pair of levers, of overlying plates attached to said levers, a semicircular evener provided with internally-arranged teeth, a pinion around which the evener moves, and connections between the evener and plates.

9. In an equalizer, the combination of a frame, a pair of levers fulcrumed in said frame, one of the levers having two sets of perforations to change the position of its fulcrum to adapt the equalizer to three or four horses, an evener, and connections between the evener and the inner free ends of the levers.

10. In an equalizer, the combination of a frame, a pair of levers fulcrumed in said frame, the inner end of the levers having overlying portions, a pinion revolubly mounted in the frame, an evener provided with teeth in engagement with said pinion, means for supporting the evener and connections between the evener and overlying portions of the levers.

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**753,383. PROCESS OF PREPARING ELECTRODES FOR STORAGE-BATTERY CELLS. OMAR FRANK, Detroit, Mich., assignor to Levi J. Lonnex and Michigan Storage Battery Co., Detroit, Mich., a Corporation of Michigan. Filed May 2, 1903. Serial No. 155,266. (No specimens.)**

*Claim.*—1. The herein-described process for treating battery plates or grids, which consists in first immersing the plates in an electrolyte, then passing a current of one-ampere strength through the plates for about fifty hours, more or less, at a temperature of about 20° centigrade; then removing the plates and placing in a weak solution of $H_2SO_4 + H_2O$ and using the positive for the negative plates and lead sheets for the positive plates; then connecting them up and charging with a current of two-ampere strength for about fifty hours, more or less and then remove, wash and dry at the temperature of about 300° centigrade.

2. The herein-described process for treating battery plates or grids, which consists in first immersing the plates in an electrolyte; then passing an electric current of about one-ampere strength through the plates for about fifty hours, at a temperature of about 20° centigrade; then removing the plates and wash with distilled water and place in a weak solution of $H_2SO_4 + H_2O$ then using the positive for the negative plates and lead sheets for the positive plates and connect up and charge with a current of about two-ampere strength for about fifty hours and then remove and wash with distilled water and dry at the temperature of about 300° centigrade.

3. The herein-described process of treating battery plates or grids, which consists in first immersing the plates in an electrolyte and passing an electric current of one-ampere strength through the plates for about fifty hours at a temperature of about 20° centigrade; then removing the plates from the electrolyte and placing the positive plates in a weak solution of $H_2SO_4 + H_2O$ then using the positive for the negative plates and sheets of lead for the positive plates while in this solution and connecting them up and charging with a current of two-ampere strength for about fifty hours; then removing from the mixture and washing with distilled water and drying in a temperature of about 300° centigrade.

4. The herein-described electrochemical process for making lead electrodes for storage-battery cells, which consists in first immersing the electrodes in an electrolyte consisting of ninety-five per cent. of $H_2O$, five per cent. of $Na_2SO_4$ and .7 per cent. of $KClO_3$; then passing an electric current of one-ampere strength through the electrodes for fifty hours at a temperature of 20° centigrade; then remove the plates and place the positive plates in a weak solution of $H_2SO_4 + H_2O$ and use the positive for the negative plates and sheets of lead for the positive plates then connect them up and charge with a current of two-ampere strength for fifty hours, the plates are then removed from this last mixture and all HCl removed by thoroughly washing in distilled water and then dried at the temperature of 300° centigrade.

5. The herein-described electrochemical process for making lead electrodes for storage-battery cells, which consists in first immersing the electrodes in an electrolyte consisting of ninety-five per cent. of $H_2O$, five per cent. of $Na_2SO_4$ and .7 per cent. of $KClO_3$; then passing an electric current of one-ampere strength through the electrodes for about fifty hours at a temperature of 20° centigrade; then removing the plates from the electrolyte thoroughly washing with distilled water and placing the positive plates in a weak solution of $H_2SO_4 + H_2O$ then using the positive for the negative plates and lead sheets for the positive plates while in this solution and connecting them up; then charging with a current of two-ampere strength for about fifty hours; then removing from this mixture and removing all HCl by washing in distilled water and then drying with a current of air charged with lead fumes at a temperature of about 300° centigrade.

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**753,384. BREECH-LOADING FIREARM. PERRY FRAKER, Dubois, Nebr. Filed July 30, 1902. Serial No. 117,447. (No model.)**



*Claim.*—1. The combination with a suitable support, of the cartridge-carrier pivoted thereto and provided with an arm, means for swinging the carrier, and a spring provided with a slotted head normally disposed in the path of the cartridges to be fed to the carrier, the said arm on the carrier being so disposed as to strike the outside of the head during the downward movement of the carrier and force the head out of the path of the cartridges, the arm passing through the slotted portion of the head when the carrier is moved in the other direction.

2. The combination with a suitable support, of the cartridge-carrier pivoted thereto and provided with an arm, means for swinging the carrier, and a spring secured at one end to the support and provided at its free end with a head having an oblique projection thereon located in the path of the carrier-arm, the said head lying normally in the path of the cartridges, whereby when the carrier-arm is moved in one direction it will strike the oblique portion of the projection and force the head farther across the path of the cartridges, and when the carrier-arm is swung in the opposite direction it will strike the said projection on the side opposite the oblique portion and force the head from the path of the cartridges.

3. The combination with a slidable breech-block, of a swinging cartridge-carrier, a lever connected thereto for swinging the carrier, a slidable support provided with a projection slidable along the lever to positions at each side of the pivotal point of the lever whereby the said projection will swing the lever in two directions when the slidable support is reciprocated, means for reciprocating the slidable support, and a brace pivoted to the breech-block and the said slidable support.

4. The combination with a slidable breech-block, of a swinging cartridge-carrier, a lever connected at one end thereto and extending at its other end beyond the pivotal point of the lever, a slidable support provided with a projection engaging the lever alternately at each side of the pivotal point of the lever when the said support is reciprocated, means for reciprocating the slidable support, and a brace pivoted to the slidable support and to the breech-block.

5. The combination with a slidable breech-block, of a reciprocable bar provided with a hand-grip, a brace pivoted to the breech-block and to the said reciprocable bar, a swinging cartridge-carrier, a pivoted lever connected thereto for swinging said carrier, means



by which the said lever is swung in two directions when the said bar is reciprocated, a cartridge-magazine having suitable means for depositing the cartridges upon the carrier, a spring rigidly secured at one end to a suitable support and provided at its free end with a head normally located in the path of the cartridges and having a projection which, when the cartridge-carrier is swung in one direction, will be struck on one side and force the said head from the path of the cartridges and which when the cartridge-carrier is swung in the opposite direction will be struck on the opposite side and thus force the said head farther across the path of the cartridges.

6. The combination with a slidable breech-block, of a swinging cartridge-carrier, a cartridge-magazine, means by which the cartridges may be deposited one by one upon the carrier when the said carrier is properly moved, a pivoted lever connected to the carrier for swinging the same, a reciprocable support provided with means for engaging, when reciprocated, the lever at each side of its pivotal point for swinging the lever in two directions, means for reciprocating the said support, and a brace connecting the said breech-block and the said support.

7. The combination with a slidable breech-block, of a swinging cartridge-carrier, a pivoted lever connected thereto for swinging the carrier, a slidable bar provided with a hand-grip by which the said bar is reciprocated, the said bar being provided with a projection for engaging, when reciprocated, the lever at each side of its pivotal point for swinging the lever, and a brace pivoted to the said breech-block and to the said slidable bar.

8. The combination with a slidable breech-block, of a swinging cartridge-carrier, a lever connected thereto for swinging the carrier, a reciprocable member provided with means for alternately engaging the lever at each side of the pivotal point thereof when the member is reciprocated, and a brace pivoted to the breech-block and to the said reciprocable member.

9. The combination with a suitable support, of a cartridge-carrier pivoted thereto and provided with an arm, means for swinging the carrier, and a spring secured at one end to the said support and provided at its free end with a head located normally in the path of the cartridges, the said head being provided with a projection thereon which the carrier-arm strikes when moving in one direction, and forces the said head out of the path of the cartridges, the said projection having an inclined face adapted to be engaged by the carrier-arm when the carrier-arm is moved in the opposite direction the disposition of the projection being such that when the carrier-arm is moved in the latter direction the head will be forced thereby farther across the path of the cartridges.

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**753,385. PROCESS OF MATURING PORTLAND OR OTHER HYDRAULIC CEMENTS. HENRY A. GERDES, Minneapolis, Minn., assignor of fifty-five one-hundredths to F. W. Cappelen, Arthur H. Hitman, and James B. Cull, Minneapolis, Minn. Filed Apr. 7, 1903. Serial No. 151,518. (No specimens.)**

*Claim.*—In the process of maturing Portland and other hydraulic cements, the subjecting them to a heat of 360° Fahrenheit and to a current of air charged with moisture and carbonic acid, for the purpose substantially as set forth.

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**753,386. SPIKE-PULLER. FRANK W. GERLACH, FRED A. GERLACH, and FRANK W. MOORE, Kenton, Ohio. Filed Oct. 26, 1903. Serial No. 178,616. (No model.)**



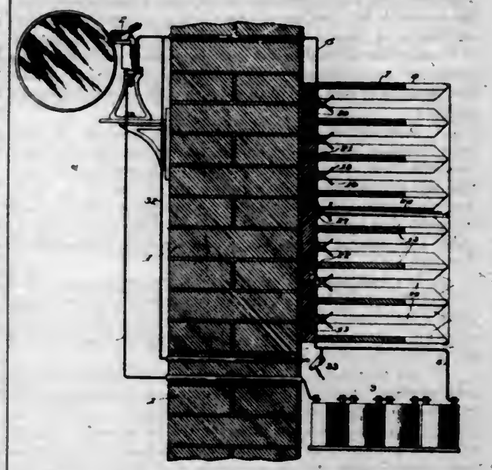
*Claim.*—1. The combination with a hand-lever having a gripper-jaw and a fulcrum-toe, of a movable jaw coacting with said gripper-jaw, a link pivotally and slidably connecting said jaw to the lever, and means for guiding and retracting said movable jaw, substantially as described.

2. In combination, the hand-lever having a gripper-jaw a fulcrum-toe, and a guide-recess, the sliding jaw having a guide-lug adapted to enter said guide-recess, and the link or bar pivotally connecting said sliding jaw with said hand-lever, substantially as described.

3. In combination, the hand-lever having a gripper-jaw, a fulcrum-toe, and a guide-recess, the sliding jaw having a guide-lug adapted to enter said guide-recess, the spring in said recess adapted to engage said lug to elevate said sliding jaw and the link or bar loosely connecting said sliding jaw and said hand-lever, substantially as described.

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**753,387. ELECTRIC TRAIN ORDER AND SIGNALING SYSTEM. JOHN C. GLEASON, Springfield, Ohio, assignor of one-half to James B Von Schrilitz, Springfield, Ohio. Filed July 24, 1903. Serial No. 166,804. (No model.)**



*Claim.*—1. An electric train order and signaling system, comprising a battery and circuit, an electrically-operated semaphore-signal located in the circuit and acting to indicate safety when the circuit is closed, and danger when the circuit is open, a train-order-board-supporting device, normally open contact-terminals in the circuit in operative relation to said supporting device, and a removable train-order board supported by said device and adapted, when placed in position therein, to close the circuit and set the signal to safety, substantially as described.

2. An electric train order and signaling system, comprising a battery and circuit, an electrically-operated semaphore-signal located in the circuit and acting to indicate safety when the circuit is closed, and danger when the circuit is open, a train-order-board-supporting device adapted to receive a plurality of train-order boards, a corresponding plurality of normally open contact-terminals arranged in series in the circuit, and a plurality of removable train-order boards supported by said device, each board being adapted, when placed in position in the supporting device, to close the circuit at the corresponding contact-terminals, whereby, when all of the boards are in position, the signal is set to safety, and whereby the signal is set to danger when any one or more of the boards are removed, substantially as described.

3. An electric train order and signaling system, comprising a battery and circuit, an electrically-operated semaphore-signal located in the circuit and acting to indicate safety when the circuit is closed, and danger when the circuit is open, a train-order-supporting device, normally open contact-terminals in the circuit in operative relation to said supporting device, a removable train-order board supported by said device and adapted, when placed in position therein, to close the circuit and set the signal to safety, a shunt-circuit around said contact-terminal, and a switch controlling said shunt-circuit, substantially as described.

4. An electric train order and signaling system, comprising a battery and circuit, an electrically-operated semaphore-signal located in the circuit and acting to indicate safety when the circuit is closed, and danger when the circuit is open, a train-order-supporting device, normally open contact-terminals in the circuit in operative relation to said supporting device, a removable train-order board supported by said device and adapted, when placed in position therein, to close the circuit and set the signal to safety, a shunt-circuit around said contact-terminal, and a normally open or self-opening switch controlling said shunt-circuit, substantially as described.

5. An electric train order and signaling system, comprising a battery and circuit, an electrically-operated semaphore-signal lo-

cated in the circuit and acting to indicate safety when the circuit is closed, and danger when the circuit is open, a train-order-board-supporting device consisting of a box having a plurality of compartments and guideways, the circuit having a pair of normally open contact-terminals in each compartment, and a plurality of removable train-order boards, one for each compartment, each board being adapted, when inserted in its compartment, to close the circuit at the contact-terminals of said compartment, substantially as described.

6. In an electric train order and signaling system of the character described, a train-order box having contact-terminals arranged the one above the other, one terminal having two contact-arms with an intervening space, and the other terminal having a single contact-arm of less width than said space, opposite which it lies, and a train-order board adapted to be inserted in said box and between said terminals to close the circuit between them, substantially as described.

7. In an electric train order and signaling system of the character described, an order-box having separate compartments and a removable back, and a series of metallic plates mounted on said back and each provided at one end with two contact-arms having an intervening space, and at the other end with a single contact-arm of less width than said space, the adjacent ends of the plates lying opposite each other in the respective compartments, substantially as described.

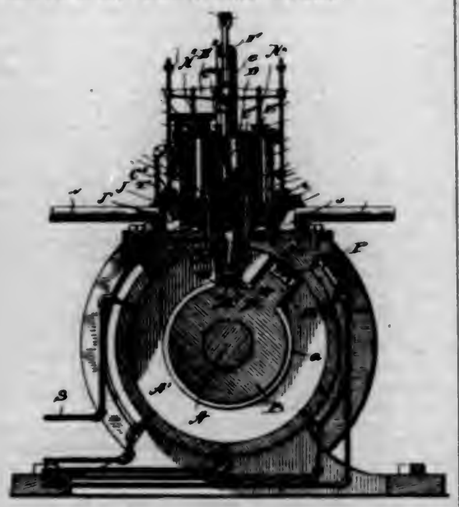
8. In a train order and signaling system, an order-box provided with a compartment having spring contact-arms lying opposite each other, a train-order board engaging said arms, and a detent coöperating with said contact-arms to prevent accidental displacement of the board, substantially as described.

9. In a train order and signaling system, an order-box having a compartment provided with spring contact-arms lying opposite each other and diverging both forwardly and rearwardly, in combination with an order-board adapted to be inserted between said contact-arms, and provided with an enlargement adapted to pass between said arms to engage them from the rear to prevent accidental displacement of the board, substantially as described.

10. In a train order and signaling system, the combination, with an order-box having spring contact-arms arranged opposite each other and diverging both forwardly and rearwardly, of an order-board provided with a pin or axis, and a sleeve of relatively large diameter loosely mounted on said pin or axis, substantially as described.

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753,388. **ROTARY ENGINE.** ARTHUR GROVES, Sr., Ladue, Mo. Filed Dec. 26, 1903. Serial No. 186,653. (No model.)



*Claim.*—1. A rotary engine comprising a cylinder, a shaft mounted in suitable bearings therein, a rotary piston fixed to said shaft, a hollow reciprocal thrust-block and means for positively throwing the same into and out of the path of said piston, a spring-pressed and perforated friction-block carried within the chambered portion of the thrust-block, and valve mechanism operated synchronously with the movement of the thrust-block to regulate the feeding of steam to the cylinder, as set forth.

2. A rotary engine comprising a cylinder, a shaft mounted in suitable bearings therein, a rotary piston fixed to said shaft, a chambered chest having communication with said cylinder, a hollow reciprocal thrust-block mounted in one of the chambers of said chest and positively-driven means for throwing the same into and out of the path of the piston, a movable perforated friction-block mounted in the chambered portion of the thrust-block, slide-valves mounted in the chambered portions of said chest, and means for positively driving said valves synchronously with the reciprocal movement of the thrust-block, as set forth.

3. A rotary engine comprising a cylinder, a shaft mounted in suitable bearings therein, a rotary piston fixed to said shaft, a chambered chest communicating with the cylinder, a hollow reciprocating thrust-block mounted in the chambers of said chest, a stem secured to said thrust-block, a cross-head secured to the end of said stem, means driven by the shaft for positively driving said thrust-block into and out of the path of said piston, slide-valves and connections between the same and said cross-head, whereby the valves may be operated synchronously with the movement of the thrust-block, as set forth.

4. A rotary engine comprising a cylinder, a shaft mounted in suitable bearings therein, a rotary piston fixed to said shaft, a chambered chest communicating with the cylinder, a hollow reciprocating thrust-block mounted in the chambers of said chest, a stem secured to said thrust-block, a cross-head secured to the end of said stem, slide-valves mounted in the chambered portions of the chest, and rods connecting said valves with said cross-head, and means driven by the shaft for operating the thrust-block and valve, as set forth.

5. A rotary engine comprising a cylinder, a shaft mounted in suitable bearings therein, a rotary piston fixed to said shaft, a chambered chest communicating with the cylinder, a hollow reciprocating thrust-block mounted in one of the chambers of said chest, a stem secured to said thrust-block, a cross-head secured to the end of said stem, slide-valves mounted in the chambered portions of the chest, rods connected to said valves and passing through suitable glands and fastened at their outer ends to said cross-head, cut-off valves and connections between the same and said cross-head, as set forth.

6. A rotary engine comprising a cylinder, a shaft mounted therein and a piston rotating with said shaft, a reciprocating thrust-block, positively-driven means for throwing the same into and out of the path of said piston, valve mechanism for regulating the supply of steam being fed to the cylinder, an auxiliary cylinder, a plunger-carrying cylinder, pipes communicating between said plunger-carrying cylinder and the cylinder carrying the rotary piston, means for operating said plunger to throw one or more of the pipes leading thereto into communication with the cylinder bearing the rotary piston, an auxiliary cylinder communicating with the plunger-carrying cylinder, and a piston in said auxiliary cylinder and connections between the same and said cut-off valve, as set forth.

7. A rotary engine comprising a cylinder having pipes communicating with the interior thereof at intervals, a rotary piston mounted in said cylinder, a reciprocating thrust-block, means for operating the same, a cut-off and slide valves, an auxiliary cylinder, a spring-pressed piston mounted therein, and pivotal lever connections between the same and the stem of said cut-off valve, a plunger-carrying cylinder through which communication is had between the auxiliary cylinder and the piston-carrying cylinder, and means for throwing one or the other of said pipes into communication with the auxiliary cylinder, as set forth.

8. In combination with a cylinder, a rotary piston therein, a reciprocating thrust-block, a cut-off valve, an auxiliary cylinder, a spring-pressed piston therein, the stem of said piston projecting through the end of the cylinder containing the spring-pressed piston, a rod connected to the end of said stem, a standard upon the frame of the apparatus, a lever pivoted in said standard having pivotal connections at one end of said bar, its other end pivotally connected to the stem of said cut-off valve, a plunger-carrying cylinder with a duct leading through a portion of said plunger, pipes leading from the plunger-carrying cylinder to and communicating with the rotary piston-carrying cylinder, a rod connected to said plunger and lever mechanism for actuating said plunger to throw one or the other of the pipes leading from the plunger-carrying cylinder into communication with the duct leading through the plunger, as shown and described.

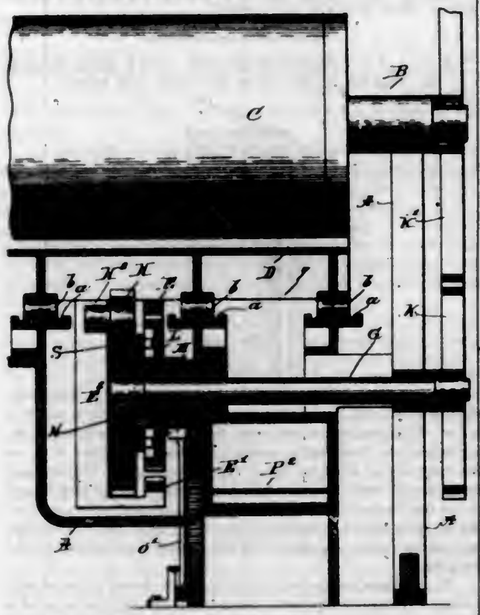
9. A rotary engine comprising a cylinder having bosses projecting toward each other from the ends of the cylinder, an operating-shaft journaled in the end of said cylinder, a piston having the hub portion fixed to the shaft intermediate said bosses, the end of the piston projecting over said bosses and its outer end adapted to wipe against the circumference of the cylinder, a chambered chest mounted over said cylinder, a thrust-block mounted in one of the chambers of said chest and having a reciprocal movement therein adapted to be thrust against the hub portion of said piston and be guided in grooves formed in the inner faces of said cylinder ends, a friction-block carried by the thrust-block, a cut-off and sliding valves for feeding the steam to the cylinder, and means for actuating the same synchronously with the movement of the thrust-block, as set forth.

10. In a rotary engine, in combination with a cylinder and shaft journaled therein, a rotary yielding piston having a hub portion secured to said shaft, a chambered chest mounted over the cylinder, a reciprocating thrust-block having reciprocal movement in one of the chambers of said chest, and means for operating the same, the opposite edges of said thrust-block adapted to be guided in grooves in the inner faces of the ends of the cylinder, a perforated friction-block having shouldered portions having a limited play in a recess in the lower end of the chambered portion of the thrust-block adapted to normally hold the same with its outer end in advance of the thrust-block, cut-off and slide valves, and means for actuating the same synchronously with the movement of the thrust-block, as set forth.

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753,389. **MECHANICAL MOVEMENT.** BICKNELL HALL, Taunton, Mass., assignor to the Huber-Hodgman Printing Press Company, Taunton, Mass., a Corporation of Massachusetts. Filed June 8, 1903. Serial No. 160,455. (No model.)



*Claim.*—1. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear extending within the plane of said racks and gear, means for shifting said gear transversely to said bearing to engage alternately the bed-racks.

2. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear extending within the plane of said racks and gear, means for shifting said gear transversely of said bearing to engage alternately the bed-racks, means for giving a uniform rotation to said gear when in engagement with either rack.

3. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear, an eccentric-sleeve between said bearing and said gear, the said stationary bearing and eccentric-sleeve extending within the plane of said racks and gear, means for shifting said eccentric whereby said gear is shifted transversely of said bearing to engage alternately the bed-racks.

4. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear, an eccentric-sleeve between said bearing and said gear, the said stationary bearing and eccentric-sleeve extending within the plane of said racks and gear, means for shifting said eccentric whereby said gear is shifted transversely of said bearing to engage alternately the bed-racks, means for giving a uniform rotation to said gear when in engagement with either rack.

5. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear, means for shifting said gear transversely to said bearing to engage alternately the bed-racks, a rotating member concentric with said gear when in one of its rack-engaging positions, connections between said rotating member and said gear whereby uniform rotation is imparted to said gear when in engagement with either rack.

6. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear, means for shifting said gear transversely to said bearing to engage alternately the bed-racks, a rotating member concentric with said gear when in one of its rack-engaging positions, a unicon-ring having diametrically-alined projections on one face in diametrically-movable engagement with said rotating member, perpendicularly-arranged diametrically-alined projections on the other face in diametrically-movable engagement with said gear, whereby uniform rotation is imparted to said gear when in engagement with either rack.

7. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear extending within the plane of said racks and gear, means for shifting said gear transversely to said bearing to engage alternately the bed-racks, a rotating member, connections between said rotating member and said gear whereby uniform rotation is imparted to said gear when in engagement with either rack.

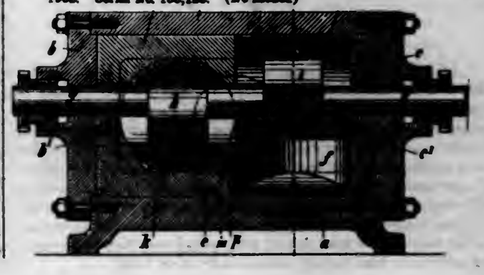
8. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a stationary bearing for said gear, means for shifting said gear transversely to said bearing to engage alternately the bed-racks, a rotating member, a unicon-ring having diametrically-alined projections on one face in diametrically-movable engagement with said rotating member, perpendicularly-arranged diametrically-alined projections on the other face in diametrically-movable engagement with said gear, whereby uniform rotation is imparted to said gear when in engagement with either rack.

9. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a rotating member, a stationary bearing for said gear eccentric to said rotating member, an eccentric-sleeve between said bearing and said gear so arranged that said gear will be concentric to said rotating member when in one of its rack-engaging positions, means for shifting said eccentric-sleeve whereby said gear is shifted transversely of said bearing to engage alternately the bed-racks, means for giving a uniform rotation to said gear when in engagement with either rack.

10. Reciprocating bed-motion comprising bed-racks, a gear located in the same plane with said racks, a rotating member, a stationary bearing for said gear eccentric to said rotating member, an eccentric-sleeve between said bearing and said gear so arranged that said gear will be concentric to said rotating member when in one of its rack-engaging positions, means for shifting said eccentric-sleeve whereby said gear is shifted transversely of said bearing to engage alternately the bed-racks, means connecting said rotating member and said gear whereby when the rotating member is rotated uniformly a uniform rotation is given to said gear when in engagement with either rack.

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753,390. **MACHINE HAVING ROTATING PISTONS.** CARL H. O. HAMANN, Borgedorf, near Hamburg, Germany. Filed Dec. 18, 1902. Serial No. 136,126. (No model.)



*Claim.*—1. The combination with a casing having inlet and exhaust ports, of a cylinder therein mounted to rotate and having a transverse bore, a piston in said bore and means to reciprocate said piston and thereby rotate said cylinder, substantially as described.

2. The combination with a cylindrical casing having inlet and outlet ports therein, of a cylinder mounted to rotate in said casing and having a transverse bore, a piston in said bore and means eccentric to the cylinder to reciprocate the pistons and simultaneously rotate the cylinder, substantially as described.

3. The combination with a cylindrical casing having oppositely-situated ports, of a cylinder axially mounted therein, transverse bores in said cylinder in symmetrical angular relation to one another, pistons in the bores and rotating means eccentric to the cylinder to reciprocate the pistons and rotate the cylinder, substantially as described.

4. The combination with a cylindrical casing having oppositely-situated ports, of a cylinder axially mounted in the casing and having two bores therethrough at right angles to each other, a shaft passing longitudinally through the cylinder and eccentric thereto and means on the shaft to reciprocate the pistons and thereby rotate the cylinder, substantially as described.

5. The combination with a cylindrical casing having oppositely-situated ports and heads having central bosses, of a cylinder axially mounted in the casing on said bosses and having bores therethrough at right angles to each other, pistons in said bores, a shaft passing eccentrically through the cylinder and also through the pistons, and eccentrics on the shaft to engage the pistons to reciprocate them and thereby rotate the cylinder, substantially as described.

6. The combination with a cylindrical casing having ports, of a cylinder mounted to rotate in said casing and having transverse bores, a shaft passing longitudinally through the cylinder and eccentric thereto, pistons in the bores, means on the shaft to reciprocate the pistons and thereby rotate the cylinder and a partition mounted on the shaft between the bores, substantially as described.

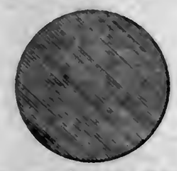
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**753,391. CASING FOR TELEPHONES OR MICROPHONES. PAUL HARDUIN, Berlin, Germany. Filed Sept. 3, 1903. Serial No. 172,000. (No model.)**



*Claim.*—The combination with a core of steel, iron and the like, of a bell-shaped casing of steel, iron and the like capable of forming with said core a bipolar electromagnet, an insulated coil mounted on said core within said casing and placed in an electrical circuit, a cover for said casing, a vibrating diaphragm held by said cover within said casing near said core, said cover having a plurality of apertures for allowing of the verberations of the voice reaching said diaphragm, two semicircular springs secured to said cover for grasping the edge of said casing, and a pin on said casing for engaging between the free ends of said springs and thereby preventing said cover from turning, substantially as set forth.

**753,392. BILLIARD OR POOL BALL. HENRY L. HASKELL, Ludington, Mich., and CHARLES F. BRIGHAM, Sheboygan, Wis. Filed Oct. 2, 1902. Serial No. 125,633. (No model.)**



*Claim.*—1. As a new and useful article of manufacture, a billiard and pool ball composed of vitrified clay, and whose bulk is lighter per given measure than the same measure of the clay of which it is composed.

2. As a new and useful article of manufacture, a billiard and pool ball composed of clay and a material lighter than clay intimately mixed therewith, substantially as set forth.

3. As a new and useful article of manufacture, a billard and pool ball composed of clay and a material lighter than clay mixed therewith, and vitrified, substantially as set forth.

4. As a new and useful article of manufacture, a billard and pool ball composed of clay, vitrified and coated with celluloid, substantially as set forth.

5. As a new and useful article of manufacture, a billiard and pool ball composed of clay and a material lighter than clay intimately mixed therewith and vitrified.

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**753,393. FOLDING WARDROBE. JOHN F. HAYES, Richmond, Va. Filed Oct. 12, 1903. Serial No. 176,667. (No model.)**



*Claim.*—1. A folding wardrobe comprising, a front frame provided with a door, a triangular top piece adapted to fit snugly in a corner of a room, hinges connected to said top piece and to the inner face of the front frame to permit the top to be folded down on the inner side of the front frame, the inner corner of the top piece being inwardly and downwardly beveled, an inner corner-post hinged to the top piece at the lower edge of the bevel, said corner-post being inwardly and downwardly beveled at its upper end, whereby the top and the corner-post may be folded against the inner face of the front frame.

2. A folding wardrobe comprising, a front frame provided with a door, a triangular top piece adapted to fit snugly in a corner of a room, hinges connected to said top piece and to the inner face of the front frame to permit the top to be folded down on the inner side of the front frame, the inner corner of the top piece being inwardly and downwardly beveled, an inner corner-post hinged to the top piece at the lower edge of the bevel, said corner-post being inwardly and downwardly beveled at its upper end, whereby the top and the corner-post may be folded against the inner face of the front frame, a shelf hinged to the outer face of the corner-post, a groove in the inner face of the front frame to receive the forward edge of said shelf, said shelf being adapted to be folded down against the outer face of the corner-post when its outer edge is released from the groove in the front frame.

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**753,394. ANCHOR. WILLIAM HECTOR, Chicago, Ill. Filed Jan. 5, 1903. Serial No. 137,762. (No model.)**

*Claim.*—1. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, and anchor fluke-arms extending into said wedge for engagement at their lower end with the end of said anchor-rod, said arms normally extending upward and parallel to said anchor-rod, substantially as described.



2. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms extending into said wedge for engagement at their lower end with the end of said anchor-rod, said arms normally extending upward and parallel to said anchor-rod, and means for causing said fluke-arms to swing downwardly to become distended as tension is applied to said rod, substantially as described.



3. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms having one end extending into said wedge for engagement therein with said anchor-rod, and enlargements at the other end of said arms, substantially as described.

4. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms having one end extending into said wedge for engagement therein with said anchor-rod, enlargements at the other end of said arms, and means for causing said fluke-arms to distend as tension is applied to said anchor-rod, substantially as described.

5. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms having one end extending into said wedge for engagement therein with said anchor-rod, enlargements at the other end of said arms, said enlargements being adapted to lie parallel to said anchor-rod, and means for causing said arms to assume a position at an angle thereto upon tension being applied to said rod, substantially as described.

6. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms having one end extending into said wedge for pivotal engagement therein with said anchor-rod, and enlargements at the other end of said fluke-arms, said enlargements having their end edge flared, substantially as described.

7. An anchor consisting of a hollow wedge having an opening from the top and side openings, an anchor-rod adapted to project into said wedge through said opening from the top, fluke-arms terminating in wings and extending into said wedge through said side openings for engagement therein with said anchor-rod, and means whereby upon longitudinal motion of said rod in one direction with respect to said wedge, said wings are disposed parallelly to said rod or distended at an angle thereto upon longitudinal motion of said rod in the other direction, substantially as described.

8. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms extending into said wedge for pivotal engagement therein with the end of said anchor-rod, and bearing-surfaces on said wedge acting in conjunction with said rod and said arms pivoted thereto to form a toggle mechanism whereby upon a pull being applied to said rod said arms are forced outwardly to become distended, substantially as described.

9. An anchor consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms extending into said wedge for engagement therein at their lower end with said anchor-rod, said arms normally extending upward and parallel to said rod, means for causing said fluke-arms to swing downwardly to become distended as said rod is moved in a direction away from said wedge, and means for causing said fluke-arms to refold back to their normal position as said anchor-rod is moved in a direction toward said wedge, substantially as described.

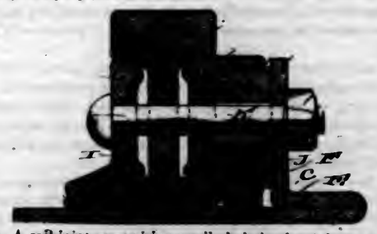
10. An anchor, consisting of a hollow wedge, an anchor-rod extending into said wedge, anchor fluke-arms extending into said wedge for engagement therein at their lower end with said anchor-rod, said arms normally extending upward and parallel to said rod, and means for causing said fluke-arms to penetrate point foremost into the earth to become distended as said rod is moved in a direction away from said wedge, substantially as described.

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**753,395. RAIL-JOINT. PERCY HOLBROOK, New York, N. Y., assignor to Weber Railway Joint Manufacturing Company, New York, N. Y., a Corporation of West Virginia. Filed Dec. 28, 1903. Serial No. 186,790. (No model.)**

*Claim.*—1. In a rail-joint, comprising the meeting ends of rails, a rail-chair having a base and an inwardly-turned portion forming a spiking-plate of double thickness, with an upright extending from said spiking-plate, plates extending adjacent the webs of the rails, packing material arranged between one of said plates and the upright of the chair, and bolts for securing the parts of the joint together, for substantially the purposes set forth.

2. A rail-joint, comprising a rail-chair having a base adapted to extend beneath the rails, and an upright, said base and upright being formed integrally one with the other and joined together by a reversely-bent portion of the chair extending outwardly from the upright in the opposite direction to the base, and fish-plates, packing material, and bolts for securing the rails in alinement, for substantially the purposes set forth.



3. A rail-joint, comprising a rail-chair having a base and an inwardly-turned portion forming a spiking-plate of double thickness, with an upright extending therefrom, rail ends having high web portions, the upright of the chair being adapted to the height of the rails, plates and packing material for securing the rails in alinement, and a plurality of rows of bolts for securing the parts of the joint together, for substantially the purposes set forth.

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**753,396. MONKEY-WRENCH. EDGAR P. HOWARD, Stillmore, Ga. Filed July 7, 1903. Serial No. 164,630. (No model.)**



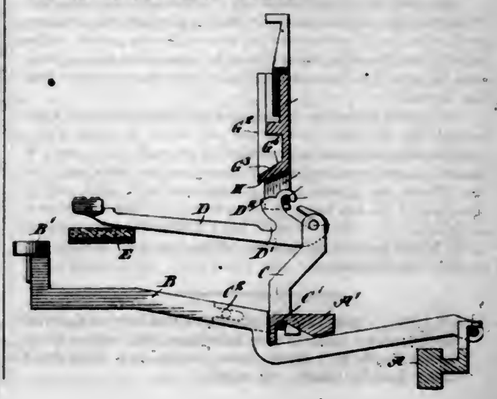
*Claim.*—1. In a wrench, a bar, a jaw fixed to the bar, a jaw sliding on the bar, a rack fixed to the sliding jaw, a handle having an opening to receive the rack, a claw pivoted in the handle and provided with an actuating-lever, and a retracting-spring, said lever being operable to force the claw against a rack-tooth and said spring operable to move the rack and claw and release the rack.

2. In a wrench the jaw fixed to the bar, the jaw sliding on the bar, the rack fixed to the sliding jaw, the handle and the claw-lever pivoted in the handle, the handle having an opening to receive the rack and a recess to receive the lever, said lever being elastic, and a retracting-spring, said lever extending beyond the outer end of the handle.

3. In a wrench the jaw fixed to the bar, the jaw sliding on the bar, the rack fixed to the sliding jaw, the handle and the claw pivoted in the handle, the handle having an opening to receive the rack and a recess to receive the lever, said lever being elastic, and a retracting-spring, said lever extending beyond the outer end of the handle, the handle-opening for the rack and the screw for the claw-lever, communicating adjacent the claw.

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**753,397. TYPE-BAR SEGMENT FOR TYPE-WRITERS. CHARLES W. HOWELL, Jr., Newark, N. J., assignor to Underwood Typewriter Company, New York, N. Y., a Corporation of New Jersey. Filed Oct. 5, 1903. Serial No. 175,734. (No model.)**



*Claim.*—1. In a type-writing machine, type-bars each having a pivot portion and a type-carrying shank connected therewith, in combination with a type-bar segment provided with a series of slots adapted to receive the type-bars, said slots extending from rear to front and terminating short of the vertical plane of the segment's front surface, being covered from above by a top wall having an overhang extending forwardly from the front ends of the slots and over the path of the foremost point of the pivot portion of a type-bar.

2. A type-bar segment provided at its lower portion with a series of slots adapted to receive the type-bars, a portion of the segment forming an inclined top wall for said slots, which terminate short of the forward end of said top wall, so that the latter forms an overhang to protect the forward ends of the slots against the entrance of foreign matter.

3. In a type-writing machine, type-bars each having a pivot portion and a type-carrying shank connected therewith, in combination with a type-bar segment provided with a series of slots adapted to receive the type-bars, a portion of the segment forming a top wall for the said slots to cover them from above, said top wall being extended beyond the ends of the slot so as to form an overhang to protect the ends of the slots against the entrance of foreign matter, said overhang also extending over the entire path of the foremost point of the pivot portion of a type-bar.

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**753,398. CLEAT FOR ELECTRIC WIRING.** EMORY C. HUNT, Belle Plaine, Iowa, assignor of one-half to Charles W. R. Snyder, Benton county, Iowa. Filed Nov. 3, 1902. Serial No. 130,601. (No model.)



*Claim.*—1. A cleat for wiring comprising of a perforated base and a perforated cap, said perforations registering with each other and standing at a right angle to the plane of contact between the base and the cap but at an inclination to the rear face of the base.

2. A cleat for wiring comprising a base and a cap, each provided with a perforation and having their adjacent faces provided with a fulcrum-point and a gripping-point on opposite sides of said perforations, said perforations standing at a right angle to the planes of said adjacent faces but at an inclination to the rear face of the base.

3. A cleat for wiring comprising a perforated base and a perforated cap, the adjacent faces of which are provided with two registering grooves to form a clamp and with a shoulder and a groove to form a fulcrum, the perforations registering with each other and being located between the clamp and the fulcrum and being inclined relatively to the rear face of the base.

4. A cleat for wiring comprising a perforated base and a perforated cap, the adjacent faces of the base and cap being provided with a fulcrum and a clamp on opposite sides of said perforations, the rear face of the base being inclined to said perforations and the outer face of the cap being provided with a retaining-groove.

5. A cleat for wiring comprising a perforated base and a perforated cap, the adjacent faces of which are provided with a fulcrum on one side of said perforations and two registering grooves on the opposite side, the outer face of the cap being provided with a groove over and substantially parallel with one of the grooves on the inner face thereof.

6. A cleat for wiring comprising a perforated base and a perforated cap, the outer face of the base being provided with a semicylindrical shoulder on one side of its perforation and a V-shaped slot and a semicylindrical groove on the other side, said shoulder slot and groove being parallel with each other, and the inner face of the cap being provided with semicylindrical grooves on opposite sides of its perforation and a V-shaped shoulder adjacent to one of said grooves, the rear face of the base being inclined relatively to said perforations.

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**753,399. COMBINATION BRACKET AND KNOB FOR ELECTRIC CONDUCTORS.** EMORY C. HUNT, Belle Plaine, Iowa, assignor of one-half to Charles W. R. Snyder, Benton county, Iowa. Filed Nov. 3, 1902. Serial No. 130,602. (No model.)

*Claim.*—1. A device of the kind described comprising a bracket having an integral outwardly-projecting knob portion and a rearwardly-extending bore transverse to and at one side of the knob portion, the said knob portion having a bore transverse to the bracket and an exterior groove parallel with the bore, as and for the purpose specified.



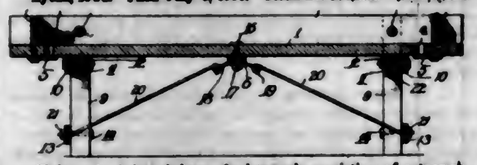
2. A device of the kind described, comprising a bracket portion and a knob portion, the bracket portion having an oblique bore, the knob portion having a transverse bore and a plurality of grooves substantially parallel with the transverse bore, as specified.

3. A device of the kind described comprising a bracket portion having an oblique bore and a knob portion having a transverse bore and a plurality of exterior grooves, substantially parallel with the transverse bore, the rear face of the bracket portion being provided with shoulders for the purpose specified.

4. A device of the kind described comprising a bracket portion having a bore at an acute angle to the bottom of said bracket portion, the bottom face of said portion being oblique to its top face, and a knob portion having a transverse bore at right angles to the bore of the bracket.

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**753,400. KNOCKDOWN FEED-TROUGH.** EDWARD J. ISQUIERDO, Lyons, Iowa. Filed July 6, 1903. Serial No. 164,269. (No model.)



*Claim.*—1. A knockdown feed-trough consisting of a trough-shaped body having a cross-rib on its lower face at or near each end, and supporting-standards each comprising a pair of uprights united by suitable cross-pieces, two of the cross-pieces of each standard being spaced apart to receive an associated cross-rib, a clip or bracket on the under side of the trough, and leg-braces connecting the bracket with cross-pieces of the standards.

2. In a knockdown feed-trough, a trough-shaped body having a cross-rib at or near each end on its lower face, an intermediate clip or bracket on its under side and having opposite holes, a pair of standards each comprising a pair of uprights and upper and lower cross-braces, the lower cross-brace having a hole or passage, the upper cross-braces being spaced apart to form a recess for one of the ribs, leg-braces having hooked inner ends to engage the clip and whose outer ends pass through the holes in the lower cross-braces, and nuts to secure the leg-braces in position.

3. In a knockdown feed-trough, a trough-shaped body composed of a suitable base, end and side pieces, a cross-rib on the under face of the base near each end, an intermediate cross-brace on the under side of the base, screw-bolts passing through the body and ends of the intermediate brace and having hooked ends to take over the top edges of the side pieces, an intermediate screw-bolt passing through the base and intermediate brace, a clip or bracket on the intermediate bolt and having holes in its opposite sides, supporting-standards composed of uprights and cross-pieces, pins passing through the upper ends of the uprights and the side pieces of the body, two of the cross-pieces being spaced apart to receive one of the cross-ribs, leg-braces having hooks at their inner ends to engage the clip and having their outer ends passing through lower cross-pieces of the standards.

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**753,401. VEHICLE-TIRE.** HERBERT H. IRWIN, Galesburg, Ill., assignor to Irwin Rubber Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 3, 1903. Serial No. 171,713. (No model.)



*Claim.*—1. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body and means adapted to penetrate the said wire fabric whereby the tire is secured to a wheel-rim, substantially as described.



2. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body and means arranged at intervals adapted to enter openings in the tire-base and engage the said wire fabric only at the same stated intervals, substantially as described.

3. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body and metallic members adapted to pass through the said wire fabric whereby the tire is secured to a wheel-rim, substantially as described.

4. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body and a lug having inwardly-hooked edges engaging the said wire fabric whereby the tire is secured to a wheel-rim, substantially as described.

5. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body, a lug engaging the said wire fabric and a cap-screw passing through a wheel-rim and engaging the said lug, substantially as described.

6. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body, notches removed from the base of said tire wherein lugs are inserted engaging said wire fabric, and cap-screws passing through a wheel-rim and engaging the said lugs, substantially as described.

7. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body and lugs engaging the said wire fabric whereby the tire is secured in a channeled metallic tire of a wheel-rim, substantially as described.

8. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body and metallic members adapted to enter openings in the tire-base and engage the wire fabric, the said metallic members being engaged by means passing through the wood felly and metallic tire of a wheel-rim, substantially as described.

9. An elastic vehicle-tire composed of two rubber compounds, the outer or tread portion being firm and compact, the inner portion being soft or sponge-like, said tire having woven-wire fabric provided with reinforced edges embedded within its body, and means for engaging said reinforced edges whereby the tire is secured to a wheel-rim, substantially as described.

10. An elastic vehicle-tire, the outer or tread portion being composed of a firm, compact rubber compound, the base or inner portion being composed of a soft, perforated, porous, or sponge-like rubber compound, said tire having woven-wire fabric embedded longitudinally within its body, and means adapted to enter openings in the tire-base and engage the wire fabric, substantially as described.

11. An elastic vehicle-tire formed in a strip and composed of two rubber compounds, the outer or tread portion being firm and compact, the inner portion being soft or sponge-like, said tire having woven-wire fabric embedded longitudinally in an arch form above the said sponge-like rubber, and means penetrating the said wire fabric whereby the tire is secured to a wheel-rim, substantially as described.

12. An elastic vehicle-tire composed of two rubber compounds, the outer or tread portion being firm and compact, the base or inner portion being soft, porous, or sponge-like, said tire having woven-wire fabric embedded longitudinally in the form of an arch above the inner porous compound, and means entering openings in the said tire at intervals whereby the tire is secured to a wheel-rim, substantially as described.

13. An elastic vehicle-tire composed of two rubber compounds, the outer or tread portion being firm and compact, the base or inner portion being soft, porous, or sponge-like, said tire having woven-wire fabric embedded therein substantially surrounding the inner porous compound, substantially as described.

14. A pneumatic vehicle-tire consisting of an outer casing and an inner air-tube, said casing being rifted on its inner periphery and having adjacent to said rift beads or flanges wherein is embedded woven-wire fabric, a lug adapted to engage one of said flanges and to overhang the other flange, and means for engaging said lug to secure the tire in a channeled wheel-rim, substantially as described.

15. A pneumatic vehicle-tire consisting of an outer casing and an inner air-tube, said casing being rifted on its inner periphery and having adjacent to said rift beads or flanges wherein is embedded a woven-wire fabric, lugs adapted to engage one of said flanges and to overhang the other flange, and cap-screws arranged to engage said lugs to secure the tire in a channeled wheel-rim, substantially as described.

16. A pneumatic vehicle-tire consisting of an outer casing and an inner air-tube, said casing being rifted on its inner periphery and having adjacent to said rift beads or flanges wherein is embedded woven-wire fabric, lugs adapted to engage one of said flanges and to overhang the other flange, a hinged ring secured to the inner side of the outer casing and lying above said lugs, and means for detachably securing the tire to a channeled wheel-rim, substantially as described.

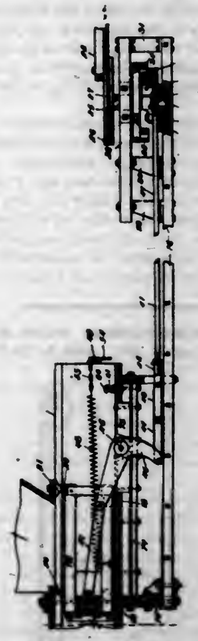
17. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body, said fabric being crimped, and means for securing said tire to a wheel-rim, substantially as described.

18. An elastic or pneumatic vehicle-tire having openly-woven crimped wire fabric embedded longitudinally within its body, lugs located in the said tire-base engaging the crimped woven-wire fabric, and means engaging said lugs for securing the tire to a wheel-rim, substantially as described.

19. An elastic or pneumatic vehicle-tire having woven-wire fabric embedded within its body, each wire of said fabric extending diagonally from one side of said fabric to the other, and means cooperating with the wire fabric whereby the tire is secured to a wheel-rim, substantially as described.

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**753,402. BALING-PRESS.** WILLIAM F. JACOBS, Ottawa, Ill., assignor to J. R. Porter Company, Ottawa, Ill., a Corporation of Illinois. Filed Apr. 19, 1902. Serial No. 103,763. (No model.)



*Claim.*—1. In a baling-press, a plunger having a vertical concave acting face, all parts of which are fixed, substantially as specified.

2. The combination with the plunger and its actuating mechanism, of returning-springs and the chains for adjusting them, the chains being made in sections having links of different size, substantially as specified.

3. The combination with the plunger and its actuating mechanism, of a returning-spring, a chain for adjusting the expansion of the spring, and a slotted bar receiving said chain, only the outer portion of the chain being adapted to enter the slots in the bar, substantially as specified.

4. The combination with the trunk and its compressing-screws, of the curved spring common to both screws, and a coiled reinforcing-spring for each screw, substantially as specified.

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**753,403. LOCK FOR SCREW OR BOLT HEADS.** GEORGE W. KINNARD, Staunton, Va. Filed Jan. 2, 1903. Serial No. 137,906. (No model.)

*Claim.*—1. In combination in an eyeglass-frame, of a screw, with that part of the screw-head intermediate of the periphery and center having the temper and function of a spring, said screw-head provided also on the contact-face, with a plurality of radial elevations and depressions, with locking means located on the surface of

the eyeglass-frame immediately in contact with the contact-face of the screw-head, said locking means engaging a depression on the contact-face of the said screw-head, substantially as set forth.



2. The combination in an eyeglass-frame, of a screw and a locking-pin, with that part of the screw-head intermediate of the periphery and center having the temper and functions of a spring, said screw-head provided also on the contact-face with a plurality of radial elevations and depressions, and said locking-pin located on the surface of the eyeglass-frame immediately in contact with the contact-face of the said screw-head, said pin engaging a depression on the contact-face of the said screw-head, substantially as, and for the purpose set forth.

3. The combination in an eyeglass-frame of a screw and a washer, said screw having provided on the contact-face of the screw-head a plurality of radial elevations and depressions, said washer provided on one side with locking means engaging a depression on the contact-face of the screw-head, and on the other side locking means engaging the part of the eyeglass-frame immediately in contact with the said washer, substantially as, and for the purpose set forth.

4. The combination in an eyeglass-frame of a screw and a washer, with that part of the screw-head intermediate of the periphery and center, having the temper and function of a spring, said screw provided also on the contact-face with a plurality of radial elevations and depressions, said washer provided on one side with locking means engaging a depression on the contact-face of the screw-head, and on the other side locking means engaging the part of the eyeglass-frame immediately in contact with the said washer, substantially as, and for the purpose set forth.

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**753,404. STEAM-CONDENSER. Roland W. Knapp, Minneapolis, Minn. Filed Aug. 22, 1902. Serial No. 120,658. (No model.)**

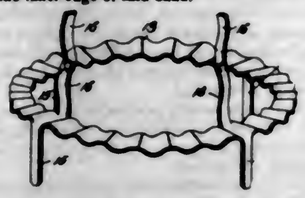


*Claim.*—A condenser having longitudinally-extending depending corrugations or folds communicating at their tops, and a longitudinally-extended partition dividing said condenser in two compartments, a communicating passage through said partition at one end of the condenser, and inlet and outlet passages at the other end of the condenser, the one opening into one compartment, and the other opening from the other compartment of said condenser, substantially as and for the purposes set forth.

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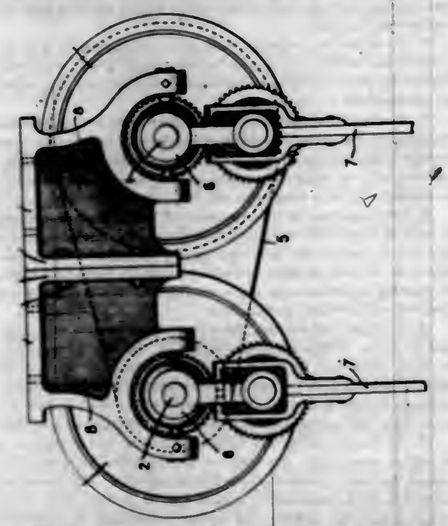
**753,405. LAMP-BURNER ATTACHMENT. Emil Krebs, Hwood, Ind. Filed Apr. 2, 1903. Serial No. 150,250. (No model.)**

*Claim.*—A lamp-burner attachment comprising a transversely-corrugated annular band having integral clips depending from the outer edge thereof and adapted to be clenched under the base of the burner, and integral chimney-supporting fingers extending upwardly from the inner edge of said band.



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**753,406. HANGER FOR SPEED-CHANGERS. Rudolf J. Lenz, Warren, Pa., and Edward L. Ahlers, East Orange, N. J. Original application filed Aug. 3, 1903, Serial No. 167,972. e Divided and this application filed Dec. 9, 1903. Serial No. 184,373. (No model.)**



*Claim.*—1. In a hanger for speed-changers, the combination, substantially as set forth, of a shaft, a pair of journal-boxes thereon, and a hanger for each journal-box, each hanger being provided with a pair of attaching-flanges at right angles to each other.

2. In a hanger for speed-changers, the combination, substantially as set forth, of two shafts mounted parallel with each other as expansion-pulley on each shaft, an independent pair of hangers for each shaft, and means for separably connecting the hangers of one shaft with those of the other shaft.

3. In a hanger for speed-changers, the combination, substantially as set forth, of two shafts mounted parallel with each other, an expansion-pulley on each shaft, an independent pair of hangers for each of said shafts, and attaching-flanges upon said hangers in position to permit of the hangers of one shaft being separably bolted to the hangers of the other shaft.

4. In a hanger for speed-changers, the combination, substantially as set forth, of two shafts mounted parallel with each other, an expansion-pulley on each shaft, an independent pair of hangers for each shaft, flanges upon said hangers in position to permit of the hangers of one shaft being separably bolted to the hangers of the other shaft, and flanges disposed upon said hangers at right angles to the before-mentioned flanges.

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**753,407. COMPOSITION OF MATTER. William Leuderoth, New York, N. Y. Filed June 16, 1903. Serial No. 161,526. (No specimens.)**

*Claim.*—1. As a new article of manufacture a hard homogeneous molded fused mass or composition of matter composed of shale and serpentine rock, which can be produced by melting said ingredients by heat and then molding the same into required shape.



2. The process of producing blocks and other articles from the composition of shale and serpentine rock, which consists in heating the mixture of shale and serpentine rock to the melting or fusing point and then molding the same.

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**753,408. ROLLING-MILL. David H. Lentz, Joliet, Ill. Filed Apr. 23, 1902. Serial No. 104,318. (No model.)**



*Claim.*—1. In a rolling-mill, the combination with a pair of rolls between which a rail may be grasped and fed, the said rolls being placed in substantial alinement, of a third roll acting upon the rail at right angles to the aforesaid rolls and engaging one side of the rail, an abutment engaging the other side of the rail, the said abutment being in the form of a bar, and means whereby the said bar may be caused to travel as the rail is passed through the rolls, substantially as described.

2. In a rolling-mill, the combination with a pair of rolls between which a rail may be grasped and fed, the said rolls being placed in substantial alinement, of a third roll acting upon the rail at right angles to the aforesaid rolls and engaging one side of the rail, an abutment engaging the other side of the rail, the said abutment being in the form of a bar, means whereby the said bar may be caused to travel as the rail is passed through the rolls, and means whereby the said bar may be reciprocated after the passage of a rail through the rolls, substantially as described.

3. In a rolling-mill, the combination with a pair of rolls between which a rail may be grasped and fed, the said rolls being placed in substantial alinement, of a third roll acting upon the rail at right angles to the aforesaid rolls to engage one side of the rail, said third roll having a peripheral speed greater than that of the aforesaid rolls, and an abutment engaging the other side of the rail, the said abutment being in the form of a slidable bar adapted to move with said rail in contact therewith throughout its length, substantially as described.

4. A rolling-mill for converting a head of a rail into a flange, comprising two gripping-rolls, an abutment-bar adapted to travel with the rail and to form with said gripping-rolls a suitable caliber for said rail, and a shaping-roll acting in conjunction with said gripping-rolls and said abutment-bar to alter the form of the rail-head, substantially as described.

5. In a rolling-mill apparatus for transforming the head of a traction-rail into a flange, the combination with a set of rolls having peripheral surfaces in correspondence with surfaces of the flange, of additional rolls for successively spreading the head varying degrees until the flange is finally shaped, the said additional rolls including those having grooving and cylindrical peripheries for engagement with the bottom of the flange portion to be, to groove this head portion to transform the same into a flange, said additional rolls having a pheripheral speed greater than that of the aforesaid set of rolls, substantially as described.

6. In a rolling-mill apparatus for transforming the head of a traction-rail into a flange, the combination with a set of rolls having peripheral surfaces in correspondence with surfaces of the flange, of additional rolls for successively spreading the head varying degrees until the flange is finally shaped, the said additional rolls including those having grooving and cylindrical peripheries for engagement with the bottom of the flange portion to be, to groove this head portion to transform the same into a flange, the peripheral speed of said additional rolls being greater than that of the aforesaid set of rolls, and the axes thereof being placed in advance of the plane containing the axes of the aforesaid set of rolls, substantially as described.

7. A machine for transforming a double-headed traction-rail into a single-headed flanged rail including rolls engaging the web of the rail and the bottom of that which is to be the flanged portion of the rail, the rolls being so disposed that this portion of the rail is substantially inclosed by the rolls, the space intervening between the rolls substantially corresponding in cross-section to the flange of the rail whereby as the rail is passed between the rolls that which was a head portion is transformed into a flange, an abutment for said rolls in the shape of a bar, and means whereby the said bar may be caused to travel as the rail is passed through the rolls, substantially as described.

8. A machine for transforming a double-headed traction-rail into a single-headed flanged rail including rolls engaging the web of the rail and the bottom of that which is to be the flanged portion of the rail, the rolls being so disposed that this portion of the rail is substantially inclosed by the rolls, the space intervening between the rolls substantially corresponding in cross-section to the flange of the rail whereby as the rail is passed between the rolls, that which was a head portion is transformed into a flange, an abutment for said roll in the shape of a bar, means whereby the said bar may be caused to travel as the rail is passed through the rolls, and means whereby the said bar may be reciprocated after the passage of the rail through the rolls, substantially as described.

9. In a rolling-mill, the combination with a pair of rolls between which a rail may be grasped and fed, the said rolls being placed in substantial alinement, of a third roll acting upon the rail at right angles to the aforesaid rolls to engage one side of the rail, the peripheral speed of said third roll being greater than that of the aforesaid rolls, and the axis thereof being placed in advance of the plane containing the axes of the aforesaid pair of rolls, substantially as described.

10. In a rolling-mill, the combination with a pair of rolls between which a rail may be grasped and fed, the said rolls being placed in substantial alinement, of a third roll acting upon the rail at right angles to the aforesaid rolls to engage one side of the rail, the peripheral speed of said third roll being greater than that of the aforesaid rolls, and the axis thereof being placed in advance of the plane containing the axes of the aforesaid pair of rolls, and an abutment engaging the other side of the rail, said abutment being in the shape of a slidable bar adapted to move with said rail in contact therewith throughout its length, substantially as described.

11. A rolling-mill for converting a head of a rail into a flange comprising two gripping-rolls, an abutment adapted to travel with the rail and to form with said gripping-rolls a suitable caliber for said rail, and a shaping-roll acting in conjunction with said gripping-rolls and said abutment-bar, to alter the form of said rail-head, the peripheral speed of the shaping-roll being greater than that of the gripping-rolls, and the axis thereof being placed in advance of the plane containing the axes of the gripping-rails, substantially as described.

12. In a rolling-mill, the combination with a pair of coacting rolls between which a rail may be grasped and fed, of a third roll acting upon the rail at right angles to the aforesaid rolls to engage the head of the rail to press the metal thereof into the shape of a flange, and an abutment for said rail in the shape of a slidable bar adapted to move with said rail in contact therewith throughout its length, substantially as described.

13. In a rolling-mill, the combination with a pair of coacting rolls between which a rail may be grasped and fed, of a third roll acting upon the rail at right angles to the aforesaid rolls to engage the head of the rail to press the material thereof into the shape of a flange, said third roll having a diameter greater than that of the aforesaid rolls, and the rates of revolution of all said rolls being equal, whereby the peripheral speed of said third roll is greater than that of the aforesaid rolls, substantially as described.

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**753,409. PROCESS OF RENEWING TRACTION-RAILS. David H. Lentz, Joliet, Ill. Filed May 3, 1902. Serial No. 105,793. (No specimens.)**



*Claim.*—1. The process of changing the form of a traction-rail, which consists in heating the rail to a suitable temperature and reshaping a head thereof into a flange by subjecting the metal thereof simultaneously to transverse and to longitudinal compression, substantially as described.

2. The process of re-forming a double-headed traction-rail into a single-headed traction-rail, which consists in heating the rail to a suitable temperature, subjecting the metal in a head thereof simultaneously to transverse and longitudinal compression to form a groove in its horizontal surface and then effecting a further redistribution of the metal by such combined transverse and longitudinal compression to transform the head into a flange, substantially as described.

3. The process of re-forming a double-headed traction-rail, which consists in heating the rail to a suitable temperature, then subjecting the metal in a head thereof simultaneously to transverse and to longitudinal compression to form a groove in its horizontal surface, thereafter widening said groove by such combined transverse and longitudinal compression, and thereafter flattening the groove to transform the rail into a single-headed flanged traction-rail, substantially as described.

4. The process of changing the form of a traction-rail, which consists in heating the rail to a suitable temperature and reshaping a head thereof into a flange by subjecting successive short sections of the material in the head thereof to simultaneous longitudinal and transverse compression, substantially as described.

5. The process of re-forming a double-headed traction-rail into a single-headed traction-rail, which consists in heating the rail to a suitable temperature subjecting successive short sections of the material in the head thereof to simultaneous longitudinal and transverse compression to form a groove in its horizontal surface and then effecting a further redistribution of the metal in the head by such combined transverse and longitudinal compression to transform the head into a flange, substantially as described.

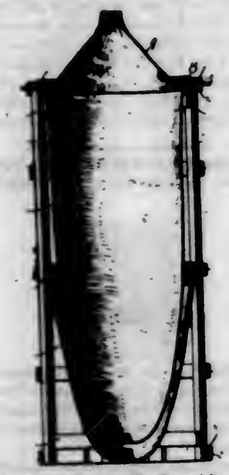
6. The process of changing the form of a traction-rail, which consists in heating the rail to a suitable temperature and reshaping a head thereof into a flange by feeding the rail between driven gripping-rolls and subjecting the top of the head to the action of reshaping-rolls having a greater peripheral speed than the gripping-rolls, whereby successive short sections of the rail-head are simultaneously subjected to longitudinal and transverse compression, substantially as described.

7. The process of changing the form of a traction-rail, which consists in heating the rail to a suitable temperature and reshaping a head thereof into a flange by feeding the rail between gripping-rolls and applying compression to the head of the rail at a point in advance of the gripping-rolls, the successive sections of the rail-head being thus simultaneously subjected to longitudinal compression between said rolls and the point of application of said compression and to transverse compression between said gripping-rolls between which the rail passes, substantially as described.

8. The process of changing the head of a traction-rail into a flange, which consists in heating the rail to a suitable temperature, then feeding the rail between gripping-rolls and applying compression to the head of the rail at a point in advance of the gripping-rolls to subject successive small sections of the rail-head to compression between said rolls and point of application of the compression as the rail passes through said rolls, substantially as described.

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**753,410. BANANA-CRATE. MICHELE LOMBARDO, Mason City, Iowa. Filed Oct. 20, 1903. Serial No. 179,066. (No model.)**



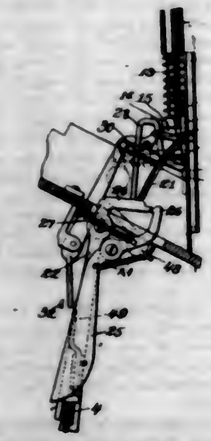
*Claim.*—1. In a crate, the combination with a frame, of a member adapted to be seated in either end thereof, an envelop suspended from the member within the frame, means for removably connecting the member with the frame, and a protecting-sack sustained within the frame with its mouth disposed adjacent to the longitudinal center of the latter, said sack being adapted for reversal to receive the lower end of the envelop when suspended from either end of the frame.

2. In a crate, the combination with a frame, of supporting members disposed at opposite ends thereof, a second member adapted to seat upon either of the supporting members, an envelop carried by the second member for suspension within the frame, means for removably attaching the second member to the frame, and a protecting-sack sustained within the frame with its mouth disposed adjacent to the longitudinal center of the latter, said sack being adapted for reversal to receive the lower end of the envelop when suspended from either end of the frame.

3. In a crate, the combination with a frame, of a member adapted to be seated in either end thereof, an envelop suspended from the member within the frame, means for removably connecting the member with the frame, said means comprising fastening devices engaged with one of the parts and detachably engaging openings provided in the other, and a protecting-sack sustained within the frame with its mouth disposed adjacent to the longitudinal center of the latter, said sack being adapted for reversal to receive the lower end of the envelop when suspended from either end of the frame.

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**753,411. TELEPHONE TOLL APPARATUS. GEORGE A. LOMB, Hartford, Conn., assignor to the Gray Telephone Pay Station Company, Hartford, Conn., a Corporation of Connecticut. Filed Apr. 15, 1902. Serial No. 103,065. (No model.)**



*Claim.*—1. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in said coin-channel, a trip-lever with a part projecting into the coin-channel and bearing a trip arranged to operate the lock, a guide-pin movable in and out of the channel and acting in connection with the projection from the trip-lever to release the lock, and means for operating the follower.

2. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in the coin-channel, a trip-lever having a part projecting into the coin-channel and bearing a trip arranged to operate the lock, a guide-pin movable in and out of the channel and operating in connection with the projection from the trip-lever, a holder projecting into the coin-channel and arranged to receive and hold a coin, means for releasing said holder in the movement of the switch-hook lever, and means for operating the follower.

3. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in the coin-channel, a trip-lever having a part projecting into the coin-channel and bearing a trip adapted to operate the lock, a guide-pin operating in connection with the projection from the trip-lever, a retaining-holder projecting into the coin-channel and connected with the lock, a delivery-holder projecting into said coin-channel and connected with the armature of the electromagnet for operating the call-bell, the electromagnet, the armature arranged to be vibrated when the magnet is energized, and means for operating the follower.



4. In a telephone toll apparatus, in combination with the switch-hook lever, a lock adapted to prevent movement of said lever, a catch arranged to hold the lock from engagement with the lever and having a cam arranged in the path of movement of the lever to disengage the catch from the lock, a coin-channel, a follower located in the channel, a trip-lever having a part projecting into the channel and bearing a trip arranged to operate the lock, a guide-pin operating in connection with the projection from the trip-lever, a retaining-holder secured to the lock and projecting into the coin-channel, a delivery-holder with one end projecting into the coin-channel said holder being operatively connected with the armature of the electromagnet, the electromagnet, the armature adapted to be vibrated when the magnet is energized, means for energising the magnet, and means for operating the follower.

5. In a telephone toll apparatus, in combination with a switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in said channel, a trip-lever with a part projecting into the coin-channel and bearing a trip arranged to operate the lock, a removable guide-pin movable in and out of the channel acting in connection with the projection from the trip-lever to release the lock, means for operating the guide-pin, and means for operating the follower.

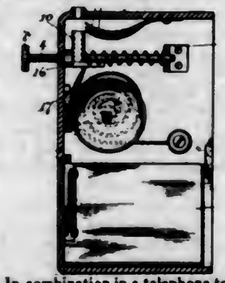
6. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of the lever, a coin-channel, a follower located in the channel, a release, a cam on the follower to operate the release, and a trip-lever to operate the lock and also to engage said release.

7. In a telephone toll apparatus, in combination with a switch-hook lever, a lock arranged to prevent movement of said lever, means for operating the lock, a coin-channel, a follower located in the channel, a guide-pin and a release operatively connected to project into the channel, and a cam on the follower adapted to operate the release.

8. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a retaining-holder borne by said lock, means for operating the lock, a coin-channel, a follower located in the channel, a guide-pin and a release operatively connected and projecting into the channel, a stud from the trip-lever projecting into the channel, and a delivery-holder operatively connected to the armature of the magnet of the telephone.

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**753,412. TELEPHONE TOLL APPARATUS. GEORGE A. LOMB, Hartford, Conn., assignor to the Gray Telephone Pay Station Company, Hartford, Conn., a Corporation of Connecticut. Filed Nov. 3, 1902. Serial No. 130,544. (No model.)**



*Claim.*—1. In combination in a telephone toll apparatus including a casing, a carrier adapted to receive a token, means for forcibly projecting the token from the carrier upon a predetermined movement thereof, and a gong or sound-yielding body operatively arranged with relation to said carrier and adapted to be struck by the projected token upon the release of said token from the carrier.

2. In combination in a telephone toll apparatus including a casing, a carrier adapted to receive and retain a token, means for moving said carrier, means for forcibly projecting the token from the carrier, and a gong or sound-yielding body arranged in the path of movement of the projected token and adapted to be sounded thereby.

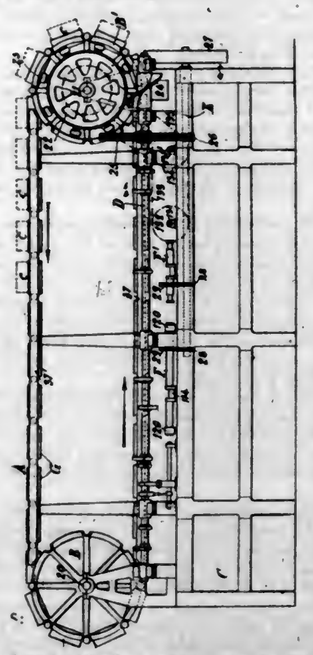
3. In a telephone toll apparatus including a casing, a plurality of carriers adapted to receive tokens of various denominations, independent means for actuating each of said carriers, means for releasing the tokens from the carriers, projectors for forcibly throwing the tokens in a predetermined path from the carriers, and gongs or sound-yielding bodies arranged in the path of the projected tokens.

4. In combination in a telephone toll apparatus, a casing, a movable carrier mounted therein and adapted to receive a token, means for releasing the token from the carrier at a predetermined point in its movement, an ejector for forcibly throwing the token from the carrier in a predetermined direction, and a gong or sound-yielding body operatively arranged with relation to the carrier and ejector and adapted to be sounded by the impact of the projected coin.

5. In a telephone toll apparatus including a casing, one or more carriers adapted to receive a token or tokens, means for retaining the tokens in the carriers during a predetermined movement thereof, an ejector adapted to forcibly throw the token from the carrier when said carrier has reached its releasing position, and a gong or sound-yielding body arranged to be sounded by the impact of the projected coin.

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**753,413. MACHINE FOR ROUNDING, BACKING, AND LINING BOOKS. CHARLES W. LOVELL, Brooklyn, N. Y., assignor to Arthur C. Fraser and George H. Fraser, Brooklyn, N. Y. Filed May 24, 1897. Serial No. 637,892. (No model.)**



*Claim.*—1. A bookbinding-machine comprising the following successively-acting mechanisms, namely, rollers between which the book is engaged for rounding its back, means for compressing the rounded back, a gluing mechanism and means for applying a lining fabric to the glued book-back, combined with means for holding a book and presenting it to said mechanisms in succession.

2. A bookbinding-machine comprising the following successively-acting mechanisms, namely, means for compressing the book-back, a gluing mechanism, and means for applying a fabric to the glued book-back, combined with means for holding a book and presenting it to said mechanisms in succession.

3. A bookbinding-machine comprising a clamp for holding the book, means for moving it to successive operative positions, and the following mechanisms in these successive positions, namely, rollers between which the book is engaged for rounding its back, means for compressing the rounded back, means for gluing the back, and means for applying a lining fabric to the book-back.

4. A bookbinding-machine comprising a succession of clamps for holding the books, means for moving them to successive operative positions, and the following mechanisms in these successive positions, namely, rollers between which the book is engaged for rounding its back, means for compressing the rounded back, means for gluing the back, and means for applying lining fabric to the book-back.

5. A bookbinding-machine comprising an endless chain, clamps carried thereby for holding the books, means for advancing said chain intermittently, and the following mechanisms at successive

stopping positions of the clamps, namely, rollers between which the book is engaged for rounding its back, means for compressing the rounded back, means for gluing the back, and means for applying a lining fabric to the book-back.

6. The combination with a rounding mechanism comprising a pair of rollers between which the book is engaged, and a backing mechanism comprising means for rolling down and compressing the rounded back, of a clamp adapted to grasp a book, present it to said mechanisms in succession, and subsequently discharge it.

7. The combination with a rounding mechanism comprising a pair of rollers between which the book is engaged, and a backing mechanism comprising means for rolling down and compressing the rounded back, of a clamp adapted to grasp a book and present it to said mechanisms in succession, and means for opening said clamp preparatory to the rounding operation and reclosing it thereafter.

8. The combination with a rounding mechanism comprising a pair of rollers between which the book is engaged, and a backing mechanism comprising means for rolling down and compressing the rounded back, of a progressively-advancing clamp adapted to grasp a book, present it to said rounding mechanism, release it during the rounding operation, thereafter regrasp it, and subsequently present it to the backing mechanism.

9. The combination with a rounding mechanism comprising a pair of rollers between which the book is engaged, and a backing mechanism comprising means for rolling down and compressing the rounded back, of a succession of clamps adapted to grasp successive books and carry them to said mechanisms, and means for opening each clamp preparatory to the rounding operation, and closing it after said operation to regrasp the book before the next advance movement.

10. The combination with a rounding mechanism comprising a pair of rollers between which the book is engaged, and a backing mechanism comprising means for rolling down and compressing the rounded back, of an endless chain carrying a series of book-clamps, means for advancing said chain intermittently to carry the clamps into positions to be operated upon by said mechanisms, and means for closing and opening the clamps to initially grasp the book, to release it and regrasp it in the rounding position, and to finally release it subsequent to the backing position

11. The combination of a clamp for holding a book, a rounding mechanism comprising rounding-rollers between which the book is engaged for rounding its back, and means for opening and closing said clamp, adapted to open it preparatory to the rounding operation and to close it to again grasp the book at the end of said operation.

12. The combination of a book-clamp, means for moving it intermittently, a rounding mechanism comprising rounding-rollers at a stopping position of the clamp, and driving and clamp-opening mechanisms adapted in such position to close said rollers together against the book, then to open the clamp and release the book, then to turn the rollers to round the book, then to close the clamp to again grasp the book, then to separate said rollers to free the book, and finally to advance the clamp to carry the book beyond the rounding mechanism.

13. The combination of a book-clamp, means for moving it intermittently, a rounding mechanism comprising rounding-rollers at a stopping position of the clamp, and driving and clamp-opening mechanisms adapted in such position to first move the rollers from a position beyond the book-back into positions at the sides of the book, then to close them together against the book, then to open the clamp and release the book, then to turn the rollers to round the book, then to close the clamp to again grasp the book, then to separate said rollers to free the book, and to again move them beyond the book-back and out of the way of its travel, and finally to advance the clamp to carry the book beyond the rounding mechanism.

14. The combination with a book-clamp and means for moving it to and beyond a backing position, of a backing mechanism for compacting and spreading the book-back, adapted to act on the book while held by said clamp in said position.

15. The combination with a series of intermittently-advancing book-clamps, of a backing mechanism for compacting and spreading the book-back, adapted to act on the successive books while held by said clamps in one of the stopping positions thereof.

16. The combination with a series of intermittently-advancing book-clamps, moving through a determinate path, of a backing mechanism comprising means for compacting and spreading the book-back, adapted to act on each of the successive books while held by said clamps in one of the stopping positions thereof, and movable toward and from the book-back in said position.

17. The combination with a book-clamp and means for moving it to and beyond a backing position, of a stationary backing-clamp for grasping the book in said position, and a backing mechanism comprising means for compacting and spreading the book-back, moving toward the book-back, acting upon it while held in said clamp, and then receding from it.

18. The combination with an intermittently-advancing clamp for holding and carrying a book, of a backing mechanism at a stopping position of said book-clamp, comprising a backing-roller, a frame carrying said roller, a driving mechanism for reciprocating said frame to move said roller through an arc-shaped path, and mechanism for displacing said moving frame bodily toward the book-back to cause the roller to act thereupon and for retracting it to permit the clamp to advance the book.

19. The combination with an intermittently-advancing clamp for holding and carrying a book, of a stationary clamp and a backing mechanism at a stopping position of said clamp, said stationary clamp adapted to support the book-back during the backing operation, and said backing mechanism comprising a backing-roller, a frame carrying said roller, driving mechanism for reciprocating said frame to move said roller through an arc-shaped path, and mechanism for displacing said frame toward and from the book-back, and means for opening and closing said stationary clamp, said parts adapted to cooperate to essentially the effect set forth.

20. The combination with a progressively-moving book-clamp of backing mechanism comprising a roller for compacting and spreading the book-back, adapted to act on the book in successive positions of said clamp, whereby the book receives a plurality of backing operations.

21. The combination with a progressively-moving book-clamp of successive backing mechanisms, each comprising a roller for compacting and spreading the book-back, independently adjustable, and adapted to act upon the book in successive positions of said clamp.

22. The combination with a book-clamp of successively-acting mechanisms for compressing the book-back and for applying a lining of frabric thereto while the book is held in said clamp.

23. The combination with an endless chain, book-clamps carried thereby, means for advancing said chain intermittently, a backing mechanism comprising a roller for compressing the book-back, and a lining mechanism for affixing a fabric to the book-back, said backing and lining mechanisms adapted to act on the books in successive stopping positions of said clamps.

24. The combination with a book-clamp of successively-acting mechanisms for backing the book, comprising a roller for compressing the book-back, for applying glue to the rounded book-back, and for applying lining to the glued surface of the book-back.

25. The combination with an endless chain, book-clamps carried thereby, means for advancing said chain intermittently, and means for applying glue to the rounded book-back, for applying lining-crash to the glued surface of the book-back, for again applying glue to the book-back exterior to said crash, and for subsequently applying lining-paper thereto.

26. The combination with an endless chain, book-clamps carried thereby, means for advancing said chain intermittently, and lining mechanism comprising a stationary clamp for holding the back portion of the book, means for applying adhesive, and means for pressing the lining against the book-back.

27. The combination with an endless chain, book-clamps carried thereby, means for advancing said chain intermittently, and lining mechanism comprising means for applying glue to the book-back, a stationary clamp for holding the back portion of the book, means for pressing lining-crash against the book-back, and means for subsequently pressing lining-paper thereagainst

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**753,414. RECOIL-LOADING SMALL-ARM.** GEORG LOEWE, Charlottenburg, Germany. Filed Mar. 17, 1900. Serial No. 9,063. (No model.)

*Claim.*—1. In a recoil-operated firearm, the combination, with a rearward-moving barrel and its extension, of a non-recoiling receiver or casing having a depending hollow handle-piece which is open to the said receiver, a breech-block, linked levers pivoted to the said breech-block and extension and having a laterally-extended projection at a point intermediate of their end pivots, and a spring secured in the said handle-piece under the said linked levers and operatively connected with one of them, said non-recoiling casing having at its side a guide-surface with which the said projection engages during the recoil.

2. The combination, with a non-recoiling receiver or casing having a depending hollow handle-piece which is open to the said receiver, of a rearward-moving barrel and its extension slidable in the said receiver, a breech-block, linked levers pivoted to the said breech-block and extension and having a laterally-extended rounded stud or projection arranged at their bending or knee point circumjacent to the pivot-pin connecting such levers, and a spring secured in the said handle-piece under the said linked levers and operatively connected with one of them, said non-recoiling casing having at its side a guide-surface with which the said stud or projection engages during the recoil of the barrel.



3. In a recoil-operated firearm, the combination, with a non-recoiling receiver, and a barrel and a barrel extension slidable therein; of a breech-block, toggle-levers connecting the said extension and breech-block, a catch member on the said receiver, and a catch member carried by the said toggle-levers, said catch members operating to lock the toggle-levers until one catch member has been slid rearwardly out of engagement with the other during the first part of the recoil.

4. In a recoil-operated firearm, the combination, with a non-recoiling receiver having a guide-surface on one side, and a barrel and a barrel extension slidable in the said receiver; of a breech-block, toggle-levers connecting the said extension and breech-block and having a lateral projection at their knee-point which engages with the said guide-surface during the recoil, a catch member on the said receiver, and a catch member carried by the said projection, said catch members operating to lock the toggle-levers during the first part of the recoil and to release them automatically before the said projection strikes the said guide-surface.

5. In a recoil-operated firearm, the combination, with a non-recoiling receiver, and a barrel and a barrel extension slidable therein; of a breech-block, toggle-levers connecting the said extension and breech-block, a catch member on the said receiver, and a spring-actuated catch member carried by the said toggle-levers, said spring-actuated catch member being adapted to engage automatically with the aforesaid catch member when pressed downward on it at the closing of the breech and operating to lock the said toggle-levers until it has been slid rearwardly out of engagement with it.

6. In a firearm, the combination, with a receiver, a removable trigger cover-plate arranged at one side of the said receiver, and a barrel slidable in the said receiver and provided with a projecting shoulder; of a bolt journaled in the front end portion of the said receiver and provided with a projection at its middle part which engages with the said shoulder on the barrel and also with the side wall of the said receiver, the barrel being thereby normally prevented from sliding forwardly and the bolt prevented from sliding longitudinally, and an operating-handle at one end of the said bolt which normally engages with the said cover-plate and prevents it from being removed from the receiver.

7. In a firearm, the combination, with a receiver provided with a handle, and a barrel and firing mechanism slidable in the receiver; of a catch pivoted at one end in the lower part of the handle and having a head at its free end which prevents the firing mechanism from being moved rearwardly, said catch having also a projection at its middle part, and a pin pivoted in the said receiver above and behind the said catch and having an inner arm provided with a stud which engages with the said projection and locks the said catch, said pin having also an outer arm or operating-lever.

8. In a recoil-operated firearm, the combination, with a non-recoiling receiver, a barrel extension slidable therein, and a magazine provided with a spring-pressed cartridge-feeder; of a breech-block slidable in the said extension, and a catch for engaging the said breech-block when the magazine is empty, said catch being pivoted to the said receiver on one side of the discharge-opening of the magazine and being moved into engagement with the said breech-block by the said cartridge-feeder.

9. In a recoil-operated firearm, the combination, with a non-recoiling receiver, a barrel extension slidable therein, a magazine under the said extension, and a cartridge-feeder slidable in the magazine; of a breech-block slidable in the said extension, a catch pivoted to the said receiver and arranged to one side of the discharge-opening of the magazine and provided with a lateral projection for engaging with the breech-block, and a tappet on the said cartridge-feeder which moves the said catch into engagement with the breech-block when the magazine is empty.

10. In a recoil-operated firearm, the combination, with a non-recoiling receiver, a barrel extension slidable therein, a magazine under the said extension, and a spring-pressed cartridge-feeder slidable in the magazine; of a breech-block slidable in the said extension, a catch pivoted to the said receiver and arranged to one side of the discharge-opening of the magazine, a releasing-spring which normally holds the said catch out of engagement with the breech-block, a tappet on the said cartridge-feeder which moves the said catch into engagement with the breech-block when the magazine is empty, and a second spring which presses the breech-block endwise against the said catch and normally prevents the said releasing-spring from releasing it when the cartridge-feeder is retracted.

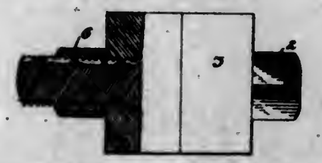
11. The combination, with a pivoted trigger-tongue and sear, of a bell-crank lever for operating the sear pivoted transversely of the trigger-tongue, one of the said parts being provided with projections arranged at different distances from the pivot of the said lever which bear against the other said part one after the other, whereby the leverage of the bell-crank lever is changed during the movement of the said trigger-tongue.

12. The combination, with a pivoted trigger-tongue and sear, of a bell-crank lever for operating the sear pivoted transversely of the trigger-tongue, one arm of the said bell-crank lever being provided with projections at different points of its length with which the said trigger-tongue engages one after the other, substantially as set forth.

13. The combination, with a pivoted trigger-tongue, and sear, of a bell-crank lever for operating the sear pivoted transversely of the trigger-tongue, and means for increasing the leverage of the bell-crank lever during the movement of said trigger-tongue, the maximum of leverage being coextensive with the completion of the trigger operation, as set forth.

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**753,415. NUT-LOCK.** WILLIAM H. MACK, Mossmore, Pa. Filed Jan. 18, 1902. Serial No. 90,268. (No model.)



*Claim.*—The combination with the bolt formed with a longitudinal groove, and a nut mounted on said bolt and being formed in its periphery with grooves extending inwardly from its inner edge, said grooves having their inner ends curved to approximately semi-circular contour, the walls or ribs separating said grooves having their inner ends tapered from their opposite sides, and a washer having a central opening adapted to receive said bolt, a lug formed integral with said washer and projecting inwardly into the opening thereof and engaging a groove in said bolt, and a plurality of radially-disposed ears bent at right angles to said lug and being received in the grooves of said nut, the tapered ends of the walls of

said grooves engaging the said ears at their inner ends, substantially as and for the purpose specified.

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**753,416. HAIR-CRIMPER.** JAMES F. MARTIN, Philadelphia, Pa., assignor to John B. Hall, Philadelphia, Pa. Filed Sept. 21, 1903. Serial No. 173,954. (No model.)



*Claim.*—1. A hair-crimper comprising jaws movably connected at one of their ends, one of said jaws being provided with a projection deflected toward the other jaw and having an eye therethrough, and the other jaw provided with a deflected terminal and adapted to be bent and be sprung longitudinally through the eye.

2. A hair-crimper comprising jaws or strips movably connected at one of their ends, one of said jaws being provided with a deflected terminal projecting toward the other jaw and having an eye therein, the other of said jaws being provided with shoulders and a terminal of reduced area and having a deflected portion adapted to engage the walls of said eye.

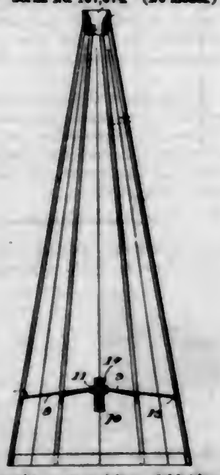
3. A hair-crimper comprising a pair of flat jaws or strips, means pivotally connecting said jaws or strips at one of their ends, one of said jaws being provided with a member deflected in the direction of the other jaw and at an angle thereto, an eye in said deflected member and a tongue projecting from the other of said jaws, said tongue being provided with a plurality of corrugations and adapted to enter and engage with the walls of said eye.

4. A hair-crimper comprising a pair of flat jaws or strips, an eyelet pivotally connected with said jaws or strips at one extremity thereof, one of said jaws being provided with a deflected terminal 13 bent in the direction of the other jaw, an eye 14 therein, and a tongue 15 projecting from the other of said jaws, said tongue being provided with a plurality of corrugations and being adapted to enter and engage with the walls of said eye, whereby accidental disengagement of the jaws in all directions is prevented.

5. In a hair-curler, the combination of an arm having a tongue, waves formed in said tongue, shoulders formed on said arm, an arm having a bent-up end having an aperture formed therein and said last-mentioned arm pivoted to said first-mentioned arm, substantially as described.

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**753,417. MEGAPHONE.** FRANK R. MITCHELL, Oshkosh, Wis. Filed July 31, 1903. Serial No. 167,674. (No model.)



*Claim.*—1. A megaphone comprising a foldable cover and pivoted means for distending said cover or permitting it to collapse.

2. A megaphone comprising a flexible cover and a pivoted ribbed distending means therefor capable of being collapsed.

3. A megaphone comprising a flexible cover, a ribbed frame on which the cover is mounted and means for holding the frame distended, said means being capable of folding to collapse the megaphone.

4. A megaphone comprising a mouthpiece, ribs pivoted thereto, stays pivoted to the ribs, a hub to which the stays are also pivoted, and a cover mounted on the ribs.

5. A megaphone comprising a mouthpiece, ribs pivoted thereto, stays pivoted to the ribs, a hub having slots in which the stays are also pivoted, said stays being adapted to bear on the walls of the slots when the ribs are distended, and a covering mounted on the ribs.

6. A megaphone comprising a mouthpiece, ribs pivoted thereto, stays pivoted to the ribs, a hub to which the stays are also pivoted, shoulders on the stays to engage the ribs when said ribs are distended, and a covering mounted on the ribs.

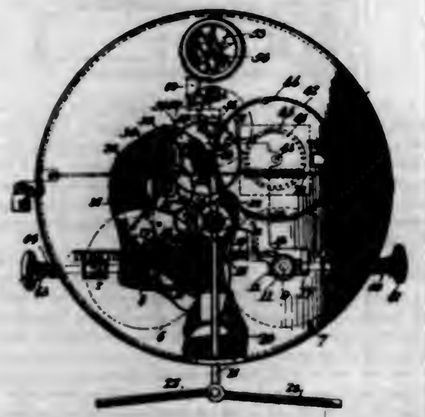
7. A megaphone comprising a mouthpiece, ribs pivoted thereto, stays pivoted to the ribs, a hub having slots in which the stays are also pivoted, said stays being adapted to bear on the walls of the slots when the ribs are distended, shoulders on the stays to engage the ribs when said ribs are distended, and a covering mounted on the ribs.

8. A megaphone comprising a mouthpiece, ribs pivoted thereto, stays pivoted to the ribs, a hub to which the stays are pivoted, said hub having an annular rabbet in which the ends of the ribs are seated when the megaphone is collapsed, and a covering mounted on the ribs.

9. A megaphone comprising a mouthpiece, ribs pivoted thereto, stays pivoted to the ribs, a hub to which the stays are pivoted, said hub having at one end an annular rabbet in which the ends of the ribs are seated when the megaphone is collapsed and having its other end reduced to form a projecting bearing-point for the device when collapsed, a covering mounted on the ribs, and a casing to contain the device when collapsed, the entire device when so arranged constituting a cane.

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**753,418. REGISTER.** JOHN O. MOORE, Richmond, Va., assignor of twenty-nine forty-fifths to Creed M. Fulton, Washington, D. C., John T. Ahern, Manchester, Va., and John A. Traylor, Richmond, Va. Filed May 28, 1903. Serial No. 158,891. (No model.)



*Claim.*—1. In registering mechanism, a casing having visual openings, a pair of initial registering-disks bearing indicating-marks, ratchet-wheels operatively connected to the disks, a pair of oppositely-disposed pawl-carrying bars for operating the ratchets, a pivoted operating-rod, a pair of centering-springs normally maintaining the rod in a central position, a train of gearing, a pawl-and-ratchet mechanism operable by the rod and connected to the train of gearing, and an indicating-disk driven by the train of gearing and serving to indicate the total number of movements of the rod in either direction.

2. In registering mechanism, a pair of registering-disks, shafts carrying said disks, ratchet-wheels carried by the shafts, a pair of oppositely-directed spring-pressed bars, pawls carried by said bars and adapted to engage the ratchet-wheels, a pivoted rod movable in either direction for operative engagement with one or other of the pawl-carrying bars, a pair of springs normally maintaining the rod in a central position, a shaft on which the rod is pivoted, a ratchet-wheel carried by the shaft, a pawl carried by the rod and engaging said ratchet-wheel, a train of gearing of which the initial member is formed by the rod-carrying shaft, a movable circuit-closer connected to and revolved by the train of gearing, a totals-registering disk also driven by the train of gearing, an electric circuit of which said movable circuit-closer forms one terminal, and a signal included in said circuit.

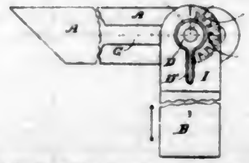
3. In a device of the class specified, a casing, a pair of primary registering-disks, ratchet-wheels carried by the disks, a pair of oppositely-directed bars guided within the casing, pawls carried by the bars and engaging the ratchet-disks, a train of gearing, an initial shaft forming a part of the train of gearing, a rod pivoted on the shaft and hung between the two pawl-carrying bars, pawl-and-ratchet mechanism connecting the bar and the shaft on which it is hung, a totals-registering disk driven by the train of gearing, a metallic disk also driven by the train of gearing and provided with an annular row of openings, a pin adjustable through any one of said openings and forming the terminal of an electric circuit, a circuit including a source of electrical energy, a stationary contact forming the opposite terminal to said circuit, and a signal and alarm included in said circuit.

4. In a device of the class specified, the combination with registering mechanism, of an alarm-gong, means connecting the registering mechanism to the clapper of the gong for sounding the alarm each time the registering mechanism is operated, a movable circuit-closer receiving motion from the registering mechanism, an electric circuit of which said circuit-closer forms one terminal, and an electromagnetically-actuated clapper included in the circuit and disposed adjacent to the gong.

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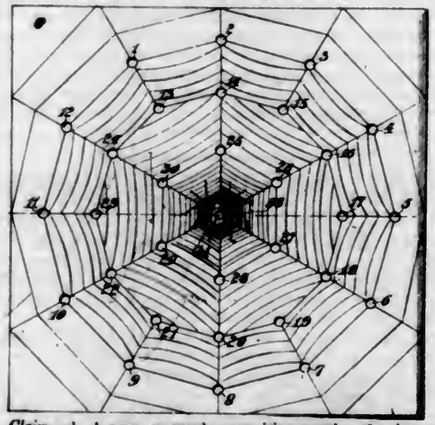
**753,419. BEVEL.** WILLIAM V. MORROW, Los Angeles, Cal. Filed June 17, 1903. Serial No. 161,918. (No model.)



*Claim.*—A device of the class described comprising a stock having a longitudinal cleft therein and a transverse circular opening extending through the end of said stock containing said cleft, one side of which is larger than the other; a circular-shaped scale on said stock adjacent to the larger portion of said circular opening; a slotted blade inserted in the cleft of the stock; an index-pointer having a shank adapted to enter the slot in said blade and having a shoulder adapted to bear upon said stock said index-pointer having an index-finger adapted to indicate on said scale the angle at which said blade stands to the stock; a bolt having both ends thereof threaded passing through said stock-blade and pointer; a nut having an operating-handle on one end of said bolt; an adjusting-nut on the other end of said bolt.

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**753,420. PUZZLE.** GUY L. MOTT, Halifax, Canada. Filed July 9, 1903. Serial No. 114,579. (No model.)



*Claim.*—1. A game or puzzle comprising a series of points arranged in the following manner, that is to say, a central point, a series of points at the corners of a regular hexagon surrounding said central point, a second series of points surrounding said first series and located at the corners of a regular dodecagon, having every alternate corner coradial with the corners of the hexagon, and a third series of points surrounding said second series and located at the corners of a regular dodecagon coradial with the points of said second series, substantially as described.

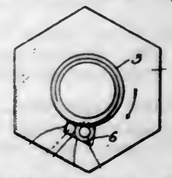
2. A game or puzzle comprising a series of thirty-one points arranged in the following manner, that is to say, a central point, a series of points at the corners of a regular hexagon surrounding said central point, a second series of points surrounding said first series and located at the corners of a regular dodecagon, having every alternate corner coradial with the corners of the hexagon, and a third series of points surrounding said second series and located at the corners of a regular dodecagon coradial with the points of said second series, in combination with a set of thirty playing-pieces each adapted to be placed on all of the thirty-one points except the central one and to be jumped successively over one another in the manner of the game of draughts, removing the pieces jumped over until all have been removed except one which is left at the central point.

3. A game or puzzle comprising a central point and a series of thirty other points arranged around it in the following order, to wit, a series of six points adjacent to the central point, a series of twelve points arranged around said central series, and an external series of twelve points arranged around the whole, there being passage-ways between each of the points of the inner series, between each of the points of the middle series, between each of the points of the outer series, from each point of the outer series to the corresponding one of the middle series, from every alternate point of the middle series to the corresponding one of the inner series, and finally from every point of the inner series to the central point.

4. A game or puzzle comprising a series of points arranged in the following manner, that is to say a central point, a series of points at the corners of a regular polygon surrounding said central point, a second series of points surrounding said first series and located at the corners of a regular polygon having every alternate corner coradial with the corners of the first polygon, and a third series of points surrounding said second series and located at the corners of a regular polygon coradial with the points of the second series, substantially as described.

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**753,421. LOCK-NUT.** ALBERT L. MOWRY, St. John, Canada. Filed Aug. 24, 1903. Serial No. 170,555. (No model.)



*Claim.*—1. In combination, a bolt, a nut mounted upon the threaded shank thereof, said nut having a recess formed in the bore of the same, extending between the inner and outer faces thereof, said recess having a substantially plane outer face, whereby said recess comprises an enlarged portion and a contracted portion, a locking-key consisting of an elongated cylindrical member adapted to be received by said recess and having a plurality of peripheral grooves formed therein, said grooves being adapted to receive the threads of said bolt, there being faces between said grooves adapted to roll on said outer face of said recess, whereby said locking-key may jam in the contracted portion of said recess.

2. In combination, a bolt having a threaded shank, a nut mounted thereupon, said nut having a recess in the bore thereof, said recess having substantially radial side faces, and a substantially plane outer face, said outer face approaching said shank at one extremity whereby said recess comprises an enlarged portion and a contracted portion, and a locking-key consisting of an elongated round member having a plurality of substantially V-shaped grooves in the lateral surface thereof, said grooves being adapted to receive the threads of said bolt, there being faces between said grooves adapted to roll upon said outer face of said recess, whereby said locking-key may jam in the contracted portion thereof.

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**753,422. ARMATURE-WINDING.** JAMES F. MCELROY, Albany, N. Y., assignor to Consolidated Car Heating Company, Albany, N. Y., a Corporation of West Virginia. Filed Nov. 11, 1902. Serial No. 130,636. (No model.)

*Claim.*—1. An armature-winding containing sets of coils in parallel cross-connected at intervals, there being in each set two or more coils in series between succeeding cross-connecting points.



2. An armature-winding containing sets of coils in parallel cross-connected at intervals, there being, in each set, two or more coils in series between succeeding cross-connecting points and the said two or more coils being placed respectively in different positions around the armature.

3. An armature-winding containing between succeeding cross-connecting points two coils in series placed respectively at points on the armature giving different electromotive forces at the same time, and connected in parallel with two coils correspondingly situated on the armature, the sets of coils aforesaid being in series with another set similarly arranged.

4. An armature-winding containing sets of coils in parallel cross-connected at intervals, there being in each set two coils in series between succeeding cross-connecting points, and the said two coils being placed respectively at magnetically-opposite points around the armature.

5. An armature-winding containing sets of coils in parallel cross-connected at intervals through the commutator, there being in each set two or more coils in series between succeeding cross-connecting points.

6. The combination with a commutator having cross-connected bars placed between bars not cross-connected, of an armature-winding having coils connected in series between two sets of cross-connected bars.

7. The combination with a commutator having alternate bars cross-connected, of an armature-winding having two coils in series connected between two sets of cross-connected bars and a connection from a point between the two series coils to a bar not cross-connected.

8. The combination with a commutator having cross-connected bars placed between bars not cross-connected of an armature-winding having two sets of coils, each set containing two coils in series, connected in multiple between two cross-connected bars.

9. The combination with a commutator having cross-connected bars placed between bars not cross-connected, of an armature-winding having two sets of coils, each set containing two coils in series, connected in multiple between two cross-connected bars and the two series coils composing each set placed respectively in different positions around the armature.

10. The combination with a commutator having cross-connected bars placed between bars not cross-connected, of an armature-winding having two sets of coils, each set containing two coils in series, connected in multiple between two cross-connected bars, the two series coils comprising each set being subject to different electromotive forces and connected at an intermediate point between them to a commutator-bar not cross-connected.

11. The combination with a cross-connected commutator-bar placed between bars not cross-connected, of two armature-coils similarly placed on the armature, both coils having their inner terminals connected to the said cross-connected bar and their outer terminals connected respectively to bars not cross-connected.

12. The combination with a cross-connected commutator-bar of two armature coils similarly placed on the armature and both having their inner terminals connected to the cross-connected bar aforesaid and their outer terminals connected, one to a bar adjacent to the said cross-connected bar and the other to a bar on the opposite side of the commutator.

13. An armature-winding having its coils arranged in pairs around the armature, the two coils of each pair spanning substantially the same arc, and a commutator having cross-connected bars each connected to the winding at a point between the two coils of one of said pairs, and bars not cross-connected, each connected to one of the outer terminals of one of said pairs.

14. An armature-winding having its coils arranged in pairs, one coil of each pair connected between two adjacent commutator-bars and the other connected between one of said adjacent bars and a bar on the opposite side of the commutator.

15. In a multipolar dynamo an armature-winding having an even number of coils which is a multiple of the number of field-magnet poles combined with a commutator having cross-connected bars equal in number to a multiple of the field-magnet poles and bars not cross-connected sufficient to make the total number of bars equal to the number of armature-coils.

16. In a multipolar armature-winding the combination with four or more sets of series coils arranged in multiple between opposite brushes of cross connections between each two or more successive coils of each two sets.

17. In a multipolar armature-winding, the combination with four or more sets of series coils arranged in multiple between the opposite brushes and the several sets containing at all times an equal number of coils, of cross connections between each two or more successive coils of each two sets.

18. In a multipolar armature-winding the combination with four or more sets of coils connected in multiple between opposite brushes and the coils of each set being in series with one another, of cross connections in each set at intervals between the coils comprising a set, the coils in one set bearing the same respective relation to the field-magnet poles as the coils of every other set.

19. In a multipolar armature-winding the combination with sets of coils in multiple, the coils of each set being in series with one another, of cross connections between the sets placed at intervals including two or more of the coils in series, the coils in series between cross-connected points being arranged to traverse the entire magnetic flux each time that they pass a set of field-magnet poles of the same name.

20. In a multipolar armature-winding the combination with sets of coils connected in multiple between opposite commutator-brushes, the coils of each set being in series, of cross connections placed at intervals including as many coils in series as there are field-magnet poles of the same name and the coils thus in series between cross-connecting points bearing respectively the same approximate relation to the respective poles of the same name.

21. In a multipolar armature-winding, the combination with sets of coils connected in multiple between opposite commutator-brushes, the coils in each set being in series with one another and the same in number in each set, of cross connections between such sets placed at intervals which intervals embrace as many coils in series as there are north poles in the field-magnet structure and the several coils thus in series between cross-connecting points bearing approximately the same definite relation to the said north poles respectively, whereby the said coils in series between cross-connecting points may traverse as a whole the entire magnetic flux proceeding from said north poles and again traverse as a whole the entire magnetic flux when passing next by the corresponding south poles.

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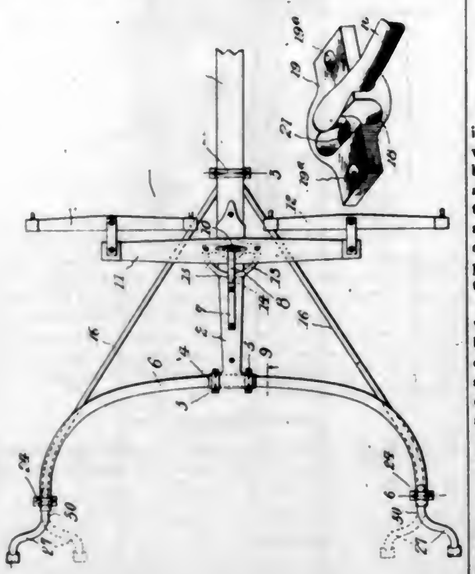
**753,423. CARRIAGE-POLE. JOHN MCINTOSH, Alexandria, Canada. Filed Oct. 9, 1903. Serial No. 176,342. (No model.)**

*Claim.*—1. In combination, a pole having a clamp at the rear thereof, a cross-arm received by said clamp and which may rotate therein, whereby the angular position of said cross-arm may be adjusted, braces attached to said cross-arm toward the extremities thereof, means for attaching said braces to said pole, said last means being adjustable longitudinally upon said pole.

2. In combination, a cross-arm, a pole, clamps rigidly attached to said pole and adapted to receive said cross-arm, said cross-arm being of substantially circular section at the point received by said clamp, diagonal braces attached to said cross-arm near the extremities thereof, a clip carried by said pole, and interlocking means between the forward extremities of said braces and said clip, said clip being adjustable longitudinally upon said pole.

3. In combination, a cross-arm of substantially tubular form, a pole, a pair of jaws attached to the rear of said pole, said jaws constituting a clamp to receive said cross-arm, clips passing around said jaws and adapted to constrain the same, diagonal braces attached to said cross-arm near the extremities thereof, another clip comprising a socket and attached to said pole, the forward extremities of said braces being received by said socket and interlocking therewith.





4. In combination, a cross-arm of substantially tubular form, a pole, a clamp formed at the rear thereof and adapted to receive said cross-arm, a clip attached to said pole, said clip having a cap-plate with pockets formed on the face thereof adjacent to said pole, said pockets having recesses therein, braces attached to said cross-arm and having enlarged heads received by said pockets, said heads being adapted to project into said recesses to prevent longitudinal movement of said clip upon said pole.

5. In combination, a cross-arm, thill-irons making a telescoping connection therewith, one of said members having an opening at said connection, and a clip attached in said opening and clamping said members therethrough.

6. In combination, a cross-arm presenting sockets substantially at the extremities thereof, thill-irons carried in said sockets, said sockets having openings in the sides thereof, and clamps located at said openings and adapted to press said thill-irons through said openings.

7. In combination, a cross-arm comprising a member having tubular sockets projecting rearwardly at the extremities thereof, thill-irons having shanks carried in said tubular sockets, said tubular sockets being mutilated to form openings through the wall thereof, clamps attached at said openings and securing said shanks, a pole attached to said cross-arm, and braces connecting said pole with said clamps.

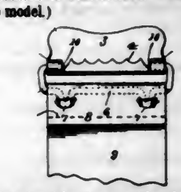
8. In combination, a cross-arm comprising sockets, thill-irons having shanks received by said sockets, said sockets being mutilated to form openings through the walls thereof, clips attached at said openings, said clips having caps received by said openings, and interlocking means between said caps and said shanks.

9. In combination, a cross-arm having tubular extremities projecting rearwardly therefrom, offset thill-irons having shanks received by said tubular extremities, means for clamping said shanks to said tubular extremities, said clamping means comprising a tooth and an interlocking recess.

10. In combination, a cross-arm consisting substantially of a tubular member having rearwardly-projecting extremities, thill-irons having shanks mounted in said extremities, said extremities being mutilated to form openings in the wall thereof, clips attached at said openings and adapted to clamp said shanks to said cross-arm, braces, the extremities whereof constitute caps for said clips, a pole attached to said cross-arm, and means for attaching said braces to said pole.

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**753,424. SUSPENDER-BUCKLE. LOUIS HEUBERGER, Bridgeport, Conn., assignor to the Connecticut Web Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Oct. 9, 1903. Serial No. 176,448. (No model.)**



*Claim.*—1. In a buckle, the combination of a loop member having a bar intermediate the sides of the loop and bearing extended web-engaging points in but adjacent to the ends of such bar, said bar being straight and continuous between said engaging points, and a lever member pivotally mounted on the said loop member and rotatable with respect thereto, said lever member having two arms at an angle with each other, one an operating-arm and the other a clamping-arm, the clamping-arm of the lever member being so proportioned and disposed as to be extended toward the straight bar of the loop member to which the web is attached.

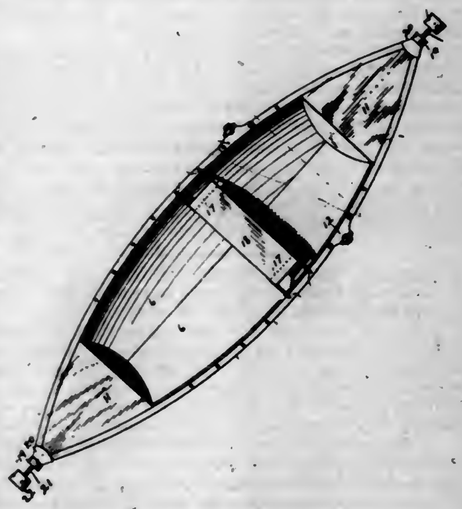
2. In a buckle, the combination of a loop member having a web-attaching bar and two outwardly-extended projections in such bar and adjacent to the sides of the loop, and a lever member pivotally mounted on the loop member and rotatable with respect thereto, said lever member having two arms at an angle with each other, one an operating-arm and the other a clamping-arm, the clamping-arm of the lever member being so proportioned and disposed as to be extended toward the bar of the loop member to which the web is attached.

3. In a buckle, the combination of a frame member having a continuous bar and small loops in such bar forming downwardly and outwardly projecting web-engaging ends adjacent to the ends of such bar, and a lever member pivotally mounted on the loop member and rotatable with respect thereto, said lever member having two arms at an angle with each other, one an operating-arm and the other a clamping-arm, the clamping-arm of the lever member being so proportioned and disposed as to be extended toward the bar of the loop member to which the web is attached.

4. In a buckle, the combination with a wire frame member bearing a bar having an intermediate straight continuous portion and outwardly-extended projections at the ends of said portion for penetrating the web, a lever member pivotally mounted on said frame and having two arms at an angle with each other, one an operating-arm and the other a clamping-arm, the clamping-arm being so proportioned and disposed as to be extended toward the bar of the frame member to which the web is attached.

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**753,425. METAL BOAT. SYLVESTER D. NOEL, Indianapolis, Ind. Filed May 5, 1903. Serial No. 155,700. (No model.)**



*Claim.*—1. The combination with a boat having an angle-iron gunwale with a horizontal top member, said member having a plurality of equidistant holes, of removable seat and oar-lock attachments adapted to be supported from said horizontal member and fastenings therefor entering said holes.

2. A boat having horizontal sleeves at prow and stern to form oar-sockets for the attachment of oars as handles for carrying the boat.

3. A boat having a pair of horizontal sleeves at prow and stern to receive carrying-bars, the outer one of each pair of sleeves being removable.

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**753,426. VEHICLE-WHEEL TIRE.** HARRY A. PALMER, Erie, Pa. Filed Nov. 13, 1903. Serial No. 181,074. (No model.)



*Claim.*—1. The combination in a vehicle-wheel tire, of radial clamp-rings within the tire, and bolts extending therefrom adapted to pass through the sides of the tire and through the radial portions of the channel rings or flanges on a vehicle-wheel rim, substantially as set forth.

2. The combination in a pneumatic vehicle-wheel tire, of a tire-sheath provided with a slit in its inner face, and adapted to inclose an inner air-tube, radial clamp-rings on the inner faces of the sides of the sheath near the base thereof, and bolts passing through said radial clamp-rings, through the sides of the tire-sheath and through the radial portions of the channel-rings on the sides of a vehicle-wheel, substantially as set forth.

3. The combination in a pneumatic vehicle-tire, of a tire-sheath provided with a slit in its inner face, adapted to inclose an inner air-tube, and having recesses in the inner faces of the sheath near the base thereof, radial clamp-rings in said recesses, and bolts passing through said clamp-rings, and the sides of the tire-sheath and adapted to pass through and be secured in channel-rings on the sides of a vehicle-wheel substantially as set forth.

4. The combination in a pneumatic vehicle-wheel tire of a tire-sheath, provided with a slit on its inner face and adapted to inclose an inner air-tube, and having recesses in the inner faces of the sheath near the base thereof, clamping-rings in said recesses, bolts passing through said clamp-rings and the sides of the tire-sheath, adapted to pass through and be secured in the channel-rings on the sides of the vehicle-wheel, and shields on the inside of the sheath, covering said clamping-rings, substantially as set forth.

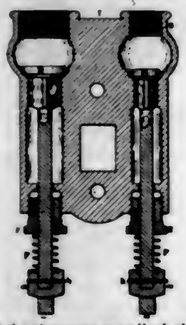
5. The combination in a vehicle-wheel, of a wheel-rim, a metal tire thereon, flange-rings secured to the sides of the wheel-rim so as to form a peripheral channel thereon, a pneumatic-tire sheath provided with a slit on its inner face, and adapted to inclose an inner tube, and fit into the channel on the wheel-rim, clamping-rings on the inner faces of the sheath opposite the sides of the channel on the wheel-rim, and bolts passing through said clamp-rings, the sides of the sheath and said flange-rings whereby the sides of the base of the tire-sheath are clamped between said clamp-rings and said flange-rings, substantially as set forth.

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**753,427. COMBINED STEAM AND WATER VALVE.** LEWIS A. PARKER and HARRISON D. CASTLEBERY, Leavenworth, Wash. Filed Aug. 26, 1902. Serial No. 121,144. (No model.)

*Claim.*—1. In a device of the character described, the combination with a water-valve and a steam-valve, stems projecting from the valves, of means for simultaneously operating the valves comprising, a rock-shaft, projections from the shaft engaging the stems, a lever for rocking the shaft to open the valves, and resilient means carried by the stems for closing the valves, substantially as described.

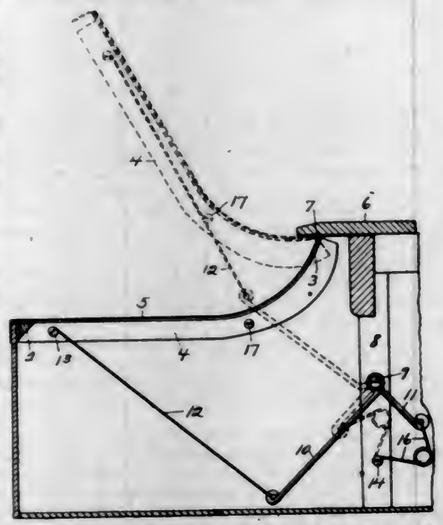
2. In a device of the character described, the combination with a valve-casing, of a steam-valve and a water-valve operating therein, stems depending from the valves, springs confined on the lower end of the stems, arms supported from the casing and bearing against the ends of the valve-stems, a pivoted lever connected to the arms, and a jet-nozzle connected to the valve-casing, substantially as described.



3. In a device of the character described, the combination with a valve-casing, of a steam-valve and a water-valve operating therein, stems depending from the valves carrying bosses on their lower ends, springs encircling the stems between the casing and the bosses, a shaft supported from the casing, arms secured to the shaft and bearing against the bosses, a lever fixed on the shaft, a T secured to the casing and in communication with the water-valve, means connecting the T with the steam-valve, and a nozzle-jet secured in the T, substantially as described.

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**753,428. BUGGY-BOOT HOLDER.** SWAIN PEARSON, Rock Island, Ill., assignor of one-half to John Pearson, Rock Island, Ill. Filed July 9, 1903. Serial No. 164,881. (No model.)




*Claim.*—In an automatic buggy-boot holder of the character described, the combination of a vertical post, an angle-lever fulcrumed to and carried by said post, a coiled spring with extended arms, one arm thereof fulcrumed to post 8, the other arm pivotally connected to angle-lever, arms pivotally secured to the body portion of a buggy-bed, stop-pins secured to the arms, a rod forming a connection between the angle-lever and the boot-arms, substantially as described.

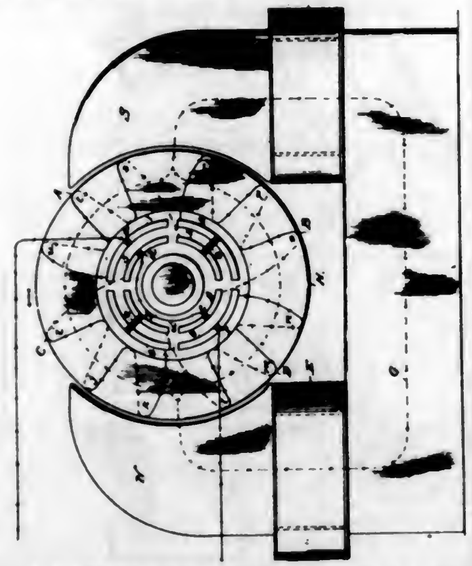
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**753,429. ELECTRODYNAMIC GENERATOR.** GEORGE M. PELTON, Chagrin Falls, Ohio. Filed Sept. 29, 1902. Serial No. 126,289. (No model.)

*Claim.*—1. In a dynamo-electric machine, the combination of a plurality of armature-coils, two commutators each consisting of segments equal in number to said coils, and connections between said coils and said commutators, whereby said coils may be established in series or in multiple relation.

2. In a dynamo-electric machine, the combination of a plurality of armature-coils, two commutators each consisting of segments equal in number to said coils, a plurality of brushes engaging said commutators, and adjustable connections between certain brushes of the respective commutators, whereby said coils may be established in series or in multiple relation.





3. In a dynamo-electric machine, the combination of a plurality of armature-coils, two commutators, each consisting of segments equal in number to said coils, means for establishing a series connection between said coils, means for connecting said coils in multiple and means for connecting certain of said coils to separate working circuits, whereby the output of said machine may be regulated as to voltage and amperage in a single working circuit or in a plurality of such circuits.

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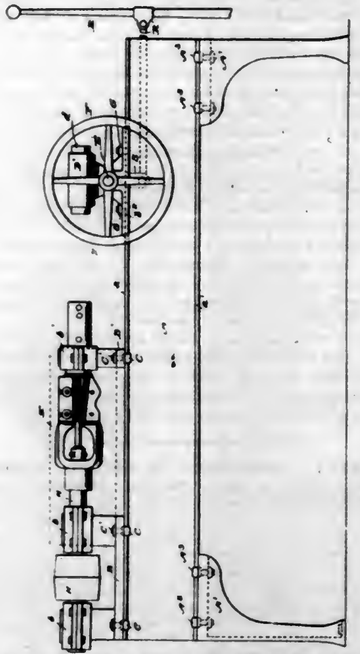
**753,430. CHUCKING MACHINERY.** CHESTER PROUTY, Ridgway, Pa. Filed Oct. 4, 1898. Serial No. 692,641. (No model.)

*Claim.*—1. The herein-described chuck for the purpose specified consisting of a body provided with a longitudinally-extending passage one end of which communicates with a chamber that opens through opposite walls of the chuck, two longitudinally-extending slots being formed at diametrically opposite points in the walls of said chuck-passage, a knife or cutter secured to the chuck and extending partially across one of said slots, and a bit mounted in the chuck and extending across the aforesaid chamber therein and into the adjacent end of the chuck-passage, substantially as set forth.

2. The herein-described chuck for a wood-turning machine comprising a revoluble body having a longitudinally-extending tapering passage therein and an open chamber beyond and communicating with the said tapering passage, a knife or cutter arranged to act upon a blank forced longitudinally through said passage, a boss to the chuck extending into the open chamber and in alinement with the passage, a bit secured in the boss and extending into the passage, and a soft-metal lining adapted to bear against the blank in advance of the knife and in the tapering portion of the passage adjacent to the knife, for the purpose set forth.

3. In a machine for the purpose described, the combination of a bed or base, a chuck mounted on said frame and having a longitudinal passage formed therein and communicating at one end with a chamber, I', that opens through opposite sides of the chuck, a knife or cutter mounted on the chuck in advance of the chamber, I', and extending into the passage in the chuck, a tubular guide forming a continuation of the longitudinal passage of the chuck in advance of the knife or cutting-blade, and provided with a lining of soft metal, a work-holder mounted on the bed in advance of the chuck-guide, and means for moving the said holder longitudinally of the bed to force a blank engaged thereby through the chuck-guide into position to be operated on by the knife, substantially as set forth.

4. In a wood-turning machine a chuck having a longitudinally-extending passage therein provided with laterally-extending recesses, a cutter secured to the chuck and projecting into the passage therein, a soft-metal lining to said passage adapted to bear against a blank in advance of the cutter, and arms to the lining anchored in the recesses



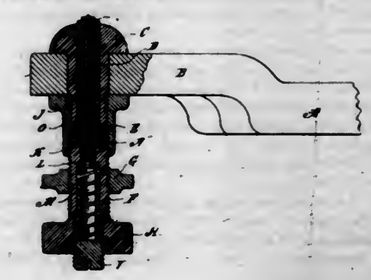
5. In a wood-turning machine a chuck consisting of a body provided with a longitudinally-extending passage one end of which communicates with a chamber that opens through opposite walls of the chuck, a soft-metal lining in the passage, laterally-extending arms thereto anchored in recesses in the wall of the passage, a cutter secured to the chuck and extending partially across a longitudinally-extending slot formed in the wall of the passage and its lining, and a bit mounted in the chuck and extending across the chamber and into the passage.

6. In a wood-turning machine a chuck having a longitudinally-extending passage therein and recesses in the wall of said passage, a soft-metal lining in the passage, and arms extending from the lining and anchored in the recesses, the sides of the arms being concaved longitudinally.

7. The herein-described chuck for the purpose specified consisting of a body provided with a longitudinally-extending passage one end of which communicates with a chamber that opens through opposite walls of the chuck, a cutter-blade extending partly across a slot in the wall of the passage, a boss extending from the body of the chuck at one end thereof, and a bit secured in said boss and extending across the chamber and into the passage.

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**753,431. SETTING-MACHINE.** EBERHARD L. PUPER, East Orange, N. J., assignor to Agatine Shoe Hook and Eyelet Company, Newark, N. J., a Corporation of New York. Filed June 8, 1903. Serial No. 160,468. (No model.)



*Claim.*—1. In a setting-machine, a setting and clenching anvil provided with a spring-seated spreading device mounted for movement within the anvil, an anvil-support, means for adjusting the spreading device and the anvil within the anvil-support, independently of the adjustment of the spring, and means for independently adjusting the tension of the spring, substantially as described.

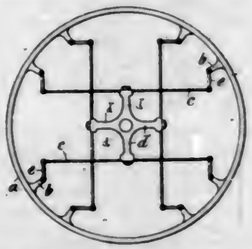
2. In a setting-machine, a setting and clenching anvil, an anvil-support, means for locking the support in position, a spring-seated spreading device mounted for movement within the anvil, and means for adjusting the spreading device in the anvil-support independently of the adjustment of the spring, substantially as described.

3. In a setting-machine, a setting and clenching anvil, an anvil-support, and means for locking the support in position, the anvil being provided with a spring-seated spreading device, mounted for movement therein, substantially as described.

4. In a setting-machine, a setting and clenching anvil provided with a spring-seated spreading device projecting from the anvil, and having a tapered spreading end, the said anvil being provided with a beveled rim at the opening through which the spreading device projects, an anvil-support, and means for adjusting the spreading device and the anvil within the anvil-support independently of the adjustment of the spring, substantially as described.

5. In a setting-machine, a setting and clenching anvil-support provided with a sleeve, a spring-seated spreading device projecting from said sleeve, means for adjusting the sleeve and spreading device together within the anvil-support, and means for adjusting the spreading device in the sleeve, substantially as described.

## 753,432. SPRING-WHEEL FOR VEHICLES. Alexander G. Ramage, Leith, and George Macmillan, Corstorphine, Scotland. Filed July 23, 1903. Serial No. 166,741. (No model.)



*Claim.*—The combination of a rim, short spokes projecting inwardly from it, a hub, arms projecting radially from it, spring-spokes fixed to the arms and links connecting the ends of the two sets of spokes.

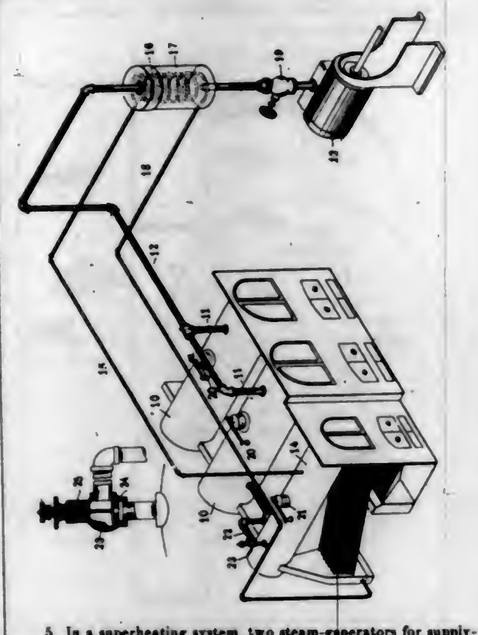
## 753,433. SUPERHEATING SYSTEM. Sidney A. Reeve, Worcester, Mass., assignor to Charles F. Brown, trustee, Reading, Mass. Filed Apr. 27, 1903. Serial No. 154,405. (No model.)

*Claim.*—1. In a superheating system, a lower-pressure steam-generator for supplying working steam, a higher-pressure steam-generator for supplying steam to superheat the working steam, a superheater constructed with two chambers having a replicate division, and conduit connections between said chambers and the steam-spaces of the respective steam-generators.

2. In a superheating system, two steam-generators arranged for different steam-pressures, a translating apparatus having a conduit connection with the lower-pressure generator, and a superheater having chambers in heat-transferring relation, one of which is interposed in the connection between lower-pressure generator and translating apparatus, the other having a conduit connection with the higher-pressure generator.

3. In a superheating system, a generator for supplying working steam, a second generator for supplying superheating steam, conduit connections forming a loop emanating from the steam-space of the superheating-generator and returning to said generator, and a superheater having chambers in heat-transferring relation, one of which is included in said loop, the other having a conduit connection with the working steam-generator and an outlet for connection with a translating apparatus.

4. In a superheating system, generators for supplying working and superheating steam respectively, a conduit connection between the two containing an automatic release-valve opening toward the working steam-generator, and a superheater having chambers in heat-transferring relation and in conduit connection with the spective generators.



5. In a superheating system, two steam-generators for supplying high-pressure and low-pressure steam respectively and having releasing-valve mechanisms set to release at different pressures in the two generators, eduction-pipes leading from the respective generators, and a superheating device having passages in heat-transferring relation connected with the respective eduction-pipes.

## 753,434. RAIL-JOINT. Burton C. Rowell, Chicago, Ill., assignor to the Ristine Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 9, 1903. Serial No. 151,698. (No model.)



*Claim.*—1. In an insulated rail-joint the outer splice-bar above described comprising the upper shoulder extending under the balls of the rails, the lower shoulder extending over the bases of the rails, the upwardly-projecting side rail portion extending alongside the tread portion of the rails, the two shoulders and the side rail portion being in one piece lapping the adjoining ends of the rails, and the insulating material between said outside splice-bar and the rails, substantially as set forth.

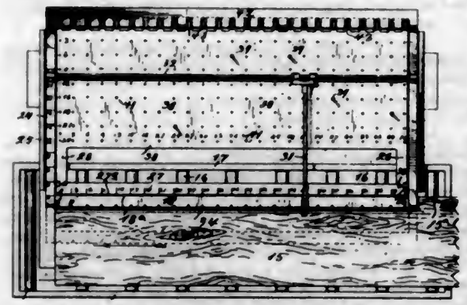
2. In an insulated rail-joint the inner splice-bar above described comprising the two splice-bars 1 and 2, and the bar 3 connecting them but insulated from them, substantially as set forth.

3. In an insulated rail-joint, the combination of an outside splice-bar having shoulders fitting between the ball and base of the rails and an upwardly-projecting side rail portion extending alongside of the tread portions of the rails, insulating material between said splice-bar and the rails and an inside splice-bar with insulating material between the inside splice-bar and the rails, substantially as set forth.

4. In combination an outside splice-bar having shoulders fitting between the ball and base of the rails and an upwardly-projecting side rail portion extending alongside of the tread portions of the rails, insulating material between said outside splice-bar and the rails, and a compound inside splice-bar made of three parts each insulated from the other and insulating material around the bolts which clamp them to the rails, substantially as set forth.



## 753,435. MARKING-MACHINE. Edwin M. Schantz, Zimmerman, Ohio. Filed Aug. 6, 1903. Serial No. 168,459. (No model.)



*Claim.*—1. In a marking-machine, the combination of a support for the material, a marking device or guide and a device arranged parallel thereto and operating in conjunction with it to show widths, this operation being by adjustment of one of the two devices last mentioned with reference to the other and parallel to each other, each being adjustable, the adjustment of both being over the surface of the material and in a plane also parallel to it and to each other.

2. In a marking-machine, the combination of a support for the material, a marking device or guide, a device arranged parallel thereto and operating in conjunction with it to show widths, this operation being by adjustment of one of the devices with reference to the other and in a direction parallel to each other, the adjustment of both being over the surface of the material and also parallel to it and an indicating device to show simultaneously lengths and widths and operating due to the joint action and adjustment of the devices above mentioned.

3. In a marking-machine, the combination of a support for the material, a device to show widths and a marking-guide, both these latter so supported as to be adjustable with reference to the material and parallel to the upper surface of the same, the marking-guide being also independently adjustable with reference to the device showing widths, an indicating device carried by the marking-guide showing simultaneously lengths and widths and means for actuating the same and operating due to the adjustment between the marking-guide and the device showing widths.

4. In a marking-machine, the combination of a support for the material, a marking-guide and a device to show widths in combination with this latter, all three so supported as to be adjustable with reference to each other and an additional marking-guide supported so as to be adjustable at right angles with reference to the adjustment of the other parts.

5. In a marking-machine, the combination of a support for the material, an adjustable marking-guide and an adjustable device to show widths, all so supported that the adjustment takes place in planes parallel to each other and in a direction parallel to the upper surface of the material and stops to hold the material in proper position with reference to the marking-guide, they being adjustable at an angle to the adjustment of the marking-guide.

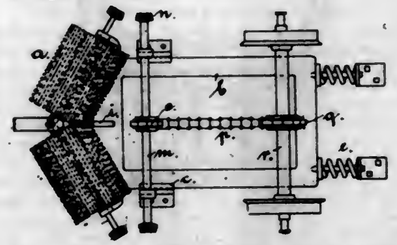
6. In a marking-machine, the combination of a support for the material and a measuring device, both so supported that one is adjustable with reference to the other, a marking-guide supported so as to be adjustable with reference to the measuring device, and indicating devices to show simultaneously lengths and widths, said devices consisting of complementary interacting parts, one set of these parts being carried by the measuring device and the other being operatively connected to the marking-guide.

7. In a marking-machine, the combination of a support for the material and a measuring device, both so supported that one is adjustable with reference to the other, a marking-guide supported so as to be adjustable with reference to the measuring device, electric-light signals to indicate by their position and when lighted up, simultaneously lengths and widths, complementary sets of contact-pieces which control the action of these lights, one set of these pieces being carried by the measuring device and the other being carried by the marking-guide.

8. In a marking-machine, the combination of a support for the material and a measuring device, both so supported that one is adjustable with reference to the other, a size-board connected to the measuring device and provided with plug-sockets arranged in graduated scales, a marking-guide supported so as to be adjustable with reference to the measuring device, indicating devices to show simultaneously lengths and widths, means for operating these devices and a support connected to the marking-guide whereby these means are carried and caused to pass over the size-board in a manner whereby the plugs on this latter are capable to actuate these means.

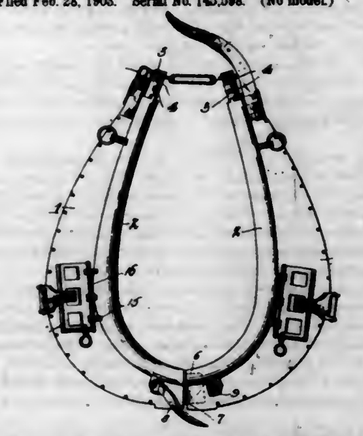
9. In a marking-machine, the combination of a support for the material, a device to show widths, both so supported that one is adjustable with reference to the other in a direction parallel to the upper surface of the material, a marking-guide also supported in a manner to be adjustable with reference to the upper surface of the material and parallel thereto, an indicator to show lengths and widths carried by the marking-guide and means for actuating the same and operating due to the adjustment of the marking-guide.

## 753,436. SAFETY APPARATUS FOR MOTOR-CARS OF ALL KINDS. Karl Schmidt, Cöthen, Germany. Filed Oct. 12, 1903. Serial No. 176,753. (No model.)



*Claim.*—The combination in a safety apparatus for motor-cars of all kinds, a frame sliding in guides under the car-frame, springs behind pressing the frame, rotatable brushes in front part of frame having each an axle, beveled pinions on the rear ends of these axles, a shaft under the car-bottom, rotating in bearings, a chain-wheel in the central part of said shaft, a chain-wheel on the running-axle of the car, an endless chain between both chain-wheels, all as described and for the purpose set forth.

## 753,437. HORSE-COLLAR. Henry Sellon, Fort Bridger, Wyo. Filed Feb. 28, 1903. Serial No. 145,598. (No model.)



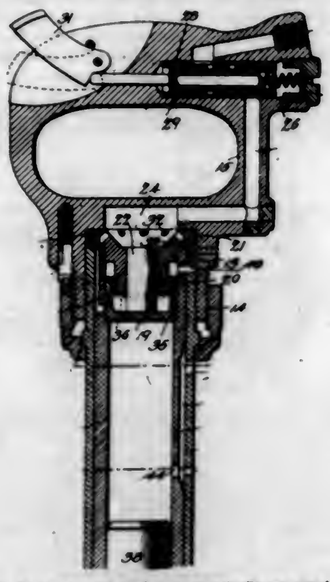
*Claim.*—1. In a device of the class described, a pair of flat, smooth, thin plates provided at their inner edges with reinforcing-beads having cylindrical upward extensions provided with laterally-extending lugs, and pads mounted upon the rear sides of said plates, in combination with means for adjustably connecting the lower ends of said plates, and connecting means for their upper ends, comprising a pair of plates having notched openings to engage the cylindrical extensions having lugs thereon and flexible connecting means for said plates.

2. In a device of the class described, a pair of flat, smooth, thin plates provided at their inner edges with reinforcing-beads provided with upward cylindrical extensions, said extensions being each provided with a plurality of forwardly-extending lugs, in combination with a pair of connecting-plates having slots at their inner ends

and provided with openings to engage the said cylindrical extensions, said openings having laterally-extending notches normally out of alinement with the lugs upon said cylindrical extensions, and a strap engaging the slots in the inner ends of said plates, and flexibly connecting the latter.

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753,438. **PNEUMATIC HAMMER.** CHARLES H. SHAW, Denver, Colo. Filed Mar. 30, 1903. Serial No. 150,332. (No model.)



*Claim.*—1. In a pneumatic tool, a pneumatically-operated valve movable in one direction by pressure within the cylinder on the instroke of the piston, and a movable member bearing against the valve and of less area than said valve, said movable member being exposed to the constant working pressure of the tool.

2. In a pneumatic tool, a valve exposed to variable pressure within the cylinder, and movable in one direction by the cylinder-pressure on the instroke of the piston and a movable member bearing against the valve and exposed to the constant working pressure of the tool.

3. In a pneumatic tool, a controlling-valve disposed at one end of the cylinder and movable in one direction by air compressed in the cylinder on the instroke of the piston, an air-chamber in communication with the pressure-supply, and a movable member bearing against the valve and extending into said chamber and there exposed to the constant working pressure of the tool to effect a movement of the valve in the opposite direction.

4. In a pneumatic tool, a cylinder, a piston therein, a valve disposed at one end of the cylinder and movable by the compression of air on the instroke of the piston, inlet and exhaust ports controlled by the valve for regulating the admission to and its escape from the lower end of the cylinder, a chamber in communication with the pressure-supply, a valve-operating member extending into said chamber, and air-passages leading from said chamber to the valve-chamber.

5. In a pneumatic tool, a cylinder provided at its upper end with a counterbored portion forming a valve-chamber, a recessed breech-block closing the upper end of the valve-chamber, air inlet and escape ports leading from the valve-chamber, a ported valve disposed in the chamber and forming one end of the cylinder, said valve being movable in one direction by air-pressure on the inward movement of the piston, and a pin for communicating movement to the valve in one direction and extending into the recessed portion of the breech-block.

6. The combination in a pneumatic tool, of a cylinder having a counterbored portion forming the valve-chamber, a cup-shaped valve therein, a breech-block extending partly within the valve-chamber, a handle secured to the cylinder and confining the breech-block in place, there being a central opening extending through said breech-block, a pin guided in said opening and serving to communicate movement to the valve in one direction, the inner end of said pin being exposed to constant pressure at the top of the breech-block, and air-ports leading through the breech-block and the cylinder to the valve-chamber.

7. In a pneumatic tool, a pneumatically-operated valve having a surface of small area exposed to constant transmitted pressure, and a surface of greater area exposed to variable pressure within the cylinder of the tool and the pressure on the larger surface serving on the instroke of the piston to move the valve in one direction.

8. In a pneumatic tool, a valve having a surface of small area exposed to constant transmitted pressure, a cylinder of which said valve forms a movable head or end, a piston adapted on its instroke to compress air at the end of the cylinder and to move the valve against the constant pressure, and piston-controlled exhaust-ports leading from the cylinder to permit the reduction of pressure in the cylinder and the movement of the valve under the constant pressure.

9. In a pneumatic tool, a cylinder having a counterbored portion forming a valve-chamber, a valve therein, a breech-block extending partly within the valve-chamber and closing the upper end of the same, and a pressure-relief port leading from the outer air to that portion of the chamber between the breech-block and the valve.

10. In a pneumatic tool, a ported cylinder having a counterbored portion forming a valve-chamber, a valve therein forming one end of the cylinder, inlet and exhaust ports extending between the outer end of the cylinder and the valve-chamber, a pressure-inlet port leading to said valve-chamber, valve-ports for governing the admission of air to and its exhaust from the outer end of the cylinder, a cylinder-port leading directly from the upper portion of the cylinder to the outer air, and a piston adapted on its inward movement to compress the air in the inner end of the cylinder and raise said valve for the admission of air under pressure to said cylinder.

11. In a pneumatic tool, a cup-shaped valve arranged at one end of the cylinder and having a transverse wall forming a movable head for said cylinder, an air-chamber disposed outside of the cylinder, and a pin extending within the air-chamber and exposed to the constant working pressure of the tool, said pin bearing directly against the valve and serving to move said valve in one direction.

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753,439. **SHAFT-COUPLING.** DUNCAN S. SINCLAIR, Wiarton, Canada. Filed June 3, 1902. Serial No. 110,061. (No model.)



*Claim.*—1. In a shaft-coupling, the combination with two shafts, of two tapered split sleeves one on each shaft end, said sleeves being loose on their shafts and substantially flat at their adjacent ends whereby they have no positive connection with each other or with the shaft; and male and female coupling-members adapted to engage the said sleeves and threaded to screw the one into the other, substantially as described.

2. In a shaft-coupling the combination with two shafts, of two split sleeves placed one on each shaft end, and tapered from the center outward, said sleeves being loose on their shafts and substantially flat at their adjacent ends whereby they have no positive connection with each other or with the shaft; and male and female coupling members tapered internally to engage the said sleeves and threaded to screw the one into the other, substantially as described.

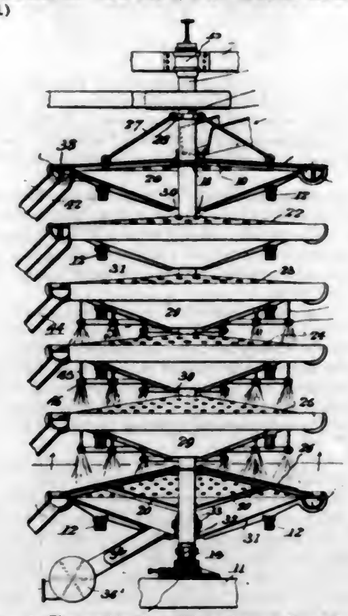
3. In a shaft-coupling, the combination with two shafts, of two tapered sleeves one on each shaft end, said sleeves being loose on their shafts and substantially flat at their adjacent ends whereby they have no positive connection with each other or with the shaft, each sleeve being split from each end to a point in proximity to the opposite end; and male and female coupling members adapted to engage the said sleeves and threaded to screw the one into the other, substantially as described.

4. In a shaft-coupling, the combination with two shaft ends, of two split sleeves placed one on each shaft end and tapered from the center outward, said sleeves being loose on their shafts and substantially flat at their adjacent ends whereby they have no positive connection with each other or with the shaft; and male and female coupling members tapered internally to engage the said sleeves and threaded to screw one into the other, the length of the threading being such that the male and female coupling members will be slightly separated at their inner parallel surfaces when under the tightest strain, substantially as described.



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753,440. **COAL SEPARATOR AND WASHER.** HARRY M. SPENCER, Dunmore, Pa. Filed Feb. 6, 1903. Serial No. 142,145. (No model.)



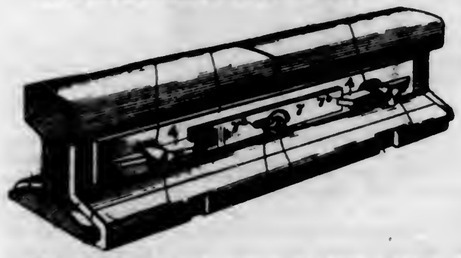
*Claim.*—1. The combination with a substantially vertical shaft, of a series of superposed outwardly-sloping conical screens secured upon said shaft, said screens being disposed at gradually-increasing inclinations and having openings therein of gradually-decreasing diameter, and separate devices for receiving the material passing over the edges of the several screens.

2. The combination with an upper sloping rotatable screen, of an annular trough surrounding the screen and divided into outer and inner sections, means for separately removing the material from each section of the trough, a lower sloping rotatable screen to which the upper screen delivers, and a trough formed in a single section receiving all the material passing over the edge of the lower screen.

3. The combination with an upper sloping rotatable screen having openings therein, of a trough surrounding said screen, a lower sloping rotatable screen upon which the upper screen delivers also having openings therein, a trough surrounding said lower screen and separate means for washing dust from the surface of the materials discharged upon the several screens.

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753,441. **RAIL-JOINT.** JOHN M. STAPLES, Philadelphia, Pa. Filed June 1, 1903. Serial No. 159,655. (No model.)



*Claim.*—1. In a rail-joint, a yoked bolt having a plurality of prongs adapted to pass through the fish-plates and webs of the rails and means for securing said yoked bolt in place comprising keys locked in position by a locking plate and ring.

2. In a rail-joint, a yoked bolt having a plurality of prongs adapted to pass through the fish-plates and webs of the rails and means for securing said yoked bolt in place comprising keys, a bearing-plate for said keys having a staple secured thereto and projecting therefrom, a locking-plate having a slot to receive said staple, the ends of said locking-plate bearing against the ends of said keys and a ring for securing said locking-plate in position.

3. In a rail-joint, a yoked bolt having a plurality of prongs adapted to pass through the fish-plates and webs of the rails and means for securing said yoked bolt in place comprising tapering keys having beveled surfaces at their larger ends and means for locking said keys in position.

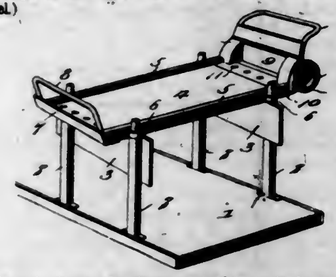
4. In a rail-joint, a yoked bolt having a plurality of prongs adapted to pass through the fish-plates and webs of the rails and means for securing said yoked bolt in place, comprising keys, a bearing-plate for said keys having a staple secured thereto and projecting therefrom, a locking-plate having a slot to receive said staple and other slots to fit the ends of said keys and a ring for securing said locking-plate in position upon said staple.

5. In a rail-joint, a yoked bolt having a plurality of prongs adapted to pass through the fish-plates and webs of the rails and means for securing said yoked bolt in place comprising keys, a bearing-plate for said keys having a staple secured thereto and projecting therefrom, a locking-plate having a slot to receive said staple, the ends of said locking-plate bearing against the ends of said keys, and a tapering ring adapted to tightly lock said locking-plate upon said staple.

6. In a rail-joint, the combination, with two rails, of a bed-plate extending entirely under the rails and over the edges of the flanges thereof, said bed-plate lying flat upon the upper surface of said flanges, and L-shaped fish-plates, fitting close to the web and flanges of the rails, each meeting and bearing against said bed-plate at a point on the upper surface of the flange of the rail intermediate of said web and the edge of the flange, substantially as set forth.

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753,442. **COMBINED DRAY-SEAT AND TRUCK.** JOHN D. STEWART, Laporte, Ind. Filed July 25, 1903. Serial No. 166,944. (No model.)

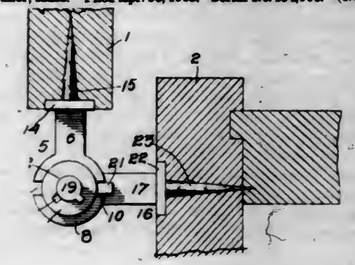


*Claim.*—1. A seat for drays comprising a body, standard-engaging straps thereon, handles at the ends of the seat, a casting secured to the body adjacent to one of the handles, boxes integral with the casting, and wheels journaled within the boxes and having their peripheries in alinement with one face of the body.

2. A seat for drays comprising a body, straps connected thereto, a handle at one end of the body, a casting at the other end, a flange to the casting extending under the body, means for securing the flange to the body, a handle extending from the casting, boxes integral with the casting, pins therein, and wheels journaled upon the pins and having portions of their peripheries in alinement with one face of the body.

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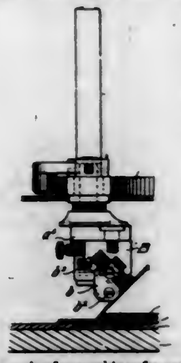
753,443. **SELF-LOCKING HINGE.** NAPOLEON J. ST. HILAIRE, Gardner, Mass. Filed Apr. 30, 1903. Serial No. 154,990. (No model.)



*Claim.*—A self-locking hinge comprising a knuckle member 5 consisting of a shank or arm 6 formed at its outer end with a head 7 provided with an annular flange 8 having slots 9 and 10 at diametrically opposite points, the head being formed with a bore 12 provided with a vertical groove 13, an attaching-plate 14 formed on the inner end of the arm 6, and a spur 15 projecting from said plate, in combination with a pintle member comprising an arm or shank 17 provided at one end with a head 18, a pintle 19 rising from said head and provided with a lug 20, a lug 21 on the said arm 17, an attaching-plate 22 at the inner end of the arm 17, and a spur 23 projecting from said plate, substantially as described.

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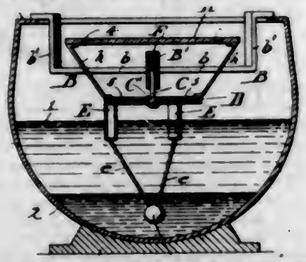
**753,444. KNIFE-CARRIER FOR MACHINES FOR CUTTING IRREGULAR FORMS.** ALLISON M. STICKNEY, Medford, Mass., assignor to Waltham Sole Cutting Machine Company, Medford, Mass., a Corporation of Maine. Filed Mar. 13, 1901. Serial No. 51,004. (No model.)



*Claim.*—A knife-carrier for machines for cutting irregular forms comprising a knife-clamp for clamping the knife; a holder for the knife-clamp and a block for the holder; means for adjusting the clamp on an axis parallel with the knife-blade; and means for adjusting the holder on an axis at right angles with the plane of the knife-blade.

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**753,445. ARTIFICIAL HORIZON FOR USE OF MARINERS.** JAMES M. STRATTON, Brooklyn, N. Y. Filed Dec. 31, 1902. Serial No. 137,261. (No model.)

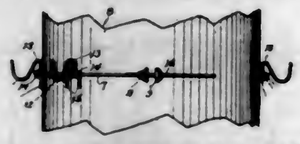


*Claim.*—1. As an artificial horizon, the combination with a spherical bowl having two fluids of different densities therein, and a central hanger supported by said bowl, of a table axially connected to said hanger, a mirror mounted above said table, means for connecting said mirror and table, a float swimming on the lighter and upper one of said fluids and upholding said table and mirror above the surface of said lighter fluid and a balance-weight below said float in the lower and denser fluid.

2. As an artificial horizon, the combination with a spherical bowl, having two fluids of different densities, and a centrally-located tubular hanger supported by said bowl, of a table, having a central spherical recess, within said bowl, a spindle having a ball on one end, engaging said spherical recess with said ball, and extending upward into the cavity of said tubular hanger, a spring in said cavity above said spindle, a mirror mounted in said bowl above said table, means for connecting said mirror and table, a float swimming in the lighter and upper fluid and upholding said table and mirror above the surface of said lighter fluid, and a balance-weight below said float connected thereto and extending into the denser and lower fluid.

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**753,446. DRYING ATTACHMENT FOR BOILERS.** WILLIS B. SWARTWOUT, Milwaukee, Wis. Filed Dec. 3, 1903. Serial No. 183,610. (No model.)



*Claim.*—1. In a drying attachment for range-boilers, a band adapted to surround the boiler and having means for tightening it, in combination with a hook mounted on the band and provided with inwardly-extending projections above and below the band forming a spring-clamp against the side of the boiler when the band is tightened.

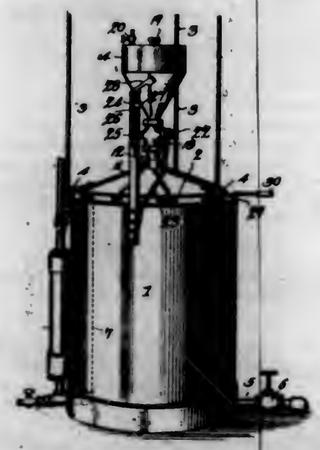
2. In a drying attachment for range-boilers, a band adapted to surround the boiler, a hook formed of wire coiled on the band and provided with inwardly-extending projections above and below the band engaging the side of the boiler and holding the coil away therefrom, and means for tightening the band against the spring action of the hook.

3. In a drying attachment for range-boilers, a band adapted to surround the boiler, a hook formed of wire bent upon itself to form a hook-section with an upwardly and inwardly extending shoulder and having each end coiled around the band and terminating in inwardly-projecting legs beneath the band, said shoulder and legs being adapted to bear against the side of the boiler to hold the coils away therefrom, and means for tightening the band to draw the coils toward the boiler.

4. In a drying attachment for range-boilers, a wire band adapted to surround the boiler, a hook formed of wire bent upon itself to form a hook-section with an upwardly and inwardly extending shoulder and having each end coiled around the band and terminating in inwardly-projecting legs beneath the band, said shoulder and legs being adapted to bear against the side of the boiler to hold the coils away therefrom, loops formed at the ends of the wire band and bent outwardly, a thumb-screw passing through the loops, and a winged nut threaded on the thumb-screw.

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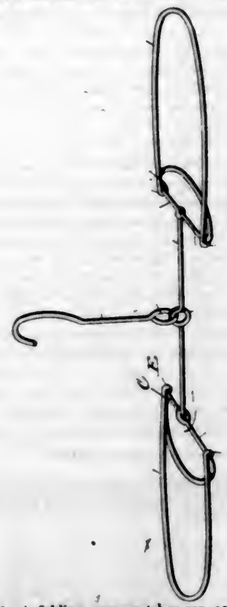
**753,447. ACETYLENE-GAS GENERATOR.** CHRISTOPHER TATTERS and JOHN TATTERS, Englehart, Tex. Filed June 23, 1903. Serial No. 162,799. (No model.)



*Claim.*—In a device of the class described, a tank, an inverted gas-holder movable vertically in said tank, upwardly-extending guides upon said tank, means upon the gas-holder engaging said guides, a valved feed-pipe extending upwardly from the gas-holder and supporting a carbid-reservoir, an operating-arm extending outwardly from the valve, a standard rising from the water-tank and having a T-shaped slot near the upper end thereof for the reception of the valve-operating arm, and a notched slide pivotally connected with the upper end of the standard and adapted to close the side opening of the T-shaped slot to confine the valve-operating arm in the latter.



**753,448. GARMENT-HANGER.** NELLIE C. TERRY, Watertown, N. Y. Filed Nov. 14, 1903. Serial No. 181,206. (No model.)



*Claim.*—1. A folding garment-hanger comprising a bail-supporting member made of a single piece of wire and bent at its center to form an eye, loops at the ends of said member, and bails hinged upon said loops adapted to fold back, one upon the other, as set forth.

2. A garment-supporter comprising a central bail-supporting member, made of a single piece of wire bent at the center to form an eye, each arm of said member bent to form a loop in the plane at right angles to said central eye, two bails provided with eyes at their ends and mounted upon said loops and designed to rest upon the outer curved marginal portion of loops when open, said bails adapted to fold back, one upon the other, as shown and described.

3. A garment-hanger comprising a central bail-supporting member made of a single piece of wire turned into a coil at its center, forming an eye, each arm of said member being bent to form a loop with oppositely-disposed straight portions, bails, each having eyes at its ends and pivotally mounted upon said straight portions of the loops, and supported in alinement with each other by the curved portions of said loops, and a hook engaging said eye, as set forth.

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**753,449. AMUSEMENT APPARATUS.** LA MARCUS A. THOMPSON, New York, N. Y., assignor to the L. A. Thompson Scenic Railway Company, New York, N. Y., a Corporation of New Jersey. Filed Dec. 5, 1903. Serial No. 183,898. (No model.)



*Claim.*—1. In an amusement apparatus, a flume having sections at different levels connected by inclined portions, means to supply said flume with water, a storage-reservoir in constant communication with the water-supply communicating with said flume contiguous to the top of said inclined portion.

2. In an amusement apparatus, a flume having sections at different levels connected by inclined portions, means to supply said flume with water, a storage-reservoir in constant communication with the water-supply communicating with said flume contiguous to the top of said inclined portion, and means to restrain the water passing to said incline.

3. In an amusement apparatus, a flume having sections at different levels connected by inclined portions, means to supply said flume with water, a storage-reservoir in constant communication with the water-supply communicating with said flume contiguous to the top of said inclined portion, means to restrain the water passing to said incline and means to release the water from said reservoir on the passage of a boat.

4. In an amusement apparatus, a flume having sections at different levels connected by inclined portions, means to supply said flume with water, a storage-reservoir in constant communication with the water-supply communicating with said flume contiguous to the top of said inclined portion, and a gate adapted, when closed, to restrain the water passing to said inclined portion.

5. In an amusement apparatus, a flume having sections at different levels connected by inclined portions, means to supply said flume with water, a storage-reservoir in constant communication with the water-supply communicating with said flume contiguous to the top of said inclined portions, a gate adapted, when closed, to restrain the water passing to said inclined portion, and means to automatically open said gate on the passage of a boat.

6. In an amusement apparatus, a channel or flume having sections at different levels connected by inclined portions, said flume being enlarged contiguous to the upper portion of said incline, said enlarged portion of the flume being in constant communication with the water-supply and means to restrain the water passing to said incline.

7. In an amusement apparatus, a channel or flume having sections at different levels connected by inclined portions, said flume being enlarged, contiguous to the upper portion of said incline, said enlarged portion of the flume being in constant communication with the water-supply, means to restrain the water passing to said incline, and means to remove said restraint on the passage of a boat.

8. In an amusement apparatus, a channel or flume having sections at different levels connected by inclined portions, said flume being enlarged, contiguous to the upper portion of said incline, said enlarged portion of the flume being in constant communication with the water-supply and a gate adapted, when closed, to restrain the water from passing to said inclined portion.

9. In an amusement apparatus, a channel or flume having sections at different levels connected by inclined portions, said flume being enlarged, contiguous to the upper portion of said incline, said enlarged portion of the flume being in constant communication with the water-supply and a gate adapted, when closed, to restrain the water passing to said inclined portion, and means to automatically open said gate on the passage of a boat.

10. In an amusement apparatus of the character described, in combination with a flume, of a gate, an arm to which said gate is secured, said arm being pivotally mounted, said gate normally projecting above the bottom of the flume and adapted when moved by said arm to descend below the bottom of the flume.

11. In an amusement apparatus of the character described, in combination with a flume, of a gate, an arm to which said gate is secured, said arm being pivotally mounted, said gate normally projecting above the bottom of the flume and said arm normally being in line of movement of a boat in said flume and adapted when struck by said boat to move on its pivot and move said gate.

12. In an amusement apparatus of the character described, in combination with a flume, of a gate, an arm to which said gate is secured, said arm being pivotally mounted, said gate normally projecting above the bottom of the flume, and said arm normally being in line of movement of a boat in said flume and adapted when struck by said boat to move on its pivot and move said gate, and means to return said gate and arm after the passage of the boat.

13. In an amusement apparatus of the character described, in combination, with a flume, of a gate, an arm to which said gate is secured, said arm being pivotally mounted, said gate normally projecting above the bottom of the flume and a second arm pivotally mounted extending along said flume and connected to the first-mentioned arm.

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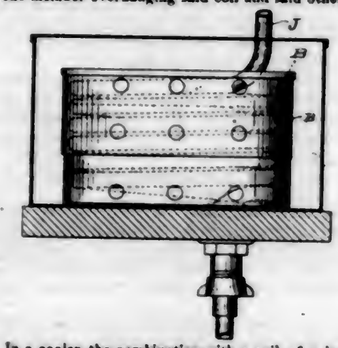
**753,450. DEVICE FOR PROTECTING COILS FOR BEER-COOLERS.** JULIUS THUERLINE, Chicago, Ill. Filed Dec. 14, 1903. Serial No. 185,113. (No model.)

*Claim.*—1. In a cooler, the combination with a coil, of two tubular members each comprising a plurality of sections telescopically connected with each other and disposed inwardly and outwardly of said coil respectively to protect the latter.

2. In a cooler, the combination with a coil, of a jacket inclosing same, said jacket comprising two tubular members each consisting of a plurality of sections telescopically connected with each other and disposed inwardly and outwardly of said coils, and a flange on one of said members overhanging the other thereof.

3. In a cooler, the combination with a coil, of a jacket inclosing same, said jacket comprising two tubular members each consisting of a plurality of sections having perforations and telescopically connected with each other, said members being disposed inwardly

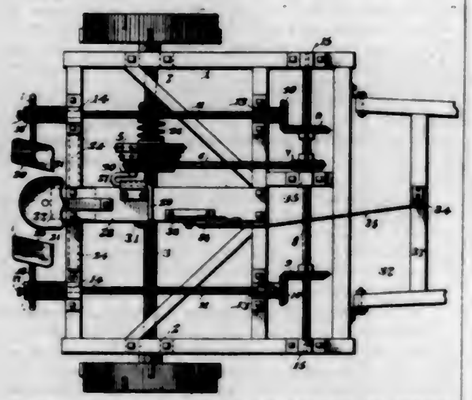
and outwardly of said coil respectively, and a flange on the upper end of one member overhanging said coil and said other member.



4. In a cooler, the combination with a coil, of a jacket inclosing same, said jacket comprising two tubular members each consisting of a plurality of sections having perforations and telescopically connected with each other, said members being disposed inwardly and outwardly of said coil respectively, a flange on one of said members at its upper end having its free edge bent to receive the other of said members, said flange having an opening for the passage of the pipe connecting said coil with the faucet.

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753,451. MACHINE FOR BLOCKING SUGAR-BEETS. JOHN H. UHL, Unionville, Mich. Filed May 13, 1903. Serial No. 156,973. (No model.)



*Claim.*—1. In a machine of the class described, the combination of a frame, an axle supporting the frame, longitudinal shafts located at opposite sides of the frame and provided at their rear ends with blades or hoes, a transverse shaft, gearing connecting the shafts, a sprocket-pinion mounted on the transverse shaft, and arranged between the longitudinal shafts and a sprocket-wheel mounted on the axle at a point between the longitudinal shafts and provided with a plurality of gears of different diameters, and a chain connecting the sprocket-wheel and the sprocket-pinion, substantially as described.

2. In a machine of the class described, the combination of a frame, an axle supporting the same, longitudinal shafts located at opposite sides of the frame and provided at their rear ends with rotary blades, a transverse shaft, gearing connecting the shafts, a sprocket-pinion mounted on the transverse shaft, a sprocket-wheel carried by the axle, said sprocket-wheel and pinion being located between the longitudinal shafts, a chain connecting the sprocket-wheel and pinion, and a wheel located at the center of the rear portion of the frame between the longitudinal shafts to prevent the blades from sinking too far into the soil, substantially as described.

3. A machine of the class described provided with a rotating hoe or blade having a cutting edge arranged at an angle to the direction of movement of the machine, said blade or hoe being also provided at opposite sides with flanges extending from the blade at an angle and provided with cutting edges, substantially as described.

4. In a machine of the class described, the combination with a shaft, of a shank secured to the shaft, and arranged at an angle to the same and having its outer end bent at an angle and a blade or hoe secured diagonally to the bent outer end of the shank and provided with angularly-disposed front and rear edges, substantially as described.

5. In a machine of the class described, the combination of a longitudinal shaft, a shank extending from the shaft, and a blade or hoe carried by the shank and provided with a front cutting edge and having side flanges, the latter being also provided with cutting edges, substantially as described.

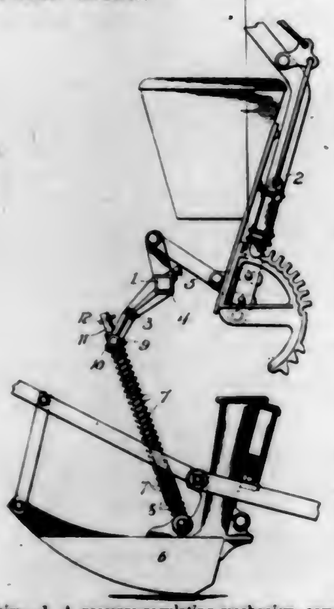
6. In a machine of the class described, the combination of a frame, a longitudinal shaft, a shank extending from the shaft, and a blade carried by the shank and having angularly-disposed front and rear edges and provided with side flanges, substantially as described.

7. In a machine of the class described, the combination of a frame provided with wheels, a longitudinal shaft actuated by the latter, and a rotating blade or hoe connected with and carried by the shaft, and set at an angle to the direction of movement of the machine, whereby it is adapted to cut through the soil without dragging the same, substantially as described.

8. In a machine of the class described, the combination of a frame provided with wheels, a shaft, a rotating blade or hoe carried by the shaft and set at an angle to the direction of movement of the machine and provided at opposite sides with projecting flanges, whereby the blade or hoe is adapted to cut through the soil without tearing up or dragging the same, substantially as described.

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753,452. PRESSURE-REGULATING MECHANISM FOR DRILLS. WILLARD A. VAN BRUNT, Horican, Wis. Filed Jan. 14, 1904. Serial No. 189,089. (No model.)



*Claim.*—1. A pressure-regulating mechanism, comprising two coiled springs intercoiled one within the other, and one held against rotation to permit the other when turned to lengthen or shorten said double spring.

2. A pressure-regulating mechanism for drills, comprising a lifting-rod, a hoe connected to the lower end of said rod, a lifting-arm connected with the upper end of said rod, two coiled springs on said rod intercoiled at their meeting ends, one spring held against turning and the other free to turn.

3. A pressure-regulating mechanism for drills, comprising a lifting-rod, a hoe connected to the lower end of said rod, a lifting-arm, a ring on said rod and pivotally connected with said arm, a pin passed through the rod limiting the upward movement of the ring, two coiled springs on said rod, one bearing against the ring and the other against the lower end of the rod, and intercoiled at their meeting ends, one spring held against turning and the other free to turn.

4. A pressure-regulating mechanism for drills, comprising a lifting-rod connecting a lifting-arm with a hoe, coiled springs on said rod intercoiled at their meeting ends and exerting downward pressure on the hoe and adapted when one is turned and the other held, to lengthen or shorten said double spring, substantially as and for the purpose set forth.

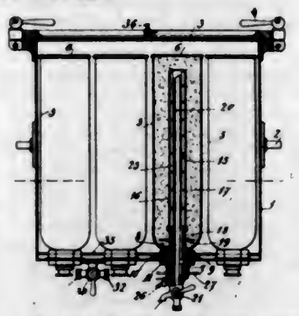
5. A pressure-regulating device, comprising a rod, a coiled spring thereon, means for limiting the movement of said spring in one direction, and a device on the rod, movable, when the spring or rod is turned, farther into or out of, the convolutions of said spring to regulate the tension thereof.

6. A pressure-regulating device, comprising a rod, a coiled spring thereon, means for limiting the movement of said spring in one direction, and a device on the rod, movable, when the spring or rod is turned, farther into or out of the convolutions of said spring to regulate the tension thereof by reason of lengthening or shortening the spring between its points of contact.

7. A pressure-regulating device for drills, comprising a hoe, a lifting-rod connected therewith, a lifting-arm connected with said rod at or near its upper end, a coiled spring loose on the rod and bearing at its upper end against the lifting-arm connection, and a device fixed to the rod and engaging the spring between its convolutions, so that when the spring is turned, it will be screwed up or down on said device to lengthen or shorten the spring and adjust the tension thereof.

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753,453. FILTER. LOUIS F. VOUINOT, Chagny, and LOUIS F. BOILLOT, Volnay, near Pommard, France. Filed Dec. 1, 1902. Serial No. 133,457. (No model.)



*Claim.*—1. In a filter the combination with a casing, of a plurality of perforated screens therein, a frame within each screen and a covering of gauze over each frame, filtering material in each screen in the space between said gauze-covered frame and the screen, and an outlet-tube passing up within said frame to the top thereof, substantially as hereinbefore described.

2. In a filter the combination with a casing, of a plurality of perforated screens therein, a frame within each screen and a covering of gauze over each frame, filtering material in each screen in the space between said screen and the gauze-covered frame, a tube at the bottom of each screen, a tube at the bottom of each frame adapted to enter said first-mentioned tube, and a ring on the second-mentioned tube within the screen, substantially as and for the object set forth.

3. In a filter the combination with a casing, of a plurality of perforated screens therein, each screen of semicylindrical form at the bottom, a frame within each screen and a covering of gauze over each frame, filtering material in each screen in the space between said screen and the gauze-covered frame, and an outlet-tube passing through said screen into the interior of said frame.

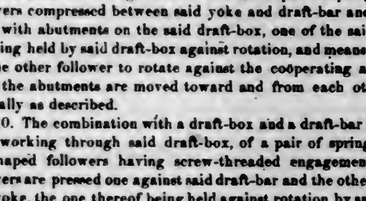
4. In a filter the combination with a casing, of a plurality of perforated screens therein, a frame within each screen and a covering of gauze over each frame, filtering material in each screen in the space between said screen and the gauze-covered frame, a tube at the bottom of each screen and a second tube at the bottom of each frame adapted to fit in the first tube, and an outlet-tube passing through said first and second tubes to the top of each frame within the latter, substantially as hereinbefore set forth.

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753,454. DRAFT-RIGGING FOR CARS. EDWIN C. WASHBURN, Minneapolis, Minn. Filed July 25, 1902. Serial No. 116,907. (No model.)

*Claim.*—1. A draft appliance involving a spring, casings between which said spring compresses, said casings serving as followers, and abutments against which said casings are pressed, substantially as described.

2. In a draft-rigging, the combination with a spring and a pair of spring-pressed followers, at least one of which followers is caused to rotate when moved toward or from the other, and abutments with which said followers engage and against at least one of which abutments the coöperating follower is rotated, substantially as described.



3. In a draft-rigging, the combination with a spring and a pair of spring-pressed followers incasing said spring, at least one having a rotary movement with respect to the other, and abutments against which said followers directly engage and against at least one of which the coöperating follower is rotated, substantially as described.

4. The combination with abutments, of a pair of telescoping spring-pressed followers having screw-threaded engagement, one with the other, said followers directly engaging said abutments and at least one thereof being rotatively movable against its coöperating abutment, substantially as described.

5. The combination with fixed abutments, of a pair of spring-pressed followers engaging said abutments, at least one of which followers is rotated when moved toward or from the other follower, and is rotated against its coöperating abutment, substantially as described.

6. The combination with a draft-box having abutments, of a pair of spring-pressed followers engaging said abutments, one of said followers being held against rotation, by said draft-box, and the other follower having a rotary movement against its coöperating abutment, substantially as described.

7. The combination with a draft-box having abutments, of a pair of telescoping spring-pressed followers having screw-threaded or cam engagements and engaging said coöperating abutments, one of said telescoping followers having projecting flanges which coöperate with the draft-box to prevent rotation thereof, the other casing-follower having a rotary movement against its coöperating abutments, substantially as described.

8. The combination with a pair of spring-pressed followers, one of which is fixed against rotation and the other of which is caused to rotate when the followers are moved toward or from each other, of a relatively fixed abutment with which said rotary follower engages, substantially as described.

9. The combination with a draft-box and a draft-bar having a yoke which works through said draft-box, of a pair of spring-pressed followers compressed between said yoke and draft-bar and coöperating with abutments on the said draft-box, one of the said followers being held by said draft-box against rotation, and means for causing the other follower to rotate against the coöperating abutment, when the abutments are moved toward and from each other, substantially as described.

10. The combination with a draft-box and a draft-bar having a yoke working through said draft-box, of a pair of spring-pressed cup-shaped followers having screw-threaded engagement, which followers are pressed one against said draft-bar and the other against said yoke, the one thereof being held against rotation by said draft-box, and the other being mounted to rotate against its coöperating abutment, substantially as described.

11. A draft-bar having a yoke, and a metallic facing covering the inner end of the same and having flanges interposed between said draft-bar and said yoke, substantially as described.

12. A draft-bar having at its inner end a shouldered head, a metallic facing embracing said shouldered head, and a yoke embracing the side flanges of said facing, secured to the said head and facing and having inturned ends that engage the outer shoulders of said head, substantially as described.

13. A draft-box having abutments or draft-lugs located inward of its extremities and having bolt-passages in its extremities outward of said abutments, substantially as described.

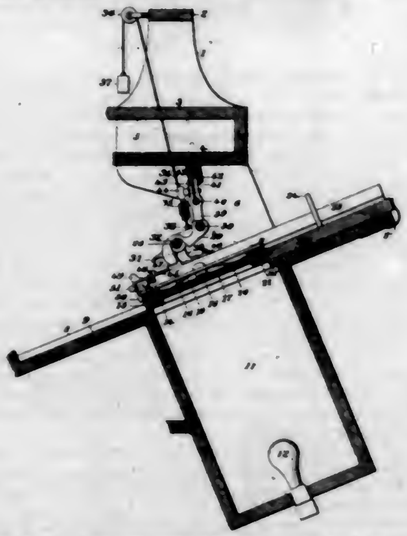
14. The combination with a draft-bar and a yoke, of a pair of spring-pressed telescoping followers having screw-threaded engagement, one of said followers being mounted to rotate against said draft-bar and the other having a rectangular flange, and a draft-box having a rectangular interior coöperating with the rectangular

flange of the non-rotary follower, and provided with upper and lower wall-channels for passing and guiding said yoke, substantially as described.

15. In a friction draft-gear, the combination of two followers having at their ends interlocking spiral bearings, and a spring in each follower adapted to be compressed between the outer end of one follower and the inner end of the other follower.

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753,455. PHOTOGRAPHIC-PRINTING APPARATUS. HAWLEY C. WHITE and ALVIN H. MALLISON, North Bennington, Vt., assignor to H. C. White Co., a Corporation of Vermont. Filed Apr. 21, 1903. Serial No. 153,639. (No model.)



*Claim.*—1. A photoprinting apparatus consisting of a printing-chamber, a printing-frame, a time-gage for determining the period of exposure, means for obscuring the print at the finish of the exposure, a reciprocating member adapted to travel between the time-gage and the obscuring device and to actuate the latter, and a prime mover with which the reciprocating member is adapted to detachably engage, combined and arranged to operate substantially in the manner described and for the purposes set forth.

2. A photoprinting apparatus consisting of a printing-chamber, a printing-frame, a time-gage for determining the period of exposure, means for withdrawing the print from the chamber at the finish of the exposure, a reciprocating member adapted to travel between the time-gage and the print-retractor and to actuate the latter, and a prime mover with which the reciprocating member is adapted to detachably engage, combined and arranged to operate substantially in the manner described and for the purposes set forth.

3. A photoprinting apparatus consisting of a printing-chamber, a printing-frame, a time-gage for determining the period of exposure, means for obscuring the print at the finish of the exposure, a reciprocating member adapted to travel between the time-gage and the obscuring device and to actuate the latter, and a rotating screw with which the reciprocating member is adapted to detachably engage, combined and arranged to operate substantially as described.

4. A photoprinting apparatus consisting of a printing-chamber, a printing-frame, a time-gage for determining the period of exposure, means for withdrawing the print from the chamber at the finish of the exposure, a reciprocating member adapted to travel between the time-gage and the print-retractor and to actuate the latter, and a rotating screw with which the reciprocating member is adapted to detachably engage, combined and arranged to operate substantially as described.

5. In a photoprinting apparatus, a printing-chamber having a slideway across its open end so inclined that a printing-frame will slide therein by gravity, a printing-frame and a shutter adapted to slide therein, a holder to support the frame in the printing position, and means connected therewith for releasing the frame at the limit of the exposure, substantially as specified.

6. In a photoprinting apparatus, a printing-chamber having a slideway across its open end so inclined that a printing-frame will slide therein by gravity, a printing-frame and shutter adapted to slide therein, and close said open end, means for determining the period of exposure, a frame-holder and a releaser, combined and adapted to operate substantially as described and set forth.

7. In a photoprinting apparatus, the combination with a printing-chamber and a movable shutter adapted to close the same, of a printing-frame, a frame-holding device and a frame-releasing device, the former being under the control of the latter, an actuating-screw with which the releaser cooperates, and means under the control of the shutter whereby its closing movement will disengage the releaser from the screw, substantially as specified.

8. In a photoprinting apparatus, the combination with a rotating screw having a predetermined constant motion, of a frame-holder and a disengageable releaser, an adjustable stop associated with the releaser for determining the extent of its travel, and a scale with which the stop registers to indicate length of exposure, substantially as specified.

9. The combination of the shutter with the screw and releaser and means located between the shutter and releaser whereby the closure of the shutter will disengage the releaser from the screw, substantially as specified.

10. In a photoprinting apparatus, the combination of a printing-chamber, a shutter for closing the same, a printing-frame, and a device for holding the frame in the printing position, of a screw-propeller, a releaser adapted to be operatively actuated by the screw, and means connected with the shutter for disengaging the releaser from the screw at the finish of an exposure, substantially as specified.

11. In a photoprinting apparatus, of the character described, the combination with a rotating screw and a disengageable nut adapted to travel thereon when in engagement therewith, of a printing-frame, means under the control of the nut for releasing the frame from its printing position, and means for disengaging the nut from the screw at the finish of the exposure, substantially as specified.

12. In a photoprinting-machine, a screw adapted to rotate at a constant speed, a printing-frame, a printing-chamber and means intermediate the screw and printing apparatus for terminating the exposure at a predetermined moment, substantially as specified.

13. In a photoprinting apparatus, the releaser pivoted and slidable upon a bar and provided with a sectional nut for engagement with a screw, in combination with the frame-holder and an adjustable stop associated with the releaser for determining the extent of its travel, substantially as specified.

14. The combination with the screw and releaser, of means for effecting their disengagement at the finish of an exposure, and means for returning the releaser to the starting-point of its traverse preparatory to another operation, substantially as specified.

15. The combination with the printing-chamber, slideway, printing-frame and shutter, of a frame holder and releaser, and provisions whereby said frame holder and releaser will be put into operative service by the act of pushing the frame up into the printing position, substantially as specified.

16. In a photoprinting apparatus, an inclined slideway for a printing-frame, a printing-chamber depending from said slideway, and a printing-frame and shutter arranged contiguously and adapted to slide therein by gravity, substantially as specified.

17. In a photoprinting apparatus, the combination with a printing-frame, a printing-chamber, and a retaining device for holding the frame in position for printing, of a screw-propeller and a device for releasing the frame, said releasing device being adapted to be operatively actuated by the screw, substantially as specified.

18. In a photoprinting apparatus, the combination with a printing-frame, a printing-chamber and a retaining device for holding the frame in position for printing, of a screw-propeller, a frame-releaser adapted to be operatively actuated by the screw, and means for breaking engagement between the screw and releaser at the finish of an exposure, substantially as specified.

19. In a photoprinting apparatus, the combination with a printing-chamber, printing-frame and means for predetermining the period of exposure, of an actuating member and means under control of said member for obscuring the print at the finish of the exposure, substantially as specified.

20. In a photoprinting apparatus, the combination of a printing-chamber, a printing-frame and a shutter adapted to slide across and cover an opening in said chamber, a time-gage, a frame-retainer and a frame-releaser between the time-gage and the retainer, a propeller for actuating the releaser and means for moving the printing-frame and shutter successively from the exposed to the obscured position, substantially as specified.



21. In a photoprinting apparatus, the combination of a printing-chamber having an exposure-opening, a printing-frame and means for moving it over said opening from the exposed to the obscured position, a chronometric device for determining the length of exposure, means for holding the picture-frame in exposure and means for retracting it from that position at the end of the time limit, substantially as specified.

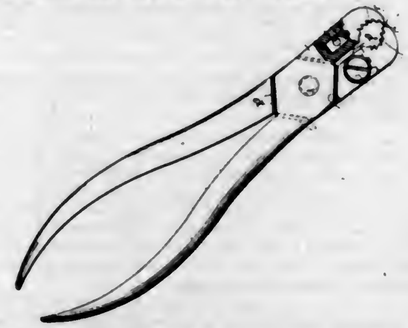
22. In a photoprinting apparatus, the combination of an inclined printing-table having a printing-chamber located beneath it and opening therethrough, and fitted with frame-guides, a printing-frame and shutter adapted to slide across said opening to successively close the same, with means for holding the frame in exposure, means for determining the duration of the exposure, and means for retracting the plate from the exposed position, substantially as specified.

23. In a photoprinting apparatus, the combination of a printing-chamber, printing-frame, frame-holder, frame-releaser, a propeller for actuating the releaser, means for predetermining the duration of exposure, and means for setting the releaser, substantially as specified.

24. In a photoprinting apparatus, a propeller having a constant motion, a movable releasing device actuated by said propeller, a chronometrical stop adjustable independently of said propeller but in cooperative relation therewith for regulating the period of exposure, a printing-chamber, printing-frame and frame-holder for holding the frame in the printing position adapted to be unlocked by the releaser at the limit of its traverse, and means for obscuring the print at the end of the exposure, substantially as specified.

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753,456. PLIERS-JAWS. WILLIAM G. G. WEIDINGER, Chicago, Ill. Filed Sept. 11, 1903. Serial No. 172,842. (No model.)



*Claim.*—1. In pliers, the combination with pivoted handles and permanent partial jaws formed integral therewith and having abutting operative surfaces, of removable toothed supplemental jaws arranged on the ends of the permanent jaws and having shanks fitting sockets in said permanent jaws and means for securing the removable jaws in position, substantially as described.

2. In pliers, the combination of handles having integral partial jaws with abutting operative surfaces and formed with longitudinal sockets and set-screws entering the sockets, and movable jaws arranged on the ends of the permanent jaws and having shanks fitting in said sockets and engaged by said screws and having opposing operative surfaces beyond the operative surfaces of the permanent jaws, substantially as described.

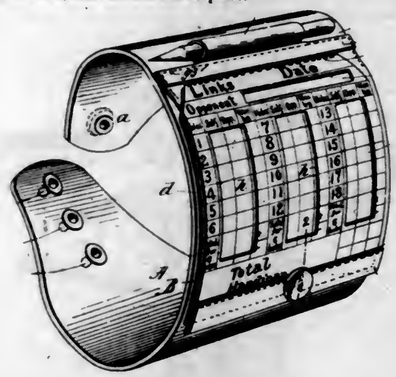
3. In pliers, the combination of pivoted handles and integral partial jaws having opposing operative surfaces of equal length to the jaws, with removable jaws attached to the ends of said partial jaws and formed with lateral teeth and abutting cutting-surfaces, substantially as described.

4. In pliers, the combination with the handles, and the partial jaws formed integral with the handles and having teeth on their inner surfaces, of the supplemental jaw secured to and upon the ends of said partial jaws and also formed with teeth on their inner surfaces, substantially as described.

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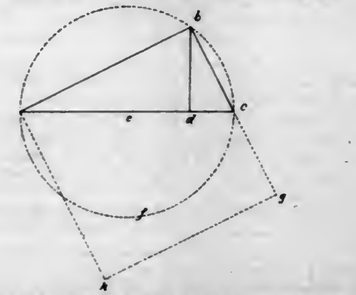
753,457. SCORING DEVICE FOR GOLF-PLAYERS. WILLIS H. WHITMORE, Great Solid, Mass. Filed July 25, 1902. Serial No. 116,906. (No model.)

*Claim.*—In a device of the class described, a band having a stud projecting therefrom, a series of score-sheets each having a notch formed in its edge coincident with the stud, and a flap permanently secured at one edge to the band and having at its opposite edge a socket to engage the stud and a marginal strip to engage and retain the score-sheets in place.




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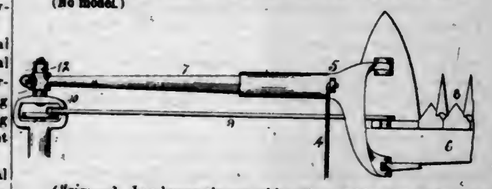
753,458. INSTRUMENT FOR THE CONSTRUCTION OF EQUIVALENT GEOMETRICAL FIGURES. JEREMY C. WILLSON, Los Angeles, Cal. Filed July 1, 1903. Serial No. 163,963. (No model.)




*Claim.*—A right-angle triangle having the hypotenuse equal to the diameter of a circle and the apex of the right angle in a line erected perpendicular to the hypotenuse from a point distant from one of the ends thereof the one-fourth part of the circumference of said circle.

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753,459. CUTTER-BAR ALINEMENT. GEORGE WILSON, Rockford, Ill., assignor to Emerson Manufacturing Company, Rockford, Ill., a Corporation of Illinois. Filed Nov. 16, 1903. Serial No. 181,457. (No model.)

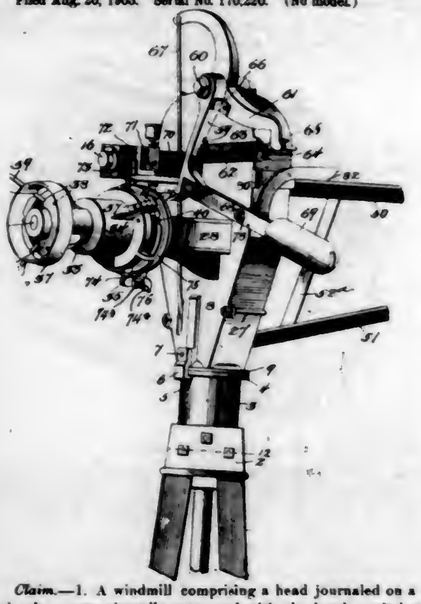



*Claim.*—1. In a harvesting-machine, the combination of the bed of a machine, a projection extending from the bed, a finger-bar, and a coupling-bar forming a connection between the finger-bar and projection, that end of the coupling-bar connected to the projection made adjustable in connection therewith in the lengthwise direction thereof.

2. In a harvesting-machine, the combination of the bed of the machine, a finger-bar, a collar supported by the bed, and a coupling-bar forming a connection between the finger-bar and collar, and made adjustable in the lengthwise direction of the collar.

3. In a harvesting-machine, the combination of the bed of the machine, a finger-bar, a collar supported by the bed, and a coupling-bar forming a connection between the finger-bar and bed and made adjustable in the lengthwise direction of the collar, that end of the coupling-bar connected with the collar comprising a split clamping-section and a clamping-bolt.

### 753,460. WINDMILL. CHARLES A. WRIGHT, Atchison, Kans. Filed Aug. 20, 1903. Serial No. 170,220. (No model.)



*Claim.*—1. A windmill comprising a head journaled on a vertical axis, a vane pivotally connected with the head, a wind-wheel mounted on a shaft located at one side of the vertical axis of the head, a furl-lever mounted upon the head and having a connection with the vane, and a self-acting lock controlled by the furl-lever and arranged to have an automatic locking engagement directly with the vane when the latter and the wheel are brought into parallel relation.

2. A windmill comprising a head journaled on a vertical axis, a vane pivotally connected with the head, a wind-wheel mounted on a shaft located at one side of the vertical axis of the head, a furl-lever element, a yielding connection between said furl-lever element and the vane, and self-acting locking means controlled by the furl-lever element and arranged to have an automatic locking engagement directly with the vane when the latter and the wheel are brought into parallel relation.

3. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a shaft extending laterally from the head, a vane pivotally connected with the head, and a duplex furl-lever fulcrumed on the head and embodying two relatively movable and yieldingly-connected members, one of which is operatively connected with the vane and the other with the furl connection.

4. A windmill comprising a head journaled upon a vertical axis, a wind-wheel mounted on a shaft extending laterally from said head, a vane pivotally connected with the head, a duplex furl-lever embodying two relatively movable members fulcrumed on the head and one of which is operatively connected with the vane, and a governor-spring interposed between and yieldingly connecting the furl-lever members.

5. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting from the head, a vane pivotally connected with the head, a duplex furl-lever fulcrumed on the head and embodying two relatively movable members, one of which is operatively connected with the vane and the other with the furl connection, a governor-spring interposed between and connecting the furl-lever members, and means for adjusting the tension of said spring.

6. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting laterally therefrom, a vane pivotally connected to the head, a duplex furl-lever fulcrumed on the head and embodying relatively movable and yieldingly-connected members, respectively connected with the vane and the furl connection, a brake associated with the hub of the wind-wheel, and a brake-lever arranged in the path of one of the furl-lever members.

7. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting laterally therefrom, a vane pivotally connected with the head, a duplex furl-lever fulcrumed on the head and whose separate elements are respectively connected with the vane and the furl connection, and a brake, controllable from the lever elemeat connected with the vane.

8. A windmill comprising a head journaled on a vertical axis, a wind-wheel journaled on a horizontal shaft projecting laterally therefrom, a vane pivotally connected to the head, a duplex furl-lever embodying relatively movable members, and a brake associated with the hub of the wind-wheel and controllable from one of the lever members.

9. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting from the head, a vane pivotally connected to the head, a duplex furl-lever fulcrumed on the head and embodying two relatively movable and yieldingly-connected members, a weighted arm connected with one of said members, a brake associated with the hub of the wind-wheel, and a brake-lever mounted in the path of the furl-lever member which carries the weighted arm so as to be operated and released thereby.

10. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting from the head, a vane pivotally connected with the head, a separate self-acting latch pivotally mounted on the head and having a member arranged to directly engage with the vane when the wheel is out of sail, and means for moving the furl-lever against the latch to release the same.

11. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting from the head, a vane pivotally connected with the head, a furl-lever fulcrumed on the head and operatively connected with the vane, a weighted arm carried by the furl-lever, and a latch on the head adapted to lock the vane when the wheel is out of sail, a portion of said latch being arranged in the path of the weighted arm.

12. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting from the head, a vane pivotally connected with the head, a furl-lever operatively connected with the vane, a weighted arm carried by said lever, a roller carried by said arm, and a vane-locking latch adapted to be engaged by said roller, substantially as and for purpose set forth.

13. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting therefrom, a vane pivotally connected to the head, a duplex furl-lever fulcrumed on the head and embodying two relatively movable members, one of which is operatively connected with the vane and the other with the furl connection, a governor-spring interposed between and connecting said members, and a stop on one member adapted to cooperate with the other member and limit the relative movement between the members, substantially as described.

14. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a horizontal shaft projecting therefrom, a vane pivotally connected with the head, a brake-band embracing the head of the wind-wheel and having a fast connection at one end, a brake-lever pivotally supported on the head and connected at one end with the free end of the brake-band, and a furl-lever fulcrumed upon the head and operatively connected with the vane, said furl-lever being arranged in the path of the free end of the brake-lever.

15. A windmill comprising a head journaled on a vertical axis and provided with a stem at its lower end, a bearing head or casing in which said stem is rotatably mounted, said casing having a flared lower end, and a bushing removably fitted in the flared lower portion of the casing and encircling said stem.

16. A windmill comprising a head journaled on a vertical axis and provided with a depending stem having enlarged bearing-collars at or near its upper and lower ends, a bearing head or casing in which the stem is journaled, said casing having a flared or enlarged lower portion, and a bushing removably fitted in the flared portion of the casing and extending around one of the enlarged bearing-collars on the stem.

17. In a windmill, a wind-wheel comprising a series of blades or wings, bands connecting the blades or wings, and duplex cross-ties connecting the spokes adjacent to one of the bands, each tie embodying overlapping members and means for securing the same to the adjacent band.

18. In a windmill, a wind-wheel comprising a series of blades, a hub, and spokes connecting the hub and blades, and a series of duplex cross-ties each consisting of overlapping members having hooked portions for engaging oppositely-arranged spokes, and fastening means for securing the tie members together.

19. In a windmill, the combination with a series of blades, and a hub embodying flanges provided with notches, and spokes having their inner ends bent and inserted in openings in the hub, the body portions of the spokes being received in the notches of the flanges.

20. In a windmill, a wind-wheel embodying a hub having oppositely-arranged flanges provided with notches, the hub being provided in radial alinement with said notches with spoke-receiving openings, and spokes having their inner ends bent at an angle and inserted in the openings in the hub, the body portions of the spokes being received in the notches of the flanges while the flanges serve to brace the spokes between the hub proper and the rim or outer portion of the wind-wheel.

21. In a windmill, the combination of a head journaled on a vertical axis, a vane having pivotal connection with the head, said pivotal connection comprising separate upper and lower pivotal points spaced a distance from each other and disposed out of vertical alinement, a wind-wheel mounted on a shaft extending laterally from said head and in a plane at one side of the vertical axis thereof, a furl-lever pivotally mounted upon the head at the side opposite the vane-mounting and having yielding connection with the vane, and locking means controlled by the furl-lever and arranged to directly engage with the vane.

22. A windmill comprising a head journaled on a vertical axis, a wind-wheel mounted on a shaft extending laterally from the head, a vane pivotally connected with the head, a latch for locking the vane when the wheel is out of sail, a duplex furl-lever embodying relative movable members, and a rod connecting one of the furl-lever members with the vane, said rod having restricted play at its point of connection with the furl-lever member.

23. A windmill comprising a head journaled on a vertical axis, a wind-wheel journaled on a shaft projecting from the head, a vane pivotally connected to the head, a furl-lever fulcrumed on the head and connected with the vane, a brake-rod associated with the hub of the wheel and having an adjustable take-up at one end of the brake-rod and a brake-lever mounted in the path of the furl-lever and operatively connected to the brake-rod.



### 753,461. ELECTRICAL CONDUCTOR AND COIL. JAMES C. ADDISON, Jersey City, N. J., assignor to Variey Duplex Magnet Company, a Corporation of New Jersey. Filed Apr. 30, 1903. Serial No. 154,220. (No model.)



*Claim.*—1. An electrical conductor consisting of a flat or ribbon wire having one face and its edges covered with insulating material and a continuous portion of its other face exposed.

2. The combination of an electrical conductor in the form of a ribbon and an insulating-covering therefor consisting of a single strip applied longitudinally to the conductor and having its edges bent or hemmed around the edges of the conductor and open continuously along one face of the conductor.

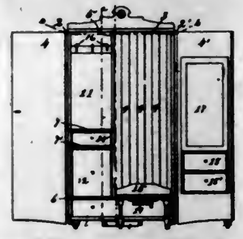
3. The combination of an electrical conductor in the form of a ribbon, and an insulating-covering therefor consisting of a single strip applied longitudinally to the conductor having its edges bent or hemmed around the edges of the conductor, and forming an open envelop adapted to retain itself upon the conductor.

4. An electrical coil, consisting of a winding of flat wire, said wire being covered with insulating material in the form of a strip applied longitudinally to the wire and having its lateral edges bent or hemmed over the edges of the wire and forming a longitudinal seam along one face of the wire, the seam occurring on the convex side of the convolutions of the coil.

5. The combination of a flat electrical conductor and an insulating-cover therefor, consisting of two strips longitudinally applied to the conductor, each having its lateral edges bent around the lateral edges of the conductor and forming two straight longitudinal seams on the opposite faces of the conductor, the seam of one strip being covered by the other strip.

6. A coil of covered wire consisting of a winding or helix in which the convolutions are successively superposed upon each other, said wire being a flat ribbon and covered with insulating material in the form of a strip applied longitudinally to the wire and having its lateral edges bent or hemmed over the edges of the wire and forming a longitudinal seam along one face of the wire, said edges of one convolution being confined by the next adjacent convolution.

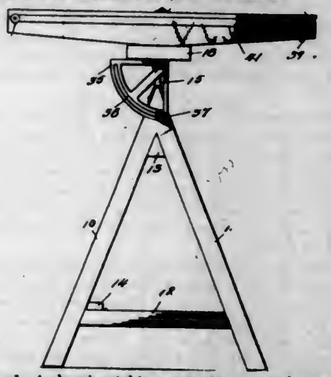
### 753,462. COMBINED WARDROBE AND BED. SALLIE AUSTIN, New York, N. Y. Filed June 11, 1902. Serial No. 111,305. (No model.)



*Claim.*—1. An article of furniture of the class herein described comprising a ventilated bed-compartment, a bed vertically movable on an axis near the bottom of said compartment, a door for closing the front of said compartment, and a removable fumigating device at the lower extremity of the structure, said device having an outlet-aperture.

2. An article of furniture of the class herein described comprising a cabinet, a ventilated bed-compartment therein, drawers in compartments of the cabinet; doors, 4 4', for closing the front of the structure; a bed vertically movable on an axis near the bottom of said bed-compartment and having at its under side a receptacle or pocket, 19; a bureau attached to the inner face of the door designed to close the front of said bed-compartment, drawers 18 18'; and a removable fumigating device at the lower extremity of said structure with an outlet-aperture therein.

### 753,463. DRAWING-BOARD. THOMAS L. AUSTIN, Erie, Pa. Filed May 8, 1903. Serial No. 156,237. (No model.)

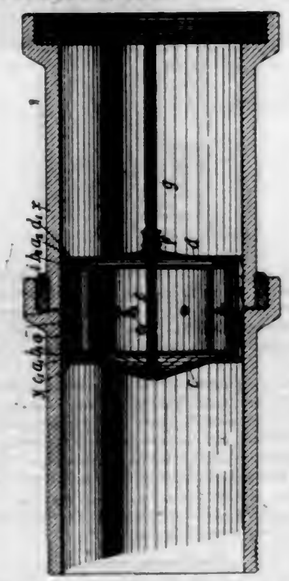


*Claim.*—1. A drawing-table comprising a stand, a transverse member pivoted horizontally thereto, means for holding the member at different points of its pivotal movement, a collar secured to the upper face of the transverse member, a flanged, cylindrical member disposed within the collar for rotation therein, the flange of said member having a series of notches therein, a dog pivoted to the collar for engagement to the notches of the flange interchangeably, a board attached to the upper edge of the flange, straight edges secured to the transverse member and rising above the board and means for locking the cylindrical member against rotation within the collar.

2. A drawing-table comprising a stand, a transverse member pivoted horizontally thereto, means for holding the member at different points of its pivotal movement, a collar secured to the upper face of the transverse member and having a threaded perforation

therethrough, a flanged cylindrical member rotatably disposed within the collar, means mounted upon the collar and cooperating with the cylindrical member to hold the latter at different points of its rotation, a board attached to the upper edge of the flange, straight edges secured to the transverse member and rising above the board, and a clamping-screw engaged in the threaded perforation of the collar and adapted to impinge against the cylindrical member to lock the latter against movement.

753,464. APPARATUS FOR TIGHTENING SOCKET-PIPE CONNECTIONS. HUGO BEHRHAUER, Bielefeld, Germany. Filed Apr. 10, 1903. Serial No. 152,081. (No model.)



*Claim.*—1. Apparatus for tightening socket-pipe connections consisting of a pneumatic expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, and of a rubber ring with a pouring-mouth which ring may be introduced into the mouth of the annulus between the spigot of the one pipe and the socket of the other one, substantially as described.

2. Apparatus for tightening socket-pipe connections consisting of an expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, said body being composed of a metallic cylinder with conical edges, side plates with peripheral conical edges, and an outer flexible cover, the edges of which are engaged between the conical edges of the metal cylinder and the peripheral conical edges of the side plates aforesaid, substantially as described.

3. Apparatus for tightening socket-pipe connections consisting of an expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, said body being composed of a metallic cylinder with conical edges, side plates with peripheral conical edges, an outer flexible cover, the edges of which are engaged between the conical edges of the metal cylinder and the peripheral conical edges of the side plates aforesaid, and a screwed socket for forcing one of said side plates inwardly for effectively clamping the edges of said cover, substantially as described.

4. Apparatus for tightening socket-pipe connections consisting of an expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, said body being composed of a perforated metallic cylinder with conical edges, side plates with peripheral conical edges, an outer flexible cover, the edges of which are engaged between the conical edges of the metal cylinder and the peripheral conical edges of the side plates aforesaid, and means for supplying fluid-pressure into said metal cylinder and said cover, substantially as described.

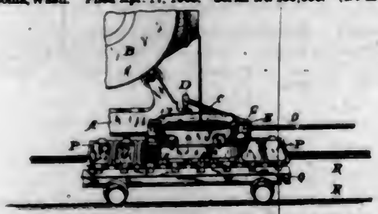
5. Apparatus for tightening socket-pipe connections consisting of an expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, said body being composed of a perforated metal cylinder with conical edges, side plates with peripheral conical edges, an outer flexible cover, the edges of which are engaged between the conical edges of the metal cylinder and peripheral conical edges of the side plates aforesaid, a perforated tube upon which said side plates are mounted, and a socket screwed upon the end of said tube for pressing one of said side plates inwardly, substantially as described.

6. Apparatus for tightening socket-pipe connections consisting of a pneumatic expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, a rubber ring which may be introduced into the mouth of the annulus between the spigot of the one pipe and the socket of the other one, a pouring-mouth on said ring, and a tongue dividing said pouring-mouth into two compartments communicating on each side of said tongue with the said annulus, substantially as described.

7. Apparatus for tightening socket-pipe connections consisting of a pneumatic expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, a hollow rubber ring which may be introduced into the mouth of the annulus between the spigot of the one pipe and the socket of the other one, a pouring-mouth on said ring, and a tongue dividing said pouring-mouth into two compartments communicating on each side of said tongue with the said annulus, substantially as described.

8. Apparatus for tightening socket-pipe connections consisting of an expansible cylindrical body which may be introduced into the interior of the respective pipes at the place of connection, a rubber ring which may be introduced into the mouth of the annulus between the spigot of the one pipe and the socket of the other one, and a pouring-mouth on said ring said pouring-mouth being separable from the ring and being provided with projections fitting in the hollow extremities of the ring, substantially as described.

753,465. COPPER-POURING SPOON. BENJAMIN H. BENNETT, Tacoma, Wash. Filed Apr. 17, 1903. Serial No. 153,068. (No model.)



*Claim.*—1. In a copper-pouring spoon, the combination of a horizontal receiving-bowl intermediate between the converter and the molds, a U-shaped supporter engaging and supporting said bowl, and a horizontally-jointed arm secured to and carrying said supporter in such manner that said bowl may be moved in any direction in the horizontal plane.

2. In a copper-pouring spoon, the combination of a horizontal receiving-bowl intermediate between the converter and the molds, trunnions secured to said bowl, a U-shaped supporter engaging and supporting said bowl by means of said trunnions, and a horizontally-jointed arm secured to and carrying said supporter.

3. In a copper-pouring spoon, the combination of a receiving-bowl intermediate between the converter and the molds, two pairs of trunnions secured to said bowl, a U-shaped supporter engaging and supporting in a substantially horizontal position said bowl by means of said trunnions, and a horizontally-jointed arm secured to and carrying said supporter.

4. In a copper-pouring spoon, the combination of a receiving-bowl intermediate between the converter and the molds, two pairs of trunnions secured to said bowl, a handle secured to and extending outward from said bowl, a U-shaped supporter engaging and supporting in a substantially horizontal position said bowl by means of said trunnions but allowing said bowl to be tipped on the front pair of trunnions when said handle is lifted, and a horizontally-jointed arm secured to and carrying said supporter.

5. In a copper-pouring spoon, the combination of a receiving-bowl intermediate between the converter and the molds, two pairs of trunnions secured to said bowl, a handle secured to and extending outward from said bowl, a U-shaped supporter supporting in a substantially horizontal position said bowl by means of said trunnions, notches on the upper surface of said supporter and engaging said trunnions, allowing said bowl to be tipped on the front pair of trunnions when said handle is lifted, and a horizontally-jointed arm secured to and carrying said supporter.



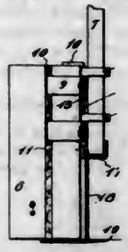
6. In a copper-pouring spoon, the combination of a receiving-bowl, a pouring-mouth, two pairs of trunnions secured to said bowl, a handle secured to and extending outward from said bowl, a U-shaped supporter supporting in a substantially horizontal position said bowl by means of said trunnions, notches on the upper surface of said supporter and engaging said trunnions allowing said bowl to be tipped on the front pair of trunnions when said handle is lifted, and a horizontally-jointed arm secured to and carrying said supporter.

753,466. DISINFECTING ATTACHMENT FOR TELEPHONES. CARLO BRAVI-BERETTI, Perth Amboy, N. J. Filed Sept. 16, 1903. Serial No. 173,289. (No model.)



*Claim.*—The combination with a telephone apparatus of a tank of liquid disinfecting material, a tubular ring adapted to be secured in the mouthpiece of the transmitter and provided with fine perforations, tubes connecting said tank with said ring, a valve-casing placed in said tube and provided with a horizontally-movable valve-rod, two valves connected with said rod within said casing and between which is a space, and a spring-operated crank-lever connected with said valve-rod, said crank-lever and the support of the receiver being also in operative connection, substantially as shown and described.

753,467. FENCE-POST. WILLIAM R. BORDNER, Canton, Ohio. Filed Dec. 5, 1903. Serial No. 183,882. (No model.)



*Claim.*—1. The combination with the base having elongated vertical grooves extending lengthwise in the sides of the base, from the end thereof, and the standard, of a clamp attached to the standard and having arms projecting into and cemented in the grooves.

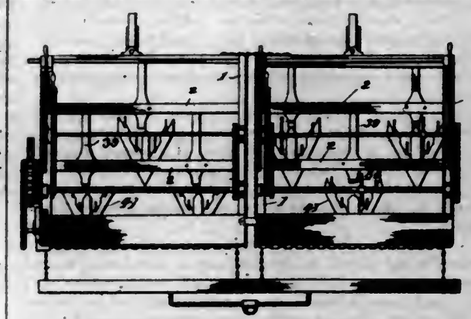
2. The combination with the base and standard, of a plate having arms which embrace the base, and a bar which extends around the standard and terminates in hooks which engage the plate.

3. The combination with the base, standard and the clamp extending around the standard and secured at its ends to the base, of the supporting-strip which projects at its upper end upon the top of the base and has a hook at its lower end into which the bottom of the post sets.

4. The combination with the base having grooves in opposite sides, of the standard on the face of the base, and the clamp embracing the standard and having arms bent around the corners of the post and fixed in the grooves.

753,468. PLOW. GEORGE L. BRADLEY, Pataha, Wash. Filed Dec. 31, 1902. Serial No. 137,283. (No model.)

*Claim.*—1. In an agricultural implement, the combination with the standard having a rear extension at its upper end and transverse extensions at the front end of said rear extension, a guard applied to the upper end of the standard, and a clearer for cooperation with the guard to prevent accumulation of trash, substantially as set forth.

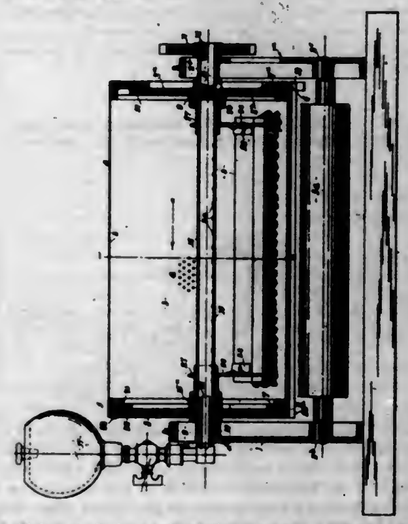


2. In combination, a standard having the part between its lower front and rear portion cut away and longitudinally slotted, sweeps having their front ends overlapped and fitted to said cut-away portion of the standard and having slots in the rear portion of the overlapped parts, the slots crossing, means for pivotally connecting the sweeps at their front ends to each other and to the standard, and a fastening operating in the slots of the sweeps and the standard and adjustable to effect a spread of the sweeps at their rear ends more or less, substantially as set forth.

3. In an agricultural implement, and in combination with the standard and plow-point, a cooperating sweep having portions cut from its rear edge and bent upward and rearward to form combined cutters and lifts, substantially as set forth.

4. In an agricultural implement, a standard provided at its upper end with a rearwardly-extended portion for receiving fastenings and having lateral extensions constituting braces, a guard attached to the upper portion of the standard and extended above the plane of said rear extension, a plow-point attached to the lower end of the standard, and sweeps connected to the standard and angularly adjustable and provided at their rear edges with combined cutters and lifts, substantially as set forth.

753,469. ROTARY STENCIL-PRINTING APPARATUS. SUMNER BROWN, London, England. Filed Dec. 31, 1902. Serial No. 137,376. (No model.)



*Claim.*—1. In a stencil-printing machine, a rotary perforated cylinder flattened in one part of its circumference, in combination with a pressure-roller, means for supplying ink, a pad surrounding the said cylinder, a stencil-sheet in contact with said pad and means for holding said sheet and pad in position against the flattened part of the cylinder.

2. In a stencil-printing machine a cylinder flattened in one part of its periphery, in combination with a stencil-sheet, means for holding said sheet against the flattened part of the cylinder, and a pressure-roller arranged to cooperate therewith substantially as set forth.

3. In a stencil-printing machine, a cylinder provided with a metal plate constituting a flattened part of its periphery, in combination with a stencil-sheet, means for holding it against this plate and a pressure-roller cooperating with said stencil-sheet substantially as set forth.

4. In a stencil-printing machine, a cylinder flattened in a part of its periphery and having recessed rings at its ends, in combination with a pad surrounding it, a stencil-sheet in contact with said pad opposite the said flattened part, a pressure-roller cooperating with said stencil-sheet and metal lathe fitting into the recesses of the said rings and holding the said sheet in position substantially as set forth.

5. In a stencil-printing machine, a rotary perforated cylinder, flattened in one part of its circumference, in combination with a pressure-roller means for supplying ink, a pad surrounding the said cylinder and a stencil-sheet in contact with the said pad and fitting into the recess left by the said flattening flush with the surface of the cylinder, the said construction affording an indication where to start each paper sheet substantially as set forth.

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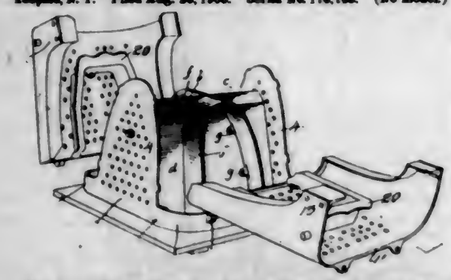
**753,470. RAIL-JOINT.** WILLIAM G. BURSON, Pittsburg, Pa., assignor of one-half to John W. Housberg, Pittsburg, Pa. Filed July 5, 1901. Serial No. 67,158. (No model.)



*Claim.*—In a rail-joint, the combination with the ends of two adjacent rails, of a rolled-metal chair or support having substantially the same expansive and contractive properties as the metal of the rails and comprising a base-plate and sides constructed in such a manner as to form a sufficiently large space for the chair or support to be applied to the adjacent rails without separating the rails, each side having a flat straight bearing-face, bowed fish-plates on both sides of the webs of the rails disposed between the straight flat bearing-faces of the chair and the webs of the rails so as to cause the bowed portions of the fish-plates to bind against the flat bearing-faces of the chair thereby maintaining the bowed portions of the fish-plates in close frictional contact with the flat bearing-faces without the aid of a wedge, and means engaging the base-plate and the base of a rail for preventing a longitudinal movement of the chair on the rails, substantially as set forth.

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**753,471. MOLDER'S FLASK.** MORTIMER A. CLAPP, Poughkeepsie, N. Y. Filed Aug. 26, 1903. Serial No. 170,763. (No model.)



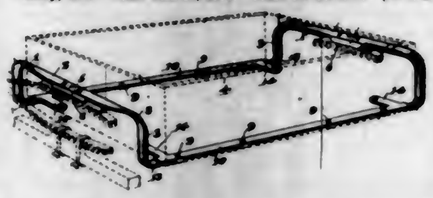
*Claim.*—1. In combination with a molder's flask, comprising a nowel having end walls and cheek-pieces to close against the end walls of the nowel, a brace connecting said end walls and having converging sides and side boards secured to the said brace and coacting therewith to form a hollow space in the flask to reduce the capacity of the same and correspondingly reduce the quantity of sand required to fill it.

2. In combination with a molder's flask of the class described, having a nowel provided with end walls, cheek-pieces to close against the end walls of the nowel, and a brace-bar connecting said end walls, side boards coacting with said brace-bar to form a hollow space in the flask to reduce the capacity thereof and correspondingly reduce the quantity of sand required to fill it, and space-forming devices on the outer sides of said side boards in the spaces between the latter and the cheek-pieces, substantially as described.

3. In combination with a molder's flask of the class described, comprising a nowel, having end walls, cheek-pieces to close against the end walls, a brace-bar connecting said end walls and sand-retainers on the inner sides of said cheek-pieces, side boards spaced apart, extending to the brace-bar and coacting therewith to form a hollow space in the center of the flask, and space-forming devices on the outer sides of said side boards in the spaces between the latter and the cheek-pieces, to form hollow spaces therein, said space-forming devices fitting in the sand-retainers of the cheek-pieces, when the latter are closed, substantially as described.

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**753,472. VEHICLE-BODY LOOP.** LEWIS CRIBB, Upper Sandusky, Ohio, assignor of one-half to the Central Ohio Buggy Co., Upper Sandusky, Ohio. Filed Jan. 12, 1903. Serial No. 138,777. (No model.)



*Claim.*—1. A vehicle-body loop comprising upright side portions, and a horizontal transverse portion provided with an enlargement at the center forming a seat for a spring, said horizontal body portion being constructed of oval metal at each side of the central portion with the major diameter of the oval arranged in a horizontal plane to present substantially horizontal upper and lower side faces, and the horizontal portion being given a quarter-bend at each end to arrange the major diameter of the upright side portions in a plane transversely of the vehicle, said bend being gradually and uniformly curved and twisted forming a partially spirally-curved connecting portion, whereby the tensile strength of the metal is carried throughout the entire loop, substantially as described.

2. A vehicle-body loop having a horizontal top portion curved inward and downward at its ends to form partially spirally-curved connecting portions, upright sides depending from the curved portions of the top and extended inward at their lower ends to form arms or bars, the latter being disposed longitudinally of the body, and the inwardly-projecting arms extending from the said arms or bars and located at the corners of the vehicle, substantially as described.

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**753,473. LOCKET.** ALEXANDER Y. CUNNINGHAM, Attleboro, Mass., assignor to the D. F. Briggs Company, Attleboro, Mass. Filed May 28, 1903. Serial No. 159,091. (No model.)



*Claim.*—1. In a locket, the combination with the front and back each provided with an undercut groove, of two frames hinged together and secured in the grooves of the front and back, as described.

2. In a locket, two parts having grooves and forming the front and back of the locket, two frames secured in said grooves and hinged together, the hinged portion of one frame being located at the end of a spring-tongue forming part of that frame, as described.

3. In a locket, the combination with a part forming the front provided with an undercut groove, and a frame secured to the part in said groove, of a part forming the back and having an undercut groove therein, a frame formed with a spring-tongue and secured in said groove of said part, the spring-tongue of one frame being connected with the other frame to form a hinge, as described.

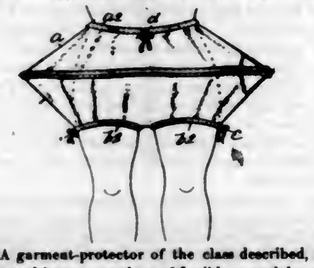


4. In a locket, two parts forming the front and back having two undercut grooves in each part, two frames shaped to fit the inner grooves in each part and connected to form a hinge, and two picture-retaining rings shaped to fit the two outer grooves, as described.

5. In a locket, the combination with the side $a'$ forming the back and the side $a^1$ forming the front of the locket, and having the inner edges $a^3$ $a^4$ with the undercut grooves $d$ and $e$ and the depressed recesses $a^4$ and $a^5$, the cut-out portion $a^6$ in the edge $a^3$ of the front $a^1$ and the cut-out portion $a^7$ with projections $a^8$ $a^9$ in the edge $a^4$ of the back $a'$, and the ring $a^2$ secured to the back, of the hinge-frames $b$ and $b'$, the frame $b$ having the opening $b^3$ and the spring-tongue $b^4$, and the frame $b'$ having the opening $b^5$ and the fingers $b^6$ $b^7$, the hinge $b^8$ formed by rolling the ends of the tongue and fingers over a pin, and the picture-retaining rings $c$ and $c'$, all for the purpose as described.

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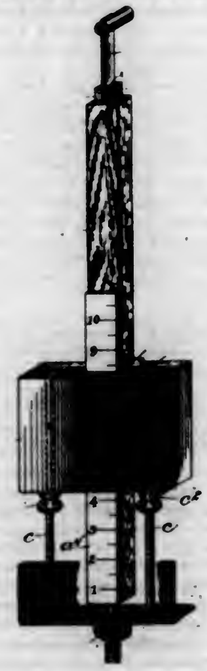
**753,474. GARMENT-PROTECTOR.** DOROTHY W. CURTIS, Brooklyn, N. Y. Filed Mar. 26, 1903. Serial No. 149,471. (No model.)



*Claim.*—A garment-protector of the class described, comprising similar top and bottom portions of flexible material secured together at their outer edges, the upper part or portion being provided with a central opening through which the lower limbs and lower part of the body may be passed, and the bottom part or portion being provided with two closely-adjacent openings through which the entire lower limbs may be passed, said openings being provided with securing devices, substantially as shown and described.

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**753,475. PENDULUM.** JOHN W. DAILY, Boston, Mass. Filed Mar. 23, 1903. Serial No. 149,155. (No model.)



*Claim.*—1. A compensating pendulum comprising a pendulum-rod provided at its lower end with an adjusting-nut, a support for the pendulum-bob resting upon said adjusting-nut, supporting-rods for said bob connected with said support, and adjusting-nuts upon said supporting-rods to vary the position of the bob relative to its support.

2. A compensating pendulum comprising a pendulum-rod of wood provided at its lower end with an adjusting-nut, a pendulum-bob, a support for said bob which in turn is supported upon said adjusting-nut and provided with vertical members which enter openings with which said pendulum-bob is provided, adjusting-nuts upon said supporting members upon which nuts said bob directly rests, and a scale upon the face of the pendulum-rod, as set forth.

3. A pendulum comprising a wooden pendulum-rod, and a metallic compensating bob; a slotted block, screw-threaded into the upper end of said pendulum; a strip of thin metal secured to the clockwork-frame and projecting into the slot in said block; and a transverse pin to secure said thin metal strip in said block.

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**753,476. HAND-MIRROR OR OTHER TOILET ARTICLE.** JOHN C. DOWD, New York, N. Y. Filed Dec. 21, 1903. Serial No. 186,070. (No model.)



*Claim.*—1. A toilet article comprising an ornamental wooden back formed with a tang, and a metal ornamental handle formed with a socket in which said tang fits; said handle being prolonged beyond its socket portion to form an ornamental brace which is secured to said wooden back and coöperates with said back and tang to stiffen the structure.

2. A toilet article comprising an ornamental wooden back formed with a tang, and a metal ornamental handle formed with a socket into which said tang is cemented; said handle being prolonged beyond its socket portion to form an ornamental brace which is secured to said wooden back by headed metal fasteners and coöperates with said back and tang to stiffen the structure.

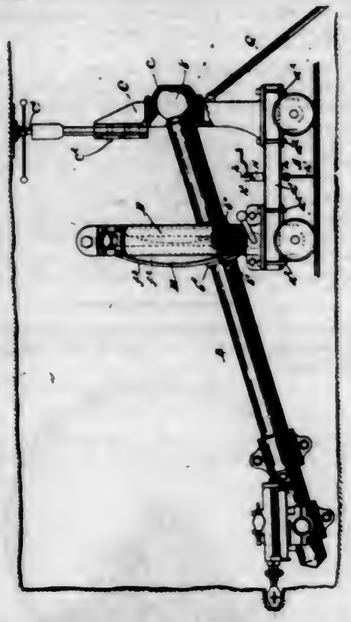
3. A toilet article comprising an ornamental metal handle formed with a laterally-flaring socket, and an ornamental wooden back formed with a tang tapered to fit in said socket; said handle being prolonged beyond said socket portion to form an ornamental brace extending along said back and secured thereto so as to prevent loosening of the tang in the socket.

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**753,477. MACHINE FOR EXCAVATING ROCK.** CHESTER T. DRAKE, Chicago, Ill. Filed Feb. 15, 1901. Serial No. 47,260. (No model.)

*Claim.*—1. In a machine of the class described, the combination with a support, of a column-bar pivoted thereon, means located between said support and the free end of said column-bar for con-

centrically adjusting the position of said column-bar with respect to a given center and means for rigidly securing the same in an adjusted position.



2. In a machine of the class described, the combination with a movable support of a forwardly-directed column-bar pivoted thereon, means for moving the free end of said column-bar concentrically around a given center, means for moving the same radially with respect to said center and means for rigidly securing the same when radially adjusted.

3. The combination with a supporting-carriage and a rigid standard thereon of a rotatable column-bar pivoted on said standard by means affording a ball-and-socket joint, means located intermediate of said support and the free end of said column-bar for moving the free end of the column-bar concentrically around a given center and means for rigidly securing the same in an adjusted position.

4. The combination with a supporting-carriage and a rigid standard thereon, of a forwardly-directed rotative column-bar pivoted on said standard, a rotative support for said column-bar located in front of the standard and means for rotating said support whereby said column-bar is moved concentrically with respect to the center of said rotative support, and means for rigidly securing said rotative support in an adjusted position.

5. The combination with a supporting-carriage and a rigid standard thereon, of a column-bar pivoted on said standard, a rotative support for said column-bar located in front of the standard and supported on said carriage, means for rotating said support and means for moving the column-bar radially therein, and automatic means for holding said column-bar in radial adjustment.

6. The combination with a carriage, of a standard supported thereon, a column-bar pivoted on said standard by means affording a universal joint, a rotative support for said column-bar on said car in advance of the standard for moving said column-bar concentrically about the center of said rotative support, means for imparting radial motion to said column-bar, means for rotating said support and means for securing the same in an adjusted position.

7. The combination with a carriage, of a standard rigidly secured thereon, of an annular member secured on said carriage in advance of said standard, a rotative support within the same, a column-bar movably secured on said standard and extending through the rotative support, means for rotating the said support with the column-bar and ways extending across said rotative support between which the column-bar is adapted to slide and means for locking the rotative support from movement with respect to said annular member.

8. The combination with a carriage, of a standard rigidly secured on the rear of the same, a forwardly-directed column-bar rotatively secured thereon, an annular member on the front end of said carriage, a rotative support within said annular member through which said column-bar passes and means for rotating said support comprising gear-teeth on the periphery of the same and a worm journaled in said annular member, said annular member being adapted to clamp said rotative support in an adjusted position.

9. The combination with a carriage and a rigid standard at the rear of the same, of a column-bar pivotally engaged to said standard by means affording a ball-and-socket joint, a rotative support for said column-bar in advance of said standard, means for rotating said support, parallel ways extending across said support between which the column-bar is adapted to move, a casing between said ways surrounding said column-bar and means for holding said column-bar in radial adjustment in said support comprising teeth along one or both of said ways and a pawl or pawls on said casing.

10. The combination with a rigid standard of a column-bar pivoted thereon by means affording a ball-and-socket joint, a rotatable support for said column-bar adapted to give the free end of the same orbital motion, ways in which the column-bar is adapted to move radially of said rotative support, a casing surrounding said column-bar and fitting closely between said ways, said column-bar being adapted to rotate freely within said casing, and means for rigidly securing the column-bar within the same.

11. The combination with a car and a track, of a standard supported on said car, a column-bar pivoted on said standard, means for moving said column-bar concentrically with respect to a given center, means for giving said column-bar radial motion with respect to said center and independent means for securing the same either when concentrically or radially adjusted and means for securing the car to the track.

12. In a machine of the class described the combination with a car, of an upright annular member, a rotative support in said annular member provided with a slot through the middle of the same, a column-bar extending through said slot, means adapted to resist lateral motion of the bar lengthwise of the slot and means for rotating the support and holding the same in its adjusted position.

13. In a device of the class described the combination with a car of a two-part annular member, a rotative support located within said annular member, a column-bar extending therethrough, means for adjusting the bar radially within said rotative support and means for securing the same in their adjusted positions.

14. The combination with a car, of an annular member secured thereon, a rotative support therein provided with an open slot through its middle, a column-bar extending through said slot and provided with a casing fitting closely therein with and in which said column-bar is adapted to rotate, means for locking said bar from rotation, means for securing the column-bar from motion lengthwise of the slot, means for rotating said rotative support and means for locking the same in its adjusted position.

15. The combination with a car, of a standard rigidly secured thereon and having pivotally and rotatively secured thereon a forwardly-directed column-bar, a two-part annular member secured in advance of said standard, a rotative support for said column-bar therein provided with means for permitting concentric radial and rotative movement of the column-bar and means for locking said car from movement during the operation of the column-bar.

16. In a machine of the class described, a forwardly-directed column-bar adapted to be rotated and moved concentrically and radially with respect to a given center and to be locked from such movements and provided at its front end with a plurality of arms extending therefrom and adapted to have secured thereon drilling apparatus or the like.

17. In a machine of the class described, the combination with a car provided with means for rigidly securing the same from movement in position, of a forwardly-directed column-bar pivotally secured on said car and adapted to be moved concentrically with respect to a given center, radially and rotatively and to be rigidly secured in its various adjusted positions and means on said column-bar for securing thereto drilling or excavating apparatus or the like.

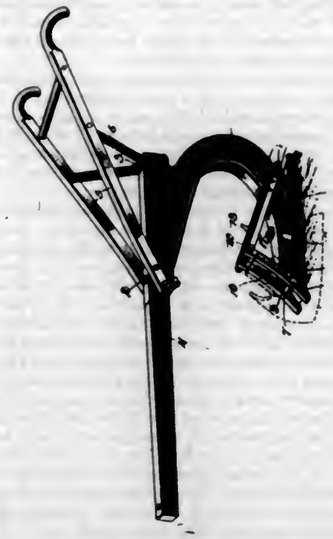
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**753,478. PLOW. GEORGE L. ROBERTS, Rockford, N. C. Filed Mar. 10, 1903. Serial No. 147,133. (No model.)**

*Claim.*—The combination with a plow having an approximately U-shaped standard, of a pair of supporting-bars pivoted between their ends to the standard and extending above the lower portion of the same and spaced apart to receive the clamping device of a cultivator blade or point, and a pair of connecting-bars pivoted to the upper portions of the said supporting-bars and extending rearward to the standard and provided with means for adjustably securing them to the opposite sides of the same, substantially as described.

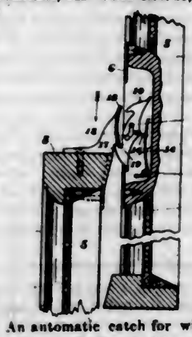


753,478.



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**753,479. DEVICE FOR ADJUSTING WINDOWS. AXEL F. ENQUIST, San Francisco, Cal. Filed Nov. 26, 1903. Serial No. 182,606. (No model.)**



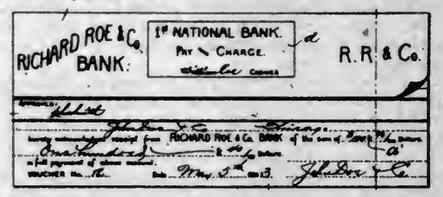
*Claim.*—1. An automatic catch for window-sashes, upper and lower, consisting of an oscillating double pawl attached to one sash, a double catch on the other sash, for engagement with said pawl, on both upward and downward movements of the lower sash, means for automatically resetting said pawl for reengagement with said catch on the movement of the lower sash in either direction, and means for automatically disengaging said pawl on a slight reverse movement of said lower sash, to permit the lower sash to move independently of the upper sash, the whole to enable the upper sash to be raised and lowered solely by operating the lower sash, substantially as specified.

2. An automatic catch for window-sashes, upper and lower, consisting of a double pawl on one sash pivoted upon an angular slot so as to have endwise motion, a spring to hold the pawl in either position at the extremities of the slot, and a double catch on the other sash for alternate engagement with said double pawl, on both upward and downward movements of the lower sash, whereby the lower sash automatically engages the upper sash to draw it down when the lower sash is raised and then lowered, and automatically disengages by a slight reverse movement to permit the lower sash to be operated independently of the upper sash, and at the same time is automatically set for reengagement with the lower sash to replace the upper sash by the movement of the lower sash, substantially as specified.

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**753,480. VOUCHER-CHECK. WILLIAM J. FAHAN, Evanston, Ill. Filed May 16, 1903. Serial No. 157,332. (No model.)**

*Claim.*—1. As a new article of manufacture, a folded voucher-check having a wide and a narrow leaf, the outer face of the narrow leaf and the exposed portion of the wide leaf being appropriately ruled and designated, to constitute the one a bank form and the other a payee's receipt.




2. As a new article of manufacture, a folded voucher-check having a wide and a narrow leaf, the outer face of the narrow leaf being appropriately ruled and designated to constitute a bank form and the exposed portion of the wide leaf being appropriately ruled and designated to constitute a payee's receipt.

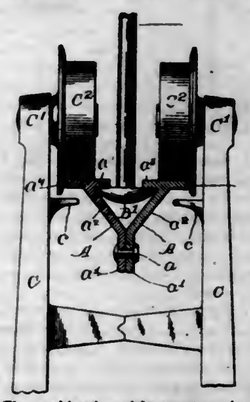
3. As a new article of manufacture a folded voucher-check having a wide and a narrow leaf, the outer face of the narrow leaf being appropriately ruled and designated to constitute a bank form and the exposed portion of the wide leaf being appropriately ruled and designated to constitute a payee's receipt and a blank for the approver's name.

4. As a new article of manufacture a folded voucher-check having a wide and narrow leaf, the outer face of the narrow leaf being appropriately lined and designated to constitute a bank form, the portion of the wide leaf concealed by the narrow leaf being appropriately lined and designated to constitute an account form and the exposed portion of said wide leaf being appropriately ruled and designated to constitute a payee's receipt.

5. As a new article of manufacture a folded voucher-check having a wide and narrow leaf, the outer face of the narrow leaf being appropriately lined and designated to constitute a bank form, the portion of the wide leaf concealed by the narrow leaf being appropriately lined and designated to constitute an account form and the exposed portion of said wide leaf being appropriately ruled and designated to constitute a payee's receipt and a blank for the approver's name.

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**753,481. HANGER AND TRACK THEREFOR. HENRY L. PERRIN, Harvard, Ill., assignor to Hunt, Helm, Ferris & Company, Harvard, Ill., a Corporation of Illinois. Filed Nov. 27, 1903. Serial No. 182,740. (No model.)**



*Claim.*—1. The combination with a track having horizontal portions to form a double tread, separated by a practically continuous slot, of diagonally-disposed portions meeting said horizontal portions substantially at their centers, said diagonally-disposed portions being joined at their lower edges, and a carrier having rollers adapted to run on said horizontal portions.

2. The combination with a track having horizontal portions to form a double tread, separated by a practically continuous slot, and portions connecting said horizontal portions to leave the outer edges of the same projecting laterally, of a carrier having rollers adapted to run upon said horizontal portions, and lugs secured to said carrier and projecting under the outwardly-extending edges of said horizontal portion.

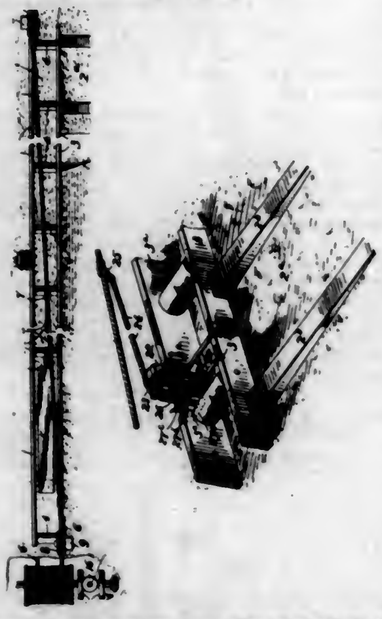
3. The combination with a track, having horizontal portions forming a double tread, separated by a practically continuous slot, of inclined webs extending downwardly from said horizontal por-

tions, substantially at their center, to leave projecting edges on each side of each of said horizontal portions, means for supporting the track, engaging the inwardly-projecting edges of the horizontal portions, a carrier having rollers adapted to run upon said horizontal portions and having lugs extending underneath the outer edges of said horizontal portions.

4. The combination with a track composed of two symmetrical pieces, each consisting of a vertical web, a diagonal web, and a horizontal web, said horizontal web extending on both sides of the diagonal web, and the two halves of said track being riveted together by rivets passing through the vertical webs, of means engaging the inner edges of the horizontal webs for supporting the track, and a carrier having rollers running on the horizontal webs and having lugs extending underneath the outer edges thereof.

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**753,482. CONVEYER.** MAGNUS FOSSEN, Chapman, Ala. Filed Dec. 1, 1903. Serial No. 183,380. (No model.)



*Claim.*—1. A conveyer comprising a roller-bed, standards, upper sheaves mounted on the standards, a conduit located beneath the roller-bed, lower sheaves journaled in the conduit, a flexible transmitter carried by the upper and lower sheaves, a drum with which the ends of the flexible transmitter are connected, means for rotating the drum, and a connection having means at one end for engaging the flexible transmitter and means at the other end for engaging the object to be conveyed.

2. A conveyer comprising a roller-bed, standards, upper sheaves mounted in the standards, a conduit located beneath the bed, lower sheaves journaled in the conduit, a flexible transmitter carried by the upper and lower sheaves, a drum with which the flexible transmitter is connected, means for rotating the drum, a connection having means at one end for engaging the flexible transmitter and means at the other end for engaging the object to be conveyed, and a tightener for the transmitter consisting of a grooved pulley resting thereon within the conduit and arms, in which the grooved pulley is journaled, pivoted to the sides of the conduit.

3. A conveyer comprising a roller-bed, standards, upper sheaves mounted on the standards, a conduit located beneath the roller-bed, lower sheaves journaled in the conduit, a flexible transmittee having links at intervals and carried by the upper and lower sheaves, a drum with which the flexible transmitter is connected, means for rotating the drum, and a connection having means at one end for engaging the flexible transmitter and means at the other end for engaging the object to be conveyed.

4. A conveyer comprising a roller-bed, standards, upper sheaves mounted on the standards, a conduit located beneath the roller-bed, lower sheaves journaled in the conduit, a flexible transmitter having links at intervals and carried by the upper and lower sheaves, a drum with which the flexible transmitter is connected, means for rotating the drum, and a connection having a hook at one end for engaging a link of the flexible transmitter and a hook at the other end for engaging the object to be conveyed.

5. A conveyer comprising a roller-bed, standards, upper sheaves mounted on the standards, a conduit located beneath the roller-bed, lower sheaves journaled in the conduit, a flexible transmitter carried by the upper and lower sheaves, a drum with which the flexible transmitter is connected and a flexible connection having means at one end for engaging the flexible transmitter and means at the other end for engaging the object to be conveyed.

6. A conveyer comprising a roller-bed, a flexible transmitter, means for carrying and operating the transmitter, a connection having means at one end for engaging the flexible transmitter, and means at the other end for engaging the object to be conveyed and a dumping device having means with which the outer end of the connection may be coupled to throw the object to one side of the conveyer.

7. A conveyer comprising a roller-bed, a flexible transmitter, means for carrying and operating the transmitter, a flexible connection having means at one end for engaging the flexible transmitter, and means at the other end for engaging the object to be conveyed, a post located opposite the dumping-place, a grooved pulley mounted on the post for receiving the flexible connection and a dumping device having means with which the outer end of the connection may be coupled to throw the object to one side of the conveyer.

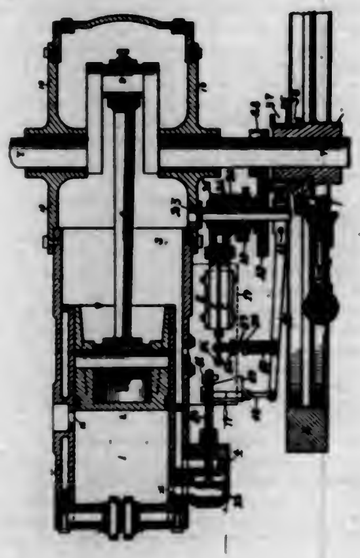
8. A conveyer comprising a roller-bed, standards, upper sheaves mounted on the standards, a conduit located beneath the roller-bed, lower sheaves journaled in the conduit, a flexible transmitter carried by the upper and lower sheaves, a drum with which the flexible transmitter is connected, means for rotating the drum, a flexible connection having means at one end for engaging the flexible transmitter, and means at the other end for engaging the object to be conveyed, a post located opposite the dumping-place and a grooved pulley mounted on the post for receiving the flexible connection.

9. A conveyer comprising a roller-bed, a flexible transmitter, means for carrying and operating the flexible transmitter, a dumping device, a connection having means at one end for engaging the flexible transmitter, and means at the other end for engaging the dumping device.

10. A conveyer comprising a roller-bed, a flexible transmitter, means for carrying and operating the flexible transmitter, a dumping device, a flexible connection having means at one end for engaging the flexible transmitter, and means at the other end for engaging the dumping device, a post located opposite the dumping-place and a grooved pulley mounted on the post for receiving the flexible connection.

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**753,483. GAS OR GASOLENE ENGINE.** GEORGE W. FULKERSON, Hagerstown, Ind. Filed Apr. 9, 1903. Serial No. 151,758. (No model.)





*Claim.*—1. In a gas or gasolene engine the combination, a cylinder, a crank-chamber connected to the cylinder and divided therefrom by a piston operative within the cylinder, a crank-shaft passing through the crank-chamber at right angles to the cylinder, a crank on said shaft in the center of the crank-chamber, a pitman connected to the piston and operative on said crank within the crank-chamber, means for admitting the aerated gas to the crank-chamber on the instroke of the piston, a channel leading from the crank-chamber to the inlet-port of the cylinder, a check-valve located in said channel controlled by the action of governor, means for reversing the engine, and means for changing the action thereof from a two to a four and from a four to a two cycle by the movement of a lever, all substantially as shown and described and for the purposes set forth.

2. In a gas or gasolene engine the combination, a cylinder, a crank-chamber opening into the cylinder and divided therefrom by a piston operative within the cylinder, a shaft passing through the crank-chamber and carried revolubly in the walls thereof, a crank on said shaft in the center of the crank-chamber, a pitman connecting the piston and the crank of the shaft within the crank-chamber, an inlet and exhaust port in the crank-chamber and an inlet and an exhaust port in the cylinder, the channel connecting the exhaust-port of the crank-chamber with the inlet-port of the cylinder, a valve located in said channel controlled by the action of the governor, a sparker located in the cylinder-head and extending into the clearance-space of the cylinder, and means for changing the speed and the cycle of the engine and for reversing the engine, all substantially as shown and described and for the purposes set forth.

3. In a gas or gasolene engine the combination, a cylinder, a crank-shaft connected to the cylinder and divided therefrom by a piston operative within the cylinder, a shaft passing through the crank-chamber and revolubly mounted in the walls thereof, a crank on said shaft in the center of the crank-chamber, a piston connecting the piston and the crank of the shaft, a carbureter located without the crank-chamber with a port leading from the carbureter to the interior of the crank-chamber, a port leading into the clearance-space of the cylinder, a passage-way leading from the crank-chamber to the inlet-port of the cylinder, means for drawing the gas from the carbureter into the crank-chamber by the inward stroke of the piston, means for compressing the gas in the crank-chamber and forcing it through said passage-way into the cylinder by the outward stroke of the piston, a valve located in said passage controlled by the governor and adapted to regulate the entrance of the gas to the cylinder, a sparker located in the clearance-space of the cylinder, means for changing the cycle of the engine and means for reversing the engine at the will of the operator, all substantially as shown and described.

4. In a gas or gasolene engine the combination, a cylinder opening at one end to a crank-chamber and a head closing the opposite end of the cylinder, a sparker located in said head, a piston operative in the cylinder with an outward-projecting pitman pivoted to the piston and connected to the crank of the main shaft, a main shaft passing through the center of the crank-chamber one end of said shaft carrying a fly-wheel and governor carried by the fly-wheel, a bracket extending out from the casing of the cylinder, a carbureter secured to the casing of the cylinder above said bracket with a channel leading therefrom to the interior of the crank-chamber, a channel leading from the interior of the crank-chamber to the clearance-space of the cylinder, means for regulating the passage of gas from the crank-chamber to the cylinder by the action of the governor and means for changing the cycle of the engine and for reversing the engine by the movement of a lever, all substantially as shown and described and for the purposes set forth.

5. In a gas or gasolene engine the combination, a cylinder, a crank-chamber opening into the cylinder and divided therefrom by a piston oscillating within the cylinder on a horizontal plane, a shaft passing through the crank-chamber and carried revolubly in bearings in the walls thereof, a crank on said shaft in the center of the crank-chamber, a pitman connecting the piston and the crank of the shaft within the crank-chamber, an inlet and an exhaust port in the crank-chamber, an inlet and exhaust port in the cylinder, the channel connecting the exhaust-port of the crank-chamber with the inlet-port of the cylinder, a valve located in said channel controlled by the action of the governor, the arm connecting said valve to the governor, a bracket secured to the side of the cylinder-jacket, a hanger extending up from said bracket carrying a horizontal hand-operative screw which carries a coil-spring adapted to engage said arm and adapted to change and vary the speed of the engine, and means for changing the cycle of the engine and for reversing the engine, all substantially as shown and described.

6. In a gas or gasolene engine the combination, a cylinder, a crank-chamber opening into the cylinder and divided therefrom by a piston within the cylinder, a shaft passing through the crank-chamber and carried revolubly in bearings in the walls thereof, a crank formed in the shaft in the center of the crank-chamber, a pitman forming a connecting-rod from the piston to the crank of the shaft, an inlet and an exhaust in the crank-chamber, an inlet and an exhaust port in the cylinder, the channel connecting the exhaust-port of the crank-chamber with the inlet-port of the cylinder, a bracket secured to the side of the jacket of the cylinder, a valve located in said channel controlled by the action of the governor or by a hand-wheel, the connecting-arm attached to the stem of said valve and to the collar of the governor, a standard extending up from said bracket carrying a longitudinal hand-operative screw which carries a coil-spring adapted to engage said arm and adapted to change and vary the speed of the engine, an auxiliary port leading from the clearance-space of the cylinder and controlled by a valve, said valve being operated by cams adapted to change the cycle of the engine, means for varying the speed of the engine, and means for controlling the inlet of gas to the engine from the carbureter by said cams, all substantially as shown and described and for the purposes set forth.

7. In a gas or gasolene engine the combination, of a cylinder and a crank-chamber divided from each other by a piston in the cylinder, a crank-shaft passing through the crank-chamber and adapted to be revolved by a pitman connected to said piston, a fly-wheel secured to said shaft outside the crank-chamber, a pintle extending out parallel with said shaft and some distance therefrom, a sleeve mounted on said pintle, a system of cams mounted on said sleeve and carried thereby, a gear-wheel secured to the outer end of said sleeve, a gear-wheel secured to said main shaft and meshing with said gear-wheel on the sleeve, a channel leading from the crank-chamber to the interior of the cylinder, a valve located in said channel controlled by the governor on the fly-wheel, an auxiliary valve controlled by said cams, a carbureter with an opening leading into said channel and controlled by the action of said cams, and a sparker located in the clearance-space of the cylinder also controlled by said cams, and means for changing the combination of said cams to change the cycle of the engine, all substantially as shown and described and for the purposes set forth.

8. In a gas or gasolene engine the combination, of a cylinder with an explosion-actuated piston therein, a crank-chamber surrounding the crank of the main shaft and a pitman connecting the crank and the piston, a passage leading from the crank-chamber to the clearance-space of the cylinder, a valve operative in said passage controlled by the governor and adapted to be opened by the pressure of gas from the crank-chamber, an auxiliary valve controlled by cams, a lever adapted to change the position of said cams, a carbureter secured to the side of the cylinder-jacket with an opening leading therefrom into the said passage-way and means for controlling the entrance of gas from the carbureter into said passage, a fly-wheel secured to the main shaft, governor carried by the fly-wheel for controlling the speed of the engine, all substantially as shown and described and for the purposes set forth.

9. In a gas or gasolene engine the combination, a cylinder opening at one end into a crank-chamber, a head in the opposite end of the cylinder, a sparker operative in said head, a piston operative in said cylinder and means for operating said piston by explosion, a shaft passing through the crank-chamber operative by the oscillations of the piston, a passage leading from the crank-chamber to the interior of the cylinder, means for varying the capacity of said passage by governor, a system of cams mounted on a pintle extending out from the body of the crank-chamber, the cam-blocks operated by said cams and controlling the action of the carbureter and the sparker, means for supplying aerated compressed gas to the cylinder and of exploding and discharging it therefrom, means for controlling the passage of the gas, means for changing the engaging from a two to a four cycle and from a four to a two cycle engine, means for changing the direction of the revolution, and means for changing the speed all at the will of the operator, all substantially as shown and described and for the purposes set forth.

10. In an explosive-engine, the combination of a cylinder and piston, a water-jacket surrounding the cylinder, the passage formed through the space between the cylinder and the jacket longitudinally of the cylinder, a crank-chamber opening into the cylinder, a crank-shaft mounted through the center of the crank-chamber, a pitman connecting the crank of the shaft with the piston, the mechanism comprising a valve operated by the governor adapted to regulate the entrance of gas to the cylinder from the crank-chamber,

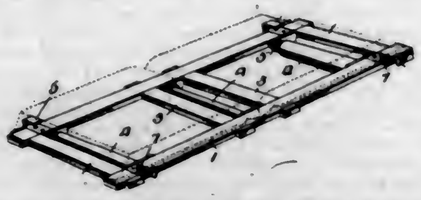
an exhaust-port in the cylinder controlled by the piston, a carbureter for supplying gas to the crank-chamber and controlled by a cam and a sliding block actuated by a mechanism dependent upon the revolutions of the shaft, substantially as described.

11. The combination of an engine-cylinder and piston therein, an exhaust-valve in the cylinder, an auxiliary exhaust-valve operated by a cam and a sliding block, an inlet-valve whose action is controlled by the governor, a sparker operated in the clearance-space of the cylinder and actuated by a cam, a crank-chamber for supplying compressed gas to the cylinder, and a carbureter for supplying gas to the crank-chamber.

12. The combination with a cylinder and a piston therein and means for supplying gas thereto at each or at alternate cycles of the piston, means for exploding the gas in the cylinder and for exhausting the pressure after it has accomplished its work, a crank-chamber connected to the cylinder and means for supplying gas thereto from the carbureter, means for compressing the gas in the crank-chamber by the outward stroke of the piston, governor for regulating the entrance of gas to the cylinder, a hand mechanism for setting the mechanism at a predetermined speed, and a lever operative on the cams and the sparker for changing the cycle of the engine.

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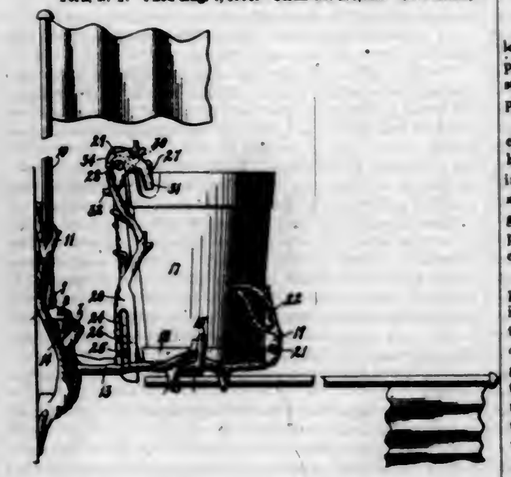
**753,484. BOOK-CARRIAGE.** JOS C. GOODMAN and FRED J. WURTELE, Evanston, Wyo. Filed Sept. 19, 1903. Serial No. 174,060. (No model.)



*Claim.*—In a device of the character described, the combination with a frame comprising end, side and intermediate rails, the said rails presenting a level surface and adapted to support a book, of downwardly-projecting brackets secured to the said side rails at points throughout their lengths, having their tops flush with the upper face of the said frame, and provided with apertures, rollers journaled in the said apertures, the said rollers lying in a plane below the bottom of the said frame, and book-clamping means arranged on the upper face of the said frame, substantially as described.

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**753,485. FLOWER-POT SUPPORT.** WILMER D. GRIDLEY, New York, N. Y. Filed Aug. 7, 1903. Serial No. 168,619. (No model.)



*Claim.*—1. A flower-pot support comprising a base and a bracket-arm carried thereby forming a support for the flower-pot, the said arm having a flagpole-receiving socket therein.

2. A flower-pot support comprising a base and a bracket-arm carried thereby forming a support for a flower-pot, the said base having a flagpole-receiving socket therein.

3. A flower-pot support comprising a base and a bracket-arm carried thereby forming a support for a flower-pot, the said arm having a horizontally-disposed flagpole-receiving socket therein.

4. A flower-pot support comprising a base and a bracket-arm carried thereby forming a support for a flower-pot, the said base having a vertically-disposed flagpole-receiving socket therein.

5. A flower-pot support comprising a base and a bracket-arm carried thereby forming a support for a flower-pot, the said base and arm having flagpole-receiving sockets therein.

6. A flower-pot support comprising a base and a bracket-arm removably carried by the base, a latch carried by the base for removably securing the bracket-arm thereto and a flagpole-receiving socket in the base arranged to permit the flagpole to rest upon the latch for still further locking the bracket-arm to the base.

7. In a flower-pot support, a bracket-arm arranged to support the flower-pot, and means for locking the flower-pot on the arm comprising branches and a latch and catch carried by one of the branches for embracing the top of the flower-pot.

8. In a flower-pot support, a bracket-arm for supporting the pot, said arm having upwardly-extended lateral branches for embracing the sides of the base of the pot and upwardly-extended branches for engaging the front and back walls of the pot, one of the said branches being provided with means for locking the pot in position.

9. In a flower-pot support, a bracket-arm for supporting the pot, branches carried by the arm and means carried by one of the branches for locking the pot to the arm.

10. In a flower-pot support, a bracket-arm for supporting a pot, hinged branches carried by the arm and means carried by one of the branches for locking the pot to the arm.

11. In a flower-pot support, a bracket-arm for supporting the pot, branches for retaining the pot in position, one of the said branches being adjustable and means carried by the adjustable branch for locking the pot in position on the said arm.

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**753,486. CLASP FOR ARTICLES OF JEWELRY.** CHARLES H. HARRIS, Providence, R. I., assignor to Gorham Manufacturing Company, Incorporated, Providence, R. I. Filed Dec. 26, 1902. Serial No. 136,529. (No model.)



*Claim.*—1. In a clasp for jewelry formed in two halves, interlocking tubular bosses on the two halves, a fastening-pin adapted to pass through the tubular bosses and provided with a groove, and a stop in the groove in the fastening-pin to limit the movement of the pin, as described.

2. In a clasp for jewelry, the halves forming the body of the clasp made in two equal parts, interlocking tubular bosses on the two halves concealed when the clasp is closed, means for centrally locating the tubular bosses, a fastening-pin working in the tubular bosses, a groove in the fastening-pin having a closed end, a stop in the groove in the fastening-pin to limit the outward movement of the pin, and means for frictionally securing the fastening-pin when the clasp is fastened, as described.

3. In combination, a clasp for jewelry formed in two separable parts or halves having interlocking tubular bosses, the half $a'$ having the tubular bosses $a^3$ and $a^4$ spaced to form the opening $a^6$ for the tubular boss $a^5$ on the half $a^2$, the fastening-pin $a^7$ with the head $a^8$ slidingly secured in the boss $a^4$ by the stop-pin $a^9$ working in the groove $a^{10}$ in the fastening-pin, means comprising the stop-pin $a^9$ and the outwardly-turned ends of the groove $a^{10}$ to limit the outward movement of the fastening-pin $a^7$ and to frictionally secure the fastening-pin in its inward position, and means for centrally locating the tubular bosses $a^3$, $a^4$ and $a^5$ when the clasp is closed, as described.

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**753,487. COMBINATION DAVENPORT AND COUCH.** ANDREW L. HARTSBURG and GUY C. HARTSBURG, Fort Worth, Tex. Filed Oct. 26, 1903. Serial No. 178,584. (No model.)



*Claim.*—1. A new article of manufacture comprising a piece of furniture of the character described having a stationary member constituting a wardrobe, two movable members folded together and inclosing a mattress attached to both members and constituting a lid for the wardrobe, means for raising said lid upward and forward for the purpose set forth as said wardrobe is being opened, and means adapting said folding members to form a settee or bed at will, the upper member being upholstered on the outside and serving as a seat when folded and being hinged to the lower member at the front side whereby said seat may be turned and opened forward to form a bed of said folding members, the lower member being supported on said wardrobe and the upper member being provided with removable legs.



2. A new article of manufacture comprising a piece of furniture of the character described having a stationary member provided with a suitable back and side arms, two movable members folded together inclosing a mattress and springs therefor attached to both members and constituting a lid for said stationary member, means connecting said lid to said stationary member and capable of raising said lid upward and forward as said lid is turned to open said stationary member, and mean adapting said folded members to form a seat or a bed at will, said folded members being hinged together at the front side whereby the upper member may be turned forward to unfold said mattress when said members are to form a bed, the lower member being supported on said stationary member and the upper member being provided with removable legs when serving as a bed.

3. A new article of manufacture comprising a piece of furniture of the character described having three members hinged together constituting normally a settee and wardrobe and capable of being converted into a bed at will, detachable side arms and a detachable back for the lower one of said members, upright and horizontal braces for said side arms, said horizontal braces being rabbeted at their rear ends to receive the edges of said detachable back, whereby said back is held rigid with said lower member by said braces.

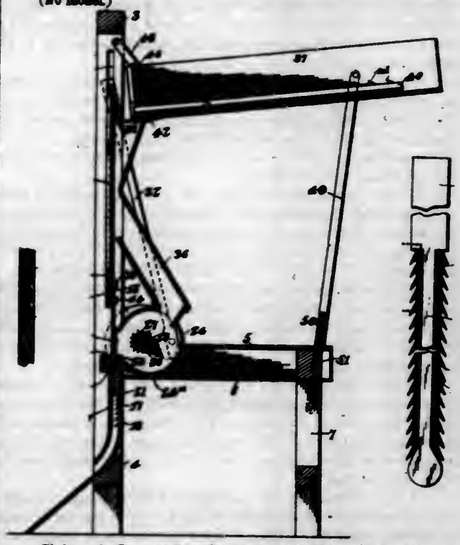
4. A new article of manufacture comprising a piece of furniture of the character described having three members hinged together constituting normally a settee and wardrobe and capable of being converted into a bed at will, detachable side arms and a detachable back for the lower one of said members, and upright and horizontal braces for said side arms, said horizontal braces being rabbeted at their rear ends to receive the edges of said back whereby said back is caught in said rabbets in front of said upright braces and held rigid with said lower member.

5. A new article of furniture comprising a stationary member provided with suitable side arms and a back detachably secured thereto, said stationary member constituting a wardrobe, two folding members inclosing a mattress and springs therefor and constituting a lid for said wardrobe, and means connecting said lid to said wardrobe capable of moving said folded members upward and forward from said back when said wardrobe is opened, the upper one of said folding members being upholstered on the outside and forming a seat when folded and being hinged to the lower folding member at the front side whereby said seat may be turned forward to expose said mattress to form a bed of said folding members, removable legs being provided for the outer edge of the bed and the other part of the bed being supported on said wardrobe.

6. A new article of furniture consisting of a stationary member constituting a wardrobe, two folding members consisting of two frames hinged together, a mattress and a set of springs for said mattress attached to both members at the opposite edges thereof from said hinges and adapted to be inclosed by said two members when folded, the upper member being upholstered to form a seat when folded, said members, when folded, constituting a lid for said wardrobe, and means connecting said lid to said wardrobe capable of moving said members upward and forward when said wardrobe is open, the upper one of said folding members forming a seat when folded, reinforced by said springs, and being hinged to the lower folding member at the front side, whereby said seat may be turned forward to unfold the said mattress to form a bed of said folding members, removable legs being provided for the outer edges of said bed and the other part of the bed being supported on said wardrobe.

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**753,488. COTTON GIN AND CONDENSER.** EDWARD W. HAYS, Birmingham, Ala., assignor, by direct and mesne assignments, of one-half to J. W. Hawkins and W. J. Holland, Birmingham, Ala., and Harry Hawkins, New York, N. Y. Filed Aug. 28, 1902. Serial No. 121,366. (No model.)



*Claim.*—1. In a cotton-gin, the combination with a throat, of a series of delinting-blades to carry the lint through the throat, the intervals between the blades and between the front side of the throat and the blades being too small to permit the passage of a cotton-seed between the blades or into the throat.

2. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, and means for presenting a rotating roll of seed-cotton to said blades.

3. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades disposed to prevent seeds from passing between the same and arranged to carry the lint through the throat, and means for presenting a rotating roll of seed-cotton to the blades.

4. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a roll-casing having an opening arranged opposite the blades, and means for rotating a roll of seed-cotton within the roll-casing and in contact with the blades.

5. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades disposed to prevent the seeds from passing between the same and arranged to carry the lint through the throat, and a feed-roller disposed adjacent to the blades and designed to rotate a roll of seed-cotton in contact with said blades.

6. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a roll-casing having an opening disposed opposite the blades, and a feed-roller located within the casing and designed to rotate a roll of seed-cotton in contact with the blades.

7. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a roll-casing having an opening disposed opposite the blades, and a feed-roller mounted eccentrically within the roll-casing and designed to rotate a roll of seed-cotton in contact with the blades.

8. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a roll-casing having an opening disposed opposite the blades and also provided with a discharge-opening in its bottom, and means for rotating a roll of seed-cotton within the roll-casing.

9. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through

the throat, a roll-casing having an open-work bottom through which the dirt and seeds may escape, and also having an opening disposed opposite the blades, and means for rotating a roll of seed-cotton within the roll-casing.

10. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, means for rotating a roll of seed-cotton in contact with the blades, and means for feeding seed-cotton to the roll.

11. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a feed-roller disposed to rotate a roll of seed-cotton in contact with the blades, and means for feeding seed-cotton to the roller.

12. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a roll-casing having an opening disposed opposite the blades, means for feeding seed-cotton to the roll-casing, and means for forming and rotating a roll of seed-cotton within the roll-casing and in contact with the blades.

13. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a roll-casing, a hopper disposed to deliver seed-cotton to the casing, and a feed-roller rotatable within the casing to form and rotate a roll of seed-cotton in contact with the blades.

14. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, means for rotating a roll of seed-cotton in contact with the blades, a hopper for delivering seed-cotton to the roll, and feeding mechanism for delivering seed-cotton to the hopper.

15. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, means for rotating a roll of seed-cotton in contact with the blades, a hopper for delivering seed-cotton to the roll, feeding mechanism for delivering seed-cotton to the hopper, and means for regulating the feed.

16. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, means for rotating a roll of seed-cotton in contact with the blades, a hopper for delivering seed-cotton to the roll, a movable feeder for feeding cotton to the hopper, and means for regulating the movement of the feeder.

17. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, means for rotating a roll of seed-cotton in contact with the blades, a hopper disposed to deliver seed-cotton to the roll, a feed-box disposed above the hopper, a feed-slide within the box, and means for operating the slide.

18. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, means for rotating a roll of seed-cotton in contact with the blades, a hopper delivering cotton to the roll, a feed-box delivering to the hopper, a feed-slide within the box, means for operating the slide, and means for adjusting the position of the box.

19. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a reciprocatory blade-frame carrying said blades, and means operated by the frame for feeding seed-cotton toward the blades.

20. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a reciprocatory blade-frame carrying the blades, means for rotating a roll of seed-cotton in contact with the blades, and means operated by the blade-frame for feeding seed-cotton toward the roll.

21. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying the blades, a roll-casing, means within the roll-casing for forming and rotating a roll of seed-cotton in contact with the blades, and means operated by the blade-frame for feeding seed-cotton to the roll-casing.

22. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying said blades, a roll-casing, means for rotating a roll of seed-cotton within the casing and in contact with the blades, a hopper leading to the roll-casing, and means operated by the blade-frame for feeding seed-cotton through the hopper.

23. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying said blades, a roll-casing, means for rotating a roll of seed-cotton within the casing and in contact with the blades, a hopper delivering to the roll-casing, and feeding-fingers carried by the blade-frame and disposed to assist the movement of the cotton through the hopper to the roll-casing.

24. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying said blades, means for rotating a roll of seed-cotton in contact with the blades, a hopper disposed to deliver seed-cotton to said roll, a feed-box disposed to deliver to the hopper, and feeding-fingers extending from the blade-frame and disposed to insure the delivery of cotton from the feed-box to the hopper.

25. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying said blades and having a panel of wire-netting, means for rotating a roll of seed-cotton in contact with the blades, and a hopper disposed to deliver seed-cotton to the roll and having an open side closed by the netting of the blade-frame.

26. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying said blades and provided with flexible feeding-fingers, a hopper for delivering seed-cotton to the blades, and a feed-box delivering to the hopper and disposed within the range of action of the flexible feeding-fingers.

27. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a blade-frame carrying said blades and provided with feeding-fingers, a roll-casing, a feed-roller within the roll-casing designed to rotate a roll of seed-cotton in contact with the blades, a hopper leading to the roll-casing, a feed-box arranged to deliver cotton to the hopper, a feed-slide within the feed-box, and operating means common to the blade-frame and feed-slide.

28. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a vertically-reciprocatory blade-frame carrying the blades and provided with feeding-fingers, a roll-casing disposed opposite the blades, a feed-roller within the roll-casing, a vertically-disposed hopper delivering to the roll-casing, a horizontal feed-box disposed above the hopper, a horizontally-reciprocatory feed-slide within the feed-box, operating mechanism common to the feed-roller, blade-frame and feed-slide, and means for regulating the throw of the feed-slide.

29. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, a reciprocatory blade-frame carrying the blades, a shaft, a feed-roller mounted on the shaft and disposed to rotate a roll of seed-cotton in contact with the blades, a pitman operatively connecting the shaft with the blade-frame, a hopper arranged to deliver seed-cotton to the roller, a feed-slide arranged to deliver cotton to the hopper, and a link pivotally connected to the feed-slide and adjustably connected to the pitman.

30. In a combined cotton gin and condenser, the combination with a condensing-chamber having a constricted throat, of a series of reciprocatory delinting-blades arranged to deliver the lint through the throat and into the condensing-chamber, and means for presenting seed-cotton to the blades.

31. In a combined cotton gin and condenser, the combination with a condensing-chamber having a constricted throat, of a series of reciprocatory delinting-blades disposed to carry the lint through the throat and into the chamber, means within the condensing-chamber for stripping the lint from the blades, and means for presenting seed-cotton to the blades.

32. In a combined cotton gin and condenser, the combination with a condensing-chamber of a width corresponding to the thickness of the bat to be formed and having a constricted throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat and into the condensing-chamber, projections located within the condensing-chamber to engage the lint for the purpose of stripping the same from the blades, and means for presenting seed-cotton to the blades.

33. In a combined cotton gin and condenser, the combination with a condensing-chamber having a constricted throat, of a series of reciprocatory delinting-blades disposed to carry the lint through the throat and into the chamber, and means for presenting a rotating roll of seed-cotton to the blades.

34. In a combined cotton gin and condenser, the combination with a condensing-chamber having a constricted throat at its upper end, of a series of reciprocatory delinting-blades disposed to carry the lint through the throat and into the chamber, a roll-casing disposed above the throat and having an opening opposite the blades, and means for rotating a roll of seed-cotton within the roll-casing and in contact with the blades.

35. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, said blades having toothed edges and projections upon their front faces.

36. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, each blade having downwardly-directed teeth and undercut biting edges extended upon its front face.

37. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, each blade having downwardly-directed teeth and undercut biting edges extended upon its front face, said biting edges constituting continuations of the under edges of the teeth.

38. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades arranged to carry the lint through the throat, each blade being formed at its opposite edges with downwardly-disposed teeth, undercut biting edges extending upon the front face of the blade and constituting continuations of the under edges of the teeth, and a rib or projection extending lengthwise of the blade upon the front face thereof to protect the teeth and biting edges.

39. In a cotton-gin, the combination with a series of movable delinting-blades, of means for moving a body of seed-cotton in a direction opposite to the movement of the blades and in contact therewith.

40. In a cotton-gin, the combination with a series of movable delinting-blades, of means for presenting a rotating roll of seed-cotton to said blades.

41. In a combined cotton gin and condenser, the combination with a condensing-chamber having the form of the bat to be produced, of a series of delinting-blades disposed to remove the lint from the cotton-seeds and to pass said lint into the condensing-chamber, and means for presenting seed-cotton to the blades.

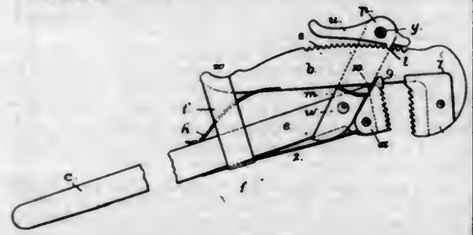
42. In a combined cotton gin and condenser, the combination with ginning mechanism, of a condensing-chamber of a size substantially corresponding to that of the bat to be formed and disposed to receive the lint directly from the ginning mechanism.

43. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades to carry the lint through the throat, the intervals between the blades and between the front side of the throat and the blades being too small to permit the passage of a cotton-seed between the blades or into the throat, and means for presenting and re-presenting seed-cotton to the blades until substantially denuded of lint.

44. In a cotton-gin, the combination with a throat, of a series of reciprocatory delinting-blades to carry lint through the throat and having projections on their front faces, and means for presenting seed-cotton to the blades.

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**753,489. ADJUSTABLE WRENCH.** ADAM HEBERER, Alameda, Cal. Filed Mar. 13, 1903. Renewed Jan. 5, 1904. Serial No. 187,847. (No model.)



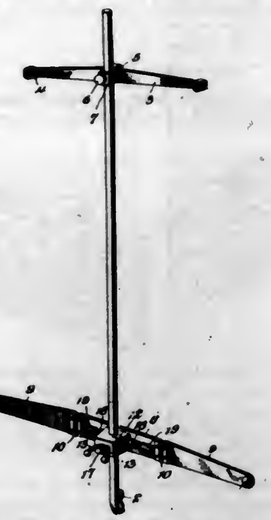
*Claim.*—1. In an adjustable wrench the combination, with a main shank having a gripping-jaw on one end and provided with a handle, of a secondary shank having a gripping-jaw on one end and a stirrup on the opposite end and loosely embracing the main shank; spaced grooves on the back of the shank having their bottoms arranged on a curved line, straps pivotally attached to the main shank and embracing the secondary shank, a bearing-block to which the straps are connected at their opposite ends, the bearing-block being adapted to ride on the back of the shank and having a projection to engage the grooves, and a tailpiece extending rearwardly of the point of attachment between the bearing-block and the straps.

2. In an adjustable wrench the combination, with a main shank having a gripping-jaw on one end and provided with a handle; of a secondary shank having a gripping-jaw on one end and a stirrup on the opposite end loosely embracing the main shank, and means adjustably connecting the main shank and the secondary shank together consisting of the straps pivotally attached to the main shank at the rear of the gripping-jaw, a bearing-block to which the opposite ends of the straps are pivotally connected, the bearing-block having a curved inner face adapted to bear on the back of the secondary shank, a series of grooves on the back of the secondary shank arranged on a curved line the center of which is situated below the point of attachment of the straps to the main shank, and a projection on the bearing-block engaging said grooves.

3. In a wrench of the character described the combination, with the main shank having a gripping-jaw on one end and provided with a handle, and the secondary shank having a gripping-jaw on one end and a stirrup loosely embracing the main shank; of the straps pivotally attached to the main shank and embracing the secondary shank, a bearing-block adapted to ride on the back of the secondary shank, a pin pivotally connecting the bearing-block and the straps, a slidable box on the bearing-block adapted to carry the said pin, and means for adjusting the said box; said bearing-block having a projection arranged to engage grooves on the secondary shank.

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**753,490. COPY-HOLDER.** BRADBURY HILL, Osage, Iowa. Filed Apr. 9, 1903. Serial No. 151,896. (No model.)



*Claim.*—1. A device of the class described having an adjustable indicator provided between its ends with a hinged joint, the hinged portion being arranged to swing toward and from a book, whereby the adjustable indicator is adapted to conform closely to the configuration of a book and to lie against the leaves when the same are rounded or balged, substantially as described.

2. A device of the class described provided with an indicator having a hinged section arranged to swing upward and downward toward and from a book, substantially as described.

3. A device of the class described provided with an adjustable indicator composed of sections movably connected together, one of the sections being provided with a weight, substantially as described.

4. A device of the class described provided with an adjustable indicator composed of a central section, and end sections hinged at their inner ends to the central section and provided at their outer ends with weights, substantially as described.

5. A device of the class described comprising a guide provided with means for engaging the top and bottom of a book, an indicator provided with a casing having an aperture receiving the guide, and clamping-levers provided with jaws engaging the guide and having yieldable means for connecting their terminals, substantially as described.

6. A device of the class described comprising a guide provided with means for supporting it in position, an indicator provided with a casing having an aperture to receive the guide, a pair of clamping-levers fulcrumed on the casing and having inner clamping-jaws

and provided with outer handle portions, and a coiled spring connecting the inner ends of the levers and holding the jaws normally in engagement with the guide, substantially as described.

7. A device of the class described comprising a guide, and an indicator adjustable on the guide and composed of an inner portion having an antifriction device arranged to slide on a leaf of a book, and an outer portion movably connected with the inner portion, substantially as described.

8. A device of the class described comprising a guide, and an indicator adjustable on the guide and composed of a central section provided with opposite antifriction-rollers, and weighted outer sections movably connected with the central section, substantially as described.

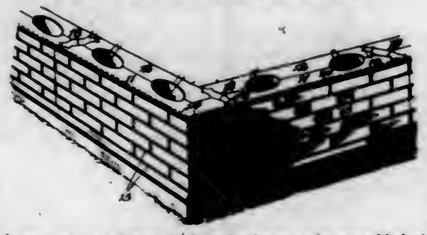
9. A device of the class described comprising a guide-rod provided with means for engaging one edge of a book, an adjustable device for engaging the opposite edge of the book composed of a bar provided with central and end hooks, and an adjustable indicator, substantially as described.

10. A device of the class described provided with an indicator having a plurality of joints forming sections arranged to swing toward and from a book, whereby the indicator is adapted to conform substantially to the configuration of the same, substantially as described.

11. A device of the class described having an indicator provided with a plurality of joints forming sections arranged to swing downward and upward toward and away from a book to permit the indicator to conform closely to the configuration of the same, and means for holding the sections or members of the indicator against a book, substantially as described.

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**753,491. BUILDING-BLOCK. ADDISON F. HOFFMAN, Pittsburg, Pa. Filed Feb. 9, 1903. Serial No. 142,616. (No model.)**



*Claim.*—1. A building-block having its outer face provided with intersecting grooves, and cement filling the grooves and terminating short of the outer face of the block.

2. A building-block formed of composite material and having a colored cementitious outer face that is provided with intersecting grooves, and cement filling the grooves.

3. A building-block comprising front and rear sections formed of cement, sand and gravel, the front section having a colored cementitious facing coat having intersecting grooves to represent a plurality of bricks.

4. A building-block having an outer waterproof coat comprising a cementitious binder, a silicate, and a chlorid.

5. A building-block having an outer waterproof coat containing unfused silicate and chlorid.

6. A building-block consisting of sections made up of cement, sand and gravel, the outer section having a facing coat of cement, sand and coloring material, said coat being provided with intersecting grooves which are filled with cement.

7. A building-block having recesses in its ends and pockets of the width of the block and extending into said block from the recesses.

8. A building-block formed of front and rear sections, the ends of which are beveled in opposite directions, so that when the sections are placed together recesses will be formed in the ends of the block, said ends being also provided with inwardly-extending pockets.

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**753,492. BREAKDOWN FIREARM. FRANK A. HOLLENBECK, Wheeling, W. Va. Filed May 28, 1901. Serial No. 62,282. (No model.)**

*Claim.*—1. The combination with a double-barreled hammerless gun, of a third barrel located beneath the two barrels and a rebounding hammer for said third barrel having a part connected therewith extending beyond the gun-frame for cocking the same by hand, substantially as described.

2. In a hammerless gun, the combination with the barrel-lug, of a part revolubly mounted therein provided with cocking-shoulders and means for holding said cocking-shoulders in operative position, substantially as described.



3. In a hammerless gun, the combination with the barrel-lug, of the cylinder provided with cocking-shoulders revolubly mounted in said lug, and means for holding said cylinder in operative position, substantially as described.

4. In a hammerless gun, the combination with the barrel-lug, of the cylinder provided with cocking-shoulders revolubly mounted in said lug, a spring for turning said cylinder to throw said cocking-shoulders out of operative position, and means for holding said shoulder in operative position against the force of said spring, substantially as described.

5. In a hammerless gun, the combination with the barrel-lug, of the cylinder provided with cocking-shoulders revolubly mounted in said lug, a spring tending to turn said cylinder to bring the said shoulders out of operative position, and the sliding rod engaging the cylinder and fore end to hold the said shoulders in operative position against the force of said spring, substantially as described.

6. In a gun-lock, the combination with the hammer, of an actuating-spring provided with a narrow lug extending longitudinally of the spring, the part engaged by said spring being slotted or grooved to receive said lug, substantially as described.

7. In a multiple-barrel gun, the combination with a single trigger and two sears operated thereby, one having a leverage requiring a short movement of the trigger, and the other a long movement, of a hammer combined with the said short-movement sear provided with an eccentric notched portion, whereby the hammer when in the fired position holds its sear away from the trigger, substantially as described.

8. In a multiple-barrel firearm, the combination with a single trigger, of the sears for the hammer, of two barrels and a safety device, a space being provided between the trigger and safety device and one of the sears being in close relation to the trigger, whereby one of the sears is actuated in the act of bringing the trigger against the safety device, substantially as described.

9. In a multiple-barrel firearm, the combination with two barrels, of two hammers therefor, a sear for each hammer, said sears having different leverages on both sides of their pivotal points, the sear having a short trigger-engaging arm, and having said arm lying in close proximity to the said trigger, a safety device having a space between it and said trigger whereby one of said sears may be actuated by the act of bringing the trigger into contact with the safety device, substantially as described.

10. In a gun-lock, the combination with the hammer provided with notches, of the sear for engaging said notches, the fly and



means for actuating said fly to close one of said notches on the forward movement of the hammer, substantially as described.

11. In a gun-lock, the combination with the hammer notched as described, the sear for engaging said notches, the fly, and the spring for actuating said hammer and fly, substantially as described.

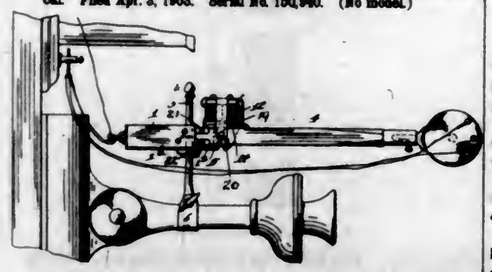
12. In a gun-lock, the combination with the hammer provided with the eccentric portion notched as described, of the sear for engaging said notches and the fly for closing one of said notches, substantially as described.

13. In a gun-lock, the combination with the hammer having an eccentric portion as described, of the sear for engaging said notches, the fly pivoted to said hammer and the spring for actuating said fly and hammer, substantially as described.

14. In a gun-lock, the combination with the hammer provided with an eccentric portion, having a retaining-notch and a firing-notch, of its engaging sear and the trigger for actuating said sear to release said hammer, and means preventing the said sear from engaging the retaining-notch when released from the firing-notch, substantially as described.

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**753,498. TELEPHONE. STEPHEN C. HOUGHTON, San Francisco, Cal. Filed Apr. 3, 1903. Serial No. 150,940. (No model.)**



*Claim.*—1. The combination with a telephone at a substation, of a substation-circuit, a line-circuit, a circuit-operating device for connecting the said substation-circuit with the line-circuit, and means, operable from a distance, for operating said circuit-operating device to disconnect said substation-circuit from the line-circuit and thereby restore the line-circuit to normal condition.

2. The combination with a telephone receiver and transmitter, of a circuit-operating device for connecting a subscriber's circuit with the line, and an electromagnet operated by a circuit from the central office for operating said circuit-operating device to disconnect said subscriber's circuit from the line, and thereby restore the line to normal condition, substantially as described.

3. The combination with a telephone receiver and transmitter, of a circuit-operating device for connecting a subscriber's circuit with the line, an electromagnet operated by a circuit from the central office for operating said circuit-operating device to disconnect said subscriber's circuit from the line, and thereby restore the line to normal condition, and means operated by the receiver for including said electromagnet in the circuit, substantially as described.

4. The combination with a telephone receiver and transmitter, of a circuit-operating device for connecting a subscriber's circuit with the line, means operated by the receiver for operating said circuit-operating device, an electromagnet operated by a circuit from the central office for operating said circuit-operating device to disconnect said subscriber's circuit from the line, and thereby restore the line to normal condition, substantially as described.

5. In a telephone, a laterally-movable receiver-arm, a surface against which it moves, means for holding said receiver-arm in engagement with said surface, an electromagnet supported by the receiver-arm for releasing said receiver-arm from said engagement, and electrical connections for operating said magnet, substantially as described.

6. In a telephone, a pivoted receiver-arm carrying a receiver and adapted to be moved laterally, means for holding the said arm at the limit of its lateral motion, a spring tending to hold said arm in a normal central position, and means controlled by the central office for releasing said receiver-arm and permitting said spring to act, substantially as described.

7. In a telephone, a casing adapted to be attached to the telephone set, a receiver-arm pivoted in said casing and adapted to be moved laterally over the same, a pin on said arm for engaging a hole in said casing whereby said arm is held in a normally central position from which it can be released by sidewise pressure, a spring bearing on the arm and tending to move it to said central position, means for holding said arm to said plate at the limit of its sidewise motion, and means controlled by the central office for releasing said arm from its sidewise limit of movement and permitting said spring to act, substantially as described.

8. In a telephone, a receiver-support adapted to be moved from its normal position and to be held in another position, and means under control of an operator at a distant point for releasing and restoring it to its normal position, subetantially as described.

9. In a telephone, a receiver-support adapted to be moved from its normal position to a position whereby a signal is sent to a distant point with communication established therewith, means for holding said receiver out of its normal position and means controlled from a distant point for releasing the receiver-support and restoring it to normal position, substantially as described.

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**753,494. METALLIC PACKING. EDWARD JAMES, Pittsburg, Pa., assignor of one-half to William G. Gordon, Edgewood borough, Allegheny county, Pa. Filed June 8, 1903. Serial No. 160,504. (No model.)**



*Claim.*—1. A packing composed of a lubricant and one or more sheets of antifriction metal V-shaped in cross-section, so that when pressed together the metal forms lubricant-retaining pockets or grooves.

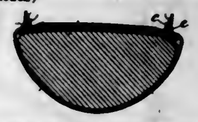
2. A packing composed of a lubricant and one or more sheets of antifriction metal having recurved edges, the latter when pressed capable of forming lubricant-retaining pockets.

3. A strip of antifriction metal for packings, consisting of a thin sheet of metal having a V-shaped cross-section and recurved edges.

4. A packing consisting of thin sheets of antifriction metal having a V-shaped cross-section and a lubricant pressed together, and a coating of antifriction metal.

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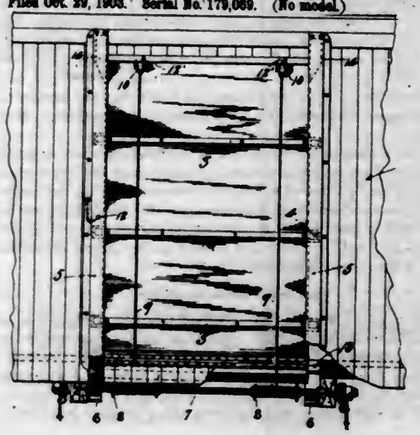
**753,495. BOOT OR SHOE. JOHN KEATS, Bagnall, England, assignor to Phoenix Boot Machinery Company, Limited, Street, England, a Corporation of Great Britain. Filed Oct. 16, 1901. Serial No. 78,792. (No model.)**



*Claim.*—In a turn shoe, the combination with the sole, a lip arranged along the edge of the sole and a rib pressed from the inner surface of the sole at a distance from its edge, of the upper stitched to the rib, the said rib serving to cover the stitched connection between the upper and rib, substantially as herein set forth.

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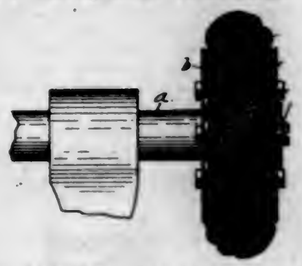
**753,496. CAR-DOOR. GEORGE W. KELLOGG, Grand Forks, N. D. Filed Oct. 29, 1903. Serial No. 179,069. (No model.)**



*Claim.*—In a freight-car having doors and ways in the door-jambs and beneath the floor, the combination of a solid flexible metallic door provided with horizontal stays at intervals provided with roller-bearings at either end adapted to enter said ways, and means for sliding the door vertically in the ways.

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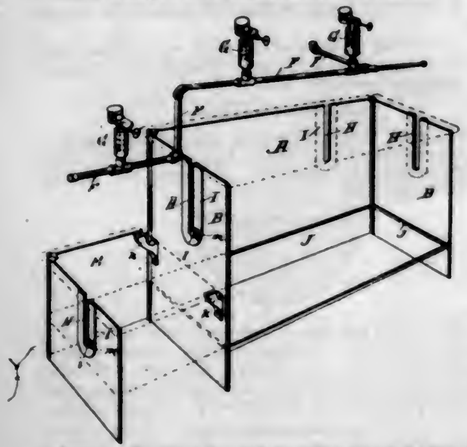
753,497. BURNISHING-WHEEL. GEORGE W. KIMBALL, Newton, N. H. Filed Aug. 21, 1903. Serial No. 170,245. (No model.)




*Claim.*—A burnishing-wheel for the purpose described consisting of a rotary holder having an annular seat, a circular burnishing-ring mounted on said seat comprising a plurality of spirally-twisted strands, each strand composed of a plurality of spirally-twisted fibers substantially as described.

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753,498. FRAME FOR VAPOR-STOVES. ISAAC KIMBRY, Dayton, Ohio. Filed Aug. 21, 1900. Serial No. 27,604. (No model.)



*Claim.*—1. In a vapor-stove and in combination, suitable burner-piping, a sheet-metal frame having open slots extending from the edges of the panels or walls to receive said piping and support the same with its burners in operative position, stiffening-plates bordering the edges of said slots to form bearings for the said piping and give rigidity to the slotted panels; lugs formed integral with said stiffening-plates, and set-screws mounted in said lugs and adapted to impinge upon said piping and clamp it against the opposite walls of the slots.

2. In a sheet-metal stove and in combination, walls or panels having interlocking joints, recessed plates capping the interlocked joints and having integral extensions, tie-rods traversing said interlocked joints and having their securing nuts or heads lying within the recesses to provide a flush smooth surface, and a stove-top resting upon said walls or panels and secured to the integral extensions on the said recessed cap-plates.

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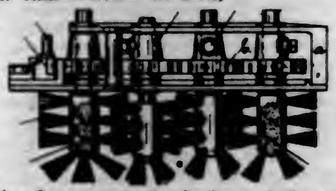
753,499. MEANS FOR LOWERING LOADS APPLICABLE AS LIFE-SAVING APPARATUS. CHRISTIAN KLEBLE, Frankfort-on-the-Main, Germany. Filed July 14, 1902. Serial No. 115,474. (No model.)

*Claim.*—A load-lowering device directly applicable upon a suspension member at any part thereof, consisting of a load-supporting member of zigzag form, said load-supporting member terminating in threading-hooks, the extremities of which are brought inwardly and into a position respectively in front and behind the load-supporting member, substantially as described.




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753,500. APPARATUS FOR CLEANING BOTTLE BASKETS OR CASES. RICHARD KRÜLLER, Magdeburg, Germany. Filed Sept. 2, 1903. Serial No. 171,671. (No model.)



*Claim.*—In an apparatus for cleaning quadratic compartments of bottle baskets or cases the combination of a series of brushes, having shafts, pinions gearing together having hollow naves fixed to the shafts by set-screws, a rack gearing with the aforesaid pinions, a crank actuating the rack and a frame bearing all the parts, all as described and for the purpose set forth.

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753,501. MAIL-BAG CRANE. MICHAEL LALLY, North Lawrence, Ohio. Filed Aug. 10, 1903. Serial No. 169,023. (No model.)

*Claim.*—1. In a mail-bag crane, the combination with suitable bag-supporting devices of a wind-shield.

2. In a mail-bag crane, the combination with bag-supporting devices of a wind-shield presenting a convex forward surface.

3. In a mail-bag crane, the combination with bag-supporting devices, of a wind-shield presenting a convex forward surface and having a vertical ridge substantially in the median line of said convex surface.

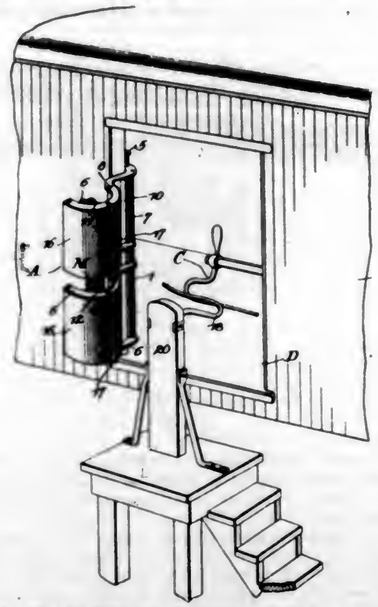
4. In a mail-bag crane, the combination with upper and lower bag-engaging means, of upper and lower wind-shields spaced apart to expose the middle portion of the mail-bag.

5. In a mail-bag crane, the combination with bag-supporting devices, of a wind-shield, and a spring-finger to prevent the accidental removal of a mail-bag from said supporting devices.

6. In a mail-bag crane, the combination of an upper support comprising a rearwardly-disposed rigid arm and a lower bag-stretching member mounted for vertical movement, and means for locking said bag-stretching member at any desired point.

7. In a mail-bag crane, the combination with a shaft adapted to be pivotally mounted within a mail-car, of curved arms carried by said shaft and adapted to project outward through a door in the side of the mail-car, mail-bag-supporting devices carried by said curved arms, and means for preventing the accidental removal of a mail-bag from said supporting devices.

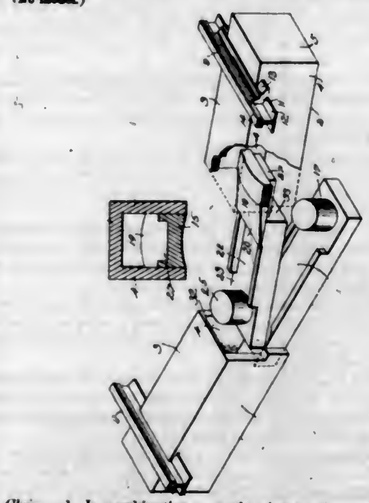




8. In a mail-bag crane, the combination with a shaft adapted to be pivotally mounted within a mail-car, of double-curved arms rigidly secured to said shaft and adapted to project outward through a car-door and to abut against the side of the frame of said door, wind-shield carried by said curved arms and corresponding to the curvature thereof, and bag-supporting devices behind said wind-shields, said bag-supporting devices comprising members carried by said curved arms and disposed in a plane parallel to the side of the car when the curved arms rest in contact with the side of the frame of the car-door.

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753,502. RAILWAY CROSS-TIE. HARRY D. LEEKING and JOHN K. HARTMAN, Lancaster, Pa. Filed Nov. 25, 1902. Serial No. 132,718. (No model.)



*Claim.*—1. In combination, a sectional cross-tie, and box ends having interlocking bearings, for the purpose specified.

2. In combination, a sectional cross-tie, and box ends having bearings separably interlocking, for the purpose specified.

3. In combination, a sectional cross-tie, and box ends having interlocking bearings, the bearing of each of said box ends projecting into the other box end.

4. The combination, in a sectional cross-tie, of box ends, each of said ends having a bearing projecting into the other box end, and interlocking shoulders on said bearings.

5. The combination, in a sectional cross-tie, of box ends opening the one toward the other, bearings projecting from each of said open ends and into the other open end, and interlocking shoulders on said bearings, for the purpose specified.

6. The combination, in a sectional cross-tie, of box ends opening the one toward the other, bearings projecting from each of said open box ends and into the other open box end, the bearing of one of the box ends having a channel therein, a tongue projecting from the other box end and connecting said other box end and the bearing thereof and engaging the channel in said bearing of the first-mentioned box end, and interlocking shoulders on said bearings, for the purpose specified.

7. The combination, in a sectional cross-tie, of box ends opening the one toward the other, a bearing projecting from each of said open box ends and into the other open box end, the bearing of one of the box ends having a channel therein, a tongue projecting from the other box end and connecting said other box end and the bearing thereof and having a backward extension engaging the channel in said bearing of the first-mentioned box end, and interlocking shoulders on the bearings and located beneath said tongue, for the purpose specified.

8. The combination, in a sectional cross-tie, of box ends opening the one toward the other, and a bearing on each of the box ends and projecting into the other box end and to the end wall thereof, for the purpose specified.

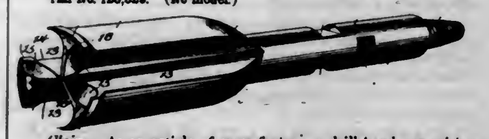
9. The combination, in a sectional cross-tie, of box ends opening the one toward the other, a bearing on each of the box ends and projecting into the other box end and to the end wall thereof, a bearing of one of the box ends having a channel therein, a tongue projecting from the other box end and connecting said other box end and the bearing thereof and having a backward extension engaging the channel in said bearing of the first-mentioned box end, and interlocking shoulders on the bearings and located beneath said tongue, for the purpose specified.

10. The combination, in a cross-tie divided transversely into sections, of box ends, rail-seats on the box ends, a bearing on each of said box ends and projecting into the other box end and to and beneath the rail-seat thereon, and springs beneath the rail-seats and on said bearings and supporting the top plates of the box ends.

11. The combination, in a cross-tie divided transversely into sections, of box ends, rail-seats on the box ends, studs beneath the rail-seats and on the under sides of the top plates of the box ends, a bearing on each of said box ends and projecting into the other box end, studs on said bearings and located beneath the studs on said top plates, and springs coiled around said studs, for the purpose specified.

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753,503. DRILL. JAMES M. MARTIN, Guthrie, Okla., assignor of one-half to William H. Gripe, Guthrie, Okla. Filed Sept. 13, 1902. Serial No. 123,329. (No model.)



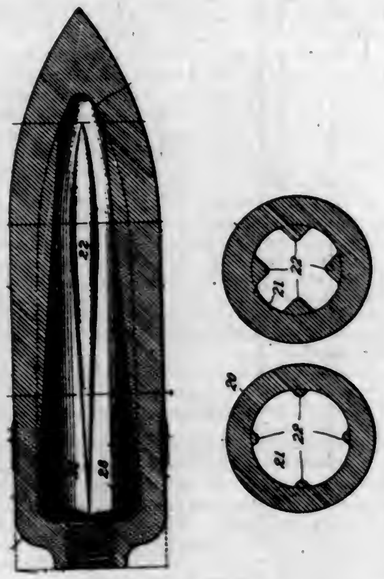
*Claim.*—As an article of manufacture, a drill-head comprising the following parts in combination, a body channeled longitudinally forming a plurality of radial webs, outstanding curved flanges located on the inner ends of the webs, peripheral curved cutting edges formed on the flanges and projecting beyond the ends of the webs, and radial cutting edges projecting from the ends of the webs, said cutting edges being all located in substantially the same plane, the ends of the webs on opposite sides of the radial cutting edges being beveled.

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753,504. EXPLOSIVE PROJECTILE. JOHN F. MEIGS and EMIL GATHMANN, South Bethlehem, Pa., assignors to the Bethlehem Steel Company, South Bethlehem, Pa., a Corporation of Pennsylvania. Filed Oct. 29, 1903. Serial No. 179,089. (No model.)

*Claim.*—1. An explosive projectile comprising a shell having the usual cylindrical body and conical point, said shell having an unobstructed central cavity, and having the wall surrounding said cavity reinforced by continuous longitudinal ribs or stiffeners.

2. An explosive projectile comprising a shell having the usual cylindrical body and conical point, said shell having an unobstructed central cavity, and having the walls surrounding said cavity reinforced by longitudinal ribs or stiffeners converging toward the forward end of the cavity.



3. An explosive projectile comprising a shell having the usual cylindrical body and conical point, said shell having an unobstructed central cavity, and having the walls surrounding said cavity reinforced by continuous longitudinal ribs or stiffeners projecting into said cavity.

4. An explosive projectile comprising a shell having the usual cylindrical body and conical point, said shell having an unobstructed central cavity, and having the walls surrounding said cavity reinforced by longitudinal ribs or stiffeners projecting into and converging toward the forward end of the cavity.

5. An explosive projectile comprising a shell having the usual cylindrical body and conical point, said shell having an unobstructed central cavity, and having the walls surrounding said cavity reinforced by continuous longitudinal ribs or stiffeners projecting into said cavity and terminating near its forward end.

6. An explosive projectile comprising a shell having the usual cylindrical body and conical point, said shell having an unobstructed central cavity, and having the walls surrounding said cavity reinforced by longitudinal ribs or stiffeners projecting into said cavity, said ribs or stiffeners converging toward and terminating near the forward end of the cavity.

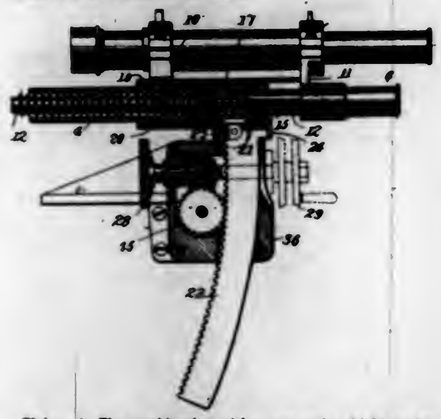
7. An explosive projectile having the usual cylindrical body and conical point and having the walls surrounding its cavity reinforced by continuous longitudinal ribs or stiffeners, said projectile having its rear end rounded and provided with an integral boss to receive the fuse.

8. An explosive projectile having the usual cylindrical body and conical point, and having the walls surrounding its cavity reinforced by continuous longitudinal ribs or stiffeners, said projectile having its rear end rounded and provided with a rearwardly-extended boss to receive the fuse.

9. An explosive projectile having the usual cylindrical body and conical point, and having the walls surrounding its cavity reinforced by continuous longitudinal ribs or stiffeners, said shell having a shallow circumferential seat for its riding-band terminating in round ends or corners, for the purpose set forth.

10. An explosive projectile comprising a shell having a cavity for receiving a bursting charge and provided with internal longitudinal ribs gradually increasing in depth toward the forward end of the cavity, for the purpose set forth.

**758,505. GUN-SIGHT.** JOHN F. HINES and HERMAN G. JAKOBSON, South Bethlehem, Pa., assignors to Bethlehem Steel Company, South Bethlehem, Pa., a Corporation of Pennsylvania. Filed Oct. 30, 1903. Serial No. 179,186. (No model.)



*Claim.*—1. The combination with a gun, and a shield having a sight-opening, of a plurality of sighting devices suitably supported and each movable into and out of alinement with the sight-opening of the shield.

2. The combination with a gun, and a shield having a sight-opening, of a plurality of sights in fixed relation to each other, said sights being suitably supported, and each movable into and out of alinement with the sight-opening in the shield.

3. The combination with a gun, and a shield having a sight-opening, of a sight-support, a plurality of sighting devices carried by said support in fixed relation to each other, said sighting devices being movable to bring either device into alinement with the sight-opening in the shield.

4. The combination with a gun, and a shield having a sight-opening therein, of a sight-support and a plurality of sighting devices arranged to swing about said support into and out of alinement with the sight-opening in the shield, and means for locking any one of said devices in operative position.

5. The combination with a gun, and with a shield having a sight-opening therein, of a sight-support, a plurality of sights adjustably mounted on said support, and means for locking any one of said sights in alinement with the sight-opening in the shield.

6. The combination with a gun, of a sight-support, and a plurality of sights in fixed relation to each other and movably mounted upon said sight-support, whereby the sights may be brought successively to the same operative position.

7. The combination with a gun, of a sight-support, a plurality of sights mounted on and having a swinging movement about said said sight-support, and means for locking the different sights in the same operative position.

8. The combination with a gun, and with a shield having a sight-opening, of an adjustable sight-support, and a plurality of sighting devices mounted on said support and each movable into and out of alinement with said sight-opening.

9. The combination with a gun, of an adjustable sight-support, and a plurality of sights in fixed relation to each other and movably mounted upon said sight-support whereby said sights may be successively brought to the same operative position.

10. The combination with a gun, of an adjustable sight-support, a plurality of sights mounted on and having a swinging movement about said sight-support, and means for locking the different sights in the same operative position.

11. The combination with a gun, of an adjustable sight-support, a telescope and open sight mounted upon and arranged to swing about said sight-support, and means for locking either the telescope or the open sight in operative position.

12. The combination with a gun, of a sighting device for the gun, a sight-support comprising a slidable part to which said device is connected, and a cushion for said part, said sighting device being thus adapted to yield when the gun is fired.

13. The combination with a gun, of a support for sighting devices comprising a part constructed to yield when the gun is fired, and a plurality of sighting devices connected to said yielding part and adjustable thereon.



14. The combination with a gun, of a tubular sight-support, a rod movable within said support, a spring surrounding said rod and adapted to hold it in normal position, and a sighting device connected to said rod, said parts cooperating for the purpose set forth.

15. The combination with a gun, of a tubular sight-support, a rod movable within said support, a spring surrounding said rod and adapted to hold it in normal position, and a plurality of sighting devices connected to said rod, said devices being movable to bring any one of said sighting devices to operative position.

16. The combination with a gun, of a sight-supporting tube supported at one point by a universal joint, a rack and adjusting devices for elevating said tube with respect to the gun, a sight rotatively mounted upon said tube, and a spring within the tube adapted to hold said sight in normal position and to return it to normal position when it is dislodged in firing.

17. The combination with a gun, of a sight-support comprising a tube 4 adjustably mounted on the gun or mount, a rod extending through said tube and adapted to turn therein, and sighting devices carried by the ends of said rod.

18. The combination with a gun, of a sight-support comprising a tube 4 adjustably mounted on the gun or mount, a rod extending through said tube, open sights supported on the ends of said rod, and a telescope rigidly connected to one end of said rod, said rod being adapted to turn within the tube to bring either of said sighting devices into operative position.

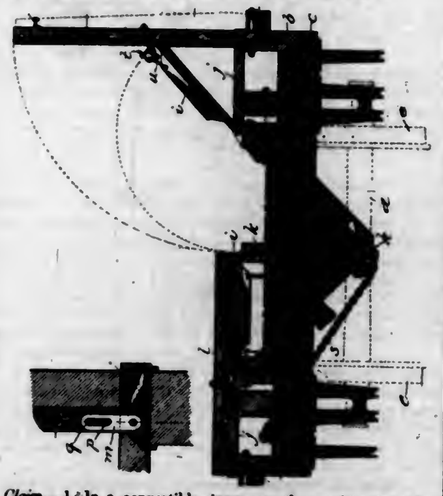
19. The combination with a gun and its mount, of a sighting device supported directly upon the gun, and a connection between said sighting device and the mount, whereby said device is prevented from recoiling.

20. The combination with a gun and its mount, of a sighting device supported directly upon the gun means for adjusting said sighting device relative to the gun, and a connection between said device and the gun-mount, whereby said device is prevented from recoiling.

21. The combination with a gun and its mount, of a sighting device supported directly upon the gun and capable of movement longitudinally of the gun, a spring for holding said device normally in fixed relation to the gun, and a connection between said sighting device and the gun-mount, said spring permitting the sight to remain relatively stationary when the gun recoils.

22. The combination with a gun and its mount, of a sighting device, a support for said sighting device connected directly to the gun, and a connection between said support and the gun-mount whereby said support is prevented from recoiling, said connection being adapted to permit of lateral and vertical adjustment of the sights with respect to the gun.

**753,506. DUMP-CAR.** OTTO W. MEISSNER, Chicago, Ill., assignor to Rodger Ballast Car Company, Chicago, Ill., a Corporation of Illinois. Filed July 11, 1903. Serial No. 165,139. (No model.)



*Claim.*—1. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper extending lengthwise of the car and formed in two portions—a lower portion and an upper foldable portion arranged to be folded into a flat plane and complete the floor of a gondola car or opened to complete the inclined sides of a hopper-car, and side boards pivotally secured to the framework of the car to form the sides of either a gondola or hopper car in one position and to be swung to a second position to convert the car into a platform-car, substantially as described.

2. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion extending lengthwise of the car and formed in two portions—a lower V portion secured to the supporting-framework and extending below the same and an upper portion formed of two swinging sections foldably secured to the supporting-frame portion above the same so as to form the upper portion of the inclined sides of the hopper in one position and complete the flat floor of a gondola car when in a second position, and side boards pivotally secured to the supporting-framework of the car above the floor portion to form the sides of a gondola car when in position and to be swung into a flat plane in a second position to form the flat floor of a platform-car, substantially as described.

3. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion extending lengthwise of the car and formed in two parts—a lower V-shaped part formed of one fixed and one swinging section attached to the supporting-framework of the car below the same, an angle-iron on the lower end of the swinging section to form a recess to receive the lower end of the fixed section and an upper portion formed of two swinging sections pivotally secured to the framework of the car above the same so as to form the upper portions of the inclined sides of the hopper when in one position and to be laid in a flat plane when in a second position to form parts of the flat bottom of a gondola car, and side boards foldably secured to the framework of the car above the same and arranged when in one position to form the sides of a flat bottom gondola or center-dumping car and to be swung or folded into a second position over the upper portions of the hopper and laid in a flat plane to form the floor of a platform-car, substantially as described.

4. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion extending lengthwise of the car and formed in two parts—a lower V-shaped part having one fixed and inclined section rigidly attached to the supporting-framework of the car below the same and a second swinging inclined section pivotally secured to the supporting-framework and provided with an angle-iron at the lower end to form a recess to receive the lower end of the fixed section, and an upper portion formed of two swinging sections pivotally secured to the framework of the car above the same so as to form the upper portions of the inclined sides of the hopper when in one position and to be laid in a flat plane when in a second position to form parts of a flat bottom for a gondola car, side boards foldably secured to the framework of the car above the same and arranged when in one position to form the vertical sides of a flat-bottom gondola or center-dumping car and to be folded into a second position over the upper portions of the hopper and laid in a flat plane to form the floor of a platform-car, and a plurality of links pivotally secured to the supporting-framework and the side boards and having a slotted engagement with the lower ends of the vertical side boards to permit the foldable operations thereof, substantially as described.

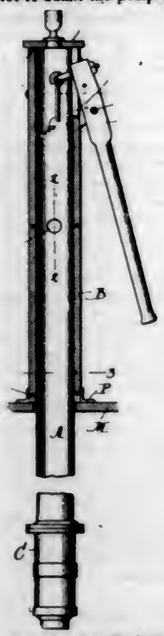
5. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion extending lengthwise of the car and formed in two parts—a lower V-shaped portion secured to the framework of the car and extending below the same and an upper portion formed of two swinging sections pivotally secured to the supporting-framework of the car above the same so as to form the upper portions of the inclined sides of the hopper when in one position and parts of a flat bottom for a gondola car when in a second position, and swinging side boards pivotally secured to the supporting-framework of the car above the same so as to form vertical side boards for either a flat-bottom gondola or center hopper-dumping car when in one position and the flat floor of a platform-car when in a second position, substantially as described.

**753,507. PUMP.** AARON J. MIXSON, Chicago, Ill. Filed Nov. 27, 1903. Serial No. 183,815. (No model.)

*Claim.*—1. A pump of the character described comprising a metal wall, a stock or body formed of vertical wooden sections united together and surrounding said wall, said wall being perforated at the pump-spout and a spout and handle secured to said stock or body.

2. A pump of the character described comprising a metal wall, a stock or body formed of vertical wooden sections secured together

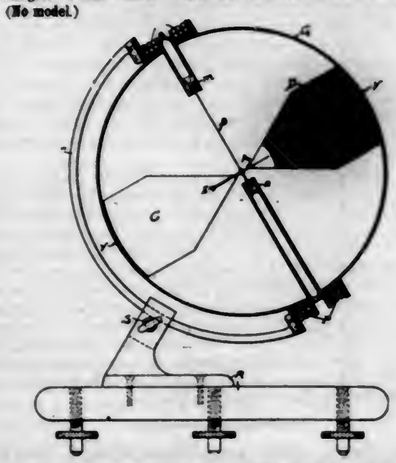
and inclosing said wall, said wall being provided at its upper end with a flange extending over the top of said stock or body and being formed with a flanged slot to admit the pump-handle.



3. A pump of the character described comprising a metal wall having an opening therein for the discharge of water, a stock or body formed of vertical wooden sections inclosing said wall, a sleeve passing through said stock or body at said discharge-opening of the metal wall and a spout having its inner end set within said sleeve, said spout being secured to the wooden stock or body.

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**753,508. LIGHT-MEASURING INSTRUMENT.** THOMAS K. MILLARD, Ottumwa, and PHIL H. PALMER, Bloomfield, Iowa; said Millard assignor to said Palmer. Filed Mar. 23, 1903. Serial No. 149,218. (No model.)



*Claim.*—The combination in a radiometer of a vane of which a magnetic needle made with one end heavier than the other is a part, a coil of insulated wire the plane of which coincides with the axis of the vane and an adjustable support, all substantially as shown.

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**753,509. ELECTROTHERAPEUTIC DEVICE.** CHARLES K. MUSSE, Corning, Iowa. Filed Oct. 24, 1903. Serial No. 178,419. (No model.)

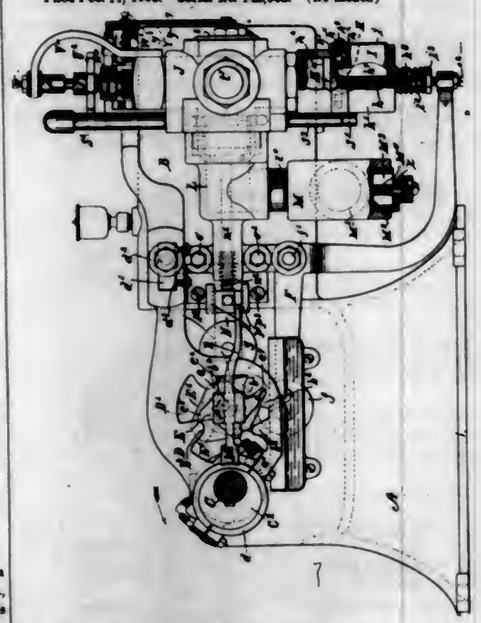
*Claim.*—1. In a device of the character described, consisting of a cabinet having three compartments, the largest containing all the generating devices, a door on one side disclosing the smaller compartments in one of which is the switchboard, with switches, buzzer, regulating-rods and binding-posts, the combination of a pair of terminals, a circuit having its ends connected with the terminals, a dynamo-electric generator interposed in said circuit, means for adjusting the current by one or more magnetic shunts, a second circuit connected to said terminals, a source of galvanic current interposed in said circuit, means for cutting out either of said circuits, and crank or other means for driving the dynamo from the outside.



2. In a device of the character described, consisting of a cabinet having three compartments, the largest containing all the generating devices, a door on one side disclosing the smaller compartments in one of which is the switchboard, with switches, buzzer, regulating-rods and binding-posts, the combination of a pair of terminals, a circuit having its ends connected with the terminals, a dynamo-electric generator interposed in said circuit, means for adjusting the current by one or more magnetic shunts, a second circuit connected to said terminals, a source of galvanic current interposed in said second circuit, a third circuit having its ends connected with said terminals, a source of faradic current interposed in third circuit, means for cutting out either of said circuits, and crank or other means for driving the dynamo from the outside.

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**753,510. GAS-ENGINE.** GEORGE J. MURDOCK, Newark, N. J. Filed Feb. 11, 1903. Serial No. 142,902. (No model.)



*Claim.*—1. The combination of a crank-shaft, a cam-shaft, a star wheel or pinion thereon, a cam connected therewith, a cam-operating lever having teeth engaging the star wheel or pinion, and an eccentric on the crank-shaft engaging the cam-operating lever.



2. The combination of a crank-shaft, a cam-shaft in front of the crank-shaft, a star wheel or pinion thereon, a cam-operating lever having teeth engaging the star wheel or pinion, an eccentric on the cam-shaft, and means for guiding the cam-operating lever in rear of the cam-shaft.

3. The combination of a crank-shaft, a cam-shaft, a star wheel or pinion thereon, a cam-operating lever having teeth engaging the star wheel or pinion to propel it, and another tooth for at times preventing the movement of the star-wheel, and an eccentric on the crank-shaft operating the cam-operating lever.

4. The combination of a crank-shaft, a cam-shaft, cams thereon, admission and exhaust valves operated by said cams, a lever operated by the crank-shaft and operating the cams, and igniting devices also operated by said lever.

5. The combination of a crank-shaft, a cam-shaft, cams thereon, a lever operated by an eccentric on the crank-shaft, gearing between the lever and the cams, igniting devices operated by the lever and means for guiding the lever and cooperating with the eccentric to give to the front and rear ends of said lever an elliptical movement.

6. The combination of a crank-shaft, a cam-shaft, a star wheel or pinion thereon, cams connected with said star wheel or pinion, a cam-operating lever engaging the star wheel or pinion, an eccentric on the crank-shaft operating the cam-operating lever, admission and exhaust valves, and connections between said valves and said cams, substantially as described.

7. The combination of an admission-valve, a casing therefor provided with a valve-seat formed with a plurality of gas-openings, a chamber below the valve-seat formed with an air-inlet tapped with a screw-thread of standard size, and a plate for adjusting the size of said opening.

8. The combination of the engine-cylinder, a casting containing the combustion-chamber detachably connected with the cylinder, a casting below the combustion-chamber for the admission-valve, means for detachably connecting the lower chamber with the upper one, a casting containing the exhaust-valve, and means for detachably connecting this latter casting with the casting containing the combustion-chamber.

9. The combination with the engine-cylinder, of a casting containing the combustion-chamber, a nipple connecting this casting with the cylinder, a plug carrying igniting devices detachably connected with said casting, a casting carrying the exhaust-valve detachably connected with said first-mentioned casting, and a removable plug closing an opening in the combustion-chamber in rear of the exhaust-valve.

10. The combination of the combustion-chamber, a casting containing the exhaust-valve detachably connected therewith, a casting connected with the exhaust-pipe detachably connected with the casting containing the exhaust-valve, and a screw-plug removably connected with said exhaust-pipe and containing a valved opening for admitting air.

11. The combination with the combustion-chamber, of an exhaust-valve, and a valve tending to open inward for at times admitting air to the combustion-chamber past the exhaust-valve.

12. The combination with the engine-cylinder, of an exhaust-valve, a governor for at times holding the exhaust-valve open, and a valve for admitting air to the cylinder past the exhaust-valve normally held closed by the pressure of exhaust-gases and open only when the exhaust-valve is held open by the governor, and the pressure decreases.

13. The combination with the combustion-chamber, of an exhaust-valve, a valve for at times admitting air to the combustion-chamber past the exhaust-valve, and a spring for opening said valve.

14. The combination of a combustion-chamber, an exhaust-valve chamber, having an exit-port at its outer end removed from the combustion-chamber, an exhaust-valve fitting said port and having an enlargement extending toward the combustion-chamber and reducing the size of the passage for the products of combustion from the combustion-chamber past the exhaust-valve, and a water-jacket surrounding the exhaust-valve.

15. The combination of a combustion-chamber, an exhaust-valve chamber, having an exit-port at its outer end removed from the combustion-chamber, an exhaust-valve fitting said port and a hollow enlargement extending from the exhaust-valve toward the combustion-chamber and reducing the size of the passage for the products of combustion from the combustion-chamber past the exhaust-valve, and a water-jacket surrounding the exhaust-valve.

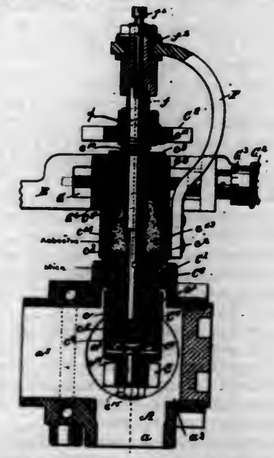
16. The combination of the engine-cylinder, a casting containing the combustion-chamber detachably connected with the cylinder, a casting containing the exhaust-valve detachably connected with the combustion-chamber, a bracket attached to the main frame of the engine, and means for detachably connecting the said bracket with the casting containing the exhaust-valve chamber.

17. The combination of the exhaust-valve, its stem, a sliding frame to which the valve-stem is connected, a casting within which the exhaust-valve is located, and by which said valve-stem is guided, a bracket secured to the main frame of the engine, and to which the exhaust-valve casting is detachably connected, and guides on the bracket for the sliding frame to which the valve-stem is connected.

18. The combination with the main frame of the engine, of a bracket attached thereto, a casting containing the exhaust-valve detachably connected with said bracket, a lever for operating the admission-valve pivoted to said bracket, cams for operating the admission and exhaust valves, and a lever for operating said cams pivotally connected with the aforesaid bracket.

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**753,511. SPARKING DEVICE FOR GAS-ENGINES.** GEORGE J. MURDOCK, Newark, N. J. Original application filed Feb. 11, 1903, Serial No. 142,902. Divided and this application filed Mar. 21, 1903. Serial No. 148,962. (No model.)



*Claim.*—1. The combination of combustion-chamber, two electrodes therein, electrical connections therefor, and means for giving a step-by-step movement to one of said electrodes and for causing it to both make and break the circuit during each alternate movement only.

2. The combination of a combustion-chamber, a battery, an electrode within the combustion-chamber connected to battery, another electrode within said chamber normally disconnected from battery, and means for giving a step-by-step movement to said last-mentioned electrode to cause it to both make and break the circuit during each alternate movement only.

3. The combination of a combustion-chamber, a battery, an electrode within the combustion-chamber connected to battery, a toothed wheel within the combustion-chamber normally disconnected from battery and adapted to engage said first-mentioned electrode, a shaft to which said wheel is connected, another toothed wheel outside the combustion-chamber carried by said shaft and having a larger number of teeth than the wheel within the combustion-chamber, and devices engaging said outer wheel while the circuit is broken at the electrodes, and which causes the toothed electrode to both make and break the circuit during a single impulse.

4. The combination of a combustion-chamber, a grounded electrode therein, a toothed wheel within the combustion-chamber adapted to engage the grounded electrode, a shaft to which said wheel is connected, another toothed wheel outside the combustion-chamber carried by the shaft and having a larger number of teeth than the wheel within the combustion-chamber, and means for actuating the outer wheel which is in engagement therewith while the circuit is being made and broken at the inner wheel, and which separates therefrom while the circuit is broken at said inner wheel.

5. The combination of a combustion-chamber, a rotary toothed electrode therein, a toothed wheel engaging said electrode, and means for operating said wheel.

6. The combination with a combustion-chamber, of a rotary

toothed electrode therein, a toothed wheel engaging said rotary electrode, electrical connections for said wheel, and means for giving a step-by-step movement to the star-wheel to cause its teeth to engage those of the said first-mentioned electrode.

7. The combination with a combustion-chamber, of a rotary toothed grounded electrode therein, a toothed wheel within the combustion-chamber having formed thereon a less number of teeth than are formed on said grounded electrode, electrical connections for the wheel, and means for giving a step-by-step movement to the wheel to cause its teeth to engage the teeth of the grounded electrode and to break connection therewith at proper intervals.

8. In an electric igniter for internal-combustion engines the combination with an igniter terminal or electrode and its insulation, of a rotary gas holder or cup adapted to retain inert products of combustion and thereby protect the insulation from deposition of carbon from subsequent explosions.

9. The combination of a combustion-chamber, an electrode therein, a shaft to which it is attached, insulating material surrounding the shaft, and a cup or bell carried by the shaft within the combustion-chamber rotating therewith and surrounding such insulation.

10. The combination of the combustion-chamber, an electrode within it, a shaft to which the electrode is attached, insulating material surrounding the shaft, and a cup or bell closed at its end facing the combustion-chamber and surrounding the insulation but open near the wall of the combustion-chamber and having a space within it to receive and confine gases.

11. The combination of the combustion-chamber, an electrode within it, a rotary shaft to which it is connected, and with which it revolves, a plug through which the shaft passes, insulating material interposed between the shaft and the plug, and a cup or bell within the combustion-chamber surrounding the shaft and insulation, and which is closed at its end facing the combustion-chamber, but is open at its end close to a wall of the combustion-chamber.

12. The combination of a combustion-chamber, an electrode within it, a shaft to which the electrode is secured, a plug through which the shaft passes, and which is formed with an inwardly-projecting sleeve, insulating material contained in the sleeve, and a cup or bell surrounding the sleeve, but leaving a space around the sleeve within the bell to receive gases.

13. The combination of a combustion-chamber, an electrode within it, a rod or shaft to which the electrode is attached, insulating material interposed between the rod and the casing of the combustion-chamber, and a cup or bell secured to and rotating with said shaft and surrounding the insulating material, but leaving a space around the insulation to receive gases.

14. The combination of the combustion-chamber, an electrode therein, a rotary shaft to which the electrode is attached, a stationary frame or bracket against which the outer end of the shaft bears, and a spring for pressing the shaft outward against the bracket.

15. The combination of a combustion-chamber, a toothed wheel therein, a shaft to which it is secured, an outer toothed wheel, a pawl engaging therewith, an operating-lever for said pawl, and an adjustable block of insulating material to which said pawl is attached and which is carried by said lever.

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## 753,512. CASH-REGISTER. WILLIAM H. MUMY, Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 14, 1903. Serial No. 169,490. (No model.)

*Claim.*—1. In a cash-register, the combination with accounting devices, of a cash-receptacle divided into compartments, covers for said compartments, and means operated by the movements of the covers for controlling the accounting devices.

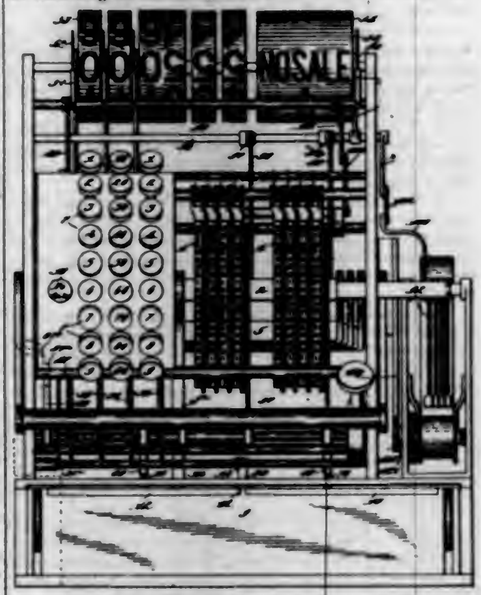
2. In a cash-register, the combination with indicating devices, of a cash-receptacle divided into compartments, covers for said compartments, and means operated by the movements of the covers for controlling the indicating devices.

3. In a cash-register, the combination with a printing mechanism, of a cash-receptacle divided into compartments, covers for said compartments, and means operated by the movements of the covers for controlling the printing mechanism.

4. In a cash-register, the combination with accounting devices, of a cash-drawer divided into compartments, covers for said compartments, and means operated by the movements of the covers for controlling the accounting devices.

5. In a cash-register, the combination with accounting devices, of a cash-drawer, divided into compartments, sliding covers for said compartments, and means operated by the movements of the covers for controlling the accounting devices.

6. In a cash-register, the combination with accounting devices, of a cash-drawer divided into compartments, automatically-operating covers for said compartments, and means operated by said covers for controlling the accounting devices.




7. In a cash-register, the combination with a printing mechanism, of a plurality of separate cash-receptacles each of which is provided with a movable member, and means operated by the movable members for selecting the printing mechanism.

8. In a cash-register, the combination with accounting devices, of a plurality of separate cash-receptacles each of which is provided with a movable member, and means operated by the movable members for selecting the accounting devices.

9. In a cash-register, the combination with a plurality of independent accounting devices, of a plurality of separate cash-receptacles having movable members, and means operated by the movable members for selecting the corresponding accounting device for operation.

10. In a cash-register, the combination with a plurality of counters, of a plurality of cash-receptacles each of which is provided with a movable member, and means operated by the movable members for selecting the corresponding counter for operation.

11. In a cash-register, the combination with a plurality of counters, of a cash-drawer divided into compartments, covers for said compartments, and means operated by the covers for selecting the corresponding counter.

12. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer divided into compartments and arranged to operate said member, independent covers for the different compartments, accounting devices, and means operated by the covers for controlling the accounting devices.

13. In a cash-register, the combination with an operating mechanism, of a counter, a cash-drawer for actuating the operating mechanism and divided into compartments, covers for said compartments, a lock for the operating mechanism, and means operated by the covers for actuating said lock.

14. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, covers for said compartments, a lock for the operating mechanism, and operating means intermediate the covers and said lock.

15. In a cash-register, the combination with an operating mechanism, of a lock for the same, a cash-drawer divided into compartments, sliding covers over said compartments, and means operated by the covers for actuating the lock.

16. In a cash-register, the combination with an operating mechanism, of two locks for the same, a series of separate cash-receptacles each of which has a movable member, means operated by the movable members for actuating one of said locks, and an independent means for actuating the remaining lock.



17. In a cash-register, the combination with an operating mechanism, of two locks for the same, a cash-drawer divided into compartments, covers for said compartments, means operated by the covers for actuating one of the locks, and independent means for actuating the remaining lock.

18. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, covers for said compartments, accounting devices, alarm devices, and means operated by the covers for controlling said accounting and alarm devices.

19. In a cash-register, the combination with a plurality of counters, of an indicating mechanism, a printing mechanism, a cash-drawer divided into compartments, covers for said compartments and mechanism operated by the covers for controlling the counters, the indicating devices, and the printing mechanism.

20. In a cash-register, the combination with a plurality of counters each of which comprises a series of counter-wheels and a series of operating-pawls, of pivoted levers for normally holding the pawls in inoperative positions, a cash-drawer divided into compartments, covers for said compartments, and means operated by the covers for releasing the holding-levers.

21. In a cash-register, the combination with a cash-drawer divided into compartments, of a series of sliding covers over said compartments, means for closing the covers as the drawer is closed, and full-stroke devices intermediate the covers and the drawer whereby the drawer cannot be closed until the covers are fully opened.

22. In a cash-register, the combination with a cash-drawer divided into compartments, of sliding covers for said compartments, means for automatically drawing the covers from over the compartments when released, and full-stroke devices intermediate the covers and the drawer whereby the drawer cannot be closed until the covers are fully opened.

23. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer arranged to operate said member and divided into compartments, covers for said compartments, and means operated by the covers for releasing the oscillatory member.

24. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer divided into compartments, covers for said compartments, a lock for the oscillatory member controlled by the covers, a second lock for said member, and means independent of the covers for operating the second lock.

25. In a cash-register, the combination with an operating mechanism including an oscillatory member, of an operating-handle connected to said member, a cash-drawer for operating said member and divided into compartments, covers for said compartments, and a lock for said member controlled by the covers.

26. In a cash-register, the combination with an operating mechanism including an oscillatory member, of an operating-handle connected to said member, a series of separate cash-receptacles having movable members, and a lock for the oscillatory member controlled by the movable members of the cash-receptacles.

27. In a cash-register, the combination with an operating mechanism including an oscillatory member, of an operating-handle connected to said member, a cash-drawer for operating said member and divided into compartments, covers for said compartments, and a lock for the oscillatory member controlled by said covers.

28. In a cash-register, the combination with an operating mechanism including an oscillatory member, of an operating-handle connected to said member, a cash-drawer divided into compartments and constructed to operate said member, sliding covers for the compartments, and a lock for the oscillatory member controlled by the sliding covers.

29. In a cash-register, the combination with a series of counting elements, of a series of operating-yokes, means for limiting the movements of the yokes, a main operating member for said yokes, a main yoke connected to said member and having its arms extended forward through the front of the machine, and an operating cross-bar connecting the forwardly-extending arms outside of the casing of the machine.

30. In a cash-register, the combination with a series of amount-keys, of an operating mechanism controlled thereby, a cash-drawer divided into compartments, a latch for the drawer arranged to be released by the amount-keys, covers for the drawer-compartments, and means operated by the covers for controlling the operating mechanism.

31. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, sliding covers for said compartments, springs for opening the covers when they are released, and means operated by the covers when so opened for controlling the operating mechanism.

32. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, movable covers for said compartments, springs for opening the covers when they are released, and means operated by the opening of the covers for controlling the operating mechanism.

33. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, sliding covers for the compartments, springs for opening the covers when they are released, means for closing the covers upon the closing of the cash-drawer, and means operated by the opening movement of the covers for controlling the operating mechanism.

34. In a cash-register, the combination with a common operating mechanism, of a plurality of counting devices, independent actuators for the counting devices, locks for the respective actuators, a cash-drawer divided into compartments, movable covers for said compartments, and means operated by the covers for actuating the locks.

35. In a cash-register, the combination with a cash-drawer, of a sliding cover over said drawer, means for closing the cover as the drawer is closed, and a full-stroke device intermediate the cover and the drawer whereby the drawer cannot be closed until the cover is fully opened.

36. In a cash-register, the combination with an operating mechanism, of a plurality of independent counters, a plurality of separate cash-receptacles each of which has a movable member, latching means for the several counters, and means for releasing a particular counter upon the opening of its corresponding cash-receptacle.

37. In a cash-register, the combination with an operating mechanism, of two locks for the same, a plurality of cash-receptacles having movable members, means for operating one of the locks upon the opening of any cash-receptacle, and an independent means for operating the remaining lock.

38. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer divided into compartments and arranged to control said member, automatic sliding covers for the compartments, and means operated by the covers for governing the movements of the operating mechanism.

39. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer divided into compartments and arranged to operate said member, sliding covers for the cash-drawer, springs for drawing the covers rearward when they are released, latches for the covers constructed to be operated after the cash-drawer is opened, and controlling devices for the operating mechanism actuated by the opening movement of the covers.

40. In a cash-register, the combination with an operating mechanism, of indicating, printing, and counting devices cooperating therewith, a cash-drawer divided into compartments, sliding covers for said compartments, means for releasing the covers after the cash-drawer is opened, and means actuated by the opening movement of the covers for controlling the operating mechanism.

41. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, sliding covers for said compartments, means for releasing the covers after the cash-drawer is opened, and devices actuated by the covers for controlling the operating mechanism.

42. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer cooperating with said member and divided into compartments, sliding covers for said compartments, springs for drawing the covers open when released, locks for the covers arranged to be operated after the cash-drawer is opened, and a lock for the oscillatory member actuated by the automatic opening movement of any one of the covers.

43. In a cash-register, the combination with an operating mechanism, of a series of indicators arranged to be set thereby, latches for holding the indicators in their set positions while the operating mechanism returns to its normal position, a cash-drawer divided into compartments, a latch for the cash-drawer, keys for simultaneously releasing the indicators and the cash-drawer, covers for the compartments of the drawer, and means operated by the covers for controlling an indicator.

44. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, slides for covering said compartments, operating devices carried by the slides and brought into operative position when the relative positions of the drawer and slide are changed, and means actuated by said operating devices for controlling the operating mechanism.

45. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, covers for said

compartments, operating devices brought into operative position when the relative positions of the covers and drawer are changed, and distinctive alarms controlled by the operating devices.

46. In a cash-register, the combination with an operating mechanism, of a cash-drawer divided into compartments, sliding covers for said compartments, operating devices mounted on said covers and normally held in inoperative positions by contact with the drawer, and alarm devices actuated by said operating devices when the same are moved to operative position by the opening of the cover.

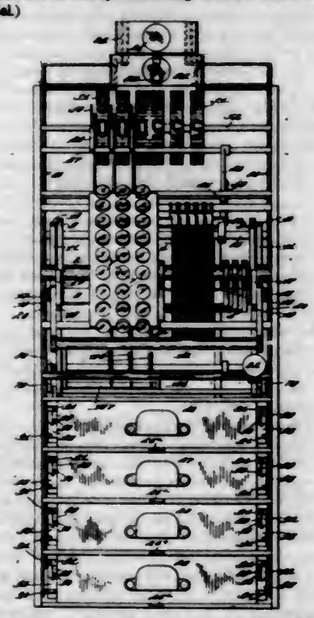
47. In a cash-register, the combination with an operating mechanism, of a plurality of counters, a cash-drawer divided into compartments, covers for the compartments, latch devices operated by the covers for rendering any desired counter operative, and main latch devices operated by said first-mentioned latch devices for releasing the operating mechanism when any one of the counters is released.

48. In a cash-register, the combination with a cash-drawer divided into compartments, of sliding covers for said compartments, springs for opening the covers when they are released, a register-operating mechanism, means operated by the covers for controlling said mechanism, and devices for preventing the opening of more than one cover at a time.

49. In a cash-register, the combination with an operating mechanism including an oscillatory member, of a cash-drawer divided into compartments, sliding covers for the compartments, counting elements, latches for the counting elements, means operated by the covers for tripping the latches, devices for holding the latches in their tripped positions, and means carried by the oscillatory member for actuating said devices to allow the latches to assume their normal positions.

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**753,513. CASH-REGISTER.** WILLIAM H. MUSBY, Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 15, 1903. Serial No. 169,655. (No model.)



*Claim.*—1. In a cash-register, the combination with a series of oscillatory elements, of means for limiting the movements of the elements in one direction, devices for moving said elements in the opposite direction, a series of indicators, means connecting the indicators to said elements, a series of cash-safes having movable members, and latching means for the indicators arranged to be operated by the movement of the movable member of the cash-safe.

2. In a cash-register, the combination with a series of oscillatory members, of means for limiting the movements of the members in one direction, devices for moving said members in the opposite direction, a series of indicators, operating means intermediate the indicators and the operating elements, latches for securing the indicators in their set positions whereby the indicators may be held displayed while the operating elements return to their normal positions, a series of cash-safes having movable members, and mechanism operated by the movable members for tripping the indicator-latches.

3. In a cash-register, the combination with an operating mechanism therefor, of means for indicating the amounts to be registered, a series of cash-safes having movable members, and means operated by the movement of said movable members for destroying the indication.

4. In a cash-register, the combination with an operating mechanism, of a series of amount-indicators controlled thereby, a series of cash-safes having movable members, and means operated by the initial movement of any one of said members for obliterating the indication.

5. In a cash-register, the combination with an operating mechanism, of a series of amount-indicators cooperating therewith, latches for securing the indicators in their set positions, a series of cash-safes having movable members, and means operated by said members for tripping the indicator-latches.

6. In a cash-register, the combination with an operating mechanism including a series of oscillatory members, means for limiting the movements of the members in one direction, devices for moving said members in the opposite direction, a series of oscillatory indicators connected to said members, a series of cash-safes having movable members, and means operated by said movable members for allowing the return of the indicators to their zero-indicating positions.

7. In a cash-register, the combination with an operating mechanism, of a series of indicators controlled thereby, a series of cash-safes having movable members, and means operated by said members for allowing the return of the indicators to their zero-indicating positions.

8. In a cash-register, the combination with an operating mechanism, of a series of oscillatory indicators cooperating therewith, means for automatically returning the indicators to their zero-indicating positions when released, a series of cash-safes having movable members, and means for releasing the indicators as a result of the opening of a cash-safe.

9. In a cash-register, the combination with a series of oscillatory elements, of an accounting device, means for limiting the movements of said elements in one direction, a main actuator for returning the elements to their normal positions, a series of cash-safes having movable members, a lock for the main actuator, and means intermediate the movable parts of the cash-safes and said lock for controlling the latter.

10. In a cash-register, the combination with an operating mechanism including a main actuator, of a series of cash-safes having movable members, a lock for the main actuator, and means operated by the movable members of the cash-safes for controlling said lock.

11. In a cash-register, the combination with an operating mechanism including a main actuator, of a series of cash-drawers, a lock for the main actuator, and means operated by the drawers for controlling the lock.

12. In a cash-register, the combination with an operating mechanism including an actuating-lever, of a lock for said lever, a series of cash-drawers, and means actuated by the opening of any one of the drawers for controlling the lock.

13. In a cash-register, the combination with an operating mechanism, of a series of cash-safes having movable members, and a locking mechanism intermediate the movable members and the operating mechanism whereby the latter is locked until some one of the movable members is operated and said members are locked during the operation of said mechanism.

14. In a cash-register, the combination with an operating mechanism, of a series of cash-safes having movable members, and means for locking all of the movable members in their adjusted conditions during the operation of the operating mechanism.

15. In a cash-register, the combination with an operating mechanism, of a series of cash-safes having movable members, and means for locking said members in their adjusted conditions as long as the operating mechanism remains out of its normal position.

16. In a cash-register, the combination with an operating mechanism having an actuating-lever, of a series of cash-safes having movable members, and means for locking all of the cash-safes in either opened or closed condition during the time that the actuating-lever is displaced from its normal position.

17. In a cash-register, the combination with an operating mechanism including an actuating-lever, of a series of cash-drawers, a lock for said lever, and means operated by the opening of any one of the cash-drawers for releasing said lock.



18. In a cash-register, the combination with an operating mechanism including an actuating-lever, of a series of cash-drawers, and means for locking the cash-drawers in either opened or closed condition during the time the lever is displaced from its normal position.

19. In a cash-register, the combination with an operating mechanism, of clerks' or department selecting devices, a series of color-signals connected to said devices, a lighting device for illuminating the color-signals whereby they may be seen at a great distance, and means for controlling the operating mechanism from the selecting devices.

20. In a cash-register, the combination with an operating mechanism, of clerks' or department selecting devices, a series of transparent color-signals connected to said devices, a lighting device cooperating with the transparent signals for rendering the colors visible at a great distance, and means for controlling the operating mechanism from the selecting devices.

21. In a cash-register, the combination with an operating mechanism therefor, of a series of independent cash-receptacles, a series of independent color-signals, controlling means connecting the color-signals and the cash-receptacles, and a lighting device for illuminating said signals whereby they may be seen at a great distance.

22. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-safes having movable members, a series of color-signals, means for setting a color-signal corresponding to the safe which is opened, and a lighting device for illuminating the color-signals.

23. In a cash-register, the combination with an operating mechanism therefor, of a series of transparent color-signals, a lighting device for illuminating said signals, a series of independent cash-drawers, and means whereby the signal is set corresponding to the cash-drawer opened.

24. In a cash-register, the combination with an operating mechanism, of a series of cash-drawers, and locking devices for locking the unopened drawers in their closed positions and the opened drawer in its opened position until the operating mechanism has been first operated.

25. In a cash-register, the combination with an operating mechanism, of a series of cash-drawers, means for preventing the operation of the operating mechanism until a cash-drawer is opened, and means for preventing the opening of any other drawer or the closing of the opened drawer until the operating mechanism is actuated.

26. In a cash-register, the combination with an operating mechanism including a plurality of oscillatory registering elements, of a counter, and a hand-lever pivoted eccentric to the operating elements, and means intermediate said lever and the operating elements for moving the latter.

27. In a cash-register, the combination with a series of oscillatory elements, of a main actuator for said elements, a lever pivoted eccentric to the main actuator, and operating devices intermediate the lever and the actuator.

28. In a cash-register, the combination with a series of oscillatory elements, of a counter, means for limiting the movements of the elements in one direction, a main actuator for the elements journaled concentric therewith, a lever journaled eccentric to said main actuator, and a cam-arm carried by the lever and engaging the main actuator.

29. In a cash-register, the combination with a series of oscillatory elements, of a counter, a main actuator journaled concentric with said elements, an operating-lever journaled eccentric to the main actuator, and an arm intermediate the main actuator and the operating-lever having a cam portion and a concentric portion whereby only a portion of the movement of the lever will be imparted to the main actuator.

30. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-safes having movable members, a lock for the operating mechanism, means for releasing the lock, a latch for holding the releasing means in set position, and devices for operating the releasing means from the movable members of the cash-safes.

31. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-safes, a series of color-signals displayed from all directions, and means for setting the signals according to the cash-safe exposed.

32. In a cash-register, the combination with an operating mechanism therefor, of a cabinet having indicator-openings, a series of transparent color-signals, a series of cash-safes, a lighting device arranged in proximity to indicating-openings, and means for interposing the proper color-signal between the lighting device and the indicator-opening according to the cash-safe exposed.

33. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, combination-locks for said drawers, and distinctive signals operated by the opening of the drawers.

34. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-safes, combination-locks for the respective safes, and distinctive signal devices operated according to the safe exposed.

35. In a cash-register, the combination with an operating mechanism therefor, of amount-indicators, a series of cash-safes, combination-locks for said safes, and means for destroying the indication upon the opening of any one of the safes.

36. In a cash-register, the combination with an operating mechanism therefor, of a series of amount-indicators, a series of cash-safes, combination-locks for the respective safes, and means for destroying the indication by the opening of any one of the safes.

37. In a cash-register, the combination with an operating mechanism therefor, of a series of amount-indicators, a series of cash-safes, combination-locks for said safes, means for destroying the amount indication upon the opening of any one of the safes, and special signal devices operated by the opening of any one of the safes.

38. In a cash-register, the combination with an operating mechanism therefor, of a series of indicators constructed to automatically return to their zero-indicating positions, latches for holding the indicators in their set positions, a series of cash-safes, and means for tripping said latches upon the opening of any one of the safes.

39. In a cash-register, the combination with an operating mechanism, of a series of keys for controlling the same, detents for the keys, an operating-handle arranged to move the operating mechanism in one direction, a tripping-frame for the key-detents, and means carried by the operating-handle for actuating said tripping-frame.

40. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, signal devices having pendent operating-rods, and means mounted on the cash-drawers for actuating said rods to set the signals.

41. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, a series of special signals, and means intermediate the cash-drawers and the signals for setting a signal according to the drawer opened and returning the previously-set signal to its normal position.

42. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-safes, a series of independent special signals, and means actuated by the opening of the cash-safes for setting a signal corresponding to the safe opened and returning any previously-set signal to its normal position.

43. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, a series of vertically-movable signals, and means mounted on the cash-drawers for supporting the signals in non-signaling positions.

44. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, a series of signals, means mounted on the cash-drawers for setting the signals to signaling positions, and independent means mounted on the cash-drawers for returning the signals to their normal positions.

45. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, a series of vertically-movable signals, supporting devices mounted on the cash-drawers for holding the signals in their non-indicating positions, and means operated by the cash-drawers for returning the signals to their non-signaling position.

46. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, a series of vertically-movable signals, and movable supporting devices mounted on the cash-drawers and normally supporting the signals in their non-signaling positions.

47. In a cash-register, the combination with an operating mechanism therefor, of series of cash-drawers, a series of signals, means for setting the signals, and means operated by any one of the cash-drawers for returning a set signal to its normal position.

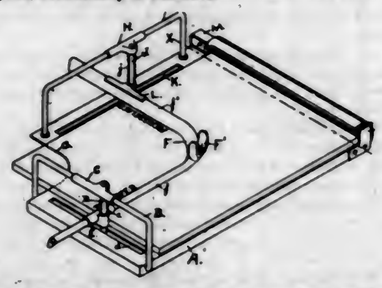
48. In a cash-register, the combination with an operating mechanism therefor, of a series of cash-drawers, a series of special signals for indicating which drawer is opened, means for setting said signals according to the drawer opened, and devices controlled by the cash-drawers for returning the signals to their normal positions.

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**753,514. TICKET-HOLDING DEVICE.** JOSEPH J. MCGUIRK, Albany, N. Y. Filed Jan. 26, 1903. Serial No. 140,463. (No model.)

*Claim.*—1. In a ticket-holder, a plate; a paper-cutter; said pa-

per-cutter mounted to reciprocate from side to side and end to end of said plate, substantially as described.



2. A ticket-holder consisting of a plate, a collection of tickets secured on said plate; a paper-cutter; said paper-cutter mounted to reciprocate from side to side and from end to end of said collection of tickets.

3. In a ticket-holder, a plate; a means for detachably securing a collection of tickets to said plate; a paper-cutter; said paper-cutter mounted to reciprocate from side to side and end to end of said tickets, substantially as described.

4. In a ticket-holder, a plate; a means for securing a collection of tickets on said plate; a paper-cutter mounted in connection with said plate; a means for causing said paper-cutter to press upon said collection of tickets; said paper-cutter adapted to be moved from one side of said ticket to the other and from one end thereof to the other, as desired.

5. In a ticket-holder, a plate; a means for detachably securing a collection of tickets to said plate; a paper-cutter; an arm pivoted to the reverse side of said plate arranged to engage that portion of the ticket remaining after the operator has torn off the part desired, and to retain the same in connection with the back of the holder, substantially as described.

6. In a ticket-holder, the combination of a plate, a means for detachably securing thereto a collection of tickets; a paper-cutter; said paper-cutter mounted to reciprocate from side to side and end to end of said plate; an arm pivoted to the reverse side of the plate to retain the remaining portion of the ticket after the operator has removed a part for the passenger, substantially as described.

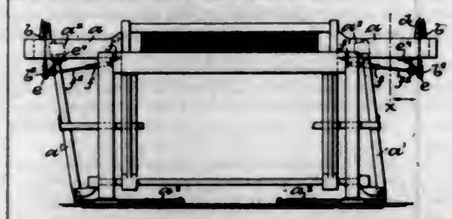
7. In a ticket-holder, a plate; a means for detachably securing a collection of tickets thereto; a paper-cutter mounted to reciprocate from side to side and end to end of said ticket; a means for securing to the reverse side of said plate the portions of the tickets remaining after parts thereof have been separated therefrom by the operator, consisting of an arm pivoted to said plate, two projecting flanges on said arm, one of which is for the purpose of moving said arm and the other to form a means for grasping the holder by the fingers of the operator; said paper-cutter provided with a rest for the thumb of the operator, substantially as described.

8. A ticket-holder consisting of a plate; a means for detachably securing a collection of tickets thereto, consisting of a spring-metal strip extending across the holder from one side to the other, being secured to the holder at one side, and provided with a spring-clasp secured to the holder on the opposite side thereof, and adapted to engage the end of said spring-metal strip and hold the same in connection with the said collection of tickets; a paper-cutter so constructed as to have two arms with a curved portion at the place of juncture between said arms; means for holding said paper-cutter in connection with said collection of tickets; a means for mounting said paper-cutter in such a manner as to provide for a reciprocating movement thereof in the direction of the extension of each of said arms, respectively; a means for securing that portion of said collection of tickets remaining after parts have been torn off by the operator, consisting of an arm pivotally supported to the reverse side of said plate; all substantially as described.

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**753,515. PICKER-CHECK FOR LOOMS. JAMES M. PECKHAM, Fall River, Mass. Filed Nov. 14, 1903. Serial No. 181,168. (No model.)**

*Claim.*—1. In a picker-check, the combination with the shuttle-box and picker of a loom, of a flexible vertical strap extending downwardly across the path of the picker, means for rigidly holding the upper end of the strap, consisting of a stud on an arm secured to the shuttle-box, means for exerting a spring tension on the strap, consisting of a link pivotally secured to the lower end of the strap and to the bottom of the shuttle-box, and a coiled spring attached to the shuttle-box and to the link, and means for adjusting the tension of the spring on the strap, as described.



2. In a picker-check, the combination with the shuttle-box and picker of a loom, of the flexible strap *b* having its upper end formed into the loop $b'$, the loop $b^2$ connected to the lower end of the strap by the belt-hook $b^3$, the arm *c* having the slot $c'$, the stud *d* having the collar $d'$, the screw-threaded end $d^2$ and the nut $d^3$, the link *e* having the closed end $e'$, the indentation $e^2$, and the outwardly-bent ends $e^3$ $e^4$, the bearings $c^4$ $c^4$, the coiled spring *f*, the bracket $f'$, and the connecting-strap $f^2$, all for the purpose as shown and described.

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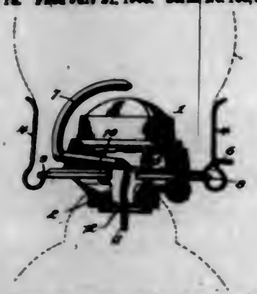
**753,516. CANTEEN. THOMAS J. PRATT, Paterson, N. J., assignor, by direct and mesne assignments, to John F. Kerr, J. Ernest Shaw, and Charles B. Blundell, Paterson, N. J. Filed June 18, 1901. Serial No. 65,078. (No model.)**



*Claim.*—A canteen comprising a liquid-receptacle having two of its opposite walls centrally flattened, one of said flattened walls having a circular aperture therein, a tubular casing within said receptacle having one end abutted against the unperforated wall of the receptacle and the other end fitting within said aperture, the joints between the ends of said casing and said unperforated wall and the edge of said aperture respectively being made water-tight, whereby the walls of said receptacle are reinforced and a pocket is formed to receive a drinking vessel, substantially as set forth.

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**753,517. LIGHTING ATTACHMENT. JAMES H. PROSSER, Mahanoy City, Pa. Filed July 31, 1903. Serial No. 168,471. (No model.)**



*Claim.*—1. The combination with a burner, of a supplemental wick mounted on the burner and arranged to extend into an oil font or reservoir, and means for carrying the outer end of the supplemental wick from a point exteriorly of the burner, when a chimney or globe is placed thereon, to a point directly above the burner, substantially as described.

2. The combination with a burner, of a supplemental wick arranged to extend into an oil font or reservoir, and a shaft having an arm arranged to lie within a chimney or other inclosure, between the same and the body of the burner, to carry the supplemental wick from the exterior of the burner, when the chimney or other inclosure is in place, to a point above the burner, substantially as described.



3. The combination with a burner, of a lighting attachment comprising a supplemental wick, and an oscillatory arm located within the chimney or other inclosure between the same and the body of the burner at a point above the support for the chimney or other inclosure, and having a projecting portion normally extending through the said support to a point exteriorly of the burner when the chimney or inclosure is in place, and means for carrying the arm to a point above the burner for lighting the same, substantially as described.

4. The combination with a burner having a supplemental wick-passage communicating with a font or reservoir, of exterior operable means for carrying the supplemental wick from a point exteriorly of a burner, when a chimney or inclosure is arranged thereon, to a point above the burner, substantially as described.

5. The combination with a burner, of a movable supplemental wick-tube adapted to carry a wick for receiving oil from a font or reservoir, said tube having a portion normally projecting exteriorly of the burner, when a chimney or inclosure is in place, to enable the supplemental wick to be lighted without removing the chimney or inclosure, and exteriorly-operable means for carrying the wick-tube to a point above the burner, substantially as described.

6. The combination of a burner provided in its bottom with an aperture, a lighting attachment provided with an arm arranged to project through the aperture of the bottom of the burner and thereby extend exteriorly thereof when a globe or inclosure is in position, and means for moving the arm upward to a point above the burner, substantially as described.

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**753,518. OVERFLOW-ALARM. EDWIN A. REEVES, New Haven, Conn., assignor, by mesne assignments, to Emil Weibel, Paterson, N. J., and John J. Weibel, Brooklyn, N. Y. Filed Jan. 21, 1903. Serial No. 139,936. (No model.)**



*Claim.*—1. In an overflow-alarm; pivotally-mounted means for controlling the operation of said alarm when the liquid within the pan has reached a predetermined level; and means for automatically changing the position of said pivot, whereby said alarm will be successively sounded when the liquid reaches predetermined levels higher than the first-mentioned level.

2. In an overflow-alarm, the combination with the bell; of a hammer; a pivotally-mounted lever, controlling the operation of said hammer when the liquid within the pan has reached a predetermined level; means for automatically changing the position of said pivot; and means for actuating said hammer after the liquid has reached a higher predetermined level than the first-mentioned level.

3. In an overflow-alarm, the combination with the bell; of a vibratory hammer, a trip-lever; a float connected with said trip-lever; and means for raising said trip-lever after the same has been oscillated by the liquid within the pan.

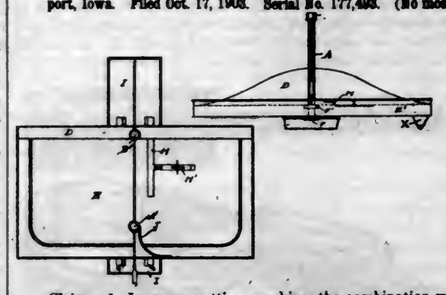
4. In an overflow-alarm, the combination with the bell; of a vibratory hammer; a verge and escapement movement for imparting a vibratory movement to said hammer; a trip-lever; a float connected with said trip-lever; and means for raising said trip-lever after the same has been oscillated by the liquid within the pan, said means being actuated from the same mechanism that imparts the vibratory movement to said hammer.

5. In an overflow-alarm, the combination with the bell; of a vibratory hammer; a rotary spindle having a tooth connected therewith; a sector having notches therein; a trip-lever pivotally secured to said sector; and a float connected with said lever.

6. In an overflow-alarm, the combination with the back plate 1; of a spring-rotated spindle having a tooth 25 thereon; of the vibratory hammer 21; sector 23 pivotally secured to said back plate; lever 27 pivotally secured to said sector; and a float 31 connected therewith.

7. In an overflow-alarm, the combination with the bell; of a hammer; a trip-lever; a float connected with said trip-lever; and means for raising said trip-lever after the same has been oscillated by the liquid within the pan.

**753,519. ICE-CUTTING MACHINE. HERMAN REINHOLD, Davenport, Iowa. Filed Oct. 17, 1903. Serial No. 177,493. (No model.)**



*Claim.*—1. In an ice-cutting machine, the combination with a bed-plate, of upright longitudinally-slotted tubes, passing through and secured to the bed-plate near opposite edges thereof, having caps on their upper ends, each provided with a taper plug adapted to enter the end of the tube.

2. In an ice-cutting machine, the combination with a bed-plate, of upright longitudinally-slotted tubes, passing through and secured to the bed-plate near opposite edges thereof, having caps on their upper ends, each provided with a taper plug adapted to enter the end of the tube, and a saw passing through both slotted tubes.

3. In an ice-cutting machine, the combination with a bed-plate, of upright longitudinally-slotted tubes, passing through and secured to the bed-plate near opposite edges thereof, a slotted guide-bar sliding within each tube and having flanges extending through the slots of the tube and a saw passing through both guide-bars and both slotted tubes.

4. In an ice-cutting machine, the combination with a bed-plate; of upright longitudinally-slotted tubes passing through and secured to the bed-plate near the opposite edges thereof, slotted guide-bars sliding within the tubes, and having flanges extending through the slots of the tubes and their lower ends located at a point above the saw-teeth, and a saw passing through both guide-bars and both slotted tubes.

5. In an ice-cutting machine, the combination with a bed-plate, of upright longitudinally-slotted tubes, passing through and secured to the bed-plate near opposite edges thereof, a slotted guide-bar sliding within each tube and having flanges extending through the slots of the tube and a bearing located within the guard-bar and a saw passing through both guide-bars and both slotted tubes, and having longitudinal slots, each receiving a bearing.

6. In an ice-cutting machine, the combination with a bed-plate, of upright longitudinally-slotted tubes, passing through and secured to the bed-plate near opposite edges thereof, a slotted guide-bar sliding within each tube and having flanges extending through the slots of the tube and a bearing located within the guide-bars, a saw passing through both guide-bars and both slotted tubes, having longitudinal slots, each receiving a bearing and a stop-nut adjustably secured on the inside of the tube.

7. In an ice-cutting machine the combination with a table or bed-plate of an upright longitudinally-slotted tube secured therein, a slotted guide-bar sliding within the tube having flanges fitting the slots of the tube, a roller pivoted in the slot of the guide-bar, a saw passing through the slots of the tube and guide-bar and receiving the roller in a longitudinal slot near its upper edge, a stop-nut secured on the inside of the tube, a cap fitting the upper end of the tube having a tapering plug adapted to enter the end of the tabe, and an adjustable raised gage secured to the bed-plate.

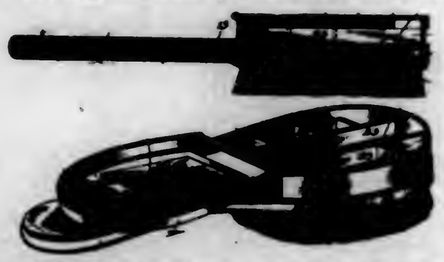
8. In an ice-cutting machine, the combination with a table or bed, of a pair of longitudinally-slotted tubes secured in the bed-plate at right angles thereto, a pair of slotted guide-bars slidingly mounted within the tubes, flanged to fit the tube-slots, each provided with a roller pivoted in its respective slot, a saw passing through both tubes and guide-bars having a pair of longitudinally-disposed slots each receiving one of the guide-bar rollers and working thereon, stop-nuts secured inside the tubes, caps with taper plugs adapted to enter the ends of the tubes at the top, an adjustable raised gage secured to the bed-plate.

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**753,520. TOILET KIT. ANNA M. SCHNEIDER, Sacramento, Cal. Filed Mar. 31, 1903. Serial No. 100,780. (No model.)**

*Claim.*—1. As an article of manufacture, a toilet kit comprising in combination a brush composed of a handle and a head located at one end of the handle, said handle having a longitudinally-dis-

posed socket in its rear portion that is provided with an open mouth disposed contiguous to the back of the head at the junction of the same with the handle, and a mirror having a handle that detachably fits in the socket of the brush-handle, said mirror extending over and having its face covered by the rear face of the brush-head.



2. As an article of manufacture, a toilet kit comprising in combination, a brush having a handle and a head, said handle being provided in its rear side with a longitudinally-disposed socket having an open mouth disposed contiguous to the back of the brush-head, a receptacle detachably mounted upon the back of the brush and having a handle slidably mounted in the socket of the brush-handle, and a cover for the receptacle movably mounted thereon.

3. As an article of manufacture, a toilet kit comprising in combination, a brush having a handle and a head, said handle being provided in its rear side with a longitudinally-disposed socket having an open mouth disposed contiguous to the back of the brush-head, a receptacle detachably mounted upon the back of the brush-head and having a handle slidably mounted in the socket of the brush-handle, and a mirror secured to the face of the receptacle that is adjacent to the back of the brush-head, said mirror being thereby carried by the head.

4. As an article of manufacture, a toilet kit comprising in combination, a brush consisting of a head and a handle, said handle being provided in its rear side with a longitudinally-disposed socket having an open mouth arranged contiguous to the back of the head, an open-sided receptacle detachably mounted upon the back of the brush and having a handle slidably mounted in the socket of the brush-handle, a cover for the open side of the receptacle, and a mirror secured to the outer face of the opposite closed side of the receptacle, said mirror being covered and protected by the back of the brush.

5. As an article of manufacture, a toilet kit comprising in combination, a brush consisting of a head and handle having open-ended sockets, one of which extends through the head, and constitutes a comb-receiver, and a mirror arranged with its face to and over the head, said mirror covering the open end of the comb-receiving socket and having a handle fitted in the socket of the brush-handle and constituting means for securing the mirror to the brush.

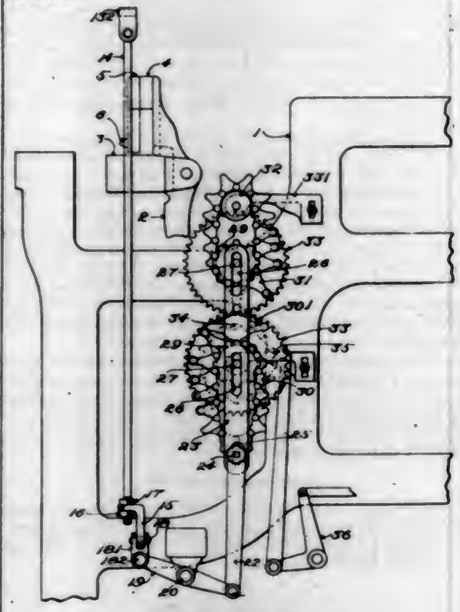
6. As an article of manufacture, a toilet kit comprising in combination, a brush comprising a head and handle having longitudinally-disposed sockets that are separate from each other, one of the sockets extending through the head and terminating short of the outer end thereof constituting a comb-receiver, said head also having rearwardly-extending flanges at its side edges, and a mirror arranged over the brush-head between the flanges thereof, and having a handle fitted in the socket of the brush-handle.

7. As an article of manufacture, a toilet kit comprising in combination, a brush composed of a handle and a head located at one end of the handle, said handle having a longitudinally-disposed socket provided with an open mouth that is located at the back of the brush and contiguous to the juncture of the head and handle, a receptacle having a handle slidably fitted in the socket, one face of the receptacle extending over the back, and a mirror secured to the said face of said receptacle and being covered by the back.

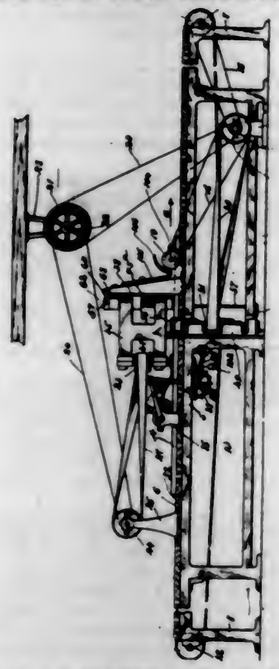
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**753,521. SWIVEL-LOOM.** CARL SCHOEN, New York, N. Y. Filed Feb. 12, 1903. Serial No. 143,082. (No model.)

*Claim.*—In a swivel-loom, in combination, the swivel-batten and its swivel-shuttles, a follower and motion-transmitting connections intermediate the same and the swivel-batten, to shift the latter transversely in the loom, tappet-chains composed of links having projections of various heights, and chain-barrels of relatively smaller diameter having said follower located between them, whereby the projecting portions of links on each chain at opposite sides of the link of said chain in action against said follower are caused to extend at opposite angles on radial lines clear of the follower, substantially as described.



**753,522. STAVE-SHAPING MACHINE.** ALBERT L. SHAW, Whitecastle, La., assignor of three-fifths to Robert H. Downman, New Orleans, La. Filed Mar. 29, 1902. Serial No. 100,562. (No model.)



*Claim.*—1. In a stave-dressing machine, the combination with a pair of connected side cutters, of a work-feed mechanism movable between said cutters, a revoluble and shiftable shaft, a traveler actuated by the shaft and connected with one of said cutters, work-actuated setting devices operatively connected with said cutters and with the shaft to shift the latter and thereby space the cutter-heads and adjust them to predetermined angular position according to the width of the blank, and means for rotating said shaft during the movement of the blank between the cutters to operate the traveler and thereby draw the cutter connected therewith toward the blank with a progressive movement.

2. In a stave-dressing machine, the combination with companion side cutters, and a work-feeding mechanism, of a shiftable and revoluble shaft having connection with said cutters, work-actuated setting devices connected to the shaft and the cutters and operable to give the shiftable movement to the shaft to space the cutters and quickly bring them to the desired angular positions on the introduction of a work-blank, and mechanism actuated by the work-feed mechanism for rotating said shaft to draw one of the side cutters toward the blank with a progressive movement.

3. In a stave-dressing machine, the combination with a pair of companion side cutters, and work-feed mechanism, of a shiftable and revoluble shaft having operative connection with said side cutters, work-actuated setting devices connected with said shaft to adjust the latter endwise and to space the cutters and move them to predetermined angular positions on the introduction of a work-blank, means for rotating the shaft, shaft-locking devices operable subsequently to the endwise movement of the shaft to lock said shaft against further endwise movement during the period of its rotation by the shaft-driving mechanism, and means for moving one of the cutters with a progressive movement from the rotating shaft.

4. In a stave-dressing machine, the combination with side cutters, and work-feed mechanism, of a threaded shaft having operative connection with one of said side cutters, work-actuated means connected with said threaded shaft to impart endwise adjustment thereto to move one of the cutters laterally and also connected with the side cutters for quickly adjusting the same to predetermined positions, means for locking said threaded shaft against endwise movement during the period of its rotation, and means actuated by the work-feed mechanism to rotate said shaft and cause the latter to draw one of the side cutters inward toward the blank with a progressive movement.

5. In a stave-dressing machine, the combination with side cutters, and work-feed mechanism one of the cutters being movably mounted on a movable support, of a threaded shaft mounted for revoluble and endwise movement, means connecting said shaft with said cutters, means connected with the shaft to give endwise adjustment thereto to move one of the cutters laterally and also connected with the cutters for adjusting them in angular positions on the introduction of work thereto, an automatic locking mechanism for restraining the shaft against movement during the advancement of work between the cutters, driving mechanism for rotating the shaft simultaneously with the advancement of work between the cutters, means for moving one of the cutters toward the blank from the rotating shaft, and means for returning the parts to normal position subsequent to the passage of the work beyond the range of the cutters.

6. In a stave-dressing machine, the combination with companion cutters, and a work-feed mechanism, of a vertical rock-shaft linked to both of said cutters to insure simultaneous adjustment thereof, a setting-arm connected with the rock-shaft, a shaft shiftable by the setting-arm, a connection between the shaft and one cutter for moving said cutter laterally, means for rotating the shaft subsequent to its adjustment by the setting-arm, and means for moving one of the cutters when the shaft is rotated.

7. In a stave-dressing machine, the combination with a pair of companion side cutters, one of the cutters being pivotally mounted on a swinging support, and a work-feed mechanism, of means connecting the cutters to simultaneously adjust them to different angular positions relative to the path of feed of the work, a setting device disposed in the path of the work and connected with said means for operating the same, a threaded shaft with which the setting device is connected, a connection between the shaft and the cutter mounted on the swinging support for moving said cutter when the shaft is rotated, and means for operating the shaft from the work-feed mechanism.

8. In a stave-dressing machine, the combination with work-feed mechanism, of pivoted carrying-heads disposed on opposite sides of the path of feed and having means to restrict the angular adjustment thereof, side cutters mounted individually in said heads and adjustable therewith, a vertical rock-shaft, an operative connection between the shaft and the said heads, a setting-arm, and a connection between the said rock-shaft and the setting-arm for operating the former from the latter.

9. In a stave-dressing machine, the combination with companion side cutters, one of the cutters being movably mounted in a movable support, a work-feed mechanism, and work-actuated setting devices connected with said side cutters, of a shiftable and revoluble shaft, means connecting the shaft with the cutters for adjusting them in angular positions, a connection between said shaft and one of the cutters for moving it laterally, a locking-bar connected with said shaft and shiftable therewith, means for rotating said shaft subsequent to adjustment by the setting devices, and means for locking the bar and the shaft against endwise movement during the rotation of the shaft.

10. In a stave-dressing machine, the combination with a work-feed mechanism, companion side cutters, one of the cutters being movably mounted on a movable support and setting devices connected with said side cutters, of a threaded shaft connected with said setting devices to be shiftable therewith and also connected to one of said side cutters, a train of gearing propelled from said work-feed mechanism and to rotate said threaded shaft subsequent to the adjustment thereof by the setting devices and during the period of advancement of the work between the side cutters, and work-actuated means to throw the gear-train into service.

11. In a stave-dressing machine, the combination with companion side cutters, a feed-chain, and a setting mechanism having operative connection with said side cutters, of a screw-threaded shaft, a connection between the shaft and one of the said side cutters to draw it toward the line of feed of the work with a progressive movement, a swinging frame moving on an axis concentric with the said shaft, a sprocket-wheel in the free end of the frame, a train of gearing mounted in said frame and geared with the screw-threaded shaft, and the sprocket-wheel and work-holding means connected to the swinging frame and operating to hold the sprocket-wheel into engagement with the feed-chain.

12. In a stave-dressing machine, the combination of a pivoted trip-arm disposed in the path of feed of the work, adjustable side cutters, a shaft, a connection between the said shaft and one of the cutters to draw said cutter toward the line of feed of the work, a frame hung on said shaft and supported at its free end by said trip, a sprocket-wheel in the free end of the frame, a feed-chain, and a gear-train mounted in the frame and gearing with the shaft and sprocket-wheel, said sprocket when the frame is raised meshing with the feed-chain.

13. In a stave-dressing machine, the combination with side cutters, and a feed-chain, of a rock-shaft having a trip-arm which is disposed in the path of feed, a revoluble shaft connected with one of the side cutters to draw it toward the line of feed of the work, a shiftable frame hung on said shaft, a link connection between the frame and the rock-shaft, a train of gearing mounted in the frame, and a sprocket-wheel mounted in the free end of the frame and geared with the gearing thereof, said sprocket-wheel when the frame is raised having intermeshing engagement with the feed-chain.

14. In a stave-dressing machine, the combination with cutters, and a feed mechanism, of a revoluble and endwise-movable shaft, a connection between one of the cutters and said shaft to draw the said cutter toward the line of feed with a progressive movement, a swinging frame, a train of gearing in the frame and geared with the said shaft, a trip-arm in the path of feed, means for operating the swinging frame the trip-arm to move the gearing of said frame in engagement with the feed mechanism, and means for locking said shaft against endwise movement when revolved.

15. In a stave-dressing machine, the combination with cutters, and a feed-chain, of a revoluble and endwise-movable shaft, a connection between the shaft and one of the cutters to draw said cutter toward the line of feed with a progressive movement, a swinging frame mounted on said shaft, a train of gearing in the frame and geared with the shaft, a sprocket-wheel in the free end of the frame and driven by said gearing, a trip-arm in the path of feed, means for operating the said frame from the trip-arm to bring the sprocket-wheel into mesh with the feed-chain, and means for locking the said shaft against endwise movement when revolved.

16. In a stave-dressing machine, the combination with side cutters, of a threaded shaft operatively connected with one of said cutters, setting devices for preliminarily adjusting the threaded shaft and through the shifting of the said shaft the side cutters to variable positions according to the width of the blank, shaft-locking devices for restraining the shaft against shifting adjustment subsequent to the operation of the setting devices, means for driving said threaded shaft while under the restraint of said locking devices, and means for restoring the threaded shaft and the cutters to normal positions after the passage of a stave-blank.

17. In a stave-dressing machine, the combination with side cutters, of a threaded shaft connected with one of said cutters, setting devices for shifting the shaft and adjusting the side cutters through the shifting of the said shaft, a shiftable bar movable endwise with said shaft, means for rotating the shaft, and means for automatically locking said bar and the shaft when the shaft-driving devices are in service.

18. In a stave-dressing machine, the combination with side cutters, of a threaded shaft having collars, setting devices for shifting the shaft and adjusting the cutters through the shifting of the said shaft, a locking-bar provided with an arm which engages with said collars, a cam-formed lever arranged to impinge said locking-bar, a work-feed mechanism, and means for rotating the said threaded shaft and for actuating said cam-formed lever.

19. In a stave-dressing machine, the combination of a cutter-carrying head comprising a member mounted to swing on a horizontal pivot, and a second member hinged to first member to swing on a vertical pivot and carrying the cutter, a shaft mounted to rotate, and connection between the said shaft and the member of the head carrying the cutter for swinging said member on its pivot.

20. In a stave-dressing machine, the combination of a cutter-carrying head comprising a member mounted to swing on a horizontal pivot, and a second member hinged to the first member to swing on a vertical pivot and carrying the cutter, a threaded shaft mounted to rotate, a nut on the shaft, and a connection between the nut and the free end of the said second member of the carrying-head.

21. In a stave-dressing machine, the combination of a cutter-carrying head comprising a member mounted to swing on a horizontal pivot, and a second member hinged to the first member to swing on a vertical pivot, said second member carrying the cutter, a shaft mounted to rotate, means for rotating said shaft, a connection between the shaft and the second member of the carrying-head for operating the latter from the former, a setting-arm, and a connection between the setting-arm and the first member of the carrying-head to swing it on its pivot.

22. In a stave-dressing machine, the combination of a cutter-carrying head comprising a member mounted to swing on a horizontal pivot, and a second member hinged to the first member to swing on a vertical pivot, said second member carrying the cutter, a threaded shaft mounted to rotate, means for rotating said shaft, a nut on the shaft, a connection between the nut and the free end of the second member of the carrying-head, a setting-arm, and a connection between the arm and the first member of the carrying-head.

23. In a stave-dressing machine, the combination with a cutter-head support comprising a member mounted to swing on a horizontal pivot, and a second member pivoted to the first member to swing on a vertical pivot, of a shaft mounted to slide endwise and with which the second member of the cutter-head support is connected, a setting-arm, and a connection between said arm and the first member of the cutter-head.

24. In a stave-dressing machine, the combination with a cutter-head support having a member pivoted to swing on a horizontal pivot, and a second member pivoted to the first member to swing on a vertical pivot, of a sliding shaft with which the second member of the cutter-head support is connected to move therewith, a setting-arm, a vertical rock-shaft, a connection between the setting-arm and rock-shaft, and a connection between the said rock-shaft and the first member of the cutter-head support.

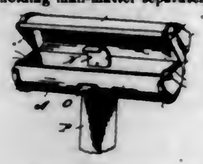
25. In a stave-dressing machine, the combination with pivotally-mounted cutter-heads, of a vertical rock-shaft, a link connection between the rock-shaft and each cutter-head, a setting-arm, and means for operating the rock-shaft from the setting-arm.

26. In a stave-dressing machine, the combination with pivotally-mounted cutter-head, and a second cutter-head support comprising a member mounted to swing on a horizontal pivot and a second member pivoted on the first member on a vertical pivot, of a revoluble and sliding threaded shaft, a traveler on the said shaft and connected with the second member of the said cutter-head support, a setting-arm engaging said shaft to move the same, a vertical rock-shaft, a connection between one end of the rock-shaft and one of the cutter-heads, a connection between the other end of the shaft and the first member of the other cutter-head support, means for operating the rock-shaft from the setting-arm, and means for revolving the screw-shaft.

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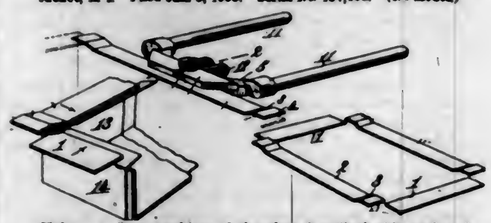
**753,523. MAIL-BOX. GEORGE W. SMITH, Union City, Ind. Filed Feb. 27, 1903. Serial No. 145,390. (No model.)**

*Claim.*—The mail-box herein shown and described, consisting of the upper and lower sections having their rear edges curved and forming a hinge connection along their entire length, the curved portion on the forward edge of the upper section forming a protecting-gutter, the end pieces hinged together and secured to said sections, said end pieces having inward-extending flanges to embrace the ends of the sections, the abutments carried by the end pieces to limit opening thereof, the lugs on one set of end pieces to receive a lock, the signal pivoted to said end piece, the studs to hold the signal, and the attaching-plate on the lower section, and the clip in the lower section for holding mail-matter separately.



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**753,524. BOX-COVERING MACHINE. HARRY B. SMITH, Brooklyn, N. Y., assignor of three-fourths to J. Stogdell Stokes, Morristown, N. J., Philip S. Smith, Philadelphia, Pa., and W. Scott Smith, Pawtucket, R. I. Filed Jan. 3, 1903. Serial No. 137,696. (No model.)**



*Claim.*—1. In a machine of the class described, side and end tuck-in fingers arranged to move in horizontal planes to tuck the edges of the cover-blank over the upper edges of the box, the ends of two opposite tuck-in fingers being arranged to move above the adjacent ends of the other tuck-in fingers to smoothly fold the corners of the cover-blank, substantially as described.

2. In a machine of the class described, side and end tuck-in fingers arranged to move toward one another to tuck the edges of the cover-blank over the upper edges of the box, the ends of two opposite tuck-in fingers being arranged to move above the ends of the other two tuck-in fingers simultaneously as the said other two tuck-in fingers move longitudinally beneath the upper tuck-in fingers, whereby the corners of the tucked-in blank are smoothly folded, substantially as described.

3. In a machine of the class described, an edge tuck-in device comprising two parallel side tuck-in fingers and two parallel end tuck-in fingers arranged at right angles to the side tuck-in fingers and at a lower level, the ends of two opposite tuck-in fingers being arranged to move above the adjacent ends of the other tuck-in fingers to engage and smoothly fold the cover-blank at the corners of the box, substantially as described.

4. In a machine of the class described, an edge tuck-in device comprising two parallel side tuck-in fingers and two parallel end tuck-in fingers arranged at right angles to the side tuck-in fingers, two opposite ends of said fingers being offset at their ends to project above the adjacent ends of the other fingers, substantially as described.

5. In a machine of the class described, an edge tuck-in device, comprising four flat metallic strips arranged in the form of a rectangle and movable toward and from each other, two of the opposite strips being offset at their ends and arranged to overlap the adjacent ends of the other two strips when said strips are brought together, substantially as and for the purpose specified.

6. An edge tuck-in finger consisting of a strip having its opposite ends offset or raised above the plane of the body of the strip.

7. An edge tuck-in finger comprising a flat metallic strip having its opposite ends offset and lying in a plane above that of the body of the strip.

8. Mechanism for tucking the covering material over the upper edges of a box and for folding the said material at the corners of the box, comprising two pairs of fingers arranged to move toward one another, one pair of said fingers being no longer than the length of the box to be covered and the other pair being arranged to move above the ends of said before-named pair and at right angles thereto whereby to engage the covering material along two lines at each corner of the box and smoothly fold the same.



**753,525. BALL-AND-SOCKET FASTENER. JOSEPH R. SMITH, Waterbury, Conn., assignor to United States Fastener Company, Portland, Me., and Boston, Mass., a Corporation of Maine. Filed July 30, 1903. Serial No. 166,258. (No model.)**



*Claim.*—1. In a fastener for gloves of the character specified, the socket member comprising a socket, an annular means for fastening said socket to material, and an imperforate cap shaped to inclose said annular means and having at its edge prongs adapted to pass through the material and fasten it.

2. In a socket member of a fastener, a socket-piece, means for fastening said socket-piece to material, and an independent cap covering said means and having prongs to pass into the material and fasten it thereto, independent of the socket-piece or its fastening means.

3. In a socket member of a fastener, a socket-piece, means for fastening said socket-piece to material, an independent cap to cover said means having prongs to extend through the material to turn upon the flange of the socket-piece.

4. In a socket member of a fastener, a socket-piece having a bead about the socket-entrance and a depressed flange, means for fastening said socket-piece to material, and an independent cap to cover said means having prongs which pass through the material and are turned upon the flange of the socket-piece outside the bead.

5. In a socket member of a fastener, the socket-piece having a yielding mouth, means for fastening said socket-piece to material, and an independent cap to cover said means, having prongs which pass through the material and which are spaced to bear against the edge of the socket-piece and to reinforce its yielding properties.

6. A socket member of a fastener having a socket part, means for fastening said socket part to material upon the side of the material opposite the socket-entrance, and a cap upon said side to cover said means and connected with the flange of the socket part upon the opposite side of the material by extensions which pass through the material, there uniting the cap to the socket part.

7. A socket member of a fastener having a socket part, means for fastening said socket part to material upon the side of the material opposite the socket-entrance, an independent cap upon said opposite side, fastened over the said fastening means, and means for fastening said cap to the material after said socket part and fastening means have been secured together to the material.

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**753,526. VOTING-TABLE AND BALLOT-BOX. LAWRENCE W. SPEAGUE, Greenville, Mich. Filed Mar. 31, 1903. Serial No. 150,450. (No model.)**



*Claim.*—1. The combination of a table having compartments and provided at its top with recesses and having apertures at the bottoms of the recesses, chutes depending from the apertures and provided with flanges secured in the said recesses, lids mounted in the recesses for covering the apertures, and ballot-boxes having apertures for registering with the said chutes, substantially as described.

2. The combination of a table provided at the top with apertures and having recesses thereat, lids mounted within the recesses and adapted when closed to lie within the same, ballot-boxes arranged within the table and provided with apertures to register with those of the table, and means for closing the apertures of the ballot-boxes when the latter are removed from the table, substantially as described.

3. The combination of a casing having an aperture and provided with a depending chute, a ballot-box arranged within the casing and having an aperture to register with that of the casing, and a sleeve or chute section mounted on the ballot-box at the aperture thereof and arranged to receive and engage the chute, and means for locking the ballot-box in the casing and for closing the aperture of the ballot-box when the same is removed from the casing, substantially as described.

4. The combination of a casing having an aperture and provided with a depending chute, a ballot-box removably arranged within the casing and having an aperture and provided with a projecting sleeve or chute section arranged to receive the said chute, a slide mounted on the ballot-box and adapted to be moved to cover and expose the ballot-box aperture, and means for locking the slide when the ballot-box is removed from the casing and for releasing the slide when the ballot-box is placed in the casing, substantially as described.

5. The combination of a casing provided at the top with an aperture, a ballot-box having an aperture to register with that of the casing, a movable closure carried by the ballot-box for covering and uncovering the aperture, and locking mechanism carried by the ballot-box and arranged to engage either the casing or the closure for securing the ballot-box in the casing and releasing the closure and for securing the closure and releasing the ballot-box, substantially as described.

6. The combination of a casing having an aperture and provided with a chute, a ballot-box provided with an aperture and having a projecting sleeve or chute section cut away at one side to receive the chute, a slide arranged to cover the aperture of the ballot-box, and means for locking the slide, substantially as described.

7. The combination of a ballot-box having an aperture, a movable closure arranged to cover and uncover the aperture, and a locking device for engaging the movable closure, said movable closure being provided with a member arranged to cover the locking device when the aperture is closed and adapted to receive a seal, substantially as described.

8. The combination of a ballot-box provided with an aperture, a slide arranged to cover and uncover the aperture, a locking device carried by the ballot-box for engaging the slide, and a movable member connected with the slide and arranged to cover the locking device and adapted to receive a seal, substantially as described.

9. The combination of a ballot-box having an aperture, a slide arranged to cover and uncover the aperture, a locking device mounted on the ballot-box for engaging the slide, and a hinged flap carried by the slide and arranged to cover the locking device when the same is in engagement with the slide, substantially as described.

10. The combination of a ballot-box provided with an aperture, a slide arranged to cover and uncover the aperture and having a hinged flap projecting beyond the ballot-box when the aperture is covered by the slide, and a locking device mounted on the ballot-box and arranged to be covered by the hinged flap, substantially as described.

11. The combination of a ballot-box provided with an aperture, a slide having an aperture to register with that of the ballot-box and provided with a slot or opening, and a locking device arranged to engage the slot or opening of the slide when the aperture thereof is out of register with that of the ballot-box, substantially as described.

12. The combination of a ballot-box having an aperture, a slide provided with an aperture to register with that of the ballot-box and having a slot or opening, and a locking device arranged to engage the slot or opening of the slide when the aperture thereof is out of register with that of the ballot-box, said locking device being also arranged to lock the ballot-box in a casing or support when out of engagement with the slide, substantially as described.

13. The combination of a ballot-box provided at the front with a keyhole and having an aperture for ballots, a locking device located at the keyhole, a slide having an aperture to register with that of the ballot-box and provided with a slot or opening arranged to be engaged by the locking device when the said apertures are out of register, and a flap hinged to the outer end of the slide and located beyond the ballot-box when the locking device is in engagement with the slot or opening, substantially as described.

14. The combination of a ballot-box having a cover provided with an aperture, a slide having an aperture to register with that of the cover and provided with a slot or opening, and a locking device arranged to engage the slot or opening of the slide when the aperture thereof is out of engagement with that of the cover and adapted to extend through the slide and engage the cover, substantially as described.

15. The combination of a casing, a ballot-box having a cover provided with an aperture, a locking device mounted on the ballot-box and arranged to engage either the casing or the cover, and a slide arranged to cover and uncover the aperture of the ballot-box and provided with a slot or opening arranged to be engaged by the locking device when the aperture of the ballot-box is covered, substantially as described.

16. The combination of a casing, a ballot-box having an aperture and provided with a cover, a locking device arranged to engage

either the cover or the casing, and a movable closure arranged to cover and uncover the aperture of the ballot-box and adapted to be engaged by the locking device when the aperture of the latter is covered, substantially as described.

7. The combination of a casing, a ballot-box provided with a cover having an aperture, a locking device mounted on the ballot-box and arranged to engage either the cover or the casing, and a slide having an aperture to register with that of the cover and provided with a slot or opening arranged to receive the locking device when the apertures are out of register, said slide being also provided with a movable member arranged to cover the locking device when the same is in engagement with the slide and the cover, substantially as described.

18. The combination of a casing, a ballot-box provided with a slidable cover removable from the back and having an aperture, a locking device located at the front of the ballot-box and arranged to engage the cover, and a movable closure arranged to cover and uncover the aperture and having a slot or opening arranged to receive the locking device when the aperture is covered, substantially as described.

19. The combination of a casing, a ballot-box provided with a slidable cover removable at the rear and provided with an aperture, a slide arranged to cover and uncover the aperture and extending through the front of the ballot-box and having a hinged section or flap, said slide being also provided with a slot or opening, and a locking device arranged at the front of the ballot-box and having a keyhole arranged to be covered by the hinged section or flap, said locking device being adapted to engage either the casing or the cover, and the slot or opening of the slide being in position to receive the locking device when the aperture of the cover is closed, substantially as described.

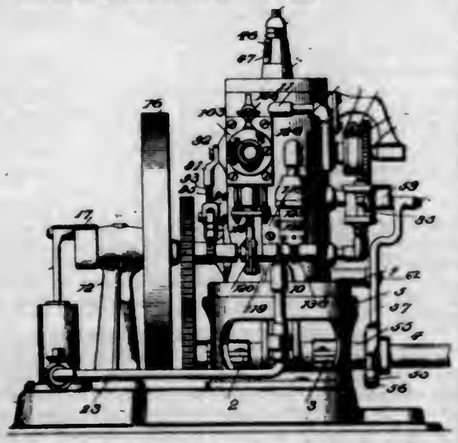
20. The combination of a ballot-box having a cover provided with an apertture, a sleeve extending from the aperture, a plate supporting the sleeve and forming a guide, a slide arranged in the guide and having a shoulder, means carried by the cover for engaging the shoulder to limit the movement of the slide, and locking mechanism for engaging the cover and the slide, substantially as described.

21. The combination of a casing or support having an aperture, a ballot-box mounted in the casing or support and provided with a corresponding aperture and having ways and provided therein with a slidable cover, said ways having an open end at a point remote from the front of the ballot-box, whereby the cover is retained in the ways when the ballot-box is in place, substantially as described.

22. The combination of a table having a plurality of apertures and provided with ways open at one end and closed at the other, a plurality of ballot-boxes having apertures and provided with slidable covers removable at the back, whereby they will be retained in place when the ballot-boxes are in the table, and means for locking the ballot-boxes in place, substantially as described.

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**753,527. GAS-ENGINE. JOHN M. STADEL, Wilmington, Del., assignor of one-half to William A. McCowen, Wilmington, Del. Filed June 23, 1902. Serial No. 112,228. (No model.)**



*Claim.*—1. In an engine, a base, a propeller-shaft suitably supported in close proximity to said base, an engine-cylinder arranged over the aforesaid shaft and having its piston-rod driving the latter, a fly-wheel shaft arranged above the aforesaid shaft and receiving motion therefrom, and a pump situated under said fly-wheel shaft and driven thereby; the arrangement of the parts being such as to permit the first-mentioned shaft to be at the lowest point, and the pump to be driven from and situated underneath the fly-wheel shaft; substantially as described.

2. In an engine, a base, a main shaft suitably supported in close proximity to said base, a main cylinder arranged over said main driving-shaft and having its piston-rod driving the latter, said main cylinder having a water-jacket, a fly-wheel shaft arranged above said main shaft and receiving motion therefrom and a pump situated under said fly-wheel shaft and driven thereby and arranged to pump water into the jacket around said cylinder; the arrangement of the parts being such as to permit the main driving-shaft to be at the lowest point, and the pump to be driven from and situated underneath the fly-wheel shaft; substantially as described.

3. In an engine, a substantially vertically arranged cylinder, a piston working therein and having a downwardly-working piston or connecting rod, a main shaft under said cylinder connected with said piston-rod, a fly-wheel, an inlet-valve, an exhaust-valve, and a rotatable igniter and a single connection with said main shaft for operating the valves and rotating the igniter, substantially as described.

4. In an engine, a substantially vertically arranged cylinder, a piston working therein and having a downwardly-working piston or connecting rod, a main shaft under said cylinder connected with said piston-rod, a rotatable igniter, inlet and exhaust valves, and an eccentric on the main shaft for operating said valves and rotating said igniter, substantially as described.

5. In an engine, and in combination with the piston and shafts thereof, a rotatable igniter and igniter-shaft, inlet and exhaust valves operative from said shaft and an operating connection between said igniter-shaft for rotating said igniter-shaft and said main shaft, substantially as described.

6. In an engine, and in combination with the piston and main shaft thereof, a rotatable igniter and igniter-shaft, inlet and exhaust valves operated from said igniter-shaft, and an eccentric connected with said main shaft for rotating said igniter-shaft, substantially as described.

7. In an engine, and in combination with the valves, the piston and main shaft thereof, a rotating igniter and an igniting-shaft, operating connections between said igniting-shaft and said main shaft, and an eccentric on said igniter-shaft for operating said valves, substantially as described.

8. In an engine, in combination with the valves, the piston and main shaft thereof, a rotating igniter and an igniter-shaft, a gear thereon, a pinion meshing with said gear, and having an operative connection with said main shaft, and an eccentric on the igniter-shaft for operating said valves, substantially as described.

9. In an engine, and in combination with the valves, the piston and main shaft thereof, an igniting-shaft, an operating connection between said igniter and main shafts, mechanism interposed between said igniter-shaft and said valves, said mechanism comprising an eccentric loosely connected with said igniter-shaft, substantially as described.

10. In an engine, and in combination with the valves, the piston and main shaft thereof, an igniter-shaft operated from said main shaft, an eccentric on said igniter-shaft, intermediate connections between said eccentric and said valves, and a loose connection between said eccentric and the igniter-shaft, substantially as described.

11. In an engine, and in combination with the valves, the piston and main shaft thereof, an igniter-shaft having a gear thereon for receiving motion from said main shaft, an eccentric on said igniter-shaft having a loose connection with said gear, and intermediate connections between said eccentric and said valves, substantially as described.

12. In an engine, and in combination with the valves and the main shaft thereof, an igniter-shaft having a gear thereon, intermediate connections between said gear and the main shaft, an eccentric loosely connected with the igniter-shaft, a loose connection between said eccentric and said gear, and intermediate connections between said eccentric and valves for operating said valves, substantially as described.

13. In an engine, and in combination with the main shaft thereof, a second rotatable shaft carrying a rotatable igniter, intermediate connections between said shafts, inlet and exhaust valves, a rock-shaft for operating said valves, and an operative connection between said rock-shaft and the shaft for rotating the igniter, substantially as described.

14. In an engine, and in combination with the main shaft thereof, a rotatable igniter-shaft receiving motion from said main shaft, a rock-shaft rocked through a connection with said igniter-shaft, an exhaust-valve and a connection between said rock-shaft and said exhaust-valve for operating the latter, substantially as described.

15. In an engine, and in combination with the main shaft thereof, a rotatable igniter-shaft operative from said main shaft, a rock-shaft operated from said igniter-shaft, exhaust and inlet valves, and connections operated by said rock-shaft for opening said valves, substantially as described.

16. In an engine, and in combination with the main shaft thereof, an igniter-shaft operated from said main shaft, a rock-shaft rocked through said igniter-shaft, inlet and exhaust valves, a tappet operated by said rock-shaft for opening said exhaust-valve, and intermediate connections between said rock-shaft and the inlet-valve for operating the same, substantially as described.

17. In an engine, and in combination with the main shaft thereof, an igniter-shaft, operated from said main shaft, a rock-shaft rocked through said igniter-shaft, exhaust and inlet valves, a tappet on said rock-shaft for operating said exhaust-valve, a crank on said rock-shaft, and a connection between said crank and the inlet-valve for operating the latter, substantially as described.

18. In an engine, and in combination with the main shaft thereof, an igniter-shaft rotated through said main shaft, a rock-shaft rocked by said igniter-shaft, exhaust and inlet valves, a tappet on said rock-shaft for operating said exhaust-valve, a crank on said rock-shaft, a supplemental shaft connected with the inlet-valve, and a hook and cam interposed between said crank and said last-named shaft, for operating the inlet-valve, substantially as described.

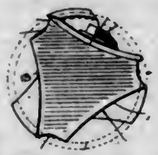
19. In an engine, and in combination with the main shaft thereof, a rock-shaft, exhaust and inlet valves, a tappet on said rock-shaft for operating said exhaust-valve, a crank on said rock-shaft, a supplemental shaft having a connection with the inlet-valve, and a hook and cam interposed between said crank and said supplemental shaft for operating the inlet-valve, substantially as described.

20. In an engine, and in combination the cylinder and main shaft thereof, an inlet-valve arranged on one side of the cylinder, and an exhaust-valve arranged on the opposite side thereof, a rock-shaft operated from the main shaft, and connections between said rock-shaft extending from one valve to the other, for operating said valves, substantially as described.

21. In an engine, a base, a main shaft suitably supported in close proximity to said base, a main cylinder arranged over said main shaft and having its piston-rod driving the same; and a fly-wheel shaft arranged above said main shaft and driven therefrom at substantially the same speed; substantially as described.

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**753,528. CUTTER-HEAD. FRANK STOVEMAN, Williamsport, Pa. Filed Oct. 30, 1903. Serial No. 179,228. (No model.)**



*Claim.*—1. A cutter-head comprising a groove or shallow channel extending longitudinally and at an inclination to an axial plane of the cutter-head, said channel or groove having its bottom curved transversely and having its edges curving longitudinally and a cutting-knife held by the said seat or channel, substantially as described.

2. A cutter-head having a seat or channel extending longitudinally thereof whose curved surface represents the curved periphery of a cylinder whose axis is arranged at an inclination to that of the axis of the cutter-head, substantially as described.

3. A cutter-head comprising a piece having shallow channels or grooves extending longitudinally thereof, said grooves being formed on a true circle transversely and having their bottom portions straight from end to end and extending at an angle to an axial plane of the cutter-head, and knives with edges curved longitudinally arranged adjustably on the seats, substantially as described.

4. In combination with a cutter-head having non-spiral seats concaved transversely and extending longitudinally of the cutter-head at an angle to an axial plane, said cutter-head having chip-breakers between the said seats.

5. In combination with a cutter-head having non-spiral seats extending longitudinally of the said head and curved transversely and knives forming the section of a cylinder whose radius is the same as the transverse curve of the groove or channel and whose cutting edge is curved longitudinally and results from the inclination of the said edge in relation to the axial plane of the imaginary cylinder and part of which the knife-blade represents.

6. A cutter-head having non-spiral seats extending from end to end at an inclination to the radial or axial planes which pass through the central points of said seats, said seats being curved transversely on a true circle, knives fitted to said seats and having cutting edges curved from end to end and means for adjustably holding the knives to the said seats and to maintain the parallel relation of the cutting edge to the chip-breaker in all positions, said cutting edge having a draw cut on the material, substantially as described.

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**753,529. DENTAL BRIDGE. FREDERIC TEAGUE, Oakland, Cal. Filed Mar. 18, 1901. Serial No. 51,643. (No model.)**

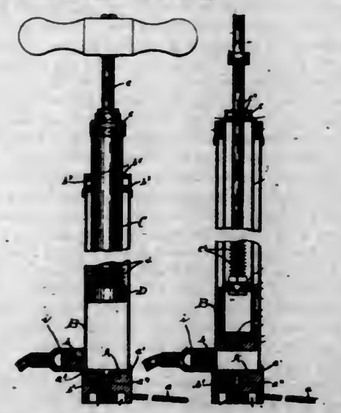


*Claim.*—1. A hollow backing to receive the cement and comprising in a single integral element back and front walls and an occluding surface joining said back and front walls, said front wall being perforated to receive the pins from the porcelain front.

2. In dental bridgework, the combination with an artificial tooth-front of a hollow backing inclosing a cavity individual to the tooth-front, and to the front wall of which the tooth-front is secured, a back wall integral with the front wall and a grinding-surface integral therewith joining the front and back walls, said grinding-surface being supported behind the tooth-front and separately of the occluding surface thereof.

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**753,530. PUMP. FRANK R. TEN EYCK, Auburn N. Y. Filed Nov. 13, 1901. Serial No. 82,611. (No model.)**



*Claim.*—1. In a pump of the character described, the combination with the base provided with oppositely-disposed sockets, of an outer cylinder having means thereon passing through said base for securing the same thereto, an inner cylinder telescoping in said other cylinder having a piston thereon for said last-named cylinder, a piston mounted within said inner cylinder, and means for locking said cylinder against movement during the operation of the piston therein, substantially as described.

2. In a pump of the type set forth, the combination with a base formed with sockets in its opposite surfaces, connected by an opening, one of said sockets having a cut-out portion, of an outer cylinder mounted in one of the sockets of the base, said cylinder having a laterally-extending arm arranged in the said cut-out portion provided with a lengthwise passage, means formed integral with said cylinder and extending through the base for securing the same thereto, an inner telescoping cylinder mounted in the last-named cylinder, a piston for the outer cylinder carried thereby, a second piston within said cylinder, and locking means to prevent relative movement of the cylinders while the inner piston is operated, substantially as described.

3. In a pump, the combination of an outer cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder, a piston for the inner cylinder, and means for preventing movement of the inner cylinder relatively to the outer cylinder during the movement of the second piston, substantially as and for the purpose set forth.

4. In a pump, the combination of an outer cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder and means for locking the inner and outer cylinders together, said inner cylinder being movable in the outer cylinder for forcing said means into its operative position, and a piston for the inner cylinder having a piston-rod provided with means for connecting the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable in the inner cylinder for forcing said means of the piston-rod into its operative position, substantially as and for the purpose described.

5. In a pump, the combination of an outer cylinder having one end provided with a substantially central opening formed with an annular groove and opposite cut-outs extending from the groove through the end face of the cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder and with opposite arms of less size than the cut-outs for locking the inner and outer cylinders together, said inner cylinder being movable endwise and rotatable in the outer cylinder for forcing said opposite arms through the cut-outs and into their operative position in the annular groove, and a piston for the inner cylinder having a piston-rod provided with means for connecting the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable in the inner cylinder for forcing said means of the piston-rod into its operative position, substantially as and for the purpose specified.

6. In a pump, the combination of an outer cylinder, an inner cylinder telescoping in the former cylinder and provided with a piston for the outer cylinder and with means for locking the inner and outer cylinders together, said inner cylinder being movable in the outer cylinder for forcing said means into its operative position and having one end provided with a substantially central opening formed with an annular groove, an engaging shoulder in the groove, and opposite cut-outs extending from the groove through the end face of said cylinder, and a piston for the inner cylinder having a piston-rod provided with opposite arms of less size than the cut-outs for locking the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable endwise and rotatable in the inner cylinder for forcing its opposite arms through the cut-outs in the inner cylinder and into their operative position in the annular groove therein and into engagement with the shoulder in said groove, substantially as and for the purpose set forth.

7. In a pump, the combination of an outer cylinder having one end provided with a substantially central opening formed with an annular groove and opposite cut-outs extending from the groove through the end face of the cylinder, an inner cylinder telescoping in the former cylinder and having one end provided with a piston for the outer cylinder and its other end provided with opposite arms of less size than the cut-outs for locking the inner and outer cylinders together and with a substantially central opening formed with an annular groove, an engaging shoulder in the groove, and opposite cut-outs extending from the groove through the end face of the cylinder, said inner cylinder being movable endwise and rotatable in the outer cylinder for forcing said opposite arms through the cut-outs and into their operative position in the annular groove of the outer cylinder, and a piston for the inner cylinder having a piston-rod provided with opposite arms of less size than the cut-outs of the inner cylinder for locking the piston-rod to the inner cylinder and rotating the inner cylinder, said piston-rod being movable endwise and rotatable in the inner cylinder for forcing its opposite arms through the cut-outs in the inner cylinder and into their operative position in the annular groove therein and into engagement with the shoulder in said groove, substantially as and for the purpose described.

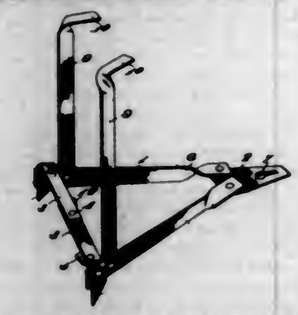
8. A pump of the character described comprising an outer cylinder having an annular groove formed at the upper end thereof, a cut-out extending from the groove through the outer face of the cylinder, an inner cylinder telescoping with the first-named cylinder provided with a piston at the lower end thereof, means carried by said second cylinder for engagement with the cut-out for locking the inner and outer cylinders together, a piston mounted in the inner cylinder, a piston-rod secured thereto and extending without the inner cylinder, and means carried by said piston for locking engagement with the inner cylinder whereby the cylinder and piston-rod may be moved together, substantially as described.

9. In a pump, the combination with an outer cylinder, and an inner cylinder telescoping in the first-named cylinder, said cylinder being movable vertically within said first-named cylinder, means carried by the inner cylinder adapted for locking engagement with the outer cylinder, a piston formed at the lower end of said inner cylinder, and a second piston mounted within the inner cylinder, having a piston-rod provided with means for locking engagement with said inner cylinder, whereby said inner cylinder and piston may be locked together, said inner cylinder having means communicating with the outer cylinder, and said outer cylinder being provided with air-outlet means, substantially as described.

10. In a pump of the character described, the combination of outer and inner concentric cylinders, the inner of said cylinders being movable within the outer cylinder and having communication therewith, means carried by said inner cylinder for locking engagement with the outer one, the piston mounted exteriorly upon the inner cylinder, a piston mounted interiorly with respect to the inner cylinder, and means for actuating said last-named piston having locking means thereon for engagement with the inner cylinder whereby the inner cylinder and said means may simultaneously move, substantially as described.

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758,531. SHINGLE-HOLDER. ISAAC D. ADAMS, Nashua, N. H. Filed May 18, 1903. Serial No. 157,643. (No model.)



*Claim.*—1. A material-holder for workmen comprising a frame formed of a body portion consisting of bars pivoted at one end, angle-pieces secured to their other ends, one end of each angle-piece forming a house-engaging point, the other end forming a stop, and pivoted arms carried by the said bars and engaging said stops when in operative position.

2. A material-holder for workmen comprising a frame formed of a base having side bars, angle-pieces secured to the side bars near their ends and formed with roof-engaging points, the said angle-pieces also extending inwardly from the bars, and links pivoted to the inwardly-extending ends of the angle-pieces for connecting the ends of the bars forming the frame and pivoted work-supporting arms carried by the frame.

3. A shingle-holder comprising a base formed with side bars pivotally connected at one end, spacing-braces pivoted between the other ends for holding the bars a proper position apart when the holder is in use and arms carried by said bars.

4. A shingle-holder comprising a frame formed of a plate, bars pivoted thereto, links connecting the outer ends of said bars, arms pivoted to said bars so that they may be turned outwardly to receive and support a bunch of shingles or like articles.

5. A folding material-holder for workmen comprising a frame made up of an attaching-plate, bars pivoted thereto, sharp projections extending from the outer ends of said bars, pivot-links connecting the same for limiting the extent to which the frame may be spread and material-carrying arms pivoted to said bars and capable of supporting material when unfolded.

6. A folding material-holder for workmen comprising a frame made up of an apertured suspending-plate, bars pivoted thereto, material-carrying arms pivoted to said bars and having detents at their outer ends preventing the material from slipping from said arms, and means for limiting the width of the said bars.

7. A shingle-holder comprising a frame having side bars, of less depth at one end than at the other for engaging shingles and slightly lifting or springing the same from their normal position, roof-engaging points projecting from the other ends of said bars, the spring of the shingles forcing the same into engagement with the roof and shingle-holding arms projecting from the frame.

8. A folding shingle-holder comprising a frame formed of flat material made up of side bars, a connecting-plate pivotally connecting the same, the bars having a twist formed in them for increasing their height from the plane of the connecting-plate, roof-engaging points carried by said bars and material-supporting arms carried by the said bars.

9. A material-holder for workmen comprising a folding frame having pivoted side bars, links for limiting their outward movement, the said links being pivotally connected, a stop carried by one of said links for preventing the said links from folding outwardly and means carried by the frame for supporting material.

10. A shingle-holder comprising a base approximately triangular in shape having its opposite sides formed of pivoted bars, pivoted links connecting one end of each bar with one end of the opposing bar for properly spacing them apart when in use and work-holding arms pivoted to said bars and capable of being turned outwardly from the base to support the shingles.

11. A material-holder for workmen comprising a collapsed frame made up of bars pivotally secured together at one end and adapted to be spread apart at the other end, links interposed between the said bars for limiting their movement, the said links folding between the bars when in a collapsed position, and work-supporting arms pivoted upon the inner surfaces of the said bars so as to fold within the same when the structure is collapsed.

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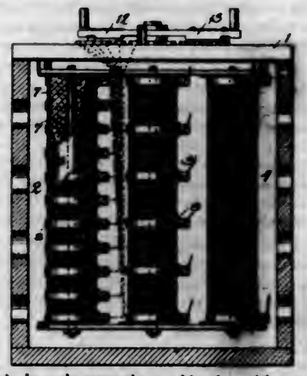
758,532. DETACHABLE HEEL FOR BOOTS OR SHOES. FREDERICK P. ANDERSON, Oakland, Cal., assignor to Louis Kohn, Oakland, Cal. Filed Dec. 27, 1901. Serial No. 87,441. (No model.)



*Claim.*—In attaching devices for removably securing detachable heels to boots and shoes, a plate secured to the top of the heel having its outer edge turned over so as to provide a groove or channel around the outer rim of the plate; a plate secured to the heel portion of the sole of the boot or shoe and adapted to have its outer edge engage with the groove or channel of the heel-plate when the two slide together; notches in said overturned edge; a hooked lever centrally pivoted to each side of the plate which is attached to the sole of the boot or shoe and adapted to engage with said notches when their outer ends are drawn together, and means for locking the levers when thus engaged, substantially as described.

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758,533. RHEOSTAT. JOHN C. BARCLAY, New York, N. Y. Filed Sept. 9, 1903. Serial No. 172,477. (No model.)



*Claim.*—1. In a rheostat, the combination with a core of insulating material, and a conductor wound thereon, of collars surrounding said core and forming stops for the windings of the conductor, said collars electrically connected to the conductor to form terminals therefor.

2. In a rheostat, the combination with a core of insulating material, and collars surrounding said core at intervals, of conductors wound about said core between said collars, the latter electrically connected to the conductors to form terminals therefor and likewise forming stops for the windings of the conductors.

3. In a rheostat, the combination with a base and a plurality of rheostat-spools secured thereto, and projecting lengthwise therefrom, each spool comprising a core, a plurality of collars surrounding the same, and resistance-wire wound around the core between the collars, and connected to said collars as terminals, of switching means carried by said base and comprising contact-pieces for the several sections of resistance-wire, and a single conductor for each such contact-piece, leading therefrom to the corresponding collar of one of the rheostat-spools.

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753,534. PLECTRUM FOR STRINGED INSTRUMENTS. DAVID W. RAESIE, Brooklyn, N. Y. Filed July 18, 1903. Serial No. 166,106. (No model.)

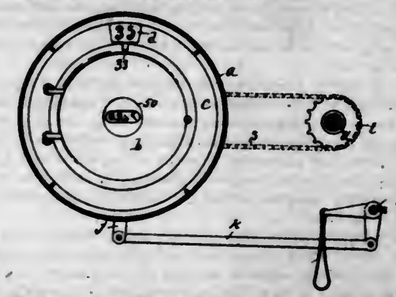


*Claim.*—1. As a new article of manufacture, a plectrum for stringed instruments composed of a body of comparatively soft, flexible material, such as leather, and an inserted stiffening-core of comparatively rigid material, such as metal or celluloid, substantially inclosed by said body and terminating short of the operative end of the body, substantially as described.

2. As a new article of manufacture, a plectrum for stringed instruments composed of a body of comparatively soft, flexible material, such as leather, an inserted stiffening-core of comparatively rigid material, such as metal or celluloid, substantially inclosed by said body and terminating short of the operative end of the body, and the operating end of the body being laterally curved, substantially as described.

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753,535. REGISTER. FRANCIS R. BEAL, Northville, Mich. Filed May 6, 1903. Serial No. 155,810. (No model.)



*Claim.*—1. A register comprising a series of types movable on the arc of a circle, a record-strip, an inking device, and a reciprocatory device to cause an imprint of any desired type of the series upon the record-strip, said reciprocatory device, inking device, and record-strip located within the arc on which said mechanism moves.

2. A register comprising mechanism movable in the arc of a circle provided with a series of type upon the inner surface thereof, a record-strip, an inking device, and a reciprocatory device for causing the imprint of any desired type of the series upon the record-strip, said reciprocatory device, inking device, and record-strip located within the arc on which said mechanism moves.

3. A register comprising a case provided with an opening therein, a series of type movable in the arc of a circle to bring any desired type adjacent to said opening, a record-strip, an inking device, and mechanism for causing an imprint of a given type adjacent to said opening upon the record-strip, said mechanism, inking device and record-strip located within the arc on which said type are movable.

4. A register comprising a series of types movable in the arc of a circle, and corresponding numbers, a record-strip, an inking device, and mechanism for causing an imprint of any desired type of the series upon the record-strip, said mechanism, inking device, and record-strip located within the arc on which said type are movable.

5. A register comprising a case provided with an opening therein, a series of type and corresponding numbers movable on the arc of a circle to register any desired number with said opening, a record-strip, an inking device and mechanism for causing an imprint of a given type upon the record-strip when its corresponding number registers with said opening, said mechanism, inking device, and record-strip located within the arc on which said type are movable.

6. A register comprising mechanism movable in the arc of a circle provided with a series of type upon the inner surface thereof and a series of corresponding numbers or marks, means to move said

mechanism to bring any desired number or mark into given position, and mechanism to make an imprint of a given type when its corresponding number or mark is brought into said given position, said latter mechanism located within the arc on which the type are movable.

7. A register comprising a device movable in the arc of a circle having two faces at right angles one to the other, one face carrying a series of type, the other face carrying a series of corresponding numbers or marks means to move said device into given position, and mechanism to make an imprint of any given type of the series when its corresponding number or mark has been brought into given position, said mechanism located within the arc on which the type are movable.

8. In a register a movable plate having an inner annular face provided with a series of type, means to move said plate to bring any given type into given position, and means located interior to said face to make an imprint of any type of the series when brought into given position.

9. A register comprising a rotatable plate provided with a series of type on the inner face thereof and with corresponding numbers or marks, means to move said plate to bring any given numeral or mark with its corresponding type into given position, and mechanism to make an imprint of the type when brought into given position, said mechanism located within the arc on which the type are movable.

10. A register comprising a case provided with an opening therein, a rotatable plate provided with a series of type on the inner face thereof and with corresponding numbers or marks, means to move any given number or mark with its corresponding type into position to register with the opening in the case, and mechanism to make an imprint of any given type of the series when its corresponding number or mark has been brought into position to register with said opening, said mechanism located within the arc on which the type are movable.

11. A register comprising a device provided with a series of type and with a series of corresponding numbers or marks, said numbers and type being simultaneously movable on the arc of a circle to bring any given type with its corresponding number or type into given position, and mechanism to make an imprint of any given type when brought into given position, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable

12. A register comprising a rotatable plate provided on the inner face thereof with a series of type and upon another face thereof with a corresponding series of numbers or marks, means to bring any given number or mark with its corresponding type simultaneously into given position, and mechanism to cause an imprint of any type of the series when its corresponding number or mark is brought into given position, said mechanism located within the arc on which the type are movable.

13. A register comprising a device provided with a series of type and with corresponding numbers or marks, said type and corresponding numbers or marks simultaneously movable on the arc of a circle to bring any given number with its corresponding type into given position, a record-strip, an inking device, and mechanism for causing an imprint of any given type of the series upon the record-strip when its corresponding number or mark has been brought into given position, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

14. A register comprising a device provided with a series of type and with corresponding numbers or marks, said type and corresponding numbers or marks being simultaneously movable on the arc of a circle to bring any given number with its corresponding type into given position, a record-strip, an inking device, and a reciprocatory device to cause an imprint of any given type of the series upon the record-strip when its corresponding number or mark has been brought into given position, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

15. A register comprising a rotatable plate provided with an annular flange having a series of typ upon the inner face of the flange and an additional flange provided with numbers or marks corresponding to the type, and mechanism to make an imprint of any given type of the series when its corresponding number or mark has been brought into given position, said mechanism located within the arc on which the type are movable.

16. A register comprising a rotatable plate provided with a flange at right angles thereto having on the inner periphery of the flange a series of type and an additional flange at right angles to the first-named flange of the plate provided on its face with a series of numbers or marks corresponding to said type, and mechanism to make an imprint of the type when its corresponding number or mark has been brought into given position, said mechanism located within the arc on which the type are movable.

17. A register comprising a rotatable plate provided with a flange at right angles thereto having on the inner periphery of the flange a series of type and an additional flange at right angles to the first-named flange of the plate provided on its face with a series of numbers or marks corresponding to said type, a record-strip, an inking device, and mechanism to make an imprint of a given type of the series upon the record-strip when its corresponding number or mark has been brought into given position, said mechanism located within the arc on which the type are movable.

18. A register comprising a rotatable plate provided with a flange at right angles thereto having on the inner periphery of the flange a series of type and an additional flange at right angles to the first-named flange of the plate provided on its face with a series of numbers or marks corresponding to said type, and a reciprocating device to make an imprint of the type when its corresponding number or mark has been brought into given position, said device located within the arc on which the type are movable.

19. A register comprising a device movable on the arc of a circle provided with a series of type and with a series of corresponding numbers or marks, a record-strip, an inking device, a reciprocatory arm or hammer, a crank-shaft to actuate the hammer, and means to actuate the crank-shaft, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

20. A register comprising a device movable on the arc of a circle provided with a series of type and with a series of corresponding numbers or marks, a record-strip, an inking device, a reciprocatory arm or hammer, a crank-shaft to actuate the hammer, means to actuate the crank-shaft, a bell and a bell-hammer actuated by the movement of the reciprocatory hammer, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

21. A register comprising a series of type movable on the arc of a circle whereby any type of the series can be brought into given position, a movable arm or hammer to cause an imprint of the type, said arm or hammer provided with a tongue and each of said type constructed with a guide to receive the tongue, said hammer located within the arc on which the type are movable.

22. A register comprising a rotatable plate provided with a flange having a series of type upon the inner face of the flange, means to make an imprint of any given type of the series when brought into given position, and a guard over a portion of said type.

23. A register comprising a series of types movable to bring any given type of the series into given position, a removable key provided with type, and means for causing an imprint of the key when in place and of any desired type of the series when in given position.

24. A register comprising a series of movable type, a record-strip, an inking device, a removable key, and means for causing an imprint of the key upon the record-strip and an imprint of any desired type of the series upon the record-strip when in given position.

25. A register comprising mechanism movable in the arc of a circle provided with a series of type, a removable key to be engaged with said mechanism, a record-strip, an inking device, and means for causing an imprint of the key and of any desired type of the series upon the record-strip when in given position.

26. A register comprising a series of movable type whereby any type of the series can be brought into given position, a movable arm or hammer to cause an imprint of the type, said arm or hammer provided with a tongue and each of said type provided with a guide to receive the tongue, and means to prevent the said arm or hammer from moving into position to make an imprint when said guide is not in position to receive said tongue.

27. A register comprising a series of type movable on the arc of a circle whereby any type of the series can be brought into given position, a hammer located within the arc on which the type is movable to cause an imprint of the type, and means whereby said hammer can only move to its work when the type is in proper position for an imprint.

28. A register comprising a case, a stationary rear wall therein, a shaft projecting at right angles through said wall, a bed rotatable about said shaft provided with numerals or marks and with types corresponding to said numerals or marks, said case constructed to disclose said numerals or marks when in given position, and mechanism within said bed for making an imprint of the types when in given position.

29. A register comprising a rear wall, a shaft projecting therethrough, a bed rotatable about said shaft, said bed provided with numerals or marks and with types corresponding to said numerals or marks, and a stationary plate located over said numerals or marks and constructed to disclose the numerals or marks when in given position, and mechanism within said bed carried upon the rear wall for making an imprint of the types when in given position, said mechanism actuated by said shaft.

30. A register comprising a case, a stationary rear wall, a shaft projecting therethrough, a bed rotatable about said shaft provided with numerals or marks and with corresponding types on the inner face thereof, mechanism within said bed for making an imprint of the types when in given position, said case constructed with a keyhole through which a key may be inserted into the rotatable bed, and mechanism for recording a print of the device when in given position.

31. A register comprising a case, a stationary rear wall, a shaft projecting therethrough, a bed rotatable about said shaft provided with numerals or marks and with corresponding types on the inner surface thereof, mechanism for making an imprint of the types when in given position, said case constructed with a keyhole through which a key may be inserted into the rotatable bed, and mechanism for recording a print of the device when in given position, the mechanism for recording an imprint of said types also effecting an imprint of the key when in given position.

32. A register comprising a case, a stationary rear wall, a shaft projecting through said wall, a bed rotatable about said shaft provided on its inner surface with types and corresponding numerals or marks, and mechanism for ringing up fares and simultaneously making an imprint of the same.

33. A register comprising a case, a stationary rear wall, a shaft projecting through said wall, a device movable about said shaft provided on its inner surface with types and corresponding numerals or marks, imprinting mechanism to make a record of said types when in given position, a crank upon the inner end of said shaft to actuate said mechanism, and a crank upon the outer end of said shaft to actuate the shaft.

34. A register comprising a rotatable shaft, a series of types movable about said shaft, a record-strip, an inking device and a reciprocatory device to cause an imprint of any desired type of the series upon the record-strip, said reciprocatory device, inking device and record-strip actuated from said shaft.

35. A register comprising a rotatable shaft, a series of types movable about the shaft, and mechanism to cause an imprint of any desired type of the series. said mechanism actuated from said shaft.

36. A register comprising a series of types movable on the arc of a circle, corresponding numbers or marks movable simultaneously on the arc of a circle with said types, a record-strip, an inking device, and mechanism for causing an imprint of any desired type of a series on the record-strip, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

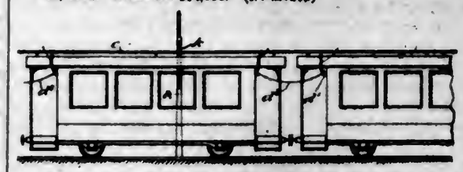
37. A register comprising a case provided with an opening therein, a series of type and corresponding numbers both movable on the arc of a circle to register any desired number with said opening, a record-strip, an inking device, and mechanism for causing an imprint of a given type upon the record-strip when its corresponding number registers with said opening, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

38. A register comprising mechanism provided with a series of type and with a series of corresponding numbers or marks, said type and numbers or marks being both movable on the arc of a circle, means to move said mechanism to bring any desired number or mark into given position, and mechanism to make an imprint of a given type when its corresponding number or mark is brought into said given position, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.

39. A register comprising a device movable in the arc of a circle having two faces at right angles one to the other, one face carrying a series of types, the other carrying a series of corresponding numbers or marks, means to move said device into given position, and mechanism to make an imprint of any given type of the series when its corresponding number or mark has been brought into given position, the imprint of the type upon the record-strip being within the arc on which said numbers or marks are movable.



**753,536. CONTACT DEVICE FOR ELECTRICALLY-PROPELLED RAILWAYS.** HENRI BERTHOUD, Neuchatel, Switzerland. Filed July 10, 1902. Serial No. 114,968. (No model.)



*Claim.*—1. In electric railways, the combination with a plurality of cars and a track, of a contact-rail above each car extending the whole length of the car and the ends thereof overhanging, said overhanging ends being so arranged as to be spaced apart from the overhanging ends of the contact-rails on the adjacent cars, means for insulating the said contact-rails from the said cars and contact devices with which the said contact-rails come into electrical connection and to form simultaneous and momentary contact with the juxtaposed ends of adjacent rails for insuring continuity of current.

2. In electric railways, the combination with a plurality of cars and a track, of a contact-rail above each car running the whole length of the car, overhanging the ends thereof and extending beyond the ends of the contact-rails of the next adjacent cars, the ends of said contact-rails being spaced apart so as not to contact with each other, means for insulating said contact-rails from the cars, and contact devices with which the said contact-rails are adapted to come into electrical connection.

3. In electric railways, the combination with a plurality of cars and a track, of a contact-rail above each car running the whole length of the car, overhanging the ends thereof, and extending beyond the ends of the contact-rails of the next adjacent cars, the ends of said contact-rails being spaced apart so as not to contact with each other, insulating-supports upon which the said rails rest, and contact devices with which said contact-rails make electrical connection.

4. In electric railways, the combination with a plurality of cars and a track, of a contact-rail above each car extending the whole length of the car and the ends thereof overhanging, said overhanging ends being so arranged as to be spaced apart from the overhanging ends of the contact-rails on the adjacent cars, means for insulating the said contact-rails from the said cars, contact devices with which the said contact-rails come into electrical connection and to form simultaneous and momentary contact with the juxtaposed ends of the adjacent rails for insuring continuity of current and electrical connections between the adjacent ends of the contact-rails.

5. In electric railways, the combination with a plurality of cars, and a track, of a contact-rail above each car running the whole length of the car, overhanging the ends thereof, and extending beyond the ends of the contact-rails to the next adjacent cars, the ends of said contact-rails being spaced apart so as not to contact with each other, means for insulating said contact-rails from the cars, contact devices with which the said contact-rails are adapted to come into electrical connection, and electrical connections between the adjacent ends of the contact-rails.

6. In electric railways, the combination with a plurality of cars and a track, of a contact-rail above each car running the whole length of the car, overhanging the ends thereof, and extending beyond the ends of the contact-rails of the next adjacent cars, the ends of said contact-rails being spaced apart so as not to contact with each other, insulating-supports upon which said rails rest, contact devices with which the said contact-rails make electrical connection, and electrical connections between the adjacent ends of the contact-rails.

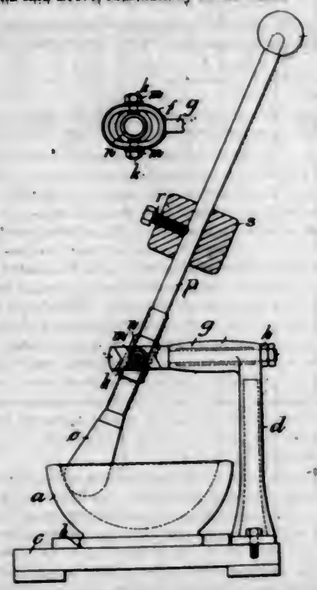
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**753,537. APPARATUS FOR GRINDING OR CRUSHING.** THOMAS BREAKELL, Wirksworth, near Derby, England. Filed Mar. 26, 1903. Serial No. 149,591. (No model.)

*Claim.*—1. In combination, a mortar, a base-plate adapted to receive said mortar, a column rigidly attached to said base-plate, a bracket carried by said column, a block provided with a spindle which is adapted to rotate in a horizontal hole in said bracket, a sleeve pivoted to said block so as to be capable of oscillating about a horizontal axis perpendicular to the axis of the said spindle and a pestle provided with a stem adapted to rotate and to slide within said sleeve, substantially as described.

2. In combination, a mortar, a base-plate adapted to receive said mortar, a column rigidly attached to said base-plate, a bracket carried by said column, a block provided with a spindle which is

adapted to rotate in a horizontal hole, in said bracket, studs screwed into said block at right angles to said spindle, a sleeve pivoted on said studs and a pestle provided with a stem adapted to rotate and to slide within said sleeve, substantially as described.



3. In combination, a pestle, a sleeve adapted to slidably and rotatably receive the stem of said pestle, a block to which the said sleeve is pivoted, a spindle extension on said block, a bracket in which said spindle extension can rotate, a mortar, and means for rigidly connecting the said mortar with the said bracket, substantially as described.

4. In combination, a pestle, a sleeve adapted to slidably and rotatably receive the stem of said pestle, a block to which the said sleeve is pivoted, a spindle extension on the said block, a bracket in which said spindle extension can rotate, a mortar, means for rigidly connecting the said mortar with the said bracket and means for increasing the pressure of the pestle on the inside of the mortar, substantially as described.

5. In combination, a pestle, a weight adjustably attached to the stem of said pestle, a sleeve adapted to slidably and rotatably receive the stem of said pestle, a block to which the said sleeve is pivoted, a spindle extension on said block, a bracket in which said spindle extension can rotate, a mortar and means for rigidly connecting the said mortar with the said bracket, substantially as described.

753,538. LETTER AND DOCUMENT DISTRIBUTER. FREDERICK BERROW, East Orange, N. J. Filed June 22, 1903. Serial No. 162,571. (No model.)



*Claim.*—1. A portable memorandum-rack for desk use embodying a series of flexible or yielding radially-disposed partitions of sheet-like form secured in grooves in a base or support and at their lower edges only, substantially as described.

2. A portable memorandum-rack for desk use embodying a base or body part and a series of flexible or yielding radially-disposed partitions of sheet-like form secured thereto at their lower or inner edges only, substantially as described.

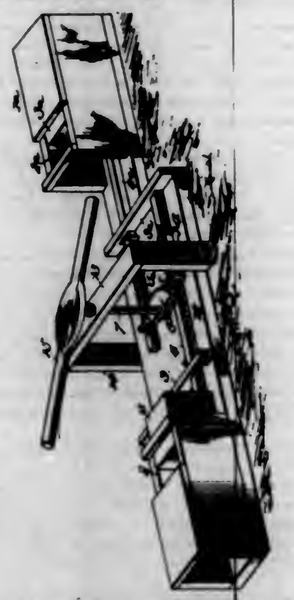
3. A portable memorandum-rack for desk use embodying a base, a body part secured thereto and provided with longitudinal grooves; in combination with a series of flexible detachable partitions of sheet-like form adapted to fit in said grooves, the arrangement being such that the partitions are held at their lower or inner edges only and that the compartments are wholly open at both ends, substantially as described.

4. A portable memorandum-rack for desk use embodying a series of radially-disposed flexible or yielding partitions of sheet-like form detachably secured at their lower or inner edges only to a body part provided with longitudinal grooves, substantially as described.

5. A portable memorandum-rack for desk use embodying a base and a body part, the latter being provided with longitudinal grooves radially disposed; in combination with a series of detachable flexible or yielding partitions of sheet-like form adapted to be inserted in said grooves and held therein by their lower or inner edges only so that the compartments are all open on three sides, substantially as described.

6. A portable memorandum-rack for desk use embodying a base A and a curvilinear body part E having longitudinal grooves C radially cut therein; in combination with a series of flexible or yielding detachable partitions D, D of sheet-like form adapted to be inserted radially in said grooves, and end plates secured to the opposite ends of the body part E, the compartments between said partitions being open on all sides so that the documents to be distributed are visible and removable from opposite ends of the rack.

753,539. PRESS. MICHAEL BROWN, Gatesville, Tex. Filed July 10, 1903. Serial No. 165,081. (No model.)

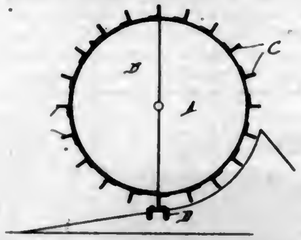


*Claim.*—1. In a press, the combination of baling-chambers, plungers operating therein, rods connected with the plungers and provided with cog-teeth, means for returning the plungers and rods to a normal position, and a toothed sector arranged between the plunger-rods in the plane thereof and having its toothed portion of such circumferential length as to engage with the cog-teeth of one plunger-rod prior to disengagement from the cog-teeth of the other plunger-rod, substantially as set forth.

2. In a press, the combination of two baling-chambers having a diagonal arrangement, plungers operating therein, toothed rods connected with the plungers, springs cooperating with the plungers to return them and the toothed rods to a normal position, a toothed sector arranged between and in the plane of the toothed rods and having its toothed portion of such relative circumferential length as to engage with the cog-teeth of one plunger-rod prior to disengagement from the cog-teeth of the other plunger-rod, and means for rotating the toothed sector in one direction for alternate actuation of the plungers, substantially as specified.



753,540. MACHINE FOR WORKING OLD PAPER-STOCK. WILLIAM BURKE, East Stroudsburg, Pa. Filed Nov. 6, 1902. Renewed Aug. 11, 1903. Serial No. 169,155. (No model.)

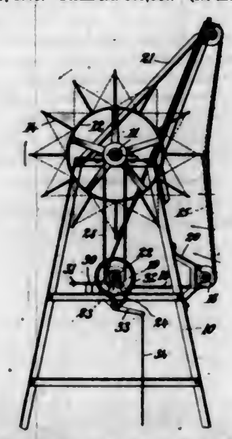


*Claim.*—1. In a machine of the class described, a drum, flanges projecting from the periphery thereof and recessed, and a bed-plate having projections corresponding to the recesses, substantially as described.

2. In a machine of the class described, a drum, flanges projecting therefrom, recessed along their edges and a bed-plate arranged centrally beneath the drum and having a double row of projections cooperating with the recesses, substantially as described.

3. In a machine of the class described, a drum, flanges disposed longitudinally on the surface thereof having each a plurality of recesses in their outer edges, and a bed-plate beneath the drum having a plurality of projections in line with the recesses in the flanges, substantially as described.

753,541. WINDMILL. WILLIAM A. BUTLER, San Francisco, Cal. Filed Sept. 19, 1903. Serial No. 173,847. (No model.)



*Claim.*—1. The combination with a wind-wheel, of a shield for the purpose specified, a shaft, connections between the shaft and shield to operate the shield, a clutch, connections between one member of the clutch and the wind-wheel, and a brake for the shaft.

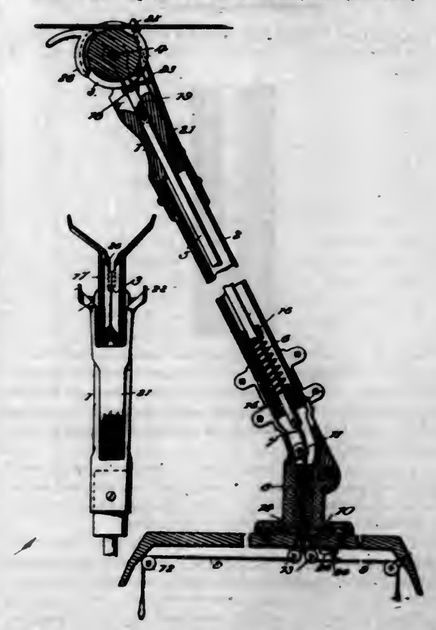
2. The combination with a wind-wheel, of a shield for the purpose specified, a rope connection with the shield, a pulley for operating the rope, a shaft on which the pulley is mounted, a clutch member fastened to the shaft, a second clutch member coacting with the first clutch member, means for driving the second clutch from the wind-wheel, means for shifting the second clutch member, and a brake to arrest the movement of the said pulley.

3. The combination of a wind-wheel turning on a horizontal axis and having blades disposed transverse to the movement of the air, a vertically-movable shield, and means for mounting and adjusting the shield to occupy a position either above or below the axis of the wind-wheel, for the purpose specified, said means having connection with the wind-wheel, whereby the wind-wheel furnishes the power for raising the shield.

4. The combination of a wind-wheel having a horizontal axis and blades disposed transverse to the movement of the air, a vertically-movable shield, means for mounting and moving the shield, said means having connection with the wind-wheel, to be operated by the power thereof, a clutch controlling said means, and manually-operative devices for actuating the clutch.

5. The combination of a wind-wheel having its axis disposed transversely to the movement of the air, a shield movable from one side to the other of said axis, for the purpose specified, and means for mounting and adjusting the shield, said means having connection with the wind-wheel, whereby the wind-wheel furnishes the power for moving the shield.

753,542. TROLLEY. ALEXANDER C. CALDERWOOD, Gloversville, N. Y. Filed Aug. 6, 1903. Serial No. 168,569. (No model.)



*Claim.*—1. In a trolley, a pivotally-mounted replacer normally held out of action against a force tending to throw the same into a working position, and a trip device actuated by contact with the line-wire to effect a release of the replacer whereby it assumes an operative position and effects automatic return of the trolley to the line-wire, substantially as set forth.

2. In a trolley, the combination of a pivotally-mounted replacer, a longitudinally-movable rod or bar, a link connection between said rod and the replacer adapted in one position to hold the replacer out of operative position, a spring normally exerting a pressure upon the said rod to move it longitudinally to throw the replacer into working position, and a trip device for breaking the joint between the replacer and link connection, substantially as set forth.

3. In a trolley, the combination of a replacer mounted for pivotal movement, a longitudinally-movable spring-actuated rod or bar, a link connection between said rod or bar and the replacer and adapted to aline with said spring-actuated rod and replacer, and a spring-actuated trip device adapted to be operated by contact with the line-wire to break joint between the replacer and link cooperating therewith to permit automatic operation in returning the trolley to the line-wire, substantially as set forth.

4. In a trolley, a pivoted replacer comprising side members having their upper end portions longitudinally curved and outwardly flared, and a tie connecting the curved end portions of said members, said tie being of loop form and longitudinally curved, substantially as set forth.

5. In a trolley, the combination of a pivoted replacer, a spring-actuated rod or bar having link connection therewith, a trip device adapted to be actuated by contact with the line-wire to effect release of the replacer to permit movement of the same into operative position, and a connection extended within convenient reach and passed through the pivotal mounting of the trolley-pole to admit of

resetting or returning the replacer to a normal position after being actuated, substantially as described.

6. In a trolley, the combination of a pivoted replacer, a spring-actuated rod or bar having link connection therewith, a trip device, a flexible connection passed through the pivotal mounting of the trolley-pole and secured to the said spring-actuated rod or bar, and an operating connection extended within convenient reach and secured to said flexible connection by means of a swivel-joint, substantially as and for the purpose set forth.

7. In a trolley, the combination of a pivoted replacer, a spring-actuated rod or bar linked thereto, a trip device, an operating connection extended within convenient reach for resetting the replacer after being actuated, and a signal device for indicating the operation of the replacer, substantially as specified.

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**753,543. PACKAGE AND CLOSURE THEREFOR.** RAYMOND S. CASE, Unionville, Conn. Filed July 17, 1903. Serial No. 165,967. (No model.)



*Claim.*—1. A package having a central bore, closure-plates arranged at the end of the package and closing said bore and provided with lugs struck up from the material of the plates and forming means of attachment of a connection, and a connection extending through the bore and cooperating with the lugs for holding the closure-plates in position.

2. A package having a central bore, a closure for each end of the bore, a receptacle secured upon one of said closures, and a connection extending through the bore from the receptacle to the opposite closure for holding the several parts in place.

3. A package having a central bore, a closure for each end of the bore, a receptacle secured to one of said closures and extending within the bore, a connection extending from one end of the receptacle to the opposite closure, and means for attaching said connection to the closure whereby the several parts are firmly held in position.

4. In a package having a central bore, a closure for each end of the bore, a receptacle secured to one of said closures and projecting within the bore, and means for retaining the closures and receptacle in position.

5. A package having a central bore, a closure for said bore comprising a plug-like member arranged to be inserted in each end of the bore, a receptacle attached to one of said plug-like members and projecting within the bore, and means for securing the plug-like member and receptacle against movement with reference to each other.

6. A package having a central bore and a closure for said bore including a disk-like plate having struck up from the material thereof a plurality of lugs, and means cooperating with said lugs for holding the closure in position.

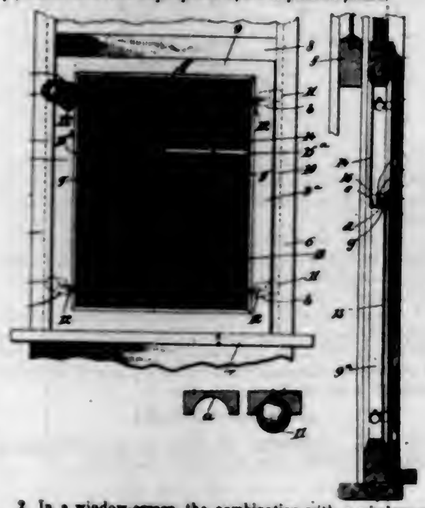
7. A package having a central opening, a closure for both ends of the opening comprising a disk-like plate having formed from the material thereof a plurality of projections, tubular members operatively arranged with relation to the closures and extending within the bore, and means cooperating with the projections of the closures for securing the parts in position.

8. A package having a central opening, a closure for each end of the opening comprising disk-like plates and means thereon for the attachment of a cord or wire extending between the closures, a cord or wire, tubular members operatively arranged with relation to the closures, and disk-like members inclosing the inner ends of the tubes and having means of attachment for the connecting cord or wire, whereby the disk-like members are held firmly in position against the ends of the tubular members.

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**753,544. WINDOW-SCREEN.** WILLIAM A. CASSEDY, Fort Worth, Tex. Filed June 20, 1903. Serial No. 162,337. (No model.)

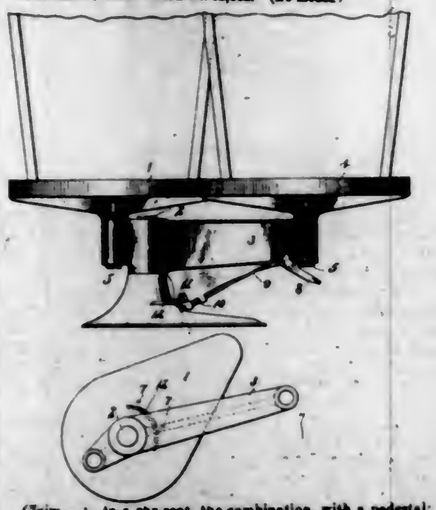
*Claim.*—1. In a window-screen, the combination with a rectangular frame, of a reticulated screen formed in two sections respectively secured upon the upper and lower portions of the frame at opposite sides thereof, the lower edge of the upper section being bent into substantially U shape, so as to provide a transverse upstanding member thereon near the upper transverse edge of the other screen-section, a return-bent V-shaped reinforcing-clip of sheet metal secured upon the upstanding member, a return-bent sheet-metal clip secured upon the transverse edge of the other screen-section, said reinforcing-clip having an outwardly-bent horizontal flange at its lower edge that affords a baffle-plate for insects, and a plurality of spaced bars extended between the opposed reinforcing-clips, which hold said clips spaced apart in parallel planes.



2. In a window-screen, the combination with a window-casement, and two guard-strips held oppositely on the stiles of the casement, each strip having a concave groove therein, of a rectangular screen-frame having two spaced and inclined pockets in each side bar thereof, an adjusting-screw tapping the bottom of each pocket, and a ball in each pocket, adapted to engage within the groove of a respective guard-strip when pressed by said adjusting-screw.

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**753,545. CAR-SEAT.** ROSSIE CHAMBERLIN, Brooklyn, N. Y. Filed June 1, 1901. Serial No. 62,622. (No model.)



*Claim.*—1. In a car-seat, the combination, with a pedestal; of a beam pivoted thereon, the pivotal point being nearer to one end of said beam than the other, and chairs mounted upon said beam.



2. In a car-seat, the combination, with a pedestal; of a beam pivoted thereon, the pivotal point being nearer to one end of said beam than the other, and chairs pivotally mounted upon said beam.

3. In a car-seat, the combination, with a pedestal; of a beam pivoted thereon, the portion of said beam on one side of such pivot extending at an angle to that portion thereof on the other side of said pivot, and chairs mounted on said beam.

4. A car-seat construction comprising a seat structure, a pivotal support for the same, eccentrically arranged with regard to the ends of the seat structure.

5. A car-seat construction comprising a seat structure, a pivotal support for same eccentrically arranged with regard to the ends of the seat structure, whereby the seat structure may be directed transversely or longitudinally of the car and may at the same time be moved bodily relatively to the car-floor, and means for locking the seat structure in different positions.

6. A car-seat construction comprising a swivel-support, and a pair of seats pivotally mounted thereon at different distances from the pivot of the swivel-support, so as to enable the two seats to be given a lateral movement with regard to the car-floor.

7. The combination with a car-body, of a plurality of seat constructions, each comprising a swivel-support, whose pivot is arranged eccentrically with respect to the ends of the seat structure whereby each seat structure is movable to present the seating means carried thereby either crosswise or lengthwise of the car and at the same time move the seat structure, as a whole, laterally with regard to the car-body.

8. In a street-railway car, a series of seat structures proportioned to substantially fill the longitudinal dimension of the seat-space along the side of the car and each seat structure having a pivot located substantially equidistant from the end of the seat structure, the back of the same and the side of the car to permit the seat structure to be turned to bring either the end or the back of the seat structure adjacent to the side of the car and form either a series of transverse seats or a continuous longitudinal series of seats.

9. In a railway-car, a series of seat structures fitting end to end along the side of the car and having pivots located symmetrically beneath all the seat structures spaced apart a distance equal to the length of the seat structure whereby said seat structures may be moved into a position transverse to the car

10. In a railway-car, a series of seat structures uniform in length fitting end to end along the side of the car and each mounted upon a pivot, the pivots being symmetrically disposed beneath the seat structures spaced apart in a longitudinal direction a distance equal to the length of the seat structure and located substantially equidistant from the side of the car and end of the seat structure and back of the seat, for the purpose set forth.

11. In a railway-car, a seat structure having a pivotal support located equidistant from the side of the car, from the end of the seat structure and from the back of the seat.

12. A seat structure for railway-cars having a pivotal support located eccentrically between the ends of the seat structures and a distance from one end substantially equal to the distance at which the pivot is to be placed from the side of the car.

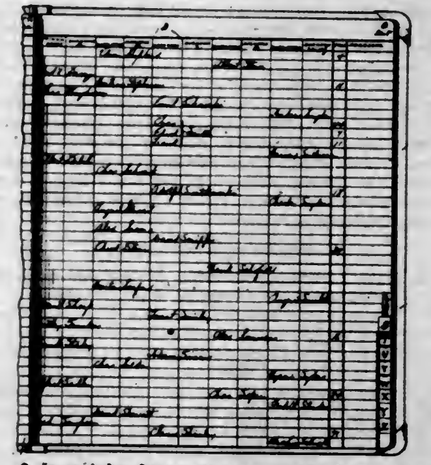
13. In a railway-car, a seat structure having a pivotal support located eccentrically between the ends of the seat structure and at a point substantially equidistant from the side of the car, the back of the seat and an end of the seat structure.

14. In combination with a railway-car, a series of seat structures of identical construction fitting end to end and along the side of the car and forming a continuous series of seats longitudinal of the car and pivotal supports symmetrically disposed beneath the seat structures spaced apart in a longitudinal direction a distance equal to the length of a seat structure and each located substantially equidistant from the side of the car and end of the seat structure and back of the seat.

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**753,546. INDEX.** BERNIE G. CHAPPER, Detroit, Mich. Filed Jan. 27, 1902. Serial No. 91,231. (No model.)

*Claim.*—1. In an index for proper names, a page appropriately designated to contain a certain class of surnames, and appropriately designated to contain a certain class of given names, and provided with alternate vertical columns each of said columns being appropriately designated to contain a certain subdivision of said class of surnames different from the subdivisions contained in the others of said columns, a vertical column, appropriately designated to contain given names, preceding each of said columns and horizontal lines crossing said vertical columns.

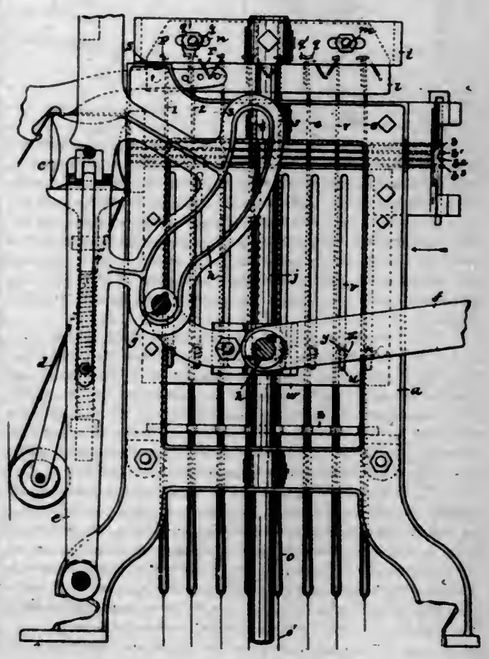


2. In an index for proper names, a page designated by the initial of the surnames and of the given names to be entered thereon and provided with vertical columns, the first column at the left and alternate columns thereafter being designated by the words "Given name," the second column from the left and alternate columns thereafter being designated by the word "Surname" and a letter of the secondary index of the surnames.

3. In an index for proper names, a page designated by the initial of the surnames and of the given names to be entered thereon and provided with vertical columns, the first column to the left and alternate columns thereafter being designated by the words "Given name," the second column from the left and alternate columns thereafter being designated by the word "Surname," a letter of the secondary index of the surnames, and a column toward the right of the page for reference-numbers or addresses.

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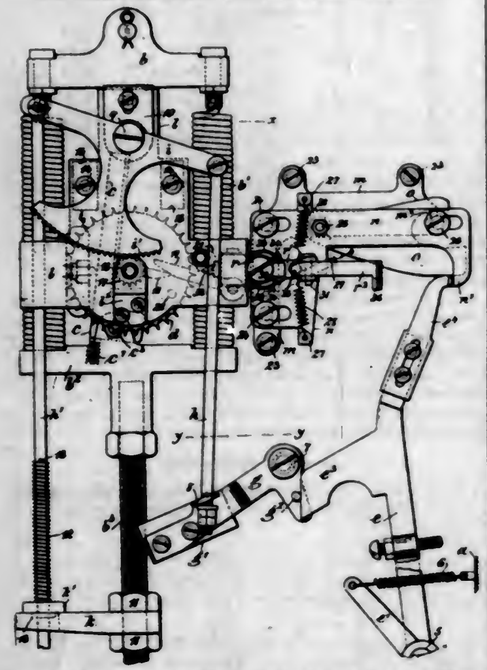
**753,547. JACQUARD-MACHINE.** WILLIAM COCHRAN, Paterson, N. J. Filed June 22, 1903. Serial No. 162,544. (No model.)



*Claim.*—The combination of a frame, the harness-cords, two sets of hooks, each hook being connected with an individual harness-cord and the hooks in one set having their rests extending oppositely to those in the other, needles, said hooks being fixed to said needles, against appreciable movement to and from each other, in pairs corresponding to the needles and comprising one hook from each set of hooks, and the hooks of each pair being adjacent each other, and a grid comprising a plurality of parallel pairs of contiguous knives, each pair of hooks being adapted to project between an individual pair of knives when the grid is at one of its limits of movement and the acting edges of said knives being spaced farther apart than the extremity of the rest of each hook in a pair is from that side of the shank of the other hook which is adjacent the rest thereof, substantially as described.

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753,548. **WEIGHING-MACHINE.** EDGAR H. COOK, New York, N. Y. Filed June 22, 1903. Serial No. 162,473. (No model.)



*Claim.*—1. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting stop, and means for holding said devices free from vibration, of a prime mover and a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, and a device intermediate of the latter devices and actuated primarily by the prime mover, and the operation of which permits the movement of the indicating mechanism and is also adapted for returning the same to its initial position.

2. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop and means for holding said devices free from vibration, of a prime mover and a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, and a movable weight device the operation of which permits the movement of the indicating mechanism and is also adapted for returning the same to its initial position.

3. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop, and means for holding said devices free from vibration, of a prime mover and a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, and a movable weight device actuated by the device set in motion by the prime mover, the movement of which in one direction permits the movement of the index-operating mechanism, and the movement of which in the opposite direction to its initial position and by its weight returns the index-operating mechanism to its initial position and the index to 0 or zero.

4. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop and means for holding said devices free from vibration, of a prime mover, a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, a device intermediate of the latter devices the operation of which permits the movement of the indicating mechanism and is also adapted for returning the same to its initial position, and a device acting as a stop to limit the extent of movement of the index or hand of the indicating mechanism.

5. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop and means for holding said devices free from vibration, of a prime mover, a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, a device intermediate of the latter devices the operation of which permits the movement of the indicating mechanism and is also adapted for returning the same to its initial position, and an adjustable device providing for the 0 or zero adjustment of the hand or index, so that on the return movement thereof the same is sure to stop at 0 or zero.

6. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop, and means for holding said devices free from vibration, of a prime mover, a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, a device intermediate of the latter devices the operation of which permits the movement of the indicating mechanism and is also adapted for returning the same to its initial position, a device acting as a stop to limit the extent of movement of the index or hand of the indicating mechanism, and a device coacting therewith and providing for originally setting the index or hand to 0 or zero, so that on the return movement thereof the same is sure to stop at 0 or zero.

7. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop, and means for holding said devices free from vibration, of a prime mover, a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, a movable weight device actuated by the device set in motion by the prime mover the movement of which in one direction permits the movement of the index-operating mechanism and the movement of which in the opposite direction to its initial position and by its weight returns the index-operating mechanism to its initial position and the index to 0 or zero, and a device acting as a stop to limit the extent of movement of the index or hand of the indicating mechanism.

8. In a weighing-machine, the combination with devices actuated by the weight of the person including a limiting-stop, and means for holding said devices free from vibration, of a prime mover, a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, a movable weight device actuated by the device set in motion by the prime mover the movement of which in one direction permits the movement of the index-operating mechanism and the movement of which in the opposite direction to its initial position and by its weight returns the index-operating mechanism to its initial position and the index to 0 or zero, and an adjustable device providing for the 0 or zero adjustment of the hand or index so that on the return movement thereof the same is sure to stop at 0 or zero.

9. In a weighing-machine, the combination with devices actuated by the weight of a person including a limiting-stop, and means for holding said devices free from vibration, of a prime mover, a device actuated thereby, an index or pointer and devices operating automatically for moving the same limited by the stop and thus indicating the weight, a pivoted and movable weight device actuated by the device set in motion by the prime mover the movement of which in one direction permits the movement of the index-operating mechanism and the movement of which in the opposite direction to its initial position and by its weight returns the index-operating mechanism to its initial position and the index to 0 or zero, a device acting as a stop to limit the extent of movement of the index or hand of the indicating mechanism, and a device coacting therewith and providing for originally setting the index or hand to 0 or zero, so that on the return movement thereof the same is sure to stop at 0 or zero.

10. In a weighing-machine having a case, the combination with the index-hand or pointer, and a shaft carrying the same, of means for turning the said shaft in opposite directions, oppositely-placed weights and connections therefrom to said devices, a prime mover and means actuated thereby for moving one of said weights to bring the other in evidence for actuating the index-operating mechanism, the release of which first weight actuates said index-operating mechanism to return the same to an initial position.

11. In a weighing-machine having a case, the combination with an index-hand or pointer a shaft therefor and a toothed wheel on said shaft, of a device meshing with said toothed wheel for turning the same, the shaft and moving the index or pointer, means for releasing the connection at one end of said device, a weight for simultaneously actuating the hand mechanism upon such release, and a weight for returning said parts to an initial position.

12. In a weighing-machine having a case, the combination with a vertically-movable rod, springs and connections between the same and to the case and which devices are actuated by a weight, an index-hand or pointer, a shaft therefor and a toothed wheel on said shaft, of a rocker-plate, a toothed segment formed therewith and engaging said toothed wheel, depending rods *h*, *h'* from opposite ends of the said rocker-plate, an arm upon the vertically-moving rod of the platform devices bifurcated at one end to receive the lower end of the rod *h'*, a ring and spring around the rod *h'* between pins forming stops, a bell-crank lever pivoted to the case of the machine, a stud on the short arm of said lever, a weight and perforated lug on the long arm of said lever, and the said rod *h* passing through said lug, a prime mover and a lever device actuated thereby and having an extension with an inclined end adapted to come into contact with the stop of the said bell-crank lever to swing the same and raise the weight of the said lever to release and permit the operation of the index-operating mechanism.

13. In a weighing-machine having a case, the combination with a vertically-movable rod, springs and connections between the same and to the case and which devices are actuated by a weight, an index-hand or pointer, a shaft therefor and a toothed wheel on said shaft, of a rocker-plate, a toothed segment formed therewith and engaging said toothed wheel, depending rods *h*, *h'* from opposite ends of the said rocker-plate, an arm upon the vertically-moving rod of the platform devices bifurcated at one end to receive the lower end of the rod *h'*, a ring and spring around the rod *h'* between pins forming stops, a bell-crank lever pivoted to the case of the machine, a stud on the short arm of said lever, a weight and perforated lug on the long arm of said lever, the said rod *h* passing through said lug, a prime mover and a lever device actuated thereby and having an extension with an inclined end adapted to come in contact with the stop of the said bell-crank lever to swing the same and raise the weight of the said lever to release and permit the operation of the index-operating mechanism, and acting as a stop to limit the extent of movement of the index or hand of the indicating mechanism, and so acting that on the return thereof to an initial position the same is sure to stop at 0 or zero.

14. In a weighing-machine having a case, the combination with a vertically-movable rod, springs and connections between the same and to the case and which devices are actuated by a weight, an index-hand or pointer, a shaft therefor and a toothed wheel on said shaft, of a rocker-plate, a toothed segment formed therewith and engaging said toothed wheel, depending rods *h*, *h'* from opposite ends of the said rocker-plate, an arm upon the vertically-moving rod of the platform devices bifurcated at one end to receive the lower end of the rod *h'*, a ring and spring around the rod *h'* between pins forming stops, a bell-crank lever pivoted to the case of the machine, a stud on the short arm of said lever, a weight and perforated lug on the long arm of said lever, the said rod *h* passing through said lug, a prime mover and a lever device actuated thereby and having an extension with an inclined end adapted to come in contact with the stop of the said bell-crank lever to swing the same and raise the weight of the said lever to release and permit the operation of the index-operating mechanism, means acting as a stop to limit the extent of movement of the index or hand of the indicating mechanism and so acting that on the return thereof to an initial position the same is sure to stop at 0 or zero, and a device coacting with the latter device and adjustable for originally setting the index or hand at 0 or zero in each machine.

15. In a weighing-machine having a case, the combination with a vertically-movable rod, springs and connections between the same and to the case and which devices are actuated by a weight, the index-hand or pointer, and a shaft carrying the same, of a finger on the shaft of the index or hand and movable therewith, a pivoted arm, a support therefor, a stop to limit the downward or gravity movement of said arm, and an adjustable device also on the support of said arm and adapted to regulate the extent of the upward movement thereof imparted by the said finger so as not only to act as a stop to limit the extent of movement of the index or hand of the indicating mechanism, but to provide for the zero adjustment of said hand or index, so that on the return movement thereof the same is sure to stop at 0 or zero.

16. In a weighing-machine having a case, the combination with the index-hand or pointer and a shaft carrying the same, of a plate and a part connected therewith forming a bearing for the shaft of said index or pointer, a device carried by said shaft revoluble therewith back of said plate, a device supported by said plate and capable of an adjusted relation, a part intermediate of the said latter devices moving by the former and contacting with the latter and collectively acting for arresting the movement of the index or pointer and for originally adjusting the position thereof at 0 or zero so that on the return movement of said index or pointer the same is sure to stop at 0 or zero.

17. In a weighing-machine having a case, the combination with a vertically-movable rod, springs and connections between the same and to the case and which devices are actuated by the weight a rack moving therewith, a shaft, a toothed disk and pinion thereon actuated by the rack, a spring-controlled pivoted rocker-arm device adapted to contact with said toothed disk and prevent vibrations thereof, a longitudinally-movable support and locking device connected therewith and carrying said rocker-arm, a prime mover and a lever device actuated thereby for holding the aforesaid group of devices in an initial position, and a spring for moving the said devices upon the release of the lever device for bringing the point of the rocker-arm device in contact with the toothed disk.

18. In a weighing-machine having a case, the combination with a vertically-movable rod, springs and connections between the same and to the case and which devices are actuated by the weight a rack moving therewith, a shaft, a toothed disk and pinion thereon actuated by the rack, a spring-controlled lever device, a prime mover for operating the same in one direction, a plate connected to the case of the machine, a plate slidable on the aforesaid plate and a plate pivoted thereto, a spring for moving the said plates in one direction, their return movement being effected by the lever device, means for locking the pivoted plate in its relation to the slidable plate, a spring-controlled rocker-arm structure adapted to come into contact with the toothed disk and hold the same free from vibration, a part formed with said rocker-arm adapted to engage the free end of the lever device to hold the same in a locked position, the release being effected by the forcible movement of the toothed disk swinging the rocker-arm structure.

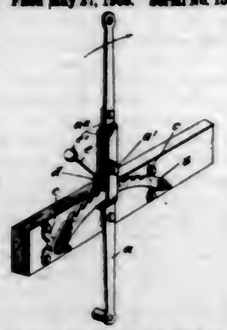
19. In a weighing-machine having a case, the combination with the platform-operated series of devices and a toothed disk actuated thereby, of a plate secured to the case of the machine and having lugs, a slidable plate having mortises and supporting-screws passing into the lugs and connecting the same to the aforesaid plate, one of which lugs is provided with a notch, a plate pivoted to the slidable plate and having an end adapted to engage the notch of the said lug to lock both plates in position at one end of their movement, a rocker-arm structure pivoted to the slidable plate and having an end adapted to engage the toothed disk, a spring for moving the slidable and pivoted plates in one direction, a prime mover and a spring-controlled pivoted device actuated thereby and coacting with the aforesaid devices, substantially as set forth.

20. In a weighing-machine having a case, the combination with the platform-operated series of devices and a toothed disk actuated, thereby, of a plate secured to the case of the machine, and having lugs, a slidable plate having mortises and supporting-screws passing into the lugs and connecting the same to the aforesaid plate, one of which lugs is provided with a notch, a plate pivoted to the slidable plate and having an end adapted to engage the notch of the said lug to lock both plates in position at one end of their movement, a rocker-arm structure pivoted to the slidable plate and having an end adapted to engage the toothed disk, a spring for moving the slidable and pivoted plates in one direction, a spring-controlled lever device having an adjustable part at its upper end, the free end of which is provided with an offset or bent part, a prime mover for actuating this lever device, a toothed end of the pivoted rocker-arm adapted in one position to interlock with the free end of the lever device, the release being effected by the movement of the toothed disk, the free end of said lever device with its return movement underrunning the lower edge of the plate pivoted to the slidable plate to raise the same and unlock it from the notch of said lug and said slidable plate having a tail end with which the free end of the lever devices comes into contact to simultaneously return the slidable and pivoted plates and the rocker-arm to an initial position.

21. In a weighing-machine having a case, the combination with the platform-operated series of devices and a toothed disk actuated thereby, of a plate secured to the case of the machine and having lugs, a slidable plate having mortises and supporting-screws passing into the lugs, and connecting the same to the aforesaid plate, one of which lugs is provided with a notch, a plate pivoted to the slidable plate and having an end adapted to engage the notch of the said lug to lock both plates in position at one end of their movement, a rocker-arm structure pivoted to the slidable plate and having an end adapted to engage the toothed disk, a prime mover and a spring-controlled pivoted device actuated thereby and coacting with the aforesaid devices, substantially as set forth.

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**753,549. BRAKE-LEVER ATTACHMENT.** ROBERT W. COOKE, Camden, Ore. Filed May 27, 1903. Serial No. 159,956. (No model.)

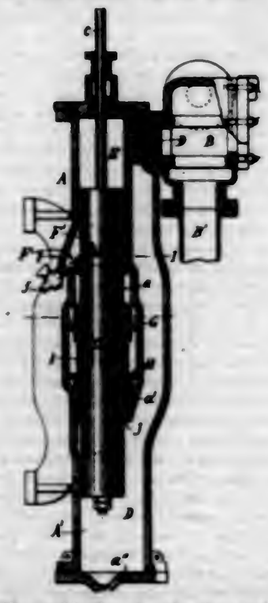


*Claim.*—1. The combination with a lever and a quadrant, of a pawl pivoted to the lever at one end and coacting at the other end with the quadrant, a weight, and means for attaching the weight to the pawl at a point intermediate its ends and projecting the weight laterally from the pawl.

2. The combination of a lever, a quadrant, a free pawl pivotally mounted on the lever and coacting with the quadrant, and a weight attached to and projected laterally from said free pawl.

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**753,550. VERTICAL-PLUNGER SINKING PUMP.** EDWIN M. CORTELL, Mount Vernon, N. Y., assignor to John R. Cameron, New York, N. Y. Filed Oct. 16, 1903. Serial No. 177,572. (No model.)



*Claim.*—1. The combination of a valve-chest or the like, a two-part cover or bonnet therefor, a rigid stud upon said main portion adjacent the meeting edges of said bonnet-sections, a hinged bolt upon said main portion adjacent the outer edge of each bonnet-section, said sections having suitable openings to take over said stud and hinged bolts, and nuts upon the latter.

2. In a pump, the combination with a two-part working barrel containing two water-chambers substantially as described, and a double-action plunger extending into both chambers, of a connection for the barrel comprising a packing adjacent to the plunger and closing the bottom of the upper chamber, a second packing that closes the top of the lower chamber, and a tube interposed between the plunger and the second packing, whereby the plunger encounters friction from one packing only while ready access may be obtained to the parts from the side.

3. In a pump, the combination with a two-part working barrel containing two water-chambers substantially as described, and a double-action plunger extending into both chambers, of a connection for the barrel comprising a packing adjacent to the plunger and closing the bottom of the upper chamber, a second packing that closes the top of the lower chamber, a tube interposed between the plunger and the second packing, and a ring carried by said tube for holding in place the first-named packing.

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**753,551. PLUMB AND LEVEL.** CHARLES H. CRAVEN, Newcastle, Pa. Filed Oct. 26, 1903. Serial No. 178,004. (No model.)

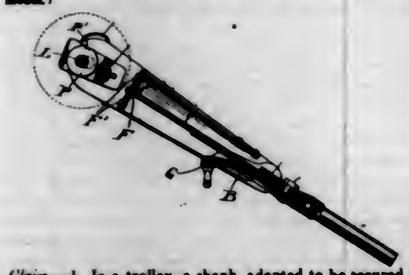


*Claim.*—1. A level having a glass spirit-tube, a metallic tube inclosing said spirit-tube, a longitudinally-curved shield adapted to fit over said tube, said shield having its sides curved outward to form flanges, a U-shaped member secured on the metal tube, and a plate bent around the bow portion of said U-shaped member and secured at the ends to one end of the shield.

2. The combination with a spirit-level, a metal tube incasing same, said tube being cut out on the top, a web on the under side of the metal tube, a plate having lugs in pairs, said web extending between said lugs and adapted to be secured to same, a U-shaped member secured on the tube adjacent the opening and having its bow portion slightly elevated, a plate having its intermediate portion resting between the top of the metal tube and the bow of the U-shaped member, said plate having its ends bent upon themselves, a longitudinally-curved shield adapted to fit over the opening in the metal tube, said shield having its corners at the rear end rounded, the shield being rigidly secured at its rear end to the ends of the plate encircling the bow of the U-shaped member.

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**753,552. TROLLEY FOR ELECTRIC CARS.** WILLIAM A. DAGGETT, Vineland, N. J. Filed Sept. 3, 1903. Serial No. 171,773. (No model.)



*Claim.*—1. In a trolley, a shank adapted to be secured to the trolley-pole, a curved arm extending upward from the shank, and side plates or prongs forming the trolley fork or harp pivoted at each side on studs extending outward from said arm, said prongs or side plates being formed separate from one another, each prong having an inwardly-extending lug, said lugs adapted to overlap one another and be secured together, a spring secured at its lower end to the upper face of the curved arm, a cross bolt or rivet extending between the plates, with which the upper end of the curved arm comes in contact, the upper lugs joining the two prongs together, each being provided with a slot through which the free end of the spring extends, and a trolley mounted between the upper ends of the prongs, as and for the purpose specified.



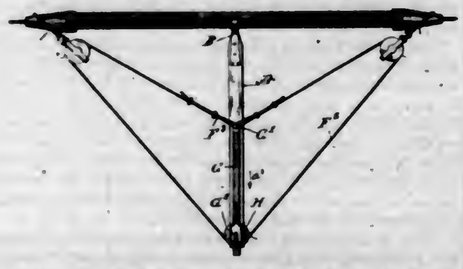
2. In a trolley, a shank adapted to be secured to the trolley-pole, a curved arm extending upward from the shank, side plates forming the trolley-fork, studs extending outward from said arm at each side upon which the lower end of the side plates are journaled, a trolley mounted between the upper end of said side plates, said side plates being made separate from one another, each side plate being provided with an inwardly-extending lug near its lower end, the plane of said lug being parallel with the trolley-pole, said lugs adapted to overlap one another and be secured together, each of said side plates being also provided with an inwardly-extending lug near their upper ends, the plane of said lugs being at right angles to the trolley-pole and overlapping one another and being secured together, a spring secured at its lower end to the upper face of the curved arm, a plate arranged above the spring, between which plate and arm the spring is adapted to be clamped, a cross bolt or rivet extending between the side plates abutting against the under side of the curved arm for the purpose of limiting the upward movement of the trolley-fork, the upper lugs extending between the side plates being provided with a slot through which the free end of the spring extends, as and for the purpose specified.

3. In a trolley, a shank adapted to be secured to the trolley-pole, a curved arm extending upward from the shank, side plates forming the trolley-fork, studs extending outward from the arm upon each side upon which the lower ends of the side plates are journaled, inwardly-extending lugs formed with the side plates, said lugs overlapping one another and being secured together after the side plates have been slipped upon the studs, a spring clamped at its lower end to the upper face of the curved arm, the upper or free end of the spring engaging the side plates, a cross bolt or rivet extending between the side plates and abutting against the under side of the curved arm, a trolley-wheel, a spindle extending through openings formed through the upper end of the side plates, said trolley-wheel journaled loosely upon said spindle, springs adapted to normally hold the trolley-wheel centrally of the fork, as and for the purpose specified.

4. In combination with a device of the character described, a trolley-fork, a trolley mounted to revolve between the prongs of said fork, a spindle extending through the prongs of the fork and held against revolution, means for allowing said spindle a certain amount of rocking or tilting movement, the trolley-wheel being journaled loosely upon said spindle, a washer arranged upon each side of the trolley and around the spindle, lugs protruding outward from each washer, antishock-springs arranged upon each side of the trolley, each spring being provided with an elongated opening through which the spindle extends, notches formed in said springs adapted to engage the lugs upon the washers to hold said washers stationary while the trolley is revolving, as and for the purpose specified.

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**753,553. BENDING DEVICE.** THEODORE DAHM, Warren, Pa. Filed Nov. 14, 1903. Serial No. 181,186. (No model.)



*Claim.*—1. A bending device comprising a support for engagement by the article to be bent, removable plugs for engagement with the ends of the article, a tackle for connection with the plugs, and a jack on the support, for engagement by the tackle, as set forth.

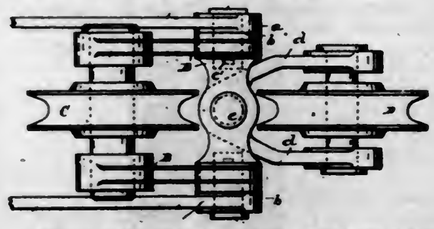
2. A bending device comprising a support, provided at one end with a fork for engaging the article to be bent at the desired point, plugs for removable attachment to the ends of the article to be bent, rings held on the said plugs, sheaves connected with the said rings, a sheave on the said support, and a jack on the said support, connected with the rope or cable passing over the said sheaves, as set forth.

3. A bending device comprising a support having a fork at one end and carrying a sheave at the other end, plugs for removable engagement with the ends of the pipe to be bent, the said plugs being conical, rings hung on the said plugs, sheaves connected with the said rings, a cable or rope passing over the said sheaves and provided at its ends with loops, a rack mounted to slide on the said support and having a horn engaged by the said loops, and a manually-controlled lever device held on the said support and engaging the said rack, to impart a sliding motion to the latter, as set forth.

4. A bending device provided with a plug for engaging the end of the pipe to be bent, the said plug being conical and having reduced portions, one of which fits into the inside of the pipe, and a ring secured on the other reduced portion and projecting beyond the same, to engage the outside of the pipe to be bent, as set forth.

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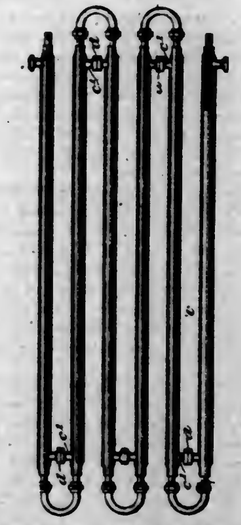
**753,554. TROLLEY.** ARTHUR S. DEEM, Reading, Pa. Filed Aug. 8, 1903. Serial No. 168,706. (No model.)



*Claim.*—A trolley comprising a harp, a main frame B pivotally mounted on the harp, pins e which enter the frame B from either side but do not reach to the center, keys e', a contact-wheel C mounted in said frame, a supplemental jaw-shaped frame d having central opening $b^2$, a pin e passing through the opening $b^2$ and the body of the frame B forming a swinging connection for said supplemental frame, and a rear wheel D pivotally mounted in said supplemental frame, all substantially as set forth.

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**753,555. CONDENSER.** THOMAS DOUGLAS and GEORGE L. COMBOY, London, England. Filed May 9, 1903. Serial No. 156,462. (No model.)



*Claim.*—1. A condenser, comprising an inner and outer element one of said elements having its end reduced in diameter snugly to engage the other element, and said parts being welded together at the said end, for the purpose specified.

2. A condenser, comprising an inner and an outer element, the inner element passing beyond the end of the outer element, and said end of the outer element being reduced in diameter snugly to engage the inner element and being welded thereto to form an integral joint.

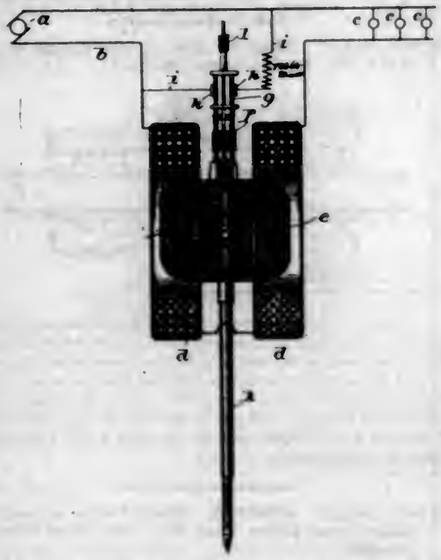
3. A condenser, comprising inner pipes, outer pipes inclosing the same, the inner pipes projecting beyond the ends of the outer pipes and the ends of the outer pipes being reduced in diameter to engage the inner pipes and being welded thereto, connections be-

tween the ends of the inner pipes, and connections between the outer pipes, said latter connections passing from points intermediate the ends of the outer pipes.

4. A condenser, comprising an inner and an outer tubular element, the inner element being extended beyond the outer element and the outer element having an integral end portion reduced to snugly engage the projected portion of the inner element and being welded permanently thereto.

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**758,556. ELECTRIC METER. THOMAS DUNCAN, Lafayette, Ind. Filed Dec. 28, 1903. Serial No. 186,994. (No model.)**




*Claim.*—1. A wattmeter having a current field-winding, a rotating pressure field-winding, subdivided into armature-coils having terminals substantially fixed with respect to the armature and forming one set of contacts, said armature with its terminals being together slidable longitudinally of the armature-shaft to effect connection and disconnection, and a commutator whose segments form another set of contacts, the sets of armature-coil-terminal contacts and commutator-segment contacts being assembled in tubular formation, substantially as described.

2. A wattmeter having a field-winding, a rotating pressure field-winding subdivided into armature-coils having strip-metal terminals forming one set of contacts and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being assembled in tubular formation and relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and permit physical separation of armature and commutator, contacts of one set being adapted to slide over contacts of the other set, substantially as described.

3. A wattmeter having a field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals forming one set of contacts and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being assembled in tubular formation and relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and to permit physical separation of armature and commutator, one contact of each pair of engaging contacts being a strip-spring having sliding engagement over its companion, substantially as described.

4. A wattmeter having a field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals forming one set of contacts and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being assembled in tubular formation and relatively movable to effect connection and disconnection of the armature and to permit physical separation of armature and commutator, one contact of each pair of engaging contacts being a strip-spring having sliding engagement over a companion, substantially as described.

5. A wattmeter having a current field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals forming one set of contacts and a commutator whose segments form another set of contacts, the sets of armature-coil contacts and commutator-segment contacts being assembled in tubular formation relatively movable to effect connection and disconnection of the armature and to permit physical separation of the armature and commutator, one contact of each pair thus separably included in circuit with an armature-coil being a strip-spring, substantially as described.

6. A wattmeter having a current field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals substantially fixed with respect to the armature and forming one set of contacts, said armature with its terminals being together slidable longitudinally of the armature-shaft to effect connection and disconnection, and a commutator whose segments form another set of contacts, the sets of armature-coil-terminal contacts and commutator-segment contacts being relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and permit physical separation of armature and commutator, substantially as described.

7. A wattmeter having a field-winding, a rotating pressure field-winding subdivided into armature-coils having strip-metal terminals forming one set of contacts, and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and permit physical separation of armature and commutator, contacts of one set being adapted to slide over contacts of the other set, substantially as described.

8. A wattmeter having a field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals forming one set of contacts, and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and to permit physical separation of armature and commutator, one contact of each pair of engaging contacts being a strip-spring having sliding engagement with its companion, substantially as described.

9. A wattmeter having a field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals forming one set of contacts and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being relatively movable to effect connection and disconnection of the armature and commutator, one contact of each pair of engaging contacts being a strip-spring having sliding engagement over a companion, substantially as described.

10. A wattmeter having a current field-winding, a rotating pressure field-winding subdivided into armature-coils having terminals forming one set of contacts, and a commutator whose segments form another set of contacts, the set of armature-coil contacts and commutator-segment contacts being relatively movable to effect connection and disconnection of the armature and to permit physical separation of the armature and commutator, one contact of each pair thus separably included in circuit being a strip-spring, substantially as described.

11. A motor having a rotating winding subdivided into armature-coils having terminals substantially fixed with respect to the armature and forming one set of contacts, said armature with its terminals being together slidable longitudinally of the armature-shaft to effect connection and disconnection, and a commutator whose segments form another set of contacts, the sets of armature-coil contacts and commutator-segment contacts being relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and permit physical separation of armature and commutator, substantially as described.

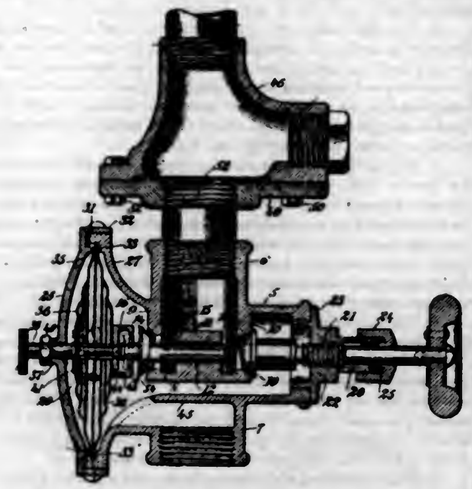
12. A motor having a rotating winding subdivided into armature-coils having strip-metal terminals forming one set of contacts, and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and to permit physical separation of armature and commutator, contacts of one set being adapted to slide over contacts of the other set, substantially as described.

13. A motor having a rotating winding subdivided into armature-coils having terminals forming one set of contacts, and a commutator whose segments form another set of contacts, the sets of armature-contacts and commutator-segment contacts being relatively slidable longitudinally of the armature-shaft to effect connection and disconnection of the armature and to permit physical separation of armature and commutator, one contact of each pair of engaging contacts being a strip-spring having sliding engagement over a companion, substantially as described.



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**758,557. STEAM-TRAP. CLAYTON A. DUNHAM, Marshalltown, Iowa. Filed Apr. 30, 1903. Serial No. 154,933. (No model.)**



*Claim.*—1. A steam-trap having a casing provided with an inlet and an outlet arranged directly in line with each other to facilitate connecting it to a horizontal or vertical pipe, a bridge joined to the upper part of the casing by spaced walls one of which is provided with a valve-opening, a guide-lug on the bridge, and a valve adapted to said opening and provided with a grooved stem which fits slidably in said guide-lug.

2. A trap of the class described, comprising a casing provided with an internal bridge arranged to form a by-pass, said bridge having a by-pass port in one side and a valve-port in the other side, a valve controllable at will and adapted to the by-pass port, and a diaphragm-controlled valve operatively related to the other port.

3. A trap of the class described, comprising a casing provided with an inlet and an outlet arranged in line with each other, a bridge within said casing to form a by-pass and having a valve-port and a by-pass port, a valve controllable at will and adapted to the by-pass port, and an automatically-controlled valve for closing the valve-port.

4. A trap of the class described, comprising a casing having an inlet and an outlet arranged in line with each other, a bridge disposed in said casing to form a by-pass in communication with the outlet, said bridge having a by-pass port in one side and a valve-port in another side, a valve controllable at will for closing the by-pass port, and a thermostatically-controlled valve adapted to the valve-port, said valve being disposed for movement across a line intersecting the inlet and outlet of the casing.

5. A trap of the class described, comprising a casing having an inlet and an outlet in line with each other, a hollow bridge within said casing and provided with a port, a guide on the bridge in line with the port therein, and a valve-stem slidable in the guide and having a valve adapted to said port.

6. A trap of the class described, having a valve-chamber and a laterally-extending expanded plate, said plate being provided with a threaded rim and with an internal bearing-shoulder, another plate screwed to said rim and having a flange disposed in cooperative relation to the shoulder of the first-named plate, a chambered diaphragm arranged for its edge portion to be laterally clamped between the shoulder and the flange of the plates, and a valve controllable by said diaphragm.

7. In a trap of the class described, a chambered diaphragm having laterally-yieldable members, a filling-nozzle attached to one of said members and projecting across the chamber to a point adjacent to the other member, and a closure for said nozzle, the latter serving to limit the relative play of the members to one another and as a means for replenishing the chamber.

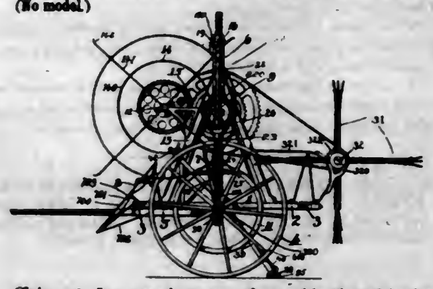
8. A trap of the class described, having a casing provided with a valve-port, a diaphragm, a cup-shaped coupling member movable with said diaphragm, a valve-stem having projecting studs fitted in said coupling member and interlocked detachably therewith, and a valve movable with the stem.

9. A trap of the class described, comprising a casing having an inlet and an outlet, a diaphragm-controlled valve in said casing, and a filter-casing coupled to said inlet and provided with two legs disposed at an angle to one another, one of said legs having a removable closure and the other leg disposed in alinement with the inlet to the trap-casing, said filter-casing having a filtering medium.

10. A steam-trap having a casing provided with an inlet at its upper side, a filter-casing having two legs disposed at an angle to each other, one of said legs being coupled to the inlet of the casing and the other leg being closed by a removable head or plug, a valve within said casing, and a suitable filtering material confined within the filter-casing.

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**758,558. CANE CUTTING AND STRIPPING MACHINE. ADAM C. A. DUPUY, New Orleans, La. Filed July 3, 1903. Serial No. 164,212. (No model.)**



*Claim.*—1. In a cane-harvester, the combination of horizontal topping-knives, a stripper operating in an upright plane in rear of said knives, and a stationary knife below and in rear of the operative position of said stripper and adapted to cut the cane near the surface of the ground.

2. In a cane-harvester, the combination with the topping-knives, of a propping-reel adapted to raise the fallen cane in advance of said knives, and a stripper operating in an upright plane in rear of said knives.

3. In a cane-harvester, the combination with means for propping the fallen cane, of cutting and stripping mechanism in rear thereof comprising topping-knives, a stripper operating in an upright plane in rear of and alined with said knives, and a stationary knife below and in rear of the operative position of said stripper and adapted to cut the cane near the surface of the ground.

4. In a cane-harvester, the combination with a main frame, of inverted-Y-shaped uprights thereon, a cross-bar connecting their upper ends, a propping-reel having its shaft journaled upon the forward arms of the uprights, topping-knives suspended from the cross-bar, brackets braced from the other arms of the uprights, and a stripper journaled in said brackets.

5. In a cane-harvester, the combination with the main frame, of inverted-Y-shaped uprights thereon, a cross-bar connecting their stems, posts standing beneath the angles of said uprights, a power-shaft journaled upon said posts, a propping-reel having its shaft journaled upon the forward arms of the uprights, topping-knives suspended from the cross-bar, brackets braced from the rear arms of the uprights, a stripper journaled in said brackets, and connections between the power-shaft and the moving parts.

6. In a cane-harvester, a resilient stripper for removing the leaves from the standing cane, and mechanism for giving said stripper a downward operative motion.

7. In a cane-harvester, a stripper for removing the leaves from the standing cane, and mechanism for giving said stripper a downward operative motion; combined with knives located in advance of the stripper for removing the tops of the cane.

8. In a cane-harvester, a stripper for removing the leaves from the standing cane, and mechanism for giving said stripper a downward operative motion; combined with propping mechanism for raising the stalks in advance of the stripper.

9. In a cane-harvester, a stripper for removing the leaves from the standing cane, and mechanism for giving the stripper a downward operative motion; combined with knives located in advance of the stripper for removing the tops of the cane, and propping mechanism for raising the stalks in advance of the knives.

10. In a cane-harvester, the combination of a rotating propping-reel operating in an upright plane, and suitable cutting mech-

anism located to one side of and within the lateral projection of the path of said reel and adapted to top the cane while the latter is propped by the reel.

11. In a cane-harvester, the combination of a rotating propping-reel in an upright plane, and a knife located to one side of and within the lateral projection of the path of said reel and rotating in a plane perpendicular to the plane of the reel.

12. In a cane-harvester, the combination with a rotatable hollow shaft, and a trackway parallel therewith; of a stem adjustable in said shaft and adapted to rotate therewith; a knife fixedly mounted on said stem, and a non-rotatable brace swiveled on the stem and provided with a perpendicular tongued portion adapted to slide in the trackway.

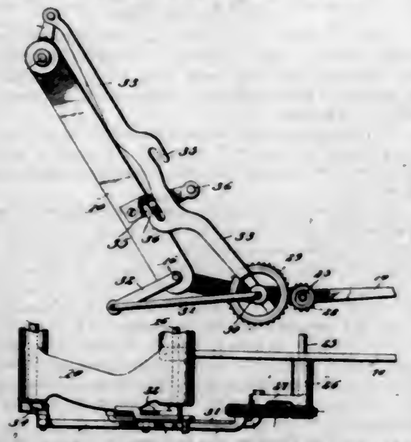
13. In a cane-harvester, the combination with the shaft bearing the topping-knives, of means for rotatably supporting said shaft comprising a yoke-bar having a notch, a latch-bar pivoted to said yoke-bar and provided with a notch adapted to complement that of the yoke-bar to loosely embrace the shaft, and means for securing said latch-bar in its closed position.

14. In a cane-harvester, a stripper having resilient stripping-fingers, combined with mechanism for causing said stripper to operate upon the cane with a downward motion.

15. In a cane-harvester, the combination with a stripper having integral resilient stripping-fingers, of mechanism for causing said stripper to operate upon the cane with a downward motion.

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**753,559. MECHANICAL MOVEMENT ADAPTED TO GRAIN-BINDERS.** WILLIAM C. DURYEA, Blawenburg, N. J. Original application filed Apr. 14, 1903, Serial No. 102,794. Divided and this application filed July 28, 1903. Serial No. 167,313. (No model.)



*Claim.*—1. The combination of the rotating shaft, a driven shaft for operating the rotating shaft, and mechanism between the said shaft and rotating shaft, consisting of a gear fastened to the driven shaft, a planetary gear coacting with the first-named gear, and a connecting-rod fastened to the planetary gear and operatively connected with the rotating shaft.

2. The combination of the rotating shaft having a crank-arm, a driven shaft for operating the rotating shaft, and mechanism between the said shaft and the crank-arm of the rotating shaft, consisting of a gear fastened to the driven shaft, a planetary gear coacting with the first-named gear, and a connecting-rod fastened to the planetary gear and connected with the crank-arm of the rotating shaft.

3. The combination with a suitable frame, of the rotating shaft, a driven shaft for driving the rotating shaft, a sleeve mounted to turn loosely on a boss on the frame, through which boss the said driven shaft is loosely projected, an arm carried by the sleeve, a planetary gear mounted to turn on the arm, a gear fastened to the said driven shaft and meshed with the planetary gear, and a connecting-rod attached to the planetary gear and operatively connected with the rotating shaft.

4. The combination of a rotating shaft, a shaft for operating the rotating shaft, and mechanism between said shafts, consisting of a gear fastened to the driven shaft, a planetary gear coacting with the first-named gear, and a connecting-rod attached to the planetary gear and operatively connected with the rotating shaft, said rod having a changeable fulcrum.

5. The combination of a rotating shaft having a crank-arm, a shaft for operating the rotating shaft, and mechanism between the said shafts, consisting of a gear fastened to the driving-shaft, a planetary gear coacting with the first-named gear, and a connecting-rod rigidly attached to the planetary gear and connected with the crank-arm of the rotating shaft, said connecting-rod projecting approximately radially from the planetary gear and having a changeable fulcrum.

6. The combination of a rotating shaft, a shaft for operating the rotating shaft, and mechanism consisting of a gear fastened to the said shaft, a planetary gear coacting with the first-named gear, a connecting-rod attached to the planetary gear and operatively connected with the rotating shaft, and a part stationary with respect to the connectiag-rod and adapted to be engaged periodically thereby to form a temporary fulcrum therefor.

7. The combination of a rotating shaft, a shaft for operating the rotating shaft, and mechanism between said shafts, consisting of a gear fastened to the said shaft, a planetary gear coacting with the first-named gear, a connecting-rod extending from the planetary gear and operatively connected with the rotating shaft, and two members stationary with respect to the connecting-rod and arranged out of transverse alinement at opposite sides thereof, said stationary members constituting temporary fulcra for the connecting-rod.

8. The combination of a rotating shaft, a shaft for operating the rotating shaft, and mechanism between said shafts, consisting of a gear fastened to the said shaft, a planetary gear coacting with the first-named gear, a connecting-rod extending between the planetary gear and the said rotating shaft, the connecting-rod having oppositely-disposed hooks located on opposite sides thereof, and relatively stationary studs adapted to be alternately engaged by said hooks to form temporary fulcra for the connecting-rod.

9. The combination of a rotating shaft, a rocking shaft, a driven shaft, a gear fastened to the driven shaft, an arm mounted to swing around the axis of the driven shaft, a rod pivotally connected with the arm and having connection with the rocking shaft, a planetary gear mounted on the arm coincident with the pivot of said connecting-rod, the planetary gear coacting with the gear on the driven shaft, and a second connecting-rod extending between the planetary gear and the rotating shaft.

10. The combination of a rotating shaft, a rocking shaft, a driven shaft, a gear fastened to the driven shaft, an arm mounted to swing around the axis of the driven shaft, a rod pivotally connected with the arm and having connection with the rocking shaft, a planetary gear mounted on the arm coincident with the pivot of said connecting-rod, the planetary gear coacting with the gear on the driving-shaft, a second connecting-rod extending between the planetary gear and the rotating shaft, and a member stationary relative to the second connecting-rod and adapted to be periodically engaged thereby, for the purpose specified.

11. The combination of a rotating shaft, a rocking shaft, a driven shaft, a gear fastened to the driven shaft, an arm mounted to swing around the axis of the driven shaft, a rod pivotally connected with the arm and having connection with the rocking shaft, a planetary gear mounted on the arm coincident with the pivot of said connecting-rod, the planetary gear coacting with the gear on the driving-shaft, a second connecting-rod extending between the planetary gear and the rotating shaft, and two relatively stationary members located on opposite sides of the second connecting-rod and adapted to be alternately engaged thereby.

12. The combination of a rotating shaft, a rocking shaft, a driven shaft, a gear fastened to the driven shaft, an arm mounted to swing around the axis of the driven shaft, a rod pivotally connected with the arm and having connection with the rocking shaft, a planetary gear mounted on the arm coincident with the pivot of said connecting-rod, the planetary gear coacting with the gear on the driving-shaft, and a second connecting-rod extending between the planetary gear and the rotating shaft, the said second-named connecting-rod having two oppositely-disposed hooks on opposite sides thereof, and two relatively stationary members arranged on opposite sides of the second-named connecting-rod and adapted to be alternately engaged by said hooks on the connecting-rod.

13. The combination of a rotating shaft, a rocking shaft, a driven shaft, an arm mounted to swing around the axis of the driven shaft, a gear fastened to the driven shaft, a connecting-rod having a laterally-turned end pivotally mounted on the arm and having connection with the rocking shaft, a planetary gear mounted to turn on the said laterally-turned end of the connecting-rod and coacting with the gear od the driving-shaft, and a second connecting-rod attached to the planetary gear and having connection with the rotating shaft.



14. The combination with a rotating shaft, and a driven shaft, of an arm connected with the rotating shaft, cooperating gears for making an end portion of the arm describe an orbital movement around the driven shaft, said arm being attached rigidly to one of said cooperating gears, and temporary fulcra for said arm during its traversing movement.

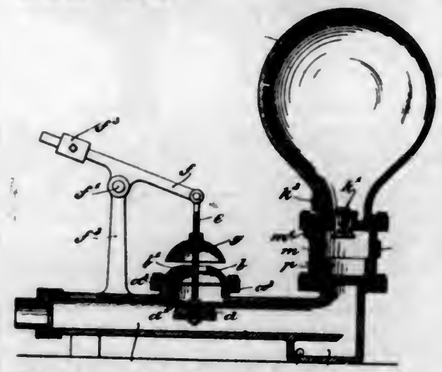
15. The combination with a driven shaft, and a rocking shaft, of means for actuating said rocking shaft from the driven shaft, said means including an arm mounted for rotation on an axis coincident with the driven shaft, a connecting-rod between said arm and the rocking shaft, and gearing actuated by the driven shaft and operatively connected with the arm for driving the latter.

16. The combination with a driven shaft, and a rocking shaft, of an arm mounted for rotation on an axis coincident with the driven shaft, a gear on said driven shaft, a planetary gear revoluble with said arm and meshing with the driven-shaft gear, and a connection between said arm and the rocking shaft.

17. The combination with a rotating shaft, a rocking shaft, and a driven shaft, of an arm rotating on an axis coincident with the driven shaft, a gear on the driven shaft, a planetary gear revoluble with said arm and meshing with said driven-shaft gear, an arm fixed to the planetary gear and connected with the rotating shaft, temporary fulcra for said last-mentioned arm, and a connection between the first-mentioned arm and the rocking shaft.

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**753,560. HYDRAULIC RAM.** GEORGE H. EARLE, Jr., Bryn Mawr, and GEORGE B. SHAWLINE, Wayne, Pa. Filed Apr. 27, 1903. Serial No. 154,538. (No model.)



*Claim.*—1. In a hydraulic ram, a spring-water chamber provided with a water-inlet and an air-inlet, a reservoir arranged above said chamber and having a valve-controlled inlet, a box-shaped valve arranged within said chamber, an intake-pipe arranged below the base of the valve of said chamber and having between its inlet and discharge an overflow-opening provided with a seat, a plunger-valve adapted to engage the seat of said opening, a rod traversing the seat and opening and carrying said plunger-valve, a lever-arm from one end of which said rod is suspended, and a bell-shaped governor-plate adjustable on said rod toward or away from said seat.

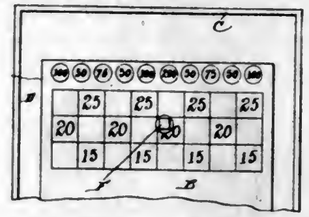
2. In a hydraulic ram, a spring-water chamber, an inlet for water to said chamber, an air-inlet for said chamber, a reservoir arranged above said chamber, a valve-controlled inlet arranged to permit water to flow only from the chamber into the reservoir, a box-shaped valve arranged within the chamber, said valve formed of rigid material, and an intake-pipe arranged below the base of said valve so that the inflowing water may strike upon said base.

3. In a hydraulic ram, an intake-pipe having an overflow-opening and a delivery end, a plunger arranged within the pipe and adapted when elevated by the water in the pipe to close the overflow-opening, a governor-plate cooperating with the plunger and arranged outside the pipe above the overflow-opening, means for adjusting said plate toward or away from the overflow-opening, a spring-water chamber arranged above the delivery end of the pipe, and a box-shaped valve of rigid material arranged in said chamber, the base of said valve normally resting upon the delivery end of said intake-pipe.

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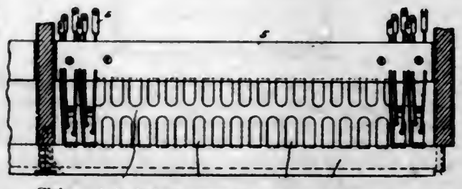
**753,561. GAME APPARATUS.** CHARLES P. EDMUNDS, Philadelphia, Pa. Filed July 8, 1903. Serial No. 164,677. (No model.)

*Claim.*—The combination with a game-board having a series of circles and a series of squares indicated thereon, game-pieces slidable on the board and having a base of such contour as to fit the circles of the board, the said game-pieces having reduced tops with straight sides, each adapted to lie within the field of one of the squares, substantially as described.




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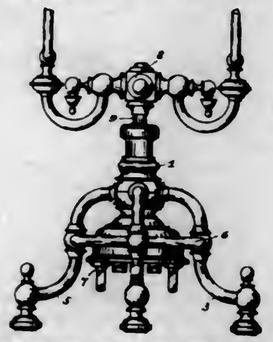
**753,562. JACK-FIELD FOR TELEPHONES.** LARS M. ERICSSON, Stockholm, Sweden, assignor to Aktiebolaget L. M. Ericsson & Co., Stockholm, Sweden. Filed June 18, 1902. Serial No. 112,140. (No model.)



*Claim.*—A jack-field comprising standards having grooves, a sheet-metal plate having its edges or parts thereof extending into the grooves in the standards, pieces of insulating material mounted upon the said sheet-metal plate in such a manner as to be totally carried by the said plate, and thimbles and jack-springs held by the insulating material, substantially as described.

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**753,563. PORTABLE OR TABLE TELEPHONE INSTRUMENT.** LARS M. ERICSSON, Stockholm, Sweden, assignor to Aktiebolaget L. M. Ericsson & Co., Stockholm, Sweden. Filed Sept. 30, 1902. Serial No. 125,395. (No model.)



*Claim.*—A portable or table telephone instrument comprising a tubular central portion, a plurality of outwardly and downwardly supporting members or feet supporting said tubular portion, an encircling ring connecting said members, a coupling-box carried on the under side of said central portion within said ring, switch-springs within said box, a switch-rod moving vertically within said tubular central portion and adapted to coöperate with said springs and a receiver-hook on the rod above the central portion, substantially as described.

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**753,564. BOTTLE.** ALFRED FRIEDMANN, Shreveport, La. Filed July 10, 1903. Serial No. 164,941. (No model.)

*Claim.*—1. A bottle having a body provided with a fragile bottom, and a ball in the body, adapted to float on the liquid contents of the bottle, the ball being capable of breaking the said fragile bottom, as set forth.

2. A bottle having a body provided with a fragile bottom, a ball in the body, adapted to float in the liquid contents thereof, and

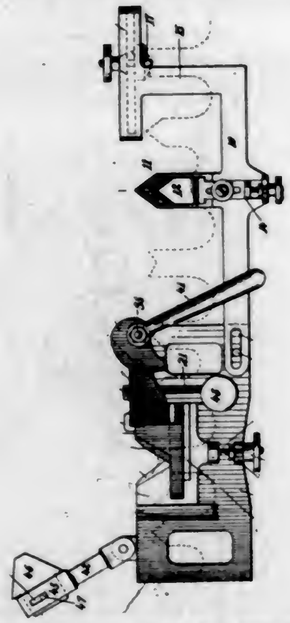
a ledge in the body, for projecting the ball onto the said bottom, as set forth.



3. A bottle having a body provided with a fragile bottom, a ball in the body, capable of breaking the said fragile bottom and adapted to float in the liquid contents of the said body, and a ledge in the body, for projecting the ball onto the said bottom, said ledge having its top and bottom curved, to project the ball in parabolic curve from the ledge onto the middle of the bottom, as set forth.

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**753,565. SAW SWAGING AND FILING GAGE.** SAMUEL J. GALLOWAY, Hillsboro, Oreg. Filed Feb. 26, 1903. Serial No. 145,468. (No model.)



*Claim.*—1. The combination of a body, a main clamping-jaw mounted to move transversely thereon, means for so moving the main clamping-jaw, an auxiliary clamping-jaw carried by the main clamping-jaw and slidable thereon, means for sliding the auxiliary clamping-jaw and a swager coacting with said jaws.

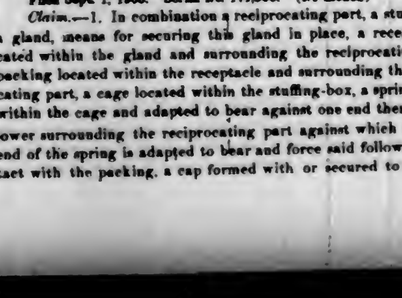
2. The combination of a body, a main clamping-jaw mounted to move transversely thereon, means for so moving the main clamping-jaw, an auxiliary clamping-jaw carried by the main clamping-jaw and slidable thereon, means for sliding the auxiliary clamping-jaw, a swager coacting with said jaws, said means for sliding the auxiliary jaw comprising a slide in connection therewith, and a cam having engagement with the slide to impart the aforesaid movement thereto.

3. The combination of a body, a clamping-jaw mounted to move thereon, means for so moving the clamping-jaw, an auxiliary clamping-jaw carried on the main clamping-jaw and independently movable thereon, and means for so independently moving the auxiliary clamping-jaw.

4. The combination of a body, a main clamping-jaw mounted to move thereon, means for so moving the main clamping-jaw, an auxiliary clamping-jaw mounted on the main jaw and movable independently thereof, a slide in connection with the auxiliary clamping-jaw and mounted on the body, a hook attached to the slide, and a cam having a flange engaging the hook and slide, whereby upon the movement of the cam a reciprocal movement is imparted to the slide.

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**753,566. SODA-WATER APPARATUS.** CHARLES A. GEDDES, Philadelphia, Pa., assignor of one-half to Charles Hamm, Philadelphia, Pa. Filed Mar. 25, 1903. Serial No. 149,445. (No model.)



*Claim.*—1. In a dispensing apparatus, a supply-passage, a plurality of outlet-passages communicating with nozzles and an outlet-passage communicating with an exhaust-opening, and a rotatable valve adapted to establish communication between said supply-passage and said nozzle-passages and between one of said nozzle-passages and said exhaust-passage.

2. In a dispensing apparatus, a supply-passage, a plurality of outlet-passages, an outer and an inner nozzle communicating with said outlet-passages, an exhaust-passage and a valve adapted to independently establish communication between said supply-passage and said nozzle-passages and between one of said nozzle-passages and said exhaust-passage.

3. In a dispensing apparatus, a body portion having a valve-seat, a supply-passage leading thereto, a plurality of passages leading therefrom and communicating with nozzles, a passage also leading therefrom and communicating with an exhaust, and a valve upon said seat having a plurality of passages adapted to establish communication between said supply-passage and said nozzle-passages, and between one of said nozzle-passages and said exhaust.

4. In a dispensing apparatus, a body portion having a valve-seat, a supply-passage leading thereto, concentric nozzles connected with said body, an exhaust-aperture in said body, passages leading from said valve-seat to each of said nozzles and said exhaust and a valve on said seat adapted to alternatively connect said supply-passage with either of said nozzle-passages and said exhaust-passage with one of said nozzle-passages.

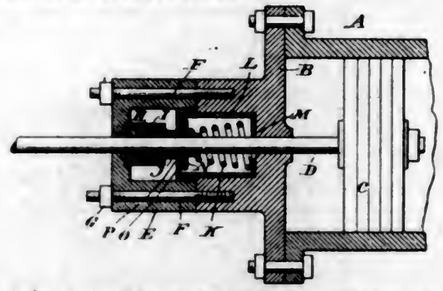
5. In a dispensing apparatus, a body portion having a valve-seat, a longitudinal supply-passage leading to said seat, a plurality of lateral exit-ports, passages leading from said exit-ports to said seat and a rotary valve having passages adapted to alternatively connect two of said exit-ports to said supply-passage and one of said exit-ports to a third.

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**753,567. STUFFING-BOX.** WILLIAM T. GILES, Shamokin, Pa. Filed Sept. 1, 1903. Serial No. 171,535. (No model.)

*Claim.*—1. In combination a reciprocating part, a stuffing-box, a gland, means for securing this gland in place, a receptacle located within the gland and surrounding the reciprocating part, a packing located within the receptacle and surrounding the reciprocating part, a cage located within the stuffing-box, a spring located within the cage and adapted to bear against one end thereof, a follower surrounding the reciprocating part against which the other end of the spring is adapted to bear and force said follower in contact with the packing, a cap formed with or secured to the cage, an opening formed through the center of said cap through which one end of the follower protrudes, an annular flange formed upon that part of the follower within the cage, said flange being of larger diameter than the opening through the cap, substantially as described and for the purpose specified.



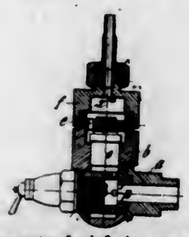


2. In a device of the character described, a reciprocating part, a cage located within the stuffing-box, the forward end of said cage being open, the rear end of said cage being closed except for an opening through which the reciprocating part passes, said closed end adapted to rest against the solid portion of the cylinder-head, a cap adapted to be secured over the open end of the cage, a follower surrounding the reciprocating part, an opening formed through the center of said cap through which the follower surrounding the reciprocating part is adapted to protrude, a flange formed upon the follower and located within the cage, the diameter of said flange being larger than the diameter within the opening through the center of the cap, a spring located within the cage and interposed between the follower and the closed end of the cage, as and for the purpose specified.

3. In a stuffing-box of the character described, a reciprocating part, a follower adapted to surround the reciprocating part, a cage located within the stuffing-box and adapted to contain the spring, the rear end of which presses against the rear end of the cage, and the other end against the follower, an opening formed through the other end of the cage through which a part of the follower protrudes to come in contact with the packing, an annular flange formed upon the follower lying within the cage, said flange being of larger diameter than the opening through the end of the cage, substantially as and for the purpose specified.

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**753,568. APPARATUS FOR INFLATING TIRES.** EMILE GIRARD, Marseilles, France. Filed Jan. 12, 1904. Serial No. 188,751. (No model.)

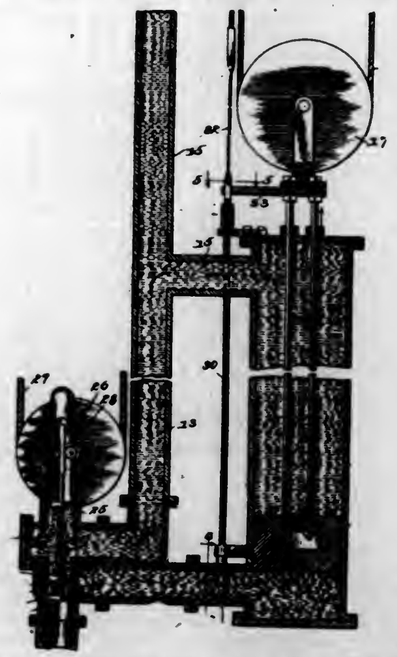


*Claim.*—An apparatus for inflating the pneumatic tires of any vehicle, based on the utilization, at the moment of explosion of a portion of the compressed gases from the explosion engine or engines driving the vehicle, said apparatus comprising a "receiver" in communication with the cylinder, into one part of which receiver may be screwed the sparking-plug the said part communicating by suitable orifices with the body proper of the receiver, provided with a valve having an adjustable stop, the "receiver" communicating with a purifier provided with baffle-plates whence the gases pass into the tires to be inflated, by means of a suitable conduit, substantially as described.

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**753,569. AUTOMATIC ELEVATOR-RETARDING DEVICE.** CHESTER P. HALL, Chicago, Ill. Filed Jan. 24, 1903. Serial No. 140,441. (No model.)

*Claim.*—1. In an elevator, the combination with a motor having a cylinder, a piston therein, a source of pressure-supply having piping connections to the cylinder on both sides of the piston, a waste-pipe, and a valve controlling the communication of the piping on one side of the piston with the waste-pipe and the source of pressure-supply, to vary the pressure on the corresponding side of the piston, a rotatable choke-valve in the piping on the variable-pressure side of the piston, a rotatable operating-rod associated with said choke-valve to move the latter, a cam-rod secured to the operating-rod, for movement therewith, and means carried by a moving element of the elevator mechanism, coacting with said cam-rod to turn the latter at predetermined points in the movement of said moving element of the elevator mechanism.



2. In an elevator, the combination with a hydraulic motor having a cylinder, a piston therein, piston-rods, a source of pressure-supply, a constant-pressure connection between the cylinder and the source of supply on one side of the piston, a variable-pressure-pipe connection between the source of supply and the cylinder on the other side of the piston, a rotary choke-valve in said variable-pressure pipe, a twisted cam-rod parallel with the cylinder, operative connections between the cam-rod and valve to transmit movement from the said rod to the valve, and an arm carried by the piston-rods adapted and arranged to coact with the cam-rod to turn the same at predetermined points in the travel of the elevator.

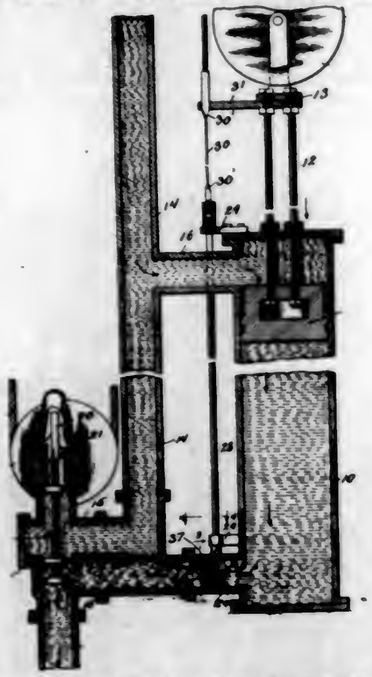
3. In an elevator, the combination of a hydraulic cylinder, a piston therein, piston-rods therefor, conductor-pipes communicating with the cylinder on opposite sides of the piston, a source of fluid-supply having constant connection with one conductor-pipe and variable connection with the other conductor-pipe to produce constant pressure on one side of the piston and variable pressure on the other, a rotatable butterfly choke-valve 29, in the variable-pressure conductor-pipe, a rotatable rod 30 extending to the end of the cylinder, miter-gears 31 connecting the rod 30 and valve 29, an elongated cam-rod 32 connected to the rod 30, and extending in parallelism to the piston-rods, and an arm 33 carried by the piston-rod arranged in sliding engagement with said cam-rod 32.

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**753,570. AUTOMATIC ELEVATOR-RETARDING DEVICE.** CHESTER P. HALL, Chicago, Ill. Filed Apr. 3, 1903. Serial No. 150,904. (No model.)

*Claim.*—1. In an elevator-retarding device, the combination with a hydraulic motor having a variable-pressure liquid-conducting pipe, of a rotary, balanced choke-valve in said pipe, provided with relief-ports, auxiliary check-valves carried by said choke-valve on one side thereof to close the ports and operable to uncloose the ports by pressure from the opposite side, and means operatively associated with a moving element of the elevator system for rotating said choke-valve from a position wherein the check-valves are operable by the

liquid-pressure in one direction to a position wherein the said check-valves are operable by the liquid-pressure in the opposite direction.



2. In an elevator-retarding device, the combination with a hydraulic motor having a variable-pressure liquid-conducting pipe, a butterfly choke-valve mounted for rotation in said pipe, and provided with ports, auxiliary pressure-operable flap-valves pivoted on one side of the choke-valve and adapted to close the ports, and means operatively connected with a moving element of the elevator system, adapted and arranged to impart to the choke-valve a half-rotation during the movement of the elevator mechanism to make its flap-valves operable by pressure first from one direction and then from the opposite direction.

3. A choke-valve structure for hydraulic elevator-retarding devices comprising a casing, a choke-valve pivoted therein comprising a generally flat body provided with ports, and auxiliary check-valves carried by said body adapted and arranged to close said ports under pressure in one direction and to open said ports under pressure in the opposite direction.

4. A choke-valve structure for hydraulic elevator-retarding devices comprising a casing, a butterfly choke-valve pivoted therein comprising a generally flat body provided with ports, auxiliary check-valves pivoted to the choke-valve body, and means for limiting the movement of said auxiliary valves.

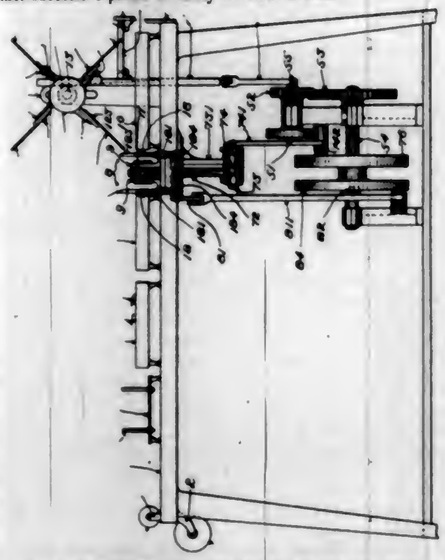
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**753,571. MACHINE FOR WRAPPING CANDY KISSES, &c. STEPHEN M. HAMBLIN, Readville, Mass. Filed Dec. 11, 1903. Serial No. 184,706. (No model.)**

*Claim.*—1. In combination, means for doubling a continuous strip or web of wrapping material into trough shape, means for folding the side portions of said web down upon pieces of candy or other articles placed upon the strip or web, a rotatable twister having a passage through which the strip or web is passed, guides for the said strip or web at opposite ends of the said twister, and clamps to engage with the strip or web at the opposite ends of the twister between the said ends and the proximate ends of the guides.

2. In combination, means for folding the side edges of a continuous strip or web of wrapping material down upon pieces of candy or other articles placed upon the said strip or web, a rotatable twister having a passage through which the strip or web is passed, clamps to engage with the strip or web at the opposite ends of the twister, and automatic feeding means to feed the strip or web through the machine.

3. In combination, a conducting-guide provided with means for turning the side portions of a strip or web down upon pieces of candy or other articles placed upon the said strip or web, a rotatable twister, guides for the strip or web adjacent the opposite ends of the twister, clamps to engage with the strip or web between the ends of the twister and the said guides, feeding means to feed the strip or web through the machine, and severing means to sever the strip or web intermediate successive pieces of candy or other articles.



4. In combination, means for folding the side portions of a strip or web over upon pieces of candy or other articles placed at intervals upon the said strip or web, a rotatable twister, having a passage through which the strip or web and the candy or other articles contained therein are passed, and constructed to grasp the said pieces or other articles, guides through which the said strip or web passes located at the opposite ends of the said twister, clamps between the opposite ends of the twister and the said guides to engage with the said strip or web, feeding means for the strip or web, and means to sever the strip or web between successive pieces of candy or other articles after passing the twister.

5. In combination, means for folding the side portions of a strip or web over upon pieces of candy or other articles placed at intervals upon the said strip or web, a rotatable twister through which the strip or web and the candy or other articles contained therein are passed, guides at the opposite ends of the said twisters, opposite pairs of clamps arranged to act between the ends of the twister and the said guides to engage with the said strip or web, feeding means for the strip or web, means to rotate the twister in opposite directions after successive feed movements, a carrier for the said clamps, and means to operate the said carrier to bring the respective pairs of clamps alternately into action.

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**753,572. DOOR-LOCKED CONTROLLER FOR ELEVATORS. CHARLES G. HARKER, Sioux City, Iowa. Filed Oct. 30, 1902. Renewed Jan. 22, 1904. Serial No. 190,238. (No model.)**

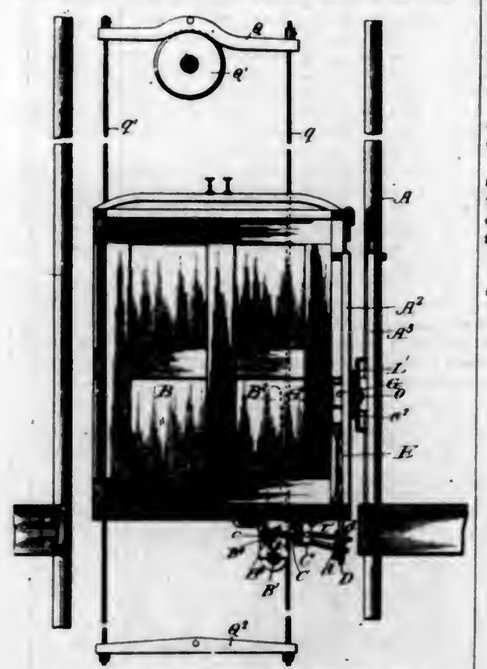
*Claim.*—1. In a door-locked controller for elevators, the combination with an elevator-shaft door, a cage and a door for the cage, of a controller on the cage, and means for preventing the actuation of the controller comprising mechanism having parts positioned to be actuated respectively by the individual doors, substantially as described.

2. A door-locked controller for elevators, in combination with a well-door and a cage-door, of means actuated in successive order by the respective doors and by the joint movement of both doors for permitting the movement of the controller, substantially as described.

3. In an elevator, the combination with controlling means for the elevator, of a well-door and a cage-door, and mechanism actuated by the individual doors upon the joint movement of the two doors for permitting the movement of the controller, substantially as described.

4. In an elevator the combination with controlling instrumentalities, a lock therefor, a door on the elevator, a door for the elevator-shaft, means for actuating the lock, and mechanism for governing the action of said means operated by the individual doors and upon the movement of both doors, substantially as described.





5. In an elevator the combination with controlling means, of a lock for the controller, means for operating the lock, a shaft-door and a cage-door, a lever on the cage-door for actuating the lock, and means actuated by the movement of the well-door for rendering operative the said lock-controlling means, substantially as described.

6. In an elevator the combination with a controller, and means for rendering the same operative, of a cage-door and a well-door, means carried by the cage-door for actuating the controller-lock, and means actuated by the well-door for permitting the actuation of said lock-actuating means, substantially as described.

7. In an elevator the combination with a well-door and a cage-door, of a latch on the well-door, a controller-lock on the cage, a lever for actuating the lock, and means on the cage-door actuated by the said lever for actuating the latch.

8. In an elevator, the combination with a cage-door, a well-door, and a controller, of locking means for the controller, means carried by the cage-door for actuating said locking means, a lock for said locking means, and a trip actuated by the well-door for releasing said lock, substantially as described.

9. In an elevator, the combination with a cage and a controller, of a lock for the controller, means for preventing the movement of said lock, and means for removing said preventing means, substantially as described.

10. In an elevator, the combination with a controller and a cage-door, of a lock for the controller, a crank on the cage-door, means actuated by the movement of the crank for actuating the controller-lock, and an independently-actuated catch for preventing the movement of the controller-lock, substantially as described.

11. In an elevator, the combination with a controller and a cage-door, of means for locking the controller, a crank on the cage-door for actuating said locking means, a catch for preventing the action of said locking means, a trip mounted on a stationary part of the elevator-well, and means actuated by the movement of the well-door for releasing said trip, substantially as described.

12. In an elevator, the combination with the well, of a trip device thereon, a well-door, means actuated by the door for moving the trip device, a cage, controlling means on the cage, a lever for actuating said controlling means, a catch for rendering operative the lever-actuated means, and a projection on the catch actuated by said trip, substantially as described.

13. In combination with a controller and a cage-door, of a lock for the controller, a reciprocating bar connected with the lock, and a crank on the door detachable from said bar and adapted to engage the same to actuate the lock upon the movement of the crank, substantially as described.

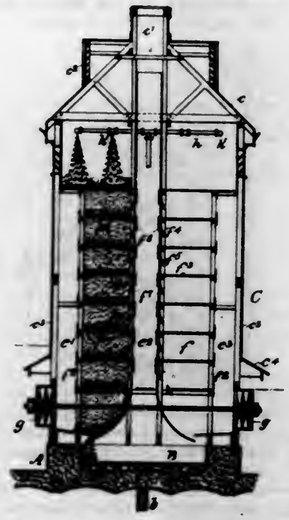
14. In an elevator, the combination with a cage-door and a well-door, of means actuated by and through the conjoint movement of the doors, a lock, and means for rendering operative the lock by the said conjoint door-operated means, substantially as described.

15. In an elevator, a door-locked controlling means, and means actuated by said door-locked controlling means for preventing the creeping of the elevator, substantially as described.

16. In an elevator, the combination with a cage-door having a spring thereon, a door-lock controller, a tripping device with which the spring engages, a lock for said tripping device, and means on the door for releasing the said lock after the spring has been tensioned against the trip, substantially as described.

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**753,573. COOLING-TOWER. CARL F. HETTINGER, Boston, Mass. Filed Sept. 23, 1903. Serial No. 174,293. (No model.)**

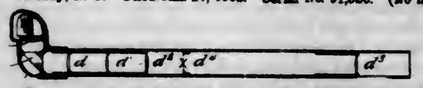


*Claim.*—1. A cooling-tower comprising a series of air and water shafts, hot-water-discharge pipes at the top of the tower and a catch-basin at the bottom, a set of perforated planes or bottoms in each of the water-shafts, fans arranged oppositely at the bottom of the tower to force air into the air-shafts $c'$ and $c^2$ and through the chambers of the water-shafts, in combination with an air shaft or vent $c^3$ communicating with each of the chambers, and slides $f^9$ for regulating such communication, substantially as and for the purposes set forth.

2. A cooling-tower comprising a series of air and water shafts, a series of perforated planes or bottoms in each of said water-shafts, arranged one above the other, hot-water-discharge pipes with nozzles arranged in the tops of each tower, louvers and ventilators in the top of each tower, a catch-basin below said water and air shaft, fans arranged oppositely to each other, to force air into the air-shafts $c'$ and $c^2$ and through the chambers of the water-shafts, an air shaft or vent $c^3$ communicating with each of the chambers of the water-shaft, fenders $f^9$ arranged between the chambers of the water-shafts and the said air-shaft $c^3$, and slides $f^9$ on the walls of the air-shaft $c^3$, adapted to regulate the supply of air into the water-shafts substantially as and for the purposes set forth.

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**753,574. TELESCOPIC SIGHT. EDWARD M. HEWLETT, Schenectady, N. Y. Filed Jan. 27, 1902. Serial No. 91,520. (No model.)**



*Claim.*—1. The combination with a rifle or other small-arm provided with orumary sights, of a telescopic sight attached to said arm out of the way of said ordinary sights and parallel therewith, and

an eyepiece for said telescope out of line with the ordinary sights and causing the light-rays passing through said telescope to intersect the ordinary line of sight at the point where the marksman places his eye.

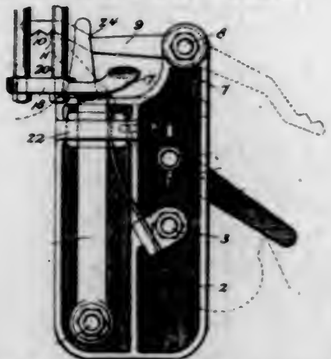
2. The combination with a rifle or other small-arm, provided with ordinary sights, of a telescopic sight parallel with the line of the ordinary sights, and an eyepiece for said telescopic sight comprising means for deflecting the light-rays passing through said telescope both laterally and upwardly to the point where the marksman places his eye for sighting along the ordinary sights.

3. The combination with a rifle or other small-arm, of a telescopic sight therefor, cross-hairs in the telescope, and a level arranged inside the telescope-tube so as to be visible to the marksman when he looks through the sight.

4. A prismatic sighting-telescope for rifles and other small-arms having the eyepiece-axis and the object-glass axis in such a way inclined to each other, that they are more distant from each other behind the eyepiece than before the object-glass, essentially as described.

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**753,575. SAW-FILER.** JOHN M. HOLLADAY, Holladay, Va. Filed July 2, 1903. Serial No. 164,094. (No model.)



*Claim.*—1. The combination in a saw-filer, comprising a clamp adapted to engage the saw, and a file-guide adjustably mounted thereon, of a front and a rear gage adapted for adjustment to the edge of the saw, and means for securing said gages.

2. The combination in a saw-filer, comprising a clamp adapted to engage the saw, and a file-guide adjustably mounted thereon, of a front and a rear gage pivotally mounted on the clamp and adapted to engage the saw, and means for securing the same in their adjusted positions.

3. The combination in a saw-filer, of opposite clamping-plates, means for binding them on a saw, a front and a rear gage adapted to engage the saw at opposite sides of the clamping-plates, and a file-guide adjustably mounted on one of said clamping-plates.

4. The combination in a saw-filer, of a pair of clamping-plates, means for binding the same upon a saw, a file-guide adjustably mounted on one of said clamping-plates, and a spring for separating the plates when released from the binding device.

5. The combination in a saw-filer, of a clamp adapted to be secured upon a saw, an arm pivoted to vibrate on the clamp, a carrier mounted on the arm, a file-guide mounted on the carrier, and a spring engaging said arm and normally forcing the same forward.

6. The combination in a saw-filer, of a clamp adapted to be secured upon a saw, an arm pivoted to vibrate on the clamp, a carrier mounted on the arm, a file-guide mounted on the carrier, a spring engaging said arm and normally forcing the same forward and means for limiting the movements of the arm.

7. The combination in a saw-filer, of a clamp adapted to be secured upon a saw, an arm pivoted to vibrate on the clamp, a carrier mounted on the arm, a file-guide mounted on the carrier, a spring engaging said arm and normally forcing the same forward and an adjustable means for limiting the movements of the arm.

8. The combination in a saw-filer, of a pair of plates, means for clamping the same on a saw, a vibratory arm carried by one of the plates, a carrier at the upper end thereof terminating at its front end in arms, vertical file-guides rising from the latter, means for limiting the vibrations of the arm, and a spring for normally pressing the arm forward.

9. The combination in a saw-filer, of plates, a clamping means therefor, one of which is provided with a keeper and a lug, a vibrating arm pivoted to said plate and extending upwardly through the keeper, a U-shaped carrier at the upper end of the arm, posts rising from the ends of the carrier, sleeves carried loosely thereon, a set-screw mounted in the keeper, a spring bearing on the arm, a rear gage-arm adjustably pivoted between the plates, a front gage-arm pivoted on the said lug and near its front end provided with a tooth-engaging notch, and a locking-standard rising from the clamping-plate and notched to temporarily engage said front gage.

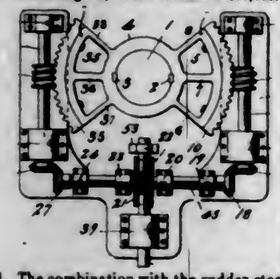
10. The combination in a saw-filer, of a clamp, suitable gages therefor, a yielding spring-pressed carrier, and opposite pairs of vertical file-guides arranged in a quadrangle.

11. The combination in a saw-filer, of a clamp, a front gage having front and rear tooth-engaging notches, a rear gage adapted to engage a tooth of the saw in rear of the clamp, a yielding spring-pressed carrier, and opposite pairs of vertical file-guides rising from the carrier, arranged in quadrangle form and a pair at each side of the front gage.

12. The combination in a saw-filer, of a clamp, a front gage-arm pivoted to the clamp and at its free end having a plurality of tooth-engaging notches, a standard rising from the clamp and notched to temporarily engage the gage-arm, a rear gage extending from the clamp, a yielding spring-pressed carrier, and opposite pairs of file-guides arranged at each side of the said front gage-arm.

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**753,576. STEERING-GEAR.** HERBERT W. HOOVER, Newport News, Va. Filed Aug. 21, 1903. Serial No. 170,333. (No model.)

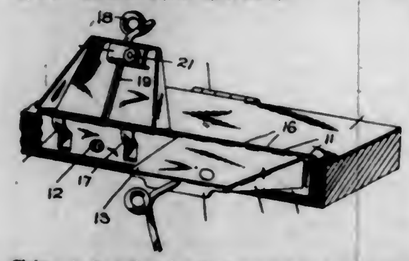


*Claim.*—1. The combination with the rudder-stock, the toothed gear secured thereto and composed of sections as described, the foundation or support and bearing-ring for said gear, shafts provided with worm-wheels, said worm-wheels engaging said toothed gear, gear-wheels on said shafts engaging similar wheels on a transverse shaft, a gear-wheel on the transverse shaft, and a shaft, provided with a worm-wheel engaging said last-mentioned gear-wheel; and means for driving said shaft, substantially as described.

2. In a steering-gear, the combination of a frame or support, a rudder-stock mounted therein, a yoke secured to the rudder-stock, a bearing foundation and an antifriction-ring interposed between said foundation and said yoke, a pair of segmental racks secured to said yoke, a pair of worms meshing with said segmental racks, a pair of longitudinal shafts carrying said worms, bevel-pinions on one end of the shafts, a transverse shaft carrying bevel-pinions meshing with said pinions on the pair of shafts, a worm-wheel on said transverse shaft and a driving-shaft carrying a worm meshing with said worm-wheel.

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**753,577. THREAD-GUIDE SUPPORT FOR SPINNING OR TWISTING MACHINES.** LEWIS T. HOUGHTON, Worcester, Mass. Filed Apr. 20, 1901. Serial No. 57,575. (No model.)



*Claim.*—1. In a thread-guide support for spinning or twisting machines, the combination of a sheet-metal strip and a plurality of sheet-metal finger-heads, each formed from a piece of sheet metal bent to form a top plate, side flanges which act as stops for holding the finger-heads in horizontal position, and integrally bent or turned tongues which intermesh with bent or turned tongues extending from the sheet-metal strip to form hinged joints.

2. As an article of manufacture, a thread-guide for spinning or twisting machines consisting of hard-tempered steel wire having a thread-receiving eye with a fastening-shank extending therefrom which is non-circular in cross-section and which is of a uniform size throughout its length so as to be free from nicks or notches forming points at which the shank may be fractured or broken.

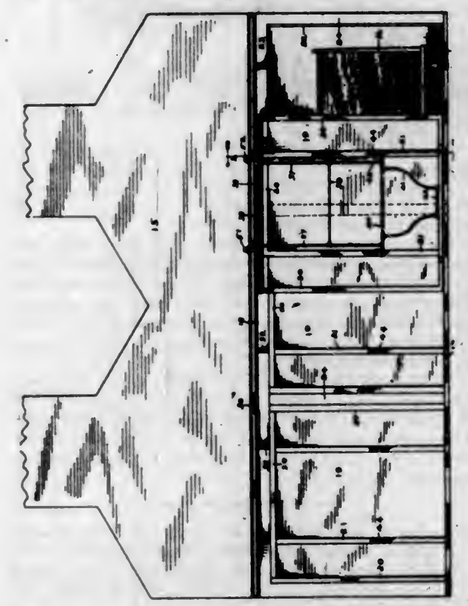
3. The combination of a sheet-metal finger-head, a thread-guide having a shank of uniform non-circular cross-section, a clamping-piece notched to receive the shank of the thread-guide, and a clamping-screw fitting into a socket struck down in the finger-head, so that the surface of said screw is substantially flush with the surface of the finger-head, substantially as described.

4. The combination of a finger-head board, a finger-head consisting of a sheet-metal plate having integral front and side flanges, and having rearwardly-extending tongues or projections which are bent down and rolled or coiled to form a hinge-pin socket below the surface of the finger-head, a thread-guide having a triangular shank extending through the front flange of the finger-head, and clamping devices for the thread-guide, comprising a clamp-piece U shape in cross-section, having notches in its side flanges to receive the shank of the thread-guide, a smooth-headed screw fitting into a struck-down socket in the finger-head, and having means for preventing the same from turning therein, and a clamping-nut threaded onto the lower end of said screw, substantially as described.



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**753,578. REMOVABLE DOOR.** JOHN R. HOUSEY, Indianapolis, Ind. Filed Apr. 23, 1903. Serial No. 153,757. (No model.)



*Claim.*—1. The combination with a structure having a side opening, and a removable vertical door for closing said opening, of means mounted in connection with the structure detachable from the door and engageable therewith for removing or replacing the door.

2. The combination with a structure having a side opening, a horizontal track on said structure near said opening, and a removable vertical door independent of the track for closing said opening, of means movable on the track detachable from the door and engageable therewith for removing or replacing the door.

3. The combination with a structure having side openings and a plurality of removable vertical doors, of a track on said structure near said openings, and a single means supported and movable on said track for replacing any one of said doors.

4. The combination with a structure having a side opening, a horizontal track on said structure near said opening, and a removable vertical door for closing said opening, of means secured to the structure for supporting said door when closed, and means carried and movable on said track for removing said door from its supporting means or replacing the same.

5. The combination with a structure having a side opening, a horizontal track on said structure near said opening, and a removable vertical door independent of the track for closing said opening, of means on said structure independent of the door for supporting the door in a closing position, and means movable on the track and independent of the door and of said door-supporting means for removing the door from said supporting means or replacing it.

6. The combination with a structure having a side opening, of a horizontal track on said structure above the opening, a removable vertical door for closing the opening, brackets secured to the structure above the door for supporting the same while closed, and means movable on the track for removing the door from said brackets or replacing the same.

7. The combination with a structure having a side opening, of a removable vertical door, downwardly and inwardly inclined supports secured to the structure above the opening, means secured to said door for engaging said supports for holding the door closed, and means carried by the structure detachable from and engageable with said door for removing it from said support and replacing it on the same.

8. The combination with a structure having a side opening, of a removable vertical door, a transverse rod above the door and secured thereto, a pair of downwardly and inwardly inclined brackets secured on the structure above the opening therein for receiving said rod and supporting the door, and means carried by the structure detachable from or engageable with said door for moving said rod to and away from said brackets.

9. The combination with a structure having a side opening and a removable vertical door for closing said opening, of means mounted in connection with said structure that is detachable from but engageable with the door below the top thereof for removing and replacing the same, and catches on said removing means detachable from said door for engaging and holding the top of the door while it is being removed or replaced.

10. The combination with a structure, of a removable vertical door, a horizontal track secured to the structure above the door, and means detachable from the door suspended from and movable on said track and extending down in front of the door for engaging the door below the top thereof to remove or replace the same.

11. The combination with a structure, of a removable vertical door, a track secured above the door, a frame suspended from and movable on said track and extending down in front of the door, and a lever fulcrumed in said frame and detachable from the door which when operated engages the door and removes or replaces the same.

12. The combination with a structure, of a removable vertical door, a track secured to the structure above the door, a frame movable on said track and extending downward therefrom, a lever fulcrumed in said frame and detachable from the door, and a catch on the door for said lever to engage when operated so that said door may be removed or replaced by said lever.

13. The combination with a structure having a side opening, a removable vertical door for closing said opening, and a track on said structure above the door, of brackets on the structure below the track and above the opening, means on the upper part of the door for engaging said brackets for supporting the door in its closing position, a frame suspended from and movable on said track and extending down in front of the door and detachable therefrom, and a lever fulcrumed on said frame and adapted to engage the door and elevate the same when operated.

14. The combination with a structure having a side opening, a removable vertical door for closing said opening, and a track on said structure above the door, of brackets on said structure below the track and above the opening, means on the upper part of the door for engaging said brackets for supporting the door in its closing position, a frame suspended from and movable on said track and extending down in front of the door and detachable therefrom, and a lever fulcrumed between its ends in said frame and adapted to engage the door and move the same simultaneously upward and outward when operated.

15. The combination with a structure having a side opening and a removable door for closing said opening, of a track secured to said structure above the door, a horizontal rod mounted in connection with said door and above the same, brackets secured to said structure above the opening adapted to receive said rod and support the door while closed, a frame movable on said track and extending down in front of the door, and a lever fulcrumed in said frame between its ends adapted to engage said rod and when operated move the door upward and outward.

16. The combination with a structure, of a plurality of removable vertical doors, a track above said doors, a frame suspended from and movable on said track to a position in front of any of said doors, and a lever fulcrumed in said frame for engaging a door for removing and replacing the same.

17. The combination with a structure, of a plurality of removable vertical doors, a horizontal track above the same, and means movable on said track for lifting any one of said doors outward away from the structure so that the same may be slidable by the other doors.

18. The combination with a structure having side openings and removable doors for closing said openings, of a track secured to said structure above said openings and extending to the front beyond the doors when closed, a frame carried and movable on said track and extending downward, and a lever carried by said frame for engaging any one of said doors and removing it from its seat and supporting the same so that it will be supported far enough away from the structure to be slidable by the other doors.

19. The combination with a structure having side openings and removable vertical doors for closing said openings, of a continuous track above said side openings, means secured to the structure near each opening for removably supporting each door while closed, a frame mounted movably on said track and extending downward, and a lever mounted in said frame adapted to engage any one of said doors and remove it from its supporting means and support it on said track so as to be slidable by the other doors.

20. The combination with a structure having side openings and removable vertical doors for closing said openings, of brackets secured to said structure above said openings for removably supporting each door while closed, a continuous track secured to the structure above said brackets and extending upward beyond said brackets and doors, a frame mounted movably on said track and extending downward, and a lever mounted in said frame for engaging any one of said doors and removing it from said brackets and supporting the same so that it will be slidable by the other doors.

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**753,579. WINDOW. GEORGE KADGIEN, Jersey City, N. J. Filed May 20, 1903. Serial No. 157,929. (No model.)**



*Claim.*—1. A window, the top, the bottom and side members of which are composed of sheet metal, perforated plates in the bottom of the inner sides of said side members, closure devices therefor, perforations in the outer side of said top member, a curved deflection-plate mounted thereover, said side members serving as communications between said perforated plates in said side members and said perforations in said top member, substantially as shown and described.

3. In a window of the class described, a frame composed of sheet metal and the sash-runs of which are permanently formed, a weight-strip mounted in each of said runs, weights connected with each of said weight-strips, a sash connected with each pair of said weight-strips, means for detachably securing said sash to the corresponding weight-strips comprising a loop on the inner and outer edges of each side of each of said sash and a projection on the inner and outer edges of each of said weight-strips, said projections being adapted to enter said loops, brackets secured to said weight-strips and passing between said loops and bolts passing through said sash and said brackets, substantially as shown and described.

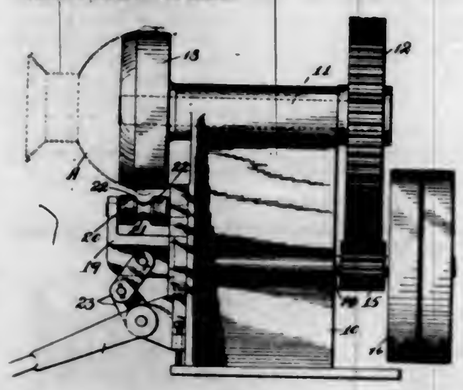
3. A window of the class described, comprising a sheet-metal frame and sash-runs formed therein, a weight-strip comprising a casing composed of two plates of sheet metal, a loop formed on each end of one of said sheet-metal plates the sides of the other of said sheet-metal plates passing into and being held by said loops, a plurality of brackets mounted on said last-named plate, a plurality of spring-operated antifriction-rollers mounted in said casing and adapted to bear against the side of the corresponding run, a sash cord or chain secured to the upper end of each of said weight-strips, rollers mounted in the top of said window-frame over which said cords and chains pass and means for connecting sash-weights with the lower ends of said sash-cords, substantially as shown and described.

4. A window of the class described, comprising a frame the top and two side members of which are each composed of two plates of sheet metal and the bottom member of which is composed of one plate of sheet metal forming a casing, said casing being filled with cement or similar material and a furring-strip secured in the opening for said window-frame, said bottom member being secured to said furring-strip, substantially as shown and described.

5. In a window of the class described, a frame comprising a top, a bottom and two side members, the top and two side members being composed of two plates of sheet metal and the bottom member being composed of one plate of sheet metal forming a casing, said casing being filled with cement, and a furring-strip secured in the opening of said window-frame, the bottom side portions of the frame being provided with ventilating devices which open inwardly and the top portion thereof with ventilating devices which open outwardly, said ventilating devices being in communication, substantially as shown and described.

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**753,580. METHOD OF ATTACHING HOOPS TO MILK-CAN BREASTS. ANTHONY T. KATES, Arlington Heights, Ill., assignor to Bray & Kates, Arlington Heights, Ill., a Firm. Filed Mar. 30, 1903. Serial No. 150,257. (No model.)**




*Claim.*—1. The method of securing a metal hoop upon a sheet-metal body, consisting in placing such body with the hoop surrounding it upon a suitable support, and then applying pressure to said hoop near its edges sufficient to force it at its edges into the said sheet-metal body, substantially as specified.

2. The method of securing a metal hoop upon a sheet-metal body, consisting in placing such body with the hoop surrounding it upon a suitable support, then applying pressure to said hoop at opposite points near its edges, and thereafter causing such pressure to be applied near such edges throughout the length of said hoop to cause the hoop at its edges to be forced into the said sheet-metal body, substantially as specified.

3. The method of securing a metal hoop upon a sheet-metal body, consisting in placing such body with the hoop surrounding it upon a suitable support, rotating such support and sheet-metal body, and then, during such rotation, applying pressure to said hoop near its edges sufficient to force it at its edges into the sheet-metal body substantially as specified.

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**753,581. SHEET-METAL CAN. ANTHONY T. KATES, Arlington Heights, Ill., assignor to Bray & Kates, Arlington Heights, Ill., a Firm. Original application filed Mar. 30, 1903, Serial No. 150,257. Divided and this application filed Sept. 15, 1903. Serial No. 173,348. (No model.)**



*Claim.*—1. The combination with a sheet-metal body, of a metal hoop surrounding said body, said hoop having its upper edge compressed and slightly embedded in said body, substantially as specified.

2. The combination with a sheet-metal body, of a metal hoop surrounding said body, said hoop being compressed along its edges and, at such edges, slightly embedded in the body, substantially as specified.

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**753,582. LIGHTNING-ARRESTER. HAROLD H. KELPER, Topeka, Kans. Filed June 30, 1903. Serial No. 163,741. (No model.)**



*Claim.*—1. In a lightning-arrester, the combination of a cylinder of insulating material provided with a spiral rib, a wire wound upon said cylinder and disposed adjacent to said rib, a plate of conducting material disposed adjacent to said cylinder, spring mechanism for automatically forcing said plate toward said cylinder, and electrical connections between said plate and the earth.

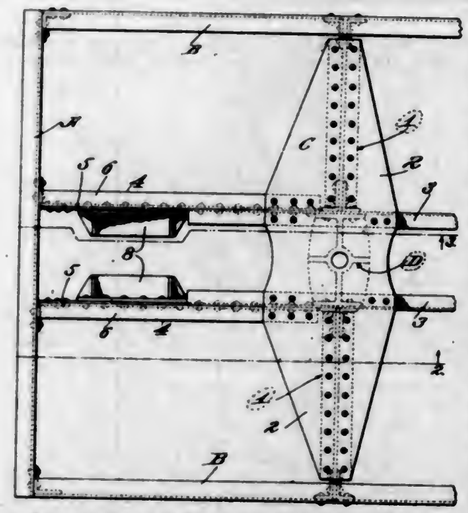


2. In a lightning-arrester, the combination of an iron core, a cylinder of insulating material encircling the same and provided with a spiral rib, a wire of fusible metal wound closely upon said cylinder of insulating material and disposed adjacent to said rib, a plate of conducting material disposed adjacent to said cylinder, and pressure mechanism for forcing said plate gently against said rib so as to maintain the same a uniform distance from said wire.

3. In a lightning-arrester, the combination of a cylinder, metallic members mounted upon the ends thereof, a wire wound spirally upon said cylinder and connected with said metallic members, spring-clips for engaging said metallic members, said spring-clips being provided with electrical connections, a member of conducting material disposed adjacent to said cylinder, and spring mechanism for normally forcing said conducting member toward said cylinder.

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**753,583. UNDERFRAMING FOR RAILWAY-CARS. GEORGE I. KING, Middletown, Pa. Filed Sept. 3, 1903. Serial No. 171,759. (No model.)**




*Claim.*—1. In a metallic underframing, a bolster, a cover-plate therefor, center sills connected therewith, short draft-sills extending between the bolsters and end sills, and connecting members riveted to the web portions of said center sills and said draft-sills; substantially as described.

2. In a metallic underframing, a bolster, a cover-plate therefor, center sills connected therewith, short draft-sills extending between the bolsters and end sills, and connecting members riveted to the web portions of said center sills and said draft-sills between said bolsters and end sills; substantially as described.

3. In a metallic underframing, a bolster, center sills projected through the same, short draft-sills abutting against the ends of said center sills, and connecting means therefor secured to the webs of said center sills and draft-sills; substantially as described.

4. In a metallic underframing, bolster-webs divided at the center sills, center sills extending between the web portions thereof, a cover-plate connected to said center sills and bolster, and short draft-sills connected with said cover-plate and end sills; substantially as described.

5. In a metallic underframing, a bolster divided at the center sills, center sills extending between the web portions thereof, a cover-plate connected to said center sills and bolster, short draft-sills connected with said cover-plate and end sills, and a connecting-plate secured to said center sills and draft-sills; substantially as described.

6. In a metallic underframing, center sills, short draft-sills abutting against the ends thereof, in combination with overlapping securing means connected with said center sills and said draft-sills; substantially as described.

7. In a metallic underframing, center sills extending beyond the bolster at each end, draft-sills having an abutment therefor beyond the ends of said center sills, and means connected with the webs of said center sills and draft-sills for connecting the same; substantially as described.

8. In a metallic underframing, center sills extending beyond the bolsters at each end, short draft-sills between said bolsters and the end sills, and means for connecting said draft-sills and said center sills between the bolsters and end sills; substantially as described.

9. In a metallic underframing, center sills extending beyond the bolsters at each end, short draft-sills terminating between said bolsters and the end sills, and means for connecting said draft-sills and said center sills between the bolsters and end sills; substantially as described.

10. In a metallic underframing, center sills extending beyond the bolsters at each end, short draft-sills extending from said bolsters to the end sills, and means for connecting said center sills and draft-sills between the bolsters and the end sills; substantially as described.

11. In a metallic underframing, center sills extending beyond the bolsters at each end, short draft-sills extending from said bolsters to the end sills, and overlapping means for connecting said center sills and draft-sills between the bolsters and the end sills; substantially as described.

12. In a metallic underframing, a bolster, a bolster cover-plate, center sills connected with said cover-plate beyond said bolsters at each end, and short draft-sills connected with said cover-plate and with end sills; substantially as described.

13. In a metallic underframing, a bolster, and cover-plate therefor, center sills connected therewith, short draft-sills extending between the bolster and the end sills, and angles secured to the upper and lower edges of said center and draft sills, to form connecting members, substantially as described.

14. In a metallic underframing, with a bolster, and cover-plate therefor, center sills connected therewith, short draft-sills extending between the bolster and the end sills, and angles extending throughout the length of the draft-sills and riveted to the upper and lower edges thereof, said angles extending inwardly and being riveted to the backs of the webs of the center sills and to said cover-plates.

15. In a metallic underframing, the combination with channel center sills of short draft-sills and connecting angles between the two, overlapping the center sills and riveted to the backs of the webs thereof, and spliced plates for connecting the webs of said center and draft sills.

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**753,584. WATCH-MAINSPRING. ERNEST F. O. KLEIN, Buffalo, N. Y. Filed Jan. 29, 1903. Serial No. 140,905. (No model.)**



*Claim.*—The combination with the spring-barrel, of a main-spring held therein and having an undercut projection stamped therefrom near its outer end, said projection being formed by cutting a transverse incision and bulging the metal outwardly on that side of the incision nearer the outer end of the spring and undercutting the elevated edge thereof, and a retaining-piece having one end edge beveled and adapted to engage the undercut projection and its other end held to the spring-barrel.

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**753,585. BOOK-HANDLE. GEORGE KOCH, East Sandy, Pa. Filed Sept. 26, 1903. Serial No. 174,799. (No model.)**

*Claim.*—1. The combination with a book having a pair of parallel longitudinal slots in its back, of a metallic finger-loop disposed with its ends through the slots and bent toward each other, a reinforcing-strip between the bent ends and the inner face of the back and a second strip disposed upon the bent ends and secured to the reinforcing-strip and the inner face of the back

2. The combination with a book having a pair of parallel longitudinal slots in its back, of a finger-loop disposed with its ends in the slots and means for preventing the disengagement of the ends from the slots.



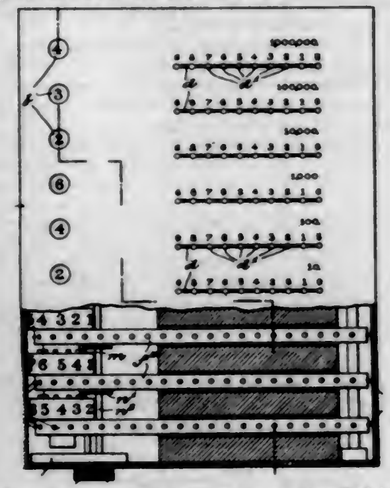
3. The combination with a book having a pair of parallel longitudinal slots in its back, of angular metallic plates disposed upon the inner face of the back and projecting through the slots, means for holding the plates in such position, and a finger-loop pivoted to the outwardly-projecting ends of the plates.

4. The combination with a book having slots in its back, of a flexible metal finger-loop disposed with its ends engaged in the slots and means for preventing disengagement of the ends from the slots.

5. The combination with a book having slots in its back, of members disposed within the slots and projecting therefrom, and a finger-loop pivoted to the outer ends of the members.

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**758,586. AUTOMATIC ADDING AND SUBTRACTING APPARATUS.** HOSTOSHI H. KODAMA, New York, N. Y., assignor of one-half to Rebecca Gancher, New York, N. Y. Filed Sept. 4, 1902. Renewed July 13, 1903. Serial No. 165,407. (No model.)



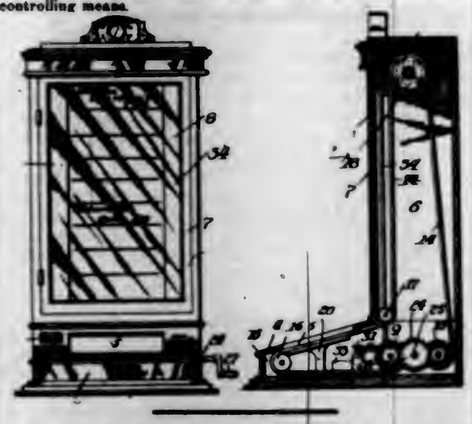
*Claim.*—1. In an apparatus of the character described, in combination with a series of wheels each carrying on its periphery a series of numerals, and means for turning each wheel independently of the others, of means for locking adjacent wheels in series together at one period of the movement of the first of said wheels in series, a series of cams each arranged to control said locking means, and mechanism for shifting said cams away from the locking means to prevent the locking of said adjacent wheels.

2. In an apparatus of the character described, in combination with a series of wheels each carrying on its periphery a series of numerals and means for turning each wheel in either direction independently of the others, means for locking adjacent wheels in series together at one period of the forward or reverse movement of the first of said wheels in series, a series of cams and means for oscillating said cams, said cams arranged in one position to control the locking means when the wheels turn in one direction and when arranged in an opposite position to control the locking means when the wheels turn in a reverse direction.

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**758,587. ADVERTISING-CABINET.** MILAN KOVAČEVIĆ, Allegheny, Pa. Filed Aug. 1, 1903. Serial No. 167,877. (No model.)

*Claim.*—A device of the character set forth comprising a casing having a base and a vertical portion having a transparent front, said base having a cut-away portion, a roll at the upper end of said vertical portion and a roll adjacent the lower end of said transparent front, a third roll at the front of said base and a pair of rolls at the rear thereof, an apron having its ends connected to said pair of rolls, a stand supported from the base-bottom and extending in alinement with said cut-away portion thereof for supporting the apron, means interposed between and engaging each of said rolls for simultaneously actuating the same, means for controlling the actuation of said last-named means so that the portion of said apron at the base cut-away portion will be moved therefrom to appear at the lower end of said transparent front at each actuation of the controlling means.



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**758,588. WASHER.** DANIEL KNEALE, Greensburg, Pa. Filed Apr. 10, 1903. Renewed Feb. 3, 1904. Serial No. 191,895. (No model.)



*Claim.*—A device of the type set forth comprising a washer having a substantially circular body having an aperture therein, oppositely-arranged extended portions formed integral with said body portion and extending in the same plane therewith, one of the said extended portions having a greater length than the other, and provided with an outwardly-extended portion formed at right angles with the same, the other of the said extended portions provided with a portion extended at right angles thereto, and an enlarged substantially semicircular portion formed integral with said last-named portion, said enlarged portion lying in the same plane with the angular extension from said body portion, and having portions thereof extending from both sides of said portion, substantially as described.

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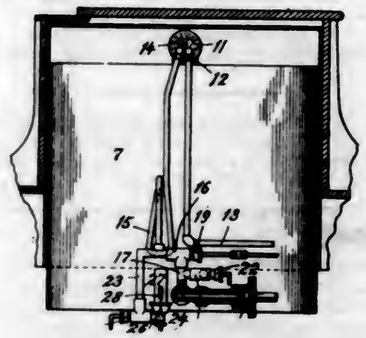
**758,589. MOTOR-VEHICLE.** WILLIAM J. LANE and GEORGE LANE, Poughkeepsie, N. Y. Filed Feb. 10, 1900. Serial No. 4,769. (No model.)

*Claim.*—1. In combination with a burner, an inclosing casing therefor, a supplemental casing external to the inclosing casing, a fuel-supply pipe for the burner having a portion of its length located in the supplemental chamber, and a separate burner arranged to heat that portion of the supply-pipe in the supplemental chamber; said burner comprising a cup to hold an inflammable fluid, a burner-tube extended upward from said cup, and provided with air-openings through which air may be brought in contact with the fuel vaporized in passing through said tube.

2. In combination with a burner, an inclosing casing therefor, a supplemental casing external to the inclosing casing, a pilot-burner in the inclosing casing, a fuel-supply pipe for the burner having a portion of its length situated in the supplemental casing, and means for heating such portion of the fuel-supply pipe.

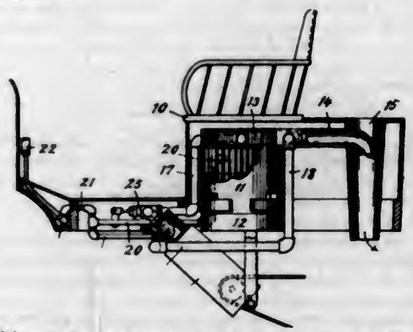


3. In combination with a burner, an inclosing casing, a supplemental casing external to the inclosing casing, a fuel-supply pipe for the burner having a portion of its length located in the supplemental casing, a device for injecting air and gas connected to the supply-pipe and feeding the main burner, and a device for burning air and gas connected to the supply-pipe and adapted to heat the portion of the supply-pipe in the supplemental casing.



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**758,590. MOTOR-VEHICLE.** WILLIAM J. LANE and GEORGE LANE, Poughkeepsie, N. Y. Filed Feb. 15, 1901. Serial No. 47,451. (No model.)



*Claim.*—1. In a motor-vehicle, the combination of a boiler, a steam-engine, a steam-gage, a main steam-pipe, and a pipe interposed between the boiler and the main steam-pipe, through which a constant flow of hot fluid is passing, and said pipe carried sufficiently near to the steam-gage to heat the steam-gage by conduction and thus prevent freezing.

2. In a motor-vehicle, the combination of a boiler, an engine, a vertically-arranged passage open at both ends at the back of the vehicle, a horizontally-disposed flue over the boiler and communicating with said passage, a pipe system connecting at one end with the boiler at the point of maximum water-level permitted within the boiler and connected at its opposite end to the live-steam pipe leading to the engine, and a pipe leading from the exhaust of said engine to and discharging into the horizontal flue from the boiler.

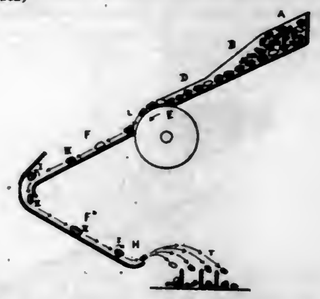
3. In a motor-vehicle, the combination of a boiler, a steam-engine, a pipe leading from the point of maximum water-level in the boiler to the steam-engine, a steam-gage in operative relation with said pipe, whereby said steam-gage will indicate the steam-pressure of the boiler and be prevented from freezing by reason of the heat conducted to it through said pipe.

4. In a motor-vehicle, the combination of a boiler, a steam-engine, a steam-gage, a main steam-pipe, a pipe leading from the boiler to the main steam-pipe and through which a constant flow of hot fluid is passing, said steam-gage situated in proximity to said pipe and adapted to be heated thereby to keep it from freezing, and a water-trap interposed between said pipe and said steam-gage.

5. In a motor-vehicle, the combination of a boiler, an engine, flues through which the products of combustion from the boiler are discharged into the atmosphere, a pipe system connected at one end with the boiler at the point of maximum water-level permitted within the boiler, and at its opposite end to the live-steam pipe leading to the engine, and a pipe leading from the exhaust of said engine to and discharging into the exhaust-flue from the boiler.

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**753,591. ART OF SEPARATING LUMP MATERIAL.** ARTHUR LAUBENFELD, Scranton, Pa. Filed May 3, 1900. Serial No. 15,406. (No model.)



*Claim.*—1. The improvement in the art of separating lump material, the pieces of which differ in their specific gravities or in the frictional natures of their surfaces, which comprises forming the pieces into a loose stream of single pieces by spacing the pieces individually apart from one another both lengthwise and crosswise of the stream, imparting an individual velocity to each piece peculiar to its properties by subjecting the pieces thus spaced apart to the combined actions of gravitation and the frictional retardation of the pieces on a declivous surface, and separating the pieces according to their acquired individual velocities.

2. The improvement in the art of separating lump material, the pieces of which differ in their specific gravities or in the frictional natures of their surfaces, which comprises forming the pieces into a loose stream of single pieces by spacing the pieces individually apart from one another both lengthwise and crosswise of the stream, imparting an individual velocity to each piece peculiar to its properties by subjecting the pieces thus spaced apart to the combined actions of gravitation and the frictional retardation of opposite sides of the pieces on a declivous surface, and separating the pieces according to their acquired individual velocities.

3. The improvement in the art of separating lump material, the pieces of which differ in their specific gravities or in the frictional natures of their surfaces, which comprises forming the pieces into a loose stream of single pieces by spacing the pieces individually apart from one another both lengthwise and crosswise of the stream, imparting an individual velocity to each piece peculiar to its properties by giving substantially equal initial velocities to all of the pieces, subjecting the pieces to the combined actions of gravitation and their frictional retardation on a declivous surface, and separating the pieces according to their acquired individual velocities.

4. The improvement in the art of separating lump material, the pieces of which differ in their specific gravities or in the frictional natures of their surfaces, which comprises forming the pieces into a loose stream of single pieces by spacing the pieces individually apart from one another both lengthwise and crosswise of the stream, imparting an individual velocity to each piece peculiar to its properties by giving substantially equal initial velocities to all of the pieces, subjecting the pieces to the combined actions of gravitation and the frictional retardation of opposite sides of the pieces on a declivous surface, and separating the pieces according to their acquired individual velocities.

5. The improvement in the art of separating lump material containing composite pieces which differ in the frictional nature of their opposite sides, which comprises imparting individual velocities to the pieces by subjecting them to the combined actions of gravitation and the frictional retardation of their opposite sides on a declivous surface, and separating the pieces according to their acquired individual velocities.

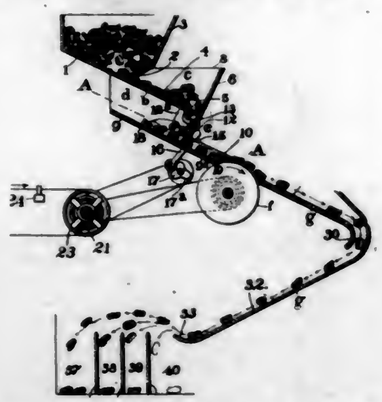
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**753,592. SEPARATOR.** ARTHUR LAUBENFELD, Scranton, Pa. Original application filed Apr. 3, 1899, Serial No. 711,582. Divided and this application filed Jan. 6, 1903. Serial No. 138,096. (No model.)

*Claim.*—1. In a separator for lump material, a declivous slide, one or more separating-partitions at the lower end of said slide, devices for ranging the material in single-piece files, spaced laterally apart from each other at such distances as to preclude contact on the slide between the pieces from adjacent files, and means for delivering the pieces of material separately from the files onto the slide.

2. In a separator for lump material, a declivous slide, one or

more separating-partitions at the lower end of said slide, devices for ranging the material in single-piece files, spaced laterally apart from each other at such distances as to preclude contact on the slide between the pieces from adjacent files, means for delivering the pieces of material separately from the files onto the slide, and means for automatically regulating the supply of material to said ranging devices.



3. In a separator for lump material, a declivous slide, one or more separating-partitions at the lower end of the slide, a feeding device having a traveling surface at the upper end of the slide and arranged to deliver material onto the slide, and a channeled feed-chute arranged to deliver material onto said surface, the channels on said chute being spaced laterally apart from each other at such distances as to preclude contact on the slide between the pieces of material issuing from adjacent channels.

4. In a separator for lump material, a declivous slide, one or more separating-partitions at the lower end of the slide, a feeding device having a traveling surface at the upper end of the slide and arranged to deliver material onto the slide, a channeled feed-chute arranged to deliver material onto said surface, the channels on said chute being spaced laterally apart from each other at such distances as to preclude contact on the slide between the pieces of material issuing from adjacent channels, and means for automatically delivering the material into said channels.

5. In a separator for lump material, a declivous slide, one or more separating-partitions at the lower end of the slide, a feeding device at the upper end of the slide having a traveling surface and arranged to deliver material onto the slide, a channeled feed-chute arranged to deliver material onto said surface, and a movable rake arranged above said feed-chute, close to the surface thereof, and adapted to arrange the material in single-piece files spaced laterally apart from one another.

6. In a separator for lump material, the combination with the slide, one or more separating-partitions, and the feeding device having a traveling surface, of a feed-chute meeting said feeding device, said feed-chute having a plain upper portion and longitudinal ribs on its lower portion, and a movable rake arranged over said plain portion and having teeth in line with said ribs.

7. In a separator for lump material, the combination with the slide, one or more separating-partitions, and the feeding device having a traveling surface, of a feed-chute meeting said feeding device, said feed-chute having a plain upper portion and longitudinal ribs on its lower portion, and a movable rake arranged over said plain portion and having teeth in line with said ribs, the alternate teeth on said rake projecting longitudinally of the chute to a greater distance than the intermediate teeth.

8. In a separator of the kind described, feeding means for spacing the pieces of material laterally and longitudinally apart from each other comprising a movable distributing-chute having notches at its lower end, a fixed stop-plate extending across the end of said chute, means for vibrating said distributing-chute, a feed-chute arranged below the distributing-chute, and means for arranging the pieces of material in single-piece files on said feed-chute.

9. In a separator of the kind described, feeding means for spacing the pieces of material laterally and longitudinally apart from each other comprising a receiving-hopper having one or more discharge-openings, a movable distributing-chute beneath said openings, said chute having notches at its lower end, a fixed stop-plate extending across the lower end of the distributing-chute, a feed-chute arranged below said notches, and means for ranging the pieces of material in single-piece files on said feed-chute.

10. In a separator of the kind described, a feed-roller having annular ribs thereon forming intervening channels spaced laterally apart at such distances as to preclude contact between the pieces in adjacent channels, a feed-chute having longitudinal ribs in line with the ribs on the roller and having tongues at its lower end projecting into the channels on the roller, and a slide having tongues at its upper end projecting into the channels on the roller, the channels on said roller being spaced laterally apart at such distances as to preclude contact between the pieces of material passing therefrom onto the slide.

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**753,593. FOUNTAIN MARKING DEVICE. JOHN R. LANGILL, New York, N. Y., assignor to Langill Fountain Pen and Brush Company, Jersey City, N. J., a Corporation of New Jersey. Filed Sept. 18, 1903. Serial No. 173,737. (No model.)**



*Claim.*—1. In a fountain marking device, the combination with a barrel or reservoir, of a tapered valve-plug in one end having openings in the side, an adjustable cap over the valve, having an opening adapted to engage the tapered valve-plug between the outer end of the same and the openings, and an ink-applying device adapted to be fed from the valve, as set forth.

2. In a fountain marking device, the combination with a barrel or reservoir, of a hollow, tapered valve-plug in one end having openings in the side, a screw-cap having a spherical end with an opening therein adapted to form a valve-seat to engage the valve-plug between the outer end of the same and the openings, an ink-applying device arranged to be supplied through the valve, and a removable protecting-cap over the ink-applying device, as set forth.

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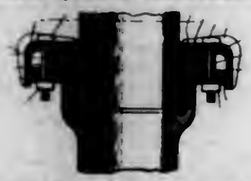
**753,594. SPECTACLE-TEMPLE. OLIVER LAVALLÉE, Boston, Mass. Filed Nov. 20, 1903. Serial No. 181,938. (No model.)**



*Claim.*—In a spectacle-temple, the forward straight portion of comparatively small diameter and provided at its rear end with the head *c* and the rear curved ear portion *d* of comparatively large diameter and screw-threaded at its forward end; and the internally-screw-threaded ferrule *g* provided at its forward end with the longitudinally-bored plug *h*, whereby the portion *g* may be screwed into the ferrule and force said head against the inner end of the plug, the three said parts being of such relative length and position that the ferrule will be opposite the side of the face of the wearer, for the purpose set forth.

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**753,595. INSULATED PIPE-JOINT. WALDO A. LEARNED, Watertown, Mass. Filed Sept. 5, 1903. Serial No. 172,371. (No model.)**



*Claim.*—1. An insulated pipe-joint comprising two pipe-sections having a bell and spigot respectively, an insulating compound filling the space between the bell and spigot, which compound will pour when heated but will set or harden quickly after being poured, a ring of yielding insulating material surrounding the spigot, and means to force said ring hard against the end of the bell, the exposed face of insulating material and the portion of the spigot adjacent said material.

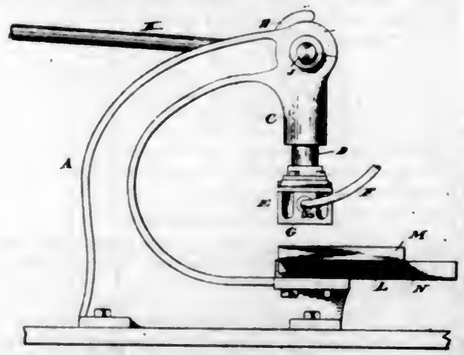
2. Two pipe-sections having a bell and spigot respectively, an insulating compound filling the space between said pipe-sections and insulating one from the other, a ring of yielding insulating material surrounding the spigot, and means to force said ring hard against the end of the bell, the exposed face of insulating material and the portion of the spigot adjacent said material, said ring operating to prevent any leakage in the joint.



3. Two pipe-sections having a bell and spigot respectively, an annular ring or gasket of insulating material between the end of the spigot and the shoulder of the bell, a flexible insulating compound filling the annular space between the bell and spigot, a ring of yielding material surrounding said spigot and a clamping-ring to force said ring hard against the end of the bell, the exposed face of the insulating compound and the portion of the spigot adjacent said compound.

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**753,596. GARMENT-PRESSING MACHINE. FRANKLIN LINDSAY, Peoria Ill. Filed Mar. 7, 1903. Serial No. 146,782. (No model.)**



*Claim.*—1. A hand-operated garment-pressing machine comprising an upwardly-extending overhanging arm bifurcated at its extremity, a rock-shaft carried in said extremity, an eccentric affixed to the shaft, a plunger beneath the eccentric and contacting with the same at all times, means on the plunger partially surrounding the eccentric for carrying the plunger by means of the said eccentric, a hand-lever on the rock-shaft for moving the eccentric for imparting an up-and-down movement to the plunger, a sad-iron on the latter member and a table beneath the same for receiving pressure therefrom substantially as set forth.

2. A hand-operated garment-pressing machine comprising an overhanging arm for carrying the operating portions, a rock-shaft carried in said arm, an eccentric affixed to the shaft, a lever for operating the shaft and eccentric, a plunger beneath the eccentric, a guide for the plunger, an arm on the latter for partially encircling the eccentric adapted for raising the plunger by means of the eccentric within it, a sad-iron on the lower end of the plunger and a table beneath the iron for receiving pressure from the iron as set forth.

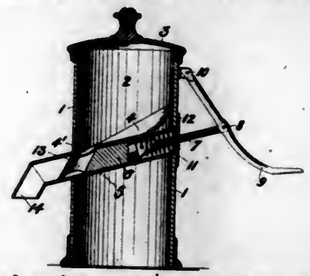
3. An implement of the character described comprising a gooseneck-arm, its lower end forming the base of the machine, its upper end carrying the operating mechanism substantially as shown, the hollow head thereof, a vertically-movable plunger therein, a cam for raising and lowering said plunger, there being a curved arm formed with the top of the plunger to partially inclose the cam for the purposes described, a hand-lever for operating the said cam, and a sad-iron carried by the lower end of the plunger all arranged as shown.

4. An implement of the character described comprising the gooseneck-arm A, its lower end comprising the base of the machine for receiving pressure, its upper end carrying the operating mechanism, the hollow head B thereof, the cam I within the head, the plunger D beneath the cam and adapted for vertical movement, said plunger being formed at its top to conform to the curve of the cam above it, the arm H on the top of said plunger and curved over the cam substantially as shown to inclose the said cam, the cam being provided with a shaft having its bearing in the head B, the hand-lever K for turning the shaft and cam, the said iron E on the lower end of the plunger, the dovetailed block L secured to the base of the arm A beneath the sad-iron, and the removable block M on the block L said block M being provided with guides all arranged substantially as and for the purposes set forth.

5. In an implement of the character described, the frame A having the head B provided with the hollow boss C, the plunger D guided within the latter, the iron E carried on the lower end of the plunger, the shaft J, the cam I carried thereon, the arm H of the plunger partially surrounding the cam, the hand-lever K for operating the shaft and cam and the table M beneath the iron E for receiving pressure from the latter as set forth.

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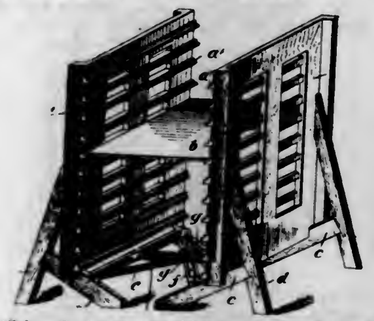
**753,597. SALT-RECEPTACLE. CHARLES R. LOVE, Brannockstown, Ireland. Filed Sept. 23, 1903. Serial No. 174,270. (No model.)**



*Claim.*—In a salt-receptacle from which the contained salt is to be delivered by mechanical devices; the combination with a normally closed container for holding a store of salt, an inclined base within the container having a delivery-aperture for the salt formed at the lower part of the said base, an inclined tube 5 passing through the structure beneath the inclined base 4, the said tube having an aperture coinciding with the aperture of the inclined base, the tube extending at its lower end beyond the outer wall of the container, and a downward extension 14 at the lower end of the tube to form a delivery-spout; of a plunger located in the tube, the said plunger having a vertical through-aperture to receive the portion of the salt to be delivered, a helical tension-spring located in the tube having one end fixed to the plunger, a plate 12 covering the upper end of the tube the other end of the spring being fixed to the said plate, a connecting-rod pivoted to the plunger and passing through a perforation in the plate, an operating-arm 9 pivoted to the upper part of the container, and a pivot-pin 8 connecting the connecting-rod to the said arm, substantially as set forth.

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**753,598. RACK. CHARLES D. LYON, St. Louis, Mo. Filed Oct. 22, 1903. Serial No. 178,143. (No model.)**



*Claim.*—1. A rack comprising a vertical section, a diagonally-disposed leg joined to the bottom thereof at a point intermediate the ends of said leg, and a second diagonally-disposed leg, the upper end of which is attached to the rack-section and the intermediate portion of which is engaged with the upper end of the first leg.

2. A rack comprising two sections, and means for adjustably connecting them together, said means comprising a member attached to each section, each of said members having a tongue, said tongues overlapping each other and one member having a guide for the tongue of the other member, and means for clamping the said tongues adjustably together.

3. A rack, comprising two vertically-disposed sections, a diagonally-disposed leg joined to the bottom of each at a point intermediate the ends of said leg, a second diagonally-disposed leg for each section, the second legs being attached at their upper ends to the respective sections and at their intermediate portions to the upper ends of the first legs, a connecting member attached to each section, said members having slidably-engaged tongues, and a clamping device working with the tongues, for the purpose specified.

4. A rack, comprising two sections, and means for adjustably connecting them together, said means comprising a member attached to each section of the rack, and each of said members comprising tongues, the tongues being overlapped and each member also having a guide slidably receiving the tongue of the other member, and means for adjustably holding the tongues together.

753,599. COMBINED SIGN AND BIRD-HOUSE. ISAAC MASON, New York, N. Y. Filed July 7, 1903. Serial No. 164,540. (No model.)

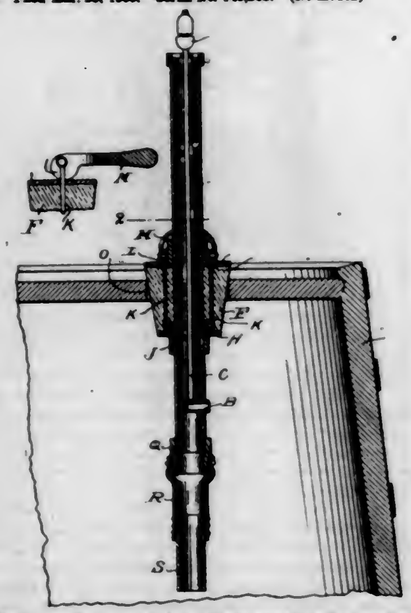


*Claim.*—1. In a device for the purpose specified, a box-like structure adapted for advertising matter on its outer side and having openings for the passage of birds, parts at the lower portions of the openings serving as landing-platforms and also as closures for the openings, and shelving in the structure.

2. In a device for the purpose specified, a box-like structure having its walls arranged at right angles to each other and having inwardly-turned portions at the outer edges of the walls, the said inwardly-turned portions being provided with openings, parts integral with said inwardly-turned portions and adapted to form landings at the lower portions of the openings and also adapted for closing the openings, and shelving in the structure opposite said openings.

3. In a device for the purpose specified, a box-like structure having its outer walls arranged at right angles to each other, the outer edges of said side walls being turned inward, the said walls and inwardly-turned portions consisting of sheet metal, and the said inwardly-turned portions being provided with openings, and parts at the lower portions of the openings adapted to be turned to form landings, or turned to form closures.

753,600. TANK-FILLING ALARM. CHRISTIAN MAUL, Chicago, Ill. Filed Mar. 23, 1903. Serial No. 148,203. (No model.)



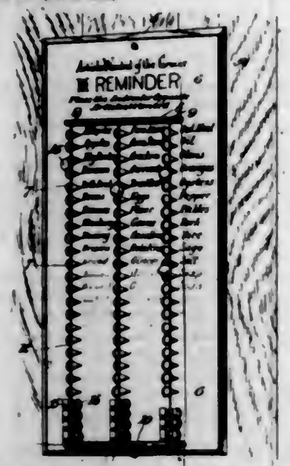
*Claim.*—1. The combination with the opening of a vessel to be filled, of a sealing device adapted to enter said opening, an air-exhaust pipe longitudinally movable in said sealing device, alarm devices carried by said pipe, and means carried by said sealing device for simultaneously clutching said pipe and the wall of said opening, whereby said pipe is firmly held in any given position relatively to said opening.

2. The combination with the opening of a vessel to be filled and an air-exhaust and alarm device adapted to be inserted in said opening and adjusted relatively to said vessel to extend any given depth into the latter, of clutch devices carried by said air-exhaust and alarm device adapted to be inserted in said opening, and means carried by said clutch for operating same to simultaneously clutch said air-exhaust and alarm device and the wall of said opening to seal the latter and hold said alarm device in the desired position relatively to said vessel.

3. The combination with a vessel to be filled and a tubular air-exhaust and alarm device adapted to be inserted therein through an opening above the liquid-level of said vessel, of a clutch movable longitudinally on said alarm device and adapted to enter said opening, and means carried by said clutch for operating same to simultaneously clutch said alarm device and the wall of said opening to hold the former firmly in position relatively to the latter.

4. The combination with a vessel to be filled and a tubular alarm device adapted to be inserted through an opening in said vessel, of an expansible plug longitudinally movable on said alarm device and adapted to fit said opening in said vessel, and devices carried by said plug and movable toward each other for expanding the same laterally to simultaneously clutch said alarm device and the wall of said opening to seal the latter and hold said alarm device firmly in position relatively thereto.

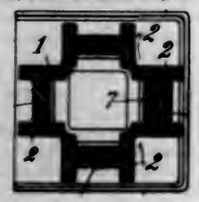
753,601. PERMANENT MEMORANDUM FOR HOUSEHOLD USE. ANTHONY R. MESSERE, Chicago, Ill. Filed Apr. 13, 1903. Serial No. 152,294. (No model.)




*Claim.*—1. A device of the class described, comprising a body portion having a series of apertures therein, each aperture having the name of a household article written opposite, a cord secured to the body portion and extending over said apertures, and pegs movable upon said cord and adapted to be inserted within the aperture opposite the name of an article wanted, substantially as set forth.

2. A device of the class described, comprising a body portion having rows of apertures formed therein, said rows being spaced apart, the body portion having written thereon opposite each aperture the name of an article desired, rods secured to the body portion immediately above and below the rows of apertures, means secured to said rods and arranged adjacent to the apertures, and pegs slidable upon said means and adapted to be inserted within said apertures, substantially as set forth.

753,602. STAMP-MILL. WILLIAM A. MERRALLS, San Francisco, Cal. Filed May 27, 1903. Serial No. 158,983. (No model.)





*Claim.*—A stamp-mill mortar having openings on all four sides, screens in three of said openings, and a removable amalgamating-plate closing the fourth opening and coextensive in size with the screens, said plate having horizontal troughs or riffles for catching the precious metal, substantially as described.

753,603. STEEL-CONCRETE CONSTRUCTION, &c. JOHN S. METCALF, Chicago, Ill., assignor to John S. Metcalf Co., Chicago, Ill., a Corporation of Illinois. Filed Oct. 7, 1903. Serial No. 176,045. (No model.)



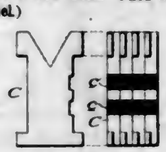
*Claim.*—1. In construction of the general character set forth, a stay comprising sections formed with adjacent hook-equipped extremities, a link engaged by said hooks, and means at each link forming a part of the stay for forcing the hooks into close engagement with the link, for the purpose set forth.

2. In construction of the general character set forth, a stay comprising sections formed with adjacent hook-equipped extremities, a link engaged by said hooks, and a wedge forcing the hooks apart and into close engagement with the link.

3. A wall of curved cross-section comprising in whole or in part cement, and curved stays embedded in the wall, each stay comprising sections provided with hook-shaped extremities, links disposed in horizontal planes and joining adjacent hooks of adjacent sections, and vertical wedges extending through said links between said hooks, for the purpose set forth.

4. An annular wall, comprising in whole or in part cement, and annular stays embedded therein, each comprising curved sections having upturned hooks, links joining adjacent hooks of adjacent sections, except at the last joint, and wedges forcing the sections apart, the last joints of the several stays being staggered, for the purpose set forth.

753,604. MATRIX FOR LINOTYPE-MACHINES. WILTON G. MIDDLETON, Phœnix, Ariz., assignor to Mergenthaler Linotype Company, a Corporation of New York. Filed Dec. 28, 1903. Serial No. 186,780. (No model.)



*Claim.*—1. A matrix for a linotype or kindred machine, containing two independent border characters, one horizontally and the other vertically disposed.

2. A matrix for a linotype or kindred machine, having the same character or design repeated thereon, one disposed to form a character for a vertical line, the other to form a character for a horizontal line.

3. A matrix for a linotype or kindred machine, containing a plurality of independently-usable border characters, positioned to produce respectively characters which will aline horizontally and vertically on the assembled slugs.

753,605. PICTURE-HANGER. HENRY MINCK, Jersey City, N. J. Filed Nov. 11, 1903. Serial No. 180,688. (No model.)

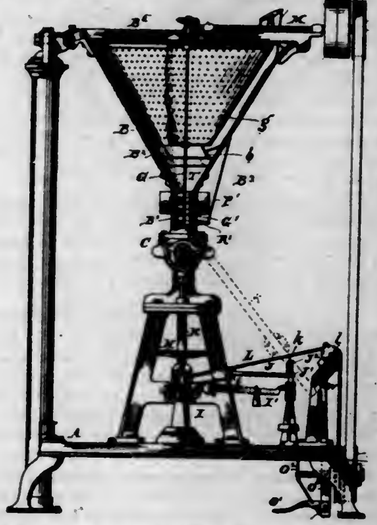
*Claim.*—1. A picture-hanger consisting of two limbs connected at their upper ends and each comprising a body member having a series of upturned hooks and below the same laterally-projecting guides having openings, and an adjustable member sliding longitudinally in said openings of the lateral guides and provided with a lateral guide having an opening receiving the body member, the opening of the lateral guide of the adjustable member being out of alinement with the openings of the lateral guides of the body member, said adjustable section being provided at its upper end with an eye to engage with the upturned hooks of the body member, all substantially as and for the purposes set forth.

2. A picture-hanger comprising a body-section provided with a series of upturned hooks, an adjustable member provided at its upper end with an eye to engage on said hooks, and guide devices on the body member and the adjustable member and slidable along each other, said guide devices being out of alinement whereby the adjustable member will be prevented from turning and its eye will be preserved at all times in position for engagement with the hooks of the body member, substantially as set forth.



3. A picture-hanger comprising two opposite limbs connected at their upper ends and composed of wire bent forming laterally-projecting upturned hooks, the hooks of the opposite limbs lying in the same plane, and adjustable members arranged and operating between the body members and slidable along the latter, and provided at their upper ends with outwardly-projecting eyes arranged to engage with the upturned hooks of the body members, substantially as set forth.

753,606. MACHINE FOR FILLING VESSELS WITH FLUID MATERIALS. GEORGE A. MCALLISTER, Gibbsboro, N. J. Filed May 29, 1903. Serial No. 159,291. (No model.)



*Claim.*—1. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve at the bottom for intermittently controlling the flow of fluid therefrom, a diaphragm across the hopper above the valve, a valve in said diaphragm, and means for closing the valve in diaphragm when opening the valve at the bottom of the hopper and vice versa whereby the downward flow of fluid material is retarded to substantially the same degree irrespective of the height of the fluid within the hopper.

2. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve at the bottom for intermittently controlling the flow of fluid therefrom, a diaphragm across the hopper above the valve, a valve in said diaphragm, a weighing device arranged below the hopper and its valve to support the vessel into which the fluid is to be fed, means for closing the valve in diaphragm when opening the valve at the bottom of the hopper, and means con-

trolled by the weighing device for causing the valve of the hopper to be closed and the diaphragm-valve opened whereby the downward flow of fluid material is retarded to substantially the same degree irrespective of the height of the fluid within the hopper.

3. In a machine for filling vessels with fluid substances, the combination of a liquid-tight hopper, a chamber formed at the bottom of the hopper, a valve to control the flow of liquid from the hopper into the chamber, a discharge-valve to control the flow of liquid from the chamber, an agitator in the chamber above the discharge-valve, and means for closing and opening the two valves alternately.

4. In a machine for filling vessels with fluid substances, the combination of a liquid-tight hopper, a chamber formed at the bottom of the hopper, a valve to control the flow of fluid from the hopper into the chamber, a valve to control the flow of fluid from the chamber, means for closing and opening the two valves alternately, and a weighing device for holding the vessel to be filled adapted to automatically control the means for closing the valve which controls the flow of fluid from the chamber and opening the valve which controls the flow of fluid from the hopper to the chamber.

5. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve at the bottom of the hopper to control the escape of fluid, a vertical rotating shaft within the hopper, a screen carried by and rotating with the shaft and automatic means controlled by the weight of the fluid discharged to operate the valve to cut off the fluid.

6. In a machine for filling vessels with fluid substances, the combination of a hopper having a neck at the bottom, a valve at the bottom of the neck of the hopper to completely close the neck or open it to control the escape of fluid, a vertical rotating shaft within the hopper having a screw arranged within the neck, and a screen carried by and rotating with the shaft.

7. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve at the bottom of the hopper to control the escape of fluid, a vertical rotating shaft within the hopper, a screen carried by and rotating with the shaft, a diaphragm surrounding the shaft and across the hopper, and a valve in the diaphragm adapted to control the fluid passing from the screen to the valve at the bottom of the hopper.

8. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the flow of the fluid from the hopper, and a removable plate arranged against the discharge-orifice of the valve and having a slot or aperture structure for subdividing the fluid stream passing from the valve-orifice.

9. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the flow of fluid from the hopper, and a transversely-movable cut-off wire adapted to cut across the stream of fluid material close to the valve.

10. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the flow of fluid from the hopper, a transversely-movable cut-off wire adapted to cut across the stream of fluid material close to the valve, and means for simultaneously closing the valve and moving the wire across the fluid and vice versa.

11. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the entire flow of fluid from the hopper, a weighted arm to close the valve, a mechanical power device to raise the arm and open the valve, means independent of the valve to control the power device, a latch for holding the arm in its raised position, and a movable support for the vessel to be filled for operating the latch to release the arm when the vessel has been filled and its weight depresses the support.

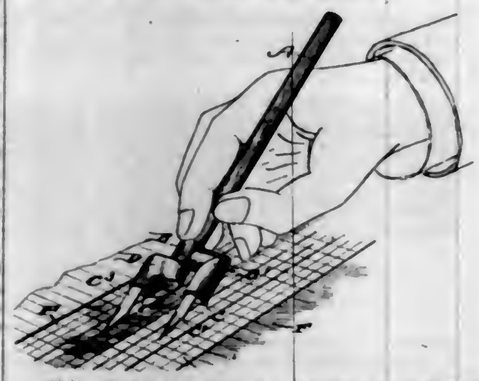
12. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the flow of fluid from the hopper, a weighted arm to close the valve, a friction and chain device to raise the arm and open the valve, means to control the friction device, a latch for holding the arm in its raised position, and a movable support for the vessel to be filled for operating the latch to release the arm when the vessel has been filled and its weight depresses the support.

13. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the flow of the fluid from the hopper, two oppositely-moving cut-off devices adapted to pass across the stream of fluid from the valve, and means for simultaneously operating the valve and cut-off devices.

14. In a machine for filling vessels with fluid substances, the combination of a hopper, a valve to control the flow of the fluid from the hopper, two oppositely-moving cut-off devices adapted to pass across the stream of fluid passing from the valve, a movable support for the vessel adapted to be depressed by the weight of the fluid in the vessel, and means for simultaneously operating the valve and cut off devices controlled by the movable support.

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**753,607. PENHOLDER.** RICHARD B. MCBEE, Ardmore, Ind. Ter. Filed June 6, 1903. Serial No. 160,374. (No model.)

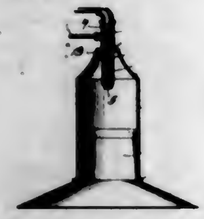


*Claim.*—1. A posting apparatus comprising a pen-staff, an adjustable sleeve carrying an elbow, an elbow arranged on the staff below the sleeve, and a pen-point carried by each elbow.

2. A posting apparatus comprising a pen-staff, a sleeve on the staff, an elbow extending laterally from said sleeve a pen-point carried by said elbow, an elbow carried by the lower end of the staff, and a pen-point carried by the last-mentioned elbow, the said point projecting below the plane of the point first mentioned when the points are held in a vertical position.

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**753,608. WEED-DESTROYING ATTACHMENT FOR LOCOMOTIVES.** ELIAS M. MCCOY, Selma, La. Filed June 3, 1903. Serial No. 160,615. (No model.)



*Claim.*—1. In a device of the class described, a hydrocarbon-burner, a combustion-chamber surrounding the same and having an annular opening for the admission of air, and a telescopic extension engaging said combustion-chamber interiorly and having a diverging deflecting-flange at its lower edge.

2. In a device of the class described, the combination of a cylindrical combustion-chamber, a cylindrical telescoping extension contracting upwardly and having an outward-flaring flange at its upper edge interiorly engaging said combustion-chamber and provided at its lower edge with a diverging deflecting-flange.

3. In a device of the class described, the combination with a hydrocarbon-burner, of a combustion-chamber surrounding the same and forming an annular air-inlet around said burner, a telescoping extension in said combustion-chamber and having a flaring flange at its upper edge interiorly engaging said combustion-chamber, and a flange diverging from the lower edge of said telescoping section and constituting a deflector.

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**753,609. KNIFE OR FORK CLEANER.** EDWARD F. MCDONOUGH, Reading, Pa., assignor of one-half to William A. Mannerback, Reading, Pa. Filed Mar. 30, 1903. Serial No. 150,179. (No model.)

*Claim.*—1. A device of the class described comprising a single piece of sheet metal bent upon itself to form a handle having radially-extended portions near one end and spaced parallel spring-jaws at the extremities of the extended portions, each of said jaws being provided with enlarged ends and having an aperture in said enlarged portions, a pad or block between the jaws, one of said jaws engaging each end thereof, said block being provided with a plurality of active faces and a transverse hole, said hole being covered by the enlarged ends of the jaws, a pin passing through the block and the apertures in the jaws and a nut engaging the pin for regulating the pressure of both of the jaws on the ends of the block for rigidly holding several of its faces in an operative position.





2. A device of the class described constructed of a single piece of metal bent upon itself to form a handle provided with radially-extended portions near one end thereof, the extremities of said portions being bent to form projecting spaced spring-jaws, said jaws being each provided with an aperture near their extremities, a rotatable pad or block provided with a plurality of active faces, between the jaws, one of said jaws engaging each end of the pad, said pad being provided with an opening through its body, a pin provided with a head on one end and threaded at its other end, said pin being adapted to pass entirely through the hole in the pad and the apertures in the jaws so that the head thereof engages the outer face of one of the jaws, and a nut on the threaded end engaging the outer face of the other jaw and adapted to regulate the pressure of the jaws and to cause them to clamp the ends of the pad to prevent rotation and hold the faces thereof successively and rigidly in an operative position.

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**753,610. METHOD OF CLEANING AND COATING PIPES.** JOHN G. MCDOWELL, Pittsburg, Pa. Filed Sept. 26, 1903. Serial No. 174,560. (No specimens.)

*Claim.*—1. The method of preparing pipe for coating consisting in subjecting it to a pickling liquid containing salt cake or niter cake having a small percentage of free acid, and then removing it, and driving a fluid current through the pipe; substantially as described.

2. The method of coating pipe consisting in pickling it in a solution of commercial salt cake or niter cake having a small percentage of free acid, then passing a current of fluid free from abrading material through it, and then coating the cleaned pipe; substantially as described.

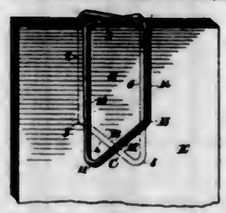
3. The method of pickling metal, consisting in immersing it in a solution of commercial salt cake or niter cake, containing a small percentage of free acid; substantially as described.

4. The method of coating pipe consisting in pickling it in a solution of commercial salt cake or niter cake having a small percentage of free acid, then forcing a current of gaseous fluid free from abrading material under pressure through the pipe and then coating the cleaned pipe; substantially as described.

5. The method of coating pipe consisting in pickling the pipe, then passing a current of hot gaseous fluid under pressure through it, and then coating the cleaned pipe; substantially as described.

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**753,611. SPRING-CLIP.** GEORGE W. MCGILL, Riverdale-on-Hudson, N. Y. Filed July 17, 1903. Serial No. 166,057. (No model.)



*Claim.*—1. A spring-clip composed of a piece of suitable spring-wire folded in manner to provide the clip a two-stranded rectangular-shaped body part or frame in which parts of the wire providing the frame sides are superimposed in spring-bearing one against the other, and parts of the wire providing the frame-base are folded upward diagonally across the frame area in manner to cross each other in spring-bearing therein, and beyond which they merge into the wires of the opposite sides of the frame, their diagonally-set parts jointly providing below their crossing a space, or mouth, opening outwardly from the frame; with the terminals of the wire forming the clip folded toward each other across the opposite end of the frame and secured together thereat.

2. A spring-clip composed of a piece of suitable spring-wire folded in manner to provide the clip a two-stranded rectangular-shaped body part or frame in which parts of the wire providing the frame sides are superimposed in spring-bearing one against the other, and parts of the wire providing the frame-base are folded upward diagonally across the frame area in manner to cross each other in spring-bearing therein, and beyond which they merge into the wires of the opposite sides of the frame, their diagonally-set parts jointly providing below their crossing a space, or mouth, opening outwardly from the frame; with the terminals of the wire forming the clip folded toward each other across the opposite end of the frame and housed together in alinement thereat by a tubular metal case.

3. A spring-clip composed of a piece of suitable spring-wire folded in manner to provide the clip a two-stranded rectangular-shaped body part or frame in which parts of the wire providing the frame sides are superimposed in spring-bearing one against the other, and parts of the wire providing the frame-base are folded upward diagonally across the frame area in manner to cross each other in spring-bearing therein, and beyond which they merge into the wires of the opposite sides of the frame, their diagonally-set parts jointly providing below their crossing a space, or mouth, opening outwardly from the frame; with the terminals of the wire forming the clip folded toward each other across the opposite end of the frame and secured together thereat in manner providing it means of suspension.

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**753,612. COMBINED BUTTON AND BUTTON-FASTENING.** GEORGE W. MCGILL, Riverdale-on-Hudson, N. Y. Filed Oct. 15, 1903. Serial No. 177,118. (No model.)



*Claim.*—A combined button and button-attaching device consisting of a button member, a metallic fabric-attaching member, and an intermediate link member; the button member and the fabric-attaching member being secured together in movable and undetachable link connection by means of the intermediate link member, the latter member consisting of a strip of material folded at its center and connected thereat with the fabric-attaching member, and having its free end parts secured to the button member by being entered therein and clamped in the space between the upper and lower shell of such member in manner to prevent its withdrawal therefrom.

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**753,613. SPRING-CLIP.** GEORGE W. MCGILL, Riverdale-on-Hudson, N. Y. Filed Oct. 20, 1903. Serial No. 178,481. (No model.)



*Claim.*—1. A spring-clip composed of a piece of suitable wire having its opposite free ends held together and in alinement with each other and its body part folded and fashioned in manner to provide the device an outer rectangular frame and an inner triangular one, with the top parts of both frames merging into each other at the vertical center or axis of both, the sides and the base of both frames being rigidly continuous and indivisible, with the inner frame adapted to be vibrated through the outer one and possessing a width of base sufficient to cover or occupy in so doing nearly the full width of the inner area of the outer frame.

2. A spring-clip composed of a piece of spring-wire folded in manner to provide it an outer rectangular frame and an inner triangular one, with the wire forming the top parts of the rectangular frame merging into the wires forming the apex or narrow open top of the triangular one at the vertical center or axes of both frames and having the wires forming the base and sides of each of the frames continuous and indivisible, the relative size of the frames being such as to admit the inner frame vibrating transversely through the inner area of the outer frame, with the inner frame possessing a width of base sufficient to extend across nearly the full width of such area.

3. A spring-clip composed of a piece of spring-wire folded and fashioned in manner to provide it an outer rectangular frame, and an inner triangular one adapted to be vibrated transversely through the outer frame, with the top parts of both frames merging into each other near the vertical center or axis of both, each of the frames

being of greater width or spread than depth or height, the inner frame possessing a narrow open top, and a width of base sufficient to cross or occupy nearly the full width of the inner area of the outer frame.

4. A spring-clip composed of a piece of spring-wire folded and fashioned in manner to provide it an outer rectangular frame, and an inner triangular one adapted to be vibrated transversely through the outer frame, with the top parts of both frames merging into each other near the vertical center or axis of both, the inner frame possessing a narrow open top and a base of sufficient width to cross and occupy nearly the full width of the inner area of the outer frame, in combination with a straight metal case housing in straight alinement the opposite ends of the wire composing the clip.

5. A spring-clip composed of a piece of wire folded in manner to provide it an outer and inner frame integrally connected at their tops and occupying the same plane, the top and bottom of the outer frame being of the same width and set parallel to each other, and the two sides of such frame being of the same height and set parallel to each other, and the section of the wire forming the base of the inner frame being of a length sufficient to extend across the inner area of the outer frame nearly its entire width, and set within the outer frame adjacent to the bottom or base wire thereof and the two sections of the wire providing the sides of the inner frame being of the same length and converging upward within the outer frame toward its top and at the center thereof merging into the wires providing such top.

6. A spring-clip composed of a piece of suitable wire folded in manner to provide it an outer and inner frame integrally connected at their tops and occupying the same plane, the top and bottom of the outer frame being of the same width and set parallel with each other, and the section of the wire forming the base of the inner frame being of a length sufficient to extend across the inner area of the outer frame nearly its entire width, and set within the outer frame adjacent to the bottom or base wire thereof, and the two sections of the wire providing the sides of the inner frame being of the same length and converging upward within the outer frame toward its top and at the center thereof merging into the wires providing such top, providing the device coacting clamping-surfaces extending across the inner area of its outer frame nearly its entire width and height.

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**753,614. SPRING-CLIP.** GEORGE W. MCGILL, Riverdale-on-Hudson, N. Y. Filed Oct. 31, 1903. Serial No. 179,276. (No model.)



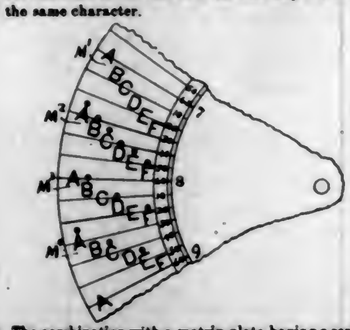
*Claim.*—A spring-clip composed of a single wire folded at its center in manner to provide the clip a top part or saddle having an arm depending from each end thereof, said arms converging below said top part in manner to cross each other some distance beneath its center, both of the arms below such crossing being folded upwardly in manner to provide them two auxiliary members occupying lines adjacent to and parallel with that part of the arms depending below such crossing, and such auxiliary members above such crossing continued upward parallel with each other toward the top of the clip, and coacting with each other in clamping material entered in the clip between them.

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**753,615. MARKING WATCHMEN'S-CLOCK DIALS.** ABRAHAM A. NEWMAN, Chicago, Ill. Filed Feb. 24, 1903. Serial No. 144,835. (No model.)

*Claim.*—1. The combination with a dial adapted to be rotated about its axis, of a series of dies arranged to mark said dial at different radii, the number of different dies being greater than the number of different radii at which they mark said dial, and the dies marking said dial at any particular radius being of a similar character but different from each other in that one die will mark the whole of the character while another die will mark only a part of the character.

2. The combination with a dial adapted to be rotated about its axis, of a series of dies arranged to mark said dial at different radii, each die having a distinct character so that the mark made at any one radius will differ from the marks made at other radii, a second series of dies each of which has a character of a kind similar to the character of the corresponding die of the first series and which is arranged to mark the dial at the same radius, and means by which each die of one series will mark on the dial at the proper radius the complete outline of the character peculiar to that radius while each die of the other series will mark on the dial only a part of the outline of the same character.

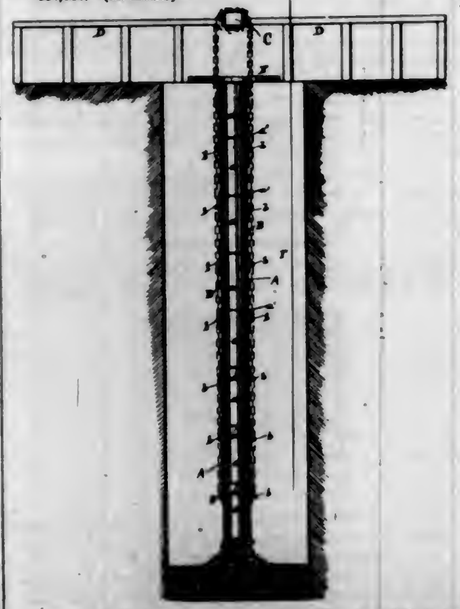



3. The combination with a matrix-plate having a series of characters formed therein, and a dial adapted to be moved over the face of the matrix-plate, of a series of dies arranged so that two or more of them cooperate with each character in said matrix-plate to mark said dial, one of the dies for each character being arranged so that it will mark the dial with the complete outline of that character while another die for the same character will mark the dial with only a part of the outline of that character.

4. The combination with a dial arranged to be rotated about its axis, and a matrix-plate having a series of characters formed therein, said matrix-plate being supported so that its different characters will lie at different distances from the center of the dial, of a die for each character, said dies being so constructed that they will mark upon the dial a part only of the corresponding characters in the matrix-plate.

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**753,616. CONVEYER OR CHUTE FOR INFILLING MATERIAL.** THOMAS NICHOLSON, Chicago, Ill. Filed July 26, 1902. Serial No. 117,087. (No model.)




*Claim.*—1. In a conveyer or chute for infilling material, the combination of a sectional conduit or tube having its sections detachably connected together and when connected having the entering ends of the sections interlocked one with the other, means for suspending the conduit or tube to hang free, and means for connecting each section independently and detachably to the suspending means, substantially as described.



2. In a conveyer or chute for infilling material, the combination of a sectional conduit or tube having its sections detachably connected together and when connected having close rigid joints at the entering ends of the sections, means for suspending the conduit or tube to hang free, and means for connecting each section independently and detachably to the suspending means, substantially as described.

3. In a conveyer or chute for infilling material, the combination of a conduit or tube consisting of a series of hollow cylindrical sections telescoped partially into each other at their adjacent ends and having rigid close joints at each of said telescopic connections, and means for suspending the conduit or tube and having the sections thereof independently and detachably connected thereto, whereby the conveyer or chute as a whole may be swung about at its lower end without pivotal or telescopic action at the joints and may be extended or shortened by the addition or removal of a section or sections, substantially as described.

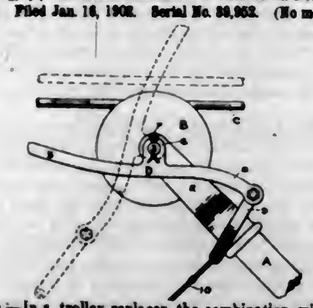
4. In a conveyer or chute for infilling material, the combination of a conduit or tube consisting of a series of attachable and detachable hollow cylindrical sections having the same diameter and tapered to telescope partially into each other at their adjoining ends forming rigid joints when the sections are attached, means for suspending the conduit or tube to hang free, means for independently and detachably connecting the sections of the conduit or tube onto the suspending means, and a receiver for and from which the material can be introduced into the upper end of the conduit or tube to be discharged at the lower end thereof, substantially as described.

5. In a conveyer or chute for infilling material, the combination of a conduit or chute composed of separately-detachable sections rigidly connected together and having their ends telescoped into each other to make a tight joint and enable the conveyer or chute as a whole to be shifted bodily, laterally and vertically, means for suspending the conduit or tube to hang free, a support for the suspending means, and a receiver for and from which the material can be deposited into the upper end of the conduit or tube to be discharged at the lower end thereof, substantially as described.

6. In a conveyer or chute for infilling material, the combination of a sectional conduit or tube having its sections detachably connected together, and when connected having the entering ends of the sections interlocked, chains one on each side of the conduit or tube, a projecting catch on opposite sides of each section of the conduit or tube adapted to engage a link of the chain and detachably and independently connect each section of the conduit or tube to the chains, and a support for the chains at their upper ends, substantially as described.

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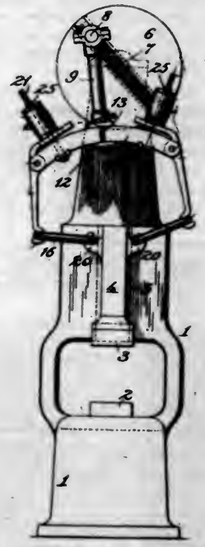
**753,617. TROLLEY-REPLACER.** FRANCIS A. NOLAN, St. Paul, Minn. Filed Jan. 16, 1902. Serial No. 89,953. (No model.)




*Claim.*—In a trolley-replacer, the combination, with a trolley-pole, a trolley-wheel and its axle, of a bifurcated lever formed with lateral lugs at a point between its ends, said lugs being pivotally supported upon the opposite ends of the axle so that the lever will turn freely upon its pivotal support without frictional contact with the trolley-wheel, a forked finder having a continuous upper face and upwardly and outwardly extending arms bridged across the upper or acting end of the lever, a yoke extending around the under side of the trolley-pole and having its ends pivotally connected with the lower or power end of the lever, and a trolley-rope connected with the yoke upon the under side of the pole, the weight of the lever being so distributed that, when the trolley-rope is released, the finder will fall backward by gravity and assume a position where it extends slightly upwardly from the horizontal, and the rope being adapted to hold the finder from being turned farther on its pivotal support after it has reached such position, substantially as and for the purpose described.

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**753,618. POWER-HAMMER.** JOHN H. MONQUINE, Moline, Ill., assignor to Williams, White & Company, a Corporation of Illinois. Filed Nov. 4, 1903. Serial No. 179,809. (No model.)




*Claim.*—1. In a power-hammer the combination with a movable hammer-head, of a driving member therefor, means for reciprocating said driving member, a lever pivoted to the driving member and operatively connected with the hammer-head, a cushioning device acting on the lever, and means for adjusting said cushioning device to and from the axis of the lever.

2. In a power-hammer the combination with a hammer-head, of a vertically-reciprocating operating member therefor, cushioning-levers pivoted between their ends to said member, operative connections between the lower ends of the levers and the hammer-head, cushioning-springs acting on the upper ends of the levers, and means for adjusting said cushioning-springs to and from the axes of the levers.

3. In a power-hammer the combination with a vertically-movable hammer-head, of a vertically-movable cross-head, means for operating said cross-head, cushioning-levers pivoted between their ends to the cross-head and formed with upper lateral portions extending along the top of the cross-head and having a plurality of openings, bolts mounted on the cross-head and adapted to be passed through either of the openings in the levers, cushioning members mounted on the bolts and bearing on the lateral ends of the levers, and connections between the levers and the hammer-head.

4. In a power-hammer the combination with a hammer-head, of driving member therefor, a connecting-rod operatively connected with the driving means, a cross-head on the lower end of the connecting-rod, cushioning-levers pivoted between their ends to the cross-head and having their upper portions extended laterally at the upper side of the cross-head, cushioning members sustained by the cross-head and acting on the lateral ends of the levers, and links connecting the lower ends of the levers with the hammer-head.

5. In a power-hammer the combination with the frame, of the rotary wrist-plate mounted thereon, a connecting-rod jointed at its upper end to the wrist-plate, a horizontally-arranged cross-head on the lower end of the connecting-rod, angular cushioning-levers pivoted between their ends to the cross-head, said levers having their upper portions extending laterally at the upper side of the cross-head and their lower portions extending downwardly, cushioning-springs acting on the laterally-extending portions of the levers, a vertically-movable hammer-slide carrying a hammer-head; and links connecting the lower ends of the cushioning-levers with the hammer-slide.

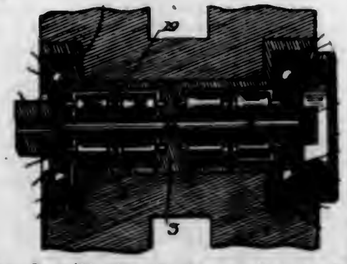
6. In a power-hammer the combination with a reciprocating hammer-head, of a driving member, a cross-head connected with the driving member and adapted to be reciprocated thereby, said cross-head comprising two parallel bars arranged side by side with a space between them, cushioning-levers pivoted between said bars at the ends of the same and provided with upper laterally-extending portions, bolts engaged with the under sides of the bars of the cross-heads and extending upward between said bars and through the lat-

eral portions of the cushioning-levers, cushioning-springs applied to said bolts and bearing on the cushioning-levers, and connections between the hammer-head and the cushioning-levers.

7. In a power-hammer the combination with a vertically-reciprocating cross-head and means for reciprocating the same, of cushioning-levers pivoted between their ends to the ends of said cross-head and having their upper portions extending inward toward each other laterally at the upper side of the cross-head, the lower portions of said cushioning-levers being extended down vertically and provided with hooked ends, cushioning members sustained by the cross-head and bearing on the laterally-extending ends of the cushioning-levers, a hammer-head, a vertically-reciprocating hammer-slide carrying said head and having near its upper end laterally-extended hooks, and links having their outer ends engaged with the hooks of the cushioning-levers and their inner ends engaged with the hooks on the hammer-slide.

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**753,619. ANTIFRICTION-BEARING.** WALTER W. O'CONNOR, East Pittsburg, Pa. Filed June 10, 1903. Serial No. 160,816. (No model.)



*Claim.*—In combination with the casing formed with a central partition, an axle having its shank passing through said partition, plates mounted on said shank adjacent the opposite ends of said casing, collars loosely mounted on said shank between said partition and plates, rollers arranged in said casing and engaging said shank, said rollers being arranged on opposite sides of the collars and having their spindles journaled in said collars, plates and partition, respectively, and means for preventing accidental displacement of said shank.

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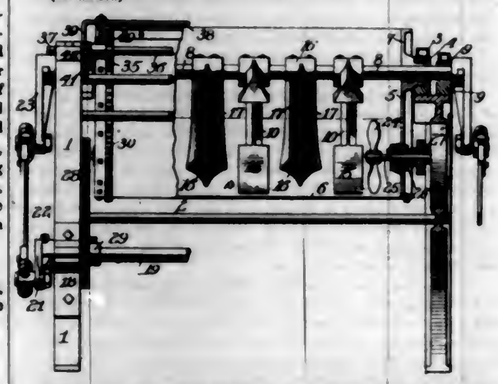
**753,620. TONGS OR CLAMP.** PETER A. OTTE, Mendo, S. D. Filed Dec. 1, 1903. Serial No. 183,330. (No model.)



*Claim.*—1. An implement of the class described, comprising pivoted members having jaws, and plates fastened to said jaws and spaced laterally thereof, said plates and jaws producing longitudinal grooves on the opposing edges of the jaws.

2. An implement of the class described, consisting of bent members each having a jaw and a handle, said members being disposed in crossing relation and pivotally connected by a transverse bolt, a plate fastened to each jaw, and spacing-strips interposed between the jaw and the plate and separating said parts to produce a longitudinal channel on the inner edge of the jaw.

**753,621. MIXING AND KNEADING MACHINE.** EMORY W. OSBURN, Rochester, N. Y. Filed Feb. 11, 1903. Serial No. 142,862. (No model.)



*Claim.*—1. In a mixing-machine, the combination with a trough and beater-arms operating therein, of a separate shaft arranged in each end of the trough and rotary blades on said shafts extending at an angle to the trough, and means for revolving each blade to force the material in the trough relatively to the other blade.

2. In a mixing-machine, the combination with a trough or receptacle, an oscillatory shaft therein having beater-arms operating through the receptacle in proximity to the bottom thereof, of propeller-blades located at the ends of the receptacle and arranged above the path described by the lower ends of the arms.

3. In a mixing-machine, the combination with a trough or receptacle, beater-arms therein and mixing-arms operating to move the material toward opposite ends of the receptacle, of blades arranged in the latter and extending at an angle thereto and means for operating them independently of the mixing and beating arms to move the material toward the center of the receptacle.

4. In a mixing-machine, the combination with a trough or receptacle and mixers operating to move material therein outwardly in opposite directions toward the ends of the receptacle, of members at the ends of the latter operating to move said material toward the center of the receptacle and means for operating the members and mixers independently of each other.

5. In a mixing-machine, the combination with a trough or receptacle, a shaft therein and sets of beaters composed of arms arranged on the shaft and extending at an angle to each other, of mixers attached to the shaft and arranged intermediate said arms and between adjacent sets of beaters and provided at opposite sides with diverging faces extending at an angle to their plane of movement whereby material operated upon by the mixers will be moved laterally into the paths of the beater-arms and means for oscillating the shaft.

6. In a mixing-machine, the combination with a frame, a receptacle and a rotary shaft on the frame having cranks, of an oscillatory shaft extending over the receptacle having mixing and kneading devices thereon and provided with cranks, connecting-rods extending between the cranks on the two shafts and shafts journaled in the ends of the receptacle, screw-propellers on the shafts and driving connections between the latter and the rotary shaft.

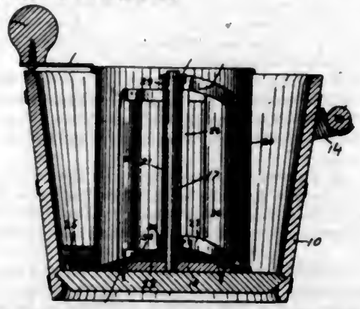
7. In a mixing-machine, the combination with a frame, a receptacle provided with trunnions journaled on the frame and a rack on the receptacle, of a pinion meshing therewith and means for revolving it to operate the receptacle on its trunnions, a shaft extending through the latter having mixing and kneading devices thereon and a driving-shaft, connections between the two shafts, members at opposite sides of the receptacle adapted to engage the material therein and move it toward the center of the receptacle and driving connections between said members and the operating-shaft.

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**753,622. ICE-CREAM FREEZER.** JOSIAH P. PERKINS, Indianapolis, Ind. Filed Mar. 10, 1903. Serial No. 97,514. (No model.)

*Claim.*—1. An ice-cream freezer including a vessel to contain the refrigerant, a cream-can mounted therein, and a plate secured to said cream-can that is substantially A-shaped with the apex extending upwardly, the outer edges of said plate extending substantially to and conforming with the inner surface of the outer vessel and the lower lateral edges of said plate extending into close proximity to the bottom of said outer vessel and being substantially radial from the center of the cream-can.





2. An ice-cream freezer including a vessel to contain the refrigerant, a cream-can mounted therein, a revoluble means between the lower end of the cream-can and outer vessel with an upwardly-inclined surface for passing under and agitating the refrigerant, and a horizontal plate at the upper end of the ice-cream freezer directly over and revoluble with said agitating means to prevent said agitating means from forcing the refrigerant upward and out of said outer vessel.

3. An ice-cream freezer including a vessel to contain the refrigerant, a cream-can rotatably mounted therein, means secured to the outside of the cream-can with an upwardly-inclined surface for agitating the refrigerant, and a wide handle or plate extending horizontally from the upper end of the cream-can directly over said agitating means.

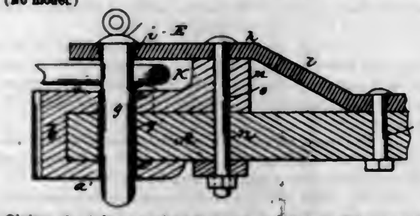
4. In an ice-cream freezer, a stationary vessel to contain the refrigerant, a spindle secured in the same to the bottom thereof, a cream-can with its bottom concave on the under side and convex on the upper side, a horizontal plate secured to the under side of said bottom for reinforcing the same, and a sleeve extending up centrally through said bottom and plate and secured thereto.

5. In an ice-cream freezer, a stationary vessel to contain the refrigerant, a spindle secured stationary therein, a rotary cream-can having a central sleeve through which said spindle extends, a worker having an eye at the bottom for surrounding said sleeve, and an eye at the top for surrounding the spindle, said upper eye having a pair of vertical notches therein, and a pin through the spindle fitting in said notches, said notches being sufficiently deep to permit vertical play of said worker.

6. In an ice-cream freezer, a cylindrical cream-can, a vertically-extending scraper made concavo-convex with the concave surface next to the side of the cream-can and with the forward edge turned back slightly to be parallel with the side of the cream-can, and the rear edge of the scraper lapped for reinforcing the same.

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**753,623. BUMPER AND COUPLING FOR MINE-CARS.** JOHN M. PHILLIPS, Carrick, Pa. Filed July 14, 1903. Serial No. 165,458. (No model.)



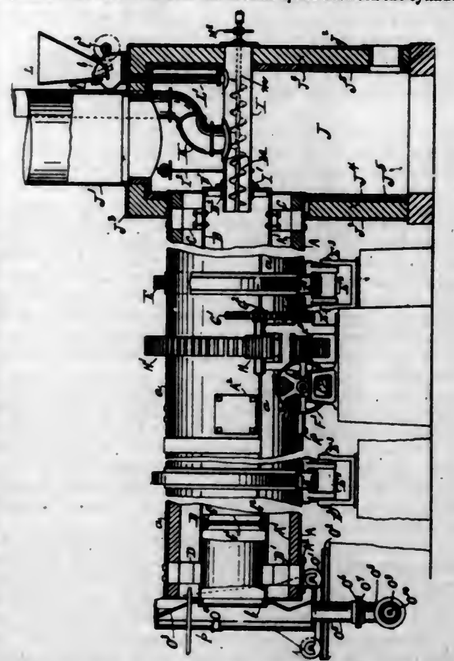
*Claim.*—1. A bumper for mine-cars, consisting of the casting A composed of the horizontal members *a*, *a'* and vertical member *b*, the upper, horizontal member *a* being formed with the enlargement or reinforcement M at its inner end, to receive the thrust or blow of the coupling-link.

2. The combination of the bumper B, having the reinforcement or enlargement M at its inner end, and the rigid pin-supporting bracket E extending forward of said enlargement, substantially as described.

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**753,624. DRYING AND CALCINING KILN.** CHARLES H. PICKETT, Bayonne, N. J. Filed Sept. 18, 1903. Serial No. 173,060. (No model.)

*Claim.*—1. In a kiln, the combination of an outer cylinder and an inner cylinder, a smoke-box at one end of the cylinders, a chimney extending from the said box, a conveyer leading to the inside of the inner cylinder, a hopper with piping leading to the said conveyer, a casing for the conveyer and a vapor-escape pipe leading from the casing, means to rotate the conveyer, means to rotate the cylinders, and means to heat the annular space between the cylinders.



2. In a rotary kiln, the combination of an outer cylinder and an inner cylinder, brackets to clamp the cylinders together at one end, combined guides and supports secured to the outer cylinder to support the inner cylinder therein, allowing the cylinders to expand and contract, a movable head at the discharge end of the kiln, trucks for the said head, oil-burners passing through the head into the space between the cylinders, means to rotate the cylinders, means to introduce material into the inner cylinder in specified quantities, means to discharge the products of combustion, and independent means to discharge the vapor and gases generated from the heating of the material, so as to separate the vapor and gases from the said material, and the gases from the products of combustion.

3. In a rotary drying-kiln, the combination of an outer cylinder, and an inner cylinder therein, flanges on the inner cylinder to secure sections thereof together, and an internal flange at the discharge end of the inner cylinder, brackets securing the two cylinders together at the inlet ends thereof, combined guides and supports fastened to the outer cylinder supporting the inner cylinder, said combined guides and supports fastened to a bonnet detachably secured to the outer cylinder, for supporting the inner cylinder, means to introduce a material into the inner cylinder, means to heat the chamber between the two cylinders, means to lead off the products of combustion, means to lead off the gases generated when heating the material.

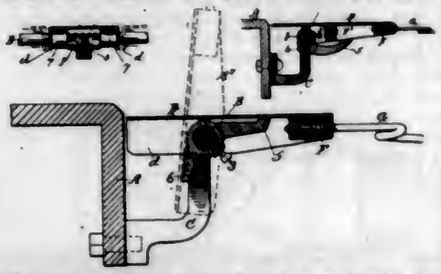
4. In a rotary drying-kiln, the combination of an outer cylinder and an inner cylinder therein, a conveyer connected to the inlet end of the inner cylinder, a casing for the said conveyer, a hopper arranged to discharge into the said casing, an opening in the hopper, a gate for the said opening, a valve in the bottom of the hopper, means to actuate the valve, means to rotate the cylinders, and means to heat the space between the cylinders.

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**753,625. YARN-GUIDE-HOLDING MECHANISM.** JOHN B. PRIME, Worcester, Mass. Filed Nov. 21, 1903. Serial No. 182,060. (No model.)

*Claim.*—1. A yarn-guide-holder mechanism, comprising an axial supporting-shaft, an independently-swinging guide-holder mounted

on said shaft and extending from the guide to the roller-beam, in a single length without intermediate divisional hinging, the yarn-guiding eye carried by said holder, and means for arresting the swing movement of said holder when the guide is at working position.



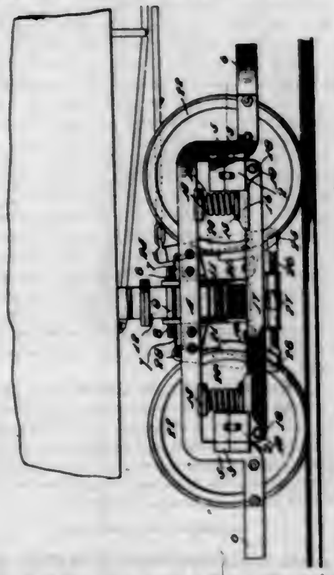
2. A yarn-guide holder, comprising a flat-topped metal plate having downwardly-turned perforated sides, said plate provided with a front end block, the guide-eye secured in said block, a supporting-rod passing transversely through said perforated side portions, a lifter device secured to the rod between said side portions and provided with means for retaining the plate in lateral relation to the lifter, and a forward projection for supporting the plate when horizontal and for lifting said plate by partial rotation of the rod and lifter device.

3. In a yarn-guide holder, the combination of a rockable supporting rod or shaft, a swinging guide-holding member overlying said shaft and having side portions whereby it is pivotally mounted thereon, an underlying hub adjustably secured to said shaft by set-screw, and having forward and rearward projections that limit the independent swing action of said guide-holding member, a guide-eye supported in said member, and means for controlling the rocking adjustment of the shaft.

4. In a yarn-guide-holder mechanism, the combination with the roller-beam, guide-holder-supporting shaft, guide-holder plate having downward side portions with openings through which the shaft extends, and the lifter device fixed to the shaft centrally beneath said plate; of the shaft-supporting bracket having its bearing-head C' disposed to embrace the shaft between the lifter device and the inner face of the downward side portion of the guide-holder plate.

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**753,626. CAR-TRUCK. WILLIAM G. PRICE, New York, N. Y. Filed May 28, 1903. Serial No. 159,140. (No model.)**



*Claim.*—1. In a car-truck, the combination of yoke-shaped side frames, cushioning means supporting the same, means connecting the said frames, a bolster, and cushioning means suspended from said connecting means in substantially the same horizontal plane with the first-mentioned cushioning means for supporting the bolster.

2. In a car-truck, the combination of yoke-shaped side frames, cushioning means supporting the same, transoms connecting said side frames, a bolster, and cushioning means carried by said transoms supporting said bolster.

3. In a car-truck, the combination with axles, of bearing-boxes therefor, flanges extending from said boxes, bars connecting the boxes engaged by said flanges, cushions mounted upon said flanges, side frames carried by said cushions, and a bolster carried by said side frames.

4. In a car-truck, the combination with axles, of bearing-boxes inclosing the ends thereof, a bar connecting the boxes of each pair of ends of the axles, a flange extending from each box resting upon the respective bar, and car-body-supporting means carried by said flanges.

5. In a car-truck, the combination with axles, of bearing-boxes therefor formed with laterally-projecting flanges, bars connecting said boxes and supporting said flanges, yoke-shaped side frames inclosing said boxes, cushioning means carried by said flanges supporting said frames, and car-body-supporting means carried by said frames.

6. In a car-truck, the combination with axles, of bearing-boxes therefor, ears depending from said bearing-boxes, bars connecting said ears, and car-body-supporting means mounted upon said bars.

7. In a car-truck the combination with axles and bearing-boxes therefor, flanges extending from said boxes, bars connecting the boxes, cushioning means carried by the flanges, and car-body-supporting means carried by the said cushioning means.

8. In a car-truck the combination with axles of bearing-boxes therefor, main flanges extending from said boxes, auxiliary parallel flanges depending from said main flanges, a bar connecting said boxes inclosed by said flanges and car-body-supporting means carried by said bar.

9. In a car-truck, the combination with axles and bearing-boxes therefor, means for sustaining a car-body connecting said boxes, the weight sustained by said retaining means locking the same in such position relative to the boxes as to prevent lateral spreading of the boxes.

10. In a car-truck, the combination with axles and bearing-boxes therefor, of flanges extending from said boxes, bars connecting said boxes and inclosed by said flanges, cushions mounted in said seats, and car-body-supporting means carried by said cushions.

11. In a car-truck, the combination with axles and bearing-boxes therefor, of connecting means for pairs of said boxes, cushion means carried by each box at one side thereof, a yoke-shaped side frame inclosing each pair of boxes, guiding lips or flanges extending from the respective side of each box opposite said cushion and engaging the respective side frame for guiding the same, and car-body-supporting mechanism carried by said side frames.

12. In a car-truck, the combination with axles, and bearing-boxes therefor, bars connecting said boxes, means carried by the boxes engaging said bars for sustaining a car-body, the weight of the car-body holding such sustaining means in such relation to the bars as to prevent lateral separation of said boxes.

13. In a car-truck, the combination with axles and bearing-boxes therefor of means held in such position by the load on the truck as to prevent lateral separation of the boxes.

14. In a truck, the combination with journal-boxes, of means fixing said boxes against lateral play, a spring-support formed integral with and projecting from each of said boxes, springs mounted on said supports, and car-body-supporting means carried by said springs.

15. In a truck, the combination with journal-boxes, of an equalizing-bar fixed to said boxes beneath the same, and means carried by said bar between the boxes for supporting a car.

16. In a truck, the combination with suitable axles and journal-boxes therefor, of an equalizing-bar connected to said boxes at points outside the plane of the axes of rotation of the axles, and means carried by said bar between said boxes for supporting a car.

17. In a truck, the combination with suitable axles and journal-boxes therefor, of a side frame, an equalizing-bar therefor, spring-seats between the axles, springs resting on said seats and supporting said frame, the spring-seats being formed integral with the journal-boxes, and jaws on said seats engaging the equalizing-bar.

18. In a truck, the combination with suitable axles and journal-boxes therefor, of a side frame, an equalizing-bar, spring-seats mounted on said bar between said axles, and springs resting on said seats and supporting said frame, the spring-seats being formed integral with the journal-boxes.



19. In a truck, the combination with suitable axles and journal-boxes therefor, of an equalizing-bar rigidly connecting the journal-boxes, and a one-piece side frame inclosing said boxes and supported on the equalizing-bar at points between the journal-boxes.

20. In a truck, the combination with suitable axles, and journal-boxes therefor, of a one-piece side frame formed with an integral vertically-extending pedestal at each end, guiding-lugs on said journal-boxes engaging said pedestals, means carried by said journal-boxes engaging said equalizing-bar for supporting the boxes against lateral play, and means carried by said bar supporting said frame.

21. In a truck, the combination with journal-boxes, of a side frame formed of a single bar of material bent into yoke shape producing two pedestals, one at each end, a flange extending from each box, a bar supporting said flanges and means carried by the flanges supporting said side frame.

22. In a truck, the combination with journal-boxes of a side frame formed of a single bar of material bent in yoke shape forming a pedestal at each end and a load-sustaining flange extending from each box.

23. In a truck, the combination with axles and bearing-boxes therefor, of an equalizing-bar pivotally connected to the boxes and means carried by the said bar for supporting a car-body.

24. In a truck, the combination with journal-boxes, of an equalizing-bar fixed to said boxes beneath the same, a yoke-shaped side frame inclosing said boxes and means carried by said bar between the boxes for supporting said side frame.

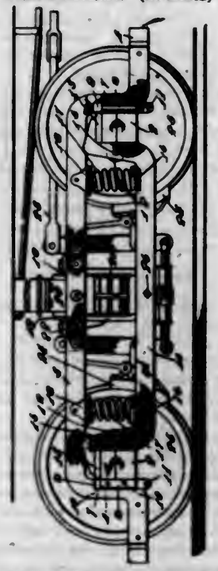
25. In a truck, the combination with axles and journal-boxes carried thereby, of a bar connecting said boxes, flanges extending from said boxes engaging said bar for preventing rotation of the boxes and means sustained by said bar for supporting a car-body.

26. In a car-truck, the combination with axles and bearing-boxes therefor, of a flange extending from each of said boxes, a bar connecting said boxes, and car-body-supporting means mounted upon each of said flanges for retaining the same in engagement with said bar and preventing movement of the bar and lateral separation of the boxes.

27. In a truck, the combination with suitable axles and journal-boxes therefor, of an equalizing-bar connecting the journal-boxes, and a one-piece side frame inclosing said boxes and supported by said bar at points between the boxes.

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**753,627. TRUCK. WILLIAM G. PRICE, Kingston, N. Y. Filed Sept. 24, 1903. Serial No. 174,497. (No model.)**



*Claim.*—1. In a car-truck, the combination with axles, and bearing-boxes therefor, of lugs projecting from said boxes, equalizer-bars rigidly connecting the boxes, means fixing said bars to said lugs, side frames movably engaging said boxes, and means carried by said equalizer-bars supporting said side frames.

2. In a car-truck, the combination with axles and journal-boxes therefor, of lugs projecting from said boxes, a plurality of strips forming equalizer-bars connecting said boxes, said strips extending upon opposite sides of said lugs, means connecting the strips to said lugs, side frames inclosing said boxes, and means carried by said equalizer-bars supporting said side frames.

3. In a car-truck, the combination with axles and journal-boxes therefor, of a plurality of strips forming an equalizer-bar connecting each set of boxes carried by the ends of said axles at one side of said truck, lugs carried by said boxes spacing said strips apart, means securing said strips together and attaching the same to said boxes, a side frame extending between and above the strips comprising each equalizer-bar, and means carried by said equalizer-bar supporting its respective side frame.

4. In a car-truck, the combination with axles and journal-boxes therefor, of strips forming side frames connecting the respective pairs of boxes at each side of the truck, lugs or bars projecting from the upper surface of each of said boxes and spaced apart a distance equal to the thickness of the respective strips and receiving the strips therebetween, means connecting said strips to said boxes, and car-body-supporting means carried by said equalizer-bars.

5. In a car-truck, the combination with axles and journal-boxes therefor, of strips of material forming an equalizer-bar upon each side of the truck, each connecting the set of boxes upon its respective side, each of said strips extending in approximately the same horizontal plane as that occupied by the lower surface of the respective boxes and being bent at the ends upwardly in contact with the inner side of the respective box, and again bent to a horizontal plane in position for resting on top of the respective box, a lug projecting from each box between the said strips, means connecting said lug and strips together, and car-body-supporting means carried by said equalizer-bars.

6. In a car-truck, the combination with axles and bearing-boxes therefor, of equalizer-bars connecting said boxes, side frames supported by said bars, each of said side frames being provided with depending pedestals slidably contacting with the corresponding box, flanges extending from each of said boxes upon each side of the respective pedestal, a bearing-strip inclosing the inner edge of each pedestal and lying between the said flanges and pedestal, and means carried by said wearing-strips for limiting the vertical movement of said side frames.

7. In a car-truck, the combination with axles and journal-boxes carried thereby, of an equalizer-bar connecting each set of boxes at one side of the truck, a yoke-shaped side frame inclosing said boxes, the vertical portions of each frame forming pedestals, flanges projecting from each of said boxes and partially inclosing the respective pedestals, a wearing-strip interposed between each pedestal and its flanges projecting below the flanges in the vertical plane thereof, and engaging means carried by the lower end of each strip and adapted to engage the respective flanges for limiting the side frame in its upward movement.

8. In a car-truck, the combination with axles, and bearing-boxes therefor, of lugs projecting from said boxes, equalizer-bars rigidly connecting the boxes, side frames movably engaging said boxes, and means carried by said equalizer-bars supporting said side frames.

9. In a car-truck, the combination with axles and journal-boxes therefor, of strips of material forming an equalizer-bar upon each side of the truck, each connecting the set of boxes upon its respective side, each of said strips extending in approximately the same horizontal plane as that occupied by the lower surface of the respective box, and again bent to a horizontal plane in position for resting on top of the respective box, a lug projecting from each box, means connecting said lug and strips together, and car-body-supporting means carried by said equalizer-bars.

10. In a car-truck, the combination with axles and bearing-boxes therefor, of equalizer-bars rigidly connecting said boxes, side frames supported by said bars, the said bars carried on the top of said boxes, and the said boxes being provided with lugs on their vertical sides, to which the said bars are secured.

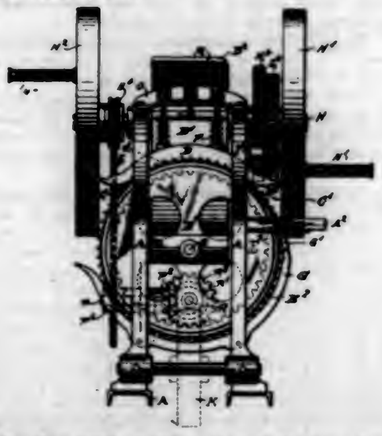
11. In a car-truck, the combination with axles, and bearing-boxes therefor, of equalizer-bars rigidly connecting said boxes, side frames supported by said bars, the said bars resting on the top of said boxes, the said boxes being provided with means on their vertical sides for engagement with the said bars.

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**753,628. MACHINE FOR CLEANING FIBER. MANUEL PRIETO, Mexico, Mexico. Filed July 27, 1903. Serial No. 167,117. (No model.)**

*Claim.*—1. In a fiber-cleaning machine, a feeder in the form

of a wheel E' and means for slowly revolving it, in combination with a correspondingly-hollowed presser D and means for elastically holding it, and with beaters $B^3$ and casing A' all arranged to serve substantially as herein specified.



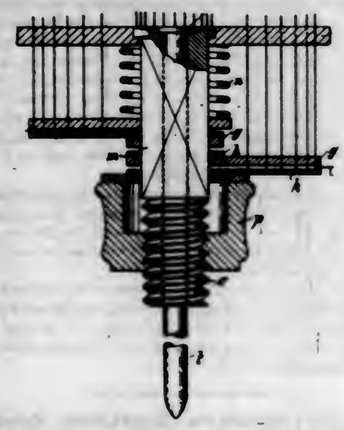
2. In a fiber-cleaning machine, a feeder in the form of a wheel E' and means for slowly revolving it, in combination with a correspondingly-hollowed presser D and means for elastically holding it, and with beaters $B^3$ and casing A', and with support G adapted to cooperate with the wheel to carry the partially-treated material onward and present it to be again treated, all substantially as herein specified.

3. In a fiber-cleaning machine, a feeder in the form of a wheel E' and means for slowly revolving it, in combination with a correspondingly-hollowed presser D and means for elastically holding it, and with beaters $B^3$ and casing A', and with support G adapted to cooperate with the wheel to carry the partially-treated material back to the place of beginning, the support being provided with extensions $G' G^3$ arranged as shown to aid in carrying the material again into the space under the presser, all substantially as herein specified.

4. In a fiber-cleaning machine, a feeder in the form of a wheel E' and means for slowly revolving it, in combination with a correspondingly-hollowed presser D and means for elastically holding it, and with beaters $B^3$ and casing A', and with driving-gear and a movable shaft H, wheels $H' H^3$ movable bearings T and holding means U, all substantially as herein specified.

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**753,629. HOLDER FOR FORMING ORNAMENTAL ARTICLES.** ADOLF A. VON RENTZELL-PINK, Jena, Germany. Filed July 16, 1903. Serial No. 165,642. (No model.)



*Claim.*—1. An apparatus of the class described, comprising a plurality of parallel plates movable relative to each other, a plurality of longitudinally-displaceable needles passing through certain of said parallel plates, and means for securing the uppermost plate against axial displacement.

2. In apparatus for the production of ornamental work from thread or band like fabrics, a pattern or working plate of suitable form, pressure-producing means arranged parallel to said pattern-plate, a spindle or shaft connecting the pressure means and the pattern-plate and axially-displaceable needles resting on said pressure-producing means and passing through said pattern-plate.

3. In apparatus for the production of ornamental work from thread or band like material, an axis or shaft, plates movable and interchangeably arranged on said shaft, axially-arranged needles of varying lengths passing through certain of the plates and resting with their lower ends upon certain other plates, the lower ends of the needles being arranged in different planes, substantially as described.

4. An apparatus of the class described, comprising a series of perforated plates, one of said plates being adapted for use as a work-supporting plate, means for varying the distance between such plates and for securing the latter in position, means connecting said plates, and pressure-rods projecting through apertures in the work-supporting plate.

5. In apparatus for the production of ornamental work from thread or band like material, a hollow axis or shaft, perforated and unperforated plates movable on said shaft, axially-displaceable needles engaging with the perforated plates, and a longitudinally-movable stem extending through the hollow shaft.

6. Apparatus for the production of ornamental work by the interlacing of threads or strips of any material comprising in combination parallel plates movable in relation to each other, means to connect said plates and a suitable number of longitudinally-displaceable needles passing through said plates, the upper ends of said needles being notched or recessed and being tapered off oppositely to said recess or notch and suitable projections on the stems of said needles.

7. Apparatus for the production of ornamental work by the interlacing of threads or strips of any material comprising in combination parallel plates displaceably arranged in relation to each other and a number of longitudinally-displaceable needles passing through a suitable number of said parallel plates and means to secure the upper plate against axial displacement, and means to secure the plates against rotary movement, substantially as described.

8. In an apparatus for manufacturing ornamental work from thread or band like material, in combination a shaft, a work-support engaging with said shaft and a suitable number of axially-displaceable spring-pressed pairs of parallel plates of suitable shape on said shaft, means on said shaft to retain said plates in position, axially-displaceable needles passing through the work-support, and through one of each pair of plates and resting with their lower ends on the lower one of each pair of plates.

9. In an apparatus of the class described, the combination of a plurality of plates movable relatively to each other, and a series of longitudinally-movable needles passing through certain of said plates, substantially as set forth.

10. In an apparatus of the class described, the combination of a pattern-plate and pressure-producing means arranged adjacent to said plate, means connecting the pressure means and the pattern-plate and passing through said pattern-plate, and a plurality of needles passing through said plate, substantially as set forth.

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**753,630. SHARPENING DEVICE.** FREDERICK S. RICE, Canton, Ohio. Filed Aug. 28, 1903. Serial No. 171,077. (No model.)

*Claim.*—1. A grinding device, comprising an attaching member, a jointed frame connected therewith, a grinding-wheel journaled at the joint in said frame, a wheel journaled at a distance from said grinding-wheel and serving to communicate motion thereto, and means for supporting the frame.

2. A grinding device, comprising an attaching member, a frame member pivotally connected therewith, a frame member pivotally connected with said first-named frame member, a grinding-wheel journaled at the joint between said frame members, a driving-wheel connected with said grinding-wheel, a crank-wheel connected with the free end portion of said second-named frame member and geared to said driving-wheel, and a handle for supporting said frame.

3. A grinding device, comprising a clamp, a frame member pivotally connected therewith, a second frame member, a grinding-wheel having a shaft serving as a pivot connecting said frame members and equipped with a driving-wheel, and a crank-wheel journaled at the free end of the second-named frame member, and connected with said driving-wheel



4. A grinding device, comprising a clamp adapted to be applied to a blade, a swinging frame member connected therewith, a grinding-wheel at either side of the free end of said swinging member, means for turning said grinding-wheel, and means for moving said swinging frame member.



5. A grinding device, comprising a clamp, a jointed frame adjustable laterally with relation to said clamp, a grinding-wheel journaled at a joint of said frame, driving means for said grinding-wheel, and a handle for said frame.

6. A grinding device, comprising a clamp having a laterally-projecting pivot, a frame member journaled at one end upon said pivot, a second frame member jointed to said first-named frame member, a grinding-wheel having a shaft journaled at the joint between said frame members and equipped with a driving-wheel, a wheel journaled at the free end of said second-named frame member, a belt connecting said wheels, means for turning the second-named wheel, and means for moving said frame, for the purpose set forth.

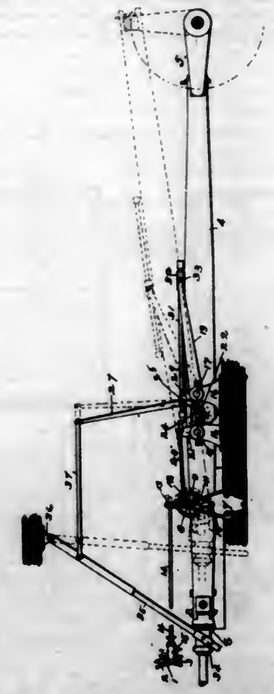
7. A grinding device, comprising two clamping members, a frame member having one end located between and pivotally connected with said clamping members, grinding-wheels journaled at the free end of said frame member, a driving-wheel for said grinding-wheels located between the grinding-wheels, a second frame member pivotally connected with the first-named frame member coaxially with the grinding-wheels, a crank-wheel, a frame-handle at the free end of said second-named frame member, and a belt connecting said crank-wheel and frame-handle to said second-named frame member, for the purpose set forth.

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**753,631. CAM-MOVEMENT FOR VALVES.** CHARLES ROGERS, Pittsburg, Pa. Filed June 26, 1903. Serial No. 163,154. (No model.)

*Claim.*—1. In a valve-controlling mechanism for steamboat-engines, an oscillatable cam, a yoke inclosing and oscillated by said cam, a valve-controlling rod connecting said yoke with the engine-valve crank, and members connecting said cam with and movable by the pitman-rod, said yoke being provided with an offset to engage the operative end of the cam when in its normal position and having its wall thereto of peripheral contour corresponding to the throw of the cam to prevent further oscillation of the yoke after said cam has passed a given point in either direction.

2. In a valve-controlling mechanism for steamboat-engines, an oscillatable cam, a yoke inclosing and oscillated by said cam, a valve-controlling rod connecting said yoke with the engine-valve crank, adapted to be adjusted to increase or decrease the valve movement, and members connecting said cam with the pitman-rod, said yoke being provided with an offset to engage the operative end of the cam when in its normal position and having its wall thereto of peripheral contour corresponding to the throw of the cam to prevent further oscillation of the yoke after said cam has passed a given point in either direction



3. In a valve-controlling mechanism for steamboat-engines, an oscillatable cam, a pivoted yoke inclosing and oscillated by said cam, an adjustable valve-controlling rod connecting said yoke with the engine-valve crank, and members connecting said cam with the pitman-rod, said yoke being provided with an offset to engage the operative end of the cam when in its normal position and having its wall thereto of peripheral contour corresponding to the throw of the cam to prevent further oscillation of the yoke after said cam has passed a given point in either direction.

4. In a valve-controlling mechanism for steamboat-engines, an oscillatable cam, a yoke pivoted at one end and oscillated by and inclosing said cam, an adjustable valve-controlling rod connecting with the free end of said yoke and the engine-valve crank, and members connecting said cam with the pitman-rod, said yoke being provided with an offset to engage the operative end of the cam when in its normal position and having its wall thereto of peripheral contour corresponding to the throw of the cam to prevent further oscillation of the yoke after said cam has passed a given point in either direction.

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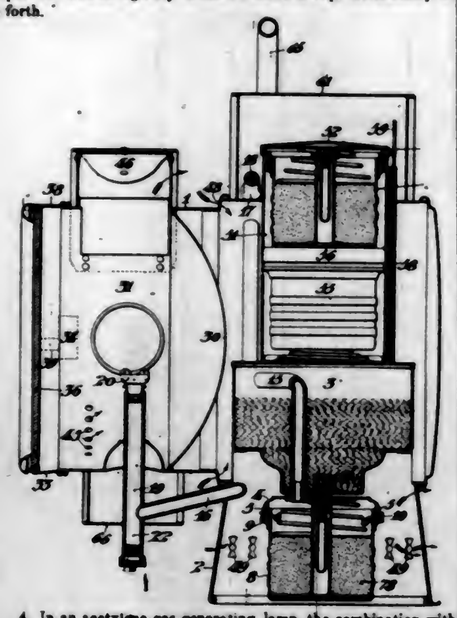
**753,632. ACETYLENE-GAS GENERATOR.** EDWIN M. ROSEBLOTH, Philadelphia, Pa. Filed June 10, 1903. Serial No. 112,267. (No model.)

*Claim.*—1. In an acetylene-gas-generating lamp, the combination with a casing comprising a flame-chamber inclosing a burner; of a water-receptacle supported by said casing; and, a plurality of separate carbid-containing receptacles removably supported by said casing respectively above and below said water-receptacle, substantially as set forth.

2. In an acetylene-gas-generating lamp, the combination with a casing comprising a flame-chamber inclosing a burner; of a water-receptacle supported by said casing; and, a plurality of separate interchangeable carbid-containing receptacles removably supported by said casing above and below said water-receptacle; each of said carbid-receptacles being adapted to be brought into communication with said burner and said water-receptacle, substantially as set forth.

3. In an acetylene-gas-generating lamp, the combination with a casing comprising a flame-chamber inclosing a burner; of a water-receptacle supported by said casing; a cap upon the bottom of said

water-receptacle arranged to removably engage a carbid-receptacle; a water-conduit opening through said cap; a gas-conduit extending from said cap to said burner; a carbid-receptacle removably connected with said cap; a magazine fixed in said casing above said water-chamber and behind said flame-chamber; and, a separate carbid-receptacle, removably supported by said magazine and adapted to interchangeably connect with said cap, substantially as set forth.



4. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal cylindriform body and a vertical standard supporting the same; of a burner mounted in said casing in front of said standard; a reflecting-diaphragm extending across said body behind said burner; a water-receptacle mounted in said casing behind said diaphragm; a cap upon the bottom of said water-receptacle arranged to removably engage a carbid-receptacle; a carbid-receptacle removably connected with said cap; a water-conduit opening through said cap; a gas-conduit extending from said cap to said burner and comprising a removable section intermediate of two stationary sections; a filtering medium in said removable section; a carbid-magazine mounted upon said water-receptacle and opening through said casing-body; a separate carbid-receptacle supported in said magazine and arranged to interchangeably connect with said cap, substantially as set forth.

5. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal body and a vertical standard supporting the same; of a diaphragm extending across said body in front of said standard; a burner mounted in said casing in front of said diaphragm; a water-receptacle mounted in said casing behind said diaphragm; a cap upon the bottom of said water-receptacle, arranged to removably engage a carbid-receptacle; a carbid-receptacle removably connected with said cap; a water-conduit opening through said cap; a gas-conduit extending from said cap to said burner, and comprising a removable section intermediate of two stationary sections; and a filtering medium in said removable section, substantially as set forth.

6. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal body and a vertical standard supporting the same; of a diaphragm extending across said body in front of said standard; a burner mounted in said casing in front of said diaphragm; a water-receptacle mounted in said casing behind said diaphragm; a cap upon the bottom of said water-receptacle, arranged to removably engage a carbid-receptacle; a carbid-receptacle removably connected with said cap; a water-conduit opening through said cap; and, a gas-conduit leading from said cap through said water-receptacle, extending in a section above said casing, and returning to said burner through said casing, substantially as set forth.

7. In an acetylene-gas-generating lamp, the combination with a casing provided with a flame-chamber inclosing a burner; of a water-receptacle mounted in said casing; a carbid-receptacle operatively connected with said burner and said water-receptacle; a carbid-magazine fixed in said casing above said water-receptacle; an air-inlet in said casing between said burner and said carbid-magazine; and, an air-outlet in said casing adjoining said carbid-receptacle, in communication with said inlet, substantially as set forth.

8. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal cylindriform body and a vertical standard supporting the same; of a water-receptacle mounted in said casing in registry with said standard; a burner mounted in said casing in front of said standard; a diaphragm extending across said casing between said water-receptacle and said burner; a carbid-receptacle in said standard operatively connected with said burner and said water-receptacle; a plurality of air-inlets in said casing behind said diaphragm and in front of said water-receptacle; a plurality of air-outlets in said standard adjoining said carbid-receptacle, in communication with said inlets, substantially as set forth.

9. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal body and a vertical standard supporting the same; of a water-receptacle mounted in said body in registry with said standard; a burner mounted in said casing in front of said water-receptacle; a carbid-receptacle in said standard, removably connected with said water-receptacle; a gas-conduit extending from said carbid-receptacle through said standard, exterior to said casing, and through the latter to said burner; and, a drip-outlet in said gas-conduit intermediate of said burner and said casing, substantially as set forth.

10. In an acetylene-gas-generating lamp, the combination with a water-receptacle; of a carbid-receptacle operatively connected with said water-receptacle; a burner; a gas-conduit extending from said carbid-receptacle to said burners; a filtering medium in said gas-conduit between said carbid-receptacle and said burner; and, a drip-outlet in said gas-conduit between said carbid-receptacle and said burner, substantially as set forth.

11. In an acetylene-gas generator, the combination with a water-receptacle; of a carbid-receptacle operatively connected with said water-receptacle; a gas-conduit extending from said carbid-receptacle, comprising a removable section between two stationary sections; and, a filtering medium in said removable section, substantially as set forth.

12. In an acetylene-gas generator, the combination with a water-receptacle; of a carbid-receptacle operatively connected with said water-receptacle; a gas-conduit extending from said carbid-receptacle, comprising a removable flexible section intermediate of two stationary sections; and, a filtering medium in said removable section, substantially as set forth.

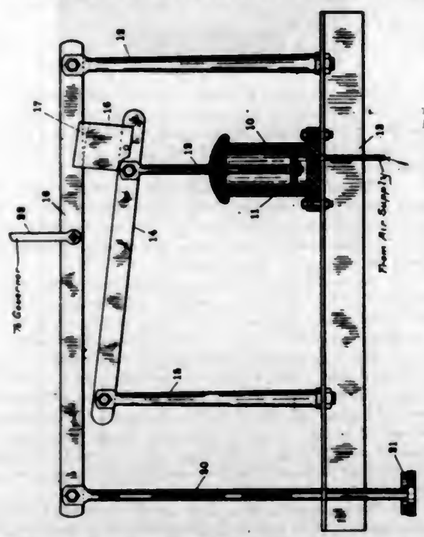
13. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal body and a vertical standard supporting the same; of a burner mounted in said casing in front of said standard; a diaphragm extending across said body behind said burner; a water-receptacle mounted in said casing behind said diaphragm; a cap upon the bottom of said water-receptacle arranged to removably engage a carbid-receptacle; a carbid-receptacle removably connected with said cap; a water-conduit opening through said cap; a gas-conduit extending from said cap to said burner; a carbid-magazine mounted in said casing and opening through the top thereof; a separate carbid-receptacle supported in said magazine and arranged to interchangeably connect with said cap; a hood hinged upon said casing and covering said magazine; a fastening device for said hood; a door in said standard giving access to said connected carbid-receptacle; a fastening device for said door; a door in said casing in front of said burner; and a fastening device for said door, substantially as set forth.

14. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal body and a vertical standard supporting the same; of a water-receptacle mounted in said casing; a burner mounted in said casing; a carbid-receptacle in operative connection with said water-receptacle and said burner; a diaphragm extending across said casing between said burner and said water-receptacle, forming a flame-chamber inclosing said burner; a chimney-outlet at the top of said flame-chamber; air-inlets in said flame-chamber in front of said diaphragm, in communication with said chimney; air-inlets in said casing behind said diaphragm; and, air-outlets from said casing, behind said carbid-receptacle, in communication with said air-inlets, substantially as set forth.

15. In an acetylene-gas-generating lamp, the combination with a casing comprising a horizontal body and a vertical standard supporting the same; of a water-receptacle mounted in said casing; a burner mounted in said casing; a carbid-receptacle removably connected with said water-receptacle and said burner; and, a cleaning-implement sheath, arranged as a brace connecting the water-receptacle and said casing, substantially as set forth.



## 753,633. GOVERNOR FOR AIR-COMPRESSORS. HENRY SAAM, Mohawk, Mich. Filed Jan. 12, 1903. Serial No. 138,641. (No model.)




*Claim.*—1. In an air-governor for air-compressors, the combination with a cylinder communicating with an air-supply and piston therein, of a lever, a connection between said lever and a motor-governor, a second lever connected to the piston, and a cam-block forming a connection between the two levers whereby as the piston shifts the ratio of leverage will change.

2. In an air-governor for air-compressors, the combination with a cylinder communicating with an air-supply and piston therein, of a weighted lever, a connection between said lever and a motor-governor, a second lever connected to the piston, and a cam-block carried by said second lever and supporting the weighted lever upon its cam-face, for the purpose set forth.

## 753,634. HOSE-NOZZLE. CHARLES L. SAWKEY, Yonkers, N. Y. Filed Oct. 15, 1903. Serial No. 177,141. (No model.)



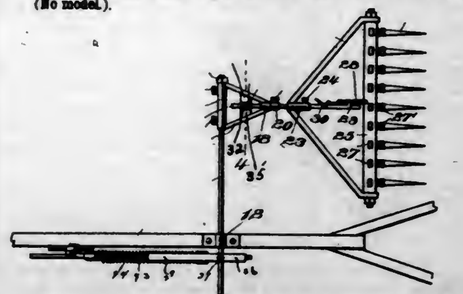
*Claim.*—1. A hose-nozzle having a body portion provided with a vertical opening, a plug having vertical movement in the said opening and provided with a water-passage, a cam for drawing the plug upward and locking it in its upper position, and a spring placed under tension when the plug is raised, and serving to draw the plug downward when the latter is released, the spring surrounding the lower portion of the plug and held in an enlarged portion of the vertical opening in the body as described.

2. In a hose-nozzle, a body having a vertical bore extending through the same and enlarged at its lower portion, a plug having vertical movement in the said bore and provided with a water-passage formed therein, means for moving the plug in one direction, and a spring coiled around the plug, at the enlarged portion of the bore and bearing at one end against the body of the nozzle and at the other end against a disk secured to the bottom of the plug, as set forth.

3. In a hose-nozzle, a plug having vertical movement in the body of the nozzle, and provided with a waterway formed therein, the plug being bifurcated at its upper end, a cam for moving the plug in one direction, the cam being provided with a handle and mounted to turn between the said bifurcated members and having a substantially L-shaped slot, a pin secured to the members of the bifurcated end of the plug and passing loosely through the slot in the cam, and a tension device for moving the plug in the opposite direction.

4. In a hose-nozzle, a plug having vertical movement in the body and having a single waterway formed therein, a cam mounted in the upper end of the plug, and a spring in the lower end of the plug having bearing against the body and against the lower section of the plug, which spring is placed under tension when the plug is raised, the plug being automatically drawn downward by the action of the spring when the plug is released from the action of the cam, and a cap for closing the portion of the body in which the spring is located, as described.

## 753,635. HARROW ATTACHMENT FOR PLOWS. JOHN SCHERER, Hireno, Okla. Filed Nov. 15, 1902. Serial No. 131,569. (No model.)



*Claim.*—1. A harrow attachment for plows comprising a shaft mounted for oscillation, a knife-bar connected to one end of the shaft and having knives, a foot-lever connected with the shaft for tilting it, a hand-lever for operating the said foot-lever and connected thereto by a rod slidably mounted in the lower end of the hand-lever, one end of said rod having a block attached thereto, said block having a socket therein, a second rod screwed into the lower end of the foot-lever, a ball integral with one end of the last-mentioned rod and fitted loosely in the socket of the block, a lug extending from the first-named rod at a point between the hand-lever and the block, and a spring disposed upon the first-named rod, and attached at one end to the block and at its opposite end to the hand-lever, said spring being of such a length that when it is in an inactive position its length will be greater than the distance between the lug and the block.

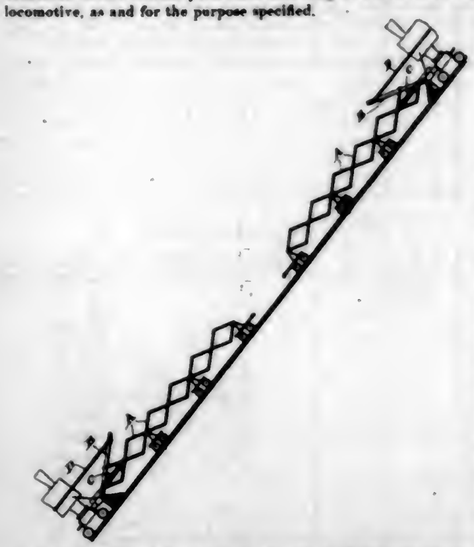
2. In a harrow, the combination with a supporting-bracket, of a beam rotatably mounted therein, means for holding the beam yieldably against rotation, arms connected to the beam and rotatable therewith, a knife-bar rotatably mounted in the arms and provided with knives, a notched segment carried by the knife-bar, and a latch mounted upon the beam for engagement with the segment to hold the latter with the knives at various angles to the ground.

3. In a harrow, the combination with a supporting-bracket, of a beam rotatably mounted therein, lugs depending inwardly and downwardly from the arms of the bracket, spring-plates attached to and depending inwardly and downwardly from the said lugs, a collar disposed upon the beam and held against sliding movement by a set-screw, said collar having a depending web lying between the spring-plates, arms connected to the beam and rotatable therewith, a knife-bar rotatably mounted in the arms and provided with knives, a notched segment carried by the knife-bar, and a latch mounted on the beam for engagement with the segment to hold the latter with the knives at various angles to the ground.

## 753,636. SYSTEM FOR PREVENTING COLLISIONS, ACCIDENTS, &c., BY RAILWAY-TRAINS. FRANK SCHMITT, Philadelphia, Pa. Filed Oct. 14, 1903. Serial No. 176,966. (No model.)

*Claim.*—1. In a device of the character described, a lazy-tongs framework, a lever to which the rear members composing the frame-work are secured, the lower end of said lever being pivoted to the locomotive, means for operating said lever from the locomotive, the framework extending a considerable distance ahead of the train, trucks for supporting the framework at intervals, a buffer-bar arranged in front of the forward truck, springs interposed between the forward truck and the buffer-bar, electrical contact-points car-

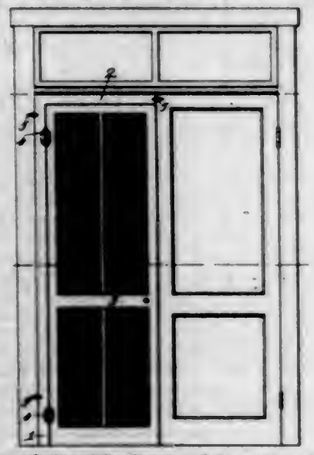
ried by the forward truck and buffer-bar adapted to come in contact with one another when an obstacle is struck, electrical wires connected to said contact-points and extending to the cable of the locomotive, as and for the purpose specified.



2. In a device of the character described, a folding framework adapted to be folded close to the locomotive or extended a distance forward of the same, trucks supporting said framework at intervals, a lever pivoted to the locomotive to which the rearward members of the framework are connected so as to operate said framework to fold or extend the same, means for operating said lever from the cab of the locomotive, means for sounding an alarm for operating an indicating device in the cab of the locomotive when the forward portion of the framework strikes an obstacle, as and for the purpose specified.

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753,687. **SCREEN-DOOR FRAME.** JOSEPH SCHNEITLER, St. Louis, Mo. Filed July 13, 1903. Serial No. 165,369. (No model.)



*Claim.*—A device of the class named, comprising a door-casing a screen-door frame consisting of a two-sided frame composed of a vertical side member and horizontal top member, the vertical side member being adapted to have a screen-door hinged thereto, and buttons mounted upon the door-casing to removably secure the two-sided frame in place therein, substantially as described.

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753,688. **HORSESHOE.** OTTO SCHRAHN, New York, N. Y. Filed Oct. 31, 1903. Serial No. 179,306. (No model.)

*Claim.*—1. The combination of a shoe, calks therefor, a removable frog and means for securing the frog to the shoe, said means including a sleeve carried by said frog, and a plurality of plates, each of said plates having one end inserted within the sleeve, the opposite end of each plate being secured to the shoe by one of the calks.



2. The combination of a shoe, a frog therefor, and means for removably securing the frog to the shoe, said means comprising a plurality of bar-plates having one end inserted within a portion of the frog and the opposite ends of said plates being secured to the shoe through the medium of the calks of the shoe.

3. The combination of a shoe, calks therefor, a frog comprising a metallic base-plate, and a sleeve extending transversely of said plate, a resilient portion cast upon the plate and extending over the sleeve, and means secured to the shoe by the calks and entering said sleeve for securing the frog to the shoe.

4. The combination of a shoe, a frog therefor, a sleeve portion formed transversely of the frog, and plates or bars secured to the shoe and extending into the sleeve for attaching the frog to the shoe, the free ends of the bars or plates overlapping within the sleeve.

5. The combination of a shoe, a frog portion therefor, including a metallic plate, a sleeve carried by said plate and a rubber body portion mounted upon the plate, means for securing the frog to the shoe, said means including a plurality of bars or plates designed to be inserted within the sleeve, but having portions projecting therefrom and provided with apertures, and calks designed to pass through the apertured portions of the plates and through the shoe, for securing the plates and the frog to the shoe.

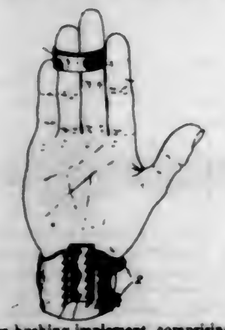
6. The combination of a shoe, a frog comprising a base-plate and a resilient body portion mounted thereon, a sleeve extending across the base-plate and interposed between said plate and body portion, a plurality of bars or plates removably securing the frog to the shoe, and a leather pad secured to the opposite side of the base-plate from that carrying the resilient body portion, substantially as forth.

7. The combination of a shoe, calks therefor, a frog, and a plurality of overlapping plates for securing the frog to the shoe, said plates being secured to the shoe through the medium of the calks.

8. The combination of a shoe, calks therefor, a frog, and means for securing the frog to the shoe, said means including a straight plate and a shouldered plate overlapping the straight plate, said plates being secured to the shoe through the medium of the calks.

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753,689. **CORN-HUSKING IMPLEMENT.** HERMAN SCHUSTER, Columbus, Nebr. Filed Dec. 18, 1903. Serial No. 185,700. (No model.)



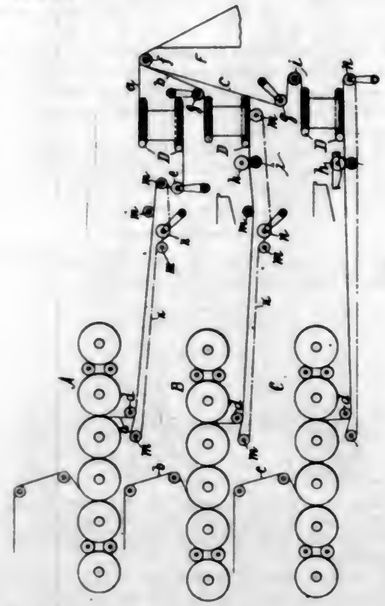
*Claim.*—A corn-husking implement, comprising a wristband, a channel-shaped plate secured to the inner side of said band, V-shaped notches arranged in the side of said plate to form teeth, a strap removably secured to the back of said wristband and extending forwardly over the back of the hand, a plate secured to said strap, a pointed triangularly-shaped hook formed on said plate, and a loop or band secured to the end of said strap to engage the fingers of the hand and hold said strap and hook in place, substantially as described.

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753,640. **PRINTING AND FOLDING MACHINE.** WALTER SCOTT, Plainfield, N. J. Filed May 14, 1901. Serial No. 60,197. (No model.)

*Claim.*—1. The combination with web-perfecting mechanism through which the web passes with its central longitudinal line always in one vertical plane, of mechanism for folding the paper along a longitudinal line, the path of the paper into said folding mechanism and during such longitudinal folding being in a vertical plane at one side of and substantially parallel to the first-named vertical plane, and means interposed between said printing and folding mechanisms for moving the paper laterally from the first to the second of said paths, the whole being so arranged as that no part of the paper can pass into said folding mechanism without such lateral transfer, substantially as described.





2. The combination with web-perfecting printing mechanism through which the web-path lies in one plane, of folding mechanism into which the paper always passes by a path substantially parallel to said web-path, and parallel angle-bars for each web, said bars being arranged in pairs the members of which are at different levels and set at an angle to the said web-path dependent upon the distance between said members and the amount of the offset of the web passing therearound in moving from one to the other of said paths.

3. The combination with a plurality of web-perfecting presses arranged one above another and through which the webs pass each with its longitudinal central line always in one vertical plane, of a folding mechanism whose central vertical plane is at one side of and substantially parallel with said central line or vertical plane, and means for moving the paper laterally from one to the other of said planes, the combination and arrangement being such that no part of the paper passes from the presses to the folding mechanism without being transferred laterally, substantially as described.

4. The combination with a plurality of web-perfecting printing-presses arranged one above another and adapted to deliver each a web, of folding mechanism into which the paper always passes by a path substantially parallel to the web-path through said presses, and a pair of parallel angle-bars for each web, the members of each pair being placed at different levels and set at an angle to the said web-path dependent upon the distance between said members and the amount of the offset of the web passing therearound in moving from its first to its path into said folding mechanism.

5. The combination of a plurality of web-perfecting presses arranged one above another and adapted to deliver each a web, a folding mechanism into which the paper always passes by a path at one side of and substantially parallel to the web-path through said presses, and two parallel angle-bars for each web, the bars of each set being on different levels at the same distance apart and placed at the same angle.

6. The combination with a plurality of web-perfecting presses arranged one above another, and adapted to deliver each a web, of a folding mechanism into which the paper always passes by a path substantially parallel to the web-path through said presses, and two parallel angle-bars for each web set at different levels, the bars of each set being the same distance apart and placed at the same angle.

7. The combination with a plurality of web-perfecting presses arranged one above another and adapted each to deliver a web, of a folding mechanism into which the paper always passes by a path at one side of and substantially parallel to the web-path through said presses, means for moving each web laterally from one to the other of said pathways, the points at which each web leaves one and enters the other of said pathways being on different levels, and adjustable rollers for securing register before the webs come into contact with each other.

8. The combination with a plurality of web-perfecting presses arranged one above another and adapted each to deliver a web, of a folding mechanism into which the paper passes by a path at one side of and substantially parallel with the web-path through said presses, angle-bars for moving each web laterally from one to the other of said paths, the angle-bars for each web being on different levels and means for leading the webs from the printing-presses to said angle-bars.

9. The combination with a web-perfecting printing-press, a longitudinal folding-machine placed substantially parallel with said press but in a different vertical plane, and two parallel turning bars located at different levels and placed between said printing and folding mechanisms at such an angle thereto that the web in its course from one to the other of said bars will be shifted laterally from the plane of the printing-press to the plane of the folding-machine.

10. The combination with a plurality of web-perfecting printing-presses arranged one above another and adapted to deliver each a web, the web-path through said presses lying in one plane, a folding mechanism into which the paper passes by a path substantially parallel with said web-path, and two parallel angle-bars for each web, the distance between the members of one pair being greater than the distance between the members of the other pair of bars, the bars having the greater distance between them being placed at a more acute angle to the printing-cylinders than are the bars having the shorter distance between them, whereby the webs will be delivered associated to the folding mechanism.

11. In a printing and folding machine, the combination of means for offsetting a traveling web from one to another vertical plane consisting of a pair of parallel horizontal bars or guides placed at different levels, with a perfecting-press through which the web passes in the first-named vertical plane, and a folding mechanism through which said web passes while in the second-named plane, substantially as described.

12. In a printing and folding machine, the combination of means for diverting a web from a path in one vertical plane to a path in another vertical plane substantially parallel to the first, the points where the web leaves one and enters the other path being on different levels, with printing mechanism delivering the web into the first-named path, and a folding mechanism into which the web passes while moving in the second path, substantially as described.

13. In a printing and folding machine, the combination of means for diverting webs moving in one vertical plane into another vertical plane substantially parallel with the first, the points where the webs leave the first plane and enter the second plane being on different levels, with a plurality of web-perfecting presses delivering said webs into said plane first named, and a longitudinal folder arranged with its axis in said second-named plane, substantially as described.

14. In a printing and folding machine, the combination of means for perfecting a plurality of webs, said means being arranged one above another and the webs all moving one way, a longitudinal folding mechanism arranged with its axis substantially parallel to and offset laterally with respect to the vertical plane in which the printing means are arranged, and parallel angle-bars arranged at different levels for shifting said webs laterally from the first to the other of said planes, substantially as described.

15. In a printing and folding machine, the combination of a plurality of web-perfecting presses arranged one above another with their webs all moving the same way, a longitudinal folding mechanism arranged with its axis substantially parallel to and offset laterally with respect to the vertical plane of said presses, and pairs of parallel angle-bars, one pair for each web, the members of each pair being arranged at different levels for shifting said webs laterally from the first to the second of said planes, substantially as described.

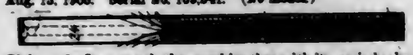
16. In a printing and folding machine, the combination of means for offsetting a web from one plane to another plane parallel thereto consisting of a pair of horizontal parallel guides lying at different levels and forming an angle with the course of the web thereto and therefrom, with a web-perfecting press, and a longitu-

dinal folder whose axis is at one side of and parallel to the central margin or margins of said web as the web leaves said press.

17. In a printing and folding machine, means for offsetting a web from one to another vertical plane, said planes being substantially parallel with each other, consisting of a pair of parallel horizontal bars placed at different levels and forming an angle with the course of the web thereto and therefrom, in combination with a web-perfecting press, and a longitudinal folder whose axis is at one side of and parallel to the central margin or margins of said web as said web leaves said press.

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**753,641. PANEL.** CHARLES SHEPHERD, New York, N. Y. Filed Aug. 13, 1903. Serial No. 169,341. (No model.)



*Claim.*—1. In a panel, the combination with its main body provided with a groove having flaring sides, of a reinforcing-rod placed within said groove, and a filling of cement of greater width than the thickness of said rod, secured to the outer flaring portions of said groove along said rod.

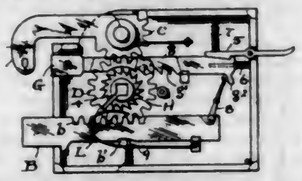
2. In a panel, the combination with its main body provided with a groove extending around one of its corners, of reinforcing-rods placed in said groove on both sides of the corner and having their ends placed opposite each other at said corner, and a body of cement attached to said groove and to said rods on both sides of said corner.

3. In a panel, the combination with its main body comprising a multiplicity of leaves with layers of cement interposed between the same and having a groove along its outer edge, of a body of cement attached to the edges of such leaves forming said groove, and being continuous with such layers of cement.

4. In a panel, the combination with its main body comprising a multiplicity of leaves cemented together and having a groove along its outer edge, a rod or wire inserted in said groove along an interior leaf and a body of cement attached to the edges of the outer leaves.

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**753,642. DOOR-LOCK.** JOHN SLISA, Cleveland, Ohio. Filed Nov. 14, 1903. Serial No. 181,237. (No model.)



*Claim.*—1. In door-locks, a sliding bolt and a rotary turning bolt, and a gear between and engaging said bolts, whereby the bolts are operated when the gear is turned, and means to rotate said gear, substantially as described.

2. In door-locks, a rotary turning bolt having a hook at its free end and a sliding bolt beneath the same, said bolts provided each with a series of teeth, and a rotatable gear in mesh with said teeth having an opening adapted to receive a key, substantially as described.

3. In door-locks, a rotatable bolt having a pivot at one end on which it turns and a hook at the other end and teeth about its pivot, a sliding bolt provided with teeth, a gear in mesh with said teeth on both bolts, a safety-bolt having teeth, and ratchets on said gear adapted to mesh with the teeth on said safety-bolt, substantially as described.

4. In door-locks, a rotatable bolt having a hook on its free end, a sliding bolt, and teeth on both said bolts, a key-actuated gear in mesh with the teeth of both bolts, ratchets on said gear, a sliding safety-bolt having teeth adapted to mesh with said ratchets, and a catch for said safety-bolt, substantially as described.

5. In door-locks, a bolt pivoted at one end and having a hook at the other end, a sliding bolt and a gear operatively engaged with both said bolts, in combination with a safety-bolt, substantially as described.

6. In door-locks, a sliding bolt having a series of teeth and a rotatable gear in mesh with said teeth, in combination with a safety-bolt provided with teeth and a ratchet member at the side of said gear in mesh with the teeth on said safety-bolt, substantially as described.

7. A door-lock comprising a sliding bolt with teeth on its edge, a gear in mesh therewith having a key-opening centrally therein, and ratchet-teeth at the sides of said gear, in combination with a safety-bolt slotted to rest over said gear and having teeth engaged by said ratchet-teeth, a bolt provided with gear-teeth meshing with said gear, and a pivoted lever between said bolt and safety-bolt adapted to reverse the movement of said bolts, substantially as described.

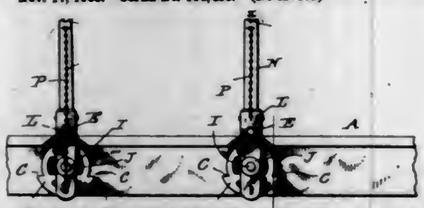
8. A door-lock comprising a safety-bolt having teeth between its ends, key-actuated ratchet-wheels adapted to engage said teeth and means to hold said bolt back out of ratchet engagement, substantially as described.

9. The combination of the sliding locking-bolt and means to move the same back and forth, in combination with a safety-bolt and actuating means therefor, and a pivoted lever between the ends of said bolts and adapted to serve as a brace and stop between them, substantially as described.

10. In door-locks, a sliding bolt having teeth along its top edge and a key-actuated gear meshing with said teeth, a spring-catch for said bolt at its bottom, and a pivoted device to depress said catch and release said bolt, substantially as described.

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**753,643. CAR-STAKE.** ALLISON H. SPEER, Kissimmee, Fla. Filed Nov. 17, 1903. Serial No. 181,488. (No model.)



*Claim.*—1. The combination of the base-plate having a marginal flange, and the stake-socket pivotally mounted on said base-plate and provided on its inner side with an overhanging lip engaging said flange.

2. The combination of the base-plate having a marginal flange provided with a notch at its top, and the stake-socket pivotally mounted on the base-plate and engaging said flange and carrying a dog adapted to engage the said notch.

3. The combination of the base-plate, the stake-socket, a bearing-sleeve inserted through registering openings in the base-plate and the socket, and a securing-screw inserted through said sleeve.

4. The combination of a base-plate having a marginal flange and provided with shoulders on its opposite sides, a stake-socket pivotally mounted on the base-plate and adapted to rest on one of the said shoulders and provided with a lip on its inner side engaging the said flange, and a dog hung within the stake-socket and adapted to engage a notch in the said flange.

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**753,644. MOTOR.** IRA H. SPRAGUE, Hartford, Conn. Filed Jan. 5, 1903. Serial No. 137,879. (No model.)

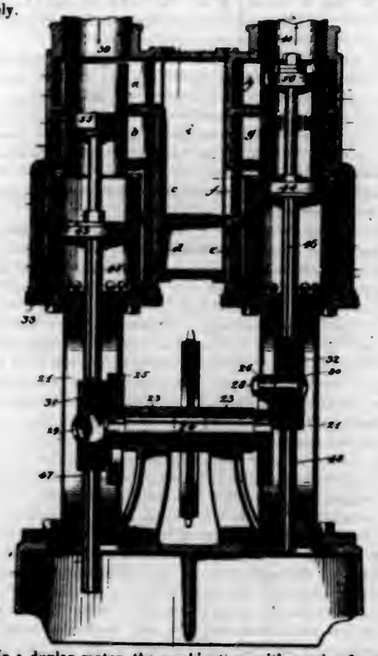
*Claim.*—1. In a duplex motor, the combination, with a pair of power-cylinders; and double-action pistons operative therein; of a pair of valve-cylinders having ports; valve-pistons moving in unison with said power-pistons, respectively, and for controlling the admission of fluid into one power-cylinder by the movement of the valve-piston in the other valve-cylinder.

2. In a duplex motor, the combination, with primary and secondary cylinders, each comprising sections of different areas; and double-action pistons operative therein; of a channel-section interposed, and for permitting the passage of fluid, between said cylinders; and passages for permitting the admission of fluid into one cylinder, and controlled by the movement of the smaller piston in the other cylinder.

3. In a duplex motor, the combination, with a primary cylinder comprising a pair of alined sections of different areas; and a double-action power-piston operative in one of said sections; of a secondary cylinder; a double-action piston operative therein; a channel-section interposed, and to permit the passage of fluid, between said cylinders; a valve-piston operative in the other section and movable in unison with said power-piston, and for controlling the admission of fluid to the secondary cylinder.

4. In a duplex motor, the combination, with a pair of casings; and double-action piston operative therein, each of said casings having chambers, and each comprising a power-cylinder and a valve-cylinder, the latter having less area than the former; of a channel-section interposed between said casings, and to permit the passage of fluid from the chambers of one casing to those of the other, respectively.





5. In a duplex motor, the combination, with a pair of casings, each having a series of chambers and each comprising a power-cylinder and a valve-cylinder; and double-action pistons operative in the power-cylinders; of a multiple-way channel-section between said casings, and for maintaining communication between the chambers disposed at opposite sides of the working pistons; and means for controlling the admission of fluid into one power-cylinder by the movement of the valve-piston in the other valve-cylinder.

6. In a duplex motor, the combination, with a primary cylinder, comprising sections of different areas, one of said sections having ports; and a valve-piston, the thickness of which is substantially equal to the length of said ports; of a secondary cylinder, comprising a power-section; a piston operative therein; and means for controlling the supply of fluid for the secondary piston by the movement of the primary valve-piston.

7. In a duplex motor, the combination, with a primary cylinder, comprising sections of different areas, one of said sections having ports disposed in alinement with the valve-piston in its half-stroke position; and pistons operative in said section; of a secondary cylinder, comprising a power-section and a valve-section; pistons operative in said sections; and means for controlling the supply of fluid for the secondary piston by the movement of the primary valve-piston, and vice versa.

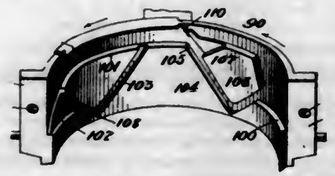
8. In a duplex motor, the combination, with a pair of casings, each comprising a supply-chamber, an exhaust-chamber, a port-chamber, and cylinders; and double-action pistons operative therein; of conduits between said cylinders; and means for controlling the admission of fluid into the chambers of one casing by the movement of the piston in the other casing.

9. In a duplex motor, the combination, with a pair of casings, each having a supply-chamber, an exhaust-chamber, and a port-chamber intermediate the pressure and the exhaust chambers of each casing; power-cylinders in said casings; a piston operative therein; of conduits between said cylinders and of means for controlling the admission of fluid into the chambers to one casing, by the movement of the piston in the cylinder of the other casing.

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**753,645. KNITTING-MACHINE.** BERNARD T. STERNE, Utica, N. Y. Filed Jan. 18, 1902. Serial No. 90,363. (No model.)

*Claim.*—1. A knitting-machine having reciprocating needles, a fixed or principal cam-cylinder section, a removable cam-section and means for removably securing the removable section to the principal section, comprising pivoted latches, springs engaging the same for holding them in their opened or closed positions, and studs or projections carried by the removable section and engaged by the said latches, substantially as described.



2. A knitting-machine, comprising a series of knitting-needles, a cam-cylinder for reciprocating the said needles, gearing capable of giving to the cam-cylinder both a continuous motion in one direction as well as a back-and-forth motion at different times for knitting different portions of a fabric, a shaft carrying said gearing, a fixed pulley secured to the shaft, a loose pulley on said shaft, a belt for operating the machine, the fixed pulley receiving the said belt for operating the machine continuously and the loose pulley receiving it when the continuous operation ceases, a clutch adapted to be brought into engagement with the fixed pulley and a sprocket wheel and chain for giving the clutch a back-and-forth movement, and power mechanism for actuating the chain to and fro, substantially as described.

3. A knitting-machine, having a cam-cylinder adapted to be revolved for operating the knitting-needles of said machine, gearing for turning the said cylinder, a shaft operating said gearing, a fixed pulley carried by said shaft, a belt connecting the pulley-shaft with the said fixed pulley, an idler-pulley for receiving said belt when the machine is not being operated continuously by the fixed pulley, a clutch for moving said shaft and adapted to be brought into engagement with the fixed pulley so as to move the same and thereby the said shaft, a sprocket-chain connecting said gear with an actuating sprocket-wheel, a crank for moving the sprocket-wheel back and forth, a second crank of shorter throw connected with the first crank, and means for turning the short crank continuously, the longer crank being only moved back and forth thereby, substantially as described.

4. A knitting-machine having a cam-cylinder for operating the needles thereof, a shaft for rotating said cylinder either continuously or intermittently in opposite directions, a lever for stopping the operation of the machine, a sprocket-wheel carried by said shaft and a chain actuated thereby and provided with a series of projections for raising the said lever when the machine is to be stopped, a pulley fixed to the driving-shaft, gearing operated thereby for producing the continuous operation of the cam-cylinder, a clutch to engage the fixed pulley, a sprocket-wheel attached thereto, a chain driving said sprocket-wheel and means for moving the chain back and forth, a belt-shifter, controlled by said lever, for moving the belt which operates the fixed pulley continuously, off-from said pulley, the said stopping-lever holding said belt-shifter in position to keep the belt on the fixed pulley until the stopping-lever is raised when the shifter will move the belt off the fixed pulley, a bell-crank lever for moving the sprocket-gear into engagement with the fixed pulley for giving an intermittent motion to the cam-cylinder, a locking-lever for holding the said bell-crank lever in this position, the said locking-lever being engaged by the stop-lever when it is raised for releasing the bell-crank lever and permitting of the sprocket-gear being disengaged from the fixed pulley, substantially as described.

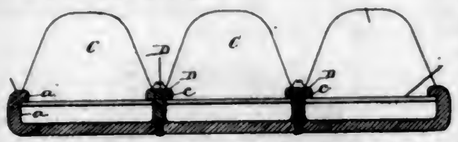
5. A knitting-machine having a series of reciprocating needles, a cam-cylinder for actuating said needles, means for raising some of the needles having both long and short heels out of action simultaneously, means for returning the said needles to action comprising a slide projecting through a slot in the cylinder, a guide-pin projecting from the cylinder below the said slide, a lug on the slide having an aperture engaging said guide-pin, a spring interposed between the cylinder and said lug for normally forcing the slide outwardly, and a cam engaging the upper edge of said slide for forcing it inwardly against the action of the spring for engaging the needles, substantially as described.

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**753,646. TIRE FOR VEHICLE-WHEELS.** JAMES A. SWINEHART, Akron, Ohio. Filed July 9, 1903. Serial No. 164,892. (No model.)

*Claim.*—1. In a vehicle-wheel the combination with the channel-rim, of the elastic tire-sections extending longitudinally within

said rim, and removable fastening-strips extending between the tire-sections; substantially as described.



2. In a vehicle-wheel, the combination with the channel-rim, having the marginal flanges, the tire-sections secured in said rim, and the fastening-strips extending between and bearing against proximate sections, and means for removably securing the strips to the rim; substantially as described.

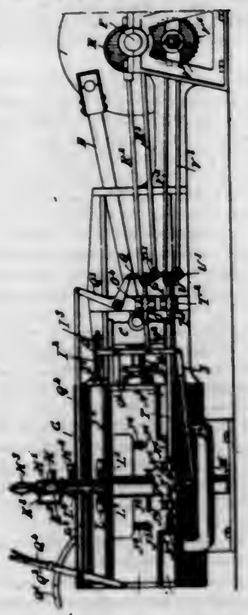
3. In a vehicle-wheel, the combination with the rim having the upwardly and inwardly extending marginal flanges, of the elastic tire-sections formed with longitudinally-extending side grooves, with which cooperate the inturned flanges of the rim, and fastening-strips extending between proximate tire-sections having lateral projections cooperating with the grooves in the sections, and means for securing the strips to the wheel; substantially as described.

4. In a vehicle-wheel, the combination with the rim, of the tire-sections having longitudinally-extending side grooves, and fastening-strips T shape in cross-section extending between proximate sections, the branches of the head of the strip entering the grooves in the tire-sections, and means for securing the strips to the rim; substantially as described.

5. In a vehicle-wheel tire, the combination with the rim having the undercut channel, of the elastic tire-sections having transversely-extending rigid retainers, the removable headed fastening-strips extending between proximate tire-sections, said rigid retainers underlying the heads of the fastening-strips and flange of the rim; substantially as described.

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**753,647. STEAM OR GAS ENGINE.** OLIVER R. THOMSON, near Thor, Iowa. Filed Jan. 26, 1903. Serial No. 140,553. (No model.)



*Claim.*—1. An engine, comprising a cylinder, a piston reciprocating therein, a motive-agent chest connected with the ends of the cylinder, a steam-supply connected with the chest, a valve in the chest for controlling the admission of steam to either end thereof, said valve also serving to divide the chest into two compartments, an explosive-mixture supply connected with the chest at opposite sides of the valve, and valves for controlling the admission of the explosive mixture to said chest, as set forth.

2. An engine comprising a cylinder, a piston reciprocating therein, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam from the said steam-supply, an explosive-mixture supply connected with the chest at opposite sides of the said piston-valve, and self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, as set forth.

3. An engine comprising a cylinder, a piston reciprocating therein, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam from the said steam-supply, an explosive-mixture supply connected with the chest, at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, and positively-actuated exhaust-valves for the said cylinder, as set forth.

4. An engine comprising a cylinder, a piston reciprocating therein, a main shaft connected with and driven from the said piston, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam by the said steam-supply, an explosive-mixture supply connected with the chest at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, exhaust-valves for the said cylinder, means actuated from the said main shaft, for controlling the said piston-valve, and means actuated from the main shaft, for controlling the said exhaust-valves, as set forth.

5. An engine comprising a cylinder, a piston reciprocating therein, a main shaft connected with and driven from the said piston, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam by the said steam-supply, an explosive-mixture supply connected with the chest at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, exhaust-valves for the said cylinder, and two link-gears driven from the main shaft, one controlling the said piston-valve and one of the exhaust-valves, while the other link-gear actuates the remaining exhaust-valve, as set forth.

6. An engine comprising a cylinder, a piston reciprocating therein, a main shaft connected with and driven from the said piston, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam by the said steam-supply, an explosive-mixture supply connected with the chest at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, exhaust-valves for the said cylinder, and reversing link-gears, driven at a different rate of speed from the said main shaft, the high-speed gear controlling the piston-valve and one of the exhaust-valves and the low-speed gear actuating the other exhaust-valve, as set forth.

7. An engine comprising a cylinder, a piston reciprocating therein, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam from the said steam-supply, an explosive-mixture supply connected with the chest, at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, and an igniting device, connected with the said chest, at opposite sides of the piston-valve therein, as set forth.

8. An engine comprising a cylinder, a piston reciprocating therein, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam from the said steam-supply, an explosive-mixture supply connected with the chest, at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, a valved by-pass connected with the chest at opposite sides of the said piston-valve, and an igniting device in the said by-pass, to allow the explosive mixture to reach the igniter from either side of the piston-valve, as set forth.

9. An engine comprising a cylinder, a piston reciprocating therein, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam from the said steam-supply, an explosive-mixture supply connected with the chest, at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said



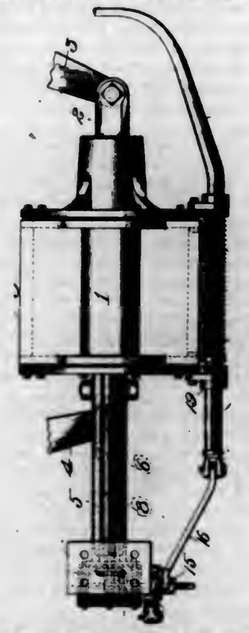
explosive-mixture supply, and a governor for the steam-supply and the said explosive-mixture supply, as set forth.

10. An engine comprising a cylinder, a piston reciprocating therein, a main shaft connected with and driven from the said piston, a motive-agent-admission chest connected with the ends of the cylinder, a steam-supply connected with the chest, a piston-valve in the chest, controlling the admission of the steam from the said steam supply, an explosive-mixture supply connected with the chest at opposite sides of the said piston-valve, self-closing admission-valves controlling the inlet of the explosive mixture to the chest from the said explosive-mixture supply, exhaust-valves for the said cylinder, reversing link-gears, driven at a different rate of speed from the said main shaft, the high-speed gear controlling the piston-valve and one of the exhaust-valves and the low-speed gear actuating the other exhaust-valve, and a lever, under the control of the operator, for shifting and setting the link-gears, as set forth.

11. An engine, comprising a cylinder, a piston therein, a motive-agent chest connected with the ends of the cylinder, a steam-supply connected with the chest, means for controlling the admission of steam to either end of the chest, said means also serving to divide the chest into compartments, and a valve-controlled explosive-mixture supply connected with the chest at each side of its center, as set forth.

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**753,648. AIR-BRAKE CONTROLLER.** JOHN C. WANDS, St. Louis, Mo. Filed Oct. 21, 1903. Serial No. 177,902. (No model.)



*Claim.*—1. In an air-brake controller, the combination with a fulcrum-block, of a brake-lever mounted therein, gearing for moving said fulcrum-block, a pawl-and-ratchet mechanism for driving said gearing, and means controlled by the excessive movement of the piston for operating said pawl-and-ratchet mechanism; substantially as described.

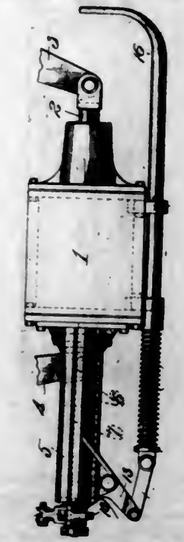
2. In an air-brake controller, the combination with a movable fulcrum-block, of a brake-lever mounted therein, a pawl-and-ratchet mechanism for effecting a movement of the fulcrum-block, a rod operated by the excess travel of the piston for operating said pawl-and-ratchet mechanism, and a spring on said rod which becomes effective to restore the parts to normal position and whose power moves the fulcrum-block when the rod is released by the piston; substantially as described.

3. In an air-brake controller, the combination with a brake-cylinder, of bearings secured in position thereon by the same bolts which are employed for holding the cylinder-heads in position, a rod mounted in said bearing and carrying a part in the path of movement of the piston whereby, when the piston exceeds its movement said rod will be actuated, a spring on said rod for restoring the same to normal position, a pawl-and-ratchet mechanism operated by said rod, gearing operated by the pawl-and-ratchet mechanism, a fulcrum-block movable by said gearing, and a brake-lever mounted in said fulcrum-block; substantially as described.

4. In an air-brake controller, the combination with a brake-cylinder and its piston, a cylinder-head, bolts for securing the cylinder-heads in position, bearings secured on the brake-cylinder by said bolts, a rod movable in said bearings and carrying a part in the path of movement of said piston, whereby, when the piston exceeds its ordinary length of travel it will engage and operate said rod, a spring on said rod for restoring it to normal position, a movable fulcrum-block, a brake-lever pivoted in said fulcrum-block, and connection between said rod and fulcrum-block whereby the latter is moved; substantially as described.

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**753,649. AIR-BRAKE CONTROLLER.** JOHN C. WANDS, St. Louis, Mo. Filed Oct. 21, 1903. Serial No. 177,903. (No model.)



*Claim.*—1. In an air-brake controller, the combination with a fulcrum-block, a rod having threaded engagement therewith, a ratchet-and-pawl mechanism for driving said rod, and a spring-pressed rod operated by the excess travel of the piston for operating said pawl-and-ratchet mechanism; substantially as described.

2. In an air-brake controller, the combination with a movable fulcrum-block, a brake-lever mounted therein, a rod having threaded engagement with said fulcrum-block, a ratchet-wheel on said rod, a pawl coöperating with said ratchet-wheel, an arm for vibrating said pawl, a bell-crank lever, a link connection between said bell-crank lever and said arm, and a spring-pressed rod also connected to said bell-crank lever, said spring-pressed rod being operated by the excess travel of the piston; substantially as described.

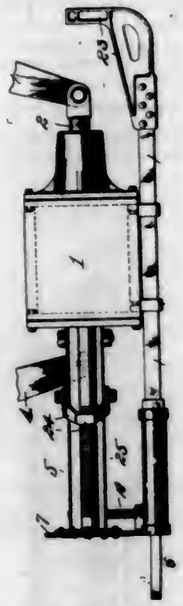
3. In an air-brake controller, the combination with a brake-cylinder and its piston, bearings secured to the side of the cylinder, and a guideway secured to the end of the cylinder, a fulcrum-block movable in said guideway, a brake-lever pivoted in said fulcrum-block, a threaded rod journaled in said guideway and in threaded engagement with said fulcrum-block, a ratchet-wheel mounted on said rod, pawl-and-ratchet mechanism driving said threaded rod, and a spring-pressed rod mounted in the bearings on the side of the brake-cylinder, said spring-pressed rod being connected to said pawl-and-ratchet mechanism and carrying a part in the path of travel of the piston whereby the excess movement of the piston will operate the spring-pressed rod whose restoration upon the release of the brakes will actuate the pawl-and-ratchet mechanism to rotate the threaded rod and move the fulcrum-block outwardly with respect to the cylinder; substantially as described.

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**753,650. AIR-BRAKE CONTROLLER.** JOHN C. WANDS, St. Louis, Mo. Filed Oct. 21, 1903. Serial No. 177,904. (No model.)

*Claim.*—1. In an air-brake controller, the combination with a movable fulcrum, of a brake-lever mounted therein, a threaded rod for causing the travel of said movable fulcrum, a contact connec-

tion arranged in the path of the piston-rod and which is actuated by the excessive travel of the piston, a yielding medium for restoring the parts to normal position during which restoration, the threaded rod is rotated and the position of the fulcrum-block is changed, and independent means for holding the fulcrum-block in its adjusted position so as to relieve its actuating connections from strain; substantially as described.



2. In an air-brake controller, the combination with a cylinder and its piston, of a fulcrum-block, a brake-lever mounted therein, a rack-and-pinion mechanism for moving said fulcrum-block, a pawl-and-ratchet mechanism for imparting motion to the rack-and-pinion mechanism, a yielding driver for the pawl-and-ratchet mechanism, and means controlled by the excessive movement of the piston for storing up power in said yielding driver; substantially as described.

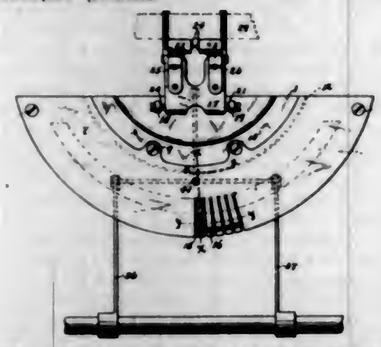
3. In an air-brake controller, the combination with a cylinder and its piston, of a fulcrum-block, a brake-lever mounted therein, a rack-and-pinion mechanism for moving said fulcrum-block, a pawl-and-ratchet mechanism for imparting motion to the rack-and-pinion mechanism, a yielding driver for the pawl-and-ratchet mechanism, and means controlled by the excessive movement of the piston for operating said pawl-and-ratchet mechanism; substantially as described.

4. In an air-brake controller, the combination with a cylinder and its piston, of a casting forming a guideway, a fulcrum-block mounted in said casting, a brake-lever mounted in said block, a rack extending from said fulcrum-block, a pinion meshing with said rack, a ratchet-wheel movable with said pinion, a segmental gear carrying a pawl cooperating with said ratchet-wheel, a rack meshing with said segmental gear, a spring cooperating with said rack, and means connected with the rack and in the path of movement of the piston whereby excess movement of the piston will operate said rack; substantially as described.

5. In an air-brake controller, the combination with an air-brake cylinder and its piston, of a casting forming a guideway, a fulcrum-block mounted in said casting, a brake-lever mounted in said block, means for moving the fulcrum-block when the piston exceeds its normal stroke, and a yoke connected to said fulcrum-block and engaging teeth on said casting for holding the fulcrum-block in adjusted positions; substantially as described.

6. In an air-brake controller, the combination of a cylinder and its piston, of a casting 5 having teeth 25 on its upper face, a fulcrum-block guided in said casting, a gravitating yoke 24 having teeth cooperating with the teeth 25 whereby the fulcrum-block is held in adjusted positions, and means for moving the fulcrum-block in the casting, said means being rendered operative by an excessive stroke of the piston; substantially as described.

**753,651. TYPE-WRITER ALINER.** JAMES ALEXANDER, Brooklyn, N. Y., assignor of one-half to Bernard Cronson, Reuben Cronson, and Solomon H. Siegel, New York, N. Y. Filed Dec. 29, 1902. Serial No. 137,040. (No model.)



*Claim.*—1. A type-writer alining and adjusting mechanism including a type-bar plate, a series of type-bars, ball-bearings for said type-bars, and means for adjusting the bearings for two type-bars simultaneously.

2. A type-writer construction including a type-bar plate, a series of type-bars mounted therein, ball-bearings for said type-bars, one ball being situated on each side of a type-bar and resting in a recess therein, adjusting-screws and means coacting therewith for adjusting the bearings of said type-bars, said balls being arranged opposite to each other on the opposite sides of the type-bar and in pivotal alinement.

3. A construction of the character described comprising a type-bar plate, a series of type-bars mounted therein, ball-bearings for said type-bars, adjusting-blades coacting with said bearings, a single pivot-rod for a plurality of blades, and means for adjusting the position of said blades.

4. A construction of the character described comprising a type-bar plate, a series of type-bars mounted therein, ball-bearings for said type-bars, pivotally-mounted adjusting-blades for said bearings, and means for adjusting the position of said blades.

5. A construction of the character described including a series of type-bars, ball-bearings therefor, pivotally-mounted adjusting-blades for said bearings, adjusting-screws for said blades, the said bearings being situated between the points of support of said blades and the adjusting-screws.

6. A construction of the character described including a vertically-positioned type-bar plate, a series of type-bars mounted therein, ball-bearings for said type-bars, one ball being situated on each side of a type-bar and resting in a recess therein, means for adjusting said bearings, a cover-plate for said bearings, and means for securing said cover-plate to said type-bar plate.

7. A type-writer construction including a type-bar plate, a series of type-bars, ball-bearings for said type-bars, a cover-plate secured to said type-bar plate, adjusting means for said bearings, adjusting-screws passing through said cover-plate and coacting with said adjusting means.

8. A type-writer construction including the type-bar plate, a series of type-bars mounted therein, ball-bearings for said type-bars, pivoted adjusting-blades for said bearings, a cover-plate, a series of adjusting-screws passing through said cover-plate and adapted to coact with said adjusting-screws.

9. An alining mechanism including a vertical type-bar plate, a semicircular universal bar at the rear thereof, a pivoted guide-block, alining devices carried by said block, a link between said block and said universal bar so that the guide-block is operated directly by the type-bar action, and a spring for holding said parts.

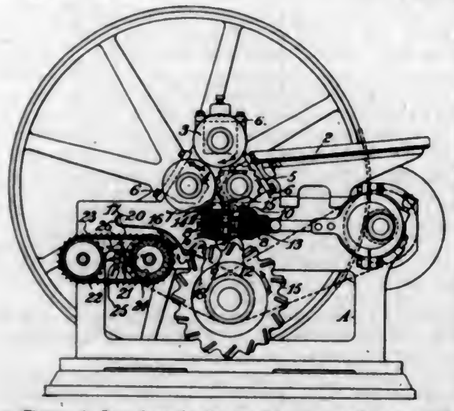
10. A construction of the character described comprising a vertical type-bar plate, type and key bar mechanism, a universal bar mounted at the rear of said plate, a universal shaft, a spring coacting therewith, a guide-block pivoted to said type-bar plate, alining devices carried by said block, a connection between said universal bar and said block to operate with said universal bar.

11. A type-writer construction of the character described including a substantially vertical and semicircular type-bar plate, a series of type-bars mounted therein, ball-bearings for said type-bars, a spring-adjusting means for said ball-bearings and adjusting-screws coacting therewith.

12. A combination in a type-writer construction of a substantially vertical and semicircular type-bar plate, type-bars mounted therein, ball-bearings for said type-bars, pivoted adjusting-blades for said bearings, one blade serving to adjust the bearings of two type-bars, adjusting-screws coacting with said blades beyond the bearings.



**753,652. DECORTICATING-MACHINE.** WALTER H. ALLISON, San Francisco, Cal., assignor to National Fibre Company of San Francisco, Cal., a Corporation of California. Filed May 20, 1902. Serial No. 108,214. (No model.)



*Claim.*—1. In a decorticating-machine, the combination with feed-rollers and whipping and fiber-cleansing devices, of a plurality of reciprocable slotted breaker-bars having sharp-edged ribs or corrugations extending lengthwise in a vertical plane and adapted to split the stalk in the direction of the fiber, and guiding means for said bars.

2. In a plant-decorticating machine, the combination with feeding mechanism and parallel guide-plates, of a slotted breaker-bar having the walls of the slots provided with vertically-extending, sharp-edged corrugations capable of splitting the stalk in the direction of the fiber.

3. In a plant-decorticating machine, the combination with feeding mechanism and parallel guide-plates, of a slotted breaker-bar, having the walls of said slots convexed in horizontal planes and provided with corrugations extending vertically and capable of splitting the stalk in the direction of the fiber.

4. In a plant-decorticating machine, the combination of parallel guide-plates, a slotted breaker-bar reciprocable between the plates, said plates having transverse slots adapted to register with the slot-opening in said bar on each reciprocation of the latter, and the walls of the slots in the plates being provided with sharp edges extending vertically to split the stalks in the direction of the fiber.

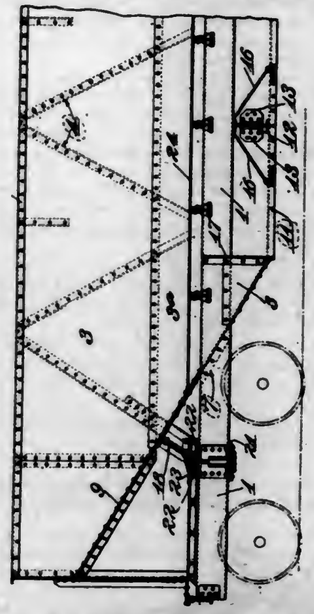
5. In a decorticating-machine, the combination of slotted parallel guide-plates, a slotted breaker-bar reciprocable between said plates, said bar having corrugations with sharp edges extending in the direction of the length of the fiber, and said bar having a portion whose thickness is equal to the width of the space between said plates, and having a portion adjacent to said slot-openings of reduced thickness whereby a space is formed on either side of said bar between the plates, the thickened portion of said bar serving to expel the woody matter lodging between the plates.

6. In a decorticating-machine, the combination with the feed-rollers and breaker thereof, of a beating-cylinder disposed beneath said breaker, a V-shaped shield as 16 around which the fiber is directed, a carrier upon which the sliver is supported, and a whipper revoluble within the carrier.

7. In a decorticating-machine, the combination with upper and lower guide-plates and a breaker-bar reciprocable between said plates, of a beating-cylinder beneath said lower plate, a horizontal endless carrier, and a V-shaped shield disposed between said cylinder and carrier, said shield having one wall extending over a portion of the carrier, the other wall adapted to deflect the fiber passing through the breaker downward onto the carrier, said wall terminating beneath the lower plate of the breaker, said lower plate having an outwardly and upwardly inclined surface between which and the upper edge of the last-named wall a passage is formed through which the woody matter may be expelled by the action of the cylinder.

8. In a decorticating-machine, the combination with plant-breaking and fiber-treating devices, of an endless-chain carrier, a whipper revoluble within the carrier, flexible radial flaps on said whipper, the beating-surfaces of said carrier consisting of transversely-disposed angle-bars, and means for driving the whipper in a direction opposite to the carrier to cause the whipper to act upon the sliver supported on said bars.

**753,653. HOPPER-BOTTOM CAR.** JOHN M. AMES, JOSEPH P. LYON, and GEORGE H. RUSSELL, New York, N. Y., assignors to American Car & Foundry Company, St. Louis, Mo., a Corporation of New Jersey. Filed Sept. 14, 1903. Serial No. 173,201. (No model.)



*Claim.*—1. In a hopper-bottom car, side walls, a continuous cross-girder connected thereto, continuous center sills above said cross-girder, and a cross-ridge connected with said cross-girder and said side walls; substantially as described.

2. In a hopper-bottom car, the combination with side walls, bolsters, braces connecting said bolsters and side walls, side hopper-sheets, continuous center sills, a continuous cross-girder extending transversely below and supporting said center sills, and being connected with said side hopper-sheets, and a cross-ridge connected with said girder and with said side hopper-sheets; substantially as described.

3. In a hopper-car with side walls and side hopper-sheets, bolsters, a cross-girder fastened to the side hopper-sheets, longitudinal beams at the sides of the car connected to and supported by the bolsters and cross-girder, inclined end sheets supported by the bolsters and extending to a plane below said girder, and a cross-ridge supported by the side hopper-sheets, to the cross-girder, and by angles secured to the aforesaid longitudinal beams; substantially as described.

4. In a hopper-car, side sheets, a cross-girder extending continuously from side to side, and connected to the side sheets, inclined end sheets, doors extending across the opening between the side sheets, a cross-ridge below the sills of the underframing of the car, and suitable opening and closing apparatus for the doors; substantially as described.

5. In a hopper-car, side walls, a continuous cross-girder connected thereto, continuous center sills above said cross-girder, and a cross-ridge interposed between the cross-girder and the center sills; substantially as described.

6. In a hopper-bottom car, side sheets, continuous center sills, sheets, a longitudinal deflecting ridge extending in substantially the same plane from end to end, a continuous cross-girder supporting said center sills, said girder being connected with said sills and said side sheets, and adapted to support said sills and said deflecting crown,

and a cross-ridge supported between the cross-girder and the longitudinal sills, substantially as described.

7. In a hopper-bottom car, a longitudinal deflecting crown extending past a plurality of hopper-openings, and supporting means therefor comprising side sheets, a continuous cross-girder connected with said side sheets, continuous center sills, and a cross-ridge connected to the cross-girder below the center sills; substantially as described.

8. In a hopper-bottom car, continuous center sills, side sheets, a cross-girder below the plane of said center sills and connected with said side sheets, a cross-ridge supported by the cross-girder, a bolster divided at the center sills, and continuous angles connected with bolster members and extending across said center sills; substantially as described.

9. In a car, the combination with side walls, of a cross-girder of triangular form, and center sills supported by and above said cross-girder; substantially as described.

10. In a car, the combination with side walls, and a center sill, of a cross-girder of triangular form attached to said side walls and extending under said center sill; substantially as described.

11. In a car, the combination with side walls, of a cross-girder comprising an I-beam and an arched plate forming a cross-ridge of triangular form; substantially as described.

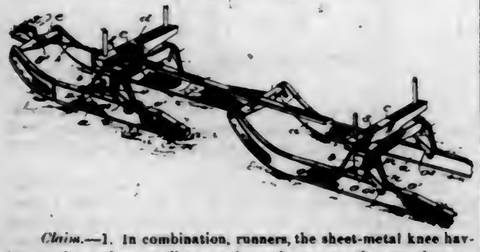
12. In a car, the combination with side walls, of a cross-girder comprising an I-beam and an arched plate forming a cross-ridge of triangular form and resting on the top flange of the I-beam; substantially as described.

13. In a car, the combination with the longitudinal center sills, a cross-beam below the center sills, and an arched plate secured between the lower flanges of the center sills and the upper flanges of the cross-beam; substantially as described.

14. In a car, the combination with the side walls and the longitudinal center sills, of a continuous cross-beam below the center sills and connected to the side walls, and an arched plate below the center sills and intermediately supported on the cross-beam and having the ends of its lower edges connected to the side walls of the car; substantially as described.

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**753,654. BOB-SLED. JOHN H. ANDERSON, Littlefalls, Minn. Filed July 13, 1903. Serial No. 165,330. (No model.)**



*Claim.*—1. In combination, runners, the sheet-metal knee having an elevated seat a distance above the runner, the opposite portions of the knee extending downwardly and outwardly from the central portion thereof which forms said seat and at their lower ends having outwardly-extending ears secured on the top edge of the runner and side flanges secured to the opposite side faces of the runner, a beam resting on said seat and provided with a projection extending thereinto, start-pins on opposite sides of the beam and converging downwardly through said knee and into the runner, and a rave-iron confined to the upper ends of the start-pins and passing over the beam and with its lower ends secured on said ears of the knee.

2. In combination, sled-runners, sheet-metal knees secured thereon, each knee being arched upwardly to form a central elevated beam-seat and having its ends fitted on and secured to a runner, the knee being formed with an opening in its seat portion, start-pins rigid with the runners and passing upwardly through the knees, a beam resting on the knee-seats, the rave-irons secured to the runner and arched up over the start-pins and beams and each having an elongated guideway over the beam, the beam ends provided with projections into said openings of the knees and with projections confined in said guideways of the rave-irons.

3. In combination, a runner, start-pins, a beam, a rave-iron, and a knee arched upwardly at its central portion to form a beam-seat between the start-pins and a distance above the runner, the start-pins passing down through the knee, the ends of the knee inclined downwardly and fitting and secured to the top edge of the runner and having side flanges fitting the opposite vertical faces of the runner and secured thereto.

4. The runner, start-pins, a rave-iron, and beam, in combination with a knee arched upwardly between its ends and forming the elevated beam-seat, said beam provided with means loosely fitting in said knee and rave-iron, the opposite ends of the knee inclined downwardly from the seat and having outturned ears fitting and secured on the top edge of the runner, said knee ends having depending flanges fitting the opposite side faces of the runner with downwardly-extending ends, means securing the rave-iron ends to said ears and to the runner.

5. In combination, a runner, a beam, start-pins diverging upwardly, a knee having its end portions secured to the runner, said knee being arched upwardly at its central portion and forming a beam-seat between the start-pins, said knee formed with perforations through which the start-pins pass, whereby the knee is braced by the start-pins, and means confining the beam to said seat.

6. In combination a runner, a knee secured to the runner at its ends and arched upwardly between its ends to form the elevated beam-seat, a beam resting on said seat, start-pins on opposite sides of the beam and passing down through the knee into the runner, a rave-iron at its lower ends secured on the ends of the knee and passing over the beam, and means confining the beam to its seat.

7. In combination, a runner, a knee secured to the runner and formed with an elevated beam-seat, upwardly-diverging start-pins passing through the knee and secured to the runner, a rave-iron secured to the runner and passing over the start-pins and between the same having an elongated guideway, a beam between the rave-iron and start-pins and resting on and loosely confined to said seat and having a projection loosely confined in said guideway.

8. In combination, a runner, an upwardly-arched sheet-metal knee forming a central elevated beam-seat and at its ends secured to the runner, start-pins, a beam resting on the seat loosely, between the start-pins, a rave-iron having a longitudinal slot above the beam and a projection rigid with the beam and confined to move in said slot.

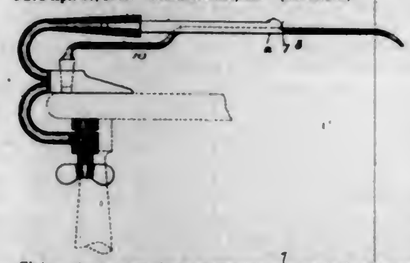
9. In combination, a runner, an upwardly-arched knee having a beam-seat with a perforation, a beam resting on said seat and provided with a projection extending into said perforation, a rave-iron having a longitudinal slot above the beam, said beam having a projection extending loosely into said slot, downwardly-converging start-pins rigid with the runner and passing through said knee on opposite sides of said beam and permitting limited independent movement of the runner with respect to the beam.

10. In combination, a runner, an upwardly-arched sheet-metal knee between its ends forming the elevated beam-seat, the ends of the knee secured on the runner, start-pins rigid with the runner and extending through the knee between its ends and said seat, a rave-iron having its ends secured down on the ends of said knee, and a beam confined on said seat and between the start-pins and under the rave-iron.

11. In combination, a knee forming an elevated beam-seat and at its ends secured down on the runner, the runner, upwardly-diverging start-pins secured to the runner and passing through said knee between its ends and said seat, a rave-iron, a beam, and means loosely confining the beam between the start-pins, and the rave-iron and said said seat.

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**753,655. SEAM-RIPPER. MARTIN J. BACON, San Francisco, Cal. Filed Apr. 20, 1903. Serial No. 153,410. (No model.)**



*Claim.*—1. A seam-ripper comprising a shank the forward end of which is provided with a rounded projection made sharp-edged and extending above the plane of the body portion, said front end having, also, an inclined concaved knife-edge portion which extends from a point just back of the extreme front of the lower side of the shank to a point back of the place of beginning of the front of the rounded projection whereby a notch is formed just under the front end of the projection and a projecting finger is formed at the lower end of said inclined concaved portion.

2. A seam-ripper comprising two normally engaging spring-pressed blade-sections, the lower section having a terminal cutting edge and lower guide therefor, the upper section overhanging said cutting edge and forming coöperating guide means to the said lower guide, and intervening members between the sections to prevent lateral disarrangement thereof.

3. A seam-ripper comprising two spring members, normally engaging blade-sections carried by said members and disposed in substantially the same plane, one of said members having a projection and the other member having a recess for the projection whereby lateral displacement of the members is avoided, and cutting means carried by said sections.

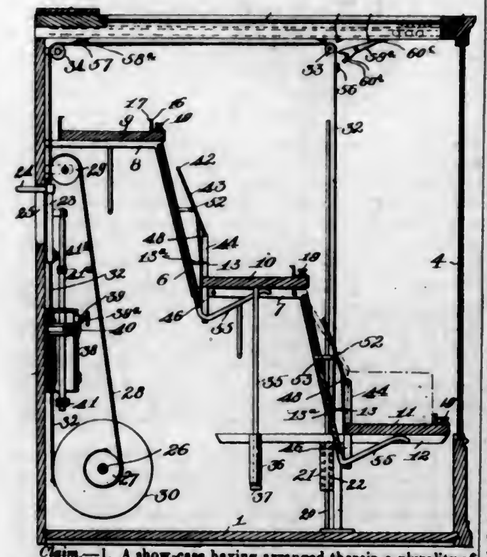
4. The combination with a suitably-supported seam-ripper having a terminal cutting edge and upper and lower coöperating guide members, of parallel supports disposed on either side of said ripper and in substantially the same plane with the axis thereof whereby the cloth may be supported relative to said cutting edge.

5. The combination with a seam-ripper having a stationary cutter and coöperating upper and lower guides of a support therefor, a support for the cloth carried by said first-named support, said cloth-support comprising two united parallel members disposed one on either side of the ripper and in substantially the same plane therewith.

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**753,656. SHOW-CASE. LOUIS J. BAKER and RALPH E. FRENCH, Lascruces, N. Mex. Filed May 13, 1903. Serial No. 156,981. (No model.)**



*Claim.*—1. A show-case having arranged therein a plurality of shelves normally disposed in different planes, and means for bringing all of the shelves to a common plane.

2. A show-case containing a plurality of shelves normally disposed in different planes, means for bringing all of the shelves to a common plane, and means for causing return of the shelves to their normal position.

3. A show-case containing a plurality of shelves normally disposed in different planes, means for bringing all of the shelves to a common plane, and means for causing gradual return of the shelves to their normal position.

4. A show-case containing a plurality of box-supporting shelves normally disposed in different planes, means for bringing all of the shelves to a common plane, and means for automatically throwing back the lids of the boxes supported by the shelves as the latter are raised.

5. A show-case containing a plurality of shelves normally disposed in different planes, means for bringing all of the shelves to a common plane, means operating automatically to throw back the lids of the boxes supported by the shelves as the latter rise, and means for automatically returning the lids to their normal position as the shelves descend.

6. A show-case containing a plurality of vertically-movable shelves, and box-lid-lowering and box-lid-raising mechanisms coöperating therewith.

7. A show-case containing a plurality of vertically-movable shelves, and automatically-operating box-lid-lowering and box-lid-raising mechanisms coöperating therewith.

8. A show-case containing a plurality of vertically-movable shelves, box-lid-lowering and box-lid-closing mechanisms coöperating therewith, and means for normally closing the spaces between the shelves and operating automatically to open such spaces as the shelves are raised.

9. A show-case containing a plurality of vertically-movable shelves, means for closing the spaces between the shelves and operated by gravity to open such spaces as the shelves rise, and means actuated by the shelves on their downward movement to return the space-closing means to their normal position.

10. A show-case containing a plurality of vertically-movable shelves, spring-actuated box-lid-lowering means operable on the raising of the shelves, and box-lid-raising means operable on the lowering of the shelves.

11. A show-case containing a plurality of vertically-movable shelves, means released thereby in lifting to lower the lids of the boxes supported by the shelves, and stationary means for raising the lids of the boxes when the shelves resume their normal position.

12. A show-case containing a plurality of vertically-movable shelves, pivoted backgrounds for closing the spaces therebetween and having a normal tendency to swing away from the spaces by gravity, and means connected with backgrounds and actuated by the shelves to cause the backgrounds to close the spaces between the shelves when the latter are in their lowered position.

13. A show-case containing a plurality of vertically-movable shelves and having a sliding top or lid, and mechanism operating to lift the shelves to a common plane and at the same time to open the lid or cover.

14. A show-case containing a plurality of vertically-movable shelves and having a horizontal slidable lid or cover, bands or cords coöperatively connecting the shelves with the lid or cover, and means for actuating the bands or cords to cause them simultaneously to raise the shelves to a common plane and to slide back the lid or cover.

15. A show-case containing a horizontally-slidable lid or cover, vertically-movable shelves disposed within the case, box-lid-lowering mechanism operatively disposed with relation to the shelves, and means for effecting lifting of the shelves to a common plane, opening of the lid or cover and the lowering of the box-lids.

16. A show-case containing a plurality of vertically-movable shelves and having a horizontally-sliding lid or cover, a shaft arranged in the lower portion of the case and provided at each end and intermediate of its ends with a sheave, a band or cord passed around each of the end sheaves, thence upward across the top of the case and downward and connected at their lower ends to a portion of the shelves, means carried by the bands or cords for engaging the lid or cover, a band or cord having one end secured to the intermediate sheave, thence passed upward over a roller and downward, and a lever to which the last-named band or cord is secured, said lever upon depression and through the medium of the last-named band or cord, operating to revolve the intermediate sheave and the shaft and thus effect lifting of all of the shelves to a common plane and the opening of the lid or cover, and upon reverse movement the lowering of the shelves and the closing of the lid or cover.

17. In a show-case, a stepped bracket, shelves loosely supported on certain of the steps, vertical guide-rods disposed within the case, brackets movable on the guide-rods and supporting the lower shelf, and means connected with the last-named brackets to lift them and thus to raise the movable shelves to a common plane.

18. In a show-case, the combination with a plurality of vertically-movable shelves, of mechanism for raising and lowering the same, and means coacting with the said mechanism to lock the shelves in their raised or lowered positions.

19. A show-case embodying means for lifting a plurality of tiers or rows of boxes to a common plane and for returning them to their normal positions, means for automatically throwing back the box-lids as the boxes rise, means for automatically opening the top of the case to permit access to the goods, means for automatically raising the box-lids as the box-supports resume their normal position, means for automatically closing the top or cover of the box coincident with the lowering of the boxes, means for cushioning the box-supports to cause them gradually to seat themselves, and means for closing the gaps or spaces between the various tiers.

20. A show-case containing a plurality of vertically-movable shelves and having a sliding top or lid, locking means for holding the lid in closed position, and mechanism operating simultaneously to lift the shelves to a common plane, to release the locking means, and to move back the lid or cover.

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**753,657. ANTHRACENE DYE AND PROCESS OF MAKING SAME.** OSCAR BALLY, Mannheim, Germany, assignor to the Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden. Filed Dec. 19, 1900. Serial No. 40,446. (No model.)

*Claim.*—1. The process of making anthracene dye which consists in acting upon a hereinbefore-defined amido-anthraquinone substance with halogen and then with ammonia.

2. The process of making anthracene dye which consists in acting upon a hereinbefore-defined amido-anthraquinone substance with bromin and then with ammonia.

3. The process of making anthracene dye which consists in acting upon one part of a hereinbefore-defined amido-anthraquinone substance with twelve (12) parts of bromin and then with ammonia.

4. The process of making anthracene dye which consists in acting upon a mixture of crude alpha- and beta-anilido-anthraquinone monosulfo-acid with halogen and then with ammonia.

5. The process of making anthracene dye which consists in acting upon a mixture of crude alpha- and beta-anilido-anthraquinone monosulfo-acid with bromin and then with ammonia.

6. The process of making anthracene dye which consists in acting upon one part of a mixture of crude alpha- and beta-anilido-anthraquinone monosulfo-acid with twelve (12) parts of bromin and then with ammonia.

7. The process of making anthracene dye which consists in acting upon a mixture of halogenated alpha- and beta-anilido-anthraquinone monosulfo-acid with ammonia.

8. The process of making anthracene dye which consists in acting upon a mixture of brominated alpha- and beta-anilido-anthraquinone monosulfo-acid with ammonia.

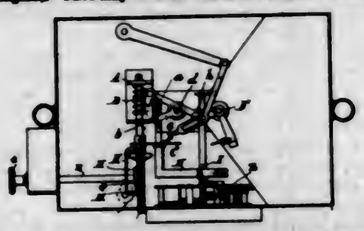
9. As a new article of manufacture the coloring-matter which can be made from halogenated crude alpha- and beta-anilido-anthraquinone monosulfo-acid and ammonia which is soluble in water and which dyes chrome mordanted wool in shades which are within the range of gray-blue to blue-black.

10. As a new article of manufacture the coloring-matter which can be made from brominated crude alpha- and beta-anilido-anthraquinone monosulfo-acid and ammonia which is soluble in water and which dyes chrome mordanted wool in shades which are within the range of gray-blue to blue-black.

11. As a new article of manufacture the coloring-matter which can be made from the product resulting from the action of one (1) part of a mixture of crude alpha- and beta-anilido-anthraquinone monosulfo-acid upon twelve (12) parts of bromin by treating said product with ammonia which dissolves in water giving a solution of brown-violet color, which is not affected in color by caustic soda or by carbonate of soda, and which gives a brown color with concentrated sulfuric acid.

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**753,658. COIN-FREED MECHANISM FOR GAS OR OTHER FLUID METERS.** BERTRAM R. BEALE and ALFRED R. BAGHALL, London, England. Filed May 18, 1903. Serial No. 157,668. (No model.)



*Claim.*—1. In a coin-freed mechanism for gas and other fluid meters, the combination with a coin-chute, a valve, a spindle for operating the same and a crank for operating said spindle, of a sliding rod operable on the insertion of a coin in said chute, a pair of arms carried by the said rod, one of said arms adapted to hold back the coin within the chute and the other of said arms adapted to arrest the movement of said crank, a weighted bar attached to the arm which arrests the movement of the crank, a stop-valve for controlling the flow of fluid, and mechanism for operating said weighted bar causing thereby the opening and closing of said stop-valve, substantially as herein shown and described.

2. In coin-freed meters for gas and other fluids, a closing device for the coin-receiving slot, said device consisting of a pivoted disk fitted in the coin-chute and having a coin-pocket, so arranged that when said disk is revolved with a coin in its pocket, the coin by falling onto a stop or onto another coin will form a block against the return or further rotation of the disk until the stop is removed or the preceding coin released, as described.

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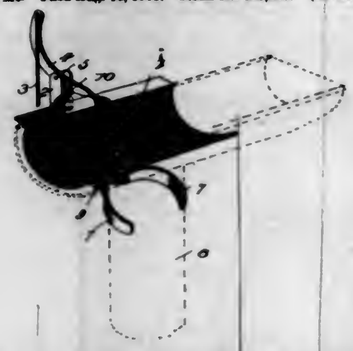
**753,659. ANTHRACENE DERIVATIVE AND PROCESS OF MAKING SAME.** RENÉ BOHN, Mannheim, Germany, assignor to Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden. Filed Dec. 1, 1903. Serial No. 183,393. (No specimens.)

*Claim.*—1. The process for the production of an anthracene derivative by treating indanthrene with a mixture of nitric acid and hydrochloric acid.

2. The yellowish-brown anthracene derivative which is insoluble in water and which by the action of reducing agents yields chloriadanthrene.

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**753,660. EAVES-TROUGH CLEANER.** GEORGE W. BOYER, Desota, Mo. Filed Aug. 10, 1903. Serial No. 168,973. (No model.)



*Claim.*—1. A cleaner for eaves-troughs and the like comprising a removable support, a trap pivoted to the support, a lever projected from the trap for operation thereof and spring means for normally holding the trap in an ascertained position.

2. A cleaner for eaves-troughs and the like comprising a support consisting of corresponding side members, provided with attaching members, a trap pivoted intermediate the aforesaid side members of the support, and a lever projected from the trap for operation thereof.

3. A cleaner for eaves-troughs and the like comprising a support consisting of corresponding side members having recurved end portions for attachment of the support, means for removably securing the side members together, a trap, a lever projected from the trap and received between the aforesaid side members and pivoted thereto, operating means connected to the lever for operation thereof to tilt the trap, and spring means for holding the trap in an ascertained position.

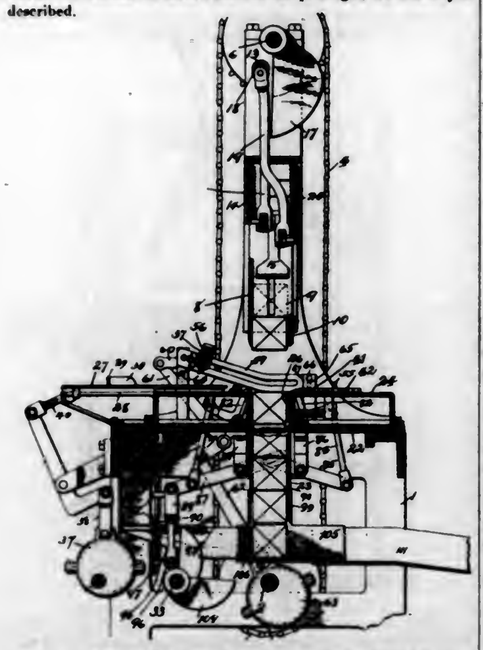
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**753,661. MACHINE FOR WRAPPING PACKAGES.** DAVID F. BREMNER, Jr., Chicago, Ill. Filed Apr. 25, 1900. Serial No. 14,345. (No model.)

*Claim.*—1. A machine for wrapping and labeling packages, comprising a wrapping mechanism consisting of a vertical chute, a carrier and plunger for intermittently feeding the packages through said chute, means for wrapping and folding a wrapper around each package during its passage through said chute, a horizontal conduit connected with said chute, constructed to fit the sides of the packages closely so as to retain the folds of the wrapper in position, a plunger for intermittently feeding the wrapped packages along said conduit and means located at the sides of the conduit and intermediate the length of the latter for applying labels to the ends of the packages while they are still within the conduit, substantially as described.

2. In a machine for wrapping packages, the combination with a wrapping and folding mechanism, of a continuous conduit for receiving and supporting the package and retaining the folds of the wrapper, and means for applying adhesive seals or labels to the folded ends of the packages while within the conduit, said conduit being cut away at the points where the folding and labeling mechanisms are located to afford access to the packages, substantially as described.





3. In a machine for wrapping packages, the combination with a vertical chute, of means for feeding the wrapper over the mouth of said chute, a package-carrier reciprocating vertically toward and from said chute, means holding the package frictionally and yieldingly within the carrier, and a plunger having a differential motion relatively to said carrier and moving in the same direction therewith and adapted to positively eject the packages from the carrier and force them together with their wrappers into the chute, substantially as described.

4. In a machine for wrapping packages, the combination with a vertical wrapping-chute, of a wrapper-feeding plate forming a carrier upon which the wrapper is supported throughout its principal length, means for reciprocating said wrapper-feeding plate across the mouth of said chute and a stop or gage arranged to arrest and determine the position of the front end of the wrapper, substantially as described.

5. In a machine for wrapping packages, the combination with a vertical wrapping-chute, of a wrapper-feeding plate forming a carrier upon which the wrapper is supported throughout its principal length, mechanism for reciprocating said wrapper-feeding plate across the mouth of said chute and lateral and transverse gages cooperating with the wrapper-feeding plate to determine the position of the wrapper relatively to the chute, substantially as described.

6. In a machine for wrapping packages, the combination, with a wrapping-chute, of a wrapper-feeding plate reciprocating across the mouth of said chute from one side, a folding blade or wiper adapted to be projected over said chute from the opposite side, a second folding blade or wiper adapted to be projected over the mouth of said chute from the same side as the wrapper-feeding plate, and means for lifting said last-mentioned blade or wiper to clear the feeding-plate, substantially as described.

7. In a machine for wrapping packages, the combination, with a wrapping-chute, of a blade or wiper adapted to be projected over the mouth of said chute to fold the forward end of the wrapper, a second wiper adapted to be reciprocated over the mouth of the chute to fold the rear edge of the wrapper, and means for lifting said second wiper during its return movement, substantially as described.

8. In a machine for wrapping packages, the combination, with means for folding a wrapper around the sides and at the ends of a package, of means for applying to the folded ends adhesive seals or labels, said means comprising intermittently-rotating carriers provided with radially-movable label-carrying plates, substantially as described.

9. In a machine for wrapping packages, the combination, with means for folding a wrapper around the sides and at the ends of a package, of means for applying to the folded ends adhesive seals or labels, said means comprising intermittently-rotating carriers provided with radially-movable label-carrying plates, means for feeding the labels to said plates, and means for applying paste to the labels, substantially as described.

10. In a machine for wrapping packages, the combination, with means for folding a wrapper around the sides and at the ends of a package, of means for applying to the folded ends adhesive seals or labels, said means comprising intermittently-rotating carriers provided with label-carrying plates, means for moistening said plates to cause a temporary adherence of the labels thereto, means for feeding the labels to the moistened plates, and pasting mechanism for applying the adhesive to said labels while on said carrying-plates, substantially as described.

11. In a machine of the character described, the combination with means for folding a wrapper around a package, of a substantially horizontal conduit having its lateral walls cut away at opposite points, fold-retaining fingers located at said cut-away portions, label-applying mechanisms located on each side of the conduit at said cut-away portions, and means for intermittently feeding the packages through said conduit, substantially as described.

12. In a machine of the character described, the combination, with means for folding a wrapper around a package, of a substantially horizontal conduit having its lateral walls cut away at opposite points, of flap-retaining fingers located at said cut-away points, means for retracting and advancing said fingers, label-applying mechanisms located on each side of the conduit at said cut-away portions and adapted to apply the labels when the fingers are retracted, and means for intermittently feeding the packages through said conduit, substantially as described.

13. In a machine of the character described, the combination, with a hollow carrier, and a plunger working within said carrier, of means for imparting a synchronous but differential movement to the carrier and plunger, as and for the purpose set forth.

14. In a machine of the character described, the combination with a hollow carrier, and a plunger working within said carrier, of means for imparting a synchronous but differential movement to the carrier and plunger, comprising a continuously-rotating shaft, cams upon said shaft and arms connected with the carrier and plunger respectively and operatively engaged with said cams, as and for the purpose set forth.

15. In a machine of the character described, a vertically-disposed hollow carrier provided with a lateral opening through which a package may be inserted, means for holding said package frictionally within the carrier, a plunger adapted to force the package from the carrier and operative connections for imparting a synchronous but differential movement to the carrier and plunger, substantially as described.

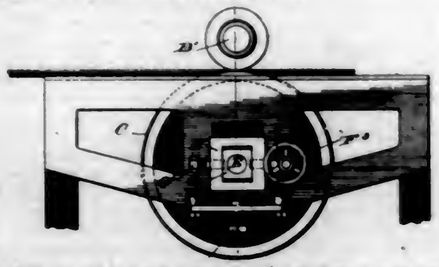
16. In a machine of the character described, the combination with a hollow carrier, means for holding a package yieldingly within said carrier, a plunger operating to thrust the package positively from the carrier, a vertically-disposed chute adapted to receive the package from the carrier, means for holding the package yieldingly in position within the mouth of the chute and folding mechanism arranged to wrap the package while thus held frictionally within the chute, substantially as described.

17. In a wrapping-machine adapted to operate upon packages having rectangular sides, the combination with means for holding the package in position while the initial folds of the wrapping are being formed, of end-folding devices comprising a blade of less width than the width of the package and operated to move across the end and adjacent to the package to close a portion of the upper side of the wrapper across the end of the package, a pair of laterally-disposed folders for forming second folds, comprising blades pivotally mounted to oscillate in a plane parallel with and adjacent to the end of the package, their pivotal axes being so located as to bring the folding-edges of the blades substantially into alinement with the bottom of said package when at the forward limits of their folding movement, whereby the side folds are formed, and means for forming the final folds, comprising end walls arranged parallel with the ends of the package and means for moving said package between said end walls in a relatively downward direction.

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**753,662. SUPPORTING-ROLLER FOR EMBOSSING-MACHINES.** AUGUST BRENKMANN, Chicago, Ill. Filed May 20, 1902. Serial No. 109,413. (No model.)

*Claim.*—1. In a machine of the character described, the combination with an embossing-die, of a support for holding the material to be embossed in the desired position relatively to the die, a shaft upon which said support is carried, means for adjusting said support axially upon said shaft and thereby locating the same in any desired position with respect to the die, bearings in which the ends of said shaft are supported, and means for separately adjusting said bearings to different relative heights whereby said shaft may be inclined in the direction of its length and the angular position of the support with respect to the die thereby varied.



2. In a machine of the character described, the combination with an embossing-die, of a roller for supporting the material to be embossed in the desired relation to said die, a rotary shaft upon which said roller is carried, means for adjusting said supporting-roller axially upon said shaft thereby enabling the same to be located in any desired position with respect to the embossing-die, bearings in which the opposite ends of said shaft are journaled, boxes in which said bearings are pivotally mounted, and means for independently adjusting said boxes whereby the plane of rotation of said roller may be adjusted and the relation of the periphery of the roller to the die thereby varied.

3. In a machine of the character described, the combination with an embossing-roller, a rotary shaft upon which said roller is carried, means for rotating said shaft, a roller for supporting the material to be embossed in the desired relation to said embossing-roller, a second rotary shaft upon which said supporting-roller is carried, means for adjusting said supporting-roller axially upon said second rotary shaft and thereby permitting said supporting-roller to be located in any desired position with respect to said embossing-roller, bearings in which the opposite ends of said second shaft are journaled, boxes in which said bearings are pivotally mounted, and means for independently adjusting said boxes whereby the plane of rotation of said supporting-roller may be adjusted and the relative positions of the peripheries of the embossing and supporting rollers thereby varied.

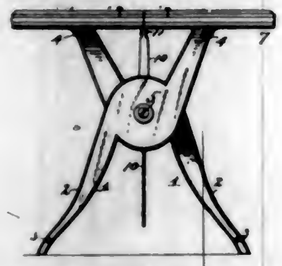
4. In a machine of the character described, the combination with an embossing-die, of a support for holding the material to be embossed in the desired position relatively to the die, said support having grooves formed in the periphery thereof by which the material to be embossed is guided, a shaft upon which said support is carried, means for adjusting said support axially upon said shaft and thereby locating the same in any desired position with respect to the die, bearings in which the ends of said shaft are supported, and means for separately adjusting said bearings to different relative heights whereby said shaft may be inclined in the direction of its length and the angular position of the support with respect to the die thereby varied.

5. In a machine of the character described, the combination with an embossing-die, of a roller for supporting the material to be embossed in the desired relation to said die, a rotary shaft upon which said roller is carried, bearings in which the opposite ends of said shaft are journaled, connections between said supporting-roller and shaft for permitting the former to be moved axially upon the latter, a grooved hub projecting from said roller, a yoke engaging said groove, means for adjusting said yoke and thereby locating said roller in any desired position relatively to the embossing-die.

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**753,663. FOLDING TABLE. AMASON W. BRIGHTWELL, Owen, Ind., assignor of three-fifths to George J. Ott and Henry H. Bench, Louisville, Ky. Filed June 6, 1903. Serial No. 160,361. (No model.)**

*Claim.*—A table comprising pivoted-together leg members, top-sections hinged intermediately of their meeting and opposite edges to said leg members at the upper ends of the last mentioned, a propping-bar having opposite upper edges hinged to said top-sections, at their meeting edges, said propping-bar being vertically movable through the pivotal connection between said legs, and means for effecting the vertical adjustment of said propping-bar and the retention of said propping-bar against movement.



**753,664. AIR-FEEDING DEVICE FOR FURNACES. GEORGE W. BROWN, Melbourne, Victoria, Australia, assignor of one-half to George Michael Horton, Coburg, Victoria, Australia. Filed Dec. 5, 1903. Serial No. 183,950. (No model.)**



*Claim.*—1. In an air-feeding device for furnaces, the combination of the bridge-wall provided with openings below the grate-bars, air-inlet tubes located beneath said grate-bars, and outlet-tubes connected with said inlet-tubes leading into the combustion-chamber, substantially as described.

2. In an air-feeding device for furnaces, the combination of a bridge-wall provided with openings located below the grate-bars upwardly-inclined tubes extending from said openings into the combustion-chamber to approximately the level of the bridge-wall, and groups of short inlet-tubes having a common trunk extending into said first-named tubes and located underneath the grate-bars, substantially as described.

3. In an air-feeding device for furnaces, the combination of the grate-bars, the bridge-wall, provided with openings, tubes in said openings inclined upwardly into the combustion-chamber and having outlets at the end and under side only, and groups of short inlet-tubes communicating therewith and located under the grate-bars, substantially as described.

4. In an air-feeding device for furnaces, the combination of the bridge-wall provided with openings, groups of air-inlet tubes located in said openings, a damper-rod for each group, a group of dampers mounted on each damper-rod, and brackets mounted on said tubes and supporting one end of said damper-rods, substantially as described.

5. In an air-feeding device for furnaces, the combination of the bridge-wall provided with openings, tubes in said openings inclined upwardly into the combustion-chamber, having outlets at the end and under side only, groups of short inlet-tubes having trunks communicating therewith, brackets supported by said inlet-tubes, a damper-actuating rod pivoted in each of said brackets, a group of damper-arms connected to each damper-rod, and a damper on each arm, substantially as described.

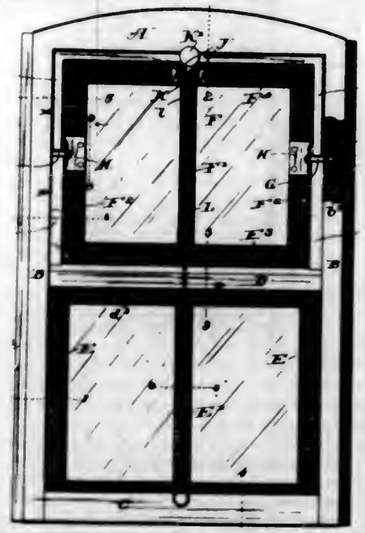
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**753,665. WINDOW. HERMAN H. BROWN, Chicago, Ill. Filed Feb. 18, 1903. Serial No. 143,948. (No model.)**

*Claim.*—1. A sheet-metal window-frame embracing upright tubular side members having on their inner walls inwardly-projecting, wide, longitudinal ribs provided with flanges which extend laterally from the ribs in the planes of the inner faces of said ribs, a stationary cross-piece extending between said side members of the frame, a swinging sash pivoted between the side members and provided with laterally-extending flanges which cooperate with the flanges on the side members of the frame to form weatherproof joints, and stationary sash members consisting of strips of sheet metal bent into



channel form and provided with a central U-shaped part which forms a groove to receive the glass, the lateral walls of said stationary sash members being wide enough apart to receive between them the said ribs and the flanges thereon, and the said lateral walls being attached at their margins to the inner faces of the frame members at both sides of said ribs.



2. A cross-piece for a sheet-metal window-frame, the lower part of which consists of two parallel strips separated at their lower edges by an opening or slot adapted to receive the edge of the glass and the upper marginal parts of which are bent horizontally outward and upward to form rib-like projections on both sides of said cross-piece and the top of which consists of a piece of sheet metal which is bent into channel form and the lateral walls of which are bent outwardly and then downwardly around the rib-like projections on the two strips which constitute the lower portion of said cross-piece.

3. A sheet-metal window-frame embracing upright tubular side members having on their inner walls, inwardly-projecting wide longitudinal ribs provided with flanges which extend laterally from the ribs in the planes of the inner faces of said ribs, and are formed by a portion of the metal of the rib which is folded upon itself and extended to form said flange, a swinging sash pivoted between the side members and provided with laterally-extending flanges which are parallel with the said flanges on the side members of the frame when the sash is closed, and flanged strips which are attached to the inner faces of the said side members of the frame and extend inwardly past the said flanges on said side members, and the flanges on which overlap the said flanges on the side members of the frame, and form therewith grooves to receive the flanges on the sash.

4. A sheet-metal window-frame embracing upright tubular side members, having on their inner walls inwardly-projecting, wide, longitudinal ribs provided with flanges which extend laterally from the ribs in the planes of the inner faces of said ribs and are formed by folded extensions of the sheet metal constituting the ribs, a swinging sash pivoted between the side members and provided with laterally-extending flanges which are parallel with the said flanges on the ribs of the side members when the sash is closed, said sash being provided above the pivots thereof with extensions of the lateral flanges, which, when the sash is closed, extend toward the inner face of the side members of the frame and then toward the ribs thereon between the said inner faces of the frame and the flanges on said ribs, and said frame members being provided below the pivots of the sash with flanged strips which are secured to the inner faces of the said frame members and extend inwardly therefrom past the free edges of the said flanges on said ribs and then extend parallel with the flanges on the ribs so as to form grooves or channels to receive the flanges on the lower part of the sash when said sash is closed.

5. The combination of a sheet-metal frame and a pivoted sash, the side members of the frame and the sash being provided above and below the pivotal axis of the sash with flanges and grooves or channels to receive the flanges and the sheet-metal parts which form the grooves on the frames and sash being provided at their meeting ends with cylindrically-curved parts which are concentric with the pivotal axis of the sash, and which overlap and slide one upon the other, so as to maintain tight joints in all positions of the sash.

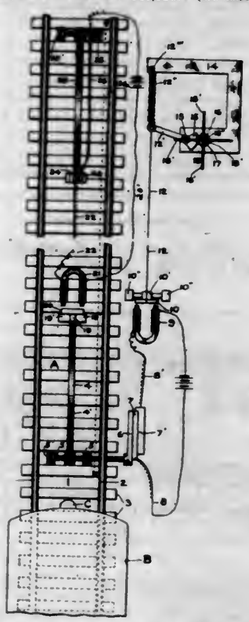
6. The combination of a sheet-metal frame, a pivoted sash and cylindric pivot-rods which extend between brackets on the sash and the side members of the frame, said side members of the frame and the sash being provided with flanges and grooves or channels to receive the flanges, which are oppositely arranged above and below the sash-pivots and the sheet-metal parts which form the grooves or channels being provided at their meeting ends with cylindrically-curved parts which are concentric with the pivots and which overlap each other and in the case of the parts on the frame members, fit against and extend partially around said pivots; said cylindrically-curved parts on the sash having sliding contact with those on the frame.

7. The combination with a tubular sheet-metal frame member and a tubular sheet-metal sash, a pivotal connection between the same consisting of brackets attached to the sash and provided with apertures for the passage of the pivots, pivots inserted through said brackets and two separated pivot-supporting bars attached to the inner surface of the tubular frame, said pivot-rod having screw-threaded engagement with both of said bars.

8. The combination of a frame, a pivoted sash, the top member of the frame having an outwardly-extending flange and the top bar of the sash having a laterally-projecting flange which is bent upwardly and then inwardly to form a groove adapted to receive the flange on the frame, and said flanges on the top member of the frame and the top bar of the sash having latch-engaging holes which coincide in position when the sash is closed, and a latch-lever pivoted between its ends to the top bar of the sash so as to swing in a plane at right angles to the face of the sash, said latch-lever having at its outer end a weight and at its inner end an upwardly-projecting spur which is adapted to pass through the said holes in the flanges of the top bar and frame.

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**753,666. RAILWAY-SIGNAL. TONY BRÜCK, New York, N. Y. Filed Jan. 26, 1903. Serial No. 140,526. (No model.)**



*Claim.*—1. A railway-signal, comprising a rock-arm designed to be actuated by a moving car, an electromagnet and armature therefor, means whereby the rocking of said arm will energize said magnet to attract its armature, a signal mechanism arranged to be actuated by said armature in one direction, a latch adapted to retain the rock-arm in the position to which it was rocked, and means for releasing said latch.

2. A railway-signal, comprising a first rock-arm designed to be depressed by a moving car, an electromagnet and armature therefor, means whereby the rocking of said arm will energize said magnet to attract its armature, a signal mechanism connected to said arma-

ture whereby it will be actuated by the latter, a latch arranged to hold said first rock-arm in its depressed position, a second rock-arm designed to be depressed by the car, a second electromagnet arranged to be energized by the depression of the second rock-arm and provided with an armature, and a connection between said armature and said latch whereby the former will release the latter, as set forth.

3. A railway-signal, comprising a first rock-arm having a cam-face, means attached to a car for moving said arm, an electromagnet and armature-lever therefor, means controlled by said arm for actuating said armature-lever, a wire attached to said lever and to an arm which is attached to a shaft, a signal operated by mechanism connected to said shaft, a latch adapted to retain the first rock-arm in the position to which it was rocked, a second rock-arm having a cam-face and adapted to be operated by means attached to a car, means operated by the second rock-arm to release the latch, and means for returning the signal to its prime position.

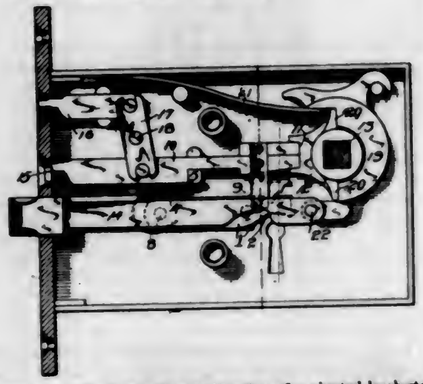
4. A railway-signal, comprising a first rock-arm having a cam-face, means attached to a car for moving said arm, an electromagnet and armature-lever therefor, means operated by said arm for actuating said armature-lever, a wire attached to the armature-lever and to an arm attached to a shaft, mechanism operated by the shaft which operates the signal, a latch adapted to engage and retain the first rock-arm in the position to which it was rocked, a second rock-arm having a cam-face and adapted to be operated by means attached to a car, means operated by the second rock-arm to release the latch, and means for returning the signal to its initial position.

5. A railway-signal, comprising a first rock-arm, a first electromagnet, means operated by the rock-arm to energize the magnet, means operated by the magnet to move the signal in one direction, a latch operated to retain the first rock-arm in the position to which it was rocked, a second rock-arm having a cam-face and operated by means attached to a car, a second electromagnet, means operated by the second rock-arm to energize said second magnet, means operated by the second magnet to release the latch, and means for returning the signal to its initial position.

6. A railway-signal, comprising a signal mechanism proper, an electromagnet provided with an armature operatively connected with said signal mechanism to actuate the same, an arm designed to be moved by a car or the like and provided with means to close the circuit of said magnet to energize the same and attract and move its armatures whereby to actuate the signal mechanism, a latch designed to hold said arm in the position to which it has been moved by the car, a second electromagnet provided with an armature connected with said latch to release the same, and a second arm designed to be moved by the car and provided with means to close the circuit of said second magnet, as and for the purpose set forth.

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**753,667. LOCK. HENRY REYDA, Woonsocket, R. I. Filed Aug. 17, 1903. Serial No. 169,764. (No model.)**

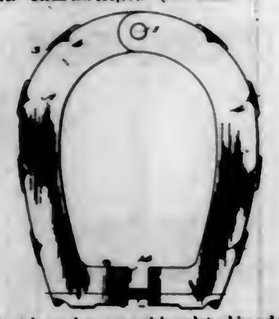


*Claim.*—1. In a lock, the combination of a pivoted knob-stem yoke-sleeve, a manually-operated bolt to engage and disengage the same, said bolt having a detent, pivoted, spring-pressed tumblers coacting with said detent, to lock and release said bolt, a latch-bolt, and a spring-pressed rocking link operated by the yoke-sleeve and connected to the latch-bolt to actuate the latter.

2. In a lock, the combination of a pivoted knob-stem yoke-sleeve, a manually-operated bolt to engage and disengage the same, said bolt having a detent; pivoted, spring-pressed tumblers coacting with said detent to lock and release said bolt, a latch-bolt, a spring-pressed rocking link operated by the yoke-sleeve and connected to the latch-bolt to actuate the latter, and a shifting bolt connected to and coacting with the manually-operated bolt.

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**753,668. HORSESHOE. JAMES F. CLARK, Denver, Colo. Filed Apr. 30, 1903. Serial No. 155,606. (No model.)**



*Claim.*—1. A horseshoe, comprising plates hinged together, provided with clamping-spurs and a bolt or screw for drawing the shoe together at the heel whereby to clamp it securely on the hoof, and a latch pivotally connected with one of the plates for removably holding the bolt or screw in position.

2. A nailless horseshoe comprising hinged plates, alternating upwardly and downwardly projecting spurs independent of each other and carried by the plates, a tread held by the downwardly-projecting spurs, and means for removably clamping the shoe.

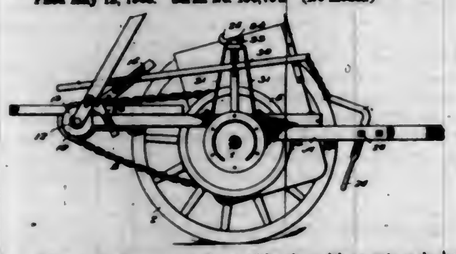
3. A nailless horseshoe comprising hinged plates, alternating upwardly and downwardly projecting spurs located on the plates, a tread adapted to be firmly grasped by the downwardly-depending spurs, a latch pivotally secured to one of the plates, a catch on the latch, the plates provided with a notch for the reception of the catch, and means retained in position by the catch for removably securing the shoe on the hoof.

4. The combination with plates hinged together at one end and provided with alternately upwardly and downwardly projecting clamping-spurs and teeth at the outer edge and teeth at the inner edge, of a tread held between said teeth, the rear ends of the plates projecting inwardly and provided with downwardly-projecting lugs and a screw or bolt swiveled in one lug and registering with a threaded hole in the other as a means for drawing the heel ends of the plates toward each other.

5. A nailless horseshoe comprising hinged plates, upwardly and downwardly projecting isolated spurs, a tread engaged by the downwardly-projecting spurs, flanges carried by the plates, one of the flanges being slotted, a latch pivotally secured to the slotted flange and adapted to close the open end thereof, and means passing through the flanges for clamping the shoe on a hoof.

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**753,669. SELF-LOADING CART. JAMES F. CLARK, Denver, Colo. Filed May 12, 1903. Serial No. 156,764. (No model.)**



*Claim.*—1. In a scraper the combination with an axle and wheels in which the latter is supported, of a rotary scoop capable of dumping forward or rearward.

2. A scraper constructed and adapted to be carried in an upright position and provided with means for swinging it in either direction so as to dump in front or in rear of its support.

3. The combination with a rotatably-supported scoop, of a shaft, gearing extending therefrom to the scoop, and means for turning the shaft whereby to control the position of the scoop.



4. The combination with a rotatably-supported scoop, of a rotary shaft, means for communicating motion from one to the other, ratchet-toothed wheel on the shaft, a lever having a dog which operates in connection with the ratchet-toothed wheel, whereby the shaft is turned.

5. The combination with a rotatably-supported scoop, and a shaft intergeared together, of a pair of levers loosely mounted on the shaft, and carrying dogs, and a pair of reversely-arranged ratchet-toothed wheels with which these dogs coöperate whereby one lever may be used to turn the scoop in one direction, and the other lever to turn it in the opposite direction.

6. The combination with a rotatable scoop, a shaft having means thereon for communicating motion to the scoop, a ratchet-toothed wheel and pawl, of a lever having a dog in position to engage the ratchet-toothed wheel.

7. The combination with a suitable frame, axle and rotatable scoop, of means for controlling the position of the scoop, said means consisting of a wheel having recesses or holes therein, and a lever having yielding lateral support and provided with means adapted to engage the recesses or holes in the wheel when moved laterally.

8. The combination with a suitable frame, axle and rotatable scoop, of means for controlling the position of the scoop, said means consisting of a ratchet-toothed wheel having recesses or holes therein, and a lever having yielding lateral support and provided with means adapted to engage the recesses or holes in the wheel when moved laterally, and a dog for engaging the teeth of the ratchet-toothed wheel, and locking the latter against movement in one direction.

9. The combination with a frame, a rotatable shaft, a counter-shaft, and gearing for communicating motion from one to the other, of a wheel secured to said shaft, a lever, yielding washer between the lever and wheel to permit the lever to be moved laterally, said lever having means thereon to engage said wheel when the lever is moved laterally whereby to lock the lever to the wheel.

10. The combination with a frame, a scoop or pan pivoted in position, a counter-shaft and gearing for communicating from one to the other, of a pair of ratchet-toothed wheels secured on the shaft with their teeth extending in opposite directions, and operating-levers mounted on the shaft adjacent to these wheels and means for locking the levers to the shaft, and locking the shaft at predetermined periods.

11. The combination with a suitable frame, and a pivotally-mounted scoop having hooks thereon, of pivotally-supported loops for receiving the hooks and supporting it when the scoop is in the scraping position, spring-catches for locking the scoop in its upright position and means for controlling these catches and loops.

12. The combination with a suitable frame, and a scoop rotatably mounted and provided with hooks, of L-shaped levers having loops on their lower ends to receive said hooks, and an operating bail-shaped lever loosely connected with the L-shaped levers and pivotally sustained by the frame of the machine.

13. The combination with a frame, and a scoop mounted to turn with respect thereto, of spring-catches for holding the scoop in its upright position and a bail-shaped operating-lever pivoted to uprights on the frame in position to release said catches from the scoop.

14. The combination with a suitable frame, and a scoop pivotally mounted and having hooks thereon, with recessed sides, of L-shaped levers pivoted to the frame and provided with loops adapted to receive the hooks on the scoop, spring-catches in position to enter the recesses in the scoop and a bail-shaped operating-lever pivoted to standards on the frame in position to release the catches from the sides of the scoop and loosely connected with the L-shaped levers.

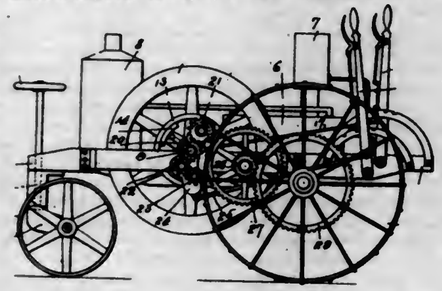
15. The combination with a suitable frame, and a scoop pivotally mounted, of counterbalance-levers pivoted to the frame and provided with means to receive the hook and sustain the forward end of the scoop, and means for operating and controlling said counterbalance-levers.

16. The combination with a scoop capable of being swung on its support whereby to dump in either direction, of a catch for locking the scoop in its upright position and means for locking it in operative position, and means for controlling and operating said catch and means whereby to release them when desired.

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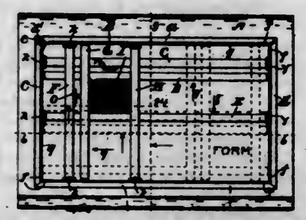
**753,670. DRIVING MECHANISM FOR TRACTION-ENGINES. HENRY C. CLOYD, Union City, Ind. Filed June 29, 1903. Serial No. 163,543. (No model.)**

*Claim.*—In a motor-vehicle the combination, of a supporting-frame, a pair of traction-wheels, a motor mounted on the frame, mechanism for independently applying the power of the motor to either traction-wheel independently of the other traction-wheel, gears connected to each of the traction-wheels, a driving-gear rigidly secured to each end of the motor-shaft, a freely-swinging plate mounted on said shaft adjacent each driving-gear, a gear carried by each of said plates meshing with the driving-gear and adapted to be brought into mesh with the traction-wheel gearing, a second gear carried by each of said plates and an idler-gear interposed between said second gear and the adjacent driving-gear, said second gear being adapted to be brought into engagement with the traction-wheel gearing, means for swinging the gear-carrying plates independently of each other, and a freely-swinging steering-wheel mounted upon a pivot located at one side of the vertical center of said steering-wheel, whereby said wheel may freely and automatically swing about said pivot to permit the vehicle to be guided entirely by means of the traction-wheels.



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**753,671. ATTACHMENT FOR PRINTERS' CHASES. LE ROY G. COWLY, Rochester, N. Y., assignor of one-half to Percy M. Landis, Rochester, N. Y. Filed Aug. 26, 1903. Serial No. 170,854. (No model.)**



*Claim.*—1. An attachment for a printer's chase, consisting of a frame formed of sections or bars, within the chase, means for securing the frame in the chase and screws at right angles to the tapered ends of adjacent sections and adjusting means on said screws disposed between the said adjacent tapered ends and accessible when the attachment is in the chase.

2. An attachment for printers' chases, consisting of a frame formed of sections or bars, within the chase, means for securing the frame in the chase, screws at right angles to the tapered ends of adjacent sections, and adjusting means on said screws disposed between the said adjacent tapered ends and accessible when the attachment is in the chase, said sections abutting at their ends at the corners of of the chase.

3. An attachment for a printer's chase, consisting of a frame formed of sections or bars, within the chase, means for securing the frame in the chase, screws at right angles to the tapered ends of adjacent sections and adjusting means on the screws disposed between the said tapered adjacent ends and accessible when the attachment is in the chase, said sections abutting at their ends at the corners of the chase and said abutting ends interlocking.

4. An attachment for a printer's chase, consisting of a frame formed of sections or bars, within the chase, means for securing the frame within the chase, screws at right angles to the tapered ends of adjacent sections, adjusting means on the screws disposed between the said tapered adjacent ends and accessible when the attachment is in the chase, said sections abutting at their ends at the corners of the chase and said abutting ends interlocking, and adjustable beams mounted in said frame.

5. An attachment for a printer's chase the same being a frame consisting of sections joined at their ends, the adjacent ends of two of the sections having space between, and a tightening-screw for the frame, in the space, at right angles to and engaging both adjacent ends of the separated sections accessible when the attachment is in the chase.

6. An attachment for a printer's chase, consisting of a frame formed of sections, within the chase, and means for securing the frame in the chase, means at right angles to and directly engaging the adjacent inclined faces of adjacent sections for tightening the frame, and a series of beams within the frame and held by the sections of the frame, said means being accessible when the attachment is in the chase.

7. An attachment for a printer's chase, consisting of a frame formed of sections or bars, within the chase, and means for securing the frame in the chase, means at right angles to and directly engaging the adjacent inclined faces of adjacent sections for tightening the frame, and a series of longitudinal and transverse beams held within the frame, the longitudinal beams passing through the transverse beams, said means being accessible when the attachment is in the chase.

8. An attachment for a printer's chase, consisting of a frame formed of sections, within the chase, and means for holding the frame in place in the chase, means at right angles to and directly engaging the adjacent inclined faces of adjacent sections for tightening the frame, and a series of beams crossing one another in the frame, said means being accessible when the attachment is in the chase.

9. An attachment for a printer's chase, comprising a frame formed of sections joined, each section having an inwardly-projecting longitudinal rib, means at right angles to and directly engaging the adjacent inclined faces of adjacent sections for tightening the frame, cross-beams in the frame having their ends engaging said ribs, and means for locking the beams to the sections, said means being accessible when the attachment is in the chase.

10. An attachment for a printer's chase, comprising a frame in sections, the sections having adjacent ends inclined with their inclined portions parallel, a tightening device between and directly engaging said inclined ends, a pair of longitudinal lock-beams in the frame, and a pair of transverse lock-beams in the frame, there being a loose longitudinal beam between the longitudinal lock-beams and a loose transverse beam between the transverse lock-beams, said device being accessible when the attachment is in the chase.

11. An attachment for a priater's chase, comprising a frame in sections, the sections having adjacent ends inclined with the inclined portions parallel, a tightening-screw between and directly engaging said inclined ends, a pair of longitudinal lock-beams and a pair of transverse lock-beams in the frame, there being a loose longitudinal beam between the longitudinal lock-beams and a loose transverse beam between the transverse lock-beams, the lock-beams being laterally adjustable in the frame, said screw being accessible when the attachment is in the chase.

12. An attachment for a printer's chase, comprising a frame in sections, the sections having adjacent ends inclined with the inclined portions parallel, a tightening-screw between and directly engaging said inclined ends, a pair of longitudinal lock-beams and a pair of transverse lock-beams in the frame, there being a loose beam between each pair of lock-beams, and means for pushing the loose beams laterally between the lock-beams, said screw being accessible when the attachment is in the chase.

13. An attachment for a printer's chase, comprising a frame in sections, the sections having adjacent ends inclined with the inclined portions parallel, a tightening-screw between and directly engaging said inclined ends, a pair of longitudinal lock-beams and a pair of transverse lock-beams in the frame, there being a loose beam between each pair of lock-beams, said loose beams being hollow, and a push-block in each loose beam, and a push-screw threaded in each push-block in position to press the adjacent lock-beam, said screw being accessible when the attachment is in the chase.

14. An attachment for a printer's chase, comprising a frame formed of sections joined, each section having an inwardly-projecting longitudinal rib divided by kerfs and parallel inclined ends, a screw at right angles to said ends and directly engaging the same, a series of cross-beams in the frame with their ends adjacent to the divided ribs, and locking-keys in the beams to enter the kerfs, said screw being accessible when the attachment is in the chase.

15. An attachment for a printer's chase, comprising a frame within the chase, said frame being in sections, the sections having inclined adjacent ends arranged parallel with each other, and a tightening-screw between said inclined ends and directly engaging the same, a pair of longitudinal lock-beams and a pair of transverse lock-beams in the frame, and a hollow loose beam between each pair of lock-beams, a block in each loose beam, and a push-screw threaded in each block, and means for holding the blocks within the loose beams.

16. An attachment for a printer's chase, comprising a frame within the chase, said frame being in sections with inclined adjacent ends, and a tightening-screw interposed between and directly engaging said inclined ends, a pair of longitudinal lock-beams and a pair of transverse lock-beams in the frame, and a hollow loose beam between each pair of lock-beams formed with interior longitudinal opposing channels, and a push-block in each loose beam having ribs to occupy said channels, and a push-screw threaded in each push-block to press a lock-beam.

17. An attachment for a printer's chase, consisting of a frame within the chase and formed of four sections joined at their ends at right angles, and a tightening-screw interposed between and directly engaging said ends, said sections having interior longitudinal ribs divided by cross-kerfs, laterally-adjustable beams in the frame having locking-keys to enter the kerfs, said kerfs being spaced to correspond to the width of the body of a type, said screw being accessible when the attachment is in the chase.

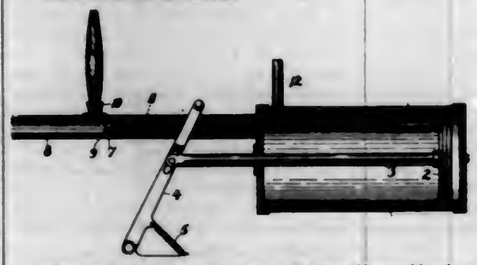
18. An attachment for a printer's chase, consisting of a frame within the chase and formed of four sections joined at their ends at right angles, and a tightening-screw interposed between and directly engaging said ends, and a series of cross-beams held within the frame and engaging the sections, said cross-beams being removable from the frame in a body, said screw being accessible when the attachment is in the chase.

19. An attachment for printers' chases, consisting of a frame within the chase, a tightening-screw at right angles to and interposed between the inclined ends of the adjacent sections and directly engaging the same, and a series of cross-beams held by the frame and movable therein, the beams having movable parts to engage with the frame, and the latter having marks to indicate the positions of the beams within it, said screw being accessible when the attachment is in the chase.

20. An attachment for printers' chases, consisting of a frame in sections within the chase, the sections being provided with inclined parallel abutting ends having cavities, and a tightening-screw interposed between the said inclined ends and having its ends disposed in said cavities, said screw being accessible when the attachment is in the chase.

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**753,672. CIGAR CUTTER AND LIGHTER.** WILLIAM M. COOMBS and CHARLES C. O'CONNELL, San Francisco, Cal.; said Coombs assignor to Minnie B. Coombs, San Francisco, Cal. Filed Sept. 21, 1903. Serial No. 174,007. (No model.)



*Claim.*—1. In a cigar cutter and lighter, the combination of stationary cigar-holding means; a reciprocating lighter positioned axially in line with said holding means; a reciprocating tip-cutter having a coördinate movement with the lighter; means for operating the cutter and fluid-pressure connections supplied by the cutter-operating means for advancing the lighter to the cigar.

2. In a cigar cutter and lighter the combination with a stationary cigar-holder, and an air-compressor mechanism including a cylinder, a piston and a piston-rod, of a cutter carried by said piston, and a lighting means axially in line with the cigar-holder and operated by a fluid-pressure generated by and during the movement of the piston.

3. In a cigar cutter and lighter, the combination of a cylinder, a piston therein, means for reciprocating the piston, cigar-holding means and cigar-lighting means maintained one axially in line with the other, and a reciprocating cutter, said cutter operatable by the direct movements of the piston and said lighting means operated by a fluid-pressure generated by the piston in advancing the cutter.

4. In a cigar cutter and lighter, the combination of a cylinder, a piston therein, means for reciprocating the piston, cigar-holding means, a cutter and a cigar-lighter reciprocable in unison with the piston and advanced to the cigar by a fluid-pressure generated by the piston during the advance of the cutter.

5. In a device of the character described, the combination with a cigar-holder of lighting mechanism, said mechanism including a reciprocating jet-tip and fluid-pressure means for reciprocating said tip.

6. In a device of the character described, the combination with a cigar-holder, of a cylinder in line with said holder, a piston therein, a piston-rod, means for reciprocating said rod and a gas-jet attachment on the outer end of said rod.

7. In a device of the character described the combination with a cigar-holder of a cylinder in axial alinement therewith, a piston in said cylinder, a normally retracted piston-rod, igniting means carried by said rod, and means for forcing the piston outward.

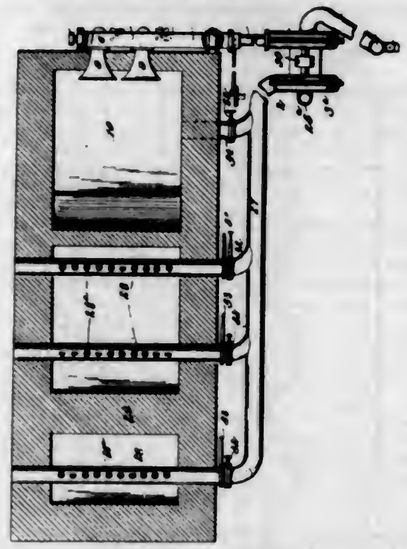
8. In a device of the character described, the combination of a cylinder, a piston therein, means for reciprocating the piston, a cigar-holder, cigar-lighting means, connecting-passages with said lighting means and the space on one side of said piston and connecting-passages between the cigar-holder and the opposite side of said piston.

9. In a device of the character described, the combination of a cylinder, a piston therein, a piston-rod, means for reciprocating the latter, a rod secured eccentric to the piston and extending exterior to the cylinder, a plunger upon said exterior portion of the rod, a tubular casing in which said plunger operates, a cutter on said plunger and cigar-holding means in the path of said cutter.

10. In a device of the character described, the combination of a compression-cylinder, a piston therein, means for reciprocating said piston, a tubular casing, a plunger in said casing reciprocable in unison with the piston of the compression-cylinder, a cutter rigid with said plunger, cigar-holding means in the path of the cutter, connecting-passages between the space behind said plunger and the space on one side of the piston of the compression-cylinder and cigar-lighting mechanism operatable by the movements of the piston in said compression-cylinder.

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**753,673. APPARATUS FOR FEEDING FINE FUEL AND AIR TO FURNACES.** ALFRED E. CREIGH, Ronceverte, W. Va. Filed May 20, 1903. Serial No. 158,021. (No model.)



*Claim.*—1. The herein-described furnace attachment, comprising fuel and air conducting pipes, a fan-blower for producing exhaust, an oscillating connected fuel-discharge pipe operatively connected with said blower and provided with nozzles projecting into the furnace-chamber, and means for operating the blower and oscillating the said discharge-pipe, simultaneously, substantially as set forth.

2. The herein-described furnace attachment, comprising fuel and air conducting pipes, a fan-blower for producing exhaust, an oscillating connected fuel-discharge pipe operatively connected with said blower and provided with nozzles projecting into the furnace-chamber, a lever-arm pendent from the fuel-discharge pipe, a rod connecting said arm with the engine-shaft, the arm and rod being detachably connected, as set forth.



3. The herein-described furnace attachment comprising fuel and air conducting pipes, a fan-blower for producing exhaust, an oscillating connected fuel-discharge pipe arranged on the front of the furnace above the fire-doors and having nozzles projecting into the furnace-chamber, and means for oscillating said pipe, substantially as shown and described.

4. The combination, with the furnace, of a fuel-discharge pipe arranged on the front of the furnace and having nozzles projecting into the chamber, the said pipe being adapted to oscillate on its axis, means connecting it with the engine and adapted for disconnection, and a hand-lever applied to the said pipe for oscillating it manually, substantially as shown and described.

5. The combination, with a furnace, and a fan of a fuel-discharge pipe arranged on the front thereof and journaled so that it is adapted to oscillate, the same being provided with nozzles extending in through the furnace-front, and means for oscillating the said pipe for distributing the fuel over the grate from end to end thereof, substantially as shown and described.

6. The combination, with a furnace, of a fan-blower and a fuel-discharge pipe journaled in the front portion of the furnace and having nozzles which are flared laterally, and means for oscillating said pipe, whereby fuel is discharged from end to end of the furnace and over the entire width of the grate, substantially as shown and described.

7. The combination, with the furnace-chamber and a fan-blower and fuel-discharge pipe having two or more nozzles projecting into the furnace-chamber, of a valve consisting of the plate hinged in the pipe adjacent to but in front of the first nozzle, and a means for adjusting the valve at a greater or less inclination, substantially as shown and described.

8. The fuel and air feed furnace attachment, comprising two fan-blowers located side by side and having a common shaft, a band-pulley mounted on the said shaft between the blowers, a fuel-pipe leading to and from one of said blowers, a distributing-pipe having nozzles projecting into the furnace-chamber, a hot-air pipe connecting with such fuel-feed blower, and hot-air pipes connecting with the other blower and one of them having branches arranged behind the bridge-walls and provided with lateral outlets, substantially as set forth.

9. The improved fuel and air feed furnace attachment, comprising two fan-blowers located side by side and having a common shaft, a band-pulley mounted on the said shaft between the blowers, a fuel-pipe leading to one of said blowers and another pipe leading therefrom and extending on the front of the furnace and adapted to discharge fuel into the latter, the hot-air pipe having a branch connected with the fuel-pipe and the fuel-blower, and another branch connected with the second blower, and other hot-air pipes leading from the said blower and having branches extending into the furnace-chamber between the bridge-walls, and valves for regulating the blast in the several pipes, substantially as shown and described.

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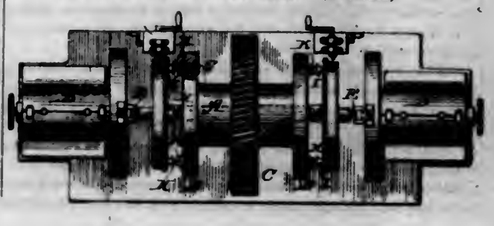
**753,674. UPHOLSTERING FOR CASKETS.** ALBERT J. CROSS, Richmond, Canada. Filed Feb. 17, 1903. Serial No. 143,836. (No model.)



*Claim.*—In combination with a casket, a cushion extending around the upper part thereof and projecting inwardly and a piece of material depending from the inner side of the said cushion and having a free lower edge, substantially as described.

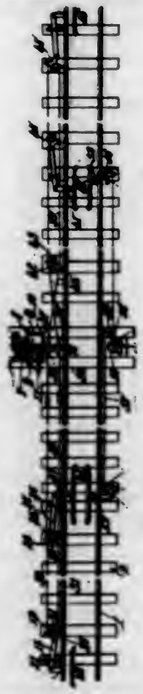
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**753,675. WHEEL-LATHE.** JOHN R. CROWLEY, Savannah, Ga. Filed June 20, 1903. Serial No. 162,336. (No model.)



*Claim.*—In a car-wheel lathe, work-driver means consisting of a driven face-plate having spaced transverse openings as specified, dogs having elongated chisel-shaped heads and screw-threaded shanks, the said shanks being adapted to pass loosely into the said openings in the face-plate, and adjusting-nuts on the said dogs substantially as described.

753,676. AUTOMATIC RAILWAY-GATE. CALVIN W. CURD, Bowling Green, Ky. Filed Aug. 1, 1903. Serial No. 167,933. (No model.)



*Claim.*—1. An apparatus of the class described comprising a gate, an actuating mechanism therefor including a pinion carried by the gate-supporting shaft, a toothed element engaged with the pinion, arms carried by the toothed element, and a rock-lever located between said arms and adapted alternately to engage the same to thereby secure the operation of the gate.

2. An apparatus of the class described comprising a gate, an actuating mechanism therefor including a pinion carried by the gate-supporting shaft, a toothed element engaged with the pinion, arms carried by the toothed element, a rock-lever between said arms and adapted alternately to engage the same, a pivoted lever for actuating said rock-lever, slides projecting through the webs of the rails of a track-section adjacent to which the apparatus is mounted and adapted to be engaged by the flanges of the car-wheels, levers connected at one end with the slides, three-armed levers fulcrumed adjacent one of the rails and each having one of its arms operatively connected with one of the free ends of said last-mentioned levers, and wire ropes or chains connecting the free arms of the three-armed levers with said pivoted lever.

3. An apparatus of the class described, comprising a gate, an actuating mechanism therefor comprising a pinion carried by the gate-supporting shaft, a toothed element engaged with the pinion, arms carried by the toothed element, a weighted rock-lever, adapted to engage the arms, and an automatically-actuated lever in co-operative relation with the rock-lever.

4. An apparatus of the class described, comprising a gate, a rock-lever adapted through interposed mechanism to actuate the same, a pivoted lever engaging the rock-lever, slides projecting through the webs of the rails of a track-section adjacent to which the apparatus is mounted and adapted to be engaged by the flanges of the car-wheels, levers connected at one end with the slides, three-armed levers fulcrumed adjacent to one of the rails, and each having one of its arms operatively connected with the free ends of the said levers, and wire ropes or chains connecting the free arms of the three-armed levers with the rock-lever-actuating device.

5. A track-section, having disposed intermediate of its length a gate, a rock-lever adapted through intermediate mechanism to actuate the gate, a horizontally-disposed lever coöperatively connected with the rock-lever, slides having one end projecting through the webs of the rail, pivoted levers having one end connected with said slides, three-armed levers each having one of its members connected with one of the levers, and wire ropes or chains connecting the three arms of the three-armed lever with the said horizontally-disposed lever, the wire ropes or chains on the one side of the said lever being crossed, thereby to cause the slides at one end of the section to be projected while those on the other end are retracted.

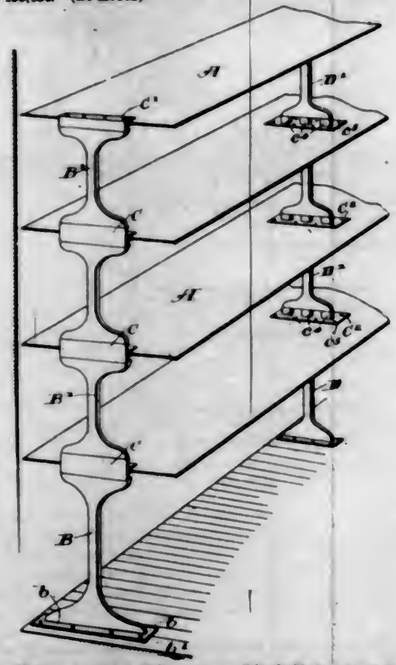
753,677. GOLF-CLUB. J. G. CURTISS, Rochester, N. Y. Filed May 2, 1903. Serial No. 155,418. (No model.)



*Claim.*—1. A golf-club consisting of a head and a shaft of different material joined, the joint consisting of two reverse conical parts, the circular meeting edge of the conical surfaces being rounded.

2. A golf-club consisting of a head and a shaft joined, the head having upwardly-extending neck in line with the shaft and conical bore and conical part surrounding the upper end of the bore, and the shaft formed with reduced conical part fitted to said bore and a conical cavity to receive the conical part of the head, said conical parts being coaxial and of reverse conicality.

753,678. KNOCKDOWN EXPANSIBLE SHELF STRUCTURE. ADOLPH DANNENBERG, Chicago, Ill. Filed May 1, 1903. Serial No. 156,126. (No model.)




*Claim.*—1. A knockdown expansible shelf structure comprising a plurality of horizontal shelf members, vertically-divided standards at the ends of the shelf members and fittings joining the parts of the standards end to end at the intersections of the standards and the shelf members and provided with grooves which receive the margins of the shelf members.



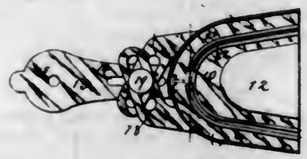
2. A knockdown expansible shelf structure comprising a plurality of horizontal shelf members, vertically-divided standards at the ends of the shelf members, the parts of which are provided at their proximate ends with tenons and fittings provided with sockets which receive the tenons of proximate ends of the standard parts and provided also with grooves which receive the margins of said shelf members.

3. A knockdown expansible shelf structure comprising a plurality of superposed shelf members, those of which are in the same horizontal plane fitting end to end, vertically-divided standards at the ends of the shelf members, the parts of which are provided at their proximate ends with tenons, and fittings provided with sockets adapted to receive the tenons of the proximate ends of said standard parts and provided also with grooves which receive the margins of the shelf members.

4. The combination with a shelf or table, of a shelf-like support located thereover, and standards for supporting said shelf-like support from the lower shelf or table, said standards being widened at their upper and lower ends and each provided at each end with a plurality of tenons and fittings attached to the table and shelf-like support and provided with sockets in which said tenons are removably seated.

5. The combination with a standard having widened upper and lower ends and provided at each end with a plurality of tenons, of fittings adapted to be attached to a shelf or the like and provided with a plurality of mortises to receive said tenons.

753,679. ADJUSTABLE DENTAL IMPRESSION-CUP. JOHN C. DAVIS, Rembeek, Iowa. Filed Apr. 6, 1903. Serial No. 151,417. (No model.)



*Claim.*—1. In an adjustable dental impression-cup, a base-plate having a dome at one end and a handle at the other end and a longitudinal slot in the handle and two flanged plates, each having a bridle at its rear end portion adapted to overlie the slot in the handle of the base-plate, and means for clamping them together, arranged and combined to operate in the manner set forth for the purposes stated.

2. In an adjustable impression-cup, the combination of two mating plates that are elbow-shaped in cross-section and provided with concentric flanges at their inner edges, a third plate having flanges at its inner edges located between the ends of said mating plates, a base-plate and means for adjustably and detachably fixing them to the base-plate, for the purposes stated.

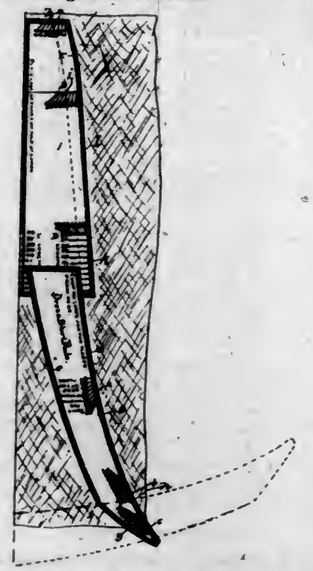
3. In an adjustable impression-cup, a plate that has a flange at its outer edge and an enlargement at one end provided with vertical flanges to produce a groove for the reception of wax, for the purposes stated.

4. In an adjustable impression-cup, a plate that has a flange at its outer edge and an enlargement at one end provided with vertical parallel flanges to produce a groove for the reception of wax and also parallel flanges on its top and inner edges to produce a groove extending horizontally from end to end of the plate, for the purposes stated.

5. An adjustable dental impression-cup comprising a base-plate having a dome at one end portion and a handle at its other end provided with a longitudinal slot, a plurality of plates that are elbow-shaped in cross-section and provided with concentric flanges on top of their inner edge portions and bridles extending rearward and a screw and nut, arranged and combined to operate in the manner set forth for the purposes stated.

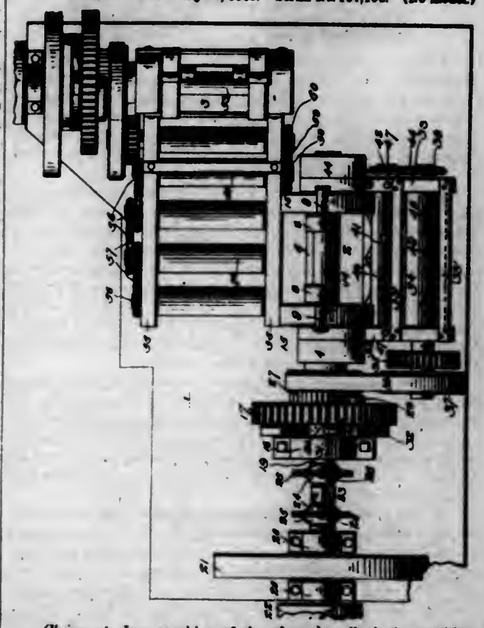
753,680. SKIRT-CHART. LOYOLA DAVIS, Omaha, Nebr. Filed Sept. 8, 1903. Serial No. 172,341. (No model.)

*Claim.*—1. The herein-described drafting devices for skirt-patterns, comprising a pattern-piece for the upper portion of a gore, having a waist-line scale, a transverse hip-scale, and length-scales at the sides of its lower portion, in combination with a ruler for the flared lower portion of a gore, having appropriately-curved sides corresponding with the shallow and deep flares of the lower portions of a gore and having scales on its deep flare side for the extreme width of the several gores at the bottom.



2. The herein-described drafting devices for skirt-patterns, comprising a plurality of pattern-pieces for the upper portions of the gores, each having a waist-line scale, a transverse hip-scale, and length-scales at the sides of its lower portion, in combination with a ruler for the flared lower portion of a gore, having appropriately-curved sides corresponding with the shallow and deep flares of the lower portions of a gore and having scales on its deep flare side for the extreme width of the several gores at the bottom.

753,681. METAL-CUTTING SHEARS. CHARLES F. DEITRICK, Berwick, Pa. Filed July 27, 1903. Serial No. 167,199. (No model.)



*Claim.*—1. In a machine of the class described, the combination of a continuously-revolvable master-wheel, a shaft to which it is fixed, revolved thereby, a cutter, means driven by said shaft to op-

erate the cutter, feed-rolls, a driving element therefor, and an intermittently-operating mechanism connecting the said driving element in the master-wheel, said intermittently-operating mechanism being timed to pretermit the operation of the feed-rolls during the cutting action of the cutter.

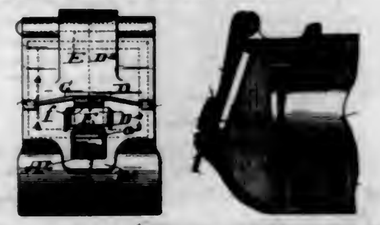
2. In a machine of the class described, the combination of a continuously-revoluble master-wheel, a shaft to which it is fixed, revolved thereby, a cutter, means driven by said shaft, to operate the cutter, feed-rolls, a driving element therefor, including a ratchet-wheel, a pawl carried by the master-wheel to engage the ratchet-wheel and rotate the latter therewith to drive the feed-rolls, and means to periodically disengage the pawl from the ratchet-wheel, to pretermit the action of the feed-rolls during the cutting action of the cutter.

3. In a machine of the class described, the combination of a continuously-revoluble master-wheel, a shaft to which it is fixed, revolved thereby, a cutter, means driven by said shaft, to operate the cutter, feed-rolls, a driving element therefor, including a ratchet-wheel, a pawl carried by the master-wheel, a spring to engage the pawl with the ratchet-wheel and rotate the latter with the master-wheel, to drive the feed-rolls, and a cam to periodically disengage the pawl from the ratchet-wheel, to pretermit the action of the feed-rolls during the cutting action of the cutter.

4. In a machine of the class described, the combination of a reciprocating cutter, a shaft, means operated by the shaft to actuate the cutter, a continuously-revoluble master-wheel fast to said shaft, feed-rolls, driving means therefor, including a ratchet-wheel loose on said shaft, a pawl carried by the master-wheel, to engage the ratchet-wheel, and means to periodically disengage the pawl from the ratchet-wheel.

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753,682. **LOCKING DEVICE FOR JOURNAL-BOX LIDS.** LUMAN R. DEWEY, Alliance, Nebr., assignor of three-fourths to David Tondorf, Charles W. Brown, and John M. Shultheiss, Chicago, Ill. Filed June 29, 1903. Serial No. 163,484. (No model.)





*Claim.*—1. The combination with a journal-box and a hinged lid therefor, of an endwise-sliding, spring-pressed locking member on the lid, the box being provided with a notched locking-lug, said locking member and the lug being each provided with oppositely-inclined contact-faces which coact to automatically shift the locking member endwise in a manner to pass the locking-lug both when the lid is being opened and when it is being closed.

2. The combination with a journal-box and a hinged lid therefor, of a sliding locking member on the lid, the box being provided with a notched locking-lug, and a spring for holding said locking member engaged with the notch of said lug, there being a shoulder on the lid cooperating with a shoulder on the locking member to limit the outward movement of said locking member, said locking member and the lug being each provided with oppositely-inclined contact-faces which coact to automatically shift the locking member inwardly in a manner to pass the locking-lug both when the lid is being opened and when the lid is being closed.

3. The combination with a journal-box and a hinged lid therefor, of a sliding locking member on said lid which projects beyond the margin thereof, the box being provided with a notched locking-lug adapted for engagement by the projecting end of said locking member, and a spring arranged transversely across said lid and attached at its ends thereto and bearing between its ends against said locking member.

4. The combination with a journal-box, and a hinged lid therefor, of a sliding locking member on said lid which projects beyond the margin thereof, a guide on said lid for the locking member, a stop on the locking member adapted for engagement with said guide, said box being provided with a notched lug adapted for engagement by the projecting end of the locking member, and a spring arranged transversely across said lid and attached at its ends thereto and bearing between its ends against said locking member.

5. The combination with a journal-box, and a hinged lid therefor, of a sliding locking member on said lid which projects beyond the same, a guide on said lid for said locking member, a stop on the locking member adapted to engage said guide, said box being provided with a notched lug adapted for engagement by the projecting end of the locking member and a spring arranged transversely across said lid and attached at its ends thereto and bearing between its ends against said locking member, said locking member and lug being provided with oppositely-inclined contact-faces which coact to shift the locking member inwardly to pass the locking-lug both when the lid is being opened and when it is being closed.

6. The combination with a journal-box and a hinged lid therefor, of a locking member having sliding engagement with said lid and projecting beyond the lower margin of the same, said box being provided with a locking-lug adapted to receive the projecting end of said locking member, a spring for forcing said locking member into engagement with said lug, and a lifting-piece projecting downwardly from said lid, said lifting-piece being provided with an opening adapted to pass over said locking-lug.

7. The combination with a journal-box and a hinged lid therefor, of a locking member having sliding engagement with said lid and projecting beyond the lower margin thereof, said box being provided with a notched locking-lug adapted to receive the projecting end of the locking member, and a spring arranged transversely across the box, the lid being provided with lugs at the sides thereof which have notches for receiving the ends of said spring, said spring bearing between its ends against said locking member.

8. The combination with a journal-box and a hinged lid therefor, of a locking member having sliding engagement with said lid and projecting beyond the lower margin thereof, said box being provided with a notched locking-lug adapted to receive the projecting end of the locking member, and a spring arranged transversely across the box, the lid being provided at the sides thereof with lugs which have downwardly-opening notches which are closed at their tops and outer ends and adapted to receive the ends of the spring from below, said spring bearing between its ends against said locking member.

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753,683. **NURSING APPLIANCE.** ALBERT S. DIXON, Los Angeles, Cal. Filed Apr. 23, 1901. Serial No. 57,145. (No model.)



*Claim.*—1. A nursing appliance comprising a spring which is more flexible at one end than at the other; a support for the weaker end of the spring, and from which the spring extends upwardly, and means for attaching a bottle to the other end of the spring.

2. A nursing appliance comprising a spring formed of an elongated wire coil of less diameter and less flexible at one end than at the other; and means for fastening a bottle to the smaller and less flexible end at one side of the axis of the coil.

3. A nursing appliance comprising an elongated tapering coil of spring-wire, a post inserted into the larger end of said coil; means for attaching the post to a support; and means for fastening a bottle to the smaller end of the tapering coil.

4. A nursing appliance comprising a hollow post, a screw-stem in said post, a wire loop fastened to the stem, means for drawing the stem through the hollow post to force said post against the wire loop, a spring formed of a wire coil embracing said post and extending upward therefrom, and a nursing-bottle fastened to the free end of said spring to flex the same and to be resiliently supported thereby.

5. A nursing appliance comprising a spring-wire bent to form an elongated tapering spiral and to form an extension beyond said spiral and bent into a loop to receive the neck of a bottle; a nursing-bottle with its neck inserted through said loop; and a removable band passed around said bottle and fastened to said spring.

6. A nursing appliance comprising a spring furnished at its free end with a loop; a nursing-bottle having its neck inserted through the loop; and an elastic band around the body of the nursing-bottle and fastened to the spring.



7. A nursing appliance comprising a spring-wire bent to form an elongated tapering spiral, an eye at the end of the spiral, an extension beyond the eye, and a loop at the end of the extension; a nursing-bottle having its neck inserted through said loop, said loop being of considerably greater diameter than the neck of the bottle; and an elastic band caught in said eye and embracing the body of said bottle.

8. A nursing-bottle holder comprising a spring-wire bent into a tapering coil and bent at the smaller end of said coil into an eye and from thence formed in an extension and finally bent into a loop for holding the neck of a bottle, said loop and the axis of the eye standing at right angles to the axis of the coil.

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753,684. **TRUSS FOR RUPTURES.** BYRON J. DOUDS, Canton, Ohio. Filed Jan. 17, 1903. Serial No. 139,406. (No model.)



*Claim.*—A rupture-pad composed of cellular sponge-rubber, the cells constituting air-spaces, and means for supporting the pad against the body of the wearer.

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753,685. **FOOD COMPOSITION.** EDWARD DREHS, San Antonio, Tex. Filed Aug. 29, 1902. Serial No. 121,540. (No specimens.)

*Claim.*—1. The herein-described composition of matter consisting of flour, Mexican chilli pepper, Mexican cominos, Mexican oregano, garlic, extract of beef, essence of celery and water, all combined substantially in the proportions and in the manner specified.

2. The herein-described composition of matter consisting of flour, Mexican chilli pepper, Mexican cominos, Mexican oregano, garlic, extract of beef, and essence of celery, all combined substantially in the proportions and in the manner specified.

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753,686. **NUT-LOCK.** WASHINGTON L. DURDEN, Peterman, Ala., assignor of one-half to John J. King, Consul, Ala., and Charles F. Hanson, Montgomery, Ala. Filed July 13, 1903. Serial No. 165,962. (No model.)

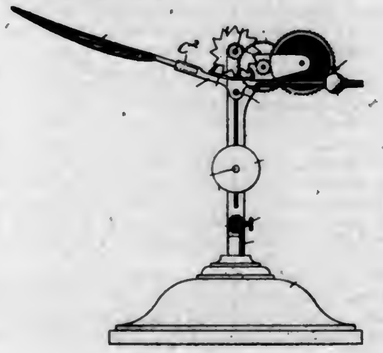


*Claim.*—1. A nut-locking device comprising a U-shaped plate the lower portion of which constituting a base and the upper portion being formed into a series of spring-fingers which extend over the base, and the rests extending from the base in the opposite direction to the fingers.

2. A nut-locking device comprising a U-shaped plate terminating in T-shaped ends one wing of which forms a spring-finger and the other wing a rest, a spring-base, and a series of spring-fingers intervening the wing-fingers and extending over the base.

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753,687. **FAN.** SPENCER D. EARL, Norristown, Pa., assignor of one-half to Frank Herbert, Philadelphia, Pa. Filed July 15, 1903. Serial No. 165,670. (No model.)



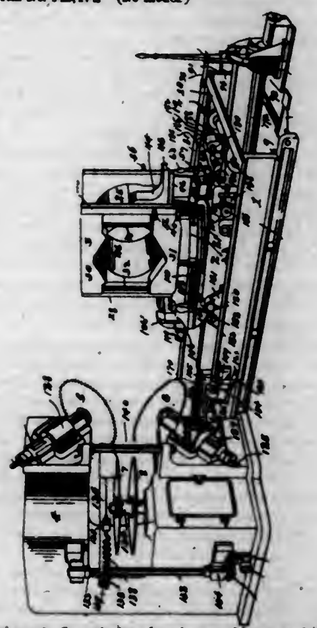
*Claim.*—1. In a fan of the character described, a standard, an oscillating arm pivoted intermediate of its two ends to the standard, a socket provided in one end of the arm, a fan adapted to be held within said socket, an adjustable weight slidably mounted upon the other end of the arm, an adjustable pendulum suspended from the arm beneath the pivotal point, a clockwork-motor, the escapement-wheel of which is arranged directly over the oscillating arm, a pallet secured to the oscillating arm and in engagement with the escapement-wheel, as and for the purpose specified.

2. In a fan of the character described, a base, a removable standard extending upward from said base, said standard being bifurcated, an oscillating arm pivoted near the upper end of the standard between the two prongs of the same, one end of the arm being provided with a socket, a palm-leaf fan, the handle of which is adapted to fit within said socket, an adjustable counterbalancing-weight arranged upon the other end of the arm, a pendulum depending from below the pivotal point of the arm, a clockwork-motor carried by the upper end of the standard, the escapement-wheel of which is arranged above the oscillating arm a pallet secured to the oscillating arm and in engagement with this escapement-wheel, as and for the purpose specified.

3. In a fan of the character described, a standard consisting of two side strips connected together by a cross-bar at their lower ends, a base, a stud extending upward from said base and adapted to protrude through an opening in the cross-bar, a set-screw for securing the standard to the stud, an oscillating arm pivoted intermediate of its two ends between the side strips of the standard, a socket provided in one end of the arm, a palm-leaf fan, the handle of which is adapted to be fitted in said socket, an adjustable counterbalancing-weight slidably mounted upon the other end of the arm, a rod depending from the arm below the pivotal point, a pendulum adjustable upon said rod, a clockwork-motor carried by the standard, the escapement-wheel of which is arranged between the side strips and directly above the oscillating arm, a pallet secured to the upper surface of the oscillating arm and adapted to coact with the escapement-wheel to oscillate said arm, as and for the purpose specified.

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753,688. **MACHINE FOR SAWING MINING-TIMBERS.** DANIEL W. EDWARDS, Chicago, Ill., assignor to Greenlee Brothers & Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 9, 1903. Serial No. 142,474. (No model.)



*Claim.*—1. In a timber-dressing machine, a main frame, a chuck adapted to grip a timber, and mounted to reciprocate upon said frame, automatic mechanism for rotating said chuck upon an axis concentric with the longitudinal axis of the timber gripped thereby and through an angular distance of ninety degrees and during the reciprocatory travel of the chuck, and rotary cutting-tools supported

in the path of the timber carried by the reciprocating chuck and operating upon each passage of the carriage thereby to cut away the end portion of the timber to produce one-half of a tenon having a straight side parallel with the longitudinal axis of the timber, and a contiguous shoulder beveled at an angle of forty-five degrees from the plane of the flat side of the tenon.

2. In a timber-sawing machine, a main frame, a chuck adapted to grip a timber and mounted to reciprocate upon said frame, means for rotating said chuck upon an axis concentric with the longitudinal axis of the timber gripped thereby and through an angular distance of ninety degrees, automatic stop mechanism operating to arrest the rotation of the chuck at a predetermined point, and saws supported upon the frame in the path of the timber carried by the reciprocating chuck, one of said saws being arranged in a plane parallel with the timber, and another saw at an obtuse angle relative to the first saw.

3. In a timber-dressing machine, the combination of a main frame, a chuck adapted to grip a timber intermediate its length, mounted to reciprocate upon said main frame, means for rotating said chuck about an axis concentric with the longitudinal axis of the timber gripped thereby, means for swiveling said chuck upon an axis perpendicular to the first-mentioned axis of rotation, independently-operating automatic stop mechanism for arresting the rotation of the chuck at predetermined points of its rotation about each of said axes, and rotary cutting-tools mounted adjacent to the path of the timber carried by the chuck.

4. In a timber-sawing machine, a main frame, a chuck adapted to grip a timber intermediate its length and mounted to reciprocate upon said frame, means for rotating said chuck upon an axis concentric with the longitudinal axis of the timber gripped thereby, said means operating automatically during the travel of the chuck, automatic cooperating stop mechanism for holding the chuck positively in each of its positions, and circular saws supported upon the frame in the path of the end of the timber carried by the chuck, one of said saws being arranged in a plane parallel and in alinement with the timber, and another saw at an obtuse angle relatively to the first saw, and with the acting portion of its periphery approximately in a line coincident with the acting periphery of the first saw.

5. In a mining-timber-sawing machine, a main frame, a carriage mounted to reciprocate upon said main frame, a chuck mounted upon said carriage upon swivel-bearings whereby it is enabled to rotate about a vertical axis, snap-action locking mechanism for locking said chuck against rotation upon said swivel-bearings in two diametrically opposite positions, and constructed to permit free rotation of the chuck throughout its movement between limits of movement, and saws supported upon the frame in the path of the end of a timber carried by the chuck, one of said saws being arranged in a plane parallel with the longitudinal axis of the chuck and another saw arranged at an obtuse angle relative to the first saw.

6. In a timber-sawing machine, a main frame, a carriage mounted to reciprocate thereon, a chuck adapted to embrace and grip a timber intermediate its length, mounted upon said carriage and having swiveling connection therewith, the gripping devices of said chuck being also constructed to rotate upon an axis extending longitudinally of the chuck, means for locking the gripping devices of said chuck in two angular positions of adjustment, means for automatically actuating said locking devices, and complementary means operating to automatically rotate the gripping devices of the chuck during the reciprocatory travel of said carriage.

7. In a timber-dressing machine, a main frame, a carriage mounted to reciprocate thereon, a chucking device adapted to hold a timber at a point intermediate its length mounted upon said carriage and journaled thereon to rotate upon an axis parallel with the longitudinal axis of the chuck, a gear-segment rigid with the chuck and concentric with the longitudinal axis of rotation of the latter, a rack-bar operatively engaged with said gear-segment, said rack-bar arranged to extend in alinement with the line of travel of the carriage, and stops upon the main frame located in the path of travel of said rack-bar and at the opposite ends thereof, whereby the rack-bar is engaged and shifted relatively to the chuck during the travel of the carriage in each direction.

8. In a timber-dressing machine, a main frame, a carriage mounted to reciprocate thereon, a chucking device adapted to hold a timber at a point intermediate its length mounted upon said carriage and journaled thereon to rotate upon an axis parallel with the longitudinal axis of the chuck, a gear-segment rigid with the chuck and concentric with the longitudinal axis of rotation of the latter, a rack-bar operatively engaged with said gear-segment, said rack-bar arranged to extend in alinement with the line of travel of the carriage, stops upon the main frame located in the path of travel of said rack-bar and at the opposite ends thereof, whereby the rack-bar is engaged and shifted relatively to the chuck during the travel of the carriage in each direction, and automatic latch mechanism operating to lock the chuck at each limit of its rotated movements.

9. In a timber-dressing machine, the combination with the main frame, a carriage mounted to reciprocate thereon, and cutting-tools mounted adjacent to the path of travel of the said carriage, of a timber-chuck mounted upon said carriage and provided with gripping-jaws mounted to oscillate upon an axis extending longitudinally of the chuck, chuck-actuating mechanism mounted upon the carriage and operatively connected with said gripping-jaws, a relatively fixed stop mounted upon the main frame in the path of travel of the carriage and adapted to engage and operate said chuck-actuating mechanism during the travel of the carriage, an automatic latch mechanism operating to lock the chuck-jaws positively against rotation in either direction at their two limits of movement upon their oscillatory axis, and mechanism arranged to automatically unlock said latch mechanism in advance of the rotative movement of the chuck in each direction.

10. In a timber-dressing machine, the combination of a main frame provided with carriage-ways, a main carriage mounted to reciprocate upon said ways, cutting-tools mounted adjacent to the path of travel of the said carriage, transverse ways upon said main carriage, an auxiliary carriage mounted upon said transverse ways, an adjusting-rack arranged transversely upon said auxiliary carriage, an actuating-shaft mounted to extend parallel with the carriage-ways of the main frame, a pinion splined to, and arranged to reciprocate upon said actuating-shaft, confining devices connecting said pinion to move with said auxiliary carriage, and holding it in mesh with said transverse adjusting-rack, means for rotating said actuating-shaft and holding it in various positions of angular adjustment, timber-gripping devices mounted upon said auxiliary carriage and having swiveling connection with the latter, and mechanism for locking said gripping devices in diametrically opposite positions of angular adjustment.

11. In a timber-dressing machine, the combination of a main frame provided with carriage-ways, a main carriage mounted to reciprocate upon said ways, cutting-tools mounted adjacent to the path of travel of the said carriage, transverse ways upon said main carriage, an auxiliary carriage mounted upon said transverse ways, an adjusting-rack arranged transversely upon said auxiliary carriage, an actuating-shaft mounted to extend parallel with the carriage-ways of the main frame, a pinion splined to, and arranged to reciprocate upon, said actuating-shaft, confining devices connecting said pinion to move with said auxiliary carriage, and holding it in mesh with said transverse adjusting-rack, means for rotating said actuating-shaft and holding it in various positions of angular adjustment, a turret-standard upon said auxiliary carriage, a chuck rotatably mounted upon said turret-standard, gripping-jaws forming parts of said chuck, mounted to oscillate about an axis extending longitudinally of the chuck, a gear-segment rigid with said jaws and arranged concentric with said longitudinal axis, a rack-bar mounted to reciprocate upon the chuck-frame and operatively engaged with said gear-segment, said rack-bar being arranged to extend parallel with the path of travel of the main carriage, an automatic latch mechanism normally holding said gear-segment locked against rotation, an unlatching mechanism mounted upon, and moving with said carriage, a cam mounted in the path of travel of the carriage and adapted to actuate said unlatching mechanism as the carriage approaches its limit of movement in one direction, and means arranged to engage the end of said rack-bar to shift the latter relatively to the gear-segment following the operation of the unlatching mechanism and during the advance movement of the carriage.

12. In a machine of the character described, the combination with the main frame and carriage mounted to travel thereon, of a chuck mounted upon the carriage, a gear-segment operatively connected with the gripping-jaws of the chuck and mounted to oscillate upon an axis extending longitudinally of the chuck, a rack-bar mounted to reciprocate on the chuck-frame and arranged parallel with the carriage-ways, a sliding buffer mounted to reciprocate upon ways on the carriage parallel with said rack-bar, means normally holding said buffer at the limit of its movement remote from the rack-bar, a latch mechanism arranged to normally hold said gear-segment locked against rotation, operative connections between said buffer and said latch mechanism, and a stop upon the main frame arranged in the path of the buffer.

13. In a machine of the character described, the combination with a reciprocating carriage, of a chuck journaled to rotate upon a vertical axis upon said carriage, gripping-jaws forming a part of said chuck mounted to rotate upon an axis perpendicular to said vertical axis, a gear-segment connected with said gripping-jaws, and rotatable with the gripping-jaws, a rack-bar mounted upon the chuck-frame, operatively engaging said gear-segment and arranged to project beyond the chuck-frame and parallel with the ways upon which the carriage travels, ways upon said carriage arranged parallel with the rack-bar, a buffer mounted to reciprocate upon said latter ways, a weight arranged to normally hold said buffer at its limit of movement remote from the carriage, a stop arranged in the path of movement of said buffer and adapted to positively arrest the latter and thereby cause the buffer to engage and arrest the advance movement of the rack, and locking mechanism for holding said chuck against rotation about its vertical axis in two diametrically opposite positions.



14. In a machine of the character described, the combination with a reciprocating carriage, of a chuck journaled to rotate upon a vertical axis upon said carriage, gripping-jaws forming a part of said chuck mounted to rotate upon an axis perpendicular to said vertical axis, a gear-segment connected with said gripping-jaws, and rotatable with the gripping-jaws, a rack-bar mounted upon the chuck-frame, operatively engaging said gear-segment and arranged to project beyond the chuck-frame and parallel with the ways upon which the carriage travels, ways upon said carriage arranged parallel with the rack-bar, a buffer mounted to reciprocate upon said latter ways, a weight arranged to normally hold said buffer at its limit of movement remote from the carriage, a stop arranged in the path of movement of said buffer and adapted to positively arrest the latter and thereby cause the buffer to engage and arrest the advance movement of the rack, and locking mechanism for holding said chuck against rotation about its vertical axis in two diametrically opposite positions, the opposite ends of said rack-bar being similar and the shift of the rack-bar in either direction symmetrical relatively to the vertical axis of rotation of the chuck, whereby when the rack-bar has been forced back by said buffer and the chuck thereafter rotated a half-revolution, the opposite end of the rack-bar is brought into operative relation to the buffer for a repeat movement.

15. In a timber-dressing machine, the combination with a traveling carriage, of a chuck movably mounted upon said carriage and comprising a cylindric yoke-frame, a cylindric chuck-shell mounted within said yoke and provided externally with a gear-segment, a rack-bar mounted to reciprocate in said chuck-frame and operatively engaging said gear-segment, means cooperating with said rack-bar to shift the latter relatively to the chuck as the carriage reciprocates, and gripping-jaws mounted upon said rotatable shell.

16. In a timber-dressing machine, the combination with a traveling carriage, of a chuck movably mounted upon said carriage and comprising a cylindric yoke-frame, a cylindric chuck-shell mounted within said yoke and provided externally with a gear-segment, a rack-bar mounted to reciprocate in said chuck-frame and operatively engaging said gear-segment, means for automatically locking and unlocking the rack-bar, and means cooperating with said rack-bar to shift the latter relatively to the chuck as the carriage reciprocates, and a pair of gripping-jaws mounted in diametrically opposite relation to each other upon the end of said cylindric shell, and means for simultaneously and equally approaching and retracting said jaws.

17. In combination, a chuck-body rotatable about an axis extending longitudinally and centrally between the jaws thereof, mechanism for locking the chuck-body in various positions of adjustment, and two pairs of oppositely-disposed gripping-jaws mounted at longitudinally-separate points on the chuck to reciprocate toward and from each other at right angles to the said longitudinal axis of the chuck, and means for simultaneously approaching and retracting said jaws comprising screw-bolts each provided with two portions of right and left and similar pitch arranged to operate said jaws and interlocking gearing.

18. In combination, a chuck-body rotatable about an axis extending longitudinally and centrally between the jaws thereof, mechanism for locking the chuck-body in various positions of adjustment, two pairs of oppositely-disposed V-shaped gripping-jaws mounted upon each end of said chuck-body in diametrically opposite relation and arranged to reciprocate in planes at right angles to the longitudinal axis of the chuck-body, and means for simultaneously and equally approaching and retracting said jaws, comprising screw-bolts having threaded portions of right and left pitch, each arranged to engage both members of a pair of jaws and arranged in parallel relation to each other, miter gears upon said screw-bolts, a cross-shaft provided with corresponding miter-gears engaging those of the screw-bolts, and means for rotating the cross-shaft.

19. In a timber-dressing machine, the combination of a main frame, a chuck-carriage mounted to reciprocate thereon, cutting-tools mounted adjacent to the path of travel of said carriage, and means for automatically reciprocating the latter comprising a rack mounted upon the carriage-frame and arranged to extend parallel with the path of travel of the latter, a drive-shaft provided with a pinion engaging said rack, a friction-gear upon said drive-shaft, oppositely-driven friction-pinions mounted in an oscillatory yoke-frame adjacent to the periphery of the pinion of the drive-shaft and adapted to be alternately brought into driving engagement with the latter, a cam-arm connected with said oscillatory yoke-frame, a shifting bar mounted to reciprocate longitudinally of the main frame, and operatively connected with said cam-arm, and a part upon the carriage adapted to engage and actuate said shifting bar as the carriage approaches its limits of movement in each direction, whereby the driving connections are reversed.

20. In a timber-dressing machine, the combination of a main frame, a chuck-carriage mounted to reciprocate thereon, cutting-tools mounted adjacent to the path of travel of said carriage, and means for automatically reciprocating the latter comprising a rack mounted upon the carriage-frame and arranged to extend parallel with the path of travel of the latter, a drive-shaft provided with a pinion engaging said rack, a friction-gear upon said drive-shaft, oppositely-driven friction-pinions mounted in an oscillatory yoke-frame adjacent to the periphery of the pinion of the drive-shaft and adapted to be alternately brought into driving engagement with the latter, a cam-arm connected with said oscillatory yoke-frame, a shifting bar mounted to reciprocate longitudinally of the main frame, and operatively connected with said cam-arm, and a spring acting upon said reversing mechanism to shift the latter to an intermediate position and to carry the driving-gears out of driving engagement when the spring is unrestrained.

21. In a timber-dressing machine, the combination of a main frame, a chuck-carriage mounted to reciprocate thereon, cutting-tools mounted adjacent to the path of travel of said carriage, and means for automatically reciprocating the latter comprising a rack mounted upon the carriage-frame and arranged to extend parallel with the path of travel of the latter, a drive-shaft provided with a pinion engaging said rack, a friction-gear upon said drive-shaft, oppositely-driven friction-pinions mounted in an oscillatory yoke-frame adjacent to the periphery of the pinion of the drive-shaft and adapted to be alternately brought into driving engagement with the latter, a cam-arm connected with said oscillatory yoke-frame, a shifting bar mounted to reciprocate longitudinally of the main frame, and operatively connected with said cam-arm, a spring acting upon said shift-bar and tending to shift the latter to an intermediate position, and a manually-operable lever mechanism for moving the shifting bar against the action of the spring.

22. In a timber-sawing machine, the combination with a circular saw, and mechanism for carrying material to be severed by said saw, of means for holding the severed portion against the throwing action of the saw, comprising a rock-shaft, an arm operatively connected with said rock-shaft, and timing mechanism whereby the rock-shaft is oscillated to cause the arm to follow the piece of material about to be severed, and apparatus to eject the latter in a direction opposite that in which the saw tends to throw the severed portion.

23. In a timber-sawing machine, the combination with a circular saw, and mechanism for carrying material to be severed by said saw, of means for holding the severed portion against the throwing action of the saw, comprising a rock-shaft mounted to extend perpendicular to the plane of the saw; an ejector-arm mounted upon said rock-shaft comprising two flexible united members, a spring tending to force said members toward a position in alinement with each other, timing mechanism actuating said rock-shaft, and a guide acting upon the outer member of the two members of the ejector-arm, whereby said outer member is first projected longitudinally, and thereafter moved positively in an arc concentric with the rock-shaft, as and for the purpose set forth.

24. In a timber-sawing machine, the combination with a main frame, a carriage mounted to reciprocate thereon, and a gang of saws mounted adjacent to the path of said carriage and operating to sever a block from the piece of material carried by the carriage, one of said saws being arranged in horizontal plane, and a cooperating saw being arranged in a plane intersecting the plane of the horizontal saw, of a block-snatcher mechanism comprising a vertically-disposed rock-shaft, an ejector-arm member rigidly mounted upon said rock-shaft, a second ejector-arm member pivotally connected with the first and arranged to extend at an angle to the latter, a spring tending to flex said ejector-arm members toward a position in line with each other, a stop operating to limit the flexure of said arms under

the tension of the spring, a stationary guide operating to direct the movement of the outer ejector-arm member during a part of its operation, and timing mechanism controlled by the travel of the carriage for actuating said block-snatcher mechanism, substantially as described.

25. In a timber-sawing machine, the combination with a main frame, a carriage mounted to reciprocate thereon, and a gang of saws mounted adjacent to the path of said carriage and operating to sever a block from the piece of material carried by the carriage, one of said saws being arranged in horizontal plane, and a cooperating saw being arranged in a plane intersecting the plane of the horizontal saw, of a block-snatcher mechanism comprising a vertically-disposed rock-shaft, an ejector-arm member rigidly mounted upon said rock-shaft, a second ejector-arm member pivotally connected with the first and arranged to extend at an angle to the latter, a spring tending to flex said ejector-arm members toward a position in line with each other, a stop operating to limit the flexure of said arms under the tension of the spring, a stationary guide operating to direct the movement of the outer ejector-arm member during a part of its operation, and timing mechanism controlled by the travel of the carriage for actuating said block-snatcher mechanism, comprising a trip-rod mounted to reciprocate in ways parallel with the path of movement of the carriage, operative connections between said ejector-arm rock-shaft and said trip-rod, a weight operatively connected with said rock-shaft and tending to normally rotate the latter in the direction of ejectment, substantially as described.

26. In a machine of the character described, the combination with a main frame, a carriage mounted to reciprocate thereon, a gang of saws mounted adjacent to the path of said carriage and operating to sever a block from the piece of material carried by the carriage, of a block-snatcher mechanism and means for operating said latter mechanism, comprising a weighted rock-shaft, a trip-shaft operatively connected to actuate said rock-shaft and mounted to reciprocate in ways parallel with the path of movement of the carriage, a latch-arm connected with said tripping-shaft, a pick-up latch adapted to automatically engage with said latch-arm and retract the trip-rod during the travel of the carriage in one direction, a spring-actuated detent normally projected into the path of the said latch-arm and operating to engage the latter automatically when the latch-arm is brought into register therewith, a part upon said pick-up latch adapted to be engaged by said detent, and whereby the pick-up latch is disengaged as the detent passes into latched engagement with the arm, and means for automatically tripping said detent during the travel of the carriage in a reverse direction.

27. In a mechanism of the character described, the combination with a main frame, a carriage mounted to reciprocate thereon, a gang of saws mounted adjacent to the path of said carriage and operating to sever a block from the piece of material carried by the carriage, of a block-snatcher mechanism, and means for operating said latter mechanism, comprising a weighted rock-shaft, a trip-shaft operatively connected to actuate said rock-shaft and mounted to reciprocate in ways parallel with the path of movement of the carriage, a latch-arm connected with said tripping-shaft, a pick-up latch adapted to automatically engage with said latch-arm and retract the trip-rod during the travel of the carriage in one direction, a spring-actuated detent normally projected into the path of the said latch-arm and operating to engage the latter automatically when the latch-arm is brought into register therewith, a part upon said pick-up latch adapted to be engaged by said detent, and whereby the pick-up latch is disengaged as the detent passes into latched engagement with the arm, and means for automatically tripping said detent, comprising a pivoted cam-lever mounted upon the carriage and means for holding said lever rigid with the carriage or permitting it to oscillate idly, as and for the purpose set forth.

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**753,689. SPEED-WAGON.** JOHN P. FABER, Rochester, N. Y., assignor, by mesne assignments, to the Faber Sulky Co., Rochester, N. Y., a Corporation of New York. Filed Nov. 25, 1903. Serial No. 182,664. (No model.)



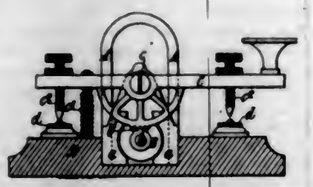
*Claim.*—1. In a speed-wagon, the combination of a recessed body, a support for one end thereof, a fifth-wheel, the stationary member of said fifth-wheel being secured to said body, and the movable member of said fifth-wheel being secured to said support, and antirattling devices located in the recesses of said body between parts of the members of said fifth-wheel, substantially as described.

2. In a speed-wagon, the combination with a recessed body, of a perforated member of the fifth-wheel attached to said body, a movable member of the fifth-wheel, a central pivot, and an antirattling-cushion located in the recess in said body, and having a metallic facing in the perforations in the stationary member of the fifth-wheel and bearing against the movable member, substantially as described.

3. In a speed-wagon, the combination of a recessed body, a support for one end of said body, a fifth-wheel, the stationary member of said fifth-wheel being secured to said body, and the movable member of said fifth-wheel being secured to said support, said stationary member being also provided with slots and a central downwardly-projecting hollow portion, a king-bolt in said hollow portion and passing through the movable member of the fifth-wheel, and antirattling devices, said antirattling devices consisting of resilient cushions and metallic facings located in the recesses of said body and passing through the slots in said movable member of the fifth-wheel, substantially as described.

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**753,690. ELECTRIC-TELEGRAPH APPARATUS.** ADAMO FALCONI, Florence, Italy. Filed May 6, 1903. Serial No. 155,902. (No model.)

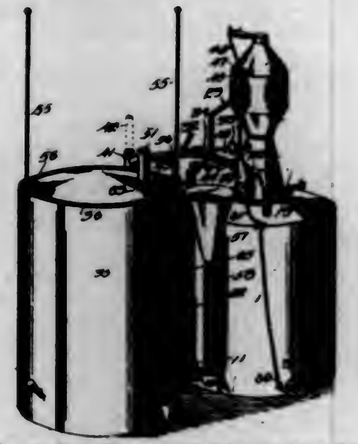


*Claim.*—1. In electric-telegraph transmitting apparatus, the combination with a permanent magnet and an armature located between the poles of said magnet, of a Morse transmitting-key connected with said armature, and means whereby the rocking of said key about its pivot directly imparts to the armature an angular movement in opposite directions, substantially as described.

2. In electric-telegraph transmitting apparatus, the combination with a permanent magnet and an armature located between the poles of said magnet, of a toothed member on the armature, a Morse transmitting-key, and a toothed arc thereon gearing with said toothed member of the armature, substantially as and for the purpose described.

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**753,691. ACETYLENE-GAS GENERATOR.** JOHN H. FLESHEAD and PETER M. FLESHEAD, Corvallis, Mont. Filed July 9, 1903. Serial No. 164,348. (No model.)



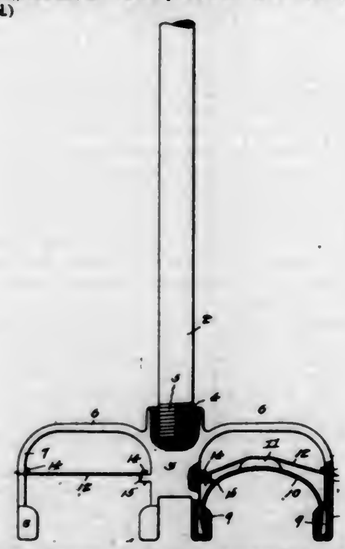
*Claim.*—1. In acetylene-gas-generating apparatus, the combination of a generator vessel, a carbid vessel, a carbid-feed valve, a partly-revoluble rod to operate the carbid-feed valve, said rod having a detent segment-arm 33 and an operating-arm, a gasometer having a gas connection with the generating vessel and a movable element having means to engage and actuate the operating-arm, and a partly-revoluble, manually-operated element having a segment-arm 46, to coact with the segment-arm 33 to lock the carbid-feed-valve-operating rod in position to close the valve and maintain the operating-arm out of operative relation to the actuating means of the movable element of the gasometer.

2. In acetylene-gas-generating apparatus, the combination of a generator vessel, a carbid vessel having a supply-port and a closure therefor, a carbid-feed valve, a rod to operate it, said rod having a detent element and an automatically-operating element, a gasometer having a gas connection with the generating vessel and a movable element having an automatically-operating element to coact with that of the carbid-feed-valve-operating rod, and manually-operated means to lock the said rod in position to close the carbid-feed valve and disengage the automatically-operating element of the said rod from that of the gasometer, said manually-operated means, having a lock element operated thereby, effective, when the carbid-feed-valve-operating rod is released, to lock the closure of the carbid-vessel-supply port.

3. In acetylene-gas-generating apparatus, the combination of a generator vessel, a vent-valve, water-supply funnel therefor, and a sludge-valve therefor, means to lock the sludge-valve, a carbid-feed element, a rod to operate said carbid-feed element, said rod having an automatically-operating element, a gasometer having a gas connection with the generating vessel and further provided with a movable element having an automatically-operating element to coact with that of the carbid-feed-element-operating rod, and manually-operating means effective when in one position to lock said rod in position to suspend action of said carbid-feed element, to disengage the automatically-operating element of said rod from that of the movable element of the gasometer, open the vent-valve and release the sludge-valve lock, and effective when in another position to release the carbid-feed-element-operating rod, engage the automatically-operating element thereof with that of the movable element of the gasometer, close the vent-valve, lock the sludge-valve, and feed the water-supply funnel.

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**753,692. TORPEDO-FORK.** EDWARD H. FRANK and HENRY H. STORER, Centralia, Ill. Filed Sept. 21, 1903. Serial No. 174,008. (No model.)



*Claim.*—1. A torpedo-fork having a jaw provided with sockets or seats adapted to receive and removably hold the ends of a torpedo-spring extended, and an elastic band extending across the jaw a suitable distance above the seats with its ends fixed to the opposite sides of said jaw and adapted to bear directly upon the upper surface of the torpedo throughout its lateral extent and exert yielding pressure downwardly upon the torpedo as it is being applied to the rail, substantially as described.

2. A torpedo-fork having a jaw consisting of an arm extending laterally from the body of the fork and having a downwardly-bent portion provided with a socket or seat at its lower end and a socket or seat in the body, said sockets or seats being adapted to hold the ends of a torpedo-spring extended, and an elastic band across the jaw intermediate said seats and the lateral arm with its ends fixed to the opposite sides of the jaw and adapted to directly bear upon the upper surface of the torpedo throughout its lateral extent and hold the torpedo and to exert downward pressure thereon when released, substantially as described.

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**753,693. PAD-HOLDER.** LEROY W. FRENCH and CHARLES R. DECKER, Holton, Kans. Filed June 16, 1903. Serial No. 161,744. (No model.)



*Claim.*—1. In a pad-holder of the class described, the combination with a pad-support, of a combined rest and leaf-holder associated with the support.

2. In a pad-holder of the class described, the combination with a pad-support, of a rest having a portion movable with respect to the support and arranged to bear upon a pad placed thereon.

3. In a pad-holder of the class described, the combination with a base, of pad-supporting means mounted thereon, and a rest hinged to the base and constructed to bear upon a pad placed on the supporting means.

4. In a pad-holder of the class described, the combination with a base, of pad-supporting means mounted on one end thereof, and a rest hinged to the opposite end of the base and having its free end constructed to bear upon a pad placed on the support.

5. In a pad-holder of the class described, the combination with a base, of pad-supporting means located at one end of the base and including upstanding retaining-fingers, a platform hinged to the opposite end of the base and having a hand-rest at its free end that is adapted to rest upon a pad placed within the fingers.

6. In a pad-holder of the class described, the combination with a hand-rest, of a pad-support movable toward and from the hand-rest.

7. In a pad-holder of the class described, the combination with a movable hand-rest, of a pad-support movable toward and from the hand-rest.

8. In a pad-holder of the class described, the combination with a base, of a swinging rest hinged to the base, and a pad-support slidably mounted on the base.

9. In a pad-holder of the class described, the combination with a base, of a pad-holder slidably mounted upon the base, and a rest movably mounted upon the base and arranged to bear upon a pad placed in the holder when said holder is in a predetermined position.

10. In a pad-holder of the class described, the combination with a base, of a rest hinged to the base, and a pad-support movably mounted on the base and movable into and out of the path of movement of the rest.

11. In a pad-holder of the class described, the combination with a base-plate, of a pad-holder slidably mounted upon one end of the base-plate and movable longitudinally thereof, and a swinging rest

hinged to the other end of the base and having its free end adapted to rest upon a pad placed on the support.

12. In a pad-holder of the class described, the combination with a base, of a pad-holder slidable longitudinally of the base, and means for moving the holder.

13. In a pad-holder of the class described, the combination with a base, of a pad-holder slidable upon the base, and a rock-shaft having offset arms that engage the holder to move the same.

14. In a pad-holder of the class described, the combination with a base, of a pad-holder slidable upon the base, and a rock-shaft having offset arms that engage the holder to move the same, one of said arms being extended to form an actuating-lever.

15. In a pad-holder of the class described, the combination with pad-supporting means, of upstanding retaining-fingers mounted thereon, certain of the fingers being depressible, and a hand-rest arranged over the depressible fingers.

16. In a pad-holder of the class described, the combination with pad-supporting means, of upstanding retaining-fingers mounted thereon, certain of said fingers being yieldable and depressible, and a swinging hand-rest arranged over said depressible fingers and being movable therewith.

17. In a pad-holder of the class described, the combination with a base-plate having a base-block at one end, of a pad-holder slidably mounted upon the block, a rock-shaft for actuating the holder, a platform hinged to the other end of the base-plate and having a hand-rest plate at its free end that is adapted to rest upon a pad placed in the holder.

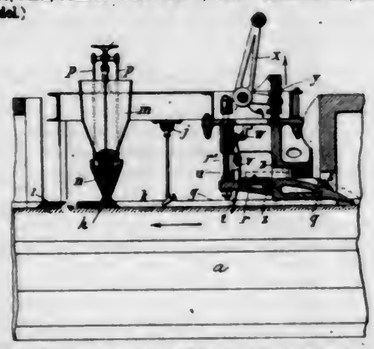
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**753,694. MANUFACTURE OF GLASS STONE.** LOUIS A. GARCHEY, Paris, France. Filed June 25, 1901. Serial No. 66,006. (No specimens.)

*Claim.*—A process of manufacturing glass stone consisting in running fluid devitrifiable glass into a cold mold and allowing it to set, then inverting the molded mass into a mass of refractory material, passing the two masses through a suitable temperature to devitrify the mass of devitrifiable material while inverted, and then molding the devitrified mass to the required form.

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**753,695. MANUFACTURE OF GLASS STONE.** LOUIS A. GARCHEY, Paris, France. Filed Dec. 3, 1902. Serial No. 134,433. (No model.)



*Claim.*—1. In an apparatus of the class described, a furnace including a circular movable bed having annular grooves for the reception of glass, a hopper for distributing the glass in said grooves, spraying means for scattering into the grooves a liquid containing insulating material, and means for cutting the glass strips formed by the grooves into suitable blocks

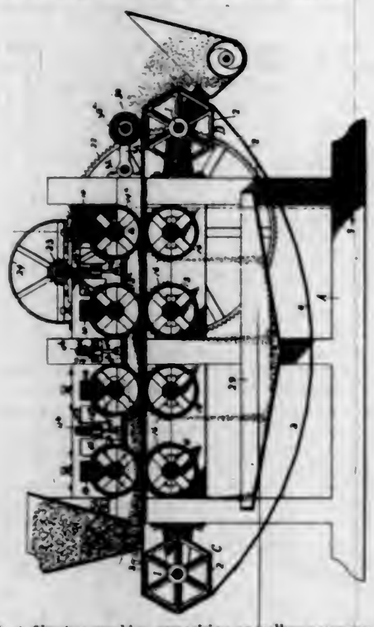
2. In an apparatus of the class described, a furnace having a circular movable bed provided with annular grooves to receive broken glass, a hopper for containing the glass, a nozzle for receiving the glass from the hopper and delivering same to said grooves, and means for adjusting the nozzle with respect to the hopper.

3. In an apparatus of the class described, a furnace including a circular movable bed having annular grooves, means for delivering broken glass into said grooves, means for cutting the glass into blocks, and means for removing the blocks.

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**753,696. FILTERING APPARATUS.** CHARLES R. GEIGER, Louisville, Ky., assignor to himself, W. B. Koop, and G. W. Fiske, partners doing business as Geiger, Koop & Fiske, and John R. Turney, Louisville, Ky. Filed June 20, 1903. Serial No. 162,315. (No model.)

*Claim.*—1. A filtering-machine comprising an endless conveyer made up of rigid plates hinged together and perforated and covered with a filtering-surface element; carriers for such endless conveyer; a frame in which such carriers are mounted comprising cheeks between which the upper ply of the conveyer travels from carrier to carrier, such cheeks being formed with ledges preventing the sagging of the conveyer between carriers, and wringing-rolls in pairs, one above and one below the upper ply of the conveyer, such upper ply and the cheeks between which it moves constituting a trough in which the upper rollers of the several pairs operate.



2. A filtering-machine comprising an endless conveyer made up of rigid perforated plates hinged together and covered with a filtering-surface element; carriers by which such conveyer is sustained; a frame in which such carriers are mounted, comprising cheeks between which the upper ply of the conveyer travels; wringing-rolls in pairs, one of each pair being below and one above the upper ply of the conveyer, the upper rolls having vertical movable journal-boxes mounted in the cheeks; means for positively actuating both rolls of the several pairs and for pressing the upper rolls of one or more of said pairs yieldingly toward the conveyer, to cause the upper ply thereof to be grasped between the two rolls of such pair or pairs, the rolls of such pair or pairs constituting the means for actuating the conveyer in its endless path of travel between the cheeks and between the rolls.

3. A filtering-machine comprising an endless conveyer having a filtering-surface; polygonal carriers for such conveyer; a rotating brush extending transversely with respect to the direction of travel of the conveyer parallel with the axis of the polygonal carrier at the delivery side; arms having bearings for said brush pivoted at a line parallel therewith to adapt the brush to swing toward and from the axis of the polygonal carrier, and means for rotating the brush to clear the conveyer.

4. A filtering-machine comprising an endless conveyer, said conveyer consisting of rigid filtering elements hinged together; polygonal carriers for such conveyer; means for driving the conveyer thereby rotating the carriers; a brush extending across the conveyer above the polygonal carrier at the delivery side; arms in which the shaft of said brush is journaled; a counter-shaft parallel therewith at a distance back therefrom, on which said arms are fulcrumed, whereby the brush is free to oscillate toward and from the axis of the carrier; intermeshing gears on said counter-shaft and brush-shaft, and means for driving the counter-shaft to rotate the brush in a direction to clear the residual material from the conveyer.

5. A filtering-machine comprising an endless filtering-conveyer; polygonal carriers for the same; means for actuating the conveyer and rotating the carriers; a clearing-brush extending across the conveyer at the delivery side; bearings for the brush-shaft movable toward and from the axis of the polygonal carrier at the delivery side; means by which said bearings tend yieldingly to approach said axis, and a polygonal track on the carrier corresponding, side for side, with said polygonal carrier; the journal-bearings of the brush-shaft being stepped on said polygonal track to limit the approach of the brush to the carrier.

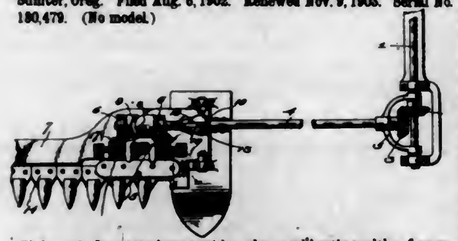
6. A filtering-machine comprising an endless conveyer made up of rigid perforated plates hinged together and provided with a filtering-surface; carriers for such conveyer; cheeks between which the upper ply of the conveyer travels, such cheeks being grooved to admit the edges of such upper ply, whereby said ply and the cheeks together constitute a substantially tight trough along the course of said upper ply from carrier to carrier; wringing-rolls in pairs, one below said upper ply and the other in the trough above said ply, the latter rolls being as to length fitted snugly between the cheeks, whereby they obstruct positively the passage through such trough and confine the material on the conveyer to passage between the rolls.

7. A filtering-machine comprising an endless conveyer; wringing-rolls between which such conveyer travels, said conveyer consisting of rigid filtering elements hinged together, the hinged connection between them being made by means of loops whose ends are lodged in rabbets in the surface of the rigid plates at their proximate edges, such loops alternating on the two elements on each hinge, and occupying each the interval between consecutive loops on the other element, and a pintle-rod extended through all the loops.



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**753,697. MOWING-MACHINE.** JOHN T. GILLASPY, Union, Oreg., assignor of one-third to Charles William Michael and William Sullivan, Sumter, Oreg. Filed Aug. 6, 1902. Renewed Nov. 9, 1903. Serial No. 180,479. (No model.)

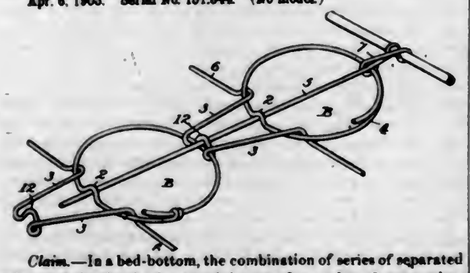


*Claim.*—1. In a mowing-machine, the combination with a finger-bar, of a reciprocating sickle-bar having a pin or lug, a shaft composed of two sections connected by a universal joint, a roller fixed to one end of said shaft and provided with a cam-groove adapted to receive the pin or lug on said sickle-bar, a main drive-shaft disposed at right angles to said flexible shaft, a bearing yoke or bracket hinged directly upon said main drive-shaft and supporting said jointed shaft at its opposite end, and gearing for imparting motion from said drive-shaft to said jointed shaft, substantially as described.

2. The combination with a supporting-shoe, of a finger-bar hinged thereto, a two-part shaft, one part of which is carried by said finger-bar, a universal joint connecting the parts of said shaft above the hinge connection of said finger-bar to permit the latter to swing up in the plane of the hinge connection of the finger-bar with the shoe, a reciprocating sickle-bar, means for transmitting motion from said two-part shaft to said sickle-bar, and a main drive-shaft geared to said two-part shaft to rotate the same, substantially as described.

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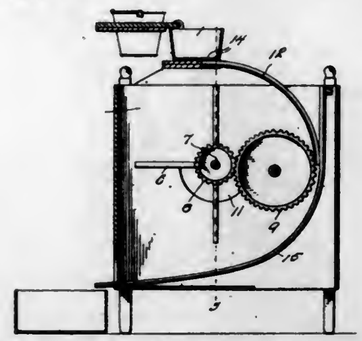
**753,698. SPRING-BED.** ISAAC H. HAAS, Atlanta, Ga. Filed Apr. 6, 1903. Serial No. 151,344. (No model.)



*Claim.*—In a bed-bottom, the combination of series of separated springs terminating in rings, each bent to form a loop 2, cross-wires 6 having loops 3, each engaging one of the rings, extending across the space between said ring and the adjacent ring, and lapped round the latter to form a loop 12 projecting upward above the ring, and cross-wires 5 extending through the loops 2 and 12 of the rings in line with each other, substantially as set forth.

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**753,699. MILK-COOLER.** JOSEPH HADALLER and MARIA HADALLER, Effingham, Ill. Filed May 12, 1903. Serial No. 156,733. (No model.)



*Claim.*—1. A milk-cooler comprising a fan, a trough partly encircling the fan and disposed to carry milk exposed to air-currents from the fan, a second trough disposed above the fan and arranged to discharge into the first-mentioned trough, and a hopper having discharge-openings leading to the second trough.

2. A milk-cooler comprising a casing, a rotary fan mounted in the casing and adapted to discharge air at its periphery, an arc-shaped trough, disposed within the casing, extending from its top and passing around beneath the fan, a second arc-shaped trough, inverted in respect to the first-named trough, disposed within the casing, extending from a point below the top of the first-named trough, and spaced therewith, and passing around above the fan, and a hopper supported above the second arc-shaped trough.

3. A milk-cooler comprising a casing, a rotary fan mounted in the casing and adapted to discharge air at its periphery, an arc-shaped trough in the casing passing around beneath the fan, a second arc-shaped trough passing around above the fan and disposed to discharge to the first-named trough, and a hopper disposed to discharge into the second trough, the first trough being arranged to receive air-currents against its contents and the second trough being arranged to receive air-currents against its under side.

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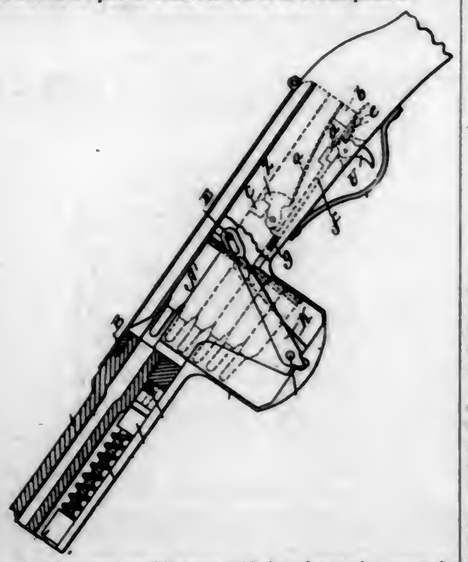
**753,700. AUTOMATIC FIREARM.** CLIFFORD R. S. J. HALLÉ, London, England, assignor to the Hallé Automatic Fire Arms Syndicate, Limited, London, England, a Corporation. Filed Jan. 21, 1902. Serial No. 90,721. (No model.)

*Claim.*—1. A firearm comprising a frame provided with a block having a recess, with one wall of said recess of greater height than the other, a lever having an angular projection adapted to engage and have its movement effected by the walls of said recess, a movable barrel extension having a depending projection pivoted to the lower end of said lever, a breech-bolt arranged in the extension and suitably connected to the upper end of said lever, said lever adapted to effect the movement of said bolt, and means for returning the barrel extension to its normal position.

2. A firearm comprising a frame provided with a block having a recess, with one wall of said recess of greater height than the other, a lever having an angular projection adapted to engage and have its movement effected by the walls of said recess, a movable barrel extension having a depending projection pivoted to the lower end of said lever, a breech-bolt arranged in the extension and suitably connected to the upper end of said lever, said lever adapted to effect the movement of said bolt, means for returning the barrel extension to its normal position, and means for retaining said bolt in its normal position.

3. A firearm comprising a movable barrel, a barrel extension connected thereto and movable therewith, means for returning said barrel and extension to their normal positions, a breech-bolt adapted to be moved by the recoil of the barrel, a lever pivoted at its lower end to the barrel extension and at its upper end connected with the bolt for effecting the backward or recoil movement of the bolt, means engaging the lower end of said lever for suitably actu-

ating it, and a pair of locking-blocks pivoted to the frame of the firearm and adapted to retain the bolt in its normal position.



4. A firearm comprising a movable barrel extension, means for returning said extension to its normal position and adapted to be moved by the recoil thereof, means arranged at one side of the extension, connected thereto and to said bolt and adapted to effect the backward or recoil movement of the bolt, and a pair of locking-blocks pivoted to the frame of the firearm for retaining the bolt in its normal position.

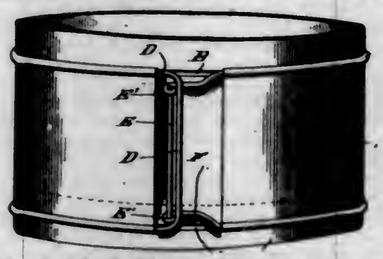
5. A firearm comprising a frame provided with a block having a recess, with one wall of said recess of greater height than the other, a movable barrel extension having a depending projection, a lever having an angular projection adapted to engage and have its movement effected by the walls of said recess, said lever pivoted at its lower end to the said depending projection of the barrel extension, a breech-bolt arranged in the extension and suitably connected to the upper end of said lever, said lever adapted to effect the movement of said bolt, and a spring for returning the barrel extension to its normal position.

6. A firearm comprising a frame provided with a block having a recess, with one wall of said recess of greater height than the other, a movable barrel extension having a depending projection, a lever having an angular projection adapted to engage and have its movement effected by the walls of said recess, said lever pivoted at its lower end to the said depending projection of the barrel extension, a breech-bolt arranged in the extension and suitably connected to the upper end of said lever, said lever adapted to effect the movement of said bolt, a spring for returning the barrel extension to its normal position, and a pair of locking-blocks pivoted to the frame of the firearm and adapted to lock the bolt in its normal position.

7. A firearm comprising a movable barrel extension, a breech-bolt arranged in the extension and adapted to be moved by the recoil thereof, a lever provided with an angular projection and pivoted to the barrel extension and having its upper end provided with a slot, a pin carried by the bolt and extending through the slot of the lever for connecting the bolt to the lever, said lever adapted to effect the movement of said bolt, means carried by the frame of the firearm and adapted to be engaged by the angular projection of the lever for actuating the latter, and a pair of locking-blocks pivoted to the frame of the firearm and adapted to lock the bolt in its normal position.

8. A firearm comprising a movable barrel extension provided with a depending projection, a movable lever having an angular projection and pivoted near its lower end to the lower end of said depending projection, means carried by the frame of the firearm and adapted to be engaged by the angular projection of the lever for effecting the movement thereof, a bolt mounted in said extension and connected with said lever, said lever adapted to effect the backward or recoil movement of said bolt, and a pair of locking-blocks pivoted to the frame of the firearm and adapted to retain said bolt in its normal position.

**753,701. STOVEPIPE-FASTENER. EVERETT HAFNER, Interlochen, Mich. Filed Dec. 16, 1903. Serial No. 185,431. (No model.)**




*Claim.*—1. A fastening for stovepipes comprising in combination with the meeting ends of the pipe-sections, a band having a wire secured to the longitudinal edges of the band, said wire being bent to form a bail projecting from one end of the band, the ends of the wire projecting from the opposite end of the band and bent to form bail-engaging portions, as set forth.

2. A fastening for stovepipes comprising a band having its opposite longitudinal edges turned into rolls, a wire passing through said rolls, said wire being bent to form a bail projecting from one end of the band, the ends of the wire projecting from the opposite end of the band and turned into eyes, a rod connecting said eyes, and over which said bail is adapted to be guided as set forth.

3. A stovepipe-fastener comprising a band having rolls formed in its longitudinal edges, a wire passing through said rolls and bent to form a bail projecting beyond one end of the band, the ends of said wire projecting over the other end of the band and turned to form eyes, a rod fixed in said eyes, the portions of the wire intermediate said eyes and the end of the band beyond which the ends project being bent at angles adapted to bear against the outer circumference of a pipe-section to hold the ends locked together, as set forth.

**753,702. WOVEN FABRIC. CHARLES H. L. HAMMOND, Philadelphia, Pa., assignor to John H. Bromley and Edward Bromley, copartners trading as John Bromley & Sons, Philadelphia, Pa. Filed May 28, 1903. Serial No. 159,080. (Specimens.)**

*Claim.*—1. A woven fabric comprising backing weft-threads arranged in two planes, warp-threads suitably binding said backing weft-threads together and maintaining them in that planular relation, chenille weft-threads disposed between the backing weft-threads of the upper plane of weft-threads, and binder warp-threads binding the chenille weft-threads in said upper plane.

2. A woven fabric comprising backing weft-threads arranged in two planes, binder warp-threads lying between said upper and lower planes of backing-weft, warp-threads suitably binding said backing weft-threads together in horizontal planular and vertically alternate relation, chenille weft-threads disposed between the backing weft-threads of the upper plane of weft-threads, and binder warp-threads binding the chenille weft-threads to the backing weft-threads in the upper plane of weft-threads.

3. A woven fabric comprising backing weft-threads arranged in two planes, warp-threads suitably binding together said upper and lower backing weft-threads, chenille weft-threads disposed between the backing weft-threads of the upper plane of weft-threads and immediately over the weft-threads in the lower plane, portions of said chenille weft-threads projecting to the back of the fabric in front of each weft-thread in the lower plane of weft-threads, and thereby reproducing on the back of the fabric, in more or less distinctness, the face pattern or figure effect, a binder warp-thread lying between said upper and lower planes of binder-weft, and a third binder-warp tying the chenille weft-threads in said upper plane of weft-threads.

4. A woven fabric, comprising a set of weft-threads arranged in a lower plane and a set of weft-threads arranged in an upper plane, the respective upper and lower threads arranged vertically alternate, two series of warp-threads binding the said weft-threads together and maintaining them in their said respective planes, chenille weft-threads disposed between the backing weft-threads in the upper plane of weft-threads, and additional binder warp-threads binding the chenille-threads to and between the weft-threads of the upper plane and to and over and in front of the weft-threads of the lower plane of said threads.

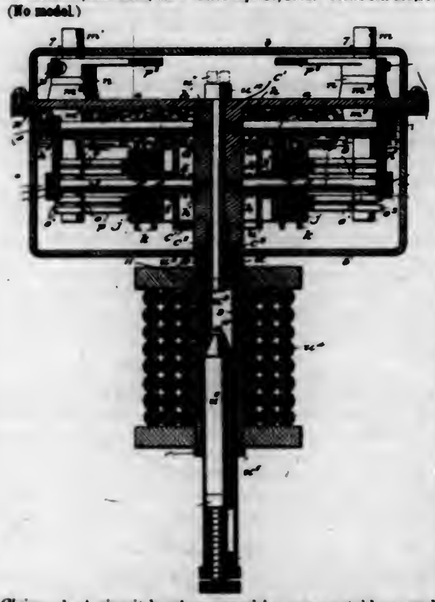


**753,703. WRENCH. FRANK D. HARRIS, Keo, Ark. Filed Jan. 4, 1901. Serial No. 42,042. (No model.)**



*Claim.*—As an article of manufacture, a wrench consisting of a head and a handle tapered away from the head and formed integral therewith, the head having a transverse perforation therethrough and lateral slots in its opposite sides intersecting the perforation and extending into the opposite faces of the handle adjacent to the head, a drum having a reduced terminal stem having ratched recesses therein, said drum and stem being cast integral and the drum being arranged with the recessed portion of its stem in a perforation, a pin removably engaged with the stem at the opposite side of the head from the drum, pawls pivoted in the slots of the head in position to engage the ratchet-recesses of the stem and having their opposite ends arranged in the slots of the handle, said head having a second perforation formed transversely therethrough, a spring disposed in the second perforation and resting with its ends against the pawls in the rear of the pivots of the latter, a ring slidably engaged over the handle and lying against the head, and a pin removably engaged transversely through the handle in the rear of the ring, said ring having an interior recess disposed to receive the rear ends of the pawls interchangeably, each of said pawls being adapted, when its rear end is engaged with said recesses, to engage its opposite end with the ratchet-recesses of the head.

**753,704. AUTOMATIC MAGNETIC CIRCUIT-BREAKER. FRANK O. HARTMAN, Mansfield, Ohio. Filed Apr. 10, 1902. Serial No. 102,366. (No model.)**



*Claim.*—1. A circuit-breaker comprising a case, a table secured within the case, the table provided with a depending post, a plurality of bars, the ends of which are removably attached to the depending post, contact-blocks secured thereto, laminated contacts slidingly mounted on the lower bars, a guide-plate secured to the inner side of each of the laminated contacts, the guide-plates engaging the upper bars, shafts journaled in bearings in the table, arms adjustably secured upon the upper ends of the shafts, latches with which the free ends of the arms are adapted to removably engage, contact-springs secured to the shafts within the casing, the free ends of which are adapted to engage the laminated contacts, tension means mounted on the lower bars and adapted to engage the laminated contacts in opposition to the contact-springs, the tension means adapted to force the laminated contacts out of engagement with the contact-blocks when the arms are released from the latches.

2. An automatic magnetic circuit-breaker comprising a casing composed of upper and lower portions, a table supported between the upper and lower portions, a hollow post depending from the table, contact-blocks secured thereto, an insulating liquid contained in the lower portion, shafts journaled in the table-arms secured to the upper ends of the shafts, a plurality of bars secured to the depending post, laminated contacts slidingly mounted upon the lower bars, contact-springs secured to the lower ends of the shafts, the free ends of the springs adapted to removably retain the contacts in engagement with the blocks, latches pivotally mounted upon the table, the arms adapted to removably engage the latches, a yoke secured to the lower portion of the casing and having a central aperture therein in alinement with the bore of the depending post, a tube received in the aperture, a coil surrounding the tube, a core adjustably supported therein, a collar-pin loosely received in the bore of the depending post, the head of the collar-pin adapted to engage and move the latches when the core is forced whereagainst thereby to release the arms and break the circuit.

3. A circuit-breaker comprising a casing, laminated contacts supported within the casing, contact-blocks with which the contacts are adapted to have removable engagement, resilient means engaging the contacts for retaining them in contact with the blocks, a yoke secured to the case, a solenoid received within the yoke, the core of the solenoid adjustably mounted therein, a collar-pin loosely supported in the casing, the core adapted to engage and move the collar-pin, pivoted latches arranged to be operated by the collar-pin, arms removably held by the latches, and means connecting the arms and the resilient means whereby the disengagement of the contacts and contact-blocks is effected.

4. An automatic magnetic circuit-breaker comprising a casing, a table supported therein, a hollow post depending from the table, a plurality of bars secured to the sides of the depending post, contact-blocks secured to the sides of the depending post, contacts slidingly mounted on the bars, shafts journaled in the table, arms secured to the shafts, the free ends of the arms provided with rollers journaled therein, latches pivotally mounted on the table, the rollers adapted to engage and be removably retained by the latches, a yoke secured to the casing, a solenoid supported therein, the core of the solenoid adjustably mounted in alinement with the bore of the depending post, a collar-pin loosely supported in the bore of the depending post, the head of the collar-pin adapted to engage the pivoted latches, the core adapted to engage the collar-pin, and cause the latter to engage the pivoted latches releasing the roller-arms, and manually-operated means for actuating the pivoted latches.

5. An automatic magnetic circuit-breaker comprising a casing, a table supported therein, a post depending from the table, the post located centrally of the table and casing, the lower end of the post provided with an aperture, a hollow collar-bolt removably received in the aperture, and a yoke supported by the collar-bolt.

6. An automatic magnetic circuit-breaker comprising a casing consisting of upper and lower portions, a table secured between the upper and lower portions, a post depending from the table into the lower portion of the casing, bars secured to the depending post, contacts slidingly mounted on the bars, blocks insulated from and removably secured to the post, the table and lower portion of the casing forming a compartment, liquid insulating material filling the compartment and submerging the operative mechanism.

7. An automatic circuit-breaker comprising a casing, a table supported therein, a hollow post depending from the table, shafts extending into the casing, arms secured to the upper ends of the shafts within the casing, contact-springs secured to the lower ends of the shafts, bars secured to the depending post, insulating holders secured to the sides of the post, contact-blocks received in the holders, contacts slidingly mounted upon the bars, a solenoid secured outside the casing, a core, a thumb-screw for adjusting the position of the core, the core in alinement with the bore of the depending post, a collar-pin loosely received in the hollow post, the end of the collar-pin adapted to be struck by the core, pivotal latches with which the arms are removably connected, the collar portion of the pin resting upon the table beneath the rear ends of the latches, the pin adapted to engage the latches when struck by the core to release the arms.

8. An automatic circuit-breaker comprising a casing, the casing consisting of upper and lower flanged portions, a table dividing the casing, the table supported between the flanges of the upper and lower portions, packing interposed between the table and the lower portion, insulating liquid filling the lower portion of the casing, operating mechanism located in the lower portion of the casing, a

solenoid secured to the casing, and means operated by the action of the solenoid for breaking the circuit established within the casing.

9. An automatic circuit-breaker comprising a suitable support, a table, a post depending therefrom, a plurality of pairs of extending parallel bars secured to two sides of the post, insulated contact-blocks secured to the remaining sides of the post, one of the blocks consisting of two sections insulated from each other, insulated contacts slidingly mounted upon the lowermost bars, guiding means secured to the contacts and engaging the uppermost bars, means normally tending to force the contacts away from the blocks, shafts rotatably supported in the table, means secured to the shafts and adapted to force the contacts into engagement with the blocks, arms secured to the shafts above the table, pivoted latches supported upon the table, means for normally retaining the latches in horizontal position, the arms adapted to engage the forward ends of the latches, a solenoid secured to the frame and means operated by the solenoid for rocking the latches to release the arms therefrom.

10. An automatic circuit-breaker comprising a support, a table, a post depending therefrom, insulated contact-blocks secured thereto, slidingly-mounted insulated laminated contacts, means normally tending to force the contacts away from the blocks, rotatable shafts, arms carried by the shafts and adapted to retain the latter in one position, means carried by the shafts which tend to force the contacts into engagement with the blocks, means for locking the arms to retain the contacts in engagement with the blocks, a solenoid and means operated by the solenoid whereby to cause the release of the arms and permit the first-named means to force the sliding contacts away from the blocks.

11. An automatic circuit-breaker comprising a casing, insulated contact-blocks located therein, slidingly-mounted insulated contacts adapted to engage the blocks, means for normally forcing the contacts away from the blocks, revoluble shafts, means carried by the shafts and adapted to force the contacts against the blocks, arms carried by the shafts, pivoted latches engaged by the free ends of the arms, the latches adapted to normally retain the arms, means for retaining the latches normally in horizontal position, a solenoid, and means operated by the solenoid for rocking the latches to release the arms therefrom.

12. An automatic circuit-breaker comprising a casing, insulated contact-blocks located therein, slidingly-mounted insulated contacts adapted to engage the blocks, means for normally forcing the contacts away from the blocks, revoluble shafts, means carried by the shafts and adapted to force the contacts against the blocks, arms carried by the shafts, pivoted latches engaged by the free ends of the arms, the latches adapted to normally retain the arms, means for retaining the latches normally in horizontal position, and a hand-release adapted to rock the latches to release the arms therefrom.

13. A mechanism for interrupting a circuit comprising a plurality of isolated stationary contacts, bridges connecting the contacts, suitably-supported movable members independent of the bridges, yielding means carried by the movable members independent of and adapted to engage the bridges to force them against the contacts, mechanism for retaining the movable members in such position as to hold the means carried by such movable members against the bridges to retain the latter in engagement with the contacts, and independent automatic means for forcing the bridges away from the contacts when the movable members are released, the yielding means and the automatic means cooperating to rotate the movable members.

14. An automatic cut-out comprising a suitable support, contact-blocks and rods secured thereto, sleeves slidingly mounted on the rods, insulating-collars carried by the sleeves, contacts supported on the collars and adapted to engage the contact-blocks, yielding means for normally forcing the contacts away from the contact-blocks, means normally operating to force the contacts against the contact-blocks, locking means for retaining the contacts against the blocks and automatically-operated means for engaging the locking means and permitting the yielding means to force the contacts away from the blocks.

15. A cut-out comprising a suitable support, blocks and guides secured thereto, contacts movably mounted upon the guides, yielding means for normally forcing the contacts away from the blocks, movable shafts suitably supported, means on the shafts adapted to engage the contacts to force them against the blocks, arms secured to the shafts, locking means with which the arms engage and by which they are held when the contacts are in engagement with the blocks, and automatically-operated means adapted to engage the locking means to release the arms and permit the yielding means to force the contacts away from the blocks.

16. A cut-out comprising a suitable support, blocks and guides secured thereto, contacts movably mounted upon the guides, yielding means for normally forcing the contacts away from the blocks, movable shafts suitably supported, means on the shafts adapted to engage the contacts to force them against the blocks, arms secured to the shafts, rollers on the arms, locking means with which the rollers engage and by which they are held when the contacts are in engagement with the blocks, and automatically-operated means adapted to engage the locking means to release the arms and permit the yielding means to force the contacts away from the blocks.

17. A cut-out comprising a suitable support, blocks and guides secured thereto, contacts movably mounted upon the guides, yielding means for normally forcing the contacts away from the blocks, movable shafts suitably supported, means on the shafts adapted to engage the contacts to force them against the blocks, arms secured to the shafts, locking means with which the arms engage and by which they are held when the contacts are in engagement with the blocks, the locking means consisting of pivoted latches, enlargements on the ends of the latches behind which the arms are received, springs for retaining the latches in their normal position, and automatically-operated means adapted to engage the locking means to release the arms and permit the yielding means to force the contacts away from the blocks.

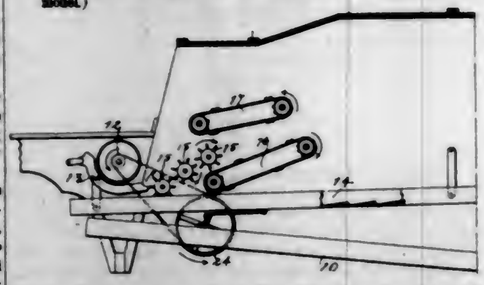
18. A cut-out comprising a suitable support, blocks and guides secured thereto, contacts movably mounted upon the guides, yielding means for normally forcing the contacts away from the blocks, movable shafts suitably supported, means on the shafts adapted to engage the contacts to force them against the blocks, arms secured to the shafts, locking means with which the arms engage and by which they are held when the contacts are in engagement with the blocks, automatically-operated means adapted to engage the locking means to release the arms and permit the yielding means to force the contacts away from the blocks, and a manually-operated means for engaging the locking means to release the arms.

19. A cut-out comprising a suitable support, blocks and guides secured thereto, contacts movably mounted upon the guides, yielding means for normally forcing the contacts away from the blocks, movable shafts suitably supported, means on the shafts adapted to engage the contacts to force them against the blocks, arms secured to the shafts, locking means with which the arms engage and by which they are held when the contacts are in engagement with the blocks, automatically-operated means adapted to engage the locking means to release the arms and permit the yielding means to force the contacts away from the blocks, and a manually-operated means for engaging the locking means to release the arms, the manually-operated means consisting of a rod adapted to engage and move the locking means and a spring for normally retaining the rod out of engagement with the locking means.

20. A circuit-breaker comprising, in combination with a source of electricity, a plurality of isolated contacts in circuit with the electrical source, a suitably-supported bridge for connecting the contacts, means normally tending to force the bridge away from the contacts, a rotatable member independent of the bridge, a resilient arm carried by the member, the arm adapted to engage and move the bridge against the contacts, means for locking the rotatable member in one of its adjusted positions and an automatic releasing means therefor.

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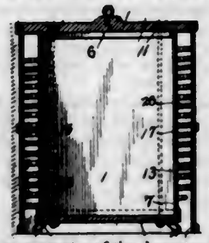
**753,705. THRESHER AND SEPARATOR.** PETER HOFMANN, Greenfield, Iowa. Filed July 28, 1902. Serial No. 116,964. (No model.)



*Claim.*—The combination of a cylinder and concave, a pair of endless belts having feed motion (i. e., having their contiguous surfaces moving in the same direction) and arranged to form a converging, upwardly-conducting throat to receive the straw and an upwardly-inclined series of ribbed rolls and extending from the discharge side of the concave into the throat formed by the belts, and forming a separator for the grain, and a continuous carrier delivering the straw to the belts as shown and described.

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**753,706. APPARATUS FOR MOLDING SOAP.** FREDERICK C. IRBER, JOHN W. ALEXANDER, JAMES P. BARR, and JOHN M. OCHILTREE, Burlington, Iowa. Filed Nov. 19, 1903. Serial No. 181,878. (No model.)



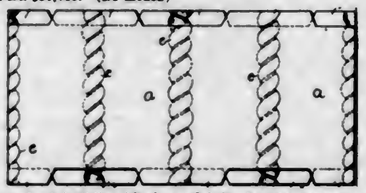
*Claim.*—1. In an apparatus of the character described, the combination of a mold, closed at its bottom and open at its upper end, a jacket of a size and shape adapting it to inclose the mold, having its upper end closed and its lower end open, means to lower the jacket over the mold and to raise it therefrom, and means to supply a heating medium to the interior of the jacket when the same is lowered to inclose the mold.

2. In an apparatus of the character described, the combination with a mold, of a closed jacket adapted to be telescoped upon said mold, and a coil of perforated pipe in said jacket adapted to project steam against said mold, substantially as described.

3. In an apparatus of the character described, the combination with a mold, of a telescoping jacket adapted to inclose said mold, a coil of steam-pipe in said jacket adapted to surround said mold and to project steam against the same, and means for raising and lowering said jacket, substantially as described.

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**753,707. FIREPROOF BUILDING BLOCK OR SLAB.** ROBERT ILLEMANN, London, England, assignor to Frederick Malcolm Hurdis Jones, Kentish Town, county of London, England. Filed June 1, 1903. Serial No. 159,703. (No model.)



*Claim.*—1. A building block or slab having one or more openings passing therethrough from the top to the bottom, said openings being made in the form of helical grooves or recesses, substantially as described.

2. A building block or slab having its top and bottom edges provided with projections at its front and back arranged alternately in relation to each other so that the projections on the front edge are opposite the spaces on the back edge, the projections and spaces being approximately of the same size and shape so that they may fit freely into each other, said block or slab being also provided with one or more openings passing therethrough from the top to the bottom made in the form of helical grooves or recesses, substantially as described.

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**753,708. WHIFFLETREE-HOOK.** CHARLES E. JONES, Windsor, Mo. Filed Jan. 11, 1904. Serial No. 188,543. (No model.)



*Claim.*—1. In combination with a whiffletree, a sleeve mounted thereon, the end of said sleeve being recessed, an outwardly-flaring hook upon said sleeve, a spring having one end seated in said recess, integral lug portions upon said sleeve adapted to be clenched over said spring to secure the same to the sleeve, the free end of the spring adapted to normally bear against the hook, and outwardly flared, as set forth.

2. In combination with a whiffletree, a sleeve mounted thereon having an integral hook, the end of said sleeve being recessed, a spring having shouldered portions engaging shoulders formed in the walls of said recess, the free end of said spring being curved and adapted to be normally held against the curved portion of said hook, and lugs integral with the sleeve adjacent to the marginal edges of said recess and adapted to be clenched over the outer face of the spring to hold the same in said recess, as set forth.

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**753,709. BASE FOR POLES OR POSTS.** GEORGE H. JONES, Salem, Oreg. Filed Oct. 3, 1903. Serial No. 176,274. (No model.)



*Claim.*—In combination with a pole, a base therefor, comprising a jacket formed of a bottom cap inclosing the lower end of the pole, one or more tubes superposed upon the cap, each of said tubes having a swelled or bell-mouthed lower end telescoping upon the upper end of the cap or underlying tube, a filling of cement between the cap and tubes and the pole, and a gaging connection between the cap and pole, on which the cap is preliminarily adjustable to gage the amount of cement to be applied between the ends of the cap and pole, substantially as described.

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**753,710. HINGE FOR CARD-TABLES.** HENRY F. KELL, Bonneville, N. Y. Filed June 18, 1903. Serial No. 162,084. (No model.)



*Claim.*—1. A hinge comprising in its construction two leaves each consisting of three plates riveted together, the central plate of each leaf being cut away to form an interior recess, and a link pivotally connected to said leaves and having each of its ends constructed to work in said recesses, each leaf also having bearing-faces to engage each other when the hinge is in either an open or outward or closed or inward relation and to prevent farther movement of the hinge in said inward or outward directions.

2. A hinge comprising in its construction two leaves each consisting of three plates riveted together the central plate of each being cut away to form an interior recess and a link pivotally connected to said leaves and having each of its ends constructed to work in said recesses, the said link being formed with beveled edges to rest against the opposite side edges of the recesses when the hinge is in either an open or closed relation.

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**753,711. THERMOMETER-CASE.** PATRICK C. KELLETT, Brooklyn, N. Y. Filed Mar. 17, 1903. Serial No. 148,265. (No model.)



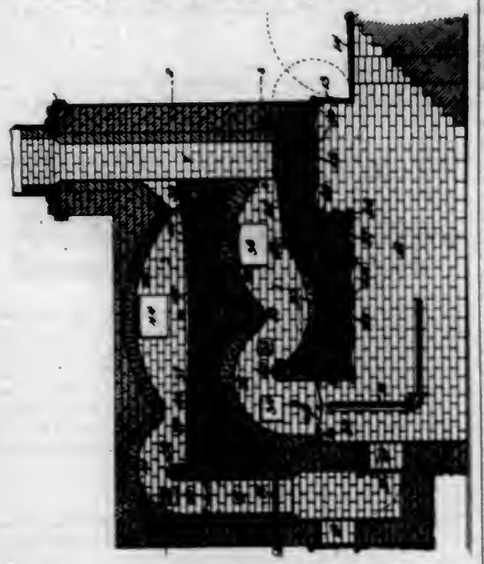
*Claim.*—1. A tapered thermometer-case provided with a frictionally-held sleeve, a cover hinged to said sleeve and a ring forming a part of said hinge and adapted to have a chain connected therewith.

2. The combination with a case comprising a tapered tube having telescoping sections, of a thermometer-tube frictionally held by engagement of its inner end with the sides of the tube.

3. The combination with a tapered case having a sliding sleeve at the open outer end thereof, and a cover hinged to the outer end of the sleeve to close the same, of a thermometer-tube the inner end of which is held by frictional engagement with the sides of the case and the outer end of which projects through the outer end of the sleeve when it is retracted on the case.

4. The combination with a tapered case having a sliding sleeve at the open larger end thereof, of a thermometer-tube the inner end of which is held by frictional engagement with the sides of the case and the outer end of which projects through the outer end of the sleeve when it is retracted on the case.

**753,712. METALLURGICAL FURNACE.** FERDINAND KEPP, Brooklyn, N. Y. Filed Aug. 13, 1903. Serial No. 169,914. (No model.)



*Claim.*—1. A metallurgical furnace including a discharge-flue, a melting-chamber and a superposed initial heating-chamber, said chambers having independent communication with the discharge-flue at their rear ends, separate heating means arranged to direct products of combustion through the chambers to the flue, and means for establishing communication between said chambers at points intermediate of their ends.

2. A metallurgical furnace including a melting-chamber, a plurality of initial heating-chambers, separate heaters arranged to direct products of combustion through the melting and initial heating chambers respectively, and independent means for establishing communication between each heating-chamber and the melting-chamber.

3. A metallurgical furnace including a vertical discharge-flue, a melting-chamber communicating at its rear end therewith, an initial heating-chamber located above the melting-chamber and having independent communication at its rear end with the flue, a vertical shaft through which metal may be passed to the melting-chamber from the heating-chamber, and separate heating means for each chamber.

4. A metallurgical furnace including superposed chambers, a fire-box located at the front end of each chamber, a discharge-flue communicating with the rear ends of both chambers, and a vertical shaft establishing communication between the chambers intermediate of the ends thereof.

5. A metallurgical furnace including a melting-chamber, a plurality of superposed initial heating-chambers, separate heaters for the melting and heating chambers arranged to pass the products of combustion therethrough, and independent means controlling the communication between each heating-chamber and the melting-chamber.

6. A metallurgical furnace including a melting-chamber, a plurality of superposed initial heating-chambers, separate heaters for the melting and heating chambers and arranged to direct the products of combustion therethrough, and a vertical shaft extending from each heating-chamber to the melting-chamber.

7. A metallurgical furnace including a melting-chamber, a plurality of superposed initial heating-chambers, a discharge-flue having independent communication with each of the several chambers, independent heating means for each chamber, and means for establishing communication between each heating-chamber and the melting-chamber to permit the discharge of metal into the latter.

8. A metallurgical furnace including a melting-chamber, a plurality of superposed initial heating-chambers, a discharge-flue having independent communication with each of the several chambers, a separate fire-box for each chamber, a vertical shaft extending from each initial heating-chamber to the melting-chamber, and independent means for closing each of said shafts.

9. A metallurgical furnace including a melting-chamber, an initial heating-chamber, separate heating means for said chambers, a diving flue for supplying air to the melting-chamber, and a controlling-valve for said flue.

10. A metallurgical furnace including a melting-chamber, a superposed initial heating-chamber, separate air-flues for supplying air to said chambers, means for establishing communication between the flues, and separate means controlling the passage of air to each flue.

11. A metallurgical furnace including a melting-chamber, a superposed heating-chamber, a separate fire-box for each chamber arranged to direct the products of combustion through the same, separate air-flues leading to the fire-boxes, and valves controlling the passage of air through said flues.

12. A metallurgical furnace including a melting-chamber having a fire-box at one end thereof, a large air-space located below the melting-chamber and communicating with the fire-box, a valve controlling the passage of air to the air-space, an initial heating-chamber, a shaft leading from said chamber to the melting-chamber, and means for closing said shaft.

13. A metallurgical furnace including a melting-chamber, a plurality of superposed initial heating-chambers, a discharge-flue having communication with the rear end of each chamber, a separate fire-box located at the front end of each chamber, a large air-space located under the melting-chamber and communicating with the fire-box thereof, a valve controlling the ingress of air to the air-space, an individual air-flue communicating with the fire-box of each initial heating-chamber, valves controlling the passage of air through said flues, and valves controlling the communication between each of said air-flues and the large air-space.

14. A metallurgical furnace including a melting-chamber, a fire-box located at one end of the chamber and a discharge-flue at the opposite end thereof, a hearth constituting the bottom of the chamber and including an inclined table and a crucible, a pair of intersecting arches extending conjointly from the front of the fire-box to the front of the discharge-flue, said arches constituting the top wall of the melting-chamber and having their point of intersection or groin located above the crucible to deflect the flames downwardly against the molten metal therein and an initial heating-chamber having communication with the melting-chamber.

15. A metallurgical furnace including a melting-chamber, a fire-box and a discharge-flue at opposite ends of the chamber, a bridge-wall at the rear side of the fire-box, a hearth extending from the bridge-wall and including an inclined charge-table and a crucible extending from the charge-table to the bridge-wall, and a pair of intersecting arches extending conjointly from the front of the fire-box to the front of the discharge-flue, the groin or point of intersection of said arches being located above the crucible and the rear arch terminating at a point above the charge-table whereby the flames issuing from the fire-box and passing over the bridge-wall are deflected downwardly against the molten metal in the crucible and are subsequently directed against the charge of metal supported by the charge-table.

16. A metallurgical furnace including a melting-chamber a superposed initial heating-chamber, a hearth constituting the bottom of the melting-chamber and having a dished portion or crucible, a pair of intersecting arches constituting the top wall of the melting-chamber and having their groin or point of intersection located above the crucible, and a shaft establishing communication between the chambers and said shaft opening through the top wall of the melting-chamber at the groin thereof.

17. A metallurgical furnace including a melting-chamber, a superposed initial heating-chamber, a hearth constituting the bottom of the melting-chamber and having a dished portion or crucible, a pair of intersecting arches constituting the top wall of the melting-chamber and having their groin or point of intersection located above the crucible, and a shaft establishing communication between the chambers, said shaft opening through the top wall of the melting-chamber through the groin thereof, the top wall of the initial heating-chamber being formed by front and rear arches, the crown of the rear arch being located directly above the shaft.

18. A metallurgical furnace including a melting-chamber, a hearth constituting the bottom wall of the melting-chamber and formed with a dished portion or crucible, a pair of intersecting arches constituting the top wall of the melting-chamber and having their groin or point of intersection located above the crucible, a plurality of initial heating-chambers located above the melting-chamber, and separate shafts establishing communication between the melting-chamber and each initial heating-chamber, said shafts opening through the top wall of the melting-chamber at the groin thereof.

19. A metallurgical furnace including a melting-chamber, a superposed initial heating-chamber, separate heaters for directing products of combustion through the chambers, and a vertical downwardly-tapered shaft establishing communication between said chambers and a removable closure at the upper end of said shaft.

20. A metallurgical furnace including a discharge-flue, a melting-chamber, a superposed initial heating-chamber, said chambers having independent communication at their rear ends with the discharge-flue, separate heating means for said chambers arranged to direct the products of combustion through the same to the flue, and means for establishing communication between the chambers to permit the passage of the metal from the heating-chamber to the melting-chamber.

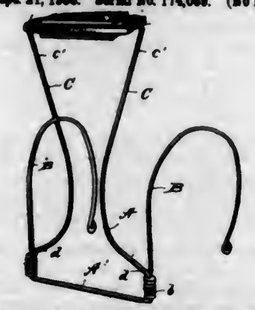
21. A metallurgical furnace including a melting-chamber, and an initial heating-chamber, a separate heater for each chamber arranged to direct the products of combustion through the same, and means for opening communication between the chambers to permit the transfer of the metal from the initial heating-chamber to the melting-chamber.

22. A metallurgical furnace including a melting-chamber and a superposed initial heating-chamber, each having a discharge-opening at one end thereof, a separate heater for said chambers located at the ends thereof opposite the discharge-openings and arranged to direct the products of combustion through the chambers, and means for establishing communication between the chambers to permit transference of the metal from one chamber to the other.

23. A metallurgical furnace including a melting-chamber and a superposed initial heating-chamber, each having a discharge-opening, separate heaters for the chambers arranged to direct the products of combustion through the same, and a vertical shaft connecting the chambers intermediate of the ends thereof and serving as a conduit for the metal during its transference from one chamber to the other.

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**753,713. HARMONICA-HOLDER.** OLIVER T. KNOBE, Richmond, Ind. Filed Sept. 21, 1903. Serial No. 174,069. (No model.)



*Claim.*—1. A harmonica-holder consisting of the wire breast-bar having lateral arms and provided with upwardly-extending spring-arms adapted to grip the harmonica, and the shoulder-hooks having coiled ends engaging the lateral arms of said breast-bar, substantially as specified.

2. A harmonica-holder consisting of the wire breast-bar having lateral arms and provided with upwardly-extending spring-arms having inturned pointed extremities, and the shoulder-hooks having end coils engaging the lateral arms of said breast-bar, substantially as specified.

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**753,714. CONDUIT FOR ELECTRICAL CONDUCTORS.** HUBERT KRAPFF, New York, N. Y. Filed Sept. 9, 1903. Serial No. 172,434. (No model.)

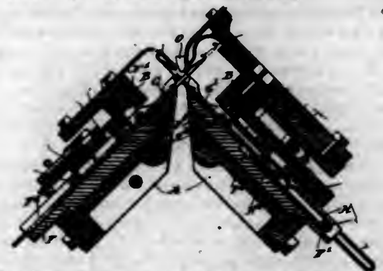


*Claim.*—1. A substantially rigid metal conduit having sides terminating in inwardly-turned shelves, said inwardly-turned shelves forming a constricted opening to the conduit, and adapted to support the wiring, substantially as and for the purpose described.

2. A substantially rigid metal conduit having sides terminating in inwardly-turned shelves, said inwardly-turned shelves forming a constricted opening to the conduit, and adapted to support the wiring, in combination with a cover and means to secure said cover in position in said space, substantially as described.



**753,715. KNITTING-MACHINE.** ISAAC W. LAMB, Perry, Mich., assignor to the Perry Glove and Mitten Company, Perry, Mich. Filed Mar. 21, 1902. Serial No. 99,363. (No model.)



*Claim.*—1. A knitting-machine having a needle-plate, needles movable thereon, a set of cams for imparting movement to the needles at the time the latter are in working position, one of the cams having a movable apex-section provided with a recess, in the apex, and a fixed auxiliary cam for moving the needles into the working position, the auxiliary cam being adapted to be engaged by the recess in the apex of said movable section, when the latter is raised to its highest position, as set forth.

2. A knitting-machine having a set of cams for actuating the needles on the needle-plate, the cams comprising side cams, a V-cam between the side cams and having a movable apex-section provided with a recess in apex, and a fixed top cam adapted to be engaged by the recess of the said movable section, as set forth.

3. A knitting-machine having a needle-plate formed with needle-grooves and needle-lifter grooves, the latter being in alinement with the needle-grooves and deeper than the latter, needles mounted to slide in the said needle-grooves, means for sliding the needles downward in their grooves, needle-lifters mounted to slide in the needle-lifter grooves, means for sliding the needle-lifters upward in their grooves, such needle-lifters being always in line with the needles and in position to be slid upward, and adapted when slid upward to abut against the rear ends of the said needles to slide the needles upward while having no positive attachment to the needles, as set forth.

4. A knitting-machine, having a needle-plate formed with needle-grooves and needle-lifter grooves, the latter being in alinement with the needle-grooves and deeper than the latter, the needle-lifter grooves being of the same depth from end to end, needles mounted to slide in the said needle-grooves, means for sliding the needles downward in their grooves, needle-lifters mounted to slide in the needle-lifter grooves, means for sliding the needle-lifters upward, in their grooves, such needle-lifters being always in line with the needles and in position to freely slide upward, and adapted when slid upward to abut against the rear ends of the said needles to slide the needles upward, while having no positive attachment to the needles, the needle-lifters having extensions reaching under the needles so that the latter will retain the upper ends of the needle-lifters in their grooves, as set forth.

5. A knitting-machine having a set of needles for each side of the machine, cams for directly engaging the needles on one side of the machine to move the needles in this set both up and down, the said needles being adapted to be moved upward out of the path of the cams to render the needles inoperative while retaining their loops on the body of such needles, means for limiting the movement of said needles, needle-lifters for the other set of needles to move the latter in the upward direction, a cam for actuating the needle-lifters, cams for moving the second set of needles in the opposite direction, the needle-lifters being adapted to be moved downward out of the path of the actuating-cam to render such needle-lifters and their needles dormant, while the needles retain their loops on their hooks, and means for limiting the movement of the needle-lifters, as set forth.

6. A knitting-machine having a set of needles for each side of the machine, means for directly engaging the needles on one side of the machine to move the needles in this set both up and down, stop-bars for limiting the movement of the said needles, needle-lifters for the other set of needles to move the latter in one direction only, the said needle-lifters being mounted to slide, means for actuating the needle-lifters, means for moving the second set of needles in the opposite direction, the needle-lifters being adapted to move out of the path of their actuating means, a stop-bar for the second set of needles when moved into an uppermost position, a stop-bar for limiting the downward movement of said needles, and a third stop-bar for

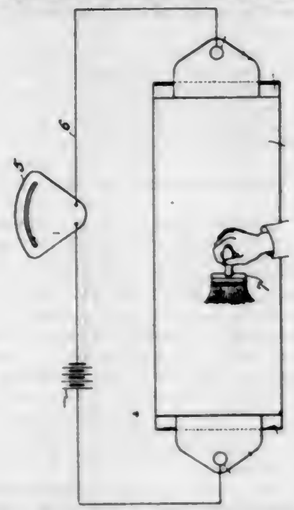
limiting the downward sliding movement of the needle-lifters, the latter bar serving to hold one end of the needle-lifters in position, as set forth.

7. A knitting-machine having a needle-plate, needles movable thereon, a set of cams for imparting movement to the needles at the time the latter are in working position, the cams comprising side cams, a V-cam between the side cams and having a movable apex-section provided with a recess in the apex, a fixed top cam in line with the said movable section and adapted to be engaged by the recess of the said movable section, and stop-bars for limiting the movement of the needles, as set forth.

8. A knitting-machine, having a set of needles for each side of the machine, means for directly engaging the needles on one side of the machine to move the needles in this set both up and down, the needles of this set being adapted to be moved upward out of the path of the operating means, whereby any of said needles may be rendered inoperative while retaining the loops on the body of the needles, needle-lifters for the other set of needles to move the latter in the upward direction, means for actuating the said needle-lifters, and means for moving the said second set of needles in the opposite direction, the needle-lifters being adapted to be moved downward out of the path of the actuating means, whereby any desired number of said needle-lifters and their corresponding needles can be rendered dormant, the said needles when in the dormant position retaining their loops on the hooks of the needles, as set forth.

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**753,716. CARBON RESISTANCE AND METHOD OF PRODUCING AND ADJUSTING SAME.** George I. Leonard, Pasadena, Cal. Filed Feb. 3, 1903. Serial No. 141,748. (No specimens.)



*Claim.*—1. The method of adjusting the resistance of graphite or similar material which consists in subjecting same to a frictional pressure until the resistance is reduced to the required amount.

2. The method of adjusting the resistance of a carbon layer which consists in subjecting the layer to frictional pressure until the resistance is reduced to the required amount.

3. The method of controlling the resistance of a carbon rheostatic material which consists in subjecting the same to frictional pressure.

4. The method of producing a carbon rheostat of definite resistance which consists in coating a suitable surface with plumbago and subjecting the coating to frictional pressure.

5. The method of producing a carbon rheostat of definite resistance which consists in coating a suitable support with plumbago paste or paint, allowing same to dry and subjecting the dry or nearly-dry coating to frictional pressure.

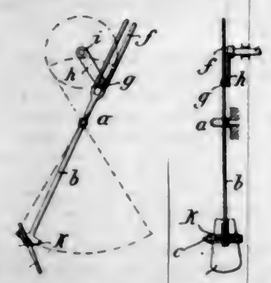
6. The method of producing a carbon rheostat of definite resistance which consists in coating a suitable non-conducting support with a paint or paste composed of plumbago, water and a binding agent, allowing the coating to dry and subjecting the dry or nearly-dry coating to frictional or rubbing pressure until the required resistance is obtained.

7. The method of adjusting the resistance of a carbon rheostatic device which consists in measuring the resistance of said device, and while continuing to measure the resistance, subjecting the carbon in the rheostatic device to frictional pressure until the resistance is reduced to the required amount.

8. The method of adjusting the resistance of a carbon rheostatic device which consists in passing an electric current through said device, and measuring by means of said current the resistance of said device, and while continuing to so apply the current and measure the resistance, subjecting the carbon in the rheostatic device to frictional pressure until the resistance is reduced to the required amount.

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**753,717. FISH-TAIL PROPELLER.** Edenko von Lieberg, Vienna, Austria-Hungary. Filed Nov. 2, 1903. Serial No. 179,633. (No model.)



*Claim.*—1. In a propeller, the combination of a pivoted lever including a blade pivotally connected at a portion of its length and provided with stops arranged to control the movement of said blade, one end of said lever provided with a guide, a rotary shaft, and a crank carried thereby and engaging said guide for imparting oscillatory movement to the lever.

2. In a propeller, the combination of a pivoted lever having a blade arranged at one end thereof and having its opposite end bifurcated, a rotatable shaft and a crank carried thereby and engaging said bifurcated portion of the lever to impart rotary movement to the lever.

3. In a propeller, the combination of a pivoted lever, a blade pivoted at one end thereof, said lever having extensions and provided with stops arranged to limit the movement of the blade, said lever having its opposite end forked, a power-driven member engaging said forked end for imparting oscillatory movement to the lever.

4. In a propeller, the combination of a pivoted lever including a blade hinged at one end thereof and provided with stops to limit the movement of said blade, the opposite end of said lever provided with a guide, a rotatable shaft and a crank carried thereby and engaging said guide to impart oscillatory movement to the lever.

5. A lever mounted for oscillation between its ends, having a bifurcation at one side of its axis of motion and a swinging propeller-blade at the opposite side of said axis, and means for limiting the motion of said swinging blade, and a revolvable crank provided with a pin to play between the branches of said bifurcation for imparting motion to the lever.

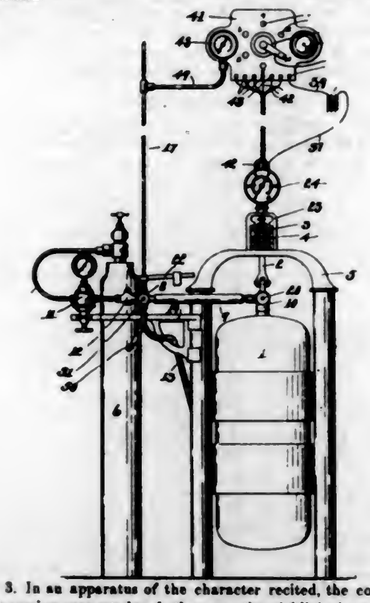
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**753,718. SODA-WATER APPARATUS.** Fisher H. Lippincott, Philadelphia, Pa., assignor to American Soda-Fountain Company, Jersey City, N. J., a Corporation of New Jersey. Filed Feb. 26, 1903. Serial No. 145,023. (No model.)

*Claim.*—1. In an apparatus of the character recited, the combination of the spring-supported tank, the respective yielding pipe connections between the same and sources of water and gas supply, and the soda-fountain, the annunciator, and electrical connections between the latter and said tank, whereby the annunciator-alarm may be caused to be sounded at a predetermined time, by the movements of the tank, substantially as described.

2. In an apparatus of the character recited, the combination of the spring-supported tank, the respective yielding pipe connections between the same and the sources of gas and water supply, and the soda-fountain, the rotatable arbor, connections between said tank and arbor, whereby the latter is adapted to be actuated by the vertical movements of the tank, the arm carried by said arbor, the annulus with which said arm contacts, the segments with which said arm is adapted to be brought into contact, the annunciator, and electrical connections between the same and said annulus and segments whereby the annunciator-alarm may be caused to sound at a predetermined time in the rotation of said arm, substantially as described.





3. In an apparatus of the character recited, the combination of the spring-supported tank, the respective yielding pipe connections between the same and the sources of gas and water supply, and the soda-fountain, the rotatable arbor, mechanism connecting said tank and arbor whereby the latter is adapted to be actuated by the vertical movements of said tank, the arm carried by said arbor, the annulus with which said arm contacts, the series of segments with which said arm is adapted to be brought into contact, the annunciator consisting of the rotatable arm, the annulus with which said arm contacts, the series of disks, corresponding to the said segments, with which said last-mentioned arm is adapted to be brought into contact, and electrical connections between said two annuli and a source of electrical energy, and conductor-wires between said respective segments and said disks, together with the alarm-bell, and conductors connecting the same and said disks, substantially as described.

4. In an apparatus of the character recited, the combination of the frame, the spring supported by said frame, the tank suspended from said spring, the indicator, consisting of the arbor, the pointer carried thereby, and the dial, connections between said tank and the indicator-arbor, whereby the latter is adapted to be actuated by and in correspondence with the vertical movement of the tank, the annunciator and electrical connections between the same and the indicator whereby the annunciator-alarm is caused to be sounded at a predetermined position rotatively of the indicator-arbor, substantially as and for the purpose set forth.

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**753,719. CAR-HANDLING APPARATUS.** Lavalette L. Logan, Robertsdale, Pa. Filed May 15, 1903. Serial No. 157,278. (No model.)

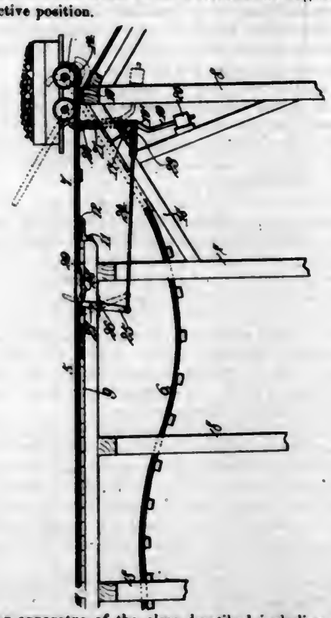
*Claim.*—1. An apparatus of the class described including superposed tracks, a track-section shiftable into working relation with the respective tracks, and automatically-operative mechanism for causing the operation of said shiftable track-section.

2. An apparatus of the class described including superposed tracks, and an oscillatory track-section shiftable into working relation with the respective tracks.

3. An apparatus of the class described including superposed tracks, and a track-section supported for oscillation between its ends and movable into working relation with the respective tracks.

4. An apparatus of the class described including superposed tracks, a track-section supported for oscillation between its ends, adapted normally to occupy a position in working relation with the upper track and shiftable into working relation with the lower track, and a latch for holding said track-section in its normal position.

5. An apparatus of the class described including superposed tracks, a track-section supported for oscillation between its ends, adapted normally to occupy a position in working relation with the upper track and shiftable into working relation with the lower track, a latch for holding said track-section in its normal position, and mechanism operative with the said track-section for moving the latch into its ineffective position.



6. An apparatus of the class described including superposed tracks, a track-section supported for oscillation between its ends, adapted normally to occupy a position in working relation with the upper track and shiftable into working relation with the lower track, a latch for holding said track-section in its normal position, mechanism operative with the said track-section for moving the latch into its ineffective position, and independent means for moving the latch into its operative position.

7. An apparatus of the class described including superposed tracks, a track-section supported for oscillation between its ends, adapted normally to occupy a position in working relation with the upper track and shiftable into working relation with the lower track, a latch for holding said track-section in its normal position, mechanism operative with the said track-section for moving the latch into its ineffective position, and car-operated means for moving said latch into its effective position.

8. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, a latch for holding the track-section in its normal position, and automatic mechanism for throwing the said latch into its ineffective position and for subsequently moving the track-section into working relation with the lower track.

9. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends, its inner branch being longer than its outer one and the latter having a car-stop, a latch for holding the track-section in its normal position, and automatic mechanism for releasing said latch and subsequently moving the said track-section into working relation with the lower track.

10. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, means for holding the track-section in its normal position, mechanism for moving the track-section into working relation with the lower track, and independent means for subsequently returning said track-section to its normal position.

11. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, and automatically-operative mechanism for moving the track-section out of its normal position and into working relation with the lower track and for subsequently returning said track-section to its normal position.

12. An apparatus of the class described including superposed

tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, the latter having a stop for a car whereby when the car strikes said stop, said inner branch can be elevated by the weight in the car, automatically-operative mechanism thrown into action by the elevation of said inner branch for lowering the latter into coincidence with the lower track, and means for returning said track-section to its initial position.

13. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track and shiftable into working relation with the lower one, a latch for holding the track-section normally in its working position, and automatic mechanism for operating the latch to effect the release of the shiftable track-section.

14. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, and an operating device for moving the shiftable track-section into working relation with the lower track, connected to said track-section by means involving a loose joint.

15. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends, a weighted lever constituting a device for shifting the track-section into working relation with the lower track, and a longitudinally-slotted link connecting the track-section and weighted lever.

16. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track supported for oscillation between its ends and its inner branch being longer than its outer one, a weighted lever operatively connected with the said longer branch by means involving a loose joint, and a latch for holding the track-section in its normal position, operatively connected with said weighted lever, said lever serving to throw the latch into its ineffective position.

17. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, a weighted lever operatively connected with the said longer branch by means involving a loose joint, and a latch for holding the track-section in its normal position operatively connected with said weighted lever, said lever serving to throw the latch into its ineffective position, and means in position to be operated by a car upon the upper track for moving the latch into its effective position.

18. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, a latch for holding the track-section in its normal position, a weighted lever, a longitudinally-slotted link connected with the longer branch of the track-section and also with the weighted lever, a rocker operatively connected with the latch, and a longitudinally-slotted rod also connected with the rocker and operatively connected with said lever.

19. An apparatus of the class described including superposed tracks, the lower one of which has first a downward and then an upward inclination, and an oscillatory track-section shiftable into working relation with the respective tracks.

20. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, and independent means acting against the branches for moving said track-section in opposite directions.

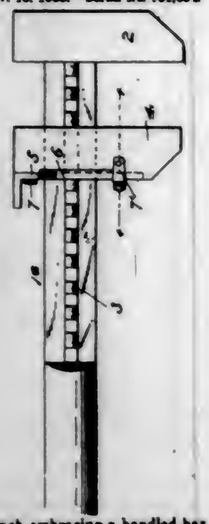
21. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, a weight carried by the outer branch, and a counterweighted lever connected with the inner branch by means including a loose joint.

22. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends, and its inner branch being longer than its outer one, a bracket supported below the free end of the upper track, having notches for the passage of the rails at the inner end of said track-section, and a latch supported by said bracket and adapted to normally engage under the inner free end of said track-section.

23. An apparatus of the class described including superposed tracks, a track-section normally in working relation with the upper track, supported for oscillation between its ends and its inner branch being longer than its outer one, a counterweighted lever, a longitudinally-slotted link connecting the lever and inner branch of the track-section, a rocker, the upper arm of which has a branch disposed in proximity to the upper track, a rod connected with the lower branch of the rocker and operatively connected by means including a loose joint with said weighted lever, a latch normally engaging under the inner branch of the track-section, and a connection between the upper branch of said rocker and the latch.

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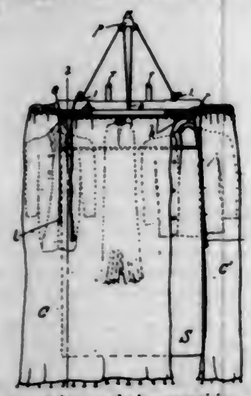
**758,720. WRENCH.** AUGUST MAGNUSON, Ishpeming, Mich., assignor of one-half to John R. Berquist and Eric Berquist, Ishpeming, Mich. Filed Nov. 13, 1903. Serial No. 181,654. (No model.)



*Claim.*—A wrench embracing a handled bar having its shank provided with a longitudinal rack and a fixed jaw, a movable jaw arranged upon said shank and provided with a latch or detent, a spring encompassing an end enlargement of said latch and bearing upon said latch at its free end, a keeper secured to said movable jaw and forming a bearing for the pivot of said latch, said keeper guarding said spring laterally as against displacement, and a guard for the free end of said latch, secured to said movable jaw.

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**758,721. PORTABLE WARDROBE.** ABEL MAGUI and MICHAEL COGRAN, New York, N. Y. Filed June 27, 1903. Serial No. 163,388. (No model.)



*Claim.*—1. A portable wardrobe, comprising a support for the garments, a sheet secured thereto, the free end of the sheet being adapted to be brought beneath and up in front of the garments, and means for securing it in this position, whereby the garments are permitted to protrude at the sides of said sheets, in combination with curtains and extensible rods mounted on said supports on which they are mounted, said curtains adapted to cover the sheet and garments, substantially as described.

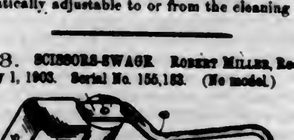
2. A portable wardrobe, comprising a main support for garments, a protecting-curtain therefor, U-shaped rods at the end of the support, both legs of the U being in substantially the same horizontal plane, adapted to carry the curtain on both sides of the U to form an inclosure within the U, and means for extending the rods at either side and beyond said main support, substantially as described.

3. A portable wardrobe, comprising a support for garments, U-shaped rods, both legs of the U being in substantially the same horizontal plane, and adapted to slide in and to extend beyond said support, a curtain hung on both legs of said U-shaped rod, and means for preventing the entire withdrawal of the rod, substantially as described.

4. A portable wardrobe, comprising a support for garments, a protecting-sheet therefor attached to said support, U-shaped rods adapted to slide in the ends of the support, and to extend beyond it, a rod parallel to the support, and mounted thereon, and curtains on the parallel rod and extending around upon each of the U-shaped rods to form an inclosure within the U, substantially as described.

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**758,722. FISH-CLEANING MACHINE.** ERIK MANULA and JNO. CARLSON, Astoria, Oreg. Filed Nov. 8, 1903. Serial No. 180,474. (No model.)



*Claim.*—1. An inside sliming and cleansing device for salmon and the like, said device consisting of a lenticular axially-journaled chamber having peripheral scrapers, said chamber having perforations for the discharge of water, and a means for supplying water brought under pressure to the interior of the device.

2. A device for sliming and cleansing the intestinal cavities of salmon and the like, said device consisting of a lenticular chamber, the periphery of which approximately conforms to the interior shape of the intestinal cavity, a supporting-framework, a shaft upon which the chamber is mounted, means by which it is revolved, a hollow connection through said shaft with the interior of the chamber, a coupling by which water under pressure may be admitted thereto, said chamber having holes and scrapers made on the surface and periphery.

3. The combination in a device for cleaning the intestinal cavity of salmon and the like, of a lenticular hollow chamber having teeth or scrapers formed upon its peripheral edge and perforations made at the base of said teeth and through the convex sides, a supporting-framework, a journaled shaft upon which the chamber is mounted, means by which the shaft and chamber are revolved, a hollow connection through the shaft with the interior of the chamber and a coupling through which water under pressure may be admitted.

4. A sliming and cleaning device for the intestinal cavity of fish, consisting of a framework, a revoluble lenticular chamber having perforated sides, in combination with means for revolving the cleaner, and means by which the fish is guided and advanced in contact with the cleaner.

5. The combination with a framework, and the lenticular perforated revoluble cleaner, of a revoluble toothed drum in the plane of rotation of the cleaner, means for revolving the drum, disks loosely fitting the drum-shaft on each side of the drum and springs by which the disks are yieldingly held with relation to the drum.

6. The combination in a fish-cleaning device of a framework, a lenticular perforated revoluble chamber, means for revolving the chamber and means to supply water under pressure to its interior, a revoluble toothed drum in the plane of the cleaning-chamber and loosely-turnable spring-pressed disks on each side of said drum, a shaft on which the drum and disks are carried, said shaft and drum being automatically adjustable to or from the cleaning device.

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**758,723. SCISSORS-SWAGE.** ROBERT MILLER, Rosebrake, Ala. Filed May 1, 1903. Serial No. 155,183. (No model.)

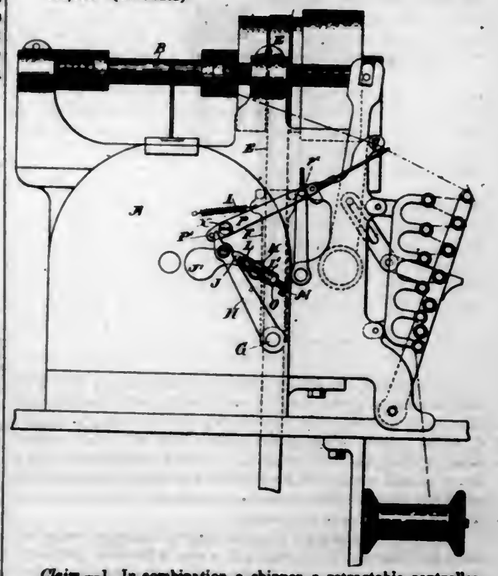


*Claim.*—1. A scissors-swage comprising a frame, a guide-block carried by the frame and having a guide-slot therein, and a roller mounted in the frame with its face at an angle to the direction of extension of the guide-slot.

2. A scissors-swage comprising a yoke-frame, a guide-block mounted upon the ends of the yoke-frame, said block having a guide-slot in its end between the sides of the frame, and a roller mounted in the frame adjacent to the slotted end of the block, said slot extending away from the roller at an acute angle to the face thereof.

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**758,724. CONTROLLED SHIPPING DEVICE.** JOHN O. MCKEAN, Westfield, Mass., assignor to Foster Machine Company, Westfield, Mass., a Corporation of Maine. Filed June 12, 1903. Serial No. 161,260. (No model.)



*Claim.*—1. In combination a shipper, a retractable controller for limiting the movement of the shipper toward operative position to part of its full stroke when the controller is in operative position, and adapted to permit the completion of that movement when the controller is retracted, and means to automatically move the controller into operative position when the shipper is moved from operative to inoperative position.

2. In combination, a shipper, a pivoted controller for limiting the movement of the shipper toward operative position to part of its full stroke when the controller is in operative position, and adapted to permit the completion of that movement when the controller is swung into retracted position, and means to automatically swing the controller from retracted position into operative position when the shipper is moved from operative to inoperative position.

3. In combination, a shipper; a spring for operating the shipper; a latch for holding the shipper in operative position in opposition to the spring; a retractable controller for limiting the movement of the shipper toward operative position to part of its full stroke when the controller is in operative position and adapted to permit the completion of that movement when the controller is retracted, and means to automatically move the controller into operative position when the latch is freed from the shipper and the latter is moved by the spring into inoperative position.

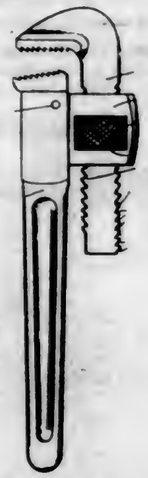
4. In combination, a shipper, a pivoted controller for limiting the movement of the shipper toward operative position to part of its full stroke when the controller is in operative position and adapted to permit the completion of that movement when the controller is swung into retracted position, means to hold the controller in retracted position when the shipper is in operative position and to release said controller when the shipper is moved toward inoperative position, and a weight carried by the controller for automatically swinging the latter from retracted position into operative position when the shipper is moved from operative to inoperative position.

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**758,725. PIPE-WRENCH.** GEORGE MCKEACHER, Jackson, Mich. Filed Apr. 25, 1903. Serial No. 154,313. (No model.)

*Claim.*—1. A wrench having a fixed jaw, a rocking spring-en-

gaged socket member and a movable jaw arranged in said socket member, and means for actuating said movable jaw, said socket member having a reduced extension, a spring attached thereto and housed within the fixed jaw, said spring standing at an angle from said extension and holding the movable jaw normally out of forcible contact with the article engaged.



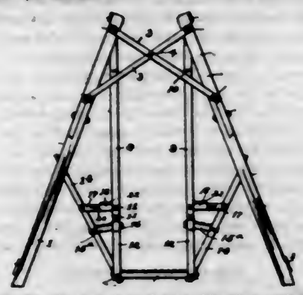
2. A wrench comprising a stationary or fixed jaw having its handled member provided with a socket having in its lower forward edge a seat or shoulder, a jaw-carrying member having a reduced extension adapted to engage said socket, with its forward stepped edge engaging said seat and pivoted to said handle member, and a spring housed within said fixed jaw and adapted to permit of the automatic retention of the movable jaw normally out of forcible contact with the article or pipe engaged.

3. A wrench comprising a handled member having its socket provided at its forward lower edge with a seat, a movable jaw-carrying member having a notch or stepped lower forward edge engaging said seat and pivotal connection with said handled member, said extension having, at its rear edge, a spring adapted to stand at an angle thereto and engage the rear edge or wall of said socket, said spring thus holding the movable jaw normally out of forcible contact with the article or pipe engaged.

4. A wrench comprising a handled member provided with a seat in its forward edge, coinciding or registering apertures or orifices through its sides, directly above said seat a movable jaw-carrying member having a reduced extension provided with a stepped lower forward edge adapted to engage said seat and having an orifice or aperture adapted to stand in alinement with said registering orifices, a pin or pivot engaging said orifices, and a spring applied to the rear edge of said extension and standing at an angle therefrom, and engaging the opposite wall of the handled-member socket.

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**753,726. LAWN-SWING.** CLARENCE G. MCLAUGHLIN and HAROLD H. MCLAUGHLIN, Columbus, Ohio. Filed June 29, 1903. Serial No. 163,496. (No model.)

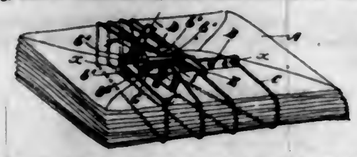


*Claim.*—1. In a lawn-swing, the combination with the pairs of standards formed of detachable sections, and bars 3 detachably connecting said standards, of the pairs of hanger-bars 9 depending from between said standards, detachable hanger-bar sections 12, a chair having its back-frame hinged between the hanger extension-bars, a seat pivotally connected with each of said chair-frames, and adjustable chair-arms formed of sections and adapted to extend between said chair-back frames and the hanger-bars and a removable platform 23 connecting the hanger-bar extensions 12, substantially as specified.

2. In a lawn-swing, the combination with the pairs of standards 1, each standard comprising a section $1^a$ and $2^a$, said sections having overlapping reduced tongue portions bolted in connection with each other and bars 3 bolted at opposite ends to opposing standards and having their lower bolts passing through said standards at the junctions of the tongues of the lower standard-sections $2^a$ with the shoulders of the upper standard-sections $1^a$, of a swinging chair-supporting frame depending from between said standards, substantially as specified.

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**753,727. PACKAGE-FASTENER.** DUNCAN J. MCLEAN, Bridgeburg, Canada. Filed Mar. 30, 1903. Serial No. 150,746. (No model.)



*Claim.*—1. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, and means on such main bar for retaining the metal loop in place after being brought into position as and for the purpose specified.

2. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, and a projection extending upwardly from the main bar for retaining the metal loop in place after being brought into position as and for the purpose specified.

3. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, means on such main bar for retaining the metal loop in place after being brought into position, and means for locking the free end of the looped string after the metal loop has been brought into position as and for the purpose specified.

4. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, means on such main bar for retaining the metal loop in place after being brought into position, and a clamping means for locking the free end of the looped string after the metal loop has been brought into position.

5. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, means on such main bar for retaining the metal loop in place after being brought into position, and a clamping-lever pivoted on the body portion and designed to be brought down over the free end of the loop of the string, and means for holding such lever in the lowered position as and for the purpose specified.

6. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, means including a clamping-lever on such main bar for retaining the metal loop in place after being brought into position, and spring-actuated means for holding such lever in position as and for the purpose specified.

7. A package-fastener comprising a bar or body portion, a looped string having the ends fastened in the ends of the body portion, a metal loop threaded on the string and forming intermediate of the length of the looped string a loop with a metal end and looped string sides, the free end of the main loop being designed to be passed through the metal loop, so as to tighten the same toward the main bar, means including a clamping-lever on such main bar for retaining the metal loop in place after being brought into position, and a catch pivotally supported at right angles to the lever and adapted to engage in a notch therein when the lever is in the closed position and spring means for preventing such catch from disengaging said lever as and for the purpose specified.

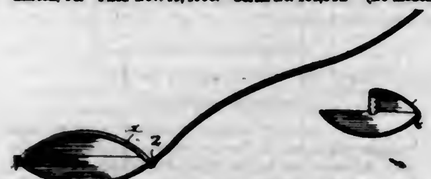
8. In a device of the class described the combination with the body having upwardly-extending side flanges and a clamping-lever pivotally supported between said flanges, said clamping-lever having a curved notch formed in one of its sides, of a catch pivotally supported at right angles to the lever and adapted to engage said notch in the lever when the lever is in the closed position, and means for preventing said catch from rotating in the direction in which it would be forced by the tendency of the lever to work loose as and for the purpose specified.

9. In a device of the class described the combination with the body, having lateral upwardly-extending flanges, and the gripping-lever pivotally supported between said flanges, said lever having a curved notch formed in one of its sides of a catch pivoted at right angles to said lever, said catch having a curved portion corresponding with the curve of the notch in the lever, means whereby the lever is being forced downwardly will rotate the catch on its axis in such a manner as to permit the lever to pass, a spring-actuating means adapted to cause the catch to spring into the curved notch when the lever has been pressed to the full extent of its downward motion as and for the purpose specified.

10. A package-fastener comprising a bar or main portion, a looped spring having the ends fastened in the ends of the body portion, and forming a double loop intermediate of its length, and means on the main bar for engaging the double loop and retaining it in place after being brought into position as specified.

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**753,728. RECEPTACLE OF THE LADLE TYPE.** JOHN M. HYDE, Easton, Pa. Filed Nov. 19, 1903. Serial No. 181,844. (No model.)



*Claim.*—A receptacle of the ladle type having its bowl provided at opposite ends with bearing-sockets, said receptacle being further provided with a longitudinally outwardly bowed spring-cover having studs at its ends to engage said bearing-sockets, and having its outer edge curved to correspond with the shape of the bowl and provided with a catch to coact with said side of the bowl to secure the cover thereto, the studs of the cover forming pivots to permit the opening and closing of the cover over the bowl when the catch is disengaged from the bowl, and the resilience of the cover enabling said studs to be disengaged from the bearing-sockets.

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**753,729. SEEDING ATTACHMENT FOR CORN-PLANTERS.** GEORGE P. OATES, Springfield, Ohio, assignor to American Seeding Machine Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 1, 1903. Serial No. 167,864. (No model.)

*Claim.*—1. In a corn-planter, a revolving seed-hopper, means for revolving same, with a removable seed-plate adapted to fit within the bottom of said hopper, and means for revolving same in unison therewith, a stationary hood and means for feeding the grain within the hood, for the purpose specified.

2. In a corn-planter, a support, a sleeve on said support, and a revolving seed-hopper journaled on said sleeve, a removable plate journaled on the hopper, slots formed in the sleeve, a stationary hood adapted to be removed, a projecting stem formed on said hood, arms formed on said stem, and means for holding said arms within the slots in said sleeve, for the purpose specified.



3. In a corn-planter, a hopper journaled on a support on said planter, said hopper having openings formed in the bottom thereof and radial arms dividing said openings, and a removable seed-plate fitted in the bottom of said hopper, said seed-plate having enlarged portions on its under side of a size and shape to fit the openings in said hopper, the spaces between said enlarged portions being adapted to fit over the said arms, as specified.

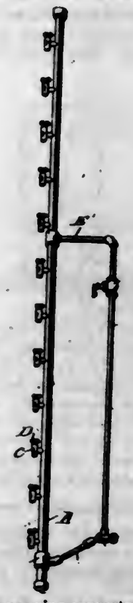
4. In a corn-planter, a support, a revolving hopper supported thereby, a removable seed-plate, means formed in said hopper for supporting said seed-plate, and means for revolving said seed-plate in unison with said hopper, a sleeve projecting from said support through said hopper and seed-plate and a stationary hood fastened to said sleeve, for the purpose specified.

5. In a corn-planter, a support and a revolving hopper supported thereby, a base formed in said hopper with ribs and a central hub, a seed-plate with a series of openings fitted removably to said base and over said hub, the openings in said seed-plate adapted to register with the openings between the ribs of said base, and means for revolving the hopper and seed-plate in unison, for the purpose specified.

6. In a corn-planter, a hopper journaled on a support on said planter, openings and radial arms formed in the bottom thereof, a removable seed-plate with a series of openings therein registering with each opening in said hopper, enlarged portions on the under side of said seed-plate and means for fitting said enlarged portions within the openings in said hopper and for fitting the rings of the hopper in the spaces formed between the enlarged portions of said seed-plate, for the purpose specified.

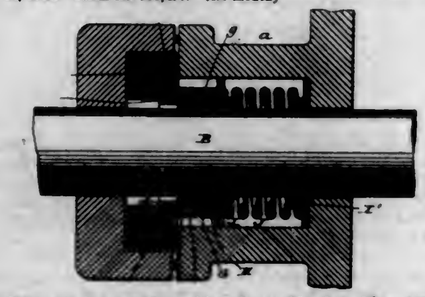
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**753,730. SPRAYING-SPAR.** WILLIS H. OWEN, Catawba Island, Ohio. Filed Dec. 22, 1903. Serial No. 186,213. (No model.)



*Claim.*—A portable spraying apparatus comprising a pipe, caps over the ends of said pipe, a series of branching valve-carrying pipes, a series of T-shaped nozzles projecting from and communicating with said pipes, valve-plugs mounted in said nozzles, branching pipes projecting from said nozzle-carrying pipes, and a valve-containing pipe connecting and communicating with said branching pipes, as shown and described.

753,781. ROD-PACKING. FRANK FINCH, Oswego, N. Y., assignor of one-half to Robert Bruce Lakin, Sidney, N. Y. Filed July 14, 1903. Serial No. 165,453. (No model.)



*Claim.*—1. In a metallic packing, the combination with an outer ring having a peripheral opening and an interior right-angled recess, of an inner ring also provided with a peripheral opening and adapted to rest in said recess, said outer ring being provided with shoulders or abutments for engagement with the ends of said inner ring to resist undue closing of the rings, when under fluid-pressure, upon the piston-rod, substantially as set forth.

2. In a metallic packing, the combination with an outer ring having a peripheral opening, an interior right-angled recess and a reduced peripheral section, of an inner ring also having a peripheral opening and adapted to rest in said recess, said outer ring being provided with shoulders or abutments for engagement with the ends of said inner ring to resist undue closing of the rings, when under fluid pressure, upon the piston-rod, and with a strengthening rib or projection at or near said shoulders or abutments, substantially as set forth.

3. In a metallic packing, the combination of a gland having a concave inner formation as described, a ring D having a convex outer surface adapted to fit said concavity, and packing-rings in the rear of said ring D peripherally divided, and adapted to be twisted so as to allow them to be applied to or removed from a rod without disconnecting the latter, substantially as set forth

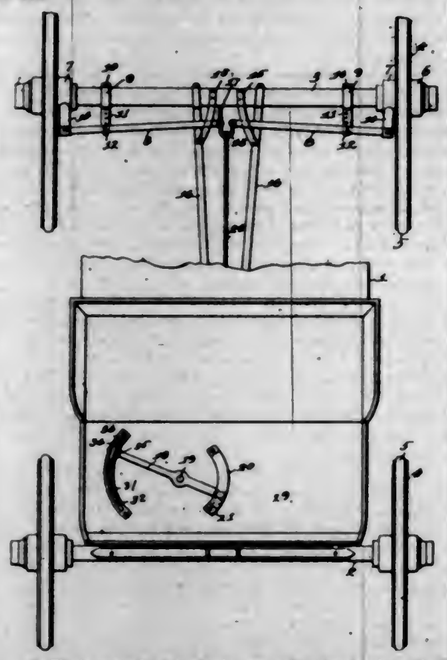
753,782. WAGON-BRAKE. HERBERT H. PIPER, Jackson, Mo. assignor of five-sixths to Richard Reehan, Pleasant Snider, and Henry J. Behrens, Jackson, Mo. Filed Mar. 3, 1903. Serial No. 146,019. (No model.)



*Claim.*—The improved wagon-brake, comprising brake-shoes, the part with which said brake-shoes come in contact, a hand-lever having an enlargement at its lower end in the form of a toothed sector, opposite brackets in which said toothed sector is mounted, one of said brackets having ratchet-teeth 23, a sleeve 22 between said brackets, a gear-wheel mounted adjacent to said toothed sector and meshing therewith, a band adapted to be wound and unwound by the rotation of said gear-wheel, and connections between said band and said brake-shoes, substantially as specified.

753,783. WAGON-BRAKE. HERBERT H. PIPER, Jackson, Mo., assignor of four-fifths to John Mabrey, Pleasant Snider, Henry J. Behrens, and Charles Behrens, Jackson, Mo. Filed Oct. 24, 1903. Serial No. 178,494. (No model.)

*Claim.*—1. The improved wagon-brake, comprising brake-shoes, the part with which said brake-shoes come in contact, a horizontal foot-lever pivoted intermediate of its length to the lower part of the wagon-frame, a strap or band connected to one end of said foot-lever, connections between said strap or band and said brake-shoes, a foot-pawl pivotally mounted upon the end of said foot-lever opposite that to which said strap or band is connected, and a horizontal curved bar having ratchet-teeth upon its upper side and located beneath said foot-pawl to be engaged thereby, substantially as described.



2. The improved wagon-brake, comprising brake-shoes, the part with which said brake-shoes come in contact, a foot-lever pivoted intermediate of its length to the lower part of the wagon-frame, a strap or band connected to one end of said foot-lever, connections between said strap or band and said brake-shoes, a foot-pawl pivotally mounted upon the end of said foot-lever opposite that to which said strap or band is connected, a curved bar having ratchet-teeth and located beneath said foot-pawl to be engaged thereby, a roller carried by the strap end of said foot-lever, and a guide-bracket having upper and lower curved alined rails for guiding said foot-lever, substantially as described.

753,784. WITHDRAWN.

753,785. ROTARY ENGINE. THOMAS D. PRESCOTT, JAMES C. PRESCOTT, and HENRY A. PRESCOTT, Philadelphia, Pa. Filed Dec. 12, 1902. Renewed Aug. 3, 1903. Serial No. 168,131. (No model.)

*Claim.*—1. The combination in a rotary engine, of an annular cylinder having radially-disposed abutments, a revoluble piston having its outer portion arranged within the cylinder, the central portion of the piston being provided with a steam-chest, two sets of steam-passages arranged in different planes with respect to the transverse axial line of the piston and facing in opposite directions, and a valve disposed in the steam-chest and movable in a plane parallel with the axis of the piston to thereby place either set of passages in communication with the chest.

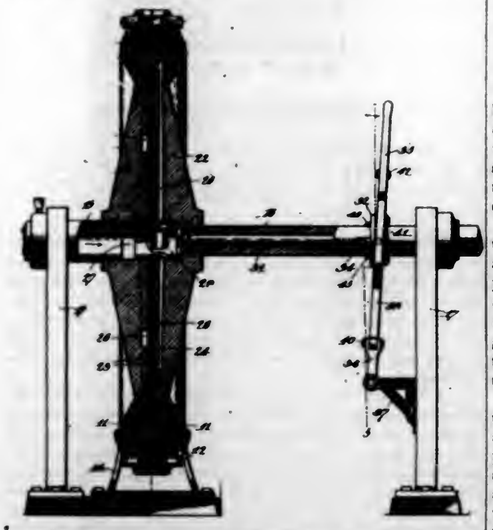
2. The combination in a steam-engine, of an annular cylinder formed of two spaced members to permit the free escape of the actuating fluid, a plurality of abutments carried by said spaced members, a revoluble piston having its outer portion arranged within the cylinder and provided with two sets of oppositely-disposed steam channels or passages, and a valve for controlling the passage of steam or other actuating fluid through said channels or passages.

3. The combination in a steam-engine, of an annular cylinder having radially-disposed abutments, a revoluble piston having its outer portion arranged within the cylinder, said piston comprising a pair of plates each provided with an inner recessed face and with steam channels or passages, and a centrally-disposed disk fitting within the recesses and forming one wall of each of the channels or passages.

4. The combination in a steam-engine, of an annular cylinder



having radially-disposed abutments, a revoluble piston having its outer portion disposed within the cylinder, two sets of oppositely-disposed steam channels or passages arranged in the piston and terminating respectively on the opposite sides of the piston near the periphery thereof, said sets of steam channels or passages being disposed at different points in the width of the piston, a centrally-disposed steam-chamber with which both sets of channels communicate, a ported cylindrical valve disposed within the steam-chest and controlling the passage of steam therefrom to either set of channels, and means for adjusting said valve.



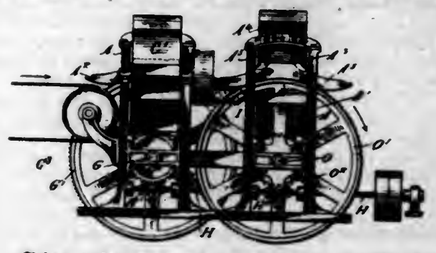
5. The combination in a steam-engine, of the annular cylinder, a revoluble piston having its outer portion arranged within said cylinder, steam channels or passages disposed in said piston, extending over the outer edge of the piston and positively embracing the sides thereof, said abutments being a plurality of sets of abutments carried by the cylinder and shaped to conform to the contour of the piston.

6. The combination in a steam-engine, of the cylinder comprising a pair of oppositely-facing annular members grooved or of trough-like form in cross-section to form an annular steam-space and spaced at their outer edges to permit the free escape of the actuating fluid, a plurality of radial abutments arranged within the cylinder, a piston having its outer portion disposed within the cylinder, and steam channels or passages leading from the center of the piston and discharging within the said cylinder.

7. The combination in an engine, of the annular cylinder having a plurality of radially-disposed abutments, a revoluble piston having its outer portion disposed within the cylinder, a centrally-disposed steam-chamber within the piston, a hollow shaft carrying said piston, a valve arranged within the steam-chest, a valve-stem extending through the hollow shaft and connected to said valve, a grooved collar secured to said valve-stem, and a two-part lever having pins engaging the grooved collar, the two parts of the lever being separable to remove the pins from the collar after the valve has been adjusted.

8. The combination in a steam-engine, of the annular cylinder having a plurality of radially-disposed abutments, a revoluble piston having its outer portion arranged within the cylinder and provided with a centrally-disposed steam-chest, steam ports or passages leading from the chest to the outer portion of the piston, a valve arranged in the steam-chest, a hollow shaft carrying the piston, said shaft being provided with a pair of diametrically-opposed longitudinal slots, a valve-stem extending through the hollow shaft and connected at one end to the valve, a grooved collar slidably mounted on the shaft, a pin extending through the grooves of the shaft and connecting the valve-stem to the collar, plate-springs for locking the collar in either position of adjustment, and a pivoted lever having pins for engaging the grooved collar, said lever comprising a lower member pivoted to a fixed support, a pair of separable members pivotally connected to said lower member, and means for locking the separable members to each other, substantially as specified.

753,736. MACHINE FOR CLEANING FIBERS. MANUEL PRIETO, Mexico, Mexico. Filed Sept. 3, 1903. Serial No. 171,765. (No model.)

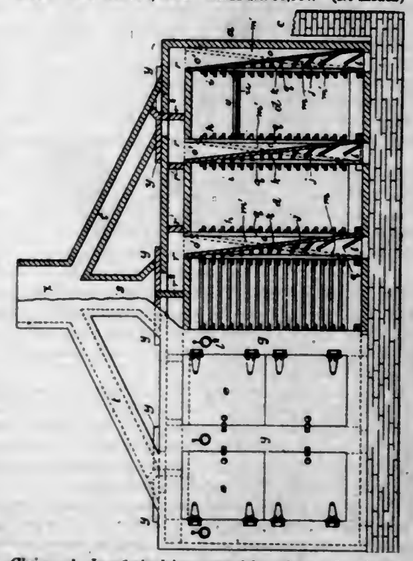


*Claim.*—1. In a machine for cleaning fibers of tropical plants, having two sets of beaters acting at one period to commence and one set acting at a later period to complete the treatment, a feed-wheel and platen arranged to feed the material through the early stage and another feed-wheel and platen arranged to automatically receive and to feed the material through the later stage, all substantially as herein specified.

2. In a machine for cleaning fibers of tropical plants, having two sets of beaters acting at one period to commence and one set acting at a later period to complete the treatment, a feed-wheel and platen arranged to feed the material through the early stage and another feed-wheel and platen arranged to automatically receive and to feed the material through the later stage, and means, as the guiding-belt I, arranged to aid in transferring the material from one feed-wheel and platen to the other feed-wheel and platen, combined substantially as herein specified.

3. In a machine for cleaning fibers of tropical plants, having two sets of beaters acting at one period to commence and one set acting at a later period to complete the treatment, a feed-wheel and platen arranged to feed the material through the early stage and another feed-wheel and platen arranged to automatically receive and to feed the material through the later stage, in combination with the yielding belt I having teeth I′ and holes *i*, and with the actuating-wheel $M^2$ with teeth $M^3$, the driving-gear $O^3$ on the second feed-wheel *O′* and connecting gearing for insuring the correct movement of such belt, substantially as herein specified.

753,737. FRUIT-DRIER. ANDREW A. QUARNBERG, Vancouver, Wash. Filed Mar. 29, 1901. Serial No. 53,507. (No model.)



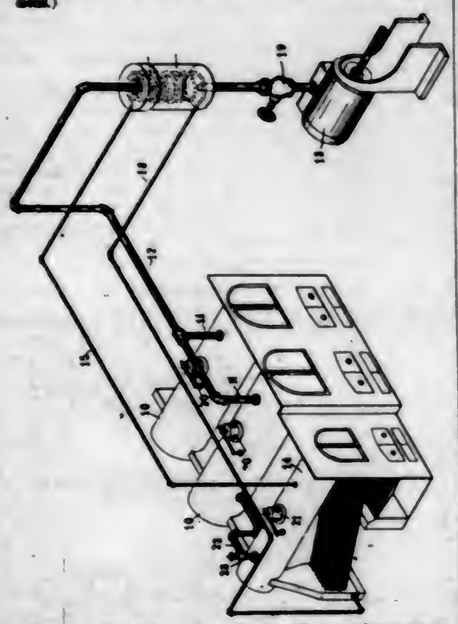
*Claim.*—1. In a fruit-drier, comprising a lower chamber in which to heat the air to be circulated through the drier, and a superstructure or inclosure built thereon, the combination of a series of parallel drying-compartments, and alternating hot-air induction and eduction passages located between and at the ends of the courses of drying-compartments, the former communicating with the heating-

chamber, and the latter with a flue in the roof of the drier, said induction-passages being constructed to guide the hot air entering from the heating-chamber in opposite directions through the course of the drying-compartments, so that the fruit therein contained will be subjected to a hot-air current coming from one direction for a part of the time, and from another direction, for another part of the time during which it is being dried, substantially as described.

2. In a fruit-drier, comprising a lower chamber in which to heat the air to be circulated through the drier, and a superstructure or inclosure built thereon, the combination of a series of parallel drying-compartments, and alternating hot-air induction and eduction passages located between and at the ends of the courses of drying-compartments, the former communicating with the heating-chamber, and the latter with a flue in the roof of the drier, said induction-passages being adapted to guide the hot air entering from the heating-chamber in varying directions through the course of the drying-compartments, so that the fruit therein contained will be subjected to a hot-air current coming from one direction for a part of the time, and from another direction for another part of the time, during which it is being dried; and means for keeping the opposite currents of hot air apart without interfering with the moving of the fruit-trays through the compartments, substantially as described.

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**753,738. METHOD OF SUPERHEATING STEAM. SIDNEY A. REEVE, Worcester, Mass., assignor to Charles F. Brown, trustee, Reading, Mass. Filed Apr. 27, 1903. Serial No. 154,406. (No specimens.)**



*Claim.*—1. The process of superheating the steam from a steam-generator which consists in subjecting it at a substantially constant pressure to the heat of a body of steam from another steam-generator at a higher temperature and pressure by conduction through walls which separate the two steam bodies.

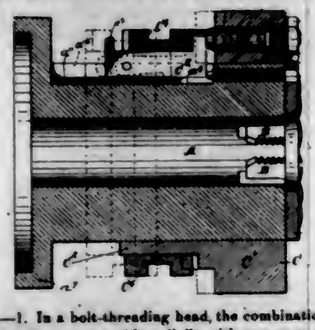
2. The process of superheating the steam from a steam-generator which consists in subjecting it to the heat of a body of steam from another steam-generator at a higher temperature and pressure, effecting a condensation of the higher-pressure steam by the lower-pressure steam, and returning the water of condensation therefrom to the source of supply of the higher-pressure steam.

3. The process of superheating the steam from a steam-generator which consists in subjecting it at a substantially constant pressure to the heat of a body of steam from another steam-generator at a higher temperature and pressure, and automatically releasing the excess of the higher-pressure steam above a predetermined maximum pressure.

4. The process of superheating the steam from a source of steam-supply which consists in subjecting it to the heat of a body of steam from another source of supply at a higher temperature and pressure, and automatically releasing the excess of the higher-pressure steam into the source of supply of the lower-pressure steam.

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**753,739. BOLT-THREADING HEAD. WILLIAM REYNOLDS, Cleveland, Ohio, assignor of one-half to Thomas H. Keane, Cleveland, Ohio. Filed June 14, 1900. Serial No. 20,532. (No model.)**



*Claim.*—1. In a bolt-threading head, the combination of a barrel, a series of die-caps movable radially with respect to the barrel-axis, a die-ring for so moving said caps and movable in the direction of said axis, each cap being formed with an opening for receiving a die intersecting the plane of outer cap-surface, and an adjustable stop arranged to limit the movement of said ring whereby said opening may be wholly or partially obstructed during the operation of the head.

2. In a bolt-threading head, the combination of a barrel, a series of die-caps movable radially with respect to the barrel-axis, a die-ring for so moving said caps and movable in the direction of said axis, each cap being formed with an opening for receiving a die intersecting the plane of the outer cap-surface, and a removable and adjustable stop for limiting the movement of said ring, whereby said opening may be wholly or partially obstructed during the operation of the head, and whereby said opening may be caused to be wholly unobstructed and the dies removed from the same.

3. In a bolt-threading head, the combination of a die-cap provided with an inclined contact-surface and formed with an opening intersecting the plane of such surface, a die secured in said opening and having its outer surface inclined and in the plane of said contact-surface, and a movable die-ring engaging such die-cap contact-surface and die-surface.

4. In a bolt-threading head, the combination of a die-cap provided with an inclined contact-surface and formed with an opening intersecting the plane of such surface, a die in said opening provided with two lateral studs, said cap formed with two grooves located transversely of said opening for receiving said studs, and a die-ring engaging such die-cap contact-surface and die-surface.

5. In a bolt-threading head, the combination of a barrel, the dies and caps, a die-ring movable in the direction of the barrel-axis, means for locking the ring to the barrel, and a spring for actuating the ring when unlocked.

6. In a bolt-threading head, the combination of a barrel, the dies and the caps, a die-ring movable in the direction of the barrel-axis for adjusting the dies, a trigger carried by the ring and adapted to engage the barrel, a locking-ring movable upon the die-ring to actuate the trigger, and a spring for moving the die-ring when unlocked from the barrel.

7. In a bolt-threading head, the combination of the dies and their caps, a barrel having an inclined shoulder, $a^4$, a reciprocating die-ring for actuating the dies, a trigger having a lug for engaging said shoulder, a locking-ring slidable on the die-ring for releasing the trigger from the shoulder, and a spring for moving the die-ring when the trigger is disengaged from the shoulder.

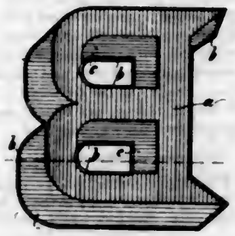
8. In a bolt-threading head, the combination of the dies and their caps, a barrel having a shoulder, the die-ring for holding the dies and caps in adjusted position, a trigger carried by the die-ring and adapted to engage the shoulder on the barrel, a locking-ring for locking the trigger, and a spring for moving the die-ring when the trigger is disengaged from the shoulder.

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**753,740. PRINTING-BLOCK. WILHELM M. ROCKSTROH, Klein-Bodungen-near Pirna, Germany. Filed Aug. 7, 1901. Serial No. 71,230. (No model.)**

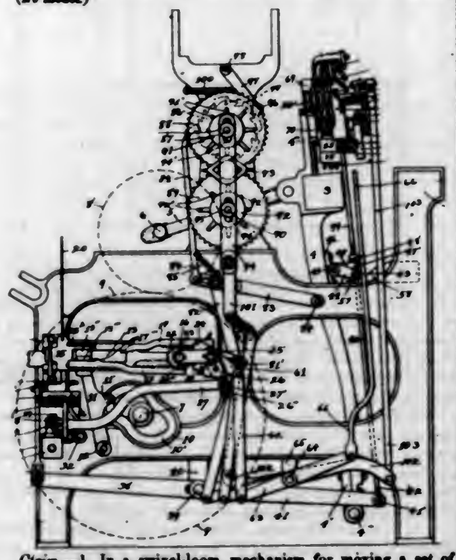
*Claim.*—A printing-block having a raised portion forming a printing-surface and further provided with a cutting means projecting above the said printing-surface, said cutting means forming the edges of the printing-block and a part of the edges of said raised portion.





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**753,741. SWIVEL-LOOM. RUFUS H. RYON, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a Corporation of Massachusetts. Filed Mar. 26, 1902. Serial No. 100,081. (No model.)**



*Claim.*—1. In a swivel-loom, mechanism for moving a set of swivel-shuttles transversely of the fabric, comprising a lever or plate, adapted to be moved, through connections to a jacquard or other pattern mechanism, two toothed bars or racks connected to said plate and moving therewith, and moved independently of said plate, and means for moving said racks simultaneously in opposite directions, a pinion meshing with and moved by said racks, and connections intermediate said pinion and the swivel-shuttles, substantially as shown and described.

2. In a swivel-shuttle loom, mechanism for moving a set of swivel-shuttles transversely of the fabric, comprising a lever or plate, adapted to be moved through connections to a jacquard or other pattern mechanism, two toothed bars or racks connected to said plate and moving therewith, and moved independently of said plate, and means for moving said racks simultaneously in opposite directions, a pinion meshing with said racks, a pin-wheel operated by said pinion, a segment star-wheel operated by said pin-wheel, a connector to a centrally-pivoted lever, and said lever, a connector to an angle-lever, and said angle-lever, and connections therefrom to a set of swivel-shuttles, substantially as shown and described.

3. In a swivel-shuttle loom, mechanism for operating the sliding-pick mechanism, and for raising and lowering the swivel-shuttle rail, comprising a lever or plate, adapted to be moved through connections to a jacquard or other pattern mechanism, two toothed bars or racks connected to said plate and moving therewith, and moved independently of said plate, and means for moving said rack simultaneously in opposite directions, a pinion meshing with said racks, a second pinion operated by said pinion and meshing with a gear-segment, and said gear-segment, and connections therefrom to a sliding shaft or rod connected with the sliding-pick mechanism, and connections from said sliding shaft or rod, operated thereby, to the swivel-shuttle rail to positively raise and lower said rail, substantially as shown and described.

4. In a swivel-shuttle loom, mechanism for operating the sliding-pick mechanism, comprising a lever or plate, adapted to be moved through connections to a jacquard or other pattern mechanism, two toothed bars or racks connected to said plate, and moving therewith, and moved independently of said plate, and means for moving said racks simultaneously in opposite directions, a pinion meshing with said racks, a second pinion operated by said pinion and engaging and operating a segment-gear, and said segment-gear having an arm thereon, and a connector from said arm to an angle-lever, and said angle-lever connected with a sliding shaft or rod, and said rod connected with the sliding-pick mechanism, substantially as shown and described.

5. In a swivel-shuttle loom, mechanism for positively raising and lowering the swivel-shuttle rail and the swivel-shuttles, comprising a lever or plate adapted to be moved through connections to a jacquard or other pattern mechanism, two toothed bars or racks connected to said plate and moving therewith, and moved independently of said plate, and means for moving said racks simultaneously in opposite directions, a pinion meshing with said racks, a second pinion operated by said pinion and meshing with and operating a segment-gear, and said gear having an arm thereon, a connector from said arm to an angle-lever, and said angle-lever connected with a sliding shaft or rod, and said rod, and a connector therefrom to a second angle-lever, and said angle-lever, and a connector therefrom to a lever, and said lever, and a second lever moving therewith, and a connector therefrom to a crank-arm on a rock-shaft, and said rock-shaft, and arms on said shaft, and upright rods from said arms to sliding plates, and said plates, and a sliding shaft loosely mounted in a bearing on said plates, and fast to a stand on the swivel-shuttle rail, and said stand, substantially as shown and described.

6. In a swivel-shuttle loom, the swivel-shuttle rail carrying swivel-shuttles, rotatable disks or surfaces carrying removable pattern-pins, and said pattern-pins, and means for rotating said disks, and connections intermediate said pattern-pins and the swivel-shuttle rail, to positively move the swivel-shuttle rail, transversely of the fabric, to its two extreme positions, and also to positions intermediate its extreme positions, substantially as shown and described.

7. In a swivel-shuttle loom, a lever or plate adapted to be moved through connections to a jacquard or other pattern mechanism, a toothed rack or bar connected to said plate and moving therewith, and moved independently of said plate, and means for moving said rack, a pinion meshing with said rack, and intermediate connections from said pinion to a pawl for actuating a ratchet-wheel, and said ratchet-wheel and pawl, and two gears actuated by said ratchet-wheel, and pattern-surfaces connected with and rotating with said gears, and connections intermediate said pattern-surfaces and the swivel-shuttle rail, to move the swivel-shuttle rail and swivel-shuttles transversely of the fabric to its two extreme positions, and also to positions intermediate its extreme positions, substantially as shown and described.

8. In a swivel-loom, a lever or plate connected with a jacquard or other pattern mechanism, and adapted to be raised or lowered, a rack guided by said plate, a pinion moved by said rack, mechanism for moving said rack and pinion, and connections from said pinion to a swivel-shuttle rack, to move said shuttle-rack back and forth, substantially as shown and described.

9. In a swivel-loom, the swivel-shuttle rail carrying swivel-shuttles, mechanism for positively moving the swivel-shuttles transversely of the warp, said mechanism consisting of two series of pattern-surfaces, a follower or cam interposed between said pattern-surfaces, and connections between said follower and the swivel-shuttle rail, substantially as shown and described.

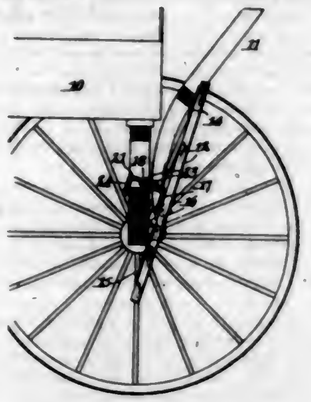
10. In a swivel-loom, the swivel-shuttle rail carrying swivel-shuttles, pattern mechanism consisting of a series of changeable pattern-surfaces, oppositely disposed, and operatively connected, a double cam-surface interposed between said pattern-surfaces, and connections between said double cam-surface and the swivel-shuttle rail to positively move said swivel-shuttle rail, in opposite directions, transversely of the warp, substantially as shown and described

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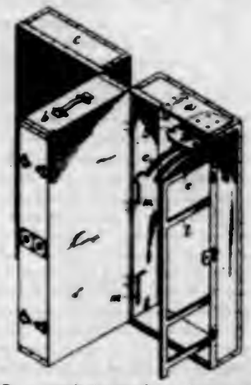
**753,742. THILL OR TONGUE SUPPORT. LOUIS A. SCHNOOR, Eau Claire, Wis. Filed Nov. 10, 1903. Serial No. 180,505. (No model.)**

*Claim.*—A thill or tongue support, comprising a bar having an intermediately-disposed longitudinal slot, a bracket formed with a base portion and right-angled lateral portion, each of said portions

having spaced bolt-apertures, said base portion for adjustable engagement with said bar by a clamp-bolt engaging said slot and bracket-apertures, and an extension-arm having spaced bolt-apertures for adjustable connection with said lateral bracket portion by a clamp-bolt engaging said apertures and terminating in a hook extending parallel to said bar.



## 753,743. WARDROBE-TRUNK. ALONZO D. SHANAN, Milwaukee, Wis., assignor to Knickerbocker Trunk Company, New York, N. Y., a Corporation of New York. Filed June 1, 1903. Serial No. 159,545. (No model.)



*Claim.*—1. In a wardrobe-trunk, a hanger-support pivoted within the trunk to one end thereof and provided with a transverse rod, which occupies a position approximately perpendicular to the bottom of the trunk when closed, and hangers suspended from said rod, substantially as described.

2. In a wardrobe-trunk, a pivot-plate attached to the end of the trunk inside and formed with a ball-race, a hanger-support provided with a corresponding plate which is pivotally secured to the plate in the trunk and balls interposed between said plates, substantially as described.

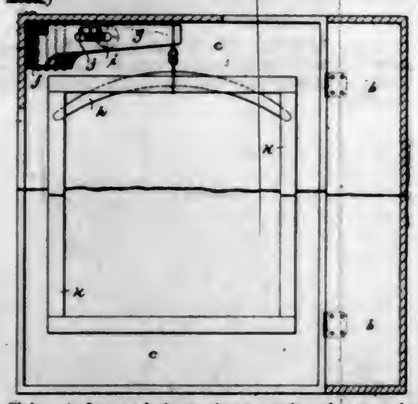
3. In a wardrobe-trunk, a hanger-support pivoted to the trunk on the inside of one end and adapted to be swung horizontally out of the trunk when it is stood on its opposite end, and a keeper attached to the end of the trunk and adapted to engage the free end of the hanger-support and to hold the same securely in place when the trunk is closed, substantially as described.

4. In a wardrobe-trunk, a hanger-support pivoted at one end within the trunk to one end thereof and provided with a transverse rod, which occupies a position approximately perpendicular to the bottom of the trunk when closed, hangers suspended from said rod, a flat follower also suspended from said rod outside of the hangers, and fastenings for holding said follower in place over the clothing hung on the hangers when the trunk is closed, substantially as described.

5. In a wardrobe-trunk composed of three or more sections hinged together on one side and affording an extended base when the trunk is opened and stood on end, and one or more hanger-supports pivoted to the trunk inside thereof and adapted when it is stood on end and opened to be swung horizontally out of and into the same, and when closed to occupy a position approximately parallel with the bottom of the trunk, substantially as described.

6. In a wardrobe-trunk, a hanger-support pivoted to the inside of one end thereof and provided with a transverse suspending-rod near its free end which is curved concentrically with the pivot on which it swings, hangers suspended from and slidable on said rod and a curved keeper attached to the same end of the trunk and adapted to engage with the curved end of said support when it is swung into the trunk, substantially as described.

## 753,744. WARDROBE-TRUNK. ALONZO D. SHANAN, Milwaukee, Wis., assignor to Knickerbocker Trunk Company, New York, N. Y., a Corporation of New York. Filed June 1, 1903. Serial No. 159,546. (No model.)



*Claim.*—1. In a wardrobe-trunk, an arm pivoted at one end within and to the trunk at or near one end thereof and adapted to be swung horizontally out of and into the trunk when it is stood on end and to occupy a position approximately parallel with the bottom of the trunk when closed, and a hanger loosely suspended from the free end of said arm, substantially as described.

2. In a wardrobe-trunk, a longitudinally-slotted arm pivoted at one end within the trunk near one end thereof and adapted to be swung horizontally out of and into the trunk when it is stood on end, an oblique rod attached at the ends to adjoining walls of the trunk and passing through the slot in said arm, and a hanger suspended from the free end of said arm, substantially as described.

3. In a wardrobe-trunk a number of hanger-arms separately pivoted at one end within and to the trunk and adapted to be swung horizontally out of and into the trunk when it is stood on end, and to occupy positions approximately parallel with the bottom of the trunk when swung in, and approximately perpendicular thereto when swung out, and hangers suspended from the free ends of said arms, substantially as described.

4. In a wardrobe-trunk, a number of longitudinally-slotted hanger-arms pivoted within and to the trunk and adapted to swing horizontally out of and into the trunk when it is stood on end, and an oblique rod attached at its ends to adjoining walls of the trunk and passing loosely through the slots in said arms substantially as described.

5. In a wardrobe-trunk, a number of hanger-arms of different lengths pivoted at one end to the trunk in a line oblique to the bottom of the trunk and adapted to be swung horizontally out of and into the trunk when it is stood on end, and hangers suspended from the free ends of said arms, substantially as described.

6. In a wardrobe-trunk, a number of longitudinally-slotted hanger-arms of different lengths pivoted within and to the trunk in a line oblique to the bottom of the trunk and adapted to be swung horizontally out of and into the trunk when it is stood upon end, an oblique supporting-brace attached to adjoining walls of the trunk and passing through the slots in said arms, and hangers suspended from the free ends of said arms and adapted to occupy positions parallel with each other and transverse to said arms when they are swung out of the trunk, substantially as described.

## 753,745. SHOE. CHARLES K. SHERWOOD, St. Paul, Minn. Filed Nov. 10, 1903. Serial No. 180,804. (No model.)



*Claim.*—1. A shoe-tongue having a lining connected with the tongue, said lining being provided with an extension in the direction of the toe of the shoe.



2. A shoe-tongue having a lining connected therewith, said lining being provided with an extension at the lower end thereof, said extension being connected with the lining of a shoe.

3. A shoe-upper, a lining therefor, a tongue, a lining for said tongue having inturned edges stitched to the tongue, and an extension of said tongue-lining having smooth edges connected with the lining of the shoe and extending to the toe of the latter.

## 753,746. METHOD OF PREPARING COLOR-PLATES FOR PRINTING. CHRIS H. SMITH, Elgin, Ill., assignor to The David C. Cook Publishing Company, Elgin, Ill. Filed Jan. 10, 1903. Serial No. 138,542. (No specimens.)



*Claim.*—1. The method of preparing an original relief-plate for the purposes described which embodies the following steps: first, applying a filling of wax or other similar composition to the surface of the said original relief-plate, smoothing the said filling in the plane parallel with the said surface; second, removing the said filling from those parts of the original relief-plate not to appear in color on the print which may be made from the plate, as set forth.

2. A method of preparing an original relief-plate for the purposes described, which consists in, first, applying a layer of yielding plastic material, capable of resisting heat, and smoothing said material in a parallel plane with and slightly above the printing-surface, and second, removing the said material from those parts of the plate which are not to appear in color, upon the print which may be made from the finished plate, as specified.

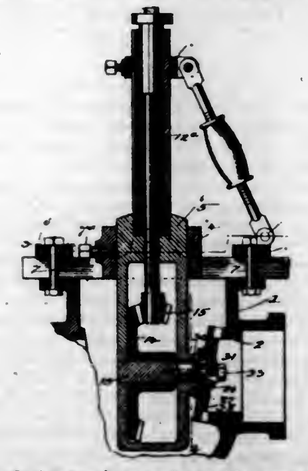
3. A method of preparing an original relief-plate for the purposes described, which consists in, first, applying a filling of plastic material capable of resisting heat on the printing-surface of the said original plate, and smoothing and burnishing said filling in a plane parallel with the said surface, as hereinbefore described.

4. The method of preparing an original relief-plate for color-printing which consists, first, in applying a filling of wax or similar composition to the surface of the said original plate, second, smoothing the said filling in a plane parallel with the said surface, and third, indenting the said composition surface by a screen or similar means, for the purposes stated.

5. An original relief-plate having a plastic filling on the impression-surface thereof which covers all that portion of the plate to be utilized as a color-printing surface, as set forth.

6. A relief-plate of the character described, having a plastic filling on a portion of the impression-surface whose printing-surface is in a plane parallel with and slightly above the remaining portion of the impression-surface of the relief-plate that is free of the filling, as set forth.

## 753,747. GATE-VALVE-RESEATING MACHINE. FRANK L. SMITH, Chicago, Ill., assignor of one-half to Alva C. Rickseeker, Chicago, Ill. Filed Apr. 13, 1903. Serial No. 152,345. (No model.)



*Claim.*—1. A gate-valve-reseating machine, comprising a frame adapted at one end to be inserted into the gateway of the valve-body; a shaft journaled transversely in such inserted end of the frame; means mounted on the frame at the outer end thereof for driving such shaft, the frame having an annular spherical boss protruding from one side of the frame concentric about the axis of the shaft-bearing; a cutter-head having a central socket adapted to seat on said boss, the shaft having projections engaging recesses in the cutter-head for driving the latter, adapted to remain engaged throughout the entire range of oscillation of the cutter-head about the spherical boss on which it is seated.

2. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of the valve-body and to protrude therefrom; a shaft journaled transversely in such inserted end of the frame, and means mounted on the frame at the outer end thereof for driving such shaft; the frame having a spherical seat whose center is in the axis of the transverse shaft, a cutter-head seated on said spherical seat whereby such cutter-head is adapted to oscillate about the center of such seat and to be held to its work directly by the pressure of the frame, and loose driving connections between the shaft and the cutter-head adapted to permit such oscillation.

3. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of a valve-body; a shaft journaled transversely in said inserted end of the frame; a shaft extending longitudinally of the frame and journaled therein and gear connections at the inner end by which it drives the transverse shaft, the frame having exteriorly a spherical seat whose center is in the axis of the transverse shaft; a cutter-head seated on said seat, whereby such cutter-head is adapted to oscillate about the center of such seat and to be held to its work directly by the pressure of the frame, and loose driving connections between the shaft and the cutter-head adapted to permit such oscillation.

4. A valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of a valve-body; a shaft journaled transversely in such inserted end of the frame, and means mounted on the frame for driving such shaft from the outer end of the frame, the frame having an annular boss protruding from one side, concentric about the axis of the transverse shaft; a cutter-head having a central socket adapted to seat on such boss and loose driving connections between the transverse shaft and the cutter-head engaging within the annular boss.

5. A valve-reseating machine comprising a frame adapted to enter the gateway of a valve-body; a shaft journaled transversely

in such inserted end of the frame; a beveled gear on such shaft; a driving-shaft journaled at right angles thereto in the portion of the frame exterior to the valve-body and a beveled pinion thereon meshing with the beveled gear on the first-mentioned shaft; means for rotating the driving-shaft at the outer end of the frame, the frame having an annular boss protruding from one side concentric about the axis of the transverse shaft; a cutter-head having a central socket adapted to seat on said boss, and driving connections between the transverse shaft and the cutter-head engaging within the annular boss.

6. In a gate-valve-reseating machine, in combination with a frame adapted to be intruded into the valve-body; the cutter-head and the shaft by which it is rotated; means for rotating the shaft from the exterior end of the frame; a spherical seat on the frame concentric with the cutter-head shaft, the cutter-head being centrally mounted on such seat with a range of oscillation in all directions; loose driving engagements between the shaft and the cutter-head, the latter having a central aperture within the circle of the driving engagements and a retaining-bolt passing through said aperture and secured in the shaft, and provided at its outer end with proper shoulder for retaining the cutter-head.

7. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of the valve-body; a shaft journaled transversely at such inserted end of the frame; a cutter-head operatively connected with the shaft with freedom for oscillating in all directions about a point in the axis of the shaft whereby the cutter-head is adapted to accommodate itself to the seat; means for rotating said shaft to operate the cutter-head; means adapted to be secured to the valve-body for pivotally supporting the frame to swing toward and from the valve-seat at the inner end; a link and means for pivoting it at one end to said supporting means parallel to the frame-pivot and for pivoting it at the other end to the frame at a distance above the pivot of the latter, and means for lengthening and shortening the link at will to swing the frame about its pivot to carry the cutter-head toward and from the valve-seat.

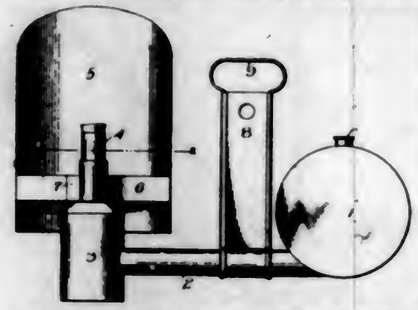
8. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of the valve-body, and having at that end a cutter-head and means for operating it in combination with a sleeve and means for pivotally mounting the same on the valve-body, the frame being adjustable through the sleeve, and means for securing it in adjustable position; an extensible link and means pivotally connecting it with the valve-body and with the frame above the pivotal connection of the latter.

9. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of the valve-body, and carrying at that end a cutter-head for operating on the valve-seat and means for actuating it; means for securing such frame in relation to the valve-body, consisting of parallel bars adapted to span the gateway into the valve-body; a collar pivotally mounted between them and slotted clamps lodged across the parallel bars, and bolts passing through said slotted clamps into the bolt-apertures of the valve-body, the frame being inserted through such sleeve and adjustably secured thereto, and means for tilting the frame over the pivot of the sleeve and securing it as tilted.

10. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of the valve-body, and carrying at that end a cutter-head for operating on the valve-seat and means for actuating it; means for securing such frame in relation to the valve-body, consisting of parallel bars adapted to span the gateway into the valve-body; a collar pivotally mounted between them and slotted clamps lodged across the parallel bars, and bolts passing through said slotted clamps into the bolt-apertures of the valve-body, the frame being inserted through such sleeve and adjustably secured thereto; a collar adjustably secured on the frame above said sleeve and an extensible link pivotally connected at one end with one of the clamps and at the other end with the collar.

11. A gate-valve-reseating machine comprising a frame adapted at one end to be inserted into the gateway of the valve-body, and carrying at that end a cutter-head for operating on the valve-seat and means for actuating it; means for securing such frame in relation to the valve-body consisting of parallel bars adapted to span the gateway into the valve-body; a collar pivotally mounted between them and slotted clamps lodged across the parallel bars, and bolts passing through said slotted clamps into the bolt-apertures of the valve-body, the frame being inserted through such sleeve and adjustably secured thereto; a collar adjustably secured on the frame above said sleeve; an adjustable link comprising two terminal portions pivotally connected, respectively, to the collar and to one of the clamps, and an intermediate sleeve having right and left thread connections with the two terminal portions, respectively.

**753,748. COKE-DRAWER'S LAMP.** JOHN S. SNYDER, Meyersdale, Pa. Filed Mar. 30, 1903. Serial No. 150,222. (No model.)



*Claim.*—1. A lamp of the class described, comprising an oil-font, a feed-tube projecting laterally therefrom, a wick-chamber with which the feed-tube communicates and having a cylindrical burner-tube on its upper side, said tube having at its base a shoulder formed at the top of the wick-chamber, a hanger secured to the feed-tube at a point between the font and the wick-chamber, a bowed concaved shield-deflector, a cross-bar fixed at its ends to the side edges of the deflector and retaining its bowed form, and a cylindrical collar vertically disposed upon the outer side of the cross-bar and directly engaging the burner-tube and resting on said shoulder to support said shield-deflector, said collar frictionally engaging the tube and axially adjustable thereon to permit the deflector to stand in a plane parallel with the feed-tube or at an angle thereto, and adapted to be slid vertically upon the burner-tube for engagement and disengagement, substantially as described.

2. The combination with a lamp, comprising an oil-font, a wick-chamber, and a feed-tube connecting the same, of a hanger secured to the feed-tube between the font and burner-tube, said hanger comprising an elongated U-shaped wire spread laterally at the bend to form a loop-handle, and a sheet-metal strip having its side edges folded over upon the arms of the wire below said handle, the lower end of the strip and lower ends of the arms of the wire being bent or coiled around the said feed-tube, substantially as described.

**753,749. SHEET-METAL FAUCET-SPOUT.** WILLIAM S. STAPLEY, Bridgeport, Conn., assignor to the Bridgeport Brass Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Nov. 9, 1903. Serial No. 180,201. (No model.)



*Claim.*—1. A faucet-spout consisting of a drawn sheet-metal tube having a hub formed with a thickened portion and an outwardly-extending integral flange, the metal of which is doubled upon itself.

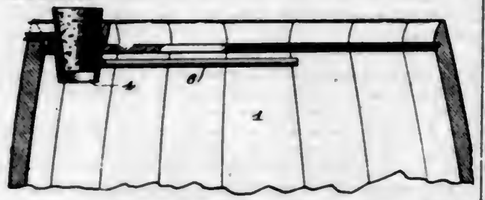
2. A faucet-spout consisting of a drawn sheet-metal tube having a hub formed with a thickened portion and an outwardly-extending integral flange, the metal of which is doubled upon itself, and an external sheet-metal sleeve rigidly secured thereto.

3. A faucet-spout consisting of a drawn sheet-metal tube having a hub formed with a thickened portion and an outwardly-extending integral flange the metal of which is doubled upon itself and at the tip thereof an external sheet-metal sleeve having a flange engaging the end thereof.

4. A faucet-spout consisting of a drawn sheet-metal tube having a hub formed with a thickened portion and an outwardly-extending integral flange the metal of which is doubled upon itself, and an external sheet-metal sleeve, the forward end of which engages the body of the spout closely the rear end being curved outward and resting against the thickened portion and rigidly secured in place.

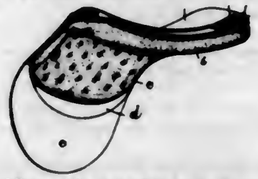
**753,750. SPOUT.** EMIL C. STAUDENRAUS, New Orleans, La. Filed Nov. 20, 1902. Serial No. 182,011. (No model.)

*Claim.*—1. A vessel, a spout therefor, having a portion extending into the vessel, the said spout being tapered inwardly, a vent-tube tapping the spout just under the lid, the said spout having a drain-opening opposite the air-tube, the said vent-tube extending approximately parallel with the top of the receptacle substantially as described.



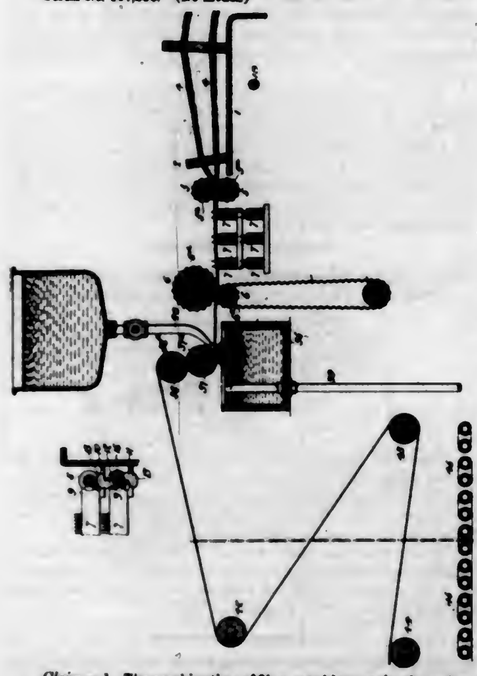
2. A vessel, a spout therefor, having a portion extending into the vessel, the inner end thereof being smaller than the outer end, a vent-tube tapping the spout just under the lid, the said spout having a drain-opening just under the lid, opposite the air-tube, a stopper closing the spout, vent-tube and drainage-hole simultaneously.

**753,751. RIDING-SADDLE.** PHILIP R. STERR, New York, N. Y. Filed Apr. 30, 1903. Serial No. 155,061. (No model.)



*Claim.*—A riding-saddle comprising a frame, a seat and flaps supported thereby, a stiff lining secured to the under side of the frame and extending downward on each side, and a pair of pneumatic cushions secured to the inner face of said lining, each of said cushions comprising a thin lower portion with parallel walls and a thicker upper portion, said cushion having projecting edge flanges for attachment to the lining, substantially as described.

**753,752. MACHINERY FOR THE PRODUCTION OF TEXTILE WEBS.** WILLIAM G. STEWART, Philadelphia, Pa. Filed July 27, 1903. Serial No. 167,238. (No model.)



*Claim.*—1. The combination of fiber-combing mechanism adapted to lay textile fibers side by side with means coöperating therewith for applying sizing to the resultant web in order to unite the fibers of the same into a fabric, substantially as specified.

2. The combination of fiber-drawing mechanism adapted to draw textile fibers into a thin web or fleece with means coöperating therewith for applying sizing to the resultant web in order to unite the fibers of the same into a fabric, substantially as specified.

3. The combination of fiber combing and drawing mechanism arranged to lay textile fibers side by side and form them into a web or fleece with means coöperating therewith for applying sizing to the resultant web in order to unite the fibers of the same into a fabric, substantially as specified.

4. The combination of mechanism for producing a fibrous web or fleece with devices coöperating therewith whereby sizing is applied to both sides of the web delivered by said mechanism thereby uniting the fibers into a fabric, substantially as specified.

5. The combination of mechanism for producing a thin web of fibers laid side by side, and sizing devices therefor coöperating therewith, comprising a pair of rollers one of which rotates in a body of sizing and adapted to apply sizing to the fibers and unite the same into a fabric, substantially as specified.

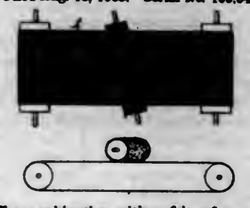
6. The combination of mechanism for producing a thin web of fibers laid side by side, and sizing devices therefor, comprising a pair of rollers one of which rotates in a body of sizing, and means for applying an independent supply of sizing to the web before it passes between the rollers, substantially as specified.

7. The combination of means for producing a thin web of fibers laid side by side, with a sizing device coöperating therewith comprising a set of three rollers one above the other, the lower roller being immersed in sizing, and the web being passed first between said immersed roller and the roller above the same, and then between the latter roller and the top roller, substantially as specified.

8. The combination of means for producing a thin web of fibers laid side by side, with means for applying sizing to said web and for feeding a web of fabric in contact with said fiber web before it reaches said sizing devices, substantially as specified.

9. The combination of means for producing a pair of thin webs each composed of fibers laid side by side, means for applying sizing to said webs, and means for feeding a third web between said fiber webs before they reach said sizing devices, substantially as specified.

**753,753. GUIDE-ROLLER.** WILLIAM H. STOBIE, Waterville, Me., assignor of two-thirds to James L. Dean and Robert Stobie, Waterville, Me. Filed Aug. 10, 1903. Serial No. 169,044. (No model.)



*Claim.*—1. The combination with a felt, of a guide-roller located in close proximity thereto, said guide-roller provided with a frictional surface in contact with said felt at an intermediate point thereof.

2. The combination with a felt of a paper-machine, of a guide-roller located under said felt at an intermediate point, said roller having a frictional surface in contact with the felt.

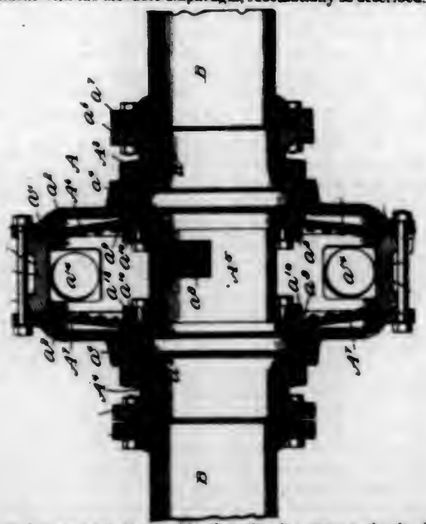
**753,754. VARIATOR.** GAMALIEL C. ST. JOHN, New York, N. Y., executor of Wallace C. Andrews, deceased. Filed July 2, 1902. Serial No. 114,233. (No model.)

*Claim.*—1. In a variator, the combination of a pipe end, a casing having an axial movement on the pipe end, a diaphragm supported between the said members and arranged to permit said axial movement, and a reinforcing member also supported between said members and thereby retained in engagement with the movable diaphragm, substantially as described.

2. In a variator, the combination of a pipe end, a casing having an axial movement on the pipe end, a diaphragm supported between said members and arranged to permit said axial movement, and reinforcing members loosely supported in said members and thereby retained in engagement with the movable diaphragm, substantially as described.

3. In a variator, the combination of a pipe end, a casing having an axial movement on the pipe end, an annular diaphragm secured

at its periphery to the casing and at its inner edge to the pipe end, and arranged to permit said axial movement, and reinforcing members loosely supported in said members and thereby retained in engagement with the movable diaphragm, substantially as described.



4. In a variator, the combination of a pipe end, a casing having an axial movement on the pipe end, an annular corrugated diaphragm secured at its periphery to the casing and at its inner edge to the pipe end and arranged to permit said axial movement, and radial reinforcing members loosely socketed in said members and thereby retained in engagement with the diaphragm, substantially as described.

5. In a variator, the combination of a casing, a pair of pipe ends each having an axial movement on the casing, a diaphragm supported between each pipe end and the casing, and a reinforcing member supported between each pipe end and the casing and thereby retained in engagement with the adjacent diaphragm, substantially as described.

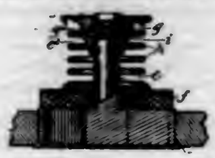
6. In a variator, the combination of a casing, a pair of pipe ends each having an axial movement on the casing, an annular corrugated diaphragm secured at its periphery to the casing and at its inner edge to one pipe end, radial reinforcing members loosely socketed in said support in the said members and thereby retained in engagement with the diaphragm, a second annular diaphragm secured at its periphery to the casing and at its inner edge to the other pipe end, and radial reinforcing members loosely supported in said members and thereby retained in engagement with the second diaphragm, substantially as described.

7. A variator comprising a casing, an inlet-pipe end and an outlet-pipe end supported therein for reciprocatory movement, diaphragms confined between the casing and the two pipe ends, and an apertured guard or guide carried by one of said movably-supported pipe ends and telescopically engaging the other of said pipe ends, substantially as described.

8. A variator comprising a casing, an inlet-pipe end and an outlet-pipe end supported therein for reciprocatory movement, diaphragms confined between the casing and the two pipe ends, and an apertured guard or guide carried by one of said movably-supported pipe ends and telescopically engaging the other of said pipe ends, said guard constructed with apertures along its upper portion and communicating between said diaphragms, substantially as described.

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**753,755. VALVE.** WILLIAM H. STRATTON, Hartford, Conn.; Cora M. Stratton administratrix of said William H. Stratton, deceased. Filed July 10, 1903. Serial No. 164,960. (No model.)



*Claim.*—1. In a fluid-controlling device, a seat for a valve, a valve located on the seat, a mainspring for holding the valve to its seat, a lock for holding said spring, and a guard-spring appurtenant to said lock.

2. In a fluid-controlling device, in combination with a valve-seat, a valve, a spring for holding the valve to its seat, a stem extending through the valve, a lock located on the stem to hold said spring, and a guard-spring appurtenant to said lock.

3. In combination with a valve-deck having openings therethrough, a valve mounted on the surface of said deck, a stem to secure it to the deck and extending through the valve, a spring for holding the valve to its seat, a lock in engagement with the stem for holding said spring, and a guard-spring appurtenant to said lock.

4. In combination in a fluid-controlling device, a valve-seat, a valve, a spring for holding said valve to its seat, a stem extending through the valve, a lock on the stem, said lock and stem having interengaging lugs and recesses, and a guard-spring appurtenant to said lock.

5. In a fluid-controlling device having a valve-seat, a valve, a stem extending through the valve and having locking-lugs, a spring to hold the valve to its seat, a lock having slots for the passage of lugs on the stem and locking-recesses for their reception, and a guard-spring appurtenant to said lock.

6. In a fluid-controlling device including a valve-seat, a valve, a stem extending through the valve and having a reduced portion forming shoulders and provided with locking-lugs, a spring to hold the valve to its seat, a lock located on the stem and having slots and locking-recesses for said lugs, and a guard-spring with one end located on said shoulder and the opposite end pressing against the lock.

7. In a fluid-controlling device including a valve-seat, a valve, a spring to hold the valve to its seat, a stem extending through the valve, a lock located on the stem, said lock and said stem having interengaging lugs and recesses, and normally inactive means for holding the lugs and recesses in engagement.

8. In a fluid-controlling device including a valve-seat, a valve, a stem extending through the valve and having projections extending therefrom, a spring for the valve, a lock having an opening with lips located therein and locking-recesses, and a guard-spring located on the stem with one end in engagement with said lips.

9. In combination with valve-deck having openings therethrough, a stem extending from said deck and having lugs, a valve located on the stem to control the openings through the deck, a spring for holding the valve to its seat, a lock located on the stem and having a central opening and locking-recesses forming lips for the reception of the lugs, and a guard-spring with one end pressing against said lips.

10. In combination with a valve-deck having openings therethrough, a stem projecting from said deck and having a reduced portion forming locking-lugs, a valve located on the stem to control the flow of fluid through the openings through the deck, a mainspring for the valve, a lock having a central opening with lips located therein and locking-recesses for the reception of said lugs, and a guard-spring located within said opening and with one end resting against said lips.

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**753,756. KEY ATTACHMENT FOR PIANOS.** HARRY S. STRAUB, Derby, Conn. Filed Jan. 29, 1903. Serial No. 141,083. (No model.)



*Claim.*—1. In combination with a piano, a removable flexible stop for temporarily holding a key out of action, said stop comprising a body portion divided into sections to suit the varying heights of keys, one or more sections interposed between the key and a stationary part of the piano, for the purpose set forth.

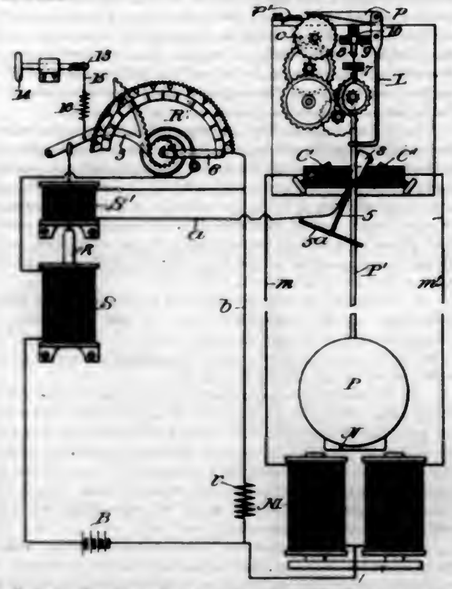
2. In combination with a piano, a removable flexible stop for engaging any one of the keys on the keyboard, said stop comprising a body portion interposed between the key and a stationary part of the piano, for the purpose set forth.

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**753,757. SELF-WINDING ELECTRIC CLOCK.** FRANK T. TALCOTT and BENJAMIN F. KERR, Ashtabula, Ohio. Filed Mar. 11, 1903. Serial No. 147,906. (No model.)



*Claim.*—1. In an electric clock, the combination with a pendulum, an electric circuit, and means in the circuit to drive the pendulum, of a rheostat in the circuit, and oppositely-acting solenoids in the circuit on opposite sides of the rheostat, controlling the resistance thereof.



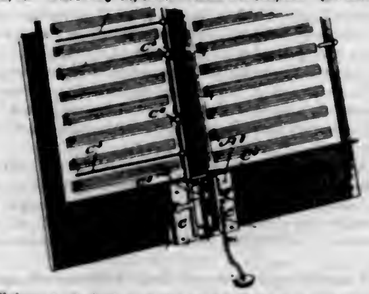
2. In an electric clock, the combination with electric driving means including a switch and magnets, of a constantly-closed circuit, a rheostat therein, an operating branch circuit containing the switch and magnets, and a solenoid in each circuit acting oppositely upon the rheostat.

3. In an electric clock, the combination with electromagnets, and a pendulum actuated thereby, of a switch controlled by the pendulum and comprising a pivoted switch-plate acting by gravity, contacts on opposite sides thereof, connected to the magnets, and an arm connected to the plate and engaging the pendulum, and acting to rock the plate beyond the perpendicular, in opposite directions alternately, substantially as described.

4. In an electric clock, the combination, with a pendulum, an operating-circuit, means actuated thereby to drive the pendulum, a rheostat in the circuit, oppositely-acting solenoids in the circuit on opposite sides of the rheostat, for varying the resistance thereof, of a branch constantly-closed circuit extending across between the arms of the main circuit and connected thereto between the rheostat and one of the solenoids, and a uniform resistance in said closed circuit.

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**753,758. MUSIC-LEAF TURNER.** JOHN W. TAYLOR, Winchester, Ill. Filed July 16, 1903. Serial No. 165,821. (No model.)



*Claim.*—1. A device of the kind described comprising a base, a pintle thereon, spring-actuated parallel arms hinged to the pintle and lying normally in vertical alinement with each other, a short arm extending laterally from each of the hinged arms, and a rod sliding on the base and having hook members alternately engaging and releasing the short arms.

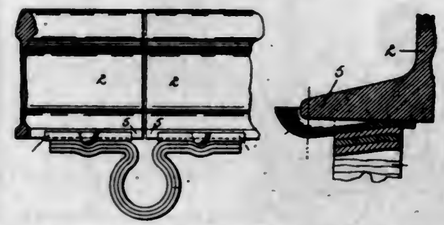
2. A device of the kind described comprising a base, hinged spring-actuated arms lying in vertical alinement above said base, short arms extending laterally from said hinged arms, a rod sliding on the base beneath and transverse to the short arms, a hook member on said rod adapted to alternately engage and release the uppermost of said short arms, and a hook member on said rod adapted to engage the arm immediately below the one released by the first-mentioned hook member.

3. A device of the kind described comprising a suitable base, a pintle thereon, a plurality of arms hinged to said pintle, a plurality of springs each spring being connected at one end to the pintle and at the opposite end to one of said arms, a leaf-turning arm pivoted to each of the hinged arms, slidably-adjustable arms carried by and at right angles to the pivoted arms, stub-arms carried by the pivoted arms, a slidable rod having hook members adapted to hold the hinged arms down, and means whereby each upward movement of the rod releases one of the hinged arms.

4. A device of the kind described comprising two parallel base-plates, guide-rods carried by one of said plates, the other plate sliding on said rods, springs connecting the plates, a rotatable rod journaled between the plates, cams carried by the rod adapted to space the plates apart, and leaf-turning arms carried by the sliding plate.

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**753,759. ELECTRICAL CONNECTION.** EDWARD G. THOMAS, Cambridge, Mass. Filed July 15, 1902. Serial No. 115,633. (No model.)



*Claim.*—1. An electrical connection having an attaching-surface adapted to make contact over the greater portion of its area with the surface of a rail and provided with a depression adapted to form, in connection with said rail-surface, a channel open and accessible at its outer end and leading to the interior of said area, substantially as described.

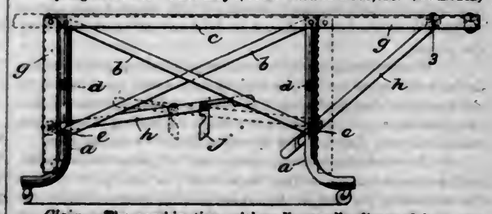
2. An electrical connection having an attaching-surface extending laterally beyond the connection proper and adapted to make contact over the greater portion of its area with the surface of a rail, said attaching-surface being provided with a depression adapted to form, in connection with said rail-surface, a channel open and accessible at its outer end and leading to the interior of said area, substantially as described.

3. An electrical connection provided at its point of attachment with a supplementary strip adapted to make contact over the greater portion of its area with the surface of a rail, said strip having a depression formed in its attaching-surface and extending from one edge of the strip to a point within the boundaries thereof.

4. A rail-bond provided at one or both of its points of attachment with a supplementary strip extending laterally beyond the edge of the bond proper and adapted to make contact over the greater portion of its area with the surface of a rail, said strip having a depression formed in its attaching-surface and extending from one edge of the strip to a point within the boundaries thereof.

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**753,760. COUCH-BED CONSTRUCTION.** FRANCIS M. TINKHAM, Springfield, Mass. Filed May 4, 1903. Serial No. 155,628. (No model.)

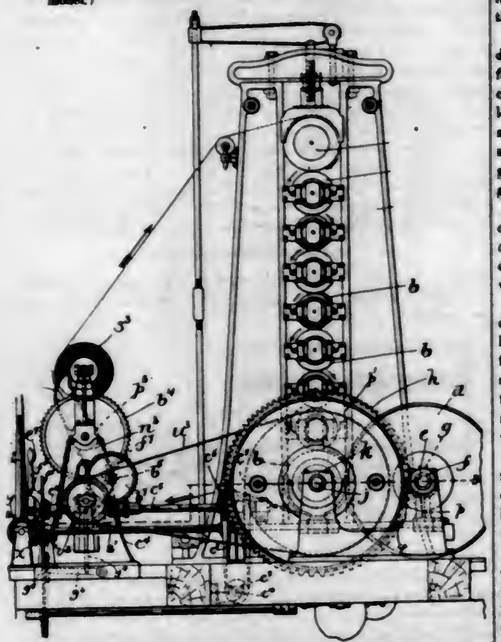


*Claim.*—The combination with a diagonally-disposed brace to support the side section of a couch-bed, said brace having a portion

of one edge thereof cut away, of a latch pivoted on the brace to swing over said cut-away portion thereof, a notch cut in the latch, and adapted to engage the frame of the bed to hold the brace in operative position, the latch and brace constituting a toggle connection to support said side section.

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753,761. CALENDERING-MACHINE. CHARLES H. TORRANCE, Northampton, Mass. Filed Aug. 30, 1902. Serial No. 121,573. (No model.)



*Claim.*—1. A calendering-machine comprising in its construction calendering-rolls, means for driving them at slow or fast speed, and means carried by one of said rolls for automatically disengaging the slow-speed mechanism when the fast-speed mechanism is engaged.

2. A calendering-machine comprising in its construction calendering-rolls, means for driving them at a comparatively slow speed during the introduction of paper to the rolls, fast-speed driving mechanism, and means carried by one of said rolls whereby the change to fast speed will automatically disconnect the slow-speed mechanism.

3. A calendering-machine comprising in its construction calendering-rolls, two shafts each having a pulley, clutch connections between the pulleys and the shafts, one of said shafts having means whereby speed communicated therefrom to the calendering-rolls will be reduced, and means for automatically disengaging the clutch mechanism of the last-mentioned shaft when the clutch of the other shaft is connected.

4. A calendering-machine comprising in its construction calendering-rolls, a shaft for operating said rolls, a driving-pulley on said shaft and having a clutch whereby said pulley may be employed to drive the shaft at high speed, a gear loosely mounted on said shaft and having a smaller gear or pinion meshing therewith, a shaft on which said smaller pinion is secured, a driving-pulley on the last-mentioned shaft, clutch mechanism between the last-mentioned pulley and shaft, means for automatically throwing out the last-mentioned clutch when the other is thrown in, and means for connecting the gear with the first-mentioned shaft when said gear is driven by the pinion.

5. A calendering-machine comprising in its construction calendering-rolls, means for driving them at slow or fast speed, means for automatically disengaging the slow-speed mechanism when the fast-speed mechanism is engaged, and a single controlling lever or arm movable in two directions for operating the power connections.

6. A calendering-machine comprising in its construction calendering-rolls, means for driving them at slow or fast speed, clutches for controlling the slow or fast speed driving means, two parallel clutch-operating shafts, a lever for oscillating one of said shafts, said lever being movable on the axis of said shaft and also in a direction at right angles thereto, and connections whereby the last-mentioned movement of the lever will be communicated to the other shaft.

7. A calendering-machine comprising in its construction calendering-rolls, means for driving them at slow or fast speed, clutches for controlling the slow and fast speed driving means, two parallel clutch-operating shafts, one of said shafts having a bevel-gear, a lever or arm secured to the other shaft to oscillate it, said lever being also pivotally connected with its support so as to be oscillated in a direction at right angles to the axis of the shaft, a tongue projecting from said lever, and a bevel-pinion meshing with the first-mentioned pinion and having a groove receiving said tongue.

8. A calendering-machine comprising in its construction calendering-rolls, means for driving them at slow or fast speed, clutches for controlling the slow or fast speed driving means, two parallel clutch-operating shafts, a lever for oscillating one of said shafts, said lever being movable on the axis of said shaft and also in a direction at right angles thereto, means whereby the last-mentioned movement of the lever will be communicated to the other shaft, and a guide-block for one end of said lever, the said block having an angular groove receiving said end of the lever.

9. A calendering-machine comprising in its construction calendering-rolls, a pulley connected with one of said rolls, means for driving the rolls at slow or fast speed, a shaft for supporting a roll on which the paper is wound, and a belt connecting the said pulley with a pulley on the said winding-shaft.

10. A calendering-machine comprising in its construction calendering-rolls, a shaft for driving said rolls and provided with a pulley, means for driving said shaft at slow or fast speed, movable arms for supporting the roll of paper to be calendered, means for holding said arms with their roll-carrying portions in either one of two different planes, a shaft and connections whereby it may rotate said roll when in one of its positions, and a belt connecting said pulley with a pulley on the paper-roll-driving shaft.

11. A calendering-machine comprising calendering-rolls, a movable carrier having arms for supporting the roll of paper to be calendered, means for oscillating said carrier, means for automatically interrupting said oscillation at a predetermined point, and means for locking said carrier at the end of each oscillation.

12. A calendering-machine comprising calendering-rolls, a pivotally-mounted carrier having roll-supporting arms arranged in pairs projecting in opposite directions from their axis of rotation, each pair of arms having means for supporting a roll of paper, means for oscillating said carrier, means for automatically interrupting said oscillation at a predetermined point, and means for locking said carrier at the end of each oscillation.

13. A calendering-machine comprising calendering-rolls, a paper-roll carrier having two pairs of pivotally-mounted roll-supporting arms projecting in opposite directions from their axis of rotation, each pair of said arms being provided with means for supporting a roll of paper, means for oscillating said carrier, and means for automatically interrupting said oscillation at a predetermined point.

14. A calendering-machine comprising calendering-rolls, movable arms for supporting the roll of paper to be calendered, means for oscillating said arms, means for automatically interrupting said oscillation at a predetermined point, means for holding said arms with their roll-carrying portions in either one of two different planes, and means for connecting power to and disconnecting it from a roll of paper supported by said arms.

15. A calendering-machine including calendering-rolls and having a paper-roll carrier comprising two pairs of rotatably-mounted roll-supporting arms projecting in opposite directions from their axis of rotation, each pair of arms having means for supporting a roll of paper, means for partially rotating the carrier and automatically stopping it at the end of such partial rotation, a power-operated shaft mounted in alinement with the axis of the supported roll in one of its stationary positions, and means for clutching said power-shaft to said roll.

16. A calendering-machine comprising calendering-rolls, rotatably mounted arms having means for supporting a roll of paper, means for oscillating said arms to bring them into convenient position for transferring a roll between said arms and a truck, and means for automatically interrupting said oscillation at a predetermined point.

17. A calendering-machine including calendering-rolls and having a paper-roll carrier comprising two pairs of rotatably-mounted roll-supporting arms projecting in opposite directions from their axis of rotation, each pair of arms having means for supporting a roll of paper, and means for reversing the direction of rotation of said arms, whereby a roll of paper may be conveniently transferred between a pair of said arms and a truck.

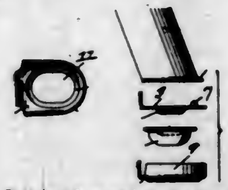


18. A calendering-machine comprising calendering-rolls, rotatable arms for supporting the roll of paper to be calendered, and means for oscillating said arms to bring them into convenient position for transferring a roll between said arms and a truck, said means comprising a gear on the axis of rotation of the arms, a shaft having a pinion meshing with said gear and having also a worm-wheel, a worm-shaft engaging said worm-wheel, and means for reversing the direction of rotation of said worm.

19. A calendering-machine comprising calendering-rolls, rotatably-mounted arms having means for supporting a roll of paper, a gear for operating said arms, said gear having some of its teeth omitted at diametrically opposite points, a shaft having a pinion meshing with the teeth of said gear, means for operating said pinion to rotate the gear until the blank space is reached, and means for locking the arms when the pinion is opposite either of the blank spaces of the gear.

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753,762. CUSHIONED FOOT FOR METAL FURNITURE. JOS. F. L. UHL, Toledo, Ohio. Filed June 18, 1903. Serial No. 162,025. (No model.)



*Claim.*—1. In a foot for metal furniture, the combination with a flanged leg-standard, of a backing-plate in contact with the end of the leg-standard and the flange thereon, a retaining member provided with an opening and having edges adapted to be turned over to engage the flange upon the leg-standard, and a cushion disposed in the opening in the retaining member having edges adapted to be clamped between the backing-plate and the retaining member, substantially as described.

2. In a foot for metal furniture, the combination with a tubular leg-standard provided with an outwardly-extending flange at its lower end, of a backing-plate in contact therewith and having a raised portion, a retaining member provided with a marginal flange adapted to be turned upon the flange of the leg-standard, and having an opening, and a cushion adapted to be clamped in position within the opening in the retaining member between its marginal edges and the raised portion upon the backing-plate, substantially as described.

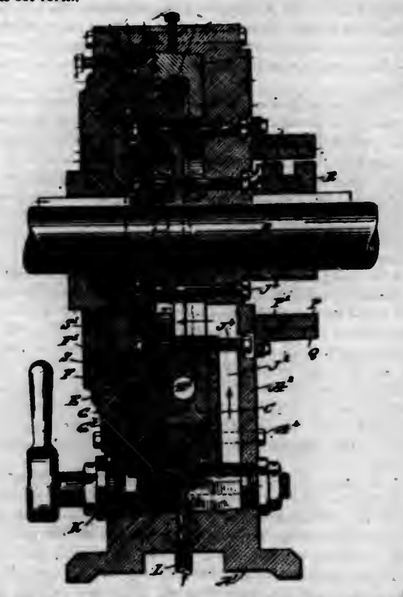
3. In a foot for metal furniture, the combination with a U-shaped metal leg-standard provided with a U-shaped flange, of a backing-plate in contact with the lower end of the leg-standard having a raised portion, a retaining member also provided with a U-shaped flange adapted to be turned over upon the flange of the leg-standard and having an opening, and a cushion adapted to be clamped in position in the opening in the retaining member between its marginal edges and the raised portion upon the backing-plate, substantially as described.

4. In a foot for metal furniture, the combination with a metal leg-standard provided with a U-shaped flange, of a backing-plate having front and side margins corresponding to the shape of the flange upon the leg-standard, and having the raised portion 6 on its lower face, the nipple 7 adapted to contact with the front inner face of the leg-standard, and the bent portion 5, adapted to take a position between the sides of the leg-standard, the retaining member having the marginal flange 9 adapted to be turned upon the flange provided on the leg-standard, and also having the opening 11 provided with a marginal offset, and the bent portion 10, and a cushion secured in position in the opening provided in the retaining member, and having formed edges lying in the offset surrounding said opening, and adapted to be clamped between the same and the raised portion upon the backing-plate, substantially as described.

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753,763. ROTARY ENGINE. FREDERICK P. UEBEL and BENJAMIN P. UEBEL, St. Johns, Oreg. Filed July 22, 1903. Serial No. 166,547. (No model.)

*Claim.*—1. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, and valves for controlling the admission and exhaust of the motive agent to and from the said working chamber, the valves also serving as abutments for the motive agent in the said working chamber, as set forth.



2. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, the said carrier having a plurality of annular packing-ribs on opposite sides of the said closing-rib, for engaging corresponding annular grooves on the side of the working chamber having the opening, and valves for controlling the admission and exhaust of the motive agent to and from the said working chamber, the valves also serving as abutments for the motive agent in the said working chamber, as set forth.

3. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, the said carrier having a plurality of annular packing-ribs on opposite sides of the said closing-rib, for engaging corresponding annular grooves on the side of the working chamber having the opening, means for adjusting the carrier in the direction of its axis toward the working chamber, and valves for controlling the admission and exhaust of the motive agent to and from the said working chamber, the valves also serving as abutments for the motive agent in the said working chamber, as set forth.

4. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, a power-transmitting web secured to the shaft to be driven and carried around by the said carrier, and valves for controlling the admission and exhaust of the motive agent to and from the said working chamber, the valves also serving as abutments for the motive agent in the said working chamber, as set forth.

5. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, a web secured to the shaft to be driven and having offsets engaging diametrical grooves in the said carrier, and valves for controlling the admission and exhaust of the motive agent to and from the said working chamber, the valves also serving as abutments for the motive agent in the said working chamber, as set forth.

6. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston, carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, an admission-valve, an exhaust-valve in the working chamber, the admission-valve forming an abutment for the motive agent in the working chamber, and means for actuating the said valves in unison, as set forth.

7. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, sets, diametrically disposed, of admission and exhaust valves in the said working chamber, means for actuating the said valves in unison, and a reversing-valve controlling the motive agent to and from the said working chamber, as set forth.

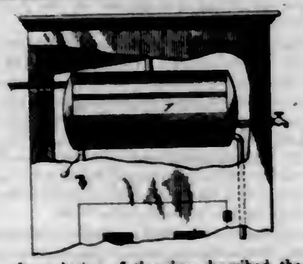
8. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, annular steam-chests having diametrically opposite inlet-ports and diametrically opposite exhaust-ports, the said ports leading to the working chamber, admission and exhaust valves for controlling the said ports and for forming abutments in the working chamber, and means for actuating the valves in unison with the said piston, as set forth.

9. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revolvble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, annular steam-chests having diametrically opposite inlet-ports and diametrically opposite exhaust-ports, the said ports leading to the working chamber, admission and exhaust valves for controlling the said ports and for forming abutments in the working chamber, means for actuating the valves in unison with the said piston, and a reversing-valve connected with a steam-supply and controlling passages to the said annular steam-chests, as set forth.

10. A rotary engine comprising an annular fixed working chamber, having an annular opening at one side, a piston mounted to travel in the said working chamber, a revoluble piston-carrier having an annular closing-rib fitting the opening in the side of the said working chamber, the said piston being secured to the said rib, annular steam-chests having diametrically opposite inlet-ports and diametrically opposite exhaust-ports, the said ports leading to the working chamber, admission and exhaust valves for controlling the said ports and for forming abutments in the working chamber, and means for actuating the valves in unison with the said pistons, consisting of cams revolving in unison with the said piston, slides reciprocated by the said cams and links connecting each slide with arms on the valve-stems of the said valves, for operating a pair of oppositely-disposed valves from one slide, as set forth.

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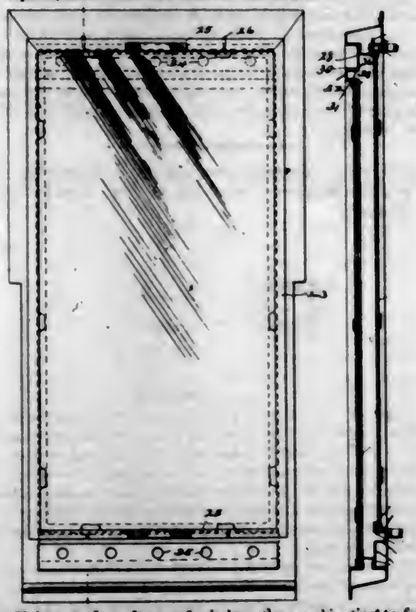
**753,764. REFRIGERATOR. FRANKLIN M. VANNEMAN, Sidell, Ill. Filed Mar. 24, 1903. Serial No. 149,366. (No model.)**



*Claim.*—In a device of the class described, the combination with a water-holding receptacle having inlet and outlet means, a vent-tube disposed upon the upper portion of the receptacle, a diaphragm disposed upon the upper end of the vent-tube and having a vent-opening therein, a thimble screwed to the upper end of the vent-tube and inclosing the diaphragm, a screw-ring adapted to be screwed within the aforesaid thimble and to clamp the diaphragm upon the upper end of the vent-tube, a float-valve disposed within the vent-tube and having a stem leading upwardly therefrom, a cross-bar formed upon the screw-ring and adapted to cooperate with the valve-stem and direct its movement within the vent-tube, and a head formed upon the upper end of the valve-stem, substantially as described.

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**753,765. ANTIHEAT-RADIATING WINDOW. FRANK VOIGTMANN, Chicago, Ill., and SILAS H. POMEROY, New York, N. Y. Filed Sept. 24, 1903. Serial No. 174,523. (No model.)**



*Claim.*—1. In a fireproof window, the combination to form a self-contained, double-glazed sash, of a main marginal sash-frame externally constructed to fit within the frame of a window-opening and provided in its inwardly-facing sides with seats for two glazings, a glazing mounted in one of said seats and a detachable glazing-frame mounted in the other seat, said detachable glazing-frame being provided with a second glazing, and ventilating-passages leading into the upper and lower portions of the space between said glazings.

2. In a fireproof window, the combination to form a self-contained, double-glazed sash, of a main, circumferentially continuous marginal sash-frame, externally constructed to fit within the frame of the window-opening and provided in its facing margins with rabbets for two parallel glazings, a glazing directly mounted in one of said rabbets a glazing-frame detachably mounted in the other rabbet, a glazing mounted in said detachable glazing-frame and ventilating-passages leading into the upper and lower portions of the space between said glazings.

3. In a fireproof window, the combination to form a self-contained, double-glazed sash, of a main, circumferentially continuous marginal sash-frame, externally constructed to fit within the frame of the window-opening and provided in its facing margins with rabbets for two parallel glazings, a glazing directly mounted in one of said rabbets, a glazing-frame detachably mounted in the other rabbet, a glazing mounted in said detachable glazing-frame, said detachable frame being provided with a glazing of less length than the opening of the main frame and having at one end a filling-in extension perforated to provide ventilation and said glazing-frame, its filling-in extension and both glazings being arranged entirely or substantially inside of the two outer face planes of the main sash-frame

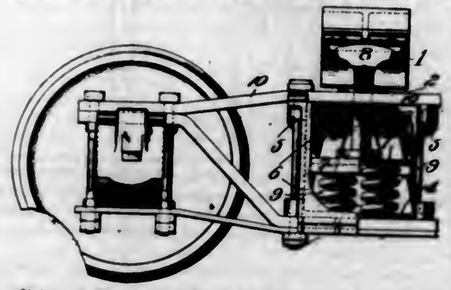
4. In a fireproof window, the combination to form a self-contained, double-glazed sash, of a main marginal sash-frame externally constructed to seat or fit within the frame of the opening and provided in its inwardly-facing margins with seats for two glazings, one of said seats containing a permanently-mounted fireproof glazing, a removably-seated glazing-frame mounted in the other rabbet, a fireproof glazing mounted in said glazing-frame and ventilating-passages leading into the space between said glazings at the upper and lower ends of the sash, the removably-seated glazing-frame, its glazing, and the permanently-seated glazing being all arranged entirely within the main marginal sash-frame and between the outer face planes of the latter.

5. In a fireproof window, the combination of a main sash-frame provided with outer and inner rabbets, a glazing permanently seated in the outer rabbet, and a detachable glazing comprising a glazing-frame removably seated in the inner rabbet and itself provided with a glazing-opening of less length than that of the main frame, filling-in metal webs above and below the glazing of said detachable frame, ventilating-apertures formed in said webs, and holding-prongs arranged to project outwardly at opposite sides of the frame and parallel with the general plane of the latter, substantially as described.

6. In a fireproof window, the combination of a main sash-frame provided with outer and inner rabbets, a glazing permanently seated in the outer rabbet, a glazing-frame removably seated in the inner rabbet and itself provided with rabbets, a glazing seated in said removable frame of less length than the full length of the frame, metal filling-in webs above and below the glazing of said detachable frame, ventilating-apertures formed through said webs, and holding-prongs arranged to project upwardly and downwardly at opposite sides of the removable frame and parallel with the general plane of the latter, and registering apertures in the main sash-frame to receive said prongs, said removable frame being made shorter than the seat within which it fits so as to be capable of being shifted upwardly to disengage the lower pair of prongs, substantially as described.

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**753,766. ROCKER SIDE-BEARING TRUCK. JOHN C. WANDS, St. Louis, Mo. Filed Nov. 28, 1903. Serial No. 183,026. (No model.)**



*Claim.*—1. The combination with a transom, of a spring-supported follower guided vertically therein, and a rocking bar having rolling engagement with said follower; substantially as described.

2. The combination with a transom having a spring-supported follower arranged therein, a top arch-bar, and a rocking bar in vertical alinement with the arch-bar and supported by said follower, said bar having a rolling engagement with said follower; substantially as described.

3. The combination with a transom, of a spring-supported follower arranged therein, a top arch-bar in vertical alinement with said follower, a rocking bar provided with an opening through which the top arch-bar passes, said rocking bar being in vertical alinement with the arch-bar, and a body-bolster with which said rocking bar has a rolling engagement; substantially as described.

4. The combination with a transom having vertical guideways, of a spring-follower arranged therein, springs for supporting said follower, a seat in the upper face of said follower, a rocking bar having rolling engagement with said seat, and provided with an opening for the passage of the top arch-bar, with which arch-bar the said rocking bar is in vertical alinement, and a body-bolster having a pivotal connection with the truck and having a recessed seat for rolling engagement with the upper end of the rocking bar; substantially as described.

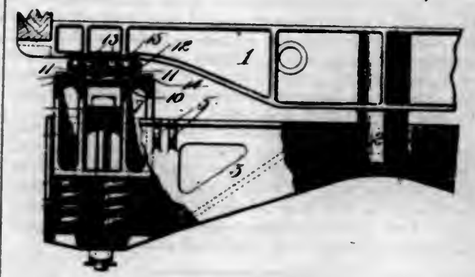
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**753,767. ROLLER SIDE-BEARING TRUCK. JOHN C. WANDS, St. Louis, Mo. Filed Nov. 28, 1903. Serial No. 183,027. (No model.)**

*Claim.*—1. The combination with a transom having vertical guideways, of a side bearing mounted in said guideways, antifriction devices carried by said side bearing, and an arch-bar passing through an opening in said side bearing; substantially as described.

2. The combination with a transom, of top and bottom arch-bars, a side bearing yieldingly mounted in said transom, and antifriction devices carried by said side bearing and movable across the upper face thereof, said antifriction devices being in vertical alinement with the arch-bars; substantially as described.

3. The combination with a transom, of top and bottom arch-bars, a side bearing vertically guided by said transom, springs for supporting said side bearing, the top arch-bar passing through an opening in said side bearing, and antifriction devices carried by the side bearing and in vertical alinement with said arch-bar; substantially as described.

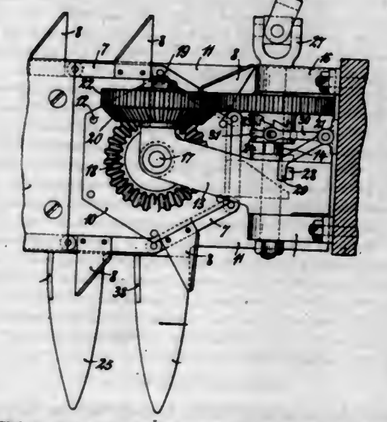


4. In a side bearing, the combination with a yieldingly-supported block having an opening for receiving the top arch-bar, of a track-support, a track arranged in vertical alinement with said opening and overhanging the edges of said support, a frame having depending lugs hooking under the edges of said track, and antifriction devices also in vertical alinement with said opening, spaced apart by said frame; substantially as described.

5. The combination with a transom, of top and bottom arch-bars, a yielding block guided vertically by said transom, springs for supporting said block in position, antifriction devices carried by said block and in vertical alinement with the arch-bars, a body-bolster having a pivotal connection with the transom, said body-bolster engaging the antifriction devices at a point in vertical alinement with the arch-bars; substantially as described.

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**753,768. HARVESTING-MACHINE. EDVARD J. WAHL, Christiania, Norway. Filed July 8, 1902. Serial No. 114,510. (No model.)**



*Claim.*—1. In combination, the finger-bar pivotally supported at its inner end, cutting means carried thereby, means for driving the cutting means located adjacent the pivoted end of the finger-bar, said means including a clutch, a clutch-shifting lever pivoted adjacent the pivoted end of the finger-bar and a projection at the pivoted end of the finger-bar to bear on the said lever, substantially as described.

2. In combination, a finger-bar pivotally supported, cutting means carried thereby, a bracket 13 at the pivoted end of the finger-bar extending upwardly and over the finger-bar, a shaft 14 passing through the bracket and serving as the pivot for the finger-bar, a drum 10 around which the cutting means passes, and a shaft therefor supported in the finger-bar and bracket 13, substantially as described.

3. In combination, a finger-bar, cutting means carried thereby, a shaft 14 about which the finger-bar pivots to be raised and low-

ered, drums on the finger-bar over which the cutting means passes, bevel-gearing for driving one of the drums and a pair of gears 21 22 having peripheral teeth for driving the bevel-gears, the said gear 21 being axially in line with the pivot of the finger-bar and the gear 22 being adapted to roll thereon when the finger-bar is raised and lowered, substantially as described.

4. In combination, a finger-bar, a shaft 14 about which the same pivots, a gear 21 loose on the said shaft, means for driving the shaft, a clutch on the shaft for connecting the gear 21 thereto, means for controlling the clutch located adjacent the pivoted end of the finger-bar and in turn controlled by the finger-bar, and cutting means on the finger-bar and means for driving the same from the gear 21, substantially as described.

5. In combination, a finger-bar pivoted at one end, cutting means carried by the finger-bar, driving means for the said cutting means including a clutch, a pivoted arm 29 for controlling the clutch and a projection 28 in connection with and moving with the finger-bar to move the arm 29 to set the clutch when the finger-bar is moved down, said arm 29 being operated by a part on the finger-bar when the latter is raised, substantially as described.

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**753,769. SUPPLY-NOZZLE FOR TURBINES.** CARL WEICHELT, Moscow, Russia. Filed Apr. 15, 1903. Serial No. 153,687. (No model.)



*Claim.*—1. In an elastic-fluid turbine, a nozzle consisting of a plurality of members forming channels, and cover-rings for said members for holding them in position, substantially as set forth.

2. In an elastic-fluid turbine, a sectional nozzle at the end of the wall of the main supply-channel, consisting of curved members forming a curved channel, cover-rings above and below said curved members for holding them in position, and means for securing said cover-rings and curved members to the wall of the main supply-channel, substantially as set forth.

3. In an elastic-fluid turbine, a sectional nozzle at the end of the wall of the main supply-channel, consisting of curved members forming curved channels, a passage in the wall of the main supply-channel communicating with the curved channel formed by said members, cover-rings above and below said members for holding them in position, and means for securing said cover-rings and members to the wall of the main supply-channel, substantially as set forth.

4. In an elastic-fluid turbine, a sectional nozzle consisting of curved members forming curved channels, a passage in the wall of the main supply-channel communicating with the curved channel formed by the members, a slide-valve for opening or closing the passage in the wall of the main supply-channel, cover-rings above and below said members for holding them in position, and means for securing said cover-rings and members to the wall of the main supply-channel, substantially as set forth.

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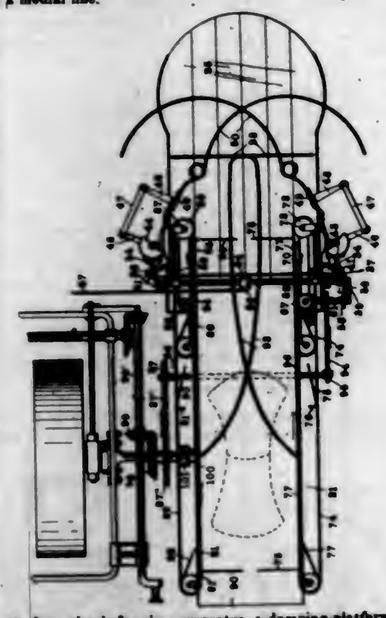
**753,770. SHOCK-FORMER.** JAMES F. WHEELER, Perry township, Marion county, Ind., assignor of one-half to Augustin Boice, Indianapolis, Ind. Filed June 9, 1902. Serial No. 110,844. (No model.)

*Claim.*—1. In a shocking apparatus, a dumping-platform consisting of a plurality of slats supported upon substantially horizontal axes, means for moving said platform bodily vertically toward and from the ground, and means for swinging the slats upon their axes.

2. In a shocking apparatus, a dumping-platform consisting of a plurality of slats supported upon substantially horizontal axes, means for moving said platform vertically toward and from the ground, and means for swinging the slats upon their axes when they are moved toward and from the ground.

3. In a shocking apparatus, a dumping-platform consisting of a plurality of slats supported upon substantially horizontal axes, means for moving said platform bodily vertically toward and from the ground, and means for swinging the slats in two groups in opposite directions from a medial line.

4. In a shocking apparatus, a dumping-platform consisting of a plurality of slats supported upon substantially horizontal axes, means for moving said platform bodily toward and from the ground, and means for operating upon the vertical movement of the platform for swinging the slats in two groups in opposite directions from a medial line.



5. In a shock-forming apparatus, a dumping-platform consisting of a plurality of slats supported upon substantially horizontal axes, means for moving said platform toward and from the ground, and means for swinging the slats in two groups in opposite directions from a medial line.

6. In a shock-former, the combination of a supporting-frame, a plurality of fingers pivotally mounted upon said frame whereby they may be turned upon edge, means for vertically reciprocating said frame, and means for swinging the fingers upon edge when the frame is lowered and for returning the fingers to initial position when the frame is raised.

7. In a shock-former, the combination of a supporting-frame, a plurality of fingers composing a shock-forming platform, each of said fingers being pivotally supported upon a substantially horizontal axis, connections between the fingers on each side of a longitudinal center grouping the fingers into two groups, means for vertically reciprocating the supporting-frame, and means connected to the reciprocating means for turning the fingers of the two groups on edge in opposite directions from the center out when the frame is lowered whereby the butt-ends of the shocked material are separated so as to spread the base of the shock and thereafter the shock is deposited upon the ground.

8. In a shock-former, the combination, with a vertically-reciprocable shock-forming platform, of a pair of gates arranged above said platform, a pair of rack-bars, and intermediate connecting-gearing between said rack-bars and gates and between the platform and rack-bars whereby a reciprocation of the platform will reciprocate the gates.

9. In a shock-former, the combination, with a receiving-platform, of a shock-forming platform arranged to receive material from the receiving-platform and consisting of a plurality of fingers, a support for each of said fingers whereby it may be turned on edge, means for turning said fingers upon edge, a pair of gates hinged at opposite sides of the shock-forming platform, a pair of rack-bars, intermediate connecting-gearing between each of said rack-bars and one of the gates, and means for reciprocating said rack-bars so as to swing the gates.

10. In a shock-former, the combination with a receiving-platform, of a supporting-frame, a shock-forming table consisting of a plurality of fingers pivotally mounted on said frame, intermediate connections between said supporting-frame and the receiving-platform whereby said frame with its fingers may be vertically reciprocated, means for turning said fingers upon edge when the supporting-frame is moved downward, a pair of gates arranged above the shock-forming platform, a pair of rack-bars, intermediate connecting-gearing between each of said rack-bars and one of said gates, and intermediate connections between the rack-bars and the supporting-frame, substantially as and for the purposes set forth.



11. In a shock-former, the combination with a platform, of a supporting-frame, a pair of links pivotally connected to the frame at one end and pivotally connected to the receiving-platform at the other end whereby the frame may be vertically reciprocated, a plurality of fingers pivotally mounted upon the supporting-frame upon substantially horizontal axes, a lever connected to each of said fingers, a pair of links connecting said levers into two groups upon opposite sides of a longitudinal medial line, a bell-crank lever connected to each of said groups of levers, a connection between said bell-crank lever and the adjacent link which connects the supporting-frame to the receiving-platform, a pair of gates arranged over the shock-forming platform, and connections between the supporting-frame and the said gates for swinging the gates when the supporting-frame is reciprocated.

12. In a shock-former, the combination with a receiving-platform, of a vertically-reciprocable supporting-frame, a plurality of fingers pivotally supported upon said frame upon substantially horizontal axes to form a shock-forming platform, a pair of rack-bars, connections between said rack-bars and the supporting-frame, a shaft, a pair of pinions carried by said shaft and engaging the rack-bars, a thread formed in said shaft, a driving-wheel threaded upon said threads, and means for driving said driving-wheel whereby, after the supporting-frame has moved downward and its fingers turned on edge the driving-wheel may be rotated freely upon its shaft a desired number of revolutions before it positively engages the shaft so as to rotate the pinions thereof to drive the rack-bars upward to return the supporting-frame and its fingers to initial position.

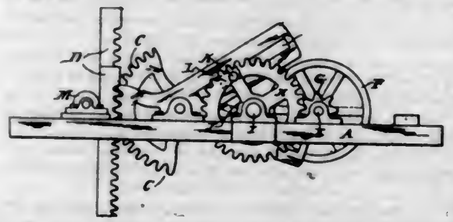
13. The combination, with a self-binding harvester, of a receiving-platform, means for attaching said receiving-platform in position to receive bundles from the harvester, a shock-forming platform consisting of a plurality of fingers, means for transferring the bundles in succession from the receiving-platform upon said fingers, means for gathering said bundles in a shock upon said fingers butt-end down, means for turning said fingers upon edge whereby the shock may drop butt-end down upon the ground, and means for withdrawing the shock-forming mechanism from the deposited shock.

14. In a shocking apparatus, a frame, a transverse member mounted to move vertically thereon, fingers forming a bottom carried by said transverse member and mounted so as to turn thereon, means for vertically moving the transverse member, and means for turning the fingers upon the vertical movement of the transverse member.

15. In a shocking apparatus, a dumping-platform arranged to move bodily toward and from the ground and including fingers turnable upon longitudinal axes, means for vertically moving the platform, and means for turning said slats simultaneously with the vertical movement of the platform.

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**753,771. DRIVING MECHANISM FOR PUMPS.** JOHN C. WHITNER, Lordsburg, Cal. Filed Sept. 15, 1903. Serial No. 173,226. (No model.)

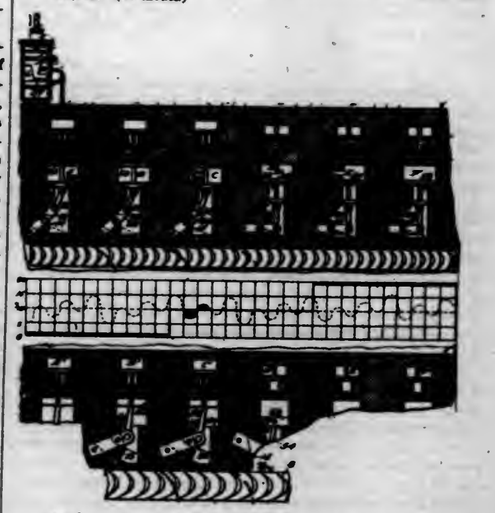


*Claim.*—1. In a driving mechanism, a frame; two levers pivoted intermediate their ends in said frame; each of said levers having at one end a toothed sector, and a longitudinal slot in the other end; rack-bars meshing with said sectors and adapted to be moved thereby; gears mounted in said frame at a point crossed by the oscillation of the slotted end of said levers; crank-pins affixed to said gears at points on the opposite sides of the shafts on which the gears are mounted, said crank-pins passing into the slots in said levers; means to operate said gears.

2. In a pumping mechanism a frame; two levers pivotally mounted in said frame intermediate their ends so that the distance from the pivot to one end shall be greater, than the distance to the other end, said levers being in parallel planes and each having on the shorter end a tooth-sector and in the longer end a longitudinal slot, said slots being twice as long as the distance from the sector-face to the pivot or fulcrum and extending nearly to the fulcrum; rack-bars meshing with said sectors and adapted to be moved thereby; gears mounted on axles rotative in said frame at a point crossed by the center of the slots as the levers move in said frame; slide-blocks in said slots; crank-pins affixed to said gears at points on the opposite sides of the axles on which the gears are mounted, said crank-pins being operatively connected to said slide-blocks; means to operate said gears.

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**753,772. GOVERNING MECHANISM FOR TURBINES.** JAMES WILKINSON, Birmingham, Ala., assignor to Wilkinson Steam Turbine Company, a Corporation of Alabama. Filed Nov. 10, 1903. Serial No. 180,618. (No model.)



*Claim.*—1. In a motor, a governing mechanism comprising a plurality of valves coupled in series, and a governor-controlled power means of varying potential for serially controlling said valves.

2. In a motor, a governing mechanism, a plurality of valves, means to serially transmit an actuating power of varying potential to said valves, and means to vary said power.

3. In a governing mechanism for motors, a plurality of valves, means to serially transmit an actuating power from one valve to another, and means to vary the effective extent of said power through the series.

4. In a governing mechanism for motors, a plurality of valves, a governed actuating power, means serially transmitting said power from one valve to another, and means to vary the effective extent in said series of said power in accordance with its potential.

5. In a governing mechanism for motors, a plurality of valves coupled up in series, means to deliver a varying actuating power to a varying number of said valves, and means to vary the actuating power.

6. In a governing mechanism for motors, a plurality of pressure-controlled valves, passages serially connecting said valves and constituting a portion of a pressure-controlling passage, the extent of which is varied by the valves under its control.

7. In a governing mechanism for motors, a plurality of valves, motors to operate said valves which are coupled up in series, and means transmitting a governed actuating power to the initial motor of the series from which it passes to one or more of the other motors of said series to successively operate them.

8. In a governing mechanism for motors, a plurality of motor-fluid valves, cylinders, piston-valves therein, controlling means to operate said motor-fluid valves, means to admit a governor-controlled pressure to said cylinders to move said pistons, and means to hold said pistons against movement whose relative value varies between the several cylinders.

9. In a governing mechanism for motors, a plurality of valves, a plurality of motors connected to said valves, and a governor con-

trolling the admission of an actuating pressure of varying potential to said motors.

10. In a governing mechanism for motors, a valve interrupting the flow of fluid-pressure through a nozzle, a governor controlling the intermittent delivery of an actuating power to said valve and varying the potential of the power in accordance with the load.

11. In a governing mechanism for motors, a plurality of valves, means to transmit an actuating power to said valves, means to hold said valves against movement by said power which vary relatively in strength, and a governor to vary the potential of the actuating power.

12. In a governing mechanism for motors, a plurality of valves, means to operate said valves, means transmitting a governed motive power serially from one to the other of said operating means, and means to serially counteract said governed power in a reverse direction as it varies in potential.

13. In a governing mechanism for motors, a plurality of valves, fluid-pressure-operating means for said valves, means to serially transmit a governed and an opposing constant pressure to a part of said operating means, which are operated by relatively different variations in the potential of the governed pressure.

14. In a governing mechanism for motors, a plurality of valves, a controlling-cylinder and an actuating-piston for each valve, said cylinders being serially coupled up to each other, means introducing a governed and an opposing constant pressure to opposite ends of said series, and intercepting said pressures in the line of their flow beyond the cylinder or cylinders wherein the said pressures most nearly counterbalance each other.

15. In a governing mechanism for motors, a plurality of valves coupled up in series, and means to deliver actuating fluid in pulsatory blasts of varying value to part of said valves, while the rest are held open or closed.

16. In a governing mechanism for motors, a plurality of valves, means to operate said valves coupled up in series, and a governing means delivering a pulsatory actuating power of varying mean value to part of said valve-operating means, while the rest are maintained open or closed according to said mean value.

17. In a governing mechanism for motors, an engine controlling a row of valves which control the flow of fluid-pressure through nozzles, said engine comprising a cylinder whose ends are exposed to a governed variable and a constant pressure, a piston movable between said pressures and recessed to form between its ends a low-pressure chamber continually open to an exhaust-pressure, a connection from said piston to a valve and a conduit from said cylinder leading to said other valves and conducting pressure thereto to operate them when said piston assumes a determined position.

18. In a turbine, a nozzle-passage divided by a partition, and a multiported rotary valve disposed in said nozzle and acting to interrupt the flow of fluid therethrough.

19. In a turbine, a divided nozzle-passage, a rotary valve seated in the nozzle-bearing portion and having a port in line with each of the passages formed as divisions of said nozzle, and acting to open or close them to the motor fluid.

20. In an elastic-fluid turbine, a motor-fluid passage, a multi-ported rotary valve therefor, and means to operate said valve connected thereto between two of its ports.

21. In a turbine, motor-fluid passages and valves, and fluid-pressure motors to actuate said valves having cylinders formed by chambers in a stationary portion of the turbine, and plugs closing said chambers and forming heads for said cylinders.

22. In a turbine, a fluid-pressure motor to actuate a turbine-valve comprising a cylinder formed as a chamber in the supply-head to a wheel-compartment, and a detachable head for said cylinder which is screwed into an end of said chamber.

23. In a turbine, a nozzle-passage, a fluid-actuated valve therefor, and governing means for said valve comprising a chamber communicating with a high pressure and an exhaust, a movable piston therein which throttles the pressure and exhaust openings to create therein a pressure of varying value, and means to conduct this pressure to actuate said valve.

24. In a turbine, a nozzle, a valve therefor, and a motor to actuate said valve comprising a compound cylinder, a compound piston whose heads are connected by a stem, passages admitting a governed pressure to one end of said cylinder, a substantially constant pressure to the other end, and an exhaust-pressure near the center and between said piston-heads.

25. In a governing mechanism for motors, a plurality of supply-valves serially connected up, a controller means, and a single connection between said series and said controller means.

26. In a governing mechanism for motors, a plurality of fluid-pressure-actuated supply-valves, passages leading from valve to valve to serially connect them, a source of actuating-fluid pressure, a passage leading from said source of pressure to the initial valve of said series.

27. In a turbine, a plurality of motor-fluid valves, pressure-controlled actuating means therefor, and passages to conduct the actuating pressure from one valve to another, formed in the turbine-casing.

28. In a turbine, fluid-actuated supply-valves, and passages to conduct the actuating fluid from one valve to another which leads through the turbine-casing.

29. In a turbine, fluid-actuated supply-valves, and passages to conduct the actuating fluid from one valve to another which are disposed inside of the outer casing.

30. In a turbine, fluid-pressure-controlled means to actuate motor-fluid valves, and fluid-conducting passages formed by channels in the turbine-casing and means closing said channels while leaving an inner passage-way for the fluid.

31. In a turbine, two or more fluid-actuated valves seated in a valve-bearing portion, openings leading through the casing to conduct actuating fluid to said valves, a channel in said casing between said openings, and filler-strips to close said channel and leave an inner passage-way connecting said openings.

32. In a turbine, a plurality of fluid-actuated valves, and means to conduct an actuating pressure to said valves comprising a series of holes drilled through the casing to said valves, and a channel in said casing connecting said holes and a calking-strip for said channel leaving a closed way connecting said several openings.

33. In a turbine, a plurality of valve motor-cylinders disposed in a compartment-head portion, openings leading through the casing to said cylinders, a channel connecting the outer ends of said openings, and locking-strips closing the open side of said channel and forming with the inner side thereof a passage-way common to said openings.

34. In a turbine, a series of valve-actuating motors, each of which comprises a constant and a variable pressure cylinder, a division-wall between said cylinders, a piston-head within each cylinder connected by a stem having a reduced portion near one head and passing through an opening in said wall, an exhausting-passage opening into the cylinder near whose piston-head said stem is reduced, and passages leading from the sides and ends of said cylinders to adjacent cylinders.

35. In a turbine, a series of motors for actuating motor-fluid valves comprising compound cylinders, compound pistons whose heads are connected by stems having reduced portions, and suitably-apertured division-walls between the ends of each compound cylinder.

36. In a turbine, a nozzle, a valve therefor, a fluid-pressure motor seated in said nozzle-bearing portion and having its cylinder formed by a casing inserted in said portion, and a stem for operating said valves leading through the inner end of said casing.

37. In a turbine, a plurality of motor-fluid valves, motors for actuating said valves each comprising constant and variable pressure cylinders and a compound piston having heads movable in said cylinders and operatively connected to said valve, a pressure-supply passage entering the ends of said cylinders and pressure-conducting passages leading from the sides of said cylinders, and an exhaust-passage opening into both said chambers between said piston-heads.

38. In a turbine, a motor for operating a turbine-valve, a compound piston having heads moving in two cylinders, said heads being connected by a stem having a reduced portion, said stem passing through an opening in a division-wall, and acting as a valve to close said opening.

39. In a turbine, nozzle-passages, rotary valves therefor, and reciprocating motors operating said rotary valves.

40. In a turbine, nozzle-passages, rotary valves therefor, and a reciprocating motor actuating one or more of said valves, and controlling pressure to actuate said other valves.

41. In a turbine, a plurality of pressure-actuated valves, and a governor therefor comprising a cylinder to which a high and low pressure is admitted, and means movable within said cylinder and acting to create a third variable pressure, out of said first-mentioned pressures, which controls the action of said valves.

42. In a turbine, a motor for operating a turbine-valve, a compound piston having heads moving in two cylinders, an apertured partition between said cylinders, means between said piston-heads which are adapted to act as a valve to open or close an aperture in said partition.

43. In a motor, a governing mechanism comprising a controller power means, a plurality of valves, adapted to be independently actuated by said power means, which are serially coupled up and have a common connection with said power means by which they are successively actuated.

44. In a governing mechanism for motors, a plurality of fluid-actuated valves, separate fluid-conducting passages leading from valve to valve which passages are successively opened to the actuating fluid by the movement of the valves from which they severally lead.

45. In a governing mechanism for motors, a plurality of valves, a plurality of fluid-pressure motors actuating said valves, passages leading from one motor to another which are successively opened to the actuating fluid, delivered to the initial motor of a series, by the movement of the motors which precede said passages in the line of the fluid's flow.

46. In a governing mechanism for turbines, a plurality of independent fluid-actuated turbine-valves, a source of governed valve-controlling fluid, and a passage conducting said fluid to a plurality of independently-acting valves.

47. In a governing mechanism for turbines, fluid-pressure motors, fluid-conduits leading from one to another of said motors, motor-fluid-supply valves, and piston-valves in said motors connected to said valves and controlling the admission of pressure to said conduits.

48. In a governing mechanism for turbines, a plurality of valve-actuating motors comprising cylinders, passages leading therefrom to a governed source of fluid-pressure, to an exhaust-pressure, and to one or more adjacent motors, and piston-valves in said cylinders acting to expose the passages leading to adjacent motors to either the governed or exhaust pressures.

49. In a governing mechanism for motors, a plurality of valve-actuating pistons exposed to a constant power and to a governed-pressure means of varying potential, the proportions of said pistons being relatively varied to cause them to operate successively as the potential of said governed-pressure means varies.

50. In a governing mechanism for motors, a plurality of valves, a plurality of differential valve-actuating pistons exposed to a constant and a variable governed pressure, and each of said pistons being designed to move responsive to a predetermined differential between said pressures.

51. In a governing mechanism for motors, a plurality of valves, a plurality of valve-actuating pistons of relatively varying proportions which are exposed to a substantially constant power, and means serially transmitting a power of varying potential to one or more of said pistons.

52. In a motor, a plurality of fluid-pressure-actuated valves, and means to control the pressure of the valve-actuating fluid, comprising a cylinder, fluid inlet and outlet passages, and a governor-actuated throttling-piston which varies the potential of said actuating fluid.

53. In a motor, a plurality of fluid-pressure-actuated valves, and a controller means therefor comprising a cylinder, fluid-conduits leading from said cylinder to a high and exhaust pressure, and a rotating cut-away piston therein, which intermittently delivers to a passage the valve-actuating fluid.

54. In a motor, a fluid-pressure-actuated valve, a cylinder exposed to a high and an exhaust pressure, a rotating governor-shifted controller device therein, which forms with the side of said cylinder two separate rotating chambers each of which is in exclusive communication with one of said pressures, and a passage for the valve-actuating fluid which is alternately exposed to the chamber-pressures.

55. In a motor, fluid-pressure-actuated valves, and a controller means for the valve-actuating fluid, comprising a cylinder, a rotating piston therein cut away to form with the sides of said cylinder two reversely-disposed wedge-shaped chambers, means to maintain in one chamber fluid under a varying high pressure and in the other an exhaust-pressure, and a passage for the valve-actuating fluid, which is alternately exposed to said chambers.

56. In a turbine, a valve-actuating motor comprising a cylinder formed with a beveled valve-seat at one end, and a piston-valve movable therein and beveled to seat pressure-tight against said seat.

57. In a turbine, a valve-actuating motor comprising a cylinder having side and end ports, and provided with beveled seats at each end, and a piston acting as a valve and having beveled ends engaging said seats.

58. In a turbine, a valve-actuating motor comprising two cylinders, a plurality of ports therein, a compound piston acting as a valve and having a head in each cylinder, beveled valve-seats at each end of said cylinders and beveled portions of said heads adapted to engage said seats.

59. In a governing mechanism for motors, a plurality of valves, passages to serially conduct actuating fluid from valve to valve, means to lock part of said valves at one end of their stroke, while the valve or valves at the critical point of regulation are left free to move subject to the control of said actuating fluid.

60. In a governing mechanism for motors, a plurality of valve-actuating means, means transmitting a governed fluid-pressure serially from one to the other of said actuating means, means to serially transmit an opposing pressure from one to the other of said actuating means and in a reverse direction to said governed fluid-pressure, and means to lock all but the valve or valves nearest the critical point of regulation in a definite position by cutting one or the other of said opposing pressures off from their actuating means.

61. In a turbine a plurality of motor-fluid stage-valves, motors for actuating said valves seated in chambers formed in the valve-bearing portion.

62. In an elastic-fluid turbine, an induction-nozzle, a fluid-actuated rotary valve therefor, a passage for the valve-actuating fluid, and governed means to control the fluid to actuate said valve.

63. In an elastic-fluid turbine, an induction-nozzle, a rotary fluid-actuated valve therefor, and governor-controlled means to actuate the valve without stationary intermediate operating positions.

64. In a turbine, a supply-passage, a rotary fluid-actuated supply-valve therefor seated in that portion of the turbine in which said passage is disposed, and passages conducting actuating fluid through said portion to move said valve under control of a governor device.

65. In a turbine, a supply end portion through which induction-nozzles pass, valves for said nozzles having actuating-stems disposed within chambers formed in said end portion, and means to operate said stems.

66. In a turbine, a supply end portion through which induction-nozzles pass, rotary valves for said nozzles seated in said end portion, chambers within which actuating means for said valves extend, and passages to admit fluid-pressure to operate said means.

67. In a turbine, a plurality of motor-fluid valves, and motors for actuating said valves seated in chambers formed in the valve-bearing portion.

68. In an elastic-fluid turbine having nozzle-passages and valves therefor, a governing mechanism comprising a governor, means for operating said valves, and a controller device moved by said governor, which actuates part of said valve-operating means intermittently according to slight variations in the load.

69. In an elastic-fluid turbine, a plurality of induction-nozzles, means to open and close said nozzles, and a regulating mechanism maintaining a continuous control over all said means and intermittently actuating a part of them.

70. In an elastic-fluid turbine, a plurality of induction-nozzles, means to open and close said nozzles, a rotating controller device constructed to intermittently operate a part of said means during portions of its cycles of action, and means to rotate said device and adjust it and said nozzle-opening means relatively to each other.

71. In a governing mechanism for turbines, a plurality of valve-controlled fluid-admission passages, valve-operating means, and a governing device for controlling said means which moves in accordance with variations in the load and intermittently operates a part of said means while maintaining the rest passively under control.

72. In an elastic-fluid turbine, a governor or regulating mechanism adapted to admit contemporaneously constant and pulsatory blasts of elastic fluid, which are proportioned to the load and used to develop mechanical power.

73. In an elastic-fluid turbine, a governing mechanism for controlling the admission of fluid-pressure to a plurality of nozzles comprising means for admitting a constant supply of fluid according to the load and a pulsatory supply varying in proportion to slight variations in the load.

74. In an elastic-fluid turbine, a governing mechanism for controlling the admission of fluid-pressure to a plurality of nozzles, comprising means for admitting blasts uniform in volume to said nozzles and means to maintain a part of them open according to the load and part pulsatory according to slight variations in the load.

75. In an elastic-fluid turbine, a plurality of nozzle-passages, valves controlling the admission of pressure thereto, and a governing mechanism which oscillates a part of said valves to admit pulsations of fluid-pressure which vary in duration with variations in speed, while it maintains the rest of said passages open or closed according to the load.

76. In an elastic-fluid turbine, a plurality of nozzles, a valve for each nozzle, and means controlled sensitive to the speed of the turbine, for progressively oscillating a part of said valves while it leaves the rest open or closed according to the load.

77. In an elastic-fluid turbine, a plurality of induction-nozzles, valves for said nozzles, and speed-governing mechanism for sweeping said valves open or closed as the load is thrown on or off, and for oscillating a part of said valves during a constant or slowly-changing load.

78. In a governing mechanism for turbines, a plurality of fluid-actuated supply-valves, and a fluid-pressure-controlling means for said valves to deliver a varying volume of motor fluid to the turbine under varying loads and to pulsate part of said supply to compensate slight variations in the load.

79. In a turbine, a plurality of fluid-supply passages, and a fluid-pressure-governing means to regulate the flow of fluid through said passages, pulsating it in a part of said passages to compensate slight variations in load.

80. In a governing mechanism for motors, a plurality of nozzle-passages, valves therefor, and fluid-pressure means to intermittently actuate part of said valves to pulsate the fluid-pressure delivered by them to the motor, while the other valves are held open or closed.

81. In a turbine, a plurality of motor-fluid-supply passages and valves therefor, in combination with a fluid-pressure-governing mechanism for said valves which intermittently opens one or more of said valves for periods of varying duration, while the rest of said valves are held open or closed.

82. In a governing mechanism for turbines, a plurality of supply-valves, a governor-controlled power means for operating one of said valves, and means under the control of said valve to transmit said operating power to one or more of the other of said valves.

83. In a governing mechanism for turbines, a plurality of independent fluid-actuated supply-valves, and a fluid-pressure-controlling means, for successively operating said valves, adapted to expose but two of them at a time to opposing actuating pressures.

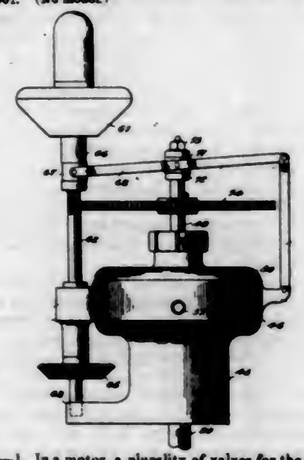
84. In a governing mechanism for motors, a plurality of valves, passages to serially conduct actuating fluid from valve to valve, means to control the successive actuation of said valves and to lock all but the valve nearest the critical point of regulation against movement.

85. In a governing mechanism for motors, a plurality of valves which are opened or closed by fluid-pressure, and a fluid-pressure-governing means to control the successive actuation of said valves and to lock all but the valves nearest the critical point of regulation against movement.

86. In a governing mechanism for turbines, a series of supply-valves, and a fluid-pressure-controlling means for said valves which exposes a part only of said valves to two actuating pressures at a time, the rest of said valves being exposed to one or the other of said actuating pressures according to their position in the series relative to the valves exposed to both pressures.

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**753,773. GOVERNING MECHANISM FOR TURBINES.** James Wilkinson, Birmingham, Ala., assignor to the Wilkinson Steam Turbine Company, a Corporation of Alabama. Filed Jan. 4, 1904. Serial No. 187,602. (No model.)



*Claim.*—1. In a motor, a plurality of valves for the motor fluid, and a fluid-pressure-controlling means adapted to divert a freely-flowing stream of fluid to control the operation of said valves.

2. In a motor, an intermittently-actuated valve delivering pulsations of fluid-pressure to said motor, and a fluid-pressure-controlling means which diverts a freely-flowing stream of fluid to control the oscillation of said valve.

3. In a motor, a fluid-pressure-operated valve, and means to control the operation of said valve by the impact action of a jet of freely-flowing fluid.

4. In a motor, fluid-pressure-operated valves, and means utilizing the impact effect of a freely-flowing stream of fluid to severally control the operation of said valves.

5. In a motor, a stream of fluid utilized to drive the motor, motor-fluid valves, and governor-controlled means to divert said stream to control the operation of said valves.

6. In a motor, the combination of rotating buckets, nozzle-passages delivering fluid thereto, valves for controlling the flow of fluid through the nozzle-passages and a governor-nozzle for controlling the action of said valves.

7. In a rotary motor, the combination with a rotary element, of a series of independent passages for conducting fluid into contact with said element, a series of fluid-actuated valves for severally controlling the supply of fluid to the passages and a governor-nozzle for controlling the operation of said valves.

8. In a motor, passages for the motor fluid, fluid-actuated valves therefor, a conduit for the valve-actuating fluid leading to one or more of said valves, a nozzle delivering a jet of fluid into said conduit, and means to control the potential of the fluid-pressure in said conduit by varying the relative position of said nozzle and conduit.

9. In a motor, passages for the motor fluid, fluid-actuated valves therefor, a conduit leading to a series of independently-acting valves, and means to control said valves by fluid-pressure in said conduit which is governed by the impact action of a jet of fluid.

10. In a motor, passages for the motor fluid, valves therefor and fluid-pressure-controlling means for said valves comprising a conduit for the valve-actuating fluid leading from a chamber to one or more of said valves, and closed at its other end, a port in said chamber into which a jet of fluid is delivered, and means to vary the ejector effect of said jet.

11. In a motor, a fluid-pressure-actuated valve, and fluid-impact means operating with a variable-ejector effect to control the actuation of said valve.

12. In a motor, passages for the motor fluid with separate valves, a fluid-conduit leading to several valves, and means to control the operation of said valves comprising a chamber from which said conduit and an eduction-passage lead, means within the said chamber to eject the pressure out of said conduit, and means to oppose said controlling pressure and move said valves.

13. In a motor, a plurality of valves, a fluid-controlling means therefor comprising a passage common to a number of said valves, a governor means compressing, by fluid impact, the fluid in said passage to vary its actuating pressure on said valves and cause them to operate successively, and a pressure opposing said governed pressure to move said valves.

14. In a motor, a fluid-pressure-controlled valve, and fluid-impact means operating with an ejector effect to govern the controlling fluid-pressure for said valve.

15. In a turbine, nozzle-passages having separate fluid-actuated valves, a controller-passage closed at one end leading to a plurality of said valves, means to divert all or part of a freely-flowing stream of fluid into said passage and means to conduct said stream into the turbine after it has exerted its controller effect.

16. In a motor, means to vary the potential of fluid-pressure in a controller-passage for one or more valves comprising inlet-port for said passage, a nozzle delivering a jet of fluid into said port and means in said port to subdivide the jet at the point of impact.

17. In a motor, means to vary the potential of fluid-pressure in a controller-passage for one or more valves comprising a nozzle delivering a jet of fluid into said passage, and director-plates disposed in said passage at the point of impact of the fluid-jet.

18. In an elastic-fluid turbine, the combination of induction-nozzles with separate valves, a controller-passage common to a plurality of valves, governor-controlled variable static fluid-pressure in said passage, and means independently controlling the action of said valves to move them sensitive to said varying pressure.

19. In an elastic-fluid turbine, a row of supply-nozzles, supply-valves therefor requiring different actuating pressures to move them, a fluid-conducting passage leading to a plurality of said valves and means to separately actuate said valves comprising a variable static pressure within said passage, and an impact-nozzle to vary the pressure.

20. In an elastic-fluid turbine, the combination of a revolving row of buckets, nozzles delivering fluid thereto, a valve for each nozzle movable sensitive to fluid-pressure, a fluid-conducting passage leading to the several valves and a governor-shifted nozzle compressing the fluid in said passage to control the operation of said valves.

21. In an elastic-fluid turbine, the combination of induction-nozzles with separate valves opened by the motor-fluid pressure, a revolving row or rows of buckets, a fluid-conducting passage leading to several valves, and means to close said valves comprising a movable nozzle, a fluid stream therein acting by induction impact to create a fluid-pressure within said passage.

22. In a motor, a fluid-pressure-controlled valve, and fluid-pressure means operating with a combined injector and ejector effect to govern the controlling fluid for said valve.

23. In a motor, a passage delivering motor fluid thereto, a conduit for fluid controlling the operation of a motor-fluid valve or valves which communicates with said passage, and a movable intermediate portion of said passage whose position determines the pressure in said conduit and controls said valve or valves.

24. In a motor, a passage delivering fluid-pressure thereto, a valve-controller fluid-conduit leading therefrom, and a nozzle controlling the diversion of said fluid into said conduit.

25. In an elastic-fluid turbine, a passage for motor fluid, and a compound differential piston-valve movable between different pressures and acting to interrupt the flow of fluid through said passage.

26. In a governing mechanism for motors, a chamber from which lead a closed and a normally open conduit, means to direct more or less of a stream of fluid supplied to said chamber into the ports for said conduits, and motor-fluid valves whose operation is controlled by the pressure in said closed conduit.

27. In a governing mechanism for motors, a controller-chamber through which a freely-flowing stream of fluid passes and enters a normally open passage, a controller-conduit for one or more motor-valves, and means to change the course of said stream to control the operation of said valves.

28. In a fluid-pressure governing mechanism for motor-fluid valves, a rotatable shiftable controller-nozzle, and means to supply fluid-pressure to said nozzle which controls the operation of said valves.

29. In a motor, a fluid-pressure-controlled valve, and means comprising a rotating nozzle to control the operation of said valve by the impact action of a jet of fluid.

30. In a motor, a fluid-pressure-controlled valve, and means comprising a rotating multiple nozzle to control the operation of said valve by the impact action of jets of fluid.

31. In a motor, the combination of rotating buckets, a valve for controlling the flow of motor fluid against said buckets, and a movable nozzle for controlling the operation of said valve.

32. In a motor, a motor-fluid nozzle, a fluid-pressure-controlled valve therefor, and a movable nozzle controlling the intermittent operation of said valve.

33. In a motor, motor-fluid nozzles, fluid-pressure-controlled valves therefor, and a movable nozzle controlling the intermittent operation of part of said valves.

34. In a motor, valves therefor, and a fluid-pressure-controller means for said valves comprising a chamber, conduits therefrom one of which controls said valves, inversely-disposed flaring ports for said conduits, and a governor-shifted rotating nozzle which intermittently directs a jet or jets of fluid into said ports.

35. In a turbine, a plurality of motor-fluid valves serially connected by passages of varying dimensions, and fluid-pressure-controller means for said valves.

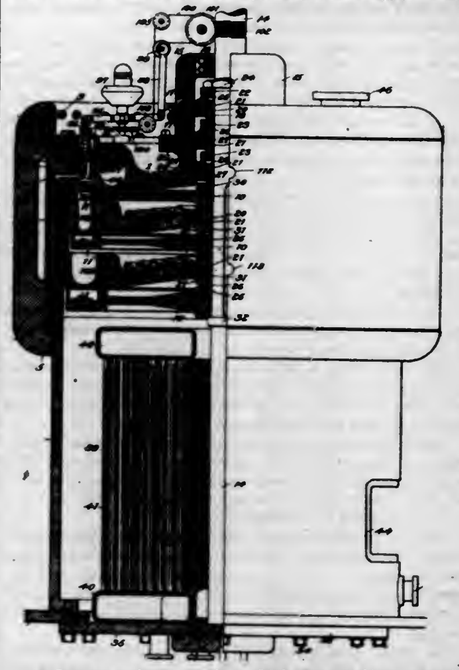
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**753,774. GOVERNING MEANS FOR ELASTIC-FLUID TURBINES.** James Wilkinson, Birmingham, Ala., assignor to the Wilkinson Steam Turbine Company, a Corporation of Alabama. Filed Jan. 12, 1904. Serial No. 188,763. (No model.)

*Claim.*—1. In a turbine operating by stage expansion, a plurality of supply-nozzles, independent valves therefor, and a plurality of stage-valves, one or more of which are opened and closed under the control of each of said supply-valves.

2. In a motor adapted to fractionally expand the motor fluid, a plurality of supply-nozzles, valves therefor, and means to successively operate said valves, in combination with a plurality of valves between two compartments where the fluid is fractionally expanded, passages leading to each of said latter valves to deliver an actuating fluid to open or close them successively under the control of said supply-valves.

3. In a governing means for multiple-stage turbines, supply and stage valves, passages, connecting each supply-valve with one or more stage-valves, which are alternately opened to a high and low pressure by the movement of said supply-valve, and a governing means to control the independent operation of said supply-valves.



4. In a governing means for multiple-stage turbines, a supply-valve, means to actuate said valve, a stage-valve, passages leading to said stage-valve, and a valve-actuating fluid which is admitted to said passages to open and close said stage-valve under the control of said actuating means for the supply-valve and which is exhausted from said passages into the first stage.

5. In a governing means for multiple-stage turbines, supply-valves, fluid-actuated stage-valves, and means to utilize the same power means to open and close part of said stage-valves, when a supply-valve opens or closes.

6. In a motor, a nozzle-passage, a valve therefor, and an actuating-piston for said valve which is recessed to form, in connection with its cylinder, peripheral chambers.

7. In a motor, nozzle-passages, valves therefor, cylinders and pistons for actuating said valves, each of said pistons having annular channels, and valve-actuating fluid-conduits with which said channels communicate.

8. In a motor, fluid-supply passages, valves therefor, an actuating-piston for each valve recessed to form chambers in which different pressures are maintained, and passages to deliver said pressures to other valve-actuating means.

9. In a motor, a fluid-supply nozzle, a valve therefor, a fluid-actuated piston connected to said valve and provided with a plurality of annular channels which form pressure-tight chambers with the piston's cylinder, means to maintain different pressures in said chambers, and fluid-conducting passages, leading to another valve, which are alternately opened to said chamber-pressures.

10. In a rotary motor, nozzle-passages, fluid-actuated valves therefor, and means to exhaust by an ejector action the valve-actuating fluid, after it has performed its work, into a motor-fluid-supply nozzle.

11. In a governing means for a multiple-stage turbine, supply and stage valves, passages conducting an actuating fluid to said stage-valves, and means to exhaust said passages into a supply-nozzle.

12. In a governing means for a multiple-stage turbine, stage-valves, means for actuating said valves by fluid-pressure, and means to exhaust the valve-actuating fluid-pressure into a stage by an ejector action of the motor fluid.

13. In a governing means for a multiple-stage turbine, stage-valves, fluid-conduits leading to said valves, and means to exhaust the valve-actuating fluid, after it has performed its work, against a rotating bucket element by the ejector action of a stream of motor fluid.

14. In a governing means for a multiple-stage turbine, stage-valves, two fluid-conduits leading to each valve, and means to admit a high pressure to one conduit as the other is exhausted into the motor-fluid supply to a stage.

15. In a turbine operating by stage expansion, supply and stage nozzles, fluid-controlled valves therefor, and means to discharge the valve-controlling fluid, after it has performed its work, against a bucket element in the initial stage.

16. In a turbine operating by stage expansion, fluid-actuated stage-valves, fluid-conduits leading to said valves, and ejector means to exhaust the valve-controlling fluid, after it has performed its work, into an induction-nozzle for a preceding stage.

17. In a turbine, a nozzle-passage leading at an angle through a supply-head and having a detachable intermediate portion.

18. In a turbine, a nozzle-passage leading at an incline through a stationary portion, and a block seated in a recess in said portion and formed with a curved passage-way constituting a portion of said nozzle.

19. In a turbine, a nozzle, a valve therefor, an actuating-stem for said valve, and a passage leading through said valve and stem for the purposes specified.

20. In a turbine, an induction-passage, a valve therefor having a nozzle-opening exposed to the pressure in said induction-passage and a passage leading from said nozzle-opening and through said valve and opening into a multiported valve-chamber.

21. In a turbine, a nozzle, a valve having an actuating-stem disposed within a valve-chamber, passages leading from said chamber and a passage through said stem and valve, and means to move said stem to place said valve-passage into communication with one or the other of said first-mentioned passages.

22. In a turbine, supply and stage nozzles, valves therefor, two passages leading from a supply-valve to a stage-valve-operating means, and means to operate said supply-valve, and means under the control of said last-mentioned means to admit high pressure to one of said passages and exhaust the other into a supply-nozzle for the first stage.

23. In a turbine operating by stage expansion, reciprocating supply-valves for the first stage, and rotary valves, controlling the flow of fluid between stages, whose operation is controlled by said supply-valves.

24. In a turbine wherein the velocity of the motor fluid is fractionally abstracted, the combination of supply, nozzle-passages and reciprocating valves therefor, with nozzle-passages leading between compartments wherein the velocity of the motor fluid is fractionally abstracted, semirotary valves therefor, and means controlled by said supply-valves to operate said semirotary valves.

25. In a motor comprising compartments wherein the velocity of the motor fluid is fractionally abstracted, the combination of a reciprocating supply-valve, a rotary valve between compartments, and fluid-pressure means to control the operation of said valves in rows across the stages.

26. In a turbine, nozzles, valves therefor, and actuating means for a valve, a passage for fluid-pressure to actuate another valve, and conduits, one opening into a nozzle and the other communicating with the motor-fluid pressure, which are alternately placed in communication with said passage by the movement of said actuating means.

27. In a turbine, nozzles, valves therefor, and actuating means for a valve, passages for fluid-pressure to actuate another valve, and conduits, one opening into a nozzle and the other communicating with the motor-fluid pressure, which are alternately placed in communication with said passages by the movement of said actuating means.

28. In a turbine, a nozzle-passage leading through a stationary element and having a curved intermediate portion, and a piece inserted in said element and forming the curved intermediate portion of said nozzle.

29. In a turbine, a rotary turbine-valve, a crank to move said valve, and an actuating-piston whose stem has an opening to receive said crank.

30. In a turbine, a rotary turbine-valve, a crank to move said valve, and an actuating-piston whose stem has a flaring opening to receive said crank.

31. In a governing mechanism for multiple-stage turbines, a supply-valve, an operating-stem therefor, and a plurality of annular channels around said stem, and a passage-way connecting two of said channels.

32. In a governing mechanism for multiple-stage turbines a supply-valve, an operating part for said valve movable therewith and provided with a plurality of separate channels, means to maintain the motor-fluid pressure in two of said channels and the pressure below the valve in the other, and means for operating a stage-valve which is exposed to the pressures in said channels.

33. In a fluid-pressure-governing mechanism for turbines, an oscillating controller-nozzle governing the admission of motor fluid to the turbine.

34. In a motor, the combination of rotating buckets, one or more nozzles delivering motor fluid thereto, means for controlling the flow of fluid through said passage or passages, and a governor-controlled oscillating nozzle for controlling the action of said means.

35. In a motor, a fluid-pressure-controlled valve, and fluid-impact controller means therefor comprising an oscillating nozzle, and means to oscillate and shift said nozzle.

36. In a motor, a fluid-pressure-controlled valve, and fluid-impact controller means therefor comprising an oscillating nozzle, an eccentric means to oscillate said nozzle, and a governor means to shift its position.

37. In a fluid-pressure motor, a plurality of supply-valves, and a plurality of fluid-pressure-operated stage-valves, one or more of which open or close in correspondence with each of said supply-valves.

38. In a governing mechanism for multiple-stage turbines, a plurality of supply-valves, a plurality of fluid-actuated valves for each stage, and means to connect said stage-valves in independent rows across the stages, each of said rows being controlled by one of said supply-valves.

39. In a governing mechanism for turbines, fluid-actuated supply and stage valves, means to group each supply-valve with one or more stage-valves, and a governing means to actuate said groups of valves independently.

40. In a governing mechanism for turbines, fluid-pressure-controlled supply and stage valves, means to group each supply-valve with one or more stage-valves, and a governing means to intermittently actuate one or more of said groups while holding the others open or closed.

41. In a governing mechanism for multiple-stage turbines, supply and stage valves, a governor-controlled power means for successively operating said supply-valves, and means, under the control of said supply-valves, to successively operate said stage-valves.

42. In a governing mechanism for multiple-stage turbines, a plurality of independent supply-valves, and a plurality of independent fluid-actuated stage-valves, whose operation is controlled by said supply-valves.

43. In a governing mechanism for multiple-stage turbines, a plurality of independently and successively controlled supply-valves, a governor-controlled power means for operating said supply-valves, stage-valves and means to transmit the operating power from said supply-valves to successively operate said stage-valves.

44. In a turbine, means for fractionally converting the motor-fluid pressure into velocity, wheel-compartments, supply-valves, fluid-pressure-actuated valves to vary the volume of fluid discharged from a wheel-compartment, and a governing means controlling said supply and compartment valves in independently-operated groups.

45. In a governing mechanism for multiple-stage turbines, a plurality of fluid-pressure-operated supply and stage valves, and a governor means to control said valves in independent rows across the stages and to successively operate said independent rows.

46. In a governing mechanism for multiple-stage turbines, a plurality of fluid-actuated supply and stage valves, independent fluid-conducting passages leading to said stage-valves which are successively operated by an actuating fluid, admitted to said passages under the control of said supply-valves.

47. In a governing mechanism for turbines, fluid-pressure motors, fluid-conduits leading from one to another of said motors, motor-fluid supply and stage valves, piston-valves in said motors for the supply-valves which control the admission of pressure to conduits leading to a motor or motors for stage-valves, and a governing means to serially operate said piston-valves.

48. In a turbine, fluid-pressure-controlled supply and stage valves, and passages to conduct actuating fluid between supply and stage valves which lead through the turbine-casing.

49. In a turbine, fluid-actuated supply and stage valves, and passages to conduct the actuating fluid between supply and stage valves which are disposed inside of the outer casing.

50. In a turbine, supply and stage valves, and fluid-pressure motors for actuating said valves disposed within the turbine.

51. In a multiple-stage turbine, a plurality of wheel-compartments, a plurality of supply-passages and a plurality of passages between compartments, valves for said passages, fluid-pressure means to operate said valves in independent groups comprising supply and stage valves, and a controller means to pulsate the valves of at least one of said groups while the valves of the other groups are held open or closed.

52. In a multiple-stage turbine, a plurality of supply and stage nozzles, valves therefor, rotating buckets, and a fluid-pressure-governing means for said valves controlling their operation in independent groups or rows across the stages and intermittently operating a row to pulsate part of the fluid-supply throughout the stages.

53. In a turbine operating by stage expansion, two or more working passages comprising supply and stage nozzles, valves therefor, and rotating rows of buckets, in combination with a fluid-pressure governing means which intermittently opens the valves of one of said working passages to pulsate the flow of fluid therethrough, while the valves of the other working passage or passages are held closed according to the load on the turbine.

54. In a fluid-motor, a working passage in which the velocity of the motor fluid is fractionally abstracted, and a rotary fluid-actuated valve in said passage.

55. In a turbine, a diaphragm-partition therein, a fluid-passage therethrough, a valve for said passage, and actuating means for said valve carried by said diaphragm.

56. In a turbine, a diaphragm-partition therein, a fluid-passage through said partition and a valve therefor, and actuating means for said valve seated in said partition.

57. In an elastic-fluid turbine operating by stage expansion, a stage-valve that is unbalanced when closed, and means to open said valve by a relay power.

58. In an elastic-fluid turbine operating by stage expansion, a diaphragm-partition therein dividing the interior into stage-compartments, a series of valve-seats therein formed by openings around its periphery, and stage-valves therein.

59. In an elastic-fluid turbine operating by stage expansion, a diaphragm-partition therein dividing the interior into stage-compartments, a series of rotary stage-valves seated in peripheral openings around said diaphragm and controlling the admission of fluid-pressure to the succeeding stages.

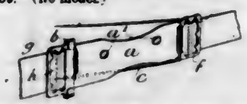
60. In an elastic-fluid turbine operating by stage expansion, a diaphragm-partition therein, passages forming nozzles therein, and valves controlling the admission of fluid to said passages seated in the nozzle-passages in said partition.

61. In an elastic-fluid turbine operating by stage expansion, a diaphragm-partition therein, a series of rotary valves seated in the peripheral openings in the turbine-head and around the diaphragm, and pressure-controlled means for operating said valves.

62. In an elastic-fluid turbine operating by stage expansion, means to deliver a part constant and part pulsatory supply of elastic fluid to the first stage, and means to pulsate part of the supply to the succeeding stage or stages.

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**753,775. GARMENT ADJUSTER OR HOLDER. JAMES WILSON-HAFFENDEN, East Croydon, England. Filed June 16, 1903. Serial No. 161,659. (No model.)**



*Claim.*—1. A garment adjuster or holder consisting of a stud-plate adapted to be directly attached to one part to be held, and comprising a plate bent to form hooks at one end, pins pivoted at the opposite end of the plate, and spaced apart a distance greater than the width of the plate, whereby the plate can freely oscillate between them, enabling the pins to be turned back past one side of the plate to pass through a part of the garment and then turned forward past the other side of the plate to engage the hooks and studs fixed in the plate; in combination with an eyelet-plate adapted to be attached to the other part to be held and to engage the studs of the stud-plate, substantially as described.

2. A garment adjuster or holder consisting of an eyelet-plate adapted to be directly attached to one part to be held, and comprising a plate provided with eyelet-openings and bent to form hooks at one end, and pins pivoted at the opposite end of the plate and spaced apart a greater distance than the width of the plate, whereby the plate can freely oscillate between the pins, enabling the pins to be turned back past one side of the plate to pass through a part of the garment and then turned forward past the other side of the plate to engage the hooks; in combination with a stud-plate adapted to be attached to the other part to be held and to engage the eyelets, substantially as described.

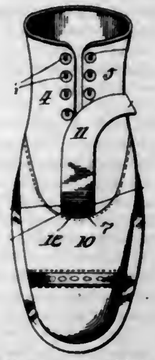


3. A garment adjuster or holder consisting of a stud-plate adapted to be directly attached to one part to be held, and comprising a plate bent to form hooks at one end, pins pivoted at the opposite end of the plate and spaced apart a distance greater than the width of the plate, whereby the plate can freely oscillate between them, enabling the pins to be turned back past one side of the plate to pass through a part of the garment and then turned forward past the opposite side of the plate to engage the hooks, and studs fixed in the plate; in combination with an eyelet-plate adapted to be attached to the other part to be held and comprising a plate provided with eyelet-openings for receiving the studs of the stud-plate, hooks on one end of the plate and pins pivoted at the opposite end of the plate and adapted to be passed through the part to be held and then to engage in the hooks, said pins being spaced apart a distance greater than the width of the plate, whereby the latter may oscillate between them, substantially as described.

4. A garment adjuster or holder, consisting of an independent waistband, a stud-plate adjustably mounted on the waistband and comprising a plate bent to form hooks at one end, and an eye or knuckle at the other end, slotted end extensions on the plate beyond the said hooks and eye or knuckle for connection with the waistband, teeth on the slotted extensions adapted to engage the said band, pins pivoted in said eye or knuckle and cooperating with the said hooks thereon to secure the plate to one of the parts to be held, said pins being so spaced that the plate may swing or oscillate between them, and studs fixed in the plate; in combination with an eyelet-plate adapted to be attached to the other part to be held and to engage the studs on the stud-plate, substantially as described.

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**753,776. SHOE-FASTENER. GEORGE W. WIRE, Glenfield, Pa. Filed June 10, 1903. Serial No. 160,821. (No model.)**




*Claim.*—1. A shoe-fastener comprising a plurality of eyelets secured to each side of the opening of the upper of the shoe, said eyelets having a wedge-shaped groove formed adjacent to the aperture of said eyelet, a tongue carrying a plurality of wedge-shaped members, said wedge-shaped members adapted to be secured in the wedge-shaped grooves formed in the eyelets, substantially as described.

2. A shoe-fastener comprising a plurality of eyelets secured to each side of the opening of the uppers of shoes, said eyelets having a wedge-shaped groove formed adjacent to the opening formed in the eyelets, a tongue carrying a plurality of wedge-shaped members adapted to be secured in the wedge-shaped grooves of the eyelets, said wedge-shaped members being attached to flexible tabs secured to the under face of the tongue, substantially as described.

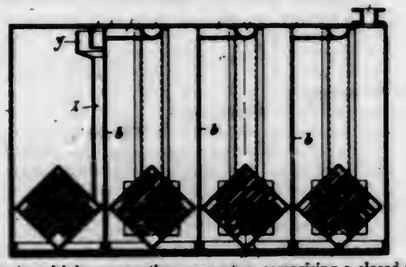
3. A shoe-fastener comprising a plurality of eyelets secured upon each side of the opening formed in the upper of the shoe, said eyelets having a wedge-shaped groove formed adjacent to the apertures formed in said eyelets, an elastic tongue carrying a plurality of tabs upon its one face, a plurality of wedge-shaped members secured to the outer ends of the tabs, and adapted to be secured in the wedge-shaped grooves formed in the eyelets, substantially as described.

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**758,777. MULTIPLE EVAPORATING APPARATUS. WLADIMIR WITKOWICK, Kiew, Russia. Filed Feb. 17, 1903. Serial No. 143,808. (No model.)**

*Claim.*—1. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel arranged transversely to the same and extending from the bottom to the top

of the vessel and having openings in the upper part of the partitions forming communication between one compartment and the next, and heating means in each of said compartments, substantially as set forth.



2. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the upper part of the same forming communication between one compartment and the next, a stuffing-box for each compartment, and removable heating-bodies in each of said compartments, said heating-bodies being secured at one end by the stuffing-box to one side of the vessel and secured at the other end direct to the other side of the vessel, substantially as set forth.

3. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the upper part of the same forming communication between one compartment and the next, a stuffing-box for each compartment secured to one side of the vessel, a lid for each compartment secured to the other side of the vessel, heating-bodies in each of said compartments, said heating-bodies being secured at one end by the stuffing-box to one side of the vessel and secured at the other end by the lid to the other side of the vessel, and a chamber at the stuffing-box end of the heating-body, substantially as set forth.

4. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the upper part of the same forming communication between one compartment and the next, heating-bodies in each of said compartments, chambers at each side of the compartments at the ends of the heating-bodies, and detachable lids for said chambers, substantially as set forth.

5. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the upper part of the same forming communication between one compartment and the next, heating-bodies in each of said compartments, a feed-tube for the heating-body in the first of said compartments, and a stuffing-box for hermetically closing both the heating-body and the feed-tube against the interior of the vessel, substantially as set forth.

6. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the upper part of the same forming communication between one compartment and the next, heating means in each of said compartments, chambers at the ends of the heating means of each compartment, and a pipe connected with the opening of the partition and with one of the chambers at the end of the heating means, substantially as set forth.

7. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the upper part of the same forming communication between one compartment and the next, heating means in each of said compartments, chambers at the ends of the heating means of each compartment, and a pipe formed integral with the wall of the vessel and connected with the opening in the partitions and with one of the chambers, substantially as set forth.

8. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the same forming communication between one compartment and the next, heating means in each of said compartments, and a wall before each opening of the partitions and in proximity thereto extending downwardly from the top of the vessel, substantially as set forth.

9. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the same forming communication between one compartment and the next, heating means in each of said compartments, a wall before each opening of said partitions and in proximity thereto extending downwardly from the top of the vessel, and a second wall in front of said first wall in proximity thereto and extending up to some distance from the top of the vessel, substantially as set forth.

10. A multiple evaporating apparatus, comprising a closed vessel, a plurality of vertical partitions in said vessel forming a plurality of compartments and having openings in the same forming communication between one compartment and the next, heating means in each of said compartments, a wall before each opening of said partitions and in proximity thereto extending downwardly from the top of the vessel, a second wall in front of said first wall in proximity thereto and extending up to some distance from the top of the vessel, and a channel connected with said second wall extending downwardly to the heating means in said compartments, substantially as set forth.

## 753,778. SEATING-BENCH. JULIUS C. WOLF, Lansing, Mich. Filed May 29, 1902. Serial No. 109,438. (No model.)



*Claim.*—1. A bench comprising a seat and a back, legs hinged to the seat, a bar between the legs having a notch near each end, two slides on the bar, a spring-actuated latch carried by the slides, a tooth on each latch to engage the notches in the bar, braces between the slides and the legs adjacent thereto, pivots connecting the braces and the hinged legs, substantially as described.

2. A bench comprising a seat, leg-castings rigidly fastened to the seat, two sets of perforated ears formed on the castings, the rear end of each casting extending out beyond the seat and formed with a perforation, a back provided with castings in alinement with the leg-castings, the end of the back-castings extending out from the back and being perforated, means pivotally connecting the leg-casting extensions and the back extensions, legs pivotally secured to the ears of the leg-castings, and slidable mechanism connected to the legs to permit of their being folded against the under side of the seat, substantially as described.

3. A bench comprising a seat, a hinged back, castings fastened to the seat, legs hinged to the castings, a bar fastened between the castings, notches formed in the bar, two boxes entirely surrounding the bar to form slides, spring-actuated levers pivoted in the slides, teeth on the levers to engage the notches, and braces between the legs and the slides, pivots connecting the slides and the braces, and pivots connecting the braces and the legs, substantially as described.

## 753,779. GLOVE. GEORGE E. WOODMAN, London, England. Filed Nov. 19, 1901. Serial No. 82,870. (No model.)



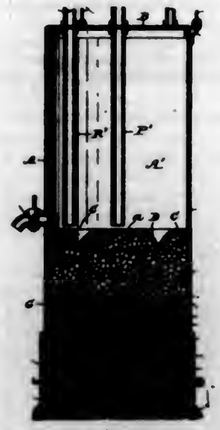
*Claim.*—An interior pocket for a glove consisting of a glove having a slit directly in the material thereof, a piece of pocket-forming material on the inner side of said glove material back of said slit, said pocket-forming material being secured at its side and base to said glove material and at its inlet end along the rear edge of said slit, a piece of rigid material extending along the back of said rear edge and secured thereto and an elastic band extending along the front edge of said slit and secured thereto.

## 753,780. WATER FILTER AND PURIFIER. WILLIAM WOODS, Spencer, Ind. Filed Sept. 30, 1903. Serial No. 175,112. (No model.)

*Claim.*—1. A water filter and purifier including a barrel having a water-chamber provided with a filtering bottom and also a long vent-tube extending from the top of the chamber, lifting-links attached to the top of the barrel, and a stop-cock connected to the barrel at the bottom of the water-chamber thereof.



2. A water filter and purifier including a barrel having a water-chamber in the uppermost portion thereof provided with a filtering bottom and also a long vent-tube extending from the top of the chamber, a discharge-pipe attached to the top of the chamber and extending vertically nearly to the filtering bottom thereof, an annular base or ring detachably secured to the lower end of the barrel, a perforate plate supported by the annular base or ring, filtering and purifying substances arranged between the perforate plate and the filtering bottom of the chamber, and sponge substance in the annular base beneath the perforate plate.



3. In a water filter and purifier, the combination of an upright barrel having a closed top, an annular base or ring detachably secured to the lower end of the barrel, a sponge in the annular base and extending beyond the lower edge thereof, a removable sponge-holder connected to the annular base and engaging the sponge, a perforate plate in the lower end portion of the barrel upon the top of the sponge, a perforate water-chamber bottom attached to the barrel above the perforate plate, filtering and purifying substances arranged between the perforate plate and the chamber-bottom, and a long vent-tube attached to the closed top of the barrel.

4. In a water filter and purifier, the combination of a barrel provided in its middle portion with a perforate chamber-bottom and at its upper end having a closed top, the whole upper portion of the barrel between said bottom and said top being a water-chamber, an annular base detachably connected to the lower end of the barrel and having notches in the lower edge thereof, a sponge in the annular base, a removable sponge-holder connected to the annular base and engaging the sponge, a perforate plate in the lower end of the barrel upon the sponge, and filtering and purifying substances arranged between said perforate plate and said perforate chamber-bottom.

5. In a water filter and purifier, the combination of a barrel the major upper portion of which forms a water-tight chamber having a perforate bottom attached to the middle portion of the barrel, and the lower portion of the barrel having filtering and purifying substances therein weighting and plumbing the barrel, a vent-tube attached to the top of the barrel, a lifting-chain attached to the upper portion of the barrel, and a faucet attached to the barrel adjacent to the perforate bottom.

6. In a water filter and purifier, the combination of a barrel having a closed top, a perforate chamber-bottom in the barrel, filtering and purifying substances arranged below the bottom in the barrel, an annular base removably connected to the lower end of the barrel, a sponge in the annular base, a removable sponge-holder connected to the base and extending through the sponge, a perforate plate upon the sponge and supporting the said substances, a suction-pipe extending from the top of the barrel nearly to the perforate chamber-bottom, and a tube attached to and extending upwardly from the barrel-top for admitting air to the water-chamber and also for excluding surrounding water from the chamber.

7. In a water filter and purifier, the combination of a barrel having a water-chamber provided with a perforate bottom and water-tight sides and top, the bottom comprising an annular imperforate dished plate attached to the barrel and a perforate central plate connected to the annular plate, and a vent-tube connected with the water-chamber, with filtering and purifying substances supported in the barrel under the perforate bottom.

8. In a water filter and purifier, the combination of a barrel having a water-chamber provided with a perforate bottom and water-tight sides and top, the bottom comprising an annular imperforate dished plate attached to the barrel and a dished perforate central plate connected to the annular plate, a vent-tube connected with the water-chamber, filtering and purifying substances in the barrel under the perforate bottom, and a tube attached to the top of the chamber and extending nearly to the bottom thereof, with a suction-pipe communicating with the tube.

## 753,781. ORNAMENT. PAUL WUNDSCH and FRIEDRICH LABUS, Berlin, Germany, assignors of one-half to Bernhard Wilmsen, Philadelphia, Pa. Filed Sept. 5, 1903. Serial No. 172,188. (No model.)



*Claim.*—1. An ornament comprising a plurality of sectional frames hinged together and a body composed of strips of pliable material, the adjacent strips being united to each other side by side at intervals and to said frames, said frames and body being adapted to be folded on each other and opened out in radial form with the free ends of the sections adjacent to each other and pieces of ornamental nature so connected with said body as to be folded and opened with the same.

2. An ornament comprising a plurality of sectional frames hinged together and a body composed of strips of pliable material, the adjacent strips being united to each other and to said frames, said frames and body being adapted to be folded on each other or opened out in radiating form, with the free ends of the sections adjacent to each other, means for connecting said ends and pieces of ornamental nature so connected with said body as to be folded and opened with the same.

3. An ornament constructed to be folded and opened out in radiating form comprising a plurality of sections formed of frames hinged together and a body connected with said frames and composed of strips of pliable material, the adjacent strips being united to each other side by side at intervals and pieces of ornamental nature so connected with said strips as to be folded and opened with the same.

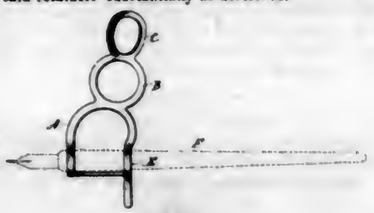
4. In an ornament, a frame composed of sections hinged together and a main body formed of strips of pliable material, the adjacent strips being united to each other, side by side at intervals and to said frame, said frame and body being adapted to be folded on each other and opened out in radial form with the free ends of the sections adjacent to each other, in combination with an additional body formed of strips of pliable material, the adjacent strips being united to each other side by side at intervals, said additional body continuing downwardly from said main body.

5. An ornament comprising a frame composed of sections hinged together, a main body formed of strips of pliable material, the adjacent strips being united side by side at intervals and to said frames, said frames and body being adapted to be folded on each other and opened out in radial form with the free ends of the sections adjacent to each other, pieces of ornamental nature so connected with said body as to be folded and opened out with the same, and an additional body continuing downwardly from the first-named body and composed of strips of pliable material, the adjacent strips being united to each other side by side at intervals.

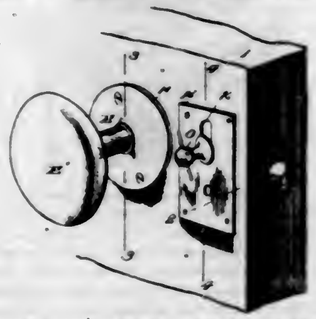
## 753,782. DEVICE FOR TEACHING PENMANSHIP. FRANK C. YOUNG, New Haven, Conn. Filed Nov. 2, 1903. Serial No. 179,456. (No model.)

*Claim.*—1. A device for teaching penmanship comprising three connected loops or rings to receive the middle, third and little fingers, and a support for the thumb, substantially as described.

2. A device for teaching penmanship, consisting of penholder-retainers adapted to support a penholder, three loops or rings for the support of the middle, third and little fingers arranged at one side of said retainers, and a support for the thumb at the opposite side of said retainers substantially as described.



## 753,783. COMBINED LOCK AND LATCH. JAMES R. YOUNG, Wayland, N. Y. Filed Mar. 17, 1903. Serial No. 148,222. (No model.)



*Claim.*—1. A combined lock and latch comprising a sliding bolt having a notch in its upper face, a vertically-movable transverse member adapted to rest in said notch, a knob carried by said transverse member and adapted to lock said member in or out of engagement with said notch and means operated by a key for raising said transverse member out of engagement with said notch.

2. A combined lock and latch comprising a sliding bolt having a notch in its upper face, a vertically-movable transverse member adapted to rest in said notch, a knob carried by said transverse member and adapted to lock said member in or out of engagement with said notch, downwardly-extending arms carried by said transverse member and adapted to be raised by a key for raising said transverse member from the notch.

3. A combined lock and latch comprising a sliding latch normally outwardly spring-pressed and having a notch in its upper face, a vertically-movable transverse member adapted to rest in said notch, a knob carried by said transverse member and adapted to lock said member in or out of engagement with said notch, two downwardly-extending arms carried by said transverse member and one of said arms adapted to be engaged by a key for raising the said transverse member from the notch.

4. A combined lock and latch comprising a horizontal bolt having a reduced inner end, a coil-spring surrounding the same and normally holding the same outward, said bolt having an intermediate vertical cut-away portion forming an abrupt shoulder against the rear end and a horizontal elongated slot communicating with said cut-away portion, a laterally-extending horizontal lug intermediate the ends of said cut-away portion, a knob-spindle extending through said horizontal elongated slot, outwardly-extending oppositely-arranged wings having a beveled rear portion adapted to engage said shoulder and the forward portion of said wings adapted to engage said lug, and means for locking said bolt in an outward position.

5. A combined lock and latch comprising an outwardly spring-pressed bolt having a notch in its upper face, a stationary plate adjacent said bolt and having a vertical slot therein, a vertically-movable horizontal bolt adapted to rest in said notch, a plate carried by said bolt on the inside of said stationary plate, the outer end of said bolt outside of the stationary plate being screw-threaded, a thumb-screw carried thereby, downwardly-extending arms carried by said plate carried by the transverse bolt, and a key adapted to engage one of said downwardly-extending arms whereby the transverse bolt is raised out of the notch.

6. A combined lock and latch comprising a sliding latch normally outwardly spring-pressed and having a notch in its upper face, a vertically-slidable member adapted to rest in said notch, a knob carried by said member and adapted to lock said member in or out of engagement with said notch, a downwardly-extending arm carried by said member and adapted to be raised by a key whereby the said member is raised from said notch.

7. A combined lock and latch comprising a sliding latch normally outwardly spring-pressed and having a notch in its upper face, a vertically-movable transverse member adapted to rest in said notch, a plate having a vertical slot through which said transverse member passes, downwardly-extending arms carried by said transverse member on the inside of said plate, and adapted to be raised by a key for raising said transverse member from the notch, a knob screwed upon said transverse member on the outside of said plate.

8. A combined lock and latch comprising a sliding latch, or bolt normally outwardly spring-pressed and having a notch in its upper face, a vertically-movable transverse bar adapted to rest in said notch, a plate having a vertical slot through which said transverse bar passes and the outer end of said bar being screw-threaded, two downwardly-extending arms carried by said bar on the inside of said plate, and one of said arms adapted to be engaged by a key for raising said transverse bar from the notch, and a knob screwed upon said bar on the outside of said plate, whereby the bar is positively locked in or out of said notch.

9. A combined lock and latch comprising a sliding bolt having a horizontal transverse slot therein, the said bolt having a vertical cut-away portion adjacent one side of said slot, a horizontal projection within said cut-away portion intermediate its ends, a spindle passing through said horizontal transverse slot, laterally-extending wings carried by said spindle, and having beveled portions adapted to engage the rear wall formed by the vertical cut-away portion, the upper portion of said sliding bolt carrying a transverse notch, a vertically-movable transverse member adapted to rest in said notch, a knob carried by said transverse member and adapted to lock said member in or out of engagement with said notch, and means operated by a key for raising said transverse member out of engagement with said notch.

10. A combined lock and latch comprising a sliding bolt having a vertical cut-away portion forming a shoulder adjacent its rear end, and a horizontal slot in communication with said cut-away portion, a transverse turning bolt passing through said slot, outwardly-extending wings carried by said bolt and adapted to engage said shoulder, said bolt having a transverse notch in its upper face, a transverse vertically-movable bar adapted to rest in said notch, means for positively locking said bar in said notch from the inside, and means for raising said bar out of said notch by a key from the outside.

11. A combined lock and latch comprising a sliding bolt having a vertically cut-away portion forming a shoulder adjacent its rear end and a horizontal slot in communication with said cut-away portion, a transverse turning bolt passing through said slot, laterally-extending wings carried by said bolt and adapted to engage said shoulder, a stop carried by said slide-bolt for limiting the oscillation of said turning bolt, said sliding bolt having a transverse notch in its upper face, a transverse vertically-movable bar adapted to rest in said notch, means for locking said transverse bar in said notch, and means for locking said transverse bar out of said notch.

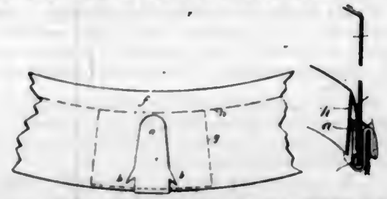
12. A combined lock and latch comprising a sliding bolt having a vertical cut-away portion forming a shoulder adjacent its rear end, and a horizontal slot communicating with said cut-away portion, a transverse turning bolt passing loosely through said slot, wings carried by said bolt, and adapted to engage the shoulder carried by said sliding bolt, the upper face of said sliding bolt having a transverse notch therein, a vertically-movable transverse member adapted to rest in said notch, a knob carried by said transverse member and adapted to lock said member in or out of engagement with said notch, two downwardly-extending arms carried by said transverse member and one of said arms adapted to be engaged by a key for raising the said transverse member out of the notch.

13. A combined lock and latch comprising a sliding bolt normally outwardly spring-pressed, a knob adapted to move said bolt inwardly against the spring, said bolt having a notch in its upper face, a transverse vertically-movable bar normally held in said notch by gravity, means for locking said bar in or out of engagement with said knob, and means for raising said bar out of said notch from the outside.

14. A combined lock and latch comprising a sliding bolt having a vertical cut-away portion forming a shoulder adjacent its rear end, and a horizontal slot communicating with said cut-away portion, a transverse spindle passing loosely through said slot, wings carried by said bolt and adapted to engage the shoulder carried by said sliding bolt, the upper face of said sliding bolt having a squared transverse notch therein, a vertically-movable transverse squared member adapted to rest in said notch in said sliding bolt, two downwardly-extending members carried by said transverse member, and one of said arms adapted to be engaged by a key, whereby the said transverse member is raised out of said notch, the outer end of said transverse member passing through an elongated slot in a plate carried by the door, and having its end screw-threaded, and a thumb-nut on said screw-threaded end, whereby the said transverse member is clamped in the desired position to the plate carried by the door.

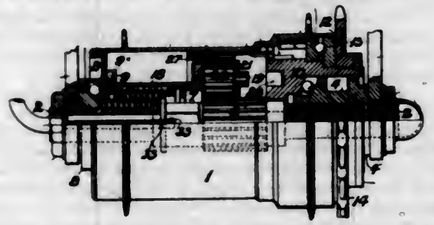


## 753,784. COLLAR AND NECKTIE RETAINER. OTIS F. AMBURN, Oklahoma, Okla., assignor of one-half to Oscar P. Gibson, Oklahoma, Okla. Filed May 1, 1903. Serial No. 155,232. (No model.)



*Claim.*—A collar and necktie retainer made of suitable material and bent substantially into a U-shaped figure with a hook *d*, one end portion or base of the said U-shaped figure to slip between the plies of a pocket-neckband of a shirt, the other end of said U-shaped figure being bent upward and forming the hook *d* for engaging the band of the necktie, said base of the U-shaped figure carrying two teeth or prongs, said teeth or prongs being bent inward, the collar being held between said teeth or prongs and the upward-bent portion, as specified and for the purpose set forth.

## 753,785. VARIABLE GEARING FOR VELOCIPEDES OR ROAD MOTOR-VEHICLES. JAMES ARCHER, Manchester, England, assignor to the Three-Speed Gear Syndicate, Ltd., Leuton, Nottingham, England. Filed Feb. 25, 1902. Serial No. 95,512. (No model.)



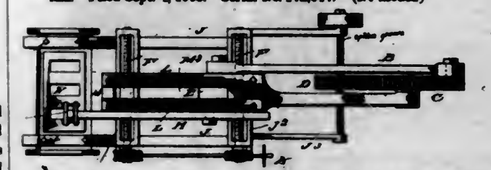
*Claim.*—1. In variable gearing for velocipedes and road motor-vehicles, a hub, having an inner clutch-ring; a "driver" having clutch-teeth, also holes or notches at one end; a gear-ring also having clutch-teeth adapted to engage the clutch-teeth on the driver and hub, and said gear-ring also having an inner internal ring of gear-teeth, a "planet-cage" comprising a tubular part, and a series of studs and pinions, means for loosely coupling said cage and gear-ring; clutch-teeth on the said tubular part; a cup-bearing for the said hub; clutch-teeth on the said cup-bearing; a fixed central axle for the hub; a fixed pinion on the said axle, with which, and the said gear-ring, the pinions of the planet-cage gear, and means for moving the planet-cage and gear-ring to and fro within the hub, substantially as set forth.

2. In combination, a stationary axle, a rigid gear carried thereby, a hub rotatably mounted on the axle, a driver also rotatably mounted on the axle, a planet-cage rotatable around said axle planet-gears rotatably carried by said cage and meshing with said rigid gear, a gear-ring encircling and meshing with said planet-gears clutch mechanism for connecting and disconnecting the gear-ring and driver, and clutch mechanism for connecting and disconnecting the planet-cage and the driver, said gear-ring having means of connection with the hub, substantially as described.

3. In combination, a stationary axle, a rigid gear carried thereby, a hub rotatably mounted on the axle, a driver also rotatably mounted on the axle, a planet-cage rotatable around said axle, planet-gears rotatably carried by said cage and meshing with said rigid gear, a gear-ring encircling and meshing with said planet-gears, clutch mechanism for connecting and disconnecting the gear-ring and hub, means whereby the gear-ring may be connected and disconnected from the driver, and means whereby the cage may be connected with and disconnected from the driver, substantially as described.

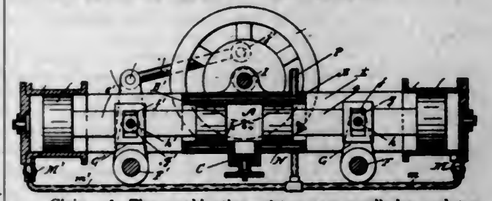
4. In combination, a stationary axle having an elongated rigid gear, a longitudinally-movable planet-cage rotatably mounted on said axle, planet-gears carried by said cage and meshing with said rigid gear, a gear-ring movable with said cage and engaging said planet-gears, a hub, clutch mechanism rendered effective by the movement of said cage for connecting it with and disconnecting it from the hub, clutch mechanism operated by the movement of said ring for connecting and disconnecting said ring with the driver and also with the hub, and means whereby also on movement of said cage it may be connected with and disconnected from the driver, substantially as described.

## 753,786. PORTABLE VALVE-SEAT PLANER. WILLIAM H. BEAN, Birmingham, Ala., assignor of one-half to H. C. Mead, Bessemer Ala. Filed Sept. 4, 1903. Serial No. 172,017. (No model.)



*Claim.*—In a portable valve-seat planer the combination of a frame fixed when in use, and consisting of side members J and channel-shaped cross members $J^2$, screws inclosed in said cross members and having bearings in the ends thereof, worm-wheels, extensions $J^3$, a splined driving-shaft supported thereby, a transversely-movable carriage having depending legs M' with threaded openings engaging said inclosed screws within the cross members, the head movable back and forth in the movable carriage, the wheel C driven by wheel D and supported by a bracket extending from said movable carriage, a connecting-rod between wheel C and said head, and a tool-carrying arm H.

## 753,787. AIR-COMPRESSOR. CYRUS S. DEAN, Buffalo, N. Y. Filed Apr. 21, 1903. Serial No. 153,681. (No model.)

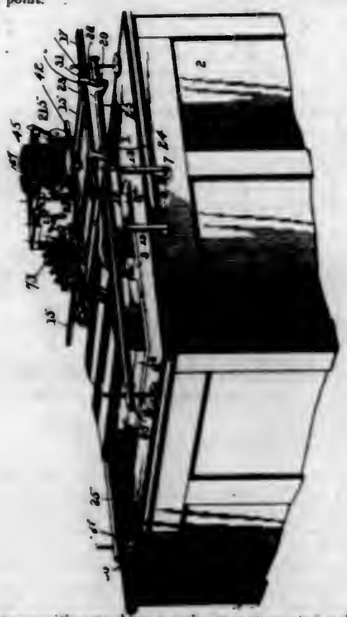


*Claim.*—1. The combination, with a power-cylinder, and two compressor-cylinders arranged at its ends; of pistons slidable in the said cylinders, piston-rods connecting the said pistons together in pairs and having guide-slots at their middle parts between the said pistons, guide-blocks slidable vertically in the said slots, a crank-shaft, pivoted arms operatively connected with the said guide-blocks, and driving connections between the said arms and the crank-shaft.

2. The combination, with a single power-cylinder, and two compressor-cylinders arranged at its ends; of pistons slidable in opposite directions in the said cylinders, bars provided with guide-slots and connecting the said pistons together in pairs, blocks sliding vertically in the said guide-slots, rock-shafts mounted under the said bars, two arms secured on the middle parts of each of the said rock-shafts and provided at their free ends with pins which engage with the said blocks, two arms provided with driving-pins at their free ends and secured on the end portions of the said rock-shafts upon opposite sides of the said cylinders, a crank-shaft journaled between the said compressor-cylinders, a fly-wheel secured on the said crank-shaft, and connecting-rods between the said driving-pins and the crank-shaft.

## 753,788. TYPE-WRITING MACHINE. HARRY S. DUKES and WILLIAM H. CLAYTON, Little Rock, Ark., assignors to the Dukes Typewriter Company, Little Rock, Ark., a Corporation. Filed Nov. 14, 1901. Serial No. 82,228. (No model.)

*Claim.*—1. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for independently and bodily raising and lowering said guide-frame without detaching the same from its support at any point.



2. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting the bodily raising and lowering of said frame through a movement thereof independent of the main support.

3. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting a synchronous bodily raising and lowering of the frame through a lateral motion thereof.

4. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting the bodily raising and lowering of said frame through an independent lateral motion of itself.

5. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting a bodily raising and lowering of said frame through a movement of the latter independent of the main support and while the frame remains supported at opposite points.

6. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting the bodily raising and lowering of said frame through an independent lateral motion of itself while supported at opposite points.

7. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting the bodily raising and lowering of said frame through a motion thereof independent of the main support and also while supported at opposite points outside of the printing area.

8. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting the bodily raising and lowering of said frame through an independent lateral motion of itself while supported at opposite points outside of the printing area.

9. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting a bodily raising and lowering of said frame through an independent reciprocatory motion thereof.

10. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting a bodily raising and lowering of said frame through an independent reciprocatory motion thereof while supported at opposite points.

11. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and means for effecting a bodily raising and lowering of said frame through an independent reciprocatory motion thereof while supported at opposite points outside of the printing area.

12. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and supporting means cooperating with the frame to permit of an independent substantially parallel motion thereof in the rising-and-falling movement.

13. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its related parts, and supporting means cooperating with the frame to permit of an independent substantially parallel motion thereof while the frame is supported at opposite points.

14. In a type-writing machine, a main support, a guide-frame sustaining the printing mechanism and its related parts, and means for raising and lowering the said frame by a synchronous movement of the oppositely-supported portions thereof independently of the main support.

15. In a type-writing machine, a main support, the guide-frame sustaining the printing mechanism and its related parts, and means for effecting a raising and lowering of said entire frame by a bodily rising-and-falling arcuate motion thereof.

16. In a type-writing machine, a guide-frame sustaining the printing mechanism and its track, and a support for the guide-frame comprising means for effecting the synchronous elevation of the front and rear ends of the frame through an independent movement of the latter.

17. In a type-writing machine, a guide-frame sustaining the printing mechanism and its track, a main support, and a separate support carried by the main support and comprising means for effecting a synchronous elevation of the front and rear ends of the guide-frame through an independent movement of the latter.

18. In a type-writing machine, a main support, a guide-frame sustaining the printing mechanism and its track, and a separate support for the guide-frame carried by the main support and comprising means for effecting the synchronous raising and lowering of the entire guide-frame with the machine parts thereon by an independent movement of the frame while the latter remains in an approximately horizontal position.

19. In a type-writing machine, a guide-frame sustaining the printing mechanism and its tracks, and a transversely-shiftable support for said frame comprising means for effecting a rising-and-falling movement thereof.

20. In a type-writing machine, a main support, a rising and falling guide-frame sustaining the printing mechanism and its track, and a shiftable support for the guide-frame comprising means for effecting a bodily raising and lowering of the latter from and to the work with the latter in position for printing without disturbing the same.

21. In a type-writing machine, a rising and falling guide-frame sustaining the printing mechanism and its track, and a transversely-shiftable support for the guide-frame comprising means for effecting the raising and lowering of the latter with the same in an approximately horizontal position.

22. In a type-writing machine, a rising and falling guide-frame of variable width, and a transversely-shiftable support for the said guide-frame comprising means for effecting the raising and lowering of the latter.

23. In a type-writing machine, a main support, a guide-frame of variable width and sustaining the printing mechanism and its track, and a transversely-shiftable guide-frame support carried by the main support and comprising means for effecting a rising-and-falling movement of the frame.

24. In a type-writing machine, a vertically-adjustable main support, a guide-frame of variable width and sustaining the printing mechanism and its track, and a transversely-shiftable guide-frame support carried by the main support.

25. In a type-writing machine, the main supporting or base rods, a rising and falling guide-frame sustaining the printing mechanism and its track, and an elevating-support for the guide-frame carried by the main supporting or base-rods.

26. In a type-writing machine, front and rear parallel base-rods, a rising and falling guide-frame sustaining the printing mechanism and its track, and an elevating-support for the guide-frame having members mounted upon the base-rods.

27. In a type-writing machine, parallel oppositely arranged base-rods, a rising and falling guide-frame sustaining the printing mechanism and its track, and an elevating-support for the guide-frame having a shiftable engagement with said base-rods.



28. In a type-writing machine, oppositely-located vertically-adjustable horizontal base-rods, a rising and falling guide-frame sustaining the printing mechanism and its track, and an elevating-support for the guide-frame having members loosely and shiftably engaging the base-rods.

29. In a type-writing machine, a guide-frame of variable width sustaining the printing mechanism and its track, oppositely-located vertically-adjustable base-rods, and a shiftable elevating-support for the guide-frame having a shiftable engagement with the base-rods.

30. In a type-writing machine, a rising and falling guide-frame sustaining the printing mechanism and its track, and vertically-swinging elevators for the front and rear end portions of said frame, said elevators providing for a substantially parallel motion to secure the raising and lowering of the frame by movement of the latter.

31. In a type-writing machine, a guide-frame sustaining the printing mechanism and its track, and transversely-shiftable elevators for the front and rear end portions of the guide-frame, said shiftable elevators comprising means for securing the raising and lowering of the frame through an independent movement of the latter.

32. In a type-writing machine, a rising and falling guide-frame sustaining the printing mechanism and its track, of an elevating-support for the guide-frame comprising front and rear vertically-swinging frame-supports having pivotal connections respectively with the front and rear portions of the frame.

33. In a type-writing machine, a rising and falling guide-frame sustaining the printing mechanism and its track, of an elevating-support essentially consisting of front and rear vertically-swinging frame supports or elevators having elevating-rods loosely connected with the front and rear portions of the frame to effect the rise and fall thereof through a substantially parallel motion of the same.

34. In a type-writing machine, the base-rods, a rising and falling guide-frame for the printing mechanism and its track, and front and rear frame-supports consisting of swinging links pivotally mounted on the base-rods, and elevating-rods connecting the swinging ends of said links, said elevating-rods having loose bearing connections with the frame.

35. In a type-writing machine, the base-rods, a rising and falling guide-frame sustaining the printing mechanism and its track, front and rear main supports consisting of swinging links pivotally and shiftably mounted upon the base-rods, and elevating-rods connecting the swinging ends of said links, said elevating-rods having loose bearing connections with the guide-frame to effect the raising and lowering thereof through a parallel movement, whereby the frame remains in an approximately horizontal position during the rise and fall thereof.

36. In a type-writing machine, the base-rods, a rising and falling guide-frame sustaining the printing mechanism and its track, front and rear frame supports or elevators consisting of vertically-swinging links pivotally mounted at one end upon the base-rods, and elevating-rods connecting the free or swinging ends of said links, one of the latter being provided with an operating end or lever, and bearing-collars carried by the rising and falling guide-frame and loosely receiving the elevating-rods of said front and rear supports or elevators.

37. In a type-writing machine, a guide-frame having longitudinal guides, and work-clamping plates carried by the guides at the under side thereof and projecting at both sides of the guides.

38. In a type-writing machine, a guide-frame having longitudinal guides, and work-clamping plates carried by the guides at the under side thereof and having extended portions disposed at the outer side of the guides to hold down the page opposite the one being printed upon in bookwork.

39. In a type-writing machine, the guide-frame having longitudinal guides, and flat work-clamping plates extending longitudinally of the guides beneath the latter and projecting at both sides of the same, the wider portions of said plates being disposed at the outer side of the guides to hold down the page opposite the one being printed upon in bookwork.

40. In a type-writing machine, the guide-frame, a track-carrier slidably mounted upon the guide-frame and essentially comprising oppositely-located track-slides and transversely-arranged track-rails carried by said slides and supporting the printing mechanism, each of the track-slides embodying longitudinally-alined slide-blocks engaging with the guides of the guide-frame, and a platform-section located outside of the plane of the guides and rigidly uniting the separate slide-blocks, the platform-sections of the said slides affording a supporting-base for parts of the line-spacing mechanism and other instrumentalities of the machine.

41. In a type-writing machine, a guide-frame, a track-carrier mounted upon the guide-frame, and having scale-supports extended from the front side thereof substantially within the plane of the guides of said frame, a transverse operator's scale held by said supports transversely of the frame in substantially the same plane, and the carriage carrying an indicator-pointer cooperating with said scale.

42. In a type-writing machine, a transversely-adjustable guide-frame, a track-carrier mounted upon the guide-frame and having adjustment compensating for that of the guide-frame, an operator's scale carried by the track-carrier and supported to permit of said adjustment, and the type-carriage carrying a pointer cooperating with said scale.

43. In a type-writing machine, a guide-frame having a transversely-adjustable member, a track-carrier mounted upon the guide-frame and also having a member adjustable with the adjustable member of the guide-frame, scale-supports extended from the track-carrier, an operator's scale secured fast to one of said supports and having a slidable engagement with the other, and a type-carriage carrying a pointer cooperating with the scale.

44. In a type-writing machine for printing upon flat surfaces, the longitudinal guides having ratchet-teeth, a track-carrier having a free sliding engagement with the guides, line-spacing mechanism movable with the track-carrier and having spacing-pawls normally disengaged from the ratchet-teeth to permit the track-carrier and the printing mechanism thereon to be freely slid manually backward or forward to any position without using the said line-spacing mechanism, the type-carriage, and an operating device for the line-spacing mechanism.

45. In a type-writing machine for printing upon flat surfaces, the longitudinal guides having ratchet-teeth, a track-carrier having a sliding engagement with the guides, line-spacing mechanism movable with the track-carrier and having reciprocatory spacing-pawls normally disengaged from the ratchet-teeth to permit of the sliding movement of the track-carrier and the printing mechanism thereon to any position in either direction without using the line-spacing mechanism, the carriage, and an operating device for the line-spacing mechanism supported and carried by the carriage.

46. In a type-writing machine for printing upon flat surfaces, the longitudinal guides having ratchet-teeth, the track-carrier having a free sliding engagement with the guides, line-spacing mechanism supported by the track-carrier and movable therewith, said spacing mechanism having reciprocatory spacing-pawls, and a spacing-bar operatively related to the pawls, said pawls being normally disengaged from the ratchet-teeth to permit the track-carrier and the printing mechanism thereon to be freely moved to any position in either direction without using the line-spacing mechanism, the carriage, and an operating device having an operative traveling engagement with the line-spacing mechanism and carried by the carriage.

47. In a type-writing machine, the longitudinal guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having pawls cooperating with said ratchet-teeth and also a spacing-bar operatively related to the pawls, and the carriage carrying an operating device cooperating directly with the said spacing-bar carried by the track-carrier.

48. In a type-writing machine, the longitudinal guides having ratchet-teeth, the track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls, and a spacing-bar operatively related to said pawls, and the carriage carrying a line-spacing-mechanism-operating device having an operative traveling engagement with the said spacing-bar carried by the track-carrier.

49. In a type-writing machine, the guides having ratchet-teeth, the track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and also a transverse horizontally-movable spacing-bar operatively related to the pawls, and the carriage carrying an operating device for the line-spacing mechanism having an operative traveling engagement with the spacing-bar carried by the track-carrier.

50. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and a spacing-bar operatively related to said pawls, the type-carriage, and an operating device for the line-spacing mechanism carried by the carriage, said operating device including an adjusting-lever having a traveling engagement with the spacing-bar, and an operating-lever for the said adjusting-lever.

51. In a type-writing machine, the guides having ratchet-teeth,

a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and a spacing-bar operatively related to said pawls, the type-carriage, and an operating device for the line-spacing mechanism carried by the carriage, said operating device comprising an adjusting-lever having a fork slidably engaging the spacing-bar, and an operating-lever for the said adjusting-lever.

52. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and a spacing-bar operatively related to said pawls, the type-carriage, and an operating device for the line-spacing mechanism carried by the carriage, said operating device comprising an adjusting-lever provided at one end with an engaging fork having a traveling engagement with the spacing-bar, and an operating-lever having a loose connection with the other end of the adjusting-lever.

53. In a type-writing machine, the guides having ratchet-teeth a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and a spacing-bar operatively related to said pawls, the type-carriage, and an operating device for the line-spacing mechanism carried by the carriage, said operating device comprising a pivotal adjusting-lever provided at one end with a pendent fork having a traveling engagement with the spacing-bar and an operating-lever having a loose connection with the other end of said adjusting-lever.

54. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and a spacing-bar operatively related to said pawls, the type-carriage, and an operating device for the line-spacing mechanism carried by said carriage, said operating device comprising a pivotal adjusting-lever provided at one end with a pendent fork having a traveling engagement with the spacing-bar, and a bell-crank-operating lever mounted inside of the carriage-casing and having a loose connection at one end with the adjusting-lever and at its other end provided with a finger key or lever arranged exterior to the carriage-casing.

55. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and having spacing-pawls and a spacing-bar operatively related to the pawls, said spacing-bar being provided with an upturned guiding-flange, the carriage, and the operating device for the line-spacing mechanism carried by the carriage and having an adjusting-lever provided with an engaging fork having a traveling engagement with said guiding-flange.

56. In a type-writing machine for printing upon flat surfaces, the guides having ratchet-teeth, a track-carrier having a free sliding engagement with the guides, line-spacing mechanism supported by the carrier and including spring-retracted plunger-stems carrying spacing-pawls, means for normally holding the pawls out of engagement with the ratchet-teeth to permit the carrier to be freely slid backward or forward to any position without employing the line-spacing mechanism, the carriage, and an operating device carried by the carriage, and having an operative relation to said plunger-stems.

57. In a type-writing machine, the guides having ratchet-teeth, a track-carrier, line-spacing mechanism supported by the carrier and including reciprocatory plungers carrying spacing-pawls and also a spacing-bar operatively connected with said plungers, the carriage, and an operating device carried by the carriage and operatively related to the spacing-bar carried by the carrier.

58. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and including reciprocatory plungers carrying spacing-pawls, a transversely-arranged spacing-bar operatively connected with both plungers, and also means for causing the spacing-bar to have a parallel horizontal movement, the carriage, and an operating device carried by the carriage and having a traveling connection with the spacing-bar carried by the carrier.

59. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted upon the guides, line-spacing mechanism supported by the track-carrier and including reciprocatory plungers carrying spacing-pawls, a transverse spacing-bar having an operative connection with both plungers, a parallel bar connection with the spacing-bar to insure the parallel horizontal movement thereof, the type-carriage, and an operating device for the spacing-bar.

60. In a type-writing machine, the guides having ratchet-teeth, the track-carrier mounted on the guides, line-spacing mechanism supported by the track-carrier and including reciprocatory plungers carrying spacing-pawls, a transverse spacing-bar having a connection with both plungers to cause the synchronous movement thereof, oppositely-arranged equalizing bell-crank levers supported by the track-carrier and connected with the spacing-bar, and a parallel coupling-bar also connected with said equalizing-levers, the carriage, and an operating device for the spacing-bar.

61. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted on the guides, line-spacing mechanism supported by the track-carrier and including reciprocatory plungers carrying spacing-pawls and having upstanding open keepers, a transversely-disposed spacing-bar engaging in the keepers of both plungers, said spacing-bar constituting a part of the line-spacing mechanism supported by the track-carrier, the carriage, and an operating device cooperating with said spacing-bar.

62. In a type-writing machine for printing upon flat surfaces, the guides having ratchet-teeth, a track-carrier slidably mounted on the guides, line-spacing mechanism supported by the track-carrier and including reciprocatory plungers carrying spacing-pawls normally held in an inactive position with relation to the ratchet-teeth to permit the track-carrier to be freely slid backward or forward to any position desired without employing the line-spacing mechanism, and means for causing the said pawls to become engaged with the ratchet-teeth when removed from their normal at-rest plane.

63. In a type-writing machine, the guides having ratchet-teeth, the track-carrier having pawl-abutments, and line-spacing mechanism supported by the track-carrier and including reciprocatory plungers, individually spring-actuated spacing-pawls carried by the plungers, said pawls having cam-heels cooperating with the pawl-abutments, suitably-arranged retracting means for the plungers to draw the heels of the pawls against the abutments, and an operating device for the line-spacing mechanism.

64. In a type-writing machine, the guides having ratchet-teeth, a track-carrier mounted on the guides and having pawl-abutments, line-spacing mechanism supported by the track-carrier and including reciprocatory plungers, individually spring-actuated spacing-pawls pivotally supported by the plungers and having contiguous to their pivots cam-heels cooperating with the abutments, a suitably-arranged retracting-spring for the plungers, the carriage, and an operating device for the line-spacing mechanism.

65. In a type-writing machine, the track-rails, the type-carriage, a pair of oppositely-arranged axles supported by the carriage within the plane thereof and each carrying a pair of traveler-rollers respectively engaging the separate rails and adjustable bearing-supports for both terminals of each axle.

66. In a type-writing machine, the track-rails, the carriage and a pair of parallel axles having adjustable terminal thrust-bearing supports and each carrying a pair of rollers traveling on the rails.

67. In a type-writing machine, the track-rails, the carriage, a pair of parallel axles arranged at opposite sides of the carriage and each carrying a pair of traveler-rollers traveling on the separate rails, and adjustable bearings for both ends of each shaft, one or both of said bearings comprising means for an endwise adjustment of the axles.

68. In a type-writing machine, a vertically-swinging type-bar carrier, a vertically-swinging support having pivotal connection with said carrier, counterbalancing means for the carrier and the parts carried thereby, and shifting mechanism for the carrier.

69. In a type-writing machine, a type-action frame, a vertically-swinging type-bar carrier and vertically-swinging supports arranged within the type-action frame and constituting the sole supporting and guiding means for the type-bar carrier said supports having pivotal connection with the carrier.

70. In a type-writing machine, a type-action frame, a vertically-swinging type-bar carrier, parallel synchronously-swinging supports mounted within the frame and constituting the sole supporting and guiding means for the type-bar carrier said supports having pivotal connection with the carrier.

71. In a type-writing machine, a type-action frame, a vertically-swinging type-bar carrier, and duplicate sets of parallel pivotally-mounted swinging supports arranged within the frame and constituting the sole supporting and guiding means for the carrier said supports having pivotal connection with the carrier.

72. In a type-writing machine, a type-action frame, a vertically-swinging type-bar carrier, and upper and lower duplicate sets of parallel hanger-arms pivotally connected with the carrier and having a pivotal support within said frame

73. In a type-writing machine, the type-action frame, a vertically-swinging type-bar carrier, a plurality of rocking supports mounted within the frame and having synchronously-swinging pivotal connections with the type-bar carrier to constitute the sole guiding and supporting means therefor.

74. In a type-writing machine, a frame, a vertically-swinging type-bar carrier a pair of rocking supports arranged one above the other within the frame, and synchronously-swinging hanger-arms carried by said supports and having pivotal connections with the type-bar carrier.



75. In a type-writing machine, a frame, a vertically-movable type-bar carrier, synchronously-swinging pivotal supports for said carrier, oppositely-arranged counterbalancing devices for the carrier and all parts supported thereby, and adjusting means for the counterbalancing devices and separate overbalancing means.

76. In a type-writing machine, a frame, a vertically-movable type-bar carrier, synchronously-swinging pivotal supports for said carrier, oppositely-arranged counterbalancing-springs for the type-bar carrier and the parts sustained thereby, one of said springs being adjustable and separate overbalancing means.

77. In a type-writing machine, a frame, a vertically-movable type-bar carrier, pivotal swinging supports for the said carrier, and oppositely-arranged counterbalancing-springs, one of said springs being of the coiled type and the other of the leaf type, and having adjusting means associated therewith.

78. In a type-writing machine, a frame, a vertically-movable type-bar carrier, a pair of rocking supports journaled in parallel relation in the frame, said supports carrying swinging hanger-arms pivotally connected with the carrier, a coiled counterbalancing-spring associated with one of the supports at one end, and a counterbalancing leaf-spring associated with said support at the opposite end and exerting a pressure thereon in the same direction as the coiled spring, said leaf-spring being attached to the frame and having an adjusting device associated therewith.

79. In a type-writing machine, a frame, a vertically-movable type-bar carrier, vertically-swinging pivotal supports for said carrier, counterbalancing-springs arranged to counterbalance the weight of the type-bar carrier and all parts sustained thereby, and a separate shifting device comprising means for overbalancing the type-bar carrier in either direction.

80. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and a separate shifting mechanism having an overbalancing device shiftable to either of two positions for normally overbalancing the type-bar carrier in either an elevated or depressed position.

81. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and a separate shifting mechanism having a single overbalancing device shiftable to either of two positions for normally overbalancing the type-bar carrier in either an elevated or depressed position.

82. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and a separate shifting mechanism having an overbalancing-spring shiftable to either of two positions for normally overbalancing the type-bar carrier in either an elevated or depressed position.

83. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and a shifting mechanism having an overbalancing-spring shiftable to either of two positions, and a shift-key having a greater leverage than said spring.

84. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier and a shifting mechanism comprising a shiftable overbalancing device to overbalance the type-bar carrier in a depressed or elevated position, and also including a shift-key having a greater leverage than said overbalancing device.

85. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and a separate shifting mechanism comprising a member having an operative connection with the carrier for raising and lowering the same, an overbalancing device having a shiftable connection with said member, and a shift-key also having a correspondingly-shiftable pull connection with the said member.

86. In a type-writing machine, a vertically-movable type-bar carrier, and shifting mechanism comprising a pivotally-supported member having an operative connection with said carrier, an overbalancing-spring having a shiftable connection with said member and movable to either side of the pivot thereof, and a shift-key having a correspondingly-shiftable pull connection with the said member.

87. In a type-writing machine, a vertically-movable type-bar carrier, and shifting mechanism comprising a pivotally-supported shift-lever having an operative connection with the type-bar carrier, an overbalancing-spring, a shift-key having a pull-rod connection, and a reversing device comprising means for simultaneously shifting one end of the overbalancing-spring and the pull-rod connection to either side of the pivot of said shift-lever.

88. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and shifting mechanism comprising a pivotally-supported shift-lever connected with the type-bar carrier and having a cross-arm, an overbalancing-spring, a shift-key having a pull-rod connection, and a reversing device comprising means for shifting one end of the overbalancing-spring and the pull-rod connection upon the cross-arm to either side of the plane of the pivot for the shift-lever.

89. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and shifting mechanism comprising a pivotally-supported shift-lever connected with the type-bar carrier and provided with a slotted reverse-head, an overbalancing-spring having a fixed support at one end, a shift-key having a pull-rod connection, and a reversing device having members connected respectively with the pull-rod connection and with the overbalancing-spring to effect a simultaneous shift thereof upon the reverse-head to either side of the pivot of the shift-lever.

90. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and shifting mechanism comprising an oscillatory shift-lever pivotally supported at one end and having a connection at its other end with the type-bar carrier, said shift-lever being provided at its pivoted end with a cross-arm carrying an offset slotted reverse-head, an overbalancing-spring having a fixed support at one end, a shift-key having a pull-rod connection, and a reversing device having a pair of synchronously-operating links connected respectively with one end of the overbalancing-spring and the pull-rod connection, said links cooperating with the slot of the reverse-head and arranged to simultaneously shift the spring and the pull-rod connection to either side of the pivot for the shift-lever.

91. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, and shifting mechanism comprising an oscillatory shift-lever connected with the type-bar carrier and having a cross-arm, an overbalancing-spring shiftable at one end, a shift-key lever having a pull-rod connection, and a reversing device including a spindle carrying at one end a reverse-lever and a pair of adjusting-links pivotally connected with said reverse-lever at one end and at their other ends respectively with the shiftable ends of the overbalancing-spring and the pull-rod connection, one of said links being attached to the reverse-lever at a point farther from the spindle than the other link to provide a greater leverage for the shift-key than the overbalancing-spring.

92. In a type-writing machine, a vertically-movable counterbalanced type-bar carrier, an oscillatory shift-lever pivotally supported at one end and having its other end connected with the type-bar carrier, an overbalancing-spring having an adjustable support at one end, a shift-key lever, a pull-rod connection with said shift-key lever, and a reversing device comprising means for simultaneously shifting one end of the spring and the pull-rod connection to either side of the pivotal support for the shift-lever.

93. In a type-writing machine, the combination with the type-bar-hanger support and the type-bars, of the type-bar hangers, each having parallel bearing-cheeks to receive the journals of the type-bars, a pair of adjusting-plates associated with each type-bar hanger and extending transversely across the upper and lower edges thereof, said adjusting-plates, under stress, exerting a contracting action upon the hanger, and a common adjusting-screw connecting the two plates.

94. In a type-writing machine, the combination with the type-bar-hanger support and the type-bars, of the type-bar hangers each having parallel bearing-cheeks and adjacent to said cheeks being provided at both their upper and lower edges with wedge bevels, a pair of adjusting-plates having wedge lugs cooperating with the bevels of the hangers, and a common adjusting-screw connecting each pair of adjusting-plates.

95. In a type-writing machine, the carriage-casing, a single detachable type-action frame carrying the entire type-action and the key-action for the latter, said key-action including a plurality of key-levers pivotally supported upon the front side of the type-action frame and carrying the keys of the keyboard, each of said levers having a pull-rod connection with a type-bar.

96. In a type-writing machine, the carriage-casing, a single detachable type-action frame supporting the entire type-action and the key-action for the latter, said key-action including a plurality of vertically-arranged bell-crank key-levers mounted upon the front wall of the type-action frame and carrying the keys of the keyboard, each of said levers having a pull-rod connection with a type-bar.

97. In a type-writing machine, the carriage-casing, a single detachable type-action frame supporting the entire type-action and the key-action for the latter, said key-action including vertically-movable bell-crank levers pivotally supported at their angles upon

the front wall of said frame, said levers being arranged in rows of progressively different sizes to provide for the stepped arrangement of the keys of the keyboard, and each lever having a pull-rod connection with a type-bar.

98. In a type-writing machine, the carriage-casing having a front open keyboard extension, a separate detachable type-action frame, carrying the entire type-action, and a series of key-levers pivotally supported upon the front wall of the type-action frame and carrying the keys of the keyboard, all of said levers and their keys being disposed inside of the keyboard extension of the carriage-casing, and each lever having an operative connection with a type-bar.

99. In a type-writing machine, the carriage, a single detachable type-action frame carrying the entire type-action, a plurality of vertically-arranged bell-crank key-levers pivotally mounted at the front of the type-action frame, said key-levers being arranged in rows of progressively different sizes but having their upstanding arms projecting to a common horizontal plane and having duplicate pull-rod connections with the type-bars, a letter-spacing mechanism, and a common universal bar also mounted at the front of the type-action frame and associated with the upstanding arms of the key-levers and operatively related to the letter-spacing mechanism.

100. In a type-writing machine, the carriage having a detachable bottom plate carrying letter-spacing mechanism and a motion-transmitting element operatively related thereto, and a single detachable type-action-supporting frame carrying the entire type-action, and a universal bar having a separable operative connection with the motion-transmitting element.

101. In a type-writing machine, the carriage-casing, letter-spacing mechanism mounted within the carriage-casing, a motion-transmitting element also mounted within the carriage-casing and operatively connected with the letter-spacing mechanism, a single detachable type-action-supporting frame removable from the carriage-casing and the elements associated with the letter-spacing mechanism, said frame carrying the entire type-action including a plurality of key-levers and a common universal bar acted upon directly by said levers and having a separable operative connection with the motion-transmitting element.

102. In a type-writing machine, the type-carriage casing, the letter-spacing mechanism therefor, a motion-transmitting element connected with the letter-spacing mechanism, a detachable type-action frame removable from the casing and the elements associated with the letter-spacing mechanism, and the type-action carried by said frame and including a plurality of key-levers and a common universal bar acted directly upon by all of said levers and having a separable interlocking connection with the motion-transmitting element.

103. In a type-writing machine, the type-carriage, letter-spacing mechanism therefor, a motion-transmitting element operatively connected with the letter-spacing mechanism, the type-action detachable as an entirety from the letter-spacing mechanism and the motion-transmitting element, said type-action including a plurality of key-levers having arms extending to a common plane, and a common universal bar acted directly upon by said arms of the levers and having a separable interlocking connection with the motion-transmitting element.

104. In a type-writing machine, the carriage, letter-spacing mechanism therefor, a motion-transmitting element operatively connected with the letter-spacing mechanism, and the type-action detachable as an entirety from the letter-spacing mechanism and the motion-transmitting element, said type-action including a series of bell-crank key-levers having upstanding arms projecting to a common plane, and a common universal bar arranged at one side of said upstanding arms and having an operative separable connection with the motion-transmitting element.

105. In a type-writing machine, the carriage, the letter-spacing mechanism therefor, a motion-transmitting element connected with said letter-spacing mechanism, said motion-transmitting element carrying a yoke-lever, and the type-action including a series of key-levers having arms arranged in an alined row, a common universal bar arranged at one side of said row of arms, and coupling-latches pivotally connected with the universal bar and having detachable hook connections with the yoke-lever.

106. In a type-writing machine, the carriage, the letter-spacing mechanism therefor, a motion-transmitting element carrying an upstanding yoke-lever having a horizontal yoke-bar, said motion-transmitting element being connected with the letter-spacing mechanism, the type-action including bell-crank key-levers having their upstanding arms arranged in a row, a common universal bar having pendent swinging supports, and coupling-latches pivotally connected with the universal bar and provided at one end with hooks detachably connecting the horizontal bar of the yoke-lever.

107. In a type-writing machine, the carriage, the letter-spacing mechanism therefor, a motion-transmitting element connected with the letter-spacing mechanism, the type-action having key-levers with upstanding arms, a common universal bar engaged by said arms and having pendent swinging supports, and a space-key yoke-lever having its end bars pivotally supported and provided with members engaging the pendent supports of the universal bar.

108. In a type-writing machine, the carriage, the letter-spacing mechanism therefor, a motion-transmitting element connected with the letter-spacing mechanism, the type-action having key-levers with upstanding arms, a common universal bar engaged by said arms and having pendent swinging supports, and a space-key yoke-lever extending around the keyboard and having end bars pivotally supported and provided with inturned lugs engaging the pendent supports of the universal bar, and an auxiliary return-spring having a fixed support and engaging a part of said space-key yoke-lever.

109. In a type-writing machine, the carriage having a detachable bottom plate, a detachable type-action-supporting frame carrying the entire type-action, and the letter-spacing mechanism carried as an entirety by a base-plate detachably fitted to the bottom plate of the carriage.

110. In a type-writing machine, the track-carrier, a scaled trip-holding bar rigidly mounted upon the track-carrier and separate from the track-rails, the traveling carriage, and a line-lock device having normally inactive elements and comprising means for locking the type-action and all cooperating parts, said line-lock device including a trip adjustably fitted to the scaled holding-bar, and locking elements carried by the carriage and set into active positions by said trip.

111. In a type-writing machine, the track-carrier, a trip-holding bar mounted upon the carrier separate from the track-rails, said trip-holding bar being graduated and provided with a series of catch elements, and a line-lock device having normally inactive locking elements carried by the carriage, and also having a trip slidable upon the holding-bar and having a catch device engaging the catch elements of the bar.

112. In a type-writing machine, the combination with the carriage, of a line-lock device comprising means for locking the type-action and all cooperating parts, said line-lock device including a release-key disposed within the area of the keyboard, said release-key constituting a direct extension of the locking element of said line-lock device.

113. In a type-writing machine, the carriage, a line-lock device including a tripping lock-lever constituting the main locking element and comprising means for locking the entire type-action and all cooperating parts, and a release-key consisting of a lever-arm rigid with said lock-lever and extended forwardly into the keyboard, said release-key being arranged to provide for resetting the line-lock device and releasing it from the printing mechanism upon the depression of the key.

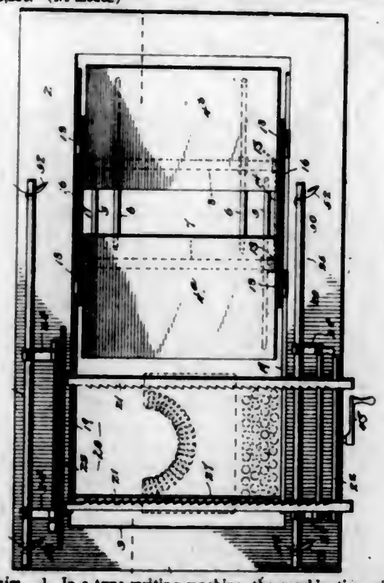
114. In a type-writing machine, the combination with the type-bars having a plurality of faces, the key-levers and the connections between these elements, of a vertically-swinging type-bar carrier supported to swing through the arc of a circle to points equidistant above and below the horizontal plane of its axis or axes, whereby there is no disturbance in position at the point of connection between the key-levers and the elements for transmitting motion therefrom to the type-bars.

115. In a type-writing machine, the combination of the carriage-casing carrying the letter-spacing mechanism, a detachable type-action frame carrying the universal bar having a separable operative connection with the letter-spacing mechanism, a type-bar carrier supported by the type-action frame and carrying the type-bars, and a plurality of vertically-arranged bell-crank key-levers supported upon the frame, said levers being arranged in rows of progressively different sizes and having the proportion between the lengths of the key ends and the upstanding ends of each set of levers relatively maintained so that the leverage of all sets is the same and the dip of the keys is the same.

116. In a type-writing machine, a main support, a rising and falling guide-frame supporting thereon the printing mechanism and its related parts and interposed between that mechanism and the writing plane, and means for bodily raising and lowering said guide-frame from and to the work while the latter is in position for printing and without disturbing the same.



753,789. **WORK-HANDLING MECHANISM FOR TYPE-WRITING MACHINES.** HARRY S. DUKES and WILLIAM H. CLAYTON, Little Rock, Ark., assignors to the Dukes Typewriter Company, Little Rock, Ark., a Corporation of Arkansas. Filed Feb. 8, 1902. Serial No. 93,230. (No model.)



*Claim.*—1. In a type-writing machine, the combination with a work-support, of simultaneously vertically adjustable main supporting elements, and a machine-supporting frame carried by the latter and shiftable thereon without disturbing the work or the shifting connection with said supporting elements.

2. In a type-writing machine, the combination with a work-support, of oppositely-located simultaneously vertically adjustable base-rods, and a machine-supporting frame carried by the base-rods and shiftable thereon without disturbing the work or the shifting connection with either rod.

3. In a type-writing machine, the combination with a work-support, of oppositely-located vertically-adjustable base-rods, a transversely-shiftable machine-supporting frame carried by said rods and shiftable thereon in either direction without disturbing the work or the shifting connection with the rods, and raising and lowering mechanism for simultaneously adjusting the rods.

4. In a type-writing machine, the combination with the support for the work, of simultaneously vertically adjustable base-rods, a transversely-shiftable machine-supporting frame, an operating means for effecting an independent bodily rising-and-falling movement of the said frame.

5. In a type-writing machine, the combination with the support for the work, of vertically-adjustable base-rods, raising and lowering mechanism for simultaneously and synchronously adjusting said rods, a transversely-shiftable machine-supporting frame, and separate means cooperating with the base-rods and said frame to effect an independent bodily rising-and-falling movement of the latter.

6. In a type-writing machine, the combination with a work-support, of oppositely-located vertically-adjustable base-rods having pendent stems, synchronously-operating levers operatively connected with said stems, and a machine-supporting frame carried by said base-rods and independently adjustable thereon.

7. In a type-writing machine, the combination with the support for the work and a machine-supporting frame, of oppositely-arranged parallel base-rods having pendent stems, raising and lowering mechanism having similar connections with the several stems to effect a synchronous adjustment of the rods, and holding devices associated with the individual rod-stems to provide separate fastenings or locks therefor.

8. In a type-writing machine, the combination with the support for the work and a machine-supporting frame, of oppositely-located base-rods supporting said frame and having pendent stems, raising and lowering mechanism connected with all of the rod-stems to insure a synchronous adjustment of the rods, and manually-operated holding-clamps cooperating with the individual rod-stems to provide separate fastenings or locks therefor.

9. In a type-writing machine, the combination with the support for the work and a machine-supporting frame, of simultaneously vertically adjustable base-rods supporting the frame and provided with pendent rod-stems, raising and lowering mechanism comprising oppositely-arranged rock-shafts, bell-crank levers mounted upon said shafts and coupled together for movement in unison, said bell-crank levers having link connections with the rod-stems, and an operating device including a screw-shaft and a traveling nut on the shaft, the latter having an operative connection with one of the rock-shafts.

10. In a type-writing machine, a support, a transversely-shiftable supporting-frame carried by said support and having front and rear connections therewith, the printing mechanism having a movement on the supporting-frame for letter and line spacing, and a work-holder independently shiftable in the same directions as said frame.

11. In a type-writing machine, an adjustable support, a transversely-shiftable machine-supporting frame carried by the adjustable support and shiftable thereon without disturbing the work or the shifting connections, and a work-holder independently shiftable in the same directions as said frame.

12. In a type-writing machine, a transversely-shiftable machine-supporting frame having a bodily rising-and-falling movement independent of its main support, and a work-holder independently shiftable in the same directions as said frame.

13. In a type-writing machine, a vertically-adjustable main support, a transversely-shiftable machine-supporting frame mounted upon said vertically-adjustable support and having an independent bodily rising-and-falling movement, and a transversely-shiftable work-holder.

14. In a type-writing machine, simultaneously vertically adjustable base-rods, a transversely-shiftable machine-supporting frame mounted upon the base-rods and movable to different positions without disturbing the work or the shifting connections with the rods, and a transversely-shiftable work-holder.

15. In a type-writing machine, simultaneously vertically adjustable base-rods, a transversely-shiftable machine-supporting frame mounted upon the base-rods and having a bodily rising-and-falling movement independent of the latter, and a transversely-shiftable work-holder.

16. In a type-writing machine, the base-rods having one end thereof extending to a point beyond one side of the printing plane, a transversely-shiftable machine-supporting frame supported upon the rods, and a shiftable work-holder having a shifting movement the full length of the base-rods and also beyond one end of the latter.

17. In a type-writing machine, a base having a work-holder opening extending longitudinally thereof, a main support, a transversely-shiftable machine-supporting frame mounted upon the main support and movable to different positions without disturbing the work or the shifting connections with the main support, and a similarly-shiftable work-holder arranged for adjustment within said opening.

18. In a type-writing machine, the base having track-rails, a main support, a transversely-shiftable machine-supporting frame having front and rear connections with said support and shiftable thereon without disturbing the work or the shifting connections, a printing mechanism having movement on the supporting-frame for letter and line spacing, and a work-holder having a carriage riding on said rails and shiftable in the same directions as the machine-supporting frame.

19. In a type-writing machine, a support, a transversely-shiftable machine-supporting frame having front and rear connections with said support and shiftable thereon without disturbing the work or the shifting connections, the printing mechanism having movement on the supporting-frame for letter and line spacing, and a self-leveling work-holder independently shiftable in the same directions as said machine-supporting frame.

20. In a type-writing machine, the work-holder comprising oppositely-arranged vertically-movable rests, and leveling devices embodying a separate coupling connection between the outer edge portion of each rest and the inner edge portion of the other rest.

21. In a type-writing machine, the work-holder comprising vertically-movable horizontal rests arranged in spaced relation, separate supporting elements, and oscillatory leveling-levers mounted upon said supporting elements, the levers upon one supporting element having terminal link connections respectively with the outer edge portion of one rest and the inner edge portion of the other rest, and the leveling-levers on the other supporting element having similar terminal connections respectively with the other edge portions of the same rests.

22. In a type-writing machine, the work-holder comprising oppositely-arranged vertically-movable rests, separate supporting elements, oscillatory leveling-levers mounted upon said supporting elements, the levers upon one supporting element having terminal connections respectively with the outer edge portion of one rest and the inner edge portion of the other rest, and the leveling-levers on the other supporting element having similar terminal connections respectively with the other edge portions of the same rests, and coupling means between the separate sets of leveling devices to insure the synchronous movement of the rests.

23. In a type-writing machine, the work-holder comprising spaced vertically-movable horizontal rests, separate rock-shafts, leveling-levers carried by said shafts and each having operative connections respectively with different edge portions of the separate rests, and a coupling connection between the two rock-shafts to secure synchronous movement thereof.

24. In a type-writing machine, the work-holder comprising spaced vertically-movable horizontal rests, separate rock-shafts, leveling-levers carried by said shafts and each having operative connections respectively with different edge portions of the separate rests, and a coupling connection comprising swinging shaft-arms fitted to the shafts and a connecting-bar pivotally coupling together the said shaft-arms.

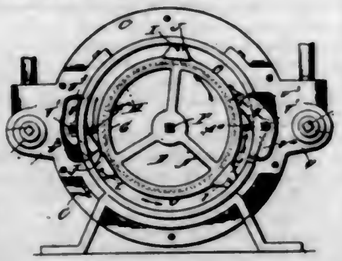
25. In a type-writing machine, the combination with a work-support, of simultaneously vertically adjustable main supporting elements, and a machine-supporting frame carried by said supporting elements and adjustable with the latter, to and from the work with the latter in position for printing, without disturbing the work or the connections with the supporting elements.

26. In a type-writing machine, the combination of simultaneously vertically adjustable main supporting elements, a machine-supporting frame carried by said supporting elements and adjustable with the latter, to and from the work, with the latter in printing position without disturbing the work or the connections with the supporting elements, and a transversely-shiftable work-holder.

27. In a type-writing machine, the combination with the work-support, of rising and falling main supporting-rods, and a transversely-shiftable machine-supporting frame carried by said rods and movable to and from the work with the latter in position for printing without disturbing the work or the connections with the said rods.

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**753,790. ROTARY ENGINE.** ANDREW F. FORD, Colfax, Wash., assignor of one-half to William Schlutig, Colfax, Wash. Filed Sept. 19, 1903. Serial No. 173,879. (No model.)



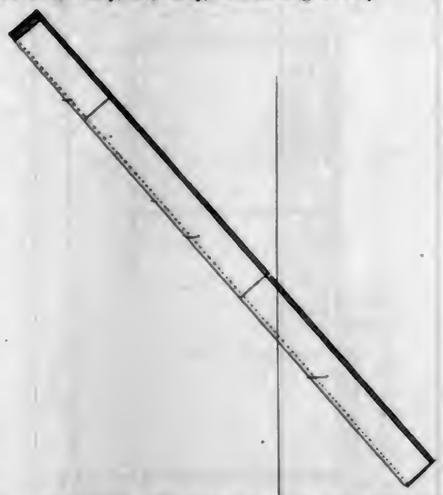
*Claim.*—1. The combination in a rotary engine, of a suitable casing, a valve-box on opposite sides of the casing; having separate feed-ports, exhaust-ports in the casing, an oscillating valve in each said box, oscillating abutments in the engine-casing, a shifter-arm having fixed crank connection to the said oscillating valves and similar but yielding connection to the said oscillating abutments, and a rotatable wheel having pistons adapted in operation to work the said oscillating valves, substantially as described.

2. The combination with a rotary engine of the character described, employing a casing, and a rotatable wheel having suitable pistons, of opposite boxes having separate feed-ports, exhaust-ports in the casing, rotatable valves in the said boxes; adapted to be set for reversing the engine, yielding oscillating abutments adapted, during passage thereby of the said pistons, for closing the feeding-port, and a shifter-arm having suitable connection to the said rotatable valve and oscillating abutments, substantially as described.

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**753,791. METHOD OF MAKING FLOOR-BOARDS.** ELISHA J. FULLOMER, Traverse City, Mich. Filed Aug. 25, 1903. Serial No. 170,756. (No model.)

*Claim.*—1. The herein-described method of producing composite floor-boards, which consists in providing the ends of a plurality of sections with companion members of an interlocking joint adapted when connected to resist longitudinal strain, connecting the said sections so as to form a continuous strip of desired length, dressing the same to uniformity, and, finally, side matching the strip.



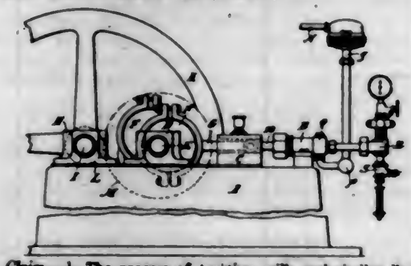
2. The herein-described method of producing floor-boards, which consists in connecting a plurality of floor-board sections by means of a binding interlocking joint adapted to resist longitudinal strain, and subsequently side matching the board thus produced.

3. The herein-described method of producing floor-boards which consists in connecting a plurality of floor-board sections by means of an interlocking joint adapted to resist longitudinal strain, and subsequently finishing the strip thus formed to a finishing process.

4. The herein-described method of producing floor-boards, which consists in end matching and connecting a plurality of short sections by means of an interlocking joint adapted to resist longitudinal strain, subsequently finishing the same, and finally cutting into predetermined lengths.

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**753,792. PROCESS OF TREATING MILK OR SIMILAR LIQUIDS.** ADOLPHE GAUDIN, Paris, France. Original application filed Sept. 30, 1902, Serial No. 126,449. Divided and this application filed Apr. 27, 1903. Serial No. 154,494. (No specimens.)



*Claim.*—1. The process of treating milk and similar liquids, which consists in elongating the larger constituent particles into capillary filaments, substantially as set forth.

2. The process of treating milk and similar liquids, which consists in elongating the larger constituent particles into capillary filaments and breaking up the filaments thus formed, substantially as set forth.

3. The process of treating milk and similar liquids, which consists in elongating the fat and casein particles into capillary filaments, substantially as set forth.

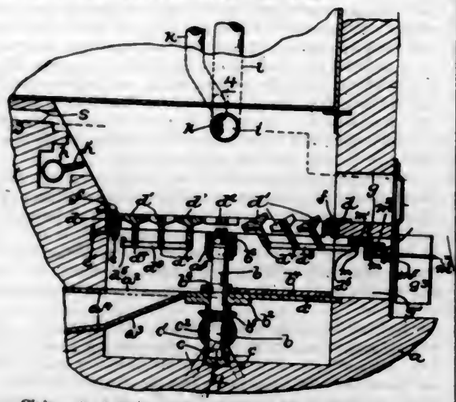
4. The process of treating milk and similar liquids, which consists in elongating the fat and casein particles into capillary filaments and then squeezing the filaments to break them up, substantially as set forth.

5. The process of treating milk and similar liquids, which consists in elongating the fat and casein particles into capillary filaments and then breaking up the filaments thus formed by squeezing them between capillary surfaces, substantially as set forth.



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**753,793. FURNACE.** FRANK GORMAN, Cleveland, Ohio. Filed Feb. 24, 1903. Serial No. 144,584. (No model.)

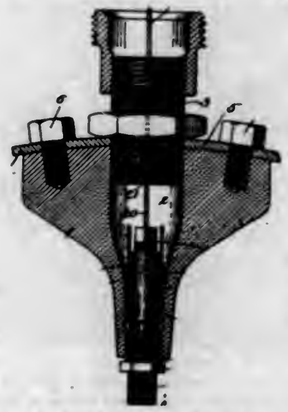


*Claim.*—1. A furnace comprising, a casing, an annular frame rotatably supported in said casing, means for revolving said frame, grate-sections mounted in said frame, bars operatively connecting the grate-sections in each half of said frame, lugs formed on the ends of said bars, a plate supported from the wall of said casing and arranged so as to swing in and out under the said grate and provided with a groove arranged so that the lugs on the said bars will pass therethrough during a revolution of the said frame and means for causing said plate to move in and out under said frame.

2. In a furnace, the combination of a casing, a circular rotary grate mounted in said casing, said grate comprising an annular frame, grate-sections pivotally mounted in said frame, lugs secured to the bottom of said grate-sections, bars operatively connecting the grate-sections in each half of said grate, lugs formed on the ends of said bars, a plate supported from the wall of said casing and arranged so as to swing in and out under said grate and having a groove formed therein so that the lugs on the said bars will pass therethrough during a revolution of the said grate, means for rotating said grate, means for causing said plate to move in and out under said grate, an annular plate mounted in the wall of said casing and, arranged to project over the rim of said grate and rollers supported beneath said grate substantially as described and for the purpose set forth.

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**753,794. TRACK-SANDING DEVICE.** JOHN H. HANLON, Somerville, Mass., assignor of one-half to William J. Hanlon, Fitchburg, Mass. Filed Nov. 4, 1903. Serial No. 179,782. (No model.)



*Claim.*—1. In a pneumatic track-sanding device, the combination of an air-blast nozzle, and a vibrator within the aperture of the said nozzle, substantially as and for the purposes described.

2. In a pneumatic track-sanding device, the combination of a sand-collector having an expanding-chamber therein, said chamber receiving sand through suitable sand-inlet holes, a sand-delivery pipe, an air-blast nozzle, and one or more vibrators in the apertures of said air-blast nozzle, substantially as described.

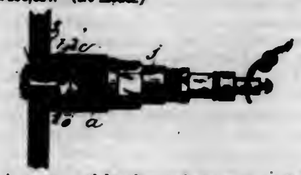
3. In a track-sanding device, the vibrator consisting of a substantially straight portion and a loop thereon engaging the interior surface of the blast-nozzle about the air-emission hole, substantially as described.

4. In a track-sanding device, the combination of an air-blast nozzle, and a vibrator therein consisting of a straight portion and a loop engaging the inner surface of the blast-nozzle, substantially as described.

5. In a track-sanding device, the combination of an air-blast nozzle having a longitudinal and two opposite air-apertures therein, a transverse vibrator in the said opposite air-apertures, a longitudinal vibrator in the longitudinal aperture, said vibrator having a head portion engaging the said transverse vibrator at certain times, as and for the purposes described.

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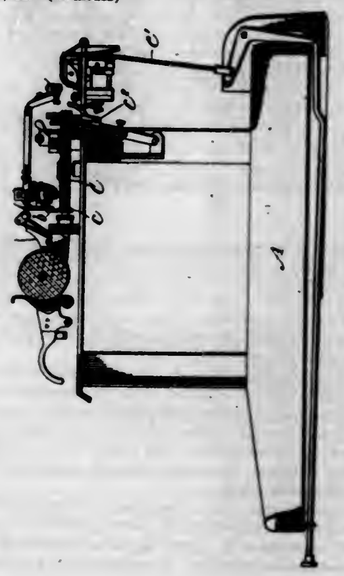
**753,795. ELECTRIC SPARKING IGNITER FOR EXPLOSIVE-ENGINES.** WILLIAM J. HART, Mount Vernon, N. Y., assignor of one-half to Charles F. Splitdorf, New York, N. Y. Filed May 28, 1903. Serial No. 159,057. (No model.)



*Claim.*—As a new article of manufacture, a coupling between sparking plugs and explosive-engines, comprising a thimble having an interior thread to receive a sparking plug, and being exteriorly arranged to be turned with a wrench, together with a narrowed, exteriorly-threaded extension adapted to screw into the plug-orifice in a combustion-chamber, said extension terminating in a cone-like formation, and said extension being provided with a central passage communicating at one end with the interior of said thimble, and at its opposite end with a plurality of radiating perforations through its cone-like termination.

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**753,796. TYPE-WRITING AND TABULATING MACHINE.** HAROLD JARVIS and MANLEY H. BLAKESLEE, Buffalo, N. Y.; said Blakeslee assignor to said Jarvis. Original application filed Feb. 1, 1901, Serial No. 45,635. Divided and this application filed Jan. 4, 1904. Serial No. 187,732. (No model.)



*Claim.*—1. In a type-writing machine, the combination with the paper-carriage, of an escapement feeding mechanism suddenly arresting the forward movement of said carriage and a governor for regulating the speed of the carriage, substantially as described.

2. A spacing attachment for type-writers comprising a series of keys, each key arranged to disengage the carriage from its feeding mechanism and to arrest the same at a different point, and a governor for regulating the speed of said carriage, substantially as described.

3. A type-writer having provision for feeding the paper-carriage predetermined spaces of varying distances and a governor for regulating the speed of said carriage, substantially as described.

4. A type-writer having provision for taking the paper-carriage from the control of its step-by-step feeding devices, and putting it in control of a variable spacing mechanism, and a governor for the paper-carriage when controlled by the varying spacing mechanism, substantially as described.

5. A type-writer having feeding devices for feeding the paper-carriage a number of letter-spaces at a time and a governor for regulating the speed of the carriage, substantially as described.

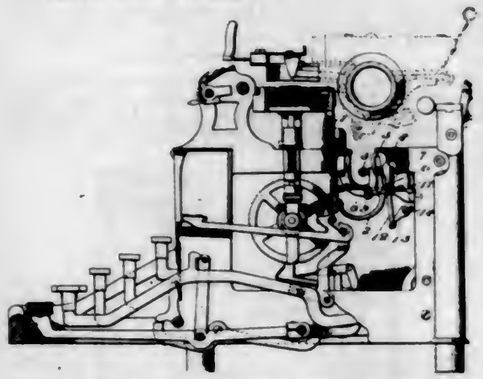
6. A governor for type-writer carriages comprising among its members a revolving shaft, a series of centrifugally-movable friction-arms, an exterior friction-surface, and connections with said carriage to rotate said shaft, the said friction-arms being reversible to change the amount of friction, substantially as described.

7. The combination with the carriage having a feed-rack, of a movably-mounted shaft having a pinion in the vertical plane of the rack but normally out of contact with it, a governor connected with said shaft and means for moving one of said parts to bring the pinion and rack into engagement, substantially as described.

8. In a type-writer, a paper-carriage having a movable feed-rack, a step-by-step escapement mechanism controlling said carriage through a pinion engaging said rack, a movably-mounted shaft having a connected governor and a pinion, and means for bringing the pinion of said movable shaft and said rack into engagement and for throwing said rack and pinion out of engagement, substantially as described.

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753,797. **POLYCHROME TYPE-WRITER.** CARL A. JOERISSEN and HARRY R. LIVINGSTON, Washington, D. C. Filed July 10, 1903. Serial No. 164,974. (No model.)



*Claim.*—1. In combination with a visible-writing type-writing machine, having a ribbon attachment which withdraws the ribbon from the printing-line to permit inspection of the writing after each character is printed; a polychrome attachment, shifting the ribbon beyond its normal position at will to permit writing upon either of the ribbons' colors without interfering with the normal operation of the ribbon attachment.

2. In combination with a disappearing-ribbon attachment for visible-writing type-writers and an upper-case attachment for shifting said ribbon attachment with the platen; means for imparting to said ribbon attachment a further independent movement to present a different longitudinal portion of the ribbon to the printing-line in both lower and upper case writing, whereby it is adapted for use with a polychrome ribbon.

3. In combination with a disappearing-ribbon attachment for visible-writing type-writers, and the means by which said ribbon attachment is actuated in its normal operation, means for shifting the ribbon attachment relatively to its actuating means without interrupting the controlling relation of the latter for writing upper-case characters, and means for adjusting the position of the ribbon attachment relatively to its actuating means, whereby said attachment is adapted for use with a polychrome ribbon.

4. In a visible-writing type-writer, the combination of the disappearing-ribbon attachment, an oscillating lever by which said ribattachment is normally actuated, an upper-case attachment by which said ribbon attachment is shifted, and means for shifting the fulcrum of the oscillating lever independently of the upper-case attachment.

5. In a polychrome attachment for visible-writing type-writers, the combination of the disappearing-ribbon attachment, an oscillating lever controlling the ribbon attachment, and the movement of which is controlled by the type-writing mechanism, an upper-case lift-rail by which said lever is supported and means for shifting the fulcrum of the lever relatively to the shift-rail.

6. In a polychrome attachment for visible-writing type-writers, the combination of the disappearing-ribbon attachment, an oscillating lever controlling the ribbon attachment, and the movement of which is controlled by the type-writing mechanism, an upper-case lift-rail by which said lever is supported and means for shifting the fulcrum of the lever relatively to the shift-rail, consisting of a shaft, an arm on said shaft and a link connecting said arm with the fulcrum of the lever.

7. In a type-writing machine the combination of an upper-case lift-rail frame, a disappearing-ribbon attachment supported from said frame and a polychrome-ribbon attachment mounted on said frame and having controlling connection with the disappearing-ribbon attachment, whereby the latter is adapted to serve for a polychrome ribbon.

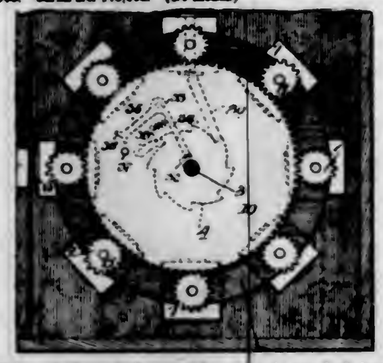
8. In a sight-writing type-writer, the combination of a disappearing-ribbon attachment having a lever through which it is actuated, an upper-case shift-frame upon which said lever is fulcrumed, and a polychrome-ribbon adjustment consisting of a shaft also mounted in the shift-frame and having means through which it shifts the position of the lever-fulcrum relatively to the shift-frame.

9. In a polychrome visible-writing type-writer, the combination of the disappearing-ribbon attachment comprising a ribbon-guide, a lever imparting movement to said ribbon-guide, and a movable fulcrum-bar for said lever; an upper-case lift-rail upon which said fulcrum-bar is pivoted, and a shaft having means for fixing it at different angular positions, movable with said lift-rail and having an arm connected with the fulcrum-bar of the lever.

10. In a polychrome visible-writing type-writer, the combination of the ribbon-guide, a lever for moving said guide, a fulcrum-bar on which said lever is fulcrumed, a lift-rail for upper-case printing, upon which the fulcrum-bar is pivoted, a universal spacing-frame controlling said lever, and a shaft carried by the mounting of the lift-rail, and having suitable connection with the fulcrum-bar by which the position of the fulcrum of the lever, relatively to the lift-rail may be adjusted by the angular movement or rotation of the shaft.

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753,798. **INDICATOR.** JAMES A. KELLOGG and JOHN D. BRADY, Pittsburg, Pa.; said Brady assignor to said Kellogg. Filed Sept. 18, 1903. Serial No. 173,602. (No model.)



*Claim.*—1. In an indicator, a box or casing, a shaft journaled therein, gears loosely mounted on said shaft, disks fixed on said shaft, carriers mounted in said disks, pinions on the ends of said carriers to engage with the gears, a ratchet-wheel on the end of said shaft, actuating means engaging said ratchet for operating the shaft, and means for locking one of the gears to the casing at the completion of each revolution of said shaft to enable the carriers of the disks to be rotated by the movement of said disks about said gear, substantially as described.

2. In an indicator, an operating-shaft having a ratchet on one end, gears loosely mounted on said shaft, disks fixed on said shaft to revolve therewith, carriers mounted on shafts extending through said disks, pinions mounted on said shafts to engage the gears on the shaft, means engaging the ratchet for moving the carriers in a circular path of travel, and means for locking one of the gears to the casing at the completion of each revolution of said shaft whereby the carriers are rotated by their revolution about said shaft by engagement of their pinions with said locked gear, substantially as described.

3. In an indicator, the casing having the shaft journaled therein, with gears loosely mounted on the shaft, disks fixed to the shaft with carriers mounted in the disks and carrying pinions engaging with said gears, means for actuating the shaft and means for momentarily locking one of said gears to said casing to enable the carriers to be partially rotated about said locked gear by revolution of the disks.

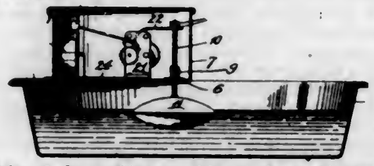
4. In an indicator, an operating-shaft with means for actuating the same, a series of carriers revolving with the shaft, means on the shaft engaging the carriers, and means for locking said last-named means to enable the carriers to be partially rotated by their revolution about the shaft and by their engagement with said means on the shaft.

5. In an indicator, a casing, an operating-shaft, means for imparting intermittent rotary movement to said shaft, a plurality of carriers mounted to be revolved by said shaft, gears loosely mounted on the shaft, pinions carried by the carriers to engage said gears, a lug on the operating-shaft, a pivoted dog for engagement with said lug, and a pin on one of the gears for engagement with said dog to lock one of the gears to the casing whereby said carriers will be partially rotated by their revolution about the shaft, and by the engagement of their pinions with said locked gear.



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753,799. **ALARM FOR REFRIGERATOR DRIP-PANS.** STANISLAS S. LAPOINTE, Hartford, Conn. Filed July 17, 1903. Serial No. 166,021. (No model.)



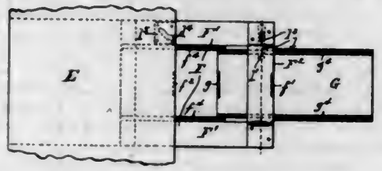
*Claim.*—1. In a refrigerator drip-pan, the combination, with the pan proper having a partial cover, of a compartment rigid with said cover; alarm mechanism located within the compartment; a float having a stem passing into the compartment; and means controlled by said float when it rises for actuating the alarm.

2. In a refrigerator drip-pan, the combination, with the pan proper having a partial cover constituting a part thereof, of a compartment rigid with said partial cover; a closure for said compartment; alarm mechanism within the compartment; and means controlled by the float for actuating said alarm mechanism.

3. In a refrigerator drip-pan, the combination, with the pan proper having a partial cover, and a compartment extending from said cover, said compartment having a closure; of alarm mechanism located within the compartment and upon said partial cover; a float within the drip-pin, and having a stem passing through the partial cover and into the compartment; and means controlled by the float for actuating the alarm.

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753,800. **CAMERA-BED.** HARVEY W. LOCKE, Rochester, N. Y., assignor to Century Camera Company, Rochester, N. Y., a Corporation of New York. Filed Dec. 27, 1900. Serial No. 41,225. (No model.)



*Claim.*—1. The combination, in a camera-bed, of a main section; two or more extensible sections adapted to be expanded and retracted with reference to the main section and with reference to each other; operating means for moving said extensible sections longitudinally and successively so as to extend the bed; a lock for automatically connecting said sections together; and means on the main section for automatically releasing said locking device by engagement with said main section when the sections reach a predetermined relative position.

2. In an extension-bed for cameras, the combination of a plurality of extensible sections; means for extending the same successively; a main section on which said extensible sections are mounted a locking device carried by one of said extensible sections and adapted to engage automatically with another of said sections and with said main section; and means on said main section for automatically releasing said locking device from its engagement with one of said extensible sections by engagement with said main section when the sections reach a predetermined relative position.

3. In an extension-bed for cameras, the combination of a plurality of extensible sections; means for extending the same successively; a main section on which said extensible sections are mounted; a locking device carried by one of said extensible sections, and adapted to engage automatically with another of said extensible sections, and with said main section; a slotted plate on said main section for automatically engaging said locking device to release it from one of said extensible sections when the latter reaches a predetermined position.

4. In an extension-bed for cameras, the combination of a plurality of extensible sections; means for extending the same; a main section on which said extensible sections are mounted; a locking-bolt carried by one of said extensible sections, and adapted to engage automatically with the other of said extensible sections and with said main section; and a slotted plate on said support for engaging said bolt and automatically withdrawing it from its engagement with one of said extensible sections when the latter reaches a predetermined position, substantially as described.

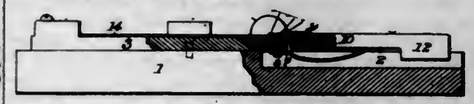
5. In an extension-bed for cameras, the combination of a plurality of extensible sections, and means for extending the same; a main section on which said extensible sections are mounted; a locking-bolt on one section for automatically connecting with the other section; and means for automatically moving said locking-bolt from its engagement with one of said sections by engagement with the main section when it reaches a predetermined position.

6. In an extensible bed for cameras, the combination of a plurality of extensible sections, and means for extending the same; a main section on which said extensible sections are mounted; a locking device carried by one of said extensible sections; cooperating means therefor on the other of said extensible sections and on the main section; means for automatic engagement and disengagement of said locking device from said main section, and from one of said extensible sections, when the other of said extensible sections reaches a predetermined position in its path of movement.

7. The combination of a camera-bed, comprising the main section E; the section F sliding in the section E'; the section G sliding in the section F; operating means for moving said extended sections longitudinally and successively so as to extend the bed; the spring-latch $l$ set in one of the rails F' of the section F; the socket $l'$ in the section G adapted to receive said spring-latch $l$; the spring $l^2$; a pin $l^3$ extending from the latch $l$; and the plate $l^4$ upon the section E, having the slot $l^4$ adapted to retract the pin $l^3$, substantially as shown and described.

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753,801. **BENDING-MACHINE.** JAMES F. MARTIN, Philadelphia, Pa., assignor to John B. Hall, Philadelphia, Pa. Filed Oct. 28, 1903. Serial No. 178,865. (No model.)



*Claim.*—1. A bending-machine comprising means for distorting the end of a strip and at the same time bending such end over upon itself.

2. A bending-machine comprising a block, a pivoted portion attached thereto and a lever attached to said pivoted portion, said lever and said pivoted portion having coacting distorting-surfaces adapted to receive the end of a strip therebetween, said lever and said pivoted portion being adapted to simultaneous pivotal movement whereby the end of such strip is bent over upon itself.

3. In a bending-machine, a block, a portion pivoted thereto, a lever pivotally attached to said pivoted portion, said pivoted portion and said lever having coacting distorting-surfaces adapted to receive the end of a strip therebetween and a spring acting upon said lever to maintain said distorting-surfaces in their operative position, said lever and said pivoted portion being adapted to simultaneous movement whereby the end of such strip is bent over upon itself.

4. A bending-machine comprising means for receiving the end of a strip, and means cooperating therewith for distorting said end said last-named means being invertible to bend said end.

5. A bending-machine comprising means to receive and hold the end of a strip, and invertible pivoted means cooperating therewith for simultaneously distorting and bending the end of said strip.

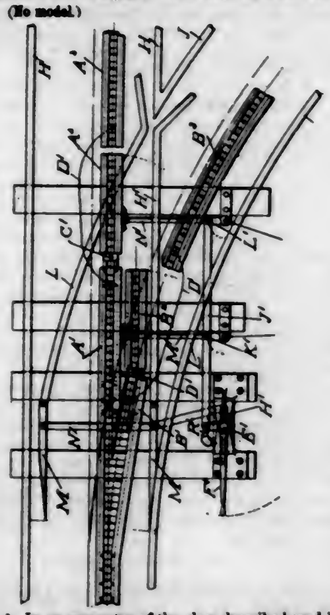
6. A bending-machine comprising means for receiving the end of a strip, and means constructed to cooperate therewith to be moved to first distort the end of the strip, and then, by continued movement, to bend said end adjacent its distorted portion.

7. In a bending-machine, male and female members mounted for cooperation, with one member stationary to distort the end of a strip, and then both movable together to bend the same.

8. In a bending-machine, a block, a pivoted portion thereon, and a lever pivoted on said portion and mounted for movement during a portion of its travel independent of said portion, and then adapted to move said portion with it in its continued movement.

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**753,802. COMBINED THIRD AND TRACTION RAIL FOR ELECTRIC RAILWAYS AND SWITCHING SYSTEMS EMBODYING SAME.** EDWARD C. MORGAN, Chicago, Ill., assignor, by mesne assignments, to Morgan Electric Machine Company of West Virginia, Chicago, Ill., a Corporation of West Virginia. Filed Aug. 27, 1903. Serial No. 171,193. (No model.)



*Claim.*—1. In an apparatus of the class described, and in combination with main and branch track rails and switching-track rails, of a combined third and traction rail for each pair of track-rails, said combined third and traction rails each made in sections, one section of each third and traction rail being movable, as and for the purpose set forth.

2. In an apparatus of the class described, and in combination with main and branch track rails and switching-track rails, of a combined third and traction rail for each pair of track-rails, said combined third and traction rails each made in sections, one section of each third and traction rail being movable, and means for simultaneously shifting or moving said movable sections into corresponding and cooperating relation with respect to said track-rails, as and for the purpose set forth.

3. In an apparatus of the class described, track, switching and switch rails, said switching-rails provided with movable sections, in combination with a combined third and traction rail for each pair of track-rails, said traction-rails made in sections, one section of each traction-rail being pivoted, whereby it may be shifted or swung into and out of alinement with its cooperating sections, and connections between said pivoted traction-rail sections and said pivoted switching-sections, whereby all of said sections are moved in unison, as and for the purpose set forth.

4. In an apparatus of the class described, main and branch track rails and switching-track rails, the latter provided with pivoted sections, in combination with combined third and traction rails for each pair of track-rails, said traction-rails made in sections, one of said sections being pivoted, the pivoted sections of said traction-rails operating over portions of said track-rails, and connections between all of said pivoted sections whereby said sections may be cooperatingly shifted to move said traction-rail sections out of the way and into proper relation according to the track-rails along which a track is to proceed, as and for the purpose set forth.

5. In a device of the class described, track-rails having movable switch-points, fixed traction-rails disposed between the track-rails, a movable section of traction-rail, and means for simultaneously moving said movable section with the switch-points.

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**753,808. COMBINED THIRD AND TRACTION RAIL FOR ELECTRIC RAILWAYS.** EDWARD C. MORGAN, Chicago, Ill., assignor to Morgan Electric Machine Company, East Chicago, Ind., a Corporation of West Virginia. Original application filed Aug. 27, 1903, Serial No. 171,193. Divided and this application filed Dec. 3, 1903. Serial No. 183,581. (No model.)



*Claim.*—1. In an apparatus of the class described, a combined third and traction rail comprising plates or bars arranged end to end and having suitably-spaced openings therethrough, in combination with plates lapped over the joint at the abutting ends of said plates or bars and secured thereto, as and for the purpose set forth.

2. In an apparatus of the class described, a combined third and traction rail comprising plates or bars arranged end to end and having suitably-spaced openings therethrough, the proximate ends of adjacent plates or bars being separated a distance corresponding to the openings formed through said plates or bars, in combination with plates lapped over the joint at the separated ends of said plates or bars and secured thereto, as and for the purpose set forth.

3. In an apparatus of the class described, a combined third and traction rail comprising plates or bars arranged end to end and having suitably-spaced openings therethrough, in combination with plates lapped over the joint at the adjacent ends of said plates or bars and secured thereto, said lapping plates having openings therethrough registering with the terminal openings adjacent to the ends of said first-mentioned plates or bars, as and for the purpose set forth.

4. In an apparatus of the class described, a combined third and traction rail comprising plates or bars arranged end to end and having suitably-spaced openings therethrough, in combination with plates lapped over the joint at the adjacent ends of said plates or bars and secured thereto, said lapping plates having a bent portion adjacent the joint between the abutting ends of said first-mentioned plates or bars, as and for the purpose set forth.

5. In an apparatus of the class described, a combined third and traction rail comprising plates or bars arranged end to end and having suitably-spaced openings therethrough, the proximate ends of adjacent plates or bars being spaced apart a distance corresponding to the area of one of said openings, in combination with fish-plates lapped over the joint at the abutting ends of said plates or bars and secured thereto, said fish-plates provided with a bend at a point adjacent the space between the proximate ends of adjacent plates or bars, as and for the purpose set forth.

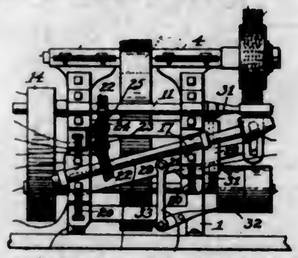
6. In an apparatus of the class described, a combined third and traction rail comprising plates having suitably-spaced openings therethrough and arranged end to end, supporting-sills arranged in longitudinal relation with respect to said rails, cross-pieces or blocks mounted upon said sills, said rail resting upon said cross-pieces or blocks, and stringers resting upon said cross-pieces or blocks and receiving said rail therebetween, said stringers forming keepers for said rail, as and for the purpose set forth.

7. In an apparatus of the class described, a combined third and traction rail, a supporting-sill therefor arranged in longitudinal relation with respect thereto, transverse blocks or pieces mounted upon said sill, and upon which said rail rests, stringers arranged in longitudinal relation with respect to said rail and spaced a suitable distance apart to receive the rail therebetween, said stringers being rabbeted upon their meeting faces to receive the edges of said rail, said stringers resting upon said cross-pieces or blocks, and means for securing said stringers, cross-pieces and sill together, as and for the purpose set forth.



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**753,804. HAT-NAPPING MACHINE.** MILFORD H. NEER, Mount Penn, Pa. Filed July 22, 1903. Serial No. 166,609. (No model.)



*Claim.*—1. In a napping-machine, the combination of a napping-roller, means for rotating the same, a presser-arm below the roller, a lever supporting the said arm, and adjustable stops adjacent to the said lever to limit the movement of the same in both directions.

2. The combination with the supporting-frame, of a napping-roller mounted thereon, means for rotating the roller, a lever pivoted at one side of the frame, a keeper on the opposite side thereof through which the lever extends, a presser-arm carried by said lever and arranged below the napping-roller, and set-screws mounted in the keeper and adapted to bear against the edges of the lever.

3. The combination of a napping-roller, means for rotating the same, smoothing-rollers arranged below and in advance of the napping-roller, means for rotating the upper of said rollers, a train of gearing connecting the said rollers, means for adjusting the lower roller toward and away from the upper roller, and means for adjusting the intermediate gears of the train as the said lower roller is adjusted.

4. In a napping-machine, the combination of the frame, shafts mounted thereon and carrying smoothing-rollers at their ends, means for vertically adjusting the lower shaft, means for rotating the upper shaft, pinions on the shafts, and a bracket adjustably secured on the frame and carrying pinions meshing with the pinions on the shafts.

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**753,805. LOOSE-LEAF BINDER.** ARTHUR OPALLA, Chicago, Ill. Filed June 20, 1902. Serial No. 112,511. (No model.)



*Claim.*—1. A loose-leaf binder comprising two principal members each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, and a connecting third member of a height approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members in their telescoping movement.

2. In a loose-leaf binder the combination of two principal members, each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, a connecting third or central member approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members in their telescoping movement, and key-controlled mechanism whereby the three members may be expanded to a height greater than the combined height of the principal members and contracted to a height practically the same as the height of a single one of said members.

3. In a loose-leaf binder the combination of two principal members, each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, a connecting third or central member approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members, a key-controlled shear-lever system having connections at the free ends with the principal members to close them in or spread them apart, and slot-and-pin connections which determine the relation of the central member to the principal members.

4. In a loose-leaf binder the combination of two principal members, each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, a connecting third or central member approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members, means on said third member for limiting the amount of separation of said principal members, and key-controlled means for positively moving said principal members and telescoping them past each other and with the third member.

5. In a loose-leaf binder the combination of two principal members, each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, a connecting third member approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members, a key-controlled shear-lever system having connections at the free ends with the principal members to close them in or spread them apart, and slot-and-pin connections which determine the relation of the central member to the principal members.

6. In a loose-leaf binder the combination of two principal members, each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, a connecting third member approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members, a key-controlled shear-lever system extending between the principal members to close them in or spread them apart, sliding connections therefor with said members, and slot-and-pin connections which determine the relation of the central member with the principal members.

7. In a loose-leaf binder the combination of two principal members, each having a back plate and a cover-plate, the back plate of one being offset to telescope past the back plate of the other, a connecting third member approximately equal to the individual height of each of the principal members and forming a guide and extension for said principal members, a key-controlled shear-lever system having connections at the free ends with the principal members to close them in or spread them apart, slot-and-pin connections which determine the relation of the central member to the principal members, and leaf-engaging posts attached to the cover-plates of the principal members.

8. A loose-leaf binder comprising two principal box-like members, each having a back plate, two end plates, and a cover-plate, the back and end plates of one member being offset to telescope past the back and end plates of the other member, in combination with a connecting third member of a height approximately equal to the individual height of each of the principal members and forming a guide for said principal members.

9. A loose-leaf binder comprising two principal box-like members, each having a back plate, two end plates and a cover-plate, the back and end plates of one member being offset to telescope past the back and end plates of the other member, in combination with a connecting third member of a height approximately equal to the individual height of each of the principal members and forming a guide and extension for the principal members, means on said third member for limiting the amount of separation of said principal members, and key-controlled means for positively moving said principal members and telescoping them past each other and with the third member.

10. A loose-leaf binder comprising two principal box-like members having back plates and end plates offset for telescoping past each other, and cover-plates, in combination with a connecting third member of a height approximately equal to the height of one of the principal members and forming a guide and extension for the principal members, means on said third member for limiting the amount of separation of said principal members, key-controlled means for positively moving said principal members and telescoping them past each other and with the third member, and leaf-engaging posts attached to the cover-plates of the principal members.

11. A loose-leaf binder comprising two principal box-like members having back plates and end plates offset for telescoping past each

other, and cover-plates, in combination with a connecting third member substantially equal in height to the individual principal members and forming a guide for the same, and a slot-and-pin connection between said third member and each individual principal member, the travel of said third member relatively to each of said principal members being approximately equal to the height of said third member.

12. A loose-leaf binder comprising two principal box-like members separable from each other and each formed with a cover-plate and having back and end plates offset to telescope past the corresponding back and end plates on the other member, said members thereby closing to a height substantially equal to the height of one of said principal members, in combination with a connecting third member forming a guide for the principal members and having a sliding connection therewith and a motion relative thereto approximately equal to its own height individually compared to each.

13. A loose-leaf binder comprising two principal box-like members separable from each other and each formed with a cover-plate and having back and end plates offset to telescope past the corresponding back and end plates on the other member, said members thereby closing to a height substantially equal to the height of one of said principal members, in combination with a connecting third member forming a guide for the principal members and having a motion relative to each individual thereof approximately equal to its own height, and telescoping binding-posts consisting of at least three parts, one part being attached directly to each of the principal members, and the third part being movable relatively to each of the other two parts.

14. A loose-leaf binder comprising two separable principal members each having end plates and a back plate offset to pass the corresponding plates on the other of said members, and a cover-plate, in combination with a third member forming a guide for said principal members, means on said third member for limiting the amount of separation of said principal members, and a pair of shear-bars for controlling said principal members.

15. A loose-leaf binder comprising two independent box-like principal members each having a back plate, two end plates, and a cover-plate, the back plate and end plates of one member being offset to pass by the corresponding parts of the other principal member, in combination with a third member having a middle portion and folded end portions inclosing and forming guides for the end plates of said principal members, slot-and-pin devices connecting said third member to the principal members, and means for telescoping said members to expand or contract the space inclosed by them.

16. A loose-leaf binder comprising two independent box-like principal members each having a back plate, two end plates, and a cover-plate, the back and end plates of one member being offset to pass by the corresponding parts of the other principal member, in combination with a third member having a middle portion and doubled end portions inclosing and forming guides for the end plates of said principal members, a slot-and-pin device connecting the outside end portions of said third member to the end plates of one of the principal members, and a slot-and-pin device connecting the inside end portions of the third member with the end plates of the second principal member, the travel of said slot-and-pin devices being substantially equal to the height of said connecting member.

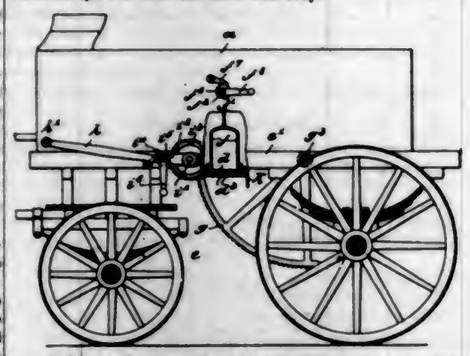
17. A loose-leaf binder comprising two independent box-like principal members, each having a back plate, two end plates and a cover-plate, the back and end plates of one member being offset to pass the corresponding parts of the other principal member, in combination with a third member slidingly connected to said principal members by slot-and-pin connections, a pair of controlling-bars pivoted together, sliding connections between one end of these bars and one of said principal members, the other member having sliding screw-blocks pivotally connected to the other end of said bars.

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## 753,806. COAL-WAGON. ABRAHAM C. PASSMORE, Philadelphia, Pa., assignor of two-thirds to Harmon B. Amoring and Henry W. Amoring, Germantown, Pa. Filed Oct. 24, 1903. Serial No. 178,206. (No model.)

*Claim.*—1. In a coal-wagon, a body provided with an outlet-opening, a slide adapted to open and close said opening, a chute-holder pivotally secured intermediate of its ends below the outlet-opening of said body, a series of nested chute-sections arranged below said chute-holder and adapted to be carried by the same, means adapted to hold said chute-holder and sections inclined, in operative position, and means adapted to raise and lower said body.

2. In a coal-wagon, a body provided with an outlet-opening, a slide adapted to open and close said opening, a chute-holder pivotally secured below the outlet-opening of said body and open at both ends, means adapted to swing said chute-holder on its pivotal connection with said body into an inclined operative position, and means adapted to raise and lower said body.

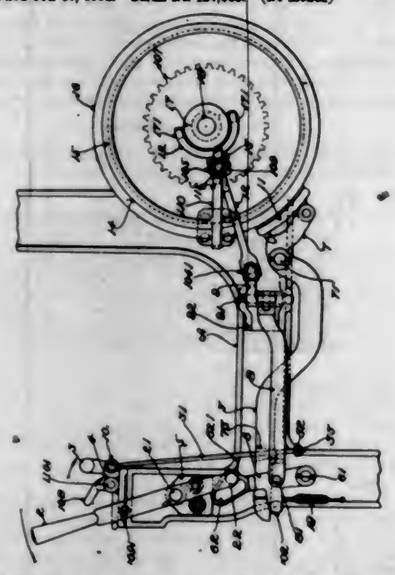


3. In a coal-wagon, a body provided with an outlet-opening, a slide adapted to open and close said opening, a chute-holder pivotally secured below the outlet-opening of said body and open at both ends, wings arranged on both sides of said chute-holder and adapted to confine the contents of said body in its discharge to said chute-holder, and means adapted to swing said chute-holder on its pivotal connection with said body into an inclined operative position.

4. In a coal-wagon, a body provided with an outlet-opening, a slide adapted to open and close said opening, a chute-holder pivotally secured below the outlet-opening of said body and open at both ends, wings arranged on both sides of said chute-holder and adapted to confine the contents of said body in its discharge to said chute-holder, means adapted to swing said chute-holder on its pivotal connection with said body into an inclined operative position, and means adapted to raise and lower said body.

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## 753,807. POWER-SHIPPING AND BRAKE MECHANISM FOR LOOMS. ALONZO R. PATTEE, Hyde Park, Mass., assignor to the Geo. W. Stafford Company, Readville, Mass., a Corporation of New York. Filed Oct. 17, 1903. Serial No. 177,663. (No model.)



*Claim.*—1. The improved power-shipping and brake mechanism for looms comprising, in combination, the shipper-handle or shipper-lock, the lock-lever having the lateral projection or pin, the shipper connected with the said lock-lever, the brake-lever extending above the said projection or pin of the lock-lever and supported thereby in the locked position of the lock-lever, and the spring tending to depress the said arm of the brake-lever, substantially as described.



2. The improved power-shipping and brake mechanism for looms comprising, in combination, the shipper-handle or shipper-lock, the lock-lever having the lateral projection or pin, the connection 8 engaging by its forward portion with the lock-lever, the bell-crank with which the rear portion of the said connection engages, the adjustable swivel connection, the shipper joined with said bell-crank by the said swivel connection, and the brake-lever extending above the said projection or pin of the lock-lever, substantially as described.

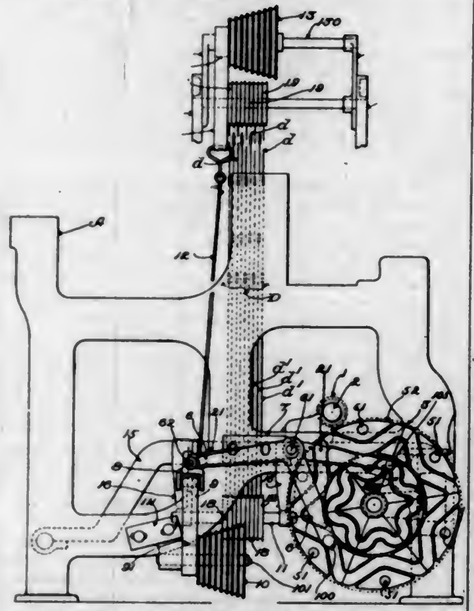
3. The combination in a loom with the brake, the shipper-handle, and operative connections through which the shipper-handle controls the said brake, of the independent brake-handle operated by hand and adapted to be restored to its normal inoperative position by the movement of the shipper-handle in setting on the loom.

4. The combination in a loom with the brake, the shipper-handle, and means under control of the shipper-handle to automatically apply the brake when the shipper-handle is moved to stop the loom, of the independent brake-handle separately connected with the brake and adapted to be restored to its normal inoperative position by the movement of the shipper-handle in setting on the loom.

5. The improved power-shipping and brake mechanism for looms, comprising, in combination, the shipper-handle or shipper-lock, the lock-lever having the lateral projection or pin, the connection 8 engaging by its forward portion with the lock-lever, the bell-crank with which the rear portion of the said connection engages, the adjustable swivel connection, the shipper joined with said bell-crank by the said swivel connection, the brake-lever extending above the said projection or pin of the lock-lever, and the independent brake-handle operatively connected with the brake-lever to enable the pressure of the brake to be relieved thereby, and actuated by the shipper-handle in the movement of the latter in setting on the loom to return the brake-handle to its normal position and release the brake, substantially as described.

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## 753,808. SHEDDING MECHANISM FOR LOOMS. ALONZO R. PATTEE, Hyde Park, Mass., assignor to the Geo. W. Stafford Company, Readville, Mass., a Corporation of New York. Filed Oct. 24, 1902. Serial No. 128,527. (No model.)

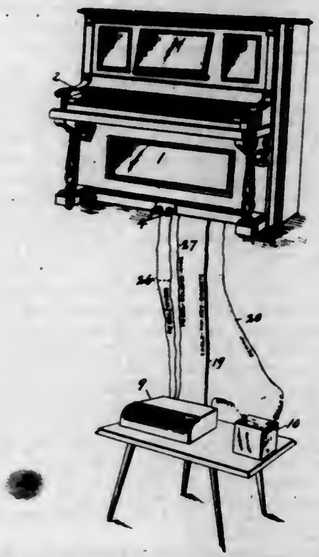


*Claim.*—1. The improved shedding mechanism for looms comprising, essentially, in combination, a plurality of harness-frames for each of the planes of the shed to be produced in the warps, the cones 13 and 10 located one above the other at one side of the loom, the upper and lower sheaves 19, 18, the harness-cording *d*, *d*, *d'*, *d'*, passing from the harness-frames around the sheaves 19, 18, and also passing in different directions around the respective cones, the harness-cording from the harness-frames which move in unison being passed in the same direction around the cones, the operating-lever 6, connections between the said lever and the cones whereby the latter are operated in unison, the cam actuating the said lever and adapted to be removed and replaced to vary the number of picks of weft received in the sheds, and means for operating the said cam, substantially as described..

2. The improved shedding mechanism for looms comprising, essentially, in combination, a plurality of harness-frames for each of the planes of the shed to be produced in the warps, the cones 13 and 10 located one above the other at one side of the loom, the upper and lower sheaves 19, 18, the harness-cording *d*, *d*, *d'*, *d'*, passing from the harness-frames around the sheaves 19, 18, and also passing in different directions around the respective cones, the harness-cording from the harness-frames which move in unison being passed in the same direction around the cones, the operating-lever 6, connections between the said lever and the cones whereby the latter are operated in unison, the cam-carrier, means for rotating the same, and the sectional cam actuating the said lever, removably connected with said cam-carrier, and replaceable to vary the number of picks of weft received in the sheds, substantially as described.

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## 753,809. AUTOMATIC PLAYING APPARATUS FOR MUSICAL INSTRUMENTS. TIMOTHY B. POWERS and MAJOR R. JEWELL, New York, assignors, by mesne assignments, to Imperial Corporation, New York, N. Y., a Corporation of New York. Filed Aug. 14, 1901. Serial No. 72,012. (No model.)



*Claim.*—1. The combination with an electrically-operated key of a musical instrument, of a contact-finger and a non-rotating metal guide connected in the key-operating circuit, an electric conductor movable in said guide transversely of the finger in electrical contact with the guide, and means for making and breaking the contact between the fingers and bar.

2. In an electrically-operated musical instrument, the combination of a series of contact-fingers, and a non-rotating metal sleeve, the fingers and sleeve being connected in the operating-circuit and a bar in electrical connection with the sleeve movable therein transversely of the fingers.

3. In an electrically-operated musical instrument, the combination of a series of contact-fingers, and a non-rotating sleeve, the fingers and sleeve being connected in the operating-circuit and a conductor movable transversely of the fingers in contact with the sleeve, and means for controlling the contact between the fingers and conductor.

4. The combination with a series of electrically-operated keys of a musical instrument, a non-rotating metal guide and fingers electrically connected in the key-operating circuits, a metal bar movable endwise in the guide transversely of the fingers in electrical contact with the guide, and a perforated music-sheet movable between the bar and fingers for the purpose described.

5. The combination with electrically-operated keys of a musical

instrument, a series of contact-fingers operating in connection with a music-sheet, and a bar removable endwise and having contact with the fingers, a guide for the bar, said fingers and bar being connected in the key-operating circuits.

6. The combination with a series of contact-fingers and a non-rotating sleeve of conducting material connected in circuit with a series of electrically-operated keys of a musical instrument, of a metal bar in contact with the sleeve, a music-sheet controlling the contact of the fingers with the bar, said bar being movable transversely of the movement of the music-sheet in contact with the sleeve.

7. A contact device for electrically-operated musical instruments consisting of a guide and a sliding contact bar or rod guided thereon, and a finger adapted to contact with the bar.

8. A contact device for electrically-operated musical instruments consisting of an open-sided sleeve, a sliding contact-bar guided in the sleeve and projecting through its opening, and a finger adapted to contact with said projecting portion of the bar.

9. A contact device for electrically-operated musical instruments consisting of a slidable contact-bar, and a finger having a non-corrosive sleeve rotatable on the finger and adapted to contact with the bar.

10. A contact device for electrically-operated musical instruments consisting of an open-sided sleeve, a sliding contact-bar guided in the sleeve and projecting through its opening, and a finger having a non-corrosive sleeve adapted to contact with the projecting portion of the bar.

11. A contact device for electrically-operated musical instruments consisting of a guide-rod and a sliding contact bar or rod guided thereon, and a finger having a non-corrosive sleeve adapted to contact with the bar.

12. In an automatic playing apparatus for musical instruments, an electrically-operated key, an expression-controlling device comprising a resistance-coil and a contact member both connected in the key-operating circuit, the coil being movable relatively to the contact member for varying the circuit resistance, in combination with a conductor, a music-sheet to make and break contact between the member and conductor, an independent electric circuit, and means operated thereby to gradually shift the position of the coil.

13. In an automatic playing apparatus for musical instruments, an electrically-operated key, an expression-controlling device comprising a resistance-coil and contact member both connected in the key-operating circuit, one of the parts being movable upon the other, in combination with a conductor, a music-sheet adapted to make and break contact between the member and conductor, and independent electric circuits having devices connected therein for actuating the movable part step-by-step a part of its full movement.

14. In an automatic playing apparatus for musical instruments, an electrically-operated key, an expression-controlling device comprising a resistance-coil and a contact member both connected in the key-operating circuit, a conductor, a music-sheet to make and break contact between the member and conductor, and electrically-operated devices connected in independent circuits and controlled by the music-sheet for shifting one of the parts relatively to the other to vary the degree of resistance in the operating-circuit to points intermediate its extremes.

15. In an automatic playing apparatus for musical instruments, an electrically-operated key, an expression-controlling device comprising a resistance-coil and a contact member both connected in the key-operating circuit, the coil being movable relatively to the contact member, a conductor, a music-sheet to make and break contact between the member and conductor, and electrically-operated devices connected in independent circuits for shifting the position of the coil step by step.

16. In an automatic playing apparatus for musical instruments, the combination with a key, of an electric working circuit, and a key-operating magnet connected therein, contact members connected in said circuit, the contact being controlled by a music-sheet, a resistance-coil having a sliding contact with one of said members, independent electric circuits having separate contact members adapted to engage the other of the former members and controlled by the music-sheet, and separate devices connected in and actuated by the latter circuits for shifting the position of the coil.

17. In an automatic playing apparatus for musical instruments, a key-working circuit, a contact-bar and a finger connected in said circuit, a music-sheet for controlling the contact between said bar and finger, a resistance-coil connected in said circuit, and having a sliding contact with the finger, a second electric circuit having a finger connected therein adapted to contact with the bar, said contact being controlled by the music-sheet, and an electrically-operated device connected in the second circuit and adapted to shift the position of the coil relatively to the contact-finger for the purpose described.

18. In an automatic playing apparatus for musical instruments, an electric key-operating circuit, a contact-bar and a finger connected in said circuit, and adapted to contact with each other, a music-sheet for controlling the said contact, a resistance-coil also connected in said circuit and having a sliding contact with the finger, a series of independent circuits each having a finger adapted to contact with said bar, the contact being controlled by the music-sheet, a series of electrically-operated devices separately connected to said circuits, each of said devices being connected to shift the position of the coil.

19. In an automatic playing apparatus for musical instruments, an electric key-operating circuit, a contact-bar and a finger connected in said circuit and adapted to contact with each other, a music-sheet for controlling the said contact, a resistance coil also connected in said circuit and having a sliding contact with the finger, a series of independent electric circuits having electrically-operated devices separately connected in said independent circuits and connections, whereby said devices shift the position of the coil step by step from one extreme position to the other.

20. In an automatic playing apparatus for musical instruments, a plurality of key-working electric circuits, a contact-bar connected in and common to all of the circuits, a contact-finger connected in each circuit and adapted to contact with the bar, the music-sheet operating to control said contact, a resistance-coil connected in each of the circuits and having a sliding contact with its respective finger, a second series of independent electric circuits, an electromagnet connected in each of the latter circuits and provided with an armature, said armatures being mechanically connected to each other and operating to shift the coils step by step in opposite directions.

21. In an automatic playing apparatus for musical instruments, a key-working electric circuit having a contact-bar and a finger connected therein, a moving stencil to control the contact for producing music, a resistance-coil connected in said circuit and having a sliding contact with the finger, independent electric circuits, electrically-operated devices connected in the latter circuits and operated to shift the coil step by step in one direction, additional electric circuits and additional devices connected in said additional circuits and adapted to shift the coil step by step in the opposite direction.

22. In an automatic playing apparatus for musical instruments, an electric working circuit, a finger and a contact-bar connected in said circuit, a moving stencil to control the contact between said bar and finger, a rocking support, a resistance-coil connected in said electric circuit and mounted on the support and having a sliding contact with the finger, and a series of electrically-operated devices controlled by the stencil to shift the position of the coil step by step.

23. In an automatic playing apparatus for musical instruments, an electrically-operated key, a contact-finger and a non-rotatable bar connected in the key-operating circuit, said bar being movable transversely of the finger, a resistance-coil connected in said circuit and having a sliding contact with the finger, independent electric circuits having devices connected therein to shift the position of the coil step by step, and a moving stencil for controlling the contact between the finger and bar and operating to open and close the independent circuits.

24. In an automatic playing apparatus for musical instruments, a key-operating electric circuit, a contact-bar and a finger connected in the circuit, a music-sheet operating to control the contact, a resistance-coil connected in the electric circuit and having a sliding contact with the finger, additional electric circuits independent of the former circuit, additional fingers connected in the latter circuits and adapted to contact with said bar, the contact being controlled by the music-sheet, and electrically-operated devices connected in the additional circuits and having mechanically-connected armatures connected to move the coil step by step.

25. In an automatic playing apparatus for musical instruments, an electric circuit having a key-operating electromagnet connected therein, contacting members connected in said circuit, a music-sheet and a trailing point coacting therewith and insulated from one of the contact members to move said member into and out of contact with the other member, a resistance-coil connected in the key-working circuit and having a sliding contact with one of the contact members, separate circuits having fingers connected therein to contact with one of said members, said latter contact being controlled by the music-sheet, and electrically-operated devices connected in said circuits for shifting the resistance-coil step by step.

26. In an automatic playing apparatus for musical instruments, a key-working circuit having a finger and a contact-bar connected therein, a music-sheet and means interposed between the music-sheet and finger and insulated therefrom whereby the contact is controlled by the music-sheet, a rocking support carrying a resistance-coil connected in the key-working circuit and having a sliding contact with the finger, additional independent electric circuits having fingers connected therein to contact with said bar, the contact of the latter fingers being controlled by the music-sheet, and electric devices connected in the additional circuits and operating to rock the support step by step in both directions.



27. In an automatic playing apparatus for musical instruments, the combination with a plurality of key-operating electric circuits, each having a contact-finger connected therein, of a contact-bar common to all of the fingers, said bar having a sliding endwise movement transversely of the fingers whereby some of the fingers may be cut out of contact with the bar without breaking contact with the other fingers, and a music-sheet for controlling the contact of the fingers with the bar.

28. In an automatic playing apparatus for musical instruments, the combination with a key-operating electric circuit having a plurality of fingers, a guide adjustable relatively to the fingers, and a contact-bar mounted in the guide and movable transversely of the fingers, said bar being connected in the key-operating circuit, and the contact of the fingers with said bar being controlled by a music-sheet.

29. In an automatic playing apparatus for musical instruments, the combination with the swinging carriage for the music-sheet, of a detent for the carriage, means to feed the sheet in one direction, additional means to feed the sheet in the reverse direction, a second detent holding one of said means in operative position, and electrically-operated means controlled by the music-sheet to release the latter detent without releasing the carriage.

30. In an automatic playing apparatus for musical instruments, winding and rewinding rollers for the music-sheet, a swinging carriage for the rollers, driving mechanism independent of the carriage for rotating the winding-roller in one direction, and movable means normally tensioning the music-sheet and connected to shift the driving mechanism from the winding-roller to the rewinding-roller and to simultaneously release the tension on the music-sheet.

31. In an automatic playing apparatus for musical instruments a swinging carriage for the music-sheet, winding and rewinding mechanism for the music-sheet, means to force the winding mechanism into operative position and to simultaneously tension the sheet, a detent to hold the winding mechanism in operative position, and electric means controlled by the music-sheet to release the detent.

32. In an automatic playing apparatus for musical instruments, the combination with winding and rewinding rolls for the music-sheet, an eccentrically-pivoted bridge supporting the intermediate portion of the music-sheet, an arm secured to the bridge, an electromagnet having its armature engaged with the arm to hold the bridge in its operative position, electrical contact members connected in the magnet-circuit and controlled by the music-sheet to close the circuit through the magnet and release the armature and bridge, and driving mechanism controlled by the rocking of the bridge for alternately rotating the rollers in reverse directions.

33. In an automatic playing apparatus for musical instruments, the combination with winding and rewinding rolls for the music-sheet, an eccentrically-pivoted bridge supporting the intermediate portion of the music-sheet, an arm secured to the bridge, an electromagnet having its armature engaged with the arm to hold the bridge in its operative position, electrical contact members connected in the magnet-circuit and controlled by the music-sheet to close the circuit through the magnet and release the armature and bridge, and driving mechanism controlled by the rocking of the bridge for alternately rotating the rollers in reverse directions, and manually-operated means to disengage the armature from said arm.

34. In an automatic playing apparatus for musical instruments, the combination with a winding and rewinding mechanism for the music-sheet, of manually-operated means for forcing the winding mechanism to its operative position, a detent for said means, electric means controlled by the music-sheet for operating the detent to release the former means, and additional means for automatically forcing the winding mechanism out of action and simultaneously moving the rewinding mechanism into action.

35. In an automatic playing apparatus for musical instruments, the combination with a winding and rewinding mechanism for the music-sheet, of means for automatically forcing the rewinding mechanism into operative position, a rocking member connected to force the winding mechanism into operation and to disconnect the rewinding mechanism, and electrically-operated means controlling the operation of the rocking member.

36. In an automatic playing apparatus for musical instruments, the combination with revoluble winding and rewinding rollers for the music-sheet, each roller being provided with a gear, of a rock-arm carrying driving-pinions arranged to alternately engage said gears as the arm is rocked in reverse directions, an eccentrically-pivoted bridge for tensioning or releasing the tension of the music-sheet, means to rock the bridge on its pivot, and additional means controlled by the rocking of the bridge to control the rocking movement of said rock-arm whereby when the winding-roller is operated the music-sheet is tensioned and when the rewinding-roller is operated the tension is released.

37. In an automatic playing apparatus for musical instruments, the combination with revoluble winding and rewinding rollers for the music-sheet, each roller being provided with a gear, of a rock-arm having pinions adapted to alternately engage said gears to rotate the rollers in reverse directions, one of the pinions being automatically forced into engagement with the gear of the rewinding-roller, an eccentrically-pivoted bridge for supporting the intermediate portion of the music-sheet, and connected to rock the arm to engage the other pinion with the winding-roller gear, means for holding the bridge in its operative position, and additional means for releasing the former means.

38. In an automatic playing apparatus for musical instruments, the combination with a feed-roller for the music-sheet, of a driving member to operate the feed-roller, a hand-lever connected to move the driving member into operative position, an armature to hold the lever in operative position, and electric means controlled by the music-sheet for operating the armature to release the lever.

39. In an automatic playing apparatus for musical instruments the combination of winding and rewinding mechanism for the music-sheet, a handpiece connected to force the winding mechanism into action, a detent for the handpiece, electric means controlled by the music-sheet for operating the detent to release the handpiece, manual means to trip the detent independent of the electric means and automatic means for disconnecting the winding mechanism and forcing the rewinding mechanism into action when the detent is tripped.

40. In an automatic playing apparatus for musical instruments, the combination of a swinging carriage and a detent therefor, a music-sheet on the carriage, winding and rewinding mechanism for the music-sheet, a hand-lever connected to force the winding mechanism into action, a detent for said lever, the former detent being movable manually to release the carriage and provided with means to simultaneously trip the second detent to release the lever.

41. In an automatic playing apparatus for musical instruments, the combination of a swinging carriage, winding and rewinding rollers on the carriage, a music-sheet on the rollers, a driving mechanism for the rollers, a holding device for the carriage, means for moving the driving mechanism to connect with the winding-roller, a detent for said means, electric means controlled by the music-sheet for operating the detent to release the former means, automatic means for connecting the driving mechanism to the rewinding-roller, a case inclosing the rewinding-roller and actuated by the music-sheet on the rewind independently of said roller, and means actuated by the case for moving the carriage-holding device to release the carriage.

42. In an automatic playing apparatus for musical instruments, the combination with a movable carriage for the music-sheet, of a series of electric circuits having key-operating electromagnets connected therein, mechanism for feeding the sheet in reverse directions, separate devices for holding the carriage and for holding said mechanism, means controlled by the music-sheet for effecting a break in the circuits and for simultaneously releasing the holding device for the feeding mechanism.

43. In an automatic playing apparatus for musical instruments, the combination with a carriage for the music-sheet, of a series of of electric circuits having key-operating magnets connected therein, circuit-closers connected in said circuits and controlled by the music-sheet, a shiftable feed for the music-sheet, separate devices for holding the carriage and feed in operative positions, a circuit-breaker connected in the key-operating circuits, and automatically-operated means controlled by the music-sheet for controlling the operation of the circuit-breaker, and also for releasing the holding device for said feed independently of the carriage-holding device.

44. In an automatic playing apparatus for musical instruments, the combination with a carriage and a reverse feed mechanism for the music-sheet, of separate devices to hold the carriage and feed mechanism in their operative positions, a plurality of electric circuits, a rheostat and a key-operating magnet connected in each of the circuits, an additional electric circuit having an electromagnet

connected therein to control the operation of the movable members of said rheostat, a circuit-breaker common to all of said circuits, and electrically-operated means controlled by the music-sheet for controlling the operation of the circuit-breaker and for releasing one of the holding devices independently of the other.

45. The combination of a moving music-sheet of an automatic playing apparatus for musical instruments, an eccentrically-pivoted bridge for supporting the intermediate portion of the music-sheet, means for holding the bridge in its operative position, and electrically-operated means controlled by the music-sheet for releasing the former means.

46. In an automatic playing apparatus for musical instruments, the combination with a music-sheet and feeding-rollers for the music-sheet, of a movable carriage for the rollers, driving mechanism arranged to be connected to either of the rollers to rotate the same in reverse directions, automatic means for moving the driving mechanism to one position, manually-operated means to move the driving mechanism to the other position, additional means for holding the driving mechanism in the latter position, and electrically-operated means controlled by the music-sheet for moving said additional means to release the manually-operated means and permit the operation of the automatic means.

47. In an automatic playing apparatus for musical instruments, the combination with a roller, of a music-sheet having one end secured to the roller and its other end provided with a projection, a second roller having a flange formed with a cut-out in its periphery for receiving said projection, a spring-catch on the flange for engaging the projection and holding the music-sheet in engagement with the second roller, and means for rotating the rollers in either direction for winding and rewinding the music-sheet from one roller to the other, the music-sheet being automatically released from the second roller on the rewind.

48. In an automatic playing apparatus for musical instruments, the combination, of a moving music-sheet, winding and rewinding mechanism for the music-sheet, manually-operated means for forcing the winding mechanism to its operative position, a detent for said means, an electric circuit having means connected therein to operate the pedal, a circuit-breaker connected in the pedal-operating circuit and held to close the circuit by said detent, and electric means controlled by the music-sheet for moving the detent out of its operative position for the purpose described.

49. An automatic playing apparatus for musical instruments comprising a series of key-operating circuits, each having a rheostat connected therein, pedal-operating circuits, rheostat-controlling circuits, contact-fingers connected in the several circuits, the coil of the rheostat having a sliding contact with its finger, a contact-bar common to all of the fingers and having a sliding contact therewith to engage all or only part of the fingers, and a moving music-sheet arranged to close the circuits through the fingers and contact-bar.

50. The combination with a sliding contact bar and finger of an electrically-operated musical instrument, said finger having a contact member mounted upon and movable independently of the finger to present different faces to the contact-bar.

51. The combination with a non-rotating sliding contact bar and finger of an electrically-operated musical instrument, said finger having a contact-sleeve rotatable thereon to present different faces to the contact-bar.

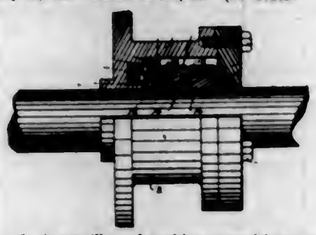
52. In an electrically-operated musical instrument, a key and a key-operating electric circuit, a contact-bar and a contact-finger formed of sections, one section contacting with the bar and the other section coacting with the music-sheet to control said contact, a resistance-coil connected in the key-operating circuit and having sliding contact with the former section of the finger for the purpose described.

53. The combination with a key of a musical instrument and electrically-operated means for actuating the key, of a contact bar and finger connected in the key-operating circuit, said finger being formed of sections insulated from each other, one section contacting with the bar, and the other section cooperating with the perforations of a music-sheet to control said contact and a resistance-coil having sliding contact with the former sections and connected in the key-operating circuit for the purpose set forth.

54. The combination with a key of a musical instrument and electrically-operated means for actuating the key, a contact bar and a finger connected in the key-operating circuit, said finger being formed of sections insulated from each other, one section contacting with the bar and the other section having a trailing point entering the perforations of the music-sheet for controlling the contact of the former section with the bar, and a resistance-coil connected in the same circuit with the fingers and having sliding contact therewith for the purpose specified.

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**753,810. METALLIC PACKING.** HENRY ROBERTS, Omaha, Nebr. Filed May 22, 1903. Serial No. 158,283. (No model.)

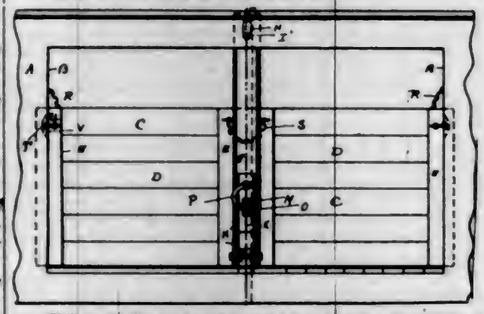


*Claim.*—1. A metallic rod-packing comprising a compression-ring, spring-containing recesses contained therein, and packing-rings, each of said packing-rings comprising a plurality of segments placed around the rod and having slots in the adjacent ends thereof, an equal number of segments lying around the foregoing segments and having tongues thereon extending into the slots therein as far as the rod, and a circular spring for holding said segments together and pressing the same toward the rod.

2. A metallic rod-packing comprising a gland, packing-rings, a compression-ring, and springs for pressing together said packing-rings and compression-ring in a direction parallel to the rod, each of said packing-rings comprising two sets of segments, equal in number, one of said sets of segments lying adjacent to the rod, the other set of segments overlying the former, one of said sets of segments having tongues thereon entering slots in the adjacent ends of the other set, and a circular spring around the outer set of segments for holding the same together and pressing the same toward the rod.

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**753,811. GRAIN-CAR DOOR.** JAMES G. SANBORN, Portland, Me., assignor of one-half to William H. Stevens, Portland, Me. Filed May 11, 1903. Serial No. 156,507. (No model.)



*Claim.*—1. The combination with a car having a door-opening therein, a post having one end secured to the top of the car with a universal joint and means for detachably securing the lower end of the post to the bottom of the car, of a door comprising two vertical sections, each section adapted to engage one side of the car and said post.

2. The combination with a car having a door-opening therein, a recess in the bottom of the car at or near the center of said opening, a post vertically and centrally positioned in said opening, the upper end of said post being pivotally secured to the top of the car, of a locking-bar pivoted to the lower extremity of said post, the lower end of said locking-bar adapted to enter a recess in the bottom of the car and the upper end adapted to be secured to the post and means for securing the locking-bar to the post.

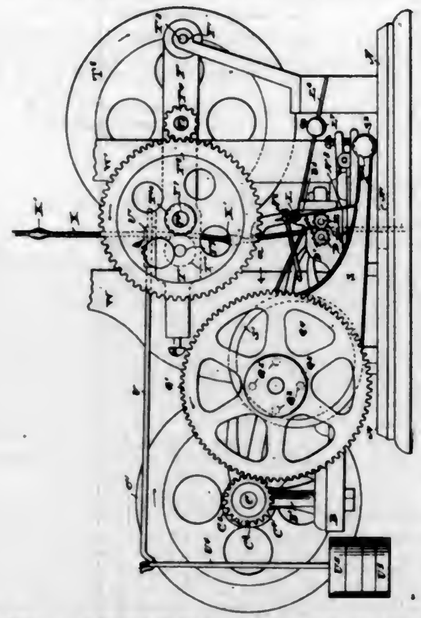
3. The combination with a car having a door-opening therein, and a recess in the floor of the car midway said door-opening, of a post vertically and centrally positioned in said opening, a locking-bar pivotally secured to the lower extremity of said post, a link-staple passing through said locking-bar and post, slots in said bar and post adapted to receive said staple, a pivoted latch secured to the outside of the locking-bar adapted to engage the outer end of said staple and a guy-wire having one end adapted to engage the inner edge of said staple and the other end pivotally secured to the opposite side of the car.



4. The combination with a car having a door-opening therein, a post vertically positioned in said opening and means for detachably securing said post in position, of a door comprising two vertical sections, each section having one end adapted to engage the side of the car and the other end adapted to engage said post, a chain loosely uniting one end of the door-sections to the car and a chain loosely uniting the adjacent ends of the sections.

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**753,812. MECHANISM FOR TRANSVERSELY SEVERING WEBS OF KNIT FABRICS.** FRANK G. SHELAIN, Rockford, Ill., assignor of one-half to Frank R. Brown, Rockford, Ill. Filed Aug. 26, 1903. Serial No. 170,884. (No model.)



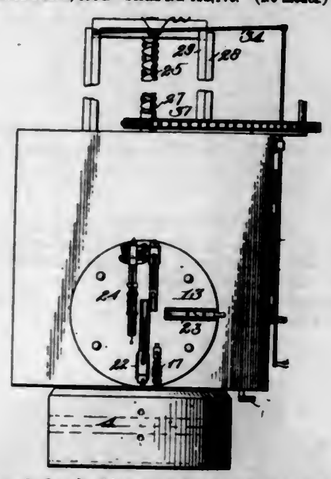
*Claim.*—1. In mechanism for transversely severing knit fabrics, in combination, a pair of rollers mounted parallel to each other, one in stationary and the other in laterally-slidable bearings, springs normally impelling the slidable bearings and their roller toward its counterpart roller, means for driving such rollers, a mounted ratchet-wheel, a driving-pawl adapted to engage with and be disengaged from the ratchet-wheel, a pivotally-mounted bell-crank, having a long arm projecting into engagement with the pawl and short arms projecting transversely around and under one of the rollers and so weighted as to normally hold the pawl out of engagement with the ratchet-wheel and to maintain the free ends of its short arms in the path of the transverse welts on a web of knit fabric passing between the rollers, substantially as and for the purpose specified.

2. In mechanism for transversely severing knit fabrics, in combination, a pair of fluted rollers mounted parallel to each other, one in stationary and the other in laterally-slidable bearings, springs normally impelling the slidable bearings and their roller toward its counterpart roller, means for driving such rollers, a mounted ratchet-wheel, a driving-pawl adapted to engage with and be disengaged from the ratchet-wheel, a pivotally-mounted bell-crank, having a long arm projecting into engagement with the pawl and short arms projecting transversely around and under the slidable roller and so weighted as to normally hold the pawl out of engagement with the ratchet-wheel and to maintain the free ends of its short arms in the path of the transverse welts on a web of knit fabric passing between the fluted rollers, the free end of the long arm of such bell-crank being depressible—by impingement of the transverse welts of the knit fabric against the free end portions of the short arms thereof—to such an extent as to permit the pawl to engage the ratchet-wheel, substantially as and for the purpose specified.

3. The combination, with a base, of a head having an annular recess $H^7$ sunk transversely thereinto, a recess $H^8$ countersunk into the bottom of the annular recess, and an opening $H^9$ extending from the bottom of the countersunk recess transversely outward through such head, and provided with axes $H^6$ $H^3$ projecting transversely, in opposite directions, from said head and having a bearing $H^6$, extending through and concentric with the longitudinal centers of such axes, a combined ratchet and cam wheel I—the teeth of the ratchet being formed on the periphery of, and the cams being sunk into and sloping outward to one end of, such wheel—mounted on the axis $H^6$, a cam-footed pin $R^2$ inserted through and freely slidable in the opening $H^3$ in the head, the cam-foot portion $R^4$ thereof being housed and slidable in the countersunk recess $H^3$ therein, an eccentric $Q^4$ rotatably mounted on the axis $H^4$, of the head and having a recess $Q^6$ sunk transversely thereinto and an opening $Q^7$ extending from the bottom of the recess $Q^6$ transversely outward through the eccentric, a footed pin R' inserted through and freely slidable in the opening $Q^7$ in the eccentric, the foot-portion $R^3$ thereof being housed and slidable in the recess $Q^6$ therein, a shaft mounted in the bearing $H^6$ in the head, a gear, fast to the shaft and having chambers $Q^3$ therein, springs seated in the chambers $Q^3$ in the gear, pins R inserted into and freely slidable in the chambers $Q^3$ in the gear, a pair of rollers D E mounted parallel to each other, one in stationary and the other in laterally-slidable bearings, springs normally impelling the slidable bearings and their roller E toward its counterpart roller D, a driving-pawl K constantly engaging the ratchet and cam wheel I and projecting into the path of the slideways $I^2$ therein, a driving-pawl $K^3$—mounted on the pawl K between its ends—adapted to engage with and be disengaged from the ratchet and cam wheel I, a pivotally-mounted bell-crank $L^2$, having an arm $L^3$ projecting into engagement with the pawl $K^3$ and arms $L^3$ projecting around and under the roller E and so weighted as to normally hold the pawl $K^3$ out of engagement with the ratchet and cam wheel I and to maintain the free ends of its arms $I^3$ in the path of the transverse welts X', on the web of knit fabric passing between the rollers D E, substantially as and for the purpose specified.

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**753,813. MACHINE FOR MAKING PNEUMATIC TIRES.** UZIEL P. SMITH, Chicago, Ill. Original application filed Nov. 26, 1902, Serial No. 132,760. Divided and this application filed Apr. 18, 1903. Renewed Feb. 5, 1904. Serial No. 192,176. (No model.)



*Claim.*—1. In a machine of the class described, a member adapted to support a tube and strip, a device for causing the tube to roll in one direction across the strip in order to envelop said tube with said strip and for subsequently causing the said tube with its surrounding strip or envelop to roll in the opposite direction, and mechanism for automatically reciprocating one of said parts relatively to the other.

2. In a machine of the class described, a member adapted to support a tube and a strip, a device normally free of said member and adapted for causing the tube to roll in one direction across the strip in order to envelop said tube with said strip and for subsequently causing the tube with its surrounding strip or envelop to roll in the opposite direction, and mechanism for automatically reciprocating one of said parts relatively to the other.

3. In a machine of the class described, a drum, the periphery of which is adapted to receive an annular tube and an annular strip,

a band for causing the tube to roll in one direction across the strip in order to envelop the tube with said strip for subsequently causing the tube with its surrounding strip or envelop to roll in the opposite direction, and mechanism for automatically reciprocating one of said parts relatively to the other.

4. In a machine of the class described, a drum adapted to support a tube and a strip, a circumferentially-expansible band, and means for operating one of said parts relatively to the other and for circumferentially expanding the band during such motion to cause said band to surround the tube and to roll it across the strip.

5. In a machine of the class described, a drum the periphery of which is adapted to receive an annular tube and an annular strip side by side, an elastic band mounted for reciprocation and adapted on its advancing stroke to embrace the tube on said drum and to roll it across said strip, and means for expanding the band on its advancing stroke.

6. In a machine of the class described, a drum, the periphery of which is adapted to receive an annular tube and an annular strip side by side, an elastic band mounted for reciprocation and adapted on its advancing stroke to embrace said tube and roll it across said strip, a plurality of pivotally-mounted arms to which said band is connected, and means for swinging said arms outward on the advancing stroke of the band.

7. In a machine of the class described, a drum the periphery of which is adapted to receive an annular tube and an annular strip side by side, an elastic band mounted for reciprocation and adapted on its advancing stroke to embrace said tube and roll it across said strip, a slide, means for reciprocating said slide, arms pivotally supported by said slide connected with the band, and provided with rollers, and a track along which said rollers are adapted to travel and having means for operating said rollers to swing said arms outward.

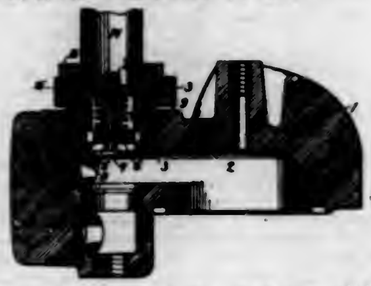
8. In a machine of the class described, a drum the periphery of which is adapted to receive an annular tube and an annular strip side by side, an elastic band mounted for reciprocation, and means for expanding said band at its front or advance end sufficiently to enable the same to embrace the tube on said drum and roll said tube across said strip.

9. In a machine of the class described, a drum, means for superimposing strips of material upon said drum with the strips side by side, independent means for forming one of the composite strips into a tube, a reciprocatory elastic band adapted on one stroke to receive the drum and tube thereon and to roll said tube across the other strip, and mechanism for expanding the forward end of the band during the advancing movement thereof.

10. In a machine of the class described, a drum adapted to support a tube and a strip side by side, an expansible band normally free of the drum, mechanism for reciprocating the band relatively to the drum, and means for expanding said band during its advancing movement.

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**753,814. MEANS FOR ATTACHING SUCTION-TUBES AND INLET-VALVES TO EXPLOSIVE OR INTERNAL-COMBUSTION ENGINES.** LOUIS B. SEYBEL, Elizabeth, N. J., assignor, by mesne assignments, to Cauda Brothers, New York, N. Y., a Copartnership. Filed July 23, 1900. Serial No. 24,493. (No model.)



*Claim.*—1. The combination, with a member of an explosive or internal-combustion engine, having an opening adapted to receive a valve-casing, and a shoulder against which said casing may bear, of a valve-casing fitting freely into said opening and seated against said shoulder, but not against the sides of the opening, means for holding said casing to its seat, a valve carried by the casing, a pipe connected to the casing and having a substantially straight entrance thereto in substantially the direction of the passage of gases past the valve, and means independent of the said casing-holding device, holding said pipe in place; whereby the valve may be inspected without breaking joint between the valve-casing and its seat.

2. The combination, with a member of an explosive or internal-combustion engine, having an opening adapted to receive a valve-casing, and a shoulder against which said casing may bear, of a valve-casing fitting freely into said opening and seated against said shoulder, but not against the sides of the opening, means for holding said casing to its seat, a valve carried by the casing, a pipe fitting into the casing and having a substantially straight entrance thereto in substantially the direction of the passage of gases past the valve, a gland surrounding said pipe and holding the same to the mouth of said casing, and means, independent of said gland, for holding the said valve-casing to its seat; whereby the valve may be inspected without breaking joint between the valve-casing and its seat.

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**753,815. RECLINING COT OR LOUNGE.** ARTHUR E. WHITE and WILLIS MILLER, Chicago, Ill.; said Miller assignor of one-half of his right to said White. Filed Mar. 18, 1903. Serial No. 148,386. (No model.)



*Claim.*—1. In a cot or lounge, a base consisting of two side rails, cross-ties or end pieces, each cross-tie or end piece having at each end a threaded stem, a nut on each stem and countersunk into the outer face of the side rail, and a perforated guard or protector on the end of each side rail, in combination with a carrier-frame for the mattress consisting of two supports, each support comprising a lower horizontal end, passing through the perforation in the guard or protector into the end of the base-rail, a coil continuing from the lower end and a side rail continuing from the coil and having an upward inclination, and a covering extending from side rail to side rail of the mattress-frame and from the cross-ties or end pieces at each end of the mattress-frame, substantially as described.

2. In a cot or lounge, a base consisting of two side rails, cross-ties or end pieces, each cross-tie or end piece having at each end a threaded stem, a nut on each stem and countersunk into the outer face of the side rail, and a perforated guard or protector on the end of each side rail, in combination with a mattress-carrying frame consisting of two side supports, each side support comprising a lower horizontal end passing through the perforated guard or protector into the end of the base-rail, a side rail connected with the entering end and extending in reverse relation thereto, a covering extending from side rail to side rail of the mattress-frame and fixedly attached to the frame-rails, and a mattress having the head-end corners thereof detachably connected to the corners of the head end of the mattress-frame and having its body and foot end loose on the covering and frame, substantially as described.

3. In a cot or lounge, a base consisting of two side rails, cross-ties each cross-tie having at each end a stem inserted into one of the side rails, a perforated guard or protector on the end of each side rail each guard or protector being provided with a base or foot downwardly extending therefrom, a mattress-carrying frame consisting of two side supports each side support provided with a backwardly-extending end passing through one of the perforated guards or protectors into the end of the base-rail and further provided with backwardly-extending side rails connected with the entering ends, substantially as described.

4. In a cot or lounge in combination with a mattress-carrying frame, a base or support consisting of two side rails connected together by cross-rails each of the cross-rails provided with a screw-threaded stem passing through the side rail, a nut on each stem countersunk into the outer face of the side rail, guards or protectors one on each end of each rail the forward guards or protectors being provided with holes in their front faces for the passing of the mattress-carrying frame therethrough, each guard or protector being provided with feet downwardly extending therefrom and further provided with an exterior plate, a top and an interior flange forming a protection and support for the entire end of the base-rail, substantially as described.

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**753,816. AXLE.** WILLIAM P. WILSON, Syracuse, N. Y., assignor of one-half to James B. Hubbell, Syracuse, N. Y. Filed Dec. 16, 1903. Serial No. 185,260. (No model.)



*Claim.*—1. An axle comprising a metal channel-bar axle-stub inserted in the ends of the channel, and a clamping-plate removably secured in the open side of the channel-bar and holding both axle-stubs in position.



2. An axle comprising a metal bar having a lengthwise channel extending from end to end and open at the bottom, axle-stubs extending into the channel and having shoulders engaging the end faces of the bar, and a reinforcing-plate removably secured in the channel and engaged with the axle-stubs to hold the latter in operative position.

3. In an axle, a channel-bar and a reinforcing-plate extending across the open side of bar, axle-stubs extending into the channel, and means to clamp the channel-bar and plate together.

4. In an axle, a metal bar concavo-convex in cross-section and having its open side at the bottom, axle-stubs having extensions movable into and out of the open bottom and operatively seated against the inner face of the top, and means extending under and across the open bottom and engaged with the axle-stubs to hold them in place.

5. An axle comprising a channel-bar and a reinforcing-plate extending across its open side, each having shoulders engaging the other to prevent independent endwise movement of the parts; axles extending into the channels and resting on the plates and means to clamp the plates in operative position to hold the axle-stubs in place.

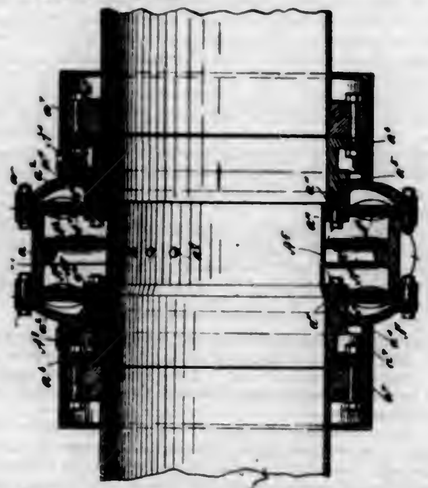
6. An axle comprising a channel-bar, a reinforcing-plate and axle-stubs secured in the channel and having interlocking shoulders to prevent endwise movement relative to each other, and means to clamp the plate to the bar.

7. An axle comprising a channel-bar and a reinforcing-plate secured in its open side, said bar and plate having interlocking shoulders to prevent endwise movement relative to each other, axle-stubs secured in the channel by the plate and means to clamp the plate to the bar.

8. An axle comprising a channel-bar and a reinforcing-plate secured in its open side, said bar and plate having interlocking shoulders to prevent endwise movement relative to each other, axle-stubs secured in the channel, means to lock the axles from endwise movement and additional means to clamp the plate to the bar

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**753,817. APPARATUS FOR SUPPLYING CITIES WITH STEAM.** WALLACE C. ANDREWS, New York, N. Y. Filed Dec. 9, 1898. Serial No. 698,729. (No model.)



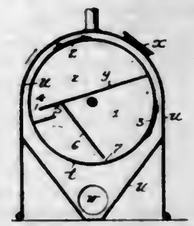
*Claim.*—1. A variator comprising a casing, an inlet-pipe end and an outlet-pipe end, diaphragms confined between the casings and the two pipe ends, and plates arranged on both sides of each diaphragm, with their inner ends engaging, respectively, the said pipe ends, to constitute guiding-supports for the latter, substantially as described.

2. A variator comprising a casing, an inlet-pipe end and an outlet-pipe end, diaphragms confined between the casings and the two pipe ends, and radially-reinforced plates arranged on both sides of each diaphragm, with their inner ends engaging, respectively, the said pipe ends, to constitute guiding-supports for the latter, substantially as described.

3. A variator comprising a casing, an inlet-pipe end and an outlet-pipe end, diaphragms confined between said casing and the two pipe ends, plates arranged on both sides of each diaphragm, said plates arranged in supporting engagement with said pipe ends, and constructed to permit reciprocation of the latter, flanges upon the outer portion of the casing, and shields secured to said flanges and formed to inclose said pipe ends, substantially as described.

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**753,818. APPARATUS FOR GENERATING ACETYLENE GAS.** GEORGE J. ATKINS, Tottenham, England. Original application filed June 5, 1900, Serial No. 19,121. Divided and this application filed June 25, 1901. Serial No. 65,987. (No model.)



*Claim.*—1. In an apparatus for generating acetylene gas from dry pulverized materials, a gas-holding chamber, a drum having a partition extending from one side of the circumferential wall into proximity to the other side of said wall, and within the said chamber, substantially as described.

2. In an apparatus for generating acetylene gas, a rotary drum having a partition extending from the circumferential wall on one side into proximity to the other side, and a second partition extending from said first-named partition at an angle thereto and into proximity to said circumferential wall, substantially as described.

3. Generating apparatus for acetylene gas which consists of a drum *t* divided into compartments *x*, *1* communicating with one another by openings 4 and 7, said drum being adapted to be rotated within an air-tight casing *u*, the drum *t* and casing *u* being provided with charging and discharging orifices, combined and operating substantially as described.

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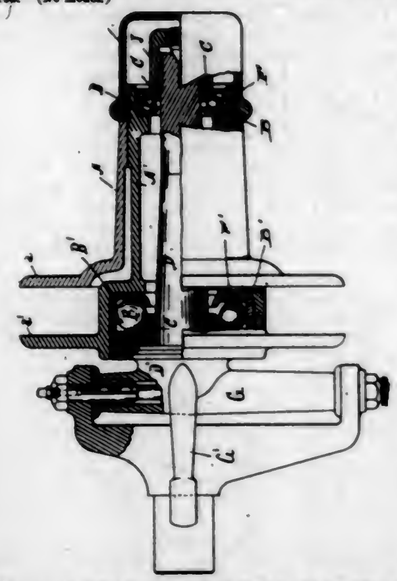
**753,819. ELECTRODE.** GEORGE J. ATKINS, Tottenham, England. Filed Apr. 8, 1903. Serial No. 151,668. (No model.)



*Claim.*—1. An electrode for electrolytic or the like apparatus which consists of a sheet-metal conductor *b*, a carbon or other analogous electrode proper *c*, and a conducting, but waterproof, substratum *f* interposed between the said conductor *b* and the electrode proper *c* for the purpose of isolating the said conductor *b* from the electrolyte while establishing and maintaining electric connection between the said conductor *b* and the electrode *c*, substantially as described.

2. In a pole or electrode for electrolytic or the like apparatus, the combination with a sheet-metal conductor *b* and electrode proper *c*, of a waterproof conducting substratum *f* interposed between said parts, said substratum being composed of finely-divided carbon combined with a non-oxidizable oil impermeable to the electrolyte substantially as described.

753,820. **ANTIFRICTION-BEARING.** WALTER C. BAKER, Cleveland, Ohio, assignor to the American Ball-Bearing Company, Cleveland, Ohio, a Corporation of Ohio. Filed Feb. 24, 1902. Serial No. 95,132. (No model.)

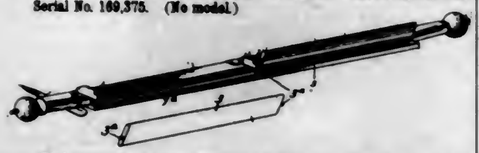


*Claim.*—1. In combination with the spindle, and the hub, two sets of balls interposed between said spindle and hub adjacent the ends thereof, said balls being of different sizes, the larger of said balls being located in line with the traction and tread of the wheel, and a steering-knuckle carried by said spindle in juxtaposition to the larger balls.

2. In combination with the spindle formed adjacent its inner end with a collar, a loose cone abutting said collar, a cone on the outer end of the shaft, a hub, races for different sizes of balls in the ends of said hub, balls arranged in said races and engaging the cones, the larger balls being located in line with the tread of the wheel, and a steering-knuckle carried by the collar of said spindle in juxtaposition to the large balls.

3. In combination with the spindle, a collar carried adjacent the inner end thereof, and the steering-knuckle formed integral with said collar, a hub provided at its inner end with spoke-flanges, cones mounted on said spindle the inner end of which engages said collar, balls carried in the ends of the last hub and engaging the cones, said balls being of different sizes, the larger being in alinement with the spoke-flanges of the hub, and means carried by the spindle for adjusting the outer cone.

753,821. **CURTAIN-POLE.** DANIEL BREEN, Haselton, Pa., assignor of one-half to A. F. Wendel, Haselton, Pa. Filed Aug. 13, 1903. Serial No. 169,375. (No model.)



*Claim.*—1. A curtain-fixture comprising a main pole or supporting member, and a supplemental member pivotally mounted upon and projected upward from the main pole adapted to form a support for one portion of the curtain and to clamp another portion of the curtain against the main pole or supporting member, for the purposes set forth.

2. In a curtain-pole, an elongated member, brackets fixedly secured thereto, supplemental bars pivotally and removably mounted in said brackets and projected vertically therefrom parallel with the elongated member, and adapted to receive a curtain, said bars having their lower edges in engagement with the elongated member to clamp said curtain.

3. As an improvement in curtain-poles, a main bar having a right-angled seat in its outer edge, a flat curtain-carrying bar pivotally supported on the main bar in an approximately vertical position with its lower edge in engagement with the aforesaid seat in the main bar, whereby the said curtain-carrying bar is sustained in an approximately vertical position with its upper end projected over the front face of the main bar to support one part of the curtain and to clamp another part of the curtain against the angled seat in the main bar, as set forth.

4. In a curtain-pole, an elongated rod or bar having a right-angled portion, bracket members secured to said rod or bar, supplemental rods or bars fulcrumed at their ends in said bracket members, said bars being adapted to receive the curtain and being so arranged as to form a cam member to clamp the curtain against the elongated rod or bar, for the purposes specified.

5. In a curtain-pole, an elongated rod or bar having a flange, bracket members mounted on said rod or bar, curtain-holding bars removably and pivotally held in said brackets with their lower edge adapted to engage the flange of the bar, for the purposes specified.

6. In a curtain-pole, an elongated rod or bar having a flange, bracket members mounted on said rod or bar, curtain-holding bars removably and pivotally held in said brackets, said curtain-holding bars at their lower edges being adapted to clamp said curtain against the flange of said elongated bar, for the purposes specified.

7. In a curtain-pole, an elongated rod or bar having a flange, bracket members mounted on the said rod, curtain-holding bars removably and pivotally held in said brackets, said bars being so arranged as to hold said curtain in engagement with the flange portion of the elongated rod or bar, for the purposes specified.

8. In a curtain-pole, an elongated rod or bar having a flange, bracket members mounted on the said rod, curtain-holding bars removably and pivotally held in said bracket members, said bars being so arranged as to form cam members to hold said curtain in tight engagement with the elongated rod or bar in the flange portion, for the purposes specified.

9. A curtain-fixture of the character described, which comprises in combination, a bar having a right-angled groove at its front edge, brackets at the end of the said bar that project transversely thereof, and a supplemental bar pivotally supported in the said brackets with its lower edge adapted to engage the said right-angled flange on the main bar and with its upper end projected beyond the said right-angled flange, whereby to pendently support one portion of the curtain over the front face of the main bar and to clamp another portion of the curtain against the right-angled flange on the said main bar, as set forth.

10. A curtain-fixture which comprises a flat bar provided with a right-angled recess in the front edge that extends the full length thereof, brackets mounted upon the said bar and projected transversely thereof beyond the said recess, a supplemental bar pivotally mounted in the said brackets and disposed vertically with respect to the main bar and with its lower edge held in the said recess of the main bar for the purposes specified.

11. A curtain-fixture which comprises a main bar or pole having a flat front face and a horizontal flange projected at right angles from the said flat front face, horizontal brackets secured to the main pole and adapted to project beyond the flat face thereof, and a supplemental member pivotally mounted in the said brackets with its lower edge adapted to engage with the horizontal extension on the main pole and with its upper end projected beyond the said front face of the main pole, the said supplemental member being arranged to have the curtain loop entirely over it and to support the same pendently over the front face of the main pole and to clamp the portion thereof against the said front face of the main pole as set forth.

12. In a curtain-pole, an elongated rod or bar, slotted bracket members mounted on said rod or bar, curtain-holding bars removably and pivotally held in said slotted bracket members with their lower edge in engagement with the bar, for the purposes specified.

753,822. **METHOD OF EXTRACTING GOLD FROM REBELLIOUS ORES.** EDWARD C. BROADWELL, Chicago, Ill., assignor, by direct and mesne assignments, to John A. Lyons, Chicago, Ill.; and Sarah A. Starring, Springfield, Ohio. Filed Mar. 7, 1902. Serial No. 97,189. (No specimens.)

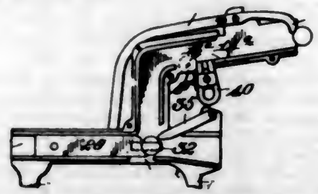
*Claim.*—1. The method of extracting gold or platinum from rebellious ores, comprising first pulverizing the ore, next mixing the same with an alkaline or alkaline-earth hypochlorite solution to which proper molecular quantities of the oxysalt of a heavy metal which can be precipitated by hydrogen sulfid from its acid solutions has been added.



2. The method of extracting gold from rebellious ores comprising first pulverizing the ore, next mixing the same with an alkaline or alkaline-earth hypochlorite solution and adding to the mixture a salt of a heavy metal having an acid nature, precipitatable by hydrogen sulfid from its acid solution and capable of acting with the alkaline hypochlorite to give the hypochlorite of said heavy metal.

3. A method of extracting gold from rebellious ores comprising first pulverizing the same, then mixing the same with an alkaline or alkaline-earth hypochlorite solution and adding to the mixture copper-sulfate solution.

753,823. **CHECK-CONTROLLED APPARATUS.** YARCEY O. CALDWELL, Paris, and LOUIS M. MARTIN, Martin, Tenn., assignors of one-third to Frederick G. Hartell, Chicago, Ill. Filed May 6, 1903. Serial No. 156,897. (No model.)



*Claim.*—1. In an apparatus of the class described, the combination of a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of and adapted to be operated by a proper check to permit the full stroke of the plunger, and means for holding the checks in the path of the plunger.

2. In an apparatus of the class described, the combination of a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of and adapted to be operated by a proper check to permit the full stroke of the plunger, said shiftable dog having a pointed working end to penetrate a lead disk, and means for holding the checks in the path of the plunger.

3. In an apparatus of the class described, the combination of a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, manually-operable means for advancing said plunger, and the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of and adapted to be operated by a proper check to permit the full stroke of the plunger, means for holding the checks in the path of the plunger, and a receiver or carrier for an article cooperative with said manually-operable means.

4. In an apparatus of the class described, the combination of a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, manually-operable means for advancing said plunger and the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of said check and having a pointed working end, means for holding the checks in the path of the plunger, and a receiver or carrier for an article cooperative with said manually-operable means.

5. In an apparatus of the class described, the combination of a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, manually-operable means for advancing said plunger and the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of the check and having a pointed working end to penetrate a lead disk, a stop for holding the checks and lead disks in the path of the plunger and for holding a lead disk while the same is impaled by the pointed end of the dog, check-operated means for moving said stop out of its normal position, whereby the lead disk impaled by the dog may drop therefrom, and a receiver or carrier for an article cooperative with said manually-operable means.

6. In an apparatus of the class described, the combination of a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, manually-operable means for advancing said plunger and the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of the check and having a pointed working end to penetrate a lead disk, a stop for holding the checks and lead disks in the path of the plunger and for holding a lead disk while the same is impaled by the pointed end of the dog, a carrier for said stop, and a lever one end of which is adapted to engage said carrier to thereby move the stop in a direction to release a lead disk impaled upon the pointed end of the dog, the other end of the lever being in position to be actuated by a check as it is introduced into the coin-runway, and a receiver or carrier for an article cooperative with said manually-operable means.

7. In an apparatus of the class described having a coin-runway, a channel into which said coin-runway opens, a plunger reciprocative in said channel, a check-operated detent arranged in the path of the checks as they leave the coin-runway and adapted to normally hold the plunger against motion, manually-operable means for advancing said plunger and the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of and adapted to be operated by a proper check to permit the full stroke of the plunger, a spring-arm provided with a pin near its free end projecting into said channel and constituting a stop to hold the check in the path of the plunger, and a lever one end of which is situated in proximity to the entering end of the coin-runway to be actuated by a check, and the other end of which is adapted to operate said spring-arm to move said pin or stop out of its normal position, and a receiver or carrier for an article cooperative with said manually-operable means.

8. A check-controlled apparatus having a coin-runway, a plunger, a channel in which the plunger is adapted to travel, a check-operated detent pivotally supported and having a working or locking portion disposed in the path of the plunger, a spring bearing against the detent to hold the working or locking portion thereof normally in its effective position, manually-operable means for advancing the plunger, the plunger being adapted to carry a check therewith on its advancing movement, a shiftable dog arranged in the path of and adapted to be operated by a proper check to permit the full stroke of the plunger, a spring-arm provided with a pin arranged in the path of the checks and adapted to uphold the same in the path of the plunger, and the bottom of the plunger-channel having an enlarged slot arranged in proximity to said stop, check-actuated means for moving the stop out of engagement with the check, and a receiver or carrier for an article cooperative with said manually-operable means.

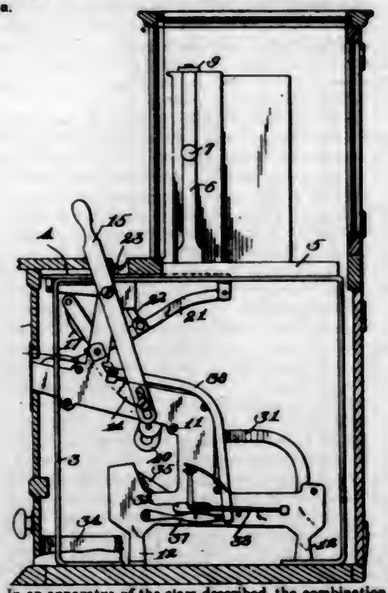
9. An apparatus of the class described having a coin-runway, a plunger, a check-operated detent for normally holding the plunger against motion, manually-operable means for advancing said plunger, and the plunger being adapted to carry a check therewith on its advancing movement, a pivotally-mounted gravity-dog arranged in the path of and adapted to be operated by a proper check to permit the full stroke of the plunger and having a pointed working end to impale a lead disk, a stop for holding the checks in the path of the plunger, check-operated means for operating said stop in a direction to effect the release of the lead disks impaled by the dog, and a receiver or carrier for an article cooperative with said manually-operable means.

753,824. **VENDING-MACHINE.** YARCEY O. CALDWELL, Paris, and LOUIS M. MARTIN, Martin, Tenn., assignors of one-third to Frederick G. Hartell, Chicago, Ill. Original application filed May 6, 1903, Serial No. 156,897. Divided and this application filed July 14, 1903. Serial No. 165,473. (No model.)

*Claim.*—1. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, a reciprocative device, connections between the reciprocative device and the rotary member for actuating said reciprocative device, a receiver for an article carried by said reciprocative device, means for supporting the receptacle containing such articles in position to cause an article to enter the receiver during the time said reciprocative device is in its backward position, and means actuated by said rotary member for operating the receiver relatively to said reciprocative device.

2. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, a reciprocative device, connections between the reciprocatory device and the rotary member for actuating said reciprocatory device, a receiver for an article carried by said reciprocatory device, means for supporting a receptacle containing such articles in position to cause an article to enter the receiver during the time the reciprocatory device is in its backward position, means actuated by said rotary member for operating the receiver in an upward direction relatively to the reciprocatory device, and a casing inclosing said parts provided with an upper glazed portion in which the re-

ceptacle-supporting means are housed, and an enlarged lower portion having a slot in which said receiver fits when in its advanced position.



3. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, a reciprocative device, connections between the reciprocative device and the rotary member for actuating said reciprocative device, a receiver for an article carried by said reciprocative device, means for supporting a receptacle containing such articles in position to cause an article to enter the receiver during the time said reciprocative device is in its backward position, means actuated by said rotary member for operating the receiver relatively to said reciprocative device, and means cooperative with said rotary member for automatically imparting a return movement to the same when the said manually-operable device has turned the rotary member for a portion of its forward movement.

4. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, a reciprocative device, connections between the reciprocative device and the rotary member for actuating said reciprocative device, a receiver for an article carried by said reciprocative device, means for supporting the receptacle containing such articles in position to cause an article to enter the receiver during the time said reciprocative device is in its backward position, means actuated by said rotary member for operating the receiver relatively to said reciprocative device, and a weight suspended from the rotary member for automatically imparting a return movement to the same after the manually-operable device has moved the same for a portion of its forward motion.

5. In an apparatus of the class described, the combination of a rotary spider, a shaft to which the spider is secured, a manually-operable lever operatively connected with the shaft for rotating the same, a slide, a receiver for an article carried by the slide, connections between the slide and one arm of the spider for reciprocating said slide upon the rotation of the spider, a device connected with another arm of the spider for lifting the receiver relatively to the slide during the rearward motion of said slide, and means for supporting a receptacle containing articles in position to cause an article to enter the receiver when the same is in its elevated position.

6. In an apparatus of the class described, the combination of a rotary spider, a shaft to which the spider is secured, a manually-operable lever operatively connected with the shaft for rotating the same, a slide, a receiver for an article carried by the slide, connections between the slide and one arm of the spider for reciprocating said slide upon the rotation of the spider, a device connected with another arm of the spider for lifting the receiver relatively to the slide during the rearward motion of said slide, means for supporting a receptacle containing articles in position to cause an article to enter the receiver when the same is in its elevated position, and a weight suspended from an arm of the spider.

7. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for operating the same, a slide, connections between the slide and the rotary member for reciprocating said slide, a receiver for an article carried by said slide, a pair of standards situated above the slide, set-screws tapped through the standards for engaging a box between said standards, springs fastened to the inner sides of the standards and adapted to bear against the box, and means actuated by said rotary member for operating the receiver relatively to the slide to move said receiver into position to receive an article from said box.

8. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, connections between the slide and the rotary member for reciprocating said slide, a receiver for an article carried by the slide, the latter having a slot through which the slide is adapted to work and an outwardly and rearwardly inclined face to the rear of the slot, means for supporting a receptacle containing such articles in position to cause an article to enter the receiver when the slide is in its backward position, and means actuated by said rotary member for operating the receiver relatively to the slide.

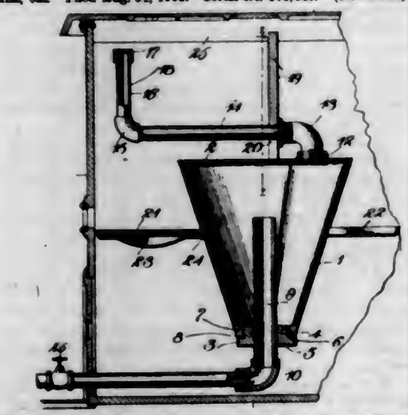
9. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, connections between the slide and the rotary member for reciprocating said slide, a receiver for an article carried by the slide, the latter having a slot through which the slide is adapted to work and an outwardly and rearwardly inclined face to the rear of the slot, means for supporting a receptacle containing such articles in position to cause an article to enter the receiver when the slide is in its backward position, means actuated by said rotary member for operating the receiver relatively to the slide, and means for adjusting the movement of said receiver.

10. In an apparatus of the class described, the combination of a rotary member, and a manually-operable device for actuating the same, a slide, connections between the slide and the rotary member for reciprocating said slide, a gravity-receiver for an article carried by the slide, a lifter for said receiver actuated by said rotary member, and means for supporting a receptacle containing articles in position to cause an article to enter the receiver when the slide is in its backward position.

11. In an apparatus of the class described, the combination of a rotary member and a manually-operable device for actuating the same, a slide, connections between the slide and the rotary member for reciprocating said slide, a gravity-receiver for an article carried by the slide, a lifter for said receiver actuated by said rotary member, means for supporting a receptacle containing articles in position to cause an article to enter the receiver when the slide is in its backward position, a guide device for the receiver depending from the slide, and adjustable screws supported by said guide device and adapted to engage the receiver when the same is in its lowermost position.

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**753,825. HYDROCARBON-BURNER.** LUCIUS R. COLEMAN, Santa Ana, Cal. Filed Aug. 31, 1903. Serial No. 171,449. (No model.)



*Claim.*—1. In a device of the class described, the combination of a bed-plate having an opening, an inverted-frustum-shaped retort seated in said opening and projecting for the greater part of its height below said bed-plate, a bushing forming a closure for the lower end of the retort, a feed-pipe adjustably connected with said bushing, and connecting means between said feed-pipe and the source of supply.

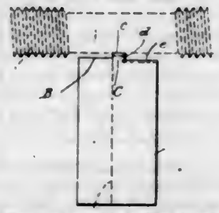
2. In a device of the class described, a bed-plate having an orifice, an inverted-frustum-shaped retort seated in said orifice and projecting for the greater portion of its height below the bed-plate, a bushing forming a closure for the lower end of the retort, a feed-pipe connected adjustably with said bushing and extending upwardly into the retort, connecting means between the lower end of the said feed-pipe and the source of supply, a permanent closure for the upper end of the retort, a vertically-disposed burner-pipe having an opening in the side thereof, connecting means between said burner-pipe and the retort, and a spray-plate disposed in front of and adapted to receive the discharge from the opening in the burner-pipe.

3. In a device of the class described, the combination of a retort, a vapor-pipe extending from the latter, a vertically-disposed burner-pipe connected with said vapor-pipe and having an opening in the side thereof, and a spray-plate disposed in front of said opening and having a notch in its lower edge engaging the vapor-pipe.

4. In a device of the class described, a retort having a permanent closure at its upper end, an L connected with said closure, a vapor-pipe connected with the L, a vertically-disposed burner-pipe connected with said vapor-pipe and having an opening in the side thereof, and a spray-plate notched in its lower edge to straddle the vapor-pipe and contacting with the L connected with the top of the retort, being thereby supported upon said retort in a position to receive the discharge from the orifice in the burner-pipe.

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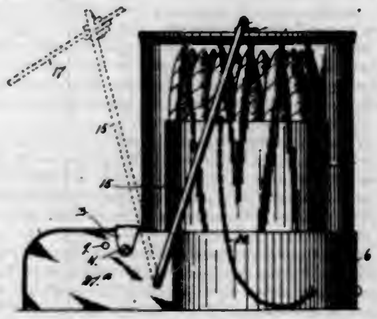
**753,826. TOOL FOR TRIMMING SCREW-THREADS.** WILLIAM R. CORBETT, Brainerd, Minn. Filed July 29, 1903. Serial No. 167,504. (No model.)



*Claim.*—A cutting-tool provided with a blunt gage or stop upon its forward end, the cutting portion projecting forwardly beyond the said stop and having a cutting edge upon its forward end and upon its side opposite the said stop.

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**753,827. DEVICE FOR DISPLAYING AND VENDING CIGARS.** GEORGE H. HAGAR, Denver, Colo. Filed Aug. 14, 1903. Serial No. 169,530. (No model.)



*Claim.*—1. The combination with a suitable base, of a receptacle mounted thereon and having a transparent portion, a rock-shaft journaled in the base, an arm connected with the rock-shaft, a lid adapted to close the top of the receptacle and liftably removable bodily therefrom, said lid being connected with the upper extremity of the arm, the rock-shaft being located to allow the lid to be opened or removed from the receptacle as the rock-shaft is actuated in one direction.

2. The combination with a suitable base, of a transparent receptacle mounted thereon, a rock-shaft journaled in the base and located to one side of the center of the receptacle, an arm connected with the rock-shaft, a lid adapted to close the top of the receptacle but not otherwise connected therewith, said lid being liftably removable bodily from the receptacle and connected with the upper extremity of the arm, and means connected with the arm for limiting the rearward movement of the latter as the rock-shaft is turned.

3. The combination with a suitable base, of a transparent receptacle mounted thereon, a rock-shaft journaled in the base, an arm connected with the rock-shaft, a lid connected with the arm adapted to close the receptacle at the top and being liftably removable bodily therefrom, and a signal device actuated from the rock-shaft as the latter is turned to open the lid through the instrumentality of the arm connecting the rock-shaft and lid.

4. The combination with a suitable frame or base, of a transparent receptacle mounted thereon, a lid for the receptacle, an arm connected with the lid, said arm being journaled in the base at a suitable point whereby as the arm is actuated in one direction the lid may be moved from the top of the receptacle, means connected with the arm for limiting its rearward movement, a signal device actuated by the movement of the rock-shaft, and a spring placed under tension by the movement of the rock-shaft in opening the receptacle, and arranged to return the lid automatically to the closed position.

5. The combination with a suitable frame or base, of a transparent receptacle mounted thereon, a rock-shaft suitably journaled, an arm connected with the rock-shaft and extending upwardly, a lid connected with the upper extremity of the arm, a crank-arm connected with the rock-shaft, a signal actuated by the arm as the rock-shaft is operated, and a spring also engaging the crank-arm as the rock-shaft is actuated whereby the spring is placed under tension as the lid is opened, and acts on the crank-arm to return the lid to the closed position, substantially as described.

6. In a device for displaying and vending cigars, the combination of a transparent receptacle, a lid adapted to close the receptacle but not otherwise connected therewith, said lid being liftably removable bodily from the receptacle, an arm connected with the lid and journaled at a suitable point below, a signal actuated from the journal portion of the arm as the latter is operated, and means acting on the arm to return it to its normal position after it has been moved rearwardly to open the lid.

7. The combination with a suitable base, of a plate surrounding the base and projecting above the same, a transparent receptacle mounted on the base and held in position by the plate, a lid movably mounted on said receptacle, a gasket surrounding the top of the lid and extending over its upper edge to make a tight joint between the lid and the body of the receptacle, an arm whose upper extremity is connected with the lid, a rock-shaft suitably journaled and with which the lower extremity of the arm is connected, a crank-arm mounted on the rock-shaft, a signaling device operated by the crank-arm as the rock-shaft is moved to open the lid, and a spring acting to return the rock-shaft and its connections to their normal position after each lid-opening operation.

8. In a device for exhibiting and vending cigars, the combination of a suitable base, a transparent receptacle, a moistening device located in the bottom of said receptacle, a perforated plate located above the moistening device and forming a support for the cigars, a lid adapted to close the top of the receptacle, said lid consisting of a flat disk, and suitable means connected with the lid whereby it may be swung to the open or closed position as desired.

9. The combination of a receptacle adapted to display articles of merchandise, a lid adapted to close said receptacle at the top but not otherwise connected therewith and being liftably removable bodily therefrom, a swinging arm connected with said lid for opening and closing the latter, and a spring placed under tension by the opening movement of the arm and having a tendency to close the lid as soon as the force applied for opening purposes, ceases to act.

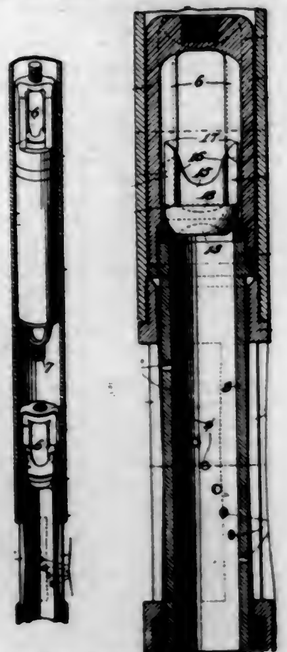
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**753,828. PUMP.** JOHN HAHN, Los Angeles, Cal., assignor of one-fourth to George Gartling, Los Angeles, Cal. Filed Jan. 20, 1903. Serial No. 139,822. (No model.)

*Claim.*—1. In a pump-piston, a valve having a cavity in its under side, and an upwardly-projecting feather terminating in chisel-points at its opposite edges, and provided in its top with cavities on opposite sides of the feather.

2. A cage having an annular valve-seat and vertical guideways at opposite sides of said valve-seat, a head at the top of the cage constructed to provide open ways above the valve-seat at opposite sides of the plane in which said guideways extend; and a valve constructed to seat in the valve-seat and having a transverse upwardly-extending web constructed to move in the guideways and to form a

barrier which will prevent liquid from flowing across the face of the valve transverse said plane in which the guides extend.



3. A cage having an annular valve-seat and vertical guideways at opposite sides of said valve-seat, a head at the top of the cage constructed to provide open ways above the valve-seat at opposite sides of the plane in which said guideways extend; and a valve constructed to seat in the valve-seat and having a transverse upwardly-extending web constructed to move in the guideways and to prevent liquid from flowing across the face of the valve transverse said plane in which the guides extend, the top of said valve being also provided with means to retain liquid on the opposite sides of the web.

4. A cage having a valve-seat, vertical guides extending up from opposite sides of the valve-seat and a head mounted on the top of the guides and constructed to provide open ways above the valve-seat on opposite sides of the plane in which the guides extend, and a valve for the valve-seat, provided with means above the valve to move freely in the guides, said valve having a barrier across the top of the valve in the plane in which the guides extend, to prevent the liquid from flowing across the top of the valve transverse said plane.

5. A cage having a valve-seat, vertical guides and a head constructed to provide open ways above the valve-seat on opposite sides of the plane in which the guides extend, and a valve for the valve-seat provided with means above the valve to move freely in the guides, said valve having a barrier across the top of the valve in the plane in which the guides extend to prevent liquid from flowing across the top of the valve transverse said plane, the top of said valve being constructed to retain liquid on opposite sides of said barrier.

6. The combination of a valve provided with a centering-web extending diametrically across the top thereof, said web having an upwardly-projecting wing at each side thereof; with guides allowing the web material lateral play, each of said guides being beveled away at its foot.

7. A check-valve provided with an integral upwardly-extending imperforate transverse web the side edges of which reciprocate in vertical guideways and are provided with chisel-points arranged to clear said guideways.

8. A check-valve provided with an integral upwardly-extending imperforate transverse web the side edges of which reciprocate in vertical guideways and are provided with chisel-points which are beveled toward the base of said guideways, stops being provided to engage the upper face of the valve.

9. A check-valve provided with an integral imperforate upwardly-extending transverse web the side edges of which reciprocate in vertical guideways and are provided with chisel-points for clearing the guideways, the foot of said guideways forming stops which engage the upper face of the valve.

10. In a pump-piston, the combination of a valve-seat and vertical ways thereabove, with a valve adapted to seat therein and slide vertically thereabove, said valve having a convex lower face which slopes inwardly and downwardly across the seating-line and has a concavity extending upwardly from the lower extremity of said face and having an integral imperforate upwardly-extending transverse web slidable in said ways.

11. In a pump-piston, the combination of a valve-seat and vertical ways thereabove, with a valve adapted to seat therein and slide vertically thereabove, said valve having a convex lower face with a cavity normally lying below the level of the top of the valve-seat and having an integral imperforate upwardly-extending transverse web slidable in said ways.

12. In a pump-piston, in combination, a valve-seat, a check-valve adapted to seat therein and to slide vertically thereabove, said valve having a lower face which slopes inwardly and downwardly across the seating-line and has a concavity extending upwardly from the lower extremity of said face and a web extending diametrically across the top of the valve, and means for guiding the web by its side edges.

13. The combination of a valve provided with a centering-web extending diametrically across the top thereof, said web having an upwardly-projecting wing at each side thereof, with guideways which embrace the side edges of said web, said guideways being materially wider than the web edge.

14. In a pump-piston, in combination, a valve-cage provided with upward extensions providing open ways at the sides, said extensions having internal guides forming ways, a valve-seat therein, and a valve adapted to seat therein and provided with a feather-web extending across its center and terminating in points adapted to travel in said ways.

15. In a pump-piston, in combination, a valve-cage provided with upward extensions providing open ways at the sides, said extensions having internal guides forming ways, a valve-cage therein, and a valve adapted to seat therein and provided with a feather-web extending across its center and terminating in points adapted to travel in said ways, and provided with cavities in its top at the sides of said feather-web.

16. In a pump-piston, in combination, a valve-cage provided with upward extensions providing open ways at the sides, said extensions having internal guides forming ways, a valve-cage therein, and a valve adapted to seat therein and provided with a feather-web extending across its center and terminating in points adapted to travel in said ways, and provided with cavities in its top at the sides of said feather-web, and also having a concavity on its under side.

17. In a pump-piston, in combination, a valve-cage provided with upward extensions providing open ways at the sides, said extensions having internal guides forming ways, a valve-cage therein, and a valve adapted to seat therein and provided with a feather-web extending across its center and terminating in points adapted to travel in said ways, and having a concavity on its under side.

18. A check-valve rounded on its under face and having across the center of its top an imperforate feather-web extending above the level of its upper face and edge, the sides of said feather-web constructed and arranged to be acted upon by the liquid through which the valve passes to truly center the valve.

19. A check-valve rounded on its under face and having across the center of its top an imperforate feather-web extending above the level of its upper face and edge, the sides of said feather-web constructed and arranged to be acted upon by the liquid through which the valve passes to truly center the valve, and said valve provided with cavities in its top at the sides of said feather-web.

20. In a pump, the combination of a check-valve rounded on its under side and having across the center of its top an imperforate feather-web extending above the level of its upper face and edge, the sides of said feather-web adapted to receive the resistance of the liquid to center the valve, said feather-web having chisel-points upwardly forming a conical edge for said feather-web, with a plunger having upward standards or extensions forming open ways and having internal guides forming ways within which said chisel-points play, stops being formed at the lower end of said guides.

21. In combination, with vertical guideways, of a check-valve provided with an imperforate upwardly-extending feather-web adapted to reciprocate in said guideways, said feather-web provided with upwardly-curved ends terminating in chisel-points for clearing said ways, the lower ends of said ways forming stops which engage the upper face of the valve.



22. In a pump, the combination, with the working barrel, of an extension having a series of ribs having inwardly-inclined faces forming springs, of a barrel or pipe extending therein and held by said springs.

23. In a pump, the combination, with the working barrel, an extension having a series of ribs having inwardly-inclined faces forming springs, of a barrel or pipe extending therein and held by said springs, said barrel or pipe provided with gas outlets or perforations.

24. In a pump, the combination with the working barrel, of an extension having a series of ribs with open ways therebetween, said ribs having inner spring-faces, of a barrel or pipe extending therein and removably held therein by said ribs.

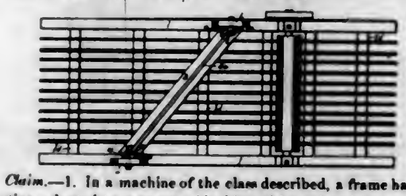
25. The combination, with a working barrel provided with ribs having inner faces forming springs, of a barrel or pipe extending into said ribbed portion and removably held therein by said ribs, a valve-seat at the top of said barrel or pipe, a valve-cage secured on said barrel or pipe, a valve therein, a movable piston, means for detachably connecting said piston and cage to raise said cage and barrel or pipe, and a valve-cage in connection with said piston, a valve-seat in connection therewith and a valve therein, and means for operating said piston.

26. The combination, with a working barrel provided with ribs having inner faces forming springs, of a barrel or pipe extending into said ribbed portion and removably held therein by said ribs, said barrel or pipe provided with gas perforations or outlets, a valve-seat at the top of said barrel or pipe, a valve-cage secured on said barrel or pipe, a valve therein, a movable piston, means for detachably connecting said piston and cage to raise said cage and barrel or pipe, and a valve-cage in connection with said piston, a valve-seat in connection therewith and a valve therein, and means for operating said piston.

27. The combination with a working barrel, of a barrel or pipe, means for retaining said barrel or pipe in the working barrel, said barrel or pipe being provided with gas-outlets, a valve-seat on said barrel or pipe, a valve cooperating with said valve-seat, a movable piston having a valve, means for detachably connecting said piston with the barrel or pipe, and means for operating the piston.

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**753,829. BLACKBOARD-MACHINE. WILLIAM T. JORDAN, Chicago, Ill., assignor of one-half to F. A. Holbrook, Chicago, Ill. Filed June 4, 1903. Serial No. 160,107. (No model.)**



*Claim.*—1. In a machine of the class described, a frame having a portion adapted to support a blackboard-base, brackets secured to the frame, and a trowel adjustably mounted on the brackets.

2. In a machine of the class described, a frame having a portion adapted to support a blackboard-base, a trowel carrying a blade, brackets supporting the trowel, and hinged to the frame and adapted to turn over on their side to expose the trowel-blade.

3. A machine of the class described comprising a frame, brackets mounted on the frame and having lower vertical slots and provided with upper curved slots, a trowel, a bar secured to the trowel and provided with vertical slots, adjusting devices mounted on the bar and operating in the vertical slots of the brackets, and adjusting devices operating in the curved slots of the brackets and engaging the vertical slots of the bar, substantially as described.

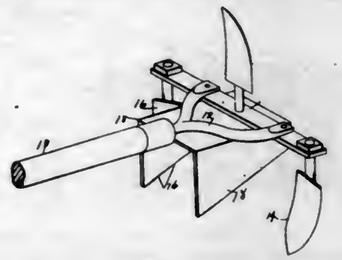
4. In a machine of the class described a bed adapted to support a blackboard-base, means for carrying the base over said bed, a trowel mounted diagonally above said bed and carrying a blade and means for adjusting said trowel relative to the bed.

5. In a machine of the class described a bed adapted to support a blackboard-base, means for carrying the base over said bed, and a trowel mounted above and extending across said bed.

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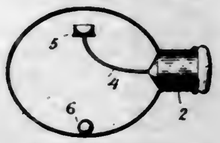
**753,830. ADJUSTABLE HOE AND PLANT-FENDER. HIRAM LEHR, Storm Lake, Iowa. Filed Oct. 19, 1903. Serial No. 177,713. (No model.)**

*Claim.*—A hoe consisting of a straight head having a handle fixed thereto and shovels at its end portions and a plant-fender detachably fixed at its center to the center of said straight head and a shovel detachably fixed to the center of the straight head to project upward, arranged and combined as shown and described for the purposes stated.



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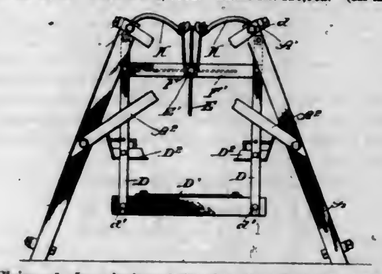
**753,831. PUZZLE. DAVID L. MUNRO, Auburndale, Mass. Filed Sept. 12, 1903. Serial No. 172,987. (No model.)**



*Claim.*—The combination with a transparent receptacle or bottle having a neck, of a stopper fixed in said neck, an upwardly-curving elongated member projecting from the inner end of said stopper, a cup held by said member with its edge near the inner face of the receptacle or bottle, and a ball in said receptacle, substantially as described.

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**753,832. FAN ATTACHMENT FOR SWINGS. JOHN R. WELIN, Victoria, Ill. Filed Oct. 7, 1902. Serial No. 126,302. (No model.)**



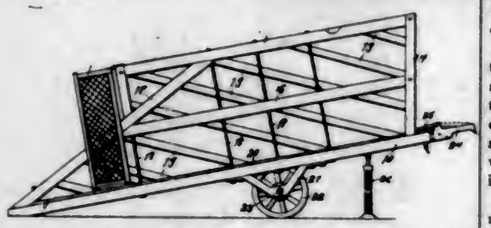
*Claim.*—1. In a device of the class described, the combination of a frame, a swing having hangers pivoted to the frame, arms carried by the hangers and projecting above the pivots, a fan rotatively supported by the swing, and means interposed between the arms aforesaid and the fan for imparting rotary movement to the fan, substantially as described.

2. In a device of the class described, the combination of a frame, a swing having hangers pivoted to the frame, arms projecting upward above said pivots, a fan rotatively supported by the swing and means interposed between the arms aforesaid and the swing for imparting rotary movement to the fan, said means including a drum on the fan-shaft and a cord wound around said drum and having its ends secured to the arms, substantially as described.

3. In a device of the class described, the combination of a frame, a swing having hangers pivotally supported by the frame, arms projecting upward from said hangers and bent inward, toward each other, a fan rotatively supported by the swing, and means interposed between the arms aforesaid and the fan for imparting rotary movement to the latter, substantially as described.

4. In a device of the class described, the combination of a frame, a swing having four parallel hangers pivoted to the frame, arms carried by the hangers and extending above said pivots, bars pivotally supported by the hangers, a fan having a shaft rotatively supported by said bars, and means interposed between the arms aforesaid and the fan for imparting rotary movement to the latter, substantially as described.

753,838. PORTABLE AND ADJUSTABLE STOCK-CHUTE. ARIEL R. COPLEY, Des Moines, Iowa. Filed Oct. 22, 1903. Serial No. 178,166. (No model.)



*Claim.*—1. In a portable stock-chute, an oblong frame having fixed parallel panels at its sides, a fixed floor, axle-bearers on its under side and central portion and traction-wheels mounted in said bearers, hinge-irons having hooks at their ends fixed to the ends of the side pieces of the bottom of the frame to project outward in alinement with said side pieces for connecting the chute with a wagon or car, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a portable stock-chute, an oblong frame having fixed parallel panels at its sides, a fixed floor, axle-bearers on its under side and central portion and traction-wheels mounted in said bearers, hinge-irons having hooks on their ends fixed to the corners of the frame for connecting the chute with a wagon or car and a board or floor-section hinged to said fixed hinge-irons at the end of the frame and floor to extend into a wagon-box or car, arranged and combined to operate in the manner set forth for the purposes stated.

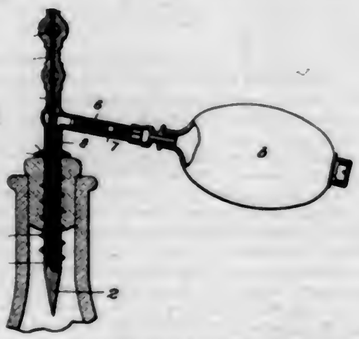
3. A stock-chute having a flat bottom mounted upon wheels and in its normal position an inclined plane and a jack-screw pivotally connected with its bottom to extend downward, and means for fastening the base of the jack-screw to the bottom in the manner set forth for the purposes stated.

4. A stock-chute mounted upon wheels to normally extend in an inclined plane and provided with fixed panels at its sides and foldable adjustable panel extension connected with the lower ends of the fixed panels, for the purposes stated.

5. A portable and adjustable stock-chute comprising a straight oblong frame having fixed panels at its sides and a fixed floor, mounted on two wheels, a jack-screw pivotally connected with the floor, axle-bearers fixed to the under side of the frame near its longitudinal center, wheels mounted in said axle-bearers, hooks on the upper corners of the frame and adjustable panel extensions connected with the fixed panels, arranged and combined to operate in the manner set forth for the purposes stated.

# REISSUES.

12,200. BOTTLE-TAP. JOSEPH A. SHERRARD, Boston, Mass. Filed June 12, 1903. Serial No. 161,203. Original No. 718,163, dated Jan. 13, 1903.

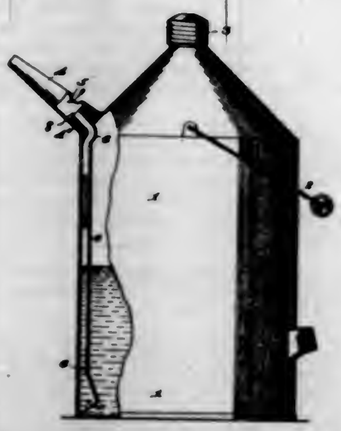


*Claim.*—1. A bottle-tap comprising a tubular conduit provided with a pointed end, a cock on the opposite end of said conduit, a valved branch leading from the conduit intermediate of said cock and pointed end, a flange or shoulder formed on said conduit, a compressible packing-washer located below said flange, and an air-pump connected to said branch and adapted to force air into the conduit, the said cock when closed causing the air to enter the bottle and act upon the contents thereof, and when open permitting the discharge of said contents through the conduit.

2. A bottle-tap provided with a stem having a pointed end integral therewith and cross-handle whereby it may be forced through a cork, a channel extending through said stem from the upper end to a port at the side near the lower end, with a cock near the upper end for closing said channel, a second channel communicating with a port at the opposite side near the lower end of the stem and also with an upper port below said cock, and an air-pump communicating with said second channel, substantially as set forth.

3. The tubular threaded and pointed conduit having air and liquid channels extending through the same, and communicating with ports on opposite sides, the liquid-port nearest the point, in combination with an air-pump communicating with the air-channel, substantially as set forth.

12,201. NON-EXPLOSIVE OIL-CAN. JOHN A. GRAY and FREDERIC LEHMANN, Allegheny, Pa., assignors, by direct and mesne assignments, to said Gray, J. R. Smith, and Nathan L. Brown, Allegheny, Pa. Filed May 6, 1903. Serial No. 156,962. Original No. 644,732, dated Mar. 6, 1900.



*Claim.*—1. A spout for oil-cans having an inlet-opening of an area less than the transverse area of any other portion of the spout, and an opening in the top of the spout between the inlet and outlet openings, substantially as set forth.

2. A spout for oil-cans, having a reduced inlet-opening, and an opening in the top of the spout between the inlet and outlet openings, said top opening being of larger size than the inlet-opening, substantially as described.

3. A spout for oil-cans, having inlet and outlet openings, and a larger opening in the top of the spout between said inlet and outlet openings, substantially as described.

4. A spout for oil-cans, having in its top and between its inlet and outlet openings, an opening larger than its inlet-opening, substantially as described.

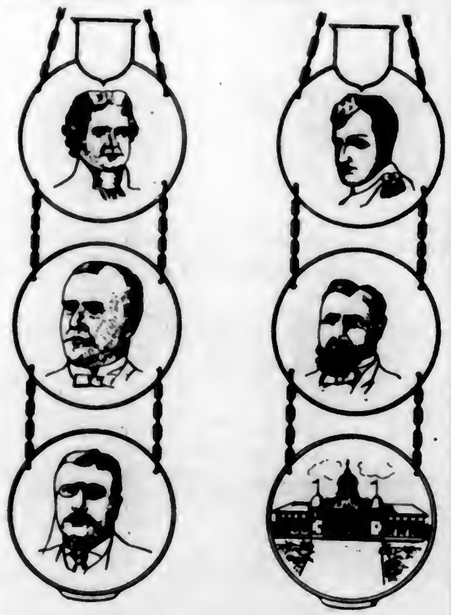
5. A non-explosive oil-can, consisting of the oil-can 1, provided with a spout, a vent 5 formed in the said spout at a point near the base of the same, a cork or plug 4' arranged in the interior of the spout located between the vent and the body of the can, an opening through the said cork or plug, a downwardly-extending tube or passage 6 secured in the said opening, said tube or passage terminating at a point near the base of the can, the entrance of which is enlarged to freely admit the fluid, and the exit at the top contracted to a less diameter than the exit of the spout, all arranged and combined for service, substantially as described.

# DESIGNS.

36,825. WATCH-CHAIN. JEAN HAHA, New York, N. Y. Filed Dec. 15, 1903. Serial No. 185,319. Term of patent 3½ years.



36,825.



*Claim.*—The ornamental design for a watch-chain, as shown.

36,826. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. EUSTACE CREES and CHARLES S. COURT, Providence, R. I., assignors to Watson and Newell Company, a Corporation of Rhode Island. Filed Feb. 4, 1904. Serial No. 192,042. Term of patent 7 years.



*Claim.*—The ornamental design for the handle of a spoon, fork or similar article as shown.

36,827. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. EUSTACE CREES and CHARLES S. COURT, Providence, R. I., assignors to Watson and Newell Company, a Corporation of Rhode Island. Filed Feb. 4, 1904. Serial No. 192,043. Term of patent 7 years.



*Claim.*—The ornamental design for the handle of a spoon, fork or similar article as shown.

36,828. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. EUSTACE CREES and CHARLES S. COURT, Providence, R. I., assignors to Watson and Newell Company, a Corporation of Rhode Island. Filed Feb. 4, 1904. Serial No. 192,044. Term of patent 7 years.



*Claim.*—The ornamental design for the handle of a spoon, fork or similar article as shown.

36,829. OPEN-WORK BORDER FOR METALLIC TABLEWARE. ALBERT STETTIN, New Bedford, Mass., assignor to The Fairpoint Corporation, New Bedford, Mass. Filed Jan. 18, 1904. Serial No. 189,636. Term of patent 7 years.



*Claim.*—The ornamental design for an open-work border for metallic tableware, as herein shown.

36,830. DISH. JAMES MADDOCK, Alsager, England, assignor to Maddock & Miller, a Corporation of New York. Filed Jan. 20, 1904. Serial No. 189,917. Term of patent 3½ years.



*Claim.*—The ornamental design for a dish as shown.

36,831. CASH-REGISTER CABINET OR CASING. EDWIN RINGOLD, Boston, Mass., assignor to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Jan. 23, 1904. Serial No. 191,062. Term of patent 7 years.

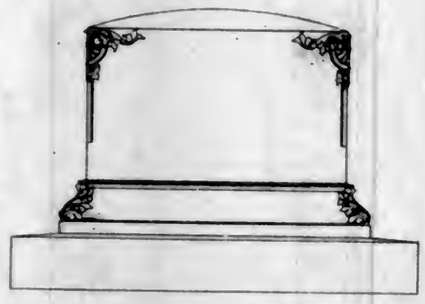


36,831



*Claim.*—The ornamental design for a cash-register cabinet or casing, as shown.

36,832. MONUMENT. RILEY M. WOLFF, Mansfield, Ohio. Filed Jan. 30, 1903. Serial No. 141,214. Term of patent 3½ years.



*Claim.*—The ornamental design for a monument, as shown.

# TRADE-MARKS

## REGISTERED MARCH 1, 1904.

42,157. WINDOW-SHADES AND WINDOW-SHADE FABRICS. BERTHOLD PRICE, St. Louis, Mo. Filed Feb. 2, 1904.

**ESTELLE**

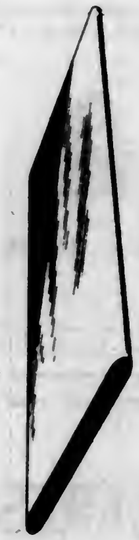
The word "ESTELLE." Used since July 1, 1901.

42,158. MEN'S SUSPENDERS. LEWIS OPPENHEIMER'S SONS, Philadelphia, Pa. Filed July 23, 1903.

*Eagle*

The title "EAGLE." Used since July, 1892.

42,159. LININGS. BURTON BROS. & CO., New York, N. Y. Filed Jan. 23, 1904.



A red strip applied to or produced on the end of the board around which the goods are to be rolled. Used since January 1, 1903.

42,160. LININGS. BURTON BROS. & CO., New York, N. Y. Filed Jan. 23, 1904.

42,160.



A black strip applied to or produced on the end of a board around which the goods are to be rolled. Used since January 1, 1903.

42,161. COTTON PIECE GOODS. GRISWELL WILLIS & CO., New York, N. Y. Filed Feb. 6, 1904.



The name "BLUE GRASS" and the representation of a woman on horseback, the ground having a diagonal bar. Used since August 15, 1902.

42,162. SEWING-TERRAD. JONAS BROOK & BROS., Ltd., Meltham, England. Filed Feb. 5, 1904.

TRIUMPH

The word "TRIUMPH." Used since May, 1901.

42,163. BELTING. JEWELL BELTING CO., Hartford, Conn. Filed Feb. 5, 1904.

GEM

The word "GEM." Used since January 1, 1904.

42,164. WRITING-PAPER AND ENVELOPE. FRANK J. MARSHALL, New York, N. Y. Filed Feb. 5, 1904.

RADIUM

The word "RADIUM." Used since January 20, 1904.

42,165. DISINFECTANTS AND DISEASE PREVENTIVES. IMMUNENE MFG. CO., Providence, R. I. Filed Feb. 5, 1904.

IMMUNENE

The word "IMMUNENE." Used since January 14, 1904.

42,166. DISINFECTANTS, GERMICIDES, AND DEODORIZERS. ROBERT W. CARLE, New York, N. Y. Filed Feb. 5, 1904.

FORMICAL

The word "FORMICAL." Used since January 29, 1904.

42,167. BRONCHIAL LOZENGES OR THROAT-TABLETS. LOUIS JAY GERSON, Philadelphia, Pa. Filed Dec. 7, 1903.

Ge-Ge

The hyphenated word "GE-GE." Used since October 1, 1903.

42,168. LIQUID MEDICINE FOR CERTAIN NAMED DISEASES. SOLOMON R. DEPUGH, Sardis, Miss. Filed Jan. 30, 1904.



The pictorial representation of a horseshoe, a horse tethered to one heel thereof, a man standing at the opposite side of the shoe and grasping said shoe near the other heel thereof, and the representation of a bottle arranged within the horseshoe and bearing the initials "S R B." Used since June 1, 1901.

42,169. REMEDY FOR EXPELLING WORMS FROM THE SYSTEM. LAZELLE & KEMP, New York, N. Y. Filed Jan. 4, 1904.



A chamber scene in which a woman is represented as seated in a chair supporting a child in her lap, and a man is represented as standing in front of the woman and in the act of presenting a package to her, while adjacent to the man a table is shown containing various packages. Used since January 1, 1857.

42,170. EXTRACT OF WITCH-HAZEL OR HAMAMELIS. LAZELLE & KEMP, New York, N. Y. Filed Jan. 4, 1904.



DEL

Dr. C. C. Bristol.

The portrait of Dr. C. C. Bristol and the words "DEL DR. C. C. BRISTOL" below the portrait. Used since July 3, 1884.

42,171. PAPER-POWDER BOOKS. ANNIE SARAH BUTLER, London, England. Filed Dec. 10, 1903.

LEHCARESOR

The word "LEHCARESOR." Used since October 18, 1903.

42,172. LOTION FOR CURE OF CERTAIN NAMED DISEASES. BROWN & ALLEN, Atlanta, Ga. Filed Oct. 7, 1903.



42,172.




The words "GOLDEN ROD" in connection with the representation of a bunch of golden-rod. The representation of the bunch of golden-rod is in rear of and partially covered by the words "Golden Rod." Used since September, 1899.

42,173. COMPOUND FOR PREVENTION AND CURE OF SWEATING OF THE AXILLA. NANCY D. RICHARDS, New Philadelphia, Ohio. Filed Jan. 6, 1904.

ANSUDORA.

The word "ANSUDORA." Used since 1894.

42,174. SANITARY NAPKINS. STANLEY & JOHNSON, East Orange, N. J., and New York, N. Y. Filed Feb. 4, 1904.

SANETTES

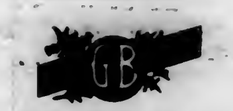
The word "SANETTES." Used since January, 1904.

42,175. CERTAIN NAMED CHEMICALS. CARL JÄGER, Duesseldorf, Germany. Filed Sept. 2, 1902.



An erect lion in rampant regardant position, a pair of scales held in the left forepaw of the lion and surrounding concentric circles. Used since 1877.

42,176. WHISKY. GEO. BALLANTINE & SON, Glasgow, Scotland. Filed Jan. 21, 1904.




The representation of a narrow oblong band, in the center of which is placed a circular seal bearing the initials "G. B." and having as a background the representation of a thistle. Used since January, 1896.

42,177. EXTRACTS AND REMEDIES. IOWA MEDICINE CO., Keokuk, Iowa. Filed Jan. 9, 1904.

KKK

The three capital letters "K K K" spaced apart from each other. Used since March 1, 1900.

42,178. WITHDRAWN.

42,179. CHOCOLATES. SOCIÉTÉ ANONYME DES CHOCOLATS AU LAIT F. L. CAILLER, Broc, Switzerland. Filed Nov. 30, 1903.

Cailler

The word "CAILLER," a facsimile of the autograph surname of François Louis Cailler, deceased. Used since January 1, 1819.

42,180. CANNED AND BOTTLED FRUITS AND VEGETABLES. S. HAMILL COMPANY, Keokuk, Iowa. Filed Aug. 27, 1903.




The word "PALM," associated with the representation of a palm tree. Used since July 15, 1893.

42,181. WHEAT-FLOUR. WASHBURN, CROSBY COMPANY, Minneapolis, Minn. Filed Feb. 4, 1904.



The representation of three foxes' heads. Used since January 8, 1904.

42,182. WHEAT-FLOUR. WASHBURN, CROSBY COMPANY, Minneapolis, Minn. Filed Feb. 4, 1904.

THREE FOXES

The words "THREE FOXES." Used since January 8, 1904.

42,188. LEATHER-POLISH. WHITTEMORE BROS. AND CO., Cambridge, Mass. Filed Dec. 30, 1903.



The symbol "W," having a circular background. Used since December 1, 1891.

42,184. LUBRICANTS SOLUBLE IN WATER. FULLER & JOHNS, New York, N. Y. Filed Feb. 4, 1904.




The word "LUBOL," and a fleur-de-lis above same inclosed in a triangle, which is surrounded by two circles. Used since October 12, 1903.

42,185. FOUNDRY-FACINGS. THE J. S. MCCORMICK CO., Pittsburg, Pa. Filed Jan. 26, 1904.

AJAX

The word "AJAX." Used since October 1, 1900.

42,186. FOUNDRY-FACINGS. THE J. S. MCCORMICK CO., Pittsburg, Pa. Filed Jan. 26, 1904.

VULCAN

The word "VULCAN." Used since October 1, 1896.

42,187. SAFETY-RAZORS. REINHARD & SOHNDER MFG. CO. New York, N. Y. Filed Jan. 11, 1904.

MOHICAN



The word "MOHICAN," associated with the representation of an Indian, in war attire and carrying a quiver and a bow, in the act of shaving himself with a safety-razor, the said representation being inclosed in a circle. Used since December 15, 1903.

42,188. SAFETY-RAZORS. REINHARD & SOHNDER MFG. CO., New York, N. Y. Filed Jan. 11, 1904.




The word "WINNER," associated with the representation of a laughing man shaving himself with a safety-razor, said representation being inclosed in a circle and below which are bay-leaves. Used since September 15, 1903.

42,189. RAZOR-STROPS. WHITTEMORE MFG. CO., Chicago, Ill. Filed Jan. 23, 1904.

E-Z-E

The letters "E-Z-E." Used since August, 1901.

42,190. HORSE-NAILS. THE CAPEWELL HORSE NAIL CO., Hartford, Conn. Filed Feb. 6, 1904.




The monogram "C H N Co," formed of a horseshoe and nails. Used since January 1, 1883.

42,191. CLUTCH HORSE-NAILS. THE CAPEWELL HORSE NAIL CO. Hartford, Conn. Filed Feb. 6, 1904.

BLACK PRINCE

The words "BLACK PRINCE." Used since January 1, 1903.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# LABELS

## REGISTERED MARCH 1, 1904.

10,779.—*Title:* "THE SENTRY BOX." (For Newspaper Articles.) C. W. POST, Washington, D. C. Filed February 5, 1904.

10,780.—*Title:* "ROELOFETTE." (For Hats.) H. I. IRELAND, Philadelphia, Pa. Filed February 5, 1904.

10,781.—*Title:* "MARSALINA THE 20TH CENTURY HAIR & SKIN TONIC." (For a Toilet Preparation.) JOSEPH M. ABOUSSLEMAN, New York, N. Y. Filed February 9, 1904.

10,782.—*Title:* "PERSIAN ROSE POMADE." (For a Toilet Preparation.) JOSEPH M. ABOUSSLEMAN, New York, N. Y. Filed February 9, 1904.

10,783.—*Title:* "BONESET AND WILD CHERRY EXPECTORANT." (For Medicine.) RUDOLPH BURKHARDT, New York, N. Y. Filed February 5, 1904.

10,784.—*Title:* "GRIPPURA (GERM-DESTROYER)." (For a Medicine.) ALEXANDER CRICHTON, Castleton, Canada. Filed February 8, 1904.

10,785.—*Title:* "NIGRIDINE." (For Medicine.) FRANK C. REIGHTER, Chicago, Ill. Filed January 15, 1904.

10,786.—*Title:* "HEDEVAL." (For Hog-Cholera Cure.) THE AMERICAN HOG CHOLERA CURE CO., Minneapolis, Minn. Filed February 9, 1904.

10,787.—*Title:* "CROWN." (For Creamery-Butter.) FREDERICK H. ARNSBURGER, Stockton, Cal. Filed February 4, 1904.

10,788.—*Title:* "UNDERWOOD SUGAR CURED MEATS." (For Canned and Other Meats.) OMAHA PACKING CO., Chicago, Ill.; South Omaha, Nebr., and St. Joseph and Kansas City, Mo. Filed February 6, 1904.

10,789.—*Title:* "KHEDIVE." (For Tea.) MILLIKEN, TOMLINSON CO., Portland, Me. Filed February 5, 1904.

10,790.—*Title:* "SHAMROCK." (For Tea.) MILLIKEN, TOMLINSON CO., Portland, Me. Filed February 5, 1904.

10,791.—*Title:* "FIFTEEN YEARS OLD MANASSAS 1861 PURE RYE WHISKEY." (For Whisky.) PATRICK MCINTYRE, Asheville, N. C. Filed February 9, 1904.

10,792.—*Title:* "JOHN LORD." (For Cigars.) GRAND RAPIDS CIGAR BOX CO., Grand Rapids, Mich. Filed November 10, 1903.

10,793.—*Title:* "SCALE OFF BOILER COMPOUND." (For a Boiler-Compound Powder.) HOWARD CHEMICAL COMPANY, New York, N. Y. Filed February 8, 1904.

10,794.—*Title:* "MANN'S SUPERIOR." (For Axes.) JAMES H. MANN, Lewistown, Pa. Filed February 4, 1904.

10,795.—*Title:* "THE XX AXE." (For Axes and Edge-Tools.) MANN EDGE TOOL CO., Lewistown, Pa. Filed February 6, 1904.

10,796.—*Title:* "COLONIAL." (For Axes and Edge-Tools.) MANN EDGE TOOL CO., Lewistown, Pa. Filed February 6, 1904.

10,797.—*Title:* "BALD EAGLE." (For Axes and Edge-Tools.) MANN EDGE TOOL CO., Lewistown, Pa. Filed February 6, 1904.

10,798.—*Title:* "RED TOP." (For Axes and Edge-Tools.) MANN EDGE TOOL CO., Lewistown, Pa. Filed February 6, 1904.

# PRINTS

## REGISTERED MARCH 1, 1904.

907.—*Title:* "PLANT OF MODERN AUTOMATIC CAN MAKING MACHINERY." (For Can-Making Machinery.) TORRIS WOLD, Chicago, Ill. Filed February 5, 1904.

908.—*Title:* "BICYCLE PLAYING CARDS, NEW AUTOMOBILE DESIGNS." (For Playing-Cards.) THE UNITED STATES PLAYING CARD CO., Cincinnati, Ohio. Filed February 8, 1904.

909.—*Title:* "BICYCLE PLAYING CARDS, NEW AUTOMOBILE DESIGNS." (For Playing-Cards.) THE UNITED STATES PLAYING CARD CO., Cincinnati, Ohio. Filed February 8, 1904.

910.—*Title:* "OVERCOAT FASHIONS FOR SPRING." (For Men's Spring Apparel.) DAVID ADLER & SONS CLOTHING CO., Milwaukee, Wis. Filed February 9, 1904.

911.—*Title:* "GOLD BAND HAM AND BACON." (For Ham and Bacon.) ARMOUR PACKING CO., Kansas City, Kans. Filed February 5, 1904.

912.—*Title:* "THE FLOUR BARREL OF THE WORLD." (For Flour.) DAVID M. MCLEAN, Chicago, Ill. Filed November 20, 1903.

913.—*Title:* "ATHLOPHOROS." (For Medicine.) THE ATHLOPHOROS CO., New Haven, Conn. Filed February 9, 1904.

914.—*Title:* "EYELENE." (For Medicine.) GEORGE W. WISE, Cincinnati, Ohio. Filed February 9, 1904.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE PICKLES.

*Decided February 6, 1904.*

DIVISION—CAR-SEAT AND HAND-STRAP.

*Held* that division was properly required between claims to the mechanism of a car-seat whereby it can be moved back and forth and a claim to a hand-strap attached to the back of the seat.

ON petition.

SWING-BACK CAR-SEATS.

*Mr. Joseph L. Levy* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner in making final his requirement for division between the subject-matter of claims 26 and 27 and the subject-matter of the remaining claims.

In the letter first requiring division the Examiner said that the requirement was made final; but, as pointed out in his answer to the petition, this was through inadvertence. The question of division has not been twice acted upon by the Examiner and is therefore not in condition for petition.

In addition to raising the question of irregularity in the Examiner's action the petitioner asks that the requirement for division be overruled. It is therefore proper to say that an examination of the case shows very clearly that the Examiner was right in his requirement. Claims 26 and 27 cover a hand-strap attached to the back of the seat, and the remaining claims cover mechanism for moving the back and seat in unison when the seat is reversed. The two inventions are clearly independent, and it appears that they are classified in different divisions of the Office.

The petition is dismissed.

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### EX PARTE EHRENDRIECH.

*Decided January 14, 1904.*

INCOMPLETE APPLICATION—DRAWINGS DESCRIBED, BUT NOT FURNISHED.

Where only one sheet of drawings, including one figure, is filed with the application and the specification describes four figures, and this discrepancy is not discovered until the case is examined upon its merits, *Held* that the application must be regarded as incomplete until the date when the additional drawings are furnished.

ON reference.

SPRING-MOTORS.

*Mr. J. W. Garner* for the applicant.

ALLEN, *Commissioner:*

The application clerk asks for instructions as to the action which should be taken in the above-entitled case.

It appears that the drawing filed with the application included only one figure, although the specification described four figures. This fact was not discovered, and the case was entered as a complete application and was forwarded to the Primary Examiner. Upon taking it up for examination the Examiner discovered the inconsistency between the drawing and the specification and called the applicant's attention thereto. The applicant then furnished three additional sheets of drawing, including three figures showing details of construction not illustrated in the original figure.

The question presented for determination is whether the application should bear the date when the original papers were furnished or the date of receipt of the additional drawings.

It is clear that the additional drawings were necessary to make the application complete, and that it was forwarded to the Examiner simply through oversight. While it may be true that the additional figures of the drawing come within the terms of the description in the original specification, it is equally true that drawings showing other specific constructions might come within those terms, and the Office had no means of knowing just what that construction was until the drawings were furnished. It must be held, therefore, that the application should be given the date when the additional drawings were filed.

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### WILDERMAN *v.* SIMM.

*Decided February 2, 1904.*

1. LIMIT OF APPEAL—EXTENSION OF TIME SET.

Where the defeated party to an interference resided abroad and the limit of appeal set was too short to enable his attorney to obtain instructions from him, *Held* that the Examiner of Interferences properly extended the limit of appeal.

2. SAME—SAME—MATTER FOR EXAMINER'S DISCRETION.

The time within which an appeal must be taken from his decision rests largely within the discretion of the Examiner of Interferences, it being required merely that under all the circumstances of the case such time must be reasonable.

APPEAL on motion.

STREET-CAR FENDERS.

Application of Joseph M. Wilderman. Application of William Simm.

*Messrs. Carr & Carr* for Wilderman.

*Mr. Wm. P. Thompson* and *Mr. Edward P. Thompson* for Simm.

ALLEN, *Commissioner:*

This is an appeal by Wilderman from a decision of the Examiner of Interferences granting Simm's motion for an extension of the limit of appeal from the final decision rendered in this case on November 19, 1903.

In this decision the limit of appeal was originally set to expire December 9, 1903. On December 8, 1903, or one day before the limit of appeal expired, Simm filed his motion to have this time extended. The reason for asking such extension was that the party Simm was then in England, being a resident of that country, and the time originally set, December 9, 1903, as a limit of appeal had for this reason proved too short for his attorney to obtain instructions from him as to the filing of an appeal if he desired to take such step.

Upon this showing the Examiner extended the limit of appeal to January 8, 1904.

Rule 143 provides that—

contested cases will be regarded as pending before a tribunal until the limit of appeal, which must be fixed, has expired. * * *

Simm's motion having been brought before the limit of appeal as originally set had expired, the Examiner of Interferences had jurisdiction to grant the extension asked for.

The time within which an appeal must be taken from his decision rests largely within the discretion of the Examiner of Interferences, it being required merely that under all the circumstances of the case such time must be reasonable.

On December 12, 1903, two days after the granting of his motion and three days after the limit of appeal originally set, Simm filed his appeal to the Board of Examiners-in-Chief.

Under the circumstances of this case the extension of thirty days granted Simm within which to file his appeal was reasonable, and the decision of the Examiner of Interferences is affirmed.

## DECISIONS OF THE U. S. COURTS.

### Court of Appeals of the District of Columbia.

SENDELBACH *v.* GILLETTE.

*Decided June 2, 1903.*

1. INTERFERENCE—PRIORITY OF INVENTION.

*Held* that Sendelbach was the original and first inventor of the subject-matter in controversy and that the patent was properly issued to him.

2. SAME—ORIGINALITY OF INVENTION—DISCLOSURE INSUFFICIENT.

Where Gillette claims to have disclosed the invention to Sendelbach, but it does not appear that the disclosure was of such special character as to the combination of parts as to have enabled a mechanic of ordinary ingenuity and skill in that particular trade or calling to have constructed and put the improvement in successful operation, *Held* that Sendelbach must be regarded as an independent inventor.

3. SAME—SAME—DISCLOSURE MUST BE COMPLETE.

Where a party claims to have conceived the invention and disclosed it to another, who reduced it to practice, the disclosure in order to be effectual must be shown to have been full and clear as to all the essential elements of the invention and such as was sufficient in itself to enable the party to whom the disclosure was made to give the invention practical form and effect without the exercise of invention on his part.

4. SAME—INVENTOR DEPRIVED OF RIGHTS BY CONTRACT.

An inventor cannot be deprived of the right to his invention where he has used due diligence in the assertion of his right except by express contract or by a course of conduct that fairly gives rise to an implication of an intention to part with or dispose of the right, and a presumption to that effect is not lightly to be made.

5. SAME—UNEXPLAINED DELAY IN APPLYING FOR PATENT—CLAIM DISCREDITED.

Unexplained delay in applying for a patent is a circumstance of considerable significance when considered in connection with other circumstances tending to discredit the applicant's claims.

6. SAME—BURDEN OF PROOF—APPLICANT AGAINST PATENTEE.

Where an applicant for patent is in interference with a previously-granted patent, the burden is upon the applicant to prove his case beyond a reasonable doubt.

*Mr. Geo. P. Whittlesey* and *Mr. Melville Church* for the appellant.

*Mr. Fred. L. Chappell* for the appellee.

ALVEY, *C. J.:*

This is an appeal from the Patent Office taken by Sendelbach from the decision of the Commissioner of Patents made in the matter of interference between the application of Gillette, filed January 3, 1901, and the Patent No. 651,276, issued to Sendelbach June 5, 1900, on application filed March 9, 1900, relating to vehicle-hubs. The interference is No. 21,180.

The issue is in two counts, framed in the following terms:

1. As a new article of manufacture, a wooden center for a hub, consisting of a short cylindrical block having ends lying in plane at right angles with its axis, radial mortises for the spoke-tenons, a central longitudinal bore, and metallic bands encircling it at its ends, said bands lying entirely outside the line of the spoke-mortises.

2. The combination with a wooden center having radial mortises and flat ends lying in plane at right angles with the axis of the hub, of a metallic box provided with a collar fitting against one end of said center, a metallic sleeve surrounding said box and having a flange fitting against the other end of the center, means for clamping said parts together, lengthwise, and spokes inserted into the mortises in said center and sustained against lateral pressure by the wooden center only.

These counts are framed in the precise terms of two of the claims contained in the patent issued to Sendelbach.

The invention is of a narrow or limited character. It has reference rather to the form and clamping of the hub than to other improvements. The hub as part of a vehicle-wheel is an old mechanical structure, and the present invention would seem designed to secure, by way of improvement of the hub heretofore in use, superior compactness, strength, and elasticity.

The Examiner of Interferences, and the Board of Examiners-in-Chief, have, upon examination of the facts in proof, concurred in the conclusion that Sendelbach was entitled to priority, or rather was the original inventor of the subject-matter of the issue. But this decision of the two tribunals was reversed on appeal by the Commissioner of Patents, who held that what Sendelbach did was the result of his employment by Gillette, and amounted to nothing more than the perfection by him, as a mechanic, of what had been disclosed to him by Gillette; and that, under well-settled rules of law, Gillette was and is entitled to be regarded as the real inventor of the matter of the issue.

Sendelbach being the senior party and a patentee, his patent bearing date June 5, 1900, the burden





of proof is upon Gillette, the subsequent applicant, whose application was not filed until near about seven months after the issue of the patent to Sendelbach, and about ten months after the filing of the application upon which the patent was issued. The burden of proof is not only upon Gillette, but that burden can only be discharged by establishing by proof beyond any reasonable doubt that he is the real prior inventor of the structure of the issue, and thus clearly overcoming the patented claim of Sendelbach.

In Gillette's preliminary statement, made under oath, it is set forth that the applicant conceived the invention in issue during the first week in June, 1898; that the invention was first disclosed by him to others during the first week in June, 1898; that during the last week of June, 1898, a drawing of the invention was prepared; that a model of the invention was made early in June, 1898; that the invention was first embodied in a complete working wheel about the 5th of September, 1898, and that the wheels completed at that time were operated successfully about the 15th of September, 1898; and this invention was reduced to practice about the last-mentioned date, by the use of a full-sized working wheel, and which wheels have been placed in the market to the extent of 310 wheels.

It appears that Gillette had applied for and obtained two patents for roller-bearings, adjustable to hubs of wheels,—the first of which, No. 643,122, dated February 13, 1900, was granted upon an application filed September 15, 1899; and the second, No. 644,550, dated February 27, 1900, was granted upon an application originally filed June 30, 1899, and renewed February 2, 1900. Neither of these patents, however, can be construed to embrace the narrow invention described in either the first or second count of the present issue; though there is, in several particulars, similarity of parts in count 2 of the present issue to parts described in the first patent issued to Gillette, No. 643,122, dated February 13, 1900. In that patent, however, as said in the opinion of the Examiners-in-Chief, the grant—

purports to be for and the claims cover a roller-bearing for vehicle-hubs, but the drawing discloses and the specifications describe a hub structure which, if it were not for the considerable length of the wooden body portion, might be regarded as a center for a hub. This wooden body portion is combined with a metallic box F provided with a collar C screwed onto it and fitting against one end of said body, with a metallic sleeve (the screw-threaded portion of the plate E) surrounding said box and having a flange E fitting against the other end of said body, and with means (the bolts K) for clamping said parts together, lengthwise, all as specified in count 2.

The Examiners-in-Chief, in further examination of the facts, with comment thereon, say:

Sendelbach's patent, which contains claims in the exact terms of the counts of the present issue, was applied for nearly a month after the aforesaid patent to Gillette was granted, and hence if valid, must cover something that is not shown or described by Gillette. That something, as appears upon an examination of Sendelbach's specification is "a wooden center, which is substantially the old wooden hub with its ends cut off," and which, because the associated encircling bands and clamping end flanges are situated close to the wooden sockets for the spokes, is directly and materially reinforced by metal, so that the spokes may be forcibly driven into their sockets without splitting the wooden center.

The issue then involves, as an essential feature of the construction, the relative diametrical and longitudinal dimensions of the wooden portion of the hub, and excludes any such construction as is disclosed in the patent to Gillette, above mentioned.

This conclusion is of great importance in its relation to the fact of priority, for one of the main contentions of Gillette is that Sendelbach is not an original inventor of the subject-matter of either count of the issue, because he, Gillette, disclosed to Sendelbach, prior to the date of his alleged conception, the substantial features of the invention in controversy.

Gillette visited Sendelbach, who is vice-president of the Standard Wheel Company of Terre Haute, Ind., some time in December 1899, or January 1900, for the purpose of having said company construct some wheels. Sendelbach's alleged conception occurred on January 23, 1900. Gillette testifies that, at this time, he showed Sendelbach two models which are in evidence as "Gillette's Red Model," and "Gillette Second Structure." He admits that no drawings were made during the interview. Sendelbach claims to have seen only the red model which, it may be remarked, is an embodiment of the construction of Gillette's Patent No. 644,550, granted February 27, 1900. Neither of these models has any bearing upon the question at issue, except as they tend to show that Gillette did not disclose the invention of the issue to Sendelbach during the said visit. The red model is a spokeless wheel provided with roller-bearings which contain clamping-plates, but it affords no suggestion of the present specific invention. The second structure model is nothing but a cylindrical tube provided with a removable flanged collar at each end. These elements might be a part of any one of a number of different structures, and hence the model cannot be considered as a thing which, when shown to Sendelbach, conveyed to him any definite idea of the invention of the issue.

In view of these facts it is plain that Sendelbach's lack of originality is not proved by the evidence relied on for that purpose.

On appeal, the Commissioner of Patents held, that the relation of employer and employee existed as between Gillette and Sendelbach from the time of the interview had at Terre Haute, in December 1899, or January 1900, and that, by reason of the communication then made by Gillette to Sendelbach, the former became entitled to the invention embodied in the patent subsequently issued to Sendelbach, as the true original inventor of the subject-matter of that patent. That in what Sendelbach did in the structure of the hub was purely mechanical, and was only the mechanical structure of the invention of Gillette which had been communicated to Sendelbach for purposes of construction; and that Gillette was in no manner divested of his right of invention by what was done by Sendelbach. This is the ground upon which the Commissioner's decision is based in favor of Gillette. If this ground is not tenable upon the facts of the case, then it is not denied that the claim of Gillette is without sufficient support as against the patent of Sendelbach.

As bearing upon this question, what are the principles of the patent law that govern in such cases, and to which Gillette must show his case to conform? The law upon the subject is well settled by repeated decisions of the Supreme Court of the United States. Where a party claims an invention and also to have communicated that invention to another who has applied mechanical work thereto, and put such invention into practice, claiming the same as his own, the communication, in order to be effectual, must be shown to have been full and clear as to all the essential elements of the invention, and such as was sufficient in itself to enable the party to whom the disclosure was made to give the invention practical form and effect without the exercise of invention on his part. In other words, his work, in giving form and effect to the invention communicated, must be nothing more than the exercise of mechanical skill, as applied to the subject-matter. If the work embodies invention, as distinguished from mechanical skill, it cannot be successfully claimed by another, except where there has been an agreement that such completed invention, or the patent therefor, shall inure to

the benefit of the party making the communication. (*Robinson on Patents*, secs. 84 and 324, and notes.)

In the case of *Hapgood* v. *Hewitt*, (119 U. S., 226,) this question was fully considered by the Supreme Court. That was a suit in equity by the trustees of a dissolved corporation to compel an employee of the corporation to convey to the plaintiffs the title to Letters Patent obtained by him for an invention made while he was in their employ and during the time they were entitled to his services. But it not appearing from the facts as set out in the bill, that there was any agreement between the employee and the corporation, that the latter was to have the title to or any interest in the invention, or in the patent therefor, it was held upon demurrer, that the complainants were not entitled to what they claimed in the bill.

In that case, the decision of the circuit court (11 Biss., 184) was placed on the ground (1) that Hewitt was not expressly required by his contract of employment, to exercise his inventive faculties for the benefit of his employer, and there was nothing in the facts alleged from which it could be fairly inferred that he was required or expected to do so; (2) that whatever right the employer had to the invention by the terms of Hewitt's contract of employment, was a naked license to make and sell the patented improvement as a part of its business, which right, if it existed, was a mere personal one, and not transferable, and was extinguished with the dissolution of the corporation.

This decision of the circuit court was held to be correct by the Supreme Court, the latter Court saying:

> We are of opinion that the views taken of the case by the circuit court were correct. There is nothing set forth in the bill as to any agreement between the corporation and Hewitt that the former was to have the title to his inventions, or to any patent that he might obtain for them. The utmost that can be made out of the allegations is that the corporation was to have a license or right to use the inventions in making plows. It is not averred that anything passed between the parties as to a patent.

This case shows very clearly that an inventor cannot be deprived of the right to his invention, where he has used due diligence in the assertion of his right, except by express contract, or by a course of conduct that fairly gives rise to an implication of an intention to part with or dispose of the right; and a presumption to that effect is not lightly to be made.

The case of *Agawam Co.* v. *Jordan* (7 Wall., 583) is a case often referred to, and has a special bearing upon the present controversy in several respects. That was a case of a bill in equity for infringement, and the defense to which, among other things, was that the combinations set forth in the several claims of the patent were first invented by one Winslow, and that neither of them was original with the assignor of the complainant. In that case it was held that a defense—

> that the patentee fraudulently and surreptitiously obtained the patent for that which he knew was invented by another—

was not a sufficient defense to a charge of infringement, unless accompanied by the further allegation that the alleged first inventor was at the time using reasonable diligence in adopting and perfecting the invention. And further, that the inventor who first perfects a machine, and makes it capable of useful operation, is entitled to the patent.

The learned Justice Clifford, who delivered the opinion in that case, said:

> They do not pretend that he (Winslow) invented or even suggested the *entire invention*, nor *all* of the several elements embraced in any one of the separate combinations as expressed in the claims of the patent; and if they did, it could not for a moment be sustained, as it finds no support whatever in the evidence. None of the devices described in the specifications are new, but the claims of the patent are for the several *combinations of the described elements arranged in the manner set forth*, and for the purpose of working out the described results. Regarded in that light, it is clear that the concession that the person named (Winslow) did not invent nor suggest the *entire invention, nor any one of the separate combinations*, is equivalent to an abandonment of the proposition under consideration, as it is clear to a demonstration that nothing short of that averment can be a valid defense.

And further on the Court say:

> Persons employed, as much as employers, are entitled to their own independent inventions, but when the employer has conceived the plan of an invention and is engaged in experiments to perfect it, no suggestions from an employee, not amounting to a new method or arrangement, which, *in itself is a complete invention*, is sufficient to deprive the employer of the exclusive property in the perfected improvement. But where the suggestions go to make up *a complete and perfect machine, embracing the substance of all that is embodied in the patent* subsequently issued to the party to whom the suggestions were made, the patent is invalid, because the real invention or discovery belonged to another.

The purport of the defense in that case, as declared by the Court, was that the invention was made by Winslow, and not by the assignor of the complainant, and in regard to such defense the Court said:

> The settled rule of law is, that whoever first perfects a machine is entitled to the patent, and is the real inventor, although others may have previously had the idea and made some experiments toward putting it in operation. He is the inventor, and is entitled to the patent, who first brought the machine to perfection and made it capable of useful operation. (*Washburn* v. *Gould*, 3 Sto. Rep., 133.)

It was further said in that case—

> that suggestions from another, made during the progress of such experiments, in order that they may be sufficient to defeat a patent subsequently issued, must have embraced the plan of the improvement, and must have furnished such information to the person to whom the communication was made, that it would have enabled an ordinary mechanic, without the exercise of any ingenuity and special skill on his part, to construct and put the improvement in successful operation.

In other words, the communication must embrace a complete invention.

But these general principles are to be taken with this qualification, that—

> no one is entitled to a patent for that which he did not invent unless he can show a legal title to the same from the inventor or by operation of law; but when a person has discovered an improved principle in a machine, manufacture, or composition of matter, and employs other persons to assist him in carrying out that principle, and they, in the course of experiments arising from that employment, make valuable discoveries *ancillary* to the plan and preconceived design of the employer, such suggested improvements are in general to be regarded as the property of the party who discovered the original improved principle, and may be embodied in his patent as a part of his invention.

Now, in view of these principles, the question is, as matter of fact, whether there was a communication made by Gillette to Sendelbach, in respect to the invention of the present issue, before the application made by Sendelbach to the Patent Office for the patent that issued to him; and if such communication was made, whether it was of such special character as to the combination of parts as to have enabled a mechanic of ordinary ingenuity and skill, in that particular trade or calling, to have constructed and put the improvement in successful operation, as described in the issue. Unless such state of facts be shown the contention on the part of Gillette, as to the alleged result of





the communication to Sendelbach, cannot be sustained.

In his testimony, Gillette gives the following statement of what was disclosed to Sendelbach in the interview at Terre Haute:

> Q. X. 61. When you had your interview with Sendelbach at Terre Haute, what invention was it that you explained to him at that time, and in what way did you explain it?
> A. Well, he had this structure before him, (pointing to red model) and also this structure (pointing to structure No. 2.)
> Q. X. 62. In showing these models, what particular feature of the construction did you call Sendelbach's attention to?
> A. Well, I called his attention to the fact that in the order for wheels I wanted the flanges extended up to the outer diameter so that I could have the hub cut off just outside the hub-band of an ordinary wooden hub. I ordered those flanges made that way so that I could cut the ordinary hub off all spoke-wheels and put these flanges onto the surfaces there. But the structure that I would adopt as a standard, would be with this extension of the flange here, and carried out in front to form part of the hub. I made that with just a pencil sketch, nothing more than this. Just so he could get a clear idea of what I wanted.

This is certainly not very clear, and the meaning intended to be conveyed is of questionable import.

He was asked whether he called Sendelbach's attention to his roller-bearing inventions. To which he replied:

> Well, now I could not say. Of course, I was enthusiastic with the roller-bearing proposition, and talked with him about it, and what I believed could be done with it. He also talked to me on the same line, and made the remark that with this structure he believed that I could control the wheel business of the world.

He further stated, that he ordered the wheels for the purpose of supplying the demand for spoke-wheel lumber-carts, for which he was receiving orders.

It is true, Gillette says that Sendelbach's attention was called to the red model and to structure No. 2; and also to the fact that in the order for wheels he wanted the flanges extended so that he could have the hub cut off just outside the hub-bands of any ordinary wooden hub. But he says the structure that he would adopt as a standard would be with the extension of the flanges here, and carried out in front to form a part of the hub. He says he made a pencil sketch of this, and nothing more, so that Sendelbach could get a clear idea of what he wanted. But he does not seem to have based his order for wheels, or any communication that he may have made upon the subject, upon any model or drawing before him; he only attempted to make a pencil sketch of what he wanted; and this clearly falls very far short of a full description of all the elements of the invention described in the issue of this case. There seems to have been considerable talk between the parties, in respect to the roller-bearing invention of Gillette, but that forms no part of the present issue.

In the testimony of Sendelbach, he explicitly denies that Gillette ever imparted to him any information whatever with respect to the invention which forms the subject-matter of this interference; that he, Sendelbach, received no disclosure in any form from Gillette which conveyed to him the invention which he claims in his patent. He says that the red model was the only exhibit shown him at the interview referred to, and in this he is corroborated by the testimony of Mrs. Way. He says that Gillette tried to make a sketch of what he wanted, but he gave it up and said he would send a blue-print upon his return home. The blue-print was received, but not until about April 12 or 13 thereafter. Sendelbach says, he understood that the wheels were to have the old-fashioned long wood hub, and that was the wheel Gillette explained to him. This statement would seem to derive considerable support from the fact that the blue-print sent to the Standard Wheel Company shows an old-fashioned wood hub, about nine inches long, and nine inches in diameter, and provided with point-band, butt-band, and two spoke-bands lying close to the spokes. The hub is fitted with a box on which are loose end flanges counter-sunk into the ends of the hub. The box and flanges seem to be the same as Gillette's "Second Structure." Between the box and the axle-bearing is a set of cylindrical rollers. This is what is shown by the copy of the blue-print as it appears in the brief of the appellant, which we assume to be correct. In the letter to the Standard Wheel Company, accompanying the blue-print, it is stated that the hubs are to be *eight inches long*, and that a set of flanges would be sent to the Standard Wheel Company to be used in the construction of a sample wheel. These flanges were sent and received about the middle of May, 1900. They embodied the same structure as that shown in the blue-print previously sent. It is very clear the blue-print and the letter accompanying the same, did not describe the structure of the hub described in the patent subsequently issued to Sendelbach, and described in the issue of this interference.

In the preliminary statement of Gillette he states that he made a drawing of his invention, or had a drawing thereof made, in June 1898, and, about the same time, a model was also made; and that the invention was embodied in a complete working wheel about the 5th of September, 1898, and that the wheels were successfully operated about the 15th of September, 1898. With the invention thus completed, it is rather remarkable, if it be the same as that described in the present issue of interference, that it was not shown in the blue-print, and specifically referred to in the letter sent with the blue-print. Moreover, there is no reason assigned for the delay and apparent want of diligence in making application for the patent, if the invention was completed as stated; as the application was not made until January 3, 1901—nearly two years and four months after the invention was completed and put in working operation, and about six months after the patent granted to Sendelbach. We do not say that this delay would be conclusive of itself to defeat the application of Gillette; but it is a circumstance of considerable significance when considered in connection with the other facts of the case.

In view of all the facts of the case, it is impossible to conclude that Gillette has established beyond reasonable doubt that his claim to the invention described in the present issue of interference is prior and superior to the claim of Sendelbach to that invention, and which is covered by the patent issued to the latter; or that Sendelbach's claim to the invention of the patent is founded upon disclo-

sures made to him by Gillette. The decision made in the Patent Office in allowing the claim and issuing the patent to Sendelbach is presumed to be correct; and the charge that the patentee fraudulently and surreptitiously obtained the patent for an invention which he well knew belonged to another, can only be sustained by the clearest and most undoubted proof. Upon careful examination of all the facts and circumstances of this case, we are brought to the conclusion that there is error in the decision of the Commissioner, and that the right of priority belongs to Sendelbach. We therefore reverse the decision of the Commissioner, and direct the proceedings and this decision to be certified to the Commissioner of Patents as directed by the statute. Decision reversed.

## Court of Appeals of the District of Columbia.

### TALBOT v. MONELL.

*Decided January 19, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION.
*Held* that Talbot was not in possession of the invention before Monell made it, and therefore the decision of the Commissioner in favor of Monell affirmed.

2. SAME—BURDEN OF PROOF—PATENTEE AGAINST APPLICANT—UNANIMOUS DECISIONS.
Where an applicant is in interference with a patentee and the unanimous decisions of the tribunals of the Patent Office are against him, *Held* that when he reaches the court he has the double burden of proving his case beyond a reasonable doubt.

3. SAME—PRIORITY OF INVENTION—CONDUCT DISCREDITING CLAIM.
Where Talbot claims to have been in possession of the invention for ten years, but made no effort to patent it, although he patented other processes, and where he ridiculed Monell's process as impractical and after the grant of Monell's patent he copied it and secured an interference, *Held* that his claim as the prior inventor is discredited.

*Mr. Chas. N. Butler* for the appellant.
*Mr. Clarence P. Byrnes, Mr. John R. Bennett,* and *Mr. Thomas W. Bakewell* for the appellee.

MORRIS, *J.:*

This is an appeal from the decision of the Commissioner of Patents in an interference case, wherein the appellant Benjamin Talbot and the appellee Ambrose Monell contend over the question which of them is the prior inventor of a process for the manufacture of steel, which is described in three several counts as follows:

1. The method herein described of making steel which consists in introducing into a basic open-hearth furnace iron oxid and lime and molten pig-iron, substantially eliminating phosphorus from the iron while the ore is at a comparatively low temperature; withdrawing at an early stage in the removal of carbon the bulk of the slag containing the eliminated phosphorus, and heating the bath of metal and oxidizing the carbon until the carbon has been reduced to the point at which the metal is to be tapped.

2. The method herein described of making steel which consists in introducing into a basic open-hearth furnace iron oxid and lime and molten pig-iron, substantially eliminating phosphorus from the iron while the iron is at a comparatively low temperature; withdrawing at an early stage in the removal of carbon the bulk of the slag containing the eliminated phosphorus, without withdrawing the metal, then heating the bath of metal and oxidizing the carbon until the carbon has been reduced to the point at which the metal is to be tapped.

3. The method herein described of making steel which consists in introducing into a basic open-hearth furnace iron oxid and lime, heating the same, then introducing molten pig-iron, substantially eliminating phosphorus from the iron while the iron is at a comparatively low temperature; and withdrawing, at an early stage in the removal of carbon, the bulk of the slag containing the eliminated phosphorus, heating the bath of metal and oxidizing the carbon until the carbon has been reduced to the point at which the metal is to be tapped.

The counts are substantially the same; and the process in controversy is one which is known as the "basic pig and ore process," as distinguished from the Bessemer process for the manufacture of steel.

Monell, the appellee, has a patent for the invention issued to him on June 9, 1900, upon an application filed on March 10, 1900. His preliminary statement alleges conception of the invention by him on January 6, 1900; disclosure of it to others on the same day; and reduction to practice on February 1, 1900.

Talbot, the appellant, is the junior applicant. He did not file his application until December 6, 1900, which was six months after the issue of the patent to Monell; and he then merely took the claims and specifications of Monell's patent, and introduced them into his own application. His preliminary statement alleged conception of the issue by him about the year 1888, disclosure to others about the middle of the year 1891, and reduction to practice in January of 1893.

After voluminous testimony taken on both sides, the three several tribunals of the Patent Office concurred in awarding judgment of priority of invention to the appellee Monell; and from the justment of the Commissioner Talbot has appealed.

The appellant has the double burden in this court of proving his case beyond a reasonable doubt; first, because he has a patent to overcome; and, second, because of the concurrent decisions of the Patent Office against him. He assumes to bear the burden successfully by seeking to show that the tribunals of the Patent Office, in the first place, construed the issues too broadly, and, in the second place, construed them too narrowly—an argument which certainly savors to some extent of inconsistency. We do not find that they have done anything of the kind. There does not seem to be any ambiguity about the issues. If there were, it would be proper to construe them in the light of the specifications from which they were taken. The appellant adopted them as his own by taking them bodily from the appellee's specifications, and it was for the specifications to determine their proper construction, and not for the appellant. But we find no such difference or difficulty of construction as the appellant assumes. The tribunals of the Patent Office have simply held that certain operations of the appellant did not fall within the terms of the issue; and in that conclusion we think that they were entirely right. That the appellant himself at one time thought that they were right, is clear from a paper in the *Journal of the Steel Institute* for 1900 from the pen of the appellant, in which he contrasts his own operations with those of the appellee, and ridicules the latter as inoperative.

We do not deem it necessary to add another opinion to the three full and satisfactory opinions of the tribunals of the Patent Office. We are satisfied to adopt as our own what the Commissioner says in his clear and cogent conclusion in the case. He says:

> The evidence, taken as a whole, fails to show that Talbot was in possession of the invention prior to the date when Monell made it. Aside from the testimony as to the character of the processes performed by Talbot, his conduct in reference to this invention is very significant and entitled to much weight. He claims to have been in possession of it more than ten years ago; but he made no effort to obtain a patent upon it, although he did patent some of the processes which he performed, and which he now claims come within the present issue. When Monell read a paper before the Iron and Steel Institute, describing his process, Talbot ridiculed it as a whole, although he said that it included some steps which he had invented. Even after hearing that paper, Talbot did not come in with his application; but six months later, after he had visited Homestead and seen Monell's process in operation, he made great haste to prepare his application. In preparing that application he did not describe what he had done, but copied the description of Monell's process from Monell's patent.

We have repeatedly held that action such as is here stated on the part of Talbot—and the statement is fully justified by the record—is sufficient ground to discredit the claim of priority of invention.

We are satisfied that the Commissioner's conclusion was right and just, and that it should be affirmed; and that the credit of priority of invention should be awarded to the appellee Monell.

The clerk of the court will certify this opinion, and the proceedings of the court in the premises, to the Commissioner of Patents according to law.



# NEW PATENT LAW OF MEXICO.

The following is a translation of the new patent law of the Republic of Mexico as published by the Department of Commerce and Labor:

### CHAPTER I.

*Concerning patents.*

ARTICLE 1. All persons who may have made a new invention of an industrial character may acquire the exclusive right, by virtue of the provisions of articles 28 and 85 of the constitution, to exploit it for their own benefit during a certain period of time, subject to the rules and conditions contained in this law. In order to acquire this right it is necessary to obtain a patent of invention.

ART. 2. The following are patentable:
I. A new industrial product.
II. The application of new means to obtain an industrial product or result.
III. The new application of known means to obtain an industrial product or result.

ART. 3. The following are not patentable:
I. A discovery or invention which simply consists in bringing to light or making evident something that already existed in nature, even though before the invention it was unknown by men.
II. Scientific principles or discoveries of a purely speculative nature.
III. Inventions or discoveries of which the exploitation may be contrary to prohibitive laws, the public safety or health, to decency or morality.
IV. Chemical products; but new processes to obtain same and new industrial applications therefor are patentable.

ART. 4. An invention is not to be considered as new when, either in this country or abroad and prior to the patent application, it has already been carried out for a commercial or industrial purpose or has received, by means of a printed publication, sufficient publicity to be put in practice, for in such case the invention is considered to have become public property.

ART. 5. The precept contained in the foregoing article does not apply to the author of the invention in question nor to the owner of a patent obtained abroad in respect to said invention in the following cases:
I. When the publicity is due to the presentation of the invention at a local, regional, or international exposition, which is either official or officially recognized; provided that, prior to such presentation, the documents mentioned in the rules of practice be deposited in the Patent Office and that the application be presented in the same office before the expiration of three months after the official closing of the exposition.
II. When the owner of the foreign patent presents his application for the issuance of a patent in Mexico within three months counted from the day on which, in accordance with the law of the country in which said foreign patent was issued, the invention in question becomes public.
In the event of there being two or more foreign patents, the period of three months will be counted with respect to the patent which may first have received publicity.
III. When the application is presented within the periods of time provided by international treaties applicable to the case or within the period of twelve months referred to by article 12.
In case two or more of the kinds of publicity, to which this article refers, coincide and when, after making the necessary commutation, it is found that the periods of time do not terminate on the same day, the interested party will be obliged to present his application within the period of time which terminates first.
Moreover, the periods of time referred to by Section III prevail over the others, and, therefore, in the event of coincidence, the interested party will enjoy the full benefit of them, even though they be longer.

ART. 6. The owner of a patent has the exclusive right—
I. To exploit it, for his own benefit, during the term allowed by this law, either personally or through others with his permission.
II. To prosecute before the tribunals those who infringe upon his right either by the industrial manufacture of the patented article or by the industrial use or employment of the patented process or method, or because for a commercial purpose they keep in their possession, offer for sale, sell, or introduce into the national territory, one or more of such articles manufactured without his consent.
In the case of industrial manufacture, the malicious intention is not necessary for penal liability; but that intention is indispensable in the case of the other contingencies provided for in this Section II.

ART. 7. Notwithstanding what is provided in the foregoing article the patent produces no effect—
I. Against similar objects which in transit pass through the national territory or tarry in its territorial waters.
II. Against a third party who was already exploiting the same patented object in the country prior to the date on which the patent application was presented or who had made the necessary preparations to exploit it.
III. Against a third party, who, for experimental or studious ends, constructs an object or conducts a process which is the same, or substantially the same, as that patented.

ART. 8. A patent may be granted to two or more persons conjointly if they conjointly solicit it.

### CHAPTER II.

*Concerning the application and granting of patents.*

ART. 9. Any person who desires to obtain a patent must present to the Patent Office a petition accompanied by the following documents:
I. A specification.
II. A claim.
III. A drawing or drawings if the case requires them in the opinion of the inventor.
IV. Two copies of the foregoing documents.

ART. 10. The Patent Office will make a purely administrative examination of the documents presented in order to ascertain whether they are complete and whether they satisfy the requirements of form laid down by the respective rules of practice.
In consequence this examination will on no account turn upon the novelty or utility of the object sought to be patented nor upon the sufficiency, clearness, and exactness of the documents.
If the Patent Office finds that the documents do not satisfy the requirements as to which it is competent to examine them or that the object for which a patent is sought comes under the provisions of Section III, article 3, it will consider the documents as not having been presented, and, by means of a notice, will so inform the interested party. If the interested party is not conformable, he may have recourse to the tribunals, as provided by Chapter XII of this law.
In case the Patent Office is satisfied with the regularity of the documents presented, it will, by means of a notice, inform the interested party to that effect.

ART. 11. The legal date of a patent is the date of the legal presentation, at the Patent Office, of the petition and documents which constitute it, and from that date it is supposed to have been granted and produces its legal effects, save as provided in the following article.
In the case of Section I, article 5, the legal date of the patent will be that on which the petition referred to in said section is presented.

ART. 12. The legal date of a patent, solicited in Mexico and already applied for by the same person in one or more foreign states, will be that appertaining to the foreign patent first applied for, provided that it be applied for in Mexico within twelve months counted from the date of the first patent application abroad, in the case of a patent of invention, or within four months from the same date in the case of a patent for an industrial design or model, and provided also that the foreign state in which the patent was first applied for grants the same right to citizens of Mexico.
In consequence all patents applied for in Mexico under these conditions will have absolutely the same force and will produce the same effects as if they had been applied for on the day and hour of their legal date.

ART. 13. Patents will be granted without prejudice to third parties and without guaranty as to their novelty or utility. Their issuance only constitutes a presumption as to those qualities and of the rights of the holder, until the contrary is proved.

ART. 14. He who, without being the author of an invention, applies for a patent must accredit his character as representative or attorney of the author. In order to accredit the character of representative or attorney, a simple letter of authorization signed by the author and two witnesses will suffice. But the Patent Office will be empowered to demand the ratification of the signatures when it deems fit.

### CHAPTER III.

*Concerning terms and fiscal dues.*

ART. 15. Patents of invention are granted for a period of twenty years, counted from their legal date.

ART. 16. This period is divided into two—the first of one year and the second of nineteen years.

ART. 17. The tax for the first period of one year is $5.
The tax for the second period, or for the remaining nineteen years, is $35.
The rules of practice will determine the fiscal dues payable for copies, issuance of certificates, replacement of title deeds, etc.
The payment of all these dues will be effected strictly in stamps of the federal stamp revenue in the form provided by the rules of practice.

ART. 18. The period of time fixed by article 15 may be extended for five years longer, within the discretion of the Executive, subject to the payment of the additional dues which said Executive may see fit to fix.
He who desires to obtain the concession referred to by this article must address a petition to the Patent Office within the penultimate half-yearly period of the ordinary term of twenty years.
He must also prove that the patent has been in uninterrupted industrial exploitation in the national territory for at least the last two years immediately preceding the date of his application.

CHAPTER IV.

*Concerning exploitation.*

ART. 19. The exploitation of a patent is not obligatory; but if after the expiration of three years, counted from its legal date, it is not exploited industrially within the national territory, or if after the expiration of those three years its exploitation has been suspended for more than three consecutive months, the Patent Office may grant to third parties a license to effect said exploitation in the form set forth in the following articles:

ART. 20. Any person desiring to obtain a license such as referred to in the foregoing article will have recourse to the Patent Office, setting forth the reasons or grounds whereon he bases his petition. This petition will be referred to the owner of the patent and an unextendible term of one month will be given within which both sides may present to the Office such proofs as they may deem expedient. Within that same period the Office will be entitled to ask for information, to appoint inspectors, and in general to do everything which, without departing from its character as an administrative authority, it may consider expedient to do in order to ascertain the true facts.

ART. 21. When the owner of the patent in question shall not prove that he has commenced industrially to exploit the object of said patent in accordance with the provisions of article 20, no evidence on his side will be accepted, but forthwith and without allowing the period for proofs mentioned in the foregoing article the license requested will be granted to the applicant.

ART. 22. Within fifteen days, counted from the expiration of the period for the rendering of proofs provided by article 20, or within eight days, counted from the presentation of the application for license under the terms of the foregoing article, the Patent Office will decide as to whether the license asked for is or is not to be granted.

A party in interest who is not conformable with this resolution will be entitled to have recourse to either of the district judges of the City of Mexico, with a view to the revocation of said resolution, acting in the capacity of plaintiff, while the other interested party will act as defendant, the former being obliged to present his suit within the unextendible term of eight days counted from the date whereon the administrative resolution is communicated to him, with the understanding that, if he does not so present his suit, he will be considered as having desisted from this action and as conformable with the resolution in question.

The trial held before said judge in these cases shall be subject to the provisions of this law.

ART. 23. The effects of the administrative resolution granting the license asked for shall not be suspended because the owner of the patent has had recourse to the judicial authority; so that the person who has obtained the license is entitled to exploit the patent at once without the obligation of giving a bond or of complying with any other requirement.

ART. 24. The person who has obtained a license of the kind in question will be obliged to begin the exploitation of the patent within a period of two months counted from the date of the resolution, if said resolution was handed down by the Patent Office, or from the date of the legal notification thereof, if the resolution was dictated by a judicial authority, and must not suspend said exploitation for more than two consecutive months.

ART. 25. One-half of the net earnings obtained by the owner of a license as the result of the exploitation will belong to the patentee, who, therefore, will be entitled to exercise vigilance over said exploitation and to demand, judicially, if necessary, the payment of that half.

The provisions of this article are without prejudice to any agreement or agreements into which the parties concerned are entirely free to enter.

ART. 26. In case the owner of the patent is absent or fails to present himself to enforce his rights, the owner of the license will be obliged to deposit every two months the half of the profits referred to in the foregoing article in such bank or institution of credit as shall be designated to him by the Patent Office, and, moreover, he must keep that Office informed as to the proceeds of exploitation and the net earnings by means of bimonthly reports.

Failure to comply with the requirements of this article will cause the Patent Office, at the request of the owner of the patent, to revoke the license granted.

The necessary notices will be published in the *Official Patent Gazette;* if the person obliged to give these notices shall give false information therein to the Office, he will be liable to the penalty of major arrest and a fine of the second class, or to one or the other penalty, within the discretion of the judge; and, in any event, he will be liable for damages to the owner of the patent.

ART. 27. The licenses that may be granted in accordance with the foregoing articles by the Patent Office do not deprive the patentee of the right of exploiting the invention himself and of granting such licenses as he may desire.

ART. 28. The patentee is entitled to ask for the revocation of a license granted by the Patent Office when, after two years from the granting of the license, the owner of the patent, or any other person in his name, shall be exploiting the patent industrially.

The indispensable requisite for the taking into consideration of the petition in question is a demonstration on the part of the patentee to the Patent Office, in accordance with article 20, that the exploitation has been initiated; for otherwise the petition will be forthwith rejected, and against this resolution there shall be no recourse.

It will also be an indispensable condition for the acceptance from a licensee of proofs that he has initiated the exploitation within the period of two months allowed him by the law, that he shall, within the proper time, have forwarded to the Patent Office the evidence alluded to by said article 20.

In other respects the method for bringing about the revocation referred to by the first paragraph of this article will be subject to the provisions of articles 20, 21, 22, and 23 in so far as they are applicable.

ART. 29. A patentee is entitled to prosecute before the tribunals as an usurper of his patent, or as an illegal operator thereof, the holder of a license granted by the Patent Office who has not commenced the exploitation of the patent within the period of two months allowed by article 24 or who has suspended the exploitation for more than two consecutive months, and who nevertheless shall be exploiting the patent, save in the event of the suspension having been due to a fortuitous contingency or to force majeure.

ART. 30. Both the patentee and the person to whom the Patent Office shall have granted a license for the exploitation of the patent are under the obligation, when they shall have commenced said exploitation, to afford evidence thereof in any legal manner to said Office within a period of time not exceeding fifteen days.

ART. 31. All patented articles will bear a mark showing that they are patented within the number and date of the patent.

CHAPTER V.

*Concerning the title deed and seal.*

ART. 32. Patents will be issued in the name of the President of the Republic by the Patent Office and will be signed by the Minister of Fomento. They will set forth:

The patent number.

The name of the person or persons to whom they are granted.

Their duration.

The object for which they were granted.

Their legal date and the date of their issuance.

And they will be sealed with the special seal of the Patent Office.

The patent, with one copy of the specification, claim, and drawings, when there are any, will constitute the title deed accrediting the rights of the patentee.

ART. 33. The force of the patent applies only to the contents of the claim, the specifications and the drawings, if there are any, only serving to explain the contents of said claim.

ART. 34. There will be in the Patent Office a special seal which will serve to legalize patents.

CHAPTER VI.

*Concerning official publicity.*

ART. 35. The Patent Office will publish in the *Official Patent and Trade-Mark Gazette*, at least every two months, a list of patents granted and at least annually will publish a special book containing the claim and one or more of the drawings of each patent.

CHAPTER VII.

*Concerning examination.*

ART. 36. The Patent Office will, at the request of an interested party, make, with respect to the novelty of a patent asked for, an examination without guaranty. The result of this examination will be communicated in writing to the interested party.

This examination will also be made at the request of any one for the purpose of ascertaining whether an article is patented in Mexico or is public property.

In order to obtain this examination the method laid down in the rules of practice of this law must be followed.

CHAPTER VIII.

*Concerning the transmission of patent rights.*

ART. 37. The rights conferred by a patent may be transferred, wholly or in part, by any of the means provided by law for the transfer of any other right. But no act of transfer or any other involving a modification of the rights in question can prejudice a third party if it has not been registered in the Patent Office.

The rules of practice will fix the tax to be paid for this registration, which must not exceed $20.

CHAPTER IX.

*Concerning expropriation.*

ART. 38. A patent of invention may be expropriated by the Federal Executive on the ground of public utility, causing the invention immediately to become public property, subject to prior indemnification and to the same formalities provided by the laws in force on the subject for the expropriation of real estate in so far as they are applicable.

When the invention consists of a new weapon, warlike instrument, explosive, or, in general, any improvement in machines or munitions of war, capable of being applied to the national defense, and which, in the opinion of the Federal Executive, ought to be utilized only by the National Government, the expropriation effected with the same formalities as are mentioned in the foregoing paragraph may include not only the patent, but also the invention, even though not yet patented, and in these cases the invention will not become public property, but the Government will become the exclusive owner both of it and of the patent when issued.

ART. 39. The Patent Office will not make public an expropriated patent when the expropriation has occurred under the circumstances alluded to in the second paragraph of the foregoing article.

CHAPTER X.

*Concerning the forfeiture and annulment of patents.*

ART. 40. Patents are forfeited—

I. At the expiration of the one-year period mentioned in article 16, if, before its expiration, the dues for the second period have not been paid.

II. At the expiration of the second period mentioned by article 16.

III. At the expiration of the extension, when one has been granted.

ART. 41. The Patent Office will publish in the *Gazette* the name and number of each of the patents forfeited.

ART. 42. Patents are null:

I. When they contravene the provisions of articles 3, 4, 5, and 102.

II. When the claim is not sufficiently clear and explicit, so that it is impossible to ascertain therefrom what is claimed as new.

III. When there is not sufficient clearness and precision in the specification and drawings, so that, in the opinion of experts, they are not sufficient, taken together, to enable a person to construct or produce what they purport to describe.

IV. When the object secured by the patent is distinct from that for which it has been solicited.

V. When previously another similar patent has been granted in the country or abroad, even though it may have been forfeited.

ART. 43. A patent can only be nullified by a judicial authority and only on the ground of one of the causes enumerated in the foregoing article.

ART. 44. The right to take action for the annulment of patents appertains to any one who considers himself aggrieved thereby, and to the Federal Attorney-General in cases in which the Federation has an interest.

ART. 45. The district judges of the capital of the Republic are competent to try suits for the annulment of patents, saving the provisions of articles 46 and 62.

In case jurisdiction belongs to the district judges, the procedure set forth in Chapter XIII will be followed.

ART. 46. Nullity and forfeiture may be pleaded as a defense, and in that event the judge before whom the suit has been brought will be competent to consider them.

ART. 47. The final sentence decreeing the annulment of a patent will be communicated by the tribunal or judge that has delivered same to the Patent and Trade-Mark Office, which will cause it to be published in the *Diario Oficial and Patent Gazette;* it will also enter it upon the registry of patents and will append a note thereof to all entries referring to that patent.

CHAPTER XI.

*Concerning the penal and civil liability of those who infringe patent rights.*

ART. 48. The industrial manufacture of patented articles and the employment for a commercial or industrial purpose of patented methods without the consent of the patentee will be chastised with a fine of from $500 to $2,000 and with one to three years' imprisonment, or with one or the other penalty at the discretion of the judge.

ART. 49. The malicious use, for a commercial or industrial purpose, of patented objects will be chastised with a fine of from $50 to $1,000 and with imprisonment of from six months to two years, or with one alone of those penalties at the discretion of the judge.

ART. 50. The burden of proving that the manufacture is not industrial and that the use is neither commercial nor industrial lies upon the accused party.

ART. 51. A fine of from $5 to $500 and major arrest, or one or other of those penalties, at the discretion of the judge, will be visited upon the person who maliciously—

I. Vends, puts upon sale or in circulation patented objects that have been manufactured without the consent of the patentee.

II. Imports, for an industrial or commercial purpose, articles protected wholly or in part by a patent without the consent of the patentee.

III. Vends, puts on sale or into circulation products obtained by patented methods without the consent of the patentee.

ART. 52. All other malicious acts not included among those enumerated in the foregoing articles and which in any manner restrict, hamper, or prevent the legitimate exercise of the rights which this law grants to the patentee, will be chastised with a fine of from $5 to $500 and with major arrest, or with either of those penalties at the discretion of the judge.

ART. 53. In case of the repetition of an offense an augmentation of one-half of the prescribed penalties will be imposed for the first time, and for each new repetition another extra half will be added to the penalty.

All persons will be regarded as relapsed offenders who shall have committed the new delinquency imputed to them before the expiration of five years from the final sentence whereby they were declared guilty of any of the transgressions mentioned by this law and even though the former transgression related to a patent other than that affected by the new transgression.

ART. 54. When a delinquency or transgression is committed for which this law makes no provision and for which a penalty is provided in the penal code of the Federal District, and also when the general rules as to delinquencies and transgressions, degrees of intentional culpability, accumulation of guilt, application of penalties, criminal and civil liability, are concerned, provided the present law contains no special precept as to such matters, then the rules laid down in said penal code will be observed and its precepts are, therefore, declared obligatory throughout the Republic when patents of invention are involved.

ART. 55. Penal action for the prosecution of persons guilty of the delinquencies referred to by this law can only be initiated and carried on by virtue of a complaint and suit brought by the patentee; and another indispensable requisite for the chastisement of the guilty party is that the objects protected by the patent in question, or the wrapping in which they are put up, bear a mark indicating that the object is patented, with the number and date of the patent.

Those who may be exploiting something which, in the opinion of the Patent Office obtained prior to the presentation of the complaint, is held to have become public property will not incur penal liability.

Nor will penal liability be incurred by persons who under a patent may be exploiting something which, in the opinion of the Patent Office obtained prior to the presentation of the complaint, is held to have been new when the patent was applied for.

ART. 56. In addition to the penalties mentioned by articles 48, etc., infringers will forfeit all the objects illegally manufactured and the utensils and instruments destined specially for their manufacture, which will be adjudicated to the patentee. If any of the products have been already sold, the guilty party will be condemned to pay to the patentee a sum equivalent to the value of those products.

ART. 57. A patentee will also be entitled to exact damages from infringers, and the suit for this purpose must be instituted before a local or federal judge according to circumstances. The suit may also be instituted as an incident in the criminal case in accordance with the provisions of the articles of this law that determine the judicial procedure that governs this department.

ART. 58. Civil actions will be instituted and carried on as provided by Chapter XIII of this law.

ART. 59. The plaintiff may ask the judge to seize objects illegally manufactured and utensils and instruments specially destined for such manufacture and to appoint, on his own responsibility, a receiver therefor. But the following are indispensable conditions for the exercise of this right:

I. That the patent in question be presented, with the opinion of the Patent Office, that the invention was new when said patent was applied for.

II. Proof, by means of the title deed, duly registered in the Patent Office, that the plaintiff is the present owner of the patent.

III. Proof, by any legal means, that the illicit manufacture or exploitation, which serves as the basis for the complaint, really exists.

The fact that the objects illicitly manufactured are the same, or essentially the same, as those protected by the patent, must necessarily be proved by means of a skilled report signed by three experts, who, under oath, will ratify said report before the judge.

IV. Proof, by any legal means, that the objects protected by the patent in question bear a mark showing that they are patented, as well as the number and date of the patent in question; or, if the objects do not lend themselves to this requirement, that the fact of their being patented and the number and date of the patent have been displayed on the cases or wrappings in which the objects are put up when being sold to the public.

V. That a bond which is sufficient in the opinion of the judge be given.

Likewise, during the course of the suit, the seizure referred to in this article may be requested, provided that the requirements above enumerated be complied with.

ART. 60. In the same cases, and subject to the same requirements as provided in the foregoing article, the plaintiff may ask that the employment of patented methods and processes be stopped, and then the judge will notify the defendant to abstain from using them until further order. In this case the requirement expressed in Section IV of the foregoing article will not be necessary.

If the person thus notified shall not obey the order, he may be pressed according to law, and, if necessary, the factory or workshop in question will be ordered closed for as long a time as may be considered necessary.

ART. 61. The measures spoken of in the foregoing two articles, and the prior measures undertaken to warrant them, will be dictated without a hearing being granted to the defendant and on the sole responsibility of the plaintiff, who will be obliged to pay damages accruing on this score to the defendant, either because the plaintiff fails to bring the penal or civil suit required by the circumstances within fifteen days following the date on which the seizure was effected or the prohibition issued, or because the defendant is acquitted, or because the suit is discontinued.

In these cases the seizure referred to by article 59 will be immediately removed or the prohibition to employ the patented method or process spoken of by article 60 will be countermanded.

ART. 62. The judge who tries the delinquencies spoken of in the foregoing articles will also decide as to the nullity, forfeiture, or ownership of the patent when these questions are raised as a defense against penal action, and the sentence delivered on the subject will be communicated to the Patent Office.

ART. 63. A fine of $50 to $1,000 and major arrest, or one of said penalties, will be imposed upon the person who marks his products as patented when they are not.

The prosecution of this delinquency may be instituted at the instance of an interested party or of the prosecuting attorney, and a suit of this nature, as well as all the penal suits to which this chapter refers, will, in any event, be prosecuted ex officio when once initiated.

ART. 64. The tribunals of the Federation are competent to try controversies growing out of this law in the following cases:

I. When the validity or nullity of the patent is the issue, or when it is maintained that the Executive had no power to issue it or issued it without the legal requirements.

II. When objects, processes, or methods are announced as patented without being so.

III. When the patent is the property of the nation.

IV. In any other case in which the Federation is concerned or federal interests are affected.

V. When the object is to bring about the revocation of the acts or decisions of the Patent Office.

In the cases covered by Sections I, II, and V, the district judges of the City of Mexico will be competent.

In the cases referred to in Sections III and IV, the competent judges will be the district judges to whose jurisdiction belongs the domicile of the defendant, if the suit is a civil one, or to whose jurisdiction belongs the place where the delinquency was committed, if the suit is a penal one.

ART. 65. In penal and civil controversies arising out of the application of this law, but in which the interests of private persons only are at stake, the judges competent to try and adjudicate them will be the judges of ordinary jurisdiction as provided by law.

ART. 66. The contents of the foregoing articles do not prevent the carrying out of articles 46 and 62 of this law in cases wherein those precepts are applicable.

### CHAPTER XII.

*Concerning the procedure to obtain the revocation of administrative resolutions.*

ART. 67. In cases wherein interested parties are not conformable with an administrative resolution of the Department of Fomento or the Patent Office, they may, within fifteen days from the communication of that resolution, have recourse to either of the district judges of the City of Mexico, setting forth the reasons of their unconformableness.

ART. 68. If they shall not have done this before the expiration of the period to which the foregoing article refers, the administrative resolution will hold.

ART. 69. The complaint will be made by presenting a written statement, with a simple copy of the latter, which will be compared with the original by the court.

The copy of the written statement will be sent within twenty-four hours to the Patent Office in order that it may render a report within eight days.

ART. 70. As soon as the report is received both it and the complaint will be referred for three days to the prosecuting attorney in order that he may formulate his pleading in the capacity of defendant, representing the Department of Fomento.

ART. 71. If there should be necessity for proofs, a period of time not exceeding ten days shall be opened therefor, and at the expiration of that period a hearing, within three days at the latest, will be fixed, at which the judge will listen to the pleadings of the interested parties and will hand down a decision within five days, whether the parties concerned have appeared or not.

This decision shall be open to appeal in both effects, and the appeal must be taken within the unextendible period of five days.

ART. 72. If an appeal is taken against this sentence the dossier will at once be sent to the proper circuit tribunal, which, after a single hearing to be convoked at the latest within five days, will hand down its decision within five days more, sending a copy thereof to the Patent Office for enforcement.

ART. 73. A copy of the definite sentence will be sent to the authority whose resolution is being appealed from.

ART. 74. If the sentence should declare that there were no grounds for the opposition of the interested party against the administrative resolution, a fine of from $5 to $25 shall be imposed on him.

### CHAPTER XIII.

*Procedure for civil suits.*

ART. 75. Civil suits arising from this law will be carried on and decided summarily by means of the procedure set forth below, saving the provisions of the foregoing chapter and the provisions for criminal suits.

ART. 76. The period for answering the suit will be five days.

ART. 77. No issues requiring prior and special adjudication can be raised, except such as involve the legal character of one of the litigants or the competence or incompetence of the judge.

ART. 78. Both lack of legal character and incompetence must be urged not less than three days before the period for answering the suit.

ART. 79. A question of legal status or character having once been raised, notification will be given for three days to the other litigant, and the incident will be argued through in the same dossier.

ART. 80. If either of the litigants should demand time for evidence, the judge will fix a period, which in no case will exceed ten days.

ART. 81. When the evidence is in, the judge will summon the litigants to a verbal hearing, which will take place within three days, and at which the litigants will adduce such arguments as may serve to establish their rights.

ART. 82. The summons for the hearing produces the effects of a summons for sentence, which the judge will hand down within three days, whether the litigants have or have not attended the hearing.

ART. 83. If time for evidence is not requested, the judge will give his decision after the hearing alone.

ART. 84. If the question of incompetence is raised, it will be argued through in accordance with the provisions of the codes of civil procedure, federal or local, according to circumstances.

ART. 85. Rebuttals involving the essence of the question will be adduced when the suit is answered and will be decided simultaneously with the main issue.

ART. 86. Offset suits and counter suits will only be allowed when the action on which they are based is also subject to summary trial.

ART. 87. The period for evidence on the main issue will be twenty days, extendible for fifteen days more, subject to the judge's discretion, and within that period the flaws of witnesses and instruments may be alleged and proved.

ART. 88. In case either of the litigants takes exception to a document which may be of decisive influence in the litigation, the issue will be followed up in a separate dossier without suspending the procedure; but a definite sentence will not be delivered as to the main issue until an unappealable decision is rendered as to the incidental issue.

ART. 89. If any document is assailed on the score of falsity, the judge trying the case will cause it to be detached from the dossier, leaving a certified copy in its place and will send it to a judge of penal jurisdiction or to a district judge, according to the circumstances of the case, signing it in union with the secretary or the witnesses in attendance, as the case may be.

If the judge trying the main issue possesses mixed jurisdiction (civil and criminal), he will cause the document to be detached from the dossier and will conduct separately the necessary criminal investigation.

ART. 90. In the former case, before the document is forwarded to the competent judge, and in the latter case before the initiation of the criminal action, the party who has presented the document, assailed on the score of falsity, will be asked whether he desires it to be taken into consideration or not. If he insists on availing himself of the document, the suit will be suspended in its then condition until an unappealable sentence be rendered in the matter of the document's falsity. If he does not insist upon said document being taken into consideration, the document in question will be forwarded to the competent judge or will be detached for the institution of the requisite criminal proceedings without causing a suspension of the civil suit.

ART. 91. At the expiration of the period of proof or its extension when granted, the publication of evidence will be at once ordered, the dossier being left open for three days to each of the litigants so that they may make their pleadings in a hearing which will take place at the latest within three days.

ART. 92. At the conclusion of the hearing a citation for sentence will be issued which will be pronounced within the five following days.

ART. 93. The decrees (autos) and sentences pronounced in suits of this nature are only appealable on the basis of indemnification.*

In the case of decrees the appeal must be taken within the unextendible period of three days, and in the case of sentences within the period of five days, also unextendible.

### CHAPTER XIV.

*Procedure for suits of the penal order.*

ART. 94. Suits of a penal nature instituted under the present law, if brought before the federal judges in cases wherein they are competent, shall be conducted in the same manner as are other criminal suits until such time as the code of federal procedure in penal cases shall be issued.

ART. 95. When those same suits have to be tried before local judges in the Federal District, States, or Territories, in accordance with article 97 of the constitution and the present law, the procedure shall be such as is at present prescribed by the laws of each of those localities.

ART. 96. A civil suit, arising out of a penal suit, as provided by this law can be carried on at the same time and before the same court as is trying the penal suit; but if the civil suit reaches the sentence stage before the conclusion of the criminal suit, the civil issue will be held over until the criminal suit reaches the same stage, so that both may be adjudicated in one and the same sentence.

ART. 97. If, owing to the fact that the civil issue has not reached the sentence stage, it is impossible to adjudicate it at the same time as the criminal suit, the civil judge that may be chosen by the plaintiff will thenceforth take up and decide the case, unless the judge who has tried the criminal case exercise mixed jurisdiction.

ART. 98. A civil suit must be instituted and carried on separately before the competent tribunal—

I. When an irrevocable sentence has been pronounced in the penal litigation, without civil action having been opportunely instituted in the criminal suit.

II. When the defendant has died before penal action being taken.

III. When the right to take penal action has expired by limitation but civil action has not, as yet, so expired.

ART. 99. When a litigant has instituted action based on civil liability in a criminal suit, the point will be tried according to articles 76 and following.

ART. 100. If the criminal trial is being conducted before a local tribunal the point involving civil liability will be tried as provided by the respective local legislation.

### CHAPTER XV.

*Concerning publications and the museum.*

ART. 101. The Patent Office will publish a periodical entitled the *Official Gazette of the Patent and Trade-Mark Office*, wherein the patents and trade-marks granted and everything concerning them will be published. It will also publish the indexes, memoirs, and other matter connected with the subject.

A public museum will be established to receive models of apparatus, plans, profiles, drawings, specifications, products, and manufactures connected with patents of invention that may be issued.

*This means that the institution of an appeal does not cause a suspension in the execution of the sentence, but only that the party who won the sentence must indemnify the appellant if in the end the sentence is reversed by a higher court.—*Translator.*





### CHAPTER XVI.

*Concerning patents for models and industrial designs.*

ART. 102. The following are patentable:

All new forms of an industrial product, piece of machinery, tool, statue, bust, alto or basso rilievo, which, by reason of their novel artistic arrangement, or the novel arrangement of their substance, constitute a new and original industrial product. All new designs used for purposes of industrial ornamentation in any substance and displayed thereon by printing, painting, embroidery, weaving, stitching, modeling, casting, engraving, mosaic work, incrustation, repoussé, discoloration, or any other mechanical, physical, or chemical means in such manner that they impart to industrial products on which such designs are used an aspect that is peculiar and sui generis, are also patentable.

ART. 103. When a patent is solicited for an industrial model or design a copy or sample must be presented to the Patent Office, in addition to the documents enumerated in article 9 of this law and those prescribed in the rules of practice thereof.

In case the drawing or drawings representing the design or model for which a patent is sought are difficult of execution, the Patent Office may accept photogravures or photographs.

It may also dispense with the model or sample when their execution is difficult or costly and the drawings suffice to give an exact and precise idea of the object.

ART. 104. Patents for industrial designs and models will be granted for five or ten years, at the option of the applicant. The above periods are unextendible.

ART. 105. The dues for patents on industrial designs or models are as follows:

I. For five years, $5.

II. For ten years, $10.

These dues will be paid in stamps of the federal stamp revenue, in the manner to be provided by the rules of practice.

ART. 106. Patents for industrial designs or models are forfeited at the expiration of the period for which they were granted.

ART. 107. All the provisions governing patents of invention are applicable to patents for industrial models and designs, except the contents of articles 3, 15, 16, 17, and 18.

### CHAPTER XVII.

*Transient enactments.*

ART. 108. This law will go into effect on October 1 of the current year.

ART. 109. Persons who have applied for a patent prior to said date and who have not yet been notified to pay the required dues for the issuance of the title deed will be allowed a period of one month, counted from the date of the coming into operation of the present law, to state to the Patent Office whether they desire that the patent be issued to them on the basis of the application and documents which they have already presented, or whether they desire to amend both with respect to form so as to adapt them to the new law, in which case they will enjoy another unextendible period of one month, counted from the date of the statement wherein to effect such adaptation.

Any change introduced by an applicant in regard to the essence of his invention, under cover of availing himself of the above right, will cause the annulment of the patent.

ART. 110. If either of the two periods mentioned in the foregoing article expires without the applicant having availed himself of the right for which said periods are respectively conceded, said right will be considered as having been renounced and the patent will be issued on the basis of the application and documents as already presented, however imperfect they may be.

ART. 111. Patents, issued in accordance with the provisions of the two foregoing articles, will be subject, both with respect to the form of their issuance and their legal effects, to the new law, as if the respective applications had been presented after the coming into operation of said law, saving what is provided in the following article:

ART. 112. The legal date of these patents will be:

I. In case the interested parties, making use of the right granted them by article 109, amend their original application, the legal date of the patents will be that whereon the applicants present their amended applications and documents within the period of two months provided by article 109.

II. In case the interested parties, either expressly or tacitly, fail to make use of the right in question, the date of the patent will be that whereon this law begins to be operative; but when, with respect to two or more patents which are on the same footing, it becomes necessary to determine to which thereof appertains the precedence in point of time, the point will be decided on the basis of the chronological order in which the applications were de facto presented.

ART. 113. Persons who, prior to the coming into operation of this law have been notified to effect the payment of the respective dues for the issuance of the patent and who have not effected such payment, are allowed an unextendible term of three months, counted from the coming into operation of this law, within which to effect such payment, with the understanding that, if they fail to comply, their applications will be regarded as not having been presented and the inventions covered by them will be held to have become public property.

The *Official Patent Gazette* will publish the list of patents to which this refers.

ART. 114. Patents, issued as the result of the payment of the respective dues by the interested parties within the period of time allowed by the foregoing article, will be issued in the form provided by the law of June 7, 1890, and will produce the effects determined by said law and its amendment of May 27, 1896, exactly as if they had been applied for, negotiated, and issued prior to the coming into operation of the present law.

ART. 115. Patents in force at the time of the coming into operation of this law will continue to produce the same effects and will be subject to the same conditions as determined by the law of June 7, 1890, and its amendment of May 27, 1896.

ART. 116. The owner of a patent belonging to the class referred to in the two foregoing articles is entitled to conform to the new law, provided he makes a statement to that effect to the Patent Office within an unextendible term of six months, counted from the date whereon this law goes into effect.

This conformity must refer solely and exclusively to the future and, therefore, naturally cannot imply the right to alter the legal date of the patent or to demand the refunding of what has been paid for dues or taxes in accordance with the law hitherto in force or the obligation of continuing to pay the dues referred to by the amendment of May 27, 1896, for, inasmuch as the effects of the acceptance must apply solely and exclusively to the future, they must naturally comprise not only the prerogatives and rights, but also the obligations and restrictions conveyed by the new law.

ART. 117. From the date whereon this law comes into effect the provision of the first paragraph, article 26, of the code of commerce, will be no longer applicable to the registration of patents of invention in the registry of commerce, and an unextendible term of six months, counted from the same date, is allowed wherein the title deeds of patents, which are registered in accordance with Section XIII, of article 21, of the same code, may be presented for registry in the Patent Office, with the understanding that, if this is not done, the entries made in said Office will be held as preferable to those effected in the registry of commerce, though the latter may be prior in date to the former.

ART. 118. The registrations of industrial models and designs which hitherto have been effected in accordance with the law of November 28, 1889, will continue to produce the effects conceded to them by that law, but the interested parties, who may desire to enjoy the benefits of the present law, can do so, provided that, within the period of one year, counted from the coming into operation of this law, they solicit new registration in accordance with the provisions of this law and renounce the effects of the previous registration.

ART. 119. The registration of industrial models and designs, of which the course is pending at the time when this law comes into force, shall continue to be treated in accordance with the law hitherto in force and the registration shall produce the same effects as they have hitherto produced; but if no opposition is pending, the interested parties may at once conform to the requirements of the new law for this class of registrations and thus they will also at once secure the benefits of said law.

ART. 120. The dossiers of industrial models and designs that may be pending on account of an opposition formulated against them will continue to be treated in accordance with the law of November 28, 1889, until such opposition shall have been definitely disposed of.

If the decision is favorable to the applicants they may make use of the right conveyed by the foregoing article, provided they do so within fifteen days, counted from the date on which, they are notified legally of said decision.

ART. 121. The law of June 7, 1890, the amendment of May 27, 1896, and all other enactments issued on the subject are repealed in all their parts.

Section 65, article 9, of the federal stamp law of April 25, 1898, and Section XVII of article 1 of the federal budget law now in force are also repealed.

Patents Nos. 753,834 to 754,405.

# THE OFFICIAL GAZETTE

OF THE

# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 109—No. 2. TUESDAY, MARCH 8, 1904. PRICE—$5 per year.

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## ISSUE OF MARCH 8, 1904.

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|---|---|---|---|
| Patents | 572 | No 753,834 to No. | 754,405, inclusive. |
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TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 3 | ..... | Nevada | ..... | ..... |
| Alaska Territory | ..... | ..... | New Hampshire | 1 | ..... |
| Arizona Territory | 1 | ..... | New Jersey | 26 | 3 |
| Arkansas | ..... | ..... | New Mexico Ter't'y | ..... | ..... |
| California | 17 | 2 | New York | 57 | 15 |
| Colorado | 5 | ..... | North Carolina | 4 | ..... |
| Connecticut | 17 | ..... | North Dakota | 1 | ..... |
| Delaware | ..... | ..... | Ohio | 32 | 4 |
| District of Columbia | 3 | ..... | Oklahoma Territ'y | 1 | ..... |
| Florida | 4 | ..... | Oregon | 2 | ..... |
| Georgia | 3 | ..... | Pennsylvania | 57 | 3 |
| Hawaii Territory | ..... | ..... | Porto Rico | ..... | ..... |
| Idaho | ..... | ..... | Rhode Island | 7 | 1 |
| Illinois | 42 | 7 | South Carolina | 3 | ..... |
| Indian Territory | ..... | ..... | South Dakota | ..... | ..... |
| Indiana | 18 | ..... | Tennessee | 3 | ..... |
| Iowa | 11 | ..... | Texas | 9 | ..... |
| Kansas | 7 | 1 | Utah | 1 | ..... |
| Kentucky | 6 | ..... | Vermont | ..... | ..... |
| Louisiana | 3 | ..... | Virginia | 6 | 2 |
| Maine | 3 | ..... | Washington | 6 | 1 |
| Maryland | 4 | 2 | West Virginia | 3 | ..... |
| Massachusetts | 50 | 11 | Wisconsin | 10 | 2 |
| Michigan | 20 | ..... | Wyoming | ..... | ..... |
| Minnesota | 12 | ..... | U. S. Army | ..... | ..... |
| Mississippi | 2 | ..... | U. S. Navy | ..... | ..... |
| Missouri | 19 | 5 | | | |
| Montana | 1 | ..... | Total to citizens of the United States | 513 | 59 |
| Nebraska | 2 | ..... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Prints. | Countries. | Patents and Designs. | Trade Marks and Prints. |
|---|---|---|---|---|---|
| Argentina | ..... | ..... | Netherlands | 2 | ..... |
| Austria-Hungary | 4 | ..... | Newfoundland | ..... | ..... |
| Belgium | ..... | ..... | New South Wales | ..... | ..... |
| Brazil | ..... | ..... | New Zealand | 1 | ..... |
| British West Indies | ..... | ..... | Norway | ..... | ..... |
| Canada | 5 | ..... | Persia | ..... | ..... |
| Cape Colony | ..... | ..... | Queensland | ..... | ..... |
| Chile | ..... | ..... | Roumania | ..... | ..... |
| China | ..... | ..... | Russia | ..... | ..... |
| Costa Rica | ..... | ..... | San Salvador | ..... | ..... |
| Cuba | 1 | ..... | Scotland | 4 | ..... |
| Denmark | ..... | ..... | South Africa | ..... | ..... |
| Ecuador | ..... | ..... | Spain | ..... | ..... |
| England | 21 | 1 | Sweden | ..... | ..... |
| France | 12 | 2 | Switzerland | 4 | ..... |
| Germany | 17 | ..... | Transvaal, South Africa | ..... | ..... |
| India | ..... | ..... | Victoria | 1 | ..... |
| Ireland | 2 | ..... | Western Australia | ..... | ..... |
| Italy | ..... | ..... | | | |
| Japan | ..... | ..... | | | |
| Java | ..... | ..... | Total to citizens of foreign countries | 75 | 3 |
| Mexico | 1 | ..... | | | |

## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., February 16, 1904.*

To the next of kin and legal representatives of Samuel B. Locklin, deceased, late of Boston, Mass.:

Notice is hereby given that on October 14, 1903, an interference was declared between the patent to Samuel B. Locklin, No. 706,574, August 12, 1902, and a pending application, the issue of the said interference being claims 1 to 4 of the patent.

Notice is further given that the time within which the statements demanded by Rule 110 must be filed has been extended to April 5, 1904.

This notice will be published in the OFFICIAL GAZETTE for six weeks.

F. I. ALLEN,
*Commissioner.*

## Errors in Letters Patent.

RULE 170. * * * Mistakes not incurred through the fault of the Office, and not affording legal grounds for reissues, will not be corrected after the delivery of the Letters Patent to the patentee or his agent. * * *

## Withdrawal After Payment of Final Fee.

RULE 165. * * * When the final fee has been paid upon an application for Letters Patent, and the case has received its date and number, it will not be withdrawn or suspended from issue on account of any mistake or change of purpose of the applicant or his attorney, nor for the purpose of enabling the inventor to procure a foreign patent. * * *

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business March 1, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Feb. 17 | Feb. 17 | 132 |
| 150 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography. | Feb. 6 | Feb. 9 | 105 |
| 312 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Feb. 4 | Jan. 18 | 351 |
| 327 | XVIII. Steam-Engineering, etc... | Feb. 3 | Feb. 4 | 187 |
| 324 | XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements. | Feb. 3 | Jan. 16 | 293 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Feb. 3 | Jan. 13 | 253 |
| 308 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Feb. 3 | Dec. 22 | 440 |
| 244 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Feb. 2 | Feb. 17 | 222 |
| 172 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Feb. 2 | Feb. 16 | 168 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Feb. 2 | Feb. 12 | 276 |
| 232 | IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc. | Feb. 2 | Feb. 5 | 357 |
| 221 | I. Tillage, etc., and Fences..... | Feb. 2 | Jan. 30 | 189 |
| 137 | VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus. | Feb. 2 | Jan. 28 | 333 |
| 148 | XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Feb. 2 | Jan. 27 | 274 |
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Feb. 1 | Feb. 16 | 205 |
| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Feb. 1 | Feb. 16 | 252 |
| 303 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Feb. 1 | Feb. 16 | 203 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Feb. 1 | Feb. 16 | 253 |
| 153 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Feb. 1 | Feb. 13 | 193 |
| 332 | X. Carriages and Wagons..... | Feb. 1 | Feb. 8 | 214 |
| 142 | IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution. | Feb. 1 | Feb. 8 | 326 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Feb. 1 | Feb. 2 | 206 |
| 315 | XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers. | Feb. 1 | Jan. 25 | 203 |
| 113 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Feb. 1 | Jan. 2 | 380 |
| | *Between one and two months.* | | | |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Jan. 30 | Feb. 11 | 181 |
| 318 | VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc. | Jan. 30 | Feb. 11 | 124 |
| 329 | XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc. | Jan. 30 | Feb. 2 | 262 |
| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Jan. 29 | Jan. 27 | 266 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Jan. 25 | Jan. 4 | 354 |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Jan. 23 | Jan. 20 | 387 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Jan. 22 | Dec. 30 | 230 |
| 109 | XVI. Telegraphy and Telephony.. | Jan. 16 | Jan. 9 | 238 |
| 128 | II. Farm Products, etc., Lubricators, Presses, etc. | Jan. 16 | Jan. 9 | 308 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Jan. 12 | Jan. 25 | 329 |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Jan. 11 | Dec. 1 | 518 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Jan. 7 | Dec. 12 | 316 |
| 382 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Jan. 2 | Dec. 26 | 498 |
| | *Between two and three months.* | | | |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Dec. 24 | Dec. 4 | 406 |

Total number of applications awaiting action.....10,580

| | | | |
|---|---|---|---|
| *Under one month.* | | | |
| *Designs | Feb. 17 | Feb. 12 | 32 |
| †Trade-Marks | Feb. 17 | Feb. 29 | 45 |
| ‡Labels and Prints | Mar. 1 | Mar. 1 | .... |

### Amendments.

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper. Erasures, additions, insertions, or mutilations of the papers and records must not be made by the applicant.

### Amendments to Amendments.

RULE 74. When an amendatory clause is amended, it must be wholly rewritten, so that no interlineation or erasure shall appear in the clause, as finally amended, when the application is passed to issue. If the number or nature of the amendments shall render it otherwise difficult to consider the case or to arrange the papers for printing or copying, the Examiner or Commissioner may require the entire specification to be rewritten.

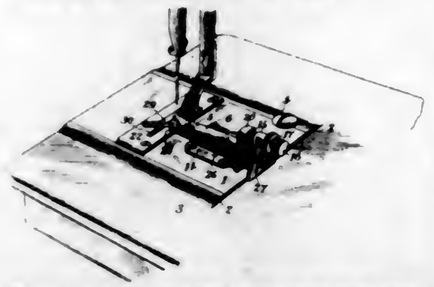
### Amendments to Allowed Applications.

Hereafter all amendments proposed to allowed applications and all petitions and requests relating thereto shall be filed with the docket clerk, Mr. J. M. Fowler, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action. (Order 669 amended October 15, 1898.)

# PATENTS

## GRANTED MARCH 8, 1904.

**753,834. BINDER FOR SEWING-MACHINES.** WILLIAM R. ABERCROMBIE, Bridgeport, Conn., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Oct. 29, 1901. Serial No. 80,421. (No model.)



*Claim.*—1. A binder attachment for sewing-machines, comprising a binder-head, a support therefor adapted to be fixed to the sewing-machine, a pinch-collar applied to said binder-head, and a set-screw applied to said collar to tilt it and thereby adjust the binder-head axially.

2. A binder attachment for sewing-machines, comprising a binder-head, a fixed support therefor, a collar rigidly applied to said head, means to adjust said collar axially, and means connected with the collar to adjust it and the attached binder-head longitudinally.

3. A binder attachment for sewing-machines, comprising a binder-head, a bearing-bracket therefor, in which it is capable of axial and longitudinal movement, a pinch-collar applied to said binder-head, a set-screw for adjusting the collar axially, and a spring opposing such adjustment, and permitting independent axial movement of the binder-head.

4. A binder attachment for sewing-machines, comprising a binder-head, a support therefor, in which it has capacity for longitudinal and axial movement, a collar applied to the binder-head, and provided with means for effecting the axial adjustment of the binder-head, and an adjusting-screw independently supported and connected with the collar for effecting longitudinal adjustment of the binder-head.

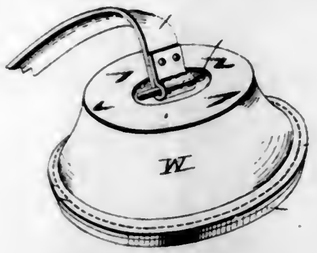
5. In a binder attachment for sewing-machines, a binder-head, comprising a tubular casing 5, a core 10 arranged within said casing and of sufficiently less diameter than the casing to leave a passage-way between them, means for adjustably securing the core to the casing, and a set-screw applied to said casing and adjustable against said core to move said core toward the opposite wall of the casing and permit it to be moved away from such casing to vary the width of the passage-way between the core and casing and thereby adapt the binder-head to binding materials of different thickness.

6. A binder attachment for sewing-machines, comprising a plate, a bracket attached thereto, a binder-head arranged within said bracket, a collar fixed to the binder-head, and provided with means for adjusting the binder-head axially, an ear rising from the plate, and a set-screw mounted in said ear and connected with the collar to effect longitudinal adjustment of the binder-head.

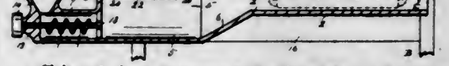
**753,835. HOLDER FOR HITCHING-WEIGHTS.** GEORGE M. ALBEE, Worcester, Mass. Filed June 22, 1903. Serial No. 162,467. (No model.)

*Claim.*—1. As an article of manufacture, a hitch-weight holder comprising a leather disk, and a leather binding or rim secured onto the face of the disk around the margin thereof and forming a socket for receiving a hitch-weight.

2. As an article of manufacture, a hitch-weight holder comprising a leather disk or mat, a rim or binding of leather stitched onto the upper face of the disk by stitches extending both through the rim and body portion, and a holding spur or pin secured in the body portion.



**753,836. APPARATUS FOR BURNING SOFT COAL.** ROBERT BAKER, Hamilton, Canada. Filed June 29, 1903. Serial No. 163,494. (No model.)



*Claim.*—1. In an apparatus for burning soft coal, the combination of a fire-box with inclined sides, a gas-generator connected therewith by a rear-inclined floor, and opening into the fire-box, a coal-receptacle in rear of the generator and communicating therewith, a hopper on the receptacle, a gas and smoke chamber on the generator gas and smoke apertures communicating with the generator and the chamber, gas and smoke distributers connected to the inclined sides of the fire-box and communicating therewith, means communicating with the gas and smoke chamber and said distributers, substantially as described and set forth.

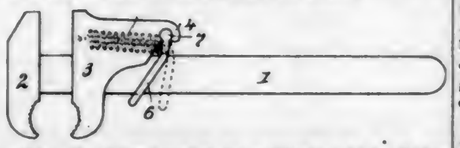
2. In an apparatus for burning soft coal, the combination of a suitable fire-box with inclined sides, air-ducts in the floor thereof of a gas-generator opening into the rear part of said fire-box by means of an inclined floor, a soft-coal receptacle at the rear end of the gas-generator and communicating therewith, and means for directing the coal from said receptacle into said generator and up the inclined floor into the fire-box, substantially as described and set forth.

3. In an apparatus for burning soft coal, in combination, a fire-box with inclined sides, air-ducts in the floor thereof; a gas-generator, an inclined floor connecting said generator with the rear part of the fire-box, a gas-chamber on the generator and communicating therewith, a coal-receiver extending from the rear end of the generator, gas and smoke distributers connected to the outer part of said inclined sides of the fire-box, and means connecting with the gas and smoke chamber, and said gas and smoke distributers, substantially as described and set forth.

4. In an apparatus for burning soft coal, a fire-box with inclined sides, air-ducts in the floor thereof, a gas-generator, an inclined floor extending from the rear part of the floor of the fire-box to the generator and communicating therewith, gas and smoke distributers connected to the outer part of said inclined sides of the fire-box and communicating with the fire-box, a gas and smoke chamber on the gas-generator and communicating therewith, a coal-receptacle connected to the rear end of the generator and communicating therewith, means connecting the gas-chamber with said distributers, and

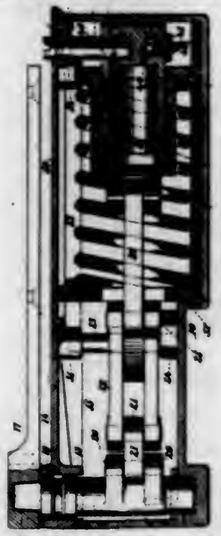
means for propelling gas and smoke from the generator to the distributers, substantially as described and set forth.

753,837. **MONKEY-WRENCH.** Luther C. Barcus, Sidney, Ill. Filed Sept. 21, 1903. Serial No. 174,052. (No model.)




*Claim.*—In a monkey-wrench, the combination of a handle-bar having a stationary jaw-head, a slidable jaw on the handle-bar having a hooked extension and a clamp-link having a rounded cross-bar adapted to slide sidewise into the bearing formed by the hooked extension of the slidable jaw.

753,838. **DOOR CHECK AND CLOSER.** Joseph Bardsley, Montclair, N. J. Filed June 1, 1903. Serial No. 159,487. (No model.)



*Claim.*—1. In a door-closer, the inclosing casing, the actuating-spindle mounted therein for connection with the door and having a crank-arm 20 initially extending at an angle to the longitudinal center of said casing, combined with the bell-crank lever 22 pivotally mounted within said casing on a pin 23 at one side of the center of said casing, the link 21 secured at one end to said crank-arm by a pivot-pin 57 and at the other end by a pivot-pin 58 to one arm of said bell-crank lever, and the confined spring connected with the other arm of said bell-crank lever, said other arm being about in line with the longitudinal center of said casing, and the whole being arranged substantially as shown and described.

2. In a door-closer, the inclosing casing, the actuating-spindle mounted therein for connection with the door and having the crank-arm 20 initially extending at an angle to the longitudinal center of said casing, combined with the bell-crank lever 22 pivotally mounted within said casing on a pin 23 at one side of the center of said casing, the link 21 secured at one end by a pivot-pin 57 to said crank-arm and at its other end by a pivot-pin 58 to one arm of said bell-crank lever, the longitudinal rod 26 connected to the other arm of said lever, the spring encompassing said rod, means engaging one end of said spring with said rod, and a stop for the other end of said spring; substantially as and for the purposes set forth.

3. The actuating-spindle for connection with the door and having the crank-arm 20, combined with the bell-crank lever 22 comprising the upper and lower united members, the link 21 connecting one arm of said lever with said crank-arm, and the confined spring connected with the other arm of said lever; substantially as set forth.

4. In a door-closer, the inclosing casing, the actuating-spindle mounted therein for connection with the door and having the upper and lower crank-arms 20 initially extending at an angle to the longitudinal center of said casing, combined with the bell-crank lever 22 composed of upper and lower corresponding members pivotally mounted within said casing on a pin 23 at one side of the center of said casing, the link 21 secured at one end by a pivot-pin 57 between and to said crank-arms 20 and at its other end by a pivot-pin 58 between and to the upper and lower members of one arm of said bell-crank lever, the longitudinal rod 26 pivotally connected to the other arm of said lever, the spring encompassing said rod, means engaging one end of said spring with said rod, and a stop for the other end of said spring; substantially as and for the purposes set forth.

5. In a door-closer, the inclosing casing having a lug 24 at one side of its center, the cover-plate 14 for said casing and having a depending sleeve 35 above said lug 24, the actuating-spindle mounted within said casing for connection with the door and having a crank-arm 20 initially extending at an angle to the longitudinal center of said casing, combined with the bell-crank lever 22 pivotally mounted within said casing on a pin 23 held at its ends in said lug 24 and sleeve 35, the link 21 secured at one end to said crank-arm by a pivot-pin 57 and at the other end by a pivot-pin 58 to one arm of said bell-crank lever, and the confined spring connected with the other arm of said bell-crank lever, said other arm being about in line with the longitudinal center of said casing, and the whole being arranged substantially as shown and described.

6. In a door closer and check, the inclosing casing having a cover-plate and adapted to hold a checking liquid, and the actuating-spindle mounted in said casing for connection with the door and having the crank-arm 20 initially extending at an angle to the longitudinal center of said casing, combined with the bell-crank lever 22 pivotally mounted within said casing on a pin 23 at one side of the center of said casing, the link 21 connected at one end by a pivot-pin 57 to said crank-arm and at the other end by a pivot-pin 58 to one arm of said bell-crank lever, the rod connected to the other arm of said bell-crank lever, the cylinder connected with said rod, the confined spring engaged at one end by said cylinder, and the piston for said cylinder; substantially as set forth.

7. In a door closer and check, the inclosing casing having a cover-plate and adapted to hold a checking liquid, and the actuating-spindle mounted in said casing and adapted for connection with the door, combined with the cylinder, the confined spring engaged at one end by said cylinder, power-transmitting means connecting said cylinder and spindle, the piston entering said cylinder and having the head 36, means for securing said head, the restricted outlet-port through said head, the valve-chamber 42 within said head and containing the ball-valve 43, the port 44 connecting said chamber with said cylinder and piston, and the screw-plug 45 at its inner end forming a valve-seat for said ball-valve and containing the port 46 and screwed into the outer end of said chamber, for confining said ball-valve and establishing communication between said chamber and the general chamber of the inclosing casing; substantially as set forth.

753,839. **TROLLEY-WIRE FINDER.** William Barnhurst, Dallas, Tex. Filed June 1, 1903. Serial No. 159,593. (No model.)



*Claim.*—1. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts; said bracket or housing containing a grooved rope pulley or sheave having hinged thereto forks substantially as shown.

2. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts, said bracket or housing having a pointed or wedge-shaped projection and said bracket or housing containing a grooved rope pulley or sheave, the said pulley or sheave having hinged thereto forks, said forks having projections on same, which projections will separate said forks upon coming in contact with said pointed or wedge-shaped projection on the bracket or housing when said rope pulley or sheave is swung on its pin, substantially as shown.

3. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts, the said bracket or housing containing a grooved rope pulley or sheave, the said pulley or sheave swinging upon a pin having forks hinged thereto, the bracket or housing having a lug or projection for attaching a rope to guide the trolley-pole iddependently of the rope which operates the rope pulley or sheave of the finder, substantially as shown.

4. In a trolley-wire finder, a bracket or housing made in halves for containing the operating-wheel, said halves to be bolted or riveted together; the operating-wheel or rope-sheave having hinged thereto forks, substantially as shown.

5. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts and containing a grooved rope pulley or sheave swinging on a pin the pin being supported by said housing or bracket and said grooved rope pulley or sheave having hinged thereto forks, substantially as shown.

6. In a trolley-wire finder, a rotating sheave or rope-pulley operated by a rope or line, the sheave or pulley having hinged thereto forks, substantially as shown.

7. In a trolley-wire finder a bracket or housing, fastened to a trolley-pole or trolley-harp by means of pins or bolts, said bracket or housing carrying a grooved pulley or sheave swinging on a pin; the hub of said grooved pulley or sheave having an annular recess in same, into which recess is fitted a spiral spring, one end of which spring is attached to said hub and the other end of the spring is attached to the bracket or housing carrying said sheave, said grooved pulley or sheave having hinged thereto forks, substantially as shown.

8. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts, said bracket or housing carrying a grooved pulley or sheave swinging upon a pin, said pulley or sheave having a projection or lug on each side for hinging thereto forks, substantially as shown.

9. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts, said bracket or housing carrying a grooved pulley or sheave swinging upon a pin supported by said housing, said grooved pulley or sheave having hinged thereto forks for guiding the trolley-wheel or trolley-wire into place, substantially as shown.

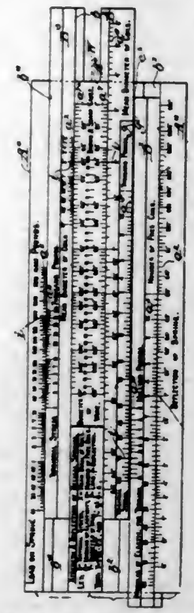
10. In a trolley-wire finder, a bracket or housing fastened to a trolley-pole or trolley-harp by means of pins or bolts, said bracket or housing carrying a grooved pulley or sheave swinging upon a pin supported by said bracket or housing, said grooved pulley or sheave having hinged thereto swinging forks, said forks having an offset to permit of their overlapping and closing together, substantially as shown.

753,840. **SLIDE-RULE.** Carl G. Barth, Bethlehem, and Henry L. Gantt and Frederick W. Taylor, South Bethlehem, Pa. Filed Nov. 20, 1901. Serial No. 82,998. (No model.)

*Claim.*—1. A slide-rule for the solution of a problem involving a number of unknown variables; said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing two of the unknown variables in their proper, mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.

2. A slide-rule for the solution of a problem involving a number of unknown variables; said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, there being as many sections in the rule as there are unknown variables in the problem, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations, between the variables of the rule problem, or some of them, and coacting to locate the scales representing two of the unknown variables in their proper, mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.





3. A slide-rule for the solution of a problem involving a number of unknown variables; said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, there being as many sections in the rule as there are unknown variables in the problem and at least one of these represented by a scale in each section, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing two of the unknown variables in their proper, mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.

4. A slide-rule for the solution of a problem involving a number of unknown variables; said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, there being as many sections in the rule as there are unknown variables in the problem and one of these represented by a fixed scale in each section, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing two of the unknown variables in their proper, mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.

5. A slide-rule for the solution of a problem involving a number of unknown variables; said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, there being as many sections in the rule as there are unknown variables in the problem and one of these represented by similarly-located fixed scales of equal magnitudes, one in each section, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing two

of the unknown variables in their proper, mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.

6. A slide-rule for the solution of a problem involving a number of unknown variables, said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, there being as many sections in the rule as there are unknown variables in the problem and one of these represented by a fixed scale in each section and another by a movable scale in each section in juxtalocation to said fixed scale, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing two of the unknown variables in their proper, mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.

7. A slide-rule for the solution of a problem involving a number of unknown variables; said rule comprising a relatively fixed part divided into sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, there being as many sections in the rule as there are unknown variables in the problem and one of these represented by similarly-located fixed scales of equal magnitudes, one in each section, and another by a movable scale in each section in juxtalocation to said fixed scale, and all the scales appertaining to each section constituting together an embodiment of one of the independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing two of the unknown variables in their proper mutually-delimiting relation to each other, the rule-sections being assembled in the rule as described, and so that the scales thus located in the several sections will again coact by inspection to determine the values of the unknown variables which will satisfy all the relations severally embodied in the different sections of the rule.

8. A slide-rule for the solution of a problem involving two unknown variables; said rule comprising a relatively fixed part divided into two sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and all the scales appertaining to each section constituting together an embodiment of one of the two independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing the two unknown variables in their proper, mutually-delimiting relation to each other, the two rule-sections being assembled in the rule as described, and so that the scales so located in the two sections will again coact by inspection to determine the values of the two unknown variables which will satisfy both of the relations embodied in the two sections of the rule.

9. A slide-rule for the solution of a problem involving two unknown variables; said rule comprising a relatively fixed part divided into two sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and one of the two unknown variables being represented by a fixed scale in each section, and all the scales appertaining to each section constituting together an embodiment of one of the two independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing the two unknown variables in their proper mutually-delimiting relation to each other, the two rule-sections being assembled in the rule as described, and so that the scales so located in the two sections will again coact by inspection to determine the values of the two unknown variables which will satisfy both of the relations embodied in the two sections of the rule.

10. A slide-rule for the solution of a problem involving two unknown variables; said rule comprising a relatively fixed part divided into two sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and one of the unknown variables being represented by similarly-located fixed scales of equal magnitudes, one in each section, and all the scales appertaining to each section constituting together an embodiment of one of the two independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing the two unknown variables in their proper, mutually-delimiting relation to each other, the two rule-sections being assembled in the rule as described, and so that the scales so located in the two sections will again coact by inspection to determine the values of the two unknown variables which will satisfy both of the relations embodied in the two sections of the rule.

11. A slide-rule for the solution of a problem involving two unknown variables; said rule comprising a relatively fixed part divided into two sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and one of the two unknown variables being represented by a fixed scale in each section and the other by a movable scale in each section in juxtalocation to said fixed scale, and all the scales appertaining to each section constituting together an embodiment of one of the two independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing the two unknown variables in their proper, mutually-delimiting relation to each other, the two rule-sections being assembled in the rule as described, and so that the scales so located in the two sections will again coact by inspection to determine the values of the two unknown variables which will satisfy both of the relations embodied in the two sections of the rule.

12. A slide-rule for the solution of a problem involving two unknown variables, said rule comprising a relatively fixed part divided into two sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and one of the two unknown variables being represented by similarly-located fixed scales of equal magnitudes, one in each section, and the other by a movable scale in each section in juxtalocation to said fixed scale, and all the scales appertaining to each section constituting together an embodiment of one of the two independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing the two unknown variables in their proper, mutually-delimiting relation to each other, the two rule-sections being assembled in the rule as described, and so that the scales so located in the two sections will again coact by inspection to determine the values of the two unknown variables which will satisfy both of the relations embodied in the two sections of the rule.

13. A slide-rule for the solution of a problem involving two unknown variables; said rule comprising a relatively fixed part divided into two sections, movable parts for these sections, scales carried by these fixed and movable parts representing the variables entering into the general problem of the rule, and one of the two unknown variables being represented by one fixed scale common to the two sections, and the other by a movable scale in each section in juxtalocation to said fixed scale, and all the scales appertaining to each section constituting together an embodiment of one of the two independent sets of relations between the variables of the rule problem, or some of them, and coacting to locate the scales representing the two unknown variables in their proper, mutually-delimiting relation to each other, the two rule-sections being assembled in the rule as described, and so that the scales so located in the two sections will again coact by inspection to determine the values of the two unknown variables which will satisfy both of the relations embodied in the two sections of the rule.

14. A slide-rule having relatively stationary and longitudinally-movable parts adapted to support and adjust the scales of the rule, and some of said parts recessed intermediate of their ends to receive detachable scale-strips, in combination with scale-strips adapted to fit and interlock in said recessed portion.

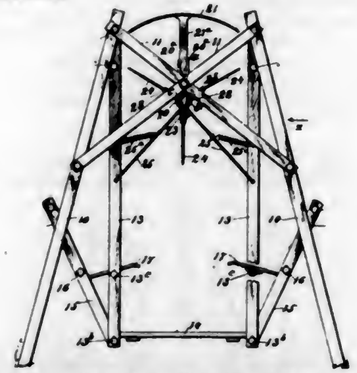
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**753,841. COMBINED SWING AND FAN.** DAVID W. BASH, Buda, Ill. Filed Mar. 8, 1902. Serial No. 97,249. (No model.)

*Claim.*—1. The combination with a suitable frame, of a concave hood provided with legs, upright arms supported on the frame, said legs telescopically engaging said upright arms, and a fan revolubly mounted in said arms and supported thereby below the hood.

2. A fan attachment for swings, comprising a shaft carrying fan-blades, bracket-arms in which the shaft is mounted, a hood supported on said bracket-arms above the shaft and fan-blades, and cords on the shaft near its ends, said cords being wound in opposite directions.

3. A fan attachment for swings, comprising a shaft carrying adjustable fan-blades, bracket-arms pendent from the swing-frame, a hood detachably mounted upon said bracket-arms, and means to rotatably support the ends of the fan-shaft upon the lower portions of the bracket-arms.



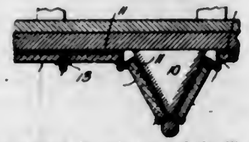
4. A fan attachment for swings, said attachment comprising a shaft carrying fan-blades, bracket-arms in which the shaft is mounted, a hood supported on the arms above the shaft and fan-blades, and ropes on the shaft at its ends, said ropes being wound in opposite directions.

5. In a device of the character described, the bracket-arms mounted upon the swing-frame, and provided with telescopic members at their upper ends to receive legs depending from the hood.

6. The combination of a swing-frame, a swing, a rotary fan, oppositely-wound cords on the fan-shaft and attached to the swing-frame to pull on said fan and rotate the same in opposite directions when actuated by said swing, and extensible cushion-springs connected individually to said cords and the swing, to cushion the change in the rotary motion of the fan and to assist the cords in propelling said fan.

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**753,842. SUPPORT FOR TILES, MIRRORS, &c.** JOSEPH P. BENJAMIN, Kankakee, Ill. Filed July 30, 1903. Serial No. 167,634. (No model.)



*Claim.*—A support for mirrors and the like, comprising base members of sheet metal having their edges bent at an angle thereto and then turned inwardly over the faces of the article to be supported, a plurality of said members being arranged with their edges in contact, and filling-strips secured to said contacting edges for uniting the members and concealing the joint between the parts.

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**753,843. ICE-CREAM CUTTER OR SCRAPER.** WILLIAM C. BETTS, Seymour, Ind. Filed July 10, 1903. Serial No. 164,989. (No model.)



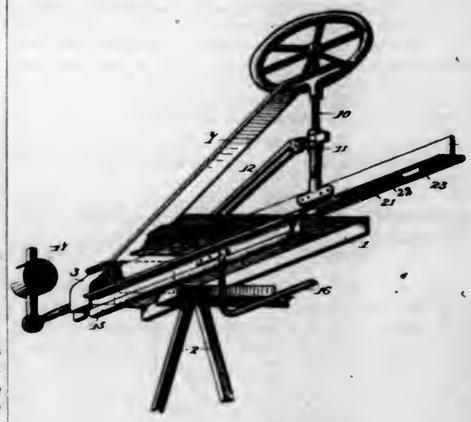
*Claim.*—A new article of manufacture consisting of the flat spring A and flexible flat blade or scraper B, the ends of the latter being connected with those of the former, to form the circumference of a space through which the mold or dipper may freely pass up and down in an ice-cream freezer as and for the purpose described.

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**753,844. PORTABLE MACHINE CAPABLE OF BENDING OR MOLDING SHEET-ZINC.** AUGUSTE H. REP, Boisguillaume, near Rouen, France. Filed Mar. 31, 1902. Serial No. 100,734. (No model.)

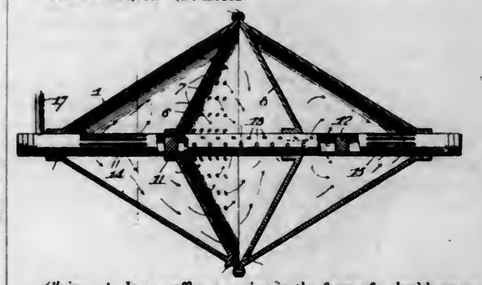


*Claim.*—The combination with the table of shoes secured adjacent the ends thereof, a spindle journaled in the shoes with a rail supported by the spindle, a lever for operating the rail, a screw-threaded socket secured above the table with arms connected to the socket and to the table for supporting the socket, a threaded shaft extending through the socket, the inner faces of the shoes having guide-grooves formed therein, an iron having its ends extending in said grooves, a sleeve on the shaft connecting the shaft to the said iron whereby the said iron will be raised and lowered by the operation of said screw-threaded shaft, and counterpoises on the ends of the said spindle, and an angle-iron detachably secured to the under face of said first-named iron, said rail having its base normally lying in horizontal alinement with the surface of the table.



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**753,845. GASOLENE-ENGINE MUFFLER.** RICHARD W. BROCKWAY and FRANCIS J. MECKENSTURM, Moodus, Conn. Filed Aug. 7, 1903. Serial No. 168,640. (No model.)



*Claim.*—1. In a muffler, a casing in the form of a double cone, partitions dividing said casing into a plurality of chambers, one of said partitions being perforated, an inlet leading to one of the cones, an outlet leading from the other cone, and a duct leading from the intermediate chamber of the muffler through the solid partition to the outlet-cone.

2. In a muffler, a casing in the form of a double cone, a pair of partitions arranged in the casing dividing the same into a plurality of compartments, one of said partitions being perforated, and a perforated cylinder extending through the second partition and forming a passage-way for the fluid.

3. In a muffler, a casing, partitions dividing the casing into a plurality of compartments, one of said partitions being perforated, and a perforated cylinder extending through an opening formed in the second of said partitions.

4. In a muffler, a casing in the form of a double cone, a pair of oppositely-disposed conical partitions arranged in the casing and dividing the same into a plurality of compartments, one of said partitions being perforated, and a pipe extending through the walls of the casing and the partitions, said pipe being plugged to form an intermediate cylindrical chamber and being further provided with openings to permit the passage of the exhaust from chamber to chamber of the muffler.

5. In a muffler, a casing in the form of a double cone, a pair of oppositely-disposed conical partitions arranged within the casing and

dividing the same into a plurality of compartments, one of said partitions being perforated, a pipe extending through the walls of the casing and the partitions, plugs arranged in said pipe to form a chamber intermediate of the length thereof, there being a plurality of perforations formed in that portion of the pipe between the plugs and serving to permit the passage of the exhaust from the intermediate to the final chamber and said pipe being further provided with slots or perforations at points within both the inlet and the final chamber of the muffler.

6. In a muffler, a casing having expansion-chambers, an exhaust-pipe leading thereinto, and a water-pipe connected to said exhaust-pipe and adapted to discharge a stream of water thereinto.

7. In a muffler, a casing formed of a pair of conical members secured together at their larger ends, a perforated partition carried by one of the members, a second and solid partition carried by the second member, both of said partitions being provided with alining openings, a cylinder extending through said openings and supported by the walls thereof, said cylinder having a solid head at that end extending through the perforated partition and the remaining portion of the walls of said cylinder being perforated to permit the passage of the fluid.

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**753,846. STRAINER FOR DRIVE-WELLS.** WILLIAM H. BROOME, Brooklyn, N. Y. Filed May 20, 1903. Serial No. 157,896. (No model.)



*Claim.*—1. A strainer for drive-wells comprising a perforated tube provided with enlarged end members having annular recesses in their adjacent ends and around said tube, said tube being also provided with annular and longitudinal ribs, and in the opposite sides thereof with longitudinal grooves or spaces, a wire screen placed on said tube and strips or plates secured in said grooves or spaces and by which the screen is held in place, substantially as shown and described.

2. A strainer for drive-wells, comprising a perforated tube provided with annular and longitudinal ribs and at its opposite ends with enlarged members, said tube being also provided at the sides thereof with longitudinal grooves or spaces, a wire screen placed on said tube and composed of two longitudinal parts, and strips or plates secured in said grooves or spaces and by which the separate parts of the screen are held in place, substantially as shown and described.

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**753,847. GARMENT-FASTENER.** CHARLES A. BRYANT, Wakefield, Mass., assignor to the Alma Button Company of Baltimore City, a Corporation. Filed Oct. 23, 1903. Serial No. 178,208. (No model.)



*Claim.*—1. As an article of manufacture, a garment-supporting clasp comprising a main plate having a tapering throat formed therein, and a toggle-joint, one end of which is wedge-shaped, said wedge-shaped end made of crimped wire and adapted to be forced into the throat to clasp the garment between it and the sides of the throat.

2. As an article of manufacture, a garment-supporting clasp comprising a main plate having a tapering throat, and a toggle-joint hinged thereto, said toggle-joint having one wedge-shaped end made of crimped resilient material, and adapted to clasp the fabric of the garment to be supported between it and the throat.

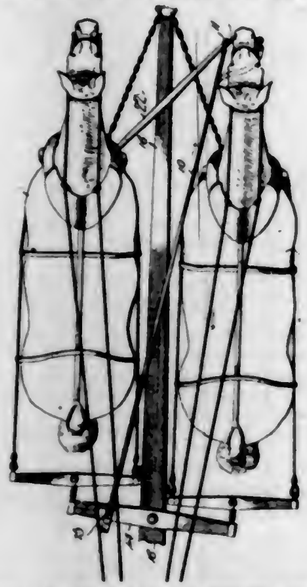
3. As an article of manufacture, a garment-supporting clasp comprising a main plate having a transverse slot at each end through which the webbing is passed, and provided at an intermediate point with a pair of lips which form a tapering throat, and a toggle-joint, one member of which is in the form of a wedge adapted to be forced into the throat to fasten the garment to be held between its edges and the lips.

4. As an article of manufacture, a garment-supporting clasp comprising a main plate, having slots at its opposite ends to receive the web of the garment-supporter, and provided with a pair of lips bent outwardly and toward each other and forming a tapering throat and a toggle-joint comprising a lever hinged at one end to the plate, and a wedge pivoted to the lever, said wedge made of resilient material and adapted to be wedged into the throat when the toggle-joint is extended whereby to clasp the fabric of the garment to be supported between it and the main plate.

5. As an article of manufacture, a garment-supporting clasp comprising a main plate having a longitudinal rib at the center and provided with slots at each end, and a bearing formed by the metal from one of the slots, this plate having lips at either side bent outwardly to form a tapering throat, and a toggle-joint hinged to the bearing, one member being wedge-shaped and in position to be forced into the throat whereby to clamp the garment to be held between it and the throat.

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**753,848. HORSE-BREAKING DEVICE.** JAMES G. BUMP, Brad, Tex. Filed June 30, 1903. Serial No. 163,756. (No model.)



*Claim.*—1. In a device of the class described, a bar adapted for connection with the bit of a horse and extending rearwardly, a lever-arm movably attached to the rear end of said bar, means for operating said lever to cause said bar to exert a pushing force upon said bit, and a stay-bar connected with the bit of the horse under treatment and with the harness of the other horse.

2. In a device of the class described, a bar adapted for connection with the bit of the horse and extending rearwardly, a lever-arm movably connected to the rear end of said bar, and means for forcibly operating said lever to cause said bar to exert a forwardly or pushing force upon said bit and the jaws of the horse, substantially as described.

3. In a device of the class described, a bar adapted for connection with the bit of the horse and extending rearwardly and movably connected by its rear end to the doubletree at the opposite side of the tongue from the horse to whose bit the device is attached, substantially as described.

4. In a device of the class described, a bar adapted for connection with the bit of the horse to be treated and extending rearwardly and movably connected at its rear end to the doubletree on the opposite side of the draft-tongue from the horse to whose bit the device is attached, and a stay-bar connected between the bit of the horse to be treated and the harness, such as the hames, of the other or companion horse, substantially as described.

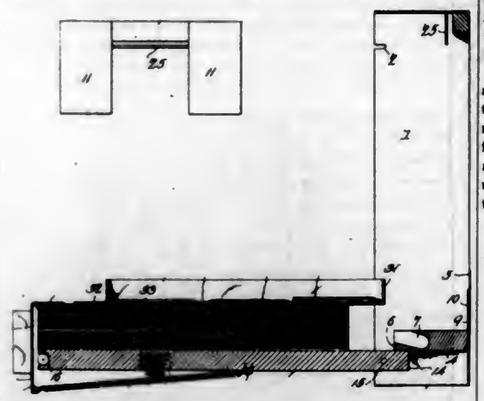
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**753,849. BILL-FILE.** GEORGE L. BURGESS, Goodland, Ind. Filed Apr. 13, 1903. Serial No. 152,366. (No model.)

*Claim.*—1. A filing-cabinet comprising a framework, a cover pivoted thereto, a latch loosely connected by one end to the face of the cover and intermediate the ends thereof, a compressible member also secured to the cover and adapted to be engaged by the latch, and means removably engaging the free end of the latch and the framework to exert a tension upon said compressible member.

2. A filing-cabinet comprising a framework, a cover pivoted thereto, a latch pivoted by one end to the cover, and having its free end obliquely disposed to the plane of its body portion, a spring secured to the cover within the path of the movement of the latch and a clip adapted to removably engage the oblique end of the latch and the framework for exerting a pressure on said spring.





3. A filing-cabinet comprising a framework, a cover pivoted thereto, a latch loosely connected by one end to the cover, a compressible member standing within the path of the movement of said latch, and a clip engaging the latch and the contents of the cabinet, the pressure of the compressible member being exerted to clamp the said contents in position.

4. A device of the class described comprising a framework, a cover pivoted to the front of the framework, a latch loosely pivoted by one end to the cover, a card-holder formed on said latch, a clip engaging the free end of said latch and the framework, and means for exerting an outward pressure on said latch.

5. A device of the class described comprising a framework, a guide formed near the upper end thereof, a clip provided with downwardly-extending ends and a cover pivoted to the framework, one end of said clip engaging the cover and the other end adapted to engage said guide for holding the cover in a closed position.

6. A filing-cabinet comprising a framework, a cover pivoted to the front thereof and extending a short distance below the base of the same, the lower extremity of the cover being adapted to pass beneath and rest against the lower face of the base to support said cover in an open position, a transverse longitudinal groove in the free extremity thereof, adapted to be closed by the top of the framework when the cover is closed, and means for holding said cover closed.

7. A device of the class described consisting of a framework comprising spaced side members, the upper extremities thereof being bent at an angle to the body portion and toward each other to form the top thereof, a base secured between the side members near their lower extremities, said base terminating short of the front of said side members and being provided in its front edge with a cavity, and a cover pivoted between the side members near their lower extremities, the pivot-points of the cover being located below the base of the framework and to permit the cover to abut against the front edge of the base when in a closed position.

8. A device of the class described comprising side members, a bar secured between the same near their lower ends, and a second bar secured near their upper ends, the upper extremities of the side members being bent inward over said bar, and terminating short of each other to form the top of the cabinet, a second bar secured across the upper end of the side members parallel with but located a short distance in front of the first bar, a clip having its extremities bent at approximately a right angle to its body portion, one of which is adapted to move between the parallel bars, and a cover pivoted to the front of the side members and adapted to engage the other end of the clip.

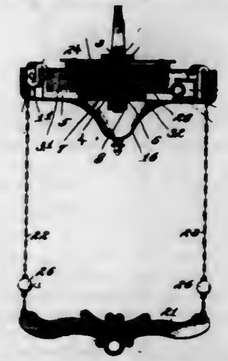
9. A filing-cabinet comprising a base and side members, the upper end of the side members being bent inward and terminating short of each other, and a transverse supporting-bar secured beneath the inturned ends, a cover pivoted near its lower extremity to the front of the side members, the upper end thereof being adapted to pass beneath the inturned ends of the same, and a clip, engaging the supporting-bar, and standing between the free extremities of the side members to form a top for the cabinet and engage the front cover when the latter is closed.

10. A device of the class described comprising a framework, a cover pivoted to the front thereof, and means for holding said cover in an open or closed position, a removable back inserted in said framework, said back being provided with a rearwardly-extending peripheral flange, receptacles carried by the rear face of the back within the flange and means carried by the framework for preventing the displacement of said back.

11. A device of the class described comprising a framework, and a cover pivoted to the front thereof, transverse bars secured to the rear of the framework near its upper and lower extremity, a removable back provided with rearwardly-projecting flanges, the lower flange thereof resting on the base of the framework and abutting against the lower transverse bar and the upper flange passing beneath the upper bar, the upper extremity of the back being adapted to stand in front of said upper transverse bar.

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**753,850. EXTENSION-HANGER FOR LAMPS.** JOHN BYSTROM, Chicago, Ill. Filed Oct. 19, 1903. Serial No. 177,644. (No model.)



*Claim.*—1. In an extension-hanger for lamps, in combination, a drum rotatable in a horizontal plane, said drum having a peripheral notch in its lower side; a spring for said drum; a suspension-chain adapted to be wound upon said drum; and a locking-roller arranged to engage the notch in said drum for positively locking the drum from rotation in either direction.

2. In an extension-hanger for lamps, in combination, a drum rotatable in a horizontal plane, said drum having a dovetail peripheral notch in its lower side; a spring for said drum; a suspension-chain arranged to be wound upon said drum; and a locking-roller having a dovetail periphery arranged to engage the dovetail locking-notch in said drum.

3. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted upon said base-bar, said drum being provided with a locking-notch in its lower side; a spring for said drum; a suspension-chain arranged to be wound upon said drum; a housing supported by said base-bar; and a locking-roller loosely supported in said housing and arranged to engage the notch in said drum.

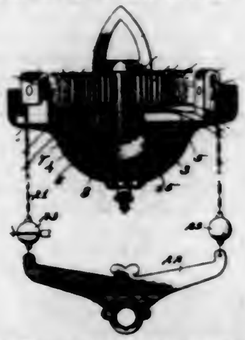
4. In an extension-hanger for lamps, in combination, a base-bar provided at its ends with integral bearing-brackets; sheaves journaled in said brackets; a drum rotatably supported upon said base-bar, said drum being provided in its lower side with a locking-notch; suspension-chains attached to said drum and extending over said sheaves; a spring for said drum; a housing supported by said base-bar; and a roller loosely supported in said housing and arranged to engage the notch in said drum.

5. In an extension-hanger for lamps, in combination, a base-bar provided at its ends with integral bearing-brackets; sheaves journaled in said brackets; a stem fixed to said base-bar and provided with a suspension-loop; a drum rotatably mounted upon said stem, said drum being provided with a locking-notch; suspension-chains attached to said drum and extending over said sheaves; a spring for said drum; a housing supported by said base-bar; and a roller loosely supported in said housing and arranged to engage the notch in said drum.

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**753,851. EXTENSION-HANGER FOR LAMPS.** JOHN BYSTROM, Chicago, Ill. Filed Dec. 7, 1903. Serial No. 184,159. (No model.)

*Claim.*—1. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted on said base-bar; a spring arranged to rotate said drum; a locking-disk secured with relation to said drum and provided in its periphery with locking-notches; a ball arranged to enter said notches; and a housing for said ball, said housing opening directly into the locking-notches in said locking-disk, the side walls of said housing being in a position to engage the portion of the ball projecting from the locking-notch in which it lies upon a rotation of said disk in either direction.



2. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted on said base-bar; a spring arranged to rotate said drum; a locking-disk fixed with relation to said drum and provided in its periphery with locking-notches; a ball arranged to enter said notches; and a housing for said ball lying outside of the periphery of said locking-disk and opening directly into the locking-notches of said disk, the side walls of said housing being in a position to engage the portion of the ball projecting from the locking-notch in which it lies upon a rotation of said disk in either direction.

3. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted on said base-bar; a spring arranged to rotate said drum; a locking-disk fixed with relation to said drum and provided in its periphery with locking-notches; a ball arranged to enter said notches and project beyond the periphery of said locking-disk; and a housing for said ball which housing comprises a bifurcated plate secured to said base-bar, the bifurcation in said plate opening directly into the locking-notches in said locking-disk.

4. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted upon said base-bar; a spring arranged to rotate said drum; a locking-disk provided with a plurality of locking-notches in its periphery, secured upon the under side of said drum; a ball arranged to enter said notches and project beyond the periphery of said locking-disk; and a housing for said ball mounted upon the upper side of said base-bar, which housing comprises a bifurcated plate, the bifurcation in said plate opening directly into the locking-notches in said locking-disk.

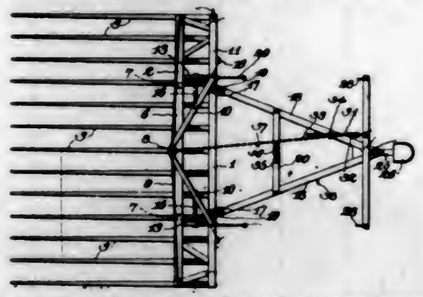
5. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted upon said base-bar; a spring arranged to rotate said drum; a locking-disk provided with a plurality of locking-notches in its periphery, secured upon the under side of said drum; a ball arranged to enter said notches and project beyond the periphery of said locking-disk; and a housing for said ball mounted upon the upper side of said base-bar, the side walls of said housing being in a position to engage the portion of the ball projecting from the locking-notch in which it lies upon a rotation of said disk.

6. In an extension-hanger for lamps, in combination, a base-bar; a drum rotatably mounted upon said base-bar; a spring arranged to rotate said drum; a locking-disk provided with a plurality of locking-notches in its periphery, secured upon the under side of said drum; a ball arranged to enter said notches and project beyond the periphery of said locking-disk; and a housing for said ball mounted upon the upper side of said base-bar, which housing comprises a bifurcated plate, the bifurcation in said plate having a flaring open end facing the locking-notches in the locking-disk, forming side walls adapted to engage the portion of the ball projecting from the locking-notch in which it lies upon a rotation of the disk, the upper surface of said base-bar beneath the bifurcation being inclined downwardly away from the open end of said bifurcation.

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**753,852. HORSE HAY-RAKE.** William A. Cavett and Samuel S. Cavett, Kirksville, Mo. Filed Oct. 31, 1903. Serial No. 179,290. (No model.)

*Claim.*—1. A rake-head comprising parallel cross-beams supported upon the rear ends of the rake-teeth, spacing-blocks upon the ends of the front cross-beam, braces connecting said spacing-blocks with the rear cross-beam near the ends of the latter, a cap-beam supported upon the upper front ends of said braces, struts intermediately supporting said cap-beam, cross-bars supported above the ends of the rear beam, an upright supported in front of the front and cap beams, inclined braces connecting the upright with the inner ends of the cross-bars supported above the rear beam, and a truss supported upon the upright and attached at the ends of the cap-beam.



2. A rake-head comprising a front and a rear cross-beam supported upon a plurality of rake-teeth, wheel-carrying spindles secured to the under side of the rake-teeth, cross-bars mounted above the rear cross-beam at the ends of the latter, and spindles secured to said cross-bars and cross-beam, approximately vertical and at right angles to the wheel-carrying spindles under the rake-teeth.

3. In a device of the class described, a rake-head including front and rear main cross-beams, cross-bars supported above the rear cross-beam, pintles extending from the inner ends of said cross-bars, pairs of wheel-supporting spindles suitably spaced from the sides of the rake-head and disposed approximately at right angles to each other, and supporting-wheels transferable from one to the other of said sets of spindles, in combination with a frame comprising rearwardly-converging side bars hingedly mounted upon the pintles of the rake-head, rotary supporting means for the rear end of said frame, and means for tilting the rake-head and for sustaining it in adjusted position with relation to said hinged frame.

4. In a device of the class described, a rake-head having an upright, a frame hingedly connected with said rake-head, pairs of spindles connected with the rake-head, suitably spaced from the sides thereof and disposed at approximately right angles to each other, supporting-wheels transferable from one to the other of said sets of spindles, rotary supporting means for the rear end of the hinged frame, an operating-lever upon the latter, flexible connecting means between said lever and the upright upon the rake-head, an arch mounted upon a cross-bar of the hinged frame and adapted to support the upright of the rake-head when the latter is tilted to an approximately vertical position, and hitching means for the flexible connecting means, connecting said upright with the operating-lever, whereby said upright may be secured against jarring when supported upon the arch member of the hinged frame.

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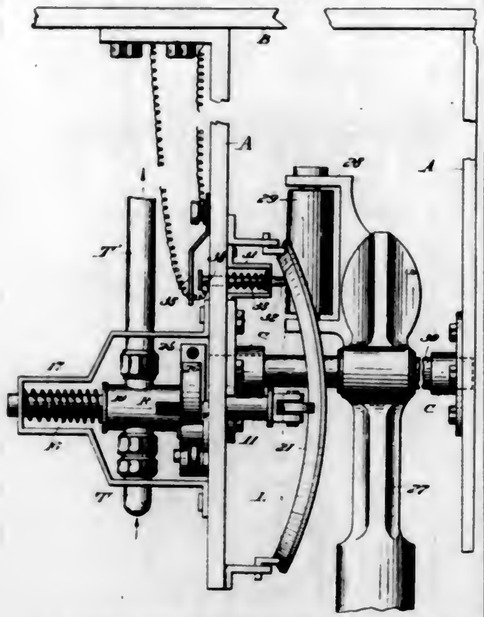
**753,853. RAILWAY SIGNALING.** Ferdinand Berne de Chavenes, Marseilles, France. Filed Sept. 3, 1903. Serial No. 171,802. (No model.)

*Claim.*—1. In a system of railway-signals of the character herein set forth, the combination with the semaphore-operating mechanism, of a stop, means for operating said stop from said semaphore, a rotatable lever mounted on a locomotive, and adapted to be engaged by said stop when the latter is in raised position, a segment adapted to be operated by said lever, a valve operated by said segment, and a signal adapted to be operated when said valve is opened, substantially as described.

2. In a railway signal system, the combination of a semaphore-rod, a toothed sector on said rod, a beveled wheel engaging with said sector, a shaft operated by said beveled wheel, a contact-stop on said shaft, a rotatable lever mounted on a locomotive and adapted to engage with said stop, and a signal adapted to be operated by said lever.

3. In a railway signal system, the combination of a rotatable lever mounted on a locomotive, a roller on said lever, a segment yieldingly mounted adjacent to said roller, and adapted to be operated thereby when the lever is turned, a valve having a valve-stem connected with said segment, whereby the valve is opened when the segment is depressed, means for automatically locking said valve in opened position, an inlet-pipe leading from said valve to a source of fluid-supply, and an outlet-pipe from said valve leading to a suitable signal, substantially as described.

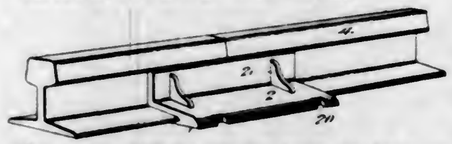




4. In a railway-signal, the combination of a contact-stop, a lever pivoted on a locomotive and adapted to be operated by said contact-stop, a roller on said lever, a segment yieldingly mounted adjacent to said roller, and a signal adapted to be operated by said segment when the latter is depressed by said roller, substantially as described.

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**753,854. RAIL-JOINT.** Andy Christensen, Cohoes, N. Y. Filed Sept. 12, 1903. Serial No. 172,974. (No model.)

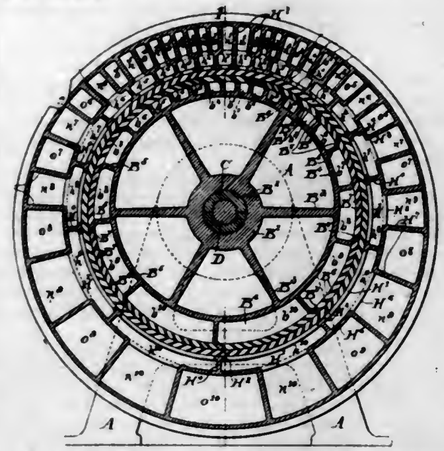


*Claim.*—The combination with rails having base-flanges, and recesses in the adjoining ends of the webs of the rails; of a base-plate below the base-flanges and adapted to be contacted thereby and support the same, inwardly-extending inclined flanges integral with the sides of the base-plate and extending over and fitting snugly upon the base-flanges, parallel side plates integral with the inner edges of the inclined flanges and bearing snugly upon the webs, a block interposed between the side plates and integral therewith, said blocks being seated within the recesses in the ends of the webs, and webs integral with and interposed between the side plates and their flanges.

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**753,855. EXPANSIBLE-FLUID TURBINE.** Benjamin S. Church, New York, N. Y., assignor to James K. Lanning, trustee, Boston, Mass. Filed July 31, 1902. Serial No. 117,749. (No model.)

*Claim.*—1. A turbine for expansible fluids having a wheel provided with a circumferentially-arranged series of buckets, in combination with a casing having a multiple series of chambers and directing-ports, each port leading through the bucket to a succeeding chamber, the ports being progressively of increasing area corresponding to the increasing expansion of the fluid and each adapted to give passage to the same weight of fluid in the same time, and the chambers being progressively of increasing area and of materially greater area than the volume of the steam actually passing through the turbine at the pressures existing in the chambers whereby the velocity of the entering steam is checked and the velocity of the steam passing out through the ports regulated by the pressure in the chambers



2. A turbine for expansible fluids having an admission-port and an exhaust-port on opposite sides of the center, a circumferentially-arranged series of buckets on the wheel proper and two series of chambers and directing-ports leading from the admission to the exhaust port, one series arranged on each side of the wheel and said chambers and ports communicating with each other through the buckets of the wheel.

3. A turbine for expansible fluids having an admission-port and an exhaust-port on opposite sides of its center, a circumferentially-arranged series of buckets on the wheel proper, two series of chambers, one arranged on each side of the wheel between the admission and exhaust ports, said chambers being progressively larger and each of area sufficient to check the velocity of the steam passing through it, a series of ports, one leading into each chamber from the buckets of the wheel and a series of directing-ports, one leading from each chamber to the buckets of the wheel said directing-ports being progressively larger and each adapted to pass a uniform weight of the progressively-expanding fluid at uniform velocities.

4. A turbine for expansible fluids having a disk-like wheel secured to its main shaft and provided with buckets around its circumference in combination with a wheel-casing having parallel plates forming a nice fit with the sides of the disk-like center of the turbine, said casing-plates having a series of fluid-packing grooves on their faces lying opposite to the disk, admission and exit ports situated on opposite sides of the wheel-center and two series of chambers and directing-ports, one series extending on each side of the wheel from the admission to the exhaust ports, the chambers of each series communicating with each other in series through the directing-ports and the buckets of the wheel.

5. A turbine for expansible fluids having a disk-like wheel secured to its main shaft and provided with buckets around its circumference in combination with a wheel-casing having parallel plates forming a nice fit with the sides of the disk-like center of the turbine, said casing-plates having a series of fluid-packing grooves on their faces lying opposite to the disk, said grooves extending across the face of the casing and substantially at right angles to the line connecting the inlet and exhaust ports, admission and exit ports situated on oppposite sides of the wheel-center and two series of chambers and directing-ports, one series extending on each side of the wheel from the admission to the exhaust ports, the chambers of each series communicating with each other in series through the directing-ports and the buckets of the wheel.

6. A turbine for expansible fluids having a disk-like wheel secured to its main shaft and provided with buckets, around its circumference in combination with a wheel-casing having parallel plates forming a nice fit with the sides of the disk-like center of the turbine, said casing-plates having a series of fluid-packing grooves on their faces lying opposite to the disk, said grooves extending across the face of the casing and substantially at right angles to the line connecting the inlet and exhaust ports and said casing having openings through its edges leading into chambers on the sides of the turbine and into which openings the fluid-packing grooves open, ad-

mission and exit ports situated on opposite sides of the wheel-center and two series of chambers and directing-ports one series extending on each side of the wheel from the admission to the exhaust ports, the chambers of each series communicating with each other in series through the directing-ports and the buckets of the wheel.

7. A turbine for expansible fluids having in combination a wheel provided with two circumferentially-arranged sets of buckets arranged side by side, a casing having inlet and exhaust ports set opposite to each other, partitions arranged in the casing to divide it into two sets of chambers of increasing size, one set extending from the inlet to the exhaust port on each side of the wheel, and directing-ports leading from each chamber to the successive one through the buckets of the wheel and alternately through buckets of the separate sets of buckets.

8. A turbine for expansible fluids having in combination a wheel provided with two circumferentially-arranged sets of radial buckets arranged side by side, a casing having inlet and exhaust ports set opposite to each other, partitions arranged in the casing to divide it into two sets of chambers of increasing size, one set extending from the inlet to the exhaust port on each side of the wheel and radially-arranged directing-ports leading from each chamber to the successive one through the buckets of the wheel and alternately through buckets of the separate sets of buckets.

9. A turbine for expansible fluids having in combination a wheel provided with two circumferentially-arranged sets of buckets set side by side, a casing having inlet and exhaust ports, a series of fluid-chambers formed in the casing between the inlet and exhaust ports connected in series through the buckets of the wheel and arranged to successively deliver the fluid alternately to buckets of the two series.

10. A turbine for expansible fluids having in combination a wheel provided with two circumferentially-arranged sets of radial buckets set side by side, a casing having inlet and exhaust ports, a series of fluid-chambers formed in the casing between the inlet and exhaust ports connected through buckets of the alternate series, and directing-ports one leading from each chamber to the buckets and all arranged to deliver the fluid to the inner edges of the radially-arranged buckets.

11. A turbine for expansible fluids having in combination a wheel provided with two circumferentially-arranged sets of buckets, a casing having inlet and exhaust ports arranged on opposite sides of the wheel-center, two series of fluid-chambers formed in the casing connecting the inlet and exhaust ports on opposite sides of the wheel, said series of chambers being connected in series through the buckets of the wheel, and arranged to successively deliver the fluid alternately to buckets of the two series.

## 753,856. VARIABLE-SPEED TRANSMISSION-GEARING.

Thomas C. Churchill, Poquoson, Va. Filed Nov. 15, 1902. Serial No. 131,480. (No model.)

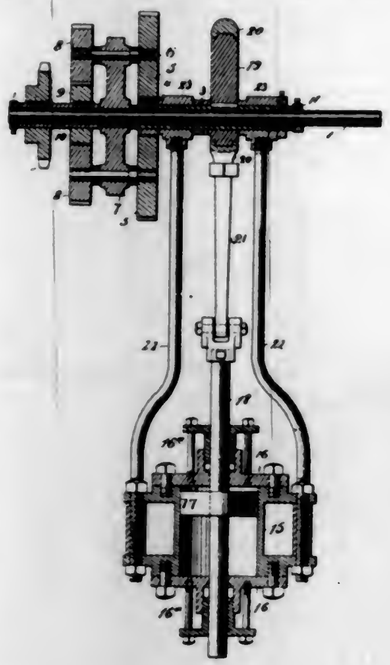
*Claim.*—1. The combination of a driving member, a driven member, and gearing interposed between them, with a cylinder and piston, means to equalize the volume of the cylinder on opposite sides of the piston, means for connecting the piston with an element of said gearing, and means to control the operation of said element by said piston, substantially as described.

2. The combination of a driving member, a driven member, and gearing interposed between them, with a cylinder and piston, means for connecting the piston with an element of said gearing, means to equalize the volume of the cylinder on opposite sides of the piston, means for providing communication between opposite ends of the cylinder, and means for controlling the flow of fluid between opposite ends of the cylinder, substantially as described.

3. The combination of a driving member, a driven member, and gearing interposed between them, with a cylinder and piston, means to equalize the volume of the cylinder on opposite sides of the piston, means for connecting the piston with an element of said gearing, a port providing communication between opposite ends of the cylinder, and a valve to control the passage of fluid through said port, substantially as described.

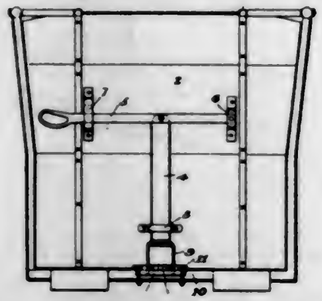
4. The combination of a driving member, a driven member, and gearing interposed between them, with a cylinder and piston, means for connecting the piston with an element of said gearing, a port providing communication between opposite ends of the cylinder, a valve to control the passage of fluid through said port, and a rod extending from the rear of the piston through the cylinder to equalize the volume of the cylinder on both sides of the piston during the reciprocations of the piston, whereby a controllable resistance is provided to regulate the reciprocations of the piston, substantially as described.

5. The combination of a driving member, a driven member, and two epicycloidal gear-trains connecting said members, with a cylinder and piston, means for connecting said piston with an element of one of said gear-trains, a rod extending from the rear of the piston through the cylinder, and means to control the reciprocations of said piston, substantially as described.



## 753,857. LOCKING-LATCH FOR DOORS OF COAL-CARS.

Albert T. Correll, Bradenville, Pa. Filed Aug. 4, 1903. Serial No. 168,141. (No model.)



*Claim.*—1. A locking-latch for swinging doors, consisting in a vertically-sliding bar, a guide for said bar, a swinging bolt pivoted to the lower end of said bar, and a staple secured to the body of the car so as to form a pocket adapted to receive and retain the end of the swinging bolt; substantially as described.

2. A locking-latch for swinging doors, consisting in a vertically-sliding bar, a guide for said bar, a swinging bolt pivoted to the lower end of the bar, a staple secured to the body of the car so as to form a pocket adapted to receive and retain the lower end of the swingiag bolt, and a lever for operating the bar; substantially as described.

## 753,858. PORTABLE DESK.

Thomas Cran, Detroit, Mich. Filed May 23, 1903. Serial No. 158,508. (No model.)

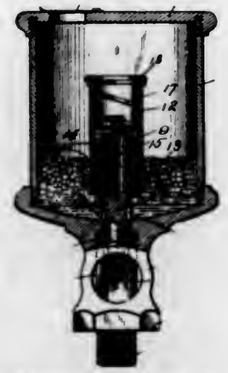
*Claim.*—In a device of the character described, the combination with a board having a spring-clip at one end thereof; of a handle to the clip having a longitudinally-extending slot therein parallel with and adjacent to one end of the board and extending transversely thereof, said slot being longer than the clip, and downwardly-curved longitudinally-extending edges to the slot forming guides.





## 753,859. SELF-REGULATING OIL-CUP.

Matthias Crowther, West Pittston, Pa. Filed May 27, 1903. Serial No. 158,958. (No model.)



*Claim.*—1. A lubricator comprising, an oil-cup, a thermostatic valve device secured therein and consisting of a valve-tube, a valve therein, a cylinder secured to said valve-tube and surrounding the upper portion thereof whereby an annular chamber is formed between the tube and the cylinder, a valve in said tube, a piston in the cylinder, means for connecting the valve to the piston, a thermostatic medium in the cylinder below the piston whereby the piston will be raised when the thermostatic medium is expanded, and a spring to return the piston to its normal position when the thermostatic medium contracts.

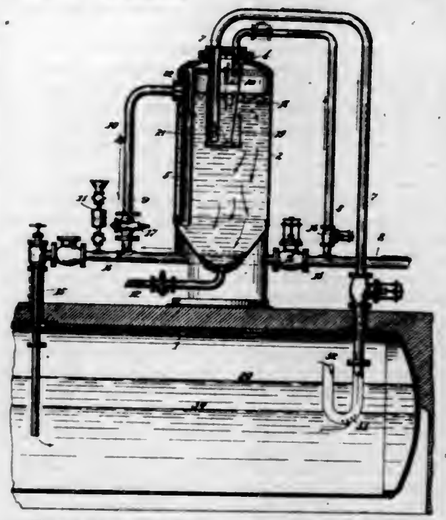
2. A valve device for an automatic lubricator comprising, a valve-tube adapted to be secured to the bottom of an oil-cup, inlet-ports formed therein, a cylinder secured to said tube above the ports, said cylinder surrounding the valve-tube whereby an annular space is formed between the tube and the cylinder; a piston in said cylinder, a thermostatic medium contained in the cylinder below the piston, a valve in the valve-tube, said valve normally closing the ports in said tube, means for connecting the valve to the piston whereby the valve will be lifted when the thermostatic medium expands, and a spring in the cylinder to return the valve to its closed position when the thermostatic medium contracts.

3. A valve device for an automatic lubricator comprising, a valve-tube adapted to be secured to the bottom of an oil-cup, inlet-ports formed therein, a cylinder secured to said tube above the ports, said cylinder being enlarged at its lower end and surrounding the valve-tube whereby an annular space is formed between the said tube and the cylinder, a piston in said cylinder above the enlarged part and extending down into the annular space between the tube and the cylinder, a thermostatic medium contained in the cylinder below the piston, a valve in the valve-tube, said valve normally closing the ports in said tube, means for connecting the valve to the piston whereby the valve will be lifted when the thermostatic medium expands, and a spring in the cylinder above the piston to return the valve to its closed position when the thermostatic medium contracts.

4. A valve device for an automatic lubricator comprising, a valve-tube, a valve therein, a thermostatic fluid-chamber surrounding said valve-tube, a movable device in said chamber and surrounding the valve-tube, and means connecting the valve centrally to the movable device, whereby the expansion of the thermostatic fluid will cause a direct longitudinal pull on the valve.

## 753,860. PROCESS OF PURIFYING FEED-WATER.

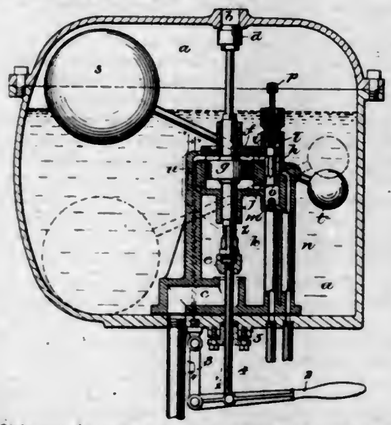
Jean B. L. Destombes, Tourcoing, France. Filed Apr. 29, 1903. Serial No. 154,772. (No specimens.)



*Claim.*—A process for the continuous purification of feed-water for steam-generators or the like, which consists in charging the boiler with a reagent consisting of carbonate of soda, and injecting a mixture of water and steam from the boiler into the feed-water beneath the level of said water, whereby the feed-water which is sprayed into the purifying-receptacle is heated by the steam and is thoroughly mixed with the water from the boiler, substantially as set forth.

## 753,861. STEAM-TRAP.

Joseph G. Duck, Milwaukee, Wis., assignor of one-half to John G. Thompson, Milwaukee, Wis. Filed May 2, 1902. Serial No. 105,592. (No model.)



*Claim.*—1. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, an expansion-chamber provided with a movable part which is connected with and arranged to operate said valve, a fluid-pressure-supply connection leading to said expansion-chamber from a source outside of the trap; a valve controlling the supply of an actuating fluid in said chamber, and a float directly connected with and arranged to operate said last-named valve according to the liquid-level in said receptacle, substantially as described.

2. In a steam-trap the combination of a closed receptacle hav-

ing inlet and outlet connections, of a valve normally closing the outlet connection, a valve for closing the inlet connection, an expansion-chamber provided with a movable part which is connected with and arranged to operate said valves, a valve controlling the supply of an actuating fluid in said chamber, a float connected with and arranged to operate the last-mentioned valve according to the liquid-level in said receptacle, a vent opening into the upper part of said receptacle and a valve arranged to be operated by said movable part and controlling said vent, substantially as described.

3. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, an expansion-chamber having a movable part which is connected with and arranged to operate said valve, a valve-chamber communicating with said expansion-chamber on opposite sides of said movable part and having fluid supply and exhaust connections, the supply connection leading from a source of fluid-pressure outside and independent of said trap, a balanced piston-valve fitted in said valve-chamber and controlling the admission and release of the actuating fluid to and from said expansion-chamber, and a float directly connected with and arranged to operate said balanced valve, substantially as described.

4. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, a valve for closing the inlet connection, a cylinder, a piston fitted in said cylinder and connected with said valves, a valve-chamber communicating through ports with the ends of said cylinder and having supply and exhaust connections, a balanced valve fitted in said chamber and controlling the admission and release of an actuating fluid to and from said cylinder on opposite sides of the piston, and a float connected with and arranged to operate said balanced valve, substantially as described.

5. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, a valve for closing the inlet connection, a cylinder, a piston fitted in said cylinder and connected with said valves so as to close the inlet-valve when the outlet-valve is opened, a valve-chamber communicating with the ends of said cylinder and having fluid supply and exhaust connections, a valve fitted in said chamber and controlling the admission and release of an actuating fluid to and from said cylinder, a float connected with and arranged to operate the last-mentioned valve, a vent opening into the upper part of said receptacle, and a valve controlling said vent and arranged to be opened by said piston when the inlet-valve is closed, substantially as described.

6. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, a cylinder, a piston fitted in said cylinder and connected with said valve, a valve controlling the admission and release of an actuating fluid to and from said cylinder, a float connected with and arranged to operate the last-mentioned valve, and waste-passages leading out of said receptacle from the ends of said cylinder and provided with cocks, substantially as described.

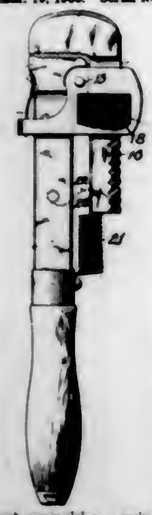
7. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, an expansion-chamber provided with a movable part which is connected with and arranged to operate said valve, a valve controlling the supply of an actuating fluid in said chamber, a float connected with and arranged to operate the last-mentioned valve, and a connection extending outside of the trap for manually operating said outlet-valve, substantially as described.

8. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, a cylinder arranged within said receptacle and provided within a piston which is connected with said valve, a balanced valve controlling the admission and release of an actuating fluid to and from said cylinder, a float connected with and arranged to operate the last-mentioned valve, and a lever connected with said outlet-valve by a rod passing through a stuffing-box in the wall of said receptacle for manually operating said valve, substantially as described.

9. In a steam-trap the combination with a closed receptacle having inlet and outlet connections, of a valve normally closing the outlet connection, a valve for closing the inlet connection, a chamber provided with a movable part which is connected with and arranged to operate said valves, a valve controlling the supply of an actuating fluid to said chamber, a float connected with and arranged to operate the last-mentioned valve, a vent opening into the upper part of said receptacle, and a valve controlling said vent and having a yielding connection with said movable part whereby the inlet-valve is closed or nearly so, before the vent-valve is opened, substantially as described.

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**753,862. WRENCH. ALBERT L. ELIEL, Parlin, N. J., and JOHN LA BURT, New York, N. Y., assignors to themselves, and Carl D. Bradley, Parlin, N. J. Filed Mar. 19, 1903. Serial No. 148,522. (No model.)**



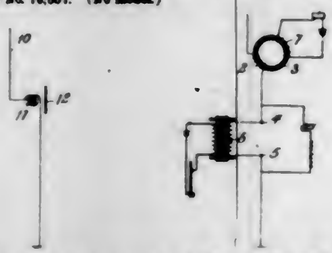

*Claim.*—1. A wrench comprising a pair of shanks having opposed jaws, a thread on one of the said shanks, said shanks being adjustable to one another, a nut for adjusting the jaws, said nut having threads engaging with the thread on one of the shanks, a mutilation in the thread of the nut to release the shank, when the mutilation on the nut is in line with the thread of the shank, and a spring arranged on the outside and connecting the movable shank with the unthreaded shank to close the jaws when they are in sliding relation.

2. A wrench comprising a shank having a jaw on one end, a second shank adjustably arranged to the first shank and having a jaw opposed to the jaw on the first shank, a thread on one edge of the adjustable shank, a nut on the unthreaded shank, said nut having a thread arranged to engage the thread on the adjustable shank, a mutilation on the thread of the nut so that the adjustable jaw is released when the mutilation on the nut is in line with the thread on the shank, and a spring arranged on the outside of the first-mentioned shank bearing on the adjustable shank to close the jaws when they are released.

3. In a wrench comprising a pair of shanks sliding in relation to one another, opposed jaws on the shanks, a spring on the outside of the wrench arranged to connect the shanks, and acting to limit the open relation of the jaws, and to close the jaws when the shanks are released.

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**753,863. WIRELESS SIGNALING. REGINALD A. FESSENDEN, Manteo, N. C., assignor to the National Electric Signaling Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Sept. 28, 1901. Serial No. 76,837. (No model.)**




*Claim.*—1. As an improvement in the art of signaling by electromagnetic waves the method herein described which consists in the practically continuous transmission and reception of electromagnetic waves or impulses, and modifying or changing the character of said waves or impulses without interruption of their continuity, substantially as set forth.



2. As an improvement in the art of signaling by electromagnetic waves the method herein described which consists in the practically continuous transmission and reception of electromagnetic waves or impulses, and continuously modifying or changing the character of such waves or impulses without interruption of their continuity, substantially as set forth.

3. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the transmission and reception of electromagnetic waves or impulses and modifying or varying the character of a portion of such waves or impulses without interruption of their continuity, substantially as set forth.

4. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the transmission and reception of electromagnetic waves or impulses of uniform character and continuously modifying or varying the character of a portion of such waves or impulses without interruption of their continuity, substantially as set forth.

5. As an improvement in the art of transmitting sounds by electromagnetic waves the method herein described, which consists in the generation of electromagnetic waves or impulses and modifying or varying the character of such waves or impulses by sound waves or impulses without interruption of their continuity, substantially as set forth.

6. As an improvement in the art of signaling by electromagnetic waves, the method herein described which consists in the practically continuous transmission and reception of electromagnetic waves or impulses normally of a predetermined character and modifying or changing the character of such waves or impulses without interrupting their continuity by changing the electrical constants of the sending-conductor so as to change the degree of resonance between the generator and sending-conductor, substantially as set forth.

7. As an improvement in the art of signaling by electromagnetic waves the method herein described which consists in the practically continuous generation of waves or impulses and modifying or changing the intensity of said waves without interrupting their continuity, thereby rendering them capable of affecting a receiving-conductor, tuned to correspond with sending-conductor, during only a portion of the time.

8. As an improvement in the art of signaling by electromagnetic waves the method herein described which consists in the practically continuous generation of waves or impulses and modifying or changing the intensity of such waves or impulses without interrupting their continuity by changing the resistance in the sending-conductor.

9. As an improvement in the art of signaling by electromagnetic waves the method herein described which consists in the practically continuous generation of waves or impulses and modifying or changing the intensity of said waves without interrupting their continuity, thereby rendering them capable of affecting a receiving-conductor tuned to correspond with the sending-conductor, to different degrees at different times.

10. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the practically continuous transmission and reception of electromagnetic waves normally of a predetermined character, and modifying or changing the character of such waves or impulses without interruption of their continuity, substantially as set forth.

11. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the practically continuous transmission and reception of electromagnetic waves or impulses normally of a predetermined character and continuously modifying or changing the character of such waves or impulses without interruption of their continuity, substantially as set forth.

12. As an improvement in the art of transmitting sounds by electromagnetic waves the method herein described, which consists in the generation of electromagnetic waves or impulses normally of uniform character, and modifying or varying the character of such waves or impulses by sound waves or impulses without interruption of their continuity, substantially as set forth.

13. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the practically continuous transmission and receipt of electromagnetic waves, and modifying the character of said waves at the sending-station without interrupting their continuity, substantially as set forth.

14. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the practically continuous generation of electromagnetic waves or impulses of constant periodicity, and modifying or changing the intensity of such waves or impulses without interrupting their continuity, substantially as set forth.

15. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in the practically continuous generation of electromagnetic waves or impulses of constant periodicity, and modifying or changing the intensity of such waves or impulses by changing the resistance of the sending-conductor without interrupting the continuity of the waves, substantially as set forth.

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**753,864. SIGNALING BY ELECTROMAGNETIC WAVES. REGINALD A. FESSENDEN, Fortress Monroe, Va., assignor, by direct and mesne assignments, to the National Electric Signaling Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Oct. 1, 1903. Serial No. 175,364. (No model.)**




*Claim.*—1. In a system of transmission of energy by electromagnetic waves, the combination of a laterally-extending conductor consisting of a series of wires adapted to radiate electromagnetic waves and having its capacity relatively much larger than that of a vertical wire of the same height as that of the conductor, and an inductance between the laterally-extended portion and ground, substantially as set forth.

2. In a system of transmission of energy by electromagnetic waves, the combination of a laterally-extending conductor of large capacity and formed of a number of laterally-extending wires, and an inductance between the laterally-extended portion and ground, substantially as set forth.

3. In a system of transmission of energy by electromagnetic waves, the combination of a conductor adapted to radiate electromagnetic waves comprising a lateral extension consisting of a number of wires, the inductance of the vertical portion forming the connection of the lateral extension to ground being greater per unit length than that of the lateral portion, substantially as set forth.

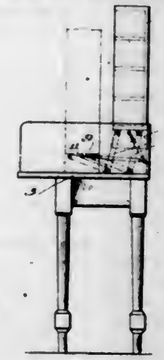
4. In a system of transmission of energy by electromagnetic waves, the combination of a laterally-extending conductor consisting of a series of wires adapted to radiate electromagnetic waves and having its capacity relatively much larger than that of a vertical wire of the same height as that of the conductor, and a coil of wire between the laterally-extended portion and ground.

5. In a system of transmission of energy by electromagnetic waves, the combination of a laterally-extending conductor of large capacity and formed with a number of laterally-extending wires, and a coil of wire between the laterally-extended portion and ground.

6. In a system of transmission of energy by electromagnetic waves, the combination of a conductor adapted to radiate electromagnetic waves, comprising a lateral extension consisting of a number of wires and a coil of wire between the laterally-extended portion and ground, the inductance of such connection being greater per unit of length than that of the lateral portion, substantially as set forth.

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**753,865. POST-OFFICE FURNITURE. MARCELLUS S. FIELD, Boston, Mass. Filed Aug. 21, 1903. Serial No. 170,301. (No model.)**



*Claim.*—1. In a device of the class described, a table, an assorting-case above the table, swinging supports for said assorting-case, and steadying-springs to steady said case during its swinging movement.

2. In a device of the class described, a table, an assorting-case, swinging supports for said case, and steadying-springs connecting said case and table and operating to steady the former during its swinging movement.

3. In a device of the class described, a table, an assorting-case mounted to swing toward and from the front of the table, and steadying-springs connecting said case and table and operating to steady the former in its swinging movement.

4. In a device of the class described, a table, an assorting-case, means to support said case for movement toward and from the table and also toward and from the front of the table, and steadying-springs disposed to oppose the movement of the case toward the front of the table.

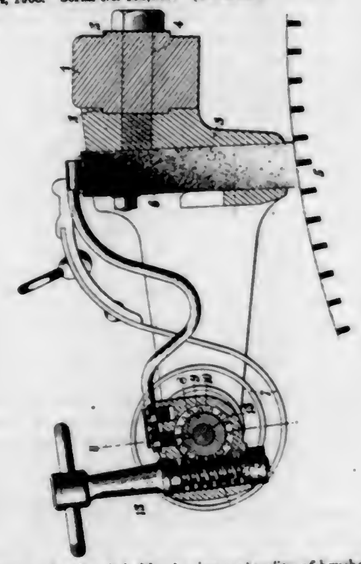
5. In a device of the class described, a table, an assorting-case mounted for movement toward and from said table and also toward and from the front of the table, steadying-springs connecting said case and the back of the table, the point of attachment between the springs and back of the table being lower than that between the springs and the case.

6. In a device of the class described, a table, an assorting-case mounted for swinging movement toward and from the table, and detachable steadying-springs connecting the table and case and operating to steady the latter in its swinging movement.

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## 753,866. BRUSH-HOLDER FOR ELECTRICAL MACHINES.

WILLIAM H. FOOT, Wilkinsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed June 24, 1903. Serial No. 162,908. (No model.)



*Claim.*—1. In a brush-holder having a plurality of brushes, the combination with a plurality of springs, of a rotatable shaft having adjusting means for one of the end springs fastened to its respective ends, and separate adjusting means for each of the other springs mounted upon the shaft to turn independently thereof.

2. In a brush-holder having a plurality of brushes, the combination with a plurality of springs acting independently upon the several brushes, of a rotatable shaft having adjusting means for one of the end springs fastened to its respective ends and separate adjusting means for each of the other springs rotatably mounted upon the shaft.

3. In a brush-holder having a plurality of brushes, the combination with a plurality of springs, bearing severally upon the brushes, of a rotatable shaft, adjusting-gears for said springs each of which has one of its members mounted upon said shaft, means for fastening each of said gear members to its spring, means for fastening one of said members to the shaft and a supplemental gear member that is attached only to the shaft.

4. In a brush-holder having a plurality of brushes, the combination with a plurality of springs bearing severally upon the brushes, of a rotatable shaft, a worm-wheel fastened to one end of the shaft and the corresponding spring, a worm-wheel fastened to the other end of the shaft, a detachable worm-spindle for engagement with either of said worm-wheels, a plurality of worm-wheels rotatably mounted upon said shaft and severally attached to the intermediate springs, and worm-spindles engaging the respective worm-wheels.

5. In a brush-holder having a plurality of brushes, the combination with a shaft having gear members fastened to its ends and intermediate gear members rotatably mounted thereon, of springs respectively attached to the intermediate gear members and one of the end members and bearing upon the respective brushes, manually-operated gear members respectively meshing with said intermediate members and a detachable, manually-operated gear member adapted to mesh with either of said end members.

6. The combination with a rocker-arm having a longitudinal projection on each side thereof, a brush-holder having a longitudinal recess in one side and means for clamping the holder against either side of the rocker-arm with one of said projections in its recess, of a set of brushes seated side by side in said holder, a set of independent springs for said brushes, means for adjusting one of the end springs from either end of the holder and independent means for adjusting each of the other springs.

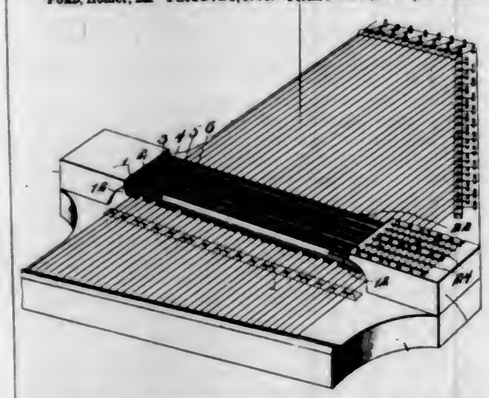
7. The combination with a rocker-arm, a brush-holder and means for detachably clamping said holder to either side of said arm, of a set of brushes supported side by side in said holder, a set of springs for said brushes, means for adjusting one of the end springs from either end of the holder and independent means for adjusting each of the other springs.

8. The combination with a rocker-arm, a brush-holder and means for removably clamping said holder to either side of said arm, of a set of brushes supported independently in said holder, a set of springs for said brushes, independent adjusting means for each of said springs, said means for one of the end springs comprising a rotatable shaft and an actuating device at each end thereof.

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## 753,867. SLIDING CHORD-BAR FOR AUTOHARPS.

DARDEN FORD, Homer, La. Filed Dec. 3, 1903. Serial No. 183,630. (No model.)



*Claim.*—1. The combination with a chromatically strung and tuned musical instrument, of casings having vertically-arranged guideways therein, said casings being arranged at opposite sides of the sounding-board of the instrument, a plurality of chord-bars arranged for vertical movement in the ways in said casings and each comprising a frame and a member arranged for longitudinal sliding movement therein, springs by which said chord-bars are held normally out of contact with the strings of the instrument, connecting devices by means of which the positions of the longitudinal sliding members relative to the spring are rendered clearly visible, said connecting devices comprising upwardly-projecting pins provided one on each of said sliding members, and a slotted cover-plate for one of said casings, said cover-plate having scales arranged between the slots thereof and the pins on the longitudinal sliding members being disposed in said slots.

2. A chord-bar for chromatically strung and tuned musical instruments comprising a frame adapted to be supported transversely of the instrument above the strings, felt pegs on the under side of said frame, springs encircling said pegs and having their lower ends



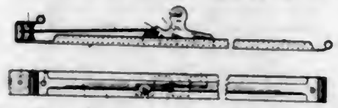
fixed in position, and a sliding member arranged for movement longitudinally in said frame, said sliding member being provided at its ends with sound-deadening buffers and having blocks of felt secured upon the under side thereof for engagement with certain strings of the instrument for the production of a particular chord.

3. In a chord-bar for musical instruments, the combination of a frame consisting of two longitudinal members spaced apart and provided near their ends with longitudinally-disposed slots, means for yieldably supporting said frame above the strings of a musical instrument, a member arranged for sliding movement in said frame and being of an inverted-T shape in cross-section, pins fixed in said member and engaging the slots in said frame, and buffers at the ends of said sliding member.

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## 753,868. WINDOW-SHADE HANGER.

JOHN C. FORSBERG, La Crosse, Wis. Filed May 26, 1903. Serial No. 158,774. (No model.)

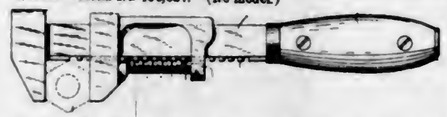


*Claim.*—The combination with the vertical guides 7 having the inturned flanges 7ª, bent at both ends to form the cylindrical seats, and bent at their upper ends to form U-shaped sections, of guide-sheaves 10 journaled in said U-shaped sections, guide-heads 14 having laterally-bent feet working in the channels of said guides, and cords attached to said heads and working over said guide-sheaves substantially as described.

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## 753,869. WRENCH.

GEORGE E. FOX, Pittsburg, Pa. Filed May 7, 1903. Serial No. 156,027. (No model.)

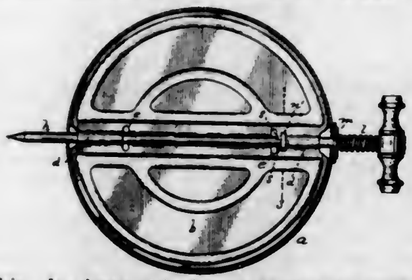


*Claim.*—In a wrench, the combination of a bar having a fixed head attached thereto a rack formed on said bar, a movable jaw, a slotted socket formed in said jaw provided with a cam-surface, a segmental screw carried by said movable jaw, a cam-surface formed on one end of said screw to oppose the before-mentioned cam-surface, and means to rotate said screw.

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## 753,870. DAMPER.

JOHN E. FRENNING, Belmont, Mass., assignor to the S. M. Howes Company, Boston, Mass., a Corporation of Massachusetts. Filed Dec. 11, 1903. Serial No. 184,707. (No model.)



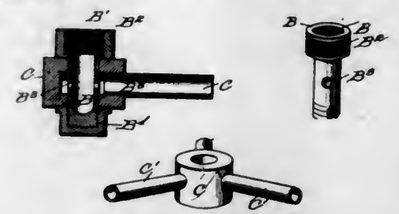
*Claim.*—In a damper of the character described, the combination with the damper proper provided with the slots *e* and the connecting-slots *f*, of a spindle provided with locking-pins adapted to pass through the slots *e* when the spindle is rotated and extend into the slots *f* when the spindle is locked, and guards on the outer ends of said pins, said guards being adapted to extend through the slots *e*, and being of sufficient breadth or size to extend beyond the edges of the spindle-groove and to extend across and overlap the opposite edges of the slots *f*, and the corners at their junction with the slots *e* when the pins are passing around the corner at the junction of said slots *e* and *f*, for the purpose set forth.

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## 753,871. GAS-BURNER.

CHARLES T. FULLER, Olean, N. Y. Filed Sept. 19, 1903. Serial No. 173,880. (No model.)

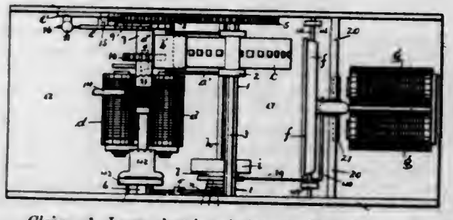
*Claim.*—A valve apparatus for gas-fixtures comprising a valve-chamber C with radiating pipes communicating therewith, a hollow detachable coupling B interiorly chambered mounted in a vertical aperture in said chamber, the inner end of said coupling being closed and having circumferential threads, the walls of the coupling being apertured, a threaded cap fitted over the inner end of said coupling, the opposite end of the coupling being shouldered and adapted to rest against the top of said chamber and having its circumference milled, the interior chambered portion of the coupling having threads and a threaded pipe adapted to be fitted thereto, as shown and described.



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## 753,872. ELECTRIC PRINTING-MACHINE.

GEORGE S. GALLAGHER, New York, N. Y., assignor to himself, Rupert L. Joseph, and Frank E. Burrows, New York, N. Y. Filed Apr. 29, 1903. Serial No. 154,782. (No model.)



*Claim.*—1. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel, and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, means for stopping the type-wheel and means independent of the continuously-revolving shaft for actuating the hammer.

2. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, means for stopping the type-wheel, means independent of the continuously-revolving shaft for actuating the hammer, means independent of the continuously-revolving shaft for shifting the type-wheel every time the hammer is actuated, and means independent of the continuously-revolving shaft for returning the type-wheel to its initial longitudinal position when the type-wheel reaches its extreme position.

3. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, means for stopping the type-wheel, means independent of the continuously-revolving shaft for actuating the hammer, means independent of the continuously-revolving shaft for automatically shifting the type-wheel every time the hammer is actuated, means independent of the continuously-revolving shaft for automatically returning the type-wheel to its initial longitudinal position when the type-wheel reaches its extreme position, a paper strip and means for automatically moving the same progressively forward when the type-wheel reaches its extreme position.

4. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a drum on the other end of said shaft, means connected with said drums and actuated thereby and by the striking-hammer for shift-

ing the type-wheel laterally every time the striking-hammer is actuated, and means independent of the continuously-revolving shaft for returning the type-wheel to its initial longitudinal position only after having reached its extreme position.

5. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a drum on the other end of said shaft, connections from both the said drums to the said frame, means independent of the continuously-revolving shaft for actuating one of said drums to shift the type-wheel and frame laterally every time the hammer is actuated, and means for returning the type-wheel to its initial longitudinal position only after having reached its extreme position.

6. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a second drum on the other end of said shaft, connections from both the said drums to the said frame, a support-frame, an annular disk carried thereby, a ratchet-wheel secured to said second drum, a pawl secured to said disk and adapted to engage said ratchet, a fixed pawl also adapted to engage said ratchet, and a connection from said disk to the arm of said striking-hammer whereby the said second drum is moved to shift the frame and type-wheel every time the hammer is actuated.

7. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft a second drum on the other end of said shaft, connections from both the said drums to the said frame, a support-frame, an annular disk carried thereby, a ratchet-wheel secured to said second drum, a pawl secured to said disk and adapted to engage said ratchet, a fixed pawl also adapted to engage said ratchet, a connection from said disk to the arm of said striking-hammer whereby the said second drum is moved to shift the frame and type-wheel every time the hammer is actuated, and means for returning the type-wheel to its initial longitudinal position only after it reaches its extreme position.

8. In an electric printing-machine, the combination with a continuously-revolving shaft, of a type-wheel, a frame connected to said type-wheel, means for turning said type-wheel by said shaft, means for stopping said type-wheel, a striking-hammer, means independent of the continuously-revolving shaft for actuating the same, a shaft, a drum on one end of said shaft, a second drum on the other end of said shaft, connections from both the said drums to the said frame, a support-frame, an annular disk carried thereby, a ratchet-wheel secured to said second drum, a pawl secured to said disk and adapted to engage said ratchet, a fixed pawl also adapted to engage said ratchet, a connection from said disk to the arm of said striking-hammer whereby the said second drum is moved to shift the frame and type-wheel every time the hammer is actuated, an arm adapted to be actuated by the type-wheel hub to release the said second drum, and a spring to actuate the said drum to return the type-wheel to its initial position only after having reached its extreme position.

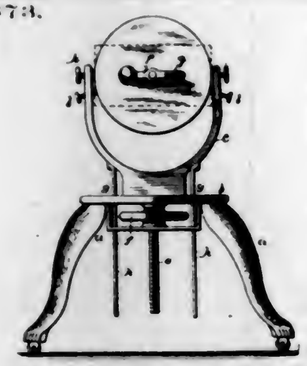
9. In an electric printing-machine, the combination with a continuously-revolving shaft, of a sleeve loose upon said shaft, a gear-wheel, a cam-wheel and a star-wheel secured to said sleeve, a type-wheel, a type-wheel shaft, a gear-wheel secured on said type-wheel shaft and meshing with the aforesaid gear-wheel, a striking-hammer, an electromagnet, an arm actuated thereby and adapted to contact with the notches of the star-wheel to stop the sleeve and thereby the type-wheel, and an electromagnet to actuate the striking-hammer simultaneously with the stopping of the type-wheel.

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**753,873. SPRING-MOTOR.** JAMES E. GIBBS, Bridgewater, Va., assignor of one-half to George A. Horn, Newark, N. Y. Filed Apr. 4, 1903. Serial No. 151,059. (No model.)

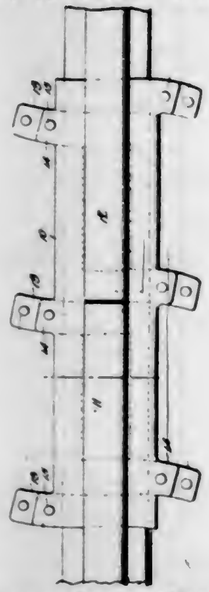
*Claim.*—The combination with an invertible spring-motor, and a pedestal, of a holding-frame, its threaded adjusting-stem and guides, the hand-wheel on said stem, and the horizontal pivots of the spring-motor in connection with said holder-frame, substantially as specified.

753,873.



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**753,874. RAIL-JOINT.** JAMES R. GILBERT, Kissimmee, Fla. Filed Apr. 15, 1903. Serial No. 152,774. (No model.)



*Claim.*—1. As a new article of manufacture, a rail-joint plate consisting of a longitudinal portion adapted to embrace the vertical web and rail-flange and having alternating spaced clips extending laterally in opposite directions, one series of said clips being curved longitudinally of the plate and adapted to extend beneath the rail-flange, and the other series of said clips being reversely curved and adapted to extend over the ties in the opposite direction, substantially as described.

2. As a new article of manufacture, a rail-joint plate formed with a longitudinal portion conforming to the vertical web and one side of the rail-flange and with spaced clips alternately disposed and extending in opposite directions, the clips on one side of said plate being disposed in a different horizontal plane from those on the other side.

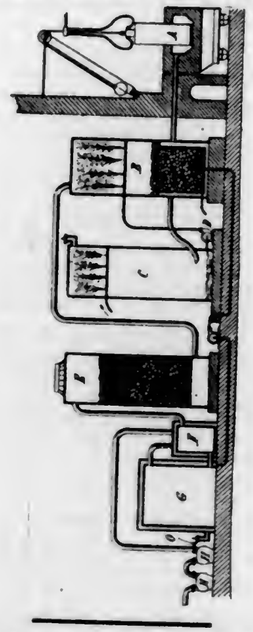
3. A rail-joint plate consisting of a longitudinal member adapted to embrace the vertical web and rail-flange and having alternately-disposed spaced clips extending laterally in opposite directions, the clips on each side of said plate being arranged in a common horizontal plane parallel with the plane occupied by the clips on the other side of said plate.

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**753,875. ELECTRICAL MANUFACTURE OF IRON ALLOYS.** GUSTAVE GIN, Paris, France. Filed July 7, 1902. Serial No. 114,661. (No specimens.)

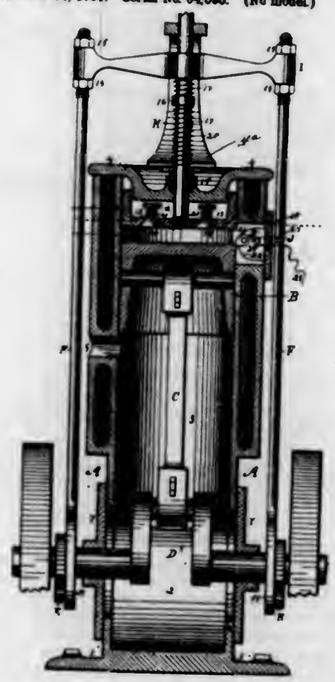
*Claim.*—The herein-described process for electrically producing an alloy of iron with the simultaneous production of oxids of alkalies, consisting of mixing a silicic acid with the sulfate of the alkali, adding carbon to the mixture heating the same in an electric furnace with the production of the silicate of the alkali, then introducing this alkali silicate into a second furnace, adding an oxid of iron, and carbon thereto, heating the same with the production of ferrosilicon and oxid of the alkali, and collecting the oxid of the alkali in the form of a sublimate of the same, substantially as described.





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**753,876. GAS-ENGINE.** DE CLOISE GLASBY, Minneapolis, Minn. Filed June 11, 1901. Serial No. 64,095. (No model.)



*Claim.*—1. In a gas-engine, the combination with the cylinder, power-piston and crank-shaft thereof, of a valve-seat chambered and longitudinally movable within the said cylinder; ports or passages for the gas extending through the said valve-seat; upward-closing valves adapted to open and close the said ports; a piston-rod affixed to the said valve-seat and extending upward therefrom through the head of the said cylinder; an annulus or collar affixed upon the said rod; a spring mounted upon the said cylinder-head, and acting against the said annulus or collar; said spring operating through its reflex action to raise the said valve-seat within the said cylinder; a cross-head affixed upon the said rod; cam-rods affixed to and extending downward from the said cross-head; cams mounted upon the said shaft and actuating the said cam-rods; and means for exploding the charges of motive fluid, substantially as shown and for the purposes specified.

2. In a gas-engine, the combination with the cylinder, piston and crank-shaft thereof, of a valve-seat chambered and longitudinally movable within the said cylinder, ports and passages in the said valve-seat, valves adapted to close the said ports and passages; a rod connecting said valve-seat with a cross-head; a spring mounted upon the said cylinder and incasing the said rod; cams mounted upon and rotatable with the said shaft; cam-rods connecting the said cams with the said cross-head; said cams, cam-rods, and cross-head, operating to deflect the said spring, and to depress the said valve-seat; said spring operating through its reflex action to return the said valve-seat to its upward position, and means for igniting the said motive fluid within the said cylinder, substantially as shown and for the purposes specified.

3. A gas-engine embodying a frame, a cylinder therein, a crank-shaft journaled in the said frame, a piston within the said cylinder, a rod connecting the said crank-shaft and the said piston, an ingress-port leading into, and an exhaust-port leading out from the said cylinder, a valve-seat intermediate the said ingress and exit ports, spring-controlled valves therein, a cylinder-head, a valve-rod extending from the said valve-seat and through the said cylinder-head, an annulus on the said valve-rod, a spring intermediate the said cylinder-head and the said annulus, a cross-head loosely mounted upon the said valve-rod, a spring intermediate the said annulus and the said cross-head, and means for operating the said cross-head from the said crank-shaft, substantially as shown and described, and for the purposes specified.

4. In a gas-engine, the combination with the frame, the cylinder, the piston, the crank-shaft and the piston-rod, of the movable valve-seat lying between the ingress and exit ports of the said cylinder, and being provided with valves, a stem for the said valve-seat, an annulus upon the said stem, a spring intermediate the said cylinder and the said annulus, a cross-head loosely mounted and longitudinally movable upon the said valve-stem, a spring intermediate the said annulus and the said cross-head, cams upon the said crank-shaft, and cam-rods connecting the said cams with the said cross-head, substantially as shown and described, and for the purposes specified.

5. The combination in a gas-engine having a cylinder, a piston operating therein, a crank-shaft, a rod connecting the said piston and the said crank-shaft, a valve-seat intermediate the ports leading to and from the said cylinder, valves arranged in said valve-seat, a stem therefor, cams affixed to the said crank-shaft, a cross-head loosely mounted upon the said valve-stem, and cam-rods connecting the said cams and the said cross-head, of the annulus upon the said valve-stem, a spring intermediate the said cylinder and the said annulus, said spring operating to cushion the said valve, substantially as shown and described, and for the purposes specified.

6. The combination with the cylinder the piston operating therein, and the drive-shaft, of a valve-seat, spring-valves mounted in said valve-seat, a cross-head, a stem connected to said valve-seat and projecting through said cross-head, means operated by said shaft for operating said cross-head, and springs interposed between said cross-head and cylinder, substantially as and for the purpose specified.

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**753,877. UMBRELLA AND SUNSHADE.** HERNANDO R. GRA, Alleyton, Tex., assignor to Gra and Leysaht, a firm composed of himself and Berthold Leysaht, Alleyton, Tex. Filed Oct. 30, 1903. Serial No. 179,204. (No model.)

*Claim.*—1. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, and resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms.

2. In a device of the class described, a standard for position at

the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, means for adjusting said arms laterally, and resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms.



3. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms, and a resilient strap curved to fit the waist and centrally pivoted to said standard.

4. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, two arms overlapping at their inner ends and provided with intereugaging loops and spaced apertures for the reception of a clamp-bolt and resilient straps for engagement with the shoulders of a wearer and pivotally connected to the free ends of said arms.

5. In a device of the class described, a standard for position at the back of the wearer provided with a sheet-metal sheathing arranged on one side and bent over the ends thereof, an umbrella or canopy support carried by said standard, laterally-extending arms pivoted at their inner ends between said standard and one of said bent end extensions of said sheathing, and resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms.

6. In a device of the class described, a standard for position at the back of the wearer provided with a sheet-metal sheathing arranged on one side and bent over the ends thereof, an umbrella or canopy support carried by said standard, and a resilient strap curved to fit the waist and centrally pivoted between said standard and one of said end extensions of said sheathing.

7. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, and resilient straps for engagement over the shoulders and pivoted to the free ends of said arms at one side and each strap provided with a clip engaging the arm at the other side.

8. In a device of the class described, a standard for position at the back of the wearer provided with a sheet-metal sheathing arranged on one side and bent over the ends thereof and with integral arms folded to form spaced guide-sockets, a supporting-bar vertically movable in said guide-sockets and carrying an umbrella or canopy, and means carried by said standard for adjustably connecting said bar in said sockets.

9. In a device of the class described, a standard for position at the back of the wearer provided with a sheet-metal sheathing arranged on one side and bent over the ends thereof, and with integral arms folded to form spaced guide-sockets, a supporting-bar vertically movable in said guide-sockets and carrying an umbrella or canopy and provided with spaced apertures, and a spring-controlled bolt for yieldable engagement with said apertures to adjustably connect said bar and standard.

10. In a device of the class described, a standard for position at the back of the wearer, a bar adjustable vertically upon said standard and curving rearwardly and forwardly above said standard, an umbrella or canopy frame having a central longitudinal rib mounted for adjustment upon said bar and with its ends folded to form sockets, wire loops centrally engaging said sockets and with their terminals formed into hooks crossing said rib member and engaging its opposite edges, and binding-wires for the canopy-top coiled at their ends around said loops and with their terminals clenched upon said rib member.

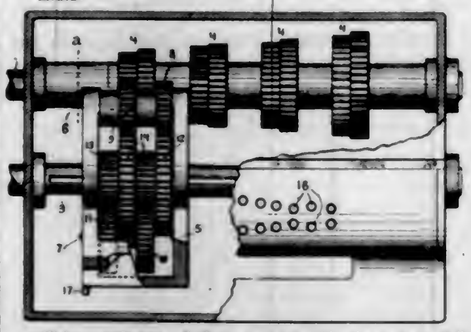
11. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms, and a resilient strap curved to fit the waist and centrally pivoted to said standard, and provided with extensions at the ends adjustable longitudinally of said waist-strap.

12. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms, and a resilient strap curved to fit the waist and centrally pivoted to said standard and provided with loops at the opposite ends, extension-straps extending through said loops and means for adjustably coupling said extension-straps to said waist-strap.

13. In a device of the class described, a standard for position at the back of the wearer supporting an umbrella or canopy, arms pivoted to said standard and extending laterally therefrom, resilient straps for engagement over the shoulders pivotally connected to the free ends of said arms, and a resilient strap curved to fit the waist and centrally pivoted to said standard and provided with loops at the ends and graduated intermediate apertures, extension-strap sections slidably engaging said loops and terminating in hooks for engagement with said intermediate apertures.

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**753,878. SPEED-CHANGER.** GEORGE E. GREENLEAF and HENRY R. KENNEDY, Plainfield, N. J., assignors to Niles-Bement-Pond Company of Jersey City, N. J. Filed Dec. 28, 1903. Serial No. 186,788. (No model.)



*Claim.*—1. In a speed-changer, the combination, substantially as set forth, of a first shaft, a gear fast thereon, a splined second shaft parallel with the first shaft, a tumbler mounted for longitudinal and angular adjustment upon the second shaft, swinging gears carried by the tumbler and adapted to engage selectively with the gear on the first shaft, a gear splined on the second shaft and carried by the tumbler and engaging and driving one of said swinging gears, a gear loose on the second shaft and engaged and driven by said driven swinging gear and engaging and driving another one of said swinging gears, and means for locking the tumbler in position.

2. In a speed-changer, the combination, substantially as set forth, of a first shaft, a gear fast thereon, a splined second shaft parallel with the first shaft, a tumbler mounted for longitudinal and angular adjustment upon the second shaft, two pairs of swinging gears carried by the tumbler and adapted to engage selectively with the gear on the first shaft, a gear splined on the second shaft and carried by the tumbler and engaging and driving one of said swinging gears, a gear splined on the second shaft and carried by the tumbler and engaging and driving another one of said swinging gears, a gear loose on the second shaft and engaged and driven by one of said driven swinging gears and engaging and driving the other two swinging gears, and means for locking the tumbler in adjusted position.



3. In a speed-changer, the combination, substantially as set forth, of a first shaft, a plurality of diversely-sized gears fast thereon, a splined second shaft parallel with the first shaft, a tumbler mounted for longitudinal and angular adjustment upon the second shaft, two pairs of swinging gears carried by the tumbler and adapted to engage selectively with the gears on the first shaft, a gear splined on the second shaft and carried by the tumbler and engaging and driving one of said swinging gears, a gear splined on the second shaft and carried by the tumbler and engaging and driving another one of said swinging gears, a gear loose on the second shaft and engaged and driven by one of said driven swinging gears and engaging and driving the other two swinging gears, and means for locking the tumbler in adjusted position.

4. In a speed-changer, the combination, substantially as set forth, of a first shaft, a plurality of diversely-sized gears fast thereon and arranged in pairs separated from each other, a splined second shaft parallel with the first shaft, a tumbler mounted for longitudinal and angular adjustment upon the second shaft, two pairs of swinging gears carried by the tumbler and adapted to engage selectively with the gears on the first shaft, a gear splined on the second shaft and carried by the tumbler and engaging and driving one of said swinging gears, a gear splined on the second shaft and carried by the tumbler and engaging and driving another one of said swinging gears, a gear loose on the second shaft and engaged and driven by one of said driven swinging gears and engaging and driving the other two swinging gears, and means for locking the tumbler in adjusted position.

5. In a speed-changer, the combination, substantially as set forth, of a first shaft, a plurality of diversely-sized gears fast thereon, a splined second shaft parallel with the first shaft, a tumbler mounted for longitudinal and angular adjustment upon the second shaft, means for locking the tumbler in adjusted position, gears carried by the tumbler for cooperation with the gears on the first shaft, a rib rigidly supported parallel with said shafts and having a transverse notch in correspondence with each gear on the first shaft, and a segmental flange carried by the tumbler and cooperating with the notches in said rib and having a transverse notch arranged to permit the flange to move along the rib when no tumbler-gear is in engagement with a gear upon the first shaft.

6. In a speed-changer, the combination, substantially as set forth, of a first shaft, diversely-sized gears fast thereon, a splined second shaft parallel with the first shaft, a tumbler mounted for longitudinal and angular adjustment upon the second shaft, gears carried by the tumbler and cooperating with the gears on the first shaft, a segmental plate rigidly supported parallel with the second shaft and provided with two rows of detent-holes, a segmental arm carried by the tumbler exterior to said plate, and a detent-pin carried by said arm and projecting inwardly for engagement with said detent-holes.

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**753,879. ELECTROMAGNET.** WILLIS D. GREGORY, Pittsburg, Pa. Filed Apr. 9, 1903. Serial No. 151,874. (No model.)



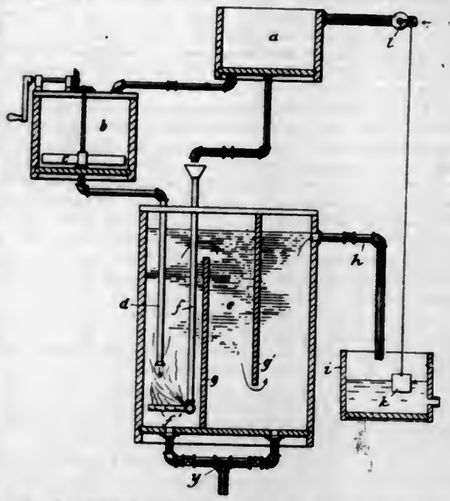
*Claim.*—1. An electromagnet having in combination a movable armature and a fixed core structurally interrupted in one or more planes transverse of the direction of magnetic lines, the portions or sections of the core being in permanent relationship to each other, substantially as set forth.

2. An electromagnet having in combination, a movable armature, and a fixed core consisting of transverse sections in permanent relationship to each other, substantially as set forth.

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**753,880. WATER-PURIFYING APPARATUS.** JOHN C. W. GREVE, Pittsburg, Pa., assignor to Wm. B. Scaife & Sons Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Oct. 22, 1903. Serial No. 178,085. (No model.)

*Claim.*—1. In water purifying apparatus a saturating tank provided with a series of partitions attached alternately to the bottom and to the top respectively, and open near the opposite side, so as to cause the water flowing through the tank to take an inverse upward and downward course and means for introducing the chemical at the bottom of the compartment therein, substantially as described.



2. In a saturating tank, an inlet pipe for the water opening near the bottom of the tank, an inlet pipe for the lime opening also near the bottom of the tank but above the mouth of the water pipe, and a partition in said tank to cause the flow from the water pipe to pass upward through the collected cream of lime therein.

3. In a saturating tank the combination with an inlet pipe for the chemical, an inlet pipe for the raw water emptying into the tank below the mouth of the chemical pipe, and a series of alternating partitions in said tank, of which some are closed at the bottom and open near the top of the tank and others closed at the top and opened near the bottom.

4. A saturating tank having a series of partitions causing a vertically reversed flow therethrough, a water inlet pipe having a distributer opening near the bottom in one of the compartments and an inlet for the chemical directly above the water inlet, whereby the stream of water is forced to rise through the chemical for the purpose of saturating, as described.

5. In water purifying apparatus, the combination with a supply tank and a box for the mixture of chemical reagents, of a saturating tank provided with a partition extending from the bottom to near the top and another partition extending from the top to near the bottom, an inlet pipe for the water opening into the bottom of the first compartment of the tank and an inlet pipe from the mixer opening near the bottom of the tank but above the opening of the water inlet pipe, substantially as described.

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**753,881. ELECTRIC SNAP-SWITCH.** GERALD W. HART, West Hartford, Conn., assignor to the Hart Manufacturing Company, Hartford, Conn., a Corporation of New Jersey. Filed Apr. 18, 1903. Serial No. 153,160. (No model.)



*Claim.*—1. In a snap-switch in combination, a base bearing contact mechanism for making or breaking a circuit through said contacts, said mechanism comprising a rotary member, a spindle coacting with said rotary member and means whereby said spindle can be given a partial rotation independent of said rotary member, a dial carried by the rotary member, an antifriction device carried by said dial but revoluble independently thereof, and means for holding said antifriction-disk against said spindle.

2. In a snap-switch in combination, a base bearing contact mechanism for making or breaking a circuit through said contacts, said mechanism comprising a rotary member, a spindle coacting with said rotary member and means whereby said spindle can be given a partial rotation independent of said rotary member, a dial carried by the rotary member, an antifriction device carried by said dial but revoluble independently thereof, and means for holding said antifriction-disk against said spindle, said dial being detachably connected with said rotary member.

3. In an electric snap-switch in combination, contact members, a rotary member carrying means for making and breaking the circuit through said contact members, and having an irregular-shaped top, a spindle arranged to have partially-independent rotation relatively to said rotary member, a dial bearing designating words or characters, a socket secured to said dial to fit on the top of and be detachably connected with said rotary member, and means for preventing the independent rotation of said rotary member and dial, and means for holding said dial in place when the parts are assembled, and a cover having a window arranged to expose one of said designating words or characters.

4. In combination with a rotary snap-switch having a pole-sleeve with an angular head, an indicating-dial having on its lower face an angular pocket which loosely fits the angular head of the pole-sleeve, substantially as specified.

5. In a rotary snap-switch, an indicating-dial, a rotative support therefor said dial being carried by said support, means for connecting said parts for causing them to rotate together but permitting disconnection of said parts by longitudinal movement.

6. In a rotary snap-switch, an indicating-dial, a rotative support therefor said dial being carried by said support, means for connecting said parts for causing them to rotate together but permitting disconnection of said parts by longitudinal movement, and separate means for holding said parts against accidental disengagement.

7. In a rotary snap-switch, a dial, a rotative sleeve said dial being supported on said sleeve, means to hold said dial against independent rotative movement relatively thereto but not against longitudinal movement relatively thereto, an actuating-spindle within said sleeve and projecting through said dial, an operating-handle carried by said spindle and standing above said dial to prevent the accidental removal of the latter.

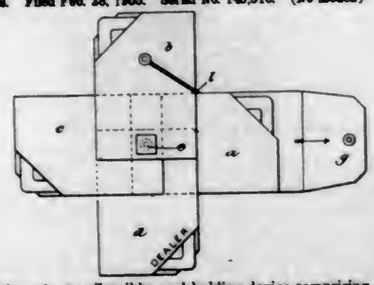
8. In an electric snap-switch, a central rotative actuating-spindle, a handle thereon, a rotative sleeve surrounding said spindle and means of connection between said parts whereby the rotation of the former rotates the latter, an indicating-dial removably mounted on said sleeve below said handle and held from accidental disengagement therefrom by the presence of said handle, and means whereby said dial is locked against independent rotative movement relatively to said sleeve.

9. In an electric snap-switch, an indicating-dial comprising a disk-like member arranged to carry indicating characters, a central opening in said disk-like member, a smaller antifriction-disk located in said opening, and means securing both said disk-like members together said means permitting the free and independent rotation of one disk relatively to the other.

10. In an electric snap-switch, a rotative pole-carrying member, an indicating-dial, means for connecting said dial to said member to prevent independent rotation of said parts said means of connection permitting disengagement of said parts by a sliding movement of one relatively to the other.

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**753,882. CARD-HOLDING DEVICE. ELROY M. HEATH, Wakefield, Mass., assignor of one-half to James Fred Parker, Wakefield, Mass. Filed Feb. 28, 1903. Serial No. 145,510. (No model.)**




*Claim.*—1. A collapsible card-holding device comprising a plurality of pivotally-connected card-holders holding their respective cards with their faces in substantially parallel relation in both the collapsed and extended positions of said device, thereby permitting said holder when extended to lie flat upon the table or other support.

2. A collapsible card-holding device provided with a plurality of holders having retaining-walls engaging the card-faces and having an opening and closing movement parallel with the retaining-walls.

3. A collapsible card-holding device comprising a plurality of card-holding pockets opened and closed by movements in substantially parallel planes and provided with means for securing said pockets in their extended positions.

4. In a collapsible card-holding device a plurality of pivotally-connected card-holders and means for defining the position of said holders when extended.

5. A collapsible card-holding device provided with a plurality of holders having an opening and closing movement in the same general direction, and means for securing said holders in their extended and collapsed positions.

6. A collapsible card-holding device having pivotally-connected card-holders for holding separated parts of a pack, and holding their respective cards with their faces in substantially parallel relation in both the collapsed and extended positions of said device, and means for holding the pack unseparated between said holders.

7. A collapsible card-holding device having a plurality of card-holding pockets swingingly connected to collapse and extend by a fan-like movement of one holder over another, separating means for determining the separation of said pockets when extended, and means for securing said holders when collapsed.

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**753,883. SWATHER ATTACHMENT FOR MOWING-MACHINES. JACOB HOFFMAN, Sidney, N. J. Filed June 16, 1903. Serial No. 161,639. (No model.)**



*Claim.*—1. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a frame, a plurality of endless conveyers one above the other running around said frame, and a plurality of guides for separating the standing grain, said guides supported at the front of the machine, and spaced from the cutting mechanism and endless conveyers and allowing the passage of the cut grain in an upright position between them and said cutting mechanism and the endless conveyers, substantially as described.

2. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, and a plurality of horizontally-adjustable guides for separating the standing grain, said guides supported at the front of the machine and spaced from the cutting mechanism and endless conveyers and allowing the passage of the cut grain in an upright position between them and said cutting mechanism and the endless conveyers, substantially as described.

3. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame and a plurality of guides having vertically-adjustable fingers, said guides supported at the front of the machine and spaced from the cutting mechanism and endless conveyers and allowing the passage of the grain in an upright position between them and said cutting mechanism and endless conveyers, substantially as described.

4. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a vertical frame, and a plurality of endless conveyers one above the other running around said frame, and having extensible fingers, substantially as described.

5. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, and a plurality of endless conveyers one above the other running aronnd said frame, and a tension device for said conveyers, substantially as described.

6. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, a plurality of guides for separating the standing grain, said guides supported at the front of the frame in front of the cutting mechanism and endless conveyers and allowing the passage of the cut grain in an upright position between them and the cutting mechanism and endless conveyers, and a guard-frame supported at the rear of the machine and spaced from the conveyers and allowing the passage of the cut grain in an upright position between it and said conveyers, and a device mounted at one end of said vertical frame for dividing the cut grain from the standing grain, substantially as described.

7. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, a plurality of guides for separating the standing grain, said guides supported at the front of the frame in front of the cutting mechanism and endless conveyers and allowing the passage of the cut grain in an upright position between them and the cutting mechanism and endless conveyers, and a guard-frame supported at the rear of the machine and spaced from the conveyers and allowing the passage of the cut grain in an upright position between it and said conveyers, a device mounted at one end of said vertical frame for dividing the cut grain from the standing grain, and a device for preventing the clogging of the machine, substantially as described.

8. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, a plurality of guides for separating the standing grain, said guides supported at the front of the frame in front of the cutting mechanism and endless conveyers and allowing the passage of the cut grain in an upright position between them and the cutting mechanism and endless conveyers, and a horizontally-adjustable guard-frame, substantially as described.

9. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, and a guard-frame supported at the rear of the machine, substantially as described.

10. In a mowing-machine the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, and a horizontally-adjustable guard-frame at the rear of the mechanism, substantially as described.

11. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, and a device for catching the grain as it leaves the machine, substantially as described.

12. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, a plurality of endless conveyers one above the other running around said frame, and a clearing device having vertically-adjustable fingers, substantially as described.

13. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, a plurality of endless conveyers located one above the other and running around said frame, and a clearing device, substantially as described.

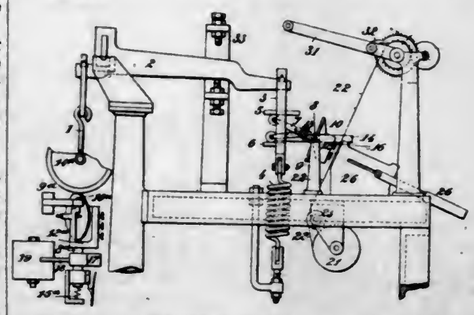
14. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, and a plurality of endless conveyers one above the other running around said frame, and means for adjusting said conveyers vertically, substantially as described.

15. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, and endless conveying means running around said frame for moving the cut grain along in an upright position before the cutting mechanism and to the back of the machine, substantially as described.

16. In a mowing-machine, the combination with the cutting mechanism, of a swather attachment mounted on the guard-plate thereof, and comprising a vertical frame, and a plurality of endless conveyers one above the other running around said frame, means for adjusting said conveyers vertically, a plurality of guides for separating the standing grain, said guides supported at the front of the machine and spaced from the cutting mechanism and conveying means and allowing the passage of the cut grain in an upright position between them and said cutting mechanism and conveying means, substantially as described.

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**753,884. MACHINE FOR WEIGHING WAGONS, &c. WILHELM HOLZER, Darmstadt, Germany. Filed Mar. 25, 1902. Serial No. 99,861. (No model.)**

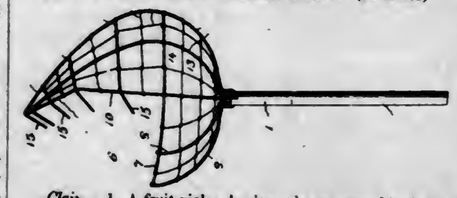


*Claim.*—1. In combination with the transmission-beam, a rod connected with said beam, lugs carried by the said rod, a disk pivotally mounted and having an arm adapted to be engaged by said lugs, means for rotating said disk, and an indicating means actuated by the said disk.

2. In a weighing device, the combination of a rotary disk, an indicating-disk adapted to be operated thereby, and means for causing said indicating-disk to assume different inclinations, said means comprising an arm, a rod provided with lugs adapted to engage said arm and means for actuating said rod, substantially as described.

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**753,885. FRUIT-PICKER. FRANK C. HOWELL, Bridgehampton, N. Y. Filed Oct. 24, 1903. Serial No. 178,347. (No model.)**



*Claim.*—1. A fruit-picker having a lower curved basket closed at the bottom, the said basket being formed of wire and having some of its members projected upwardly and forwardly thereover to form a hood, the upper terminal of the hood being angularly deflected and said hood having cross members which are projected beyond its margin and bent inwardly, the basket opposite the hood being fully open, and a handle secured to the central part of the closed bottom of the basket.

2. A fruit-picker, having a basket formed of wire and its upper portion open at one side of the center, a hood projecting above

the remaining portion and partially overhanging the open portion, the hood being likewise formed of wire and portions thereof constructed by extending a part of the wires of the basket, the terminals of a portion of the wires of the hood projecting over the open part of the basket and bent inwardly at an angle of inclination, a part of the basket being closed, a handle-socket at the center of the closed bottom of the basket to which the wires are connected, and a handle fitted in the said socket.

753,886. **RULER.** JOHN H. JACOBS, Chicago, Ill. Filed Oct. 24, 1903. Serial No. 178,357. (No model.)



*Claim.*—1. A device of the character described, comprising a ruler, a blotter, means carried by the blotter, and means carried by the ruler and adapted to detachably engage the first-mentioned means to removably secure the blotter in applied position.

2. A device of the character described, comprising a ruler, a blotting means, sleeves carried by the blotting means, and means carried by the ruler and adapted to engage the sleeves to secure the blotting means in applied position.

3. A device of the character described, comprising a ruler, a blotting means, sleeves carried by the blotting means, and bolts carried by the ruler and adapted to engage the sleeves to secure the blotting means in applied position.

4. A device of the character described, comprising a ruler, a blotting means, sleeves carried by the blotting means, and bolts carried by the ruler and adapted to engage the sleeves to secure the blotting means in applied position, one of said bolts being provided with a handle.

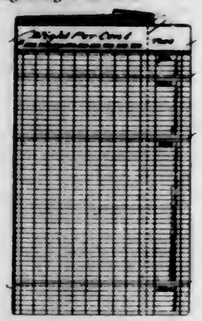
5. A device of the character described, comprising a ruler provided with shouldered recesses, a blotting means, means carried by the blotting means and adapted to engage the shoulders of the recesses, and means carried by the ruler and adapted to engage the second-mentioned means to secure the blotting means in applied position.

6. A device of the character described, comprising a ruler provided with openings reduced to provide shoulders, a blotting means provided with openings and recesses communicating therewith, sleeves adapted to occupy the last-mentioned openings and engage said shoulders, said sleeves being provided with heads adapted to occupy the recesses, and bolts provided with knurled heads and occupying the first-mentioned recesses and adapted to engage the sleeves to secure the blotting means in applied position.

753,887. **INTEREST-TABLE.** PALMER H. JOHANSEN, Carson, Iowa. Filed Aug. 12, 1903. Serial No. 169,362. (No model.)

*Claim.*—1. In a table of the character described, the combination with a strip having divisions thereon with headings for indicating percentage; of a flap at one end of the strip having time-indicating characters thereon.

2. An interest-table comprising a strip having sections designated thereon, each of said sections having columns extending transversely of the strip, numerals designating the columns, and each section being devoted to a different percentage, similar flaps at the ends of the strip, each flap having time-indicating characters arranged in a column extending transversely of the strip, said characters being within columns extending longitudinally of the strip, said transverse and longitudinal columns forming spaces within which are arranged interest-designating characters.



753,888. **HOISTING-WAGON.** ALBERT E. JOHNSON, Northfield, Minn. Filed July 11, 1903. Serial No. 165,121. (No model.)



*Claim.*—1. In a device of the character described, the combination with a vehicle-body pivotally mounted at one end and having a conveyer thereon; of standards pivoted to the body, traction-wheels connected to the standards and means operated by the traction-wheels for moving the standards to raise the body.

2. In a device of the character described, the combination with a vehicle-body pivotally mounted at one end and having a conveyer thereon; of standards pivoted to the body, traction-wheels connected thereto, a drum journaled upon the body, a flexible connection between the drum and the standards and means operated by one of the traction-wheels for winding the said connection upon the drum.

3. In a device of the character described, the combination with a vehicle-body pivotally mounted at one end and a conveyer upon the body; of standards pivoted to the body, traction-wheels connected thereto, a drum journaled within the body, a flexible connection between the drum and standards, a second drum, a drum adapted to be operated by one of the traction-wheels, and a flexible connection between said drums.



4. In a device of the character described, the combination with a vehicle-body pivotally mounted at one end and having a conveyer thereon; of standards pivoted to the body, an axle extending therethrough, traction-wheels upon the axle, a drum slidably mounted upon the axle, a drum journaled within the body, a flexible connection between said drum and the standards, a second drum journaled upon the body, a flexible connection between said drum and the drum on the axle, and means for throwing said axle-drum into operative relation with a traction-wheel.

5. In a device of the character described, the combination with a vehicle-body pivotally mounted at one end and having a conveyer thereon; of standards pivoted to the body, an axle therein, traction-wheels mounted upon the body, an axle therein, traction-wheels mounted upon the axle, a drum slidably mounted upon the axle, a shaft journaled upon the body, drums thereon, a flexible connection between one of said drums and the standards, a flexible connection between one of said drums and the drum on the axle, and means for throwing said axle-drum into operative relation with a traction-wheel.

6. In a device of the character described, the combination with a wagon-body pivotally mounted at one end and having a conveyer thereon; of standards pivoted to the body, an axle therein, traction-wheels upon the axle, a drum slidably mounted upon the axle, a shaft journaled upon the body, drums thereon, a flexible connection between one of said drums and the standards, a flexible connection between the other drum and the drum on the axle, a lever, means for moving the axle-drum into operative relation with a traction-wheel, and a flexible connection between the lever and said means.

7. In a device of the character described, the combination with a body pivoted at one end and having a conveyer thereon; of standards pivoted to the body, an axle therein, traction-wheels upon the axle, a drum slidably mounted upon the axle, a gear thereon, a second gear meshing therewith, a cylinder, a piston slidably mounted therein, means for operating the piston from the gears, a drum revolubly mounted upon the body, a flexible connection between said drum and the standards, a second drum, a flexible connection between it and the drum on the axle, and means for placing said axle-drum in operative relation with a traction-wheel.

8. In a device of the character described, the combination with a body having an axle connected thereto, traction-wheels upon the axle and a drum slidably mounted upon the axle; of shafts journaled within the body, an endless conveyer mounted thereon, drums upon one of the shafts, a flexible connection between one of said drums and the drum on the axle, and means for throwing said axle-drum into operative relation with a traction-wheel.

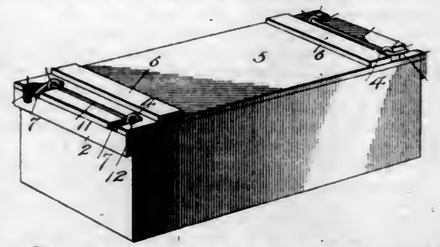
9. In a device of the character described the combination with a body having an axle, traction-wheels thereon and a drum slidably mounted upon the axle; of shafts journaled within the body, an endless conveyer mounted thereon, drums upon one of the shafts, a flexible connection between one of said drums and the drum on the axle a spring-pressed sliding strip upon the body, a flexible connection between said strip and one of the drums on the shafts, and means for moving the axle-drum into operative relation with a traction-wheel.

10. In a device of the character described, the combination with a body having an axle, traction-wheels thereon and a drum mounted upon the axle; of a cylinder, a reciprocating piston therein, means operated by the drum for moving the piston, longitudinally-extending rods, springs thereon, a compressing-strip mounted upon the rods, a flexible connection between said strip and one of the drums on the shaft, a flexible connection between the other drum and the drum on the axle, and means for moving said axle-drum into operative relation with a traction-wheel.

11. In a device of the character described, the combination with a body having an axle, traction-wheels thereon and a movable drum upon the axle; of shafts journaled within the body, an endless conveyer mounted thereon, drums upon one of the shafts, a flexible connection between one of said drums and the drum on the axle, means for moving said axle-drum into operative relation with a traction-wheel, rods within the body, springs thereon, a compressing-strip slidably mounted upon the rods, a flexible connection between said strip and one of the drums on the shaft, and means for retarding the rotation of the drums.

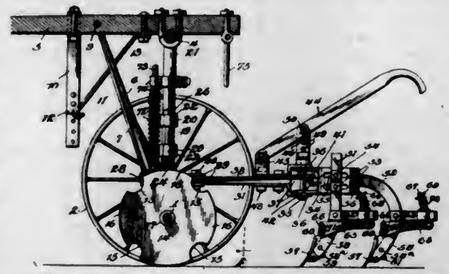
12. In a device of the character described, the combination with a body pivotally mounted at one end, of shafts journaled within the body, an endless conveyer thereon, drums upon one of the shafts, rods, springs thereon, a compressing-strip upon the rods, a flexible connection between said strip and one of the drums, standards pivoted to the body, an axle therein, traction-wheels upon the axle, drums slidably mounted on the axle, a flexible connection between one of the axle-drums and the drum on the shaft, a second shaft journaled upon the body, drums thereon, a flexible connection between one of the drums and the standards, a flexible connection between a second drum on said shaft and the remaining drum on the axle, means for moving the axle-drums into operative relation with the traction-wheels, and mechanism for retarding the rotation of the drums.

753,889. **BOX-FASTENER.** HUGH L. JONES, Osceola, Mo. Filed June 24, 1903. Serial No. 162,954. (No model.)




*Claim.*—In a box-fastener, the combination with a box provided with eyes and a recess, of a cover having slots through which the eyes project and one of which registers with said recess, a locking member inserted through the eyes and provided with an arm adapted to be turned into engagement with the recess in the box to prevent endwise movement of the locking member in both directions.

753,890. **COMBINED COTTON CHOPPER AND CULTIVATOR.** NOAH LANGFORD, Tidwell, Tex. Filed May 1, 1902. Serial No. 105,519. (No model.)



*Claim.*—1. In an agricultural implement, the combination with an axle having a central arch, and a vertically-yielding chopper-disk suspended from the axle within the arch, of horizontally-swinging plow-beams supported by and extending from the axle at opposite sides of the arch, and plows carried by the beams.

2. In an agricultural implement, the combination with an axle having a central arch, and a vertically-yielding support mounted in and supported by the arch, of a chopper carried by said support, horizontally-swinging plow-beams extending rearwardly from and supported by the axle at opposite sides of the arch, and plows carried by the plow-beams.

3. In an agricultural implement, the combination with an axle having a central arch, of spring-urged bearing-rods mounted upon the vertical side portions of the arch, a chopper-disk carried by the rods, horizontally-swinging plow-beams extending rearwardly from the end portions of the axle beyond the opposite sides of the arch, and handles and plows carried by the beams.

4. In an agricultural implement, the combination with the wheels and axle, of a sleeve mounted on the axle, a cross-head and plows in rear of the sleeve, and a plow-beam having hinged connection with the cross-head and adjustable upon the sleeve toward and from the adjacent wheel.

5. In an agricultural implement, the combination with the wheels and axle, of a sleeve mounted on the axle, a cross-head and plows in rear of the sleeve, a beam having hinged connection with the cross-head, and adjustable upon the sleeve toward and from the adjacent wheel, a parallel rod having pivotal connection with the cross-head and with the sleeve, and means for adjusting the connection between the rod and sleeve to correspond with the adjustment of the beam.

6. In an agricultural implement, the combination with an axle and wheels, of a cross-head and plows, a beam having pivotal con-

nection with the axle and hinged connection with the cross-head, a parallel rod also having pivotal connection with the axle, and an adjustable device carried by the cross-head and pivotally connected to the rear end of the parallel rod, to compensate for wear between the parts.

7. In an agricultural implement, the combination with an axle and wheels, of a sleeve mounted on the axle, a cross-head and plows in rear of the sleeve, a beam having pivotal connection with the sleeve and hinged to the cross-head, a parallel rod pivoted to the sleeve to one side of the beam, and an eyebolt adjustably retained by the cross-head and having pivotal connection with the rear end of the parallel rod.

8. In an agricultural implement, the combination with an arched axle and wheels, of sleeves mounted on the axle at opposite sides of the arch, cross-heads and plows in rear of the sleeves, beams connected at their opposite ends to the sleeves and cross-heads, means for adjusting the connection between the beams and the sleeves to present said beams at different distances from the wheels, and means for retaining the cross-heads in parallel relation with the axle.

9. In an agricultural implement, the combination with an axle and wheels, of a plow-beam extending rearwardly from the axle, a cross-head, a bolt effecting a hinged connection between the cross-head and beam, a handle-bracket swiveled upon the bolt, and adjustable independently of both the beam and head, and a handle secured to the bracket.

10. In an agricultural implement, the combination with an axle and wheels, of a beam extending rearwardly from the axle, a cross-head and plows, a hinge-bolt connecting the cross-head and beam, angular handle-brackets carried by the beam and by said hinge-bolt, respectively, and a handle secured to the brackets, said brackets being adjustable to position the handle at either side of the beam.

11. In an agricultural implement, the combination with an arched axle and wheels, of sleeves mounted on the axle at opposite sides of the arch, said sleeves having forward extensions, bearing-brackets carried by the arch, guide-rods having flexible connection with the forward extensions of the sleeves and extended through the guide-brackets, springs encircling the rods and exerting a downward pressure upon the sleeve extensions, beams secured to and extending from the rear sides of the sleeves, plows carried by the beams, other bearing-brackets carried by the arch, bearing-rods movable in said brackets, and a chopper-disk carried by the lower ends of the bearing-rods.

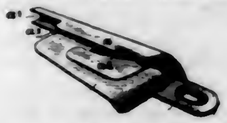
12. In a device of the character described, the combination with a cross-head having parallel ends, of plow-shanks, and adjustable retaining means connecting the shanks to the ends of the cross-head and disposed to permit the angular adjustment of said shanks.

13. In a device of the character described, the combination with a cross-head having parallel ends, each of said ends having a pair of slots, plow-shanks imposed against the ends of the cross-head, and a pair of bolts passed through each shank and the slots at one end of the cross-head.

14. In an agricultural implement, the combination with an arched axle and wheels, sleeves mounted on the axle at opposite sides of the arch, said sleeves having forward extensions, bearing-brackets carried by the arch, guide-rods having flexible connection with the forward extensions of the sleeves and extended through the brackets, springs encircling the rods and exerting a downward pressure upon the sleeve extensions, beams secured to and extending from the rear sides of the sleeves, plows carried by the beams, and means for adjusting the beams upon the sleeves in a direction parallel with the axle.

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**753,891. HEMMER ATTACHMENT FOR SEWING-MACHINES.** ALEXANDER LAUBSCHER, Bridgeport, Conn., assignor to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Jan. 23, 1900. Serial No. 2,448. (No model.)



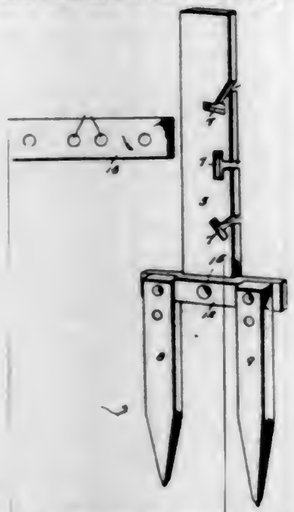
*Claim.*—1. A sewing-machine hemmer attachment, comprising a folder having an upper folding and guiding lip, and a divided lower lip to hem-fold the edge of an outer fabric, such as a shirt-bosom, around and inclosing the edge of an underlying fabric or lining, a plate arranged between the members of the divided lower lip and adapted to support and guide the underlying fabric, and means for supporting said folder in operative position.

2. A sewing-machine hemmer attachment, comprising a folder having an upper folding and guiding lip, and a divided lower lip having a fabric passage-way between its members to turn one piece of cloth around another in the form of an underturned hem, said lower lip having two members arranged in different planes, a plate attached to the lower member and beneath the upper member of the divided lower lip to support and guide the inner fabric, and a base-plate, substantially as described.

3. A sewing-machine hemmer attachment, comprising an upper folding and guiding lip *a* having a free edge projecting into space, a divided lower lip composed of members $a^3$ and $a^4$ arranged in different planes, with a passage-way between them, a plate *b* arranged between the members of the divided lower lip and attached to the member $a^3$ thereof, and a base-plate.

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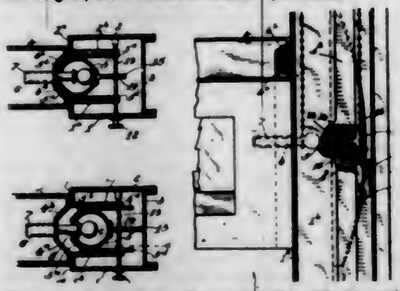
**753,892. FENCE-POST.** MARSHALL R. LERCH, Lawnsdale, Pa. Filed May 8, 1903. Serial No. 156,287. (No model.)



*Claim.*—In a fence-post, the combination with a base comprising stakes having a cross-bar having reduced portions at its ends and resultant shoulders adjacent thereto, said cross-bar being secured to the stakes with the ends of the latter lying upon the reduced portions and against the shoulders, said cross-bar also having a socket between the reduced portions, of a body portion removably secured in the socket and adapted for attachment of wires thereto.

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**753,893. WINDOW FRAME AND SASH.** ALBERT K. LOVELL, New York, N. Y., assignor to Gerhard F. Drouvé, Bridgeport, Conn. Filed Aug. 13, 1902. Serial No. 119,542. (No model.)



*Claim.*—1. In a window, the combination with the sash and frame, of laterally-movable sashways, vertical grooves in the edges of said sash adapted to be engaged by the sashways, an operating-shaft in said frame and carrying pinions, racks projecting from the sashways to be engaged by said pinions whereby said sashways are operated, for the purpose set forth.

2. In a window, the combination with the sash and frame, of



laterally-movable sashways extending vertically the full length or practically the full length of the inside of the frame, shafts carrying pinions and journaled in the frame, racks projecting from the sashways adapted to be engaged by said pinions, for the purpose set forth.

3. In a window, the combination with the sash and frame, of laterally-movable sashways extending vertically the full length or practically the full length of the inside of the frame, shafts carrying pinions, and journaled in the frame, racks projecting from the sashways adapted to be engaged by the pinions, a portion of said sashways embracing said shafts and fulcrumed thereon, for the purpose set forth.

4. In a window, the combination with the sash and frame, of a sashway, the central portion tubular and having a longitudinal opening in one side, and rearwardly-projecting wings, for the purpose set forth.

5. The herein-described sashway made of a single piece of suitable material, the central portion of tubular construction and having a narrow longitudinal slot or opening therein, rearwardly-projecting wings, combined with an angular face on each side of said slot, for the purpose set forth.

6. In a window, the combination with the sash and frame, of laterally-movable sashways extending vertically the full length or practically the full length of the inside of the frame, said sashways having a tubular central portion, a longitudinal opening or slot therein, an angular face on each side of said slot, rearwardly-projecting wings, the sash having angular faces adapted to receive the angular faces of the sashways, pivotal pins projecting from said sash into the tubular sashways and adapted to move up and down said sashways, said sashways adapted to move laterally in the frame to and from the sash, shafts journaled in the frames and carrying pinions adapted to engage racks projecting from the sashways to effect such movement, for the purpose set forth.

7. In a window, the combination with the sash and frame, of laterally-movable sashways embraced by said frame and extending the full length or practically the full length of the inside of the frame, the central portion being tubular and having a slot in its face and rearwardly-projecting wings adapted to operatively engage the inner walls of the frame, pinion-shafts journaled in the frame, racks projecting from said sashways adapted to be engaged by said pinions, the wings of said sashways having longitudinal slots adapted to embrace said shafts and be fulcrumed thereon so as to practically sustain the weight of said sashways, each sashway provided with a truss substantially as shown, the edge of the sash provided with recesses adapted to receive the sashways, cords and weights arranged substantially as shown, all for the purpose set forth.

8. In a window provided with two or more pivotally-supported sashes, the combination with the frame and sashes, of laterally-movable sashways provided for each sash and embraced by the frame, and extending the full length or practically the full length of the inside of said frame, racks projecting from said sashways, endwise-movable shafts in said frames, pinions thereon, said pinions adapted to engage said racks, whereby all of said sashways may be moved at once, or the sashways for any one of the sashes may be moved while the remaining sashways remain idle, for the purpose set forth.

9. In a window provided with two or more pivotally-supported sashes adapted to be raised and lowered while in a vertical position or when tilted, of laterally-movable sashways provided for each sash and embraced by the frame, and extending the full length or practically the full length of the inside of the frame, shafts in said frame, means substantially as shown on said shafts and sashways whereby said sashways are brought into engagement with the sashes to prevent their being tilted, and moved therefrom to permit tilting, means whereby all of said sashways can be operated at once or the sashways for a single sash may be operated while the remaining sashways are idle, for the purpose set forth.

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**753,894. NON-REFILLABLE BOTTLE.** SAMUEL W. LUDLOW, Covington, Ky. Filed June 11, 1903. Serial No. 161,094. (No model.)



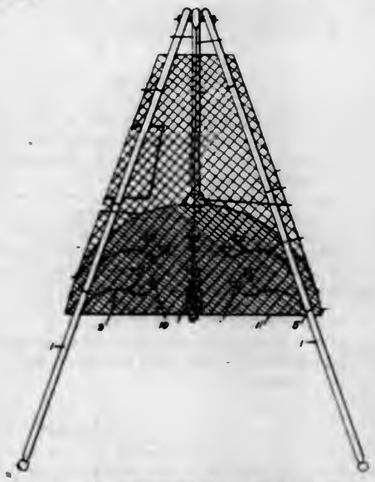
*Claim.*—1. In a non-refillable bottle, the combination with a bottle-neck having an annular flange within its neck to form a narrow valve-seat, of a spherical segment-valve, grooved longitudinally with an annular rim to seat itself on the valve-seat, said rim extending to the surface of the neck and having scallops to coöperate with the grooves of the valve to permit the discharge of the liquid and entrance of air, and a baffle-plug to prevent access to the valve, substantially as shown and described.

2. In a non-refillable bottle, the combination with a bottle-neck having an annular flange within its neck to form a narrow valve-seat, of a spherical segment-valve, grooved longitudinally with an annular rim to seat itself on the valve-seat, said rim extending to the surface of the neck and having scallops to coöperate with the grooves of the valve to permit the discharge of the liquid and entrance of air, and a baffle-plug to prevent access to the valve, said plug having a conical recess and a ball-bearing on the valve within said recess to shut the valve when the bottle is slightly inverted, substantially as shown and described.

3. In a non-refillable bottle, a valve for closing the same, comprising a disk-like scalloped rim for a seat, with an inwardly-projecting portion having longitudinal corrugations on its surface, coöperating with the scallops of the rim for the discharge of the liquid, and having its center of gravity substantially below the seat of the valve, whereby a prompt seating of the valve is obtained, substantially as described.

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**753,895. INSECT-TRAP.** JOHN LUMP and MORRIS F. DIFFENDERFER, Landisville, Pa. Filed July 21, 1902. Serial No. 116,351. (No model.)



*Claim.*—1. The combination, in a trap, of a frame comprising legs secured together at the top, a case open at the bottom and closed at the top and secured in the frame with the bottom thereof located above the lower ends of said legs, a retainer secured to the case above the bottom thereof and having an opening therein, and a cup in the case, for the purpose specified.

2. The combination, in a trap, of a frame comprising legs hinged together at the top, a case open at the bottom and closed at the top and secured in the frame with the bottom thereof located above the lower ends of said legs, a retainer secured to the case above the bottom thereof and having an opening therein, and a cup supported in the case below the retainer, for the purpose specified.

3. The combination, in a trap, of a tripod having the legs thereof hinged together at the top, a network case open at the bottom and closed at the top and secured in the tripod with the bottom thereof located above the lower ends of the legs of the tripod, a network retainer secured to the case above the bottom thereof and having an opening therein, and a cup supported in the case below the retainer, for the purpose specified.

4. The combination, in a trap, of a tripod having the legs thereof hinged together at the top, a bolt on which the legs are hinged, a nut on the bolt, a network case open at the bottom and closed at the top and secured in the tripod with the bottom thereof located above the lower ends of the legs of the tripod, a network retainer secured to the case above the bottom thereof and having a centrally-

located opening therein, and a cup supported in the case below the retainer, for the purpose specified.

5. The combination, in an insect-trap, of a case having an opening at the bottom, legs supporting the case, and connected at the top through a joint, a retainer secured in the case above the bottom thereof and having an opening therein, means for illuminating the opening in the case, and a cup secured in the case below the retainer for the purpose specified.

6. The combination, in an insect-trap, of a cone-shaped case having an opening at the bottom, a tripod supporting the case, a bolt passing loosely through the upper ends of the legs of the tripod, a nut on said bolt to clamp the ends of said legs together, a retainer secured in the case above the bottom thereof and having an opening therein, means for illuminating the opening in the case, and a cup secured in the case below the retainer, for the purpose specified.

7. The combination, in an insect-trap, of a tripod, a bolt passing loosely through the upper ends of the tripod, a nut on said bolt to clamp the ends of said legs in a fixed position, a cone-shaped case having an opening at the bottom and located in the tripod above the lower ends of the legs thereof, fastenings securing the case to said legs, a retainer in the case above its bottom and having an opening therein, a wire secured to said bolt and passing down through the top of the case and the opening in the retainer, a lamp attached to the lower end of said wire, and a cup located below the retainer for the purpose specified.

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753,896. **MIRROR-SUPPORT.** FREDERICK MARKEY, Williamsport, Pa. Filed July 2, 1903. Serial No. 164,068. (No model.)

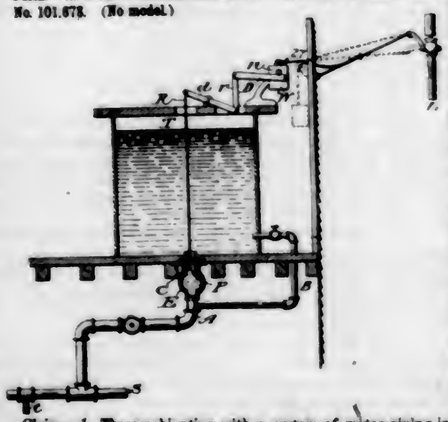


*Claim.*—1. In a device of the class described, an arm mounted to swing horizontally and having lateral branches at its free end, extension members connected for adjustment longitudinally of said branches, and a mirror or other article to be supported mounted to swing upon said extensions, substantially as specified.

2. In a device of the class described, an arm mounted to swing horizontally and having lateral branches at its free end and with clips thereon, extension members engaged by said clips and adapted for adjustment therein longitudinally of said branches, and a mirror or other article to be supported mounted to swing upon said extension members, substantially as specified.

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753,897. **AUTOMATIC APPARATUS FOR EXTINGUISHING FIRE.** HOWARD P. MAXIM, Bethel, Me. Filed Apr. 7, 1902. Serial No. 101,673. (No model.)



*Claim.*—1. The combination with a system of water-piping in which the inclosed water is normally at rest, of a cylinder inserted in the principal line of pipe, a piston fitting the cylinder and sliding therein, an enlarged chamber at the inner end of the cylinder into which the piston slides, an alarm, a detent releasing the alarm and a mechanical connection which transmits the motion of the piston to the detent; all as and for the purpose set forth.

2. The combination with a system of pipes which feed fire-extinguishing apparatus of a cylinder inserted in the course of one of the principal pipes, a piston which fits the cylinder, an enlarged chamber at the inner end of the cylinder, an alarm actuated by the movement of the piston, a by-pass around the cylinder and a valve controlling the flow of water through the by-pass; all as and for the purpose set forth.

3. The combination with a system of water-pipes in which the water is normally at rest, of two or more cylinders, each of which is inserted in a separate branch of the system, pistons fitting each cylinder, two or more electric circuits corresponding to the pistons and controlled by them, and a combined annunciator and alarm with which each of the circuits is connected; all combined with each other substantially as and for the purpose set forth.

4. The combination with a system of sprinkler-pipes which is normally filled with water of one or more empty sprinkler-pipes, valves admitting water from the full pipes into the empty ones, one or more pistons which intercept the flow of water into the empty sprinkler-pipes and an alarm actuated by the movement of either piston; all as and for the purpose set forth.

5. In an automatic sprinkler system one or more full pipes, one or more empty pipes branching therefrom, a thermostatically-controlled valve in each empty pipe which admits water thereto, a piston which intercepts the flow of water into both the full and the empty pipes, an alarm set in action by the motion of the piston and an enlarged chamber into which the piston passes after actuating the alarm; all in combination with each other and with a source of water-supply substantially as and for the purpose set forth.

6. In an automatic sprinkler system one or more sprinkler-pipes which are normally full of water, one or more empty sprinkler-pipes, a valve admitting water to the empty pipes, a coiled spring, intermediate mechanism between the spring and the valve, a detent holding the spring, a piston intercepting the flow of water into the normally full sprinkler-pipes, an enlarged chamber into which the piston passes and a mechanical connection between the piston and the detent; all combined with each other substantially as and for the purpose set forth.

7. In an automatic sprinkler system, one or more sprinkler-pipes which are kept full of water, one or more empty sprinkler-pipes, a valve connecting the full and the empty pipes, a coiled spring which acts to open the valve, a mechanical connection between the spring and the valve, a detent which holds the spring from action, a source of water-supply, a piston interposed between the source of supply and the full pipes, a piston-rod, an electric circuit which is held open by the piston-rod and closes with its inward motion and means of releasing the detent actuated by the electric circuit; all combined with each as and for the purpose set forth.

8. In a system of automatic sprinklers, one or more sprinkler-pipes which are kept full of water, one or more empty sprinkler-pipes, a valve between the full and the empty pipes, a spring acting to open the valve, a detent holding the spring, a piston intercepting the flow of water to the full pipes, a mechanical connection between the piston and the detent, an electric circuit, a series of circuit-closing thermostats in the neighborhood of the empty pipes, and means of releasing the detent controlled by the electric circuit, all combined with each other as and for the purpose set forth.

9. In an automatic sprinkler system the combination of a source of water-supply, one or more sprinkler-pipes connected therewith, one or more empty sprinkler-pipes, a valve connecting the empty pipes with the source of water-supply, a spring acting to open the valve, a detent holding the spring, a piston interposed between the source of supply and the full pipes, an electric circuit, a circuit-closer therefor actuated by the motion of the piston, a series of circuit-closing thermostats in the neighborhood of the empty pipes, a branch of the electric circuit passing therethrough and means of releasing the detent actuated by the electric circuit; all combined with each other as and for the purpose set forth.

10. In a system of automatic sprinklers a source of water-supply, one or more empty sprinkler-pipes, a valve connecting the pipes with the source of supply, a spring acting to open the valve, a detent holding the spring, a cylinder closed at the end, a piston fitting the cylinder, a piston-rod connected with the detent, an explosive charge inclosed below the piston, an electric circuit passing through the charge and adapted to explode it by its heating effect, and one or more circuit-closers; all in combination with each other substantially as and for the purpose set forth.

11. In a system of automatic sprinklers a source of water-supply, one or more full sprinkler-pipes, a piston interposed between the source and the full pipes, a chamber into which the piston passes, one or more empty sprinkler-pipes, a valve connecting the empty pipes with the source of supply, a spring acting to open the valve, a cylinder closed at the ends, a piston moving therein, a piston-rod passing through both ends of the cylinder and acting at one end as a detent for the spring, intermediate mechanism transmitting to the other end of the piston-rod the motion of the piston interposed between the source of water-supply and the full pipes, an explosive charge in the cylinder, an electric circuit passing through the charge and adapted to ignite it, and means of closing the circuit at points protected by the empty sprinkler-pipes; all combined with each other substantially as and for the purpose set forth.

12. In a system of automatic sprinklers a water-tank, a cylinder projecting from the bottom of the tank, a piston working therein, an enlarged chamber into which the piston passes, sprinkler-tubes leading out therefrom, a piston-rod rising through the tank, a whistle or other alarm, an actuating-cord attached thereto, a weight attached to the other end of the cord, rollers projecting from the side of the weight, a forked lever on which the rollers rest and a mechanical connection between the inner end of the lever and the upper end of the piston-rod; all in combination with each other as and for the purpose set forth.

13. In a system of automatic sprinklers a piston intercepting the flow of water thereinto, a cylinder, an enlarged chamber into which the cylinder gradually changes, an alarm which is actuated by the first motion of the piston and a second alarm which is actuated by the piston when the flow of water has become sufficient to carry the piston into the enlarged chamber; all combined with each other as and for the purpose set forth.

14. In a system of automatic sprinklers, a source of water-supply, one or more empty sprinkler-pipes, a valve connecting the pipes with the source of supply, a sprocket-wheel upon the valve-stem, a second sprocket-wheel upon a shaft at a distance, a chain connecting the two sprockets, a spring coiled about the shaft, a hand-wheel for coiling the spring, a detent entering the rim of the hand-wheel, an automatic release for the detent; all combined with each other as and for the purpose set forth.

15. In a system of automatic sprinklers a source of water-supply, one or more empty sprinkler-pipes, a valve connecting the pipes with the source of supply, a spring acting to open the valve, a hand-wheel by which the spring is coiled, an alarm actuated by the reverse motion of the hand-wheel and an automatically-controlled detent for the spring; all in combination with each other as and for the purpose set forth.

16. In an automatic sprinkler system a source of water-supply, two or more sprinkler-pipes separately connected with the source of supply, a separate piston which intercepts the flow of water into each separately-connected pipe, and an alarm actuated by each piston which is distinguishable from that attached to either of the others; all in combination with each other as and for the purpose set forth.

17. In an automatic sprinkler system an alarm, an actuating-weight connected therewith, supporting-rollers for the weight, a pair of forked levers on which the rollers rest, one or more sprinkler-pipes, a piston intercepting the flow of water into the pipes, a mechanical connection between the piston and one of the forked levers, a piston which supports the inner end of the other forked lever, a cylinder in which this piston moves freely, an explosive charge below the piston, a conducting-fuse in the charge, an electric circuit passing through the fuse and one or more circuit-closers; all in combination with each other as and for the purpose set forth.

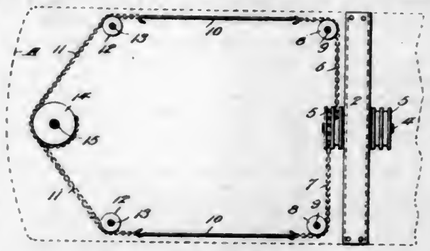
18. In a system of automatic sprinklers a source of water-supply, an empty sprinkler-pipe, an automatically-controlled valve between the source of supply and the pipe, a U-shaped bend in the pipe, a drainage-tube leading down from the lowest point of the bend, an internal valve which closes the outlet of the drainage-tube, a spiral spring which supports the weight of the internal valve, and a perforated adjusting-cap at the lower end of the drainage-tube; all combined with each other as and for the purpose set forth.

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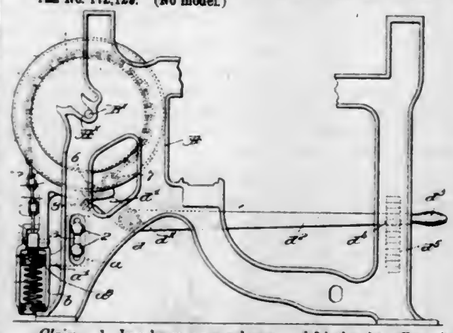
753,898. **BRAKE.** JOSEPH A. MAYS and CHARLES MAYS, Philadelphia, Pa. Filed Oct. 31, 1903. Serial No. 179,423. (No model.)

*Claim.*—1. In a car-brake of the rail class, a horizontally-mounted grooved pulley, an eccentric on the shaft of the pulley, a vertically-reciprocable frame actuated by the eccentric, brake-arms extending in opposite direction, pivotally connected to the reciprocable frame, shoes on the outer ends of the brake-arms to engage on the track-rails, and means to rotate the grooved pulley substantially as described.

2. A car-brake of the rail class, comprising a vertical brake-staff, a grooved pulley on the lower end of the brake-staff, oppositely-extended flexible members connected to the pulley, a horizontally-mounted shaft disposed endwise on the car, a grooved pulley on the shaft having the flexible members connected thereto, an eccentric or cam on the shaft, a vertically-reciprocable frame actuated by the cam, oppositely-extending brake-arms pivotally connected to the frame, brake-shoes carried on the outer ends of the brake-arms, and means connected to the brake-staff to actuate all the elements



753,899. **FRICTION LET-OFF MECHANISM FOR LOOMS.** JOHN T. MEATS, Taunton, Mass., assignor to Mason Machine Works, Taunton, Mass., a Corporation of Massachusetts. Filed Sept. 5, 1903. Serial No. 172,129. (No model.)



*Claim.*—1. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating flexible member fixedly held at one end, and pressure-regulating means comprising a spring operatively connected with the other end of said flexible member, a lever to vary the tension of the spring, and a device to govern the angular position of said lever.

2. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating flexible member, pressure-regulating means comprising a spring operatively connected with one end of said flexible member, and a lever to vary automatically the tension of the spring in accordance with the diameter of the yarn mass on the beam, combined with a positively-acting holding device for and to fixedly position the other end of the said flexible member.

3. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating flexible member, pressure-regulating means comprising a spring operatively connected with one end of said flexible member, and a lever to vary automatically the tension of the spring in accordance with the diameter of the yarn mass on the beam, and a manually-adjustable holding device for the other end of the said flexible brake member.

4. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating flexible member, pressure-regulating means comprising a spring operatively connected with one end of said flexible member, and a lever to vary automatically the tension of the spring in accordance with the diameter of the yarn mass on the beam, a holding-lever operatively connected with the other end of said flexible member and manually adjustable from the front of the loom, and a lock to hold said lever in adjusted position.

5. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating friction member fixedly held at one end, a pressure-regulating spring operatively connected with the other end of said member, and means to vary the tension of the spring, said means including a lever manually adjustable from the front of the loom, and a lock to hold said lever in adjusted position.

6. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating flexible member, and pressure-regulating means including a lever operatively connected with said flexible member, a spring-controlled fulcrum for the lever, and a device to govern the angular position of the latter and thereby vary the tension of the spring while the latter maintains its control of said flexible member.

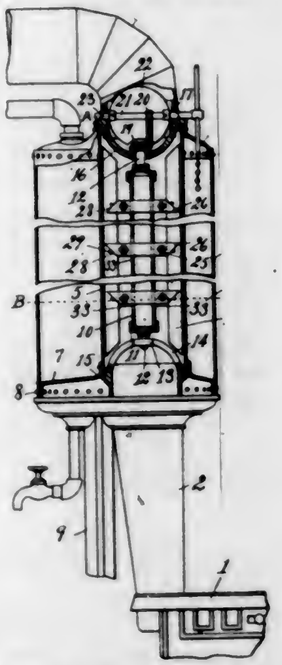
7. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular brake member rotatable with the beam, a coöperating flexible member, and pressure-regulating means including a lever operatively connected with said flexible member, a spring-controlled fulcrum for the lever, and a device to govern automatically the angular position of said lever in accordance with the diameter of the yarn mass on the beam.

8. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular member rotatable with the beam, a coöperating friction member, a pressure-regulating spring, a fixed seat for one end thereof, a stirrup in which its other end is seated, a lever extended through the stirrup and fulcrumed thereon above said fixed seat and connected with one end of the second friction member, and means to coöperate with the free end of and retain said lever in adjusted angular position, angular movement of the lever varying the tension of the spring.

9. In a loom, a warp-beam, and friction let-off mechanism therefor including an annular member rotatable with the beam, a coöperating flexible friction member held at one end, a lever connected with the other end of said flexible member, a stirrup having a fulcrum for the lever, and a spring-seat, a fixedly-mounted spring-seat extended into the stirrup, a spring interposed between the two seats, and means to govern the angular position of the lever, the stirrup coöperating therewith between its connection with the flexible friction member and its opposite end.

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**753,900. DOMESTIC BOILER.** HANS A. MILLER, Selby, Cal. Filed Sept. 8, 1903. Serial No. 172,373. (No model.)



*Claim.*—1. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a radially-movable scraper for said inner wall supported on said boiler, and means for operating the same from the outside of the boiler, substantially as described.

2. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a radially-movable scraper rotating about the axis of said inner wall, and means for operating the same from the outside of the stove, substantially as described.

3. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a longitudinal scraper arranged in contact with said inner wall, a central spreader upon which said scraper is supported to turn therewith but radially movable relative thereto, and means for turning said spreader about its axis, substantially as described.

4. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a central spreader having slots, bars extending horizontally through said slots, spreader-plates supported by said bars and having beveled ends, scraper-plates having pins engaging the beveled ends of the bars and in contact with the inner wall of the boiler, and means for turning said spreader-tube about its axis, substantially as described.

5. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a spreader on the axis of the inner wall, a vertical series of spreader-plates carried by said spreader-tube, the lower plates of the series being vertically movable, said spreader-plates having beveled ends, scraper-plates having pins engaged by said beveled ends and having edges in contact with the inner wall, and means for turning said spreader-tube about its axis, substantially as described.

6. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a longitudinal scraper arranged in contact with said inner wall, a central spreader upon which said scraper is supported, a damper and an operative connection between said damper and said spreader-tube whereby the turning of the damper turns said tube, substantially as described.

7. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a central spreader, spreader-plates carried thereby, scraper-plates supported by said spreader-plates against the inner wall of the boiler, a damper and an operative connection between said damper and said spreader-tube whereby the turning of the damper turns said tube, substantially as described.

8. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a central spreader having slots, bars extending horizontally through said slots, spreader-plates supported by said bars and having beveled ends, scraper-plates having pins engaging the beveled ends of the bars and in contact with the inner wall of the boiler, a damper and an operative connection between said damper and said spreader-tube whereby the turning of the damper turns said tube, substantially as described.

9. A domestic boiler comprising inner and outer walls, the inner wall forming a flue for the products of combustion from the stove, a spreader on the axis of the inner wall, a vertical series of spreader-plates carried by said spreader-tube, the lower plates of the series being vertically movable, said spreader-plates having beveled ends, scraper-plates having pins engaged by said beveled ends and having edges in contact with the inner wall, a damper and an operative connection between said damper and said spreader-tube whereby the turning of the damper turns said tube, substantially as described.

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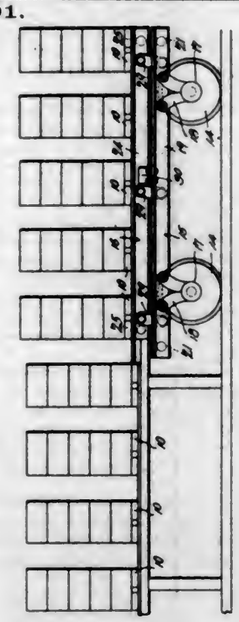
**753,901. BRICK-HANDLING TRUCK.** WILLIAM MILLER, Thomasville, Ga., assignor of one-half to L. F. Patterson, Bainbridge, Ga. Filed July 9, 1903. Serial No. 164,878. (No model.)

*Claim.*—1. In a device of the class described, the combination with the axles and supporting-wheels, of a main frame carried thereby, a vertically-movable supplemental frame, connecting-links pivoted to the main and supplemental frames, and a stop attached to the side bar of one of the frames and projecting beyond the same for engagement by the other frame to limit the downward movement of the supplemental frame, said stop being adapted for engagement by one of the links for maintaining the supplemental frame in elevated position.

2. In a device of the class described, the combination with the axles and supporting-wheels, of a main frame carried thereby, a vertically-movable supplemental frame comprising side bars having horizontal flanges, connecting-links pivoted to the main and supplemental frames, and a stop attached to the side bar of the lower frame and projecting above the same for engagement by the horizontal flange of the supplemental frame to limit the downward movement of the latter, said stop being adapted for engagement by one of the links for maintaining the supplemental frame in elevated position.

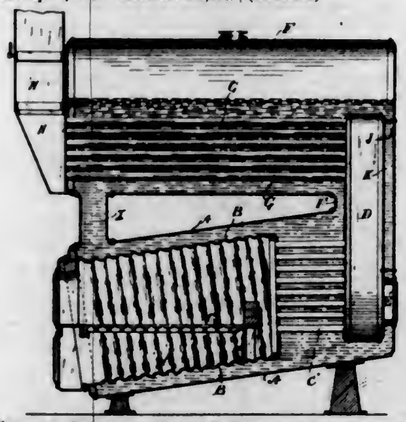


753,901.



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**753,902. STEAM-BOILER.** JOSEPH A. MUMFORD, Roslyn, N. Y. Filed Apr. 9, 1903. Serial No. 151,768. (No model.)



*Claim.*—1. In an internally-fired boiler provided with means for continuous water circulation, the combination of a furnace located within the boiler, a water-space surrounding the furnace, a superposed water and steam drum, relatively short fire-tubes in the boiler, other fire-tubes in the drum, the tubes in the drum being larger than those in the boiler, a flue connecting the two series of fire-tubes, and a stack connecting with the front end of the fire-tubes which are located in the drum.

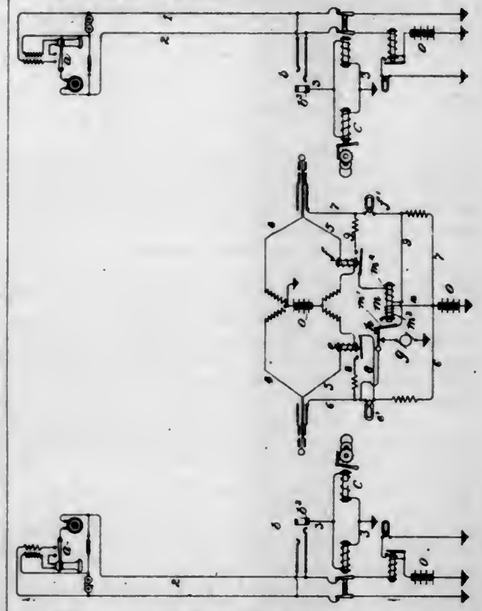
2. In an internally-fired boiler provided with means for continuous water circulation, the combination of a furnace located within the boiler, a water-space surrounding the furnace, a superposed water and steam drum, fire-tubes in the boiler and in the drum, a casing or side plates inclosing the space between the boiler and the drum and a flue or conduit for the products of combustion connecting the boiler-tubes with the tubes in the drum and with the space inclosed by said casing and a stack connecting with said space and with the tubes in the drum.

3. In an internally-fired boiler provided with means for continuous water circulation, the combination of a furnace located within the boiler, a water space or jacket surrounding the furnace, a superposed water and steam drum, fire-tubes in said drum, a casing or side plates inclosing the space between the drum and the boiler, a fire-flue connecting the furnace with the space between the boiler and the drum, and also with the fire-tubes in the drum, and a stack connecting directly with said space and said fire-tubes.

4. In an internally-fired boiler provided with means for continuous water circulation, the combination of a furnace located within the boiler, a water-space surrounding the furnace, a superposed water and steam drum, fire-tubes in the boiler and in the drum, a casing or side plates inclosing the space between the boiler and the drum, a flue or conduit for the products of combustion connecting the boiler-tubes with the tubes in the drum and with the space inclosed by said casing and a stack connecting with said space and with the tubes in the drum, the tubes in the drum being larger than those in the boiler.

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**753,903. TOLL APPARATUS FOR TELEPHONE-EXCHANGES.** FRANK R. MCBERTY, Evanston, Ill., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed May 9, 1902. Serial No. 106,565. (No model.)



*Claim.*—1. The combination with telephone-lines and a switchboard therefor, of a toll device for one of the lines, a manual key and mechanism controlled thereby for actuating said toll device, an electromagnetic lock for preventing the actuation of the toll device, an electric circuit for said lock and a switch controlling the said circuit, automatically actuated at the switchboard in the course of a connection between the line having the toll device and another line.

2. The combination with the calling and a called line and link conductors at the switchboard for uniting them, of a toll device for the calling-line, a key for actuating the same, an electromagnetic lock for said key, a source of current connected with the link conductors, a switch at the substation of the called line controlling the flow of current therein, a relay *f* in the path of current so controlled, and a circuit for said electromagnetic lock controlled by said relay, whereby the key is automatically unlocked through the agency of the switch at the called station.

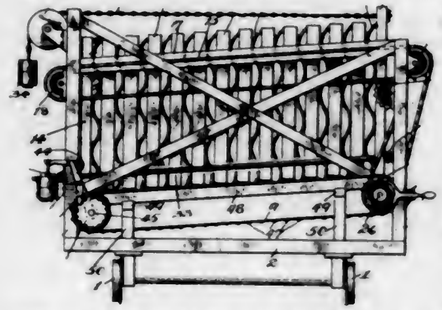
3. The combination with a calling and a called line and link conductors at the switchboard for uniting them, of a toll device for the calling-line, a key for actuating the same, an electromagnetic lock for said key, a source of current connected with the link conductors, a switch at the substation of the called line controlling the flow of current therein, a relay *f* in the path of current so controlled, and a circuit for said electromagnetic lock controlled by said relay, whereby the key is automatically unlocked through the agency of the switch at the called station, and a locking-circuit for said magnet closed in the excitation thereof.

4. The combination with telephone-lines and a switchboard

therefor, of a toll device for one of the lines, a manual key and mechanism controlled thereby for actuating said toll device, means for preventing the actuation of said toll device, a source of current, a switch at the substation of the called line controlling the flow of current therein, and electromagnetic mechanism actuated by said switch, controlling the aforesaid preventing means.

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**753,904. MACHINE FOR DRYING PAPER-BOARD.** THOMAS W. MCFARLAND, Chicago, Ill. Filed Jan. 2, 1903. Serial No. 137,475. (No model.)



*Claim.*—1. In a device for drying boards the combination of means for holding the boards in an upright position and means for engaging the edges of the boards, movable toward said first means for crowding the boards thereagainst and taking up the shrinkage of the boards, substantially as set forth.

2. In a device for drying boards the combination of means for holding the boards in an upright position and a support for the lower edges of the boards, movable toward said first means for crowding the boards toward the latter, substantially as set forth.

3. In a device for drying boards the combination of means for holding the boards in an upright position and a support for the lower edges of the boards having lugs or corrugations for engaging the boards and advancing them toward said first means, substantially as set forth.

4. In a device for drying boards the combination of means for holding the boards in an upright position and an endless movable support for the lower edges of the boards movable toward said first means, substantially as set forth.

5. In a device for drying boards the combination of means for holding the boards in an upright position, a movable device for engaging the lower ends of the boards for moving them toward said first means and means for producing continual pressure against the boards toward said first means, substantially as set forth.

6. In a device for drying boards the combination of means for holding the boards in an upright position, a movable device for engaging the lower ends of the boards and moving them toward said first means and means for imparting to said movable device a continual tendency to move toward said first means, substantially as set forth.

7. In a device for drying boards the combination of means for holding the boards in an upright position, a movable device for engaging the lower ends of the boards for moving them toward said means and means for imparting motion to said movable device with gradually-increasing pressure, substantially as set forth.

8. In a device for drying boards the combination of means for holding the boards in an upright position, a movable device for engaging the lower ends of the boards for moving them toward said means, a pawl and ratchet for imparting motion to said device and a weighted lever for imparting motion to said pawl, substantially as set forth.

9. In a device for drying boards the combination of means for holding the boards in an upright position, a roughened flexible surface for supporting the lower edges of the boards and means for winding said surface past the lower edges of the boards toward said first means, substantially as set forth.

10. In a device for drying boards the combination of means for holding the boards in an upright position, an endless roughened belt engaging the lower edges of the boards, drums for supporting and moving said belt and means for rotating said drums, substantially as set forth.

11. In a device for drying boards the combination of means for holding the boards in an upright position, a screen for supporting the lower edges of the boards and means for supporting said screen and moving it toward said first means, substantially as set forth.

12. In a device for drying boards the combination of means for holding the boards in an upright position, a screen for supporting the lower edges of said boards, means for moving said screen toward said first means, and slats arranged under and supporting said screen at intervals throughout its length, substantially as set forth.

13. In a device for drying boards the combination of means for holding the boards in an upright position, a movable support for the lower edges of said boards movable toward said first means, a follower engaging said movable support and adapted to be moved thereby for crowding the boards toward said first means, and means for moving said movable support, substantially as set forth.

14. In a device for drying boards the combination of means for holding the boards in an upright position, a movable support for the lower edges of the boards, a follower resting upon said support and adapted to move therewith and a weight flexibly connected with said follower for crowding it against the boards, substantially as set forth.

15. In a device for drying boards the combination of means for holding the boards in an upright position on one side, a follower adapted to engage the boards on the other side, a pull-rod engaging the lower edge of said follower for crowding the follower against the boards and a weight flexibly connected with the upper edge of the follower for moving the upper edge toward the boards, substantially as set forth.

16. In a device for drying boards the combination of means for supporting the lower edges of the boards, means for moving said support, a follower for holding the boards in an upright position on said support and means for moving said follower with said first means, substantially as set forth.

17. In a device for drying boards the combination of means for supporting the lower edges of the boards, means for moving said support, a follower for holding the boards in an upright position on said support and means operatively connected with said supporting means and also disengageable therefrom, for moving said follower with said supporting means, substantially as set forth.

18. In a device for drying boards the combination of a support for the lower edges of the boards, a follower for holding the boards in an upright position on said support, belts connected with the ends of said follower for moving the same and means disengageably connected with said belt and support for moving the latter and said belt, substantially as set forth.

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**758,905. AUTOMATIC MULTIPLE DRILLING-MACHINE.** FREDERICK J. HUTTING, Dayton, Ohio, assignor, by direct and mesne assignments, to the National Automatic Tool Co., Dayton, Ohio. Filed Jan. 13, 1902. Serial No. 89,563. (No model.)

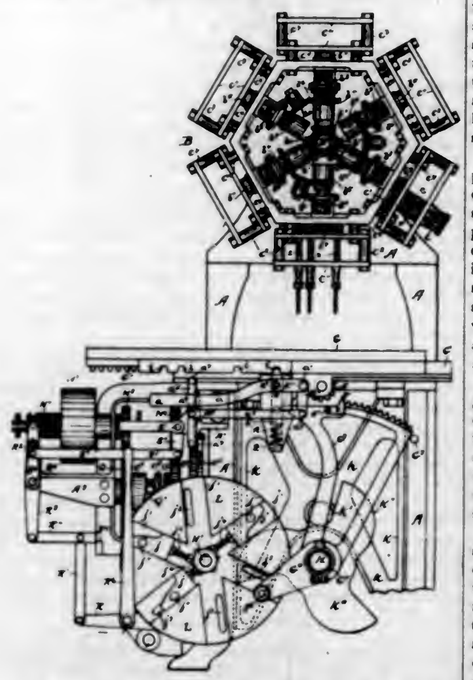
*Claim.*—1. In a multiple drilling-machine, a turret-head having a series of straight sides, a series of spindles mounted in said turret-head, means for driving said spindles, groups of drill-spindles, means for mounting said groups of drill-spindles on the sides of the turret-head, means for driving each group of drill-spindles, an indexing-plate on the turret-head, an indexing-lever cooperating with said turret-head to automatically index the turret-head to present each group of drill-spindles in an operative position.

2. In a multiple drilling-machine, a turret-head having a series of straight sides, a series of radial spindles therein, a center spindle to drive said radial spindles, a plurality of groups of drill-spindles driven from said radial spindles, means for supporting each group of drill-spindles on the sides of the turret-head, means for throwing each group of drill-spindles in and out of gear with their respective actuating-spindle, an indexing-plate on the turret-head, an indexing-lever adapted to engage with said plate to rotate the turret-head, and means for automatically actuating said indexing-lever.

3. In a multiple drilling-machine, a turret-head having a series of straight sides, a series of radial spindles mounted in said turret-head, groups of drill-spindles driven from said radial spindles, means for mounting said groups of drill-spindles on the sides of the turret-head, means for driving the drill-spindles of each group, means for automatically throwing each group of drill-spindles in and out of gear with their driving-spindles, an indexing-plate on said turret-head, an indexing-lever adapted to actuate said turret-head to impart intermittent rotary movement to said turret-head whereby each group of drill-spindles is brought into an operative position, and means for actuating said indexing-lever.

4. In a multiple drilling-machine, a turret-head having a series of sides or faces, a series of spindles mounted therein, a center spindle from which said spindles are driven, a plurality of groups of drill-spindles geared to said driving-spindles, plates by means of which the groups of drill-spindles are mounted on the sides or faces of the turret-head, means for automatically throwing each group of drill-spindles in and out of gear with their respective driving-spindle, means for automatically indexing the turret-head, and means for locking said turret-head in each indexed position.





5. In a multiple drilling-machine, a turret-head having a series of sides or faces, a series of radial spindles therein, a central spindle for driving said radial spindles, groups of drill-spindles driven from said radial spindles, means for supporting each group of drill-spindles on the sides of the turret-head, means for automatically throwing each group of drill-spindles in and out of gear with their respective actuating-spindle, an indexing-plate on said turret-head, an indexing-lever to actuate the turret-head by engaging with said plate to present each group of drill-spindles in an operative position, a bolt to lock said turret-head in each indexed position, and means for actuating the indexing-lever and said bolt at the proper times.

6. In a multiple drilling-machine, a multisided turret adapted to receive groups of drill-spindles, groups of drill-spindles mounted thereon, means for driving said groups of drill-spindles, means for automatically throwing each group of drill-spindles into and out of operative relation with their driving-spindles, a feed table or platen, and means for indexing the turret and platen simultaneously.

7. In a multiple drilling-machine, a multisided turret-head, groups of drill-spindles mounted on the sides thereof, means for driving said drill-spindles, means for throwing each group of such drill-spindles into and out of operative position, a feed table or platen, and means for simultaneously indexing said turret-head and platen, the platen at uniform distances.

8. In a multiple drilling-machine, a multisided turret-head, groups of drill-spindles mounted thereon, means for driving said drill-spindles, means for throwing each group of such drill-spindles into and out of an operative position, a feed table or platen, and means for simultaneously indexing the turret-head and the platen, the platen at uniform or varying distances.

9. In an automatic multiple drilling-machine, a turret-head having a series of sides or faces, groups of drill-spindles arranged on said sides or faces, means for driving said drill-spindles, means for throwing each group of drill-spindles into and out of operative position, automatic indexing mechanism for the turret-head, a feed table or platen, automatic indexing mechanism for said feed table or platen, means for timing or operating said mechanism to shift said feed table or platen into operative relation with the turret-head upon each indexing operation of the latter, and means for locking the turret-head and the feed table or platen in each indexed position, substantially as specified.

10. In a multiple drilling-machine, a multisided turret-head, a plurality of radial spindles mounted therein and driven from a center pinion, groups of drill-spindles mounted on said turret-head, means for throwing in operation each group of drill-spindles when required, an indexing-plate on said turret-head, an indexing-lever to actuate said plate and whereby the turret-head is automatically indexed, means for actuating said indexing-lever, a feed table or platen, means through which said feed table or platen is actuated to index the same at uniform or varying distances, and means for elevating said feed table or platen after each operation of indexing the turret-head and said platen.

11. In a multiple drilling-machine, a multisided turret-head, a plurality of groups of drill-spindles mounted thereon, means for driving each group of drill-spindles when required, the several drill-spindles of each group at uniform or varying speeds, a feed table or platen, means for indexing the turret-head to bring each group of drill-spindles in operative relation with said platen, means for indexing the platen simultaneously with the indexing of the turret-head, means for locking the turret-head and said platen after each operation of indexing, a worm-shaft, cams driven therefrom through which the indexing mechanisms of the turret-head and the platen are actuated, and a speed combination by means of which said worm-shaft may be driven at varying speeds.

12. In a multiple drilling-machine, a multi-sided turret-head, groups of drill-spindles arranged on the sides thereof, means for driving each group of drill-spindles at predetermined times, means for automatically indexing said turret-head, a feed table or platen, means for automatically indexing said platen simultaneously with the indexing of the turret-head and at uniform or varying distances, and means for locking said turret-head and platen in each indexed position.

13. In a multiple drilling-machine, the combination of a multisided turret-head, groups of drill-spindles mounted on the sides thereof, means for driving the spindles of each group at predetermined times, means for indexing the turret-head, a feed table or platen, means for indexing said platen, a plurality of cams through which the indexing mechanisms of the turret-head and the indexing mechanism of the platen are actuated, means for elevating the platen after each operation of indexing, a timing-wheel, and mechanism interposed between said timing-wheel and the main power-shaft through which the power is cut off after each complete operation of the machine.

14. In a multiple drilling-machine, the combination of a multisided turret-head, a plurality of radial spindles mounted therein and driven from a center pinion, groups of drill-spindles mounted on the sides of the turret-head, clutches and springs controlling the connections between the drill-spindles and their driving-spindles, an indexing-plate on the turret-head, an indexing-lever, a pivotal head on such lever which engages said indexing-plate to rotate the turret-head, a cam for actuating said indexing-lever, a shot-bolt to lock the turret-head in each indexed position, a double cam to actuate said shot-bolt after each operation of the indexing-lever, and means means for imparting varying speeds to the shaft upon which said cams are mounted.

15. In a multiple drilling-machine, the combination of a multisided turret-head, a plurality of radial spindles therein driven from a center pinion, groups of drill-spindles, clutches and springs controlling the connections of each group of drill-spindles with its respective driving-spindle, an indexing-plate on the turret-head, an indexing-lever having a pivotal head which actuates the indexing-plate in each indexed position, a shot-bolt to lock the indexing-plate, cams to actuate the indexing-lever and the shot-bolt at the proper times and to the proper extent, a worm-gear, a timing-wheel having removable cam-pieces and means interposed between said cam-pieces and said worm-gear, whereby the speed imparted to the worm-shaft may be regulated to any of the speeds required and at any fraction of a revolution desired.

16. In a multiple drilling-machine, the combination of a multisided turret-head, groups of drill-spindles arranged on the sides thereof, means for driving the drills of each group of drill-spindles as desired, indexing mechanism for said turret-head, cams for operating said indexing mechanism, a worm-shaft from which the cam-shaft is driven, a timing-wheel with suitable cam or cams thereon, means interposed between said cams and said worm-shaft through which the speed of the cam-shaft is regulated, and stop-levers actuated upon the completion of a movement of the timing-wheel and

through which the machine is automatically stopped after each operation and means for actuating said stop-levers.

17. In a multiple drilling-machine, the combination of a multisided turret-head, groups of drill-spindles mounted thereon, mechanism for indexing the turret-head, means for actuating each group of drill-spindles after each operation of indexing the turret-head, a feed table or platen, mechanism for indexing said feed table or platen, cams through which the indexing mechanisms of the turret-head and platen are actuated, a worm-shaft through which the cam-shaft is driven, a speed combination through which varying speeds may be transmitted to the cam-shaft through said worm-shaft, a timing-wheel, mechanisms interposed between the speed combination and said timing-wheel and through which the speeds transmitted to the worm-shaft may be varied as desired, mechanism interposed between the main shaft and said timing-wheel through which the power is cut off from the machine at each complete operation thereof.

18. In a multiple drilling-machine, the combination of a multisided turret-head, groups of drill-spindles mounted on the sides thereof, mechanism for indexing the turret-head, means for actuating each group of drill-spindles after each operation of indexing the turret-head, a feed table or platen, mechanism for indexing said feed table or platen, cams through which the indexing mechanisms of the turret-head and the platen are actuated, a worm-shaft through which the cam-shaft is driven, a speed combination through which varying speeds may be transmitted to the cam-shaft, a timing-wheel, mechanism interposed between the speed combination and said timing-wheel through which the speeds transmitted to the worm-shaft may be varied as desired, mechanism interposed between the main power-shaft and said timing-wheel through which power is cut off from the machine at each complete operation thereof, and means for manually cutting off the power from the machine.

19. In a multiple drilling-machine, a feed table or platen, means for indexing said platen, means for locking such platen after each operation of indexing the same, and automatic means for elevating said feed-table.

20. In a multiple drilling-machine, a feed table or platen, mechanism for automatically indexing said feed table or platen at uniform or varying distances, means for locking said feed table or platen in each indexed position, and automatic means for elevating said feed-table after each indexing operation.

21. In a multiple drilling-machine, a feed table or platen, gearing adapted to impart indexing movements to said platen, means adapted to lock said platen in each indexed position, and means for elevating said platen after each indexing operation.

22. In a multiple drilling-machine, a feed table or platen, gearing adapted to impart indexing movements to said platen, a series of adjustable cams through which uniform or varying movements may be imparted to said gearing, a shot-bolt for locking said platen in each indexed position, and means for elevating said platen after each operation of indexing.

23. In a multiple drilling-machine, a platen, gearing for imparting indexing movements to said platen, a series of adjustable cams through which uniform or varying movements may be imparted to said gearing, a shot-bolt for locking said platen in each indexed position, and a system of levers through which said shot-bolt is maintained in an interlocked position with the platen during an operation.

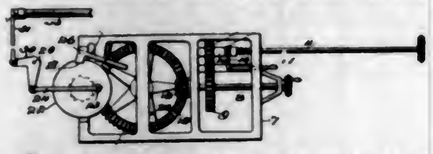
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**753,906. MUSTACHE-BAND.** FIDEL OBERDORFER, Heidenheim-on-the-Brenz, Germany. Filed Oct. 7, 1903. Serial No. 176,082. (No model.)



*Claim.*—In a washable mustache-band, the combination of a wire-gauze band adapted to engage the mustache, a binder around the edges of said band, eyelets in the ends of said band, loops of elastic material engaging said eyelets, bent tubular guards, through which said elastic loops pass, adapted to carry the latter around the ears of the wearer, and means connecting with said elastic loops for fastening them about the head of the wearer.

**753,907. AUTOMATIC DROPPER.** WOLFGANG OBERHEIM, Lost-lake, Wis. Filed June 3, 1903. Serial No. 159,852. (No model.)



*Claim.*—1. In a harvesting-machine, the combination with a sheaf-rack, means for raising and lowering said rack, and a reciprocating device for operating said raising and lowering means, of means for operating said reciprocating device, means for automatically locking said operating means, comprising in part a catch, means normally tending to throw said catch into locking position, and a pin on a part of said operating means which trips said catch and permits said raising and lowering means to operate.

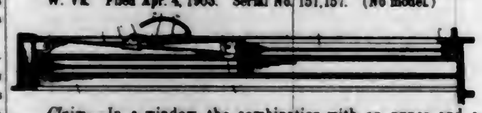
2. In a harvesting-machine, the combination with a sheaf-rack, and means for raising and lowering said rack, of a reciprocating device for operating said raising and lowering means, means for operating said reciprocating device, comprising in part a segment-wheel, a pivoted catch adapted to lock a part of said operating means, and a pin on said segment-wheel adapted to release said locking-catch.

3. In a harvesting-machine, the combination with a sheaf-rack, means for raising and lowering said rack, and a reciprocating device for operating said raising and lowering means, of a notched wheel for operating said reciprocating device, means for rotating said notched wheel comprising in part a segment-wheel, means normally tending to lock said notched wheel, and a pin on said segment-wheel adapted to disengage said locking means just prior to the rotation of said notched wheel by the segment-wheel.

4. In a harvesting-machine, the combination with a sheaf-rack, means for raising and lowering said rack comprising in part a notched wheel, means normally tending to engage said notched wheel and lock the same, means for rotating said notched wheel, and means on said rotating means which trips said locking means and permits the rotating means to operate to raise and lower the said rack.

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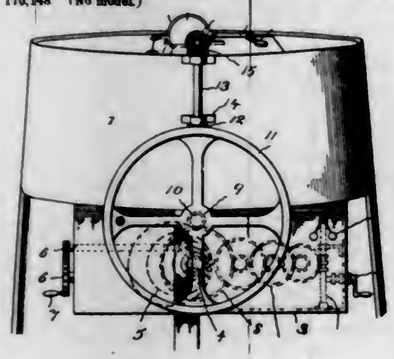
**753,908. SASH-BALANCE.** GEORGE W. ODDEN, Prosperity, W. Va. Filed Apr. 4, 1903. Serial No. 151,157. (No model.)



*Claim.*—In a window, the combination with an upper and a lower sash, of a bracket mounted on the upper edge of the lower sash and including a plurality of upstanding ears, a locking-cam journaled between certain of the ears and movable into and out of engagement with the upper sash, a pulley journaled between certain of the ears, said pulley being located beside but independent of the cam, a cable secured to the upper sash and passing about the pulley, and means for adjustably securing one end of the cable to an intermediate portion of the same.

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**753,909. DRIVING MECHANISM FOR WASHING-MACHINES.** KARL L. PATTERSON, Beaverfalls, Pa. Filed Oct. 7, 1903. Serial No. 176,148. (No model.)



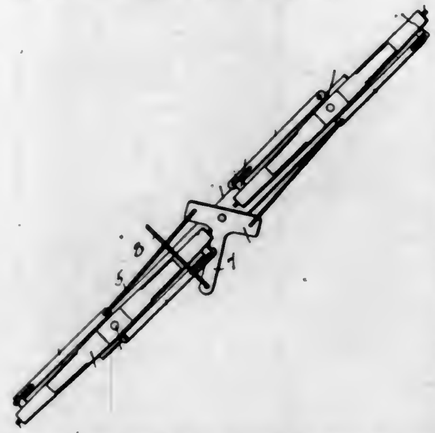


*Claim.*—1. In a washing-machine, the combination with the body thereof and an arm upon the body adapted to be connected to a rubber; of a shaft journaled upon the body; an eccentric secured on the shaft, means connecting the eccentric and arm for imparting a reciprocating movement to the arm, a motor, a toothed fly-wheel thereon, and means for transmitting rotary motion from the said fly-wheel to the eccentric.

2. In a machine of the character described, the combination with a body having an arm thereon adapted to be connected to a rubber within the body; of a motor secured to and depending from the body, a toothed fly-wheel on the motor, shafts journaled upon the side and top of the body respectively, means for transmitting rotary motion from one shaft to the other, a gear upon the side shaft meshing with the teeth on the fly-wheel, an eccentric secured to the top shaft, a strap inclosing the eccentric, and a link connecting the strap and arm.

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**753,910. HORSE-DETACHER.** JOHN PEARSON, Northwood, N. D. Filed Oct. 28, 1903. Serial No. 178,863. (No model.)



*Claim.*—1. In a device of the character described, the combination with a whiffletree having a swingletree thereon, and an operating-lever fulcrumed upon the whiffletree; of a lever interposed between the whiffletree and the swingletree and projecting from opposite sides thereof, spring-pressed plungers slidably mounted within the ends of the swingletree, trace-receiving extensions normally engaged by the plungers, rods connecting the ends of the lever with the plungers, and a rigid connection between said lever and the operating-lever.

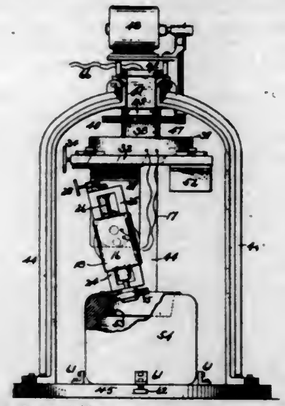
2. In a device of the character described, the combination with a whiffletree having a swingletree pivoted thereon, and an operating-lever fulcrumed upon the whiffletree; of a lever interposed between the whiffletree and the swingletree, a rod connecting the two levers, spring-pressed plungers slidably mounted in the ends of the swingletree, trace-receiving extensions normally engaged by the plungers, ears extending from the plungers, and rods connecting the ears with the projecting ends of the interposed lever.

3. In a device of the character described, the combination with a whiffletree having an operating-lever fulcrumed thereon, and a swingletree pivoted upon the whiffletree; of a transversely-extending lever interposed between the whiffletree and the swingletree, a rod connecting said levers, a casing upon each end of the swingletree, an angular extension thereto, a spring-pressed plunger slidably mounted in each casing and normally engaging the extension, an ear upon each plunger, a slotted rod connected to each ear and to the transversely-extending lever, and means for rotating the operating-lever.

4. In a device of the character described, the combination with a whiffletree having swingletrees pivoted thereon, and an operating-lever interposed between the swingletrees; of transversely-extending levers mounted between the whiffletree and the swingletrees, casings upon the ends of the swingletrees, angular trace-receiving extensions thereon, spring-pressed plungers slidably mounted within the casings and normally engaging the extensions, ears upon the plungers, slotted rods connected to the ears and the transversely-extending levers, and rods connecting said levers with the operating-lever.

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**753,911. GRINDING-MACHINE.** GEORGE J. PELSTRING, Cincinnati, Ohio, and HENRY G. PELSTRING, Covington, Ky., assignors, by mesne assignments, to the Victor Safe & Lock Co., Cincinnati, Ohio, a Corporation of Ohio. Filed Oct. 3, 1903. Serial No. 175,539. (No model.)



*Claim.*—1. In a grinding-machine, the combination of a grinding-wheel, means to rotate it, a bracket to which it is adjustably connected, a platform from which this bracket depends nad means to rotate the platform.

2. In a grinding-machine, the combination of an electrical motor, a grinding-wheel rotated by the armature-shaft of the same, a support to which the motor is adjustably connected and means for moving the grinding-wheel and its actuating-motor in a circular path.

3. In a grinding-machine, the combination of an electrical motor, a grinding-wheel rotated by the armature-shaft of the same, a slide on which this motor is supported so as to have a pivotal adjustment, a frame to which this slide is connected with a sliding adjustment, a bracket to which this frame is connected with a pivotal adjustment, a platform from which this bracket depends and means to rotate the platform.

4. In a grinding-machine, the combination of a grinding-wheel, means to rotate it, a bracket to which it is adjustably connected, a platform from which this bracket depends, a vertical spindle on which this platform is suspended and means to rotate the platform about the spindle.

5. In a grinding-machine, the combination of a rotary carrier and a single motor-operated grinding-wheel adjustably suspended thereon.

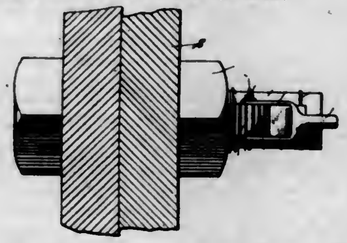
6. In a grinding-machine, the combination of a motor-operated grinding-wheel, and a rotary carrier on which it is suspended and whereby it is moved in a circular path.

7. In a grinding-machine, the combination of a motor-operated grinding-wheel, a bracket on which it is supported, a platform to the under side of which this bracket is adjustably connected and means to rotate the platform.

8. In a grinding-machine, the combination of a grinding-wheel, a base on which it is supported, a slide to which this base is pivotally attached and a frame on which this slide is held with a longitudinal adjustment.

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**753,912. GEAR-LOCK.** CLARENCE PERCY, Jr., Wakefield, La. Filed Jan. 6, 1904. Serial No. 187,938. (No model.)



*Claim.*—1. In a device of the class described, the combination with a rack, of a primary locking member traveling thereon and

adapted for movement into engagement with a body, a secondary locking member movable into engagement with the primary member, and means for securing the secondary member in locking position.

2. In a device of the class described, the combination with a rack, of a toothed primary locking member traveling thereon and adapted for movement into engagement with a body, a secondary locking member movable into engagement with the primary member, and means for securing the secondary member in locking position.

3. In a device of the class described, the combination with a rack, of a pinion traveling thereon and adapted for movement into engagement with a body, a wedge movable into engagement with the pinion, and means for securing the wedge in locking position.

4. In a device of the class described, the combination with a rack having a longitudinal groove, of a locking-pinion traveling on the rack and adapted for movement into engagement with a body, a wedge movable into engagement with the pinion and having a spline engaging the groove and means for securing the wedge in locking position.

5. In a device of the class described, the combination with a rack, of a pinion traveling thereon and adapted for movement into engagement with a body, a lever pivotally connected with the pinion, a wedge movable into engagement with the pinion, and a member carried by the wedge for engagement by the lever to secure the wedge in locking position.

6. In a device of the class described, the combination with a rack, of a pinion traveling thereon and adapted for movement into engagement with a body, a wedge movable into locking engagement with the pinion, and a lever operatively connected with the pinion and adapted for engagement with the wedge to secure the latter in locking position.

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**753,913. FENCE-POST.** Victor E. Randall, Battlecreek, Mich. Filed Feb. 14, 1903. Serial No. 143,345. (No model.)



*Claim.*—1. In a fence-post having a channel, hooks arranged within the channel of said post, a top hook curving upward, a bottom hook curving downward, and intermediate hooks having their bights in horizontal arrangement and a locking-strip looped about the bottom and top hooks and caught by intervening hooks, for the purpose set forth.

2. A fence-post having a channel, hooks arranged within the channel of said post, a top hook curving upward, a bottom hook curving downward, and intermediate hooks having their points in zigzag arrangement and their bights in horizontal position, a locking-strip looped about the bottom and top hooks and caught by the intervening hooks, substantially as and for the purpose set forth.

3. A fence-post having a channel, hooks arranged within the channel of said post, a top hook curving upward, a bottom hook curving downward, and intermediate hooks having their points in zigzag arrangement and their bights in horizontal position; all of said hooks having their bights wholly within a line intersecting the salient angles of the two edges of said channel, and a locking-strip having eyelets in either end thereof, the eyelets of said strip engaging the bottom and top hooks, its intermediate portion locking with hooks disposed between said bottom and top hooks, substantially as and for the purpose set forth.

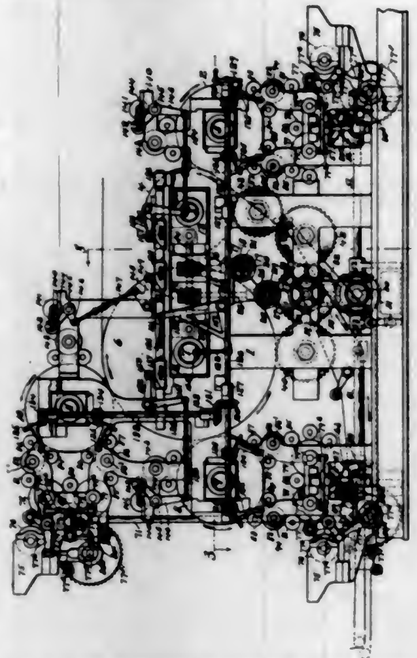
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**753,914. PRINTING-MACHINE.** George F. Read, New York, N. Y., assignor, by direct and mesne assignments, to Robert Hoe and Charles W. Carpenter, New York, N. Y. Filed Apr. 30, 1900. Serial No. 14,805. (No model.)

*Claim.*—1. In a printing-machine, the combination with a plurality of printing-couples, the impression members of which are arranged between the form-carrying members, of independent moving means for one of the members of each couple said means operating to move said members toward and away from their cooperating members, substantially as described.

2. In a printing-machine, the combination with a plurality of printing-couples, the impression members of which are arranged between the form-carrying members, boxes in which the shafts of the impression members are mounted, ways in the machine-frame in which the boxes move, and independent means for moving the boxes whereby said impression members can be independently operated, substantially as described.

3. In a printing-machine, the combination with a plurality of printing-couples having the impression members arranged between the form-carrying members, of sliding boxes in which the shafts of the impression members are mounted, ways in the machine-frame in which the boxes move, an independent operating-shaft for each couple and connections between the shafts and the boxes whereby rotation of the shafts causes movement of the boxes, substantially as described.



4. In a printing-machine, the combination with a printing-couple, of sliding boxes in which the shaft of the impression member of the couple is mounted, substantially horizontal ways in which the boxes move, threaded links connected to the boxes, nuts which are engaged by the links, and means for rotating the nuts to move the boxes, substantially as described.

5. In a printing-machine, the combination with a printing-couple, of sliding boxes in which the shaft of the impression member of the couple is mounted, substantially horizontal ways in which the boxes move, threaded links connected to the boxes, nuts which are engaged by the links, a shaft extending across the machine from side to side, and means whereby a rotation of the shaft causes a rotation of the nuts and a movement of the boxes, substantially as described.

6. In a printing-machine employing a plurality of printing-couples, the impression members of which are arranged between the form-carrying members whereby said form-carrying members are readily accessible for the purpose of making ready, the combination with the form-carrying members thereof, of a plurality of inking mechanisms, a shaft extending along the machine, and means whereby a rotation of the shaft causes the form-rollers of the inking mechanisms to move toward and away from the paths of the forms, substantially as described.

7. In a printing-machine employing a plurality of printing-couples, the impression members of which are arranged between the form-carrying members whereby said form-carrying members are readily accessible for the purpose of making ready, the combination with the form-carrying members thereof, of a plurality of inking mechanisms, a shaft extending along the machine, means whereby a rotation of the shaft causes the form-rollers of the inking mechanisms to move toward and away from the paths of the forms, means for driving the printing-couples, and independent means for driving the inking mechanisms, substantially as described.

8. In a printing-machine employing a plurality of printing-couples, the combination with the form-carrying members thereof, of a plurality of inking mechanisms, a worm-shaft, segment-arms operated by the worm-shaft, and connections between the segment-arms and the bearings for the form-rollers, whereby a movement of the arms causes the rollers to move toward and away from the paths of the forms, substantially as described.



9. In a printing-machine employing a plurality of printing-couples, the combination with the form-carrying members thereof, of a plurality of inking mechanisms, a worm-shaft, segment-arms operated by the worm-shaft, connections between the segment-arms and the bearings for the form-rollers, whereby a movement of the arms causes the rollers to move toward and away from the paths of the forms, means for driving the printing-couples, and independent means for driving the inking mechanisms, substantially as described.

10. In a printing-machine, the combination with a form-carrier, of form-rollers therefor, pivoted arms in which the bearings for the form-rollers are mounted, a normally stationary shaft, links between the shaft and the pivoted arms, whereby a movement of the shaft causes a movement of the arms on their pivots, and means for rotating the shaft, substantially as described.

11. In a printing-machine, the combination with a form-carrier, of form-rollers therefor, a distributing-roll with which the form-rollers are in contact, arms pivoted on the shaft of the distributing-roll, said arms carrying bearings for the form-rollers, a normally stationary shaft, links between the shaft and the pivoted arms, whereby a movement of the shaft causes a movement of the arms on their pivots, and means for rotating the shaft, substantially as described.

12. In a printing-machine, the combination with a form-carrier, of form-rollers therefor, pivoted arms in which the bearings for the form-rollers are mounted, a shaft, links between the shaft and the pivoted arms whereby a movement of the shaft causes a movement of the arms on their pivots, a segment for rotating the shaft, and means for operating the segment, substantially as described.

13. In a printing-machine, the combination with a form-carrier, of form-rollers therefor, a distributing-roll with which the form-rollers are in contact, arms pivoted on the shaft of the distributing-roll, said arms carrying the bearings for the form-rollers, a shaft, links between the shaft and the pivoted arms, whereby a movement of the shaft causes a movement of the arms on their pivots, a segment for rotating the shaft, and means for operating the segment, substantially as described.

14. In a printing-machine, the combination with a plurality of printing-couples, of a plurality of inking mechanisms, pivoted arms in which the bearings for the form-rollers of the inking mechanisms are mounted, a plurality of shafts, one for each set of form-rollers, a segment connected to each shaft, and means for simultaneously operating the segments, substantially as described.

15. In a printing-machine, the combination with a plurality of printing-couples, of a plurality of inking mechanisms including distributing and form rollers, arms pivoted on the shafts of the distributing-rollers and carrying the bearings of the form-rollers, a plurality of shafts, one for each set of form-rollers, connections between each shaft and its form-rollers, a segment connected to each shaft, and means for simultaneously operating the segments, substantially as described.

16. In a printing-machine, the combination with a plurality of printing-couples, of a plurality of inking mechanisms including form and distributing rollers, arms pivoted on the shafts of the distributing-rollers and carrying the bearings for the form-rollers, a plurality of shafts, one for each set of form-rollers, connections between each shaft and its form-rollers, a segment connected to each shaft, and a worm-shaft for simultaneously operating the segments, substantially as described.

17. In a printing-machine, the combination with three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, of a plurality of sets of form-rollers, a shaft, connections between the shaft and the form-rollers of two of the form-cylinders, a second shaft, connections between this shaft and the form-rollers of the third form-cylinder, gearing between the two shafts, and means for rotating one of the shafts and thus causing the form-rollers to move toward and away from the paths of the forms on the form-cylinders, substantially as described.

18. In a printing-machine, the combination with three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, of a plurality of sets of inking mechanisms including form and distributing rollers, arms pivoted on the shafts of the distributing-rollers and carrying the bearings for the form-rollers, a shaft, connections between the shaft and the arms which carry the bearings of the form-rollers for two of the form-cylinders, a second shaft, connections between this shaft and the arms which carry the bearings of the form-rollers for the third form-cylinder, gearing between the two shafts, and means for rotating one of the shafts and thus causing the form-rollers to move toward and away from the paths of the forms on the form-cylinders, substantially as described.

19. In a printing-machine, the combination with three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, of a plurality of sets of form-rollers, a worm-shaft, connections between the worm-shaft and the form-rollers of two of the form-cylinders, said connections including segment-arms which are operated by the worm-shaft, a second worm-shaft, connections between this shaft and the form-rollers of the third form-cylinder, said connections including segment-arms, gearing between the two shafts, and means for rotating one of the shafts and thus causing the form-rollers to move toward and away from the path of the forms on the form-cylinders, substantially as described.

20. In a printing-machine, the combination with three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, of a plurality of sets of inking mechanisms including form and distributing rollers, arms in which the bearings of said form-rollers are mounted, said arms being pivoted on the shafts of the distributing-rollers, a shaft, connections between the shaft and the pivoted arms which carry the form-rollers for two of the form-cylinders, a second shaft, connections between this shaft and the pivoted arms which carry the form-rollers for the third form-cylinder, gearing between the two shafts, and means for operating one of the shafts, substantially as described.

21. In a printing-machine, the combination with three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, of a plurality of sets of inking mechanisms including form and distributing rollers, arms in which the bearings of said form-rollers are mounted, said arms being pivoted on the shafts of the distributing-rollers, a worm-shaft, connections between the worm-shaft and the pivoted arms which carry the form-rollers for two of the form-cylinders, said connections including segment-arms operated by the worm-shaft, a second worm-shaft, connections between this shaft and the pivoted arms which carry the form-rollers for the other form-cylinder, said connections including segment-arms operated by the worms on this shaft, gearing between the two worm-shafts, and means for operating one of the worm-shafts, substantially as described.

22. In a printing-machine, the combination with three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, a plurality of sets of form-rollers, pairs of pivoted arms in which the bearings of the form-rollers are mounted, a plurality of shafts, one for each set of form-rollers, connections between the shafts and the pivoted arms which carry the form-rollers, segment-arms on the shafts, a worm-shaft for operating the segment-arms of the shafts of the form-rollers for two of the form-cylinders, a worm-shaft for operating the segment-arms of the form-rollers for the third form-cylinder, gearing between the two worm-shafts, and means for operating one of the shafts, substantially as described.

23. In an inking mechanism employing two primary distributing-rolls, the combination with a shaft, of a gear thereon, gearing between said gear and said rolls, a shaft having a cam thereon parallel to the first shaft, gearing between the two shafts, a ductor-roll, and means whereby the cam operates the ductor-roll, substantially as described.

24. In an inking mechanism employing two primary distributing-rolls, the combination with a shaft, of a gear thereon, gearing between said gear and said rolls, a shaft having a cam thereon parallel to the first shaft, gearing between the two shafts, and a vibrating mechanism for said distributing-rolls operated from said cam, substantially as described.

25. In an inking mechanism employing two primary distributing-rolls, the combination with a shaft, of a gear thereon, gearing between said gear and said rolls, a cam-shaft parallel to the first shaft, two cams on the cam-shaft, gearing between the two shafts, a ductor-roll, connections between one of the cams and the ductor-roll, whereby said cam operates the roll, and a vibrating mechanism for the distributing-rolls operated from the other cam, substantially as described.

26. In an inking mechanism, the combination with two primary distributing-rolls, of a shaft, gearing between the said shaft and the distributing-rolls, a cam-shaft parallel to the first shaft, two cams on the cam-shaft, gearing between the two shafts, a ductor-roll, connections between one of the cams and the ductor-roll, a third shaft, arms on said third shaft engaging hubs on the distributing-roll shaft, and means whereby said shaft is rocked from the other cam on the cam-shaft, substantially as described.

27. In an inking mechanism, the combination with two primary distributing-rolls, of a shaft, gearing between said shaft and the distributing-rolls, a cam-shaft parallel with the first shaft, a third shaft, arms on this shaft engaging hubs on the distributing-roll shaft, means whereby said third shaft is rocked from a cam on the cam-shaft, a ductor-roll, a shaft having arms in which the ductor-roll is mounted, an arm extending from said shaft, and means whereby the arm is operated from a cam on the cam-shaft, substantially as described.

28. In a planographic printing-machine, the combination with a plurality of form-carriers, of damping mechanisms, one for each carrier, means for operating all the damping mechanisms, and means for independently controlling the operation of each damping mechanism so as to vary the amount of moisture deposited by it on the form, substantially as described.

29. In a planographic printing-machine, the combination with a plurality of form-carriers, of a plurality of damping mechanisms, each mechanism including a ductor-roll and a fountain-roll, means for operating all the ductor-rolls, and means for independently varying the length of time which each ductor-roll remains in contact with its fountain-roll, and thereby varying the amount of moisture imparted to the form, substantially as described.

30. In a planographic printing-machine, the combination with a plurality of form-cylinders, of a plurality of damping mechanisms, each mechanism including a ductor-roll and a fountain-roll, a slide, a plurality of cams mounted on the slide, means whereby each cam operates a ductor-roll, and means for operating the slide, substantially as described.

31. In a planographic printing-machine, the combination with a plurality of form-cylinders, of a plurality of damping mechanisms, each mechanism including a ductor-roll and a fountain-roll, a slide, a plurality of adjustable cams mounted on the slide, means whereby each cam operates a ductor-roll, and means for operating the slide, substantially as described.

32. In a planographic printing-machine, the combination with a plurality of rotary printing-couples, of a plurality of damping mechanisms, one for the form-cylinder of each couple, each damping mechanism including a fountain-roll and a ductor-roll, a slide, a plurality of adjustable cams on the slide, connections whereby each cam operates a fountain-roll, and operating connections between the shaft of one of the impression-cylinders and the slide, substantially as described.

33. In a planographic printing-machine, the combination with the side frames, of three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, horizontal ways in the frame, boxes supported in the ways and carrying the shafts of the impression-cylinders, means for moving the boxes, a plurality of sets of inking mechanisms including form and distributing rollers, and means for moving the form-rollers out of contact with the forms on the form-cylinders without moving them out of contact with the distributing-rollers, substantially as described.

34. In a planographic printing-machine, the combination with the side frames, of three form-cylinders and two impression-cylinders, the impression-cylinders being arranged between the form-cylinders, horizontal ways in the frame, boxes supported in the ways and carrying the shafts of the impression-cylinders, means for moving the boxes, a plurality of sets of inking mechanisms including form and distributing rollers, means for driving the form and impression cylinders, independent means for driving the inking mechanisms, and means for moving the form-rollers out of contact with the forms on the cylinders without moving them out of contact with the distributing-rollers, substantially as described.

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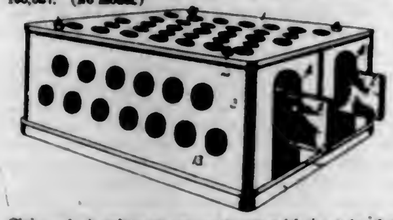
**753,915. WRENCH.** CHARLES H. W. RELYEA, North Adams, Mich., assignor of one-half to George H. Corbett, North Adams, Mich. Filed Nov. 3, 1903. Serial No. 179,720. (No model.)



*Claim.*—A wrench of the kind described comprising a shank having a fixed jaw integral therewith, integral ears and an integral keeper, a pivoted jaw arranged within the keeper and between the ears, a spring secured to the shank between the ears, the free end of which is adapted to bear upon the inner side of the pivot-jaw and a wedge-block adapted to slide upon the outer face of the pivot-jaw, the inclined face of said wedge-block having a series of transverse V-shaped grooves produced therein, the under side of the top member of the keeper being formed with a double bevel adapted to engage the said grooves, the rear end of the wedge-block being provided with depending legs, and a pin working in a slot produced in the pivot-jaw and connected to the said depending legs, as and for the purpose described.

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**753,916. SHUNT RESISTANCE.** GEORGE W. RICHMOND, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed July 10, 1903. Serial No. 165,057. (No model.)



*Claim.*—1. A resistance apparatus comprising a strip of suitable resistance material of zigzag formation the lengths of which are spaced in pairs, a short-circuiting, clamping device for each pair of said lengths, a plurality of pairs of supporting and spacing blocks therefor composed of non-conducting material and having a plurality of grooves in their edges into which the edges of the resistance-strip fit, and adjustable supporting means for said blocks.

2. A resistance apparatus comprising a strip of suitable resistance material of zigzag formation the lengths of which are spaced in pairs, a plurality of pairs of supporting and spacing blocks therefor composed of non-conducting material and having a plurality of grooves in their edges into which the edges of the resistance-strip fit, and an adjustable support for said blocks.

3. A resistance apparatus comprising a strip of suitable resistance material of zigzag formation the lengths of which are spaced in pairs and a plurality of pairs of supporting and spacing blocks therefor composed of non-conducting material and having a plurality of grooves in their edges into which the edges of the resistance-strip fit.

4. A resistance apparatus comprising a resistance-strip of zigzag formation and supporting-blocks composed of non-conducting material and having grooved edges for the reception of the edges of said strip.

5. A resistance apparatus comprising a resistance-strip of zigzag formation, supporting-blocks composed of non-conducting material and having grooved edges for the reception of the edges of said strip, and a base which is interchangeable in connection with resistance-strips of widely-different dimensions.

6. A resistance apparatus comprising a resistance-strip of zigzag formation, supporting-blocks composed of non-conducting material and having grooved edges for the reception of the edges of said strip, a base which is interchangeable in connection with resistance-strips of widely-different dimensions, and clamps for short-circuiting adjacent portions of said resistance-strip.

7. A resistance apparatus comprising a zigzag strip of resistance material, supporting-blocks having grooves to receive the edges of said strip and means for clamping said blocks in position.

8. A resistance apparatus comprising a zigzag strip or ribbon, non-conducting blocks having grooves to receive the edges of said strip or ribbon, and means for clamping said parts in position comprising bolts and a slotted base-plate.

9. A resistance apparatus comprising a zigzag metal strip, non-conducting blocks having grooves to receive the edges of said strip, a casing having a slotted base, bolts extending through the blocks and the base-slots and spacing-ferrules on the bolts between the blocks.

10. A resistance apparatus comprising a zigzag strip of resistance material, supporting-blocks disposed transversely to the lengths of said strip and having grooves in which the edges of the strip are seated.

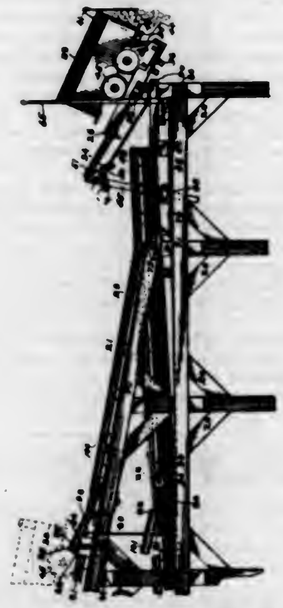
11. A resistance apparatus comprising a zigzag, flexible strip of resistance material, and non-conducting blocks adjacent to both ends of said strip having grooves in which the edges of the strip are seated.

12. A resistance apparatus comprising a zigzag, flexible strip of resistance material, and a plurality of non-conducting blocks transversely disposed at both ends of the zigzag strip and having grooves in which both edges of the strip are seated.



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**753,917. AUTOMATIC BLOCKING, RELEASING, AND DUMPING SYSTEM FOR TRAM-CARS.** CHARLES J. RICHARDSON, Chicago, Ill. Filed June 5, 1903. Serial No. 160,189. (No model.)



*Claim.*—1. In an automatic blocking, releasing and dumping system for tram-cars, the combination with two oppositely-inclined tracks, of means on the forwardly-inclined track to block the cars, means thereon to release them one at a time, and means on the rearwardly-inclined track connected to the blocking and releasing mechanism on the other track to trip said mechanism by means of the passage of a car.

2. The combination with an inclined track, of a rocking bar pivotally secured longitudinally under one of the rails thereof and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar in alinement with one of the track-rails of the forwardly-inclined track, a rail-section pivoted at one of its ends and in alinement with one of the rails of the rearwardly-inclined track, means to support the connected rail-sections in their raised positions, and a connection uniting said means and the rail-section on the rearwardly-inclined track so that when said section is depressed the supporting means will be lowered.

3. The combination with an inclined track, of a rocking bar pivotally secured longitudinally under one of the rails thereof and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar, and means to support the connected rail-sections in their raised positions.

4. The combination of a forwardly-inclined and a rearwardly-inclined track, of a rocking bar pivotally secured longitudinally under one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar in alinement with one of the track-rails of the forwardly-inclined track, a rail-section pivoted at one of its ends and in alinement with one of the rails of the rearwardly-inclined track, means to support the connected rail-sections in their raised positions, and a connection uniting said means and the rail-section on the rearwardly-inclined track so that when said section is depressed the supporting means will be lowered.

5. The combination of a forwardly-inclined and a rearwardly-inclined track, of a rocking bar pivotally secured longitudinally under one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, a roller journaled on the upper end of each of said extensions, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar in alinement with one of the track-rails of the forwardly-inclined track, a rail-section pivoted at one of its ends and in alinement with one of the rails of the rearwardly-inclined track, means to support the connected rail-sections in their raised positions, and a connection uniting said means and the rail-section on the rearwardly-inclined track so that when said section is depressed the supporting means will be lowered.

6. The combination of two oppositely-inclined tracks, of a rocking bar secured longitudinally with one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and in alinement with the rails of said track and connected together; one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of said bar, a rock-shaft suitably journaled, a rail-section fixed on one end of said shaft and pivotally secured at one of its ends in alinement with one of the rails of the rearwardly-inclined track, a bell-crank lever fulcrumed near the connection of the connected pair of rail-sections to support the same, a weighted projection on the rock-shaft and a connection uniting the rock-shaft and said lever.

7. The combination of two tracks, one inclined forwardly and the other rearwardly, with a rocking bar secured longitudinally with one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and in alinement with the rails of the forwardly-inclined track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of said bar, a rock-shaft suitably journaled, a rail-section fixed on one end of said shaft and pivotally secured at one of its ends in alinement with one of the rails of the rearwardly-inclined track, a bell-crank lever mounted on the other end of the rock-shaft and having a weighted projection, another bell-crank lever fulcrumed near the connection of the connected pair of rail-sections, a connection uniting the said bell-crank levers, and means connected to the lower arm of the first-named lever whereby the blocking and releasing rail-sections may be operated manually.

8. The combination with two oppositely-inclined tracks having at one of their ends a common level and meeting-points for their rails, of a tilting-frame pivotally mounted at said ends of the tracks, rails on said frame, stops at the front ends of said rails, means on the forwardly-inclined track to block and release the cars, means on the rearwardly-inclined track to trip the releasing means on the first-named track, and a connection uniting the said tripping means with the tilting-frame.

9. The combination with a suitable support, of a frame pivotally mounted thereon, a friction-bar pivotally connected at one of its ends to the front portion of said frame, a clutch mechanism to clamp said friction-bar, a spring-pressed lever fulcrumed so as to impinge one of the plates of the clutch, the said friction-bar located vertically between said plates, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the upper portion of the friction-bar, a lever fixed on the opposite end of said shaft, and a connection uniting the lower end of said lever and the spring-pressed clutch-lever.

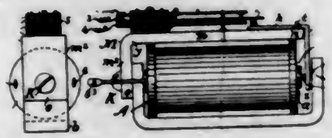
10. The combination with a suitable support, of a frame pivotally mounted thereon, a friction-bar pivotally connected at one of its ends to the front portion of said frame, a clutch mechanism to clamp said friction-bar, a spring-pressed lever fulcrumed so as to impinge one of the plates of the clutch, the said friction-bar located vertically between said plates, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the upper portion of the friction-bar, a lever fixed on the opposite end of said shaft, a connection uniting the lower end of said lever and the spring-pressed clutch-lever, and a tripping-bracket located on the front upper portion of the tilting-frame and having its upper surface inclined.

11. The combination with two oppositely-inclined tracks, the rails of which have a common level and meeting-points, means for blocking and releasing the cars on the forwardly-inclined track, means on the rearwardly-inclined track to trip the releasing means on the other track, a connection uniting the means of each track, a frame pivotally mounted at the meeting ends of the rails of the two tracks, rails on said frame, stops at the front of the rails on the tilting-frame, a friction-bar pivotally connected at one of its ends to the front portion of the tilting-frame, a clutch to clamp said friction bar which passes vertically between the clutch members, a spring pressed lever fulcrumed so as to impinge one of the clutch members, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the upper portion of the friction-bar, a lever fixed on the opposite end of said shaft, a connection uniting the lower end of said lever and the spring-pressed lever, another lever loosely mounted on the said shaft, a connection uniting the lower end of said lever and the blocking and releasing means on the forwardly-inclined track as well as the tripping means therefor on the rearwardly-inclined track.

12. The combination with a suitable support, of a frame pivotally mounted thereon, a friction-bar loosely connected at one of its ends to the front portion of said frame a bell-crank lever fulcrumed on the front portion of said frame and having its longer arm loosely connected to the friction-bar, a clutch mechanism to clamp said bar, a spring-pressed lever fulcrumed so as to impinge one of the plates of the clutch, the said friction-bar located vertically between said plates, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the shorter arm of the bell-crank lever, a lever fixed on the opposite end of said shaft, and a connection uniting the lower end of said lever and the spring-pressed clutch-lever.

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753,918. **POLARIZED RELAY.** MALCOLM C. ROBTY, Boston, Mass., assignor to American Telephone and Telegraph Company, a Corporation of New York. Filed June 18, 1903. Serial No. 162,109. (No model.)



*Claim.*—1. The hereinbefore-described relay, comprising an electromagnet with confronting poles; a permanent polarizing-magnet mounted parallel to the limbs of said electromagnet and having its poles in juxtaposition to the heel and poles respectively thereof; contact-springs mounted upon said permanent magnet; an armature suspended between the confronting poles of said electromagnet and poised or fulcrumed on the permanent-magnet pole nearest thereto, and having an attachment or continuation extending backward over said permanent magnet; said armature and attachment constituting a lever actuated by said electromagnet and adapted to engage said contact-springs for the control of their reciprocal relation.

2. In a relay, the combination of an electromagnet with confronting poles; a permanent polarizing-magnet mounted parallel to the limbs of said electromagnet and having one pole attached to the heel and the other extended forward into contiguity to the poles thereof; contact-springs of a controlled circuit mounted upon said permanent magnet; an armature poised or fulcrumed upon the said forwardly-extended permanent-magnet pole to be polarized thereby, and suspended therefrom between the poles of said electromagnet; and an attachment or continuation of said armature extending backward therefrom over said permanent magnet beneath said contact-springs and constituting conjointly with said armature a lever actuated in both directions by the poles of said electromagnet, and adapted thereupon to establish or disestablish the contacts of said springs; substantially as set forth.

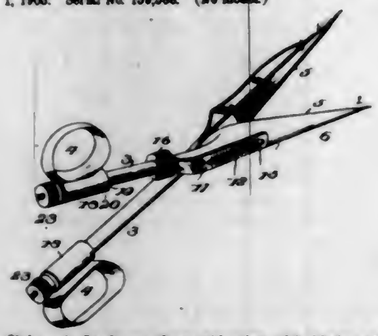
3. In a polarized relay, the combination of an electromagnet with one limb only surrounded by an exciting-coil and the other extended forward adjacent to said coil, and having the pole of the latter limb turned at an angle to confront that of the former with an armature-space between; a rectangular permanent polarizing-magnet mounted parallel to said electromagnet having one pole secured to the heel and the other extended forward into juxtaposition to the poles thereof; contact-springs of a controlled local circuit mounted upon and supported by said permanent magnet; and a rectangular lever poised or fulcrumed upon the forward pole of said permanent magnet and having one end suspended from said permanent magnet in the said space between the poles of said electromagnet to form the armature thereof, and the other extended rearwardly over said permanent magnet, and beneath and in engagement with the said contact-springs; substantially as and for the purposes described.

4. The combination in a polarized relay, of a straight iron core; a complementary iron core with a straight stem and both ends turned at a right angle to overlap the ends of said straight core, one being secured to the heel end, and the other constituting a pole arranged to confront the pole end thereof, with an intervening armature-space; a rectangular permanent bar-magnet having one pole secured to the heel of said cores, and the other extended forward to a point opposite the armature-space thereof and formed at its end into a bevel or knife edge; the stems of said bar-magnet and cores being all parallel to one another; an exciting-coil surrounding the said straight core, and fitted between the said permanent bar-magnet and the stem of said complementary core; an armature suspended in the space between the poles of said cores, and poised or fulcrumed to swing on the knife-edge pole of said permanent magnet; and electrical contacts controlled by said armature; substantially as specified.

5. The combination in a polarized relay, of an electromagnet comprising a single exciting coil, and an iron core having two limbs one surrounded by said coil and the other extending forward adjacent to the exterior thereof and having its polar end prolonged beyond the pole of the interior limb and turned at an angle to overlap and face the same at an appropriate distance to form an armature-space between said poles; a rectangular permanent polarizing-magnet having one pole secured to the heel and the other extending to the said armature-space of said electromagnet, and terminating in a beveled or knife edge; and an armature secured to said permanent magnet, balanced on the knife-edge pole thereof, and suspended in the armature-space between the poles of said electromagnet; substantially as set forth.

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753,919. **SHEARS.** GEORGE R. ROWE, Moore, Okla. Filed June 1, 1903. Serial No. 159,583. (No model.)



*Claim.*—1. In shears, the combination with blades, of handles provided with tubular journals mounted upon the butt-ends of the blades, locking elements projected from the butt-ends for cooperation with the journals of the handles to secure the latter in an adjusted position, and spring means cooperating with the handles to normally hold the same in engagement with the locking means upon the butt-ends of the blades.

2. In shears, the combination with blades provided with tubular butt-ends, handles having tubular journals mounted for rotatory movement upon and receiving the butt-ends, locking means projected from the butt-ends and cooperating means upon the journals for engagement with the said locking means, and spring means disposed within the tubular butt-ends and adapted to cooperate with the journaled portions of the handles to hold the latter in engagement with the locking means upon the butt-ends of the blades.

3. In shears, reversible blades having tubular butt-ends, handles having tubular journals mounted upon the butt-ends for rotatory movement, lugs projected from the butt-ends, notches provided upon the journals of the handles, spring-retracted stems disposed within the tubular butt-ends and provided with stops at their outer end portions for engagement with the journals of the handles, said stops being adapted to exert a pressure against the journals so as to normally hold the notched portions thereof in engagement with the lugs upon the butt-ends of the blades.

4. In shears, the combination with blades, pivot means for the said blades, a spring-plate disposed upon one of the blades and provided with a longitudinal opening to cooperate with the said pivot, teeth disposed longitudinally upon one of the blades and adapted to cooperate with the aforesaid spring-plate to secure same in an adjusted position, and a finger element mounted upon the butt-end of the aforesaid blades and adapted to cooperate with the teeth aforesaid to actuate the said plate to an ascertained adjustment.

5. In shears, the combination with blades, pivot means for securing the blades together consisting of a headed fastening, spring-plates disposed upon opposite sides of the aforesaid blades extending longitudinally thereof and cooperating with the fastening, said plates equalizing the tension exerted from opposite directions upon the blades.

6. In shears, and in a combination with blades, pivot means for securing the blades together, independent spring-plates cooperating with the aforesaid pivot means and extending longitudinally of the blades exerting a pressure against the respective blades in opposite direction so as to equalize the tension upon opposite sides of the blades.

7. In shears, the combination with blades, a headed pivot-fastening adapted to secure the blades together, notches disposed upon opposite sides of one end of the fastening, a spring-plate having a longitudinal opening therein to receive the notched end of the fastening, teeth disposed upon the butt-end of one of the blades and adapted to cooperate with the end portion of the spring-plate to fix the same in an ascertained adjustment, a finger element mounted upon the butt-ends of the aforesaid blades and adapted to cooperate with the toothed portion thereof to actuate the spring-plate said finger element being adapted for a rotatory movement from the butt-end of the blade.

8. In shears, the combination with blades, of a sharpener attachment adapted to be attached intermediate the blades.

9. In shears, the combination, with blades, of a sharpener attachment adapted to be secured interchangeably to the said blades and by manipulation thereof to sharpen the cutting edges of the blades.

10. In shears, the combination with blades, of a sharpener attachment adapted to be secured upon the inner faces of either of the blades.

11. In shears, the combination with blades of approximately concavo-convex form, and a sharpener attachment to be interchangeably secured to the concave side of either of the blades for cooperation with the cutting edges upon the blade opposite to which it is secured.

12. In shears, the combination with blades of approximately concavo-convex form, of a sharpener attachment of approximately plano-convex form adapted to be interchangeably secured in the concave portions of the blades.

13. In shears, the combination with blades of approximately concavo-convex form, a sharpener attachment adapted to be interchangeably secured in the concave portions of the blades, said attachment comprising a filler-block having a renewable abrasive surface thereon.

14. In shears, the combination with blades of approximately concavo-convex form, of a sharpener-block of approximately plano-convex form adapted to be interchangeably secured within the concave portions of the blades, and abrasive material applied to the plane side of the said block.

15. In shears, the combination with blades of approximately concavo-convex form, a sharpener-block adapted to be secured within the concave portions and of approximately plano-convex form in cross-section, a plate rigidly disposed within the concave portions of the blades, a lug projected from the sharpener-block and adapted to engage beneath the aforesaid plate, and pawls disposed upon the sharpener-block and adapted to engage in recesses upon the blades, the said lugs and pawl constituting means for securing the sharpening attachment to the blades.

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753,920. **VEHICLE-TIRE.** MARTIN V. RUSH, Anderson, Ind. Filed May 28, 1903. Serial No. 159,141. (No model.)



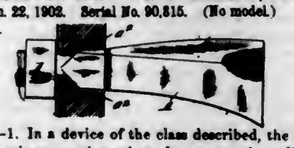
*Claim.*—1. In a pneumatic tire, the bottom semicircular protector-sections of compressed spongy cork, an inner coated diametric metallic-strip annulus engaging the same, and a fabric binder around said cork sections, and strip annulus, substantially as specified.



2. A pneumatic tire, comprising an outer cylindrical tube, and within the same, an inner semicylindrical air-tube, outer semicylindrical spongy compressed cork protector-sections, a metallic-strip annulus engaging the chord-surfaces of the cork sections, and the fabric binder of said strip annulus and cork sections engaged by the diametric chord-surfaces of the inner air-tube, substantially as specified.

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753,921. **THRESHING-MACHINE AND MACHINE USED FOR ANALOGOUS PURPOSES.** JOHN F. SANDERSON, Libertyville, Ill. Filed Jan. 22, 1902. Serial No. 90,815. (No model.)



*Claim.*—1. In a device of the class described, the combination of a tooth having a portion adapted to enter the cylinder-rim or tooth-bar; and a removable tooth-face having a wedge-shaped root also adapted to enter into and to be completely encircled by the cylinder-rim or tooth-bar to prevent lateral movement of said tooth-face on said tooth and thereby increase the rigidity with which the parts are held together when said tooth and tooth-face are forced toward th cylinder-rim or tooth-bar.

2. In a device of the class described, the combination of a tooth having a portion adapted to enter into the cylinder-rim or tooth-bar a sufficient distance to be completely encircled thereby to prevent lateral movement of said tooth-face on said tooth; a removable tooth-face having a wedge-shaped root also adapted to enter the cylinder-rim or tooth-bar; and means for forcing said tooth and tooth-face toward the cylinder-rim or tooth-bar to thereby tighten said tooth-face in position upon the tooth.

3. In a device of the class described, the combination of an apertured tooth-bearing part, such as a cylinder-rim or tooth-bar, a tooth having a portion adapted to enter said tooth-bearing portion; a removable tooth-face having a wedge-shaped root also adapted to enter the tooth-bearing part a sufficient distance to be completely encircled thereby to prevent lateral movement of said tooth-face on said tooth; and a bolt-and-nut device for drawing said tooth and tooth-face toward the tooth-bearing portion to thereby tighten said tooth-face in position upon the tooth.

4. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar, a tooth proper having a portion adapted to enter the aperture in said tooth-bearing part; a removable tooth-face also having a portion adapted to enter the aperture in said tooth-bearing part and be engaged thereby; and means near the outer extremity of said tooth and tooth-face for detachably connecting the parts together.

5. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar, a tooth proper having a portion adapted to enter the aperture in said tooth-bearing part; a removable tooth-face also having a portion adapted to enter the aperture in said tooth-bearing part a sufficient distance to be completely encircled thereby for positive engagement therewith to prevent lateral movement of said tooth-face on said tooth; and interconnections between said tooth and tooth-face, said interconnections cooperating with the tooth-bearing part to hold said tooth and tooth-face together.

6. In a device of the class described, the combination with the tooth-bearing part such as a cylinder-rim or tooth-bar, of a tooth, a removable tooth-face, means near the outer extremity of said tooth for preventing lateral play of the tooth-face on the tooth and means at said tooth-bearing part for removably holding the tooth and tooth-face in contact with each other.

7. In a device of the class described, the combination with the tooth-bearing part, such as a cylinder-rim or tooth-bar of a tooth, a removable tooth-face, a lug near the outer extremity of said tooth for preventing lateral play of the tooth-face on said tooth; and means at said tooth-bearing part for removably holding the tooth and tooth-face in contact with each other.

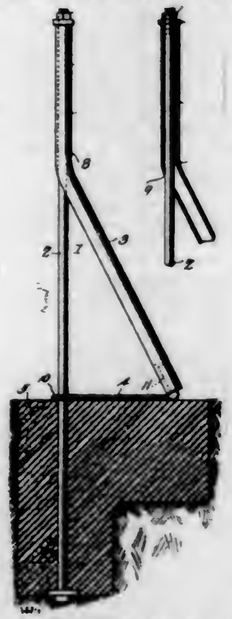
8. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar; a tooth adapted to extend into the aperture in said tooth-bearing part; a removable tooth-face having a wedge-shaped root also adapted to enter the aperture in said tooth-bearing part; means remote from the tooth-bearing part for preventing lateral play of the tooth-face on the tooth; and means for forcing said tooth and tooth-face toward said tooth-bearing part to wedge said tooth-face against said tooth

9. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar; a tooth having a screw-threaded bolt portion adapted to extend through the aperture in said tooth-bearing part; a removable tooth-face having a wedge-shaped root also adapted to enter the aperture in said tooth-bearing part; means remote from the tooth-bearing part for preventinglateral play of the tooth-face on the tooth, and a nut screwing onto the bolt portion of said tooth for drawing said tooth and tooth-face toward said tooth-bearing part to wedge said tooth-face against said tooth.

10. In a device of the class described, the combination of an apertured tooth-bearing part such as a cylinder-rim or tooth-bar; a tooth having a portion adapted to enter the aperture in said tooth-bearing part; a removable tooth-face having a wedge-shaped root also adapted to enter into said tooth-bearing part a sufficient distance to be completely encircled thereby for preventing lateral movement of said tooth-face on said tooth; means for forcing said tooth and tooth-face toward said tooth-bearing part; and means for preventing outward longitudinal movement of said tooth-face along said tooth when being forced toward said tooth-bearing part.

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753,922. **FENCE-POST.** JOHN SCHEIDLER, Coldwater, Mich. Filed May 23, 1903. Serial No. 158,523. (No model.)



*Claim.*—1. A fence-post comprising a vertical standard, a brace member having a vertical tubular portion embracing the standard and a relative angularly-disposed portion, a base member operatively engaging the standard and the lower end of the brace, and means for pressing the brace downward relative to the standard.

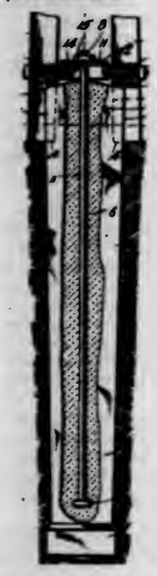
2. A fence-post comprising a vertical standard, a tubular brace member having a vertical portion embracing the standard and a relative angularly-disposed portion, a base member operatively engaging the standard and the lower end of the brace, and means for pressing the brace downward relative to the standard.

3. A fence-post comprising a vertical standard, a tubular brace member having a vertical portion embracing the standard and a relative angularly-disposed portion, a base member connected with the standard and having an angularly-disposed finger extending into the lower end of the brace, and means for pressing the brace downward relative to the standard.

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753,923. **FENCE-POST.** JOHN SCHEIDLER, Coldwater, Mich. Filed May 27, 1903. Serial No. 159,006. (No model.)

*Claim.*—1. In a fence-post, an artificial-stone base-section having a reduced upper portion forming shoulders, a longitudinal member embedded in the base and projecting beyond the upper end of the same, an upper section comprising a pair of standards seated at their lower ends upon the shoulders and receiving the reduced portion of the base-section between them, and means for connecting the post-sections comprising a primary connecting member adjustably mounted upon the upper end of the longitudinal member and secondary connecting members associated with the primary member and engaging the respective standards.

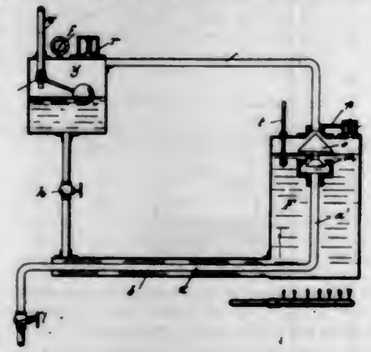


2. In a fence-post, an artificial-stone base-section having a reduced upper portion forming shoulders and provided upon each of its edges with a longitudinal recess, a longitudinally-disposed rod embedded in the base and projecting beyond the upper end of the same, an upper section comprising a pair of standards spaced at their lower ends to receive the reduced portion of the base between them, the lower ends of the standards being seated upon the shoulders and within the recesses, and means for connecting the sections comprising a primary connecting member mounted upon the upper end of the rod and secondary connecting members associated with the primary member and engaging the respective standards.

3. In a fence-post, an artificial-stone base having a reduced upper portion forming shoulders, a longitudinally-disposed rod embedded in the base and projecting beyond the upper end of the same, an upper section having its lower end seated over the reduced portion of the base and resting upon the shoulders, and means for connecting the post-sections comprising a primary connecting member mounted upon the upper end of the rod and provided with secondary connecting members engaging the upper post-section.

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753,924. **APPARATUS FOR STERILIZING, HEATING, AND BOILING LIQUIDS.** JOHN E. SIEBEL, Chicago, Ill. Filed Jan. 19, 1903. Serial No. 139,663. (No model.)



*Claim.*—1. In apparatus for sterilizing, heating and boiling liquid an inner and outer receptacle merging into a common heatable receptacle inside of which the inner receptacle is continued, the length of this continuation or extension being determined by the length of time during which the liquid is to be treated as described.

2. In apparatus for sterilizing, heating and boiling liquid an inner and outer receptacle merging into a common heatable receptacle inside of which the inner receptacle is extended, in connection with a combination-valve to mediate the escape of volatile matter as described.

3. In apparatus for sterilizing, heating and boiling liquid an inner and outer receptacle merging into a common heatable receptacle inside of which the inner receptacle is extended in connection with a combination-valve and an equalizing-valve as described.

4. In apparatus for sterilizing, heating and boiling liquids an outer receptacle or pipe *b* an inner receptacle or pipe *a* merging into a common heatable receptacle F the inner pipe *a* extending into receptacle F forming the pipe *a'* by the length of which the time of sterilization is regulated as set forth.

5. In apparatus for sterilizing, heating and boiling liquids an outer receptacle or pipe *b* and an inner receptacle or pipe *a* merging into a common heatable receptacle F the inner pipe *a* extending into receptacle F forming the pipe *a'* by the length of which the time of sterilization is regulated the latter being provided with a combination-valve *e m* as set forth.

6. In apparatus for sterilizing, heating and boiling liquids an outer receptacle or pipe *b* and an inner receptacle or pipe *a* merging into a common heatable receptacle F, the inner pipe *a* extending into receptacle F forming the pipe *a'* by the length of which the time of sterilization is regulated the latter being provided with a combination-valve *e m* in connection with a compensating valve *p* and an equalizing-valve *k*, as described.

7. In apparatus for sterilizing, heating and boiling liquids an outer receptacle or pipe *b* and inner receptacle or pipe *a* merging into a common heatable receptacle F the inner pipe *a* extending into receptacle F forming the pipe *a'* by the length of which the time of sterilization is regulated and the latter being provided with a combination-valve *e m* in connection with the pipe *d* leading to the water-receptacle *y* and the equalizing-valve *k*.

8. In apparatus for sterilizing, heating and boiling liquids an outer receptacle or pipe *b* and an inner receptacle or pipe *a* merging into a common heatable receptacle F which is provided with a valve *k*, the inner pipe *a* extending into receptacle F forming the pipe *a'* by the length of which the time of sterilization is regulated and to be provided with the combination-valve *e m*.

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753,925. **ELECTRIC RAILWAY-MOTOR.** ROBERT SIEGFRIED, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed May 2, 1903. Serial No. 155,429. (No model.)

*Claim.*—1. The combination with a four-wheel truck-frame, of two electric motors having their outer ends journaled upon the axles, a single cross suspension-bar, substantially vertical suspension-rods the lower ends of which are respectively attached to the inner ends of the motors and the upper ends of which are attached to the suspension-bar and springs interposed between the suspension-rods and the bar.

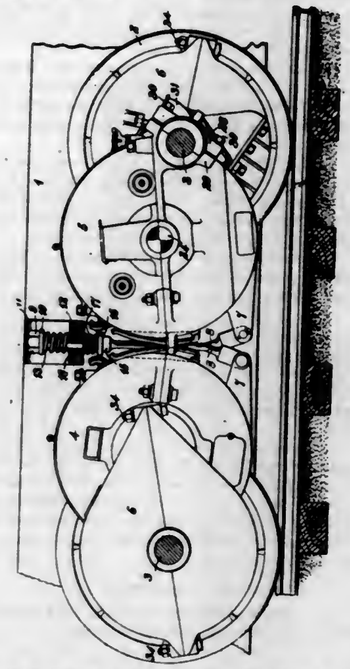
2. The combination with a four-wheel truck-frame, of two electric motors having their outer ends journaled upon the axles of the truck-wheels, substantially vertical suspension-rods having their lower ends respectively pivotally connected to the inner ends of the motor-frames, a cross suspension-bar and supporting and cushioning springs interposed between said bar and the upper ends of the supporting-rods.

3. The combination with a four-wheel truck-frame, of two electric motors having their outer ends journaled upon the axles of the truck-wheels and having lugs at their inner ends, substantially vertical suspension-rods having their lower ends pivotally connected to the respective lugs, a suspension-bar extending from side to side of the truck-frame above the motors and having holes of greater diameter than the suspension-rods through which said rods project, bars or plates fastened to said rods above and below the suspension-bar and springs interposed between said bar and said plates.

4. The combination with a four-wheel truck-frame, of two electric motors having their inner ends flexibly suspended from said frame and having their outer ends journaled upon the axles of the truck-wheels, bearing-housings comprising removable caps and two-part gear-cases one part of each of which is fastened to and removable with the corresponding cap.



5. In a truck having an electric motor journaled at one end upon a truck-axle, a bearing-cap for such axle which extends the entire length of the axle.



6. In an electric locomotive, an electric motor having a two-part bearing-housing that completely incloses the axle, the plane of division between the two parts being angularly disposed with reference to both the vertical and the horizontal.

7. A truck-frame having vertical guides in combination with axles having boxes mounted in said guides, springs interposed between the frame and the boxes, electric motors having their outer ends journaled on said axles and flexible, link-motion suspension devices for the inner ends of the motors.

8. The combination with a truck, of an electric motor having one end journaled upon a truck-axle and its other end flexibly suspended from the truck-frame, and a removable axle-cap which extends the entire length of the axle.

9. The combination with a truck, of an electric motor removably supported at one end upon a truck-axle and having its frame split on a plane through its armature-axis but at one side of the supporting-axle and unsymmetrically with reference to the field-magnet pole-pieces.

10. The combination with the wheels and axles of a truck, of a frame supported upon the axle-boxes so as to have a vertical movement relative thereto, electric motors removably journaled at their outer ends upon said axles, a cross-bar rigidly supported by the truck above the inner ends of both motors and means for flexibly suspending said inner ends from the cross-bar.

11. An electric motor having a two-part frame the plane of division of which is through the armature-axis but is unsymmetrically located with reference to the pole-pieces of the motor field-magnet.

12. An electric railway-motor having a two-part frame journaled at one end upon a truck-axle the plane of division of which is through the armature-axis, and unsymmetrically located with reference to both the field-magnet pole-pieces and the axle.

13. An electric railway-motor having a two-part frame journaled at one end upon a truck-axle below the plane of division, said plane being central but unsymmetrical with reference to the field-magnet pole-pieces.

14. An electric railway-motor having a two-part frame provided with an axle-bearing housing at one end that projects into the space between adjacent pole-pieces, the plane of division being through the armature-axis and at one side of the bearing-housing.

15. An electric railway-motor having a two-part frame supported at one end upon a truck-axle, and having a two-part bear-

ing-housing one of the parts of which is integral with the frame and projects into the space between adjacent pole-pieces at one side of the division-plane of the frame.

16. An electric railway-motor having a two-part frame supported at one end upon a truck-axle and having a two-part bearing-housing that completely incloses the axle.

17. An electric railway-motor having a two-part frame supported at one end upon a truck-axle and having a two-part bearing-housing that completely incloses the axle, one of the parts of which is integral with the motor-frame and projects into the space between adjacent pole-pieces.

18. An electric railway-motor having a two-part frame supported at one end upon a truck-axle and having a two-part bearing-housing that completely incloses the axle, and one part of which is integral with the frame and projects into the space between adjacent pole-pieces at one side of the division-plane of the frame.

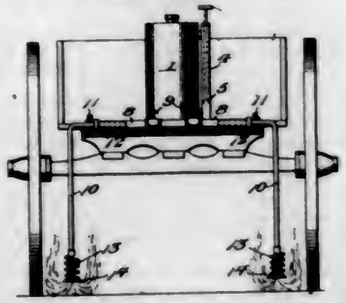
19. In an electric railway-motor, an axle-bearing housing having a removable cap that extends from end to end of the axle and is provided with oil-cups and with means for attaching a gear-casing thereto.

20. The combination with the wheels and axles of a truck, of a frame supported upon the axle-boxes, electric motors supported at their outer ends upon said axles, a cross-bar and two substantially vertical suspension-rods respectively hinged at their lower ends to the inner ends of the motors and loosely suspended from said cross-bar.

21. The combination with the wheels and axles of a truck and a frame supported thereby, of electric motors the outer ends of which are supported upon said axles, a cross-bar supported by said frame between and above the motors and two suspension-rods depending from said cross-bar and having a loose, cushioned connection therewith and a hinge connection between the lower end of each rod and the inner end of the corresponding motor.

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**753,926. INSECT-DESTROYER. Needham Smith, Pearsall, Tex.** Filed June 3, 1903. Serial No. 159,933. (No model.)



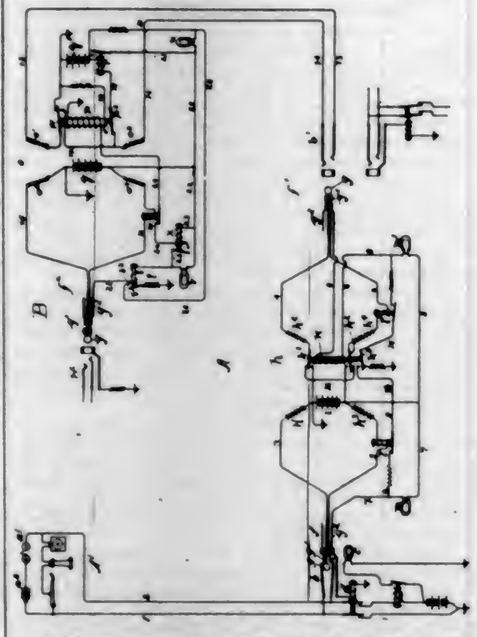
*Claim.*—1. A device of the character described, comprising a tank, a supporting-bracket thereon, air-compressing means connected to the tank, a discharge-pipe, a laterally-extending distributing-pipe communicating with the discharge-pipe, valves therein, brackets upon the distributing-pipe, an L-shaped pipe adjustably mounted in each end of the distributing-pipe, means within the brackets of the distributing-pipe for locking the L-shaped pipes in adjusted position, and a burner upon each of said L-shaped pipes.

2. An attachment of the character described comprising a tank, a supporting-bracket extending therefrom and adapted to engage the body of a vehicle, air-compressing means connected to the tank, a discharge-pipe extending from the center of the tank, a valved distributing-pipe extending laterally from the discharge-pipe, brackets upon the distributing-pipe, an L-shaped pipe adjustably mounted in each end of the distributing-pipe, locking means within each bracket adapted to secure the L-shaped pipes in adjusted position, and burners upon said L-shaped pipes.

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**753,927. SWITCHING APPARATUS FOR TELEPHONE-EXCHANGES. Edwin H. Smyth, Freeport, Ill., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois.** Filed Mar. 10, 1903. Serial No. 97,388. (No model.)

*Claim.*—1. The combination with telephone-lines of two different types entering an exchange-office and provided with spring-jack terminals thereat, of a pair of plugs and their plug-circuit for uniting any two of said lines, an induction device dividing the plug-circuit, a battery in a bridge of the conductors leading to the answering-plug, an electromagnetic switch controlling the connection of said battery with the conductors leading to the calling-plug, and a local circuit for said electromagnetic switch, operatively established in registering contacts of the calling-plug and the spring-jack of any of the lines of one of said types; whereby the battery is brought into the circuit by connection with a line of one type, but is not brought into the circuit by connection with a line of the other type.



2. The combination with subscribers' telephone-lines and a telephone trunk-line terminating in spring-jacks at an exchange-switchboard, of a pair of plugs and their plug-circuit, a repeating-coil dividing the plug-circuit, a battery connected in a bridge of the plug-circuit together with that winding of the repeating-coil which is connected to the answering-plug of the pair, one pole of said battery being grounded, an electromagnetic switch adapted to connect the battery in circuit with the calling-plug, and a circuit for the said electromagnetic switch established in registering contacts of the calling-plug and the spring-jack of any subscriber's line, said circuit being left incomplete by the insertion of the calling-plug in the spring-jack of the trunk-line whereby the plug-circuit may be connected with the trunk-line without grounding the trunk-line.

3. The combination with two subscribers' lines and a trunk-line for uniting them, of a pair of plugs and their plug-circuit connecting one of the subscriber's lines with one end of the trunk-line, and means for connecting the other end of the trunk-line with the other subscriber's line, a grounded battery in the plug-circuit, a second grounded battery connected with the trunk-line at the end distant from the plug-circuit, signals for the system supplied with current from said batteries, two induction devices conductively separating the main section of the trunk-line from the two subscribers' lines and automatic switches adapted to cut off the said batteries from the conductive connection with the main section of the trunk-line, whereby inductive or electrostatic disturbances or unbalancing of the circuit during telephonic conversation over the trunk-line is avoided.

4. The combination with subscribers' telephone-lines and a trunk-line, terminating in spring-jacks at an exchange-switchboard, of a pair of plugs and their plug-circuit, an induction device dividing the plug-circuit, a grounded source of current connected with one end of the plug-circuit, an electromagnetic switch controlling the connection of said source of current with the other end of the plug-circuit, a conductor adapted to form a portion of a local circuit for said electromagnetic switch, terminating in a contact-piece of the plug-terminal of the last-mentioned end of the plug-circuit, and conductors connected to contact-pieces of the spring-jacks of the several subscribers' lines, adapted to complete the local circuit of said electromagnetic switch when the plug is inserted in such spring-jacks, whereby the said switch is caused to connect the battery with a subscriber's line when the plug is inserted in the spring-jack of that line, the battery being disconnected when the plug is inserted in the spring-jack of the trunk-line.



5. The combination with a trunk-line, a called-subscriber's line connected to the trunk-line at the receiving-terminal thereof, a calling-subscriber's line, and a pair of plugs and their plug-circuit uniting the calling-subscriber's line with the other terminal of the trunk-line, of a battery conductively connected with the plug-circuit, a battery conductively connected with the trunk-line at the receiving-terminal thereof, signals supplied with current from said batteries, an induction device dividing the plug-circuit, another induction device at the receiving-terminal of the trunk-line conductively dividing the trunk-line from the called-subscriber's line, and switches at each terminal of the trunk-line adapted to cut off the batteries from conductive connection with the trunk-line, whereby inductive and electrostatic disturbances on the trunk-line during its use for speech transmission may be avoided.

6. The combination with a telephone trunk-line extending from a spring-jack at an answering-board to a terminal-plug at a trunking-board, of a repeating-coil dividing the trunk-line into two sections at the trunking-board, a battery having one of its poles grounded, normally connected in a bridge of the main trunk-circuit, an electromagnetic switch adapted when actuated to disconnect the battery from the trunk-line, a signal at the answering-board responsive to the flow of current in the trunk-line, a supervisory relay and a source of current in the section of the trunk-line which terminates in the trunk-plug, a telephone-line connected with the trunk-line at the trunking-board, said relay being controlled through the agency of the telephone-switch at the substation of the telephone-line, and a local circuit for the electromagnetic switch, controlled by said supervisory relay, substantially as described.

7. The combination with two telephone-lines and a trunk-line uniting them, of induction devices conductively severing the telephone-lines from the trunk-line, a signal device *l* at one end of the trunk-line responsive to the flow of battery-current therein, a grounded battery connected with the trunk-line at the other end thereof for operating said signal device, an electromagnetic switch *p* for disconnecting the battery from the trunk-line, the telephone-circuit being completed independent of said battery, a switch at the substation of one of the telephone-lines, and means controlled by said switch for operating the aforesaid electromagnetic switch *p*, whereby the trunk-line is freed from connection with the grounded battery during the use of said trunk-line for telephonic purposes, and the battery is connected with the line at other times for signaling purposes.

8. The combination with two telephone-lines of different types, each line having a spring-jack terminal at an exchange-switchboard, of a plug and plug-circuit for making connection with either of said lines by the insertion of the plug into the correspooding spring-jack, a source of current, a supervisory signal in a local circuit with said source of current, a relay in the plug-circuit controlling said supervisory signal, an electromagnetic switch controlling the operative relation of the relay to the supervisory signal, said electromagnetic switch being adapted alternatively to bring the switch-contacts of the relay into series or shunt relation with said signal, and a circuit for said electromagnetic switch operatively completed in registering contacts of the plug and one of said spring-jacks but not the other, whereby the operative relation between the supervisory relay and its controlled signal is dependent upon the type of line with which the plug-circuit may be connected.

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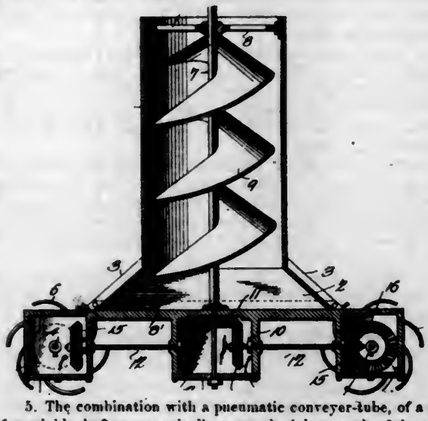
**753,928. FEEDING ATTACHMENT FOR PNEUMATIC CONVEYERS. Edward T. Sowenriker, Golden, Tex., assignor of one-half to Matthew Walton Coleman, Golden, Tex.** Filed Sept. 29, 1902. Serial No. 126,271. (No model.)

*Claim.*—1. A pneumatic conveyer having an automatic feeding attachment arranged adjacent to the mouth of said conveyer and operable by the air-current through the conveyer-tube.

2. The combination with a pneumatic conveyer, of a feeding attachment operable by the air-current in the conveyer-tube for engaging the material to be fed in advance of its entrance to said tube.

3. The combination with a pneumatic conveyer-tube, of a feeding mechanism arranged adjacent to the inlet-mouth of the tube and operable by the air-current passing through said tube.

4. The combination with a pneumatic conveyer-tube, of a plurality of picker-fingers arranged adjacent to the mouth of the tube and adapted to feed the material to be conveyed, a revoluble member disposed within the tube and operable by a current of air passing therethrough and means for transmitting motion from the revoluble member to said picker-fingers.

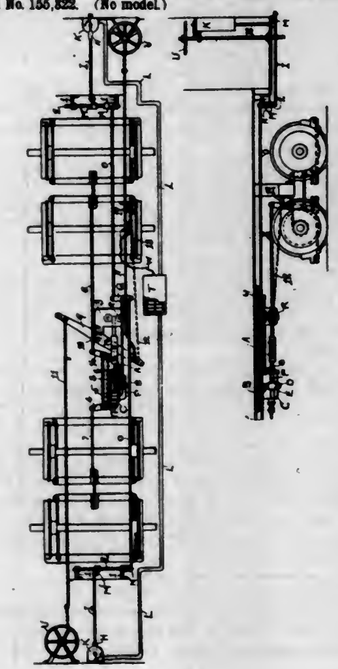


5. The combination with a pneumatic conveyer-tube, of a pair of revoluble shafts arranged adjacent to the inlet-mouth of the tube, shaft-supporting means, a revoluble member disposed within the tube and operable by a current of air passing therethrough, means operatively connecting said member to the shafts, and picker-fingers carried by said shafts.

6. The combination with a pneumatic conveyer-tube, of a rectangular casing forming the inlet-mouth of the tube, shafts disposed at each side of the casing, picker-fingers on said shafts, a centrally-disposed shaft within the conveyer-tube, cross-bars supporting said shaft, a helix mounted on the shaft and revoluble by a current of air passing through the tube, and bevel-gearing connections between said shafts and the picker-finger shafts.

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**753,929. RAILWAY-BRAKE. Harry A. Spiller, Boston, Mass., assignor, by mesne assignments, to Algonquin Electric Brake Corporation, Boston, Mass., a Corporation of Maine.** Filed May 6, 1903. Serial No. 155,822. (No model.)



*Claim.*—1. The combination with a brake, of electromagnetically-controlled means for applying it, a fluid-lock for the brake, mechanically-operated means for releasing the lock, and a common operating device which controls both said means.

2. The combination with a brake, of means for applying it, a fluid-lock for the brake, mechanically-operated means for releasing the lock, and an operating device which controls both said applying and releasing means.

3. The combination with a car, of a brake therefor, means for applying the brake, a fluid-lock for the brake, means for releasing the lock, a controller at the end of the car, and connections between the controller and said applying and releasing means, whereby the operation of the controller in opposite directions respectively operates each of said means.

4. The combination with a car, of a brake therefor, means for applying the brake, a fluid-lock for the brake, means for releasing the lock, a controller at each end of the car, and operating connections between said controllers and said applying and releasing means, whereby similar movements of each controller in opposite directions respectively operate each of said means.

5. The combination with a car, of a brake therefor, means for applying the brake, a fluid-lock for the brake, mechanism for releasing said lock, controlling devices at the ends of the car, and mechanical connections between the releasing mechanism and said controlling device, whereby similar movements of each operating device effect the same result.

6. The combination with a car, of a brake therefor, a fluid-lock for the brake, mechanism, for releasing said lock, a rod connected to said mechanism, a bar to which the end of said rod is pivoted, two oppositely-extending rods pivoted to said bar at opposite sides of said pivot, and devices at the respective ends of the car for reciprocating said oppositely-extending rods.

7. The combination with a car, of a brake therefor, a fluid-lock for the brake, mechanism for releasing said lock, a vertical controller-shaft at each end of the car, and connections between said mechanism and shafts whereby a similar movement of either shaft effects a like result.

8. The combination with a car, of a brake therefor, a fluid-lock for the brake, mechanism for releasing the lock, a rod connected to said mechanism and extending longitudinally of the car, a crank to which said rod is connected, a rock-shaft on which said crank is mounted, a second crank mounted on said shaft, a second horizontal rod pivoted to said second crank, a third crank to which said second rod is connected, and a vertical controller-shaft on which said third crank is mounted.

9. The combination with a car, of a brake therefor, a fluid-lock for the brake, mechanism for releasing the lock, an electric controller, and operating connections between the shaft of said controller and said releasing mechanism.

10. The combination with a car, of a brake therefor, a fluid-lock for the brake, mechanism for releasing the lock, a brake-controller, and operating connections between said controller and said releasing mechanism.

11. The combination with a car, of a brake therefor, a brake-lever, means for operating said lever, a fluid-lock for said brake controlled by said operating means, means for releasing said lock, a controller, operating connections between said controller and said operating means, and mechanical connections between said controller and said releasing means.

12. The combination with a brake and applying devices therefor, of a fluid-lock, a valve controlling the lock, and a device constructed and arranged to operate said valve by one direction of movement and the said applying device by the opposite direction of movement.

13. The combination with a fluid-lock, of a valve controlling the lock, and an oscillating segment controlling said valve.

14. The combination with a fluid-lock, of a valve controlling the lock, a rod arranged to operate said valve, and an oscillating segment controlling said rod.

15. The combination with a fluid-lock, of a valve controlling the lock, an oscillating segment controlling the valve, a crank for oscillating the segment, and means for operating the crank.

16. The combination with a fluid-lock, of a valve controlling the lock, a rod for operating the valve, means for normally retaining said rod out of operative engagement with the valve, and an oscillating segment controlling said rod.

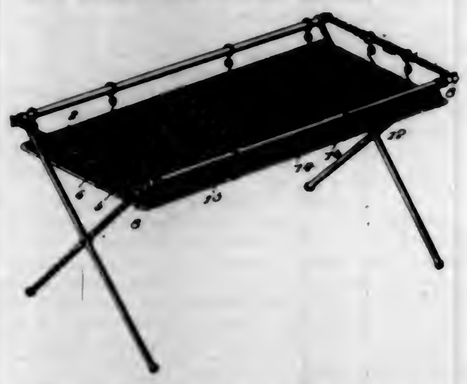
17. The combination with a fluid-lock, of a valve therefor, a bracket, a rock-shaft in the bracket, an oscillating segment on said shaft, and a rod movable by said segment to operate said valve.

18. The combination with a fluid-lock, of a valve therefor, a rod reciprocally supported in operative position with respect to said valve, and an oscillating segment for moving said rod.

19. The combination with a brake-lever, of a fluid cylinder-lock, a piston-rod therefor, operated by said brake-lever, a lever pivoted to said piston-rod, a second lever having a stationary pivot, a rod pivoted to and joining the last-mentioned levers, and brake-applying rods connected to said joined levers.

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**753,930. FIRE-ESCAPE. JAMES M. STAFFORD, Petersburg, Ind. Filed May 28, 1903. Serial No. 159,147. (No model.)**



*Claim.*—1. In a life-saving device of the character set forth, the combination of a frame, a net, and yielding connections between the frame and net consisting of convoluted or flat spiral springs, substantially as set forth.

2. In a life-saving device of the character set forth, the combination of a frame, a net, and yielding connections between the frame and net consisting of convoluted springs loosely mounted upon the frame-bars and adapted to have a twofold action, the first resulting from a closing of the convolutions and the second resulting from unwinding of the convolutions against the inherent tension thereof and the frictional engagement of the convolutions, substantially as specified.

3. In a life-saving device of the character set forth, the combination of a frame, a net, and yielding connections between the frame and net consisting of a series of convoluted springs linked together, the uppermost spring of the series being loosely mounted upon the frame-bars, substantially as described.

4. In life-saving apparatus of the character described, a frame composed of longitudinal and jointed end bars, the longitudinal bars being slidable upon the terminal portions of the end bars, springs exerting an outward pressure upon the longitudinal bars, a net suspended from the frame-bars, and folding legs having their upper ends loosely connected with the longitudinal bars and movable therewith, substantially as set forth.

5. In life-saving apparatus of the character described, a frame composed of longitudinal and end bars, the longitudinal bars being slidable upon the end bars, springs mounted upon the end bars and exerting an outward pressure upon the longitudinal bars, stops applied to the extremities of the end bars to limit the outward movement of the longitudinal bars, and a net yieldably suspended from the frame-bars, substantially as set forth.

6. A life-saving device of the character described comprising jointed end bars, longitudinal bars slidable upon the end bars, springs mounted upon the end bars and normally pressing the longitudinal bars outward, stops applied to the extremities of the end bars to limit the outward movement of the longitudinal bars, a net, spring connections suspending the net from the frame-bars, and folding legs having their upper ends loosely connected with the longitudinal bars and provided at their lower ends with rolling supports, substantially as specified.

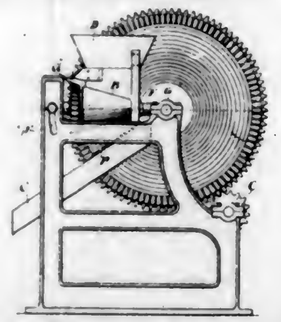
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**753,931. SHREDDER FOR WHEAT OR OTHER GRAIN. JOHN H. STEVENSON, Ann Arbor, Mich., assignor of one-half to G. Frank Allmendinger, Ann Arbor, Mich. Filed June 17, 1903. Serial No. 161,776. (No model.)**

*Claim.*—1. In a machine for the purpose described, the combination of a cone-disk revolving upon a horizontal axis and provided upon its conical face with a series of concentric grooves or corruga-



tions and a cone having a smooth face revolving upon a substantially horizontal axis intersecting the axis of the conical disk at right angles thereto and adapted to travel with its face in rolling contact with that of the disk and means for yieldingly holding said cone in contact with the disk, substantially as described.



2. In a machine for the purpose described, the combination of a cone-disk revolving upon a horizontal axis and provided upon its conical face with a series of concentric grooves or corrugations, a cone revolving upon a substantially horizontal axis intersecting the axis of the disk at right angles and having its face adapted to cooperate with that of the disk, and means for radially adjusting the cone in relation to the face of the disk.

3. In a machine for the purpose described, the combination of a cone-disk revolving upon a horizontal axis and provided upon its conical face with a concentrically-arranged series of annular grooves or corrugations, a cone revolving upon a substantially horizontal axis intersecting the axis of the disk at substantially right angles and radially adjustable in relation thereto, shafts one secured in fixed and the other in movable bearings upon which said disk and cone are journaled respectively, a peripheral gear on the disk, a gear-wheel meshing therewith and imparting rotary motion to the disk and intermeshing gear-teeth carried by said disk and cone respectively for imparting motion to said cone substantially as described.

4. In a machine for the purpose described the combination with a feed-hopper, of a cone-disk having its conical face provided with concentrically-arranged grooves or corrugations, a cone in rolling contact with the conical face of said disk, shafts fixedly secured in bearings upon which said disk and cone are journaled, means for revolving said disk and cone together, springs applied to the shaft of the cone for pressing said cone against the face of the disk, said shaft being supported in sliding bearings, means for radially adjusting the cone on the face of the disk and a scraper device for removing the material from the disk and cone.

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**753,932. FLY-EXIT FOR SCREENS. EMORY R. STOVER, Bigelow, Minn. Filed Sept. 6, 1902. Serial No. 122,441. (No model.)**



*Claim.*—1. In a fly-exit for screens, the combination with a frame, of a sheet of screen material secured thereto and having its upper portion bent inwardly at an angle to the general plane of the screen material, a bar secured to the frame and spaced from the screen to form a passage, and a cap having converging side walls secured to the frame and provided with an opening at its apex.

2. In a fly-exit for screens, the combination with a frame, of a sheet of screen material secured thereto and having its upper portion bent inwardly at an angle to the general plane of the screen material, a bar provided with an upwardly-extending plate secured to the frame and spaced from the screen to form a passage, a corresponding plate carried by the frame, and a cap having converging side walls secured to the top of the frame and provided with a longitudinal opening at its apex.

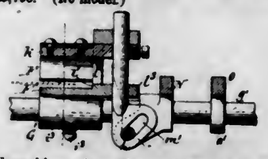
3. In a fly-exit for screens, the combination with a frame, of a sheet of screen material secured thereto and having its upper portion bent inwardly at an angle to the general plane of the screen material, a bar provided with an upwardly-extending plate secured to the frame and spaced from the screen to form a passage, a corresponding plate carried by the frame, and a triangular-shaped cap, one of the side walls of which extends above and in advance of the other to form an opening.

4. In a fly-exit for screens, the combination with a frame, having its upper portion inclined or beveled, a sheet of screen material secured to the frame and bent to conform to the inclined portion thereof, a bar provided with an upwardly-extending plate secured to the frame and spaced from the screen to form a passage, a corresponding plate secured to the top of the frame and forming a continuation of the screen, and a cap having converging side walls secured to the top of the frame, one of said side walls extending above and in advance of the other to form an opening.

5. In a fly-exit for screens, the combination with a frame having its upper portion inclined or beveled, a sheet of screen material secured to the frame and bent to conform to the inclined portion thereof, a pair of triangular blocks secured to the frame, a bar having an inclined or beveled face secured to the blocks and spaced from the frame to form a passage, an upwardly-extending plate secured to the inclined face of the bar, a corresponding plate secured to top of the frame, and serving to secure the top edge of the screen material in position and a cap having converging side walls secured to the frame and provided with a longitudinally-disposed opening at its apex.

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**753,933. SIDE-REGISTER FOR SHEET-FOLDING OR OTHER MACHINES. CHARLES A. STURTEVANT, Plainfield, N. J., assignor to Welvant Manufacturing Company, of New York. Filed Mar. 2, 1903. Serial No. 145,795. (No model.)**



*Claim.*—1. In a side-register, the combination of a horizontally-reciprocating lower gripper-jaw, an upper gripper-jaw which is movable horizontally with the lower jaw and also movable vertically independent of the lower jaw, a transversely-reciprocating actuating-rod, and a cam device which is interposed between said rod and the upper jaw, and which is constructed to open and close and also move the gripper-jaws transversely upon reciprocating said rod, substantially as set forth.

2. In a side-register, the combination of a horizontally-reciprocating lower gripper-jaw, a horizontal rod on which said jaw is guided, a vertically-reciprocating upper gripper-jaw which is movable toward and from the lower jaw, a vertical shipper-rod guided on the lower jaw and connected with the upper jaw, a head arranged on the shipper-rod and provided with a cam-slot, and a horizontally-reciprocating actuating-rod carrying a pin which engages with said cam-slot, substantially as set forth.

3. In a side-register, the combination of a horizontally-reciprocating lower gripper-jaw, a horizontal rod on which said jaw is guided, a vertically-reciprocating upper gripper-jaw which is movable toward and from the lower jaw, a vertical shipper-rod guided on the lower jaw and connected with the upper jaw, a head arranged on the shipper-rod and provided with a cam-slot, a horizontally-reciprocating rod arranged parallel with said guide-rod, a cross-head sliding on said guide-rod and secured to the actuating-rod, and a pin carried by said cross-head and engaging with said cam-slot, substantially as set forth.

4. In a side-register, the combination of a horizontally-reciprocating lower gripper-jaw, a horizontal rod on which said jaw is guided, a vertically-reciprocating upper gripper-jaw which is movable toward and from the lower jaw, a vertical shipper-rod guided on the lower jaw and connected with the upper jaw, a head arranged on the shipper-rod and provided with a cam-slot, a horizontally-reciprocating rod arranged parallel with the guide-rod, an inner cross-head sliding on said guide-rod and adjustably secured to the reciprocating rod, a pin carried by said inner cross-head and engaging with said cam-slot, an outer cross-head sliding on said guide-rod and adjustably secured to the reciprocating rod, and an adjusting-screw connecting said cross-heads, substantially as set forth.

5. In a side-register, the combination of a horizontal guide-rod, a lower gripper-jaw having a split sleeve whereby said jaw slides on said rod, an adjusting-screw connecting the split parts of said sleeve, a vertically-movable upper jaw guided on the lower jaw, and means whereby said jaws are actuated, substantially as set forth.

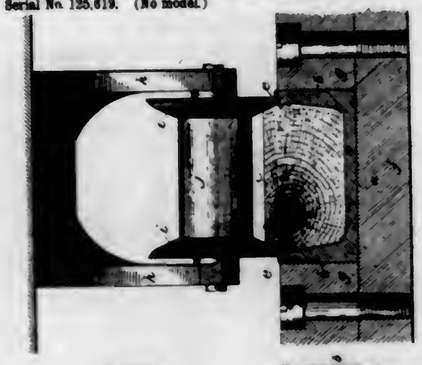
6. In a side-register, the combination of a horizontal guide-rod, a lower gripper-jaw having a split sleeve whereby said jaw slides on said rod, an adjusting-screw connected with one part of the split sleeve, a spring interposed between the head of said screw and the other part of the split sleeve, a vertically-movable upper jaw guided on the lower jaw, and means whereby said jaws are actuated, substantially as set forth.

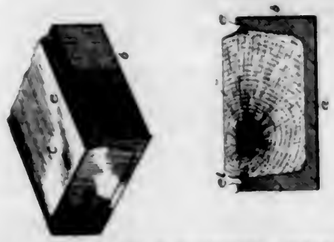
7. In a side-register, the combination of a lower inflexible gripper-jaw, and an upper gripper-jaw movable toward and from the lower jaw and comprising a support and a flexible strip bent to form a loop having a convex under side and secured at opposite ends to said support, substantially as set forth.

8. In a side-register, the combination of a lower rigid gripper-jaw, an upright wall arranged on said jaw and having a vertical slot and guide-lugs above and below said slot, a vertically-reciprocating rod guided in said lugs, a carrier arranged in said slot and secured to said rod, and an upper gripper-jaw consisting of a loop of spring metal which is secured on its upper side to said carrier, substantially as set forth.

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**753,934. STRUCTURAL BEAM FOR RAILWAY-CARS. ALBERT W. SULLIVAN and WILLIAM RENSHAW, Chicago, Ill. Filed Oct. 2, 1902. Serial No. 125,619. (No model.)**





*Claim.*—1. As a new article of manufacture, a structural post or beam composed of a metallic channeled member having a web and two inwardly-extending flanges grooved and crimped inwardly at their upper edges, and a filler of wood or similar material arranged in the channel of the metal member and held therein by the crimped flanges of the metal portion, substantially as described.

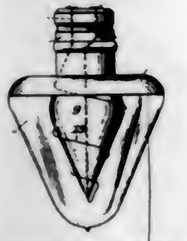
2. As a new article of manufacture, a structural beam consisting of a filler portion composed of wood, and a metallic member comprising a web portion having integral flanges extending at an angle therefrom such flanges having split edges the inner integral portions of which extend into the body of the filler, substantially as described.

3. As a new article of manufacture, a structural beam consisting of a filler portion composed of wood, and a metallic member comprising a web portion having integral main flanges extending at an angle to the outer surface thereof, such flanges having their edges divided into inner and outer integral flange portions, the inner one of which extends inwardly at an angle to the main flange and into intimate contact with the wooden filler, substantially as described.

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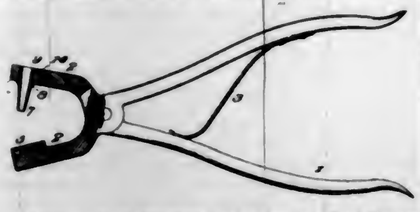
**753,935. INCANDESCENT ELECTRIC LAMP. HERBERT M TAYLOR, Hamilton, Canada. Filed Sept. 2, 1902. Serial No. 121,785. (No model.)**

*Claim.*—In an incandescent electric lamp, a globe having a neck and a curved shoulder, the latter being provided with a reflecting material upon its outer surface and curved to conform thereto, a glass cone disposed centrally within the globe and provided with an interior coating of reflecting material, the cone and globe being fused together, a leading-in wire passed axially downward through the cone, a filament disposed spirally outside the cone within the globe and connected with the tip of said wire, and a wire connected with said filament and held between the fused uniting surfaces of the cone and globe.



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**753,936. PUNCH. ROBERT M. TULL and GEORGE T. TULL, Windsor, Ill. Filed Nov. 11, 1903. Serial No. 180,761. (No model.)**



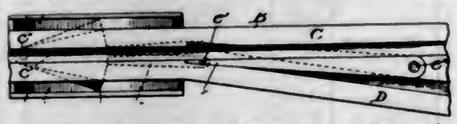
*Claim.*—1. In an implement of the class described, the combination with complementary handle members, jaws carried by the said members, heads formed in the said jaws, one of the jaws being provided with an opening, and a tubular punch having spring-engaged portions secured within the opening of the aforesaid jaw.

2. In an implement of the class described, the combination with handle members, jaws having heads formed thereon, a bed-plate carried by the head of one of the jaws, the other jaw having its head provided with an opening therein, and a tubular punch provided with a tang or shank extended within the aforesaid opening of the jaw, said shank having spring-engaging portions removably holding same upon the jaw.

3. In an implement of the class described, the combination with pivotally-secured handles provided with jaws, heads formed upon the jaws, one of said heads being provided with a bed-plate, the other head having an opening therein, a tubular cutter, a tang formed upon the cutter and received by the opening in the head aforesaid, the said tang having its end portions provided with vertical slits to form spring-engaging members to removably secure the cutter to the jaw.

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**753,937. RAILWAY-SWITCH. FREDERICK UNTERBROCK, New York, N. Y. Filed Apr. 18, 1903. Serial No. 153,184. (No model.)**



*Claim.*—1. In railway-switch-operating mechanism, a switch-point, a switch-operator comprising a triangularly-formed plate with two perimetral faces which are engageable by tappets; and a forwardly-extending arm pivoted to the switch-point, and tappets which are fixed upon a car and are severally engageable with the engageable perimetral faces of the switch-operator, substantially as described.

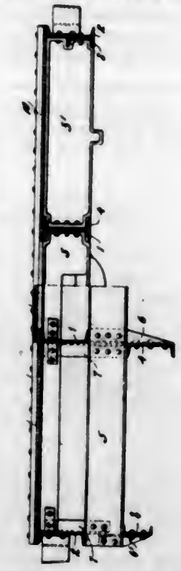
2. In railway-switch-operating mechanism, a switch-point, a switch-operator which operatively engages the switch-point and has a plate with two perimetral faces which are engageable by tappets; tappets which are fixed upon a car and are severally engageable with the engageable perimetral faces of the switch-operator; and tappet-guides having curved bottoms and sides fixed parallelly of the switch, substantially as described.



3. In railway-switch-operating mechanism, a switch-point, a switch-operator which operatively engages the switch-point and has a plate with two perimetral faces which are engageable by tappets; tappets which are fixed upon a car and are severally engageable with the engageable perimetral faces of the switch-operator; and tappet-guides having curved bottoms and sides fixed parallelly of the switch, substantially as described.

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**753,938. RAILWAY-CAR. CORNELIUS VANDERBILT, New York, N. Y. Filed Feb. 17, 1902. Serial No. 94,411. (No model.)**



*Claim.*—1. In a metallic car-frame, a longitudinal center truss, a transverse beam forming a strut for said truss and side sills secured to the ends of said beam, substantially as described.

2. In a metallic car-frame, longitudinal center and side trusses and a transverse beam forming a strut for each of said trusses and supporting said side trusses, substantially as described.

3. In a metallic car-frame, a center sill, side trusses, a transverse beam forming a strut for said trusses and secured to said center sill, substantially as described.

4. In a metallic car-frame, a longitudinal center truss composed of flanged beams and a transverse beam forming a strut for said truss, substantially as described.

5. In a metallic car-frame, longitudinal center and side trusses composed of flanged beams and a transverse beam forming a strut for each of said trusses, substantially as described.

6. In a metallic car-frame, a longitudinal center sill, longitudinal side trusses composed of flanged beams, and a transverse beam forming a strut for said trusses, substantially as described.

7. In a metallic car-frame, a plurality of members, each comprising a straight longitudinal channel-beam and a channel-beam bent in the plane of its web, and placed back to back with said straight beam, its ends being secured thereto, and a transverse beam interposed between the straight and bent channels of each member, substantially as described.

8. In a metallic car-frame, center trusses comprising flanged beams 4, 4 having horizontal end portions which carry draft-rigging guides and intermediate portions depressed below said horizontal end portions, and straight flanged compression members 1, 1 secured to the horizontal portions of said flanged beams 4, 4, substantially as described.

9. In a metallic car, longitudinal supporting-sills, floor-plates laid thereon, the end floor-plate being bent down and secured directly to the ends of said sills, whereby an end sill is dispensed with, substantially as described.

10. In a metallic car, a floor-plate having a portion bent down to form an end plate, said portion being apertured to permit the passage of the draw-bar or coupling, substantially as described.

11. In a metallic car, a floor-plate having a portion bent down to form an end plate, said portion having stiffening-flanges along its lower edge, substantially as described.

12. In a metallic car, longitudinal center and side sills, bolster-pieces secured therebetween, side floor-plates extending from side to center sills between the bolsters, a center floor-plate extending from center to center sill above the side floor-plates, end floor-plates extending from the bolsters to the ends of the said sills, and a bolster-cover plate secured above the adjacent edges of the end and side plates, substantially as described.

13. In an underframe, a trussed longitudinal supporting-sill composed of tension and compression chords formed of flanged bars arranged in the same vertical plane, and transverse transoms which extend between the chords of said sill and constitute struts therefor, substantially as set forth.

14. In an underframe, trussed center sills each composed of tension and compression chords formed of flanged bars arranged in the same vertical plane, and transverse transoms which extend between the chords of said sills and constitute struts therefor, substantially as set forth.

15. In an underframe, trussed center sills each composed of tension and compression chords formed of flanged bars arranged in the same vertical plane, and transverse transoms formed of flanged beams which extend between the chords of said sills and constitute struts therefor, substantially as set forth.

16. In an underframe, the combination of trussed longitudinal center and side sills each composed of upper and lower chords formed of flanged bars arranged in the same vertical plane, and transverse transoms which extend between the chords of said sills and constitute struts therefor, substantially as set forth.

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**753,939. STRAINER. MARTHA H. VINER, Buffalo, N. Y. Filed Apr. 14, 1903. Serial No. 152,512. (No model.)**



*Claim.*—1. A strainer comprising a retaining-ring, a straining-bag fitted over the retaining-ring and a clamp having portions movable relatively to each other and embracing the retaining-ring for clamping the straining-bag thereupon.

2. A strainer comprising a retaining-ring having an enlargement at its lower part and a drip-guard at its upper part, a straining-bag fitted over the retaining-ring below the drip-guard, and a clamp having portions movable relatively to each other and embracing the retaining-ring for clamping the straining-bag thereupon.

3. A strainer comprising a retaining-ring having enlargements at top and bottom, a straining-bag fitted over the retaining-ring, a split spring-clamp embracing the retaining-ring and having projecting handles, and a locking-loop fitting the projecting handles.

4. The combination of the retaining-ring *i* having a drip-guard *k* at its upper part and an enlargement *b* at its lower part, a straining-bag *j* fitted over the retaining-ring, and a split spring-clamp embracing the retaining-ring and comprising a band *i* with spring-wired edges and handles *b*, *c*, *d* and *e*, a locking-loop *g* fitting over the handles, and a supporting-arm *h* projecting from the band *i*, substantially as set forth.

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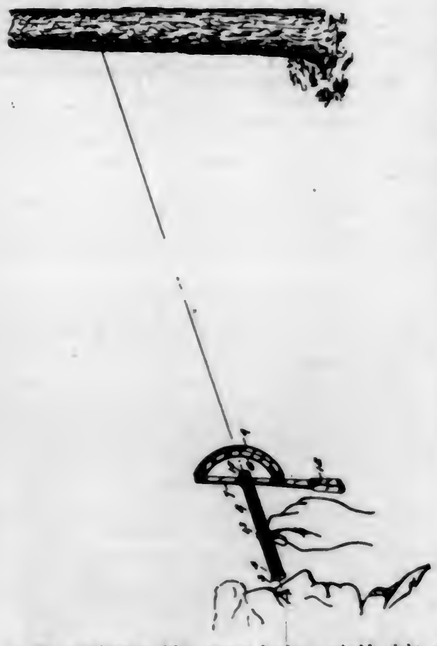
**753,940. TIMBER-ESTIMATING DEVICE. CLINTON L. WALKER, Minneapolis, Minn. Filed Dec. 29, 1903. Serial No. 186,988. (No model.)**

*Claim.*—1. The combination, with a tube or barrel, of an arc having its chord pivoted on said barrel and arranged to automatically adjust itself to the perpendicular, and said arc being provided with a series of marks or notches that are arranged to intersect with the line of vision through said barrel to the object looked at.

2. The combination, with a barrel having an eyepiece at one end, of an arc mounted on a fixed pivot at the other end of said barrel and arranged to automatically adjust itself to the perpendicular, and said arc bearing a series of marks or notches arranged to intersect with the line of vision through said eyepiece when said barrel is tilted vertically, substantially as described.

3. The combination, with a barrel having an eyepiece at one end and a sight at the other, of an arc having its chord mounted on a fixed pivot on said barrel and the lower end of said chord being extended and provided with a suitable weight adapted to automatically adjust the said chord and arc to the perpendicular when said

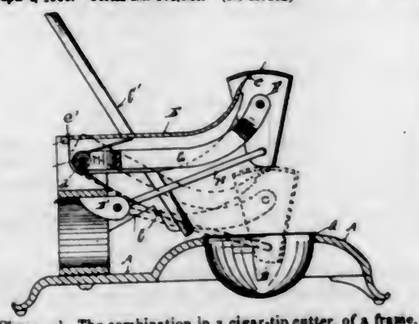
barrel is tilted vertically, and said arc bearing a series of marks or notches arranged to intersect with the line of vision through said barrel, for the purpose specified.



4. The combination with a support having a suitable sight, of an arc having its chord pivoted on said support and adapted to automatically adjust itself to the perpendicular, and said arc being provided with a series of marks or notches that are arranged to intersect with the line of vision over said sight to the object looked at.

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753,941. **CIGAR-TIP CUTTER.** EDWIN WALKER, Erie, Pa. Filed Sept. 4, 1903. Serial No. 171,941. (No model.)



*Claim.*—1. The combination in a cigar-tip cutter, of a frame, a pair of arms pivoted thereto one above the other, a hollow cutter-head pivoted to the free ends of said arms, a cutter within said hollow cutter-head, a cutter-arm pivoted to said frame and connected with said cutter for operating the same, and a spring operating to raise the cutter-head, substantially as set forth.

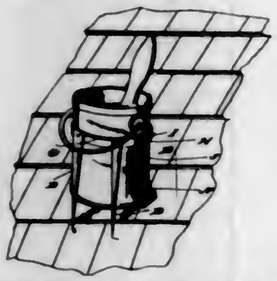
2. The combination in a cigar-tip cutter, of a frame, a pair of arms pivoted thereto one above the other, a hollow cutter-head pivoted to the free ends of said arms, a cutter-arm pivoted to said frame and operating a cutter-blade under the top of the cutter-head, and a spring operating on one or more of said arms to raise and yieldingly support the cutter-head, substantially as set forth.

3. The combination in a cigar-tip cutter, of a frame, an arm pivoted to said frame having its outer end curved upward, another arm pivoted to said frame below the first-named arm, a hollow head pivoted to the outer ends of said arms, a cutter-arm pivoted to the frame on the same axis as the upper arm above referred to, and having its outer end curved upward under the top of the hollow head, a cutter-blade on the end of said arm, and a spring operating on said cutter-arm, substantially as set forth.

4. The combination in a cigar-tip cutter, of a frame having an advertising-display plate thereon, an upright on said frame, a pair of arms pivoted therein one above the other a hollow head having cigar-tip openings therein pivoted to the outer ends of said arms, a cutter-arm pivoted to the frame on a common axis with the upper one of the arms pivoted in the hollow head, a stop on the upright engaging said cutter-arm so as to limit its upward movement, a spring operating on said cutter-arm to normally support it in a raised position, and a cutting-blade on the free end of the cutter-arm under the inside of the top of the cutter-head adapted to closely contact therewith when downward pressure is applied to said head, substantially as set forth.

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753,942. **DEVICE FOR HOLDING PAINT-BUCKETS IN PERMANENT POSITION ON THE ROOFS OF BUILDINGS.** LUTHER WALLACE, Southport, Ind. Filed Mar. 13, 1903. Serial No. 147,680. (No model.)

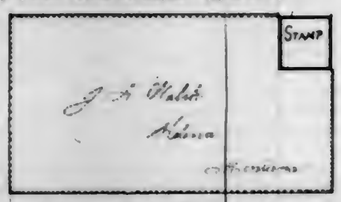


*Claim.*—1. In a device of the character described, the combination with a main securing-band, of a removable band adjustably secured thereto, independent means carried by the last-named band to engage the main band forming a clamping means, and inclined members secured to the main band adapted to support the device, substantially as and for the purpose set forth.

2. In a paint-bucket holder, a main securing-band, supporting members secured thereto, a removable band detachably secured to the main band, means for adjusting the same upon the main band, and clamping means for securely holding a bucket within the two bands, substantially as set forth.

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753,943. **ENVELOP.** JAMES A. WALSH, Helena, Mont. Filed May 4, 1903. Serial No. 155,662. (Specimens.)




*Claim.*—1. The combination of two envelops, one placed within the other, the outer envelop having an aperture therein through which the stamp on the inner envelop is exposed to view and canceled.

2. The combination of two envelops, one placed within the other, the outer envelop having an aperture therein through which the stamp on the inner envelop is exposed to view and canceled, and having directions printed thereon to remove the outer envelop and return the letter if not called for.

3. The combination of two envelops, one placed within the other, the outer envelop having an aperture therein for the uses and purposes herein set forth.

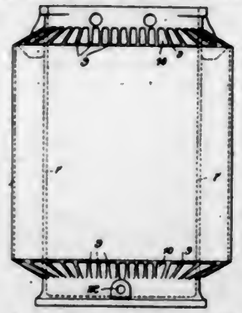
4. The combination of two envelops, one placed within the other, the outer envelop having the name and address of the person to whom it is to be sent written thereon, and having an aperture therein through which the stamp on the inner envelop is exposed to view and canceled; the inner envelop having a stamp thereon in such position that it is exposed to view and may be canceled through the aperture in the outer envelop, and having the name and address of the writer written on said inner envelop.

5. The combination of two envelops, one placed within the other, the outer envelop having the name and address of the person to whom it is to be sent written thereon, and having directions written thereon to remove the outer envelop and return the letter if not called for, and having an aperture therein through which the stamp on the inner envelop is exposed to view and canceled; the inner envelop having a stamp thereon in such position that it is exposed to view and can be canceled through the aperture in the outer envelop, and having the name and address of the writer written thereon.



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753,944. **TRANSFORMER-CASE.** WILLIAM L. WATERS, Milwaukee, Wis. Filed Mar. 5, 1903. Serial No. 146,400. (No model.)



*Claim.*—1. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of tubular openings extending through the material of said shell having no communication with the interior of the inclosing shell.

2. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of parallel tubular openings extending through the material of said shell having no communication with the interior of the inclosing shell.

3. In a device of the class described, the combination with a retaining-shell of heat-conducting material, of tubular openings extending vertically through the material of said shell having no communication with the interior of the inclosing shell.

4. In a device of the class described, the combination with a retaining-shell of heat-conducting material, of parallel tubular openings extending vertically through the material of said shell having no communication with the interior of the inclosing shell.

5. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of tubular chambers open at either end and surrounding said shell at the outside thereof and having no communication with the interior thereof.

6. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of vertical tubular chambers open at top and bottom, and surrounding said shell at the outside thereof and having no communication with the interior thereof.

7. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of parallel tubular chambers open at either end and surrounding said shell at the outside thereof and having no communication with the interior thereof.

8. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of parallel vertical tubular chambers open at top and bottom and surrounding said shell at the outside thereof and having no communication with the interior thereof.

9. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of a second shell surrounding said first shell, there being an intervening space between said shells having no communication with the interior of the inclosing shell and substantially radial webs interposed between said shells.

10. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of a second shell surrounding said first shell, there being an intervening space between said shells having no communication with the interior of the inclosing shell and webs interposed between said shells.

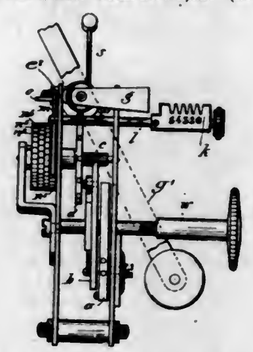
11. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of a second shell surrounding said first shell, there being an intervening space between said shells, and substantially vertical webs interposed between said shells and forming therewith parallel tubular chambers open at top and bottom and having no communication with the interior of the inclosing shell.

12. In a device of the class described, the combination with an inclosing shell 7 of heat-conducting material, of an air-jacket 8 surrounding said inclosing shell, said air-jacket consisting of vertical tubular chambers 9, 9, said chambers being open at both ends to allow upward passage therethrough of cool surrounding air to carry with it the heat radiated into said chambers by said inclosing shell.

13. In a device of the class described, the combination with an inclosing shell of heat-conducting material, of a second shell surrounding said first shell, there being an intervening space between said shells having no communication with the interior of the inclosing shell, and webs interposed between said shells, said shells and said webs being cast in one piece.

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753,945. **METRONOME.** THEODOR WEBBER, Neustadt, Germany. Filed Feb. 4, 1903. Serial No. 141,803. (No model.)



*Claim.*—In a metronome, the combination of a slidable rod *i* having a notch-scale *k*, a plate *q* through which said scale projects, a bent arm on said rod with which said plate is adapted to engage, a plurality of toothed wheels with which one end of said arm is adapted to engage at times and be operated by the teeth thereof, suitable clockwork for operating said wheels, and a bell-hammer adapted to be operated by the other end of said bent arm, substantially as described.

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753,946. **GAME APPARATUS.** SAMUEL E. WHARTON, Everett, Wash. Filed May 28, 1903. Serial No. 159,186. (No model.)



*Claim.*—1. A device of the character described comprising a receptacle or shell provided with a receiving-opening, doors or gates hinged to said receptacle and adapted to close or partially close said opening, spring devices adapted to hold said gates in their closed position, cross-bars upon said receptacle to prevent said gates from swinging outwardly, and an operating-handle for said receptacle, substantially as described.

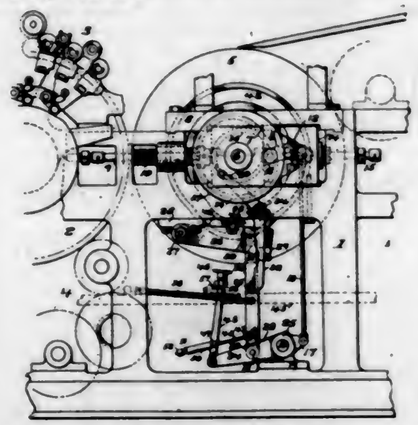
2. A device of the character described, comprising a receptacle or shell formed with an end opening, a side opening and a handle for manipulating the receptacle, a pivoted spring-actuated guard-plate in said end opening, a sliding finger-piece upon the handle, and a connection or cord between said plate and finger-piece, substantially as described.

3. A device of the character described, comprising a receptacle or shell having an end opening, a side opening and a manipulating-handle, a connecting band or ring about the end opening, a plate hinged to said band, a spring for holding said plate retracted, a sliding operating-button upon the handle, and a flexible connection between said button and said plate whereby said plate may be moved to partially close said end opening, substantially as described.

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753,947. **PRINTING-MACHINE.** JOSEPH WHITE, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Jan. 7, 1902. Serial No. 88,719. (No model.)

*Claim.*—1. The combination with the form-carrying and impression members of a rotating single-revolution printing-couple the members of which are normally in contact and the inking mechanism, of means for moving one of said members to interrupt their printing contact, automatic devices for operating said means, and devices under the control of the operator for also operating said means, substantially as described.



2. The combination with the form-carrying and impression members of a rotating single-revolution printing-couple the members of which are normally in contact and the inking mechanism, of means for moving the impression member away from the form-carrying member so as to interrupt the printing contact and keep it interrupted while the form-carrying member makes a revolution, automatic devices for operating said moving means, and devices under the control of the operator for also operating said moving means, substantially as described.

3. The combination with the form-carrying and impression members of a printing-couple which are normally in contact and the inking mechanism, of automatic means for moving one of said members away from the other member to interrupt the printing contact, said means operating to keep the members separated while the form-carrying member completes a movement corresponding to the printing movement, and means for interrupting the action of said automatic means in order to keep the members separated, substantially as described.

4. The combination with the form-carrying and impression members of a printing-couple which are normally in contact and the inking mechanism, of automatic means for moving one of said members away from the other member to interrupt the printing contact said means operating to keep the members separated while the form-carrying member completes a movement corresponding to the printing movement, and means under the control of the operator for interrupting the action of said automatic means in order to keep the members separated, substantially as described.

5. The combination with the form-carrying and impression cylinders of a rotating single-revolution printing-couple the members of which are normally in contact and the inking mechanism, of automatic means for moving the impression-cylinder toward and away from the form-carrying cylinder, said means operating to keep the cylinders out of printing contact while the form-carrying cylinder makes a revolution, and means for interrupting the action of said automatic means in order to keep the cylinders separated, substantially as described.

6. The combination with the form-carrying and impression cylinders of a rotating single-revolution printing-couple the members of which are normally in contact and the inking mechanism, of automatic means for moving the impression-cylinder toward and away from the form-carrying cylinder, said means operating to keep the cylinders out of printing contact while the form-carrying cylinder makes a revolution, and means under the control of the operator for interrupting the action of said automatic means in order to keep the cylinders separated, substantially as described.

7. The combination with the form-carrying and impression members of a printing-couple and the inking mechanism, of means for moving one of said members into and out of printing contact, means including an actuating member for causing the operation of said moving means, an operating mechanism capacitated to produce the movement of the actuating member in both directions, an automatic positioning device for said member, and means under the control of the operator for actuating the moving means, substantially as described.

8. The combination with the form and impression cylinders of a rotating printing-couple said cylinders being normally in contact and the inking mechanism, of cylinder-moving means operating to move one of the cylinders into and out of printing contact with the other, means including an actuating member for causing the operation of said moving means, an operating mechanism capacitated to produce the movement of the member in both directions, and an automatic positioning device for said member, substantially as described.

9. The combination with the form and impression cylinders of a rotating printing-couple and the inking mechanism, of a cylinder-moving means operating to move one of the cylinders into and out of printing contact with the other, means including an actuating member for causing the operation of said moving means, an operating mechanism capacitated to produce the movement of the member in both directions, an automatic positioning device for said member, and means under the control of the operator for actuating the cylinder-moving means, substantially as described.

10. The combination with the form-carrying and impression members of a printing-couple said members being normally in contact and the inking mechanism, of means for moving one of the members into and out of printing contact, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatic positioning device for the actuating member, and a controller for the actuating member, substantially as described.

11. The combination with the form-carrying and impression members of a printing-couple said members being normally in contact and the inking mechanism, of means for moving one of the members into and out of printing contact, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatic positioning device for the actuating member, a controller for the actuating member, and a locking device for said controller, substantially as described.

12. The combination with the form and impression cylinders of a printing-couple said cylinders being normally in contact and the inking mechanism, of means for moving one of the cylinders into and out of printing contact with the other cylinder, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatic positioning device for the actuating member, and a controller for the actuating member, substantially as described.

13. The combination with the form and impression cylinders of a printing-couple said cylinders being normally in contact and the inking mechanism, of means for moving one of the cylinders into and out of printing contact with the other cylinder, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatic positioning device for the actuating member, a controller for the actuating member, and a locking device for said controller, substantially as described.

14. The combination with the members of a printing-couple and the inking mechanism, of means for moving one of the members toward and away from the other, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatically-operated positioning device, a controller for the actuating member, and connections whereby the controller operates the moving means, substantially as described.

15. The combination with the members of a printing-couple and the inking mechanism, of means for moving one of the members toward and away from the other, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatically-operated positioning device, a controller for the actuating member, connections whereby the controller operates the moving means, and a locking device for said controller, substantially as described.

16. The combination with the form and impression cylinders of a printing-couple and the inking mechanism, of means for moving one of the cylinders toward and away from the other, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatically-operated positioning device, a controller for the actuating member, and connections whereby the controller operates the moving means, substantially as described.

17. The combination with the form and impression cylinders of a printing-couple and the inking mechanism, of means for moving one of the cylinders toward and away from the other, means including an actuating member for causing the operation of said moving means, an operating mechanism, an automatically-operated positioning device, a controller for the actuating member, connections whereby the controller operates the moving means, and a locking device for said controller, substantially as described.

18. The combination with a form-carrier and impression-cylinder which are normally in contact, of cylinder-moving means, an operating mechanism capacitated to produce a movement of the cylinder in both directions, means including a movable actuator between the operating mechanism and the moving means, and a constantly-rotating member for operating the actuator, substantially as described.

19. The combination with a form-carrier and impression-cylinder which are normally in contact, of cylinder-moving means, an operating mechanism capacitated to produce a movement of the cylinder in both directions, means including a movable actuator between the operating mechanism and the moving means, a constantly-rotating member for operating the actuator, and a controller for the movable actuator, substantially as described.

20. The combination with a form-carrier and impression-cylinder which are normally in contact, of cylinder-moving means, an operating mechanism capacitated to produce a movement of the cylinder in both directions, means including a movable actuator between the operating mechanism and the moving means, a constantly-rotating member for operating the actuator, a controller for the movable actuator, and a locking device for said controller, substantially as described.

21. The combination with a form-carrier and impression-cylinder, of cylinder-moving means, an operating mechanism capacitated to produce a movement of the cylinder in both directions, means including a movable actuator between the operating mechanism and the moving means, a constantly-rotating member for operating the actuator, a controller for the movable actuator, and connections whereby the controller operates the cylinder-moving means, substantially as described.

22. The combination with a form-carrier and impression-cylinder, of cylinder-moving means, an operating mechanism capacitated to produce a movement of the cylinder in both directions, means including a movable actuator between the operating mechanism and the moving means, a constantly-rotating member for operating the actuator, a controller for the movable actuator, connections whereby the controller operates the cylinder-moving means, and a locking device for said controller, substantially as described.

23. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, means including a movable actuator for operating the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, and an automatically-operated positioning device for moving the actuator so that it may be operated alternately in opposite directions by the driver, substantially as described.

24. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, means including a movable actuator for operating the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, an automatically-operated positioning device for moving the actuator so that it may be operated alternately in opposite directions by the driver, a controller, and connections between the controller and the movable actuator, substantially as described.

25. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, means including a movable actuator for operating the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, an automatically-operated positioning device for moving the actuator so that it may be operated alternately in opposite directions by the driver, a controller, connections between the controller and the movable actuator, and a locking device for said controller, substantially as described.

26. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, means including a movable actuator for operating the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, an automatically-operated positioning device for moving the actuator so that it may be operated alternately in opposite directions by the driver, a controller, connections between the controller and the movable actuator, and connections between the controller and the cylinder-moving means, substantially as described.

27. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, means including a movable actuator for operating the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, an automatically-operated positioning device for moving the actuator so that it may be operated alternately in opposite directions by the driver, a controller, connections between the controller and the movable actuator, connections between the controller and the cylinder-moving means, and a locking device for said controller, substantially as described.

28. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, a pivotally-mounted actuator, connections between the actuator and the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, a cam-controlled positioning-lever for operating the actuator, a controller, and connections between the controller and the actuator, substantially as described.

29. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, a pivotally-mounted actuator, connections between the actuator and the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, a cam-controlled positioning-lever for operating the actuator, a controller, connections between the controller and the actuator, and a locking device for said controller, substantially as described.

30. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, a pivotally-mounted actuator, connections between the actuator and the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, a cam-controlled positioning-lever for operating the actuator, a controller, connections between the controller and the actuator, and connections between the controller and the cylinder-moving means, substantially as described.

31. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, means for moving the cylinder toward and away from the form-carrier, a pivotally-mounted actuator, connections between the actuator and the cylinder-moving means, a driver provided with means for moving the actuator in opposite directions, a cam-controlled positioning-lever for operating the actuator, a controller, connections between the controller and the actuator, connections between the controller and the cylinder-moving means, and a locking device for said controller, substantially as described.

32. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a driver, a movable actuator, connections between the actuator and the rock-shaft, means whereby the driver operates the actuator to rock the shaft in either direction, means including a positioning-lever for determining in which direction the actuator shall be moved by the driver, a controller and connections between the controller and the actuator whereby the controller determines the position of the actuator independent of the positioning-lever, substantially as described.

33. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a driver, a movable actuator, connections between the actuator and the rock-shaft, means whereby the driver operates the actuator to rock the shaft in either direction, means including a positioning-lever for determining in which direction the actuator shall be moved by the driver, a controller, connections between the controller and the actuator whereby the controller determines the position of the actuator independent of the positioning-lever, and a locking device for said controller, substantially as described.

34. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a driver, a movable actuator, connections between the actuator and the rock-shaft, means whereby the driver operates the actuator to rock the shaft in either direction, means including a positioning-lever for determining in which direction the actuator shall be moved by the driver, a controller, connections between the controller and the actuator whereby the controller determines the position of the actuator independent of the positioning-lever, and connections between the controller and the rock-shaft whereby the controller may operate the cylinder-moving means, substantially as described.

35. The combination with a form-carrier and an inking mech-

anism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a driver, a movable actuator, connections between the actuator and the rock-shaft, means whereby the driver operates the actuator to rock the shaft in either direction, means including a positioning-lever for determining in which direction the actuator shall be moved by the driver, a controller, connections between the controller and the actuator whereby the controller determines the position of the actuator independent of the positioning-lever, connections between the controller and the rock-shaft whereby the controller may operate the cylinder-moving means, and a locking device for said controller, substantially as described.

36. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a movable actuator-bar, connections between said bar and the rock-shaft, a lever having oppositely-disposed shoulders for moving the bar in opposite directions, a cam-controlled positioning-lever for moving the bar into position to be struck by one of the shoulders, a spring for moving it into position to be struck by the other shoulder, a controller, and connections between the controller and the actuator-bar, substantially as described.

37. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a movable actuator-bar, connections between said bar and the rock-shaft, a lever having oppositely-disposed shoulders for moving the bar in opposite directions, a cam-controlled positioning-lever for moving the bar into position to be struck by one of the shoulders, a spring for moving it into position to be struck by the other shoulder, a controller, connections between the controller and the actuator-bar, and a locking device for the controller, substantially as described.

38. The combination with a form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, a movable actuator-bar, connections between said bar and the rock-shaft, a lever having oppositely-disposed shoulders for moving the bar in opposite directions a cam-controlled positioning-lever for moving the bar into position to be struck by one of the shoulders, a spring for moving it into position to be struck by the other shoulder, a controller, connections between the controller and the actuator-bar, connections between the controller and the rock-shaft, and a locking device for the controller, substantially as described.

39. The combination with the form-carrier and an inking mechanism, of an impression-cylinder, cylinder-moving means including a rock-shaft and suitable connections, an actuator-bar, connections between said bar and the rock-shaft, a driver-lever having oppositely-disposed shoulders for moving the actuator-bar in opposite directions, a cam moving with the impression-cylinder for operating the driver-lever, positioning devices including a cam moving with the impression-cylinder and a positioning-lever, a controller-bar, connections between said bar and the actuator-bar whereby the controller-bar may be moved independently of the positioning devices, and connections between the controller-bar and the rock-shaft, and a locking device for the controller-bar, substantially as described.

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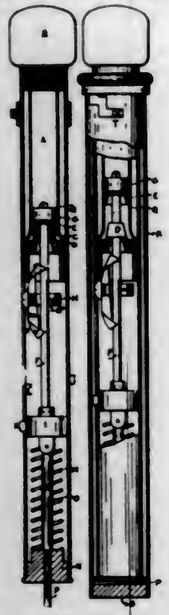
753,948. **INSTRUMENT FOR TAKING SOUNDINGS.** EUSTACE K. WIGHELL, London, England. Filed May 26, 1902. Serial No. 109,044. (No model.)

*Claim.*—1. A sounding instrument having, in combination, a cylinder-tube, a piston and cup-leather movable in said tube by water-pressure, a mold at one end of said tube, and a spring and connections whereby said piston is retracted and said cup-leather is normally held in contact with said mold.

2. A sounding instrument having, in combination, a cylinder-tube provided in its side with a water-escape hole, a piston movable in said tube by water-pressure, and a spring and connections whereby said piston is retracted and said water-escape hole is opened after each sounding cast.

3. A sounding instrument having, in combination, a cylinder-tube provided in its side with a water-escape hole, a piston movable in said tube by water-pressure, a spring and connections whereby said piston is retracted and said water-escape hole is opened after each sounding cast, a loose endwise-movable rod, and an outer casing having a bottom which moves said rod and therewith said piston to close said hole when said outer casing is applied.

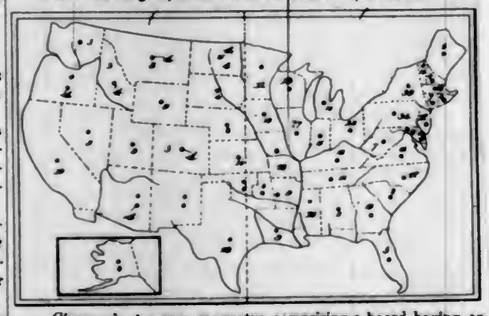
4. A sounding instrument having, in combination, a cylinder tube, a piston movable in said tube by water-pressure, means for retracting the same after each sounding cast, a rack-bar movable with said piston, and a ring-shaped marker, embracing said rack-bar, having a knife-shaped projection by which it is interlocked with the teeth of the rack-bar when the latter is retracted, an index-button at the front of the marker, an attachment thereto projecting above and below the index-button along the front of the rack-bar and constructed with backwardly-turned projections at the sides of the rack-bar to keep the marker from turning, and an under spring by which said projection is adapted to be disengaged from said teeth and the marker is adapted to be reset to zero by hand.



5. A sounding instrument having a ring-shaped marker provided with an index-button at front and an internal projection at its back and with main and under springs at its front, such mainspring projecting above and below the index-button of the marker and the under spring attached to one end of said mainspring, in combination with a longitudinally-movable rack-bar having teeth at back to interlock with said projection and a front face against which said springs press, substantially as hereinbefore specified.

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753,949. **GAME APPARATUS.** CENTENNIAL W. WING, Bayard, Fla. Filed Aug. 27, 1903. Serial No. 171,015. (No model.)



*Claim.*—1. A game apparatus comprising a board having on the surface thereof a chart or map of the United States, each State shown on the map having marked thereon the number of electoral votes for President to which that State is entitled, a pack of cards comprising one for each State and Territory, each card bearing on its surface the name of the State or Territory represented and the number of its electoral votes, and a set of markers comprising a marker for each State to show on the map the States represented by cards that have been retired from the game.

2. A game apparatus comprising a board having on the surface thereof a map or chart of the United States, each State and Territory having marked thereon the number of electoral votes for President to which it is entitled and being provided with a single aperture for the reception of a marking-pin, a pack of cards comprising a card for each State and Territory, each card bearing the name of the State or Territory represented and the number of electoral votes to which said State or Territory is entitled, and a plurality of marking pins or pegs adapted for insertion into the openings provided in the board to show on the map the States represented by the cards that have been retired from the game during the play.

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753,950. **METAL FASTENING DEVICE.** GEORGE C. WYLAND, Williamsport, Pa. Filed Nov. 14, 1903. Serial No. 181,201. (No model.)



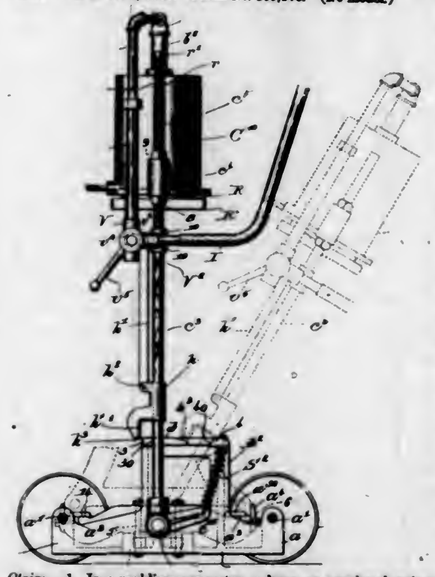
*Claim.*—1. A metal fastening device having a plurality of graduated corrugations, substantially as and for the purpose set forth.

2. A metal fastening device having a plurality of corrugations which increase in size from its center in a direction toward its ends, substantially as and for the purpose specified.

3. A metal fastening device having a plurality of corrugations increasing in depth and width in a direction from its center toward its ends, substantially as and for the purpose described.

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753,951. **MOLDING APPARATUS.** JOHN ANDERSON, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 5, 1903. Serial No. 183,870. (No model.)



*Claim.*—1. In a molding apparatus, a base, an overhead swinging carrier mounted thereon, a power-actuated rammer on one of said members and a flask-support on the other, a controlling-valve to govern the operation of the rammer, and means to positively lock the carrier in operative position by or through actuation of the controlling-valve.

2. In a molding apparatus, a base, an overhead swinging carrier mounted thereon, a power-actuated rammer on one of said members and a flask-support on the other, a controlling-valve to govern the operation of the rammer, means to positively lock the carrier in operative position by or through actuation of the controlling-valve, and separate means to prevent actuation of said valve when the carrier is in inoperative position.

3. In a molding apparatus, a base, an overhead swinging carrier mounted thereon, a power-actuated rammer on one of said members and a flask-support on the other, a controlling-valve to govern the operation of the rammer, a keeper on the base, a coöperating locking-latch mounted on the carrier, and a connection between said latch and the valve, whereby actuation of the latter causes operative engagement of the latch and keeper to retain the carrier in operative position.

4. In a molding apparatus, a base, an overhead swinging carrier mounted thereon, a power-actuated rammer on one of said members and a flask-support on the other, a controlling-valve to govern the operation of the rammer, a keeper on the base, an adjacent detent, a latch movable with and also relatively to the carrier, to cooperate with the keeper or the detent, and connections between the valve and the latch, whereby actuation of the valve is prevented unless the carrier is in operative position, actuation of the valve at such time causing the latch to positively engage the keeper and lock the carrier in position.

5. In a molding apparatus, a base, an overhead swinging carrier mounted thereon, a depending rammer on the carrier, means, including a cylinder and a fluid-pressure-controlling valve, to actuate the rammer and move it toward a flask supported on the base, positively-acting locking means to retain the carrier in operative position, and connections between said means and the valve, opening of the latter locking the carrier and shutting of said valve rendering the locking means inoperative.

6. In a molding apparatus, a base, an overhead swinging carrier mounted thereon, a reciprocating rammer depending from the top of the carrier, fluid-pressure-actuating means for the rammer, including a manually-operated controlling-valve, a latch slidable on the carrier and operatively connected with the valve, a keeper on the base, and an adjacent, elongated detent, opening of the valve being permitted only when the latch is beyond the detent and the carrier in operative position, operation of the valve to cause movement of the rammer effecting positive locking engagement of the latch and keeper.

7. In a molding apparatus, a portable base adapted to support a flask for ramming, an overhead carrier mounted to swing on the base, a rammer depending therefrom, springs to lift it, fluid-pressure means, including a cylinder and controlling-valve, to depress the rammer, and means operated by actuation of said valve when the carrier is in operative position to positively lock the carrier in such position.

8. In a molding apparatus, a base, seats thereon to support the feet of a molding-machine, means to clamp the molding-machine rigidly on the base, an overhead swinging carrier fulcrumed on the sides of the base, a depending rammer, fluid-pressure-operating means therefor, and a controlling-valve, all mounted on the carrier, and means operated by actuation of the valve to lock the carrier in operative position.

9. In a molding apparatus, a base, seats thereon to support the feet of a molding-machine, means to clamp the molding-machine rigidly on the base, an overhead swinging carrier fulcrumed on the sides of the base, a depending rammer, fluid-pressure-operating means therefor, and a controlling-valve, all mounted on the carrier, a latch operatively connected with the valve, a keeper, and an adjacent detent, both mounted on the base, the detent acting through the latch to prevent actuation of the valve when the carrier is in inoperative position and actuation of the valve causing positive cooperation of the latch and the keeper.

10. In a molding apparatus, a base adapted to support a flask, an overhead rammer and its operating-cylinder, a manually-actuated controlling-valve for the cylinder, a carrier for the latter mounted to swing on the base into and out of operative position, means to prevent the actuation of the valve when the carrier is in inoperative position, and means to positively and automatically lock the carrier in operative position by actuation of the valve.

11. In a molding apparatus, a base adapted to support a flask, a rammer, an attached piston and its cylinder for operating it, a swinging carrier for the cylinder mounted on the base, a valve to govern the admission of motive fluid to the cylinder, means to lock the swinging support in operative position, and controlling connections between the valve and the locking means to positively lock the swinging support by or through opening of the valve and to permit actuation of the valve only when the carrier is in operative position.

12. In a molding apparatus, a base having upturned sides and lateral studs, side rods fulcrumed on the studs, a cross-head connecting the rods above the base, a rammer, and actuating means therefor mounted on the cross-head, a manually-actuated controlling-valve for said means, fixed stops on the upturned sides of the base to limit the swinging movement of the side rods, a sliding latch on

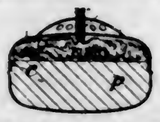
one of said rods, a keeper therefor on the base, and a connection between the latch and controlling-valve, whereby actuation of the latter slides the latch into engagement with the keeper and positively locks the cross-head in operative, ramming position.

13. In a molding apparatus, a base adapted to support a flask, a carrier mounted thereon and comprising side rods fulcrumed on the base and an attached cross-head, an upright cylinder on the cross-head, a plunger-piston therein having a rammer on its lower end, upright guide-rods fast on the rammer and slidable in the cross-head, lifting-springs surrounding said rods between their upper ends and the top of the cross-head, and a manually-actuated valve to control the entrance of motive fluid to the cylinder above the piston, to depress the rammer.

14. In a molding apparatus, a rectangular base having upturned sides, truck-wheels at the corners of the base, horizontal seats on the base to support the feet of a molding-machine, means to clamp the same on the seats, a swinging carrier mounted on the base, an overhead rammer and actuating means therefor sustained on the carrier, a manually-actuated controlling-valve for said means, a keeper and an elongated detent on one of the upturned sides of the base, a latch movable with and relatively to the carrier, and a connection between the latch and valve, the latch engaging the detent and preventing actuation of the valve unless the carrier is in upright, operative position, actuation of the valve at such time moving the latch into engagement with the keeper and positively locking the carrier in operative position.

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**753,952. NIGHT LIGHT OR LAMP. JOSEPH R. BENTON, London, England. Filed May 22, 1903. Serial No. 158,306. (No model.)**

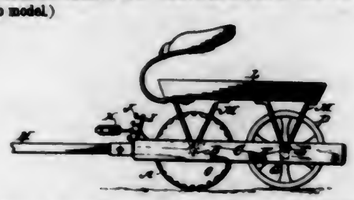


*Claim.*—1. A night light or lamp comprising a receptacle for petroleum-absorbing material, said receptacle made in two parts, the upper part provided with tongues at its lower circumference and the lower part provided with holes corresponding in width with the tongues and of such length as to form ports for the admission of petroleum to the receptacle when the two parts are united by clenching the tongues in said holes, and an asbestos wick which passes out through the top of the receptacle while its lower end is surrounded by absorbent material, substantially as set forth.

2. A night light or lamp comprising a receptacle for petroleum-absorbing material, said receptacle made in two parts, the upper part containing asbestos wool and provided with tongues at its lower circumference, and the lower part containing salt and provided with holes corresponding in width to the width of the tongues, but of such length as to form ports for the admission of petroleum to the receptacle where the two parts are united by clenching the tongues into said holes, an asbestos wick which passes out through its top while the lower end of the wick is surrounded by the asbestos wool, and a hole for admitting air to the space above the salt, substantially as set forth.

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**753,953. COMBINED PULVERIZER AND ROLLER. MALCOLM G. CAMERON, Thomas, Ala. Filed June 24, 1903. Serial No. 162,334. (No model.)**



*Claim.*—1. As an article of manufacture, a frame, crusher-rolls journaled therein, a smooth roll mounted in said frame, a weight-box mounted on the journals of said rolls, and means to utilize the draft strain to increase the pressure on said crusher-rolls without affecting the pressure on said smooth roll.

2. In an implement of the character described, a frame, pulverizing and smooth rolls journaled therein, a weight-box mounted on the journals of said rolls, and means to increase the pressure on one of said rolls without affecting the pressure on the other.

3. In combination, a frame, crusher-rolls journaled therein, a smooth roll journaled in said frame, a weight-box and a clevis cooperating therewith to vary the pressure upon one roll without affecting the other.

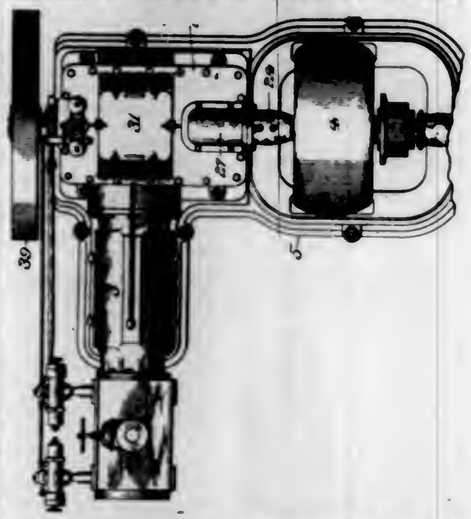
4. In combination, a frame, pulverizer and smooth rolls journaled in said frame, means to vary the pressure on said pulverizing-rolls without affecting said smooth roll and a weight-box mounted on the journals of said rolls.

5. In combination, a main frame, adjustable clevis draft devices mounted thereon, crushing-rolls and smooth rolls mounted therein, and a weight-box mounted on the axes of said rolls.

6. In combination, a main frame, pulverizer and smooth rolls journaled therein, a weight-box mounted on the journals of said rolls, and a seat secured to the said weight-box.

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**753,954. ELECTRIC MACHINE. NIELS A. CHRISTENSEN, Milwaukee, Wis. Filed May 8, 1901. Serial No. 59,257. (No model.)**




*Claim.*—1. In a machine of the class described, a casing forming an inclosed shaft-chamber, a shaft operating in said chamber, a gear on said shaft within the chamber, in combination with an electric machine placed laterally of and in the same horizontal plane as the chamber, said electric machine having an armature-shaft extending through a side wall thereof, a pinion on the armature-shaft meshing with said gear, and a bearing for the armature-shaft, which bearing is removably secured to the casing.

2. In a machine of the class described, a casing forming an inclosed shaft-chamber, a shaft operating therein, a gear arranged on the shaft and located within the chamber, in combination with an electric machine placed at one side of the chamber with its armature-shaft extending through a side wall thereof, a pinion on the armature-shaft also located within the chamber and meshing with said gear, a top cover for said casing which cover is cut away adjacent said pinion, a closure for said cut-away portion and removably secured to such cover, and an armature-shaft bearing removably secured to said casing and to said closure.

3. In a machine of the class described, a casing forming an inclosed chamber, a shaft therein, a gear on the shaft, in combination with an electric machine arranged at the side of the chamber with its armature-shaft extending therein, a pinion on the armature-shaft and meshing with the gear, the top of the casing having an opening above the pinion, a cover secured to the casing and covering said opening and a bearing for the armature-shaft, which bearing rests in the sides of the casing and is secured to the casing and to said cover.

4. In a machine of the class described the combination of an inclosed crank-chamber, a crank-shaft operating therein, an electric machine located at one side of the chamber with the armature-shaft extending therein through a side wall, direct connections between said crank-shaft and armature-shaft, a cylinder having a piston connected to the crank-shaft and a common base for said cylinder, chamber and electric machine.



5. In a machine of the class described, the combination of a casing forming a crank-chamber having a crank-well 12, a crank operating in such chamber, a base or bed plate supporting the casing and having an opening through which the well extends and means for operating the crank-shaft.

6. In a machine of the class described, the combination of a crank-chamber in which a crank works and having a crank-well for oil and also a communicating main-gear oil-well, a main gear arranged on the shaft within the chamber and dipping into its oil-well, a pinion meshing with such gear and an electric machine on whose armature-shaft the pinion is mounted, said electric machine being arranged laterally of and in the same horizontal plane as the crank-chamber.

7. In a machine of the class described, the combination of a crank-chamber, a crank-shaft operating therein, said chamber having an oil well or pit in which the crank dips and also an auxiliary oil-well, means of communication between said wells, a gear arranged on such shaft and dipping into the oil in the auxiliary well, a pinion meshing with such gear and an armature-shaft of an electric machine on which shaft the pinion is secured, said electric machine being arranged laterally of and in the same horizontal plane as the crank-chamber.

8. In a machine of the class described the combination of a crank-chamber having shelves 13 and 14 forming supports for the crank-shaft bearings and dividing the chamber into an oil-well for the crank and an oil-well for a gear, an oil-passage between said wells, a crank-shaft in said chamber, a gear arranged on said shaft and working in its oil-well, a pinion meshing with such gear and an armature-shaft of an electric machine on which shaft the pinion is secured, said electric machine being arranged laterally of and in the same horizontal plane as the crank-chamber.

9. In a machine of the class described, the combination of an electric machine, a cylinder with its piston, direct connections between said parts, all arranged side by side, and a common base on which said mechanisms are mounted, said electric machine being arranged laterally of and in the same horizontal plane as the cylinder.

10. In a machine of the class described the combination of a casing forming a chamber having a shaft operating therein, a removable top plate on said casing and a door in said top plate removable independently of such plate for the inspection of the parts within the casing.

11. In a machine of the class described, the combination of a casing forming a crank-shaft chamber, a crank-shaft therein, a gear on such shaft, an electric machine arranged at the side of such casing and having its armature-shaft extending therein, a pinion meshing with said gear and secured to the crank-shaft, a top plate 26 arranged on the casing and having an opening over the crank and a second opening over the pinion and a cover 31 for the crank-opening and a cover 27 for the pinion-opening.

12. In a machine of the class described, the combination of a casing forming a chamber, a crank-shaft therein and extending through one side of the casing, said side having a slotted opening from the top and a removable cover secured to the casing over said opening and having an opening for the shaft to pass through.

13. In a direct-connected electric machine, the combination of an electric machine having an armature-shaft provided with a pinion, an inclosed chamber at one side of such machine, into which chamber said armature-shaft and its pinion extends, a shaft in said chamber, a gear on said shaft for driving, said pinion, said electric machine being arranged in the same horizontal plane as said chamber, said chamber having a top opening above the pinion and an arched cover secured to the chamber over said opening and removable without disturbing the parts in said chamber.

14. In a direct-connected electric machine, the combination of an electric machine having an armature-shaft provided with a pinion, an inclosed chamber located at one side of said machine into which chamber said armature-shaft and its pinion extends, said electric machine being arranged in the same horizontal plane as said chamber, a shaft working in said chamber, a gear on said shaft for driving said pinion, said chamber having an oil-well into which the gear dips and also having a top opening above the gear and an arched removable cover removably secured to said casing for closing such opening.

15. In a machine of the class described, the casing 2 having an oil-well 12, an auxiliary oil-well 18, a crank-shaft 17 with a crank and rod dipping in the well 12, a main gear 20, on shaft 17 and dipping into oil-well 18, in combination with an electric machine arranged by the side of said casing and having an armature-shaft 22 extending into casing 2 and provided with a pinion 21 meshing with gear 20.

16. In a machine of the class described, a casing having shelves 13 and 14 with an intermediate oil-well 12 and side adjacent well 18, a crank-shaft 17 in said casing and having a crank dipping in well 12, a gear 20 on the crank-shaft and dipping into well 18, a communicating oil-passage 19 in combination with an electric machine arranged at one side of the casing and adjacent thereto, the armature-shaft of which machine is extended into the said casing and a pinion 21 on the armature-shaft within the casing and meshing with gear 20.

17. In a machine of the class described, a casing having crank-shaft bearings, a crank-shaft journaled in said bearings, a gear on said shaft, and inclosed within the casing, in combination with an electric machine having an armature-shaft 22 extending into the casing, a pinion 21 on the end of the shaft within the casing and meshing with gear 20, a top plate 26 for the casing having an opening above the pinion, an arched cover 27 covering such opening, and armature-shaft bearings 24 fastened to the casing and to the said cover 27.

18. In a machine of the class described, the combination of a casing forming an inclosed chamber, a shaft operating therein, a gear-wheel arranged within the chamber and driven by said shaft, an electric machine arranged at one side of said casing but in proximity thereto, such machine having an armature-shaft extending through a side wall of the casing and into the chamber, a pinion mounted on said armature-shaft and within the casing, said pinion meshing with said gear, and means in said chamber for automatically lubricating the moving parts, said pinion and gear together with its shaft being all arranged and concealed within the casing.

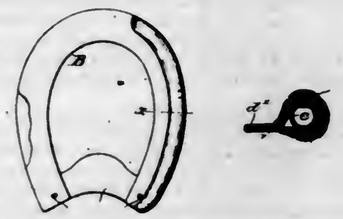
19. In a machine of the class described the combination of a single casing forming an inclosed crank-chamber having a crank-shaft operating therein, a gear-wheel also located and operating within the said chamber and secured on such shaft, an electric machine located at one side of and adjacent to said crank-chamber in the same horizontal plane as the latter and having an armature-shaft extending therein, and a pinion secured to such armature-shaft at a point within the crank-chamber and meshing with said gear-wheel.

20. In a machine of the class described the combination of a single casing forming an inclosed chamber, a crank-shaft operating therein, a gear-wheel also therein and secured to such shaft, an electric machine placed at one side of said chamber in the same horizontal plane and having an armature-shaft extending therein, a pinion secured on the inner inclosed end of such armature-shaft and, driven by said gear-wheel, and a bearing secured in a side wall of the crank-chamber, in which bearing this extended end of the armature-shaft is journaled.

21. In a machine of the class described, the combination of an electric machine, having an armature-shaft provided with a pinion, a single casing forming a crank-chamber having a crank-shaft operating therein, a cylinder and guide-frame secured to said casing and projecting laterally therefrom, a piston and connections with the crank-shaft, a gear arranged on the crank-shaft and meshing with the pinion, the electric machine being arranged at one side of but in close proximity to said casing and having positive connections with the crank-shaft by said gear and pinion both arranged and concealed within said casing.

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**753,955. HOOF-PAD. GEORGE H. CLARK, Boston, Mass., assignor of one-half to Ellery C. Wright, Campello, Mass. Filed Nov. 18, 1901. Serial No. 82,615. (No model.)**



*Claim.*—1. A hoof-pad having a flange to be interposed between the shoe and the hoof, and provided with a yielding hollow fender projecting above the plane of and from one side of the pad to fit the exterior of the hoof.

2. A hoof-pad to be interposed between a shoe and hoof, said pad having a fender composed of a tube secured to the pad and wrapped in a ply having its outer edges cut to present fingers.

3. A hoof-pad to be interposed between a shoe and hoof, said pad having a fender composed of a tube secured to the pad and wrapped in a ply having its outer edges cut to present fingers, said parts being vulcanized.

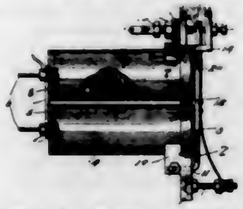
4. A hoof-pad to be interposed between a shoe and hoof, said pad comprising a tube wrapped between a plurality of plies having their edges cut to present fingers, said parts being vulcanized together.

5. A hoof-pad having a flange to be interposed between the shoe and hoof, and provided with a yielding hollow fender to fit the exterior of the hoof, the flange of the pad being connected by a portion to constitute a frog-pad to sustain the frog of the hoof.

6. A hoof-pad having a flange to be interposed between the shoe and the hoof and provided with a yielding hollow fender to fit the exterior of the hoof, said fender being separate from and secured to the flange.

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753,956. **RELAY.** HENRY P. CLAUSEN, Chicago, Ill., assignor to American Electric Telephone Company, a Corporation of New Jersey. Filed Apr. 1, 1901. Serial No. 53,766. (No model.)



*Claim.*—1. In a relay, the combination of an electromagnet, an armature for said magnet, a spring adapted and applied for holding said armature normally open, a portion of said spring being also adapted to serve as a flexible circuit-closing contact, and a stationary contact adapted and arranged to engage and bend said spring-contact away from the armature when the latter moves toward the magnet.

2. In a relay, the combination of an electromagnet, an armature normally away from said magnet, a flat spring having its middle portion secured to the back of said armature, a frame or body upon which said magnet and said armature are mounted, a binding-post for connecting one end of said spring with the said frame or body, the other end portion of said spring serving as a flexible circuit-closing contact, and a stationary contact arranged to engage and bend said spring-contact away from the armature when the latter moves toward the magnet.

3. In a relay, the combination of an electromagnet, an armature for said magnet, a flat spring having its middle portion secured to the back of said armature, a frame or body serving as a support for said magnet and said armature, a binding-post connecting one end of said spring with said frame or body, the other end portion of said spring being adapted to serve as a flexible circuit-closing contact, a stop normally engaging said spring-contact and limiting the outward movement of said armature, and a stationary circuit closing contact arranged to engage and bend said spring-contact away from the armature when the latter moves toward the magnet.

4. In a relay, the combination of an electromagnet, an armature for said magnet, a spring-contact secured to said armature and serving as a flexible circuit-closing contact, and a stationary circuit-closing contact having one portion adapted to engage and bend said spring-contact away from the armature when the latter moves toward the magnet, and said stationary contact having another portion serving as a stop to prevent the armature from touching the magnet.

5. In a relay, the combination of an electromagnet, a frame or body upon which said magnet is mounted, an armature pivotally supported on said frame or body, a flat spring secured to the back of said armature and serving as a flexible circuit-closing contact, an adjustable screw mounted upon said frame or body, the end portion of said screw being provided with a reduced end adapted to engage and bend said spring-contact away from the armature when the latter moves toward the magnet, and said screw also being provided with a shoulder which serves as a stop for preventing the armature from touching the magnet, and an adjustable screw for limiting the outward movement of said armature.

6. In a relay, the combination of an electromagnet, an armature pivoted at its lower end, a frame or body upon which said magnet and armature are mounted, two oppositely-arranged uprights rising from the upper portion of said frame or body, a flexible spring-contact mounted upon said armature, a screw-contact extending through one of said uprights and arranged to engage said spring-contact, a screw-stop extending through the other of said uprights, and a dust-proof cap adapted to slide down over said uprights and inclose said contacts.

7. In the relay, the combination of a pair of electromagnets having tubular cores, an electromagnet arranged within each tubular core, a bar serving as a common connection between the cores of both the inner and the outer magnets, an armature common to all of said magnets, said armature having a flexible spring-contact, and a stationary contact adapted to engage and bend said spring-contact away from said armature when the latter moves toward the said magnets.

8. In a relay, the combination of tubular electromagnets, solid electromagnets arranged within said tubular electromagnets, a connecting-bar common to the core of both the tubular and solid magnets, an armature common to all of said magnets, a stop for limiting the outward movement of said armature, a circuit-closing contact mounted upon said armature, a frame or body upon which said magnets and said armature are mounted, a stationary contact mounted upon said frame or body, said stationary contact being adapted to engage the contact on the armature, and a spring for holding said armature normally away from said magnets.

9. In a relay, the combination of tubular electromagnets, solid electromagnets arranged concentrically within said tubular magnets, a bar arranged to connect both the tubular and solid cores of said magnets, an armature common to all of said magnets, a yielding circuit-closing contact mounted upon said armature, a frame or body upon which the magnets and the armature are mounted, an adjustable screw-contact extending through a portion of said frame or body, said adjustable contact being arranged to engage and oppose the forward movement of said yielding contact, a stop for preventing the armature from touching the magnets, a stop for limiting the outward movement of said armature, and a dust-proof covering applied and arranged to inclose the said contacts and stops.

10. In a relay, the combination of a pair of tubular cores, coils on said tubular cores, solid cores within said tubular cores, coils on said solid cores, a connecting-bar common to both the tubular and solid cores, an armature common to all of said cores, a flat spring having its middle portion secured to the back of said armature, a frame or body to which the tubular cores are secured, said armature having its lower end pivotally connected with same frame or body, binding-post connecting one end of said spring with said frame or body, the other end of said spring being adapted to serve as a flexible circuit-closing contact, an adjustable circuit-closing contact extending through a portion of said frame or body, said adjustable circuit-closing contact being adapted to engage and bend said flexible contact away from the armature when the latter moves toward the magnet-cores, a stop for preventing said armature from touching said cores, an adjustable stop or screw-contact for limiting the outward movement of said armature, and a dust-proof covering for inclosing said stops and contacts.

11. In a relay, the combination of a suitable support, a pair of electromagnets mounted upon the said support, a vibratory armature pivoted at its lower end, a pair of contact-screws mounted upon said support and arranged to limit the swing of said armature, a flat contact-spring secured to the back of the armature and having its upper end arranged to engage the said contact-screws, and a binding-post or the like secured to the lower portion of said support, and adapted to clamp and hold the lower end portion of said spring-contact, substantially as described.

12. In a relay, the combination with an operating-magnet, an armature therefor carrying a lever and having an aperture in its end, and a spring strip or contact secured to said armature and covering said aperture, a contact-stud having a reduced portion adapted to enter said aperture and raise said spring when the lever strikes the enlarged portion of the stud which is so adjusted that the armature cannot stick to the magnet, whereby when the magnet is de-energized the lever will be retracted and strike the strip to free it from the reduced portion of the contact-stud.

13. In a relay, a magnet, a support therefor at one end, stationary contacts at one end of said support, an armature for the magnet pivoted in said support and arranged in operative relation to said contacts, a spring-contact secured to said armature and adapted to cooperate with the stationary contacts, said spring being prolonged beyond said armature, and means to secure said prolonged end to said support and to adjust the tension of the same so as to tend to retract or close said armature.

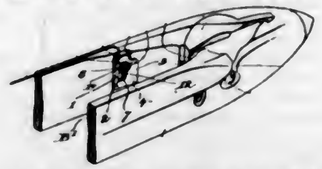
14. In a relay, the combination of two standards, contacts between and supported by said standards, an armature-lever also between said standards and cooperating with said contacts, and a U-shaped dust-proof cover adapted to slide down over and fit said standards.

15. In a relay, the combination of a magnet, a brass frame secured to one end of said magnet, an armature pivotally mounted on said frame, contacts associated with the upper end of said armature, and a dust-excluding cap removably mounted upon said frame and adapted to inclose said contacts.



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753,957. **LOOM-SHUTTLE.** HENRY CÔTÉ, Woonsocket, R. I., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 10, 1903. Serial No. 184,530. (No model.)



*Claim.*—1. In a loom-shuttle having a delivery-eye and adapted to contain a filling-carrier, a thread-parter located on the shuttle-wall in front and at one side of the tip of the filling-carrier, a guard to normally prevent engagement of the filling-thread by said device, and a controller for and to retract the guard and render the thread-parter operative upon the occurrence of a float in the warp.

2. A loom-shuttle adapted to contain a filling-carrier and having a delivery-eye, an upturned thread-parter on the side wall of the shuttle and between the eye and the tip of the filling-carrier, a guard to normally shield or hood the thread-parter, and a yielding support for the guard extending above the shuttle and adapted to be depressed by a float, to retract the guard, the whipping of the filling-thread causing its engagement and breakage by the thread-parter when the guard is retracted.

3. A loom-shuttle adapted to contain a filling-carrier and having a delivery-eye, an upturned prong mounted on the side wall of the shuttle near the tip of the filling-carrier, a guard to normally shield or hood it and prevent catching of the filling-thread thereby, and a yielding support for the guard normally extending above the top of the shuttle and adapted to be depressed upon the occurrence of a warp-float, to retract the guard and render the prong operative.

4. A loom-shuttle adapted to contain a filling-carrier and provided with an automatically self-threading device, a thread-parter mounted on the shuttle side wall slightly in advance of the tip of the filling-carrier, a resilient float-detector carried by the shuttle, and a guard controlled by the detector and normally retained thereby in position to prevent engagement of the filling-thread by the thread-parter, detection of a float causing the guard to be retracted and thereby rendering said thread-parter operative.

5. A loom-shuttle adapted to contain a filling-carrier and having a delivery-eye, a slotted plate secured to the side wall of the shuttle beyond the tip of the filling-carrier and having an upturned prong, a resilient float-detector mounted on the shuttle and having its forward, free end downturned to pass between the plate and the side-wall of the shuttle, and a guard carried by the downturned end of the detector and projecting inward through the slot in the plate, to normally shield the point of the prong and prevent engagement of the filling-thread thereby.

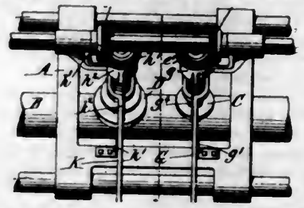
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753,958. **MACHINE FOR CLEANING PRINTERS' ROLLERS.** SAMUEL CRUMP, Poughkeepsie, N. Y. Filed June 25, 1903. Serial No. 163,079. (No model.)

*Claim.*—1. In a machine for cleaning printers' rollers, the combination of a rotary disk having in its working face one or more cleaner-blades arranged at right angles to the axis of rotation, and means for producing a relative movement in the longitudinal direction of the roller between the latter and the cleaner-disk, substantially as set forth.

2. In a machine for cleaning printers' rollers, the combination of a traveling carriage, and a rotary disk mounted on the same and having its flat working face formed by cleaner-blades arranged at right angles to the axis of rotation, substantially as set forth.

3. In a machine for cleaning printers' rollers, the combination of a rotary cleaner-disk having its flat working face formed by one or more cleaner-blades arranged at right angles to the axis of rotation, and a rotary grainer-disk having its flat working face provided with projecting grainer-points, substantially as set forth.



4. In a machine for cleaning printers' rollers, the combination of a traveling carriage, a rotary disk mounted in the same and having its flat working face formed by cleaner-blades arranged at right angles to the axis of rotation, and a rotary grainer-disk also mounted in said carriage and having its flat working face provided with projecting grainer-points, substantially as set forth.

5. The combination of a rotary cleaner-disk having its flat working face formed by projecting needles, a stripper-plate having perforations through which the needles extend, and means for moving said disk and plate relatively to each other, substantially as set forth.

6. The combination of a rotary cleaner-disk having a recess in its face, needles secured within said recess and projecting beyond the same, a perforated stripper-plate arranged in said recess, and means for moving said plate and disk relatively to each other, substantially as set forth.

7. The combination of a rotary cleaner-disk, a shaft to which the same is secured, needles secured to the disk and forming the flat working face thereof, a stripper-plate through which said needles extend, a guide on said plate extending through said disk, and a stop device whereby the movement of said plate in the direction of said shaft is arrested, substantially as set forth.

8. The combination of a rotary cleaner-disk, a shaft to which the same is secured, needles secured to the disk and forming the flat working face thereof, a stripper-plate through which said needles extend, a guide on said plate extending through said disk, a stop-collar loosely mounted on said shaft, and a fixed stop which arrests the movement of said collar and through the same the movement of the stripper-plate, substantially as set forth.

9. The combination of a rotary cleaner-disk having its flat working face formed by projecting needles, a perforated stripper-plate provided on its back with guides which extend through said disk, springs by which the stripper-plate is yieldingly held against said disk, a movable stop-collar arranged above said guides, and a fixed stop which limits the movement of said collar, substantially as set forth.

10. The combination of a traveling carriage, a cleaner-disk, a rotary shaft to which said disk is secured, a bearing on said carriage in which said shaft is slidably journaled, a lifting-lever pivoted to said carriage and connected with said shaft, and means for supporting said lever in its elevated position, substantially as set forth.

11. The combination of a traveling carriage, a grainer-disk having its flat working face formed by projecting needles, a rotary shaft to which said shaft is secured, a bearing on said carriage in which said shaft is slidably journaled, a stripper-plate movable with reference to said needles, a stop on said carriage by which the movement of said stripper-plate is arrested, and a lifting-lever pivoted to said carriage and connected with said shaft, substantially as set forth.

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753,959. **METHOD OF MAKING PRINTERS' ROLLERS.** SAMUEL CRUMP, Poughkeepsie, N. Y. Filed June 27, 1903. Serial No. 163,378. (No model.)



*Claim.*—1. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which consists in fitting the leather cover in a mold by internal pressure, placing the core in the mold, filling the space between the core and cover with the liquid composition, and allowing the composition to set, substantially as set forth.

2. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which con-

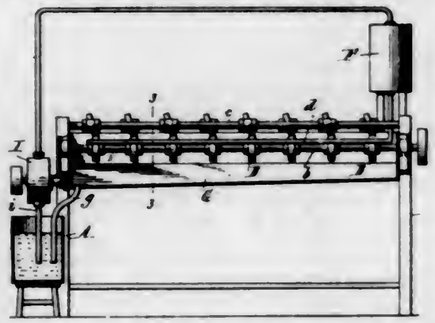
sists in fitting the leather cover in a mold, placing the core in the mold, filling the space between the core and cover with the liquid composition, compacting the composition by pressure, and allowing the composition to set, substantially as set forth.

3. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which consists in fitting the leather cover in a mold, placing the core in the mold, exhausting the air from the mold, filling the space between the core and cover with the liquid composition, and allowing the composition to set, substantially as set forth.

4. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which consists in fitting the leather cover in a mold, placing the core in the mold, exhausting the air from the mold, filling the space between the core and cover with the liquid composition, compacting the composition by pressure, and allowing the composition to set, substantially as set forth.

## 758,960. MACHINE FOR CLEANING PRINTERS' ROLLERS.

SAMUEL CRUMP, Poughkeepsie, N. Y. Filed July 3, 1903. Serial No. 164,186. (No model.)



*Claim.*—1. In a machine for cleaning printers' rollers, the combination of rollers adapted to convey the cleaning liquid in a film to the printers' rollers under treatment, and a delivery-pipe for the cleaning liquid having nozzles which discharge the liquid directly against the faces of said rollers, substantially as set forth.

2. In a machine for cleaning printers' rollers, the combination of cleaning-rollers adapted to act upon the printer's roller to be cleaned, elevating-rollers which run in face-to-face contact with said cleaning-rollers, nozzles which discharge the cleaning liquid directly against the faces of said elevating-rollers, and means for supplying the cleaning liquid to said nozzles, substantially as set forth.

3. In a machine for cleaning printers' rollers, the combination of rollers adapted to convey the cleaning liquid in a film to the printers' roller under treatment, a delivery-pipe for the cleaning liquid having nozzles which discharge the liquid directly against the faces of said rollers, a receptacle below said rollers for catching the surplus liquid, and a circulating-pump which receives the liquid from said receptacle and returns the liquid to the delivery-pipe, substantially as set forth.

4. In a machine for cleaning printers' rollers, the combination of rollers adapted to convey the cleaning liquid in a film to the printers' rollers under treatment, a delivery-pipe for the cleaning liquid having nozzles which discharge the liquid directly against the faces of said rollers, and an elevated reservoir from which the liquid is supplied to said delivery-pipe, substantially as set forth.

5. In a machine for cleaning printers' rollers, the combination of rollers adapted to convey the cleaning liquid in a film to the printer's roller under treatment, a delivery-pipe for the cleaning liquid having nozzles which discharge the liquid directly against the faces of said rollers, a receptacle below said rollers for catching the surplus liquid, an elevated reservoir from which the liquid is supplied to said delivery-pipe, and a circulating-pump which receives the liquid from said receptacle and returns the liquid to said elevated reservoir, substantially as set forth.

## 753,961. COIN-DETECTOR FOR COIN-ACTUATED DEVICES.

BETHEL M. DAVIS, Chicago, Ill., assignor, by mesne assignments, to Charles F. Travis, Owosso, Mich. Filed Oct. 13, 1901. Serial No. 78,432. (No model.)

*Claim.*—1. In a coin-detector the combination of a casing having a discharge-slot, and a U-shaped coin-receiving recess open through both sides and the edge of said casing, and a coin-receiver in said casing for moving a coin from said receiving-recess to said discharge-slot, substantially as set forth.



2. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having a finger-recess, an intermediate ring having a finger-recess and a receiving coin-slot, and means for securing the parts together.

3. A coin-detector comprising a face-plate having a receiving coin-slot, and a discharging coin-slot, a back plate, an intermediate ring having a U-shaped rib, and a receiving coin-slot, and means for securing the parts together.

4. A coin-detector comprising a face-plate having a surrounding flange formed with corner-lugs, a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having corner-lugs, and a finger-recess, an intermediate ring having corner-lugs, a finger-recess, and a receiving coin-slot and means for securing the parts together by their corners.

5. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, a discharging coin-slot, and a magnet recessed in the body of the face-plate, a back plate having a finger-recess, an intermediate ring having a finger-recess and a receiving coin-slot, and means for securing the parts together.

6. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having a finger-recess, an intermediate ring having a finger-recess, a receiving coin-slot, and integral intermediate web, and means for securing the parts together.

7. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having a finger-recess, an intermediate ring having a finger-recess, a receiving coin-slot, and an intermediate web, a disk having a coin-recess adapted to register with the finger-recesses and with the receiving coin-slots, and located within the intermediate ring between the face plate and the integral web of the intermediate ring, and means for operating the disk.

8. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having a finger-recess, an intermediate ring having a finger-recess, a receiving coin-slot and an intermediate web, a disk having a coin-recess, and located within the intermediate ring between the face-plate and the integral web of the intermediate ring and a knob journaled in the face-plate and secured to the disk whereby the latter is operated.

9. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having a finger-recess, an intermediate ring having a finger-recess, a receiving coin-slot and an intermediate web, a disk having coin-recess, and a stop-lug adapted to contact with the web for limiting the movement of the disk and means for operating the disk.

10. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot and a discharging coin-slot, a back plate having a finger-recess and a pin, an intermediate ring having a finger-recess, a receiving coin-slot, an intermediate web and a rib, a disk having a coin-recess, and a stop-lug adapted to contact with the web for limiting the movement of the disk, a spring coiled around the pin on the back plate and having its free end bearing against the stop-lug for returning the disk, and means for operating the disk, the stop-lug contacting with the rib to limit its advance movement.

11. A coin-detector comprising a face-plate having a receiving coin-slot a discharging coin-slot, and a channel, a back plate, an intermediate ring having a receiving coin-slot, a disk having a coin-recess, and a peripheral notch, a spring-catch located in the channel and having a lug adapted to project into the path of the notch, and means for operating the disk.

12. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot a discharging coin-slot, and channels, a back plate having a finger-recess, an intermediate ring having a finger-recess and receiving coin-slot, a disk having a coin-recess, and a plurality of peripheral notches, spring-catches located in the channels and having lugs adapted to project into the path of the peripheral notches and means for operating the disk.

13. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, a discharging coin-slot, and a channel, a back plate having a finger-recess, an intermediate ring having a finger-recess and a receiving coin-slot, a disk having a coin-recess, and a peripheral beveled notch, a spring-catch located in the channel and having a lug adapted to project into the path of the notch, and means for operating the disk.

14. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, a discharging coin-slot and a channel, a back plate having a finger-recess, an intermediate ring having a finger-recess and a receiving coin-slot, a disk having a coin-recess and a peripheral notch, a catch having an arm formed with a bent end and pivoted in the channel, and a lug adapted to project into the path of the notch, a spring secured to the bent end of the arm, and means for operating the disk.

15. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, a discharging coin-slot and a channel, a back plate having a finger-recess, an intermediate ring having a finger-recess and a receiving coin-slot, a disk having a coin-recess, a spring-catch having an arm formed with a sharpened lug adapted to project into the path of the coin-recess of the disk, and means for operating the disk.

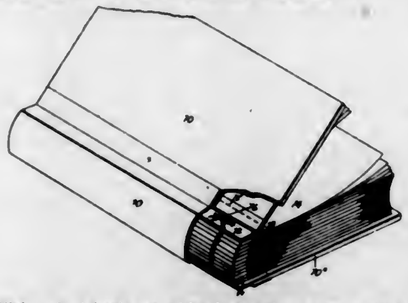
16. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, a discharging coin-slot and a channel, a back plate having a finger-recess, an intermediate ring having a finger-recess and a receiving coin-slot, a disk having a coin-recess formed with a bevel, a spring-catch having an arm formed with a sharpened lug adapted to project in the path of the bevel of the coin-recess of the disk, and means for operating the disk.

17. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, a discharging coin-slot and channels, a back plate having a finger-recess, an intermediate ring having a finger-recess and receiving coin-slot, a disk having a coin-recess and a peripheral notch, spring-catches each having an arm formed with a sharpened lug adapted to project into the path of the coin-recess of the disk and means for operating the disk.

18. A coin-detector comprising a face-plate having a finger-recess, a receiving coin-slot, and a discharging coin-slot, a back plate having a finger-recess, an intermediate ring having a finger-recess, a receiving coin-slot and integral intermediate web, a disk having a coin-recess and circular depression, a screw working through the web into the circular depression for taking up wear, and means for operating the disk.

## 753,962. BOOKBINDING.

GEORGE H. DAY, Des Moines, Iowa. Filed June 1, 1903. Serial No. 159,428. (No model.)



*Claim.*—1. A book, comprising leaf-sections, strips at the back of each of said sections, cloth pasted over said strips and on the outside of each section, binding-stitches passing through the cloth on each side of each leaf-section and through each leaf in said sections, means for holding the strips together in position relative to each other, and a cover, substantially as and for the purposes stated.

2. A book, comprising in combination leaf-sections, strips extending longitudinally of the leaf-sections and at the rear of each of them, cloth or similar substance pasted over each of said strips and outside of each of said leaf-sections, binding-stitches extending through that portion of the cloth which is outside of the leaf-sections and through each leaf in the section, substantially as and for the purposes stated.

3. In a device of the class described, the combination of a strip, a cloth extending around the strip, a section of a book in front of said strip, comprising a number of leaves, a flexible material extending over said strip and binding-stitches extending through the flexible material and each leaf of the leaf-section, said stitches extending throughout the entire length of the leaf-section, substantially as and for the purposes stated.



## 753,963. CIGARETTE.

WILLIAM C. DOSCHER, New York, N. Y. Filed Dec. 10, 1902. Serial No. 134,599. (No model.)



*Claim.*—1. A cigarette containing a mouthpiece formed of yielding and elastic cork having a substantially straight longitudinal channel cut therein from the outer surface inward and a suitable wrapper for the mouthpiece and combustible portion of the cigarette forming a draft-passage, the construction being such that the mouthpiece is resilient and elastic to the touch by reason of the material and of the channel cut therein so that it may be compressed and will expand to hold it securely in place in the wrapper.

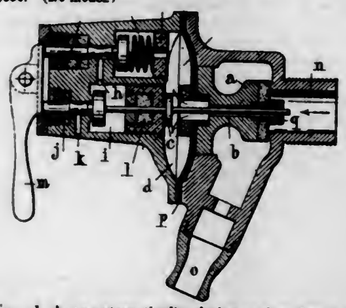
2. A cigarette comprising a combustible portion, a mouthpiece formed of elastic and yielding cork-like material having a plurality of longitudinal channels cut therein and extending from the outer surface inwardly and a suitable wrapper for the cigarette and mouthpiece whereby a series of draft-channels is provided and the mouthpiece is readily compressible by reason of the material and of the channels cut therein so that when compressed it will expand to fit tightly in the wrapper.

3. A cigarette comprising a main combustible portion, a mouthpiece formed of yielding resilient or elastic cork-like material having a plurality of zigzag longitudinal channels cut therein from the outer surface inward and a wrapper surrounding the mouthpiece and the cigarette whereby the mouthpiece is provided with draft-passages and is yielding and resilient to the touch by reason of the material and of the channels cut therein so that it may be compressed and will expand to fill the wrapper.

4. A cigarette-mouthpiece formed of yielding and resilient cork-like material having longitudinal channels cut therein from the outer surface of one side only toward the center, the said mouthpiece being oval in cross-section and elastic and compressible along its axis for the purposes specified by reason of the material and of the channels cut therein.

## 753,964. AUTOMATICALLY-CLOSING COCK OR FAUCET.

CHARLES DOUENNE, Lyons, France. Filed Oct. 5, 1903. Serial No. 175,839. (No model.)




*Claim.*—1. In an automatically-closing cock or faucet, the combination with a supply-pipe and a discharge-nozzle, of a longitudinally-perforated supply-valve, a spindle passing through said valve, an expansible counter-pressure chamber in communication with said supply-valve, means of communication between said counter-pressure chamber and the atmosphere, valves adapted to open and close said means of communication, one of said valves being closed by spring and liquid pressure and the other by the aforesaid valve-spindle, external means for opening said valves and means for regulating the discharge, substantially as described.

2. In an automatically-closing cock or faucet, the combination with a supply-pipe and a discharge-nozzle of a longitudinally-perforated supply-valve, a spindle passing through said valve, an expansible counter-pressure chamber in communication with said supply-valve, means of communication between said counter-pressure chamber and the atmosphere, valves adapted to open and close said means of communication, one of said valves being closed by spring and liquid pressure and the other by the aforesaid spindle, external means for opening said valves means on said spindle for forcing the

supply-valve against its seat, and means for regulating the flow of liquid to said back-pressure chamber, substantially as described.

3. In an automatically-closing cock or faucet, the combination with a supply-pipe and a discharge-nozzle of a longitudinally-perforated supply-valve, a spindle passing through said valve, a counter-pressure chamber in communication with said supply-valve, a flexible membrane connected to said valve and forming a wall of said chamber, means of communication between said counter-pressure chamber and the atmosphere, valves adapted to open and close said means of communication, one of said valves being closed by spring and liquid pressure and the other by the aforesaid spindle, an exterior lever adapted to open said valves, a disk on said spindle for forcing the supply-valve against its seat and a screw-threaded plug for regulating the flow of liquid to said back-pressure chamber for the purpose set forth.

753,965. STAMP-AFFIXER AND ENVELOP-SEALER. Ernst A. Ehnerling, New York, N. Y. Filed Jan. 12, 1903. Serial No. 138,620. (No model.)



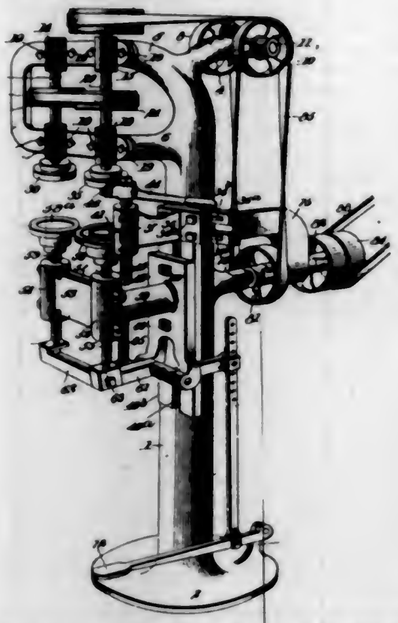
*Claim.*—1. A device of the class described comprising a head portion having an internal chamber open at the bottom, parallel arms connected with said head portion and provided with forwardly-directed extensions, a roller mounted between said arms and movable adjacent to said opening, another roller mounted between the extensions of said arms and adapted to operate in connection with the first-named roller, and a curved spring-arm secured to said head at the front thereof and provided with an inwardly-directed member adjacent to the bottom front portion of the first-named roller and a segmentally-curved end portion which passes partially around the last-named roller, said last-named roller being provided with spring-bearings by which it is normally separated from the first-named roller, substantially as shown and described.

2. A device of the class described comprising a head portion having an internal chamber open at the bottom, parallel arms connected with said head portion and provided with forwardly-directed extensions, a roller mounted between said arms and movable adjacent to said opening another roller mounted between the extensions of said arms and adapted to operate in connection with the first-named roller, and a curved spring-arm secured to said head at the front thereof and provided with an inwardly-directed member adjacent to the bottom front portion of the first-named roller and a segmentally-curved end portion which passes partially around the last-named roller, substantially as shown and described.

753,966. MACHINE FOR MANUFACTURING CANS. Daniel L. Eustice, Galena, Ill. Filed Mar. 27, 1902. Serial No. 100,157. (No model.)

*Claim.*—1. In a machine of the class described, an upright having arms at its upper end, a U-shaped frame secured to the arms and provided with journal-boxes, a pair of shafts mounted in the journal-boxes of the frame and each having plates on their lower ends, bead-forming rollers journaled in one of the plates to roll the top of the can, means on the upright adjacent the other plate, cooperating with the plate to bottom the can, vertically-movable supports for the can adjacent each of the upper plates, means formed in the supports to center the cans, and means for rotating both of the shafts synchronously.

2. In a machine of the class described, an upright frame having a pair of rotating shafts journaled therein and provided with plates on their lower ends, bead-forming rollers carried by one of said plates, means cooperating with the other plate for bottoming the cans, a plate vertically adjustable on the upright and having a lateral extension formed with bearing portions, a plate secured to the lateral extension and having bearing portions in matching relation with the first-mentioned bearing portions to form journal-boxes, longitudinally-movable rotary shafts mounted in the journal-boxes and provided with can-supporting plates, and a movable rest for said shafts carried by the adjustable plates and capable of operating upon both shafts simultaneously to bring the cans in engagement with the upper plates, substantially as specified.



3. In a machine of the class described, an upright frame having a longitudinally-grooved plate secured thereto, a second plate carrying bolts adapted to slide in the groove, an arm extending from said last-mentioned plate and having a lateral extension provided with semicircular bearing portions, a plate secured to said lateral extension and having semicircular bearing portions in matching relation with the first-mentioned bearing portions, longitudinally-movable shafts mounted in said bearings and having can-supporting plates on their upper ends, a lever pivoted to the adjustable plate and having rests to engage the ends of the shafts, and means operating on said lever for raising the can-supporting plates.

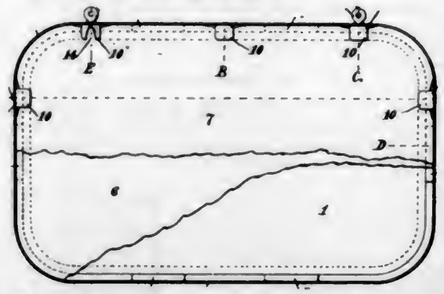
4. In a machine of the class described, an upright having arms 5 and 6, a U-shaped frame secured to said arms, an upper pair of shafts journaled in said U-shaped frame, plates on the end of each shaft for bottoming and rolling the top of the can, a pair of lower shafts provided with can-supporting plates movable relatively to the upper pair of shafts, grooves in the lower plates for centering the cans, and means between the arms of the U-shaped frame for synchronously rotating both pairs of shafts.

5. In a machine of the class described, an upright having arms at its upper end, a U-shaped frame secured to the ends of the arms, journal-boxes formed in the frame and arms, rotary shafts mounted in the journal-boxes and having plates on their lower ends, bead-forming rollers journaled in one of said plates, a laterally-adjustable arm mounted on the frame, a lever journaled in the arm and having grooved rollers adapted to cooperate with the other plate to bottom the can, vertically-adjustable journal-boxes mounted beneath the arms of the upright, shafts having can-supporting plates mounted in the journal-boxes and capable of vertical movement independently of the latter, and means for rotating the shafts simultaneously.

6. In a machine of the class described, an upright having arms, a U-shaped frame secured at its ends to said arms and provided with journal-boxes, a plurality of shafts journaled in said boxes and provided with plates for bottoming and rolling the tops of the cans, means between the arms of the U-shaped frame for rotating the shafts synchronously, combined with a plurality of can-supporting plates, and means for simultaneously operating on said plates to throw the cans into engagement with the first-mentioned plates.



753,967. MEANS FOR MOUNTING MIRRORS, PICTURES, &c., IN METALLIC FRAMES. John P. Eustis, Newton, Mass. Filed Jan. 4, 1904. Serial No. 187,653. (No model.)



*Claim.*—1. In a framed mirror or like article, the combination of a metal frame comprising face and edge flanges arranged substantially at a right angle to each other; a glass plate of less length and width than the distances between the opposing edge-flanges, placed in contact with the inner surface of the face-flange; a series of stay-blocks inserted between said edge-flange and the edge of said glass plate; a backing-plate of a size and shape to fit the inner contour of said edge-flange and covering the back of said glass plate, and having in its edge a series of notches or recesses; a series of clips each composed of two integral members having their inner surfaces at an angle to each other somewhat less than ninety degrees, said clips being arranged at intervals about and in contact with the inner surface of said edge-flange, with one member thereof resting on the outer surface of said backing-plate; and a corresponding series of clamping-screws each passing through said edge-flange and screwed into the other member thereof as and for the purposes described.

2. In a framed mirror or other similar article, the combination of a metal frame comprising face and edge flanges integral with and substantially at a right angle to each other; a glass plate of less area than the space inclosed by said edge-flange, arranged centrally within said space with its outer face in contact with the inner face of said face-flange; a series of stay-blocks inserted between said edge-flange and the edge of said glass plate; a glass-protecting sheet, and a backing-plate both cut to a size and shape to fit the space inclosed by said edge-flange, and each having a series of recesses in its edge; a series of clips each comprising two integral members at an angle to each other, less than ninety degrees arranged at intervals about, and with one member in contact with the inner surface of said edge-flange and the other member resting on the outer surface of said backing-plate; a corresponding series of clamping-screws each passing through a hole in said edge-flange and screwed into a threaded hole in said clip to clamp said clip to said edge-flange and press its inner end upon the backing-plate; and means for hanging said framed article.

3. In a mirror or like framed article, the combination of a metal frame comprising face and edge flanges integral with and substantially at a right angle to each other; a glass plate of less area than the space inclosed by said edge-flange arranged centrally within said inclosed space with its outer face in contact with the inner face of said face-flange; a series of stay-blocks inserted between said edge-flange and the edge of said glass plate at intervals around the entire inner perimeter of said edge-flange; a backing-plate fitted within the inner perimeter of said edge-flange, and having a series of notches or recesses cut in its edge at intervals around its entire perimeter; a suitable glass-protecting packing between said glass and the backing plate; a series of clips each having two integral members at an angle to each other of less than ninety degrees arranged at intervals around, and in contact with the inner side of said edge-flange and with the other member resting upon said backing-plate, a plurality of said clips having formed in the member thereof which rests upon said backing-plate, a V-shaped slot the edges of which are beveled; and a corresponding series of screws inserted through holes in said edge-flange and screwed into the members of said clips which are contiguous to the inner surface of said edge-flange, as and for the purposes set forth.

753,968. DEVICE FOR APPLYING LIQUIDS TO THE SCALP. Arthur J. Farmer, Detroit, Mich. Filed Oct. 16, 1903. Serial No. 177,247. (No model.)

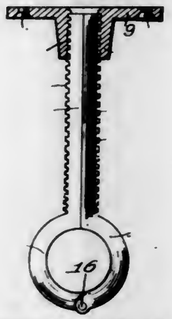


*Claim.*—1. In a toilet article of the class described, a comb having a tubular back and provided with discharge-orifices leading to the teeth, a collapsible bulb connected with the tubular back, and a drip-cup located between the discharge-orifices in the comb and the collapsible bulb, to protect the latter from moisture, substantially as described.

2. In a toilet article of the class described, a comb having a tubular back and provided with discharge-orifices leading to the teeth, a collapsible bulb connected with the tubular back, a handle provided with a guard to protect the bulb against accidental compression, and a drip-cup located between the handle and the comb to protect the former against the passage of the fluid preparation onto the same, substantially as described.

3. In a toilet article of the class described, a comb having a tubular back and provided with discharge-orifices $a'$ leading to the outside of the teeth, teeth formed with channels to receive the fluid discharged through the orifices $a'$, a removable cap $a^3$, a nozzle $B'$ connected with the tubular back, a collapsible bulb connected with the nozzle, a handle provided with a guard to protect the bulb from being accidentally compressed, and a drip-cup located between the discharge-orifices in the comb and the handle to protect the latter from moisture, substantially as described.

753,969. PIPE-HANGER. Thomas Fee, Brooklyn, N. Y. Filed Mar. 5, 1902. Serial No. 96,763. (No model.)



*Claim.*—1. In combination with a hollow sleeve formed with two series of oppositely-disposed transverse grooves, of a stem formed in two sections having their lower ends pivoted together and their upper ends freely movable with relation to each other, each stem having teeth on its periphery for engagement in the grooves of said sleeve, said sleeve retaining said upper ends of the stem-sections in a closed position, and against outward and downward movement.

2. In combination with a hollow sleeve formed with series of oppositely-disposed transverse grooves on its interior, of a stem formed in two sections, the lower ends of which are pivoted together, and the upper ends of which are freely movable with relation to each other, each stem having teeth on its periphery, the teeth of one stem located opposite the teeth of the other stem, said stems when in their closed position being received in said sleeve and having the teeth thereof engaging in the grooves of said sleeve, said teeth supporting the stems against downward movement by engagement with the ungrooved space formed by said sleeve-grooves, said stems being retained against outward movement by engagement of the teeth thereof in the sleeve-grooves.

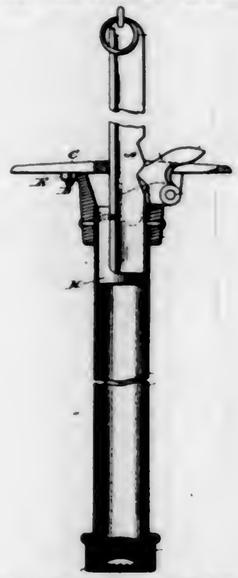
753,970. NAP-RESTORING DEVICE. Alfred W. Foster, Washington, D. C., assignor to the Foster Brush Manufacturing Company, Washington, D. C., a Corporation. Filed June 4, 1903. Serial No. 160,138. (No model.)

*Claim.*—As a new article of manufacture, a nap-restoring brush consisting of a suitable back, a sheet of suitable material secured to the back, elastic-wire bristles passing through the sheet, the bristles being bent at an angle between their ends and being of such a length

and of such an elasticity that when the device is drawn over a piece of cloth in the direction for the ends of the bristles to catch under the fiber of the cloth when the bristles are in their normal position, they will yield until they are in a position to disengage from the fiber of the cloth, whereby the fiber of the cloth will be picked up and the nap restored without tearing the cloth.



753,971. HITCHING-POST. Thomas J. Fox, Memphis, Tenn. Filed Dec. 11, 1903. Serial No. 184,729. (No model.)



*Claim.*—1. The combination with a base-plate provided with a vertical way, of a post sliding in that way and provided with marginal notches, and a pivoted pawl normally tending toward notch-engaging position and projecting above the base-plate in position to be rotated out of engaging position by downward pressure of the foot.

2. The combination with a base-plate provided with a non-cylindrical vertical way, of a post fitting and sliding in said way and provided with suitable marginal notches, a pivoted pawl tending to engage said notches and operable by downward pressure of the foot to release the engagement, and a tube extending downward from the base-plate in position to receive the downwardly-sliding post.

3. The combination with a suitably-perforated base-plate and a vertical tube detachably secured to the lower side of the base-plate in line with the perforation, of a post sliding in said perforation and tube, and a pawl projecting above the base-plate, adapted to engage the post to prevent its descent and arranged to release the post when pressed down by the foot.

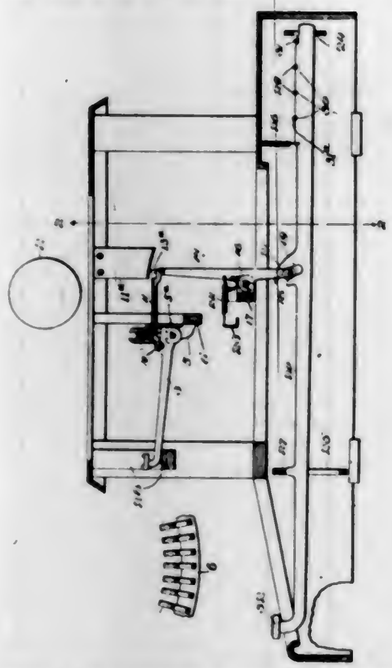
4. The combination with a suitably-perforated base-plate and a tube extending downward from the base-plate in line with the perforation, of a flanged post sliding in said perforation and tube, and a centrally-pivoted pawl having its inner end overweighted to throw it to post-engaging position and its outer end projecting above the plate to receive downward post-releasing pressure from the foot.

5. The combination with the base-plate having a vertical way, of the flanged post sliding in the way and having one flange marginally notched, the centrally-pivoted pawl adapted to engage the notched flange and having the weighted and bifurcated inner end and the outer end projecting above the base-plate, and the tube detachably secured to the lower side of the base-plate in position to receive and protect the downwardly-sliding post.

6. The combination with a base-plate having a suitable vertical way and a downwardly-closed tube forming a continuation of said way, of a T-bar sliding in said way and provided with rings above and an impact-plate at its lower end, and a rubber block placed in the lower end of the tube to receive the impact of the falling bar.

7. The combination with the base-plate having the vertical way and the tube forming a continuation of said way, of the perforated cap closing the lower end of the tube, the T-bar sliding in said way, the downwardly-concave buffer in the cup, and the gravity-pawl released by the foot and normally urged toward engagement with the bar.

753,972. TYPE-WRITING MACHINE. Carl Gabrielson, Worcester, Mass., assignor to L. C. Smith and Bros. Typewriter Company, Syracuse, N. Y., a Corporation of New York. Filed Jan. 21, 1903. Serial No. 139,971. (No model.)



*Claim.*—1. In a type-writing machine, the combination with a type-bar arranged to swing upwardly and rearwardly, of a substantially straight upright sublever having a pivot intermediate of its ends, a link connecting the upper end of the sublever with the type-bar, and a key-lever having a curved cam-surface engaging the lower end of the sublever.

2. In a type-writing machine, the combination of a type-bar arranged to swing upwardly and rearwardly, an upright sublever having a pivot intermediate of its ends, a link connecting the upper end of the sublever with the type-bar, and a key-lever in engagement with the lower end of the sublever, said key-lever having a curved cam-surface adapted to swing the lower end of the sublever in a horizontal direction.

3. In a type-writing machine, the combination of a platen, a segment below the platen, a series of front-strike type-bars pivoted to said segment, a series of substantially straight upright sublevers arranged in a common plane in the rear of the segment, links connecting the upper ends of the sublevers with their respective type-bars, and key-levers each having a curved cam-surface in engagement with the lower end of its respective sublever.

4. In a type-writing machine, the combination of a platen, a segment below the platen, a series of front-strike type-bars pivoted to said segment, a series of substantially straight sublevers radiating from points in the rear of their respective type-bars to their respective key-levers, a curved fulcrum-bar for said sublevers, and a series of key-levers, said sublevers being operatively connected with their respective type-bars and key-levers.

5. In a type-writing machine, the combination with a segment and a series of type-bars pivoted to said segment, of a series of key-levers, and a series of substantially straight upright sublevers arranged in radial lines upon a curved pivotal support, said support being arranged in an upright plane and said sublevers being operatively connected to their respective type-bars and key-levers.

6. In a type-writing machine, the combination of a platen, a segment arranged below the platen, a series of type-bars mounted on said segment, a series of key-levers having curved cam-surfaces, and a series of substantially straight upright sublevers pivotally mounted intermediate of their ends, the upper ends of said sublevers being in rear of and connected to their respective type-bars, and said sublevers radiating to their respective key-levers and being operatively engaged with the cam-surfaces thereof.

7. In a type-writing machine, the combination with the platen, and a series of front-strike type-bars having their fulcrums arranged in a curved line below the platen, of a series of key-levers, a series of upright sublevers radiating from their respective key-levers to points in the rear of their respective type-bars, cams on the key-levers with which the lower ends of the sublevers are engaged, springs connected with the sublevers and holding them in engagement with their respective cams, and links connecting the upper ends of the sublevers with the type-bars.

8. In a type-writing machine, the combination of a series of key-levers, a series of openings in the fixed frame of a machine, and a fulcrum-bar adjustable to any one of said openings to vary its position with respect to the key-levers, and means for holding said key-levers in operative contact with said fulcrum-bar.

9. In a type-writing machine, the combination of a series of key-levers, a fixed fulcrum-bar cooperating with said key-levers, and a second fulcrum-bar adjustable lengthwise of the key-levers to vary the leverage thereof.

10. In a type-writing machine, the combination with a series of key-levers, each provided with a series of fulcrum-notches, of a fixed fulcrum-bar cooperating with one of the notches of each key-lever, and a second fulcrum-bar adjustable to cooperate with the remaining notches.

11. In a type-writing machine, the combination with the sublevers having open notches in their ends, of links having pins adapted to engage said notches, and a guard-plate arranged to prevent the links from being disengaged from the sublevers.

12. In a type-writing machine, the combination with the sublevers having open notches, of the links having pins engaging said notches, and also having projections adjacent to the pins, of a guard-plate arranged to cooperate with said projections to prevent disengagement of the links from the sublevers.

13. In a type-writing machine, the combination with a series of type-bars having U-shaped pivotal ends, of a segment having integral projecting blades with parallel faces, the U-shaped portions of the type-bars being adapted to embrace said blades.

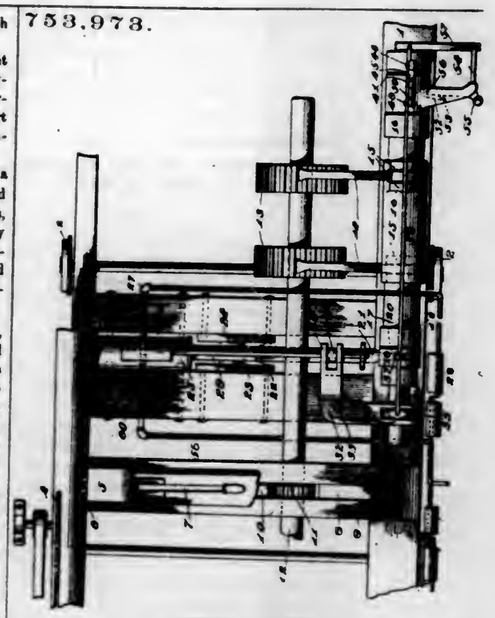
753,973. SET-WORKS. John J. Galway, Duluth, Minn., assignor of one-half to Kenneth McDonald, Duluth, Minn. Filed Sept. 28, 1901. Serial No. 76,948. (No model.)

*Claim.*—1. A set mechanism for sawmills comprising a carriage, knees moving transversely of the carriage upon its upper surface, transverse beams arranged below the level of the knees, the beams forming an engine-receiving space between them, a power-cylinder longitudinally supported between the said beams, a rock-shaft mounted above the surface of the carriage, a set-shaft mounted on the upper surface of the carriage and connected with the knees, one or more ratchet-disks carried by said set-shaft, arms on the rock-shaft carrying pawls for engaging and actuating the said ratchet-disks, and means carried by the rock-shaft for controlling the application of pressure to the power-cylinder, substantially as described.

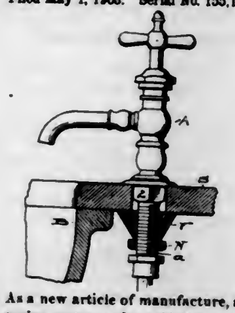
2. A sawmill set mechanism comprising a carriage formed of side beams and cross bracing-beams, two of said brace-beams being arranged comparatively close together, a pressure-cylinder mounted between said latter beams, so as to be supported at a considerable distance below the upper surface of the sawmill-carriage, a cross-head for guiding the piston of the pressure-cylinder, guides upon the inner opposing faces of the said beams for directing the movement of the piston cross-head, a rock-shaft operated by the said piston, a pitman connecting the said rock-shaft with the said piston, and a set-shaft receiving its movement from the said rock-shaft, substantially as described.



753,973.



753,974. BASIN-COCK FASTENER. Joseph H. Glauber, Cleveland, Ohio. Filed May 1, 1903. Serial No. 155,139. (No model.)

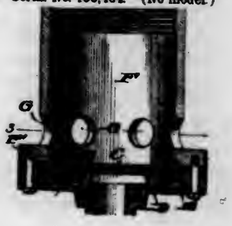


*Claim.*—1. As a new article of manufacture, a fastener adapted to be used in fastening water-cocks, said fastener being of conoidal shape and having corrugations between its edges and smooth internally in its smaller portion, substantially as described.

2. A basin-cock and a slab supporting the cock, in combination with a tapered tubular fastener for the cock having its larger end bearing against the bottom of the slab and a nut on the stem of the cock bearing against the smaller end of said fastener, substantially as described.

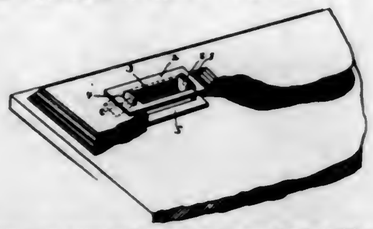
3. The basin-slab and the basin-cock having a threaded stem projecting beneath said slab, in combination with a fluted fastener of substantially conoidal shape having its larger end bearing against the bottom of the slab and its smaller end about said stem, and a nut on said stem engaged against said fastening device and holding it in place, substantially as described.

753,975. GAS-MIXER. Alfred A. Gohn, Warren, Pa. Filed May 9, 1903. Serial No. 156,464. (No model.)



*Claim.*—A gas-mixer comprising a shallow cup, a plate arranged upon the top of the cup, and having a series of apertures adjacent the edges of the cup, a shell having a flange and resting upon the plate, said shell having a series of openings in the side thereof, adjacent the lower end thereof, and the bolts for connecting the cup, plate, and shell, substantially as described.

753,976. **BOOK-LEAF FASTENER.** WILLIAM C. GOSS, Omaha, Nebr. Filed May 5, 1903. Serial No. 156,100. (No model.)



*Claim.*—In a book-leaf fastener, and in combination with a book having slots in the leaves thereof, a male member, a female member, substantially rectangular tongues on said male member, slots in said female member through which the tongues are adapted to be passed, and an opening in said female member between the said slots into which opening the ends of the tongues may be turned and extend into the slot through the book-leaves, the said members being adapted to loosely hold together a number of leaves of the book, whereby the said leaves may be turned as a unit and may slip between the said members so as to lie flat when the book is opened.

753,977. **PHOTOGRAPHIC PLATE.** ADOLF A. GURTNER, Bern, Switzerland. Filed Jan. 19, 1903. Serial No. 139,881. (No model.)

*Claim.*—1. A photographic plate comprising a color-filter film for red and sensitive to light, and a second separable film, substantially as described.

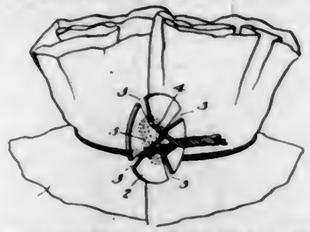
2. A photographic plate comprising a film sensitive to light and stained with anilin orange, and a second film also sensitive to light in juxtaposition to the first film, substantially as described.

3. A photographic plate comprising two carriers, each provided with an actinic film and the films placed against one another, and a separable binding-strip to hold the carriers and films together, substantially as described.

4. A photographic plate comprising two carriers one of which is provided with an orthochromatic film containing silver bromid and the other provided with a colored film containing silver chlorid, both carriers being connected together with their films placed against one another.

5. A photographic plate comprising two carriers one of which is provided with an orthochromatic film containing silver bromid and the other provided with an orange-colored film containing silver chlorid, both carriers being held together by a separable binding-strip, the films being placed against one another.

753,978. **BAG-FASTENER.** CHARLES GUY, Iola, Kans., assignor of one-half to Albion P. Charles, Iola, Kans. Filed Sept. 4, 1903. Serial No. 171,969. (No model.)



*Claim.*—1. A bag-closure comprising a disk, a staple for fastening the disk to the bag and having its terminals freely accessible and projecting beyond the outer face of the disk and a tie-band connected to the disk having one end also freely accessible to intertwist with the accessible terminals of the staples.

2. A bag-fastener having radial slots, means for attaching the fastener to a bag, said means having freely-accessible flexible terminals, and a tie for closing the bag and engaging the fastener and the terminals aforesaid.

3. A bag-fastener, means for attaching the fastener to a bag, and a band connected to the fastener, the terminals of the said means and the band being freely accessible for simultaneous intertwisting.

4. A bag, a button, a fastener for the button and passing through the bag and button and having freely-accessible terminals, and a band to encircle the bag and also terminally free to intertwist with the terminals of the fastener.

5. A bag, a button having pairs of slots, one pair of slots being disposed at a right angle to the other pair, a staple-fastener passing through the bag and through the slots in the button and having freely-accessible terminals, a band terminally engaging one of the slots at a right angle to the first-named slots, and having a free terminal to engage the freely-accessible terminals of the staple.

6. A bag, a button having pairs of slots, one pair of slots being disposed at a right angle to the other pair, a staple-fastener passing through the bag and through the slots in the button and having free ends projecting beyond the outer face of the button, a band terminally engaging one of the slots at a right angle to the first-named slots, and having a free terminal to engage the other slot, and for intertwisted engagement with the free ends of the staple.

7. A bag, a disk, a fastening means for the disk having an accessibly-free terminal, and a terminally-free encircling band for simultaneous intertwisting with the fastening-terminals.

753,979. **SHELVING.** THEASHER HALL, St. Louis, Mo., assignor of one-half to George Rueckheldt, St. Louis, Mo. Filed Apr. 11, 1903. Serial No. 152,110. (No model.)



*Claim.*—1. Shelving comprising supports and one or more shelves mounted thereon, the under side of the shelf having a marginal portion extending lower than the surface contiguous thereto on the inward side.

2. A tier of shelves, each having a downturned margin projecting beyond the main body thereof.

3. Shelving comprising supports, and one or more shelves mounted thereon and having marginal projections, the outer part of the projection extending lower than the intermediate part thereof.

4. Shelving comprising supports, one or more shelves mounted thereon, and sheathing for the upper surface of the shelves, the marginal portion of said sheathing extending beyond the edge of its shelf and being downturned to form a drip-line.

5. Shelving comprising supports, one or more shelves thereon, the marginal portion of the shelf having sheathing projecting beyond it and turned downwardly to form a drip-line.

6. Shelving comprising supports, and one or more shelves mounted thereon, the marginal portion of each shelf having a molding-strip on its under side.

7. Shelving comprising supports, and one or more shelves mounted thereon, the marginal portion of each shelf having a groove on its under side.

8. Shelving comprising supports, and one or more shelves mounted thereon, the marginal portion of each shelf having a molding-strip on its under side and having also a groove on its under side.

9. Shelving comprising end supports, one or more shelves mounted thereon, and deflector-strips mounted on said supports below the rear margins of the respective shelves.



10. Shelving comprising end supports arranged for fastening to the wall of a building, one or more shelves mounted thereon at a distance from the rear face of said supports and deflector-strips mounted on said supports below the rear edges of the respective shelves.

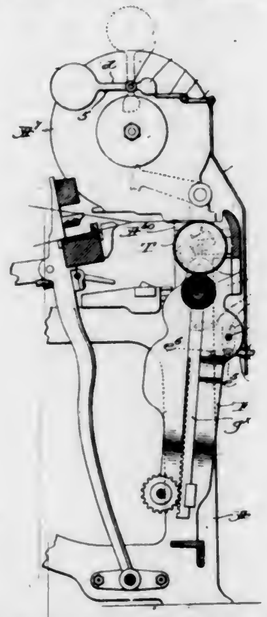
11. Shelving comprising end supports, one or more shelves mounted thereon, and deflector-strips mounted on said supports below the rear margins of the respective shelves, the under side of each shelf having a marginal portion extending lower than the surface contiguous thereto on the inward side.

12. A shelf-protector consisting of a sheathing adapted to cover the shelf and having downturned edges arranged to project beyond it.

13. A shelf-sheathing having its upper surface inclined downwardly to its margin, and said margin being downturned, substantially as and for the purpose specified.

14. A shelf-sheathing adapted to cover a shelf and having its upper surface inclined downwardly to its margins, and said margins being curled downwardly, substantially as and for the purpose specified.

753,980. **CUT SIGNAL OR INDICATOR FOR LOOMS.** WILLIAM HAYNES, Atlanta, Ga., assignor to Draper Company, Portland, Me. Filed Dec. 2, 1903. Serial No. 183,450. (No model.)



*Claim.*—1. In a loom, take-up mechanism, including a shaft on which the cloth is wound, a signal or indicator, means cooperating therewith by which it is normally maintained in non-indicating position, and separate means to automatically and positively interrupt cooperation of said first-mentioned means and the signal or indicator to thereby render the latter operative when a predetermined length of cloth has been wound upon said shaft.

2. In a loom, take-up mechanism, a visual indicator, means to retain it normally in non-indicating position, and means operative automatically when a predetermined length of cloth has been taken up to render inoperative the retaining means and thereby to effect movement of the indicator into a conspicuous position.

3. In a loom, take-up mechanism, a visual indicator, a device to move it into indicating position, means, including a latch, to retain the indicator in non-indicating position, and a releasing device for said means, governed by or through the take-up mechanism, to render the latch inoperative when a predetermined length of cloth has been taken up.

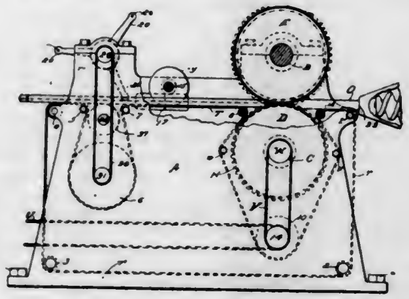
4. In a loom, take-up mechanism, including a shaft on which the cloth is wound, sliding supports therefor, a pivotally-mounted indicator, a device to move it into indicating position, a latch to engage said device and retain the indicator in non-indicating position, a trip connected with the latch, and a releasing device for the trip, mounted on one of the sliding supports, to render the latch inoperative when a predetermined length of cloth has been wound on said shaft.

5. In a loom, take-up mechanism, including a shaft on which the cloth is wound, sliding supports therefor, a pivotally-mounted indicator, a device to move it into indicating position, a latch to engage said device and retain the indicator in non-indicating position, a trip connected with the latch, means to adjust the trip for different lengths of "cut," and a releasing device for the trip, mounted on one of the sliding supports, to render the latch inoperative when a "cut" has been wound on the shaft.

6. In an automatic loom provided with a stand for a filling feeder, a "cut" indicator pivotally mounted thereon and having an attached weight to move it into indicating position, a latch to engage the weight and retain the indicator in non-indicating position, take-up mechanism, and means to automatically retract the latch when a predetermined length of cloth, or "cut," has been taken up.

7. In a loom, take-up mechanism, a visual indicator, a device to move it into indicating position, means, including a latch and an adjustable trip connected therewith, to normally retain the indicator in non-indicating position, and a movable finger to engage the trip and release the indicator from control of the latch when a predetermined length of cloth has been woven.

753,981. **MACHINE FOR STAMPING OR SHAPING PLASTIC CLAY, SHALE, &c., INTO VARIOUS PATTERNS OR ARTICLES.** EDMOND C. HOELSCHE, Chicago, Ill. Filed Sept. 14, 1903. Serial No. 173,198. (No model.)



*Claim.*—1. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, an outwardly-projecting fixed stud or device made on the face of one of said rollers for punching a hole in said patterns or articles, and of suitable means for both trimming off said surplus side margin and cutting said patterns or articles apart after said strip or ribbon has passed between and beyond said rotating rollers, all substantially as described and for the purposes set forth.

2. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, an outwardly-projecting curved stud or device made on one of said rollers and of suitable means for both trimming off said surplus side margin and cutting said patterns or articles apart after said strip or ribbon has passed between and beyond said rotating rollers, all substantially as described and for the purposes set forth.

3. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the

combination of a frame with a pair of rollers mounted parallel therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material when said strip or ribbon is fed between said rollers, an outwardly-projecting fixed stud or device made on the face of one of said rollers for punching a hole in said articles or patterns, a suitable bearing located near and in front of said rollers for receiving and supporting said strip or ribbon after it has passed between and beyond said rollers, and suitable means for cutting said patterns apart after said strip or ribbon has passed between and beyond said rollers, all substantially as shown and described and for the purposes set forth.

4. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, an outwardly-projecting fixed stud or device made on the face of one of said rollers for punching a hole in said patterns or articles, a suitable bearing located near and in front of said rollers for receiving and supporting said strip or ribbon after it has passed between and beyond said rollers, and suitable means for both trimming off said surplus side margin and cutting said articles or patterns apart after said strip or ribbon has passed between and beyond said rotating rollers, all substantially as shown and described and for the purposes set forth.

5. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, an outwardly-projecting curved stud or device made on the face of one of said rollers for punching a hole in said patterns or articles, a suitable bearing located near and in front of said rollers for receiving and supporting said strip or ribbon after it has passed between and beyond said rollers, and suitable means for both trimming off said surplus side margin and cutting said patterns or articles apart after said strip or ribbon has passed between and beyond said rotating rollers, all substantially as shown and described and for the purposes set forth.

6. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, an outwardly-projecting fixed stud or device made on the face of one of said rollers for punching a hole in said patterns or articles, a belt suitably located near and in front of said rollers for receiving, supporting and carrying along said strip or ribbon after it has passed between said rollers, means for operating said belt, and of suitable means for both trimming off said surplus side margin and cutting said patterns or articles apart after said strip, or ribbon has passed between and beyond said rotating rollers, all substantially as shown and described and for the purposes set forth.

7. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, an outwardly-projecting curved stud or device made on the face of one of said rollers for punching a hole in said patterns or articles, a belt suitably located near and in front of said rollers for receiving, supporting and carrying along said strip or ribbon after it has passed between and beyond said rollers, means for operating said belt, and of suitable means for both trimming off said surplus side margin and cutting said patterns or articles apart after said strip or ribbon has passed between and beyond said rotating rollers, all substantially as shown and described and for the purposes set forth.

8. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, a belt suitably located near and in front of said rollers for receiving, supporting and carrying along said strip or ribbon after it has passed between said rollers, means for operating said belt, and of suitable means for both trimming off said surplus side margin and cutting said articles or patterns apart after said strip or ribbon has passed between and beyond said rollers, all substantially as shown and described and for the purposes set forth.

9. In a machine for stamping and shaping a series of articles or patterns from a strip or ribbon of clay or other plastic material, the combination of a frame with a pair of rollers mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with said rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip or ribbon of clay or other plastic material and also adapted to leave or form a surplus margin on the side of said strip or ribbon when said strip or ribbon is fed between said rollers, a belt suitably located near and behind said rollers for receiving, supporting, carrying along and properly guiding said strip or ribbon between said rotating rollers, means for operating said belt, and of suitable means for both trimming off said surplus side margin and cutting said patterns or articles apart after said strip or ribbon has passed between and beyond said rotating rollers, all substantially as shown and described and for the purposes set forth.

10. In a machine for stamping and shaping a series of articles from a strip or ribbon of clay or other plastic material, the combination of the main frame A with the pair of rollers E and D mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with the rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping patterns or articles from a strip or ribbon of clay or other plastic material when said strip or ribbon is fed between said rollers, the belt T, the driving-belt U, and the trimming-disks *g* and *h*, all substantially as shown and described and for the purposes set forth.

11. In a machine for stamping and shaping a series of patterns or articles from a strip or ribbon of clay or other plastic material, the combination of the main frame A with the pair of rollers E and D mounted parallel to each other and adapted to rotate therein, suitable driving-gears and means in connection with the rollers to cause them to rotate in unison, suitable dies or shaping-surfaces made on the periphery of said rollers for shaping articles or patterns from a strip of clay or other plastic material when said strip or ribbon is fed between said rollers, the belt T, the driving-belt U, the rotary trimming-disks *g* and *h*, and the cross-cutting wires 26, attached to the spokes 20 of the cutting-wheel, and means for driving said cross-cutting wheel, all substantially as shown and described and for the purposes set forth.

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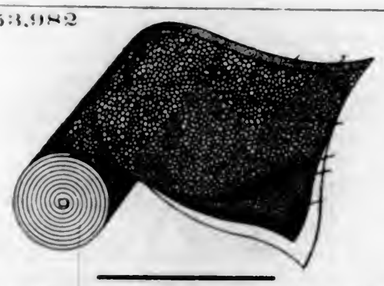
**753,982. PREPARED ROOFING. STANLEY R. HOLLAND, St. Louis, Mo. Filed June 23, 1903. Serial No. 162,730. (No specimens.)**

*Claim.*—1. A material for prepared roofing composed of layers of felt, burlap and asphalt adhesively retained together, the outer surface being covered with crushed shell, a margin formed on the one edge of the material and sprinkled with marble-dust, substantially as specified.

2. A material for prepared roofing composed of a layer of felt, asphalt placed on the layer of felt, a layer of burlap located on the asphalt, asphalt placed on the upper surface of the layer of burlap, crushed shell sprinkled on the asphalt and adhesively retained in a perfect flat position upon the surface of the roofing material, a margin formed on the one edge of the material, said margin sprinkled with marble-dust, substantially as specified.

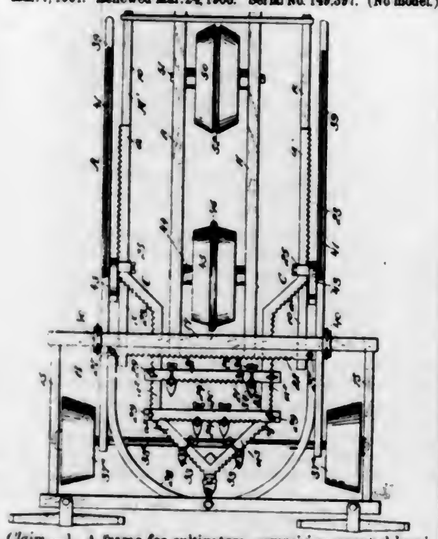


753,982



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**753,983. CULTIVATOR. JESSE R. JONES, Jackson, Miss. Filed Mar. 7, 1901. Renewed Mar. 24, 1903. Serial No. 149,397. (No model.)**



*Claim.*—1. A frame for cultivators, comprising serrated longitudinal upper and lower bars, and serrated upper and lower cross-bars, the said longitudinal bars being adjustable relatively to each other and said cross-bars being movable relatively to each other to vary the relative positions of the serrations of the bars.

2. A frame for cultivators, comprising separate serrated top and bottom bars adjustable relatively to each other, for the purpose described.

3. A frame for cultivators, consisting of upper and lower separate sections adjustable relatively to each other, one section being a duplicate of the other and each section consisting of serrated side bars and connected serrated front bars at angles to each other, the front bars being connected with the side bars, as set forth.

4. A frame for cultivators, comprising upper and lower separate longitudinal sections adjustable relatively to each other, serrated cross-bars movable upon the longitudinal sections relatively to each other, and means for securing the cross-bars to the longitudinal sections of the frame, one longitudinal section being a duplicate of the other, and each section consisting of serrated side bars and serrated front bars at angles to each other, connecting the side bars, as specified.

5. In combination with a supporting-frame, adjustable implement-carrying frame-sections on the upper and lower sides thereof having notches to receive implement-shanks, substantially as described.

6. In an agricultural implement, the combination of a frame comprising upper and lower sections having serrations, of cultivator-teeth attached to the serrations, and means for holding the teeth in place, the said upper and lower frame-sections being movable relatively to each other to vary the relative positions of the upper and lower sections.

7. A frame for cultivators and the like, having superposed slidably-related sections for the attachment of implements, said sections being adjustable longitudinally and laterally with relation to each other.

8. In combination with a relatively fixed frame implement-carrying frame-sections on the upper and lower sides thereof, adjustable with reference to each other.

9. In combination with a supporting-frame, implement-carrying frame-sections on the upper and lower sides thereof adjustable with reference to each other.

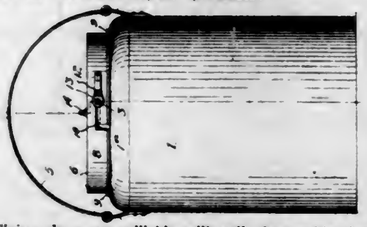
10. In combination with a supporting-frame, implement-carrying frame-sections on the upper and lower sides thereof, longitudinally adjustable with reference to each other.

11. In combination with a supporting-frame, implement-carrying frame-sections on the upper and lower sides thereof longitudinally and laterally adjustable with reference to each other.

12. In combination with a relatively fixed frame, implement-carrying frame-sections on the upper and lower sides thereof having adjustable elements.

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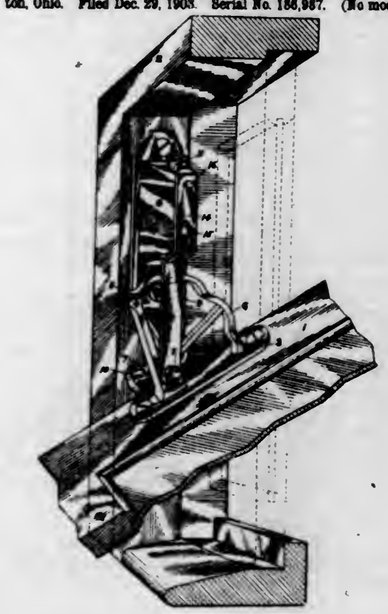
**753,984. MILK-PAIL. JOHN H. KIPP, Garrity, Ala. Filed Oct. 22, 1903. Serial No. 178,087. (No model.)**



*Claim.*—In a non-spillable milk-pail, the combination with a pail, having an inwardly-curved flange and a neck having outwardly-projecting studs, of a cover having a flanged rim to engage said neck and pail-flange, and close said pail, right-angularly-disposed slots formed in said flange and adapted to engage said studs to hold said cover on said pail, spring-catches fixed on said cover to engage said studs to hold the cover in engagement therewith, an inwardly-projecting bowl formed on said cover, a centrally-disposed opening formed in the bottom of said bowl, curved lugs fixed to the bowl adjacent to said opening, a combined valve cage and strainer arranged beneath the same and having loops to engage said curved lugs to removably support said cage, and a spherical valve supported by said cage, to close said opening upon the overturning of said pail, substantially as described.

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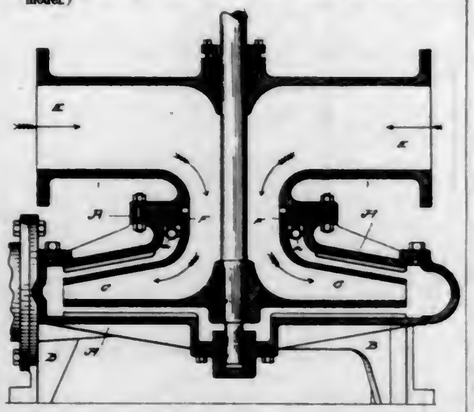
**753,985. FIXTURE FOR HANGING SASH. JOHN KIRBY, Jr., Dayton, Ohio, assignor to the Dayton Manufacturing Company, Dayton, Ohio. Filed Dec. 29, 1903. Serial No. 186,987. (No model.)**



*Claim.*—In a fixture for mounting sash, a casing containing a spring-actuated bolt and having an extension-plate provided with a pivot-seat, a segment provided with a projecting pivot operative in said seat and having a corrugated member operative in conjunction with said bolt, in combination with a retaining-guard removably attached to said casing and being in pivotal engagement with said segment.

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**753,986. PUMP.** FERDINAND W. KROGH and CARL A. KROGH, San Francisco, Cal. Filed Dec. 4, 1903. Serial No. 183,808. (No model.)



*Claim.*—1. A centrifugal pump having a non-secured packing-ring placed between its stationary and running parts and provided with detachable means for preventing leakage between said parts.

2. A centrifugal pump having a non-secured packing-ring placed between its stationary and running parts and provided with detachable means arranged at an angle with each other and respectively engaging the stationary and running parts and adapted to prevent leakage between the same.

3. In a centrifugal pump provided with a casing and an impeller rotating therein, the combination therewith of a floating packing-ring having bearing-faces engaging said casing and the impeller and preventing leakage of water between said casing and the impeller.

4. In the class of machinery described a floating packing-ring placed between the stationary and running parts and having faces secured at right angle thereon engaging seats formed on said stationary and running parts for preventing leakage.

5. In the class of machinery described a floating packing-ring placed between the stationary and running parts and having removable bearing-faces engaging seats formed on said stationary and running parts and preventing leakage of water between said faces and seats.

6. In the class of machinery described a packing-ring placed between the stationary and running parts, consisting of a hollow shell hermetically closed and having faces engaging seats formed on said stationary and running parts for the purpose of preventing leakage between said parts.

7. In the class of machinery described a packing-ring placed between the stationary and running parts consisting of a cylindrical floating shell having faces engaging said stationary and running parts and adapted to prevent leakage of water between said faces and the stationary and running parts.

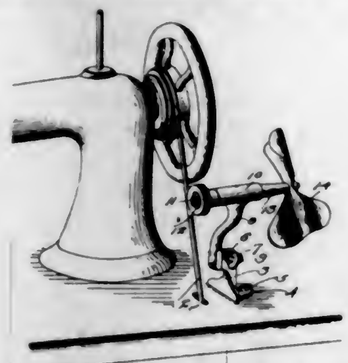
8. In the class of machinery described, the combination with stationary and moving parts, of a floating packing-ring having bearing-faces respectively engaging seats on said stationary and moving parts and adapted to prevent leakage of water between said seats and faces.

9. In the class of machinery described, the combination with the casing and the impeller, of a floatable packing-ring encircling said impeller and provided with bearing-faces arranged at an angle with each other and respectively engaging seats on said impeller and casing and adapted to prevent leakage of water between said seats and faces, substantially as described and for the purposes set forth.

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**753,987. SEWING-MACHINE ATTACHMENT.** ROLAND H. LEGG, Carthage, Mo. Filed Sept. 24, 1903. Serial No. 174,494. (No model.)

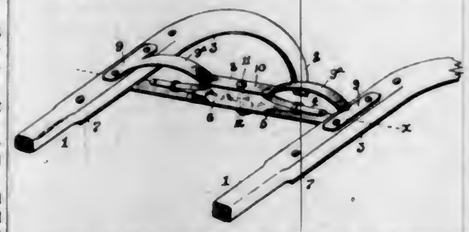
*Claim.*—1. A sewing-machine attachment comprising a bracket adapted to be secured to the stand of the machine adjacent to the front stretch of the drive-belt, a drive-spindle provided with a friction-wheel to engage the belt, and a standard carrying said spindle and hinged or pivoted to said bracket, said standard being adjustable at the front of the machine to swing toward and from the said front stretch of the belt and adjust said friction-wheel into and out of engagement therewith, substantially as described.



2. A sewing-machine attachment comprising a bracket adapted to be secured to the stand of the machine adjacent to the front stretch of the drive-belt, said bracket having an eye in a plane transverse to said stretch of the belt, a standard having at its upper end a bearing and at its lower end a lateral stem journaled in said eye, and a drive-spindle journaled in said bearing and provided with a friction-wheel to engage the belt, said standard being adjustable at the front of the machine to swing toward and from the said front stretch of the belt and adjust said friction-wheel into and out of engagement therewith, substantially as described.

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**753,988. THILL ATTACHMENT.** MYRON D. LE ROY and GEORGE P. ROSS, Walkerton, Ind. Filed Sept. 11, 1903. Serial No. 172,776. (No model.)



*Claim.*—1. The combination with the thills, of reinforcing-straps extending along the under face of the thills and having an integral cross-bar, and a whiffletree pivoted to the cross-bar.

2. The combination with the thills, of reinforcing-straps secured to the under face of the thills and having coupling-eyes at their outer ends, and also having an integral cross-bar to brace the thills, and a whiffletree pivoted to the cross-bar.

3. An attachment for thills comprising reinforcing-straps secured to the under face of the thills and having a cross-bar to brace the thills, said straps being extended forwardly beyond the cross-bar, and a whiffletree pivoted to the cross-bar.

4. The combination with the thills having a cross-bar, of a combined brace and guard secured at its ends to the thills, and a whiffletree pivoted to and between the cross-bar and guard.

5. An attachment for vehicle-thills, comprising reinforcing-straps secured to the under face of the thills and having an integral cross-bar, a combined brace and guard secured at its ends to the upper faces of the thills, and a whiffletree pivoted to and between the guard and the cross-bar.

6. In an attachment for vehicle-thills, the combination of a cross-bar secured to the under faces of the thills, a combined brace and guard secured at its ends to the upper faces of the thills, a king-pin piercing the brace and the cross-bar, and a whiffletree fulcrumed on the king-pin between the brace and cross-bar.



7. In an attachment for vehicle-thills, the combination of a cross-bar secured to the under faces of the thills, a combined brace and guard secured at its ends to the upper faces of the thills and having upwardly-bowed portions adjacent its ends and an intermediate portion parallel with the cross-bar, a king-pin piercing said intermediate portion and the cross-bar, and a whiffletree fulcrumed upon the king-pin between the guard and cross-bar.

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**753,989. MATCH-BOX.** JACOB LONG, St. Paul, Kans. Filed Aug. 7, 1903. Serial No. 168,670. (No model.)

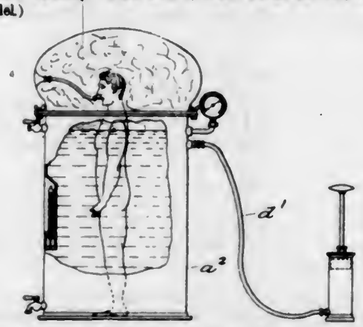


*Claim.*—1. A match-box consisting of a casing having a discharge-opening, an inner body substantially cylindrical in form having a narrowed lateral extension and a slot extending downwardly from the top of the said lateral extension, an ejector slidably disposed upon the narrowed lateral extension arranged to engage the matches through the said slot and successively discharge the said matches through the opening in the casing, a hinged cover for the said opening, a rod connecting the ejector with the cover and a coiled spring mounted upon the said rod for holding the ejector normally and yieldably with the cover in closed position.

2. In a match-box, the combination with a casing, closures hinged to the top and bottom of the said casing, of a body disposed within the casing, the said body being substantially cylindrical in form and having a narrowed lateral extension having a slot extending downwardly from its top, an ejector mounted in the said slot to discharge a single match, and means connected to the ejector and one of the closures of the said casing for moving the said closure into and out of active position, as the ejector is operated.

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**753,990. METHOD OF AND APPARATUS FOR IMPREGNATING PARTS OF THE BODY WITH MEDICAMENTS.** JULIUS LOTTE, Altona, Germany. Filed Nov. 1, 1902. Serial No. 129,735. (No model.)



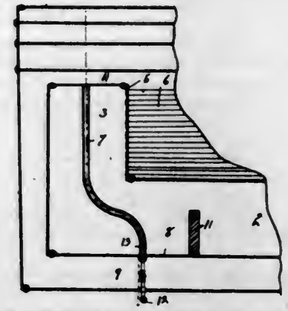
*Claim.*—1. In the medical treatment of the body, the method which consists in covering the part to be treated with the medicament in liquid form and forcing the medicament into the pores of the skin by means of air under pressure acting on said medicament, substantially as set forth.

2. In the medical treatment of the body, the method which consists in placing the part to be treated in a closed chamber containing the medicament in a liquid form and forcing the same into the pores of the skin by means of air under pressure, substantially as described.

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**753,991. CIRCULATING SYSTEM FOR STEAM-BOILERS.** WILLIAM J. MACDONALD, Detroit, Mich. Filed Nov. 5, 1903. Serial No. 179,922. (No model.)

*Claim.*—1. In a circulatory system for steam-boilers, the combination with the boiler-shell and combustion-chamber, the top of said chamber having a crown-sheet, of the circulatory tube expanded in the crown-sheet of said chamber at its upper end, passing downwardly and forwardly through the combustion-chamber in the rear of the furnace and expanded in the lower wall of said chamber at its lower end, the lower end of said tube communicating with the water-space below the combustion-chamber, and the upper end of said tube communicating with the water-space in the upper portion of the boiler.

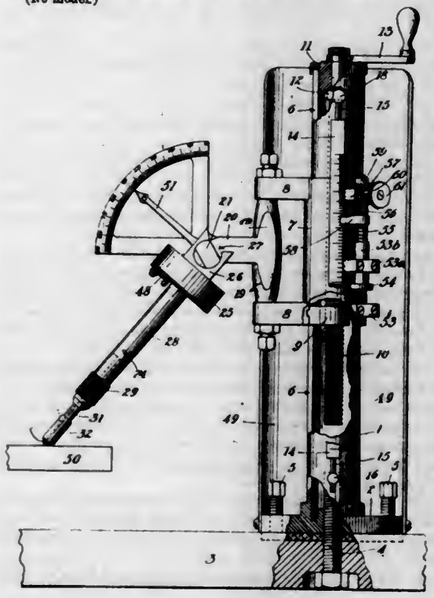


2. In a circulatory system for steam-boilers, the combination with the boiler-shell, the furnace and combustion-chamber, the top of said combustion-chamber having a crown-sheet and a bridge-wall dividing the combustion-chamber from the furnace, circulatory tubes expanded at their upper ends in the crown-sheet of the combustion-chamber, said tubes extending downwardly through said chamber and forwardly to a point in the rear of the bridge-wall, their lower ends being expanded in the sheet forming the bottom of said chamber, said tubes establishing communication between the water-space below the furnace and the water-space in the upper portion of the boiler.

3. In a circulatory system for steam-boilers, the combination with the boiler-shell, the furnace and the combustion-chamber, a circulatory tube passing through the combustion-chamber communicating at its upper end with the water-space of the boiler and at its lower end with the water-space below the combustion-chamber, and a steam-pipe entering the lower end of said tube and standing therein free from the walls thereof.

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**753,992. LAPIDIST'S FACET-CUTTING INSTRUMENT.** FRANK A. MARCHER, Los Angeles, Cal. Filed Nov. 1, 1902. Serial No. 129,755. (No model.)



*Claim.*—1. In a facet-cutting instrument, a stationary tubular standard, a sleeve mounted on the standard, a part projecting from said sleeve into said standard, means for holding a stone flexibly connected with said sleeve, and means inside said standard engaging said part for raising and lowering said sleeve.

2. In a facet-cutting instrument, a stationary tubular standard, a sleeve mounted on the standard, a part projecting from said sleeve into said standard, a bracket pivoted to said sleeve to swing horizontally, means for holding a stone flexibly connected with said bracket, means indicating the angularity of said holding means, and means inside of said standard engaging said part for raising and lowering said sleeve.

3. In a facet-cutting instrument, a stationary tubular standard, a sleeve slidably mounted on said standard, a part projecting from said sleeve into said standard, means for holding a stone flexibly connected with said sleeve, means inside of said standard engaging said part for raising and lowering said sleeve and means for indicating the position of said sleeve relatively to the standard.

4. In a facet-cutting instrument, a stationary tubular standard, a sleeve on the standard, a part projecting from said sleeve into said standard, means for holding a stone flexibly connected with the sleeve, means for indicating the angularity of the holding means, and means inside of said standard engaging said part for raising and lowering the sleeve.

5. In a facet-cutting instrument, a stationary tubular standard having a longitudinal slot, a sleeve on said standard, means for holding a stone flexibly connected with the sleeve, a screw rotatably mounted inside said standard, a projection from said sleeve passing through said slot and engaging said screw, and means for rotating said screw.

6. In a facet-cutting instrument, a stationary tubular standard having a longitudinal slot, a sleeve on said standard, means for holding a stone flexibly connected with the sleeve, a screw rotatably mounted in said standard, a projection from said sleeve, passing through said slot and engaging said screw and means for indicating the position of the sleeve relatively to the standard.

7. In a facet-cutting instrument, a stationary tubular standard having a longitudinal slot, a sleeve slidably mounted on the standard, a screw rotatably mounted in the standard, a projection from said sleeve passing through said slot and engaging said screw, a bracket pivoted to the sleeve to swing horizontally, an arbor pivoted to the bracket to swing vertically and means on said arbor for holding a stone.

8. In a facet-cutting instrument, a stationary tubular standard having a longitudinal slot, a screw rotatably mounted in said standard, a sleeve slidably mounted on said standard, a projection from said sleeve passing through said slot and engaging said screw, a bracket pivoted to the sleeve to swing horizontally, a shaft carried by the bracket, an arm pivotally mounted on the shaft and removable from the shaft and means carried by the arbor for holding a stone.

9. In a facet-cutting instrument, rotatable means for holding a stone and means for frictionally holding said rotatable means at various spaced points in its revolution.

10. In a facet-cutting instrument rotatable means for holding a stone and means for frictionally holding said rotatable means at predetermined points of the revolution thereof.

11. In a facet-cutting instrument, a standard, a sleeve mounted on said standard, a bracket mounted in the sleeve, means for holding a stone connected with a bracket and rotatable with respect thereto, and means for frictionally holding said holding means from rotation.

12. In a facet-cutting instrument, a standard, a sleeve mounted on the standard, a bracket mounted on the sleeve, means for holding a stone connected with the bracket and rotatable with respect thereto, means for frictionally locking said holding means from rotation, a scale mounted on the bracket and a hand connected with the holding means and movable over the scale

13. In a facet instrument, a standard, a sleeve slidably mounted on the standard, a bracket pivoted to the sleeve, a stationary shaft fixed on the bracket, an arbor pivotally connected to the shaft, said shaft being flattened, said arbor being provided with a concave bearing-face embracing more than one hundred and eighty degrees permitting the removal of the arbor from the shaft and means carried by the arbor for holding the shaft.

14. In a facet-cutting instrument, a standard, means for adjusting said standard to a plumb, means for holding a stone connected to the standard and means for indicating the position of the holding means.

15. In a facet-cutting instrument, a standard, a sleeve mounted on the standard, a bracket pivoted to the sleeve to swing horizontally, a flattened shaft on the bracket, means for holding a stone, an index-box connected to said holding means, a lug projecting from the index-box, said lug having a concave recess embracing more than one hundred and eighty degrees and being removably carried by the shaft.

16. In a facet-cutting instrument, a standard, a sleeve slidably mounted on the standard, a bracket pivoted to the sleeve to swing horizontally, an arm projecting horizontally from said bracket, a horizontal shaft fixed on said arm, means for holding a stone, an index-box, one end of said holding means being rotatably mounted in said index-box said index-box being hung on said shaft but removable therefrom and means in said index-box for frictionally locking said holding means from revolution.

17. In a facet-cutting instrument rotatable means for holding a stone, means for indicating the position of the holding means embracing an index-plate provided with peripheral notches and a spring-catch detent for frictionally engaging said notched index-plate.

18. In a facet-cutting instrument rotatable means for holding a stone embracing a series of notched index-plates, a series of spring-pressed detents frictionally bearing against the peripheries of said index-plates and means for throwing said detents into and out of operation, the notches of the index-plates having walls which diverge toward the periphery, the portions of said detents which bear against the walls of the notches being rounded, the index-plates springing out the detents when sufficient force is imparted to turn the index-plates.

19. In a facet-cutting instrument, a standard, a sleeve mounted on the standard, means for holding a stone flexibly connected with the sleeve, a scale mounted on the standard, a calipering device embracing a stationary and a movable member, a finger, means for simultaneously moving the movable member in one direction and the finger in the reverse direction over said scale at a variant speed.

20. In a facet-cutting instrument, a standard, a sleeve on the standard, means for holding a stone flexibly connected to the sleeve, a pair of lugs mounted on the frame, a hollow threaded stem slidably mounted in one of said lugs, a screw provided with right and left threads rotatably mounted on the sleeve, one set of threads engaging said stem and a finger mounted on the other part of said sleeve engaging the other threads, one end of said finger being notched and sliding over the scale.

21. In a facet-cutting instrument, a standard, a sleeve slidably mounted on the standard, a bracket pivoted to the sleeve, an index-box pivoted to the bracket, an arbor rotatably mounted in the index-box, means on the free end of the arbor for holding a stone, a set of index-plates provided with notches in their peripheries mounted on the end of the arbor within said index-box, a set of pivoted detents in said box for controlling the movement of said index-plates, a shaft mounted in said box and provided with a series of revoluble cams, each of said cams being movable into contact with the spring of a detent.

22. In a facet-cutting instrument rotatable means for holding a stone, means for regulating the degree of rotation of said holding means consisting of a set of index-plates provided with notches in their peripheries, one of said index-plates having more notches than the other, the notches of one of said index-plates being arranged equidistant between the notches of another plate and means for frictionally engaging said index-plates within the notches.

23. In a facet-cutting instrument, a base, a base-plate mounted on said base, a standard secured to said base-plate, means engaging the central portion of said base-plate to secure said base-plate to said base, and a plurality of adjusting-screws carried by said base-plate and engaging the base to adjust the standard to a plumb position.

24. In a facet-cutting instrument, a stationary standard, a carrier mounted on the standard, means for holding a stone flexibly connected with said carrier, a scale carried by said standard and extending longitudinally of said carrier, a calipering device carried by said carrier and having a hand to cooperate with said scale, and means for vertically moving said carrier.

25. The combination with a lap, of a support arranged in definite relation thereto, a carrier movable on said support, transversely to the plane of the lap, calipering means on the carrier for calipering a stone, indicating means mounted movably with respect to the carrier and connected to be operated by said calipering means, a scale mounted on the said support and cooperating with said indicator, and a stone-carrying arm pivoted to said carrier.

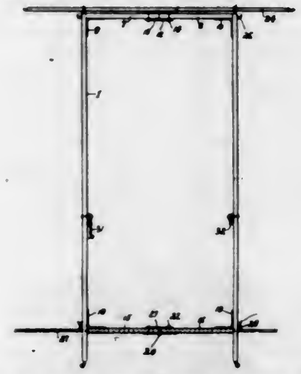
26. The combination with a lap, of a support arranged in definite relation thereto, a calipering means for measuring a stone to be ground, a carrier movably mounted on said support, a stone-holding arm pivoted on the carrier, and indicating means connected to the said carrier and to the calipering means to enable the position of the stone-holding arm to be varied.

27. The combination with a lap, of a support arranged in definite relation thereto, a calipering means for measuring a stone to be ground, a carrier movably mounted on said support, a stone-holding arm mounted on the carrier, and indicating means connected to the said carrier and to the calipering means to enable the position of the stone-holding arm to be varied in accordance with the diameter of the stone.

28. The combination with a lap, of a support arranged in definite relation thereto, a carrier movable on said support transversely to the plane of the lap, a screw engaging and moving the carrier, a stone-carrying arm pivoted to the carrier, caliper means for measuring a stone, and indicating means connected to the carrier and to the calipering means for enabling the carrier to set in accordance with the diameter of the stone, and indicating means connected to said arm and carrier for indicating their relative angular position.

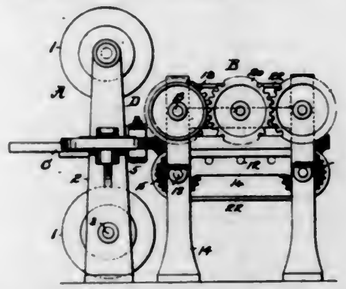


## 753,993. PORTABLE DUSTING-FRAME. JOSEPH R. MAURAN, Los Angeles, Cal. Filed Sept. 11, 1902. Serial No. 123,032. (No model.



*Claim.*—A dusting-frame comprising four corner-posts arranged in pairs, said pairs being pivotally united at the top and centrally connected by end braces, said braces being pivotally connected to each other and to the corner-posts; side braces hinged together and to said corner-posts, connecting the members of said pairs at the top and near the bottom; means to make rigid the central joints of said side braces; an extension-pole removably connected to the top of said corner-posts; and a dust-collecting receptacle removably attached to said corner-posts near the bottom thereof.

## 753,994. SMOKELESS-POWDER ROD OR GRAIN AND PROCESS OF MAKING SAME. HUDSON MAXIM, New York, N. Y. Filed Dec. 8, 1898. Serial No. 698,601. (No specimens.)



*Claim.*—1. In the manufacture of smokeless powder, the process herein described, which consists in molding smokeless-powder material into rods or strips while in a plastic state, due to a contained solvent, then evaporating the solvent to shrink and harden the material, and then applying a solvent to the surface of the rods or strips to render them adhesive, and then affixing a covering to the adhesive surface, substantially as described.

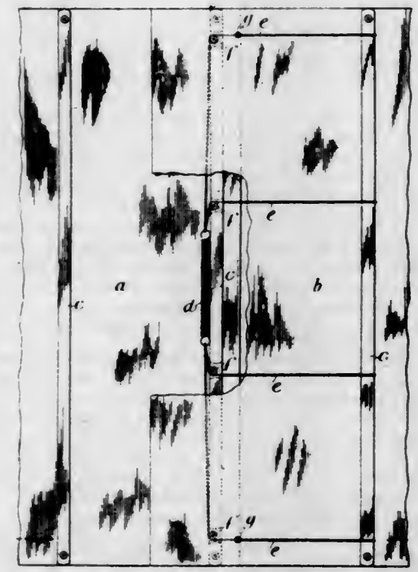
2. The herein-described process of manufacturing rods or grains of smokeless powder which consists in molding the same into rods or strips, while in a plastic state due to a contained solvent, multiperforating the rods or strips evaporating the solvent to shrink and harden the material, then rendering the rods or strips adhesive by application of a solvent to the surface thereof and then applying a covering to the rods or strips.

3. In the manufacture of smokeless powder, the herein-described process, which consists in molding the powder material into rods or strips, and then multiperforating the same, then drying, and then affixing a combustible non-explosive covering to the surface of the powder-body, and over the mouths of the perforations.

4. The herein-described multiperforated powder-grain having a combustible covering over its perforations adapted to be ruptured by the pressure of the powder-gases in the gun, said covering being secured to the grain without the interposition of cement.

5. The herein-described multiperforated powder-grain, having the openings of its perforations covered with a material adapted to be ruptured by the pressure of the powder-gases in the gun.

## 753,995. TRAVELING BELT OR APRON. FREDERICK D. MERCER, Hampstead, England. Filed Dec. 7, 1903. Serial No. 184,136. (No model.)



*Claim.*—1. In a traveling belt or apron a spring arranged transversely of the said belt or apron at one end thereof in combination with a flexible cord or cords or the like connecting the said spring to the other end of the belt or apron and eyes or guides through or around which the said cord or cords passes or pass, substantially as, and for the purpose, described.

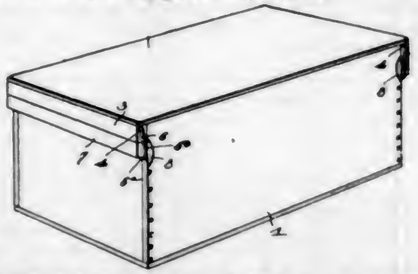
2. In a traveling belt or apron having slats upon its outer surface, a tension device comprising a spring arranged transversely of the apron and lying against a slat at one end of the said apron, apertures in the said slat, and flexible cords connected with the spring and passing through the said apertures, and connected to the other end of the apron, substantially as described.

3. In a traveling belt or apron having slats upon its outer surface, a tension device comprising a spring arranged transversely of the said apron, apertures in a slat near one end of the said apron, pulleys in the said apertures, a cord or cords connected to the said spring and passed over the said pulleys and attached to the other end of the apron, substantially as described.

## 753,996. BOX-FASTENER. FRANK MOELLENBROCK, Dixon, Mo. Filed Sept. 3, 1903. Serial No. 171,801. (No model.)

*Claim.*—1. The combination with a box, of a lid having a transversely-arranged end cleat having channels in the upper surface thereof, a spring-catch pivotally mounted in the channels on said

cleat to swing substantially into contact with the under surface of the lid and having its outward pivotal movement limited, and a member on the box for engagement with said catch.



2. The combination with a box, of a lid having a cleat transversely arranged at the end thereof, a loop of resilient material pivotally mounted in said cleat to swing substantially into contact with the under surface of the lid and having its outward movement limited, and a member on said box in position to be encircled by the loop.

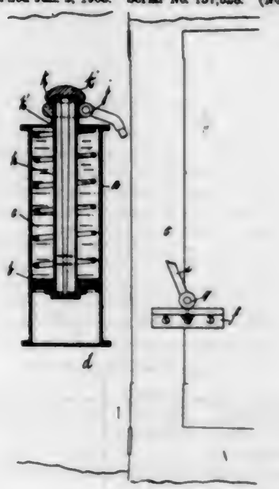
3. The combination with a box, of a lid having a transversely-arranged end cleat channeled on its upper surface, a loop of resilient material pivotally mounted in the channel to swing substantially into contact with the under surface of the lid and having its outward movement limited, and a member on the box for engagement with said loop.

4. The combination with a box, of a lid having a transversely-arranged end cleat channeled on the top, a loop of resilient material pivotally mounted in the channel to swing substantially into contact with the under surface of the lid and having its outward movement limited, and an external, transversely-arranged cleat on the end of the box for engagement with said loop

5. The combination with a box, of a lid having a transversely-arranged end cleat channeled on its upper surface and having grooves on the inner face thereof merging at the top into the channel, a loop of resilient material having horizontal portions resting in the channel and downwardly-bent terminal portions lying in said grooves, and a member on the outside of the box for engagement with said loop.

6. The combination with a box, of a lid having a transversely-arranged end cleat provided on its upper surface with a longitudinal channel and having on the inner face thereof two downwardly-disposed grooves merging at their upper ends into said channel and having inclined bottoms, a loop of resilient material having horizontal portions resting in the channel on top of said cleat and downwardly-disposed terminal portions lying in said grooves, and a member on the outside of the box for engagement with said loop.

753,997. DOOR-CHECK. JOHN C. MOORE, Lower Edmonton, England. Filed Jan. 2, 1903. Serial No. 137,628. (No model.)



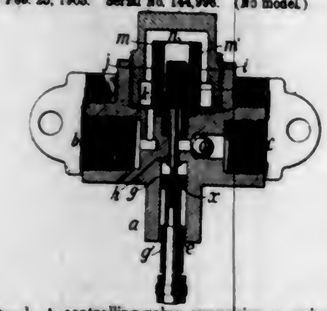
*Claim.*—In a door-check the combination with a door and its frame of a checking-cylinder vertically disposed on the door, a spring-actuated piston movable within the cylinder, and means for operating said piston comprising a bracket attached to the door-frame below the level of the piston, an eyebolt pivotally mounted in said bracket, a rod pivotally connected at one end to said bolt, a band embracing the projecting free end of the piston-rod and pivotally connected to the upper end of said rod, and means for retaining said band on the piston-rod, substantially as shown and described.

753,998. DOOR-SPRING. JOHN C. MOORE, Lower Edmonton, England. Filed Sept. 18, 1903. Serial No. 173,689. (No model.)



*Claim.*—In a door or gate spring the combination of a trough-like corner-piece to attach to a corner of the door or gate: a spring-controlled spindle free at one end to slide through a partition near one end of the trough: a cross-bead at the opposite end of the spindle free to slide under guides and carrying a roller below the bottom of the trough and free to move in an open-ended slot provided in the bottom of the trough: a bottom plate having an upstanding eccentrically-planned rim and an upstanding pin on which can turn the trough-like corner-piece so that the roller always remains in contact with the said rim, substantially as hereinbefore described.

753,999. CONTROLLING-VALVE. ASA H. MOSHER, Westfield, N. J., assignor to the Hall Signal Company, a Corporation of Maine. Filed Feb. 25, 1903. Serial No. 144,996. (No model.)



*Claim.*—1. A controlling-valve comprising a casing having a supply-inlet, a combined pressure and exhaust opening and an exhaust-outlet, a supply-valve and an exhaust-valve connected to move together by a stem extending through the supply-valve opening from the supply-valve to the exhaust-valve, the supply-valve having a conical working face and a soft-rubber seat for the supply-valve also having a conical working face.

2. A controlling-valve comprising a casing having a supply-inlet, a combined pressure and exhaust opening and an exhaust-outlet, a supply-valve and an exhaust-valve connected to move together by a stem extending through the supply-valve opening from the supply-valve to the exhaust-valve, the supply-valve being of hard rubber, and a soft-rubber seat for the supply-valve, the valve and seat having counterpart working faces.

3. A controlling-valve comprising a casing having a supply-inlet, a combined pressure and exhaust opening and an exhaust-outlet, a supply-valve and an exhaust-valve connected to move together by a stem extending through the supply-valve opening from the supply-valve to the exhaust-valve, a soft-rubber seat for the supply-valve, the valve and seat having counterpart working faces, and a supply-valve guard detachably connected to the casing and having the soft-rubber valve-seat therein, substantially as set forth.

4. In a controlling-valve, in combination, the casing *a* having the cover *a'* and having a supply-inlet *b*, a combined pressure and exhaust opening *c* and an exhaust-outlet *c*, a supply-valve *f* of hard rubber, an exhaust-valve *g* connected to the supply-valve by a stem *h* extending through the supply-valve opening, a soft-rubber seat *k* for the supply-valve, the supply-valve and seat having conical engaging faces, and a supply-valve guard *j* detachably connected to the casing and having the soft-rubber supply-valve seat therein, substantially as set forth.



5. The combination, with electromagnetic valve-controlling means, of a casing having a supply-inlet, a combined pressure and exhaust opening and an exhaust-outlet, a supply-valve and an exhaust-valve connected to move together by a stem extending through the supply-valve opening from the supply to the exhaust valve, the supply-valve having a conical working face, and a soft-rubber seat for the supply-valve also having a conical working face.

6. The combination, with electromagnetic valve-controlling means, of a casing having a supply-inlet, a combined pressure and exhaust opening and an exhaust-outlet, a supply-valve and an exhaust-valve connected to move together by a stem extending through the supply-valve opening from the supply-valve to the exhaust-valve, the supply-valve being of hard rubber, and a soft-rubber seat for the supply-valve.

7. The combination, with electromagnetic valve-controlling means, of a casing having a supply-inlet, a combined pressure and exhaust opening and an exhaust-outlet, a supply-valve and an exhaust-valve connected to move together by a stem extending through the supply-valve opening from the supply-valve to the exhaust-valve, a soft-rubber seat for the supply-valve, and a supply-valve guard detachably connected to the casing and having the soft-rubber valve-seat therein, substantially as set forth.

8. The combination, with electromagnetic valve-controlling means, of a casing *a* having the cover *a'* and having a supply-inlet *b*, a combined pressure and exhaust opening *c* and an exhaust-outlet *c*, a supply-valve *f* of hard rubber, an exhaust-valve *g* connected to the supply-valve by a stem *h* extending through the supply-valve opening, a soft-rubber seat *k* for the supply-valve, the supply-valve and seat having conical engaging faces, and a supply-valve guard *j* detachably connected to the casing and having the soft-rubber supply-valve seat therein, substantially as set forth.

754,000. RESERVOIR-PEN OR THE LIKE. ALEXANDER MUNRO, Stockport, England. Filed Aug. 11, 1902. Serial No. 119,313. (No model.)



*Claim.*—1. In a reservoir-pen or the like, a holder a small pump within the said holder and a wheel capable of being rotated in either direction by pressing its outside edge and of operating the said pump, as and for the purposes set forth.

2. In a reservoir-pen or the like, a holder, an india-rubber tube with a portion arranged along part of the circumference of a circle in such holder and opening at one end to the ink-reservoir of the holder, a pen-nib feeder connected to the opposite end of the tube, rollers adjacent to such tube and means for carrying such rollers and causing them to press upon the tube for the purposes set forth.

3. In a reservoir-pen or the like, a holder, a movable ink-feeder and an india-rubber tube, one part of the tube being fixed to the holder and another part to the feeder so that upon the feeder being moved forward to the pen-nib point the contraction of the tube automatically pulls the feeder back as set forth

4. In a reservoir-pen or the like, a holder having a cavity an ink-feeder secured to the holder, a tube of india-rubber in the said cavity, a wheel also in the cavity, and means for axially sustaining the wheel, studs on the wheels and rollers loose on the studs, as and for the purpose set forth.

5. In a reservoir-pen or the like a holder having a cavity and slot, an ink-feeder loosely fitted to the holder, a tube of india-rubber in the said cavity connected at one end with the feeder and at the other end leading into the ink-reservoir a wheel in the cavity, means for axially supporting the wheel, studs on the wheel and rollers loose on the studs, and means for moving the ink-feeder toward the pen-nib, as set forth.

6. In a reservoir-pen or the like, a holder having a cavity with curved floor and holes in each end wall an india-rubber tube in such cavity with its ends passing through the said holes, a wheel and axle in the said cavity, and studs and rollers on the wheel, substantially as set forth.

7. In a reservoir-pen or the like, a holder having a cavity, a wheel and axle within the cavity and studs and rollers on the wheel, substantially as and for the purposes set forth.

8. In a reservoir-pen or the like, a holder having a cavity, a wheel and axle in the said cavity and the said wheel having gear-teeth, a rack gearing with the said teeth and a movable ink-feeder connected to the said rack, substantially as and for the purposes set forth.

9. In a reservoir-pen or the like, a holder having a cavity a wheel and disk, and an axle within such cavity, rollers mounted between the wheel and disk as set forth.

10. In a reservoir-pen, a holder having a cavity a wheel and disk and an axle within such cavity, rollers mounted between the wheel and disk, an india-rubber tube also within the cavity with one end leading to an ink-reservoir, and the other end leading to and connected with an ink-feeder as set forth.

11. In a reservoir-pen or the like, a holder having a cavity two wheels and a disk and axle within such cavity, rollers mounted between one of the wheels and the disk, and the other wheel having gear-teeth, a rack also within the cavity and gearing with the said wheel, a movable ink-feeder connected with the said rack, and an india-rubber tube in the cavity with its ends connected to the said feeder and the ink-reservoir respectively, substantially as set forth.

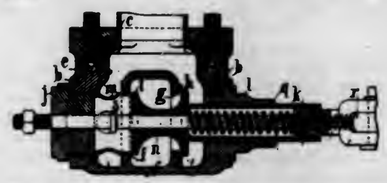
12. In a reservoir-pen or the like, a holder having a cylindrical transverse cavity with two holes at the opposite sides of such cavity, a movable ink-feeder, an india-rubber tube in such cavity with one end connected to the said feeder and the other end leading into the ink-reservoir, an axle in such cavity, a wheel on such axle and adjoining the said cavity studs on the wheel and rollers on the said studs and within the cavity, as and for the purposes set forth.

13. In a reservoir-pen or the like, a holder having a transverse cylindrical cavity and with two holes at opposite sides of such cavity, a movable feeder, an india-rubber tube in said cavity with one end connected to the feeder and the other end leading into the ink-reservoir, two disk-wheels in such cavity, studs on such disks and rollers loose on such studs; disks at the ends of the cavity, an axle passing loosely through the disks, a wheel fastened at one end of the axle, another wheel running loose at the opposite end of such axle and having a boss with gear-teeth, a rack operated by such gear-teeth and connected to the feeder, substantially as set forth.

14. In a reservoir-pen a movable feeder having a box-like part with lateral extension a rod upon which the extension is capable of sliding, and said box-like part also having a further extension terminating in a rack, as set forth.

15. An india-rubber tube with one part straight and another part curved to the form of a semicircle, and said tube having flanges as and for the purposes set forth.

754,001. REGULATING DEVICE FOR ENGINES. MARCEL MUTEL, Paris, France. Filed Oct. 12, 1903. Serial No. 176,741. (No model.)



*Claim.*—1. In a regulating device for engines the combination with the governor of a rod connected therewith, a valve-casing through which the working gases must pass, a double-seated valve in said casing mounted loosely upon the governor-rod aforesaid therein, a spring connection between the governor-rod and the valve whereby the rod is allowed to move farther after the valve is closed on its seating, substantially as described.

2. In a regulating device for engines the combination with the governor of a rod connected therewith, a valve-casing through which the working gases must pass, a double-seated valve in said casing mounted loosely upon the governor-rod therein, the operating-faces of said valve being unequal, a tubular projection on the valve through which the governor-rod passes, a collar on said rod beyond the valve, and a spring in the tubular projection arranged in such manner as to tend to keep the valve pressed against its seatings or against the collar on the governor-rod.

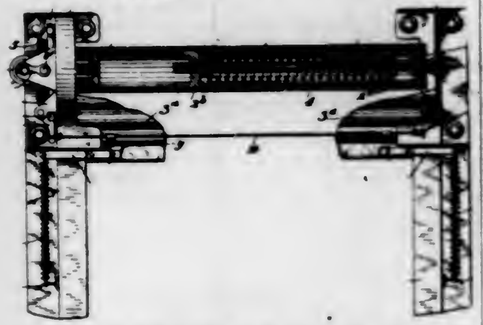
3. In a regulating device for engines the combination with the governor of a rod connected therewith, a valve-casing through which the working gases must pass, a double-seated valve in said casing mounted loosely upon the governor-rod therein, the operating-faces of said valve being unequal, an adjustable seating for one operating-face of said valve in the casing, a tubular projection on the valve through which the governor-rod passes, a collar on said rod beyond the valve, and a spring in the tubular projection arranged in such manner as to tend to keep the valve pressed against its seatings or against the collar on the governor-rod.

4. In a regulating device for engines the combination with the governor of a rod connected therewith, a valve-casing through which the working gases must pass, a double-seated valve in said casing mounted loosely upon the governor-rod therein, the operating-faces of said valve being unequal, a tubular projection on one valve portion, a nipple on the valve-casing through which said projection passes, said projection thus being under atmospheric pressure whereby it serves to compensate the inequality of the valve-faces, a collar on the governor-rod beyond the valve and spring means tending to press the valve upon its seats or against the collar.

5. In a regulating device for engines the combination with the governor of a rod connected therewith, a valve-casing through which the working gases must pass, a double-seated valve in said casing mounted loosely upon the governor-rod aforesaid therein, a spring connection between the governor-rod and the valve whereby the rod is allowed to move further after the valve is closed on its seating and means for automatically admitting air to the casing beyond the valve when said valve is closed on its seating, substantially as described.

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**754,002. FIREPROOF BLIND.** EDWARD H. MCCLOUD, Columbus, Ohio, assignor to the Kinnear Manufacturing Company, Columbus, Ohio, a Corporation of West Virginia. Filed Nov. 15, 1902. Serial No. 131,556. (No model.)



*Claim.*—1. In a fireproof blind, the combination of end casings, a shaft fixed in one of said casings, a curtain-winding drum to turn on said shaft, a coil-spring encircling said fixed shaft fixed at one end and connected to the drum at the other, a rotary shaft connected with and supporting the roller at the opposite end casing, means for engaging and holding said rotary shaft temporarily from rotation, and means for releasing said rotary shaft by a dangerous rise of temperature.

2. In a fireproof blind, the combination of end casings, a shaft fixed in one of said casings, a rotary shaft connected with and supporting the roller in the opposite end casing, means connected with said shaft for holding the same temporarily from rotation, means for releasing said holding means by a dangerous rise of temperature, and means connected with said shaft for operating it to wind up the curtain.

3. In a fireproof blind, the combination of end casings, a shaft fixed in one of said casings, a curtain-winding drum to turn on said shaft, a coil-spring encircling said fixed shaft fixed at one end and connected to the drum at the other, a rotary shaft connected with the roller and supporting it in the opposite end casing, means for temporarily holding fixed said rotary shaft comprising an arm fixed thereto and projecting laterally therefrom, a lever engaged by said arm and a latch to hold said lever in engagement with said arm and means fusible by a dangerous rise of temperature to release said latch.

4. In a fireproof blind, the combination of means for holding the same in raised position, means for automatically releasing the same on a dangerous rise of temperature, and means supplemental to the weight of the curtain for giving an initial movement only to said blind upon the release thereof.

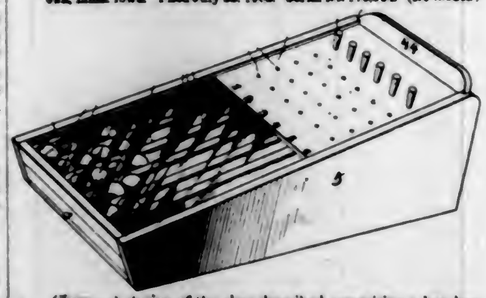
5. In a fireproof blind, the combination of end casings, a shaft fixed in one of said casings, a curtain-winding drum to turn on said shaft, a spring between said drum and fixed shaft, a rotary shaft supporting the roller in the opposite end casing, means for engaging and holding said rotary shaft, and means for releasing said shaft on a dangerous rise of temperature, a gear on said rotary shaft, and a pinion to engage said gear.

6. In a fireproof blind, the combination with a curtain-winding drum, a shaft fixed to said drum for winding the same, a gear on said shaft, a pinion for engaging said gear having a longitudinally-movable shaft whereby said pinion may be released from engagement with said gear.

7. In combination with a series of fireproof blinds, latches for holding said blinds in raised position, a non-fusible wire connecting said latches, a lever to which said wire is attached, a wire severable on a dangerous rise of temperature also connected to said lever and fastened to hold said latches in latching position.

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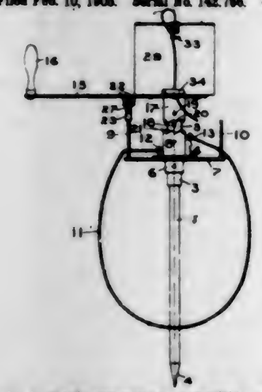
**754,003. COMBINATION GAME-COUNTER.** CHRISTIAN C. NEYZER, Lima, Iowa. Filed July 22, 1902. Serial No. 116,584. (No model.)



*Claim.*—A device of the class described comprising a box having grooves adjacent the upper edges of its sides on their inner faces, a horizontal longitudinal partition disposed within the box and at an angle to the bottom of the box and having perforations therethrough, and grooves in its upper face connecting with the perforations, a drawer disposed below the partition, counting-balls disposed within the grooves of the partition and adapted to pass through the perforations into the drawer, and a perforated board removably disposed with its edges in the grooves of the sides and adapted to receive counting-pins in its perforations.

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**754,004. SHOCK-COMPRESSOR.** GUSTAV A. OLSON, Albert Lea, Minn. Filed Feb. 10, 1903. Serial No. 142,786. (No model.)



*Claim.*—1. A shock-compressor comprising, in combination, a thrust-pin, a spool carried thereby, a compressing-rope having its ends connected with the spool, and spool-engaging means also carried by the thrust-pin and adapted to be moved into engagement with the spool to cause the spool to revolve to wind up the rope, and out of engagement with the spool to allow the rope to turn the spool and unwind therefrom.

2. A shock-compressor comprising, in combination, a thrust-pin, a handle carried thereby and provided with spool-engaging means, a spool loosely mounted upon the thrust-pin near the handle and revoluable independently of the handle, and a compressing-rope having its ends connected with the spool, the handle being adapted to be moved into engagement with the spool to cause the spool to revolve to wind up the rope, and out of engagement with the spool to allow the rope to turn the spool and unwind therefrom.

3. A shock-compressor comprising, in combination, a thrust-pin, a spool loosely and revolubly mounted thereon, a compressing-rope having its ends connected with the spool, means carried by the thrust-pin for engaging the spool and causing it to revolve with the pin to wind up the rope, and means for preventing the pin and spool from turning back.



4. A shock-compressor comprising, in combination, a thrust-pin, a spool loosely and revolubly mounted thereon, a guard-plate also loosely and revolubly mounted thereon and having rope-guides at its ends, a compressing-rope having its ends connected with the spool and intermediately engaging said guides, means to revolve the spool to wind said rope, and means to prevent the spool from turning back to unwind the rope.

5. A shock-compressor comprising, in combination, a thrust-pin, a spool loosely and revolubly mounted thereon, a guard-plate also loosely and revolubly mounted thereon and having slotted ends, a compressing-rope secured at one end to the spool and having at the other end means for detachable connection with the spool and passing intermediately through the slots in the guard-plate ends, and means to revolve the spool to wind the compressing-rope thereon.

6. A shock-compressor comprising, in combination, a thrust-pin, a spool loosely and revolubly mounted thereon, a guard-plate also loosely and revolubly mounted thereon and having rope-guides at its opposite ends, a compressing-rope having its ends connected with the spool and engaging intermediately the guides of the guard-plate, means carried by the thrust-pin for engaging the spool and causing it to revolve with the pin to wind up the rope, and means for holding the pin and spool from turning back to allow the rope to unwind.

7. A shock-compressor comprising, in combination, a thrust-pin, a spool loosely and revolubly mounted thereon and formed with teeth at its upper end, a guard-plate also loosely and revolubly mounted thereon and having a guide at each end, a compressing-rope having its ends connected with the spool and intermediately engaging the guides, a sleeve mounted upon the thrust-pin above the spool and slidable longitudinally thereon, the sleeve being formed with teeth upon its lower end adapted to engage with the teeth upon the upper end of the spool, whereby the spool may be made to revolve with the thrust-pin, and means for revolving the thrust-pin and sleeve.

8. A shock-compressor comprising, in combination, a thrust-pin, a spool loosely and revolubly mounted thereon, a guard-plate also loosely and revolubly mounted thereon and having upwardly-projecting end portions, the end portions being provided with rope-guides, a compressing-rope engaged by said guides and having its ends connected with the spool, whereby it may be wound up from both ends, a crank secured to the thrust-pin near its upper end, means connected with the crank for engaging the spool and causing it to revolve with the thrust-pin, a catch having pivotal support upon the crank and adapted to engage the end portions of the guard-plate and prevent the thrust-pin and spool from turning back to allow the compressing-rope to unwind.

9. A shock-compressor comprising, in combination, a thrust-pin and means to revolve it, a spool loosely and revolubly mounted on the thrust-pin, a compressing-rope having its ends connected with the spool, and a clutch device adapted to be moved into engagement with the spool to cause it to revolve with the pin to wind up the rope, and out of engagement with the spool to allow the rope to unwind from the spool.

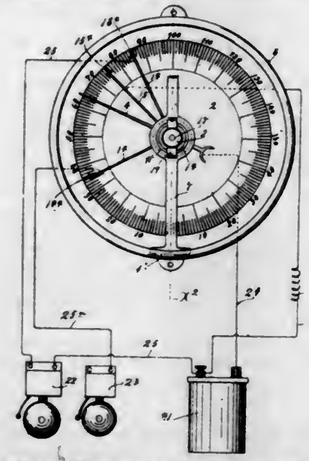
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**754,005. FIRE-ALARM OR TEMPERATURE-ANNUNCIATOR.** JOHN A. OLSON, Minneapolis, Minn., assignor to the Temperature Annunciator Company, a Corporation of Minnesota. Filed Aug. 3, 1903. Serial No. 168,014. (No model.)

*Claim.*—1. A device of the character described, comprising a case having a dial, an automatically-actuated pointer, a plurality of electrodes cooperating with said pointer and having concentric stems insulated from each other, and an electric circuit including said pointer and said electrodes and involving an element which is actuated by the closing of the circuit between said pointer and one or the other of said electrodes, substantially as described.

2. In a device of the character described, the combination with a case having a dial and an automatically-actuated pointer, of a plurality of electrodes cooperating with said pointer and having concentric stems insulated from each other, a support for the said concentric stems, a spring-bracket through which the central member of the electrode-stems projects, a nut on the said projecting stem outward of said bracket, by the tightening of which all of the electrodes are set under friction, and an electric circuit including said electrodes and said pointer and involving an element which is actuated by the closing of the circuit between said pointer and one or the other of said electrodes, substantially as described.

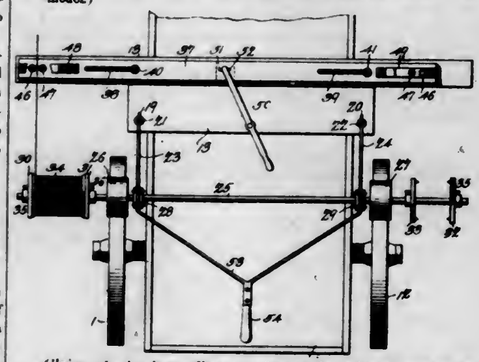
3. In a device of the character described, the combination with a case having a dial and a cooperating automatically-actuated pointer, of a rigid bar or strap held by the said case and spaced outward from the dial, an electrode pivotally mounted at the central portion of said bar or strap and working between said strap and said dial and cooperating with said pointer, and an electric circuit including the said pointer and said electrodes and involving an element which is actuated by the closing of the circuit between said pointer and electrodes, substantially as described.



4. In a device of the character described, the combination with a case having a dial and a pointer, of a crystal supported by said case outward of said dial, a bearing at the central portion of said crystal, a rigid bar or strap held by said case and supporting said bearing independently of said crystal, an electrode journaled in said central bearing, and an electric circuit including said pointer and said electrode and involving an element which is actuated by the closing of the circuit between said pointer and said electrode, substantially as described.

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**754,006. WIRE-REELING APPARATUS.** CHARLES L. PACKER, Wilton Junction, Iowa. Filed Dec. 27, 1902. Serial No. 136,837. (No model.)



*Claim.*—1. A wire-reeling attachment for vehicles, wagons or the like, comprising an upper frame member, a lower frame member, and clamping devices connecting the two, a pivotally-mounted journal-frame carried by said upper frame member, a transverse shaft journaled in said pivoted frame, rollers upon said shaft, and reel-supports carried at the extremities of said shaft, as and for the purpose set forth.

2. The combination with a vehicle having a body of a frame transversely disposed thereon, clamp-bolts for the frame having eyes in their upper ends above the frame and connected to the vehicle-body by their lower ends, a shaft having pulleys in frictional contact with the wheels of the vehicle, wire-spool supports carried by said shaft, spaced rods having eyes in one end movably engaging the eyes in said clamp-bolts and connected to the said shaft, wire-guides carried movably by said frame, and means for adjusting said

guides transversely of the path of the wire leading to or from said spools, substantially as described.

3. The combination with a vehicle, of a frame mounted thereon, a shaft mounted to swing from said frame and carrying pulleys in frictional contact with the wheels of the vehicle, wire-spool supports carried by said shaft, a bar provided with slots and sliding longitudinally upon the frame, bolts secured to the frame and extending through the slots in the bar, brackets having opposite rollers carried by said bar, and means for adjusting the bar to move the rolls transversely across the path of the wire.

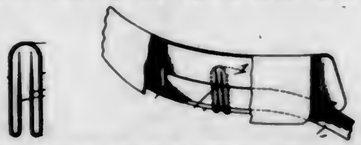
4. The combination with a vehicle of a frame transversely disposed thereon, clamp-bolts having eyes in their upper ends above the frame and with their lower ends threaded, a clamp-plate transversely disposed beneath said vehicle and engaging said clamp-bolts and held thereon by clamp-nuts, a shaft having pulleys in frictional contact with the wheels of the vehicle, and carrying wire-spool supports, and means for coupling said shaft to the clamp-bolt eyes, substantially as described.

5. A wire-reeling attachment for vehicles, wagons or the like, comprising an upper frame member, a lower frame member, and clamping devices connecting the two, a transverse shaft and a support therefor pivotally mounted on said upper frame member, rollers carried by said shaft and arranged to contact with the wheels of the vehicle, and supports adjacent to the extremities of said shaft and arranged to removably engage the usual wire-carrying reels, as and for purpose set forth.

6. A wire-reeling attachment for vehicles, wagons or the like, comprising an upper frame member, a lower frame member, and clamping devices connecting the two, a transverse shaft and a pivoted support therefor mounted on said upper frame member, rollers on said shaft, and reel-supports at the extremities of said shaft adjacent to said rollers, and a slidable bar arranged upon said upper frame member and constituting a deployer, as and for the purpose set forth.

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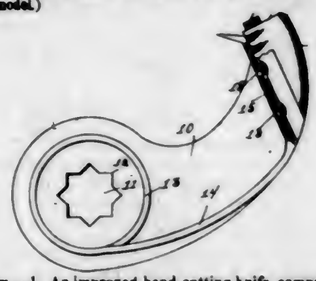
**754,007. NECKTIE-BAND HOLDER.** GEORGE G. PARSONS, Madera, Cal. Filed Mar. 7, 1903. Serial No. 146,723. (No model.)



*Claim.*—A necktie-band holder comprising a single piece of metal having a central curved bend to provide vertical side arms of equal lengths, said side arms being bent at their central or middle portions into U-shaped forms to produce vertical prongs which are arranged parallel with and between the side arms, and said prongs being constructed to extend the lengths of said arms, substantially as specified.

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**754,008. KNIFE FOR BAND-CUTTERS AND FEEDERS.** GEORGE W. PARSONS, Newton, Iowa, assignor to Parsons-Hawkeye Manufacturing Co., Newton, Iowa. Filed Jan. 13, 1903. Serial No. 138,945. (No model.)



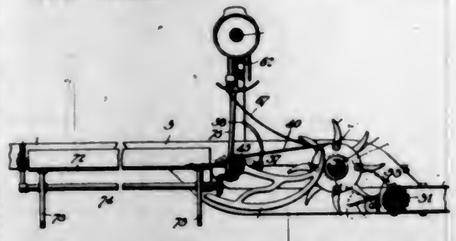

*Claim.*—1. An improved band-cutting knife, comprising a body portion provided with a dovetailed groove at its outer portion, said groove extending in the same direction in which the body portion runs, and a detachable blade having yielding sides inserted in said dovetailed groove and retained therein by the resiliency of the yielding sides.

2. An improved band-cutting knife, comprising in combination, a body portion having a dovetailed groove, and a detachable blade, having one edge corrugated, the corrugations being tapered from a maximum at the edge to a minimum toward the longitudinal center of the body of the blade, whereby the blade is held in the dovetailed groove by the resiliency of the metal at the point where the corrugations are made.

3. An improved band-cutting knife, comprising in combination a body portion susceptible of being cast complete in one piece having in its inner end portion an angular opening to receive an angular shaft, and having at its outer end a dovetailed groove open at one end and closed at its other end, and a blade having one edge corrugated, the corrugations tapering from a maximum thickness nearest the edge to a minimum near the longitudinal center of the blade and having its other edge curved and sharpened, for the purposes stated.

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**754,009. GRAIN-BINDING HARVESTER.** ROBERT L. PARSONS, Olmstead, Ky., assignor of one-half to Thomas M. Traughber and Beverly C. Crumbaugh, Olmstead, Ky. Filed Oct. 1, 1903. Serial No. 175,346. (No model.)



*Claim.*—1. In a grain-binding harvester, an endless apron forming a carrier, a packer-shaft disposed adjacent to and transmitting motion to said carrier, a plurality of disks upon said packer-shaft, having pivoted, radially-extending, spring-actuated arms, and means for transmitting motion to the packer-shaft from a rotary supporting member of the machine.

2. In a grain-binding harvester, an endless grain-carrying apron, a packer-shaft disposed adjacent to the inner end of said apron and transmitting motion to the latter, a plurality of disks mounted upon the packer-shaft, radially-extending spring-actuated arms connected pivotally with said disks, a grain-board having slots for the passage of said disks and arms, a shaft mounted below the grain-board and having an arm extending through a slot in the latter to form a resistance to the grain packed upon the grain-board, a needle-shaft, a needle upon the latter, knotting mechanism cooperating with the needle, and means for releasing the operating mechanism at the proper time when a gavel has been formed and the resistance-arm has been thereby depressed.

3. In a machine of the class described, the combination with grain-binding mechanism, of a resistance-arm located in the path of the gavel, a shaft carrying a series of disks, each provided with a plurality of radially-extending, pivoted, spring-actuated packer-arms, a grain-board having slots for the passage of said packer-arms and for said resistance-arm, a trip upon the end of the resistance-arm, and means, released by said trip when the resistance-arm is depressed by the accumulated gavel, for conveying motion to the needle-carrying shaft, the knot-tying mechanism and the dumping mechanism.

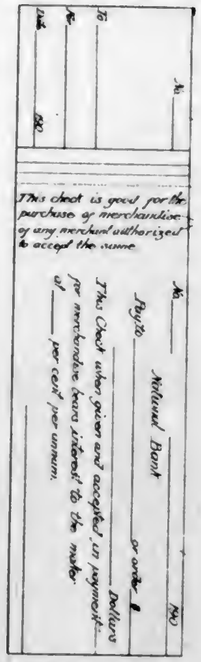
4. In a machine of the class described, a continuously-rotating packer-shaft, a casing mounted loosely upon said shaft, a lever mounted pivotally in said casing and having a centrally-disposed eye and a slot extending laterally from the latter, a lug upon the end of the shaft adapted to engage said slot, a spring connecting the lever with the casing and actuating the lever to cause the slotted portion thereof to engage the lug upon the end of the shaft, a needle-carrying shaft, an arm mounted loosely upon the latter and normally engaging the protruding end of the lever, a shaft having a resistance-arm normally disposed in the path of the grain, a trip upon the end of said shaft having an arm bearing against the under side of the arm upon the needle-shaft to release said arm from contact with the lever when the resistance-arm is depressed, a knotter-shaft, means for transmitting motion to the latter from the casing upon the packer-shaft, a disk upon the knotter-shaft, a crank upon the needle-shaft, a pitman connecting said crank with said disk, and a spring connecting said crank with the arm which is mounted pivotally upon the needle-shaft.

5. In a machine of the class described, a clutch mechanism comprising a disk mounted loosely upon a continuously-operated shaft and having a cavity therein, a slotted lever mounted pivotally in the cavity of said disk and adapted to engage an arc-shaped lug upon the end of the latter and to be thus locked upon the shaft, a spring disposed to urge the lever in the direction of its locked position, a spring-actuated arm normally engaging the protruding end of the lever and holding it disconnected from the shaft, intermittently-operated means for tripping the said arm, and means for restoring said arm into the path of the lever.



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**754,010. COMMERCIAL PAPER.** CHARLES L. PRITCHARD, Aurora, Ill. Filed May 23, 1903. Serial No. 158,390. (No model.)




*Claim.*—1. A medium for use in commercial transactions substantially in the form of a check and bearing a notice that the check is for a specified purpose in transactions with certain authorized persons and a statement that the check bears interest to the maker.

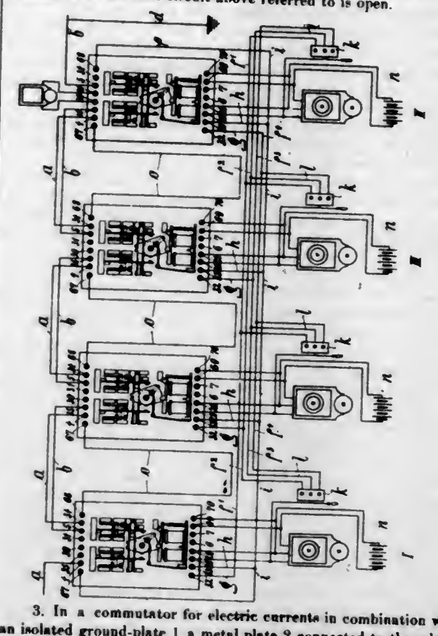
2. A medium for use in commercial transactions substantially in the form of a check, and bearing a notice authorizing the use of the check for the purchase of merchandise of certain authorized persons and also that when used for a purpose stated it bears interest to the maker.

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**754,011. COMMUTATOR FOR TELEPHONIC OR OTHER CIRCUITS.** CARL H. PRÖTT, Rheydt, Germany. Filed June 14, 1902. Serial No. 111,632. (No model.)

*Claim.*—1. A series of telephone or other electric stations, including a main station which controls communication between a central or other additional station and any station in said series, each station in the said series being provided with a commutating device capable of taking any one of three circuit-controlling positions, in combination with contacts and conductors, one of the said positions leaving the apparatus normal and inactive, another position making an operative circuit between one of the said stations and the central station and the third position making an operative circuit between any two stations of the series, the conductors being arranged to leave inactive the stations of the series which are not in speaking or other active circuit substantially as set forth.

2. A series of telephonic or other electric stations, including a main station which controls communication between the central station and any station of said series, each station being provided with a commutating device adapted to be turned into position for closing circuit through the telephonic or other indicating devices of the said station and the central station in combination with said telephonic devices means for automatically locking the said commutating device in this position and thereby barring the central office-circuit to all the other stations of the series and means for releasing the said commutating device and opening the said circuit to any of the other stations when the first circuit above referred to is open.



3. In a commutator for electric currents in combination with an isolated ground-plate 1, a metal plate 2 connected to the admission-wire *a*, a similar metal plate 3 connected to the derivation-wire *b*, a spring 8 fixed to said metal plate 2, a spring 9 fixed to the metal plate 3, a commutator-cam 37 placed between the free ends of said springs 8, 9 said cam 37 being held rotatory upon a pin 36 on the ground-plate 1, a handle 74 upon said pin outside of a cover 73, metal plates 14, 15 arranged respectively right and left of said spring 8 and below said metal plate 2, similarly-arranged metal plates 16, 17 right and left of spring 9, said plates 14 and 17 being respectively connected to clamps 28, 29, holding the lines to and from the speaking and hearing apparatus *m*, while the plates 15 and 16 respectively are connected to clamps 30 and 31 respectively, leading to a call-bell *c*, springs 10 and 11 fixed respectively to said plates 14, 15 and springs 12, 13 fixed respectively to said plates 16, 17 said inner springs 11, 12 being pressed against contact-pieces 24, 25 respectively of plates 26, 27, while said outer springs 10, 13 by their own elasticity are pressed against the contact-pieces 18, 19 of plates 20 or 21 respectively, contact-pieces 40 and 41 on springs 10, 13 respectively against which contacts 40, 41 the springs 8, 9 respectively may be pressed, contact-pieces 42, 43 on plates 20, 21 respectively making contact with said springs 11, 12 respectively when the springs 8, 9 are pressed against the contacts 40, 41 of springs 10, 13 respectively, clamps 32, 33 on ground-plate 1 for connecting said plates 20 and 21 respectively to a speaking-line *g* and a house-line *h* respectively, plates 26, 27 and clamps 34, 35 respectively for connecting said plates 26, 27 respectively to the admission-line *a* and to the derivation-line *b* respectively, the whole as described and illustrated and for the purpose set forth.

4. In a commutator for electric lines with intermediate stations for currents of weak and strong intensity an isolated ground-plate 1 having fixed thereto metal plates 2, 3, clamps 4, 5, 6, 7, springs 8, 9 connected respectively to said plates 2, 3, metal plates 14, 15, 16, 17, springs 10, 11, 12, 13 connected to said plates 14, 15, 16, 17 respectively clamps 28, 29 and 30, 31, plates 20, 21, 26 and 27 and clamps 32, 33, 34, 35 respectively, for connecting said plates to a speaking-line *g*, a house-line *h*, an admission-line *a* and a derivation-line *b* respectively, a commutator-cam 37 on a pin 36 and a handle 74 fixed thereon in combination with metal plates 56, 57, 60, 63, 65 respectively, springs 54, 55 attached to said plates 56, 57 respectively, a distance-piece 58 held on spring 54 between said springs 54, 55, contact-pieces 59, 62, 64 on plates 60, 63 and 65 respectively, clamps 69, 70, 67, 68 for connecting said plates 63, 65, 56, 60 to the controlling-lines *p*, *o* respectively, the whole as described and illustrated and for the purpose set forth.

5. In a commutator for electric lines with intermediate stations for currents of weak and strong intensity an isolated ground-plate 1 having fixed thereto metal plates 2, 3, clamps 4, 5, 6, 7, springs 8, 9 connected respectively to said plates 2, 3, metal plates 14, 15, 16, 17, springs 10, 11, 12, 13 connected to said plates 14, 15, 16 and 17 respectively, clamps 28, 29, 30 and 31, plates 20, 21, 26, 27 and clamps 32, 33, 34, 35 respectively for connecting said plates to a speaking-line *g*, a house-line *h*, an admission-line *a* and a derivation-line *b* respectively, metal plates 56, 57, 60, 63, 65 respectively, springs 54, 55 fixed to said plates 56, 57 respectively, a distance-piece 58 between said springs, contact-pieces 59, 62, 64 on plates 60, 63 and 65 respectively, clamps 69, 70, 67 and 68 for connecting said plates 56, 60, 63 and 65 respectively to controlling-lines *o* and *p* respectively, a commutator-cam 37 on a pin 36, a handle 74 on said pin, a hub 37ª on the cam 37, supporting said springs 54, 55, projections 61 on hub 37ª, lifting the spring 54 out of contact with the plate 60, a projection 66 raising both springs so much, that spring 55 comes in contact with contact-piece 64 of plate 65 in combination with an electromagnet 44, a stay 45 held on a bracket 46, a spring 47 tending to pull the stay away from the magnet, a pin 48 limiting the path of the stay, a recess 50 on the upper side of the same, a projection 49 on the lower side of the commutator-cam limiting the turning of the commutator-cam, when the stay is not attracted by the magnet 44, a spring 52 connected to the commutator-cam and a rod 51 having the tendency to press the same toward the right side, the whole as described and illustrated and for the purpose set forth.

6. In a commutator for electric lines with intermediate stations for currents of weak and strong intensity an isolated ground-plate 1, metal plates 2, 3 fixed thereon, springs 8, 9 attached to said plates respectively, knobs 38 at the end of said springs in combination with a commutator-cam 37 on a pin 36 carrying a handle 74, said cam having recesses 39 at diametrically opposite sides for holding the springs spread asunder by the knobs 38 falling into said recesses when the cam is turned, a spring 52 connected to said cam by a rod 51 and held fast at one end to the ground-plate 1, said spring tending to press the commutator-cam into its position of rest, a hammer 75 fixed to the handle 74 of the commutator-cam 37, a bell 76 fixed on the cover 73 of the commutator-case so, that the bell is made to sound when the commutator-cam is brought in its normal position of rest, thereby indicating that the line is free; the whole as described and illustrated and for the purpose set forth.

754,012. **WRENCH.** JOSEPH M. REAMS, Seattle, Wash. Filed Feb. 25, 1903. Serial No. 145,015. (No model.)



*Claim.*—1. A device of the class described, comprising among its members, a ratchet, a casing in which the ratchet is mounted, a pawl having oppositely-disposed ratchet-engaging portions, mounted in said casing with a shifting pivotal connection between them, whereby differing movements of the pawl shifts the pivot of the pawl to cause the different ratchet-engaging portions to engage the ratchet, substantially as described.

2. A device of the class described, comprising among its members, the ratchet, the casing in which the ratchet is movably mounted, the pawl and its operating-handle, said pawl having two pivotal points within said casing, and adapted to be shifted from one to the other to reverse the movement of the ratchet, substantially as described.

3. A device of the class described comprising among its members, the ratchet, the casing in which the ratchet is movably mounted, the pawl and its operating-handle, said pawl having two pivotal points within said casing adapted to be moved by the handle from one to the other to reverse the movement of the ratchet, substantially as described.

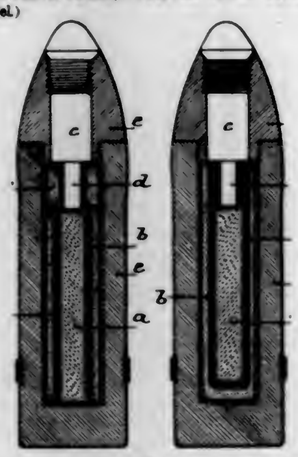
4. A device of the class described, comprising among its members, a ratchet, a pawl having opposite ratchet-engaging portions, and opposite pivotal portions, a casing in which the said ratchet and pawl are mounted having bearings to receive the pivotal portions of the pawl, substantially as described.

5. A device of the class described comprising among its members a ratchet, a casing in which said ratchet is mounted, a pawl having opposite ratchet-engaging portions, mounted in said casing with a shifting pivotal connection between them, whereby opposite movements of the pawl shifts the pivotal point of the pawl to bring the different ratchet-engaging portions into use and a spring to assist in maintaining the pawl in its chosen pivotal position, substantially as described.

6. A device of the class described, comprising among its members a ratchet, a casing in which the ratchet is mounted, a pawl having opposite ratchet-engaging portions, a handle connected with said pawl, whereby either of the ratchet-engaging portions of the pawl can be brought into contact with the ratchet by a movement of the handle, and means for holding one part of the pawl out of engagement, substantially as described.

7. A wrench of the class described, comprising a ratchet provided with an opening to receive a nut or bolt, a casing in which said ratchet is movably mounted, said casing provided with the socket and pivotal recesses, of a pawl having two pivotal portions loosely mounted in said casing and the shifting collar, substantially as described.

754,013. **AMMUNITION-SHELL.** ERNST VON REICHENAU, Düsseldorf-Oberkassel, Germany. Filed June 16, 1902. Serial No. 111,845. (No model.)



*Claim.*—1. An ammunition-shell comprising a suitable casing, a high-explosive bursting charge arranged within the casing and limited in amount to that necessary to burst the shell, whereby a rapid explosion is obtained and the fragments of shell given a small scattering-angle, and a smoke-generating substance arranged within the casing to be ignited by the explosion of the bursting charge.

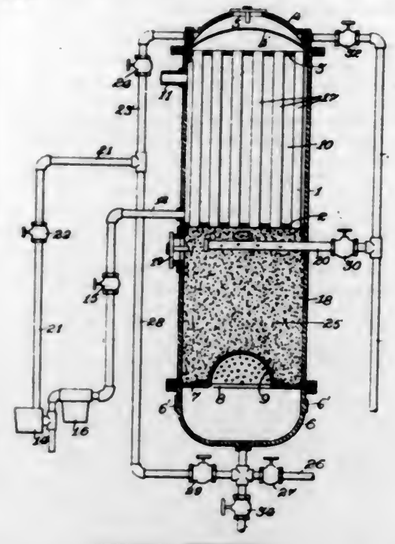
2. An ammunition-shell comprising an outer casing, a high-explosive bursting charge arranged centrally within said casing in the form of a relatively long body and limited in amount to that necessary to burst the shell, and a smoke-generating substance arranged within said casing and extending concentric with and throughout the length of the bursting charge and adapted to be ignited by said charge, substantially as described, for the purpose set forth.

3. An ammunition-shell comprising a suitable casing, a high-explosive bursting charge arranged within the casing, and a charge of smoke-generating substance suitably arranged within the casing to be ignited by the explosive material when the latter explodes, for the purpose described.

754,014. **HEATER AND PURIFIER.** ROBERT M. ROSS, Allegheny, Pa. Filed Aug. 5, 1903. Serial No. 168,318. (No model.)

*Claim.*—In a device of the character described, the combination of an outer shell, caps for closing the ends of said shell, a heating-chamber formed within said shell, pipes leading through said chamber, a filtering-chamber located within said shell adjacent to the heating-chamber, filtering material within said filtering-chamber, a steam-inlet pipe connecting with the heating-chamber, a pipe for conducting the condensation from said chamber to a steam-trap, a pump for forcing water through the apparatus, connections between the steam-trap and pump whereby the condensation from the heating-chamber may be forced through the apparatus, waste connections whereby the apparatus may be cleansed, and valves for controlling the several connections, substantially as and for the purpose described.





754,015. **DEVICE FOR STORING AND ADMINISTERING SERUM.** FRANK G. RYAN, Detroit, Mich., assignor to Parke, Davis & Company, Detroit, Mich., a Corporation of Michigan. Filed Apr. 1, 1903. Serial No. 150,573. (No model.)



*Claim.*—1. The combination with a receptacle having openings at its opposite ends, of penetrable caps covering said openings and engaging the sides of the receptacle, a delivery device and compressor, and connections between said delivery device and compressor and said penetrable caps.

2. The combination with a glass receptacle having reduced complementary extensions, open at their ends, and permanent penetrable metallic caps covering said openings and engaging the sides of the receptacle.

3. In a syringe, the combination with a glass syringe-body having reduced extensions, open at their ends, of a delivery device and a compressor, and permanent metallic penetrable caps covering the open ends of the extensions and engaging the sides thereof and adapted for connection with said delivery device and compressor.

4. In a syringe, the combination with a syringe-body having a reduced extension open at its end, a permanent penetrable cap covering the open end of the extension, a threaded portion on said cap, and a hypodermic needle having a threaded engagement with the cap.

5. The combination with a receptacle having open ends, a cap covering one of said open ends, said cap being penetrable and having a reduced portion at its outer end, and a hypodermic needle having an engagement with said reduced portion of the cap.

6. The combination with a glass storage-receptacle having a tubular extension provided with an open end, a penetrable seal closing the end, and a permanent penetrable cap engaging over the tubular extension and covering the end and seal.

7. In a syringe, the combination with a syringe-body having oppositely-projecting reduced extensions open at their ends, of a penetrable seal closing each end, and permanent penetrable caps covering the extension ends and having portions adapted to receive thereon respectively a syringe-bulb and needle.

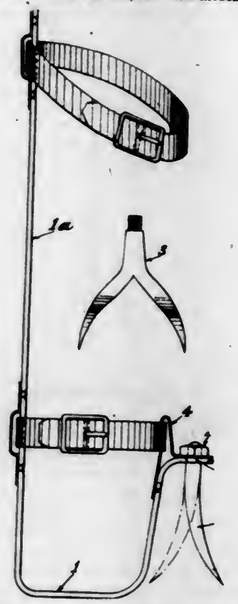
8. In a syringe, the combination with a glass receptacle, terminating in reduced open nipples, of a cap of penetrable material fitting over one end and having a plain exterior to receive the nipple of a rubber bulb, a cap over the other end having a penetrable end and a screw-threaded nipple adapted to receive a hypodermic needle, the rubber bulb and the needle having means for connection to the opposite ends, substantially as described.

9. The combination with a receptacle having an open end, a cap covering said open end, said cap being penetrable and forming a stop having a reduced portion at its outer end, and a hypodermic needle having a screw-threaded engagement with said reduced portion of the cap, and abutting against the stop.

10. The combination with a receptacle having an open end, a cap covering said open end, said cap being penetrable and having a shoulder around the outer surface of its sides, and a hypodermic needle having an engagement with said cap, the shoulders thereon limiting the inward movement of the needle-engaging means.

11. The combination with a receptacle having a reduced tubular extension open at its end, and a penetrable cap covering said opening, the said cap having a portion engaging over the sides of the reduced tubular extension.

754,016. **POLE-CLIMBER.** FRANK X. SCHMUCKER, Morris, Ill. Filed June 11, 1903. Serial No. 161,031. (No model.)



*Claim.*—1. A device of the character described, comprising a stirrup having an outstanding portion and a spur axially movable in said portion and having applied thereto a fastening for its retention in position.

2. A device of the character described, comprising a stirrup having an outstanding portion, a spur having a shank formed with an angular, and a screw-threaded, portion, axially movable in said outstanding portion, and a nut applied to said screw-threaded portion, above said outstanding portion.

3. A device of the character described, embracing a stirrup having a long arm applied to the outside of the leg of the user, and its short arm having an outstanding portion and a spur axially movable in said outstanding portion, and having applied thereto a fastening for its retention in position.

4. A device of the character described, comprising a stirrup and a spur, said stirrup having an arm provided with an outstanding end portion provided with an aperture, receiving a shank portion of said spur, and means effecting the retention of said shank portion in said aperture.

5. A device of the character described, comprising a stirrup, and a spur having an angular shank portion and an upper end screw-threaded portion, said stirrup having an outstanding portion provided with an aperture receiving said angular shank portion, and a nut engaging said screw-threaded portion.

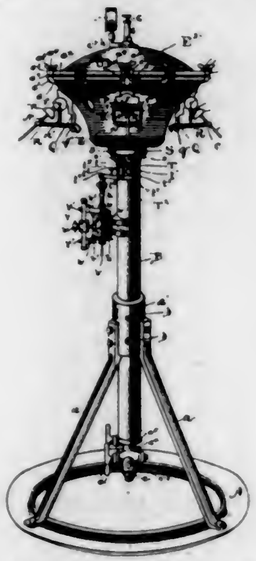
6. A device of the character described, comprising a stirrup, a spur, said stirrup having an apertured outstanding portion adapted to receive the shank of said spur, a spring connected to said stirrup

and having one end adapted to also receive the shank portion of said spur, and a nut applied to the upper end of said spur, and engaging and forcing said spring, at its spur-shank-receiving portion, into contact with said stirrup outstanding portion.

7. A device of the character described, comprising a stirrup, a spur, said stirrup having an apertured outstanding portion adapted to receive the shank of said spur, a spring connected to said stirrup and formed or produced into a loop, with one end extending laterally therefrom and adapted to also receive the shank portion of said spur, and a nut applied to the upper end of said spur and engaging and forcing the laterally-extending portion of said spring into contact with said stirrup outstanding portion.

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**754,017. MACHINE FOR BOTTLING LIQUIDS.** ADOLPH SCHNEIDER, Chicago, Ill. Filed Nov. 14, 1902. Serial No. 131,305. (No model.)



*Claim.*—1. In a bottle-filling machine, the combination of a supporting-stand, a sleeve at the upper end of the stand, a tubular post passing through and vertically slidable in the sleeve, a liquid-supply-controlling cock entered into the lower end of the post, a liquid-supply tube within the tubular post or standard and in communication with the liquid-supply cock and having a circumferential bearing at its lower end in the cock and the end of the tubular post, and an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post or standard and from which in the axial line of the receptacle the liquid-supply tube is suspended to revolve with the receptacle, the liquid-supply tube having communication with the receptacle through the bearing-plate, substantially as described.

2. In a bottle-filling machine, the combination of a supporting-stand, a sleeve at the upper end of the stand, a tubular post passing through and vertically slidable in the sleeve, a liquid-supply-controlling cock entered into the lower end of the post and having a passage for the admission of liquid and a passage for the admission of pressure, a liquid-supply tube within the tubular post or standard, and in communication with the liquid and pressure supply controlling cock and having a circumferential bearing at its lower end in the cock and the end of the tubular post and through which both liquid and pressure can flow, and an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post or standard and from which in the axial line of the receptacle the liquid and pressure supply tube is suspended to revolve with the receptacle, the liquid and pressure supply tube having communication with the receptacle through the bearing-plate, substantially as described.

3. In a bottle-filling machine, the combination of a supporting-stand, a sleeve at the upper end of the stand, a tubular post passing through and vertically slidable in the sleeve, a liquid-supply-controlling cock entered into the lower end of the post and having a passage for the admission of liquid and a passage for the admission of pressure, a liquid-supply tube within the tubular post or standard, and in communication with the liquid and pressure supply controlling cock and having a circumferential bearing at its lower end in the cock and in the end of the tubular post, an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post and from which in the axial line of the receptacle the liquid-supply tube is suspended to revolve with the receptacle, the liquid-supply tube having communication with the receptacle through the bearing-plate and the receptacle consisting of a body and a convex cap or cover the lower portion of the body furnishing a liquid-receiving chamber and the upper portion of the body with the cover furnishing a pressure-chamber, substantially as described.

4. In a bottle-filling machine, the combination of a supporting-stand, a sleeve at the upper end of the stand, a tubular post passing through and vertically slidable in the sleeve, a liquid-supply-controlling cock entered into the lower end of the post, a liquid-supply tube within the tubular post or standard and having its lower end entered into the liquid-supply-controlling cock and in communication with the passage of said cock, a circumferential shoulder on the interior of the tubular post in contact with the lower end of the liquid-supply tube, a packing around the liquid-supply tube between the circumferential shoulder and the face of the controlling-cock around the supply-tube, and an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post and from which in the axial line of the receptacle the liquid-supply tube is suspended to revolve with the receptacle, the liquid-supply tube having communication with the receptacle through the bearing-plate, substantially as described.

5. In a bottle-filling machine, the combination of a vertical tubular post, a liquid-supply-controlling cock entered into the lower end of the post, a liquid-supply tube within the tubular post and in communication with the liquid-supply-controlling cock and having a circumferential bearing at its lower end in the cock and in the end of the tubular post, an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post and from which in the axial line of the receptacle the liquid-supply tube is suspended to revolve with the receptacle, the liquid-supply tube having communication with the receptacle through the bearing-plate and the receptacle consisting of a body and a convex cap or cover the lower portion of the body furnishing a liquid-receiving chamber and the upper portion of the body with the cover furnishing a pressure-chamber, substantially as described.

6. In a bottle-filling machine, the combination of a vertical tubular post, a liquid-supply-controlling cock entered into the lower end of the post, a liquid-supply tube within the tubular post and in communication with the liquid-supply-controlling cock and having a circumferential bearing at its lower end in the cock and in the end of the tubular post, an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post and from which in the axial line of the receptacle the liquid-supply tube is suspended to revolve with the receptacle, the liquid-supply tube having communication with the receptacle through the bearing-plate and the receptacle consisting of a body and a convex cap or cover the lower portion of the body furnishing a liquid-receiving chamber and the upper portion of the body with the cover furnishing a pressure-chamber, a pressure-regulator mounted on the cap or cover and having communication with the pressure-chamber, and means automatically operated by the rise and fall of the liquid in the receptacle to close and open the escape of the pressure-regulator, substantially as described.

7. In a bottle-filling machine, the combination of a vertical tubular post, a liquid-supply-controlling cock entered into the lower end of the post, a liquid-supply tube within the tubular post and in communication with the liquid-supply-controlling cock and having a circumferential bearing at its lower end in the cock and in the end of the tubular post, an intermittently-revoluble liquid-containing receptacle having on its bottom in the line of its axial center a bearing-plate by which it is supported and mounted on the tubular post and from which in the axial line of the receptacle the liquid-supply tube is suspended to revolve with the receptacle, the liquid-supply tube having communication with the receptacle through the bearing-plate and the receptacle consisting of a body and a convex cap or cover the lower portion of the body furnishing a liquid-receiving chamber and the upper portion of the body with the cover furnishing a pressure-chamber, a pressure-regulator mounted on the cap or cover and having communication with the pressure-chamber, a tube at the axial center of the bearing-plate in communication with the liquid-supply tube and extending into the liquid-chamber of the receptacle, a float around the extended end of the bearing-plate tube, a stem carried by the float, and a valve on the end of the stem controlling the venting of pressure by the pressure-regulator, substantially as described.

8. In a bottle-filling machine, the combination of a fixed vertical tubular post or standard, an intermittently-revoluble liquid-containing receptacle, a bearing-plate located in axial line with the center of the receptacle and having thereon a series of projections spaced equidistant apart and mounted on the upper end of the post and carrying the receptacle, and means operating successively on the projections and giving the plate a step-by-step advance and thereby intermittently revolving the receptacle, substantially as described.

9. In a bottle-filling machine, the combination of a vertical tubular post, an intermittently-revoluble liquid-containing receptacle, a bearing-plate located in axial line with and mounted on the upper end of the post and carrying the receptacle, a series of pins downwardly projecting from the under side of the plate, a pawl having a forward and backward movement given thereto for successively engaging the pins, and means for advancing and receding the pawl for the advance movement of the pawl by its engagement with a pin to advance the receptacle the distance of the throw of the pawl in its forward movement, substantially as described.

10. In a bottle-filling machine, the combination of a vertical tubular post, an intermittently-revoluble liquid-containing receptacle, a bearing-plate located in axial line with and mounted on the upper end of the post and carrying the receptacle, a series of pins downwardly projecting from the under side of the plate, a pawl having a forward and backward movement given thereto for successively engaging the pins, means for advancing and receding the pawl for the advanced movement of the pawl by its engagement with a pin to advance the receptacle the distance of the throw of the pawl in its forward movement, a lever carrying the pawl, and a reciprocating rod for actuating the lever to give the pawl its forward and backward throw, substantially as described.

11. In a bottle-filling machine, the combination of a vertical tubular post, a liquid-supply tube within the post an intermittently-revoluble liquid-containing receptacle, a plate in axial line with and mounted on the upper end of the post and carrying the liquid-containing receptacle and having suspended therefrom the liquid-supply tube, a series of pins downwardly projecting from the under side of the plate, a pawl having a forward and backward throw given thereto for successively engaging the pins and have the engagement of a pin with the forward throw of the pawl give the receptacle a partial rotation, and means for giving the pawl its forward and backward throw, substantially as described.

12. In a bottle-filling machine, the combination of a vertical tubular post, a liquid-supply-controlling cock entered into the lower end of the post, a liquid-supply tube within the post and in communication with the liquid-supply-controlling cock, an intermittently-revoluble liquid-containing receptacle, a plate in axial line with and mounted on the upper end of the post and carrying the liquid-containing receptacle and having suspended therefrom the liquid-supply tube, a series of pins downwardly projecting from the under side of the plate, a pawl having a forward and backarwd throw given thereto for successively engaging the pins and have the engagement of a pin with the forward throw of the pawl give the receptacle a partial rotation, and means for giving the pawl its forward and backward throw, substantially as described.

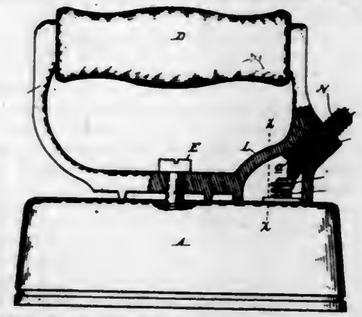
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**754,018. ELECTRIC SAD-IRON.** GEORGE J. SCHNEIDER, Detroit, Mich., assignor to American Electrical Heater Company, Detroit, Mich., a Corporation of Michigan. Filed Aug. 11, 1903. Serial No. 169,089. (No model.)

*Claim.*—1. The combination with a heater-body having electric terminals projecting therefrom, of the handle secured to said body and recessed to form a housing for said terminals

2. A combination with a heater-body having electric terminals projecting therefrom, and a flexible conductor connected to said terminals of a handle recessed to form a housing for said terminals, and apertured for the outward passage of said flexible conductor therefrom.

3. The combination with the heater-body of a flexible conductor connected thereto, a handle secured to said body recessed for the passage of said conductor therethrough, and a flexible tube projecting from said handle, and surrounding said flexible conductor.

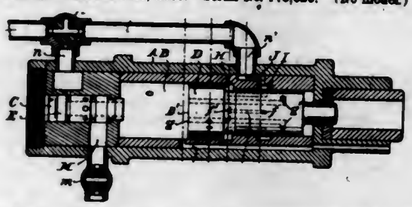


4. The combination with the heater-body of a flexible conductor connected therewith, a handle secured to said body and recessed for the passage of said flexible conductor therethrough, and a resilient helix secured at one end in said recess and projecting outward therethrough, surrounding said flexible conductor.

5. The combination with the heater-body having electric terminals projecting therethrough of a flexible conductor connected with said terminals, a handle secured to said body and recessed to form a housing for said terminals and a passage for such flexible conductor outward therefrom, and a resilient helix having an enlarged inner end secured in said recess and projecting outward therefrom surrounding said flexible conductor.

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**754,019. PNEUMATIC TOOL.** WILLIAM H. SOLEY, Philadelphia, Pa., assignor of one-half to Thos. H. Dallett Co., a Corporation of New Jersey. Filed Oct. 29, 1903. Serial No. 179,029. (No model.)



*Claim.*—1. In a pneumatic tool, in combination with a piston and piston-chamber and a valve, of a source of pressure-supply and connection between said source of pressure-supply and the piston-chamber controlled by the valve, connection between said source of pressure-supply and the piston-chamber independent of the valve, and means to control said connections.

2. In a pneumatic tool, in combination with a piston and piston-chamber and a valve, of a source of pressure-supply and the piston-chamber controlled by the valve, connection between said source of pressure-supply and the piston-chamber independent of the valve, a valve adapted in its movement to open one of said connections and close the other and vice versa.

3. In a pneumatic tool of the character described, in combination, a casing, a piston-chamber and a valve-chamber in said casing, a valve in the valve-chamber, a piston in the piston-chamber, a passage adapted to convey a pressure fluid from a source of pressure-supply, connection between said passage and the valve-chamber and connection between said passage and the piston-chamber, and means to control the connections between said passages and valve and piston chamber.

4. In a pneumatic tool of the character described, in combination, a casing, a piston-chamber and a valve-chamber in said casing, a valve in the valve-chamber, a piston in the piston-chamber, a passage adapted to convey a pressure fluid from a source of pressure-supply, connection between said passage and the valve-chamber and connection between said passage and the piston-chamber, and means to make connection between said passage and said connections, and means to cut off the pressure-supply in said passage.

5. In a pneumatic tool of the character described, in combination, a casing, a piston-chamber and a valve-chamber in said casing, a valve in the valve-chamber, a piston in the piston-chamber, a passage adapted to convey a pressure fluid from a source of pressure-supply, connection between said passage and the valve-chamber and

connection between said passage and the piston-chamber, a valve adapted in its movement to either open connection between the valve-chamber connection and said passage and cut off the connection between the passage and the piston-chamber or vice versa.

6. In a pneumatic tool of the character described, in combination, a casing, a piston-chamber and a valve-chamber in said casing, a valve in the valve-chamber, a piston in the piston-chamber, a passage adapted to convey a pressure fluid from a source of pressure-supply, connection between said passage and the valve-chamber and connection between said passage and the piston-chamber, a three-way valve adapted to cut off or open connection between said passage and said valve and piston chambers and between said passage and the source of pressure-supply.

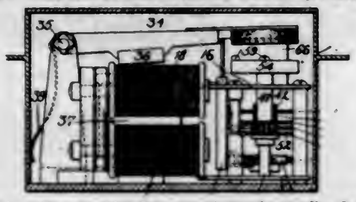
7. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve therein, means to operate said piston controlled by the valve, means to operate said piston independent of the valve, a passage having an opening into the piston-chamber at the lifting end of the piston-chamber and an outlet to the atmosphere and means, independent of the piston, to open and close said outlet.

8. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve therein, means to operate said piston controlled by the valve, means to operate said piston independent of the valve, a passage having an opening into the piston-chamber and having an outlet to the atmosphere, a plate controlling said outlet, an orifice in said plate corresponding to said outlet, said plate being slidably mounted and adapted to close the first-mentioned outlet, or cause the orifice in the plate to register with said outlet.

9. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve therein, means to operate said piston controlled by the valve, means to operate said piston independent of the valve, a plurality of passages each having an opening into the piston-chamber and outlets to the atmosphere, a plate controlling said outlets having openings corresponding to the said outlets, said plate being slidably mounted to cause the outlets to register with the solid portion of said plate.

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**754,020. ELECTRIC APPARATUS FOR MEASURING AND RECORDING INTERVALS OF TIME. CALVIN J. SPRINGER, Somerville, Mass. Filed June 27, 1903. Serial No. 163,379. (No model.)**

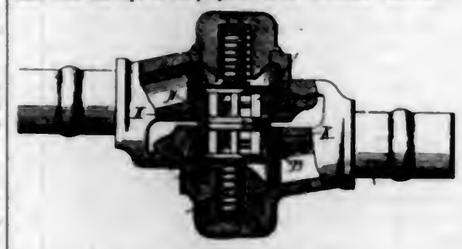


*Claim.*—In a machine for measuring and recording intervals of time, the combination with a time-train adapted to be actuated by an electromagnet controlled by a clock, of a rotatable carrier driven by said time-train and provided with a puncturing device adapted to produce a record of minutes and portions thereof on a card or ticket bearing the imprint of a minute-dial, two rotatable concentrically-arranged carriers also driven by said time-train at different velocities and each provided with a puncturing device for puncturing a card or ticket bearing the imprint of a clock-dial to record on said dial the time of day corresponding to that indicated by the controlling-clock, and a movable platen or hammer adapted to be operated by an electromagnet for pressing the time card or ticket upon said puncturing devices.

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**754,021. FLUID-PRESSURE COUPLING FOR AIR-BRAKE VALVES. DAVID H. STAPLES, Skowhegan, Me. Filed Oct. 5, 1903. Serial No. 175,856. (No model.)**

*Claim.*—A fluid-pressure coupler comprising a head, a threaded chambered plug having a circumferential flange and adapted to fit in a threaded aperture in the wall of said head, one face of said head being flat and having an aperture leading into the chambered portion of the head, the wall of said aperture having an annular recess, the outer wall of said recess being narrower than the inner wall, a gasket having a flanged portion seated upon the inner wall of said annular recess and provided with an angled portion which is adapted to engage the annular outline of the narrow wall of said recess, a valve having an integral stem mounted in the chambered portion of said plug, a spring seated in said plug and bearing against said valve, projections from the outer face of said valve along the marginal edge of the tapering portion thereof, said projections having shoulders on their outer faces, a ring seated upon said shoulders and flush with the tops of the projections, as shown and described.



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**754,022. HORSESHOE-CREEPER. WILLIAM J. STEWART, St. Louis, Mo., assignor of one-half to Arthur Henneman, St. Louis, Mo. Filed Dec. 3, 1903. Serial No. 183,646. (No model.)**

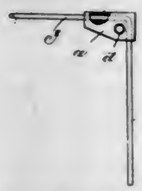


*Claim.*—1. A horseshoe-creeper comprising a plate adapted to engage the under surface of the shoe on either side of the center thereof, upturned lips disposed along the outer edge of the plate for engaging the sides of the shoe, spikes on the under surface of the plate, a central inner lobe deflected at an acute angle to the plane of the plate, and a securing-screw carried by the lobe and adapted to engage the upper inner edge of the shoe, substantially as set forth.

2. A horseshoe-creeper comprising a plate adapted to engage the under surface of the shoe on either side of the center thereof, upturned lips disposed along the terminals of the outer edge thereof for engaging the sides of the shoe, a central inner lobe deflected at an acute angle to the plane of the plate, a securing-screw mounted in the lobe for engaging the upper inner edge of the shoe, protecting-wings forming a part of the plate disposed on either side of the lobe and overlapping the shoe inwardly toward the frog of the animal's hoof, the inner edge of the plate being curved or convexed, and suitable spikes disposed on the bottom of the plate at points interior to the lips and on either side of the lobe, substantially as set forth.

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**754,023. FILLING-FORK FOR LOOMS. EDWARD S. STIMPSON, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Oct. 31, 1903. Serial No. 179,283. (No model.)**

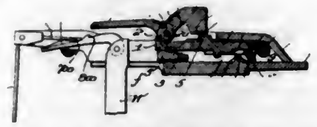


*Claim.*—1. As a new article of manufacture, a filling-fork comprising a cast-metal body, wire tines and a loop or tail, the roots of the tail and tines being permanently embedded in the metal of the body.

2. As a new article of manufacture, a filling-fork comprising a cast-metal body and tines the roots whereof are permanently embedded in the body, and a transverse bearing-sleeve also embedded in the body.



**754,024. FILLING-REPLENISHING LOOM. EDWARD S. STIMPSON, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 14, 1903. Serial No. 185,026. (No model.)**



*Claim.*—1. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism, controlled by or through the slide, a shipper, a releasing-latch therefor pivotally mounted on the slide and having an attached detent, a latch-controller movable with and also longitudinally of the slide, and a fixed abutment, the latter and the detent coöperating alternately with the controller a plurality of times to effect step-by-step movement thereof relatively to the slide and thereby position the latch to release the shipper after a predetermined number of successive movements of the slide.

2. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism controlled by or through the slide, a shipper, a releasing-latch therefor pivotally mounted on the slide and having an attached detent, provided with a plurality of shoulders, a latch-controller movable with and also longitudinally of the slide and having a shouldered rest on its upper face and a plurality of shoulders on its lower face, and a fixed abutment, the latter and the detent coöperating alternately with the controller by the shoulders and the rest thereon to move it step by step relatively to the slide and thereby position the latch to release the shipper after a predetermined number of successive movements of the slide.

4. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism controlled by or through the slide, a shipper, a releasing-latch therefor pivotally mounted on the slide and having an attached detent, provided with a plurality of shoulders, a latch-controller movable with and also longitudinally of the slide and having a shouldered rest on its upper face and a plurality of shoulders on its lower face, the rest normally supporting the detent and maintaining the latch inoperative, and a fixed abutment to coöperate successively with the shoulders on the lower face of the controller, a predetermined number of successive movements of the slide causing the detent and abutment to change the relative position of the controller and thereby withdraw the rest from beneath the detent, to position the latch to effect release of the shipper on the final successive movement of the slide.

4. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism controlled by or through the slide, a shipper, a releasing-latch therefor pivotally mounted on the slide and having an attached detent, provided with a plurality of stepped shoulders, a latch-controller movable with and also longitudinally of the slide and having an upturned rest to engage the detent, two shoulders on the lower face of the controller, and a fixed abutment to coöperate therewith, a predetermined number of successive movements of the slide causing the abutment to coöperate successively with the shoulders on the controller and the shouldered detent with the rest, to move the controller step by step relatively to the slide into position to permit the detent to clear the rest and thereby lower the latch into position to effect release of the shipper.

5. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism controlled by or through the slide, a shipper, a releasing-latch therefor pivotally mounted on the slide and having an attached detent, provided with a plurality of shoulders, a latch-controller movable with and also longitudinally of the slide and having a shouldered rest on its upper face and a plurality of shoulders on its lower face, a fixed abutment, the latter and the detent coöperating alternately with the controller by the shoulders and the rest thereon to change the position thereof relatively to the slide and thereby position the latch to release the shipper after a predetermined number of successive movements of the slide, and a cam on the slide to elevate the outer end of the controller when reset in its normal position with relation to the slide.

6. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism controlled by or through the slide, a shipper, a downturned releasing-latch therefor pivotally mounted on the slide and having an integral shouldered detent, a latch-controller supported by and movable with and also longitudinally of the slide and shouldered on its lower face, an upturned rest on the controller to normally support the detent and maintain the latch inoperative, a fixed abutment to coöperate successively with the shoulders on the controller, and a cam integral with the slide to coöperate with the controller and prevent accidental movement thereof and also to position the outer end of the controller when reset.

7. In a loom, a filling-detector, its slide adapted to be moved upon detection of filling failure, filling-replenishing mechanism controlled by or through the slide, a shipper, a knock-off lever therefor, a latch pivotally mounted on the slide and having a detent provided with a series of stepped shoulders, a latch-controller mounted on and having a limited longitudinal movement relatively to the slide, said controller having an upturned rest to coöperate with the shouldered detent and provided on its under side with a corresponding series of shoulders, a fixed abutment to coöperate with one after another of the shoulders and permit one shoulder after another of the detent to coöperate with the rest, a predetermined number of successive movements of the slide causing the abutment and detent to coöperate with and effect movement of the controller relatively to the slide and likewise gradually lower the latch, the final movement of the slide causing the latch to engage and actuate the knock-off lever to release the shipper.

8. In a loom, two filling-detectors, filling-replenishing mechanism directly controlled as to its operation by one detector, means operative by or through detecting action of the other detector to cause filling replenishing through the operation of the first-named detector, said means including a tilting dog, and a device to automatically render the dog irresponsive when the first-named detector has detected filling failure.

9. In a loom, main and auxiliary filling-detectors, their slides, filling-replenishing mechanism directly controlled as to its operation by the main detector, means operative by or through detecting action of the auxiliary detector to cause filling replenishing through the operation of the main detector, said means including a dog mounted on the main detector-slide, and a device operated by movement of said slide to render the dog irresponsive when the main detector has detected filling failure.

10. In a loom, main and auxiliary filling-detectors, their slides, filling-replenishing mechanism directly controlled as to its operation by the main detector, means operative by or through detecting action of the auxiliary detector to cause filling replenishing through the operation of the main detector, said means including a dog shiftably fulcrumed on the main detector-slide, and a controller having a cam to coöperate with the dog and shift its fulcrum when filling failure is first detected by the main detector, to thereby render the dog irresponsive when filling failure is thereafter detected by the auxiliary detector.

11. In a loom, main and auxiliary filling-detectors, their slides, filling-replenishing mechanism directly controlled as to its operation by the main detector, means operative by or through detecting action of the auxiliary detector to cause filling replenishing through the operation of the main detector, said means including a dog shiftably fulcrumed on the main detector-slide, and a controller having a cam, movement of the main slide upon detection of filling failure by the main detector causing the cam to engage the dog and shift its fulcrum, to thereby render the dog irresponsive to detecting action of the auxiliary detector.

12. In a loom, main and auxiliary filling-detectors, their slides, an actuator for and to operatively move each slide upon detection of filling failure, filling-replenishing mechanism the operation whereof is directly controlled by operative movement of the main slide, means governed by the auxiliary detector upon detection thereby of filling failure to cause operative movement, by its actuator, of the main slide and effect the actuation of the replenishing mechanism, said means including a dog movable with and also relatively to the main slide, and a controlling device to render the dog irresponsive to detecting action of the auxiliary detector, operative movement of the main slide upon detection of filling failure by the main detector causing the controlling device to coöperate with the dog.

13. In a loom, a main filling-detector, its slide, an actuator, to move the latter by or through said detector upon detection of filling failure, a tilting dog shiftably mounted on the slide to form an independent connection between it and the actuator, said dog having a tail which acts to normally maintain the dog inoperative, filling-replenishing mechanism controlled by or through the slide, an auxiliary filling-detector, means governed by detecting action thereof upon filling failure to act upon the tail and tilt the dog to render it operative, whereby said slide will be moved to effect the actuation

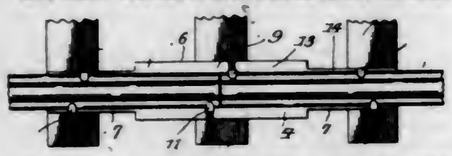
of the replenishing mechanism, and a controlling device, moved by the slide when the main detector detects filling failure, to engage the dog and shift it relatively to the slide, whereby the dog is rendered irresponsive to subsequent detecting action of the auxiliary detector.

14. In a loom, a main filling-detector, its slide, an actuator to move the latter by or through said detector upon detection of filling failure, a dog shiftably fulcrumed on the slide, and having a forwardly-extended tail, said dog being adapted to coöperate with the actuator, a controlling device to shift the dog on its fulcram, filling-replenishing mechanism, the actuation of which is effected through operative movement of the slide, an auxiliary filling-detector, and means governed by detecting action thereof, upon filling failure to engage and lift the tail, and thereby positively cause coöperation of the dog and actuator, to effect operative movement of the slide and cause filling replenishing, detection of filling failure by the main detector moving its slide, and causing the controller to lift and shift the dog to prevent subsequent detecting action of the auxiliary detector from tilting the dog into operative engagement with the actuator.

15. In a loom, a shipper, a main filling-detector, its slide, an actuator to move the latter by or through said detector upon detection of filling failure thereby, a shipper-releasing latch mounted on said slide, means to render said latch operative when the slide has been moved a predetermined number of times in succession, said means including a controller movable with and also longitudinally of the slide and provided with a cam portion, a dog shiftably fulcramed on the slide and adapted to form an independent connection between it and the actuator, filling-replenishing mechanism the actuation of which is effected through operative movement of the slide, an auxiliary filling-detector, and means governed by initial detecting action thereof to rock the dog into coöperative relation with the actuator for and thereby move the main slide, to cause filling replenishment, initial detection of filling failure by the main detector acting through the controller to effect engagement of its cam portion with the dog and shift its fulcrum, to thereby render the dog irresponsive to subsequent detecting action of the auxiliary detector.

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754,025. **TIE-PLATE.** Auguste St. Pierre, Riviere Trois Pistoles, Canada. Filed Nov. 16, 1903. Serial No. 181,378. (No model.)



*Claim.*—1. As a new article of manufacture, a tie-plate consisting of an elongated substantially rectangular plate having a member of elastic material superposed upon the same, said plate and said member having notches in the edges thereof and conforming substantially in outline to each other.

2. As a new article of manufacture, a tie-plate consisting of a metallic plate substantially of elongated rectangular form, said tie-plate having reduced extremities, and a rubber cushion superposed upon said metallic plate and conforming substantially in outline thereto, said tie-plate having notches in the edges thereof adapted to receive spikes.

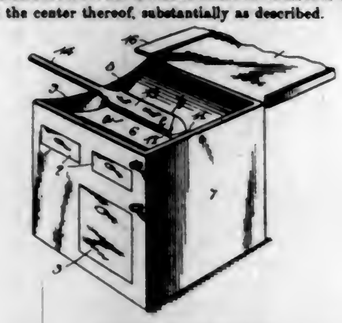
3. A rail-joint, comprising, in combination, abutting rails, fish-plates disposed on the side thereof, a cushion consisting of a flat elastic member disposed beneath the flanges of said rails, a metallic plate beneath said cushion, said metallic plate having notches in the edges thereof adapted to receive spikes.

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754,026. **KNEADING DEVICE.** Arthur A. Stuart, Elgin, Ill. Filed July 24, 1902. Serial No. 116,532. (No model.)

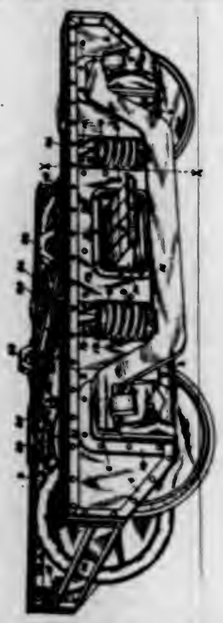
*Claim.*—1. In combination with a kneading-trough having downwardly-converging sides, a kneading-pin adapted to be rolled from side to side of the trough, and a guide and support for the kneading-pin, said guide and support converging outwardly and upwardly toward the sides of the trough and the diameter of the kneading-pin being such that when at the center of the trough it is out of contact with the bottom thereof, substantially as described.

2. In combination with a kneading-trough having downwardly-converging sides, a kneading-pin adapted to be rolled from side to side of the trough, and a guide and support for the kneading-pin, said guide and support converging outwardly and upwardly toward the sides of the trough, and the kneading-pin being semicylindrical on one side and provided with outwardly-converging sides and of such diameter as to be out of contact with the bottom of the trough when at the center thereof, substantially as described.



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754,027. **CAR-TRUCK.** Henry Tessyman, Dayton, Ohio, assignor to the Barney & Smith Car Company, Dayton, Ohio. Filed June 19, 1903. Serial No. 162,165. (No model.)



*Claim.*—1. In a car-truck, the combination of side frames each consisting of a sheet of metal having separate stiffening members secured thereto around the edges on both sides thereof, openings formed in the side frames, pedestals mounted in said openings and secured to the side frames, journal-boxes operative within said pedestals, and an equalizer arranged on each side of the side frames and having their ends supported on the journal-boxes, substantially as shown and described.

2. In a car-truck, the combination of side frames each consisting of a sheet of metal having separate stiffening members secured thereto around the edges on both sides thereof, openings formed in the side frames, pedestals mounted in said openings and secured to the side frames, journal-boxes operative within said pedestals, an equalizer arranged on each side of each side frame and having their ends supported on the journal-boxes, and openings in the side frames provided with equalizer-springs carried by and exerting pressure against the equalizers and against the side frames, substantially as shown and described.

3. In a car-truck, the combination of side frames each consisting of a sheet of metal having separate stiffening members secured thereto around the edges on both sides thereof, openings formed in the side frames, pedestals mounted in said openings and secured to the side frames, journal-boxes operative within said pedestals, an equalizer arranged on each side of each side frame and having their ends supported on the journal-boxes, openings in the side frames provided with equalizer-springs carried by and exerting pressure against the equalizers and against the side frames, and openings in the side frames provided with bolster-springs extending therethrough, substantially as shown and described.



4. In a car-truck, the combination of a plurality of truck-transoms each composed of two side portions with a space between and united to form a single structure, a truck-bolster arranged between said transoms, bolster-springs carrying said truck-bolster, a spring-plank carrying said bolster-springs, swing-motion axles carrying said spring-plank, swing-motion hangers carrying said swing-motion axles, and means for connecting the swing-motion hangers with said truck-transoms, substantially as shown and described.

5. In a car-truck, side frames each consisting of a sheet of metal having stiffening members around the edges thereof, in combination with a plurality of truck-transoms each comprising two side portions, swing-motion hangers carried between and in direct connection with the said side portions, and swing-motion axles carried by said swing-motion hangers, substantially as shown and described.

6. In a car-truck, the combination of a truck-frame consisting of side frames and end sills, and laterally-arranged truck-transoms, each comprising two side portions with a space between them, the said transoms being secured to and between the side frames below the upper sides thereof, swing-motion hangers carried between and in direct connection with the said side portions, and swing-motion axles carried by the said swing-motion hangers, substantially as shown and described.

7. In a car-truck, the combination of a truck-frame consisting of side frames and end sills, truck-transoms each composed of two side portions having a space between them, and swing-motion hangers, mounted within said spaces upon pins having bearings in and which are carried by said side pieces, substantially as shown and described.

8. In a car-truck, the combination of a plurality of truck-transoms each comprising two side portions with a space between them, swing-motion hangers mounted therein and in direct connection therewith, and swing-motion axles carried by said swing-motion hangers, substantially as shown and described.

9. In a car-truck, side frames in combination with a plurality of truck-transoms each comprising two side portions with a space between them and provided at each end with flanged portions secured to the side frames, swing-motion hangers mounted within said spaces in direct connection with the said side portions, and swing-motion axles carried by said swing-motion hangers, substantially as shown and described.

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754,028. **STOVE ATTACHMENT.** Clifford H. Torrens, Bangor, Me., assignor of one-half to Henry L. Mitchell, Bangor, Me. Filed May 29, 1903. Serial No. 159,822. (No model.)



*Claim.*—The combination with a stove or the like having a flanged portion provided with a socket, of a removable piece having a leg entering said socket and preventing the removal of said piece in a direction transverse to said socket and flange, and a button pivoted on said piece and engaging with the edge of said flanged portion to prevent the movement of said piece in a direction perpendicular to the other.

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754,029. **UMBRELLA.** James L. Vaughn, Pikeville, Tenn. Filed July 22, 1902. Serial No. 116,563. (No model.)

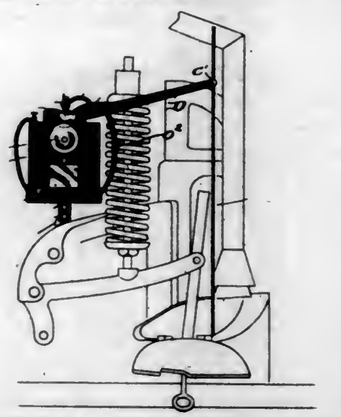


*Claim.*—In an umbrella, a notch consisting of a body portion having radiating fingers and intervening slots, said fingers being bent upon themselves to form each inwardly-directed depending members, the side edges only of the inner faces of the fingers being recessed, to receive the spherical heads of ribs passed through the slots between the fingers.

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754,030. **ALARM ATTACHMENT FOR LINOTYPE-MACHINES.** George L. Vimark, New Brunswick, N. J. Filed Apr. 11, 1903. Serial No. 152,220. (No model.)

*Claim.*—1. In an alarm for linotype-machines, a base provided with means for securing it in position on the machine, an upright adjustably secured to the base at one end, a balanced lever secured to the other end of the upright, a float adjustably secured to the outer end of said lever, and a signaling apparatus in position to be operated by the inner end of the lever.



2. In an alarm for linotype-machines, a base provided with means for securing it in position on the machine, an angular upright, the lower end of which is perforated and slotted and adjustably secured to the base, a lever pivotally secured to the other end of said upright, a float adjustably secured to the outer end of said lever, and a signaling apparatus in position to be operated by the inner end of said lever.

3. In an alarm for linotype-machines, a base provided with means for securing it in position on the machine, an upright adjustably secured to the base at one end and having a support near said end, a lever pivotally secured to the other end of said upright, a float adjustably secured to the outer end of said lever, a battery on the support provided with a circuit, a signal in said circuit and means for engaging with the inner end of said lever and closing the circuit.

4. In an alarm for linotype-machines, a base provided with means for securing it in position on the machine, an upright adjustably secured to the base at one end, a contact insulatingly mounted on the upright, a lever mounted on the other end of said upright, the inner end of said lever being adapted to engage with said contact, a float adjustably secured to said lever, a signal, and a battery provided with a circuit which includes said signal and contact.

5. In an alarm for linotype-machines, a base provided with means for securing it in position on the machine, an upright adjustably secured to the base at one end, a lever pivotally secured to the other end of the said upright, a laterally-projecting arm at the outer end of said lever, a rod through said arm, the lower end of which is provided with a float, a set-screw for adjustably securing the rod in the arm, and a signaling apparatus in position to be operated by the inner end of said lever.

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754,031. **ROTARY ENGINE.** Orin Williams, Des Moines, Iowa. Filed July 3, 1903. Serial No. 164,138. (No model.)

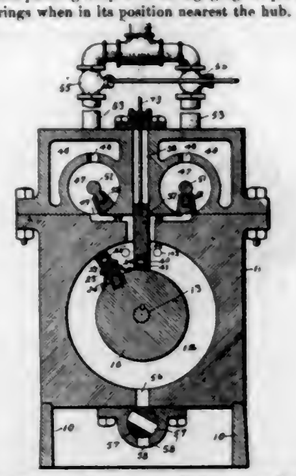
*Claim.*—1. In a rotary engine, a rotary hub, a piston fixed to the rotary hub, expansion-rings on the end portions of the rotary hub and spring-pressed packing-strips on the sides of the piston engaging the inner faces of the expansion-rings.

2. In a rotary engine, a rotary hub, a piston fixed to the rotary hub, expansion-rings on the end portions of the rotary hub and spring-pressed packing-strips on the sides of the piston engaging the inner faces of the expansion-rings, a pressure-plate moving to and from the hub, and a spring-pressed packing-strip thereon engaging the periphery of the expansion-rings when in its position nearest the hub.

3. In a rotary engine, a rotary hub, a piston fixed to the rotary hub, two expansion-rings arranged side by side and engaging each other at the opposite ends of the hub, spring-pressed packing-strips on the sides of the piston engaging the inner face of the inner expansion-rings.

4. In a rotary engine, a rotary hub, a piston fixed to the rotary hub, two expansion-rings arranged side by side and engaging each other at the opposite ends of the hub, spring-pressed packing-strips on the sides of the piston engaging the inner face of the inner ex-

pansion-rings, a pressure-plate moving to and from the hub, and a spring-pressed packing-strip thereon engaging the peripheries of the expansion-rings when in its position nearest the hub.



5. In a rotary engine, a rotary hub, a piston fixed to the hub, two expansion-rings in each end of the hub, spring-pressed packing-strips on the sides of the piston engaging the inner faces of the inner rings, and springs forcing the expansion-rings toward the piston.

6. In a rotary engine, the combination of a shaft, a hub keyed to the shaft, circular plates secured to the ends of the hub and having annular grooves at the inner edges of their peripheries, two expansion-rings in each groove, springs for forcing the expansion-rings toward the center of the hub, a piston fixed to the hub, spring-pressed packing-strips on the sides of the piston, their inner ends bearing against the inner faces of the inner rings.

7. In a rotary engine, a rotary piston, comprising a body portion, having a groove therein, a packing-strip mounted in the groove and having slots therein, pins passed through the body portion and through said grooves to limit the movement of the packing-strips, a flat spring placed in said groove, a perforated block at the central portion of the spring, a pin passed through the body portion and through said perforated block, the ends of the spring engaging the end portions of the packing-strip, for the purposes stated.

8. In a rotary engine, the combination of a rotary hub, a shaft driven by the hub, a cam-wheel fixed to the shaft, a lever, a roller on the lever in the cam-groove, a link attached to said lever, a reciprocating pressure-plate, a rocking lever, a link connecting the reciprocating pressure-plate with one end of the rocking lever, a contractile coil-spring having one end fixed to the opposite end of said lever and the other end held stationary, and an arm on the rocking lever pivoted to the link of the cam-lever, for the purposes stated.

9. In a rotary engine, the combination of an engine-body, a rotary hub, a shaft driven by the rotary hub, two eccentrics on said shaft, two independent steam-chests, a valve for controlling each steam-chest, a shaft fixed to each valve, a clutch member rotatably and non-slidingly connected with each shaft, an arm connecting each of said clutch members with one of the eccentrics, a coacting clutch member on each shaft slidingly, but non-rotatably mounted, a lever connecting said sliding clutches, said lever arranged so that in one position both of the slide-clutches are free and in another position one of the slide-clutches engages its mating clutch, and the other is free, and in a third position of said lever, the opposite clutches are in engagement, arranged and combined substantially in the manner set forth, and for the purposes stated.

10. In a rotary engine, the combination of an engine-chamber, having an exhaust-opening at its lower end and two exhaust-openings near its upper end, two independent steam-chests communicating with the engine-chamber, a valve in each steam-chest, independent means for operating each valve, a lever connected with both valve-operating devices for placing either one in an operative position, two exhaust-ports at the top of the engine-chamber, a valve controlling each, and rods connected with said valves and with the said lever whereby one of said exhaust-ports is closed and the other opened when the said lever is moved to reverse the engine, for the purposes stated.

11. In a rotary engine, the combination of an engine-chamber having an exhaust-port at its bottom and two exhaust-ports near its top, two independent steam-chests communicating with the top of the engine-chamber, a valve in each steam-chest, a shaft connected with each valve, a rotating clutch member on each shaft normally rocking when the engine is running a sliding clutch member on each shaft to coact with the rotating clutch member, an upright shaft, a lever at the top of the upright shaft pivoted to both sliding clutch members, an arm on said upright shaft, and a reversing-lever connected with said arm and means for locking the reversing-lever in different positions, petcocks connected with the exhaust-ports at the top of the engine-chamber, a wheel fixed to the said upright shaft, and links connecting said wheels with the petcocks, substantially as and for the purposes stated.

12. In a rotary engine, the combination of an engine-chamber, a rotary hub in the chamber, a piston on the hub, a shaft driven by the hub, an exhaust-port at the bottom of the engine-chamber, a valve controlling the exhaust-port, means driven by the shaft for controlling said valve, two independent steam-chests communicating with the engine-chamber, independent valves for the steam-chests, shafts for said valves, a reciprocating pressure-plate, means driven by the hub-shaft for reciprocating the pressure-plate, means driven by the hub-shaft for operating both of the valves in the steam-chests, a reversing-lever controlling said valve-operating means, and two exhaust-ports on opposite sides of the pressure-plate, and means operated by said reversing means for opening and closing said exhaust-ports, for the purposes stated.

13. In a rotary engine, the combination of an engine-chamber, a rotary hub, a piston on the hub, a shaft driven by the hub, an induction-port at the top of the engine-chamber, an eduction-port at the bottom of the engine-chamber diametrically opposite from the induction-port, and a valve controlling the eduction-port, said valve operated automatically from the hub-shaft.

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**754,032. VALVE. ABNER R. WRIGHT, Gilbert Station, Iowa. Filed Mar. 23, 1903. Serial No. 149,087. (No model.)**



*Claim.*—1. In a device of the class described, a conical-shaped protector, in a pipe having a portion thereof cut away, a valve movably mounted in said pipe and designed to enter the portion of the conical-shaped protector which is cut away.

2. In a device of the class described, a pipe, a conical-shaped protector mounted in the pipe having a portion thereof cut away to receive a valve, supports for maintaining the conical-shaped protector in position in the pipe in such a way as to form openings beneath the exterior of the conical-shaped protector and the interior of the pipe, a valve movably mounted in said pipe designed to enter the opening in the conical-shaped protector, formed by cutting away a portion thereof.

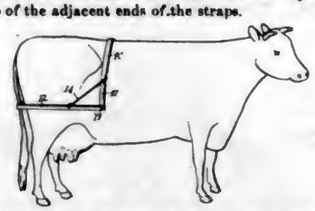
3. In a device of the class described, a pipe, a valve capable of vertical movement in the pipe, a bar extending across the pipe for preventing the valve from moving horizontally, a conical-shaped protector having its under surface cut away to receive the valve when it is at its upper limited movement, supports for maintaining the conical-shaped protector in position on the interior of the pipe attached to the extreme lower portion of said protector to form openings beneath the exterior portion of the conical-shaped protector and the interior portion of the pipe, for the purposes stated.

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**754,033. TAIL-HOLDER FOR COWS. PETER YOUNG, Rockfalls, Iowa. Filed June 1, 1903. Serial No. 159,432. (No model.)**



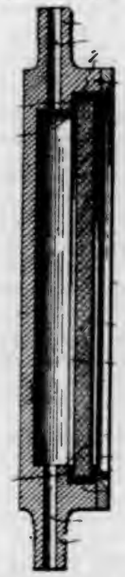
*Claim.*—1. In a device of the class described, a springing strap shaped to pass over an animal's back and downwardly at its sides with its ends yieldingly held against the animal's sides, a second springing strap with its ends pivoted to the ends of the first, and shaped to pass around the animal's tail, and a hook adjustably connecting two of the adjacent ends of the straps.



2. In a device of the class described, the combination of a semicircular strap 10 made of spring metal, a semicircular strap 12 made of spring metal and having its ends pivoted to the ends of the strap 10 and a hook 14 pivoted to the strap 12 and adjustably connected with one of the upright portions of the strap, substantially as and for the purposes stated.

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**754,034. WATER-GAGE. JOSEPH ZOARETTO, New York, N. Y. Filed Dec. 10, 1903. Serial No. 184,647. (No model.)**

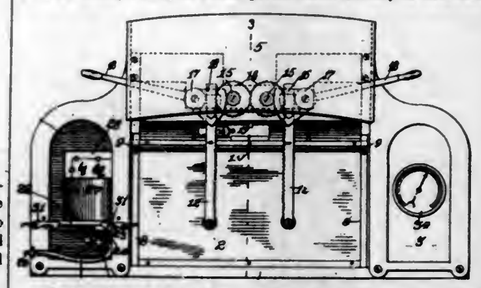


*Claim.*—A water-gage comprising a hollow non-frangible body closed at its ends, open on one side, having a shoulder extending around the opening in the body, at the sides and ends thereof, a flange also extending around the sides and ends of the opening and spaced therefrom, screw-nipples at the ends of the body having passages extending through them and communicating with the opening or hollow in the body, a gasket extending around the sides and ends of said opening and bearing against the shoulder, a transparent plate bearing against the gasket, a packing around the side and end edges of the plate and bearing against the side and end portions of the flange, a gasket on the outer side of the plate, extending around the sides and ends thereof, and a frame bearing against the outer side of the outer gasket and secured to the outer side of the flange, substantially as described.

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**754,035. OVEN-FRONT. FRANCIS J. ALBRECHT, Pittsburg, Pa. Filed Apr. 25, 1903. Serial No. 154,228. (No model.)**

*Claim.*—1. In an oven-front, the combination of the frame having a central aperture in which a door is placed, racks and pinions for actuating said door, segments and gears for actuating said pinions, handles for actuating said segments, a weighted shaft for holding said door against ledges formed on the frame, chambers formed on either side of the central aperture formed in the frame, a device for indicating the temperature in one of said chambers, an aperture in the wall of the other chamber communicating with the oven, a frame carrying transparent material adapted to close said aperture, a door hinged at the top of said aperture adapted to close said aperture when the same is not closed by said frame, burners placed behind and mounted on the base of said frame, and means for regulating said burners corresponding with their position, substantially as described.



2. In a device of the character described, the combination of a frame having a central aperture at the sides of which ledges are formed, a vertical sliding door the rear edges of which rest against said ledges, angles at the front edges of said door, a rod having pins mounted in either end resting against said angles, a weight attached to said rod for holding said pins against the angle said angle holding the door against the ledges at its rear, racks and pinions for actuating said door, segments and gears for actuating said pinions, handles for actuating said segments, a slide one end of which has an aperture covered with transparent material, an aperture in the top of said frame adapted to be covered by either half of said slide, chambers formed on either side of said door-aperture, a temperature-indicator placed in one of said chambers, an aperture connecting the other chamber with the oven, a swinging frame covered with transparent material, burners located behind said frame on its base, the said frame in one of its positions adapted to close the aperture in said chamber, a door hinged over said aperture and adapted to close said aperture when the same is not closed by the said frame, means carried by said frame for locking said door in when in its closed position, a cock mounted on said frame and adapted to be controlled by the position of the frame, and latches for holding said frame in one of its two positions, substantially as described.

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**754,036. SUCTION-BOX FOR PAPER-MAKING MACHINES. EDWIN C. ANDREWS, Penn Yan, N. Y. Filed June 8, 1903. Serial No. 160,575. (No model.)**

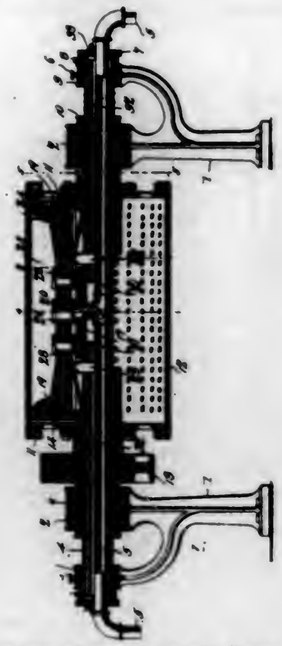
*Claim.*—1. The combination in apparatus of the class described, of a hollow rotatable cylinder having perforations in the side wall thereof, a non-rotative suction-chamber within said cylinder, a stationary supporting member extending through said cylinder and having portions thereof adjustable in position, and resilient members attached to said chamber and resting upon the adjustable portions of said supporting member, said resilient members serving to hold said chamber in contact with the inner surface of said cylinder.

2. The combination in apparatus of the class described, of an endless perforated septum adapted to travel in contact with the under surface of a paper-making machine wire or felt, a supporting member fixed in position beneath said septum, guides on said supporting member, a suction-chamber slidably mounted on said guides, springs attached to said suction-chamber and engaging said supporting member to hold said chamber in contact with said septum, and means for varying the upward pressure of said springs.

3. The combination in apparatus of the class described, of an endless perforated septum adapted to travel in contact with the under surface of a paper-making machine wire or felt, a supporting member beneath said septum having movable portions, a suction-chamber, guides upon said supporting member upon which said suction-chamber is mounted, leaf-springs attached to the bottom of said suction-chamber and having the free ends thereof resting upon the movable portions of said supporting member, and serving to hold said suction-chamber in yielding contact with said septum, and means for shifting the movable portions of the supporting member.

4. The combination in apparatus of the class described, of an endless perforated septum adapted to travel in contact with the under surface of a paper-making machine wire or felt, a supporting member beneath said septum, guides provided on said supporting member, a suction-chamber slidably mounted on said guides, leaf-

springs attached to the bottom of said suction-chamber, and having the free ends thereof resting normally upon said supporting member, adjusting-lugs slidably mounted upon said supporting member beneath said springs, and means for shifting the position of said lugs to raise the free ends of said springs.



5. The combination in apparatus of the class described, of an endless perforated septum adapted to travel in contact with the under surface of a paper-making machine wire or felt, a supporting member beneath said septum, guides provided on said septum, a suction-chamber slidably mounted on said guides, leaf-springs attached to the bottom of said suction-chamber and having their free ends resting normally upon said supporting member, adjusting-lugs slidably mounted on said supporting member beneath said springs, and means comprising rotative threaded rods provided in said supporting member and engaging threaded openings in said lugs for shifting said lugs upon said supporting member.

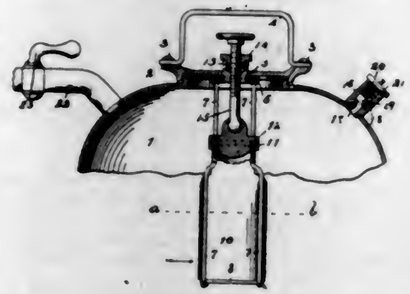
6. The combination in apparatus of the class described, of an endless perforated septum adapted to travel in contact with the lower surface of a paper-making machine wire or felt, a supporting member beneath said septum, a frame rigidly mounted on said supporting member, a suction-chamber vertically slidable in said frame, leaf-springs attached to the bottom of said suction-chamber and having their free ends inclined outwardly and downwardly and resting normally upon said supporting member, slots in the bottom of said frame under said springs, lugs slidable in said slots, and means for moving said lugs in said slots.

7. The combination in apparatus of the class described, of a rotatable hollow cylinder having perforations in the side wall thereof, a tubular supporting member upon which said cylinder is mounted to rotate, guide-standards upon said tubular supporting member, a frame carried by said supporting member, a suction-chamber slidable on said standards and in said frame, leaf-springs attached to the bottom of said chamber and having their free ends inclined outwardly and downwardly to rest upon said supporting member, lugs slidable in said slots and adapted to engage said springs, and means for moving said lugs longitudinally of said slots.

8. The combination in apparatus of the class described, of a tubular supporting member, a hollow cylinder having perforations in the side wall thereof rotatably mounted on said supporting member, a frame clamped on said supporting member, a suction-chamber slidably mounted in said frame and yieldably held in contact with the inner surface of said hollow cylinder, a drainage-tube extending longitudinally through said supporting member, a side tube opening into said drainage-tube and extending upward through the bottom of said frame and said suction-chamber, and means for maintaining air-tight contact between said side tube and the walls of the opening in the bottom of said suction-chamber through which said tube passes.

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**754,037. FIRE-EXTINGUISHER.** GUSTAF A. ANDERSON, Kansas City, Kans. Filed June 23, 1902. Serial No. 112,771. (No model.)



*Claim.*—1. In a fire-extinguisher, the combination with the closing-cap, of a member connected therewith, two U-shaped bottle-supporting arms secured to the said member at their ends, and a platform for the bottle hinged to the horizontal portion of one of said arms and having its other free end adapted to rest upon the horizontal portion of the other U-shaped arm, substantially as described.

2. In a fire-extinguisher, the combination with the closing-cap provided with a boss on its inner side, of a nut mounted on the said boss and having screw-threaded connection therewith, two U-shaped bottle-supporting arms secured at their ends to the said nut, and a platform for the bottle hinged to the horizontal portion of one of said arms and having its free end provided with a lip and adapted to rest upon the horizontal portion of the other U-shaped arm, substantially as described.

3. In a fire-extinguisher, the combination with the bottle having a ground surface encircling the mouth, of the cap provided with a screw-threaded boss on its inner side, a nut mounted thereon, two U-shaped arms secured to the nut at their ends, a platform on which the bottle rests hinged to the horizontal portion of one of the U-shaped arms and adapted to have its free end rest upon the horizontal portion of the other U-shaped arm, a soft-metal gasket resting upon the said ground surface of the bottle, a stopper resting upon the gasket, and an operating-rod adapted to be moved vertically through the cap and having a universal-joint connection with the stopper, substantially as described.

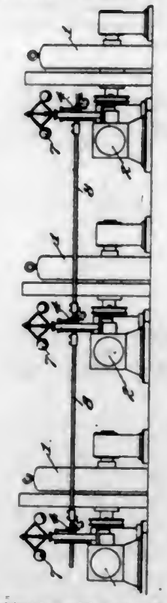
4. In a fire-extinguisher, a bottle-supporting frame comprising a pair of U-shaped arms disposed parallel with each other, a plate secured to their upper ends, and a platform for the bottle hinged to the horizontal portion of one of the U-shaped arms and having its free end adapted to rest upon the horizontal portion of the other U-shaped arm, the said platform being provided outside the latter-named arm with a downwardly-extending lip, substantially as described.

5. In a fire-extinguisher, the combination with the liquid and gas receptacle provided with a hole, of a cap for closing said hole, two U-shaped arms supported at their ends by the said cap and movable toward and from each other at their lower ends, a bottle-supporting platform hinged to one of said U-shaped arms and resting at its free end upon the horizontal portion of the other of said U-shaped arms, the platform being provided with means for preventing disengagement normally of the platform from the arm on which its free end rests.

6. In a fire-extinguisher, the combination with the liquid and gas receptacle provided with a gas-outlet and means for controlling the flow therefrom, and having a hole in the top, of a cap covering said hole and provided with means for being releasably secured to the receptacle, two U-shaped arms of substantially equal length and supported at their upper ends to the cap and movable toward and from each other at their lower ends, a horizontal plate having one end formed into a tubular portion which encircles the horizontal portion of one of said U-shaped arms, the other end of the plate resting upon the horizontal portion of the other U-shaped arm and provided with a downwardly-extending lip outside of and preventing outward movement of said arm, an acid-receptacle having an opening at its upper end and resting upon said plate, and releasable means for closing the said opening in the acid-receptacle.



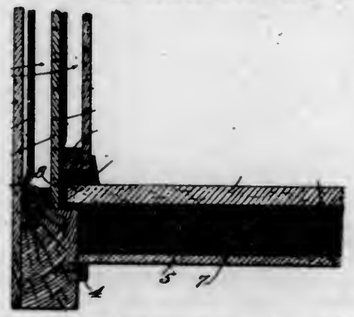
**754,088. GOVERNING MECHANISM.** PHILIP DE C. BALL, St. Louis, Mo., and CHARLES I. WAKEFIELD, Dallas, Tex. Filed Mar. 26, 1902. Serial No. 100,009. (No model.)



*Claim.*—The combination with a plurality of independent motors, a rock-shaft, a speed-regulating mechanism for each of said motors and mounted on said rock-shaft, a governor for each of said speed-regulating mechanisms and means for effecting detachable connection between each of said governors and its speed-regulating mechanism, comprising a rock-arm rigidly connected to said rock-shaft, a link, and a removable bolt engaging the link and rock-arm.

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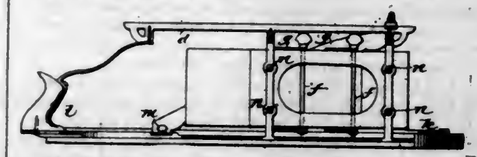
**754,089. REFRIGERATOR-CAR.** PHILIP DE C. BALL, St. Louis, Mo. Filed June 17, 1903. Serial No. 161,813. (No model.)



*Claim.*—1. In a refrigerator-car, the combination with a supporting-base, of a flooring, a side wall supported upon said base at the edge of said flooring and spaced from the edge of the latter, a batten upon said flooring and spaced from said side wall, filling material in the space between said side wall and the edge of said flooring and also in the space between said side wall and said batten, and a lining above said filling material and between said side wall and said batten; substantially as described.

2. In a refrigerator-car, the combination with supporting-sills, of a subflooring supported thereon, filling material upon said subflooring, a sheet of insulating material upon said filling material, a flooring above said sheet of material and spaced therefrom, a side-lining having its lower edge above said flooring and spaced therefrom, and waterproofing material between said sheet and said flooring and extending above the edge of the latter to present a portion above said flooring and between said flooring and the lower edge of said lining; substantially as described.

**754,040. MACHINE FOR CUTTING BREAD.** OSCAR BERNARD, San Francisco, Cal., assignor, by mesne assignments, of one-fourth to Arthur H. Manning, San Francisco, Cal. Filed Jan. 9, 1903. Serial No. 138,443. (No model.)



*Claim.*—A bread-cutting device comprising a base, having a grooved member, an end frame having an overhanging grooved arm secured to said base, a knife-frame sliding in the grooves of said arm and member and carrying a knife, a plate fixed to said knife-frame in a plane parallel to and outside that of the knife, a gage-board pivoted to pairs of links and threaded bolts passing through said links and said plate to clamp them together at will.

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**754,041. TELEPHONE ATTACHMENT.** JOSEPH BLUM, Baltimore, Md. Filed May 23, 1903. Serial No. 158,435. (No model.)

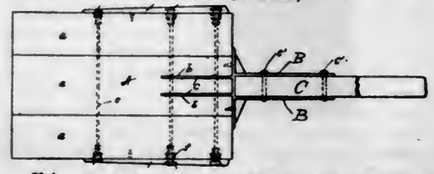


*Claim.*—1. A sanitary attachment for a telephone made of an annular disk and provided with arms or fingers attached to said disk and being perpendicular to said disk up to about one-half the length of said arms or fingers and thence bent inwardly and thence outwardly again until they are perpendicular again to the inner circle of the said annular disk, said annular disk having extensions projecting from the outside edge thereof and bent downwardly and inwardly so as to engage with the mouthpiece of a telephone substantially as described.

2. A sanitary attachment for a telephone made of an annular disk and provided with arms or fingers attached to said disk and being perpendicular to said disk up to about one-half the length of said arms or fingers and thence bent inwardly and thence outwardly again until they are perpendicular again to the inner circle of the annular disk, said arms or fingers being balled at the ends, the said annular disk being provided with extensions projecting from the outer edge thereof and bent downwardly and inwardly so as to engage with the mouthpiece of a telephone substantially as described.

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**754,042. BAKER'S PEEL.** GOTTFRIED J. BOHN, Toledo, Ohio, assignor of one-half to Fred Maulbetsch, Toledo, Ohio. Filed Sept. 26, 1903. Serial No. 174,829. (No model.)



*Claim.*—1. A baker's peel, consisting of a tapered blade, a handle, one or more rods extending transversely of said blade, and adjusting means in engagement with said rods and adapted to cause a lateral compression of said blade.

2. A baker's peel, consisting of a tapered blade, a handle, strips engaging the sides of said blade, and adjustable rods connecting said strips, substantially as described.

3. A baker's peel, consisting of a blade having a series of transversely-disposed apertures therethrough, a handle, rods in said apertures, and means connected to said rods for causing lateral adjustment of said blade, substantially as described.

4. A device of the class described, consisting of a tapered blade having transversely-disposed apertures therethrough, a handle-bracket having its shanks secured within slots provided in said blade, rods in said apertures, a member having a series of inwardly-pro-

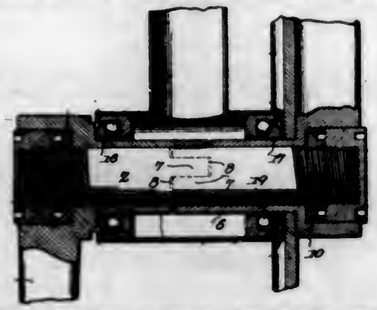
jecting lugs thereon in engagement with each side of said blade, and means in engagement with said rods adapted to compress said members, substantially as described.

5. A baker's peel, comprising a tapered blade having transverse apertures therethrough, a handle, rods in said apertures, compressing-strips at the sides of said blade, and internally-threaded screws countersunk within said strips and in engagement with the ends of said rods and said strips, substantially as described.

6. A baker's peel or like article, comprising a blade, having slots in its upper end, a handle-bracket having its retaining-shanks in said slots, a handle in said bracket, a series of rods disposed transversely of said blade and engaging the shanks of said bracket, and means attached to said rods for laterally compressing said blade, substantially as described.

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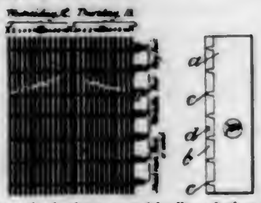
**754,043. BICYCLE ATTACHMENT.** William H. Bradley, Portland, Oreg. Filed June 1, 1903. Serial No. 159,575. (No model.)



*Claim.*—In a device of the class described, the combination with a casing, of bearing-rings seated wholly within the ends thereof and provided with outwardly-extending sleeves having shoulders at their outer ends engaging the ends of the casing, a shaft extending through the casing and having threaded ends, crank-arms mounted upon the shaft and having inwardly-extending interlocked sleeves, said sleeves having outer enlarged recessed ends lying beyond the casing, nuts tapped onto the ends of the shaft within the recesses, cone-rings disposed wholly within the casing upon the sleeves between the enlarged ends of the latter and the bearing-rings and serving conjointly with the latter to form raceways, and antifriction devices arranged in the raceways.

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**754,044. METHOD OF TYPOGRAPHICALLY PRINTING CURVES.** Victor A. Brumbley, Paris, France. Filed Sept. 10, 1903. Serial No. 172,553. (No model.)



*Claim.*—A method of typographically printing curves as herein described, the same consisting in locating, in juxtaposition, printing characters of proper height and bearing each indications corresponding with the ordinate and abscissa of one of the points of the curve, and then printing from the characters thus disposed, substantially as explained.

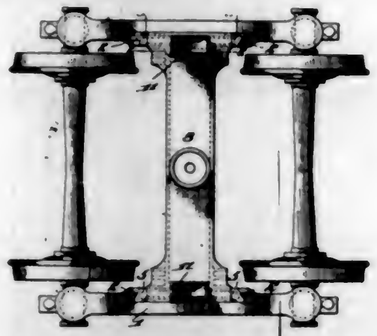
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**754,045. CAR-TRUCK.** Harry C. Dunbur, Chicago, Ill. Filed Nov. 24, 1903. Serial No. 182,516. (No model.)

*Claim.*—1. In a car-truck, the combination with side frames, of a transverse connecting element, and frictional means for maintaining the rigid connection of said side frames and transverse connecting element, substantially as and for the purposes specified.

2. In a car-truck, the combination with side frames, of a transverse connecting element vertically adjustable with respect thereto, and laterally-adjustable means for maintaining said side frames and transverse connecting element in an adjusted position, substantially as and for the purposes specified.

3. In a car-truck, the combination with the side frames and a transverse connecting element, of a coacting inclined member independent thereof, said inclined member adapted to transmit force from the said transverse connecting element to the said side frames and to maintain the rigid connection thereof, substantially as and for the purposes specified.



4. In a car-truck, the combination with the side frames and a transverse connecting element, of means independent thereof adapted to cause a horizontal thrust upon the side frames by imposing a load upon the said transverse connecting element, whereby said transverse connecting element and said side frames are rigidly connected, substantially as and for the purposes specified.

5. In a car-truck, the combination with the side frames and a transverse connecting element, of independent means operative by the load imposed upon said transverse connecting element to cause the rigid engagement of said side frames and transverse connecting element, substantially as and for the purposes specified.

6. In a car-truck, the combination with the side frames and a transverse connecting element, of a wedge comprising a plurality of members, whereby the side frames and transverse connecting element are connected substantially as and for the purposes specified.

7. In a car-truck, the combination with the side frames and a transverse connecting element, of a side-bearing-supporting element whereby the said side frames and transverse connecting element are connected, substantially as and for the purposes specified.

8. In a car-truck, the combination with the side frames, of a transverse connecting element having a transversely-extending pocket therein adapted to receive means operative by the load for causing the rigid engagement of said side frames and said transverse connecting element, substantially as and for the purposes specified.

9. In a car-truck, the combination with the side frames, of a transverse connecting element, a plurality of interlocking members, whereby said side frames and said transverse connecting element are rigidly connected and means for relatively adjusting said interlocking members, substantially as and for the purposes specified.

10. In a car-truck, the combination with the side frames and a transverse connecting element, of a plurality of interlocking members, means for relatively adjusting said interlocking members, and means for retaining said interlocking member in an adjusted position, substantially as and for the purposes specified.

11. In a car-truck, the combination with the side frames and a transverse connecting element, of a plurality of interlocking members, means for relatively adjusting said interlocking members, and means adapted to frictionally retain said interlocking members in an adjusted position, substantially as and for the purposes specified.

12. In a car-truck, the combination with side frames, of a transverse connecting element, an interlocking member, operative by the load to cause a rigid engagement of said side frames and transverse connecting element and means adapted to frictionally retain said interlocking member in an adjusted position, substantially as and for the purposes specified.

13. In a car-truck, the combination with side frames, of a transverse connecting element, a plurality of interlocking members, whereby said side frames and said transverse connecting element are rigidly connected and means for expanding said interlocking members, substantially as and for the purposes specified.

14. In a car-truck, the combination with the side frames, of a transverse connecting element having a transverse horizontally-extending pocket therein, an independent interlocking member within said pocket, and means for causing said interlocking member to engage the side frame, substantially as and for the purposes specified.



15. In a car-truck, the combination with the side frames, of a transverse connecting element having a pocket therein, a plurality of movable interlocking members within said pocket, and means adapted to cause said interlocking members to engage the side frames, substantially as and for the purposes specified.

16. In a car-truck, the combination with the side frames, of a transverse connecting element having a pocket therein, inclined interlocking members within said pocket, and means for causing said interlocking members to engage the side frames, substantially as and for the purposes specified.

17. In a car-truck, the combination with side frames, of a transverse connecting element, independent inclined interlocking members, and means whereby said inclined interlocking members are operative by the action of the load to cause the rigid engagement of said side frames and said transverse connecting element, substantially as and for the purposes specified.

18. In a car-truck, the combination with the side frames, of a transverse connecting element, and means for rigidly connecting said side frames and transverse connecting element, said means comprising a plurality of inclined interlocking members and a wedge adapted to separate said interlocking members, substantially as and for the purposes specified.

19. In a car-truck, the combination with the side frames, of a transverse connecting element having a transverse pocket therein, said pocket adapted to receive an interlocking member, and an interlocking member operative by the action of the load to cause the rigid connection of said side frames and transverse connecting element, substantially as and for the purposes specified.

20. In a car-truck, the combination with the side frames and a transverse connecting element, of a wedge element coacting therewith, whereby said side frames and transverse connecting element are rigidly connected by the action of the load, substantially as and for the purposes specified.

21. In a car-truck, the combination with the side frames, of a transverse connecting element having pockets therein, and means retained in said pockets by the load for connecting said side frames and transverse connecting element, substantially as and for the purposes specified.

22. In a car-truck, the combination with side frames having pockets therein, of a transverse connecting element also having pockets, and interposed independent interlocking elements retained in the pockets by the load, substantially as and for the purposes specified.

23. In a car-truck, the combination with side frames and a transverse connecting element, of independent laterally-movable interlocking members, operative by the load to cause the rigid connection of said side frames and transverse connecting element, substantially as and for the purposes specified.

24. In a car-truck, the combination with the side frames, of a transverse connecting element, and interlocking means independent thereof adapted to be retained in a locked position by the action of the load, substantially as and for the purposes specified.

25. In a car-truck, the combination with the side frames, of a transverse connecting element, and an interlocking member having both a vertical and a horizontal inclination whereby said side frames and transverse connecting element are rigidly connected, substantially as and for the purposes specified.

26. A connecting device for the side frames and transverse connecting element of a car-truck, comprising a plurality of elements adapted to be retained in a fixed position relative to each other by the frictional engagement of the several elements, substantially as and for the purposes specified.

27. In a car-truck, the combination with side frames, of a transverse connecting element, interlocking means, and a wedge having an angularity equal to or less than the apex angle of the cone of friction, substantially as and for the purposes specified.

28. In a car-truck, the combination with side frames, of a transverse connecting element having pockets therein, a plurality of independently-movable interlocking members within said pockets, and means adapted to cause a horizontal thrust upon the side frames by imposing a load upon the said transverse connecting element, substantially as and for the purposes specified.

29. In a car-truck, the combination with side frames, of a transverse connecting element vertically adjustable with respect thereto, and frictional means adapted to maintain said side frames and transverse connecting element in an adjusted position, substantially as and for the purposes specified.

30. In a car-truck, the combination with the side frames and transverse connecting element, of interposed locking elements, whereby said side frames and transverse connecting element are rigidly connected, the transverse member and locking elements being relatively adjustable with relation to each other and the side frames for varying the height of said transverse connecting element, substantially as and for the purposes specified.

31. In a car-truck, the combination with side frames, of a transverse connecting element, and an interlocking element, all of said parts mutually engaging and relatively movable to effect the rigid interlocking thereof, substantially as and for the purposes specified.

32. In a car-truck, the combination with the side frames, of a transverse connecting element, and independent means whereby the said side frames and transverse connecting element are rigidly connected by the action of the load, substantially as and for the purposes specified.

33. In a car-truck, the combination with the side frames, of a transverse connecting element having a pocket therein adapted to limit the vertical movement of an interlocking member, an interlocking member within said pocket, and means for causing said interlocking member to engage the side frame, substantially as and for the purposes specified.

34. In a car-truck, the combination with the side frames, of a transverse connecting element, and means for connecting said side frames and transverse connecting element, said means consisting of a plurality of wedges mutually engaging and relatively immovable with respect to each other, substantially as and for the purposes specified.

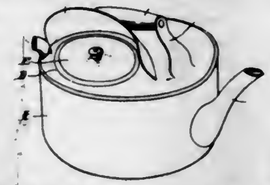
35. In a car-truck, the combination with the side frames, of a transverse connecting element, a plurality of laterally-movable wedges, and a wedge adapted to cause a lateral movement of said laterally-movable wedges and to render them relatively immovable, substantially as and for the purposes specified

36. In a car-truck, the combination with the side frames, of a transverse connecting element, a plurality of laterally-movable wedges, and means adapted to cause a lateral movement of said laterally-movable wedges and to cause them to be rendered relatively immovable, substantially as and for the purposes specified.

37. In a car-truck, the combination with the side frames, of a transverse connecting element, a plurality of laterally-movable elements, and means adapted to cause a movement of said laterally-movable elements and to render them relatively immovable, substantially as and for the purposes specified.

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**754,046. TEA-KETTLE.** William R. Bulmer, Windsor, Canada, assignor of one-fourth to Harry Slater, Windsor, Canada. Filed July 23, 1903. Serial No. 166,659. (No model.)



*Claim.*—A kettle having a top provided with a fill-opening at one side of its center line, a cover to close said opening, a handle, ears on the top between which the handle is secured, said ears being offset to bring the handle to the side of the center line of the top opposite that at which the fill-opening is located, a vent-pipe extending through the top diametrically opposite the spout and a shield secured to the top between the opening and handle and extending outward and upward over said vent-pipe and the fill-opening.

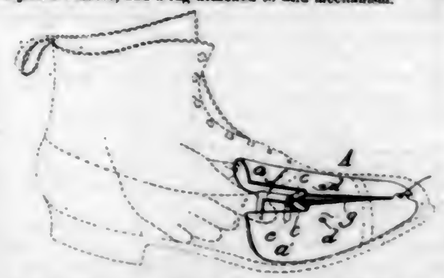
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**754,047. SHOE-TREE.** James H. Burt, Springfield, Mass., Augustus L. Anderson, Brooklyn, N. Y., and Rudolph C. Grossmann, Jersey City, N. J., assignors to said Burt, Peter S. Kinsey, Newark, N. J., and Walter Kinsey, New York, N. Y. Filed May 14, 1903. Serial No. 157,049. (No model.)

*Claim.*— 1. A toe-support comprising sections pivotally connected at the front, pivotally-connected links in pivotal connection with said sections, and a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto.

2. A toe-support comprising sections pivotally connected at the front, pivotally-connected links in pivotal connection with said sections, a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot

or adjacent thereto and the other end attached to the secton-pivot or adjacent thereto, and a lug attached to said mechanism.



3. A toe-support comprising sections pivotally connected at the front and yielding means consisting of pivotally-attached spring-actuated links pivotally connected with the sections back of their pivot adapted to actuate said sections into normal position and so retain them, the front ends of the sections being cut away to permit of separation at the rear and to limit such separation.

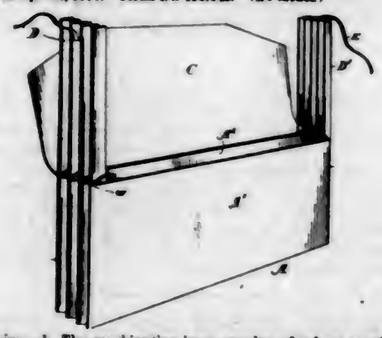
4. A toe-support comprising sections pivotally connected at the front and yielding means consisting of pivotally-attached spring-actuated links pivotally connected with the sections back of their pivot to normally cause said sections to separate and remain separated at the rear, the front ends of the sections being cut away to permit such separation to take place and to determine the amount of the same.

5. A toe-support comprising sections pivotally connected at the front, the parts forward of the pivotal connection being cut away so that they abut only when the sections are separated in the rear, pivotally-connected links in pivotal connection with said sections, and a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto.

6. A toe-support comprising shell-like sections pivotally connected at the front, the parts forward of the pivotal connection being cut away so that they abut only when the sections are separated in the rear, pivotally-connected links in pivotal connection with said sections, and a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto.

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**754,048. ENVELOP.** ALVAH DOSENBELL, Jr., Philadelphia, Pa. Filed Apr. 21, 1903. Serial No. 153,643. (No model.)

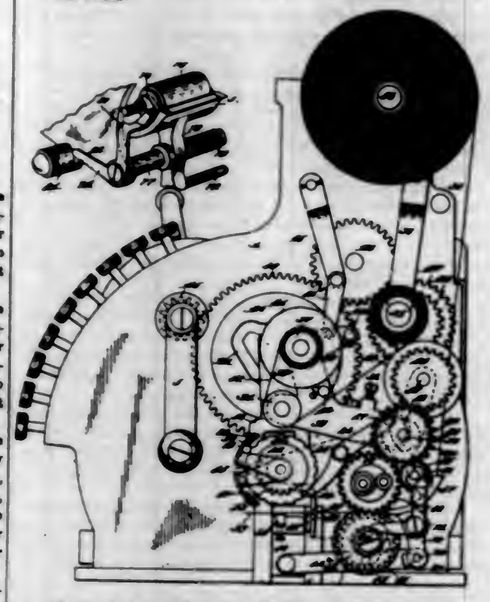


*Claim.*—1. The combination in an envelop of a front portion, a back portion, end gussets having a plurality of plaits, filling-pieces formed on said end gussets having plaits corresponding in number to the plaits in the said end gussets, said filling-pieces being adapted to fold at right angles to the end gussets and to expand and contract with said end gussets to completely close the opening of the envelop at any degree of expansion, substantially as described.

2. The combination in an envelop of a front portion, a back portion, end gussets having a plurality of plaits, filling-pieces formed on said end gussets having plaits corresponding in number to the plaits in the said end gussets, said filling-pieces being adapted to fold at right angles to the end gussets and to expand and contract with said end gussets to completely close the opening of the envelop, and means of securing said filling-pieces together, substantially as described.

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**754,049. CASH-REGISTER.** THOMAS CARROLL, Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Apr. 18, 1903. Serial No. 153,196. (No model.)



*Claim.*—1. In a cash-register the combination with an operating mechanism, of a special type-carrier, a setting device for said carrier, a locking device for the operating mechanism, and means connected to the operating mechanism for positively returning the locking device to its normal position upon each operation of the machine.

2. In a cash-register the combination with an operating mechanism, of a special type-carrier, a setting device for said carrier, a locking-lever for the operating mechanism controlled by the setting device, means for holding the lever in an unlocked position when it is operated, and devices connected to the operating mechanism for positively returning the locking-lever to its normal position upon each operation of the machine.

3. In a cash-register, a printing mechanism including a series of type-carriers, of ink-pads therefor, supports for said ink-pads, carriers for said supports independently journaled concentric to the axis of the type-carriers, means for oscillating said carriers to bring the pads to diametrically opposite sides of said type-carriers, and means for forcing the pads against the said type-carriers.

4. In a cash-register, the combination with a series of type-carriers, of ink-pads therefor, supports for said ink-pads, carriers for said supports independently journaled concentric to the axis of said type-carriers, and means for operating said support-carriers for bringing them to the printing-line for inking the type.

5. In a cash-register the combination with a series of type-carriers, of independently-pivoted ink-pad carriers, pinions connected to said carriers, and means for simultaneously operating the pinions in opposite directions to move the pad-carriers to opposed points of the type-carriers.

6. In a cash-register the combination with a series of printing-wheels, of ink-pad carriers independently pivoted and mounted concentric to the axis of said wheels, and means for independently operating said ink-pad carriers for bringing them to the printing-points upon the opposite sides of said type-carriers.

7. In a cash-register the combination with a series of type-carriers, of a series of independent ink-pad carriers pivoted concentrically to the axis of said type-carriers, pinions connected to said ink-pad carriers, and a movable member having duplicate rack-bars for engaging the respective pinions.

8. In a cash-register the combination with a series of type-wheels, of independent ink-pad carriers mounted concentrically to



the axis of the printing-wheels, pinions connected to the respective carriers, a reciprocating bar carrying racks which engage the respective pinions, and means for reciprocating the said bar.

9. In a cash-register the combination with an operating mechanism, of a platen mounted on a reciprocated slide, a knife carried by said slide, a stationary knife, and means for reciprocating the slide and means for disabling the reciprocating means.

10. In a cash-register the combination with type-carriers, of a platen, a platen-operating lever, means for operating the lever, and means for changing the fulcrum of the lever whereby it will operate the platen or not, as desired.

11. In a cash-register the combination with type-carriers, of a platen, a printing-drum, a pressure-roller, an ink-roller, and a common means for preventing the pressure-roller and the ink-roller from engaging the printing-drum and for preventing the operation of the platen.

12. In a cash-register the combination with an operating mechanism, of a special type-carrier, a setting device for said carrier, a locking-lever for the operating mechanism controlled by the setting device, a spring device for holding the locking device in its unlatching position, and means connected to the operating mechanism for positively returning the locking-lever to its normal position upon each operation of the machine.

13. In a cash-register, a printing mechanism including a series of type-carriers, of ink-pads therefor, supports for said ink-pads movable against spring tension, independent carriers for said supports, and a common means for simultaneously operating said support-carriers to move them in opposite directions.

14. In a cash-register the combination with a series of type-carriers, of pivoted ink-pad carriers, pinions connected to said carriers, and a reciprocating rack arranged to operate said pinions to move the carriers in opposite directions.

15. In a cash-register a printing mechanism including a series of type-carriers, pivoted ink-pad carriers mounted concentric to the axis of the type-carriers, pinions connected to said pivoted carriers, and a movable operating-bar having rack-teeth which engage the respective pinions upon opposite sides whereby the movement of said bar will actuate the pad-carriers simultaneously in opposite directions.

16. In a cash-register the combination with a printing mechanism, of a movable knife, a lever for operating said knife, a shiftable fulcrum-pin for said lever and means for operating the lever.

17. In a cash-register the combination with a platen, of a lever for operating the same, a shiftable fulcrum-pin for said lever, and means for operating the lever.

18. In a cash-register the combination with type-carriers, of a slide carrying a platen, a pivoted lever connected at one end to said slide, a shiftable fulcrum-pin for the opposite end of the lever, and means for imparting movement to the lever at a point intermediate its two ends.

19. In a cash-register the combination with a printing mechanism, of a platen, a lever connected to the platen, feeding-rollers, means for adjusting said rollers in relation to each other, and a fulcrum for said lever controlled by said adjusting means.

20. In a cash-register the combination with a platen, of an operating-lever for the same, a printing device, an inking means for said device, adjusting mechanism for drawing the inking means away from the printing device, and a fulcrum-pin for the platen-operating lever shifted by said adjusting mechanism.

21. In a cash-register the combination with a platen, of a lever for operating the same, a printing device, an inking-roller for said device, a spring for normally holding the roller in contact with the printing device, adjusting means for moving the roller out of contact with the printing device, and a fulcrum-pin for the operating-lever carried by the adjusting device.

22. In a cash-register the combination with an operating mechanism, of a type-carrier, means for setting the type-carrier, a lock for the operating mechanism, tripped by said setting means, holding means for holding the lock in its tripped position, and means connected to the operating mechanism for positively returning the lock to its locking position.

23. In a cash-register, the combination with an operating mechanism, of a special type-carrier, a special lever for setting said carrier, a locking-lever for said operating mechanism tripped by said special lever, a spring-pressed plunger coöperating with the said locking-lever to hold the same in tripped position, a resetting-lever for returning said locking-lever to normal position, and a cam projection moved by the operating mechanism to actuate said resetting-lever at each operation of the machine.

24. In a cash-register, the combination with a series of type-carriers and a platen therefor, of an operating-lever for said platen, a pin carried on said lever, a revoluble operating member formed with a cam-groove for engaging said pin and actuating said operating-lever, and adjustable means for preventing the movement of said revoluble member from moving said platen.

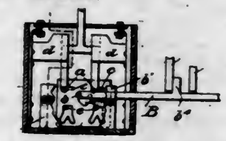
25. In a cash-register, the combination with a series of type-carriers and a platen therefor, of an operating-lever for said platen, a pin carried on said lever, a revoluble operating member formed with a cam-groove for engaging said pin and actuating said operating-lever, and adjustable means for preventing the travel of said pin within said groove from causing said lever to move said platen.

26. In a cash-register, a printing mechanism including a series of type-carriers and platens therefor, independent ink-pad carriers having mounted thereon pad-supports movable against spring tension, pinions connected to said carriers, a double rack-bar formed with teeth to engage said pinions upon opposite sides whereby to move said carriers in opposite directions, a pin formed on said rack-bar, and an operating-gear formed with a cam-groove to engage said pin and operate said rack-bar.

27. In a cash-register, the combination with a series of type-wheels, of a platen, an operating-lever for said platen carrying a pin at its central portion and formed with an L-shaped slot in its outer portion, a printing-roller, a feed-roller formed with a cam-groove for engaging said pin on said operating-lever, an ink-roller for said printing-roller, a rocking arm carrying said ink-roller and provided with a pin for engaging said L-shaped slot, hand manipulative means for adjusting said feed-roller, and connections between the latter and said rocking arm.

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**754,050. MECHANICAL MOVEMENT.** ROY V. COLLINS, New York, N. Y., assignor to the American Automatic Switch Company, New York, N. Y., a Corporation of New York. Filed May 21, 1903. Serial No. 158,107. (No model.)



*Claim.*—1. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, and means engaging the motion-transmitting member to cause it to have a motion of translation when actuated by the prime mover to change its position with respect to the first-named member.

2. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a freely-supported motion-transmitting member engaged by the prime mover and the first-named member, and means engaging the motion-transmitting member to translate it and change its position with respect to the first-named member.

3. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, and means engaging the motion-transmitting member to translate it laterally to change its position with respect to the first-named member.

4. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, and means to translate the second-named member laterally after each actuation thereof by the prime mover to change its position with respect to the first-named member.

5. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, and means to translate the second-named member alternately first toward one side and then toward the other side to change its position with respect to the first-named member.

6. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member between the prime mover and the member to be moved, a pin-and-slot connection between the first and second named members, and means for translating the second-named member to change the position of the pin in the slot.

7. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a freely-supported motion-transmitting member between the prime mover and the member to be moved a pin-and-slot connection between the first and second named members, and means to change the position of the pin in the slot.

8. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member between the prime mover and the member to be moved, a pin-and-slot connection between the first and second named members, and means for translating the second-named member laterally after each actuation thereof by the prime mover to change the position of the pin in the slot.

9. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, an inclined track on the second-named member adapted to engage a relatively fixed part to change the position of the second-named member with respect to the first-named member, and means for guiding the second-named member to bring said track and fixed part into the proper relation.

10. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, an inclined track on the second-named member adapted to engage the first-named member to change the position of the second-named member with respect to the first-named member, and means for translating the second-named member to bring said track and first-named member into the proper relation.

11. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, a track having two oppositely-inclined portions on the second-named member adapted to engage a relatively fixed part to change the position of the second-named member with respect to the first-named member, and means for guiding the second-named member to bring said track and fixed part into the proper relation.

12. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, a track having two oppositely-inclined portions on the second-named member adapted to engage a relatively fixed part to change the position of the second-named member with respect to the first-named member, and means for guiding the second-named member to cause each portion of the track to be engaged alternately by the fixed part after each successive actuation of the second-named member by the prime mover.

13. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a freely-supported motion-transmitting member engaged by the prime mover and the first-named member, means for guiding the second-named member laterally after each actuation thereof by the prime mover, and means for shifting the second-named member to change its position with respect to the first-named member, which means are brought into operation by the guiding means.

14. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a freely-supported motion-transmitting member having two resting positions and engaged by the prime mover and the first-named member, a track having two oppositely-inclined portions on the second-named member adapted to engage a relatively fixed part to shift the connection between said members, and means for guiding the second-named member after each actuation thereof by the prime mover to cause each portion of the track to be engaged alternately by the fixed part to bring the second-named member into one position of rest after one actuation of the prime mover and into the other position of rest after the next actuation of the prime mover.

15. In a motion-transmitting device, the combination of a prime mover, a member to be moved having a limited freedom of movement, a motion-transmitting member between the prime mover and the member to be moved, a pin-and-slot connection between the first and second named members, and means to translate the second-named member laterally after each actuation thereof by the prime mover to change its position with respect to the first-named member.

16. In a motion-transmitting device, the combination of a prime mover, a member to be moved having a limited freedom of movement, a motion-transmitting member engaged by the prime mover and the first-named member, an inclined track on the second-named member adapted to engage the first-named member while in one of its limiting positions to change the position of the second-named member with respect to the first-named member, and means for translating the second-named member to bring said track and second-named member into the proper relation.

17. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover, a cam-track upon the second-named member adapted to engage and to move the first-named member, and means for translating the second-named member to change the position of the track with respect to the first-named member.

18. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover, a cam-track with two oppositely-inclined portions upon the second-named member adapted to engage and to move the first-named member, and means for translating the second-named member to change the position of the track with respect to the first-named member.

19. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover, a cam-track with two oppositely-inclined portions upon the second-named member, a pin or lug upon the first-named member adapted to engage said track whereby the first-named member may be moved, and means for translating the second-named member to change the position of the track with respect to the pin or lug.

20. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover, a cam-track upon the second-named member adapted to engage and to move the first-named member, a second track on the second-named member adapted to engage a relatively fixed part to shift the position of the cam-track with respect to the first-named member, and means for guiding the second-named member to bring said second track and fixed part into the proper relation.

21. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover, a cam-track with two oppositely-inclined portions upon the second-named member adapted to engage and to move the first-named member, a second track on the second-named member adapted to engage a relatively fixed part to shift the position of the cam-track with respect to the first-named member, and means for guiding the second-named member to bring said second track and fixed part into the proper relation.

22. In a motion-transmitting device, the combination of a prime mover, a member to be moved having a limited movement, a motion-transmitting member and engaged by the prime mover, a cam-track with two oppositely-inclined portions upon the second-named member, a pin upon the first-named member adapted to engage said track whereby the first-named member may be moved, a second track upon the second-named member adapted to engage said pin to shift the position of the cam-track with respect to the pin, and means for guiding the second-named member to bring said second track and pin into the proper relation.

23. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting plate engaged by the prime mover, said plate having a slot with two tracks each track having two oppositely-inclined portions, and a pin on the member to be moved lying within said slot and adapted to engage one of the portions of one of the tracks when the plate is actuated by the prime mover whereby the member to be moved is moved in one direction and then to engage one of the portions of the other track whereby the plate is shifted to bring the other portion of the first track into such a position that upon the next actuation of the plate the member to be moved will be moved in the opposite direction and the plate will be shifted to its first position.

24. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a plate engaged by the prime mover, said plate having a slot with two tracks each track having two oppositely-inclined portions, a pin on the member to be moved lying within said slot and adapted to engage one of the portions of one of the tracks when the plate is actuated by the prime mover whereby the member to be moved is moved in one direction and then to engage one of the portions of the other track whereby the plate is shifted to bring the other portion of the first track into such a position that upon the next actuation of the plate the member to be moved will be moved in the opposite direction and the plate will be shifted to its first position, and means for guiding the plate to bring the shifting track and pin into the proper relation directly after each actuation of the plate by the prime mover.

25. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, means to shift the position of the second-named member to change the position of said member with respect to the first-named member, said second member having a guide-slot with two recesses, and a fixed pin in said slot.

26. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, an inclined track on the second-named member adapted to engage a relatively fixed part to change the position of the second-named member with respect to the first-named member, said second-named member having a guide-slot with two recesses, and a fixed pin in said slot.

27. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged by the prime mover and the first-named member, a track having two oppositely-inclined portions on the second-named member, said second-named member having a guide-slot with two recesses, and a fixed pin in said slot, whereby the second-named member is guided after successive actuations by the prime mover first toward one side and then toward the other side.

28. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a plate engaged by the prime mover, said plate having a slot with two tracks each track having two oppositely-inclined portions, a pin on the member to be moved lying within said slot and adapted to engage one of the portions of one of the tracks when the plate is actuated by the prime mover whereby the member to be moved is moved in one direction and then to engage one of the portions of the other track whereby the plate is shifted to bring the other portion of the first track into such a position that upon the next actuation of the plate the member to be moved will be moved in the opposite direction and the plate will be shifted to its first position, said plate having a guide-slot with two recesses, and a fixed pin in said slot, whereby the plate is guided after successive actuations of the prime mover first toward one side and then toward the other side.

29. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a motion-transmitting member engaged at each end by the prime mover, a pin-and-slot connection between the first and second named members, and means for translating the second-named member to change the position of the pin in the slot.

30. In a motion-transmitting device, the combination of a prime mover, a member to be moved, a plate engaged by the prime mover and having a heart-shaped slot and a Y-shaped slot, a pin on the member to be moved lying in the heart-shaped slot, and a fixed pin in the Y-shaped slot.

31. In a motion-transmitting device, the combination of a prime mover, a member to be moved having a limited freedom of movement, a plate having a heart-shaped slot in the center and two Y-shaped slots at either end, a pin on the member to be moved and lying in the heart-shaped slot, and a fixed pin in each of the Y-shaped slots.

32. In a motion-transmitting device, the combination of a prime mover, a rod to be moved capable only of a limited longitudinal motion, a motion-transmitting plate engaged by the prime mover and the rod, means to move the rod in opposite directions upon successive actuations of the prime mover, means to guide the plate in opposite directions upon successive actuations of the prime mover, and means to shift the plate after each actuation of the prime mover.

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**754,051. TOY AIR-RIFLE. THOMAS W. CRAVEN, Fairfield, Cal. Filed Mar. 28, 1903. Serial No. 149,998. (No model.)**

*Claim.*—1. A gun of the kind described comprising an outer barrel, a sliding inner barrel, a cylinder at the rear of the sliding barrel, a nipple projecting therefrom, the said sliding barrel fitting over said nipple and being perforated adjacent its rear end, a magazine-barrel having its open rear end turned down on the sliding barrel, a piston in the cylinder, means for drawing the piston rearward, a spring adapted to project it forward, and means for bringing the perforation of the sliding barrel into alinement with the open end of the magazine-barrel when the piston is drawn back.

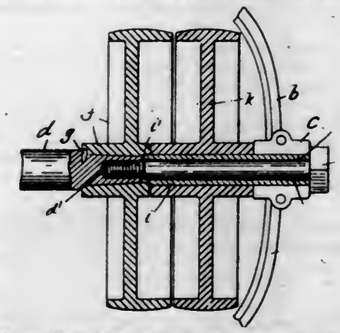
2. The combination with a gun of the kind described, of a cylinder therein, a piston in said cylinder, a spring adapted to hold said piston in the forward part of the cylinder, a plunger-rod connected to said piston, a rack-bar secured to said plunger, a plate sliding on the exterior of the gun, a rack-bar sliding within the gun, means connecting the last-named rack to the sliding plate, a gear-wheel engaging said rack-bar, a gear-wheel engaging the rack-bar secured to the plunger-rod, means for connecting the two gears when rotating in one direction, and means for locking the plunger-rod in a rearward position.

3. A gun of the kind described comprising a sliding inner barrel having an aperture on its upper side, a magazine normally closed at its rear end by the inner barrel, a cylinder opening at its forward end into said inner barrel, a piston therein, a rod connected to said piston, a plate sliding on the exterior of the gun, a rack-bar connected to said plate and sliding within the gun, a gear engaging said bar, means whereby rotation of the gear in one direction draws the piston to the rear of the cylinder, a lever secured at one end to the sliding barrel, a rod secured at one end to the lever and having its opposite end bent into the path of the forward end of the rack-bar, said rod and lever being adapted to slide the barrel and bring the aperture in alinement with the open rear end of the magazine.



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**754,052. PULLEY-SHAFT. THOMAS F. CUDDY, Lawrence, Mass. Filed Jan. 4, 1904. Serial No. 187,643. (No model.)**




*Claim.*—1. In combination with an inner and an outer journal-box, a shaft journaled in, and having its outer end extend beyond the outer end of said inner box, a pulley fixed on the outer end of said shaft, a shaft extension rotatably mounted in said outer box and having a threaded connection with the end of said shaft and a pulley rotatably mounted on said extension between said fixed pulley and said outer box, substantially as described.

2. In combination with an inner and an outer journal-box, a shaft journaled in, and having its outer end extend beyond the outer end of said inner box, a pulley fixed on the outer end of said shaft, a stud passing through said outer box and having a head at its outer end and a screw-thread at its inner end which engages a correspondingly-threaded bore in the end of the shaft, a sleeve fitted on said stud and journaled in said outer box, the outer end of said sleeve

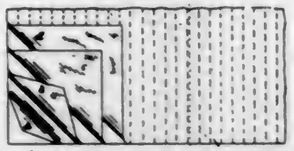
bearing against the head of said bolt and its inner end against the hub of said fixed pulley, substantially as described.

3. In combination with an inner and an outer journal-box, a shaft journaled in, and having its outer end extend beyond the outer end of said inner box, a pulley fixed on the outer end of said shaft, a stud passing through the outer box and having a threaded connection at its inner end with the outer end of the shaft, a sleeve on said bolt journaled in said outer box, and a loose pulley journaled on said sleeve between said outer bearing and the fixed pulley, substantially as described.

4. In combination with an inner and an outer journal-box, a shaft journaled in, and having its outer end extend beyond the outer end of said inner box, a pulley fixed on the outer end of said shaft, a stud passing through said outer box and having a head at its outer end and a screw-thread at its inner end which engages a correspondingly-threaded bore in the end of the shaft, a sleeve fitted on said stud and journaled in said outer box, and an interlocking connecting means between said sleeve and fixed pulley to prevent rotation of one with relation the other, substantially as described.

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**754,053. FILTERING MATERIAL.** SAMUEL G. DERRAM, Cincinnati, Ohio. Filed Mar. 2, 1903. Serial No. 145,805. (No specimens.)



*Claim.*—As an improved article of manufacture, a filtering fabric composed of a plurality of alternate layers of textile fabric, and filtering-paper, with an intermediate layer of cotton-wadding contiguous the filtering-paper, the whole united and bound together by stitches over the entire face of the fabric, substantially as described.

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**754,054. SUBMARINE PRESERVING AND ANTIFOULING COMPOSITION.** MATTHEW H. DEVEY, Philadelphia, Pa. Filed Dec. 5, 1901. Renewed Jan. 11, 1904. Serial No. 188,666. (No specimens.)

*Claim.*—1. A compound consisting of boiled linseed-oil, litharge, sulfate of copper, Venice turpentine, Portland cement, and ground glass, substantially as and for the purpose described.

2 A compound consisting of one gallon of boiled linseed-oil, three ounces of litharge, six pounds of sulfate of copper, two pounds of Venice turpentine, twenty pounds of Portland cement, and twenty pounds of ground glass, substantially as and for the purpose described,

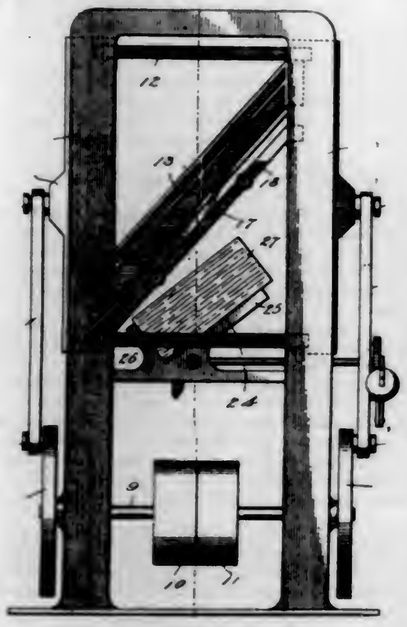
3. A compound for coating submarine structures consisting of one gallon of boiled linseed-oil, three ounces of litharge, six pounds of sulfate of copper, two pounds of Venice turpentine, twenty pounds of Portland cement, five pounds of ground glass bolted, five pounds of ground glass run through a twenty-four-mesh sieve, five pounds of ground glass run through a twenty-six-mesh sieve, and five pounds of ground glass run through a twenty-eight-mesh sieve, substantially as described.

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**754,055. CUTTING-MACHINE.** WILHELM DIETMANN, Slotergemeente, Netherlands, assignor, by mesne assignments, to John H. G. Stuurman, Jr., Brooklyn, N. Y. Filed July 23, 1902. Renewed Nov. 30, 1903. Serial No. 183,292. (No model.)

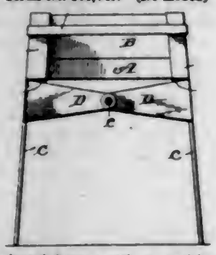
*Claim.*—1. In a machine of the class set forth, the combination of an obliquely-arranged vertically-reciprocating cutter also disposed at an angle to a vertical plane, vertically-reciprocating slides to which the knife is secured, a guard terminally secured to said slides at a distance below and in a plane parallel with the edge of the cutter, the said guard always occupying a constant or immovable position in relation to the cutter and comprising a channeled or grooved support having a pressure-bar adjustably mounted therein and provided with outer hand-wheels whereby the said bar may be moved proportionately to the reduction of the block of wood, the face or edge of the bar which comes into engagement with the block of wood being beveled in a downward and outward direction, a bed having a work-supporting means at an angle to a horizontal plane, and mechanism for automatically feeding the bed and the work held thereby toward the cutter proportionate to the vertical reciprocation of the latter.

2. In a machine of the class set forth, the combination of vertical side members having slots extending longitudinally thereof, slides mounted in the said slots and formed with outer intermediate bosses provided with wrist-pins, drive-bars loosely attached at their upper terminals to said wrist-pins, a power-shaft having disks thereon to which the lower ends of the drive-bars are eccentrically attached, the said slides being connected by upper and lower cross-bars, an obliquely-disposed knife-frame terminally attached to the slides and having a knife removably held in one side thereof and disposed at an angle of inclination to a vertical plane, a guard terminally secured to the slides at a plane below and parallel to the knife-frame and comprising a pressure-bar adjustably mounted therein and having outer hand-wheels whereby the bar may be adjusted proportionate to the reduction of the block of wood operated upon, a bed having a work-supporting means at an angle to a horizontal plane, and mechanism for automatically feeding the bed and the work held thereby toward the cutter proportionate to the vertical reciprocation of the latter.




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**754,056. BUTTER-MOLD.** JOHN W. RASTOR, Chicago, Ill. Filed Oct. 12, 1903. Serial No. 176,749. (No model.)




*Claim.*—1. A knockdown mold, comprising several parts, in combination with a holder therefor consisting of two end frames pivotally connected at points mediate the same.

2. A knockdown mold, comprising a rectangular tray, two side pieces, and two end blocks, in combination with a holder therefor consisting of two end frames pivotally connected at points mediate the same.

3. A knockdown mold, comprising a rectangular tray, two side pieces, and two end blocks, in combination with a holder therefor consisting of two end frames pivotally connected at points mediate the same and a suitable band therefor



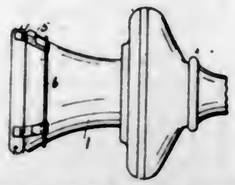
4. A knockdown mold, comprising several parts, in combination with a holder therefor consisting of two end frames having legs extending from their lower corners and their lower edges between said legs flanged horizontally toward each other, and having laterally-projecting arms which are pivotally connected as and for the purpose specified.

5. A knockdown mold comprising a rectangular tray, two corresponding side pieces and two end blocks, in combination with a holder therefor consisting of two end frames having legs extending from their lower corners and their lower edges between said legs flanged horizontally toward each other, and having laterally-projecting arms which are pivotally connected as and for the purpose specified.

6. A knockdown mold comprising a rectangular tray, two corresponding side pieces and two end blocks, in combination with a holder therefor consisting of two end frames having legs extending from their lower corners and their lower edges between said legs flanged horizontally toward each other, and having laterally-projecting arms which are pivotally connected and a suitable band confining said end frames and mold as set forth.

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**754,057. ANTISEPTIC ATTACHMENT FOR TELEPHONE-MOUTHPIECES.** WILLIAM M. ENGLISH and ARTHUR H. TEN BROECK, San Francisco, Cal. Filed Apr. 27, 1903. Serial No. 154,427. (No model.)




*Claim.*—1. In combination with a bell-shaped telephone-mouthpiece, an inner bell-shaped shell of inflexible material within the mouthpiece, having its outer or larger rim curled outward and back through substantially half a revolution to form an annular external trough, the rear edge of the trough resting against the front of the mouthpiece and a ring of absorbent material saturated with an antiseptic in said trough, said shell being perforated within the mouthpiece, substantially as described.

2. In combination with a bell-shaped telephone-mouthpiece, an inner bell-shaped shell of inflexible material within the mouthpiece, having its outer or larger rim curled outward and back through substantially half a revolution to form an annular external trough, the rear edge of the trough resting against the front of the mouthpiece, and a ring of absorbent material saturated with an antiseptic in said trough, said shell being perforated within the mouthpiece, the upper portion of said curled rim having an aperture for supplying the absorbent material with antiseptic liquid, substantially as described.

3. In combination with a telephone-mouthpiece, an inner perforated shell having its outer rim curled over to form a trough adapted to contain absorbent material and an antiseptic and means for securing said shell within said mouthpiece, said means comprising the ring around the mouthpiece and the tongues secured to the shell and bent around said ring, substantially as described.

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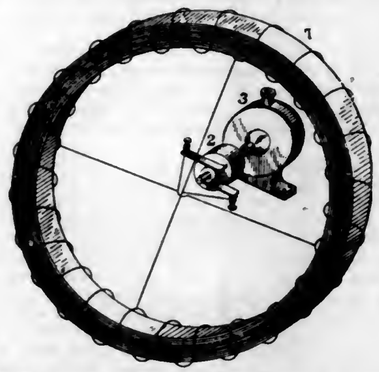
**754,058. SIGNALING BY ELECTROMAGNETIC WAVES.** REGINALD A. FESSENDEN, Fort Monroe, Va., assignor, by direct and mesne assignments, to the National Electric Signaling Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Aug. 8, 1903. Serial No. 168,900. (No model.)

*Claim.*—1. In a system for the transmission of energy by electromagnetic waves the combination of an electric generator a sending-conductor operatively connected to the generator and a steam-turbine directly connected to the generator.

2 In a system for the transmission of energy by electromagnetic waves the combination of a high-frequency electric generator a sending-conductor operatively connected to the generator and a prime mover having a constant torque.

3. In a system for the transmission of energy by electromagnetic waves the combination of an electric generator a sending-conductor operatively connected to the generator and a turbine directly connected to the generator.

4. In a system for the transmission of energy by electromagnetic waves the combination of a high-frequency electric generator a sending-conductor operatively connected to the generator and a steam-turbine directly connected to the generator.




5. In a system for the transmission of energy by electromagnetic waves the combination of a prime mover having a constant torque, an electric generator and a sending-conductor operatively connected to the generator.

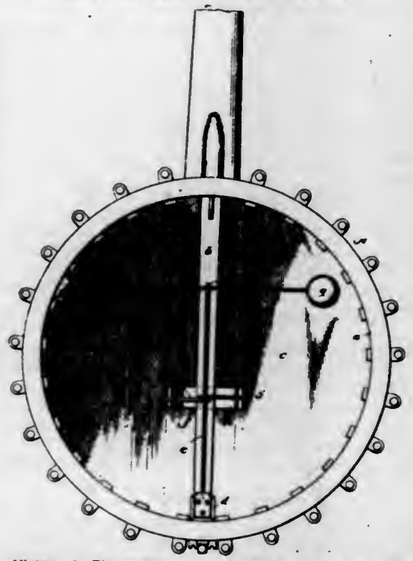
6. In a system for the transmission of energy by electromagnetic waves the combination of a prime mover having a constant torque, an electric generator and a sending-conductor operatively connected to the generator so as to directly generate electromagnetic waves.

7. In a system for the transmission of energy by electromagnetic waves the combination of an electric generator a sending-conductor operatively connected to the generator and a prime mover having a constant torque and a high angular velocity.

8. In a system for the transmission of energy by electromagnetic waves the combination of an electric generator a sending-conductor operatively connected to the generator and a prime mover having a constant torque and a high angular velocity and directly connected to the generator.

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**754,059. BANJO.** GEORGE C. FURBERSHAW, Washington, D. C. Filed June 8, 1903. Serial No. 160,602. (No model.)



*Claim.*—1. The combination with the body of a banjo or similar musical instrument, of a spring-bar arranged in and connected to the body, a muffler connected and movable with said spring-bar, and a movable rod connected to the body and the spring-bar, and having an angular arm.

2. The combination with the body of a banjo or similar musical instrument; of a spring-bar arranged in and connected to the body, a muffler connected and movable with said spring-bar, and a movable rod, mounted to turn on its axis in the body and the spring-bar, and having an angular arm.

3. The combination with the body of a banjo or similar musical instrument; of a spring-bar arranged in and connected to the body, a muffler connected and movable with said spring-bar, and a movable spring-rod journaled, at one end, in the body, and, at an intermediate point of its length, in the spring-bar, and having an angular arm.

4. The combination with the body of a banjo or similar musical instrument, having a head; of a rod mounted to turn on its axis in the body, and movable toward and from the head thereof, and having an angular arm, and a muffler connected with said rod, and movable with the same toward and from the head of the body.

5. The combination with the body of a banjo or similar musical instrument, having a head; of a resilient rod, mounted to turn on its axis in the body, and spring toward and from the head thereof, and having an angular arm, and a muffler connected with said rod, and movable with the same toward and from the head of the body.

6. The combination with the body of a banjo or similar musical instrument, having a head; of a rod arranged in the body, and movable toward and from the head thereof, and having an angular, threaded arm, a muffler connected and movable with said rod, and a threaded knob adjustable on the arm of the rod for the purpose set forth.

7. The combination with the body of a banjo or similar musical instrument; of a movable bail arranged in and connected with the body, and having legs extending toward the head thereof, and a muffler adapted to engage the head, and having sleeves receiving and held by frictional contact on the legs of the bail.

8. The combination with the body of a banjo or similar musical instrument; of a spring-bar arranged in and connected to the body, and having a free end provided with an eye, a bail connected to said bar at an intermediate point in the length thereof, a muffler having sleeves receiving and held by frictional contact on the legs of the bail, and a spring-rod journaled at one end in and secured to the body, and extending through the eye of the spring-bar, and having an angular arm.

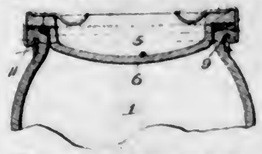
9. An attachment for banjo-bodies comprising a block adapted to be connected to the cross-brace of a body, a spring-bar fixed at one end to said block, and having an eye at its opposite end, a muffler connected and movable with said spring-bar, a block adapted to be connected to the rim of the body, and a movable rod journaled in and connected to the latter block, and journaled in the eye of the spring-bar, and having an eye.

10. An attachment for banjo-bodies comprising a block adapted to be connected to the cross-brace of a body, a spring-bar fixed at one end to said block, and having an eye at its opposite end, a bail connected to the spring-bar, and having straight legs, a muffler having sleeves receiving and held by frictional contact on the legs of the bail, a block adapted to be connected to the rim of the body, and a movable, resilient rod journaled in and connected to the latter block, and journaled in the eye of the spring-bar, and having an angular arm.

11. The combination with the body of a banjo or similar musical instrument, having a head; of a rod mounted to turn on its axis in the body, and movable toward and from the head thereof, and having an angular, threaded arm, a muffler connected with said rod, and movable with the same toward and from the head of the body, and a threaded knob adjustable on the arm of the rod for the purpose set forth.

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754,060. **JAR AND CLOSURE THEREFOR.** FRANK H. GIBSON, Bridgeton, N. J., assignor to the Gibson Jar Company, Bridgeton, N. J. Filed June 11, 1903. Serial No. 161,107. (No model.)

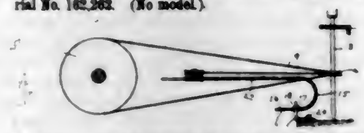


*Claim.*—1. The combination with a jar having an open top and recesses in opposite sides below the top forming depending tongues, of a closure to cover the opening in the jar, and clamps having hooks at one end to enter the recesses in the jar and engage behind the tongues, and the other ends of said clamps adapted to engage the upper face of the closure.

2. The combination with a jar having an open top and recesses in its opposite sides, of a closure or cover having a depending central portion to fill the opening in the top of the jar and an annular shoulder to fit over the upper edge of the jar, a bead around the outer upper edge of the shoulder, clamps having hooks at one end to enter the recesses in the jar and bent at their other ends forming catches to lock over the bead, flat portions to engage the shoulder, and finger-holds to rest within the depressed portion of the closure.

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754,061. **TENSION DEVICE FOR SPINDLE-DRIVING BANDS.** THOMAS H. GREENWOOD, Worcester, Mass. Filed June 19, 1903. Serial No. 162,262. (No model.)



*Claim.*—1. In a tightening device for spinning-frames, the combination with a bracket adapted to be attached to the framework of the machine, of a rod held in said bracket and bent upon itself in a U shape to form ways for a sliding plate, a plate sliding on said ways, a tightening-pulley carried by said plate, and a spiral spring inclosing said rod and acting against said plate, substantially as described.

2. In a tightening device for a spinning-frame band, the combination with a bracket adapted to be attached to the step-rail of a spinning-frame, of a rod held at one end in said bracket and curved in a U shape in a vertical plane, with the free end of said rod bent in U shape to form parallel ways for a sliding plate, a sliding plate held on said ways, a tightening-pulley carried by said plate, and a spiral spring inclosing said bent rod between said plate and the attaching-bracket, with its tension applied to force said plate away from said bracket, substantially as described.

3. The combination with the step-rail of a spinning-frame, of an angular bracket attached thereto, a U-shaped bent rod having a straight screw-threaded end held in said bracket, a pair of adjusting-nuts held thereon on opposite sides of said bracket, a coiled spring inclosing said bent rod, a plate sliding on the rod and a tightening-pulley held by said plate, substantially as described.

4. The combination of an angular bracket with each of its members provided with slots to permit of the adjustment of the connected parts, a rod held in said bracket and bent at each of its ends into a U shape, a plate sliding on said rod, a pulley carried by said plate and a spiral spring with its tension applied between said plate and said bracket, substantially as described.

5. A tension device for spinning-frames, consisting of a bracket adapted to be attached to a spinning-frame, a rod held in said bracket and bent at each of its ends into a U shape, but in planes at right angles to each other, a plate capable of sliding on said rod, a stud held by said plate, a tightening-pulley turning on said stud, and a spring inclosing said rod between said plate and said bracket, substantially as described.

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754,062. **FIRE-KINDLER.** ROBERT HAGER, St. Louis, Mo., assignor, by mesne assignments, of one-half to Joseph J. Hauer, St. Louis, Mo. Filed Apr. 9, 1903. Serial No. 151,861. (No model.)





*Claim.*—1. In a fire-kindler, the combination with combustible sections having teeth formed along one edge of each section; of an inflammable strip connecting said sections and forming a hinge, a fuse connected to the inflammable hinge-strip, and a weight upon the free end of the fuse.

2. In a fire-kindler, the combination with combustible sections; of an inflammable strip secured to the adjoining edges of the sections and forming a hinge, and teeth at one edge of each section.

3. In a fire-kindler, the combination with sections formed of combustible material and having teeth at one edge of each section; of an inflammable hinge-strip connecting the sections whereby the same may be folded upon each other.

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754,063. **WRENCH.** CHARLES E. HAWKINS, East Pittsburg, and FRANK CARY, Wilkinsburg, Pa. Filed Apr. 10, 1903. Serial No. 151,961. (No model.)



*Claim.*—In a wrench, the combination with the shank having a rigid jaw at its outer end and a handle on its inner end, of a jaw slidably mounted on the shank and provided with a plain bore-nut in its rear end, a screw-shaft extending through said nut into the casing of the slidable jaw, a locking-lever pivoted in said casing and provided with a half-nut to engage the screw-shaft, a stud carried by said locking-lever, and a spring affixed near its one end to the sliding jaw and lying in engagement with said locking-lever for holding the half-nut of the latter in engagement with the screw-shaft, said spring having a slot to receive the stud of the locking-lever, as and for the purpose described.

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754,064. **FIREPROOF COVERING FOR COLUMNS OR THE LIKE.** ABRAHAM L. A. HIMMELWRIGHT, New York, N. Y., assignor to the New Jersey Wire Cloth Company, Trenton, N. J., a Corporation of New Jersey. Filed July 17, 1903. Serial No. 165,930. (No model.)



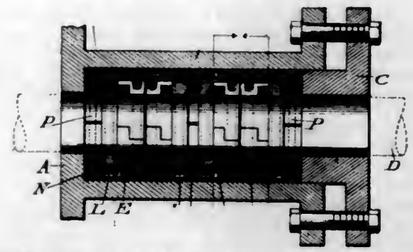
*Claim.*—1. A covering for columns, stacks, piping and the like consisting of metallic lathing provided with corrugations running around the column, securing means in the corrugations for holding the lathing in place, and a covering of plastic material on the lathing, substantially as described.

2. A covering for columns, stacks, piping and the like consisting of metallic lathing provided with corrugations running around the column, wire ties or rods in the corrugations for holding the lathing in place, and a covering of plastic material on the lathing substantially as described.

3. The combination with column or the like D having projecting flanges, of the lathing B inclosing the column and provided with corrugations running around the column and bearing against the flanges, and stiffening-rods 3 in the corrugations securing the lathing in place, substantially as described.

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754,065. **ROD-PACKING.** JOHN HODGE, Chester, Pa., assignor to Harper Manufacturing Company, a Corporation of Pennsylvania. Filed Jan. 8, 1904. Serial No. 188,181. (No model.)



*Claim.*—1. In a metallic packing, a rod, packing-rings having overlapping joints, means for holding the same upon said rod and means containing said rings for preventing the pressure from the cylinder from reaching the outer peripheries of said rings, the overlapping joints of the latter being placed at the outer ends of said last-mentioned means.

2. In a metallic packing, a rod, packing-rings having overlapping joints, means for holding the same upon said rod and means containing said rings for preventing the pressure from the cylinder from reaching the outer peripheries of said rings, the overlapping joints of the latter being situated at the extremities of said last-mentioned means.

3. In a metallic packing, a rod, packing-rings having overlapping joints, means for holding the same upon said rod and a casing for said rings, the overlapping joints of the latter being situated at the extremities of said casing.

4. In a metallic packing, a rod, packing-rings having overlapping joints, means for holding the same upon said rod and a split casing containing said rings, the overlapping joints of the latter being situated at the outer extremities of said casing and means for holding said split casing in assembled position.

5. In a metallic packing, a rod, packing-rings having overlapping joints, means for holding the same upon said rod, a casing consisting of interfitting members, containing said rings for preventing the pressure from said cylinder from reaching the outer periphery of said rings, the overlapping joints of the latter means situated at the extremities of said interfitting members.

6. In a metallic packing in combination with a stuffing-box, a box situated therein, a casing fitting within said box and consisting of interfitting members, a packing-ring within said casing having overlapping joints which are situated at the extremities of said casing.

7. In a metallic packing, a rod, a packing-ring having overlapping joints, means containing said ring to prevent pressure from the cylinder from reaching the outer periphery of said ring, the overlapping joints of the latter being placed at the outer extremities of said last-mentioned means.

8. In a metallic packing, a casing consisting of interfitting sections, one of said sections having a circumferential groove on the face thereof and contacting with the other section, and a packing-ring having overlapping joints situated within said casing with the said joints at the outer extremities of said casing.

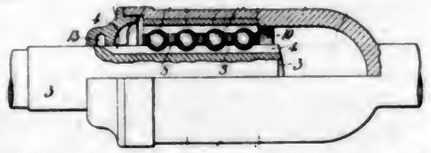
9. In a metallic packing, a rod, packing-rings having overlapping joints, means for holding same upon said rod, split means for preventing the pressure from the cylinder from reaching the outer periphery of said rings, the overlapping joints of the latter being situated at the outer extremities of said split means and an inclosing box for said parts.

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754,066. **TELESCOPIC JOINT FOR SHAFTING, &c.** ERNST G. HOFFMANN, London, England. Filed Oct. 5, 1903. Serial No. 175,785. (No model.)

*Claim.*—1. In a telescopic joint, and in combination a socket forming one of the members having a series of longitudinal grooves in its inner surface, an inner member having a corresponding series of grooves in its outer surface, a cage situate between said inner member and socket and a ball carried by said cage in each of said

grooves forming a sliding bearing between the inner member and socket.



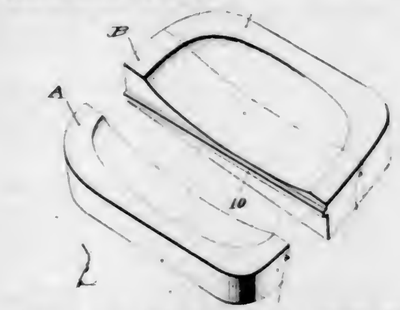
2. In a telescopic joint, and in combination a socket forming one of the members, a sleeve carried by said socket carrying a series of internal longitudinal grooves, an inner member carrying a corresponding series of external grooves, a cage situate between said inner member and sleeve and a number of balls carried by said cage in each of said grooves, forming sliding bearings between the inner member and the sleeve.

3. In a telescopic joint, and in combination, a socket forming one of the members carrying a series of internal longitudinal grooves, an inner member carrying a corresponding series of external grooves, a cage situate between the inner member and the socket, balls carried by said cage in each of said grooves, and means for limiting the longitudinal movement of the cage and balls in either direction.

4. In a telescopic joint, and in combination, a socket forming one of the members carrying a series of internal longitudinal grooves, an inner member carrying a corresponding series of external grooves, a cage situated between the inner member and the socket, balls carried by said cage in each of said grooves, and a cap carried by said socket and encircling the said inner member and forming a dust-excluding cover for the inner parts.

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**754,067. JOINT FOR CHAIR-SEAT SECTIONS OR SIMILAR PURPOSES.** JOHN B. HOUGH, Erving, Mass. Filed May 1, 1903. Serial No. 155,135. (No model.)



*Claim.*—1. As an article of manufacture, a wooden structure comprising a plurality of separate pieces or strips connected together by tongues, each of which extends diagonally across the engaging face of a section, and which projects a uniform distance from the surface thereof, and which is seated in a groove of uniform depth extending diagonally across the meeting face of an adjacent section.

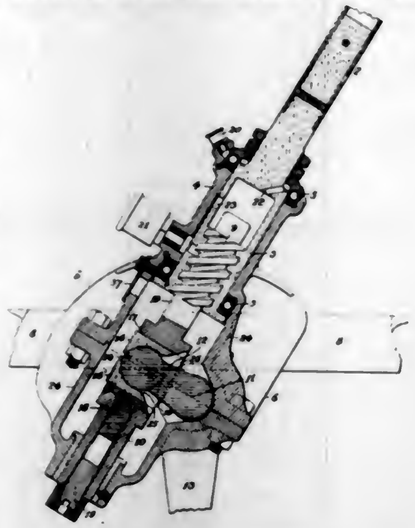
2. As an article of manufacture, a wooden chair-seat comprising a plurality of separate pieces, the joint between adjacent pieces comprising an integral tongue projecting a uniform distance at all points in its length from a meeting face of one of said pieces, and extending obliquely across said meeting face, and fitting into a groove of uniform depth which extends obliquely across the meeting face of an adjacent piece.

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**754,068. STEERING-GEAR FOR MOTOR-CARS.** WALTER J. IDEN, Coventry, England. Filed Oct. 13, 1902. Serial No. 127,003. (No model.)

*Claim.*—1. In steering-gear for motor-cars, the combination of a first lever having a ball end, a screw-pin having a transverse chamber, a nut adapted to receive the said screw-pin, means for rotating the said nut, a block mounted in the said chamber and having a socket adapted to receive the said ball end.

2. In steering-gear for motor-cars, the combination of a first lever having a ball end, a screw-pin having a transverse chamber and a bored and tapped end, a nut adapted to receive the said screw-pin, means for rotating the said nut, a split block mounted in the said chamber and having a socket adapted to receive the said ball, a T-piece mounted in the said screw-pin and adapted to bear by its cross-bar against the said block and a plug adapted to screw into the said screw-pin and bear against the tail of the said T-piece.



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**754,069. WRENCH.** WILLIAM R. JOHNSON, Freeport, Ill. Filed Mar. 19, 1903. Serial No. 148,546. (No model.)



*Claim.*—1. In a wrench, the combination with a stock having a transverse angular socket, of an angular stem slidably fitted and freely movable in the socket, said stem being held against rotation in the socket throughout its entire sliding movement, a stop carried by the stem and engaging the stock for limiting the extreme movement of said stem in the socket, and a head revolubly mounted on one end of the stem.

2. In a wrench, the combination with a stock having a transverse angular socket, of a stem slidably fitted in the socket, a head revolubly mounted on the stem, a dog carried by the stem and coacting with the head, and a stop-washer detachably fitted upon the end of the stem to limit the movement of the latter in the socket.

3. In a wrench, the combination with a stock having a transverse socket, of a hollow stem slidably fitted in the socket, a head revolubly mounted on the stem, a dog located in the stem and coacting with the head, a stop-washer arranged upon one end of the stem, and a plug threaded into the stem and bearing against the washer to hold the same in place.

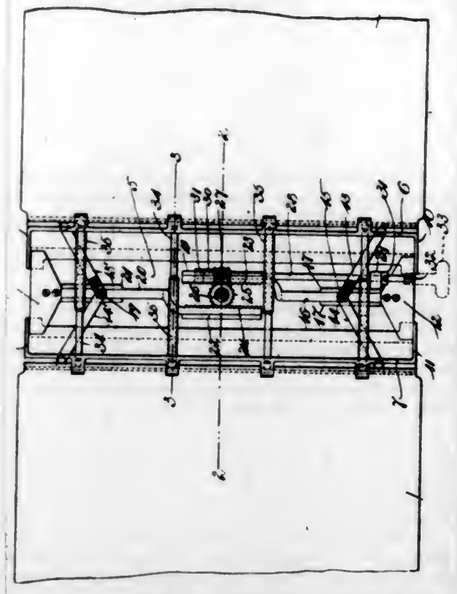
4. In a wrench, the combination with a stock having a socket, of a hollow stem slidable in the socket, a revoluble head mounted on the stem on one side of the stock, and a dog slidably mounted in the hollow stem and coacting with the head, said dog having an exposed actuating end projecting from the stem on the side of the stock opposite the head.

5. In a wrench, the combination with a stock having a transverse socket, of a transversely-disposed hollow stem slidably fitted in the socket of the stock, a head revolubly mounted on one end of the stem and having ratchet-teeth, a shouldered dog slidably and revolubly fitted in the stem, one end of the dog engaging the teeth, the other end projecting from the opposite end of the stem, a screw-plug threaded into the stem and surrounding the dog, and a coiled spring interposed between the plug and the shoulder of the dog.

6. In a wrench, the combination with a stock having a transversely-disposed socket, of a hollow stem slidably fitted in the socket and provided at one end with spaced ears, a head having a shank journaled in the ears, a ratchet-wheel fitted upon the shank and located between the ears, and a slidable spring-pressed dog located within the stem and coacting with the ratchet-wheel.



**754,070. BINDER-FRAME.** LOUIS A. JONES, Cambridge, Mass., assignor to Florence Nightingale Tait, Melrose, Mass. Filed June 24, 1903. Serial No. 162,869. (No model.)



*Claim.*—1. A binder-frame comprising a back-plate, cover-plates constructed to slide laterally thereon, two racks constructed to slide longitudinally of said back-plate, links pivotally connected at opposite ends thereof, respectively, to said cover-plates and to said racks, and a pinion meshing at opposite sides thereof into said racks.

2. A binder-frame comprising a back-plate, cover-plates constructed to slide laterally thereon, two racks constructed to slide longitudinally of said back-plate, links pivotally connected at opposite ends thereof, respectively, to said cover-plates and to said racks, a pinion meshing at opposite sides thereof into said racks, and means to rotate said pinion from one end of said back-plate.

3. A binder-frame comprising a back-plate, cover-plates constructed to slide laterally thereon, two racks constructed to slide longitudinally of said back-plate, links pivotally connected at opposite ends thereof, respectively, to said cover-plates and to said racks, a pinion meshing at opposite sides thereof into said racks, and a worm-gear meshing into said pinion.

4. A binder-frame comprising a back-plate, cover-plates constructed to slide laterally thereon, two racks constructed to slide longitudinally of said back-plate, links pivotally connected at opposite ends thereof, respectively, to said cover-plates and to said racks, a pinion meshing at opposite sides thereof into said racks, a rotatable rod extending longitudinally of said back-plate, and a worm-gear fast to said rod and meshing into said pinion.

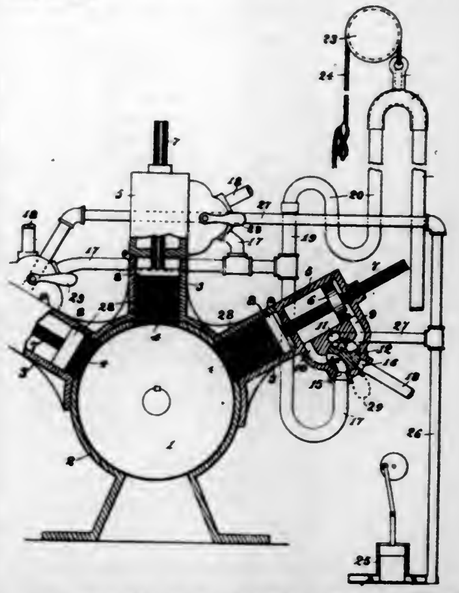
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**754,071. PULP-GRINDER.** MARLOW U. KAMON, Sandy Hill, N. Y., assignor to Union Bag and Paper Company, a Corporation of New Jersey. Filed May 23, 1903. Serial No. 158,113. (No model.)

*Claim.*—1. In a pulp-grinder, in combination, a rotary grinder, a piston adapted to hold the material to be ground against said grinder, means for forcing said piston against said material, a water column acting in opposition to said piston, and means for varying the height of said water column.

2. A rotary grindstone, a piston and means for actuating said piston to force the material to be ground against the stone, means for exerting a substantially uniform resistance in opposition to said piston during its movement toward the stone, and means to lessen the amount of said resistance as said stone becomes smaller.

3. A rotary grinder, a piston-cylinder, a piston therein adapted to hold the material to be ground against said grinder, means to force said piston toward said grinder, means to force water into said cylinder to return said piston, and a free discharge-passage for said water from the return end thereof and extending above said return end whereby a column of water is formed which opposes the forward movement of said piston, and means to vary the height of said water column.



4. A pulp-grinder having a hydraulic cylinder and piston for forcing the wood upon the grinder, separate discharge-ports for opposite ends of the cylinder and means for varying the level of the discharge from the return end of the cylinder.

5. A pulp-grinder having a hydraulic cylinder and piston for holding the wood upon the grinder, separate discharge-ports for opposite ends of the cylinder, a flexible discharge-pipe for the return end of the cylinder extending above said cylinder, and means for raising and lowering said pipe to vary the head against which said end of the cylinder discharges.

6. A pulp-grinder having a hydraulic cylinder and piston for holding the wood upon the grinder, separate discharge-ports for opposite ends of the cylinder, a discharge-pipe for the return end of the cylinder having an elevated loop provided with an air-inlet at its upper part and means for raising and lowering said loop for varying the resistance upon the piston.

7. A pulp-grinder having a hydraulic cylinder and piston for holding the wood upon the grinder, a supply-pipe, a separate discharge-pipe for each end of the cylinder, a valve having two ports therein each adapted to connect its end of the cylinder alternately with the supply and with its respective discharge and means for varying the pressure of discharge for one of said ports.

8. In a pulp-grinder, in combination, a rotary grinder, a casing for said grinder having pockets adapted to receive the material to be ground, a cylinder having a piston therein, a discharge-pipe connected with the end of said cylinder next the grinder, and means for varying the height of the discharge from said pipe.

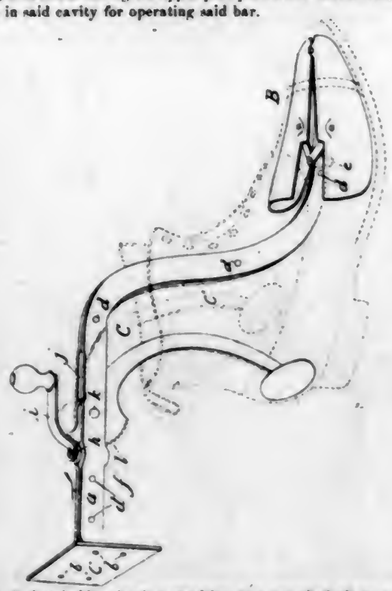
9. A pulp-grinding machine comprising a rotary grinder, a plurality of pockets disposed about said grinder and adapted to receive the material to be ground, a piston for each pocket adapted to hold the material against the grinder, a common fluid-supply for operating said pistons, means for producing an adjustable but substantially uniform resistance against the movement of the pistons toward the grinder, and means for independently controlling the application of each of said pistons.

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**754,072. SHOE-HOLDER.** PETER S. KINSEY, Newark, N. J., and AUGUSTUS L. ANDERSON, Brooklyn, N. Y., assignors to said Kinsey, Walter Kinsey, New York, N. Y., and James H. Burt, Springfield, Mass. Filed May 14, 1903. Serial No. 157,053. (No model.)

*Claim.*—1. A shoe-holder shank comprising two attached plates separated for a portion of their length, a heel-bar hung in the space afforded by the separation of said plates, and mechanism also in said space for actuating said bar.

2. A shoe-holder shank comprising two attached plates separated for a portion of their length to form a cavity and a slot in the shank, a heel-bar having its upper part positioned in said slot, and means in said cavity for operating said bar.



3. A shoe-holder shank comprising two attached plates separated for a portion of their length to form a cavity and a slot, the cavity and slot opening into each other, a swinging heel-bar having its upper part positioned in said slot, and means in said cavity for engaging the upper part of said bar to operate the latter.

4. The combination, in a shoe-holder, with a shank comprising two attached plates, of a heel-bar pivotally connected with said shank, and worm and gear operating mechanism for said bar, located between the shank-plates.

5. The combination, in a shoe-holder, with a shank consisting of horizontal and downwardly and forwardly extending portions, the horizontal part having a cavity and a slot therein, of a worm in said cavity, a heel-bar pivotally connected with the shank and operating in said a slot, provided with teeth meshing with said worm, an operating-arm for the worm, and a toe-support attached to the front terminal of the shank.

6. The combination, in a shoe-holder, with a shank comprising two attached plates separated for a portion of their length to form a cavity and a slot, of a worm in said cavity, a heel-bar pivotally connected with the shank and operating in said slot, having teeth thereon meshing with said worm, and means to actuate the latter.

7. The combination, in a shoe-holder, with a shank comprising two attached plates having lateral curved or bent portions to form a cavity and a slot, the cavity and slot opening into each other, of a worm in said cavity, a heel-bar pivotally connected with the shank and operating in said slot, provided with teeth meshing with said worm, and an operating-arm fast to the worm-spindle.

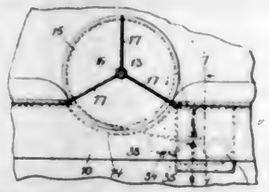
8. The combination, in a shoe-holder, with a shank comprising two attached plates having lateral curved or bent portions to form a cavity and a slot and provided with lips at the top and bottom of said cavity, a worm in the cavity with its spindle journaled in said lips, and a heel-bar pivoted to the shank and operating in said slot, having teeth meshing with said worm.

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**754,073. SAFETY APPLIANCE FOR BANKS. WILLIAM S. KINGSLEY, Reading, Mass., assignor of one-half to Elias D. Cook, Reading, Mass. Filed June 15, 1903. Serial No. 161,560. (No model.)**

*Claim.*—1. The combination with a barrier between an inclosure and an outside space, of means controlled within said inclosure for controlling the movements of a person at the outer side of the barrier, said means being automatically locked to confine a person until released by another person behind said barrier.

2. The combination with a barrier between an inclosure and an outside space, of means controlled within said inclosure for forming a booth or closet at the outer side of the barrier, said booth or closet being normally closed to prevent escape of a person within it until intentionally released.



3. The combination with a barrier between an inclosure and an outside space, of a turnstile located at the outer side of said barrier and having sight-proof arms or wings arranged to cooperate with the barrier in forming a booth or closet at the outer side of the barrier to prevent transactions within the booth from being witnessed by a person in the outside space.

4. The combination with a barrier between an inclosure and an outside space, of a turnstile located at the outer side of said barrier and having sight-proof arms or wings arranged to cooperate with the barrier in forming a booth or closet at the outer side of the barrier to prevent transactions within the booth from being witnessed by a person in the outside space, and means controlled within the inclosure for moving and stopping said turnstile.

5. The combination with a barrier between an inclosure and an outside space, of a turnstile located at the outer side of said barrier and having arms or wings arranged to cooperate with the barrier in forming a booth or closet at the outer side of the barrier, and means controlled within the inclosure for alternately rotating and stopping the turnstile.

6. The combination with a barrier between an inclosure and an outside space, of a turnstile located at the outer side of said barrier and having arms or wings arranged to cooperate with the barrier in forming a booth or closet at the outer side of the barrier, a motor connected with said turnstile to rotate the same, and means controlled within the inclosure for starting and stopping the motor.

7. The combination with a barrier between an inclosure and an outside space, of a turnstile located at the outer side of said barrier and having arms or wings arranged to cooperate with the barrier in forming a booth or closet at the outer side of the barrier, and mechanism controlled within the inclosure for alternately rotating and stopping the turnstile, said mechanism having provisions for rotating the turnstile in either direction.

8. The combination with a barrier between an inclosure and an outside space, said barrier having a recess in its outer side, of a turnstile located at the outer side of the barrier and projecting into said recess, said turnstile having sight-proof wings to cooperate with the sides of the recess to shut off sight from the outside or rear of the turnstile.

9. The combination with a barrier of the character stated, of a turnstile located at the outer side of the barrier, a wheel affixed to the lower portion of the turnstile, and mechanism for rotating the wheel and turnstile, said turnstile having sight-proof wings to shut off sight from the outside or rear of the turnstile.

10. The combination with a barrier of the character stated, of a turnstile located at the outer side of the barrier, a wheel affixed to the lower portion of the turnstile, a motor within the barrier, and connections between the motor and wheel for rotating the wheel and turnstile.

11. The combination with a barrier between an inclosure and an outside space, of a turnstile located at the outer side of said barrier, means for rotating the turnstile, and means for automatically stopping the rotation of the turnstile at predetermined points.

12. The combination with a barrier of the character stated, of a turnstile located at the outer side of the barrier and provided with a series of contact-pieces or circuit-closers, an electric motor mechanically connected with the turnstile to rotate the latter, a controller for said motor, a normally open electric circuit arranged to be closed by each of said circuit-closers, and an electromagnet in said circuit arranged to act on the lever of said controller to stop the motor when the circuit is closed.

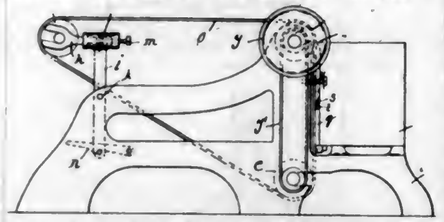
13. The combination with a barrier of the character stated, of a turnstile located at the outer side of the barrier and having a base formed to support persons entering the turnstile, and vertical wings arranged to cooperate with the barrier in forming a compartment to confine a person supported by the base.

14. The combination with a barrier of the character stated, of a turnstile located at the outer side of the barrier, a wheel affixed to the lower portion of the turnstile, a driving-shaft operatively connected with said wheel, means for rotating said shaft, and means for reversing the rotation of the shaft.



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**754,074. CEMENTING-MACHINE. WILLIAM A. KNIPE, Haverhill, Mass. Filed Jan. 8, 1904. Serial No. 188,246. (No model.)**



*Claim.*—1. A machine of the class described comprising a front roll and two rear rolls, one of said rear rolls being arranged above the other, and all of said rolls being arranged in parallelism, an endless belt arranged about said rolls, means for driving said rolls so that the belt moves from the front to the upper rear rolls, and provides a work-receiving portion therebetween, and means for supplying liquid cement to the outer surface of the belt between the said rear rolls, substantially as described.

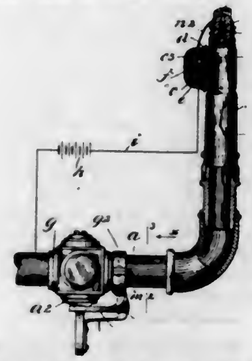
2. A machine of the class described comprising a liquid-containing tank having a discharge-opening, three parallel rotating rolls, an endless belt passing about said rolls, one of said rolls being disposed above the other and so arranged that the outer surface of the belt is driven over and against the outer edges of said opening as it is driven from said uppermost roll to the one below it, the third roll being disposed to conduct the belt to one side to provide a work-receiving portion, substantially as described.

3. A machine of the class described comprising a liquid-containing tank having a side opening, a pair of vertically-extending bosses at opposite ends of said opening, and on the side of the tank, an endless liquid-carrier constantly pressed against said bosses, a gate-valve for closing said opening and a regulating-plate below said valve and extending across the space between said bosses, the front edge of said plate being parallel to the face of said carrier, and adjustable toward and from the same, substantially as described.

4. A machine of the class described comprising a frame, a roll removably journaled in the rear thereof, a support connected to said frame and movable toward said roll, a second roll removably journaled in said support, an endless belt passing about said rolls, a liquid-containing tank connected to said frame in the rear of said rolls and having a discharge-opening leading to said belt, and a valve for closing said opening, substantially as described.

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**754,075. GAS-BURNER. WILLIAM KOHN, Brooklyn, N. Y. Filed July 6, 1903. Serial No. 164,298. (No model.)**



*Claim.*—1. In a device of the class described, a gas-fixture provided with a valve, a burner-tube, and a burner-tip connected with said tube; a contact device connected with the fixture adjacent to the valve and provided with a segmental member, a spring-arm connected with the valve and operating in connection with said member, means for insulating said arm from said member, when the gas is turned off, a casing connected with the burner-tube, two insulated contact devices secured in said casing, a platinum coil supported across the burner-tip and one end of which is in electrical connection with one of said contact devices, and the other end of which is in electrical connection with the contact device secured to the fixture, a battery in electrical connection with the fixture and with the other contact device within said casing, a rotary contact device in said casing and adapted to complete the circuit between said stationary contact devices, a thermostat for operating the rotary contact device and means connected with the burner-tip for heating the thermostat, substantially as shown and described.

2. In a device of the class described provided with a burner-tube and burner-tip, a platinum coil supported over the burner-tip, a casing secured to the burner-tube and provided with two stationary insulated contact devices, a rotary contact device mounted between the stationary contact devices, a thermostat for operating the rotary contact device, means whereby the heat of the burner will operate the thermostat, a wire connected with one end of the platinum coil and with one of said stationary contact devices, another wire connected with the other end of said platinum coil, a battery in an open circuit formed by said wires and means whereby the turning on of the gas will complete said circuit, substantially as shown and described.

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**754,076. LOW-POWER TELESCOPE. ALBERT KÖNIG, Jena, Germany, assignor to The Firm of Carl Zeiss, Jena, Germany. Filed Feb. 6, 1903. Serial No. 142,234. (No model.)**



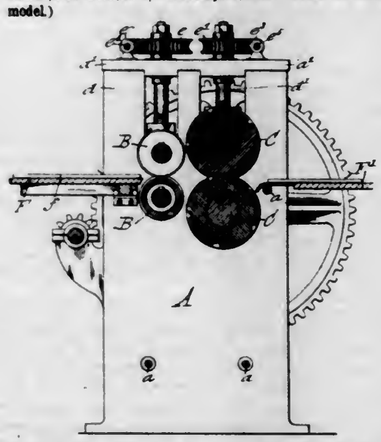
*Claim.*—1. In a low-power telescope having a large field of view the combination with an ordinary eyepiece and an erecting system of a spherically, chromatically and astigmatically corrected objective which is located at some distance behind the entrance-pupil.

2. In a low-power telescope having a large field of view the combination with an ordinary eyepiece of a spherically, chromatically and astigmatically corrected objective which is located at some distance behind the entrance-pupil and an inverting prism system arranged entirely before the objective and including the entrance-pupil.

3. In a low-power telescope having a large field of view the combination with an ordinary eyepiece of a spherically, chromatically and astigmatically corrected objective which has a large relative aperture, consists of two separate collective lens systems and is located at some distance behind the entrance-pupil.

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**754,077. MACHINE FOR MAKING METALLIC LATHING. PAUL KUHNE, New York, N. Y. Filed Apr. 8, 1903. Serial No. 151,580. (No model.)**



*Claim.*—1. In a machine for making metallic lathing, a pair of forming-rolls, each roll provided with inner and outer faces adapted

to form the metallic sheet into a lath having zigzag-shaped strips arranged in two parallel planes; and tangential faces between said inner and outer faces and adapted to form inclined connecting or truss portions between said strips, substantially as set forth.

2. In a machine for making metallic lathing, a pair of forming-rolls, each roll provided with inner and outer faces adapted to form the metallic sheet into a lath having zigzag-shaped strips arranged in two parallel planes; and tangential faces between said inner and outer faces and adapted to form inclined connecting or truss portions between said strips, said inner and outer faces of the rolls being arranged in series extending first in one and then in another direction on the roll in zigzag arrangement, whereby said zigzag-shaped strips are produced in their respective planes in zigzag arrangement in a lath, substantially as set forth.

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**754,078. METHOD OF VULCANIZING TIRES IN CONTINUOUS LENGTHS.** GEORGE A. LUDINGTON, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed Jan. 2, 1904. Serial No. 187,516. (No model.)



*Claim.*—1. A method of vulcanizing rubber tires in continuous lengths which consists in first vulcanizing all but an end portion of a given section, then splicing a second section to the unvulcanized end of said first section, and then subjecting the spliced unvulcanized end portion of the first section and said second section to the vulcanizing operation, substantially as described.

2. A method of vulcanizing rubber tires in continuous lengths which consists in first vulcanizing all but an end portion of a given section, then splicing a second section to the unvulcanized end of said first section, then vulcanizing the spliced unvulcanized end of said first section and all but the free end of said second section, and then splicing and vulcanizing successive sections in the manner and sequence above defined until the desired continuous length of vulcanized tire stock is obtained, substantially as described.

3. A method of vulcanizing rubber tires in continuous lengths by the action of heat and pressure in a mold, which consists in first vulcanizing all but an end portion of a given section, then splicing a second section to the unvulcanized end of said first section, then advancing the tire through the mold until the spliced joint and all but the free end portion of said second section are covered by the mold, then vulcanizing said parts contained in the mold, and continuing said operations in the order named until the desired continuous length of vulcanized tire stock is obtained, substantially as described.

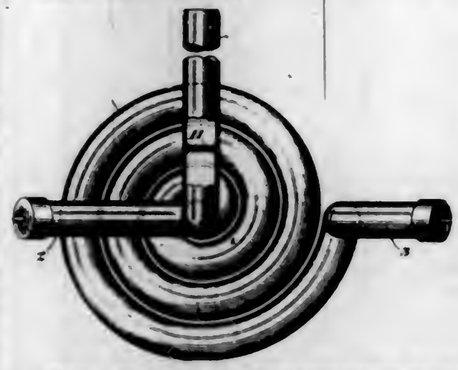
4. A method of vulcanizing rubber tires in continuous lengths by the action of heat and pressure in a mold, which consists in first vulcanizing all but a projecting end portion of a given section and simultaneously supporting and protecting said projecting end portion against deformation and heat action during said vulcanizing operation, then splicing a second section to the unvulcanized end of said first section, then advancing the tire through the mold until said spliced projecting end portion and all but the free end portion of said second section are covered by the mold, then vulcanizing said parts and simultaneously supporting and protecting said free end portion against deformation and heat action and repeating said operations in the order named until the desired continuous length of vulcanized tire stock is obtained, substantially as described.

5. A method of vulcanizing cored rubber tires in continuous lengths, which consists in first vulcanizing all but an end portion of a given section on a mandrel, then withdrawing said mandrel, then splicing a fresh section containing a mandrel to the unvulcanized end portion of said first section and simultaneously inserting the end of said last-named mandrel into and through said unvulcanized end portion, and then vulcanizing said spliced end portion and said fresh section, substantially as described.

6. A method of vulcanizing cored rubber tires in continuous lengths by the action of heat and pressure in a mold, which consists in first vulcanizing all but a projecting end portion of a given section on a mandrel and simultaneously supporting and protecting said projecting end portion against deformation and heat action during said vulcanizing operation, then withdrawing said mandrel, then splicing a second section containing a mandrel to the unvulcanized end portion of said first section and simultaneously inserting the end of said last-named mandrel into and through said unvulcanized end portion, then advancing the tire through the mold until said spliced projecting end portion and all but the free end portion of said second section are covered by the mold, then vulcanizing said parts and simultaneously supporting and protecting said free end portion against deformation and heat action, and repeating said operations in the sequence named until the desired continuous length of vulcanized cored tire stock is obtained, substantially as described.

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**754,079. SPIRAL VACUUM-TUBE FOR THERAPEUTIC PURPOSES.** ROBERT MACHLETT, New York, N. Y. Filed Jan. 26, 1904. Serial No. 190,697. (No model.)



*Claim.*—1. In a vacuum-tube for therapeutic purposes, the combination of a tube of relatively small diameter having a portion thereof so formed as to present a corrugated contact-surface, and one or more terminals adapted to supply current thereto, substantially as described.

2. In a vacuum-tube for therapeutic purposes, the combination of a tube of relatively small and uniform diameter having a portion thereof formed into a spiral presenting a relatively large contact-surface, and one or more terminals adapted to supply current thereto, substantially as described.

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**754,080. HINGE-PIN FOR BREAKDOWN GUNS.** OSCAR F. MOSMAN, Fitchburg, Mass., assignor to Mary Elizabeth Johnson, executrix, Fitchburg, Mass. Filed Nov. 4, 1903. Serial No. 695,429. (No model.)



*Claim.*—1. In a firearm, the combination with a frame and a barrel pivoted thereto, of a screw-threaded pivotal pin by which said barrel and frame are connected, a radial arm projecting from said pin and forming a lever-handle, a rocking latch-plate carried by said handle and arranged to engage a groove in said frame, whereby said pin is held from rotation and a spring by which said latch-plate is held in position, substantially as described.

2. The combination, with the frame and barrel of a firearm, of a pivotal pin by which the barrel and frame are connected, said pin having a screw-thread at one end engaging said frame, and a radial arm at its opposite end, a latch-plate pivoted in said radial arm, and arranged to engage a groove in said frame, a spring by which said latch-plate is held in position, and a pin projecting from said frame into the path of said radial arm, as the pin is screwed into said frame, whereby said latch-plate is brought into alinement with the groove in said frame, substantially as described.

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**754,081. BATTERY-STOPPER.** ALBERT MÜLLER, New York, N. Y. Filed Oct. 24, 1903. Serial No. 178,337. (No model.)

*Claim.*—1. The combination with a battery vessel, of a stopper in the top thereof provided with a funnel-like mouth and with an imperforate bottom and inlet and outlet ports leading from said mouth to the interior of the battery vessel above the imperforate bottom of the stopper.

2. In combination with a closed battery-container, of a removable stopper having a funnel-like mouth, a transverse port near the bottom of the stopper communicating with the interior of the container, a vertical central port leading from the mouth of the stopper and intersecting the transverse port, and a plurality of irregular ports or passages leading from the mouth of the stopper to the interior of the container, substantially as described.

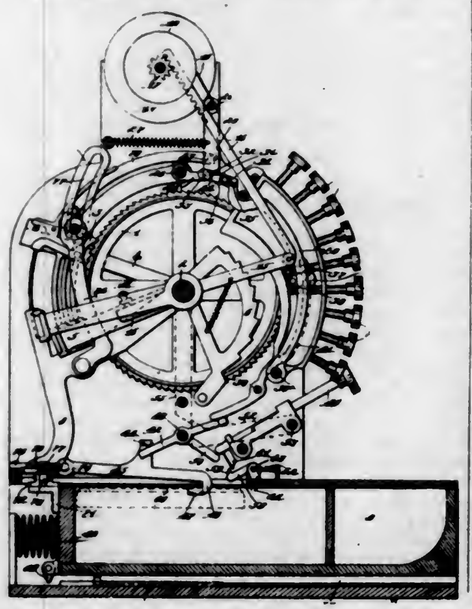


3. A device for preventing the overflow of battery vessels, comprising a plug provided with a funnel-like mouth at the top and an imperforate bottom, a transverse port near said bottom, a central port leading from said mouth and communicating with said transverse port, and a plurality of vertical ports leading from the mouth to the exterior of the plug near the said bottom through intersecting short ports, substantially as described.

4. A vent-stopper for battery vessels, provided with a flared mouth at the top and an imperforate bottom, a transverse port near said bottom, a central port leading from the bottom of said mouth to and intersecting the transverse port, an irregular port leading from the upper edge of the mouth to the exterior of the stopper near said bottom, said stopper being provided with a shoulder and exterior threads, substantially as described.

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**754,082. CASH-REGISTER.** WILLIAM H. MUSEY, Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J., and Dayton, Ohio, a Corporation of New Jersey. Filed July 18, 1903. Serial No. 166,171. (No model.)





*Claim.*—1. In a cash-register, the combination with a series of operating elements, means for limiting the movements of the elements in one direction, a plurality of cash-safes having movable members, mechanism whereby any one of the movable members can return the operating elements after they have been set, and an accounting device coöperating with the operating elements.

2. In a cash-register, the combination with a series of operating-yokes, means for limiting the movements of the yokes in one direction, a main actuator for moving the yokes in the opposite direction, an accounting device and connections operated by the yokes, a series of cash-safes having movable members, and mechanism whereby any one of the movable members may be brought into coöperative relation with the main actuator.

3. In a cash-register, the combination with a series of operating-yokes, of a series of keys for limiting the movements of the same, an accounting device and connections controlled by said yokes, a main actuator for said yokes, a series of cash-safes having movable members, and mechanism whereby any one of said movable members may be brought into coöperative relation with the main actuator.

4. In a cash-register, the combination with a series of oscillatory operating members, of a series of keys for limiting the movements of said members in one direction, a single operating-lever for moving the members in the opposite direction, an accounting device and connections coöperating with said members, and a plurality of cash-drawers any one of which may be brought into coöperative relation with the operating-lever for actuating the latter.

5. In a cash-register, the combination with an operating mechanism including a movable member, of a plurality of cash-drawers, and means for establishing a coöperative relation between any particular cash-drawer and the operating member at will whereby any desired drawer may actuate said member.

6. In a cash-register, the combination with an accounting device, of an operating mechanism for the same including a movable member, a series of cash-safes having movable members, and mechanism for establishing a coöperative relation between the main movable member and the movable members of any one of the cash-safes at will whereby any desired drawer may actuate said member.

7. In a cash-register, the combination with an operating mechanism including a single movable member, of a plurality of cash-drawers, and means for establishing a coöperative relation between said member and any desired drawer by the opening movement of the drawer.

8. In a cash-register, the combination with an operating mechanism including a movable member, of a plurality of cash-safes having movable members, and mechanism for establishing a coöperative relation between the main movable member and the movable member of any desired safe by the opening movement of said latter member.

9. In a cash-register, the combination with an operating mechanism, of a series of indicators, means for automatically returning the indicators to normal positions when released, a series of independent cash-safes, and means for opening any desired safe and simultaneously releasing the indicators to allow them to return to their normal positions.

10. In a cash-register, the combination with an operating mechanism, of a series of indicators, a series of cash-safes, and means arranged to limit the movements of said indicators and also to release the same and a cash-safe corresponding thereto, when operated.

11. In a cash-register, the combination with an operating mechanism, of a series of indicators, means for holding the indicators in their set positions, a latch for said holding means, a series of cash-safes, and means for opening any desired safe and tripping said latch to allow the indicators to assume their normal positions.

12. In a cash-register, the combination with an operating mechanism including an operating-lever, of a plurality of cash-drawers, and means for establishing a coöperative relation between any particular drawer and said lever by the opening movement of the drawer.

13. In a cash-register, the combination with an operating mechanism including a lever, of an accounting device, keys for limiting the movements of the operating mechanism, a plurality of cash-safes having movable members, and connecting means intermediate the movable members of the cash-safes and said lever for controlling the movements of the same in both directions.

14. In a cash-register, the combination with a series of operating elements, of an accounting device, a single lever for returning said elements to their normal positions, a series of keys for limiting the movements of said elements, a plurality of cash-drawers, and means intermediate the cash-drawers and said lever for controlling the movements of the latter according to the movements of the drawer.

15. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-safes having movable members, a lock for the operating mechanism, means for establishing a coöperative relation between the operating mechanism and any one of the movable members of the safes, and devices for preventing the release of the operating mechanism until one of the movable members of the cash-safes has been partly operated.

16. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, a latch for the operating mechanism, means for establishing a coöperative relation between any desired drawer and the operating mechanism, and devices for preventing the operation of the latch until one of the cash-drawers has been partly opened.

17. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers for controlling the operating mechanism, a latch for the operating mechanism, and means for preventing the operation of the latch when the cash-drawers are in their closed positions.

18. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, a latch for the operating mechanism, and means for compelling the opening of a cash-drawer before the latch can be operated.

19. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, means intermediate the operating mechanism and the cash-drawers constructed to establish the connection only after a cash-drawer is opened, a latch for the operating mechanism, and means for preventing the operation of the latch until a cash-drawer is opened.

20. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-receptacles, a latch for the operating mechanism, latches for the receptacles, keys for operating the receptacle-latches, a key for operating the main latch, and devices for preventing the operation of the latter key until a cash-receptacle is opened.

21. In a cash-register, the combination with an operating mechanism, of an accounting device, a lever for controlling the movements of the operating mechanism in both directions, a plurality of cash-receptacles, and means for establishing a coöperative relation between the lever and any desired one of the cash-receptacles whereby the opening and closing movements of the receptacle will control the oscillatory movements of the lever.

22. In a cash-register, the combination with an operating mechanism, of a counter coöperating therewith, a printing mechanism also coöperating with said operating mechanism, indicators controlled by the operating mechanism, a plurality of cash-safes having movable members, and mechanism for establishing a coöperative connection between any one of the movable members of the cash-safes and the operating mechanism whereby the movement of said member will actuate the operating mechanism.

23. In a cash-register, the combination with a series of operating elements, of an accounting device, a lever for controlling the movements of the operating elements, a plurality of cash-drawers, means for bringing the lever into coöperative relation with any desired drawer whereby the drawer will operate the lever, latches for the respective drawers, and keys for operating said latches.

24. In a cash-register, the combination with an operating mechanism, of a series of oscillatory indicators, means for latching the indicators in their set positions, a series of cash-drawers, means for establishing a coöperative relation between any desired drawer and the operating mechanism, latches for the drawers, individual keys for tripping said latches, and means operated by either of the keys for tripping the indicator-latch.

25. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, means for establishing a coöperative relation between any one of the cash-drawers and the operating mechanism, a latch for the operating mechanism, latches for the cash-drawers, and means for preventing the operation of the latch which controls the operating mechanism until one of the cash-drawers has been opened.

26. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, a latch for the operating mechanism, a key for operating the latch, means for locking said key when the actuators are in their normal positions, means for establishing a coöperative relation between any one of the cash-drawers and the operating mechanism, and means intermediate the key and the latch for permitting the latter to return to its normal locking position prior to the return of the key.

27. In a cash-register, the combination with an operating mechanism, of an accounting device, a series of cash-drawers, means for establishing a coöperative relation between any desired drawer and the operating mechanism, a latch for the operating mechanism, a key for operating said latch, a latch for said key, and projections on the cash-drawer arranged to operate said latter latch as any one of the cash-drawers is opened.

28. In a cash-register, the combination with an operating mechanism, of a series of indicators, pawls for holding the indicators in their set positions, a latch for holding the pawls in engagement with the indicators, a series of cash-drawers, means for releasing any desired drawer, and devices for operating the indicator-latch when said drawer-releasing means is actuated.

29. In a cash-register, the combination with an operating mechanism, of a series of indicators, pawls for holding the indicators in their set positions, a latch for holding the pawls in position, and tripping means for said latch arranged to operate the same and then allow it to return to normal position prior to the return of said tripping means.

30. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-safes having movable members, automatic plungers mounted on said members and arranged to coöperate with the operating mechanism, and stationary means for retracting the plungers when the cash-safes are closed.

31. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, automatic operating devices mounted on the respective cash-drawers so as to move into coöperative relation with the operative mechanism when released, and stationary means for retracting said operating devices out of their operated positions when the cash-drawers are closed.

32. In a cash-register, the combination with an operating mechanism, of an accounting device, a plurality of cash-drawers, automatic devices mounted on the cash-drawers and constructed to automatically move into coöperative relation with the operating mechanism upon the initial opening movement of the drawer.

33. In a cash-register, the combination with a series of operating elements, of accounting devices coöperating therewith, a main actuator for said elements, a plurality of cash-drawers, spring-pressed plungers mounted on said drawers and arranged to coöperate with the operating mechanism, and stationary cams arranged to engage the spring-pressed plungers and withdraw them out of coöperative relation with the operating mechanism when the cash-drawers are closed.

34. In a cash-register, the combination with an operating mechanism, of a series of cash-safes having movable members, and means for preventing the operation of said mechanism until after some one of the movable members has been actuated.

35. In a cash-register, the combination with an operating mechanism, of a series of indicators, a series of independent cash-safes, and means for opening the desired safe and simultaneously releasing the indicators independently of the regular movement of the operating mechanism.

36. In a cash-register, the combination with an operating mechanism, of a plurality of cash-safes having movable members, and automatic connecting devices mounted on the different members and constructed to automatically move into coöperative relation with the operating mechanism upon the movement of any one of said members.

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**754,083. PHOTOGRAPHIC-PRINTING MACHINE. HERVEY H. McINTIRE, South Bend, Ind. Filed June 9, 1903. Serial No. 160,718. (No model.)**

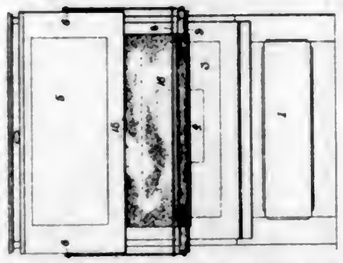
*Claim.*—1. A photographic-printing apparatus comprising a case having means for holding a negative therein, a platen hinged to the case and adapted to be lowered to hold the photographic paper against the negative, means carried by the platen to automatically raise it, and means operated by the raising means for holding the paper upon the negative during the printing operation.

2. A photographic-printing apparatus comprising a case having means to hold a negative therein, a platen hinged to the case, a swinging frame carried by the platen, means carried by the frame to roll over and hold the photographic paper in contact with the negative when the platen is lowered, and means for automatically restoring said paper-holding means to its normal condition and for raising the platen, substantially as specified.

3. A photographic-printing apparatus comprising a case having means to hold a negative therein, a platen, a swinging frame carried by the platen, an apron carried by the swinging frame and adapted to engage and hold the photographic paper in contact with the negative during the printing operation, and means for automatically removing the apron and for synchronously raising the platen.

4. A photographic-printing apparatus comprising a case having means for holding a negative therein, a platen, a swinging frame carried by the platen, means secured to the case and to the swinging frame for applying and holding the photographic paper upon the negative, means to permit the platen to engage the paper-holding means to press the paper upon the negative, and means carried by the swinging frame for automatically resetting the platen and the paper-holding means.





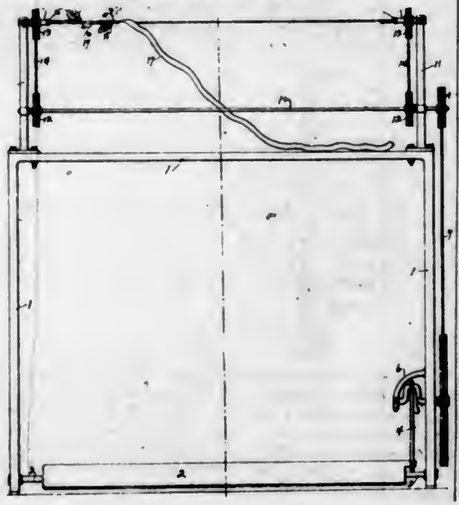
5. A photographic-printing apparatus comprising a case having means for holding a negative therein, a platen hinged to the case, a swinging frame carried by the platen, a roller mounted in the swinging frame, an apron wound upon the roller and having one end secured to the case, means whereby the apron is unwound and rolled over the photographic paper to hold the latter against the negative, and means for automatically rewinding the apron on the roller and for synchronously raising the platen.

6. A photographic-printing apparatus comprising a case having means for holding a negative therein, a platen hinged to the case, a frame pivoted to the platen and carrying at its free end a roller, an apron on the roller having one end secured to the case and adapted to be unwound and engage the photographic paper when the platen is lowered, means to permit the platen to pass through the frame to engage the apron when the platen has reached the limit of its downward movement, and a spring mounted in the roller to rewind the apron thereon and to simultaneously raise the platen.

7. A photographic-printing apparatus comprising a case having an inclined face-board provided with an opening in which the negative is mounted, a platen hinged to the case at the upper end of the face-board, links pivoted to the platen upon the side edges thereof, a roller mounted in the ends of the links, an apron normally wound around the roller and secured at one end to the case, a spring in one end of the roller adapted to have its tension increased when the apron is unwound therefrom and the platen is lowered, the roller and links being mounted to swing around the platen and support the latter when it is raised, substantially as specified.

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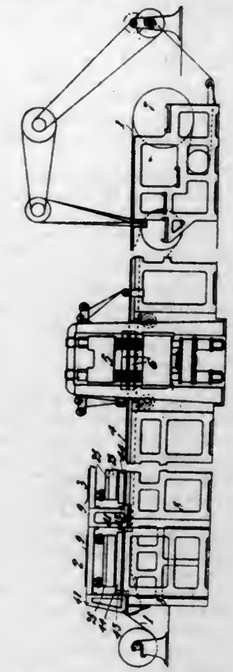
**754,084. MACHINE FOR MANUFACTURING ARTIFICIAL FLOWERS, VINES, &c. HARRY L. McKAIN, Allegheny, Pa. Filed Oct. 12, 1903. Serial No. 176,610. (No model.)**



*Claim.*—In a machine for the manufacture of artificial flowers, the combination with a frame, of a driving means, a pair of standards mounted on the top of the frame, a shaft carried thereby having pulleys mounted on the same at each end thereof means connecting said shaft with the driving means, a pair of pulleys mounted at the upper ends of the standards above and opposite the pulleys on the shaft, means operatively connecting the same with the shaft-pulleys, and means formed integral with said pair of pulleys having openings therein to receive a removable flower-supporting member, substantially as described.

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**754,085. APPARATUS FOR THE MANUFACTURE OF MOSAIC LINOLEUM FLOOR-CLOTH OR THE LIKE. MICHAEL B. NAIRN, Kirkcaldy, Scotland. Filed May 4, 1903. Serial No. 155,456. (No model.)**



*Claim.*—1. In machinery for the manufacture of mosaic linoleum floor-cloth, a plurality of hollow cutting-dies whose cutting edges all lie in one and the same plane, and a roller adapted to travel along underneath said cutting-dies so as to press an interposed sheet of linoleum consecutively against and into them, substantially as described.

2. In machinery for the manufacture of mosaic linoleum floor-cloth, a plurality of hollow cutting-dies having their cutting edges all lying in one and the same plane, a carriage having a backward and forward motion to and from the dies and adapted to bring a sheet of linoleum underneath said dies, a roller on said carriage, means for raising said roller when the carriage with the linoleum is at the end of its forward motion under the cutting-dies, so as to press the linoleum sheet progressively against and into the dies as the carriage and roller travel from under the dies, means for removing the waste portions of the linoleum from between the dies, and means for ejecting the cut tesseræ out of the dies and depositing them upon a base-cloth, substantially as described.

3. In machinery for the manufacture of mosaic linoleum floor-cloth, a plurality of hollow cutting-dies whose cutting edges all lie in the same plane, a carriage having a backward and forward motion to and from the dies, a cutting-roller mounted on pivoted arms on said carriage, springs adapted to bring the roller into a raised position, means for holding the roller in a lowered position while the carriage is traveling forward underneath the dies, and for releasing it when the carriage begins to travel backward so as to allow the cutting-roller to rise and press a sheet of linoleum successively against the dies during the backward travel, means for pressing the waste

portions of linoleum from between the dies and onto a traveling cloth on the carriage adapted to convey such portions away, a base-cloth adapted to travel along a table beneath said carrier, means for lowering the cutting-dies into close proximity to the base-cloth after the carriage has passed from under them, means for depositing the cut tesserm from the dies onto the base-cloth, and means for raising the dies again after such deposit has been effected, substantially as described.

4. In machinery for the manufacture of mosaic linoleum floor-cloth, a plurality of hollow cutting-dies whose cutting edges all lie in the same plane, a carriage having a backward and forward motion to and from the dies, a cutting-roller mounted on pivoted arms on said carriage, springs adapted to bring the roller into a raised position, means for holding the roller in a lowered position while the carriage is traveling forward underneath the dies, and for releasing it when the carriage begins to travel backward so as to allow the cutting-roller to rise and press a sheet of linoleum successively against the dies during the backward travel, an oiling-roller situated on the carriage in front of said cutting-roller, means for holding said oiling-roller in a raised position while the carriage is traveling forward, so as to bring the roller in contact with the cutting-dies and their plungers, and means for lowering the oiling-roller when the carriage begins its backward travel, substantially as described.

5. In machinery for the manufacture of mosaic linoleum floor-cloth, a plurality of hollow cutting-dies whose cutting edges all lie in the same plane, a carriage adapted to travel backward and forward to and from said dies which consists of an outer and an inner part capable of a certain amount of longitudinal motion relatively to each other, of which the inner part carries first a cutting-roller adapted to be lowered during the forward travel of the carriage and to be raised during the backward motion thereof; secondly, a series of small rollers adapted to receive a sheet of linoleum to be operated upon by the cutting-roller and cutting-dies, and, thirdly, an endless traveling cloth adapted to receive and carry away the waste portions of the linoleum sheet after it has been operated upon, while the outer part of the carriage carries a nipping-bar for nipping the linoleum sheet between it and the cutting-roller, and an oil-trough containing an oiling-roller adapted to be raised in contact with the cutting-dies and their plungers while the carriage is performing its forward travel and to be lowered out of such contact while the carriage performs its outward travel, substantially as described.

6. In machinery for the manufacture of mosaic linoleum floor-cloth, a cross-head adapted to receive a vertical to-and-fro motion with intervening periods of rest, an upper platen adjustably fixed to the cross-head, a lower platen carried by eccentrics on the cross-head so as to be capable of a certain vertical motion relatively thereto hollow cutting-dies fixed to the under side of the lower platen and adapted to cut tesserm from a sheet of linoleum pressed against them, plungers in said dies having stems attached to the upper platen, so that when on the downward motion of the cross-head and platens the lower platen butts against stops, the upper platen, in descending still further causes the plungers to move downward in the dies and to deposit the tesserm onto a base-cloth below substantially as described.

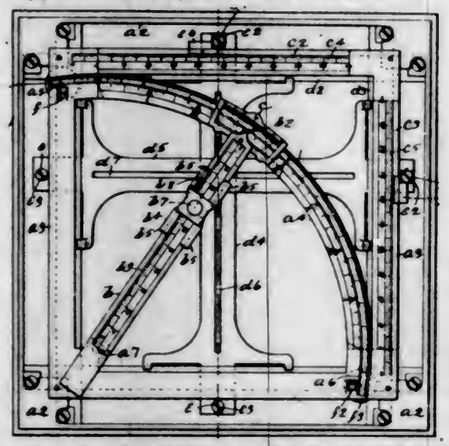
7. In machinery for the manufacture of mosaic linoleum floor-cloth, a cross-head adapted to receive a vertical to-and-fro motion with intervening periods of rest, an upper platen adjustably fixed to the cross-head, a lower platen carried by the cross-head and upper platen so as to be capable of a certain vertical motion relatively thereto, hollow cutting-dies fixed to the under side of the lower platen and adapted to cut tesserm from a sheet of linoleum pressed against them, plungers in said dies having stems attached to the upper platen, eccentrics on the cross-head, whose straps are connected to the lower platen, and means for turning said eccentrics when the cross-head and platens are in the raised position so as to move the lower platen upward relatively to the upper platen to such an extent as to cause the plungers to protrude from the dies, substantially as described.

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**754,086. TRAVERSE QUADRANT. HENRY G. HODGES, Irvington, N. Y. Filed Feb. 12, 1903. Serial No. 143,053. (No model.)**

*Claim.*—1. An instrument of the class described, comprising a rectangular frame, a slide mounted in said frame and operating parallel to one side thereof, a supplemental slide mounted in said frame and operating at right angles to the first-named slide and crossing the same, a quadrant arranged in one corner of said frame, a radial arm operating in connection with said quadrant and in operative connection with said slides and means for securing said radial arm and slides in any position, substantially as shown and described.

2. An instrument of the class described comprising a frame having a quadrant, slides mounted in said frame and at right angles to each other, a radial arm operating in connection with said quadrant, a finger slidably mounted on said radial arm and adapted to engage slots in said slides and means for securing said radial arm and slides in any position substantially as shown and described.

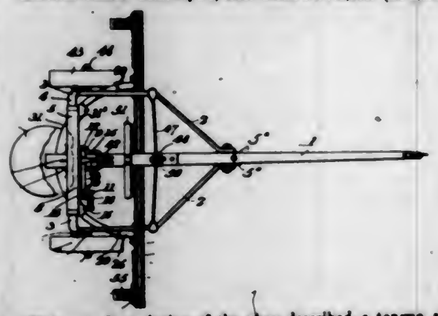


3. An instrument of the class described comprising a frame, two slides mounted in said frame and adapted to slide thereon, one above the other and at right angles to each other, a supplemental frame mounted over said first-mentioned frame, graduated scales on the side members of said supplemental frame, a quadrant secured to said supplemental frame and graduated on its outer edge, verniers mounted on said slides and adapted to be read on the graduated scales on said supplemental frame, a radial arm pivoted on said supplemental frame and operating in connection with said quadrant, a graduated scale on said radial arm, a slide mounted on said radial arm, a vernier on said slide and adapted to be read on the scale on said radial arm, a folding vernier on the outer end of said radial arm and adapted to be read in connection with the graduations on the outer edge of said quadrant, substantially as shown and described.

4. In an instrument of the class described comprising a frame, slides mounted thereon, a supplemental frame, a quadrant mounted thereon, a radial arm in operation with said quadrant and a slide mounted on said radial arm, a plurality of openings in the said supplemental frame, a disk removably mounted beneath each of said openings, said disks each bearing the cardinal points of the compass, any one of which is adapted to be read in one of said openings, substantially as shown and described.

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**754,087. ROAD GRADING AND SCRAPING MACHINE. JAMES H. GUTHRIE, White City, Kans., assignor of two-thirds to Robert Guy Oaten and John Walker. Filed Sept. 8, 1903. Serial No. 172,508. (No model.)**



*Claim.*—1. In a device of the class described, a tongue, side pieces connected pivotally with the latter and having upturned standards provided with inturned brackets at their upper ends, a seat-supporting cross-piece mounted upon said brackets, a plate secured upon the front side of said cross-piece and having ears, one of said ears terminating in a toothed quadrant, a rock-shaft journaled in said ears and having a forwardly-extending arm and an operating-lever, a lock-dog upon said lever engaging the toothed quadrant, a fork member straddling the tongue and connected pivotally therewith, and a pivotal connection between the upper end of said fork member and the arm extending forwardly from the rock-shaft.



2. In device of the class described, a tongue, a scraper-blade connected pivotally with the under side of said tongue, rearwardly-diverging side pieces connected pivotally with the sides of the tongue and having upturned standards with inturned brackets, a seat-supporting cross-piece mounted upon said brackets, a plate secured to said cross-piece and having ears, one of said ears being extended to form a toothed quadrant, a rock-shaft journaled in said ears and having a forwardly-extending arm and an operating and locking lever, a fork member connected pivotally with the arm of the rock-shaft, straddling the tongue and connected pivotally with lugs depending from the latter, a cross-piece connecting the arms of said fork member above the tongue, and a spring connecting said cross-piece with the seat-supporting cross-piece of the frame.

3. In a device of the class described, a wheeled supporting-frame including a seat-supporting cross-bar, a scraper-supporting tongue pivotally connected with said supporting-frame at the front end of the latter, an arched cross-bar connecting the side members of the supporting-frame, a vertically-slotted upright mounted upon the tongue, and a pin connected with the arched cross-bar and engaging the slot in said upright.

4. In a device of the class described, a supporting-frame comprising side pieces having upturned standards at the rear ends, in combination with wheel-carrying standards connected with the side pieces and having rearwardly-extending brackets connected with the uprights of said side pieces.

5. In a device of the class described, a tongue, a shouldered plate secured to the under side of the latter and having a free perforated member disposed in a plane below the under side of the tongue, a scraper having an upwardly-extending pintle extending through the perforated plate, and a nut adjustable upon said pintle between said plate and the under side of the tongue.

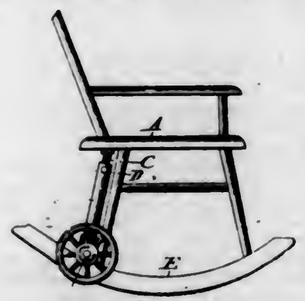
6. In a device of the class described, a tongue, a scraper-blade, a swivel connection between said blade and the under side of the tongue, a semicircular brace having downturned brackets secured to the rear side of the scraper-blade, a flange-plate secured upon the upper side of the semicircular brace and having a plurality of perforations, a keeper secured under the rear end of the tongue and engaging the semicircular brace and flange-plate, and a lock-pin extending vertically through the tongue and adapted to engage any one of the perforations in the flange-plate.

7. In a device of the class described, a scraper-blade, keepers upon the rear side of the latter, shanks movable in said keepers, earth-engaging members at the lower ends of said shanks, levers pivotally connected with the rear side of the scraper-blade, cam-heads upon said levers engaging the upper ends of the shanks, and means for securing the levers in adjusted position.

8. In a device of the class described, a scraper-blade, keepers upon the rear side of the latter, shanks vertically slidable in said keepers, earth-engaging members at the lower ends of said shanks, cam-levers pivotally connected with the rear side of the scraper-blade with their cam-heads in engagement with the upper ends of the vertically-slidable shanks, and projections on the resilient handles of said levers, engaging recesses in the rear side of the scraper-blade, said recesses being concentric with the fulcra of the cam-levers.

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**754,088. INVALID ROCKING-CHAIR. BOYD M. OWEN, Wilkesbarre, Pa. Filed Sept. 16, 1903. Serial No. 173,397. (No model.)**



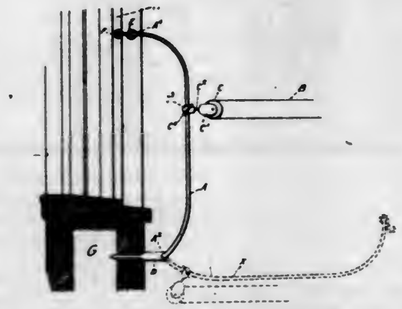
*Claim.*—1. A hollow post B having an adjustable rod C, said rod C secured to the rear end of the seat of the rocking-chair and having a sleeve F placed thereon, said sleeve formed with a journal and carrying a wheel H, the sleeve journal and wheel operating upon said hollow post in the manner and for the purposes described.

2. In a rocking-chair the sleeve F provided with a journal, said journal supporting a wheel H, said sleeve F provided with a lug having a lever J and pin K, said sleeve adapted to turn upon said hollow post and held thereon in the manner and for the purposes described.

3. In a rocking-chair, the combination of the adjustable post B, sleeve F having slot M, wheel H, lever J, pin K and pin L all arranged and operating in the manner and for the purposes described.

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**754,089. DRYING-LINE HOLDER. OTTO A. PFLEGER, Newburgh, N. Y. Filed Jan. 13, 1903. Serial No. 138,833. (No model.)**



*Claim.*—1. A drying-line holder comprising an arm portion bent at both ends, the lower end of which is bent at right angles to its length, which bent portion is adapted to pivotally engage a bracket, a hook arranged at the opposite end of said arm, a screw-eye adapted to be engaged by said hook, a bracket having an opening to receive the lower end of said arm, means to hold said arm in said bracket, and a pulley and pulley-block adjustably attached to said arm by a clamp.

2. A drying-line holder comprising an arm portion bent at both ends, the lower end of which is bent at right angles to its length, which bent portion is provided on its outer end with a screw-thread, a thumb-nut adapted to engage said screw-thread, a hook arranged at the opposite end of said arm, a screw-eye adapted to be engaged by said hook, a bracket adapted to hold said arm, having an eye or opening to receive said arm, and a pulley and pulley-block adjustably attached to said arm by a clamp having a thumb-screw therein.

3. A drying-line holder comprising a body A bent at both ends, the lower end of which is bent at right angles to its length, which bent portion is provided with an enlargement or shoulder $A^3$ and having at its outer end a screw-thread $A^6$, adapted to engage a thumb-nut, a thumb-nut A', an eye $A^4$ arranged in the upper end of said arm A, a hook E connected with said eye and arranged to engage a screw-eye, a screw-eye F adapted to be attached to a window-frame, a bracket D having an eye or opening near its outer end to receive the lower end of the arm A, which bracket is adapted to connect said arm A with the wall G, a pulley C arranged in a pulley-block C', which said pulley-block C' is connected with a clamp $C^2$ by the bolt $C^3$, and the said clamp $C^2$ having a thumb-screw $C^4$ arranged in one side thereof for holding same in position on the arm A, all substantially as described and shown.

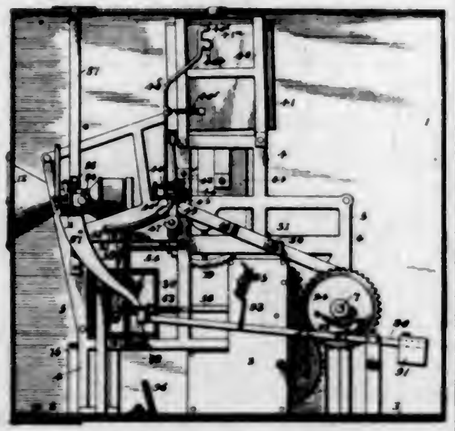
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**754,090. AUTOMATIC PHOTOGRAPHIC APPARATUS. JAMES POWERS, New York, N. Y., assignor to Robert J. Louis and Harry B. Thearle, New York, N. Y. Filed Apr. 24, 1903. Serial No. 154,138. (No model.)**

*Claim.*—1. In a photographic apparatus, the combination with a lens-tube, and magazine; of a plate-holder movable from the magazine to a position opposite the lens-tube, and mechanism for advancing the plate to the holder from the magazine and for thereafter moving the holder to its normal position opposite the lens-tube.

2. In a photographic apparatus, the combination with the lens-tube, and a magazine; of an oscillatory plate-holder movable from the magazine to a position opposite the lens-tube, means for advance-

ing the plate to the holder from the magazine, means for thereafter oscillating the holder to present it opposite the tube, and an actuating device or motor common to the plate-advancing and holder-oscillating means.



3. In a photographic apparatus, the combination with the lens-tube and a magazine; of a plate-holder movable to transfer a plate from the magazine to a position opposite the lens-tube, means for moving the plate-holder in one direction, and holder-retracting means.

4. In a photographic apparatus, the combination with a lens-tube and a magazine; of a plate-holder, and means for moving said holder from a position opposite the lens-tube to the developing position, thence to the magazine, and finally from the magazine to its normal position opposite the lens-tube.

5. In a photographic apparatus, the combination with a lens-tube and a magazine; of a plate-holder, means for moving said holder from a position opposite the lens-tube to the developing position, and reactive means for retracting the holder first to the magazine and then to its normal position opposite the lens-tube.

6. In a photographic apparatus, the combination with a lens-tube and a magazine; of an oscillatory plate-holder, and operating mechanism for swinging the plate-holder from its normal position opposite the lens-tube to the developing position, thence to the magazine and back to its normal position, said mechanism including provision for intervals of rest to permit the development of a plate and the reception of a new plate by the holder.

7. In a photographic apparatus, the combination with a lens-tube and a magazine; of an oscillatory plate-holder, means for swinging said holder from its normal position opposite the lens-tube to the developing position, and reactive means for retracting the holder first to the magazine and then to its normal position opposite the lens-tube.

8. In a photographic apparatus, the combination with a lens-tube and a plate-holder movable upon an axis; of operating mechanism for moving the plate-holder upon its axis from a position opposite the lens-tube to a developing position and thence to the receiving position, said mechanism including provisions for intervals of rest to permit the development of a plate carried by the holder and the subsequent reception of a new plate by the holder when in the receiving position.

9. In a photographic apparatus, the combination with a lens-tube and a magazine, of a plate-holder arranged to transfer a plate from the magazine to a position opposite the lens-tube, cam-operated means for moving the plate-holder in one direction, and holder-retracting means.

10. In a photographic apparatus, the combination with a lens-tube and magazine, of an oscillatory plate-holder, gearing connected to the plate-holder to operate the same, and including a tappet-rod, a holder-operating cam disposed to move the rod, and means for retracting the plate-holder.

11. In a photographic apparatus, the combination with a lens-tube and magazine, of an oscillatory plate-holder provided with a pinion, a gear-wheel meshing with the pinion, a tappet-rod connected to the gear-wheel, a cam for operating the rod, and means for retracting the plate-holder.

12. In a photographic apparatus, the combination with the lens-tube and a magazine; of a plate-holder movable from a horizontal position opposite the magazine, to a vertical position opposite the lens-tube and thence to the developing position.

13. In a photographic apparatus, the combination with a lens-tube and a developing-tray, of an oscillatory plate-holder disposed to support a plate opposite the lens-tube for exposure, and movable from such position to a position opposite the developing-tray, said tray being movable to discharge the developing fluid after the plate has been developed.

14. In a photographic apparatus, the combination with a lens-tube, magazine and developing-tray, of a plate-holder movable from the magazine to the lens-tube and thence to the developing-tray.

15. In a photographic apparatus, the combination with a lens-tube, a magazine and developing-tray, of a plate-holder movable from a horizontal position opposite the magazine to a vertical position opposite the lens-tube and thence to a horizontal position opposite the developing-tray.

16. In a photographic apparatus, the combination with a lens-tube, magazine and developing-tray, of a plate-holder, means for moving said plate-holder from the magazine to the lens-tube, thence to the developing-tray and back to the magazine.

17. In a photographic apparatus, the combination with a lens-tube, magazine and a developing-tray, of an oscillatory plate-holder, and means for swinging the plate-holder from a horizontal position opposite the magazine to a vertical position opposite the lens-tube, and thence to a horizontal position opposite the developing-tray.

18. In a photographic apparatus, the combination with a lens-tube, magazine and tray; of an oscillatory plate-holder, and means for swinging the holder from a vertical position opposite the lens-tube to the tray and thence to a horizontal position opposite the magazine.

19. In a photographic apparatus, the combination with a horizontal lens-tube, a vertically-disposed magazine in rear thereof and a developing-tray below the tube, of an oscillatory plate-holder normally supporting the plate opposite the lens-tube, means for swinging the plate-holder to present the plate to the developing-tray, means for effecting the partial retraction of the plate-holder to present it in position opposite the magazine for the reception of a new plate, means for advancing a plate from the magazine to the holder, and means for completing the retraction of the holder to present the new plate opposite the lens-tube.

20. In a photographic apparatus, the combination with a lens-tube, a magazine and a developing-tray, of a plate-holder normally disposed in position to support a plate opposite the lens-tube, means for moving the plate-holder from the tube to the developing-tray, thence to a position opposite the magazine and back to the lens-tube, and means for advancing a plate to the holder when the latter is opposite the magazine.

21. In a photographic apparatus, the combination with a lens-tube, and a movable plate-holder normally supporting a plate opposite the tube; of a tray normally disposed in a substantially vertical inoperative position, and means for moving the tray to a horizontal operative position and for moving the plate-holder to locate a plate in the tray.

22. In a photographic apparatus, the combination with a lens-tube, of an oscillatory plate-holder, an oscillatory developing-tray, means for effecting the conjoint movement of the tray and holder to present the plate to the tray after exposure and means for thereafter moving the tray away from the holder to facilitate the ejectment of the plate.

23. In a photographic apparatus, the combination with a lens-tube; of a tray normally disposed in an inoperative position, an oscillatory plate-holder normally disposed opposite the lens-tube, means for moving the tray to an operative position and for swinging the plate-holder to locate a plate in the tray, and means for discharging fluid into the tray after the latter has reached its operative position.

24. In a photographic apparatus, the combination with a lens-tube, of an oscillatory tray normally disposed in a substantially vertical position, means for moving the tray to a horizontal position, means operative subsequent to such movement of the tray to supply the latter with fluid, and means for carrying a plate to the tray from a position opposite the lens-tube.

25. In a photographic apparatus, the combination with a lens-tube, of an oscillatory holder normally supporting a plate opposite the tube, an oscillatory developing-tray normally disposed in a substantially vertical position, means for effecting the conjoint movement of the tray and holder to present the tray in a horizontal position and to locate the holder within the tray, and means for supplying a predetermined quantity of developing fluid to the tray after the latter has reached its horizontal position.



26. In a photographic apparatus, the combination with a lens-tube, magazine and developing-tray, the latter normally occupying an inoperative position, of a plate-holder normally supporting a plate opposite the lens-tube, and operating mechanism arranged to effect the following movements of the parts, to wit: the conjoint movement of the tray and holder to present the tray in an operative position and to locate the plate in the tray, the retraction of the tray to its inoperative position, the subsequent movement of the plate-holder to a position opposite the magazine and the final movement of the holder from the magazine to its normal position opposite the lens-tube.

27. In a photographic apparatus, the combination with a lens-tube, a magazine, a movable developing-tray, and a movable plate-holder normally supporting the plate opposite the lens-tube, of a reservoir for the developing fluid, a discharge-pipe leading therefrom, valve mechanism, and operating mechanism arranged to effect the following movements of the parts in the recited order, to wit: the conjoint movement of the plate-holder and tray to present the plate in the tray for development, the operation of the valve mechanism to permit the discharge of the fluid to the tray, the retraction of the tray from the plate-holder, the movement of the plate-holder to the magazine to receive a new plate, and the subsequent movement of the plate-holder to its normal position opposite the lens-tube.

28. In a photographic apparatus, the combination with a lens-tube, of a plate-holder normally supporting a plate opposite the lens-tube, means for moving the plate-holder away from the lens-tube, and means for ejecting the plate from the holdec.

29. In a photographic apparatus, the combination with a lens-tube, of a plate-holder normally occupying a vertical position opposite the lens-tube, a plate-ejector, and means for moving the plate-holder away from the lens-tube to a horizontal position in operative relation with the ejector.

30. In a photographic apparatus, the combination with a lens-tube, of a plate-holder normally supporting a plate opposite the lens-tube, a plate-ejector, means for moving the plate-holder away from the tube and into operative relation with the ejector, and means for returning the plate-holder to its normal position after the plate has been ejected.

31. In a photographic apparatus, the combination with a lens-tube, of a plate-holder normally supporting a plate opposite the lens-tube, a plate-ejector, means for moving the plate-holder into operative relation with the ejector, means for feeding a new plate to the holder, and means for returning the holder to its normal position.

32. In a photographic apparatus, the combination with a lens-tube, of a swinging plate-holder normally supporting a plate opposite the tube, means for swinging the plate-holder away from the tube, an ejector for ejecting the plate from the holder, and means for returning the plate-holder and ejector to their normal positions after the plate has been ejected.

33. In a photographic apparatus, the combination with a lens-tube, of a developing-tray movable into and out of its developing position, a plate-holder normally supporting a plate opposite the lens-tube and movable to the developing-tray, means for moving the tray away from the holder after the plate has been developed, and means for ejecting the plate from the holder while the latter is in the developing position.

34. In a photographic apparatus, the combination with a lens-tube, a plate-holder, a movable developing-tray and a plate-ejector, of means for presenting a plate to the tray by the conjoint movement of the tray and holder, means for moving the tray away from the holder when the plate has been developed, and means for thereafter moving the ejector to eject the plate from the holder while the latter is in the developing position.

35. In a photographic apparatus, the combination with a lens-tube, of a swinging plate-holder, a swinging tray, a swinging ejector, means for moving the tray and holder to present a previously-exposed plate to the tray, means for subsequently moving the tray away from the holder, for thereafter moving the ejector to eject the plate and for finally retracting the plate-holder.

36. In a photographic apparatus, the combination with a lens-tube, a plate-magazine, a movable tray, a movable plate-holder normally supporting a plate opposite the lens-tube, and a plate-ejector, of operating means for effecting the following operations, to wit: first, the movement of the holder and tray to present the exposed plate to the latter; next, the movement of the tray away from the holder; next, the movement of the ejector to eject the plate from the holder; next, the retraction of the holder to a position opposite the magazine, and finally, the movement of the holder from the magazine to a position opposite the lens-tube, and means for advancing a new plate to the holder when the latter is disposed opposite the magazine.

37. In a photographic apparatus, the combination with a lens-tube and magazine, of an oscillatory plate-holder normally supporting a plate opposite the lens-tube and movable to a horizontal position opposite the magazine, and a plunger movable to advance the plate from the magazine to the holder.

38. In a photographic apparatus, the combination with a lens-tube and magazine, an oscillatory plate-holder normally supporting a plate opposite the lens-tube, a plate-ejector, means for moving the plate-holder away from the tube and into operative relation with the ejector, means for operating the ejector to eject the plate from the holder, means for thereafter moving the holder to a position opposite the magazine, means for advancing a new plate into the holder, and means for returning the holder to its normal position.

39. In a photographic apparatus, the combination with a lens-tube, plate-magazine, plunger, movable plate-holder and movable tray, of a fluid-reservoir, valve mechanism controlling the discharge of fluid to the tray, and a plate-ejector, of operating mechanism arranged to effect the following operations in the recited order, to wit: the conjoint movement of the tray and holder to present the exposed plate to the tray, the operation of the valve mechanism to supply the tray with the developing fluid, the movement of the tray away from the holder, the movement of the ejector to eject the plate from the holder, the retraction of the holder to a position opposite the magazine and the simultaneous retraction of the ejector, the advance of the plunger to feed a new plate to the holder, and the simultaneous retraction of the plate-holder and plunger to their normal positions.

40. In a photographic apparatus, the combination with a lens-tube, plate-magazine, plunger, movable tray and plate-holder, of a plate-ejector, a reservoir for the developing fluid, valve mechanism controlling the discharge of the fluid to the tray, and operating mechanism common to the holder, tray, ejector, valve mechanism and plunger, said mechanism including an operating-shaft and a series of cams mounted on the shaft and each controlling the movement of one of said elements.

41. In a photographic apparatus, the combination with a lens-tube, a developing-tray and a plate-holder, of a reservoir containing fluid to be supplied to the tray, interdependent liquid and air valves controlling the egress of liquid from and the ingress of air to the reservoir, and means for operating one of the valves.

42. In a photographic apparatus, the combination with a lens-tube, and a movable plate-holder normally disposed in a substantially vertical position opposite the lens-tube; of a tray normally disposed in a substantially vertical inoperative position, and means for effecting the conjoint movement of the holder and the tray to present them in adjacent horizontal positions.

43. In a photographic apparatus, the combination with a horizontal lens-tube, a vertically-disposed magazine, and a developing-tray; of a plate-holder normally supporting the plate opposite the lens-tube, means for moving the plate-holder to present the plate to the developing-tray, means for effecting the partial retraction of the plate-holder to present it in position opposite the magazine for the reception of a new plate, means for advancing a plate from the magazine to the holder, and means for effecting the complete retraction of the holder to present the new plate opposite the lens-tube.

44. In a photographic apparatus, the combination with a horizontal lens-tube, a vertically-disposed magazine, and a tray; of an oscillatory plate-holder normally supporting the plate opposite the lens-tube, means for swinging the plate-holder to present the plate to the tray, means for effecting the partial retraction of the plate-holder to present it in position opposite the magazine and for completing the retraction of the holder to its normal position, and means for advancing a plate to the holder while the latter is opposite the magazine.

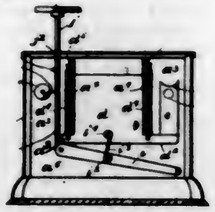
45. In a photographic apparatus, the combination with a casing having an opening in one of its walls, and a fixing-tray exterior to the casing and disposed to receive a plate passed through the opening; of a lens-tube, a plate-holder, a developing-tray and a plate-ejector located within the casing, and operating mechanism whereby the plate is carried from the lens-tube to the developing-tray for development and is then ejected from the holder to the fixing-tray.

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**754,091. MATCH-BOX.** PATRICK F. QUINN and GEORGE SOYLIAN, New York, N. Y. Filed June 1, 1903. Serial No. 159,507. (No model.)

*Claim.*—1. A match-box having vertical side extensions at the front thereof forming vertically-arranged chambers, a match-recep-

tacle in the top thereof the bottom of which is inclined downwardly and forwardly, the front wall of the receptacle being also provided with a transverse slot or opening, a vertically-movable slide mounted adjacent to the front of the wall of the box and normally held above the bottom of the match-receptacle, springs located in said chambers for holding the slide in its normal position, a lever for depressing said slide, and means for operating said lever, substantially as shown and described.

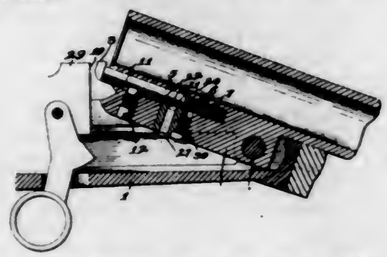


2. A match-box having vertical side extensions at the front thereof forming vertically-arranged chambers, a match-receptacle in the top thereof the bottom of which is inclined downwardly and forwardly, the front wall of the receptacle being also provided with a transverse slot or opening, a vertically-movable slide mounted adjacent to the front of the wall of the box and normally held above the bottom of the match-receptacle, springs located in said chambers for holding the slide in its normal position, a lever for depressing said slide, and means for operating said lever, said slide being also provided with a cigar-cutter located in one of the said chambers, and the front of the box with an opening through which the top of a cigar may be inserted, substantially as shown and described

3. A match-box having vertical side extensions at the front thereof forming vertically-arranged chambers, a match-receptacle in the top thereof the bottom of which is inclined downwardly and forwardly, the front wall of the receptacle being also provided with a transverse slot or opening, a vertically-movable slide mounted adjacent to the front of the wall of the box and normally held above the bottom of the match-receptacle, springs located in said chambers for holding the slide in its normal position, a lever for depressing said slide, and means for operating said lever, said slide being also provided with a cigar-cutter located in one of the said chambers, and the front of the box with an opening through which the top of a cigar may be inserted, and the box being also provided with a bell or gong which is arranged to be operated when the lever is operated, substantially as shown and described.

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**754,092. CARTRIDGE-EJECTOR FOR BREAKDOWN GUNS.** OTTO W. RINGQVIST, Fitchburg, Mass., assignor to Mary Elizabeth Johnson, Fitchburg, Mass. Filed July 8, 1902. Serial No. 114,737. (No model.)



*Claim.*—1. In a breakdown gun, the combination with a gun-frame and a barrel hinged to the front extension thereof, and having a barrel-rib provided with a transverse opening, of a sliding spring-actuated cartridge-ejector, a block detachably held in said transverse opening, a spring-actuated catch pivoted at one end in said block and transversely to said barrel-rib, said catch having a lip adapted to engage the cartridge-ejector and a toe projecting beyond said barrel-rib, and a shoulder in the gun-frame arranged in the path of said toe as the gun is broken down, whereby said catch is withdrawn and the ejector released, substantially as described.

2. In a breakdown gun, the combination with a gun-frame and a barrel hinged to the front extension thereof, and having a barrel-rib provided with a transverse opening, of a spring-actuated sliding cartridge-ejector, a block detachably held in said opening, a catch pivoted at one end in said block and transversely to said barrel-rib, a spring held in said block and acting against said catch to carry it into engagement with the cartridge-ejector, and means for withdrawing said catch from the ejector as the gun is broken down, substantially as described.

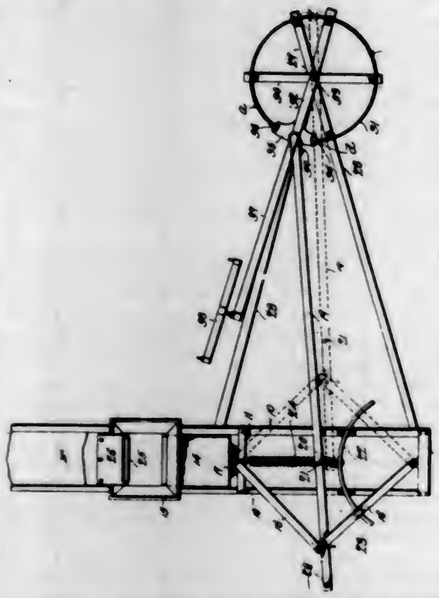
3. In a breakdown gun, the combination with a gun-frame and a barrel hinged to the front extension thereof, and having a rib on its lower side provided with a transversely-formed opening, of a sliding spring-actuated cartridge-ejector fitted to a bore formed in said barrel-rib, a block detachably held in said transverse opening and recessed through its center to form parallel opposing walls, a pivoted spring-actuated catch fitted between said parallel walls and adapted to normally engage the cartridge-ejector, and means for disengaging the catch from the cartridge-ejector when the gun is broken down, substantially as described.

4. In a breakdown gun, the combination with a gun-frame and a barrel hinged to the front extension thereof, and having a rib on its lower side provided with a transversely-formed opening, of a sliding spring-actuated cartridge-ejector fitted to a bore formed in said barrel-rib, a block detachably held in said opening and recessed through its center to form parallel opposing walls, a spring-actuated catch pivoted at one end in said block and fitted between said parallel walls, said catch being adapted to normally engage the cartridge-ejector, a toe projecting from the opposite end of said catch beyond said barrel-rib, a cavity in the front extension of the gun-frame to receive said toe and permit a limited swinging motion to the barrel, and a shoulder in said front extension of the frame in the path of said toe when the gun is broken down, whereby the catch is withdrawn and the ejector released, substantially as described.

5. In a breakdown gun, the combination with a gun-frame and a barrel hinged to the front extension thereof, said barrel having a rib on its lower side provided with a transversely-formed opening, of a sliding spring-actuated cartridge-ejector, a block fitted to the transverse opening in the barrel-rib, means for detachably holding said block in said opening, and a spring-actuated catch wholly contained in said block adapted to normally engage the cartridge-ejector, and means for withdrawing said catch and releasing the cartridge-ejector when the gun is broken down, substantially as described.

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**754,093. BALING-PRESS.** GEORGE W. ROBERTS, Granbury, Tex., assignor of one-half to Mike C. Lemaster and Henry H. Lemaster, Granbury, Tex. Filed May 4, 1903. Serial No. 155,621. (No model.)



*Claim.*—1. The combination in a baling-press of a press-frame, a compression-chamber, a plunger reciprocable in said chamber, means on the frame to limit the rearward movement of the plunger, toggle-links for imparting movement to said plunger, a pitman having sliding connection with said links, and means for imparting movement to said pitman sufficient to force the links past the position of alinement at each movement of the pitman.

2. The combination in a baling-press of a press-frame, a compression-chamber, a plunger reciprocable in said chamber, means on the frame to limit the rearward movement of the plunger, toggle-links for imparting movement to said plunger, a cuff mounted on one of said links, a pitman slidable in said cuff, stops upon said pitman to limit its movement in the cuff, and means for imparting movement to said pitman sufficient to force the links past the position of alinement at each movement of the pitman.

3. The combination in a baling-press of a frame, a compression-chamber, a plunger reciprocable in said chamber, means on the frame to limit the rearward movement of the plunger, toggle-links for imparting movement to said plunger, a cuff pivotally supported on one of said links, a pitman slidable in said cuff, stops on said pitman to limit its movement in the cuff, and means for imparting movement to said pitman sufficient to force the links past the position of alinement at each movement of the pitman.

4. The combination in a baling-press of a frame, a compression-chamber, a plunger reciprocable in said compression-chamber, means on the frame to limit the rearward movement of the plunger, toggle-links for imparting movement to said plunger, a pitman slidably connected with one of said links, a retracting-spring attached at one end to said plunger and at the other end to the frame of the press, and means for imparting movement to said pitman sufficient to force the links past the position of alinement at each movement of the pitman.

5. The combination in a baling-press of a frame, a compression-chamber, a plunger reciprocable in said chamber, means on the frame to limit the rearward movement of the plunger, toggle-links for imparting movement to said plunger, a cuff pivotally mounted on one of said links, a pitman slidable in said cuff, stops on said pitman to limit its movement in the cuff, a track of suitable form provided on said frame, a roll on the under surface of one of said toggle-links and adapted to travel on said track, a retracting-spring attached at one end to said plunger and at the other end to said track, and means for imparting movement to said pitman.

6. The combination in a baling-press of a frame, a compression-chamber, a plunger reciprocable in said chamber, means on the frame to limit the rearward movement of the plunger, toggle-links for imparting movement to said plunger, a pitman slidably connected with said links, converging bars projecting laterally from the base of said press-frame, a crank pivotally mounted on said converging bars at their point of intersection, a wrist-pin projecting upward from said crank, connections between said wrist-pin and said pitman, and a sweep rigidly secured to said wrist-pin at its upper end.

7. The combination in a baling-press of a frame, a compression-chamber, a plunger reciprocable in said chamber, toggle-links for imparting movement to said plunger, a pitman slidably connected with said links, a frame for a horse-power projecting laterally from said press-frame, a circular track provided on the frame for said horse-power, a crank pivotally mounted on said horse-power frame, rolls for supporting said crank associated therewith near the outer end and adapted to travel on said track, a wrist-pin projecting upward from said crank, connections between said wrist-pin and said pitman, and a sweep rigidly secured to said wrist-pin at the upper end.

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**754,094. LINE-EYE ATTACHMENT FOR FISHPOLES.** FRANK W. ROTH, West Hoboken, N. J. Filed Oct. 6, 1903. Serial No. 175,926. (No model.)

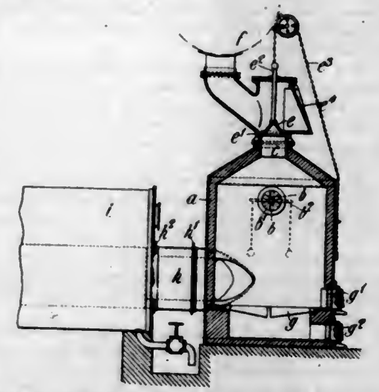


*Claim.*—The combination with a fishing rod or pole of a line-eye attachment into which the line is passed laterally, said line-eye attachment consisting of a central hook portion, a ring or eye at each side thereof, and means whereby the same may be secured to the rod or pole, substantially as shown and described.

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**754,095. GAS-FIRED BOILER.** AXEL SAHLIN, Millom, England. Filed Sept. 6, 1902. Serial No. 122,435. (No model.)

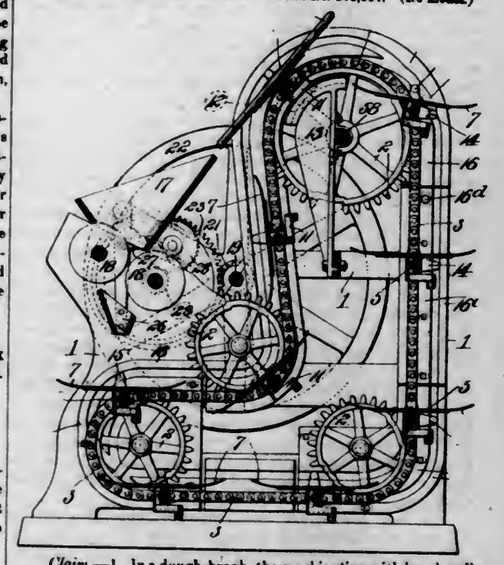
*Claim.*—1. The combination with a blast-furnace, and a boiler-furnace, of a combustion-chamber connecting the blast-furnace and the boiler-furnace, and comprising a portable circular metallic shell having a central gas-inlet at its top, radial inlets in its sides, and an escape-opening near the bottom below the radial air-inlets, fire-bricks forming an interior lining for the shell, valves for the radial air-inlets, a downwardly-seating valve for controlling the communication between the blast-furnace and the combustion-chamber, a seat for the valve provided with an annular space, and a door above the valve to permit access to said valve.



2. The combination with a blast-furnace and a boiler-furnace, of a combustion-chamber connecting the blast-furnace and the boiler-furnace, and comprising a portable circular metallic shell having a central gas-inlet at its top, radial inlets in its sides, and an escape-opening near the bottom below the radial air-inlets, fire-bricks forming an interior lining for the shell, valves for the radial air-inlets, a downwardly-seating valve for controlling the communication between the blast-furnace and the combustion-chamber, a seat for the valve provided with an annular space, a door above the valve to permit access to said valve, a fire-grate below the escape-opening and an ash-pit below the grate.

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**754,096. DOUGH-BREAK.** WILLIAM H. SCOTT, St. Louis, Mo., assignor of two-thirds to S. L. G. Hyde and Frederick S. Freund, St. Louis, Mo. Filed Oct. 24, 1903. Serial No. 178,397. (No model.)



*Claim.*—1. In a dough-break, the combination with break-rolls, of an endless chain, trays carried by said chain, and means for tilting said trays to dump the dough onto the break-rolls; substantially as described.

2. In a dough-break, the combination with break-rolls, of an endless chain, trays carried by said chain, and means for partially rotating said trays when in the dumping position over the break-rolls; substantially as described.

3. In a dough-break, the combination with break-rolls, of an endless chain carrying rock-shafts, trays pivotally mounted on said rock-shafts, means for rocking said shafts to tilt the trays to a dump-

ing position, and means for rotating said trays as they approach their dumping position; substantially as described.

4. In a dough-break, the combination with break-rolls, of endless chains passing over sprockets, rock-shafts carried by said chains, crank-arms on the ends of said shafts, and continuous cam-grooves coöperating with said crank-arms to rock the shafts and tilt the trays; substantially as described.

5. In a dough-break, the combination with break-rolls, of endless chains, trays carried by said chains, and means for holding said trays in a horizontal position from the time they leave a point under the break-rolls up to the time that said trays reach a point above said break-rolls, when said means tilt said trays to a dumping position; substantially as described.

6. In a dough-break, the combination with break-rolls, of endless chains, trays carried by said chains, means for holding said trays in a horizontal position from the time they leave a point under the break-rolls up to the time they reach a point above said break-rolls, said means tilting said trays to a dumping position when above the break-rolls, and other means for operating said trays in their dumping position for imparting a partial rotation thereto; substantially as described.

7. In a dough-break, the combination with break-rolls, of traveling trays designed to move into and out of position above and below said break-rolls, means for tilting said trays to dump the dough onto the break-rolls when said trays are above said break-rolls, and means for folding the dough onto the receiving-tray under the break-rolls; substantially as described.

8. In a dough-break, the combination of traveling trays with means for tilting said trays when at a point above the break-rolls, means for partially rotating said trays when approaching a dumping position, and means for folding the dough onto the receiving-tray under the break-rolls; substantially as described.

9. In a dough-break, the combination with break-rolls, of traveling trays whose path of movement is above and below said break-rolls, means for tilting and partially rotating said trays at a point above the break-rolls, said means restoring said trays to normal horizontal position and maintaining said horizontal position throughout their circuit, and a spring-pressed pin coöperating with the trays to yieldingly hold them against accidental displacement; substantially as described.

10. In a dough-break, the combination with break-rolls, of endless chains, whose links at intervals are replaced by bearings, rock-shafts mounted in said bearings, crank-arms on the ends of said rock-shafts operating in continuous grooves in cam-plates, a tray pivotally mounted upon said rock-shaft, means for holding said tray in rotatably-adjusted position, and means for partially rotating said trays; substantially as described.

11. In a dough-break, the combination with side frame-castings of break-rolls mounted therein, sprocket-wheels mounted in said frame-plates, endless chains passing over and under said sprocket-wheels, rock-shafts carried by said endless chains, trays on said rock-shafts, crank-arms on the ends of said shafts, said crank-arms having cam-rollers at their ends, a sectional cam-plate having continuous cam-grooves for coöperating with said rollers, and means for adjusting certain of the sections of said cam-plate; substantially as described.

12. In a dough-break, the combination with side frame-castings, of break-rolls, endless chains carrying rock-shafts, crank-arms on said rock-shafts, and a cam-plate comprising a fixed section $16^a$, horizontally-adjustable sections $16^a$ and $16^b$ and a swinging section $16^c$, all of said sections being provided with cam-grooves for receiving rollers on the ends of said crank-arms; substantially as described.

13. In a dough-break, the combination with break-rolls, of traveling trays adapted to discharge a batch of dough onto the break-rolls and receive the dough from the break-rolls, and automatic means for arresting the travel of the trays during the time that a batch of dough is passing through the break-rolls; substantially as described.

14. In a dough-break, the combination with break-rolls, of traveling trays adapted to discharge a batch of dough onto the break-rolls and receive the dough from the break-rolls, and means operated by the resistance encountered by the break-rolls acting upon the dough for causing the arrest of the trays during the time that dough is passing through the break-rolls; substantially as described.

15. In a dough-break, the combination with break-rolls, of trays adapted to travel above and below said break-rolls, means for tilting said trays to discharge a batch of dough onto the break-rolls, means for partially rotating said trays as they approach a dumping position, means for folding the dough as it issues from between the break-rolls onto the receiving-tray, and means operated by the resistance to the movement of the break-rolls in acting upon the dough for causing the arrest of said trays during the time that the break-rolls are acting upon the dough; substantially as described.

16. In a dough-break, the combination with break-rolls, of trays adapted to travel above and below said break-rolls, one tray discharging a batch of dough onto the break-rolls and another tray receiving said dough as it issues from the break-rolls, and automatic means set in operation when the batch of dough passes through the break-rolls for causing the travel of the trays; substantially as described.

17. In a dough-break, the combination with break-rolls, of traveling trays for discharging a batch of dough onto said break-rolls and receiving the dough as it issues from said break-rolls, and automatic mechanism set in operation when the break-rolls have finished acting upon a batch of dough for causing the trays to be advanced one step; substantially as described.

18. In a dough-break, the combination with constantly-driven break-rolls, of traveling trays adapted to discharge a batch of dough onto the break-rolls and receive the dough from said break-rolls, driving mechanism for the trays, a clutch for rendering said driving mechanism effective, and automatic means operated by the break-rolls when acting on a batch of dough for throwing said clutch out of operative position; substantially as described.

19. In a dough-break, the combination with constantly-driven break-rolls, of traveling trays coöperating therewith, driving mechanism for said trays, a clutch for rendering said driving mechanism operative, and means actuated by the break-rolls when acting upon a batch of dough for operating said clutch to throw the same into operative position when a batch of dough has passed through the break-rolls, said clutch being automatically thrown out of gear after moving the trays a predetermined distance; substantially as described.

20. In a dough-break, the combination with break-rolls, of means for constantly driving the same, trays coöperating with said rolls, and means for automatically driving said trays a predetermined distance, said driving means being controlled by the resistance encountered by the break-rolls in acting upon a batch of dough; substantially as described.

21. In a dough-break, the combination with break-rolls, of means for constantly driving the same, said means including a shaft, an internal gear mounted on said shaft, a driving-pulley having a yielding connection with said internal gear, and a clutch which is thrown into and out of operative position by the changed relation of the driving-pulley and internal gear; substantially as described.

22. In a dough-break, the combination with break-rolls, of driving mechanism therefor including a shaft, an internal gear fixed on said shaft, a driving-pulley loosely mounted on said shaft, and driving the same through the interposition of a yielding medium, trays coöperating with the break-rolls, driving mechanism for said trays, and means for throwing said tray-driving mechanism into and out of gear, said means being controlled by the relation between the internal gear and driving-pulley; substantially as described.

23. In a dough-break, the combination with break-rolls, of driving mechanism therefor including the shaft, an internal gear fixed on said shaft, a driving-pulley loosely mounted on said shaft, and driving the same through the interposition of a yielding medium, a collar slidingly mounted on said shaft, and means for sliding said collar along the shaft when the driving-pulley is displaced with respect to the internal gear, trays coöperating with the break-rolls, driving mechanism for said trays, and means for throwing said tray-driving mechanism into and out of gear, said means being controlled by the position of the sliding collar on the shaft; substantially as described.

24. In a dough-break, the combination with break-rolls, of trays coöperating therewith, means for constantly driving the break-rolls, means for intermittently driving trays, said last-mentioned means including the driving-pulley, gearing yieldingly connected with the driving-pulley, collars slidingly mounted on the shaft and movable in one direction when the gearing is operated a certain way, a spring for moving the collar in the opposite direction when the gearing is reversed, and a clutch mechanism for controlling the intermittent drive of the trays, which clutch mechanism is thrown into and out of operative position by the movement of said collar; substantially as described.

25. In a dough-break, the combination with break-rolls, of means for constantly driving same, traveling trays for discharging a batch of dough onto said break-rolls and receiving the dough as it issues from said break-rolls, driving mechanism for the trays, a clutch for throwing said driving mechanism into and out of gear, and means for automatically operating said clutch; substantially as described.

26. In a dough-break, the combination with break-rolls, of trays coöperating therewith, means for driving said trays, a clutch for throwing said driving mechanism into and out of gear, a lever for normally holding said clutch in operative position, and means for vibrating said lever; substantially as described.

27. In a dough-break, the combination with break-rolls and their driving mechanism, of trays and their driving mechanism, a clutch for throwing the tray-driving mechanism into and out of operation, a lever coöperating with said clutch, a sliding block for moving said lever, a tripping-dog on said sliding block, a lever coöperating with said dog, and means for operating said last-mentioned lever, which means are controlled by the resistance encountered by the break-rolls acting upon a batch of dough; substantially as described.

28. In a dough-break, the combination with break-rolls and their driving mechanism, of trays and their driving mechanism, a clutch for rendering the tray-driving mechanism operative or inoperative, a lever for normally holding said clutch in an inoperative position, a sliding block for operating said lever, a dog carried by said block, means for tripping said dog, a lever for moving the dog, sliding block and lever in one direction until the dog is tripped so as to become disengaged from said lever, a spring for returning said parts to normal position, and means for operating the dog-actuating lever, said means being controlled by the presence or absence of dough between the break-rolls; substantially as described.



754,097. **BED-BOTTOM.** WOODFORD SHANNON, Louisville, Ky. Filed Aug. 8, 1902. Serial No. 118,933. (No model.)



*Claim.*—1. A support for spring-mattresses, comprising a series of slats spaced apart, and secured together at their ends and provided with a series of L-shaped slots disposed in opposite directions from the center of the slats.

2. A support for spring-mattresses comprising a series of slats connected together at their ends, vertically-disposed hooks integral with each end of each slat, each slat being provided with a series of L-shaped slots disposed in opposite directions on each side of the center of said slat.

3. A support for spring-mattresses comprising a series of slats joined together at their ends and provided with a series of L-shaped slots disposed in opposite directions on each slat from the center thereof, and a central brace connecting the slats.

4. A support for spring-mattresses comprising a series of slats, vertically-disposed hooked ends integral with each end of said slats, a bar connecting the hooked ends of said slats, central braces connecting the slats, each slat being provided with L-shaped slots in the top thereof extending in opposite directions from the center of the slat.

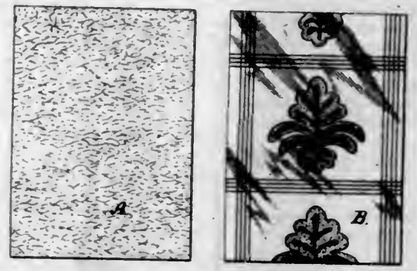
5. A bed-bottom support, comprising a series of connected slats, each of which is provided with a series of oppositely-disposed slots, a mattress secured thereon, with a cross-wire base entering said slots, and wire clips further securing the cross-wires in the slots.

6. A bed-bottom support comprising a series of slats, bent upon a half-twist at their outer ends, and further bent upward at their outer ends to form suspension-hooks, rods connecting the slots at their outer ends by connection to the vertical members of such suspension-hooks, braces connecting the slats at the middle, and a group of oppositely-disposed slots formed in said slats on each side of the center thereof.

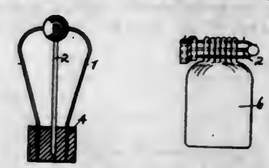
754,098. **FABRIC.** WARREN S. SILLCOCKS, New York, N. Y., assignor to the Celluloid Company, New York, N. Y., a Corporation of New Jersey. Filed July 8, 1903. Serial No. 164,638. (No specimens.)

*Claim.*—1. A fabric coated on one side with an opaque coating having pyroxylin as its base and made to represent an ornamental surface, and its other side exhibiting an ornamental pattern covered with a transparent coating having pyroxylin as its base, substantially as described.

2. A fabric coated on one side with an opaque coating having pyroxylin as its base and made to represent a surface of leather, and its other side exhibiting an ornamental pattern covered with a transparent coating having pyroxylin as its base, substantially as described.




754,099. **SEAL FOR BAGS, &c.** LE ROY J. SIMMONS, Albany, N. Y. Filed June 24, 1903. Serial No. 162,897. (No model.)



*Claim.*—In a seal of the character described a compressible block having perforations therein; a tie having a pin or stud attached thereto; the ends of tie and the pin being arranged so that the pin or stud may be passed through the bag or other article to be sealed and the ends of the tie passed around it, the ends of the tie and pin or stud passing into the perforations of the block and firmly fixed therein substantially as described.

754,100. **APPARATUS FOR PRODUCING OPTICAL ILLUSIONS.** FRANCIS J. STRAUB, Pittsburg, Pa. Filed July 15, 1903. Serial No. 165,576. (No model.)



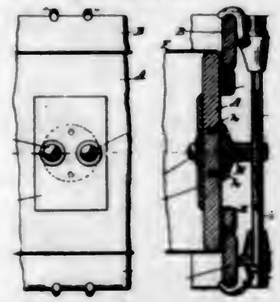
*Claim.*—1. In an apparatus of the character described, the combination of a plurality of display-surfaces, a cord to which said surfaces are attached, a ring secured to one end of said cord, a weight secured to the other end of said cord, a spike or pointed projection connected with the free end of said weight, and a paper casing adapted to inclose all the before-mentioned elements when the same are in their folded position, substantially as described.

2. In an apparatus of the character described, the combination of a paper casing formed and ornamented to represent any desired figure, a plurality of display-surfaces, a cord to which said surfaces are attached, a ring secured to one end of said cord, a weight secured to the other end of said cord, a spike or pointed projection on the free end of said weight, said display-surfaces, cord, ring and weight being adapted to be concealed within said paper casing when so desired, substantially as described.

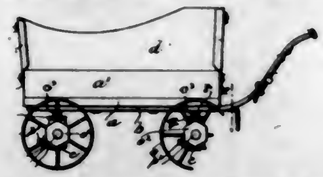
754,101. **DRUM.** CHARLES A. STROMBERG, Chelsea, Mass. Filed July 20, 1903. Serial No. 166,311. (No model.)

*Claim.*—In a drum, in combination, a shell, beater, and snare heads, and straining-hoops arranged at opposite ends of said shell, a series of brackets secured to the latter and engaging independent clamping devices, each of said brackets having steady-pins *h*, *h*, interlocked with corresponding recesses in the shell, a strengthening-block arranged on the interior of the shell opposite to said bracket and headed screws K, K, going loosely through perforations on said

strengthening-block and shell, and screwed into the bracket, substantially as and for the purpose set forth.



754,102. **BABY-CARRIAGE.** LETITIA V. THOMPSON, New York, N. Y. Filed Oct. 30, 1903. Serial No. 179,165. (No model.)



*Claim.*—1. In a baby-carriage, the combination of the bottom, folding sides and ends, axles, brackets swinging on and shiftable longitudinally of said axles, journals held by the brackets and wheels on the journals, for substantially the purposes set forth.

2. In a baby-carriage, the combination of the bottom, folding sides and ends, axles and wheels mounted to be moved in rolling position and to be moved under the bottom, said wheels being movable longitudinally of the axles, for substantially the purposes set forth.

3. In a baby-carriage, the combination of the bottom, folding sides and ends, axles applied to the bottom, brackets suitably mounted on the ends of the axles to be moved over their extreme ends and to be moved under the axles, journals supported by the brackets adapted to be used as legs and wheels on the journals, said journals being movable longitudinally of the axles, for substantially the purposes set forth.

4. In a baby-carriage, the combination of the carriage-body provided with axles, swinging and shiftable journals carried by the axles, wheels mounted on the journals, spring locking devices and studs on the journals and cooperating with said locking devices for automatically locking the wheels in rolling position, said journals constituting legs when the wheels are in non-using position, for substantially the purposes set forth.

5. In a baby-carriage, the combination of the carriage-body provided with axles, brackets engaging over the ends of the axles, journals on the brackets, a pin-and-slot connection between each bracket and its axle, said brackets and journals being movable in line with the axle and at right angles thereto and said pin-and-slot connection remaining established during these positions of the brackets and journals, and wheels mounted on the journals, for substantially the purposes set forth.

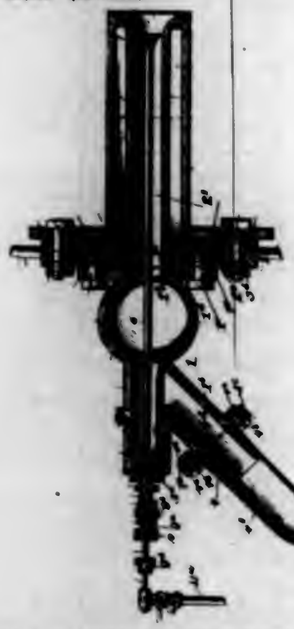
6. In a baby-carriage, the combination of the carriage-body provided with axles, brackets engaging over the ends of the axles, journals on the brackets, a pin-and-slot connection between each bracket and its axle, said brackets and journals being movable in line with the axle and at right angles thereto and said pin-and-slot connection remaining established during these positions of the brackets and journals, wheels mounted on the journals, and means for locking the brackets and wheels in rolling position, such means being independent of the axles, for substantially the purposes set forth.

7. In a baby-carriage, the combination of the carriage-body provided with axles, brackets swinging on said axles and provided with journals, wheels mounted on said journals and means for locking the wheels in rolling position, said means comprising studs or pins on the brackets and springs supported by the axles, for substantially the purposes set forth.

8. In a baby-carriage, the combination of the carriage-body provided with axles, brackets swinging on said axles and provided with journals, wheels mounted on said journals and means for locking the wheels in rolling position, said means comprising pins or studs on the brackets, C-springs loosely mounted and adapted to engage the said studs or pins and means for flexing the said springs for disengaging the ends from said pins or studs, for substantially the purposes set forth.

9. In a baby-carriage, the carriage-body comprising the bottom provided with side rails and end rails, the side rails being higher than the end rails and the end rails being separated suitable distances from the side rails, ends hinged to the end rails in the space between the same and the side rails, and the sides hinged to the higher side rails, for substantially the purposes set forth.

754,108. **HYDROCARBON-BURNER.** WILLIAM H. THORNLEY, Reading, Pa. Filed June 26, 1899. Renewed Dec. 27, 1902. Serial No. 136,804. (No model.)



*Claim.*—1. A hydrocarbon-burner comprising a burner-body, a burner-head, a hollow plug secured in the outer end of the burner body, a screw-threaded collar secured in the plug, an adjustable sleeve secured to the collar, a hydrocarbon-pipe extending through the sleeve supported in the plug and extending through the burner-body and into the burner-head, a tap secured to the outer end of the hydrocarbon-pipe, and means whereby the tap is connected with the sleeve so as rotate therein or to be adjusted therewith.

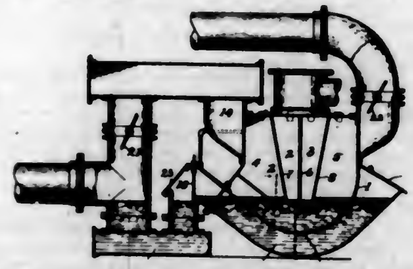
2. A hydrocarbon-burner comprising a burner-body, a burner-head, a hollow plug secured in the outer end of the burner-body, a screw-threaded turn-collar secured at one end in the plug, an adjustable sleeve secured to the other end of the turn-collar, a hydrocarbon-pipe extending through the sleeve, supported in the plug and extending through the burner-body and into the burner-head, a tap secured to the outer end of the hydrocarbon-pipe, and pin-and-groove connection between the sleeve and the tap.

3. A hydrocarbon-burner comprising a burner-body formed with a hollow horizontal arm, with a hollow inclined arm and with a chamber having a supporting-flange and providing an air-reservoir, the burner-head formed with an inner shell providing a commingling-chamber, and an outer shell providing a water-jacket between the shells, a supporting-flange on the burner-head into which the water-jacket extends, having an inlet and an outlet, and a hydrocarbon-pipe supported in the horizontal arm.

4. A hydrocarbon-burner comprising a burner-body formed with a hollow horizontal arm, with a hollow inclined arm, and with a chamber having a supporting-flange and providing an air-reservoir, the burner-head formed with an inner shell providing a commingling-chamber, and an outer shell providing a water-jacket around the inner shell, a supporting-flange on the burner-head into which the water-jacket extends, having an inlet at the bottom and an outlet at the top, and a hydrocarbon-pipe supported in the horizontal arm.

5. A hydrocarbon-burner comprising a burner-body formed with a hollow horizontal arm, with a hollow inclined arm, and with a chamber having a supporting-flange and providing an air-reservoir, the burner-head formed with an inner shell providing a commingling-chamber and with an outer shell providing a water-jacket around the inner shell, a supporting-flange on the burner-head into which the water-jacket extends, having an inlet at the bottom and an outlet at the top, a hydrocarbon pipe supported in the burner-body and extending into the burner-head, and means for adjusting the hydrocarbon-pipe.

754,104. **HYDRAULIC MAIN.** EDWARD H. TRUMP, Syracuse, N. Y. Filed June 13, 1903. Serial No. 161,285. (No model.)



*Claim.*—1. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature.

2. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature and a liquid-sealed port for having access to the bottom of the main.

3. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature and a chamber beneath the main having communication with the interior thereof.

4. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature and a chamber beneath the main communicating with the interior thereof and provided with a liquid-sealed port for having access thereto.

5. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature, and means for withdrawing the liquid from the main and adjustable means connected therewith for maintaining the liquid at the required height in the main.

6. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature and liquid-trapped means for withdrawing the liquid from the main.

7. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature, with liquid-trapped means for withdrawing the liquid, from the main and a liquid-sealed port for having access to the trap.

8. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature and valve-controlled connection between certain compartments and the source of gas-supply.

9. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature and valve-controlled connection between certain compartments and a carrying-off pipe or pipes.

10. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature, an adjustable gate for maintaining the liquid at the desired height and valve-controlled connection between certain compartments and a source of gas-supply.

11. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature, a valve-controlled connection between certain compartments and a source of gas-supply, and a valve-controlled conductor for withdrawing the gas from the main.

12. In a hydraulic gas-main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly from the top of the main and dipping into a body of liquid at the bottom of the main, said partitions being so proportioned and disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartments as will maintain the opposite sides of the main at the same temperature, a conductor for withdrawing the gas and liquid from the main with independently-adjustable means for regulating the flow of gas and liquid therethrough.

13. A hydraulic main, provided with a plurality of partitions extending throughout its length projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the inner or middle compartments having a gas-inlet, the flanking or outer compartments adapted to receive the gas from the inner compartments as it passes through the water around the lower edge of the separating-partitions.

14. A hydraulic main, provided with a plurality of partitions extending throughout its length projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the inner or middle compartments having a gas-inlet, the flanking or outer compartments adapted to receive the gas from the inner compartments as it passes through the water around the lower edge of the separating-partitions and means for conducting the gas away from the outer compartments.

15. In a hydraulic gas-main, the combination of a plurality of longitudinally-disposed compartments, the main constructed to contain a mass of liquid as a seal common thereto, a plurality of partitions dipping in the said mass of liquid so disposed as to provide such

distribution of the hot gas as to maintain the opposite sides of the main at the same temperature.

16. In a hydraulic gas-main, the combination of a plurality of longitudinally-disposed compartments, the main constructed to contain a mass of liquid as a seal common thereto, a plurality of partitions dipping in the said mass of liquid so disposed as to provide such distribution of the hot gas as to maintain the opposite sides of the main at the same temperature, and a liquid-sealed port for having access with the bottom of the main.

17. A hydraulic main provided with a plurality of longitudinally-disposed compartments having a common water seal, the inner compartments adapted to receive the gas, a valve-controlled gas-inlet for each of said inner compartments, each outer compartment adapted to receive the gas from its adjacent inner compartment after the same has passed through the water seal.

18. A hydraulic main provided with a plurality of compartments, extending throughout its length, a common water seal therefor, the middle compartments adapted to receive the gas, the flanking or outer compartments adapted to receive the gas from the middle compartments, means for carrying said gas from the outer compartment, and a water-sealed port through which may be removed the tar washed from the gas.

19. A hydraulic main provided with a plurality of partitions extending throughout its length, projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments the inner or middle compartments each having a valve-controlled gas-inlet, the flanking or outer compartments adapted to receive the gas from the inner compartments as it passes through the water around the lower edges of the supporting-partitions, means for conducting the gas away from the outer compartments, and a water-sealed port through which may be removed the tar washed from the gas.

20. A hydraulic main provided with a plurality of partitions extending throughout its length, projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the middle partition projecting farther into the water than the others, the inner or middle compartments each having a valve-controlled gas-inlet, the flanking or outer compartments adapted to receive the gas from the inner compartments as it passes through the water around the lower edges of the supporting-partitions, means for conducting the gas away from the outer compartments, and a water-sealed port through which may be removed the tar washed from the gas.

21. A hydraulic main provided with a plurality of partitions extending throughout its length, projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the inner or middle compartments each having a valve-controlled gas-inlet, each flanking or outer compartment adapted to receive the gas from its adjacent compartment as it passes through the water around the lower edges of the supporting-partitions, means for conducting the gas away from the outer compartments, and a water-sealed port through which may be removed the tar washed from the gas.

22. A hydraulic main provided with a plurality of partitions extending throughout its length, projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the inner or middle compartments each having a valve-controlled gas-inlet, each flanking or outer compartment adapted to receive the gas from its adjacent compartment as it passes through the water around the lower edges of the supporting-partitions, means for conducting the gas away from the outer compartments, and a chamber beneath the main communicating therewith for collecting the tar washed from the gas, having a water-sealed port through which may be removed the tar.

23. In a hydraulic gas-main, the combination of a plurality of compartments, the main constructed to contain a mass of liquid as a seal common thereto, partitions between said compartments, a valve-controlled connection between certain of the compartments and a gas-supply, said partitions being so proportioned and the connection with the gas-supply being such as to maintain the opposite sides of the main at approximately the same temperature.

24. In a hydraulic gas-main, the combination of a plurality of compartments, the main constructed to contain a mass of liquid as a seal common thereto, partitions between said compartments, a valve-controlled connection between certain of the compartments and a gas-supply, said partitions being so proportioned and the connection with the gas-supply being such as to maintain the opposite sides of the main at approximately the same temperature, and a water-sealed port for removing the tar from the bottom of the main.

25. A hydraulic main having a plurality of compartments, extending throughout its length, a water seal common thereto, the middle compartments adapted to receive the gas, the flanking or outer compartments, means for carrying said gas from the outer compartments, a chamber beneath said main, having communication through the bottom thereof for collecting the tar washed from the gas and a water-sealed port through which the same may be removed.

26. In combination with a gas-supply, a hydraulic main therefor provided with a plurality of partitions extending throughout its length projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the inner or middle compartments connected with the source of gas-supply, the flanking or outer compartments adapted to receive the gas from the inner compartments as it passes through the water around the lower edge of the separating-partitions, means for conducting the gas away from the outer compartments, a chamber beneath said main having communication through the bottom thereof for collecting the tar washed from the gas and a water-sealed port through which the same may be removed.

27. A hydraulic main provided with a plurality of longitudinally-disposed compartments having a common water seal, the inner compartments adapted to receive the gas, the outer compartments adapted to receive the gas from the inner compartments after the same has passed through the water seal, a chamber beneath said main having communication through the bottom thereof for collecting the tar washed from the gas and a water-sealed port through which the same may be removed.

28. A hydraulic main provided with a plurality of longitudinally-disposed compartments having a common water seal, a valve-controlled gas-inlet for each inner compartment, the outer compartments adapted to receive the gas from the inner compartments after the same has passed through the water seal.

29. A hydraulic main provided with a plurality of longitudinally-disposed compartments having a common water seal, a valve-controlled gas-inlet for each inner compartment and means for connecting said gas-inlets with different sources of gas-supply, the outer compartments adapted to receive the gas from the inner compartments after the same has passed through the water seal.

30. A hydraulic main provided with a plurality of longitudinally-disposed compartments having a common water seal, a valve-controlled gas-inlet for each inner compartment, the outer compartments adapted to receive the gas from the inner compartments after the same has passed through the water seal, and means for so separating the inner compartments that each outer compartment shall receive the gas from its adjacent compartment only.

31. A hydraulic main provided with a plurality of longitudinally-disposed compartments, having a common water seal, a valve-controlled gas-inlet for each inner compartment and means for connecting the same with different sources of gas-supply, the outer compartments adapted to receive the gas from the inner compartments after the same has passed through the water seal, and means for so separating the inner compartments that each outer compartment shall receive the gas from its adjacent inner compartment only.

32. A hydraulic main having a plurality of compartments extending throughout its length, a common water seal therefor, the middle compartments provided with gas-inlets, the flanking or outer compartments adapted to receive the gas from the middle compartment, means for carrying said gas from the outer compartments and an adjustable water-gate for maintaining the water in the main at the desired level.

33. A hydraulic main provided with a plurality of longitudinally-disposed compartments having a common water seal, the inner compartments provided with gas-inlets, the outer compartments adapted to receive the gas from the inner compartments after the same has passed through the water seal, and an adjustable water-gate for maintaining the desired level of the water in the main.

34. A hydraulic main, provided with a plurality of partitions extending throughout its length, projecting from the top toward the bottom into a common water seal, thereby forming a plurality of water-sealed compartments, the inner or middle compartments connected with a source of gas-supply, the flanking or outer compartments adapted to receive the gas from the inner compartments as it passes through the water around the lower edges of the separating-partitions, means for conducting the gas from the outer compartments and an adjustable water-gate for maintaining the desired level of water in the main.

35. In a hydraulic gas-main, the combination of a plurality of longitudinally-extending compartments, said compartments being divided into two elements, one element comprising an inner compartment or compartments, the other element comprising outer compartments flanking both sides of the first element, said elements being separated by partitions having their lower edges dipping into a water seal, said partitions being so disposed as to permit the gas discharged into one element to pass therefrom through the water seal to the other element and means for connecting one element with a source of gas-supply.



36. In a hydraulic gas-main, the combination of a plurality of longitudinally-disposed partitions dipping into a common water seal thereby forming a plurality of longitudinally-disposed compartments, said compartments being divided into two elements, one element comprising an inner compartment or compartments, the other element comprising outer compartments flanking both sides of the first element, said partitions so proportioned and disposed as to insure the passage of the gas from one element to the other and means for connecting one element with a source of gas-supply.

37. A hydraulic gas-main comprising a longitudinally-extending conduit provided with a plurality of longitudinally-disposed partitions extending from the upper side of said conduit downwardly toward its bottom into a common water seal thereby forming a plurality of longitudinally-extending compartments, said compartments being divided into two elements, one element comprising an inner compartment or compartments, the other element comprising outer compartments flanking both sides of the first element, the partitions being so proportioned and disposed as to permit the gas to pass through the water seal from one element to the other element, and means for connecting one element with a source of gas-supply.

38. A hydraulic gas-main comprising a longitudinally-extending conduit provided with a plurality of longitudinally-disposed partitions extending from the upper side of said conduit downwardly toward its bottom into a common water seal thereby forming a plurality of longitudinally-extending compartments, said compartments being divided into two elements, one element comprising an inner compartment or compartments, the other element comprising outer compartments flanking both sides of the first element, the partitions being so proportioned and disposed as to permit the gas to pass through the water seal from one element to the other element so that the hot gas and cold gas will be so distributed to either side of the main as to prevent the twisting thereof and means for connecting one element with a source of gas-supply.

39. A hydraulic gas-main comprising a longitudinally-extending conduit provided with a plurality of longitudinally-disposed partitions extending from the upper side of said conduit downwardly toward its bottom, a body of liquid occupying the lower portion of said conduit and immersing the lower extensions of the partitions thereby forming a plurality of longitudinally-extending liquid-sealed compartments, said compartments being divided into two elements, one element comprising an inner compartment or compartments the other element comprising outer compartments flanking both sides of the first element, the partitions being so proportioned and disposed as to permit the gas to pass evenly through the liquid seal from one element to the other, and means for connecting one element with the gas-supply.

40. A hydraulic gas-main provided with a plurality of longitudinally-extending partitions, said main constructed to contain a mass of liquid for immersing the lower extensions of said partitions thereby providing a plurality of liquid-sealed longitudinally-extending compartments and means whereby the temperature from the hot gas delivered thereto is so distributed as to prevent its causing a twisting or contortion of the main.

41. In a hydraulic gas-main the combination of a plurality of compartments, the main constructed to contain a mass of liquid as a seal common thereto, partitions between said compartments so proportioned respectively, and the connection between the main and the source of gas-supply being such, as to maintain the opposite sides of the main at the same temperature.

42. A hydraulic gas-main provided with a plurality of longitudinally-extending partitions projecting downwardly from the upper wall of the main, and constructed to contain a mass of liquid immersing the lower extensions of said partitions thereby forming a plurality of longitudinally-extending compartments having a common liquid seal, valve-controlled connections between one or more of said compartments and a gas-supply, the disposal of the partitions and the connection with the gas-supply being such as to maintain the opposite sides of the main at approximately the same temperature.

43. In a hydraulic main, the combination of a plurality of compartments formed by a plurality of partitions dipping into a body of liquid, said partitions being so disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartment or compartments as will maintain the opposite sides of the main at the same temperature.

44. In a hydraulic main, the combination of a plurality of compartments formed by a plurality of partitions extending downwardly and dipping into a body of liquid, said partitions being so disposed as to cause the gas to pass through the liquid from one or more of said compartments to such other compartment or compartments as will maintain the opposite sides of the main at the same temperature.

45. A hydraulic main constructed to maintain a mass of liquid and provided with a plurality of compartments formed by partitions dipping into said liquid, means for connecting one or more of said compartments with a gas-supply, said partitions being so disposed and the connection with the gas-supply being such as to maintain the opposite sides of the main at approximately the same temperature.

46. A hydraulic main constructed to maintain a mass of liquid, said main provided with a plurality of compartments formed by partitions dipping into said mass of liquid, means for connecting one or more of said compartments with a gas-supply, said connecting means being such and said partitions being so disposed as to provide such distribution of the gas as will maintain the opposite sides of the main at approximately the same temperature.

47. A hydraulic main constructed to maintain a mass of liquid, said main provided with a plurality of compartments formed by partitions dipping into said mass of liquid, means for connecting one or more of said compartments with a gas-supply, said connecting means being such and said partitions being so disposed as to provide such distribution of the gas as will maintain the opposite sides of the main at approximately the same temperature, and a liquid-sealed port for having access to the portion of the main containing the mass of liquid.

48. In a hydraulic gas-main, the combination of a plurality of compartments, the main constructed to contain a mass of liquid as a seal common thereto, partitions between said compartments so proportioned respectively, and the connection between the main and the source of gas-supply being such, as to maintain the opposite sides of the main at approximately the same temperature, and a longitudinally-extending section of the main having sliding engagement with adjacent parts of the main to permit slight movement with respect thereto due to change in temperature.

49. A hydraulic gas-main provided with a plurality of longitudinally-extending partitions, said main constructed to maintain a mass of liquid for immersing the lower extensions of said partitions thereby providing a plurality of liquid-sealed longitudinally-extending compartments, the partitions between said compartments so proportioned respectively, and the connection between the main and the source of gas-supply being such, as to maintain the opposite sides of the main at approximately the same temperature, and a longitudinally-extending section of the main having sliding engagement with adjacent parts of the main to permit slight movement with respect thereto due to changes in temperature.

50. A hydraulic gas-main provided with a plurality of longitudinally-extending partitions, said main constructed to maintain a mass of liquid for immersing the lower extensions of said partitions thereby providing a plurality of liquid-sealed longitudinally-extending compartments, a longitudinally-extending section of the main having sliding engagement with adjacent parts of the main to permit slight movement with respect thereto, due to changes in temperature, and means for connecting certain compartments with the gas-supply and for permitting the discharge therefrom to other compartments so that the temperature from the hot gas delivered to the main shall be so distributed as to prevent the twisting or contortion of the main.

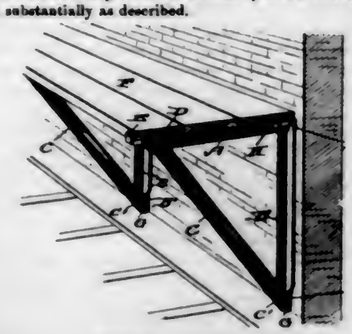
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754,105. **FOLDING BRACKET.** LOUIS W. TUCKER, Seymour, Conn. Filed Nov. 4, 1903. Serial No. 179,836. (No model.)

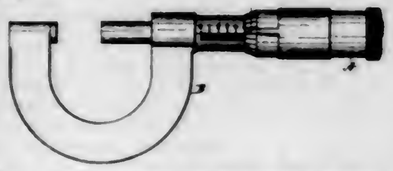
*Claim.*—1. A folding bracket formed of angle-iron and comprising the horizontal arm, the upright arm and oblique arm, the upper end of the oblique arm being pivotally connected to the outer end of the horizontal arm, and the lower end of the oblique arm being pivotally connected to the lower end of the upright arm, the flanges of the oblique arm being pressed together at the lower end and arranged between the flanges of the upright member, the flanges of said upright member being pressed into parallel relation at the lower end, and the rod connected to the rear or inner end of the horizontal arm and adapted to pass through the opening produced in the upright member adjacent the upper end, as set forth.

2. A folding bracket formed of angle-iron comprising the horizontal arm, the upright arm and oblique arm, the outer end of the

horizontal arm being turned upwardly, the inner end of said arm having a rearwardly-projecting rod attached thereto, the rear end of said rod being threaded, the upper end of the oblique arm being pivotally connected to the horizontal arm adjacent the outer end, the lower end of the oblique arm having the flanges pressed together and pivotally connected to the lower end of the upright arm, the flanges of the upright arm being pressed into parallel relation at the lower end and between which the lower end of the oblique arm is pivoted, and a nut adapted to be screwed upon the threaded end of the rod, substantially as described.



754,106. MICROMETER-CALIPER ATTACHMENT. WILLIAM D TURNER, Providence, R. I. Filed June 9, 1902. Serial No. 110,833. (No model.)



*Claim.*—1. The combination with the graduated sleeve of a micrometer-caliper, of a ring or band revolubly mounted upon said sleeve and provided with an index or indicator adapted to distinguish any selected graduation on said sleeve from the other graduations thereon.

2. The combination with the graduated sleeve of a micrometer-caliper, of an index or indicator adjustably mounted on said sleeve and adapted to distinguish any selected graduation thereon from the other graduations.

3. The combination with the graduated sleeve of a micrometer-caliper, of a ring or band revolubly mounted upon said sleeve and provided with an index or indicator adapted to distinguish any selected graduation on said sleeve from the other graduations thereon, and means for locking said ring or band against movement on said sleeve.

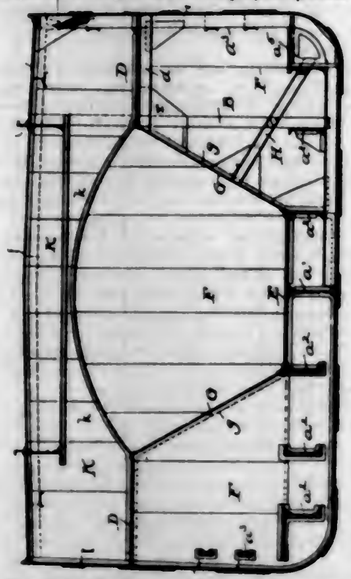
4. The combination with the graduated sleeve of a micrometer-caliper, of an index or indicator adjustably mounted on said sleeve and adapted to extend longitudinally of the sleeve and to distinguish any selected graduation thereon from the other graduations, said index or indicator having a definite width corresponding to the limit of permissible variation in the thickness between duplicate parts measured by the caliper.

754,107. SHIP CONSTRUCTION. AUGUSTUS B. WOLVIN, Duluth, Minn. Filed Aug. 15, 1903. Serial No. 169,616. (No model.)

*Claim.*—1. A steel ship having an unobstructed trough-shaped cargo-hold, which is located midway between the sides of the ship, and which has a floor which does not extend as close to the sides as do the hatchways, and which has outwardly-flaring side walls extending from the floor to the main-deck, substantially as and for the purpose specified.

2. A steel ship having a plurality of keelsons, a floor laid thereon, a shelf-like main-deck extending inward from the sides of the ship, and longitudinally-extended partitions which are inclined outwardly from the floor to the edges of said main-deck, substantially as and for the purpose specified.

3. In a ship construction, the combination with a hull, of side frames, and a plurality of keelsons, vertical stanchions, main-deck beams secured to said stanchions and side frames, a floor secured upon the keelsons and longitudinally-extended partitions which are outwardly inclined from the floor to the inner edges of said main-deck, and are located wholly between the stanchions and the center of the ship, substantially as and for the purpose specified.



4. A steel ship having an unobstructed trough-shaped cargo-hold which is located midway between the sides of the ship and is provided with outwardly-flaring side walls which extend upward from the floor, brace-bars secured to the outer sides of said side walls, and inclined outwardly-extended struts secured to said bars and to the hull, substantially as and for the purpose specified.

5. In ship construction, the combination of a hull having interior side frames, and a plurality of keelsons, vertical stanchions supported upon said keelsons, main-deck beams secured to said stanchions and frames, and deck-plates secured upon said beams, with the floor secured upon said keelsons, and outwardly-inclined partitions extending from the floor to the main-deck, substantially as and for the purpose specified.

6. In ship construction, the combination of a hull having interior frame members, and a plurality of keelsons, vertical stanchions, main-deck beams secured to said frames and stanchions, deck-plates upon said beams, and bulkheads secured at intervals to said frames and extending across the ship, with a floor secured upon said keelsons, and outwardly-inclined partitions extending from the floor up to the main-deck and extending longitudinally from one bulkhead to another whereby there is formed in the center of the ship an unobstructed trough-like cargo-hold extending from one bulkhead to another and containing no supports or obstructions to interfere with the work of unloading mechanism therein, and whereby there is formed outside of said hold water-ballast compartments, substantially as and for the purpose specified.

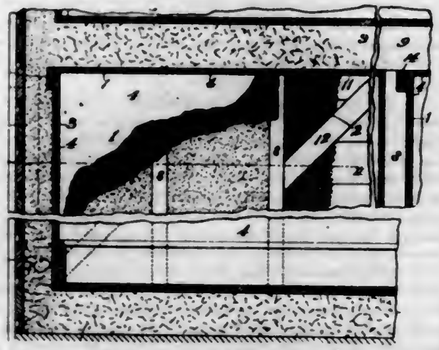
754,108. GAS-FIXTURE. JOHN WUNDER, Jr., New York, N. Y. Filed June 3, 1901. Serial No. 62,831. (No model.)



*Claim.*—In a gas-fixture, the combination of means for controlling the flow of gas, comprising in its structure a key having a prismatic aperture therein and adapted to have a movement of rotation, a plurality of fixed stops on the gasway limiting the movement of rotation of the key, the said fixed stops being of such character as to limit the rotation of the key irrespective of the vertical position of the key, a pin carried by the key, a series of recesses in the gasway in which the pin is adapted to engage, a stem 3 upon which the said key is carried and adapted to slide freely longitudinally thereon and a spiral spring interposed between the stem and the key located within the said key and carried upon a reduced end of the stem and a shoulder within the key upon which said spring is adapted to bear.



754,109. FIREPROOFING AND INSULATING STRUCTURE. OSWALD F. ZAHN, Los Angeles, Cal. Filed Apr. 22, 1903. Serial No. 153,749. (No model.)



*Claim.*—A wall comprising studding, lath and plaster on one side of the studding, a retainer on the other side of the studding, and a filling of infusorial or diatomaceous earth.

754,110. CIGAR-BAND. CHARLES F. SENKER, New York, N. Y. Filed Oct. 19, 1903. Serial No. 177,396. (No model.)

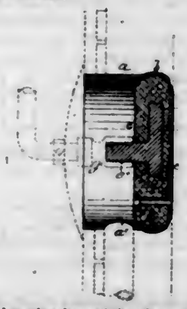


*Claim.*—1. A frusto-conical sleeve band for the end of a cigar comprising a flexible band made of two strips and means for retaining the same in the form of a frustum of a cone.

2. A band for the conical end of a cigar comprising a flexible strip longitudinally slotted and means for securing the free ends of the same together to overlap at one edge more than at the other to retain them in the form of a frustum of a cone.

3. A band for the conical end of a cigar comprising two longitudinal and two transverse terminal strips, and means for joining together the transverse strips to encircle the cigar and retain the band in the form of a frusto-conical sleeve.

754,111. JUNCTION-BOX FOR ELECTRIC WIRES IN BUILDINGS. BOYD W. ALLEN, Boston, Mass. Filed Dec. 12, 1903. Serial No. 184,907. (No model.)



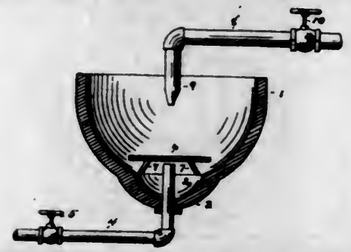
*Claim.*—1. A junction-box of the character described, comprising a side wall; a rear wall of insulating material; and a nipple for attaching the bracket or fixture, the main or holding portion of said nipple being embedded in said rear wall without reaching the rear surface thereof, and the attaching portion of the nipple extending forward in position for connection with the bracket or fixture.

2. A junction-box of the character described, comprising a rear wall of insulating material; a nipple for attaching the bracket or fixture, said nipple being entirely embedded in the rear wall with the exception of the portion which connects directly with the bracket or fixture, said portion extending through the insulation into engagement with the bracket or fixture; and a side wall embracing and holding in position by its shape the rear wall of insulating material.

3. In a junction-box of the character described, the rear wall *c* made of insulating material, and whose peripheral edge is curved in cross-section; the metallic main portion or case *a* provided with the concavo-convex extension *b* holding said wall in engagement; and the nipple whose main portion *e* is embedded in and beneath the surface of said wall, and whose forward portion *e'* is extended through said wall for engagement with said bracket or fixture, for the purpose set forth.

4. In a junction-box of the character described, the rear wall *c* made of insulating material; the nipple comprising the main portion *e*, radial extensions *e'*, and the forwardly-projecting portion *e''* adapted to engage the bracket or fixture, said portions *e* and *e'* being embedded in and below the surface of the rear wall; and the metallic side wall *a* in engagement with and holding said rear wall, for the purpose set forth.

754,112. HYDROCARBON-BURNER. GEORGE W. ARPER, Oakland, Cal. Filed Dec. 9, 1902. Serial No. 134,482. (No model.)



*Claim.*—1. A hydrocarbon-burner comprising a fire-pot, a centrally-arranged oil-supply pipe communicating with the interior thereof, a deflector centrally arranged above the oil-feed, and spaced at its sides from the walls of the fire-pot forming an unobstructed passage therearound, whereby an exit is formed for the vapor beyond the respective sides of the deflector, and a steam-pipe extending into the upper portion of the fire-box, the jet therefrom impinging centrally on the deflector under pressure and passing beyond the sides thereof to commingle with the oil.

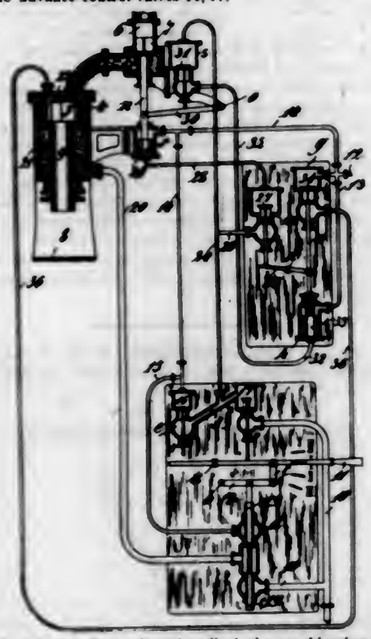
2. A hydrocarbon-burner comprising a fire-pot, a deflector centrally arranged therein and spaced from the surrounding walls thereof, an oil-supply pipe communicating with the interior of the fire-pot at a point adjacent the under surface of the deflector intermediate its sides, and a steam-inlet pipe extending within the fire-pot at a point adjacent the upper surface of the deflector, the jet therefrom impinging on the deflector, and the deflector having an uninterrupted upper and lower surface, so as to afford no obstruction to the direct passage of the oil and steam beyond the edges thereof to become commingled.

3. A hydrocarbon-burner comprising a fire-pot, an oil-supply pipe passing through the bottom and communicating with the interior thereof, a deflector arranged within the fire-pot and spaced from said oil-supply pipe and the surrounding wall of the burner by suitable leg-supports, and a steam-inlet pipe passing through the upper portion of the fire-pot to a point directly above said deflector, whereby the jet therefrom impinges on the deflector, said deflector being unobstructed at its sides, whereby the oil and steam may commingle beyond the opposite sides thereof.

754,118. HYDRAULIC APPARATUS. WILAND ASTFALCK, Tegel, near Berlin, Germany. Filed June 20, 1902. Serial No. 112,549. (No model.)

*Claim.*—1. In a device of the class described, the combination with a pressure-cylinder, a piston 5, a low-pressure supply, a high-pressure supply, and a controlling-lever 11; of a return control formed by a controlling device 19 initiating the upward and downward

movement of the pressure-piston 5 and connected with the controlling-lever 11, an advance control formed by two controlling-valves 16, 17, directly operated by the controlling-lever, a high-pressure control formed by the controlling-valve 27, piston 33, valve 34 and lever 35, and a low-pressure control formed by controlling-valve 7, and its piston, the valve 31 and means connecting said valves for cooperation, the two latter acting in the required time and order, according to the upward or downward movement of the pressure-piston by the advance-control valves 16, 17.



2. In a device of the class described, the combination with a pressure-cylinder, a piston 5, a low-pressure supply, a high-pressure supply, and a controlling-lever 11; of a return control formed by a controlling device 19 initiating the upward and downward movement of the pressure-piston 5, and connected with the controlling-lever 11, an advance control formed by two controlling-valves 16, 17, directly operated by the controlling-lever, a high-pressure control formed by the controlling-valve 27, piston 33, valve 34, and lever 35, a low-pressure control formed by controlling-valve 7, and its piston, and the valve 31, said controlling-valves 7 and 31 being arranged side by side and connected to each other by a rocking lever so that said controlling-valve 31 is positively moved by the controlling-valve 7, and the valve 31 and rocking lever acting in the required time and order, according to the upward or downward movement of the pressure-piston by the advance-control valves 16, 17.

3. In a device of the class described, the combination with a pressure-cylinder and a piston, of a high-pressure supply leading to both sides of the cylinder, a low-pressure supply leading to one side of the cylinder only, a controlling device for controlling the low-pressure supply, controlling devices for controlling the high-pressure supply to both sides of the cylinder, connections between the high-pressure-controlling devices and the low-pressure-controlling device, and a single lever and connections between the same and the controlling devices, said controlling devices and connections comprising provision by virtue of which the low-pressure-controlling device closes before the high-pressure-controlling devices open and vice versa.

4 In a device of the class described, the combination with a pressure-cylinder and a piston, of a high-pressure supply leading to both sides of the cylinder, a low-pressure supply leading to one side of the cylinder only, a controlling device for controlling the low-pressure supply, controlling devices for controlling the high-pressure supply, both the controlling means operated by the high-pressure supply, connections between the low-pressure-controlling means and the high-pressure-controlling means, permitting the operation of the high-pressure-controlling means, after the low-pressure-controlling means for movement of the piston in one direction and vice versa, for movement of piston in the other direction.

5. In a device of the class described, the combination with a pressure-cylinder, and a piston; of a high-pressure supply having a branch leading to the upper part of the pressure-cylinder, and a branch leading to the lower part of said cylinder; a low-pressure supply leading to the upper part of the cylinder; a fluid-operated controlling means for controlling the low-pressure supply; fluid-operated controlling means for controlling the high-pressure supply leading to the upper part of the cylinder; connections from the high-pressure supply to the low-pressure-controlling device to open it, and to the high-pressure-controlling device to close it; controlling means 16, 19 in the high-pressure supply which leads to the lower part of the pressure-cylinder and to the low-pressure-controlling device; supply-pipes from the controlling means 16 and the low-pressure-controlling means to the high-pressure-controlling means of the branch which leads to the upper part of the pressure-cylinder to connect the low-pressure-controlling device and the high-pressure-controlling device, said connections permitting the high-pressure-controlling device to open only after the low-pressure-controlling device is closed or the low-pressure-controlling device to open only after the high-pressure-controlling device is closed.

6. In a device of the class described, the combination with a pressure-cylinder and a piston; of a high-pressure supply having a branch leading to the upper part of the pressure-cylinder, and a branch leading to the lower part of said cylinder; a low-pressure supply leading to the upper part of the cylinder; a fluid-operated controlling means for controlling the low-pressure supply; fluid-operated controlling means for controlling the high-pressure supply leading to the upper part of the cylinder; connections from the high-pressure supply to the low-pressure-controlling device to open it, and to the high-pressure-controlling device to close it; controlling means 16, 19, in the high-pressure supply which leads to the lower part of the pressure-cylinder and to the low-pressure-controlling device; supply-pipes from the controlling means 16 and the low-pressure-controlling means to the high-pressure-controlling means of the branch which leads to the upper part of the pressure-cylinder, to connect the low-pressure-controlling device and the high-pressure-controlling device said connections permitting the high-pressure-controlling device to open only after the low-pressure-controlling device is closed or the low-pressure-controlling device to open only after the high-pressure-controlling device is closed; and a means permitting the fluid to flow from the controlling-means supply.

7. In a device of the class described, the combination, with a pressure-cylinder, and a piston, of a high-pressure supply having a branch leading to the upper part of the pressure-cylinder, and a branch leading to the lower part of said cylinder; a low-pressure supply leading to the upper part of the cylinder; fluid-operated controlling means for controlling the low-pressure supply; fluid-operated controlling means for controlling the high-pressure supply leading to the upper part of the cylinder; connections from the high-pressure supply to the low-pressure-controlling device to open it, and to the high-pressure-controlling device to close it; controlling means 16, 19 in the high-pressure supply which leads to the lower part of the pressure-cylinder and to the low-pressure-controlling device; supply-pipes from the controlling means 16 and the low-pressure-controlling means to the high-pressure-controlling means of the branch which leads to the upper part of the pressure-cylinder, to connect the low-pressure-controlling device and the high-pressure-controlling device, said connections permitting the high-pressure-controlling device to open only after the low-pressure-controlling device is closed or the low-pressure-controlling device to open only after the high-pressure-controlling device is closed; a means permitting the fluid to flow from the controlling-means supply, and a single lever shiftable to various positions operating, in predetermined order, the high-pressure-controlling device that controls the supply to the low end of the pressure-cylinder, the controlling device 16, and the means which permits the fluid in the controlling-means supply to flow out.

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**754,114. PROCESS OF PREPARING ELECTRODES. GEORGE J ATKINS, Tottenham, England. Filed Oct. 6, 1903. Serial No. 175,983. (No specimens.)**

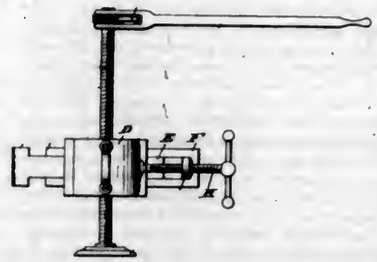
*Claim.*—1. For preventing the disintegration of carbon or other analogous electrodes of electrolytic or the like apparatus, the process which consists in saturating the material of such electrode with an oxidizable oil impermeable to the electrolyte, substantially as described.

2. For preventing the disintegration of carbon or other analogous electrodes of electrolytic or the like apparatus, the process which consists in saturating the material of such electrode with an oxidizable oil impermeable to the electrolyte, and which has been previously mixed with finely-divided carbon, substantially as described.



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**754,115. SHIP-BUILDER'S CLAMP. NEWTON C. BAILEY, Tampa, Fla. Filed Apr. 4, 1903. Serial No. 151,163. (No model.)**

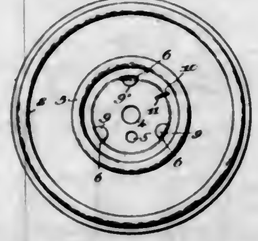


*Claim.*—1. In a clamp, a block having a screw-threaded bore, a jaw rigidly mounted on said block, a jaw slidably mounted on the block, an ear on said jaw, a screw-rod mounted in a screw-threaded bore in said ear and journaled in the block, and a screw-plunger intermembering with the screw-threaded bore in the block, having a plunger-head on one end and an actuating means on the other end, substantially as shown and described.

2. In a clamp, a block, a jaw rigidly mounted thereon, a jaw slidably mounted on the block, an ear on said jaw, a screw-rod mounted in a screw-threaded bore in said ear and journaled in the block, a screw-plunger mounted in a screw-threaded bore in the block, a lever loosely mounted on said plunger, a ratchet-wheel keyed on said plunger, and pawls mounted on said lever to intermember with said ratchet-wheel, substantially as shown and described.

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**754,116. RIBBON-SPOOL. JOHN A. BEDWORTH, Boston, Mass., assignor to F. S. Webster Company, Boston, Mass., a Corporation of Maine. Filed Dec. 10, 1903. Serial No. 184,513. (No model.)**



*Claim.*—1. A ribbon-spool comprising two heads, and a tubular connecting-hub, the separated ends of the hub being overlapped and the inner end thereof having ribbon-holding teeth extended beneath the other, overlapping end.

2. A ribbon-spool comprising two apertured heads, and an interposed tubular hub having ears adapted to be passed through the apertures and upset to connect the heads and hub, the unconnected ends of the latter being overlapped and the inner end having ribbon-holding teeth extended beneath the overlapped end.

3. A ribbon-spool comprising two axially-apertured, disk-like heads, an interposed hub consisting of a metal strip bent into tubular form with its ends overlapped, means to connect the sides of the strip and the heads, and teeth on the inner end of said strip extended beneath the overlapping outer end of the strip, to engage and hold the end of a ribbon.

4. A ribbon-spool comprising two heads and a tubular hub interposed between and connecting them, said hub consisting of a metal strip having loosely-overlapped ends, means to rigidly connect the outer end with the heads, and teeth on the inner end of the hub, extending beneath the overlapping end, to engage and hold the end of a ribbon.

5. A ribbon-spool comprising two sheet-metal, apertured heads, a hub connected therewith and consisting of a metal strip having its ends overlapped and provided on its sides with ears to pass through the apertures in the heads and be upset, the inner end of the strip having ribbon-holding teeth or prongs extended inward beneath the outer or overlying end of the strip.

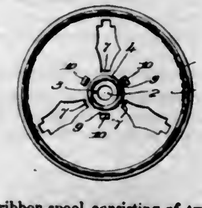
6. A ribbon-spool comprising two like sheet-metal heads each having an axial hole and a plurality of circularly-arranged apertures, an interposed hub consisting of a metallic strip toothed at one end and having ears on its sides, said strip being bent into tubular form with its toothed end overlapped by the other end, the ears passing through the apertures in the head and being upset, to connect the heads and hub, and means to rigidly hold the non-toothed end of the strip from movement relative to the heads.

7. A ribbon-spool comprising two disk-like heads each having an axial hole, and a connecting-hub consisting of a metallic strip bent into tubular form and having its ends overlapped, the inner end of the strip having ribbon-holding teeth, means to rigidly connect the heads and the overlaping end of the strip, and means to permit limited separation of the toothed end from said rigidly-connected end of the hub-strip.

8. A ribbon-spool comprising two like sheet-metal heads each having an axial hole, a hub interposed between and connecting said heads, the hub consisting of a resilient metal strip bent into tubular form with its ends overlapped and separated from each other, means to rigidly hold the outer end from radial movement, ribbon-holding teeth on the inner end, and means to permit limited radial movement of said toothed end, whereby the end of a ribbon may be inserted between the overlapped ends and caught upon the teeth.

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**754,117. RIBBON-SPOOL FOR TYPE-WRITING MACHINES. JOHN A. BEDWORTH, Boston, Mass., assignor to F. S. Webster Company, Boston, Mass., a Corporation of Maine. Filed Dec. 10, 1903. Serial No. 184,514. (No model.)**



*Claim.*—1. A ribbon-spool consisting of two like heads each having a plurality of integral hub-sections, and means to attach the hub-sections of one head directly and permanently to the other head, and vice versa.

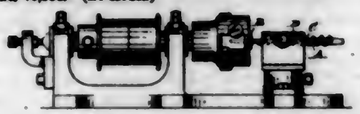
2. A ribbon-spool consisting of two like heads each having a plurality of integral hub-sections, bent at right angles thereto and each having a tongue at its free end, and a slot in the head between each two hub-sections thereof, the tongues of the sections on one head being extended through the slots in the other head and upset, and vice versa, to connect the heads and form a hub between them.

3. A ribbon-spool consisting of two disk-like sheet-metal heads each having a plurality of integral hub-sections bent at right angles thereto and terminating each in a tongue, each section being curved transversely and having a prong on one edge, the heads having a corresponding number of slots alternating with the sections and circularly arranged, the tongues of the sections integral with each head being extended through the slots of the other head, and upset to connect the heads, the prong on each section being interned under the next adjacent section, to engage and hold the end of a ribbon to be wound upon the hub.

4. A ribbon-spool consisting of two disk-like sheet-metal heads each having a plurality of integral hub-sections, stamped out of the head and bent at right angles thereto, each section having an interned prong on one edge and terminating at its free end in a narrow tongue, each head having a central opening and slots alternating with the sections, the slots and bases of the sections being circularly arranged concentric with the central opening, the tongues of the hub-sections on each head passing through the slots in the other head and being upset, to rigidly connect the heads, the several interned prongs of the hub-sections serving as ribbon-holding devices.

5. A ribbon-spool consisting of two disk-like sheet-metal heads each having a plurality of hub-sections integrally connected therewith by narrow necks and bent thereat at right angles to the head, each section terminating in a tongue, each head having a series of circularly-arranged slots alternating with the necks of the sections, to receive the tongues of the sections on the other head, the sections of the two heads alternating with each other to form a hub between the heads.

**754,118. COILER FOR WIRE-WEAVING MACHINES.** WALTER BELL, South Melbourne, Victoria, Australia. Filed Oct. 22, 1901. Serial No. 79,536. (No model.)



*Claim.*—1. In a self-feeding wire-coiling machine, a coiling device comprising a revoluble cylindrical mandrel of gradually-increasing diameter from its feed toward its delivery end and a stationary forming-coil, the convolutions of which have rounded edges, said coil fitting said mandrel snugly and having sufficient space between its convolutions to admit of the passage of a plurality of wires side by side, substantially as set forth.

2. In a wire-coiling machine, a coiling device, comprising a mandrel and a forming-coil thereon of a metal softer than the mandrel, for the purpose set forth.

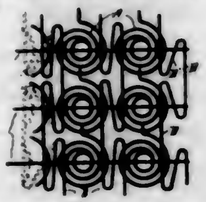
3. In a wire-coiling machine, a coiling device comprising a mandrel and a forming-coil thereon coated with a metal softer than the mandrel, for the purpose set forth.

**754,119. PLASTIC FENCE-POST.** JOHN C. BROOKS, Charleston, Ill. Filed Oct. 12, 1903. Serial No. 176,747. (No model.)



*Claim.*—A plastic fence-post provided with transverse tubes for the tie-wires, each tube having end flanges and lateral wings, whereby the tubes are prevented from endwise displacement substantially as described.

**754,120. SPRING BED-BOTTOM.** CHARLES D. BROUILLETTE, Chicago, Ill., assignor of one-half to Francis Karr, Holland, Mich. Filed Aug. 26, 1902. Serial No. 121,008. (No model.)



*Claim.*—In combination with a spiral-spring bed-bottom, longitudinal tie-rods, offsets to engage alternate springs in adjacent parallel rows, said longitudinal tie-rods supported above the upper coils of the springs and provided with depressions to engage and interweave with the lateral tie-rods below the upper coils of the springs, substantially as and for the purpose set forth.

**754,121. MEANS FOR CYLINDER LUBRICATION OF INTERNAL-COMBUSTION ENGINES.** ALANSON P. BRUSH, Detroit, Mich. Filed Nov. 30, 1903. Serial No. 183,116. (No model.)



*Claim.*—1. In an internal-combustion engine, a cylinder and a piston provided with a peripheral groove, the piston provided with a channel on its lower side communicating with the combustion-chamber of the cylinder at the bottom of the cylinder and with said peripheral groove, the opposite side of the piston constructed with a groove for distributing the oil from the peripheral groove over the upper surface of the cylinder.

2. In an internal-combustion engine a cylinder and piston provided with packing-rings and with corresponding junk-rings, and with a peripheral groove, one side of the piston constructed with channels communicable with the peripheral groove and with the combustion-chamber at the bottom of the cylinder, the opposite side of the piston constructed to distribute the oil from the peripheral groove on the upper surface of the piston.

3. In an internal-combustion engine a cylinder, a piston provided with packing-rings and corresponding junk-rings and with a peripheral groove between two adjacent packing-rings, the junk-rings and packing-rings on the one side of the cylinder constructed with channels on the end adjacent to the combustion-chamber of the cylinder communicating with said chamber and with the peripheral groove, and the packing-ring and junk-ring on the opposite side of the peripheral groove provided with channels for distributing the oil over the upper surface of the piston.

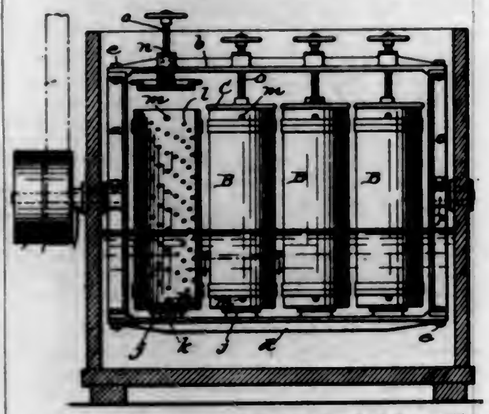
4. In an internal-combustion engine a cylinder, a piston provided with packing-rings and corresponding junk-rings and with a peripheral groove between two adjacent packing-rings, the junk-rings and packing-rings on the one side of the cylinder constructed with channels on the end adjacent to the combustion-chamber of the cylinder communicating with said chamber and with the peripheral groove, and the packing-ring and junk-ring on the opposite side of the peripheral groove provided with channels for distributing the oil over the upper surface of the piston, the channels of the junk-rings made wider than the channels of the packing-rings.

5. In an internal-combustion engine provided with a cylinder a compression-chamber, a piston of an oil-passage communicable at its lower end with the compression-chamber the opposite end of the oil-passage leading to a working part of the engine outside of the combustion-chamber, the piston provided with a passage the lower end of which opens into the compression-chamber and the upper end opening on a tube of the piston on the side of the packing-rings away from the combustion-chamber.

6. A piston provided with junk-rings and with an oil-channel around one of the junk-rings, the lower side communicating with the compression-chamber at the bottom thereof and the upper side communicating with the top of the piston on the side of the packing-rings away from the combustion-chamber.

7. In an internal-combustion engine a cylinder provided with a combustion-chamber, a piston, and means whereby oil may be distributed from the bottom of the combustion-chamber to other parts of the engine by the explosive pressure in said chamber.

**754,122. TUMBLING-MACHINE.** JAMES P. BUCKLIN, Providence, R. I. Filed June 30, 1903. Serial No. 163,717. (No model.)



*Claim.*—1. In a machine of the class described, the combination with a tank of a frame revolubly mounted in the tank, and a removable holder mounted in the frame.

2. In a machine of the class described, the combination with a tank of a frame revolubly mounted in the tank, and holders mounted in the frame.

3. In a machine of the class described, the combination with a tank of a frame revolubly mounted in the tank, a removable holder mounted in the frame and means for retaining the holder against lateral rotation.

4. In a machine of the class described, the combination with a tank of a frame revolubly mounted in the tank, a holder mounted in the frame and openings in the holder for the admission of liquids.

5. In a machine of the class described, the combination with a frame of means for revolving the frame, holders mounted in the frame, and means within the holders for segregating their contents.

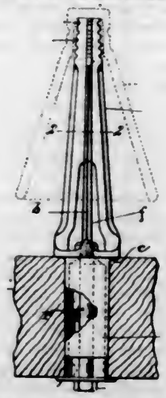


6. In a machine of the class described, the combination with a frame of means for revolving the frame, a holder mounted in the frame at right angles to the axis of said frame, and projections upon the interior of the holder.

7. In a machine of the class described, the combination with a frame of means for revolving the frame, holders mounted in the frame, and diagonally-disposed projections upon the interior of the holders.

8. In a machine of the class described, the combination of a frame of means for revolving the frame, holders mounted upon the bottom of the frame, screws traversing the top of the frame, and holder-covers engaging the screws.

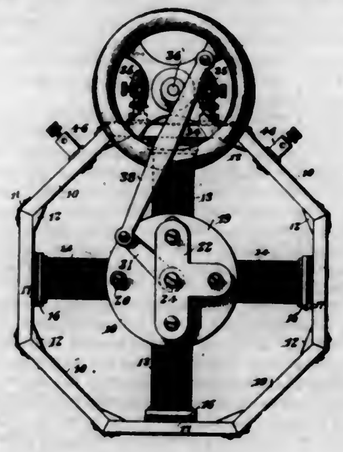
**754,128. INSULATOR-PIN.** JAMES H. BULLARD, Springfield, Mass. Filed Oct. 26, 1903. Serial No. 178,507. (No model.)



*Claim.*—1. A metal insulator-pin comprising a series of webs disposed at an angle one to the other and united along their meeting lines, arranged at or near the upper end thereof to constitute channels through which a plastic material may be poured; together with a stem-piece into which the lower ends of said webs merge, and a bolt located longitudinally of said stem-piece to secure the pin to its support.

2. A metal insulator-pin comprising a series of webs disposed at an angle one to the other and united along their meeting lines, arranged at or near the upper end thereof to constitute channels through which a plastic material may be poured, a base into which the lower ends of said webs merge, said base being perforated to receive a bolt; and a bolt in said perforated base to secure the pin to a cross-bar.

**754,124. ELECTRIC MOTOR.** DAVID P. BURDOS, Jacksonville, Fla., assignor of two-thirds to Samuel P. Holmes and Gustave Muller, Jacksonville, Fla. Filed July 13, 1903. Serial No. 165,375. (No model.)



*Claim.*—1. In an oscillatory motor, the combination with a rock-shaft, of an armature-magnet carried by the rock-shaft, field-electromagnets alternately coacting with the armature-magnet for moving the same, a switch having electrical connections with the electromagnets and including a rotary member, and an eccentric connection between the rock-shaft and rotary member of the switch.

2. In an oscillatory motor, the combination with a rock-shaft, of an armature-magnet carried by the rock-shaft, field-electromagnets disposed radially with respect to the rock-shaft and alternately coacting with the armature-magnet for moving the same, a switch having electric connections with the electromagnets and including a rotary member, and an eccentric connection between the rock-shaft and rotary member of the switch.

3. In an oscillatory motor, the combination with a rock-shaft, of armature-magnets carried by the rock-shaft and projecting on opposite sides of the same, independent sets of electrically-connected field-magnets located radially about the shaft and alternately coacting with the armature-magnets, a switch having electrical connections with both sets of magnets and including a rotary member, and a crank-and-pitman connection between the rock-shaft and rotary member of the switch.

4. In an oscillatory motor, the combination with a rock-shaft, of armature-magnets carried by the rock-shaft and projecting on opposite sides thereof, independent sets of electrically-connected field-magnets located radially about the shaft and having their inner ends alternately coacting with the armature-magnets, a separate source of electrical energy for each set of magnets, and a common switch for alternately connecting and disconnecting said sources with their respective sets of magnets.

5. In an oscillatory motor, the combination with a rock-shaft, of armature-magnets carried by the rock-shaft and projecting on opposite sides thereof, independent sets of electrically-connected field-magnets located radially about the shaft and having their inner ends alternately coacting with the armature-magnets, a separate source of electrical energy for each set of magnets, and a common switch for alternately connecting and disconnecting said sources with their respective sets of magnets, said switch including a rotary member driven from the rock-shaft.

6. In an oscillatory motor, the combination with a rock-shaft, of an armature-magnet carried thereby, a field-magnet coacting with the armature-magnet, one of said magnets being an electromagnet, a rotary shaft, a crank-arm attached to the rock-shaft, a pitman connection between the crank-arm and the rotary shaft, and a switch having electrical connection with the electromagnet, said switch including a rotary member mounted on the rotary shaft.

7. In an oscillatory motor, the combination with a rock-shaft, of an armature-magnet carried thereby, a field-magnet coacting with the armature-magnet, one of said magnets being an electromagnet, a rotary shaft, a fly-wheel attached to the rotary shaft, a crank-arm fastened to the rock-shaft, a pitman connecting the crank-arm and fly-wheel, and a switch having electrical connection with the electromagnet.

8. In an oscillatory motor, the combination with a rock-shaft, of oppositely-extending armature-magnets carried thereby, field-electromagnets surrounding the shaft and disposed radially with respect thereto, a rotary shaft, a fly-wheel attached to the rotary shaft, a crank-arm fastened to the rock-shaft, a pitman connection between the crank-arm and fly-wheel, and a switch having electrical connections with the field-magnet, said switch comprising a drum attached to the rotary shaft and brushes bearing against the same.

9. In an oscillatory motor, the combination with a frame, of inwardly-extending field-magnets carried by the frame, a rock-shaft located between the inner ends of the field-magnets, an oscillatory magnet carried by the rock-shaft and coacting with said inner ends, and a switch having electrical connections with the field-magnets and including a movable member actuated from the rock-shaft.

10. In an oscillatory motor, the combination with a frame, of inwardly-extending radially-disposed sets of field-magnets carried by the frame and having their inner ends spaced apart, a rock-shaft located between said inner ends, armature-magnets carried by the rock-shaft and coacting with the inner ends, and a switch having electrical connections with the field-magnets and including a rotary member driven from the rock-shaft.

11. In an oscillatory motor, the combination with a frame, of inwardly-extending field-magnets secured at their outer ends to the frame, an oscillatory armature arranged between the inner ends of the field-magnets, a rotary shaft journaled upon the frame, an eccentric connection between the armature and the rotary shaft, and a switch having electrical connection with the field-magnets and including a rotary member mounted on the rotary shaft.

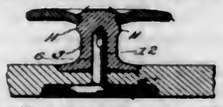
12. In an oscillatory motor, the combination with a frame, of inwardly-extending field-magnets secured at their outer ends to the frame and having their inner ends spaced apart, journal-brackets secured to said inner ends, a rock-shaft journaled in the brackets and extending between the inner ends of the field-magnets, and armature-magnets carried by the rock-shaft and coacting with said inner ends.

13. In an oscillatory motor, the combination with a tubular frame, of inwardly-extending field-magnets secured at their outer ends to the frame and extending inwardly within the same, said magnets having spaced pole-pieces at their inner ends, journal-brackets fastened to the outer sides of the pole-pieces, a rock-shaft journaled in the brackets and extending between the pole-pieces, armature-magnets carried by the rock-shaft and coacting with the pole-pieces, a switch having electrical connections with the field-magnets and including a rotary member, and connections between the rotary member and the rock-shaft for revolving the former.

14. In an oscillatory motor, the combination with a tubular frame comprising detachably-connected sections, of field-magnets located within the frame and secured at their outer ends to the sections thereof, pole-pieces attached to the inner ends of the magnets, journal-brackets fastened to the outer sides of the pole-pieces, a rock-shaft journaled in the brackets, armature-magnets carried by the rock-shaft and coacting with the pole-pieces, a rotary shaft journaled on the frame, a fly-wheel carried by the rotary shaft, a crank-arm connected to the rock-shaft, a pitman connection between the crank-arm and fly-wheel, a switch having electrical connections with the field-magnets, said switch comprising a drum mounted on the rotary shaft and having a contact-piece, and brushes coacting with the drum and alternately engaging the contact-piece.

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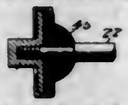
**754,125. METALLIC BUTTON.** GEORGE J. CAPEWELL, Hartford, Conn. Filed Nov. 18, 1901. Serial No. 82,703. (No model.)



*Claim.*—A metallic button having a long cylindrical shank that is solid at one end and has a smooth bore extending but part way of the length of the shank from the other end with an integral flange at the open end of the shank, and solid beads of greater diameter than the diameter of the shank upset at the solid end of the shank, and a large thin head having a perforation that fits the shank between the upset beads at the solid end, substantially as specified.

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**754,126. BOTTLE-CLOSING DEVICE.** FRANCIS R. CARY, Baltimore, Md. Filed Feb. 6, 1902. Serial No. 92,869. (No model.)



*Claim.*—A bottle-closing device which consists of a flanged hemispherical plug of some compressible material, a flanged nut the face of which is in contact with the flat suface of the plug, an annulus which is placed over the hemispherical portion of the said plug with its flange turned over the edge of the nut, combined with a stem which is forced through the compressible plug and screwed into the nut, substantially as specified.

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**754,127. SWITCH FOR OVERHEAD TROLLEY-TRACKS.** WALTER L. CLARK, Everett, Mass., assignor to J. Duncan & Company, Boston, Mass., a Copartnership. Filed Dec. 24, 1903. Serial No. 186,454. (No model.)



*Claim.*—1. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail.

2. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail and having a portion thereof projecting into said cut-out portion of the main rail to serve as a support for the switch-sections in their different positions, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail.

3. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle and a connection between said handle and switch-frame passing up, over and down around the journals of the switch-frame.

4. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail and having a portion thereof projecting into said cut-out portion of the main rail to serve as a support for the switch-sections in their different positions, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle and a connection between said handle and switch-frame passing up, over and down around the journals of the switch-frame.

5. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle and a connection between said handle and the branch switch-section passing up, over and down around the journals of the switch-frame when said switch-section is in operative position.

6. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail and having a portion thereof projecting into said cut-out portion of the main rail to serve as a support for the switch-sections in their different positions, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle and a connection between said handle and the branch switch-section passing up over and down around the journals of the switch-frame when said switch-section is in operative position.

7. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle, a bent lever connecting said handle and the branch switch-section, said lever being fulcrumed on a link pivoted to the switch-bracket.

8. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail and having a portion thereof projecting into said cut-out portion of the main rail to serve as a support for the switch-sections in their different positions, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle, a bent lever connecting said handle and the branch switch-section, said lever being fulcrumed on a link pivoted to the switch-bracket, the pivotal points of the link and the lever being in line when the switch-frame is in position to form a continuous main track.



9. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, a main and a branch switch-section each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch track, a stop on said switch-bracket against which the main switch-section bears to maintain the branch switch-section in position.

10. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, one of said journals being located on the same side of the center of the main rail as the trolley-hanger passes, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail.

11. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail and having a portion thereof projecting into said cut-out portion of the main rail to serve as a support for the switch-sections in their different positions, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, the line of said journals diverging toward the same side of the main rail as the trolley-hanger passes, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail.

12. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle, a bent lever connecting said handle and the branch switch-section, said lever being fulcrumed on a link pivoted to the switch-bracket, the pivotal points of the link and the lever being in line when the switch-frame is in position to form a continuous main track.

13. A switch for trolley-tracks comprising a switch-bracket adapted to be rigidly attached to a main rail opposite a cut-out portion of said rail and having a portion thereof projecting into said cut-out portion of the main rail to serve as a support for the switch-sections in their different positions, two switch-sections each provided with switch-rails and structurally or integrally combined to form a single-piece switch-frame, said switch-frame being journaled horizontally in said switch-bracket, means for operating said switch-frame to bring either of the switch-rails into its proper alined position with the main or branch rail, comprising a handle, a bent lever connecting said handle and the branch switch-section, said lever being fulcrumed on a link pivoted to the switch-bracket, the pivotal points of the link and the lever being in line when the switch-frame is in position to form a continuous main track.

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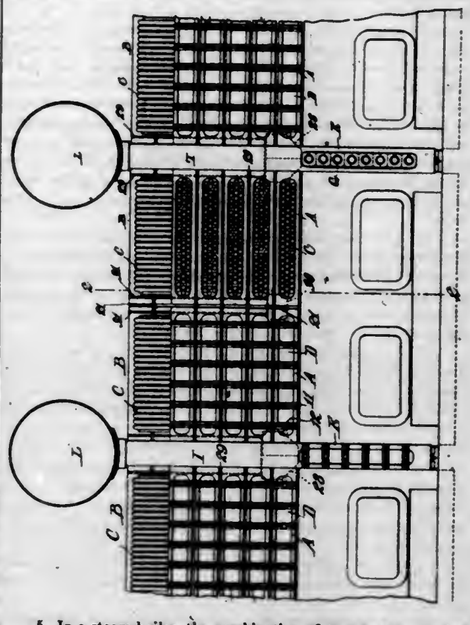
**754,128. STEAM-BOILER.** CHARLES G. CURTIS, New York, N. Y. Filed Mar. 27, 1903. Serial No. 149,837. (No model.)

*Claim.*—1. In a steam-boiler, the combination of water-tubes located transverse to the flow of the products of combustion in the close proximity described, with removable covers, each exposing the ends of a number of the water-tubes, substantially as set forth.

2. In a steam-boiler, the combination of water-tubes located transverse to the flow of the products of combustion in the close proximity described, with removable covers, each exposing the ends of a number of water-tubes, and means for confining the escape of the gases to the small spaces between the tubes, substantially as set forth.

3. In a steam-boiler, the combination of water-tubes located in the close proximity described, with removable covers each exposing the ends of a group of water-tubes, and means for closing the larger spaces or gaps between the groups of water-tubes, substantially as set forth.

4. In a steam-boiler, the combination of two or more sections each composed of two headers connected at their inner walls by water-tubes located transverse to the flow of the products of combustion in the close proximity described, with oblong openings each exposing the ends of a group of tubes occupying a substantial portion of the transverse area of the section, and removable covers for such openings, substantially as set forth.



5. In a steam-boiler, the combination of two or more sections each composed of two headers connected at their inner walls by water-tubes located transverse to the flow of the products of combustion in the close proximity described, with oblong openings each exposing the ends of a group of tubes occupying a substantial portion of the transverse area of the section, and removable covers for such openings seated on the inner side of such openings, substantially as set forth.

6. In a steam-boiler, the combination of two or more sections each composed of two headers connected at their inner walls by water-tubes having the close proximity described, with oblong openings in the outer walls of the headers each exposing a group of tubes occupying a substantial portion of the transverse area of the section, removable covers for such openings, and means for confining the escape of the gases to the small spaces between the tubes, substantially as set forth.

7. In a steam-boiler, the combination of two or more sections each composed of two headers connected at their inner walls by a plurality of rows of small water-tubes located transverse to the flow of the products of combustion in the close proximity described, with oblong openings each exposing the ends of a group of tubes occupying a substantial portion of the transverse area of the section, and removable covers for such openings, substantially as set forth.

8. In a steam-boiler, the combination of two or more water-tube sections each composed of two headers, and water-tubes located transverse to the flow of the products of combustion connecting the inner walls of such headers and having the close proximity described, with a single oblong opening exposing the entire area occupied by the ends of water-tubes, and a single oblong cover for said opening seated on the inner side of the opening, substantially as set forth.

9. In a steam-boiler, the combination of two or more horizontal water-tube sections each composed of two headers and water-tubes having the close proximity described, with means for confining the escape of the gases to the small spaces between the water-tubes, removable covers in the outer walls of the headers for exposing the ends of the water-tubes, upright stand-pipes connected with the steam-drum, and removable connections between the headers and such stand-pipes, substantially as set forth.

10. In a steam-boiler, the combination of two adjoining stacks of horizontal water-tube sections, each section being composed of

two headers connected by water-tubes placed in the close proximity described, with removable covers in the outer walls of the headers for exposing the ends of the water-tubes, stand-pipes supporting the headers at their outer ends and connecting them with the steam-drum, and means for closing the gaps between the water-tubes of the adjoining headers of the two stacks of sections, substantially as set forth.

11. In a steam-boiler, the combination of two or more divisions, each division being provided with two adjoining stacks of horizontal water-tube sections, and each of such sections being composed of two headers and water-tubes connecting their inner walls and located in the close proximity described, stand-pipes between the headers of adjoining divisions supporting such headers and connecting them with the steam-drum, means for closing the gaps between the water-tubes of the adjoining sections in each division of the boiler, and means for closing the gaps between the water-tubes in the adjoining sections of different divisions of the boiler, substantially as set forth.

12. In a steam-boiler, the combination with a horizontal header for a water-tube section, of an upright stand-pipe connecting the header with the steam-drum, a removable joint between the header and the upright, means for securing the header and upright together located within the water-space, and a cover on the header for giving access to the connecting devices, substantially as set forth.

13. In a steam-boiler, the combination with an upright connected with the steam-drum, of two headers for water-tube sections connected in line with each other on opposite sides of the upright, means for simultaneously clamping the two headers to the upright located in the water-space, and removable covers on the headers for giving access to the connecting devices, substantially as set forth.

14. In a steam-boiler, the combination with an upright connected with the steam-drum, of two headers for water-tube sections connected in line with each other on opposite sides of the upright, means for simultaneously clamping the two headers to the upright located in the water-space, removable covers on the headers for giving access to the connecting devices, and braces connecting the walls of the upright adjoining the clamping devices, substantially as set forth.

15. In a steam-boiler, the combination of two or more water-tube sections each composed of two headers connected by water-tubes located transverse to the flow of the products of combustion in the close proximity described, the escape of the products of combustion being confined to the spaces between the water-tubes, with spaces between the headers for permitting the cleaning of the outer surfaces of the tubes, and removable covers on the outer walls of the headers each exposing the ends of a number of the water-tubes, substantially as set forth.

16. In a steam-boiler, the combination of two or more superposed horizontal water-tube sections each composed of two headers, and water-tubes connecting such headers and having the close proximity described, with means for confining the escape of the gases to the small spaces between the water-tubes, spaces between the headers for permitting the cleaning of the outer surfaces of the tubes, and removable covers on the outer walls of the headers, each exposing the ends of a number of the water-tubes, substantially as set forth.

17. In a steam-boiler, the combination of the horizontally arranged water-tube sections, the water-leg partitions separating divisions of the boiler, stand-pipes from said water-leg partitions connecting with the steam-drums, direct connections between opposite sides of such water-leg stand-pipes and the headers of adjoining water-tube sections, and a partition separating the space between the tubes of the water-tube sections connected with the stand-pipes, consisting of a wall of fire-brick filling the space between the tubes of the lowermost water-tube sections and a double metal partition extending from each side of the fire-brick wall to the top of the boiler, substantially as set forth.

18. In a steam-boiler, the combination of horizontally-arranged water-tube sections, stand-pipes to which the headers of said water-tube sections are directly connected in pairs at one end, the other ends of such headers being closed, and partitions between the adjoining closed ends of the headers closing the space between the water-tubes of the adjoining sections, consisting of a wall of fire-brick closing the space between the tubes of the lowermost sections and a double metal wall rising from opposite sides of the fire-brick wall to the top of the boiler, substantially as set forth.

19. In a steam-boiler, the combination with water-leg partitions separating the divisions of the boiler and having stand-pipes connected with the steam-drums, of horizontally-arranged water-tube sections placed one above another, two stacks of such sections being located between each pair of water-leg partitions, the ends of the headers of such sections adjoining the water-leg partitions being directly connected to the water-leg stand-pipes and the other ends of such headers being closed, and partitions filling the spaces between the water-tube sections at the water-leg partitions and between the tubes at the closed ends of the headers, consisting of walls of fire-brick and double metal partitions rising from the outer edges of such fire-brick walls to the top of the boiler, substantially as set forth.

20. In a steam-boiler, the combination with the horizontally-arranged water-tube sections, of the water-leg partitions, the stand-pipes from such partitions to which the headers of the water-tube sections are connected, such stand-pipes being expanded upwardly, and partitions in said stand-pipes, substantially as set forth.

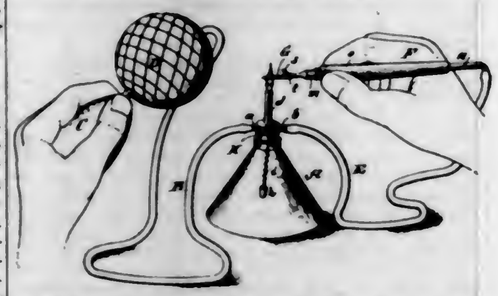
21. In a steam-boiler, the combination with the water-leg partitions and stand-pipes therefrom, of the horizontally-arranged water-tube sections, the headers of the upper water-tube sections being connected directly with such stand-pipes, the headers of the lower sections being connected to only one of such stand-pipes, and a connection from the other headers of such lower sections to the stand-pipe through a pipe or pipes permitting of the expansion of the water-tube sections, substantially as set forth.

22. In a steam-boiler, the combination of a plurality of layers of water-tubes arranged transverse to the flow of the products of combustion, water-chambers at the ends of the tubes, openings in the water-chambers with removable covers each exposing the ends of a number of tubes, spaces between the water-chambers giving access to the spaces between layers of tubes for cleaning the outer surfaces of the tubes, and means for confining the escape of the gases to the small tube-spaces, substantially as set forth.

23. In a steam-boiler, the combination of a plurality of layers of water-tubes arranged transverse to the flow of the products of combustion, each layer of water-tubes being composed of a plurality of groups of such tubes, water-chambers at the ends of the tubes, openings in the water-chambers with removable covers each exposing the ends of one of such groups of tubes, spaces between the chambers giving access to the spaces between layers of tubes for cleaning the outer surfaces of the tubes, and means for closing the gaps between the groups of tubes, substantially as set forth.

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**754,129. PYROGRAPHIC APPARATUS.** ARTHUR S. DUDD, New York, N. Y., assignor, by mesne assignments, to Frederick Tolhurst. Filed June 1, 1903. Serial No. 159,479. (No model.)



*Claim.*—1. In pyrographic apparatus the combination of the air-forcing bulb C, pipe B, the cork or stopper H, having air-supply passage e, vapor-discharge passage *f*, and a hollow or chamber *j* in its lower part, which hollow or chamber connects with both passages e and *f*, the pipe E, and pyrographic instrument F, substantially as and for the purposes described.

2. The combination in a pyrographic apparatus of the stylus G, a tubular support for the same, air-compressing apparatus C, fluid-reservoir A and fume-carrying conduit E, with the deflector *s* placed on the stylus over the aperture w therein, all arranged so that the products of combustion forced through the aperture w will be deflected to carry the smoke generated at the point of the stylus away from the eyes of the operator, as and for the purposes specified.

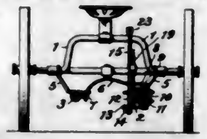
3. In a pyrographic apparatus, the combination of a fluid-reservoir and means for supplying air thereto, a stopper having an air-supply passage and a vapor-discharge passage and also having in its lower part a hollow or chamber open to said reservoir and to the air-supply and vapor-discharge passages, and a pyrographic instrument connected with the vapor-discharge passage.

4. In a pyrographic instrument, a stylus having a channel for supplying vapor thereto and provided with a lateral aperture for the escape of the products of combustion, in combination with a deflector placed upon the stylus and extending over the said aperture to carry the smoke generated at the point of the stylus away from the eyes of the operator.



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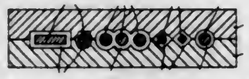
**754,130. CULTIVATOR.** WILLIAM L. EDDY, Star, Tex. Filed Sept. 29, 1903. Serial No. 176,074. (No model.)



*Claim.*—The combination with a cultivator having laterally-movable cultivator-beams, of a bearing-block provided at its inner face with a recess to receive one of the beams, a clip securing the bearing-block to said beam, a segment having a yoke straddling the beam on which the bearing-block is mounted, a vertical crank-shaft having upper and lower arms and mounted on the bearing-block, an arched bar connecting one of the arms with the other beam, a segment provided with teeth and having a depending yoke straddling the beam on which the bearing-block is mounted, an operating-lever fulcrumed on the segment and connected with the other arm of the crank-shaft, and latch mechanism carried by the lever for engaging the segment, substantially as described.

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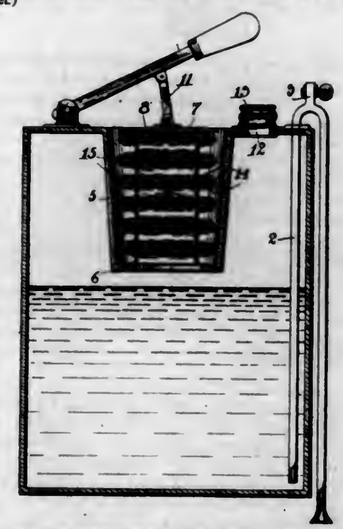
**754,131. CONTRIVANCE FOR MAKING HOLLOW PASTRY OR ROLLS.** CARL FORCKE, Hanover, Germany, assignor to Hermann Bahlsen and Theodor Bahlsen, trading as Hannoversche Cakesfabrik H. Bahlsen, Hanover, Germany, a Firm. Filed Sept. 12, 1902. Serial No. 123,167. (No model.)



*Claim.*—In apparatus for the manufacture of hollow, tubular pastry, the combination with cores *d* of a bipartite mold having troughs *c* formed with elevated edges *g* at their ends adapted to closely surround and guide the cores *d* and to retain the pastry in the mold while the cores are longitudinally withdrawn.

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**754,132. STORAGE TANK OR RECEPTACLE.** WESTON M. FULTON, Knoxville, Tenn. Filed Mar. 4, 1903. Serial No. 146,171. (No model.)



*Claim.*—1. A receptacle for liquids having a depression in its top, a vessel having flexible non-angular corrugated walls located within said depression and communicating with the interior of the receptacle, an inwardly-opening valve for admitting air to the interior of said receptacle, means for collapsing said vessel, a siphon with its short leg within and its long leg without the receptacle and a valve on the siphon's crown.

2. A receptacle for liquids, a siphon with its short leg within and its long leg without said receptacle, a valve in the crown of said siphon, and a collapsible vessel mounted on the top of the receptacle and operating to compress air therein, said collapsible vessel having a rigid end wall and a corrugated flexible side wall composed of substantially parallel horizontal portions united by curved non-angular portions.

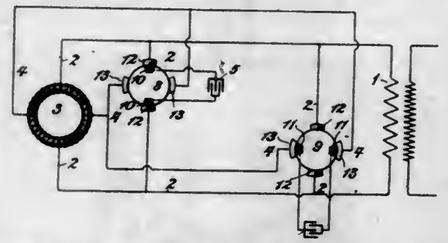
3. The combination of a receptacle for liquids having a depression formed therein, a corrugated collapsible vessel of resilient material located in said depression, a lever fulcrumed on the receptacle and operatively connected with said vessel for collapsing the same, and a discharge-outlet from said receptacle.

4. The combination of a receptacle for liquids, a collapsible vessel connected to said receptacle, a lever fulcrumed to said receptacle and operatively connected to said vessel for collapsing the same, and a discharge-outlet from said receptacle.

5. The combination of a receptacle for liquids having a depression formed therein, a collapsible vessel located within said depression, a lever fulcrumed on the receptacle and operatively connected with said vessel for collapsing the same, and a discharge-outlet from said receptacle.

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**754,133. SYSTEM OF ALTERNATING-CURRENT DISTRIBUTION.** EDWIN R. GILL, New York, N. Y., assignor to Invention Developing Company, a Corporation of New Jersey. Filed Sept. 5, 1900. Serial No. 29,031. (No model.)



*Claim.*—1. As a means for producing auxiliary current-waves out of phase with an original single-phase current in a main circuit, an auxiliary circuit having a self-induction approximately equal to that of said main circuit, a condenser and means for alternately charging said condenser from said main circuit during rise of potential in said circuit, and discharging said condenser into said auxiliary circuit, whereby said main and auxiliary circuits are made to carry periodic currents of different phases and common periodicity.

2. As a means for producing polyphase currents, a source of single-phase alternating current, a main circuit fed thereby, an auxiliary circuit, two condensers and means for charging said condensers alternately with opposite potentials during increase of the respective opposite potentials in said main circuit, and alternately discharging said condensers between charges into said auxiliary circuit, whereby said main and auxiliary circuits are made to carry periodic currents of different phases and common periodicity.

3. As a means for producing polyphase currents, a source of single-phase alternating current, a main circuit fed thereby, an auxiliary circuit, two condensers, a synchronous motor operated by said main circuit, and two commutators operated by said motor, each operating to alternately charge one of said condensers from the main circuit and discharge it into the auxiliary circuit, whereby said main and auxiliary circuits are made to carry periodic currents of different phases and common periodicity.

4. In a means for alternately charging and discharging condensers, a rotary commutator carrying two sets of independent isolated conducting-sections tapering longitudinally, two separate sets of brushes bearing respectively on said segments and means for adjusting the relative longitudinal positions of both said sets of brushes simultaneously, with respect to the said segments.

5. In a means for alternately charging and discharging a condenser, a rotary commutator, a rotary carrier and two pairs of brushes borne on said carrier, said pairs of brushes being located in separate planes and bearing on said commutator; in combination with means for adjusting the relative angular positions of said brushes pair to pair.

6. As a means for producing polyphase currents, a source of single-phase alternating current, a main circuit fed thereby, a synchro-

nous motor in said main circuit, an auxiliary circuit independent of said synchronous motor, a condenser and means for alternately charging said condenser from said main circuit during rise of potential in said circuit and discharging said condenser into said auxiliary circuit, whereby said main and auxiliary circuits are made to carry periodic currents of different phases and common periodicity.

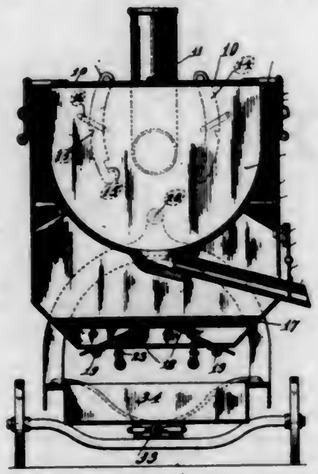
754,134. CIRCULAR SAW. OLE GRANBERG, Blair, Wis. Filed Oct. 21, 1903. Serial No. 177,967. (No model.)



*Claim.*—1. A saw having separate cutting and planing teeth, the latter presenting beveled edges formed on convex curves and being bent laterally about midway between the base and point.

2. A saw having separate cutting and planing teeth, the cutting-teeth being of substantially the same length as the planing-teeth and formed without appreciable spread, the planing-teeth being alternately spread to the left and right and presenting planing edges formed on convex curves, each planing-tooth being bent laterally substantially midway between the base and point and having the effective portion of its edge disposed in a plane parallel to the faces of the saw.

754,135. HEATING-TANK. LOUIS J. GRUBITS, St. Louis, Mo., assignor of one-half to Henry P. Wehrenbrecht, St. Louis, Mo. Filed Sept. 3, 1903. Serial No. 172,287. (No model.)



*Claim.*—1. A heating-tank comprising a frame, a furnace having a kettle therein, trunnions on said furnace bearing in said frame, pivoted pins upon opposite sides of one of said trunnions in position to engage said frame and means on said frame to hold said pins in engagement therewith, substantially as described.

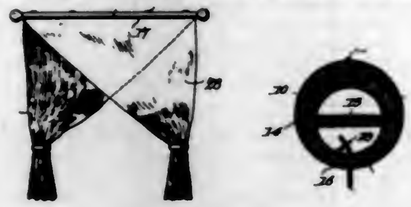
2. A heating-tank comprising a frame, a furnace having a kettle therein, trunnions on said furnace bearing in said frame, pivoted pins on opposite sides of one of said trunnions in position to engage said frame, and links pivoted on said frame to overlap said pins and means for locking said links in position, substantially as described.

3. A heating-tank comprising a frame, a furnace having a kettle therein, trunnions on said furnace bearing in said frame, a pin on one end of said furnace in position to engage said frame when said furnace is in its normal position and a link pivoted on said frame to overlap said pin and means for locking said link in position, substantially as described.

4. A heating-tank comprising a frame, a furnace rotatably mounted therein, a kettle removably mounted on said furnace, damper-plates pivotally mounted in the bottom of said furnace and extending longitudinally thereof, a rock-shaft having an operating-handle and operative connections between said rock-shaft and damper-plates whereby said damper-plates may be adjusted.

754,136. CURTAIN-POLE. ARTHUR R. HARMANY, Marietta, Ohio. Filed Sept. 3, 1903. Serial No. 171,641. (No model.)

*Claim.*—A curtain-pole formed of two semitubular members hinged together along one side, connecting means for holding said pole members yieldably closed, an arm pivoted by one end to one of said pole members, a plate having a longitudinal aperture with a lateral offset near one end, and connected to the other pole member, a catch slidably disposed within said slot and adapted to engage said offset, and a rod connecting said slidable catch and the free end of said arm, whereby said pole members may be distended and locked in their distended position, substantially as specified.



754,137. WRENCH. JULIAN R. HARRISON, Barnwell, S. C. Filed Mar. 13, 1903. Serial No. 147,589. (No model.)



*Claim.*—As a new article of manufacture, a wrench consisting of a shank, a stationary jaw formed upon one end of the shank, a handle secured to the opposite end of the shank, ratchet-teeth formed upon the forward face of the shank, a movable jaw slidably mounted upon the shank, a housing carried by the movable jaw, a circular opening formed through the housing at right angles to the shank, a block fitted within said opening and adapted to slide thereon, a tooth carried by the block and adapted to engage the ratchet-teeth, a plug threaded in the outer end of the opening in the housing, a spring interposed between the plug and the sliding block, the housing provided with concavities upon each side and also with slots formed within the concavities and extending through to the opening formed through the housing, a pin carried by the sliding block and extending through the slots and protruding each side in the concavities, and a pin projecting from each side of the shank at a point near the handle for limiting the movement of the movable jaw, as specified.

754,138. OIL-WELL PACKER. CHARLES M. HESTER, Butler, Pa. Filed May 11, 1903. Serial No. 156,594. (No model.)

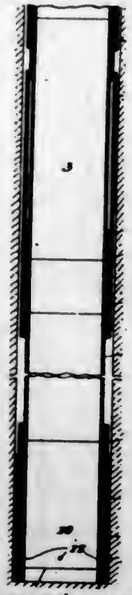
*Claim.*—1. A deep-well casing or tubing, and a packer connected thereto by a frangible joint; substantially as described.

2. A casing or tubing having a packer connected thereto by a frangible joint, and an inner sealing-gasket for the casing; substantially as described.

3. A casing or tubing having a telescopic connection with a packer, the connection being held against movement by a frangible joint arranged to be severed by the weight of the casing; substantially as described.

4. A packer for deep wells having an expansible gasket, an expanding device therefor, and a frangible connection between the packer and the expanding device; substantially as described



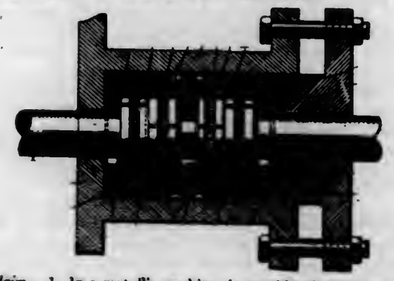


5. A packer having an annular expansible gasket, an expanding-shoe, and a frangible connection forming the sole connection between the shoe and the packer, the shoe being arranged to expand the gasket when the connection is broken; substantially as described.

6. A casing or tubing having a packer secured thereto by a frangible connection, an inner sealing-gasket, and a telescopic connection arranged to engage and compress the inner gasket when the frangible connection is broken; substantially as described.

7. A deep-well packer having a casing, an annular gasket surrounding the casing with its lower end flush with the bottom end of the packer, both resting upon the bottom of a hole, and a shoulder on the casing bearing upon the flat top edge of the gasket, whereby the gasket aids in holding the weight of the casing; substantially as described.

754,139. ROD-PACKING. JOHN HODGE, Chester, Pa., assignor to the Harper Manufacturing Company, a Corporation of Pennsylvania. Filed Mar. 1, 1902. Serial No. 96,248. (No model.)



*Claim.*—1. In a metallic packing, in combination with a stuffing-box, a box situated therein and having an internal groove or annular compartment, a casing fitting between the ends of said groove or compartment and consisting of interfitting members within which the packing-rings are situated.

2. In a metallic packing, a box having an internal groove or compartment, a casing fitting between the ends of said groove or compartment and consisting of interfitting members within which the packing-rings are situated, the combined thickness of the packing-rings and the ends of said casing being approximately equal to the length of said groove or compartment.

3. In a metallic packing in combination with a stuffing-box, a box situated therein and having an annular compartment, and a casing containing packing-rings situated within said compartment, said casing being of less diameter than said compartment to permit lateral movement of the casing and the rings, and the ends of said casing fitting against the ends of the compartment.

4. In a metallic packing, a casing consisting of interfitting sections, one of said sections having a circumferential groove in the face thereof contacting with the other section, and a packing-ring situated within said casing.

5. In a metallic packing in combination with a stuffing-box, a casing situated therein and containing the packing-rings, and consisting of interfitting sections, each section being divided longitudinally and a spring upon each section for holding divisions thereof together.

6. In a metallic packing, in combination with a rod, packing-rings, means for holding the same upon said rod, and means out of contact with the rod for preventing the pressure from the cylinder from reaching the outer peripheries of said rings and an inclosing box for said parts.

7. In a metallic packing, in combination with a rod, packing-rings, means for holding the same upon said rod, means out of contact with the rod for preventing the pressure from the cylinder from reaching the outer peripheries of said rings, and means for permitting lateral movement of said rod, with respect to the cylinder and an inclosing part for said parts.

8. In a metallic packing, in combination with a rod, packing-rings, means for holding the same upon said rod, means out of contact with the rod for preventing the pressure from the cylinder from reaching the outer peripheries of said rings, and means for permitting the lateral movement of said rod, rings, and the means controlling the latter, with respect to the cylinder and an inclosing box for said parts.

9. In a metallic packing in combination with a rod, packing-rings, means for holding the same upon said rod, split means for preventing the pressure from the cylinder from reaching the outer periphery of said rings, and means for holding said split means in assembled position.

754,140. CRIB. CHARLES HOLLIS, Wolfboro, N. H. Filed Mar. 19, 1903. Serial No. 148,006. (No model.)



*Claim.*—1. In a crib, the combination with the supporting-posts, of the perforated side and end rails, vertically-adjustable side and end members including bars adapted to the perforations, and means for securing said sides and ends in adjusted position.

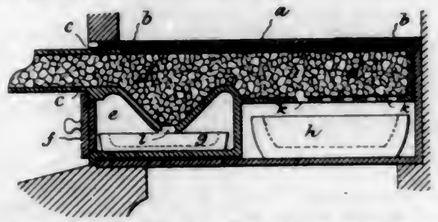
2. The combination in a crib, of the supporting-frame including the posts and the perforated side and end rails, of side and end sections guided by said rails and vertically adjustable with respect thereto, and means for locking said sections in adjusted position.

3. The combination in a crib, of the supporting-posts, a side rail having a plurality of openings, a vertically-adjustable side including parallel bars adapted to said openings, and means for locking said side in any position to which it may be adjusted.

4. The combination in a crib, of the supporting-post, a plurality of pin-receiving eyes carried thereby, side and end rails having guiding-openings, side and end sections each comprising an upper and a lower rail and vertically-disposed parallel bars extending through the guiding-openings and connecting said upper and lower rails, and pins carried by the upper rails and adapted to said pin-receiving eyes.

5. The combination in a crib, of a plurality of supporting-posts, perforated side and end rails secured thereto, vertically-adjustable side and end members each comprising upper and lower rails fitting against the sides of the posts and serving to brace said posts, and bars extending through the perforations of the side and end rails and secured to said upper and lower rails, and means for securing said side and end members in adjusted position.

754,141. PROCESS OF OBTAINING ZINC. EVAN H. HOPKINS, South Kensington, London, England. Filed June 4, 1903. Serial No. 160,117. (No specimens.)




*Claim.*—1. The process of obtaining zinc from substances containing it in a metallic state which consists of subjecting the substances to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of heated carbon from which air is excluded, substantially as described.

2. The process of obtaining zinc from substances containing it in a metallic state which consists of subjecting the substances to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of carbon from which air is excluded and which is heated to a temperature above that at which zinc solidifies, substantially as described.

3. The process of obtaining zinc from substances containing it in a metallic state which consists of subjecting the substances to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of carbon from which air is excluded and which is heated to a temperature below that at which zinc vaporizes, substantially as described.

4. The process of obtaining zinc from substances containing it in a metallic state which consists of subjecting the substances to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of carbon from which air is excluded and which is heated to a temperature between those at which zinc solidifies and volatilizes, substantially as described.

5. The process of obtaining zinc from substances containing it in a metallic state which consists of subjecting the substances to heat, excluding air and the heating-flame therefrom, conveying the zinc-vapors into and condensing all of them in a mass of heated carbon from which air is excluded, and collecting the condensed metal as a liquid beneath the carbon, substantially as described.

6. The process of obtaining zinc from substances containing it in a metallic state, which consists of adding lead to the substances and subjecting them to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of heated carbon from which air is excluded, substantially as described.

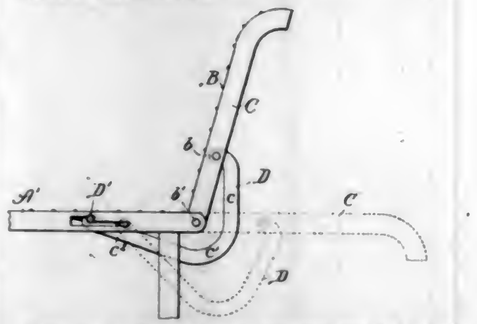
7. The process of obtaining zinc from substances containing it in a metallic state, which consists of adding lead to the substances and subjecting them to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of carbon from which air is excluded and which is heated to a temperature above that at which zinc solidifies, substantially as described.

8. The process of obtaining zinc from substances containing it in a metallic state, which consists of adding lead to the substances and subjecting them to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of carbon from which air is excluded and which is heated to a temperature below that at which zinc vaporizes, substantially as described.

9. The process of obtaining zinc from substances containing it in a metallic state, which consists of adding lead to the substances and subjecting them to heat, excluding air and the heating-flame therefrom, and in conveying the zinc-vapors into and condensing all of them in a mass of carbon from which air is excluded and which is heated to a temperature between those at which zinc solidifies and volatilizes, substantially as described.

10. The process of obtaining zinc from substances containing it in a metallic state, which consists of adding lead to the substances and subjecting them to heat, excluding air and the heating-flame therefrom, conveying the zinc-vapors into and condensing all of them in a mass of heated carbon from which air is excluded, and collecting the condensed metal as a liquid beneath the carbon, substantially as described.

754,142. LEAF-SUPPORT FOR SOFA-BEDS. OZELLO R. HUNT, Kenosha, Wis., assignor to the Simmons Manufacturing Company, Kenosha, Wis., a Corporation of Wisconsin. Filed Sept. 17, 1902. Serial No. 123,703. (No model.)




*Claim.*—1. In an article of the character described, the combination of a main frame provided with a guide and a stationary locking-shoulder, of a swinging leaf connected with said main frame, a link connected with said leaf and provided at its free end with a stud engaging said shoulder, and a yielding member with means for holding said stud in engagement with said shoulder in one position of the leaf and permitting said stud to drop automatically and clear said shoulder in another position of the leaf, for the purpose set forth.

2. In an article of the character described, the combination of a main frame provided with a guide and two locking-shoulders corresponding with different positions of the back, of a swinging back connected with said main frame, a link connected with said back and provided at its free end with a stud serving to engage either one of said shoulders, according to the position of the back, and a yielding device with means for holding said stud in engagement with one of said shoulders in one position of the leaf and permitting the link to drop automatically in another position of the leaf, so that the leaf can be moved so as to bring said stud into engagement with the other shoulder.

3. In an article of the character described, the combination of a main frame provided with a guide and a locking-shoulder corresponding with the standing position of the back and a locking-shoulder in the rear of said first-named locking-shoulder corresponding with the horizontal position of the back, a swinging back, a link connected with said back and provided at its free end with a stud engaging said guide, and a spring serving to hold said stud in engagement with the front locking-shoulder in the standing position of said back and to permit said stud to drop out of engagement with said shoulder when said back is moved in front of its normal standing position, the guide then serving to direct the stud into engagement with the rear shoulder, for the purpose set forth.

4. In an article of the character described, the combination of a main frame provided with a guide-slot having an offset at its upper front portion, whereby a locking-shoulder is presented at the rear portion of said offset and another locking-shoulder at the rear end of said slot, a swinging leaf, a link connected with said leaf and provided at its free end with a stud engaging said slot, a spring serving to direct said stud to said front locking-shoulder and hold it in engagement therewith, said spring having a recess, and a stud on said link riding on said spring until said recess is reached, for the purpose set forth.

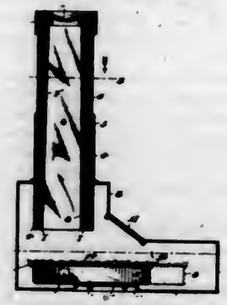
5. In an article of the character described, the combination of a main frame provided with a guide-slot presenting two locking-shoulders corresponding with two positions of the swinging leaf, a swinging leaf connected with said main frame, a link connected with said leaf and provided at its front end with a stud engaging said slot, a spring secured at its front end to said main frame, and provided with a recess, the rear portion of said spring extending across said slot, and a stud on said link which rides upon the rear portion of the spring till said recess is reached, for the purpose set forth.

6. The combination of two frame members hinged to swing with relation to each other, one of said members having a guide and a locking-shoulder corresponding with the angular position of the members with relation to each other, a link carried by the other member and equipped with a locking-lug, and a yielding member with means for automatically forcing said lug into engagement with said shoulder in one relative position of said first-named members and permitting said lug to fall clear of said shoulder and effect an automatic release in another relative position of said first-named members, for the purpose set forth.

7. The combination of two frame members hinged to swing with relation to each other, one of said frame members having a guide and locking-shoulder, a link connected with the other frame member and equipped at its free end with a stud engaging said guide, and a spring attached to the guide-equipped frame member and crossing said guide and having a portion serving to lift said stud into engagement with said shoulder during one movement of the swinging frame member and permit said stud to fall during a supplemental movement of the swinging frame member to pass beneath said spring during the return movement of the swinging frame member whereby an automatic locking and releasing of the swinging frame member is secured, for the purpose set forth.



754,143. ILLUMINATED KALEIDOSCOPE. THOS. R. JOHNSON, Jeannette, Pa. Filed Sept. 17, 1903. Serial No. 173,511. (No model.)



*Claim.*—1. In a kaleidoscope, mirrors, a case, an object-holder slidable in the case transverse the line of vision and open at the top for the admission of light, and means for rotating the slidable holder.

2. In a kaleidoscope, revoluble mirrors, and a revoluble object-holder.

3. In a kaleidoscope, revoluble mirrors, and a revoluble object-holder slidable transverse the line of vision.

4. In a kaleidoscope, a holder, and two mirrors arranged at an angle therein with a black or dark-colored surface exposed between the mirrors.

5. In a kaleidoscope, a three-sided tube having one side black or dark colored, and mirrors fitting the other two sides thereof.

6. A movable object-support for kaleidoscopes having an edge of irregular shape.

7. A movable object-support for kaleidoscopes having a decorated edge of irregular shape.

8. A circular and rotatable object-support for kaleidoscopes having a decorated edge of irregular shape.

9. A dish-shaped object-holder for kaleidoscopes having a decorated object-supporting surface and a decorated edge of irregular form.

10. In a kaleidoscope, a case formed with a side opening for the purpose described, mirrors, and an object-holder.

11. In a kaleidoscope, a case having a black or dark-colored surface beneath the mirrors, an object-support, and mirrors.

12. In a kaleidoscope, a case having a black or dark-colored bottom-surface, mirrors, and an object-holder movable between said dark-colored surface and the mirrors.

13. In a kaleidoscope, a case having a black or dark-colored bottom-surface, mirrors, and an object-support movable between said surface and the mirrors and provided with a decorated edge of irregular shape.

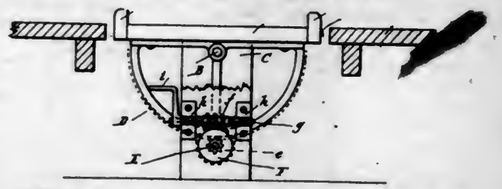
14. In a kaleidoscope, a case, an observation-tube projecting from the upper portion of the case, a light-admitting panel in the upper portion of the case, and an object-holder within the case and below the tube and panel.

15. In a kaleidoscope, a case, an observation-tube, an object-holder within the case, and a light-admitting panel in the upper portion of the case arranged at an angle to the object-support.

16. In a kaleidoscope, a case having a raised rear portion, a glass panel in the top of the case at the juncture of the front and rear portions, an observation-tube depending through said rear portion, and an object-holder within the case.

17. In a kaleidoscope, a case having its rear portion closed and provided with a black bottom, an observation-tube and a glass panel in the upper portion of the case, and an object-support within the case and movable over the black bottom-surface thereof.

754,144. ICE-TABLE. JULIUS KAMALS, Parkersburg, W. Va. Filed Nov. 25, 1903. Serial No. 182,572. (No model.)

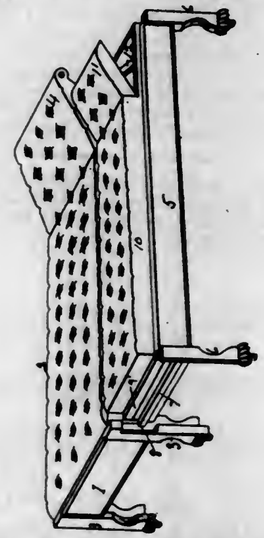



*Claim.*—1. The combination, with a floor or platform having an opening, of a pivoted ice-table working in said opening and having its upper surface normally horizontal, means for supporting the ice on the table when the table is placed in an inclined position, toothed segments secured to the under side of the table, a revoluble operating-shaft, and toothed pinions secured on the said operating-shaft and gearing into the said segments.

2. The combination, with an ice-table pivoted at its middle part, and supports for the said ice-table; of toothed segments secured to the under side of the table, a revoluble operating-shaft, toothed pinions secured on the said operating-shaft and gearing into the said segments, and means for supporting the ice on the table when the table is placed in an inclined position.

3. The combination, with a pivoted ice-table, and means for supporting the ice on the table when in an inclined position; of toothed segments secured to the under side of the table, an operating-shaft, toothed pinions secured on the said shaft and gearing into the said segments, a worm-wheel secured on the said shaft, and a worm gearing into the said worm-wheel and provided with means for revolving it.

754,145. BED-COUCH. GEORGE M. KIM, Allegheny, Pa. Filed July 11, 1903. Serial No. 165,059. (No model.)

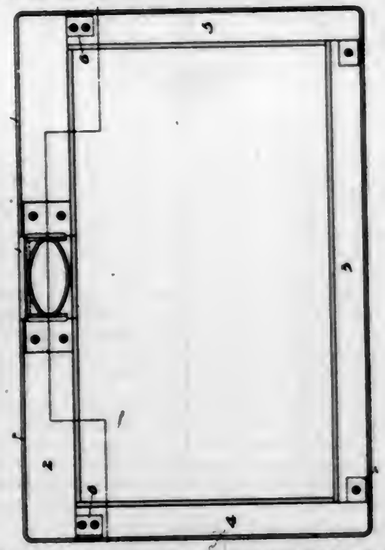



*Claim.*—In a device of the type set forth, a main couch provided with longitudinal grooves, a sliding frame, pieces projecting from the ends of said frame adapted to engage and slide in the said grooves, a removable, reversible box having means on its ends adapted to engage the end pieces of the sliding frame to support the box, said box having a partition therein forming the interior thereof into a large and small compartment, a head-rest pivoted upon said partition and lying flush with the bottom of the box covering the small compartment, a pivoted supporting-brace secured to the bottom of the head-rest, means carried by the box to hold said brace in extended position, and a locking means pivotally mounted upon the

head-rest adapted to engage the brace to hold the same in closed position, said means engaging in a recess formed in the box, substantially as described.

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**754,146. STOVE-TOP. WILLIAM C. KERALS, Indianapolis, Ind., assignor to the National Malleable Castings Company, Cleveland, Ohio, a Corporation of Ohio. Filed Aug. 1, 1903. Serial No. 167,876. (No model.)**

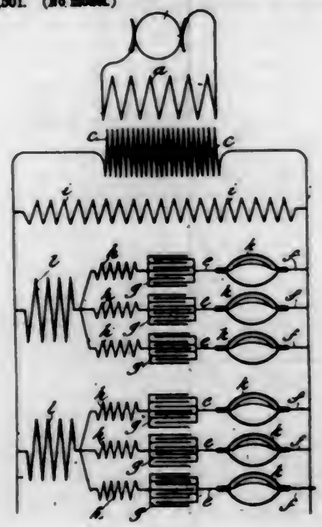


*Claim.*—1. A stove-top comprising marginal metal castings, the front casting having two plain, machined ends adapted to abut against the side castings and the divided rear casting having two finished ends, each with an adjacent side lug to receive a machined end of its corresponding side casting, and two machined ends to receive the central pipe-section; substantially as described.

2. A stove-top comprising a rear metal casting having a middle stovepipe-section provided with fastening devices at its ends, and outer sections having plain ends adapted to be trimmed and to abut against the middle section; substantially as described.

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**754,147. APPARATUS FOR ELECTRICAL PRODUCTION OF NITROGEN OR OTHER COMPOUNDS. JOSEF VON KOWALSKI and LUDAS MOSCICKI, Freiburg, Switzerland. Filed Feb. 21, 1903. Serial No. 144,501. (No model.)**



*Claim.*—1. The combination, with an electric circuit and a plurality of pairs of electrodes arranged in said circuit in parallel, of a plurality of condensers arranged in parallel, each condenser being in series with its respective pair of electrodes, and means for supplying alternating current to the circuit.

2. The combination, with a circuit and means for supplying alternating current to said circuit, of a plurality of pairs of electrodes arranged in said circuit, said pairs being in parallel with each other, a plurality of condensers, each in series with its respective pairs of electrodes, and an induction-coil in series with each condenser.

3. The combination, with an electric circuit, a pair of electrodes included in the circuit and between which the gas to be acted upon may flow, of a condenser in series with the electrodes, a main inductance-coil in parallel with the condenser, and means for supplying alternating current to said circuit.

4. The combination, with a circuit and means for supplying alternating currents to said circuit, of a plurality of pairs of electrodes arranged in said circuit, said pairs being in parallel with each other, the electrodes of each pair being arranged to receive between them the gas to be acted upon, a plurality of condensers, each in series with its respective pair of electrodes, and an inductance-coil in series with each condenser.

5. The combination, with a circuit and means for supplying alternating currents to said circuit, of a plurality of pairs of electrodes arranged in said circuit, said pairs being in parallel with each other, the electrodes of each pair being arranged to receive between them the gas to be acted upon, a plurality of condensers, each in series with its respective pair of electrodes, an inductance-coil in series with each condenser, and a main inductance-coil in parallel with all the electrodes.

6. The combination, with an electric circuit having a plurality of consumption branches arranged in parallel and in groups, of means for supplying alternating current to said circuit, a pair of electrodes, a condenser and an inductance-coil arranged in series in each consumption branch, and a group inductance-coil in series with each group of consumption branches.

7. The combination, with an electric circuit having a plurality of consumption branches arranged in parallel and in groups, of means for supplying alternating current to said circuit, a pair of electrodes, a condenser and an inductance-coil arranged in series in each consumption branch, a group inductance-coil in series with each group of consumption branches, and a main inductance-coil in parallel with the consumption branches.

8. The combination, with a transformer and means for supplying alternating current to the primary winding of said transformer, of a pair of leads connected to the secondary winding of the transformer, a plurality of consumption branches in multiple between said leads and arranged in groups, a pair of electrodes, a condenser and an inductance-coil in each consumption branch, a group inductance-coil in series with each group of consumption branches, and a main inductance-coil arranged between the leads in parallel with the consumption branches.

9. The combination, with a transformer and means for supplying alternating current to the primary winding of said transformer, of a pair of leads connected to the secondary winding of the transformer, a plurality of consumption branches in multiple between said leads and arranged in groups, a pair of electrodes, a condenser and an inductance-coil in each consumption branch, a group inductance-coil in series with each group of consumption branches, a main inductance-coil arranged between the leads and in parallel with the consumption branches, and a receiver inclosing each pair of electrodes.

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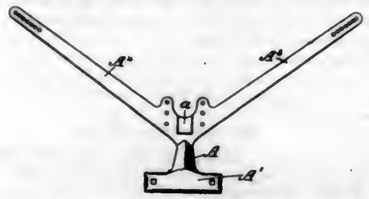
**754,148. HOLLOW INDIA-RUBBER ARTICLE USED AS A TOY. FRIEDRICH KUHLEMANN, Budapest, Austria-Hungary. Filed Jan. 13, 1903. Serial No. 138,573. (No model.)**



*Claim.*—A hollow figure of elastic material, in combination with a plate inserted therein, having a vibrating tongue or reed on each of its sides, and a strip opposite each tongue, adapted to prevent entrance of air to the tongue which at the moment of compression or of expansion of the hollow article should not emit a tone.



**754,149. VEHICLE-BODY HANGER. CHARLES LA DOW, Albany, N. Y. Filed Oct. 29, 1903. Serial No. 178,966. (No model.)**



*Claim.*—1. As a new article of manufacture, a vehicle-body hanger comprising cross-bar A′, arms $A^2$, and $A^2$, obliquely inclined relatively to bar A′, and body-bar A located between said arms and the cross-bar.

2. As a new article of manufacture, a vehicle-body hanger comprising cross-bar A′, arms $A^2$, and $A^2$, obliquely inclined relatively thereto, and body-bar A, located between said cross-bar and said arms, and obliquely inclined relatively thereto.

3. In combination with a vehicle-body and an elliptic spring therefor, a hanger consisting of a metal cross-bar affixed to a central portion of the upper section of said spring, and a graduated body portion intervening between the spring and the vehicle-body, and triangular arms forming an apex for fastening said hanger to project from the center of an end of the vehicle-body.

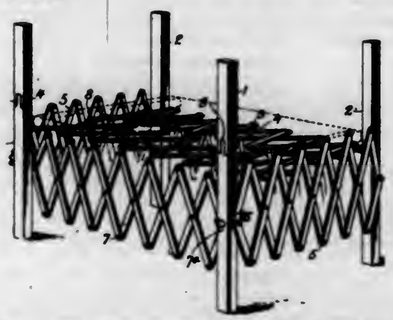
4. In combination with a vehicle-body and an elliptic spring means for supporting them relatively to each other by adjacent and central points only, consisting of a triangular metal structure having a graduated body portion and arms affixed to the apex of the triangle and a cross-bar affixed to said body portion, bolts for affixing cross-bar portion to the spring, and a bolt for affixing its apex to a central end portion of the vehicle-body and bolts for affixing the ends of the triangle arms to the under sides of the vehicle-body.

5. In combination with a vehicle-body a hanger therefor having an apex attachable to said body at its end central portion, and arms radiating from the apex diagonally under the bottom of the vehicle and attachable to the side sills of its body in a line inside the corners thereof.

6. A triangular-shaped hanger for a vehicle-body having an apex, and arms radiating therefrom, and a channel in said apex to receive the central bottom-board-supporting strap of a vehicle-body.

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**754,150. COMBINATION BED, SOFA, AND CHAIR. HARRY LEHRER, New York, N. Y. Filed Sept. 30, 1903. Serial No. 175,193. (No model.)**



*Claim.*—1. In a folding bed, the combination of the corner-posts, vertically-arranged lazy-tongs interposed between the posts at the two sides, at the head and foot of the bed, a set of expansible and collapsible tongs swinging on horizontal pivots near one side of the bed and adapted, when swung to a horizontal position and expanded, to form the bottom of the bed, and means for holding the lazy-tongs in their expanded horizontal position.

2. In a folding bed, the combination of the corner-posts, vertically-arranged lazy-tongs interposed between the posts at the two sides and at the head and foot of the bed, two sets of expansible and collapsible lazy-tongs each swinging on horizontal pivots at opposite sides of the bed and adapted, when swung to a horizontal position and expanded, to form the bottom of the bed, and means for holding the lazy-tongs in their expanded horizontal position.

3. In a folding bed, the combination of the corner-posts, vertically-arranged lazy-tongs interposed between the posts at the two sides and at the head and foot of the bed, inwardly-projecting brackets carried by the lazy-tongs at the head and foot of the bed and moving therewith as they are expanded and collapsed, and a set of expansible and collapsible lazy-tongs swinging on horizontal pivots near one side of the bed and adapted, when swung to a horizontal position and expanded, to form the bottom of the bed and to rest on said brackets.

4. In a folding bed, the combination of posts, threaded pivots, thumb-nuts, levers arranged as lazy-tongs and pivoted to the posts by means of the threaded pivots to form the sides and the head and foot of the frame and adapted to be clamped rigidly to the posts when extended to the desired degree to form a bed of certain size, supplemental lazy-tongs arranged along the sides of the frame and adapted to swing from a vertical to a horizontal position and vice versa, means for permitting a swinging action by the supplemental lazy-tongs while being extended or folded and means for supporting same when horizontally disposed.

5. In a folding bed, the combination of posts, pivoted lazy-tongs connecting two of the posts and forming a side of the bed, clamping-bolts connecting the lazy-tongs with the posts and also forming the pivots for the end levers of said lazy-tongs, lazy-tongs connecting the posts at the head and foot of the bed, clamping-bolts for attaching said lazy-tongs to the posts and which also form the pivots for the end levers thereof, brackets extending inwardly from the lazy-tongs at the head and foot of the bed, and a bed-bottom resting on said brackets.

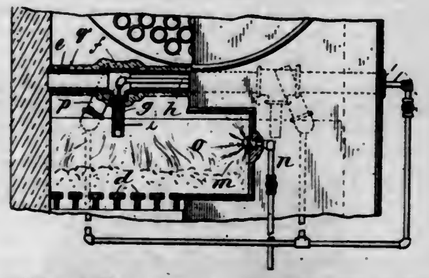
6. In a folding bed, the combination of posts, lazy-tongs connecting the posts, clamping means securing the lazy-tongs to the posts, brackets carried by the lazy-tongs adjacent to the bed-bottom and extending inwardly beneath it, a set of pivoted levers arranged along the side of the frame and hinged to the foot and head lazy-tongs and adapted to fold down upon the brackets, and hinged bars carried by the posts of the opposite side having lazy-tongs and adapted to fold down upon the brackets with the opposite lazy-tongs and constitute the bottom of the bed or remain in its vertical position to form the back of an article of furniture while the opposite levers remain in their horizontal position or vice versa.

7. In a folding piece of furniture, the combination of posts with hinged joints, means for retaining the jointed sections in their upright positions, lazy-tongs forming the sides of the article, means for locking the lazy-tongs at any degree of extension, brackets carried by the lazy-tongs and supplemental lazy-tongs adjacent to two opposite sides of the frame and adapted to be swung on an arc so that one set of supplemental lazy-tongs may be swung to a horizontal position for a seat while the other remains vertical for the back.

8. In a folding article of furniture, the combination of posts having hinged sections, means for retaining the sections in a normally upright position, lazy-tongs connecting the posts and forming the sides of the frame, lazy-tongs carried by the posts on opposite sides of the article, adapted to swing on a pivot from a vertical to a horizontal position and varying in height so as to form a seat or a back of desired width, length or height, brackets adapted to support the seat and means for retaining the back in its upright position.

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**754,151. DEVICE FOR AIDING COMBUSTION IN BOILER-FURNACES. EDWARD R. LEWIS, Springfield, Mass. Filed Sept. 21, 1903. Serial No. 173,960. (No model.)**

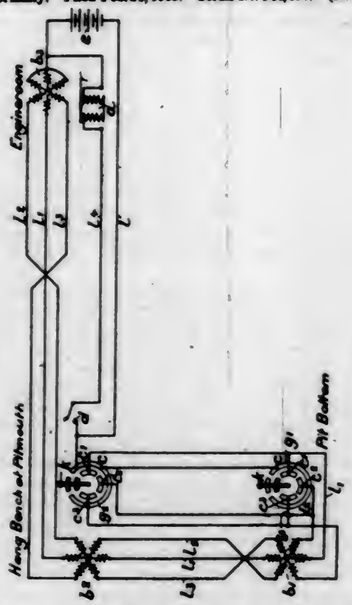


*Claim.*—1. The combination with a boiler-setting having the usual fire-door opening therein, of an air-conduit located over said opening transversely of the setting, delivery-nipples in said pipe extending into the fire-box, and a steam-pipe in said conduit, and branches extending into said nipples, together with a water-spraying device located in the fire-door opening.

2. The combination with a boiler-setting having the usual fire-door opening therein, of an air-conduit located over said opening transversely of the setting, delivery-nipples in said conduit looking downward, and extending into the fire-box; a steam-pipe in the air-conduit, and branches extending into the nipples, the whole constituting a device to inject air and steam into the fire-box, a second air and steam injecting device located at the rear end of the setting, together with a water-spraying device located in the fire-door opening and adapted to spray the water transversely of said opening.

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**754,152. SIGNALING APPARATUS.** OTTO LÜDDECKENS, Breslau, Germany. Filed Feb. 21, 1903. Serial No. 144,497. (No model.)

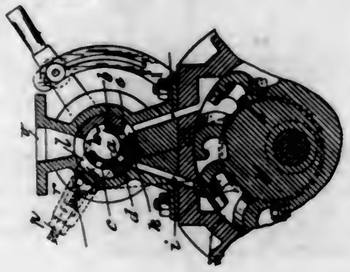



*Claim.*—1. In a signaling apparatus, the combination, with a plurality of signal-receiving devices located one at each signal-station, and a plurality of signal-transmitting devices located one at each station except one, each transmitting device being arranged to actuate all of the signal-receiving devices, of an auxiliary signal-receiving device located at the station which has no signal-transmitting device, and an auxiliary signal-transmitting device located at one of the remaining stations and arranged to operate the said auxiliary signal-receiving device.

2. In a signal apparatus for mines, the combination, with three signal-receiving devices located at the pit-bottom, pit-mouth and engine-room respectively, of two signal-transmitting devices located at the pit-bottom and pit-mouth respectively, and each arranged to actuate all of the signal-transmitting devices, an auxiliary signal-receiving device located at the engine-room, and an auxiliary signal-transmitting device located at the pit-mouth, and arranged to actuate the auxiliary signal-receiving device.

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**754,153. ROTARY ENGINE.** CHRISTOPHER MACARTHUR and FRANK SMITH, Woolston, England. Filed Feb. 12, 1903. Serial No. 143,140. (No model.)



*Claim.*—In a rotary engine the combination of a cylinder *x* and valve-casing having alternative admission-passages *i j* leading from said valve-chamber to cylinder for forward and reverse travel respectively, a reciprocatory valve having ports *c d e*, said ports *c e* being spaced at equal distance from said port *d*, said distance corresponding to that between passages *i j* and a reciprocating reversing-valve *b* having a port *k* and means for adjusting the valve *b* so that said port cooperates alternatively with passage *i* or *j* for the purpose set forth.

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**754,154. PROCESS OF MANUFACTURING STEEL.** OTTO MASSENEZ, Wiesbaden, Germany. Filed Apr. 20, 1903. Serial No. 153,485. (No specimens.)

*Claim.*—1. The described process of manufacturing steel from chromiferous pig-iron in the reverberatory furnace which consists in melting the iron, forming in contact therewith a slag capable of dissolving chromic oxid, and adding a flux capable of counteracting the stiffening action of chromic oxid upon the slag, substantially as and for the purpose described.

2. The described process of manufacturing steel from chromiferous pig-iron in the reverberatory furnace which consists in melting the iron, forming in contact therewith a slag capable of dissolving chromic oxid, adding a flux capable of counteracting the stiffening action of chromic oxid upon the slag, and separating slag from the metal, substantially as and for the purpose described.

3. The described process of manufacturing steel from chromiferous pig-iron in the reverberatory furnace which consists in melting the iron, forming in contact therewith such a quantity of slag capable of dissolving chromic oxid that the resulting chromiferous slag does not contain more than fourteen per cent. of chromic oxid, adding fluxes capable of counteracting the stiffening action of the chromic oxid upon the slag, and separating slag from the metal, substantially as and for the purpose described.

4. The described process of manufacturing steel from chromiferous pig-iron in the reverberatory furnace which consists in melting the iron, forming in contact therewith such a quantity of slag capable of dissolving chromic oxid that the resulting chromiferous slag does not contain more than fourteen per cent. of chromic oxid, repeatedly adding fluxes capable of counteracting the stiffening action of the chromic oxid upon the slag, removing a part of the slag after each addition of flux, and finally separating the remainder of slag from the metal, substantially as and for the purpose described.

5. The described process of manufacturing steel from chromiferous pig-iron in the reverberatory furnace which consists in melting the iron, forming in contact therewith such a quantity of slag capable of dissolving chromic oxid that the resulting chromiferous slag does not contain more than fourteen per cent. of chromic oxid, adding repeatedly fluor-spar, removing a part of the slag after each addition of fluor-spar, and finally separating the remainder of slag from the metal, substantially as and for the purpose described.

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**754,155. CARRIAGE-SPACING ATTACHMENT FOR WRITING-MACHINES.** LEVI MATHAUS, Newark, N. J. Filed Apr. 8, 1903. Serial No. 151,618. (No model.)

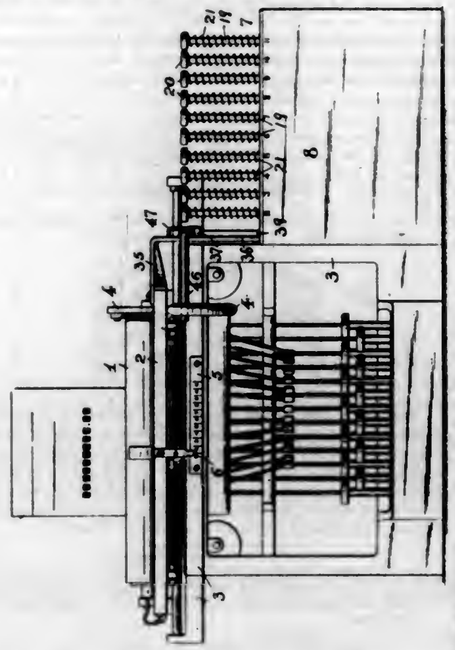
*Claim.*—1. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism connected with said carriage and comprising a number of depressible posts bearing digit-indicating numbers, said mechanism being constructed to move said carriage over a number of spaces less one than the digit-indicating number of the depressed post, substantially as and for the purposes set forth.

2. In a writing-machine, the combination, with the carriage, of a series of space-indicating devices, comprising a number of depressible posts bearing digit-indicating numbers, and means connected with the carriage adapted to be actuated by said devices to move said carriage over a number of spaces less one than the digit-indicating number of the depressed post, substantially as and for the purposes set forth.

3. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, and means connected with the carriage adapted to be actuated by said devices to move said carriage over a number of spaces less one than the digit-indicating number of the depressed post, substantially as and for the purposes set forth.

4. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide, adapted to be actuated by the depression of any one of said vertically-moving devices, and means between said slide and the carriage for moving said carriage over any desired space when the slide is actuated, substantially as and for the purposes set forth.





5. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, each vertically-moving device having an incline, a horizontally-moving slide, adapted to be actuated by an incline of any one of the depressed vertically-moving devices, and means between said slide and the carriage for moving said carriage over any desired space when the slide is actuated, substantially as and for the purposes set forth.

6. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, each vertically-moving device having an incline, a horizontally-moving slide, rollers on said slide in engagement with the said inclines, and means between said slide and the carriage for moving said carriage over any desired space when the slide is actuated, substantially as and for the purposes set forth.

7. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide, adapted to be actuated by the depression of any one of said vertically-moving devices, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, and a portion of said bar being in slidable engagement with said miter-shoulder, substantially as and for the purposes set forth.

8. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide, adapted to be actuated by the depression of any one of said vertically-moving devices, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, an arm and finger connected with said bar, and a roller on said finger in engagement with said miter-shoulder, substantially as and for the purposes set forth.

9. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, each vertically-moving device having an incline, a horizontally-moving slide, adapted to be actuated by an incline of the depressed vertically-moving device, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, and a portion of said bar being in slidable engagement with said miter-shoulder, substantially as and for the purposes set forth.

10. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, each vertically-moving device having an incline, a horizontally-moving slide, adapted to be actuated by an incline of the depressed vertically-moving device, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, an arm and finger connected with said bar, and a roller on said finger in engagement with said miter-shoulder, substantially as and for the purposes set forth.

11. In a writing-machine, the combination, with the carriage of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, each vertically-moving device having an incline, a horizontally-moving slide, rollers on said slide in engagement with the said inclines, for actuating said slide, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, and a portion of said bar being in slidable engagement with said miter-shoulder, substantially as and for the purposes set forth.

12. In a writing-machine, the combination, with the carriage, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, each vertically-moving device having an incline, a horizontally-moving slide, rollers on said slide in engagement with the said inclines, for actuating said slide, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, an arm and finger connected with said bar, and a roller on said finger in engagement with said miter-shoulder, substantially as and for the purposes set forth.

13. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in said casing, and a cover provided with a series of openings, of a series of vertically-moving actuating devices in said vertical guides provided with posts extending through the openings in said cover, each post having a finger-piece, and a carriage-spacing mechanism in said casing adapted to be actuated by any one of said vertically-moving devices, substantially as and for the purposes set forth.

14. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in said casing, and a cover provided with a series of openings, of a series of vertically-moving actuating devices in said vertical guides provided with posts extending through the openings in said cover, each post having a finger-piece, and a horizontally-moving carriage-spacing slide in said casing adapted to be actuated by any one of said vertically-moving devices, substantially as and for the purposes set forth.

15. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in said casing, and a cover provided with a series of openings, of a series of vertically-moving actuating devices in said vertical guides provided with posts extending through the openings in said cover, each post having a finger-piece, an incline connected with each vertically-moving device, and a horizontally-moving carriage-spacing slide in said casing, adapted to be actuated by an incline of any one of said vertically-moving devices, substantially as and for the purposes set forth.

16. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in said casing, and a cover provided with a series of openings, of a series of vertically-moving actuating devices in said vertical guides provided with posts extending through the openings in said cover, each post having a finger-piece, an incline connected with each vertically-moving device, a horizontally-moving carriage-spacing slide in said casing, and rollers on said slide in engagement with the said inclines for actuating said slide, substantially as and for the purposes set forth.

17. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in the front of said casing, horizontal guides at the sides of said casing, and rollers in said guides, of a series of vertically-moving actuating devices in said vertical guides provided with posts, each post having a finger-piece, and a carriage-spacing mechanism movably arranged against the rollers in said side guides and adapted to be actuated by any one of said vertically-moving devices, substantially as and for the purposes set forth.

18. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in the front of said casing, horizontal guides at the sides of said casing, and rollers in said guides, of a series of vertically-moving actuating devices in said ver-

tical guides provided with posts, each post having a finger-piece, and a horizontally-moving carriage-spacing slide movably arranged against the rollers in said side guides and adapted to be actuated by any one of said vertically-moving devices, substantially as and for the purposes set forth.

19. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in the front of said casing, horizontal guides at the sides of said casing, and rollers in said guides, of a series of vertically-moving actuating devices in said vertical guides provided with posts, each post having a finger-piece, an incline connected with each vertically-moving device, and a horizontally-moving carriage-spacing slide movably arranged against the rollers in said side guides, and adapted to be actuated by any one of said vertically-moving devices, substantially as and for the purposes set forth.

20. In a carriage-spacing attachment for writing-machines, the combination, with a casing, vertical guides in the front of said casing, horizontal guides at the sides of said casing, and rollers in said guides, of a series of vertically-moving actuating devices in said vertical guides provided with posts, each post having a finger-piece, an incline connected with each vertically-moving device, a horizontally-moving carriage-spacing slide movably arranged against the rollers in said side guides, and rollers on said slide in engagement with the said inclines for actuating said slide, substantially as and for the purposes set forth.

21. In a writing-machine, the combination, with the carriage and platen-roll, of a series of space-indicating devices, comprising a number of depressible posts bearing digit-indicating numbers, means connected with the carriage adapted to be actuated by said devices to move said carriage over a number of spaces less one than the digit-indicating number of the depressed post, and mechanism for rotating said platen-roll in its bearings simultaneously with the moving of said carriage over the desired number of spaces, substantially as and for the purposes set forth.

22. In a writing-machine, the combination, with the carriage and platen-roll, of a series of space-indicating devices, comprising a number of depressible posts bearing digit-indicating numbers, means connected with the carriage adapted to be actuated by said devices to move said carriage over a number of spaces less one than the digit-indicating number of the depressed post, an actuating-lever connected with said platen-roll, and mechanism for raising said lever and rotating said platen-roll in its bearings simultaneously with the moving of said carriage over the desired number of spaces, substantially as and for the purposes set forth.

23. In a writing-machine, the combination, with the carriage, and the platen-roll, of a slide-plate, means for causing a sliding movement of said plate, and means arranged between said plate and the carriage adapted to move the carriage over a space and simultaneously therewith actuate the platen-roll, substantially as and for the purposes set forth.

24. In a writing-machine, the combination, with the carriage, the platen-roll and its actuating-lever, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and a finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide, adapted to be actuated by the depression of any one of said vertically-moving devices, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, a lower portion on said bar in slidable engagement with said slide and the miter-shoulder thereof, and an arm on the upper part of said bar in engagement with the actuating-lever of said platen-roll, substantially as and for the purposes set forth.

25. In a writing-machine, the combination, with the carriage, the platen-roll and its actuating-lever, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and a finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide, adapted to be actuated by the depression of any one of said vertically-moving devices, a miter-shoulder on said slide, a vertically-movable bar connected with said carriage, an arm connected with the lower portion of said bar in slidable engagement with said slide, a finger on said arm, a roller on said finger in engagement with said miter-shoulder, and an arm on the upper part of said bar in engagement with the actuating-lever of said platen-roll, substantially as and for the purposes set forth.

26. In a writing-machine, the combination, with a carriage, and a platen-roll, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide adapted to be actuated by the depression of any one of said vertically-moving posts, means between said slide and the carriage for moving said carriage over any desired space when the slide is actuated, and mechanism for moving said platen-roll in its bearings simultaneously with the spacing of the carriage, substantially as and for the purposes set forth.

27. In a writing-machine, the combination, with a carriage, and a platen-roll, of a carriage-spacing mechanism, comprising, a series of vertically-moving devices, a post and finger-piece on each device, bearing digit-indicating numbers, a horizontally-moving slide adapted to be actuated by the depression of any one of said vertically-moving posts, means between said slide and the carriage for moving said carriage over any desired space when the slide is actuated, an actuating-lever connected with said platen-roll, and mechanism for raising said lever and rotating said platen-roll in its bearings simultaneously with the spacing of the carriage, substantially as and for the purposes set forth.

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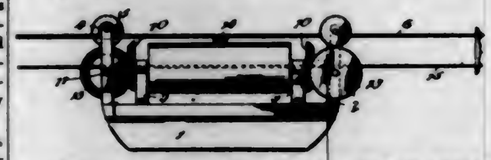
754,156. **RADIATOR.** GEORGE A. MOWER, London, England. Filed Feb. 4, 1903. Serial No. 141,903. (No model.)



*Claim.*—In combination, a plurality of radiator-sections each consisting of a substantially rectangular hollow body having its side walls waved in a horizontal manner so as to form vertically-extending channels, each of said sections further provided with ribs waved about a horizontal plane as well as being waved to conform to the waves of the sections, the ribs of one section being located opposite the ribs of an adjacent section so as to form air-channels.

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754,157. **DEVICE FOR CHALKING LINES.** JOHN F. MCCONNICK, near Churubusco, Ind. Filed Nov. 16, 1903. Serial No. 181,424. (No model.)



*Claim.*—1. In a device for chalking lines, a drum for receiving the loose chalk or like material, a line passed through the drum and in coaxial alinement with the end portions thereof, and means for imparting a rotary movement to said drum about the line in the passage of the latter therethrough, substantially as set forth.

2. In a device for chalking lines, a drum for containing the material in powdered form, means for imparting rotary movement to the drum as the chalk-line passes therethrough, and ribs upon the inner side of the drum to carry the material upward and drop it upon the line, substantially as set forth.

3. In a device for chalking lines, a drum for containing the material in powdered form, means for imparting rotary movement to the drum as the chalk-line passes therethrough, and ribs provided upon the inner side of the drum and having a spiral arrangement to effect a continuous discharge of the material upon the line in the operation of the device, substantially as described.

4. In a device for chalking lines, a drum having centrally-disposed openings at its ends for the passage of the chalk-line, a track for suspending the device, and gearing for imparting rotation to the drum from the track as the device travels thereon, substantially as set forth.

5. In combination, a track, a carriage suspended therefrom, a chalking device journaled to the carriage, and means for imparting rotation to the chalking device by the movement of the carriage on the track, substantially as specified.

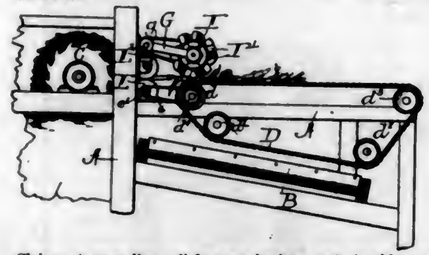
6. In combination, a track, a carriage mounted to travel upon said track, a drum mounted upon the carriage and having end openings for the passage of a chalk-line, and gearing for transmitting motion from the rotary supports of the carriage to the drum to effect rotation of the latter during the travel of the carriage, substantially as set forth.

7. In a device for chalking lines, a drum for receiving powdered chalk or like material and having centrally-disposed end openings, a line passed through the drum and the end openings thereof, means for rotating the drum about the line in the passage of the latter therethrough, and brushes applied to the inner sides of the ends of the drum and rotatable therewith about the line to remove surplus chalk therefrom, substantially as described.



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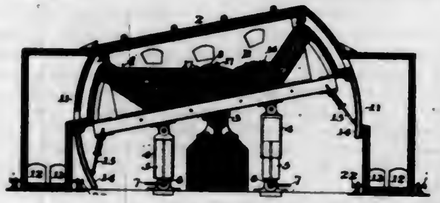
754,158. **SPREADING-ROLL FOR CORN HUSKERS AND SHREDDERS.** JULIAN H. PITKIN, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill. Filed Nov. 20, 1903. Serial No. 181,907. (No model.)



*Claim.*—A spreading-roll for corn huskers and shredders comprising a shaft and a series of plates or flanges bolted thereto, each individual plate or flange of the series having a portion of its length lying in a plane perpendicular to said shaft, and a portion lying in a plane oblique to said shaft, with the adjacent ends of the flanges of each individual plate of the series receding from each other, the disposition of this series of plates being made in such a manner as to form oppositely-pitched interrupted spirals about the said shaft, substantially as described.

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754,159. **METHOD OF TREATING ORES, MATTES, &c.** JOHN A. POTTER, New York, N. Y. Filed July 31, 1902. Serial No. 117,763. (No model.)



*Claim.*—1. The method of treating metal and metal-bearing materials, consisting in forming a molten metallic bath upon one portion of a furnace-hearth, preheating a separate charge of solid materials upon another portion of the furnace-hearth, pouring the molten bath over the solid material, preheating another charge of solid material upon that portion of the hearth from which the molten bath was poured, and then pouring said bath back upon said subsequent charge of solid material and so continuing; substantially as described.

2. The method of treating metal and metal-bearing materials, consisting in preheating a charge of solid material in a furnace-chamber, bonding the materials with a small portion of molten substance which becomes congealed and fastened to the solid materials, and then feeding the molten metallic bath onto such charge; substantially as described.

3. The method of treating metal and metal-bearing materials, consisting in forming a molten metallic bath in one cavity in a furnace-chamber, preheating a separate charge of solid materials in a second similar cavity in the same furnace-chamber, pouring the molten bath over the solid material in the second cavity and substantially emptying the cavity which contained the molten bath, preheating another charge of solid material in the cavity from which the molten bath was poured, and then pouring said bath back upon said subsequent charge of solid material, and so continuing; substantially as described.

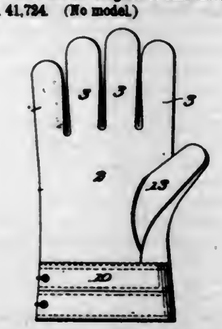
4. The method of treating metals and metal-bearing materials, consisting in preheating a charge of solid materials in one cavity in a furnace-chamber, simultaneously heating a molten metallic bath in a separate cavity in the same furnace-chamber, pouring the molten bath over the solid material in the separate cavity and substantially emptying the cavity which contained said molten bath, feeding another charge of solid materials into the cavity just emptied, preheating said materials and again pouring the molten bath over said solid materials, and so continuing; substantially as described.

5. The method of treating metals and metal-bearing materials, consisting in forming a molten metallic bath in the lower pocket of a movable furnace-bed, simultaneously preheating a charge of solid material in an upper pocket of said movable bed in the same furnace-chamber, pouring the molten metallic bath over the solid charge by elevating and substantially emptying the pocket which contained said molten bath, and then placing a fresh charge of solid materials in the pocket just emptied, and repeating said operation; substantially as described.

6. The method of treating metals and metal-bearing materials, consisting in forming a molten metallic bath in one cavity in a furnace-chamber, preheating a separate charge of solid materials in another cavity of the same chamber, pouring the molten bath over the solid material and substantially emptying the cavity which contained the bath, tapping out from the combined mass a portion of the treated material, preheating another charge of solid material in the cavity from which the molten bath was poured and repeating the operation; substantially as described.

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754,160. **GLOVE.** ROBERT G. RATE and MATTHIAS MATTES, Iowa City, Iowa; said Mattes assignor to said Rate. Filed Dec. 31, 1900. Serial No. 41,734. (No model.)



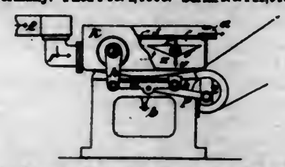
*Claim.*—1. A glove comprising a blank, having a palm portion provided with finger portions, certain of said finger portions being wider at their outer extremity than where they join the palm, and a series of corresponding finger-backs of complementary form, that is to say, having their outer extremity narrower than at the base of said finger-backs, whereby the seam-line joining the corresponding edges of the fingers of the glove are more remote from the face of the fingers at one end than at the other.

2. A glove comprising a blank, having a palm portion provided with integral finger portions, certain of said finger portions being wider at their outer extremity than where they join the palm, and a series of corresponding finger-backs of complementary form, that is to say, having their outer extremity narrower than at the base of said finger-backs, whereby the seam-line joining the corresponding edges of the fingers of the glove will be more remote than the face of the fingers at one end than at the other, and the edges of the complemental front and back portions of the fingers are of substantially the same length.

3. A glove having a blank including a palm portion and integral finger-fronts gradually widening from their juncture with the palm portion, and a series of finger-backs united to the finger-fronts and gradually increasing in width from their outer ends to the bases of the finger-fronts

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754,161. **HORIZONTAL PULP-STRAINER.** PAUL REINICKE, Köthen, Germany. Filed Feb. 4, 1903. Serial No. 141,913. (No model.)



*Claim.*—1. In a horizontal pulp-strainer having below the screen a plurality of oscillatory wings located side by side and adapted to act upon the pulp, the combination with the vat, the screen, and the wings, of means for leading the pulp into the spaces below

the wings and away from the space above the screen; said spaces being in direct intercommunication, and each of them containing a plurality of wings arranged coaxially, substantially as described.

2. In a horizontal pulp-strainer having below the screen a plurality of oscillatory wings located side by side and adapted to act upon the pulp, the combination with the vat, the screen, and the wings, of means for leading the pulp into the spaces below the wings and away from the space above the screen so as to cause said wings to force the pulp through said screen in an upward direction; said spaces being in direct intercommunication so as to form parts of a common chamber inclosed by said vat, and each part of said chamber containing a plurality of wings arranged coaxially, substantially as described.

3. In a horizontal pulp-strainer having below the screen a plurality of oscillatory pairs of wings located side by side and adapted to act upon the pulp, the combination with the vat, the screen, and the wings, of means for leading the pulp into the spaces below the wings and away from the space above the screen; said spaces being in direct intercommunication, and each of them containing a plurality of wings arranged coaxially, an interstice being left between every two of the thus-arranged wings, substantially as described.

4. In a horizontal pulp-strainer having below the screen a plurality of oscillatory pairs of wings located side by side and adapted to act upon the pulp, the combination with the vat, the screen, and the wings, of means for leading the pulp into the spaces below the wings and away from the space above the screen; said spaces being in direct intercommunication, and each of them containing a plurality of wings, arranged coaxially, projections attached to the upper side of said pairs of wings between the two wings forming a pair, substantially as described.

5. In a horizontal pulp-strainer having below the screen a plurality of oscillatory pairs of wings located side by side and adapted to act upon the pulp, the combination with the vat, the screen, and the wings, of means for leading the pulp into the spaces below the wings and away from the space above the screen; said spaces being in direct intercommunication, and each of them containing a plurality of wings, arranged coaxially, projections attached to the upper side of said pairs of wings between the two wings forming a pair, and terminating only just at the lower surface of the screen, substantially as described.

6. In a horizontal pulp-strainer having below the screen a plurality of oscillatory pairs of wings located side by side and adapted to act upon the pulp, and having upright flat parts located between the middle portions of said pairs of wings and said screen, the combination with the vat, the screen, and the wings, of means for leading the pulp into the spaces below the wings and away from the space above the screen; said spaces being in direct intercommunication, and each of them containing a plurality of wings arranged coaxially, said upright flat parts being fixed to said pairs of wings and being divided accordingly, substantially as described.

7. In a horizontal pulp-strainer having below the screen a plurality of oscillatory pairs of wings located side by side and adapted to act upon the pulp, and having flat upright bodies arranged between the middle portions of said pairs of wings and said screen, the combination with the vat, the screen and the wings, of means for leading the pulp into the spaces below the wings and away from the space above the screen; said spaces being in direct intercommunication, and each of them containing a plurality of wings arranged coaxially, said flat upright bodies being secured to said pairs of wings and being each shorter than the respective pair, substantially as described.

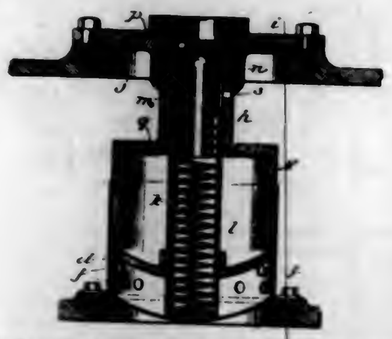
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**754,162. BLOWING-ENGINE. EDWIN REYNOLDS, Milwaukee, Wis. Filed Sept. 19, 1898. Serial No. 691,364. (No model.)**

*Claim.*—1. In combination with a chambered cylinder-head, a valve-seat formed thereon; a fixed stem extending down toward said seat; a valve mounted and movable upon said stem toward and from the seat; a tube mounted within the stem and bearing upon the inner face of the valve at one end; a plug fitting within the upper end of the stem; and a spring interposed between the lower closed end of the tube and the lower end of the plug.

2. In combination with a chambered cylinder-head, a valve-seat formed thereon; a fixed stem extending down toward said seat; a valve mounted and movable upon said stem toward and from said seat; a tube fitting within the stem and bearing at its lower end upon the inner face of the valve; a plug fitting within the upper end of the stem; a spring interposed between the lower closed end of the tube and the lower end of the plug; and a ring or collar *n*, also mounted within the stem and projecting out in line with the upper end of the tube.

3. In combination with a chambered cylinder-head, a valve-seat formed thereon; a fixed stem extending down toward said seat and provided with an enlarged head; a valve *d* movably mounted upon said head and provided with a series of openings *f*; a tube *k* fitting within said head and extending through and bearing upon the inner face of the valve; a plug *m* fitting within the upper end of the stem; a ring or collar *n* also fitting within the stem and extending out in line with the upper end of the tube; a spring bearing against the lower end of the plug and tending to force the tube down; and a vent formed in the plug, substantially as and for the purpose described.



4. In combination with a chambered cylinder-head, a valve-seat formed in one wall thereof; a fixed support extending from the opposite wall toward the valve-seat; a valve mounted upon said support; means located in the interior of said support for forcing the valve down to its seat; means for affording access to said forcing means; and means for closing the opening formed by the removal of the parts in securing said access, against escape of air from the chambered cylinder-head.

5. In combination with a chambered cylinder-head, a valve-seat formed in one wall thereof; a fixed support, comprising the hollow cylindrical head *g*, stem *h* and plate *i*; a cup-shaped valve *d* mounted upon said head *g*; a tube *k* extending through the lower end of the head and bearing upon the inner face of the valve, the upper end of the tube extending into the hollow portion *h*; a plug *m* secured in the plate *i* and extending down into the tube *k*; a spring bearing against the lower end of the plug and the lower closed end of the tube; a collar or ring *n* fitting within the tubular portion *h* and extending out in line with the upper end of the tube *k*; and an opening *q* formed in the enlarged head *g*.

6. An exhaust-valve for air-compressors, comprising an annular head; a cup-shaped valve mounted thereon provided with openings *f*; a hollow tube mounted within the annular head and bearing at its closed end upon the inner face of the valve; a closure for the upper end of said tube when it is elevated; and a spring for forcing said tube down.

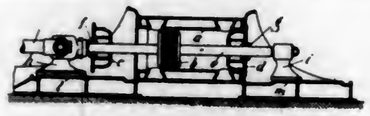
7. In a blowing-engine or compressor system, the combination of the cylinder; a moving piston; induction-valves having ports in their sides, and their inner ends closed; positive means for opening said valves; weighted arms or levers for closing said valves; means for arresting the valves when the closed ends are in the same plane as the inner face of the cylinder-head; and means for taking the thrust of the valves off the operating mechanism while the valves are in a state of rest, substantially as described.

8. In combination with a cylinder-head, a valve-seat formed thereon; a fixed stem extending toward said seat; a valve mounted and movable upon said stem toward and from the seat; a tube mounted within the stem and bearing upon the inner face of the valve at one end; a plug fitting within the outer end of the stem; a shell or tube secured to the lower end of the plug and extending within the outer tube; a spring interposed between the closed end of the outer tube and the inner end of the plug; and a second spring fitting within the inner tube and bearing at one end against the closed end of the outer tube.

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**754,163. GAS-ENGINE. HANS RICHTER, Nuremberg, Germany. Filed July 9, 1903. Serial No. 164,865. (No model.)**

*Claim.*—In a double-acting four-stroke gas-engine, a base, a cylinder mounted thereon, a removable cylinder-head at each end, a piston-rod projecting through each cylinder-head, a piston carried by said rod, and a cross-head connected to the rod at each end and having a sliding connection with the base below the bottom of the cylinder, substantially as described.



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**754,164. PROCESS OF MAKING VANILLIN. ROBERT H. RIDDLE, Uwchland, Pa., assignor to the Warner Chemical Company, Carteret, N. J., a Corporation of New Jersey. Filed June 18, 1903. Serial No. 162,099. (No specimens.)**

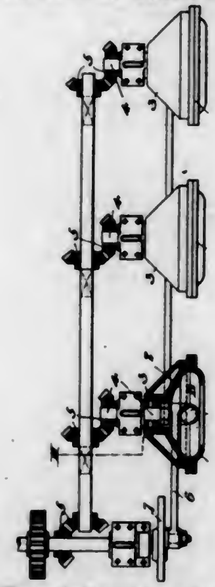
*Claim.*—1. The process of producing acet-vanillin from acet-iso-eugenol, which consists in submitting to the action of suitable oxidizing agents a solution of acet-iso-eugenol which has been dissolved in the ester of a fatty acid.

2. The process of producing acet-vanillin which consists in preliminarily preparing a saturated solution of acet-iso-eugenol by means of the ester of a fatty acid as a solvent, then oxidizing the same by a chromic-acid solution.

3. The process of producing vanillin which consists in dissolving acet-iso-eugenol in the ester of a fatty acid, then oxidizing the same by means of a chromic-acid solution, then purifying the resultant acet-vanillin by isolating the acetyl compound, and freeing the vanillin therefrom.

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**754,165. MANUFACTURE OF GLASS ARTICLES OF CIRCULAR CROSS-SECTION. DANIEL A. RIPLEY, Pittsburg, Pa., assignor to United States Glass Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Oct. 19, 1903. Serial No. 177,561. (No model.)**



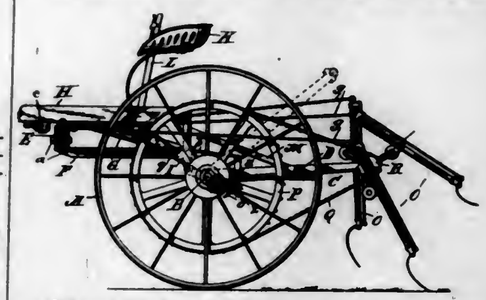
*Claim.*—1. The method herein described of making glass articles of circular cross-section, which consists in supporting a piece of plastic glass upon a forming-surface of the desired contour, retaining it in contact with said surface by gravity only, and subjecting it to rolling contact therewith; substantially as described.

2. The method herein described of making glass balls, which consists in supporting a piece of plastic glass upon a divided forming-surface of the desired contour, subjecting it to continuous rolling in contact with a portion of said surface and to an intermittent rolling in contact with the other portion of said surface; substantially as described.

3. The method herein described of making glass balls, which consists in retaining by gravity a piece of plastic glass in contact with a divided forming-surface of the desired contour, subjecting it to unidirectional rolling contact with one portion of said surface and to rolling contact in alternately reverse directions with the other portion of said surface; substantially as described.



**754,166. HAY-TEDDER. GEORGE L. ROBY, Dayton, Ohio, assignor to the Stoddard Manufacturing Company, Dayton, Ohio, a Corporation of Ohio. Filed Feb. 28, 1901. Serial No. 49,247. (No model.)**



*Claim.*—1. In a hay-tedder, the combination of a seat-platform, a fork-carrying frame pivoted thereto, operating means actuated by the traction of the machine for normally operating the forks, a member rotated by the operating means whose non-rotation will disconnect said operating means, and a brake put into action by the lifting of the fork-carrying frame which will automatically engage and stop such member by the differential movement between the fork-carrying frame and seat-platform when the forks are raised a certain distance from the ground, substantially as described.

2. In a hay-tedder, the combination of forks normally driven by the traction of the machine, a gear-wheel revolving concentric with the ground-wheels, pawls having projecting parts normally rotating the gear-wheel with the ground-wheel when moving forward, a disk revolving with the gear-wheel, cam-surfaces on said disk engaging said projecting parts of the pawls, and means for automatically applying friction to the disk and thereby drawing the pawls from engagement with the ground-wheel when the forks are raised a certain distance from the ground, substantially as described.

3. In a hay-tedder, the combination of a ground-wheel, a fork-frame pivoted to the seat-frame, a gear-wheel moving concentrically with the ground-wheel, pawls pivoted in the gear-wheel and engaging with the ground-wheel, and a cam-wheel encompassing parts of the pawls and a friction-brake engaging the cam-wheel at certain positions of the fork-frame and free from the cam-wheel at other positions, substantially as described.

4. In a hay-tedder, the combination of a fork-carrying crank-shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted, a ratchet-wheel rotated by the traction of the machine, a drive-wheel on the same axis with said ratchet-wheel, dog mechanism between said drive-wheel and ratchet, connecting mechanism between said drive-wheel and the fork crank-shaft, a friction-disk on the same axis with the ratchet-wheel, a connection between said friction-disk and the dog mechanism, and a brake for said friction-disk actuated by the angling of the crank-shaft frame and seat-frame, whereby the raising of the crank-shaft frame throws the brake-shoe into engagement with its disk and causes the disengagement of the dog mechanism and ratchet to stop the revolution of the fork-carrying crank-shaft, substantially as described.

5. In a hay-tedder, the combination of a fork-carrying crank-shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted a ratchet-wheel rotated by the traction of the machine, a sprocket-wheel on the same axis with said ratchet-wheel, dog mechanism between said sprocket-wheel and ratchet-wheel, a drive-chain connecting said sprocket-wheel and fork crank-shaft, a friction-disk on the same axis with the ratchet and sprocket wheels, a connection between said friction-disk and the dog mechanism, and a brake-shoe for said friction-disk actuated by the angling of the crank-shaft frame and seat-frame, whereby the raising of the crank-shaft frame throws the brake-shoe into engagement with the disk and causes the disengagement of the dog mechanism and ratchet to stop the revolution of the fork-carrying crank-shaft, substantially as described.

6. In a hay-tedder, the combination of a fork-carrying crank-shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted, a ratchet-wheel rotated by the traction of the machine, a drive-wheel on the same axis with said ratchet-wheel, dog mechanism between said drive-wheel and ratchet, connecting mechanism between said drive-wheel and fork crank-shaft, a friction-disk on the same axis with the ratchet-wheel, a cam connection between said friction-disk and the dog mechanism, and a brake for said friction-disk actuated by the angling of the crank-shaft frame

and seat-frame, whereby the raising of the crank-shaft frame throws the brake-shoe into engagement with the disk and causes the disengagement of the dog mechanism and ratchet to stop the revolution of the fork-carrying crank-shaft, substantially as described.

7. In a hay-tedder, the combination of carrying-wheels, a fork-carrying crank-shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted, a ratchet-wheel rotated by the traction of the machine, dog mechanism for said ratchet-wheel, a sprocket-wheel on the same axis with said ratchet-wheel, a drive-chain connecting said sprocket-wheel and fork crank-shaft, a friction-disk on the same axis with the ratchet and sprocket wheels, a cam connection between said friction-disk and the dog mechanism, and a brake-shoe for said friction-disk actuated by the angling of the crank-shaft frame and seat-frame, whereby the raising of the crank-shaft frame throws the brake-shoe into engagement with the disk and causes the disengagement of the dog mechanism and ratchet to stop the revolution of the fork-carrying shaft, substantially as described.

8. In a hay-tedder, the combination of carrying-wheels, a fork-carrying shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted forward of the supporting-axis of the carrying-wheels, a ratchet-wheel rotated by the traction of the machine, a drive-wheel on the axis with said ratchet-wheel, dog mechanism between said drive-wheel and ratchet, connecting mechanism between said drive-wheel and the fork crank-shaft, a friction-disk on the same axis with the ratchet-wheel, a connection between the said friction-disk and the dog mechanism, a brake for said friction-disk actuated by the angling of the crank-shaft frame and seat-frame, and a single lever for raising and lowering the crank-shaft frame, whereby the raising of the crank-shaft frame throws the brake-shoe into engagement with its disk and causes the disengagement of the dog mechanism and ratchet to stop the revolution of the fork-carrying crank-shaft, substantially as described.

9. In a hay-tedder, the combination of carrying-wheels, a fork-carrying crank-shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted forward of the supporting-axis of the carrying-wheels, a ratchet-wheel rotated by the traction of the machine, a drive-wheel on the same axis with said ratchet-wheel, dog mechanism between said drive-wheel and ratchet-wheel, connecting mechanism between said drive-wheel and the fork crank-shaft, a friction-disk on the same axis with the ratchet-wheel, a cam connection between said friction-disk and the dog mechanism, a brake for said friction-disk actuated by the angling of the crank-shaft frame and seat-frame, and a single lever for raising and lowering the crank-shaft frame, whereby the raising of the crank-shaft frame throws the brake-shoe into engagement with the disk and causes the disengagement of the dog mechanism and ratchet to stop the revolution of the fork-carrying shaft, substantially as described.

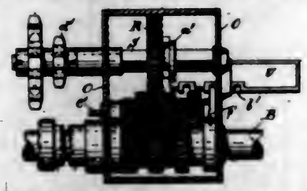
10. In a hay-tedder, the combination of a seat-frame, a fork-shaft frame pivoted thereto, fork-carrying crank-shaft journaled on said fork-shaft frame, carrying-wheels for both of said frames, driving mechanism between said carrying-wheels and the fork-shaft, a single lever for angling said fork-carrying frame and seat-frame, spring buffer mechanism for said lever and means for connecting and disconnecting said driving mechanism by the lowering and raising of the fork-shaft frame through the medium of said single lever, substantially as described.

11. In a hay-tedder, the combination of carrying-wheels, a fork-carrying crank-shaft, a carrying-frame therefor, a seat-frame to which the carrying-frame is pivoted forward of the supporting-axis of the carrying-wheels, a ratchet-wheel rotated by the traction of the machine, a drive-wheel on the same axis with said ratchet-wheel, dog mechanism between said drive-wheel and ratchet-wheel, connecting mechanism between said drive-wheel and the fork crank-shaft, a friction-disk on the same axis with the ratchet-wheel, a cam connection between said friction-disk and the dog mechanism, a brake for said friction-disk actuated by the angling of the crank-shaft frame and seat-frame, a single lever pivoted to the seat-frame and connected to the fork-carrying frame, spring buffer mechanism between said lever connections and fork-carrying frame, and means for connecting and disconnecting said driving mechanism by the lowering and the raising of the fork-shaft frame through the medium of the single lever, substantially as described.

12. In a hay-tedder of the character described, the combination of carrying-wheels, seat-frame, fork-carrying frame, fork-carrying crank-shaft, adjustable journal-bearings for the latter secured to thick members of the fork-carrying frame, sprocket-wheels having enlarged sleeves to pass the bends of the crank-shaft, a connection for receiving the end thrust of the crank-shaft between said sprocket-wheels and the adjacent shaft-journals, attaching-bushings for said sprocket-wheels, and driving connections between the sprocket-wheels and the traction-driven mechanism of the machine, substantially as described.

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**754,167. GRAIN-DRILL.** GEORGE I. ROBY, Dayton, Ohio, assignor to the Stoddard Manufacturing Company, Dayton, Ohio, a Corporation of Ohio. Filed Feb. 23, 1901. Serial No. 49,348. (No model.)



*Claim.*—1. In a grain-drill, the combination of a series of feed-distributing wheels, a shaft for rotating the same, a shaft constantly driven by the forward traction of the machine, a set of gears side by side on said shaft, a second set of gears adapted to mesh with the aforesaid gears on a counter-shaft, and a third gear on a shaft connected with the feed-shaft and adjustable with the second set of gears, whereby upon shifting said third gear different speeds can be imparted to the feed-shaft, substantially as described.

2. In a grain-drill, the combination of a series of feed-distributing wheels, a shaft for rotating the same, a shaft constantly driven by the forward traction of the machine, a set of gears side by side on said shaft, a second set of gears adapted to mesh with the aforesaid gears on a counter-shaft, a third gear on a shaft connected with the feed-shaft and adjustable with said second set of gears, and means for engaging and disengaging said second set of gears and the third gear to permit the lateral adjustment of the third gear, substantially as described.

3. In a grain-drill, the combination of a series of feed-distributing wheels, a shaft for rotating the same, a shaft constantly driven by the forward traction of the machine, a set of gears side by side on said shaft, a second set of gears adapted to mesh with the aforesaid gears on a counter-shaft, a third gear on a shaft connected with the feed-shaft and adjustable with said second set of gears, a gage-plate for adjusting and locking said third gear, and means for engaging and disengaging said second set of gears and the third gear to permit the lateral adjustment of the third gear, substantially as described.

4. In a grain-drill, the combination of a series of feed-distributing wheels, a shaft for rotating the same, a shaft constantly driven by the forward traction of the machine, a set of gears side by side on said shaft, a second set of gears adapted to mesh with the aforesaid set of gears on a counter-shaft, a third gear on a shaft connected with the feed-shaft and adjustable with the second set of gears, and a box for inclosing said gears, substantially as described.

5. In a grain-drill, the combination of a series of feed-distributing wheels, a shaft for rotating the same, a shaft constantly driven by the forward traction of the machine, a set of gears side by side on said shaft, a second set of gears adapted to mesh with the aforesaid set of gears on a counter-shaft, a third gear on a shaft connected with the feed-shaft by gears of different diameter and adjustable with the second set of gears, and an adjustable box for inclosing said gears and regulating the distance between the last-named counter-shaft and feed-shaft, substantially as described.

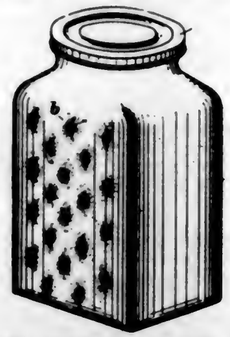
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**754,168. GLASS JAR.** ROGER I. SHERMAN, Lexington, Mass. Filed Oct. 1, 1903. Serial No. 176,271. (No model.)

*Claim.*—1. The method of producing a jar for naturalizing preserved-food products designed to be placed therein, which consists in providing a transparent wall portion for said jar and in coloring the same predeterminately with reference to the natural color of the preserved-food products thereby to naturalize the exteriorly-viewed color effects of the particular articles of food designed to be viewed therethrough.

2. A naturalizing preserved-food jar provided with a transparent wall portion predeterminately colored with respect to the natural color of the preserved-food products to be placed therein thereby to naturalize the exteriorly-viewed color effects of the particular articles of food designed to be viewed therethrough.

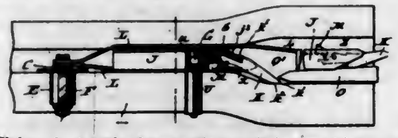
3. The method of producing a jar for holding preserved-food products which consists in providing a transparent wall portion, forming irregularities therein to thereby correct the configuration of the articles of food to be placed within said jar and to be exposed to view through said wall portion, and in coloring said wall portion predeterminately with reference to the natural color of said food articles thereby to naturalize the exteriorly-viewed color effects thereof.



4. A naturalizing preserved-food jar provided with a transparent wall portion having irregularities therein for correcting the configuration of the articles of food to be placed within said jar and to be exposed to view through said wall portion, said wall portion being also predeterminately colored with reference to the natural color of said food articles thereby to naturalize the exteriorly-viewed color effects thereof.

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**754,169. DEVICE FOR THE OPENING OR SHIFTING OF TRACK-SWITCHES.** WILLIAM D. SIMPSON, Columbia, S. C. Filed July 23, 1903. Serial No. 166,778. (No model.)



*Claim.*—1. A device for operating a switch, comprising a wedge-piece normally held in line with the groove of a track, and a spring under tension engaging the wedge-piece and which is relaxed and causes the wedge-piece to be moved laterally when the latter, enters the widened portion of the groove, containing the switch-point.

2. The combination of a pivoted wedge-piece and a spring engaging the wedge-piece and tending to move the latter about its pivot when the wedge-piece is in engagement with the main track and which does so move said wedge-piece when the latter enters the switch.

3. The combination of a supporting-frame, a wedge-piece carried thereby and a spring placed under compression and tending to shift the wedge-piece when the latter is in engagement with the main track and which does so move the wedge-piece when the latter enters the switch.

4. The combination of a supporting-frame, a wedge-piece carried thereby and adapted to engage a switch-point, a wedge-block carried by the frame and adapted to move laterally in the frame and a spring interposed between the wedge-block and the wedge-piece.

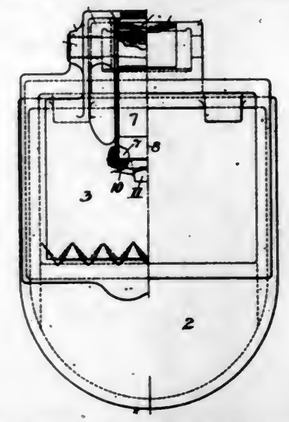
5. The combination of a supporting-frame, a wedge-piece carried thereby and adapted to engage a switch-point, a wedge-block carried by the frame and adapted to move laterally relative thereto, a pin connecting the wedge-piece with the wedge-block and a spring interposed between the wedge-piece and wedge-block.

6. The combination of a supporting-frame, a wedge-piece pivoted thereto and having an inclined front portion adapted to engage a switch-point, a wedge-block carried by the frame and having an inclined portion adapted to engage a rail whereby the wedge-block is moved laterally into the frame when the switch-operating device is lowered on to the track, a pin connecting the wedge-block with the rear end of the wedge-piece and a spring interposed between the wedge-piece and wedge-block.

7. The combination of a rear frame having supporting-rollers which rest on the track, the boxes having arms pivotally connected with the rear frame, rollers carried by said boxes and adapted to run on the tracks, wedge-pieces pivotally connected with the boxes and adapted to engage switch-points, laterally-moving wedge-blocks carried by the boxes and springs interposed between the wedge-pieces and wedge-blocks.

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**754,170. JOURNAL-BOX.** JOHN W. STEPHENSON, Toledo, Ohio, assignor to the National Malleable Castings Company, Cleveland, Ohio, a Corporation of Ohio. Filed Feb. 2, 1903. Serial No. 141,407. (No model.)

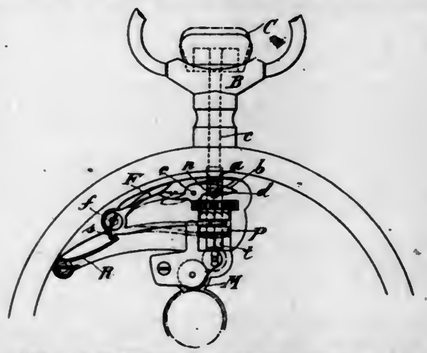


*Claim.*—1. A journal-box having a pivotally-movable lid, a leaf-spring having a laterally-deflected rounded end, and a lug provided with a rib or projection against which the end of the spring has an endwise bearing when the lid is closed, and against which the inner surface of the spring bears as the lid is opened, substantially as described.

2. A journal-box having a pivotally-movable lid, and a lug provided with a projection or rib against which the end of the spring bears when the lid is closed, said projection having a middle rocking bearing on the inner surface of the spring; substantially as described.

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**754,171. STEM WINDING AND SETTING MECHANISM FOR WATCHES.** CHARLES RODÉ-STUCKY, La Chaux-de-Fonds, Switzerland. Filed July 29, 1903. Serial No. 167,484. (No model.)



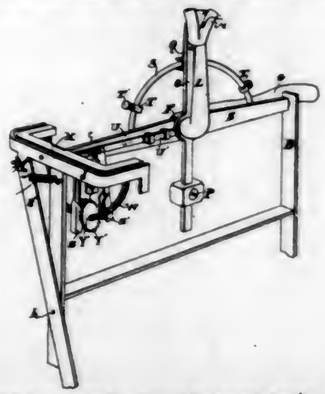
*Claim.*—In combination in a hand-setting mechanism a spindle *t*, a pinion P, lever *b*, *u*, pivoted intermediate of its length and having a pin-and-groove connection with the spindle *t*, a double lever F F' pivoted at the junction of its two arms, said arms extending on the same side of the pivotal point, one arm being engaged by the lever-arm *u* and the other arm of the double lever engaging the pinion and a spring acting on the double lever, substantially as described.

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**754,172. LAWN-SPRINKLER.** EMIL SUTHERLAND, Los Angeles, Cal., assignor to J. T. Pollock, Los Angeles, Cal. Filed Nov. 16, 1903. Serial No. 181,417. (No model.)

*Claim.*—1. A lawn-sprinkler comprising a delivery-nozzle operatively connected to a sprinkling-nozzle, said sprinkling-nozzle having two curved channels whose outer ends curve away from each other and whose inner ends lie adjacent to each other, and means to cause the delivery-nozzle to alternately discharge its contents into first one and then the other of the channels of the sprinkling-nozzle.

2. In a lawn-sprinkler a delivery-nozzle operatively connected to a sprinkling-nozzle, said sprinkling-nozzle having two curved channels whose outer ends curve away from each other and whose inner ends lie adjacent to each other; means to cause the delivery-nozzle to alternately discharge its contents into first one and then the other of the channels of the sprinkling-nozzle; means to cause the movement of the nozzle from one side of the machine to the other side thereof.



3. In a lawn-sprinkler a sprinkling-nozzle having two curved channels whose outer ends curve away from each other and whose inner ends lie adjacent to each other; means to cause the delivery of water alternately first into one and then into the other of the channels of the sprinkling-nozzle; means connected thereto to cause the travel of said sprinkling-nozzle from one side of the frame to the other side thereof.

4. In a lawn-sprinkler a sprinkling-nozzle having two curved channels whose outer ends curve away from each other and whose inner ends lie adjacent to each other; means to cause the delivery of water alternately first into one then into the other of the channels of the sprinkling-nozzle.

5. The herein-described sprinkler comprising a frame; a supporting-bar rotatively mounted in the upper part thereof; a delivery-nozzle revolubly mounted in said supporting-bar; a bar having a collar secured to said delivery-nozzle and projecting in front and to the rear thereof; an adjustable weight on the rear end of said bar; a sprinkling-nozzle having two curved channels, the front ends of which curve away from each other and the rear ends of which lie adjacent to each other pivotally secured to the front end of said bar, said channels being adapted to receive the discharge of the delivery-nozzle; a shifting lever pivotally connected to said bar near its center and operatively connected at its front end to said sprinkling-nozzle; a stop-bar adjacent to the lower end of said shifting lever and having its ends secured to said supporting-bar; adjustable stops on said stop-bar; means to attach the hose to said supporting-bar.

6. In a lawn-sprinkler the combination of a frame; a delivery-nozzle revolubly mounted therein; a sprinkling-nozzle having two curved channels whose front ends curve away from each other and whose rear ends lie adjacent to each other, said sprinkling-nozzle being pivotally mounted in front of the discharge end of the delivery-nozzle; means to cause the delivery of water into the sprinkling-nozzle alternately first into one and then into the other of the channels comprising a shifting lever pivotally mounted at the rear of the sprinkling-nozzle and operatively connected to one end thereof; stops secured in said frame in the path of the movement of the lower end of the shifting lever and adapted to be engaged thereby, whereby the channels of the sprinkling-nozzle are alternately shifted so as to receive the discharge from the delivery-nozzle.

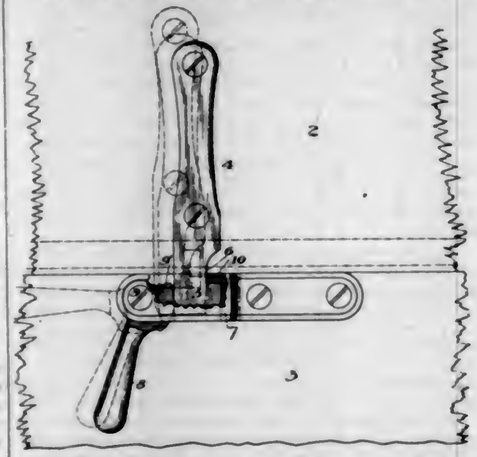
7. In a lawn-sprinkler the combination of a frame; a supporting-bar revolubly mounted therein; a delivery-nozzle revolubly mounted in said bar; a sprinkling-nozzle having two curved channels whose front ends curve away from each other and whose rear ends lie adjacent to each other, said sprinkler-nozzle being pivotally mounted in front of the discharge end of the delivery-nozzle; means to cause the delivery of water into the sprinkling-nozzle alternately, first into one and then into the other of the channels; means to cause the sprinkling-nozzle to travel from one side of the frame to the other comprising a lever pivotally mounted near the center thereof and operatively connected to the delivery-nozzle at such point as will cause the oscillation of the other end of the lever; dogs secured to said lever; a ratchet-wheel having oppositely-pointed teeth adapted to be engaged by said dogs; a curved threaded rod secured in said frame and passing in threaded contact through said ratchet-wheel; shifting-arms secured to said frame on opposite sides of said ratchet-wheel; means to prevent one of said dogs from engaging said ratchet-wheel while the other dog is in engagement therewith.

8. In a lawn-sprinkler the combination of a frame; a delivery-nozzle revolubly mounted therein; a sprinkling-nozzle having two curved channels whose front ends curve away from each other and whose rear ends lie adjacent to each other pivotally mounted in front of the discharge end of the delivery-nozzle; a self-closing hydrant operatively connected to said delivery-nozzle; means to lock said hydrant open; means to cause the sprinkling-nozzle to travel from one end of the frame toward the other end of the frame; means to cause the sprinkling-nozzle to travel from one side of the frame to the other side of the frame; means to release the lock on the hydrant.

9. In a lawn-sprinkler the combination of a frame; a delivery-nozzle revolubly mounted therein; a sprinkling-nozzle having two curved channels whose front ends curve away from each other and whose rear ends lie adjacent to each other pivotally mounted in front of the discharge end of the delivery-nozzle; means to cause the delivery of water into the sprinkling-nozzle alternately first into one and then into the other of the channels; means to cause the sprinkling-nozzle to travel from one side of the frame to the other; means to automatically shut off the supply of water when the sprinkling-nozzle has reached its limit of side motion comprising; a tripping-lever pivotally mounted near its center to the frame; a spring secured to said lever and to the frame; a rocking lever pivotally mounted on said frame and having a catch adapted to engage the upper end of said tripping-lever and hold the same against the spring-pressure; a wire cord adjustably secured to the lower end of said tripping-lever and connected to a locking-lever on the hydrant; a self-closing hydrant having operating-handles to open said hydrant by pressing the outer ends thereof toward each other; a locking-lever pivotally mounted on one of said handles and having a catch in one of its ends adapted to receive and retain the other handle of said hydrant to lock the hydrant open; means to release said tripping-lever when the sprinkling-nozzle has reached the limit of its side movement.

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**754,173. SEAT-LOCK.** Henry C. Swan, Cleveland, Ohio. Filed Sept. 19, 1903. Serial No. 173,758. (No model.)



*Claim.*—1. In a seat-lock, a riser-strap having a projecting lower end with a side shoulder, a body-strap having an opening with an upper overhanging shoulder, and a cam-lever arranged to automatically open and then move the shoulders in locking engagement; substantially as described.

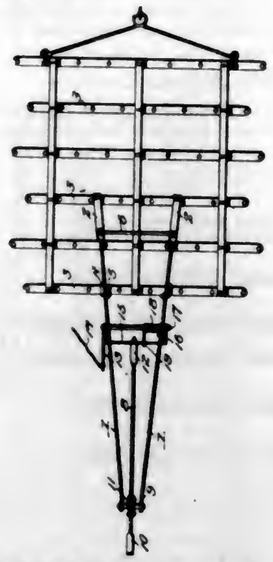
2. In a seat-lock, a riser-strap having a side notch or shoulder and a body-strap having an opening with an overhanging shoulder on one side, and a locking-cam on the other side, said locking-cam having a shoulder arranged to be engaged by the lower end of the riser-strap, to rotate the cam; substantially as described.

3. In a seat-lock, a riser-strap having a projecting lower end with a side shoulder, a body-strap having an opening with an upper overhanging shoulder at one end, and a weighted gravity cam-lever at the opposite side of the opening and arranged to open automatically when the riser-strap is inserted and then move the shoulders into locking engagement; substantially as described.

4. A seat-lock comprising a riser-strap having a side shoulder, a body-strap having an opening with a shoulder at one side, and a cam-lever at one side of the opening and arranged to automatically open when the riser-strap enters the opening in the body-strap; substantially as described.

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**754,174. HARROW-JACK.** Nelson W. Thompson, Erskineville Oreg. Filed Oct. 13, 1902. Renewed July 16, 1903. Serial No. 165,873. (No model.)



*Claim.*—1. A jack-frame comprising a pair of rearwardly-converging side bars having their forward ends recurved to form hooks for engagement with the harrow, means for securing the jack-frame at another point to the frame of the harrow, a rotatable jack pivotally mounted between the convergent ends of the side bars, and a jack-tripping device carried by the jack-frame.

2. A jack-frame provided with means for securing the same to a harrow, a rotatable jack pivotally mounted in the frame and comprising a main arm, replacing-arms of less length than the main arm and extending in different directions, and a tripping device for engaging and releasing the main arm of the jack, said tripping device comprising a trip-lever, a cross-bar adapted to be moved thereby into and out of the path of the main arm of the jack, and a spring for restoring the tripping device to its normal position.

3. A harrow-jack comprising a jack-frame, means for coupling the same to the harrow, a rotatable jack pivotally mounted in the jack-frame and comprising a main arm, shorter arms extending respectively in line with and substantially at right angles to the main arm, a tripping device carried by the jack-frame and consisting of a tripping-lever, and a cross-bar extending laterally therefrom and adapted to be moved by the lever into and out of the path of the main arm of the jack, substantially as described.

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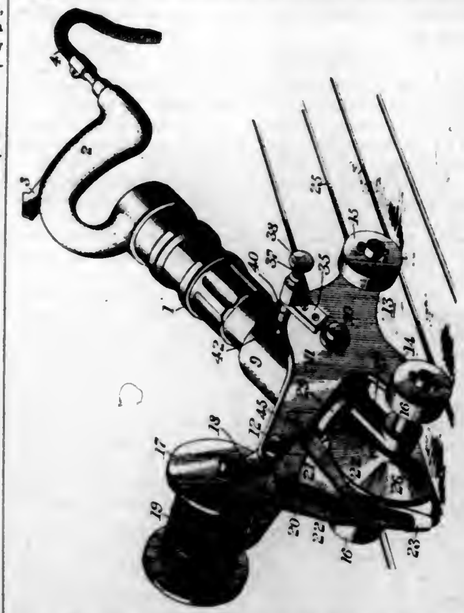
**754,175. PNEUMATIC CALKING-TOOL.** Joseph J. Tynan and Harry C. Mortiller, Philadelphia, Pa., assignors, by direct and mesne assignments, to Julius Keller, Philadelphia, Pa. Filed Nov. 4, 1903. Serial No. 179,783. (No model.)

*Claim.*—1. In a calking apparatus, the combination of a pneumatic impact-tool, a rotary calking device, a support for said tool and device and means for detachably connecting said impact-tool with said support.

2. In a pneumatic calking-tool, the combination of a rotary calking device, an inclined support for said calking device, a pneumatic impact-tool and means for adjusting the inclination of said support and impact-tool.



3. In a calking device, a carriage, a pneumatic impact-tool detachably connected therewith, a rotary device suitably supported and cushioning devices intermediate said calking device and said impact-tool.



4. The combination of a rotary calking device, a forked anvil supporting the latter in an inclined direction, and a pneumatic impact device for hammering said anvil, whereby said calking device simultaneously rotates and advances the apparatus.

5. In a calking apparatus, a carriage, a cylinder mounted in trunnions therein, means for locking said cylinder at the desired inclination, a pneumatic impact-tool, means for detachably connecting the pneumatic impact-tool to said cylinder, and a rotary calking device mounted on said cylinder.

6. In a calking apparatus, the combination of a rotary calking device, a pneumatic impact-tool and means for causing the blows from said impact-tool to simultaneously reciprocate and rotate said calking device.

7. The combination of a rotary calking device, a carriage, a reel for the calking material, a guide located intermediately of said reel and calking device, and a pneumatic impact-tool detachably supported upon said carriage.

8. In a calking apparatus, a carriage, a cylinder mounted in trunnions thereon, means for locking said cylinder at any desired inclination, a pneumatic impact-tool detachably connected with said cylinder, and a calking device.

9. In a calking apparatus, a pneumatic impact-tool, a carriage on which said tool is detachably supported, a rotary calking device consisting of a tapered disk suitably supported, and means for conveying the blows from the impact-tool to said calking device.

10. In a calking apparatus, the combination of a carriage, a pneumatic impact-tool detachably supported thereon, a rotary calking device and means for causing said calking device to both effect the calking at the desired point and to revolve, so as to effect the progression of the apparatus.

11. In a pneumatic calking apparatus, the combination of a carriage, a rotary calking device, a spool for containing the calking material, a guide for the calking material, a pneumatic impact-tool, and means for detachably securing said impact-tool to said carriage.

12. In a pneumatic calking apparatus, a carriage, rollers for said carriage, whereby the latter is movable upon the material to be calked, a cylinder mounted in suitable trunnions so as to be capable of oscillation on said carriage, a pneumatic impact-tool detachably connected to said cylinder, a calking device, and means for imparting the blows from said impact-tool to said calking device.

13. In a pneumatic calking apparatus, a carriage, rollers for said carriage, whereby the latter is movable upon the material to be

calked, a cylinder mounted in suitable trunnions, so as to be capable of oscillation on said carriage, a pneumatic impact-tool detachably connected to said cylinder, a calking device and means for imparting the blows from said impact-tool to said calking device, in combination with means for cushioning the return movement of said calking device.

14. In a pneumatic calking apparatus, the combination of a carriage, a cylinder mounted in trunnions therein, means for adjusting the inclination of said cylinder, means for detachably connecting the pneumatic impact-tool to said cylinder, a calking device, a supply for the calking material suitably supported on said carriage, and a guide intermediate said calking device and the supply for said calking material.

15. In a pneumatic calking apparatus, a cylinder mounted in suitable trunnions thereon, a rotary calking device, a fork in which said calking device is supported, a body projecting from said fork into said cylinder, a nut on said body and a spring interposed between said nut and cylinder for automatically resetting said calking device.

16. In a pneumatic calking apparatus, a carriage, a cylinder rotatably mounted therein on suitable trunnions, a fork having a body projecting into said cylinder, a calking device, cushioning devices for said body and means for preventing said calking device and its support from improper rotation with respect to said cylinder.

17. In a pneumatic calking apparatus, a carriage composed of a plurality of sides, rollers upon which said carriage is mounted, a cylinder mounted in trunnions in the sides of said carriage, means for varying the inclination of said cylinder, a pneumatic impact-tool detachably connected to said cylinder, a rotary tapered calking device, a reel for the calking material located above said calking device, and a guide for the calking material located intermediate said calking device and reel.

18. In a pneumatic calking apparatus, a suitable carriage, a cylinder supported therein, a pneumatic impact-tool detachably supported in said cylinder, a grasping-handle for said tool, a manually-operated throttle-valve trigger carried by said handle, a calking device, and means for transmitting the blows from said tool to said calking device.

19. In a pneumatic calking apparatus, a carriage, a cylinder mounted in suitable trunnions thereon, a rotary calking device, a fork in which said calking device is supported, a body projecting from said fork into said cylinder, a nut on said body, a spring interposed between said nut and cylinder for automatically resetting said calking device.

20. In combination with a cylinder, a carriage in which said cylinder is movably supported, an impact-tool, a coupling device for detachably securing said impact-tool to said cylinder, a rotary calking device, means for supporting said calking device from said cylinder, and a loose shank mounted in the body of the support for said calking device and adapted to be hammered upon by the piston of the impact-tool.

21. The combination of a manually-held pneumatic impact-tool, a calking device, a support intermediate said calking device and pneumatic tool, and means for detachably connecting said pneumatic tool to said support.

22. The combination of a cylinder, a calking device supported thereby, a manually-held pneumatic impact-tool, and a coupling device for securing said impact-tool to said cylinder.

23. In a calking apparatus, a rotary disk-shaped calking-tool, a support therefor, means for imparting a reciprocating movement to said tool and for also imparting a rotary motion to said tool whereby the propulsion of the calking apparatus is effected.

24. In a calking apparatus, a rotary disk-shaped calking-tool, a support therefor, means for imparting a reciprocating movement to said tool and for also imparting a rotary motion to said tool whereby the propulsion of the calking apparatus is effected, in combination with a source of supply for the calking material, the latter being unwound and fed to the desired point by the propulsion of said calking apparatus.

25. A manually-held pneumatic impact-tool, a calking device, a support intermediate said calking device and pneumatic tool, means for detachably connecting said pneumatic tool to said support and a loose bolt interposed between said tool and said calking device.

26. A manually-held pneumatic impact-tool, a calking device, a support intermediate said calking device and pneumatic tool, means for detachably connecting said pneumatic tool to said support and a loose bolt interposed between said tool and said calking device, in combination with a cushioning device, whereby the hammer-blows are prevented from injuring the deck or floor to be calked.

27. In a calking apparatus, a rotary calking-disk, a forked anvil having a flange and a body portion, a cylinder into which said body portion enters, a bolt entering said body portion, means for hammering on said bolt and cushioning devices surrounding said body portion.

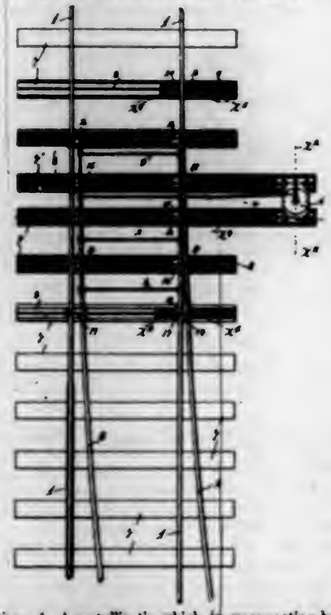
28. In a calking apparatus, a rotary calking-disk, a forked anvil having a flange and a body portion, a cylinder into which said body portion enters, a bolt entering said body portion, means for hammering on said bolt and cushioning devices surrounding said body portion, in combination with means for preventing said anvil from improper rotation.

29. In a calking apparatus, a calking-tool, a single mechanism for reciprocating and rotating said tool, and a device for carrying the calking material permitting its free paying out.

30. In a calking apparatus, a calking-tool, single means for hammering on said tool and causing the rotation thereof to automatically advance the same, a device for carrying the calking material and permitting the latter to freely pay out, and a guide for said calking material.

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754,176. RAILWAY-TIE. GUST WALBERG, Minneapolis, Minn. Filed Oct. 15, 1903. Serial No. 177,097. (No model.)



*Claim.*—1. A metallic tie which in cross-section has the form of a double I-beam with a common base but with the upper flanges spaced apart to afford a longitudinal slot the upper surface of said tie being serrated, substantially as described.

2. The combination with a pair of metallic ties having their upper faces serrated and provided with longitudinal slots, of a switch-stand resting on said ties, and clamping-blocks pressing on the base portions of said switch-stand and having serrated surfaces engaging with the serrated surfaces of said ties, and bolts passed through said clamping-blocks and through the slots of said ties for rigidly but adjustably securing said switch-stand to said ties, substantially as described.

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754,177. HARNESS-TERRET. JOHN G. WAY, Jackson, Mich. Filed July 12, 1902. Serial No. 115,264. (No model.)

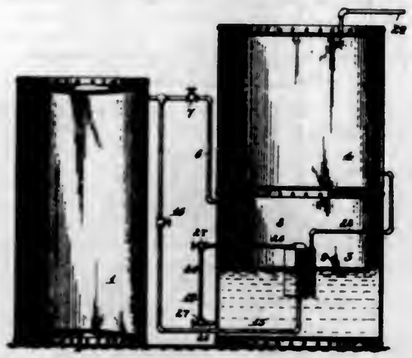


*Claim.*—A harness-terret comprising semicircular side members terminating short of each other at their free ends, each free end terminating in oppositely-disposed, inwardly-directed pairs of projections and an outwardly-curved, elongated extension, the extension of each member being curved outwardly in opposite direction to its companion extension to admit of the free insertion of a rein, a tongue bridging the side members and pivotally mounted in one pair of said projections, said tongue having an extension, a groove-formed in one of the side members, said groove being of uneven depth forming a shoulder intermediate its length, and a spring lying within the groove and contacting with the extension of the tongue, said spring being brought into contact with said shoulder upon depression of the tongue, whereby the latter is forced upwardly and held normally in engagement with the pair of projections opposite its pivotal point.



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754,178. CARBURETER. THEODORE T. WEBER, Buffalo, N. Y., assignor of two-thirds to Gurdon R. Allyn and Frank W. Johnston, Buffalo, N. Y. Filed July 25, 1902. Serial No. 117,090. (No model.)



*Claim.*—1. In a carbureter, the combination with a compressed-air tank, of a fluid-supply chamber adapted to be partly filled with a volatile inflammable fluid, a carbureting-chamber located in said supply-chamber and having its upper end projecting above the surface of the said fluid, a fluid-supply pipe connecting the supply-chamber below the surface of the fluid contained therein with the upper end of the carbureting-chamber, means for regulating the supply of the said fluid to said carbureting-chamber, and a pipe leading from the said air-tank to the fluid-supply chamber above the surface of the fluid contained therein, whereby the said fluid is forcibly caused to enter the carbureting-chamber.

2. In a carbureter, the combination of a fluid-supply chamber, a carbureting-chamber within said fluid-supply chamber, an air-supply pipe leading to the supply-chamber above the fluid contained therein, a fluid-supply pipe connecting the supply-chamber below the surface of the fluid with the upper end of the carbureting-chamber, and an air-supply pipe entering at the lower end of said carbureting-chamber.

3. In a carbureter, the combination of a fluid-supply chamber, a carbureting-chamber having its upper end in a plane above the surface of the fluid contained in said supply-chamber, a fluid-supply pipe connecting the said supply-chamber below the surface of the fluid with the carbureting-chamber above the surface of the fluid, an air-supply pipe connected to the bottom of said carbureting-chamber, and an air-supply pipe connected to the upper part of the fluid-supply chamber.

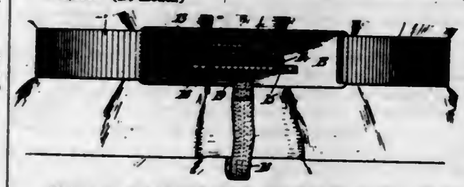
4. A carbureter comprising a chamber having an air-inlet at its lower end, a gas-outlet and a drip-opening at its upper end, a hood above said drip-opening, a diaphragm containing absorbent material and permitting the passage of air therethrough, a fluid-supply pipe entering said hood and terminating in a drip-head located above said drip-opening, said drip-head having tapering perforations, and drip-pins extending through said perforations.

5. A carbureter comprising a chamber having an air-inlet at its lower end, a gas-outlet and a drip-opening at its upper end, a hood above said drip-opening, a plurality of diaphragms located in said chamber and consisting of two screens and absorbent material between said screens, a fluid-supply pipe entering said hood and terminating in a drip-head located above said drip-opening, said drip-head having tapering perforations, and drip-pins extending through said perforations.

6. In a carbureter, the combination of a fluid-supply chamber, a carbureting-chamber having an air-inlet at its lower end and a gas-outlet at its upper end, a diaphragm containing absorbent material and permitting the passage of air therethrough, a fluid-supply pipe connecting the fluid-supply chamber with the carbureting-chamber and terminating at the upper end of the latter, a perforated drip-head secured to the termination of the fluid-supply pipe for directing the fluid against said diaphragm, and drip-pins extending from the perforations in said drip-head.

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754,179. SHIRT-WAIST HOLDER AND SKIRT-SUPPORTER. ALVAH WILTSEY, New York, N. Y. Filed June 12, 1903. Serial No. 161,180. (No model.)



*Claim.*—1. A shirt-waist holder and skirt-supporter, comprising two sections adapted to have parallel position on the person, the forward or inner section being provided with a longitudinal rearwardly-extending horizontal lip and the outer or rear section being provided with a longitudinal opening adapted to receive the said lip, and with a lower longitudinal upwardly and rearwardly inclined toothed lip, for the purpose described.

2. A shirt-waist holder and skirt-supporter, comprising two plate-sections adapted to have close parallel relation to each other, tapes connected with the said sections, whereby to hold the sections in position upon the person, a connection between the lower edges of the plate-sections, a horizontal rearwardly-extending lip formed upon the outer or rear face of the inner or forward section, the rear or outer plate-section having a longitudinal opening therein to receive the said lip, and a series of longitudinal teeth carried upwardly and rearwardly from the lower portion of the outer plate-section for the purpose set forth.

3. In a shirt-waist holder and skirt-supporter, the combination with an inner plate-section having a longitudinal opening made therein, and the displaced material carried horizontally rearward and outward from the upper edge of the opening, forming a longitudinal lip, of a second outer plate-section having a longitudinal opening near its upper edge, adapted to receive the lip of the inner plate-section, the said outer plate-section being further provided with a longitudinal lower opening, the displaced material being carried upwardly and rearwardly from the bottom edge of the opening, forming an inclined lip, and teeth produced at the upper edge of the latter lip, a connection between the lower portions of the two plate-sections, means substantially as described for securing the said sections in place upon a person, and a hook extending upwardly and rearwardly from the upper portion of the outer plate-section, for the purpose set forth.

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754,180. GAS-STOVE. ARTHUR C. WITHAM, Columbus, Ohio. Filed Aug. 28, 1903. Serial No. 170,350. (No model.)



*Claim.*—1. A gas-stove embodying an expansion-chamber having a fuel-inlet, and provided with a base extension, the top of which is provided with burner-openings and has at its rear end an upstanding flange, the front of the chamber between the flange and the top thereof being open, an integral fireback member rising from the front of the top of the chamber, and a lower fireback member closing the open front of the expansion-chamber and connected at its upper end to the upper fireback member and at its lower end to the flange on the extension of the chamber.

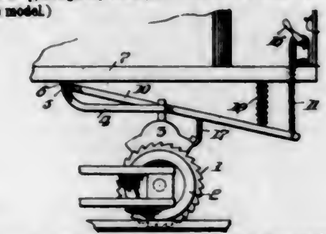
2. A gas-stove embodying an expansion-chamber having a base extension, the top of such extension having openings to constitute a burner-plate, a fireback rising from the front of the top of the chamber, end plates applied to opposite ends of the chamber, and a removable tie-rod extending through the chamber and piercing the respective end plates.

3. A gas-stove embodying an expansion-chamber having a base extension, the top of the extension having openings to constitute a burner-plate, a fireback rising from the front of the top of the chamber, end plates applied to opposite ends of the chamber to close the same and provided with marginal flanges fitting the ends of the chamber, and a removable tie-rod lying within the chamber and piercing the end plates.

4. A gas-stove embodying an expansion-chamber having a base extension, the upper front portion of the chamber between the extension and the top being open, the top of the extension having openings to constitute a burner-plate, a lower fireback member closing the open front portion of the chamber between the burner-plate and the top of said chamber, an upper fireback member rising from the front of the top of the chamber and provided at opposite sides with forwardly-directed flanges, end plates applied to and closing the ends of the chamber and also projected in front of the chamber above the burner-plate, and a tie-rod within the chamber and piercing the end plates.

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**754,181. EMERGENCY CAR-BRAKE.** MICHAEL WOLTZ, Wilkins township, Allegheny county, Pa. Filed Dec. 3, 1903. Serial No. 183,652. (No model.)

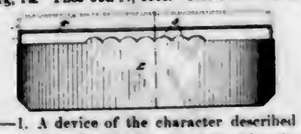


*Claim.*—1. In an emergency car-brake, the combination with the car-wheels provided with toothed flanges, of a rod or shaft supported from the car-body, a pair of levers hung on said rod or shaft, toothed brake-shoes carried by said levers, a cross-bar connecting the levers, a cross-bar connecting the toothed shoes, an actuating-lever hung on the rod or shaft, extending under the cross-bar connecting the pair of levers, a hook carried by said lever and engaging the cross-bar connecting the toothed shoes, and means connected to the free end of said lever for holding the toothed shoes normally out of engagement with the toothed flanges of the wheels, substantially as described.

2. In an emergency car-brake, the combination with the car-wheels having toothed flanges, of toothed brake-shoes held normally out of engagement with said flanges, means for supporting said brake-shoes, a cross-bar connecting said brake-shoes, and a means connected with said cross-rod for raising and lowering the brake-shoes substantially as described.

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**754,182. HAIR-PARTING DEVICE.** FRANKLIN H. WOOD, Wilkinsburg, Pa. Filed Oct. 17, 1903. Serial No. 177,393. (No model.)



*Claim.*—1. A device of the character described comprising a strip or plate of thin flexible material adapted to be curved to fit the head and at one edge define the line of part, and a supporting member operating to connect the opposite ends of said strip and maintain the curvature thereof, the supporting member being adapted to rest on the head below the line of part and sustain the device in operative position.

2. A device of the character described comprising a strip or plate curved from end to end and adapted at one edge to define the line of part, and a straight supporting member uniting with opposite ends of the strip and adapted to rest on the head below the line of part and sustain the device in operative position.

3. A device of the character described, comprising a body curved to fit the head and at one edge adapted to define the line of part, and a support for that side of the body opposite its part-defining edge, said support being lower than the part-defining edge and adapted to rest on the head below the line of part.

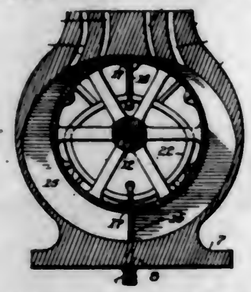
4. A device of the character described comprising a body curved to fit the head and at one edge adapted to define the line of part, and a laterally-adjustable support for the side of the body opposite its part-defining edge, said support being lower than the part-defining edge and adapted to rest on the head below the line of part.

5. A device of the character described comprising a strip or plate of thin material curved to fit the head and at one edge adapted to define the line of part, keepers at the extremities of the strip, and a combined support and connecting member extending longitudinally of the strip and having lateral extensions adapted to be confined in said keepers.

6. A device of the character described comprising a strip or plate of thin flexible material adapted at one edge to define the line of part, the strip being curved to fit the head, keepers at the extremities of the strip, and a combined support and connecting member extending longitudinally of the strip and consisting of a piece of wire having its ends turned laterally to enter said keepers.

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**754,183. ROTARY ENGINE.** ALBERT C. ACKERMAN, Pittsburg, Pa. Filed Jan. 12, 1904. Serial No. 188,748. (No model.)

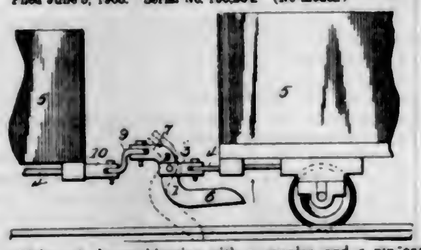


*Claim.*—1. In a rotary engine, an elliptical-shaped working cylinder, inlet and outlet ports for said cylinder, a circular piston or wheel contacting on its periphery at one point only with the wall of the working cylinder, rings forming sides for the working cylinder secured to the circular piston, plungers reciprocating through the periphery of the piston, operating-rods to which the plungers are pivotally connected, crank ends on said rods, and cams engaged by said crank ends of the rods to reciprocate the plungers, substantially as described.

2. In a rotary engine, a cylinder-casting having an elliptical-shaped working cylinder therein, and having an enlargement at its upper end, inlet and outlet ports through said enlargement, a circular piston or wheel, side rings carried by the piston or wheel and engaging the sides of the enlargement, plungers reciprocating through said piston, operating-rods extending through the piston, and to which the plungers are pivotally attached, crank ends on said rods, and cams supported from the cylinder-casting and engaged by said crank ends to reciprocate the plungers, substantially as described.

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**754,184. AUTOMATIC BRAKE.** DAVID L. AIRHART, Lemont, Pa. Filed June 5, 1903. Serial No. 160,204. (No model.)



*Claim.*—1. In combination with a coupler, and a pin carried thereby, of a brake-dog pivoted in the adjacent coupler and having a bifurcated end to receive the coupling-pin, substantially as described.

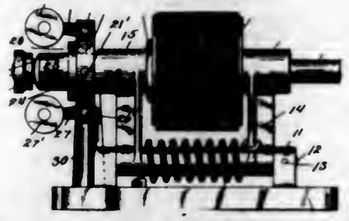
2. In a device of the character described, a clevis, brake-dog pivoted therein and provided with a bifurcated end to receive the coupling-pin, in combination with a coupling-pin connected in said bifurcated end, substantially as described.

3. A brake-dog of substantially Z-shaped form, in combination with a clevis in which the brake-dog is pivoted, said clevis being connected to the draw-bar of one car, and a coupling-pin connecting the brake-dog to the draw-bar of the adjacent car, substantially as described.



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**754,185. AUTOMATIC FRICTION-GOVERNOR.** VINCENT G. APPLE, Dayton, Ohio. Filed May 2, 1903. Serial No. 155,307. (No model.)



*Claim.*—1. The combination with a rotating prime mover and a bodily-stationary device, having a rotatable element to be driven, of a translating and governing device comprising a support, a laterally-movable shaft mounted in said support, a frictional power-transmitting instrumentality mounted on said shaft and arranged for normally operative association with the prime mover, a centrifugal device mounted on said shaft, means for laterally moving said shaft out of operative association with the prime mover arranged to be actuated by the centrifugal device, and a flexible shaft connection between the shaft of the translating and governing device and the rotatable element of the bodily-stationary device.

2. The combination with a rotating prime mover and a bodily-stationary device having a rotatable element to be driven, of a translating and governing device comprising a support, a frame member movably mounted thereon, a rotatable shaft carried by said frame member, a frictional power-transmitting instrumentality secured to said shaft for rotation therewith and normally arranged in operative association with the prime mover, means for moving the frame member to remove the power-transmitting instrumentality from operative association with the prime mover, and a governing device operatively associated with the shaft to actuate the moving means, and a tumble-shaft arranged to connect the shaft of the translating and governing device with the rotatable element of the bodily-stationary device, said tumble-shaft having universal joints at each of its ends.

3. In a device of the character described a base having a fixed bearing-pedestal, a pivoted yoke mounted on the base, a shaft journaled for rotation in the yoke, a friction-cylinder secured to said shaft, a centrifugal governor upon the shaft operatively associated therewith, a lever pivoted to the bearing-pedestal, one end of the lever being associated with the governor and its other end arranged to bear against the yoke, whereby the movement of the governor serves to turn the yoke on its pivot to vary the position of the friction-cylinder, and a spring arranged to restore the yoke to normal position.

4. In a device of the character described, a base 10 having lugs projecting therefrom, a yoke 14 mounted for oscillation in said lugs, a bearing-pedestal 30 projecting from the plate 10 on one side of the axis of oscillation of the yoke, a shaft 17 journaled for rotation in said yoke and projecting beyond the same at both ends, a friction-cylinder mounted on said shaft between the yoke-arms, a centrifugal governor secured to the shaft 17 beyond one of the yoke-arms and comprising weights having arms 28, a cap 23 mounted on the end of the shaft beyond said governor and arranged to coöperate with said arms, a lever 31 pivotally mounted on the pedestal 30, having one arm axially arranged in contact with the cap 23 and its other arm arranged in contact with the yoke, and a spring arranged to normally hold the yoke at its limit of movement in the direction of said lever-arm contacting therewith.

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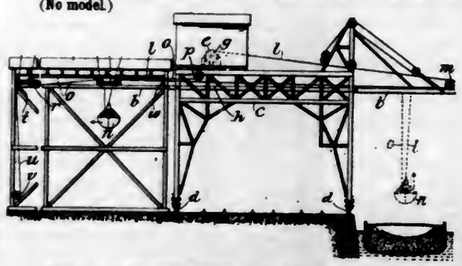
**754,186. PUMP-VALVE.** OTTO ARENDT, Newark, N. J. Filed Nov. 28, 1903. Serial No. 182,974. (No model.)



*Claim.*—A pump-valve which consists of a disk of soft rubber and a double-cone thimble of metal set therein as a bearing-center.

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**754,187. HOISTING MECHANISM.** HEINRICH AUGUST, Cologne, Germany, assignor to C. W. Hunt Company, West New Brighton, N. Y., a Corporation of New York. Filed Sept. 3, 1903. Serial No. 171,734. (No model.)



*Claim.*—1. The combination of a storage-shed having a plurality of tracks, a loading-platform having a track and movable along the front of the storage-shed to bring its track in line with the several tracks of the storage-shed, hoisting devices mounted on the loading-platform, hoisting-ropes, a trolley movable on said tracks and having guides for said ropes, an outer stationary guide-pulley, an inner guide-pulley, a movable frame to support the last-named pulley, and means to secure said frame detachably in operative position with relation to each of the tracks of the storage-shed, substantially as described.

2. The combination of a storage-shed having a plurality of tracks, a loading-platform having a track and movable along the front of the storage-shed to bring its track in line with the several tracks of the storage-shed, hoisting devices mounted on the loading-platform, hoisting-ropes, a trolley movable on said tracks and having guides for said ropes, an outer stationary guide-pulley, an inner guide-pulley, a movable frame to support the last-named pulley, a stationary guide at the inner end of each of the tracks of the storage-shed, and a rope passed over said guide and detachably secured to said movable frame, whereby said frame can be pulled in upon the corresponding track and secured in position, substantially as described.

3. The combination of a storage-shed having a plurality of tracks, a loading-platform having a track and movable along the front of the storage-shed to bring its track in line with the several tracks of the storage-shed, hoisting devices mounted on the loading-platform, hoisting-ropes, a trolley movable on said tracks and having guides for said ropes, an outer stationary guide-pulley, an inner guide-pulley, a movable frame to support the last-named pulley, a stationary guide at the inner end of each of the tracks of the storage-shed, a rope passed over said guide and detachably secured to said movable frame, and a winch for said rope, whereby said frame can be pulled in upon the corresponding track and secured in position, substantially as described.

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**754,188. NECKWEAR.** CHARLES BABSON, Gloucester, Mass. Filed Oct. 3, 1903. Serial No. 175,574. (No model.)



*Claim.*—1. A tip for the neckband of neckties and analogous articles, consisting of flat elongated opposing members bowed outwardly from each other at their central portion and having their end portions connected together in flat engagement with each other.

2. A tip for the neckband of neckties and analogous articles, consisting of opposing members and an interposed spring, as described.

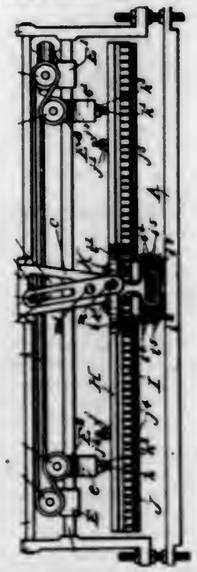
3. A tip for the neckband of neckties and analogous articles, comprising opposing members connected at their ends, and a spring located between the members, adapted to normally spread them apart, as described.

4. A tip for the neckband of neckties and analogous articles, consisting of two oppositely-curved spring body members connected at their ends, and a tension-spring located between the ends of the body members, acting to normally force them apart, as set forth.

5. The combination with the head of a necktie and attached neckband, the head being provided with a passage for the free end of the neckband, which passage has a section of resisting material,

of a tip for the neckband, comprising opposing body members connected at their ends, and an interposed spring which normally supports the body members between their ends, as described.

754,189. CARD-FEEDING MECHANISM. EDGO V. BAYER, Lowell, Mass. Filed Dec. 30, 1903. Serial No. 187,095. (No model.)



*Claim.*—1. The combination of a traveler-body suitable guiding means therefor, a traveling belt or chain and connecting means, including a plate swiveled on said body, between said body and said belt or chain, a pair of gears carried by said plate and engaging each other, a pair of feed-rolls each rotating with one of said gears, and a rack normally engaging the following one of said gears.

2. The combination of a traveler-body a lever pivoted thereon, a traveling belt or chain engaging said lever, a plate pivoted on said body and connected to said lever, a pair of gears carried by said plate and engaging each other, a pair of feed-rolls each rotary with one of said gears, and a rack adapted to engage the following one of said gears.

3. In a feeding mechanism for carding-machines, the combination of main sprocket-wheels, an endless chain supported thereby, other sprocket-wheels arranged between said main sprocket-wheels to hold the lower member of said chain in close proximity to the upper member of the same, the traveler-body, suitable guides therefor, a lever fulcrumed on said traveler-body and having a longitudinal slot, a driving-pin carried by said chain and entering said slot in said lever, a plate pivoted on said traveler-body and swiveled by the movement of said lever, gears carried by said plate and engaging each other, feed-rolls, each carried by one of said gears and a rack-bar, adapted to engage said gears one at a time.

4. In a card-feeding mechanism, the combination of the traveler, feed-rolls carried thereby and having circumferential grooves and arranged with the grooves of one roll opposite the ridges between the grooves of the other roll, means for causing said traveler to traverse and means for rotating said feed-rolls by the traversing movement of said traveler.

5. In a card-feeding mechanism, the combination of the traveler and feed-rolls carried thereby, each feed-roll having circumferential and longitudinal grooves and above said grooves having a land or continuous cylindrical surface at the full or largest diameter of said roll.

6. In a card-feeding mechanism, the combination of the traveler, feed-rolls carried thereby each having ratchet-like teeth, means for causing said carriage to traverse and means for rotating each feed-roll in the opposite direction to that in which its teeth point.

7. In a card-feeding mechanism, the combination of a traveler, feed-rolls carried thereby, each having ratchet-like teeth, the teeth of one roll pointing in the opposite direction from the teeth of the other roll, means for causing said carriage to traverse and means for rotating each feed-roll in the opposite direction from that in which its teeth point.

8. In a card-feeding mechanism, the combination of a traveler, feed-rolls carried thereby, each having ratchet-like teeth, the teeth of one roll pointing in the opposite direction from the teeth of the other roll, means for causing said carriage to traverse and means for rotating each feed-roll in the opposite direction from that in which its teeth point, each roll having above said teeth, a land or continuous cylindrical surface at the full diameter of said roll.

754,190. CHANGEABLE EXHIBITOR. ADOLPH BECHTOLD and AUGUST C. BECHTOLD, New York, N. Y. Filed May 29, 1903. Serial No. 159,262. (No model.)




*Claim.*—1. A changeable exhibitor, consisting of a shaft, a frame supported by and rotatable around said shaft, having braces arranged transversely, and stays arranged parallel to the shaft and connecting the corners of the braces, transparent panels having letters, characters or other signs on the same, corner-pieces connected with said braces for holding the panels against the stays for supporting the same, illuminating means supported by the shaft at the interior of the frame, and means for intermittently rotating the panel-frame, substantially as set forth

2. A changeable exhibitor, consisting of a shaft, a frame supported by and rotatable around said shaft, having braces arranged transversely, and stays arranged parallel to the shaft and connected with the corners of the braces, transparent panels having letters, characters or other signs on the same, corner-pieces connected with said braces for holding the panels against the stays for supporting the same, illuminating means supported by the shaft at the interior of the frame, a pinion connected with one of said braces, a clock-train engaging the pinion for rotating the same, a ratchet-wheel connected with the pinion, a pawl engaging the ratchet-wheel, and means for disengaging said pawl from the ratchet-wheel for permitting the same to rotate, substantially as set forth.

754,191. FRUIT-PEELER. JACOB C. BELL, Youngstown, Ohio. Filed May 23, 1903. Serial No. 158,436. (No model.)



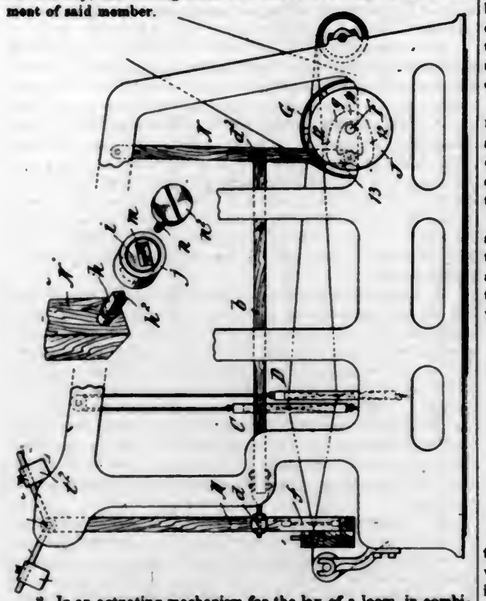
*Claim.*—1. A fruit-peeler comprising a member having a longitudinally-curved peeling-blade provided with a terminal stripping edge, and a slitting-knife disposed longitudinally of and normal to said blade within its concavity and midway between the side edges thereof.

2. A fruit-peeler comprising a handle carrying a longitudinally-curved peeling-blade provided with a terminal stripping edge, and a slitting-knife arranged within the concavity of the blade and disposed normal thereto, said knife being shorter in length than the curved blade and presenting a curved edge.

754,192. BEATING-UP MOTION FOR LOOMS. HIRAM A. BOND, West Springfield, Mass., assignor, by mesne assignments, to the National Loom and Wire Company, Incorporated, Springfield, Mass. Filed June 4, 1902. Serial No. 110,235. (No model.)



*Claim.*—1. In an actuating mechanism for the lay of a loom, in combination, a cam, a member engaged and reciprocated by the cam having an elongated aperture therein, and a part connected to, and movable with, the lay engaging in the aperture of said cam-reciprocated member, and capable of being moved bodily therewith and thereby, and having a movement independently of the movement of said member.



2. In an actuating mechanism for the lay of a loom, in combination, a rotary disk having a cam-groove therein, a member engaged in said groove for a reciprocatory movement having an elongated aperture therein, and a part connected to, and movable with, the lay engaging in the aperture of said cam-reciprocated member, for the purpose set forth.

3. In an actuating mechanism for the lay of a loom, in combination, a rotary disk having a cam, the groove *g* therein comprising the portions 12 12 and the uniting dip or groove portion 13, a member engaged in said groove having an elongated aperture therein, and a part connected to, and movable with, the lay engaging in the aperture of said member substantially as and for the purposes set forth.

4. In a loom, the combination with a driving-shaft, the lay, and a lay-connecting part provided with a stud secured thereto and having an extension therefrom, of a disk driven by the shaft and having a cam-groove therein, a circular member having an elongated aperture, an end wall of which engages said stud extension, and a sleeve rotatably mounted on said circular member and arranged to engage the walls of the said cam-groove in the disk.

5. In a loom the combination with the lay, of a cam, a member engaged and reciprocated by the cam having an elongated aperture therein, a part, connected to and movably with the lay, engaging in the aperture of said cam-reciprocated member and capable of being moved bodily therewith and independently of said member, and means carried by the lay for regulating the momentum thereof emanating from the movements of the cam-reciprocated member.

754,193. CAR-BRAKE. HENRY T. BROWN, Wilkinsburg, Pa. Filed July 23, 1903. Serial No. 166,602. (No model.)



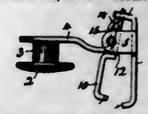
*Claim.*—1. In a brake, the combination with a truck, of a transversely-arranged shaft, cranks at the ends of said shaft, rail brake-shoes pivotally connected to said cranks, and means for operating said shaft, of cams pivotally attached to the car-truck, connecting-rods pivotally connected to said rail brake-shoes and the cams, brake-shoes adapted to engage the wheels of the truck, connecting-rods pivotally attached to said wheel brake-shoes and the cams, and springs in each of said connecting-rods, substantially as described.

2. In a car-brake, the combination with a truck, a brake-shaft suspended therefrom, cranks carried by the said brake-shaft, rail brake-shoes connected to said cranks, and means for operating said cranks, of wheel-engaging brake-shoes, cams pivotally attached to the car-truck, connecting-rods pivotally attached to the rail brake-shoes and the cams, and connecting-rods pivotally attached to the cams at each side of the truck, substantially as described.

3. In a car-brake, the combination with a truck, of a brake-shaft, rail brake-shoes connected to said shaft, means for operating the shaft, pivotally suspended from the truck, connecting-rods pivotally connected to the cams and rail-shoes, wheel-engaging shoes, and connecting-rods pivotally attached to the wheel-engaging shoes and the cams, substantially as described.

4. In a car-brake, the combination with the truck, of a brake-shaft, rail brake-shoes, rods connecting the rail brake-shoes with the shaft with compression and adjustment means between the shaft and the said shoes, wheel-engaging shoes, and means connected to the wheel-engaging shoes for operating the latter simultaneously with the rail-engaging shoes, substantially as described.

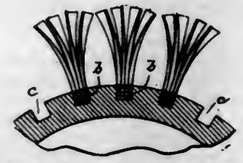
754,194. GARMENT-SUPPORTER. JOHN J. BUCHANAN, Waterbury, Conn., assignor to the Waterbury Buckle Co., Waterbury, Conn., a Corporation. Filed Dec. 22, 1903. Serial No. 186,165. (No model.)



*Claim.*—1. A garment-supporter comprising a clasp and a button-lever the inner end of the fixed member of the clasp bent upward and formed with a slot, the swinging member adapted at its inner end to extend into the said slot, the lever pivotally connected with the fixed member of the clasp and carrying a button at its outer end, substantially as described.

2. A garment-supporter comprising a clasp and a button-lever, said lever pivotally connected with the fixed member of the clasp and carrying a button at its outer end the inner end of the fixed member of the clasp turned inward and formed with a transverse slot, the swinging member adapted at its inner end to extend through said slot, said swinging member formed with a finger extending into the path of the inner end of said lever whereby as the lever is turned its inner end will engage with said finger and separate the outer ends of the clasp, substantially as described.

754,195. HEAT-RADIATING DEVICE. JAMES H. BULLARD, Springfield, Mass. Filed June 13, 1903. Serial No. 161,294. (No model.)



*Claim.*—1. A heat-radiating device comprising a plurality of thin metal plates each consisting of a back portion, and separated heat-radiating teeth extending from said back portion, and means to secure said back portions together to constitute a substantially homogeneous body.

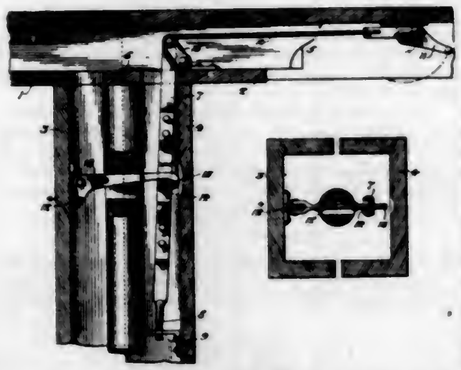
2. A heat-radiating device comprising a plurality of thin metal plates, each consisting of a back portion, and separated heat-radiating teeth extending from the edge thereof; means to secure said back portions together side to side into one substantially homogeneous body, whereby said heat-radiating teeth become disposed transversely of said body.

3. A heat-radiating device comprising a plurality of thin metal plates, each consisting of a back portion, and separated heat-radiating teeth extending from opposite edges thereof, said back portions being bent together along the central longitudinal line thereof, said back portions being nested and secured together to constitute a substantially homogeneous body, on which said teeth are transversely disposed.

4. A heat-radiating device comprising a plurality of thin metal plates, each consisting of a back portion, and separated equally-spaced heat-radiating teeth disposed along the edge of said plates, means to secure the back portions of the plates together into a substantially homogeneous body, whereby said teeth may become disposed along one side thereof in transversely-disposed series.

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**754,196. PEDESTAL-TABLE LOCK.** CHARLES S. BURTON, Oak-part, Ill., assignor to Emil Tyden, Hastings, Mich. Filed Nov. 13, 1903. Serial No. 180,988. (No model.)



*Claim.*—1. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever having a pivotal connection with one pedestal member adapted to permit it to move in more than one direction about such connection; means for rocking the lever about its said pivotal connection toward and from the parting plane of the table members; a controlling device connecting the lever to the table for causing it to move at the point of such connection in a different direction when it is thus moved toward and from the parting plane; means for rocking and securing said lever, and means on the opposite pedestal member for engaging it.

2. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever fulcrumed on one table member, with capacity for rocking in more than one direction about its fulcrum; a link which connects the lever to the same table member on which it is fulcrumed at a point remote from said fulcrum; means stopping the lever at a position at which said link trends from its pivot to the table member to its pivot to the lever in a direction approximately at right angles to the lever; means for rocking the lever toward and from the parting plane of the table members, and for releasably securing it at the position to which it may be thus rocked in one direction, and means on the opposite pedestal member for engaging the lever.

3. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member, pivotally connected to said member with capacity for longitudinal movement; a controlling device connected to the table member for causing it to move longitudinally when it is moved toward and from the parting plane of the two members; an engaging device carried by the opposite pedestal member; means on the lever for engaging said device, and means for rocking and securing the vertically-disposed lever.

4. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever pivotally mounted on one pedestal member, with capacity for longitudinal movement; a link which forms a second connection of the lever to said member; means for stopping the lever at one limit of its longitudinal movement at a position at which the link trends from its pivot to the table member approximately horizontal to its pivotal connection with the lever; means for rocking the link away from the horizontal plane of its said pivot, and for releasably securing it at the position to which it may be thus rocked, and means on the opposite pedestal member for engaging the lever.

5. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member, having moving pivotal connection therewith at the lower part permitting longitudinal movement; a controlling device connecting the lever to the table members for causing it to move upward when it is moved back from the parting plane; a latch carried by the opposite pedestal member; means on the lever for engaging the latch and means for rocking and securing the vertically-disposed lever and securing it at position remote from said parting plane.

6. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member, having connection with said member at two points in its length; a link which constitutes one of said connections, the other connection being adapted to permit longitudinal movement of the lever; means for stopping the lever in its downward movement at a position at which said link trends from its pivot to the table member inward to its pivotal connection with the lever; means for rocking the link upward and outward about its pivot to the table member, and for releasably securing it at the position to which it may be thus rocked, and means on the opposite pedestal member for engaging the lever.

7. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member, said lever and the opposite pedestal member being provided with mutually-engaging devices, the lever being movable longitudinally at its fulcrum connection with the member upon which it is mounted; a controlling device connecting it to said table member at a point remote from its fulcrum connection adapted for causing it to move upward when it is moved back from the parting plane of the two members, and means for rocking the lever about its fulcrum and releasably securing it at a position remote from said parting plane.

8. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member; means for rocking the lever about its fulcrum toward and from the parting plane of the table members, the fulcrum connection of the lever being adapted to permit it to receive an additional movement beside its movement toward and from the parting plane; a controlling device connecting the lever with the table member at a point remote from its fulcrum for causing such additional movement when it is rocked toward and from the parting plane, and a device on the opposite pedestal member into and out of engagement with which the lever is carried in the movement caused by said controlling device.

9. A pedestal-table-locking device comprising, in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member; means for rocking the lever about its fulcrum toward and from the parting plane of the table members, the fulcrum connection of the lever being adapted to permit it to receive an additional movement in a different direction; a controlling device for guiding the lever in such additional movement; means on the opposite pedestal member for engaging the lever adapted to be engaged thereby in such additional movement of the lever, one of the two parts which cooperate in such engagement being adapted to yield upon encounter with the other for effecting such engagement automatically when the encounter occurs after the lever has made such additional movement.

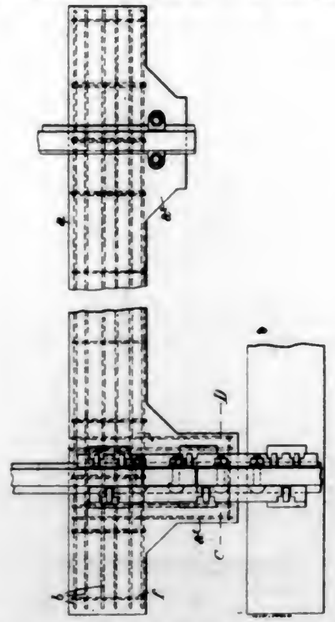
10. A pedestal-table-locking device comprising in combination with the table members and the pedestal members pertaining thereto respectively, a vertically-disposed lever mounted on one pedestal member; a link or pull-rod for rocking the lever about its fulcrum toward and from the parting plane of the table members, the fulcrum connection of the lever being adapted to permit it to receive an additional movement in a different direction; a guide-link fulcrumed on the pedestal member which carries the lever and pivotally connected to the pull-rod for controlling the movement of the latter and the lever to give the lever such additional movement, and means on the opposite pedestal member for engaging with the lever, adapted to be engaged thereby in such additional movement of the lever.

11. A pedestal-table-locking device, comprising in combination with the table members and the pedestal members pertaining thereto respectively; a vertically-disposed lever mounted on one pedestal member; a link or pull-rod for rocking the lever about its fulcrum toward and from the parting plane of the table members, the fulcrum connection of the lever being adapted to permit it to receive an additional movement in a different direction; a link pivotally connected to the lever and pull-rod at their pivotal connection with each other, such link being fulcrumed on the same pedestal member on which the lever is mounted, trending from its said fulcrum to its connection with the pivot of the lever and pull-rod when the parts are at unlocked position, in a direction approximately transverse to the parting plane of the pedestal members and adapted to swing about its fulcrum from that position in the direction of said additional movement of the lever.



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**754,197. RAIL-SUPPORT.** JULIEN CHAPPUIS, Bienne, Switzerland. Filed Sept. 3, 1903. Serial No. 171,770. (No model.)



*Claim.*—1. A rail-support, composed of a material molded to shape while in a plastic condition, having embedded therein two sets of longitudinal metallic rods, one set in proximity to its upper surface and one set in proximity to its lower surface, and each set consisting of a plurality of rods arranged parallel and in proximity to each other, throughout the whole width of the support, and wires in zigzag arrangement passing from the upper rods to the lower rods, successively enveloping one rod after the other, substantially as described.

2. A rail-support, composed of a material molded to shape while in a plastic condition, substantially of rectangular shape and provided with projections extending some distance from the body of the support in line with the rail, an upper and a lower set of longitudinal metallic rods embedded in said support and projections of the same, and wires in zigzag arrangement passing from the upper rods to the lower rods, successively enveloping one rod after the other, substantially as described.

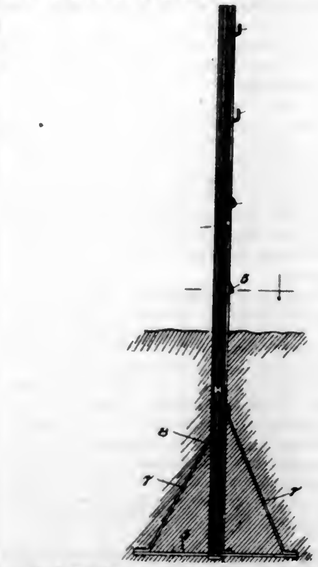
3. A rail-support, composed of a material molded to shape while in a plastic condition, provided with holes, spirally-wound wires embedded in the walls forming the holes, and wooden blocks in said holes, substantially as described.

4. In combination, a rail-support, composed of a material molded to shape while in a plastic condition and provided with holes, rails on said support, plates provided with holes embedded in said support and arranged transversely to the holes of the same, bolts passing through the holes of the plates connecting the rails and the plates, and metallic fittings interposed between the rails and transverse plates and surrounding the bolts, substantially as described.

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**754,198. METAL POST.** GEORGE F. CLEMMAN, Chicago, Ill. Filed May 24, 1902. Serial No. 108,324. (No model.)

*Claim.*—1. A metal post having flexible-metal tongues formed by slots in the post at the sides of the tongues, the width of the tongues being less than the width of the resulting apertures in the post and serving to clamp a wire or wires between themselves and the post, substantially as described.



2. A metal post having flexible-metal tongues formed by diverging slots in the post at the sides of the tongues, the width of the tongues being less than the width of the resulting apertures in the post and serving to clamp a wire or wires between themselves and the post, substantially as described.

3. The combination with fence-wires, of a metal post having flexible tongues formed by slits or slots in the post at the sides of the tongues, whereby the width of the tongues is less than the width of the resulting apertures in the post, the wires being bent slightly into said apertures by the tongues, substantially as described.

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**754,199. ROASTING-FURNACE.** SANFORD D. CRAIG, GUY H. KELLY, and WILLIAM TURNER, Labarpe, Kans. Filed June 16, 1903. Serial No. 162,016. (No model.)



*Claim.*—1. A roasting-furnace comprising a long casing having a downwardly-inclined floor, a series of arched roof-plates arranged

at different horizontal planes, a flue leading to an uptake, certain of said plates forming the bottom walls of said flue, an agitator, and means for causing said agitator to move through the furnace.

2. A roasting-furnace having a downwardly-inclined floor, arched roof-plates of different lengths and arranged on different horizontal planes, a plurality of fire-boxes arranged on opposite sides of the furnace and communicating with the interior thereof, and a scraper movable through the furnace.

3. A roasting-furnace having a downwardly-inclined bottom wall or floor, a series of arched roof-plates, a flue, certain of said plates forming the bottom walls of said flue, fire-boxes communicating with the interior of the furnace, the side walls of said furnace being provided with openings having removable doors or closures, swinging doors at the ends of the furnace, an agitating device movable through the furnace, and means for causing the movement of said device upward on the inclined floor, the movement of said device downward being by gravity.

4. A furnace comprising a long casing, having an inclined floor, track-rails extended along the floor, a carriage movable on said track-rails, a swinging frame on said carriage, means for locking the frame in its adjusted position, means for releasing the locking device, and agitator-plates on opposite ends of said swinging frame.

5. A furnace comprising a long casing having an inclined floor, track-rails on said floor, a carriage mounted on said rails, a frame mounted to swing on the carriage, two sets of scraper-plates arranged on each end of said swinging frame, the plates of the series at the ends being at reverse angles, and the plates at one end being at reversed angles to the plates of the other ends, means for holding the plates at one end in lowered position while holding the plates at the other end in an upper position, and means for reversing the positions.

6. A furnace having an inclined floor, track-rails on the floor, swinging doors at the opposite ends of the furnace, each door consisting of a plurality of sections, a carriage movable along said track-rails, a shaft at the upper end of the furnace, sheaves on said shaft, cable connections between the carriage and sheaves, a swinging frame on the carriage, and agitator-plates on opposite ends of said frame.

7. The combination with a furnace having an inclined bottom wall, of an agitator movable through the furnace, the said agitator comprising a carriage, a frame mounted to rock on the carriage, a notched wheel carried on the shaft of said frame, diagonally-arranged agitating-plates on opposite ends of the frame, a swinging lever having a lug to engage in any one of the notches of the said wheel, and means for swinging said lever to move the lug out of the notch.

8. The combination with a furnace having an inclined floor, of a carriage movable along said floor, a frame mounted to swing on the carriage, diagonally-disposed agitating-plates on the front and rear ends of said frame, means for holding the frame with either set of agitators in operative position, means for holding both sets of agitators out of operative position, and means for drawing the carriage up the incline.

9. A furnace having an inclined bottom wall, track-rails arranged on said bottom wall, a bar arranged along the floor between the rails, a carriage movable on said track-rails, scrapers mounted on the carriage for forcing material toward said center rail, and agitators on the carriage for moving material outward from said center rail.

10. The combination with a furnace and an agitator movable therethrough, of a trip mechanism for the agitator at one end of the furnace, comprising an winging lever, a cross-bar carried by the lever, means for limiting the downward movement of said lever, and means for holding said lever in elevated position.

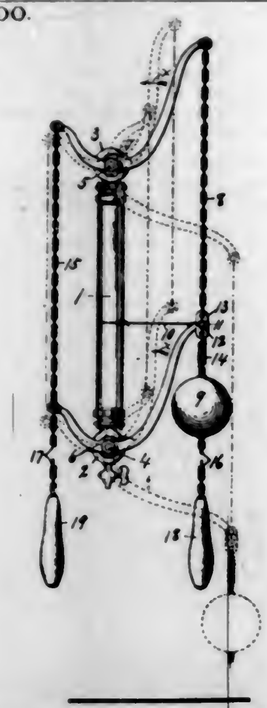
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**754,200. AUTOMATIC CUT-OFF FOR WATER-GAGES.** JOHN H. CUNNINGHAM, Syracuse, N. Y. Filed Aug. 17, 1903. Serial No. 169,750. (No model.)

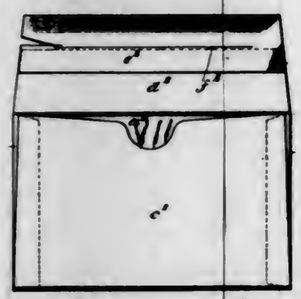
*Claim.*—1. In combination with the valves and glass of a water-gage, separate levers secured to the valve-stems, each lever extending laterally and upwardly from its stem, a weight attached to one of the levers, and a detent operatively connected to the glass and weight to hold the weight in its operative position.

2. In combination with the valves and glass of a water-gage, separate levers secured to the valve-stems and projecting laterally therefrom, separate connections between the corresponding ends of the levers, a weight attached to one of the levers, and a flexible detent having one end attached to the glass and its other end connected to the weighted end of the lever.

754,200.



754,201. **ENVELOP.** PEDRO DÁVALOS, Havana, Cuba. Filed Nov. 4, 1902. Serial No. 130,112. (No model.)



*Claim.*—An envelop having its sealing-flap folded inward upon itself at its free end and having such interfold portion sealed, and a tearing-strip formed integral with and partially severed from the material of the flap, such tearing-strip lying under the outer face portion of the flap, substantially as set forth.

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**754,202. NAIL-PULLER.** JACQUES H. DE GRANADA and RICHARD KEMP, New York, N. Y. Filed June 30, 1903. Serial No. 163,681. (No model.)

*Claim.*—1. A nail-puller embodying a shaft provided with a part adapted to slide thereon and act as a hammer, a fixed jaw on the end of the shaft, a part pivoted to the shaft adjacent to the fixed jaw and which is provided with claws on one end and a laterally-extending fulcrum-arm on the other end and a downwardly-projecting part extending beyond the plane of the claws and adapted to be driven into the material from which the nail is to be drawn.

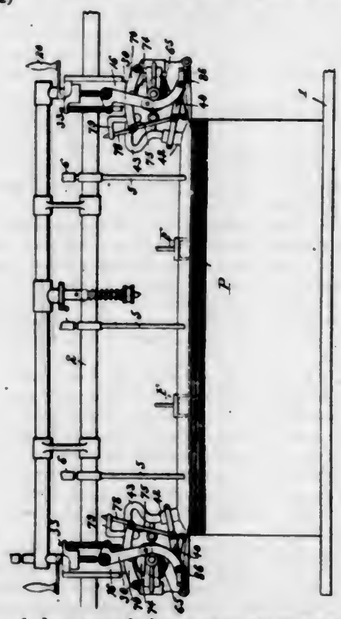
2. As a new article of manufacture a jaw for a nail-puller provided with a hole whereby it may be pivoted to the shaft of a nail-puller and having claws at one end, a laterally-extending fulcrum-arm opposite the claws and a part, as G, extending downwardly beyond the plane of the under surface of the jaw taken as a whole which immediately engages with the nail for the extraction thereof.



754,202



754,203. **PAPER-FEEDING MACHINE.** TALBOT C. DEXTER, Pearl River, N. Y. Filed July 31, 1901. Serial No. 70,329. (No model.)



*Claim.*—1. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-moving instrument capable of moving transversely and longitudinally with relation to the pile, and means for operating said sheet-moving instrument adapted to cause it to first buckle one edge of a sheet by its movement transversely of the pile, and next shift the sheet bodily upon the pile by its movement longitudinally of the pile, substantially as set forth.

2. In a paper-feeding machine, the combination of a support for a pile of sheets, and suitable feeding devices adapted to feed sheets on the pile, with a sheet-separating instrument capable of moving transversely and longitudinally with relation to the pile, and means for operating said sheet-moving instrument adapted to cause it to first buckle one edge of a sheet by its movement transversely of the pile, and next shift the sheet bodily upon the pile by its movement longitudinally of the pile, substantially as set forth.

3. In a paper-feeding machine, the combination of a support for a pile of sheets, and suitable feeding devices adapted to feed sheets on the pile, with a sheet-moving device capable of moving transversely, longitudinally and vertically with relation to the pile, and means for operating the sheet-separating instrument adapted to cause it to first buckle one edge of the sheet by its movement transversely of the pile and next simultaneously raise the buckled edge of the sheet and shift the sheet bodily upon the pile by its longitudinal and vertical movements with relation to the pile, substantially as set forth.

4. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating devices constructed and arranged to reciprocate horizontally over the pile, move up and down with relation to the pile, and laterally toward the rear edge of the pile, said separating devices being adapted to buckle and raise one edge of a sheet from the pile and then by the lateral movement shift the entire sheet rearwardly upon the pile, and suitable sheet-feeding devices adapted to feed the sheet forwardly on the pile, substantially as set forth.

5. In a paper-feeding machine, the combination of a support for a pile of sheets, and suitable feed devices adapted to feed a sheet on the pile, with separating devices adapted to raise an edge of a sheet from the pile, shift the entire sheet upon the pile and stretch or straighten out the raised edge of the sheet above the pile, substantially as set forth.

6. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of sheet-buckling devices adapted to first buckle and then raise an edge of a sheet upon the pile, shift the entire sheet upon the pile, and stretch or straighten out the raised edge of the sheet between them above the pile, substantially as set forth.

7. In a paper-feeding machine, the combination of a support for a pile of sheets, and suitable sheet-feeding devices adapted to feed a sheet on the pile, with sheet-separating devices adapted to buckle and raise an edge of a sheet upon the pile, shift the entire sheet upon the pile and stretch the raised edge of the sheet above the pile, substantially as set forth.

8. In a paper-feeding machine, the combination of a support for a pile of sheets, with a suctional sheet-moving device, means controlling the suction in said device, means for reciprocating and raising and lowering the sheet-moving device with relation to the pile, and means for moving said device laterally of its direction of reciprocation, substantially as set forth.

9. In a paper-feeding machine, the combination of a support for a pile of sheets, with a suctional sheet-moving device, means for controlling the suction in said device, means for raising and lowering and reciprocating said sheet-moving device with reference to the pile, and means, thrown into operation by the raising of said device, for shifting said sheet-moving device laterally of its direction of reciprocation, substantially as set forth.

10. In a paper-feeding machine, the combination of a support for a pile of sheets, with a suctional sheet-moving device adapted to engage a sheet, means for imparting a forward and back and lateral movements to said sheet-moving device, means for raising and lowering said sheet-moving device, and means controlling the suction of said device adapted to cause said device to engage a sheet, move it inwardly, raise it from the pile and shift it bodily on the pile, and means for blowing air under the lifted edge of the sheet for completely separating it from the pile, substantially as and for the purpose set forth.

11. In a paper-feeding machine, the combination of two oppositely-arranged suctional sheet-buckling devices means for reciprocating the buckling devices inwardly and outwardly over a pile of sheets, means for raising and lowering the buckling devices with relation to the pile, means for shifting said buckling devices laterally of their line of reciprocation, means controlling the suction of said devices adapted to cause them to engage a sheet at two points, move inwardly with the engaged parts, raise the engaged parts of the sheet from the pile, shift the entire sheet upon the pile, and move away from each other while part of the sheet is raised so as to stretch or straighten out the raised part of the sheet, substantially as set forth.

12. In a paper-feeding machine, the combination of a support for a pile of sheets, a reciprocating arm, a sheet-moving instrument joined to said arm and capable of moving up and down and laterally thereon, means for operating said reciprocating arm, and means for raising and lowering and moving laterally the sheet-moving instrument, substantially as set forth.

13. In a paper-feeding machine, the combination of a support for a pile of sheets, a sheet-buckling finger having means for engaging and raising a sheet, means for reciprocating and raising and lowering said buckling-finger, a stationary bracket-arm, and a part connected with the buckling-finger adapted to engage said bracket-arm

when the buckling-finger is raised and cause the buckling-finger to be shifted laterally, as set forth.

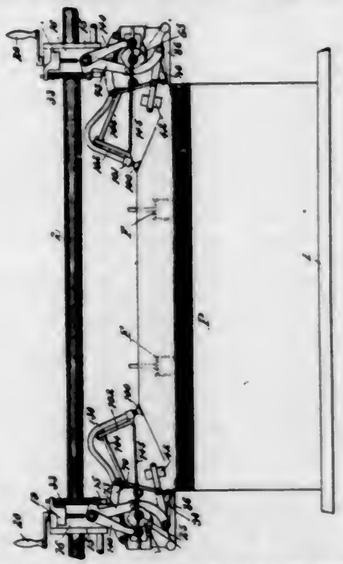
14. In a paper-feeding machine, the combination of a support for a pile of sheets, a buckler-supporting frame, an operating-lever mounted thereon, a buckling-finger having a laterally-yielding pivotal connection with the operating-lever, a buckler-elevating lever, a link connecting the buckling-finger and elevating-lever and having a laterally-yielding connection with said lever, a shaft, cams on said shaft operating said levers, a bracket-arm on the buckler-supporting frame, and a finger connected with one of said parts and adapted to engage said bracket-arm for moving the buckling-finger laterally, as set forth.

15. In a paper-feeding machine, the combination of a support for a pile of sheets, with two oppositely-operating sheet-moving instruments capable of engaging and raising a sheet from the pile, means for raising and lowering said instruments, and means for moving said instruments toward each other in lowered position and away from each other a greater distance in elevated position, substantially as set forth.

16. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling instrument, means for raising and lowering said instrument, means for reciprocating said instrument inwardly and outwardly and means for moving said instrument rearwardly of the pile; said raising and lowering means, reciprocating means and rearwardly-moving means being constructed and arranged relatively to cause said buckling instrument to move inwardly in lowered position, rearwardly while it is being raised, and outwardly in raised position to a point beyond the position from which said instrument starts its inward movement in lowered position, as set forth.

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**754,204. PAPER-FEEDING MACHINE. TALBOT C. DEXTER, Pearl River, N. Y. Filed Aug. 1, 1901. Serial No. 70,544. (No model.)**



*Claim.*—1. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating devices adapted to take positive hold upon a sheet at two points and move the engaged parts up and down with relation to the pile and thereby impart a whipping or undulating motion to the entire sheet, substantially as set forth.

2. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating mechanisms adapted to first buckle a sheet at two points and then take positive hold upon the buckled parts of the sheet and move them up and down to impart a whipping or undulating motion to the sheet, substantially as set forth.

3. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating mechanisms adapted to first buckle a sheet in two places at or near one edge, then raise the buckled edge of the sheet from the pile, and finally move the buckled edge toward and away from the pile and impart a whipping or undulating motion to the sheet, substantially as set forth.

4. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating mechanisms adapted to buckle a sheet in two places at or near one edge, raise the buckled edge of the sheet from the pile, shift the sheet bodily upon the pile, and impart an up-and-down motion to the raised edge of the sheet, substantially as set forth.

5. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating mechanisms adapted to impart a whipping or undulating motion to a sheet and stretch or straighten out an edge of the sheet between them in raised position, substantially as set forth.

6. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating mechanisms adapted to buckle a sheet in two places at or near one edge, raise the buckled edge of the sheet from the pile, impart a whipping or undulating motion to the sheet, and stretch or straighten out the raised edge of the sheet between them above the pile, substantially as set forth.

7. In a paper-feeding machine, the combination of a support for a pile of sheets, with a pair of coöperating sheet-separating mechanisms adapted to buckle a sheet in two places at or near one edge, raise the buckled edge of the sheet, impart a whipping or undulating motion to the sheet, shift the sheet bodily upon the pile, and stretch or straighten out the raised edge of the sheet between them above the pile, substantially as set forth.

8. In a paper-feeding machine, the combination of a support for a pile of sheets, and means for feeding sheets from a pile, with a pair of coöperating sheet-separating mechanisms adapted to buckle a sheet in two places at or near one edge, raise the buckled edge of the sheet, impart a whipping or undulating motion to the sheet, shift the sheet bodily upon the pile, and stretch or straighten out the raised edge of the sheet between them above the pile, substantially as set forth.

9. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, said foot or stop having means for positively engaging and raising the buckled edge of the sheet, substantially as set forth.

10. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, said foot or stop having means for positively engaging and raising a sheet, and means for imparting an up-and-down motion to said foot or stop; whereby the buckled sheet will be given a whipping or undulating movement, substantially as set forth.

11. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, said foot or stop having means for positively engaging and raising a sheet, and means for imparting approximately horizontal and up-and-down movements to said foot or stop; whereby the buckled sheet will be given a whipping or undulating movement and will be shifted bodily upon the pile, substantially as set forth.

12. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop, said foot or stop having means for positively engaging and raising a sheet, means for reciprocating and raising and lowering the buckling-finger, means for controlling the engagement of the foot or stop with the sheet, and means for imparting an up-and-down movement to the foot or stop, whereby a sheet will be buckled and given an undulating or whipping motion, substantially as set forth.

13. In a paper-feeding machine, the combination of a support for a pile of sheets, and a sheet-buckling device, with an independent pneumatic or suctional sheet-separating device adapted to engage and raise the buckled edge of a sheet from the pile and impart a whipping or undulating motion to the sheet, substantially as set forth.

14. In a paper-feeding machine, the combination of a support for a pile of sheets, and a sheet-buckling device, with an independent pneumatic or suctional sheet-separating device adapted to engage and raise the buckled edge of a sheet from the pile, impart an up-and-down movement to said edge of the sheet, and shift the sheet bodily upon the pile, substantially as set forth.



15. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, said foot or stop having pneumatic or suctional means for positively engaging and raising a sheet, means controlling the suction in said foot or stop, and means for imparting an up-and-down motion to said foot or stop, whereby the sheet will be given a whipping or undulating movement, substantially as set forth.

16. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, said foot or stop having pneumatic or suctional means for positively engaging and raising a sheet, means controlling the suction in said foot or stop, and means for imparting approximately horizontal and vertical movements to said suctional foot or stop; whereby the buckled sheet will be given a whipping or undulating movement and will be shifted bodily upon the pile, substantially as set forth.

17. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-buckling separating mechanism including a buckling-finger and a coöperating foot or stop, said foot or stop having pneumatic or suctional means for positively engaging and raising a sheet, means for reciprocating and raising and lowering the buckling-finger, means for controlling the suctional engagement of the foot or stop with the sheet, and means for imparting an up-and-down movement to the foot or stop; whereby a sheet will be buckled and will be given an undulating or whipping motion to separate it from the pile, substantially as set forth.

18. In a paper-feeding machine, the combination of a support for a pile of sheets, and means for separating a part of a sheet from the pile at or near one edge, with a sheet-moving device having means for positively engaging and raising the separated part of the sheet, a horizontally and vertically movable support for said sheet-moving device, means for raising and lowering said support, means for moving said support horizontally, and means controlling the engagement of the sheet-moving device with a sheet, substantially as set forth.

19. In a paper-feeding machine, the combination of a support for a pile of sheets, with means for separating sheets including a vertically-rocking support, a sheet-moving device mounted upon said rocking support and capable of lateral movement thereon, a spring normally restraining said sheet-moving device from lateral movement, and a cam adapted to move said device laterally against the action of said spring, substantially as set forth.

20. In a paper feeding machine, the combination of a support for a pile of sheets, and a sheet-buckling device, with a vertically-rocking member, a cam for operating said member, a laterally-movable arm pivoted to said rocking member, a spring maintaining said arm in normal position, a cam for moving said arm laterally, a buckling foot or stop having means for engaging and raising a sheet and mounted upon said laterally-movable arm, substantially as set forth.

21. In a paper-feeding machine, the combination of a support for a pile of sheets, with means for separating sheets including a vertically and laterally movable sheet engaging and raising device, oppositely-acting springs engaging said device, and means for increasing the tension of one of said springs to cause said device to be shifted laterally, substantially as set forth.

22. In a paper-feeding machine, the combination of a support for a pile of sheets, with means for separating sheets including a vertically and laterally movable sheet engaging and raising device, a spring holding said device in normal position, a second spring engaging said device and acting upon it in an opposite direction, a pivoted lever to which said second spring is connected, and a cam operating upon said lever, substantially as set forth.

23. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a vertically-rocking member, an arm pivotally mounted upon said rocking member and capable of moving laterally toward the rear edge of the pile, a second arm pivotally mounted upon the first arm and capable of moving laterally toward the side of the pile, a sheet-moving device mounted upon said second arm and having means for engaging and raising a sheet, and means for operating said pivoted arms and said rocking support, substantially as set forth.

24. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a vertically-rocking member, means for operating it, an arm 104 pivoted at 110 to said rocking member, an arm 102 pivoted at 103 to the arm 104, a shoulder $102^a$ on arm 102, an adjustable stop 106 carried by arm 104 and adapted to engage the shoulder $102^a$, a spring 108, a sheet-moving device carried by arm 102 and having means for engaging and raising a sheet, and means for moving arms 104 and 102 upon their pivots, substantially as set forth.

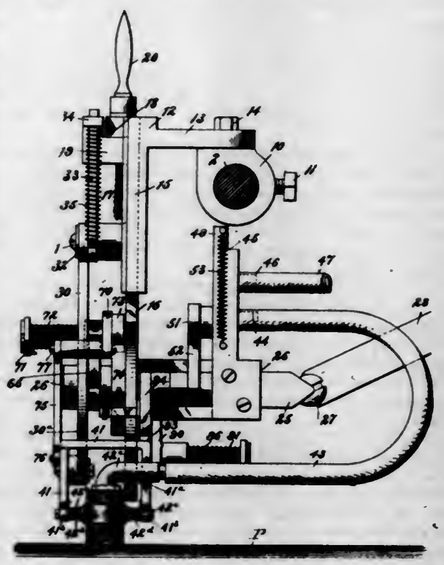
25. In a paper-feeding machine, the combination of a support for a pile of sheets, with two oppositely-arranged sheet-separating mechanisms, each including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, each foot or stop having means for engaging and raising a sheet, and means for imparting up-and-down movements to said feet or stops simultaneously; whereby the buckled sheet will be given a whipping or undulating movement, substantially as set forth.

26. In a paper-feeding machine, the combination of a support for a pile of sheets, with two oppositely-arranged sheet-separating mechanisms, each including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, each foot or stop having means for engaging and raising a sheet, and means for imparting up-and-down and rearward movements to said feet or stops simultaneously; whereby the buckled sheet will be given a whipping or undulating movement, and be shifted bodily upon the pile, substantially as set forth.

27. In a paper-feeding machine, the combination of a support for a pile of sheets, with two oppositely-arranged sheet-separating mechanisms, each including a buckling-finger and a coöperating foot or stop against which the sheet is buckled, each foot or stop having means for engaging and raising a sheet, and means for imparting up-and-down and rearward and outward movements to said feet or stops simultaneously; whereby the buckled sheet will be given a whipping or undulating movement and be shifted bodily upon the pile and the buckled edge of the sheet stretched or straightened out in raised position above the pile, substantially as set forth.

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**754,205. PAPER-FEEDING MACHINE. TALBOT C. DEXTER, Pearl River, N. Y. Filed Aug. 10, 1901. Serial No. 71,573. (No model.)**



*Claim.*—1. In a paper-feeding machine, the combination of a support for a pile of sheets, with a sheet-separating device adapted to bend abruptly upward a triangular portion or corner of a sheet, and raise a part of the sheet from the pile by its bent-up corner, substantially as set forth.

2. In a paper-feeding machine, the combination of a support for a pile of sheets, with independently-operating sheet-separating devices supported over the corners at one edge of a pile of sheets and adapted to bend the corners of the successive sheets abruptly upward into triangular portions, and raise part of the sheet from the pile by its bent-up corners, substantially as set forth.

3. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a pile-holding foot or clamp, and a separating device adapted to bend

abruptly upward a triangular portion or corner of a sheet and raise a part of the sheet from the pile by its bent-up corner, substantially as set forth.

4. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism adapted to first bend abruptly upward the corners of one edge of a sheet on lines extending approximately at right angles to the diagonals of the sheet, and then raise said edge of the sheet upwardly from the pile by its bent-up corners, substantially as set forth.

5. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including pile-holding clamps, and separating devices adapted to first bend abruptly upward the corners of one edge of a sheet on lines extending approximately at right angles to the diagonals of the sheet, and then raise said edge of the sheet upwardly from the pile by its bent-up corners, substantially as set forth.

6. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism adapted to first bend abruptly upward the corners of one edge of a sheet on lines extending approximately at right angles to the diagonals of the sheet, and then raise said edge of the sheet upwardly from the pile by its bent-up corners, and means for feeding sheets from the pile, substantially as set forth.

7. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism adapted to abruptly bend up the corners of one edge of a sheet on lines extending approximately at right angles to the diagonals of the sheet, raise said edge of the sheet from the pile, and shift the sheet bodily upon the pile, substantially as set forth.

8. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism adapted to abruptly bend up the corners of one edge of a sheet on lines extending approximately at right angles to the diagonals of the sheet, raise said edge of the sheet from the pile, shift the sheet bodily upon the pile, and stretch or straighten out the raised edge of the sheet above the pile, substantially as set forth.

9. In a paper-feeding machine, the combination of a support for pile of sheets, and a pile-holding foot or clamp, with sheet-separating mechanism including a rocking device having means for engaging a sheet and adapted to rock or tip over upon the pile and thereby bend up a triangular portion or corner of the top sheet, substantially as set forth.

10. In a paper-feeding machine, the combination of a support for pile of sheets, means for feeding sheets from the pile, and a pile-holding foot or clamp adapted to retain the pile in place, with sheet-separating mechanism including a rocking device having means for engaging a sheet and adapted to rock or tip over upon a pile and thereby bend up a triangular portion or corner of the top sheet, substantially as set forth.

11. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a rocking or tipping sheet-engaging device, means for operating said sheet-engaging device adapted to cause it to move toward and away from the pile and rock or tip over upon the pile a plurality of times between its movements toward and away from the pile, and means controlling the engagement of said device with a sheet, substantially as set forth.

12. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a rocking or tipping sheet-engaging device, means controlling the engagement of said device with a sheet, operating means adapted to cause said device to rock or tip over upon the pile a plurality of times between its movements toward and away from the pile, and means for raising and lowering said device with relation to the pile, substantially as set forth.

13. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a rocking or tipping suctional sheet-engaging device, means for operating said sheet-engaging device adapted to cause it to rock or tip over upon the pile a plurality of times, and means controlling the suctional engagement of said device with a sheet, adapted to cause it to engage and release a sheet a plurality of times, said operating means and suction-controlling means being relatively timed to cause the sheet-engaging device to engage a sheet in upright position, hold onto it while it tips over, then release it in tipped-over position, and finally repeat the operation, substantially as set forth.

14. In a paper-feeding machine, the combination of a support for a pile of sheets, with a reciprocating support, and a sheet-engaging device journaled in said reciprocating support and adapted by its engagement with the pile to be rocked or tipped over upon the pile when its support is reciprocated, substantially as set forth.

15. In a paper-feeding machine, the combination of a support for a pile of sheets, with a reciprocating supporting-arm, and a corner-bending device journaled in the supporting-arm and having means for taking hold of a sheet, said corner-bending device being adapted to rock or tip over upon the pile by reason of its engagement with the pile when its supporting-arm is reciprocated substantially as set forth.

16. In a paper-feeding machine, the combination of a support for a pile of sheets, with a horizontally-reciprocating supporting-arm capable of moving toward and away from the pile, a sheet-engaging device pivotally mounted in the free end of said supporting-arm, and adapted to rock or tip over upon the pile, said sheet-engaging device having means for raising a sheet, and yielding means holding said sheet-engaging device in upright position upon the supporting-arm, substantially as set forth.

17. In a paper-feeding machine, the combination of a support for a pile of sheets, with a horizontally-reciprocating supporting-arm capable of moving toward and away from the pile, a sheet-engaging device pivotally mounted in the free end of said supporting-arm, and adapted to rock or tip over upon the pile, said sheet-engaging device having means for raising a sheet, springs arranged to return said sheet-engaging device to upright position upon the supporting-arm, and a stop determining the normal upright position of said device, substantially as set forth.

18. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including a separator-arm, means for reciprocating and raising and lowering said arm, a sheet-engaging suction-cup journaled in the separator-arm and adapted to rock or tip over upon the pile, means controlling the exhaust of air in the suction-cup, and means for blowing air under a sheet, substantially as set forth

19. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism comprising a horizontally-swinging lever, means for operating said lever, a vertically-movable separator-arm journaled upon said lever, a vertically-swinging lever connected with the separator-arm, means for operating said vertically-swinging lever, a rocking separating device journaled in the free end of the separator-arm and provided with means for engaging and raising part of a sheet from the pile, substantially as set forth.

20. In a paper-feeding machine, the combination of a support for a pile of sheets, with a reciprocating vertically-movable supporting-arm having depending yoke-arms upon its free end, a pneumatic or suction cup journaled in the depending yoke-arms, a part attached to said cup adapted to engage one of the yoke-arms for determining the normal upright position of the suction-cup, a spring device adapted to return the suction-cup to upright position, means controlling the exhaust of air from the cup, and means for operating the supporting-arm, substantially as set forth.

21. In a paper-feeding machine, the combination of a support for a pile of sheets, with a separator-arm, a sheet-engaging device pivotally mounted in said arms, means for raising and lowering and reciprocating said arm for first moving the sheet-engaging device into contact with the pile, then causing it to tip over upon the pile to bend upward a part of the sheet and finally raise the said device with the sheet from the pile, and means for tilting said sheet-engaging device upon said arm when it is raised, substantially as set forth.

22. In a paper-feeding machine, the combination of a support for a pile of sheets, with a separator-arm, a sheet engaging and raising device journaled in said arm, means for raising and lowering said arm, a part projecting from said sheet-engaging device, and a stationary arm adapted to engage said part when the separator-arm is raised to cause the sheet-engaging device to be tilted upon the separator-arm, substantially as set forth.

23. In a paper-feeding machine, the combination of a support for a pile of sheets, with sheet-separating mechanism including two oppositely-arranged separator-arms, two sheet engaging and raising devices journaled in said arms to rock or tilt away from each other, means for raising and lowering said arms, means controlling the engagement of said devices with a sheet, and means for tilting said devices oppositely upon their supporting-arms to stretch or straighten out an edge of a sheet in raised position, substantially as set forth.

24. In a paper-feeding machine, the combination of a horizontal support for a pile of sheets, with a sheet-separating mechanism supported above the pile in a plane inclined from the vertical toward the vertical plane of one edge of the pile, said separating mechanism including a device having means for engaging and lifting a sheet and adapted to move up away from the pile toward the vertical plane of one edge of the pile, means for operating said sheet-engaging device, and means controlling its engagement with a sheet, substantially as set forth.



754,206. COMB. LOTTIE R. EDGAR, Pittsburg, Pa. Filed Sept. 24, 1903. Serial No. 174,413. (No model.)



*Claim.*—As a new article of manufacture, a comb having its back continued to form a roll, said roll being higher and wider at its center than at its ends, and having its front edge free from contact with the comb proper, said free edge and the portion of the roll adjacent the comb proper being perforated, and a covering inclosing said roll and secured by its ends in said openings.

754,207. CHATELAINE-BAG. LOTTIE R. EDGAR, Pittsburg, Pa. Filed Sept. 24, 1903. Serial No. 174,414. (No model.)



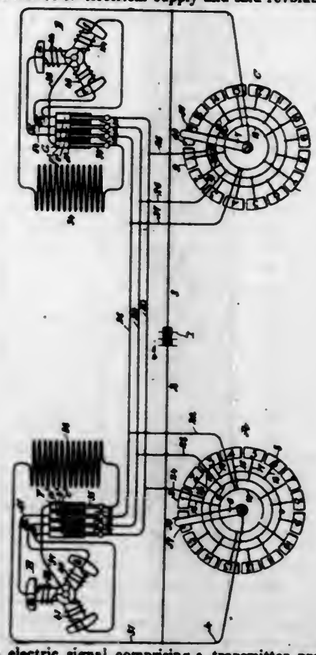
*Claim.*—1. A bag of the type described formed from a blank embodying a front and rear, said rear having an integral flap on its lower end and said front having an integral flap at its side edge, a web connecting the side edge of the front to the back, an auxiliary flap formed integral with the lower end of the front, means carried by the auxiliary flap and by the front for securing said auxiliary flap to the front when said flap is folded on the front, substantially as described.

2. As a new article of manufacture, a bag of the type described formed from a blank embodying an integral front and back connected together by a web, a flap carried by one side edge of the front and adapted to be secured to the back, an integral flap carried by the back and adapted to be secured to the inner face of the front, pockets carried on the inner faces of the back and front, an auxiliary flap carried by the front and adapted to be folded against the outer face of said front, means for fastening the auxiliary flap, means attached to the upper end of the bag for suspending the same, and pockets carried by the auxiliary flap on its inner face, substantially as described.

754,208. ELECTRIC SIGNAL. JOSEPH R. FELLER, Brooklyn, N. Y. Filed Apr. 24, 1902. Serial No. 104,506. (No model.)

*Claim.*—1. An electric signal, comprising an electric motor provided with a revoluble armature having a plurality of separate poles, conducting-wires separately connected with said poles for energizing the same one at a time, a transmitter provided with a plurality of circularly-disposed contacts connected separately with said conducting-wires, manually-operated mechanism for energizing said contacts one at a time, and a source of electricity connected with said manually-operated mechanism and with said motor.

2. An electric signal, comprising an electric motor provided with a revoluble armature having a plurality of separate poles, conducting-wires separately connected with said poles for energizing the same one at a time, a transmitter provided with a plurality of circularly-disposed contacts connected separately with said conducting-wires, a manually-operated electrode free to move circularly over said contacts so as to engage the same one at a time in a predetermined order, a source of electrical supply connected with said revoluble armature, and means for periodically closing the circuit between said source of electrical supply and said revoluble electrode.



3. An electric signal, comprising a transmitter provided with contacts, a manually-operated contacting member disposed adjacent to said contacts and free to engage the same successively in a predetermined order, an electric motor provided with an armature having a plurality of poles, separate line connections from said contacts to said separate poles of said armature for the purpose of energizing the same synchronously with the successive engagement and disengagement of said contacts by said contacting member, a source of electricity connected with said contacts and with said armature, and mechanism actuated by said motor for indicating successive current-phases passing through said armature.

4. An electric signal, comprising an electric motor provided with a revoluble armature having a plurality of separate poles, manually-operated mechanism connected separately with said poles for energizing the same independently of each other, thus giving a step-by-step movement to said armature, and means for indicating individually and collectively the several movements of said armature.

5. An electric signal, comprising an electric motor provided with a revoluble armature having distinct poles spaced apart from each other, separate wires connected with said poles for actuating the same step by step, means controllable at will for energizing said wires one at a time, and mechanism actuated by said motor for indicating the cumulative effect of several successive movements of said armature.

6. In an electric signal, the combination of a revoluble armature having a plurality of poles spaced apart from each other, conducting-wires connected separately with said poles for energizing the same one at a time, and manually-operated electric mechanism for energizing said wires successively.

7. In an electric signal, the combination of a motor provided with a revoluble armature having a plurality of separate poles spaced apart from each other, conducting-wires connected separately with said poles for energizing the same one at a time, mechanism connected with said armature for indicating the cumulative effect of several successive movements of said armature, separate contacts connected with said wires for energizing the same individually, and mechanism controllable at will for successively closing said contacts.

754,209. WIRE-ROD-CLEANING MACHINE. JAY S. FERGUSON, South Sharon, Pa. Filed Oct. 9, 1903. Serial No. 176,384. (No model.)



*Claim.*—1. In a rod-cleaning machine, straining-rolls arranged at opposite sides of the line of movement for the rod, and a separate tubular adjustable feeding-guide arranged at the feeding end of the machine for the reception of the rod prior to its passage to the rolls, said guide having a longitudinal guiding-bore accommodating the rod therein, and being movable in a direction transverse to the line of movement for the rod.

2. In a rod-cleaning machine, straining-rolls arranged at opposite sides of the line of movement for the rod, and a tubular adjustable feeding-guide accommodating the rod therein and carrying one of said rolls, said guide being adjustable in a direction transverse to the line of movement for the rod.

3. In a rod-cleaning machine, straining-rolls arranged at opposite sides of the line of movement for the rod, a vertically-swinging tubular feeding-guide carrying one of said rolls whose rod-engaging portion is in line with the bore through the guide, and an adjusting device for said guide to move the latter in a direction transverse to the line of movement for the rod.

4. In a rod-cleaning machine, vertical and horizontal sets of straining-rolls, each set having an adjustable roll, and means for synchronously setting both of the adjustable rolls, and also holding them fixed in their set positions.

5. In a rod-cleaning machine, vertical and horizontal sets of straining-rolls for the rod, each set having an adjustable roll, a vertically-swinging pivotally-supported tubular feeding-guide carrying bearings for the adjustable roll of the horizontal set, and a regulating device having an adjusting-cam for the feeding-guide, and an operative connection with the adjustable roll of the vertical set.

6. In a rod-cleaning machine, the base having a transversely-disposed slideway, a set of vertical straining-rolls supported upon the base and arranged in staggered relation, one of said rolls being adjustable and having a carrier slidably mounted in the slideway, a horizontal set of straining-rolls arranged at the feeding end of the base and disposed one in advance of the other, one of said rolls having a vertical adjustment, a swinging feeding-guide carrying said adjustable horizontal roll, a regulating-lever having locking means and carrying an adjusting-cam operating against the feeding-guide, and an adjusting-rod having an operating connection with the said roll-carrier for moving the same toward and from the line of movement of the rod, and also operatively connected with the regulating-lever.

7. In a rod-cleaning machine, the base, vertical and horizontal sets of straining-rolls arranged in succession, each set having an adjustable roll for varying the strain against the rod, means for setting the adjustable rolls in fixed positions, a cleaning device, and means for operating the cleaning device by communicating motion thereto from one of the straining-rolls.

8. In a rod-cleaning machine, a series of rod-straining rolls, and a pair of spaced axially-alined rotatable cleaning devices receiving the rod from the rolls, one of said devices having positive motion communicated thereto and the other being an idler.

9. In a rod-cleaning machine, the base, a series of rod-straining rolls arranged in staggered relation, and a pair of spaced axially-alined cleaning devices receiving the rod from the rolls, one of said cleaning devices having a scraping element, and the other having a brush member for supplementing and completing the action of the scraper.

10. In a rod-cleaning machine, the base, a series of rod-straining rolls, and a pair of spaced axially-alined cleaning devices rotatably mounted and receiving the rod from the rolls, one of said cleaning devices having a scraper and the other having a brush, the latter being arranged to supplement and complete the action of the scraper.

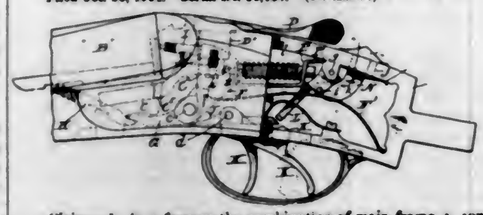
11. In a rod-cleaning machine, the base, a series of rod-straining rolls, a pair of spaced axially-alined cleaning devices receiving the rod from the rolls and respectively embodying differently-constructed cleaning elements, and a pair of horizontal guiding delivery-rolls arranged to receive the rod from the last cleaning device.

12. In a rod-cleaning machine, a series of rod-straining rolls, and a cleaning device receiving the rod from the rolls, and consisting of a tubular rotatable body provided with a head at one end, separate inner and outer overlapping pairs of scraper-blades carried by said head and slidably mounted in independent radially-disposed slideways, all of said scraper-blades having at their inner ends matching notched scraping ends, and individual adjusting-springs for the several blades to yieldingly press the same inward.

13. In a rod-cleaning machine, the combination of a series of straining-rolls, a rotary cleaning device receiving the rods from said rolls, and a driving connection from one of said rolls to said cleaning device for rotating the latter.

14. In a rod-cleaning machine, a series of rod-straining rolls and a rotary cleaning device receiving the rod from the rolls and consisting of a tubular rotatable body provided within its bore with an interior brush.

754,210. FIREARM. ANDREW FYRBERG, Worcester, Mass. Filed Oct. 23, 1901. Serial No. 80,187. (No model.)



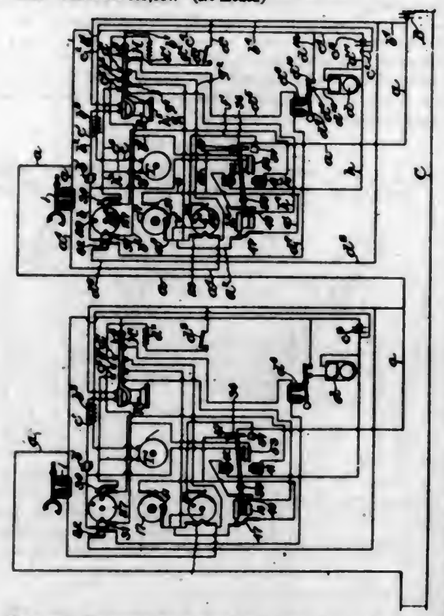
*Claim.*—1. In a firearm the combination of main frame A, top lever D, its hub D', barrel-locking plate C and trigger K, with horizontal, longitudinal bolt E, its supporting-frame, means for imparting a forward, yielding pressure to said bolt, bolt E being interposed between the rear end C³ of plate C and vertical lock-lever L; said lock-lever L, slide M, its inward-extending arm N, and means for holding said slide and arm in their adjusted positions, the lock-lever L being pivoted at its upper end to a fixed bearing and just below said pivot to the inner end of said arm N, so that it may be operated to engage and disengage its lower end to and from the trigger, either by moving the slide M, or by the operation of the top lever, substantially as set forth.

2. In a firearm, the combination of main frame A, top lever D, its hub D', barrel-locking plate C and trigger K, with horizontal longitudinal bolt E, its supporting-frame, means for imparting a forward yielding pressure to said bolt, and vertical lock-lever L, the latter being pivoted at its upper end to a fixed bearing, and its lower end adapted to be engaged and disengaged to and from the trigger, by the operation of the top lever and the bolt-actuating spring, substantially as set forth.

3. In a firearm, the combination of main frame A and trigger K, with the vertically-arranged lock-lever L, pivoted at its upper end to a fixed bearing on said frame A, slide M, and its arm N, and means for holding said slide and arm in their adjusted positions, the arm extending inward and forward from the slide, and pivoted at its inner end to said lock-lever L below its fixed pivot, the lower end of the lock-lever L being adapted to be engaged and disengaged to and from the trigger, substantially as set forth.



754,211. TELEPHONE OR TELEGRAPH SYSTEM. THOMAS W. GLEMSON, Boston, and ROBERT HAMILTON, Milton, Mass. Filed May 1, 1903. Serial No. 155,117. (No model.)



*Claim.*—1. In a telephone system in combination, a plurality of stations; a main line common to all of said stations; a telephone instrument at each station having the ends of its secondary joined to the main line; a number of switch-controlling motors in the main line, one at each station between the ends of the secondary thereof; a normally closed switch at each station arranged in the main line between the ends of the secondary; a normally open switch in each secondary; a condenser in each secondary, and means to enable the operator at any one of said stations to operate the motors to close the normally open switch of any one of the other stations and open the normally closed switch of that station, and to close the secondary circuit of his own station.

2. A telephone system comprising two or more stations; a main battery-circuit; an electric switch-operating motor at each station; a telephone at each station; a secondary circuit for each telephone, each having its ends connected with the main battery-circuit; a normally open switch in each secondary controlled by the motor of its respective station; a condenser in each secondary; and a normally closed switch in the main battery-circuit at each station arranged between the ends of the secondary and controlled by said motor.

3. A telephone system comprising two or more stations; a main battery-circuit common to all of the stations; a telephone at each station; a secondary circuit for each telephone each having its ends connected with the main battery-circuit; a normally open switch in each secondary circuit; a condenser in each secondary circuit; a normally closed switch in the main battery-circuit arranged between the ends of each of the secondary circuits; a number of motors in said main battery-circuit for operating said switches one motor for each station, and means at each station for operating the main battery-circuit to cause the motor of either one of the other stations to close its normally open switch and open its normally closed switch.

4. A telephone system comprising two or more stations; a main battery-circuit common to all of the stations; a telephone at each station; a secondary circuit for each telephone, each having its ends connected with the main battery-circuit; a normally open switch in each secondary circuit; a condenser in each secondary circuit; a normally closed switch in the main battery-circuit arranged between the ends of each of the secondary circuits; a number of magnets in series in said main battery-circuit, one for each station, for operating said switches; and means at each station for operating the main battery-circuit to cause the magnet of either one of the other stations to close its normally open switch and open its normally closed switch.

5. In a telephone system in combination, a main battery-circuit, a number of electric switch-operating motors in said circuit, one for each station of the system; a telephone at each station; a secondary circuit for each telephone each having one of its ends connected with the main battery-circuit at each side of the motor of its respective station; a condenser in each telephone-circuit; a normally open switch in each secondary telephone-circuit; a normally closed switch arranged in the main battery-circuit between the ends of each of the secondary circuits; and means at each station for operating the main battery-circuit so as to cause the motor of either one of the other stations to close the normally open switch and to open the normally closed switch of that station.

6. In a telephone system two or more stations; a main battery-circuit common to all the stations; a telephone at each station; a secondary circuit for each telephone each having its ends connected to the main battery-circuit; a normally open switch in each secondary circuit; a condenser in each secondary circuit; a number of normally closed switches in the main battery-circuit each arranged between the ends of one of the secondary circuits; a shunt in the main battery-circuit at each station extending around the normally closed switch thereof; a normally closed switch in each shunt controlled by the receiver-hook of its respective station; a number of motors in said main battery-circuit for operating the two first-mentioned switches, one for each station; and means at each station for operating the main battery-circuit to cause the motor of either one of the other stations to close its normally open switch and open its normally closed switch.

7. A telephone system comprising two or more stations; a main battery-circuit common to all of the stations; a telephone at each station, a secondary circuit for each telephone, each having its ends connected to the main circuit; a normally open switch in each secondary circuit; a condenser in each secondary circuit; a shunt in each secondary circuit around the normally open switch thereof; a normally open switch in each shunt controlled by the receiver-hook of its respective station; a number of normally closed switches in the main battery-circuit each arranged between the ends of one of the secondary circuits; a number of motors in the main battery-circuit, one for each station, and each arranged to operate the normally open switch in the secondary and the normally closed switch in the main battery-circuit at its respective station; and means at each station for operating the main battery-circuit to cause the motor of either one of the other stations to close its normally open switch and open its normally closed switch.

8. A telephone system comprising two or more stations; a main battery-circuit common to all of the stations; a telephone at each station; a secondary circuit for each telephone, each having its ends connected with the main battery-circuit; a normally open switch in each secondary circuit; a condenser in each secondary circuit; a number of normally closed switches in the main battery-circuit each arranged between the ends of one of the secondary circuits; a number of switch-operating motors in the main battery-circuit, one for each station; means at each station for operating the main battery-circuit to cause the motor of either one of the other stations to close its normally open switch and open its normally closed switch; a signal-circuit at the called station; a signal in the signal-circuit; a relay for operating the signal-circuit; a relay-circuit at the called station connected at its ends with the secondary circuit of the telephone of that station and adapted to be opened by the operator at the called station in response to the operation of the signal at his station; a shunt at the calling-station connected at its ends with the secondary circuit of that station at each side of the normally open switch of the secondary circuit of said calling-station, and a normally open switch in said shunt adapted to be closed by the operator.

9. A telephone system comprising secondary telephone-circuits; a normally open switch in each secondary telephone-circuit; a main battery-circuit; a series of electric motors in the main battery-circuit each arranged to operate one of the normally open switches of the secondary telephone-circuits, and means at each station and controlled by the operator thereof for automatically operating the main battery-circuit to cause the motor of either one of the other stations to operate its normally open switch.

10. In combination, a magnet; an armature operated by the magnet; an arbor; connections between the arbor and the armature; a pair of commutator-wheels on said arbor, one adapted to control the

initial movement of the arbor and the other to control the return of the arbor to its normal position; contacts coöperating with the commutator-wheels, and electrical connections between said contacts and said magnet.

11. In combination, a magnet; an armature operated by the magnet; an arbor; connections between the arbor and the armature; a pair of commutator-wheels on said arbor one adapted to control the initial movement of the arbor and the other to control the return of the arbor to its normal position; contacts coöperating with the commutator-wheel; electrical connections between said contacts and said magnet; and adjustable stopping means for limiting the initial movement of the arbor.

12. In combination, a magnet; an armature operated by the magnet; an arbor; connections between the arbor and the armature; a pair of commutator-wheels on said arbor, one adapted to control the initial movement of the arbor and the other to control the return of the arbor to its normal position; contacts coöperating with the commutator-wheels; electrical connections between said contacts and said magnet; adjustable stopping means for limiting the initial movement of the arbor; a switch for controlling the circuits through the contacts and commutator-wheels; and connections between said switch and the adjustable stopping means for operating said switch when the stopping means is operated.

13. In combination, a magnet; an armature operated by the magnet; an arbor; connections between the arbor and the armature; a pair of commutator-wheels on said arbor, one adapted to control the initial movement of the arbor and the other to control the return of the arbor to its normal position; contacts coöperating with the commutator-wheels, electrical connections between said contacts and said magnet; adjustable stopping means for limiting the initial movement of the arbor; a switch for controlling the circuits through the contacts and commutator-wheels; connections between said switch and the adjustable stopping means for operating said switch in one direction when the stopping means is moved into operative position, and adapted to permit the switch to be moved in the opposite direction independently of the stopping means; and automatic means for returning the stopping means to normal position when the arbor is returned to its normal position.

14. In combination, a magnet; an armature operated by the magnet; an arbor; connections between the arbor and the armature; a pair of commutator-wheels on said arbor, one adapted to control the initial movement of the arbor and the other to control the return of the arbor to its normal position; contacts coöperating with the commutator-wheels; electrical connections between said contacts and said magnet; angularly-adjustable stopping means movable into and out of operative position for limiting the initial movement of the arbor; a switch for controlling the circuits through the contacts and commutator-wheels; connections between said switch and the adjustable stopping means for operating said switch in one direction when said stopping means is moved into operative position and adapted to permit the switch to be moved in the opposite direction independently of the stopping means; means to automatically lock the stopping means against angular movement when the latter is in operative position, and automatic means for unlocking the stopping means when the switch is moved independently in the opposite direction, and for returning the stopping means to normal inoperative position when the arbor is returned to its normal position.

15. In combination, a magnet; an armature operated by the magnet; an arbor; connections between the arbor and the armature; a pair of commutator-wheels on said arbor one adapted to control the initial movement of the arbor and the other to control the return of the arbor to its normal position; contacts coöperating with the commutator-wheels; electrical connections between said contacts and said magnet; adjustable stopping means for limiting the initial movement of the arbor; and means for automatically locking the adjustable stopping means in normal position when the arbor is moved before the stopping means is adjusted.

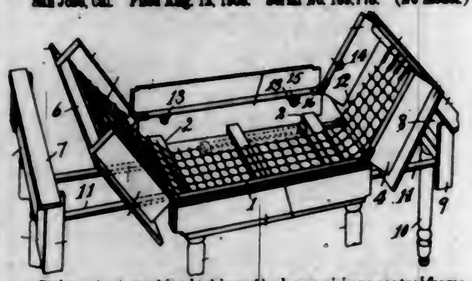
16. In a telephone system, the combination with a switch-operating motor, and an armature for controlling the action of said motor, of a magnet arranged to move the armature in one direction to start the motor upon its initial movement; a circuit for said magnet; a normally open switch in said circuit adapted to be closed by the operator, and a normally closed switch in said circuit operated by the said motor and arranged to be opened by the motor when the latter is started upon its initial movement.

17. In a telephone system, the combination with a switch-operating motor, and an armature for controlling the action of said motor, of a magnet arranged to move the armature in one direction to start the motor upon its initial movement; a circuit for said magnet; a normally open switch in said circuit controlled by the receiver-hook of the telephone and adapted to be closed when the receiver is moved from its hook; said hook; and a normally closed switch in said circuit operated by said motor and arranged to be opened by the motor when the latter is started upon its initial movement.

18. In a telephone system, the combination with a switch-operating motor and an armature for controlling the action of said motor, of adjustable stopping means for regulating the operation of said motor operated by said armature when the latter is moved from its normal position in one direction; a magnet for returning the armature to normal position; a circuit for said magnet; a normally closed switch in said circuit controlled by the receiver-hook of a telephone, and arranged to be opened when the receiver is moved from its hook; and a normally open switch in said circuit which is operated by the stopping means and arranged to be closed when the latter is adjusted by the operator.

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**754,212. COMBINED TABLE AND BED. Lizzie C. Grabbeel, San Jose, Cal. Filed Aug. 12, 1903. Serial No. 169,175. (No model.)**



*Claim.*—1. A combined table and bed comprising a central frame, terminal frames pivotally connected to the central frame, a wire mattress secured at its ends only to said terminal frames, the intermediate part being free, ends and slides rigidly connected to said ends and slidably engaging the central frame whereby said ends close the ends of the table when folded and form the ends of the bed when unfolded, substantially as described.

2. A combined table and bed comprising a central frame, terminal frames pivotally connected to the central frame, a mattress secured at its ends to said terminal frames, ends which close the ends of the table when folded and form the ends of the bed when unfolded, transverse slats in the main frame, and slides rigidly secured to the ends and sliding between the transverse slats, substantially as described.

3. A combined table and bed comprising a central frame, terminal frames pivotally connected to the central frame, a mattress secured at its ends to said terminal frames, ends, and slides rigidly connected to said ends and slidably engaging the central frame whereby said ends close the ends of the table when folded and form the ends of the bed when unfolded, and automatically-locking devices for securing the sections in their closed position concealed by said sections when so closed, substantially as described.

4. A combined table and bed comprising a central frame, terminal frames pivotally connected to the central frame, a mattress secured at its ends to said terminal frames, ends, slides rigidly connected to said ends and slidably engaging the central frame, whereby said ends close the ends of the table when folded and form the ends of the bed when unfolded, and movable strips at the sides of the table of uniform width and the length of the central frame and arranged to cover the openings between the ends of the terminal side pieces when the latter are closed, substantially as described.

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**754,213. HAT. Emanuel M. Hackel, New York, N. Y., assignor to himself and Abraham Seiffer, doing business as Style Manufacturing Co., New York, N. Y., a Firm. Filed Jan. 5, 1904. Serial No. 187,816. (No model.)**

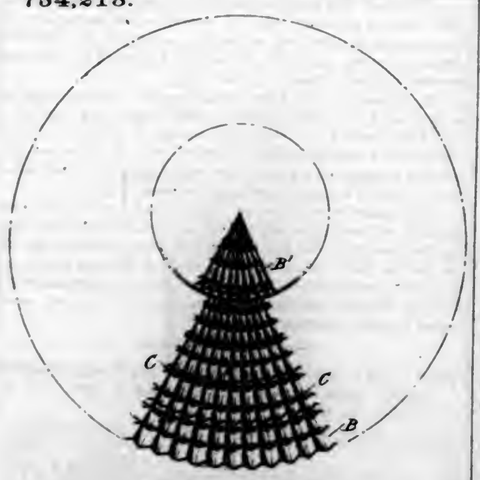
*Claim.*—1. A hat comprising a covering with radiating folds and with overlapping folds disposed in about circular lines.

2. A hat, comprising a suitable frame, and a covering, the inner edge of which is initially shorter than its outer edge, said covering being provided with folds radiating from its inner edge.

3. A hat comprising a suitable frame and a covering provided with radial folds and with overlapping folds disposed in approximately circular lines, and threads or the like, connecting said overlapping folds.

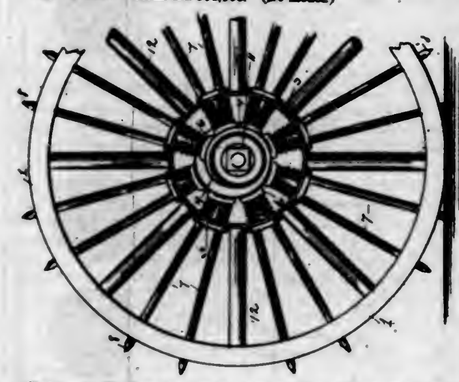


754,218.



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**754,214. TRACTION-WHEEL. William R. Harris, Pittsburg, Pa., assignor of one-half to Joseph F. Klapka, Allegheny, Pa. Filed July 18, 1903. Serial No. 166,166. (No model.)**



*Claim.*—1. The herein-described traction-wheel, consisting of a hub, a spiral casting arranged thereon, said casting being provided with a groove, a wrench-engaging portion formed integral with the said casting, shoes adapted to ride in the said groove, each of said shoes being provided with a plurality of radial bars, and means formed thereon for retaining the same in a set position, substantially as and for the purpose specified.

2. The herein-described traction-wheel, consisting of a hub, a spiral casting arranged thereon, said casting being provided with a groove, a wrench-engaging portion formed integral with the said casting, shoes adapted to ride in the said groove, each of said shoes being provided with a plurality of radial bars, said bars being provided with springs, substantially as and for the purpose specified.

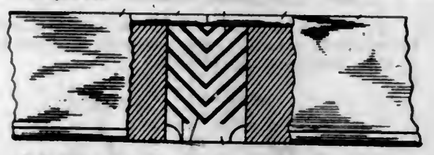
3. The herein-described traction-wheel, consisting of a hub, a spiral casting arranged thereon, said casting being provided with a groove, a wrench-engaging portion formed integral with the said casting, shoes adapted to ride in the said groove, each of said shoes being provided with a plurality of radial bars, a casing surrounding the casting, a flange formed upon each of the said bars near the lower end thereof, and a spring interposed between the said flange and the casing, substantially as and for the purpose specified.

4. The herein-described traction-wheel, consisting of a hub, a spiral casting arranged thereon with rods supported thereby and extending through the felly of the wheel, an annular casing arranged about the said casting, and a dust-guard formed on the said casing, substantially as and for the purpose specified.

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**754,215. FLOORING END JOINT. Morris A. Hayward, Columbus, Ohio. Filed July 15, 1903. Serial No. 165,565. (No model.)**

*Claim.*—1. In a flooring end joint, a connecting-key comprising a plate having formed on its surface, ribs which incline forwardly and outwardly from the center of the length of said plate, substantially as specified.

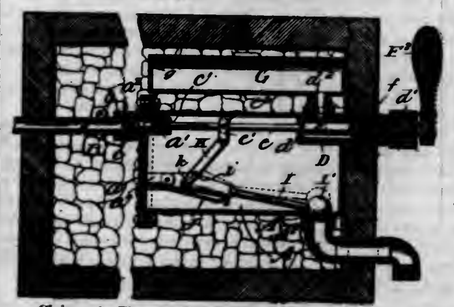


2. In a flooring end joint, the combination with floor sections or boards as 1 and 2, said sections having saw-kerfs formed transversely in their adjoining ends, of a connecting-plate comprising a body 6 having projecting surface ribs 7 diverging from the center of said plate outward and forward, substantially as specified.

3. In a flooring end joint, the combination with flooring-sections as 1 and 2 having opposing end saw-kerfs, of a connecting device comprising a metallic plate having the corners of one of its ends cut away and having formed on its surface a series of diverging ribs as described, substantially as specified.

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**754,216. CARBONATED-LIQUID-DISPENSING APPARATUS. Theodor Heutsch, New York, N. Y. Filed Sept. 28, 1903. Serial No. 174,963. (No model.)**



*Claim.*—1. The combination of the holder having a draw-off outlet, an outlet-valve, a venting-chamber communicating with the holder, and a vent-valve controlling communication between the holder and venting-chamber, having a longitudinally-movable stem, means for operating the vent-valve, a lever connected to the outlet-valve, and connections between said lever and vent-valve stem, whereby the outlet-valve is opened and closed simultaneously with the vent-valve.

2. The combination of the holder having a draw-off outlet, an outlet-valve, a venting-chamber communicating with the holder, a vent-valve controlling communication between the holder and venting-chamber and a lever within the holder connected to the outlet-valve, with a link connected to the vent-valve stem and loosely engaging said lever whereby the outlet-valve is closed simultaneously with the vent-valve, and a spring engaging said lever for opening the outlet-valve when the vent-valve opens, substantially as described.

3. The combination of the holder, the outlet-valve, and vent-valve, a pivoted lever within the holder connected to said outlet-valve, and having a slot, a link pivoted to the vent-valve stem and loosely engaging the slot in the lever, and a spring to open the outlet-valve, substantially as described.

4. The combination of the holder, a supply-valve, an outlet-valve, and a vent-valve, a stem connected to the vent-valve adapted to unseat the inlet-valve when the vent-valve is closed; a lever connected to the outlet-valve, a link connected to said stem between the inlet and vent valves and loosely engaging said lever and adapted to cause said lever to close the outlet-valve when the vent-valve is closed, and springs adapted to close the inlet-valve and to open the outlet-valve, substantially as described.

5. The combination of the holder or cooler, a vent or frothing chamber communicating therewith, a vent-valve controlling communication between said chambers, a supply-pipe communicating with said holder, a valve controlling said supply; an outlet-valve from said chamber; a stem connected to said vent-valve adapted to open the inlet-valve when the vent-valve closes; a pivoted lever within the holder connected to the outlet-valve, a link connected to said stem between the inlet and vent valves and adapted to engage

the lever and close the outlet-valve with the vent-valve; and springs arranged to close the inlet-valve and to open the outlet-valve, all substantially as described.

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754,217. PORTABLE BATH OR SACK FOR WASHING OR BATHING PURPOSES. ADOLF HERZ, Vienna, Austria-Hungary. Filed Sept. 17, 1902. Serial No. 123,700. (No model.)



*Claim.*—1. An appliance of the character described, comprising a water-tight sack composed of waterproof material having the lower part stiffened so as to be adapted to receive and contain a bathing agent or fluid and provided with a controlled draw-off cock and means provided at the upper end of the sack adapted to permit of the fitting of the sack around the neck or drawing the same over the head of a person, whose body and limbs are concealed within the sack, substantially as and for the purposes described.

2. An appliance of the character described, comprising a water-tight sack composed of waterproof material having pockets and light or inspection openings arranged in the sack and at the base stiffened and provided with a draw-off cock, said base adapted to receive and contain a bathing agent or fluid and means provided at the upper end of the sack adapted to permit of the fitting of the sack to the neck or of drawing the same over the head of a person, whose body and limbs are concealed within the sack, substantially as and for the purposes described.

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754,218. POSTAL MONEY-CARRIER. WILLIAM G. HOUGH, Jacobs Creek, Pa. Filed Apr. 11, 1903. Serial No. 152,146. (No model.)




*Claim.*—A postal money-carrier comprising a card, having a stamp-receiving portion, a pocket formed on said card having its upper end open and extending onto said stamp-receiving portion, so as to be sealed by the stamp when the latter is properly positioned on said stamp-receiving portion.

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754,219. DOOR-GUARD. BELDEN D. JONES, Chicago, Ill., assignor to Jones Car Door Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 7, 1903. Serial No. 176,056. (No model.)



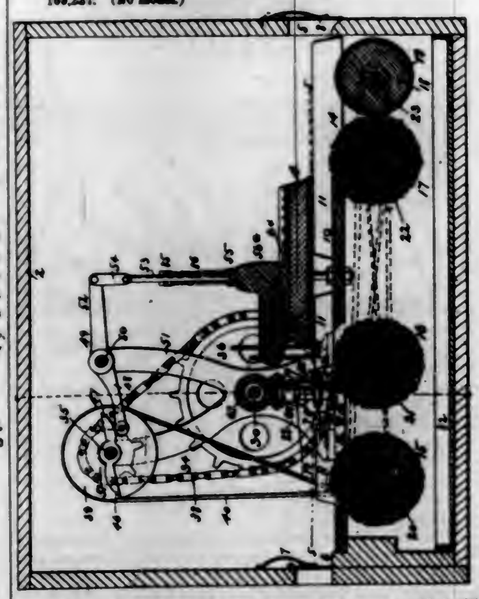
*Claim.*—1. A guard for sliding doors comprising two overlapping plates or strips, the outer one secured to the frame above the door-opening and the inner one secured to the door and extending the width thereof, and a deflector carried by one of the strips and extending laterally toward the other strip.

2. A guard for sliding doors comprising two plates or strips, one secured to the frame above the door-opening and having a lower vertical offset portion, the other secured along the width of the door and having a vertical portion adapted to enter the offset and provided at its upper edge with a downwardly-extending flange terminating adjacent the offset portion of the other strip.

3. A guard for sliding doors comprising two overlapping plates or strips, one secured to and having an inturned upper edge entering the frame above the door-opening and having its lower edge offset, and the other secured along the width of the door and having a vertical portion adapted to enter the offset and provided with a flange at its upper edge extending downwardly toward and terminating adjacent the offset.

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754,220. MACHINE FOR CLEANING BLACKBOARD-ERASERS. JAMES A. JONES, Plymouth, Ind. Filed Aug. 12, 1903. Serial No. 169,237. (No model.)



*Claim.*—1. An eraser-cleaner having a bed-plate provided with openings, lugs projecting from the under side of the bed-plate, and brushes on shafts supported in said lugs and extending through said openings; in combination with an eraser-holder, brackets above and on opposite sides of the bed-plate, a power-shaft supported on said brackets, miter gear-wheels on said shaft, vertical shafts having gear-wheels engaged by the wheels on the power-shaft and laterally movable at their lower ends, and friction-rollers on said vertical shafts to engage erasers.

2. An eraser-cleaner having a bed-plate provided with openings, brushes for cleaning an eraser through said openings, feed-rollers for engaging the sides of an eraser and having shafts laterally movable at one end, a spring engaging each shaft, and an eraser-holder; in combination with a power-shaft, connections for raising said holder and connections for revolving said rollers.

3. An eraser-cleaner having a bed-plate, vertical brackets above and on opposite sides of the bed-plate and having bifurcated arms, a power-shaft supported in the brackets below said arms, a shaft provided with a pulley and a cam and supported in one of the arms of said brackets, and a shaft provided with a lever engaged by said cam and supported in the other arms of said brackets; in combination with an eraser-holder.

4. An eraser-cleaner, having an eraser-holder, vertical posts, a transverse bar secured to the upper end of said posts, a transverse bar vertically movable between the posts and to which said eraser-holder is secured, a rod connected to the movable bar, and a spring

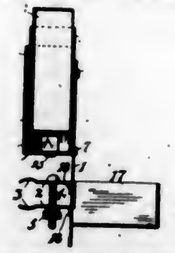


on the rod between said bars; in combination with means for raising the eraser-holder.

5. An eraser-cleaner consisting of a case having openings opposite each other in the ends thereof, a horizontal bed-plate between and in line with said openings, an eraser-holder, means for beating erasers, means for brushing the erasers, and means for automatically moving the erasers from the holder through the egress-opening.

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754,221. MATCH-SAFE. DANIEL S. KEHAN, Orange, N. J. Filed Sept. 14, 1903. Serial No. 173,049. (No model.)



*Claim.*—1. A holder for matches, comprising a body-plate 1, a receptacle for unused matches at one side of said plate and near its top, a tray for burned matches at the lower portion of the opposite side of said plate, and clamping means adapted to engage a gas-pipe or the like projecting from said body-plate beneath the match-receptacle and on the opposite side from the tray for burned matches.

2. A holder for matches, comprising a body-plate 1, a receptacle on one side and near the top of said plate, open at its top and adapted to hold a match-box with its end projecting, and having its sides apertured to expose the said box for scratching, a tray for burned matches at the lower portion of the opposite side of said plate from the said receptacle, and clamping means adapted to engage a gas-pipe or the like projecting from said body-plate beneath the match-receptacle and on the opposite side from the tray for burned matches.

3. In a match-holder, the combination of a body-plate, 1, adapted to occupy a vertical position, an upright receptacle attached flatwise against one side of said plate near its upper portion and being open at its top and adapted to hold unused matches, a tray affixed to the opposite side of the plate near its lower end, resilient arms 2, 2, projecting from the plate at a point opposite the said tray and lying at their extremities in substantially the plane of the outer wall of the said receptacle for unused matches, said outer wall having an aperture near its top, and means for clamping said arms upon a gas-pipe or the like.

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754,222. BALLAST-COMPARTMENT FOR SUBMARINE BOATS. SIMON LAKE, Bridgeport, Conn. Filed Nov. 23, 1903. Serial No. 182,217. (No model.)

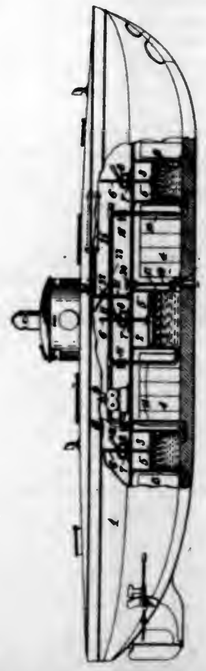
*Claim.*—1. In a submarine boat, the combination with a water-ballast compartment and means for controlling its fluid contents, of a movable partition fitted to said ballast-compartment and acting idly in respect of the said controlling means to adjust the capacity of that portion of said compartment containing the water ballast to correspond with the volume of its fluid contents.

2. In a submarine boat, the combination with a water-ballast compartment and means for controlling its fluid contents, of a movable partition fitted to said ballast-compartment and acting idly in respect of the said controlling means to adjust the capacity of that portion of said compartment containing the water ballast to correspond with the volume of its fluid contents, and means for securing said partition in any of its positions of adjustment.

3. The combination with a submarine boat, of a water-ballast compartment, means for controlling the volume of water within said compartment, and means independent of said controlling means whereby the contained water is prevented from shifting therein.

4. The combination with a submarine boat having a water-ballast compartment provided with inlet and outlet communicating with the exterior of the boat, of means for controlling the contents of said compartment through said inlet and outlet, and a partition within said compartment movable toward and from said outlet and inlet independently of said controlling means whereby the volume of water contained in said compartment may be confined within an inclosed space therein of equal capacity.

5. The combination with a submarine boat having a water-ballast compartment and means for controlling the volume of water with in said compartment, of a partition within the compartment movable vertically and independently of said controlling means for dividing off the filled from the unfilled space of said compartment.



6. The combination with a submarine boat having a water-ballast compartment and means for controlling the volume of water within said compartment, of a movable partition within the compartment for separating its filled from its unfilled space, and means for securing said partition in position.

7. The combination with a submarine boat, of a collapsible water-ballast compartment and means operating independently of the effective capacity of said compartment for controlling its fluid contents.

8. The combination with a submarine boat, of a ballast-compartment, means for controlling the contents of said compartment, and means independent of said controlling means for controlling its capacity.

9. The combination with a submarine boat, of a water-ballast compartment and means for controlling its fluid contents, and a vertically-movable partition acting by gravity to maintain the effective capacity of said compartment in correspondence with the volume of water contained therein.

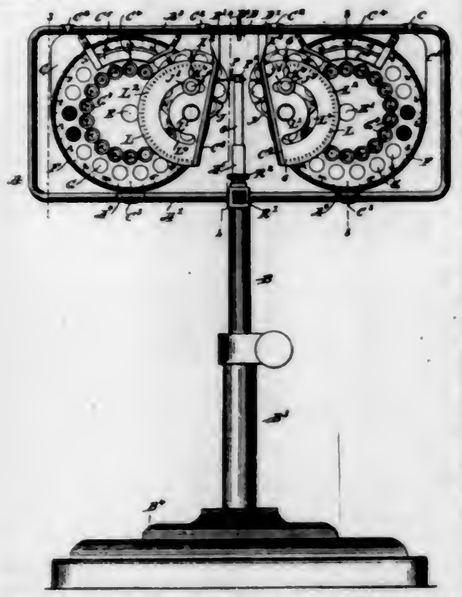
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754,223. OPTOMETER. WILLIAM J. LAUGHLIN, Waunakee, Wis. Filed May 26, 1903. Serial No. 158,534. (No model.)

*Claim.*—1. An optometer comprising a frame, supports movable toward and from each other on the said frame, and a pair of disks on each support, mounted to turn independent one of the other, one of the disks having plus unit power-lenses, minus fraction-power-lenses and a minus 10 D lens, and the other disk having minus unit power-lenses plus fractional power-lenses and a plus 10 D lens, as set forth.

2. An optometer provided with supports, a pair of disks mounted to turn independent one of the other on the same axis, on each of the said supports, spherical power-lenses in each disk, arranged in a circle, the lenses in one disk being adapted to register with the lenses in the other disk, a second pair of disks, arms mounted to swing on the said supports, eccentric to the first-named disks, the said second pair of disks being mounted to turn on the same axis, but independent one of the other, on the said arms, and cylindrical power-lenses set in a circle in the said second pair of disks and adapted to register with each other and with the spherical power-lenses, as set forth.

3. An optometer provided with supports, a pair of disks mounted to turn independent one of the other on the same axis, on each of the said supports, spherical power-lenses in each disk, arranged in a circle, the lenses in one disk being adapted to register with the lenses in the other disk, a second pair of disks, arms mounted to swing on the said supports, eccentric to the first-named disks, the said second pair of disks being mounted to turn on the same axis, but independent one of the other, on the said arms, cylindrical power-lenses set in a circle in the said second pair of disks and adapted to register with each other and with the spherical power-lenses, and eyepieces on the said supports, in alinement with the registering lenses, as set forth.



4. An optometer provided with supports, a pair of disks mounted to turn independent one of the other on the same axis, on each of the said supports, spherical power-lenses in each disk, arranged in a circle, the lenses in one disk being adapted to register with the lenses in the other disk, a second pair of disks, arms mounted to swing on the said supports, eccentric to the first-named disks, the said second pair of disks being mounted to turn on the same axis, but independent one of the other, on the said arms, cylindrical power-lenses set in a circle in the said second pair of disks and adapted to register with each other and with the spherical power-lenses, and graduated segments fixed on the supports and having hollow pivots for the arms to swing on, the latter indicating on the said segments, as set forth.

5. An optometer provided with supports, a pair of disks mounted to turn independent one of the other on the same axis, on each of the said supports, spherical power-lenses in each disk, arranged in a circle, the lenses in one disk being adapted to register with the lenses in the other disk, a second pair of disks, arms mounted to swing on the said supports, eccentric to the first-named disks, the said second pair of disks being mounted to turn on the same axis, but independent one of the other, on the said arms, and cylindrical power-lenses set in a circle in the said second pair of disks and adapted to register with each other and with the spherical power-lenses, the axes of the said arms corresponding with the axes of the said registering lenses, as set forth.

6. An optometer provided with supports, a pair of disks mounted to turn independent one of the other on the same axis, on each of the said supports, spherical power-lenses in each disk, arranged in a circle, the lenses in one disk being adapted to register with the lenses in the other disk, a second pair of disks, arms mounted to swing on the said supports, eccentric to the first-named disks, the said second pair of disks being mounted to turn on the same axis, but independent one of the other, on the said arms, cylindrical power-lenses set in a circle in the said second pair of disks and adapted to register with each other and with the spherical power-lenses, graduated segments fixed on the supports and having hollow pivots for the arms to swing on, the latter indicating on the said segments, and pointers on the said arms, indicating on the graduation of the said segments, as set forth.

7. An optometer having a pair of disks, one in front of the other, mounted to turn independent one of the other on the same axis, and spherical power-lenses arranged in coinciding circles in the disks, the lenses in one of the disks being plus unit power-lenses, minus fraction power-lenses and a minus D lens, and the lenses in the other disk being minus unit power-lenses, plus fraction power-lenses and a plus D lens, as set forth.

8. An optometer having a pair of independently-revolving disks, carrying registering spherical power-lenses, an arm mounted to swing and having its axis in alinement with the axis of a pair of registering lenses in the said disks, and a second pair of disks, mounted to turn independent one of the other on the said arm and having registering cylindrical power-lenses adapted to register with the said pair of registering spherical power-lenses, as set forth.

9. An optometer having a pair of independently-revolving disks, carrying registering spherical power-lenses, an arm mounted to swing and having its axis in alinement with the axis of a pair of registering lenses in the said disks, a second pair of disks, mounted to turn independent one of the other on the said arm and having registering cylindrical power-lenses adapted to register with the said pair of registering spherical power-lenses, and a fixed graduated segment, on which the said arm indicates, as set forth.

10. In an optometer, a supporting-standard, a rod adjustable vertically in said standard, a frame provided with a transversely-extending arm secured to the upper end of said rod, lens-supports movable toward and from each other on the said frame, a vertically-disposed bearing on the said arm of the frame, a graduated post mounted to slide in said bearing, and a nose-piece mounted to slide in a horizontally-disposed bearing at the upper end of said post and extending between the said lens-supports, as set forth.

11. A frame, lens-supports slidable on the said frame, toward and from each other, a graduated post slidable in the said frame, a nose-piece slidable transversely on the said post, between the said supports, and springs for holding the post and the nose-piece in position in their bearings, as set forth.

12. A frame, lens-supports slidable on the said frame toward and from each other, a graduated post slidable vertically in a bearing on the said frame, a nose-piece slidable transversely in a bearing on the said post, and springs forming one side of said bearings and pressing against the corresponding sides of the post and nose-piece, as set forth.

13. An optometer comprising a frame, supports on the said frame, eyepieces held on the said supports, a pair of disks mounted to turn on each support, the disks of each pair being adapted to be turned independent one of the other, spherical power-lenses set in a circle in the said disks, the lenses of one disk in a pair registering with the lenses in the other disk, a graduated segment on each support, carrying a hollow pivot, in axial alinement with the corresponding eyepiece, a pair of registering lenses on the said disks, an arm mounted to swing on the said pivot and indicating on the graduated segment, a second pair of disks mounted to turn independent one of the other on the said arm, and cylindrical power-lenses set in a circle on the said second pair of disks, one pair of registering cylindrical power-lenses being at the time in axial alinement with the corresponding eyepiece and the said pivot, as set forth.

14. An optometer comprising a frame, supports on the said frame, eyepieces held on the said supports, a pair of disks mounted to turn on each support, the disks of each pair being adapted to be turned independent one of the other, spherical power-lenses set in a circle in the said disks, the lenses of one disk in a pair registering with the lenses in the other disk, a graduated segment on each support, carrying a hollow pivot, in axial alinement with the corresponding eyepiece, a pair of registering lenses on the said disks, an arm mounted to swing on the said pivot and indicating on the graduated segment, a second pair of disks mounted to turn independent one of the other on the said arm, cylindrical power-lenses set in a circle on the said second pair of disks, one pair of registering cylindrical power-lenses being at the time in axial alinement with the corresponding eyepiece and the said pivot, and a right and left hand screw screwing in the said supports, for moving the same simultaneously toward and from each other, as set forth.

15. An optometer comprising a frame, supports movable toward and from each other on the said frame, and a pair of disks on each support, mounted to turn independent one of the other, one of the disks having plus unit power-lenses from plus 1 D to plus 10 D, minus fraction power-lenses, and a minus 10 D lens, and the other disk having minus unit power-lenses from minus 1 D to minus 10 D, plus fraction power-lenses, and a plus 10 D lens, whereby the instrument may be set to obtain all the spherical powers to 20 D both plus and minus, as set forth.

16. An optometer having a pair of disks one in front of the other and mounted to turn independent one of the other, and cylindrical power-lenses arranged in coinciding circles in the disks, one of the disks having plus unit power-lenses from plus 1 D to plus 5 D and minus fraction power-lenses from minus .25 D to minus .75 D, and the other disk having minus unit power-lenses from minus 1 D to minus 5 D and plus fraction power-lenses from plus .25 D to plus .75 D, as set forth.

17. An optometer provided with supports, arms mounted to swing on said supports, a pair of disks mounted to turn on the same axis, but independent one of the other, on each of said arms, cylindrical power-lenses set in a circle in the said pair of disks, to allow of bringing any one lens in one disk in register with any one of the lenses in the other disk, graduated segments fixed on the supports and having hollow pivots for the arms to swing on, and pointers on the arms indicating on the graduation of the said segments, as set forth.

18. An optometer comprising a frame, supports movable toward and from each other on the said frame, a pair of disks mounted to turn independent one of the other on the same axis, on each of the said supports, spherical power-lenses in each disk arranged in a circle, the lenses in one disk being adapted to register with the lenses in the other disk, the lenses of one of said disks comprising plus unit power-lenses from plus 1 D to plus 10 D, minus fraction power-lenses from minus .12 D to minus .75 D and a minus 10 D lens the lenses of the other disk comprising minus unit power-lenses from minus 1 D to minus 10 D, plus fraction power-lenses from plus .12 D to plus 75 D, and a plus 10 D lens, a second pair of disks mounted to turn independent one of the other, and cylindrical power-lenses set in a circle in the said second pair of disks and adapted to be brought into register with each other and with the spherical power-lenses, the said cylindrical power-lenses giving the cylindrical power from .25 D to 5.75 D both plus and minus, as set forth.

19. In an optometer, a frame, lens-supports having guide-lugs engaging the top and bottom of the frame, the said lens-supports being slidable toward and from each other, nuts carried by said lens-supports, and a right and left hand screw extending between the lens-supports and engaging said nuts, the lower guide-lugs on said lens-supports forming pointers indicating on graduations arranged on the bottom portion of the frame to indicate the pupilary distance, as set forth.

20. In an optometer, a frame having top and bottom members, a support for the said frame, lens-supports having guide-lugs engaging the top and bottom members of said frame, the said lens-supports being slidable toward and from each other, nuts carried by said lens-supports, and a right and left hand screw engaging said nuts and provided at its middle portion, between the lens-supports, with a head for turning the said screw, the bottom member of the frame being provided with graduations, and the lower guide-lugs of the lens-supports forming pointers indicating on the said graduations, as set forth.

21. In an optometer, a supporting-standard, a rod adjustable vertically in said standard and having a transverse socket at its upper end, a frame having an arm secured in one end of the said socket, a bar secured in the other end of the socket, a slide mounted to move on said bar and adapted to carry a reading-card, and lens-supports carried by the frame, as set forth.

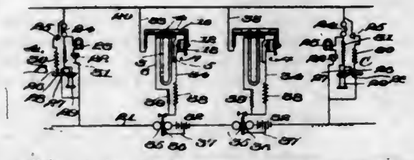
22. An optometer comprising a support, a rod adjustable vertically in said support, a frame having an arm secured to the upper end of said rod, an adjustable nose-piece carried by the arm, a bar also secured to the upper end of said rod, and carrying an adjustable reading-card, and lens-supports carried by the said frame, as set forth.

23. An optometer comprising a frame, supports movable toward and from each other on the said frame and a pair of disks on each support mounted to turn independent one of the other, one of the disks having plus unit power-lenses from plus 1 D to plus 10 D, minus fraction power-lenses from minus .12 D to minus .75 D, and a minus 10 D lens, and the other disk having minus unit power-lenses from minus 1 D to minus 10 D, plus fraction power-lenses from plus .12 D to plus .75 D, and a plus 10 D lens, for the purpose set forth.

24. An optometer provided with supports, arms mounted to swing on said supports a pair of disks mounted to turn on the same axes but independent one of the other, on each of said arms, and cylindrical power-lenses arranged in coinciding circles in the disks, said lenses giving the cylindrical powers from .25 D to 5.75 D both plus and minus as set forth.



**754,224. TELEPHONE REPEATER AND SYSTEM. SAMUEL P. LEVENBERG, New York, N. Y. Filed Apr. 24, 1903. Serial No. 154,066. (No model.)**



*Claim.*—1. In a telephone-repeater, a variable-resistance transmitter, an electromagnet included in a shunt from one of the leads of said variable-resistance transmitter, a vibrating diaphragm mounted adjacent said magnet, and means for controlling one of the electrodes of said transmitter in accordance with the vibrations of said diaphragm.

2. In a telephone-repeater, a variable-resistance transmitter, an electromagnet included in a shunt from one of the leads thereof, a vibrating diaphragm loosely mounted adjacent said magnet, means for controlling one of the electrodes of said transmitter in accordance with the vibrations of said diaphragm, and an induction-coil having its windings embodied respectively in the transmitter-circuit and in the magnet-circuit.

3. In a telephone-repeater, in combination, an electromagnet, a vibrating ring mounted adjacent to and surrounding the poles of said magnet, a variable-resistance transmitter, connections between said ring and one of the electrodes of said transmitter, and an elastic diaphragm loosely carried by said ring above the poles of said magnet.

4. In a telephone-repeater, in combination, an electromagnet, a vibrating ring mounted adjacent to and surrounding the poles of said magnet, a variable-resistance transmitter, connections between said ring and one of the electrodes of said transmitter, an elastic diaphragm loosely carried by said ring above the poles of said magnet, and a cap adapted to inclose said elements and to rest lightly upon the upper surface of said diaphragm at its periphery.

5. In combination with a telephonic circuit, a repeater bridged across said circuit, said repeater comprising a variable-resistance transmitter included in the circuit of said bridge, an electromagnet included in a shunt from said bridge-circuit, and a vibrating diaphragm adapted to be actuated by said magnet and controlling one of the electrodes of said variable-resistance transmitter.

6. In combination with a telephonic circuit, a repeater bridged across said circuit, said repeater comprising a variable-resistance transmitter included in the circuit of said bridge, an electromagnet included in a shunt from said bridge-circuit, a vibrating diaphragm adapted to be actuated by said magnet and controlling one of the electrodes of said variable-resistance transmitter, and an induction-coil having one of the members thereof in said main bridge-circuit and the other in said shunt-circuit.

7. In combination with the terminal stations and circuit of a telephone system, a variable-resistance transmitter included in a line bridged across said circuit, an electromagnet shunt-wound from said bridge, and a diaphragm adapted to be vibrated by said magnet and to control said variable-resistance transmitter.

8. In combination with the terminal stations and circuit of a telephone system, a variable-resistance transmitter included in a line bridged across said circuit, an electromagnet shunt-wound from said bridge, a diaphragm adapted to be vibrated by said magnet and to control said variable-resistance transmitter, and means whereby a break in said bridge-circuit is under the control of the main line.

9. In combination with the terminal stations and circuit of a telephone system, a variable-resistance transmitter included in a line bridged across said circuit, an electromagnet shunt-wound from said bridge-circuit, a diaphragm adapted to be controlled by said magnet and to control said transmitter, and an induction-coil having the elements thereof included in the circuit of said transmitter and said magnet respectively.

10. In combination with a telephonic circuit, a repeater bridged across said circuit, said repeater comprising a variable-resistance transmitter included in the main circuit of said bridge, an electromagnet included in a shunt from said bridge-circuit, and a vibrating diaphragm adapted to be actuated from said magnet and to control one of the electrodes of said transmitter.

11. In combination with a telephonic circuit, a repeater bridged across said circuit, said repeater comprising a variable-resistance transmitter included in the main circuit of said bridge, an electromagnet included in a shunt from said bridge-circuit, a vibrating

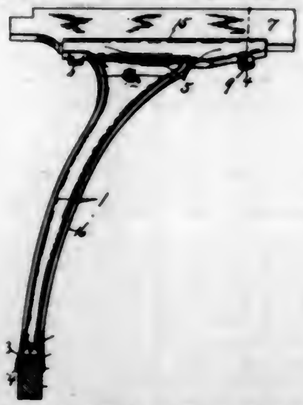
diaphragm adapted to be actuated from said magnet and to control one of the electrodes of said transmitter, and an induction-coil having one of the members thereof included in said main bridge-circuit and the other in said shunt-circuit.

12. In a telephone system, in combination, a circuit embodying a variable-resistance transmitter, a shunt therefrom embodying an electromagnet, a vibrating diaphragm within the field of the poles of said magnet, and means for controlling said transmitter in accordance with the vibrations of said diaphragm.

13. In a telephonic system, a primary circuit comprised in the main-line conductors, a repeater-bridge bridged across the line conductors and also in inductive relation to said primary circuit, and a variable resistance in said primary circuit controlled by a translating device in said repeater-bridge.

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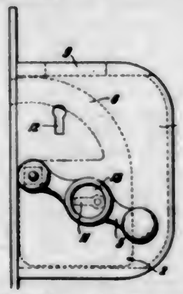
**754,225. SLEIGH-KNEE.** PERKINS S. LOCKWOOD, Madrid, N. Y. Filed July 8, 1903. Serial No. 164,631. (No model.)



*Claim.*—A knee for sleighs formed from a single piece of metal channeled on its sides, the lower end thereof being enlarged and extending on either side beyond the knee-body, flanges formed integral with the termination of said enlarged end, and extending below the extremities of said enlarged end, said enlarged end lying in a plane transverse to the plane of the knee-body, the upper end of the knee-body being enlarged and extending in a plane transverse to the lower end, the said enlarged upper end being secured to said knee-body at a point to one side of the center thereof, and upwardly-projecting flanges carried by the said enlarged upper end, substantially as described.

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**754,226. LOCK.** CHARLES R. LOSS, Drumcondra, Ireland, and JAMES C. IRVING, Hampstead, England. Filed Mar. 18, 1903. Serial No. 148,313. (No model.)



*Claim.*—1. In a lock, the combination with a bolt-plate and a box-casing of a key-operated lock, a bolt secured to said key-operated lock, trunnions on said key-operated lock, bearings in said box-casing adapted to receive said trunnions, and a handle secured to one of said trunnions and by which the said lock and bolt may be rocked in said bearings.

2. In a lock, the combination with a bolt-plate and a box-casing have a keyway, of a key-operated lock, a segmental bolt secured to said key-operated lock and adapted to project from said casing to engage said plate, trunnions on said key-operated lock, bearings in said casing adapted to receive said trunnions, there being a keyhole in said casing corresponding in position with the keyway in the said lock when the said bolt is projected, and a handle secured to one of said trunnions and having an aperture at about the center of its length in such a position as to correspond with the said keyhole in the casing and keyway in the lock when the said bolt is projected.

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**754,227. COMBINED SAMPLE CARRIER AND DISPLAY-RACK.** PHILIP H. MOSS, New York, N. Y., assignor to Alfred Peats Company, a Corporation of New York. Filed Jan. 8, 1904. Serial No. 188,162. (No model.)



*Claim.*—1. A combined sample carrier and display-rack, comprising a series of sample-sheets, two rigid backs and a flexible joint connecting said backs and said sample-sheets along one edge, said joint permitting said backs to be closed together with the sample-sheets between them, or to be bent back toward each other in the opposite direction to form an upright display-rack with said sample-sheets on the outside adapted to be turned over and displayed upon said rack.

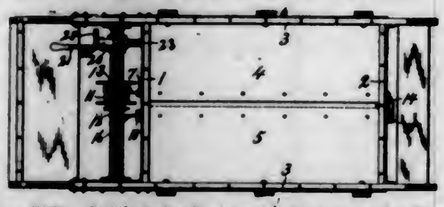
2. A combined sample carrier and display-rack, comprising a series of sample-sheets, two rigid backs and a flexible joint connecting said backs and said sample-sheets along one edge, said joint permitting said backs to be closed together with the sample-sheets between them, or to be bent back toward each other in the opposite direction to form an upright display-rack with said sample-sheets on the outside, and means for holding said backs in position as a display-rack.

3. A combined sample carrier and display-rack, comprising a series of sample-sheets, two rigid backs, a flexible joint connecting said backs and said sample-sheets along one edge, said joint permitting said backs to be closed together with the sample-sheets between them, or to be bent back toward each other in the opposite direction to form an upright display-rack with the sample-sheets on the outside, handles by which the device may be carried, and means for holding said backs either in the closed position as a carrier or in the position as a display-rack.

4. A combined sample carrier and display-rack, comprising a series of sample-sheets, two rigid backs each provided with a strap, and a flexible joint connecting said backs and said sample-sheets along one edge, said joint permitting said backs to be closed together with the sample-sheets between them, or to be bent back toward each other in the opposite direction to form an upright display-rack with the sample-sheets on the outside, said straps adapted to be secured together in either position of said backs, to close the carrier when the backs inclose the samples, or to hold the backs in position for displaying the samples.

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**754,228. DUMP-WAGON.** HARVEY A. MOYER, Syracuse, N. Y. Filed Jan. 11, 1904. Serial No. 188,600. (No model.)



*Claim.*—1. A dump-box having swinging bottom-sections hinged to the sides and meeting near the longitudinal center of the box, in combination with a sheave at the rear end of the box, a rotary drum at the front end of the box, and a cable having one end riding on the sheave and anchored to the rear end of one of the doors, and its other end passed under the other door and attached to the drum.

2. In combination with the swinging bottom doors of a dump-wagon, two drums of unequal diameters rotating together, a cable connecting the smaller drum directly to one door, and a second cable operatively connected to the larger drum and to both doors.

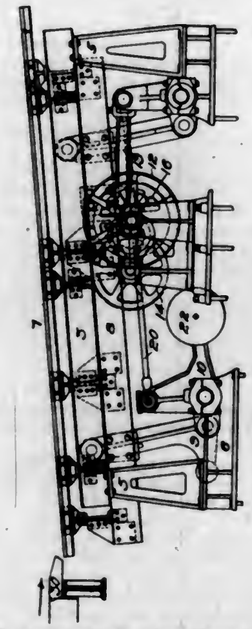
3. In a dump-wagon, a dump-box having bottom doors hinged to its sides, a winding-drum at the front and a sheave at the rear end of the doors, a cable attached to the drum and extending rearwardly under one door and over the sheave and having sliding connection with one door and its rear end fixed to the rear end of the other door.

4. In a dump-wagon, a dump-box having bottom doors hinged to its sides, a winding-drum at the front and a sheave at the rear end of the doors, a cable attached to the drum and extending rearwardly under one door and over the sheave and having sliding connection with one door and its rear end fixed to the rear end of the other door, a second drum rotating with the former drum and a second cable connecting the second drum directly to the front end of the last-named door.

5. In a dump-wagon, a dump-box having bottom doors hinged to its sides, two winding-drums of unequal diameter at the front end of the doors, chains of unequal lengths leading from the drums, the one from the smaller drum connected to the front end of one door, and the one from the larger drum operatively connected to both doors.

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**754,229. CONVEYER.** THOMAS MCDONALD and WILLIS MCKEE, Youngstown, Ohio. Filed Nov. 25, 1903. Serial No. 183,581. (No model.)



*Claim.*—1. In a conveyer, a fixed frame having a set of fixed supports, a movable frame having a set of movable supports, and means for effecting a curved movement of the movable frame and its supports for the purpose of giving a positive forward motion to the material being conveyed, substantially as set forth.

2. In a conveyer, a fixed frame having a set of fixed supports, a movable frame having a set of movable supports, and means for effecting an elliptical movement of the movable frame and its supports, substantially as set forth.

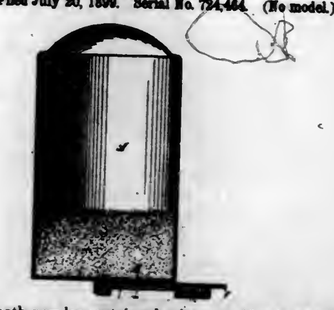
3. In a conveyer, a fixed frame having a set of fixed supports, a movable frame having a set of movable supports, said movable supports parallel with and intermediate of the fixed supports, and means for effecting a curved movement of the movable frame and its supports for the purpose of giving a positive forward motion to the material being conveyed, substantially as set forth.

4. In a conveyer, a fixed frame having a set of fixed supports, a movable frame having a set of movable supports, and means for effecting a curved movement of the movable frame comprising, a power-shaft, bell-cranks, movable standards for supporting the movable frame and means connecting the power-shaft and the bell-cranks and the power-shaft and the movable frame, substantially as set forth.

5. In a conveyer, a set of fixed supports, a set of movable supports, a power-shaft provided with a crank, means connecting the crank and the movable supports for effecting a vertical movement of the movable supports, and an eccentric mounted on the power-shaft arranged to make contact with a fixed part carried by the movable supports whereby a longitudinal movement of the movable supports is effected, substantially as set forth.

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**754,230. POWDER-CONTAINER.** JEANIE M. MCINTYRE, Jersey City, N. J. Filed July 20, 1899. Serial No. 724,464. (No model.)



*Claim.*—A tooth-powder container having an orifice in its bottom, a guide on the under side of the bottom and provided with a cross-piece, a drawer held to slide in the said guide and having an integral box portion adapted to register with the said orifice and an integral cut-off portion for closing the orifice at the time the drawer is drawn out, and a knob on the cut-off portion of the drawer to move the latter and to limit the outward movement of the drawer on butting against the said cross-piece at one side, the inward movement of the drawer being limited by the box portion on butting against the guide at the other side thereof, as set forth.

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**754,231. CLINICAL-THERMOMETER HOLDER.** GEORGE R. BETTLETON, New Haven, Conn., assignor of one-half to Elisha Hewitt, New Haven, Conn. Filed Oct. 22, 1903. Serial No. 178,160. (No model.)



*Claim.*—A holder for clinical thermometers comprising a tube, a collar secured to the open end thereof and having a flange extending inwardly over the open end of the tube and formed with an annular rib on its upper face, a sleeve surrounding the said collar and secured thereto and formed with a shoulder adapted to set over said flange and with a groove in said shoulder into which said rib may extend, a diaphragm located upon the upper face of said sleeve to which it is clamped by said collar, said diaphragm perforated to permit the thermometer to be passed through it into the tube, and a cap to close the outer end of said sleeve, substantially as described.

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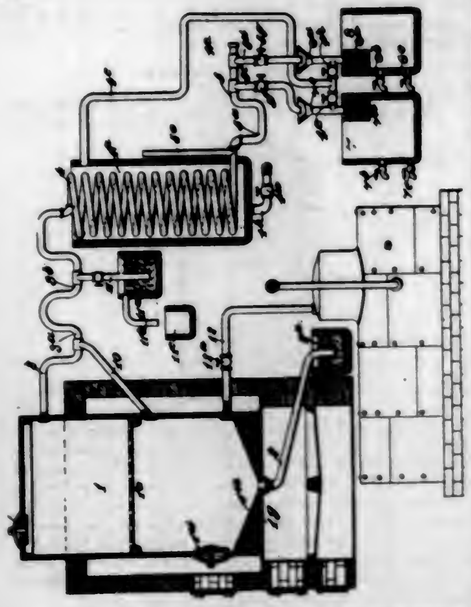
**754,232. WOOD-DISTILLATION APPARATUS.** CHARLES M. PALMER, New London, N. C. Filed Dec. 9, 1903. Serial No. 184,412. (No model.)

*Claim.*—1. In an apparatus for distilling wood, &c., the combination of a retort, a transverse partition or grate therein, a condenser, a pipe leading from the upper part of the retort to the condenser and having a trap intermediate the condenser and retort, and a pipe leading upwardly and directly connecting said trap, and with the retort below the grating, substantially as described.

2. In an apparatus for distilling wood, &c., the combination of a retort, a vapor-escape pipe leading from said retort, a tar-trap in said pipe, a creosote-trap in said pipe beyond the tar-trap, and a drain-pipe leading from the tar-trap down into the retort, substantially as described.

3. In an apparatus for distilling wood, &c., the combination of a retort, a condenser, a pipe leading from the upper part of said retort to the condenser, a tar-trap in said pipe, a creosote-trap in said pipe between the tar-trap and the condenser, means for draining the creosote-trap, and a drain-pipe leading from the tar-trap down into the retort, substantially as described.

4. In an apparatus for distilling wood, &c., the combination of a retort, a transverse partition or grate therein, a pipe leading from the upper part of the retort, a tar-trap in said pipe, a creosote-trap beyond the tar-trap, a pipe leading from the tar-trap to the retort below the grating, adapted to serve as a vapor-escape pipe and as a return-pipe for draining heavy liquids in the tar-trap back into the retort.



5. In an apparatus for distilling wood, &c., the combination of a retort, a transverse partition or grate therein, a condenser adjacent to the retort, a pipe leading from the upper part of the retort to said condenser, a tar-trap in said pipe, a creosote-trap between the tar-trap and the condenser, means for draining the creosote-trap, and a pipe leading from the tar-trap to the retort below the grating, adapted to serve as a vapor-escape pipe and as a return-pipe for draining heavy liquids in the tar-trap back into the retort.

6. In an apparatus for distilling wood, &c., the combination of a retort, a condenser connected with the retort, and means for introducing warm water into the oils passing from the condenser, substantially as and for the purpose described.

7. In a wood-distilling apparatus, the combination of a retort, a condenser, vapor-pipes connecting the worm and condenser, two valved outlets from said condenser, receiving-tanks into which said valved outlets respectively discharge, and filters interposed between the outlets and receiving-tanks, substantially as described.

8. In a wood-distilling apparatus, the combination of a retort, a condenser, vapor-pipes connecting the worm and condenser, an outlet-pipe from the condenser, a receiving-tank into which said outlet discharges, and a filter interposed between the outlet and tank, and means for introducing warm water into the filters along with the heavier distillates, substantially as described.

9. In an apparatus for distilling wood, &c., the combination of a retort, a condenser, a pipe leading from said retort to the condenser, a trap in said pipe between the retort and condenser, and a pipe connecting said trap with the retort at a point below the trap, said pipe serving both as a secondary gas-outlet for the retort and as a return-pipe for heavy matters in the trap; with an outlet-pipe connecting with the condenser, a receiving-tank into which said outlet discharges, and a filter interposed between said outlet and receiving-tank.

10. In an apparatus for distilling wood, &c., the combination of a retort, a condenser, a pipe leading from the upper part of said retort to the condenser, a tar-trap in said pipe, a creosote-trap in said pipe between the tar-trap and the condenser, means for draining the creosote-trap, and a drain-pipe leading from the tar-trap down into the retort, and means for introducing warm water into the lighter distillates, substantially as described.

11. In an apparatus for distilling wood, &c., the combination of a retort, a condenser, a pipe leading from the upper part of said retort to the condenser, a tar-trap in said pipe, a creosote-trap in said pipe between the tar-trap and the condenser, means for draining the creosote-trap, and a drain-pipe leading from the tar-trap down into the retort; with an outlet-pipe connecting with the condenser, a receiving-tank into which said outlet discharges, and a filter interposed between said outlet and receiving-tank.

12. In an apparatus for distilling wood, &c., the combination of a retort, a transverse partition or grate therein, a condenser adjacent to the retort, a pipe leading from the upper part of the retort to said condenser, a tar-trap in said pipe, a creosote-trap between the tar-trap and the condenser, means for draining the creosote-trap, and a pipe leading from the tar-trap to the retort below the grating, adapted to serve as a vapor-escape pipe and as a return-pipe for draining heavy liquids in the tar-trap back into the retort; with valved outlet-pipes connected with the condenser, receiving-tanks into which said outlets respectively discharge, and filters interposed between said outlets and receiving-tanks.

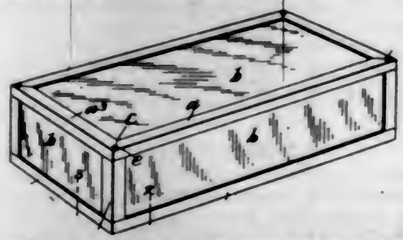
13. In a wood-distilling apparatus, a retort having a dumping grating or shelf, and vapor-outlets above and below the shelf, a trapped pipe connected with the upper vapor-outlet and a pipe connecting the lower outlet with the trapped pipe, substantially as described.

14. In an apparatus for distilling wood, &c., the combination of a retort, a condenser, a pipe leading from said retort to the condenser, a trap in said pipe between the retort and condenser, and a pipe connecting said trap with the retort at a point below the trap, said pipe serving both as a secondary gas-outlet from the retort and as a return-pipe for heavy matters in the trap; with valved outlet-pipes connected with the condenser, receiving-tanks into which said outlets respectively discharge, and filters interposed between said outlets and receiving-tanks, and means for introducing warm water into the filters along with the lighter products, substantially as described.

15. In an apparatus for distilling wood, &c., the combination of a retort, a transverse partition or grate therein, a condenser adjacent to the retort, a pipe leading from the upper part of the retort to said condenser, a tar-trap in said pipe, a creosote-trap between the tar-trap and the condenser, means for draining the creosote-trap, and a pipe leading from the tar-trap to the retort below the grating, adapted to serve as a vapor-escape pipe and as a return-pipe for draining heavy liquids in the tar-trap back into the retort; with valved outlet-pipes connected with the condenser, receiving-tanks into which said outlets respectively discharge, and filters interposed between said outlets and receiving-tanks, and means for introducing warm water into the filters along with the lighter products, substantially as described.

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754,238. SHOW-CASE. JOHN FARTHMÜLLER, New York, N.Y. Filed Dec. 12, 1903. Serial No. 184,572. (No model.)



*Claim.*—A show-case frame the separate parts of which are of the same shape in cross-section, said parts consisting of a piece of metal L-shaped in cross-section, and another piece of metal L-shaped in cross-section and connected with one part of the first-named piece whereby two longitudinal grooves are formed one of which opens at right angles to the other, the corners being formed by cutting two of said pieces at a bevel or inclination of forty-five degrees and the other transversely, and the part which is cut transversely being provided with a block which is secured in one of its grooves and adapted to receive a screw passed through the connection of the other parts, said last-named parts being brazed together, substantially as shown and described.

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754,234. DRESS-SHIELD. CHARLES A. PIENKOWSKY, Chicago, Ill., assignor to the Anthony Shield Company, Chicago, Ill., a Corporation. Filed Feb. 25, 1903. Serial No. 145,108. (No model.)

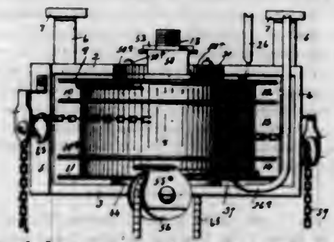


*Claim.*—A dress-shield, comprising outer layers of cloth and an intermediate layer of thin waterproof tissue, one layer of cloth serving as a lining and consisting of closely-woven fabric, the waterproof tissue serving as a loose interlining between the two layers of cloth, the layer of cloth which goes next to the body being coarsely woven and consisting of a porous-mesh ventilating fabric, and all three layers, to wit, the layer of closely-woven cloth, the layer of porous-mesh ventilating fabric, and the intermediate layer of thin waterproof tissue, being suitably bound together at the edges of the shield, substantially as shown and described.



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754,235. EXTENSION-FIXTURE FOR INCANDESCENT ELECTRIC LAMPS. CONRAD M. FITEL, Meriden, Conn. Filed May 6, 1903. Serial No. 155,631. (No model.)



*Claim.*—1. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum located therein, electric connections, flexible electric conductors wound upon the drum, and means for electrically connecting the respective electric connections and flexible conductors, the said means including stationary and rotatable ball-receiving contact-pieces, and contact-balls interposed between and establishing electric connection through the same.

2. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum located therein, electric connections, flexible electric conductors wound upon the drum, and means for electrically connecting the respective electric connections and conductors, including two pairs of ball-receiving contact-pieces having annular grooves, and balls therefor, one member of each pair being stationary with the frame and the other revolving with the drum.

3. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum located therein, an arbor on which the drum rotates, a pair of ball-receiving contact-pieces located at the upper end of the said arbor, a corresponding pair of contact-pieces located at the lower end thereof, one member of each pair being stationary with the frame and the other rotatable with the drum, balls interposed between and electrically connecting the contact-pieces of each pair, electric connections leading to the stationary member of each pair, and electric conductors wound upon the drum and having their inner ends connected with the rotatable member of each pair of contact-pieces.

4. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum located therein, electric conductors wound upon the drum, electric connections, means including stationary and rotatable ball-receiving contact-pieces and contact-balls for connecting the said connections and conductors, and a friction device for controlling the rotation of the drum.

5. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum located therein, a drum-arbor, a pair of ball-receiving contact-pieces located at the upper end of the arbor, means for insulating them from the frame and drum, a corresponding pair of ball-receiving contact-pieces located at the lower end of the arbor, means for insulating them from the frame and drum, contact-balls for the said pairs of contact-pieces, electric connections respectively connected with the stationary members of each pair of contact-pieces, and electric conductors wound upon the drum and connected through the walls thereof with the rotatable members of each pair of contact-pieces.

6. In an extension-fixture for incandescent electric lamps, the combination with the frame thereof, of a drum located therein and having its top and bottom recessed, a pair of ball-receiving contact-pieces located in each recess of the drum, one member of each pair being stationary and the other rotatable with the drum and connected at their inner ends through the walls thereof with the rotatable member of each pair of contact-pieces.

7. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a hollow drum, a drum-arbor extending through the drum and projecting at each end beyond the same, a drum-spring located within the drum and having its outer end connected with the drum, and its inner end connected with the said arbor, a pair of insulating contact-pieces located at each end of the arbor, one member of each pair being stationary with the frame and the other being rotatable with the drum, electric connections leading to the stationary member of each pair of contact-pieces, electric conductors wound upon the drum and respectively connected through openings therein with the rotatable member of each pair of contact-pieces and pulleys mounted in the said frame for the said conductors to run over.

8. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a hollow drum, a drum-arbor extending through the drum, a drum-spring located within the drum and having its outer end connected therewith and its inner end connected with the arbor, electric conductors wound upon the drum, electric connections leading to the device, contact means between the said conductors and connections, one or more chains or flexible supports wound upon the drum for assisting the said conductors in bearing the weight of the electric-lamp fixture, and pulleys mounted in the said frame and arranged to have the said conductors and the said chain or chains run over them.

9. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum provided with three annular grooves or compartments, electric conductors wound in the upper and lower grooves or compartments, and one or more chains wound in the middle groove or compartment, electric connections, and contact means between the said connections and conductors, whereby the same are maintained in electric connection when the drum is at rest and when it is rotating.

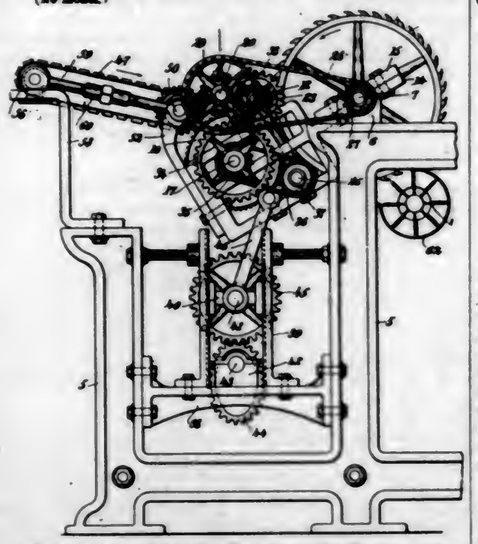
10. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a hollow drum, a drum-arbor extending through the drum, a drum-spring located within the drum and connected at its outer end therewith and at its inner end with the said arbor, electric conductors wound upon the drum and having their inner ends passed through openings therein, electric connections leading to the device, contact means for maintaining the connections and conductors in circuit, a sheet-metal friction-spring having a central opening adapting it to be mounted upon one end of the arbor and having its ends arranged to ride upon a part connected with the drum, whereby friction for controlling the operation of the same is developed and pulleys mounted in the frame for the said conductors to run over.

11. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum, a pair of upper and a pair of lower ball-receiving contact-pieces each formed with an outwardly-extending finger, and one member of each pair being stationary with the frame, and the other being rotatable with the drum, electric connections leading to the fingers of the stationary members, and electric conductors wound upon the drum and connected with the fingers of the rotatable members.

12. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum mounted therein, corrugated pulleys supported by the frame, a braid-covered electric conductor wound upon the drum, running over the said pulleys and provided with a flexible armor or beads which take into the corrugations of the pulleys upon which the conductors are thus prevented from slipping.

13. In an extension-fixture for incandescent electric lamps, the combination with a frame, of a drum mounted therein, pulleys mounted in the said frame and each comprising two corrugated parts and a friction-washer, a braid-covered electric conductor wound upon the drum and provided with an armor of interlocking protecting and insulating beads which take into the corrugations of the pulleys and press the members thereof apart to bring their friction-washers into play.

754,236. **WOOL BURRING AND PICKING MACHINE.** GEORGES PROUVOST, Roubaix, France. Filed Jan. 21, 1903. Serial No. 139,335. (No model.)



*Claim.*—1. A wool picking and burring machine having a picker-cylinder, a set of feed-rolls adjacent to said picker-cylinder, and means for imparting a traversing movement to said set of feed-rolls relatively to the active surface of said cylinder.

2. A wool picking and burring machine having a picker-cylinder, a set of feed-rolls of different sizes, and means for bodily imparting a traversing movement to the entire set of feed-rolls relative to the picker-cylinder.

3. A wool picking and burring machine having a picker-cylinder, a set of feed-rolls, means for imparting a traversing movement to said feed-rolls in a path concentric with the active surface of the cylinder, and a suitable blower arranged to direct a blast of air against the material on the cylinder.

4. A wool picking and burring machine having a picker-cylinder, a swinging support movable on an axis coincident with that of the cylinder, a set of feed-rolls carried by said swinging support and movable therewith in a path concentric with the active surface of the cylinder, and mechanism for positively moving the support and the set of feed-rolls to impart a traversing movement thereto.

5. A wool picking and burring machine having a picker-cylinder, a feed-roll of large diameter adjacent thereto, another feed-roll cooperating with the first-named feed-roll, a small feed-roll disposed between the picker-cylinder and the other two feed-rolls, means for supporting all the feed-rolls of the set, and means for bodily shifting the support and the set of feed-rolls relative to the cylinder.

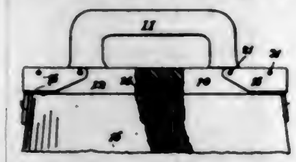
6. In a wool picking and burring machine, the combination with a picker-cylinder, of a swinging support, a set of feed-rolls mounted on the support, one of said feed-rolls being disposed between the picker-cylinder and the other feed-rolls of the set, a doffing-brush carried by the support, and means for imparting traversing movement to said support and the feed-rolls and doffing-brush thereon.

7. In a wool picking and burring machine, the combination with a picker-cylinder, of a set of feed-rolls, means for imparting a traversing movement to said feed-rolls relative to the picker-cylinder, and a feed device shiftable with said feed-rolls.

8. In a wool picking and burring machine, the combination with a picker-cylinder, of a set of feed-rolls, means for imparting a traversing movement to said feed-rolls relative to the picker-cylinder, and an endless carrier having one end connected with a part of the feed-roll mechanism and shiftable with said feed-rolls in its traversing movement.

9. In a wool picking and burring machine, the combination with a picker-cylinder, of a movable feed-roll carrier, a set of feed-rolls mounted in said carrier, means for imparting movement to the carrier and the feed-rolls in a way to secure a traversing movement of the feed-rolls relative to the picker-cylinder, an endless carrier, a conveyer-driving roller mounted on said shiftable carrier and geared to one of said feed-rolls, and an idler conveyer-roller operatively fitted to the endless conveyer and serving as the axis of motion of the conveyer in its adjustment with the feed-roll carrier, one of said conveyer-rollers being adjustable to maintain the conveyer in a taut condition.

754,237. **STOVE-POLISHING BRUSH.** BERNHARD RAUSCH, Newark, N. J. Filed Aug. 22, 1903. Serial No. 170,394. (No model.)



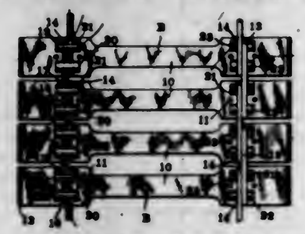
*Claim.*—1. The combination with the bed-plate having flanges 12, and tongues 13, of polishing-cloths folded over retaining-strips, which latter are inserted in the groove formed between said flanges, and means for holding the series of strips and cloths within said groove, substantially as set forth.

2. The combination with the bed-plate having at its opposite longitudinal edges flanges with inwardly-extending tongues at their lower edges, of polishing-cloths folded over opposite projecting retaining-strips the latter being arranged between the said flanges on said tongues, end plates at the opposite ends of the polishing-brush, and straps 15, secured to the body across the open opposite ends of the groove between said flanges, substantially as set forth.

3. The improved polishing-brush herein described comprising a bed-plate, a series of transversely-disposed polishing-cloths and end plates of a more rigid character than the said cloths, and means for holding the said parts in operative relation, substantially as set forth.

4. The improved polishing-brush herein described comprising a flanged bed-plate, and polishing-cloths recessed at opposite edges and folded over retaining-strips said retaining-strips projecting out from the opposite edges of said cloths and being held between said flanges, substantially as set forth.

754,238. **LINK BELT.** MILTON O. REEVES, Columbus, Ind., assignor to Reeves Pulley Company, Columbus, Ind., a Corporation of Indiana. Filed Dec. 21, 1903. Serial No. 186,135. (No model.)



*Claim.*—1. A flexible belt consisting of a plurality of transverse members, and a plurality of longitudinal links the overlapping adjacent ends of which are independently secured to the transverse members.

2. A flexible belt consisting of a plurality of transverse members, a plurality of connecting-links each of which is rigidly secured in one transverse member and pivotally connected to the adjacent transverse member, the adjacent ends thereof overlapping each other, for the purpose specified.

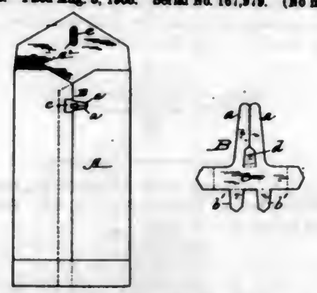
3. A flexible belt consisting of a plurality of transverse members, a plurality of connecting-links the adjacent ends of which overlap each other, and a pair of pins for each link, each of said pins passing through a free opening in the adjacent link.

4. A flexible belt consisting of a plurality of transverse bars each having a pair of link-slots 13 and 14 and a pair of pin-sockets 20 and 21, and a plurality of links each secured in one set by a pin 22, and pivoted in the other slot of the adjacent bar by pin 23, each of said pins passing freely through the overlapping end of an adjacent link.

5. A flexible belt consisting of a plurality of transverse bars each composed of a pair of mating members, having a pair of link-slots formed across the adjacent faces of said members and a pair of pin-sockets formed in said faces across the slots, a plurality of links arranged in one slot of each bar, and a pair of pins for each link resting in the pin-sockets, each of said links passing freely through the overlapping end of the adjacent link.

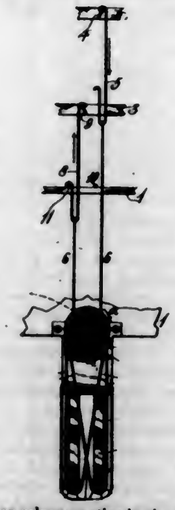


754,239. **ENVELOP-FASTENER.** ABRAM A. RHEUTAN, Worcester, Mass. Filed Aug. 3, 1903. Serial No. 167,979. (No model.)



*Claim.*—An envelop-fastener, comprising a central body part, having two long prongs projecting from the side thereof, a clip located between and at the base of said prongs, formed by cutting away a portion of the inner edge of each prong and attached to the central body about on a line with its side edge, and other suitable holding-clips also projecting from said central body, substantially as and for the purpose set forth.

754,240. **SELVAGE-FORMING ATTACHMENT FOR LOOMS.** EDWIN G. RODER, Chester, Pa. Filed Apr. 15, 1903. Serial No. 152,657. (No model.)



*Claim.*—1. A doup-selvage motion having means for carrying a selvage warp-yarn, a belt operative to reciprocate said carrying means and loom portions positively and alternatively reciprocating in both directions, the ends of said belt being connected with said loom portions.

2. A doup-selvage motion comprising a belt, an eye in said belt for carrying a warp-yarn, a pulley over which said belt runs, and like positive means for rotating said pulley in both directions.

3. A doup-selvage motion comprising a stud having an eye adapted to carry a selvage warp-yarn, a belt adapted to carry a second selvage warp-yarn, a pulley over which said belt passes and like positive means for rotating said pulley in both directions, whereby said warp-yarns are twisted together to form a selvage.

4. A doup-selvage motion comprising a suitably-supported stationary warp-carrier, a reciprocating warp-carrier attached to a belt, a pulley over which said belt passes and two vertically-reciprocating griffs connected with said pulley, whereby it is positively rotated in both directions.

5. A doup-selvage motion comprising a pulley, like positive means for rotating said pulley in both directions, a belt on said pulley, a second or guide pulley over which said belt runs, a hollow axle adapted to carry a selvage warp-yarn on which said guide-pulley rotates and an eye on said belt adapted to carry a crossing selvage warp-yarn.

6. A doup-selvage motion comprising a pulley, means for rotating said pulley in both directions, a strap bearing a second or guide pulley, a belt running over both of said pulleys, means on said strap adapted to carry a selvage warp-yarn, eyes on said belt for carrying a crossing selvage warp-yarn and a guard adapted to prevent said eyes from contact with the remaining warp-yarns.

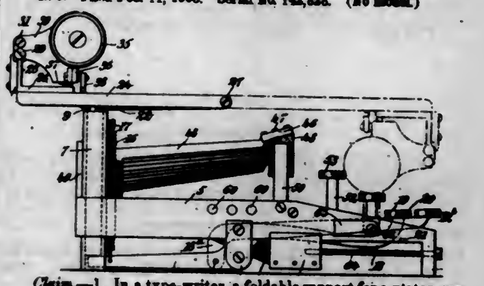
7. A doup-selvage motion comprising a belt, means on said belt for carrying a crossing selvage warp-yarn, a pulley over which said belt runs, like positive means for rotating said belt in both directions and stops adapted to positively limit the rotation of said belt in both directions.

754,241. **PARCEL-ATTACHING DEVICE.** HENRY F. ROLL, St. Louis, Mo. Filed Mar. 23, 1903. Serial No. 149,007. (No model.)



*Claim.*—A device of the class described, comprising a cord having one of its end portions doubled upon the main portion, a tubular slide connecting said doubled portion with the main portion, whereby the said loop may be increased or decreased in size as desired, a ring encircling the cord of such adjustable portion, the opposite end of the cord being also doubled to form a second loop, a tubular sleeve securing the double portion of such loop of the second loop in position, a ring suspended on said second loop, and a clasping device secured to said second ring, substantially as set forth.

754,242. **TYPE-WRITING MACHINE.** FRANK S. ROSS, Newark, N. J. Filed Feb. 11, 1903. Serial No. 142,838. (No model.)



*Claim.*—1. In a type-writer, a foldable support for a platen-carriage having one of its members movable to an abnormal position in overhanging relation to a keyboard.

2. In a type-writer, a foldable support for a carriage and a platen, consisting of a non-adjustable member, and an adjustable member foldably connected with said non-adjustable member and movable to an abnormal position, combined with a carriage mounted to travel on the adjustable member of said support, and a platen supported by said carriage.

3. In a type-writer, a foldable support for a carriage and platen, consisting of a skeletonized non-adjustable member, and an adjustable member having pivotal connection with said non-adjustable member and foldable relatively thereto, in combination with a carriage mounted on the adjustable member, and a platen supported in said carriage.

4. In a type-writer, a foldable support for a carriage and a platen, consisting of a non-adjustable member, and an adjustable member pivotally connected with said non-adjustable member and movable to an abnormal position, combined with a carriage mounted on the adjustable member, and a platen in said carriage, said adjustable member and the parts supported thereby being arranged to rest in normal position on the non-adjustable member of the support.

5. In a type-writer, the combination of a two-part foldable support, and a carriage provided with a platen and mounted on the adjustable member of said support, said carriage and the adjustable member being movable into overhanging relation to a keyboard.

6. In a type-writer, the combination of a two-part foldable carriage-support, a traveling platen-carriage mounted on the foldable part of said carriage-support, and means for shifting said carriage-support and the platen-carriage bodily in a vertical plane.

7. In a type-writer, the combination of a foldable carriage-supporting frame, a traveling platen-carriage mounted on the foldable member of said carriage-frame to be foldable therewith, and means for bodily raising and lowering the carriage-supporting frame and the carriage thereon in a vertical plane.

8. In a type-writer, the combination of vertical posts, a two-part carriage-frame having a non-foldable member mounted on said posts and movable vertically therewith, a platen-carriage supported by said foldable member of the frame to travel thereon and to be raised or lowered bodily with said carriage-frame, and means controllable at will for adjusting the carriage-frame and the carriage thereon in a vertical plane.

9. In a type-writer, the combination of vertical posts, a two-part carriage-frame having one member attached to said posts, and a foldable member pivoted to said first-named member for adjustment to an abnormal position relatively thereto, a platen-carriage carried wholly by the adjustable member of said frame for movement vertically and foldably therewith, and means for vertically adjusting the supporting-frame and the carriage thereon.

10. In a type-writer, a carriage-supporting frame consisting of a skeletonized non-adjustable member, and an adjustable member pivoted to said skeletonized member and equipped with a base-plate affording two track-surfaces, in combination with a platen-carriage mounted on said base-plate to travel thereon and to be foldable with the adjustable member of the carriage-supporting frame.

11. In a type-writer, a foldable carriage-supporting frame consisting of a skeletonized non-adjustable member, and an adjustable member pivoted to said non-adjustable member, said adjustable member of the frame having a track-surface, combined with a platen-carriage fitted to said track-surface of the adjustable frame member to travel thereon and to be foldable therewith, and means for bodily shifting the carriage-frame and its contained parts in a vertical direction.

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**754,243. SOAP CAKE.** LEOPOLD S. SAMUEL, Newark, N. J. Filed June 1, 1901. Serial No. 62,740. (No specimens.)



*Claim.*—A soap cake having a perforation extending transversely through its broader sides, and enlarged intermediate of its ends, and a filling of medicinal or chemical matter in said opening.

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**754,244. VEHICLE-WHEEL.** GEORGE W. SANFORD, Thomaston, Conn., assignor of one-third to James Gray, Thomaston, Conn. Filed Oct. 9, 1903. Serial No. 176,387. (No model.)

*Claim.*—A vehicle-wheel comprising two plates flaring outward at their outer edges and having centrally-arranged inwardly-projecting hubs arranged to meet, a tire having an inwardly-extending flange, and means for drawing the rims of the plates together and uniting them with the flange of the tire between them, whereby the plates are flexed, substantially as described.



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**754,245. CORNER-CLAMP FOR SECURING GLASS PLATES TOGETHER.** HERMAN SCHIELER, Cleveland, Ohio. Filed Aug. 8, 1903. Serial No. 168,730. (No model.)



*Claim.*—1. In a corner-clamp for glass plates, the combination with the glass plates of an angle-plate adapted to fit the angle formed by said glass plates, each arm of said angle-plate having a longitudinal slot formed therein, teeth arranged to project into the slot in each arm, a bolt passing through the slot in each arm and through a bolt-hole formed in the glass plate adjacent thereto and a strip of resilient material doubled around said bolt and having its ends arranged to engage with the teeth in said slot, substantially as described and for the purpose set forth.

2. In a corner-clamp for glass plates, the combination with the glass plates of an angle-plate adapted to fit the angle formed by said glass plates, each arm of said angle-plate having a longitudinal slot formed therein, teeth arranged to project into the slot in each arm, a bolt passing through the slot in each arm and through a bolt-hole formed in the glass plate adjacent thereto, a strip of resilient material doubled around said bolt and having its ends arranged to engage the teeth in said slot and means for holding the ends of said strip of resilient material in engagement with the teeth, substantially as described and for the purpose set forth.

3. In a corner-clamp for glass plates, the combination with the glass plates of an angle-plate adapted to fit the angle formed by said glass plates, each arm of said angle-plate having a longitudinal slot formed therein and a recess formed in its face next to the glass plate, a bolt passing through each slot in each arm and through a bolt-hole formed in the glass plates adjacent thereto and a metallic strip arranged in said slot and forming a yielding connection between the angle-plate and the bolt therein, said strip being provided with an ear arranged to extend into the aforementioned recess.

4. In a corner-clamp for glass plates, the combination with the glass plates, of an angle-plate adapted to fit the angle formed by said glass plates, each arm of said angle-plate having a longitudinal slot formed therein, teeth arranged to project into the slot in each arm, a bolt passing through the slot in each arm and through a bolt-hole formed in the glass plate adjacent thereto, and a strip of resilient material secured to said bolt and arranged to engage with the teeth formed in said slot.

5. A corner-clamp for glass plates comprising an angle-plate having a longitudinal slot formed in each arm, bolts arranged to move freely in said slots and flexible strips arranged in said slots and engaging with the walls of said slots and with said bolts so as to form a yielding connection between said bolts and said angle-plate.

6. A corner-clamp for glass plates comprising an angle-plate having a longitudinal slot formed in each arm, teeth arranged to project in the respective slots, a bolt arranged to move freely in each of said slots, and a flexible strip arranged in each slot and forming a yielding connection between said teeth and the bolt therein.

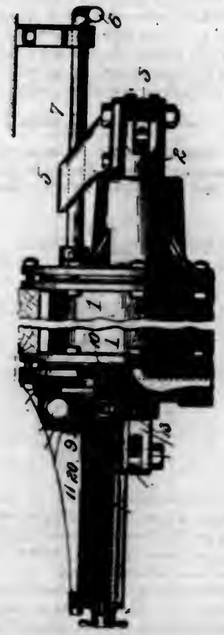
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**754,246. AIR-BRAKE CONTROLLER.** WILLIAM H. SCOTT, St. Louis, Mo., assignor to John C. Wands, St. Louis, Mo. Filed Dec. 24, 1903. Serial No. 186,428. (No model.)

*Claim.*—1. In an air-brake controller, the combination with the cylinder and its piston-rod, of an inclined striker-plate on the piston-rod, a rock-arm in its path, a rock-shaft to which said arm is connected, a rockable pawl-carrier operated by said shaft, a ratchet, a threaded rod, and a fulcrum-block for the cylinder-lever, which is adjusted by the operation of the above-mentioned parts to take up the slack in the brake system; substantially as described.



2. In an air-brake controller, the combination with a cylinder and its piston-rod, of an inclined striker-plate mounted on the end of the piston-rod, a rock-arm in the path of said striker-plate, a rock-shaft to which said arm is connected, a movable fulcrum-block for the cylinder-lever, a spring for moving said fulcrum-block, and means operated by the rock-shaft for storing up power in said spring when the piston-rod exceeds its ordinary limit of travel; substantially as described.



3. In an air-brake controller, the combination with a cylinder, of a fulcrum-block for the cylinder-lever, a threaded rod connected to said fulcrum-block, a ratchet connected to said rod, a rockable pawl-carrier, a stop for determining the normal position of said pawl-carrier, a spring tending to return said pawl-carrier to normal position at all times, and means controlled by the excessive movement of the piston-rod for displacing said pawl-carrier; substantially as described.

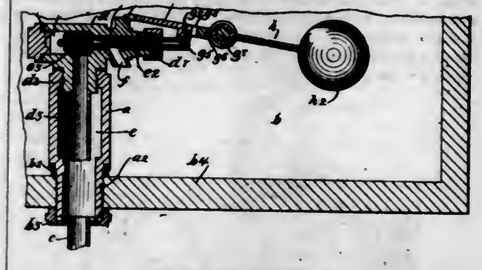
4. In an air-brake controller, the combination with a cylinder-head, of a casting secured thereto and forming a housing, said casting extending rearwardly to form a guideway, a fulcrum-block for the cylinder-lever mounted in said guideway, a threaded rod for moving said fulcrum-block outwardly from its cylinder, a ratchet on said threaded rod, a pawl-carrier housing in said ratchet and containing a pawl engaging the same, a projection on said pawl-carrier forming a spring-seat and coöperating with a shoulder in the housing for determining the normal position of said pawl-carrier, a spring interposed between said projection and the seat in said housing, and means for rocking said pawl-carrier in one direction whereby the spring returns the same in the opposite direction and drives the ratchet; substantially as described.

5. In an air-brake controller, the combination with a cylinder, of a fulcrum-block for the cylinder-lever, a threaded rod upon which said fulcrum-block is mounted, a ratcheted nut engaging said threaded rod, gear-teeth arranged on said ratcheted nut, a pinion in mesh with said gear-teeth, means for manually operating said pinion, a pawl in engagement with said ratcheted nut, and means for lifting said pawl from engagement with its ratchet; substantially as described.

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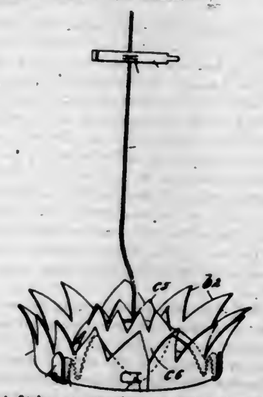
**754,247. FLUSH-TANK APPARATUS.** JAMES H. SEAGER and JOHN J. KELLY, Flushing, N. Y. Filed Apr. 21, 1903. Serial No. 153,708. (No model.)

*Claim.*—A water-supply device for flush-tanks, comprising a main casing one end of which is adapted to be secured in the bottom of a tank; a supplemental casing detachably connected with the top thereof and ranging transversely thereof and one end of which is closed by a removable plug and the other end of which is provided with an extension having a longitudinal bore, said supplemental casing being also provided with a tube which projects downwardly into said main casing a predetermined distance and with a horizontal valve-chamber communicating with said tube and with said horizontal bore and between which and said bore is a valve-seat; a valve mounted in said valve-chamber and adapted to close the communication with said tube and provided with a valve-rod which passes through said bore and outwardly through the end of said extension, said end being closed by a removable cap; and a float-rod loosely connected with said supplemental casing at the top thereof and in operative connection with the outer end of said valve-rod, substantially as shown and described.



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**754,248. FITTING FOR VESSELS IN WHICH FLOWER-BULBS ARE GROWN.** ANDREW SIMPSON, Linlithgow, Scotland. Filed Oct 6, 1903. Serial No. 175,927. (No model.)



*Claim.*—1. A fitting or attachment designed to be connected with the top of a vase or other vessel comprising a central receiver open at the top and bottom and adapted to receive and hold the bulb of a flowering or other plant, said fitting or attachment being provided with radial members adapted to rest on the top of said vase, substantially as shown and described.

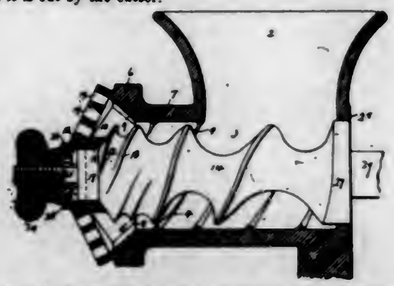
2. A fitting or attachment designed to be connected with the top of a vase or other vessel comprising a central receiver open at the top and bottom and adapted to receive and hold the bulb of a flowering or other plant, said fitting or attachment being provided with radial members adapted to rest on the top of said vase, and an annular crown or body portion connected with said radial members and adapted to inclose the top of the vase, substantially as shown and described.

3. A fitting or attachment designed to be connected with the top of a vase or other vessel comprising a central receiver open at the top and bottom and adapted to receive and hold the bulb of a flowering or other plant, said fitting or attachment being provided with radial members adapted to rest on the top of said vase, and an annular crown or body portion connected with said radial members and adapted to inclose the top of the vase, said attachment being also provided with an upwardly-directed support, substantially as shown and described.

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**754,249. FOOD-CHOPPER.** LEVI T. SNOW, New Haven, and ALONZO A. WARNER, New Britain, Conn.; said Warner assignor to said Snow. Filed June 30, 1902. Serial No. 113,574. (No model.)

*Claim.*—1. In a food-chopper, the combination with a case having a cylindrical primary forcing-chamber and a conical secondary forcing-chamber larger in diameter than the same, of a cylindrical forcer corresponding in diameter to the primary forcing-chamber but smaller in diameter than the said secondary forcing-chamber, cutting-arms arranged to spring from the forward portion of the inclined wall of the secondary chamber so as to leave the rear portion of the said chamber unobstructed for the reception of the delivery end of the forcer the forward ends of the forcing-ribs of which enter the said unobstructed portion of the secondary chamber the inclined wall of which they clear, and a cutter carried by the forcer and coacting with the outer faces of the said arms to cut the food, whereby the food expands into the secondary chamber in which the ribs of the forcer coact through the food with the inclined wall thereof to produce direct forward pressure supplemental to the pressure developed in the primary forcing-chamber and whereby the food is forced between the said arms upon the outer faces of which it is cut by the cutter.



2. In a food-chopper, the combination with a case having a cylindrical primary forcing-chamber and a conical secondary forcing-chamber larger in diameter than the same, of a cylindrical forcer corresponding in diameter to the primary forcing-chamber but smaller in diameter than the said secondary forcing-chamber, cutting-arms arranged to spring from the forward portion of the inclined wall of the secondary chamber so as to leave the rear portion of the said chamber unobstructed for the reception of the delivery end of the forcer the forward ends of the forcing-ribs of which enter the said unobstructed portion of the secondary chamber the inclined wall of which they clear, a cutter carried by the forcer and coacting with the outer faces of the said arms to cut the food, and stops located within the rear portion of the secondary chamber and to the rear of the said arms for preventing the food from rotating therein with the forcer.

3. In a food-chopper, the combination with a case having a cylindrical primary forcing-chamber and a conical secondary forcing-chamber larger in diameter than the same, of a cylindrical forcer corresponding in diameter to the primary forcing-chamber but smaller in diameter than the said secondary forcing-chamber, cutting-arms arranged to spring from the forward portion of the inclined wall of the secondary chamber so as to leave the rear portion of the said chamber unobstructed for the reception of the delivery end of the forcer the forward ends of the forcing-ribs of which enter the said unobstructed portion of the secondary chamber the inclined wall of which they clear, a cutter carried by the forcer and coacting with the outer faces of the said arms to cut the food, and stops located at the bases of said arms for preventing the food from rotating therein with the forcer.

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**754,250. PLATE-LIFTER.** GEORGE S. SOLOMON, Bisbee, Ariz. Filed Apr. 23, 1903. Serial No. 153,976. (No model.)

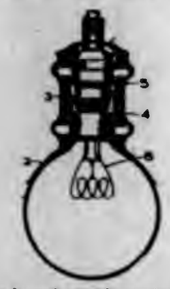


*Claim.*—1. A lifting device comprising arms formed of a single piece of material and extending parallel with each other the greater portion of their distance, the end portions of said arms diverging relatively to each other, inwardly-turned hooks formed at the extremities of said end portions, a rod extending longitudinally between parallel portions of the arms said rod being shorter than the arms and terminating some distance from the ends thereof, a band binding one end of the rod to the arms, a slide movable along the parallel arms, a lug formed on said slide through which the rod extends a pan-engaging tongue formed on the slide, and tension means adapted to bear against the slide and normally press the latter toward the hooked extremities of the arms, substantially as set forth.

2. A lifting device comprising arms formed of a single piece of material doubled approximately central, said arms having hooks formed at the extremities thereof, a rod relatively shorter than said arms, and arranged centrally between the same, a slide movable along the arms, a pan-engaging tongue formed at one end of said slide, a lug at the opposite end of the slide, said tongue and lug having apertures therein for the passage of a rod, and a coiled tension-spring encircling the rod and normally bearing against the lug for pressing the slide toward the hooked ends of the arms, substantially as set forth.

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**754,251. ELECTRIC LAMP.** CHARLES P. STEINMETZ, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Mar. 6, 1903. Serial No. 146,443. (No model.)



*Claim.*—1. In an incandescent lamp, the combination of an incandescent filament, and means for simultaneously diffusing and reflecting light emanating therefrom so as to produce an illumination of substantially equal intensity over a circular field whose diameter approximates its distance from the lamp.

2. In an electric lamp, the combination of a light-diffusing globe, a reflector therefor, of less diameter than the maximum diameter of the globe and having its edge perforated and of uneven contour, and a light-giving body located eccentrically in said globe.

3. In an electric lamp, a combination of a globe of light-diffusing material, a reflector located in close proximity to the globe and of less diameter than the globe, and a light-giving body located eccentrically in said globe.

4. In an electric lamp, the combination of a substantially spherical globe of light-diffusing material, a spherical reflector of substantially the same radius of curvature as the globe, located in close proximity to the globe and having a diameter less than the diameter of the globe, said reflector having its edge of uneven outline, and a light-giving body located eccentrically in said globe.

5. In an electric lamp, a combination of a spherical globe of light-diffusing material, a spherical reflector of substantially the same radius of curvature as the globe, located in close proximity to the globe and having a diameter less than the diameter of the globe, and an incandescing filament or light-giving body located eccentrically in said globe.

6. In an electric lamp, the combination of a spherical globe having the major portion of its surface frosted, a spherical reflector placed so as to cover the unfrosted portion of the globe as well as the dividing-line between the frosted and unfrosted portions, and an incandescing filament or body located symmetrically with respect to said reflector and between said reflector and the center of the globe.

7. The combination of a socket, an incandescent lamp having a substantially spherical globe or envelop of light-diffusing material, a light-generating body located eccentrically in said globe, means for detachably securing said globe to said socket, a spherical reflector of less diameter than the globe located close to the outer surface of said globe and arranged symmetrically with respect to said socket, and a casing surrounding the joint between said socket and the attaching means for the globe.

8. In an incandescent lamp, the combination of an incandescent filament, and means for simultaneously diffusing and reflecting light emanating therefrom so as to produce an illumination of equal intensity over a circular field of considerable diameter.

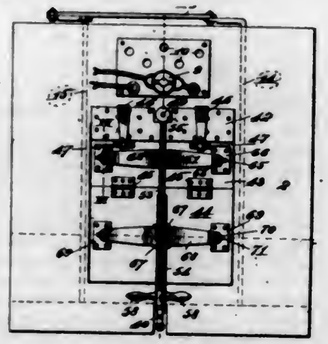
9. In an electric lamp, the combination of a globe one part of which is frosted and another part unfrosted, a reflector provided with an edge of uneven contour and mounted in close proximity to the unfrosted portion of the globe and so that its uneven edge laps over the frosted portion of the globe, and a light-giving body located eccentrically in said globe.

10. In an electric lamp, the combination of a globe one part of which is frosted and another part unfrosted, a reflector having a perforated edge of uneven contour and mounted in close proximity to the unfrosted portion of the globe and so that its uneven edge laps over the frosted portion of the globe, and a light-giving body located eccentrically in said globe.

11. In an electric lamp, the combination of a light-giving body, a light-transmitting envelop therefor having transparent and translucent portions, the translucent portion including that part of the envelop of maximum diameter and the transparent portion a part of the envelop the maximum diameter of which is less than the maximum diameter of the translucent portion, and a reflector covering the transparent portion of the envelop and having an edge of uneven contour lapping over the dividing-line between transparent and translucent portions of the envelop.

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**754,252. PHOTOGRAPHIC-PRINTING MACHINE.** FRED P. STEVENS, St. Louis, Mo. Filed June 17, 1903. Serial No. 161,856. (No model.)



*Claim.*—1. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, a pressure-back, means for holding said pressure-back to the negative, and a lift-spring for elevating said pressure-back after it is freed, substantially as set forth.

2. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back for movement to the negative, a lever for holding said pressure-back to the negative, means for holding said lever, springs interposed between said lever and said pressure-back, and a lift-spring for elevating said pressure-back and lever after said lever is freed, substantially as set forth.

3. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back for movement to the negative, a lever for holding said pressure-back to the negative, springs interposed between said lever and said pressure-back, and means by which said springs are slidably connected to said pressure-back to permit flexing of the springs, substantially as set forth.

4. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back for movement to the negative, a lever for holding said pressure-back in lowered position, springs interposed between said lever and said pressure-back, slide-pins carried by the springs, knobs carried by said slide-pins, and slotted keepers carried by said pressure-back in which said slide-pins have sliding engagement, substantially as set forth.

5. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back for movement to the negative, means for holding said pressure-back to the negative, and a lift-spring for elevating the pressure-back when its holding means is freed, substantially as set forth.

6. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back consisting of sections hinged together, a sectional lever for holding said pressure-back to the negative, and means for holding said lever when the pressure-back is resting against the negative, substantially as set forth.

7. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back consisting of sections hinged together, a sectional lever for holding said pressure-back to the negative, means for holding said lever when the pressure-back is resting against the negative, and means for contracting said lever when the pressure-back is freed, substantially as set forth.

8. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back consisting of sections hinged together, a sectional lever for holding said pressure-back to the negative, means for holding said lever when the pressure-back is resting against the negative, a lift-spring for moving said pressure-back, and means for contracting said lever when the pressure-back is freed, substantially as set forth.

9. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for holding a negative in said opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a pressure-back for movement to the negative in said opening, a lever, springs carried by said lever arranged to press against said pressure-back, and means for adjusting said lever with respect to said pressure-back, substantially as set forth.

10. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, means for supporting a negative in said opening, a sectional pressure-back, a lever composed of telescoping sections having connection with said pressure-back, and swingingly connected to said table, and a spring connecting the sections of said lever and through the medium of which its length is contracted, substantially as set forth.

11. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, a reflector-box, means for controlling the passage of light from said reflector-box to said negative-receiving opening, a sectional pressure-back, a lever connected to said table and having engagement with said pressure-back, means for holding said lever when said pressure-back is resting against the negative, means for operating said light-controlling means, and means operating through said last-named means for releasing said pressure-back lever, substantially as set forth.

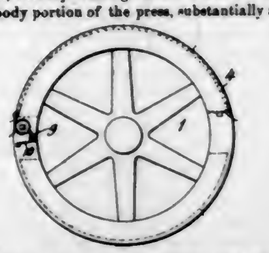
12. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, a reflector-box, blinds for controlling the passage of light from said reflector-box to said negative-receiving opening, mechanism for operating said blinds, a pressure-back for movement to said negative-receiving opening, a lever connected to said table and having engagement with said pressure-back, a catch for engaging said lever, a release-lever having connection with said catch, and means carried by said blind-operating means for actuating said release-lever, substantially as set forth.

13. In a photographic-printing machine, the combination of a table provided with a negative-receiving opening, a reflector-box, blinds for controlling the passage of light from said reflector-box to said negative-receiving opening, mechanism for operating said blinds, a pressure-back for movement to said negative-receiving opening, a lever connected to said table and having engagement with said pressure-back, a catch for engaging said lever, a release-lever having connection with said catch, means carried by said blind-operating means for actuating said release-lever, and a finger carried by said blind-operating means to engage said release-lever, substantially as set forth.

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**754,253. MEANS FOR ATTACHING BLANKETS TO CYLINDERS OF PRINTING-PRESSES.** ANDREW B. STEWART, Brooklyn, N. Y. Filed June 29, 1901. Serial No. 66,466. (No model.)

*Claim.*—1. In a printing-press, the combination with the impression-body portion of the press, of a blanket formed with an opening, and a headed clamping device arranged to pass through said opening and adapted to be turned to bring its head down upon the blanket by a drawing action, the opening in the blanket being larger than the greatest diameter of the head of the clamping device so that when the device is in its unclamping position the blanket may be withdrawn over the head of the clamping device, the head of said device when in its clamping position overlapping the portion of the blanket adjacent to the head so as to clamp the blanket by a drawing action, thereby tending to draw the blanket taut upon the impression-body portion of the press, substantially as described.

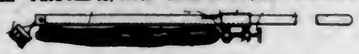


2. In a printing-press, the combination with the impression-body portion of the press, of an eccentric-headed screw entering the said impression-body portion, and a blanket formed with an opening to receive the eccentric-headed screw, said opening being eccentric to the screw and said screw adapted by rotation to have its eccentric portion brought over the blanket and to exert a screw-drawing action thereon, thereby tending to draw the blanket taut and clamp it to the impression-body portion, substantially as described.

3. In a printing-press, the combination with an impression-cylinder, of a blanket having a flange adapted to fit over an edge of the cylinder and formed with an opening, a reel-rod having the opposite end of the blanket connected therewith, and an eccentric-headed screw passed through the opening in the flange of the blanket and entering the edge of the cylinder, the opening in the flange being eccentric to the shank of the screw, and said screw in its unclamping position permitting the flange portion of the blanket to slip over its head and in its clamping position having its eccentric head clamp the flange to the edge of the cylinder by a drawing action, thereby tending to draw the blanket taut upon the impression-body portion of the press, substantially as described.

4. In a printing-press, the combination with the impression-body portion of the press, of a blanket having a flange formed with an opening, and an eccentric-headed screw entering the body-impression portion, said screw in one position adapted to have the apertured flange portion slip over its head and in another position to have the eccentric portion of the head bear against the flange and clamp it to the impression-body portion by a drawing action, thereby tending to draw the blanket taut upon the impression-body portion of the press, the opening in the flange being materially larger than the thickness of the shank of the screw to permit adjustment of the blanket, substantially as described.

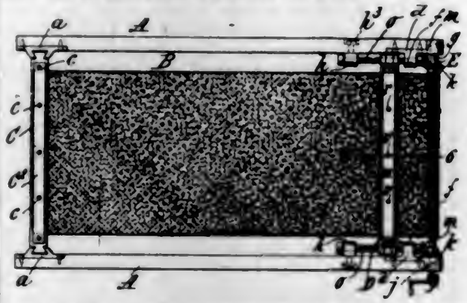
### 754,254. APPLIANCE FOR CLEANSING THE SURFACES OF FLOORS OR THE LIKE. JOHN S. STEWART-WALLACE, Redhill, Knock, Ireland. Filed Jan. 15, 1903. Serial No. 139,208. (No model.)



*Claim.*—In a mop, the combination of a handle, a sleeve on said stick capable of sliding but not of rotating thereon, means for securing said sleeve against sliding movement, a rotary spindle carried by said sleeve, a mop-cloth attached at one end to said handle and at the other end to said rotary spindle, means for rotating said spindle to twist the mop-cloth and a spring adapted to resist said twisting operation, so as to untwist the mop-cloth when released.

### 754,255. SPRING-BED. JOHN F. SULLIVAN, Chicopee, Mass. Filed Aug. 28, 1903. Serial No. 171,105. (No model.)

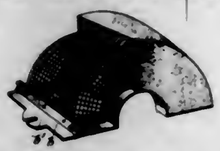
*Claim.*—1. In a bed-bottom, in combination, the side bars A A having at one end portion of each the inwardly-disposed socketed casting *a* and having at its opposite end portion the casting *d* provided with the transverse journal-hole *g* and endwise inwardly therefrom having the inwardly-extending lug *f* provided with the longitudinally-alined journal-hole *f'*, and the journal-lug *h*, also supported by and inwardly extended from the side bar having the journal-hole *i* therein, in alinement with the journal-hole *f'*, the end cross-bar C endwise engaged in said socketed castings *a a*, the movable cross-bar D, the shaft E having the gear-wheels *k k* and means for turning said shaft, the screw-shafts *o o* journaled for rotation in said lugs *f* and *h* having the gear-wheels *m m* and, by their intermediate portions, screw-engaging the end portions of said movable bar D, and the woven-wire fabric, secured to, and extending between, the said bars C and D, substantially as described and shown.



2. In a bed-bottom, in combination, the side bars A A having at one end portion of each the inwardly-disposed socketed casting *a* and having at its opposite end portion the casting *d* provided with the transverse journal-hole *g* and endwise inwardly therefrom having the inwardly-extending lug *f* provided with the longitudinally-alined journal-hole *f'*, and the journal-lug *h*, also supported by and inwardly extended from the side bar having the journal-hole *i* therein, in alinement with the journal-hole *f'*, the end cross-bar C endwise engaged in said socketed castings *a a*, the movable cross-bar D, having its ends bifurcated and horizontally perforated parallel with the side bars, and having the nut *t* fitted in each bifurcated portion, said nut having the vertical upwardly-open screw-hole *w*, the shaft E having the gear-wheels *k k*, and means for turning said shaft, the screw-shafts *o o* journaled for rotation in said lugs *f* and *h*, having the gear-wheels *m m* in mesh with said gear-wheels *k k*, and, by their intermediate portions penetrating the horizontal perforations in said bar D, and screw-engaging through said nut *t*, the woven-wire fabric secured to the bar C extending therefrom and over said bar D, the clamping-strip *v* binding the fabric against the said bar D, and having a series of confining-screws, the end ones thereof screw-engaging down into the screw-holes *w* in the nuts *t*, substantially as described and shown.

3. In a bed-bottom, in combination, the side bars A A, the rigidly-united one end cross-bar C, the movable bar D, and the shaft E, journal-supported in the side bars, having a sleeve frictionally engaged thereon, and means for turning the shaft, the woven-wire fabric secured to, and extending between, the bars C and D, and further extended to a take-up engagement with said sleeve, the screw-shafts *o o*, journal-supported, at the inner side portions of the side bars, and having screw engagements with the end portions of said bar D, and bevel-gears secured on the screw-shaft and said shaft E, and in mesh with each other, substantially as and for the purposes set forth.

### 754,256. PIPE-COVERING. MAURICE SULLIVAN, New York, N. Y. Filed Aug. 3, 1903. Serial No. 168,012. (No model.)



*Claim.*—1. A pipe-covering comprising a frame formed of clamps and connecting members therefor, said clamps being capable of embracing the pipe-sections, a shield applied to the frame, and a covering proper applied to the shield.

2. A covering for pipes comprising two clamps, longitudinal connecting members extending between them, a shield applied to the connecting members, and a covering proper applied to the shield.

3. A covering comprising clamps, longitudinal connecting members joining them together, said clamps and connecting members constituting a frame, and a covering proper applied to said frame.



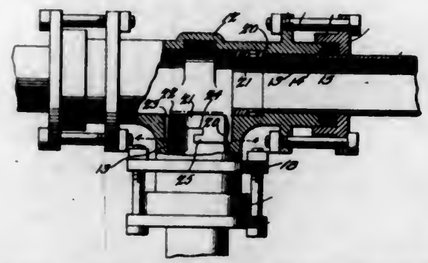
4. A covering comprising clamps formed of two sections, adapted to embrace the structure to which the covering is applied, connecting members joining said clamps together, said clamps and connecting members constituting a frame, and a covering proper applied to the said frame.

5. A covering comprising a frame formed of clamps made in two sections fastened together, to embrace the structure to which the covering is applied and longitudinal connecting members also formed in two sections fastened together and extending between and connecting said clamps, and a covering proper applied to the frame.

### 754,257. ART OF PRINTING. WILLIAM THOMAS, Geraldine, New Zealand. Filed Sept. 19, 1902. Serial No. 124,107. (No model.)

*Claim.*—In the production of surfaces for printing, the utilization of a type-writing machine from which to obtain impressions of the matter in matrix composed of thin lead backed by a layer of flong or flong-paste, forming a mold in wax from the impressions and reducing the broad parts of the mold where necessary, a second matrix in plaster-of-paris from the mold, and a stereotype from the second matrix, substantially as described.

### 754,258. PIPE-COUPLING. JULIEN E. TINKER, Bradford, Pa., assignor of one-half to Pulaski B. Broughton, Bradford, Pa. Filed Nov. 26, 1902. Serial No. 132,752. (No model.)



*Claim.*—A pipe-coupling comprising tubular members, said members being provided at their adjacent ends with undercut notches and overhanging lugs, said lugs and notches of the tubular members being interlocked to prevent longitudinal displacement, and one of said tubular members being of an extreme diameter exceeding that of the other, a coupling-sleeve having a bore enlarged at its inner end to form a seat for the large tubular interlocking member, a coupling-plate fitted upon the tubular interlocking members, of less diameter and having a flange exteriorly engaging the sleeve, a compressible gasket seated within said flange and engaging the end of the sleeve, and connecting means.

### 754,259. STOVE ATTACHMENT. JAPEW S. VAN BUREN, Albany, N. Y., assignor to Rathbone, Sard & Co., a Corporation of New York. Filed June 20, 1903. Serial No. 162,434. (No model.)

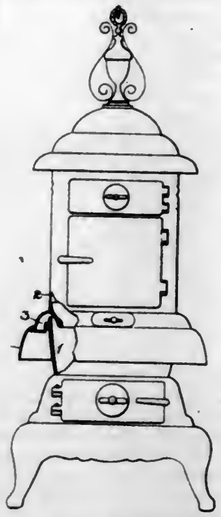
*Claim.*—1. In a device of the character described, the combination with a fire-pot and drum of a fuel-burning apparatus, of an exterior blast-belt having an inner overhanging flange provided with an enlargement around its inner edge.

2. The combination with the fire-pot and drum of a fuel-burning apparatus, of a blast-belt carrying an external and imperforate downwardly-curving deflector adapted to throw the heat downward and forming a pocket in which the heated air assists in heating the air-chamber.

3. In a device of the character described, the combination with the fire-pot and drum of a fuel-burning apparatus, of an exterior blast-belt comprising a lower section, resting upon a flange on the fire-pot, and an upper section wholly supported by said lower section, said upper section forming an arch over the upper edge of the fire-pot and extending downwardly within the same forming a circumferential passage for feeding the air upon the fire.

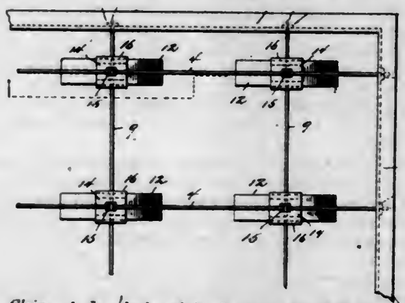
4. In a device of the character described, the combination with the fire-pot and drum of a fuel-burning apparatus, of an exterior blast-belt comprising a lower section, resting upon a flange on the fire-pot, and an upper section wholly supported by said lower section, said upper section forming an arch over the upper edge of the fire-pot and extending downwardly within the same forming a circumferential graduated passage for feeding the air upon the fire.

5. In a device of the character described, the combination with the fire-pot and drum of a fuel-burning apparatus, of an exterior blast-belt comprising a lower section, resting upon a flange on the fire-pot, and an upper section wholly supported by the lower section and forming an arch over the upper edge of the fire-pot, said upper section having a flange to receive the drum and extending downwardly within the fire-pot forming a circumferential passage for feeding the air upon the fire.



6. In a device of the character described, the combination with the fire-pot and drum of a fuel-burning apparatus, of an exterior blast-belt comprising a lower section, resting upon a flange on the fire-pot, and an upper section wholly supported by the lower section and forming an arch over the upper edge of the fire-pot, said upper section having a tapering flange to receive the driven-on drum and extending downwardly within the fire-pot forming a circumferential passage for feeding air upon the fire.

### 754,260. SPRING BED-BOTTOM. JOSEPH G. VENABLE, Sr., Petersburg, Ind. Filed May 9, 1903. Serial No. 156,414. (No model.)



*Claim.*—1. In a device of the character described the combination with a frame, of longitudinally-extending wires therein, extensions on the wires, transversely-extending wires within the frame and seated within the extensions, a circular spring having an aperture therein for the reception of one of the extensions, apertured plates upon the extension at opposite sides of the aperture in the spring, and flanges to one of the plates for the reception of a transverse wire whereby said spring and wires are bound together.

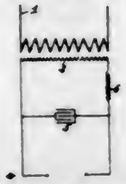
2. In a device of the character described, the combination with a frame, of longitudinally-extending wires secured therein, U-shaped extensions to said wires, transversely-extending wires secured within the frame and seated within the extensions, means for preventing longitudinal movement of the wires, a circular spring having an aperture therein for the reception of one of the extensions, apertured plates upon the extension at opposite sides of the apertured

portion of the spring, and flanges at opposite sides of one of said plates and having openings therein for the reception of a transverse wire, whereby the wires, plates and spring are secured together.

3. In a device of the character described, the combination with frames having longitudinally-extending wires therein and inwardly-projecting U-shaped extensions thereon; of transversely-extending wires within each frame and seated within the extensions, means for preventing longitudinal movement of said wires within the frames, circular springs having oppositely-disposed apertures therein for the reception of the extensions of the wires, apertured plates upon each extension and at opposite sides of the adjacent apertured portion of the spring, and flanges upon one of said plates having openings therein for the reception of a transversely-extending wire.

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**754,261. OZONIZER.** ALEXANDER VOSMAER, Nieuwersluis, Amsterdam, and ADRIAAN LIEBRT, Utrecht, Netherlands, assignors to Ozon Maatschappij, Systeem A. Vosmaer, Amsterdam, Netherlands. Filed Sept. 11, 1902. Serial No. 122,936. (No model.)



*Claim.*—The combination of an ozonizing apparatus, a transformer, the connections between said transformer and ozonizing apparatus, a condenser mounted in shunt in the secondary of the transformer and choking-coils joined up to the terminals of the secondary circuit of the transformer between said secondary circuit of the transformer and the shunt of the condenser, for the purpose set forth.

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**754,262. PROCESS OF CLEANSING AND IMPROVING THE QUALITY OF IRON OR STEEL.** FREDERICK C. WEBER, Chicago, Ill. Filed Mar. 27, 1903. Serial No. 100,310. (No specimens.)

*Claim.*—1. The herein-described process of cleansing of oxygen slags, and occluded nitrogen and improving the quality of iron and steel in one operation, which consists in adding to the to-be-treated molten metal soluble binary metallic borids decomposable in solution under heat furnishing nascent atoms for cleansing the metal, and introducing into the metal when in a molten state alloys of iron with the basic metal of the particular borid used, substantially as described.

2. The herein-described process of cleansing of oxygen slags, and occluded gases and improving the quality of iron and steel in one operation, which consists in melting the same and adding thereto when in a molten state soluble binary metallic borids decomposable in solution under heat furnishing nascent atoms for cleansing the metal, and modifying alloys of iron, whereby impurities will be eliminated by chemical reaction and the radical metals of the borids and of the alloys will be united with the iron or steel, substantially as described.

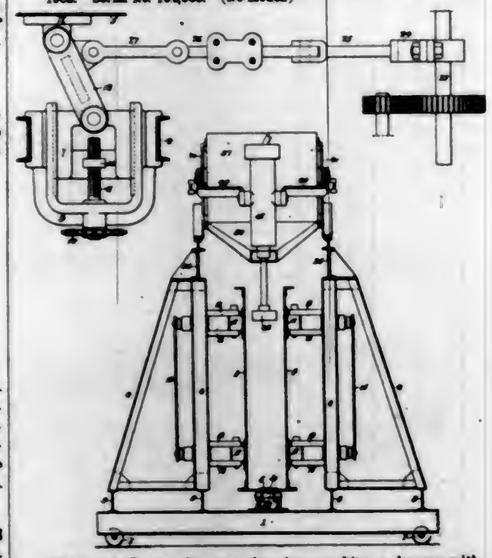
3. The herein-described process of cleansing of residual oxygen slags, and occluded nitrogen and improving the quality of iron and steel in one operation, which consists in melting the same and adding thereto when in a molten state soluble binary metallic borids decomposable in solution under heat furnishing nascent atoms for cleansing the metal and metallic alloys, whereby impurities will be eliminated by chemical reaction and the radical metals of the crystalline borids and alloys will be united with the iron and steel, substantially as described.

4. The herein-described process of cleansing and improving the quality of iron and steel, which consists in adding to the to-be-treated metal soluble binary metallic borids alone in chemically-equivalent proportions with the contained impurities to be removed from any given metal, the borids being decomposable in solution under heat furnishing nascent atoms for cleansing the metal, whereby the impurities will be eliminated by chemical reaction, substantially as described.

5. The herein-described process of cleansing of residual oxygen slags, and occluded nitrogen and improving the quality of iron and steel in one operation, which consists in melting the same and adding thereto, when in a molten state, soluble binary metallic borids decomposable in solution under heat, furnishing nascent atoms for cleansing the metal, and a titanium alloy whereby impurities and occluded nitrogen will be eliminated by chemical reaction, and the radical metals of the crystalline borids and titanium alloy will be united with the iron or steel, substantially as described.

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**754,263. MACHINE FOR CHARGING COKE-OVENS.** SAMUEL T. WELLMAN, CHARLES H. WELLMAN, JOHN W. SEAVER, and THOMAS R. MORGAN, Cleveland, Ohio, assignors to the Wellman-Seaver-Morgan Company, Cleveland, Ohio, a Corporation of Ohio. Filed Apr. 21, 1902. Serial No. 104,003. (No model.)



*Claim.*—1. In a coke-oven-charging machine, a hopper with sides adjustable from and toward each other, slides carrying an adjustable side of the hopper and laterally adjustable upon the frame of the machine, and means for effecting simultaneous adjustment of all of said slides, substantially as specified.

2. In a coke-oven-charging machine, a hopper with sides adjustable from and toward each other, laterally-adjustable slides carrying an adjustable side of the hopper, means for effecting simultaneous adjustment of all of said slides, and toggle mechanism interposed between the said slides and the side of the hopper and serving to effect lateral adjustment of the latter independent of the movement of the slides, substantially as specified.

3. In a coke-oven-charging machine, a hopper structure, a base-frame, a longitudinal row of vertical girders at each side of the same, a hopper for receiving the charge, and supporting devices for the sides of the hopper mounted upon said rows of vertical girders and adjustable laterally in respect thereto, substantially as specified.

4. In a coke-oven-charging machine, a hopper structure, a fixed frame, a hopper mounted thereon, and having sides adjustable from and toward each other, slides connected to an adjustable side of the hopper and mounted on the fixed frame so as to be adjustable laterally thereon, nuts on said slides, screw-stems adapted to bearings on the fixed frame and engaging said nuts, and means for operating said screw-stems, substantially as specified.

5. In a coke-oven-charging machine, a hopper structure, a fixed frame, a hopper having sides adjustable from and toward each other, slides connected to a movable side of the hopper and adjustable laterally on the fixed frame, nuts on said slides, screw-stems engaging said nuts and adapted to bearings on the fixed frame, sprocket-wheels on said screw-stems and an endless chain connected to said sprocket-wheels, substantially as specified.

6. In a coke-oven-charging machine, a fixed frame, a hopper thereon for receiving the charge, a fluid-operated hammer for compacting the charge in the hopper, a carrier for said hammer mounted on runways on the fixed frame, and means for adjusting the hammer-cylinder vertically in respect to said carrier, substantially as specified.

7. In a coke-oven-charging machine, a fixed frame, a hopper thereon for receiving the charge, a charging-truck mounted on runways on the fixed frame, a fluid-actuated hammer carried by said truck and adapted to compress the charge in the hopper, and means for adjusting the hammer-cylinder vertically in respect to the charging-truck, substantially as specified.



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**754,264. ANTHRACENE DYE AND PROCESS OF MAKING SAME.** HEINRICH WELTZ, Ludwigshafen-on-the-Rhine, Germany, assignor to Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden, Germany. Filed Apr. 10, 1903. Serial No. 152,069. (No specimens.)

*Claim.*—1. The process of manufacturing anthracene coloring-matter by treating anthraquinon-beta-mono-sulfo-acid with concentrated sulfuric acid and mercury in the presence of phosphoric acid and nitrous acid and then treating the resulting pupurin-sulfo-acid with an aromatic amido compound.

2. The anthracene coloring-matter such as can be obtained by heating the hereinbefore-defined parpurin-sulfo-acid with an aromatic amido body, which dissolves in concentrated sulfuric acid with a violet color, which solution on the addition of boric acid becomes blue, whose aqueous solution on the addition of caustic soda is blue to violet and on the addition of ammonia blue-violet to blue-red, which dyes chrome-mordanted wool black.

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**754,265. MATCH COMPOSITION.** JOHN A. WENDEL, Milwaukee, Wis. Filed Oct. 28, 1903. Serial No. 178,891. (No specimens.)

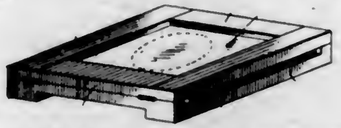
*Claim.*—1. A composition of matter consisting of potassium chlorate, sulfid of antimony, lead nitrate, amorphous phosphorus, vegetable carbon, bichromate of potash, and a binding agent.

2. A composition of matter comprising potassium chlorate, sulfid of antimony, lead nitrate, amorphous phosphorus, vegetable carbon, bichromate of potash and glue.

3. A composition of matter prepared in the following proportions, potassium chlorate, two, sulfid of antimony, one, lead nitrate, one, amorphous phosphorus, 0.5, vegetable carbon, 0.5, bichromate of potash, 0.3, and glue.

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**754,266. PHOTOGRAPHIC-PRINTING FRAME.** CHARLES WEBSTER, Ruskin, Canada. Filed Dec. 4, 1902. Serial No. 133,860. (No model.)



*Claim.*—1. In a photographic-printing frame, the combination with a front portion designed to carry the light admitting and controlling medium, a negative-carrying section adjacent thereto, said front portion adapted to carry said light-controlling medium in close proximity to said negative-carrying section, and a back portion hinged to said front portion, said back portion having an opening for admitting and removing the positive sheet, and a cover for said opening adapted to hold said positive sheet against said negative, for the purposes specified.

2. A photographic-printing frame, comprising a front section, having a groove in one face, a light admitting and controlling medium mounted in said groove with its inner face flushed with the adjacent face of said front portion, a negative-carrying device adjustably secured to one of said portions, said negative-carrying device including a film-spool carrier and a negative-carrying frame, said negative-carrying frame including friction-rollers adjacent said film-spool carriers, film-carrying spools mounted in said film-spool carriers, a film mounted on said spools and passing over said friction-rollers and said negative-carrying frame and in close proximity to said light admitting and controlling medium, a back section hinged to said front section and adapted to close over a portion of said film and said light admitting and controlling medium, said back portion having an opening for the introduction of the positive sheet, and a closure member for said opening, said closure member being adapted to hold said negative in tight engagement with said light controlling and admitting medium, for the purposes specified.

3. In a photographic-printing frame consisting of two sections hinged together, one of said sections adapted to hold the light admitting and controlling medium, and the other section having an opening through which the positive medium is introduced, and a removable cover for said opening, the other of said sections having a slot or opening across one face thereof in a plane parallel to the printing-surface, and a slidable frame within said slot adapted to hold a negative in close proximity to the light admitting and controlling medium, said slidable frame being susceptible to adjustment in any direction in a plane parallel with the printing-surface, and said cover for said opening in said first-mentioned section being adapted to hold said positive medium in contact with said negative and to hold said slidable frame in engagement with said light admitting and controlling medium whereby when the said cover is in place all of the parts will be held immovable, for the purposes specified.

4. A photographic-printing frame comprising a front portion adapted to hold the light admitting and controlling medium, a back portion hinged to said front portion and adapted to hold the positive sheet or plate in such a manner that a space is left between the front and back portions and the negative-bearing frame mounted in such space and slidably connected to one of said portions in such a manner as to be susceptible of adjustment in any direction in a plane parallel to the printing-surface, said front portion adapted to hold said light admitting and controlling medium in close proximity to said negative and in engagement with said negative-bearing frame, and said back portion adapted to hold said light admitting and controlling medium and said negative-bearing frame in their proper correlative positions, for the purposes specified.

5. In a photographic-printing frame having the front and back portions divided in a plane parallel to that of the printing-surface and having a space between them adapted to hold a negative-bearing frame, an open frame recessed to hold a negative and having turned-over edges on opposite sides to engage the thickness of one of said portions, the width between said turned-over edges being such as will allow a limited slidable movement in any direction in the plane of the printing-surface.

6. In a photographic-printing frame, consisting of two sections hinged together, slots or openings in the opposite sides or end members in a plane parallel to the printing-surface, film-spool carriers opposite each slot, and means for rotating such spools whereby the film may be wound on one and unwound off the other traversing the film across the printing-surface of the frame.

7. In a photographic-printing frame consisting of a front portion carrying a light admitting and controlling medium and adapted for the support of film-negatives hinged to a back portion into which a positive sheet may be introduced and held, such connection between the portions being made as to leave a space across the printing-surface adapted to the passage of a negative-film, a film-negative carrying frame slidably connected to one portion in such a manner as to be susceptible of adjustment of the negative in any direction in the plane parallel to the printing-surface, and film-spool carriers secured to such frame adapted to removably hold and permit the rotation of the spools.

8. In a photographic-printing frame having a front or mask-carrying portion hinged or otherwise connected to a back or positive holding portion in such a manner as to leave a space between adapted to permit the passage of a negative-film across the printing-surface; a negative-carrier comprising an open frame 10 attached to one of said portions of the printing-frame in such a manner as to permit slidable adjustment in any direction in the plane of the printing-surface; spool holding and rotating means secured to opposite sides and comprising end bracket members 20 and 21 a fixed pin 12, a rotatable and endwise-slidable pin 13 having spool-engaging feathers 14, a spool-bearing washer 15, a spring 17 between the washer and the bracket member 21, and a spool-rotating means 17; and a roller 25 sunk flush in the corner of the turned-over edge 10ª.

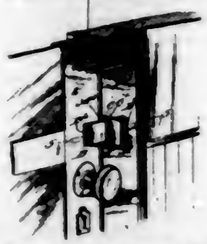
9. A photographic-printing frame, consisting of a front and a back portion hinged together, said front portion adapted to carry a light admitting and controlling medium, said back portion having a groove, and an opening therethrough, of a negative-carrying device adjustably mounted in said groove and having a portion for receiving a negative, said negative and said light admitting and controlling medium adapted to lie in close proximity to each other, and said front and back portions being so arranged as to admit of inserting the negative into the negative-carrying member without removing the same from the said groove, all being arranged substantially as shown and for the purposes specified.

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**754,267. DOOR-SECURER.** FREDERICK R. WIENNER, Washington, D. C. Filed Oct. 7, 1903. Serial No. 176,068. (No model.)

*Claim.*—1. The improved door-securer herein described consisting of the jaw-section A having the jaw *a* at one end and provided between its ends with the deflected portion C having an opening C′ for the stop-section and forming the inner and outer wings on opposite sides of said deflected portion and the stop-section operating in the opening of said deflected portion and provided at one end with a stop projection and at its other end with a hook, said pro-

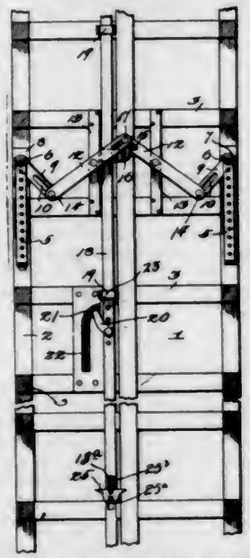
jection and hook being arranged on opposite sides of the jaw-section and the hook being adapted to engage with the end of the jaw-section when the parts are folded in compact form substantially as set forth.



2. The combination in a door-securer of the main or jaw section having a deflected portion and an opening therein midway between its ends and having the jaw at one end and the stop-section operating in said opening and abutting at one end the jaw of the main section and having a hook engaging with end of the main section opposite the jaw substantially as set forth.

3. A door-securer comprising the jaw-section having an intermediate deflected portion and wings on opposite sides thereof and approximately parallel with each other, said intermediate portion having an opening for the stop-section, and the stop-section operating in said opening and resting in folded position at its opposite ends against the opposite faces of the end wings of the jaw-section and overlapping at one end one of said wings and having a hook engaging said wing substantially as set forth.

**754,268. MINE-SHAFT DOOR.** JOHN WINELAND, Athens, Ill., assignor of three-fourths to George, Seth, and John Fredrick Wineland, Athens, Ill. Filed Sept. 10, 1903. Serial No. 172,706. (No model.)



*Claim.*—1. In a door for closing elevator-shafts, the combination with a structural framework, of swinging door-sections hinged to said framework, a crank-arm fixed to each of said door-sections pivoted levers having a pin-and-slot connection with said crank-arms at one end and having a pin-and-slot connection with a vertically-reciprocating bracket at their opposite ends, and means actuated by the raising or lowering of a car in said shaft to actuate said levers and open or close said door-sections, substantially as described.

2. In a door for closing elevator-shafts, the combination with a structural framework, of swinging door-sections hinged to said framework, a crank-arm fixed to each of said door-sections, pivoted levers having a pin-and-slot connection with said crank-arms at one end and having a pin-and-slot connection with a bracket, a vertically-reciprocating bar fixed to said bracket, a pivoted arm carried by said bar, means carried by the elevator-car to engage said arm and raise said bar to actuate said levers and open said door-sections, means for disengaging said arm from said car after said door-sections have been opened, and means whereby said door-sections may be closed when said car is lowered to the bottom of the shaft, substantially as described.

3. In a door for closing elevator-shafts, the combination with a structural framework, of swinging door-sections hinged to said framework, a crank-arm fixed to each of said door-sections, pivoted levers having a pin-and-slot connection with said crank-arms at one end and having a pin-and-slot connection with a bracket, a vertically-reciprocating bar fixed to said bracket, a pivoted arm carried by said bar, a roller and a laterally-projecting rod carried by said arm, a bracket-plate carried by the elevator-car to engage said rod and raise said bar upon the upward movement of the car, a fixed guide-way or track engaged by said roller and having a curved or offset upper end, whereby said roller will be guided from said car to remove said rod-bar from engagement with said bracket-plate, a bracket-plate yieldingly connected to the lower end of said reciprocating bar and in the path of downward movement of the bracket-plate on said car whereby said bar is lowered upon the descent of the car, and buffer-springs connected to said reciprocating bar whereby the jarring of the car is obviated, substantially as described.

**754,269. PHOTOGRAPHIC CASE FOR TOMBSTONES.** JAMES W. M. WITT, Cedarbluff, and ZACHARIAH D. LANEY, Blanch, Ala. Filed May 21, 1903. Serial No. 158,165. (No model.)



*Claim.*—1. A device of the character described, comprising a cylindrical cup open on its outer side, interiorly screw-threaded, having a spring secured in its inner end and provided with exterior anchoring devices, a picture bearing against said spring and engaging the same to prevent revoluble movement of the picture, a cover having a lateral rim projecting laterally beyond the cup and having an annular flange to enter the cup, said flange being screw-threaded and engaging the threaded inner side of the cup, a ring in the said cover bearing on the outer side of the picture and coacting with the spring to hold the picture in place, substantially as described.

2. A device of the character described having a sprig to bear against the picture, a ring to bear against the opposite side of the picture, and means to secure the picture to the sprig to prevent movement of the picture, substantially as described.

**754,270. SHEET-METAL STUDDING.** HENRY WITTEKIND and ROBERT B. BOURKE, Chicago, Ill. Filed May 27, 1903. Serial No. 158,920. (No model.)



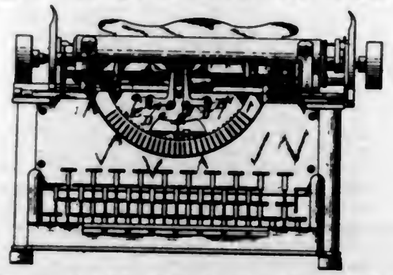
*Claim.*—1. A sheet-metal building member comprising a web formed of two parts rigidly united together between which fastening devices for securing thereto coöperating building members are adapted to be driven, the opposite edges of one of said parts terminating in portions extending inwardly between the two parts composing the web, the edges of such portions adapted to engage and retain the fastening devices between the two parts of the web.

2. A sheet-metal building member comprising a web formed of two parts rigidly united together, between which fastening devices for securing thereto coöperating building members are adapted to be inserted, the opposite ends of each part terminating in portions extending inwardly between the two parts composing the web, thereby forming locking edges at each end of the web to retain therein the inserted fastening devices.

3. A sheet-metal building member comprising a web formed of two parts rigidly riveted together, a flange formed at each end of each part of said web each of said flanges composed of a plurality of thicknesses of metal and each terminating in a portion extending inwardly between the two parts of the web thereby forming locking edges at each end of the web to retain fastening devices therein.



**754,271. TYPE-WRITING-MACHINE ALINER.** JESSE ALEXANDER, Brooklyn, N. Y., assignor of one-half to Arthur Letts, Los Angeles, Cal. Filed Aug. 2, 1902. Serial No. 118,086. (No model.)



*Claim.*—1. An alining device for type-writing machines comprising pivoted guide-posts having their axes at right angles to the axis of the platen, pivoted revoluble guide-wheels carried thereby having a guide-passage between them and means for adjusting the position of the guide-posts for varying the width of the guide-passage.

2. An alining device for type-writing machines comprising guide-posts attached to the frame of a machine and carrying at their upper ends pivoted revoluble guide-wheels having a guide-passage between the same and between said posts and means for moving the guide-wheels toward or away from each other or to one side or the other for adjusting the position or extent of the guide-passage, substantially as described.

3. An alining device for type-writing machines comprising pivoted guide-posts, pivoted guide-wheels carried thereby, said guide-posts having extension-arms and means for adjusting the position of the same.

4. An alining device for type-writing machines comprising guide-posts pivoted to the frame of a machine and having extension-arms, said extension-arms being slotted and screws working in the slotted portion of said extension-arms and adapted to engage the frame of the machine.

5. An alining mechanism for type-writing machines comprising a type pivot-plate having recesses therein, lift-blocks operating in said recesses said lift-blocks having pivots for the type-bars, and means for adjusting the vertical position of said lift-blocks comprising screws passing through the walls of the recesses to draw the lift-blocks up or to let them down.

6. In an alining mechanism for type-writing machines, a type pivot-plate, a lift-block carried thereby, a type-bar pivoted to said lift-block, and means for adjusting the vertical position of said lift-block and type-bar comprising a screw operating through the pivot-plate and in the lift-block to raise or lower the block.

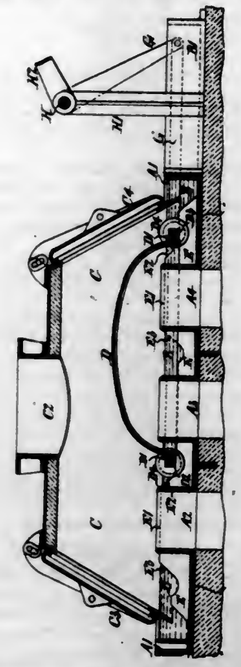
7. The vertical alining mechanism for a type-writing machine comprising a type pivot-plate, recesses therein, a lift-block having a pivot for the type-bar, a helical spring normally depressing said lift-block and a screw for adjusting the position of said lift-block, substantially as described.

8. In an alining mechanism for type-writing machines, the combination of the horizontal and vertical adjustment comprising pivoted guide-posts attached to the frame of the machine, said guide-posts carrying guide-wheels, and lift-blocks carried by the frame of the machine and having an individual pivot for the type-bar and a screw for adjusting the position of said lift-block.

9. In an alining mechanism for type-writing machines, the combination of the horizontal and vertical adjustment comprising the guide-posts pivoted to the frame of the machine, the revoluble guide-wheels carried by said guide-posts and the spring-pressed lift-blocks having pivots for a type-bar, and means for adjusting the position of the same.

10. In an alining mechanism for type-writing machines, the combination of the horizontal and vertical adjustment comprising the guide-posts carried by the frame of the machine, the revoluble guide-wheels carried by said guide-posts and the spring-pressed lift-blocks having pivots for a type-bar, and means for adjusting the position of the same.

**754,272. REVERSING-VALVE FOR REGENERATIVE FURNACES, &c.** CHARLES G. ATHA, Patrick, Scotland, assignor of one-half to William Beardmore and Company, Limited, Glasgow county, Scotland. Filed Oct. 10, 1903. Serial No. 176,521. (No model.)



*Claim.*—1. Improvements in and connected with reversing-valves, comprising, in combination, a water-seal bed-plate, ports therein, a stationary casing fitted thereto, rails formed with level and sloping portions, a frame having wheels adapted to run on the rails, a reversing-valve detachably fixed to the frame and working over the ports, an operating-shaft outside the casing, and means for operating the frame and valve from such shaft, as described.

2. Improvements in and connected with reversing-valves, comprising, in combination, a trough-shaped water-seal bed-plate, ports formed in the floor thereof, a stationary casing fitted thereto and having its lower edge dipping into the seal, an inlet in the casing, rails formed on the floor of the bed-plate along each side of the ports, and having level and sloping portions, a frame working over the ports, axles in the frame, wheels carried on the axles and running on the rails, links attached to the axles and normally below the level of the seal, a reversing-valve detachably fixed to the frame, and a shaft external to the casing for operating the frame and valve through the links, as described.

3. Improvements in and connected with reversing-valves comprising in combination, a water-seal bed-plate, ports formed therein, an inlet-casing fitted to the bed-plate, a reversing-valve controlling the ports, wheels on the valve, rails on which the wheels travel and made with level and sloping portions, a handled operating-lever connected to the valve and to two sets of vertical rods fitted with adjustable stops, a balance-weight on the rods and a fixed stool for same, substantially as and for the purposes herein set forth.

4. In connection with a reversing-valve traveling on rails formed with level and sloping parts, an operating-lever, two sets of vertical rods fitted with adjustable stops, connections between the valve and the lever and between the lever and the rods, a balance-weight on the rods, a fixed stool for same, the balance-weight resting on the stool and being lifted thereoff alternately by each respective set of stops, substantially as and for the purposes herein set forth.

**754,273. SHEET FOR ROOF-COVERING.** WILLIAM H. RACHE, Boundbrook, N. J. Filed May 20, 1903. Serial No. 158,033. (No model.)



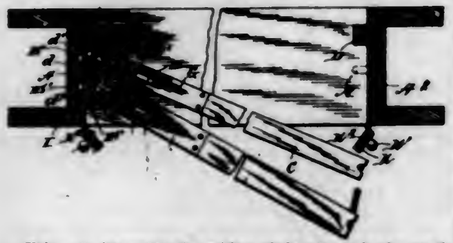
*Claim.*—1. A covering of the class described consisting of a sheet of material folded on itself, fastenings for securing the sheet to a foundation, a strip fitting against the sheet between the parts of the fold and receiving said fastenings, and the sheet having a groove to receive said strip.

2. A covering of the class described consisting of a sheet of material folded on itself, staples passing through the same and covered by the body thereof, for fastening said sheet to a backing, and a flexible strip straddled by the staples, said strip holding the sheet to said backing, between the staples.

3. A flat sheet for roof-covering having corresponding beads and grooves on its opposite faces, the grooves facing in opposite directions.

4. A roof-covering consisting of a series of sheets, each sheet being folded on itself along one edge, the folds being covered by the bodies of the respective sheets, the folded-over portion of an upper sheet lying on the upper portion of a lower sheet, the latter having along said upper portion a groove, the fold of said upper sheet having a groove on its upper side and a corresponding bead on its lower side fitting in the groove along the upper portion of the lower sheet, a strip fitted in the groove in the folded portion of the upper sheet, the folded portion of the lower sheet also having a groove, a strip in the last-mentioned groove, and means for fastening the strips in place.

**754,274. WINDOW-SASH ATTACHMENT.** LEWIS R. W. RANEY, Camden, N. J. Filed Dec. 5, 1903. Serial No. 183,940. (No model.)



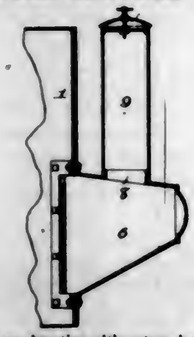
*Claim.*—1. In combination with a window-frame having vertically-sliding sashes, slotted plates mounted over recesses in the frame of the window, sliding bolts carried by the sash having hinged links which are grooved on their opposite faces adapted to engage said slotted plates to allow the sash to swing as a door, as set forth.

2. In combination with a window-frame, a sash mounted to slide vertically therein, sliding bolts mounted in slots in said sash, recesses in said slots, slotted plates mounted over said recesses, operating-handles projecting from said bolts and working in the slots in said plates, hinged links upon said bolts provided with grooves on their opposite faces, slotted plates fitted to the window-frame adapted to be engaged by said hinged links, as set forth.

3. In combination with a window-frame with window-sash mounted therein, sliding bolts carried by the sash and provided with hinged links having grooves on their opposite faces, slotted plates mounted in the frame of the window adapted to be engaged by said links, hinged sash-retaining strips mounted upon the frame of the window, and means for locking the strips, as set forth.

4. In combination with a window-frame having an upper and a lower sliding sash, sliding bolts carried by each sash, hinged links connected to said bolts, slotted plates in the opposing faces of the window-frame adapted to be engaged by said links, a removable parting-strip intermediate the sash, a hook carried by said parting-strip and an eye in the groove of the facing adapted to be engaged by said hook, as set forth.

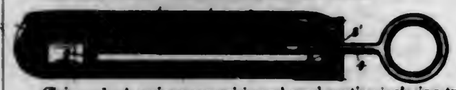
**754,275. HEATING-STOVE.** THOMAS M. BARBER, Corydon, Ind., assignor of three-fourths to Sam P. Vogt and Levi V. Brown, Corydon, Ind. Filed Sept. 22, 1903. Serial No. 174,345. (No model.)



*Claim.*—1. The combination with a stove-body having an opening in its wall coincident with its ash-pit, of an outwardly-projecting box secured to said body and communicating with said opening, the bottom of said box being inclined throughout its full extent, a door closing the outer end of said box, and a downdraft-pipe communicating with the top of said box.

2. The combination of a stove-body having an angular opening in its end, a box secured to the stove-body around the opening and projecting outward therefrom, said box having its walls tapering to its outer end toward each other, an ash-door closing the outer end of the box, a downdraft-pipe connecting with the top of the box, and a damper in the upper end of said pipe.

**754,276. SYRINGE.** EDWIN BARTSCH, San Francisco, Cal. Filed July 7, 1903. Serial No. 164,513. (No model.)



*Claim.*—1. A syringe comprising a barrel portion inclosing two parallel chambers connected at or near their rear ends and each having a discharge-opening at their forward ends, the said discharge-openings connected by a lateral passage made in the front extremity of the barrel whereby said chambers may discharge one into the other in case the outlet ends of said discharge-openings become closed, and a piston operatable in one of said chambers.

2. A syringe comprising in combination a barrel having a blunt rounded nozzle portion, said nozzle portion essentially ovoidal in cross-section and having a central orifice and a substantially transverse groove forming a lateral passage-way, a piston movable in said barrel, said lateral passage-way connecting the rear end of the barrel-chamber with the nozzle-orifice and also having a discharge separate from but adjacent to said orifice.

3. In a syringe of the double-action type, the combination with the barrel and piston-rod thereof of a perforated cap attaching to the barrel and embracing the piston-rod, and flexible packing-rings carried by said cap and engaging the rod inside and outside the barrel and separated by an annulus rigid with the cap.

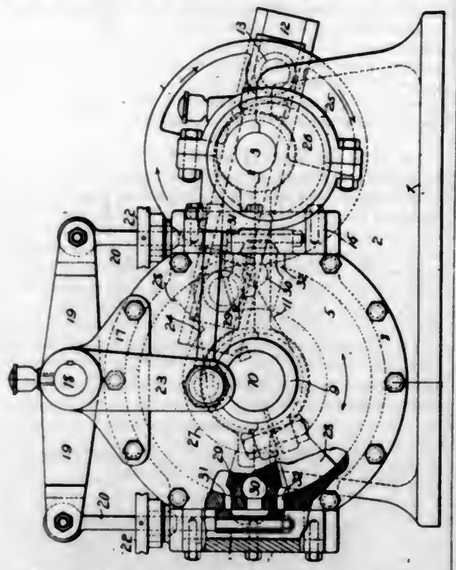
4. In a syringe of the double-action type, the combination with the barrel and piston-rod thereof, of a cap attaching to the barrel and embracing the piston-rod, said cap having annular recesses concentric with the rod, on the inner and outer side of the cap, said recesses having substantially dovetailed walls, and flexible packing-rings with edges inclined correspondingly with the walls of said recesses seating in the latter and held thereja solely by the interengagement of said edges and walls.

5. The combination in a syringe, of a barrel characterized by having a cylindrical bore and being essentially ovoidal in cross-section and terminating in a nozzle portion with slightly-flattened sides, a passage-way in the thickened wall portion of said barrel extending parallel with the bore and opening into the rear end of the barrel and discharging at a point adjacent to the nozzle-orifice.

6. In a syringe, the combination of a hard-rubber shell inclosing a piston-chamber and a lateral passage, said passage opening into the rear end of said chamber and having a point of discharge in common with the chamber, a piston, a metal piston-rod of reduced diameter, and a perforated cap attaching to the shell and having external and internal packing-rings embracing said piston-rod.



**754,277. ENGINE.** JAMES A. BECHER, Mishawaka, Ind. Filed May 6, 1903. Serial No. 155,874. (No model.)

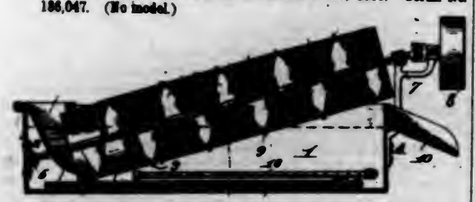


*Claim.*—1. The combination with an engine-bed comprising a bed-plate and an upright web thereon, of a cylindrical chamber having a hub on one side secured in a bearing on the web, a shaft projecting through the hub into the chamber, an oscillating piston on the shaft in the chamber, an arm on the shaft at one side of the web, and means for automatically regulating the admission and exhaust of steam from the chamber to oscillate the piston.

2. The combination with an engine-bed having an upright web and bearings on said web, of an engine-cylinder having a hub on one side secured in one of said bearings, a crank-shaft mounted in the other of said bearings, a shaft extending through the hub into the cylinder, an oscillating piston on the shaft in the cylinder to operate the shaft, an arm on the shaft, on one side of the web opposite to the cylinder, and a pitman connecting said arm with the crank-shaft.

3. The combination with an engine-bed having a vertical web, of an engine-cylinder having a hub on one side secured in a bearing on the web to support the cylinder on one side of the web, a crank-shaft supported across the web, an oscillating piston in the cylinder, a shaft driven thereby and projecting through the hub, an arm on the shaft, at one side of the web opposite to the cylinder, a pitman connecting said arm with the crank-shaft, an eccentric on the crank-shaft on the same side of the web as the cylinder, a pitman reciprocated by the eccentric, a bracket on the cylinder, a shaft in said bracket, a walking-beam on said shaft, an arm on said shaft connected with the last-mentioned pitman, and reciprocating valves for the cylinder operated by the walking-beam.

**754,278. DOUGH-KNEADING MACHINE.** CHARLES BETZ and PHILLIP SHERRY, St. Louis, Mo. Filed Dec. 21, 1903. Serial No. 186,047. (No model.)



*Claim.*—1. In a dough-cooking machine, the combination of a water-tank, a cylinder located within the tank, and a screw located within the cylinder; said cylinder being connected to said screw so as to turn therewith, and having its lower end beneath the water-line in the tank, substantially as set forth.

2. In a dough-cooking machine, the combination of a water-tank, a cylinder located in the tank in an inclined position, and a screw located within the cylinder; said cylinder being connected to said screw so as to turn therewith, substantially as set forth.

3. In a dough-cooking machine, the combination of a water-tank, a cylinder located in the tank in an inclined position, and a screw located in the cylinder; said cylinder being perforated throughout the greater portion of its length and imperforate at its receiving end, which is open and located beneath the water-line, substantially as and for the purpose set forth.

4. In a dough-cooking machine, the combination of a water-tank, a cylinder located in the tank, and a screw located in the cylinder; said cylinder being perforated throughout the greater portion of its length and imperforate at its feed end, which is open and located beneath the water-line, substantially as set forth.

5. In a dough-cooking machine, the combination of a water-tank, a cylinder located within the tank in an inclined position, a screw located within the cylinder, and a perforated feed-plate located at the feed end of the cylinder; said cylinder being perforated throughout the greater portion of its length and imperforate at its feed end, substantially as set forth.

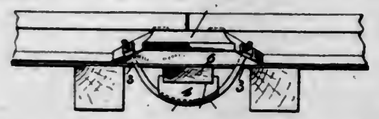
6. In a dough-cooking machine, the combination of a water-tank, means for heating the water within the tank, a cylinder located in the tank in an inclined position, a screw located within the cylinder, and a perforated curved plate located at the feed end of the cylinder; said cylinder being perforated throughout the main portion of its length and imperforate at its feed end, substantially as set forth.

7. In a dough-cooking machine, the combination of a water-tank having a compartment at one end separated from the main portion of the tank, a cylinder located in the tank, a conveyer located in said cylinder, and means for circulating the water from the main portion of said tank to said compartment; said compartment being arranged in communication with the receiving end of said cylinder; substantially as set forth.

8. In a dough-cooking machine, the combination of a water-tank, a partition dividing said tank into a main portion and a separated compartment, a cylinder located in said tank in an inclined position and having its lower end arranged in communication with said tank-compartment, a conveyer in said cylinder, and water-circulating pipes having communication with the main portion of said tank and said separated compartment, substantially as set forth.

9. In a dough-cooking machine, the combination of a water-tank, a partition dividing said tank into a main portion and a separated compartment, a cylinder located in said tank in an inclined position and having its lower end extending to said tank-compartment, a conveyer in said cylinder, water-circulating pipes located in said tank and having open ends extending into said tank-compartment, inlet-nipples connected to said circulating-pipes within the main portion of said tank, a steam-pipe and jets extending from said steam-pipe into said inlet-nipples, substantially as set forth.

**754,279. RAILWAY-JOINT FASTENING.** WARREN H. CASE, Mount Vernon, Ohio. Filed Sept. 22, 1903. Serial No. 174,176. (No model.)



*Claim.*—1. A railway-joint fastening embracing coupling-bars applied to the rail-sections, truss-rods secured to said coupling-bars, and means effective, with said truss-rods, to clamp said coupling-bars upon the flanges and webs of the rail-sections, whereby the use of fastening-bolts for that purpose is obviated.

2. The combination of lateral coupling-bars adapted to bind upon the webs of meeting rail-sections and resting upon the flanges thereof, truss-rods integral with means for securing the same in position, and means to effect such binding action.

3. The combination of lateral coupling-bars adapted to engage the webs of meeting rail-sections and resting upon the flanges thereof, truss-braces having rebent end portions or terminals passing through, and bearing upon, said coupling-bars, and means for effecting a binding action between said coupling-bars and said webs via said truss-braces.

4. The combination of coupling-bars adapted to be applied to meeting rail-sections and engage the web and flange portions thereof,

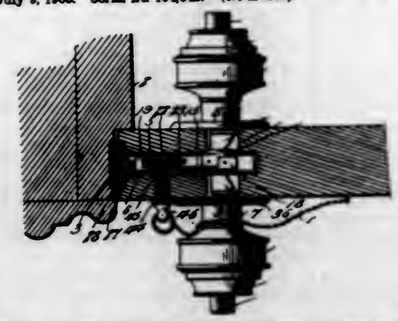
looped truss-braces adapted to be secured to said coupling-bars and relatively converged, and means interposed between said braces and the rail-sections to deliver the binding action of said coupling-bars upon said rail-sections.

5. The combination of coupling-bars adapted to be applied to meeting rail-sections and engage the web and flange portions thereof, looped truss-braces adapted to be secured to said coupling-bars and relatively converged toward each other, a bolster having grooves therein to receive said braces and means to retain said bolster in position.

6. The combination of coupling-bars, adapted to clamp the meeting ends of rail-sections and having inclined end portions, looped truss-braces relatively converging toward each other, means for securing said braces to said coupling-bars, a bolster having grooves therein to receive said truss-braces, a wedge let into a recess in said bolster and inserted below the rail-sections, and means for the retention of said wedge against displacement.

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754,280. **LOCK.** George W. Caswell, New Britain, Conn. Filed July 9, 1903. Serial No. 164,842. (No model.)



*Claim.*—1. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide formed with a slot having a lateral projection at the inner edge thereof, a latch-bolt having pivoted relation to the slide, a guide located in said slot and constructed with parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and spring-controlled cam devices movable through these slots in opposite directions against parts of the slide and guide to retract the slide and latch-bolt.

2. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide having an angular hanger extending therefrom, and formed with a slot having a lateral projection at its inner edge, a latch-bolt pivoted at its inner end to said slide, a guide located in said slot and constructed with parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and spring-controlled cam devices movable through these slots in opposite directions against parts of the slide and guide to retract the slide and latch-bolt.

3. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide formed with a slot having a lateral projection at the inner edge thereof, a latch-bolt having pivoted relation to the slide, a guide located in said slot and constructed with parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and means for securing the slide against movement.

4. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide having an angular hanger extending therefrom, and formed with a slot having a lateral projection at its inner edge, a latch-bolt pivoted at its inner end to said bracket, a guide located in said slot and constructed with parallel members embracing said projections and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and means for securing the slide against movement.

5. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide formed with a slot having a lateral projection at its inner edge, said projection supporting a friction-roller, a latch-bolt having pivoted relation to the slide, a guide located in said slot and also supporting a friction-roller and having parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and spring-controlled cam devices movable through the slots in opposite directions between and against said friction-rollers.

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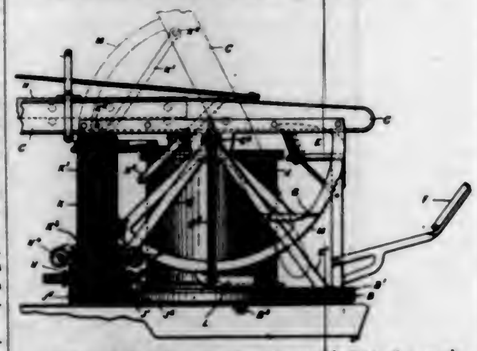
754,281. **STENCIL.** Joseph T. Common, New York, N. Y. Filed Apr. 16, 1903. Serial No. 152,940. (No model.)




*Claim.*—A pattern or marking device comprising a frame formed from heavy strawboard or other readily-cut material, having a space, a fine open-work fabric of readily-cut material secured tightly or in stretched condition across the space to the under side of the frame to contact with the surface to be marked, and letters or characters pasted or secured independently of one another to the upper side of the fabric.

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754,282. **MACHINE FOR RAISING OR LOWERING LADDERS.** Edward F. Darill and James R. Goddard, New Bedford, Mass. Filed Oct. 20, 1902. Serial No. 128,033. (No model.)



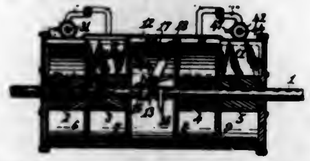
*Claim.*—1. In a fire apparatus, the combination of a truck, a turn-table on the truck, a ladder pivotally mounted on the turn-table, a tank or holder for fluid under pressure mounted on the turn-table beneath the horizontal axis about which the ladder swings, two vertical cylinders mounted on the turn-table directly beneath the side bars of the ladder when lowered, pistons fitted in said cylinders, two rods each pivotally connected at one end to one of the pistons and having its other end pivotally connected to the adjacent side bar of the ladder, a valved conduit connecting said tank with the cylinders below the pistons therein, and means for controlling the escape of fluid from the cylinders.

2. In a fire apparatus, the combination of a truck, a turn-table on the truck, a ladder pivotally mounted on the truck, a tank or holder on the turn-table, beneath the horizontal axis about which the ladder swings for holding fluid under pressure, a vertically-arranged cylinder on the turn-table beneath each of the side bars of the ladder, pistons in said cylinders, rods pivotally connected at their lower ends to said pistons and at their upper ends to the side bars of the ladder, a conduit connecting said cylinders below the pistons therein with the tank, a valve in said conduit, a shaft geared to said valve and extending beyond the sides of the ladder, a valve for regulating the escape of fluid from the cylinders, and a supplemental holding device for maintaining the ladder at any desired inclination

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754,283. **ROTARY ENGINE.** Obed De Champ, Everett, Mass. Filed Jan. 26, 1904. Serial No. 190,893. (No model.)



*Claim.*—1. In a rotary engine, a main shaft, a blade on the shaft, a stationary casing surrounding the shaft, an abutment movable into and from the chamber within the casing in the direction of the axis of said shaft, supply and exhaust valves controlling the motive fluid to operate the engine, and means to operate the abutment consisting of a star-shaped cam, a shaft carrying the star-shaped cam, an arm on the star-cam shaft engaging said abutment, and pins on the main shaft engaging the arms of the star cam on opposite sides of its shaft.

2. In a rotary engine, a main shaft, two blades upon the shaft on opposite sides thereof, a casing surrounding the shaft and forming two ring-shaped cylinders each containing one of said blades, a connecting-passage between the two cylinders of the casing, a reciprocating abutment movable alternately from one cylinder into the other and forming a wall across the cylinders, supply and exhaust valves for the cylinders, a star-shaped cam, a shaft carrying said cam, an arm on the star-cam shaft engaging said abutment, and pins on the main shaft engaging the star cam on opposite sides of its shaft to reciprocate the abutments.

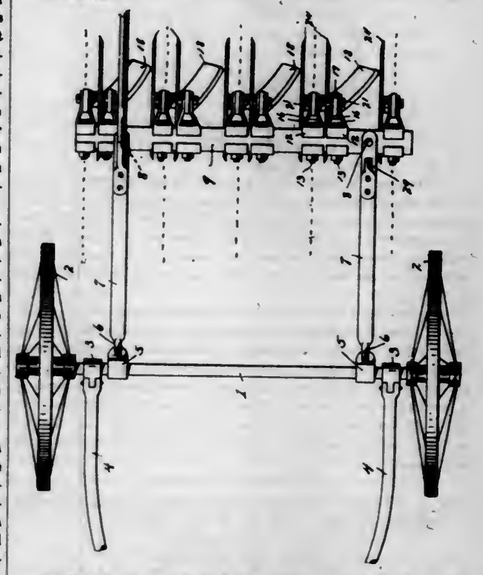
3. In a rotary engine, a main shaft, a plurality of series of blades upon the shaft, two blades in a series and on opposite sides of the shaft, a casing for each series of blades surrounding the shaft and forming two ring-shaped cylinders within each casing, each cylinder containing one of the blades of the series, a connecting-passage between the two cylinders of each casing, a reciprocating abutment for each casing alternately entering the two cylinders therein to form a wall across said cylinders, a supply and exhaust valve for each casing, a star-shaped cam, a shaft carrying said cam, an arm on the star-cam shaft engaging said abutment, and pins on the main shaft engaging the star cam on opposite sides of its shaft to reciprocate the abutment.

4. In a rotary engine, a main shaft, blades upon the shaft projecting in different directions around the shaft in series of two blades each, a casing having ring-shaped cylinders formed therein surrounding the shaft and having one of said blades in each cylinder forming a rotating piston therein, an abutment for each two cylinders in the casing reciprocating alternately from one cylinder into the other cylinder and forming a wall across each cylinder, a valve-casing for each two cylinders, a supply-pipe of motive fluid connected to one of said valve-casings, a hollow valve-rod between the valve-casings forming a continuation of the supply-pipe, a valve within each valve-casing carried by the valve-rod controlling communication between the supply-pipe and the valve-casings, two valve-casings upon each two of the cylinders in open communication with one of said two cylinders but on opposite sides of the abutment in the cylinder, a branch pipe from each valve-casing on the supply-pipe connected to one of the valve-casings on the cylinders, a hollow valve-rod between the valve-casings on the cylinders forming a continuation of the branch pipe, a valve on the hollow valve-rod within each valve-casing on the cylinders and controlling the admission of motive fluid to said casings, a bar connecting the hollow valve-rods on the casing having means whereby the hollow valve-rods are moved in unison, pipes connecting each valve-casing on the cylinders with the other cylinder of the two cylinders on the opposite sides of the abutment in this latter cylinder, an exhaust-pipe from each valve-casing on the cylinders, a valve on the hollow valve-rod in each of said casings controlling communication with said exhaust-pipes, a star-shaped cam, a shaft carrying said star cam, an arm on the star-cam shaft engaging the abutments, an arm on the star-cam shaft engaging the hollow valve-rod between the valve-casings on the supply-pipe, and pins on the main shaft engaging the star cam on opposite sides of its shaft to reciprocate the abutments and to operate the valves controlling the admission of motive fluid to the branch pipes.

5. In a rotary engine, a main shaft, blades upon the shaft projecting in different directions around the shaft in series of two blades each, a casing having ring-shaped cylinders formed therein surrounding the shaft and having one of said blades in each cylinder forming a rotating piston therein, an abutment for each two cylinders in the casing reciprocating alternately from one cylinder into the other cylinder and forming a wall across each cylinder, a valve-casing for each two cylinders, a supply-pipe of motive fluid connected to one of said casings, a hollow valve-rod between the valve-casings forming a continuation of the supply-pipe, a valve within each valve-casing carried by the valve-rod controlling communication between the supply-pipe and the valve-casings, two valve-casings upon each two of the cylinders in open communication with one of said two cylinders, but on opposite sides of the abutment in the cylinder, a branch pipe from each valve-casing on the supply-pipe connected to one of the valve-casings on the cylinders, a hollow valve-rod between the valve-casings on the cylinders forming a continuation of the branch pipe, a valve on the hollow valve-rod within each valve-casing on the cylinders and controlling the admission of motive fluid to said casings, a bar connecting the hollow valve-rods on the casing having means whereby the hollow valve-rods are moved in unison, pipes connecting each valve-casing on the cylinders with the other cylinder of the two cylinders on the opposite sides of the abutment in this latter cylinder, an exhaust-pipe from each valve-casing on the cylinders, a valve on the hollow valve-rod in each of said casings controlling communication with said exhaust-pipes, a star-shaped cam, a shaft carrying said star cam, an arm on the star-cam shaft engaging the abutments, an arm on the star-cam shaft engaging the hollow valve-rod between the valve-casing on the supply-pipe, and pins on the main shaft engaging the star cam on opposite sides of its shaft to reciprocate the abutments and to operate the valves controlling the admission of motive fluid to the branch pipes.

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754,284. **BEET BLOCKER AND CULTIVATOR.** Charles H. Derham, Corunna, Mich. Filed Sept. 11, 1903. Serial No. 172,715. (No model.)



*Claim.*—1. In a machine for the purpose set forth, the combination with the transportable frame, of the rotary cutters adapted to cut through the surface of the ground on each side of the plant, said rotary cutters being positioned in the rear of the transportable frame, a flexible connection between said cutters and frame and the blocking-knives interposed between said rotary cutters to sever the plants between them.

2. In a machine for the purpose set forth, the combination of the rotary cutters arranged in pairs to straddle the plant to be left for cultivation, and the lateral blocking-knives interposed between the pairs of rotary cutters, said knives being positioned to work between said cutters in transverse alinement with the points at which said cutters enter the ground, a standard for each knife lying contiguous to the face of one of each pair of cutters.

3. In a beet-blocking machine, the combination with a portable frame, of the pairs of rotary cutting-disks mounted on said frame and adapted to cut adjacent to and parallel with the row of plants, said disks being laterally adjustable in pairs and the interposed blocking-knife extending between the faces of said disks, each knife being independently movable in the arc of a circle and independently adjustable vertically.

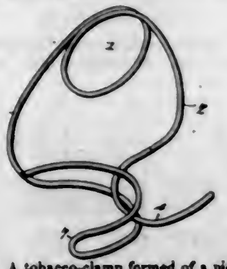
4. In a beet-blocking machine, the combination of the portable frame, the rotary cutting-disks arranged in pairs, and mounted upon said frame, the blocking-knives interposed between the outer faces of the disks of each pair, said knives being adjustable independently of said disks, a transportable frame, and a flexible connection between said frames.

5. In a beet-blocking machine, the combination with the axle and transporting-wheels, of the transverse beam loosely connected to said axle in the rear thereof, rotary cutting-disks laterally adjustable on the beam and arranged in pairs to straddle the beet-plants, and the adjustable blocking-knives interposed and extending between each pair of disks substantially as set forth.

6. In a beet-blocking machine, the combination with the transporting-wheels and the beam connected therewith, of the opposed cutting-disks secured in pairs to said beam, a blocking-knife interposed between each pair of said disks, each knife being adjustable vertically and having independent movement in the arc of a circle to change the angle of the blade.

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754,285. TOBACCO-CLAMP. ROBERT C. DICK, Whitsett, N. C., assignor to Henry A. Reams, Durham, N. C. Filed June 2, 1903. Serial No. 159,777. (No model.)

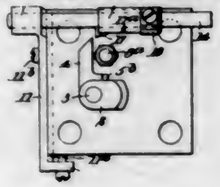


*Claim.*—1. A tobacco-clamp formed of a piece of wire bent to form a pair of spring-arms having an inherent spreading tendency, the ends of the arms being curved to form a pair of overlapping jaws that exert their clamping force on the separating movement of the arms, one of said jaws being bent to form a pair of clamping members disposed one above and one below the clamping member formed by the opposite jaw.

2. A tobacco-clamp formed of a section of spring-wire centrally bent to form a suspension-loop and thence bent to form a pair of arms having an inherent spreading tendency, the lower end of one of the arms being curved to form a semicircular clamping-jaw and the end of the opposite arm being bent outward and thence inward to form a jaw having clamping members disposed one above and one below the clamping member formed by the opposite jaw, both of said jaws being arranged approximately at a right angle to the plane of the arms.

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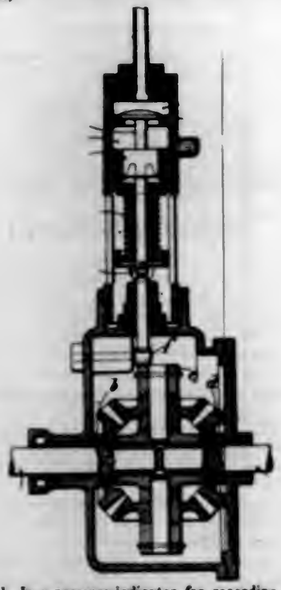
754,286. SPARKER. FRANK DICKINSON, Springport, Mich. Filed June 15, 1903. Serial No. 161,535. (No model.)



*Claim.*—In a sparking mechanism, the combination with a plate carrying the electrodes, of a push-rod actuating the movable electrode, and an adjustable slide mounted on the plate and having a guide-bearing for the rod.

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754,287. PRESSURE-INDICATOR. ALBERT DE DION and GEORGES BOUTON, Puteaux, France. Filed Mar. 18, 1903. Serial No. 148,443. (No model.)



*Claim.*—1. In a pressure-indicator for recording the variable pressure in a motor-cylinder, an indicator mechanism provided with a cylinder, means for establishing communication between the two cylinders, means for opening and closing said communication, means for actuating said opening and closing means, means operated by the pressure in the motor-cylinder for operating said actuating means for the opening and closing means, and means for manually operating said actuating means for the opening and closing means.

2. In a pressure-indicator for recording the variable pressure in a motor-cylinder, an indicator mechanism provided with a cylinder, means for establishing communication between the two cylinders, a double valve for opening and closing said communication, and means for imparting a reciprocating movement to said double valve.

3. A pressure-indicator for recording the variable pressure in a motor-cylinder, an indicator mechanism provided with a cylinder, means for establishing communication between the said cylinders, means for opening and closing said communication, a disk provided with a cam-surface adapted to engage and operate said opening and closing means, a differential gearing for operating said disk, a driven shaft for operating said gearing, and a manually-operated shaft also adapted to operate said gearing.

4. A pressure-indicator for recording the variable pressure in a motor-cylinder, an indicator mechanism provided with a cylinder means for establishing communication between the said cylinders, a double valve for opening and closing said communication, a disk provided with a cam-surface adapted to engage and operate said valve, a differential gearing for operating said disk, a driven shaft for operating said gearing, and a manually-operated shaft also adapted to operate said gearing.

5. In a pressure-indicator for recording the variable pressure in a motor-cylinder, an indicator-mechanism cylinder, means for establishing communication between said cylinder and the motor-cylinder, a double valve adapted to open and close said communication, a piston operating in said indicator-mechanism cylinder, means for preventing the falling down of said piston, a stem connected to said piston, a recording-point carried by said stem, a movable frame carrying a recording-card, means for operating said frame, and means for operating said valve.

6. In a pressure-indicator for recording the variable pressure in a motor-cylinder, an indicator-mechanism cylinder communicating



with the motor-cylinder, a double valve for opening and closing communication between the two cylinders, a piston operating in said indicator-mechanism cylinder, a spring adapted to prevent the falling down of said piston, a stem carrying the piston, a recording-point on said stem, a manually-operated shaft, a crank on said shaft, a pin carried by said crank, and a movable segment member carried by the frame and adapted to be engaged by said pin.

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754,288. TOP-ROLL SADDLE. BERA DIXON, Bristol, R. I. Filed Aug. 12, 1903. Serial No. 169,204. (No model.)



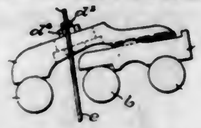
*Claim.*—1. A top-roll saddle having an elongated slot, a slide on the saddle having an elongated slot coinciding with the slot in the saddle, means for adjustably securing the slide to the saddle, and means on the slide for holding the upper end of a weight-strap, as described.

2. The combination with a front top-roll saddle having an elongated slot, of a slide on the saddle having an elongated slot coinciding with the slot in the saddle, means for adjustably securing the slide to the saddle, a weight-strap having a T-shaped upper end, and means on the slide for holding the T-shaped upper end of the weight-strap, as described.

3. In top-roll saddles, the combination with the back saddle *b*, the front saddle *c* having the slot *c'*, the slide $c^2$ adjustably secured to the saddle *c* by the set-screw $c^3$ through the slot $c^4$ in the slide, and the weight-strap *d* having the T-shaped upper end *d'* adapted to extend through the slot in the saddle and the slot in the slide to engage with the groove $c^5$ in the slide to adjustably connect the weight-strap to the front top-roll saddle and prevent lateral movement of the slide, as described.

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754,289. TOP-ROLL SADDLE. BERA DIXON, Bristol, R. I. Filed Aug. 12, 1903. Serial No. 169,205. (No model.)



*Claim.*—1. A top-roll saddle having a slot, a bolt in the slot, a nut on the bolt, a weight-strap having an opening in its upper end, and means on the end of the bolt to hold the upper edge of the opening in the weight-strap to adjustably connect the weight-strap with the saddle, as described.

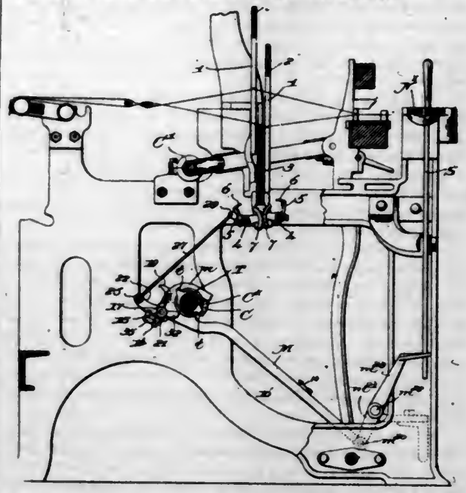
2. The combination with a front top-roll saddle having a slot extending lengthwise and countersunk on the under side, a bolt extending upward through the slot and having a square head in the countersunk portion of the slot, a nut on the bolt, a groove in the end of the bolt, and a weight-strap having a square opening in its upper end adapted to receive the saddle and bring the upper edge of the opening in the weight-strap into the groove in the end of the bolt to adjustably connect the weight-strap with the saddle, as described.

3. In top-roll saddles, the combination with the back saddle *c*, the front saddle *d* having the slot *d'* with the countersunk portion $d^3$, the bolt $d^3$ having the square head $d^4$ and the groove $d^5$, in its end, the nut $d^6$, and the weight-strap *e* having the inverted-stirrup-shaped upper end *e* with the opening $e^2$ to adjustably connect the weight-strap with the front top-roll saddle, as described.

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754,290. WARP STOP-MOTION FOR LOOMS. CLARE H. DRAPER, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 24, 1903. Serial No. 186,451. (No model.)

*Claim.*—1. In a warp stop-motion for looms, a series of detectors, a feeler to coöperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a member adapted to be moved to effect the operation of a stopping instrumentality, a rocker mounted on said member and operatively connected with the feeler, a bunter governed by the rocker, a follower fulcrumed on the movable member and coöperating with the feeler-cam, a cushion-spring to prevent shock on the feeling stroke of the feeler, and means acting through the follower to oscillate the rocker by intermittent impact thereon, to thereby move the feeler toward and away from the detectors, arrest of the feeler by a released detector instantly acting through the rocker to cause coöperation of the bunter with the bunter-cam, to move said movable member.



2. In a warp stop-motion for looms, a series of detectors, a feeler to coöperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a member adapted to be moved to effect the operation of a stopping instrumentality, a rocker mounted on said member and operatively connected with the feeler, a bunter governed by the rocker, a follower fulcrumed on the movable member and coöperating with the feeler-cam, a cushion-spring to prevent shock on the feeling stroke of the feeler, and means acting through the follower to oscillate the rocker by intermittent impact thereon, to thereby move the feeler toward and away from the detectors, arrest of the feeler by a released detector instantly acting through the rocker to cause coöperation of the bunter with the bunter-cam, to move said movable member.

3. In a warp stop-motion for looms, a series of detectors, a feeler to coöperate with a detector released by failure or undue slackness of its warp-thread, rotating feeler and bunter cams, a link longitudinally movable to effect the operation of a stopping instrumentality, a rocker mounted on said link and operatively connected with the feeler, a bunter governed by the rocker, a follower fulcrumed on the link and coöperating with the feeler-cam, and means acting through the follower to oscillate the rocker by intermittent impact thereon, to thereby move the feeler toward and away from the detectors, arrest of the feeler by a released detector instantly acting through the rocker to cause coöperation of the bunter with the bunter-cam, and move the link longitudinally.

4. In a warp stop-motion for looms, a series of detectors, a feeler to coöperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a member adapted to be moved to effect the operation of a stopping instrumentality, a rocker mounted on said member and operatively connected with the feeler, opposed impact-shoulders on the rocker, a bunter governed by the latter, a follower fulcrumed on the movable member and coöperating with the feeler-cam, and a tail movable with the follower and extended between the shoulders on the rocker, to oscillate the latter by intermittent impact on the shoulders and thereby move the feeler toward and from the detectors, arrest of the feeler by a released detector instantly acting through the rocker to cause coöperation of the bunter with the bunter-cam, to move said movable member.

5. In a warp stop-motion for looms, a series of detectors, a feeler to coöperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a link movable longitudinally to effect the operation of a stopping instrumentality, a spring-controlled rock-shaft mounted on the link and having fast upon it a follower to coöperate with the feeler-cam, a rocker loosely mounted on the rock-shaft and provided with a bunter movable into and out of the path of the bunter-cam, means acting through the follower to intermittingly engage and oscillate the rocker by impact therewith, and a

connection between said rocker and feeler, to operate the feeler by oscillation of the rocker, arrest of the feeler by a released detector instantly causing cooperation of the bunter and bunter-cam, to longitudinally move the link.

6. In a warp stop-motion for looms, a series of detectors movable into operative position when released by failure or undue slackness of their warp-threads, a vibratable feeler to cooperate with a released detector, momentum-operated means to vibrate the feeler and means adapted to cause the operation of a stopping instrumentality by or through engagement of the feeler with a released detector.

7. In a warp stop-motion for looms, a series of detectors movable into operative position when released by failure or undue slackness of their warp-threads, a vibratable feeler to cooperate with a released detector, momentum-operated means to move the feeler on its feeling stroke, a spring to cushion such stroke and thereby reduce the impact of the feeler upon a released detector, and means adapted to cause the operation of a stopping instrumentality upon engagement of the feeler and a detector.

8. In a warp stop-motion for looms, a series of detectors movable into operative position when released by failure or undue slackness of their warp-threads, a vibratable feeler to cooperate with a released detector, a rocker operatively connected with and to vibrate the feeler, means to overcome the inertia of the rocker by intermittent impact therewith, the completion of the stroke being due to its momentum, a member adapted by its movement to effect the operation of a stopping instrumentality, and means to cause movement of said member upon engagement of the feeler with a released detector.

9. In a warp stop-motion for looms, a series of detectors movable into operative position when released by failure or undue slackness of their warp-threads, a vibratable feeler to cooperate with a released detector, means to positively initiate the movement of the feeler toward the detectors, the completion of such movement being due to momentum of the moving parts, and a member adapted to cause the operation of a stopping instrumentality upon such engagement.

10. In a warp stop-motion for looms, a series of detectors, a feeler to cooperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a link movable longitudinally to effect the operation of a stopping instrumentality, a spring-controlled rock-shaft mounted on the link and having fast upon it a follower to cooperate with the feeler-cam, a rocker loosely mounted on the rock-shaft and provided with a bunter movable into and out of the path of the bunter-cam, opposed shoulders on the rocker, a connection between the latter and the feeler, to operate the feeler by oscillation of the rocker, and a tail on the follower extended between the shoulders of the rocker and having a limited movement relative thereto, whereby the rocker is oscillated by impact of said tail upon the rocker-shoulders, arrest of the feeler by a released detector instantly causing cooperation of the bunter and bunter-cam to longitudinally move the link.

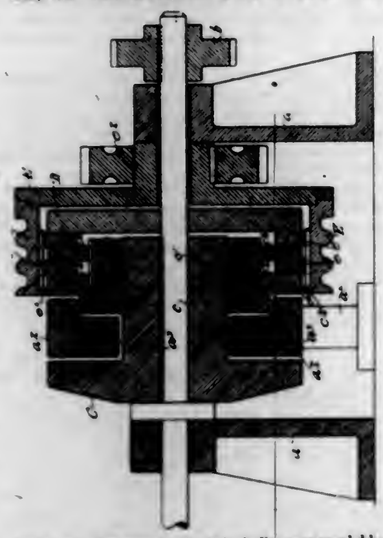
11. In a warp stop-motion for looms, a series of detectors, a feeler to cooperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a link movable longitudinally to effect the operation of a stopping instrumentality, a spring-controlled follower fulcrumed on the link and cooperating with the feeler-cam, a rocker coaxial with the follower and loosely mounted to rock on the link, said rocker having an attached bunter movable into and out of cooperative relation with the bunter-cam, opposed shoulders on the rocker, a laterally-extended impact member on the follower and extended between the shoulders and having lost motion between them, and a connection between the rocker and the feeler to move the latter toward and from the detectors by oscillation of the rocker, engagement of said impact member with the shoulders effecting such oscillation, arrest of the feeler by a released detector instantly causing cooperation of the bunter and bunter-cam to effect longitudinal movement of the link.

12. In a warp stop-motion for looms, a series of detectors, a feeler to cooperate with a detector released by failure of its warp-thread, rotating feeler and bunter cams, a link movable longitudinally to effect the operation of a stopping instrumentality, a spring-controlled follower fulcrumed on the link and cooperating with the feeler-cam, a rocker coaxial with the follower and loosely mounted to rock on the link, said rocker having an attached bunter movable into and out of cooperative relation with the bunter-cam, opposed shoulders on the rocker, a laterally-extended impact member on the follower and extended between the shoulders and having lost motion between them, a cushion-spring to prevent shock when the feeler engages a released detector, a connection between the rocker and the feeler to move the latter toward and from the detectors by or through the oscillation of the rocker, engagement of the impact member with the rocker-shoulders effecting such oscillation, and a stop to limit feeler-retracting movement of the rocker, arrest of the feeler by a released detector instantly acting to cause cooperation of the bunter and bunter-cam.

13. In a warp stop-motion for looms, a series of detectors movable into operative position when released by failure or undue slackness of their warp-threads, a vibratable feeler to cooperate with a released detector, means to positively initiate the movement of the feeler toward and away from the detectors, the completion of such movement being due to momentum of the moving parts, a spring to partly neutralize the momentum on the feeling stroke and to retract the feeler when engaged by a released detector, and a member adapted to cause the operation of a stopping instrumentality upon such engagement.

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**754,291. MAGNETIC CLUTCH.** ARTHUR C. EASTWOOD, Cleveland, Ohio. Filed Jan. 26, 1904. Serial No. 190,794. (No model.)



*Claim.*—1. A magnetic clutch including two revolubly-supported members, each having a series of rings fixed to it with a stationary coil placed to act on said rings to operatively couple the members, substantially as described.

2. A clutch having two members constructed to frictionally engage each other, a casing inclosing the engaging surfaces of said members, liquid in said casing, and a magnet for drawing said two members together, substantially as described.

3. A stationary magnet, two members constructed to frictionally engage each other and placed to be drawn together by said magnet, with a casing inclosing said members and a liquid in said casing, substantially as described.

4. The combination of a fixed magnet, a pair of rings of magnetizable material both on the same side of the magnet and connected respectively to the driving and driven apparatus with an armature on the opposite side of the magnet from the rings, substantially as described.

5. The combination in a clutch of a fixed magnetizing-coil, a flanged body of metal extending through said coil, a ring of non-magnetic metal adjacent to the coil, a series of rings of magnetizing material on said first ring, a second series of rings of magnetizing material, independent of the other series, said rings being placed to be included in the magnetic circuit of the magnet, substantially as described.

6. The combination of two series of parallel rings, supporting-pieces for each of said sets of rings, certain of the same forming a closed casing, with a magnet and a core therefor, said magnet being placed to include the rings in its magnetic circuit, substantially as described.

7. The combination of a casing having a surface provided with projecting portions, bodies of metal attached to said casing, an armature having portions within said casing placed to coact with the bodies of metal therein, liquid in the casing and a magnet placed to act on the armature and on the bodies of metal coacting with the same to draw them together, substantially as described.

8. The combination of a liquid-tight casing having a portion operatively connected to a driving device and another portion connected to a driven device, frictionally-coacting bodies of metal within the casing and connected to its respective parts, with a magnet placed to act on the said bodies of metal to draw them together, substantially as described.

9. The combination of a ring of magnetizable metal, a coil supported thereby in a fixed position, a disk revolubly supported on one side of the coil having a portion extending through the same, a body of non-magnetizable metal on said portion, a metallic ring on said body of metal, a second disk also having a metallic ring coacting with the other ring with means for dissipating heat generated by the frictional engagement of said two rings, substantially as described.

10. A clutch having members constructed to frictionally engage each other to couple a driving with a driven device, means for causing said members to grip each other, and a casing surrounding the members, with liquid in the casing bathing portions of the said members, substantially as described.

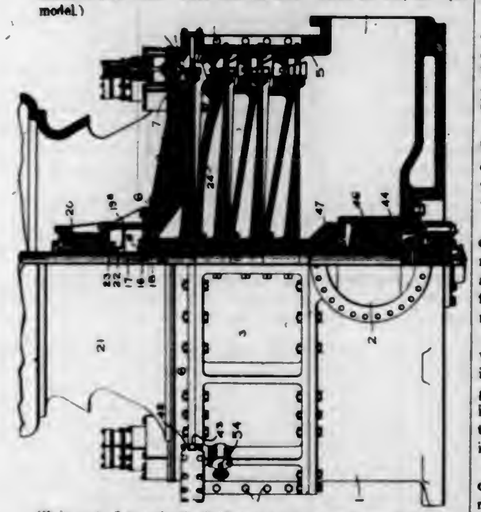
11. A clutch having members constructed to frictionally engage each other to couple a driving with a driven device, means for causing said members to grip each other, and a casing surrounding the members, with a liquid in the casing bathing portions of said members, said casing having its peripheral portion roughened and made with a relatively extended surface, substantially as described.

12. The combination of a casing having within and fixed to it a metallic ring, a shaft passing through the casing and also having a ring fixed to it, an armature coacting with one of the rings and a relatively stationary magnet placed to act on said rings and armature, substantially as described.

13. The combination of a shaft having on it an armature-plate and a series of rings, a sleeve also on said shaft having connected to it a second series of rings placed to coact with those of the first series, means for connecting the shaft and the sleeve between a driving and a driven device, with a magnet between the armature-plate and said two series of rings, substantially as described.

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**754,292. ELASTIC-FLUID TURBINE.** WILLIAM L. R. EMMET, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Mar. 14, 1903. Serial No. 147,725. (No model.)



*Claim.*—1. In an elastic-fluid turbine, the combination of a plurality of separate compartments or shells, a wheel for each shell, a double row of buckets for each wheel, one on each side of the plane of the wheel, supports for the buckets which are secured to the sides of the wheel, a single row of intermediate buckets for each compartment or shell which is in line with the wheel-periphery, and nozzles for delivering motive fluid to the several wheels.

2. In an elastic-fluid turbine, the combination of a plurality of separate compartments or shells, a wheel for each shell having a smooth periphery, a double row of buckets for each wheel, supports for the buckets which are secured to opposite sides of the wheel, a single row of intermediate buckets for each compartment or shell which is situated between the double rows of buckets and opposite the wheel-periphery, and expanding nozzles for delivering motive fluid to the buckets, each nozzle having a rectangular throat and a similar discharge end.

3. In a turbine, the combination of a wheel or support having a shoulder formed on one side of its rim, with detachable buckets which extend radially beyond the rim and engage with said shoulder, the bottom of the passage between the buckets being located beyond the rim, and a cover which closes in the space between the outer ends of the buckets.

4. In a turbine, the combination of a wheel or support having a shoulder formed on one of its faces, detachable buckets formed integral with a support which engages with the shoulder, the bottom of the bucket-passage being located beyond the wheel-rim, means for holding the support in engagement with the shoulder, and a segmental cover which is secured to the outer ends of the buckets.

5. In a turbine, the combination of a wheel or support having shoulders formed on opposite faces, detachable buckets, supports therefor arranged in segmental form and provided with shoulders which interlock with the wheel-shoulders, means for retaining the buckets in place, and a cover which closes in the outer ends of the buckets whereby the motive fluid is caused to flow from one side to the other.

6. In a turbine, the combination of a wheel or support having a web with a peripheral flange which extends both sides thereof and forms shoulders, buckets having hook-like projections which engage with the shoulders, retaining means that pass through the bucket projections into the wheel, and a cover which closes in the outer ends of the buckets and causes the motive fluid to flow from one side to the other.

7. In a turbine, the combination of a wheel or support having a web, detachable segmental buckets having shanks formed integral therewith which engage with opposite sides of the wheel-web, and retaining-bolts which pass through the shanks and also through the web.

8. In an elastic-fluid turbine, the combination of a shell, a wheel within the shell having cylindrical shoulders formed on opposite sides thereof, detachable buckets having projections which engage with the shoulders for resisting the centrifugal strains, a single row of intermediate buckets in the shell and extending between the wheel-buckets, and a nozzle for delivering a jet of motive fluid to the wheel.

9. In an elastic-fluid turbine, the combination of a row of buckets, a support and cover therefor which project beyond one edge of each bucket and are flush with the other edge, a second row of buckets adjacent thereto, and a support and cover therefor which project beyond the buckets on the side adjacent to the first row of buckets and are flush therewith on the opposite side.

10. In an elastic-fluid turbine, the combination of a plurality of buckets having sharpened front and rear edges, with a support and cover therefor which project beyond the sharpened front edge of the bucket and are provided with cut-away surfaces to facilitate the entrance of motive fluid to the passages between buckets.

11. In an elastic-fluid turbine, the combination of a wheel, a casing therefor having a groove formed in the interior wall, an intermediate bucket-support which is seated in said groove, a diaphragm, a shoulder between the diaphragm and the casing whereby the former is supported, and nozzles for converting the pressure of the motive fluid into velocity and discharging it against the wheels.

12. In an elastic-fluid turbine, the combination of two or more wheels, a casing which incloses the wheels and has a groove formed in the interior wall, intermediate buckets which are fitted into the groove and are situated entirely within the casing, bolts for securing the buckets in place which are accessible from the outside of the casing, and a diaphragm for separating adjacent wheels which is entirely inclosed by the casing.

13. In an elastic-fluid turbine, the combination of a wheel, a casing which incloses the wheel and has a groove formed in the interior wall, intermediate buckets which are fitted into the groove and are situated entirely within the casing, bolts for securing the buckets in place which are accessible from the outside of the casing, and an enlargement on each of the bolts for preventing the escape of motive fluid around its body.

14. In an elastic-fluid turbine, the combination of a wheel, a casing therefor, intermediate buckets and their support which are entirely inclosed by the casing, bolts which enter the casing from the outside, and a conical enlargement under each bolt-head for preventing the escape of motive fluid around its body.

15. In an elastic-fluid turbine, the combination of a plurality of

wheels having radial buckets, a sectional casing having an inwardly-extending projection formed integral therewith, which overhangs the wheel and has a nozzle cast therein, said nozzle comprising closely-associated passages for delivering fluid to the wheel, a detachable diaphragm between the wheels which rests on the projection, and a shoulder between the projection and the diaphragm.

16. In a staged turbine, the combination of a casing having a projection which overhangs a bucket-wheel, a shoulder which is formed on its inner wall and outside of a wheel-periphery, nozzles for the projection, a diaphragm which rests on the projection, a second diaphragm larger than the first, which rests on the shoulder, and bucket-wheels inclosed by the casing and located adjacent to the diaphragms.

17. In a turbine, the combination of a bucket-wheel, a casing therefor having a projection which extends inward over the buckets toward the axis of the wheel, nozzles for delivering motive fluid to the wheel, which are formed in the projection, a shoulder formed on the projection, and a diaphragm which is seated on said shoulder.

18. In an elastic-fluid turbine, the combination of a wheel having rows of buckets, intermediate buckets situated between the wheel-buckets, and a cylindrical casing comprising a number of sections, divided in axial planes which are removable radially to expose the wheel and intermediate buckets, certain of said sections being provided with nozzles cast therein.

19. A turbine-casing comprising a cylinder which is split into sections in radial planes, certain of the sections having a plurality of closely-associated nozzle-passages and the remainder being without.

20. In a turbine, the combination of a bucket-wheel, a casing therefor comprising a plurality of sections each of which is provided with a projection that extends inward over the buckets, and a plurality of closely-associated nozzle-passages which are formed in certain of the said projections and not in others.

21. In a turbine, the combination of a casing having a shoulder formed on the inside thereof, a cover for the casing, a bucket-wheel, and a diaphragm which rests on the shoulder and is held there by its own weight and by the pressure to which it is subjected.

22. In a turbine, the combination of a casing having two or more internal shoulders formed thereon, a cover for the top of the casing, two or more bucket-wheels mounted on a common shaft, and diaphragms which separate the wheels one from the other and rest on the shoulders within the casing and are retained in place by their own weight and by the pressure to which they are subjected.

23. In a turbine, the combination of a casing having an internal shoulder formed thereon at a point between the ends, a bucket-wheel, a diaphragm which rests on the shoulder and is held in place by its own weight and by the pressure to which it is subjected, and nozzles which are movable with the diaphragm.

24. In a turbine, the combination of a cylindrical casing having a shoulder and a guide formed thereon at a point between its ends, a diaphragm which rests on the shoulder and is held by its own weight and by the pressure exerted thereon, and is prevented from moving laterally by engaging with said guide, a nozzle movable with the diaphragm, and a bucket-wheel receiving motive fluid from the nozzle.

25. In an elastic-fluid turbine, the combination of bucket-wheels, a casing which incloses all of the wheels and is separated in axial planes, shoulders formed on the inner walls of the casing between the ends, and diaphragms which separate the space between the wheels and are supported by the shoulders.

26. In an elastic-fluid turbine, the combination of a plurality of wheels, a casing which incloses the wheels, a projection on the inner wall of the casing which is provided with a shoulder and a groove, a diaphragm which separates one wheel from the next and rests on the shoulder, and intermediate buckets which are seated in the groove.

27. In an elastic-fluid turbine, the combination of a plurality of stages, a wheel for each stage, adjustable intermediates for the high-pressure stage, and fixed intermediates for the lower-pressure stages.

28. In an elastic-fluid turbine, the combination of a plurality of stages working at successively-decreasing pressures, a bucket-wheel for each stage, a nozzle for each stage, and intermediate buckets for each stage which are separated by a clearance from the wheel-buckets, the said clearances gradually increasing in amount as the pressure in the stages decreases, substantially as and for the purpose described.

29. A nozzle for a turbine comprising a body of metal having a plurality of closely-associated expanding discharge-passages, each having a throat and a discharge end, both of which form parallelograms in cross-section, the discharge end of the several passages being arranged to deliver the motive fluid in a solid stream, in combination with a shoulder formed in said body of metal adjacent to the passage, and a diaphragm which rests on the shoulder.

30. In a turbine, the combination of bucket-wheels, a casing therefor, a diaphragm between the wheels, and an expanding nozzle formed in said diaphragm comprising a plurality of closely-associated sections, each of which has a throat and a discharge end both of which form parallelograms in cross-section, the discharge ends of the several passages being arranged to discharge the motive fluid in a solid stream.

31. In an elastic-fluid turbine, the combination of a bucket-wheel and intermediate, a deflector partially surrounding a row of wheel-buckets and having one edge nearly in line with the clearance between the moving and intermediate buckets whereby the water discharged from the wheel due to centrifugal force is collected.

32. In an elastic-fluid turbine, the combination of a bucket-wheel, intermediate buckets located between wheel-buckets, and a perforated deflector situated beyond the wheel-buckets for collecting water thrown from the wheel.

33. In an elastic-fluid turbine, the combination of a plurality of bucket-wheels, intermediate buckets, a diaphragm between one wheel and the next, and a deflector which is attached to the diaphragm for collecting water thrown from the wheel.

34. In an elastic-fluid turbine, the combination of two or more stages, a wheel for each stage, a diaphragm which separates one stage from the next, water-conveying passages which extend from one stage to the next, and deflectors which are situated between the passages and the wheels.

35. In an elastic-fluid turbine, a plurality of separate nozzle sections or passages grouped together and arranged to discharge motive fluid as a solid stream, each nozzle section or passage having a throat and discharge end which in cross-section form a parallelogram, bowls which are anterior to said nozzle sections or passages, a casing in which the nozzle is formed, and a diaphragm which rests on the casing.

36. In an elastic-fluid turbine, the combination of a casing, a bucket-wheel, a cover for the casing having radially-extending openings on the under side, the upper end of said casing acting as the lower wall for said openings, and intermediate buckets which are mounted in said openings.

37. In an elastic-fluid turbine, the combination of a casing, a bucket-wheel, a cover for the casing having radially-extending openings on the under side, the upper end of said casing forming the lower wall for the openings, intermediate buckets which are mounted in said openings, axially-extending nozzle-receiving openings, and nozzles which are located in the axial openings.

38. In an elastic-fluid turbine, the combination of a casing having a shoulder, a gutter formed in the shoulder for collecting water due to condensation, and a diaphragm mounted on the shoulder.

39. In an elastic-fluid turbine, the combination of a casing having a projection which extends inwardly over the wheel-buckets, nozzles carried thereby, a gutter formed in the projection, a passage for drawing the water from the gutter, and a bucket-wheel.

40. In a turbine, the combination of a plurality of bucket-wheels, a diaphragm between each pair of wheels, a sectional casing for the wheels which is divided in axial planes, each section covering a plurality of wheels.

41. In a turbine, the combination of a plurality of wheels, a sectional casing which surrounds the wheels and is divided in axial planes, each of said sections being common to a plurality of wheel-chambers.

42. In a turbine, the combination of a casing, a diaphragm engaging with a seat on the casing and normally held in place by the pressure to which it is subjected, and means for preventing the diaphragm from leaving its seat when the pressure thereon is removed.

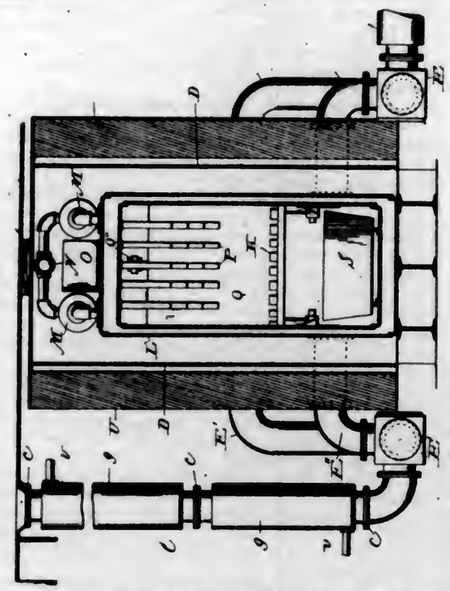
43. In a turbine, the combination of a casing having a seat formed thereon, a diaphragm engaging therewith and normally held against the seat by the pressure to which it is subjected, and bolts which engage with the diaphragm for preventing it from leaving its seat when the pressure is removed from the diaphragm.

44. In an elastic-fluid turbine, the combination of a shell or casing, a wheel mounted therein having a single-piece web, a double row of buckets for the wheel, supports for the buckets which are secured to opposite sides of the wheel-web, a single row of intermediate buckets located between the rows of wheel-buckets, and means for discharging motive fluid against the buckets.

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**754,293. HEATING AND VENTILATING APPARATUS.** WILLIAM M. PERRY, Park City, Utah. Filed Apr. 28, 1903. Serial No. 154,963. (No model.)

*Claim.*—1. In a heating and ventilating system, the combination of a heater for an apartment, a descending ventilating-pipe leading from the apartment to the heater, and means for cooling the descending portion of the said ventilating-pipe, substantially as set forth.



2. The combination of a discharge-conduit through which heated vapors are passed, a descending ventilating-pipe leading from an apartment and connected with the said discharge-pipe, and means for cooling the descending portion of the said ventilating-pipe, substantially as set forth.

3. In a heating and ventilating system, the combination of a furnace, a descending ventilating-pipe leading from an apartment to be heated and ventilated to the furnace, the said pipe passing in its course downward through the furnace-room, and means for cooling the descending portion of the ventilating-pipe situated within the furnace-room, substantially as set forth.

4. In a heating and ventilating system, the combination of a discharge-conduit through which heated vapors are passed, a descending ventilating-pipe leading from an apartment and connected with the said discharge-conduit, and means for cooling the descending portion of the ventilating-pipe arranged above the level of the connection of the ventilating-pipe with the discharge-conduit, substantially as set forth.

5. In a heating and ventilating system, the combination with a discharge-conduit through which heated vapors pass, a ventilating-pipe leading from an apartment connected with such conduit, and a series of connected chambers adapted to contain a cooling medium surrounding the descending portion of the ventilating-pipe, substantially as set forth.

6. In an apparatus for heating and ventilating buildings, the combination of a steam or hot-water heater having an internally-located fuel-grate, and a casing surrounding such heater arranged to receive and heat fresh air, flues connecting the air-space of the said casing with the apartment to be heated and ventilated, a descending return or foul-air pipe leading from the apartment back to the heater, the descending portion of the said return or foul-air pipe being jacketed whereby it is adapted to be kept cool by a cooling medium circulating in the jacket of the pipe, and means for directing the foul air passing through the said pipe either into the smoke-stack or under the grate or into the combustion-chamber above the grate accordingly as such means are adjusted, substantially as set forth.

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**754,294. HORSE-BLANKET.** IDA J. FOGLESONG, St. Paul, Minn. Filed Sept. 17, 1903. Serial No. 173,574. (No model.)

*Claim.*—1. A horse-blanket comprising in its construction an outer sheet or portion and a lining or inner portion, pockets being formed at short intervals in the lining and open spaces 5 being left to extend between each two pockets, and the outer portion and lining being suitably united; and insulated wires extending through the said pockets with their projecting terminals adapted to be connected to an electrical source of supply.



2. A horse-blanket comprising in its construction an outer sheet or portion, and a lining having pockets or plaits formed therein at short intervals by folding a portion of the material upon itself and stitching together the edges of said plaits or folds, open spaces 5 being left to extend between each two pockets or plaits, and the outer portion and lining being suitably united; and insulated wires extending through the said pockets, with their projecting terminals adapted to be connected to an electrical source of supply.

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**754,295. BIT-STOCK.** JOSEPH FOIT, Wellston, Ohio. Filed June 29, 1903. Serial No. 163,581. (No model.)



*Claim.*—1. In a bit-stock, a handle having two parallel arms one above the other and at right angles thereto, one of the arms being longer than the other and provided with a handle parallel with respect to the first-mentioned handle, the shorter arm having a series of bit-sockets, substantially as specified.

2. In a bit-stock, a handle having two arms bent at right angles thereto, one above the other and parallel with respect to each other, one of the arms being longer than the other, the longer arm having a handle at a right angle thereto and parallel with respect to the first-mentioned handle, the shorter arm having a series of bit-sockets adapted to receive bits, and means for locking bits within the sockets, substantially as specified.

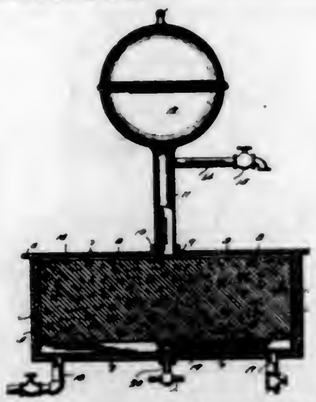
3. In a bit-stock, a handle having two arms bent at right angles thereto one above the other and parallel with respect to each other, one of the arms being longer than the other, the longer arm having a handle at a right angle thereto and parallel with respect to the first-mentioned handle, the shorter arm having a series of bit-sockets, a plate pivoted to the free end of the shorter arm, the said plate adapted to fold down over the said sockets, and means for locking the plate in position, substantially as shown and for the purpose described.

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**754,296. WATER-FILTER.** SAMUEL R. FOREMAN and RICHARD T. LIGHTFOOT, Paducah, Ky. Filed Sept. 21, 1901. Renewed Dec. 22, 1903. Serial No. 186,237. (No model.)

*Claim.*—1. In a filter, a casing comprising an upper and a lower section having engaging threaded flanges, said upper section being provided on the under side of the top thereof with radial ribs merging into an escape-opening, in combination with a filtering-stone permanently secured in the flanged upper section and spaced from the bottom of the lower section of the casing, an inlet and an exit for unfiltered water in the bottom of said lower casing, and a rotary clean-

ing device normally supported upon the bottom of said casing and having an operating-stem extending through and bearing in the latter and provided with a handle.

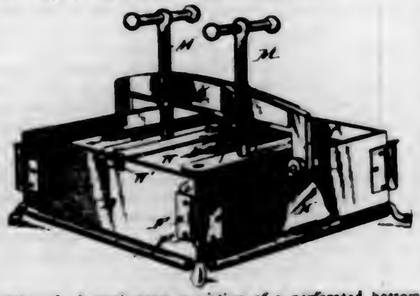


2. In a filter, a casing comprising flanged upper and lower members having threaded connection with each other, said upper member being provided with a water-exit and with ribs directing filtered water toward said exit, a filtering-stone tightly seated in the upper member of said casing and spaced from the bottom of the lower member of the casing, and a rotatable cleaner mounted in the bottom of said lower member of the casing and having arms extending diametrically across the lower face of the filtering-stone and provided with an operating-stem journaled centrally in the bottom of said lower member, the latter being provided with an inlet and an exit for unfiltered water.

3. The herein-described filtering-casing comprising upper and lower flanged members having threaded engagement with each other and the upper member of the casing being provided with radially extending lugs, in combination with a filtering-stone permanently seated in the upper member of the casing.

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**754,297. MEAT-PRESS.** GUSTAVE FREYSLEBEN, San Diego, Cal. Filed Aug. 12, 1903. Serial No. 169,207. (No model.)



*Claim.*—1. A meat-press consisting of a perforated bottom, sides and end boards hinged to the said bottom, detachable corner-fastenings consisting of fixed loops and a locking-pin, a follower, and a detachable D-frame providing support for compressing-screws, adapted in operation, to apply pressure to the said follower, substantially as described.

2. In combination with a meat-press having hinged sides and end boards, corner-fastenings, compressing-screws and a follower, a D-frame providing support for the compressing-screws, and plates fixed to the said end boards, having perforated ears adapted for connection with the D-frame and with their lower ends forming one member of the hinge connection to the bottom of the press, substantially as shown and described.

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**754,298. PRODUCTION OF RESINOUS SUBSTANCES.** GEORGE FRY, Berwick-upon-Tweed, England. Filed Dec. 12, 1902. Serial No. 134,991. (No specimens.)

*Claim.*—1. The production of resinous substances, suitable for the manufacture of varnishes, by the oxidation of vegetable hydrocarbons through their nitrification with nitric acid, and the subsequent decomposition of the nitro compound so formed.

2. The production of resinous substances, suitable for the manufacture of varnishes, by the oxidation of the lower oxids of vegetable hydrocarbons through their nitrification, with nitric acid, and the subsequent decomposition of the nitro compounds so formed.

3. The production of resinous substances suitable for the manufacture of varnishes, by the oxidation of colophony through its nitrification with nitric acid and the subsequent decomposition of the nitro compounds so formed.

4. The production of resinous substances, suitable for the manufacture of varnishes, by the oxidation of mixtures of vegetable hydrocarbons, their lower oxids and colophony through the nitrification of such mixtures with nitric acid and the subsequent decomposition of the nitro compounds so formed.

5. The production of oleo-resinous substances, suitable for the manufacture of varnishes, by the oxidation of solutions composed of vegetable hydrocarbons dissolved in drying-oil, through the nitrification of such solutions with nitric acid and the subsequent decomposition of the nitro compounds so formed.

6. The production of oleo-resinous substances, suitable for the manufacture of varnishes, by the oxidation of solutions composed of the lower oxids of vegetable hydrocarbon dissolved in drying-oil, through the nitrification of such solutions with nitric acid and the subsequent decomposition of the nitro compounds so formed.

7. The production of oleo-resinous substances, suitable for the manufacture of varnishes by the oxidation of solutions composed of colophony dissolved in drying-oil through the nitrification of such solution with nitric acid, and the subsequent decomposition of the nitro compounds so formed.

8. The production of oleo-resinous substances, suitable for the manufacture of varnishes by the oxidation of solutions composed of mixtures of vegetable hydrocarbons, their lower oxids and colophony, dissolved in drying-oil through the nitrification of such solutions with nitric acid and the subsequent decomposition of the nitro compounds so formed.

9. The production of self-colored varnishes, of shades of orange and red, consisting of solutions of substances resulting from the action of a temperature approximating 212° Fahrenheit on resinous substances produced from vegetable hydrocarbons, from the lower oxids of such hydrocarbons, from colophony, and from mixtures of these substances by their oxidation through nitrification with nitric acid, and the subsequent decomposition of the nitro compounds so formed.

10. The production of self-colored varnishes from vegetable hydrocarbons with drying-oils, oxidized by means of nitric acid, decomposed, and modified by the action of regulated and controlled heat.

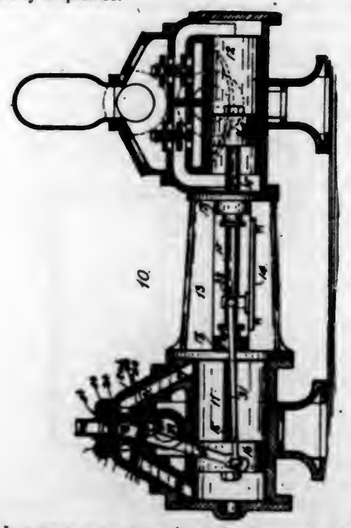
11. The production of self-colored varnishes, of shades of red and red brown, consisting of solutions of substances resulting from the action of a temperature approximating 212° Fahrenheit on oleo-resinous substances produced from solutions in drying-oil or vegetable hydrocarbons, of the lower oxids of such hydrocarbons, and of colophony, by the oxidation of such oil solutions through nitrification with nitric acid, and the subsequent decomposition of the nitro compounds so formed.

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**754,299. VALVE.** LEONARD L. GRIFFITH, New York, N. Y. Filed Apr. 1, 1903. Serial No. 150,533. (No model.)

*Claim.*—1. In a steam-motor, the valve-casing having main steam and exhaust ports therein communicating with the motor, and auxiliary steam and exhaust ports communicating with the interior of the casing adjacent to its ends, an oscillatory valve arranged within said casing and adapted to move longitudinally therein under the impulse of the operating fluid, a set of steam and exhaust passages arranged in said valve adjacent to one end thereof, and a set of steam and exhaust passages arranged therein adjacent to its opposite end, adapted to alternately communicate with the main and auxiliary steam and exhaust ports, and means connected to the motor for reversing the passage of the steam and exhaust from the main and auxiliary steam and exhaust ports, through the passages in said valve, substantially as specified.

2. In a steam-motor, the valve-casing having main steam and exhaust ports communicating with the motor, auxiliary steam and exhaust ports communicating with a part of said casing and auxiliary steam and exhaust ports communicating with the opposite part of said casing, an oscillatory valve arranged in said casing and adapted to move longitudinally therein under the impulse of the motive fluid, a set of steam and exhaust passages in said valve adjacent to its forward end, and a set of steam-exhaust passages in said valve adjacent to its rear end adapted to alternately communicate with the main and auxiliary steam and exhaust ports in said casing, and means for actuating said valve connected to the motor and operated thereby, substantially as specified.



3. In a steam-motor, the valve-casing having main steam and exhaust ports therein communicating with the motor, auxilary steam and exhaust ports communicating with the forward and rear ends of said casing, a shaft supported partly within and partly without said casing, a valve slidably arranged upon the inner end of said shaft and adapted to rotate therewith, a set of steam and exhaust passages extending through said valve, a similar set of exhaust and steam passages arranged at an angle to and to the rear of the first-named set, and mechanism intermediate the outer end of the valve-shaft and piston-rod of the motor for actuating said valve, substantially as specified.

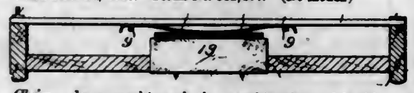
4. In a steam-motor, the cylindrical valve-casing having main steam and exhaust ports therein communicating with the motor, auxiliary steam and exhaust ports communicating with the forward end of said casing, auxiliar ysteam and exhaust ports communicating with the rear end of said casing, a shaft supported partly within and partly without said casing, a cylindrical valve arranged upon the inner end of said shaft within said casing adapted to move longitudinally thereon and rotate therewith, steam and exhaust passages arranged parallel to each other and extending through said valve, similar steam and exhaust passages arranged in said valve to the rear of said first-named passages therein, and operating mechanism connected to and arranged intermediate the projecting end of the valve-shaft and the piston-rod of the motor whereby to reverse the valve at or near the completion of the stroke of the motor-piston in each direction, substantially as specified.

5. In a steam-motor, the cylindrical valve-casing having main steam and exhaust ports therein communicating with the motor, auxiliary steam and exhaust ports communicating with the forward and rear ends of said casing, a shaft supported partly within and partly without said casing, a valve arranged upon its inner end within the casing and provided with steam and exhaust passages adapted to communicate with the main and auxiliary steam and exhaust ports therein, an arm fixed to the outer end of said shaft, a segmental slot therein, an arm loosely carried by the outer end of said shaft, a stud on said last-named arm extending into the segmental slot in the fixed arm, and a link having one end pivotally connected to the lower end of the loose arm, and its other end pivotally connected to the piston-rod of the motor whereby to actuate the fixed arm, the shaft and valve mounted thereon, at or near the end of the stroke of the motor-piston in each direction, substantially as specified.

6. In a steam-motor, the cylindrical valve-casing arranged at right angles to the motor-cylinder and piston therein, main steam and exhaust ports arranged midway of said casing ends, main steam and exhaust portways in line with the main steam and exhaust ports and communicating with the motor, auxiliary steam and exhaust ports in the valve-casing intermediate one main portway and the main steam inlet and exhaust and communicating with the forward end of said valve-casing, auxiliary steam and exhaust ports arranged intermediate the other of said main portways and the main steam inlet and exhaust and communicating with the rear end of said valve-casing, a shaft arranged partly within and partly without said valve-casing, splines at its inner and outer ends, a cylindrical slide-valve arranged upon the inner splined end of said shaft, steam and exhaust passages arranged parallel to each other and extending through said valve, a second steam and exhaust passage also extending through said valve to the rear of and at an angle to the passages first named, a segmental arm keyed to the outer splined end of the valve-shaft having a segmental slot therein, an arm loosely carried upon the outer end of said valve-shaft having a stud upon its rear surface extending into the slot in the keyed segmental arm, and a link having one end pivotally connected to the outer end of the loose arm, and its other end pivotally connected to the piston-rod of the motor, substantially as specified.

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**754,300. WASHBOARD.** HAROLD M. HAAS, Cincinnati, Ohio. Filed Nov. 24, 1903. Serial No. 182,477. (No model.)



*Claim.*—In a washboard, the combination with side strips, a retaining-strap upon one of the side strips, and a locking device on the other strip; of an apertured head interposed between the side strips, retaining-stripe extending across the aperture and secured to the head, a cross-bar adapted to engage the strap and to be secured in position by the locking device, a block interposed between the cross-bar and the aperture, a longitudinally-slotted bow-spring bearing upon the block, and guide-pins extending from the cross-bar and projecting through the slots, said bow-spring being adapted to project the block into the aperture.

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**754,301. MANUFACTURE OF HARDENED-STEEL PROJECTILES OR OTHER ARTICLES.** ROBERT A. HADFIELD, Sheffield, England. Filed June 24, 1901. Serial No. 65,802. (No model.)

*Claim.*—1. The method of hardening nickel-chromium-steel articles, which consists in heat-treating the article to raise the temperature thereof to about 900° centigrade and upward, and thereafter subjecting such heated article to the direct action of a blast or current of air.

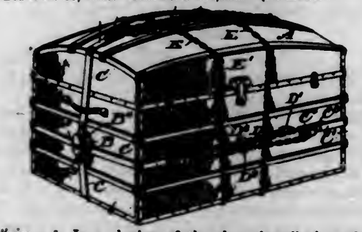
2. The method of hardening nickel-chromium-steel projectiles, which consists in heat-treating the projectile to raise the temperature thereof to about 900° centigrade and upward, and thereafter subjecting such heated projectile to the direct action of air at low temperature.

3. The method of producing hardened-steel articles, which consists in casting the article of nickel-chromium steel, raising the internal temperature of the article to 900° centigrade and upward, and thereafter subjecting the heated article to the action of a blast or current of air.

4. The method of producing hardened-steel projectiles, which consists in casting the projectile of nickel-chromium steel, raising the internal temperature of the projectile to 900° centigrade and upward, and thereafter subjecting the heated projectile to the action of a blast or current of air.

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**754,302. TRUNK-PROTECTOR.** JOSEPH HAIGH, Wetmore, Kans. Filed Nov. 18, 1903. Serial No. 181,668. (No model.)



*Claim.*—1. In a device of the class described, a plurality of straps disposed at an angle to each other upon the opposite ends of a receptacle and having free ends bent to extend upon the top, bottom, and sides thereof, means for connecting the adjacent ends of said straps together upon the ends of the receptacle, and means upon

the top, bottom and sides of the receptacle for connecting the free ends of said straps.

2. In a device of the class described, a plurality of straps disposed at an angle to each other and at the opposite ends of receptacle, a clamping device to receive the adjacent meeting ends of said straps for detachably and adjustably securing them together, means for connecting the free ends of said straps, and means for tightening said connecting means.

3. In a device of the class described, a plurality of straps extended at an angle to each other and disposed at the opposite ends of a receptacle, a clamping-cup adapted to receive the meeting ends of said straps, a cap adjustably mounted upon said cup for engaging said straps, and means for connecting the free ends of the straps.

4. In a device of the class described, a plurality of straps extended at an angle to each other and disposed at the opposite ends of a receptacle, a clamping-cup adapted to receive the meeting ends of said straps, a cap adjustably mounted upon said cup for engaging said straps, means for connecting the free ends of the straps, and a centrally-threaded post within said cup adapted to engage a threaded aperture in said cap.

5. In a device of the class described, a plurality of straps extended at an angle to each other and disposed at the opposite ends of a receptacle, a clamping-cup adapted to receive the meeting ends of said straps, a cap adjustably mounted upon said cup for engaging said straps, means for connecting the free ends of the straps, a central threaded post within said cup adapted to engage a threaded aperture in said cap, and an interiorly-threaded flange upon said cap engaging an exteriorly-threaded face upon said cup.

6. In a device of the class described, a plurality of straps extended at an angle to each other and disposed at the opposite ends of a receptacle, a clamping-cup adapted to receive the meeting ends of said straps, a cap adjustably mounted upon said cup for engaging said straps, means for connecting the free ends of said straps, a central threaded post within said cup adapted to engage a threaded aperture in said cap, an interiorly-threaded flange upon said cap engaging an exteriorly-threaded face upon said cup, a loop at the free end of said straps through which the connecting means passes, and means for tightening said connecting means.

7. In a device of the class described, a plurality of straps disposed at an angle to each other and upon the opposite ends of a receptacle with their free ends extended upon the adjacent faces of the receptacle, parallel strands for connecting the free ends of said straps, and a flexible clamping-band extending transversely around connecting-strands between the straps to draw the same together.

8. In a device of the class described, a plurality of straps disposed at an angle to each other and upon the opposite ends of a receptacle with their free ends extending upon the adjacent faces of the receptacle, means for connecting the free ends of said straps, a flexible auxiliary securing means extending transversely of the connecting means between the straps, and a connecting-bar upon the bottom of the receptacle having loops at its opposite ends through which the auxiliary securing means pass.

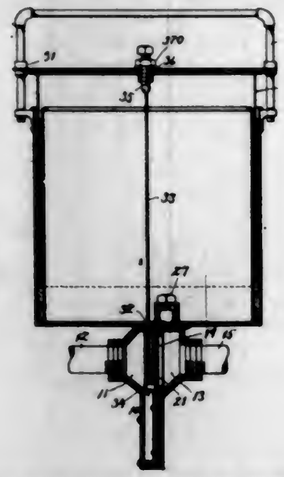
9. In a device of the class described, a plurality of straps disposed at an angle to each other and upon the opposite ends of a receptacle with their free ends extending upon the adjacent faces of the receptacle, means for flexibly connecting the free ends of said straps, a flexible auxiliary securing means extending transversely of the connecting means between the straps, a connecting-bar upon the bottom of the receptacle having loops at its opposite ends through which the auxiliary securing means pass, a bearing-roller carried by the looped free ends of the straps, and a clamping-band extending between the parallel strands of the flexible connecting means for drawing the same together.

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**754,303. AIR AND GAS REGULATING APPARATUS. EDWIN A. HALL, Hydepark, Mass. Filed Mar. 7, 1903. Serial No. 146,665. (No model.)**

*Claim.*—1. In an air and gas regulating apparatus, the combination of a mixing-chamber, air and gas chambers connecting therewith through ports or openings, flat sliding valves controlling said ports, an expansible-chamber mechanism independent of and communicating with said mixing-chamber and having a movable wall structure, the communicating port or passage being relatively small, direct connections between said movable wall structure and the valves, whereby the latter receive synchronous movements so as to similarly vary the aperture through the air and gas ports, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.

2. In an air and gas regulating apparatus, the combination of a mixing-chamber, air and gas chambers connecting therewith through ports or openings, independent valves controlling said ports, a liquid-sealed expansible-chamber mechanism independent of and communicating with said mixing-chamber and having a movable float structure, the communicating port or passage being relatively small, direct connections between said movable float structure and the valves, whereby the latter receive synchronous movements which similarly vary the aperture through said air and gas ports, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.




3. In an air and gas regulating apparatus, the combination of a mixing-chamber, air and gas chambers connecting therewith through ports or openings, flat sliding valves controlling said ports, an expansible chamber independent of and communicating with said mixing-chamber and having a movable wall, the communicating port or passage being relatively small, direct connections between said wall and both of said valves, whereby the valves are equally moved in the same direction, so as to proportionately vary the aperture through said ports, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.

4. In an air and gas regulating apparatus, the combination of a mixing-chamber, air and gas chambers connecting therewith by ports, independent valves controlling said ports, an expansible chamber independent of and communicating with said mixing-chamber, the communicating port or passage being relatively small, connections between the movable wall of said expansible chamber and the valves, said connections having provisions for relatively adjusting the positions of said valves independently with respect to said movable wall, the relative movements of the valves remaining the same regardless of the adjustments, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.

5. In an air and gas regulating apparatus, the combination of a casing formed with a mixing-chamber and air and gas chambers conecting through ports therewith, sliding plates, valves controlling said ports, guides engaging the edges of said valves and adjustably secured to the casing, an expansible chamber independent of and communicating with said mixing-chamber, the communicating port or passage being relatively small, rods connecting the movable wall of said expansible chamber with said valves, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.

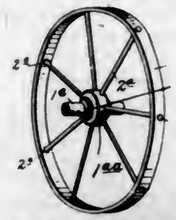
6. In an air and gas regulating apparatus, the combination of a casing formed with a mixing-chamber and with air and gas chambers connecting through ports therewith, independent air and gas regulating valves controlling said ports, an expansible chamber independent of and communicating with said mixing-chamber, and having a movable wall, said communicating port or passage being relatively small, internally-threaded bushings mounted on said wall, rods rotatable but axially immovable with respect to the valves and having enlarged externally-threaded portions screwing in said bushings, said rods extending through said communicating passages, lock-nuts on said portions, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.



7. In an air and gas regulating apparatus, the combination of a casing having a mixing-chamber and air and gas chambers communicating through ports therewith, vertically-movable independent valves mounted in said casing and controlling said ports, a vessel mounted above said casing and communicating through its bottom with said mixing-chamber, the communicating port or passage being relatively small, said vessel having a vertical annular trough adapted to contain a liquid seal, an inverted bell or float having its edge mounted between the walls of said trough, independently-adjustable connections between the roof of said bell and the valves, and an outlet-port for said mixing-chamber, said outlet-port opposing said inlet ports or openings.

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**754,304. METHOD OF MANUFACTURING WHEELS. THOMAS D. HARRIS, Ashboro, N. C., assignor of one-half to Emmett Leonidas Moffitt, Ashboro, N. C. Filed Aug. 29, 1903. Serial No. 171,271. (No model.)**




*Claim.*—1. The method described of casting the central bearing or axle and the spoke-hub of wheels, which consists in producing such a bearing by the ordinary casting operation, in placing or disposing the inner ends of the spokes in relative position to said bearing, and in casting around said spoke ends, and upon said bearing, a hub member

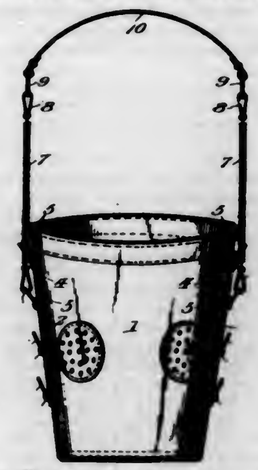
2. The method described of casting the central bearing and the spoke-hub of wheels, which consists in producing, by casting, a tubular bearing with annular raised portions thereon arranged equidistantly from, and laterally of, the center thereof, in disposing the inner ends of the spokes in relative position to said bearing, and in casting around said spoke ends, and upon said bearing, between said annular portions, a hub member.

3. A wheel comprising a central cast bearing having a hub member cast thereon, around the inner ends of the spokes.

4. A wheel embracing a central cast bearing having raised annular or encompassing portions arranged equidistantly from, and laterally of, the center thereof, and a hub member cast upon said bearing, around the inner ends of the spokes and intermediately of said annular or encompassing portions.

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**754,305. FEED-BAG. THEODORE L. HAWKINS, Lincoln, Nebr. Filed Dec. 12, 1903. Serial No. 184,981. (No model.)**




*Claim.*—1. The combination with a feed-bag; of elastic supports adjustably connected to opposite sides of the bag.

2. The combination with a feed-bag having a series of securing devices at each side thereof; of elastic supports adapted to be fastened to any one of the securing devices of each series.

3. The combination with a feed-bag having a series of rings loosely connected to opposite sides thereof; of coiled springs detachably secured to one ring of each series.

4. The combination with a feed-bag; of coiled springs adjustably connected to the sides thereof.

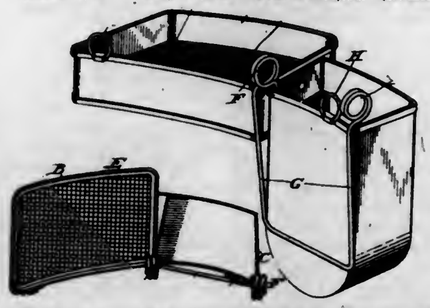
5. The combination with a feed-bag, and a strap; of coiled springs detachably secured to the ends of the strap and adjustably connected to the opposite sides of the bag.

6. The combination with a feed-bag having straps secured to opposite sides thereof, and rings loosely connected to the straps; of a coiled spring extending through one ring of each series and detachably secured to one ring of each series.

7. The combination with a feed-bag having straps secured to opposite sides thereof, and series of rings loosely connected to the straps; of a strap removed from the bag, coiled springs detachably connected to the ends of the strap and to rings of the series, said springs being adapted to project through rings of the series.

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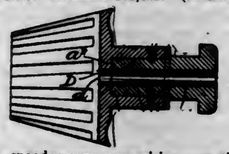
**754,306. SOAP AND BRUSH HOLDER. MARY R. HEARTTAGER, Allentown, Pa. Filed Apr. 30, 1903. Serial No. 154,268. (No model.)**




*Claim.*—A device of the character described, comprising a shallow horizontal soap-dish with depending corner-legs for providing a lower drain-space, a screen-support above said legs, a screen on said support, a distinct deeper receptacle laterally at one end of the dish and having its upper portion in the same horizontal plane therewith, said deeper receptacle non-communicating with the soap-dish and including an upper offset portion in direct relation with and positively connected to the adjacent parallel wall of the dish, the rear walls of both the dish and receptacle being contiguously disposed and curved to mutually conform to the corresponding surface of the tub, and a wire having its ends secured at the rear upper corners of the deeper receptacle providing upper elevated coils disposed transversely to the receptacle-back, and an externally-depending loop normally held by the coils spring-yielding against said deeper receptacle.

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**754,307. SPEED-CONE. JOHN HEARTTAGER, Allentown, Pa. Filed July 15, 1903. Serial No. 165,622. (No model.)**

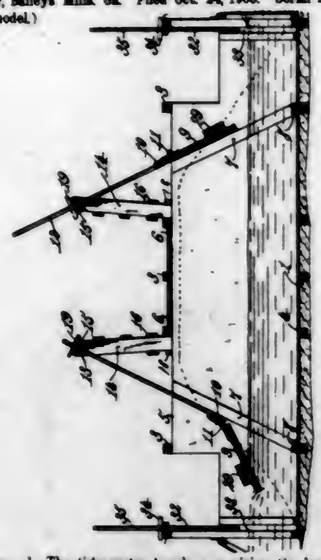


*Claim.*—1. A speeder-cone comprising a casting embodying a rim and hub, the latter containing a longitudinal cylindrical recess terminated at its inner end by a seating presented by the metal at the junction of the hub with the rim, said seating having a central opening with a keyway, and an independent bearing portion provided with an integral cylindrical bushing snugly located within said recess, the said portion and bushing having a longitudinal passage and keyway registering with the opening, and keyway in the seating, and means for rigidly connecting the hub and bushing.

2. A speeder-cone comprising a casting embodying a rim and hub, the latter containing a longitudinal cylindrical recess terminated at its inner end by a seating presented by the metal at the junction of the hub with the rim, said seating containing a central opening with a keyway; and an independent bearing portion hav-

ing a body larger in diameter than the hub-recess, and provided with an integral cylindrical bushing snugly located within and extending beyond said recess, the said portion and bushing having a longitudinal passage and keyway registering with the opening and keyway in the seating, a hardened metal washer interposed between the hub end and body of the bearing portion, and means for rigidly connecting said hub and bushing and retaining the washer in a clamped position.

754,308. TIDE-WATER TRUNK OR FLOOD-GATE. JESSE C. HEIDT, Baileys Mills, Ga. Filed Oct. 24, 1903. Serial No. 178,330. (No model.)



*Claim.*—1. The tide-water trunk comprising the body portion, and the hinged and sliding gates located within the body portion, one adjacent to each end of the body portion, substantially as described.

2. The tide-water trunk comprising the body portion, inclined seats located within the body portion adjacent to opposite ends thereof, slidable gates resting upon said seats and each having a hinged member, and means sustaining said gates in their adjustment, substantially as described.

3. The tide-water trunk comprising the body portion, slidable gates supported in an inclined position within the body portion, one adjacent to each end of the body portion, each gate having a hinged member, and screens located one at each end of the body portion of the trunk, substantially as described.

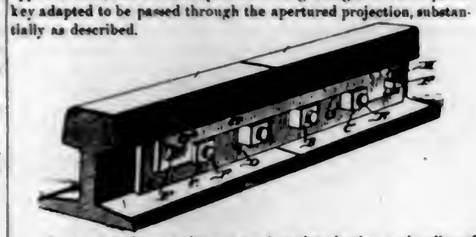
4. The tide-water trunk comprising the body portion, the inclined seats within the body portion, the sliding gates resting upon said inclined seats, each gate having a hinged member, a windlass, and a cable connected at one end to the windlass and at the other end to the hinged member of the gate on the side thereof opposite to its hinges for sliding the gate, substantially as described.

5. The tide-water trunk comprising the body portion, the slidable and two-part hinged gate located therein, an inclined seat for said gate, a hinged screen at the end of the body portion, and the vertically-slidable cut-off gate located between the hinged screen and the slidable two-part hinged gate, substantially as described.

6. The tide-water trunk comprising the body portion, the two gates located within the body portion, one adjacent to each end of the body portion, both of said gates being arranged in an inclined position, one being inclined in the opposite direction to the other and both hinged to swing open in the direction of the end of the body portion adjacent to which it is located, and inclined seats for said gates, substantially as described.

754,309. NUT-LOCK. HENRY C. HOLLIDAY, Hermanville, Miss., assignor of two-thirds to S. E. Dudley and J. W. Foster, Hermanville, Miss. Filed July 20, 1903. Serial No. 166,376. (No model.)

*Claim.*—1. A nut-lock comprising a washer-plate having a plurality of bolt-openings intermediate its ends, a hook-shaped projection adjacent one end, and a vertically-apertured projection adjacent the opposite end and a locking-plate having apertures adjacent its opposite ends, one of said apertures being elongated and a pin or key adapted to be passed through the apertured projection, substantially as described.



2. A nut-lock comprising a washer-plate having a plurality of bolt-openings, a hook-shaped projection adjacent one end, and a vertically-apertured projection adjacent the opposite end, a locking-plate cut away intermediate its ends and having apertures adjacent its opposite ends, one of said apertures being elongated, and a cotter-pin adapted to be passed through the vertical aperture of the projection carried by the washer-plate, substantially as described.

754,310. COOKING UTENSIL. HANNIEL M. HORINE, Chicago, Ill. Filed Dec. 14, 1903. Serial No. 185,062. (No model.)



*Claim.*—1. A cooking utensil consisting of a vessel having rising sides, an aperture in the sides of the vessel, a spout-piece secured to the side of the vessel below the aperture therein, said spout-piece having a spout and also having ears formed at the sides of said aperture, a valve for closing said aperture and a rod journaled in the ears of said spout-piece, said valve being mounted on said rod for the purpose described.

2. In a cooking utensil, the combination of a vessel having rising sides and an aperture therein; a handle, a spout-piece secured to the sides of the vessel at the aperture therein; a spout on said spout-piece; ears on said spout-piece; a rod journaled in said ears; a spring-influenced valve mounted on said rod in position to control the aperture in the side of the vessel; and a lever for operating said valve, said lever connecting with said rod and bent so as to lie beneath said handle.

3. A cooking utensil consisting of a vessel having rising sides; an aperture in the sides of the vessel; a spout-piece secured to the side of the vessel below the aperture therein, said spout-piece having ears formed thereon at the sides of said aperture; a valve for closing said aperture; a rod journaled in the ears of said spout-piece, said valve being mounted on said rod; and a spring for holding said valve closed.

754,311. MEANS FOR FACILITATING INTERLEAVING SHEETS. THOMAS G. HYDE, London, England, assignor to Gilbert Hinds Whitehead, New Eltham, England. Filed Oct. 9, 1903. Serial No. 176,424. (No model.)

*Claim.*—1. A printing-machine, in combination with a flier and automatic means for causing said flier to act only on certain predetermined sheets of those successively fed to it, substantially as described.

2. A printing-machine, in combination with a flier and automatic means for operating said flier upon the feed of every alternate sheet thereto, substantially as described.

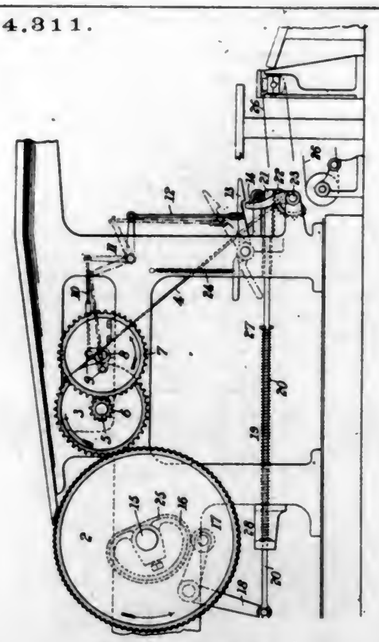
3. A printing-machine, having traveling tapes, in combination with a flier, a latch, means for operating the flier and automatic means for operating said latch to prevent the operation of the flier at every alternate sheet's feed, substantially as described.

4. A printing-machine, having traveling tapes, a flier, a cam and means for operating the flier therefrom, a feed-roller, a latch, and means for operating said latch from the feed-roller, said last means being so timed in operation as to prevent the operation of the flier at the feed of every alternate sheet, substantially as described.

5. A printing-machine, having traveling tapes, a flier, a cam, and means for operating the flier therefrom, a feed-roller, cranks operated thereby, rods from said cranks, and a pivoted latch operated by the rods, said latch being adapted to prevent the operation of the flier when in latched position, and said cranks being timed as to cause the latching of said flier upon the feed of every alternate sheet, substantially as described.



754,311.



754,312. DRAG-SAW HANDLE. PERRY M. IRISH, Booneville, Cal., assignor of one-fourth to Mrs. James R. Reilly, Christine, Cal. Filed Jan. 31, 1903. Serial No. 141,362. (No model.)



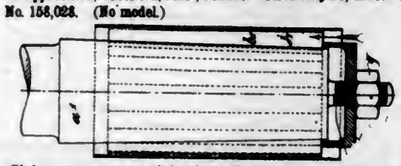
*Claim.*—1. A handle for drag-saws comprising a handle-frame, a handle-clamp at one end and saw-clamp devices at the opposite end of said frame, and independent means applied to the handle-frame for operating the said clamp devices, substantially as set forth.

2. In a handle for drag-saws comprising a handle-frame having a longitudinal opening and intersecting transverse openings, nuts fitted into the said transverse openings, and clamp devices at opposite ends of the handle-frame, each comprising a stem loosely fitted into an end portion of said longitudinal opening and making screw-thread connection with the respective cooperating nuts, substantially as set forth.

3. In a handle for drag-saws, a handle-frame having a longitudinal opening and an intersecting transverse opening and provided at one end with a fixed jaw, a handle having an opening, a movable jaw provided with a stem passed through the opening of the handle into the opening of the handle-frame, and a nut located in the transverse opening of said handle-frame and having screw-thread connection with the said stem of the movable jaw, substantially as and for the purpose set forth.

4. In combination, a handle-frame provided at one end with an enlargement formed in its outer side with a series of grooves and having a longitudinal and transverse opening, a stem loosely fitted into the longitudinal opening of the handle-frame, a nut mounted upon the inner end of the said stem and located in the transverse opening of the handle-frame and threaded upon the said stem, and a bar fitted to the end of the saw and having its intermediate portion widened and loosely mounted upon the aforementioned stem and having cogs to interlock with the grooves at the end of the handle-frame, substantially as set forth.

754,313. PHONOGRAPH, &c. ERNEST A. IVATTS, Paris, France, assignor to Compagnie Générale de Phonographes, Cinématographes et Appareils de Précision, Paris, France. Filed May 20, 1903. Serial No. 158,023. (No model.)



*Claim.*—1. An expansible sleeve having longitudinal corrugations whose outer edges lie in a cylindrical plane, so as to engage with the inner surface of a cylindrical record, and whose inner edges lie in a conical plane, corresponding with and adapted to engage the external conical surface of the ordinary phonograph-mandrel.

2. The combination with a phonograph-mandrel having the usual conical taper, of a record having a cylindrical interior, and an expansible integral sleeve having a corrugated surface and adapted to be slid lengthwise into the annular space between the mandrel and the record, and firmly support the latter.

754,314. WHISTLE. FREDERICK L. JOHNSON, Wallingford, Conn. Filed June 25, 1903. Serial No. 163,103. (No model.)



*Claim.*—In a whistle, the combination with a body having an opening in its top, and a flattened mouthpiece formed of upper and lower parts, one of said parts having its side portions bent at approximately a right angle thereto to form side members, the longitudinal edge portions of the side members being recurved to provide longitudinal grooves or channels to receive and embrace the longitudinal edge portions of the other part, said other part being thereby spaced from the part having the side members aforesaid and having its outer end rounded and bent downwardly to form a lip.

754,315. AZO DYE AND PROCESS OF MAKING SAME. PAUL JULIUS and ERNST FUNKENDORER, Ludwigshafen-on-the-Rhine, Germany, assignors to Badische Anilin und Soda Fabrik. Filed Mar. 19, 1903. Serial No. 148,610. (Specimens.)

*Claim.*—1. The process of manufacturing azo dyes by combining a para diazo monoalkylphenylnitrosamin with 1:8 dihydroxynaphthalene 3.6 disulfo-acid and saponifying the product obtained.

2. The process of manufacturing azo dyes by combining a para diazomonoalkylphenylnitrosamin with 1.8 dihydroxynaphthalene 3.6 disulfo-acid.

3. The process of manufacturing azo dyes by combining para diazoethylphenylnitrosamin with 1.8 dihydroxynaphthalene 3.6 disulfo-acid and saponifying the product obtained.

4. The manufacture of azo dyes by combining para diazo ethylphenylnitrosamin with 1.8 dihydroxynaphthalene 3.6 disulfo-acid.

5. The new azo dye which contains a nitroso group and on reduction yields a monoalkyl paraphenylenediamin body amido and 1.8 dihydroxynaphthalene 3.6 disulfo-acid.

6. The new azo dye which contains a nitroso group and on reduction yields monoethyl paraphenylenediamin and amido 1.8 dihydroxynaphthalene 3.6 disulfo-acid.

754,316. HAT-FASTENER. JOSEPH KAISER, Columbus, Ohio. Filed July 1, 1903. Serial No. 163,948. (No model.)



*Claim.*—1. A hat-fastener comprising an attaching-plate provided with an aperture and having tabs at opposite sides of said aperture for engaging the hat, a hat-pin passing through said aperture and pivotally connected intermediate its ends with the plate, and a spring mounted on the plate and acting to hold said pin yieldingly in its operative position, substantially as described.

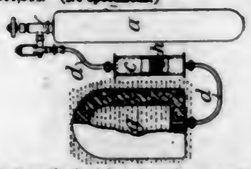
2. A hat-fastener comprising an attaching-plate provided with an aperture, split lugs on said plate, a spring connected with the

plate and having a portion thereof extended through the lugs and provided with an eye, and a hat-pin passing through the aperture in the plate and fulcrumed in the eye of said spring, the spring acting to yieldingly hold the pin in its operative position.

3. A hat-fastener comprising an attaching-plate provided with an aperture, a hat-pin passing through said aperture and provided intermediate its ends with a coil, and a spring connected with the plate and provided with an eye interlocked with the coil of said pin and acting to yieldingly hold the latter in its operative position.

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**754,817. METHOD OF DISSOLVING GASES IN LIQUIDS FOR THE PURPOSE OF KEEPING ALIVE AQUATIC ANIMALS AND WATER-PLANTS.** FERDINAND KALTENBRUNER, Brixen, and NORBERT L. VON LIEBERMAN, Weidlingau, Austria-Hungary. Filed Aug. 14, 1903. Serial No. 169,511. (No specimens.)



*Claim.*—1. A method of keeping alive aquatic organisms consisting of supplying to a body of liquid, through a permeable body, a solution containing a life-maintaining element.

2. A method of keeping alive aquatic organisms consisting of supplying to a body of liquid, through a permeable body, a solution containing a life-maintaining gas.

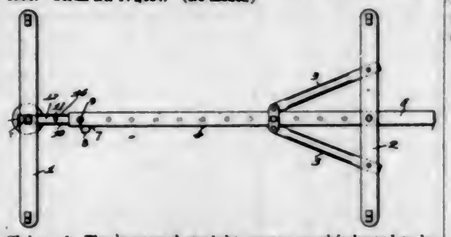
3. A method of keeping alive aquatic organisms consisting of supplying a solution containing a life-maintaining element to a body of water, through a permeable body, in such water.

4. A method of keeping alive aquatic organisms consisting in dissolving a life-maintaining gas in liquid contained in a hollow porous vessel or chamber.

5. A method of keeping alive aquatic organisms consisting in dissolving a life-maintaining gas, supplying the gas to a body of water in a stream of uniform velocity and pressure and in subsequently charging the solution into a body of water, through a permeable body in such water.

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**754,818. WAGON-REACH.** EDWIN KEFFER, Madison, Ill., assignor of one-half to Raymond Bock, St. Louis, Mo. Filed Sept. 25, 1903. Serial No. 174,637. (No model.)

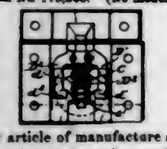


*Claim.*—1. The improved straight wagon-reach adapted to be inserted and withdrawn in place of the ordinary wooden reach, and comprising a straight steel shell 4 angular in cross-section the bottom and top walls of which are provided with two holes 6 to be engaged by the usual hounds and bolster-pins, also provided near its front end with another hole, a straight steel I-beam 10 provided at its front end with the strengthening-cleat 13 which extends between the flanges of said beam and beyond the front end of the same, said I-beam and said cleat having a hole 14 to receive the wagon king-pin, said I-beam having a series of holes 16 and mounted to slide within said shell 4, and a pin 9 by means of which said I-beam and shell are held in relative adjustment, substantially as described.

2. The improved straight wagon-reach adapted to be inserted and withdrawn in place of the ordinary wooden reach, and comprising a straight steel shell 4 angular in cross-section the bottom and top walls of which are provided with two holes 6 to be engaged by the usual hounds and bolster-pins, also provided near its front end with another hole, a straight steel I-beam 10 provided at its front end with the strengthening-cleat 13 which extends between the flanges of said beam and beyond the front end of the same, said I-beam and said cleat having a hole 14 to receive the wagon king-pin, said I-beam having a series of holes 16 and mounted to slide within said shell 4, a pin 9 by means of which said I-beam and shell are held in relative adjustment, a staple 7 secured to said shell, and a chain 8 secured to said staple and to said pin 9, substantially as described.

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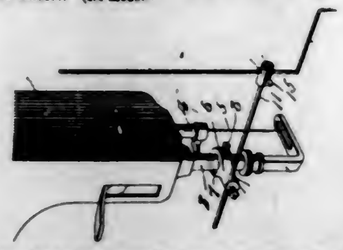
**754,819. LATCH.** HENRY F. KEIL, Brooklyn, N. Y. Filed Oct. 23, 1903. Serial No. 178,203. (No model.)



*Claim.*—As a new article of manufacture a casing formed with a bolt-opening and an orifice, a plate adjacent thereto and having an orifice to register with the first-named one, a rock-plate or cam working on the plate, a knob and shank therefor passing loosely through the orifices and secured to the rock-plate, the said plate having an apset part formed with an open portion, and a latch-bolt constructed and arranged to be snapped in the casing and to work in the last-named open portion and the bolt-opening of the casing.

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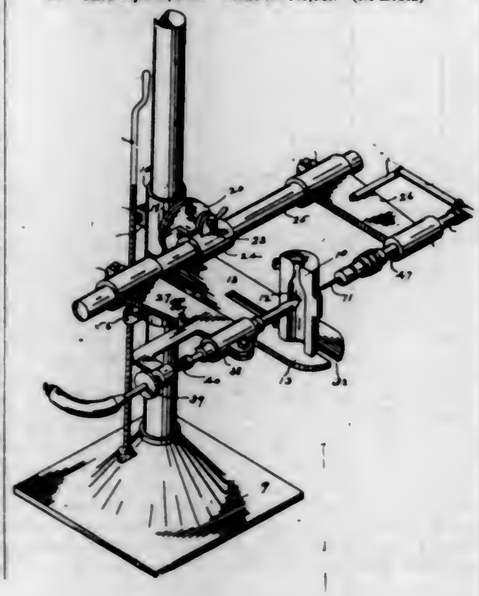
**754,820. GUIDE FOR SEWING-MACHINES.** OTTO KIRSEWETTER and LOUIS R. EHLERS, Secaucus, N. J. Filed May 2, 1903. Serial No. 155,409. (No model.)



*Claim.*—In an attachment for a sewing-machine, the combination with a presser-bar, of a collar on the presser-bar, means to hold the collar in position, an arm on the collar having an opening therethrough, a carrying member extending through the opening, means to hold the member in position, said member having an opening, in one end, a vertical rod extending through the opening, a lateral extension at the lower end of the rod, and a vertical holding-point at the end of the lateral extension, and means to hold the rod in position.

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**754,821. DRILLING-MACHINE.** WILLIAM F. KOEPPEN, Marion, Ind. Filed Sept. 29, 1903. Serial No. 175,048. (No model.)





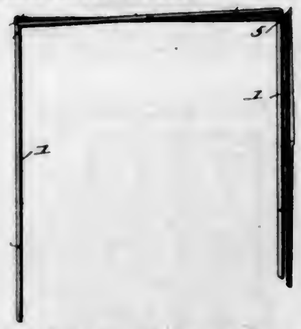
*Claim.*—1. A drilling-machine including means for holding the work stationary, opposing drill-holders and actuators in line with each other, and means for mounting said drill-holders and actuators so that they may be readily changed to various elevations and to various degrees of obliquity.

2. A drilling-machine including a standard, a substantially horizontal rod, means for mounting said rod on said standard so that the rod may be rotatable and also obliquely adjusted, suitable drills, and means for holding and actuating said drills that are mounted on said rod so as to be oppositely located and in line with each other.

3. A drilling-machine including a round standard, a bracket releasably clamped thereon having on one side a vertically-disposed disk, another disk rotatably mounted on said bracket-disk, means for clamping said rotatable disk in the desired position, a split sleeve carried by said rotatable disk, a rod carried in said split sleeve whereby the same may be releasably clamped on said rod and extending therefrom parallel with each other, suitable drills, and drill-holders and actuators mounted in the outer ends of said arms opposite to and in line with each other.

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**754,822. PLANT-PROTECTOR.** CHARLES LEIGH, Evansville, Ind., assignor of one-half to Ernst Soufer, Evansville, Ind. Filed Nov. 18, 1903. Serial No. 181,899. (No model.)



*Claim.*—1. A plant-protector having two cross top bars pivotally connected to each other at their centers and provided with depending legs at right angles thereto, the said legs being rigidly attached to the bars and adapted to have their lower ends inserted in the ground, and a covering for enveloping the frame freely removable from and applicable to the latter, and having a square top and vertical side pieces, the lower edges of the vertical side pieces being loose, the angles between a part of the legs and bars having projecting means for holding another covering.

2. A plant-protector, comprising two cross top bars pivotally connected at their middle and formed with legs to support them, brackets mounted on the ends of the under cross-bar on a plane with the surface of the upper cross-bar, and an inclosing textile about the frame, having a flat top piece to engage the top bars, substantially as described.

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**754,823. FASTENING AND SUSPENSION DEVICE.** EDGAR M. LEWIS, Moundsville, W. Va. Filed July 3, 1903. Serial No. 164,206. (No model.)



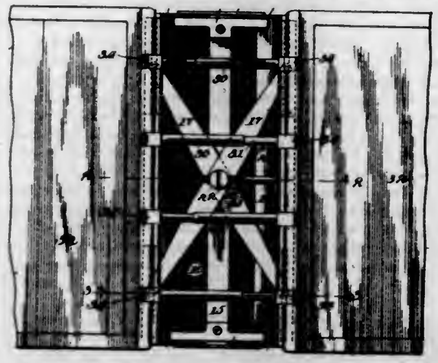
*Claim.*—1. As a new article of manufacture a fastening and suspension device consisting of a backing, and a plate comprising a body portion, integral projection extending therefrom in the same plane, a plurality of pointed projections extending from said plate and penetrating said backing, said plate provided with means to receive a cord or wire.

2. As a new article of manufacture a fastening and suspension device consisting of a backing and a flexible sheet-metal plate secured thereto, said plate comprising a body portion provided with a tongue adapted to be bent to hook form, a plurality of pointed projections extending from each side of said plate, one pair of said projections penetrating the backing, and the other set adapted to be secured to some object to be ornamented.

3. As a new article of manufacture, a fastening and suspension device consisting of a backing and a flexible sheet-metal plate secured thereto, said plate comprising a body portion provided with a tongue adapted to be bent to hook form, a plurality of projections extending from said plate and having eyes or openings therein, a plurality of pointed projections extending from each side of said plate, one pair of said pointed projections penetrating the backing, and the other set extending from the plate in the same plane therewith and adapted to be secured to the object to be ornamented.

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**754,824. LOOSE-LEAF BINDER-FRAME.** AUGUST H. LORENZ, Chicago, Ill., assignor, by mesne assignments, to Arthur W. Friskey, Chicago, Ill. Filed Aug. 4, 1902. Serial No. 118,297. (No model.)



*Claim.*—1. A loose-leaf binder-frame comprising a back section and two cover-sections, crossed levers connecting said cover-sections, and a screw arranged transversely in the frame and adapted to be operated to adjust the cover-sections simultaneously.

2. A loose-leaf binder-frame comprising a back section and two cover-sections, one pair of levers connected at their ends to said cover-sections and crossed at or about the middle of the frame, and a screw-bolt connected with said crossed levers and operating transversely through one cover-section for simultaneously adjusting said cover-sections.

3. A loose-leaf binder-frame comprising a back section and two cover-sections, and a screw-bolt connected with the back section and operating transversely through one cover-section for simultaneously adjusting both cover-sections.

4. A loose-leaf binder-frame comprising a back section and two cover-sections, crossed levers connected at their ends to said cover-sections, and a screw-bolt arranged transversely in the frame and having a bearing against one cover-section and connected with said crossed levers to adjust both cover-sections simultaneously.

5. A loose-leaf binder-frame comprising a back section and two cover-sections, levers connected at their ends to said cover-sections and crossed at or about the middle of the frame, and a transversely-arranged screw-bolt connected with said levers at the point where they cross each other.

6. A loose-leaf binder-frame comprising a back section and two cover-sections, crossed levers connected at their ends to the cover-sections and at their middle with the back section, and a screw-bolt connected to said levers at or about their middle and having a bearing against one of said sections.

7. A loose-leaf binder-frame comprising a back section and two cover-sections, said cover-sections being provided with guide-grooves, a pair of crossed levers connected at their middle to the back section, pins on the ends of said levers arranged to travel in said grooves, and a screw-bolt operating through one of the cover-sections and connected with the crossed levers and adapted to be operated to adjust said cover-sections simultaneously.

8. A loose-leaf binder-frame comprising a back section and two cover-sections, levers crossed at or about their middle and connected at their ends to the cover-sections, a bolt securing said levers at the point where they cross to the back section and provided with a transverse opening in its head, and a screw-bolt operating in said opening and through one of the cover-sections.

9. A loose-leaf binder-frame comprising a back section and two cover-sections, connecting means for said cover-sections, a member

carried by said back section and provided with a transverse threaded bolt opening therein, and a screw-bolt operating through and bearing against one cover-section and working in said threaded opening.

10. A loose-leaf binder-frame comprising a back section and two cover-sections, levers connected at their ends to said cover-sections and crossing each other at or about the middle of the frame, a bolt passing through said levers where they cross and secured to the back section, said bolt being provided with a transverse threaded opening in its head, and a screw-bolt passing transversely through and bearing against one of the cover-sections and working in said threaded opening.

11. In a binder-frame, the combination of a binding means comprising two parts, one of which is movable with relation to the other, a back member, a lever having its ends operatively connected with said parts respectively, a fulcrum for said lever mounted in said back member, and means for oscillating said lever upon said fulcrum.

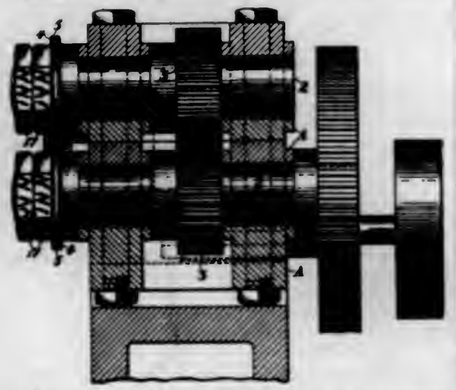
12. In a binder-frame, the combination of a binding means comprising two relatively movable members, a back member, a pair of crossed pivoted levers having their ends operatively connected with said members respectively, and means secured to said back member for moving said levers relatively.

13. In a binder-frame, the combination of a binding means comprising two relatively movable members, a back member, crossed levers pivoted to said back member and having their ends operatively connected with said first members, and means for oscillating said levers upon their pivot.

14. In a binder-frame, the combination of a binding means comprising two relatively movable members, a back member, crossed levers pivoted to said back member and having their ends operatively connected with said first two members, and means secured to said back member for oscillating said levers upon their pivot.

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754,825. WIRE-SOLDER-ROLLING MACHINE. AUGUSTUS LOTZ, San Francisco, Cal., assignor to Pacific Metal Works of San Francisco, Cal., a Corporation of California. Filed Sept. 3, 1903. Serial No. 172,418. (No model.)



*Claim.*—1. In a machine of the class described, the combination of two peripherally-grooved rollers approximately tangential to each other, a guide for the wire on the entrance side of the rollers, and a trimmer mounted at the delivery side of the rollers, said guide and trimmer having their adjacent ends shaped to enable them to be inserted from opposite sides well in between the disks.

2. In a machine of the class described, the combination of two suitably-mounted spindles, intermeshing gears thereon, each of said spindles carrying a removable disk having a peripheral groove, said disks substantially tangential and in the same vertical plane, a feed-guide on the entrance side of the disks, and a removable trimmer at the delivery side thereof, said trimmer having the receiving end shaped to enter the space between the disks.

3. In a wire-solder-rolling machine, the combination with form-rollers of cutter means cooperating with said rollers for receiving the wire therefrom, said cutter means longitudinally channeled to receive the wire and provided with cutting edges at the receiving end for removing any surplus metal from the wire.

4. In a wire-solder-rolling machine the combination with form-rollers of a trimmer and an adjustable removable holder for the trimmer, said trimmer longitudinally channeled to receive the wire and having its receiving end provided with cutting edges.

5. In a wire-solder-rolling machine, the combination with form-rollers, of a trimmer having a longitudinal guide-channel, the front end of said trimmer provided with beveled cutting edges and downwardly-extending guide portions cooperating with said cutting edges.

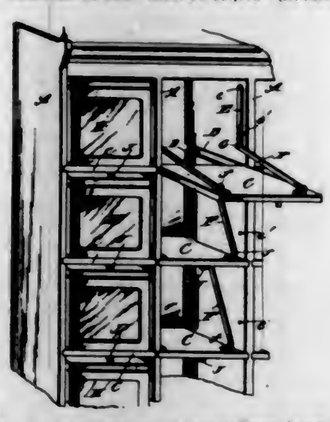
6. In a wire-solder-rolling machine, the combination with form-rollers of a trimmer having a longitudinal guide-groove gradually increasing in size toward its rear end, and opposed beveled concaved cutting edges cooperating with the front end of said groove.

7. In a wire-solder-rolling machine, the combination with form-rollers, of means for removing the surplus from the surface of the wire after its passing between said rollers, said means including a guide in line with the solder strip and in juxtaposition with the rollers and having a cutting member inclosing an opening which corresponds essentially to the cross-section of the finished strip and into which opening the wire is received, said cutting member beveled to divert the trimmings downward and outward from the finished wire.

8. In a wire-solder-rolling machine, the combination of a support, boxes thereon carrying spindles in the same vertical plane, intermeshing gears on said spindles, removable disks on said spindles said disks having complementary forming-grooves in the same vertical plane, a feed-guide, and a trimmer adjustable in a line essentially tangential to the two disks, said guide and trimmer having their adjacent ends shaped to enter into the space between the disks.

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754,826. CRACKER-CASE. WILLIAM T. MAGUIRE, Spartanburg, S. C. Filed June 18, 1903. Serial No. 162,060. (No model.)



*Claim.*—1. A cracker-case substantially as herein described comprising framing having guides for sliding shelves, and provided with inner and outer seats for engagement with locking devices, and shelves sliding in said guides, links jointed together at one end, one of said links being jointed at its outer end to the shelf and the other link being jointed at its upper end to the framing, a stop for the latter link whereby to limit the outward movement of the sliding shelf, and locking devices supported on the under side of the shelves and including sliding handle-bars, the bolts and their actuating-springs, and links connecting said bolts with the sliding handle-bars substantially as set forth.

2. A cracker-case comprising the framing having guides for shelves, shelves sliding in said guides, locking devices for said shelves, and links for guiding and bracing said shelves substantially as set forth.

3. The combination in a cracker-case of the framing having guides for shelves, the sliding shelves, the links arranged in pairs, the links of each pair being pivoted together at one end and one of said links being pivoted at its upper end to the framing and the other one of said links being pivotally connected at its outer end with the outer end of the sliding shelf substantially as set forth.

4. The combination in a cracker-case of the framing having guides for shelves, the shelves sliding in said guides, and the locking devices carried by said shelves and comprising the sliding handle-bar, the bolts and their actuating-springs, and the links connecting said bolts with the handle-bar substantially as set forth.

5. A cracker-case comprising the framing having guides for sliding shelves and provided with inner and outer seats for locking devices, the sliding shelves operating in said guides and the locking devices carried by the shelves and engaging with the inner and outer seats of the case substantially as set forth.



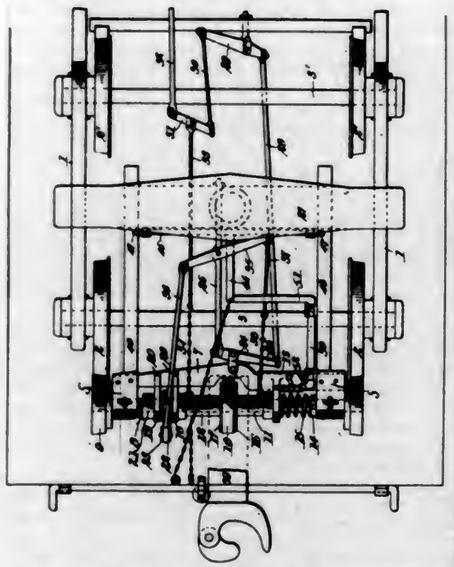
6. A cracker-case comprising the framing having guides for sliding shelves and notches at the inner and outer ends of said guides combined with the shelves, and the bolts carried by the shelves and engaging the notches substantially as set forth.

7. The improvement in cracker-cases comprising the frame having grooves for sliding shelves, the sliding shelves operating in said grooves, the links for guiding and steadying said shelves, and the lock devices for said shelves substantially as and for the purposes set forth.

8. A cracker-case, comprising framing having guides for shelves, shelves sliding in said guides, links pivoted together at their meeting ends, and connecting the shelves and framing, and devices for locking said shelves.

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754,827. BRAKING MECHANISM. JOHN B. MANAHA, Tacoma, Wash. Filed Mar. 2, 1903. Serial No. 145,753. (No model.)



*Claim.*—1. Combined in a brake-operating mechanism, wheels, as of a vehicle, a shaft adapted to be rotated by frictional engagement with the wheels, means for moving the shaft to and from the wheels, a friction-disk on said shaft, sleeves loosely mounted on said shaft and adapted to be brought into engagement with and driven by said friction-disk, and means connected to one of said sleeves for operating the brakes, substantially as set forth.

2. Combined in a brake-operating mechanism, wheels, as of a vehicle, a shaft adapted to be rotated by frictional engagement with said wheels, a friction-disk on said shaft, a sleeve loosely mounted on said shaft and adapted to be driven by said disk, a second sleeve on the shaft adapted to be brought into engagement with said disk by the rotation of the first-mentioned sleeve, and means connected to said second sleeve for operating the brakes, substantially as set forth.

3. Combined in a brake-operating mechanism, wheels, as of a vehicle, a shaft adapted to be rotated by frictional engagement with said wheels, a draw-bar, means controlled by the draw-bar for moving the shaft to and from the wheels, a friction-disk on said shaft, a sleeve loosely mounted on said shaft and adapted to be driven by said disk, a second sleeve on the shaft adapted to be brought into engagement with said disk by the rotation of the first-mentioned sleeve, and means connected to said second sleeve for operating the brakes, substantially as set forth.

4. Combined in a brake-operating mechanism, wheels, as of a vehicle, a shaft adapted to be rotated by frictional engagement with said wheels, a buffer, such as a draw-bar, means controlled by the draw-bar for moving the shaft to and from the wheels, a friction-disk on said shaft, a sleeve loosely mounted on said shaft and adapted to be driven by said disk, mechanism controlled by the draw-bar for engaging said sleeve with said disk, a second sleeve on said shaft adapted to be brought into engagement with said disk by the rotation of the first-mentioned disk, and means connected to said second sleeve for operating the brakes, substantially as set forth.

5. Combined in a brake-operating mechanism, wheels, as of a vehicle, a shaft adapted to be rotated by said wheels, a friction-disk on said shaft, a buffer such as a draw-bar, means controlled by the draw-bar for moving the shaft to and from the wheels, mechanism operated by said friction-disk for applying the brakes, and other means controlled by said draw-bar and driven by said disk for moving said mechanism into operative engagement with the aforesaid disk, substantially as set forth.

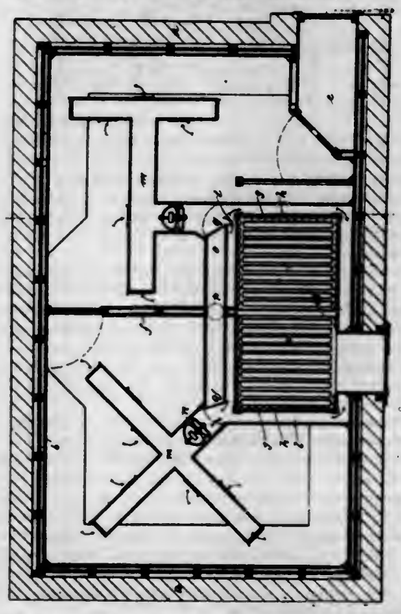
6. Combined in a brake-operating mechanism, wheels, as of a vehicle, a shaft having friction-wheels adapted to be rotated by engagement with the vehicle-wheels, means for moving the shaft to and from the vehicle-wheels, a friction-disk on said shaft and adapted to be driven by said friction-disk, a braking mechanism operated by the rotation of said sleeve, a lever-operated cam for engaging said sleeve with said disk, and means also driven by said friction-disk for moving said lever-operated cam, substantially as set forth.

7. In braking mechanism, a car, wheels therefor, and a frictionally-rotatable shaft combined with means for automatically moving said shaft to and from said wheels, mechanism operated through the medium of said shaft for applying and releasing the brakes, and means for engaging and disengaging said mechanism with and from said shaft, substantially as set forth.

8. In braking mechanism, a car, wheels therefor, a buffer such as a draw-bar, and a frictionally-rotatable shaft combined with means controlled by said draw-bar for automatically moving said shaft to and from said wheels, mechanism operated through the medium of said shaft for applying and releasing the brakes and means simultaneously operated by said draw-bar for engaging and disengaging said mechanism with and from said shaft, substantially as set forth.

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754,828. COLD-AIR CHAMBER OR REFRIGERATOR. LOUIS MANTELL, London, and WILLIAM J. PRIN, Wimbledon, England, assignors to James Keith & Blackman Company, Limited, London, England. Filed Mar. 20, 1902. Serial No. 99,192. (No model.)

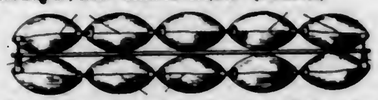


*Claim.*—A refrigerating-chamber comprising non-conducting walls, an ice-receptacle disposed within the chamber and having openings in its top and bottom and longitudinal passages through its walls, closures for the openings in the top of the ice-receptacle, an air-conducting passage surrounding the ice-receptacle at its top, and communicating with the longitudinal passages and the openings in the top of the ice-receptacle, air-conducting passages communicating with the first-named passage and opening into the chamber, fans disposed within the second-named passages for forcing air into the first-named passage, an air-exit passage communicating with the second-

named passages and opening exteriorly of the chamber, and doors for closing the communication between the exit-passage and second-named air-passages, said doors being movable to open the communication between the exit-passage and second-named air-passages and to close the communication between the first-named air-passages and second-named air-passages, the closures for the openings in the top of the ice-receptacle being adapted to be opened to permit of a portion of the air to pass through the ice-receptacle and in contact with the ice.

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754,329. **BED OR CUSHION.** Bailey T. Milliken, Epperson, Ky. Filed Aug. 27, 1903. Serial No. 171,093. (No model.)

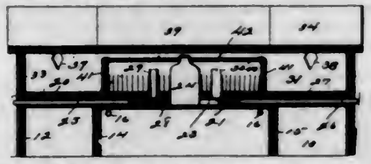


*Claim.*—1. The combination, with a series of independent bag-like bed-sections having an oblong rectangular form and provided with detachable fastenings whereby they are held in close contact side by side, of a like row of similar bed-sections superposed on the first-named series, the end sections of one row having elongated eyes, and the other elongated hooks, which are extended vertically and detachably engaged, as shown and described.

2. The combination, with a row of independent bag-like bed-sections which are rectangular and provided with detachable fastenings and arranged side by side, of a series of like sections superposed on the first row of sections, and engaged fastenings applied to the end sections of the respective rows and adapted for detachment as shown and provided.

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754,330. **BROODER.** Martin A. Mills, Exira, Iowa. Filed Nov. 28, 1903. Serial No. 183,983. (No model.)



*Claim.*—1. The brooder, comprising a casing containing a furnace-chamber, a lamp therein, a floor on said casing, a water-receptacle on said floor and open at its top, pipes in said floor and communicating between the exterior of the casing and the space around said water-receptacle, a brooder-house or upper casing surrounding said floor, air ingress and egress ports for the furnace-chamber, air-egress ports for the brooder-house or upper casing, and a door in said upper casing.

2. A brooder, comprising a casing provided with air ingress and egress ports and a door, a lamp removably and replaceably mounted in said casing, a floor on said casing, which floor is apertured, a sheet-metal plate mounted on said floor and crossing the aperture therein, a water-receptacle on said sheet-metal plate within said aperture, a hover surrounding said receptacle and supported by the floor, and a housing inclosing said hover and receptacle and supported by the floor.

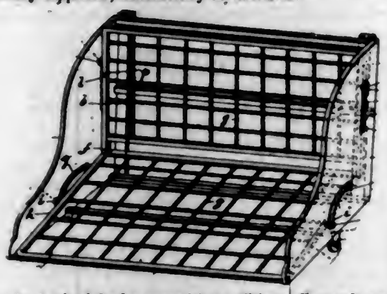
3. A brooder, comprising a casing formed with a furnace-chamber, ventilators and means of access to said chamber, a floor on said casing and formed with an aperture, a sheet-metal plate on said floor crossing the aperture therein, cold-air pipes leading through said floor to said aperture, a water-receptacle in said aperture of the floor and supported by said sheet-metal plate, a second floor on the first floor and provided with an aperture to receive the water-receptacle, ventilating-pipes mounted in the floor, a hover surrounding the water-receptacle and resting on the floor, and a housing surrounding and covering the water-receptacle and hover and provided with means of ingress and egress.

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754,331. **WHEEL-FENDER.** Manuel R. de los Monteros, Mexico, Mexico. Filed Dec. 4, 1903. Serial No. 183,735. (No model.)

*Claim.*—1. A wheel-fender comprising a frame provided with closed sides, a tilting collector within said frame, formed of two sections pivoted together and means in said sides for movably supporting each of said collector-sections, substantially as described.

2. A wheel-fender comprising a frame provided with closed sides, a tilting collector within said frame, formed of two sections pivoted together, each provided with bearings projecting approximately centrally from their sides, and slots in said closed sides in which said bearings rest, whereby said collector-sections are movably supported, substantially as described.



3. A wheel-fender comprising a tilting collector formed of two sections pivoted together, each provided with bearings projecting from their sides, and side sections each provided with slots in which said bearings rest, whereby said collector-sections are movably supported, substantially as described.

4. A wheel-fender comprising a tilting collector formed of two sections pivoted together, side sections adapted to movably support said collector-sections, and supporting means on said collector-sections so arranged that the outer ends thereof have free movement, substantially as described.

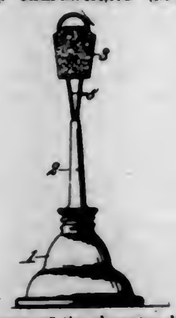
5. A wheel-fender comprising a frame provided with closed sides, a tilting collector within said frame, formed of two sections pivoted together, each provided with bearings projecting approximately centrally from their sides, and slots in said closed sides in which said bearings rest, whereby said collector-sections are movably supported with their outer ends having free movement, substantially as described.

6. A wheel-fender comprising a frame provided with closed sides, a tilting collector within said frame formed of two sections pivoted together, each provided with a pair of bearings projecting approximately centrally from their sides, two pairs of slots in said closed sides in which said bearings rest, whereby said collector-sections are movably supported, and means carried by said closed sides adapted to maintain said collector normally in an untilted position, substantially as described.

7. A wheel-fender comprising a frame provided with side sections, a tilting collector within said frame formed of two sections pivoted together, slots in said side sections in which said collector-sections are movably supported and springs in said sides adapted to maintain said collector normally in an untilted position, substantially as described.

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754,332. **INK-DISTRIBUTER.** Mar R. Mott, New York, N. Y. Filed Apr. 9, 1903. Serial No. 151,894. (No model.)

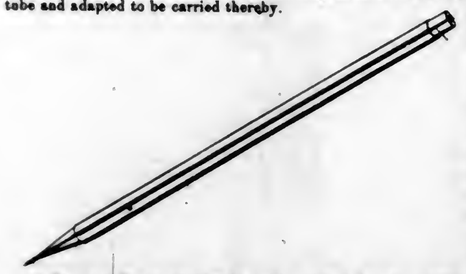


*Claim.*—In a device of the character described, a receptacle having a spout, a porous body having two flat sides and provided with two longitudinal apertures extending through the same from end to end, and a spring-clip having its legs passed through said apertures and crossed and inserted in the spout of said receptacle through the mouth thereof and adapted to hold the said porous body at adjustable distances from the outer end of said spout.

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754,333. **LEAD-PENCIL.** John A. Mulvey, New York, N. Y. Filed Oct. 7, 1903. Serial No. 176,120. (No model.)

*Claim.*—1. A pencil comprising a sheath having a longitudinally-extending passage therethrough, and a longitudinally-extending slot communicating with the passage, a casing slidably mounted upon the sheath, a tube integral therewith and slidably mounted within the passage, a web integral with the tube and casing and slidably mounted within the slot, and a strip of writing material within the tube and adapted to be carried thereby.

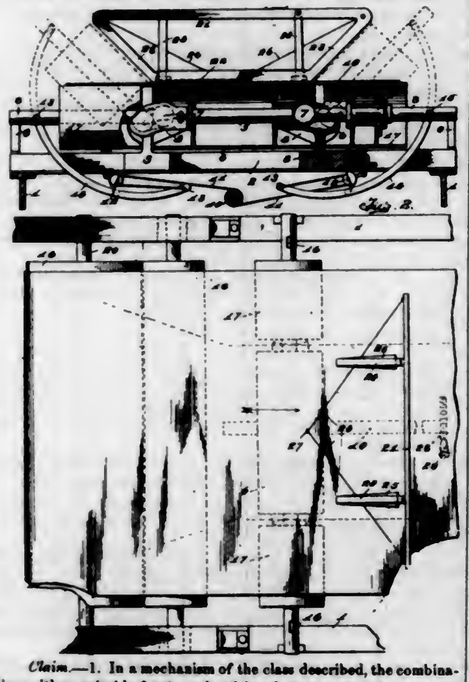


2. In a pencil, the combination with a sheath having a longitudinally-extending passage therethrough, and a longitudinally-extending slot communicating with the passage; of a casing slidably mounted upon the sheath and projecting into the slot and passage, and a strip of writing material inclosed and adapted to be carried by the casing.

3. In a pencil, the combination with a sheath having a passage extending longitudinally therethrough, and a longitudinally-extending slot communicating with the passage and extending from one end to the other of the sheath; of a casing slidably mounted upon the sheath, a tube inclosed thereby and integral therewith, said tube being arranged within the passage, and a strip of writing material inclosed by the tube and movable therewith.

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754,334. **PORTABLE CONVEYER.** William L. McCabe, Seattle, Wash. Filed Nov. 7, 1901. Serial No. 81,413. (No model.)



*Claim.*—1. In a mechanism of the class described, the combination with a suitable framework, of brackets mounted thereupon, a shaft rotatably supported by said brackets, a roller carried by said shaft, axles extending outwardly from each of said brackets and having ball-bearing mountings therein, rollers revolubly carried upon said axles, and means for moving the same from a horizontal to a diagonal plane, substantially as described.

2. In a mechanism of the class described, the combination with a suitable framework and brackets supported thereon, of heads formed thereon, a pulley rotatably mounted between said heads, elongated sockets being formed in said heads, a ball mounted in each of said sockets an axle carrying said ball designed to be supported thereby in a horizontal position when at one end of said socket, and in a diagonal plane when at the other, a roller carried by each of said axles, and means for moving said axles from a horizontal to a diagonal plane, substantially as described.

3. In a mechanism of the class described, the combination with a suitable framework, and an endless belt supported thereon, of rollers revolubly mounted upon said framework and supporting said belt, a pivotally-supported shaft at each end of said supporting-rollers, rollers carried by said shafts designed to support the edges of said belt, and means for simultaneously swinging said shafts from a horizontal plane to a diagonal plane, whereby the belt may be cupped for preventing lateral displacement of the articles conveyed, substantially as described.

4. In a mechanism of the class described, the combination with a suitable framework, of an endless belt supported thereon, rollers revolubly mounted on said framework and supporting said belt, a pivotally-supported shaft at each end of each of said supporting-rollers, rollers carried by said shafts designed to support the edges of said belt, means for simultaneously swinging said shafts from a horizontal to a diagonal plane, whereby the belt may be cupped for preventing lateral displacement of the articles conveyed, and means for retaining said shafts in the same given plane relative to each other, substantially as described.

5. In a mechanism of the class described, the combination with a suitable framework of axles pivotally supported thereon and rollers carried by said axles, an arc-shaped arm pivotally secured to each of said axles, a cable secured to each of said arms and passed about suitable bearings, and a shaft extending longitudinally of said framework and having the ends of said cables secured thereto, whereby rotation of said shaft is designed to raise said axles and their rollers from a horizontal to a diagonal plane, substantially as described.

6. In a mechanism of the class described, the combination with a suitable framework of rollers carried thereby, a belt passed over said rollers, means for tilting some of said rollers from a horizontal to a diagonal plane for cupping or slanting the edges of said belt, and an outwardly-flaring bracket carried by said belt, the flare thereof corresponding with the cup of the belt, means being provided on said bracket for preventing the rearward movement thereof, substantially as described.

7. In a mechanism of the class described, the combination with a suitable framework of axles pivotally mounted thereon, near each side thereof, rollers carried by said axles, arc-shaped arms having their upper ends pivotally secured within slots near the ends of said axles, a cable secured to the free end of each of said arms, pulleys carried by said framework, the said cables being passed about the same, a shaft extending longitudinally of the said framework, and having the said cables secured thereto, and means for retaining said shaft against rotation, whereby rotation of said shaft is designed to move said axles and their pulleys from a horizontal to a diagonal plane, substantially as described.

8. In a mechanism of the class described, the combination with a suitable framework, of axles pivotally supported thereon and rollers carried by said axles, an arm pivotally attached to each of said axles, a cable secured to each of said arms, and means extending longitudinally of said framework and carrying the inner ends of said cables for moving said arms whereby said axles and their rollers may be raised from a horizontal to a diagonal plane, substantially as described.

9. In a mechanism of the class described, the combination with a suitable framework, of axles pivotally supported thereon and rollers carried by said axles, an arm pivotally secured to each of said axles, and means for simultaneously moving said arms longitudinally for raising said axles and their rollers from a horizontal to a diagonal plane, substantially as described.

10. In a mechanism of the class described, the combination with a suitable conveyer-frame and a conveying-belt mounted thereon, of a series of belt-supporting pulleys arranged in said frame, a second series of belt-supporting pulleys arranged outside of the first-mentioned pulleys, and means for simultaneously adjusting the pulleys of the last-mentioned series to an angle relative to the first-mentioned pulleys, substantially as described.

11. In a mechanism of the class described, the combination with a suitable conveyer-frame, of belt-supporting pulleys arranged therein, a pivotally-supported pulley mounted at each end of said first-mentioned pulleys, and lying normally in the same horizontal plane.

and means for adjusting each of said last-mentioned pulleys to an angle relative to its respective first-mentioned pulley, substantially as described.

12. In a portable conveyer, the combination with a suitable frame, of belt-supporting pulleys arranged centrally thereon, laterally-extending belt-supporting pulleys arranged outside said central pulleys, and means for simultaneously adjusting all of the laterally-extending pulleys of one side to an angle relative to the central pulleys, substantially as described.

13. In a portable conveyer, the combination with a suitable frame, of belt-supporting pulleys arranged at either side of said frame, and means for simultaneously adjusting all of said pulleys to diagonal planes, substantially as described.

14. In a portable conveyer, the combination with a suitable frame, of belt-supporting pulleys, pivotally attached thereto at either side thereof, and means for simultaneously adjusting all of the pulleys of one side to an angle relative to the frame, substantially as described.

15. In a portable conveyer, the combination with a suitable frame, of sockets carried thereby, pulley-carrying shafts slidably engaging said sockets, means pivotally supporting the free ends of said shafts, and means for adjusting said shafts to diagonal planes, substantially as described.

16. In a conveyer, a belt-guide adapted to give a conveyer-belt a trough-like form, consisting of two inclined supports for the outer parts of the belt, an intermediate support for the middle part of the belt, independent of said inclined supports, and means for tilting and adjusting the inclined supports relative to said intermediate supports, substantially as described.

17. In a conveyer, a belt-support consisting of the combination of two inclined pulleys, an intermediate support for the middle part of the belt independent of said pulleys, and means for tilting the axes of the inclined pulleys relative to the horizon and to said intermediate support, substantially as described.

18. In a conveyer, a belt-support consisting of the combination of two inclined pulleys, an intermediate pulley, and means for tilting the axes of the inclined pulleys relative to a horizontal plane, substantially as described.

19. In a conveyer, a belt-support consisting of the combination of two incline pulleys, an intermediate pulley, means for tilting, and means for supporting the axes of the incline pulleys relative to a horizontal plane.

20. In a portable conveyer, the combination of a tilting belt-support and flexible means for actuating the same.

21. In a portable conveyer, the combination with a belt, of tilting supports therefor arranged transversely thereof and adapted to swing in the same vertical plane, and flexible means for moving said supports.

22. In a portable conveyer, the combination with a belt, of tilting supports for the same adapted to swing in the same vertical plane transversely of the belt, and means for simultaneously adjusting said supports.

23. A support for a belt comprising a pulley, a tilting shaft carrying the same, and means for tilting said shaft and moving the same bodily longitudinally.

24. A device of the class described comprising a pivotally-mounted tilting support, means for tilting said support and moving the pivoted end thereof into different horizontal planes.

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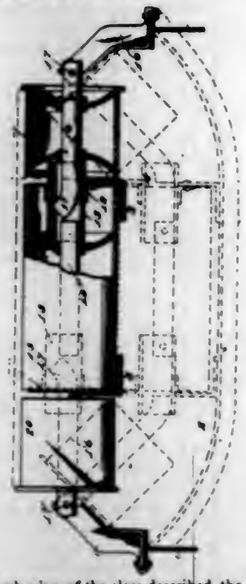
**754,385. PORTABLE CONVEYER. William L. McCabe, Seattle, Wash. Filed Apr. 2, 1902. Serial No. 101,102. (No model.)**

*Claim.*—1. In a mechanism of the class described, the combination of a main and an auxiliary frame, tilting belt-supports carried thereby, and means for moving one of said frames relative to the other for adjusting said supports.

2. In a mechanism of the class described, the combination with a suitable frame, of belt-supporting pulleys arranged therein, some of said pulleys being pivotally supported, and means for moving some of said pulleys for adjusting the pivoted pulleys to diagonal planes, substantially as described.

3. In a mechanism of the class described, the combination with a suitable frame, of belt-supporting pulleys arranged therein, means for altering the horizontal plane of said belt-supporting pulleys, and belt-supporting pulleys pivotally attached to said first-mentioned pulleys, substantially as described.

4. In a mechanism of the class described, the combination with a suitable frame, of belt-supporting pulleys mounted therein, means for altering the horizontal plane of said belt-supporting pulleys, and a pulley pivotally attached at each end of each of said belt-supporting pulleys, substantially as described.



5. In a mechanism of the class described, the combination with a suitable frame, of belt-supporting pulleys mounted therein, means for altering the horizontal plane of said pulleys, pulleys pivotally connected with said belt-supporting pulleys, and means pivotally connecting said last-mentioned pulleys to said frame, substantially as described.

6. In a mechanism of the class described, the combination with a suitable main frame, of an auxiliary frame therein, belt-supporting pulleys mounted in said auxiliary frame, means for altering the horizontal plane of said auxiliary frame, and pulleys connected to said belt-supporting pulleys, and also pivotally connected to said main frame, substantially as described.

7. In a mechanism of the class described, the combination with a suitable main frame, of an auxiliary frame arranged longitudinally of and movable laterally within said main frame, belt-supporting pulleys mounted on said auxiliary frame, and pulleys pivotally attached to said main frame, and having their inner ends movable with the auxiliary frame, substantially as described.

8. In a portable conveyer, the combination with a suitable main frame, of an auxiliary frame movable therein, and pulleys attached to said main frame and having their inner ends pivoted to the auxiliary frame, substantially as described.

9. In a portable conveyer, the combination with a suitable main frame, of an auxiliary frame movably mounted therein, belt-supporting pulleys carried by said auxiliary frame, cuffs carried by said auxiliary frame, pulley-carrying shafts slidably engaging said cuffs, and means pivotally supporting the free ends of said shafts, substantially as described.

10. In a portable conveyer, the combination with a suitable frame of cuffs carried thereby, pulley-carrying shafts slidably engaging said cuffs, means pivotally supporting the free ends of said cuffs, and means for moving said cuffs for adjusting said shafts to diagonal planes, substantially as described.

11. In a portable conveyer, the combination with a main frame, of an auxiliary frame movably mounted therein, means for moving said auxiliary frame, cuffs carried by said auxiliary frame, pulley-carrying shafts having bent ends extending into and slidably engaging said cuffs, and means pivotally supporting the free ends of said shafts, substantially as described.

12. In a portable conveyer, the combination with a main frame, of an auxiliary frame movable therein, pulley-carrying shafts slidably engaging either side of said auxiliary frame, and brackets carried by either side of said main frame and pivotally engaging the free ends of their respective shafts, substantially as described.

13. In a portable conveyer, the combination with a suitable frame of cuffs carried thereby, pulley-carrying shafts slidably engaging said cuffs, means pivotally supporting the free ends of said cuffs, and means for simultaneously moving said cuffs for adjusting said shafts to diagonal planes, substantially as described.

14. In a mechanism of the class described, the combination of a main frame and an auxiliary frame, belt-supports carried thereby, and means for adjusting said auxiliary frame for tilting said supports.

15. In a mechanism of the class described, the combination with a main frame, of an adjustable auxiliary frame within the same, and tilting belt-supports carried by said frame.

16. In a conveyer, the combination with a framework, of belt-supporting pulleys pivotally mounted thereon, cams supporting said pulleys, and means for moving said cams for moving the pulleys in various planes relative to each other, substantially as described.

17. In a mechanism of the class described, the combination with a framework, of belt-supporting pulleys pivotally mounted thereon, and cams positioned beneath said pulleys and supporting some of the same for adjusting the pulleys to various planes, substantially as described.

18. In a mechanism of the class described, the combination with a framework, of belt-cupping means carried thereby, and a cam engaging said means for operating the same, substantially as described.

19. In a conveyer, the combination with a framework, of belt-cupping pulleys pivotally mounted thereon, and a cam for shifting said pulleys to various planes, substantially as described.

20. In a mechanism of the class described, the combination with a framework, of a belt-cupping pulley mounted thereon, and a cam engaging the support of said pulley, substantially as described.

21. In a conveyer, the combination with a framework, of belt-cupping means mounted thereon, a pair of cams supporting said belt-cupping means, and means for effecting synchronous action of said cams for moving said belt-cupping means, substantially as described.

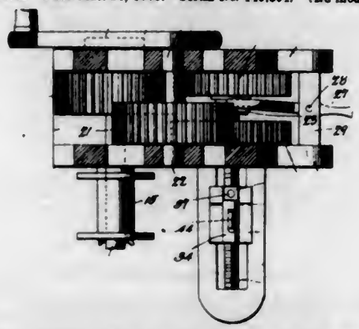
22. In a mechanism of the class described, the combination of a main and an auxiliary frame, tilting belt-supports carried thereby, and means for adjusting said frames relative to each other for simultaneously moving said supports.

23. In a mechanism of the class described, the combination with a main frame, of a vertically-adjustable auxiliary frame carried thereby, and movably-mounted belt-supports connecting said frames.

24. In a mechanism of the class described, the combination of a plurality of frames movable relative to each other, and movably-mounted belt-supports connecting said frames.

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**754,386. WIRE-REELING MACHINE. Thomas Nighbert, Elrod, Ind. Filed Mar. 27, 1903. Serial No. 149,891. (No model.)**

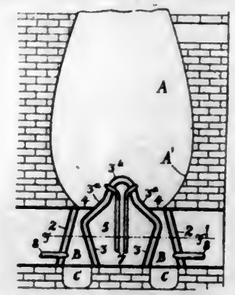


*Claim.*—A wire-reeling machine consisting of a supporting-frame, a reel-support and a guide-frame projecting from said supporting-frame at one side, said guide-frame being spaced from said reel-support, a carrier mounted for forward and backward movements upon said guide-frame, and having a wire-guiding groove, a spring-actuated tension-arm movably supported upon said carrier transversely of said guide-groove, and a cam-lever movably connected to said tension-arm and operative to release said tension-arm, substantially as described.

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**754,387. BLAST-FURNACE. John W. Pack, Berkeley, Cal. Filed Oct. 28, 1903. Serial No. 178,806. (No model.)**

*Claim.*—1. The combination in a furnace having a shaft and crucible, and an exterior water-jacket, of an interior hollow water-jacket the outer walls of which are spaced from the inner walls of said exterior jacket said interior jacket having its upper portion converging and entering the lower part of the stack whereby said converging portion supports and arrests the ore passing from the furnace.




2. The combination in a smelting-furnace of a vertical stack, an exterior water-jacket and crucible in the lower portion, an interior hollow water-jacket having a surrounding space, said jacket having its upper end entering the lower part of the stack and having its greatest diameter intermediate of the ends whereby downwardly-converging passages are formed between the inner and outer water-jackets and the inner jacket supports and arrest the ore passing through the bosh or neck of the furnace.

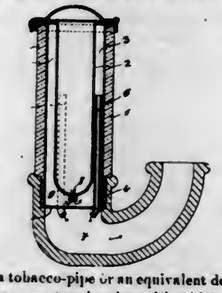
3. The combination in a furnace of a vertical stack adapted to receive the ore, a slag-chamber and crucible located in the lower part, a water-jacket surrounding said chamber, an interior hollow water-jacket located in the narrowed part of the furnace above the slag-chamber and horizontally coincident with the outer water-jacket, said inner jacket having an interior open chamber and the upper portion extending upwardly into the main part of the furnace.

4. The combination in a furnace of a vertical stack, a slag-chamber, and crucible, a water-jacket surrounding the lower part and having oil-burner pipes opening therethrough into the ore-chamber, an interior water-jacket having its upper portion converging toward the bosh or neck of the furnace to form inclined walls which support and arrest the ore passing therethrough and oil burner pipes opening through the interior water-jacket into the ore-chamber.

5. The combination in a furnace of a vertical stack, slag-chamber, and crucible, water-jackets exterior and interior to the slag-chamber, said interior jacket having its walls converging in opposite directions from its middle portion and having an open central chamber, oil-burners extending from said chamber into the stack and other burners opening through the outer jacket into the slag-chamber.

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**754,388. TOBACCO-PIPE. Josef Parkh, Vienna, Austria-Hungary. Filed May 16, 1903. Serial No. 157,339. (No model.)**

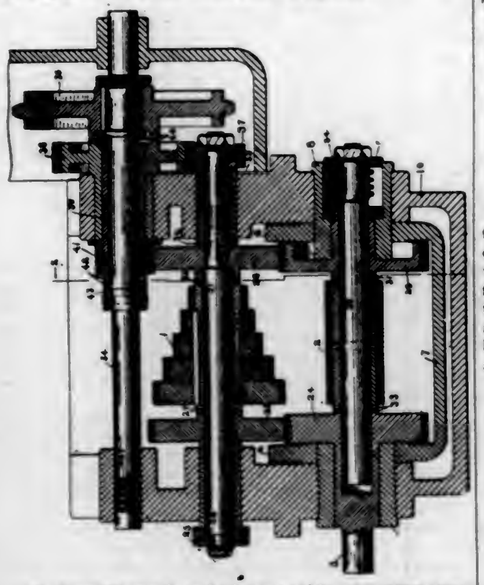


*Claim.*—In a tobacco-pipe or an equivalent device, the combination of a bowl-case, a water-chamber with which said bowl-case engages, a tobacco-box provided with a flanged top and adapted to be inserted in said bowl-case and leave a chamber between the same and said bowl-case, a smoke-outlet in the bottom of said tobacco-box, a bottom closure for said bowl-case, small pipes passing through said bottom and extending up into the chamber between the tobacco-box and the bowl-case, and having upwardly-curved ends projecting below said bottom and into said water-chamber, substantially as described.

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**754,389. VARIABLE-SPEED MECHANISM. John Parker, Providence, R. I., assignor to Brown and Sharpe Manufacturing Company, Providence, R. I., a Corporation of Rhode Island. Filed Jan. 27, 1902. Serial No. 91,330. (No model.)**

*Claim.*—1. A variable-speed mechanism comprising two rotary members mounted to rotate about fixed axes, and means for transmitting motion from either rotary member through the other to the mechanism to be operated, substantially as described.



2. A variable-speed mechanism comprising two rotary members, means for transmitting motion from either rotary member through the other to the mechanism to be operated, and means for varying the relative speeds of the two members, substantially as described.

3. A variable-speed mechanism comprising two gears mounted to rotate about fixed axes and so connected that the motion of one is transmitted to the other, means for reversing the relation of said gears as driver and driven, and means for connecting either of said gears to the mechanism to be operated, substantially as described.

4. A variable-speed mechanism comprising a cone-gear and a second gear, means for connecting any one of the gears of the cone-gear with the second gear, means for connecting either the cone-gear or second gear to the mechanism to be operated, and means for reversing the relation of said gears as driver and driven, substantially as described.

5. A variable-speed mechanism comprising two gears so connected that the motion of one is transmitted to the other, a driver, means for connecting either of said gears with the driver without changing the position of said driver, and means for connecting either of said gears with the mechanism to be operated, substantially as described.

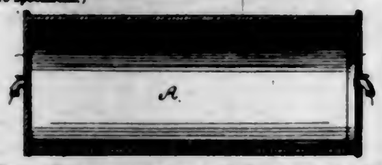
6. A variable-speed mechanism comprising a cone-gear and a second gear, means for connecting any one of the gears of the cone-gear with the second gear, a driver, means for connecting either the cone-gear or the second gear with the driver, and means for connecting either the cone-gear or the second gear with the mechanism to be operated, substantially as described.

7. A variable-speed mechanism comprising two gears mounted to rotate about fixed axes and so connected that motion is transmitted from one to the other, mechanism for driving either of said gears, clutches for connecting and disconnecting each of said gears with the driving mechanism, mechanism operated from said gears, and clutches for connecting and disconnecting each of said gears with said driving mechanism, substantially as described.

8. A variable-speed mechanism comprising a cone-gear 1, a gear 2, an adjustable intermediate gear 4, for connecting any one of the gears of cone-gear 1 with gear 4, a shaft 3, gear 24 secured thereto, gear 23 meshing with gear 24, clutches 27 and 33, gears 28 and 29, clutches 32 and 31, and means for engaging either clutches 27 and 31 or clutches 32 and 33, substantially as described.

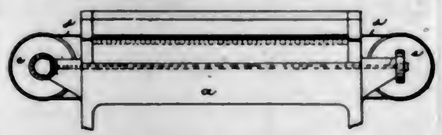
9. The combination of two rotary members, means for transmitting motion from one member to the other, two connected driving members, two connected driven members, coupling and uncoupling devices between one rotary member and one driving and one driven member, similar devices between the other rotary member and the other driving and driven members, substantially as described.

**754,340. PROCESS OF PRESERVING FRUIT.** FERDINANDO PARMERLLI, New York, N. Y. Filed Oct. 22, 1903. Serial No. 178,122. (No specimens.)




*Claim.*—The process of preserving fruit, consisting in subjecting the fruit to a bath of lime-water, removing the fruit from the bath, drying the surface of the fruit by evaporation so as to displace the water, leaving the solid particles of the bath to close the pores of the fruit, packing the fruit within a container, simultaneously exhausting the air from the container and admitting carbonic-acid gas thereto, and hermetically sealing the container when the air has been exhausted and all vacant spaces in the container filled by the carbonic-acid gas, substantially as described.

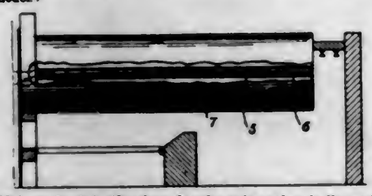
**754,341. RAWHIDE-SPLITTING MACHINE.** CHARLES H. PELL, Newark, N. J., assignor to P. Reilly & Son, a Corporation of New Jersey. Filed Sept. 10, 1902. Serial No. 122,816. (No model.)



*Claim.*—1. The improved rawhide-splitting machine in which is combined with a traveling splitting-blade and a cushion-roll c, a series of ring-rolls in contact with said cushion-roll, and a gage-roll, the said ring-rolls being each furnished with indentations each separate and apart from the others and extending but partly through the roll and thus adapted to be closed by the rawhide, substantially as set forth.

2. The improved rawhide-splitting machine in which is combined with a traveling splitting-blade and cushion-roll, a series of indented ring-rolls and an indented gage-roll, arranged near the traveling blade and adapted to feed the rawhide thereto, the indentations being each separate and apart from the others and extending but partly through the roll and thereby forming an air-chamber adapted to be closed by the rawhide as it engages the indented portion of the roll, substantially as set forth.

**754,342. HEAT-CIRCULATOR FOR BOILER-TUBES.** JOHN PHILIP, New York, N. Y. Filed May 8, 1903. Serial No. 156,288. (No model.)




*Claim.*—1. A baffle-piece for the tubes of a boiler, said piece having a plurality of channels, and deflecting means to cause the gas to flow successively through said channels.

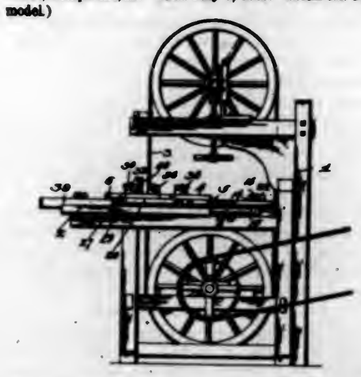
2. A baffle-piece for boiler-tubes comprising three radial flanges separating or dividing the tube in which it is mounted into three channels, and deflecting means to cause the gas to flow successively through said channels.

3. A baffle-piece for the tubes of a boiler, said piece having three radial flanges equal in radius to the radius of the tube, curved portions at each end separating the channels formed by said flanges, and two of said flanges having communicating passage-ways therethrough, for the purpose described.

4. A baffle-piece for boiler-tubes, said piece having radial flanges of a radius equal to the radius of the tubes in which the piece is mounted thereby forming channels, and partitions at the ends of said pieces separating said channels, as and for the purpose set forth.



**754,343. WORK-HOLDER FOR SAWING-MACHINES.** JOHN PIPER, Kampsville, Ill. Filed July 9, 1903. Serial No. 164,861. (No model.)



*Claim.*—1. In a sawing-machine of the character described, a work-holder comprising a frame having work-supporting surfaces having spaced curved adjacent edges of different radii, said edges having an intervening opening for the saw, and representing the largest and smallest arcs of cut, substantially as described.

2. In a sawing-machine of the character described, a work-holder comprising side pieces and an intermediate supporting-surface having a saw-slot, one of said side pieces being divided in line with the slot, the divided portions having a tongue-and-groove connection, and means for holding said portions from spreading, substantially as described.

3. In a sawing-machine of the character described, a work-holder comprising side pieces and an intermediate supporting-surface having a saw-slot, one of said side pieces being divided in line with the slot, the divided portions having a V-shaped tongue-and-groove connection, and means for holding said portions from spreading, substantially as described.

4. In a sawing-machine of the character described, the combination with a supporting-frame, of a segmental work-holder having a transverse curved saw-slot, a sliding pivotal connection between the frame and vertex portion of the work-holder, said connection including a gage member cooperating with means for indicating various positions to which said connection should be adjusted to cut different sizes of articles, gage-stops on the outer side of said slot adjustable at an angle to the arc of curvature thereof to predetermined positions corresponding to certain positions of adjustment of the sliding pivotal connection, whereby the holder may be adjusted to vary the radius of the arc on which it turns and the stop may be adjusted so that the width of the sections sawed may correspond with such radius, and other stops adjustable parallel to the arc of the slot to regulate the length of the sections.

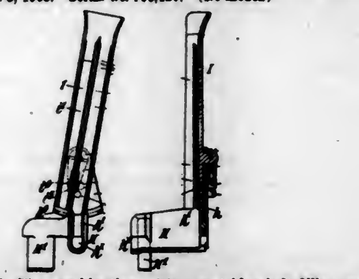
**754,344. WATER-FAUCET.** MILES PITT, Indianapolis, Ind. Filed Nov. 18, 1903. Serial No. 181,708. (No model.)



*Claim.*—1. The combination with a spigot having a spring-actuated valve, of a depending stirrup-lever through which the nozzle of the spigot extends and formed with a rearwardly-extending piece at its upper end pivotally connected to the valve-stem, substantially as described.

2. The combination with a spigot having a spring-actuated valve, of a depending stirrup-lever through which the nozzle of the spigot projects and formed with a rearwardly-extending piece at its upper end pivotally connected to the stem of the valve and having spreading arms at its lower end curved frontward and adapted to be engaged by a vessel, substantially as described.

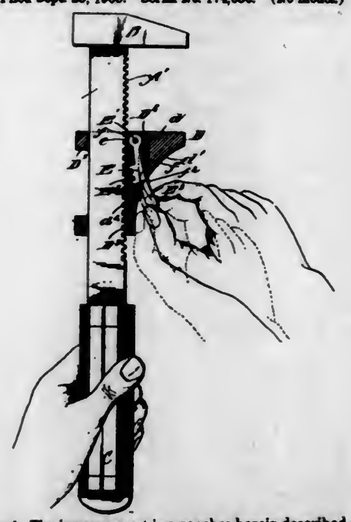
**754,345. FEED DEVICE FOR CARTRIDGE-BELT-FILLING MACHINES.** JAMES RAMSAY and THOMAS R. RIDDLE, Erith, England, assignors to Vickers Sons & Maxim, Limited, Westminster, England. Filed Aug. 3, 1903. Serial No. 168,120. (No model.)



*Claim.*—1. The combination with a cartridge-belt-filling machine of a feed-hopper, a swinging chute located above said hopper and provided with a plurality of substantially vertical cartridge-channels, a pivot-pin on said chute supported by an extension of the hopper, an arm on said pivot-pin, means for limiting the extent of swinging of the said arm and chute, and means for retaining the chute in the position in which it is swung about its pivot to bring the cartridge-channels opposite the hopper, substantially as and for the purpose specified.

2. The combination with a cartridge-belt-filling machine, of a feed-hopper, a swinging chute located above said hopper and provided with a plurality of vertical or approximately vertical cartridge-channels, a pivot-pin on said chute supported by an extension of the hopper, an arm on said pivot-pin, a projection on said arm working in a segmental slot in said extension for limiting the extent of swinging of the chute, a spring-controlled bolt carried by said arm and having an inclined head, and a projection on said extension lying in the path of the spring-controlled bolt and cooperating with the latter for retaining the chute in the positions to which it is swung about its pivot to bring the cartridge-channels opposite the hopper, substantially as and for the purpose specified.

**754,346. MONKEY-WRENCH.** EDWARD A. REHOUP, Wellsville, Ohio. Filed Sept. 25, 1903. Serial No. 174,656. (No model.)



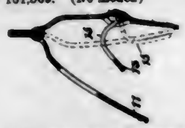
*Claim.*—1. The improvement in wrenches herein described comprising the toothed bar having the fixed jaw, the movable jaw having an opening receiving said bar and a recess extending from said opening, an opening being provided in the rear face of the jaw leading to said recess and the jaw being provided with an extension at its rear side beyond said opening, the pawl toothed to engage with the toothed wrench-bar and having at its front end a rounded head and pivoted at such end within the recess in the movable jaw adjacent to the working face of said jaw and extending at its rear end through the opening in the rear face of the movable jaw and over-

lying the rear extension of said jaw whereby the finger of the operator may operate between such extension and the rear or handle end of the pawl, and the spring having at its front end a rounded portion fitting on the rounded head of the pawl and having an upwardly-projecting portion bearing against the wall of the recess in the movable pawl and an end portion bearing against the pawl to actuate the same substantially as set forth.

2. The combination with a wrench-bar and the jaw sliding thereon and having an opening for the pawl, of the pawl pivoted at one end in said opening and the spring embracing the pivoted end of the pawl and having a bowed portion bearing between the handle end of the pawl and the outer wall of the opening which receives the pawl whereby to actuate the pawl into engagement with the wrench-bar substantially as set forth.

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**754,347. HOSE-SUPPORTER.** WILLIAM E. RINK, Hilton, N. J., assignor to L. and A. B. Meyer, Newark, N. J., a Firm. Filed Nov. 17 1903. Serial No. 181,569. (No model.)



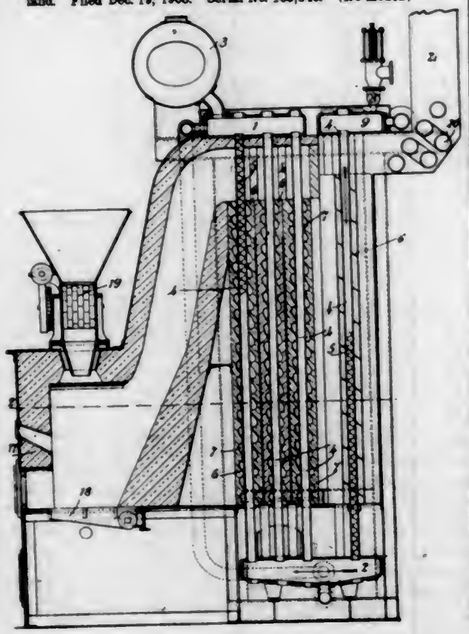
*Claim.*—1. In a hose-supporter, the combination of two jaws pivoted together, one of which is provided with an opening and the other provided with a pivoted tongue adapted to extend through the opening of the jaw and be turned down after insertion in said opening and means for yieldingly holding said tongue in fixed relation to the jaw to which it is pivoted substantially as set forth

2. In a hose-supporter, the combination of two jaws one of which is provided with an opening and the other of which is provided with a pivotal tongue adapted to extend through the opening of the open jaw, and a resilient strip or part adapted to press on said tongue and hold it in position preliminary to its passage through said opening, substantially as set forth.

3. In a hose-supporter, the combination of two jaws one of which is provided with an opening and the other of which is provided with a downwardly-curved pivotal tongue adapted to extend through the opening of the open jaw, and a resilient strip or part adapted to press on said tongue and hold it in position preliminary to its passage through said opening, substantially as set forth.

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**754,348. STEAM-BOILER.** FREDERICK J. ROWAN, Glasgow, Scotland. Filed Dec. 19, 1903. Serial No. 185,846. (No model.)



*Claim.*—1. In steam-boilers and in feed-heaters the combination comprising water-tubes, means within the water-tubes for dividing the flowing water into minute streams, outer tubes fitted with spirals and top and bottom headers, whereby the heated and heating fluids are divided into minute streams flowing in opposite directions and the extent of travel of these fluids is increased, substantially as herein described.

2. In steam-boilers and in feed-heaters water-tubes, means within the water-tubes for dividing the flowing water into minute streams in combination with an outer equivalently formed or fitted tube or passage through which the heating gases or steam pass in the opposite direction substantially as herein described.

3. In combination a steam-boiler, a feed-heater, water-tubes, means within the water-tubes for dividing the flowing water into minute streams and an outer equivalently formed or fitted tube or passage through which the heating gases or steam pass in the opposite direction substantially as herein described.

4. In steam-boilers and in feed-heaters, the combination comprising water-tubes fitted with film-tubes, heating-tubes fitted with spirals, and top and bottom headers, the top header being fitted with a horizontal dividing-plate, and film-tubes carried above said plate, substantially as herein described.

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**754,349. FISH-HOOK.** BENJAMIN S. SCOTT, Ewell, Va. Filed July 21, 1903. Serial No. 166,475. (No model.)



*Claim.*—1. A fish-hook having a plurality of barbed shanks, and upward-disposed bait-holding prongs on the shanks.

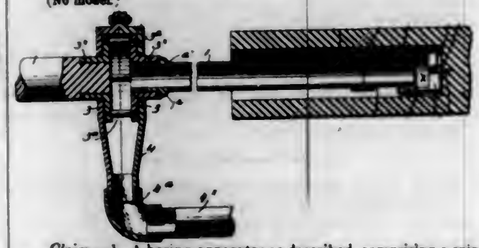
2. A fish-hook having a plurality of barbed shanks, and upward-projecting oppositely-disposed bait-holding prongs on the shanks.

3. A fish-hook having a plurality of barbed shanks disposed in substantial parallelism, and upward-projecting oppositely-disposed bait-holding prongs arranged on the inner sides of the shanks.

4. A fish-hook having a plurality of barbed shanks, the barbs being disposed in the same plane, and the shanks being provided with upward-projecting oppositely-disposed bait-holding prongs projecting inward from the shanks.

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**754,350. TUBULAR AUGER.** GROVE D. SHAULL and JAMES H. SHAULL, Charlotte, Mich. Filed July 22, 1903. Serial No. 166,644 (No model.)

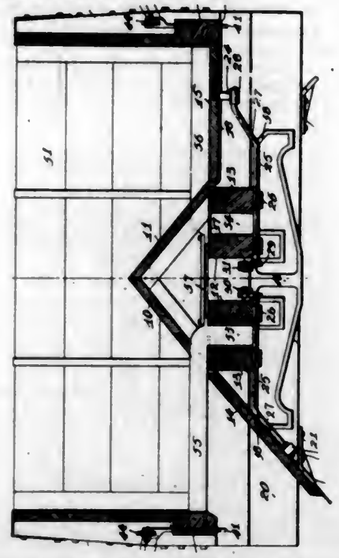


*Claim.*—1. A boring apparatus as described, comprising a spindle, a hollow mandrel, a combined collector and coupling adapted to join the adjacent ends of the spindle to the outlet end of the mandrel and arranged to receive the cuttings that are drawn through the hollow mandrel, a cutter-head on the inlet end of the mandrel of greater diameter than the said mandrel and a suction-blast connected with the combined collector or coupling.

2. In a boring-tool as described, the combination with the hollow mandrel having a threaded end and a suction-fan; of a cutter-head comprising a hollow spindle, an annular flange or head on the spindle, a series of longitudinally-projected holders secured to the annular head, said holders including radially inwardly bent portions, bits having angle-blades, and an auger-point detachably secured to the said inwardly-bent portions, means for detachably connecting the cutter-head to the hollow mandrel and means connected with the discharge end of the mandrel for joining the said mandrel with the lathe and with the suction-fan as set forth.



**754,351. DUMP-CAR.** JOHN SHELTON, Denver, Colo. Filed Jan. 2, 1904. Serial No. 187,477. (No model.)



*Claim.*—1. In a dump-car, a body-bolster adapted to rest upon the truck-bolster and extending upwardly through the center of the car-body and then laterally to the side sills of the car-body, and dump-doors hinged in position to swing upwardly against the outer portions of the body-bolster, substantially as specified.

2. In a dump-car, a body-bolster, central sills supported by the body-bolster, said body-bolster extending upwardly to a point above the central sills and then laterally and supporting side sills, and dump-doors hinged in position to swing upwardly against the lateral portions of said body-bolster, substantially as specified.

3. A dump-car, comprising the combination with a car-body having a hopper-shaped bottom and a plurality of dump-doors leading from the bottom, of body-bolsters supporting the car-body and extending upwardly and laterally so that the doors swing upwardly against the body-bolster, and means of operating the doors, substantially as specified.

4. In a dump-car, the combination with a body-bolster having its arms located above the dump-doors, the dump-doors hinged in position to swing upwardly against said arms, and means of operating the doors, substantially as specified.

5. A dump-car, comprising the combination with a car-body having a hopper-shaped bottom, a plurality of dump-doors leading from the bottom, a body-bolster supporting said car-body, the arms of said bolster passing above the dump-doors, substantially as specified.

6. A dump-car, comprising the combination with a car having a hopper-shaped bottom, a plurality of dump-doors leading from the bottom, cams attached to said doors, shafts rotatably mounted, arms extending from the shafts and engaging the cams to close the doors, operating-arms attached to the shafts, rods connecting the operating-arms together, a winding-staff connected to said rod, so that by winding the staff the doors are closed, and means of holding the doors closed, substantially as specified.

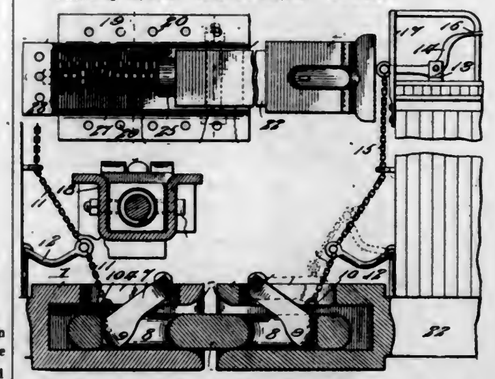
7. A dump-car, comprising the combination with a car having a hopper-shaped bottom, a plurality of dump-doors leading from the bottom, a body-bolster supporting the car-body, the arms of the bolster extending above the doors, cams attached to said doors, shafts rotatably mounted, arms extending from the shafts and engaging the cams to close the doors, operating-arms attached to the shafts, a rod connecting said operating-arms, means of operating said rod, and means of holding the doors closed, substantially as specified.

8. A dump-car, comprising the combination with a car having a hopper-shaped bottom, a plurality of dump-doors leading from the bottom, cams attached to said doors, shafts rotatably mounted, arms extending from the shafts and engaging the cams to close the doors, means of operating said shafts, snaps for holding the doors closed, said snaps being embedded in the side sills of the car and protected from injury, and means of operating the snaps, substantially as specified.

9. A dump-car, comprising the combination with a car having a hopper-shaped bottom, a plurality of dump-doors leading from the bottom, cams attached to said doors, shafts rotatably mounted, arms extending from the shafts and engaging the cams to close the doors, means of operating said shafts, snaps for holding the doors closed, said snaps being embedded in the side sills of the car and protected from injury, and means whereby said snaps may be connected for simultaneously releasing the doors or disconnected as required to operate one door independent of the others, substantially as specified.

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**754,352. CAR-COUPLING.** VACLAV SIMECEK, Praha, Tex. Filed Aug. 12, 1903. Serial No. 169,278. (No model.)

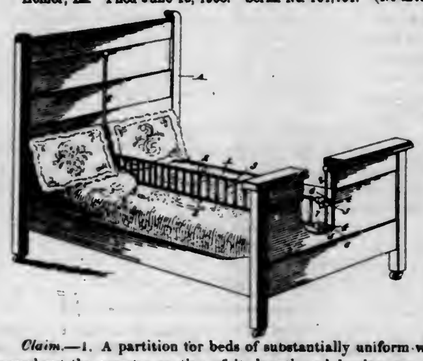


*Claim.*—1. In a car-coupling, the combination with a car-body, of a casing secured thereto, a draw-bar slidably mounted within the casing and having a slot therein, said draw-bar carrying a head having a longitudinal slot in its upper wall, lugs on the head, a pin in the lugs, a detent pivoted on the pin and provided with a cam-face upon its front portion, an eye upon the detent, a foot-lever fulcrumed upon the car-body, a chain connecting the eye of the detent and said lever, a bolt rigidly mounted in said casing and extending through the slot in the draw-bar and an expansive spring engaging one end of the casing and the rear of the draw-bar.

2. In a car-coupling, the combination with a car-body, of a casing having marginal flanges secured to the body, and a projection in one end thereof, a draw-bar slidably mounted within the casing and having a slot therein, said draw-bar carrying a head having a longitudinal slot in its upper wall, lugs on the head, a pin in the lugs a detent pivoted on the pin and provided with a cam-face upon its front portion, an eye upon the detent, a foot-lever fulcrumed upon the car-body, a chain connecting the eye of the detent and said lever, a bolt rigidly mounted in the casing and projected through said slot, and an expansive spring within the casing, one end of said spring engaging the projection in the casing and the other end abutting the draw-bar.

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**754,353. BED-PARTITION.** JOHN E. SMITH and JAMES P. SMITH, Homer, La. Filed June 16, 1903. Serial No. 161,701. (No model.)



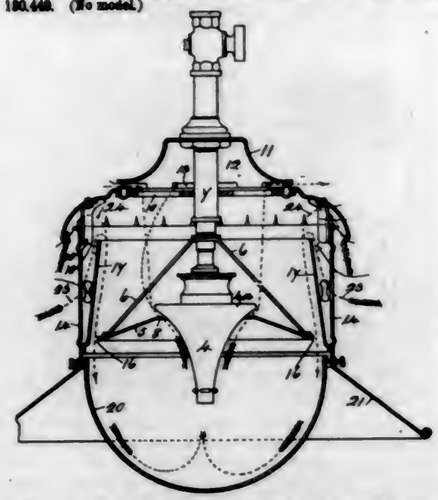
*Claim.*—1. A partition for beds of substantially uniform width throughout the greater portion of its length and having one rela-

tively narrow end portion overhanging a space within which the bedclothing may be adjusted.

2. A partition for beds of substantially uniform width throughout the greater portion of its length and having one relatively narrow end portion overhanging a space within which the bedclothing may be adjusted, in combination with vertically-disposed supporting-rods for the head and foot of said partition, and adjustable fastening devices carried by the partition arranged to engage said rods to support the partition.

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754,854. INVERTED INCANDESCENT GAS-LAMP. THOMAS R. SMITH, Handsworth, England. Filed Nov. 9, 1903. Serial No. 180,449. (No model.)



*Claim.*—1. In a lamp of the class described, the combination with a burner, of a body having air-inlets, a circular partition between the burner and body and separated from the latter to form a space for the passage of atmospheric air entering said inlets, a hood over the body, having inlets for atmospheric air, a hot-air chamber above the hood, having inlets for the hot air from the burner, and outlets for said hot air opening into the atmosphere, and a deflecting-plate around and separated from the burner and inclosed by and separated from said partition.

2. In a lamp of the class described, the combination with a burner, of a body having circumferential air-inlets, a circular partition within and connected to said body, the partition being separated from the body beyond its point of connection therewith to afford a space for the passage of atmospheric air entering through said inlets, a deflecting-plate surrounding the burner and separated therefrom to form a space for the passage of hot air from the burner, said deflecting-plate being inclosed by and separated from the central partition to form a space for the passage of atmospheric air to the burner, entering said inlets.

3. In a lamp of the class described, the combination with a cylindrical body having air-inlets, of a circular partition within the body consisting of two overlapping and separated parts, the lower part being connected with said body below said inlets and the upper part being free of said body to provide for the passage of air over the top of said partition, which air enters the inlets, and which is adapted to flow through the space separating the two sections of the partition.

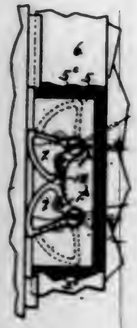
4. In a lamp of the class described, the combination with a body having air-inlets, of a circular partition within the body, consisting of two overlapping and separated parts, one of the parts being connected with said body, and the latter having an outlet for the escape of liquid.

5. In a lamp of the class described, the combination of a body, a drop-down reflector carried by said body, a burner in the body, and a deflector also in the body, arranged for movement with respect to the burner to obtain ready access to the latter.

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754,855. SASH-LOCK. ABRAHAM M. SOUTHARD and CLARENCE L. SOUTHARD, Denver, Colo. Filed Sept. 24, 1903. Serial No. 174,601. (No model.)

*Claim.*—The combination with a casing, of a spring-held cam mounted thereon and having a hub engaging openings formed in the casing, the hub being provided with an opening, and a key-lever whose stem engages the opening of the cam-hub, the said key-lever being provided with an exposed arm extending at an angle to the stem, and a pin passing through the lever-stem inside the casing to prevent the removal of the latter, the key-lever stems being provided with pins located inside the casing to prevent the removal of the levers.



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754,856. SAWING APPLIANCE. VERE SPENCER, Brokenswerd, Ohio. Filed Sept. 1, 1903. Serial No. 171,553. (No model.)



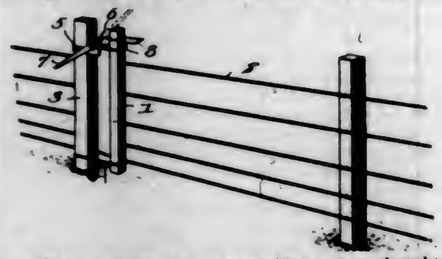
*Claim.*—1. In a saw-guide, a bar provided at one end with saw-engaging means and having the opposite end portion bent about at a right angle, thence rearwardly to form a fulcrum and stop, and a dog pivotally connected to the said rear extension, substantially as set forth.

2. In a saw-guide, a bar provided at one end with saw-engaging means and having its opposite end portion of elbow form and terminating in a rear forked extension forming a fulcrum and stop, and a dog pivoted between the fork members, substantially as specified.

3. The saw-guide substantially as herein specified, the same consisting of a bar having one end straight, the opposite end of elbow form and the intermediate portion curved, the terminal portion of the elbow being forked and rearwardly extended to form a fulcrum and stop, a dog pivoted between the extremities of the rear extension, a weight adjustable on the curved portion of the bar and a roller-guide adjustably fitted to the straight end of the bar, substantially as set forth.

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754,857. GATE-FASTENER. CHARLES H. SPENCER, Kendall, Kans. Filed Dec. 5, 1903. Serial No. 183,990. (No model.)

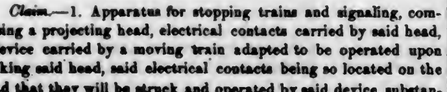


*Claim.*—1. A gate-fastener comprising a strap adapted to be secured to a post and having an eartat one end, a lever pivoted at one end of the ear, and an angular loop extending through the lever at a point between its ends and adapted to receive the end bar of a gate, said loop forming a stop for the lever.

2. The combination with a fence-post having a loop at one end thereof for the reception of the end bar of a gate; of a strap secured to said post adjacent its other end, a lever pivoted at one end to the strap, and a loop extending through the lever at a point between its ends and adapted to receive the end bar of a gate, said loop forming a stop for the lever.

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754,858. CLAMP FOR FASTENING SNAPS TO LEATHER LINES. WILLIAM W. SPOHN, Dale township, McLean county, Ill. Filed Nov. 25, 1903. Serial No. 183,574. (No model.)



*Claim.*—1. A clamp comprising a body having an opening therethrough and a threaded aperture in one side thereof and having also a circular aperture in the opposite side thereof extending into the opening opposite to the threaded aperture, the circular aperture being greater in diameter than the threaded aperture, and a clamp-screw in the threaded aperture and having a slot in the outer end thereof, the outer end of the screw being in approximately the same plane as the outer side of the clamp-body.

2. A leather line or strap looped and doubled upon itself and having a clamp-body extending about the doubled portions adjacent to the loop, the clamp-body having a threaded aperture in one side thereof and a circular aperture in the opposite side thereof provided with a rounded edge at the inner end thereof, the circular aperture being greater in diameter than the threaded aperture, a metallic attachment connected to the loop, and a clamp-screw in the threaded aperture and having a slot in the outer end thereof, the outer end of the screw being in approximately the same plane as the outer side of the clamp-body.

3. The combination with a leather strap or line looped and doubled upon itself, of a clamp-body having an opening therethrough that is rectangular and oblong in cross-section and containing the doubled portions of the strap or line adjacent to the loop, the clamp-body also having a threaded aperture in one side thereof and a circular aperture in the opposite thereof extending into the opening in which the circular aperture has a rounded edge, and a clamp-screw in the threaded aperture and having a slot in the outer end thereof, said screw being adapted to form circular depressions in the doubled portions of the leather strap or line in said circular aperture.

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754,859. APPARATUS FOR STOPPING RAILWAY-TRAINS FROM THE LINE AND FOR SIGNALING PURPOSES. BERNARDUS A. J. VAN DER HEGGE-ZIJNEN, Hanover, Germany. Filed May 26, 1902. Serial No. 109,047. (No model.)



*Claim.*—1. Apparatus for stopping trains and signaling, comprising a projecting head, electrical contacts carried by said head, a device carried by a moving train adapted to be operated upon striking said head, said electrical contacts being so located on the head that they will be struck and operated by said device, substantially as described.

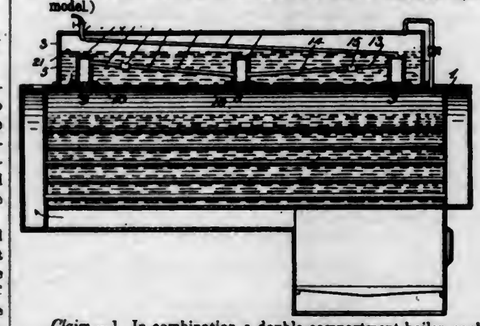
2. Apparatus for stopping trains and signaling, comprising a counterweighted pivoted head, and means for raising or lowering it between the rails, an electrical contact device carried by said head and conductors therefor, in combination with a device carried by a train adapted to strike said head to operate the contact and itself be operated by the force of impact, substantially as described.

3. Apparatus for stopping trains and signaling, comprising a head projecting above the rails, an abutment-piece *h* at one part of the head, an electrical contact device adapted to be operated by said piece *h* and a device carried by a train adapted to strike said piece *h* to operate the contact and itself be operated by impact against said head, substantially as described.

4. In apparatus for stopping railway-trains from the line and for signaling purposes; the combination of a contact device supported between the rails; means for actuating the brake mechanism of the train by said contact device; a brass disk *e* in connection with one terminal of a source of electricity, said disk located in the center of an insulating-sleeve *b* in the head of the contact device; a pair of brass pins *e*, one at each side of the aforesaid disk *e*; spiral springs *d* for keeping the brass pins *e* normally a short distance from the disk *e*; means for preventing the rotation of the said brass pins *e*; and brass contact-springs *g*, bearing against the movable pins *e*, in connection with the second terminal of the source of electricity, substantially as described and shown.

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754,860. STEAM-BOILER. JOSEPH WEHRLE, Wampum, Pa., assignor to himself and John J. Offermanns, Wampum, Pa., and Charles Scheppener, Chenton, Pa. Filed Dec. 5, 1903. Serial No. 183,866. (No model.)



*Claim.*—1. In combination, a double-compartment boiler, each compartment being provided with a water-space and a steam-space and a projection from the steam-space of one of the compartments extending through both spaces and beyond the same of the other compartment, and means for establishing communication between the steam-spaces of the two compartments.

2. In combination, a double-compartment boiler, each compartment being provided with a water-space and a steam-space, means for passing the steam from one of the compartments through the water-space and then through and out of the steam-space of the other compartment, and means for establishing communication between the steam-spaces of the two compartments.

3. In a steam-boiler, two compartments, one of which is a feed-water compartment, a pipe from the boiler-compartment to form a conduit for the passage of steam from the boiler-compartment through the feed-water compartment, and means for heating said steam after said passage.

4. In a steam-boiler, two compartments, one of which is a feed-water compartment, an inclined pipe from the boiler through the feed-water compartment to form a conduit for passing a portion of the steam from the boiler-compartment through the feed-water, and means for subjecting said portion of the steam to the action of other steam from the boiler after said passage.

5. In a steam-boiler, a boiler, a shell secured thereto forming a space, hollow portions from the boiler in said space, a pipe leading from one of said portions to the top of the shell, means for keeping said space partly filled with water, and means for establishing communication between said space and the steam-space and the water-space respectively, of the boiler.

6. In a steam-boiler, a boiler, a shell secured thereto forming a space, intercommunicating, hollow saddles in said space communicating with the live-steam space of the boiler, a pipe leading from one of said saddles to the top of the shell, means for keeping said space filled with water above the tops of said saddles, and means for establishing communication between said space and the steam-space and the water-space respectively of the boiler.

7. In a steam-boiler, a boiler, a shell secured thereto forming a space, hollow saddles in said space communicating with the steam-space of the boiler, inclined pipes connecting said saddles, a pipe leading from the top of one of the saddles to the top of the shell, means for keeping water above the tops of said saddles, and means for establishing communication between said space and the steam-space and the water-space respectively, of the boiler.

8. In a steam-boiler, a boiler, a shell secured thereto, forming a space, three hollow saddles in said space communicating with the steam-space of the boiler, inclined pipes connecting said saddles, the ends of the pipes at the middle saddle being lower than at the end saddles, a pipe leading from one of the end saddles to the top of the shell, means for keeping water above the tops of said saddles, and means for establishing communication between said space and the steam-space and the water-space respectively, of the boiler.

9. In a steam-boiler, a boiler, a shell secured thereto forming a space, communicating projections from the boiler in said space, an inclined pipe extending from the projection at one end of the boiler to the opposite end of the shell, means for keeping said projections covered with water, and means for enveloping said pipe with live steam from the boiler.

10. In a steam-boiler, a boiler, a shell secured thereto forming a space, a steam-gage for the space and for the boiler respectively, an overflow-pipe leading from the space at a point below the steam-gage thereof to the boiler, intercommunicating hollow projections from the boiler into said space, the tops of which are each below the outlet of the overflow-pipe, a pipe leading from one of said projections to the top of the shell, and means for establishing communication between the upper portion of said space and the steam-space of the boiler.

11. In a steam-boiler, a boiler, a semicylindrical shell secured at its side edges thereto forming thereby a space above the boiler with a long, narrow space along each side, a crescent-shaped end piece at each end of the shell, the points of which are each provided with a hand-hole, a manhole in one of the end pieces, a conduit leading from the top of the boiler to and through the top of the shell, means for keeping said space above the boiler partly filled with water, and means for establishing communication between said water-space and the boiler.

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754,861. **MANIFOLD SALES-BOOK.** LEWOOD G. WHITNEY, New York, N. Y. Filed Nov. 5, 1903. Serial No. 179,916. (No model.)




*Claim.*—1. A manifold check-book comprising a pair of hinged covers, a pad of check-slips on one of said covers, a bank of original checks, and a frame 35 upon the other cover, combined with the pivot-holder 39 connected at one end to said frame and at the other end extending downwardly below said frame, said holder 39 being adapted to receive the original checks and permit the latter to have a hinged movement toward and from said pad and also a swiveling movement below said frame; substantially as set forth.

2. In a manifold sales-book, supporting means, means thereon adapted to receive and detachably retain a pad of check-slips, the frame 35 secured at one end only to said supporting means for receiving a series of original check-slips, and the pivot-holder 39 connected with said frame upon which said original check-slips may be threaded and which is adapted to permit the said original checks to have a hinged movement toward and from said pad and also a swiveling movement to position below said frame, said frame having a spring action toward its support, thereby to more securely hold the checks passed below it; substantially as set forth.

3. In a manifold sales-book, supporting means, means thereon adapted to receive and detachably retain a pad of check-slips, the elevated frame held at one portion only by its support for receiving a series of original check-slips, the pivot-holder 39 upon which said original check-slips are threaded at their top ends for retaining said ends upon said elevated frame, and the retaining-lip 34 for detachably holding the outer ends of said original check-slips, the said holder 39 permitting said original checks to have a hinged movement toward and from said pad and also a swiveling movement below said frame; substantially as set forth.

4. In a manifolding sales-book, supporting means, means thereon adapted to receive and detachably retain a pad of check-slips, the elevated frame secured at one portion only to its support for receiving a series of original check-slips, and having the lips 42 to form abutments for the adjacent ends of said slips, the pivot-holder 39 upon which said original check-slips are threaded at their top ends, and the lip 34 for detachably retaining the other ends of said original check-slips, said holder 39 permitting the said original check-slips to have a hinged movement toward and from said pad and also a swiveling movement below said frame; substantially as set forth.

5. In a manifold sales-book, supporting means, a pad of check-slips thereon, the plate 26 secured to said supporting means and having at one end the detent 30, and the right-angular frame 31 pivotally secured at one end and at its other end having the spring-tongue 32 to engage said detent, said frame 31 being adapted to inclose the stub portion of said pad; substantially as set forth.

6. In a manifold sales-book, supporting means, a pad of check-slips thereon, the plate 26 fastened upon said supporting means and having the vertical lips 29 and detent 30, and the pivoted right-angular frame 31 having the spring-tongue 32 to engage said detent, said frame 31 being adapted to said plate 36 and to confine the stub portion of said pad; substantially as set forth.

7. In a manifold sales-book, supporting means, a pad of check-slips thereon, the plate 26 fastened upon said supporting means and having the vertical lips 29, the pivoted right-angular frame 31 having the horizontal and vertical members to confine the stub portion of said pad upon said plate, and a locking device for detachably retaining said right-angular frame in position upon said stub; substantially as set forth.

8. A manifold sales-book comprising a pad of checks to be issued and a carbon-sheet on said pad, combined with a series of original checks for use in connection with said pad, supporting means for said pad and original checks, the frame 35 for said original checks, the holder in cooperative relation thereto for said original checks, said frame being attached at one portion only to its support whereby some of said original checks may be turned below it, and said holder passing through corresponding apertures in said original checks and permitting said checks to have a hinged movement thereon to and from said pad and also a swiveling movement when said checks are to be turned below said frame, substantially as set forth.

9. In a manifold sales-book, supporting means, means thereon adapted to receive and detachably retain a pad of check-slips, the frame for receiving a series of original check-slips, and the holder upon which said original check-slips may be threaded and which is in the form of a pivot extending upwardly, outwardly and downwardly into cooperative relation to said frame, said frame being attached at one portion only to its support whereby some of said original check-slips may be turned on the lower portion of said holder as an axis and passed below said frame; substantially as set forth.

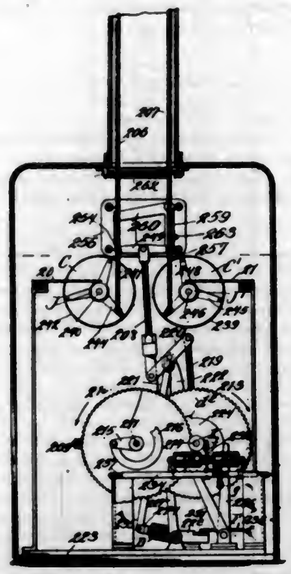
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754,862. **RAILWAY SIGNALING SYSTEM.** HENRY BEHR, Westfield, N. J. Filed Oct. 16, 1901. Serial No. 78,812. (No model.)

*Claim.*—1. The combination, with signal-indicating means counterweighted to go to danger, of actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and having a movable part, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the movable part of the clutch; the counterweighted signal-indicating means being free to go to danger independently of the actuating mechanism when the clutch is released, and the actuating mechanism controlling the signal-indicating means to force the indicating means to danger should the clutch or counterweight fail.

2. The combination, with signal-indicating means counterweighted to go to danger, of actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and having a movable part, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the movable part of the clutch, the counterweighted signal-indicating means being free to go to danger independently of the actuating mechanism when the clutch is released, the actuating mechanism controlling the signal-indicating means to force the danger indication should the counterweight fail and the actuating mechanism controlling the movable part of the clutch to force the clutch into engaging position.





3. The combination, with signal-indicating means, of actuating mechanism therefor, a clutch controlling the movement of the indicating means and having a part pivoted on a stationary fulcrum and a cross-leve: having a movable fulcrum on such pivoted part of the clutch and connected to the actuating mechanism and the indicating means.

4. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement of the indicating means and having a part pivoted on a stationary fulcrum, and a cross-lever having a movable fulcrum on such pivoted part of the clutch and connected to the actuating mechanism and to the signal-indicating means, the counterweighted signal-indicating means being movable to danger independently of the actuating mechanism by actuation of the cross-lever when the clutch is released.

5. The combination, with signal-indicating means, of actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the pivoted clutch-lever, the pivoted clutch-lever being freely movable to permit the danger indication when the clutch is released.

6. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the pivoted clutch-lever, the counterweighted signal-indicating means being free to swing the clutch-lever on its pivot and go to danger independently of the actuating mechanism when the clutch-lever is released.

7. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and a cross-lever having a movable fulcram on the clutch and connected to the actuating mechanism and to the signal-indicating means, the counterweighted signal-indicating means being free to go to danger independently of the actuating mechanism by actuation of the cross-lever when the clutch is released, and the actuating mechanism controlling the signal-indication should the counterweight fail.

8. The combination, with signal-indicating means, of actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and a cross-lever fulcrumed on the clutch-lever and connected to the actuating mechanism and to the signal-indicating means.

9. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and a cross-lever fulcrumed on the clutch-lever and connected to the actuating mechanism and to the signal-indicating means, the counterweighted signal-indicating means being free to swing the clutch-lever on its pivot and go to danger independently of the actuating mechanism when the clutch-lever is released.

10. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and a cross-lever fulcrumed on the clutch-lever and connected to the actuating mechanism and to the signal-indicating means, the counterweighted signal-indicating means being free to swing the clutch-lever on its pivot and go to danger independently of the actuating mechanism when the clutch-lever is released, and the actuating mechanism controlling the clutch-lever through the cross-lever to swing the clutch-lever into engaging position.

11. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and a cross-lever fulcrumed on the clutch-lever and connected to the actuating mechanism and to the signal-indicating means, the counterweighted signal-indicating means being free to swing the clutch-lever on its pivot and go to danger independently of the actuating mechanism when the clutch-lever is released, and the actuating mechanism controlling the signal-indicating means through the cross-lever to force the danger indication should the counterweight fail.

12. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, and a cross-lever fulcrumed on the clutch-lever and connected to the actuating mechanism and to the signal-indicating means, the counterweighted signal-indicating means being free to swing the clutch-lever on its pivot and go to danger independently of the actuating mechanism when the clutch-lever is released, the actuating mechanism controlling the signal-indicating means through the cross-lever to force the danger indication should the counterweight fail, and the actuating mechanism controlling the clutch-lever through the cross-lever to swing the clutch-lever into engaging position.

13. The combination of signal-indicating means counterweighted to go to danger, means for actuating the same, and a clutch controlling the movement to clear and clear indication and comprising a pivoted clutch-lever coacting therewith, and a stationary retaining and releasing part therefor, the means for actuating the signal-indicating means being held by the pivoted clutch-lever in operative condition to put the signal-indicating means to safety when the pivoted clutch-lever is held by the stationary part, the counterweighted signal-indicating means being free to swing the clutch-lever away from the stationary part and go to danger independently of the actuating means when the clutch is not held by the stationary part, and the actuating means controlling the clutch-lever to swing the clutch-lever into engaging position relatively to the stationary part.

14. The combination of signal-indicating means counterweighted to go to danger, means for actuating the same, and a clutch controlling the movement to clear and clear indication and comprising a stationary electromagnet and a pivoted clutch-lever carrying an armature, the actuating means being held by the clutch-lever in operative condition to put the signal-indicating means to safety when the clutch-electromagnet is energized, the counterweighted signal-indicating means being free to swing the clutch-lever armature away from the stationary electromagnet and go to danger independently of the actuating means when the clutch-electromagnet is deenergized, and the actuating means controlling the clutch-lever to force the clutch-lever armature into engaging position relatively to the stationary electromagnet.

15. The combination of signal-indicating means counterweighted to go to danger, means for actuating the same, and a clutch controlling the movement to clear and clear indication and comprising a pivoted clutch-lever and a stationary retaining and releasing part therefor, the means for actuating the signal-indicating means being held by the clutch-lever in operative condition to put the signal-indicating means to safety when the clutch-lever is held by the stationary part, the counterweighted signal-indicating means being free to swing the clutch-lever away from the stationary part and go to danger independently of the actuating means when the clutch is not held by the stationary part, the actuating means controlling the signal-indicating means to force the danger indication should the

counterweight fall, and the actuating means controlling the clutch-lever to swing the clutch-lever into engaging position relatively to the stationary part.

16. The combination of signal-indicating means counterweighted to go to danger, means for actuating the same, and a clutch controlling the movement to clear and clear indication and comprising a stationary electromagnet and a pivoted clutch-lever carrying an armature, the actuating means being held by the clutch-lever in operative condition to put the signal-indicating means to safety when the clutch-electromagnet is energized, the counterweighted signal-indicating means being free to swing the clutch-lever armature away from the stationary electromagnet and go to danger independently of the actuating means when the clutch-electromagnet is demergined, the actuating means controlling the signal-indicating means to force the danger indication should the counterweight fail, and the actuating means controlling the clutch-lever to force the clutch-lever armature into engaging position relatively to the stationary electromagnet.

17. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a pivoted clutch-lever, a releasable holding part for the clutch-lever located at a point distant from the pivot of the clutch-lever, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever.

18. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a pivoted clutch-lever carrying an armature located at a distance from the pivot of the clutch-lever, a clutch-electromagnet cooperating with such armature, means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever.

19. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a clutch including a pivoted clutch-lever, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the clutch-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

20. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a pivoted clutch-lever carrying an armature, a clutch-electromagnet cooperating with such armature, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the clutch-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

21. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a pivoted clutch-lever, a releasable holding part for the clutch-lever located at a point distant from the pivot of the clutch-lever, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

22. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, a pivoted clutch-lever carrying an armature located at a distance from the pivot of the clutch-lever, a clutch-electromagnet cooperating with such armature, and means connecting the actuating mechanism and the signal-indicating means and including a part fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

23. The combination of signal-indicating means counterweighted to go to danger, actuating means therefor, a clutch controlling the movement to clear and clear indication and a lever connection of the indicating means and actuating means pivotally connected to the clutch and pivotally connected to the indicating means and pivotally connected to the actuating means, such clutch and lever connection being freely movable to permit the danger indication when the clutch is released.

24. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a clutch controlling the movement to clear and clear indication and including a pivoted clutch-lever, a cross-lever fulcrumed on the clutch-lever, a connecting-rod pivotally connected to the cross-lever and connecting the same to the actuating part, and an actuating-rod connected to the signal-indicating means and having a pivotal connection with the cross-lever.

25. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a pivoted clutch-lever, a releasable holding part for the clutch-lever located at a point distant from the pivot of the clutch-lever, a cross-lever fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever, a connecting-rod pivotally connected to the cross-lever and connecting the same to the actuating part, and an actuating-rod connected to the signal-indicating means and having a pivotal connection with the cross-lever.

26. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a pivoted clutch-lever carrying an armature located at a distance from the pivot of the clutch-lever, a clutch-electromagnet cooperating with such armature, a cross-lever fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever, a connecting-rod pivotally connected to the cross-lever and connecting the same to the actuating part, and an actuating-rod connected to the signal-indicating means and having a pivotal connection with the cross-lever.

27. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a clutch including a pivoted clutch-lever, a cross-lever fulcrumed on the clutch-lever, a connecting-rod pivotally connected to the cross-lever and pivotally connected to the actuating part, and an actuating-rod connected to the signal-indicating means and pivotally connected to the cross-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

28. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a pivoted clutch-lever carrying an armature, a clutch-electromagnet cooperating with such armature, a cross-lever fulcrumed on the clutch-lever, a connecting-rod pivotally connected to the cross-lever and connecting the same to the actuating part, and an actuating-rod connected to the signal-indicating means and pivotally connected to the cross-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

29. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a pivoted clutch-lever, a releasable holding part for the clutch-lever located at a point distant from the pivot of the clutch-lever, a cross-lever fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever, a connecting-rod pivotally connected to the cross-lever and connecting the same to the actuating part, and an actuating-rod connected to the signal-indicating means and pivotally connected to the cross-lever with the direction of thrust of the counterweighted signal-indicating means upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

30. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, a pivoted clutch-lever carrying an armature located at a distance from the pivot of the clutch-lever and a clutch-electromagnet cooperating with such armature, a cross-lever fulcrumed on the clutch-lever in proximity to the pivot of the clutch-lever, a connecting-rod pivotally connected to the cross-lever and connecting the same with the actuating part, and an actuating-rod connected to the signal-indicating means and pivotally connected to the cross-lever with the direction of thrust of the counterweight of the signal upon the clutch-lever at such fulcrum nearly parallel to a line joining the center of such fulcrum and the pivotal center of the clutch-lever.

31. The combination of signal-indicating means counterweighted to go to danger, a rotating actuating part therefor, connecting mechanism from the actuating part to the counterweighted signal indicating means arranged to impart a backward thrust to the rotating actuating part when the signal-indicating means is in safety condition and a self-locking mechanism locking against backward movement of the actuating part but permitting forward movement thereof.

32. The combination of signal-indicating means counterweighted to go to danger, a rotating actuating part therefor, connecting mechanism from the actuating part to the counterweighted signal-indicating means arranged to impart a backward thrust to the rotating actuating part when the signal-indicating means is in safety condition and also to impart a backward thrust to the rotating actuating part when the signal-indicating means is in danger condition by any tendency to move to safety, and a locking mechanism for preventing backward movement of the actuating part from either of such thrusts.

33. The combination of signal-indicating means counterweighted to go to danger, a rotating actuating part therefor, connecting mechanism for the actuating part to the counterweighted signal-indicating means arranged to impart a backward thrust to the rotating actuating part when the signal-indicating means is in safety condition, and a pawl having a stationary pivot and a ratchet fixed upon the rotating actuating part with its teeth arranged to coact with the pawl to prevent backward movement of the actuating part but permit forward movement thereof.

34. The combination of signal-indicating means counterweighted to go to danger, a rotating actuating part therefor, connecting mechanism from the actuating part to the counterweighted signal-indicating means arranged to impart a backward thrust to the rotating actuating part when the signal-indicating means is in safety condition and also to impart a backward thrust to the rotating actuating part when the signal-indicating means is in danger condition by any tendency to move to safety, and a pawl and ratchet for preventing backward movement of the actuating part from either of such thrusts.

35. The combination, with signal-indicating means and signal-actuating means, of a part moving with the signal-indicating means in its movement to clear, and means for controlling the power-supply of the actuating means and including power-discontinuing means, such power-discontinuing means being controlled by the part moving with the signal-indicating means but being movable independently thereof in its power-discontinuing movement.

36. The combination, with signal-indicating means and electrically-controlled signal-actuating means, of a part moving with the signal-indicating means in its movement to clear, and current-controlling means including a pivoted circuit-opening lever controlled by the part moving with the signal but movable independently thereof in its circuit-opening movement, such current-controlling means controlling the signal-actuating means.

37. The combination with signal-indicating means and signal-actuating means, of a ratchet-wheel moving with the signal-indicating means in its movement to clear, and power-controlling means for the signal-actuating means including a pawl-lever controlled by such ratchet-wheel but movable independently thereof.

38. The combination, with signal-indicating means and electrically-controlled signal-actuating means, of a ratchet-wheel moving with the signal-indicating means in its movement to clear, and current-controlling means including a circuit-opening pawl-lever controlled by such ratchet-wheel but movable independently thereof in its circuit-opening movement, such current-controlling means controlling the signal-actuating means.

39. The combination of signal-indicating means, a part moving with the signal-indicating means in the movement to clear, a locking mechanism for such part, and means for starting and continuing the actuation of the signal-indicating means independently of the locking mechanism and completing and discontinuing the actuation of the signal-indicating means subject to the control of the locking mechanism.

40. The combination of signal-indicating means counterweighted to go to danger, a motor connected thereto, a part moving with the signal-indicating means in the movement to clear, locking mechanism for such part, the locking mechanism being constructed to lock the signal-indicating means against going to danger by its counterweight but not to oppose the movements of the motor to put the signal-indicating means to safety or danger, and motor-controlling means for starting and actuating the motor independently of the locking mechanism and completing the movement thereof and discontinuing the power-supply of the motor by the locking engagement of the locking mechanism.

41. The combination of signal-indicating means, an electromotor therefor, a part moving with the signal-indicating means in the movement to clear, a locking mechanism for such part, and means for energizing the electromotor independently of the locking mechanism and continuing the energization thereof subject to the control of the locking mechanism and for deenergizing the electromotor by the locking engagement of the locking mechanism.

42. The combination of signal-indicating means, a motor therefor, a ratchet-wheel moving with the signal-indicating means in the movement to clear, a pawl adapted to engage with the teeth of the ratchet-wheel, and electric-circuit make-and-break devices for starting and actuating the motor independently of the pawl and completing the movement of the motor subject to the control of the pawl and discontinuing the power-supply of the motor by the engagement of the pawl with a tooth of the ratchet-wheel.

43. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, connecting mechanism from the actuating part to the signal-indicating means connected to the signal-indicating means with the thrust of the signal-indicating means, when in the safety condition, in the direction of movement of the actuating part, a self-locking mechanism for preventing such movement of the actuating part, a motor connected to such actuating part, and motor-controlling means in part controlled by the self-locking mechanism.

44. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, connecting mechanism from the actuating part to the signal-indicating means connected to the signal-indicating means with the thrust of the signal-indicating means, when in safety condition, in the direction of movement of the actuating part, a self-locking pawl and ratchet for preventing such movement of the actuating part, a motor connected to such actuating part, and motor-controlling means in part controlled by the pawl.

45. The combination of signal-indicating means counterweighted to go to danger, an actuating part therefor, connecting mechanism from the actuating part to the signal-indicating means connected to the signal-indicating means with the thrust of the signal-indicating means, when in safety condition, in the direction of movement of the actuating part, a locking mechanism for preventing such movement of the actuating part, a motor connected to such actuating part, and means for starting and actuating the motor independently of the locking mechanism and completing the movement thereof subject to the control of the locking mechanism and discontinuing the power-supply of the motor by the locking engagement of the locking mechanism.

46. The combination of signal-indicating means counterweighted to go to danger, a rotating actuating part therefor, connecting mechanism from the actuating part to the indicating means arranged so that when the indicating means is in safety condition the counterweight of the signal tends to rotate the actuating part backwardly, a pawl and ratchet for preventing such backward movement of the actuating part, a motor connected to such actuating part, and means for starting and actuating the motor independently of the pawl and completing the movement thereof subject to the control of the pawl and discontinuing the power-supply of the motor by the engagement of the pawl with a tooth of the ratchet-wheel.

47. The combination of signal-indicating means, a motor therefor, a part moving with the signal-indicating means in the movement to clear, a locking mechanism for such part, a commutator also moving with the signal-indicating means in the movement to clear and commutator-brushes therefor and other circuit-completing and make-and-break devices coacting therewith and with the locking mechanism to start and actuate the motor independently of the locking mechanism and to complete the movement thereof subject to the control of the locking mechanism and to open a circuit and thereby discontinue the power-supply of the motor by the locking engagement of the locking mechanism.

48. The combination of signal-indicating means, a motor therefor, a ratchet-wheel moving with the signal-indicating means in the movement to clear, a pawl adapted to engage with the teeth of the ratchet-wheel, a commutator also moving with the signal-indicating means in the movement to clear, and commutator-brushes and circuit-completing and make-and-break devices coacting therewith and with the pawl to start and actuate the motor independently of the pawl and to complete the movement thereof subject to the control of the pawl and to open a circuit and thereby discontinue the power-supply of the motor by the engagement of the pawl with a tooth of the ratchet-wheel.

49. The combination of signal-indicating means and means for actuating the same, such actuating means including a resilient connection interposed as a power-conveying device and connected at one end to the power and at the other end to the resistance and adapted to yield to a limited extent to forward movement of the actuating means and to react upon the discontinuance of the forward movement of the actuating means.

50. The combination of signal-indicating means and means for actuating the same, such actuating means including a resilient connection interposed as a power-conveying device and having parts movable relatively to each other and respectively connected to the power and the resistance and stops to the forward and backward

relative movements of the parts, the resilient connection being adapted to yield and contact with the front stop upon the forward movement of the actuating means and to react and contact with the back stop upon the discontinuance of the forward movement of the actuating means.

51. The combination of signal-indicating means, an actuating-shaft for the same, a motor and gearing connecting the motor and actuating-shaft, such gearing including a part connected to the actuating-shaft, a loose part connected to the motor and moving between stops on the part connected to the actuating-shaft and a resilient connection controlling the loose part and adapted to yield to the actuation of the motor and to reverse the movement of such loose part upon the discontinuance of the power-supply of the motor.

52. The combination of signal-indicating means, motive means therefor, a part moving with the signal-indicating means in the movement to clear, a loose part moving with the motive means and having movement independently of the part moving with the indicating means, and a locking device for locking the part moving with the indicating means against forward movement, such locking device being controlled by the loose part.

53. The combination of signal-indicating means, motive means therefor, a ratchet moving with the indicating means in the movement to clear, a loose part moving with the motive means and having movement independently of the ratchet, and a pawl cooperating with the ratchet to lock the same against forward movement, such pawl being controlled by the loose part.

54. The combination of signal-indicating means, motive means therefor, a part moving with the indicating means in the movement to clear, a loose part moving with the motive means and having movement independently of the part moving with the indicating means, and a resilient connection controlling the independent movement of the loose part and adapted to yield to a limited extent to forward movement of the actuating means and to react upon the discontinuance of the forward movement of the actuating means, and a locking device for locking the part moving with the indicating means against forward movement, such locking device being controlled by such loose part.

55. The combination of signal-indicating means, a rotating part connected thereto, signal-actuating means, gearing connecting the actuating means and rotating part, such gearing including a loose part connected to the actuating means and a resilient connection controlling the same and adapted to yield to a limited extent to forward movement of the actuating means and to react upon the discontinuance of the forward movement of the actuating means, and a locking device for locking the rotating part against forward movement, such locking device being controlled by such loose part.

56. The combination of signal-indicating means, motive means therefor, a ratchet moving with the indicating means in the movement to clear, a loose part moving with the motive means and having movement independently of the ratchet, and a resilient connection controlling the independent movement of the loose part and adapted to yield to a limited extent to forward movement of the actuating means and to react upon the discontinuance of the forward movement of the actuating means, and a pawl cooperating with the ratchet-wheel to lock the same against forward movement, such pawl being controlled by the loose part.

57. The combination of signal-indicating means, a rotating part connected thereto, signal-actuating means, gearing connecting the actuating means and rotating part and including a loose gear-wheel having stops thereon, a resilient connection between the loose gear-wheel and its shaft, and an arm fixed on such shaft and working between such stops.

58. The combination of signal-indicating means, a rotating part connected thereto, signal-actuating means, gearing connecting the actuating means and rotating part and including a loose gear-wheel having stops thereon, a resilient connection between the loose gear-wheel and its shaft, an arm fixed on such shaft and working between such stops, a ratchet-wheel on the rotating part, and a pawl cooperating with the ratchet-wheel to lock the same against forward movement, the loose gear-wheel having a cam thereon and the pawl having an arm cooperating with such cam so as to be unlocked thereby.

59. The combination of railway signal-indicating means giving two different clear indications, actuating means therefor, and a single clutch controlling both of such clear indications and having a movable part, and means connecting the actuating means and indicating means and including a part fulcrumed on the movable part of the clutch.

60. Railway signaling apparatus comprising counterweighted indicating means giving two different clear indications, actuating means therefor, means connecting the actuating mechanism and indicating means, and a single clutch controlling both clear indications and carrying a movable fulcrum of such connecting means, the counterweighted indicating means being free to go to danger from both clear indications independently of the actuating means when the clutch is released.

61. Railway signaling apparatus comprising counterweighted indicating means giving two different clear indications, actuating means therefor, and a single clutch controlling both clear indications, the counterweighted indicating means being free to go to danger from both clear indications independently of the actuating means when the clutch is released and the actuating mechanism controlling the indicating means to force the indicating means to danger should the clutch or counterweight fail.

62. Railway signaling apparatus comprising indicating means indicating danger, one block clear and a plurality of blocks clear, actuating means therefor, a single clutch controlling both of such clear indications and having a part pivoted on a stationary fulcrum, and connecting means between the actuating and indicating means including a part having a movable fulcrum on the pivoted part of the clutch.

63. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism for effecting the safety indication and an electromagnetic brake-clutch connected to the signal-indicating means independently of such actuating mechanism.

64. The combination of signal-indicating means counterweighted to go to danger, means for effecting the safety indication and an electromagnetic clutch to check the movement to danger, such clutch being connected to the indicating means independently of the means for effecting the safety indication.

65. The combination of signal-indicating means counterweighted to go to danger, means for effecting the safety indication, a clutch connected to the signal-indicating means and controlling the movement of the signal-indicating means toward danger, and circuit-controlling devices whereby the power of the clutch is varied to hold the indicating means or to retard the movement thereof.

66. The combination of signal-indicating means counterweighted to go to danger, means for effecting the safety indication, an electromagnetic clutch controlling the movement of the indicating means to danger, and circuit-controlling devices whereby the power of the electromagnetic clutch is varied to hold the indicating means or to retard the movement thereof.

67. The combination of signal-indicating means counterweighted to go to danger, means for effecting the safety indication, a clutch connected to the indicating means independently of the means for effecting the safety indication and circuit-controlling devices actuated by the movement of the indicating means and controlling the clutch.

68. The combination of signal-indicating means counterweighted to go to danger, means for effecting the safety indication, an electromagnetic clutch connected to the indicating means independently of the means for effecting the safety indication, and circuit-controlling devices actuated by the movement of the indicating means and controlling the electromagnetic clutch.

69. The combination of signal-indicating means counterweighted to go to danger, means for effecting the safety indication, a clutch controlling the movement to danger, circuit-controlling devices actuated by the movement of the indicating means and controlling the clutch, and other circuit-controlling devices controlling the power of the clutch.

70. The combination of two signals giving different indications, actuating mechanism therefor, and a single reciprocating actuating-rod connecting both signals to the actuating mechanism and actuating the different signals by different portions of the movement thereof.

71. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, the two signals giving different indications, actuating mechanism therefor, and a single reciprocating actuating-rod connecting both signals to the actuating mechanism and actuating the different signals by different portions of the movement thereof.

72. The combination of two signals giving different indications, a single reciprocating actuating-rod and actuating mechanism to which the actuating-rod is connected, self-acting controlling means connecting the single actuating-rod and the two signals and controlling the movements of the signals to put the signals to safety successively in the movement from danger to safety.

73. The combination of a home signal and a distant signal, both of such signals being counterweighted to go to danger, a single reciprocating actuating-rod, actuating mechanism to which the actuating-rod is connected and self-acting controlling means connecting the single actuating-rod and the two signals and controlling the movements of the signals to first put the home signal to safety in the movement from danger to safety.

74. The combination of a home signal and a distant signal, actuating mechanism therefor, a single reciprocating actuating-rod connecting both signals to the actuating mechanism and a self-acting locking device for the danger position of the distant signal, operative during the movement of the home signal to safety.

75. The combination of two signals giving different indications, a single reciprocating actuating-rod, actuating mechanism to which the actuating-rod is connected, self-acting controlling means connecting the single actuating-rod and the two signals and controlling the movements of the signals to first put one signal to safety in the movement from danger to safety, and a self-acting locking device for the danger position of the other signal, operative during the movement of the first-mentioned signal to safety.

76. The combination of two signals giving different indications, actuating mechanism therefor, a single actuating-rod connecting both signals to the actuating mechanism, and a self-acting locking device for the danger position of one signal operative during the movement of the other signal to safety and released by the final movement of the other signal toward safety position.

77. The combination of a home signal, a distant signal, actuating mechanism therefor, a single clutch controlling the movements of both signals to safety and a single reciprocating actuating-rod connecting both signals to the actuating mechanism.

78. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, the two signals giving different indications, and means for moving the signals to safety including a single clutch controlling both signals and including a single reciprocating actuating-rod for both signals.

79. The combination of a home signal counterweighted to go to danger, a distant signal counterweighted to go to danger, a single reciprocating actuating-rod for both signals and a single clutch controlling the movement of both signals to safety.

80. The combination of a signal counterweighted to go to danger and a clutch controlling its movement to danger, another signal giving a different indication and counterweighted to go to danger and a clutch controlling its movement to danger, and means for moving the signals to safety including a single clutch controlling both signals.

81. The combination of a signal counterweighted to go to danger and a clutch controlling its movement to danger, another signal giving a different indication and counterweighted to go to danger and a clutch controlling its movement to danger, a single actuating-rod for both signals, and a single clutch controlling the movement of both signals to safety.

82. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, means for moving the signals to safety including a single clutch controlling both signals, and a locking device for locking one signal at danger, such locking device being operative during the movement of the other signal to safety.

83. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, a single actuating-rod for both signals, a single clutch controlling the movements of both signals to safety, and self-acting controlling means connecting the single actuating-rod and the two signals and controlling the movements of the signals to put the signals to safety successively in the movement from danger to safety.

84. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, a single actuating-rod for both signals, a single clutch controlling the movements of both signals to safety, and a locking device for locking one signal at danger, such locking device being operative during the movement of the other signal to safety.

85. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, a single actuating-rod for both signals, a single clutch controlling the movements of both signals to safety, and mechanism connecting the single actuating-rod and the two signals and controlling the signals to first put one signal to safety in the movement from danger to safety and to lock the other signal at danger while the first-mentioned signal is being put to safety.

86. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, a single actuating-rod for both signals, a single clutch controlling the movements of both signals to safety, and a locking device controlling one signal to lock such signal at danger while the other signal is being put to safety and controlled in its unlocking movement by the final movement of the other signal toward safety position.

87. The combination of two signals, a single actuating-rod, means connecting the single actuating-rod and both signals, and a pivoted latch-lever having a locking part constructed to lock one signal at danger while the other signal is being put to safety and having an actuating part constructed to be engaged to unlock the locking part by the final movement of the other signal toward safety position.

88. The combination of a signal and an up-and-down rod therefor, another signal and an up-and-down rod therefor, a single reciprocating actuating-rod connected to both up-and-down rods, guides directing the movements of the up-and-down rods, and a locking device for locking one signal at danger, such locking device being operative while the other signal is being put to safety.

89. The combination of a signal and an up-and-down rod therefor, another signal and an up-and-down rod therefor, a cross-link connected to both up-and-down rods, a single reciprocating actuating-rod connected to the cross-link, and guides directing the movements of the up-and-down rods and limiting the movements thereof.

90. The combination of a signal and an up-and-down rod therefor, another signal and an up-and-down rod therefor, a cross-link connected to the up-and-down rods, a single reciprocating actuating-rod connected to the cross-link, guides directing the movements of the up-and-down rods and limiting the movements thereof, and a locking device for locking one signal at danger such locking device being operative while the other signal is being put to safety.

91. The combination of a signal and an up-and-down rod therefor, another signal and an up-and-down rod therefor, a cross-link connected to both up-and-down rods, a single reciprocating actuating-rod connected to the cross-link, guides directing the movements of the up-and-down rods and limiting the movements thereof, and a pivoted latch-lever having a locking part constructed to lock the up-and-down rod of one signal while the other signal is being put to danger and having an actuating part constructed to be engaged to unlock the locking part by the final movement of the other signal toward safety position.

92. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, connecting means between the actuating mechanism and signal-indicating means including a clutch controlling the clear indication, the actuating mechanism and connecting means being arranged to force the danger indication of the signal-indicating means should the counterweight fail, controlling means for the actuating mechanism subject to control in advance of the signal-indicating means, and clutch-controlling means combined with the means controlling the actuating mechanism to necessarily deënergize the clutch during the movement of forcing the danger indication.

93. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, connecting means between the actuating mechanism and signal-indicating means including a clutch controlling the clear indication, the actuating mechanism and connecting means being arranged to force the danger indication of the signal-indicating means should the counterweight fail, controlling means for the actuating mechanism subject to control in advance of the signal-indicating means and clutch-controlling means controlled independently of the movement of the signal-indicating means and combined with the means controlling the actuating mechanism to necessarily deënergize the clutch during the movement of forcing the danger indication.

94. The combination of signal-indicating means counterweighted to go to danger, actuating mechanism therefor, connecting means between the actuating mechanism and the signal-indicating means including a clutch controlling the clear indication, a rear relay of the block or section in advance of the signal-indicating means, such rear relay controlling the actuating mechanism to force the danger indication of the signal-indicating means should the counterweight fail, and clutch-controlling means controlled by such rear relay so that the clutch is deënergized by the actuation of the rear relay to force the danger indication independently of the operation of the signal-actuating means.

95. The combination of signal-indicating means counterweighted to go to danger, means for moving the same to safety constructed to permit the danger indication to be effected by the counterweight, a clutch adapted to control the movement to danger, a commutator moving with the signal-indicating means, and commutator-brushes therefor and other circuit-controlling devices cooperating therewith to control the clutch.

96. The combination of a signal counterweighted to go to danger, another signal counterweighted to go to danger, means for mov-

ing the signal to safety constructed to permit the signals to be put to danger by their counterweights, a separate clutch for each signal adapted to control the movement of its signal to danger, a commutator for each clutch moving with its signal, and commutator-brushes therefor and other circuit-controlling devices cooperating therewith to separately control the clutches.

97. The combination of railway signal-indicating means counterweighted to go to danger and constructed to indicate one block clear, two blocks clear and danger, electric clutch mechanism controlling the movement of the indicating means toward danger position, means for actuating the indicating means and permitting the indicating means to be moved by its counterweight toward the danger position, and circuit-controlling devices controlling the actuating means and clutch mechanism to actuate the clutch more powerfully in the movement from two to one block clear than in the movement from either clear position to danger.

98. The combination of railway signal-indicating means counterweighted to go to danger and constructed to indicate one block clear, two blocks clear and danger, electric clutch mechanism controlling the movement of the indicating means toward danger position, means for actuating the indicating means and permitting the indicating means to be moved to danger by its counterweight, and a contact make and break device having a back contact and a front contact, the front contact being connected with the actuating means so that the closing thereof effects the movement of the indicating means toward safety, the back contact being connected with the clutch mechanism to actuate the same to check the movement toward danger, and the front contact being also connected with the clutch mechanism to more powerfully actuate the same to control the movement of the indicating means from two to one block clear.

99. The combination of railway signal-indicating means constructed to indicate one block clear, two blocks clear and danger, means for actuating the indicating means, a subdivided main commutator moving with the indicating means in the movement to clear, commutator-brushes therefor and other circuit-controlling devices cooperating therewith to control the movement of the indicating means and effect the movement from two to one block clear through circuits controlled by the commutator.

100. The combination of railway signal-indicating means counterweighted to go to danger and constructed to indicate one block clear, two blocks clear and danger, means for actuating the indicating means and permitting the indicating means to be moved by its counterweight toward danger position, and circuit-controlling devices controlling the actuating means to force the indicating means from two to one block clear in the event of the failure of the counterweight.

101. The combination of two signals counterweighted to go to danger, a clutch for each signal constructed to control the movement of the signal to danger, a commutator for each signal connected so as to move therewith and commutator-brushes therefor and other circuit-controlling devices cooperating therewith, means for actuating the signals, a main commutator connected to the signals so as to move therewith in the movement to clear and commutator-brushes therefor and other circuit-controlling devices cooperating therewith, the circuit for the distant signal being controlled by the main commutator in the movement from two to one block clear.

102. The combination of a home signal counterweighted to go to danger, a distant signal counterweighted to go to danger, a single actuating-rod, a connecting device joining the two signals to the single actuating-rod, and guides controlling the movements of the connecting device and shaped to afford no obstruction to the movement of the home signal to danger from any relative position of the two signals.

103. The combination of a home signal counterweighted to go to danger and an up-and-down rod therefor, a distant signal counterweighted to go to danger and an up-and-down rod therefor, a single actuating-rod, a cross-link connected to both up-and-down rods and to the single actuating-rod, and guides and other controlling means controlling the movements of the cross-link, the guides for the distant signal being shaped to prevent horizontal movement of the distant-signal up-and-down rod at the connection with the cross-link and the guides for the home signal being shaped to afford no obstruction to the horizontal movement of the home-signal up-and-down rod at its connection with the cross-link.

104. The combination of a home signal counterweighted to go to danger, a distant signal counterweighted to go to danger, a single reciprocating actuating-rod movable in one direction to put the signals to clear, actuating mechanism connected to the actuating-rod and dependent upon t' e return of the actuating-rod from the movement to clear for the further actuation thereof to put the signals to clear, and connecting means joining the two signals to the actuating-rod and connected thereto so that the completion of the return movement of the actuating-rod is dependent upon the return of the distant signal to danger.

105. The combination of a home signal and a distant signal, actuating means therefor, and a cross-link connected at its ends to the home signal and the distant signal, respectively, and engaging the actuating means at an intervening point.

106. The combination of a home signal and a distant signal, actuating means therefor, and a cross-link interposed between the signals and the actuating means and pivotally connected in proximity to its ends to the home signal and the distant signal, respectively, and pivotally connected at an intervening point to the actuating means.

107. The combination of a home signal counterweighted to go to danger and a distant signal counterweighted to go to danger, means for moving the signals to safety and permitting the signals to be put to danger by their counterweights, an electromagnetic clutch for each signal, each clutch being connected to the corresponding signal and constructed to control the movement of the signal to danger, a home-signal rear relay and a distant-signal rear relay controlling the means for moving the signals to safety, circuit-controlling devices actuated by the movements of each signal and controlling the corresponding clutch to check the movement of the corresponding signal to danger, and other circuit-closing devices controlled by the distant-signal rear relay to more powerfully energize the home-signal electromagnetic clutch, whereby the clutch becomes a holding-clutch to hold the home signal at safety while the distant signal is returned to danger by its counterweight.

108. The combination of a home signal a distant signal, actuating means therefor including a single clutch controlling the movements of each signal from danger to safety, and controlling means for returning the home signal to danger and maintaining the distant signal at safety.

109. The combination with signal-indicating means, of signal-actuating means, power initiating and continuing means for the actuating means, and a self-moving part for discontinuing the power-supply of the actuating means, such self-moving part being brought into action by the movement of the actuating means.

110. The combination with signal-indicating means, of signal-actuating means, power initiating and continuing means for the actuating means, and a pivoted weighted lever controlling the power-supply of the actuating means to discontinue such power-supply, and a part moving with the signal-actuating means and arranged to release such lever to permit the power-discontinuing movement thereof.

111. The combination, with signal-indicating means of a clutch controlling the clear indication, a part moving with the signal-indicating means in the movement to clear, and means for controlling the power-supply of the actuating means and including power-discontinuing means, such power-discontinuing means being controlled by the part moving with the signal-indicating means but being movable independently thereof in its power-discontinuing movement.

112. The combination with signal-indicating means, of signal-actuating means, a clutch controlling the clear indication, power initiating and continuing means for the actuating means, and a self-moving part for discontinuing the power-supply of the actuating means, such self-moving part being brought into action by the movement of the actuating means.

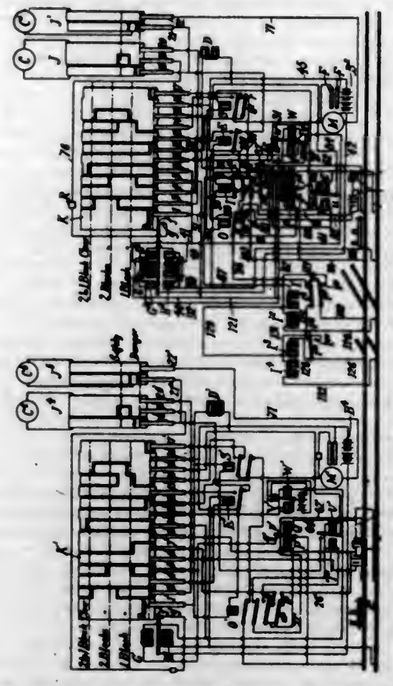
113. The combination with signal-indicating means, of signal-actuating means, a clutch controlling the clear indication, power initiating and continuing means for the actuating means, and a pivoted weighted lever controlling the power-supply of the actuating means to discontinue such power-supply, and a part moving with the signal-actuating means and arranged to release such lever to permit the power-discontinuing movement thereof.

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**754,868. RAILWAY SIGNALING SYSTEM. HENRY BOOTH, Westfield, N. J. Original application filed Oct. 16, 1901, Serial No. 78,813. Divided and this application filed Feb. 4, 1903. Serial No. 141,858. (No model.)**

*Claim.*—1. The combination of normal danger railway-traffic-controlling means, non-polarized electric translating means controlling the same, conductors of a single circuit extending from such translating means along a railway-line to a point in rear of such traffic-controlling means, and other conductors of a single circuit extending rearwardly from such point in rear of the traffic-controlling means to a point farther in rear thereof, such conductors of single circuits comprising all of the means of electric intercommunication from point to point along the railway-line and such translating means being responsive to control from the conductors last mentioned to perform an operation thereof and responsive to control from the conductors first mentioned to perform another operation thereof.





2. The combination of normal danger railway-traffic-controlling means, non-polarized electric translating means controlling the same, conductors of a single circuit extending from such translating means along a railway-line to a point in rear of such traffic-controlling means, and other conductors of a single circuit extending rearwardly from such point in rear of the traffic-controlling means to a point farther in rear thereof, such conductors of the single circuits comprising all the means of electric communication between such points, and such translating means being responsive to control from the conductors last mentioned to perform an operation thereof and responsive to control from the conductors first mentioned to continue such operation thereof and also to perform another operation thereof.

3. The combination of railway-traffic-controlling means, electric translating means controlling the same, conductors of a circuit extending from such translating means rearwardly along a railway-line, means for effecting a reduction of the resistance of such circuit and means for effecting a further reduction of the resistance thereof, the electric translating means being responsive to the first-mentioned reduction of resistance to perform an operation thereof and responsive to the last-mentioned reduction of resistance to perform another operation thereof.

4. The combination of railway-traffic-controlling means, electric translating means controlling the same, conductors of a circuit extending from such translating means rearwardly along a railway-line, means for effecting a reduction of the resistance of such circuit and means for effecting a further reduction of the resistance thereof, the electric translating means being responsive to the first-mentioned reduction of resistance to perform an operation thereof and responsive to the last-mentioned reduction of resistance to perform another operation thereof and also to perform another operation thereof.

5. The combination of railway-traffic-controlling means, two relays controlling the same, conductors of a circuit connected with both of such relays and extending therefrom along a railway-line to a point in rear of such traffic-controlling means, and other conductors of a circuit extending rearwardly from such point in rear of the traffic-controlling means to a point farther in rear thereof, one of such relays being responsive to control from the conductors last mentioned and the other of such relays being responsive to control from the conductors first mentioned.

6. The combination of railway-traffic-controlling means, two relays controlling the same, conductors of a circuit connected to both of such relays and extending from such relays along a railway-line to a point in rear of such traffic-controlling means, and other conductors of a circuit extending rearwardly from such point in rear of the traffic-controlling means to a point farther in rear thereof, one of such relays being responsive to control from the conductors last mentioned and both of such relays being responsive to control from the conductors first mentioned.

7. The combination of railway-traffic-controlling means, two relays controlling the same, conductors of a circuit connected to both of such relays and extending therefrom rearwardly along a railway-line, means for effecting a reduction of the resistance of such circuit and means for effecting a further reduction of the resistance thereof, one of such relays being responsive to the first-mentioned reduction of resistance and the other of such relays being responsive to the last-mentioned reduction of resistance.

8. The combination of railway-traffic-controlling means, two relays controlling the same, conductors of a circuit connected to both of such relays and extending therefrom rearwardly along a railway-line, means for effecting a reduction of the resistance of such circuit and means for effecting a further reduction of the resistance thereof, one of such relays being responsive to the first-mentioned reduction of resistance and both of such relays being responsive to the last-mentioned reduction of resistance.

9. A railway signaling system comprising non-polarized electric translating means, signal-indicating means controlled thereby, a rail-circuit connected to such electric translating means and extending therefrom to a point in rear of the indicating means and another rail-circuit extending rearwardly from such point in rear of the indicating means to a point farther in rear thereof, such translating means being responsive to control from the rail-circuit last mentioned to perform an operation thereof and responsive to control from the rail-circuit first mentioned to perform another operation thereof.

10. A railway signaling system comprising electric translating means, signal-indicating means controlled thereby, a rail-circuit connected to such electric translating means and extending therefrom to a point in rear of the indicating means and another rail-circuit extending rearwardly from such point in rear of the indicating means to a point farther in rear thereof, such translating means being responsive to control from the rail-circuit last mentioned to perform an operation thereof and responsive to control from the rail-circuit first mentioned to continue such operation thereof and also to perform another operation.

11. A railway signaling system comprising electric translating means, signal-indicating means controlled thereby, a rail-circuit connected to such electric translating means and extending rearwardly therefrom, means for effecting a reduction of the resistance of such rail-circuit and means for effecting a further reduction of the resistance thereof, the electric translating means being responsive to the first-mentioned reduction of resistance to perform an operation thereof and responsive to the last-mentioned reduction of resistance to perform another operation thereof.

12. A railway signaling system comprising electric translating means, signal-indicating means controlled thereby, a rail-circuit connected to such electric translating means and extending rearwardly therefrom, means for effecting a reduction of the resistance of such rail-circuit and means for effecting a further reduction of the resistance thereof, the electric translating means being responsive to the first-mentioned reduction of resistance to perform an operation thereof and responsive to the last-mentioned reduction of resistance to continue such operation thereof and also to perform another operation thereof.

13. A railway signaling system comprising a signal-indicator, two non-polarized relays controlling the indicator, a rail-circuit in operative relation to both relays and extending rearwardly from the indicator and comprising the rails of the railway-track, one of the relays being responsive to an electric impulse transmitted along the railway-line solely through the rails of such rail-circuit and controllable from a point in rear of the indicator, and the other relay being responsive to an electric impulse also transmitted along the railway-line solely through the rails of such rail-circuit but controllable from a nearer point in rear of the signal-indicator.

14. A railway signaling system comprising a signal-indicator, two non-polarized relays controlling the indicator, a rail-circuit in operative relation to both relays and extending rearwardly from the indicator and comprising the rails of the railway-track, one of the relays being responsive to an electric impulse transmitted along the railway-line solely through the rails of such rail-circuit and controllable from a point in rear of the indicator, and the other relay

being responsive to an electric impulse also transmitted along the railway-line solely through the rails of such rail-circuit but controllable from a nearer point in rear of the signal-indicator and the first-mentioned relay being also governable by the second-mentioned electric impulse to maintain such relay *in statu quo*.

15. A railway signaling system comprising a rail-circuit having an extension from point to point along the railway-line comprised wholly within the rails of the railway-track, two relays in operative relation to such rail-circuit and responsive to variations in the resistance thereof, a signal-indicator governable by the relays, and resistance-varying means in rear of the indicator to actuate one of the relays by a variation of the resistance of the rail-circuit and to actuate the other relay by a further variation of such resistance.

16. A railway signaling system comprising a rail-circuit having an extension from point to point along the railway-line comprised wholly within the rails of the railway-track, two relays in operative relation to such rail-circuit and responsive to variations in the resistance thereof, a signal-indicator governable by the relays, and resistance-varying means in rear of the indicator to actuate one of the relays by a variation of the resistance of the rail-circuit and to actuate the other relay by a further variation of such resistance while maintaining the first-mentioned relay *in statu quo*.

17. An electric railway signaling system comprising an electric translating apparatus, a signal-indicator controllable by two operations thereof, a controlling-circuit coöperative with such translating apparatus and extending to rearward of the signal-indicator and including two conductors which comprise all the means of electric communication with such translating apparatus from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to effect one operation of the translating apparatus and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to effect the other operation of the translating apparatus.

18. An electric railway signaling system comprising an electric translating apparatus, a signal-indicator controllable by two operations thereof, a controlling-circuit coöperative with such translating apparatus and extending to rearward of the signal-indicator and including two conductors which comprise all the means of electric communication with such translating apparatus from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to effect one operation of the translating apparatus and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to effect the other operation of the translating apparatus, and to continue the first operation thereof.

19. An electric railway signaling system comprising two relays, a signal-indicator controllable by the two relays, a controlling-circuit coöperative with both such relays and extending to rearward of the signal-indicator and including two conductors which comprise all the means of electric communication with such relays from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to actuate one of the relays and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to actuate the other relay.

20. An electric railway signaling system comprising two relays, a signal-indicator controllable by the two relays, a controlling-circuit coöperative with both such relays and extending to rearward of the signal-indicator and including two conductors which comprise all the means of electric communication with such relays from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to actuate one of the relays and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to actuate the other relay, and to continue the actuation of the first-mentioned relay.

21. An electric railway signaling system comprising an electric translating apparatus, a signal-indicator controllable by two operations thereof, a controlling-circuit coöperative with such translating apparatus and extending to rearward of the signal-indicator and including the rails of the railway-track as conductors, such rails comprising all the means of electric communication with such translating apparatus from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to effect one operation of the translating apparatus and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to effect the other operation of the translating apparatus.

22. An electric railway signaling system comprising an electric translating apparatus, a signal-indicator controllable by two operations thereof, a controlling-circuit coöperative with such translating apparatus and extending to rearward of the signal-indicator and including the rails of the railway-track as conductors, such rails comprising all the means of electric communication with such translating apparatus from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to effect one operation of the translating apparatus and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to effect the other operation of the translating apparatus and to continue the first-mentioned operation thereof.

23. An electric railway signaling system comprising two relays, a signal-indicator controllable by both such relays, a controlling-circuit coöperative with both such relays and extending to rearward of the signal-indicator and including the rails of the railway-track as conductors, such conductors comprising all the means of electric communication with both such relays from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to actuate one of such relays and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to actuate the other of such relays.

24. An electric railway signaling system comprising two relays, a signal-indicator controllable by both such relays, a controlling-circuit coöperative with both such relays and extending to rearward of the signal-indicator and including the rails of the railway-track as conductors, such conductors comprising all the means of electric communication with both such relays from points in rear of the signal-indicator, means for influencing the controlling-circuit from a distant point in rear of the signal-indicator to actuate one of such relays and for influencing the controlling-circuit from a nearer point in rear of the signal-indicator to actuate the other of such relays and to continue the actuation of the first-mentioned relay.

25. An electric railway signaling system comprising an electric translating apparatus, a signal controllable by two operations thereof, a controlling rail-circuit in operative relation to the translating apparatus and extending to rearward of the signal, and a second controlling rail-circuit in operative relation to the first-mentioned controlling-circuit and extending to rearward of the first circuit, each of such controlling rail-circuits including the rails of a block or section of the railway-track and such rails comprising all the means of electric communication from end to end of their respective blocks, the translating apparatus being controllable by the first controlling-circuit and the first controlling-circuit being controllable by the second controlling-circuit, and means for influencing the second controlling rail-circuit to effect one operation of the translating apparatus and for influencing the first controlling rail-circuit to effect the other operation of the translating apparatus.

26. An electric railway signaling system comprising an electric translating apparatus, a signal controllable by two operations thereof, a controlling rail-circuit in operative relation to the translating apparatus and extending to rearward of the signal, and a second controlling rail-circuit in operative relation to the first-mentioned controlling-circuit and extending to rearward of the first circuit, each of such controlling rail-circuits including the rails of a block or section of the railway-track and such rails comprising all the means of electric communication from end to end of their respective blocks, the translating apparatus being controllable by the first controlling-circuit and the first controlling-circuit being controllable by the second controlling-circuit, and means for influencing the second controlling rail-circuit to effect one operation of the translating apparatus and for influencing the first controlling rail-circuit to effect the second operation of the translating apparatus and to continue or maintain the first-mentioned operation thereof.

27. An electric railway signaling system comprising two relays, a signal controllable by both such relays, a controlling rail-circuit in operative relation to both such relays and extending to rearward of the signal, and a second controlling rail-circuit in operative relation to the first-mentioned controlling-circuit and extending to rearward of the first circuit, each of such controlling rail-circuits including the rails of a block or section of the railway-track and such rails comprising all the means of electric communication from end to end of their respective blocks, both relays being controllable by the first controlling-circuit and the first controlling-circuit being controllable by the second controlling-circuit, and means for influencing the second controlling rail-circuit to actuate one of the relays and for influencing the first controlling rail-circuit to actuate the other relay.

28. An electric railway signaling system comprising two relays, a signal controllable by both such relays, a controlling rail-circuit in operative relation to both such relays and extending to rearward of the signal, and a second controlling rail-circuit in operative relation to the first-mentioned controlling-circuit and extending to rearward of the first circuit, each of such controlling rail-circuits including the rails of a block or section of the railway-track and such rails comprising all the means of electric communication from end to end of their respective blocks, both relays being controllable by the first controlling-circuit and the first controlling-circuit being controllable by the second controlling-circuit, and means for influencing the second controlling rail-circuit to actuate one of the relays and for influencing the first controlling rail-circuit to actuate the other relay and to maintain the first-mentioned relay *in statu quo*.

29. An electric traffic-controlling system for railways comprising a traffic-controlling circuit including a source of electric energy of given power, a source of electric energy of greater power, a traffic-controlling apparatus controllable by the traffic-controlling circuit, and means controllable by the approach of a train from the rear and toward the traffic-controlling apparatus for connecting the source of electric energy of greater power in the traffic-controlling circuit.

30. An electric traffic-controlling system for railways comprising a traffic-controlling circuit including a source of electric energy of given power, a source of electric energy of greater power, a traffic-controlling apparatus controllable by the traffic-controlling circuit, and means controllable by the approach of a train from the rear and toward the traffic-controlling apparatus for connecting the source of electric energy of greater power in the traffic-controlling circuit and means controllable by the progression of a train in advance of the traffic-controlling apparatus for disconnecting such source of electric energy of greater power from the traffic-controlling circuit.

31. The combination of normal danger railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with a current of given power and the two-blocks-clear indication with a current of greater power, a source of electric energy of given power and a source of electric energy of greater power, means subject to the control of a train in the block in advance of the indicating means for connecting in circuit with the controlling means the source of electric energy of lesser power, and means subject to the control of a train in the second block in advance of the indicating means for connecting in circuit with the controlling means the source of electric energy of greater power.

32. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, one or more sources of electric energy adapted to send to the controlling means the current of lesser power and the current of greater power, means subject to the control of a train in the block in advance of the indicating means for sending the current of lesser power through the controlling means, and means subject to the control of a train in the second block in advance of the indicating means for sending the current of greater power through the controlling means and means for reducing the flow of current to the lesser power when the train enters the block in advance of the indicating means.

33. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, a source of electric energy of given power and a source of electric energy of greater power, means subject to the control of a train in the block in advance of the indicating means for connecting in circuit with the controlling means the source of electric energy of lesser power, and means subject to the control of a train in the second block in advance of the indicating means for connecting in circuit with the controlling means the source of electric energy of greater power and for disconnecting such source of greater power from such circuit when the train enters the block in advance of the indicating means.

34. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, a source of electric energy of given power on a normally closed circuit and a source of electric energy of greater power on a normally open circuit, means subject to the control of a train in the block in advance of the indicating means for connecting in circuit with the controlling means the source of electric energy of lesser power, and means subject to the control of a train in the second block in advance of the indicating means for closing the normally open circuit of the source of electric energy of greater power and connecting such source of electric energy of greater power in circuit with the controlling means.

35. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, a source of electric energy of given power on a normally closed circuit and a source of electric energy of greater power on a normally open circuit, means subject to the control of a train in the block in advance of the indicating means for connecting in circuit with the controlling means the source of electric energy of lesser power, and means subject to the control of a train in the second block in advance of the indicating means for closing the normally open circuit of the source of electric energy of greater power and connecting such source of electric energy of greater power in circuit with the controlling means and opening the circuit of such source of electric energy of greater power when the train passes the indicating means.

36. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, a relay located at the front end of the block in rear of the indicating means and controllable by the presence of a train in such block to close a circuit, subject to the control of a train in the block in advance of the indicating means, for sending the current of lesser power through the controlling means, and electric translating apparatus located at the front end of the block or section in advance of the indicating means and controllable by the presence of a train in the block in rear of the indicating means to close a circuit subject to the control of a train in the second block in advance of the indicating means, for sending the current of greater power through the controlling means.

37. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, two rail-circuits one in advance and one in rear of the indicating means, each rail-circuit including a source of electric energy of given power connected therein and including the rails of the block or section as conductors comprising all the means of electric communication from the beginning to the end of the block or section, a relay located at the front end of the rear block or section and connected in the rail-circuit thereof so as to be operated by the presence of a train in such block or section to connect the rail-circuit of the advance block or section with the controlling means and thereby send the current of lesser power through the controlling means, and electric translating apparatus located at the front end of the advance block or section and constructed to be operated by the presence of a train in the rear block or section, to connect the rail-circuit of the advance block or section with the source of electric energy of greater power, subject to the control of a train in the second block in advance of the indicating means, and thereby to send the electric current of greater power through the controlling means.

38. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an electric current of given power and the two-blocks-clear indication with an electric current of greater power, two rail-circuits, one of the block in rear of the indicating means and the other of the block in advance of the indicating means, each rail-circuit including a source of electric energy of given power connected therein and including the rails of the block or section as the only conductors from the beginning to the end of the block or section, a source of electric energy of greater power on a normally open circuit, means controlling such source and controllable by the front relay of the advance block or section, relays located at the front ends of such blocks or sections and connected to the rails, the front relay of the rear block or section controlling the rail-circuit of the advance block or section to connect the same with the controlling means, the front relay of the advance block or section being controlled by the presence of a train in the rear block or section, through the rail-circuit of the advance block or section, to actuate the switching means to connect in the rail-circuit of such advance block or section, subject to the control of a train in the second block in advance of the indicating means, the source of electric energy of greater power.

39. The combination of railway signal-indicating means constructed to indicate one block clear and two blocks clear, controlling means for effecting the one-block-clear indication with an elec-

tric current of given power and the two-blocks-clear indication with an electric current of greater power, two rail-circuits, one of the block in rear of the indicating means and the other of the block in advance of the indicating means, each rail-circuit including a source of electric energy of given power connected therein and including the rails of its block or section as the only conductors from the beginning to the end of the block or section, a front relay of the rear blocks, a home-block front relay and a home and rear blocks front relay of the advance block, a source of electric energy of greater power on a normally open circuit, the front relay of the rear block controlling the rail-circuit of the advance block to connect the same with the controlling means, and means controllable jointly by the home and rear blocks front relay of the advance block and by a train in the second block in advance of the indicating means, to connect in the rail-circuit of the advance block the source of electric energy of greater power, such means of connecting being also controllable by the home block front relay of the advance block to open the circuit of such source of electric energy of greater power.

40. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, normal danger-signal indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, a source of electric energy of given power and a source of electric energy of greater power, means subject to the control of a train in the block in advance of the indicating means for connecting the source of electric energy of lesser power in circuit with the home-signal rear relay, and means subject to the control of a train in the second block in advance of the indicating means for connecting the source of electric energy of greater power in circuit with the distant-signal rear relay.

41. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, one or more sources of electric energy adapted to send to the rear relays the current of lesser power and the current of greater power, means subject to the control of a train in the block in advance of the indicating means for sending the current of lesser power to the home-signal rear relay, and means subject to the control of a train in the second block in advance of the indicating means for sending the current of greater power to the distant-signal rear relay and for reducing the flow of current to the lesser power when the train enters the block in advance of the indicating means.

42. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, a source of electric energy of given power and a source of electric energy of greater power, means subject to the control of a train in the block in advance of the indicating means for connecting the source of electric energy of lesser power in circuit with the home-signal rear relay, and means subject to the control of a train in the second block in advance of the indicating means for connecting the source of electric energy of greater power in circuit with the distant-signal rear relay and for disconnecting such source of greater power from such circuit when the train enters the block in advance of the indicating means.

43. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay by establishment of the current of given power effects the indication of one block clear and of the distant-signal rear relay by establishment of the current of greater power effects the indication of two blocks clear, a source of electric energy of given power on a normally closed circuit and a source of electric energy of greater power on a normally open circuit, means subject to the control of a train in the block in advance of the indicating means for connecting the source of electric energy of lesser power in circuit with the home-signal rear relay, and means subject to the control of a train in the second block in advance of the indicating means for closing the normally open circuit of the source of electric energy of greater power and connecting such source of electric energy of greater power in circuit with the distant-signal rear relay.

44. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, a source of electric energy of given power on a normally closed circuit and a source of electric energy of greater power on a normally open circuit, means subject to the control of a train in the block in advance of the indicating means for connecting the source of electric energy of lesser power in circuit with the home-signal rear relay, and means subject to the control of a train in the second block in advance of the indicating means for closing the normally open circuit of the source of electric energy of greater power and connecting such source of electric energy of greater power in circuit with the distant-signal rear relay and means for opening the circuit of such source of electric energy of greater power when the train enters the block in advance of the indicating means.

45. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, a relay located at the front end of the block in rear of the indicating means and constructed to be operated by the presence of a train in such block to close a circuit, subject to the control of a train in the block in advance of the indicating means, for sending the current of lesser power through the home-signal rear relay, and a relay located at the front end of the block or section in advance of the indicating means and constructed to be operated by the presence of a train in the block in rear of the indicating means to close a circuit, subject to the control of a train in the second block in advance of the indicating means, for sending the current of greater power through the distant-signal rear relay.

46. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, two rail-circuits, one in advance and the other in rear of the indicating means, each rail-circuit including a source of electric energy of given power connected therein and including the rails of the block or section as the only conductors of the circuit from the beginning to the end of the block or section, a relay located at the front end of the rear block or section and connected in the rail-circuit thereof so as to be operated by the presence of a train in such block or section to connect the rail-circuit of the advance block or section with the home-signal rear relay and thereby send the current of lesser power therethrough, and a relay located at the front end of the advance block or section and constructed to be operated by the presence of a train in the rear block or section to connect the source of electric energy of greater power with the rail-circuit of the advance block or section and with the distant-signal rear relay, subject to the control of a train in the second block in advance of the indicating means, and thereby to send the current of greater power through the distant-signal rear relay.

47. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, two rail-circuits, one in advance and the other in rear of the indicating means, each rail-circuit including a source of electric energy of given power connected therein and including the rails of the block or section as the only conductors of the circuit from the beginning to the end of the block or section, a source of electric energy of greater power on a normally open circuit, relays located at the front ends of such blocks or sections and connected to the rails, the front relay of the rear block or section controlling the rail-circuit of the advance block or section to connect the same with the two rear relays, the front relay of the advance block or section being controlled by the presence of a train in the rear block or section, through the rail-circuit of the advance block or section, to connect in the rail-circuit of such advance block or section, subject to the control of a train in the second block in advance of the indicating means, the source of electric energy of greater power.



48. The combination of a home-signal rear relay and a distant-signal rear relay of a railway block or section, the home-signal rear relay being constructed to operate with a current of given power and the distant-signal rear relay being constructed to operate with a current of greater power, signal-indicating means controlled thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, two rail-circuits, one in the block in rear of the indicating means and the other in the block in advance of the indicating means, such advance rail-circuit being in operative relation to the rear relays and each rail-circuit including a source of electric energy of given power connected therein and including the rails of its block or section as the only conductors from the beginning to the end of the block or section, a front relay of the rear block, a home-block front relay and a home and rear blocks front relay of the advance block, a source of electric energy of greater power on a normally open circuit, the front relay of the rear block controlling the rail-circuit of the advance block to connect the same with the distant-signal rear relay, and means controllable jointly by the home and rear blocks front relay of the advance block and by the presence of a train in the second block in advance of the indicating means, to connect in the rail-circuit of the advance block the source of electric energy of greater power, and means controllable by the home-block front relay of the advance block to open the circuit of such source of electric energy of greater power.

49. The combination of two front relays of a railway block or section, a signal controlled thereby, means for operating one front relay from a distant point and the other front relay from a nearer point, a source of electric energy normally connected in circuit with the front relay operated from a distant point, the other front relay being on normally open circuit, and means controlled by the approach of a train for connecting the last-mentioned front relay in closed circuit with the source of electric energy.

50. The combination of two front relays of a railway block or section, a signal controlled thereby, means for operating one front relay from a distant point and the other front relay from a nearer point, a source of electric energy normally connected in circuit with the front relay operated from a distant point, the other front relay being on normally open circuit, and means controlled by the front relay operated from a distant point for connecting the front relay operated from a nearer point in closed circuit with the source of electric energy.

51. The combination of two front relays of a railway block or section, one front relay being constructed to be operated with a given resistance in its circuit and the other front relay being constructed to be operated with a less resistance in its circuit, a signal controlled thereby, a source of electric energy connected in circuit with the front relay operated with greater resistance, the other front relay being on normally open circuit, and means controlled by the approach of a train for connecting the last-mentioned front relay in closed circuit with the source of electric energy.

52. The combination of two front relays of a railway block or section, one front relay being constructed to be operated with a given resistance in its circuit and the other front relay being constructed to be operated with a less resistance in its circuit, a signal controlled thereby, a source of electric energy connected in circuit with the front relay operated with greater resistance, the other front relay being on normally open circuit, and means controlled by the front relay operated with greater resistance for connecting the last-mentioned front relay in closed circuit with the source of electric energy.

53. The combination of front electric translating means constructed to perform two operations and located in proximity to the front end of a block or section, a source of electric energy connected in circuit therewith, rear electric translating means located in proximity to the rear end of the same block or section, means for connecting the rear electric translating means in circuit with the source of electric energy and the front electric translating means to effect one operation of the front electric translating means and removing the resistance of the rear electric translating means from the circuit to effect the other operation of the front electric translating means, a signal in proximity to the front end of the block or section controlled by the front electric translating means, and a signal in proximity to the rear end of the block or section controlled by the rear electric translating means.

54. The combination of two front relays of a block or section connected in a circuit including a source of electric energy, electric translating means located in proximity to the rear end of the same block or section, means for connecting the electric translating means in the circuit to operate one of the front relays and removing the resistance of such electric translating means from the circuit to operate both front relays, a signal in proximity to the front end of the block or section and controlled by the front relays, and a signal in proximity to the rear end of the block or section and controlled by the electric translating means.

55. The combination of front electric translating means constructed to perform two operations and located in proximity to the front end of a block or section and connected to the rails thereof, a source of electric energy also connected to such rails, rear electric translating means of the same block or section, the rails of such block or section forming the only electrical conductors between the source of electric energy and front electric translating means and the rear electric translating means from the beginning to the end of such block or section, means for connecting the rear electric translating means in the rail-circuit to effect one operation of the front electric translating means, the other operation of the front electric translating means being effected by the removal of the resistance of the rear electric translating means from the rail-circuit due to the presence of a train in the block or section, a signal in proximity to the front end of such block or section controlled by the front electric translating means, and a signal in proximity to the rear end of the block or section controlled by the rear electric translating means.

56. The combination of two front relays connected to the rails of a block or section, a source of electric energy also connected to such rails, the circuit of one of such front relays being normally closed and the circuit of the other normally open, electric translating means located in proximity to the rear end of the same block or section, the rails of such block or section forming the only conductors between the source of electric energy, the front relays, and the electric translating means, from the beginning to the end of such block or section, means for connecting the electric translating means in the rail-circuit to operate the front relay on normally closed circuit, and means for closing the circuit of the other front relay, the operation of the other front relay being effected by the removal of the resistance of the electric translating means from the rail-circuit due to the presence of a train in the block or section, a signal in proximity to the front end of such block or section and controlled by the front relays, and a signal in proximity to the rear end of the block or section and controlled by the electric translating means.

57. The combination of a series of blocks or sections and signals and circuits therefor, the circuits including the rails of each block or section as the only conductors of the signal-circuits from point to point along the line, the signal for each block constructed to indicate one block clear and two blocks clear, and controlling means for such signals combined so that the controlling means of each signal is controlled only by the controlling means of the signal in advance in preventing the giving of the two-blocks-clear indication.

58. The combination of a series of blocks or sections and signals and circuits therefor, the circuits including the rails of each block or section as the only conductors of the signal-circuits from point to point along the line, the signal for each block constructed to indicate one block clear with a current of a certain power and two blocks clear with a current of greater power, and controlling means for such signals combined so that the controlling means of such signal is controlled only by the controlling means of the signal in advance in preventing the sending of the current of greater power for the two-blocks-clear indication.

59. The combination of a series of railway blocks or sections, each block or section having a normally deënergized rear relay and a rail-circuit in controlling relation to such relay and including the rails of the block or section as the only conductors of such circuit from the beginning to the end of each block or section and including a source of electric energy, signal-indicating means controlled by such rear relay, and means controlled by the presence of a train in the second block in rear of the indicating means for connecting each rear relay in its rail-circuit.

60. The combination of a series of railway blocks or sections, each block or section having a normally deënergized home-signal rear relay and a rail-circuit in controlling relation thereto and including the rails of the block or section as the only conductors of such circuit from the beginning to the end of each block or section, home signal-indicating means controlled by such rear relay, and means controlled by the presence of a train in the second block in rear of the indicating means for connecting each rear relay in its rail-circuit.

61. The combination of a railway block or section having a normally deënergized rear relay, located at the rear end of the block or section, a rail-circuit including the rails of the block or section as the only conductors of such circuit from the beginning to the end of such block or section, signal-indicating means controlled by such rear relay and located in proximity thereto, a rail-circuit of the next adjacent block or section in rear including the rails of the block or section as the only conductors of such circuit from the beginning to the end of the block or section, an electric translating apparatus located at the advance end of the last-mentioned block or section and connected to the rails thereof and controlling the rear relay, and means controlled by the presence of a train in a block of section in rear of the last-mentioned block or section for operating the electric translating apparatus and thereby connecting the rear relay in its rail-circuit.

62. The combination of railway signal-indicating means constructed to indicate one block clear and located in proximity to the rear end of a block or section, signal-controlling means therefor including a rear relay on normally open circuit, such rear relay being also located in proximity to the rear end of such block or section, means controlled by the presence of a train in the second block in rear of such indicating means for closing the normally open circuit of such rear relay and, subject to control in advance of such indicating means, putting the signal-controlling means in condition to give the one-block-clear indication, other signal-indicating means located in proximity to the rear end of the block in rear of the first-mentioned indicating means, and constructed to indicate two blocks clear and controlling means therefor controlled by the signal-controlling means first mentioned to effect the two-blocks-clear indication.

63. The combination of railway signal-indicating means constructed to indicate one block clear and located in proximity to the rear end of a block or section, signal-controlling means therefor including a rear relay on normally open circuit, such rear relay being also located in proximity to the rear end of such block or section, a front electric translating apparatus controlling the rear relay to close the normally open circuit thereof and located at the front end of the block or section in rear of such indicating means, a rail-circuit connected to such electric translating apparatus and including a source of electric energy and including the rails of the block or section in rear of the indicating means as the only conductors for the circuit of such electric translating apparatus from the beginning to the end of such block or section, means for operating the electric translating apparatus from the second block in rear of the indicating means and thereby closing the normally open circuit of such rear relay, and, subject to control in advance of such indicating means, putting the signal-controlling means in condition to give the one-block-clear indication, other signal-indicating means located in proximity to the rear end of the block in rear of the first-mentioned indicating means and constructed to indicate two blocks clear, and controlling means thereof controlled by the signal-controlling means first mentioned through the rail-circuit to effect the two-blocks-clear indication.

64. The combination of a normally deënergized home-signal rear relay and a normally deënergized distant-signal rear relay located in proximity to the rear end of a railway block or section, signal-indicating means controllable thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, such indicating means being also located in proximity to the rear end of such block or section, circuit means adapted to be connected to the relays and including one or more sources of electric energy, and means controllable by the presence of a train in the second block in rear of the indicating means to connect the home-signal rear relay in closed circuit and controllable by the presence of a train in the block in rear of the indicating means to connect the distant-signal rear relay in closed circuit.

65. The combination of a normally deënergized home-signal rear relay and a normally deënergized distant-signal rear relay located in proximity to the rear end of a railway block or section, signal-indicating means controllable thereby so that the actuation of the home-signal rear relay effects the indication of one block clear and of the distant-signal rear relay effects the indication of two blocks clear, such indicating means being also located in proximity to the rear end of such block or section, two rail-circuits, one in advance and one in rear of the indicating means, each rail-circuit including a source of electric energy connected therein and including the rails of the block or section as the only conductors of the circuit from the beginning to the end of the block or section, an electric translating device located at the front end of the block or section in rear of the indicating means and connected in the rail-circuit thereof and controlling the rear relay and constructed to perform two operations, and means controllable by the presence of a train in the second block in rear of the indicating means for controlling the electric translating device through the rail-circuit of the block in rear of the indicating means to effect one operation of such translating device, and thereby to connect the home-signal rear relay in closed circuit with the rails of the block or section in advance of the indicating means, the electric translating device being controllable by the presence of a train in the block in rear of the indicating means to effect the other operation of such translating device, and thereby to connect the distant-signal rear relay in closed circuit with the rails of the block or section in advance of the indicating means.

66. The combination of exposed conductors of a railway block or section adapted to be bridged by a train, one or more sources of electric energy connected to the exposed conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section, and a signal controlled thereby.

67. The combination of exposed conductors of a railway block or section adapted to be bridged by a train, signal-indicating means in operative relation to such conductors and controllable thereby, one or more sources of electric energy connected to such conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section, and automatic means for substantially equalizing the powers of the opposing currents, but such means being controllable by abnormal leakage between the two exposed conductors to prevent such equalization of powers of the opposing currents.

68. The combination of exposed conductors of a railway block or section adapted to be bridged by a train, signal-indicating apparatus in operative relation to such conductors and controllable thereby, one or more sources of electric energy connected to such conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductors being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section, and automatic means for diminishing the flow of current to the conductors at the rear end of the block or section, such means being subject to control of an abnormal leakage between the two exposed conductors to prevent such automatic diminution of the flow of current to the conductors at such rear end of the block or section.

69. The combination of a relay in proximity to the front end of a railway block or section, a signal controlled by such relay, conductors connected to such relay and extending to the rear end of the block or section, and one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section.

70. The combination of a relay in proximity to the front end of a railway block or section, a signal controlled by such relay, conductors connected to such relay and extending to the rear end of the block or section, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductors being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section, and automatic means controlled by the resistance of the circuit for substantially equalizing the opposing currents.

71. The combination of a relay in proximity to the front end of a railway block or section, a signal controlled by such relay, conductors connected to such relay and extending to the rear end of the block or section, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section, and automatic means controlled by the resistance of the circuit for diminishing the flow of current to the conductors at the rear end of the block or section.

72. The combination of conductors extending along a railway block or section, a signal controllable thereby, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, controlling means for such connections constructed to be controlled by a train so that the presence of a train removes the current connections at one end of the block or section and the departure of the train restores such connections.

73. The combination of conductors extending along a railway block or section, a signal controllable by such conductors, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, controlling means for such connections constructed to be controlled by a train so that the presence of a train alters the normal flow of current at such connections and causes a more powerful current to flow to the conductors at one end than at the other of such block or section, and the departure of the train restores the normal flow of current at such connections.

74. The combination of conductors extending along a railway block or section, a signal controllable by such conductors, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity, an electric translating device controlling such connections at one end of the block or section so that the actuation thereof causes a more powerful current to flow to the conductors at such end than at the other end of the block or section and the further actuation thereof reduces the current flowing to the conductors at such end of the block or section.

75. The combination of the rails of a railway block or section, one or more sources of electric energy connected to the rails in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of each line of rails being of like polarity, an electric translating device controlling such connections at one end of the block or section so that the actuation thereof causes a more powerful current to flow to the rails at such end than at the other end of the block or section and the further actuation thereof reduces the power of the current flowing to the rails at such end of the block or section, and a signal-indicating apparatus controllable through the rails of the block or section and by such currents

76. The combination of conductors extending along a railway block or section, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity, an electric translating device controlling such connections at one end of the block or section so that the actuation thereof causes a more powerful current to flow to the conductors at such end than at the other end of the block or section and the further actuation thereof causes a reduction of the power of such current flowing to the conductors at such end of the block or section, and a signal in proximity to the rear end of the block or section and controlling such electric translating device so that when the signal goes to danger the current of greater power is caused to flow to the conductors.

77. The combination of the rails of a railway block or section, one or more sources of electric energy connected to the rails in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same line of rails being of like polarity, a relay having opposed coils and an armature between its opposed coils and controlling such connections at the rear end of the block or section so that the actuation of such armature in one direction causes a more powerful current to flow to the rails at the rear end than at the front end of the block or section and the actuation of such armature in the other direction causes a reduction of the power of such current flowing to the rails at the rear end of the block or section, a signal in proximity to the rear end of the block or section and controlling such relay so that when the signal goes to danger the current of greater power is caused to flow to the rails.

78. The combination of conductors extending along a railway block or section, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductor being of like polarity and arranged to send a more powerful current to the conductors at the rear end of the block or section, and automatic means controlled by the resistance of the circuit for diminishing the flow of current to the conductors at the rear end of the block or section, an electric translating apparatus connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, and controlling the connections at the front end of the block or section so as to send an electric current of given power and an electric current of greater power to the conductors, and an electric translating device connected to the conductors in proximity to the rear end of the block or section so as to send an electric current of given power and an electric current of greater power to the conductors, and a signal controllable by such conductors.

79. The combination of the rails of a railway block or section, one or more sources of electric energy connected to the rails in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same line of rails being of like polarity, an electric translating apparatus connected to the rails in proximity to the front end of the block or section and controlling the connections at the front end of the block or section so as to send an electric current of given power and an electric current of greater power to the rails, and an electric translating device connected to the rails in proximity to the rear end of the block or section so as to send an electric current of given power and an electric current of greater power to the rails, and a signal controllable by current transmitted through the rails.

80. The combination of conductors extending along a railway block or section, signal-indicating apparatus controllable thereby, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section and arranged to normally send currents of given power to the conductors at both ends of the block or section and provided with connections capable of sending currents of greater power to the conductors at either or both ends thereof, an electric translating apparatus connected to the conductors in proximity to the front end of the block or section and controlling the connections at such end of the block or section so as to send a current of greater power than the normal current to the conductors, and an electric translating device connected to the conductors in proximity to the rear end of the block or section and controlling the connections at such end of the block or section so as to send a current of greater power than the normal current to the conductors.

81. The combination of the rails of a block or section, one or more sources of electric energy connected to the rails in proximity to the front end and in proximity to the rear end of the block or section, and arranged to normally send currents of given power to the rails at both ends of the block or section and provided with connections capable of sending currents of greater power to the rails at either or both ends thereof, the connections at opposite ends of the same line of rails being of like polarity, an electric translating apparatus connected to the rails in proximity to the front end of the block or section and controlling the connections at such end of the block or section so as to send a current of greater power than the normal current to the rails, and an electric translating device connected to the rails in proximity to the rear end of the block or section and controlling the connections at such end of the block or section so as to send a current of greater power than the normal current to the rails.

82. The combination of conductors extending along a railway to block or section, one or more sources of electric energy connected to such conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductors being of like polarity, a rear electric translating device controlling such connections at the rear end of said block or section so that the actuation thereof causes a more powerful current to flow to the conductors at the rear end than at the front end of said block or section and the further actuation thereof causes a reduction in power of the current flowing to the conductors at the rear end of the block or section, a signal in proximity to the rear end of said block or section and controlling such rear electric translating device so that when the signal goes to danger the current of greater power is caused to flow to such conductors, a signal in proximity to the advance end of such block or section and controllable by current transmitted through the said conductors extending along such block, other conductors extending along a block or section in rear of the block or section first mentioned, one or more sources of electric energy connected to such conductors in proximity to the front end and in proximity to the rear end of said rear block or section, the connections at opposite ends of the same conductors being of like polarity, another rear electric translating device controlling such connections at the rear end of the rear block or section so that the actuation thereof causes a more powerful current to flow to the

conductors at the rear end of said rear block or section than at the front end thereof and the further actuation causes reduction of the power of such current flowing to the conductors at the rear end of said rear block or section, and a front electric translating apparatus at the front end of said rear block or section and connected to the conductors thereof and controlled by the rear electric translating device of said rear block or section and controlling the signal at the rear end of the advance block or section so that the current of greater power assures the actuation of the front electric translating apparatus which will cause the signal to go to danger.

83. The combination of exposed conductors extending along a railway block or section and constructed to be bridged by a train, one or more sources of electric energy connected to the conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductors being of like polarity, a rear electric translating device controlling such connections at the rear end of the block or section so that the actuation thereof causes a more powerful current to flow to the conductors at the rear end than at the front end of such block or section and the further actuation thereof causes a reduction of such current flowing to the conductors at the rear end of the block or section, a front relay having opposed electromagnets and an armature between said electromagnets and connected with such conductors so that the conductors are comprised in a branch of part of the circuit of said relay excluding one of such electromagnets, and a signal-circuit controlled by said relay.

84. The combination of exposed conductors extending along a railway block or section and constructed to be bridged by a train, one or more sources of electric energy connected to such conductors in proximity to the front end and in proximity to the rear end of the block or section, the connections at opposite ends of the same conductors being of like polarity, a rear electric translating device controlling such connections at the rear end of said block or section so that the actuation thereof causes a more powerful current to flow to the conductors at the rear end than at the front end of said block or section and the further actuation thereof causes a reduction of said more powerful current, a signal in proximity to the rear end of said block or section and controlling such rear electric translating device so that when the signal goes to danger the current of greater power is caused to flow to such conductors, a front relay having opposed electromagnets and an armature between said electromagnets and connected with such conductors so that the conductors form a branch of part of the circuit of said relay excluding one of such electromagnets, and a signal-circuit controlled by said relay, other like exposed conductors extending along a block or section in rear of the block or section first mentioned, one or more sources of electric energy connected to such conductors in proximity to the front end and in proximity to the rear end of said rear block or section, the connections at opposite ends of the same conductors being of like polarity, another rear electric translating device controlling such connections at the rear end of the rear block or section so that the actuation thereof causes a more powerful current to flow to the conductors at the rear end of said rear block or section than at the front end thereof and the further actuation thereof causes a reduction of said more powerful current, and a front relay of said rear block or section having opposed electromagnets and connected with the exposed conductors thereof so that the conductors form a branch of part of the circuit of said relay excluding one of such electromagnets, such front relay controlling the signal at the rear end of the advance block or section so that the current of greater power assures the actuation of the front relay which will cause the signal to go to danger.

85. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a rail-circuit including the rails of the block or section as continuous conductors from the beginning to the end of the block or section, and signal-controlling means controlled by such rail-circuit and including a signaling-circuit which has to be closed for a safety indication of the signal, the signaling-circuit having a contact device therein controlled by the movement of the switch so that the opening of the switch prevents the closing of the signaling-circuit.

86. The combination of a railway block or section having a switch therein, a normal danger-signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a rail-circuit including the rails of the track of the block or section as continuous conductors from the beginning to the end of the block or section, and signal-controlling means controlled by such rail-circuit and including a signaling-circuit which has to be closed for a safety indication of the signal, this signaling-circuit having a contact device therein controlled by the movement of the switch so that the opening of the switch prevents the closing of the signaling-circuit, and the signal-controlling means controlling the switch-controlling device so as to prevent the safety operation of the switch-controlling device when the signal-controlling means are in the safety condition.

87. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a rail-circuit including the rails of the track of the block or section as continuous conductors from the beginning to the end of the block or section, signal-controlling means of such signal controlled by such rail-circuit and including a signaling-circuit which has to be closed for a safety indication of the signal, another signal located at a distance in rear of the signal first mentioned and controlling means thereof also including a controlling-circuit which has to be closed for a safety indication of such signal, the signaling-circuit of the first-mentioned signal and the controlling-circuit of the last-mentioned signal each having a contact device therein controlled by the movement of the switch so that the opening of the switch prevents the closing of both of such circuits.

88. The combination of a railway block or section having a switch therein, a normal danger-signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a rail-circuit including the rails of the track of the block or section as continuous conductors from the beginning to the end of the block or section, signal-controlling means of such signal controlled by such rail-circuit and including a signaling-circuit which has to be closed for the safety indication of the signal, another signal located in proximity to the rear end of the block in rear of the signal first mentioned and constructed to indicate two blocks clear, and controlling means thereof also including a controlling-circuit which has to be closed for the one-block-clear indication of such signal, the signaling-circuit of the first-mentioned signal and the controlling-circuit of the last-mentioned signal each having a contact device therein controlled by the movement of the switch so that the opening of the switch prevents the closing of both of such circuits, and the signal-controlling means of the advance signal controlling the switch-controlling means so as to prevent the safety operation of the signal-controlling device when the signal is at safety.

89. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a switch rear relay controlling the switch-controlling device and located in proximity to the rear end of the block or section and a normally closed circuit therefor, and signal-controlling means controlled by the approach of a train and controlling the switch rear relay to open the circuit thereof upon the approach of a train.

90. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a switch rear relay controlling the switch-controlling device and located in proximity to the rear end of the block or section, a rail-circuit including the rails of the block or section as the only conductors thereof from the beginning to the end of the block or section, the switch rear relay being connected in a normally closed branch of such circuit, and signal-controlling means including a signal rear relay connected in a normally open branch of such rail-circuit and controlled by the approach of a train and controlling the switch rear relay to open the circuit thereof upon the approach of a train.

91. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, conductors of such block or section, signal-controlling means including a relay connected to such conductors, a switch-controlling device in proximity to the switch, and two line-wires extending from the switch-controlling device to the signal and connected to the switch-controlling device and forming a separate line-circuit for the switch-controlling device only, such line-circuit being controlled by the signal-controlling means.

92. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, conductors of such block or section and signal-controlling means connected thereto and forming a normally open signal-circuit, a switch-controlling device in proximity to the switch, two line-wires extending from the switch-controlling device to the signal and connected to the switch-controlling device and forming a separate line-circuit for the switch-controlling device only, such line-circuit being normally closed, and a relay at the signal and controlling the signal-circuit and the switch-line circuit so that the closing of the signal-circuit is dependent upon the opening of the switch-line circuit.



93. The combination of a railway block or section having a switch therein, railway signal-indicating means constructed to indicate one block clear and located in proximity to the rear end of the block or section and controlling means therefor, a switch-controlling device in proximity to the switch, other signal-indicating means located in proximity to the rear end of the block in rear of the first-mentioned indicating means and constructed to indicate one block clear and two blocks clear and controlling means therefor, means controlled by the presence of a train in the block in rear of such last-mentioned indicating means, subject to the control of a train in advance of the first-mentioned indicating means and of the switch-controlling device, for putting the signal-controlling means first mentioned in condition to give the one-block-clear indication and controlling the signal-controlling means last mentioned to effect the two-blocks-clear indication, the first-mentioned signal-controlling means controlling the switch-controlling device so as to put the switch-controlling device in the danger condition when the signal is at safety, and the last-mentioned controlling means not controlling the switch-controlling device.

94. The combination of two railway traffic-controlling devices disposed one in advance of the other along one railway-track, two relays, one for each traffic-controlling device, electric conductors common to both relays along the line and means for separately controlling one of such relays, the two relays having a single armature controlled by both relays and controlling both of such traffic-controlling devices.

95. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a signal rear relay and a switch rear relay, conductors of the block or section common to both relays, and means for separately controlling one of such rear relays, the two rear relays having a single armature controlled by both rear relays and controlling both the signal and the switch-controlling device.

96. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a signal rear relay and a switch rear relay, the rails of the block or section forming the only conductors of the circuits of the two rear relays from the beginning to the end of the block or section, and means for separately controlling one of such rear relays, the two rear relays having a single armature controlled by both rear relays and controlling both the signal and the switch-controlling device.

97. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a normally deënergized signal-relay and a normally energized switch-relay, conductors of the block or section common to both relays, and means for separately controlling one of such relays, the two relays having a single armature controlled by both relays and controlling both the signal and the switch-controlling device.

98. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, a normally deënergized signal rear relay and a normally energized switch rear relay, the rails of the block or section forming the only conductors of the circuits of the two rear relays from the beginning to the end of the block or section, and means for separately controlling one of such rear relays, the two rear relays having a single armature controlled by both relays and controlling both the signal and the switch-controlling device.

99. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch, exposed conductors of the block or section constructed to be bridged by a train, a source of electric energy, a rear electric translating apparatus controlling both the switch-controlling device and the signal, normally closed connections from such source of electric energy through the exposed conductors and electric translating device, means controlled by a train in rear of the block or section, for opening such connections and opposing an electric current between the electric translating apparatus and the exposed conductors, subject to the shunting action of a train in the block or section, and signal-controlling means controlled by the reënergization and actuation of the electric translating apparatus by such opposed current, whereby the signal cannot be actuated until the shunting action of the train in the block or section is removed.

100. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch and including a contact device controlled by the switch so as to be held open when the switch is open, exposed conductors of the block or section constructed to be bridged by a train, a source of electric energy, a rear electric translating apparatus controlling both the switch-controlling device and the signal, normally closed connections from such source of electric energy through the exposed conductors and electric translating apparatus, means controlled by a train in rear of the block or section and including a circuit through such switch-controlled contact device for opening such connections and opposing an electric current between the electric translating apparatus and the exposed conductors, subject to the shunting action of a train in the block or section, and signal-controlling means controlled by the reënergization and actuation of the electric translating apparatus by such opposed current whereby the signal cannot be actuated unless the switch-controlled contact device is closed and until the shunting action of the train in the block or section is removed.

101. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a switch-controlling device in proximity to the switch and including a circuit-contact device controlled by the switch so as to be held open when the switch is open, the rails of the block or section, a source of electric energy connected thereto in proximity to the front end of the block or section, a rear electric translating apparatus controlling both the switch-controlling device and the signal, normally closed connections from the rails to the electric translating apparatus in proximity to the rear end of the block or section, means controlled by a train in rear of the block or section and including a circuit through the switch-controlled contact device, for opening such connections and opposing an electric current between the electric translating apparatus and the rails and controlled by such electric translating apparatus to open the circuit of such opposed current, and signal-controlling means controlled by the reënergization and actuation of the electric translating apparatus by such opposed current.

102. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, conductors of such block or section, signal-controlling means including a relay connected to such conductors, a switch-controlling device in proximity to the switch, and a separate circuit extending from the switch-controlling device to the signal and controlled by the signal-controlling means.

103. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, conductors of such block or section, signal-controlling means including a normally deënergized relay connected to such conductors, a switch-controlling device in proximity to the switch, and a separate normally closed circuit extending from the switch-controlling device to the signal and controlled by the signal-controlling means.

104. The combination of a railway block or section having a switch therein, a signal in proximity to the rear end of the block or section, a circuit of such block or section including the rails of the block or section as the only conductors thereof from the beginning to the end of the block or section and signal-controlling means including a signal rear relay connected in such rail-circuit, a switch-controlling device in proximity to the switch, and a separate circuit extending from the switch-controlling device to the signal and controlled by the signal-controlling means.

105. The combination of a railway block or section having a switch therein, railway signal-indicating means constructed to indicate one block clear and located in proximity to the rear end of the block or section and controlling means therefor, a switch-controlling device in proximity to the switch, a block or section in rear of the first-mentioned block or section, signal-indicating means located in proximity to the rear end of such last-mentioned block or section and constructed to indicate one block clear and two blocks clear and controlling means therefor, circuit means controlled by the presence of a train in the block in rear of the last-mentioned block, subject to the control of a train in advance of the first-mentioned indicating means and of the switch-controlling device, to put the signal-controlling means first mentioned in condition to give the one-block-clear indication and controlling the signal-controlling means last mentioned to effect the two-blocks-clear indication, the first-mentioned signal-controlling means controlling the switch-controlling device so as to put the switch-controlling device in the danger condition when the signal is at safety and the last-mentioned signal-controlling means not controlling the switch-controlling device, and the rails of the block or section in rear of the first-mentioned block or

section constituting the only electrical conductors of the circuit means from the beginning to the end of the block or section.

106. The combination of a railway block or section having a switch therein, railway signal-indicating means constructed to indicate one block clear and located in proximity to the rear end of such block or section, controlling means for such signal including a rear relay on normally open circuit, a switch-controlling device in proximity to the switch, a block or section in rear of the first-mentioned block or section, signal-indicating means located in proximity to the rear end of such last-mentioned block or section and constructed to indicate one block clear and two blocks clear, controlling means for such last-mentioned signal including a normally deenergized rear relay, circuit means controlled by the presence of a train in the block in rear of the last-mentioned block or section for closing the normally open circuit of the first-mentioned rear relay and, subject to the control of a train in advance of the first-mentioned indicating means and of the switch-controlling device, putting the signal-controlling means first mentioned in condition to give the one-block-clear indication and controlling the signal-controlling means last mentioned to effect the two-blocks-clear indication, the first-mentioned signal-controlling means controlling the switch-controlling device so as to put the switch-controlling device in the danger condition when the signal is at safety and the last-mentioned signal-controlling means not controlling the switch-controlling device, and the rails of the block or section in the rear of the first-mentioned block or section constituting the only electrical conductors of the circuit means from the beginning to the end of the block or section.

107. The combination of railway signal-indicating means and a circuit controlling the same, such circuit including a source of electric energy of given power, a source of electric energy of greater power and means controlled by the approach of a train for connecting the source of greater power in such circuit and continuing the source of lesser power in circuit until the source of greater power is connected in such circuit.

108. The combination of railway signal-indicating means counterweighted to go to danger, electrically-controlled actuating means therefor, an electrically-controlled clutch controlling the movement of the signal to safety, a circuit controlling the actuating means and clutch, such circuit including a source of electric energy of given power and a source of electric energy of greater power, and means controlled by the approach of a train for connecting the source of greater power in such circuit and continuing the source of lesser power in circuit until the source of greater power is connected in such circuit.

109. The combination of railway signal-indicating means counterweighted to go to danger, electrically-controlled actuating means therefor, an electrically-controlled clutch controlling the movement of the signal to safety, a relay located at a distance in advance of the signal and having an armature and front and back contacts, such contacts being arranged so that one is not opened by the movement of the armature until after the other has been closed by such movement, a circuit controlling the actuating means and clutch, means including one of the contacts of such relay for energizing such circuit with an electric current of given power, and means including the other contact of such relay for energizing such circuit with an electric current of greater power.

110. The combination of a series of railway signal-indicating means located along a railway-line, a relay and its armature for each signal-indicating means, the armature controlling the indicating means to cause a clear indication thereof by the attraction of the armature, and means for diminishing the current through the coils of each of such relays for holding the armature forward after the armature has been attracted.

111. The combination of a series of railway signal-indicating means located along a railway-line, a relay having opposed coils and an armature between said coils for each signal-indicating means, the armature controlling the indicating means to cause a clear indication by the attraction of the armature toward the front coils of the relay; and means for diminishing the current through the front coils of each of said relays after the armature has been attracted.

112. The combination of a railway-signal, actuating mechanism therfor, a relay and its armature controlling the signal-actuating mechanism to cause a clear indication of the signal by the attraction of the armature, another signal and actuating mechanism therefor located in rear of the first-mentioned signal, and means controlled by the movement of the last-mentioned signal-actuating mechanism and controlling the relay to diminish the current through the coils of the relay for holding the armature forward after the armature has been attracted.

113. The combination of a railway-signal, actuating mechanism therefor, a relay having opposed coils and an armature between such coils, the armature controlling the signal-actuating mechanism to cause a clear indication by the attraction of the armature toward the front coils of the relay, another signal and actuating mechanism therefor located in rear of the first-mentioned signal, and means controlled by the movement of the last-mentioned signal-actuating mechanism and controlling the relay to diminish the current through the front coils after the armature has been attracted.

114. An electric railway signaling system comprising a plurality of successive railway-blocks, successive signal-indicating apparatuses interposed between such blocks and each controllable from each of a plurality of blocks in rear, and a single pair of conductors leading from each signal-indicating apparatus to each adjacent signal-indicating apparatus and comprising all the means of electric intercommunication between them.

115. An electric railway signaling system comprising a plurality of railway-blocks, signal-indicating apparatuses located between such blocks, each of such apparatuses being controllable from, and by the several conditions of, each of a plurality of blocks in advance, and also controllable from a block in rear, and single pairs of conductors interposed between adjacent signal-indicating apparatuses and comprising all their means of electric intercommunication.

116. An electric railway signaling system comprising a plurality of railway-blocks, signal-indicating apparatuses interposed between adjacent blocks and each controllable from, and by the several conditions of, each of a plurality of blocks in advance and also controllable from each of a plurality of blocks in rear, and a single pair of conductors leading from each signal-indicating apparatus to each immediately adjacent signal-indicating apparatus and comprising all their means of electric intercommunication.

117. An electric railway signaling system comprising a plurality of successive railway-blocks, successive signal-indicating apparatuses interposed between such blocks and each controllable from each of a plurality of blocks in rear, and a rail-circuit leading from each signal-indicating apparatus to each adjacent signal-indicating apparatus and including the rails of the railway-track, such rails comprising all the means of electric intercommunication between such signal-indicating apparatuses.

118. An electric railway signaling system comprising a plurality of railway-blocks, signal-indicating apparatuses located between such blocks, each of such apparatuses being controllable from, and by the several conditions of, each of a plurality of blocks in advance, and also controllable from a block in rear and rail-circuits interposed between adjacent signal-indicating apparatuses and including the rails of the railway-track, as conductors, such rails comprising all the means of electric intercommunication between such signal-indicating apparatuses.

119. An electric railway signaling system comprising a plurality of railway-blocks, signal-indicating apparatuses interposed between adjacent blocks and each controllable from, and by the several conditions of, each of a plurality of blocks in advance, and also controllable from each of a plurality of blocks in rear, and a rail-circuit including the rails of the railway-track as conductors, leading from each signal-indicating apparatus to each immediately adjacent signal-indicating apparatus, such rail-circuits comprising all the means of electric intercommunication between the signal-indicating apparatuses.

120. A normal danger electric railway signaling system comprising a plurality of successive railway-blocks, successive normal danger-signal-indicating apparatuses interposed between such blocks and each such apparatus being controllable from each of a plurality of blocks in rear to give a clear indication and a single pair of conductors leading from each signal-indicating apparatus to each adjacent signal-indicating apparatus and comprising all the means of electric intercommunication between such signal-indicating apparatuses.

121. A normal danger electric railway signaling system comprising a plurality of railway-blocks, normal danger-signal-indicating apparatuses located between such blocks, each of such apparatuses being controllable from a block in rear to give a clear indication subject to joint control from, and by the several conditions of, each of a plurality of blocks in advance, and single pairs of conductors interposed between adjacent signal-indicating apparatuses, such conductors comprising all means of electric intercommunication between them.

122. A normal danger electric railway signaling system comprising a plurality of railway-blocks, normal danger-signal-indicating apparatuses interposed between adjacent blocks and each controllable to give a clear indication from each of a plurality of blocks in rear, subject to joint control from, and by the several conditions of, each of a plurality of blocks in advance, and a single pair of conductors leading from each signal-indicating apparatus to each immediately adjacent signal-indicating apparatus and comprising all means of electric intercommunication between such signal-indicating apparatuses.

123. An electric normal danger railway block-signaling system comprising a signal-indicating apparatus indicative of the several conditions of each of a plurality of blocks in advance of such signal-indicating apparatus, a controlling-circuit in controlling relation to such signal-indicating apparatus and provided with a source of electric current having a number of controllable characteristics, such controlling-circuit being governable by presence of a train in any one of the said advance blocks to influence or control a corresponding one of the aforementioned controllable characteristics of the current, and each indication of the signal-indicating apparatus being controllable by a corresponding one of the said current characteristics.

124. An electric normal danger railway block-signaling system comprising a signal-indicating apparatus indicative of and governable by the several conditions of each of a plurality of blocks in advance of such signal-indicating apparatus, a controlling-circuit in controlling relation to such signal-indicating apparatus and provided with a source of electric current having a number of controllable characteristics, such controlling-circuit being governable by presence of a train in any one of the said advance blocks to influence or control a corresponding one of the aforementioned controllable characteristics of the current, and each indication of the signal-indicating apparatus being controllable by a corresponding one of the said current characteristics.



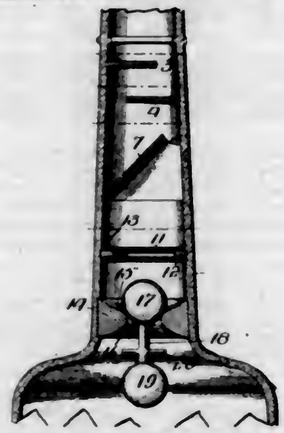
754,364. **HAIR-WAVING DEVICE.** JOSEPH P. BONNEY, Boston, Mass. Filed Nov. 18, 1902. Serial No. 131,907. (No model.)



*Claim.*—1. A device for producing artificial waves in the hair consisting of a rectilineal centrally-disposed spine or body with lateral teeth or projections on opposite edges thereof suitable distances apart to receive the hair to be operated upon, substantially as described.

2. A device for producing artificial waves in the hair consisting of a rectilineal centrally-disposed longitudinal spine or body with oppositely-disposed teeth or projections, the teeth or projections on one edge of the spine or body located opposite the spaces between the teeth or projections on the other edge, substantially as described.

754,365. **NON-REFILLABLE BOTTLE.** MICHAEL G. DELANEY, Ogdensburg, N. Y., assignor to Edgar A. Newell, Sidney W. Smith, and Richard E. Fitz Gerald, Ogdensburg, N. Y. Filed Mar. 16, 1903. Serial No. 148,111. (No model.)




*Claim.*—1. A bottle of the type set forth, consisting of projections, a valve mechanism, and an open conoidal shield, having its upper end located adjacent the point of securement of the lowermost projection.

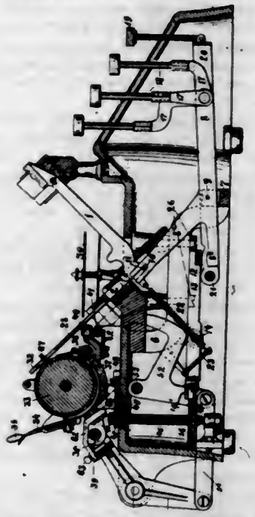
2. A bottle of the type set forth, having an open conoidal shield located in its neck, oppositely-extending means forming a guard arranged in the neck above the upper end of the shield and a controlling-valve below said shield, substantially as described.

3. A bottle of the type set forth comprising a projection crosswise of the interior of the neck of said bottle, an open conoidal shield having its upper end located adjacent the point of securement of such projection, and a valve mechanism below such conoidal shield.

4. In a bottle of the type set forth, a plurality of projections formed on opposite sides of the neck thereof, and being arranged one above the other, an open conoidal shield having its upper end adjacent the base of the lower of said projections, and valve mechanisms mounted below the said shield, substantially as described.

5. In a bottle of the character described, a ball-valve mounted within the neck thereof an upwardly-opening valve mounted above the same, said neck having seats therein for the said valves, an open conoidal shield secured in the neck above the last-named valve, and projections extending oppositely from the sides of the bottle-neck, the lower of said projections being secured adjacent the upper end of said shield whereby said valves are further shielded, substantially as described.

754,366. **TYPE-WRITING MACHINE.** HALCOLM ELLIS, Attleboro, Mass. Filed June 2, 1903. Serial No. 159,801. (No model.)



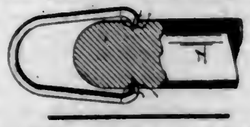
*Claim.*—1. The combination in a type-writer of the frame in which is mounted the key-levers and said key-levers being made with three arms, extending radially from the pivot therefor, one arm engaging and operated by the key, another arm engaging and operating the type-levers the third arm engaging and operating the universal bar, all the arms extending radially from the pivot, type-levers mounted within said frame, springs for returning the type-levers and key-levers to their normal position, mounted in said frame, the said frame being independent of and detachable from the main frame or case of the machine.

2. The combination in a type-writer of the frame in which is mounted the key-levers and said key-levers being made with three arms, extending radially from the pivot therefor, a key engaging and operating one arm, another arm engaging and operating the type-levers the third arm engaging and operating the universal bar, all the arms extending radially from the pivot, type-levers mounted within said frame, springs for returning the type-levers and key-levers to their normal position, a universal bar engaged by the key-levers, mounted in said frame, the said frame being independent of and detachable from the main frame or case of the machine.

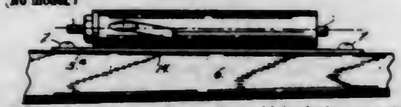
754,367. **HANGER.** EMORY FLAGLER, Lockport, N. Y., assignor of one-half to Roy E. Flagler, Wilmington, Del. Filed June 17, 1901. Serial No. 64,920. (No model.)

*Claim.*—A hanger comprising an approximately U-shaped

spring-wire bail, the free ends of the arms of said bail being bent inwardly forming teeth having pointed ends, and beveled lower side faces to form cutting edges, and each tooth having a flat bottom face.



754,368. **DRAFT APPLIANCE FOR VEHICLE-SHAFTS.** STEPHEN GREGORY, Trinidad, Colo. Filed Feb. 16, 1903. Serial No. 143,711. (No model.)



*Claim.*—1. A draft appliance for vehicle-shafts, comprising a casing adapted to be attached to the shafts, and a spring-held piston located therein and provided with a projection extending through a slot formed in the casing, said slot being inclined to the axis of the casing, the outer extremity of the said projection being fashioned to receive the eye of a tug or holding device.

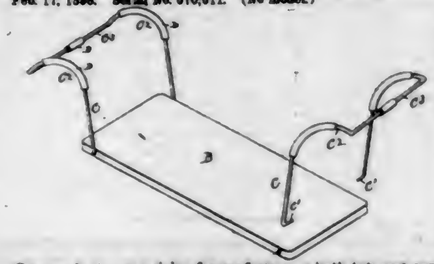
2. A draft appliance comprising a casing adapted to be attached to vehicle-shafts, a piston located therein and having forwardly and rearwardly projecting stem parts engaging openings in the casing extremities, a coil-spring located in the casing forward of the piston, the wall of the casing having a slot forming an angle with the axis of the casing, and a piston having a projection passing through the said slot for the attachment of a tug or other device connected with the draft-animal for applying power.

3. A draft appliance comprising a casing having an opening formed in one extremity, an apertured screw-plug inserted in its opposite extremity, a piston located therein and provided with forwardly and rearwardly projecting stem parts which pass through the respective extremities of the casing, which form guides therefor, a coil-spring surrounding the stem part forward of the piston, washers located in the casing forward of the spring, the casing having a slot forming an angle with the axis of the casing, and a projection attached to the piston and passing through said slot, its outer extremity protruding for the purpose set forth.

4. A draft appliance for vehicle-shafts, comprising a cylindrical casing having apertured end flanges to receive fastening devices, the forward extremity of the casing having an opening, and its rear extremity being provided with a screw-plug having an opening, the casing having a longitudinal slot forming an angle with the axis of the casing, a piston located in the slotted portion of the casing and having a part protruding therefrom and fashioned to engage the eye of a harness-tug, the piston having stem parts passing through the casing extremities which form guides therefor, and a coil-spring mounted in the casing forward of the piston.

5. In a device of the class described, the combination of a casing adapted to be attached to the vehicle-shaft, a piston located in said casing, the casing being provided with a slot which is inclined to the axis of the casing, and a spring-held piston located in the casing and provided with a projection passing through said slot, its outer extremity being adapted to be connected with the tug of a harness, substantially as described.

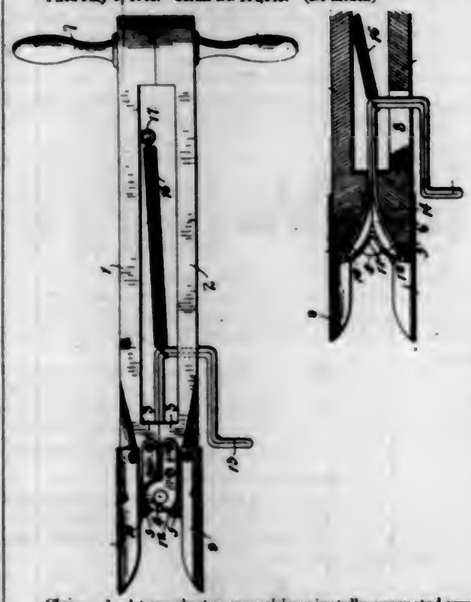
754,369. **SEAT FOR BATH-TUBS.** GEO. W. HARBOUR, Worcester, Mass., assignor to Abner S. Newcomb, Worcester, Mass. Filed Feb. 17, 1898. Serial No. 670,611. (No model.)



*Claim.*—1. As an article of manufacture, a bath-tub seat comprising a plate provided with recesses on the edges thereof, and a pair of duplicate removable suspension-hooks, each hook comprising arms and a cross-piece, elastic buffers removably received upon and surrounding the arms and cross-piece of the hooks, and inwardly-projecting prongs formed on the free ends of the arms, the prongs removably received within the recesses in the plate, the hooks adapted to fold upon the plate and adapted to support the plate only in a suspended position and fitting closely against either edge of the plate when folded to prevent accidental displacement, the buffers when the hooks are folded, adapted to engage the lower edge of the plate and serving as stops to retain them in folded position.

2. As an article of manufacture, a bathing appliance comprising a rigid seat, and a pair of duplicate independent hooks, each formed of resilient material, each hook comprising a pair of arms and a cross-piece, the arms each bent into hook shape and inclosing a space equal to the width of the seat, the arms pivotally secured to the seat and adapted to fold over thereupon, the cross-piece serving as a stop to limit the folding movement of the arms, buffers received on the arms, the hooks when folded adapted to closely embrace the sides of the seat, the buffers so located on the arms as to engage the lower surface of the seat to prevent the accidental displacement of the hooks when in folded position.

754,370. **BEET-TRANSPLANTER.** HOMER HUNTER, Fort Collins, Colo., assignor of one-half to Arthur C. Bartels, Denver, Colo. Filed July 9, 1903. Serial No. 164,915. (No model.)



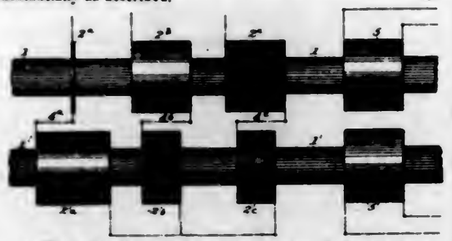
*Claim.*—1. A transplanter, comprising pivotally-connected arms having blades at their lower ends, one of said arms having a slot, a tamper disposed to operate between said blades, a foot-piece to operate the tamper and having a connection therewith extending through and operating in the slot, and a spring to normally raise the tamper.

2. A transplanter, comprising pivotally-connected arms having blades at their lower ends, one of said arms having a slot, a tamper disposed to operate between said blades, a foot-piece to operate the tamper and having a connection therewith extending through and operating in the slot, and a spring attached to said connection and one of said arms, and normally raising the tamper, substantially as described.

754,371. **ALTERNATING-CURRENT TRANSFORMATION.** MAURICE HUTIN and MAURICE LEBLANC, Paris, France, assignors, by mesne assignments, to George Westinghouse, Pittsburg, Pa. Filed Apr. 3, 1896. Serial No. 544,224. (No model.)

*Claim.*—1. The method of generating electrical energy, which consists in producing two separate alternating magnetic fluxes in quadrature, and generating by the inductive influence of these fluxes three or more alternating working currents, dephased with reference to each other, substantially as described.

2. The method of producing two separate alternating magnetic fluxes in quadrature, by a greater number of dephased alternating currents, which consists in passing each of the initial currents around one of two separate magnetic cores in a number of turns proportionate to the sine of the current lag and around the other core in a number of turns proportionate to the cosine of the same current lag, substantially as described.



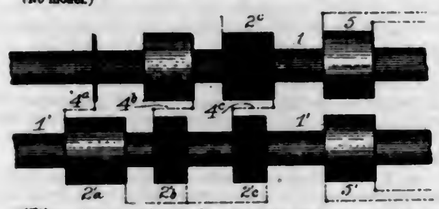
3. The method of generating three or more dephased alternating electric currents by two separate magnetic fluxes which are in quadrature, by subjecting three or more circuits simultaneously to the inductive action of the two fluxes, each circuit in the ratio of the sine of its current lag by one flux and in the ratio of the cosine of its current lag by the other flux, substantially as described.

4. The method of transforming electrical energy, which consists in generating by the combined inductive influence of three or more phase alternating currents two separate alternating magnetic fluxes in quadrature, substantially as described.

5. The method of transforming two-phase alternating currents into three-phase alternating currents, which consists in producing two separate alternating magnetic fluxes in quadrature by the inductive influence of the two-phase currents, and subjecting three circuits simultaneously to the inductive action of the two fluxes, each circuit in the ratio of the sine of the desired current lag by one flux, and in the ratio of the cosine of the desired current lag by the other flux, substantially as described.

6. The method of transforming three-phase alternating currents into two-phase alternating currents, which consists in passing each of the three-phase currents around one of two separate magnetic cores in a number of turns proportionate to the sine of the current lag and around the other core in a number of turns proportionate to the cosine of the same current lag, whereby two separate alternating magnetic fluxes in quadrature are produced, and generating by these two fluxes two-phase alternating currents, substantially as described.

754,372. **SYSTEM OF ALTERNATING-CURRENT TRANSFORMATION.** MAURICE HUTIN and MAURICE LEBLANC, Paris, France, assignors, by mesne assignments, to George Westinghouse, Pittsburg, Pa. Original application filed Apr. 3, 1896, Serial No. 544,224. Divided and this application filed Nov. 19, 1903. Serial No. 181,853. (No model.)

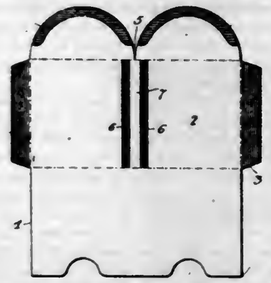


*Claim.*—1. An apparatus for generating two separate alternating magnetic fluxes in quadrature, by multiphase alternating currents, and vice versa, consisting of two inductional transformers each having as many coils as there are multiphase currents used or generated, the number of windings of said coils being graduated for one transformer in the ratio of the sines of the lags of the currents which traverse them and for the other transformer in the ratio of the cosines of the same lags, the homologous coils being connected in series, and an independent coil or coils for each transformer, substantially as described.

2. A system of alternating-current transformation comprising two separate magnetic cores, one wound with a set of coils graduated in accordance with a sine law and the other with a set of coils graduated in accordance with a cosine law, the homologous coils of the two sets being connected in series and with a multiphase line, and a separate coil or coils for each core connected with a quarter-phase line, substantially as described.

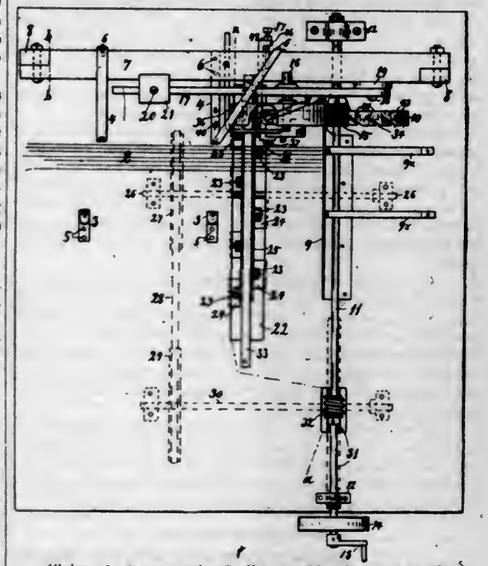


754,373. **TWIN ENVELOP.** ARCHER G. JONES, Richmond, Va., assignor to the Duplex Envelope and Printing Company, Richmond, Va., a Corporation of Virginia. Filed Apr. 21, 1902. Renewed Sept. 9, 1903. Serial No. 172,525. (No model.)



*Claim.*—A twin envelop formed with front and back folds, the front fold having end and side gummed laps, and a pair of gummed lines arranged to flank an ungummed tear-space and to close the joining sides of the pair of envelops at the opposite sides of the tear-space, the pair of gummed lines terminating at the folding-lines of said end sealing-laps, and flanking their meeting-point at said lines for the purpose stated.

754,374. **GRASS-TWINE-FEEDING MACHINE.** ERICK A. LUNDGREN and CARL H. JOHANNESEN, St. Paul, Minn. Filed June 13, 1903. Serial No. 161,397. (No model.)



*Claim.*—1. A grass-twine-feeding machine having two wheels rolling face to face so as to feed grass between them, one of said wheels having in its rim notches adapted to carry grass from a supply in between the wheels.

2. A grass-twine-feeding machine having two wheels rolling face to face so as to feed grass between them, one of said wheels having in its rim notches adapted to carry grass from a supply in between the wheels and auxiliary slanting guiding-grooves extending from the notches upon the face of the wheel.

3. A grass-twine-feeding machine having a feed-wheel with a concave side forming a rim, and in said rim notches adapted to carry grass from a supply into feeding mechanism, a block or sweeper adjacent to the side of the wheel to separate the surplus grass outside the notch from the grass in the notch and a presser-wheel rolling face to face upon the feed-wheel.

4. A grass-twine-feeding machine having a feed-wheel with a concave side forming a rim, and in said rim notches adapted to carry grass from a supply into a feeding mechanism and a block or sweeper

adjacent to the side of the wheel to separate the surplus grass outside the notch from the grass in the notch, an adjustable gage partly covering the notches while they are in a position to receive the grass and a presser-wheel rolling face to face upon the feed-wheel.

5. A grass-twine-feeding device having a feed-wheel with feed-notches in its edge adapted to carry grass from a supply upon the face of the wheel, a presser-wheel bearing with its face against the face of the feed-wheel and adjustable means for giving pressure to the presser-wheel toward the feed-wheel.

6. A grass-twine-feeding device having a feed-wheel with feed-notches in its edge adapted to carry grass from a supply upon the face of the wheel, a presser-wheel bearing with its face against the face of the feed-wheel, said presser-wheel having its face covered with rubber or similarly soft material and adjustable means for giving pressure to the presser-wheel toward the feed-wheel.

7. A grass-twine-feeding device having a feed-wheel with feed-notches in its edge adapted to carry grass from a supply upon the face of the wheel, a presser-wheel bearing with its face against the face of the feed-wheel, the face of said presser-wheel projecting out over the notched rim or edge of the feed-wheel and adjustable means for giving pressure to the presser-wheel toward the feed-wheel.

8. In a grass-twine-feeding machine, the combination with a primary feed-wheel having feed-notches in its edge or rim, and a presser-wheel rolling face to face therewith so as to feed grass between them endwise into the twine-forming device, of a secondary feed-wheel having yielding fingers moving the supply of grass in small portions sidewise against the notched edge or rim of the primary feed-wheel.

9. In a grass twine-feeding machine, the combination with a primary feed-wheel having a side rim with notches adapted to take a few straws at a time from a supply of grass, a presser-wheel rolling face to face on said wheel, of a secondary feed-wheel having yielding fingers moving a portion of the supply gently toward the side of the primary feed-wheel; said secondary wheel revolving in a vertical plane, and said fingers being pivoted near the periphery of the wheel, and having weights secured to them to hold them normally upright, or in a position to engage and move some of the grass-supply sidewise toward the side of the feed-wheel.

10. In a grass-twine-feeding machine, the combination with a primary feed-wheel adapted to take a few straws at a time from a supply of grass, and a presser-wheel rolling face to face therewith, of a secondary feed-wheel having yielding fingers engaging the supply to move a portion thereof gently toward the primary wheel, said fingers being pivoted near the periphery of the wheel and having adjustable weights holding the fingers in position to engage the supply.

11. In a grass-twine-feeding machine, the combination with a primary feed-wheel having at one side a rim with notches adapted to take a few straws at a time from a supply of grass, and a presser-wheel rolling face to face upon said wheel, of a secondary feed-wheel having yielding fingers moving a portion of the supply gently against the side of the primary wheel; said secondary wheel being operatively connected with the shaft of the primary feed-wheel by a speed-reducing mechanism or gearing.

12. The combination with the feed-wheel 10 having the feed-notches 34 in its edge, of the sweeping-block 35 adjacent thereto, the inverted-V-shaped guide 39 secured to said block, and the weighted wheel 15 resting on the feed-wheel, and means for bringing grass into contact with the notches of the feed-wheel.

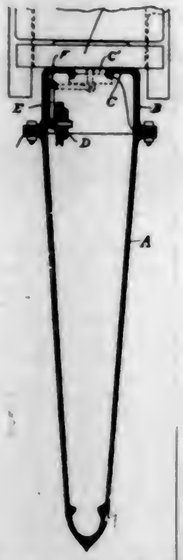
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**754,375. METHOD OF MAKING CONCRETE PILES. WALLACE C. LYON, Hyattsville, Md. Filed Sept. 3, 1902. Serial No. 121,988. (No specimens.)**

*Claim.*—1. A method of making concrete piles, consisting in forming a hole in the ground by means of a former, of filling the former with concrete, hermetically sealing the same and applying a pressure between the surface of the concrete and the top of the former, whereby the latter will be raised out of the ground and the concrete forced through the lower end of the former to replace the space occupied by the former, as set forth.

2. A method of making concrete piles, consisting in making a hole in the ground by a suitable former and filling the latter with a semiliquid concrete and hermetically sealing the former and applying pressure between the surface of the concrete and the top of the former, whereby the concrete will be forced through the lower end of the former simultaneously with the raising of the latter, whereby the space occupied by the former may be replaced by the concrete and preventing the caving in of the wall of the hole, as set forth.

3. The method of making concrete piles which consists in preparing a permanent base or foundation for the pile, introducing the same into the ground to the proper depth, and forming an opening above said base by the act of introducing the same, then filling said opening with concrete or other plastic material and permitting the concrete to set, substantially as described.




4. A method of making concrete piles which consists in preparing a permanent base or foundation for the pile, driving the same into the ground to the proper depth by means of a pile or former and thereby making an opening in the ground above said base, then filling said opening with concrete or other plastic material and permitting the concrete to set, substantially as specified.

5. A method of making concrete piles which consists in preparing a permanent base or foundation for the pile, driving the same into the ground to the proper depth by means of a hollow pile, or former and thereby making an opening in the ground above said base, then filling said opening with concrete or other plastic material introduced thereinto through the hollow pile, and permitting said concrete to set, substantially as specified.

6. A method of making concrete piles, the same consisting in providing a hollow pile or former with a detachable point or shoe, driving said pile to displace the earth, withdrawing the pile without the shoe and filling the opening above said shoe with concrete or other plastic material and permitting the same to set, substantially as specified.

7. A method of making concrete piles which consists in providing a hollow pile or former with a detachable point or shoe, driving said pile to displace the earth, withdrawing the pile, without the shoe, and, as said pile is withdrawn, delivering the concrete or other plastic material from its lower end into the opening formed by such withdrawal of the pile, substantially as specified.

8. A method of making concrete piles which consists in providing a hollow pile or former with a detachable point or shoe, driving said pile to displace the earth, introducing concrete into the hollow pile, withdrawing the pile without the shoe, and, as said pile is withdrawn, applying pressure to the mass of concrete therein so as to force said concrete from the lower end of the pile into the opening formed by the withdrawal of the pile, substantially as specified.

9. A method of making concrete piles which consists in providing a hollow pile or former with a detachable shoe or point, driving said pile to displace the earth, introducing concrete into the hollow pile, closing the top of the pile and then introducing fluid-pressure into the space between the top of the mass of concrete and the closed top of the pile, whereby the latter is forced out of the opening, leaving the shoe therein, and the concrete is forced from the lower end of the pile into the opening above said shoe, substantially as specified.

10. A method of making concrete piles consisting in introducing a tube into the ground, introducing concrete into the tube, hermetically sealing the tube and applying fluid-pressure between the surface of the concrete and the closure of the tube.



**754,376. APPARATUS FOR USE IN MAKING CONCRETE PILES. WALLACE C. LYON, Hyattsville, Md. Original application filed Sept. 3, 1902, Serial No. 121,988. Divided and this application filed May 12, 1903. Serial No. 156,853. (No model.)**




*Claim.*—1. An apparatus for making concrete piles comprising a former, a shoe adapted to be driven by the latter into the ground and forming the footing for a concrete pile, as set forth.

2. An apparatus for making concrete piles comprising a former, with a valved top, a shoe adapted to be driven by the latter into the ground, said former designed to receive concrete which is forced out of the bottom thereof as the former is raised, thereby producing a concrete pile with said shoe as a footing to the latter, as set forth.

3. An apparatus for making piles, comprising a hollow tapering former, a tapering shoe engaging one end of the former and adapted to be driven thereby into the ground, said former designed to receive concrete which is forced out of the lower end of the former as it is raised out of the ground, thereby leaving said shoe as a footing for the pile.

4. A pile-forming apparatus comprising a hollow former, a shoe engaged by said former and driven thereby into the ground, a valve-regulated filling-aperture in said former and through which fluid-pressure is introduced to raise the former from the ground and force the concrete within the former out through the lower end thereof, whereby a pile is formed of solid concrete with said shoe as a footing, as set forth.

5. An apparatus for making piles comprising a hollow former, a shoe having an annular shoulder upon which the lower end of the former is adapted to rest, the opposite end of the former being flanged forming a filling-aperture, and a valve adapted to seat over said filling-aperture, as set forth.

6. A pile-forming apparatus comprising a hollow former, a shoe engaging one end thereof and adapted to be driven by the former into the ground, a filling-aperture at the other end of the former, a valve adapted to seat over said aperture and having a pipe connection through which fluid-pressure may be introduced to the former, and a link pivotally connecting said valve to the shell, as set forth.

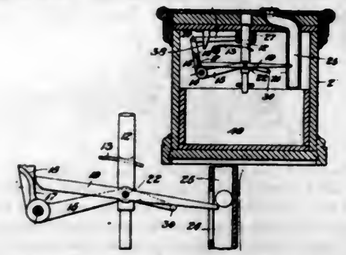
7. An apparatus for making concrete piles comprising removable former and a shoe detachable therefrom and adapted to be driven thereby into the ground to form the footing for a concrete pile.

8. An apparatus for making concrete piles comprising a removable hollow former and a shoe normally closing the lower end of the same but detachable therefrom, said shoe being adapted to be driven into the ground by the hollow former to constitute the footing for a concrete pile.

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**754,377. CHECK-CONTROLLED GAME APPARATUS. GEORGE W. MACKENZIE, Beaver, Pa., assignor of five-sixths to Robert H. Marks and R. R. Mills, Beaver, Pa., and Robert H. M. MacKenzie, Pittsburg, Pa. Filed Oct. 2, 1902. Serial No. 126,645. (No model.)**

*Claim.*—1. In a game apparatus, the combination with a pivotal turning stem and handle having a lever-arm provided with a locking-bearing and a cam-face, and a plunger-actuating lever provided with a limiting-abutment; of a pivoted locking-lever adapted to engage said locking-bearing, and to be actuated by a tally-weight and to be partially depressed by the tally-weight to engage the limiting-abutment and to be further depressed by the cam-face, substantially as set forth.




2. In a game apparatus, the combination with a pivotal turning stem and handle having a lever-arm provided with a locking-bearing and a cam-face, and a plunger-actuating lever provided with a limiting-abutment; of a tally-weight channel and a pivoted locking-lever projecting thereinto and adapted to engage said locking-bearing, limiting-abutment and cam-face in the order named, substantially as set forth.

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**754,378. ELECTRIC SWITCH. NORMAN MARSHALL, Newton, Mass., assignor to Marshall Sanders Company, Boston, Mass., a Corporation of Maine. Filed June 27, 1903. Serial No. 163,296. (No model.)**




*Claim.*—1. In an electric switch the combination with a spindle, contacts, and spring for moving the same, of a catch-plate provided with a transverse recess having an open end at one side of the spindle, an arm projecting from the spindle through the open end of said recess, and stops engaged by said catch-plate.

2. In an electric switch the combination with a spindle, contacts, and spring for moving the same, of a catch-plate provided with a transverse recess having an open end at one side of the spindle, an arm in the plane of the catch-plate projecting from the spindle through said open end and playing on opposite sides of said recess, and stops engaged by said catch-plate.

3. In an electric switch the combination with a spindle, contacts, and spring for moving the same, of a catch-plate provided with a slot extending transversely to its line of movement and having substantially parallel sides, an arm in the plane of the catch-plate projecting from the spindle into said slot and having a circular end playing between the sides of said slot, and stops engaged by said catch-plate.

4. In an electric switch the combination with a spindle, contacts and spring for moving the same, of a catch-plate provided with a recess, an arm in the plane of the catch-plate and of greater thickness projecting from the spindle and engaging the sides of said recess, a flange projecting from the spindle of the same thickness as the arm, and stops engaged by said catch-plate.

5. In an electric switch the combination of the switch-plate, a catch-plate sliding therein, a spindle, a spring connecting the spindle and switch-plate, a slot in the catch-plate extending transversely to its line of movement, and a crank on the spindle engaging said slot and arranged to move in the direction of movement of the catch-plate, and stops engaged by the catch-plate.

6. In an electric switch the combination of a sliding plate provided with a slot extending transversely to its line of movement and having an open end, a spindle, and a crank-arm in the plane of the plate projecting from the spindle through the open end of said slot.

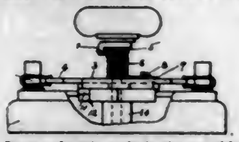
7. In an electric switch the combination of a spindle provided with a projecting crank-arm, a movable plate in the plane of said arm, an opening extending lengthwise of said plate through which said spindle passes, and a slot extending transversely from said opening and engaged by said crank-arm.

8. In an electric switch the combination of a stop-plate, a switch-plate, a catch-plate carried thereby recessed to permit the play of an arm, a spindle extending through the recess in said catch-

plate provided with a flange for supporting the switch-plate out of contact with the catch-plate and with an opposite projecting arm playing in said recessed catch-plate, and a spring connecting said catch-plate and spindle.

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**754,379. ELECTRIC SWITCH. NORMAN MARSHALL, Newton, Mass., assignor to Marshall Sanders Company, Boston, Mass., a Corporation of Maine. Filed Oct. 6, 1903. Serial No. 175,949. (No model.)**

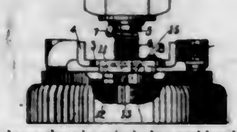


*Claim.*—1. In an electric switch the combination of a stop-plate, a switch-plate, a sliding catch-plate carried by said switch-plate and provided with an opening extending lengthwise thereof, a spindle extending through said opening and provided with projecting arms lying in said opening and having cam-surfaces arranged to engage the opposite ends of said opening and reciprocate said catch-plate, substantially as described.

2. In an electric switch the combination of a stop-plate, a switch-plate, a sliding catch-plate carried on said switch-plate and provided with an opening extending lengthwise thereof, a spindle extending through said opening and provided with projecting arms lying in said opening and having cam-surfaces arranged to engage opposite ends of said opening, and a lug projecting inward from the side of said opening and arranged to be engaged by said arms, substantially as described.

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**754,380. ELECTRIC SWITCH. NORMAN MARSHALL, Newton, Mass., assignor to Marshall Sanders Company, Boston, Mass., a Corporation of Maine. Filed Oct. 6, 1903. Serial No. 175,950. (No model.)**



*Claim.*—1. In an electric switch the combination of a stop-plate, a switch-plate, a catch-plate connected with said switch-plate, a spindle provided with a projection, and a pin-and-slot connection between the projection and catch-plate arranged to move between the spindle and side of the catch-plate in the direction of movement of the catch-plate upon relative rotation between the spindle and catch-plate, substantially as described.

2. In an electric switch the combination of a stop-plate, a switch-plate, a catch-plate connected with the switch-plate, a spindle, a flange on the spindle, a radial slot in said flange, and a pin on the catch-plate engaging said slot, substantially as described.

3. In an electric switch the combination of a stop-plate, a switch-plate, a catch-plate connected with said switch-plate, a spindle provided with a projecting flange, a connection between the flange and catch-plate consisting of a pin projecting from one part into a slot in the other part and arranged to move between the spindle and side of the catch-plate in the direction of movement of the catch-plate upon relative rotation between the spindle and catch-plate, substantially as described.

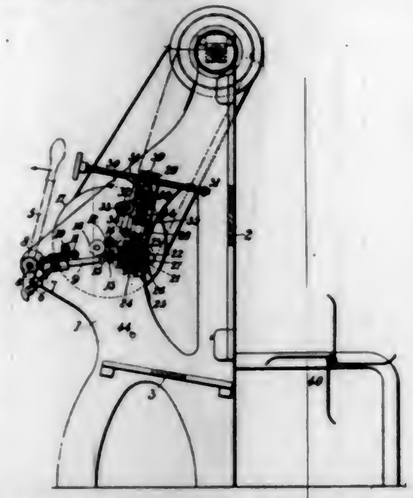
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**754,381. MACHINE FOR REMOVING HAIRS FROM FUR SKINS. THOMAS C. MILLS, London, England. Filed Aug. 3, 1903. Serial No. 168,030. (No model.)**

*Claim.*—1. In a machine for removing hairs from fur skins, and in combination, a plucking device comprising a series of carved flexible beating-surfaces having an air-space on their rear side, means for holding such flexible surfaces at their inner ends only so that they are resilient from their base outwardly, means for rotating the same, and a part in conjunction with which such resilient surfaces work.

2. In a machine for removing hairs from fur skins, and in combination, a series of resilient beaters composed of curved surfaces, of flexible material having an air-space on their rear side whereby their natural elasticity is increased, means for carrying and rotating the same, and a spindle in conjunction with which the resilient beaters work.

3. In a machine for removing hairs from fur skins, and in combination, a plucking device having yielding plucking-surfaces, means for rotating the same, a bracket pivoted centrally of the plucking device, a spindle with which such device cooperates, and a part carrying such spindle and adjustable on said bracket whereby the spindle can be moved around the plucking device, and also be moved toward and away from the same.



4. In a machine for removing hairs from fur skins and in combination, an endless band, flexible loops carried by the same, means for carrying and rotating said band, and a spindle in conjunction with which the loops work.

5. In a machine for removing hairs from fur skins and in combination, an endless band having a looped surface, means for carrying and rotating said band, a supporting-drum for the band, a spindle, means for adjusting same, and means for presenting, feeding in and withdrawing the skins to and from the looped surface and spindle.

6. In a machine for removing hairs from fur skins and in combination, a table, means for reciprocating same, rubber-covered spindles 10, 11, carried by said table, a plucking device having yielding plucking-surfaces, a spindle to cooperate with said plucking-surfaces, means for vertically, forwardly and rearwardly adjusting such spindle, feeding-in and withdrawing rollers, and means for carrying and rotating same.

7. In a machine for removing hairs from fur skins and in combination, a table, rubber-covered spindles 10, 11, carried by said table, a plucking-drum, means for rotating same, flexible rubber beaters carried by same, a fluted spindle, feeding-in and withdrawing rollers, and means for carrying and operating same.

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**754,382. MACHINE FOR REMOVING HAIRS FROM FUR SKINS. THOMAS C. MILLS, London, England. Original application filed Aug. 3, 1903, Serial No. 168,030. Divided and this application filed Nov. 20, 1903. Serial No. 181,967. (No model.)**



*Claim.*—1. In a machine for removing hairs from fur skins, and in combination, a series of flexible sleeves forming plucking-surfaces, a pin passing through each sleeve, a spindle, and means for removably holding said pins to said spindle.

2. In a machine for removing hairs from fur skins, and in combination, a series of flexible sleeves forming plucking-surfaces each having an opening in the same, a pin passing through the opening in each sleeve, a spindle, and means for removably holding said pins to said spindle.

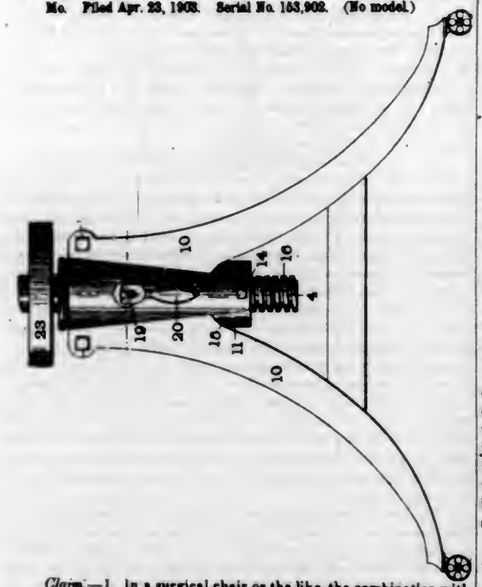
3. In a machine for removing hairs from fur skins, and in combination, a series of flexible sleeves, forming plucking-surfaces, each having an opening in the same, a spindle, a central packing-block, a series of pins arranged around said block and means for removably holding said pins to said spindle.

4. In a machine for removing hairs from fur skins, and in combination, a spindle, a central packing-block, a series of pins arranged around said block, and plates carrying said pins, and flexible circular sleeves forming plucking-surfaces carried by said pins supported and compressed by said pins and packing-block.



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**754,388. SURGICAL CHAIR. ALEXANDER MCDANNOLD, St. Louis, Mo. Filed Apr. 23, 1903. Serial No. 153,902. (No model.)**



*Claim.*—1. In a surgical chair or the like, the combination with a base, of an internally-threaded sleeve carried thereby, a threaded stem within said sleeve, means for preventing rotation between said base and sleeve, a wedge-shaped opening in said sleeve, a wedge-shaped friction-block retained in said opening, and means carried by said base for forcing said friction-block against said stem.

2. In a surgical chair or the like, the combination with a base composed of a plurality of parts, of an internally-threaded sleeve, means for clamping the parts of said base around said sleeve, a threaded stem within said sleeve, an opening in said sleeve, a friction-block in said opening, mechanism carried by said base for forcing said friction-block against said stem, and a chair-supporting member carried by said stem.

3. In a surgical chair or the like, the combination with a base composed of a plurality of parts, of an internally-threaded sleeve, means for clamping the parts of said base around said sleeve, a threaded stem within said sleeve, an opening in said sleeve, a wedge-shaped friction-block in said opening, mechanism carried by said base for forcing said friction-block against said stem, and a chair-supporting member carried by said stem.

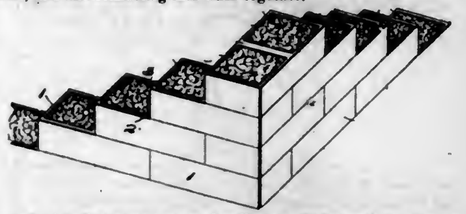
4. In a surgical chair or the like, the combination with the base composed of two parts, of an internally-threaded sleeve, means for clamping the parts of said base around said sleeve, a threaded stem within said sleeve, an opening in said sleeve, a friction-block in said opening, a threaded member carried by said base for forcing said friction-block against said stem, and a chair-supporting member carried by said stem.

5. In a surgical chair or the like, the combination with a base composed of two parts, of an internally-threaded sleeve, means for clamping the parts of said base around said sleeve, a threaded stem within said sleeve, a wedge-shaped opening in said sleeve, a wedge-shaped friction-block in said opening, a threaded member carried by said base for forcing said friction-block against the said stem, and a chair-supporting member carried by said stem.

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**754,384. WALL STRUCTURE. PETER J. MCGUIRE, Blairsville, Pa. Filed Dec. 6, 1902. Renewed Oct. 20, 1903. Serial No. 177,818. (No model.)**

*Claim.*—1. A wall structure, comprehending a multiplicity of superposed open glass frames or tiles overlapping one another each of which is provided with a single cross web or partition of double the thickness of the tile ends so as to support the abutting ends of the tile at the lappings and cause the openings therein to register and form a plurality of parallel non-communicating spaces from top to bottom, a filling in each of said spaces to lock the tiles together and form a solid mass or wall, a false wall at the rear of said tile wall, and ties connecting said walls together.



2. A wall structure, comprehending a multiplicity of glass frames or tile arranged upon and overlapping one another so as to form a hollow space therein, a filling in said space to lock said tile together and form a solid mass or structure, and ties embedded in said filling and extending through said wall.

3. A wall structure, comprehending a multiplicity of glass frames or tile each having an inner cross web or partition and each arranged one upon the other with their openings registering, a filling in said openings to lock said tile together and form a solid mass or structure, and ties embedded in said filling and extending through said wall.

4. A wall structure, comprehending a multiplicity of glass frames or tile each having an inner cross web or partition and each arranged one upon and overlapping the other so as to form a hollow space therein some of which are arranged to cross-lap at intervals to project beyond the wall-surface at the rear, a false wall at the rear embedding said projecting tile and provided at intervals with ties extending through said tile into the hollow space therein, and a filling in said tile-space to lock the tile together and to said ties to form a solid mass or structure.

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**754,385. GAS-ENGINE ATTACHMENT FOR STEAM-ENGINES. HENRY B. NICODEMUS, Allegheny, Pa., assignor to George K. Benner, Allegheny, Pa. Filed Feb. 27, 1902. Serial No. 95,897. (No model.)**



*Claim.*—1. The combination with a main cylinder; of a piston-cylinder having its inner part located within the main cylinder and providing either a steam-chamber or explosion-chamber, passages for feeding either steam or an explosive mixture into the piston-cylinder, valves for controlling the flow through the passages, and an igniter for the explosive mixture.

2. The combination with a main cylinder, of a feed pipe or channel, a valve-casing communicating with the feed-chamber having air-inlets, a gas-pipe connected with the valve-casing, a check-valve within the valve-casing, a piston-cylinder having its inner part located within the main cylinder and providing either a steam-chamber or explosion-chamber, feed-passages providing communication between the opposite ends of the piston-cylinder, a valve-casing having a check-valve whereby communication with the outer part of the chamber of the piston-cylinder is controlled, and an igniter for the explosive mixture connected with the outer part of the piston-cylinder.

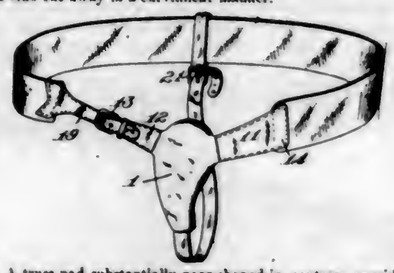
3. The combination with the main cylinder, of a piston-cylinder secured to one end of the main cylinder having a part thereof located within the main cylinder and the remainder thereof extending beyond the main cylinder, the said piston-cylinder providing either an explosion or steam chamber, means for controlling the admission of an explosive mixture to the chamber of the piston-cylinder, a piston located within the piston-cylinder, and means for controlling the admission and exhaust of steam to the piston-cylinder.

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**754,386. HERNIA-TRUSS. CHARLES P. NORRIS, Chambersburg, Pa., assignor of one-third to George L. Snider, Washington, D. C. Filed June 16, 1903. Serial No. 161,727. (No model.)**

*Claim.*—1. A truss-pad substantially pear-shaped in contour,

provided with a pair of upwardly-extending inclined wings and having one side cut away in a curvilinear manner.



2. A truss-pad substantially pear-shaped in contour, provided with a pair of upwardly-extending inclined wings, a flexible lower end and having one side cut away in a curvilinear manner.

3. A truss-pad provided with a pair of upwardly-extending inclined wings and with a flexible lower end.

4. A truss-pad provided with a pair of upwardly-extending inclined wings, a flexible lower end and having one side cut away in a curvilinear manner.

5. A truss-pad provided with a pair of upwardly-extending inclined wings, a flexible lower end and having one side cut away in a curvilinear manner and a strap secured to said lower end.

6. A truss comprising a pad having one side cut away in a curvilinear manner, a pair of upwardly-extending inclined wings and a strap connected to the bottom thereof, a supporting-band secured to one of said wings and adapted to be connected to the other of said wings, and a loop carried by said band and adapted to be connected to said strap.

7. A truss consisting of a flexible pad having its lower end of greater flexibility than its remaining portion, a pair of upwardly-extending inclined wings and a strap secured to said lower end, a supporting-band having one end secured to one of said wings and its other end adapted to be connected to the other of said wings, and a loop carried by said band and adapted to be connected to said strap.

8. A truss consisting of a flexible pad having its lower end of greater flexibility than its remaining portion, a pair of upwardly-extending inclined wings, a strap secured to said lower end, said pad having one side cut away in a curvilinear manner, a supporting-band having one end secured to one of said wings and adapted to have its other end connected to the other of said wings, and a loop carried by said band adapted to be connected to said strap.

9. A truss-pad comprising a metallic base provided with a packing and a plurality of coverings of flexible material enveloping said base, and a pair of upwardly-extending inclined wings secured to an inner one of one of said coverings.

10. A truss-pad comprising a metallic base cut away at one side in a curvilinear manner and provided with a packing and a plurality of coverings of flexible material enveloping said base, and a pair of upwardly-extending inclined wings secured to an inner one of one of said coverings.

11. A truss-pad comprising a metallic base provided with a packing, a plurality of coverings of flexible material enveloping said base, a pair of upwardly-extending inclined wings secured to an inner one of one of said coverings, and a strap secured to the lower end of an inner one of one of said coverings.

12. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame and a packing interposed between said gauze and plate, and a plurality of coverings of flexible material enveloping said base.

13. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame and a packing interposed between said gauze and plate, and a plurality of coverings of flexible material enveloping said base, said coverings projecting below said base to form said pad with a flexible lower end.

14. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate and a plurality of coverings of flexible material enveloping said base, and a pair of upwardly-extending wings secured to an inner one of one of said coverings.

15. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate and a plurality of coverings of flexible material enveloping said base, said coverings projecting below said base to form said pad with a flexible lower end, and a pair of upwardly-extending wings secured to an inner one of one of said coverings.

16. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate and a plurality of coverings of flexible material enveloping said base, a pair of upwardly-extending wings secured to an inner one of one of said coverings, and a strap secured to the lower end of an inner one of one of said coverings.

17. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate and a plurality of coverings of flexible material enveloping said base, said coverings projecting below said base to form said pad with a flexible lower end, a pair of upwardly-extending arms secured to an inner one of one of said coverings, and a strap secured to the lower end of an inner one of one of said coverings.

18. A truss-pad comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate and a plurality of coverings of flexible material enveloping said base, said base cut away at one side in a curvilinear manner, and said coverings conforming in shape to said base, a pair of upwardly-extending wings secured to an inner one of one of said coverings, and a strap secured to the lower end of an inner one of one of said coverings.

19. A truss comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate, a plurality of coverings of flexible material enveloping said base, said base cut away at one side in a curvilinear manner and said coverings conforming in shape to said base, a pair of upwardly-extending wings secured to an inner one of one of said coverings, a strap secured to the lower end of an inner one of one of said coverings, a supporting-band secured to one of said wings and adapted to be connected to the other of said wings, and a loop carried by said band and adapted to be connected to said strap.

20. A truss comprising a base consisting of a metallic plate, a wire frame secured thereto, a wire-gauze secured to said frame, a packing interposed between said gauze and plate, a plurality of coverings of flexible material enveloping said base, said coverings projecting below said base to form said pad with a flexible lower end, a pair of upwardly-extending arms secured to an inner one of one of said coverings, a strap secured to the lower end of an inner one of one of said coverings, a supporting-band secured to one of said wings and adapted to be connected to the other of said wings, and a loop carried by said band and adapted to be connected to said strap.

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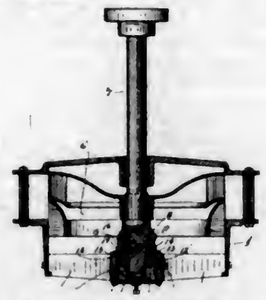
754,387. **CAR-COUPLING.** STEPHEN B. PRICE, Eagle Mills, Ky., assignor of one-half to Alexander Raphal Mattingly, Eagle Mills, Ky. Filed June 5, 1901. Renewed Nov. 23, 1903. Serial No. 182,408. (No model.)



*Claim.*—A car-coupling comprising a draw-head having two recesses therein and an extension projecting beyond the recesses, a coupling-hook pivoted in one of the recesses, a plate having an upper curved surface and having its outer end bearing on the extension from the draw-head pivoted in the other recess, a spring attached to the draw-head and bearing on the coupling-hook, a bail arranged beneath the plate, a spring attached to the side of the car and having a beveled projection, and an extension from the bail arranged between the spring and the car and adapted to come in contact with the projection in its up-and-down movement, substantially as described.



754,388. **ANTIFRICTION-BEARING FOR WATER-WHEELS.** RUDOLPH W. O. REHNKLAU, Minneapolis, Minn., assignor of one-half to Jas. F. Williamson, Minneapolis, Minn. Filed Oct. 3, 1903. Serial No. 175,541. (No model.)



*Claim.*—1. The combination with a body set to rotate on a vertical axis and having a concaved bearing-toe, of an antifriction-bearing involving a rotary member, a non-rotary member, and interposed bearing-balls, said rotary bearing member having a depressed seat in its upper end, and a friction-bearing involving a wooden block fitting the depressed seat in the said rotary bearing member and fitting the concave bearing-toe of said rotary body, substantially as described.

2. The combination with a rotary body set to rotate on a vertical axis and having the concaved bearing-toe 8, of the antifriction-bearing involving the non-rotary thimble 9, the shoulder rotary member 14, having a depressed seat in its upper end, and interposed bearing-balls 9, and a friction-bearing involving the wooden block 16 formed conical both at its upper and lower portions, its upper conical portion fitting the concaved toe 8 of said rotary body, and its lower conical portion fitting the concaved seat of said bearing member 14, substantially as described.

3. The combination with a body set to rotate on a vertical axis and having a concaved bearing-toe, of an antifriction-bearing involving a rotary member, a non-rotary member, and interposed bearing-balls, and a friction-bearing involving a wooden block fitting the concave bearing-toe of said rotary body and fitting the upper face of said rotary bearing member, substantially as described.

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754,389. **FENCE.** WILLIAM C. REINMILLER, Atlanta, Ill., assignor to A. T. Kenyon and H. C. Hawes, Atlanta, Ill. Filed Dec. 9, 1903. Serial No. 184,475. (No model.)

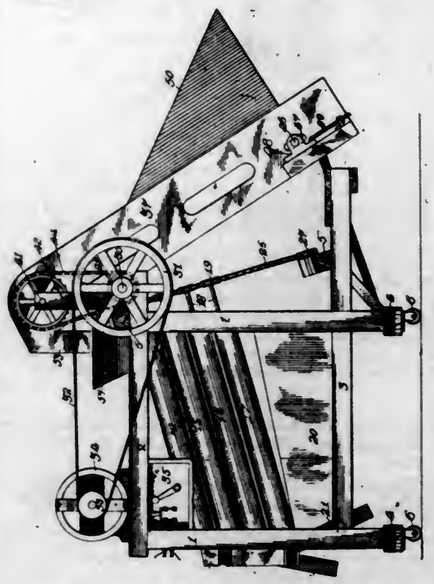


*Claim.*—1. The combination with adjacent fence-sections having posts at the ends thereof, of a segmental bolt connecting the posts, and on which the posts are adjustable to vary the angle between the sections, and means engaging the posts and the bolt to fix the sections as adjusted.

2. The combination with adjacent worm-fence sections, of rigid segmental coupling-bolts extending through the adjacent posts of the respective sections and adjustable to vary the relative angle of the sections.

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754,390. **SORTING-MACHINE.** JOHN RIDDLEBAUGH, Sharpsburg, Pa., assignor to Lutz & Schramm Company, Allegheny, Pa., a Corporation of Pennsylvania. Filed Apr. 25, 1903. Serial No. 154,317. (No model.)



*Claim.*—1. A sorting-machine, comprising a plurality of pairs of rolls arranged in vertical alinement and in planes having a common inclination, the rolls of the respective pairs being spaced apart with the spaces decreasing in width from the upper pair of rolls, a hopper arranged adjacent one end of the upper pair of rolls, and a separate delivering means for the respective pairs of rolls arranged at the opposite ends thereof.

2. In a machine of the type set forth, a means for assorting vegetables and the like comprising a plurality of pairs of rolls arranged in vertical alinement and in planes having a common inclination, the rolls of the respective pairs being spaced apart to form passes with the passes decreasing in width from the upper pair, said rolls being inclined common planes, and means for rotating the rolls of the respective pair in opposite directions.

3. In a sorting-machine, the combination with a plurality of pairs of rolls, of means for imparting movement thereto, separate spouts arranged adjacent the ends of each pair of rolls, and tilter-plates having one of their ends projecting into said spouts and their other ends extending into the spaces between said rolls, substantially as described.

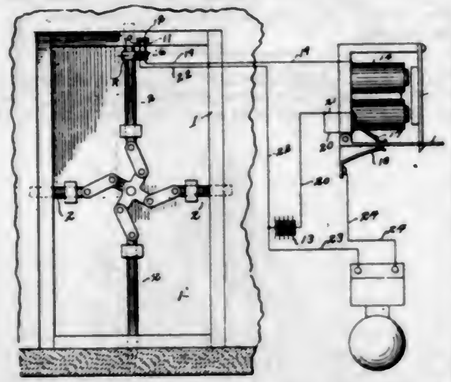
4. In a machine of the type set forth, a plurality of pairs of rolls arranged in vertical alinement, a frame for supporting the same, sprocket-wheels arranged on the ends of said rolls, a sprocket-wheel journaled beneath said first-named wheels, a sprocket-wheel arranged above said first-named wheels, an endless chain passing over said last-named wheels and engaging the wheels of the respective pairs of rolls on common sides, and means for imparting movement to said chain.

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754,391. **BURGLAR-ALARM.** FREEMAN C. ROBINSON and JAMES E. GREEN, Council Bluffs, Iowa. Filed Nov. 26, 1901. Serial No. 83,713. (No model.)

*Claim.*—1. The combination, with a suitable door provided with a draw-bolt, of an insulating-plate in the door-casing, a circuit-closer comprising springs arranged upon said draw-bolt and both insulated therefrom and adapted to bear upon an insulating-plate in the door-casing and to be disengaged therefrom to close an electric circuit

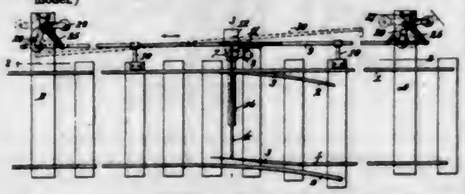
upon the movement of said bolt, an automatic circuit-closer and an alarm-gong in a circuit arranged to be closed by said automatic circuit-closer, substantially as described.



2. The combination, with a vault or vault-door provided with a draw-bolt 2, of an insulated collar arranged upon said draw-bolt, the contact-springs 10 and 11 supported upon said draw-bolt and adapted to rest normally upon an insulating-block arranged upon the door-frame, an automatic circuit-closer in circuit with said contact-springs, an alarm-gong and an electric circuit connected therewith and adapted to be closed by said automatic circuit-closer.

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**754,892. AUTOMATIC RAILWAY-SWITCH.** William C. Sayre, Wilmington, Ohio. Filed Dec. 10, 1903. Serial No. 184,562. (No model.)



*Claim.*—1. In combination with a railway-switch, operating mechanism for closing and locking the same, and means for actuating said mechanism both directly and reversely by the moving train at the same place in advance of the switch.

2. In combination with a railway-switch, means for opening as well as closing said switch and locking the same from the moving train at the option of the engineer at places on both or opposite sides of the switch.

3. In combination with a railway-switch, operating mechanism for opening or closing the switch and locking the same in position, and means for actuating said mechanism by the moving train in advance of the switch, to unlock from either position, shift to the other and lock in the latter position, at the option of the engineer.

4. In an automatic railway-switch, the combination with switch-operating mechanism, of a switch-stand located beside the track at a distance from the switch having two roller-carrying devices arranged one above another and connected to said mechanism, one or the other of which devices, according to whether said mechanism is to be operated directly or reversely, is adapted to be engaged by a horizontally-disposed bar inclined with respect to the track carried by the advancing train, to shift the device engaged outwardly.

5. In an automatic railway-switch, the combination with switch-operating mechanism, of an operating-rod therefor extending along the track a distance from the switch, and a switch-stand located beside the track comprising a rock-shaft having a lever connected to said rod and an arm provided with a roller with which an inclined bar carried by the advancing engine or train is adapted to contact to turn the rock-shaft and thereby operate the switch.

6. In an automatic railway-switch, the combination with switch-operating mechanism, of an operating-rod therefor extending along the track a considerable distance on opposite sides of the switch, and switch-stands located beside the track at the opposite ends of said rod, the latter each comprising a rock-shaft having a lever connected to said rod and a roller-carrying arm adapted to be contacted by an inclined bar carried by the advancing engine or train to turn the rock-shaft and operate the switch

7. In an automatic railway-switch, the combination with switch-operating mechanism for opening and closing the switch, of a switch-stand located beside the track in advance of the switch, the same comprising a rock-shaft suitably connected with said mechanism and having two arms disposed at an angle and at a distance from each other on the rock-shaft, one or the other of which is adapted to be engaged by a part carried by the advancing engine or train according to whether the switch is to be opened or closed.

8. In an automatic railway-switch, the combination with switch-operating mechanism for opening and closing the switch, of a switch-stand located beside the track at a distance from the switch, the same comprising a vertically-disposed rock-shaft connected to said mechanism and having two roller-carrying arms disposed one above another and at an angle, one or the other of said arms being adapted to be turned by contact with its roller by an inclined bar carried by the advancing engine or train, the arrangement being such that when an arm is thrown by said bar farthest away from the track the other will stand at the side of a line running at right angles from the track through the axis of said rock-shaft in position for engagement by said bar when moved to a different altitude.

9. In an automatic railway-switch, the combination with the main rails, and the switch-points, of a switch-bar connecting said switch-points, a crank-shaft, a pitman connecting said crank-shaft with the switch-bar, and means for operating said crank-shaft by the advancing train from either side of the switch.

10. In an automatic railway-switch, the combination with the main rails, and the switch-points, of a switch-bar connecting said switch-points, a crank-shaft, a pitman connecting the switch-bar with said crank-shaft, a longitudinally-movable operating-rod extending along the track adapted to be shifted by the advancing train, and means for turning said crank-shaft by movement of said operating-rod.

11. In an automatic railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting the switch-points, a rotatory member eccentrically connected to said switch-bar, a longitudinally-movable operating-rod beside said member extending along the track a distance from the switch, means adapted to be actuated by the advancing train for moving said rod in one direction or the other according to whether the switch is to be opened or closed, and means for rotatably engaging said member by said rod on movement of the latter to operate the switch.

12. In an automatic railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting the switch-points, a rotatory member eccentrically connected to said switch-bar, a longitudinally-movable operating-rod beside said member extending along the track a distance from the switch, means adapted to be actuated by the advancing train for moving said rod in one direction or the other according to whether the switch is to be opened or closed, and means for rotatably engaging said member by said rod on movement of the latter to operate the switch together with automatic means for positively locking the switch in open or closed position.

13. In an automatic railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting the switch-points, a stationary pinion eccentrically connected to said switch-bar, a longitudinally-movable rod extending along the track having a rack for engaging said pinion and turning the same to operate the switch, and means located at a distance from the switch adapted to be actuated by the advancing train for moving said rod.

14. In an automatic railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting the switch-points, a rotatory member eccentrically connected to said switch-bar, a longitudinally-movable rod extending along the track and having means for engaging said member to turn the same, and a switch-stand located beside the track at a distance from the switch comprising a vertically-disposed rock-shaft having a lever connected to said rod and having two roller-carrying arms disposed one above the other and at an angle, one or the other of which is adapted to be moved to operate the switch by an inclined actuating-bar carried by the advancing engine or train, the arrangement being such that when one arm is thrown back from the track the other is moved to a position beside a line running at right angles from the track through the axis of said rock-shaft in position for contact by said actuating-bar when at a different altitude.

15. In a railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting said switch-points, a rotatory member eccentrically connected to said switch-bar, a longitudinally-movable rod adapted to rotatably engage said member, and means for shifting said rod.

16. In a railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting said switch-points, a rotatory member eccentrically connected to said switch-bar, a longitudinally-movable rod adapted to rotatably engage said member, and means for shifting said rod together with means for automatically locking and unlocking the switch at the final and initial movements respectively of said rod.

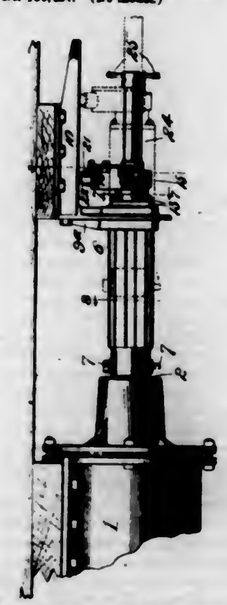
17. In a railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting said switch-points, a rotatory member eccentrically connected to said switch-bar, a longitudinally-movable rod having means for engaging and turning said member, a plate connected to the switch-bar and extending through a slot in said rod, said plate having notches at opposite sides separated by a distance substantially equal to the movement of the switch-bar, said notches being alternately engaged by the opposite end walls of said slot to lock the switch in open and closed position, according to the position of said rod, and means for shifting said rod.

18. In a railway-switch, the combination with the main rails and switch-points, of a switch-bar connecting said switch-points, a suitably-mounted pinion eccentrically connected by a pitman to the switch-bar, and a longitudinally-movable rod having a rack for engaging and turning said pinion, said rack being adapted to turn the pinion a semirotation to shift the switch and to leave the pitman on a dead-center with respect to the crank, and means for shifting said rod.

19. In combination with a switch-operating mechanism, including a switch-stand located beside the track at a distance from the switch, said switch-stand comprising a vertically-disposed rock-shaft connected to said mechanism and having two roller-carrying arms disposed at an angle and one above another, an actuating-bar for contact with said roller longitudinally supported at the side of the engine or train and inclined with respect to the track with its front end nearer the center of the track and means operated from the engine or train for raising and lowering said actuating-bar to contact with the roller of either arm.

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**754,893. AIR-BRAKE CONTROLLER.** William H. Scott, St. Louis, Mo., assignor to John C. Wands, St. Louis, Mo. Filed Dec. 24, 1903. Serial No. 186,427. (No model.)



*Claim.*—1. In an air-brake controller, the combination with a piston-rod, of a housing or guide carried thereby, a nut rotatably mounted in the housing, a fulcrum-block slidingly mounted in the housing or guide and provided with a threaded rod engaging the nut, and means for rotating the nut as the piston exceeds its ordinary limit of travel: substantially as described.

2. In an air-brake controller, the combination with a piston-rod, of an extension secured thereon and forming a guideway for the fulcrum-block of the piston-lever, a threaded rod connected to said fulcrum-block, a nut rotatably mounted in said piston-rod extension and in engagement with said threaded rod, ratchet-teeth on said nut, a pawl in engagement with said ratchet-teeth, and means for retracting the pawl when the piston exceeds its ordinary limit of travel: substantially as described.

3. In an air-brake controller, the combination with a piston-rod, of an extension on said piston-rod forming a guideway, a fulcrum-block for the piston-lever slidingly mounted in said guideway, a threaded rod extending from said fulcrum-block, a nut rotatably mounted in said guideway for engaging said threaded rod, means for rotating said nut, and a housing for receiving the projecting end of said rod as it passes through the nut, said housing being secured to the nut; substantially as described.

4. In an air-brake controller, the combination with a piston-rod, of a slotted extension carried thereby and forming a guideway, a fulcrum-block for the piston-lever slidingly mounted in said guideway, a piston-lever fulcrumed in said block and operating through the slot in said extension, a threaded rod extending from said fulcrum-block, a nut engaging said rod, and means for rotating said nut; substantially as described.

5. In an air-brake controller, the combination with a piston-rod, of an extension mounted thereon and carried thereby, a fulcrum-block for the piston-lever movably mounted in said extension, and means for moving said fulcrum-block, said means including a plate having a cam-slot and a rockable element mounted on the piston-rod extension and operating in said cam-slot; substantially as described.

6. In an air-brake controller, the combination with a piston-rod, of an extension mounted thereon, a fulcrum-block for the piston-rod lever mounted in said extension, a threaded rod extending from said fulcrum-block, a nut through which said rod passes, ratchet-teeth on said nut, a housing mounted adjacent the nut and rotatable independently thereof, a pawl carried by said housing, a spring cooperating with the pawl, and a cam-plate for rocking said housing; substantially as described.

7. In an air-brake controller, the combination with a fulcrum-block, of a threaded rod extending therefrom, a nut through which said rod passes, ratchet-teeth on said nut, a housing rotatably mounted on said nut, a pawl mounted in a follower arranged in said housing and cooperating with said ratchet-teeth, a push-button for lifting the pawl from engagement with the ratchet-teeth, and a spring in said housing bearing against said follower: substantially as described.

8. In an air-brake controller, the combination with a fulcrum-block and a threaded rod, of a ratcheted nut engaging said rod, a rotatable housing mounted in juxtaposition to said nut, said housing having a concentric way, a follower mounted in said way, a pawl mounted in the follower and engaging the ratcheted nut, a spring in the way for holding said follower in normal position at one end of said way, a projection extending from the housing, and a plate having a cam-slot for cooperating with said projection; substantially as described.

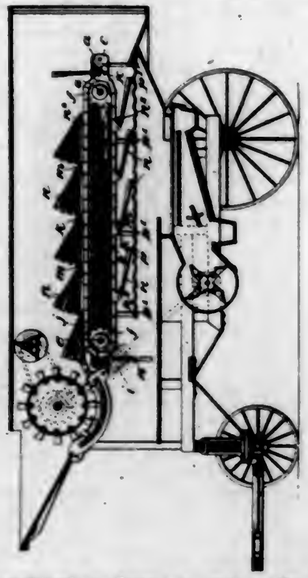
9. In an air-brake controller, the combination with a piston-rod, of an extension fixedly mounted thereon and carried thereby a fulcrum-block for the piston-rod slidingly mounted in said extension, a threaded rod extending from said fulcrum-block, a nut rotatably mounted in said extension through which said rod passes, ratchet-teeth on said nut, a housing mounted in juxtaposition to said nut and movable with relation to said ratchet-teeth, a spring-pressed pawl-carrying block arranged in said housing, a pawl mounted in said block and engaging said teeth, a plate having a cam-slot, and a projection on the housing cooperating with said cam-slot whereby when the piston exceeds its ordinary limit of travel said housing will be moved to enable the pawl to take a new bite after which, when the parts are restored to normal position, the spring-pressed pawl-carrying block will yieldingly force the ratcheted nut to make a partial revolution, thereby causing the fulcrum-block to move outwardly with respect to the cylinder; substantially as described.

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**754,894. SEPARATOR.** Harry J. Silvis, Greensburg, Pa., assignor of one-half to K. T. Silvis, Greensburg, Pa. Filed Dec. 24, 1903. Serial No. 186,491. (No model.)

*Claim.*—1. An attachment for grain-separators comprising a pair of bars attachable interiorly of the separator, rotatable shafts journaled in the bars, traveling means carried by the shafts, beaters carried by the traveling means, and means for causing an oscillation of the beaters.

2. An attachment for grain-separators, comprising a pair of bars detachably secured interiorly of the separator, shafts journaled in the bars, traveling belts passing over the shafts, beaters carried by the belts, means for oscillating the beaters, hangers depending from the bars, and a screen supported by the hangers beneath the beaters, the latter adapted to drag over the screen on their return movement.



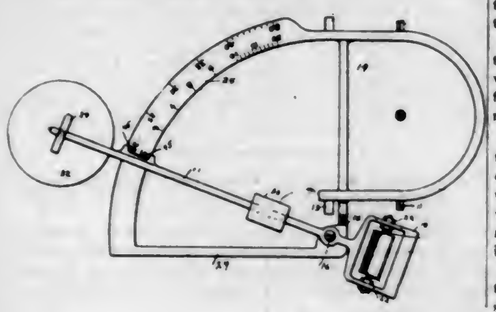
3. As an article of manufacture, an attachment for separators comprising a pair of bars attachable to the separator, traveling beaters supported by the shafts, hangers depending from the shafts and a screen carried by the hangers beneath the beaters, the mechanism in its entirety being bodily removable from the separator.

4. An attachment for separators comprising a pair of bars attachable to the separator, traveling means carried thereby, beaters supported by the traveling means, each beater comprising a series of fingers, a blank portion into which the fingers merge, a plate to which the blank portion is secured and a lug extending from the plate, each finger gradually tapering from the blank portion to the free end, and aprons carried by each finger, the aprons tapering from the ends of the fingers to the blank portion, the fingers separated by tapering interstices.

5. As an article of manufacture, an attachment for separators comprising a pair of bars removably secured to the walls of the separator, bearings formed in and carried by the bars, shafts received in the bearings, traveling beaters carried by the shafts, and rods received in the bearings in the bars, the traveling beaters adapted to impinge against the rods.

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**754,895. COMPUTING-SCALE. CHARLES F. SNYDER, Dayton, Ohio, administrator of Henry C. Stilwell, deceased. Filed July 16, 1897. Serial No. 644,840. (No model.)**



*Claim.*—1. In a price-scale the combination of the following instrumentalities, to wit; a goods-support, a price-beam having pivotal supports, and connected with the goods-support, a value-beam in balance on its pivotal supports and in operative engagement with the price-beam at a point having a fixed relation to the value-beam, the distance between the point of operative engagement of the beams and fulcrum of the price-beam being variable to vary the power of the price-beam as a lever between the value-beam and goods-support whereby the scale may be set to indicate value at different rates and a value-weight carried by the value-beam; substantially as described.

2. In a price and value indicating scale, the combination of the following instrumentalities, to wit; a support for the goods to be weighed, a value-beam, a price-beam in loose operative engagement with the value-beam at a point having a fixed relation to the axis of the value-beam and interposed between the value-beam and goods-support, said goods-support and price-beam counterbalancing each other, and with the value-beam being normally in balance, when the value-weight is not in position to indicate value, a value-weight coöperating with the value-beam to balance the goods and indicate the value thereof, the distance between the point of operative engagement of the beams and fulcrum of the price-beam being variable whereby the leverage exerted by the price-beam in transmitting the balancing strain between the value-weight and goods-support may be varied and the scale set to indicate value at different prices; substantially as described.

3. In a price and value indicating scale, the combination of the following instrumentalities, to wit; a goods-support a pivoted price-beam connected therewith, a value-beam having a pivotal axis different from that of the price-beam and adapted to coöperate with the price-beam at a fixed distance from the pivotal axis of the value-beam but at different points with relation to the pivots of the price-beam, whereby the leverage of the price-beam may be varied and a value-weight carried by the value-beam; substantially as described.

4. In a price and value indicating scale, the combination of the following instrumentalities, to wit; a goods-support, a pivoted price-beam connected and in balance therewith, a value-beam independently in balance and in operative engagement with the price-beam at a fixed distance from the fulcrum of the value-beam, a value-weight carried by the value-beam, the distance between the point of operative engagement of the beams and fulcrum of the price-beam being variable to vary the power of the price-beam as a lever between the value-beam and goods-support, whereby the scale may be set to indicate value at different rates; substantially as described.

5. In a price and value indicating scale, the combination of the following instrumentalities, to wit; a goods-support, a value-beam, a sliding value-weight on said beam, a beam having a fixed fulcrum and located intermediate the goods-support and value-beam, said beam constituting a price-beam, the point of application of the draft of the value-beam to said price-beam being variable with respect to the pivots of the latter to vary the effective leverage of the price-beam in accordance with the price; substantially as described.

6. In a price and value indicating scale the combination of the following instrumentalities, to wit; a beam, a member angularly adjustable with relation thereto and whose angular position determines the price, a weight member adjustable longitudinally on the angularly-adjustable member and whose position thereon determines the value, a goods-support and connections between the same and beam; substantially as described.

7. A weight-receiving member, a tilting frame connected thereto and in balance therewith, an independently-balanced beam pivotally mounted upon said frame and movable laterally with relation thereto, a value-indicating poise upon said beam, and price-indications with which the beam registers.

8. A weight-receiving member, a fulcrumed frame connected thereto and in balance therewith, a beam mounted upon said frame with its extremities movable toward and from the fulcrum of said frame, price-indications with which the beam registers in its movements upon said frame, and a value-indicating poise on said beam.

9. A weight-receiving member, a fulcrumed frame connected thereto, an independently-movable beam having a value-poise and connected to said frame, and a series of price-indications arranged variable distances apart to indicate regular increments in price, and with which the beam registers in its movements upon said frame and a series of value-indications on the beam with which the poise registers.

10. A weight-receiving member, a fulcrumed frame connected thereto, a beam movably connected to said frame, a value-poise upon said beam and adapted to indicate a series of value-graduations, and a series of price-indications arranged variable distances apart upon said frame to indicate regular advances in price, said price-indications being adapted to be indicated by the movement of said beam upon said frame.

11. A weight-receiving member, a fulcrumed frame connected thereto, a beam movably connected to said frame, a value-poise upon said beam and adapted to indicate a series of value-graduations, a series of price-graduations upon said frame and arranged variable distances apart to indicate regular advances in price as said graduations approach the fulcrum of said frame, and an indicator carried by said beam and adapted to indicate said price-graduations.

12. In a scale, a weight-receiving member, a curved beam 25 connected thereto, a series of price-graduations upon said beam 25, and a counterbalance member counterbalanced within itself and movable upon said beam 25 and an adjustable load-counterbalancing member.

13. In a scale, a weight-receiving member, a curved beam 25 connected thereto, a series of price-graduations arranged variable distances apart, upon said beam 25 to indicate regular advances in price from the outer to the inner end of said beam 25, and a weight-counterbalancing member counterbalanced within itself and movable upon said beam 25, and an adjustable load-counterbalancing member.

14. In a scale, a weight-receiving member, a curved beam 25 connected thereto, a series of price-graduations arranged variable distances apart on said beam 25 to indicate regular advances in price from the outer to the inner end of said beam 25, a beam 17 pivoted upon said beam 25, a poise upon said beam 17 and adapted to indicate a series of graduations, and an indicator upon said beam 17 and adapted to indicate said price-graduations upon said beam 25.

15. In a scale, a weight-receiving member, a beam 25 connected thereto, a series of price-graduations arranged variable distances apart on said beam 25 to indicate regular advances in price from the outer to the inner end of said beam 25, a beam 17 pivoted upon said beam 25, a value-indicating poise upon said beam 17, an indicator upon said beam 17 and adapted to indicate said price-graduations upon said beam 25, and a laterally and longitudinally adjustable weight upon said beam 17.

16. In a scale, a weight-receiving member, a beam 25 connected thereto, a series of price-graduations arranged variable distances apart on said beam 25 to indicate regular advances in price from the outer to the inner end of said beam 25, a beam 17 pivoted upon said beam 25, a value-indicating poise upon said beam 17, an indicator upon said beam 17 adapted to indicate said price-graduations upon said beam 25, a needle-point 28 upon said beam 17, a counterweight-receiver 32 supported by said needle-point 28, one or more counterweights 65 adapted to be placed upon said receiver 32, and a laterally and longitudinally adjustable weight 19 upon said beam 17.

17. A weight-receiving member, a value-beam and poise thereon, a variably-graduated price-beam intermediate said value-beam, and member, and a tare-beam connected to said weight-receiving member.

18. A weight-receiving member, a value-beam and poise thereon, a price-graduated beam intermediate said member and value-beam, said price-graduations on said price-beam being arranged variable distances apart to indicate regular advances in price, means for changing and indicating the price, and a tare-beam connected with said weight-receiving member.

19. A weight-receiving member, a value-beam and value-indicating poise thereon, a price-graduated beam intermediate said member and value-beam, said price-graduations on said price-beam being arranged variable distances apart to indicate regular advances in price, means for changing and indicating the price, a tare-beam connected with said weight-receiving member, a poise upon said tare-beam and adapted to indicate weight, a counterweight-receiver 32 connected to said value-beam, and a counterweight 65 adapted to be placed upon said receiver 32.

20. In a price-computing scale, the combination with a goods or weight support and a pivotal member connected therewith, of a separate value-beam controlling the balance of the pivotal member, the distance between the point of connection of the value-beam with the free end of the pivotal member and the point of intersection of the horizontal axis of the latter and the longitudinal center of the beam being relatively fixed at all times, and means for varying the power exerted by the beam on the pivotal member whereby value may be computed at different rates per unit; substantially as described.

21. In a computing-scale, the combination with a value-beam having computations of value thereon, a poise on said beam and a goods receiver or support, of an intermediate pivoted vertically-swinging member, constituting a lever upon which the beam is mounted and forming the connection between the beam and goods-support with means for varying the effective leverage of the value-beam, whereby the scale may be set to compute values at different rates per unit; substantially as described.

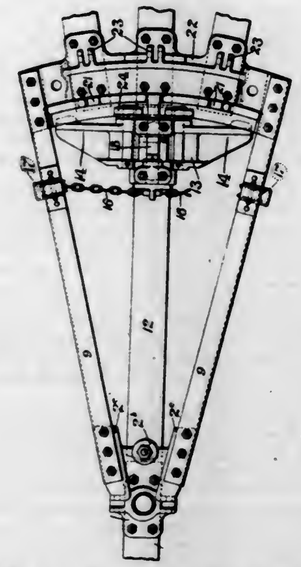
22. A scale consisting of a beam having a weight-receiving arm and a weight-receiving swinging beam balanced thereon.

23. A scale consisting of a beam having a weight-receiving arm and a weight-receiving swinging beam balanced on the beam, so as to swing in a plane parallel to the axis thereof.

24. In a computing-scale, the combination with the main beam, of a swinging beam, mounted thereon, the said main beam and swinging beam being provided, one with a series of value-graduations and the other with a series of price-graduations.

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**754,396. OVERHEAD-TRACK SYSTEM. GEORGE F. STEEDMAN, St. Louis, Mo. Filed Nov. 2, 1903. Serial No. 179,600. (No model.)**



*Claim.*—1. In an overhead-track system, the combination with a main track, of a switch-tongue pivotally mounted at its terminal, a casting supporting a group of tracks with which said switch-tongue is designed to aline, means for moving the switch-tongue in alinement with the several tracks in the group, and braces extending from the extremities of the said casting to a supporting-casting for the terminal of the main track; substantially as described.

2. In an overhead-track system, the combination with a main track, of a casting for supporting its end, a pivot-bolt mounted in said casting, a switch-tongue arranged on said pivot-bolt, a casting for supporting a plurality of tracks with which the switch-tongue is adapted to aline, and braces extending from the extremities of said last-mentioned casting and connected to the supporting-casting for the main-track terminal; substantially as described.

3. In an overhead-track system, the combination with a switch-tongue carrying a guard-casting at its free end, of a supporting-casting for a plurality of branch tracks, means on the guard-casting for supporting the free end of the switch-tongue, notches in said supporting-casting, and means on the guard-casting for coöperating with said notches to lock the switch-tongue in alinement with a branch track; substantially as described.

4. In an overhead-track system, the combination with a switch-tongue, of a plurality of branch tracks with which the same is capable of being alined, a supporting-casting for said branch tracks, said supporting-casting having notches, means mounted on the switch-tongue for coöperating with said notches to lock the switch-tongue in alining positions with the branch tracks, and devices coöperating with said locking means for moving said switch-tongue from one branch track to another; substantially as described.

5. In an overhead-track system, the combination with a switch-tongue, of a plurality of branch tracks with which the same is ca-

pable of being aimed, a supporting-casting for said branch track, said supporting-casting having notches, means mounted on the switch-tongue for cooperating with said notches to lock the switch-tongue in alining position with the branch track, and a common means cooperating with the locking means for releasing the same and for moving said switch-tongue from one branch track to another; substantially as described.

6. In an overhead-track system, the combination with a switch-tongue, of a spring-pressed lever pivotally mounted on the free end thereof, a notched member with which said lever cooperates to lock the switch-tongue in different adjusted positions, a T-shaped lever cooperating with said spring-pressed lever, and a chain connected to said T-shaped lever and extending on each side thereof whereby when said chain is pulled the T-shaped lever is operated to raise the spring-pressed lever out of its notch, a continued pull on the chain moving the switch-tongue; substantially as described.

7. In an overhead-track system, the combination with a main-track terminal, of a supporting-casting therefor, a switch-tongue pivoted adjacent to said terminal, a group of branch tracks, a supporting-casting for said branch tracks, braces connecting said two supporting-castings, a lever pivotally carried by the free end of the switch-tongue for cooperating with notches in the supporting-casting for the group of branch tracks to lock the switch-tongue in different adjusted positions, a T-shaped lever cooperating with said first-mentioned lever to raise it out of its receiving-notch, pulleys on the connecting-braces, and a chain connected to said T-shaped lever having its ends passing over said pulleys; substantially as described.

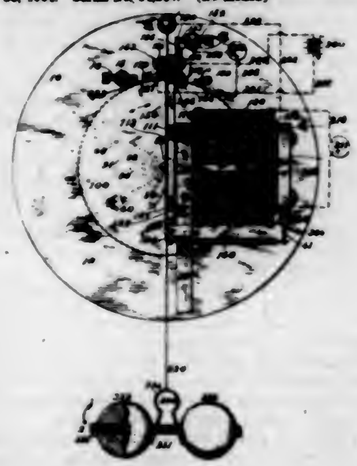
8. In an overhead-track system, the combination with a main track, of a switch-tongue, a group of branch tracks, means for locking the switch-tongue in position to aline with any of said branch tracks, and means for releasing the switch-tongue, said means also being utilized to move the switch-tongue from one branch track to another; substantially as described.

9. In an overhead-track system, the combination with a movable transfer-track, of a spring-impelled device mounted thereon and designed to fit in notches to aline the transfer-track with a fixed track, and a flexible connection for releasing the spring-impelled device; and by which flexible connection the transfer-track is moved; substantially as described.

10. In an overhead-track system, the combination with a plurality of converging tracks, of a ring-casting for supporting the ends of the same, a gear cooperating with said ring-casting and carrying a crossing-track member, a pinion for rotating said gear, a shaft upon which said pinion is mounted, a spring-impelled bolt for engaging notches in said gear for alining the crossing track with two diametrically opposite converging tracks, a chain and sprocket-wheel feathered on said shaft and whose hub portion is provided with cam-faces for moving said bolt, and a spring on said shaft for restoring the sprocket-wheel and its cam-faced hub to normal position; substantially as described.

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**754,897. ELECTRIC CLOCK. GEORGE S. TIFFANY, Brooklyn, N. Y., assignor of one-half to James Van Inwagen, Chicago, Ill. Filed Nov. 30, 1901. Serial No. 84,267. (No model.)**



*Claim.*—1. The combination of a clock-train, a torsional pendulum, and an electromagnetic clock-train-driving mechanism independent of said pendulum and comprising an armature separate from said pendulum, said pendulum being provided with an electric contact for controlling said electromagnetic driving mechanism and being free to rotate independently of the movement of said armature.

2. The combination of a clock-train, an electromagnetic clock-train-driving mechanism, and a torsional pendulum separate from said driving mechanism and comprising a torsional rod and a rotary bob suspended thereby and separate from the armature constituting a part of said mechanism, said rod being provided above said bob with a lateral projection serving as a circuit-closer for said electromagnetic driving mechanism.

3. The combination of a clock-train, a clock-train-driving mechanism therefor comprising an armature, an electromagnet for actuating said mechanism, alternate reversing electric circuits for energizing said magnet, and a regulating torsional pendulum independent of said driving mechanism and provided with an electric contact for controlling said circuits, said pendulum being free to rotate independently of the movement of said armature.

4. The combination of a clock-train, an electromagnet, an armature movable into contact with said magnet, mechanism operated by said armature for driving said clock-train, an electric circuit for energizing said magnet to attract said armature, an electric circuit for passing a reduced electric current through said magnet in a direction reverse to that of the energizing-circuit to eliminate residual magnetism, mechanical means for swinging said armature out of contact with said magnet, a pendulum, two contacts adapted to be engaged by said pendulum for closing the respective circuits at alternate beats of the pendulum, and a circuit-breaker adapted to instantly break the energizing-circuit on the closure of the armature against the magnet.

5. The combination of a clock-train, an electromagnet, an armature movable into contact with said magnet, mechanism operated by said armature for driving said clock-train, an electric circuit for energizing said magnet to attract said armature, an electric circuit for passing a reduced electric current through said magnet in a direction reverse to that of the energizing-circuit to eliminate residual magnetism, mechanical means for swinging said armature out of contact with said magnet, a pendulum provided with an electric contact, two contacts belonging respectively to said circuits and engaged by said pendulum for closing either circuit, and automatic means adapted to instantly break the energizing-circuit on the closure of the armature against the magnet.

6. The combination of a clock-train, an electromagnet, an armature movable into contact with said magnet, mechanism operated by said armature for driving said clock-train, alternate reversing electric circuits, mechanical means for swinging said armature out of contact with said magnet, a torsional pendulum provided with an electric contact, two contacts mounted on said armature and adapted to be engaged by said pendulum for closing the respective circuits, a third contact also mounted on said armature and composed of separable parts respectively connectible with said circuits, and a device adapted to separate said parts to open one of said circuits immediately after the closing thereof and to form a connection with the other circuit preparatory to its being closed by the return of the pendulum.

7. The combination of a clock-train, an electromagnet, an armature movable into contact with said magnet, mechanism operated by said armature for driving said clock-train, an electric circuit for energizing said magnet to attract said armature, an electric circuit for passing a reduced electric current through said magnet in a direction reverse to that of the energizing-circuit to eliminate residual magnetism, mechanical means for swinging said armature out of contact with said magnet, a pendulum provided with an electric contact, two contacts mounted on said armature and adapted to be engaged by said pendulum for closing the respective circuits, a third contact also mounted on said armature and composed of separable parts respectively connectible with said circuits, and a device adapted to separate said parts for opening the energizing-circuit immediately after the closing thereof to form a connection with the releasing-circuit preparatory to its being closed by the return of the pendulum.

8. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, alternate reversing electric circuits for energizing said magnet, pole-changing contacts separate from the pendulum, and connecting with said circuits, respectively, and a regulating torsional pendulum provided with an electric contact adapted to operate in connection with said pole-changing contacts to open, close and reverse said circuits.



9. The combination of a clock-train, a torsional pendulum, an arm fixed to said pendulum and constituting an electric contact, an armature provided with two contacts between which said arm projects, means for moving said armature in one direction, an electromagnet for moving it in the opposite direction, intermediate devices between said armature and clock-train, and alternate electric circuits connected respectively with said armature-contacts and including the coils of said electromagnet.

10. The combination of a clock-train, a torsional pendulum, an arm fixed to said pendulum, an armature provided with two contacts between which said arm projects, means for moving said armature in one direction, an electromagnet for moving it in the opposite direction, means connected with said armature for actuating said clock-train, and alternate reversing electric circuits connected respectively with said armature-contacts and including the coils of said electromagnet.

11. The combination of a clock-train, a torsional pendulum, mechanism for actuating said train and imparting impulses to said pendulum, an electromagnet for operating said mechanism, electric circuits controlled by said pendulum for energizing said magnet, and a shunt-circuit connected with the magnet-coils and including a resistance.

12. The combination of a central arbor carrying a minute-hand, a sleeve on said arbor carrying an hour-hand, a train between said arbor and sleeve, a large ratchet-wheel on said central arbor, a torsional pendulum, a contact-arm connected with said pendulum, an armature provided with two contacts between which said arm projects, means for moving said armature in one direction, an electromagnet for moving it in the opposite direction, a pawl connected with said armature for actuating said large ratchet-wheel, and electric connections adapted to close the circuit through the electromagnet by way of either of said armature-contacts.

13. The combination of a central arbor carrying a minute-hand, a sleeve on said arbor carrying an hour-hand, a train between said arbor and sleeve, a large ratchet-wheel on said central arbor, a torsional pendulum, a contact-arm connected with said pendulum, an armature provided with two contacts between which said arm projects, means for moving said armature in one direction, an electromagnet for moving it in the opposite direction, a pawl connected with said armature for actuating said large ratchet-wheel, a stop for said armature, and electric connections adapted to close the circuit through the electromagnet by way of either of said armature-contacts.

14. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum comprising a pendent torsional rod provided with a contact-arm, a horizontal coupling-bar suspended from said rod, and weights adjustable on said bar, the rod and weights being composed of metals having different expansibilities whereby the pendulum automatically adjusts itself to different temperatures.

15. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum comprising a pendent torsional rod provided with a contact-arm, a horizontal coupling-bar supported by said spring-clip, and weights adjustable on said coupling-bar between said clip and stops.

16. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum comprising a pendent torsional rod provided with a contact-arm, a spring-clip attached to said rod, a horizontal coupling-bar supported by said spring-clip and provided with stops at its opposite ends, and weights adjustable on said coupling-bar between said clip and stops.

17. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum comprising a pendent torsional rod provided with a contact-arm, a spring-clip attached to said rod, a horizontal coupling-bar supported by said spring-clip, and provided with adjustable stops at its opposite ends, and weights adjustable on said coupling-bar between said clip and stops.

18. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum comprising a pendent torsional rod provided with a contact-arm, a spring-clip attached to said rod, a horizontal coupling-bar supported by said spring-clip and provided with adjustable stops, and weights adjustable on said coupling-bar between said clip and stops, the weights being more sensitive to changes of temperature than the bar, whereby the expansion or contraction of the bar is offset by the contraction or expansion of the weights, the expansion of the bar tending to separate the weights and the expansion of the weights causing them to approach each other and the contraction of each having the opposite effects respectively.

19. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum comprising a pendent torsional rod provided with a contact-arm, a spring-clip attached thereto, a horizontal bar supported by said spring-clip and provided with stops at its opposite ends, and weights adjustable on said coupling-bar between said clip and stops; the weights being more sensitive to the changes of temperature than the bar, whereby the expansion or contraction of the bar is offset by the contraction or expansion of the weights, the expansion of the bar tending to separate the weights and the expansion of the weights causing them to approach each other and the contraction of each having the opposite effects respectively.

20. The combination of a clock-train, an electromagnet, an armature movable into contact with said magnet, mechanism operated by said armature for driving said clock-train, an electric circuit for energizing said magnet to attract said armature, an electric circuit for passing a reduced electric current through said magnet in a direction reverse to that of the energizing-circuit to eliminate residual magnetism, mechanical means for swinging said armature out of contact with said magnet, a pendulum provided with an electric contact, two contacts belonging respectively to said circuits and engaged by said pendulum for closing either circuit, and automatic means adapted to instantly break either circuit after each movement of the armature.

21. In an electric clock, the combination a back plate, a bracket secured thereto, an electromagnet supported on said bracket, an armature hinged to said bracket and provided at its long end with contact-studs and with a pawl, a spring connected to the short end thereof, a central arbor, a ratchet-wheel attached to said arbor and engaged by said pawl, a torsional pendulum provided with a contact-arm engaged by said contact-studs of the armature in the oscillation thereof, and electric circuits connected with said studs.

22. In an electric clock, the combination of an electromagnet, an armature provided with a conductive plate, and with a conductive spring disposed adjacent to said plate and normally in contact therewith, a fixed contact with which said contact-spring engages on the movement of the armature in one direction, and electric connections forming alternate circuits passing through said spring and plate respectively.

23. In an electric clock, the combination of a back plate, a dial-plate, a recessed bracket secured to said back plate, a central arbor extending through said plates and having a bearing in said bracket, a minute-hand on said arbor in front of the dial-plate, an hour-hand sleeve surrounding said arbor, a train connecting said sleeve with said arbor, a ratchet-wheel disposed on said arbor back of said back plate, an electromagnet supported on said bracket, an armature hinged to said bracket adjacent to said electromagnet, a pawl on said armature engaging said ratchet-wheel, a pendulum engaged by said armature, and electric circuits controlled by said pendulum.

24. In an electric clock, the combination of a clock-train, a torsional pendulum, electromagnetic means for propelling the clock-train and maintaining motions of said pendulum, the circuits of said electromagnetic means being adapted to be alternately closed by the movement of said pendulum and opened independently of said pendulum.

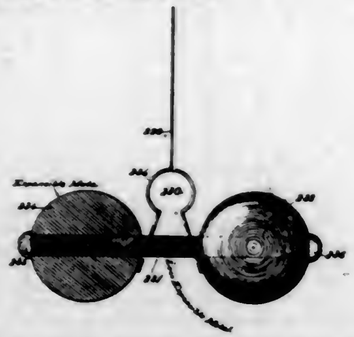
25. The combination of a clock-train, a driving mechanism therefor, an electromagnet for actuating said mechanism, electric means for energizing said magnet, and a pendulum controlling said electric means and comprising a pendent torsional rod provided with a contact-arm, and means mounted on said driving mechanism and engaging said contact-arm for actuating said pendulum.

26. The combination of a clock-train, a torsional pendulum, an electromagnet, an armature for said magnet provided with means connecting directly with said clock-train for actuating it, and also provided with means for engaging said torsional pendulum for imparting impulses thereto, and an electric circuit controlled by said pendulum for energizing said magnet.

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**754,898. TORSIONAL PENDULUM FOR CLOCKS. GEORGE S. TIFFANY, Brooklyn, N. Y., assignor of one-half to James Van Inwagen, Chicago, Ill. Original application filed Nov. 30, 1901, Serial No. 84,267. Divided and this application filed Dec. 12, 1903. Serial No. 184,921. (No model.)**

*Claim.*—1. A compensating pendulum comprising a pendent torsional rod having a lateral extension provided with a stop, a weight of solid metal on said extension, the weight and extension having different expansibilities adapting them to act automatically by expansion and contraction to vary the radial distance between the weight and the axis of the rod to compensate for the contraction and expansion of the extension, and automatic means for holding said weight in contact with said stop.



2. A compensating pendulum comprising a pendent torsional rod having a lateral extension provided with an adjustable stop, a weight of solid metal on said extension, the weight and extension having different expansibilities adapting them to act automatically by expansion and contraction to vary the radial distance between the weight and the axis of the rod to compensate for the contraction and expansion of the extension, and automatic means for holding said weight in contact with said stop.

3. A compensating pendulum comprising a pendent torsional rod, a coupling-bar connected with said rod and provided with adjustable stops, weights on said coupling-bar between said stops, and resilient means operative to hold said weights in contact with said stops and permit them to expand toward each other, the weights and bar being of different solid metals and the metal of the weights being more sensitive to the changes of temperature than the metal of the bar, and adapted by expansion and contraction to compensate for the expansion and contraction of the coupling-bar.

4. A compensating pendulum comprising a pendent torsional rod, a spring-clip attached thereto, a coupling-bar supported by said spring-clip, and weights adjustable on said coupling-bar between said clip and stops.

5. A compensating pendulum comprising a pendent torsional rod, a spring-clip attached thereto, a coupling-bar supported by said spring-clip and provided with stops at its opposite ends, and weights on said coupling-bar between said clip and stops.

6. A compensating pendulum comprising a pendent torsional rod, a spring-clip attached thereto, a coupling-bar supported by said spring-clip and provided with adjustable stops at its opposite ends, and weights adjustable on said coupling-bar between said clip and stops.

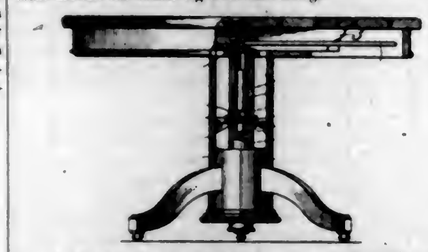
7. A compensating pendulum comprising a pendent torsional rod, a coupling-bar connected with said rod, weights adjustable on said coupling-bar between said clip and stops, and a spring means for holding said weights against said stops.

8. A compensating pendulum comprising a pendent torsional rod, a spring-clip attached thereto, a coupling-bar supported by said spring-clip and provided with stops, and weights on said coupling-bar between said clip and stops, the weights and bar being of different metals, the metal of the weights being more sensitive to changes of temperature than the metal of the bar, whereby the pendulum is self-compensating.

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**754,399. PEDESTAL-TABLE LOCK. Emil Tyden, Hastings, Mich. Original application filed Feb. 19, 1902, Serial No. 94,748. Divided and this application filed Nov. 2, 1903. Serial No. 179,579. (No model.)**

*Claim.*—1. In a pedestal extension-table, in combination with the divided members of the table and the pedestal members pertaining thereto respectively, the center leg carried in position to be inclosed in the pedestal members when they are closed together, and means for drawing and locking the members together comprising an arm pivotally mounted on one pedestal member for swinging horizontally, means for connecting it with the opposite pedestal member, and for swinging it about its pivot, said arm being curved to clear around the center leg as it thus swings.



2. In a pedestal extension-table, in combination with the separable table members and the pedestal members pertaining thereto respectively, a center leg which is supported in position to be inclosed in the pedestal members when they are closed together; means for drawing and locking the pedestal members together comprising an arm pivoted to each member for swinging horizontally; means for connecting said arms and thereby connecting the pedestal members on which they are respectively pivoted, and for swinging said arms about their pivots, both said arms being curved to clear around the center leg at opposite sides thereof in such swinging movement.

3. In a pedestal extension-table, in combination with the separable members and the pedestal members pertaining thereto respectively, a center leg adapted to be inclosed in the pedestal members when they are closed together; an element mounted on said center leg for oscillation about the axis thereof; means at the upper end of the leg for so oscillating it; arms projecting from said element at a substantial distance from both ends of the pedestal; a link pivoted to each of the pedestal members for swinging horizontally, and projecting toward the opposite pedestal member; means connected with each of said arms for holding it yieldingly in a position for encounter by said oscillating element on the center leg, the arms of said element being adapted for engagement with said links respectively at its opposite ends, said arms being curved to clear around the center leg and proportioned each so as to reach to the opposite side of said leg from its pivot.

4. In a pedestal extension-table, in combination with the table members and the pedestal members pertaining thereto respectively, a center leg adapted to be inclosed by the pedestal members when they are closed together; an element mounted on said center leg for oscillation about the vertical axis thereof; diametrically opposite projections from said element protruding beyond the center leg at opposite sides, and a ring encompassing the center leg and carried by said projections; links pivoted to the pedestal members respectively and projecting each toward the opposite pedestal member provided with means for encountering said ring and for engaging said projections respectively, and springs which hold said links with their ring-encountering means respectively in position to encounter said ring at points aside from the plane containing the axis of the center leg and the pivots of the links, and which cause them to react back toward said intermediate positions when deflected therefrom.

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**754,400. VERTICAL FLUID-PRESSURE TURBINE. George Westinghouse, Pittsburg, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed June 24, 1903. Serial No. 163,909. (No model.)**

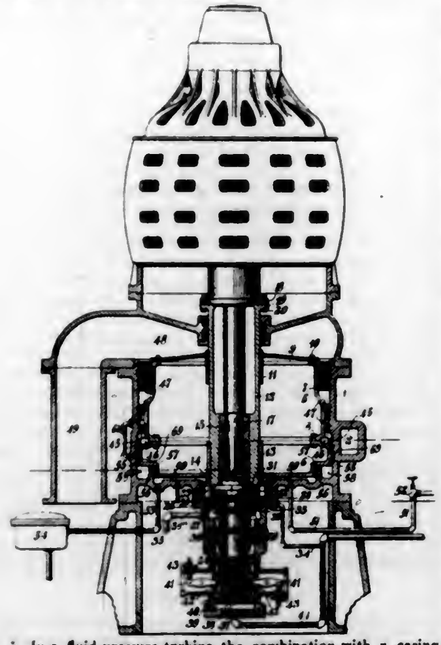
*Claim.*—1. In a fluid-pressure turbine having a vertical shaft, means for supplying the propelling fluid at or near the bottom of the turbine and means for exhausting the same at the top, in combination with means for applying such supplemental fluid-pressure to the bottom of the rotary member of the turbine as to substantially support the weight of the rotating parts.

2. In a fluid-pressure turbine having a vertical shaft and operated by fluid-pressure introduced at or near the bottom and exhausted at the top, a body of compressed fluid between the bottom of the rotating member and its casing to receive the downward thrust of the rotating parts due to gravity.

3. In a fluid-pressure turbine, the combination with a casing having one or more steam-chests and supply-nozzles, of a drum having steam receiving and utilizing members and means for supplying fluid-pressure between the lower end of the drum and the casing to receive the downward pressure exerted by gravity upon the moving parts.

4. In a fluid-pressure turbine having a vertical shaft and having a partial vacuum above its rotary member, means for applying fluid-pressure to the bottom of the rotary member to so supplement the upward atmospheric pressure as to substantially relieve the shaft-bearing from the weight of the moving parts.





5. In a fluid-pressure turbine, the combination with a casing and a rotary member having suitable steam-utilizing parts and a vertical shaft, of means for applying fluid-pressure to the rotary member in opposition to gravity in such degree and over such surface as to substantially relieve the shaft-bearing from the weight of the moving parts.

6. In a condensing steam-turbine, the combination with a casing and a rotary member having a vertical shaft and mounted in said casing, of means for supplying compressed fluid to the casing beneath the rotary member and means for automatically adjusting said pressure in accordance with the degree of vacuum in the exhaust chamber or passage.

7. The combination with a vertical steam-turbine and a dynamo-electric generator supported and driven thereby, of means for subjecting the rotary member of the turbine to an upwardly-acting fluid-pressure of such degree as to float the moving parts of the turbine and dynamo and thus relieve the shaft-bearing from the weight of said parts.

8. The combination with a vertical steam-turbine and a dynamo supported and driven thereby, of means for supplying fluid-pressure to the lower end of the rotary member of the turbine and means for regulating the fluid-pressure in order to float the moving parts.

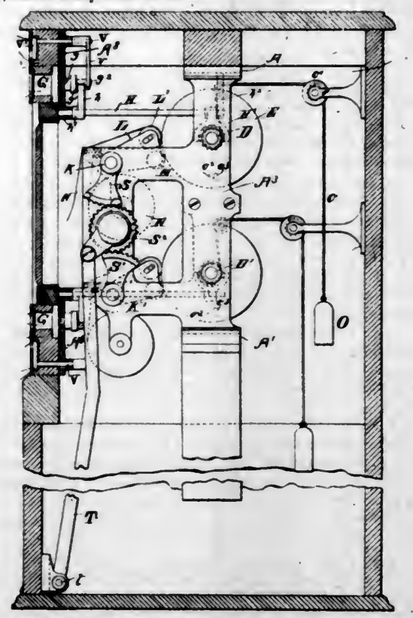
9. The combination with a vertical steam-turbine and a dynamo supported and driven thereby, of means for applying regulated fluid-pressure to the lower end of the turbine to float the moving parts and a pressure-regulating valve controlled by the resultant of the opposing pressures of the supporting fluid and leakage steam.

10. The combination with a vertical steam-turbine and a dynamo supported and driven thereby, of means for applying an upwardly-acting fluid-pressure to the moving parts, independently of the shaft-bearing, of such degree as to wholly or largely relieve the shaft-bearing from the weight of said parts.

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**754,401. TIME-RECORDER. George White, Jersey City, N. J. Filed May 23, 1896. Serial No. 590,357. (No model.)**

*Claim.*—1. In a time-recording mechanism, the combination of a power-shaft, a motor adapted to intermittingly rotate said shaft, a recording-wheel loosely mounted on the shaft, a casing surrounding said shaft and wheel, a friction-clutch interposed between said wheel and shaft, a lock G supported by the inclosing casing, operating devices controlled by said lock, a stop for preventing access to the lock, and connections between said stop and the motor whereby the stop will be automatically withdrawn at predetermined intervals of time while the power-shaft and recording-wheel are stationary, substantially as set forth.



2. In a time-recording mechanism, the combination of an inking mechanism, a platen, a rotary wheel, a band of type-metal of a length equal to the periphery of the wheel and bent to encircle it, the ends of said band being separable whereby it is detachable, and the face being provided with raised type-indicating arithmetically-progressing characters, means for holding said band against peripheral motion on the wheel, and means for clamping said band laterally whereby bands with differing characters can be interchangeably substituted, substantially as set forth.

3. In a time-recording mechanism, the herein-described platen-presser, it having a yielding jacket, a shaft or central carrier, the tube fitted tightly to the jacket and fitted loosely to and rotating on the central shaft, the yoke-frame $l^3$, $l^3$, and the spring for moving the frame and platen, in combination with the printing-wheel in front of the platen, substantially as set forth.

4. In a time-recording mechanism, the combination with the recording-wheel, of the printing-frame L, the frame $l^3$, $l^3$ arranged within the frame L, the platen supported in said frame, and the coiled spring arranged between the platen and the frame $l^3$, substantially as set forth.

5. In a time-recording mechanism, the combination with the recording-wheel, of the printing-frame L, having slots $l^2$, formed therein, an inking-roller journaled in said slots, and spring-arms $m^4$ attached to the frame L and bearing against the ends of the inking-roller, substantially as set forth.

6. In a time-recording mechanism, the combination with the recording-wheels, and the printing-frames L, of the rotary gearing for removing the printing-frames from the recording-wheels, and the door or equivalent lever connected to the gearing for actuating it, substantially as set forth.

7. In a time-recording mechanism, the combination of the recording-wheel, devices for moving the wheel in one direction, the rock-shaft K, the printing-frame L mounted on said rock-shaft and carrying the inking-roller which contacts with and prevents retrograde movement of the recording-wheel, a door or equivalent lever geared to the rock-shaft to move the printing-frame from the recording-wheel, and a weight or equivalent device connected with the recording-wheel for moving the same when the inking-roller is out of contact therewith, substantially as set forth.

8. In a time-recording mechanism, the combination of a recording-wheel, devices for moving said wheel in one direction, the rock-shaft K, the printing-frame mounted on said shaft and carrying the inking-roller adapted to contact with and normally hold the

recording-wheel stationary when disconnected from its power or driving devices, the gear $S^2$ mounted on a shaft and meshing with a segment S on the rock-shaft, a lever connected to said gear and to a door, and a weight connected to the recording-wheel and adapted to rotate the same when the inking-roller is out of contact therewith and the power devices are disconnected therefrom, substantially as set forth.

9. In a time-recording mechanism, the combination of a power-shaft, a recording-wheel loosely mounted on said shaft, means for connecting the recording-wheel to the shaft to cause the same to move therewith, and a visual indicator connected with the said connecting means and adapted to indicate whether the wheel is fast to or detached from the power-shaft, substantially as set forth.

10. In a time-recording mechanism, the combination with suitable driving devices, and a recording-wheel, of a clutch adapted to connect the recording-wheel to the driving mechanism, a shaft *g* for actuating the clutch, a lever *v*, adapted to be actuated by the shaft *g*, and a visual indicator connected with the lever *v*, whereby the relative position of the clutch and recording-wheel will be indicated simultaneously with the movement of the clutch in either direction, substantially as set forth.

11. In a time-recording mechanism, the combination with the recording devices, the driving devices, the means for connecting and disconnecting the driving devices, the shaft *g*, and the lock G, of the bar $A^3$ adapted to support a series of said locks and the shafts *g*, substantially as set forth.

12. In a time-recording mechanism, the combination with power devices, a recording-wheel, and devices for connecting the power devices and recording-wheel, of a visual indicator, a lock, and means controlled by the lock for actuating the devices for connecting the recording-wheel and power devices and simultaneously actuating the visual indicator to indicate the relative positions of the recording-wheel and power devices, substantially as set forth.

13. In a time-recording mechanism, the combination of a motor, a recording-wheel, means for connecting the recording-wheel to the motor, a lock, a rock-shaft *g* adapted to be actuated by a key in the lock, a rock-shaft H connected with the means for connecting the motor and recording-wheel and adapted to be actuated from the shaft *g*, a visual indicator, and a lever connected with said indicator and adapted to be operated by the shaft *g*, simultaneously with the shaft H, to indicate the relative positions of the motor and recording-wheel, substantially as set forth.

14. In a time-recording mechanism, the combination with a motor, a recording device, and means for connecting the recording device to the motor, of a lock, a rock-shaft *g* adapted to be actuated from the lock, a rock-shaft H connected with the means for connecting the motor and recording devices and having arm *h* connected with the rock-shaft *g*, a visual indicator, and a lever connected with said indicator and having one end bifurcated to receive a pin or lug on the shaft *g*, whereby both the indicator and means for connecting the motor and recording device will be simultaneously actuated, substantially as set forth.

15. In a time-recording mechanism, the combination of a type or printing wheel, an intermittingly-acting motor, means for connecting said wheel to the motor, a platen contacting with the printing-wheel in one direction approximately tangential to the periphery of said wheel, and an inking-roller contacting with said wheel in a direction tangentially opposite to the direction of contact of the platen, whereby said wheel will be held from movement in either direction when disengaged from the motor, substantially as set forth.

16. In a time-recording mechanism, the combination of a wheel having a series of printing characters on its periphery, an intermittingly-acting motor, devices for connecting the said wheel with the motor and a pivotally-supported printing-frame contacting with said wheel at points on opposite sides of a straight line joining the axis of said wheel and the axis of the fulcrum of said frame, whereby the said wheel will be held against movement in either direction when not being actuated by the motor, substantially as set forth.

17. In a time-recording mechanism, the combination of a power-shaft, a motor connected with and intermittingly actuating said shaft, a series of type-wheels loosely mounted on the power-shaft, an independent clutch mechanism for connecting each wheel to said shaft, a series of printing-frames all mounted to rock about a common axis and each contacting with one of the type-wheels at points on opposite sides of a straight line joining the said axis with the axis of the power-shaft, whereby each type-wheel will be held stationary when the motor is still or said wheel is disconnected therefrom, means for simultaneously rocking all of said printing-frames out of contact with the type wheels, and means for maintaining each wheel in a predetermined position when disconnected from the power-shaft and its printing-frame, substantially as set forth.

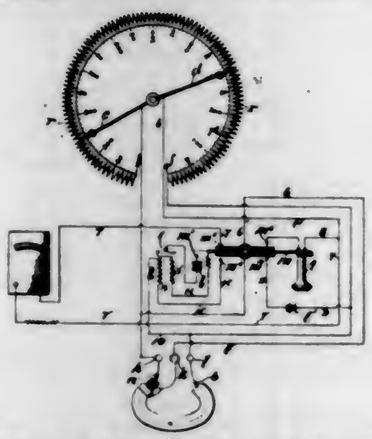
18. In a time-recording mechanism, the combination of an intermittingly-rotating shaft, a wheel loosely mounted on said shaft and provided with a series of peripheral printing characters, a friction-clutch adapted to connect the said wheel to the shaft at any point of the circle surrounding the shaft, and means for preventing movement of said clutch when the shaft is in motion, substantially as set forth.

19. In a time-recording mechanism, the combination of an inclosing casing, parallel vertically-arranged uprights, $A^3$, $A^3$ supported within said casing, a motor arranged within said casing between an end wall thereof and one of said uprights, a shaft D journaled in bearings in said uprights, a power-shaft extending from the motor to the upright $A^3$, gearing connecting said shafts together, a series of recording-wheels loosely supported on said shaft D, a clutch for connecting each of said wheels to said shaft, a rock-shaft journaled in bearings in said uprights and extending across the peripheries of all the recording-wheels, printing-frames carried by said shaft and adapted to normally contact with the recording-wheels, and a lever connected with said rock-shaft for simultaneously moving all of said printing-frames out of contact with the recording wheels, substantially as set forth.

20. In a time-recording mechanism, the combination of an inclosing casing, parallel vertically-arranged uprights, $A^3$, $A^3$, supported within said casing, a motor arranged within said casing, two shafts, D, D′, journaled in bearings in said uprights, a power-shaft geared to the motor and to both shafts D, D′, a series of recording-wheels mounted on said shafts D, D′, two rock-shafts extending parallel to said shaft D, D′, printing-frames carried by said shafts and adapted to contact with the recording-wheels, a gear mounted on each rock-shaft, a pinion mounted on the upright, $A^3$, and meshing with both said gears on the rock-shaft, and an operating-lever connected with and adapted to actuate said pinion, substantially as set forth.

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**754,402. FAULT-LOCATOR FOR ELECTRIC CABLES. DANIEL R. WHEELER, Spokane, Wash. Filed Aug. 3, 1903. Serial No. 167,963. (No model.)**



*Claim.*—1. In a fault-locator for electric cables, the combination with a resistance and a movable contact adapted to divide the same into two branches, of means for connecting said branches to form two ratio-arms of a Wheatstone-bridge circuit, the faulty conductor of the cable being connected so that the portions on either side of the fault are included respectively in the other two arms of said Wheatstone bridge, a testing instrument in the bridge, a source of current, and means for dividing the total operative resistance into a number of units corresponding to the number of units of length of the faulty conductor, whereby when a balance is indicated by said testing instrument, the number of units of resistance in the ratio-arms indicate directly the distance in units of length from the ends of the cable to the fault.

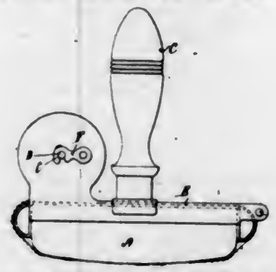
2. In a fault-locator for electric cables, the combination with a resistance and a corresponding scale divided to indicate the units of resistance, of a movable contact *c* adapted to be adjusted along said resistance, said movable contact and the other end of the resistance being adapted to be connected respectively with the terminals of the faulty conductor of the cable, said contact *c* being adapted to be adjusted along the scale to bring into the circuit a number of units of resistance corresponding to the units of length of the cable, a second movable contact *d* adapted to be adjusted along the operative resistance determined by said contact *c*, a source of current, a testing instrument, and connections forming a Wheatstone-bridge circuit in which the portions of the resistance on either side of the said contact *d* form two ratio-arms and the portions of the cable-conductor on either side of the fault form the other two arms, the testing instrument being located in the bridge, whereby the position of said contact *d* when a balance is obtained indicates the location of the fault directly upon the scale.

3. In a fault-locator for electric cables, the combination with a resistance *r*, of a movable contact *c* adapted to be adjusted along said resistance, said movable contact and the other end of the resistance being adapted to be connected respectively with the terminals of the faulty conductor of the cable, said contact *c* being adapted to be adjusted along the scale to bring into the circuit a number of units of resistance corresponding to the units of length of the cable, a second movable contact *d* adapted to be adjusted along the operative resistance determined by said contact *c*, connections forming a Wheatstone-bridge circuit of which the portions of resistance *r* on either side of contact *d* form two ratio-arms, the portions of the cable-conductor on either side of the fault forming the other arms, a testing-bridge 6 having two branches, one of said branches containing a galvanometer and the other branch containing a telephone instrument, a telephone-switch adapted to close said branches alternatively, a source of direct current *l*′ and a source of varying current $a^3$ arranged to be connected alternatively in the circuit according to the position of said telephone-switch.

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**754,403. GILDER'S TOOL. WALTER H. COE, Providence, R. I. Filed June 27, 1901. Serial No. 66,305. (No model.)**



*Claim.*—In a gilding-tool, the combination of the yielding pressure-pad and its backing-support, with means for holding a spirally-wound package-roll of metallic leaf, the guide for holding the paper strip when freed from the metallic leaf, and a handle located between the package-roll and the guide for the freed paper strip, substantially as described.

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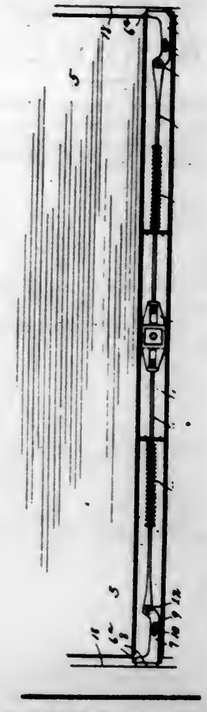
**754,404. CURTAIN-FIXTURE. JAMES W. PATTERSON, Chicago, Ill., assignor to Curtain Supply Company, Chicago, Ill., a Corporation of New Jersey. Filed Aug. 1, 1901. Serial No. 70,477. (No model.)**

*Claim.*—1. In a window-shade holder the combination with a casing and a spring-actuated shade, of a bar carried by the shade, a pivoted locking-cam at the end of the bar adapted to engage the casing above its pivoted point, a rod carried by the bar and pivotally connected to the cam, a spring for normally forcing the rod outward to set the cam into holding engagement with the casing, and means for retracting the rod.

2. In a window-shade holder the combination with a casing and a spring-actuated shade, of a bar carried by the shade having ends extended to serve as guides, pivoted locking-cams at the ends of the bar, spring-actuated rods within the bar pivotally connected to the cams, and means for retracting the rods to release the cams from holding engagement with the casing.

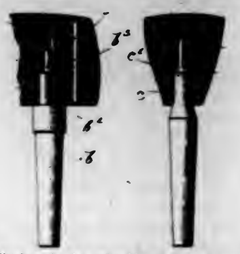
3. In a curtain-fixture for spring-actuated curtains a curtain-stick, shoes slidingly and pivotally mounted thereon, springs normally tending to thrust the shoes into contact with the window-frame, and means for retracting said shoes, substantially as described.

4. In a curtain-fixture the combination with a curtain-stick of sliding, pivoted shoes, springs normally tending to thrust said shoes into contact with the window-frame and the shoes being adapted to rock upon their pivots when the curtain is lowered whereby to release the curtain, substantially as described.



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**754,405. LAST-SUPPORT. EDWIN O. KRENTLER, Detroit, Mich., assignor to Krentler-Arnold Hinge Last Company, Detroit, Mich., a Corporation of West Virginia. Filed June 15, 1903. Serial No. 161,406. (No model.)**



*Claim.*—1. The herein-described last-support, comprising a thimble having an internal shoulder intermediate its length, and a spindle fitting said thimble and having an external shoulder for engaging said internal shoulder.

2. The herein-described last-support, comprising a thimble provided with an internal cavity having larger diameter at its upper end than at its lower end, and a spindle provided with a reduced portion for extending substantially the length of said thimble for maintaining the last in stable position, and intermediate its length within said thimble provided with a portion fitting and bearing against said thimble intermediate the ends thereof.

3. The herein-described last-support, comprising a thimble and spindle provided with mutually engaging and supporting surfaces between the top and bottom of the thimble.

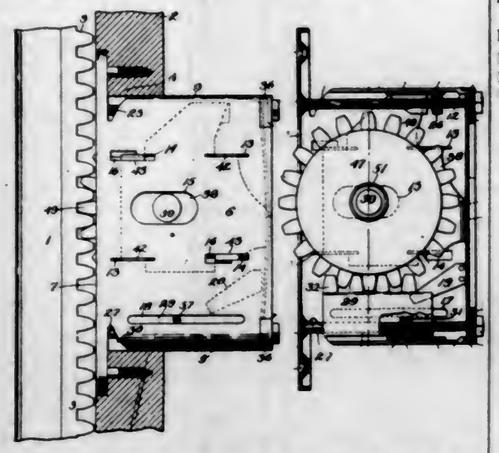
4. A thimble set solidly in the heel end of a last, said thimble having an internal shoulder intermediate its length, combined with a spindle having a reduced portion for extending approximately the length of said thimble for maintaining the last in stable position, a shoulder a short distance from its end for bearing against the shoulder of the thimble, and a tapered portion $b^2$ located adjacent the outer end of said thimble.

5. A thimble, having its walls of substantially uniform thickness throughout its length, said walls having an internal ledge or shoulder

approximately midway of its length, combined with a jack-spindle for bearing against said ledge or shoulder.

# REISSUES.

12,202. SASH-BALANCE. HENRY R. RATHBUN and WILLIAM H. LOMBARD, Providence, R. I., assignors, by mesne assignments, to the Lexit Company, Providence, R. I., a Corporation of Rhode Island. Filed Dec. 4, 1903. Serial No. 183,842. Original No. 737,867, dated Sept. 1, 1903.



*Claim.*—1. A sash-balance, comprising a casing formed of sheet metal and having a face-plate and side plates having inwardly-turned ends furnished with overlapping lips, and fittings for engaging said inwardly-turned ends.

2. A sash-balance, comprising a gear formed of two sheet-metal sections having peripheral walls shaped as teeth, the toothed wall of one section fitting within the corresponding wall of the other section.

3. A gear for a sash-balance embracing in its construction a peripheral band of sheet metal, portions of which are struck up radially to form a series of hollow gear-teeth integral with said band, substantially as described.

4. A sheet-metal gear for a sash-balance embracing in its construction, a hollow cup-like member whose edge is turned up to form a peripheral flange having a series of hollow teeth integral with and forming part of said flange, substantially as described.

5. A sash-balance, comprising a shaft, a gear rotatable thereon, and consisting of two sheet-metal sections forming a gear-case, each of said sections having a peripheral wall furnished with hollow teeth, the teeth of one section fitting within the teeth of the other section, a spring located between said sections and connected with said shaft and with one of said sections.

6. A sash-balance, comprising a casing formed of sheet metal and having slotted sides, a gear-frame formed of plates having outwardly-turned lips movable in said slots, a gear rotatably mounted in said gear-frame, and a spring acting against said gear-frame to move the same into an operative position.

7. The combination with the case having the sides 5 and 6 and the face-plate 7, the sides having the slots 13 13 and 14 14, the plates 38 38 having the lips 42 42 and 43 43 movably engaged in said slots, and a gear rotatably mounted in said frame, of the bolt 27, the nut 28 engaged thereon, the gear-locking device 29 mounted on said bolt and having the teeth 32 adapted to engage with the teeth of the gear, the springs 19 and 20 secured to the sides 5 and 6, and means for swinging the gear-locking device out of engagement with the gear, as and for the purpose described.

8. A sash-balance device for windows embracing in its construction, a rack-bar, an intermeshing balance-gear, a pawl for locking said parts against movement, said pawl being adjustably mounted to permit it to be properly set for locking the sash in any predetermined position, substantially as described.

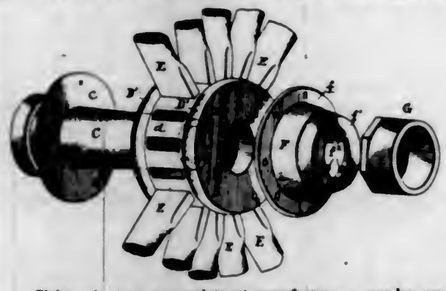
9. In a sash-balance, the combination of a balance-gear provided with teeth, an interlocking pawl arranged to engage the teeth to hold said gear against rotation, and an adjusting-screw for varying the locking position of said pawl to cause it to properly register with the gear when the sash is in contact with the sill, substantially as described.

10. In a sash-balance the combination of the balance-gear, the locking-pawl pivotally mounted upon a screw-threaded bolt, said pawl being provided with an engagement with said screw-thread to cause it to travel longitudinally of the bolt for purposes of adjustment, substantially as described.

11. In a sash-balance the combination of a balance-gear, a pawl for locking said gear against rotation, an automatic centering device arranged to move the pawl into locking position from either side, substantially as described.

12. In a sash-balance the combination of the balance-gear, the locking-pawl, opposing springs for normally holding said locking-pawl in position to interlock with the gear and for returning said pawl from either side into locking engagement when the pawl is moved out of engagement, substantially as described.

12,203. VEHICLE-HUB. EDWARD SEIDELBACH, Terre Haute, Ind., assignor of one-half to Charles Minshall, Terre Haute, Ind. Filed Dec. 3, 1901. Serial No. 84,577. Original No. 651,278, dated June 5, 1900.



*Claim.*—1. As a new article of manufacture, a wooden center for a hub, consisting of a short cylindrical block having ends lying in planes at right angles with its axis, radial mortises for the spoke-tenons, a central longitudinal bore, and metallic bands encircling it at its ends, said bands lying entirely outside of the line of the spoke-mortises.

2. The combination with a short cylindrical wooden block having its ends substantially at right angles with its axis, and provided with a central longitudinal bore and radial spoke-mortises, of separate metallic bands encircling it at its ends, and spokes driven into the radial mortises, said wooden portion being compacted and solidified between its ends and the spoke-tenons.

3. The combination with a short cylindrical mortised wooden block having flat ends, of metallic clamping-plates fitting tightly against said ends substantially over their entire surface, separate metallic bands encircling said ends, and spokes driven into said mortises and compressing the wood lying between the spoke-tenons and said clamping-plates.

4. The combination with a wooden center having radial mortises and flat ends lying in planes at right angles with the axis of the hub, of a metallic box provided with a collar fitting against one end of said center, a metallic sleeve surrounding said box and having a flange fitting against the other end of the center, means for clamping said parts together, lengthwise, and spokes inserted into the mortises in said center and sustained against lateral pressure by the wooden center only.

5. A vehicle-hub composed of a metallic box having a collar whose outer face lies in a plane at right angles with the axis of the box, a sleeve having a flange at one end loosely fitting said box and having its inner face lying in a plane at right angles with the axis of the box, a wooden center provided with mortises for the spoke-tenons and having flat ends at right angles with the axis of the hub and provided with encircling bands of metal lying entirely outside of the line of the spoke-mortises, and a point-band screwed on the outer end of the box and adapted to impart an endwise-clamping movement to the sleeve, said center lying between the collar and the flange with its ends in contact therewith substantially over their entire surface.

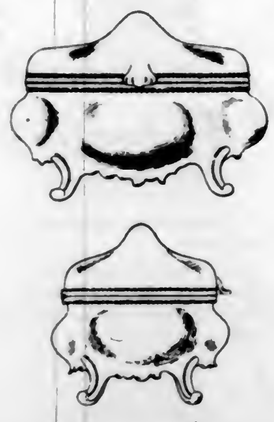
6. As a new article of manufacture, a sleeve for a hub, having internal flanges at each end, and three or more inwardly-projecting radial lugs on one of said flanges, whereby said sleeve can be centered on a hub-box by drossing off the ends of said lugs.



7. As a new article of manufacture, a sleeve for a hub, having internal flanges at each end at right angles with the axis of the sleeve, a flaring flange on one end of the sleeve, and radial ribs connecting said flaring flange with the end flange.

# DESIGNS.

36,833. JEWEL-CASKET OR SIMILAR ARTICLE. ELLERSON L. BRAINARD, Danbury, Conn. Filed Dec. 21, 1903. Serial No. 186,135. Term of patent 3½ years.



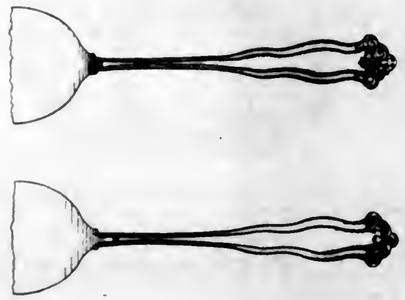
*Claim.*—The ornamental design for a jewel-casket or similar article, as shown.

36,834. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. JOHN CLULEE, Wallingford, Conn., assignor to the International Silver Company, Meriden, Conn., a Corporation of New Jersey. Filed Feb 11, 1904. Serial No. 193,201. Term of patent 7 years.



*Claim.*—The ornamental design for a handle for a spoon, fork or similar article as shown.

36,835. HANDLE FOR SPOONS OR SIMILAR ARTICLES. SAMUEL J. LARGE, Bristol, Conn., assignor to American Silver Company, Bristol, Conn., a Corporation. Filed Feb. 11, 1904. Serial No. 193,202. Term of patent 7 years.



*Claim.*—The ornamental design for the handle of a spoon or similar article as shown.

36,836. CUT-GLASS VESSEL. WILLIAM C. ANDERSON, Lansing, Mich., assignor to American Cut Glass Co., Lansing, Mich., a Corporation of Illinois. Filed Feb. 8, 1904. Serial No. 192,720. Term of patent 7 years.



*Claim.*—The ornamental design for a cut-glass vessel, as shown.

36,837. CUP OR SIMILAR ARTICLE. CHARLES J. AHRENFELDT, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,449. Term of patent 7 years.



*Claim.*—The ornamental design for a cup or similar article substantially as herein shown.

36,838. TEAPOT OR SIMILAR ARTICLE. CHARLES J. AHRENFELDT, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,450. Term of patent 7 years.



*Claim.*—The ornamental design for a teapot or similar article substantially as herein shown.

36,839. PLATE OR SIMILAR ARTICLE. CHARLES J. AHRENFELDT, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,451. Term of patent 7 years.



*Claim.*—The ornamental design for a plate or similar article substantially as herein shown.

36,840. PLATE OR SIMILAR ARTICLE. CHARLES J. AHRENFELDT, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,452. Term of patent 7 years.



*Claim.*—The ornamental design for a plate or similar article substantially as herein shown.

36,841. PLATE OR SIMILAR ARTICLE. CHARLES J. AHRENFELDT, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,453. Term of patent 7 years.



*Claim.*—The ornamental design for a plate or similar article substantially as herein shown.

36,842. PLATE OR SIMILAR ARTICLE. CHARLES J. AHRENFELDT, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,454. Term of patent 7 years.



*Claim.*—The ornamental design for a plate or similar article substantially as herein shown.

36,843. SOUVENIR-PLATE. MAX TOUSSAINT, Jersey City, N. J. Filed Feb. 6, 1904. Serial No. 192,474. Term of patent 14 years.





*Claim.*—The ornamental design for a souvenir-plate, as shown

36,844. PLAYING-CARD. SAMUEL N. BARKER, Kalamazoo, Mich. Filed Feb. 1, 1904. Serial No. 191,641. Term of patent 14 years.



*Claim.*—The ornamental design for a playing-card, as shown.

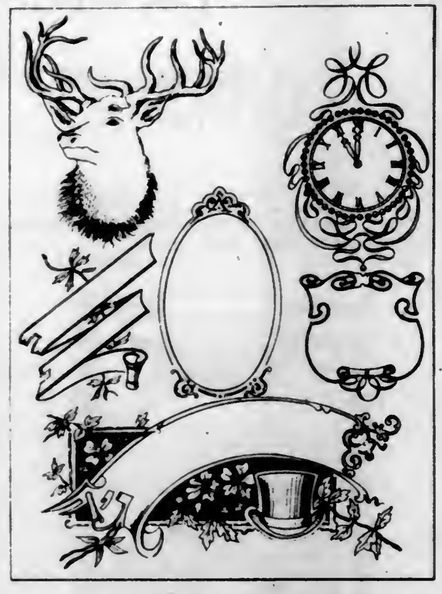
36,845. PLAYING-CARD. SAMUEL N. BARKER, Kalamazoo, Mich. Filed Feb. 1, 1904. Serial No. 191,642. Term of patent 14 years.



*Claim.*—The ornamental design for a playing-card, as shown.

36,846. PICTURE-FRAME MAT. CHARLES A. HARTMAN, Denver, Colo. Filed Dec. 26, 1903. Serial No. 186,712. Term of patent 14 years.

36,846.



*Claim.*—The ornamental design for a picture-frame mat as shown in the drawing.

36,847. BRAID. HANS P. VON NOSTITZ, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,457. Term of patent 7 years.



*Claim.*—The ornamental design for a braid, substantially as shown.

# TRADE-MARKS

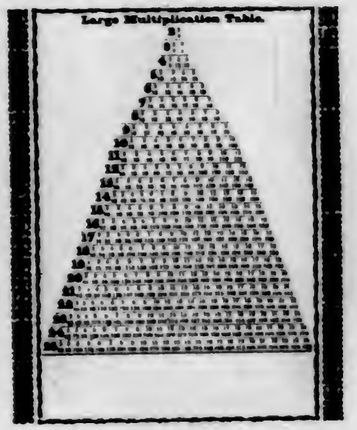
## REGISTERED MARCH 8, 1904.

42,192. ALMANACS. THE GRUBER ALMANACK CO., Hagerstown, Md. Filed Jan. 19, 1904.




The representation of a scroll with a bunch of grapes at each end thereof, beneath which is an eagle having in its beak a ribbon whereon is inscribed "BY INDUSTRY WE THRIVE." Upon the lower part of the page appears a design in the foreground of which is a sitting female figure holding over her shoulder a pole on which is the cap of Liberty and emblems denoting commerce on the left and manufactures and agriculture on the right, with a grape-vine bordering on the sides and bottom of the page. Used since 1835.

42,193. ALMANACS. THE GRUBER ALMANACK CO., Hagerstown, Md. Filed Jan. 19, 1904.




A multiplication-table arranged in the form of an isosceles triangle or pyramid, having at its apex a large figure "2" as multiplicand and on the right a small figure "2" as multiplier and a small figure "4," the product, immediately under, the said triangle being formed by twenty-four successive rows of multiplicands, commencing with "2" and ending with "25," with their multipliers and products placed to the right, as above described. Said triangle has the words "LARGE MULTIPLICATION TABLE" at the top and is inclosed by a narrow ornamental border, with an ornamental column on each side. Used since 1839.

42,194. BOND-PAPER. W. R. WEBB & COMPANY, Chicago, Ill. Filed Feb. 8, 1904.

CONSTRUCTION

The word "CONSTRUCTION." Used since May, 1903.

42,195. COTTON PIECE GOODS. GRISWELL WILLIS & CO., New York, N. Y. Filed Feb. 6, 1904.



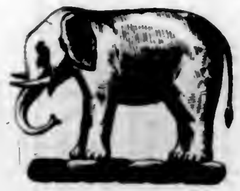
WAYSIDE

The name "WAYSIDE" and the representation of flowering golden-rod and black-eyed susans. Used since January 1, 1904.

42,196. DARNING-COTTON AND CROCHET-COTTON. THE CLARK MILE-END SPOOL COTTON CO., East Newark, N. J. Filed Jan. 19, 1904.



42,196.



ELEPHANT

The representation of an elephant or the word "ELEPHANT." Used since October 18, 1894.

42,197. COTTON THREAD. THE CLARK MILE-END SPOOL COTTON CO., East Newark, N. J. Filed Jan. 19, 1904.



CROWN

The representation of a crown or the word "CROWN." Used since January, 1898.

42,198. GLOVES AND MITTENS. THE BOSS MFG. CO., Kewanee, Ill. Filed Feb. 12, 1904.

KLONDYKE

The word "KLONDYKE." Used since January 1, 1901.

42,199. GLOVES AND MITTENS. THE BOSS MFG. CO., Kewanee, Ill. Filed Feb. 12, 1904.

BOSS

The word "BOSS." Used since January 1, 1895.

42,200. GLOVES AND MITTENS. THE BOSS MFG. CO., Kewanee, Ill. Filed Feb. 12, 1904.

TOBY

The word "TOBY." Used since February 1, 1901.

42,201. GLOVES AND MITTENS. THE BOSS MFG. CO., Kewanee, Ill. Filed Feb. 12, 1904.

ZERO

The word "ZERO." Used since July 1, 1893.

42,202. CERTAIN NAMED READY-MADE CLOTHING. THE F. B. Q. CLOTHING CO., New York, N. Y. Filed Jan. 29, 1904.

*Just Right*

The word "JUSTRIGHT." Used since January 14, 1904.

42,203. LINEN SHIRTS AND DRAWERS. THE LINEN UNDERWEAR COMPANY, Greenwich, N. Y. Filed Feb. 3, 1904.



The representation of a wreath of flax inclosed within a circle. Used since January 22, 1904.

42,204. OVERCOATS, ULSTERS, AND RAINCOATS. BLUMENTHAL BROS. & CO., Philadelphia, Pa. Filed Feb. 4, 1904.

BLUMENETTE

The word "BLUMENETTE." Used since January 1, 1904.

42,205. LEATHER BOOTS AND SHOES. URFIT COMPANY, Cincinnati, Ohio. Filed Jan. 25, 1904.

*Urfit*

The word-symbol "URFIT." Used since September 10, 1903.

42,206. COFFEE. LEMUEL H. COSTIKYAN, New York, N. Y. Filed Feb. 6, 1904.

42,206.

CAFE-TURK

The hyphenated word "CAFE-TURK." Used since January 1, 1904.

42,207. GELATIN FOR USE IN ICE-CREAM AND SIMILAR CONFECTIONS. AMERICAN GLUE COMPANY, Boston, Mass. Filed Jan. 26, 1904.

VELVET CREAM

The words "VELVET CREAM." Used since January 4, 1904.

42,208. WHEAT-FLOUR. KANSAS MILLING & EXPORT CO., Kansas City, Mo. Filed Feb. 4, 1904.

INTEGRITY

The word "INTEGRITY." Used since September 15, 1901.

42,209. WHEAT-FLOUR. KANSAS MILLING & EXPORT CO., Kansas City, Mo. Filed Feb. 4, 1904.



A substantially circular or wreath-shaped design made up of representations of sunflowers and heads or ears of wheat alternately arranged. Used since September 15, 1901.

42,210. METAL-POLISH AND STOVE-POLISH. HERMAN PAPE, New York, N. Y. Filed Jan. 30, 1904.

RADIUM

The word "RADIUM." Used since January 6, 1904.

42,211. SCOURING-SOAP. THE STANDARD SOAP COMPANY, San Francisco, Cal. Filed Jan. 25, 1904.

BRIGHTSHINE

The word "BRIGHTSHINE." Used since July 1, 1903.

42,212. WASHING FLUID. WASHAWAY MANUFACTURING CO., New Bedford, Mass. Filed Dec. 10, 1903.

WASHAWAY

The word "WASHAWAY." Used since July, 1903.

42,213. PERFUMERY EXTRACTS AND ESSENCES AND TOILET WATERS. A. J. HILBERT & CO., Milwaukee, Wis. Filed Dec. 14, 1903.

de Luxe

The word-symbol "DE LUXE." Used since July, 1893.

42,214. LAXATIVE MEDICINE PUT UP IN CONCRETE FORM. THE F. A. WHEE CO., San Francisco, Cal. Filed Nov. 23, 1903.




The representation of grape-leaves and a bunch of grapes associated with the words "LAXATIVE GRAPES," which are arranged upon a panel. Used since May 17, 1899.

42,215. CATARRH AND COUGH MEDICINES. LOUIS BODIE, Fremont, Ohio. Filed Oct. 14, 1903.



A portrait of the registrant. Used since October 1, 1903.



42,216. MEDICAL COMPOUND FOR CORRECTION OF FOOT TROUBLES. SLACK & GRIGGS, Harper City, Kans. Filed Jan. 26, 1904.

SUDORNON

The word "SUDORNON." Used since January 1, 1902.

42,217. LIQUID SPECIFIC FOR FEMALE COMPLAINTS. GEORGE MORTIMER, Boston, Mass. Filed Dec. 30, 1903.



The portrait of a woman having flowing curls falling down her shoulders, with herbs projecting above each shoulder, the portrait and herbs surmounting inclined spaces. Used since October 23, 1889.

42,218. MEDICATED ADHESIVE PLASTERS. GEORGE MORTIMER, Boston, Mass. Filed Dec. 30, 1903.



The portrait of a woman having flowing curls falling down her shoulders, with herbs projecting above each shoulder, the portrait and herbs surmounting inclined spaces. Used since August 31, 1898.

42,219. CERTAIN NAMED OPTICAL GOODS. VVE. E. COLMONT, VALETTE ET CIE., Paris, France. Filed Oct. 15, 1903.



The letter "C" inclosed within a star. Used since January 6, 1886.

42,220. TALKING-MACHINES, PARTS AND SUPPLIES THEREFOR, AND RECORDS. VICTOR TALKING MACHINE CO., Camden, N. J. Filed Jan. 23, 1904.

42,220.



The representation of a Chinaman located near a talking-machine and in a position as apparently listening to the sounds produced by said machine, said machine being represented as resting upon a table. Used since January 1, 1904.

42,221. GLASS REFLECTORS. THE NATIONAL X-RAY REFLECTOR COMPANY, Chicago, Ill. Filed Jan. 25, 1904.

X-RAY

The hyphenated word "X-RAY." Used since March 1, 1900.

42,222. RUBBER NIPPLES. DAVIDSON RUBBER CO., Boston, Mass. Filed Oct. 12, 1903.

NEARNATURE

The word "NEARNATURE." Used since January, 1903.

42,223. BOTTLE-STOPPERS. ARTHUR BLUMER, La Varenne, France. Filed Jan. 6, 1904.

REX

The word "REX." Used since January, 1900.

42,224. CERTAIN NAMED RECEPTACLES FOR BATH-ROOMS AND LAVATORIES. J. P. EUSTIS MANUFACTURING CO., Boston, Mass. Filed Jan. 28, 1903.

The Brasscrafters

The words "THE BRASSCRAFTERS." Used since July, 1901.

42,225. SMOKING DEVICES AND IMPLEMENTS. THE BOSS MFG. CO., Kewanee, Ill. Filed Feb. 13, 1904.

BOSS

The word "BOSS." Used since October 1, 1868.

42,226. PIPE-WRENCHES AND PIPE-VISES. J. H. WILLIAMS AND COMPANY, Brooklyn, N. Y. Filed Jan. 28, 1904.

VULCAN

The word "VULCAN." Used since June, 1867.

THE NORRIS PUBLISHING CO.

# LABELS

## REGISTERED MARCH 8, 1904.

10,799.—*Title:* "GOLD BOND, KNOX, DUST, FILL, MEDAL, PLATE SHOES." (For Shoes.) JOHN B. HUNTER, Zanesville, Ohio. Filed February 5, 1904.

10,800.—*Title:* "WYACONDA MINERAL SPRINGS." (For Mineral Water.) WILLIAM H. THOMAS, Lagrange, Mo. Filed February 11, 1904.

10,801.—*Title:* "BLUEMONT WHISKEY." (For Whisky.) EDWARD QUINN, Alexandria, Va. Filed February 13, 1904.

10,802.—*Title:* "VIRGINIA CHINQUAPIN." (For Cigars.) C. B. HENSCHEL MFG. CO., Milwaukee, Wis. Filed February 11, 1904.

10,803.—*Title:* "TOKE POINT PERFECTO." (For Cigars.) CHARLES H. SONNTAG, Tacoma, Wash. Filed February 12, 1904.

10,804.—*Title:* "JACKFULL." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed February 15, 1904.

10,805.—*Title:* "FACTORY BUNCH." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed February 15, 1904.

10,806.—*Title:* "PROSPERITY." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed February 15, 1904.

10,807.—*Title:* "HOT CAKE." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed February 15, 1904.

10,808.—*Title:* "DR. HOWLAND'S ANTI-RHEUMATIC." (For Medicine.) FRANK P. HOWLAND, Cortland, N. Y. Filed February 15, 1904.

10,809.—*Title:* "DO-NO." (For Medicine.) LEWIS G. DENTON, Schenectady, N. Y. Filed February 15, 1904.

10,810.—*Title:* "EXOTIC BALM." (For Liniment.) JAMES A. WOOD, Providence, R. I. Filed February 10, 1904.

10,811.—*Title:* "SALVATOR SALVE." (For Salve.) GEORGE FLANAGAN, St. Louis, Mo. Filed February 13, 1904.

10,812.—*Title:* "VIOLET EMOLLIENT SKIN TONIC AND MASSAGE CREAM." (For Emollient Preparation.) CHAS. FRIEDGEN, New York, N. Y. Filed February 13, 1904.

10,813.—*Title:* "SLATER'S LEMON LOTION." (For Toilet Preparation.) SLATER MANUFACTURING COMPANY, Ironton, Ohio. Filed February 10, 1904.

10,814.—*Title:* "LUEBERT'S NOX 'EM, NOX 'EM QUICK." (For Insecticides.) A. GUSTAV LUEBERT, Philadelphia, Pa. Filed June 8, 1903.

10,815.—*Title:* "BEAN'S CONDITION POWDERS FOR HORSES AND CATTLE." (For Condition-Powders.) JAMES W. BEAN, Hydepark, Mass. Filed September 24, 1902.

10,816.—*Title:* "SIMON PURE." (For Baking-Powder.) THE GILLILAND BAKING POWDER CO., Cameron, Mo. Filed February 13, 1904.

10,817.—*Title:* "ICE CUPS." (For Biscuit-Cups for Holding Ice-Cream.) ITALO MARCHIONY, New York, N. Y. Filed February 16, 1904.

10,818.—*Title:* "NON RUSTIN." (For Sheet-Metal Ware.) ROCHESTER NONRUST TINWARE CO., Rochester, N. Y. Filed February 18, 1904.

# PRINTS

## REGISTERED MARCH 8, 1904.

915.—*Title:* "ATLAS HOSIERY MILLS." (For Hosiery.) ATLAS HOSIERY MILLS, Philadelphia, Pa. Filed February 11, 1904.

916.—*Title:* "IT IS NOT ALWAYS THE MAN WITH THE BALLS WHO CAN JUGGLE THEM." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed February 12, 1904.

917.—*Title:* "SHOES FOR THE CHILDREN." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed February 12, 1904.

918.—*Title:* "OUR EASTER OPENING." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed February 12, 1904.

919.—*Title:* "WE HATCH OUT OUR OWN IDEAS IN FOOTWEAR." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed February 12, 1904.

920.—*Title:* "NATURAL LEAF." (For Tobacco.) RUCKER & WITTEN TOBACCO CO., Martinsville, Va. Filed February 16, 1904.

921.—*Title:* "HUNTING SCENES." (For Wall-Paper.) LAWRENCE & BULLEN, LTD., London, England. Filed January 9, 1904.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### Supreme Court of the United States.

UNITED STATES, *ex rel.* STEINMETZ, *v.* ALLEN, COMMISSIONER OF PATENTS.

*Decided February 23, 1904.*

1. MANDAMUS TO COMMISSIONER OF PATENTS—APPEAL TO EXAMINERS-IN-CHIEF—DIVISION OF APPLICATION.

Where the Commissoner of Patents refused to direct the Primary Examiner to forward to the Examiners-in-Chief an appeal from his ruling that process and apparatus claims should be divided and presented separately, *Held* that a mandamus will lie to compel him to forward the appeal.

2. APPEAL TO EXAMINERS-IN-CHIEF—APPEAL REGULAR IN FORM—DUTY OF EXAMINER.

Where an appeal is filed regular in form, it is the duty of the Examiner to answer the appeal by furnishing the Examiners-in-Chief the statement provided for in Rule 135.

3. SAME—REQUIREMENT TO DIVIDE APPLICATION—MERITS DISTINGUISHED.

*Held* that a requirement by the Primary Examiner for division is appealable to the Examiners-in-Chief, although a distinction can be made between his ruling upon that question and one on the merits, if we regard the merits to mean invention, novelty, or the like.

4. SAME—REQUIREMENT FOR DIVISION IS REJECTION.

Where the unity of the inventions claimed by the petitioner is not denied, he has the right to join them in one application, and where the Primary Examiner in such case denies that right *Held* that the Examiner's action is a rejection of the application and entitles petitioner to an appeal to the Examiners-in-Chief under section 4909, Revised Statutes.

5. SAME—APPEALABLE RULING—FINAL ACTION.

Where the ruling is such that the applicant must yield and give up the right claimed, or if he does not yield he will not be heard at all and may subsequently be regarded as having abandoned his application, *Held* that such ruling must be considered as final and appealable.

6. RULE 41 INVALID—DIVISION BETWEEN PROCESS AND APPARATUS.

The provision in Rule 41 of the Rules of Practice of the Patent Office which compels the separation of claims for a process and claims for its apparatus is invalid, because it precludes the exercise of any judgment, however related or connected they may be.

7. STATUTORY RIGHT TO JOIN INVENTIONS—RELATED INVENTIONS.

The statute gives the right to join inventions in one application in cases where the inventions are related, and it cannot be denied by a hard and fixed rule which prevents such joinder in all cases.

8. PROCESS AND APPARATUS MAY BE RELATED.

Process and apparatus may be related and may approach each other so nearly that it will be difficult to distinguish the process from the function of the apparatus.

9. DIVISION OF APPLICATION—DISCRETION OF PATENT OFFICE—REVIEW BY COURTS.

Without a hard and fixed rule the action of the Patent Office upon the question of dividing applications for patents can be accommodated to the character of invention and discretion can be exercised, and when exercised the courts will not review it except in cases of clear abuse.

10. WRIT OF ERROR—JURISDICTION—VALIDITY OF AUTHORITY UNDER UNITED STATES—RULES OF PATENT OFFICE.

Where the Commissioner with the approval of the Secretary of the Interior and acting under the authority of the statute makes a rule of procedure and that rule constitutes in part the powers of the Primary Examiner and Commissioner in the action complained of and the plaintiff assails the validity of that rule, *Held* that there is drawn in question the validity of an authority exercised under the United States and that the Supreme Court has jurisdiction to review the judgment of the court of appeals by writ of error.

IN error to the Court of Appeals of the District of Columbia.

STATEMENT OF THE CASE.

This is a petition in mandamus filed in the Supreme Court of the District of Columbia to compel the Commissioner of Patents to require the Primary Examiner to forward an appeal, prayed by the petitioner, to the Board of Examiners-in-Chief, to review the ruling of the Primary Examiner requiring petitioner to cancel certain of his claims in his application for motor-meters.

The Supreme Court dismissed the petition, and its action was affirmed by the court of appeals. This writ of error was then sued out.

The decision of the Primary Examiner was based upon Rule 41 of practice in the Patent Office, and the case involves the validity of the rule under the patent laws.

The petitioner filed an application in the Patent Office, November 21, 1896, for a patent for "certain new and useful improvements in motor-meters." He expressed his invention in thirteen claims. They are inserted in the margin.*

*1. The herein-described method of measuring alternating electric currents, which consists in setting up or establishing a shifting field of magnetism from three intersecting lines or axes of magnetization and adapted to actuate a rotatable armature in a motor-meter arranged within the energizing-coils producing said lines of magnetization.

2. The herein-described method of actuating an alternating-current motor-meter, which consists in setting up or establishing a shifting field of magnetism from three intersecting lines or axes of magnetization and adapted to actuate a rotatable armature arranged within the energizing-coils producing said lines of magnetization.

3. The herein-described method of actuating a single-phase alternating-current motor-meter, which consists in setting up or establishing a shifting field of magnetism from three intersecting lines or axes of magnetization and adapted to actuate a rotatable armature arranged within the energizing-coils producing said lines of magnetization.

4. The herein-described method of actuating an alternating-current motor-meter, which consists in setting up or establishing a shifting field of magnetism by means of magnetomotive forces acting along three intersecting lines and subjecting an armature to the inductive action of said field.

5. The herein-described method of actuating an alternating-current motor-meter, which consists in setting up or establishing a shifting field of magnetism by means of magnetomotive forces being proportional to the current and the other two to the electromotive force, and subjecting an armature to the inductive action of said field.

6. The herein-described method of actuating an alternating-current motor-meter which consists in setting up or establishing a shifting field of magnetism by means of magnetomotive

The first six were held by the Primary Examiner to be claims for a process; the balance of the claims to be for an apparatus; and on the 15th of May, 1900, ordered that the latter, that is, claims 7, 8, 9, 10, 11, 12 and 13, be canceled from the application. In other words, he required a division between the process claims and the apparatus claims in accordance with Rule 41. That rule is as follows:

41. Two or more independent inventions cannot be claimed in one application; but where several distinct inventions are dependent upon each other and mutually contribute to produce a single result, they may be claimed in one application.

Claims for a machine and its product must be presented in separate applications.

Claims for a machine and the process in the performance of which the machine is used must be presented in separate applications.

Claims for a process and its product may be presented in the same application.

Petitioner persisted in his application as filed, and the Primary Examiner repeated his order for a division of the claims. Petitioner regarded such order as "a second final rejection" of his claims to the apparatus, and appealed therefrom to the Board of Examiners-in-Chief. The Primary Examiner refused to answer the appeal and to forward the same with his answer thereto and the statements required by the rules of the Patent Office. Thereafter, on the 20th of August, 1900, petitioner petitioned the Commissioner of Patents to direct the Primary Examiner to forward said appeal, which petition was denied. It was repeated to the present Commissioner, defendant in error, and by him denied on the 7th of February, 1902.

These facts constitute petitioner's claim to relief.

The answer to the respondent asserts the validity of Rule 41, justifies the action of the Patent Office, alleges that petitioner is estopped from contesting the orders of the Primary Examiner, and also alleges that those orders—

did not involve the rejection of any claim or an action upon the merits of any claim made by the relator,

as provided in Rule 13, and that—

the statutes and Rule 133 of the Rules of Practice do not provide for an appeal to the Examiners-in-Chief from an Examiner's requirement for division, and the Examiners-in-Chief have no jurisdiction to pass upon the question whether or not division should be required.

The answer presents also the following facts: Prior to making the order of May 15, 1900, to wit, on October 9, 1899, the Primary Examiner wrote a letter to petitioner regarding the division of the process claims and the apparatus claims, in accordance with Rule 41, before further action would be given upon the merits of the case.

Petitioner replied December 15, 1899, requesting "that the requirement for division be waived for the present," in order that his process claims be placed in interference with the claims of a patent to one Duncan. To this request the Examiner answered:

Pending the determination of the interference applicant may retain the method and apparatus claims in this case, but the acceptance of an interference on one of the method claims will be held by the Office to be an election of the prosecution of the method claims, and further prosecution of the apparatus claims in this application will not be permitted.

Petitioner replied January 19, 1900, urging that the interference be declared, and on February 7, 1900, it was declared and decided in favor of petitioner. After the decision the Examiner wrote the letter of May 15, 1900. These proceedings, respondent contends, constitute an estoppel.

The first ruling of the Commissioner of Patents upon the petition to require the Primary Examiner to respond to petitioner's appeal was as follows:

Where applicant does not care to comply with the Examiner's requirements in a matter of division such as is here involved, it has been the practice for the past thirty years to treat the question, not as one of merits and appealable to the Examiners-in-Chief, but as a proper matter for petition to the Commissioner. I see no reason for overturning this practice. This petition is denied.

The second order of the Commissioner, respondent, after reciting certain of the facts, concluded as follows:

The requirement for division is purely a matter of form, not involving the merits of the claims, since the claims may be, and in the present case are, regarded as allowable. The Examiner has not refused to grant a patent to this applicant upon any of the claims presented, but has merely required that they be included in two patents instead of one. It is a question of procedure or of the manner of securing the protection which is in controversy and not the right of the applicant to a patent upon any of the claims presented.

The Examiner was right in taking the position that the question involved is not appealable to the Examiners-in-Chief, and although it is a general rule of law that the appellate tribunal is the one to determine whether or not it has jurisdiction when an appeal is taken to it, it is not considered necessary in the Office practice to follow that practice strictly, since the Commissioner is the head of the Office and has the final decision upon all questions arising within it and may settle questions of this kind upon direct petition. The Examiner's decision upon the question whether or not an appeal to the Examiners-in-Chief is regular and proper is not final, since it may be reviewed by the Commissioner upon petition, but he has authority to pass upon that question in the first instance.

The petition is denied.

forces acting along three intersecting lines, one magnetomotive force being proportional to the current and the other two to the electromotive force, the several magnetomotive forces being so proportioned and related to each other that the resultant of the last two is displaced in phase from the first by the complement of the angle of lag, and subjecting an armature to the inductive action of said field.

7. In a wattmeter for alternating electric currents, means for producing a magnetic flux proportional to the current and varying in phase therewith, means for producing a second magnetic flux proportional to the electromotive force and lagging in phase behind the same, and means for producing an auxiliary flux along a line at an angle to said second flux and of such magnitude and phase that the resultant of the two last-mentioned fluxes will lag behind the first by the complement of the angle of lag.

8. The combination in an electromotor of a field-magnet system and means for inducing therein magnetic fluxes of three phases, one a flux due to a series coil and proportional to the current, a second flux due to a shunt potential coil and lagging behind the electromotive force, and a third flux lagging behind said second flux and having a fixed angular relation thereto such that the resultant of the second and third fluxes is dephased by substantially the complement of the angle of lag from the flux due to the series coil.

9. The combination in a recording electric meter of a field-magnet system acting on the armature and having a plurality of intersecting magnetic axes, means for inducing along one of said magnetic axes a flux proportional to the current and varying in phase therewith, and means for inducing along the other magnetic axes a plurality of other fluxes dependent upon the potential of the metered circuit, which lag behind the electromotive force by different amounts and act upon the armature at different points, said fluxes being so proportioned in value and phase that their joint action upon the armature will enable the meter to register the true energy consumed in an alternating-current circuit without being substantially affected by changes of phase relation.

10. In a wattmeter for alternating currents, the combination of a field-magnet system having three intersecting magnetic axes, means for producing along one of said axes a magnetic flux proportional to the current and varying in phase therewith, means for producing along another of said axes an alternating flux proportional to the electromotive force and lagging behind the same, and means for producing along the third axis an auxiliary magnetic flux also proportional to the electromotive force, of such a magnitude and phase that the joint action of the several fluxes upon the armature will enable the meter to register the true energy consumed in an alternating-current circuit without being substantially affected by changes of phase relation.

11. In a meter for alternating currents, the combination of a field-magnet system having three intersecting magnetic axes, means for producing along one of said axes a magnetic flux proportional to the current and varying in phase therewith, means for producing along another of said axes an alternating flux proportional to the electromotive force and lagging behind the same, and means for producing along the third axes an auxiliary magnetic flux also proportional to the electromotive force and of such magnitude and phase that the joint action of the two potential fluxes upon the armature will produce a torque sufficient to overcome the static friction of the meter.

12. In a single-phase alternating-current meter, the combination of a field-magnet system having three intersecting magnetic axes, a field-coil in which the current phase varies as the conditions of the circuit change, producing a magnetization along one magnetic axes, a potential coil producing a magnetization along another magnetic axis, a reactance device in series with said potential coil for lagging the current behind the electromotive force and a second potential coil depending for its current upon the first potential coil, producing a magnetization along the third magnetic axis; the two potential coils conveying currents which differ in phase from each other, and each generating a flux which acts upon the armature at a point removed from the point at which the flux due to the other potential coil acts upon the armature.

13. In an electric meter, the combination of a multipolar field-magnet structure having three magnetic axes, current-coils mounted upon some of the field-poles and producing a magnetization along one of said magnetic axes, potential coils mounted upon other field-poles and producing a magnetization along another one of said magnetic axes, and other potential coils mounted upon a portion only of the last-named field-poles, or some of them, and producing a magnetization along the third magnetic axes, and an armature acted upon by the flux induced by the field-coils.





*Mr. Melville Church* and *Mr. Frederic H. Betts* for plaintiff in error.

*Assistant Attorney-General McReynolds* and *Solicitor-General Hoyt* for defendant in error.

Mr. Justice MCKENNA, after stating the case as above, delivered the opinion of the Court.

1. The jurisdiction of this Court to review the judgment of the court of appeals is questioned. There is no money in dispute nor anything to which a pecuniary value has been given. Jurisdiction is claimed under the clause of section 8 of the act of February 9, 1893, which gives an appeal to this Court from the final judgment or decree of the court of appeals in cases in which there is drawn in question the validity of "an authority exercised under the United States."

By section 483 of the Revised Statutes the Commissioner of Patents, subject to the approval of the Secretary of the Interior, is empowered to establish from time to time regulations not inconsistent with law, for the conduct of proceedings in the Patent Office. The Commissioner of Patents, exercising the power conferred, established, among other rules of practice, Rule 41. It thereby became a rule of procedure and constituted, in part, the powers of the Primary Examiner and Commissioner. In other words, it became an authority to those officers, and, necessarily, an authority "under the United States." Its validity was and is assailed by the plaintiff in error. We think, therefore, we have jurisdiction, and the motion to dismiss is denied.

2. The issue is well defined between the parties, both as to the right and remedy, in the Patent Office. As to right, petitioner contends that a union by an inventor of process and apparatus claims, which are essentially the same invention, is given by the patent laws, and that Rule 41, so far as it takes that right away, is repugnant to those laws and invalid. As to remedy, that the decision of the Primary Examiner constituted a final decision upon the case, and petitioner was entitled to an appeal under the patent laws to the Board of Examiners-in-Chief. The latter proposition depends upon the first. Assuming the right in an inventor as expressed in the first proposition, the Primary Examiner denied the right. True, a distinction can be made between his ruling and one on the merits, if we regard the merits to mean invention, novelty or the like. But in what situation would an applicant for a patent be? If he yield to the rule he gives up his right of joinder. If he does not yield he will not be heard at all, and may subsequently be regarded as having abandoned his application. (Sec. 4894, R. S.) A ruling having such effect must be considered as final and appealable. Whether, however, to the Examiners-in-Chief or to the Commissioner, and from the latter to the courts, we may postpone answering until we have considered the right of an inventor to join process and apparatus claims in one application.

Section 4886 of the Revised Statutes of the United States provides as follows:

Any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter, or any new and useful improvements thereof, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor.

There is nothing in the language of the section which necessarily precludes the joinder of two or more inventions in the same application. But the section does distinguish inventions into arts (processes), machines, manufactures and compositions of matter, and the earliest construction of the law denied the right of joinder. An exception, however, came to be made in cases of dependent and related inventions.

In *Hogg* v. *Emerson*, (6 How., 437,) it was said:

The next question is, that this description in the letters thus considered covers more than one patent and is therefore void.

There seems to have been no good reason at first, unless it be a fiscal one on the part of the Government when issuing patents, why more than one in favor of the same inventor should not be embraced in one instrument, like more than one tract of land in one deed or patent for land. (Phillips on Pat., 217.)

Each could be set out in separate articles or paragraphs, as different counts for different matters in libels in admiralty or declarations at common law, and the specifications could be made distinct for each and equally clear.

But to obtain more revenue, the public officers have generally declined to issue letters for more than one patent described in them. (Renouard, 263; Phillips on Pat., 218.) The courts have been disposed to acquiesce in the practice, as conducive to clearness and certainty. And if letters issue otherwise inadvertently to hold them, as a general rule, null. But it is a well-established exception that patents may be united, if two or more, included in one set of letters, relate to a like subject, or are in their nature or operation connected together. (Phil. on Pat., 218, 219; *Barret* v. *Hall*, 1 Mason C. C., 447; *Moody* v. *Fiske*, 2 Mason C. C., 112; *Wyeth et al.* v. *Stone et al.*, 1 Story, 273.)

This language would seem to imply that not the statute but the practice of the Patent Office required separate applications for inventions, but the cases cited were explicit of the meaning of the statute. Mr. Justice Story, in *Wyeth* v. *Stone*, said:

For, if different inventions might be joined in the same patent for entirely different purposes and objects, the patentee would be at liberty to join as many as he might choose, at his own mere pleasure, in one patent, which seems to be inconsistent with the language of the patent acts, which speak of the thing patented, and not of the things patented, and of a patent for invention, and not of a patent for an inventions; and they direct a specific sum to be paid for each patent.

But he confined the requirement to independent inventions, and his illustrations indicated that he meant by independent inventions not those which, though distinct, were "for the same common purpose and auxiliary to the same common end."

*Hogg* v. *Emerson* came to this Court again, and is reported in 11 How., 587. Of one of the objections to the patent the Court said:

It is that the improvement thus described is for more than one invention, and that one set of Letters Patent for more than one invention is not tolerated by law.

But grant that such is the result when two or more inventions are entirely separate and independent, though this is doubtful on principle, yet it is well settled, in the cases formerly cited, that a patent for more than one invention is not void if they are connected in their design and operation. This last is clearly the case here.

Many other cases are to the same effect.

Can it be said that a process and an apparatus are inevitably so independent as never to be "con-

nected in their design and operation?" They may be completely independent. (*Cochrane* v. *Deener*, 94 U. S., 780.) But they may be related. They may approach each other so nearly that it will be difficult to distinguish the process from the function of the apparatus. In such case the apparatus would be the dominant thing. But the dominance may be reversed and the process carry an exclusive right, no matter what apparatus may be devised to perform it. There is an illustration in the *Telephone Cases*, (126 U. S., 1.) The claim passed upon in those cases was as follows:

> The method of and apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth.

The claim was held to refer to the art described, and the means of making it useful. The Court observed:

> Other inventors may compete with him for the ways of giving effect to the discovery, but the new art he has found will belong to him and those claiming under him during the life of his patent.

A distinction between the process and the means employed for using it was recognized. It was said:

> The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; for it is only useful arts—arts which may be used to advantage—that can be made the subject of a patent.

The patent was sustained. It was not attacked because it embraced independent inventions. The fact is not without force. Considering the ability of counsel engaged and the division of the Court in opinion, it is a proper inference that no tenable objection to the patent was overlooked.

It is said by Robinson, in his work on patents, that—

> special rules which govern the joinder of arts or processes with each other or with related inventions of a different class, are more stringent in the Patent Office than in the courts. (Sec. 473, Vol. II, *Robinson on Patents.*)

And the author deduces the conclusion that under the rules of the Patent Office a process cannot be—

> joined with the apparatus that performs it, nor either of these with the product in which they result, unless they are to such an extent inseparable that the existence of some one of them is dependent upon that of the others.

But Rule 41 precludes even this.

If there is a divergence of views between the courts and the Patent Office and the divergence proceeds from a different interpretation of the statute, the views of the courts ought to prevail. If the courts, however, have only recognized and enforced the exercise of a discretion of the Patent Office, the question occurs, what is the extent of such discretion and can it be expressed and fixed in an inflexible rule such as Rule 41? In *Bennet* v. *Fowler*, (8 Wall., 445,) a discretion in the Patent Office was recognized. The question arose upon the validity of two reissued patents for improvements, which "had been embraced in one, in the original patent." The Court said:

> It may be that if the improvements set forth in both specifications had been incorporated into one patent, the patentee taking care to protect himself as to all his improvements by proper and several claims, it would have been sufficient. It is difficult, perhaps impossible, to lay down any general rule by which to determine when a given invention or improvements shall be embraced in one, two or more patents. Some discretion must necessarily be left on this subject to the head of the Patent Office. It is often a nice and perplexing question.

Some discretion is not an unlimited discretion, and if the discretion be not unlimited it is reviewable. In other words, the statute gives the right to join inventions in one application in cases where the inventions are related, and it cannot be denied by a hard and fixed rule which prevents such joinder in all cases. Such a rule is not the exercise of discretion; it is a determination not to hear. No inventor can reach the point of invoking the discretion of the Patent Office. He is notified in advance that he will not be heard, no matter what he might be able to show. His right is denied, therefore, not regulated. Such is the necessary effect of Rule 41, as amended.

Without that rule the action of the Patent Office can be accommodated to the character of inventions, and discretion can be exercised, and when exercised, we may say in passing, except in cases of clear abuse, the courts will not review it. But the rule as amended, as we have said, precludes the exercise of any judgment and compels the separation of claims for a process and claims for its apparatus, however related or connected they may be. And the right denied is substantial. Counsel for petitioner have explained that right by the embarrassments caused by its denial, one of which is that, by disclosing the apparatus in his application for the process, he might lose the right to and a patent for the apparatus, and to sustain that view *James* v. *Campbell*, (104 U. S., 356,) is cited. We are not prepared to admit such consequences nor that *James* v. *Campbell* so decides. If the classification of the statute makes a distinction between the different kinds of inventions—between a process and an apparatus—and requires or permits a separate application for each, it would seem to follow irresistably that an application and patent for one would not preclude an application and patent for the other, and the order of the application could not affect the right which the law confers. *James* v. *Campbell* was a case of reissued patent, and by express provision of the statute as to reissued patents no new matter can be introduced in them. In other words, the reissue is to perfect, not to enlarge, the prior patent. Whether the principle of the case applies to related as well as to independent inventions is not clear from its language. The Court said:

> Where a new process produces a new substance, the invention of the process is the same as the invention of the substance, and a patent for the one may be reissued so as to include both, as was done in the case of Goodyear's vulcanized-rubber patent. But a process, and a machine for applying the process are not necessarily one and the same invention.

The facts of the case did not call for a more definite ruling. The original patent was for a device for postmarking and canceling postage-stamps by a single blow. The reissued patent claimed the act of marking and cancellation, and it was observed by the Court:

> The process or act of making a postmark and canceling a postage-stamp by a single blow or operation, as a subject of invention, is a totally different thing in the patent law from a stamp constructed for performing that process.

But without attempting to enlarge the case and extend it to more intimately related inventions, it is enough now to say that there is nothing in the case





which decides that if the process had been claimed in an independent application it (the process) would have been adjudged to have been dedicated to the public by the other patent. There is language indicating the contrary. It was said:

> If he (the patentee) was the author of any other invention than that which he specifically describes and claims, though he might have asked to have it patented at the same time and in the same patent, yet if he has not done so, and afterwards desires to secure it, he is bound to make a new and distinct application for that purpose, and make it the subject of a new and different patent.

The case, however, indicates what embarrassment and peril of rights may be caused by a hard and fixed rule regarding the separation of related inventions. See also *Mosler Safe Co.* v. *Master*, (127 U. S., 345,) and *Miller* v. *Eagle Manufacturing Co.*, (151 U. S., 186.)

The Patent Office has not been consistent in its views in regard to the division of inventions. At times convenience of administration has seemed to be of greatest concern; at other times more anxiety has been shown for the rights of inventors. The policy of the Office has been denominated that of "battledore and shuttlecock," and Rule 41 as it now exists was enacted to give simplicity and uniformity to the practice of the Office. Its enactment was attempted to be justified by the assumption that the patent laws gave to the Office a discretion to permit or deny a joinder of inventions. But, as we have already said, to establish a rule applicable to all cases is not to exercise discretion. Such a rule ignores the differences which invoke discretion, and which can alone justify its exercise, and we are of opinion therefore that Rule 41 is an invalid regulation.

3. Having settled the right of appellant, we may now return to the consideration of his remedy. Respondent contends:

> It is fundamental that mandamus will not issue against a public officer, except to compel the performance of some plain, clear, ministerial duty, and will not issue to control his discretion.

And it is further contended that respondent has acted, and, having acted, cannot be required to refer the case to a lower tribunal in his office. To sustain the contention *Commissioner of Patents* v. *Whitely*, (4 Wall., 522,) is cited.

The unity of the inventions claimed by petitioner in the case at bar we may assume. It is not denied by respondent. Petitioner had, therefore, the right to join them in one application. The denial of this right by the Primary Examiner was a rejection of the application and entitled petitioner to an appeal to the Examiners-in-Chief, under section 4909 of the Revised Statutes. That section provides:

> Every applicant for a patent, * * * any of the claims of which have been twice rejected, * * * may appeal from the decision of the Primary Examiner to the board of Examiners-in-Chief; * * *

The section 482 provides:

> The Examiners-in-Chief shall be persons of competent legal knowledge and scientific ability, whose duty it shall be on the written petition of the appellant to revise and determine upon the validity of the adverse decisions of Examiners upon applications for patents, and for reissues of patents, and in interference cases; and, when required by the Commissioner, they shall hear and report upon claims for extensions and perform such other like duties as he may assign them.

The procedure on appeal is provided for by the rules of the Patent Office. It is taken by filing a petition praying an appeal with the Primary Examiner setting forth the reasons upon which the appeal is based, and it is made the duty of the Examiner five days before the date of hearing to furnish the appellate tribunal and the appellant with a statement of the grounds of his decision. A petition praying an appeal was filed but the Primary Examiner refused to answer the appeal, and the defendant in error also refused to direct him to answer it. It is manifest that if an appeal cannot be compelled from the decision of the Primary Examiner, an applicant is entirely without remedy. And respondent has asserted that extreme. In *ex parte Frasch* the Court of Appeals of the District of Columbia was persuaded that an appeal was not the proper remedy. In the case at bar it is contended that mandamus is not the proper one. One or the other must be. A suggestion made is that the inventor must await a decision on the merits, meaning by merits "lack of invention, novelty or utility," as expressed in Rule 133. But after waiting he would encounter the arbitrary requirement of Rule 41. Besides what would there be to review if the order of the Primary Examiner were complied with and the claims put into separate applications? There are some observations in *Commissioner of Patents* v. *Whitely*, which may be quoted. Whitely claimed to be the assignee of a patent, and filed an application for a reissue. The Commissioner declined to entertain it on the ground that Whitely was only assignee of an interest and not of the entire patent. He also declined to allow an appeal to be taken from his decision. The Supreme Court of the District of Columbia awarded a peremptory writ of mandamus commanding the Commissioner to refer the application to the proper Examiner, or otherwise examine or cause it to be examined according to law. Error was prosecuted to this Court. Under the act of 1836 it was provided that if the Commissioner decided adversely to an applicant for a patent an appeal could be taken to the Board of Examiners, and by the act of 1837 that remedy was given to an applicant for a reissue of a patent, and the question in the case was whether that remedy should have been pursued. In other words, whether the remedy was by appeal or mandamus. It was decided that appeal was the remedy. Singularly enough, the Commissioner in answer to the rule took the position that the application was not before him because it had not been filed. The Court said if that were so—

> mandamus would clearly lie to compel the Commissioner to receive it. It was his first duty to receive the application. Whatever he might do subsequently, without this initial step there could be no examination, and, indeed, no rightful knowledge of the subject on his part. Examination and the exercise of judgment, with their proper fruit, were to follow, and they did follow.

And so the exercise of judgment might follow a hearing of the application under review. It was the duty of the Primary Examiner to accord a hearing or, refusing to do so, to grant an appeal. It was the duty of the Commissioner to compel the appeal. The Commissioner of Patents is primarily charged with granting and issuing patents. Applications for patents are made to him, (sec. 4888,

Rev. Stats.,) and his superintendence should be exercised to secure the rights which the statutes confer on inventors. The first of those rights is a hearing. If that be denied other rights cannot accrue.

The Commissioner justifies his decision by the rules of the Patent Office and a long practice under them. If there is inconsistency between the rules and statute, the latter must prevail. But the Primary Examiner did not follow the rules. The rules provide that if appeal be regular *in form* (italics ours) he shall within five days of the filing thereof furnish the Examiners-in-Chief with a written statement of the grounds of his decision on all of the points involved in the appeal, with copies of the rejected claims and with the references applicable thereto. If he decide that the appeal is not regular in form, a petition from such decision may be made directly to the Commissioner. The regularity of the appeal in form is not questioned in the case at bar, and it was the duty of the Examiner to answer the appeal by furnishing the Examiners-in-Chief the statement provided for in Rule 135. A petition to the Commissioner was not necessary except to make the Examiner to perform his duty.

4. We do not think that petitioner was estopped from insisting upon his application by proceeding with the interference with Duncan after the Examiner's letter of December 15, 1899. It would be pressing mere order of procedure and the convenience of the Patent Office too far to give them such result under the circumstances.

*The judgment of the court of appeals is therefore reversed with directions to reverse that of the Supreme Court, and direct the Supreme Court to grant the writ of mandamus as prayed for.*

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## Supreme Court of the United States.

### EX PARTE FRASCH.

*Decided February 23, 1904.*

1. MANDAMUS TO COURT OF APPEALS TO HEAR APPEAL FROM PATENT OFFICE—DIVISION OF APPLICATION—APPEAL TO EXAMINERS-IN-CHIEF.

Petition for a mandamus to the court of appeals to hear and determine an appeal from a decision of the Commissioner of Patents requiring division of an application for patent *dismissed*, since the remedy was not by appeal to the court, but by mandamus to compel the allowance of an appeal from the Primary Examiner to the Examiners-in-Chief upon the question of division.

2. RULE 41 OF PATENT OFFICE INVALID—DIVISION BETWEEN PROCESS AND APPARATUS.

Rule 41 of the Patent Office in so far as it requires a division between claims for a process and claims for an apparatus, if they are related and dependent inventions, is invalid.

ON petition for writ of mandamus to the Court of Appeals for the District of Columbia.

*Mr. Chas. J. Hedrick* for the petitioner.

*Assistant Attorney-General McReynolds* for the respondent.

Mr. Justice MCKENNA delivered the opinion of the Court.

This is a petition for a writ of mandamus to compel the Court of Appeals of the District of Columbia to take jurisdiction of an appeal from the Commissioner of Patents.

The petition shows that petitioner was the first inventor of a new and useful improvement in the art of making salt by evaporation of brine, which improvement consisted of new and useful means for removing incrustation of calcium sulfate from brine-heating surfaces.

Petitioner applied for a patent for his invention in due form, and expressed his invention in six claims, three of which were for the process of removing incrustation of calcium sulfate from heating-surfaces, and three of which were for an apparatus for use in the process.

The Primary Examiner decided that "two different subjects of invention" were presented in the specification and claims, and required a division of the claims under Rule 41 of the Patent Office. A reconsideration of the decision was requested and denied. A petition for an appeal to the Board of Examiners-in-Chief was filed. The Primary Examiner refused to allow the appeal. A petition was then presented to the Commissioner of Patents praying that he make such order or take such action that petitioner's appeal to the Examiners-in-Chief might be heard, or, if that prayer be denied, that the Commissioner himself "consider the various matters all and severally raised by the appeal." Both prayers were denied and petitioner appealed to the Court of Appeals of the District of Columbia. That court dismissed the appeal for want of jurisdiction. This petition was then filed and a rule to show cause issued. A return to the rule was duly made.

We have just held in *United States* v. *Allen* that Rule 41 of the Patent Office, in so far as it requires a division between claims for a process and claims for an apparatus, if they are related and dependent inventions, is invalid. We, however, held that mandamus to the Commissioner, not appeal to the Court of Appeals of the District, was the proper remedy. It follows, therefore, that the rule to show cause should be discharged and the petition be dismissed, and it is so ordered.

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## Court of Appeals of the District of Columbia.

### TALBOT v. MONELL AND JAMES.

*Decided January 19, 1904.*

INTERFERENCE—PRIORITY OF INVENTION.

The decision of the Commissioner of Patents awarding priority of invention to Monell and James affirmed.

*Mr. Charles N. Butler* for the appellant.

*Mr. Clarence P. Byrnes, Mr. John R. Bennett,* and *Mr. Thomas W. Bakewell* for the appellee.

MORRIS, *J.:*

The issues in this case differ only in one slight particular from those in the case of *Talbot* v. *Monell*, No. 234, just decided; and it seems to be conceded that the decision in the one case should govern that to be rendered in the other. By agreement of parties the same testimony was to be used in both cases.

The decision of the Commissioner of Patents in the case will be, and it is hereby affirmed: and judgment of priority of invention is awarded in favor of the appellees Monell and James.

The clerk of the court will certify this opinion, and the proceedings of the court in the premises, to the Commissioner of Patents according to law.



Patents Nos. 754,406 to 754,958.

THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 109—No. 3. TUESDAY, MARCH 15, 1904. PRICE—$5 per year.

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| Patents | 553 | No 754,406 to No. 754,958, inclusive. |
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### TO CITIZENS OF THE UNITED STATES.

| States | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 1 | | Nevada | | |
| Alaska Territory | | | New Hampshire | 3 | |
| Arizona Territory | 1 | | New Jersey | 28 | 3 |
| Arkansas | | | New Mexico Ter't'y | 1 | |
| California | 21 | 2 | New York | 70 | 23 |
| Colorado | 14 | | North Carolina | 2 | 2 |
| Connecticut | 14 | 1 | North Dakota | 2 | |
| Delaware | | | Ohio | 46 | 5 |
| District of Columbia | 5 | | Oklahoma Territ'y | 1 | |
| Florida | 1 | | Oregon | 8 | |
| Georgia | 3 | | Pennsylvania | 40 | 4 |
| Hawaii Territory | | | Porto Rico | | |
| Idaho | | | Rhode Island | 3 | |
| Illinois | 52 | 4 | South Carolina | | |
| Indian Territory | | | South Dakota | 2 | |
| Indiana | 14 | 2 | Tennessee | 1 | |
| Iowa | 6 | | Texas | 13 | |
| Kansas | 10 | | Utah | 3 | |
| Kentucky | 6 | 2 | Vermont | 1 | |
| Louisiana | 2 | | Virginia | 1 | |
| Maine | | 1 | Washington | 5 | 1 |
| Maryland | 6 | 3 | West Virginia | 6 | |
| Massachusetts | 24 | 3 | Wisconsin | 18 | 3 |
| Michigan | 22 | 2 | Wyoming | 1 | |
| Minnesota | 10 | 1 | U. S. Army | | |
| Mississippi | 2 | | U. S. Navy | | |
| Missouri | 23 | 1 | | | |
| Montana | 3 | | Total to citizens of the United States | 506 | 64 |
| Nebraska | 3 | 1 | | | |

### TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Prints. | Countries. | Patents and Designs. | Trade Marks and Prints. |
|---|---|---|---|---|---|
| Argentina | | | Netherlands | | |
| Austria-Hungary | 3 | | Newfoundland | | |
| Belgium | | | New South Wales | | |
| Brazil | | | New Zealand | | |
| British West Indies | | | Norway | 1 | |
| Canada | 11 | | Persia | | |
| Cape Colony | | | Queensland | | |
| Chile | | | Roumania | | |
| China | | | Russia | | |
| Costa Rica | | | San Salvador | | |
| Cuba | | | Scotland | 2 | |
| Denmark | | | South Africa | | |
| Ecuador | | | Spain | | |
| England | 8 | 2 | Sweden | 4 | |
| France | 8 | | Switzerland | 3 | |
| Germany | 14 | | Transvaal, South Africa | | |
| India | | | Victoria | | |
| Ireland | | | Western Australia | | |
| Italy | | | | | |
| Japan | | | Total to citizens of foreign countries | 54 | 2 |
| Java | | | | | |
| Mexico | | | | | |

## Changes in Classification.

(ORDER No. 1,578.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., March 4, 1904.*

The following changes in classification of patents are hereby directed to take effect this day:

In Division XXXIV, class 105, Railway Rolling-Stock, abolish the following subclasses:

Trucks—
Center bearings—
110. Roller,
Side bearings—
116. Roller.

In Division XII, class 64, Journal-Boxes, Pulleys, and Shafting, establish the following subclasses:

Truck-bearings—
63. Ball,
64. Cylinder,
65. Rocker.

These last subclasses to be formed of the patents of the two above abolished subclasses.

F. I. ALLEN,
*Commissioner.*

---

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business March 8, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Feb. 25 | Feb. 25 | 157 |
| 321 | I. Tillage, etc., and Fences | Feb. 13 | Feb. 5 | 165 |
| 159 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography. | Feb. 12 | Feb. 20 | 134 |
| 232 | IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc. | Feb. 10 | Feb. 11 | 385 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Feb. 10 | Feb. 10 | 256 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Feb. 9 | Feb. 24 | 241 |
| 308 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Feb. 9 | Feb. 23 | 218 |
| 152 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Feb. 9 | Feb. 23 | 204 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Feb. 9 | Feb. 18 | 263 |
| 327 | XVIII. Steam-Engineering, etc. | Feb. 9 | Feb. 15 | 185 |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Feb. 9 | Feb. 15 | 197 |
| 148 | XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Feb. 9 | Feb. 9 | 268 |
| 329 | XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc. | Feb. 9 | Feb. 4 | 271 |
| 324 | XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements. | Feb. 9 | Jan. 25 | 308 |
| 344 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Feb. 8 | Feb. 23 | 250 |
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Feb. 8 | Feb. 23 | 208 |
| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Feb. 8 | Feb. 23 | 262 |
| 318 | VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc. | Feb. 8 | Feb. 19 | 137 |
| 332 | X. Carriages and Wagons | Feb. 8 | Feb. 16 | 213 |
| 142 | IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution. | Feb. 8 | Feb. 15 | 336 |
| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Feb. 8 | Feb. 11 | 282 |
| 315 | XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers. | Feb. 8 | Feb. 5 | 271 |
| 137 | VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus. | Feb. 8 | Feb. 3 | 356 |
| 312 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Feb. 8 | Feb. 1 | 369 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Feb. 8 | Jan. 16 | 274 |
| 308 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Feb. 8 | Dec. 26 | 461 |
| | *Between one and two months.* | | | |
| 172 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Feb. 6 | Feb. 23 | 150 |

*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| 109 | XVI. Telegraphy and Telephony | Feb. 5 | Jan. 21 | 200 |
| 113 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Feb. 4 | Jan. 2 | 371 |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Feb. 3 | Feb. 2 | 395 |
| 126 | II. Farm Products, etc., Lubricators, Presses, etc. | Feb. 1 | Jan. 18 | 298 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Jan. 27 | Jan. 4 | 360 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Jan. 25 | Jan. 4 | 202 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Jan. 22 | Feb. 1 | 351 |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Jan. 18 | Dec. 3 | 524 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Jan. 11 | Jan. 7 | 322 |
| 382 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Jan. 8 | Jan. 5 | 570 |
| | *Between two and three months.* | | | |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Dec. 24 | Dec. 2 | 414 |

Total number of applications awaiting action.....10,893

| | | | |
|---|---|---|---|
| *Under one month.* | | | |
| *Designs | Feb. 20 | Feb. 24 | 25 |
| †Trade-Marks | Feb. 23 | Mar. 7 | 41 |
| ‡Labels and Prints | Mar. 8 | Mar. 7 | 1 |

### Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., February 16, 1904.*

To the next of kin and legal representatives of Samuel B. Locklin, deceased, late of Boston, Mass.:

Notice is hereby given that on October 14, 1903, an interference was declared between the patent to Samuel B. Locklin, No. 706,574, August 12, 1902, and a pending application, the issue of the said interference being claims 1 to 4 of the patent.

Notice is further given that the time within which the statements demanded by Rule 110 must be filed has been extended to April 5, 1904.

This notice will be published in the OFFICIAL GAZETTE for six weeks.

F. I. ALLEN,
*Commissioner.*

### Patents to Assignees.

RULE 200. In every case where it is desired that the patent shall issue to an assignee, the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 26.) The date of the record is the date of the receipt of the assignment at the Office.

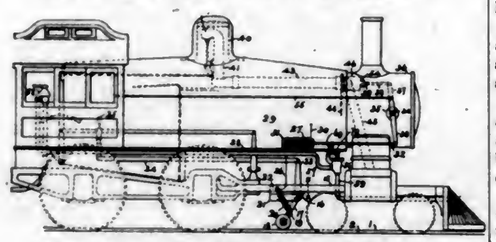
### Date of Patent.

RULE 207. The weekly issue closes on Thursday, and the patents of that issue bear date as of the third Tuesday thereafter. If the final fee in any application is not paid on or before Thursday, the patent will not go to issue until the following week.

# PATENTS

## GRANTED MARCH 15, 1904.

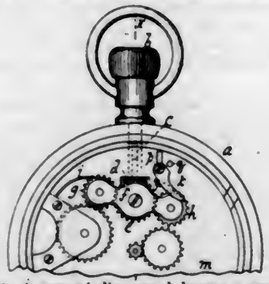
### 754,406. ELECTRICALLY-OPERATED STOPPING MEANS AT RAILWAY DANGER-SIGNALS. WILLIAM L. ADAMSON, Philadelphia, Pa. Filed June 12, 1903. Serial No. 161,193. (No model.)



*Claim.*—1. The combination of a third rail electrically energized by a signal, with a contact-wheel adapted to ride the rail, a solenoid energized by the contact of the wheel and rail, and a valve interposed between the throttle-valve and the cylinders of a locomotive and adapted to prevent the flow of steam to the cylinders when the wheel and third rail are in contact.

2. The combination of a third rail electrically energized by a signal, a contact-wheel adapted to ride the rail, a solenoid energized by the contact of the wheel and rail, an intercepting-valve adapted to stop the flow of steam, an air-valve adapted to release air-pressure while the wheel and rail contacts continue, and means to simultaneously open the steam-valve and close the air-valve when the contact-wheel is released from contact with the rail.

### 754,407. STEM-WINDING WATCH. ABRAHAM AKKERWITZ, New York, N. Y. Filed Apr. 11, 1903. Serial No. 152,201. (No model.)



*Claim.*—1. A stem-winding watch having a gear-setting lever, and a carrier made to carry and shift the lever and actuating mechanism for the carrier to cause the latter to impart motion to the lever.

2. A stem-winding watch having a gear-setting lever with shiftable fulcrum on which said lever turns, and mechanism outside the lever for shifting the fulcrum.

3. A stem-winding watch with a gear-setting lever having four movements, a shiftable fulcrum on which said lever turns and actuating mechanism for causing said lever to move automatically as said mechanism is actuated.

4. A stem-winding watch having a stem and a gear-setting lever oscillating on and having its fulcrum shiftable in direction parallel to the stem.

5. A stem-winding watch having a gear-setting lever oscillating on a shiftable fulcrum and guides for the lever placed in the path thereof so as to cause the lever to swing on the fulcrum as the latter is shifted.

6. A stem-winding watch having a gear-setting lever with shiftable fulcrum, means independent of the lever for shifting the fulcrum, and fixed guide for causing the lever to swing on the fulcrum as the latter is shifted.

7. A stem-winding watch having a gear-setting lever with shiftable fulcrum and guides for the lever, said lever having a shoulder and face portion for contacting with one or another of the guides to swing the lever on the fulcrum as the latter is shifted.

8. A stem-winding watch having a winding and setting mechanism normally in winding position, a lever for actuating said mechanism, a carrier, and a shiftable fulcrum for the lever, said fulcrum being mounted on the carrier and said lever and carrier being located opposite to one another.

9. A stem-winding watch having a shiftable carrier in contact with the stem or arbor, and a lever fulcrumed on said carrier and bodily movable therewith, said lever oscillating on said fulcrum.

10. A stem-winding watch having a bridge or bearing piece and a winding pinion or arbor, a carrier in said bridge or bearing, a lever mounted on said carrier, and a guide for the lever, so that as the carrier is moved the guide forces the lever into position to shift the parts.

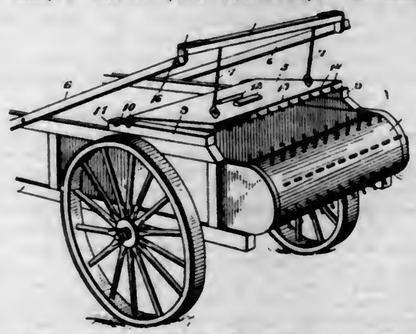
11. A bridge having bearings, a winding arbor or pinion in one of the bearings, a carrier in another bearing, a lever connected to the carrier, and guides for the lever, said parts being adapted so to be attached to a stem-winding watch, plate or movement, so as to allow a change from lever-set to pendant-set.

12. A stem winding and setting watch having a gear-setting lever, a carrier and a guide for the lever, and a stem or arbor for actuating the carrier, said parts being so arranged that upon the stem being moved away from the carrier the guide forces the lever to shift the parts, and upon the stem being moved farther from the carrier, the lever moves clear of the winding and setting mechanism.

13. A stem-winding watch having a stem, a carrier, a spring for holding the carrier against the stem, and a lever for moving the winding and setting mechanism, said lever having its fulcrum mounted on the carrier so as to be normally moved outward by said carrier and spring.

14. A stem-winding watch having a slotted movement-plate *m*, a carrier at one side of the plate, and a lever at the other side of the plate and having its fulcrum extended through the slot and connected to the carrier so as to be moved when the carrier is shifted.

### 754,408. FERTILIZER-DISTRIBUTER. MILTON L. BAKER, Edgemont, Pa. Filed Dec. 18, 1903. Serial No. 185,614. (No model.)



*Claim.*—1. In a fertilizer-distributer, the combination with a suitable manure-holding body of a distributing-drum and means for revolving the same, a regulating-gate, and means for swinging the same, suitable lever-arms, and means for connecting the same to said

board to raise or lower the same and to rigidly hold the same in position, cleats on the rear face of said board adapted to be engaged by the distributing-drum to raise said board, and an angle-iron plate on the rear edge of said board, and pins carried thereby at an angle of substantially forty-five degrees, to said board.

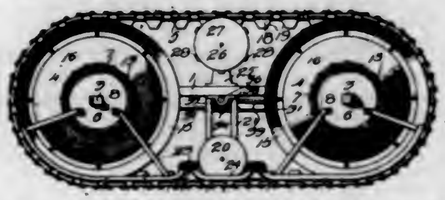
2. In a fertilizer-distributer the combination of a suitable body and a distributing-drum with means for revolving the said drum, a regulating-board and means for swinging the same, suitable lever-arms and means for connecting the same to said regulating-board for raising and lowering the same and for holding the same rigidly in position, teeth on the rear edge of said board arranged angularly thereto for disintegrating the fertilizer.

3. In a fertilizer-distributer, the combination with a suitable body of means for distributing the fertilizer, a regulating-board and means for swinging the same from said body at different points thereon, means for raising and lowering the rear portion of said board and for holding the same rigidly in position.

4. In a fertilizer-distributer, the combination with a suitable body, of means for distributing the fertilizer, a regulating-board and means for swinging the same from said body, at different points thereon, means for raising and lowering the after end of said board and suitable means on said board for disintegrating the fertilizer.

5. The combination in a manure-distributer of an adjustable swinging tail-gate adapted to swing vertically when the machine is at rest, and adapted to be moved forwardly when in operation and swing at its top, and means for raising or lowering said board angularly substantially as described.

## 754,409. TRACTION-ENGINE. HARVEY BECKWITH, Oakland, Cal. Filed Aug. 24, 1903. Serial No. 170,573. (No model.)



*Claim.*—1. In a machine of the character described, the combination with a suitable frame having supporting-wheels, of endless belts surrounding the peripheries of said supporting-wheels and serving as moving track-rails for the same, means for imparting motion to said belts to drive said wheels, and means for turning said wheels and belts at angles with respect to the frame in order to steer the machine, substantially as described.

2. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, supporting-wheels mounted to rotate upon said spindles, and means for shifting said spindles to turn the wheels at angles with respect to the frame, substantially as described.

3. In a machine of the character described the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, supporting-wheels mounted to rotate upon said spindles, and means for shifting said spindles upon the arc-shaped ends of the axles, endless belts surrounding the peripheries of said wheels and serving as moving track-rails for the same, and means for driving said belts to propel the machine, substantially as described.

4. In a machine of the character described the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, supporting-wheels mounted to rotate upon said spindles, bars connecting the sliding spindles, pivoted levers having a loose connection with said bars and means for operating said levers, substantially as described.

5. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, supporting-wheels mounted to rotate upon said spindles, bars connecting the sliding spindles, pivoted levers having a loose connection with said bars, a screw-rod upon said frame, a nut upon said screw-rod having a loose connection with said levers, and means for rotating said screw-rod, substantially as described.

6. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, supporting-wheels mounted to rotate upon said spindles, bars connecting the sliding spindles, pivoted levers having a loose connection with said bars, a screw-rod upon said frame, a nut upon said screw-rod having a loose connection with said levers, means for rotating said screw-rod, endless belts surrounding the peripheries of said supporting-wheels and serving as track-rails for the same, and means for driving said belts to propel the machine, substantially as described.

7. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, spindles or bearings slidably mounted upon said ends and formed with grooved peripheries supporting-wheels formed with grooved peripheries and with annular ribs in their hub to engage said grooves in the spindles, endless belts surrounding said supporting-wheels and formed of linked slats having lugs or blocks adapted to engage the grooved peripheries of the wheels, means for driving said belts, and means for adjusting said sliding spindles upon the arc-shaped ends of the axles, substantially as described.

8. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, spindles or bearings slidably mounted upon said ends and formed with grooved peripheries supporting-wheels formed with grooved peripheries and with annular ribs in their hubs to engage said grooves in the spindles, endless belts surrounding said supporting-wheels and formed of linked slats having lugs or blocks adapted to engage the grooved peripheries of the wheels, a drive-shaft, drive-wheels upon said shaft adapted to engage the lugs or blocks upon said belts, and means for adjusting said sliding spindles upon the arc-shaped ends of the axles, substantially as described.

9. In a machine of the character described, the combination of a frame, supporting-wheels for said frame formed with grooved peripheries, endless belts surrounding said supporting-wheels and formed of linked slats having lugs or blocks adapted to engage the grooved peripheries of said wheels, a drive-shaft, and drive-wheels upon said shaft adapted to engage the lugs or blocks upon said belts to impart motion to the same and thereby propel the machine, substantially as described.

10. In a machine of the character described, the combination of a frame, supporting-wheels for the same, endless belts surrounding the peripheries of said wheels and adapted to serve as moving track-rails for the same, and braces upon the side of said wheels adapted to limit the turning or twisting of said belts, substantially as described.

11. In a machine of the character described, the combination of a frame, supporting-wheels for the same, endless belts surrounding the peripheries of said wheels and adapted to serve as moving track-rails for the same, depending hangers or brackets upon said frame having bracing-frames at their lower ends, and braces upon each side of said wheels having a loose connection with said bracing-frames, said braces and bracing-frames being adapted to limit the turning or twisting of the belts upon the ground, substantially as described.

12. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, means for adjusting said spindles upon said ends, supporting-wheels mounted to rotate upon said spindles, endless belts surrounding the peripheries of said wheels, depending hangers upon said frame, wheels journaled in said hangers and engaging the centers of the lower stretches or runs of the belts, a shaft journaled in bearings upon said frame, and wheels upon said shaft engaging the centers of the upper stretches or runs of the belts, said wheels upon the shaft and hangers being adapted to serve as pivots for the belts when the sliding spindles are adjusted to steer the machine, substantially as described.

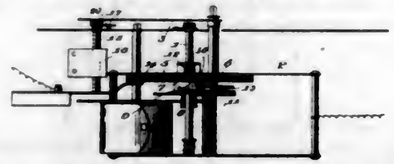
13. In a machine of the character described, the combination of a frame, axles carried by said frame and having arc-shaped ends, sliding spindles or bearings mounted upon said ends, means for adjusting said spindles upon said ends, supporting-wheels mounted to rotate upon said spindles, endless belts surrounding the peripheries of said wheels, depending hangers upon said frame, idler-wheels journaled in said hangers and engaging the centers of the lower stretches or runs of the belts, a drive-shaft journaled in bearings upon said frame, drive-wheels upon said shaft and engaging the centers of the upper stretches or runs of the belts, a brace secured upon each side of the spindles or bearings of the supporting-wheels, and brace-frames secured upon the lower ends of said hangers and having a loose connection with said brace, substantially as described.

14. A machine of the class described, having curved axles, wheels mounted thereon, and movable angularly and laterally and flexible traction elements connecting said wheels.

15. A machine of the class described, having curved axles, supporting-wheels on said axles, movable laterally and angularly, and traction-belts connecting said wheels, said belts being laterally flexible.



## 754,410. ELECTRIC TIME-ALARM. EMIL M. BENESCH, Denver, Colo. Filed Mar. 7, 1903. Serial No. 146,748. (No model.)



*Claim.*—1. The combination with a clock-face having a pair of dials thereon, and indicator-hands operating in connection with said dials, one to indicate the hour when a current is to be turned on and the other the number of hours for its duration, and automatic mechanism controlled by these hands for making and breaking an electrical circuit.

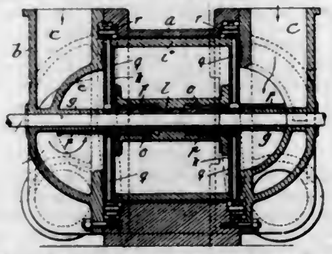
2. The combination with a movable contact, an adjustable contact, a dial, and a hand on the adjustment of the contact for indicating the position of the contact on the dial, of means for determining the time when the movable contact will engage the adjustable contact.

3. The combination with a suitable support, and a contact-wheel suitably actuated and loosely mounted on the support whereby to turn or slide thereon, of a projection on the support, an indicating-hand on said support, a dial upon which is indicated the hour when the current is to be turned on, a notched hub on the wheel, a contact-brush, means for adjusting said brush, a dial for indicating the duration of the current and a hand on said means to be turned on said dial.

4. The combination with a clock-face having a pair of dials thereon, one of which is numbered from "1" to "12," and the other from "2" to "10," and indicator-hands operating in connection with said dials, one to indicate the hour when a current is to be turned on and the other the number of hours for its duration, and automatic mechanism controlled by these hands for making and breaking an electrical circuit.

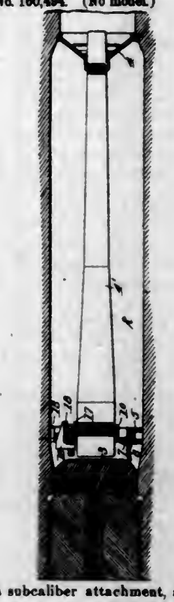
5. The combination with a spindle adapted to be turned and having a projection thereon, of a contact-wheel loosely mounted on the spindle and adapted to be rotated by a clock mechanism, said wheel having a hub, the periphery of which is notched, the notch having an abrupt shoulder at one end and spirally inclined from the inner end of the shoulder to the edge of the hub, and an adjustable contact-brush in position to be engaged by the wheel while the notch is opposite the projection on the spindle.

## 754,411. ROTARY ENGINE. HENRIK BERGLUND, Stockholm, Sweden. Filed Feb. 25, 1902. Serial No. 95,514. (No model.)



*Claim.*—An improved rotary engine consisting of a cylindrical case *a* with tightly-closing heads *b* each provided on the inside with a semispherical recess or pocket *c*, the working chamber, having admission and discharge apertures separated by an axial partition, and in which case is inclosed a tight-fitting rotatable drum *i* with tight-closing ends *k* through each of which oscillate two sector-shaped vanes *p* parallel to each other and to the shaft and located on opposite sides of the latter *k*, said vanes being secured to the inner end of shafts *q* arranged radially in the drum and having its outer end formed into a crank provided with friction-rollers rolling on a cam-shaped guide *r* arranged on the inside of the casing and actuating each crank in such a manner during the rotation of the engine that the corresponding vane during one-half of a revolution of the drum will occupy its outer position projecting across the working chamber in the corresponding head *b*, to be subsequently pushed in during the succeeding quarter of a revolution so that it can move past the partition between the discharge and admission apertures, whereupon during the next quarter of a revolution it is once more projected into its outer position.

## 754,412. SUBCALIBER ATTACHMENT. WILLIAM H. BEVANS, Bridgeport, Conn., assignor to American & British Manufacturing Company, New York, N. Y., a Corporation of New York. Filed June 8, 1903. Serial No. 160,494. (No model.)



*Claim.*—1. In a subcaliber attachment, a support for the tube provided with means for locking it in position in the gun-chamber comprising a sliding clamping member having a cam-surface, a wedge adapted to coact with said cam-surface to effect the movement of the clamping member, and means for adjusting the wedge.

2. In a subcaliber attachment, a support for the tube provided with means for locking it in position in the gun-chamber comprising a sliding clamping member having a cam-surface, a wedge adapted to coact with said cam-surface to effect the movement of the clamping member, and an operating-screw adjustable in the support and having a rotatable connection with the wedge.

3. In a subcaliber attachment, a support for the rear end of the tube comprising a shoe, an adapter to which the tube is attached adapted to rest upon said shoe and formed diametrically opposite to said shoe with a recess, a sliding clamping member movable in said recess and having a cam-surface, a wedge movable in said recess and adapted to coact with said cam-surface to force said member in contact with the wall of the gun-chamber, and means for operating said wedge.

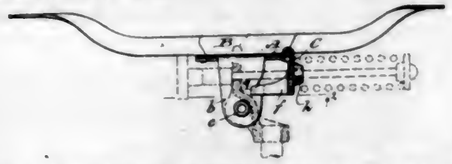
4. In a subcaliber attachment, a support for the tube having a recess formed therein, a block slidable in said recess having its outer surface formed on the same radius as the radius of the wall of the gun-chamber and having an inner cam-surface, a wedge slidable in said recess and adapted to coact with said cam-surface to force the block in contact with the wall of the chamber, and means for effecting the movement of said wedge.

## 754,413. SEAT-SPIDER. HARRY W. BOLTON, Port Washington, Wis. Filed Apr. 22, 1901. Serial No. 56,875. (No model.)

*Claim.*—1. In a seat-spider, the combination with a spreader comprising depending side flanges or ears, of a separate spring-receiving bridge-piece supported by said ears independent of the swivel-support.

2. In a seat-spider, the combination, with a spreader provided with opposite depending side flanges having notches, of a spring-receiving bridge-piece seated in said notches.

3. In a seat-spider, the combination with a spreader provided with opposite depending side flanges having notches, of a spring-receiving bridge-piece seated in said notches and between the same connected to the spreader.



4. In a seat-spider, a sheet-metal spreader having its opposite ends doubled upon themselves to form reinforced seats for the spider-arms, and between said seats provided with depending ears, in combination with spider-arms secured to the said seats, and a swiveled support pivoted to said depending ears.

5. In a seat-spider, a sheet-metal spreader provided between its ends with downwardly-struck ears and beyond the same provided with seats for the spider-arms, combined with spider-arms secured to said seats, and a support pivotally connected to said depending ears.

6. In a chair-spider, the combination with a spreader provided with depending ears at opposite sides of its center, of an independent transverse spring-supporting bridge-piece spanning the distance between the ears, connected to the same and to the spreader at a point between the ears, and a swiveled support connected to said ears.

7. In a chair-spider, a spreader having depending years provided in their edges with notches, a spring-supporting bridge-piece engaging said notches and provided with a groove receiving the longitudinal edge of the spreader, and spider-arms supported by the spreader.

8. In a chair-spider, a sheet-metal spreader, having depending ears struck out from between the ends thereof, said spreader beyond the arms being folded upon itself to form reinforced seats and terminating against the ears, combined with a spring-supporting bridge-piece, and spider-arms mounted on the spreader.

9. In a seat-spider, a sheet-metal spreader having depending ears, in combination with a spring-supporting bridge-piece, comprising a bar, provided with end flanges having lugs and provided with an upper groove, the said groove receiving and engaging the longitudinal edge of the spreader, and the end flanges engaging the ears, and the lugs of the flanges abutting against said ears, and spider-arms mounted on the spreader.

10. In a seat-spider, a sheet-metal spreader having depending ears, the stock of which the spreader is formed being folded upon itself and terminating against said ears, combined with spider-arms seated on the folded ends of the spreader, and means for securing the same thereto.

11. In a chair-spider, the combination with a sheet-metal spreader, having downwardly and outwardly struck depending ears, forming openings $b^3$, and adjacent thereto providing seats, of spider-arms secured to the seats, a bridge-piece adapted to receive the tension bolt and spring, and a swiveled support pivoted between the depending ears and provided with stop-lugs entering the openings $b^3$ of the spreader.

12. In a chair-spider, the combination with a spreader, having depending ears and openings $b^3$, and adjacent thereto provided with seats, of spider-arms secured to the seats, a bridge-piece adapted to receive the tension bolt and spring and a swiveled support pivoted between the depending ears and provided with stop-lugs entering the openings $b^3$ in the spreader.

13. In a seat-spider, the combination with a spreader comprising depending securing flanges or ears, of an independent spring-receiving bridge-piece engaging said spreader between said ears.

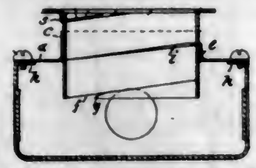
14. In a seat-spider, the combination with a spreader comprising depending securing flanges or ears, of an independent spring-receiving bridge-piece engaging said spreader between said ears and at its ends resting against said ears.

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**754,414. OUTLET-BOX FOR INTERIOR CONDUITS.** WILLIAM F. BOSSERT, Utica, N. Y., assignor to the Bossert Electric Construction Company, Utica, N. Y. Filed Dec. 19, 1903. Serial No. 185,793. (No model.)

*Claim.*—1. The combination of an outlet-box having an open space on its front and a supporting-finger extending partly across the same, with an adjustably-supported metal sleeve in said space having an opening in its side through which the said finger projects, as set forth.

2. The combination of an outlet-box having an open space on its front, of a metal sleeve in said space provided with an opening in its side, with a metal finger extending partly across said space and through said opening adapted to adjustably support the sleeve, as set forth.



3. The combination in an outlet-box provided with a cover which has a central opening surrounded by a collar, and a supporting-finger extending partly across the opening from the collar, with a metal sleeve in said opening having an opening in its wall through which the finger extends to adjustably support the sleeve, as set forth.

4. The combination in an outlet-box having a circular opening on its front, a finger extending partly across the opening, with a cylindrical metal sleeve in said opening having perforations in its wall through which the finger projects to adjustably support the sleeve, as set forth.

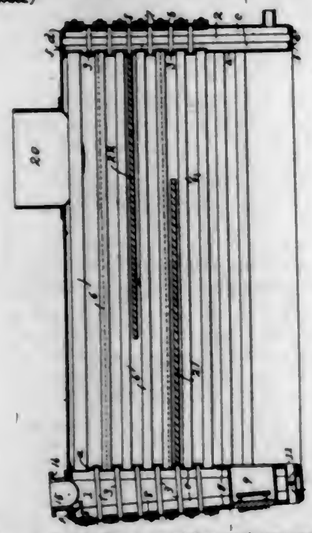
5. The combination in an outlet-box having a circular opening in its front, a finger extending partly across the opening, with a sleeve in said opening consisting of a metal plate of cylindrical form and having perforations in its wall through which the finger projects and on which the sleeve is adjustably supported, as set forth.

6. The combination in an outlet-box having a circular opening on its front, one or more fingers extending partly across the opening, with a cylindrical metal sleeve in said opening having perforations in its wall to receive said fingers to adjustably support the sleeve, consisting of a vertical perforation from which extend horizontal perforations, as set forth.

7. The combination in an outlet-box having a circular opening on its front, a finger extending partly across the opening, with a sleeve in said opening cylindrical in cross-section provided with a flange at its outer end and with perforations in its wall through which the finger projects and on which the sleeve is adjustably supported, as set forth.

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**754,415. WATER-TUBE BOILER.** JOHN R. BOSHKOSHAN and FRANK BELDS, Oswego, N. Y. Filed Dec. 5, 1902. Serial No. 133,963. (No model.)



*Claim.*—1. In a boiler, a set of front and rear water-legs forming front and rear walls; each water-leg being composed of front and rear plates, having inturned flanges connected with each other by an encircling band; water-tubes connecting the water-legs, hand-holes in the outer plates of the water-legs in line with said tubes; the front water-leg being provided in its lower portion with a tubular fuel-receiving aperture of larger size than the hand-holes, and a fuel-door for said aperture; together with an inclosing sheath for the water-tubes, formed in longitudinal sections having end connection with the water-legs.

2. In a boiler, a water-leg formed of front and rear plates provided with inturned flanges and a connecting-band secured to said flanges; said water-leg being arranged to form the entire front of the boiler and its furnace, with a tubular fuel-aperture leading to the combustion-chamber and provided with a fuel-door; a steam-receiving chamber; and a tubular neck communicating between the water-leg and steam-chamber through the band which connects the front and rear walls.

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**754,416. FOUNTAIN-PEN.** WILLIAM BOVILL, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,950. (No model.)



*Claim.*—1. In a fountain-pen, the combination with the barrel or body of the same, of a piston arranged to reciprocate therein, a piston-rod comprising an inner section fixed to said piston, an outer tubular section slidably mounted on said inner section, a pin-and-slot connection between said sections and means whereby the same may be locked in extended positions, substantially as described.

2. In a fountain-pen, the combination with the barrel or body of the same, of a piston arranged to reciprocate therein, a piston-rod comprising an inner section fixed to said piston and having a laterally-projecting pin or lug, an outer tubular section slidably mounted on said inner section and having a longitudinal slot formed therein to engage said pin or lug, and a right-angularly-formed recess communicating with said slot and with which said pin or stud may be engaged to lock said sections against telescopic movement, substantially as described.

3. In a fountain-pen, the combination with the barrel or body of the same, of a piston arranged to reciprocate therein, a piston-rod comprising an inner section fixed to said piston, and having a laterally-projecting pin or lug, an outer tubular section slidably mounted on said inner section and having a longitudinal slot formed therein to engage said pin or lug, a right-angularly-formed recess communicating with said slot and with which said pin or stud may be engaged to lock said sections against telescopic movement, a ring or collar removably secured in the outer end of said pen-barrel to limit the outward movement of said piston, and means for removably securing said collar within said barrel, substantially as described.

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**754,417. STONE-CLEANING COMPOSITION AND METHOD OF MAKING SAME.** PHILIP J. BRAHEN, Hartford, Conn., assignor to American Restoring Company, Hartford, Conn., a Corporation of South Dakota. Filed June 9, 1902. Serial No. 110,772. (No specimens.)

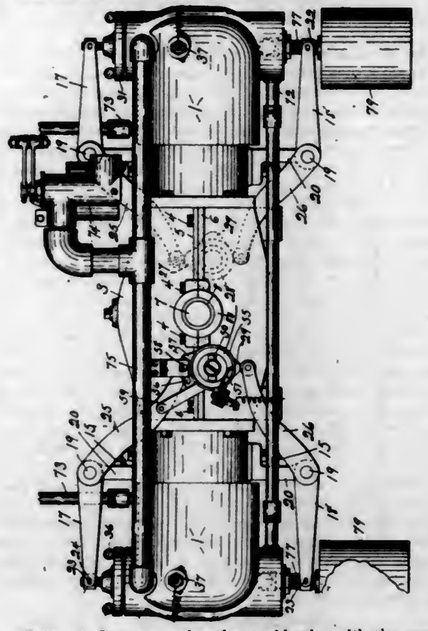
*Claim.*—1. The method of compounding a cleaning composition for stone and marble which consists in mixing together twelve parts of chlorid of lime, and four parts of whiting, then dissolving one part of sodium chlorid and sixteen parts of sodium carbonate in about sixty-six and two-thirds parts of boiling water, then pouring the same over the chlorid of lime and whiting and slowly stirring the same.

2. The method of compounding a cleaning composition which consists in mixing together chlorid of lime and whiting in about the proportions stated, then dissolving sodium chlorid and sodium and sodium carbonate in water, in about the proportions stated, then introducing the same to the mixed chlorid of lime and whiting.

3. A cleaning composition resulting from the mixing of twelve parts of chlorid of lime, four parts of whiting, sixteen parts of sodium carbonate, one part of sodium chlorid and sixty-six and two-thirds parts of water.

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**754,418. GAS-ENGINE.** PATRICK H. BRENNAN, Syracuse, N. Y. Filed June 26, 1903. Serial No. 163,202. (No model.)



*Claim.*—1. In a gas-engine, the combination with the crank-case and the cylinders having vapor inlet and exhaust ports in their heads, corresponding opposite inlet and exhaust valves for said ports, said valves being arranged substantially flush with the inner surfaces of the cylinders, corresponding elongated bearings on each cylinder, rods journaled therein, opposite inlet and exhaust valve levers secured to the corresponding ends of the respective rods and connected to the respective valve-stems, opposite inlet-valve arms and exhaust-valve arms secured to opposite ends of said rods respectively, secondary shafts journaled in the case, connections to rotate said secondary shafts from the main shafts, cams on the secondary shafts provided with cam-surfaces to engage with the inlet and exhaust valve arms respectively, to operate said valves at the proper times, means to supply gasolene-vapor to the cylinder-heads and a sparking device arranged in each cylinder-head adjacent to the inlet and electrical means for producing a spark, substantially as described and shown.

2. In a gas-engine, the combination with the crank-case and the cylinders having vapor inlet and exhaust ports in their ends, inlet and exhaust valves for said ports arranged substantially flush with the inner surfaces of the cylinders, corresponding opposite bearings on both cylinders, rods journaled in said bearings, opposite inlet and exhaust valve levers secured to the corresponding ends of the respective rods and having forked outer ends, threaded valve-stems on the valves outwardly extending in said forked ends, blocks adjustably connected to said threaded steins and connected to the forked lever ends by lugs fitted to slots in said ends, opposite inlet and exhaust valve arms secured to the opposite ends of said respective rods and carrying antifriction-rollers on their inner ends, secondary shafts journaled in bearings, one integral with each half of the case and arranged parallel to and on opposite sides of the crank-case, means to rotate the secondary shafts, cams on the secondary shafts provided with cam-surfaces to engage with the antifriction-rollers on the arms to open the respective valves at the proper times, means to admit the gasolene-vapor to the cylinder-heads, and means to ignite said vapor, substantially as described and shown.

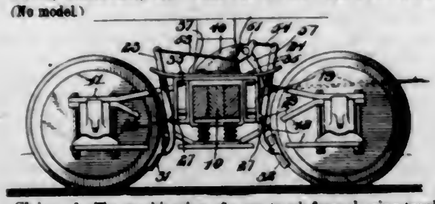
3. In a gas-engine, the combination with the crank-case and the cylinders, of pistons fitted to the cylinders, pitmen connecting the pistons to the cranks, opposite extensions on the cylinder-heads,

one on each cylinder having a substantially solid end provided with an exhaust-chamber and an exhaust-port, and the other extension having an open end and formed with an inlet-port, an exhaust-valve fitted to a beveled seat inwardly of the exhaust-chamber and lying substantially flush with the inner surface of the cylinder, a valve-shell fitted to the open end of each opposite extension and provided with an admission-chamber communicating with the inlet-port, an inlet-valve carried in said shell and fitted to a beveled seat at the inner end thereof, a flange on said shell engaging with a shoulder in the cylinder, means to lock the shell, forcing the flange tight against the shoulder, outwardly-extending stems on said valves, operative arm and lever connections supported on the cylinders and connected at one end to the valves, cams suitably supported and having cam-surfaces to engage with the opposite ends of said connections to open the valves in turns, springs to maintain the valves closed, means to supply explosive vapor to the admission-chamber and means to ignite the vapor, substantially as described and shown.

4. In a gas-engine, the combination with the crank-case and cylinders having inlet and exhaust ports in their heads, a muffle, an exhaust-valve fitted to a seat adjacent to the exhaust-port and arranged substantially flush with the inner surface of the cylinder, a valve-shell chamber communicating with the inlet-port, an inlet-valve carried in said shell and arranged flush with the inner surface of the cylinder, outwardly-extending stems on said exhaust and inlet valves, elongated bearings bolted to the opposite sides of each cylinder, valve-rods journaled in said bearings, inlet-valve and exhaust-valve levers connected to the opposite ends of the respective rods, inlet and exhaust arms connected to the opposite ends of said rods on each cylinder and having their ends extending adjacent to operative cams, secondary shafts arranged in bearings in the cylinders, means to operate the secondary shaft from the main or crank shaft, concave cams secured to the outer ends of the secondary shafts and fitted internally to the outer surfaces of the secondary-shaft bearings, cam-surfaces on said cams to engage with the inlet and exhaust valve arms respectively, springs secured to said arms to maintain the valves in closed position and the arm ends in contact with the cams, a suitable carbureter, pipes therefrom to the inlet-port and admission-chamber, and sparking devices arranged within the cylinder-heads adjacent to the inlet-valves.

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754,419. **CAR-BRAKE.** HERBERT R. BROWN and MARCUS L. BROWN, Goldthwaite, Tex. Filed Dec. 9, 1903. Serial No. 184,494. (No model.)



*Claim.*—1. The combination of a car-truck frame having track-wheels, guide-plates connected transversely of said truck-frame between said wheels and having longitudinal apertures through their ends, levers carrying brake-shoes for bearing against said track-wheels and fulcrumed upon said truck-frame and with their free ends extending through said apertures, and means carried by said truck-frame for simultaneously actuating said levers to apply said brake-shoes.

2. The combination of a car-truck frame having track-wheels, guide-plates connected transversely of said truck-frame between said wheels and having longitudinal apertures through their ends, levers carrying brake-shoes for bearing against said track-wheels and fulcrumed upon said truck-frame and with their free ends extending through said apertures, a shaft mounted for rotation upon said truck-frame and having rocker-arms upon its ends, connecting-rods between said rocker-arms and said levers, and means for rotating said shaft.

3. The combination of a car-truck frame having track-wheels, guide-plates connected transversely of said truck-frame between said wheels and having longitudinal apertures through their ends, levers carrying brake-shoes for bearing against said track-wheels and fulcrumed upon said truck-frame and with their free ends extending through said apertures, a shaft mounted for rotation upon said truck-frame and having rocker-arms upon its ends, connecting-rods between said rocker-arms and said levers, an arm extending from said shaft for the attachment of the brake-rod, and rods connecting said rocker-arms and levers.

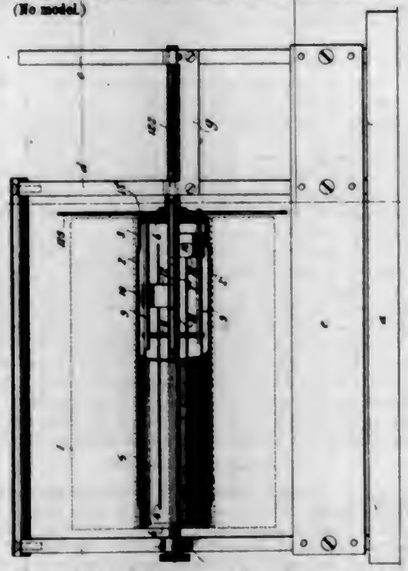
4. The combination of a car-truck frame having spaced track-wheels mounted for rotation therein and with a central transverse member, stirrup-bars of inverted-U shape and embracing said central member between said wheels and having pivot-bearings in their depending ends, guide-plates riveted to the upper portions of said stirrup-bars and extending laterally from said central member and with longitudinal apertures in the extended portions, levers fulcrumed upon the bearings in said stirrup-bars and carrying brake-shoes for engagement with said track-wheels and extending through said apertures, and means for simultaneously actuating said levers to apply said brake-shoes.

5. The combination of a car-truck frame having spaced track-wheels mounted for rotation therein and with a central transverse member, stirrup-bars of inverted-U shape and embracing said central member between said wheels and having pivot-bearings in their depending ends, guide-plates riveted to the upper portions of said stirrup-bars and extending laterally from said central member and with longitudinal apertures in the extended portions, levers fulcrumed upon the bearings in said stirrup-bars and carrying brake-shoes for engagement with said track-wheels and extending through said apertures, brackets riveted to said guard-plates and stirrup-bars and having bearings in their upper ends, a shaft mounted for rotation in said bearings and having rocker-arms upon its ends, rods connecting said rocker-arms with the free ends of said brake-levers, and means for forcibly rotating said shaft to apply said brake-shoes.

6. The combination of a car-truck frame having track-wheels, guide-plates connected transversely of said truck-frame between said wheels and having longitudinal apertures through their ends, levers fulcrumed upon said truck-frame and with their upper ends extending through said apertures, brake-shoes upon the lower ends of said levers and having bearing-surfaces conforming to the treads and embracing the flanges of said track-wheels, and means for simultaneously actuating said levers to apply said brake-shoes.

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754,420. **ROLL-HOLDER.** JOHN BURRY, Ridgefield Park, N. J., assignor to Stock Quotation Telegraph Company, New York, N. Y., a Corporation of New York. Filed Oct. 10, 1901. Serial No. 78,175. (No model.)



*Claim.*—1. A roll-holder consisting of a rotary tube slitted lengthwise to form strips united at the end, said strips being forced outward to make a split tube larger in diameter than the unslitted end, said split tube being adapted to engage frictionally with the inside of a roll-core and said split tube and roll-core rotating together.

2. A roll-holder consisting of a rotatory tube slitted lengthwise to form strips united at the end, said strips being forced outward to make a split tube larger in diameter than the unslitted end, said split tube being adapted to engage frictionally with the inside of a roll-core and said split tube and roll-core rotating together, a central through-tube, and means for connecting the central and the split tubes, in combination.



3. A roll-holder consisting of a rotatory tube slitted lengthwise to form strips united at each end, said strips being forced outward to make a split tube larger in diameter than the unslitted ends, said split tube being adapted to engage frictionally with the inside of the roll-core and to rotate therewith, disks fast in the ends of said tube, and a central tube mounted in said disks and providing bearings for a removable shaft or rod, in combination with a controlling-wheel, said removable shaft or rod, and means actuated by said rod for connecting and disconnecting said split tube and said wheel.

4. A roll-holder comprising a tube slitted longitudinally to form resilient strips adapted to engage frictionally with the inside of the roll, disks in said tube, a central tube mounted in said disks and forming a bearing for a shaft or rod, a disk fast on said central tube, a rod mounted to slide in the last-mentioned disk and in an end disk of the first-mentioned tube, and a block fast on the last-named rod and having jaws extending into the hollow part of said central tube, combined with a controlling-wheel, and a rod or shaft adapted to pass through said central tube and engage with said jaws and take bearing in the hollow shaft of said wheel.

5. A roll-holder comprising a tube slitted longitudinally to form resilient strips adapted to engage frictionally with the inside of the roll, disks in said tube, a central tube mounted in said disks and forming a bearing for a shaft or rod, a disk fast on said central tube, a plurality of rods mounted to slide in the last-mentioned disk and in an end disk of the first-mentioned tube, and blocks fast on the last-mentioned rods and provided with jaws which extend within the hollow part of said central tube, combined with a controlling-wheel, and a rod or shaft adapted to pass through said central tube and engage with said jaws, and take bearing in the hollow shaft of said wheel.

6. In a roll-holder, a rotatable longitudinally-slitted tube, a central inner tube connected to turn therewith, said inner tube forming a shaft-bearing and being slotted longitudinally at opposite sides thereof, a rod connected with and movable endwise independently thereof, jaws on said rod projecting into said slots, a controlling-wheel engaged by said rod, and a shaft passing through said inner tube and engaging said jaws, all in combination, substantially as described.

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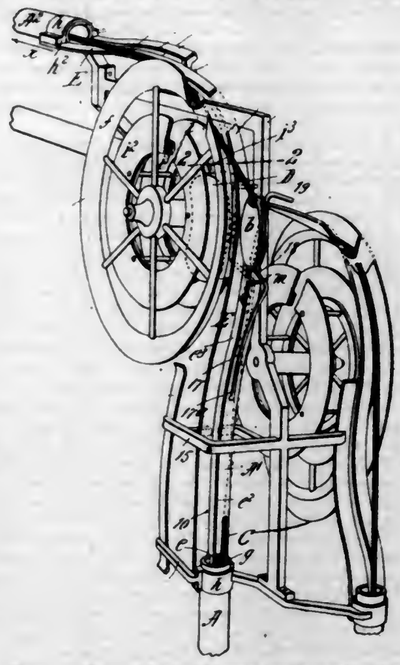
754,421. **POST-HOLE DIGGER.** CHARLES BUTCHER, Cambridge, Mass. Filed Dec. 15, 1903. Serial No. 185,255. (No model.)



*Claim.*—In combination with a handle A and a shovel B, pivotally connected to the lower end of said handle, a longitudinally-movable rod C, guided on and adjustable relative to said handle links pivoted intermediate said rod and shovel, a toothed rack on the upper end of said rod, a spring-pressed pawl engaging said rack, and an adjustable stop projection F, arranged on the handle adjacent to the upper end of the movable rod C, and means for disengaging said pawl from the rack, substantially as and for the purpose set forth.

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754,422. **CASH-CARRIER APPARATUS.** JAMES H. D. CHAMBERLAIN, Springfield, Mass., and DAVID R. CHEEK, Stafford Springs, Conn., assignors to Independent Store Service Company, Springfield, Mass. Filed Oct. 3, 1903. Serial No. 175,617. (No model.)



*Claim.*—1. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other and each comprising runner portions separated by a longitudinal slotway therebetween, a wheel having a grooved rim in the angle of said two lengths of trackway provided with a cash-box-engaging member in a plane offset from said rim, and the carrier-cord, arranged for travel along and adjacent said trackways and having running contact on the wheel-rim.

2. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other, and terminating at a distance from the point of intersection and each comprising runner portions separated by a longitudinal slotway, a wheel located in the angle of said two lengths of trackway having a cord-engaging groove in its rim, and having at one side of said groove the flange $f^3$ and the carrier-cord arranged for travel along and adjacent said trackways, and having a running contact engagement in said grooved wheel-rim.

3. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other, and terminating at a distance from the point of intersection and each comprising runner portions separated by a longitudinal slotway, a wheel located in the angle of said lengths of trackway, a guard and guide-strip E, in continuation of a runner portion of each trackway, at the side toward the plane of rotation of the wheel having a curved course around and alongside the rim of the wheel, the opposite runner portions of the said two trackways being terminated and discontinuous around the curve conformable to the rim of said wheel.

4. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other, and terminating at a distance from the point of intersection and each comprising runner portions separated by a longitudinal slotway, a wheel located in the angle of said lengths of trackway and a guard and guide-strip E, in continuation of a runner portion of each trackway, at the side toward the plane of rotation of the wheel having a curved course around and alongside the rim of the wheel, the opposite runner portions of the said two trackways being terminated and discontinuous around the curve conformable to the rim of said wheel, and the carrier-cord arranged for travel along and adjacent said trackways and having a running engagement on the rim of said wheel.

5. In a cash-carrier apparatus, in combination, a wheel mounted for rotation in a vertical plane, two lengths of tubular trackway, an-

gular to each other, appoximately tangential to the rim of the wheel, said lengths of tubular trackway terminating at a distance from the point of intersection of their longitudinal lines and each having a longitudinal slot with separated runner-ways at either side thereof, the strip E in continuation of the runner portion of both trackways which are at the side toward the wheel having a curved course around and sidewise adjacent, but offset from, the rim of the wheel, the opposite or outer runner portions of the said two tubular trackways being terminated and discontinuous around the curve conformable to the rim of the wheel and the carrier-cord arranged and operating in conjunction with the trackways and said wheel.

6. In a cash-carrier apparatus, in combination, a wheel mounted for rotation in a vertical plane, two lengths of tubular trackway, angular to each other, approximately tangential to the rim of the wheel, and arranged in a plane coincident with the plane of rotation of the wheel, said lengths of tubular trackway terminating at a distance from the point of intersection of their longitudinal lines having a longitudinal slot with separated runner-ways at either side thereof, the strip E in continuation of the runner portion of both trackways which are at the side toward the wheel having a curved course around and sidewise adjacent, but offset from, the rim of the wheel, the opposite or outer runner portions of the said two tubular trackways being terminated and discontinuous around the curve conformable to the rim of the wheel and the carrier-cord arranged and operating in conjunction with the trackways and said wheel.

7. In a cash-carrier apparatus, in combination, a wheel mounted for rotation in a vertical plane, two lengths of trackway, angular to each other, approximately tangential to the rim of the wheel, and arranged in a plane coincident with the plane of rotation of the wheel, terminating at a distance from the point of intersection of their longitudinal lines, and each length of trackway having a longitudinal slot between the separated runner-ways at either side thereof, the strip E in continuation of those runner portions of both trackways which are at the side toward the wheel, having a curved course around and alongside the rim of the wheel, the runner portions of the said two trackways farther from the plane of the wheel being terminated and discontinuous around the curve conformable to the rim of the wheel, and the carrier-cord arranged and operating in conjunction with the trackways and said wheel.

8. In a cash-carrier apparatus, in combination, a grooved-rimmed wheel mounted for rotation in a vertical plane, two lengths of trackway, angular to each other, approximately tangential to the rim of the wheel, and arranged in a plane sidewise offset from the plane of rotation of the wheel, terminating at a distance from the point of intersection, of their longitudinal lines, and each length of trackway having a longitudinal slot between the separated runner-ways at either side thereof, the strip E in continuation of the runner portion of both trackways which are at the side toward the wheel, having a curved course around and alongside the rim of the wheel, and also having an inclination as shown toward the wheel-rim groove, the runner portions of the said two trackways farther from the plane of the wheel being terminated and discontinuous around the curve conformable to the rim of the wheel, and the carrier-cord arranged and operating in conjunction with the trackways and said wheel.

9. In a cash-carrier apparatus, a wheel having a grooved rim with a comparatively high outside flange and a comparatively low inside flange, mounted for rotation in a vertical plane, in combination with two lengths of tubular longitudinally-slotted trackway angular to each other, approximately tangential to the rim of the wheel, and terminated at a distance from the point of intersection of their longitudinal lines, a strip connecting and constituting a continuation of those runner portions of both of said trackways, which are at the side toward the wheel, said strip having a curved course conformable to the adjacent portion of the wheel-rim, and located alongside of the latter, the carrier-cord arranged and operating in conjunction with the trackways and said wheel, the cash-box having the extended neck, and enlarged head to be engaged by the carrier-cord, and means carried by said wheel for engaging the body of the cash-box and maintaining it in its proper disposition in being carried around the curve alongside the wheel.

10. In a cash-carrier apparatus, a wheel having a grooved rim with a comparatively high outside flange and a comparatively low inside flange, mounted for rotation in a vertical plane, in combination with two lengths of longitudinally-slotted trackway angular to each other, approximately tangential to the rim of the wheel, and terminated at a distance from the point of intersection of their longitudinal lines, a strip connecting and constituting a continuation of those runner portions of both of said trackways, which are at the side toward the wheel, said strip having a curved course conformable to the adjacent portion of the wheel-rim, and located alongside of the latter, the trackway continuations A' $A^3$ outside of, and separated from, the strip E, and discontinuous around the wheel-rim curve, the carrier-cord arranged and operating in conjunction with the trackways and said wheel, the cash-box having the extended neck and enlarged head to be engaged by the carrier-cord and the flange $i^3$ carried by the wheel in a plane offset from that of its rim, for engaging the body of the cash-box and maintaining it in its proper disposition in being carried around the curve alongside the wheel.

11. In a cash-carrier apparatus, a wheel having a grooved rim with a comparatively high outside flange and a comparatively low inside flange, mounted for rotation in a vertical plane, in combination with two lengths of tubular longitudinally-slotted trackway angular to each other, approximately tangential to the rim of the wheel, and terminated at a distance from the point of intersection of their longitudinal lines, a strip connecting and constituting a continuation of those runner portions of both of said trackways, which are at the side toward the wheel, said strip having a curved course conformable to the adjacent portion of the wheel-rim, and located alongside of the latter, the trackway continuations A' and $A^3$ outside of, and separated from, the strip E, and discontinuous around the wheel-rim curve, the carrier-cord arranged and operating in conjunction with the trackways and said wheel, the cash-box having the extended neck and enlarged head to be engaged by the carrier-cord, means carried by the wheel for engaging the body of the cash-box, and a spring device, normally closing the space between the trackway continuation A' and the sidewise adjacent strip E, susceptible of displacement by the head of the cord-engaged cash-box.

12. In a cash-carrier apparatus, a wheel having a grooved rim mounted for rotation in a vertical plane, in combination with two lengths of tubular longitudinally-slotted trackway angular to each other, approximately tangential to the rim of the wheel, and terminated at a distance from the point of intersection of their longitudinal lines, a strip connecting and constituting a continuation of those runner portions of both of said trackways, which are at the side toward the wheel, said strip having a curved course conformable to the adjacent portion of the wheel-rim, and located alongside of the latter, the trackway continuations A' and $A^3$ outside of, and separated from, the strip E, and discontinuous around the wheel-rim curve, the carrier-cord arranged and operating in conjunction with the trackways and said wheel, the cash-box having the extended neck and enlarged head to be engaged by the carrier-cord, the flange *i* carried by the wheel in a plane offset from that of its rim, for engaging the body of the cash-box and maintaining it in its proper disposition in being carried around the curve alongside the wheel, and the yielding spring-strip 16 arranged adjacent the plane of rotation of the wheel and operable to guide the cash-box body between the side of the wheel and its said offset flange *i*.

13. In a cash-carrier apparatus, a wheel having a grooved rim with a comparatively high outside flange and a comparatively low inside flange, mounted for rotation in a vertical plane, in combination with two lengths of tubular longitudinally-slotted trackway angular to each other, approximately tangential to the rim of the wheel, and terminated at a distance from the point of intersection of their longitudinal lines, a strip connecting and constituting a continuation of those runner portions of both of said trackways, which are at the side toward the wheel, said strip having a curved course conformable to the adjacent portion of the wheel-rim, located alongside of the latter, and inclined sidewise toward the wheel-rim groove, the trackway continuations A' and $A^3$ outside of, and separated from, the strip E, and discontinuous around the wheel-rim curve, the carrier-cord arranged and operating in conjunction with the trackways and said wheel, the cash-box having the extended neck and enlarged head to be engaged by the carrier-cord, the flange *i* carried by the wheel in a plane offset from that of its rim, for engaging the body of the cash-box and maintaining it in its proper disposition in being carried around the curve alongside the wheel, means for normally closing the space between the trackway continuation and the sidewise adjacent strip E, which is readily displaceable by the passing cash-box head, and a yielding member arranged adjacent the plane of rotation of the wheel and operable to guide the cash-box body between the side of the wheel and its said flange *i*.

14. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other and each comprising runner portions separated by a longitudinal slotway therebetween, a wheel having a grooved rim in the angle of said two lengths of trackway provided with a cash-box-engaging member in a plane offset from said rim, the carrier-cord, arranged for travel along and adjacent said trackways and having running contact on the wheel-rim, and the strip E extending in a curved course adjacent the side of the wheel-rim and connecting those runner portions of the two trackways which are at the side toward said wheel.

15. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other and each comprising runner portions separated by a longitudinal slotway therebetween, a wheel having a grooved rim in the angle of said two lengths of trackway provided with a cash-box-engaging flange in a plane offset from said rim, having an inwardly-located annular ledge $i^3$ and the carrier-cord, arranged for travel along and adjacent said trackways and having running contact on the wheel-rim.

16. In a cash-carrier apparatus, in combination, two lengths of trackway arranged angularly to each other and each comprising runner portions separated by a longitudinal slotway therebetween, a wheel having a grooved rim in the angle of said two lengths of trackway provided with a cash-box-engaging member in a plane offset from said rim, the carrier-cord arranged for travel along and adjacent said trackways and having running contact on the wheel-rim, the curved strip E connecting the runner portions of the two trackways at the side toward the wheel, and located adjacent the side of the wheel-rim, and the yielding member 16 located adjacent the wheel and substantially in the plane of rotation thereof, for the purpose set forth.

17. In a "lower-plumb-corner" construction for a cash-carrier apparatus, the combination with a wheel rotatable in a substantially vertical plane having at one side of its rim an outwardly-extending flange, of lengths of trackway having opposite runner portions separated by a longitudinal slotway, and extended angularly to each other and approximately tangential to the rim of said wheel, said runner portions at the side of said wheel-flange being discontinuous around the bend corresponding to the adjacent portion of the wheel-rim, while the runner portions at the opposite side have a continuing curved section $E^3$ arranged sidewise adjacent the wheel-rim, and in opposition to said rim-flange, and the carrier-cord operative in conjunction with said trackways and said wheel.

18. In a "lower-plumb-corner" construction for a cash-carrier apparatus, the combination with a rotatable wheel having one side of its rim a radially outwardly extending flange, of tubular trackway-sections having a longitudinal slot and runner portions at both sides of the slot, arranged approximately tangential to the wheel-rim, angularly to each other, and terminating in positions approached to said rim, a strip which is curved in its length, conformable to the curvature of the wheel-rim, and is in continuation of the runner portions of the two angularly-arranged trackways at one side thereof and has its disposition along the opposite side of the wheel, in the location of said wheel-rim flange, and the carrier-cord operative in conjunction with said trackways and said wheel.

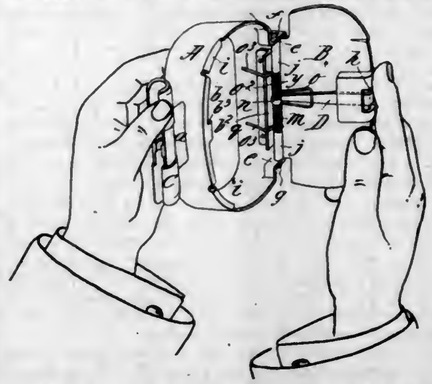
19. In a "lower-plumb-corner" construction for a cash-carrier apparatus, the combination with a rotatable wheel having one side of its rim a radially outwardly extending flange, of tubular trackway-sections having a longitudinal slot and runner portions at both sides of the slot, arranged approximately tangential to the wheel-rim, angularly to each other, and terminating in positions approached to said rim, a strip which is curved in its length, conformable to the curvature of the wheel-rim, and is in continuation of the runner portions of the two angularly-arranged trackways at one side thereof, has its disposition along the opposite side of the wheel, from the location of said wheel-rim flange, and has its outer edge portion inwardly deflected toward said flange, and the carrier-cord operative in conjunction with said trackways and said wheel.

20. In a "lower-plumb-corner" construction for a cash-carrier apparatus, the combination with a rotatable wheel having one side of its rim a radially outwardly extending flange, at one side, and provided with the annular rib *k*, of tubular trackway-sections having a longitudinal slot, and runner portions at both sides of the slot, arranged approximately tangential to the wheel-rim, angularly to each other, and terminating in positions approached to said rim, a strip which is curved in its length, conformable to the curvature of the wheel-rim, and is in continuation of the runner portions of the two angularly-arranged trackways at one side thereof has its disposition along the opposite side of the wheel from the location of said wheel-rim flange, and has its outer edge portion deflected toward said flange, the carrier-cord operative in conjunction with said trackways and said wheel, and the cash-box having the extension-neck and troughed head.

21. In a "lower-plumb-corner" construction for a cash-carrier apparatus, the combination with a wheel rotatable in a substantially vertical plane having at one side of its rim an outwardly-extending flange, of lengths of trackway having opposite runner portions separated by a longitudinal slotway, and extended angularly to each other and approximately tangential to the rim of said wheel, said runner portions at the side of said wheel-flange being discontinuous around the bend corresponding to the adjacent portion of the wheel-rim, while the runner portions at the opposite side have a continuing curved section $E^3$ arranged sidewise adjacent the wheel-rim, and in opposition to said rim-flange, the outer edge of the said section $E^3$ being inwardly deflected contracting the annular opening between it and the wheel-rim flange and said section and said flange having their outer edges at similar radially-outward dispositions for serving as bearings equally for the cash-box edge, as described, and the carrier-cord operative in conjunction with said trackways and said wheel.



## 754,423. BOX FOR CASH-CARRIERS. DAVID E. CHEEK, Stafford Springs, Conn., assignor to Independent Store Service Company, Springfield, Mass. Filed Mar. 9, 1903. Serial No. 146,850. (No model.)



*Claim.*—1. A box having at the upper edge of its front wall an immovably-affixed inward projection, and having a flat cover pivotally engaged at an upper portion of the rear wall of the box, and also slidably engaged thereat, whereby the cover may, in addition to its swinging movement, relatively to its pivot, have a bodily-sliding movement crosswise at the top of the box, and arranged so that when swung closed the cover may be forwardly moved to have its forward edge engaged under said immovable projection at the front of the box.

2. A box having at the upper edge of its front wall an immovably-affixed inward projection, and having a flat cover pivotally engaged at an upper portion of the rear wall of the box, and also slidably engaged thereat, whereby the cover may, in addition to its swinging movement, relatively to its pivot, have a bodily-sliding movement crosswise at the top of the box, and arranged so that when swung closed the cover may be forwardly moved to have its forward edge engaged under said immovable projection at the front of the box, and a spring applied for reaction in a direction to swing the cover to its open position.

3. A box having at the upper edge of its front wall an immovably-affixed inward projection, and having a flat cover pivotally engaged at an upper portion of the rear wall of the box, and also slidably engaged thereat, whereby the cover may, in addition to its swinging movement, relatively to its pivot, have a bodily-sliding movement crosswise at the top of the box, and arranged so that when swung closed the cover may be forwardly moved to have its forward edge engaged under said immovable projection at the front of the box, and a spring applied for reaction against the cover in a direction to automatically bodily move it crosswise of the top of the box, for the purpose set forth.

4. The box having at the upper edge of its front wall a fixed projection and having a cover hinge-engaged at the rear wall of the box and also slidably engaged with said rear wall and thereby rendered bodily movable crosswise of the box, automatically-operative means for exerting a yielding forwardly-sliding pressure to the cover, and automatically-operative means for exerting a pressure against the cover to swing it outwardly open, relatively to its hinge.

5. A box having a hinged cover which is slidable crosswise relatively to the box, and said box and cover being constructed for interlocking engagements relatively between the front wall of the box and front edge of the cover and a spring applied between the box and the cover under compression and reactive on the cover imparting a yielding force thereto both crosswise of the box and in a direction outwardly therefrom.

6. A box having at opposite portions of its wall near it rear elongated sockets, the cover having endwise-projecting hinge members engaged in said elongated sockets, whereby the cover is rendered both slidable in a direction across the box and capable of swinging on its hinge, the front wall and front edge of the box and cover being respectively and relatively constructed for sliding engagements and disengagements.

7. A box having at opposite portions of its wall near its rear elongated sockets, the cover having endwise-projecting hinge members, engaged in said elongated sockets, whereby the cover is rendered both slidable in a direction across the box and capable of swinging on its hinge, the front wall and front edge of the box and cover being respectively and relatively constructed for sliding engagements an disengagements, and a spring reactive on the cover for imparting a forwardly-sliding force thereto.

8. A box having at opposite portions of its wall near its rear elongated sockets, the cover having endwise-projecting hinge members engaged in said elongated sockets, whereby the cover is rendered both slidable in a direction across the box and capable of swinging on its hinge, the front wall and front edge of the box and cover being respectively and relatively constructed for sliding engagements and disengagements, and a spring reactive against the cover to impart automatically an opening swinging movement thereto.

9. A box having at opposite portions of its wall near its rear elongated sockets, the cover having endwise-projecting hinge members engaged in said elongated sockets, whereby the cover is rendered both slidable in a direction across the box and capable of swinging on its hinge, the front wall and front edge of the box and cover being respectively and relatively constructed for sliding engagements and disengagements, and a spring applied in compression between the box and cover and reactive yieldingly against the cover in directions to impart to the latter both a forwardly-shifting bodily movement and an outwardly-swinging movement.

10. A box having at the upper edge of its front wall an inward projection having a socket, a cover hinged to the box and slidable crosswise thereof, a cover-catch bodily movable in unison with the cover and having a movement away from and back toward the face of the cover and adapted for engagement in said socket, and a spring for maintaining the catch normally disposed, adjacent the inner face of the box.

11. A box having at the upper edge of its front wall an inward projection having a socket and provided with the aperture *s* therethrough, a cover hinged to the box and slidable crosswise thereof, a cover-catch bodily movable in unison with the cover and having a movement away from and back toward the inner face of the cover adapted for engagement in said socket, and arranged crosswise of said aperture *s*, and a spring for maintaining the catch normally disposed adjacent the inner face of the box.

12. A box having at the upper edge of its front wall an inward projection having the downturned extremity $b^3$ constituting a socket *x*, a cover having at its rear oppositely endwise extending hinge projections engaging in transversely-elongated sockets in the box-walls, a cover-catch bodily movable in unison with the cover and having a movement toward and away from the inner face thereof and having at its extremity an angularly-turned projection for engagement in said socket *x*, means for shifting the cover automatically forwardly and spring means for maintaining the catch normally in proximity to the inner face of the cover.

13. A box having at its rear portion opposite slots which extend forwardly and a cover adapted for an interlocking engagement with the upper edge of the front wall of the box, said cover being hinged to the box and slidable crosswise thereof, a hinge-rod engaged with the cover, a spring having coils surrounding the hinge-rod having a member bearing under tension against the box-back and reacting on the hinge-rod forwardly and having a member projected from the axis of the coils and exerting an outward bearing against the inner side of the cover.

14. A box having at the upper edge of its front wall an inward projection *b* and having also at its front wall one or more additional inward projections in a plane below the projection *b*, and having a cover hinged to the box and slidable relatively to the box in a forward direction, whereby when swung closed the cover may be seated on the projection *i* and forwardly slid and edgewise engaged under said projection *b*.

15. A box made of thin metal having near its rear and end portions the metal inwardly displaced constituting angular niches *d* having the parallel walls *e e* in which are the slots *f f* in lines crosswise of the box, the cover and the hinge-rod engaged with the rear of the cover and having its opposite extremities projecting through said slots *f*, and said cover and the front wall of the box being constructed for interlocking engagements as described, a spring having its middle portion formed into a loop, portions outwardly beyond such loop formed into coils surrounding the hinge-rod, and having its extremities extended to bearing under tension against the back of the box, for the purposes set forth.

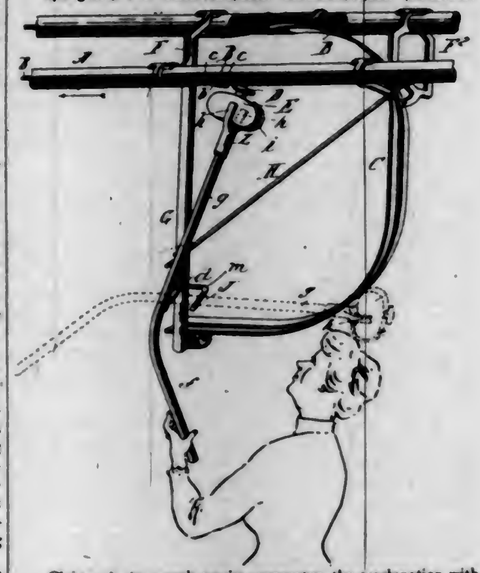
16. The cash-box having an elongated head joined to the box proper by a neck and said head having a circumferential opening channel extending from end to end, and devious in its length.

17. The combination with a track or runner way and propulsion-cable running therealong, of a cash-box having a head provided with an upwardly-opening and longitudinal devious channel for the purpose set forth.

18. The combination with a track or runner way and a propulsion-cable running therealong, of a cash-box having a head provided with an upwardly-opening and longitudinally-extending devious channel, and an inclined rib supported by an upper portion of the trackway structure against which the cable impinges and by which it is deflected for engagement in the devious channel in the cash-box head.

19. In a cash-box in combination, the box proper having at its front the inwardly-projecting lip *b* having at its central portion $b^2$ the downward projection $b^2$ and having the ledges *i i* in a plane below the lip *b*, and having at its back the transversely-extending slots *f f*, the cover and hinge-rod thereto connected, the extremities of the latter slidably engaging in said slots, the cover-catch D having the upturned end projection *h*, pivotally connected at its end opposite said projection on the hinge-rod, the spiral spring comprising coils encircling the hinge-rod having the member extended from its axis to pressure bearing against the cover-catch and exerting force upon the latter outwardly against the cover, and said spring having another member extended and engaged in compression against the back of the box and reacting to force the hinge-rod, the cover, and the cover-catch bodily in a direction crosswise of the box.

## 754,424. CASH-CARRIER APPARATUS. DAVID R. CHEEK, Stafford Springs, Conn., assignor to Independent Store Service Company, Springfield, Mass. Filed Oct. 3, 1903. Serial No. 175,618. (No model.)



*Claim.*—1. In a cash-carrier apparatus, the combination with a trackway and a cash-box propulsion-cord arranged therealong, of a part pivotally mounted below the trackway and provided with a cash-box holder, for the purpose described.

2. In a cash-carrier apparatus, the combination with a trackway and a propulsion-cord arranged therealong, of a cash-box having a head adapted to engage the cord, and a part pivotally mounted below the trackway and provided with a holder in which the body of the box may be supported and beyond which the box-head may project and said part being arranged for swinging movement in a vertical plane approximately coincident with the trackway, whereby the holder portion thereof may be lowered within easy reach, and swung upwardly into proximity to the trackway.



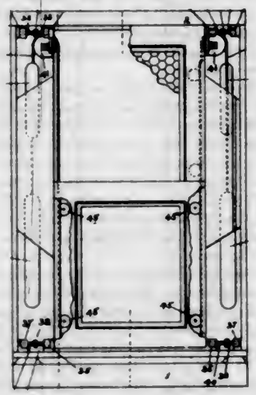
3. In a cash-carrier apparatus, the combination with a trackway and a propulsion-cord arranged therealong, of a part pivotally mounted below the trackway and arranged to swing to bring its extremity to a lowered position of easy reach and to be presented upwardly in proximity to the trackway and said extremity being provided with a cash-box holder comprising opposite side fork-like members and a rearwardly-located member.

4. The combination with the cash-carrier structure comprising an elevated trackway and a depending support, of a propulsion-cord arranged to run along the trackway, and a member intermediately pivotally mounted on said depending support below the trackway, provided at its one extremity with a cash-box holder, and a cash-box comprising a body and an extended head adapted to engage the propulsion-cord and all arranged for operation, substantially as described.

5. The combination with a trackway of tubular form having a longitudinal bottom slot and an opening through said slotted bottom, of a width to permit the entrance therethrough into the tubular trackway of a cash-box head, of the propulsion-cord arranged to run along within the trackway-tube, a member pivotally mounted below the trackway and arranged to be swung from approximately horizontal to approximately vertical positions and having at its extremity the cash-box holder, and a cash-box comprising a body and an extended head having an upwardly-opening groove therein and adapted for engagement about said cord, substantially as described.

6. In a cash-carrier apparatus, the combination with a trackway of tubular form having a longitudinal bottom slot, and opposite lower portions of the tube adjacent the slot downwardly extended and sidewise located, whereby a box-head entrance into the tube is produced having opposite depending guide-lips therefor, of the propulsion-cord arranged to run along within the trackway-tube, a member pivotally mounted below the trackway and arranged to swing in a vertical plane approximately coincident with the trackway and provided with a cash-box holder at its extremity, and the cash-box comprising a head and a body from which said head is extended adapted to be received within said holder and said head being constructed for engagement with the propulsion-cord.

## 754,425. WINDOW. OTTO R. CLUSS, St. Louis, Mo. Filed Aug 2, 1902. Serial No. 118,038. (No model.)



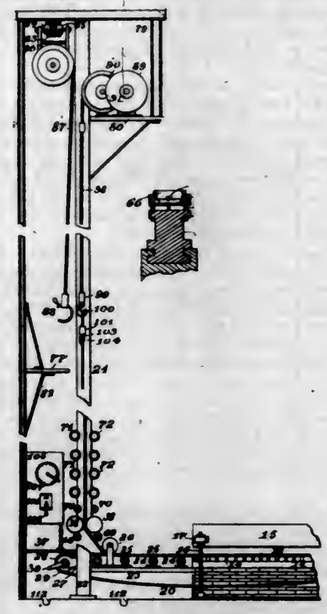
*Claim.*—1. In a window the combination of a pulley-stile and a sash, one of said parts being provided with V-shaped vertical grooves, and antifriction-rollers on the other having V-shaped peripheries engaging in said grooves, substantially as set forth.

2. In a window the combination of hollow sash-bars comprising separate strips forming the outer edges thereof, roller-brackets secured to the inner sides of said strips within said hollow bars, rollers journaled in said brackets and projecting through said strips and a window-frame having a part against which said rollers run for guiding the sash, substantially as set forth.

3. In a window the combination of a sash, a pulley-stile, and set-screws operatively connected to the upper and lower ends of said pulley-stile for adjusting the same relatively to the sash, substantially as set forth.

4. In a window the combination of a sash, a pulley-stile having a compressible socket at one side thereof, a strip having a flange embraced by said socket, constituting one face of the window-frame, and a back lining having a compressible socket at one edge receiving and embracing said strip, substantially as set forth.

## 754,426. GLASS-WORKING MACHINE. IRVING W. COLBURN, Toledo, Ohio. Filed May 24, 1899. Renewed July 31, 1903. Serial No. 167,804. (No model.)



*Claim.*—1. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for grasping said blank between frictional appliances, and means for forcibly drawing said blank through said frictional appliances, whereby the blank is stretched and attenuated into a polished sheet, substantially as specified.

2. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for reheating said blank, means for removing said blank from the casting device to the reheating device, means for grasping said blank between frictional appliances, means for regulating the degree of pressure applied to said blank by the said frictional appliances, and means for forcibly drawing said blank through said grasping device, substantially as specified.

3. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for compressing said blank by rolling pressure passively applied to both sides thereof, and means for forcibly drawing said blank through said compressing means, substantially as specified.

4. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for grasping said blank by rolls passively rotating in contact therewith, means for forcibly drawing said blank through said grasping-rolls, and means for frictionally retarding the rotation of said rolls, whereby the plastic blank is drawn, stretched and attenuated by the drawing means, substantially as specified.

5. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for reheating said blank, means for removing said blank to the reheating device, means for applying frictional pressure to both sides of said blank, and means for forcibly drawing said blank through said pressure devices, whereby it is stretched and attenuated, substantially as specified.

6. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for applying frictional pressure to both sides of said blank, means for forcibly drawing said blank through said frictional devices, and means for projecting jets of cooling fluids on both sides of said plastic blank, substantially as specified.

7. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for applying rolling fric-

tional pressure to both sides of said blank, means for forcibly drawing said blank through said rolling frictional devices, and means for cooling said blank located on both sides thereof and on both sides of said frictional pressure devices, substantially as specified.

8. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for reheating said blank, means for compressing said blank by frictional appliances, means for forcibly drawing said blank through said frictional appliances, and means for projecting jets of steam, water and air upon said blank, in proximity to the said frictional compressing appliances, substantially as specified.

9. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for grasping said blank between rolls passively rotating in contact therewith, means for forcibly drawing said blank through said grasping devices, and means for frictionally retarding the rotation of said rolls, controlled by a hand-lever within reach of an operator, whereby the rotation of the rolls may be regulated or entirely stopped at will, and the plastic blank thereby drawn, stretched and attenuated to any required degree of tenuity, substantially as specified.

10. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for grasping said blank between rolls passively rotating in contact therewith, means for forcibly drawing said blank through said grasping devices, and means for applying frictional retardation to the bearings of the said rolls, capable of preadjustment, substantially as specified.

11. In the making of sheet-glass, the combination of means for casting a flat blank of plastic glass, means for grasping said blank between rolls passively rotating in contact therewith, means for forcibly drawing said blank through said grasping devices, means for applying frictional retardation to said rolls controlled by a hand-lever, and means for applying frictional retardation to the bearings of said rolls independent of the lever-controlled means, substantially as specified.

12. In sheet-glass-making apparatus, a tank for containing molten glass, a casting-table, a trackway between said tank and said table, near the level of the upper surface of the latter, a traveling car on said trackway, and a swiveled spout on said car, extending over said table, of dimensions sufficient to reach any point on said upper surface, substantially as specified.

13. In sheet-glass-making apparatus, a tank for containing molten glass, a casting-table, a trackway between said tank and said table, near the level of the upper surface of the latter, a traveling car on said trackway, a swiveled spout on said car, extending over said table, a second trackway beneath and parallel to said upper trackway, and a water-car traversing on said lower trackway, substantially as specified.

14. In sheet-glass-making apparatus, a casting-table, a flattening-roller, a compressing means apart from said flattening means, a traction means for drawing plastic glass from the table into the compressing means, and a reheater interposed between the table and the compressing means, all substantially as and for the purpose specified.

15. In an apparatus for making sheet-glass, the combination of a casting-table, means for delivering plastic glass upon said table, means for flattening the glass into a plate or blank of uniform thickness, a reheating means, a means for transferring said blank from the casting-table to said reheater, means for compressing said plastic blank to reduce its thickness, and means for drawing, stretching and attenuating said reduced sheet to a state of clearness and transparency, substantially as specified.

16. In an apparatus for making sheet-glass, the combination of a casting-table, a reheating-oven in proximity thereto, means for removing a blank of plastic glass from the casting-table to said oven, a pair of passively-rotating compressing-rolls, means for regulating and controlling the degree of compression of said rolls, a bar 101 for making connection with the plastic-glass blank, a motor, and connections between said motor and said bar, whereby the blank of plastic glass is drawn through the compressing-rolls, substantially as specified.

17. In an apparatus for making sheet-glass, the combination of the bar 101, bar 34, chains 20, 20, sprocket-wheels 28, 33, rolls 24, 24, 26, compressing devices 38, 38, cooling devices 69, 70, 71, 72, drawing-chains 98, motor 89, rheostat 107, and reversing-switch 106, substantially as specified.

18. In sheet-glass-making apparatus, a tank for containing molten glass, a casting-table, a trackway between said tank and said table, near the level of the upper surface of the latter, a traveling car on said trackway, carrying a swiveled spout thereon, extending over said table, said spout having a fan-like receiving member *s*, substantially as specified.

19. In sheet-glass-making apparatus, a tank for containing molten glass, a casting-table, a trackway between said tank and said table near the level of the upper surface of the latter, a traveling car on said trackway, carrying a swiveled spout *q*, *s*, thereon, and stops or bunters 10, 11, to limit the extent of travel of said car on said trackway, substantially as specified.

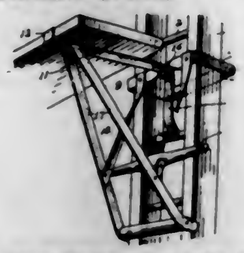
20. In an apparatus for making sheet-glass, a casting-table, a reheating-oven in proximity thereto, a bar 101 having rabbeted face 103, pins 104, and eyebolts 109 in combination with chains 20, 20, bar 34, pins 36, and means for operating said chains, to draw the glass blank from said table into said oven, substantially as specified.

21. In an apparatus for making sheet-glass, the bar 101, having rabbeted face 103, pins 104 and eyebolts 102, in combination with hooks 100, chains 98, bar 95, guide-blocks 96, cords 94, winding-drums 93, and electric motor 89 for operating said drums, substantially as specified.

22. In an apparatus for making sheet-glass, the casting-table *k*, and clamp-hooks *r r*, in combination with bar 101, having rabbeted face 103, pins 104, eyebolts 102, 109, and pins 110, substantially as and for the purpose specified.

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**754,427. LADDER AND SCAFFOLD SUPPORT.** THORN COPELAND, Essex, Canada, assignor of two-thirds to Tom W. Brooke, Windsor, Canada, and Joseph Waite, McGregor, Canada. Filed May 4, 1903. Serial No. 155,505. (No model.)



*Claim.*—1. The combination with a ladder of a supporting-bracket free to slide thereon comprising an arm having a yoke engaging said ladder, a latch carried by said arm and adapted to engage the rounds of the ladder to hold said bracket in any of its adjusted positions, braces extending from the outer end of said arm to the ladder and engaging the same and braces connecting said yoke with the aforementioned braces.

2. The combination with a ladder of a supporting-bracket free to slide thereon comprising a laterally-extending arm having a yoke embracing the ladder on three sides and projecting beyond the same, a gravity-latch carried by said arm adapted to engage the rounds of the ladder, braces extending from the outer end of said arm to the opposite side rails of the ladder and lapping the same, braces connecting the aforementioned braces with the yoke and antifriction-rolls journaled between the aforementioned braces and between the projecting ends of the yoke to engage the side rails on opposite sides substantially as described.

3. The combination with the supporting-standard of a sliding bracket or supporting-bracket adjustably mounted thereon comprising a laterally-extending arm having an upturned end and a yoke at its opposite end partially encircling the standard on three sides, an antifriction-roll journaled between the ends of said yoke, a latch carried by said arm and braces extending from the outer end of said arm to the standard and an antifriction-roll journaled between said braces in rolling contact with said standard.

4. The combination with the upright ladder, of a supporting-bracket adjustably mounted thereon comprising a laterally-extending arm having an upturned end and a yoke at its opposite end partially encircling said ladder on three sides and an antifriction-roll journaled between said braces in rolling contact with said rolls and braces connecting the yoke with the aforementioned braces intermediate their ends.

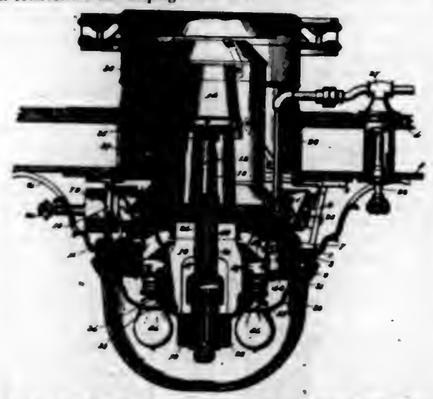
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**754,428. LAMP.** JOHN L. CREVELING, New York, N. Y., assignor to Safety Car Heating & Lighting Company, a Corporation of New Jersey. Filed Mar. 22, 1901. Serial No. 52,374. (No model.)

*Claim.*—1. In a lamp structure a gas-burner, its frame and an electric-bulb support secured to the frame and having its end opposite to that which carries the bulb extending away from the area of heat radiation from the burner.

2. In a lamp structure a gas-burner, means for supporting an electric-light bulb and its electrical connections within the lamp, and means for directing the air-currents to the burner about the electrical connections for keeping them cool.





3. In a lamp structure a burner, centrally-located means of carrying off the products of combustion from the burner, a bowl underneath the burner, means for sustaining an electric bulb within the bowl, electrical connections, and a partition between the bowl and electrical connections of the bulb.

4. In a lamp structure a burner, centrally-located means of carrying off the products of combustion from the burner, a bowl underneath the burner, means for sustaining an electric-light bulb within the bowl, electrical connections, and a plurality of separate partitions between the bowl and the electrical connections of the bulbs.

5. In a lamp structure a body-ring, a burner, means of carrying off the products of combustion from the burner supported by the ring, a fuse-block bracket provided within the bowl with an electric bulb, a fuse-block external to the bowl, and a partition between the bulb and the fuse-block.

6. In a lamp structure a body-ring, a spider, a center casting, a burner, a reflector, means of air-supply through the body-ring and center casting to the burner, a fuse-block bracket carried upon the body-ring and provided at one end with an electric bulb extending through the reflector and upon the side of the reflector opposite the bulb a fuse-block.

7. In a lamp structure a body-ring, a spider, a center casting, a burner, a reflector, means of air-supply through the body-ring and center casting to the burner, a fuse-block bracket carried upon the body-ring and provided at one end with an electric bulb extending through the reflector, and upon the side of the reflector opposite the bulb a fuse-block, and a partition between the reflector and the fuse-block.

8. In a lamp structure a body-ring and its bracket-supports, a spider, a center casting, a burner, a bowl, means of air-supply through the body-ring and center casting to the burner, a partition surrounding the burner, a plurality of fuse-block brackets carried upon the body-ring and provided at one end, respectively, with bulbs extending through the partition, fuse-blocks on the outside of the partition, line-wires supported upon the bracket-supports of the body-ring and passing through the fuse-blocks, and an electric switch connected with the mains.

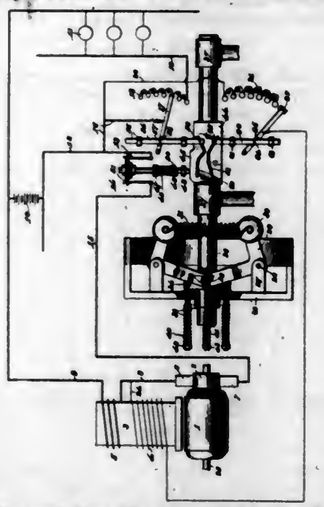
9. In a lamp structure a frame, a burner, a bowl, means of air-supply to the burner, electric-light bulbs and their connections, a partition between the bulbs and their connections, means of gas-supply to the burner, mains in electrical connection with the bulbs, a gas-cock, and an electric switch, all contained within the lamp.

10. In a lamp structure a burner, centrally-located means of carrying off the products of combustion from the burner, bowl underneath the burner, a partition within the bowl, a lamp-socket within the partition adapted to receive an electric-light bulb and forming a part of the partition, and electrical connections with said socket.

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**754,429. MEANS FOR ELECTRICAL DISTRIBUTION.** JOHN L. CREVELING, New York, N. Y. Filed May 10, 1901. Serial No. 59,602. (No model.)

*Claim.*—1. The combination with a generator, battery and translating devices, in electrical communication one with the other, of two variable resistances, one in the main circuit and the other in the field-circuit, movable members cooperative therewith, respectively, make-and-break mechanism in the main circuit, and common means for actuating said members and said make-and-break mechanism.



2. The combination with a generator, battery and translating devices, in electrical communication one with the other, of a pair of variable resistances, one in the main circuit and the other in the field-circuit, movable members cooperative with said resistances, respectively, a block movable proportionately to the rate of speed of the generator, and keyways operatively connected with said movable member, and shaped to impart to them, respectively, the movements required, substantially as set forth.

3. The combination with a generator, battery and translating devices, in operative communication one with the other, of a pair of variable resistances, one in the main circuit and the other in the field-circuit, a pair of movable members cooperative with said resistances, respectively, an endwise-movable shaft operatively connected with said members, centrifugally-actuated mechanism upon the armature-shaft of the generator, operatively connected with the endwise-movable shaft, and means for controlling the centrifugal mechanism and thereby fixing the critical speeds of the generator.

4. The combination with a generator, battery and translating devices in electrical communication one with the other, of a pair of variable resistances, one in the main circuit and the other in the field-circuit, movable members cooperative with said resistances, respectively, a block movable proportionatley to the rate of speed of the generator, means for actuating said movable members, respectively, through the movement of the block, and means for imparting different movements thereto through the movements in opposite directions of the block.

5. The combination with a generator, storage-battery and translating devices, in operative communication one with the other, of a pair of variable resistances, one in the main circuit and the other in the field-circuit, a pair of movable members cooperative with said resistances, respectively, an endwise-movable member operatively connected with said movable members, centrifugally-actuated mechanism varying in speed with the armature-shaft of the generator, and operatively connected with the endwise-movable member, and a plurality of successively-operative springs for controlling the centrifugal mechanism and operating at the critical speeds of the generator.

6. The combination with a generator, battery and translating devices in electrical communication one with the other, of a pair of variable resistances, one in the main circuit and the other in the field-circuit, movable members cooperative with said resistances, respectively, a block movable proportionately to the rate of speed of the generator, keyways operatively connected with said movable members and shaped to impart to them, respectively, the movements required, and means for causing said movable members to follow one set of keyways when the block moves in one direction and another set when the block moves in the opposite direction.

7. The combination with a generator, battery and translating devices in operative communication one with the other, of a pair of variable resistances, one in the main circuit and the other in the field-circuit, a pair of movable members cooperative with said resist-

ances, centrifugally-actuated mechanism operated by the armature-shaft, and means for causing the said members to move with a variable increment or decrement, as considered with regard to the motion imparted by the centrifugal mechanism.

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754,430. **BEDCLOTHES-HOLDER.** HANNAH CROCKER, Plainfield, N. J. Filed Nov. 13, 1903. Serial No. 180,989. (No model.)



*Claim.*—1. In a bedclothes-holder, the combination with an angle-iron and a bar adapted to engage therein, of a plate attached to said angle-iron and extending in a bow downwardly and then outwardly and upwardly and being adapted to engage with and secure said bar, and means adapted to secure said plate to the bed.

2. In a bedclothes-holder, the combination with an angle-iron of a bar adapted to engage therein, a plate attached to said angle-iron and extending in a bow downwardly and then outwardly and upwardly, having a hole adapted to receive a tenoned portion of said bar, and means adapted to secure said plate to the bed.

3. In a bedclothes-holder, the combination with an angle-iron and a bar adapted to engage therein, of a plate attached to said angle-iron and extending in a bow downwardly and then outwardly and upwardly and being adapted to engage with and secure said bar, a second plate attached to the first-mentioned plate and means adapted to secure the former to the bed.

4. In a bedclothes-holder, the combination with an angle-iron of a bar adapted to engage therein, a plate attached to said angle-iron extending in a bow downwardly and then outwardly and upwardly, having a slotted portion adapted to receive a tenoned portion of said bar, said plate being adapted to unite the bar and angle-iron, a second plate having a slot, means adjustable in said slot and adapted to unite the said plates, and means adapted to secure the second plate to the bed.

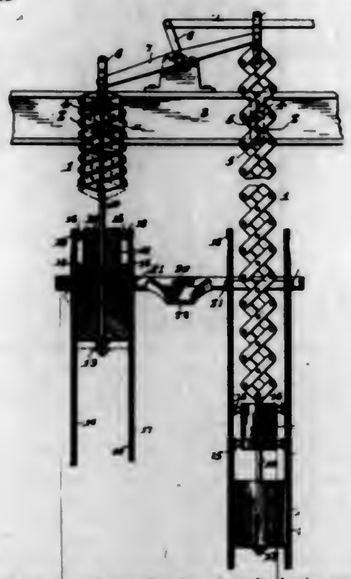
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754,431. **PUMP.** JAMES M. CROWLEY, Carl Junction, Mo. Filed May 14, 1903. Serial No. 157,145. (No model.)

*Claim.*—1. In a pump, the combination with a receptacle having an open bottom, of a valve movable toward and from the bottom of the receptacle, mechanism for raising and lowering the valve and the receptacle, and means for holding the receptacle stationary during a portion of the downstroke of the valve, substantially as described.

2. In a pump, the combination with a receptacle having an open bottom, of a valve arranged to close the bottom of the receptacle, said receptacle being capable of a limited movement independent of the valve, operating mechanism for raising and lowering the receptacle and the valve, and means for holding the receptacle stationary during a portion of the downstroke of the valve, substantially as described.

3. In a pump, the combination of a receptacle having an open bottom, a valve arranged to close the open bottom of the receptacle on the upstroke and provided with a valve-stem receiving the receptacle, mechanism connected with the valve-stem for raising and lowering the same, and means for holding the receptacle stationary during a portion of the downstroke of the valve, substantially as described



4. In a pump, the combination of a valve having a valve-stem, an open-bottom receptacle slidable on the valve-stem, lazy-tongs connected with the valve-stem, operating mechanism for actuating the lazy-tongs, and means for engaging the receptacle to hold the same stationary during a portion of the downstroke of the valve, substantially as described.

5. In a pump, the combination of an open-bottom receptacle, a valve for closing the bottom of the receptacle on the upstroke, mechanism connected with the valve for raising and lowering the same and the receptacle, and means for holding the receptacle during a portion of the downstroke of the valve, substantially as described.

6. In a pump, the combination of a valve having a valve-stem, an open-bottom receptacle slidable on the valve-stem, guides receiving the valve and the receptacle, operating mechanism connected with the valve-stem for raising and lowering the same, and means for conveying water from the receptacle, substantially as described.

7. In a pump, the combination of upright guide-bars, a receptacle provided with antifriction rollers or wheels arranged on the guide-bars, said receptacle having an open bottom, a valve slidable on the guide-bars and provided with a stem receiving the receptacle, mechanism connected with the stem for raising and lowering the same, and means for holding the receptacle during a portion of the downstroke, substantially as described.

8. In a pump, the combination of upright guide-bars provided with grooves, a valve having a stem and provided with flanges fitting in the grooves, an open-bottom receptacle slidable on the stem and provided with antifriction-wheels arranged in the grooves, mechanism connected with the stem for raising and lowering the valve and the bucket, and means for holding the receptacle during a portion of the downstroke of the valve, substantially as described.

9. In a pump, the combination of upright guides having seats, a valve slidable on the guides, an open-botton receptacle loosely connected with the valve and provided with means for engaging the said seats, and means for raising and lowering the valve, substantially as described.

10. In a pump, the combination of a trough or conduit having an opening, an open-bottom receptacle, an elongated valve loosely connected with the receptacle and arranged to close the bottom thereof, said valve being also adapted to close the opening of the trough or conduit, and means for holding the receptacle stationary during a portion of the downstroke of the valve, substantially as described.



11. In a pump, the combination of a pair of open-bottom receptacles, valves arranged to close the bottoms of the receptacles and provided with stems, lazy-tongs pivoted between their ends and connected at their lower ends with the valve-stems, and means connected with the upper ends of the lazy-tongs for operating the same, substantially as described.

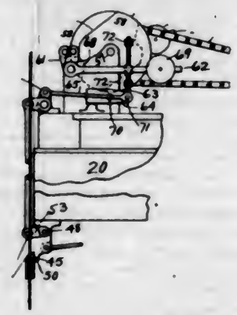
12. In a pump, the combination of a support, lazy-tongs fulcrumed between their ends on the support, a lever fulcrumed on the support and adjustably connected with the upper ends of the lazy-tongs, receptacles and valves connected with the lower ends of the lazy-tongs, the latter being capable of a limited movement independent of the receptacles, and means for operating the lever, substantially as described.

13. In a pump, the combination of a support provided at opposite sides with vertical series of perforations, lazy-tongs provided between their ends with fulcruming-pivots adapted to be arranged in the said perforations, a lever mounted on the support, links provided with perforations and forming adjustable connections between the upper ends of the lazy-tongs and the lever, receptacles, valves, and means for connecting the valves and the receptacles with the lower ends of the lazy-tongs, substantially as described.

14. In a pump, the combination of a support, a trough located beneath the support and having openings, upright guides extending through the openings, lazy-tongs fulcrumed between their ends on the support, a lever connected with the upper ends of the lazy-tongs, receptacles slidable on the guides, and valves also slidable on the guides and connected with the lower ends of the lazy-tongs and arranged to cover and uncover the receptacles, substantially as described.

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754,432. **SAFETY APPLIANCE FOR ELEVATORS.** JAMES CRUICKSHANK, New York, N. Y., and CHARLES S. BURNHAM, Philadelphia, Pa.; said Burnham assignor to said Cruickshank. Filed Jan. 9, 1903. Serial No. 138,365. (No model.)




*Claim.*—1. In safety appliances for elevators, the car, a movable dog carried thereby, the vertical rod secured in the elevator-shaft adjacent to the path of the car, the retarder thereon to be engaged at the proper time by said dog, the rotary cam with intermediate connections for controlling the position of said dog and enabling it to pass said retarder when the car is traveling at a safe speed, and means for rotating said cam in harmony with the movement of said car; substantially as set forth.

2. In safety apparatus for elevators, the car, movable dogs carried by and at the opposite sides of said car, the vertical rods secured at opposite sides of the elevator-shaft adjacent to the path of said car, the retarders on said rods to be engaged at the proper time by said dogs, the rotary cam with intermediate connections for controlling the position of said dogs and enabling them to pass said retarders when the car is traveling at a safe speed, and means for rotating said cam in harmony with the movement of said car; substantially as set forth.

3. In safety apparatus for elevators, the car, movable dogs carried by and at the opposite sides of said car, the vertical rods secured at opposite sides of the elevator-shaft adjacent to the path of said car, the retarders on said rods to be engaged at the proper time by said dogs, the rotary cam-disks with intermediate connections for controlling the position of said dogs and enabling them to alternately move inward from the path of said retarders when the car is traveling at a safe speed, and means for rotating said cam-disks in harmony with the movement of said car, said cam-disks having reversely-arranged surfaces to effect an alternate movement of said dogs, substantially as set forth.

4. In safety apparatus for elevators, the car, sets of movable dogs carried by and at the opposite sides of said car with the dogs at one side respectively connected with the dogs at the other side to move therewith, the vertical rods secured at opposite sides of the elevator-shaft adjacent to the path of said car, the retarders on said rods to be engaged at the proper time by said dogs, the rotary cam-disks with intermediate connections for respectively controlling the position of said connected sets of dogs and enabling them to alternately move inward from the path of said retarders when the car is traveling at a safe speed, and means for rotating said cam-disks in harmony with the movement of said car, said cam-disks having reversely-arranged surfaces to effect an alternate movement of said connected sets of dogs, whereby when one set of dogs is moved into position to pass the retarders next below them the other set of dogs are given a position to engage the retarders next below them; substantially as set forth.

5. In safety apparatus for elevators, the car, the dogs carried at opposite sides of the car, means connecting the diagonally-arranged dogs in sets to effect the simultaneous movement inward and outward of the dogs of each set, the vertical rods in the elevator-shaft, the retarders on said rods to be engaged at the proper time by said dogs, the rotary cam-disks with intermediate connections for respectively controlling the position of said sets of dogs, and means for rotating said cam-disks in harmony with the movement of said car; substantially as set forth.

6. In safety apparatus for elevators, the car, a movable dog carried thereby, the vertical rod secured in the elevator-shaft adjacent to the path of said car, the retarder thereon to be engaged at the proper time by said dog, the rotary governor-cam for controlling the position of said dog, the crank-arm engaging at one end the surfaces presented by said cam, means for yieldingly maintaining the said arm against said cam, means connecting said crank-arm and dog whereby the latter may be moved from said arm, and means for rotating said cam in harmony with the movement of said car; substantially as set forth.

7. In safety apparatus for elevators, the car, a movable dog carried thereby at each side thereof, means connecting said dogs for securing their simultaneous inward and outward movement, the vertical rods in the elevator-shaft at opposite sides of the path of said car, the retarders thereon to be engaged at the proper time by said dogs, the rotary governor-cam for controlling the position of said dogs, the crank-arm engaging at one end the surfaces presented by said cam, means for yieldingly maintaining the said arm against said cam, means connecting said crank-arm and set of dogs whereby the latter may be moved from said arm, and means for rotating said cam in harmony with the movement of the car; substantially as set forth.

8. In safety apparatus for elevators, the car, the dogs carried at opposite sides of the car, means connecting the diagonally-arranged dogs in sets to effect the simultaneous movement inward and outward of the dogs of each set, the vertical rods in the elevator-shaft, the retarders on said rods to be engaged at the proper time by said dogs, the rotary governor-cams reversely arranged for controlling the position of said dogs, the independent crank-arms respectively engaging at one end the surfaces presented by said cams, means for yieldingly maintaining the said arms against said cams, means independently connecting said crank-arms with the respective sets of dogs whereby the latter are moved from said arms, and means for rotating said cams in harmony with the movement of the car; substantially as set forth.

9. In safety apparatus for elevators, the car, the movable connected dogs carried thereby, the vertical rods adjacent to the opposite sides of the path of said car, the retarders on said rods to be engaged at the proper time by said dogs, the rotary cam for controlling the position of said dogs, the crank-arm engaging the surfaces presented by said cam, the weighted arm yieldingly pressing said crank-arm against said cam, a second crank to be actuated by the first-mentioned crank-arm, means connecting this second crank with said dogs for moving them as required, and means for rotating said cam in harmony with the movement of the car; substantially as set forth.

10. In safety apparatus for elevators, the car, the dogs carried at opposite sides of the car, means connecting the diagonally-arranged dogs in sets to effect the simultaneous movement inward and outward of the dogs of each set, the vertical rods in the elevator-shaft, the retarders on said rods to be engaged at the proper time by said dogs, the rotary governor-cams for controlling the position of said dogs, the independent crank-arms engaging the reversely-arranged surfaces presented by said cams, the weighted arms yieldingly pressing said crank-arms against their respective cams, inde-

pendent cranks to be respectively actuated by said crank-arms, means independently connecting said independent cranks respectively with said sets of dogs for moving them as required, and means for rotating said cams in harmony with the movement of the car; substantially as set forth.

11. In safety apparatus for elevators, the car, the vertical rod and retarder thereon, the movable dog carried by the car to engage said retarder at the proper time, the rotary governor-cam mounted on the car, the crank-arm engaging said cam, and means connecting said arm and dog, combined with the drum 76 carried by the car, the cables 78 and 79 connected with said drum and also at the top and bottom of the elevator-shaft, and means for communicating motion from said drum to said cam; substantially as set forth.

12. In safety apparatus for elevators, the car, the vertical rods and retarders thereon, the movable dogs carried by the car to engage said retarders at the proper time, the rotary governor-cams mounted on the car, the crank-arms engaging the reversely-arranged surfaces of said cams, and means independently connecting said arms and dogs, combined with the drum 76 carried by the car, the cables 78, 79 connected with said drum and also with the top and bottom of the elevator-shaft, and means for communicating motion from said drum to said cams; substantially as set forth.

13. In safety apparatus for elevators, the car, the vertical rods and retarders thereon, the movable dogs carried by the car to engage said retarders at the proper time, the rotary governor-cams mounted on the car, the crank arms engaging the reversely-arranged surfaces of said cams, and means independently connecting said arms and dogs, combined with the drum 76 carried by the car for operating said cams, and means for actuating said drum during and in harmony with the movement of the car; substantially as set forth.

14. In safety apparatus for elevators, the car, the vertical rod and retarder thereon, the movable dog to engage said retarder at the proper time, the rotary governor-cam mounted on the car, the crank-arm 61 engaging said cam, the weighted arm 62 connected with said crank-arm, the vertical rod 62 carrying stops to be engaged by said weighted arm, the pivoted weighted lever-crank 64 connected at one end with said vertical rod, and means intermediate said end of said lever-crank and said dog for actuating said dog therefrom, combined with means for rotating said cam during and in harmony with the movement of the car; substantially as set forth

15. In safety apparatus for elevators, the car, the vertical rods and retarders at the sides of the path thereof, the movable dogs carried by and at opposite sides of the car to engage said retarders at the proper time, the corresponding but reversely-arranged rotary governor-cams mounted on the car, the independent crank-arms 61 for said cams, the weighted arms 62 connected with said crank-arms, the vertical rods 62 carrying stops to be engaged by said weighted arms, the pivoted weighted lever-cranks 64 connected at one end with said vertical rods, and means intermediate said end of said lever-cranks and the respective sets of dogs for actuating said dogs therefrom, combined with means for rotating said cams in harmony with the movement of the car; substantially as set forth.

16. In safety apparatus for elevators, the car having the movable dog, and means for controlling said dog, combined with the plurality of flexible wire rods, and the retarder thereon to be engaged at the proper time by said dog, said retarder comprising the plates 42, 43 the pins 44 between which the wire rods are held, and the contact-bar 45 bearing upon the upper edges of said plates and having its lower portion extended between said plates and recessed at its opposite edges to fit between and engage the facing sides of the two upper inner pins 44; substantially as set forth.

17. In safety apparatus for elevators, the car having the movable dog, and means for controlling said dog, combined with the plurality of flexible wire rods, and the retarder thereon to be engaged at the proper time by said dog, said retarder comprising the plates 42, 43 the pins 44 between which the wire rods are held, and the contact-bar 45 whose upper surface inclines downwardly and outwardly, and said dog having the dowawardly and outwardly inclined finger 49 and inner finger 50 forming between them a space conforming to the upper portion of said contact-bar; substantially as set forth.

18. In safety apparatus for elevators, the car having the movable dog, and means for controlling said dog, combined with the flexible wire rods having the retarder to be engaged at the proper time by said dog, the springs sustaining said rods at their upper ends, the plate 34 to which said rods are secured at their lower end, the end bars 35 connected with said plate, the guides 36 for said bars, and the springs 37 yieldingly resisting any upward movement of said plate; substantially as set forth.

19. In safety apparatus for elevators, the car having the movable dog, and means for controlling said dog, combined with the flexible wire rods having the retarder to be engaged at the proper time by said dog, the springs sustaining said rods at their upper ends, the plate 34 for the lower ends of said rods and having the recesses 39 and apertures 38, and the bolts and nuts 33, 41, said bolts being adapted to said recesses and apertures and having the eyes 40 in their head end to receive said rods and bind them to said plate; substantially as set forth.

20. In safety apparatus for elevators, the car having the movable dog, means for controlling said dog, the rod having the retarder thereon to be engaged at the proper time by said dog and the spring connected with one end of said rod and allowing the same a limited lengthwise movement when said dog contacts with said retarder, combined with appliances to be actuated by the pull on said rod against the resistance of said spring for stopping the elevator-motor; substantially as set forth.

21. In safety apparatus for elevators, the car, the rod having a retarder thereon to be engaged by a part carried by the car should the latter attain undue speed, said rod being allowed a limited lengthwise movement under such engagement, and the spring to resist such movement of said rod, combined with appliances to be actuated by such movement of said rod in opposition to said spring for stopping the elevator-motor; substantially as set forth.

22. In safety apparatus for elevators, the car having the movable dog, means for controlling said dog, the rod having the retarder thereon to be engaged at the proper time by said dog for arresting the car, the spring suspending said rod and allowing a limited movement in the same under such engagement, and the stopping and starting cable 23, combined with the pivoted lever 82 at one end connected with said rod, and means connecting the other end of said lever with said cable 23 for stopping the elevator-motor under the action of said pivoted lever; substantially as set forth.

23. In safety apparatus for elevators, the car, the dogs carried thereby, means for controlling said dogs, and the wire rods having retarders thereon to be engaged by said dogs at the proper time for arresting said car during its descent, combined with the sets of inclined wire rods 120 having retarders thereon adjacent to and at opposite sides of the top of the elevator-shaft to be engaged by the car in case the latter should attain undue speed during its upward travel; substantially as set forth.

24. In safety apparatus for elevators, the car, the dogs carried thereby, means for controlling said dogs, the wire rods having retarders thereon to be engaged by said dogs at the proper time for arresting said car during its descent, said rods being allowed a limited lengthwise movement when said dogs strike the retarders, and means to be set in motion by such movement of said rods for stopping the motor, combined with the sets of additional wire rods 120 having retarders thereon adjacent to and at opposite sides of the top of the elevator-shaft to be engaged by the car in case the latter should attain undue speed during its ascent, and means operable from said additional wire rods for stopping the motor; substantially as set forth.

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**754,433. MACHINE FOR DOUBLING METAL PLATES.** BERNARD H. DOLL, Cumberland, Md. Filed June 16, 1903. Serial No. 161,864. (No model.)

*Claim.*—1. In a machine for doubling plates, the combination with folding-leaves, of sliding automatically-operated cod clutches for engaging the ends of the plates, and adjustable sliding side clutches for engaging the sides of the plates, substantially as described.

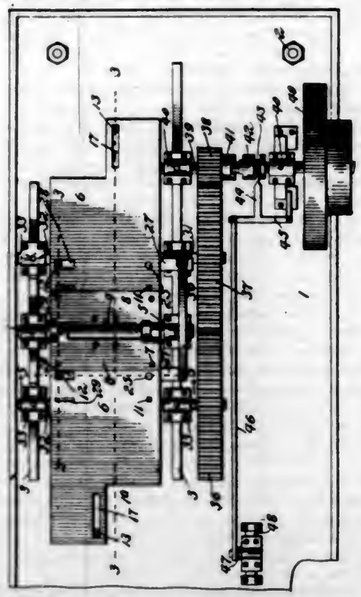
2. In a machine for doubling plates, the combination of angularly-movable doubling-leaves, adjusters movable longitudinally with respect thereto, and connections effective by the angular movement of the doubling plates to operate said adjusters, said connections including yieldable elements and springs to keep the adjusters in engagement with the work, substantially as described.

3. In a machine for doubling plates, the combination of a suitable frame, folding-leaves pivotally mounted thereon, fixed side stops upon one side of said leaves, sliding bars mounted in said leaves and carrying stops, means for simultaneously operating said sliding bars to adjust their stops toward and from said fixed stops, substantially as described.

4. In a machine for doubling plates, the combination of a suitable frame, folding-leaves pivotally mounted thereon, fixed side stops upon one side of said leaves, sliding bars mounted in said leaves and carrying stops projecting through slots in said leaves, and an arc-shaped rod carried by one of said bars and having a sliding connection with the other, substantially as described.



5. In a machine for doubling plates, the combination of angularly-movable doubling-leaves, adjusters movable longitudinally with respect thereto, and connections effective by the angular movement of the doubling plates to operate said adjusters, said connections including slidably-related elements and springs to keep the adjusters in engagement with the work, substantially as described.

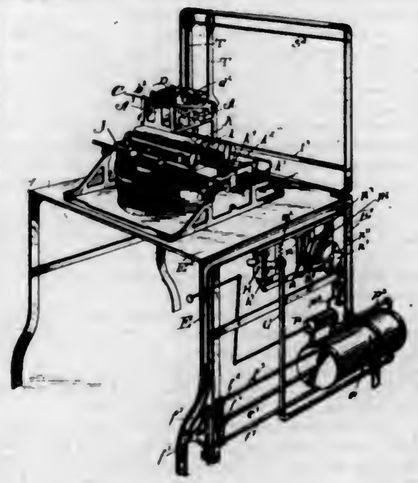


6. In a machine for doubling plates, the combination with angularly-movable doubling-leaves, of adjusters slidably related thereto, and pivoted rods connecting said adjusters to a fixed point, the pivot of said rods being eccentric with reference to the pivotal axis of the doubling-leaves, substantially as described.

7. In a machine for doubling plates, the combination of angularly-movable doubling-leaves, adjusters slidably related thereto, means to operate said adjusters automatically, shafts having cranks, pitmen connecting the said cranks to the doubling-leaves to angularly operate the latter, and gears connecting said crank-shafts together for simultaneous reverse revolution, substantially as described.

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**754,434. ENVELOP OR CARD FEEDING DEVICE.** DOUGLAS S. DUFUR, The Dalles, Oreg. Filed Apr. 20, 1903. Serial No. 153,536. (No model.)



*Claim.*—1. The combination of a receptacle, a member constructed to feed writing articles therefrom in succession, means constructed to adjust said member to varying thicknesses of writing articles, a pneumatic device arranged to operate the said member, and pneumatically-operated means constructed and arranged to actuate said pneumatic device, substantially as described.

2. The combination of a receptacle, a member constructed to feed writing articles therefrom in succession, means constructed to adjust said member to varying thicknesses of writing articles, a pneumatic device arranged to operate the said member, and pneumatically-operated means under the control of the operator and constructed and arranged to actuate said pneumatic device, substantially as described.

3. In a type-writing machine having the usual carriage and platen, the combination of a receptacle, a member constructed to feed writing articles therefrom in succession, a device arranged to operate said member, a device arranged to effect the return of the type-writer carriage, a common actuating means constructed and arranged for actuating both of said devices, and means constructed to shift said common actuating means to position for operating either of said devices independently of the other, substantially as described.

4. In a type-writing machine having the usual carriage and platen, the combination of a receptacle, a member constructed to feed writing articles therefrom in succession, a device arranged to operate said member, a device arranged to effect the return of the type-writer carriage, a common actuating means constructed and arranged for actuating both of said devices, and means constructed to shift said common actuating means to position for operating either of said devices independently of the other, substantially as described.

5. In a type-writing machine having the usual carriage and platen, the combination of a receptacle, a member constructed to feed writing articles therefrom in succession, a pneumatic device arranged to operate said member, a pneumatic device arranged to effect the return of the type-writer carriage, a common pneumatic actuating means constructed and arranged for actuating both of said pneumatic devices, and means arranged to shift said common pneumatic actuating means in operative connection with either of said pneumatic devices, substantially as described.

6. The combination, in a type-writer, of a reciprocable member, a pressure device arranged to move said member in one direction, a second pressure device, means of communication between the said pressure devices, the said second pressure device being arranged to cause the first pressure device to move said member, means for actuating said second pressure device by the operator, a receptacle, a member arranged to feed writing material from the receptacle, a third pressure device arranged to operate said feeding member, means of communication between the second pressure device and the third pressure device, and means for closing either of said means of communication, substantially as described.

7. The combination, in a type-writer, of a reciprocable member, a pressure device arranged to move said member in one direction, a second pressure device arranged to cause the first pressure device to move said member, and means for actuating the second pressure device by the operator, a receptacle, a member arranged to feed the writing material from the receptacle, a third pressure device arranged to operate the feed member, means of communication between the second pressure device and the third pressure device, a valve arranged to close the means of communication between the second and third pressure devices when in one position, and to close means of communication between the second and first pressure devices when in another position, and means for automatically shifting said valve at predetermined intervals, substantially as described.

8. The combination, in a type-writer, of a receptacle, a member arranged to feed writing articles therefrom in succession, operating means arranged to be actuated by the leg of the operator, means for causing the operating means to return the carriage of the type-writer, means for causing said operating means to operate the feeding means, and means for shifting the operating means from each of said means to the other, substantially as described.

9. The combination, in a type-writer, of a receptacle, a member arranged to feed writing articles therefrom in succession, operating means arranged to be actuated by the leg of the operator, means for causing the operating means to return the carriage of the type-writer, means for causing said operating means to operate said feeding means, a power device arranged to accumulate power from the movement of the operating device to actuate either of said means, the power device being arranged to shift the operating means from each of said means to the other at the latter part of the return stroke of said operating device, substantially as described.

10. The combination, in a type-writer, of a reciprocable member, a pressure device arranged to move said member in one direction, a second pressure device arranged to cause the first pressure device to move said member, and means for actuating the second pressure device by the operator, a receptacle, a member arranged to feed the writing material from the receptacle, a third pressure device arranged to operate the feed member, means of communication between the second pressure device and the third pressure device, a valve arranged to close the means of communication between the second and third pressure devices when in one position, and to close means of communication between the second and first pressure devices when in another position, means for automatically shifting said valve at predetermined intervals, said means comprising a valve, a spring arranged to operate said valve when put under tension, a fourth pressure device having means of communication with the second pressure device and arranged to put said spring under tension when the second pressure device is operated, substantially as described.

11. The combination of a receptacle having a slot therein, a reciprocable bar having a grooved edge and arranged to deliver writing articles from the receptacle at said slot, a lever having one end connected with said bar, a cylinder, a piston in said cylinder and connected with said lever, and a pressure device arranged to advance and retract said piston, substantially as described.

12. The combination of a receptacle having a slot therein, a reciprocable bar on each side of the receptacle arranged to feed writing articles therefrom at said slot, each said bar having a lever connected therewith, a pair of cylinders, a piston in each cylinder connected with one of said levers, respectively, a counterweight on each of said levers, and a pressure device connected with the cylinders and arranged to advance and retract the pistons and connected parts, substantially as described.

13. The combination of a receptacle, a movable member arranged to deliver articles therefrom in succession, a device on said member arranged to engage the articles, a device on said latter device arranged to move said articles into position for engagement with said engaging device, and means on said member arranged to adjust said devices relative to the path of movement of said delivery member, substantially as described.

14. The combination of a receptacle provided with a slot, a reciprocable member, an ejector pivotally secured to said reciprocable member and provided with a grooved end and selecting-blade arranged to engage writing articles in the receptacle and deliver them at said slot, and means constructed to adjust said ejector about its pivot, substantially as described.

15. In a type-writing machine having the usual carriage, the combination of a receptacle carried by the type-writer carriage and having a slot therein, a reciprocable bar having a grooved edge and arranged to deliver writing articles from the receptacle at said slot, a lever having one end connected with said bar, a cylinder, a piston in said cylinder and connected with said lever, and a pressure device arranged to advance and retract said piston, substantially as described.

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**754,435. FEEDING DEVICE FOR TYPE-WRITERS.** DOUGLAS S. DUFUR, The Dalles, Oreg. Filed June 25, 1903. Serial No. 163,055. (No model.)



*Claim.*—1. An attachment for type-writing machines, comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, pneumatic means connected and arranged to actuate said carriage, and pneumatic means carried by said frame and connected and arranged to actuate said paper-roll supports, substantially as described.

2. An attachment for type-writing machines, comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, means connected to actuate the carriage, means carried by said frame and constructed to actuate the take-off supports, and a common operating means connected to operate each of said actuating means, substantially as described.

3. An attachment for type-writing machines, comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, tension-rolls on said carriage, means connected to actuate the carriage, means carried by said frame and constructed to actuate the take-off supports, and a common operating means connected to operate each of said actuating means, substantially as described.

4. An attachment for type-writing machines, comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, tension-rolls on said carriage, and pneumatic means carried by said frame and connected to actuate the take-off supports, substantially as described.

5. An attachment for type-writing machines, comprising a frame, paper-roll supports for the supply and take-off rotatably supported on said frame, but held from longitudinal movement, a carriage arranged to travel in said frame along said paper-roll supports, reels removably supported through a portion of their length on said supports and constructed to rotate therewith and to slide longitudinally thereon, and detachable supports on said carriage arranged to engage the unsupported ends of said reels, substantially as described.

6. An attachment for type-writing machines, comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, a line-space-indicating device, means connected and arranged to actuate said carriage, independent means connected and arranged to actuate said indicating device, and a common operating means connected and constructed to operate each of said actuating means, substantially as described.

7. An attachment for type-writing machines comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, said take-off supports comprising flat bars journaled in said frame, but held from longitudinal movement, openings in one member of said carriage through which the bars extend, reels provided with axial bores of approximately the same cross-section as that of said flat bars, whereby said reels may be removably supported on said bars to rotate therewith and slide longitudinally thereon, detachable supports on said carriage arranged to engage said reels, and means for rotating said flat bars, substantially as described.

8. An attachment for type-writing machines comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, means for actuating said carriage, means for actuating said take-off supports, a line-space-indicating device, and a common means arranged to operate the actuating means of the carriage, the take-off supports, and the indicating device, substantially as described.

9. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, pneumatic means arranged to actuate said carriage, pneumatic means arranged to operate said take-off supports, a line-space-indicating device, pneumatic means arranged to operate said indicating device, a pneumatic compressor, and connections from said compressor to the pneumatic actuating means of the carriage, the take-off supports, and the indicating device, whereby said several actuating means are operated in common from said compressor, substantially as described.

10. An attachment for type-writing machines comprising a frame, a traveling carriage, paper-roll supports for the supply and take-off, a line-space-indicating device, and pneumatic means for actuating said carriage and indicating device, substantially as described.

11. An attachment for type-writing machines comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, a line-space-indicating device, a slide-scale arranged for measuring the number of line-spaces to be left blank on any portion of the paper, and means for actuating said carriage and indicating device, substantially as described.

12. An attachment for type-writing machines comprising a frame, a traveling carriage, paper-roll supports on said carriage for the supply and take-off, a line-space-indicating device, a slide-scale arranged for measuring the number of line-spaces to be left blank on any portion of the paper, means for actuating said carriage, and independent means for actuating said indicating device, said actuating means being arranged and connected for simultaneous operation, substantially as described.

13. An attachment for type-writing machines comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, and pneumatic means carried by said frame for actuating the take-off supports, substantially as described.

14. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, bevel-gears secured on the contiguous ends of said take-off supports, a shaft journaled in the frame, a plurality of friction-disks carried by said shaft, a series of bevel-gears loosely mounted on said shaft adjacent the friction-disks and arranged in mesh with the bevel-gears on the take-off supports, springs for yieldingly holding said second bevel-gears against the friction-disks, adjustable members arranged to regulate the tension of said springs, and means for rotating said shaft, substantially as described.

15. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, bevel-gears secured on the contiguous ends of said take-off supports, a shaft journaled in the frame, a plurality of friction-disks carried by said shaft, a series of bevel-gears loosely mounted on said shaft adjacent the friction-disks and arranged in mesh with the bevel-gears on the take-off supports, springs for yieldingly holding said second bevel-gears against the friction-disks, adjustable members arranged to regulate the tension of said springs, and pneumatically-actuated means for rotating said shaft, substantially as described.

16. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, bevel-gears secured on the contiguous ends of said take-off supports, a shaft journaled in the frame, a plurality of friction-disks carried by said shaft, a series of bevel-gears loosely mounted on said shaft adjacent the friction-disks and arranged in mesh with the bevel-gears on the take-off supports, springs for yieldingly holding said second bevel-gears against the friction-disks, adjustable members arranged to regulate the tension of said springs, a pinion on said shaft, a gear arranged in mesh with said pinion, a ratchet-wheel carried by said gear, a stationary shaft on which said gear is loosely mounted, a barrel mounted to turn on the stationary shaft, a spring arranged with one end secured to said barrel and the other end secured to the stationary shaft, a gear carried by said barrel and provided with a pawl engaging with said ratchet-wheel, a rack arranged in mesh with said last-mentioned gear, and means for actuating said rack, substantially as described.

17. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, bevel-gears secured on the contiguous ends of said take-off supports, a shaft journaled in the frame, a plurality of friction-disks carried by said shaft, a series of bevel-gears loosely mounted on said shaft adjacent the friction-disks and arranged in mesh with the bevel-gears on the take-off supports, springs for yieldingly holding said second bevel-gears against the friction-disks, adjustable members arranged to regulate the tension of said springs, a pinion on said shaft, a gear arranged in mesh with said pinion, a ratchet-wheel carried by said gear, a stationary shaft on which said gear is loosely mounted, a barrel mounted to turn on the stationary shaft, a spring arranged with one end secured to said barrel and the other end secured to the stationary shaft, a gear carried by said barrel and provided with a pawl engaging with said ratchet-wheel, a pneumatic cylinder having a piston and piston-rod, and a rack carried by said piston-rod and guided in mesh with said barrel-gear, whereby, upon the admission of pressure in the pneumatic cylinder, the rack will operate to place the barrel-spring under tension, and, upon the release of pressure in the pneumatic cylinder, said spring will act to rotate said pinion-carrying shaft and to return the rack to its initial position, substantially as described.

18. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, bevel-gears on the contiguous ends of certain of said take-off supports, spur-gears secured to the take-off supports which are so provided with bevel-gears, spur-gears on certain other of the take-off supports and arranged in mesh with said first-mentioned spur-gear, bevel-gears arranged in mesh with the bevel-gears on the take-off supports, and means for rotating said second bevel-gears, substantially as described.

19. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, bevel-gears on the contiguous ends of certain of said take-off supports, spur-gears secured to the take-off supports which are so provided with bevel-gears, spur-gears on certain other of the take-off supports and arranged in mesh with said first-mentioned spur-gear, a shaft journaled in the frame, a plurality of friction-disks carried by said shaft, a series of bevel-gears loosely mounted on said shaft adjacent the friction-disks and arranged in mesh with the bevel-gears on the take-off supports, springs for yieldingly holding said second bevel-gears against the friction-disks, adjustable members arranged to regulate the tension of said springs, and means for rotating said shaft, substantially as described.

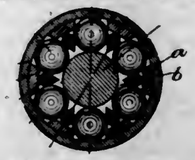
20. An attachment for type-writing machines, comprising a paper-supply and take-off, a line-space-indicating and alarm device comprising a visual signal and an alarm device, mechanism arranged to actuate said visual signal, means carried by said mechanism and arranged to operate the alarm at a predetermined position of said signal, means for actuating the paper-supply and take-off, said actuating means being arranged and connected for simultaneous operation, substantially as described.

21. An attachment for type-writing machines, comprising a paper-supply and take-off, a line-space-indicating and alarm device comprising a dial and pointer, a spindle supporting said pointer, two ratchet-wheels secured on said spindle, a rear cover-plate constituting an auxiliary dial, a short shaft rotatably mounted in said cover-plate, an auxiliary pointer secured on the rear end of said shaft, an annular boss formed on the front end of said shaft and arranged to turn on the rear end of said spindle, a plate secured to said shaft adjacent the boss, a pawl carried by said plate and engaging with the rearward of said ratchet-wheel, a tappet carried by said plate, a tappet carried by the forward ratchet-wheel, an alarm-bell and hammer, a latch carried by said hammer and extending in the paths of the two tappets, a reciprocatory member, a pawl carried by said member and engaging said forward ratchet-wheel, means for actuating said reciprocatory member, and means for actuating the paper-supply and take-off, said actuating means being arranged and connected for simultaneous operation, substantially as described.

22. An attachment for type-writing machines, comprising a frame, a carriage arranged to travel in said frame, paper-roll supports on said carriage for the supply and take-off, a line-space-indicating and alarm device comprising a dial and pointer, a spindle supporting said pointer, two ratchet-wheels secured on said spindle, a rear cover-plate constituting an auxiliary dial, a short shaft rotatably mounted in said cover-plate, an auxiliary pointer secured on the rear end of said shaft, an annular boss formed on the front end of said shaft and arranged to turn on the rear end of said spindle, a plate secured to said shaft adjacent the boss, a pawl carried by said plate and engaging with the rearward of said ratchet-wheels, a tappet carried by said plate, a tappet carried by the forward ratchet-wheel, an alarm-bell and hammer, a latch carried by said hammer and extending in the paths of the two tappets, a reciprocatory member, a pawl carried by said member and engaging said forward ratchet-wheel, means for actuating said reciprocatory member, and means for actuating said carriage, said actuating means being arranged and connected for simultaneous operation, substantially as described.

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**754,436. BALL-BEARING.** TYRRELL H. DUNCOMBE, St. Thomas, Canada. Filed Dec. 19, 1902. Serial No. 135,912. (No model.)

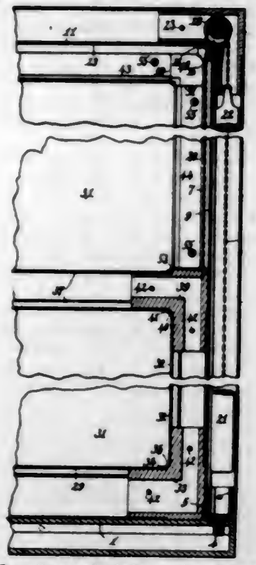


*Claim.*—1. In a ball-bearing, a retaining-ring formed in one piece, said retaining-ring having a series of openings forming a series of projections, there being passages in said projections between said openings, antifriction-balls in said openings, and antifriction spacing-rollers in said passages, substantially as specified.

2. In a ball-bearing, a retaining-ring formed in one piece, said retaining-ring having a series of circular openings forming a series

of projections, there being passages in said projections between said openings, antifriction-balls in said openings, and antifriction spacing-rollers in said passages, the said rollers being in frictional contact with the said balls, a circular sleeve surrounding the said retaining-ring, substantially as specified.

754,437. FIREPROOF WINDOW FRAME AND SASH. ISAIAH W. ERICSON, Milford, Mass. Filed Apr. 1, 1903. Serial No. 150,642. (No model.)



*Claim.*—1. In a fireproof window sash and frame, the several parts made of sheet metal bent into tubular shape, combined with castings at the joints between said parts entering the tubular parts and connecting them together, said castings provided with lips covering the joint between said parts.

2. In a fireproof window-sash, muntins made of sheet metal bent into tubular shape, castings at the meeting place of a plurality of muntins forming telescopic joints whereby the muntins are connected together and castings attached to the end of the muntins having means whereby they may be secured to other parts of the sash.

3. In a fireproof window-frame, side pieces made of sheet metal, bent into the desired shape, a stop-bead made of sheet metal bent into the desired form, slotted perforations in the sides of the frame each slot varying in size at different parts thereof, a grooved nut adapted to be inserted within the larger part of the slot in the sides of the frame and held therein by movement into the smaller part of said slots and receiving the metal of the sides of the frame within the grooves in the nut, perforations in the stop-bead, and a screw-bolt inserted through said perforations and screwed into the nut.

4. In a fireproof window-frame, side pieces made of sheet metal bent into the desired shape, a parting-bead made of sheet metal bent into the desired form, slotted perforations in the sides of the frame each slot varying in size at different parts thereof, a grooved nut adapted to be inserted within the larger part of the slot in the sides of the frame and held thereon by movement into the smaller part of said slots and receiving the metal of the sides of the frame within the grooves in the nut, perforations in the parting-beads and a screw-bolt inserted through said perforations and screwed into the nut.

754,438. LOCK-NUT. GEORGE B. EVANS and JAMES H. WILLIAMS, Dodgeville, Wis. Filed Dec. 19, 1903. Serial No. 186,384. (No model.)

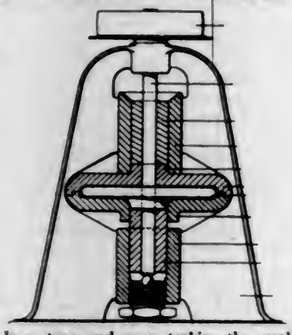
*Claim.*—1. In a lock-nut, the combination of a bolt having a longitudinal channel transversely of the threads, a nut engaging said threads and having an extension internally threaded to conform to the threads of the nut and externally threaded reversely to the threads of the bolt and nut and provided with a radial transverse aperture, a key for engagement with said aperture and extending into the channel in said bolt and externally threaded to conform to the external threads on said extension, and a clamp-nut engaging said extension, substantially as described.

2. In a lock-nut, the combination of a bolt having a longitudinal channel transversely of the threads, a nut engaging said threads and having an extension internally threaded to conform to the threads of the nut and with its exterior eccentric to the bore of the nut and externally threaded reversely to the threads of the bolt and nut, said extension having a radial aperture transversely of its threads, a key for engagement with said aperture and extending into the channel in said bolt and externally threaded in conformity with the external threads of said extension, and a clamp-nut engaging said extension, substantially as described.



3. In a lock-nut, the combination of a bolt having a longitudinal channel transversely of the threads, a nut engaging said threads and having an extension internally threaded to conform to the threads of the nut and externally threaded reversely to the threads of the bolt and nut and provided with a radial transverse aperture, a key for engagement with said apertures and extending into the channel in said bolt and externally threaded to conform to the external threads on said extension, a clamp-nut engaging said extension, and a relatively soft metal washer between said nuts, substantially as described.

754,439. STEAM-TURBINE. ERNST R. F. FAGERSTRÖM, Sundbyberg, Sweden. Filed Feb. 12, 1903. Serial No. 143,116. (No model.)



*Claim.*—In a steam and vapor turbine, the combination with the turbine-wheel and its shaft, of a support or frame, bearings in said frame for the turbine-shaft, a wheel-case formed separately and having a hub guided by said bearings, substantially as described.

754,440. BRAKE-SHOE. JOSEPH D. GALLAGHER, Glenridge, N. J. Filed Apr. 11, 1903. Serial No. 152,217. (No model.)



*Claim.*—1. A brake shoe comprising a cast iron body portion and a wrought metal back, the latter being bent to form a strengthening medial rib extending longitudinally along the same, substantially as described.

2. A brake shoe comprising a cast iron body portion and a perforated wrought metal back, the latter being provided with corrugations extending lengthwise aloag the flat back of the same, substantially as described.

3. A brake shoe of the character described comprising a cast iron body portion and a steel back or strengthening plate, the latter being anchored to said body portion and provided with a rib extending lengthwise of the same, the cast metal of the body portion extending upwardly into said rib, substantially as described.

4. A brake shoe of the character described comprising a cast iron body portion and a perforated steel back or strengthening plate, the latter being provided with a downwardly extending strengthening rib forming a channel, said channel being filled with the cast metal of the body portion, substantially as described.

5. A brake shoe of the character described comprising a cast iron body portion and a wrought metal back, said back being constructed with a rib extending lengthwise of the same forming an open channel, said channel being filled with the cast metal of the body portion, substantially as described.

6. A cast metal brake shoe provided with a malleable plate backing, the said backing being provided with a forged rib thereon extending longitudinally of the shoe, and the backing being attached to the body of the shoe in the casting of the shoe, whereby it is cast in place therein, substantially as described.

754,441. MAIL-DELIVERY BOX. THOMAS R. GRAY, Silverlake, Kans. Filed Dec. 22, 1903. Serial No. 186,155. (No model.)



*Claim.*—1. In a device of this character, the combination with a shield provided with a closed top and an open bottom, and means secured exteriorly of the shield for supporting the same, of a removable mail-receptacle adapted to be inserted through the open end and entirely surrounded by the shield, and a combined handle and latch made of a strip and having its terminals secured respectively to the bottom and one of the side walls of the mail-receptacle whereby the angle of the strip at the junction of the body of the strip and the terminal connected to the side, will form the latch.

2. In a device of this character, the combination with a shield provided with a closed top and an open bottom with inclined walls, and means secured exteriorly of the shield for supporting the same, of a removable mail-receptacle adapted to be inserted within the shield and be entirely surrounded thereby, a strip of metal having two terminals one secured at the bottom and one to the side of the mail-receptacle and provided intermediate of its length with a latch and handle, whereby the receptacle is locked and held within the shield or removed therefrom.

3. In a device of this character, the combination with a shield provided with a closed top and an open bottom with inclined walls, and means secured exteriorly of the shield for supporting the same, of a removable receptacle with a closed bottom and open mouth provided with a projecting lip, a strip of metal having one terminal secured to the wall of the receptacle and the other terminal secured to the bottom, a U-shaped handle formed intermediate of its length and projecting below the bottom of the receptacle, and a latch formed intermediate of the handle and the end which is secured to the wall of the receptacle so as to be normally projected beyond the bottom and wall of the receptacle so that the receptacle will be locked within the shield or readily removed therefrom.

4. In a device of this character, the combination of a shield provided with a closed top and open bottom and having a slot in one wall near the lower edge thereof, of a removable mail-receptacle provided with a closed bottom and open mouth provided with a projecting lip, a strip of metal having one terminal secured to the wall of the receptacle and the other terminal secured to the botom, a U-shaped handle formed intermediate of its length and projecting below the bottom of the receptacle, and a latch formed intermediate of the handle and the end which is secured to the wall of the receptacle so as to be normally projected beyond the bottom and wall of the receptacle so that the receptacle will be locked within the shield or readily removed therefrom.



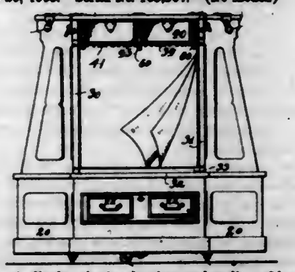
754,442. PROGRESSIVE-SCORE TALLY. IRVING W. GREEN, Detroit, Mich. Filed Dec. 26, 1903. Serial No. 186,571. (No model.)



*Claim.*—1. A score-card having a head portion provided with data indicating the table at which the player shall first play and a lower portion provided with a column of figures corresponding with the numbers of the tables and arranged in the order in which the player will successively sit at the tables, and provided with a column of figures arranged in their numerical order, beginning with the figure 1 which is placed opposite the number in the other column indicating the second table at which the player will sit.

2. A score-card having a head portion provided with data indicating the table at which the player shall first play and the couple at that table to which he belongs, and a lower portion provided with a column of figures corresponding to the numbers of the tables arranged in the order in which the player is to play at the tables with the number indicating the first table at which he plays, at the bottom of the column, a second column of figures arranged in their numerical order beginning with the figure 1 with said figure opposite the figure in the table-column indicating the second table at which the player will play, data at the top of each column to identify the same, and lines extending across the card between the figures of each column upon which line the card is to be severed.

754,448. SHOW-CASE. WILLIAM H. J. GUEST, New York, N. Y. Filed June 29, 1903. Serial No. 163,567. (No model.)



*Claim.*—1. A display device having a plurality of holder-pockets open at the front and a plurality of holders each adapted to one of said pockets, said holders having outwardly-projecting parts engaging the article displayed at different places in the width thereof.

2. A display-section for a show-case, comprising a suitable framework open in front, an upper series of holder-pockets provided with front vertical slits, means for closing the pockets except in front, and a plurality of independent holders each having one end adapted to

a pocket and its other end projecting outward from said pocket, said outwardly-projecting parts of said holders being adapted to support the article displayed and engaging the same at different places.

3. A display device having a plurality of holder-pockets having narrowed front ends, and holders having their rear ends retained in the wider portion of the pockets and their front ends extending through said narrowed front ends and adapted to engage the article displayed.

4. A display device, comprising a holder-frame provided with retaining-plates relatively arranged to form pockets having narrowed front openings and compartments between said pockets, and holders inserted in said pockets and having outwardly-projecting ends to engage the articles displayed.

5. A display-section for a show-case comprising a suitable framework open in front, a holder-frame supported above the same and provided with pockets consisting of vertically-placed retaining-plates bent inwardly at the front toward each other to form a relatively narrow aperture between their front edges.

6. A display-section, comprising a holder-frame provided with partitions relatively arranged to form pockets and compartments between said pockets, said partitions having converging front portions forming a relatively narrow front opening to the pocket between the same, and holders inserted in said pockets and having outwardly-projecting parts which engage the articles displayed.

7. A holder adapted to be used in supporting sheets of fabric consisting of a rod-like member folded at its center and expanded at each end into a flat relatively thin member to permit of its passage through slits in the sheets of fabric to be supported.

8. In a device of the class described, the combination with a holder-frame provided with pockets having a relatively narrow front vertical aperture, of fabric-holders comprising thin flat end members and a narrow central member, whereby the holders may be inserted into the pocket-apertures when in a vertical position and be retained therein when turned to a horizontal position.

9. A show-case comprising a plurality of display-sections, a common base therefor provided with drawers, a holder-frame at the top of each section and holders for the goods displayed adapted to be held by and depend from the holder-frame.

10. A show-case comprising a plurality of display-sections, a common base therefor, a holder-frame at the top of each section, said holder-frames having pockets, and holders for the goods displayed, having their inner ends inserted in said pockets and their outer ends projecting from said pockets and adapted to engage the articles displayed.

11. A show-case comprising a plurality of display-sections, a common base therefor, holder-frames at the tops of said sections, said frames having pockets, and holders for the goods displayed, said holders being supported at their inner ends within said pockets and having free outer ends adapted to engage the article displayed at different places in the width of said article, said inner ends being removably inserted in said pockets.

12. A display device, comprising a holder-frame provided with pockets and a top having apertures registering with said pockets said pockets being open at the front, and holders for the goods displayed, supported at their inner ends within said pockets and having free ends projecting through the open front thereof and adapted to engage the article displayed.

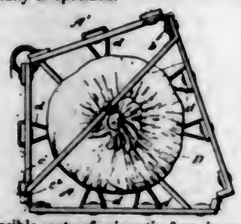
13. A display device, comprising a holder-frame provided with pockets having narrowed front opening leading thereto, and holders for the goods displayed, having their inner ends removably inserted in said pockets and expanded to be retained therein, said holders having outwardly-projecting free ends by which the articles displayed are supported and being adapted to extend through openings in said articles.

14. A show-case, comprising a plurality of display-sections, a common base therefor, holder-frames at the tops of said sections, said frames having pockets with narrowed front openings leading thereto, holders for the goods displayed, having expanded inner ends removably inserted in said pockets, said holders being adapted to extend through openings in said goods and having outwardly-projecting ends to engage said goods, and movable means for covering the tops of said sections.

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**754,444. BANANA-CRATE.** JOSHUA A. HADLEY, Brazil, Ind. Filed Dec. 8, 1903. Serial No. 134,462. (No model.)

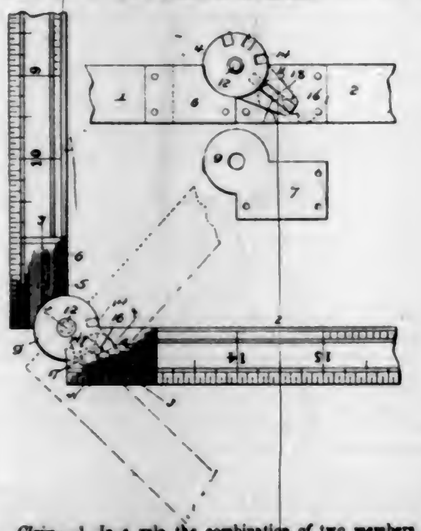
*Claim.*—1. A collapsible crate of trapezium form in cross-section, having hinged sides, the two longer of which have angle-flanges for the hinges to leave a space for the two shorter sides when collapsed, substantially as specified.



2. A collapsible crate of prismatic form in cross-section having hinged sides and open at both ends, and a diagonal hinged cross bar or brace at each end of the crate for suspension of the contents of the crate and to keep the crate in form, substantially as specified.

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**754,445. RULE.** PORTER S. HARRICK, Whitewater, Wis. Filed Oct. 23, 1903. Serial No. 178,941. (No model.)



*Claim.*—1. In a rule, the combination of two members, of a notched disk fixed to one member, plates secured on opposite sides of the other member and inclosing the disk, a reinforcing-plate secured to one of said last-mentioned plates and having an arm thereon, a journal passed through all of said plates and disk, a locking-bar movable in a guideway in said arm, and means for moving the bar into and out of the notches in the disk.

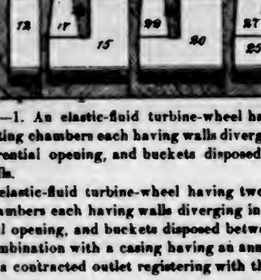
2. In a rule, the combination of two members, of a notched disk fixed to one member, plates secured on opposite sides of the other member, inclosing the disk, a journal or hinge pin passed through the plates and disk, a reinforcing-plate secured to the inner face of one of said plates beside the disk and having an integral arm thereon, a locking-bar movable in a guideway in said arm, and a button on the outside of one of said plates, adapted to operate the locking-bar to move it into and out of any of said notches in the disk.

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**754,446. TIME-DAMPER MECHANISM.** WILLIAM HARTSELL, Philadelphia, Pa. Filed Nov. 19, 1903. Serial No. 181,315. (No model.)

*Claim.*—1. The combination with a stove or range of an auxiliary plate or lid provided with openings adapted to register with each other, a supporting device carried thereby and having fulcrumed therewith a spring-controlled arm, a member for shifting the plate operated thereby, a spring-operated damper, a clock mechanism, suspended from said supporting device and means for releasing the arm and damper, substantially as described.

2. The combination with a stove or range of an auxiliary plate or lid having openings for registering with each other, a supporting device carried thereby, a spring-operated damper, a clock mechanism, a spring-controlled arm having a projection, a member for shifting the plate attached thereto, a rod between the arm and the damper and a flexible member carried by the arm and adapted to be released by the clock mechanism, substantially as described.



3. The combination with a stove or range of a two-part auxiliary plate or lid having openings adapted to register with each other, one of which parts being provided with a pin, and a supporting device carried by the other of said parts, a spring-controlled arm, fulcrumed to said support and adapted to shift a forked member having engagement with the said pin, a spring-controlled damper, a rod connected with the arm and adapted to release the said spring, a clock mechanism suspended from the support and a flexible member adapted to be released by the winding-stem of the clock to operate the arm, substantially as described.

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**754,447. STEAM-TURBINE.** PER J. HEDLUND, Stockholm, Sweden. Filed June 13, 1903. Serial No. 161,339. (No model.)



*Claim.*—1. An elastic-fluid turbine-wheel having two parallel communicating chambers each having walls diverging inwardly from a circumferential opening, and buckets disposed between said diverging walls.

2. An elastic-fluid turbine-wheel having two parallel communicating chambers each having walls diverging inwardly from a circumferential opening, and buckets disposed between said diverging walls, in combination with a casing having an annular chamber provided with a contracted outlet registering with the inlet-opening of said wheel.

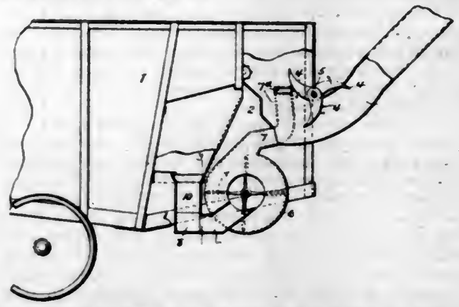
3. An elastic-fluid turbine-wheel having two parallel communicating chambers each having walls diverging inwardly from a circumferential opening and buckets disposed between said diverging walls in combination with a casing having an annular chamber provided with a contracted inlet registering with the outlet-opening of said wheel.

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**754,448. PNEUMATIC STACKER.** JOHN HENRY, Grand Forks N. D. Filed Apr. 24, 1903. Serial No. 154,182. (No model.)



*Claim.*—1. In a pneumatic stacker, the combination with a straw-receiving hopper and a pneumatic stack with which said hopper communicates, of a mechanical feeding device at the juncture of the hopper and stack, and means for forcing air into the hopper in rear of said mechanical feeding device.



2. In a pneumatic stacker, the combination with a conveyer-tube and means for forcing an air-blast therethrough, of a hopper having inclined walls and discharging into the conveyer-tube, mechanical means for forcing the straw from the hopper into the conveyer-tube, and auxiliary air-blasts discharging into the hopper along its inclined walls to force the straw in the direction of its feed and concentrate it to the center in the path of the mechanical feeders.

3. In a pneumatic stacker, the combination with a straw-receiving hopper, of a tube into which the straw is directed by the hopper, a fan-casing communicating with the tube and a fan in said casing to direct an air-blast through the tube, auxiliary air-blast pipes through which air is forced by the fan into the hopper, and mechanical means for assisting this auxiliary air-blast to force the straw into the conveyer-tube.

4. In a pneumatic stacker, the combination with a tube into which the straw is directed, and means for directing an air-blast through said tube, of a chaff-receptacle inclining or sloping downward to its center, and a suction-pipe communicating with the chaff-receptacle at its center to draw the chaff therefrom.

5. In a pneumatic stacker, the combination with a tube into which the straw is directed, and means for directing an air-blast through said tube, of a chaff-receptacle inclining or sloping downward to its center, a deflector in the central portion of the chaff-receptacle, and a suction-pipe communicating with the chaff-receptacle at its center below the deflector to draw the chaff therefrom.

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**754,449. LISTER ATTACHMENT.** JAMES A. HERRON, Enbridge, Kans. Filed July 17, 1903. Serial No. 166,001. (No model.)



*Claim.*—1. The combination with a turning-plow, and a roller, of a lister attachment located between the plow and the roller and comprising a subsoiler having an opening, and a rotary cutter operating in the opening, substantially as described.

2. A lister attachment comprising a subsoiler having a central longitudinal slot or opening and a rotary cutter operating in the slot or opening, and located in rear of the point of the subsoiler, substantially as described.

3. A lister attachment comprising a subsoiler having a slot or opening, a standard having sides connected with the subsoiler at opposite sides of the slot or opening thereof, and a rotary cutter mounted between the sides of the standard and operating in the slot or opening of the subsoiler, substantially as described.

4. A lister attachment comprising a subsoiler having a longitudinal slot or opening and provided at opposite sides thereof with inclined portions, a standard provided at its lower portion with sides having diverging terminals connected with the inclined sides of the subsoiler, and a rotary cutter operating between the sides of the

standard and in the slot or opening of the subsoiler, substantially as described.

5. A lister attachment comprising a subsoiler having an arched front portion and provided with inclined sides or wings, and a rotary cutter operating between the sides or wings of the subsoiler in rear of the point thereof, substantially as described.

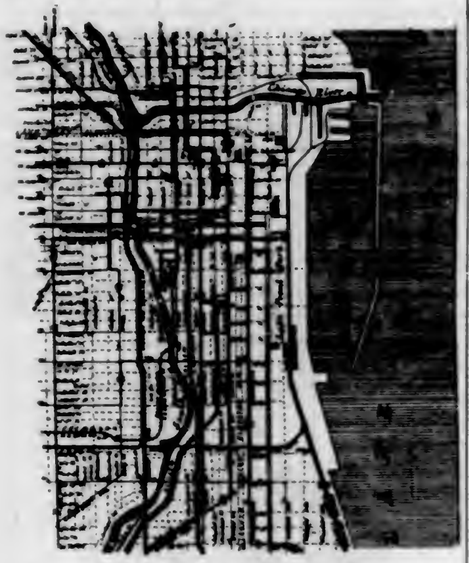
6. A lister attachment comprising a subsoiler having an arched front portion or point and provided with laterally-extending sides or wings, said subsoiler being provided between the sides or wings with a slot or opening, and a rotary cutter operating in the slot or opening, substantially as described.

7. A lister attachment comprising a subsoiler having an arched inclined front portion and provided with laterally-extending curved sides or wings, said subsoiler being also provided with a central longitudinal slot or opening, and a rotary cutter operating therein, substantially as described.

8. A device of the class described comprising a subsoiler consisting of an arched front portion arranged at an inclination, and outwardly-extending curved side portions or wings, said subsoiler being provided with a central longitudinal slot or opening, a standard having an opening at its lower portion, the sides of the latter being diverged and connected with the sides of the subsoiler at the inner faces thereof, and a rotary cutter mounted on the standard between the sides thereof and operating in the longitudinal slot or opening, substantially as described.

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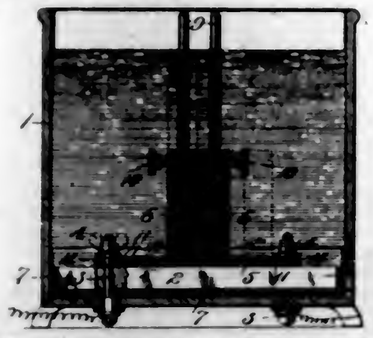
**754,450. MAP.** EMIL HEUBACH, Edison Park, Ill. Filed Mar. 5, 1902. Serial No. 96,862. (No model.)



*Claim.*—1. The herein-described map, having as the foundation thereof dotted lines representing clear streets, each of said streets represented by a single dotted line, said map having different characters of railroads represented by characteristically-different lines, and means for indicating each railroad throughout independently of every other railroad, said means indicating each railroad in the streets traversed by more than one railroad, substantially as described.

2. A map having as the foundation thereof dotted lines representing clear streets, each of said streets represented by a single dotted line said map having different characters of railroads represented by characteristically-different lines and means for indicating each railroad throughout independently of every other railroad, said means indicating each railroad in the streets traversed by more than one railroad, and means consisting of individual reference characters for the several railroads distributed at intervals throughout the length of the same, and an index-section explanatory of the route and character of each individual line and each having a symbol analogous to the reference character to which it relates, substantially as described.

**754,451. ELECTRICAL WATER-HEATER.** HARRY M. HILL, St. Louis, Mo., assignor to Hill Electrical Manufacturing Company, St. Louis, Mo., a Corporation of Missouri. Filed June 1, 1903. Serial No. 159,629. (No model.)



*Claim.*—1. In an electrical water-heater, opposing electrodes which have adjustment with relation to each other to vary the distance between them and have also adjustment to carry one of them across the opposing surface of the other thereof, substantially as described.

2. In an electrical water-heater, opposing electrodes, each of which is adjustable toward and away from the other thereof and is also adjustable across the opposing surface of the other thereof; substantially as described.

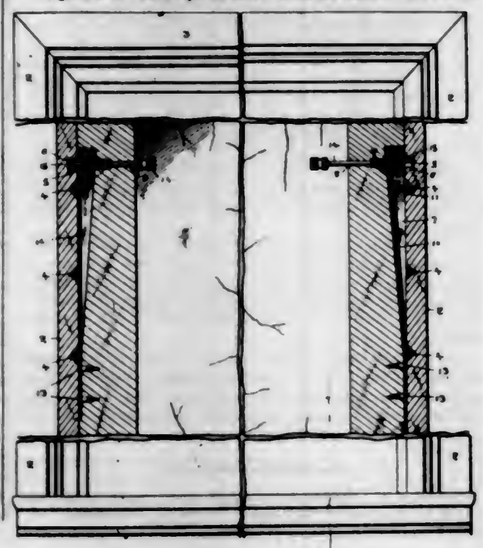
3. In an electrical water-heater, an electrode, a support extending in a line across the face of said electrode, and a second opposing electrode adjustably mounted upon said support; substantially as described.

4. In an electrical water-heater, an electrode, an electrode-support adjustable toward and away from said electrode, a standard upon said support and in a line extending across the face of said electrode, and a second and opposing electrode adjustably supported upon said standard; substantially as described.

5. In an electrical water-heater, a casing, an electrode therein, a bolt extending through a wall of said casing and adapted to have a conducting-wire applied thereto, an electrode-support comprising a standard which extends in a line across the face of said electrode and a base which is provided with a slot receiving said bolt, a nut upon said bolt for clamping said base, an electrode adjustable upon said standard, and a set-screw seated in said electrode and engaging said standard; substantially as described.

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**754,452. SASH HOLDER AND LOCK.** ORWIN R. HOWE, Washington, D. C. Filed Apr. 20, 1903. Serial No. 153,494. (No model.)





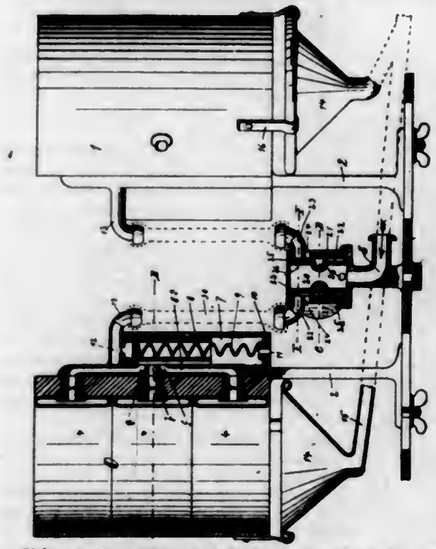
*Claim.*—1. The combination of a window-frame formed with notches in the sash-channels and locking-sockets, the window-sash, springs secured to the sash and formed with projections to engage the said notches, and locking-bolts passed loosely through the side rails of the sash and the free ends of the springs and arranged to engage in the said locking-sockets.

2. The combination of a window-frame formed with notches in the sash-channels and locking-sockets having annular or oval grooves in their bases, the window-sash formed with seats in the edges of the side rails, holding-springs secured in the said seats and formed with projections to engage in the said notches, locking-bolts passed loosely through the side rails of the sash and free ends of the springs and formed with heads on their inner ends to engage in the locking-sockets and the annular or oval grooves at the base thereof.

3. The combination of a window-frame formed with notches in the sash-channels and locking-sockets having annular or oval grooves in their bases, the window-sash formed with seats in the edges of the side rails, holding-springs secured in the said seats and formed with projections to engage in the said notches, locking-bolts passed loosely through the side rails of the sash and the free ends of the springs and formed with heads on their inner ends to engage in the locking-sockets and the annular or oval grooves at the base thereof, expansive springs mounted loosely on the locking-bolts and arranged to bear against the holding-springs.

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**754,453. MILKING-MACHINE.** JOHN L. HULBERT and IRA L. PARK, Holland Patent, N. Y. Filed Oct. 6, 1902. Serial No. 126,042. (No model.)



*Claim.*—1. In a milking-machine, a teat-receiver having a substantially cylindrical opening, a series of inflatable encircling tubes or bags within said opening, mechanism for supplying compressed air, and a valve for controlling the supply of compressed air to said inflatable tubes or bags successively and exhausting the same, substantially as set forth.

2. In a milking-machine, a teat-receiver having an opening to receive the teat, a lining for said opening having separately-inflatable sections and a valve mechanism controlling the inflation and deflation of said sections successively, substantially as set forth.

3. In a milking-machine, a teat-receiver, having an inflatable lining in sections, ports or openings into said sections, a valve operating on and controlling said ports and adapted to open them successively, substantially as set forth.

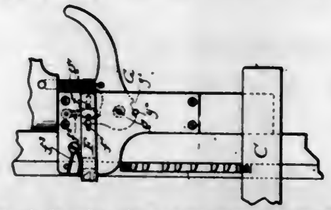
4. In a milking-machine, a teat-receiver, and inflatable lining therefor, having separate sections with independent ports or openings into the several sections, a valve controlling said ports and adapted to open same successively to receive compressed air, and adapted to open them substantially simultaneously in exhausting, a spring for operating said valve in one direction and the same constructed and arranged to be operated by the compressed air in the opposite direction, substantially as set forth.

5. In a milking-machine, a teat-receiver having an inflatable lining in separate sections, means for supplying compressed air thereto, a valve controlling the entrances to said separate sections, a spring for operating said valve in one direction and means for operating it in the other direction by the compressed air employed for inflating the sections, substantially as set forth.

6. In a milking-machine, a teat-receiver having an inflatable lining in separate sections, mechanism for supplying compressed air, a valve for controlling the supply of compressed air to said sections successively, and a mechanism for controlling the supply of compressed air to produce pulsation, substantially as set forth.

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**754,454. TYPE-WRITING MACHINE.** ALFRED E. JARMAN, Hackensack, N. J., assignor, by mesne assignments, to Elliott-Fisher Company, a Corporation of Delaware. Filed Feb. 4, 1903. Serial No. 141,872. (No model.)



*Claim.*—1. In a flat-platen type-writer, printing mechanism mounted to slide freely forward and backward for line-spacing, in combination with a series of stop-teeth and a dog adapted to engage the teeth successively to limit the advance.

2. In a flat-platen type-writer, the printing mechanism movable for line-spacing, a series of stop-teeth unevenly spaced and a stop-dog adapted to engage the teeth successively, whereby the lines of print may be arbitrarily and unevenly spaced.

3. In a flat-platen type-writer, the writing mechanism mounted to slide freely for line-spacing, in combination with the lever thereon, the stop-dog actuated by the lever, and the fixed toothed stop-bar.

4. In a flat-platen type-writer, the freely-sliding writing mechanism, in combination with a stop-bar having teeth to arrest the advance of the mechanism, a movable dog on the writing mechanism to engage said teeth, and a lever or handle serving the twofold purpose of advancing the mechanism and controlling the dog.

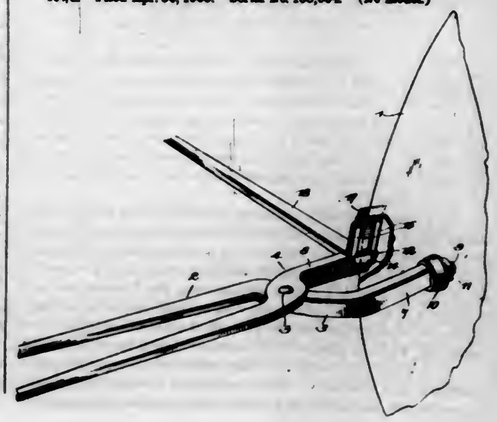
5. In a flat-platen type-writer, its freely-sliding frame for line-spacing, the lever thereon, the longitudinally and laterally movable dog controlled by the lever, and fixed stop-teeth to engage the dog.

6. In a flat-platen type-writer, the writing mechanism movable freely forward and backward for line-spacing, in combination with stop-teeth to arrest its advance, a normally disengaged dog, and means for moving the writing mechanism and actuating the dog.

7. In a flat-platen type-writer, the writing mechanism normally free to slide forward and backward for line-spacing, in combination with a series of stop-teeth and a stop-dog cooperating therewith to repeatedly arrest the advance of the writing mechanism.

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**754,455. DISK-SHARPENER.** WILLIAM J. JULIAN, Charles City, Iowa. Filed Apr. 30, 1903. Serial No. 155,034. (No model.)



*Claim.*—1. A disk-sharpener comprising a pair of pivoted members, a roller carried by one of the members, a lever pivoted to the opposite member and a knife or sharpener carried by the lever.

2. A disk-sharpener comprising a pair of pivoted jaws, an antifriction-roller carried by one of the jaws, a lever provided with an angular extension pivoted to the opposite jaw, guides formed in the angular extension and a knife fitting within the guides.

3. A disk-sharpener comprising a pair of pivoted jaws, an oppositely inclined or beveled antifriction-roller carried by one of the jaws and a lever provided with a knife or sharpener pivoted to the opposite jaw and arranged at right angles thereto.

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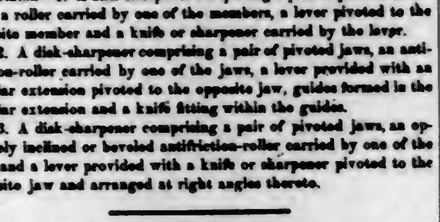
**754,456. PORTABLE BOWLING-ALLEY.** FRANK KARY, Chicago, Ill., assignor of one-half to Charles Morisek, Chicago, Ill. Filed May 3, 1902. Serial No. 105,801. (No model.)



*Claim.*—A game-board of the class described, comprising a supporting-frame provided with a playing-surface, a pit at the rear end of the playing-surface provided in its front side with an opening and having a forwardly-inclined bottom converging to said opening, a hood at the rear end of the supporting-frame above the pit, consisting of a back board, side boards and a cover board, the latter above the rear side of the pit, a recoil-cushion above the rear end of the forwardly-inclined, converging surface of the pit-bottom and spaced from the back board of the hood, a receptacle at the front end of the frame below the playing-surface, a delivery-chute supported longitudinally on the frame below the playing-surface and leading forwardly on a slight downward inclination to said receptacle, and a short conducting-chute extending on a greater inclination from the discharge-opening in the front wall of the pit to the delivery-chute and resting upon said chute, whereby the balls discharging from the pit travel with force and speed down the short conducting-chute and receive an impetus to travel along the lesser inclined delivery-chute to the receptacle, said delivery-chute diminishing the speed of the balls so that they will roll gently into the receptacle and not rebound therefrom, substantially as described.

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**754,457. TELEPHONIC RELAY OR REPEATER.** ISIDOR KITSEE, Philadelphia, Pa. Filed July 7, 1899. Renewed Apr. 26, 1902. Serial No. 104,677. (No model.)



*Claim.*—1. A telephonic relay consisting essentially of a galvanometer, the needle or needles of which are provided with means to vary the resistance of a local circuit through the action of the incoming current; said local circuit containing the primary of an inductorium the secondary of which is adapted to be connected to a second line-wire, the coil of said galvanometer adapted to be connected to the primary telephonic circuit, and the needle or needles placed in the recess of said coil.

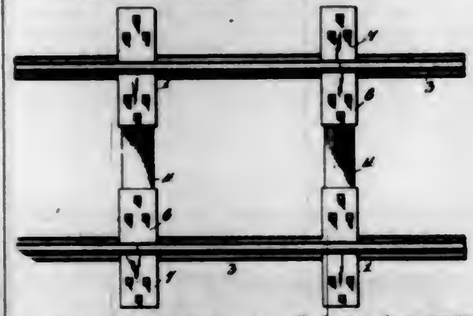
2. A telephonic relay, consisting essentially of a galvanometer consisting of a stationary helix and movable needle or needles placed in the recess thereof, the helix of said galvanometer is electrically connected to a telephonic circuit, and the movable needle or needles of which are provided with a contact-arm, the contact-points of which are in electrical connection with a local circuit containing a generator of electricity and the primary of an inductorium, the secondary of which is adapted to be connected to a second line-wire.

3. A telephonic relay, consisting essentially of a galvanometer consisting of a stationary coil and needle or needles placed in the recess thereof, the needle or needles of said galvanometer provided with a contact-arm, the contact-points of said contact-arm being conducting, and adapted to increase or decrease the resistance of a local circuit containing a battery and the primary of an inductorium, the secondary of which is adapted to be connected to a second line-wire.

4. A telephonic relay, consisting essentially of a galvanometer, the movable needles of which are provided with means to vary the resistance of two independent local circuits, each of said circuits containing a generator of electricity, and a primary of an inductorium, the secondaries of said primaries being in electrical contact with each other, and adapted to be connected to a second telephonic circuit.

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**754,458. RAILWAY CROSS-TIE.** THOMAS J. KITTO, Joplin, Mo. Filed Oct. 20, 1903. Serial No. 178,169. (No model.)



*Claim.*—1. The combination with a rail, of a cross-tie constructed of metal and provided at its upper face with a longitudinal recess, and a cushioning-piece interposed between the cross-tie and the rail and secured to the cross-tie by the fastening means for retaining the rails in place, substantially as described.

2. The combination with rails, of a cross-tie provided at its upper face with a longitudinal recess extending from one rail to the other, and a cushioning plank or piece fitted in the recess and interposed between the cross-tie and the rails, substantially as described.

3. The combination with rails, of a cross-tie provided with a longitudinal recess and having projecting end portions located beyond the rails, and a cushioning plank or piece arranged within the recess and fitted against the projecting portions of the cross-tie and interposed between the latter and the rails, substantially as described.

4. The combination with a rail, of a cross-tie receiving the rail, and a rail-clamp consisting of a cap fitted on the cross-tie and provided at one end with an outwardly-extending rail-engaging portion engaging one of the bottom flanges of the rail, said clamp being provided at opposite sides of the cross-tie with depending flanges, substantially as described.

5. The combination of a cross-tie, a cushioning plank or piece arranged on the upper face of the cross-tie in position to receive a rail, and a rail-clamp consisting of a cap fitted on the cushioning plank or piece and provided with depending side flanges embracing the cross-tie and retaining the plank or piece in position, substantially as described.

6. The combination of a cross-tie provided at its upper face with a longitudinal recess, a cushioning plank or piece fitted in the recess and arranged to receive the rails, rail-engaging clamps consisting of clamps fitted on the cross-tie and provided with depending side flanges and retaining the cushioning plank or piece in position, and fastening devices connecting the clamps and the cross-tie and piercing the cushioning plank or piece, substantially as described.

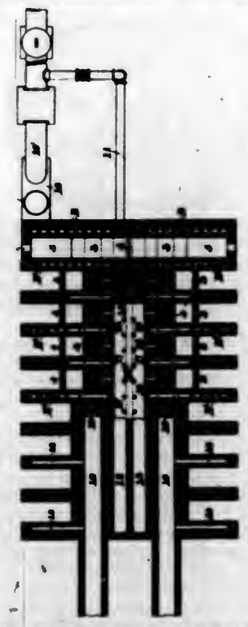
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**754,459. RETORT FOR MAKING GAS AND COKE.** ANTHONY C. KLEMAN, Pittsburg, Pa., assignor of one-half to James Scott, Pittsburg, Pa. Filed May 20, 1902. Serial No. 108,267. (No model.)

*Claim.*—1. A coke-retort chamber having means for applying heat thereto, said chamber having a bottom inclined in both directions from a middle angular ridge and discharge-openings at the ends of said inclined bottoms, the tops of said openings extending to a level above the ridge, and doors closing said discharge-openings; substantially as described.

2. A coke-retort chamber having means for applying heat thereto, said chamber having a bottom inclined in both directions from a middle angular ridge and discharge-openings at the ends of said inclined bottoms, the tops of said openings extending to a level above the ridge, doors closing said openings, and a combustion-chamber extending beneath said inclined bottoms; substantially as described.





3. The combination of a series of retort-chambers, a common combustion-chamber extending below the chambers transversely of the same, and arched flues in the walls, said flues extending over the chambers and communicating at one end with the combustion-chamber, and at the other end with the stack-flue; substantially as described.

4. The combination of a series of gas-retort chambers having inclined bottoms, a common combustion-chamber extending transversely of the retort-chambers beneath the bottom thereof, and arched flues in the walls, said flues extending over the retort-chambers and being connected at one end with the combustion-chamber, and at the other end with a stack-flue; substantially as described.

5. A series of coke-retort chambers located side by side and adjacent to each other, each chamber having an inclined bottom and a door at the base, means for applying heat to all of said retort-chambers from a common source, and gas-eduction pipes leading from their tops to the gas-main; substantially as described.

6. A series of coke-retort chambers located side by side and adjacent to each other, each chamber having a bottom inclined in both directions from a middle angular ridge, doors at the bases of the inclines, gas-eduction pipes leading from the eduction-chamber to the gas-main, and means for heating the bottoms and sides of all of said retorts; substantially as described.

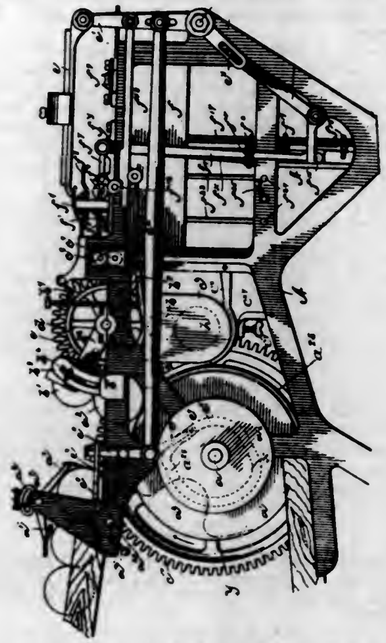
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**754,460. LABELING-MACHINE.** DANIEL W. KENELY, Dayton, Ohio, assignor of two-thirds to George H. Kramer and Frank J. Kramer, Dayton, Ohio. Original application filed Sept. 20, 1901, Serial No. 75,971. Divided and this application filed Nov. 5, 1902. Serial No. 130,124. (No model.)

*Claim.*—1. In a labeling-machine, the combination of operating devices with label feeding and pasting devices consisting in part of a pivoted yoke, a roll journaled in said yoke and means to fix said yoke in different radial positions to its pivot, a feedway for the articles to be labeled adjacent to said roll, holding devices having two or more projecting arms adjacent to said feedway, and means to adjust said projecting arms in their relation to each other and to said feedway, substantially as specified.

2. In a label and article feeding mechanism, a guideway for the article to be labeled, a pair of rolls operating in a fixed position in relation to each other and to said guideway, a pivoted yoke in which the respective ends of one of said rolls are journaled, and means to adjust and fix said yoke in different radial positions, whereby said roll can be adjusted to the size of the article to be labeled.

3. In a label and article feeding mechanism, a guideway for the article to be labeled, a pair of rolls operating in a fixed position in relation to each other and to said guideway, pivoted arms in which the respective ends of one of said rolls are journaled, and means to independently adjust and fix the radial position of each of said arms and thereby the roll they carry in its relation to the other roll, for the purpose of adjusting said rolls to articles of irregular shape.



4. In a label and article feeding mechanism, a feedway, including guides for the articles to be labeled, means to adjust said guides to the size of the article to be labeled, and auxiliary devices giving an independent lateral movement to said guides to change the course of the article to be labeled in its relation to the label-feeding mechanism, whereby narrow labels can be attached in different positions on the article as desired.

5. In a label and article feeding mechanism, a feedway including guides for the articles to be labeled, means to adjust said guides to said articles and auxiliary devices, including a hinged extension to one of said guides, with means to adjust the other laterally, whereby the feed-line of said article can be changed in its relation to the label-feeding mechanism, for the purpose specified.

6. In a labeling-machine having peripheral grooves thereon, of a hinged scraper having projecting fingers adapted to extend into said grooves, and means at the respective ends of said scraper to normally hold said scraper from contact with said roll and to adjust its relation to said roll whereby the thickness of the paste can be regulated from either or both ends of the scraper.

7. In a labeling-machine, the combination with paste-feeding rolls, of a paste-box slidingly connected with said rolls, and means to adjust the position of said box in its relation to said rolls, substantially as specified.

8. In a labeling-machine, the combination of operating devices, label-feeding devices, a movable support for the labels, a clutch mechanism for operating said support, a governor having one arm resting on the labels and another arm with an arm pivoted thereto to engage and regulate the movement of said clutch mechanism, and means engaging said last-named arms to adjust said regulation, substantially as specified.

9. In a labeling-machine, the combination of operating devices, label-feeding devices, a movable support for the labels, a clutch mechanism for operating said support, a governor having one arm resting on the labels and another arm with an arm pivoted thereto to engage and regulate the movement of said clutch mechanism, a spring interposed between said last-named arms and a screw to vary the position of said arm in relation to said clutch mechanism to adjust said regulation, substantially as specified.

10. In a label and article feeding mechanism, a pair of rolls, one of which is adjustable in its relation to the size of the article to be labeled and adjusting devices at the respective ends of the other roll to adjust it to the shape of the article to be labeled, substantially as specified.

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**754,461. PROCESS OF FERMENTING HONEY.** ANTON V. KOUBA, Milligan, Nebr. Filed Apr. 6, 1903. Serial No. 151,377. (No specimens.)

*Claim.*—1. A process of fermenting a beverage consisting in taking natural honey, adding water to same, boiling the liquid thus formed removing all scum and foam during the boiling, adding chalk in the proportion of forty pounds to one hundred gallons of liquid, boiling approximately thirty minutes, adding charcoal in the proportion of fifty pounds to one hundred gallons of liquid, boiling one hour, cooling the liquid, drawing same off from the chalk and charcoal, and adding suitable ferments.

2. The process of fermenting a beverage consisting in mixing natural honey and water to a saccharimeter standard of substantially 21°, of boiling said liquid and continuously removing the foam and scum, of slowly adding chalk to the liquid in the proportion of substantially forty pounds of chalk to one hundred gallons of liquid, of continuing the boiling and removal of the scum and adding fifty pounds of animal charcoal to one hundred gallons of liquid, of running the liquid into a tank cooling and settling, of drawing the liquid off from the chalk and charcoal, and adding yeast and other ingredients adapted to produce a fermentation.

3. The process of the kind described consisting of clarifying a mixture of water and natural honey, of adding to one hundred gallons of the clarified liquid at a strength of 21° saccharimeter test, fifteen pounds of vine-yeast, six ounces of phosphate of ammonia, fifteen ounces of tartrate of ammonia, twenty-five ounces of bitartrate of potassium, eleven ounces of tartaric acid, and six ounces of sulfate of magnesia, substantially as described.

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**754,462. GARMENT-CLASP.** ALFRED J. KREBSER, Milwaukee, Wis., assignor of two-thirds to Henry G. Russell and Edward H. Mundt, Milwaukee, Wis. Filed Sept. 4, 1902. Serial No. 122,094. (No model.)



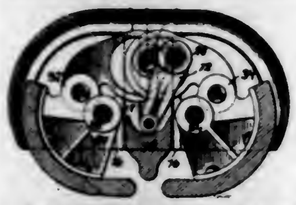
*Claim.*—1. In a device of the described class, the combination of a slotted fulcrum-plate; a lever pivotally secured thereto and extended through the slot; a clamping-plate connected with the fulcrum-plate at one end and formed with an arch extending around one arm of the lever; and a spring for holding the lever, with said arm, in clamping relation to an inwardly-curving side of said arched portion of the plate.

2. The combination of a fulcrum-plate and a clamping-plate connected at one end, with the free end portion of the clamping-plate curved inwardly toward the fulcrum-plate; a clamping-lever pivotally secured to the fulcrum-plate, with one end projecting toward the clamping-plate, and adapted to bear against the inwardly-curving portion of the clamping-plate, whereby material engaged between the lever and clamping-plate, will, when subjected to strain, draw the lever against the angular face of the inwardly-curving portion of the clamping-plate.

3. In a device of the described class, the combination of a slotted fulcrum-plate; an elbowed lever pivotally secured thereto, with one arm extended through the slot and the other arm normally parallel with the plate; a clamping-plate connected with the fulcrum-plate at one end, arranged to form an arch *b*, and an inwardly-curving crown *d*, near its free end, the arm of the lever which projects through the slot in the fulcrum-plate being arranged to extend into the arch of the clamping-plate, and adapted to engage the inwardly-curving portion of the latter in the rear of the crown *d*, said clamping-plate being adapted to yield resiliently to pressure exerted by the lever.

4. In a device of the described class the combination of a slotted fulcrum-plate; a lever pivotally secured thereto, with one arm extending through the slot and doubled backwardly along the under side of the fulcrum-plate, with a downwardly-extending end portion 8; a clamping-plate having resilient connection at one end with the fulcrum-plate and arched around the end of the portion 8 of the clamping-lever.

**754,463. MASSAGE-MACHINE.** PHILIP J. KROLL, New York, N. Y. Filed Nov. 2, 1903. Serial No. 179,562. (No model.)



*Claim.*—1. In a massage-machine, three flesh-compressing members and mechanism for intermittently moving said members to approach one another, two of said members being constructed and arranged to compress the flesh between them and the third member to act upon said compressed flesh in a direction normal to the body of the patient.

2. In a massage-machine, three flesh-compressing members, mechanism for intermittently moving two of said members to approach one another, and mechanism for intermittently moving said third member into the space between said first two members and in a direction normal to the body of the patient.

3. In a massage-machine, two flesh-compressing members, mechanism for moving said members toward and from one another, and a reciprocating pushing member constructed and arranged to compress the flesh grasped by said first-named members in a direction normal to the body of the patient; all of said members having narrow elongated rounded faces acting upon said flesh.

4. In a massage-machine, an inclosing shell, two swinging jaws pivoted therein, a rotary shaft and mechanism actuated by said shaft for actuating said jaws intermittently to approach one another.

5. In a massage-machine, an inclosing shell, two swinging jaws pivoted therein, a rotary shaft and eccentrics on said shaft actuating said jaws intermittently to approach one another.

6. In a massage-machine, an inclosing shell, a rotary shaft therein, a sliding pusher, and mechanism actuated by said shaft for causing said pusher intermittently to protrude from said shell.

7. In a massage-machine, an inclosing shell, a rotary shaft, two swinging jaws pivoted therein, a pusher constructed intermittently to move into the space between said jaws and mechanism actuated by said shaft for reciprocating said pusher and for causing said jaws intermittently to approach one another.

8. In combination with an inclosing shell and a rotary shaft therein, a crank on said shaft, a reciprocating pusher, a pitman connecting said crank and pusher, reversely-set eccentrics on said shaft, two swinging jaws pivoted in said shell, and links respectively connecting said jaws to said eccentrics.

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**754,464. SIGHTING OR OBSERVING TUBE FOR VESSELS.** SIMON LAKE, Bridgeport, Conn. Filed Nov. 12, 1903. Serial No. 180,836. (No model.)

*Claim.*—1. The combination with a vessel, of a sighting-tube having in its upper or outer end a reflector movably mounted therein for receiving and reflecting inwardly an image of an external object, and means connected with said reflector and automatically controlled independently of the trim of the vessel for maintaining said reflector trained toward external objects at the level of the water.

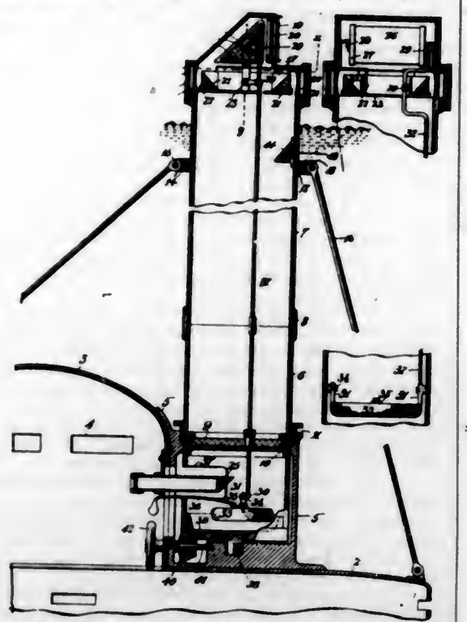
2. The combination with a vessel, of a sighting-tube having revolubly mounted in its upper or outer end a reflector for receiving and reflecting inwardly an image of an external object, and means connected with said reflector and automatically controlled independently of the trim of the vessel for maintaining said reflector trained toward external objects at the level of the water.

3. The combination with a vessel, of a sighting-tube, an inclined reflector movably mounted in the upper end of said tube, a pendulum, and a connection between said pendulum and said reflector whereby the degree of inclination of the latter is varied with the movement of the pendulum.

4. The combination with a vessel, of a sighting-tube, an inclined reflector pivotally mounted in the upper end of said tube, a pendulum mounted in the lower end of said tube, and a connection between said pendulum and said reflector whereby the degree of inclination of the latter is varied with the movement of the pendulum.

5. The combination with a submarine vessel, of a sighting-tube, an inclined reflector movably mounted in the upper end of said tube and adapted to receive and reflect inwardly through said tube an image of an external object, a second reflector disposed beneath and normally in the range of said first-named reflector, and means for controlling the inclination of said first-named reflector governed by a device operating independently of the trim of the vessel whereby said second-named reflector and said external object may be maintained constantly in the range of said first-named reflector.





6. The combination with a submarine vessel, of a sighting-tube, an inclined reflector mounted in the upper or outer end of said tube and adapted to receive an image of an external object and to reflect it inwardly through said tube, and a second reflector intermediate said first-named reflector and the inner or lower end of said tube, disposed slightly above the level of the highest portion of said vessel and at a distance below said first-named reflector to serve as a gage for indicating the total submergence of said vessel while the first-named reflector remains above the surface of the water.

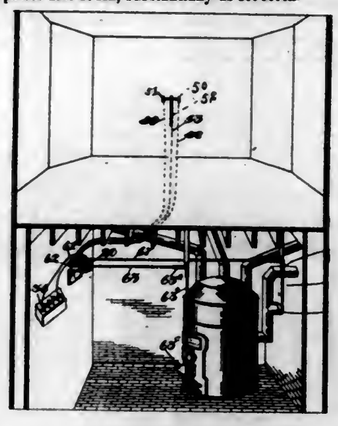
7. The combination with a submarine vessel, of a sighting-tube extending upwardly above the highest portion of the same, a reflector mounted in the upper end of the said tube and adapted to receive and to reflect inwardly through the same an image of an external object, and a gage carried by said tube materially below said reflector but above the highest portion of said vessel and adapted to indicate when the latter is totally submerged.

8. The combination with a submarine vessel, of a sighting-tube mounted revolubly upon the same, and provided in its upper end with a reflector adapted to receive and to reflect downwardly through said tube an image of an external object, a collar loosely embracing said tube and locked from longitudinal movement thereon, guys connecting said collar with said boat for staying said tube against lateral displacement, and means for turning said tube in respect of said boat.

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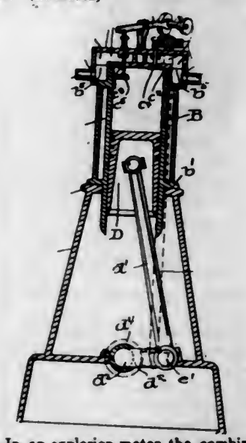
**754,465. AUTOMATIC ELECTRIC HEAT-REGULATOR.** DANIEL M. LEIB, Elkhart, Ind., assignor to the Automatic Heat Regulator Company, Elkhart, Ind., a Corporation. Filed Apr. 10, 1902. Serial No. 102,172. (No model.)

*Claim.*—In a device for the purpose described the combination of an electromagnet, an insulated contact-point connected with one terminal thereof, a battery connected with the other terminal of said magnet, a shaft, a notched friction-wheel on said shaft, an armature for said magnet, a clutch-bar operatively connected with said armature and gripping and embracing the edge of said wheel, a contact-spring on said armature adapted to contact with said insulated contact-point, a spring electrically connected with said contact-spring and with said clutch-bar and compressed between the latter for holding the bar in position and placing it in electrical communication with said contact-spring, a two-part contact-disk having its parts electrically connected together, insulated contact-plates, a brush carried by said shaft and adapted to sweep said insulated contact-plates and contact-disk, a thermostat and means whereby said thermostat alternately closes the circuit through said contact-plates and brush, substantially as set forth.



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**754,466. EXPLOSIVE-ENGINE.** SHIRLEY S. LEWIS and ALBERT LEWIS, Syracuse, N. Y., assignors to Lewis Gas Engine and Machine Company, a Corporation of New Jersey. Filed Jan. 2, 1902. Serial No. 88,090. (No model.)



*Claim.*—In an explosion-motor, the combination with the exhaust-valve and a cam whose speed is proportional to the speed of the motor, a lever, adapted to actuate the valve when tipped, a disk carried by same adapted to contact with the cam to tip the lever periodically, and a smaller disk carried eccentric of the first-mentioned disk and adjustable with relation to the cam to contact with the cam when moved into a contacting position to tip the lever semiperiodically.

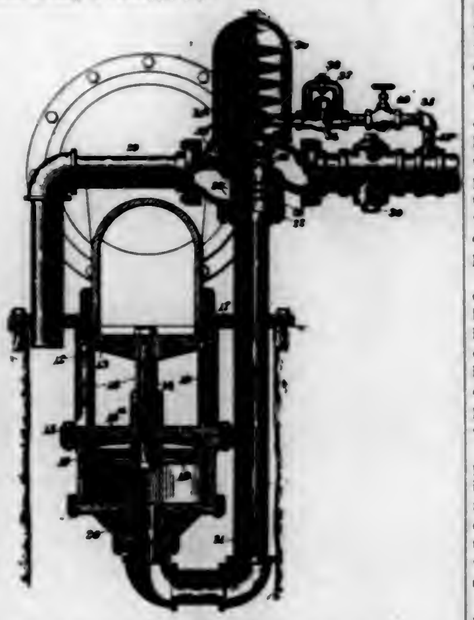
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**754,467. RELIEF-VALVE.** NATHANIEL LOMBARD, Brookline, Mass., assignor to the N. Lombard Improved Governor Company, Boston, Mass., a Corporation of Maine. Filed Aug. 11, 1902. Serial No. 119,151. (No model.)

*Claim.*—1. The combination with a conduit system, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a casing, a pipe leading from the lower end of the casing to the piston-chamber, a supply-pipe from the conduit system delivering through openings in the side of said casing, a discharge-pipe communicating through other side openings with the casing, a hollow reciprocatory valve having openings adapted to register with those leading to the supply-pipe and discharge-pipe, an actuator for the reciprocatory valve consisting of an expansible chamber, and a connector between said actuator and said controlling-valve.

2. The combination with a conduit system, of a relief-valve there-

ia, a piston for operating the relief-valve, a chamber in which the piston is contained, a casing provided with a series of inlet-ports, a pipe leading from the lower end of the casing to the piston-chamber, a supply-pipe from the conduit system delivering through the ports in the side of the casing, and a hollow reciprocatory valve having a corresponding number of ports adapted to register with those leading to the supply-pipe.



3. The combination with a conduit system, of a relief-valve, a piston for operating the relief-valve, a chamber in which the piston is contained, a casing provided with a series of outlet-ports, a pipe leading from the lower end of the casing to the piston-chamber, a discharge-pipe from said chamber communicating through the ports in the side of said casing, and a hollow reciprocatory valve having a corresponding number of ports adapted to register with those leading to said discharge-pipe.

4. The combination with a conduit system, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a casing, a pipe leading from the end of the casing to the piston-chamber, a supply-pipe from the conduit system delivering through openings in the side of the casing, a discharge-pipe communicating through other side openings with the casing, and a hollow reciprocatory valve having openings adapted to register with those leading to the supply-pipe and discharge-pipe.

5. The combination with a conduit system, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a casing, a pipe leading from the end of the casing to the piston-chamber, a supply-pipe from the conduit system delivering through openings in the side of the casing, a discharge-pipe communicating through other side openings with the casing, a hollow reciprocatory valve having openings adapted to register with those leading to the supply-pipe and the discharge-pipe, and automatic means for reciprocating the valve.

6. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a valve controlling the application of pressure, an actuator for the controlling-valve, means for admitting pressure to the actuator, and a check-valve and a relatively restricted passage cooperating to regulate the diminution of pressure upon the actuator.

7. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a valve controlling the application of pressure, an actuator for the controlling-valve, a pipe for admitting pressure to the actuator, a check-valve in said pipe and a by-pass about the check-valve and a valve in said by-pass.

8. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a valve controlling the application of pressure, an actuator for the controlling-valve, means for admitting pressure to the actuator, a check-valve, a by-pass about the check-valve, and means for controlling the movement of fluid through the by-pass.

9. The combination with a conduit adapted to contain fluid under pressure, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a valve controlling the flow through the pipe, a diaphragm forming at least one wall of a chamber a pipe delivering to the diaphragm-chamber the fluid-pressure of the conduit, a check-valve in said pressure-pipe opening in the direction of the diaphragm-chamber and a relatively restricted passage connecting the pipe on either side of said check-valve.

10. The combination with a conduit adapted to contain fluid under pressure, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a valve controlling the flow through the pipe, a diaphragm forming at least one wall of a chamber, a pipe delivering to the diaphragm-chamber the fluid-pressure of the conduit, a check-valve in said pressure-pipe opening in the direction of the diaphragm-chamber, and a relatively restricted pipe opening into the pressure-pipe on each side of the check-valve.

11. The combination with a conduit adpted to contain fluid under pressure, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a valve controlling the flow through the pipe, a diaphragm forming at least one wall of a chamber, a pipe delivering to the diaphragm-chamber the fluid-pressure of the conduit, a check-valve in said pressure-pipe opening in the direction of the diaphragm-chamber, a pipe opening into the pressure-pipe on each side of the check-valve, and a valve in this last-named pipe.

12. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a valve controlling the flow through the pipe, a plurality of diaphragms forming expansible chambers, a connection between one of the diaphragms and the controlling-valve, a supply-pipe to said diaphragm mechanism, a check-valve in said supply-pipe, and a relatively restricted by-pass about said check-valve.

13. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a valve controlling the application of pressure, an actuator for the controlling-valve consisting of an expansible chamber, a connector between said actuator and said controlling-valve, a supply-pipe admitting pressure to said expansible chamber, means for permitting the free passage of fluid through the pipe to the actuator, and means for restricting the passage of the fluid in the opposite direction.

14. The combination of a supply-pipe, a valve-chamber for said supply-pipe, a valve in said chamber adapted to regulate the flow of fluid, an expansible chamber above said valve-chamber and separated therefrom by a partition provided with a fluid-tight bearing, a valve-rod connecting the top of said expansible chamber to said valve and passing through said bearing, and a pipe from the fluid-supply leading to said expansible chamber for the admission and exit of the fluid.

15. The combination of a supply-pipe, a valve-chamber for said supply-pipe, a valve in said chamber adapted to regulate the flow of fluid, a hollow base above said valve-chamber and separated therefrom by a partition provided with a fluid-tight bearing, a valve-rod secured to said valve and passing through said bearing, an expansible chamber secured to said hollow base and communicating therewith and having its upper portion secured to the end of said valve-rod whereby said valve will be governed in its movement by the expansion and contraction of said expansible chamber, and a pipe from the fluid-supply leading to said base for the admission and exit of the fluid.

16. The combination of a supply-pipe, a valve-chamber in said supply-pipe, a valve in said chamber adapted to regulate the flow of fluid, a hollow base above said valve-chamber and separated therefrom by a partition provided with a fluid-tight bearing, a valve-rod secured to said valve and passing through said bearing, an expansible chamber secured to said hollow base and communicating therewith and having its upper portion secured to the end of said valve-rod whereby said valve will be governed in its movement by the expansion and contraction of said expansible chamber, a pipe from the fluid-supply leading to said base for the admission and exit of the fluid, and means for adjusting the position of said valve-rod relative to said expansible chamber.

17. The combination of a supply-pipe, a valve-chamber in said supply-pipe, a valve in said chamber adapted to regulate the flow of fluid, a hollow base above said valve-chamber and separated therefrom by a partition provided with a fluid-tight bearing, a valve-rod secured to said valve and passing through said bearing, a plurality of oval diaphragm-chambers, the lower of which is secured to said hollow base and communicates therewith, tubular necks connecting the same at their centers whereby they all expand in unison, means for adjustably connecting the upper diaphragm-chamber to said valve-rod which passes through said chambers and necks, and a pipe from the fluid-supply communicating with said base for the admission and exit of the fluid.

18. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a supply-pipe, a valve in said supply-pipe controlling the application of pressure, a diaphragm-chamber above said valve and separated therefrom by a partition and composed of top and bottom portions riveted together at their edges, said top and bottom portions being normally curved outwardly and having an annular depression or groove at or near the outer portion thereof, a rod connecting said valve with the upper portion of said chamber and passing through a fluid-tight bearing in said partition, and a secondary fluid-passage from the fluid-supply communicating with said diaphragm-chamber.

19. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a supply-pipe, a valve in said supply-pipe controlling the application of pressure, a diaphragm-chamber composed of top and bottom portions riveted together at their edges, said top and bottom portions being normally curved outwardly and having a series of annular depressions or grooves therein, a partition between said supply-pipe and said diaphragm-chamber, a rod connecting said valve with the upper portion of said chamber and provided with a fluid-tight bearing in said partition, and a pipe from the fluid-supply communicating with said diaphragm-chamber for the admission and exit of the fluid.

20. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a supply-pipe, a hollow base, a pipe from the fluid-supply leading to said base for the admission and exit of fluid, an expansible chamber mounted upon and communicating with said hollow base, a valve-rod secured to the upper portion of said expansible chamber and passing through a fluid-tight bearing in the bottom of said hollow base, and a valve in said supply-pipe secured to said rod below said base adapted to regulate the flow of fluid to operate said relief-valve and governed in its movement by the expansion and contraction of said expansible chamber.

21. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a supply-pipe, a hollow base, a pipe from the fluid-supply leading to said base for the admission and exit of the fluid, an expansible chamber mounted upon and communicating with said hollow base, a valve-rod secured to the upper portion of said expansible chamber, a partition between said supply-pipe and said expansible chamber provided with a fluid-tight bearing for said valve-rod, means for adjusting the position of said rod relative to said expansible chamber, and a valve in said supply-pipe secured to said rod adapted to regulate the flow of fluid to operate said relief-valve and governed in its movement by the expansion and contraction of said expansible chamber.

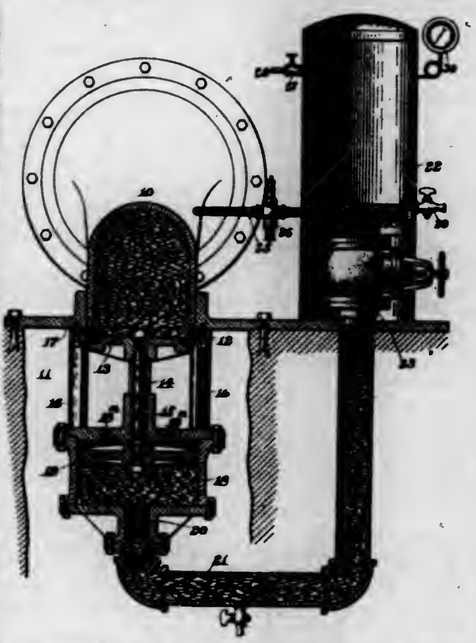
22. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a supply-pipe, a valve in said supply-pipe controlling the application of pressure, a plurality of oval metallic diaphragm-chambers, the interior of each of said chambers being in communication with each other, a support for said chambers, a valve-rod passing through the communicating passages and connecting with the upper portion of the upper chamber and with the said controlling-valve, a partition between said diaphragm-chambers and said supply-pipe provided with a fluid-tight bearing for said valve-rod, and means connected with the fluid-supply for permitting the inlet of fluid-pressure to said chambers and an outlet for said fluid-pressure whereby said chambers are caused to expand or contract according to requirement.

23. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a plurality of oval diaphragm-chambers, tubular necks connecting the same at their centers whereby they all expand in unison, a valve-stem depending from the top of the uppermost chamber, means acting on the upper surface of the uppermost chamber for adjusting the position of the valve-stem, a supply-pipe, a partition between said supply-pipe and said diaphragm-chambers provided with a fluid-tight bearing for said valve-stem, a valve controlling the application of pressure carried by the lower end of said stem, said stem being passed through said chambers and necks, and a pipe from the fluid-supply communicating with said diaphragm-chambers for the admission and exit of fluid.

24. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a supply-pipe therefor, a plurality of oval diaphragm-chambers, tubular necks connecting the same at their centers whereby they all expand in unison, a valve-stem depending from the top of the uppermost chamber, means for adjusting the position of said rod, a partition between said supply-pipe and said diaphragm-chambers provided with a fluid-tight bearing for said valve-rod, a valve controlling the application of pressure carried by the lower end of said stem, said stem being passed through said chambers and necks, and a pipe from the fluid-supply communicating with said diaphragm-chambers for the admission and exit of fluid.



## 754,468. SAFETY-VALVE. NATHANIEL LOMBARD, Worcester, Mass., assignor to the N. Lombard Improved Governor Company, Waterville, Me., a Corporation of Maine. Filed July 11, 1903. Serial No. 165,087. (No model.)



*Claim.*—1. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, and a pipe leading from said air-chamber to said conduit.

2. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, and a valve in the pipe connecting the conduit with the air-chamber.

3. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, and a gate in the pipe connecting the air-chamber with the relief-valve.

4. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston

is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, a gate in the pipe connecting the air-chamber with the relief-valve, and a valve in the pipe connecting the conduit with the air-chamber.

5. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a closed cylinder with which the opposite end of said pipe communicates, means for maintaining within said cylinder a relatively constant pressure, a fluid-supply pipe communicating with said conduit and said cylinder, and means for regulating the amount of fluid passing through said supply-pipe.

6. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a closed cylinder with which the opposite end of the pipe communicates, means for maintaining within said cylinder a relatively constant pressure, a pipe from said conduit communicating with said cylinder and supplying fluid thereto, and a valve in said pipe adapted to regulate the amount of fluid passing therethrough.

7. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the pistoe is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, and means for withdrawing the fluid from the pipe leading to said piston-chamber.

8. The combination with a conduit, of a relief-valve therein, means for applying fluid-pressure to retain the relief-valve normally closed, a valve controlling the application of pressure, and compressible means removed from and independent of said pressure-controlling valve with which it does not coact but communicating with the device for applying fluid-pressure, said compressible means being adapted to permit the opening of said relief-valve when an undue pressure is attained within said conduit and to close said relief-valve when the undue pressure has been relieved.

9. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a relief-reservoir communicating with the opposite end of said pipe, means for maintaining within said relief-reservoir a relatively constant pressure, and a pipe leading from said relief-reservoir to said conduit.

10. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, and a reducing-valve in the pipe connecting the conduit with the air-chamber.

11. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, and means for supplying air to said air-chamber.

12. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, and an air-supply pipe communicating with said air-chamber.

13. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, an air-supply pipe communicating with said air-chamber, and a valve in said air-supply pipe.

14. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, a valve in the pipe connecting the conduit with the air-chamber, and means for determining the water-level in said air-chamber.

15. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, a valve in the pipe connecting the conduit with the air-chamber, and means for determining the amount of pressure in said air-chamber.

16. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, means for maintaining within said air-chamber a relatively constant pressure, a pipe leading from said air-chamber to said conduit, a valve in the pipe connecting the conduit with the air-chamber, and a pressure-gage communicating with said air-chamber.

17. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, means for determining the pressure within said air-chamber, an air-supply pipe, and a valve in said air-supply pipe.

18. The combination with a conduit, of a relief-valve therein a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, and a cock communicating with said air-chamber at the predetermined water-level.

19. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a gate in the pipe connecting the air-chamber with the relief-valve, and a reducing-valve in the pipe connecting the conduit with the air-chamber.

20. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve therein, and means for withdrawing the fluid from the pipe leading to said piston-chamber.

21. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, a relief-reservoir communicating with the opposite end of said pipe, a pipe leading from said relief-reservoir to said conduit, and a reducing-valve in said pipe.

22. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, and means for determining the water-level in said air-chamber.

23. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, and means for determining the amount of pressure in said air-chamber.

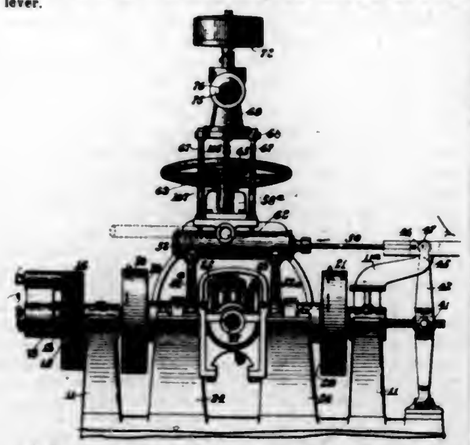
24. The combination with a conduit, of a relief-valve therein, a piston for operating the relief-valve, a chamber in which the piston is contained, a pipe leading to the chamber, an air-chamber communicating with the opposite end of said pipe, a pipe leading from said air-chamber to said conduit, a reducing-valve in the pipe connecting the conduit with the air-chamber, and a pressure-gage communicating with said air-chamber.

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**754,469. GOVERNOR.** NATHANIEL LOMBARD, Worcester, Mass., assignor to the N. Lombard Improved Governor Company, Waterville, Me., a Corporation of Maine. Filed July 11, 1903. Serial No. 165,088. (No model.)

*Claim.*—1. In a governor, the combination with a hollow actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft located in part within said actuating-shaft, a rod slidable within said actuating-shaft, a pivoted lever connected intermediate its ends to said rod, and power mechanism acting upon the outer end of said lever.





2. In a governor, the combination with a hollow actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft located in part within said actuating-shaft, a rod movable within said actuating-shaft, a pivoted lever connected intermediate its ends to said rod, power mechanism acting upon the outer end of said lever, and means for controlling the application of power.

3. In a governor, the combination with a motor-controlling shaft, of a hollow actuating-shaft therefor, means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft located in part within said actuating-shaft, a pivoted lever connected intermediate its ends to said rod, and power mechanism acting upon the outer end of said lever.

4. In a governor, the combination with a hollow actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft located in part within said actuating-shaft, a rod slidable within said actuating-shaft, a pivoted lever connected intermediate its ends to said rod, a power-cylinder acting upon the outer end of said lever, and a valve for controlling the admission of pressure to the cylinder.

5. In a governor, the combination with a motor-controlling shaft, of a hollow actuating-shaft therefor, two oppositely-rotating driving-shafts, pairs of coacting clutch members carried by the actuating-shaft and driving-shafts, an operating member for the clutches movable within the actuating-shaft, a pivoted lever connected intermediate its ends with said operating member, and a power-cylinder acting upon said lever.

6. In a governor, the combination with a motor-controlling shaft, of a hollow actuating-shaft therefor, two oppositely-rotating driving-shafts, pairs of coacting clutch members carried by the actuating-shaft and driving-shafts, an operating member for the clutches movable within the actuating-shaft, a pivoted lever connected intermediate its ends with said operating member, a power-cylinder acting upon said lever, and a valve controlling the admission of pressure to the cylinder.

7. In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts, pairs of coacting clutch members carried by the actuating-shaft and driving-shafts, a rod movable within the actuating-shaft, flexible members connecting the rod and one of each pair of clutch members, a pivoted lever connected intermediate its ends with said rods, and a power-cylinder acting upon said lever.

8. In a governor, the combination with a motor-controlling shaft, of a hollow actuating-shaft therefor, two oppositely-rotating driving-shafts, pairs of coacting clutch members carried by the actuating-shaft and driving-shafts, a rod provided with a recess movable within the actuating-shaft, chains secured within the recess and to one of each pair of clutch members, a pivoted lever connected intermediate its ends with said rod, and a power-cylinder acting upon said lever.

9. In a governor, the combination with a hollow actuating-shaft of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a lever connected with the clutches at a point intermediate its ends, power mechanism acting upon one end of the lever, and mechanism connected with the actuating-shaft for changing the position of said lever.

10. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a lever connected with the clutches at a point intermediate its ends, power mechanism acting upon one end of the lever, and mechanism connected with the actuating-shaft for automatically changing the relative positions of said lever and said connecting mechanism to disengage the clutches.

11. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a pivoted lever, a power-cylinder for operating the free end of said lever, a threaded bearing swiveled to said lever intermediate its ends, a threaded rod coacting with said bearing and operated by said actuating-shaft to change the relative positions of said lever and rod.

12. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a pivoted lever, a swiveled block mounted on said lever intermediate its ends, a rod connected with the clutches and threaded into said swiveled block, and power mechanism acting upon the outer end of the lever.

13. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a pivoted lever connected with the clutches at a point intermediate its ends, and power mechanism acting upon one end of the lever.

14. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connected with the driving-shafts and actuating-shaft, a pivoted lever, a connector connecting the clutches with said lever at a point intermediate its ends, power mechanism acting upon one end of the lever to effect the engagement of the clutches, and mechanism interposed between said clutch-connector and said lever for automatically effecting the disengagement of the clutches.

15. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a pivoted lever, a connector connecting the clutches with said lever at a point intermediate its ends, a power-cylinder acting upon one end of the lever to effect the engagement of the clutches, and mechanism interposed between said actuating-shaft and said lever for automatically effecting the disengagement of the clutches.

16. In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts surrounding the actuating-shaft, an outer clutch member fast upon each driving-shaft, coacting inner clutch members fast upon the actuating-shaft, a rod within the actuating-shaft connected with the inner clutch members, a pivoted lever connected with the rod, and means for applying power to the movable end of said lever.

17. In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts surrounding the actuating-shaft, an outer clutch member fast upon each driving-shaft, coacting inner clutch members fast upon the actuating-shaft, a rod within the actuating-shaft, chains connecting the rod and inner clutch members, a pivoted lever, a threaded block swiveled in said lever, a threaded end to said rod coacting with said swiveled block, and means for applying power to the lever.

18. In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts surrounding the actuating-shaft, an outer clutch member fast upon each driving-shaft, coacting inner clutch member fast upon the actuating-shaft, a rod within the actuating-shaft connected with the inner clutch members, a pivoted lever provided with a swiveled block intermediate its ends, a threaded bearing in said block, a threaded end to said rod coacting with said bearing, and means for applying power to the outer end of said lever.

19. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a lever, a swiveled block mounted on said lever, a rod connected with the clutches and threaded into said swiveled block, and power mechanism acting upon one end of the lever.

20. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a pivoted lever, a threaded connector interposed between said lever and said clutches, and power mechanism acting upon one end of the lever.

21. In a governor, the combination with an actuating-shaft, of

two oppositely-rotating driving-shafts, clutches connected with the driving-shafts and actuating-shaft, a pivoted lever connected with the clutches at a point intermediate its ends, power mechanism acting upon one end of the lever to effect the engagement of the clutches, and mechanism interposed between said clutches and said lever for automatically effecting the disengagement of the clutches.

22. In a governor, the combination with an actuating-shaft, of two oppositely-rotating driving-shafts, clutches connecting the driving-shafts and actuating-shaft, a pivoted lever connected with the clutches at a point intermediate its ends, power mechanism acting upon one end of the lever to effect the engagement of the clutches, and mechanism interposed between said actuating-shaft and said lever for automatically effecting the disengagement of the clutches.

23 In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts surrounding the actuating-shaft, an outer clutch member fast upon each driving-shaft, coacting inner clutch members fast upon the actuating-shaft, a rod within the actuating-shaft connected with the inner clutch members, a pivoted lever or connector between said lever and rod, and means for applying power to the movable end of said lever.

24. In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts surrounding the actuating-shaft, an outer clutch member fast upon each driving-shaft, coacting inner clutch members fast upon the actuating-shaft, a rod within the actuating-shaft, chains connecting the rod and inner clutch members, a pivoted lever, a threaded block swiveled in said lever, a threaded end to said rod coacting with said swiveled block, a slide coacting with the outer end of said lever, and means for applying power to said slide.

25. In a governor, the combination with a hollow actuating-shaft, of two oppositely-rotating driving-shafts surrounding the actuating-shaft, an outer clutch member fast upon each driving-shaft, coacting inner clutch members fast upon the actuating-shaft, a rod within the actuating-shaft connected with the inner clutch members, a pivoted lever provided with a swiveled threaded bearing intermediate its ends, a threaded end to said rod coacting with said bearing, and means for applying power to the outer end of said lever.

26. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, means for controlling the application of power, a centrifugal weight rotatable from the motor, a rack mounted upon the weight, a rack upon the controlling means, and a pinion-connector meshing with said racks.

27. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, a rack mounted upon the weight, a rack upon the controlling means, a pinion-connector meshing with said racks, and means for counteracting the effect of the centrifugal mechanism upon the valve.

28. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, a rack mounted upon the weight, a rack secured to said valve, and a pinion-connector meshing with said racks.

29. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, a rack mounted upon the weight, a valve-stem, a rack swiveled to said stem, and a pinion-connector meshing with said racks.

30. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, a connector between said valve and said weight and reciprocated by the movement of the latter, and means for causing said controlling means to resume its normal position.

31. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, means for changing the radial movement of said weight to a reciprocatory movement of said valve, and power mechanism operated by said valve for counteracting the effect of the centrifugal mechanism upon the valve.

32. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, means for changing the radial movement of said weight to a reciprocatory movement of said valve, a lever operating with said valve, and a power-cylinder to operate said lever.

33. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, means for changing the radial movement of said weight to a reciprocatory movement of said valve, a lever operating with said valve, springs on either side of said lever to center the same, and a power-cylinder to operate said lever.

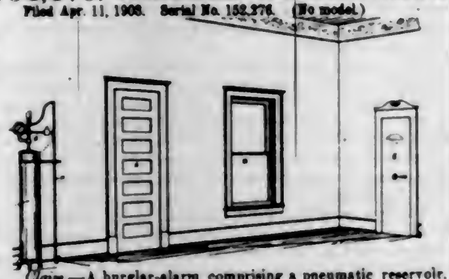
34. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, means for changing the radial movement of said weight to a reciprocatory movement of said valve, a lever operating with said valve, a power-cylinder to operate said lever, and inlet and exhaust passages communicating with said cylinder and controlled by said valve.

35. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, means for changing the radial movement of said weight to a reciprocatory movement of said valve, a lever operating with said valve, a power-cylinder to operate said lever, inlet and exhaust passages communicating with said cylinder and controlled by said valve, and valves in said passages to regulate the flow of fluid therein.

36. In a governor, the combination with an actuating-shaft, of means for rotating the actuating-shaft in opposite directions, connectors between the rotating means and actuating-shaft, power mechanism acting upon the connectors, a valve for controlling the application of power, a centrifugal weight rotatable from the motor, a connector between said valve and said weight and reciprocated by the movement of the latter, a lever operating with said valve, a piston therein connected with said lever, inlet and exhaust passages communicating with said cylinder and controlled by said valve, and valves in said passages to regulate the flow of fluid therein.

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**754,470. BURGLAR-ALARM. NATHAN A. LYLE, Kremlin, Okla. Filed Apr. 11, 1903. Serial No. 152,276. (No model.)**



*Claim.*—A burglar-alarm comprising a pneumatic reservoir, a discharge-valve, a whistle controlled by said valve, an arm pivotally attached to said valve, and a weight adjustably secured on said valve-arm, a second arm, a trip-rod pivotally secured to said second arm and having teeth to cooperate with the weighted arm and lines attached to the free end of the trip-rod, substantially as described.

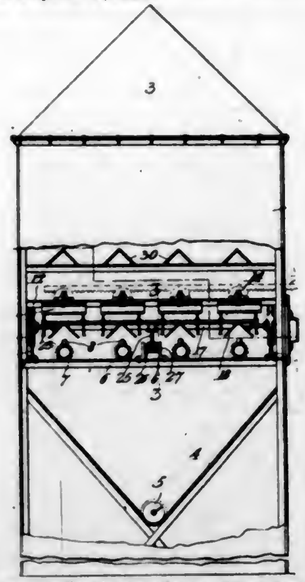
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**754,471. MACHINE FOR MAKING LAMPBLACK. JOHN H. MANN, West Union, W. Va. Filed Oct. 21, 1903. Serial No. 177,973. (No model.)**

*Claim.*—1. In apparatus for the manufacture of lampblack, a reversible plate or strip having depositing-faces of different character.



2. In apparatus for the manufacture of lampblack, a reversible plate or strip of which both sides form depositing-surfaces, and means for reversing the strip to expose either side to the burner, the surfaces being disposed respectively at different distances from said burner when in operative position.



3. In apparatus for the manufacture of lampblack, a plate or strip of which both sides form depositing-surfaces, and a pivotal supporting means, the axis of which is in a plane parallel with but out of alinement with both surfaces thereby to present such surfaces at different distances from the burner.

4. In apparatus for the manufacture of lampblack, the combination with a burner, of a depositing-plate formed of a pivotally-supported strip of metal having its opposite sides of different character and reversible to expose either of its sides to the burner.

5. In apparatus for the manufacture of lampblack, the combination with a burner, of a pivotally-mounted metallic strip of T shape in cross-section and reversible to expose either of its sides to the burner.

6. In apparatus for the manufacture of lampblack, the combination with a burner, of a metallic strip of T shape in cross-section and reversible to expose either of its sides to the burner, and pivotal supports connected to the vertical web of the strip.

7. In apparatus for the manufacture of lampblack, a burner-tube having a plurality of nipples, a strip or plate arranged above the tube and forming a depositing-surface, a wheeled frame movable longitudinally of the tubes between the latter and the strip, a hood or deflecting-plate carried by the frame, and a pair of oppositely-disposed scraping-blades carried by the frame at points above the plate and operable respectively in opposite directions.

8. In apparatus for the manufacture of lampblack, a burner-tube having a plurality of nipples, a strip or plate arranged above the hood and forming a depositing-surface, a wheeled frame extending between the tube and strip, a hood carried by the frame and forming a deflector, a pair of transversely-arranged bars in part supported by the hood, and oppositely-mounted counterweighted scrapers carried by the said bars.

9. In apparatus for the manufacture of lampblack, a casing, a burner-tube extending longitudinally thereof, a row of nipples carried by the burner-tube, the end nipples of the row being spaced from the walls of the casing, a wheeled frame, a deflector-hood carried by the frame and of a length less than the distance between the end nipples, and the casing-wall, and scrapers carried by said frame.

10. In apparatus for the manufacture of lampblack, a casing, burners, depositing-plates all arranged within the casing and spaced from each other, and inverted-V-shaped deflectors arranged in the upper portion of the casing at points over the depositing-surfaces and serving to direct particles of loose carbon between them.

11. In apparatus for the manufacture of lampblack, a burner-tube having a plurality of nipples, a reversible depositing-strip of T shape in cross-section, a deflecting-hood, a frame carrying the same and loosely-mounted interchangeable scrapers carried by said hood.

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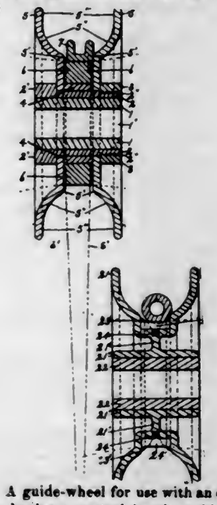
**754,472. ACETYLENE-GAS TORCH. WILLIAM H. MARSH, San Antonio, Tex. Filed Oct. 1, 1903. Serial No. 175,329. (No model.)**



*Claim.*—In an acetylene-gas torch of the class described a cylindrical receptacle A, a burner E screwed in the top cap of the same, a screen-bottom H for holding cotton and asbestos layers in place, a cylindrical receptacle B, holding in its upper compartment a cylinder U, with screen top and bottom, containing cotton or other porous material, and the lower compartment having a valve P, on a valve-seat L, with four valve-holes N, in a circle, all set forth and described.

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**754,473. GUIDE-WHEEL. ALEXANDER H. MATHESIUS, Brooklyn, N. Y. Original application filed Mar. 26, 1900, Serial No. 10,287. Divided and this application filed Feb. 14, 1901. Serial No. 47,339. (No model.)**



*Claim.*—1. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, the central bearing being made of harder material than the material of which the electrical conductor, rope or the like with which the central bearing may revolve in contact, is made, for the purpose specified.

2. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse

contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact; shoulders which adjoin and project beyond the central bearing, but which are of smaller diameter than the largest diameter of circular flanges of the guide-wheel, for the purpose specified.

3. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, convex curves which adjoin and project beyond the central bearing and which are located near the bottom of the cavity between circular flanges of the guide-wheel, for the purpose specified.

4. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, the central bearing being made of harder material than the material of which the electrical conductor, rope or the like, with which the central bearing may revolve in contact is made; flanges which project beyond the circumference of the central bearing, a hub, for the purpose specified.

5. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, and which is made of harder material than the material of which the electrical conductor, rope or the like, with which the central bearing revolves in contact, is made, flanges which project beyond the circumference of the central bearing, for the purpose specified.

6. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, flanges which are fitted with convex curves near the central bearing, concave curves joined thereto and straight lines near their largest diameters, for the purpose specified.

7. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, flanges which are fitted with convex curves near the central bearing and concave curves joined thereto, for the purpose specified.

8. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, flanges which are provided with a cavity which is composed of straight lines near their largest diameter, and concave lines joined thereto nearer the central bearing, for the purpose specified.

9. A guide-wheel for use with an electrical conductor, rope or the like, having a hub which is provided at each end with a head made of the integral part of the hub, an independently-fitted central bearing, for the purpose specified.

10. A guide-wheel for use with an electrical conductor, rope or the like, having a hub which is provided at each end with a head made of the integral part of the hub, independently-fitted flanges, for the purpose specified.

11. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, a hub which is fitted with a screw-nut, for the purpose specified.

12. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, a hub which is fitted with a shoulder at one end and a screw-nut at the other end, for the purpose specified.

13. A guide-wheel for use with an electrical conductor, rope or the like, having a central bearing which is provided with transverse contact-lines which are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which the central bearing may revolve in contact, bolts located between the central bearing and the hub, for the purpose specified

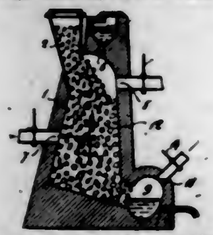
14. A guide-wheel composed of a central bearing of which the transverse contact-lines are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which it may revolve in contact; a separating-ring; a hub; a bushing; flanges which project beyond the transverse contact-lines of the central bearing; means for connecting the details together; and means for guiding them from a common axis, for the purpose specified.

15. A guide-wheel composed of a central bearing of which the transverse contact-lines are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of the cross-section of an electrical conductor, rope or the like, with which it may revolve in contact; a hub; a bushing; flanges which project beyond the transverse contact-lines of the central bearing; means for connecting the details together; and means for guiding them from a common axis, for the purpose specified.

16. A guide-wheel which is composed of a central bearing of which the transverse contact-lines are less curved than the same length of an arc of the largest circle which may be inscribed in the boundary of a cross-section of an electrical conductor, rope or the like, with which it may revolve in contact; a hub; flanges which project beyond the transverse contact-lines of the central bearing; means for connecting the details together; and means for guiding them from a common axis, for the purpose specified.

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**754,474. PROCESS OF MAKING NITROGEN COMPOUNDS FROM ATMOSPHERIC NITROGEN.** HERMANN MEMMER, Steglitz, near Berlin, Germany. Filed July 30, 1903. Serial No. 167,593. (No specimens.)



*Claim.*—1. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent-fluid heat-carrier obtained by igneous fusion from solids to percolate through, and simultaneously causing a current of atmospheric-nitrogen-carrying gas to penetrate into, said mass, both in the presence of alkaline matter, withdrawing the nitrogen compounds formed from the zone of reaction, and returning the heat-carrying fluid to the top of the carbon, substantially as and for the purpose stated.

2. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent-fluid heat-carrier obtained by igneous fusion from solids to percolate through the middle portion of, and simultaneously causing a current of atmospheric-nitrogen-carrying gas to penetrate into said mass of carbon, both in the presence of alkaline matter, withdrawing the nitrogen compounds formed from the reaction zone, and returning the heat-carrying fluid, substantially as and for the purpose stated.

3. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent-fluid heat-carrier obtained by igneous fusion from solids to percolate in downward direction through the middle portion of, and simultaneously causing a current of atmospheric air to penetrate at an intermediate zone into said mass, both in the presence of alkaline matter, causing the current of air to subdivide within said mass of carbon into a strong upward current, burning the carbon in contact therewith substantially to carbonic acid to add heat to the said heat-carrier, and into a weak downward current, burning the carbon in contact therewith to carbonic oxid for further adding heat and preventing the reaction from being disturbed by the presence of carbonic acid, causing the gases to pass from below said carbonic-oxid-generating zone into a separator to separate therefrom the nitrogen compounds formed, and returning the outflowing heat-carrier to the top of the carbon mass, substantially as and for the purpose stated.

4. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent fluid composed of molten silicate to percolate in downward direction through the middle portion of, and simultaneously causing a current of atmospheric air to penetrate at an intermediate zone into said mass of carbon, both in the presence of alkaline matter, causing the current of air to subdivide within said mass of carbon into a strong upward current, burning the carbon in contact therewith substantially to carbonic acid to add heat to the said heat-carrier, and into a weak downward current, burning the carbon in contact therewith to carbonic oxid for further adding heat and preventing the reaction from being disturbed by the presence of carbonic acid, causing the gases to pass from below said carbonic-oxid-generating zone into a separator to separate therefrom the nitrogen compounds formed, and returning the outflowing heat-carrier to the top of the carbon mass, substantially as and for the purpose stated.

5. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent fluid, composed of a molten silicate capable of dissolving the ashes of the burned carbon to percolate in downward direction through the middle portion of, and simultaneously causing a current of atmospheric air to penetrate at an intermediate zone into said mass of carbon, both in the presence of alkaline matter, causing the current of air to subdivide within said mass of carbon into a strong upward current, burning the carbon in contact therewith substantially to carbonic acid to add heat to the said heat-carrier, and into a weak downward current, burning the carbon in contact therewith to carbonic oxid for further adding heat and preventing the reaction from being disturbed by the presence of carbonic acid, causing the gases to pass from below said carbonic-oxid-generating zone into a separator to separate therefrom the nitrogen compounds formed, and returning the outflowing heat-carrier to the top of the carbon mass, substantially as and for the purpose stated.

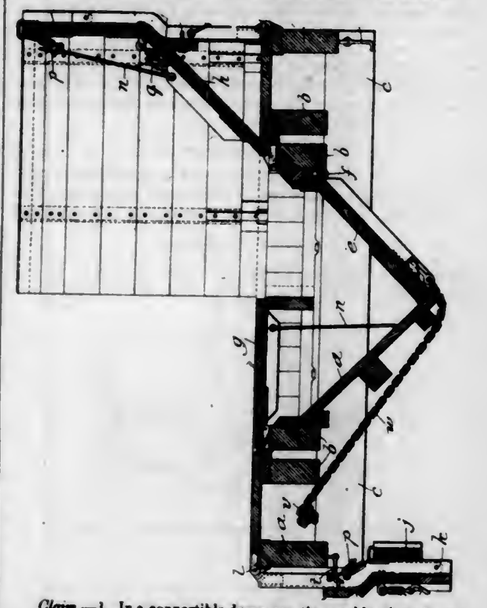
6. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent fluid composed of molten alkaline silicate to percolate in downward direction through the middle portion of, and simultaneously causing a current of atmospheric air to penetrate at an intermediate zone into said mass of carbon, causing the current of air to subdivide within said mass of carbon into a strong upward current, burning the carbon in contact therewith substantially to carbonic acid to add heat to the said heat-carrier, and into a weak downward current, burning the carbon in contact therewith to carbonic oxid for further adding heat and preventing the reaction from being disturbed by the presence of carbonic acid, causing the gases to pass from below said carbonic-oxid-generating zone into a separator to separate therefrom the nitrogen compounds formed, and returning the outflowing heat-carrier to the top of the carbon mass, substantially as and for the purpose stated.

7. The process of manufacturing nitrogen compounds from atmospheric nitrogen which essentially consists in providing a permeable mass of carbon, causing an incandescent-fluid heat-carrier composed of molten alkaline silicate to percolate in downward direction through the middle portion of, and simultaneously causing a current of atmospheric air to penetrate at an intermediate zone into said mass, causing the current of air to subdivide within said mass of carbon into a strong upward current, burning the carbon in contact therewith substantially to carbonic acid to add heat to the said heat-carrier, and into a weak downward current burning the carbon in contact therewith to carbonic oxid for further adding heat and preventing the reaction from being disturbed by the presence of carbonic acid, causing the gases to pass from below said carbonic-oxid-generating zone into a separator to separate therefrom the nitrogen compounds formed, providing the outflowing heat-carrier with fresh alkaline matter and returning it to the top of the said carbon mass, substantially as and for the purpose stated.

8. The process of manufacturing nitrogen compounds from atmospheric nitrogen, which essentially consists in providing a permeable mass of carbon, causing an incandescent-fluid alkaline silicate to percolate in downward direction through the middle portion of, and simultaneously causing a current of atmospheric air to penetrate at an intermediate zone into said mass of carbon, causing the air-current to subdivide within said carbon mass into an upward strong current burning the carbon in contact therewith substantially to carbonic acid, to add heat to the heat-carrier and into a downward weak current burning the carbon in contact therewith to carbonic oxid for further adding heat and preventing the reaction from being disturbed by the presence of carbonic acid, providing the outflowing heat-carrier with alkaline matter and returning it to the top of the carbon mass, causing the gases to pass from below the said carbonic-oxid-generating zone into a separator to separate therefrom the cyanids and other nitrogen compounds formed, decomposing the same into ammonia and alkaline compound, and utilizing the alkaline compound thus formed for providing the alkaline matter required in the process, substantially as and for the purpose stated.

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**754,475. DUMP-CAR.** OTTO W. MEISSNER, Chicago, Ill., assignor to Rodger Ballast Car Company, Chicago, Ill., a Corporation of Illinois. Filed July 27, 1903. Serial No. 167,150. (No model.)



*Claim.*—1. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion extending lengthwise of and below the same with its apex at or near the longitudinal center of the car and formed in two portions—a lower V portion and an upper foldable portion secured to the supporting-framework of the car above the same so as to form a portion of the inclined sides of the V-shaped hopper when in one position and a part of the flat platform of the car in a second position, and swinging side boards pivotally secured to the framework of the car and adapted to form the sides of a dumping hopper-car or be swung outwardly and downwardly to permit the formation of a platform-car, substantially as described.

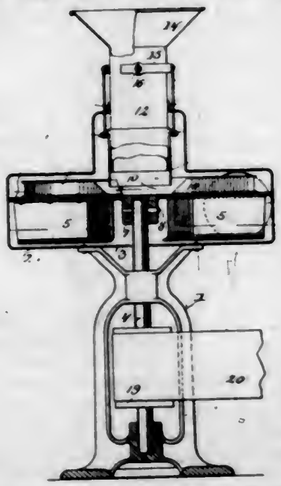
2. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion extending lengthwise of the car and formed in two portions—a lower portion secured to the framework of the car extending below the same and an upper portion formed of two swinging sections pivotally secured to the framework of the car above the same so as to complete the inclined sides of the V-shaped hopper in one position and the flat portion of a platform-car in a second position, foldable side boards pivotally secured to the framework of the car and arranged to be placed in a vertical position to receive the upper edges of the swinging hopper-sections when in one position and to be folded outwardly and downwardly in a second position, and means for securing the foldable side boards to the swinging hopper-sections to hold both of such parts in desired relation, substantially as described.

3. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper portion arranged lengthwise thereof and made in two parts, a lower V-shaped portion secured to the framework of the car and below the same, and an upper portion formed of two swinging sections pivotally secured to the framework of the car above the same so as to complete the inclined sides of the V-shaped hopper in one position and the flat portion of a platform-car when in a second position, and swinging side boards made in two foldable portions pivotally secured to the framework of the car and having recesses arranged to support the free edges of the swinging hopper-sections in one position and be folded together and swung outwardly and downwardly to permit the formation of a platform-car when in a second position, and means for securing both portions of the foldable side boards to the swinging hopper-sections to sustain the parts in the desired relation, substantially as described.

4. In a convertible dump-car, the combination of a supporting-framework, a V-shaped hopper arranged lengthwise thereof and made in two portions—a lower V portion having one fixed and one swinging section extending below the supporting-frame and an upper portion formed of two swinging sections pivotally secured to the framework of the car above the same so as to complete the inclined sides of the V-shaped hopper in one position and the flat portion of a platform-car in a second position, swinging side boards made in two foldable portions pivotally secured to the framework of the car and having a recess in which the upper edges of the swinging hopper-sections rest, rule-joints forming the pivotal connections of the swinging side boards and foldable portions, and link-and-chain mechanism for holding the swinging side boards and hopper-sections in desired relation, substantially as described.

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754,476. **GRAIN-BLOWER.** GEORGE MERKEL, Richfield, Wis., assignor of two-thirds to George Bernert and Jacob Bernert, Richfield, Wis. Filed Dec. 3, 1903. Serial No. 183,569. (No model.)

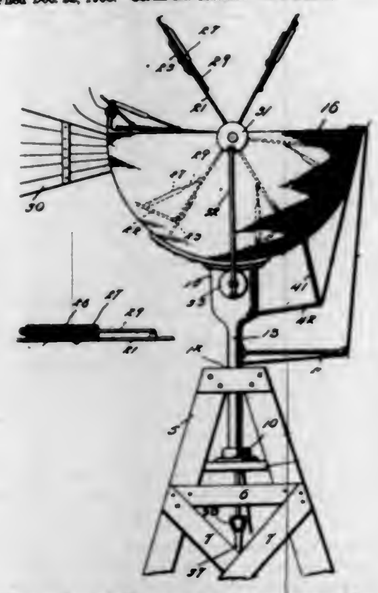


*Claim.*—1. In a grain-blower, the combination with a suitable standard or frame, and a circular casing supported thereon, said casing being provided with central openings at the top and bottom, and a side outlet in communication with a pipe or passage-way, of a revoluble vertical shaft, extending up within said casing; a solid circular disk secured to the upper end of said shaft; a series of radially-disposed fan-blades secured to the under side of said disk; a series of radially-disposed strips secured to the upper side of said disk; and a feed-pipe extending down through the upper opening of the said casing toward the said circular disk.

2. In a grain-blower, the combination with a suitable standard or frame, and a circular casing supported thereon, and provided with an upper and a lower central opening, and an outlet-opening in its side wall of substantially the height of said casing, of a pipe or passage-way in communication with said outlet-opening; a revoluble vertical shaft, extending up through said lower opening and terminating on a line intermediate of the top and bottom of said outlet-opening; a solid circular disk secured to the upper end of said shaft, and of a diameter to just revolve within said casing; fan-blades on the lower side of said disk, and curved guiding and distributing strips on the upper side of the disk; a feed-pipe extending down through the upper opening of the casing; a vertically-movable pipe end fitting lower end of said feed-pipe; and means for varying the projection of the pipe end beyond the lower end of the feed-pipe, and for holding the said pipe end in any position to which it may be adjusted.

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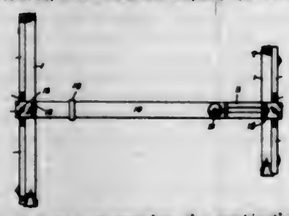
754,477. **WINDMILL.** CHARLES H. MIKKELSEN, Geddes, S. D. Filed Dec. 22, 1903. Serial No. 186,241. (No model.)



*Claim.*—A windmill comprising a casing mounted for rotation upon a vertical axis, a wheel comprising a hub mounted transversely of the casing and blades radiating from the hub and movable into and out of the casing, each of the blades including an inner section and an outer section hinged thereto and adapted to aline therewith and to move out of such alinement in one direction only, means for holding the outer sections yieldably in alinement with the inner sections, and a striker carried by the casing in the path of movement of the outer sections of the blades and adapted to fold them in the direction of inner sections as they pass into the casing.

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754,478. **GARMENT-STRETCHER.** JOSEPH B. MILLER, Sedalia, Mo. Filed Mar. 18, 1903. Serial No. 148,316. (No model.)



*Claim.*—1. In a garment-stretcher, the combination of a pair of contacting arms overlapping each other and adapted to be adjustably secured together, the outer end of each arm carrying a clamping member, said clamping members being identical in construction but of different lengths and consisting of a body-bar to which said arms are secured by thumb-screws, an auxiliary two-part bar attached to the outer side of said body-bars, its parts connected by a flexible plate, thumb-screws extending down from the arms adapted to contact with said plate, a main clamping member hinged below and to said body member, and means for locking the clamping members in engagement with the respective body member, substantially as shown and described.

2. In a garment-stretcher the combination of a pair of main clamping members, arms extending inward from each of the clamping members, means for securing the arms together adjustably, an auxiliary clamp attached to the outside of each of the clamps—consisting of two parts united by a plate, screws extending down from the outer ends of said arms adapted to contact with said plate, and means for locking the parts of the clamp together, all substantially as shown and described and for the purposes set forth.

3. A garment-stretcher having in combination a pair of oppositely-disposed clamps connected adjustably by arms, auxiliary clamps attached to said main clamps adapted to clamp the goods between the outer ends of the main clamps, substantially as described.



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754,479. **PADLOCK.** JOSEPH B. MILLER, Kansas City, Mo. Filed May 18, 1903. Serial No. 157,698. (No model.)

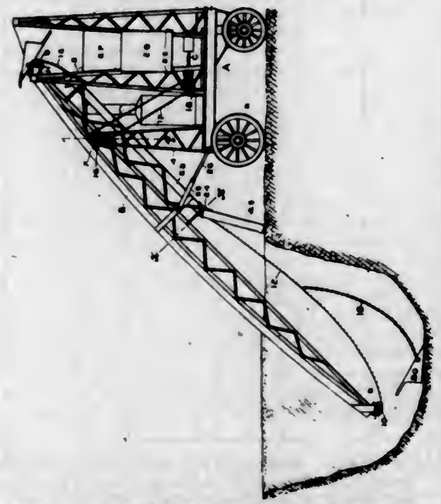



*Claim.*—1. In a padlock, the combination with the casing and a plate inclosing the interior thereof, of a bow hinged to the casing, a bolt for securing the bow in a locked position, a spring-actuated arm for opening the bow and for holding back the bolt until the point of the bow is again entered in the casing, disks operated by a key for drawing back the bolt, guides formed on the outside of the casing for holding a destination-tag, and means for connecting the lock to another object by a chain, all substantially as shown and described.

2. In a padlock, the combination of a casing with a securing-bow pivoted thereto; a bolt adapted to move for securing the end of the bow; a pin operative through a hole in the case, for retaining the destination-tag, and actuated by said bolt; a disk within the casing operative by a key; a cam secured to said disk; a second disk located below the first disk; a permanent shaft on which said disks are revolubly mounted; a bar pivoted in the periphery of the second disk; a finger and an arm integral with and at right angles to each other; a pivot to which said arm and finger are mounted at their union, the upper end of said arm being mounted in a slot in said bolt and the outer end of said finger being pivoted to said bar; a spring-actuated lug to engage in a notch in the periphery of the second disk; a pin in the face of the second disk; a shoulder in the periphery of said cam to engage said pin in the face of the second disk; and a pin in the under face of the first disk to engage said pin in the second disk; all substantially as shown and described.

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754,480. **EXCAVATING-MACHINE.** JOHN D. MORAN, St. Paul, Minn. Filed July 16, 1902. Serial No. 115,805. (No model.)



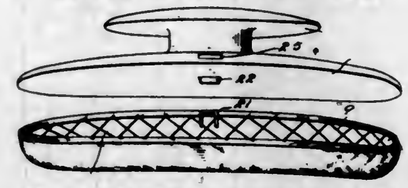
*Claim.*—1. In a machine of the class described, the combination with a suitable framework, of an inclined runway having fulcrum-support therein, endless chains carried by said runway, scoops connected by auxiliary chains to said endless chains, means for actuating said endless chains, and an adjustable connection between said runway and framework.

2. In a machine of the class described, the combination with a suitable framework, of an inclined runway having fulcrum-support therein, endless chains carried by said runway, scoops connected by auxiliary chains to said endless chains, a discharge-chute supported in the framework below the inner end of said runway, and means for actuating said chains.

3. In a machine of the class described, the combination with a suitable framework, of a downwardly-inclined runway having fulcrum-support in said framework, endless chains carried by said runway, scoops connected with said chains, a guideway supported below the upper end of said runway, a hinged apron at the lower end of said guideway, a discharge-chute supported in said framework adjacent to the inner end of said runway, and means for actuating said chains.

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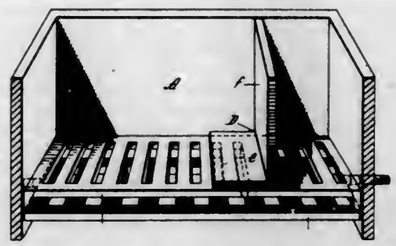
754,481. **FINGER-NAIL BUFFER.** CARLOTTA R. MOSER, Erie, Pa. Filed May 16, 1903. Serial No. 157,444. (No model.)



*Claim.*—A buffer comprising an arched plate provided with a handle, a second arched plate having a pad disposed in the arch thereof, a buffing-cover secured around the pad and the second plate, and having its edges disposed between the plates, said edges being connected by transverse stitches.

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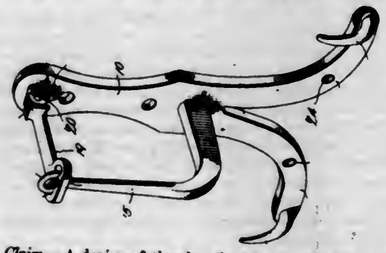
754,482. **FIRE-BOX FOR COOKING-STOVES.** JOHN MULVENY, Fall River, Mass. Filed Oct. 14, 1903. Serial No. 127,287. (No model.)



*Claim.*—In a cooking-stove, the combination of its fire-box; a removable table-grate provided with legs, said grate and legs being cast in one piece; and a movable lining formed in one piece, made up of a base, and upright portion, and a tongue depending from the bottom of the base, to engage the grate-bars of said table-grate, to lock said lining to said table-grate and maintain said movable lining in an upright position.

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754,483. **HARNESS-RACK.** CHARLES H. MUSTGROVE, Colorado Springs, Colo. Filed June 16, 1903. Serial No. 161,742. (No model.)

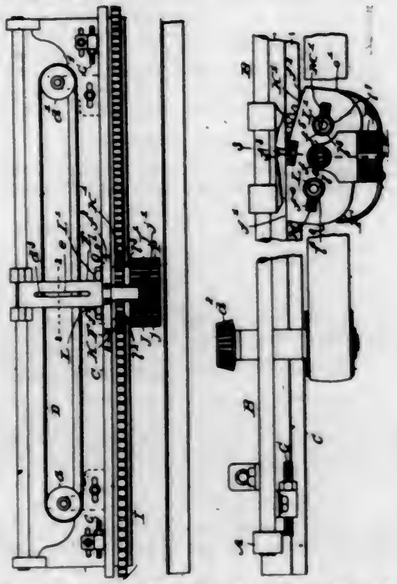


*Claim.*—A device of the class described comprising a supporting-frame, a hook extending from said frame, and an arm pivotally

connected with said frame and having a depending lug at its pivoted end disposed in position to engage said frame to limit the movement of said arm in a downward direction, said hook and arm being provided at their free ends with interengaging means.

## 754,484. FEEDING MECHANISM FOR CARDING-MACHINES.

PATRICK L. MCBRIDE, Lowell, Mass. Filed Nov. 25, 1901. Serial No. 83,513. (No model.)



*Claim.*—1. The combination of a rack, a carriage-body, feed-rolls carried thereby, gears secured to said rolls concentrically therewith and adapted to engage said rack singly, and yielding means for causing each of said rolls to approach the other equally while allowing each of them to move away from the other with the variations of thickness of the stock passing between them.

2. The combination of a rack, a carriage-body, a pivoted shifting plate, feed-rolls carried by said plate, gears secured to said rolls concentrically therewith and singly adapted to engage said rack, and yielding means for causing each of said rolls to approach the other equally toward the middle of said plate and of allowing them to move apart with the variations of thickness of the stock passing between them.

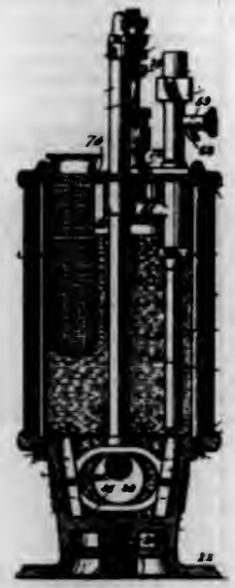
3. The combination of a carriage-body, a plate, pivoted thereto and provided with slots extending in opposite directions from the pivot of said plate, shafts having shoulders arranged in said slots and collars bearing against the bottom of said plate, washers surrounding said shaft above said plate and resting on said shoulders nuts, feed-rolls carried by said shafts and springs.

## 754,485. LUBRICATING-PUMP.

JOHN F. MCCANNA and JOHN R. MARKLE, Chicago, Ill., assignors to the John F. McCanna Company, Chicago, Ill., a Corporation of Illinois. Filed June 30, 1900. Serial No. 20,960. (No model.)

*Claim.*—1. In a device of the class described, the combination with the top plate 48 having the tubes 47 and 50 secured thereto, the two valve-seats formed in the tube 50, and the cross-tube 51 connecting the tube 47 with the tube 50 between said valve-seats, the check-valves 53 and 56 coöperating with said seats, the piston 45 in the tube 47, and the connection 57 screwed into the upper end of the tube 50 and serving to prevent the displacement of the check-valve 56, and having the channel extending therethrough, the drain-pipe 59 opening into said channel, a seat in said drain-pipe, the screw-valve 60 coöperating with said seat, the spout 63 opening into the drain-pipe 59 outside of the seat, and a check-valve coöperating with said connection located beyond the drain-pipe, substantially as and for the purpose described.

2. In a device of the class described, the combination with a cup, of an operating-shaft therein having eccentrics thereon, the rods 41 reciprocated by said shaft, the yokes 35 secured to the inner ends of said rods 41, the ways 37 formed on the inside of the cup in which said yokes 35 reciprocate and by which they are guided, and the channel-bars 39 secured to the casing between the ways 37.



3. In a device of the class described, a cup consisting of the glass cylinder 10 seated upon the flange forming the outer edge of the cup-like base and having the cap-piece upon its upper end, with an operating-shaft mounted in said base portion and having eccentrics thereon, the rods 41 reciprocated thereby and passing through the cap-piece at their outer ends, the yokes 35 secured to the inner ends of said rods, the ways 37 formed on the inside of the base portion of the cup in which the yokes 35 reciprocate and by which they are guided, and the channel-bars 39 secured to the inside of said base between the yokes, substantially as and for the purpose described.

4. In a device of the class described, the cup consisting of the cylinder seated upon the flange forming the upper and outer edge of the cup-like base and having the cap-piece on its upper end which is provided with an aperture, with the pump seated in said aperture and having its piston outside of the cup, the reciprocating rod for actuating the pump-piston passing from the interior of the cup through the cap-piece, connections between the reciprocating rod and piston outside of the cup and adjustable for varying the stroke given to the piston by the uniform stroke of the rod, an operating-shaft in the cup-like base, and connections for transforming the rotary movement of the operating-shaft to the reciprocating movement of the rod.

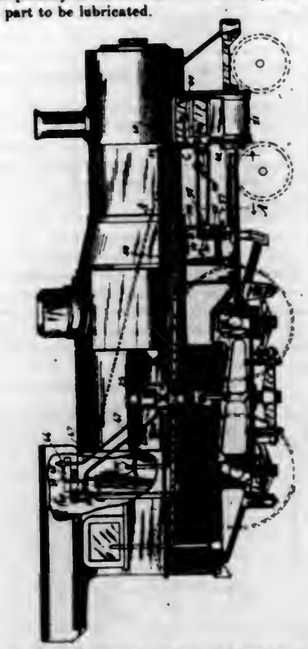
5. In a device of the class described, the cup consisting of the cylinder seated upon the flange forming the upper and outer edge of the cup-like base and having the cap-piece on its upper end which is provided with an aperture, with the pump seated in said aperture and having its piston outside of the cup, the reciprocating rod for actuating the pump-piston passing from the interior of the cup through the cap-piece, connections between the reciprocating rod and piston outside of the cup and adjustable for varying the stroke given to the piston by the uniform stroke of the rod, an operating-shaft in the cup-like base, and connections for transforming the rotary movement of the operating-shaft to the reciprocating movement of the rod, said connections comprising an eccentric mounted upon the shaft and coöperating with a yoke secured to the lower end of the rod.

## 754,486. APPARATUS FOR FORCE-FEED LUBRICATION.

JOHN F. MCCANNA, Chicago, Ill., assignor to the John F. McCanna Company, Chicago, Ill., a Corporation of Illinois. Filed June 8, 1901. Serial No. 63,660. (No model.)

*Claim.*—1. In a device of the class described, the combination with the force-feed pump and means for operating said pump automatically, of the reservoir, connections between said pump and reservoir and said pump and the part to be lubricated, a vacuum-valve in said connections between the pump and the part to be lubricated, and an auxiliary pump adapted to be operated when desired to force an additional quantity of oil from said reservoir past the vacuum-valve to the part to be lubricated.





2. In a device of the class described, the combination with the force-feed pump and means for operating said pump automatically, of the reservoir, connections between said pump and reservoir and said pump and the part to be lubricated, a vacuum-valve in said connections between the pump and the part to be lubricated, and an auxiliary pump adapted to be operated when desired to force an additional quantity of oil from said reservoir through said automatic pump to the part to be lubricated.

3. In a device of the class described, the combination of a plurality of force-feed pumps and means for operating said pumps automatically, of the reservoir common to said pumps, connections between said pumps and reservoir and said pumps and the parts they respectively lubricate, a vacuum-valve between each pump and the part it lubricates, an auxiliary pump adapted to be operated to force an additional quantity of oil from said reservoir through the vacuum-valves to the parts to be lubricated, and valve connections to said auxiliary pump whereby when operated the oil will be forced from said reservoir to any of the parts said automatic pumps are adapted to lubricate.

4. In a device of the class described, the combination of a plurality of force-feed pumps and means for operating said pumps automatically, of the reservoir common to said pumps, connections between said pumps and reservoir and said pumps and the parts they respectively lubricate, a vacuum-valve between each pump and the part it lubricates, an auxiliary pump adapted to be operated to force an additional quantity of oil from said reservoir through said pumps and through the vacuum-valves to the parts to be lubricated, and valve connections to said auxiliary pump whereby when operated the oil will be forced from said reservoir to any or all of the parts said automatic pumps are adapted to lubricate.

5. In a device of the class described, the combination with a reservoir, a force-feed pump in communication therewith, and means for carrying oil from said pump to the parts to be lubricated, of a feed-test mechanism connected to said reservoir, an auxiliary pump for forcing an extra supply of oil through the force-feed pump to the parts to be lubricated, and valve connections between said reservoir, feed-test mechanism and auxiliary pump, whereby, as desired, oil can be fed to the parts to be lubricated by said force-feed pump directly from the reservoir, or from the feed-test mechanism alone, or by said auxiliary pump from said reservoir.

6. In a device of the class described, the combination with a reservoir, and means for carrying oil therefrom to the parts to be lubricated, of a feed-test mechanism connected to said reservoir, an auxiliary pump for forcing an extra supply of oil to the parts to be lubricated, and valve connections between said reservoir, feed-test mechanism and auxiliary pump, whereby, as desired, oil can be carried to the parts to be lubricated by said means from the reservoir and feed-test mechanism, or from the reservoir alone, or from the feed-test mechanism alone, or by said auxiliary pump from said reservoir.

7. In a device of the class described, the combination with a reservoir, and means for carrying oil therefrom to the parts to be lubricated, of a feed-test mechanism connected to said reservoir, an auxiliary pump for forcing an extra supply of oil to the parts to be lubricated, and a single valve with multiple ports between said reservoir, feed-test mechanism and auxiliary pump, whereby, as desired, oil can be carried to the parts to be lubricated by said means from the reservoir or from the feed-test mechanism, or by said auxiliary pump from said reservoir.

8. In a device of the class described, the combination with a reservoir, and means for carrying oil therefrom to the parts to be lubricated, of a feed-test mechanism connected to said reservoir, an auxiliary pump for forcing an extra supply of oil to the parts to be lubricated, and a single valve with multiple ports between said reservoir, feed-test mechanism and auxiliary pump, whereby, as desired, oil can be carried to the parts to be lubricated by said means from the reservoir and feed-test mechanism, or from the reservoir alone, or from the feed-test mechanism alone, or by said auxiliary pump from said reservoir.

9. In a device for locomotive lubrication, the combination with the oil-pump for the driving-cylinder, of a steam-chamber located adjacent to said pump, and a pipe leading from the air-pump-cylinder exhaust-pipe to said chamber.

10. In a device of the class described, the combination with the reservoir having the horizontal valve-seat extending through its base, of the gage-glass located in front of said reservoir and having its lower end seated on a portion of the reservoir-base above the seat projecting from the front of the reservoir, the ports connecting the reservoir and gage-glass with the valve-seat, and the valve having the different channels therein, substantially as and for the purpose described.

11. In a device of the class described, the combination with the reservoir having the horizontal valve-seat extending through its base, of the gage-glass located in front of said reservoir and having its lower end seated on a portion of the reservoir-base seat projecting from the front of the reservoir, the ports connecting the reservoir and gage-glass with the valve-seat, the valve having the different channels therein, and a dial-plate secured to the outer end of said valve-seat and the pointer secured on the end of the valve and coöperating with the dial-plate; substantially as described.

12. In a device of the class described, the combination with the reservoir having the valve-seat extending beneath its base and the gage-glass seated above the outer end of the valve-seat, with the passage extending beneath said valve-seat, the channels 127 and 128 connecting the gage-glass and the reservoir with the valve-seat, the channel 120 connecting the valve-seat with the passage, the pump coöperating with said passage, and the valve in said valve-seat having the ports therein adapted to coöperate with the channels 127, 128 and 120 for the purposes described.

13. In a device of the class described, the combination with the reservoir having the valves extending through its base and the auxiliary pump-chamber extending beneath said valves, said valves being adapted to connect with the reservoir or with the pump-chamber depending upon their position; substantially as described.

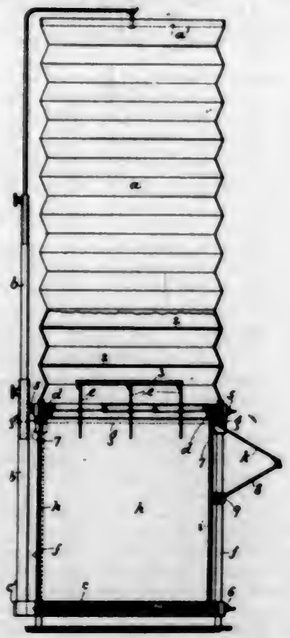
## 754,487. PHOTOGRAPHIC FLASH-LIGHT APPARATUS.

IRVING G. MCCOLL, New York, and MAXIMILIAN KLAUBER, Brooklyn, N. Y. Filed July 7, 1903. Serial No. 164,518. (No model.)

*Claim.*—1. In a flash-light apparatus, the combination with an inclosure in which the flash is made, of a device connected thereto, separable therefrom and progressively extensible so as to draw therein the smoke from the combustion of the flash-powder, means for closing said device and retaining the smoke therein and which means may after the separation of the parts be opened to permit the exit of the smoke.

2. The combination in a flash-light apparatus with an inclosure in which the flash is made, of an apertured device adapted to be connected therewith, means connected with said device for closing said aperture, and a bellows structure connected with the apertured device whereby when the flash is made in the inclosure the bellows

may be distended and the closing means in the aperture operated to draw the smoke into the bellows and retain the same therein by again closing off the aperture, said bellows and apertured device being removable from the inclosure so that the smoke may be discharged into the open air.



3. In a flash-light apparatus, the combination with an inclosure in which the flash is made, of an apertured frame and means for removably connecting the frame to the inclosure, swinging slats in the frame for closing off the aperture therein, a bellows structure connected to the frame, and means for holding the same in a distended condition.

4. A flash-light apparatus comprising a supporting-base, corner-posts, means for connecting the corner-posts to the base, a flexible device inclosing three sides and a transparent device inclosing the fourth side, a removable apertured frame adapted to fit upon and be connected to the corner-posts, means for closing the aperture in said frame and an extensible device connected to said frame, substantially as set forth.

5. A flash-light apparatus, comprising a supporting-base, corner-posts, means for connecting the corner-posts to the base, a flexible device inclosing three sides, and a transparent device inclosing the fourth side, a removable apertured frame adapted to fit upon and be connected to the corner-posts, swinging slats adapted to close off or open up the space within said frame, a bellows device connected at its edges to said frame and adapted to be distended above the said frame and the base, substantially as and for the purposes set forth.

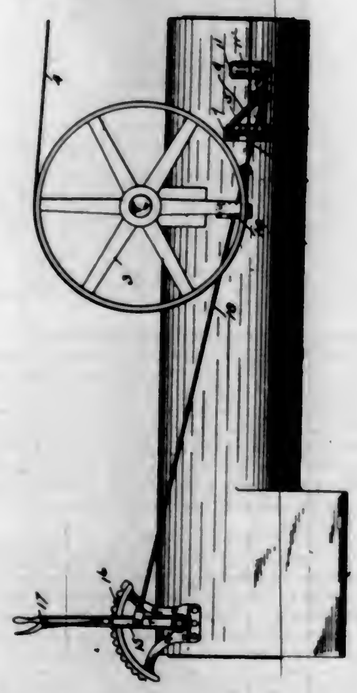
6. A flash-light apparatus, comprising a supporting-base, corner-posts, corner-clamps connected to the base and adapted to receive and engage the posts, sleeves upon the corner-posts near their upper ends, a wire frame having corner-eyes adapted to rest upon said sleeves and be received over said corner-posts, flexible material connected to said wire frame and to said supporting-base around three sides, transparent material forming the fourth side of the inclosure above the base, an apertured frame, corner-clamps on said frame adapted to receive and fit over the upper ends of the corner-posts and to rest down upon said wire frame, swinging slats within and extending across said frames and adapted to open up or close off the space within the same, and a bellows structure closed at one end and at the other end connected to said frame.

7. A flash-light apparatus, comprising a supporting-base, corner-posts, corner-clamps connected to the base and adapted to receive and engage the posts, sleeves upon the corner-posts near their upper ends, a wire frame having corner-eyes adapted to rest upon said sleeves and be received over said corner-posts, flexible material connected to said wire frame and to said supporting-base around three sides, transparent material forming the fourth side of the inclosure above the base, an apertured frame, corner-clamps on said frame adapted to receive and fit over the upper ends of the corner-posts and to rest down upon said wire frame, swinging slats within and extending across said frame and adapted to open up or close off the space within the same, a bellows structure closed at one end and at the other end connected to said frame, and a telescoping rod-support connected to the base and adapted to engage the free closed end of the bellows device.

8. A flash-light apparatus comprising a supporting-base, corner-posts, corner-clamps connected to the base and adapted to receive and engage the posts, sleeves upon the corner-posts near their upper ends, a wire frame having corner-eyes adapted to rest upon said sleeves and be received over said corner-posts, flexible material connected to said wire frame and to said supporting-base around three sides, transparent material forming the fourth side of the inclosure above the base, an apertured frame, corner-clamps on said frame adapted to receive and fit over the upper ends of the corner-posts and to rest down upon said wire frame, swinging slats within and extending across said frame and adapted to open up or close off the space within the same, a bellows structure closed at one end and at the other end connected to said frame, and an adjustable hood device between the base and said frame and at the side having the transparent material.

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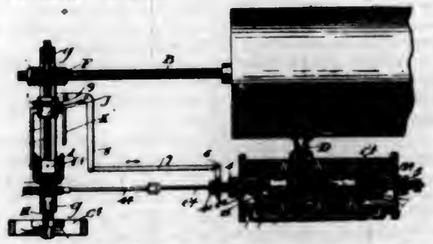
754,488. **BELT-REMOVING DEVICE FOR THRESHING-ENGINES.** Claud McCollor, Herman, Minn. Filed June 20, 1903. Serial No. 162,330. (No model.)



*Claim.*—The combination, with a threshing-engine boiler, its pulley and belt, of a bracket secured to the side of said boiler and having horizontally-projecting lugs one above the other, an arm comprising a straight bar 8 and a downwardly-bent bar 9 pivotally supported at their inner ends on said lugs, a vertically-arranged bolt connecting said bars at a point intermediate to their ends, an upright pin provided at the outer end of said arm, and an antifriction-roller mounted on said pin and arranged to engage the inner edge of said belt, a link having one end looped around said bolt, a rod longitudinally slidable in a guide on said boiler and connected at one end with said link, and an operating-lever pivotally connected to the opposite end of said rod, substantially as described.



754,489. **GOVERNOR-VALVE FOR TURBINE-ENGINES.** James H. K. McCollum, Toronto, Canada, assignor of one-half to John Wycliffe Lowes Forster, Toronto, Canada. Filed Jan. 19, 1903. Serial No. 139,665. (No model.)



*Claim.*—1. In a turbine-engine, a governing-valve comprising a valve-chest and inlet thereinto, and outlet to the turbine, a balanced double piston-valve having a fixed regular stroke, and an adjustable balanced cylindrical single casing within which such valve has movement and having two sets of ports located centrally of the casing and communicating with the separate spaces between the casing and the valve-chest, and so arranged that, under load the ports when opened are always opened wide as specified.

2. In a turbine-engine, the combination with the governing-valve comprising a valve-chest and inlet thereinto, and outlet to the turbine, a balanced double piston-valve having a fixed regular stroke, and an adjustable balanced cylindrical single casing within which such valve has movement and having two sets of ports located centrally of the casing and communicating with the separate spaces between the casing and the valve-chest, and so arranged that under load the ports when opened are always opened wide, of the valve-rod connected to the piston and the drive for the same, and the sleeve extending from the end of the casing and through which the valve-rod extends, a governor and means connecting the governor to the sleeve as and for the purpose specified.

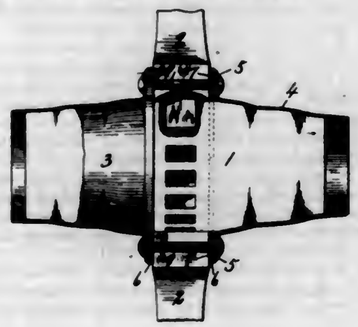
3. In a governing-valve for turbines, the combination with the valve-chest having stuffing-boxes and internal annular rings, of the valve-casing provided with a circle of inlet and a circle of outlet ports and means for adjusting the same longitudinally and a double piston-valve located within the same and deriving a uniform movement as and for the purpose specified.

4. In a governing-valve for turbines, the combination with the valve-chest having stuffing-boxes and internal annular rings, of the valve-casing provided with a circle of inlet and a circle of outlet ports and tubular extensions extending through the stuffing-boxes of the valve-chest, and stuffing-boxes in the ends of such tubular extensions, and a piston-valve having a rod extending through the stuffing-boxes in the ends of the tubular extensions as and for the purpose specified.

5. In a governing-valve for turbines, the combination with the valve-chest having internal rings and the passage-way leading from one end of the valve-chest to the other outside of the rings, of the adjustable valve-casing provided with suitable inlet and outlet ports and end ports, and the double piston-valve located within the casing as and for the purpose specified.

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754,490. **METAL-COVERED VEHICLE-HUB.** George A. McKeel, Jackson, Mich., assignor to George A. McKeel & Company, Limited, Jackson, Mich., a Partnership Association of Michigan. Filed Dec. 12, 1903. Serial No. 184,900. (No model.)



*Claim.*—1. A seamless sheet-metal collar for wood hubs, said collar being formed with an annular flange, in combination with a metal ring placed against the flange, the periphery of said flange being turned or crimped over upon the periphery of the ring to lock the parts together.

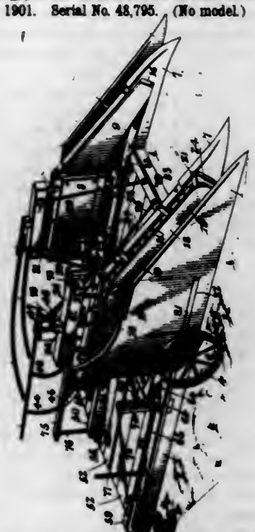
2. The combination with a wood vehicle-hub and spokes mortised therein, of sheet-metal collars fitted upon the ends of the hub and having their adjacent ends expanded along the sides of the spokes forming annular flanges and metal rings between the flanges and adjacent sides of the spokes, the outer edges of the flanges being crimped or overturned against the periphery of their rings to secure the rings in place.

3. The combination with a wood hub and spokes, of seamless sheet-metal collars or sleeves fitted upon the ends of the hub, metal rings inserted in the inner ends of the collars, the inner ends of the collars being crimped or turned over upon the periphery of the ring to hold it in place and rivets passed through the rings to tie the collars together on the hub.

4. A seamless sheet-metal collar for wood hubs having one end expanded radially to form a flange, the edge of the flange being turned axially to form an annular shoulder, and a metal ring fitted within the annular shoulder, the latter being overturned upon the periphery of the ring to lock the parts together.

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754,491. **CORN-HARVESTER.** Adam Neer, St. Paris, Ohio. Filed Feb. 25, 1901. Serial No. 48,795. (No model.)



*Claim.*—1. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage having a splayed entrance-throat, said inner divider-board including a sectional frame, of cutting mechanism in rear of the passage, an endless conveyer-chain mounted upon said sectional frame and provided with foldable gathering-fingers, and means disposed adjacent to the opposite ends of the passage for moving the gathering-fingers to their operative and inoperative positions.

2. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage having a splayed entrance-throat, said inner divider-board including a sectional frame, of cutting mechanism in rear of said passage, means for adjusting the relative positions of the frame-sections, an endless conveyer-chain passed around the sectional frame and provided with foldable gathering-fingers, means located at the front end of the passage for moving the fingers to their operative positions, and means at the rear end of the passage for moving said fingers to their inoperative positions.

3. In a corn-harvester, the combination with rigidly-mounted inner and outer divider-boards defining an intermediate passage having a splayed entrance-throat, said inner divider-board including a sectional frame comprising a rear horizontal section and a front inclined section hinged thereto, of means for vertically adjusting the rear section of said frame, sprocket-wheels located at the front and rear ends of the frame, a conveyer-chain passed around the sprocket-wheels and provided with individually-swinging gathering-fingers,

means for disposing said fingers in their horizontal positions during their rearward travel, means for retaining said fingers in their vertical positions during their forward travel, and cutting mechanism in rear of the passage between the divider-boards.

4. In a corn-harvester, the combination with a divider-board including a sectional frame, one section of which is downwardly and forwardly inclined and has sliding engagement with another section of the divider-board, sprocket-wheels mounted on the frame, a conveyer-chain passing around said sprocket-wheels and having gathering-fingers, and means for raising and lowering said frame.

5. In a corn-harvester, the combination with a conveyer-chain provided with gathering-fingers, of a vertically-movable frame carrying sprocket-wheels over which said chain passes, an elevated beam arranged above said frame, and an elevating-screw connecting said beam and frame for raising and lowering the latter.

6. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage for cornstalks, of a lower conveyer-chain movable around vertical axes, a vertically-movable frame disposed above said chain, an upper conveyer-chain carried by the frame, and mounted to move around horizontal axes and gearing arranged to maintain the operative connection between the chains at all times.

7. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage, said inner divider-board including a vertically-movable frame, a lower conveyer-chain below said frame, an upper conveyer-chain carried by the frame and provided with gathering-fingers, means for adjusting the frame vertically, and gearing between the upper and lower chains, said gearing being arranged to maintain the operative connection between the chains during the adjustment of the frame.

8. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage, said inner divider-board including a vertically-adjustable frame, of a pair of vertically-disposed shafts extending through said frame and constituting guides therefor, means for driving one of said shafts, a pinion mounted on said shaft and movable with the frame, and a conveyer-chain provided with gathering-fingers and geared to said pinion.

9. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage, of a pair of upstanding shafts, sprockets mounted on the lower ends of said shafts, a lower conveyer-chain passing around said sprockets, a vertically-movable frame guided upon said shafts and provided with sprockets, an upper conveyer-chain passed around the sprockets and provided with gathering-fingers, a pinion mounted on one of the shafts and geared to one of the sprocket-wheels carried by the frame, said pinion being movable with the frame as the latter is adjusted vertically, means for driving the shaft upon which the pinion is mounted, and means for effecting the vertical adjustment of the frame.

10. In a corn-harvester, a platform on which the shock is formed, comprising a vertically-movable frame, means for raising and lowering the same, comprising a rock-shaft carrying a lifting-arm engaging the platform and flexibly-connected platform-sections connected with said frame.

11. In a corn-harvester, a platform on which the shock is formed, comprising a vertically-movable frame having parallel longitudinal bars, a slatted floor having the sections thereof flexibly connected to each other and to said longitudinal bars, and means for raising and lowering said frame.

12. In a corn-harvester, a platform comprising a vertically-movable frame having parallel longitudinal bars, a platform-floor composed of sections flexibly connected to each other and to said parallel bars, means for raising and lowering the frame, and transversely-arranged supporting-bars located between the flexibly-connected sections.

13. In a corn-harvester, a platform comprising a vertically-movable frame, floor-sections flexibly connected to each other and to said frame, means for raising and lowering the frame, and a hinged bar connected to the machine-frame and forming a support for the rear portion of the platform-sections.

14. In a corn-harvester, a platform comprising a vertically-movable frame, floor-sections flexibly connected to each other and to said frame, means for raising and lowering the frame, a hinged beam forming a support for the rear portion of the platform, and a latch on the platform-frame adapted to interlock with said hinged supporting-bar.

15. In a corn-harvester, the combination with a vertically-movable platform comprising flexibly-connected floor-sections, of a rock-shaft provided with an operating-lever and also provided with means for raising and lowering the platform-frame.

16. In a corn-harvester, a dumping-platform comprising a vertically-movable frame, floor-sections flexibly connected to each other and to said frame, and means for raising and lowering the platform comprising a rock-shaft extending transversely of the machine-frame, an operating-lever connected with said shaft, and a lifting-lever connected to said rock-shaft and operating beneath the platform, substantially in the manner and for the purpose specified.

17. In a corn-harvester, the combination with a post, of a platform comprising a vertically-movable frame, a runner connected to said frame and movable up and down on said post, and flexibly-connected floor-sections carried by said frame.

18. In a corn-harvester, the combination with the gathering and cutting mechanism, of a post, a dumping-platform, a runner connected therewith and movable up and down on the post, and a cut-off hinged to said post and adapted to be vibrated by the runner as the latter moves up and down, said cut-off being designed to prevent the corn from reaching the platform during the operation of depositing the shock on the ground.

19. In a corn-harvester, the combination with inner and outer divider-boards defining a passage for the cornstalks, cutting mechanism in rear of the passage, a vertically-movable dumping-platform in rear of the cutting mechanism, and gathering devices for conveying the cornstalks through the passage to the cutting mechanism, of a cut-off located at the rear end of the passage, and means operated by the movement of the dumping-platform for presenting the cut-off across the rear end of the passage to prevent the corn from passing to the platform.

20. In a corn-harvester, the combination with a conveyer-chain having gathering-fingers, of a frame carrying sprocket-wheels for said chain and comprising a hinged downwardly-inclined forward section, and a divider-board section with which the inclined frame-section has a sliding connection.

21. In a corn-harvester, the combination with a conveyer-chain provided with foldable gathering-fingers, of a vertically-movable frame carrying sprocket-wheels over which said chain passes, a supporting-beam arranged above said frame, an elevating-screw connecting said beam and frame for raising and lowering the latter, and means carried by the frame to deflect the fingers.

22. In a corn-harvester, a platform on which the shock is formed comprising a vertically-movable frame having parallel longitudinal bars, a slatted floor having the sections thereof flexibly connected to each other and to the longitudinal bars, means for raising and lowering the frame comprising a transversely-disposed rock-shaft provided with an operating-lever and also provided with means for raising and lowering the platform-frame, the rock-shaft being journaled in suitable bearings in the machine-frame.

23. In a corn-harvester, the combination with a frame and cutting mechanism, of upper and lower conveyor-chains disposed in advance of the cutting mechanism and movable respectively around right-angularly-related axes, means for effecting the relative adjustment of the chains to accommodate stalks of different lengths, driving mechanism for said chains, and means for maintaining an operative connection between the chains and the driving mechanism irrespective of the relative adjustment of the chains.

24. A dumping-platform for corn-harvesters, comprising a vertically-movable frame, and a pair of separate floor-sections having hinged connection at their outer edges with the frame, whereby the vertical movement of said frame will cause the floor-sections to swing outwardly to dump the shock.

25. A dumping-platform for corn-harvesters comprising a vertically-movable frame having a pair of parallel bars, a pair of separate platform-sections hinged to said bars and disposed horizontally between the same, means for sustaining said sections in their normal positions, and means for elevating the frame to cause the platform-sections to swing outwardly and thereby dump the shock.

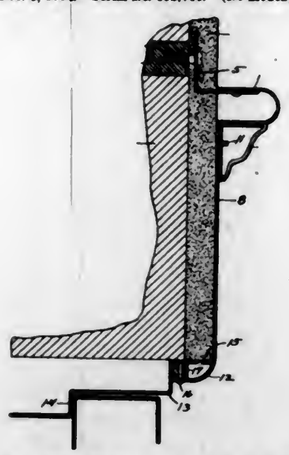
26. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage for the cornstalks, of cutting mechanism located at the inner end of the passage, a dumping-platform in rear of the cutting mechanism, and a cut-off operated by the movement of the dumping-platform to obstruct the rear end of the passage and thus prevent the passage of the stalks to the platform from the cutting mechanism.

27. A dumping-platform for corn-harvesters, comprising a vertically-movable frame, and a floor-section having hinged connection at its edge with the frame, whereby the vertical movement of said frame will cause the floor-section to swing downwardly and outwardly to dump the shock.

28. In a corn-harvester, the combination with inner and outer divider-boards defining an intermediate passage having a splayed entrance-throat, of upper and lower relatively adjustable conveyer-chains disposed to convey cornstalks through the passage and movable around right-angularly-related axes, folding gathering-fingers carried by one of the chains, and means for automatically moving the fingers into and out of their operative positions.



**754,492. DOOR OR LIKE FRAME.** ENOCH OHNSTRAND, Jamestown, N. Y., assignor to Art Metal Construction Company, Jamestown, N. Y., a Corporation of New York. Filed Feb. 20, 1903. Renewed Feb. 8, 1904. Serial No. 192,716. (No model.)



*Claim.*—1. A frame for doors, windows and the like, composed of sheet metal, a portion thereof being embedded in the plastic material of the wall.

2. A frame for doors, windows and the like, consisting of a casing of sheet metal having a projecting portion thereof embedded in the plastic material of the wall.

3. A frame for doors, windows and the like, consisting of a sheet-metal casing, an angle-piece secured thereto, one flange of said angle-piece being embedded in the plastic material of the wall.

4. A frame for doors, windows and the like, consisting of a sheet-metal casing, an angle-piece secured thereto, one flange of said angle-piece being embedded in the plastic material of the wall, and means for fastening said flange to the main wall.

5. A frame for doors, windows and the like, consisting of a sheet-metal casing, an angle-piece secured thereto, one flange of said angle-piece being embedded in the plastic material of the wall, a stringer in said wall and means for securing said flange to said stringer.

6. A frame for doors, windows and the like, comprising a casing of sheet metal, molding secured thereto, and fastening devices connecting said molding from the rear side of said casing.

7. A frame for doors, windows and the like, comprising a sheet-metal casing, a molding, screws passing through said casing from its rear face and engaging said molding.

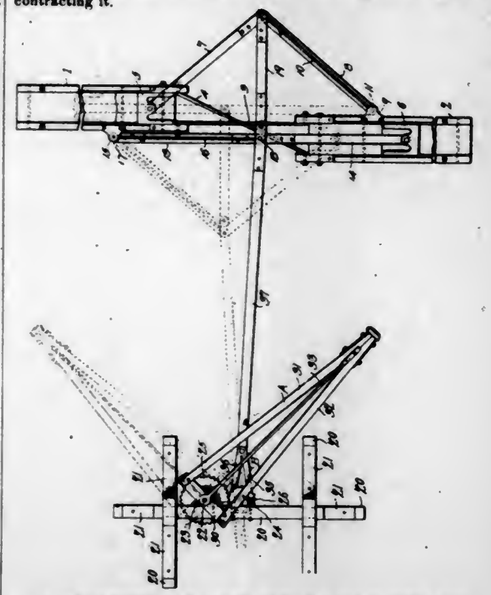
8. A frame for doors, windows and the like, comprising a sheet-metal casing having a beading formed thereon, a molding secured within the angle formed by said beading and the main body of the casing.

9. A frame for doors, windows and the like, comprising a metallic casing adapted to be secured to the wall, and a jamb formed of sheet metal the casing overlapping said jamb and secured thereto.

10. A frame for doors, windows and the like, comprising a metallic casing adapted to be secured to the wall, and a jamb formed of sheet metal the casing overlapping said jamb and secured thereto, rivets connecting said casing and jamb, and sleeves surrounding said rivets and separating said casing and jamb.

**754,493. BALING-PRESS.** THOMAS F. ORMOND, Huntsville, Ala. Filed Apr. 15, 1903. Serial No. 152,732. (No model.)

*Claim.*—1. The combination in a baling-press, of a pair of baling-boxes oppositely disposed and slightly disalined, plungers movable in said boxes, a pair of toggle-links associated with each of said plungers and having the ends opposite the plungers fixed in position, connecting devices between said pairs of toggle-links whereby the pairs of toggle-links are so held that the extension of one pair is accompanied by the contraction of the other, and means connected with one pair of toggle-links for alternately extending and contracting it.



2. The combination in a baling-press, of a pair of baling-boxes oppositely disposed and slightly disalined, plungers movable in said boxes, a pair of toggle-links associated with each of said plungers, a bar disposed between said pairs of toggle-links and forming a connection whereby the insertion of one plunger is always accompanied by the withdrawal of the other, and means for alternately expanding and contracting one pair of toggle-links.

3. The combination in a baling-press, of a pair of boxes oppositely disposed and slightly disalined, plungers movable in said boxes, a pair of toggles each having one end secured to the plunger in one box and the other end secured to a side of the other box, and means for applying power to said toggles, substantially as described.

4. The combination in a baling-press, of a pair of boxes oppositely disposed and slightly disalined, plungers movable in said boxes, a pair of toggles each having one end secured to a plunger in one box and the other end secured to a side of the other box, said toggles being connected by a cross-bar to keep their joints at a constant distance apart, and means for applying power to said toggles, substantially as described.

5. The combination in a baling-press, of a pair of baling-boxes oppositely arranged and slightly disalined, plungers movable in said boxes, a pair of toggles, each of said toggles having one end pivotally secured to a plunger in one box and the other end pivotally mounted in a bracket on the side of the other box, a cross-bar connecting the joints of the two toggles to keep them a constant distance apart, a motor, and a connecting-rod pivotally connected with the cross-bar and a crank-arm on the motor, substantially as described.

**754,494. MACHINE FOR WASHING VESSELS OR RECEPTACLES.** WILLIAM B. PAGE, Dixon, Ill. Filed Jan. 21, 1901. Serial No. 44,192. (No model.)



*Claim.*—1. A machine for washing receptacles comprising a vertically-adjustable brush adapted to extend within the receptacle and to conform to the longitudinal contour of one side thereof and ex-

tending partly across the bottom of the same, means for adjusting the brush to the receptacle, means for rotating the receptacle in engagement with said brush and means for injecting heated fluid within said receptacle while rotating against the brush.

2. In a machine of the class described the combination with a vertically-adjustable brush adapted to extend within a receptacle and conform to one side and part of the bottom of the same, means for rotating the receptacle thereon means for adjusting the rotating means to permit the receptacle to be inserted over the brush into operative position and a valved passage communicating with the interior of said receptacle when in operative position and adapted to admit fluid within the same.

3. In a machine of the class described, a brush formed to fit closely within one side of a receptacle and provided at its end with a part of a length greater than the radius of the receptacle and adapted to engage the end thereof, means for rotating the receptacle when engaged on said brush comprising rotative friction-disks on which said receptacle is supported and a friction-disk adapted to engage the receptacle above the brush and hold the same thereon.

4. In a device of the class described a longitudinally-disposed rigid arm provided with a brush adapted to receive a receptacle inserted over the same, said brush conforming longitudinally with a side of the receptacle and provided with a part on its inner end adapted to engage and extend partly across the bottom of the receptacle, means for vertically adjusting said arm and a plurality of friction-disks adapted to simultaneously engage, support and rotate each receptacle on the brush.

5. In a device of the class described, the combination with a fluid-containing tank of a vertically-movable standard secured thereon, a brush-bearing arm rigidly secured on said standard and extending within said tank, and means for securing a receptacle on said brush and rotate the same in contact therewith.

6. In a device of the class described a vertically-adjustable standard, a longitudinally-disposed arm rigidly secured thereon, a discharge-aperture extending longitudinally therethrough, a brush transversely curved carried upon said arm, and conforming longitudinally with the interior of a receptacle, the inner end having secured thereon resilient means adapted to engage the bottom of said receptacle and extend beyond the center of the same.

7. As an article of manufacture, a brush transversely curved and adapted to be removably secured upon a rigid arm and conforming longitudinally with the interior of a receptacle, the inner end having secured thereon a brush adapted to engage the bottom of said receptacle and extend beyond the center of the same.

8. The combination with a tank of a plurality of parallel shafts extending through one end of the tank and longitudinally of the same, means at the outer end of said shafts for rotating said shafts in the same direction, friction-disks on said shafts within the tank adapted to rotate a receptacle supported thereon, a movable friction-disk supported from the top of said tank and adapted to be moved downwardly to engage a receptacle when supported on the first-mentioned disks and a brush extending between said friction-disks and adapted to extend within a receptacle when in operative position.

9. A brush for cleaning receptacles comprising an arm a longitudinal part adapted to conform to a side of the receptacle, a resilient terminal part engaged at one end thereof and of a length sufficient to extend more than half across the bottom of the receptacle, and designed normally to press outwardly on the bottom of the receptacle when in operation and a passage-way through said arm adapted to admit water into the receptacle.

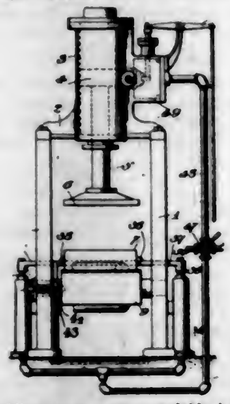
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**754,495. MOLDING APPARATUS.** RICHARD A. PEARCE, Philadelphia, Pa. Filed Apr. 7, 1903. Serial No. 151,458. (No model.)

*Claim.*—1. In a molding apparatus, a revoluble device for supporting a flask and a pattern, in combination with mechanism for ramming a mold in said flask, and mechanism for first withdrawing said flask and mold from said pattern and then revolving said supporting device, substantially as specified.

2. In a molding apparatus, a revoluble table having plates thereon adapted for supporting a pattern and flask, in combination with mechanism for ramming a mold in said flask, electrical vibratory mechanism for disengaging said mold and pattern, and mechanism for first withdrawing said flask and mold from said pattern and then revolving said table, substantially as specified.

3. In a molding apparatus, a revoluble support, in combination with a reciprocating rammer, reciprocating rods, means for engaging and lifting a flask by said rods, mechanism for vibrating said support, and gearing connected with said support for revolving the same, substantially as specified.

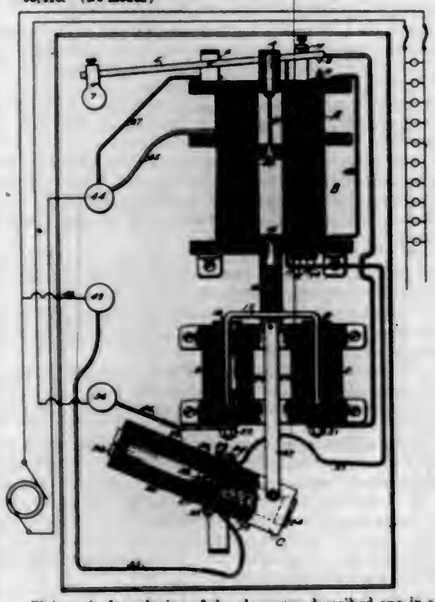


4. In a molding apparatus, a revoluble hollow table having plates thereon respectively adapted for supporting a pattern, a vibratory device within said table and having means for jarring the respective plates, mechanism for lifting a flask and withdrawing a mold from said pattern, and mechanism actuated upon the withdrawal of said mold to revolve said table, substantially as specified.

5. In a molding apparatus, a revolving table having plates thereon respectively adapted for supporting a pattern and mold, a reciprocating rammer for consolidating said mold, and mechanism connecting said rammer with said table whereby said rammer revolves said table, substantially as specified.

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**754,496. LIMITING DEVICE FOR ELECTRIC CIRCUITS.** CHARLES W. POTTER, Denver, Colo. Filed Feb. 10, 1902. Serial No. 93,410. (No model.)



*Claim.*—1. In a device of the character described and in combination, a solenoid of low resistance normally in series with the load, a solenoid of relatively high resistance, means operative by said low-resistance solenoid adapted to connect said high-resistance solenoid across the mains, means operative by said high-resistance solenoid adapted to break the circuit through the low-resistance solenoid and load, means operative by said high-resistance solenoid to maintain its connection across the mains at one point and means consisting of a device having timed movements in two directions and operative by its movement in one direction to consecutively open the shunt-circuit in two places, and to close one break in the shunt-circuit by its movement in the other direction, substantially as described.

2. In a device of the character described and in combination, a solenoid of low resistance normally in series with the load, a solenoid of relatively high resistance, means operative by said low-resistance solenoid adapted to connect said high-resistance solenoid across the mains, means operative by said high-resistance solenoid adapted to break the circuit through said low-resistance solenoid and load, means operative by said high-resistance solenoid to maintain its connection across the mains at one point, with a device having timed movements and adapted to consecutively open the shunt-circuit in two places, substantially as described.

3. In a device of the character described, a solenoid of low resistance normally in series with the load, a solenoid of relatively high resistance, means for disconnecting said series solenoid, means simultaneously connecting or shunting said high-resistance solenoid across the mains, in combination with a tilting timing device consisting of a cylinder of non-conducting material pivoted about mediately of its length and interiorly divided into two chambers by a ported partition, and provided with a quantity of mercury in its said chambers, electric terminals penetrating one of said chambers and adapted to be connected upon the filling of said chamber with the mercury substantially as described.

4. In a device of the character described, a coil of low resistance normally in series with a predetermined load, its armature, means adapted to exert a counter pull on said armature slightly greater than the pull of said coil, a coil of high resistance located below said low-resistance coil and having its hollow core concentric therewith, means operative by the armature of the series coil to shunt the high-resistance coil on the mains, means operative by the shunt-coil to disconnect the series coil, in combination with means operative by a supplemental armature in the top of said high-resistance coil adapted to maintain connection on the mains substantially as described.

5. In a device of the character described, the combination with a coil of low resistance normally in series with a predetermined load, its armature, means adapted to exert a counter pull on said armature slightly greater than the normal pull of said coil, a coil of relatively high resistance placed below the series coil and having its hollow core concentric therewith, an armature in the lower end of said high-resistance coil, means for shunting said high-resistance coil on the mains, and means connected with and adapted to be operated by the armature of the high-resistance coil to open and to close at predetermined intervals the circuit through the series coil, substantially as described and for the purposes stated.

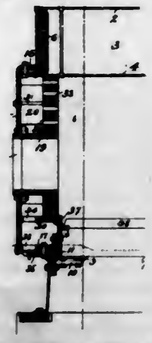
6. In a device of the character described, the combination with a coil of low resistance normally in series with a predetermined load, its armature, means adapted to exert a counter pull on said armature slightly greater than the normal pull of said coil, of an adjacent coil of relatively high resistance, its armature, means for shunting said high-resistance coil across the mains, and means connected with and adapted to be operated by said high-resistance-coil armature to open and to close, at predetermined intervals, the circuit through the series coil, substantially as described and for the purpose stated.

7. In a device of the character described, a coil of low resistance normally in series with a predetermined load, its armature, means connected with and adapted to exert a counter pull on said armature slightly greater than the normal pull of said coil, an adjacent coil of relatively high resistance, its armature, in combination with means connected with and adapted to be operated by the armature of said high-resistance coil to open and to close, at predetermined intervals, the circuit of the low-resistance coil, and means consisting of a mediately-pivoted cylinder of non-conducting material interiorly divided into two chambers by a ported partition, a quantity of conducting fluid contained in said cylinder and adapted to run from one chamber to the other through said ported partition, terminals on the line of the coil of high resistance penetrating said cylinder into one of its chambers and adapted to be electrically connected by the inflowing conducting fluid therein and electrically disconnected by the outflow of said fluid upon the tilting of said pivoted cylinder, whereby to make and break the circuit through the coil of high resistance at predetermined intervals, substantially as described and for the purpose stated.

8. In a device of the character described, a solenoid of low resistance normally in series with the load, its armature, means connected with and adapted to exert a counter pull on said armature slightly greater than the pull of the solenoid, an adjacent relatively high resistance solenoid, its armature, means connected with and adapted to be operated by the armature of the low-resistance solenoid to close the circuit through the high-resistance solenoid, means connected with and adapted to be operated by the armature of the high-resistance solenoid to open and to close the circuit through the low-resistance solenoid, in combination with means for opening and closing the circuit through the high-resistance solenoid at predetermined intervals consisting of a mediately-pivoted cylinder of non-conducting material interiorly divided into two end chambers by a ported partition, a quantity of conducting fluid contained in said cylinder and adapted to run from one chamber to the other through said ported partition, electric terminals on the line of said high-resistance solenoid penetrating said cylinder into one of its chambers and adapted to be electrically connected by the inflowing conducting fluid therein and electrically disconnected by the outflow of said fluid upon the tilting of said pivoted cylinder, substantially as described and for the purpose stated.

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**754,497. LOCOMOTIVE-BOILER.** SAMUEL F. PRINCE, Jr., Reading, Pa. Filed Oct. 16, 1903. Serial No. 177,242. (No model.)



*Claim.*—1. A locomotive-boiler having fire-box crown and side sheets extended rearwardly beyond the surrounding water-space, and a separately-formed rear fire-box end removably secured to the projecting edges of the rearwardly-extended sheets.

2. A locomotive-boiler having a fire-box provided with a separately-formed rear fire-box end comprising an outer wall-plate having a door-frame and a fire-wall-supporting flange extending inward therefrom, suitably-formed perforated fire-brick mounted upon the inner portions of said frame and flange to form an intervening air-chamber and an air-inlet to said chamber.

3. A locomotive-boiler having a fire-box provided with a separately-formed rear fire-box end comprising an outer wall-plate having a door-frame, a fire-wall-supporting flange, and spacing-ribs, extending inwardly therefrom, suitably-formed perforated fire-brick mounted upon the inner portions of said frame and flange and secured against said spacing-ribs to form an intervening air-chamber, and an air-inlet to said chamber.

4. A locomotive-boiler having rearwardly-extended fire-box crown and side sheets directly connected to the surrounding boiler-shell by a water-space end sheet, a transverse bottom bar connecting the rear ends of the water-legs, and a separately-formed rear-door end independently secured to said rearwardly-extended fire-box sheets and to said bottom bar.

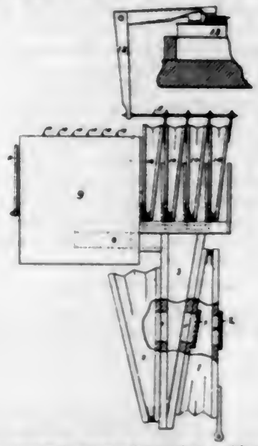
5. In a locomotive-boiler having space between the boiler-shell and the fire-box closed by a crescent-shaped end sheet and the depending water-legs connected by a transverse bottom bar, an independently-secured hollow door end comprising an outer wall-plate having an inwardly-extending perforated bottom flange secured to said bottom bar, a perforated fire-wall-supporting flange above said bottom flange, removably-secured plates forming an inner wall between said flanges, and means for regulating the air-inlet through said perforated flanges.

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**754,498. PNEUMATIC PIANO ATTACHMENT.** REGINALD C. PRYOR, Houghton, Mich. Filed Mar. 23, 1903. Serial No. 150,076. (No model.)

*Claim.*—1. In an automatic piano-player, the combination with power-pneumatics and key-operating devices, of a pair of pressure-chambers, valves between each of said chambers and each of the power-pneumatics whereby each power-pneumatic may be connected

to each pressure-chamber, and means under the control of the operator for accurately adjusting the relation of pressures in the two chambers.



2. In an automatic piano-player, the combination with power-pneumatics and key-operating devices, of a pair of pressure-chambers, a valve between said chambers, means under the control of the operator for determining the action of said valve, means for maintaining desired pressure in said two chambers, one through the other, and valve mechanism between the power-pneumatics and the two pressure-chambers whereby any power-pneumatic may be connected with either pressure-chamber.

3. In an automatic piano-player, the combination with power-pneumatics and key-operating devices, of a pair of puppet-valve structures for each power-pneumatic, a pair of passages leading from said tracker-board one to each of the valve structures, a passage forming a communication between each power-pneumatic and its pair of puppet-valves, a valve controlling said passage to close communication between it and either of the puppet-valves, a pair of pressure-chambers one communicating with one puppet-valve, and the other with the other, and means for producing desired pressures in said chambers.

4. In an automatic piano-player, the combination with power-pneumatics and key-operating devices, of a pair of puppet-valve structures for each power-pneumatic, a pair of passages leading one from each of said valve structures to the tracker-board, a passage forming a communication between each power-pneumatic and its pair of puppet-valves, a valve controlling said passage to close communication between it and either of the puppet-valves, a pair of communicating pressure-chambers one communicating with one puppet-valve and the other with the other, a valve between said chambers means under control of the operator for determining the action of said last-mentioned valve, and means operating upon one chamber through the other for producing desired pressures in said chambers.

5. In an automatic piano-player having a pair of differential pressure-chambers, a valve mechanism for each note to be voiced consisting of a pair of puppet-valve chambers one communicating with one pressure-chamber and the other with the other, a passage forming a communication between said puppet-valve chambers, a passage leading from said communicating passage to voicing mechanism, and a valve capable of closing communication between either of said puppet-valve chambers and said last-mentioned passage and opening communication between said last-mentioned passage and the other puppet-valve chamber.

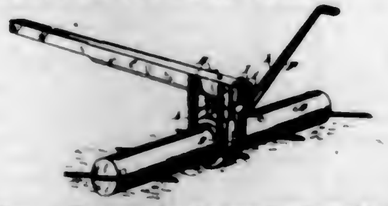
6. In an automatic piano-player having a pair of differential pressure-chambers, a valve mechanism for each note to be voiced consisting of a pair of puppet-valve chambers one communicating with one pressure-chamber and the other with the other, a passage forming a communication between said puppet-valve chambers, a passage leading from said communicating passage to voicing mechanism, and a pair of flap-valves mounted in the communicating passage, one upon each side of the voicing-passage, for the purpose set forth.

7. In an automatic piano-player, the combination, with the note-controlling pneumatics, of a pair of communicating pressure-chambers connected with said pneumatics, a valve arranged between said chambers, a spring engaging said valve, and means under the control of the operator for regulating the resistance of said spring upon said valve.

8. In an automatic piano-player, the combination, with the note-controlling pneumatics, of a pair of communicating pressure-chambers connected with said pneumatics, a valve arranged between said chambers, a spring engaging said valve, a toggle-lever engaging said spring, a rock-shaft under the control of the operator, and a connection between said rock-shaft and said toggle-lever whereby the resistance of said spring to the valve may be controlled by the operator.

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754,499. **HORSE-RAKE.** JOHN H. RANDOLPH, Baton Rouge, La. Filed Aug. 3, 1903. Serial No. 168,075. (No model.)



*Claim.*—1. The combination of an intermittently-revolving rake-head, an oval cam-ring thereon and having its major axis arranged vertically, stops on the ring, a lever engaging said stops at intervals to hold the rake-teeth down, and teeth projecting through the rake-head at right angles to the major axis of the ring.

2. The combination of a tongue, down-hangers on each side thereof, a rake-head turning in bearings in the down-hangers, rake-teeth projecting through the rake-head, an oval cam-ring secured to the rake-head between said down-hangers, and having its major axis arranged perpendicularly to the plane of the teeth, stops on the cam-ring and a lever engaging said stops.

3. The combination of a tongue, down-hangers thereon, a turning rake-head in the hangers, a cam-ring on the rake-head, a lever rocking on a pivot in the down-hangers below the tongue, and engaging stops on the cam-ring.

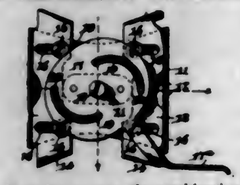
4. The combination of a tongue, down-hangers thereon, a turning rake-head, an oval cam-ring thereon, stops on the cam-ring, a lever rocking vertically on a pivot on the down-hangers below the tongue, and a leaf-spring secured at one end to the tongue having its free end interposed between the tongue and the lever to hold the lever and stops in contact.

5. The combination of a tongue, down-hangers thereon, a rake-head turning in the down-hangers, an oval cam-ring on the rake-head, stops on the cam-ring, a lever engaging said stops, a guide-box for the lever on the rear end of the tongue, and rake-teeth projecting through the rake-head and disposed at right angles to the major axis of the cam-ring.

6. The combination of a tongue, down-hangers thereon, a rake-head turning in the down-hangers, an oval cam-ring on the rake-head, stops on the cam-ring, a lever engaging said stops, a guide-box for the lever, and a projection of the web of the lever meshing in the guide-box, and teeth projecting from the rake-head and disposed at right angles to the major axis of the cam-ring.

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754,500. **ICE-CREEPER.** CHRISTIAN F. ROCKHAGEL, New Britain, Conn. Filed Feb. 21, 1903. Serial No. 144,418. (No model.)



*Claim.*—1. In an ice-creeper, the combination with a base, having spaced sets of depending spurs, of shoe-engaging members movably mounted on one side of the base between the sets of spurs and having terminal hooks that project above the opposite side edges of the base and engage the shank of the shoe or boot, and means coacting with the members for moving the same toward and from each other.

2. In an ice-creeper, the combination with a base having downturned flanges at certain of its side edges, of shoe-engaging members movably mounted on the base and having upstanding sole-engaging hooks projecting above the other side edges, and a cam journaled on the base and coacting with the members to move the hooks into engagement with the sole of a shoe and thereby secure the base with the flanges transversely of said shoe.

3. In an ice-creeper, the combination with a base-plate having downturned flanges at certain of its opposite side edges, said flanges being serrated to form spurs, of shoe-engaging members slidably mounted on the under side of the base between the flanges and having upstanding sole-engaging hooks that extend across the other opposite side edges of the base and project above the same, a cam journaled upon the under side of the base between the shoe-engaging members and extending beneath the under faces of said members, movable connections between the cam and members, and a handle carried by the cam and projecting from one side of the base, said handle swinging between the corresponding ends of the flanges.

4. In an ice creeper, the combination with a base having rows of depending spurs at its ends, of clamp members slidably mounted on the under side of the base and extending across the same, said members having outstanding sole-engaging hooks projecting over the side edges of the base, and a cam journaled on the under side of the base between the members and coacting with the inner opposing edges thereof.

5. In an ice-creeper, the combination with a base having spurs, of spaced clamped members movably mounted upon the base, and a revolnble locking device located between and bearing against the opposing inner edges of the clamp members.

6. In an ice-creeper, a base-plate arranged to fit against the shank of the shoe-sole, said plate having its end edges downturned to constitute terminal flanges and serrated to provide transversely-disposed rows of teeth, one of said flanges being of greater width than the other and arranged to abut against the heel of the shoe, and means for securing the plate to the shoe.

7. In an ice-creeper, the combination with a base having downturned flanges and edges located in angular relation to the downturned flanges, shoe-engaging members having upturned hooks projecting above the said angularly-disposed flanges, said hooks being arranged to engage a boot or shoe and maintain the flanges in transverse relation thereto, and means for moving the shoe-engaging members.

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754,501. **LARDING OR SALTING DEVICE.** ROBERT R. REYNOLDS, New York, N. Y. Filed Mar. 11, 1903. Serial No. 147,349. (No model.)



*Claim.*—1. A larding-tool, comprising two sections relatively adjustable to form a complete tube open at one end and closed at the other end, said closed end being extended and tapered to a point.

2. A larding-tool, comprising two sections relatively adjustable to form a complete tube open at one end and closed and pointed at the other end, said tube-sections having side and end cutting edges.

3. A larding-tool, comprising a tube open at one end, closed at the other, and divided lengthwise into sections relatively adjustable to open and close the tube throughout its effective length, the end and sides of said tube-sections being beveled to form cutting edges and means for adjusting the sections.

4. A larding-tool, comprising a tube divided lengthwise into sections, one of the sections terminating in a sleeve and the other section in a shank swiveled in the sleeve and having its projecting end pointed.

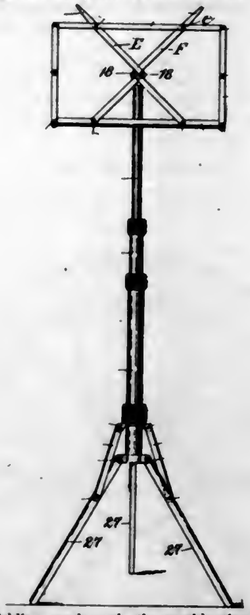
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754,502. **FOLDING MUSIC-RACK.** JOSEPH H. ROCKWELL, Providence, R. I. Filed July 26, 1903. Serial No. 167,086. (No model.)

*Claim.*—1. In a folding music-rack, the combination with the base-bar, the top bar and the jointed side bars pivoted at their opposite ends to said base and top bars, of a pair of jointed V-shaped bars crossed and hooked together and adapted to interlock with each other at their joints when the rack is opened and form a stop therefor, said V-shaped bars being pivoted to the base and top bars and forming the central portion of the rack.

2. The combination with a supporting-stand, of a folding music-rack composed of base and top bars, jointed side bars pivoted at their opposite ends to said base and top bars, a pair of jointed V-shaped bars pivoted to said base and top bars and hooked together and adapted to interlock with each other at their joints when the rack is opened, headed studs projecting rearwardly from said V-shaped bars at the interlocking-point, and an inclined plate secured to the upper end of the supporting-stand and provided with a vertical slot and notches at its upper corners for the reception of said headed studs when the rack is fully opened for use.

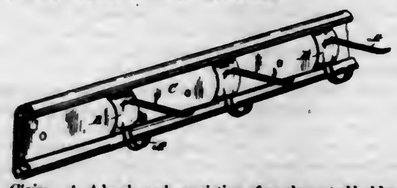
3. In a folding music-rack, a clamping device for the supporting-stand comprising a tubular casing having a longitudinal slot and provided at its ends with heads or flanges forming between them a chamber, a pair of clamping-rings or washers arranged within said chamber and adapted to loosely encircle the rod passing through said casing, said rings having lugs adapted to pass through the longitudinal slot of the casing, and a sleeve encircling and axially movable upon said casing and provided with transverse diverging slots with which said ring-lugs engage, whereby said rings may be held in parallelism or tilted or inclined in opposite directions to cause them to engage and clamp the rod encircled thereby.




4. In a folding music-rack, the combination with the supporting-stand, of a clamping device comprising a tubular casing provided with a longitudinal slot and at its opposite end with heads or flanges having their opposing inner faces inclined in opposite directions, a pair of tilting clamping-rings arranged within the casing between said heads and adapted to loosely encircle the rod passing through said casing, said rings being provided with lugs extending through said longitudinal slot, and a sleeve encircling and axially movable on said casing and provided with transverse diverging slots with which said ring-lugs engage, whereby said clamping-rings may be tilted or inclined at an angle to each other to cause them to engage and clamp the rod encircled thereby.

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754,503. **HOOK-RACK.** JOHN H. RUBICAM and JOHN F. BAXTER, Cambridge, Ohio; said Rubicam assignor to said Baxter. Filed Aug. 31, 1903. Serial No. 171,490. (No model.)



*Claim.*—1. A hook-rack consisting of an elongated holder adapted for attachment to a support and having parallel confronting upper and lower ways, and hooks attached thereto having curved or sprung metal bases or back pieces, the top and bottom edges of which are formed to slide into and coact with said ways to hold the hooks in place, the spring of said metal bases serving to hold them tightly in place.

2. A hook-rack consisting of a metal holding-strip having its upper and lower edge portions rolled or curved over on its front, and hooks having curved sprung metal bases or back pieces with flanges which engage with the edges of said rolled portions, said

bases being inserted and slid into the holding-strip from its end, the spring of said metal bases serving to hold them in place.

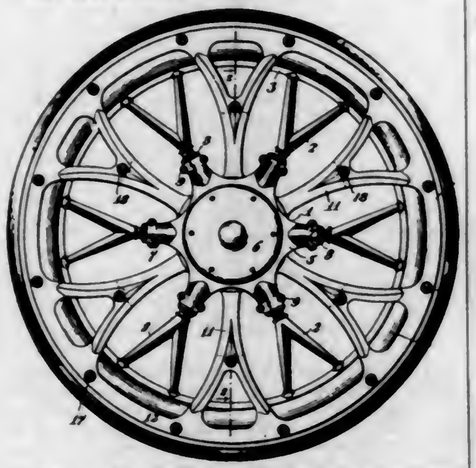
3. A hook-rack consisting of a metal holding-strip having its upper and lower edge portions rolled or curved over on its front, and the extreme edges thereof housed within said rolled portions and forwardly turned in opposed directions, and hooks having curved or sprung metal bases or back pieces with flanges formed to coact with said edges, said bases being inserted and slid into the holding-strip from its end.

4. The herein-described holder for the hooks consisting of a metal strip having its edges rolled or curved over on its front and its extreme edges housed in said rolled portions and forwardly turned in opposite directions and formed to engage and hold the edges of suitable hook-bases.

5. A hook-rack consisting of a metal holding-strip having its upper and lower edge portions flanged and its extreme edges extending in opposite directions, and hooks having curved or spring metal bases with flanges coacting with said edges and engaging the same so as to hold the hooks in place.

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754,504. VEHICLE-WHEEL. PERCY A. SANGUINETTI, New York, N. Y., assignor to Ada R. Martinsen, New York, N. Y. Filed Nov. 4, 1902. Serial No. 130,016. (No model.)



*Claim.*—1. In a wheel, the combination with a hub member, a tire member, and a cushioning device between them, of an intermediate guide plate or member between the hub and tire members, one of said members provided with a plurality of stationary studs, and another having a slot arranged parallel with a line through the center of the said studs, of a plurality of freely-mounted sleeves, one for each said stationary stud, mounted upon the said studs, and arranged to engage the walls of the said slot.

2. In a wheel, the combination with a hub member, a tire member and a cushioning device between the members, of an intermediate guide plate or member between the hub and tire members, and roller-bearings comprising relatively stationary studs, freely-mounted sleeves, and planetary rollers between the sleeves and studs, said roller-bearings arranged between the intermediate guide-plate and the wheel members.

3. In a wheel, the combination with two relatively movable members, one provided with a plurality of stationary studs, and the other having a slot arranged parallel with a line passing through the center of the said studs, of a plurality of freely-mounted sleeves, one for each said stationary stud, and a plurality of planetary rollers arranged between the stationary studs and their respective sleeves.

4. In a wheel, the combination with a hub member, a tire member, and a cushioning device between them, of an intermediate guide plate or member between the hub and tire members, one of said members provided with a plurality of stationary studs, and another having a slot arranged parallel with a line through the center of the said studs, of a plurality of freely-mounted sleeves, one for each said stationary stud, and a plurality of planetary rollers arranged between the stationary studs and their respective sleeves.

5. In a wheel, the combination with a hub and spokes, of an outer channel comprising a rim and two flanges constructed separately, the flanges rigid with the said spokes and having recesses at their inner faces for receiving the edges of the said rim, together with bolts for securing the flanges and rim together.

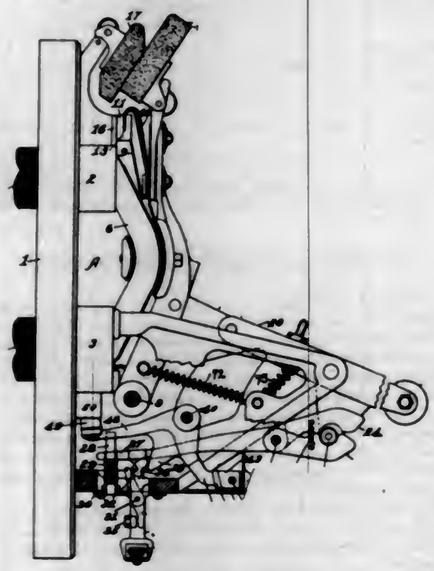
6. In a wheel, the combination with a hub and spokes having removable portions, of an outer channel comprising a rim and two flanges constructed separately, one of said flanges rigid with the said spokes, the other of said flanges rigid with removable portions of said spokes, and both said flanges having recesses for receiving the outer edges of the said rim, together with bolts for securing the flanges and removable portions of the spokes together.

7. A wheel comprising two relatively movable members and a cushioning device between them, one member comprising a hub, spokes and rim, the hub provided with a plurality of internally-screw-threaded bushings projecting radially therefrom, and the spokes provided with screw-threaded portions fitted to said bushings, substantially as set forth.

8. In a wheel, the combination with a hub member comprising a hub, spokes and a rim, a tire member, and a cushioning device between the members, the said hub composed of two sections having radially-projecting portions, and internally-screw-threaded bushings mounted in said portions, the said spokes having screw-threaded portions adapted to engage the said bushings, and means for locking the bushings in position.

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754,505. AUTOMATIC CIRCUIT-BREAKER. WILLIAM M. SCOTT, Philadelphia, Pa., assignor to Cutter Electrical and Manufacturing Company, a Corporation of New Jersey. Filed June 18, 1903. Serial No. 161,985. (No model.)



*Claim.*—1. In an automatic circuit-breaker, separable cooperative contacts, a latch for restraining said contacts in normal position, means actuated by locally-stored energy for operating said latch, a trigger restraining said latch-operating means, a member pivoted concentrically with said trigger for operating said trigger, and electromagnetic means for tilting said trigger-operating means.

2. In an automatic circuit-breaker, separable cooperative contacts, means for restraining said contacts in normal position, an electromagnet, an armature therefor for controlling said restraining means, and adjusting means for said armature engaged by said armature upon a warped surface.

3. In an automatic circuit-breaker, separable cooperative contacts, a latch for restraining said contacts in normal position, an electromagnet, an armature therefor for controlling said latch, and means for adjusting said armature comprising a wedge-shaped block whose engaging face is a warped surface.

4. In an automatic circuit-breaker, separable cooperative contacts, a latch for restraining said contacts in normal position, an electromagnet, an armature therefor, a member supporting said armature and controlling said latch, a means for adjusting said armature comprising a wedge-shaped member, having a warped surface, and engaged on said surface by said armature-supporting member.

5. In an electric switch, a contact comprising a mass of conducting material having a recess therein, means engaging loosely in said recess, and a member loosely engaging said mass and cooperating with said means to lock said mass in position.

6. In an electric switch, a contact comprising a conducting mass having a plurality of recesses therein, means engaging loosely in a recess, and a member loosely engaging in another recess, whereby said mass is locked in position.

7. In an electric switch, a shunt-contact, comprising a conducting mass, a slot in said mass, a supporting-spring engaging in said slot, a groove in said mass, and a spring engaging in said groove.

8. In combination, a plurality of switches of different capacities, and having dissimilar tripping mechanisms, and a connection between the tripping mechanisms of all the switches, whereby the operation of any one switch causes the operation of all the switches.

9. In combination, a plurality of switches of different capacities and having dissimilar tripping mechanisms, and a mechanical connection between the tripping mechanisms of all the switches whereby all switches are tripped when any one switch is tripped.

10. In combination, a plurality of switches, having dissimilar tripping mechanisms, each tripping mechanism comprising a trigger-controlled member actuated by locally-stored energy, a trigger-operating member, and a mechanical connection between the trigger-operating members of all the switches.

11. In combination, a plurality of electrical switches of different capacities, each switch having a tripping mechanism comprising a trigger-controlled member actuated by locally-stored energy, a pivoted trigger-actuating member, and means for causing the simultaneous action of the trigger-operating members of all the switches.

12. In combination, a plurality of automatic circuit-breakers of different capacities, each switch having a tripping mechanism comprising a trigger-controlled member actuated by locally-stored energy, a trigger-actuating member, and electroresponsive means for actuating said trigger-actuating means, and means for causing the simultaneous action of the trigger-actuating means of all the circuit-breakers.

13. In combination, a plurality of automatic circuit-breakers of different capacities, each having a tripping mechanism comprising a tripping-lever, actuated by locally-stored energy, a hair-trigger restraining said lever, a trigger-actuating member, an electroresponsive means controlling said trigger-actuating member, and a mechanical connection between the trigger-actuating members of all the circuit-breakers.

14. In an electric switch, separable coöperative contacts, means for restraining said contacts in normal position, means for imparting a blow to said restraining means, resilient means connecting said restraining means and blow-imparting means, and a trigger controlling said blow-imparting means.

15. In an electric switch, separable coöperative contacts, means for restraining said contacts in normal position, means for actuating said restraining means by locally-stored energy, a resilient connection between said restraining means and its actuating means, and means controlling said actuating means.

16. In an electric switch, separable coöperative contacts, means for restraining said contacts in normal position, means for actuating said restraining means by locally-stored energy a trigger controlling said actuating means and means for operating said trigger said trigger and its operating means being concentrically pivoted.

17. In an electric switch, separable coöperative contacts, means for restraining said contacts in normal position, a member for actuating said restraining means, a resilient connection between said restraining means and said actuating member, a spring compressed by said actuating member, and a trigger for restraining said spring.

18. In an electric switch, fixed contacts, a movable switch member adapted to coöperate therewith, means for restraining said movable switch member in normal position, means for actuating said restraining means and for delivering a blow to the movable switch member, a local source of energy for operating said actuating means, and a trigger controlling said source of energy.

19. In an electric switch, fixed contacts, a movable switch member adapted to coöperate therewith, a latch for restraining said movable switch member in normal position, a member actuated by locally-stored energy to operate said latch and to impart a blow to the movable switch member, and a trigger controlling said member.

20. In an electric switch, fixed terminals, a movable switch member coöperating therewith, a latch for restraining said movable member in normal position, a pivoted lever for actuating said latch, a spring held compressed by said lever, a trigger controlling said lever, and means for operating said trigger pivoted concentrically with said trigger.

21. In an electric switch, a base, fixed contacts, a movable switch member coöperating therewith, a latch for restraining said movable switch member in normal position, a member for actuating said latch by locally-stored energy, and a trigger pivoted to the base for controlling said member.

22. In an electric switch, a base, contacts secured thereto, a movable switch member coöperating with said contacts, a latch for restraining said switch member in normal position, a member for actuating said latch by locally-stored energy, a trigger pivoted to said base for controlling said member, and means pivoted to said base for actuating said trigger.

23. In an electric switch, a base, fixed contacts, a movable switch member adapted to coöperate therewith, a latch for restraining said movable switch member in normal position, a member for actuating said latch, a spring for operating said member, and a trigger pivoted to the base for controlling said spring.

24. In an electric switch, a base, fixed contacts, a movable switch member coöperating therewith, a latch for restraining said movable switch member in normal position, a member for actuating said latch, a trigger for controlling said member, and a trigger-actuating member, said trigger and its actuating member being pivoted to the base concentrically with each other.

25. In an electric switch, a base, terminal blocks secured thereto, a laminated bridging member adapted to coöperate with said terminal blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch by locally-stored energy, and a trigger pivoted to the base for controlling said actuating member.

26. In an electric switch, a base, terminal blocks secured thereto, a laminated bridging member adapted to coöperate with said terminal blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch by locally-stored energy, a trigger pivoted to said base for controlling said member, and means pivoted to said base for actuating said trigger.

27. In an electric switch, a base, terminal blocks secured thereto, a movable laminated member adapted to bridge said blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch, a spring for operating said member, and a trigger pivoted to the base for controlling said spring.

28. In an electric switch, a base, terminal block secured thereto, a movable laminated member adapted to bridge said blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch, a trigger for controlling said actuating member, and a trigger-actuating member, said trigger and its actuating member, being pivoted to the base concentrically with each other.

29. In an automatic circuit-breaker, fixed contacts, a base supporting the same, a movable switch member coöperating with said contacts, a latch for restraining said movable switch member in normal position, a member for actuating said latch by locally-stored energy, a trigger pivoted to said base for controlling said member, and electroresponsive means for controlling said trigger.

30. In an automatic circuit-breaker, a base, fixed contacts mounted thereon, a movable switch member coöperating with said contacts, a latch for restraining said movable switch member in normal position, a latch-actuating member operated by locally-stored energy, a trigger for controlling said actuating member, and electroresponsive means secured to said base for controlling said trigger.

31. In an automatic circuit-breaker, a base, fixed contacts, a movable switch member coöperating with said contacts, a latch for restraining said movable switch member in normal position, a latch-actuating member operated by locally-stored energy, a trigger pivoted to the base for controlling said actuating member, and electroresponsive means for controlling said trigger.

32. In an automatic circuit-breaker, a base, contacts secured thereto, a movable switch member coöperating with said contacts, a latch for restraining said switch member in normal position, a member for actuating said latch by locally-stored energy, a trigger pivoted to said base for controlling said member, means pivoted to said base for actuating said trigger, and electroresponsive means for actuating said trigger-actuating means.

33. In an automatic circuit-breaker, a base, fixed contacts mounted thereon, a movable switch member adapted to coöperate with said contacts, a latch for restraining said movable switch member in normal position, a member for actuating said latch, a spring for operating said member a trigger pivoted to said base for controlling said spring, and electroresponsive means for controlling said trigger.

34. In an automatic circuit-breaker, a base, fixed contacts mounted thereon, a movable switch member adapted to coöperate with said contacts, a latch for restraining said movable switch member in normal position, a member for actuating said latch, a spring for operating said member, a trigger pivoted to the base for controlling said spring, means pivoted to the base for actuating said trigger, and electroresponsive means for controlling said trigger-actuating means.

35. In an automatic circuit-breaker, a base, fixed contacts mounted thereon, a movable switch member coöperating with said contacts, a latch for restraining said movable switch member in normal position, a member for actuating said latch, a trigger for controlling said member, a trigger-actuating member, said trigger and its actuating member being pivoted to the base concentrically with each other, and electroresponsive means for controlling said trigger-actuating member.

36. In an automatic circuit-breaker a base, contact-blocks fixed thereon, a movable laminated member adapted to bridge said blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch, a spring for operating said latch-actuating member, a trigger pivoted to said base for controlling said spring, and electroresponsive means for controlling said trigger.

37. In an automatic circuit-breaker, a base, contact-blocks fixed thereto, a laminated member adapted to bridge said contact-blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch, a spring for operating said member, a trigger pivoted to the base for controlling said spring, means for operating said trigger, and electroresponsive means for controlling said trigger-operating means.

38. In an automatic circuit-breaker, a base, contact-blocks fixed thereon, a movable laminated member adapted to bridge said blocks, a latch for restraining said laminated member in normal position, said latch being pivoted to said base, a member for actuating said latch, a trigger pivoted to the base for controlling said latch-actuating member and electroresponsive means for controlling said trigger.

39. In an automatic circuit-breaker, a base, contact-blocks fixed thereon, a movable laminated member adapted to bridge said blocks, a latch for restraining said laminated member in normal position, a member for actuating said latch, a trigger for controlling said member, a trigger-actuating member, said trigger and its actuating member being pivoted to the base concentrically with each other, and electroresponsive means for controlling said trigger-actuating member.

40. In a tripping mechanism for electric switches, an adjusting means comprising relatively movable members, one of said members having a warped surface and engaged thereon by another of said members.

41. In a tripping mechanism for electric switches, an adjusting means comprising relatively movable members, one of said members being of a general wedge shape and having a warped surface engaged by another of said members.

42. In a tripping mechanism an electromagnet, an armature therefor, and means for adjusting the position of said armature with respect to said electromagnet comprising a member having a warped surface and a second member engaging said warped surface.

43. In a tripping mechanism, an electromagnet, an armature therefor, a pivotal support for said armature, a movable wedge-shaped member having a warped surface, and an extension from said armature-support engaging said warped surface.

44. In a tripping mechanism, an electromagnet whose conductor has great current-carrying capacity, an armature for said magnet, means for adjusting the position of said armature with respect to said magnet comprising a member having a warped surface and a second member engaging upon said warped surface, said members being relatively movable.

45. In an electric switch, a shunt-contact comprising a conducting mass, a recess therein, means engaging loosely in said recess, and a shouldered member loosely engaging said mass.

46. In an electric switch, a shunt-contact comprising a conducting mass, resilient means engaging in a slot therein, and a resilient shouldered means engaging said mass.

47. In an electric switch a shunt-contact comprising a recessed conducting mass, and a member supporting said mass by a locking tongue-and-slot engagement.

48. In an electric switch, a shunt-contact comprising a conducting mass, resilient means engaging in a recess therein, and a resilient tongued means engaging in a recess therein.

## 754,506. PITMAN. KARL F. SMITH, Offerle, Kans. Filed Oct. 28, 1902. Renewed Sept. 18, 1903. Serial No. 173,732. (No model.)



*Claim.*—1. A pitman comprising a rod bent upon itself to form spaced members and a connecting-bight, said members having enlarged portions at their connections with the bight portion, said enlarged portions being threaded, an adjustable box at the bight end of the pitman comprising a semicircular member having a groove in its periphery, said groove being disposed on the bight and a second member having perforations therethrough for engagement with the second-mentioned enlarged portions of the spaced members, stop-nuts disposed upon the screw-threads of the enlarged portions to adjust the box, a second adjustable box comprising two members having alining perforations therethrough disposed with said perforations engaged upon the enlarged portions of the spaced members at the ends thereof, stop-nuts disposed upon the threads of the enlarged portions just mentioned between the two boxes to move the second-named box away from the first-named box and other nuts disposed upon the ends of the spaced members to move the second-named box toward the first-named box and to clamp the members of the second-named box one upon the other.

2. A pitman comprising spaced boxes each of which is adjustable in its bearing and one of which is adjustable toward and away from the other, stops for limiting the movement of the last-named box toward the other and means for adjusting the bearing of said last-named box and moving it toward the other.

3. A pitman comprising a rod bent upon itself to form spaced members and a connecting-bight, boxes each comprising sections engaged with the spaced members, one of the boxes being adjustable upon the spaced members toward and away from the other, nuts engaged with said spaced members at the opposite side of one of the boxes from the bight to clamp said box between them and the bight, nuts engaged with the members between the boxes and forming stops for the adjustable box, and additional nuts engaged with the members beyond the adjustable box to clamp it against the stop-nuts, said boxes being divided on lines transversely of the spaced members whereby the resultant sections may be adjusted toward each other by manipulation of the clamping-nuts.

## 754,507. SHOW-CASE. CHARLES W. SELDEN, Richmond, Va. Filed Dec. 4, 1902. Serial No. 133,802. (No model.)



*Claim.*—1. In a show-case, a corner-post, an angle-clasp disposed upon said corner-post thereof and provided with free ends extended at an angle to each other and adapted to embrace the edges of the top plate of the case at an angle to each other, and means for securing said clasp to the upper portion of said corner-post.

2. In a show-case, corner-posts, angular clasps disposed upon the upper face of said posts, a top plate adapted to extend beyond the posts and rest upon said clasps, and free bendable ends carried by said clasps to embrace the opposite edges of the top plate at each corner thereof.

3. In a show-case, corner-posts, angular clasps disposed upon the upper face of said corner-posts, a top plate adapted to extend beyond the posts and rest upon said clasps, free bendable ends carried by said clasps to embrace the opposite edges of the top plate at each corner thereof, and a clasp secured to the vertical plate of the case intermediate of the corner-posts and having a free end to embrace the edge of the top plate.

4. In a show-case, corner-posts, angular clasps disposed upon the upper face of said posts, a top plate adapted to extend beyond the posts and rest upon said clasps, free bendable ends carried by the clasps to embrace the opposite edges of the top plate at each corner thereof, a clasp secured to the vertical plate of the casing intermediate of the corner-posts and having a free end to embrace the edges of the top plate, and a packing-strip disposed between said clasps and the plate embraced thereby.



## 754,508. PHONOGRAPHIC APPARATUS. CHARLES W. SKIFF, Westfield, and SIDNEY A. GRAFF, Springfield, Mass., assignors to the United States Music Machine Company, Springfield, Mass., a Corporation of New Jersey. Filed Oct. 18, 1902. Serial No. 127,765. (No model.)



*Claim.*—1. In an apparatus of the character described a case or cabinet having an opening in its front and an opening in its rear, a door to close the rear opening, and a forwardly-diverging inclosure located in said cabinet and extending from the front opening to the door-closed opening.

2. In an apparatus of the character described, a case having an opening in its front and a removable diaphragm at its rear wall and having a space or compartment therein extending and divergent from rear to front, said removable diaphragm also forming a closure for the rear end of the compartment, for the purpose set forth.

3. In an apparatus of the character described, a case or cabinet having an opening in its front, and having therein an inclosure, the sides of which are composed of a series of circularly-arranged rods extending from the rear of the cabinet in forwardly-divergent lines to the front opening, and a diaphragm at the rear ends of the rods, substantially as described.

4. In an apparatus of the character described, a case having an opening in its front and having therein a forwardly-widening chamber leading to said front opening, and composed of a series of circularly-arranged forwardly-divergent rods extending from the rear to the front of the case having a covering supported thereby independent of the case.

5. In an apparatus of the character described, a phonographic-containing case having therein a forwardly-widening compartment or removable chamber, the rear wall of which is constituted by a vibratory diaphragm and having its front open, for the discharge of sound.

6. In an apparatus of the character described, a case having a front opening for the discharge of sound, a screen covering and protecting said opening, said case having therein, a forwardly-widening phonographic-containing compartment or chamber terminating at said screen-covered opening, and a vibratory door to close the rear end of the compartment.

7. A phonographic case, embodying a sound-augmenting compartment which flares forwardly to an open front end for the discharge of sound, and a removable diaphragm forming a closure for the rear end of the compartment.

8. A phonographic case, embodying a sound-augmenting compartment which flares forwardly to an open front end for the discharge of sound, a foraminous cover for the open end of the compartment, and a removable diaphragm forming a closure for the rear end of the compartment.

9. In an apparatus of the character described, the combination of a flaring sound-augmenting compartment having a rear closed end and an open end for the discharge of sound, a removable diaphragm to close the rear end, a phonograph within the compartment, and a horn connected with the phonograph and disposed longitudinally within the compartment with its open front end disposed toward the open end of the compartment.

10. In an apparatus of the character described, the combination of a flaring sound-augmenting compartment having its larger end open for the issue of sound, a removable diaphragm forming a closure for the smaller end of the compartment, a phonograph within the smaller end portion of the compartment, and a horn within the compartment with its smaller end connected with the phonograph and its larger discharge end disposed toward the open end of the compartment.

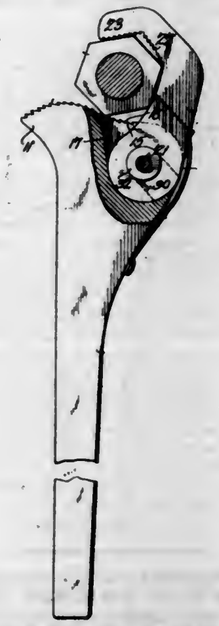
11. In an apparatus of the class described, a case having a forwardly-flaring compartment with an open front end, a sound-augmenting chamber within the compartment, a removable resonating-diaphragm to close the rear end of the compartment and chamber and to permit access thereto, a phonograph, and a phonographic horn connected with the phonograph and arranged in the chamber with its open end disposed toward the open end of the chamber.

12. In an apparatus of the class described, a case or cabinet having forwardly-diverging partitions forming a forwardly-flaring compartment, a sound-augmenting chamber in the compartment, a removable diaphragm to close the smaller rear ends of the compartment and chamber, a phonograph in the compartment, and a horn within the chamber with its smaller end connected with the phonograph and its larger end disposed toward the open end of the chamber.

13. In an apparatus of the class described, a case or cabinet having forwardly-diverging partitions forming a forwardly-flaring compartment, an annular flaring augmenting-chamber within the compartment and extending from the front to the rear of the case, a removable resonating-diaphragm at the rear of the case to close the smaller ends of the compartment and chamber and to permit access thereto, a phonograph in the compartment, and a horn within the chamber with its smaller end connected with the phonograph and its larger discharge end disposed toward the open end of the compartment.

14. In an apparatus of the class described, a case or cabinet having forwardly-diverging vertical partitions forming a central forwardly-flaring compartment and compartments at each end of the case, an annular forwardly-flaring sound-augmenting chamber inclosed by the partitions, a diaphragm-door at the rear of the case to close the smaller rear end of the chamber, a phonographic horn in the chamber having its larger discharge end disposed toward the open end of the chamber, and a foraminous cover for the open front end of the central compartment and chamber.

## 754,509. COMBINED PIPE AND NUT WRENCH. JOHN C. SNIDER, Cripplecreek, Colo. Filed July 31, 1903. Serial No. 167,781. (No model.)

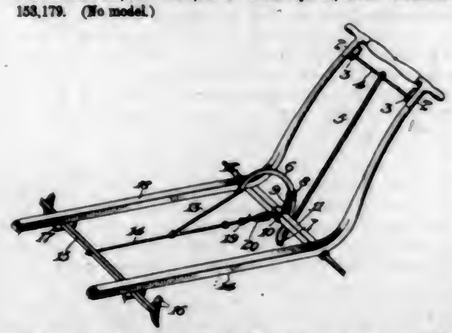


*Claim.*—A wrench for circular and non-circular bodies, comprising a stock having oppositely-disposed lateral extensions at one end, one of said extensions being provided with transverse serrations and the other of said extensions being provided with a slot extending longitudinally of the stock and having oblique grooves formed in the sides of the slot, and a grip member pivotally mounted in said slot and having round lateral lugs encircling the pivot and fitting

in the ends of the grooves in the sides of said slot, said grip member having its free end extended over the serrated lateral extension of the stock and having its gripping-face formed concave and provided with transverse serrations.

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754,510. **AUTOMATIC BRAKE-SHOE FOR BABY-CARRIAGES.** JOHN F. SNYDER, New York, N. Y. Filed Apr. 13, 1903. Serial No. 153,179. (No model.)



*Claim.*—1. An automatic brake for baby-carriages, comprising means for engaging a portion of the carriage to prevent its movement, a rod connecting to said engaging means and spring-held to apply the latter, a lever fulcrumed on the carriage and having an arm connected to said rod to actuate the same in a direction to release said engaging means, and means connected to said lever for rocking the latter when the carriage is to be moved.

2. An automatic brake for baby-carriages, comprising means for engaging a portion of the carriage to prevent its movement, a longitudinally-movable rod connected at one end to said engaging means, a pull-spring connected to the other end of said rod and to the carriage whereby to normally apply said engaging means, a lever fulcrumed on the carriage, a link connecting one arm of said lever with said rod, and means, actuated by grasping the handle-bar of the carriage, for rocking the lever whereby to push said rod against the tension of the spring.

3. An automatic brake for baby-carriages, comprising means for engaging a portion of the carriage to prevent its movement, a longitudinally-movable rod connected at one of its ends to said engaging means, a lever fulcrumed intermediate its ends on the carriage, a spring connected to the other end of said rod and to the carriage, a link connecting one arm of said lever with said rod, a movable handle-bar, and a link connecting said handle-bar with the other arm of said lever.

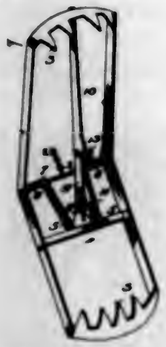
4. An automatic brake for baby-carriages, comprising a brake-beam carrying brake-shoes designed to engage the wheels of the carriage to prevent their movement, a rod connected at one end to said beam, a bracket secured to one of the carriage-axles, a spring connected to the other end of said rod and to said bracket, a lever fulcrumed intermediate its ends on said bracket, a link connecting one arm of said lever with said rod, a movable handle-bar, and a link connecting the other arm of said lever with said handle-bar.

5. An automatic brake for baby-carriages, comprising a brake-beam carrying brake-shoes designed to engage the wheels of the carriage to prevent their movement, a rod connected at one end to said brake-beam, a pull-string connected to the other end of said rod, a bracket secured to one of the carriage-axles and attached to said spring, said bracket being provided with a fulcrum-arm, a lever fulcrumed on said arm intermediate the ends of the lever, a link connecting one arm of said lever with the said rod, a link connected at one end to the other arm of said lever, and a movable handle-bar mounted adjacent to the usual handle-bar of the carriage and connected to the other end of the last-named link.

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754,511. **WOLF-TRAP.** JOSEPH W. SPRAGUE, Poncho Springs, Colo. Filed Mar. 29, 1902. Serial No. 100,643. (No model.)

*Claim.*—1. A trap comprising a pair of jaws, a rod to which the rear ends of the jaws are pivotally secured, a coiled spring mounted on the rod, a cross-bar carried by one of the jaws, a brace extending between and connecting the cross-bar and rod, one end of the spring slidingly engaging a jaw, the opposite end of the spring secured to the brace, the spring confined between the brace and the sides of the jaws and a toggle-jointed trigger, the lower end of the trigger pivotally secured to one of the jaws and means for securing the bait to the trigger, the upper end of the trigger removably engaging the remaining jaw when the trap is set.



2. A trap comprising a pair of jaws, a rod to which the rear ends of the jaws are hinged, means mounted on the rod for normally retaining the jaws in closed position and a trigger comprising a pair of toggle-jointed members, one of the members provided with a stop located slightly to one side of the longitudinal axes of the members, the remaining member adapted to engage the stop, and means on one of the members for receiving the bait, one end of the trigger adapted to removably engage a jaw.

3. A trap comprising a pair of jaws, a rod to which the jaws are pivotally secured, means normally tending to retain the jaws in closed position, an ear, a trigger pivotally secured thereto, the trigger consisting of a pair of toggle-jointed members, one of the members provided with a stop located to one side of the pivot, the other member provided with a cut-away portion in order that it may pass the center and lie against the stop, the upper end of the last-named member having a step formed therein to receive a jaw when the trap is set and a bait-hook located on the first-named member.

4. A trap comprising a plurality of members, means tending to force the members together and a trigger for retaining the members in open position, the trigger comprising a pair of hinged levers, one of the levers secured to one of the members and the other lever adapted to have frictional contact only with the other of said members.

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754,512. **BUSHING.** GUSTAVE STREEL and JOHN STREEL, La Crosse, Wis. Filed Feb. 26, 1903. Serial No. 145,262. (No model.)



*Claim.*—A metallic bushing comprising an outer bushing section having an inner smooth underbeveled rim-flange, a coarse exterior thread, an interior thread, and an interior annular rabbeted wrench-seat at the outer termination of said interior thread, and in combination therewith an inner bushing-section having an outer smooth underbeveled rim-flange, and an exterior thread, said outer underbeveled rim-flange and inner underbeveled rim-flange being adapted to forcibly engage respectively the outer and inner walls of a stave in which the bushing is seated, substantially as specified.

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754,513. **DRAFTING IMPLEMENT.** HENRY A. SWENSON, St. Paul, Minn. Filed Feb. 13, 1903. Serial No. 143,337. (No model.)

*Claim.*—1. The combination with a draftsman's curve, of a tangent-gage pivoted to said "curve," as set forth.

2. The combination with a draftsman's curve, of a tangent-gage connected to the curve and having its exterior surface in form of an arc.

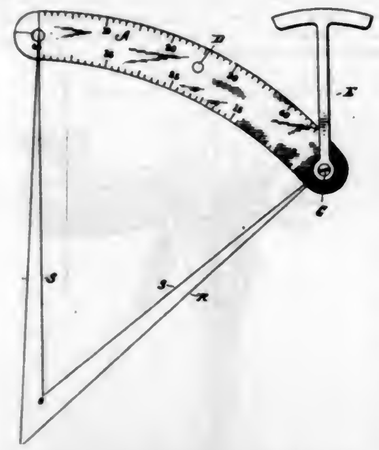
3. The combination with a set of curves of different radii and length as described, of a tangent-gage, and means for attaching it to any curve of the set.

4. A draftsman's curve having both its ends perforated, combined with a tangent-gage removably attachable to either of the perforated ends of the curve.

5. A draftsman's curve having outer and inner arcs of like radii, and indexed to read in opposite directions on the two edges, combined with a tangent-gage removably attachable to either end of the curve.

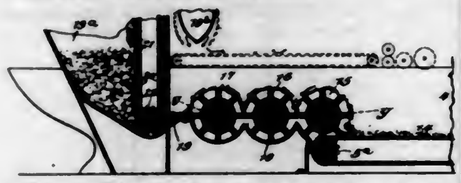


754,513.



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754,514. **ATTACHMENT FOR CARDING-MACHINES.** GEORGE W. TAYLOR, Boston, Mass., and JAMES W. SCOTT, Warren, Me. Filed Jan. 30, 1901. Serial No. 45,368. (No model.)



*Claim.*—1. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of cleaning-brushes disposed to receive the waste from the conveyer, and arranged in close relation to each other, whereby the waste is directly transferred from each brush to the next successively, mechanism for operating the conveyer and brushes simultaneously, a feed device for the carding-machine, and means for receiving the waste from the last brush of the series and conveying it to the feeding device.

2. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of cleaning-brushes disposed to receive the waste from the conveyer, and arranged in close relation to each other, whereby the waste is directly transferred from each brush to the next successively, a feed device for the carding-machine, and an elevator disposed to receive the waste from the last brush of the series and convey it to the feeding device.

3. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of cleaning-brushes disposed to receive the waste from the conveyer and arranged in close relation to each other, whereby the waste is directly transferred from each brush to the next successively, and a screen disposed horizontally beneath the cleaning-brushes to prevent the escape of waste which may drop beneath the brushes.

4. The combination with a carding-machine and a feeder comprising a hopper, of a conveyer located below the machine to receive the waste and to carry it to the feed end of the machine, and an elevator disposed to convey the waste from the conveyer to the hopper and from the hopper to the carding-machine.

5. The combination with a carding-machine and a feeder comprising a hopper, of a conveyer located below the machine to receive the waste, a fiber-cleaning device disposed to receive the waste from the conveyer, and an elevator disposed to convey the fibers to the hopper from the cleaning device and from the hopper to the carding-machine.

6. The combination with a carding-machine, of a conveyer located therebelow, a series of rotary cleaning-brushes disposed to receive the fiber from the conveyer, an endless elevator constituting an element of a feeder for the machine, and means for presenting the fiber from the cleaning-brushes to the return or descending run of the elevator.

7. The combination with a carding-machine, of a feeder comprising an endless elevator, and a hopper disposed at one side thereof, a waste-hopper disposed at the opposite side of the elevator, a cleaning device disposed to deposit cleaned fibers in the waste-hopper for conveyance to the main hopper by the elevator, and a conveyer located below the carding-machine and disposed to convey the waste therefrom to the cleaning device.

8. The combination with a carding-machine, of a feeder comprising a hopper and an endless elevator disposed to convey fiber from the hopper to the machine, a waste-hopper disposed to deliver fiber to the elevator at the side opposite the main hopper, a conveyer located below the machine to receive the waste therefrom, and a series of cleaning-brushes disposed to convey waste from the conveyer to the waste-hopper and to clean said waste in transit.

9. The combination with a carding-machine, of a feeder comprising a hopper and an endless elevator disposed to convey fiber from the hopper to the machine, a waste-hopper disposed to deliver fiber to the elevator at the side opposite the main hopper, a conveyer located below the machine to receive the waste therefrom, a series of cleaning-brushes disposed to convey the waste from the conveyer to the waste-hopper and to clean said waste in transit, and a screen disposed directly below the brushes to prevent the escape of such fiber as may drop between the brushes during the operation of the device.

10. The combination with a series of carding-machines, of a feeder for the first machine of the series, said feeder comprising an endless elevator, a hopper disposed at one side thereof, and a waste-hopper disposed at the opposite side of the elevator, a conveyer extending continuously under the entire series of carding-machines and operated to convey the waste from said machines to the feed end of the first machine of the series, and a cleaning device disposed to receive the waste from the delivery end of the conveyer and to deposit it in the waste-hopper of the feeder for conveyance by the elevator from said waste-hopper into the main hopper for subsequent delivery to the first machine.

11. The combination with a series of carding-machines, of an endless conveyer located beneath the same to catch the waste falling from each individual machine of the series and to return the same to the feeder of the first machine, a vibrating device located on each side of and slightly above said conveyer, and supported by a machine-frame to bank the waste toward the middle of the conveyer to prevent its escape as the portion of the conveyer acted upon passes through the interval between the machines, means for operating said conveyer, and means for operating said vibrating device directly from one of the machines.

12. The combination with a carding-machine including a cylinder, of a conveyer located below the same to catch the waste falling therefrom, vibratory plates disposed along opposite sides of the conveyer, and a series of operating devices carried by the cylinder of the machine, and disposed to effect the intermittent vibration of the plates.

13. The combination with a carding-machine including a cylinder, of a conveyer located therebelow to catch the waste falling therefrom, vibratory plates disposed along opposite sides of the conveyer, a series of lugs mounted upon the cylinder, and mechanism intermittently operated by said lugs to effect the vibration of the plates.

14. The combination with a carding-machine, of a conveyer located therebelow to catch the waste falling therefrom, vibratory plates disposed along opposite sides of the conveyer, movable brackets operatively related to the plates, and means operated by the machine to intermittently vibrate the brackets.

15. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of rotary cleaning-brushes rotating in the same direction and substantially in contact with each other, one of said brushes being arranged to wipe the waste from the conveyer and to carry it around the upper side of said brush, to be delivered directly to the next succeeding brush of the series, and means for conveying the cleaned waste from the last of the series of brushes, to the carding-machine.

16. The combination with a carding-machine and a feeder comprising a hopper, of a conveyer located below the machine to receive the waste and to carry it to the feed end of the machine, a series of cleaning-brushes disposed to receive the waste from the conveyer, and an elevator disposed to convey the waste from the cleaning-brushes to the hopper and from the hopper to the carding-machine

17. The combination with a carding-machine, of an endless con

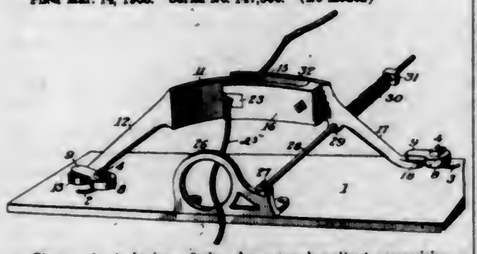
veyer located beneath the same to catch the waste falling therefrom and to return the same to the feed end of the machine, a vibrating device located on each side of and slightly above the conveyer and supported by the machine-frame to bank the waste toward the middle of the conveyer to prevent its escape therefrom, means for operating the conveyer, and means for operating the vibrating device directly from the machine.

754,515. STOP AND WASTE COCK. JAMES M. TEAHEN, Detroit, Mich. Filed Dec. 29, 1902. Serial No. 136,944. (No model.)



*Claim.*—In a stop and waste cock, a body portion provided with an annular collar having an upstanding lug $A^3$, a valve provided with a hollow stem, said stem projecting above the annular collar and provided with an opening to receive a screw, a cap C sleeved on the valve-stem, its lower edge encircling the annular collar of the valve-body, said cap provided with channels in its upper wall to receive the projecting shank of a screw set in the valve-stem to lock the cap with the valve, lugs on the inside of the cap adapted to limit the rotation of the valve when brought in contact with the lug on the annular collar of the valve-body, means for rotating the valve secured in the hollow valve-stem, and a screw securing the valve-stem to the operating means, its projecting end lodged within one of the channels in the cap whereby it may indicate by its occupation of either channel, the pipe drained by the movement of the valve, substantially as described.

754,516. TENSION DEVICE. FRED W. TEMPLE, Canova, S. D. Filed Mar. 14, 1903. Serial No. 147,866. (No model.)



*Claim.*—1. A device of the character described comprising a pair of spring-controlled jaws, clips for securing the jaws to a support, and fastening devices for the clips.

2. A device of the character described, comprising spring-controlled pivoted jaws, each jaw being curved in an arc and interlocking with the other.

3. In a device of the character described, the combination with a support, blocks carried by the support, arms projecting from the blocks, depending fingers on the arms, and pivoted jaws carried by the fingers.

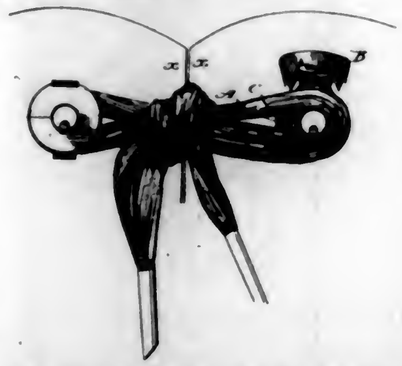
4. In a device of the character described, the combination with a support, blocks carried by the support, arms projecting from the blocks, depending fingers on the arms, and spring-controlled jaws pivotally mounted on the fingers.

5. In a device of the character described, the combination with a support formed with curved slots, adjustable clips fitting in the slots, and pivoted jaws carried by the clips and adapted to grip a line between them.

6. In a device of the character described, the combination with a base or support formed with slots therein, blocks adjustably movable in the slots, and spring-pressed pivoted interlocking jaws carried by the blocks.

754,517. SHOE-LACE OR SHOESTRING HOLDER. BEATRICE H. B. THOMSEN, Burlington, Vt. Filed Apr. 9, 1903. Serial No. 152,144. (No model.)

*Claim.*—1. In a shoe-lace or shoestring holder a base secured to a shoe by pointed strips, a post in the center of said base, and a cover hinged to the same base having a hole in the center to work over said post and a tongue to hold the cover down upon the shoe-strings as herein described.



2. In a shoe-lace or shoestring holder a base fastened to a shoe by pointed strips, a post secured to said base in combination with a cover hinged to the same and provided with downward-bent points or teeth and a tongue to hold the cover down as herein set forth.

754,518. SUSPENSION-HOOK. LEWIS H. TORREY, Worcester, Mass. Filed Dec. 11, 1903. Serial No. 184,734. (No model.)



*Claim.*—A suspension-hook comprising two curved overlapping arms having shanks which are pivotally connected together, one of said shanks being provided with an open hook closed by the other of said shanks when the device is in operative condition, the overlapping portions of said arms having inclined flattened contiguous faces constructed and arranged to have a strong frictional contact with each other when said arms are closed together to form a suspension-ring.

754,519. HAT PIN OR FASTENER. SAMUEL L. TROUPE and MARGARET C. BROOKS, Philadelphia, Pa.; said Brooks assignor to said Troupe. Filed Mar. 10, 1903. Serial No. 147,139. (No model.)

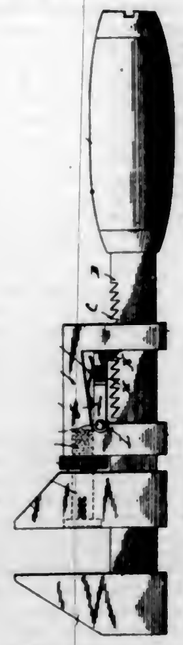


*Claim.*—1. A hat-fastener comprising a body portion, a post on one side thereof, a head engageable with said post and a plurality of curved pins secured to the other side of said body portion and having arc-shaped portions spaced away from and in a plane parallel with said body and integral end portions bent downward to a helical curve.

2. A hat-fastener comprising a disk, a post secured axially on one face thereof, a head engageable with said post and a plurality of curved pins secured to the other face of said disk and having arc-shaped body portions spaced away from and in a plane parallel with said disk and integral pointed ends bent downward to a helical curve.

754,520. WRENCH. LEVI TREDEAU, Toledo, Ohio. Filed May 26, 1903. Serial No. 158,676. (No model.)

*Claim.*—A wrench having a toothed shank; a movable frame provided with perforated arms F, F, base G, a spring secured upon the inner surface of the base, a perforated lug I, and a threaded recess R; a pawl J located between the base G and the toothed shank and pivoted to lug I, said pawl having projections M, M, at the sides to be engaged by the thumb and finger; a movable jaw S having a hole for the shank B, a circular hole T and a recess of larger diameter than the hole; an adjusting-screw located between the movable frame and the movable jaw, one end Q being threaded and engaging a threaded recess R in the frame, the other end U located within the circular hole T in the jaw S and having a threaded hole V; and the headed and threaded screw W, the head seated within the recess in the movable jaw and the shank engaging the threaded hole V in the end of the adjusting-screw, the enlarged portion of the adjusting-screw being in frictional contact with the movable jaw.



754,521. SEPARABLE LINK. ELI C. VALE, East Carmel, Ohio. Filed June 5, 1903. Serial No. 160,343. (No model.)



*Claim.*—1. A link of the character described, consisting essentially of two hooks, hinged together by an integral pintle projecting from one hook, said pintle being substantially the frustum of a cone, with its large end outward, the other hook or member having an opening with an undercut shoulder embracing said pintle.

2. A link of the character described, having its body composed of two hooks, one of said hooks having an integral pintle, undercut at its outer end, and a rivet projecting centrally from said undercut pintle, and the other hook swiveled on said pintle so as to swing open by a side movement, and interlocking with said undercut pintle and rivet by a hole conforming thereto.

3. In a separable link, the hook member having an integral undercut pintle at one end and a flattened face and side projecting curved flange at the curved end, and a second member having an undercut shoulder around the opening which embraces the pintle, and a substantially cylindrical opening which closes over said flange on the complementary hook, and a flat face to close against the flattened body of the sister hook.

4. A separable link having two hooks connected by an integral pintle on one hook entering an opening in the other hook, and a smaller pintle forming a continuation at the outer end of the first pintle, entering but not filling the opening of the sister hook at the rear side.

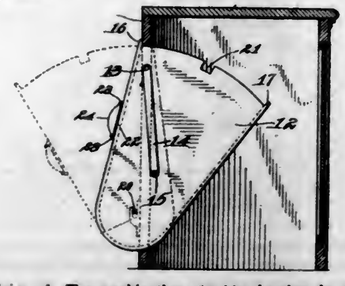


754,522. FREEZING-TANK. CARL W. VOLLMANN, Montreal, Canada. Filed Nov. 3, 1902. Serial No. 130,002. (No model.)



*Claim.*—In a freezing-tank, a freezing-wall comprising a series of tubular members extending from end to end of the wall and arranged a short distance apart, and a series of wall members consisting of strips extending from end to end of said tubular members and arranged with their edges abutting, said strips presenting plane outer surfaces collectively forming a wall with a plane surface the inside surface of each of said wall members having a pair of ribs, one located adjacent to and extending from end to end of each side edge thereof, and the portion of said ribs contiguous to said edges being concaved to fit upon said tubular members, substantially as described and for the purpose set forth.

754,523. TILTING BIN AND SAMPLE-DISPLAY DEVICE. ARNOLD J. WEST, Aberdeen, Wash. Filed Dec. 7, 1903. Serial No. 184,153. (No model.)



*Claim.*—1. The combination of a bin-chamber, having spaced vertically-elongated bearings, a bin movable within said chamber and having studs engaging said bearings, and radius-bars connected respectively by their ends to said chamber and bin.

2. The combination of a bin-chamber having spaced bearings elongated vertically and open at the top, a bin movably disposed within said chamber and having studs supported within said bearings and with the upper surface of the bin concentric to said studs, said bin having stops at its front and rear to limit its movement and with notches intermediately of said concentric surfaces to permit its detachment from said chamber.

3. The combination of a bin-chamber having spaced vertically-elongated bearings, a bin movable within said chamber and having studs engaging said bearings and with its upper side substantially concentric to said studs and with stops at the front and rear to limit its movement, and radius-bars pivoted by their upper ends to said chamber in vertical alinement above said bearings and pivoted by their lower ends to said bin between said studs and said concentric end and centrally of the bin.

4. The combination with a storage-receptacle of a base member attached to the front thereof and having spaced parallel guideways, and a sample-receptacle having a transparent front and detachably supported by said guideways.

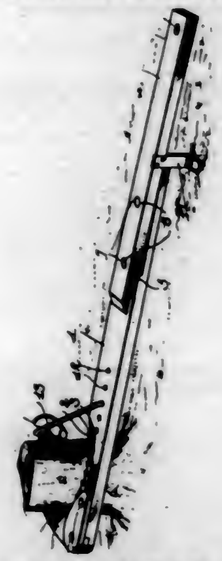
5. The combination with a storage-receptacle of a base member attached to the front thereof and having spaced parallel guideways, a sample-receptacle having a transparent front and detachably supported by said guideways and with an aperture in its rear side provided with a detachable closure held in position by the base member when the sample-receptacle is closed.

754,524. STUMP-EXTRACTOR. SAMUEL D. WHEELER and HENRY V. WHITTLE, Fowlstown, Ga. Filed Jan. 4, 1904. Serial No. 187,679. (No model.)

*Claim.*—1. In a device of the class described, the combination with a primary stump-engaging member, of a secondary stump-engaging member, means for locking said members in engaging position, and a draft-beam attached to one of the members.

2. In a device of the class described, the combination with a primary stump-engaging member, of a secondary stump-engaging

member, means for locking said members in engaging position, a draft-beam attached to one of the members, and a standard carried by the beam and provided with a ground-engaging shoe.



3. In a device of the class described, the combination with a primary stump-engaging member, of a secondary stump-engaging member pivoted thereto, means for locking the members in engaging position, and a draft-beam attached to one of the members.

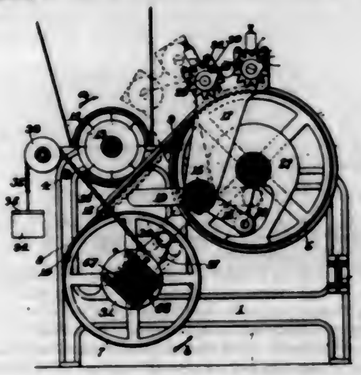
4. In a device of the class described, the combination with a primary stump-engaging member, of a secondary stump-engaging member pivoted thereto, a locking-rod pivotally connected with one of the members and engaging the other for locking the members in engaging position, and a draft-beam attached to one of the members.

5. In a device of the class described, the combination with a primary stump-engaging member, of a secondary stump-engaging member pivoted thereto, a locking-rod adjustably and pivotally connected with one of the members and engaging the other for locking them in engaging position, and a draft-beam attached to one of the members.

6. In a device of the class described, the combination with a primary stump-engaging member, of a secondary stump-engaging member pivoted thereto and provided adjacent to its free end with a stop or abutment, a locking-rod adjustably and pivotally connected with the primary member and engaging said stop for locking the members in engaging position, and a draft-beam carried by one of the members.

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**754,525. HIDE WORKING AND UNHAIRING MACHINE.** ROBERT P. WHITNEY, Winchester, Mass., assignor of one-half to Arthur H. Whitney, Winchester, Mass. Filed May 4, 1903. Serial No. 155,511. (No model.)



*Claim.*—1. In a hide working and unhairing machine, the combination of a pair of revoluble drums mounted in bearings with their axes parallel with each other; an apron firmly secured by its opposite ends to said drums so as to be alternately wound upon each of said drums, while being unwound from the other; a bolster of soft rubber resting upon and movable with said apron; a bladed cylinder mounted in fixed bearings with its axis parallel to the axes of said drums and in a plane at right angles to said apron and intermediate between said drums and provided with two series of blades projecting radially therefrom and arranged spirally in opposite direction thereon, from the center of the length of said cylinder toward each end thereof; means for revolving said bladed cylinder always in the same direction; and means for alternately moving said drums in opposite directions.

2. In a hide working and unhairing machine, the combination of the drums 6 and 7 arranged with their axes parallel to each other; the apron 8 firmly secured to each of said drums; the bladed cylinder 13; a driving-pulley and a pinion carried by said cylinder; the spur-gear 25 fixed on the shaft of drum 6; the arms 17 mounted upon and movable about studs 16; the feed-rolls 22 and 23; pinions 24 24 carried by said feed-rolls and arranged to engage the gear 25; means for vibrating said arms 17 to move said feed-rolls into and out of contact with the bolster, or a hide resting thereon; gearing arranged to transmit motion from the pinion carried by said bladed cylinder to the gear 25; and means for reversing the motions of said gears and consequently of said drums and said apron.

3. In a hide working and unhairing machine, the combination of a pair of drums arranged with their axes parallel to each other; an apron firmly attached by its opposite ends to both of said drums and adapted to be alternately wound upon each of said drums and unwound from the other; a bladed cylinder mounted intermediate between said drums and above said apron; a rubber bolster resting upon and secured to said apron; the shafts 46 and 40; trains of gearing connecting said bladed cylinder, said shafts 46 and 40 and the front drum; the clutch-jaws 43 and 50 and the clutch-sleeve 51 mounted on shaft 46; and means for moving said clutch-sleeve endwise as and for the purposes described.

4. In a hide working and unhairing machine, the combination of two drums arranged with their axes parallel to each other; a flexible apron firmly secured by its opposite ends to both of said drums and extending from one to the other; a spirally-bladed cylinder mounted in fixed bearings in a plane at right angles to the plane of said apron and intermediate of the axis of said drums; the shafts 46 and 40; trains of gearing connecting said bladed cylinder, said shafts 46 and 40 and the front drum; the clutch-jaws 43 and 50 and the clutch-sleeve 51; means for moving said clutch-sleeve endwise on shaft 46; a pair of levers each comprising three arms 17, 18 and 19 mounted on studs fixed in and projecting inward from the inner faces of the frames 1 and 2; a pair of feed-rolls 22 and 23 carried by the arms 17; pinions on the feed-roll shafts arranged to engage the gear 25 carried by the shaft of the drum 6; trucks 36 carried by the movable end of the arm 18; and the cams 27 carried by the shaft of the drum 6 and arranged to act upon said trucks 36 to vibrate said arms 17 and 18 and move said feed-rolls into and out of contact with said apron or a hide resting thereon.

5. In a hide working and unhairing machine, the combination of the drum 6, mounted in fixed bearings; the drum 7 mounted in adjustable bearings at the rear of said drum 6; a flexible apron firmly secured by its opposite ends to both of said drums; mechanism for rotating said drums in opposite directions; the sheaves 31 firmly secured upon the shaft of said drum 7; the sheaves 33 mounted on studs set in the frames 1 and 2; the chains 32 attached to sheaves 31 by their inner ends and extending over the sheaves 33; and the weights 34 attached to the other ends of said chains all constructed, arranged and operating substantially as described.

6. In a hide working and unhairing machine, the combination of the drum 6 mounted in fixed bearings; the drum 7 mounted in adjustable bearings; a flexible apron attached by its opposite ends to both of said drums; the sheaves 31 and the levers 37 all secured on the shaft of the drum 7; the sheaves 33; the chains 32 connected at their inner ends to sheaves 31; the weights 34 secured to their other ends; the trucks 36 carried by the levers 37; the lever-arms 17, 18 and 19; the cam-trucks 26; and the cams 27, all constructed, arranged and operating substantially as described.

7. In a hide working and unhairing machine, the combination of a pair of drums arranged with their axes parallel to each other; a flexible apron firmly connected at opposite ends to both of said drums, and adapted to be alternately wound upon each of said drums while being unwound from the other; a soft-rubber bolster secured to and resting upon said apron; a spirally-bladed cylinder constructed and arranged to contact with said bolster at a point between the bearings of said apron upon said drums; the shafts 46 and 40; trains of gearing connecting said bladed cylinder, the shafts 46 and 40 and the front drum; the clutch-jaws 43 and 50 formed upon or secured to the internal gear 42 and the spur-gear 49 respectively, and mounted loosely on the shaft 46; the reciprocating clutch-sleeve 51; the shaft 54; the shipper-fork 53 and the lever 57 firmly secured upon said shaft 54; the dogs 63 and 64 firmly but adjustably secured on said shaft 54; the shipper-bar 58 provided with the notch 59 and shoulder 60; the latch-plate 61; and the dogs 65 and 66 adjustably secured on the shaft of the front drum, all constructed, arranged and operating substantially as and for the purposes described.

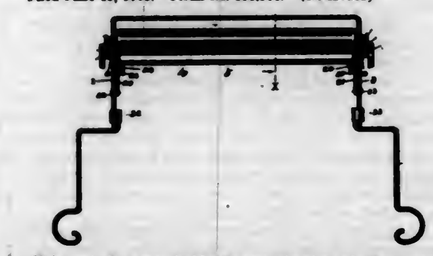
8. The combination of the drums 6 and 7; the apron 8 secured to both of said drums and arranged to be wound upon either of said drums while being unwound from the other; mechanism for moving said drums about their axes in opposite directions; a clutch mechanism for reversing the motions of said drums; and means for automatically operating said clutch to reverse or arrest the motions of said drums.

9. The combination with the clutch members 43, 50 and 51 of the shafts 5 and 54 arranged at right angles to each other; the shipper-fork 53 fixed on shaft 54, and the dogs 63 and 64 adjustably secured on said shaft 54; and the dogs 65 and 66 adjustably secured on said shaft 5, in positions to alternately act upon the dogs 63 and 64 to reverse the motion of the reciprocating clutch-sleeve 51.

10. In a hide working and unhairing machine, the combination of two drums arranged with their axes parallel to each other; a flexible apron firmly secured by its opposite ends to each of said drums and adapted to be wound upon either of said drums while being unwound from the other; a spirally-bladed cylinder mounted in fixed bearings above said apron with its axis parallel to the axes of said drums and intermediate between the points of contact of said apron upon said drums; a train of gearing constructed and arranged to transmit motion from said bladed cylinder to said drums to move them about their axes in one direction at a given speed; and another train of gearing constructed and arranged to move said drums about their axes in the opposite direction at a different speed.

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**754,526. COPY-HOLDER.** KING R. WILLIAMS, Richmond, Ind. Filed June 15, 1903. Serial No. 161,506. (No model.)



*Claim.*—1. In a copy-holder the combination, of a frame consisting of a bar with arms extending down therefrom and at right angles thereto, a rear bar having integral members extending forward and secured to said arms, a pair of contacting rollers mounted revolubly in said frame, a pair of helical springs mounted to the axles of said rollers adapted to normally retain said rollers in contact, a line-bar mounted in front of the lower roller with arms at right angles thereto pivoted to the arms of the frame, a pair of helical springs extending from the arms of the line-bar to said forwardly-extending members of the rear bar adapted to keep the line-bar normally in contact with one of said rollers, all substantially as shown and described and for the purposes set forth.

2. In a copy-holder the combination, of a frame, a pair of normally contacting rollers revolubly mounted in said frame, turning-knobs secured to said rollers, a line-bar pivoted to the frame adapted to be moved to and from the lower roller, and helical springs for retaining it normally in contact therewith, and means for securing the device to a type-writing machine, all substantially as shown and described and for the purposes set forth.

3. A copy-holder having an upper horizontal bar with integral arms extending down from the ends thereof, an upper and a lower roller revolubly mounted between said arms, a rear bar 14, members 15 and 16 integral of the bar 14 and secured to said arms, a pair of spring-guards secured to said rear bar and extending forward to the under side of said lower roller, and a line-bar pivoted in front of said lower roller, means for resiliently holding said rollers in contact, and means for resiliently holding said line-bar in contact with said lower roller, all substantially as shown and described.

4. A copy-holder having an upper horizontal bar with integral arms extending down from the ends thereof at right angles thereto, a pair of contacting rollers parallel with said bar pivotally mounted between said arms, a pair of helical springs for retaining said rollers in resilient contact, a line-bar pivoted to said arms, a pair of helical springs for retaining said bar in resilient contact with one of said rollers, and means for securing the device in its operative position, all substantially as shown and described.

5. In a copy-holder having a frame with downwardly-extending arms, a pair of rollers mounted between said arms, a rear bar secured to said arms, a pair of guards extending forward from said rear bar, a line-bar pivoted to said arms, springs for resiliently contacting said rollers, springs for contacting said line-bar with one of said rollers, a pair of standards each carrying a ferrule on its upper end to receive the lower ends of said arms whereby the device may be attached to a type-writing machine, all substantially as shown and described.

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**754,527. DRAFT-RIGGING.** HENRY C. WILLIAMSON and HERMAN PRIES, Michigan City, Ind. Filed Nov. 28, 1903. Serial No. 183,017. (No model.)



*Claim.*—1. In a draft-rigging, in combination, a pair of friction-plates one thereof being slidable upon the other, a follower, and a toggle member interposed between the follower and one of the plates and being normally oblique to the direction of movement.

2. In a draft-rigging, in combination, a pair of movable members in slidable contact, a pair of relatively approachable followers, and toggle-blocks interposed between the followers and one of the friction members and being normally oblique to the direction of movement of the parts.

3. In a draft-rigging, in combination, a pair of oppositely-disposed friction-plates, a second pair of friction-plates one in sliding engagement with each of the first-named pair, followers at opposite ends of the friction-plates, and toggle-blocks interposed between each of the followers and each of the second-named pair of friction-plates.

4. In a draft-rigging, in combination, a pair of oppositely-disposed friction-plates having curved faces, a second pair of complementary curved friction-plates one in sliding engagement with each of the first-named pair, followers at opposite ends of the friction-plates, and toggle-blocks interposed between each of the followers and each of the second-named pair of friction-plates.

5. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end and opposing internal friction-faces, friction-plates slidingly engaging such faces, followers at opposite ends of the plates, a spring interposed between the inner end of the housing and the adjacent follower, and toggle members interposed between each of the followers and each of the plates.

6. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end and curved opposing internal friction-faces, friction-plates slidingly engaging such faces, followers at opposite ends of the plates, a spring interposed between the inner end of the housing and the adjacent follower, and toggle members interposed between each of the followers and each of the plates.

7. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end, removable friction-shoes mounted within the housing, friction-plates slidingly engaging the shoes, followers at opposite ends of the plates, a spring interposed between the inner end of the housing and the adjacent follower, and toggle-blocks interposed between each of the followers and each of the plates.

8. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end, removable friction-shoes mounted within the housing having curved faces, friction-plates slidingly engag-

ing the shoes, followers at opposite ends of the plates, a spring interposed between the inner end of the housing and the adjacent follower, and toggle-blocks interposed between each of the followers and each of the plates.

9. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end, removable friction-shoes mounted within the housing having concave faces, friction-plates having complementary convex faces and slidingly engaging the shoes, followers at opposite ends of the plates, a spring interposed between the inner end of the housing and the adjacent follower, and toggle-blocks interposed between each of the followers and each of the plates.

10. In a draft-rigging, in combination, friction-plates having complementary curved contacting faces, means for moving the plates relatively in opposite directions, and means for pressing the faces of the plates together.

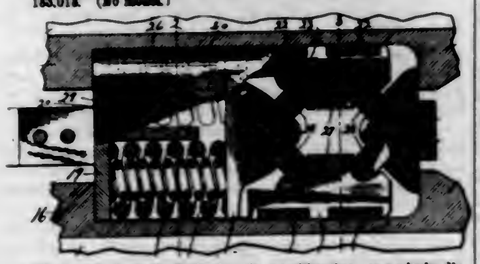
11. In a draft-rigging, in combination, friction-plates having complementary curved contacting faces, means for moving the plates relatively in opposite directions, and means for yieldingly pressing the faces of the plates together.

12. In a draft-rigging, in combination, oppositely-disposed longitudinally-movable friction-plates having curved faces; a second set of friction-plates in sliding engagement with the first-mentioned set of plates and having complementary curved faces; followers at opposite ends of the plates; and toggle members interposed between the followers and the members of one set of plates.

13. In a draft-rigging, in combination, oppositely-disposed longitudinally-movable friction-plates having concave faces; a second set of friction-plates in sliding engagement with the first-mentioned set of plates and having complementary convex faces; followers at opposite ends of the plates; and toggle members interposed between the followers and the members of one set of plates.

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**754,528. DRAFT-RIGGING.** HENRY C. WILLIAMSON and HERMAN PRIEM, Michigan City, Ind. Filed Nov. 26, 1903. Serial No. 183,018. (No model.)



*Claim.*—1. In a draft-rigging, in combination, oppositely-disposed longitudinally-movable friction-plates having flat faces; a second set of friction-plates in sliding engagement with the first-mentioned set of plates; followers at opposite ends of the plates; and toggle members interposed between the followers and the members of one set of plates.

2. In a draft-rigging, in combination, oppositely-disposed longitudinally-movable friction-plates having flat faces inclined toward each other; a second set of friction-plates in sliding engagement with the first-mentioned set of plates: followers at opposite ends of the plates; and toggle members interposed between the followers and the members of one set of plates.

3. In a draft-rigging, in combination, a pair of friction-plates having flat faces, one thereof being slidable upon the other, a follower, and a toggle member interposed between the follower and one of the plates and being normally oblique to the direction of movement.

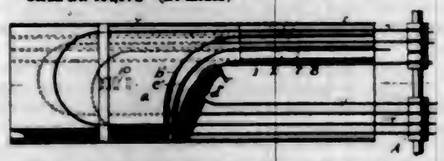
4. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end and flat opposing friction-faces, a pair of friction-plates in sliding engagement with said friction-faces, followers at opposite ends of the plates, a spring reacting between the inner end of housing and adjacent follower, and toggle members interposed between each of the followers and each of the plates.

5. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end and flat outwardly-inclined friction-faces, a pair of friction-plates slidably engaging said faces, followers at opposite ends of the plates, a spring interposed between the inner end of housing and adjacent follower, and toggle members interposed between each of the followers and each of the plates.

6. In a draft-rigging, in combination, a movable housing having a shoulder-engaging end, oppositely-disposed removable friction-shoes within the housing having flat inclined faces, friction-plates having complementary inclined faces in sliding engagement with the shoes, followers at opposite ends of the plates, a spring between the inner end of the housing and adjacent follower, and toggle-blocks between each of the followers and each of the plates.

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**754,529. COMBINED GUIDE AND GUARD FOR OVERFEED WIRES.** CLAUDE M. SELLERS, Cleveland, Ohio. Filed Dec. 7, 1903. Serial No. 184,074. (No model.)



*Claim.*—1. A combined guide and guard for overfeed wires in rolling-mills, the same comprising a series of guide-channels at the initial end of the device and a series of compartments one above the other in the guard portion of the device for different wires, substantially as described.

2. The device substantially as described comprising a series of open guide-channels for the wire having parallel walls and separate horizontally-disposed covered spaces at the end of said walls to receive the overfeed wires, substantially as described.

3. A device to handle overfeed wires in wire-rod mills, the same having a series of horizontally-disposed compartments one above the other to confine and separate the overfeed wires and means to direct the wires to varying elevations and into separate compartments, substantially as described.

4. In rolling-mills, a set of rolls having a plurality of passes, a guard having a corresponding series of separate compartments with horizontal division-walls supporting and separating the overfeed wires one above the other, and a lead for each wire from the rolls to said compartments, substantially as described.

5. In a device substantially as described, a series of compartments for separate overfeed wires and a backwardly-yielding check in each compartment to cause the wire loop to feed in substantial alinement with its pass in the receiving-coil, substantially as described.

6. The device having a series of compartments one above the other and guides leading to said compartment having gradually-declining walls, substantially as described.

7. In a device as described, a series of compartments to receive the overfeed-wire loops and said compartments having inwardly-inclined portions at one side thereof, thereby preventing vibration or whipping of the wires in the compartments, substantially as described

8. An overfeed device for rolling-mills comprising several compartments one above the other and separate channels leading to said compartments, each channel having its outer wall extending above the inner wall, substantially as described.

9. In a device to separate overfeed wires in rolling-mills, the separate compartments one above the other, and an open wall at the side of the compartments to provide access to said compartments, substantially as described.

10. A device to separate overfeed wires for rolling-mills comprising a series of compartments one above the other provided with removable division-covers, substantially as described.

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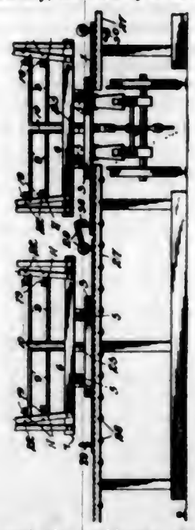
**754,530. DRIER-RACK.** ANDREW J. EILERS, ALBERT L. TIDMARSH, and CHARLES J. ARMSTRONG, Austin, Tex. Filed Apr. 9, 1903. Serial No. 151,904. (No model.)

*Claim.*—1. In a drier-rack, the combination with a pintle-rod, and a keeper-rod, of a leaf or plate provided with means for securing it to a drier-rack shelf and having projecting flanges, one of the flanges forming a guide or stop for bricks, and a catch or locking device mounted on the leaf or plate and arranged to engage the keeper, substantially as described.

2. In a drier-rack, the combination with a keeper, and a shelf, of a leaf or plate secured to the shelf and provided with projecting flanges, a rod or pin supported by the flanges, and a catch mounted on the rod or pin and arranged to engage the keeper, substantially as described.

3. In a drier-rack, the combination with a keeper, and a shelf, of a pivotally-mounted leaf or plate secured to the shelf and provided with projecting flanges, one of the flanges forming a stop or guide for the bricks, a rod or pin supported by the flanges, and a slidable catch mounted on the rod or pin and arranged to engage the keeper automatically, substantially as described.





4. In a drier-rack, the combination of standards, pintle and keeper rods arranged in pairs, a vertical series of shelves, leaves or plates secured to the shelves and mounted on the pintle-rods, and catches carried by the leaves or plates and arranged to engage the keeper-rods automatically, substantially as described.

5. In a drier-rack, the combination with a bottom, standards rising therefrom, and pintle and keeper rods arranged in pairs, of a vertical series of shelves, leaves or plates mounted on the pintle-rods and secured to the shelves and provided with projecting portions forming stops or guides for the bricks, and catches mounted on the leaves or plates and arranged to engage the keeper-rods automatically when the shelves are swung upward, substantially as described.

6. In a drier-rack, the combination with standards, and shelves, of pintle-rods, leaves or plates secured to the shelves and provided with projecting flanges, rods or pins mounted on the flanges, slidable catches arranged between the flanges and mounted on the rods or pins and provided with projecting engaging portions, and keeper-rods arranged to be engaged by the catches, substantially as described.

7. In a drier-rack, the combination with a bottom, standards rising therefrom, and shelves, of pintle and keeper rods connecting the standards and arranged in pairs, leaves or plates arranged at opposite sides of the shelves, one of the leaves of each shelf being provided with projecting flanges and having a pin supported by the same, and slidable catches arranged on the pins and provided with projecting portions arranged to engage the keeper-rods automatically, substantially as described.

8. In a drier-rack, the combination with a shelf, and pintle and keeper rods, of a leaf or plate having depending flanges forming a dovetailed joint and embracing the shelf, and a catch mounted on the leaf or plate and arranged to engage the keeper-rod, substantially as described.

9. In a drier-rack, the combination of a base provided at opposite sides with slides and having a circular track, superimposed pivotally-connected shelves, and means for supporting the shelves provided with wheels to run on the track, substantially as described.

10. The combination with opposite elevated supports having guides, of a drier-rack slidable on the supports and provided with a turn-table and having slides at the base thereof, substantially as described.

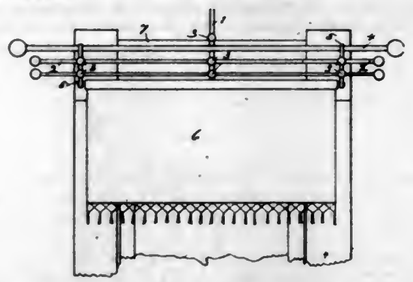
11. The combination with opposite elevated supports provided with guides, of a drier-rack having a turn-table, and provided at the base thereof with slides arranged to rest upon and move longitudinally of the supports in the guides thereof, substantially as described.

12. The combination with opposite supports having ways, of a drier-rack provided with a turn-table, and having slides arranged to move in the ways, substantially as described.

13. In a drier-rack, the combination of standards, pintle and keeper rods arranged in pairs and connecting the standards, shelves mounted on the pintle-rods, and independently-operable automatically-operating catches carried by the shelves and arranged to engage the keeper-rods, substantially as described.

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**754,531. WINDOW CURTAIN AND SHADE HOLDER.** HARVE T. ANDREW, Memphis, Mo. Filed Jan. 29, 1903. Serial No. 141,061. (No model.)

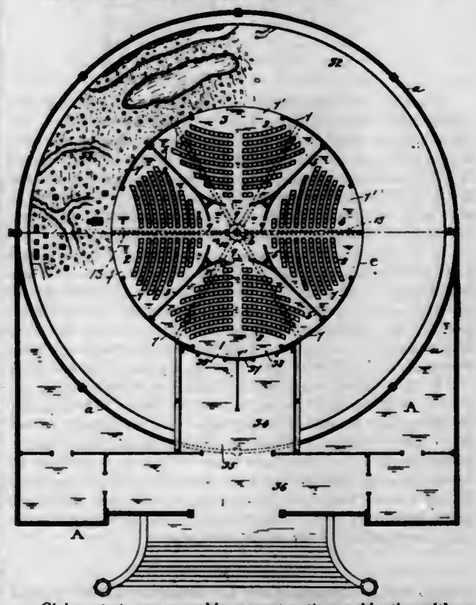


*Claim.*—1. In a curtain and shade holder, a bracket having a jaw, at its lower end, a jaw slidable on the bracket, the said bracket having apertures, rods adjustable in the apertures, brackets slidable on the opposite ends of the rods, the said brackets being approximately C-shaped with the upper portion extending beyond the lower portion, a pole carried by the upper portion, the said lower portions having slots and a shade-roller mounted therein.

2. In a curtain and shade holder, a bracket having a jaw at its lower end, a jaw slidable on the bracket, the said bracket having apertures, rods adjustable in the apertures, brackets slidable on the opposite ends of the rods, the said brackets being approximately C-shaped, a pole carried by the upper portion, the said lower portions having slots and a shade-roller mounted therein.

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**754,532. SCENOGRAPHIC APPARATUS.** EDWARD J. ARDEN, St. Louis, Mo., and HERBERT A. BRADWELL, Coney Island, N. Y. Filed Jan. 24, 1903. Serial No. 140,413. (No model.)

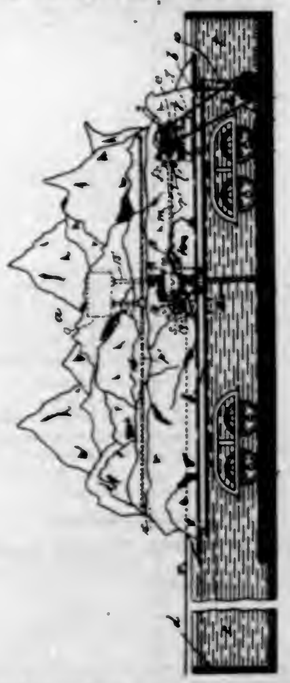


*Claim.*—1. In scenographic apparatus, the combination with an inclosed and revolving auditorium having an opening through one side, of a scenograph surrounding the said auditorium and having its consecutive portions only visible successively from the auditorium through the said opening during a complete revolution, or thereabout of the auditorium, substantially as described.

2. In scenographic apparatus, the combination with an inclosed

and revolving auditorium having an opening through one side, of a scenograph, a building containing the said parts, and a row of lights dependent from the building and surrounding the said auditorium adjacent to the said opening, for producing variable light effects on the successive portions of the scenograph visible from the auditorium through the said opening, substantially as described.

754,533. SCENOGRAPHIC APPARATUS. EDWARD J. AUSTEN, St. Louis, Mo. Filed Dec. 7, 1903. Serial No. 184,155. (No model.)



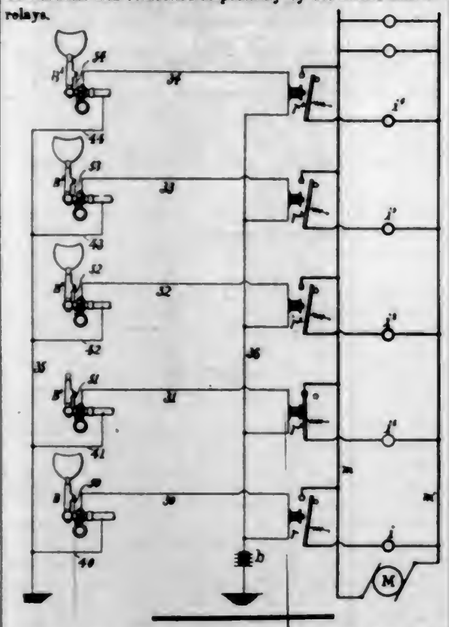
*Claim.*—1. In scenographic apparatus, the combination of a scenograph, a tank containing water, a car mounted on wheels and supporting the scenograph, the said car being adapted to travel along the floor of the tank within the said water, a motor fixed on the car, a toothed rack fixed on the said floor longitudinally with the car, a shaft mounted in bearings fixed to the car, a toothed wheel fixed on the shaft and engaging the said rack, and means for rotating the shaft from the said motor, substantially as described.

2. In scenographic apparatus, the combination of a scenograph, a car mounted on wheels and supporting the scenograph, an electric motor fixed on and adapted to propel the said car, a shaft suitably mounted on the car, a drum revoluble on the shaft, a coil-spring surrounding and connecting the shaft to the said drum, and a wire fixed to and adapted to be wound around the drum, the said wire being electrically connected with the said motor, substantially as described.

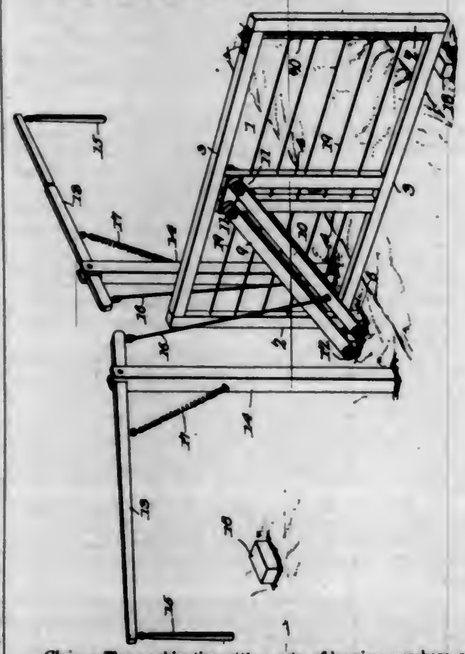
3. In scenographic apparatus, the combination of a scenograph, a tank containing water, a car mounted on wheels and supporting the scenograph, the said car being adapted to travel along the floor of the tank within the said water, a motor fixed on and adapted to propel the said car, a cistern fixed on the car, a pump fixed to the car and operated by the said motor, the suction-pipe of the pump extending into the said water and the delivery-pipe into the cistern, and a perforated pipe in communication with the cistern, substantially as described for the purpose set forth.

754,534. THERMOSTATIC GAS-DETECTING MEANS. JAMES H. BALDWIN, East Williston, N. Y. Filed Sept. 10, 1902. Serial No. 122,836. (No model.)

*Claim.*—The combination with a system of gas-lighting embodying a plurality of gas-burners each having a valve controlling the flow of gas therefrom, of an electrical controlling-circuit having parallel branches each of which has two breaks, valve-operated electric switches controlling one set of breaks in said branch circuits, thermostatic circuit-controllers carried by said burners and governing the other set of breaks in said branch circuits, relays governed respectively by said parallel branches of the controlling-circuit and each embodying an electromagnet and a switch-bar secured to the armature of said electromagnet, and an electric-lighting system comprising an incandescent-light circuit having a plurality of lamps connected in normally open branch circuits corresponding in number to said burners and controlled respectively by the switch-bars of said relays.



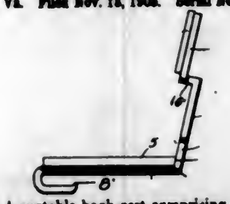
754,535. GATE. HARVEY H. BELL, Nevada, Iowa. Filed Oct. 26, 1903. Serial No. 178,653. (No model.)



*Claim.*—The combination with a gate, of bearing members, operating-links pivotally connected with the latter and the gate, said links being adapted to swing in a vertical plane for opening and closing the gate, standards disposed adjacent to the gate, traction-levers pivotally connected with the standards, operative connections between the levers and links, and springs connected at their lower ends with the standards and at their upper ends with the levers outside of the fulcra of the latter, said springs being adapted to act directly upon the levers to assist the opening, and support the gate during the closing, movement.

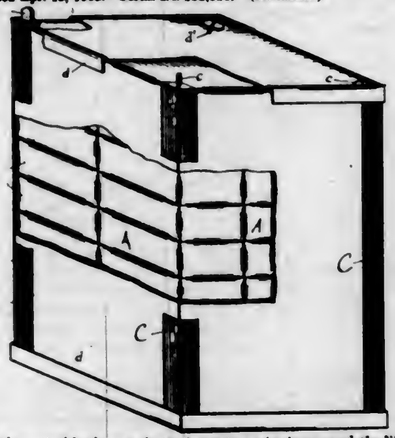


754,536. FOLDING BACK-REST. BYRON B. BELLMYER, Wardensville, W. Va. Filed Nov. 18, 1903. Serial No. 181,705. (No model.)



*Claim.*—A portable back-rest comprising a seat, braces secured to the under side of the seat transversely thereof and extending beyond the rearward edge thereof and turned upwardly, the forward ends of said braces being sharpened and turned downwardly and rearwardly and again upwardly in the direction of the braces and spaced therefrom, uprights hinged to the rearward ends of the braces and having forward-projecting lugs at their upper ends, braces hinged to the forward ends of the lugs and a back secured to the forward faces of the last-named braces, said back and uprights being adapted to fold downwardly to lie at times upon the upper face of the seat.

754,537. SHIPPING-PACKAGE. JOHN A. BOWER, Pittsburg, Pa. Filed Apr. 18, 1903. Serial No. 153,229. (No model.)



*Claim.*—A shipping-package for rectangular boxes and the like, consisting of a flexible carton angular in cross-section constituting by itself a wrapper or casing for rectangular boxes, and the like, metallic corner-pieces fitting the angles of the carton, and metallic top and bottom ends connected together by said corner-pieces, said corner-pieces being distinct and separable from the said ends and carton.

754,538. PITMAN CONNECTION FOR MOWING-MACHINES. FRANKLIN P. BURKHARDT, Chicago, Ill., assignor to the Warder, Bushnell & Glessner Company, Chicago, Ill., a Corporation of Ohio. Filed July 5, 1902. Serial No. 114,897. (No model.)



*Claim.*—1. In a pitman connection for mowing-machines, the combination with a crank-pin and pitman, of a cap-sleeve closed at one end and receiving the crank-pin in the other end thereof, said cap-sleeve being mounted in the end of said pitman and means carried by said sleeve and arranged to engage said pin to prevent relative endwise movement of said sleeve and pin, as and for the purpose set forth.

2. In a pitman connection for mowing-machines, the combination with a crank-pin, of a pitman-rod having a clamping-seat, a bearing cap-sleeve closed at one end and receiving longitudinally through the other end thereof said crank-pin, said cap-sleeve being received in said clamping-seat and means carried by said sleeve and arranged to engage said pin to prevent relative endwise movement of said sleeve and pin, all combined and arranged as and for the purpose set forth.

3. In a pitman connection for mowing-machines, the combination with a crank-pin having a peripheral groove and a pitman-rod having a clamping-seat, of a bearing cap-sleeve closed at the outer end thereof and receiving said crank-pin through the inner end thereof, said cap-sleeve provided with an opening therethrough to admit the lubricant to the bearing-surface thereof and adapted to be received in said clamping-seat and means carried by said sleeve arranged to operate in the groove in said pin to lock these parts against relative endwise movement, as and for the purpose set forth.

4. In a pitman connection for mowing-machines, an eccentric or crank pin having a shoulder or head formed on one end and its projecting end turned down to form a second shoulder, a cap-sleeve having a closed end and received upon the projecting end of said pin, and bearing against said second shoulder, a pitman-rod, and a clamping-seat carried thereby and adapted to receive said cap-sleeve, all combined and arranged as and for the purpose set forth.

5. In a pitman connection for mowing-machines, a crank-pin, a cap-sleeve mounted thereon, said cap-sleeve being closed at its outer end, there being a peripheral groove formed in said pin, a locking-key arranged to operate in said peripheral groove to lock said sleeve against endwise movement upon said pin, a pitman-rod, and a clamping-seat formed therein for receiving and supporting said cap-sleeve, all combined and arranged as and for the purpose set forth.

6. In a pitman connection for mowing-machines, a crank-pin having a shoulder or head formed on one end and its projecting end turned down to form a second shoulder, a bearing cap-sleeve arranged to be received upon said projecting end, said cap-sleeve being of greater length than the length of said projecting end, the outer end of said cap-sleeve being closed and the inner end forming a bearing against said second shoulder, an opening being formed through said cap-sleeve to admit a lubricant to the bearing-surface thereof, a pitman-rod, and means for clamping said pitman upon said bearing-sleeve, as and for the purpose set forth.

7. In a pitman connection for mowing-machines, the combination with a crank-pin, of a cap-sleeve therefor, said cap-sleeve being closed at one end and provided with a lubricating-opening therethrough, said lubricating-opening terminating in an enlarged recess on the inside surface of said cap-sleeve, means for locking said sleeve to said pin to prevent relative longitudinal movement thereof, a pitman and means for clamping said pitman upon said sleeve, as and for the purpose set forth.

8. In a pitman connection for mowing-machines, a crank-pin, a sleeve mounted thereon, there being a peripheral groove formed in said pin, a locking-key arranged to operate in said peripheral groove to lock said sleeve against endwise movement upon said pin, a pitman-rod, and means for clamping said rod upon said sleeve, all combined and arranged as and for the purpose set forth.

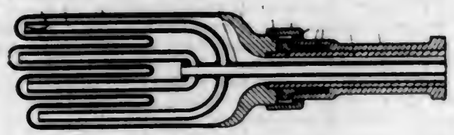
9. In a pitman connection for mowing-machines, a crank-pin, a sleeve mounted thereon, there being a peripheral groove formed in said pin, a locking-key arranged to operate in said peripheral groove to lock said sleeve against endwise movement upon said pin, a pitman-rod, a clamping-seat formed therein for receiving and supporting said sleeve, said clamping-seat also operating to inclose and retain said locking-key in place, as and for the purpose set forth.

10. In a pitman connection for mowing-machines, a crank-pin, a sleeve mounted thereon, there being a peripheral groove formed in said pin, a locking-key arranged to operate in said peripheral groove, a pitman-rod carrying a clamping-seat, a coöperating cap-piece, said cap-piece and bearing-seat coöperating to form a clamp adapted to receive said sleeve, said clamp also serving to inclose and lock said key in place, as and for the purpose set forth.

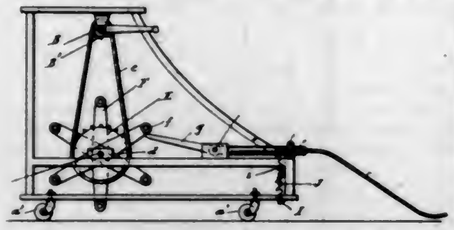
754,539. GLOVE-TURNER. GUSTAV BURR, Chicago, Ill. Filed Dec. 21, 1903. Serial No. 186,053. (No model.)

*Claim.*—In a glove-turner, in combination, a hollow hand, a

socket-tube enlarged and threaded internally at the top, a sleeve-coupling connecting the hand and the socket-tube with a space therebetween, a return-pipe extending from the base of the hand and fitting in the socket-tube, a supply-pipe extending through the return-pipe and into the hand, packing between the enlarged portion of the socket-tube and the return-pipe, and an internal nut within the said space between the hand and the socket-tube, having a threaded portion which engages the threads in the socket-tube and binds the packing.



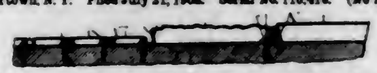
754,540. CARPET-BEATING MACHINE. CHARLES P. CAREY, Wollaston, Mass. Filed Nov. 5, 1903. Serial No. 179,945. (No model.)



*Claim.*—1. In a carpet-beating machine, the combination, with a frame, and a series of levers pivoted in the frame and normally resting on its front edge, of flexible and elastic beaters secured to the projecting front ends of the said levers, a series of tappets provided with rollers which depress the opposite ends of the said levers, and driving mechanism for revolving the said tappets.

2. In a carpet-beating machine, the combination, with a frame, and toothed racks secured to the said frame at the sides of its front end portion; of a series of levers pivoted in the frame and normally resting on its front edge, flexible and elastic beaters secured to the projecting front ends of the said levers, an adjustable anchor-bar engaging with the said toothed racks and extending crosswise under the said levers, springs between the said anchor-bar and the said levers, and tappet mechanism for operating the said levers.

754,541. SHEET-METAL SIDING. EDWIN G. CHARLESON, Watertown, N. Y. Filed July 21, 1902. Serial No. 116,416. (No model.)



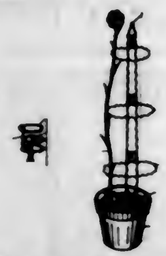
*Claim.*—1. A sheet-metal siding-section consisting of a main body creased or scored transversely and having its opposite longitudinal edges offset inwardly, a flange projecting from the inner edge of the lower offset, an upright portion projecting from the inner edge of the upper offset and having its upper edge overturned outwardly and downwardly to form a groove to receive the lower flange of the next adjacent upper siding-section, the vertical width of said upright portion being equal to or greater than the combined widths of the lower and upper interlocking flanges.

2. A sheet-metal siding-section consisting of a main body creased or scored transversely and having its opposite longitudinal edges offset inwardly and inclined toward each other, which together with the like offsets of adjacent sections form dovetailed channels to receive mortar or cement, the inner edges of the offsets being formed with flanges interlocking with those of the adjacent sections.

3. As a new article of manufacture, a sheet-metal siding strip or section consisting of a main body creased or scored transversely at regular intervals and having lateral offsets converging inwardly and terminating in flanges to interlock with the adjacent strips or sections.

754,542. ADJUSTABLE PLANT SUPPORT AND HOLDER. HENRY C. CHENEMAN, Richmond, Ind., assignor of one-tenth to Fred S. Anderson, Richmond, Ind. Filed Feb. 28, 1903. Serial No. 145,522. (No model.)

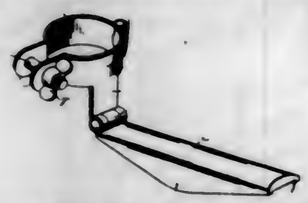
*Claim.*—1. A device of the class described formed of crimped wire, comprising a standard, a number of plant-supporting clamps adapted to be adjusted circumferentially and to be attached to said standard, said clamps having two arms adapted to overlap each other at their outer portions and to be locked together, all substantially as shown and described.



2. A device of the class described formed of crimped wire, comprising a double standard with an anchor formed on its lower end integral thereof, a number of horizontal clamps each formed with two outwardly-extending arms adapted to be connected adjustably to said standard, means for locking together the outer ends of said arms to vary the space inclosed thereby, all substantially as shown and described.

3. A device of the class described formed of wire, comprising a standard with an anchor integral thereof formed on its lower end, a number of clamps having two outwardly-extending arms, means for adjustably connecting the outer ends of said arms, and means for adjustably connecting said arms to the standard, all substantially as shown and described.

754,543. SHOVEL AND FOOT PROTECTOR. JOHN CHRISTIANSEN, Cedarhills, Iowa. Filed Nov. 11, 1903. Serial No. 180,772. (No model.)



*Claim.*—1. A device of the class described, provided with a hinged foot-piece fitted against the blade of a shovel and adapted to swing upward therefrom, substantially as described.

2. The combination with a shovel of a clamp for engaging the handle of the shovel, and a foot-piece hinged to the clamp and arranged to fit against the upper edge of the blade of the shovel, substantially as described.

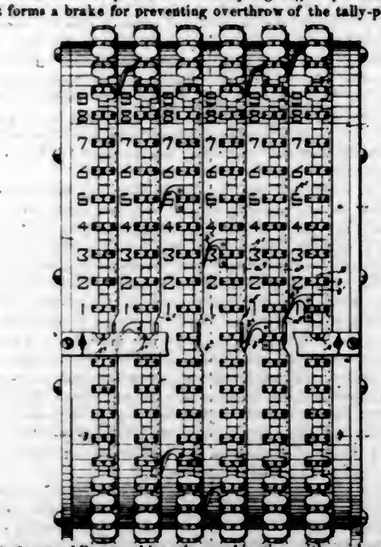
3. The combination with a shovel of a clamp composed of hinged sections and provided with an adjusting device, and a foot-piece arranged to fit against the upper edge of the shovel and hinged to the clamp, substantially as described.

4. The combination with a shovel of a clamp for engaging the handle of the shovel, an arm extending from the clamp, and a foot-piece hinged to the arm and provided with flanges embracing the blade of the shovel, substantially as described.

754,544. ADDING-MACHINE. WILLIAM H. CLARK, Erie, Pa., assignor, by mesne assignments, to the National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Dec. 24, 1894. Serial No. 533,866. (No model.)

*Claim.*—1. In an adding-machine, the combination of a series of guides, each one representing a different denomination, plural series of tally-pieces adapted to move in said guides, each series representing a different denomination and each tally-piece adapted to be moved initially to operate its series, a spring-finger on a tally-piece of each lower denomination adapted to engage a tally-piece in the next higher denomination as said finger passes a designated point, a fixed abutment for disengaging said finger from said tally-piece and for holding the same normally out of engagement with any tally-piece, whereby the sum of the number of the tally-piece of the lower denomination is transferred to a digit of the higher denomination and the pressure of said spring-finger upon said abutment forms a brake for preventing overthrow of the tally-pieces.





2. In an adding-machine, the combination with guides for different denominations; tally-pieces in said guides; and a spring-finger on a tally-piece of the lower denomination that moves a tally-piece in the higher denomination and forms a friction-plate for holding the tally-pieces in place.

3. In an adding-machine, the combination with guides for different denominations having the L-shaped retaining-lip $a^4$ with notches $a^5$ therein; tally-pieces in said guides; a spring-finger on a tally-piece of lower denomination that normally rides against the retaining-lip of the higher denomination and is adapted to enter the notch $a^5$ to actuate a tally-piece of the higher denomination.

4. In an adding-machine, the combination of a series of guides, each one representing a different denomination, plural series of tally-pieces adapted to move in said guides, each series representing a different denomination and each tally-piece adapted to be moved initially to operate its series, a spring-finger on a tally-piece of each lower denomination adapted to engage a tally-piece in the next higher denomination as said finger passes a designated point, a fixed abutment for disengaging said finger from said tally-piece and for holding the same normally out of engagement with any tally-piece, whereby the sum of the number of the tally-piece of the lower denomination is transferred to a digit of the higher denomination and the pressure of said spring-finger upon said abutment forms a brake for preventing overthrow of the tally-pieces.

754,545. TRUCK. CHARLES R. DAVIS, Chicago, Ill., assignor to Goodman Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 21, 1903. Serial No. 182,043. (No model.)



*Claim.*—1. In a truck the combination of a supporting part with a normally fixed portion of the truck-body, and a tilting portion of the truck-body, both mounted on such support.

2. In a truck the combination of a wheeled support with a body mounted thereon, said body consisting of two parts, one in substantially rigid relation to said support, the other adapted to be tilted thereon.

3. In a truck the combination of a support with a substantially rigid and substantially horizontally-disposed body portion thereon, and a movable body portion mounted on the support and adapted to be tilted thereon, so as to bring its outer end to the ground.

4. In a truck the combination of a supporting part with a normally fixed portion of the truck-body, and a tilting portion of the truck-body, both mounted on such support, and a device on the fixed portion of the truck-frame adapted to draw the load over the movable portion.

5. In a truck the combination of a wheeled support with a body mounted thereon, said body consisting of two parts, one in substantially rigid relation to said support, the other adapted to be tilted thereon, and a device on the fixed portion of the truck-frame adapted to draw the load over the movable portion.

6. In a truck the combination of a support with a substantially rigid and substantially horizontally-disposed body portion thereon, and a movable body portion mounted on the support and adapted to be tilted thereon, so as to bring its outer end to the ground, and a device on the fixed portion of the truck-frame adapted to draw the load over the movable portion.

7. In a truck the combination of a support with a rigidly-fixed body portion thereon, a tilting body portion thereon, a windlass on the fixed portion, and a cable extending therefrom across the movable portion.

8. A truck comprising a wheeled support with a fixed body portion supported thereon and projecting therefrom in one direction, and a body portion supported thereon and projecting therefrom in the other direction and adapted to tilt thereon.

9. A truck comprising a wheeled support with a fixed body portion supported thereon and projecting therefrom in one direction, and a body portion supported thereon and projecting therefrom in the other direction and adapted to tilt thereon, said tilting portion pivotally connected with one axle of the supporting part.

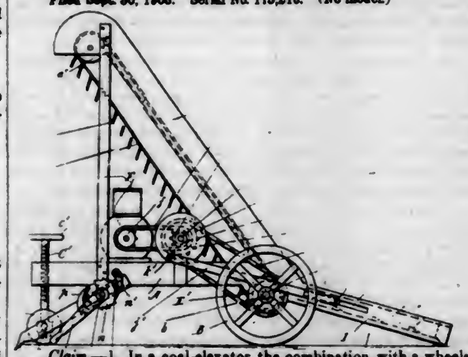
10. A truck comprising a wheeled support with a fixed body portion supported thereon and projecting therefrom in one direction, and a body portion supported thereon and projecting therefrom in the other direction and adapted to tilt thereon, and a device on the fixed portion to draw the load up over the tilting portion.

11. A truck comprising a wheeled support with a fixed body portion supported thereon and projecting therefrom in one direction, and a body portion supported thereon and projecting therefrom in the other direction and adapted to tilt thereon, said tilting portion pivotally connected with one axle of the supporting part, and a device on the fixed portion to draw the load up over the tilting portion.

12. A truck comprising a wheeled support with a fixed body portion supported thereon and projecting therefrom in one direction, and a body portion supported thereon and projecting therefrom in the other direction and adapted to tilt thereon, and a device on the fixed portion to draw the load up over the tilting portion, said device consisting of a windlass-like part and a drawing-cable.

13. A truck comprising a wheeled support with a fixed body portion supported thereon and projecting therefrom in one direction, and a body portion supported thereon and projecting therefrom in the other direction and adapted to tilt thereon, said tilting portion pivotally connected with one axle of the supporting part, and a device on the fixed portion to draw the load up over the tilting portion, said device consisting of a windlass-like part and a drawing-cable.

754,546. COAL-ELEVATOR. JOHN DEARY, Jr., Ware, Mass. Filed Sept. 30, 1903. Serial No. 175,216. (No model.)



*Claim.*—1. In a coal-elevator, the combination, with a wheeled frame, of an elevator supported in an inclined position by said frame, an inclined trough secured to the frame at the lower end of the elevator, bars slidable at the sides of the trough, wedge-shaped cross-bars extending between the said bars, and driving mechanism which reciprocates the said bars and operates the elevator.

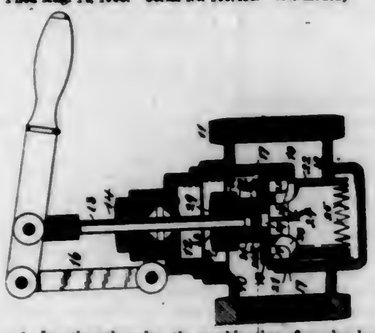
2. In a coal-elevator, the combination, with a wheeled frame, of an inclined trough at the rear end of the said frame, adjusting devices at the front end of the frame for pressing the lower end of the said trough against the ground, bars slidable in the sides of the said trough, wedge-shaped cross-bars extending between the said bars,

an elevator supported in an inclined position and receiving the coal from the said trough, and driving mechanism which reciprocates the said bars, and operates the elevator.

3. In a coal-elevator, the combination, with a wheeled frame, of an inclined trough at the rear end of the said frame, a shaft journaled at the front part of the said frame, anchor-bars provided with slots which slide over the said shaft, flexible connections secured to the anchor-bars and wound on the said shaft, driving devices for revolving and holding the said shaft, bars slidable at the sides of the said trough, wedge-shaped cross-bars extending between the said bars, an elevator arranged in an inclined position and receiving the coal from the said trough, and driving mechanism which reciprocates the said bars and operates the elevator.

4. In a coal-elevator, the combination, with a wheeled frame, of a driving-shaft journaled in the frame and provided with two chain-wheels and two crank-plates, an elevator extending in an inclined position over the said shaft and provided with two chain-wheels at its lower end for driving it, drive-chains connecting the said chain-wheels in pairs at each side of the elevator, an inclined trough secured to the said frame and having slots in its sides, bars slidable at the sides of the said trough, wedge-shaped cross-pieces extending between the said bars, pins which project from the said bars through the said slots, and connecting-rods between the said pins and crank-plates.

754,547. **THROTTLE-VALVE.** John Dumont, Cincinnati, Ohio, assignor to the William Powell Co., Cincinnati, Ohio, a Corporation of Ohio. Filed Aug. 14, 1903. Serial No. 169,418. (No model.)



*Claim.*—1. In a throttle-valve, the combination of a valve-housing, a main valve therein, a cylinder open at both ends connected so as to move with this valve and forming with adjacent parts of the valve-housing a movable valve-chamber which is normally closed, an auxiliary valve permitting access of steam to this valve-chamber, a valve-stem to manipulate this auxiliary valve and operative connection between it and the main valve whereby by extended manipulation of the auxiliary valve the main valve is also opened.

2. In a throttle-valve, the combination of a valve-housing, a valve, a seat for the same formed by internal parts of the valve-housing, a cylinder open at both ends connected to this valve in a manner to move with the same and fitted against the interior parts of the valve-housing forming in conjunction with them a normally closed, sliding valve-chamber and means to raise the valve off of its seat, and to charge sliding valve-chamber with steam without and before continued manipulation permits such steam to pass out.

3. In a throttle-valve, the combination of a valve-housing, a valve, a seat for the same being formed by internal parts of the valve-housing, said parts being extended below such seat, a cylinder open at its lower end fitted steam-tight into this downwardly-extended part of the valve-seat and attached to the valve in a manner to leave a space between this latter and its open upper end to permit ingress of steam thereat, an internal annular lip fitted around the lower end of this cylinder, which end in the normal or closed position of the valve extends below this lip and means to raise the valve off of its seat.

4. In a throttle-valve the combination of a valve-housing, a valve, a seat formed for the same by internal parts of the valve-housing, which parts are extended below such seat, a cylinder open at both ends fitted into this downwardly-extended part of the valve-housing, arms whereby this cylinder is attached to the under side of the valve and means whereby both are simultaneously manipulated to permit steam to pass into and through this cylinder.

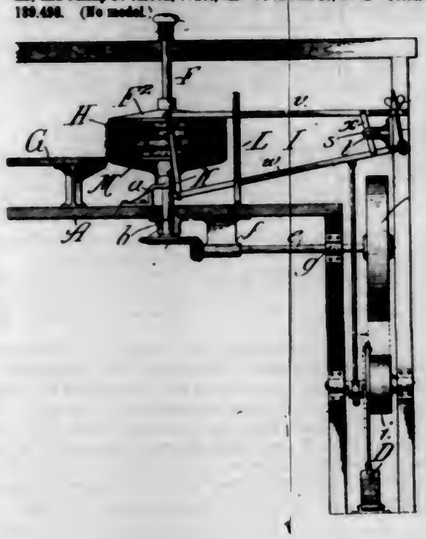
5. In a throttle-valve, the combination of a valve-housing a main valve therein, a cylinder open at both ends connected so as to move with this valve and forming with adjacent parts of the valve-housing a movable valve-chamber and normally closed by these adjacent parts of the valve-chamber, an opening in this main valve, an auxiliary valve controlling passage through this opening with the movable valve-chamber mentioned, a housing formed in the upper part of the main valve and into which this auxiliary valve is fitted, ports in the housing to admit steam to it, means to manipulate this auxiliary valve and operative connection between it and the main valve whereby this latter may be opened only after the auxiliary valve is open.

6. In a throttle-valve, the combination of a valve-housing a main valve therein, a cylinder open at both ends connected so as to move with this valve and forming with adjacent parts of the valve-housing a movable valve-chamber, an opening in this main valve, an auxiliary valve controlling passage through this opening and into the sliding valve-chamber mentioned, a housing formed on the upper part of the main valve and into which this auxiliary valve is fitted, ports in this housing to admit steam to it, a valve-stem connected to this auxiliary valve, a nut above this latter and fitted to the upper end of the open housing to confine the auxiliary valve therein, thereby connecting also both valves to the valve-stem, there being a clearance-space between this nut and the auxiliary valve permitting for this latter a limited independent movement within its housing and means to manipulate the valve-stem to effect a preliminary admission of steam to the movable valve-chamber to balance the main valve before its opening.

7. In a throttle-valve, the combination of a valve-housing, a main valve therein, a cylinder connected so as to move with this valve and forming with adjacent parts of the valve-housing a movable valve-chamber, a valve-stem having an enlarged end, two plugs having complementary screw-threads fitted onto this valve-stem and which when engaged inclose between them the enlarged end of this latter, the outer or lower one of these plugs forming also a valve, an opening in the main valve which this valve is fitted to close, means to manipulate the valve-stem to open this valve and operative connection between the two valves whereby the main valve is opened by the other valve after this latter has been opened by the valve-stem.

8. In a throttle-valve, the combination of a valve-housing, a valve, a seat for the same being formed by internal parts of the valve-housing, said parts being extended below such seat, a cylinder open at its lower end fitted steam-tight into this downwardly-extended part of the valve-seat and attached to the valve in a manner to leave a space between this latter and its open upper end to permit ingress of steam thereat, an internal annular lip 38 fitted around the lower part of this cylinder, serrations 23 around the lower edge of this latter which edge extends below the lip mentioned and means to raise the valve and its appended cylinder.

754,548. **LAYER-CAKE-TRIMMING MACHINE.** Christian F. Dietz, Chicago, Ill., assignor of two-thirds to August Junge, Chicago, Ill., and Phillip F. Carroll, Joliet, Ill. Filed Jan. 18, 1904. Serial No. 189,498. (No model.)



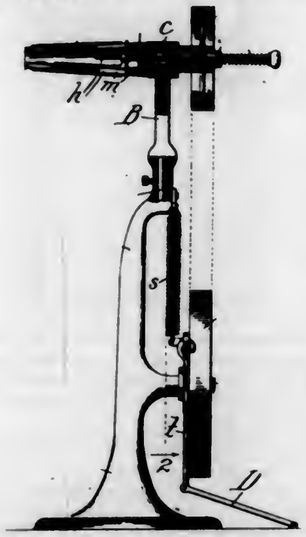



*Claim.*—1. In a layer-cake-trimming machine, a cake-supporting disk presenting an annular shearing edge, a vibratory frame, a knife on said frame movable along said shearing edge, and a drive-shaft with which said disk and frame are operatively connected, substantially as and for the purpose set forth.

2. In a layer-cake-trimming machine, a lower rotary cake-supporting disk presenting an annular shearing edge, an upper cake-clamping disk also presenting an annular shearing edge, a vibratory frame, a knife on said frame movable along both said shearing edges, and a drive-shaft with which said lower disk and frame are operatively connected, substantially as and for the purpose set forth.

3. In a layer-cake-trimming machine, a platform, a lower horizontal rotary cake-supporting disk in the plane of said platform and presenting an annular shearing edge, an upper cake-clamping disks also presenting an annular shearing edge, a vibratory frame, a knife of thin metal held by and tensioned in said frame and movable along said shearing edges, and a drive-shaft with which said lower disk and frame are operatively connected, substantially as and for the purpose set forth.

754,549. **CREAM-ROLL-FORMING MACHINE.** Christian F. Dietz, Chicago, Ill., assignor of two-thirds to August Junge, Chicago, Ill., and Phillip F. Carroll, Joliet, Ill. Filed Jan. 18, 1904. Serial No. 189,499. (No model.)




*Claim.*—1. In a machine for forming crusts, of the character described, a support, a mandrel journaled in the support, and adapted to receive and hold the hollow baking-form, and means for rotating the mandrel, substantially as described and for the purpose set forth.

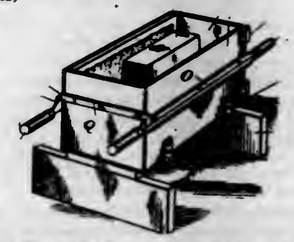
2. In a machine for forming crusts, of the character described, a support, a mandrel journaled in the support, and adapted to receive and hold the hollow baking-forms, means for rotating the mandrel, and a form-engaging ejector movable along the mandrel, substantially as and for the purpose set forth.

3. In a machine for forming crusts, of the character described, the combination of a support, a hollow tapering mandrel, journaled in the support, provided with an elongated slot and adapted to receive and frictionally hold the hollow tapering baking-forms, means for rotating the mandrel, a plunger movable within and extending beyond one end of the mandrel and a form-ejector pin on the plunger extending through said slot, substantially as and for the purpose set forth.

4. In a machine for forming crusts, of the character described, a support, a mandrel journaled in the support and adapted to receive and hold the hollow baking-forms, a pulley upon the mandrel, a driving-pulley, journaled on the support, and belted to the pulley on the mandrel, a ratchet-wheel on the driving-pulley, a treadle, and pawl-and-ratchet-actuating means between said treadle and driving-pulley, substantially as and for the purpose set forth.

5. In a machine for forming crusts, of the character described, a support, a hollow tapering mandrel journaled in the support and adapted along its forward end portion to receive and hold the hollow tapering baking-forms, and provided with a longitudinally-extending slot, a spring-returned plunger extending into the mandrel, from the rear end thereof, having a form-ejector pin extending through said slot at one end and in position, at its opposite end, to be pressed by the chest of the operator, and means for rotating the mandrel, substantially as and for the purpose set forth.

754,550. **MANUFACTURE OF ARTIFICIAL STONE.** Frederick W. Dunn, Woodstock, Canada, assignor of one-half to Neil McPhedran, George L. Whitney, Jacob Henry Frank, and Henry John Finkle, Woodstock, Canada. Filed Sept. 5, 1903. Serial No. 172,077. (No model.)




*Claim.*—1. In a mold for the manufacture of artificial stone the combination of a bottom member, a mold-box therefor consisting of side and end members hinged together and arranged to be opened and closed laterally during the use of the apparatus, grappling members secured to the side members of the mold-box, to engage the bottom members and secure the mold-box thereto when the parts are in their assembled position and a locking device to securely hold the side and end members of the mold-box in their closed position.

2. In a mold for the manufacture of artificial stone the combination of a bottom member, a mold-box therefor consisting of side and end members hinged together and arranged to be opened and closed laterally during the use of the apparatus, grappling members secured to the side members of the mold-box to engage the bottom member and secure the mold-box thereto when the parts are in their assembled position, handles for the side members of the mold-box and a detachable locking-bar arranged to engage the handles and lock the side and end members of the mold-box in their closed position.

3. In a mold for the manufacture of artificial stone the combination of an apertured bottom member, a mold-box therefor consisting of side and end members hinged together and arranged to be opened and closed laterally during the use of the apparatus, grappling members secured to the side members of the mold-box to engage the bottom member and secure the mold-box thereto when the parts are in their assembled position, handles for the side members of the mold-box and a detachable locking-bar arranged to engage the handles and lock the side and end members of the mold-box in their closed position and a core for the base member corresponding to the aperture in the bottom member of the mold.

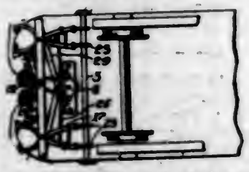
4. In a mold for the manufacture of artificial stone the combination of a bottom member, a mold-box therefor consisting of side and end members hinged together and arranged to be opened and closed laterally during the use of the apparatus, grappling members secured to the side members of the mold-box to engage the bottom member and secure the mold-box thereto when the parts are in their assembled position, handles for the side members of the mold-box, a detachable locking-bar arranged to engage the handles and lock the side and end members of the mold-box in their closed position and a core for the base member corresponding to the aperture in the bottom member of the mold.

754,551. **EMERGENCY CAR-BRAKE.** Stephen A. Duvall, Penrith, W. Va. Filed Dec. 8, 1903. Serial No. 184,336. (No model.)

*Claim.*—1. In an emergency car-brake, a suspension-bar hung from the car-platform, means for holding said bar normally elevated, spring-pressed grippers pivotally mounted in said bar, and means for actuating the rear ends of said grippers to close the forward ends thereof against the sides of the rails of the track when the bar is lowered, substantially as described.

2. In an emergency-brake, a spring-pressed suspension-bar suspended from the car-platform, a pair of spring-pressed grippers carried by said bar, and means for closing said grippers into engagement with the rails of a track when the bar is lowered.

3. In an emergency car-brake, a pair of spring-pressed grippers pivoted together and held normally suspended above the track and adapted to straddle the rails of the track when lowered, and means for closing the grippers into engagement with the rails of the track when in the lowered position.



4. In an emergency car-brake, rail-gripping means having their forward or engaging ends held normally suspended above the track and adapted when lowered to straddle the rails, and means for actuating the rear ends of the gripping means to engage the forward end thereof with the sides of the rails when in the lowered position.

5. In an emergency car-brake, a pair of rail-grippers pivoted to each other and having their pivoted ends normally suspended above the track and adapted to be lowered so as to straddle the rails of the track, and means for closing the gripping means with the sides of the rails when in the lowered position.

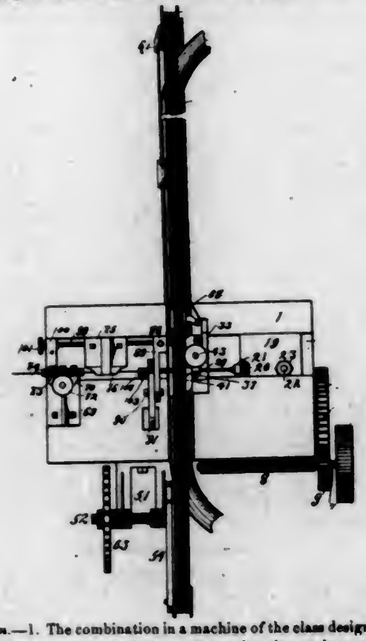
6. A brake comprising a spring-pressed suspension-bar carrying gripping means pivoted to each other, and means for actuating the gripping means.

7. A car-brake comprising pairs of rail-grippers pivoted together at their rear ends and movable downwardly at said ends, with means for actuating the grippers.

8. A car-brake comprising rail-grippers pivoted together at their rear ends, and pivotally supported from their forward ends, with means for closing said grippers.

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**754,552. MACHINE FOR INSERTING TRANSVERSE WIRES IN SOLID-RUBBER TIRES.** AUGUSTUS H. ELLINWOOD, Akron, Ohio. Filed Aug. 5, 1903. Serial No. 168,294. (No model.)



*Claim.*—1. The combination in a machine of the class designated of mechanism to progressively move forward a tire at determinate intervals and for determinate distances, a reciprocatory puncturing-needle, means to move the tire toward the point of said puncturing-needle simultaneously with the movement of said needle.

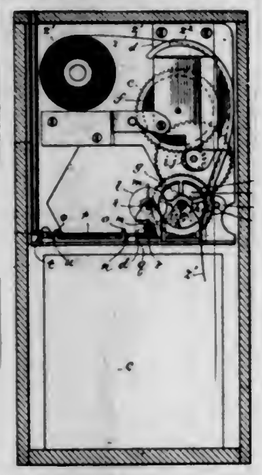
2. The combination in a machine of the class designated of mechanism to move a tire progressively forward, a platform to sustain said tire, a pressure-roller to hold said tire in place on said platform, a reciprocatory puncturing-needle adapted to pass through said tire, and means to move said tire and platform toward the approaching needle.

3. The combination with alternately-acting puncturing mechanism, and embedding mechanism, of a series of belts to convey a tire between said mechanisms.

4. The combination with a reciprocatory puncturing-needle, a means to support a tire passing in front of said needle, of two belts passing over and under said tire to convey the same forward at a step-by-step movement, of a ratchet-wheel to move said belts, a pawl to operate said ratchet and a cam to actuate said pawl.

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**754,553. AUTOMATIC REGISTER FOR COIN-CONTROLLED MACHINES.** CHARLES S. ELLIS and FRANK D. POWELL, Chicago, Ill., assignors to American Coin Register Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 8, 1903. Serial No. 151,649. (No model.)



*Claim.*—1. The combination with a coin-receiving receptacle, of a registering-web protected against unauthorized manipulation, a locked or sealed inclosure and means for intermittently feeding a predetermined portion of said web into said inclosure with each impulse of said feeding mechanism.

2. The combination with a coin-receiving receptacle, of a registering-web protected against unauthorized manipulation, a locked or sealed inclosure, and means for automatically feeding a portion of said web into said locked or sealed inclosure to conform respectively to each coin placed in said coin-receiving receptacle.

3. The combination with a coin-receiving receptacle, of a coin-registering mechanism inclosed within a locked or sealed inclosure, said mechanism consisting of a registering-web, means for feeding said web out of said inclosure through a restricted aperture into a secondary locked or sealed inclosure, means for actuating said feeding mechanism, means for normally arresting the movement thereof, and means for releasing said arresting mechanism.

4. The combination with a coin-receiving receptacle, of a coin-registering mechanism inclosed within a primary locked or sealed inclosure, said mechanism consisting of a registering-web, means for positively feeding said web, step by step out of said primary inclosure through a restricted aperture into a secondary locked or sealed inclosure, a motor element, and means for releasing the same whenever a coin is inserted within the coin-receiving receptacle.

5. The combination with a coin-receiving receptacle, of a coin-registering mechanism inclosed within a primary locked or sealed inclosure, said mechanism consisting of a registering-web, means for feeding said web step by step out of said primary inclosure through a restricted aperture into a secondary locked or sealed inclosure, means for releasing said feeding mechanism, and means for positively preventng a backward or forward movement of the web when the feeding mechanism is at rest.

6. The combination with a coin-receiving receptacle, of a coin-registering mechanism consisting of a registering-web, means for feeding said web step by step through a restricted aperture, means for protecting said feeding mechanism against unauthorized manipulation, a locked or sealed inclosure for receiving said web as it is fed through said aperture, means for releasing said feeding mechanism, and means for preventing a backward or forward movement of said web when the feeding mechanism is at rest.

7. The combination with a coin-receiving receptacle, of a coin-registering mechanism inclosed within a separate locked or sealed inclosure, said registering mechanism consisting of a registering-web, means for feeding said web out of said inclosure through a restricted aperture, means for actuating said feeding mechanism, means for normally arresting the movement thereof, means for releasing said arresting mechanism by the impact of a coin, and means within said inclosure for indenting or puncturing said web as it is advanced, said indenting or puncturing means being in constant positive engagement therewith, whereby an unauthorized movement of said web will cause its mutilation.

8. The combination with a coin-receiving receptacle, of a coin-registering mechanism inclosed within a locked or sealed inclosure, said mechanism consisting of a registering-web, means for feeding said web out of said inclosure through a restricted aperture into a secondary locked or sealed inclosure, means for actuating said feeding mechanism, means for normally arresting the movement thereof, and means for releasing said arresting mechanism by the impact of a coin.

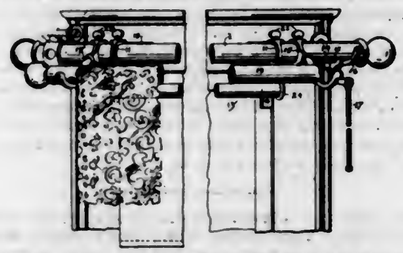
9. The combination with a coin-receiving receptacle, of a coin-registering mechanism inclosed within a locked or sealed inclosure, said mechanism consisting of a registering-web, means for feeding said web out of said inclosure through a restricted aperture into a secondary locked or sealed inclosure, means for actuating said feeding mechanism, means for normally arresting the movement thereof, means for releasing said arresting mechanism by the impact of a coin, means within said inclosure for indenting or puncturing said web as it is advanced, said indenting or puncturing means being in constant positive engagement with said web and means for normally locking said puncturing device against movement.

10. A coin-registering mechanism in which is combined a motor element, a train of gears, means for normally locking said train against movement, means for temporarily releasing said locking mechanism by the impact of a coin, a registering-web, and a web-feed mechanism for feeding said web a predetermined distance with each release of the locking mechanism consisting of opposing rolls, one of which is provided with peripheral teeth for indenting or puncturing said web as it is fed thereto.

11. A coin-registering mechanism in which is combined a motor element, a train of gears, an escapement mechanism for normally locking said train against movement, means for releasing said escapement by the impact of a coin, a graduated web, and a feed mechanism for feeding said web a predetermined distance with each movement of the escapement, said feed mechanism consisting of opposing rolls, one of which is provided with peripheral teeth for puncturing said web as it is fed thereto, thereby preventing an unauthorized or forced passage of the web between the rolls without mutilation.

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**754,554. WINDOW-CURTAIN ATTACHMENT.** CELIA A. REESE, Canton, Ohio. Filed Sept. 11, 1902. Serial No. 122,957. (No model.)



*Claim.*—1. In a window-curtain attachment, a fixed bracket provided with a swivel-ring, said ring provided with a groove upon its inner periphery, a supporting-bar provided with feathers, shade-roller brackets secured to the supporting-bar in fixed relative position and curtain-pole brackets secured to the supporting-bar, substantially as and for the purpose specified.

2. In a window-curtain attachment, a casing, and a bracket carrying a swivel-ring, a bracket located upon the opposite side of the casing from that to which the swivel-ring-carrying bracket is located, a dog pivoted to the bracket, and an operating-rod connected to said dog and a supporting-bar, substantially as and for the purpose specified.

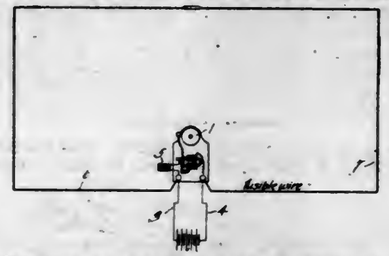
3. A supporting-bar carrying shade-roller brackets, said supporting-bar carried by a swivel-ring at one end, a casing, and a bracket fixed to the window-casing and located upon the opposite side of the window from the swivel-bracket, a dog pivoted to the bracket located under the free end of the supporting-bar, and said dog provided with arms or extensions adapted to lift the supporting-bar over the upper end of the curved portion of the bracket in either direction, substantially as and for the purpose specified.

4. In a window-curtain attachment a swinging supporting-bar carried by a fixed bracket, said bracket located at one side of the window-casing, the supporting-bar provided with a feather, shade-roller brackets adjustably attached to the supporting-bar, curtain-pole arms adjustably attached to the supporting-bar and grooves formed in the eyes of the brackets and arms adapted to receive the feather formed upon the curtain-pole, and means for holding said brackets and arms against longitudinal movement upon the supporting-bar, substantially as and for the purpose specified.

5. In a window-curtain attachment, a fixed bracket provided with a swiveled ring carrying a supporting-bar, said bracket provided with attaching flanges, two of said attaching flanges formed circular and located in the same plane and adapted to be seated or connected in or to the molding of the window-casing, and an intermediate flange located at an angle to the two circular flanges, substantially as and for the purpose specified.

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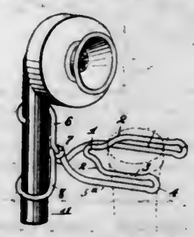
**754,555. AUTOMATIC FIRE-ALARM.** MASON K. FRED, Pleasanton, Tex. Filed Mar. 9, 1903. Serial No. 146,965. (No model.)



*Claim.*—An automatic fire-alarm system comprising an alarm, a source of electrical energy connected direct in a closed circuit with said alarm, a wire formed of fusible metal extending throughout the room or rooms to be protected and also connected in closed circuit with the battery, and artificial resistance connected in the line between the alarm and the point of connection of the fusible wire with the battery, such resistance being greater than that offered by the fusible wire.

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**754,556. TELEPHONE-RECEIVER SUPPORT.** HARRY L. GOODWIN, Kansas City, Mo., assignor of one-half to Charles H. Lavery, Kansas City, Mo. Filed May 26, 1903. Serial No. 158,627. (No model.)



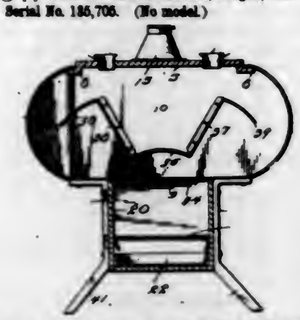
*Claim.*—1. A telephone-receiver hook consisting of forwardly-extending arms adapted to support the receiver, rearwardly-extending arms communicating with and underlying the forwardly-extending arms, and clamping members communicating with the rearwardly extending arms and adapted to engage a suitable portion of the telephone.

2. A telephone-receiver hook consisting of forwardly-extending arms connected at their rear portions with a reduced semicircular portion, rearwardly-extending arms communicating with the forward portions of the forwardly-extending arms, pivotal connections between the rear portion of the rearwardly-extending arms, and clamping members communicating with said rearwardly-extending arms.

3. A telephone-receiver hook consisting of forwardly-extending arms connected at their rear portions by a reduced semicircular por-

tion and which are bent downwardly and rearwardly at their forward portions, rearwardly-extending arms communicating with the bent portions of the forwardly-exteading arms, and pivotally connected at their rear portions, and clamping members communicating with the rearwardly-extending arms, substantially as described.

754,557. STOVE. ODA P. GREENE, Oregon, Mo. Filed Dec. 18, 1903. Serial No. 185,705. (No model.)



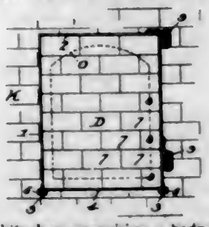
*Claim.*—A stove comprising a body having a flue-collar and supplemental collars leading therefrom, a fire-box upon which the body is disposed, said body having openings in its bottom, communicating with the fire-box, a deflector-plate arched over said openings and extending upwardly and divergently at the ends of the arched portion and then downwardly and divergently, and irons secured to the body and to the fire-box and projecting below the latter to support the stove.

754,558. SCHOLAR'S COMPANION. ABBIE R. GREVES, New York, N. Y. Filed Oct. 29, 1902. Serial No. 129,302. (No model.)



*Claim.*—A portfolio comprising a strip of waterproof flexible material adapted to be rolled up, a pocket formed on one end and whose mouth is transverse to the direction of the roll, an elongated pocket running along the edge of said strip and transverse to the first-named pocket, and a series of retainers on the inner face of said strip.

754,559. KILN-DOOR. HENRY H. HACKERD, Manson, Ind. Filed Sept. 10, 1903. Serial No. 172,677. (No model.)

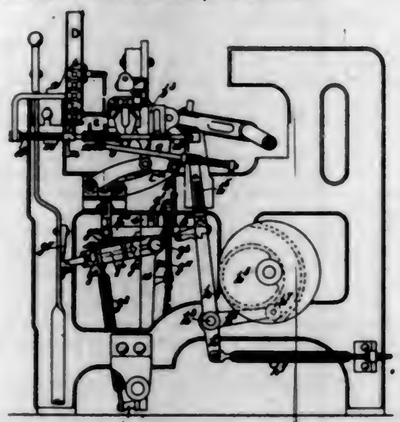


*Claim.*—1. A kiln-door comprising a body formed wholly of ordinary brick and a frame within which said brick are secured, said frame consisting of a wide, flat strap extending around the body of the door except at one side and having threaded extensions at its ends, a bar extending across the other side of said body and having eyes through which said extensions pass, and nuts on said threaded extensions to clamp said bar in contact with the body of the door.

2. A kiln-door consisting of a body formed wholly of ordinary brick and a frame within which said brick are secured, said frame consisting of wide, flat members disposed around said body of brick, and means for clamping said frame members in close contact with the body of brick.

3. The combination with a kiln or furnace, of a door and suspension devices comprising converging members attached to the upper corners of the door, and a stationary supporting member fixed in the wall of the kiln from which said converging members hang.

754,560. WEFT-REPLENISHING MECHANISM FOR LOOMS. WILLIAM H. HASKINS and HENRY H. HASKINS, Bury, England. Filed Oct. 13, 1902. Serial No. 127,143. (No model.)



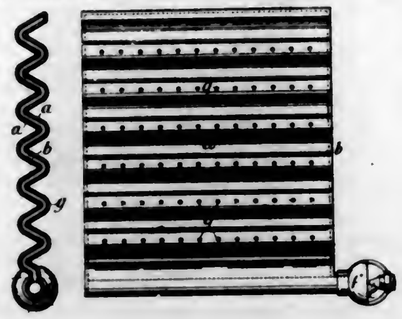
*Claim.*—1. In a loom for weaving having a shuttle-box on the loom-slay adapted to receive shuttles through the bottom thereof and a hopper whence reserve shuttles descend and lifting devices for elevating the shuttles, the combination of the slide-block m, the reciprocating longitudinally-divisible shuttle-carrier E, the slide-rod o, the normally simultaneously acting levers $h$ $h'$ adapted to disengage when meeting with a resistance, the strut $h^{10}$ and the eccentric $h^9$ for transferring shuttles from the hopper to underneath the shuttle-box substantially as set forth and shown.

2. In a loom for weaving having a shuttle-box in the loom-slay adapted to receive shuttles through the bottom thereof and means for elevating the shuttles from a reciprocating shuttle-carrier into the shuttle-box, the combination with the slay-sword and the said shuttle-carrier, of the bell-crank lever $g$, having its fulcrum on the slay, a spring-operated locking-bolt $g^4$ adapted to disengage on the arm $g'$ of the bell-crank lever meeting with resistance, and a spur $g^5$ on the other arm $g^3$ of said bell crank lever adapted to strike the stop-rod when the lever $g$ turns on its fulcrum, substantially as and for the purpose set forth and shown.

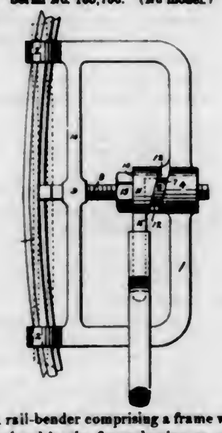
754,561. ATMOSPHERIC GAS-BURNER. ALFRED E. HARRIS, London, England. Filed Oct. 28, 1903. Serial No. 178,617. (No model.)

*Claim.*—1. An atmospheric gas-burner having two corrugated walls arranged in close proximity to and parallel with each other, throughout their extent, and forming a continuous, narrow, sinuous chamber between said walls, for the passage of the combustible mixture, exterior convex portions of said plates being provided with rows of burner-apertures, whereby the combustible mixture is forced to pass through the burner in a thin, uniform sheet, and will be highly heated by contact with the parallel walls of said burner, substantially as described.

2. An atmospheric burner having two horizontally-corrugated walls arranged in close proximity to and parallel with each other, throughout their extent, and forming a continuous, narrow, sinuous passage between said walls, the space between said walls being closed adjacent to the edges only of the said walls, and exterior convex portions of said plates being provided with burner-apertures, arranged in horizontal rows, whereby the combustible mixture is caused to pass without obstruction, and in a thin uniform sheet between the parallel walls and will be highly heated by contact therewith, substantially as described.



754,562. RAIL-BENDER. REINHART O. HIRTS, near Massillon, Ohio, assignor of one-half to John R. English, Massillon, Ohio. Filed July 16, 1903. Serial No. 165,786. (No model.)



*Claim.*—1. A rail-bender comprising a frame with arms adapted to engage a rail, a head in the frame having an axial aperture and an inwardly-projecting sleeve, spiral faces on the inner side of the head, a rotatable collar on the sleeve having spiral faces on its outer side corresponding to the similar faces on the head, a bending-screw movable endwise in the axial aperture, and a nut on the screw adapted to be adjusted against the inner side of the collar.

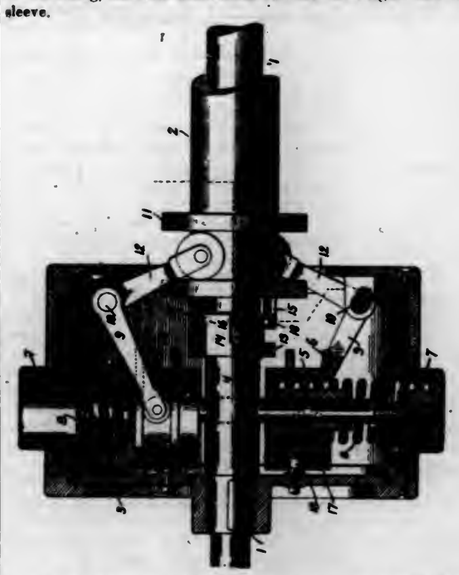
2. A rail-bender comprising a frame, a head in the frame having an axial aperture and an inwardly-projecting sleeve, spiral faces on the inner side of the head, a rotatable collar on the sleeve having spiral faces on its outer side corresponding to the similar faces on the head, a bending-screw movable endwise in the axial aperture, and a nut on the screw adapted to be adjusted against the inner side of the collar.

3. A rail-bender comprising a frame, a head on the frame having an axial aperture, spiral faces on one side of the head, a bending-screw movable endwise in the axial aperture, a nut on the screw, and a rotatable collar between the head and the nut having spiral faces on one side corresponding to the similar faces on the head.

754,563. GOVERNOR FOR ENGINES. HAMS HOLSWARTH, Hamilton, Ohio, assignor to the Hooven, Owens, Rentschler Company, Hamilton, Ohio. Filed Dec. 10, 1903. Serial No. 184,635. (No model.)

*Claim.*—1. In a governor, the combination, substantially as set forth, of a governor-spindle, a sleeve mounted to slide thereon, a casing fast on the governor-spindle and having apertures in its rim, a cross-spindle intersecting the governor-spindle, weights sliding on the cross-spindle, springs upon the cross-spindle for urging the weights inwardly, caps screwed upon the cross-spindle exterior to the springs and engaging the apertures in the rim of the casing, and lever connections between the weights and the sleeve.

2. In a governor, the combination, substantially as set forth, of a governor-spindle, a sleeve mounted to slide thereon, a casing fast on the governor-spindle, a cross-spindle intersecting and free for crosswise motion in the governor-spindle, weights sliding on the cross-spindle, springs urging the weights inwardly, caps screwed upon the cross-spindle exterior to the springs and engaging the rim of the casing, and lever connections between the weights and the sleeve.



3. In a governor, the combination, substantially as set forth, of a governor-spindle, a sleeve mounted to slide thereon, a casing fast on the governor-spindle, a cross-spindle intersecting and free for crosswise motion in the governor-spindle, weights sliding on the cross-spindle, springs urging the weights inwardly, caps screwed upon the cross-spindle exterior to the springs and engaging the rim of the casing, lever connections between the weights and the sleeve, and guide-rollers carried by the casing and coöperating with guide-ways on the weights.

4. In a governor, the combination, substantially as set forth, of a governor-spindle, a sleeve mounted to slide thereon, a casing fast on the governor-spindle, a cross-spindle intersecting the governor-spindle, weights sliding on the cross-spindle, springs urging the weights inwardly, caps screwed upon the cross-spindle exterior to the springs and engaging the rim of the casing, pivots carried by the casing at right angles to the axis of the governor-spindle, and bell-crank levers mounted on said pivots and straddling the weights and the sleeve and operatively engaging collars on the weights and sleeve.

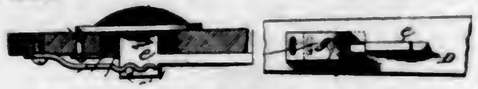
5. In a governor, the combination, substantially as set forth, of a governor-spindle, a sleeve mounted to slide thereon, a casing fast on the governor-spindle, a cross-spindle intersecting the governor-spindle, weights sliding on the cross-spindle, springs urging the weights inwardly, caps screwed upon the cross-spindle exterior to the springs and engaging the rim of the casing, lever connections between the weights and the sleeve, coöperating prongs upon the sleeve and governor-spindle provided with grooves in their contiguous side faces, and balls disposed in said grooves.

6. In a governor, the combination, substantially as set forth, of a governor-spindle, a sleeve mounted to slide thereon, a casing-head fast on the governor-spindle, a rim secured to said head, an open head secured to the opposite face of said rim and free of the governor-spindle, a cross-spindle intersecting the governor-spindle weights sliding on the cross-spindle, springs urging the weights inwardly, caps screwed upon the cross-spindle exterior to the springs and engaging the rim of the casing, and lever connections between the weights and the sleeve and working through the open head of the casing.

754,564. SAFETY DEVICE FOR FIREARMS. GEORGE A. HORNE, Syracuse, N. Y. Filed May 11, 1903. Serial No. 156,667. (No model.)

*Claim.*—1. A three-position safety device having combined

therewith a device movable into position to form a stop for holding the said safety device from being moved to inoperative position thereby changing it to a two-position safety, substantially as described.



2. A safety device for breech-loading firearms, comprising a safety-slide, movable to three positions and a device movable into the path of said slide to form a continuously-acting stop to prevent said slide from being moved into inoperative position, whereby the device is changed to a two-position safety, substantially as described.

3. A safety appliance for firearms, comprising among its members, a safety device movable from a firing position to a position to prevent the unintentional discharge of the arm, and movable also to an inoperative position and a device movable into and out of operative relation with said safety device for preventing the safety device from being moved into inoperative position, substantially as described.

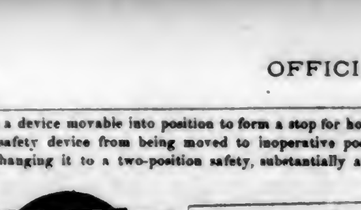
4. A safety appliance for firearms movable into firing, safe and inoperative positions, of a rotating part and a plate operatively related thereto whereby said plate can be moved into position to prevent the safety device from being moved into the inoperative position, substantially as described.

5. A safety appliance for firearms, comprising the slide movable into firing, safe and inoperative positions, a bolt rotatably mounted in the tang of the gun, and a plate operatively connected therewith whereby said plate can be moved into position to form a continuously-acting stop to prevent the said slide from being moved into inoperative position, substantially as described.

6. A safety appliance for firearms comprising the slide movable into firing, safe, and inoperative positions, a bolt rotatably mounted in the tang of the gun, a plate secured to said bolt and frictionally engaging the under side of the tang to hold the slide from being moved into inoperative position, substantially as described.

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**754,565. ELECTRIC RAILWAY.** Rudolf A. R. Huber and Hans H. C. Behn-Eschenburg, Zurich, Switzerland, assignors to The Firm of Maschinenfabrik Oerlikon, Oerlikon, near Zurich, Switzerland. Filed Dec. 23, 1901. Serial No. 86,966. (No model.)

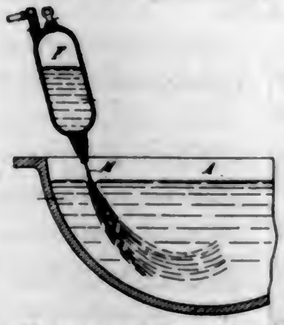


*Claim.*—1. In an electric-railway system, the combination with alternate-current line-sections having different voltages; of a car, an alternate-current motor thereon, a continuous-current generator coupled thereto, motors operated by the continuous current generated and transformers to bring the voltages of the sections of line to the voltage required by alternate-current motor, all on said car, substantially as described.

2. In an electric-railway system, the combination with sections of line of alternating current, the one carrying a high voltage and the other a low voltage; of a car, an alternating-current motor wound for the low voltage, a direct-current generator driven by said motor, motors operated by the direct current generated, a static transformer wound for the two different voltages, means to supply the low voltage directly to the alternate-current motor and means to collect current from the high-voltage sections and supply to the high-tension winding of said static transformer, substantially as described.

3. In an electric-railway system, the combination with alternate-current line-sections having different voltages, of a car, an alternate-current motor thereon, a continuous-current generator driven by said motor, motors operated by the continuous current generated, means to vary the excitation and means to vary the current supplied to the armatures of the continuous-current motors, means to collect the low voltage from the low-voltage sections and supply it directly to the alternate-current motor, means to collect the high-voltage current, and a step-down transformer to reduce the high voltage to that required before supplying to the alternate-current motor.

**754,566. PROCESS OF TREATING MATTERS IN FUSION.** Paul L. Hulin, Chevaux, par Rioupéroux, France. Filed Dec. 29, 1902. Serial No. 136,986. (No specimens.)



*Claim.*—1. The herein-described process for the treatment of molten matters, which consists in injecting molten alkali in an attenuated jet into said matters.

2. The herein-described process for the treatment of molten matters, which consists in projecting an attenuated jet of molten sodium into such matters.

3. The herein-described process for the treatment of molten matters, which consists in forcibly introducing liquid material lighter than said matters downwardly into such matters.

4. The herein-described process for the treatment of molten matters, which consists in injecting finely-subdivided sodium into the molten matter.

5. The herein-described process for the treatment of molten matters, which consists in spraying liquid alkali into the molten matter.

6. The herein-described process for the treatment of molten matters which consists in forcibly projecting an attenuated jet of molten material lighter than said molten matters downwardly into such matters.

7. The herein-described process for the treatment of molten matters which consists in forcibly projecting an attenuated jet of molten sodium into such matters.

8. The herein-described process for the treatment of molten matters which consists in forcibly projecting an attenuated jet of molten material into such matters by pressure generated by the heat applied to melt said material.

9. The herein-described process for the treatment of molten matters which consists in forcibly projecting an attenuated jet of molten material into such matters by pressure generated by a highly-expansible substance confined with said molten material during the application of heat to melt said material.

10. The herein-described process for the treatment of molten matters which consists in forcibly projecting an attenuated jet of molten lighter material downwardly into such matters by pressure generated by a still lighter highly-expansible substance confined with and above said molten material during the application of heat to melt said material.

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**754,567. BELT-FASTENER.** Isaac Jackson, Glossop, England. Filed Oct. 6, 1903. Serial No. 176,988. (No model.)



*Claim.*—1. A belt-fastener comprising a metal plate having an upwardly-projecting flange around its edge and provided with a plurality of openings, and fastening devices extending through said openings and adapted to engage the belt and secure the fastener thereto, said flange extending practically to the plane of the outer surfaces of the said fastening devices, substantially as described.

2. A belt-fastener comprising a metal plate having an upwardly-projecting flange around its edge and having bosses in the body of the plate and provided with a plurality of openings, and fastening devices extending through said openings and adapted to engage the belt and secure the fastener thereto, said flange extending practically to the plane of the outer surfaces of said fastening devices, substantially as described.



3. A belt-fastener comprising a metal plate having an upwardly-projecting flange around its edge and provided with cup-shaped projections having openings for the fastening devices, and fastening devices extending through said openings and having their outer ends extending practically to the plane of the outer edge of said flange and adapted to engage the belt and secure the fastener thereto, substantially as described.

4. In a belt-fastener, the combination with a metal plate having an upwardly-projecting flange around its edge, bosses in the body of the plate and cup-shaped projections having openings for the fastening devices, of fastening devices comprising bolts and nuts, the nuts being provided with cup-shaped flanges to fit recesses between said cup-shaped projections and said flange and bosses, substantially as described.

5. In a belt-fastener, the combination with a metal plate having an upwardly-projecting flange around its edge and cup-shaped projections having openings for the fastening devices, of fastening devices comprising bolts having cup-shaped heads and nuts provided with cup-shaped flanges, substantially as described.

6. In a belt-fastener, the combination with a metal plate having an upwardly-projecting flange around its edge and cup-shaped projections having openings for the fastening devices, of fastening devices comprising bolts having heads the inner surfaces of which are curved and nuts having cup-shaped flanges and provided with means for operating the nuts, substantially as described.

7. In a belt-fastener, the combination with a metal plate having an upwardly-projecting flange around its edge and cup-shaped projections having openings for the fastening devices, of fastening devices each comprising a bolt having a cup-shaped head, a nut having a cup-shaped flange and a cup-shaped washer, substantially as described.

8. In a belt-fastener, the combination with a metal plate having an upwardly-projecting flange around its edge and cup-shaped projections having openings for the fastening devices, of fastening devices comprising bolts having cup-shaped heads and projections on their inner surfaces, nuts having cup-shaped flanges and cup-shaped washers having projections, substantially as described.

9. In a belt-fastener, the combination with a plate having openings for the fastening devices, of fastening devices comprising bolts having projections on the inner faces of their heads, washers also having projections on their inner faces and nuts adapted to engage said bolts, substantially as described.

10. In a belt-fastener, the combination with a plate having openings for the reception of the fasteners, of washers having projections on their inner faces and interposed between the belt and plate and having corresponding openings for the fasteners, and fastening devices extending through said openings and adapted to engage the belt and secure the fastener thereto, substantially as described.

11. A belt-fastener comprising a metal plate having an upwardly-projecting flange around its edge, the edge being turned back forming a bead, cup-shaped projections having openings for the fastening devices, the edges of the projections being turned to form beads, and fastening devices extending through said openings and adapted to engage the belt and secure the fastener thereto, substantially as described.

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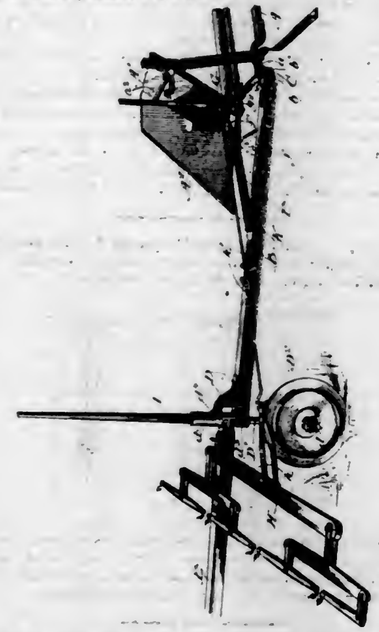
**754,568. TONGUE-TRUCK FOR HARVESTERS.** Edward A. Johnston, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill., a Corporation of New Jersey. Filed Sept. 14, 1903. Serial No. 173,101. (No model.)

*Claim.*—1. In a tongue-truck for harvesters and like machines, the combination of a supplemental tongue, a supporting-wheel pivotally mounted therein, a tongue proper connected with said wheel for controlling it, and a draft-equalizer mounted upon said tongue proper and connected at its center of draft with the machine by means other than the supplemental tongue.

2. In a tongue-truck for harvesters and like machines, the combination of a supplemental tongue, a supporting and steering wheel or wheels pivotally mounted therein, and a tongue proper connected with said wheel or wheels so that the plane of revolution of the latter forward of the axle thereof is inclined stubbleward from the line of advance.

3. In a tongue-truck for harvesters and like machines, the combination of a supplemental tongue pivotally connected with the machine, means for maintaining said tongue and machine in the desired relative position, a steering-post pivoted in said tongue, an axle integral with said post which extends stubbleward therefrom, a supporting and steering wheel journaled on said axle, and a tongue proper secured to said steering-post.

4. In a tongue-truck for harvesters and like machines, the combination of a supplemental tongue pivotally connected with the machine, means for maintaining said tongue and machine in the desired relative position, a brace rigidly secured to said tongue also pivotally connected with the machine, a steering-post pivoted in said tongue, an axle integral with said post which extends stubbleward therefrom, a supporting and steering wheel journaled on said axle, a tongue proper secured to said steering-post so that the plane of revolution of said wheel forward of the axle thereof is inclined stubbleward from the line of advance, and a draft-equalizer mounted upon said tongue proper and connected at its center of draft with the machine by means of a draft-rod.

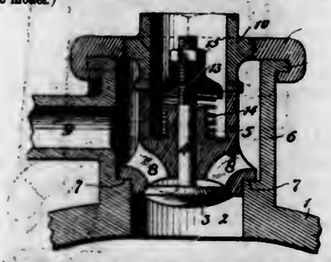


5. In a harvester, the combination of a grain-receiving platform, a tongue-truck formed of a supplemental tongue, a supporting and steering wheel pivoted therein, and a tongue proper connected with said wheel for controlling it, and means for connecting said tongue-truck with the outer end of said platform and longitudinal therewith.

6. In a harvester, the combination with a grain-receiving platform having the bar J and the bar J', of a tongue-truck formed of a supplemental tongue having a rigid brace, both of which are provided with means for engaging the bar J, and the former with means for engaging the bar J', a supporting and steering wheel pivotally mounted in said tongue, and a tongue proper connected with said wheel for controlling it.

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**754,569. ENGINE-VALVE.** James H. Jones, Bristol, Conn., assignor to the Corbin Motor Vehicle Corporation, New Britain, Conn., a Corporation of Connecticut. Filed July 10, 1903. Serial No. 164,951. (No model.)



*Claim.*—1. In a device of the character described, a valve, a frame carrying the same, a seat for said valve, a seat for said frame, and means to hold said valve-frame to its seat said means compris-

ing a removable plate and a separate nut threaded therein one of said parts being adjustable.

2. In a device of the character described, a valve, a frame carrying the same, a seat for said valve, a seat for said frame, and means to hold said valve-frame to its seat said means comprising a removable plate and a separate nut threaded therein said nut being adjustable independently of said plate.

3. In a device of the character described, a valve, a frame carrying the same, a seat for said valve, a seat for said frame, and means to clamp said valve-frame to its seat, said clamping means comprising a removable member 11 and a second member 10 rotatably carried by said member 11, and means for moving one of said parts longitudinally by rotation, the member 10 exerting a pressure against said frame in the direction of its seat.

4. In a device of the character described, a valve, a skeleton frame carrying the same, a seat for said valve formed on said frame, a seat for said frame and means to clamp said valve-frame to its seat, said clamping means comprising a removable member 11 and a second member 10 carried thereby and means for moving one of said parts longitudinally by rotation, one of the said members exerting a pressure against said valve-frame in the direction of its seat and means for detachably holding the member 11 in a fixed position.

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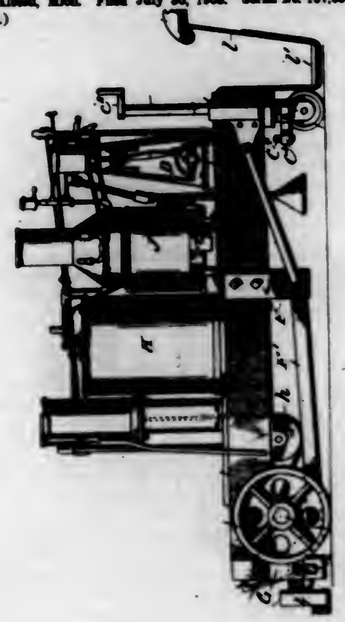
**754,570. KITCHEN-CABINET. CHARLES F. KANE, Sheboygan, Wis., assignor to H. Winter Lumber Company, Sheboygan, Wis. Filed Nov. 14, 1901. Serial No. 82,135. (No model.)**



*Claim.*—A kitchen-cabinet comprising a frame, compartments separately removable from the frame, covers having sliding engagement with the compartments, and brackets arranged in said cabinet in the path of pushed-back covers of said compartments.

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**754,571. AUTOMOBILE LIFTING-TRUCK. WARREN S. KESSLER, Albion, Mich. Filed July 30, 1903. Serial No. 167,627. (No model.)**



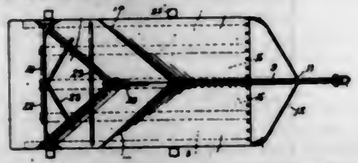
*Claim.*—1. An automobile-truck provided with lifting-bars having a lifting-platform rigidly secured thereto and means for raising and lowering said lifting arms and platform, substantially as described.

2. In an automobile-truck, the combination with the main body, of the lifting-bars, the cam-shaft for raising the same and means for actuating said shaft, substantially as described.

3. In an automobile-truck, the combination with the main body, of the lifting-bars, the cam-shaft for raising and lowering the said bars provided with the rigid arm, the flexible connection and the steam-cylinder for actuating said shaft, substantially as described.

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**754,572. PLOW. JOHN KEHL, Fond du Lac, Wis. Filed Oct. 1, 1902. Serial No. 125,464. (No model.)**



*Claim.*—1. In a plow, the combination of an upright partition, a base or bottom portion from which the upright partition extends, said base or bottom portion slanting downwardly to its forward edge, said upright portion extending in advance of the forward edge of the base or bottom portion, a wing projecting upwardly from the rear portion of the base or bottom of the plow, and extending to the upright partition, and projecting therefrom laterally and rearwardly and at an obliquity, said wing being concavo-convex in cross-section, with the concavity in the front side thereof.

2. In a plow, the combination of an upright partition, a base or bottom portion from which the upright partition extends, said base or bottom portion slanting downwardly to its forward edge, and also slanting downwardly to its lateral edge, and a wing projecting upwardly from the rear portion of the base or bottom of the plow, and extending to the upright partition and projecting therefrom laterally and rearwardly and at an obliquity, said wing being concavo-convex in cross-section, with the concavity in the front side thereof.

3. In a plow, the combination of an upright partition, a base or bottom portion from which the upright partition extends, the front edge of said base or bottom portion being pointed and beveled downwardly, and said base or bottom portion slanting downwardly to its forward edge, and a wing projecting upwardly from the rear portion of the base or bottom of the plow, and extending to the upright partition, and projecting therefrom laterally and rearwardly, and at an obliquity, said wing being concavo-convex in cross-section, with the concavity in the front side thereof.

4. In a plow, the combination of a base or bottom portion, said base or bottom portion on each side of a longitudinal line therethrough slanting downwardly to the forward edge of the plow, wings projecting upwardly from the rear portions of the slanting portions of the base or bottom, and extending rearwardly obliquely in divergent lines from their converged forward edges, each wing being concavo-convex in cross-section, with the concavity in its forward side and a ballast-receptacle between the wings capable of balancing the plow when said plow is desired to travel at a distance above the platforms of the cars.

5. In a plow, the combination of an upright partition, a base portion from which the partition extends, said partition projecting in advance of the forward edge of the base portion, said base portion on each side of the partition slanting downwardly to the forward edge of the plow, and wings projecting upwardly from the rear portions of the base on opposite sides of the partition and extending rearwardly obliquely in divergent lines from the converged forward edges thereof which extend to or against the opposite faces of the partition, each wing being concavo-convex in cross-section, with the concavity in the forward edge thereof.

6. In a plow, the combination of an upright partition, a base portion from which the partition extends, said base portion on each side of the partition slanting downwardly to the forward edge of the plow, and also slanting downwardly to the lateral edges of the plow, and wings projecting upwardly from the rear portions of the base on opposite sides of the partition, and extending rearwardly obliquely in divergent lines from the converged forward edges thereof which extend to or against the opposite faces of the partition, each wing being concavo-convex in cross-section, with the concavity in the forward face thereof.



7. A plow provided with a plow-point and having on its under side a series of longitudinal runners with intervening recesses or grooves between the runners, and rollers disposed between the runners and journaled on axial pins.

8. A plow provided with a pointed forward end, the lateral edges of said pointed end being thickened to form shoulders adapted to bear against the inner sides of standards projecting upwardly from a car, in the travel of the plow along said car.

9. In combination with a plow adapted to travel along a flat-car, of a device extending longitudinally along the upper portion of the plow and connected at its opposite ends to the plow, said device adapted for the connection thereto of a chain or other elevating mechanism, whereby the plow may be elevated and swung around, in order to reverse its line of travel.

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**754,573. WATER-CLOSET. HENRY O. KRAKOW, Dubuque, Iowa. Filed Oct. 19, 1903. Serial No. 177,678. (No model.)**



*Claim.*—1. A water-closet-flushing apparatus comprising a casing consisting of separately-formed connected sections the upper one of which contains a valve-chamber communicating with a water-inlet and an impact-chamber communicating with said valve-chamber and with a water-outlet, and the lower section having a piston-chamber and an air-chamber exterior to the latter, a separately-formed water-tight diaphragm between the sections at their point of connection having an opening and a gland at said opening, a valve in the valve-chamber, a piston in the piston-chamber, and a rod connected with the piston and extending through the diaphragm-opening and gland and adapted to engage and unseat the valve in its upward movement.

2. A water-closet-flushing apparatus comprising a casing consisting of separately-formed connected sections the upper one of which contains a valve-chamber communicating with a water-inlet and an impact-chamber communicating with said valve-chamber and with a water-outlet, and the lower section having a piston-chamber and an air-chamber exterior to the latter, an air-valve in the air-chamber, a separately-formed water-tight diaphragm between the sections at their point of connection having an opening and a gland at said opening, a valve in the valve-chamber, a piston in the piston-chamber, a rod connected with the piston and extending through the diaphragm-opening and gland, a valve-engaging rod screwed into the upper end of the piston-rod and an impact-disk at the point of connection of said rods.

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**754,574. FIREPROOF FLOOR CONSTRUCTION. ROBERT C. KYLE, Columbus, Ohio, assignor to the International Fence & Fire Proofing Company, Columbus, Ohio, a Corporation of Ohio. Filed Apr. 18, 1903. Serial No. 153,279. (No model.)**

*Claim.*—1. In a fireproof floor construction, the combination with spaced supports, of cables bridging the space between the supports and independently anchored to said supports, netting independent of the cables and resting upon the upper sides thereof, and a body of concrete inclosing the netting and cables between the supports.



2. In a fireproof floor construction, the combination with floor-beams, of cables running across the beams, netting also running across the beams and supported upon the upper sides of the cables between the beams, and a body of concrete in which the beams, cables and netting are embedded.

3. The combination with the walls of a building, of floor-beams supported upon opposite walls, cables running across the beams and anchored to the other opposite walls to form ties therefor, netting also running across the beams and supported upon the upper sides of the cables between the beams, and a body of concrete in which the beams, cables and netting are embedded, the cables and netting being sagged between the beams to lie adjacent to the bottom of the body of concrete and in substantially the same plane therewith.

4. The combination with the walls of a building, of floor-beams supported upon opposite walls, continuous cables crossing and supported by the beams and anchored to other opposite walls to form ties therefor, said cables extending in a continuous direction between each and every pair of beams, netting supported by the cables, and a body of cement in which the beams, cables and netting are embedded, the cables and netting being disposed adjacent to the bottom of the body of cement and in substantially the same plane therewith.

5. In a fireproof floor construction, the combination with supporting I-beams, of cables arranged between said I-beams, pairs of oppositely-disposed hooks connected with said cables and adapted to engage opposite sides of the heads of respective I-beams, netting arranged on said cables, and a body of concrete inclosing said netting and cables between said I-beams.

6. The combination with opposite supports, of cables secured thereto and extending between the same with their intermediate portions located in a plane below the points of connection between the cables and the supports, transverse rods connecting the depressed portions of the cables, truss-braces extending between the struts and the cables, and a body of concrete in which the cables, rods, struts and braces are embedded.

7. The combination with opposite supports, of cables extending between and running over the tops of the supports, pairs of hooks carried by the cables, the members of each pair of hooks being reversely arranged and engaging the opposite upper edges of the respective supports to anchor the cables thereto against movement in either direction, and a body of concrete in which the cables are embedded.

8. The combination with opposite supports, of cables extending between the supports, pairs of hooks carried by the cables, each hook being bifurcated and receiving the adjacent cable in the bifurcation thereof, and also provided with means to clamp the opposite side portions of the hook upon the cable, the members of each pair of hooks being reversely arranged with their bills engaging the opposite upper edges of the support, and a body of concrete in which the cables are embedded.

9. The combination with opposite supports, of cables extending between the supports, hooks upon the cables, each hook being bifurcated and receiving the adjacent cable in the bifurcation, and provided with means for clamping the opposite side portions of the hook upon the cable, each hook having its bill engaging the top of the adjacent support, and a body of concrete in which the cables are embedded.

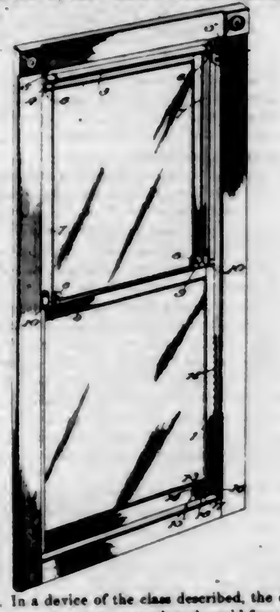
10. The combination with opposite supports, of cables extending between the same, hooks upon the cables and engaging the supports, each hook being bifurcated and receiving the adjacent cable

in the bifurcation, screw-threaded fastenings piercing the opposite sides of the hooks to clamp the same upon the cables, and a body of concrete in which the cables are embedded.

11. The combination with opposite supports, of cables extending between the same, hooks upon the cables and engaging the supports, each hook being bifurcated and receiving the adjacent cable in the bifurcation, fastenings carried by the hooks for clamping them upon the cables, transverse rods connecting the cables, struts rising from some of the rods at their points of crossing the cables, truss-braces extending between the struts and the cables, a wire-netting supported upon the cables and the rods, and a body of concrete in which the cables, rods, struts, braces and netting are embedded.

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**754,575. WINDOW-SASH.** George H. Lawrence, Middletown N. Y. Filed Nov. 10, 1903. Serial No. 180,612. (No model.)



*Claim.*—1. In a device of the class described, the combination with a window-frame, brackets secured to the said frame, stops projected from said brackets, a spring-roller mounted in the said brackets, a sash movable in the window-frame, connecting means between the spring-roller and the sash for actuation of said sash, the movement of the sash being limited by the stops of the brackets aforesaid.

2. In a device of the class described, the combination with a window-frame, brackets secured to the said frame, a spring-roller mounted in the said brackets, stop-flanges projected laterally from the lower portion of the brackets, a sash movable in the window-frame, pulleys secured to the upper portion of the sash, a cord having its ends secured to the spring-roller and passing about the pulleys upon the sash, and cushion means carried by the upper portion of the sash for cooperation with the stop-flanges of the supporting-brackets aforesaid to limit the upward movement of the sash.

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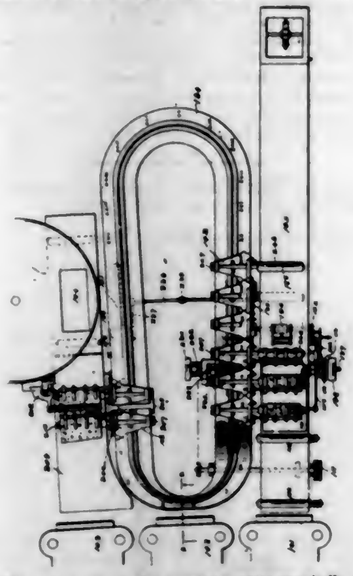
**754,576. APPARATUS FOR TREATING OIL-CAKE.** Alfred S. Lawther, Syracuse, N. Y., assignor to Frederick O. Swansell, Chicago, Ill. Filed July 30, 1903. Serial No. 167,567. (No model.)

*Claim.*—1. The combination with an oil-press, of a conveyer for conveying the cloth-enveloped cakes from the press to a revolving stripper-spindle, and a revolving stripper-spindle surrounded by a pick-up shell for guiding the end of the cloth to the spindle, substantially as specified.

2. The combination with a revoluble stripper-spindle, of a pick-up shell for guiding the end of the cloth to the spindle, substantially as specified.

3. The combination with a revoluble stripper-spindle of a pick-up shell for guiding the end of the cloth to the spindle, and means for lifting the cloth into engagement with the pick-up shell, substantially as specified.

4. The combination of a revoluble stripper-spindle, mounted upon a movable carriage, a pick-up shell for guiding the end of the cloth to the spindle mounted on the stationary frame of the machine, and made movable up and down, so that it may be lifted away from the spindle to permit the carriage to be moved into and out of position beneath it, substantially as specified.



5. The combination of a revoluble stripper-spindle, mounted upon a movable carriage, a pick-up shell, the lower portion of which is hinged to the upper portion thereof, for guiding the end of the cloth to the spindle, mounted on the stationary frame of the machine and made movable up and down so that it may be lifted away from the spindle to permit the carriage to be moved into and out of position beneath it, substantially as specified.

6. The combination of a revoluble stripper-spindle, mounted upon a movable carriage, a pick-up shell, having a hinged lower portion, a series of supplemental guide-fingers, to supplement the action of the shell, and made movable, substantially as specified.

7. The combination with a revoluble stripper-spindle, of a table upon which the cloth-enveloped cake is moved to the spindle, a pick-up shell for guiding the end of the cloth to the spindle, a trap-door in the table and a tripping device in the path of the cake on the table for operating the trap-door, substantially as specified.

8. The combination with a revoluble stripper-spindle, of a table upon which the cloth-enveloped cake is moved to the spindle, a pick-up shell for guiding the end of the cloth to the spindle, a trap-door in the table, a tripping device in the path of the cake on the table for operating the trap-door, and a slide or chute beneath the trap-door for delivering the cake to the trimming-machine, substantially as specified.

9. The combination with a revoluble stripper-spindle, of a table upon which the cloth-enveloped cake is moved to the spindle, a pick-up shell for guiding the end of the cloth to the spindle, a trap-door in the table, a tripping device in the path of the cake on the table for operating the trap-door, a slide or chute beneath the trap-door for delivering the cake to the trimming-machine, and a trimming-machine consisting of a traveling conveyer which carries the cake between blunt knives and sharp knives for trimming the edges of the cake, and into a revolving disk for revolving the end of the cake against knives for trimming the ends of the cake, substantially as specified.

10. The combination with the cake-trimming conveyer for moving the cake, of a pair of blunt knives and a pair of sharp knives for trimming the edges of the cake, substantially as specified.

11. The combination with the cake-trimming conveyer for moving the cake endwise, of a rotating disk for receiving the cake and revolving its edges against trimming-knives, and said trimming-knives, substantially as specified.

12. The combination with the cake-trimming conveyer for moving the cake endwise, of stationary knives for trimming the edges of the cake as the latter moves between them, a rotating disk for receiving the cake and revolving its ends against trimming-knives, and said end-trimming knives, substantially as specified.

13. The combination with the cake-trimming conveyer for moving the cake endwise in an upward direction, of stationary knives for trimming the edges of the cake as the latter moves up between them, a gravity switch-box at the upper end of the conveyer, a hopper-chute to receive the cake as it descends, and for guiding it to to the end trimmer, the end trimmer consisting of a revoluble disk for receiving the cake, and revolving its ends against trimming-knives, and said end-trimming knives, substantially as specified.

14. In an apparatus for stripping cloth from oil-cakes the combination of an endless track, a series of carriages mounted on said track and each provided with a stripping-spindle, a pick-up device for engaging the cloth to the spindle, means for moving the carriages one after another to the position where the cloth-enveloped cake is presented to the action of the stripper-spindle, and thence to the point where the cloth is to be unwound from the spindle, substantially as specified

15. In an apparatus for stripping cloth from oil-cakes the combination of an endless track, a series of carriages mounted on said track and each provided with a stripping-spindle, a pick-up device for engaging the cloth to the spindle, means for moving the carriages one after another to the position where the cloth-enveloped cake is presented to the action of the stripper-spindle, and thence to the point where the cloth is to be unwound from the spindle, and means for unwinding the cloth from the spindle by the further movement of the carriage which contains the spindle to be unwound, substantially as specified.

16. The means for unwinding the cloth from the spindle mounted upon a carriage by the movement of said carriage, and which consists of a nipping device for holding the end of the cloth while the carriage is being moved, to lay the cloth over the cake-forming machine in position to receive a charge of meal, substantially as specified.

17. The combination with the movable stripper-spindle-bearing carriage, of a nipping device consisting of the table on which the end of the cloth wound on the spindle will trail, a roller on the table, and a movable frame above the trailing cloth carrying a second roller and a nipper-bar, substantially as specified.

18. The combination with the endless track and the stripper-spindle-bearing carriages mounted thereon, of the hydraulic cylinder for moving the carriages around the track step by step, said cylinder containing a thick piston, an inlet-port at one side of the piston opening into the cylinder at some distance from its head, and into a groove in the inner surface of the cylinder, whereby the piston is caused to start slowly and thereafter to move rapidly, substantially as specified.

19. The combination with the endless track and the stripper-spindle-bearing carriages mounted thereon, of the hydraulic cylinder for moving the carriages around the track step by step, said cylinder containing a supplemental piston-rod with a conical end, and having a chamber at that end of the cylinder provided with an opening into which the conical end of the supplemental rod passes in the movement of the piston, and which chamber contains the exhaust-port; whereby as the conical-ended supplemental piston-rod enters the opening into said chamber, the exhaust-flow is lessened, and the movement of the piston slowed down, substantially as specified.

20. The combination with the endless track and the stripper-spindle-bearing carriages mounted thereon, of the hydraulic cylinder for moving the carriages around the track step by step, said cylinder having at one end a supplemental chamber containing the exhaust-port, and a supplemental piston-rod to enter the opening into said chamber, the sides of said piston-rod being constructed to vary the dimension of the passage-way for controlling the outflow of liquid from the cylinder to the exhaust-port; whereby the speed of the piston may be varied during its movement, substantially as specified.

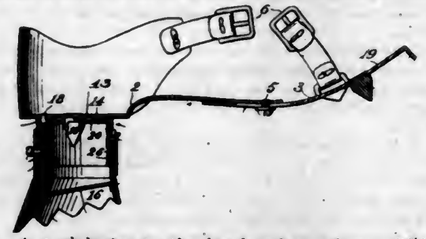
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**754,577. REVERSIBLE MOUNTAIN-CLIMBER.** Nicholaus Laun, Los Angeles, Cal., assignor of one-half to Ludwig Wundhammer, Los Angeles, Cal. Filed Aug. 4, 1902. Serial No. 118,388. (No model.)

*Claim.*—1. A sole having downwardly-projecting studs at front and rear, a lift which has its bottom aslant, and means for attaching the lift interchangeably to the front and rear of the sole.

2. A sole, a detachable lift applicable interchangeably to front and rear of the sole, having its bottom aslant, and means detachably attaching the lift to the sole

3. A sole, a detachable lift applicable interchangeably to front and rear of the sole, having its bottom aslant, and arranged with points to prevent slipping, and means for interchangeably attaching the lift to front and rear of the sole.



4. A sole having shouldered studs at front and rear, a lift having a slotted head to receive and retain the studs, respectively, and a bolt to prevent the lift from turning.

5. A sole having shouldered calks at front and rear and a lift adapted for attachment to said calks interchangeably and having a slanting bottom, and means to prevent the lift from turning.

6. A sole adapted to be secured to a boot or shoe and formed of sheet metal having down-bent points at the sides and with calks at the heel and ball of the sole, and a lift having a slanting bottom, said lift being provided with means for interchangeable attachment to said heel and ball calks.

7. A sole adapted to be secured to a boot or shoe and having calks at front and rear, a lift provided with means for attachment to the front or rear calk of said sole, said lift having a slanting bottom.

8. A sole adapted to be secured to a boot or shoe and having calks at front and rear, a lift having a slanting toothed bottom, said lift provided with means for interchangeable attachment to the front and rear calk of said sole.

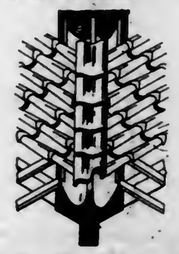
9. A sole, a detachable lift for said sole, said lift having an inclined tread, means for attaching said lift to the rear portion of the sole with the tread inclined in one direction, and means for attaching the lift to the forward portion of the sole with the tread inclined in the reverse direction.

10. A sole, a hollow detachable lift for said sole, a slot-and-stud connection for securing said lift to said sole, the slotted portion of said connection being formed in the lift, a movable bolt mounted in the lift adjacent to the slot, and adapted to engage a socket provided therefor in the sole, a spring normally retaining said bolt in engagement with said socket, said spring being curved to avoid the stud, and means for manually withdrawing the bolt from the socket.

11. A sole formed of a heel-piece and a toe-piece adjustably connected together, fasteners adapted to secure said sole to a shoe, a lift having an inclined tread, a slot-and-stud connection for securing said lift to said sole, a spring-pressed bolt normally engaging a socket provided therefor in the sole, and means for manually withdrawing said bolt from said socket.

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**754,578. MEANS FOR COVERING THE VALLEYS OF TILED ROOFS.** Wilhelm Ludowici, Tockgrim, Germany. Filed July 16, 1903. Serial No. 165,892. (No model.)



*Claim.*—1. A tile adapted to cover the valley portion of a roof, comprising a plate having a concave central portion, and longitudinal side ribs formed on its under face parallel to the concave portion, substantially as described.

2. A tile adapted to cover the valley portion of a roof, comprising a plate *k*, having a concave central portion and convex portions on each side of the concave, and longitudinal side ribs *a* on its under face parallel to the concave and convex portions, substantially as described.

3. A tile adapted to cover the valley portion of a roof, com-

prising a plate *k*, having a central concave portion longitudinally of the plate and parallel convex portions on both sides of the concave portion, and longitudinal ribs *a* having recesses *b* formed therein on the under face of the plate, substantially as and for the purpose specified.

4. In combination with two sides of a roof forming a valley at their meeting edges, and roofing-tiles on the two sides provided with concave portions; a covering-tile adapted to span the valley and permit water from the roofing-tiles to flow under it, substantially as described.

5. In combination with two sides of a roof forming a valley at their meeting edges, and a bottom row of tiles on each side of the valley; a covering adapted to span said valley and rest on the bottom rows of tiles, and valley-tiles adapted to form two channels beneath the covering-tile, for the purpose specified.

6. In combination with two sides of a roof forming a valley at their meetiag edges and a bottom row of tiles on each side of the valley; a covering-tile adapted to span said valley, longitudinally-arranged recessed side ribs formed on the under face of the covering-tile adapted to rest on the bottom row of tiles, and a partition centrally mounted in the valley adapted to centrally support the covering-tile, substantially as and for the purpose specified.

7. In combination with two sides of a roof forming a valley at their meeting edges, a bottom row of tiles on each side of the valley, and a partition centrally mounted in said valley dividing the same longitudinally into two parts; a valley-tile mounted on each side of the partition and having a rounded end portion abutting against said partition and a flat portion supporting the tiles of the bottom row, a covering-tile having a concave portion resting on the partition, and longitudinally-arranged recessed ribs formed on the under face of said covering-tile adapted to rest on the bottom rows of tiles, substantially as described.

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754,579. **DRILL OR PUMP ROD GRAPPLE.** JAMES LUKE, Eskridge, Kans. Filed Sept. 17, 1903. Serial No. 173,615. (No model.)



*Claim.*—1. A grappling device consisting of spaced resilient arms terminating in inwardly-extending claws and provided with longitudinal slots, and a bar movably disposed in said slots and provided with notches for engagement with the walls of said slots to maintain said bar in distended position, said bar having spaced barbed arms depending therefrom between the bar and claws, substantially as described.

2. A grappling device consisting of spaced resilient arms terminating in inwardly-extending claws and with intermediate transverse apertures; a bar movably engaging said apertures and with notches for engagement with said arms to maintain them in distended position, and a catch-plate depending from said bar at right angles to said claws and having its lower end offset to extend it into longitudinal alinement with the edges of said claws.

3. A grappling device comprising spaced resilient arms terminating in inwardly-extending and laterally-projected claws, a bar having spaced notches for detachable engagement with said arms to maintain them in their distended position, and a catch-plate connected to said bar and extended into longitudinal alinement with said laterally-projecting claws, substantially as described.

4. A grappling device consisting of a stock having at one end spaced resilient arms terminating in inwardly-extending claws and having at the other end an elongated loop, a correspondingly-elongated loop engaging said stock-loop and affording means for the connection of the draw-line, and a bar having spaced notches for detachable engagement with said resilient arms to hold them in their distended position and provided with barbed arms depending therefrom between said bar and claws, substantially as described.

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754,580. **BAG-HOLDER.** DANIEL MADDEN and WILLIAM A. THOMPSON, Chepstowe, Canada; said Madden assignor to said Thompson. Filed Dec. 14, 1901. Serial No. 85,866. (No model.)



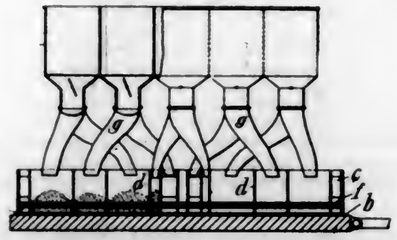
*Claim.*—1. In a bag-holder the combination of the supporting-standards, a distending-frame rigidly secured to the top thereof having an outturned flange surrounding its entire upper edge, an upturned U-shaped arm connected to the distending-frame, a clamping-band connected to the U-shaped arm and adapted to embrace the distending-frame and a tension-spring connected to the ends of the clamping-band to allow of the expansion and contraction thereof, substantially as specified.

2. In a bag-holder, the combination of a surrounding supporting-frame, stay-rods secured to said frame, a substantially rectangular distending-frame provided with outwardly-bent surrounding flange upon the upper edge thereof adapted to receive the upper edge of a bag, and having the same folded downward and over the same, a supporting device composed of a single piece of wire having a short terminal secured exteriorly of the distending-frame and a long arm projecting above and in line with the lower edge of the flange of the distending-frame and provided with an eye, an open clamping-band loosely connected intermediate of its length to said eye of the supporting device and an extensible spring connecting the terminals of the band and adapted to hold the band in close contact with the bag's mouth upon the distending-frame below the flange thereof.

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754,581. **METHOD OF MANUFACTURING LINOLEUM CARPETS.** FREDRIK K. MAGNUS AF RENTRÖM, Stockholm, Sweden. Filed Apr. 4, 1903. Serial No. 151,088. (No model.)

*Claim.*—1. An improved method of manufacturing linoleum carpets in multicolored patterns, consisting in placing on a longitudinally-movable web of cloth a form or stencil divided into compartments conforming to the pattern required and divided off by a perforated horizontal bottom, setting said stencil in a shaking motion while its compartments through tubes or passages are being filled with linoleum compositions of the required colors from a superposed holder divided into corresponding compartments or pockets, and letting this form or stencil accompany the web of cloth in its motion through a distance equal to the length of the stencil subsequently closing the perforations of the aforesaid bottom and returning the form or stencil to its starting position while the web of cloth continues its movement to a pair of press-rolls between which the layer of linoleum on the web is pressed.



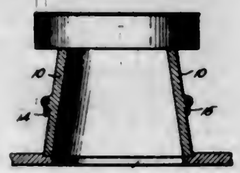
2. The herein-described method of manufacturing linoleum carpets of multicolor patterns consisting in feeding upon a cloth backing, through a patterned stencil carried thereby, powdered, colored linoleum compositions, the backing and stencil being vibrated during the feeding of the compositions, and finally subjecting the backing with the compositions thereon to pressure, substantially as set forth.

3. The method herein set forth of manufacturing multicolored linoleums consisting in mounting a cloth backing for longitudinal and vibratory movement, placing a stencil divided into the desired pattern upon said cloth, feeding linoleum compositions upon the cloth through the said stencil, vibrating the cloth and the stencil carried thereby during the feeding of the compositions, and conducting the backing with the compositions thereon through pressure means, substantially as and for the purpose set forth.

4. The herein-described method of manufacturing colored linoleums consisting in mounting a cloth backing for vibratory and longitudinal movement, placing thereon a stencil provided with pattern-forming compartments and being divided off from the backing by interposed perforated bottoms, feeding colored linoleum compositions into the compartments of the stencil, vibrating the backing and stencil during the feeding of the compositions, closing the perforations of the interposed bottoms upon the cloth and stencil being moved longitudinally a distance equal to the length of the stencil to stop the feed of the compositions, and then subjecting the backing with the compositions thereon to pressure, substantially as set forth.

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754,582. **SUPPORT FOR COOKING UTENSILS.** JOHN W. MARSHALL, Chloride, N. Mex. Filed Aug. 1, 1903. Serial No. 167,967. (No model.)



*Claim.*—1. As a new article of manufacture, a support for culinary vessels comprising an imperforate casing of uniform thickness throughout having the side walls thereof tapered toward one end and provided with smooth flat edges.

2. As a new article of manufacture, a support for culinary vessels comprising a casing constructed of heat retaining and imparting material and having tapering sides and reversible in position to fit lid-openings of different sizes by its opposite ends, and provided with swinging handle members centrally disposed upon opposite sides whereby the handle members are in position for use in both positions of the support, substantially as specified.

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754,583. **TOY GUN.** JOHN B. MASON, Chicago, Ill. Filed June 8, 1903. Serial No. 160,538. (No model.)

*Claim.*—1. In a toy gun, the combination of a barrel, an anvil in the barrel-breech, a movable breech-block closing against the end of the barrel-breech to form therewith a cap-compartment, a cap-exploding plunger in the breech-block, and means at the breech for actuating the plunger to explode the cap.



2. In a toy gun, the combination of a barrel, an anvil in the barrel-breech, a pivotal backward-swinging breech-block closing against the end of the barrel-breech to form therewith a cap-compartment, a cap-exploding plunger in the breech-block, and means at the breech for actuating the plunger to explode the cap.

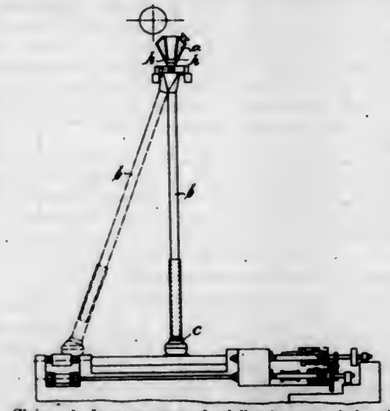


3. In a toy gun, the combination of a barrel, an anvil in the barrel-breech, a pivotal backward-swinging spring-closed breech-block closing against the end of the barrel-breech to form therewith a cap-compartment, a cap-exploding plunger in the breech-block, and means at the breech for actuating the plunger to explode the cap.

4. In a toy gun, the combination with a pivotally-connected breech-casing and breech-housing, of a spring-pressed hammer slidably pivoted in the breech-casing, the breech-housing having a slot through which the end of the hammer projects when the gun is closed, the hammer being movable on its pivot under pressure of the housing in closing, substantially as described.

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754,584. **DELIVERING APPARATUS FOR YARN-SKEINS.** WALTER MATHESIUS, Hörde, Germany. Filed Dec. 2, 1902. Serial No. 133,605. (No model.)

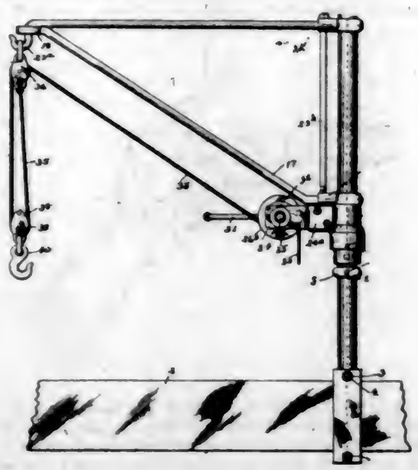


*Claim.*—1. In an apparatus for delivering yarn-skeins, the combination of a funnel with a pipe suspended underneath the same, said pipe consisting of several pieces shifted telescopically one into the other, and means for moving the lower end of this pipe in all directions, substantially as described and for the purpose set forth.

2. In an apparatus for delivering yarn-skeins, the combination of a funnel with a pipe suspended underneath the same, the lower end of this pipe being spherical, and means for moving this lower end of the pipe in all directions, substantially as described and for the purpose set forth.

3. In an apparatus for delivering yarn-skeins, the combination of a funnel with double walls, the inner wall being provided with openings, with a pipe suspended underneath the funnel and provided with a lower spherical end, a bearing for said end, said bearing being constructed so as to allow of a movement of the same and of the lower end of the pipe situated within the same in all directions, substantially as described and for the purpose set forth.

754,585. CORN-SHOCK LOADER. ELMER T. MAXWELL, Wooster, Ohio. Filed Sept. 14, 1903. Serial No. 173,211. (No model.)



*Claim.*—1. In a corn-shock loader, the combination with a standard having a rigid support at its lower end, a sleeve rotatably mounted on said standard and also capable of being vertically adjusted thereon, a reel-supporting frame carried by said sleeve and a reel-body journaled therein, of a crane-body comprising upper and lower arms, the latter connected with said sleeve and the former rotatably mounted on the standard, a pulley-block adapted to be supported from the crane and a rope running over the pulley of said block and adapted to be wound upon said reel, substantially as specified.

2. In a corn-shock loader, the combination with a supporting-framework, a standard rigidly connected therewith and rising therefrom, a collar adjustably connected with said standard, a sleeve rotatably mounted on said standard and collar and a journaled reel-body supported from said sleeve, of a crane-frame comprising upper and lower members, said lower member being connected with said sleeve and said upper member rotatable on said standard and a pulley-carrying block connected with the outer end of said crane, substantially as specified.

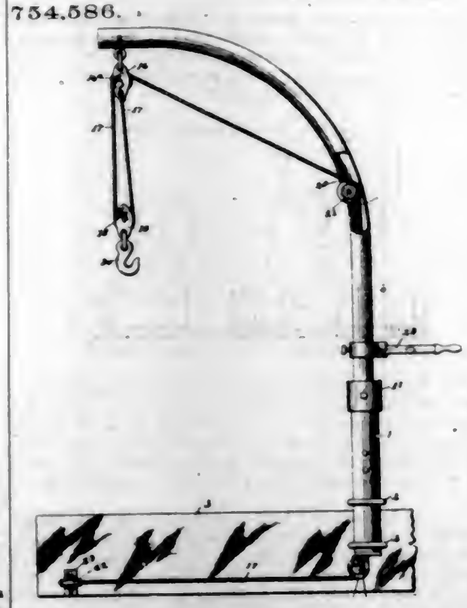
3. The combination with a standard, of a vertically-adjustable collar thereon provided with an external annular flange, a sleeve rotatably supported upon the collar and embracing the flange thereof, set-screws piercing the sleeve and underlying the flange of the collar to prevent upward displacement of the sleeve, a crane member carried by the sleeve, a reel upon the sleeve, and a hoisting-cable hung from the crane member and engaging the reel.

754,586. LOADING APPARATUS. ELMER T. MAXWELL, Wooster, Ohio. Filed Sept. 14, 1903. Serial No. 173,212. (No model.)

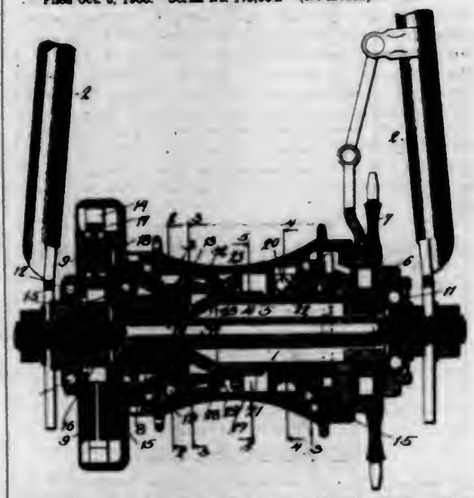
*Claim.*—1. In an apparatus of the character described, a hollow standard having an internal annular shoulder, a tubular bearing-plug supported upon the shoulder and having its upper end reduced, a tubular crane-arm seated within the standard with its lower end rotatably supported upon the bearing-plug and embracing the reduced portion thereof, and a hoisting-cable hung from the crane-arm with one end portion running through the arm and also through the tubular bearing-plug.

2. In an apparatus of the character described, a hollow standard which is open at the top and bottom and has an internal annular shoulder, a tubular bearing-plug supported upon the shoulder and having its upper end reduced, a rotatable tubular crane-arm having its lower end fitted within the standard to embrace the reduced portion of the bearing-plug and also supported thereon, a pulley at the open lower end of the standard, a pulley set in an opening in the crane-arm, a hoisting-cable hung from the crane-arm with one portion engaging the last-mentioned pulley and running through the opening in the arm down through the latter and the tubular plug and out across the lower pulley, and a reel for the cable.

754,586.



754,587. BICYCLE-GEARING. HYLA P. MAYNES, Corning, N. Y. Filed Oct. 6, 1903. Serial No. 175,934. (No model.)



*Claim.*—1. In bicycle-gearing, the combination with a wheel-hub and a stationary axle therefor, of a driving-sleeve rotatably mounted between the axle and the hub, said sleeve composed of two parts, one telescoped upon the other, and provided with a key locking the two parts together against relative rotation, but permitting relative longitudinal movement, one portion of said sleeve at one end supporting a power-transmitting member, and the other portion of said sleeve at the other end carrying a gear.

2. In bicycle-gearing, the combination with a wheel-hub and a stationary axle, of two driving-sleeves concentrically mounted between the hub and the axle, gearing connecting the sleeves together to rotate at different speeds, and clutch mechanism between the sleeves and the hub operatively connecting the hub with one or other of the said sleeves, and a power-transmitting member secured to one of the said sleeves at the end opposite to the end at which the gearing is arranged, the said sleeve carrying the power-transmitting member composed of two parts slidably connected together but locked against relative rotation.



3. In bicycle-gearing, the combination with a wheel-hub, a stationary axle, two concentric driving-sleeves arranged between the hub and the axle, and gearing connecting the sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by the high-speed sleeve and locked thereon against relative rotary movement, a clutch controlled by said clutch-controlling sleeve, and means for shifting the said clutch-controlling sleeve longitudinally with respect to the sleeve on which it is mounted.

4. In bicycle-gearing, the combination with a wheel-hub, a stationary axle, two concentric driving-sleeves arranged between the hub and the axle, and gearing connecting the sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by the high-speed sleeve and locked thereon against relative rotary movement, a clutch controlled by said clutch-controlling sleeve, and means controlled by a back-pedaling movement for shifting the clutch-controlling sleeve longitudinally with respect to the sleeve on which it is mounted.

5. In bicycle-gearing, the combination with a wheel-hub, a stationary axle, two driving-sleeves concentrically arranged between the stationary axle and the wheel-hub, and gearing connecting the two sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by one of said driving-sleeves, clutch mechanism controlled thereby, and operating means for said clutch-controlling sleeve engaged by the other said driving-sleeve.

6. In bicycle-gearing, the combination with a wheel-hub, a stationary axle, two driving-sleeves concentrically arranged between the stationary axle and the wheel-hub, gearing connecting the two sleeves together to rotate at different relative speeds, and a power-transmitting member rigidly secured to one of the said sleeves, of a clutch-controlling sleeve carried by one of said driving-sleeves, clutch mechanism controlled thereby, and operating means for said clutch-controlling sleeve engaged by the other said driving-sleeve, the latter said driving-sleeve being the sleeve to which is secured the power-transmitting member.

7. In bicycle-gearing, the combination with a wheel-hub and a stationary axle, two driving-sleeves concentrically arranged between the stationary axle and the wheel-hub, and gearing connecting the two sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by one of said driving-sleeves and locked thereto against relative rotation, clutch mechanism controlled thereby, a cam for shifting the clutch-controlling sleeve longitudinally with respect to the sleeve carrying it, and means engaged by the other said driving-sleeve for rotatively shifting the cam.

8. In bicycle-gearing, the combination with a wheel-hub and a stationary axle, two driving-sleeves concentrically arranged between the stationary axle and the wheel-hub, and gearing connecting the two sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by one of said driving-sleeves and locked thereto against relative rotation, clutch mechanism controlled thereby, a cam for shifting the clutch-controlling sleeve longitudinally with respect to the sleeve carrying it, and operating means therefor frictionally engaged by the other said sleeve, but having a limited rotative movement with respect to the sleeve carrying the clutch-controlling sleeve.

9. In bicycle-gearing, the combination with a wheel-hub and a stationary axle, two driving-sleeves concentrically arranged between the stationary axle and the wheel-hub, and gearing connecting the two sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by one of said driving-sleeves and locked thereto against relative rotation, clutch mechanism controlled thereby, a cam for shifting the clutch-controlling sleeve longitudinally with respect to the sleeve carrying it, a pawl-carrier frictionally engaged by the other said sleeve, but having a limited rotative movement with respect to the sleeve carrying the clutch-controlling sleeve, and a pawl carried by the pawl-carrier and arranged to engage the said cam.

10. In a bicycle-gearing, the combination with a wheel-hub and a stationary axle, two driving-sleeves concentrically arranged between the stationary axle and the wheel-hub, and gearing connecting the two sleeves together to rotate at different relative speeds, of a clutch-controlling sleeve carried by one of said driving-sleeves and locked thereto against relative rotation, clutch mechanism controlled thereby, a cam-ring carried by the said driving-sleeve and engaging the clutch-controlling sleeve, said cam-ring having ratchet-teeth, a stop-pawl carried by the same, said driving-sleeve engaging said ratchet-teeth, a pawl-carrier frictionally engaged by the other said drive-sleeve, but arranged to have a limited rotative movement with respect to the first said driving-sleeve, and a pawl carried by said pawl-carrier and engaging the ratchet-teeth of said cam-ring.

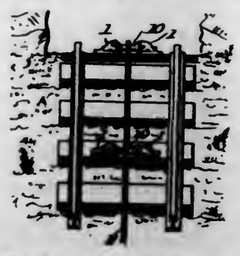
11. In bicycle-gearing, the combination with two members geared together to rotate at different relative speeds, of a clutch-controller comprising two portions, one carried by one of said members and locked against relative rotation with respect thereto, and the other arranged to have a limited rotative movement with respect to the same said member, but frictionally engaged by the other said member.

12. In bicycle-gearing, the combination with two members geared together to rotate at different relative speeds, and a clutch, of a clutch-controller carried by, and rotating with, the said members and engaging both said members, said clutch-controller operated by relative movements of one said member with respect to the other.

754,588. COMPOSITION OF MATTER FOR WASHING AND BLEACHING. THOMAS MELLOR, Philadelphia, Pa. Filed Dec. 1, 1903. Serial No. 183,413. (No specimens.)

*Claim.*—The herein-described composition of matter for washing and bleaching, consisting of linseed-oil, benzol, petroleum, turpentine, chloroform, glycerin, alcohol, potassium hydrate, carbonate ammonium, and gelatin, substantially as described for the purpose specified and in the proportions named.

754,589. ROPE-HAULAGE SOCKET. GEORGE W. MINTO, Ginter, Pa. Filed Aug. 24, 1903. Serial No. 170,858. (No model.)



*Claim.*—A bearing for rope-haulage apparatus comprising pairs of body portions oppositely disposed with a space therebetween, each body consisting of a flange at the base thereof, said flange extending at the sides and rear end of the base therebeyond and being apertured, with spikes passing through said apertures to have their heads seated on the base-flange at the upper face thereof, the bodies being arranged on the upper face of a cross-tie, the inner faces of each of the bodies having a cylindrical recess formed therein, running lengthwise of the body, one side wall of each of the bodies having a slot therein the center of which is out of alinement with and located above the center of the said cylindrical recesses, said slots communicating with said cylindrical recesses, with an axle carrying a roller, the ends of the axle being received in said cylindrical recesses, the slots in the side walls being of a width to receive the said axle ends.

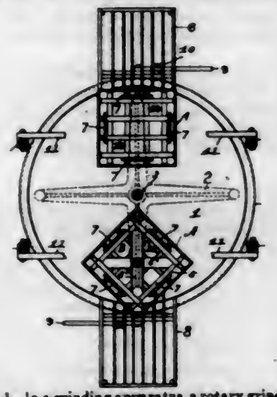
754,590. NUT-LOCK. JAMES C. MITCHELL, Lancaster, N. H., assignor of three-fourths to Moses B. Hartford and Gilbert A. Marshall, Lancaster, N. H. Filed July 1, 1903. Serial No. 113,926. (No model.)



*Claim.*—1. In a nut-lock, the combination with an ordinary bolt and nut, of a rubber lock-nut having a plain opening the diameter of which is less than the diameter of the bolt, the inner face of said rubber lock-nut having a bead at the edge of the opening and a concave beyond said bead, whereby when said lock-nut is turned upon the projecting end of the bolt it will have the thread of the bolt embedded therein and will closely engage the nut, substantially as shown.

2. In a nut-lock, the combination with an ordinary bolt and nut, of a lock-nut composed of rubber and having a plain opening closed at its outer end, said opening being of less diameter than the diameter of the bolt so that the thread of the latter will be embedded therein, a bead at the inner face of the lock-nut surrounding the bolt-opening, and a concave surrounding said bead, as herein shown and described.

**754,591. APPARATUS FOR GRINDING TILE.** THOMAS H. MOONEY, Dayton, Ohio. Filed June 11, 1903. Serial No. 160,993. (No model.)



*Claim.*—1. In a grinding apparatus, a rotary grinding-bed, a tile-frame adapted to encompass the tiling to be ground, said frame inclosing the upper portion of the tiling so that the face of said tiling alone, is in contact with the grinding-bed, a holding-frame engaging the tile-frame, a shaft secured to said holding-frame and having suitable journals, said shaft forming the axis of rotation of the tile-frame and the holding-frame, substantially as set forth.

2. In a grinding apparatus, a rotary grinding-bed, a tile-frame consisting of a series of cross-bars inclosed by marginal bars, said tile-frame being adapted to inclose a series of tile or a single tile of equal dimensions with the frame, a holding-frame having a shaft rigidly secured thereto, and suitable bearings for said shaft, said shaft forming the axis of rotation for the tile-frame and the holding-frame, substantially as set forth.

3. In a grinding apparatus, a rotary grinding-bed, a tile-frame adapted to hold a plurality of sections of tiling together upon the rotary grinding-bed, a holding-frame secured to said tile-frame, and a shaft secured to said holding-frame, said shaft being the axis of rotation to the tile-frame, and the holding-frame, the holding-frame serving to hold said tile-frame in a position to rotate under the action of the grinding-bed, substantially as set forth.

4. In a grinding apparatus, a rotary grinding-bed driven from an upright shaft, a rectangular tile-frame having flanges projecting upwardly therefrom, a holding-frame adapted to be placed upon said tile-frame between said flanges, and a shaft rigidly attached to said holding-frame and becoming the axis of rotation of the tile-frame when the latter is in contact with the rotary grinding-bed.

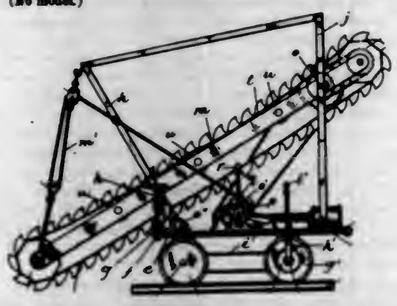
5. In a grinding apparatus, the combination of a rotary grinding-bed, a stationary rim surrounding said grinding-bed, a feed-table located adjacent to said rim, and the upper surface thereof being normally below the surface of the grinding-bed, said feed-table being adapted to support the tile-frames preparatory to said frames being moved onto the grinding-bed, means for elevating said feed-table to a position on a plane with the surface of the grinding-bed to permit of the tile-frame and its contents being moved onto said grinding-bed, substantially as set forth.

6. In a grinding apparatus, a rotary grinding-bed, a stationary rim surrounding said grinding-bed, a tile-frame adapted to inclose tiling in a position upon the grinding-surface of said bed, a holding-frame and a shaft adapted to hold said tile-frame on a permanent axis of rotation, substantially as set forth.

7. In a grinding apparatus, a rotary grinding-bed, a stationary rim surrounding said bed, a tile-frame consisting of a series of cross-bars surrounded by marginal bars, said tile-frame being adapted to hold one or more slabs of tiling in position to be acted upon by the grinding-bed, a holding-frame detachably connected to said tile-frame, and adapted to hold said tile-frame, a shaft to which said holding-frame is rigidly united and which forms the axis of rotation for the tile-frame, and means for elevating said shaft to remove the holding-frame from the tile-frame, substantially as set forth.

8. In a grinding apparatus, a rotary grinding-bed, a tile-frame adapted to hold one or more slabs of tiling in a position to be acted upon by the grinding-bed, a holding-frame adapted to interlock with said tile-frame to hold the latter during the grinding operation, an upright shaft rigidly secured to said holding-frame, and an operating-lever by means of which said holding-frame is elevated from the tile-frame, substantially as set forth.

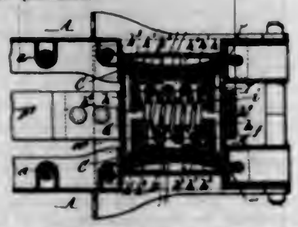
**754,592. DIGGING AND LOADING MACHINE.** DANIEL MCDONALD, Bruce Mines, Canada. Filed Jan. 30, 1903. Serial No. 141,123. (No model.)



*Claim.*—1. In a digging and loading machine the combination of a movable truck or platform, a swing-table mounted thereon, a worm-shaft for the swing-table, a rack connected to the movable truck or platform meshing with the worm-shaft, a pinion-shaft, intermeshing bevel-pinions mounted on the pinion-shaft, worm-shafts, a main frame supported by the swing-table, a carrier-frame journaled at one end to the main frame, an adjustable gear for raising and lowering the other end of the carrier-frame, drums mounted in the carrier-frame, a carrier-belt passing around the drums, buckets connected to the carrier-belt, a sprocket-wheel for driving the carrier-belt, a motor and means for transmitting motion from the motor to the sprocket-wheel, substantially as specified.

2. In a digging and loading machine the combination of a movable truck or platform, a swing-table mounted thereon, a worm-shaft for the swing-table, a rack connected to the movable truck or platform meshing with the worm-shaft, a pinion-shaft, intermeshing bevel-pinions mounted on the pinion and worm shafts, a main frame supported by the swing-table, a carrier-frame journaled at one end to the main frame, an adjustable gear for raising and lowering the other end of the carrier-frame, drums mounted in the carrier-frame, a carrier-belt passing around the drums, buckets connected to the carrier-belt, a sprocket-wheel for driving the carrier-belt, a motor, means for transmitting motion from the motor to the sprocket-wheel, and means for shifting the position of the movable truck or platform, substantially as specified.

**754,593. FRICTION DRAFT-GEAR FOR RAILWAY-CARS.** THOMAS L. MCKEEN, Easton, Pa. Filed Aug. 25, 1903. Serial No. 170,720. (No model.)



*Claim.*—1. The combination of supporting members, a draw-bar, front and rear followers movable respectively rearwardly and forwardly with the draw-bar, stops to limit the forward and rearward movements respectively of said front and rear followers, a coil-spring arranged between said followers, and spring-plates which are arranged at opposite sides of said coil-spring between said supporting members and said followers and which are compressed laterally by the movement of either follower, substantially as set forth.

2. The combination of supporting members, a draw-bar, front and rear followers movable respectively rearwardly and forwardly with the draw-bar, stops to limit the forward and rearward movements respectively of said front and rear followers and longitudinally-fixed spring-plates which are compressed laterally by the movements of said followers, substantially as set forth.

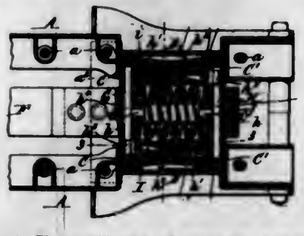
3. The combination of supporting members provided with front and rear stops, a draw-bar, followers arranged between said stops and each having inclined side faces, means connecting said draw-bar and followers whereby one follower is moved when the draw-bar is moved in either direction, and laterally-compressible spring-plates arranged between the inclined faces of the followers and said supporting members, substantially as set forth.

4. The combination of supporting members, a draw-bar movable longitudinally between the same, front and rear followers movable respectively rearwardly and forwardly with the draw-bar, stops to limit the forward and rearward movements of the front and rear followers respectively, said followers having inclined outer side faces, and laterally-compressible longitudinally-fixed spring-plates arranged between the opposite inclined side faces of said followers and said supporting members, substantially as set forth.

5. The combination of supporting members, a draw-bar movable longitudinally between the same, a front follower movable rearwardly with said draw-bar, a rear follower movable forwardly with said draw-bar, front and rear stops on said supporting members for limiting the forward and rearward movements of said front and rear followers respectively, said followers having side wings which project toward each other and which are provided with beveled outer faces, and spring-plates arranged between the beveled outer faces of said followers and said supporting members, substantially as set forth.



**754,594. FRICTION DRAFT-GEAR FOR RAILWAY-CARS.** THOMAS L. MCKEEN, Easton, Pa. Filed Aug. 26, 1903. Serial No. 171,075. (No model.)



*Claim.*—1. The combination of supporting members, a draw-bar, two followers each of which is movable in one direction with the draw-bar, stops for limiting the movements of said followers in the opposite direction, each of said followers having a fixed wing, and a laterally-movable wing which is moved laterally by the longitudinal movement of the fixed wing of the other follower, and springs which are strained by the lateral movement of said movable wings, substantially as set forth.

2. The combination of supporting members, a draw-bar, two followers each of which is movable in one direction with said draw-bar, stops for limiting the movement of said followers in the opposite direction, each of said followers having a fixed wing provided with an inclined face and a laterally-movable wing engaging the inclined face of the fixed wing of the other follower, and springs which are strained by said laterally-movable wings, substantially as set forth.

3. The combination of supporting members, a draw-bar, two followers each of which is movable in one direction with said draw-bar, stops for limiting the movement of said followers in the opposite direction, each of said followers having a fixed wing, and a laterally-movable wing provided with an inclined face engaging the fixed wing of the other follower, and springs which are strained by said laterally-movable wings, substantially as set forth.

4. The combination of supporting members, a draw-bar, two followers, each of which is movable in one direction with the draw-bar, stops for limiting the movement of said followers in the opposite direction, each of said followers having a fixed wing provided with an outer inclined face, and a laterally-movable wing which engages the inclined face of the fixed wing of the other follower, and springs arranged between said movable wings and said supporting members, substantially as set forth.

5. The combination of supporting members, a draw-bar, two followers, each of which is movable in one direction with the draw-bar, stops for limiting the movement of said followers in the opposite direction, each of said followers having a fixed wing provided with an outer inclined face, and a laterally-movable wing which engages the inclined face of the fixed wing of the other follower, and spring-plates arranged between said movable wings and said supporting members, substantially as set forth.

6. The combination of supporting members, a draw-bar, two followers, each of which is movable in one direction with the draw-bar, stops for limiting the movement of said followers in the opposite direction, each of said followers having a fixed wing provided with an outer inclined face, a laterally-movable wing which engages the inclined face of the fixed wing of the other follower, spring-plates arranged between said movable wings and said supporting members, and a coil-spring between said followers, substantially as set forth.

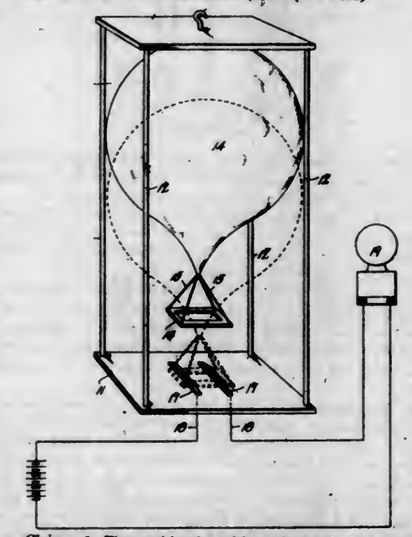
**754,595. REGENERATIVE GAS-BURNER.** JOHN W. MCKINNEY, Hanover, Pa., assignor of one-fourth to William F. Kintzing, Hanover, Pa. Filed Apr. 30, 1903. Serial No. 154,995. (No model.)



*Claim.*—1. In a gas-lamp, the combination with a gas-heating chamber having upwardly and outwardly flaring side walls serving as a reflector and a top wall, said side walls having apertures therethrough, burners located under the walls of said chamber, branch supply-pipes supporting said burners and engaging said apertures, and means for supplying gas to said chamber, substantially as described.

2. In a gas-lamp, the combination with a gas-heating or regenerating chamber of a conical shape with the apex downward, the outer surface of said chamber being adapted to act as a reflector, means for supplying gas thereto, one or more burners outside of and beneath the said gas-heating chamber and receiving gas therefrom, a reflector in the shape of a frustum of a cone outside of the burner and means for supporting the same with its large end either up or down.

**754,596. GAS-DETECTOR.** GEORGE A. NELSON, Providence, R. I. Filed Feb. 10, 1903. Serial No. 142,727. (No model.)

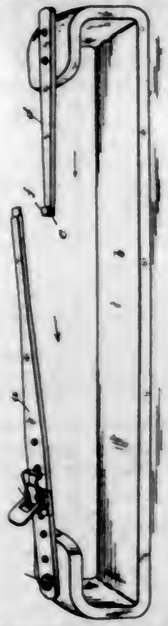


*Claim.*—1. The combination with an alarm, of a float maintained in suspension wholly by the atmosphere, said float being freely movable and adapted to descend upon the displacement of the atmosphere by a lighter fluid, and means controlled by the descent of the float for actuating the alarm.

2. The combination with a support, of a pair of spaced contacts carried thereby, an alarm in open circuit with the contacts, a float disposed directly above the contacts and maintained in suspension wholly by the atmosphere, said float being freely movable and adapted to descend upon the displacement of the atmosphere by a lighter fluid, means for guiding the float in its descent, and means cooperating with the contacts and controlled by the descent of the float for closing the circuit.

3. The combination with a cage comprising a base and guides sustained thereby, of a pair of spaced contacts carried by the base, an alarm in open circuit with the contacts, a float disposed between the guides directly above the contacts and maintained in suspension wholly by the atmosphere, said float being freely movable and adapted to descend upon the displacement of the atmosphere by a lighter fluid, and a member carried by the float and adapted upon the descent of the latter to cooperate with the contacts for closing the circuit to actuate the alarm.

754,597. CASING-TURNER. WILLIAM NESBITT, Toronto, Canada. Filed Apr. 20, 1903. Serial No. 153,400. (No model.)



*Claim.*—1. In an apparatus for lining hollow casings, the combination of a lining-holder, a casing-holder and a catch for the casing-holder to engage one end of the casing as it is being turned.

2. In an apparatus for lining hollow casings, the combination of a lining-holder, a casing-holder, a catch for the casing-holder, to engage one end of the casing as it is being turned and means for holding the lining in position on the lining-holder.

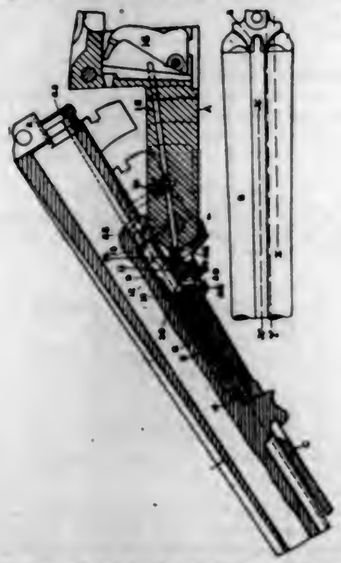
3. In an apparatus for lining hollow casings, the combination of a supporting-frame, a casing-holder supported thereon having at its free end a tongue-receiving groove, a catch for the casing-holder to engage one end of the casing as it is being turned, and a lining-holder having at its free end a tongue to enter the groove of the casing-holder.

4. In an apparatus for lining hollow casings, the combination of a supporting-frame, a casing-holder supported thereby, having at its free end a tongue-receiving groove, a catch for the casing-holder to engage one end of the casing as it is being turned, a lining-holder pivotally supported by the supporting-frame having at its free end a tongue to enter the groove of the casing-holder and hold one end of the lining, and a clamp for the lining-holder to hold the other end.

5. In an apparatus for lining hollow casings, the combination of a supporting-frame, a casing-holder supported thereby, having at its free end a tongue-receiving groove, a catch for the casing-holder to engage one end of the casing as it is being turned, a lining-holder having at its free end a tongue to enter the groove of the casing-holder and hold one end of the lining, an adjustable clamp for the lining-holder to hold the other end and means for holding the clamp in its adjusted position.

754,598. SHELL-EJECTOR MECHANISM FOR GUNS. FRANK NOVOTNY, St. Paul, Minn. Filed Oct. 20, 1903. Serial No. 127,930. (No model.)

*Claim.*—1. In a gun of the class described, the combination with the frame, the fore-end iron, barrels, and shell-ejectors slidably arranged in connection with said barrels, of a plate fixedly secured underneath said barrels, ejector-plungers slidably supported upon said plate, actuating-springs for said plungers, a stop for said plungers, means carried by the frame to engage with said plungers to hold them in retracted position and in engagement with said stop when the gun is closed, dogs pivotally supported in said fore-end iron, and rods extending through the forward extension of said frame and adapted to engage said dogs to carry them into engagement with said plungers to release the same when the gun is broken.



2. In a gun of the class described, the combination with the frame, the fore-end iron, barrels, and shell-ejectors slidably arranged in connection with said barrels, of a plate fixedly secured underneath said barrels, ejector-plungers supported upon said plate, actuating-springs for said plungers, a stop carried by said plate, a fixed lug carried by the frame to engage with said plungers when the gun is closed to hold the same in retracted position and in engagement with said stop, dogs pivotally supported adjacent to said plungers, and rods extending through the forward extension of the frame in position to engage with said dogs when the gun is broken to carry said plungers out of engagement with said stop to permit their being actuated by their springs.

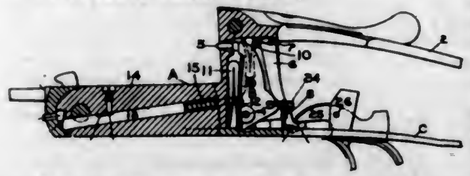
3. In a gun of the class described, the combination with the frame, the fore-end iron, barrels, and shell-ejectors slidably arranged in connection with said barrels, of ejector-plungers for said ejectors supported underneath the barrels, actuating-springs for said plungers, means carried by the frame to engage with said plungers to hold them in retracted position when the gun is closed, dogs pivotally supported in said fore-end iron, rods extending through the forward extension of said frame and adapted to engage with said dogs to carry them into engagement with said plungers to release the same when the gun is broken, and means actuated by said plungers to return said rods to rear position.

4. In a gun of the class described, the combination with the frame, the fore-end iron, barrels, and shell-ejectors slidably arranged in connection with said barrels, of a plate supported underneath said barrels, ejector-plungers slidably supported on said plate, actuating-springs for said plungers, a fixed cross-bar carried by said plate, means carried by the frame of the gun to engage with said plungers when the gun is closed to hold the same in retracted position and against said cross-bar, dogs pivotally supported in the rear end of the fore-end iron, rods extending through the forward extension of the frame in position to engage with said dogs when the gun is broken to release said plungers and permit their being actuated by their springs, and means actuated by said plungers to return said rods to rear position.

5. In a gun of the class described, the combination with the frame, the fore-end iron, barrels, and shell-ejectors slidably arranged in connection with said barrels, of spring-actuated ejector-plungers supported underneath the barrels, a fixed cross-bar, means carried by the frame to engage with said plungers to hold them in retracted position and in engagement with said cross-bar when the gun is closed, dogs pivotally supported in the fore-end iron, slidable rods extending through the forward extension of the frame, said rods being carried forward when the gun is fired into position to engage with said dogs when the gun is broken to release said plungers to allow their being forced by their springs into engagement with the shell-ejectors, and means actuated by said plungers to return said rods to rear position.

6. In a gun of the class described, the combination with the frame, the fore-end iron, barrels, and shell-ejectors slidably arranged in connection with said barrels, of ejector-plungers for said ejectors supported underneath the barrels, actuating-springs for said plungers, a fixed cross-bar, means carried by said frame to engage with said plungers to hold them in retracted position and in engagement with said cross-bar when the gun is closed, dogs pivotally supported in said fore-end iron, slidable rods extending through the forward extension of the frame, said rods being carried forward by the hammers when the gun is fired into position to engage with said dogs when the gun is broken to turn said dogs into engagement with said plungers and release the same from said cross-bar, a slidable block supported in said fore-end iron to be actuated by said ejector-plungers to return said rods to rear position, and a controlling-spring for said block.

754,599. GUN. FRANK NOVOTNY, St. Paul, Minn. Filed Aug. 24, 1903. Serial No. 170,506. (No model.)



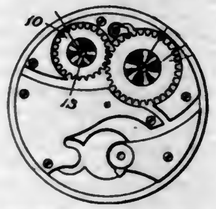
*Claim.*—1. In a gun, in combination with the frame, a pair of hammers pivotally supported in said frame, vertically-arranged split springs interposed between the fronts of said hammers and the adjacent wall of the frame, the ends of each spring bearing against the adjacent wall of the frame and the adjacent hammer below its pivot, sears having pivotal support above said hammers and means for engagement with said hammers, and vertically-arranged split springs interposed between said sears and the adjacent front wall of the frame, the ends of each spring bearing against the front wall of the frame and the adjacent sear, as and for the purpose set forth.

2. In a gun, in combination with the frame provided with a forward extension, hammers pivotally supported within the body of the frame, vertically-arranged split springs arranged between the fronts of said hammers and the adjacent front wall of the frame, the ends of each spring bearing against said front wall and against the adjacent hammer below its pivot, sears pivotally supported in said frame above said hammers and having means for engagement with said hammers, and a vertically-arranged depending split spring interposed between each sear and the adjacent front wall of the frame, the ends of said spring bearing against said front wall and against the adjacent sear in line with its pivot.

3. In a gun, in combination with the frame provided with a forward extension, hammers having pivotal support within the body of the frame, vertically-arranged split springs interposed between said hammers and the adjacent front wall of the frame, the ends of each spring bearing against said front wall and against the adjacent hammer below its pivot, a forwardly-extending boss upon each hammer above its pivot in position to engage with its spring when the gun is fired, depending sears having pivotal support above said hammers and having means for engagement with said hammers, and a vertically-arranged inverted split spring interposed between each sear and the front wall of the frame, the ends of said spring engaging with said front wall and with the pivoted end respectively of the adjacent sear.

4. In a gun, in combination with the frame provided with a forward extension, hammers having pivotal support within the body of said frame, vertically-arranged split springs interposed between said hammers and the adjacent front wall of the frame, the ends of each spring engaging with said front wall and with the adjacent hammer below its pivot, a lug upon the inner side of each hammer furnishing an engaging surface for a cocking-rod alongside said spring, depending sears pivotally supported above said hammers and having means for engagement therewith, and a vertically-arranged split spring interposed between each sear and the adjacent front wall of the frame, the ends of said spring engaging with said front wall and with the adjacent sear in line with its supporting-pivot.

754,600. ORNAMENTATION OF EXPOSED WINDING-WHEELS OF WATCH-MOVEMENTS. OLOF OHLSON, Waltham, Mass., assignor to American Waltham Watch Company, Waltham, Mass., a Corporation of Massachusetts. Filed Sept. 21, 1903. Serial No. 173,940. (No model.)



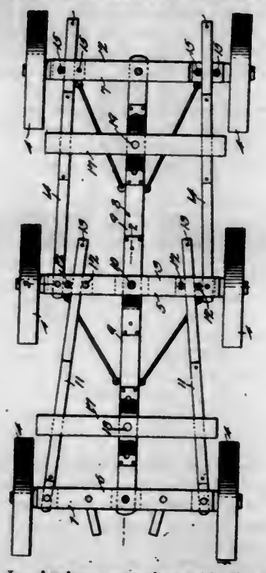
*Claim.*—1. An ornamental construction for an exposed part of a watch-movement or the like, comprising a continuous dished bed, a flexible plate separable or distinct from the said bed and having an unbroken surface, and means for conforming the plate to the bed.

2. An ornamental construction for the center of an exposed winding-wheel, comprising a wheel having a vertical dished bed, a flexible plate covering said bed, and a screw securing and conforming the plate to the bed.

3. An ornamentation comprising a continuous or unbroken, normally flat, flexible plate having a brilliant surface, and means for springing said plate to impart a dished form thereto.

4. An ornamentation comprising a brilliant-surfaced, sheet-metal plate, and means for springing said plate to impart a dished form thereto, the plate having radial grooves in its under side, producing weakened lines of division, whereby substantially flat-surfaced sectoral panels are formed on the dished plate.

754,601. LUMBER-WAGON. BENJAMIN F. PADGETT, Laurel, Miss. Filed Nov. 3, 1903. Serial No. 179,713. (No model.)



*Claim.*—1. In a lumber-wagon, the combination with front and rear axles, of an intermediate axle, a reach-beam extending between the axles and composed of a pair of sections pivotally connected together and to the intermediate axle to permit free independent movement of the axles in a vertical plane, coupling-bars pivoted to the front and slidingly engaging the intermediate axle, and analogous couplings pivoted to the central and slidingly engaging the rear axle, whereby said couplings form a continuous connection between all the axles.

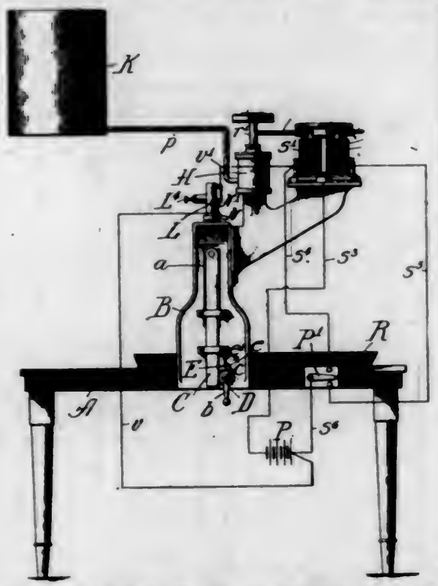
2. In a lumber-wagon, the combination with front and rear axles, of guides carried by the latter, an intermediate axle, guides carried thereby, a reach-beam extending between the axles and comprising a pair of sections pivotally connected together and to the intermediate axle to permit free independent movement of the axles in a vertical plane, coupling-bars pivoted to the front axle and extending loosely through the intermediate guides, and analogous couplings pivoted to the intermediate axle and extending loosely through the rear guides, whereby said couplings form a continuous connection between all the axles.

3. In a lumber-wagon, the combination with front and rear axles, of vertical guide-rollers carried by the latter, an intermediate axle, vertical guide-rollers carried thereby, a reach-beam extending between the axles and comprising a pair of sections pivotally connected together and to the intermediate axle to permit free independent movement of the axles in a vertical plane, coupling-bars pivoted to the front axle and extending loosely between the intermediate guide-rollers, and analogous couplings pivoted to the intermediate axle and extending loosely between the rear guide-rollers, whereby said couplings form a continuous connection between all the axles.

4. In a lumber-wagon, the combination with front and rear axles, of an intermediate axle, a reach-beam extending between the axles and composed of a pair of sections having their meeting ends one overlying the other and reversely curved, said sections being pivotally connected together and to the intermediate axle, coupling-bars pivoted to the front and slidingly engaging the intermediate axle, and analogous couplings pivoted to the intermediate and slidingly engaging the rear axle.

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**754,602. BOTTLE-FILLING MACHINE. ERER H. PARKER, Evanston, Ill. Filed Dec. 7, 1903. Serial No. 184,061. (No model.)**




*Claim.*—1. In a bottle-filling machine, the combination with the filling-tube, of a liquid-supplying reservoir communicating with the filling-tube, a valve governing the flow of liquid from the said reservoir to the filling-tube, a chamber having an actuating-diaphragm for said valve movable under variations of air-pressure, and an electrically-actuated device controlling the pressure of air against the said diaphragm to effect opening and closing movements of said valve.

2. In a bottle-filling machine, the combination with the filling-tube, of a liquid-supplying reservoir communicating with the filling-tube, a valve governing the flow of liquid from the said reservoir to the filling-tube, a chamber having an actuating-diaphragm for said valve movable under variations of air-pressure, a compressed-air-supply pipe communicating with said chamber, and an electrically-actuated controlling device interposed in said pipe and governing the flow of compressed air to and its exhaust from said chamber, to effect opening and closing movement of said valve.

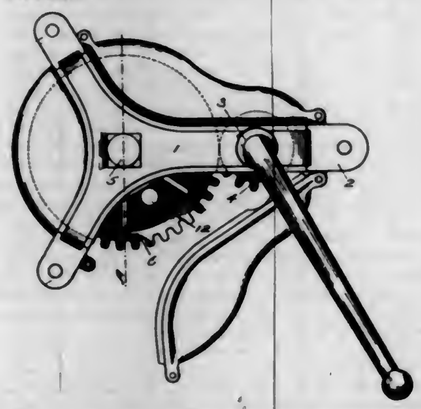
3. In a bottle-filling machine, the combination with the filling-tube, of a liquid-supply reservoir communicating with the filling-tube, a spring-closed valve governing the flow of liquid from the said reservoir to the filling-tube, a chamber having a diaphragm operatively connected with said valve and movable under the force of air-pressure to open said valve, and an electrically-actuated device controlling the pressure of air against the said diaphragm, substantially as and for the purpose set forth.

4. In a bottle-filling machine, the combination of a sealing-head, a filling-tube, a closed chamber having a movable diaphragm, an electric circuit having contacts in position to be made and broken by movement of said diaphragm, a vent-passage extending from beneath the sealing-head to said chamber, a liquid-supply conduit extending to said filling-tube, a valve interposed in said conduit, and an electrically-actuated controlling device governing the opening and closing movement of said valve and in circuit with said contacts, whereby air compressed and displaced by liquid entering the bottle flows to said chamber and moves said diaphragm to actuate said contacts, causing the said controlling device to effect closing movement of said valve, substantially as and for the purpose set forth.

5. In a bottle-filling machine, the combination of a sealing-head, a filling-tube, a closed chamber having a movable diaphragm, means for regulating the capacity of said chamber, an electric circuit having contacts in position to be made and broken by movement of said diaphragm, a vent-passage extending from beneath the sealing-head to said chamber, a liquid-supply conduit extending to said filling-tube, a valve interposed in said conduits, and an electrically-actuated controlling device governing the opening and closing movements of said valve and in circuit with said contacts, whereby air compressed and displaced by liquid entering the bottle flows to said chamber and moves said diaphragm to actuate said contacts, causing the said controlling device to effect closing movement of said valve, substantially as and for the purpose set forth.

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**754,603. MECHANISM FOR OPERATING CAR-BRAKES. JOHN L. PEACOCK, Buffalo, N. Y. Filed Sept. 3, 1903. Serial No. 171,857. (No model.)**




*Claim.*—1. In a brake-actuating device, the combination with the brake-post, of a pinion on the lower end of said post, a gear in mesh with said pinion and integral with a spiral brake-chain drum adapted to operate with a variable leverage, said spiral tapering downward to a cylindrical part and being in its broadest portion of parabolic curve, substantially as set forth.

2. In a brake-actuating device, the combination of roller-bearings with the brake-post, a pinion on the lower end of said post, a brake-actuating drum comprising an integral spiral and concentric periphery, a gear in mesh with said pinion and operating said drum, and a brake-chain attached to said drum and adapted to operate with a variable leverage, substantially as and for the purpose set forth.

3. In a brake-actuating device, the combination of roller-bearings with the brake-actuating drum and gear, an integral spiral and concentric periphery, a brake-chain attached to said drum and adapted to operate from the said spiral and concentric periphery with a variable leverage, and a pinion in mesh with said gear, and actuated by the brake-post, substantially as and for the purpose set forth.

4. In a brake-actuating device, the combination with a brake-actuating spiral drum and gear, of a recess formed in the periphery at the greatest diameter of said drum to receive the terminal link of the brake-chain, and a bolt adapted to pass through said link and fasten it to said spiral drum, substantially as shown and for the purpose set forth.

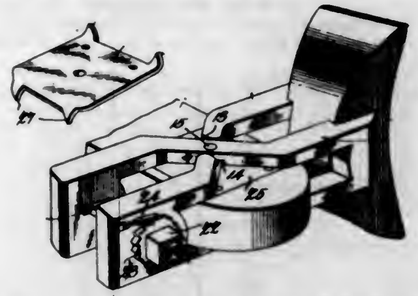
5. In a brake-actuating device, the combination with roller-bearings, of a brake-actuating spiral drum and gear, a pinion in mesh with said gear and carried on the lower end of the brake-post, and a brake-chain operating with a variable leverage from the spiral and concentric periphery of said drum, substantially as shown and for the purpose set forth.

6. In a brake-operating device, the combination of a brake-actuating spiral drum and gear with means for turning the said gear and a brake-chain operating with variable leverage from the said spiral and cylindrical parts of the drum; the said spiral part diminishing in diameter from the said gear and being of parabolic curve in its largest part, substantially as set forth.

7. In brake-actuating mechanism, a single piece, consisting of a gear-wheel, a parabolic spiral part, tapering therefrom, and a cylindrical part at the end of the latter, in combination with a chain, winding from the broadest portion of said spiral part, and a pinion, carried by the brake-post, which meshes with the said gear-wheel, to turn the same substantially as set forth.

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**754,604. BRAKE-SHOE HOLDER. AMBROSE M. PENDOCK, Bourbon, Mo., assignor of one-half to William J. Thornehill, Bourbon, Mo. Filed July 14, 1903. Serial No. 165,459. (No model.)**




*Claim.*—1. A brake-shoe holder comprising oppositely-operating jaw members crossing each other exteriorly of the beam and movably connected thereto at their crossing points and adapted to support a brake-shoe at one side of the brake-beam, and a clamp-bolt connecting the jaw members at the opposite side of the beam and operating to compress them upon said shoe, substantially as described.

2. A brake-shoe holder comprising opposing jaw members movably connected to a brake-beam and adapted to support a brake-shoe at one side thereof, a threaded clamp-bolt movably connected by one end to one of said jaw members at the opposite side of the beam, a nut operatively engaging the threaded portion of said bolt and provided with spaced ratchet-teeth, and a spring-actuated pawl engaging said ratchet-teeth, substantially as described.

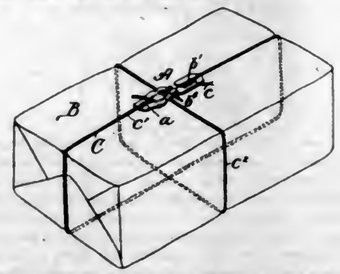
3. A brake-shoe holder comprising opposing jaw members having transverse apertures adapted to receive the brake-beam, said jaw members crossing each other upon opposite sides of the beam and pivoted thereto at their crossing points and adapted to support a brake-shoe at one side of the beam, and a clamp-bolt operatively engaging the jaw members at the opposite side of the beam, substantially as described.

4. A brake-shoe holder comprising opposing jaw members having transverse apertures adapted to receive the brake-beam, said jaw members crossing each other upon opposite sides of the beam and formed with reversely-disposed recesses and pivoted to the beam at their crossing points and adapted to support a brake-shoe at one side of the beam, and a clamp-bolt operatively engaging the jaw members at the opposite side of the beam, substantially as described.

5. A brake-shoe holder comprising oppositely-operating jaw members crossing each other exteriorly of the beam and movably connected thereto at their crossing points and adapted to support a brake-shbe at one side of the brake-beam, said jaw members having transverse apertures in their free ends with one of said apertures elongated longitudinally of the jaw member, a threaded clamp-bolt engaging said apertures and with the portion passing through said elongated aperture flattened to prevent rotation and with a stop-collar exteriorly of the jaw member carrying said elongated aperture, and a nut engaging said threaded end exteriorly of the other jaw member, substantially as described.

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**754,605. TIE. ERNST F. PRIDDAT, Chicago, Ill. Filed Oct. 25, 1902. Serial No. 128,729. (No model.)**




*Claim.*—1. A tie-fastener, comprising a thin flat member having at its opposite ends twine-gripping slots cut therein and intermediately an elongated suitably-curved upturned tongue with free lateral edges and upper extremity, said tongue lying above the plane of the body of said member, for the purpose set forth.

2. A tie-fastener comprising, a thin flat member having near its opposite ends upwardly-extending twine-gripping slots cut therein and intermediately on its outer surface an upturned suitably-curved elongated tongue struck up from the body of the member and having free lateral edges and upper extremity, substantially as and for the purpose set forth.

3. A tie-fastener, comprising a member of sheet material provided near opposite extremities with twine-gripping slots and intermediately with a smooth bearing in substantial alinement with said slots and over which the twine may be drawn freely, in tightening, for the purpose set forth.

4. A tie-fastener, comprising a member provided with an intermediate bearing over which the twine may be drawn freely in tightening and having, also, on opposite sides of said bearing, twine-gripping slots opening in the same general direction, for the purpose set forth.

5. A tie-fastener comprising a member of sheet material having at opposite extremities twine-gripping slots cut therein, and having, also, an intermediate shoulder formed by bending the material and over which the twine may be drawn freely in tightening, for the purpose set forth.

6. A tie-fastener, comprising a member having near one extremity a twine-gripping slot with its closed or gripping end nearest said extremity, having, also, an intermediate bent portion affording a smooth bearing over which the twine may be drawn freely in tightening, and having at the opposite extremity a twine-gripping slot, with its closed or gripping end directed toward said bearing for the purpose set forth.

7. A tie-fastener, comprising a sheet-metal member having in substantial alinement two twine-gripping slots and a smooth concaved bearing, said bearing projecting above the upper surface of the member and affording a shoulder over which the direction of the twine may be changed, for the purpose set forth.

8. A tie-fastener, comprising a sheet-metal member having at its opposite ends twine-gripping slots and intermediately a concaved bearing formed of metal punched through and bent to form, for the purpose set forth.

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**754,606. TIE-FASTENER. ERNST F. PRIDDAT, Chicago, Ill. Filed Dec. 22, 1902. Serial No. 136,233. (No model.)**

*Claim.*—1. A fastener of the character described, comprising a thin flat member provided with twine-gripping slots cut therein and opening at the edges some distance from the extremities and extending in opposite general directions toward the extremities, one of said slots being oblique to the other and forming an inwardly-directed hook and serving to grip and retain the cord when the latter is passed transversely about the package, for the purpose set forth.

2. A fastener comprising a thin flat elongated member having two lateral recesses cut therein with opposed twine-gripping slots

opening thereat and extending toward opposite ends of the members, one of said slots being oblique to the other to form an inwardly-directed hook, and a third twine-gripping slot through which the cord may be passed after leaving the oblique slot, for the purpose set forth.

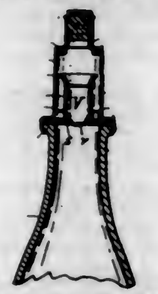


3. A fastener, comprising a thin flat member having lateral recesses and opposed twine-gripping slots opening thereat and extending toward opposite ends of the member, and having a lateral extension equipped with a twine-gripping slot, for the purpose set forth.

4. A fastener, comprising a thin flat member having lateral recesses and opposed twine-gripping slots opening thereat and extending toward opposite ends of the member, and having a lateral T-shaped extension with twine-gripping slots at opposite sides of its shank, for the purpose set forth.

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**754,607. NON-REFILLABLE STOPPER FOR BOTTLES.** JOSEPH G. REDDOCK, Portland, Oreg., assignor of one-half to Arthur H. Harrison, Seattle, Wash. Filed June 15, 1903. Serial No. 161,473. (No model.)



*Claim.*—1. In a device of the class set forth, the combination with a cap having a reduced discharge-orifice, means for securing the cap to the mouth of a bottle such means comprising a socket adapted to be turned or flanged beneath an enlargement upon the neck of a bottle, a valve provided with an annular collar and adapted to be seated and make a liquid-tight closure with a valve-seat, and said valve-seat, substantially as set forth.

2. As a new article of manufacture, a seal or stopper for bottles, consisting of a metal cap, means to secure the cap to the mouth of a bottle, a valve positioned internally of the cap said valve comprising a cylindrical main portion terminating in a semiglobular end and a flaring end and having intermediate its length an annular serrated collar, and a disk-shaped plate provided with a central aperture registering with the semiglobular end of the valve, substantially as set forth.

3. As a new article of manufacture, a seal or stopper for bottles comprising in combination, a cap C consisting of a valve-chamber *b* having at one end a reduced orifice *c* and at the other end a socket *d*, the studs *l*, a valve V having a middle cylindrical part *e*, a semiglobular end *v* and an opposite flaring end *f*, a guide-collar *h*, and a disk plate S provided with a central aperture *s* registering with the contiguous end of the valve, substantially as set forth.

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**754,608. NON-REFILLABLE STOPPER FOR BOTTLES.** JOSEPH G. REDDOCK, Portland, Oreg. Filed Oct. 26, 1903. Serial No. 178,498. (No model.)

*Claim.*—1. In a device of the character described, the combination with an open-end valve, a seat for said valve, and means for securing said seat in the neck of a bottle, of a perforated cap having a cylindrical portion merging to a point at its lower end adapted to receive the open end of the valve, and an annular flange projecting laterally from the cap and extending over and secured to the rim of the neck of the bottle.

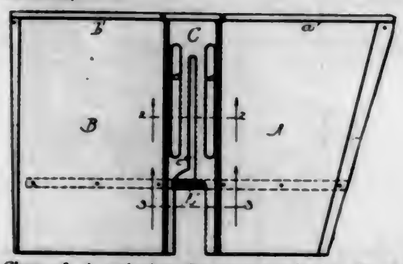


2. In a device of the character described, in combination with a perforated cap having a pointed lower portion and secured in the mouth of a bottle, a valve having a closed compartment and an open end adapted to receive the point of the cap and provided with a rounded bottom, a flared valve-seat secured in the neck of the bottle and adapted to receive the rounded end of the valve, and projections formed on the valve for centering the same.

3. In a device of the character described, the combination with a perforated cap, of a cylindrical valve having a closed compartment and formed with a flared open end and rounded bottom and annular projections intermediate its ends, a valve-seat comprising a tube having a flared end adapted to receive the rounded end of the valve, and means for securing the valve-seat in the neck of a bottle.

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**754,609. GRAIN-DECK FOR HARVESTERS.** ALBERT REINHARDT, Chicago, Ill., assignor to International Harvester Company, a Corporation of New Jersey. Filed Dec. 14, 1903. Serial No. 185,022. (No model.)



*Claim.*—1. A grain-deck for harvesters having ribs or folds formed of and integral with the material constituting the deck, the ribs or folds being formed at or near the edge of the said deck on the upper, the right and the left hand sides thereof, substantially as described.

2. A grain-deck for harvesters having ribs or folds formed of and integral with the material constituting the deck, the ribs or folds being formed at or near the edge of the said deck on the upper, the right and the left hand sides thereof, and a wire formed in the lower edge of said deck, substantially as described.

3. A grain-deck for harvesters comprising a forward section provided with marginal folds on three edges thereof, a rearward section also provided with marginal folds on three edges thereof, and a slotted, central removable deck-head connected to and intermediate of the said forward and rearward sections, substantially as described.

4. A grain-deck for harvesters comprising a forward and a rearward section provided with marginal folds and a slotted, central and ribbed deck-head intermediate of and connected with the said forward and rearward sections, substantially as described.

5. A grain-deck for harvesters comprising a forward and a rearward section provided with marginal folds and a slotted central and removable deck-head intermediate of the said forward and rearward sections with which it connects, substantially as described.

6. A grain-deck for harvesters comprising a forward and a rearward section provided with marginal folds, and a slotted and removable central deck-head consisting of a corresponding upper and lower member intermediate of and connected with the said forward and rearward sections of said deck, substantially as described.

7. A grain-deck for harvesters comprising a forward and a rearward section having marginal folds on the upper, right and left hand sides thereof, a slotted and removable central deck-head consisting of a corresponding upper and lower member, the said upper member having its lateral edges turned down and gripped by the inner folds of the adjacent forward and rearward sections of said deck, the said lower member of the deck-head having slots and flanges to register with the corresponding slots and flanges of the upper member, and having U-shaped folds on its lateral edges inclosing the folds on the adjacent edges of the forward and rearward sections of said deck, substantially as described.

8. A grain-deck for harvesters comprising a forward and a rearward section, each provided with marginal folds, and a slotted and removable central deck-head consisting of a member intermediate of and connected with the said forward and rearward section of said deck, and a tie-bar rigidly securing together the forward and rearward sections of the deck near the lower edge thereof, substantially as described.

9. A grain-deck for harvesters consisting of a forward, a rearward and a central section, the said forward and rearward sections being provided with marginal folds opening upwardly, and the central section having downwardly-turned edges which are gripped by the adjacent folds of the said forward and rearward sections, and means for securing the three sections in a relatively fixed position, substantially as described.

10. A grain-deck for harvesters consisting of a forward, a rearward and a central section, the said forward and rearward sections being provided with marginal folds opening upwardly, and the central section comprising an upper and a lower member, the said upper member having its lateral edges turned downwardly and gripped by the adjacent marginal folds of the forward and rearward sections of the deck, the said lower member of the central section fitting to the said upper member and engaging and inclosing the adjacent folds of the forward and rearward sections of the deck, and means for securing the several parts in a relatively fixed position, substantially as described.

11. A grain-deck for harvesters consisting of a forward, a rearward and a central section, the central section being comprised of an upper and a lower member, the said forward and rearward sections being provided with marginal folds which engage the upper and lower members of the central section, the said upper and lower members of the central section having formed on their upper edges ribs or folds which engage each other and are themselves engaged by the folds or ribs on the upper edge of the rearward and forward sections of said deck, the several parts being held in a relative fixed position by bolts, substantially as described.

12. A grain-deck for harvesters consisting of a forward, a rearward and a central section, the several sections being provided with marginal folds on their edges, the folds on the adjacent edges of which serve to form connecting means for the said sections, and means for holding the several sections in a relatively fixed position substantially as described.

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**754,610. VEHICLE FRAME AND SPRING CONSTRUCTION.** WILLARD F. RICHARDS, Buffalo, N. Y. Filed Nov. 25, 1903. Serial No. 182,665. (No model.)

*Claim.*—1. A metallic vehicle-frame comprising longitudinal and transverse bars each having a vertical portion and a horizontal flange extending inwardly from said vertical portion, the horizontal flanges of the several bars being located in the same horizontal plane, and corner-pieces embracing said horizontal flanges and secured to said vertical flanges, substantially as set forth.

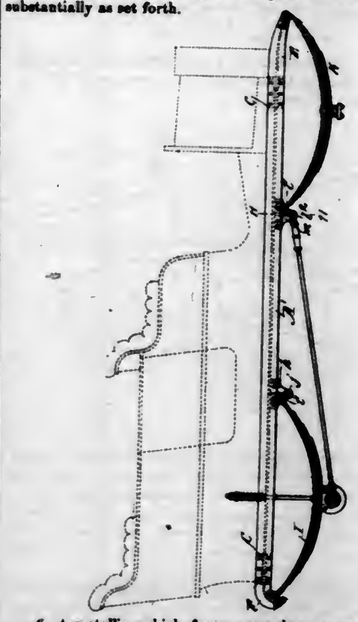
2. A metallic vehicle-frame comprising longitudinal and transverse bars each having a vertical flange and a horizontal flange extending inwardly from said vertical flange, and corner connecting-pieces having separated horizontal portions embracing and riveted to said horizontal flanges of the frame-bars, and vertical flanges located beside and riveted to said vertical flanges of the frame-bars, substantially as set forth.

3. A metallic vehicle-frame comprising longitudinal and transverse T-bars each arranged with the head-flanges vertical and leg-flange extending inwardly, and corner connecting-pieces having separated portions embracing and riveted to said inwardly-extending flanges of the frame-bars and vertical flanges located beside and riveted to said vertical flanges of the frame-bars, substantially as set forth.

4. A metallic vehicle-frame, comprising longitudinal and transverse T-bars each arranged with its head-flanges vertical and its leg-flange extending inwardly from the head-flanges, the leg-flange of one bar passing through a slot in the end of the bar at right angles thereto, and corner-pieces connecting said longitudinal and transverse frame-bars, substantially as set forth.



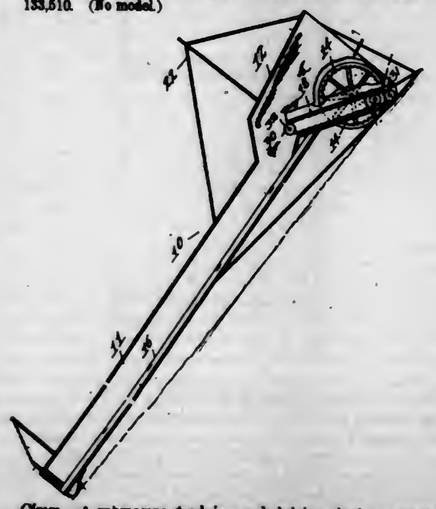
5. A metallic vehicle-frame comprising longitudinal T-bars arranged with the leg-flanges projecting inwardly and transverse T-bars connecting said longitudinal bars between their ends and having slots through which the leg-flanges of the longitudinal bars pass, and corner-pieces connecting said longitudinal and transverse bars, substantially as set forth.



6. A metallic vehicle-frame comprising transverse T-bars arranged with their head-flanges vertical and their leg-flanges extending inwardly from the head-flanges and terminating short of said head-flanges, the ends of said head-flanges being slotted, and longitudinal T-bars arranged with their head-flanges vertical and their leg-flanges extending inwardly and entering said slots in the ends of said transverse bars, said longitudinal bars extending beyond said transverse bars and constituting attaching-arms for the vehicle-springs, and corner-pieces connecting said longitudinal and transverse frame-bars, substantially as set forth.

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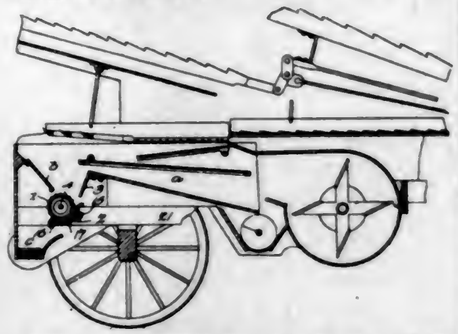
**754,611. SUBMARINE DREDGING AND SLUICING DEVICE.** ROBERT G. RILEY, Seattle, Wash. Filed Dec. 1, 1902. Serial No. 133,510. (No model.)



*Claim.*—A submarine dredging and sluicing device comprising a tubular sluice-box adapted to be dragged along a subaqueous bot-

tom and having the wall at the head end flaring outwardly entirely about the box to provide an expanded mouth, traction-wheels supporting the box at the head end, a scoop at the lower edge of said mouth, an endless conveyer in said mouth and extending between said scoop and box, means to operatively connect said wheels with said conveyer, and a gate mounted at the tail end of said box.

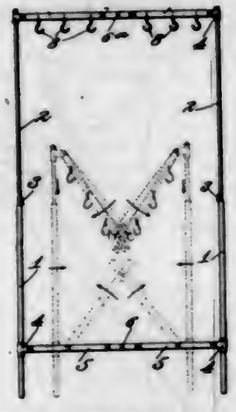
754,612. CLOVER-HULLING ATTACHMENT FOR THRESHING-MACHINES. CHARLES SAYLOR, Cody, Wyo. Filed Apr. 21, 1903. Serial No. 104,041. (No model.)



*Claim.*—1. In combination with a cylinder, a concave having longitudinally-disposed supporting-bars at its front and rear sides, fixed brackets on which the ends of said bars rest, said brackets having upstanding flanges bearing against the front and rear sides of said bars and forming retaining-guides therefor, and adjusting-bolts with which said brackets are provided and bearing under the bars to adjust the concave, substantially as described.

2. A clover-hulling concave comprising longitudinally-disposed supporting-bars at the front and rear sides of the concave, transversely-disposed curved bridge-bars secured to and connecting said supporting-bars, longitudinally-disposed bars secured on the upper sides of said bridge-bars and a metallic rubbing-sheet secured on the concave surfaces of the last-mentioned bars, and provided on its upper surface with tangentially-disposed teeth, in combination with a revoluble cylinder having a similar metallic rubbing-sheet on its periphery, substantially as described.

754,613. FOLDING WARDROBE. HENRY H. SCHUETTE, St. Louis, Mo. Filed Oct. 5, 1903. Serial No. 175,798. (No model.)



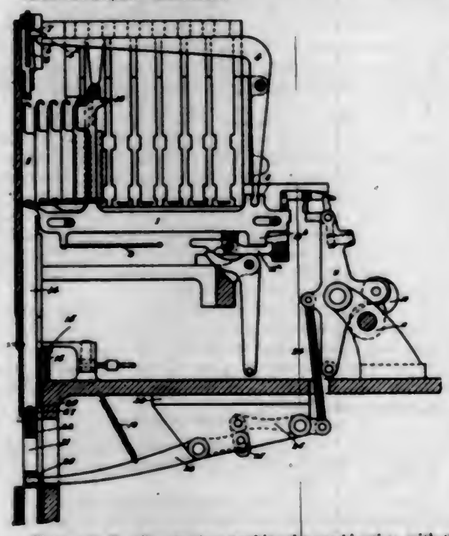
*Claim.*—1. In a device of the character described, the combination with vertical supporting-standards, of arms pivoted thereto at one end and converging toward each other, each of said arms being connected at its other end by a hinge-joint, to a perforated plate, a pivot for connecting said plates together, and movable pins designed to pass through the perforations in said plates for locking them together, substantially as described.

2. In a device of the character described, the combination with vertical standards, of arms 7 pivotally connected thereto and having hooks 8 depending therefrom, said arms converging toward each other, plates 9 to which said arms are connected by a hinge-joint, a pivot 10 connecting said plates, and pins 11 designed to pass through registering openings in the plates to lock them together; substantially as described.

3. In a wardrobe, the combination with telescoping standards, of arms pivotally connected to the lower ends thereof and arranged in pairs, each pair being pivotally connected together and provided with means for holding them in a horizontal position, arms 7 pivotally connected to the upper ends of the standards and converging together, plates 9 pivotally connected to each other and to which said arms are connected by hinge-joints, means for locking said plates together, a flexible covering 12 arranged upon the frame, and a flexible flap for closing access to the interior; substantially as described.

4. In a device of the class described, the combination with vertical standards of folding side and end arms pivotally connected to the standards and to each other, separate brace-arms connected to the standards and converging toward each other, plates to which said arms are connected by hinge-joint, a pivot passing through and connecting said plates one to the other, and means for locking the brace-arms rigid with relation to the pivoted plates, substantially as described.

754,614. LINE-CASTING MACHINE. WILBUR S. SCUDDER, Brooklyn, N. Y., assignor to the Monoline Composing Company, Washington, D. C., a Corporation of West Virginia. Filed Aug. 17, 1903. Serial No. 169,837. (No model.)



*Claim.*—1. In a line-casting machine the combination, with the delivery-gate, accelerator-lever and mechanism for actuating the same, of an accelerator-plate coacting with accelerator-lever to impel the delivery of the matrix-bar to the assembling-box, substantially as specified.

2. In a line-casting machine the combination with the delivery-gate, accelerator-lever, and mechanism for actuating the same, of a spring-actuated accelerator-plate coacting with the accelerator-lever to impel the delivery of the matrix-bar to the assembling-box, substantially as specified.

3. In a line-casting machine the combination with the delivery-gate, accelerator-lever, and mechanism for actuating the same, of an accelerator-plate coacting with the accelerator-lever to impel the delivery of the matrix-bar to the assembling-box, a spring actuating the impulse of the accelerator-plate and a screw to adjust the pressure of the spring and guide the movement of the accelerator-plate, substantially as specified.

4. In a line-casting machine the combination with the assembling-box, stopping-bar, stop-return coacting with the stopping-bars, and mechanism for actuating the same, of a movable stopping-head in the path of the matrix-bar, and pawls carried by the stopping-head to engage the base of the delivered matrix-bar, substantially as specified.

5. In a line-casting machine the combination with the assembling-box, stopping-bar, stop-return coacting with the stopping-bar and mechanism for actuating the same, of a stopping-head in the path of the matrix-bar and spring-actuated pawls carried by the stopping-head to engage the base of the delivered matrix-bar, substantially as specified.



6 In a line-casting machine, the combination with the assembling-box, stopping-bar, stop-return coacting with the stopping-bar, and mechanism for actuating the same, of a stopping-head in the path of the matrix-bar, spring-actuated pawls carried by the stopping-head to engage the base of the matrix-bar and a buffer-plate to cushion the blow of the matrix-bar as it is stopped, substantially as specified.

7. In a line-casting machine the combination with the assembling-box, stopping-bar, stop-return coacting with the stopping-bar, stopping-head and pawls carried by the stopping-head, of a matrix-bar, a recess in the base of the matrix-bar in which register the pawls and a teat in the recess to spread the pawls asunder to engage the sides of the recess, substantially as specified.

8. In a line-casting machine the combination with the assembling-box, stopping-bar, stop-return coacting with the stopping-head, and spring-actuated pawls carried by the stopping-head, of a matrix-bar, a recess in the base of the matrix-bar, in which register the pawls, and a teat in the recess to spread the pawls to engage the sides of the recess, substantially as specified.

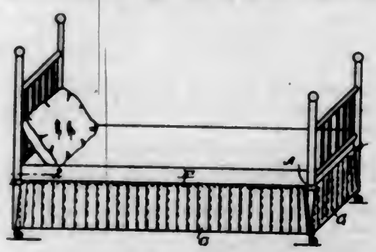
9. In a line-casting machine the combination with the assembling-box, stopping-bar, stop-return, stopping-head, spring-actuated pawls carried by the stopping-head, a buffer-plate for the stopping-head, of a matrix-bar, a recess in the base of the matrix-bar in which register the pawls, and a teat in the recess to spread the pawls to engage the sides of the recess, substantially as specified.

10. In a line-casting machine the combination with the assembling-box, aligning-bar, and auxiliary line-carriage, and the spring-actuated line-detaining pawls, of a reciprocating plate actuated by the assembling-box lever, substantially as specified.

11. In a line-casting machine the combination with the assembling-box, aligning-bar and auxiliary line-carriage and the spring-actuated line-detaining pawls, of a reciprocating plate actuated by the lug on the assembling-box lever, and a spring-actuated releasing-plate having a lug to engage the line-detaining pawl at the front of the matrix-bar to lift the line-detaining pawl out of the path of the incoming matrix-bar, substantially as specified.

12. In a line-casting machine the combination of the metal-pot, a jacket for the metal-pot, upright lugs secured to the jacket having their front faces tapered, adjustable wedges engaging the tapering faces of the lugs to force the metal-pot into contact with the back of the mold, substantially as specified.

754,615. BEDSTEAD ATTACHMENT. AURELIA B. SHANE, Chicago, Ill. Filed Dec. 23, 1901. Serial No. 87,018. (No model.)

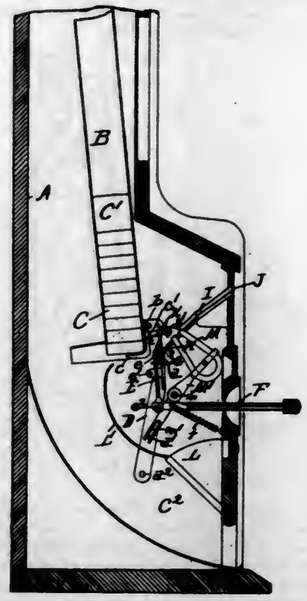


*Claim.*—An attachment for bedsteads comprising clamps adapted to be secured to the bedposts, projections on each of said clamps extending at angles to each other, nipples pivotally secured to said projections and swinging in a horizontal plane, end telescopic rods adapted to be secured at their ends to said nipples and extend practically parallel with the side rails and ends of the bedstead.

754,616. COIN-ACTUATING VENDING-MACHINE. CHARLEY A. SHILEY, Erie, Pa. Filed Dec. 4, 1902. Serial No. 133,881. (No model.)

*Claim.*—1. In a coin-actuated vending-machine, the combination of a chute; a rocking lever; a positively-actuated clamp carried by said lever and arranged to carry a coin past the bottom of the chute as the lever is rocked; means for actuating the rock-lever; and means for guiding the coin into the clamp.

2. In a coin-actuated vending-machine, the combination of a chute; a rocking lever arranged to move over the center of its pivot; a positively-actuated clamp carried by said lever and arranged to carry a coin past the bottom of the chute as the lever is rocked; means for actuating the rock-lever; and means for guiding the coin into the clamp.



3. In a coin-actuated vending-machine, the combination of a chute; a rocking lever; a positively-actuated clamp carried by said lever and arranged to carry a coin past the bottom of the chute as the lever is rocked; means acting initially upon the clamp for operating the rocking lever; and means for guiding the coin into the clamp.

4. In a coin-actuated vending-machine, the combination of a chute; a rocking lever arranged to move past a vertical line extending from its pivot as it is rocked; a positively-actuated clamp carried by said lever and arranged to carry a coin past the bottom of the chute as the lever is rocked; means acting initially upon the clamp for operating the rocking lever; and means for guiding the coin into the clamp.

5. In a coin-actuated vending-machine, the combination of a chute; a rocking lever having a jaw *d*; a clamp carried by said lever, said clamp comprising the lever E pivoted on the rocking lever and the jaw *e* arranged to operate in connection with the jaw *d* on the rocking lever; the operating-rod F secured to the clamp-lever; the spring *f* for retracting the rod; and means for guiding coin into the clamp.

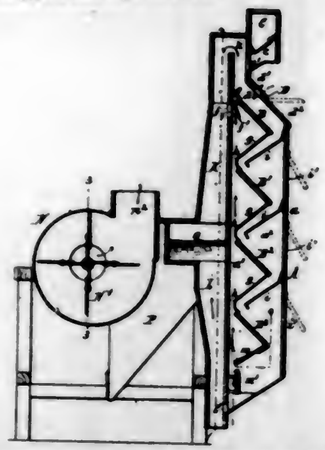
6. In a coin-actuated vending-machine, the combination of a chute; a rocking lever; a clamp carried by said lever and arranged to carry a coin past the bottom of the chute as the lever is rocked; a coin-support arranged in the clamp when the clamp is in its normal position; means for actuating the rock-lever; and means for guiding the coin into the clamp.

7. In a coin-actuated vending-machine, the combination of a chute B; a rocking lever D having the jaw *d* thereon; the clamp-lever E pivoted on the rocking lever D having the jaw *e* thereon; the operating-rod F connected with the clamp-lever E; the spring *f* arranged to operate on the rod F; the guideway I; movable deflecting-plate K; a magnet M adjacent to the guideway I; the lever M′ carrying the magnet; and a connection between the lever M′ and the lever D.

754,617. GRAIN-SEPARATOR. F. M. SMITH, Nashville, Mich., assignor to Huntley Manufacturing Company, Silvercreek, N. Y. Filed July 12, 1901. Serial No. 67,992. (No model.)

*Claim.*—1. The combination of an upright separating-case, an upright series of inclined screens arranged in the same, front conveying-plates which convey the material tailing off from one screen to the head of the next lower screen, rear conveying-plates receiv-

ing the material which has passed through the screens and extending from the lower end of one screen to the upper end of the next lower screen, an upright imperforate wall arranged in rear of the screens and rear conveying-plates and forming therewith an ascending air-passage having a contracted throat at the lower end of each rear conveying-plate, through which throat an air-current flows upwardly, and a suction-fan connected with the upper end of said ascending passage, substantially as set forth.



2. The combination of a separating-case, an upright series of inclined screens arranged in the same, front conveying-plates which convey the material which tails off from one screen to the head of the next lower screen, rear conveying-plates which receive the material passing through the screens, an ascending air-passage arranged behind the several screens and rear conveying-plates and receiving the material from the latter, a fan connected with the upper end of said ascending air-passage, an ascending air-trunk connected with said fan and having an air-inlet at its lower portion only, and means for conveying the heavy material which tails off from the screens into said ascending air-trunk, substantially as set forth.

3. The combination of an upright separating-case, an upright series of inclined screens arranged in the same, front conveying-plates which convey the material tailing off from one screen to the head of the next lower screen, rear conveying-plates receiving the material which has passed through the screens and extending from the lower end of one screen to the upper end of the next lower screen, an upright imperforate wall arranged in rear of the screens and rear conveying-plates and forming therewith an ascending air-passage having a contracted throat at the lower end of each rear conveying-plate, through which throat an air-current flows upwardly, a feed-hopper arranged above the screens, a feed-passage leading from said hopper to the uppermost screen, an air-inlet for said passage, and a suction-fan connected with the upper end of said ascending passage and also with the upper end of said feed-passage, substantially as set forth.

4. The combination of a separating-case, an upright series of inclined screens arranged in the same, front conveying-plates which convey the material which tails off from one screen to the head of the next lower screen, rear conveying-plates which receive the material passing through the screens, an ascending air-passage arranged behind said screens and rear conveying-plates and receiving the material from the latter, a fan, a feed-hopper arranged above said series of screens, an air-inlet arranged in the upper part of the case below the feed-passage leading from said feed-hopper to said screens, an air-trunk which connects said fan with the upper end only of said ascending air-passage and with the case above said feed-passage, and an ascending air-trunk which is also connected with said fan and which is provided with an air-inlet only at its lower portion, and means for conveying the heavy material which tails off from the screens into said ascending air-trunk, substantially as set forth.

5. The combination of a separating-case, an upright series of inclined screens arranged in the same, an ascending air-passage arranged between the rear sides of the screens and the rear wall of the case, front conveying-plates which convey the material which tails off from one screen to the head of the next lower screen, rear conveying-plates which receive the material passing through the screen and deliver the same to said ascending air-passage, a feed-hopper arranged above the screens, an air-inlet arranged in the upper part of the case below the feed-passage leading from the feed-hopper to the screens, a descending air-trunk arranged behind the upper portion of said case and connecting at its upper end only with the upper end of said ascending passage below the uppermost screen and with the case above said feed-passage, an ascending air-trunk arranged behind the lower portion of the case and which is provided with an air-inlet only at its lower portion, means for conveying the heavy material which tails off from the screens into said ascending air-trunk, and a suction-fan connected with the lower end of said descending air-trunk and the upper end of said ascending air-trunk substantially as set forth.

## 754,618. TAPPING DEVICE. NICHOLAS A. SMITH and CHARLES H. PULTON, Grand Rapids, Mich. Filed June 1, 1903. Serial No. 159,457. (No model.)



*Claim.*—1. The combination of a bushing having a valve-seat at its inner end, a smaller valve-seat, a yoke supporting said valve-seat, a tubular and longitudinally-movable valve engaging the said valve-seats and closed by the smaller valve-seat, and a dispensing-tube adapted to be attached to the bushing and to operate the valve and having an exit-passage connected to the interior of the bushing and an air-inlet passage connected to the interior of the valve.

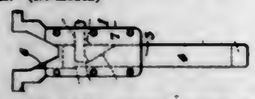
2. The combination of a bushing, cams in the interior of the bushing, a valve to close the bushing, lugs on the valve to engage the cams, a dispensing-tube adapted to engage and rotate the valve, lugs on the tube to engage the cams, and a packing on the tube to engage the bushing.

3. The combination of a bushing having internal cams, a valve having a central opening, lugs on the valve to engage the cams, a second valve to close said opening, a dispensing-tube adapted to open said valves, a packing on the tube to engage the bushing, lugs on the said tubes to engage the cams, and an intake-tube in the dispensing-tube and connected to the opening in the valve.

4. The combination of a bushing having two alined valve-seats, a valve engaging the seats and having an axial opening, cams in the interior of the bushing, lugs on the valve engaging said cams, a dispensing-tube having a bifurcated end adapted to engage the lugs on the valve, lugs on the tube to engage the cams in the bushing, a packing on the tube to engage the bushing, and an intake-tube in the dispensing-tube and connecting with the opening in the valve.

5. The combination of a bushing having two alined valve-seats, oppositely-inclined cams in the interior of the bushing, a double valve engaging both valve-seats and having an axial opening, lugs on the valve and engaging the cams having one inclination, a dispensing-tube having a bifurcated end to engage the lugs on the valve, lugs on the dispensing-tube to engage the oppositely-inclined cams, an intake-tube in the axis of the dispensing-tube and having a reduced end to insert in the opening of the valve, and a packing on the intake-tube.

## 754,619. MEANS FOR PRODUCING NOTCHES IN LINOTYPES OR SLUGS AS THEY ARE CAST IN LINOTYPE-MACHINES. WILLIAM R. SPENCELEY, Broadheath, England, assignor to the Mergenthaler Linotype Company, New York, N. Y. Filed Oct. 23, 1903. Serial No. 178,242. (No model.)



*Claim.*—1. In a device for producing notches in linotypes, the combination of a body having lugs to support it in the linotype-machine, a tongue horizontally movable in said body, and a slide vertically movable in the body and having a cam-surface to act upon the tongue.

2. In a device for coring notches in linotypes, the combination of a body adapted to be sustained in the machine, a tongue horizontally movable in the body, and a vertically-movable slide mounted in the body, its upper portion adapted to advance the tongue, and its lower end adapted to be acted upon by the justification-block of the machine.



3. In a device for coring notches in linotypes, the combination of a body portion substantially as shown, a tongue horizontally movable therein, a tongue-operating slide movable vertically in the body, said slide provided with a stop to limit its movement.

4. In a device for coring notches in linotypes, the combination of a body adapted to interlock with the linotype-machine, a tongue having a limited horizontal movement in the body, and a vertical tongue-actuating slide mounted in the body and provided with a stop to limit its motion.

5. In combination with a linotype-machine, a body having lugs for supporting it therein, a tongue movable horizontally in the body and adapted for projection into the mold, a tongue-actuating slide also mounted in the body, and a cam on the machine to move the tongue forward.

6. In combination with a linotype-machine, a body adapted to be supported in the matrix-delivery channel of said machine, a tongue horizontally movable in the body and adapted to enter the mold, and a vertically-movable tongue-actuating member, also mounted in the body, the matrix-delivery channel of the machine being grooved to receive the tongue as described.

7. In combination with a linotype-machine, the body adapted to sustain itself in the intermediate space-bar channel of the machine, a tongue horizontally movable in the body, a vertically-movable slide to actuate the tongue, and a cam-surface in the machine to return the tongue to its normal position.

8. In a linotype-machine, a tongue adapted to be projected into the mold, in combination with means for projecting and withdrawing the same independently of the matrix-line.

9. In a linotype-machine, a device intended to be assembled in a line of matrices, provided with a tongue movable forward and backward in relation to the matrices, into and out of the mold, and means for effecting said movement.

10. A device for use in a linotype-machine, to produce a notch in the edge of the linotype, comprising a body portion adapted to be assembled in the line of matrices and to remain normally at rest, a movable tongue mounted in the body and adapted to be projected into the mold, and a sliding member adapted to effect the projection of the tongue.

11. In a linotype-machine and in combination with the coring device comprising the body portion, the movable tongue and its actuating-slide, 4, means for positively effecting the retreat of the tongue.

12. In a linotype-machine, in combination with the coring device comprising a body portion and the movable tongue 5, therein, a cam 19, in the path of the matrix-line to cause the retreat of the tongue.

13. In a linotype-machine, as a means of forming notches in the linotypes, a device comprising a body portion adapted to be assembled and locked in the matrix-line, a relatively movable tongue adapted to be projected into the mold, and means for effecting the movement of the tongue.

## 754,620. VALVE-GEARING FOR STEAM-ENGINES. JAMES B. STANWOOD, Cincinnati, Ohio. Filed Aug. 30, 1902. Serial No. 121,613. (No model.)

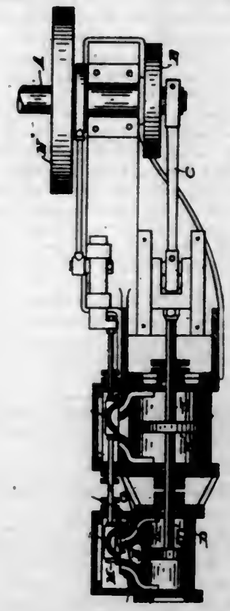
*Claim.*—1. In a multicylinder, expansion steam-engine of the class described, in combination with the high and low pressure cylinders, valves of variable travel and valve-seats, the valves overtraveling the seats at unusual loads, and automatically admitting steam at the pressure of the steam-chest to the low-pressure cylinder or cylinders, substantially as described.

2. In a multicylinder expansion steam-engine of the class described, in combination with high and low pressure cylinders, valves of variable travel, high-pressure steam-chamber, and high-pressure exhaust-chamber, the short bridge *b*, substantially as and for the purpose described.

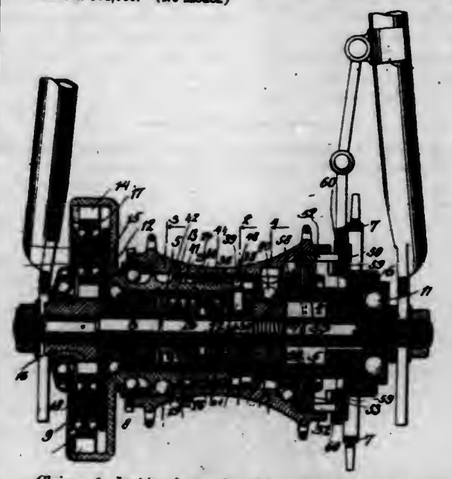
3. In a multicylinder expansion steam-engine of the class described, in combination with the high and low pressure cylinders, high-pressure steam-chamber, and the exhaust-chamber, valves of variable travel and valve-seats, the valves overtraveling the seats at unusual loads, substantially as and for the purpose described.

4. In a multicylinder expansion steam-engine of the class described, in combination with the driving-shaft, the main-shaft governor mounted thereon, the high and low pressure cylinders, valves of variable travel, high-pressure steam-chamber and high-pressure exhaust-chamber, the short bridge *b*, substantially as and for the purpose described.

5. In a multicylinder expansion steam-engine of the class described, the driving-shaft, the main-shaft governor mounted thereon, the shifting eccentric controlled by said main-shaft governor, the valves and gearing operated by said eccentric, the high and low pressure cylinders, the high-pressure steam-chamber, the high-pressure exhaust-chamber, and the short bridge *b*, substantially as and for the purpose described.



## 754,621. BICYCLE-GEARING. CHARLES S. THOMPSON, Elizabeth, N. J., and HYLA P. MAYNES, Corning, N. Y. Filed Sept. 2, 1903. Serial No. 171,609. (No model.)



*Claim.*—1. In bicycle-gearing the combination with a wheel-hub, a stationary axle and a gear stationary on said axle, of a driving-sleeve concentrically arranged between the stationary axle and the wheel-hub, planetary gears carried by the driving-sleeve at one end and in mesh with the gear on said axle, a power-transmitting wheel carried by the sleeve at its other end, a second driving-sleeve surrounding the first said driving-sleeve and provided with an internal gear-ring surrounding the said planetary gears and in mesh therewith, a clutch between each said driving-sleeve and said hub, and controlling means therefor operated by the power-transmitting member.

2. In bicycle-gearing the combination with a wheel-hub, a stationary axle concentrically arranged within the same, and a gear stationary on said axle, of a low-speed driving-sleeve comprising a

shell, concentrically arranged between said wheel-hub and said axle, a gear-carrier supporting bearings for planetary gears, and an end support, ball-bearings for said end support and for the said shell at its opposite end, planetary gears arranged between said end support and said gear-carrier, and in mesh with said stationary gear, a high-speed driving-sleeve surrounding the said low-speed sleeve and provided with an internal gear-ring surrounding the said planetary gears and in mesh therewith, a clutch between each said driving-sleeve and said hub, and controlling means therefor operated by the power-transmitting member

3. In bicycle-gearing the combination with a wheel-hub and a stationary axle concentrically arranged within same, of two concentric driving-sleeves arranged between the stationary axle and the wheel-hub, gearing, connecting the driving-sleeves together to run at different speeds, arranged at one side of the said hub, a driving-gear fixed to one of the said sleeves arranged upon the opposite side of said hub, clutch mechanism connecting one or other of said driving-sleeves with said wheel-hub, and controlling means therefor, operated by movements of the power-transmitting member.

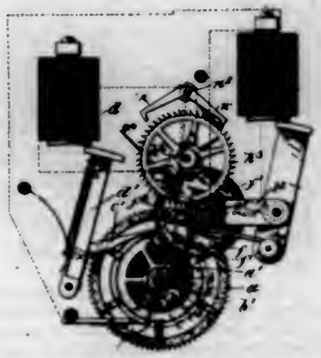
4. In bicycle-gearing the combination with a wheel-hub and a stationary axle concentrically arranged within same, of two concentric driving-sleeves arranged between the stationary axle and the wheel-hub, sun and planet gearing, connecting the driving-sleeves together to run at different speeds, arranged at one side of the said hub, a driving-gear fixed to one of the said sleeves arranged upon the opposite side of said hub, clutch mechanism connecting one or other of said driving-sleeves with said wheel-hub, and controlling means therefor, operated by movements of the power-transmitting member.

5. In bicycle-gearing the combination with a wheel-hub and a stationary axle concentrically arranged within same, of two concentric driving-sleeves arranged between the stationary axle and the wheel-hub, gearing, connecting the driving-sleeves together to run at different speeds, arranged at one side of the said hub, a driving-gear removably fixed to one of the said sleeves arranged upon the opposite side of said hub, clutch mechanism connecting one or other of said driving-sleeves with said wheel-hub, and controlling means therefor, operated by movements of the power-transmitting member.

6. In bicycle-gearing the combination with a wheel-hub and a stationary axle concentrically arranged within same, of two concentric driving-sleeves arranged between the stationary axle and the wheel-hub, gearing, connecting the driving-sleeves together to run at different speeds, arranged at one side of the said hub, a driving gear fixed to one of the said sleeves arranged upon the opposite side of said hub, a ball-clutch between each said driving-sleeve and said hub, and means, operated by movements of the power-transmitting member, for controlling one of said ball-clutches.

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754,622. **ELECTRIC CLOCK.** DAVID W. THOMPSON, Chicago, Ill. Filed Dec. 5, 1903. Serial No. 571,159. (No model.)



*Claim.*—1. In an electrical contact device, the combination with a contact-arm *m* mounted upon a rotating part $A^2$ and forming one circuit-terminal, of a second circuit-terminal part mounted upon an oscillating shaft *o'*, the said terminal part consisting of a thin spring-like body portion $o^3$ and an angularly-extended end $o^4$, the said circuit-terminals being so mounted as to engage the edge of the extension $o^3$ with the end of arm *m* while the said parts are respectively in motion, whereby part $o^3$ is placed under torsion and the circuit is momentarily closed, substantially as described.

2. In an electrically-operated clock, the combination with the driving-wheel thereof, of means controlled by the synchronizing device for advancing the said driving-wheel to secure the synchronization of the seconds-hand in event the mainspring of the clock fails to operate, substantially as and for the purpose specified.

3. In an electrically-operated clock, the combination with the ratchet-wheel *p* rotating with the driving-wheel of the radius-link *p'* engaging the teeth of the said ratchet-wheel, the synchronizing-electromagnet *l*, and pivoted armature *l'* with which the said radius-link is connected to advance the clock-train and secure the synchronization of the seconds-hand in event the mainspring of the clock fails to operate when the synchronizing-maguet is energized, substantially as and for the purpose specified.

4. In a synchronizer for the seconds-hand of a timepiece, the combination with the driving-train of said timepiece, of the arbor *c'* mounted in said train and carrying intermediate parts thereof, the disk *f* rotating therewith and laterally movable thereon carrying one member of the clutch *g*, the pins *f'* *f'* secured to said disk, the electromagnet *l*, the pivoted armature *l'*, the arm $l^2$ secured thereto and adapted to laterally move the said disk and separate the members of the clutch, the loosely-mounted wheel *h* meshing with the pinion upon the escapement-arbor and carrying the other member of the clutch *g* and the tongue $l^3$ mounted upon the pivoted armature and adapted to be extended thereby within the path of the pins *f'*, substantially as and for the purpose specified.

5. The combination with the shaft *b* carrying the main wheel *a*, of the clock-train, the ratchet-wheel *c* mounted loosely upon said shaft, the mainspring, one end thereof being mounted to rotate with said ratchet-wheel and the other end to rotate with said clock-train, an electromagnet *d*, pivotally-mounted armature *d'*, link *e'* connecting the said armature and the ratchet-wheel and adapted to rotate the latter step by step in one direction, a torsional contact-spring *o* mounted upon the rocking shaft $k^2$, contact-arm *m* rotating with shaft $k^2$ adapted to engage the said torsional contact-spring and momentarily close the circuit through the actuating-magnets, and stops *b'* $c^3$, independent of the circuit-closing device, mounted upon said shaft and ratchet-wheel respectively and adapted to permit the ratchet-wheel to effect several complete revolutions relatively to the trains, substantially as described.

6. In a synchronizer for the seconds-hand of a timepiece, the combination with the arbor of an intermediate wheel, of one member of a clutch device mounted loosely and laterally movable thereon, rotating with the said arbor, a second member of the clutch device secured to a wheel loosely mounted upon the intermediate arbor and meshing with a pinion upon the escapement-arbor, an electromagnet and pivoted armature, an arm attached to said armature, adapted to engage the laterally-movable element of the clutch device and force it from engagement with the second member thereof, detents provided upon the aforesaid disk and an engaging arm therefor carried upon the pivoted armature adapted to stop the seconds-hand in its zero position when the driving-wheel has been released by the action of the said armature, substantially as described.

7. In an electrically-operated clock, the combination with a main driving-spring, of a driving-wheel driven thereby, a contact-arm continuously rotating with the clock-train, a torsional contact-spring oscillated with the pallets of the escapement adapted to engage the said contact-arm while in motion, thereby securing a brushing electrical contact therewith of short duration, electromagnetic means for winding the mainspring of the clock controlled by a circuit through the said contacts, an electromagnetically-controlled synchronizing device for disengaging the escapement from the clock-train to permit the rotation of the seconds-hand to a zero position, and means controlled by said electromagnetic synchronizing device to cause the advancement of the driving-wheel independent of the condition of the main clock-spring, substantially as described.

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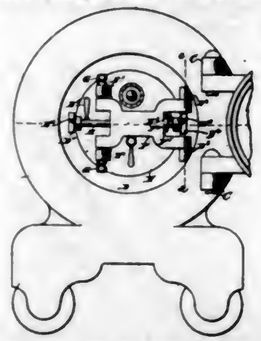
754,623. **SAFE.** ELLIS E. THOMPSON, Cedar Rapids, Iowa. Filed June 15, 1903. Serial No. 161,504. (No model.)

*Claim.*—1. In a safe having a circular outer door, the combination of an inner door, a diaphragm therefor, and mechanism internal to the safe when closed adapted to carry the inner door through the outer door-opening from a closed position to a wide-open position and clear of the outer door-jamb.

2. The combination with a safe, of an arm hinged to the safe at one end, and a door pivoted to the other end of said arm, the door-pivots being near the side opposite to the connection of said arm with the safe.

3. The combination with a safe having slotted hinge-lugs, of a door-supporting arm with trunnions in said slots, a door hinged to the other end of the arm, and a pressure-bar adapted to forcibly close the door, and in opening it to force the arm outwardly in said slot.



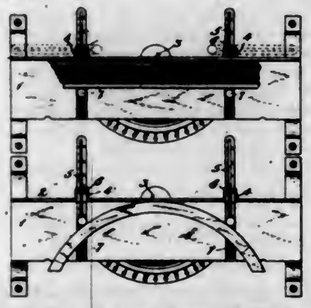


4. In a safe having circular outer and inner doors, the combination with the inner door, of an arm pivoted thereto and adapted to carry it through the outer door-opening, trunnions on one end of said arm the lower one flattened on two sides, lugs on the inner compartment of the safe to take said trunnions, the lower lug being slotted to fit the flattened trunnion, with a circular enlargement to allow the trunnion to turn when at the outer position, and a pivotal connection of said arm with the inner door near the side opposite the connection of the arm with the safe.

5. The combination with a safe, of a door-supporting arm, a door hinged thereto, trunnions on the other end of the arm, slotted lugs on the safe to take said trunnions, a pressure-bar adapted to forcibly open and close the door, and a finger on said bar adapted to engage the arm when in closing position and force the trunnions inwardly to initial position, substantially as described.

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754,624. **MITER-BOX.** JUSTUS A. TRAUT, New Britain, Conn., assignor to The Stanley Rule & Level Company, New Britain, Conn., a Corporation of Connecticut. Filed Apr. 24, 1903. Serial No. 154,052. (No model.)



*Claim.*—1. In a miter-box, a frame, a table supported thereby, a back adjacent the rear edge of said table, an adjustable fore guide comprising a stud, an arm or slide carrying said stud, a support for said arm or guide to the rear of said back, said arm or slide being freely pivoted to said support, an opening or passage through said back and in front of said support through which said arm or slide may project, and means for securing said slide on said support at different positions.

2. In a miter-box, a frame, a table supported thereby, a back adjacent the rear edge of said table, an adjustable fore guide comprising a stud, an arm or slide carrying said stud, a support for said arm or guide to the rear of said back, said arm or slide being freely pivoted to said support, an opening or passage through said back and in front of said support through which said arm or slide may project, and means for securing said slide on said support at different positions, a groove or recess in said table to receive said slide so that it will not stand above the supporting-surface of said table.

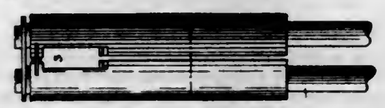
3. In a miter-box, a frame, a table supported thereby, a back adjacent the rear edge of said table, an adjustable fore guide comprising a stud, an arm or slide carrying said stud, a support for said arm or guide to the rear of said back, said arm or slide being freely pivoted to said support, an opening or passage through said back and in front of said support through which said arm or slide may project, and means for securing said slide on said support at different positions, said arm or slide being graduated.

4. In a miter-box, a frame, a table, a back, an adjustable fore guide comprising a slotted slide, a support for said slide to the rear of said back, said slide being freely pivoted to said support, means for adjustably setting said slide on said support, a fore-guide stud carried by said slide and an opening or passage in the back in front of said support, said opening or passage being large enough to admit the introduction or withdrawal of said stud and slide.

5. In a miter-box, a frame, a table, a back, an adjustable fore guide comprising a slotted slide, a support for said slide to the rear of said back, said slide being freely pivoted to said support, means for adjustably setting said slide on said support, a fore-guide stud carried by said slide and an opening or passage in the back in front of said support, said opening or passage being large enough to admit the introduction or withdrawal of said stud and slide, and a groove or recess in said table to receive said slide so that it will not stand above the supporting-surface of said table.

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754,625. **MITER-BOX.** JUSTUS A. TRAUT, New Britain, Conn., assignor to The Stanley Rule & Level Company, New Britain, Conn., a Corporation of Connecticut. Filed Apr. 24, 1903. Serial No. 154,053. (No model.)



*Claim.*—1. In a miter-box, an adjustable saw carrier and guide, the same comprising a pair of posts spaced apart and parallel with each other and a rotatable support therefor in common to both, a pair of sections to carry the saw, each of said sections being swiveled upon said posts whereby by rotating said support said sections may be swiveled thereon and the space between them through which the saw-blade passes varied, said sections having a saw-engaging range greater than their angular movement with said posts.

2. In a miter-box, an adjustable saw carrier and guide the same comprising a pair of posts spaced apart and parallel with each other, and a rotatable support therefor in common to both, a pair of sections to carry the saw, each of said sections being slidably mounted and swiveled on said posts whereby by rotating said support said sections may be swiveled thereon, and the space between them through which the saw-blade passes varied, said sections having a saw-engaging range greater than their angular movement with said posts.

3. In a miter-box, an adjustable saw carrier and guide, the same comprising a pair of cylindrical posts spaced apart and parallel with each other and a rotatable support therefor in common to both, a pair of sections to carry the saw each of said sections extending on each side of said posts to afford a broad bearing for a saw-blade, each of said sections being swiveled relatively to the axis of said posts whereby by rotating the support said sections may be swiveled and the space between them through which the saw-blade passes varied.

4. In a miter-box, a combined adjustable saw guide and carrier comprising a pair of cylindrical posts spaced apart and parallel with each other, a rotatable support therefor in common to both, a pair of sections each of said sections being of segmental form and arranged with their flat sides facing each other and each of said sections being swiveled upon said posts whereby by rotating said support the adjacent faces of said sections may be moved toward or away from each other.

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754,626. **MOLD FOR METAL-CONCRETE CONSTRUCTION.** CARL WEBER, Chicago, Ill., assignor to Steel-Concrete Construction Co., Chicago, Ill., a Corporation of Maine. Filed July 21, 1903. Serial No. 166,425. (No model.)

*Claim.*—1. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for releasably locking them one to another, and two intermediate molds to coöperate, respectively, with said outer and inner molds, each comprising a series of edgewise-abutting sections, substantially as described.

2. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for releasably locking them one to another, and two intermediate molds to coöperate, respectively, with said outer

and inner molds, each comprising a series of edgewise-abutting sections provided with openings to receive supporting-rods, substantially as described.



3. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for releasably locking them one to another, hangers on the sections of the outer mold, and two intermediate molds to coöperate, respectively, with said outer and inner molds, each comprising a series of edgewise-abutting sections, substantially as described.

4. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for locking them one to another and each formed of a frame provided with a facing projecting beyond its lower end, and two intermediate molds to coöperate, respectively, with said outer and inner molds, each comprising a series of edgewise-abutting sections of greater length than the sections of said outer and inner molds, substantially as described.

5. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for releasably locking them one to another and each formed of a frame provided with a facing projecting beyond its lower end, and two intermediate molds to coöperate, respectively, with said outer and inner molds, each comprising a series of edgewise-abutting sections of greater length than the sections of said outer and inner molds and provided with openings to receive supporting-rods, substantially as described.

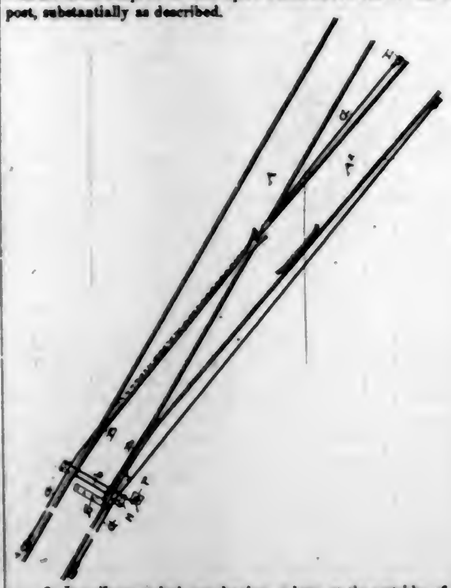
6. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for releasably locking them one to another and each formed of a frame provided with a facing projecting beyond its lower end, and two intermediate molds to coöperate, respectively, with said outer and inner molds, each comprising a series of edgewise-abutting sections of greater length than the sections of said outer and inner molds and having cross-bars for coöperation with spreader-rods inserted between the intermediate molds, substantially as described.

7. A set of molds for the purpose set forth, comprising an outer mold and an inner mold each composed of a series of sections provided with means for releasably locking them one to another and each formed of a frame provided with a facing projecting beyond its lower end, and two intermediate molds to coöperate, respectively, with said outer and inner molds, each comprising a series of edgewise-abutting sections of greater length than the sections of said outer and inner molds to project beyond the latter at their opposite ends and coöperate at their upper ends with a centering piece, said intermediate mold-sections having openings to receive supporting-rods and cross-bars for coöperation with spreader-rods inserted between said last-named molds, substantially as described.

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**754,627. AUTOMATIC RAILWAY-SWITCH. MARK M. WHITFIELD, Lorain, Ohio, assignor to John F. Sharp, Lorain, Ohio. Filed Sept. 10, 1903. Serial No. 172,568. (No model.)**

*Claim.*—1. In an automatic switch for railways, a track and a box set at the side of the track, a depressible post set into said box and having a segmentally-rounded head, a bell-crank lever pivoted in said box and engaged upon by said post and a switch-operating rod connected with said lever, in combination with a shoe having a rounded head adapted to bear upon the rounded head of the said post, substantially as described.



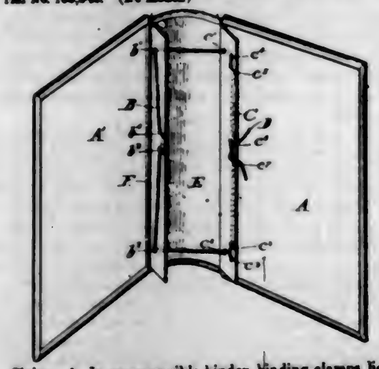
2. In railway-switch mechanism, a box at the outside of the track, a depressible post slidable up and down in said box, and a bell-crank lever operatively engaged by said lever, in combination with the switch and mechanism for throwing the switch operatively connected with said bell-crank lever, and a flat spring beneath the switch and pressing against the bottom thereof, whereby the switch is prevented from creeping away from its working position, substantially as described.

3. The switches and the mechanism to operate the same automatically from a car, in combination with a signal-light supporting-post, a housing in which said post is rotarily supported, a lever pivotally supported on said post and means to lock the lever temporarily thereon independently of said housing, a set of switches and a lever-and-link mechanism connecting the post operatively with the said switches, whereby the said switches can be thrown automatically or by hand, substantially as described.

4. In automatic switches for railways, a box and a depressible post set therein from the top having a head with a rounded top surface, and a bell-crank lever pivoted in said box and having one portion beneath said post and the other portion outside said box, substantially as described.

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**754,628. BINDER AND FILE FOR PAMPHLETS, BOOKS, LEDGERS, &c. FRED R. WHITNEY, Waukegan, Ill. Filed Dec. 1, 1903. Serial No. 183,348. (No model.)**



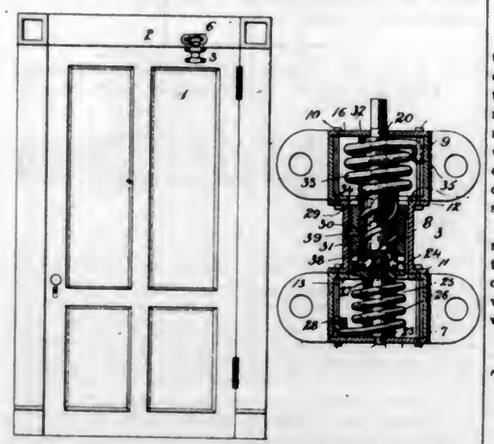
*Claim.*—1. In an expansible binder, binding-clamps, lids hinged to said clamps, an expansible back connecting said clamps, each of said clamps comprising a metal plate covered by a sleeve, said sleeve being extended and connected to its respective lid, said clamps being provided with holes for the passage of a connecting-fastener and also with locking-notches in the edges thereof.

2. In a temporary binder, the lids having clamps hinged thereto, said clamps having holes therethrough and a plurality of locking-notches in the edges thereof.



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**754,629. DOOR CHECK AND CLOSER. JOSEPH A. YOUNG, New York, N. Y. Filed May 16, 1903. Serial No. 157,356. (No model.)**



*Claim.*—1. In an automatic door-closing device, means for closing a door, a spring, and cam-controlled means for applying a torsional stress upon said spring for checking the door and preventing it from slamming.

2. In an automatic door-closing device, a spring-actuated means for closing a door, and spring-actuated and cam-controlled means for checking the door and preventing slamming through a torsional stress upon said latter spring.

3. In an automatic door-closing device, means for closing a door, a spindle, a spring, and cam-controlled means for connecting the spindle and spring so that a torsional strain of said spring operates to check the door to prevent it from slamming.

4. In an automatic door-closing device, means for closing a door, a spindle, a ratchet secured to said spindle, a second ratchet loosely mounted on said spindle and adapted to automatically engage said first-mentioned ratchet, and means for causing said ratchets to engage and disengage.

5. In an automatic door-closing device, a casing, a spindle mounted to rotate therein, a sleeve on said spindle and fixed thereto, a closing-spring connecting said casing and sleeve, a ratchet supported by said sleeve, a second ratchet mounted on said spindle, means for causing said ratchets to engage and disengage, and means engaging said second ratchet to cause the same to oppose the action of said closing-spring.

6. In an automatic door-closing device, a casing with a cam on its inner surface, a spring mounted to rotate therein, and a sleeve fixed to said spindle and provided with internal screw-threads and adapted to engage the threads on said sleeve and having rigid teeth on its lower end, and a pin projecting from said nut, and engaging said cam, a ratchet loosely mounted on said spindle and adapted to engage said teeth, and a spring connecting said ratchet and casing.

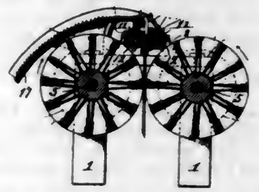
7. In an automatic door-closing device, a casing, a spindle, a spring interposed between said casing and spindle to close a door, a second spring secured to said casing and means for causing the springs to intermittently and torsionally oppose each other.

8. In an automatic door-closing device, a casing, a spindle, a clutch mounted on said spindle, two springs secured to said casing, one end of each being secured to a clutch member, and means for automatically uniting and separating said clutch members so that the springs will intermittently oppose each other.

9. In an automatic door-closing device, a casing, a spindle, a clutch, springs secured to the respective clutch members and the casing, and means for causing said springs to intermittently oppose each other.

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**754,630. BEEF-INTESTINE WRINGER. HERMAN C. ZIPRICK, Kansas City, Kans. Filed Jan. 2, 1903. Serial No. 137,457. (No model.)**



*Claim.*—1. In a machine of the character described, a curved table to receive the intestines, a guide-roller mounted at the upper end of the table and arranged with its upper portion slightly above the upper surface of said table, a pair of adjustably-mounted feed-rollers arranged with their adjacent sides vertically below the guide-roller, and a pair of adjustably-mounted cleaning-brushes arranged with their adjacent sides vertically below the feed-rollers and one of which brushes is located beneath the curved table so that portion of the intestines on the latter will not contact with the brush, substantially as shown and described.

2. In a machine of the character described, a curved table to receive the intestines, a guide-roller mounted at the upper end of the table, a pair of adjustably-mounted feed-rollers arranged vertically below the guide-roller, a pair of cleaning-brushes arranged vertically below the feed-rollers, and adjustable supporting-posts in which the cleaning-brushes are mounted.

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**754,631. LAMP FOR CANES, UMBRELLA-STICKS, OR THE LIKE. JAMES W. ALLEN, St. Louis, Mo. Filed Nov. 2, 1903. Serial No. 179,546. (No model.)**



*Claim.*—1. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a normally open electric circuit connecting said battery and lamp, a hinged cover arranged to automatically close said circuit when open, and means to prevent the closing of said circuit by said cover.

2. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a reflector for said lamp, a cover for said cavity, a normally open electric circuit connecting said battery and lamp and including said reflector and cover, and means on said cover arranged to make contact with said reflector when said cover is open and thereby close said circuit.

3. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a reflector for said lamp having a non-conducting section, a cover for said cavity, a normally open electric circuit connecting said battery and lamp and including said reflector and cover, and a projection on said cover arranged to make contact with said reflector when said cover is open, said reflector being adjustable to bring said non-conducting section into position to be engaged by said projection.

4. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a primary reflector for said lamp, a cover for said cavity arranged to serve as a secondary reflector when open, a normally open electric circuit connecting said battery

and lamp and including said primary reflector and cover, and means on said cover arranged to make contact with said primary reflector when said cover is open and thereby close said circuit.

5. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a normally open electric circuit connecting said battery and lamp, a cover for said cavity, a latch for said cover, and means arranged to release said latch and close said circuit.

6. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a normally open electric circuit connecting said battery and lamp, a cover for said cavity, a latch for said cover, and a switch-bolt arranged to release said latch and close said circuit.

7. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a normally open electric circuit connecting said battery and lamp, a cover for said cavity, a latch for said cover, and a switch-bolt arranged to release said latch and close said circuit, said switch-bolt being constructed to lock said cover shut.

8. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a reflector for said lamp, a head on said stick comprising a casing, and a cover, a normally open electric circuit connecting said battery and lamp and including said reflector and casing, a latch for said cover, and a switch-bolt in said casing arranged to release said latch and contact said reflector and thereby close said circuit.

9. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a reflector for said lamp, a head on said stick comprising a casing and a cover, a normally open electric circuit connecting said battery and lamp and including said reflector and casing, a latch for said cover and a switch-bolt arranged to release said latch and contact said reflector and thereby close said circuit, said switch-bolt having a semicylindrical section having transverse grooves arranged to engage a portion of said casing upon rotation of said switch-bolt; whereby said bolt may be locked against accidental movement when the circuit is either closed or open.

10. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, a normally open electric circuit connecting said battery and lamp, a cover for said cavity arranged to serve as a reflector, a latch for said cover, and a switch-bolt arranged to release said latch and close said circuit.

11. A stick-lamp comprising a stick having a cavity therein, a battery and a lamp in said cavity, an interrupted electric circuit connecting said battery and lamp, a hinged cover arranged to automatically close said circuit when open, means to prevent the closing of said circuit by said cover, a latch for said cover, and means arranged to release said latch and close said circuit.

12. A stick-lamp comprising a stick, having a cavity therein, a battery and a lamp in said cavity, an interrupted electric circuit connecting said battery and lamp, a hinged cover for a cavity, means on said cover to close said circuit when said cover is open, means to prevent the closing of said circuit by said means, a latch for said cover, and a switch-bolt arranged to release said latch and close said circuit.

13. A stick-lamp comprising a stick having a cavity therein, a battery therein, a head on said stick comprising a cavity and a cover hinged thereto, a reflector rotatably mounted in the mouth of said cavity having a non-conducting section and a lamp-socket, a lamp in said socket having one terminal in electrical connection with said reflector and the other in electrical connection with said battery, a conductor connecting the opposite terminal of said battery with said casing, a latch for said cover, a switch-bolt mounted in said casing to release said bolt and contact said reflector, a projection on said cover arranged to engage said reflector when said cover is open, and an arm on said reflector whereby said reflector may be rotated to bring said non-conducting section into position to be engaged by said projection.

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**754,632. BRIDLE-BIT.** Harvey S. Anderson, Hillsboro, Ohio. Filed Dec. 19, 1898. Serial No. 699,712. (No model.)



*Claim.*—1. The combination with a tubular, open-ended bit-bar, of bridle-attaching means adjustable exteriorly upon said bit-bar.

2. The combination with a tubular, open-ended bit-bar, of two bit-rings connected with the same, and connecting means, each consisting of an approximately spherical body having a longitudinal opening to engage the bit-bar and provided with upward and downward approximately spherical extensions, one of said extensions having a transverse perforation at right angles to the longitudinal opening in the spherical body to receive a bit-ring and the other of said extensions having a longitudinal slit or kerf communicating with the opening for the reception of the bit-bar, a transverse perforation the ends of which are countersunk and threaded, and a clamping-screw engaging said perforation.

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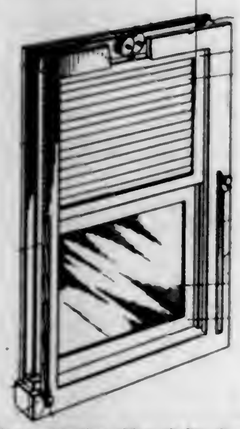
**754,633. WRENCH.** Lewis Ash and Hiram B. Stewart, Hassel, Mont. Filed Apr. 28, 1903. Serial No. 154,720. (No model.)



*Claim.*—In a wrench, the combination with a shank provided with a fixed jaw having a longitudinal recess disposed upon the upper side thereof, said recess being undercut at one end, a longitudinal toothed plate disposed within the aforesaid recess having one end thereof extended beneath the undercut portion of the recess, a handle removably disposed upon the shank of the wrench and embracing the opposite end of the removable toothed plate aforesaid to hold same in position, a movable jaw adjustable upon the shank of the wrench, brackets projected from the said jaw and embracing the said shank, a recess provided upon the inner face of the shank of the movable jaw, a removable toothed plate disposed within the said recess and adapted to cooperate with the toothed plate upon the shank of the wrench to fix the movable jaw at an ascertained adjustment, and a removable plate secured to the end of the shank of the movable jaw and securing the toothed plate upon the said jaw from displacement, and a flat spring interposed between the inner faces of the rear sides of the aforesaid brackets and adapted to cause normal engagement of the toothed plates upon the movable jaw and upon the shank of the wrench.

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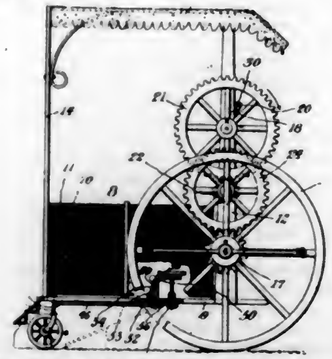
**754,634. SASH-LIFTER FOR CAR-WINDOWS.** Angeline R. Bell, Knightstown, Ind. Filed Dec. 2, 1902. Serial No. 133,634. (No model.)



*Claim.*—The combination with a window-frame having weight-boxes, longitudinal slots in the fronts of the weight-boxes, sashes slidably mounted in the frame, weights in the boxes, cords connecting the sashes with their respective weights, and racks upon the faces of the boxes at the sides of the slots, of knobs having stems passed through the slots engaged with the weights, and latch-levers pivoted to the stems and having finger-pieces projecting laterally below the knobs for operation simultaneously with the knobs.



**754,635. SELF-PROPELLED VEHICLE.** Joseph-Cajétan Bérubé, St. Damase, Canada. Filed Apr. 23, 1903. Serial No. 153,945. (No model.)



*Claim.*—1. A self-propelled vehicle comprising in combination, a pair of oppositely-disposed driving-wheels, a pair of cranks adapted respectively to drive said wheels, and a removable coupling between said cranks.

2. In a self-propelled vehicle, in combination, a pair of oppositely-disposed driving-wheels, a pair of cranks respectively adapted to drive said wheels, members carried by said cranks which project toward each other, and another member movably mounted upon said last members and affording means for connecting or disconnecting the same.

3. In a self-propelled vehicle, in combination, a pair of oppositely-disposed driving-wheels, a pair of oppositely-disposed cranks, mechanisms connecting each of said cranks with said wheels to drive the same, members carried by said cranks and projecting toward each other, and a sleeve slidably mounted upon said members and which may couple the same.

4. In a self-propelled vehicle, in combination, a pair of oppositely-disposed driving-wheels, independent gear mechanisms for driving said wheels, a pair of cranks respectively adapted to actuate said mechanisms, laterally-projecting members carried by the arms of said cranks, the extremities whereof may lie adjacent, springs impelling said members toward each other, and a sleeve movable longitudinally thereupon and which may connect said members.

5. In a self-propellel vehicle, in combination, a pair of oppositely-disposed driving-wheels, independent gear mechanisms for driving said wheels, cranks respectively adapted to actuate said mechanisms, members carried by the arms of said cranks and which project toward each other, springs constraining the same, a movable sleeve mounted upon said members and which may connect the same, and means whereby said members may be attached to the arms of said cranks in a plurality of positions.

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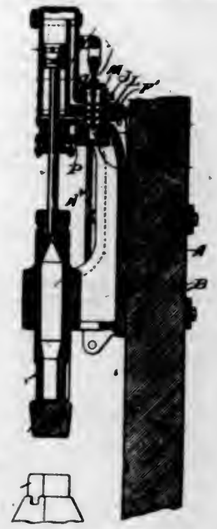
**754,636. STEAM-HAMMER.** Charles E. Billin, Chicago, Ill. Filed Aug. 12, 1902. Serial No. 119,396. (No model.)

*Claim.*—1. As an article of manufacture, a steam-hammer comprising a frame or casting having a flat rear portion formed to be secured to a wall or column, and having attached thereto a cylinder, and guides for the movable parts, a hammer, a spring-buffer to limit the upward movement of the same, and operating mechanism for admitting working fluid into the cylinder and reciprocating the hammer, as and for the purpose set forth.

2. As an article of manufacture, a steam-hammer comprising a C-shaped frame or casting having a flat back portion formed to engage and be secured to a wall or column, a cylinder at the upper extremity of said frame, vertical guides at the lower extremity in alinement with said cylinder, and a hammer guided thereby, and operating mechanism for admitting working fluid into the cylinder and reciprocating the hammer, as and for the purpose set forth.

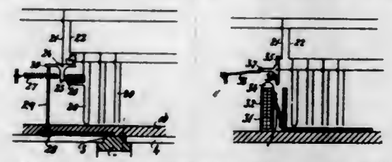
3. As an article of manufacture, a steam-hammer comprising a C-shaped frame or casting having a flat back portion formed to engage and be secured to a wall or column, a cylinder at the upper extremity of said frame, vertical guides at the lower extremity in alinement with said cylinder, and a hammer guided thereby, and automatic operating mechanism for admitting working fluid into the cylinder and reciprocating the hammer, as and for the purpose set forth.

4. As an article of manufacture, a steam-hammer comprising a C-shaped frame or casting having a flat back portion formed to engage a wall or column, a plurality of bolt-holes therein whereby the same may be secured to the wall or column, a cylinder and valve-gear at the upper extremity of the frame, and a hammer guided in bearings at the lower end of the frame, as and for the purpose set forth.



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**754,637. ELECTROMAGNETIC GUN.** Kristian Birkeland, Christiania, Norway. Filed Jan. 2, 1902. Serial No. 88,189. (No model.)



*Claim.*—1. In an electromagnetic gun, the combination, with a gun-barrel, a plurality of solenoid-windings surrounding said barrel, and means for supplying current to said windings, of a series of circuit-closers arranged to close the circuit of the respective windings, a projectile arranged to move inside the gun-barrel and progressively generate a counter electromotive force in the solenoid-windings, and means for progressively opening the circuit-closers of the respective windings, each at that moment when the induced counter-current in its corresponding winding is substantially equal to the current produced by the direct electromotive force in the same.

2. In an electromagnetic gun, the combination, with a gun-barrel, a plurality of solenoid-windings surrounding said barrel, and means for supplying current to said windings, of a series of circuit-breakers arranged to close the circuit of the respective windings, a projectile arranged to move inside the gun-barrel and progressively generate a counter electromotive force in the windings, and means operated by the projectile and arranged to progressively open the circuit-breakers of the respective windings, each at that moment when the induced counter-current in the winding is substantially equal to the current produced by the direct electromotive force.

3. The combination, with a barrel provided with a longitudinal slot, a plurality of solenoid-windings surrounding the barrel and means for energizing said windings, of a strip of insulating material mounted in said slot and a plurality of circuit-breakers connected to said solenoids and mounted on said strip.

4. In an electromagnetic gun in combination, solenoid-windings, a barrel, a longitudinal slot in the barrel, a block of insulating material in the slot, a groove on the inside of the block in the whole length of the barrel and circuit-breakers in the groove said circuit-breakers being electrically connected with the solenoid-windings.

5. In an electromagnetic gun, in combination, a barrel of non-magnetic material, a longitudinal slot in the barrel, a block of insulating material in the slot, parallel grooves in the block in the whole

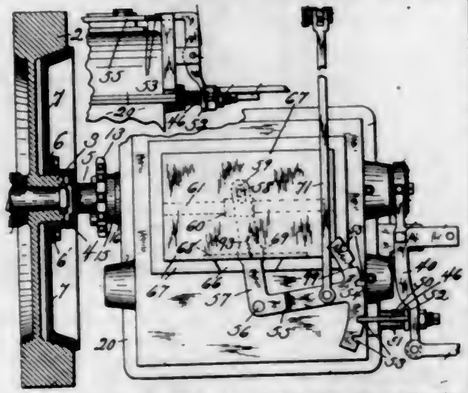
length of the barrel, elementary solenoids placed on the barrel and connected with the source of electricity, and circuit-breakers in the grooves of said block, serving to close and open the circuit of each solenoid or group of solenoids.

6. In an electromagnetic gun, in combination, a barrel, a longitudinal slot in the barrel, a block of insulating material in the said slot, elementary solenoids placed on the barrel, circuit-breakers mounted on the block, and serving to close and open the circuit of each solenoid, and electrical connections between groups of solenoids and the source of electricity and circuit-breakers in the said electrical connection.

7. In an electromagnetic gun the combination, with the projectile, the barrel and a block of insulating material placed in a longitudinal slot in the whole length of the barrel, of a rod or rods of insulating material fitting into a groove or grooves in the said block and means whereby said rod or rods are loosely attached to the projectile during its passage through the barrel, said rod or rods acting to separate the circuit-breakers placed in said groove or grooves.

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754,638. TRANSMISSION-GEAR. PATRICK H. BRENNAN, Syracuse, N. Y. Filed Dec. 21, 1903. Serial No. 185,912. (No model.)



*Claim.*—1. In a transmission-gear mechanism, the combination with a suitable gear-case, of a main shaft journaled and moving longitudinally therein, means at one end of the shaft to make connection with the engine-shaft, a lever connected to the other end to move the main shaft into or out of said connection, a main gear fitted on the main shaft and having depressions therein, means connected to the main gear to communicate the power, a sliding gear provided at one end with a small gear and fitted on the main shaft to turn therewith, a lever and connections to slide the sliding gear on the main shaft, projections on the sliding gear to engage with the depressions on the main gear, a counter-shaft journaled in the case parallel with the main shaft, a driving-shaft, a driving-pinion on the counter-shaft to engage with the main gear, an intermediate pinion on the counter-shaft to engage with the sliding gear, a low-speed pinion on the counter-shaft to engage with the small gear, a transmitting-pinion suitably journaled to engage with the small gear and a reversing-pinion on the counter-shaft to engage with the transmitting-pinion.

2. In a transmission-gear mechanism, the combination with a suitable gear-case, of a main shaft journaled and moving longitudinally therein, means at the outer end of the shaft to make connection with the engine-shaft, a lever connected to the other end to move the main shaft into and out of said connection, a main gear fitted on the main shaft and having depressions therein, means connected to the main gear to communicate the power, a sliding gear provided at one end with a small gear and fitted on the main shaft to turn therewith, projections on the sliding gear to engage with the depressions on the main gear, a counter-shaft journaled in the case parallel with the main shaft, a driving-pinion on the counter-shaft to engage with the main gear, an intermediate pinion on the counter-shaft to engage with the sliding gear, a low-speed pinion on the counter-shaft to engage with the small gear, a transmitting-pinion suitably journaled to engage with the small gear and a reversing-pinion on the counter-shaft to engage with the transmitting-pinion, a bell-crank lever journaled on top of the case having an inner arm extending into the case, a guide-rod in the case parallel to the shafts, a sliding collar connected to the inner arm of the lever, a sliding lever on the collar engaging with the sliding gear and operative connections to the bell-crank lever.

3. In a transmission-gear mechanism, the combination with a suitable gear-case, of a main shaft journaled and moving longitudinally therein, means at the outer end of the shaft to make connection with the engine-shaft, a main gear fitted on the main shaft and having depressions therein, means connected to the main gear to communicate the power, a sliding gear provided at one end with a small gear and fitted on the main shaft to turn therewith, a bell-crank lever having a notched quadrant and connections to slide the sliding gear on the main shaft, projections on the sliding gear to engage with the depressions on the main gear, a counter-shaft journaled in the case parallel with the main shaft, a driving-pinion on the counter-shaft to engage with the main gear, an intermediate pinion on the counter-shaft to engage with the sliding gear, a low-speed pinion on the counter-shaft to engage with the small gear, a transmitting-pinion suitably journaled to engage with the small gear and a reversing-pinion on the counter-shaft to engage with the transmitting-pinion, a latch pivotally supported and adapted to engage with the quadrant on the bell-crank lever to lock the sliding gear in each of its operative positions, and a shaft-lever pivotally supported on the outside of the inner end of the case, to engage with the main shaft to move it longitudinally and to engage with the latch and withdraw it from engagement with the quadrant.

4. In a transmission-gear mechanism, the combination with a suitable gear-case, of a main shaft journaled and moving longitudinally therein, means at the outer end of the shaft to make connection with the engine-shaft; a main gear fitted on the main shaft and having depressions therein, means connected to the main gear to communicate the power, a sliding gear provided at one end with a small gear and fitted on the main shaft to turn therewith, projections on the sliding gear to engage with the depressions on the main gear; a counter-shaft journaled in the case parallel with the main shaft, a driving-pinion on the counter-shaft to engage with the main gear, an intermediate pinion on the counter-shaft to engage with the sliding gear, a low-speed pinion on the counter-shaft to engage with the small gear, a transmitting-pinion suitably journaled to engage with the small gear and a reversing-pinion on the counter-shaft to engage with the connecting-pinion; a bell-crank lever pivotally supported on the case, having an inner arm extending into the case and a notched quadrant on its outer arm, a guide-rod in the case parallel to the shafts, a sliding collar having a pin engaging with the inner arm of the lever, a sliding lever on the collar engaging with the sliding gear; a latch pivotally supported on the case and adapted to engage with the quadrant; a shaft-lever pivotally supported on the case and connected to the main shaft to move it longitudinally and adapted to engage with the latch and withdraw it from engagement with the quadrant, and operative connections respectively to the bell-crank lever and to the shaft-lever.

5. In a transmission-gear mechanism for motor-cars, a suitable case, a main shaft journaled in the case, a main gear fitted to the outer end of the shaft, within the case and having interlocking spaces therein and an outwardly-extending shank, a sprocket on the outer end of the shank, a hollow hub and clutch member on the outer end of the shaft adapted to engage with corresponding parts connected to the engine-shaft, a shaft-lever pivotally supported on the outside of the inner end of the case and having one end engaging with the inner end of the shaft and an outwardly-extending free arm; a sliding gear fitted to be moved longitudinally on the main shaft to turn therewith, and provided with a circumferential groove, said sliding gear having lugs on its outer end to engage with the interlocking spaces on the main gear and having a small gear on its inner end, a transmitting-pinion suitably journaled within the case at its inner end to engage with the small gear, intermediate, low-speed and reversing pinions on the counter-shaft to engage respectively with the main, sliding, small and transmitting gears; a bell-crank lever journaled on top of the case having an outer arm provided with a notched quadrant and an inner arm extending into the case through a slot, a guide-rod arranged within the case parallel to the shafts, a sliding collar on the guide-rod connected to the inner arm of the bell-crank lever, a sliding lever on the collar engaging with the circumferential groove in the sliding gear; a spring arranged to engage with, and force out the free arm, to maintain the clutch elements in engagement, a latch pivotally supported on the exterior of the case having an arm arranged to be engaged by said free arm and a bent end to engage with the quadrant, said quadrant being provided with notches for the latch corresponding to the reverse, low-speed, intermediate and high-speed positions and with a notch corresponding to the neutral position, and suitable operative connections respectively to the bell-crank lever and to the shaft-lever.

6. In a transmission-gear mechanism for motor-cars, a suitable case, a main shaft journaled in the case, a main gear fitted to the outer end of the shaft within the case and having interlocking spaces therein and an outwardly-extending shank, a sprocket on the shank, a hollow hub and clutch member on the outer end of the shaft adapted to engage with corresponding parts connected to the engine-shaft, a shaft-lever pivotally supported on the outside of the inner end of the case and having one end engaging with the inner end of the shaft and an outwardly-extending free arm; a sliding gear fitted to be moved longitudinally on the main shaft but to turn therewith, and provided with a circumferential groove, said sliding gear having lugs on its outer end to engage with the interlocking spaces on the main gear and having a small gear on its inner end, a transmitting-pinion suitably journaled within the case at its inner end to engage with the small gear, driving, intermediate, low-speed and reversing pinions on the counter-shaft to engage respectively with the main, sliding, small and transmitting gears; a bell-crank lever journaled on top of the case having an outer arm provided with a notched quadrant and an inner arm extending into the upper portion of the case through a slot, a shutter fitted to said inner arm to close the slot in the cover; a guide-rod arranged within the case parallel to the shafts, a sliding collar on the guide-rod connected to the inner arm of the bell-crank lever, a sliding lever on the collar engaging with the circumferential groove in the sliding gear; a spring arranged to engage with, and force out the free arm, to maintain the clutch elements in engagement, and a latch pivotally supported on the exterior of the case having an arm arranged to be engaged by said free arm and a bent end to engage with the quadrant, said quadrant being provided with notches for the latch corresponding to the reverse, low-speed, intermediate and high-speed positions and with a notch corresponding to the neutral positions, and suitable operative connections respectively to the bell-crank lever and to the shaft-lever.

7. In a transmission-gear mechanism for motor-cars, a suitable case, a cover to close the top opening in the case, a main gear having a tubular shank journaled at the outer end of the case, a sprocket on the shaft, a main gear journaled in the shaft and in the inner end of the case, a clutch member on the outer end of the shaft adapted to engage with a corresponding part connected to the engine-shaft, collars on the inner end of the shaft outside of the case, a ring fitted to the end of the shaft between the collars, ball-bearings between the ring and the collars, a shaft-lever pivotally supported outside the case on its inner end, having a forked end engaging with said ring and an outwardly-extending free arm; hardened-steel plates fitted to counterbores on the inner face of the main gear, forming interlocking spaces between them; a sliding gear fitted to be moved longitudinally on the main shaft but to turn therewith, and provided with a circumferential groove, said sliding gear having lugs on its outer end to engage with the interlocking spaces on the main gear and a small gear on its inner end, a transmitting-pinion suitably journaled within the case at its inner end to engage with the small gear, driving, intermediate, low-speed and reversing pinions on the counter-shaft to engage respectively with the main, sliding, small and transmitting gears; a bell-crank lever journaled on top of the case having an outer arm provided with a notched quadrant and an inner arm extending into the upper portion of the case through a slot, a shutter fitted to said inner arm and adapted to close the slot in the cover; a guide-rod arranged within the case above the shafts and parallel thereto, a sliding collar on the guide-rod having a pin engaging with the slot in the inner arm of the bell-crank lever, a sliding lever on the collar having a forked end engaging with the circumferential groove in the sliding gear, a spring arranged to engage with, and force out the free arm, to maintain the clutch elements in engagement, a latch pivotally supported on the exterior of the case adjacent to said free arm, having an arm arranged to be engaged by the free arm and having a bent end to engage with the quadrant; a sliding collar fitted to move freely on the counter-shaft and having a circumferential groove, a forked lever engaging with the groove on said sliding collar, said forked inner lever being pivotally supported on a bearing within the case and having an upper arm engaging with the inner arm of the bell-crank lever, a connecting-feather, connecting the driving-pinion to the sliding collar, and a spring arranged between the driving-pinion and the intermediate pinion, tending to maintain the former in engagement with the main gear, said driving-pinion being connected to the counter-shaft to turn therewith but free to move longitudinally thereon.

9. In a transmission-gear mechanism for motor-cars, a suitable case, a main shaft journaled in the case, a main gear fitted to the outer end of the shaft within the case and having interlocking spaces therein and an outwardly-extending shank, a sprocket on the shank, a clutch member on the outer end of the shaft adapted to engage with a corresponding part connected to the engine-shaft, a shaft-lever pivotally supported outside the case on its inner end and having one end engaging with the inner end of the shaft and an outwardly-extending free arm; a sliding gear fitted to be moved longitudinally on the main shaft but to turn therewith, and provided with a circumferential groove, said sliding gear having lugs on its outer end to engage with the interlocking spaces on the main gear and a small gear on its inner end, a transmitting-pinion suitably journaled within the case at its inner end to engage with the small gear, driving, intermediate, low-speed and reversing pinions on the counter-shaft to engage respectively with the main, sliding, small and transmitting gears; a bell-crank lever journaled on top of the case having an outer arm provided with a notched quadrant and an inner arm having a slotted end, extending into the upper portion of the case through a slot, a shutter fitted to said inner arm and adapted to close the slot in the cover; an elongated lug on the under side of the inner arm within the case, a guide-rod arranged within the case above the shafts and parallel thereto, a sliding collar on the guide-rod having a pin engaging with the slot in the inner arm of the bell-crank lever, a sliding lever on the collar having a forked end engaging with the circumferential groove in the sliding gear, a spring arranged to engage with, and force out the free arm, to maintain the clutch elements in engagement, a latch pivotally supported on the exterior of the case adjacent to said free arm, having an arm arranged between the said collar and spring on the guide and having a bent end to engage with the quadrant, said quadrant being provided with notches for the latch corresponding to the reverse, low-speed, intermediate and high-speed positions and with a notch corresponding to the neutral position, a sliding collar fitted to move freely on the counter-shaft and having a circumferential groove, a forked lever having antifriction-rollers engaging with the groove on said sliding collar, said forked inner lever being pivotally supported on a bearing within the case and having an integral, curved upper arm engaging with said elongated lug on the inner arm of the bell-crank lever, and a connecting-feather having shoulders at each end connecting the driving-pinion to the sliding collar, a spiral spring arranged between the driving-pinion and the intermediate pinion, tending to maintain the former in engagement with the main gear, and a feather to connect the sliding pinion to turn with the counter-shaft.

10. In a transmission-gear mechanism for motor-cars, a suitable case composed of two corresponding halves, a flanged cover fitted to close a top opening in the case, a main gear having a tubular shank journaled at the outer end between the two halves of the case, a sprocket on the shaft, a main shaft journaled in the shank at the outer end and between the two halves of the case at the inner end, a hollow hub and clutch member on the outer end of the shaft adapted to engage with corresponding parts connected to the engine-shaft,

collars on the inner end of the shaft, a ring fitted to the end of the shaft between the collars, ball-bearings between the ring and the collars, a shaft-lever pivotally supported on the outside of the inner end of the case and having a forked end engaging with said ring and an outwardly-extending free arm; hardened-steel plates fitted to counterbores on the inner end of the main gear, forming interlocking spaces between them; a sliding gear fitted to be moved longitudinally on the main shaft but to turn therewith, and provided midway of its length with a circumferential groove, said sliding gear having lugs on its outer end to engage with the interlocking spaces on the main gear, a small gear on the inner end of the sliding gear; a transmitting-pinion suitably journaled within the case at its inner end to engage with the small gear; driving, intermediate, low-speed and reversing pinions on the counter-shaft to engage respectively with the main, sliding, small and transmitting gears; a bell-crank lever journaled on top of the case having an outer arm provided with a notched quadrant and an inner arm extending into the upper portion of the case through a slot in the cover, said inner arm being provided with a slotted inner end, and with opposite arcs where it extends through the cover, a shutter fitted to said arcs and adapted to close the slot in the cover; an elongated lug on the under side of the inner arm within the case; a guide-rod arranged within the case above the shafts and parallel thereto, a sliding collar on the guide-rod having a pin engaging with the slot in the inner arm of the bell-crank lever, a sliding lever on the collar having a forked end engaging with the circumferential groove in the sliding gear; a collared guide on the free arm of the shaft-lever, a spiral spring fitted to said guide and engaging with the case to force out the free arm and to maintain the clutch members in engagement, a latch pivotally supported on the exterior of the case adjacent to said free arm, having an arm arranged between the said collar and spring on the guide and having a bent end to engage with the quadrant, said quadrant being provided with notches for the latch corresponding to the reverse, low-speed, intermediate and high-speed positions and with a notch corresponding to the neutral position; a sliding collar fitted to move freely on the counter-shaft and having a circumferential groove, a forked lever having anti-friction-rollers engaging with the groove on said sliding collar, said forked inner lever being pivotally supported on a bearing within the case and having an integral, curved, upper arm engaging with said elongated lug on the inner arm of the bell-crank lever, and a connecting-feather having shoulders at each end connecting the driving-pinion to the sliding collar, a spiral spring arranged between the driving-pinion and the intermediate pinion, tending to maintain the former in engagement with the main gear, a suitable feather to connect the sliding pinion to turn with the counter-shaft, and suitable operative connections respectively to the bell-crank lever and to the shaft-lever.

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**754,639. APPARATUS FOR MAKING BLOCKS FOR BUILDING OR LIKE PURPOSES.** JOHN BROWER, San Francisco, Cal. Filed Mar. 18, 1903. Serial No. 148,046. (No model.)

*Claim.*—1. In combination, a mold-box made up of separable members, a removable die within the box on one side, openings in the two adjacent sides of the box, means for forming an opening in the material and compressing the said material within the box and against the die and means for the insertion of a sand filler into the opening in the material.

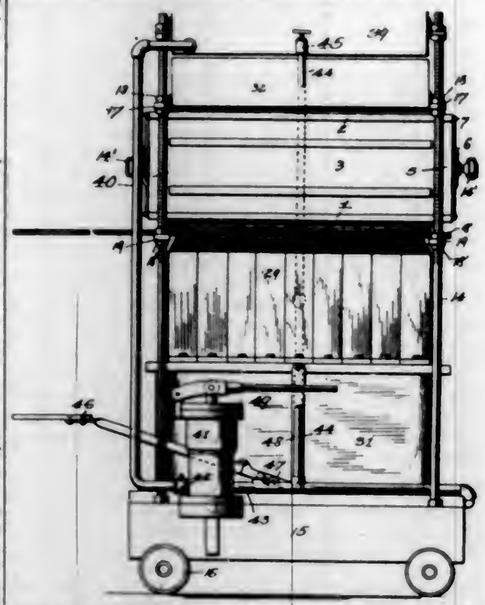
2. In combination with a mold-box having openings in its opposite sides a wedge reciprocating through both openings and through the box means to close one of the openings said means being operated by the wedge to free the opening on one stroke the wedge then returning through the opening formed in the material substantially as described.

3. In combination a mold-box having an opening, a wedge to enter the mold-box, automatic means for closing the mold-box as the wedge is withdrawn therefrom and means for the insertion of a sand filler into the opening left by the withdrawal of the wedge, substantially as described.

4. In combination a mold-box having opposite openings, a wedge to enter the mold-box through one opening and to recede through the said opening, the other opening permitting the introduction of sand core, means for introducing the said core and means for closing the openings, substantially as described.

5. In combination a mold-box having a plurality of gates located side by side to form a closure for an opening in the mold-box and means formed in sections to enter the said opening for compressing the material in the mold-box and leave openings in the said material, said sections corresponding in number to the number of gates whereby differently-disposed openings may be left in the molded article, substantially as described.

6. In combination a mold-box having an opening, a wedge formed in sections each of which is adjustable and a partition to be placed in the mold-box, and sectional means to close the opening in the box independent of the wedge, substantially as described.



7. In combination a frame, a mold-box supported on rollers, and formed in separable sections and having openings in opposite sections, tracks on the frame for the said rollers and wedge means within the frame adapted to enter the mold-box for compressing the material therein, substantially as described.

8. In combination, a mold-box comprising a bottom, two sides and a top separable from each other, rollers on one of the sides, openings through the sides in line with each other, a die resting on the bottom and means for turning the box so that the bottom may be in its lowermost position or may be in an upright position, substantially as described.

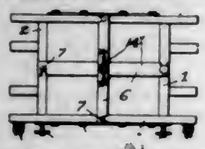
9. In combination, a mold-box comprising a bottom, two sides and a top separable from each other, rollers on one of the sides, openings through the sides in line with each other, a die resting on the bottom and means for turning the box so that the bottom may be in its lowermost position or may be in an upright position and a board 13 at the top of the box, substantially as described.

10. In combination a mold-box having an opening extending continuously from near one end to near the other end of one side of the box, means formed in sections for entering the said continuous opening to provide a plurality of openings in the material within the box and gates or slides corresponding in position and number to the sections, said gates or slides normally closing said continuous openings from end to end, substantially as described.

11. In combination a mold-box having an opening, a wedge formed of removable sections, to enter the said mold-box and a series of movable gates corresponding in number to the sections of the wedge, the wedge-sections being arranged side by side and in contact to form a complete wedge, substantially as described.

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**754,640. METHOD OF MAKING BLOCKS FOR BUILDING OR LIKE PURPOSES.** JOHN BROWER, San Francisco, Cal. Filed Aug. 22, 1903. Serial No. 170,496. (No model.)



*Claim.*—1. The herein-described process of forming building-blocks and the like of cement or like material, consisting in shaping the mass of material, forming an opening or openings therein and thereby simultaneously compressing the material, introducing a sand filler or core into the opening or openings and allowing the mass to dry, substantially as described.

2. The herein-described process consisting in shaping the mass in connection with a die and forming an opening or openings in the mass and thereby simultaneously compressing the material against the die and then introducing a sand core or filler into the opening or openings and allowing the mass to dry and then removing the sand, substantially as described.

3. The herein-described process consisting in shaping the mass of material, turning the same upon its side, forming an opening or openings vertically through the mass while it is in this position, introducing a sand core or filler vertically into the opening in the mass and then giving the mass a quarter-turn and allowing the same to dry, substantially as described.

4. The herein-described process consisting in shaping the mass of material in connection with a die upon which the said mass rests, turning the mass upon its side with the die-face extending vertically, forming an opening or openings through the mass while in this position and simultaneously compressing the material against the die-face, introducing a sand core vertically into the opening or openings and then turning the mass with the die uppermost and removing the said die, substantially as described.

5. The herein-described process consisting in shaping the mass of material in connection with a die upon which the said mass rests, placing a board on top of the said material, turning the mass of material upon its side, forming an opening or openings therein while in this position and simultaneously compressing the material between the board and the die, introducing a sand filler vertically into the opening or openings, turning the mass of material so as to rest upon the board and with the die uppermost, removing the die and then allowing the material to dry, substantially as described.

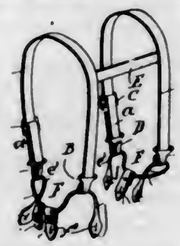
6. The herein-described process consisting in packing the material in a mold having a die at the lower part thereof, forming an opening or openings in the material while the same is in the mold and thereby simultaneously compressing the material outwardly against the sides of the mold, introducing a sand core vertically into the opening or openings and stripping the mold from about the material, substantially as described.

7. The herein-described process consisting in shaping the mass within the mold composed of separable members with a die within the lower part of the mold, placing a cover-board on the mass, turning the mold upon its side and forming an opening or openings vertically through the material therein while on its side, introducing a sand core or filler vertically into the opening or openings, turning the mold so that the die is uppermost and stripping the parts of the mold-box from about the mass, substantially as described.

8. The herein-described method consisting in first placing the material in a mold then forming an opening in the mass by forcing the material from its central or intermediate body portion outwardly against the sides of the mold to thereby compress the material and then introducing a core of sand into the opening while the material is still in the mold, substantially as described.

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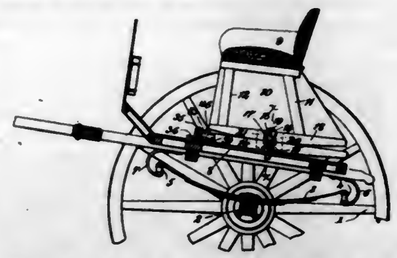
**754,641. SUSPENDERS.** JOHN W. BURGETT, Guttenberg, N. J. Filed Aug. 15, 1902. Serial No. 119,688. (No model.)



*Claim.*—In suspenders, the web-sections A, each arranged to pass over the shoulder of the wearer to the front and to the back, and the end of each section terminating at a point below his arm, snap-hooks B, and D, one on each of the lower ends of said web-sections, in combination with suspender-ends, having each two button-tabs, one on each end, and an intermediate cord, an intermediate button-tab slidably engaging each of said cords and each of said cords detachably and slidably engaged, between said tabs, by the snap-hooks on the ends of said web-sections, and said cord by reason of such engagement holding said ends apart and thereby affording facility for detaching said suspender-ends from said web-sections, and also affording facility for the said cord to slide in said snap-hooks, and in said intermediate button-tab.

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**754,642. DEVICE FOR PREVENTING SHAFT MOTION IN VEHICLES.** WILLIAM N. CLEVELAND, Dover, Ky. Filed June 6, 1903. Serial No. 160,339. (No model.)



*Claim.*—1. A device for preventing shaft motion in vehicles, comprising a seat provided with rockers, means for flexibly connecting said seat with the body of a vehicle, and mechanism for compensating the inclination of said seat relative to the general position of said body of said vehicle.

2. A device for preventing shaft motion in vehicles, comprising a seat provided with a plurality of superimposed rockers, and means for flexibly connecting said seat and said rockers together and for flexibly securing the same upon the body of the vehicle.

3. A device for preventing shaft motion in vehicles, comprising a seat provided with a plurality of superimposed rockers, and means for flexibly connecting said seat and said rockers together and for flexibly securing the same upon a body of a vehicle, and a manually-operated fastening independent of said means for temporarily locking one of said rockers rigidly, relatively to said vehicle-body, so as to prevent rolling motion between said rocker and said vehicle-body.

4. A device for preventing shaft motion in vehicles, comprising a seat provided with a rocking device, and with means for changing the general inclination of said seat relatively to the vehicle-body, leaving said rocking device free to compensate shaft motion.

5. A device for preventing shaft motion in vehicles, comprising a seat to be used in connection with a vehicle-body, a plurality of rockers for preventing said seat from being affected by shaft motion, and means controllable at will for changing the general relative position of said seat and said vehicle for the purpose of compensating the inclination of said vehicle-body due to passage of the same over inclined roads.

6. A device for preventing shaft motion in vehicles, comprising a seat provided with a rocking device and with locking mechanism connected with said rocking device and with the vehicle-body for the purpose of controlling the general inclination of said seat relatively to said vehicle-body.

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**754,643. PROCESS OF SEPARATING IRON PYRITES FROM ZINC-BLENDE.** KARL DANNECKER, Zawodzie, near Kattowitz, Germany. Filed May 29, 1903. Serial No. 159,334. (No specimens.)

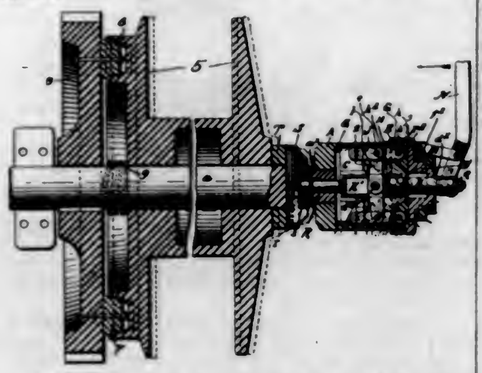
*Claim.*—A process for separating iron pyrite from zinc-blende, which consists in exposing the zinc-blende to the action of air moisture and heat and extracting the ferrous salt, which has been formed by the oxidizing action by water.

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**754,644. FRICTION CLUTCH MECHANISM.** SPURGEON J. DAVIS, Cathlamet, Wash., assignor to the Davis-McGregor Manufacturing Company, Portland, Oreg., a Corporation. Filed July 17, 1903. Serial No. 166,034. (No model.)

*Claim.*—1. A mechanism of the class described, comprising in combination with a drum-shaft, a drive-gear carried thereby and a drum-spool loosely mounted upon said drum-shaft, said drive-gear and said drum-spool having cooperating clutch-faces, of means for shifting said drum-spool into tight frictional engagement with said drive-gear, said means including a cylinder mounted upon the end of the drum-shaft to rotate therewith, and clutch members having toggle connections with each other held within said cylinder, for the purposes specified.

2. In a device of the character stated, comprising in combination with a drum-shaft, the drive-gear and the drum-spool, of means for shifting said drum-spool into tight frictional engagement with the drive-gear, said means including a cylinder mounted upon the drum-shaft and open at one end, a detachable cap for said open end, a disk mounted in said end to bear against the inner side of the cap, a cross-bar at the other end of the cylinder, a stem slidable within an aperture in the drum-shaft and engaging said cross-bar, means for shifting said cross-bar, said means including a piston longitudinally movable through the cylinder, a toggle mechanism mounted on the piston and connected with the cross-bar and the disk, and means exterior to the cylinder for reciprocating said piston, for the purposes described.



3. In a device of the character stated, a drum-shaft, a drive-gear carried thereby, a drum-spool mounted thereon, said drum-shaft having a longitudinal aperture in one end and a cross-slot registering with the inner portion of said aperture, a cross-key movable within said cross-slot, a stem or pin longitudinally movable within said aperture and abutting said cross-key, a collar mounted upon said shaft between said drum-spool and said cross-key, a cylinder mounted upon said shaft to rotate therewith, and manually-operated means carried by said cylinder for shifting said stem or pin and said cross-key into engagement with said drum-spool to cause said drum-spool to engage said drive-gear to turn therewith, as specified.

4. The combination with a drum-shaft, a cylinder open at one end detachably connected thereto to rotate therewith; of a piston axially movable through the cylinder, a drive-gear mounted on the drum-shaft, for cooperating with the drum-spool, means for endwise interlocking said drive-gear and said drum-spool, said means including an endwise-movable ring and a cross-key secured to and movable in the cross-slot in the drum-shaft, and adapted to interlock with the endwise-movable ring, toggle clutch devices mounted within and cooperating with the cylinder and joined with the piston, and adjusted by shifting said piston, and means exterior of the cylinder for shifting said piston, as set forth.

5. In combination with a drum-shaft, a drum-spool loosely mounted and having endwise movement thereon; of a hollow cylinder secured to and rotatable with the drum-shaft; drum-spool-shifting mechanism located within the cylinder and adapted to be interlocked and rotate therewith, said shifting mechanism including a longitudinally-shiftable member, the movement of which controls the action of the said shifting mechanism and the endwise shifting of the drum-spool, and means for setting said shifting mechanism, for the purposes specified.

6. The combination in a drum-spool-shifting mechanism as described, with a drum-shaft, a drum-spool and a collar or ring loosely mounted thereon; of a cylinder open at one end secured to the shaft to rotate therewith, means for endwise moving the drum-spool, said means being detachably located within the cylinder and adapted under said adjustment of the parts to interlock and rotate with the cylinder for adjusting said internal mechanism, and a cap detachably and adjustably fitted over the open end of the cylinder, as set forth.

7. The combination with the drum-shaft and drum-spool, and the ring loosely mounted on said shaft for endwise movement thereon, and a drive-gear secured to rotate with said shaft; of a cylinder mounted on the drum-shaft to rotate therewith, a piston axially movable through the cylinder, a key cooperating therewith for interlocking with the endwise-movable ring on the drum-shaft, toggle devices mounted on the piston joined with the cylinder adapted under one adjustment to lock the drum-spool and the drive-gear to move together; means for reciprocating said piston, for the purposes specified.

8. In a clutch mechanism as described; the combination with the drum-shaft having a drive-gear secured thereon, and a drum-spool and a ring loosely mounted and having endwise movement thereon; of a cylinder secured to the drum-shaft to rotate therewith and having diametrically opposite longitudinal guides at each end, a cross-bar for engaging the guides at one end, of a disk having portions for engaging the guides at the other end, a piston axially movable in the cylinder and connecting to said cross-bar, a stem axially projected from the cross-bar through the drum-shaft, a key carried by the drum-shaft for interlocking with the endwise-movable ring, a detachable cap for one end of the cylinder, said disk having portions for engaging the longitudinal guides at the open end of the cylinder being adapted to engage the interior wall of said cap, toggles I I secured to the piston, toggles H connecting the toggles I I with the cap-engaging disk, and toggles J for connecting the toggles H and I with the cross-bar, a buffer-spring, and means exterior of the cylinder for reciprocating the piston, all being arranged substantially as shown and described.

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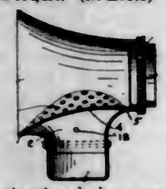
**754,645. PNEUMATIC TIRE. JOSEPH DUPONT, West Derry, N. H. Filed Sept. 4, 1903. Serial No. 171,922. (No model.)**



*Claim.*—As a new article of manufacture, a tire comprising an outer tube, and an inner tube of reduced diameter, a plurality of transverse diaphragms dividing the space between said tubes into a plurality of annular compartments, longitudinally-disposed webs dividing said annularly-disposed compartments into smaller compartments, and valves which may open communication from said smaller compartments to said inner tube.

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**754,646. ANTISEPTIC TELEPHONE-MOUTHPIECE. WILLIAM M. ENGLISH and ARTHUR H. TEN BROECK, San Francisco, Cal. Filed Apr. 27, 1903. Serial No. 154,428. (No model.)**



*Claim.*—1. An antiseptic telephone-mouthpiece comprising a single bell-shaped shell unobstructed in the interior, and a cup for an antiseptic substance, lying wholly beneath the shell and substantially its whole width, the entire peripheral edge of which is attached directly to the under side of said shell, said shell being perforated within, but imperforate outside, said edge, substantially as described.

2. An antiseptic telephone-mouthpiece comprising a single bell-shaped shell unobstructed in the interior, and a cup for an antiseptic substance lying wholly beneath the shell and substantially its whole width, the entire peripheral edge of which is attached directly to the under side of said shell, said shell being perforated within, but imperforate outside said edge, said edge flaring both longitudinally and transversely, and said cup having a detachable lower portion, substantially as described.

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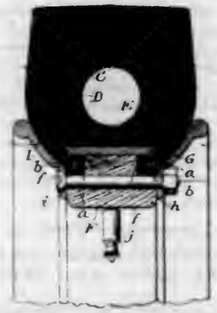
**754,647. PROCESS OF MAKING CYANIDS AND NITRATES. WILLIS R. EVERETTE, Tacoma, Wash. Filed Dec. 28, 1903. Serial No. 186,880. (No specimens.)**

*Claim.*—A process of forming cyanids and nitrates which consists first in reducing a mixture of pulverized material containing carbon to an intense erymic condition by contact with liquid air; second, subjecting said mixture while still in said intense erymic condition to contact with intense heat in the form of incandescence thereby producing a violent disruption of the elements contained in said mixture, and: third, collecting the cyanids, acids, ammonia, nitrates and other nitrogenous derivates formed by the union of the nitrogen of the air with the disrupted elements separated by said explosion and preparing them for commercial use.



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**754,648. TIRE. HENRY G. FISKE, New York, N. Y., assignor, by mesne assignments, to Morton Trust Company, trustee, a Corporation of New York. Filed July 1, 1899. Serial No. 722,528. (No model.)**



*Claim.*—1. A pneumatic tire comprising an exterior portion with reinforced edges including fabric constituting a loop, and a solid member in said loop and an inflatable air-tube entirely incased within the tire, the material between said air-tube and the exterior of the tire being so disposed as to support a flat tread portion, and interiorly affording a normally circular cavity for said air-tube, a felly and flanges engaging the edges of said outer portion and flaring to support the side walls of the tire near their base.

2. A pneumatic tire comprising an exterior portion with enlarged edges including fabric and an inextensible member and an inflatable air-tube entirely incased within the tire, and material between said air-tube and exterior of the tire so disposed as to support a flat tread portion approximating in width the diameter of the tire, and so disposed as to support the inner tube in normally circular position, a felly, and lateral detachable flanges secured to said felly and engaging the edges of said outer portion.

3. A pneumatic tire comprising an exterior portion with enlarged edges including fabric and an inextensible member and interiorly comprising a single inflatable air-tight tubular portion entirely incased within the tire, the material between said tubular portion and the exterior of the tire being so disposed as to support a flat tread portion greater in width than the diameter of the air-tight tubular portion, and so disposed as to support said air-tight tubular portion in circular position, a felly, laterally-detachable flanges secured to said felly and engaging the edges of said outer portion.

4. A pneumatic tire comprising an exterior with reinforced air-tube including looped fabric entirely incased within the tire, the material between said air-tube and the interior of the tire containing reinforcing material so disposed as to support the flat tread portion presented by the conformity of the exterior of the tire and support said air-tube normally circular, a felly supporting the reinforced edges of the tire, flanges engaging the edges of said outer portion, and laterally supporting the tire above the reinforced edges, said flanges laterally detachable from the felly.

5. A pneumatic tire comprising an exterior portion of the reinforced edges embodying looped fabric, an inflatable air-tube entirely incased within the tire, material between said air-tube and the exterior of the tire-embodying fabric or other strain-resisting material disposed to restrain said air-tube in a circular configuration, a felly supporting the reinforced edges of the tire, flanges engaging the edges of said outer portion and laterally supporting the tire above the reinforced edges, said flanges laterally detachable from the felly.

6. A pneumatic cushion-tire comprising a casing having a flat tread of substantially uniform thickness, a detachable inner casing also having a flat tread portion and conforming to the casing and formed with an interior air-chamber, and an air-tube wholly incased in and supported by the detachable inner casing.

7. A pneumatic cushion-tire comprising an exterior reinforced casing having reinforced edges, an inner detachable elastic cushion-casing provided with an endless band in each edge, an air-tube adapted to be placed within and be entirely surrounded by the inner casing, and a suitable rim.

8. In combination, a felly having notches in its sides and a metallic band upon its periphery, said band overlapping the notches and forming a retainer for the edges of the exterior casing, an inner elastic casing its edges adapted to rest upon the exterior of the peripheral band and an inner inflatable air-tube within said inner casing.

9. In combination with a felly having a periphery of greater width than the adjacent portion, an elastic tire, a part thereof seated upon said broader peripheral portion of the felly, and having edges containing looped fabric extending radially and laterally inward under, and adapted to be engaged by, the overhanging peripheral portion of the felly, laterally-detachable flanges secured against the sides of the felly to retain the edges of the tire laterally in position, said flanges extending radially and laterally beyond the periphery of the felly and further forming a lateral support for the base of the tire.

10. In combination with a felly having a periphery of greater width than the adjacent portion, an elastic tire partially seated and supported upon said relatively broader peripheral portion of the felly and having enlarged edges integral with and embodying in common strips of fabric the side walls of said tire extending inward under, and adapted to be engaged by, the overhanging peripheral portion of the felly, laterally-detachable flanges circumferentially continuous secured against the sides of the felly to retain the edges of the tire laterally in position, said flanges extending laterally and radially beyond the periphery of the felly further forming a support for the base portion of the tire.

11. A felly including a peripheral band of a width greater than the adjacent portion of the felly, an exterior casing formed with reinforced edges adapted to be engaged by the overhanging portion of the band and laterally-detachable metallic flanges adapted to be secured against the sides of the felly to retain the reinforced edges in proper position with relation to the band, said flanges forming a support for the tire.

12. In combination, an inner air-tube surrounded by and inclosed within a resilient cushion, a felly including a peripheral band supporting said cushion, an outer envelop inclosing the cushion and tube and provided with enlarged ends underlying the peripheral band, and supporting-flanges adjacent to the felly adapted to prevent lateral displacement of the ends of the envelop and serve as a support for the tire.

13. A felly, a peripheral band greater in width than the adjacent portion of the felly, a tire comprising an inner air-tube, a peripherally-divided cushion, an outer envelop inclosing the cushion and tube, and flanges secured to opposite sides of the felly forming a support for the tire and cooperating with the peripheral band to hold the outer envelop against displacement.

14. In combination, a felly, a peripheral band greater in width than the adjacent portion of the felly, a resilient cushion provided with inexpansible bands supported upon said peripheral band and inclosing an air-tube, an outer envelop conforming to the outline of the cushion and provided with enlarged ends adapted to underlie the peripheral band, and flanges secured to the sides of the felly having parallel portions cooperating with the peripheral band to secure the ends of the envelop, and having outwardly-extending portions forming a seat for the overhanging portions of the tire.

15. In combination in a separable tire, an outer removable envelop, an inner casing of resilient material parted along its inner side, a continuous air-tube located within said cushion, inexpansible bands located within and adjacent to the inner edges of the cushion, a felly including a peripheral flange, the latter greater in width than the adjacent portion of the felly and serving as a support for the cushion, and side flanges applied to the sides of the felly and having a portion adapted to prevent movement of the edges of the envelop, and a second portion adapted to support and form a seat for the sides of the tire.

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**754,649. CLOTH-HOLDING DEVICE. ERNST GESSNER, Aue, Germany. Filed July 15, 1902. Serial No. 115,642. (No model.)**

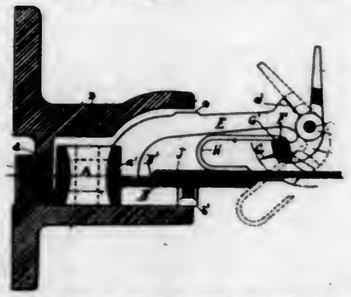
*Claim.*—1. In a cloth-holding device for textile machinery, in combination, a cloth-support, a series of pins and means whereby said pins are forced to impale said cloth by the pull of the cloth on said pins.

2. In a cloth-holding device for textile machinery, in combination, a cloth-plate, a series of pins and means whereby the support of the cloth is automatically transferred from said plate to said pins.

3. In a cloth-holding device for textile machinery, in combination, a cloth-plate, a series of pins and means whereby the support of the cloth is transferred from said plate to said pins by the pull of the cloth on said pins.

4. In a cloth-holding device for textile machinery, in combination, a cloth-plate, a series of pins inclined toward the selvage edge

and means whereby the support of the cloth is automatically transferred from said plate to said pins.



5. In a cloth-holding device for textile machinery, in combination, a support on one side of the cloth, a series of pins on the opposite side of the cloth and a connection admitting of movement of said pins from a position opposite said support to a position not opposite the same.

6. In a cloth-holding device for textile machinery, in combination, a cloth-support and a series of pins which in holding position are inside of the edge of said support.

7. In a cloth-holding device for textile machinery, in combination, a cloth-support, a series of pins and means for mounting the same whereby said pins commence to engage the cloth opposite to said support and move to a holding position not opposite the same.

8. In combination, two chains, means whereby the same are guided in diverging directions, inwardly-extending cloth-plates attached to said chains and underlapping the edges of said cloth before divergence, and a series of pins located between opposite cloth-plates whereby the edges of the cloth are held after divergence.

9. In combination, a chain adapted to be bent in a plurality of planes, a cloth-plate attached thereto on one side of the cloth, a series of pins on the opposite side of the cloth and means whereby the support of the cloth is automatically transferred from said plate to said pins.

10. A cloth-holding device for textile machinery comprising a table or cloth-plate having its edge notched, a series of pins and a support permitting the same to move in an inclined direction through said notches.

11. A cloth-holding device for textile machinery comprising a table or cloth-support having its edge notched, a series of pins adapted to move in an inclined direction through said notches, and cloth-controlled means for determining the engagement of said pins with the cloth.

12. A cloth-holding device for textile machinery comprising a table or cloth-support having its edge notched, a series of pins adapted to move in an inclined direction through said notches, and a finger interposed between cloth and pin-bar and determining the engagement of pins and cloth.

13. A cloth-holding device for textile machinery comprising a table or cloth-support, a pin-bar pivoted so that the arc described by the pins intersects the cloth; said pins being inclined to the radius of said arc toward the selvage edge of the cloth.

14. A cloth-holding device for textile machinery comprising a table or cloth-support, a pin-bar guided to move the pins in paths intersecting the cloth and pins inclined at the points of intersection toward the selvage edge of the cloth.

15. A cloth-holding device for textile machinery comprising a table or support for the reception of the cloth, an arm extending out over said table, a series of pins pivoted upon said arm and swinging between the arm and table so that the arc described by the pins intersects the cloth; said table being notched to permit passage of the pins and a stop limiting the swing of the pins after passing out of said notches.

16. A cloth-holding device for textile machinery comprising a table or cloth-support and a pin-bar pivoted so that the arcs described by the pins intersect the cloth at points where the radius of said arcs inclines toward the selvage edge of the cloth.

17. In a cloth-holding device for textile machinery, the combination with members adapted to engage the cloth to hold it and feelers resting upon the cloth and operating said holders, of two opposed surfaces between which the selvage is drawn and smoothed.

18. A cloth-holding device for textile machinery comprising a table or cloth-support, the outward edge of which the selvage edge overhangs and a smoother opposed to said support adjacent to said edge whereby the selvage edge is smoothed whether it curls down or up as it is drawn between the edges of said table and smoother.

19. In a cloth-holding device for textile machinery, the combination with a cloth-holding device and of a member engaging the cloth and controlling the engagement of said holding means with the cloth of a selvage-smoothing device presenting an abrupt edge toward the curl.

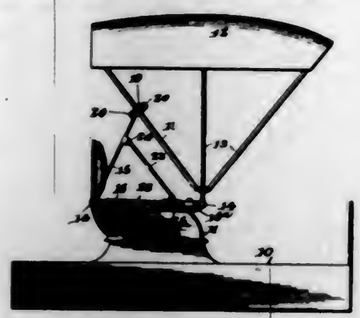
20. In a cloth-holding device for chains of textile machines, a cloth-support having its inner edge notched, a series of pins pivoted to swing through said notches, and a stop limiting the inward swing of the pin-bar to a point inside of the edge of the cloth-support.

21. In a cloth-holding device for textile machinery the combination with a cloth-support having a recess extending across the same and adapted to receive the rolled edge of the cloth, of a smoothing member adapted to engage the upper side of the cloth.

22. In a cloth-holding device the combination with the cloth-securing members, and cloth-smoothing members adapted to engage opposite sides of the cloth, of a separate member controlling the engagement of the cloth-securing members and the separation of the cloth-smoothing members.

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**754,650. VEHICLE-TOP SUPPORT. Galen Grosar, Murray, Ky. Filed May 8, 1903. Serial No. 156,963. (No model.)**



*Claim.*—1. A vehicle-top support in the form of an attachment comprising angularly-disposed swinging arms, a spring engaging the arms for swinging one of the same in one direction, a connection between the arms for holding said swinging arm against movement, a bow-engaging device carried by one arm, and means for securing the other arm against movement.

2. A vehicle-top support in the form of an attachment comprising angularly-disposed swinging arms, a spring engaging the arms for swinging one of the same in one direction, means for holding the swinging arm against movement, a bow-embracing clamp pivoted to the free end of the swinging arm, and means for securing the other arm to a vehicle.

3. In a vehicle-top support, the combination with a spring, of a swinging arm moved by the spring, a bow-clamp carried by the free end of the arm, and a holding device for the arm carried thereby.

4. A vehicle-top support in the form of an attachment comprising angularly-disposed arms, a coiled spring connecting the arms and constituting an eye that receives one of the projecting bolts of a vehicle-top, a bow-embracing clamp pivoted to the free end of one arm and arranged to slide upon the bow, the other arm having an eye at its free end adapted to receive the pivot-bolt of the top.

5. In a vehicle-top support, the combination with angularly-disposed relatively movable arms, of a connection carried by one arm and having a slidable engagement with the other.

6. In a vehicle-top support, the combination with angularly-disposed relatively movable arms, of a connection carried by one arm and having slidable engagement with the other, and a latch pivoted to the slidable portion of said connection and engaging the arm upon which said portion slides.

7. In a vehicle-top support, the combination with an upright swinging top-engaging arm, of a brace pivoted at one end to the arm, and a latch pivoted at the other end of the brace to secure it and the arm against movement.

8. In a vehicle-top support, the combination with angularly-disposed arms connected by a coiled portion, said coiled portion constituting a spring and an eye to receive a fastening-bolt, of means for pivotally connecting one of the arms to a vehicle-bow, and a connection between the arms for holding the same against relative movement, said connection having a slidable engagement with one of the arms.

9. In a vehicle-top support, the combination with angularly-disposed arms having an intermediate spring connection, of a brace connecting the arms for normally holding them against movement.

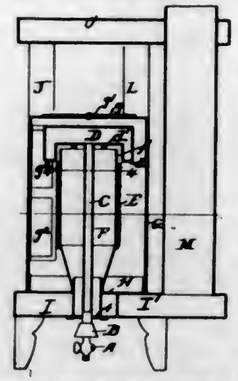
10. In a vehicle-top support, the combination with angularly-disposed arms having an intermediate spring connection, of a brace pivoted at one end to one arm and having a boxing which slidably surrounds the other arm, said latter arm having a series of teeth, and a latch pivoted on the boxing and coacting with the teeth.

11. In a vehicle-top support, the combination with an arm, comprising slidably-associated sections one of which is provided with an eye, of a top-engaging arm, and a spring for moving the top-engaging arm.

12. In a vehicle-top support, the combination with angularly-disposed arms, of a coiled-spring connection between the adjacent ends of the arms, a bow-clamp pivoted upon the free end of one arm, a brace pivoted to said arm, and a sliding connection between the other arm and said brace.

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**754,651. GAS-STOVE. Henry A. Guignon, Corry, Pa. Filed Apr. 12, 1902. Serial No. 102,554. (No model.)**



*Claim.*—1. In a gas-stove the combination of a burner arranged to invert the flame; a fireback; walls forming draft-passages at both sides of the flame; and a regulator on one of said passages for balancing said passages.

2. In a gas-stove the combination of an annular burner arranged to invert the flame; a supply-pipe leading from the bottom of said burner; and a fireback surrounding an air-passage, said supply-pipe being surrounded by said air-passage.

3. In a gas-stove the combination of an inverted burner having a downwardly-extending annular lip; and a fireback extending into said burner, said fireback having a draft-passage arranged within it adapted to deliver air between the lip and the fireback.

4. In a gas-stove the combination of a burner having a downwardly-extending annular lip; a fireback extending into said lip and forming a passage between it and the lip said fireback having an air-passage extending through it to said passage between the fireback and the lip; walls forming an exit-passage at the bottom of the fireback; and walls having a draft-opening arranged to deliver air outside of the flame.

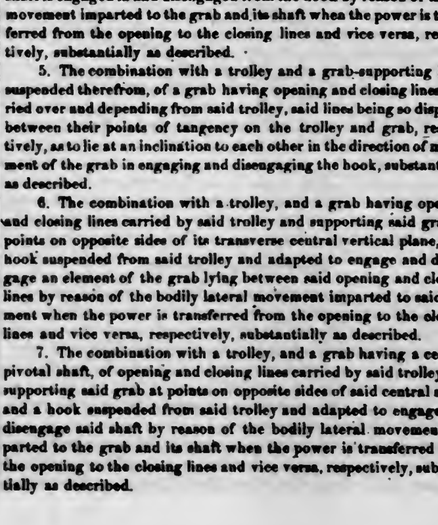
5. In a gas-stove the combination of the burner D, having a downwardly-extending annular lip; a fireback E, extending into said burner and inclosing the air-passage F; a regulator *f*, for said air-passage; an outer case G having an opening *g*, in the top thereof; a regulator for said opening; walls forming an exit-passage H, of smaller diameter than the fireback E; and the base I, into which said exit-passage leads.

6. In a gas-stove the combination of an annular burner; front base I, to which the heated gases pass direct from the burner; the flues J leading from the base I; the top K, into which the flues J lead; flues L, leading from the top K, to the rear base I'; and an exit-pipe G.

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**754,652. TROLLEY-HOOK FOR MANIPULATING SELF-LOADING GRABS. Frank K. Hoover and Arthur J. Mason, Chicago, Ill. Filed May 21, 1903. Serial No. 158,100. (No model.)**

*Claim.*—1. The combination with a trolley and a grab suspended from said trolley by opening and closing lines, of a hook suspended from said trolley and adapted to engage and disengage an element of the grab by reason of the lateral movement imparted to the grab when the power is transferred from the opening to the closing lines and vice versa, respectively, substantially as described.



2. The combination with a trolley and a grab suspended from said trolley by opening and closing lines, of a pivoted, rearwardly-yieldable hook suspended from said trolley and adapted to engage and disengage an element of the grab by reason of the lateral movement imparted to the grab when the power is transferred from the opening to the closing lines and vice versa, respectively, substantially as described.

3. The combination with a trolley and guide-sheaves carried thereby, of a grab having a central shaft suspended from said sheaves on the trolley by opening and closing lines, and a hook suspended from said trolley, the said sheaves, shaft and hook being so positioned that the shaft is engaged in and disengaged from the hook by reason of lateral movement imparted to the grab and its shaft when the power is transferred from the opening to the closing lines and vice versa, respectively, substantially as described.

4. The combination with a trolley and guide-sheaves carried thereby, of a grab having a central shaft suspended from said sheaves on the trolley by opening and closing lines, and a cushioned, rearwardly-yieldable grab-supporting hook pivotally suspended from said trolley, the said sheaves, shaft and hook being so positioned that the shaft is engaged in and disengaged from the hook by reason of lateral movement imparted to the grab and its shaft when the power is transferred from the opening to the closing lines and vice versa, respectively, substantially as described.

5. The combination with a trolley and a grab-supporting hook suspended therefrom, of a grab having opening and closing lines carried over and depending from said trolley, said lines being so disposed between their points of tangency on the trolley and grab, respectively, as to lie at an inclination to each other in the direction of movement of the grab in engaging and disengaging the hook, substantially as described.

6. The combination with a trolley, and a grab having opening and closing lines carried by said trolley and supporting said grab at points on opposite sides of its transverse central vertical plane, of a hook suspended from said trolley and adapted to engage and disengage an element of the grab lying between said opening and closing lines by reason of the bodily lateral movement imparted to said element when the power is transferred from the opening to the closing lines and vice versa, respectively, substantially as described.

7. The combination with a trolley, and a grab having a central pivotal shaft, of opening and closing lines carried by said trolley and supporting said grab at points on opposite sides of said central shaft, and a hook suspended from said trolley and adapted to engage and disengage said shaft by reason of the bodily lateral movement imparted to the grab and its shaft when the power is transferred from the opening to the closing lines and vice versa, respectively, substantially as described.

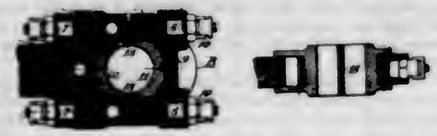
8. The combination with a trolley, and a grab having a central pivotal shaft and guide-sheaves located adjacent to and on opposite sides of said shaft, of opening and closing lines carried by and suspended from said trolley at points thereon in the same transverse vertical plane, said opening and closing lines engaging said oppositely-disposed guide-sheaves on the grab, respectively, and a hook suspended from said trolley, said hook having an inclined lower edge lying across the path of said shaft in its upward movement, substantially as described.

9. The combination with a trolley, and a grab having a central pivotal shaft and guide-sheaves located adjacent to and on opposite sides of said shaft, of opening and closing lines carried by and suspended from said trolley at points thereon in the same transverse vertical plane, said opening and closing lines engaging said oppositely-disposed guide-sheaves on the grab, respectively, and a yieldably-suspended hook depending from said trolley, said hook having an inclined lower edge lying across the path of said shaft in its upward movement, substantially as described.

10. The combination with a trolley, and a grab having a hook-engaging member and guide-sheaves located adjacent to and on opposite sides of said hook-engaging member, of opening and closing lines carried by and suspended from said trolley at points thereon in the same transverse vertical plane, said opening and closing lines engaging said oppositely-disposed guide-sheaves on the grab, respectively, a rearwardly-yieldable hook pivotally suspended from said trolley, said hook having an inclined lower edge lying across the path of said hook-engaging member in its upward movement, and a rigid member disposed alongside of said hook and serving to engage and check rearward movement of said hook-engaging member when seated in the hook, substantially as described.

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754,653. CONNECTING-ROD OR PITMAN. CHAS. H. HOWLAND-SHERMAN, Baltimore, Md., assignor to The Howland-Sherman Manufacturing Company, Wilmington, Del., and Baltimore, Md., a Corporation of Delaware. Filed Dec. 17, 1902. Serial No. 135,522. (No model.)



*Claim.*—1. Combined in a connecting-rod or pitman, a head adapted to embrace brasses, brasses in said head, the inner brass having flanges removable separting laminæ between the brasses, and means in operative connection with said flanges for adjusting said inner brass, substantially as set forth.

2. Combined in a connecting-rod or pitman, a head adapted to embrace brasses, brasses in said head, the inner brass, having flanges, and means in operative connection with said flanges for adjusting the inner brass, substantially as set forth.

3. Combined in a connecting-rod or pitman, a head adapted to receive brasses, brasses in said head, the inner brass having external flanges, and means in operative connection with said flanges for adjusting the inner brass, substantially as set forth.

4. Combined in a connecting-rod or pitman, a head adapted to receive brasses, brasses in said head, the inner brass having external flanges, removable separating laminæ between the brasses, and means in operative connection with said flanges for adjusting the inner brass, substantially as set forth.

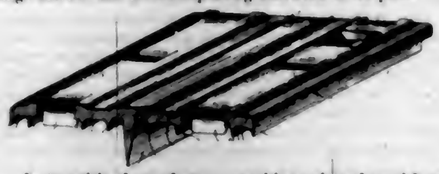
5. Combined in a connecting-rod or pitman, a head adapted to embrace brasses, flanged brasses in said head, removable separating laminæ between said brasses, means for adjusting the inner brass through the medium of the external flanges thereon, and separate means for adjusting the outer brass, substantially as set forth.

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754,654. TIE-PLATE FOR RAILWAYS. WILLIS S. JONES, Chicago, Ill. Filed Oct. 23, 1902. Serial No. 128,406. (No model.)

*Claim.*—1. A plate of approximately uniform thickness waved or corrugated transversely to provide a plurality of lower flat bearing-surfaces for engagement on the tie and upper flat bearing-surfaces arranged alternately therewith to support the rail, and one or more longitudinal flanges on the under side of the plate of a length less than the length of the plate.

2. An article of manufacture comprising a plate of metal formed to provide a plurality of lower flat bearing-surfaces in approximately the same plane alternating with a plurality of upper flat bearing-surfaces, said plate having an integral downwardly-directed sharp flange shorter than the corresponding dimension of the plate.



3. An article of manufacture comprising a plate of metal formed to provide a plurality of lower flat longitudinal bearing-surfaces in approximately the same plane alternating with a plurality of upper flat bearing-surfaces slightly raised above the same, said plate having an integral, central downwardly-directed sharp flange extending longitudinally of the plate and shorter than the corresponding dimension of the plate.

4. An article of manufacture comprising a plate of metal comprising a plurality of flat, longitudinal upper bearing-surfaces and alternate downwardly-directed bearing-surfaces, a plurality of flanges on the under side of the plate extending longitudinally thereof and in length shorter than the plate, and a plurality of transverse flanges on the under side thereof having their faces directed toward one end of the plate.

5. A plate of metal rolled to provide on its opposite faces alternately-arranged flat bearing-faces and concave grooves or gutters separating said faces, and a relatively short longitudinal flange located near each of the bends in the plate.

6. A plate of metal rolled to provide on its opposite faces alternately-arranged flat bearing-faces and concave grooves or gutters, and a relatively short longitudinal flange located near each of the bends in the plate and a transverse flange at the end of the longitudinal flange.

7. A tie-plate comprising a plate of metal having raised flat bearing-surfaces and intermediate grooves or gutters arranged alternately on opposite sides of the plate, a central downwardly-directed flange and a longitudinal flange parallel therewith on each side of said central flange and located at the bends in the plate, the ends of the plate projecting beyond said flanges, and downwardly-directed transverse flanges positioned to close the ends of the gutters on the under side of the plate.

8. A tie-plate comprising a plate of metal having raised flat bearing-surfaces and intermediate grooves or gutters arranged alternately on opposite sides of the plate, a central downwardly-directed flange and a longitudinal flange parallel therewith on each side of said central flange and located at the bends in the plate, the ends of the plate projecting beyond said flanges, and downwardly-directed transverse flanges positioned to close the ends of the gutters on the under side of the plate, and other transverse flanges intermediate of the ends of the plate.

9. As an article of manufacture an apertured plate formed to provide transverse wave-like flat-topped corrugations presenting on opposite sides of the plate alternately-disposed bearing-surfaces and concave gutters or grooves, flanges located along the bends of the plate on the under side thereof, a central longitudinal flange, transverse flanges closing the ends of the gutters on the under side of the plate, the ends of the plate extending beyond the longitudinal flanges and affording bearing-surfaces beyond the ends thereof.

10. A tie-plate comprising a transversely-corrugated plate apertured near the ends to receive spikes and corrugated transversely to provide alternately-arranged flat upper and lower bearing-surfaces, and upper and lower alternately-arranged longitudinal grooves or gutters, a central sharp flange located in one of the gutters in the under surface, parallel flanges of smaller size located on each side of the central flange at the bends in the plate, a lateral flange at each edge of the plate and transverse flange disposed at the ends of the gutters on the under side of the plate and intermediate of the ends thereof and presenting approximately flat resisting-faces against longitudinal thrust and serving as a transverse brace or truss for the plate.

11. A tie-plate comprising a plate of metal apertured to receive spikes and corrugated transversely, a plurality of longitudinal sharp flanges on the under side of the plate disposed one at each edge of the plate and one at each of the bends therein and a central broad sharp flange located intermediate of adjacent bends in the plate.

12. A tie-plate comprising a plate of metal apertured to receive spikes and corrugated transversely, a plurality of longitudinal sharp flanges on the under side of the plate disposed one at each edge of the plate and one at each of the bends therein and a central broad sharp flange located intermediate of adjacent bends in the plate, the ends of the plate projecting beyond the longitudinal flanges and affording a bearing on the tie beyond said flanges.

13. A corrugated tie-plate of rolled metal apertured to receive spikes and one or more longitudinal downwardly-directed flanges thereon shorter than the plate and means adapted to prevent an end thrust of the plate.

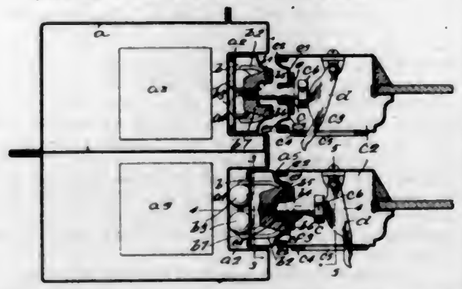
14. A rolled tie-plate, corrugated to provide upper and lower alternate bearing-surfaces, flanges disposed along the bends of the plate and beyond which the ends of the plate project and means adapted to prevent longitudinal movement of said plate.

15. A rolled tie-plate corrugated and provided with flanges on the under side thereof shorter than the corresponding dimension of the plate and sharp flanges arranged between and at right angles with the first-named flanges the edges and ends of the plate projecting beyond all of the flanges.

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754,655. PIVOTED SASH. GEORGE KABURECK, Jersey City, N. J. Filed June 12, 1903. Serial No. 161,204. (No model.)



*Claim.*—1. In a window comprising a frame and the usual sash-runs formed therein, a sash, a weight-strip on each side of said sash and in operation therewith, a pivot-bolt secured in each of said weight-strips and passing into said sash, a plurality of bow-springs on each of said weight-strips, a plurality of antifriction-rollers on each of said bow-springs and bearing against the backs of the corresponding sash-runs and means for forcing said weight-strips against the action of said bow-springs and out of engagement with said sash, substantially as shown and described.

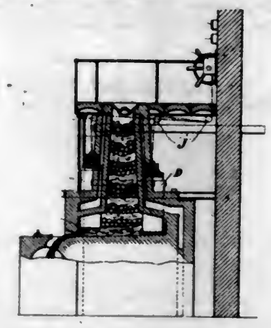
2. In a window comprising a frame and sash-runs formed therein, a sash, a weight-strip on each side of said sash and in operative engagement therewith, a pivot-bolt in each of said weight-strips and passing into said sash, a plurality of springs secured in said weight-strips, a plurality of antifriction-rollers on each of said springs, said antifriction-rollers being adapted to bear against the backs of the corresponding sash-runs, a lever pivoted in each side of said sash, adjacent to said pivot-bolt and adapted to operate thereon, a plate detachably secured to the inner side of said sash and adjacent to said lever on either side of said sash, a slot in each of said plates through which the outer end of each of said levers passes and means for locking said sash to said weight-strips, substantially as shown and described.

3. In a window comprising a frame and the usual sash-runs formed therein, a sash, a weight-strip on either side thereof, a pivot-bolt in each of said weight-strips and passing into said sash, a plurality of longitudinal projections on each side of said sash and forming recesses thereby, a plurality of longitudinal projections on each of said weight-strips engaging said recesses in the corresponding side of said sash and means for keeping said projections and said recesses in engagement with each other, substantially as shown and described.

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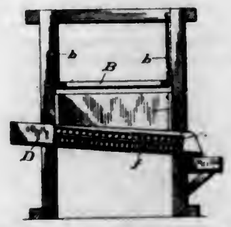
754,656. ELECTRIC FURNACE. CHARLES A. KELLER, Paris, France. Filed Jan. 17, 1902. Serial No. 90,151. (No model.)

*Claim.*—In a double electric and continuously-operating metallurgic furnace in which the upper furnace, formed as a stack-furnace, is designed for the reduction of metal and in which the lower furnace of the ordinary kind, pierced at its upper part by a conduit located below and in the prolongation of the charging-column of the upper furnace is designed for refining, purifying or alloying metals, a chamber of fusion of the upper furnace with a charging-column located at the central part of its roof, openings pierced around the charging-column in the roof of the chamber of fusion of the upper furnace, and vertical electrodes in two parallel series, passed through the openings in the roof of the chamber of fusion, the lower extremities of these electrodes being situated in the interior of the chamber of fusion and their upper extremities, exterior to the said chamber of fusion, being carried each by a suspension mechanism by the aid of which they are capable of being vertically displaced and removed.



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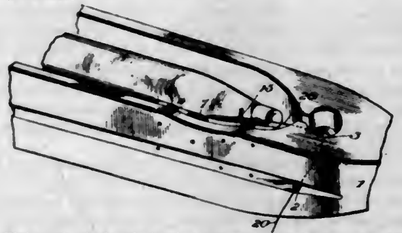
754,657. GOLD-SEPARATOR. AUGUST C. LA BUD and HENRY J. BARTON, Oakbar, Cal. Filed Jan. 22, 1902. Serial No. 90,780. (No model.)



*Claim.*—In a gold-separator, the combination of a sluice-box, and a plurality of sets of inverted-L-form riffles therein, the lower set of riffles lying on the bottom of the sluice-box and slightly spaced from each other, and the upper set directly overlying said lower set and having its riffles more widely spaced from each other than those of the lower set, substantially as specified.

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754,658. FLOAT-DETECTING SHUTTLE. EDMOND LAMOUREUX, Woonsocket, R. I., assignor of two-thirds to Louis Goulet and Emanuel Marcotte, Manville, R. I. Filed Aug. 12, 1903. Serial No. 169,270. (No model.)



*Claim.*—1. A shuttle having a removable plate attached to its inner wall and having a vertical groove, an oscillatory member having an arm located in said groove, a pivoted float-detecting member having a tailpiece for engagement with the oscillatory member, and a spring acting upon the first member.

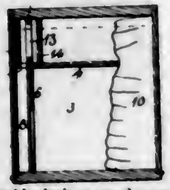
2. A shuttle provided with a detachable plate having a cavity and vertical groove, a pivoted float-detecting member in said cavity and having spring-arms, an oscillatory member having an arm movable in said groove, and a spring held in said plate and adapted to cooperate with said oscillatory member.

3. A shuttle, a plate attached to the inner wall thereof and having a cavity and a groove, a pivoted float-detecting member in said cavity and having spring-arms and a tailpiece, an oscillatory member having a lug for engagement with the tailpiece, a long arm seated normally in said groove, and a spring for actuating said member when the same is disengaged from the other member.

4. A shuttle having a plate attached to its inner wall and provided with a cavity and a vertical groove and a longitudinal groove in its under edge, a float-detecting member pivoted in said cavity and having a body portion, tailpiece and spring-arms, an oscillatory member seated in said longitudinal groove, and having a long arm seated in the vertical groove and a cam projection coöperating with said tailpiece, and a spring held in said plate, as and for the purpose specified.

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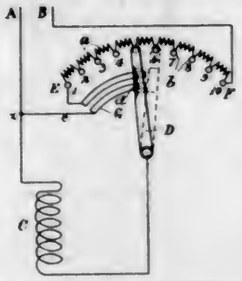
**754,659. PORTABLE DARK ROOM. WILBER H. LEVEY, Woodstock, Ill. Filed Sept. 18, 1903. Serial No. 173,733. (No model.)**



*Claim.*—In a portable dark room, the combination of an outer casing having open sides, a hood having one end secured within one open side of the casing and capable of being folded with the casing, a door for that side of the casing, a main vertical partition supporting a ruby glass, a door inclosing said partition, a short vertical partition outside of the main vertical partition leaving a space between them, said main vertical partition having an opening through its upper end, a horizontal partition and a deflecting-plate located above the horizontal partition inside of the main vertical partition having its ends stopping short of the end of the casing.

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**754,660. RHEOSTAT. LAMAR LYNDON, New York, N. Y., assignor to National Battery Company, Buffalo, N. Y., a Corporation of New Jersey. Filed Aug. 8, 1902. Serial No. 118,864. (No model.)**



*Claim.*—1. In combination for the purposes hereinbefore set forth, a plurality of resistances electrically connected and bridged in circuit across the line, a receiving device with which said resistances are adapted to be connected either in parallel or partly in series and partly in parallel, means for so connecting said resistances and receiving device, and a switch operated by said means to open the circuit across the line at a predetermined point, substantially as described.

2. In combination for the purposes hereinbefore set forth a plurality of resistances electrically connected and bridged in circuit across the line, a receiving device with which said resistances are adapted to be connected either in parallel or partly in series and partly in parallel, a controller-arm in circuit with said receiving device for so connecting said resistances and receiving device, and a switch operated by said arm to open the circuit across the line at a predetermined point, substantially as described.

3. In a rheostat, the combination of a plurality of resistances adapted to be bridged in circuit across the line, a plurality of contacts to which said resistances are connected, a switch controlling said circuit across the line, and a controller-arm in circuit on the line and adapted to make electrical connection with any of said contacts, said arm being also adapted to operate said switch and thereby to open the circuit across said line at a predetermined point, substantially as described.

4. In a rheostat, the combination of a plurality of resistances adapted to be bridged in series across the line, a plurality of contacts to which said resistances are connected, a controller-arm in circuit upon the line and adapted to make electrical connection with any of said contacts whereby to include certain of said resistances in series upon the line, and a switch controlling said circuit across the line and operated by said arm to open said circuit across the line at a predetermined point, substantially as described.

5. The combination with a rheostat having a plurality of resistances adapted to be placed in circuit across the supply-mains, a plurality of contacts to which said resistances are connected, a switch controlling said circuit across the supply-mains, and a controller-arm adapted to make electrical connection with any of said contacts and also adapted to operate said switch, of a receiving device in circuit on the line between said arm and one terminal of said circuit across the supply-mains, said arm at one extreme contact placing all the resistances in series across the supply-mains and at a predetermined point as it moves toward the other extreme contact opening the circuit across the supply-mains, the only resistances receiving current after said arm passes said predetermined point being the resistances included between the end of the arm and said other extreme contact, substantially as described.

6. In a rheostat, the combination of a plurality of resistances in electrical connection, contacts at both ends of said plurality of resistances whereby current may be supplied to the same, a switch in series with said resistances comprising a pair of terminals and a contact-piece, one of said terminals being connected with one main of the supply-circuit and the other of said terminals being connected with one of said contacts, the second of said contacts being connected to the other supply-main, a controller-arm adapted to be placed in circuit on the line and carrying said contact-piece, said arm being also adapted to make electrical contact with any of the resistances and thereby to be placed in series with a part of said resistances and in parallel with the rest of said resistances until said arm is moved to open said switch when the current will only flow through certain of the resistances all of which will be serially connected with said arm and in circuit on the line, substantially as described.

7. In a rheostat, the combination of a plurality of contacts arranged *seriatim*, a plurality of resistances severally placed between certain but not all of the pairs of adjacent contacts and having their terminals electrically connected with said adjacent contacts respectively, said contacts and resistances being adapted to be bridged in circuit across the line, a switch controlling said circuit across the line, a controller-arm in circuit on the line and adapted to make electrical connections with any of the contacts, said arm being also adapted to operate said switch and thereby to open the circuit across the line at a predetermined point, and a plurality of conductors electrically connecting certain pairs of said contacts which are not adjacent, substantially as and for the purpose set forth.

8. In a rheostat, the combination of a plurality of contacts arranged *seriatim*, a resistance inserted between each of the adjacent contacts except between the contacts 3 and 4, 4 and 5 and 5 and 6, respectively, the terminals of said resistances being electrically connected with their adjacent contacts respectively, and three conductors connected respectively with contacts 1 and 4, 2 and 5, and 3 and 6, substantially as and for the purpose set forth.

9. The combination of a supply-circuit, a regulated circuit, a resistance having a plurality of contact-points, a regulator-arm adapted to coöperate with said contact-points to determine the amount of resistance in series with the regulated circuit, and means operated by said regulator-arm to place some of the resistance in parallel with the regulated circuit, whereby by adjusting the position of said arm little or no current may be made to flow through the regulated circuit, the voltage of which will be that which results from the fall of potential along the parallel resistance, and whereby a greater amount of current may be made to flow through the regulated circuit by cutting out the parallel resistance and as much of the series resistance as is desired.

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**754,661. OIL-BURNER. ALBERT MAEULER, Denver, Colo. Filed June 24, 1903. Serial No. 162,920. (No model.)**

*Claim.*—1. In an oil-burner, a central retort and communicating and surrounding circulating and expanding gas-chamber cast integral, in combination with an oil-supply pipe leading into the retort, and a heating-jet below the retort and in communication with the circulating and expanding gas-chamber, substantially as and for the purpose set forth.

2. In an oil-burner having a retort and surrounding gas circulating and expanding chamber cast integral, the gas-chamber communicating with the retort and divided into vertical compartments by vertical partitions having gas passages or ports, alternately at the top and bottom; means for supplying gas from the gas-chamber to a heating-jet and means for supplying oil to the retort, substantially as hereinbefore set forth.





3. In an oil-burner such as described, a retort and gas-circulating chamber cast integral and mounted in a supporting-frame; a frame and concentrating-cone cast integral; a generating-cone secured to the frame below the concentrating-cone; an oil-supply pipe communicating with the retort; a jet below the generating-cone and a gas-pipe connecting the jet and the gas-circulating chamber, substantially as and for the purpose set forth.

4. In an oil-burner such as described, a central retort and surrounding gas-circulating chamber cast integral and open at the top, in combination with a removable cap or cover adapted to close both the retort and gas-circulating chamber, and an oil-supply pipe passing through the cap or cover and into the retort, substantially as hereinbefore set forth.

5. In an oil-burner such as described, in combination with the retort and surrounding gas-chamber and the removable cap or cover and oil-supply pipe connected therewith and adapted to deliver oil upon the floor of the retort, a deflector adjustably secured to the oil-supply pipe within the retort, substantially as hereinbefore set forth.

6. In an oil-burner such as described, in combination with the retort and surrounding gas-chamber cast integral, a waste-pipe communicating with the bottom of the retort and provided with a valve or cock, whereby the precipitates within the retort may be withdrawn, substantially as hereinbefore set forth.

7. In an oil-burner such as described, in combination with the central retort and surrounding gas-chamber cast integral, a supporting-frame and concentrating-cone also cast integral, the concentrating-cone adapted to direct the products of combustion against the bottom of the retort and having a flue or flues between it and the retort and leading to the outside, substantially as hereinbefore set forth.

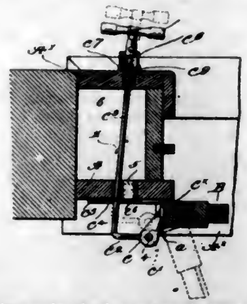
8. In an oil-burner such as described, in combination with the retort and surrounding gas-chamber mounted within a frame provided with a concentrating-cone below the retort; a generating-cone secured to the frame below the concentrating-cone; means for supplying oil to the retort; a jet below the generating-cone and means for supplying gas from the gas-chamber to the jet, substantially as set forth.

9. In an oil-burner such as described, the primary mixing-cone formed with concentric walls closed at the upper end and having an air-space between them, the outer wall having air-passages near the top thereof, whereby the entrained air is caused to travel downward and become heated before commingling with the gas delivered from the jet, substantially as hereinbefore set forth.

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**754,662. SHUTTER-WORKER. FRANK D. MARCHAND, Cambridge, Mass. Filed Dec. 5, 1903. Serial No. 183,880. (No model.)**

*Claim.*—1. A window-casing having upturned pintles, a blind mounted to swing thereon and capable of upward movement on the pintles, a device to lock the blind in position, and means actuated from the inner side of the casing to lift and thereby unlock the blind and thereafter to move it from open to closed position, and vice versa.



2. A window-casing having upturned pintles, a blind mounted to swing thereon and capable of upward movement on the pintles, a device to lock the blind in position, means extended through the casing to raise the blind to unlock it, and thereafter to swing the blind on the pintles, said means being connected at its outer end with the blind eccentrically to the pintles, and movable slides to coöperate with said means and prevent the admission of dust or dampness into the casing while permitting the free operation of said means.

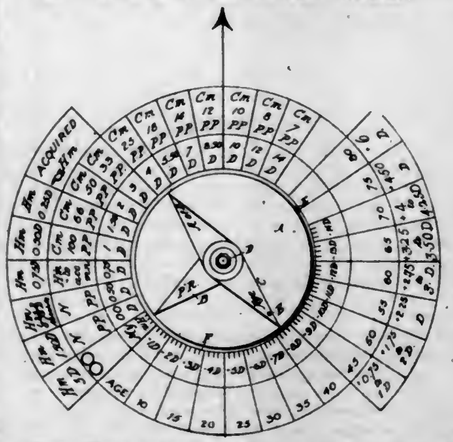
3. A window-casing having upturned pintles, a blind mounted to swing thereon and capable of upward movement on the pintles, a device to lock the blind in position, lugs extended from the blind, and operating means for the blind, said means comprising a shaft extended through the casing and having its outer end bent to coöperate with the lugs, to slightly raise the blind to unlock it, subsequent movement of said shaft longitudinally and laterally acting through the lugs to swing the blind in one direction or the other.

4. A window-casing having upturned pintles, a blind mounted to swing thereon and capable of upward movement on the pintles, a device to lock the blind in position, the inner and outer walls of the casing having openings therein, movable slide-plates covering the outer ends of the openings, bearings for said slide-plates, an operating-shaft extended loosely through said plates and having a bent outer end, and a pivotal connection between said bent end and the blind, actuation of said shaft unlocking the blind and causing it to swing on its pintles into open or closed position.

5. A window-casing, a blind hinged thereon, and vertically movable on its supports, a catch for the blind, a longitudinally-movable, laterally-swinging operating member extended through the casing and having its outer end bent and pivotally connected with the blind eccentric to its hinges, and means whereby rotative movement of said member will raise the blind to release its catch, subsequent longitudinal and swinging movement of the operating member turning the blind on its hinges from open to closed position, and vice versa.

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**754,663. DIOPTRICAL CHART. WILLIAM W. MARTIN, Salem, Oreg. Filed May 4, 1903. Serial No. 155,647. (No model.)**



*Claim.*—The herein-described dioptrical chart, containing formulæ indicative of the punctum proximum and the amplitude of ac-

commodation of the emmetrope and the ametrope at any given age, in combination with a rotatable single index-bearing disk, and a double-ended index rotatable independently of the single index, both indexes being employed in reading the chart, substantially as described.

754,664. COMBINATION LETTER-BOX, DOOR-BELL, AND NAME-PLATE. HIRAM MESSERSMITH, Muncie, Ind. Filed June 27, 1903. Serial No. 163,411. (No model.)



*Claim.*—1. A device of the kind described comprising an open rectangular frame having guide-flanges, a collar carried by said frame, a sleeve extending rearwardly from the collar, a rod rotatably journaled in said sleeve, a bell fixed on the inner end of said rod, a stationary knocker, a disk carried by the rod and resting in the collar, and a plate adapted to slide in the frame and rotate the disk.

2. A device of the kind described comprising an open frame having guide-flanges, a plate sliding in said frame between the flanges, a rod rotatably journaled above and transverse to the frame, a bell, means whereby rotation of the rod will sound the bell, and a disk fixedly carried by the rod and engaged by the sliding plate.

3. A device of the kind described comprising a frame having guide-flanges, a slotted collar carried by one of said flanges, a rotatable rod having a disk rigidly secured thereon, said disk being adapted to rotate in the collar, a plate sliding in said frame and beneath the slotted portion of the collar, said plate adapted to engage and rotate the disk, a bell arranged at the inner end of the rod, and means for ringing said bell when the disk and rod rotate.

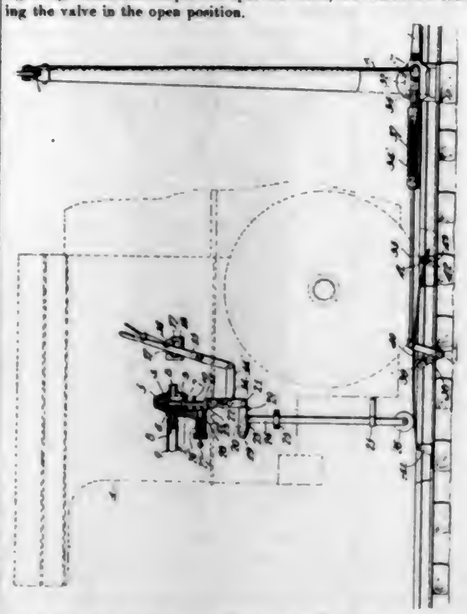
4. A device of the kind described comprising a frame centrally cut out, guide-flanges along the upper and lower sides of the frame a sleeve carried by the upper flange, a rod rotatably journaled in said sleeve, a bell fixedly secured at the inner end of the rod, a stationary knocker arranged within the bell and supported from the sleeve, a disk fixedly secured on said rod, and a plate slidably carried by the frame and normally covering the cut-out portion, the upper edge of said plate engaging the disk when moved to uncover the opening.

5. A device of the kind described comprising a rectangular open frame having guide-flanges, a sleeve carried by one side of the frame, a rod rotatably journaled therein, a disk on said rod having a grooved periphery, a soft-rubber ring arranged in said groove, a plate adapted to slide in said frame the edge of the plate adapted to engage the periphery of the rubber ring and rotate the disk, a bell, and means whereby rotation of the disk and rod will ring the bell.

6. A device of the kind described comprising a flanged frame, a rod rotatably journaled adjacent said frame, a bell carried by and rotating with said rod, a stationary knocker, a handle at the outer end of the rod, a disk fixedly secured on said rod adjacent the handle and above the flanged frame, and a plate slidably held in said frame, said plate being reduced in width intermediate its ends, the reduced portion normally lying below the disk and the non-reduced portion being adapted to engage and rotate the disk.

754,665. AUTOMATIC BRAKE-APPLYING DEVICE FOR RAILROADS. AUGUST METER, Jersey City, and CLAUS P. GERITS, Kingsland, N. J. Filed Apr. 30, 1903. Serial No. 155,022. (No model.)

*Claim.*—1. In an air-brake apparatus, a train-pipe, a valve, a tappet, a link connection between the valve and the tappet, a lever pivotally connected to said link connection for throwing the links out of alinement with each other, a signaling means on the road-bed, a valve-operating device adjustable to operative position by the signaling means and adapted to open the valve, and means for locking the valve in the open position.



2. In an air-brake apparatus, a train-pipe, a valve, a tappet, a link pivoted to the end of the valve-stem, a slotted link connecting the pivoted link with the tappet, a signaling means on the road-bed, a valve adjustable to operative position by the signaling means, means for locking the valve in the open position and a lever for disengaging the valve-operating mechanism from the signaling means.

3. In an air-brake apparatus, a train-pipe, a valve, a tappet, a link connection between the valve and the tappet, a lever pivotally connected to said link connection for throwing the links out of alinement with each other, a signaling means adjacent to the road-bed, and a valve-operating device adjustable to operative position by the signaling means.

4. In an air-brake apparatus, a train-pipe, a valve, a tappet, a link connection between the valve and the tappet, a lever pivotally connected to said link connection for throwing the links out of alinement with each other, a signaling means adjacent to the road-bed, and a valve-operating device adjustable to operative position by the signaling means.

5. In an air-brake apparatus, a train-pipe, a valve, a tappet, a link pivoted to the end of the valve-stem, a slotted link connecting the pivoted link with the tappet, a signaling means adjacent to the road-bed, a valve-operating device adjustable to operative position by the signaling means, and means for disengaging the valve-operating means from the signaling means.

6. In an air-brake apparatus, a train-pipe, a valve, a tappet, a valve-stem provided with a lug or projection having an inclined face, a link connection between the valve-stem and the tappet, a signaling means on the road-bed, a valve-operating device adjustable to operative position by the signaling means, and a spring-bolt adapted to engage the inclined face of the lug for locking the valve in the open position.

754,666. INDUCTION-COIL. REUBEN MILLER, Jr., Pittsburg, Pa. Filed Jan. 7, 1904. Serial No. 188,120. (No model.)

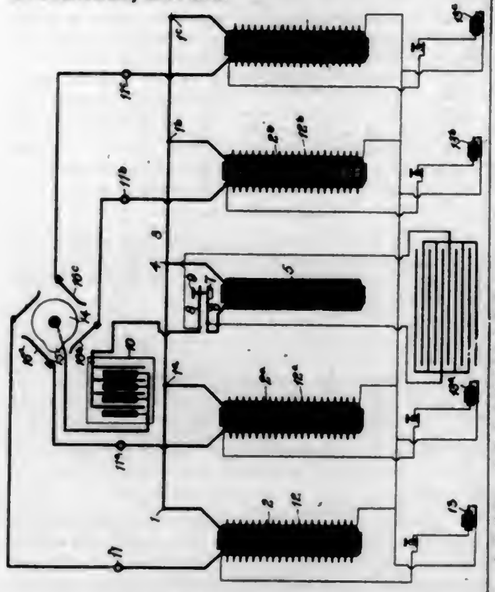
*Claim.*—1. The combination of two or more induction-coils and an interrupter included in the primary circuits of said coils, substantially as set forth.

2. The combination of two or more induction-coils arranged in parallel, an electromagnet in series with the primaries of each induction-coil and an interrupter controlled by said magnet in series with each of the primaries, substantially as set forth.

3. The combination of two or more induction-coils, a circuit-breaker in the primaries of each coil, an interrupter and its controlling-magnet in series with the primaries of the coils, substantially as set forth.

4. The combination of two or more induction-coils, a multiple-switch mechanism controlling the primaries of said coils, an interrupter and its controlling-magnet in series with the primaries of the coils, substantially as set forth.





754,667. PROCESS OF MAKING LEAD SALTS. WALTER MILLS, London, England, assignor to A. O. Granger, Cartersville, Ga. Filed May 25, 1903. Serial No. 158,623. (No specimens.)

*Claim.*—1. That method of making salts of lead which consists in dissolving lead-carrying substances in hydrofluosilicic acid to form silicofluorid of lead, and in then reacting upon such silicofluorid with a nitrate to form nitrate of lead.

2. That method of making salts of lead which consists in dissolving lead-carrying substances in hydrofluosilicic acid to form silicofluorid of lead; in then acting upon such silicofluorid with a nitrate to form nitrate of lead; and in then reacting upon such nitrate with the proper reagent to form the salt desired.

3. That method of making salts of lead which consists in heating a mixture of a lead-carrying substance and concentrated hydrofluosilicic acid and thereby forming silicofluorid of lead; in then acting upon such silicofluorid with a nitrate to form nitrate of lead; and in then reacting upon such silicofluorid with a proper reagent to form the lead salt desired.

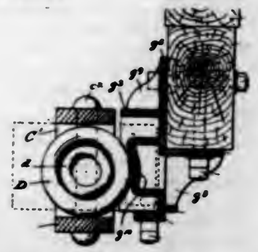
754,668. PROCESS OF MAKING AMMONIUM NITRATE. WALTER MILLS, London, England, assignor to A. O. Granger, Cartersville, Ga. Filed May 25, 1903. Serial No. 158,625. (No specimens.)

*Claim.*—1. The process of making ammonium nitrate which consists in first forming silicofluorid of lead; then converting the same into the nitrate; and finally reacting upon the nitrate of lead with fluorid of ammonium.

2. The process of making ammonium nitrate which consists in heating a mixture of lead or lead-carrying compound and hydrofluosilicic acid of about 1.80 specific gravity; in adding a nitrate to a solution of the lead silicofluorid so formed; and in finally decomposing the lead nitrate with ammonium fluorid.

754,669. TANDEM-SPRING DRAFT-RIGGING. WILLIAM H. MINER, Chicago, Ill., assignor to W. H. Miner Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 12, 1903. Serial No. 176,627. (No model.)

*Claim.*—1. In a tandem-spring draft-rigging for railway-cars, the combination with the draft-sills of a draw-bar, a draw-bar extension, a pocket strap or yoke pivotally connected at its front end with the rear end of the draw-bar extension, tandem springs and followers and a pair of stop-castings having each stops for the followers to abut against, and provided with a horizontal flange fitting under and bolted to the draft-sill, and an upright flange fitting against and bolted to the side of the draft-sill, and furnished each with an inwardly-projecting guide to keep the springs in position, substantially as specified.



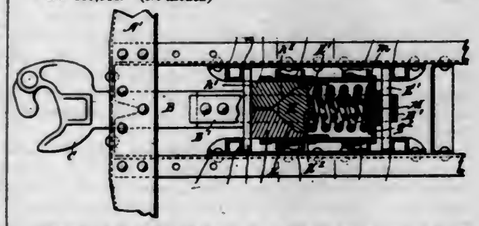
2. In a tandem-spring draft-rigging for railway passenger-cars, the combination with the draft-sills, of a draw-bar, a draw-bar extension, a pocket strap or yoke pivotally connected to the draw-bar extension, tandem springs and followers and a pair of stop-castings having each stops for the followers to abut against, and provided each with a horizontal flange fitting under and bolted to the draft-sill, and an upright flange fitting against and bolted to the side of the draft-sill, said stop-castings having each downwardly-projecting vertical flanges and a transversely-extending thimble and connecting-bolt extending between and connecting the stop-castings at the rear end thereof, substantially as specified.

3. In a draft-rigging for railway-cars, the combination with a pair of stop-castings having each a downwardly-projecting vertical flange at the rear end thereof, and a transversely-extending thimble and connecting-bolt extending between and connecting the stop-castings at the rear end thereof, substantially as specified.

4. In a draft-rigging, the combination of stop-castings G G having each a horizontally-projecting flange $g^4$ and an upright flange $g^5$, and depending lugs or flanges $g^{12}$, a transversely-extending thimble K and connecting tie-bolts K′, substantially as specified.

5. In a draft-rigging, the combination of stop-castings G G having each a horizontally-projecting flange $g^4$ and an upright flange $g^5$, and depending lugs or flanges $g^{12}$, a transversely-extending thimble K, connecting tie-bolts K′ and removable spring-plates H H, said stop-castings having slots at the lower edges thereof to receive bolts for securing said spring-plates to the stop-castings, substantially as specified.

754,670. FRICTION DRAFT-RIGGING FOR RAILWAY-CARS. WILLIAM H. MINER, Chicago, Ill., assignor to W. H. Miner Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 30, 1903. Serial No. 183,110. (No model.)



*Claim.*—1. In a friction draft-rigging for railway-cars, the combination with the side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension front and rear followers, and longitudinally-arranged spring, of a longitudinally-sliding friction shell or case, alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and a plurality of segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each an exterior friction-surface engaging said shell or case and having each a square or right-angle end bearing against one follower, and having each an inclined bearing-face at its longitudinally middle portion, and a wedge, bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, substantially as specified.

2. In a friction draft-rigging for railway-cars, the combination with the side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and longitudinally-arranged spring, of a longitudinally-sliding friction shell or case, alternately held stationary by

one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each an exterior friction-face engaging said shell and a square or right-angle end bearing against one follower, and an inclined bearing-face at its longitudinal middle portion, a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, and an independent seat-block interposed between one of the followers and one end of the spring to permit a partial compression of the spring before the frictional resistance comes into action, substantially as specified.

3. In a friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, a longitudinally-arranged spring bearing at one end against a follower and at the other end against a wedge, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and a plurality of segmental longitudinally-sliding friction-blocks inside said case or shell, and having each an exterior friction-face in sliding frictional engagement with said shell, and having each a square or right-angle end bearing against one follower, and having each an inclined bearing-face at its longitudinally middle portion, and a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, substantially as specified.

4. In a friction draft-rigging for railway-cars, the combination with the side plates or stop-castings having front and rear stops and upper and lower guides, a longitudinally-arranged spring bearing at one end against a follower and at the other end against a wedge, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each an exterior friction-face in sliding engagement with said shell, a square or right-angle end bearing against one follower, and an inclined bearing-face at its longitudinally middle portion, a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, and an independent seat-block interposed between one of the followers and one end of the spring to permit a partial compression of the spring before the frictional resistance comes into action, substantially as specified.

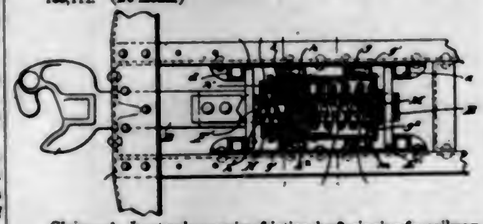
5. In a friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and a longitudinally-arranged spring, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and a plurality of segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each a square or right-angle end bearing against one follower, and having each an inclined bearing-face, and a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, substantially as specified.

6. In a friction draft-rigging the combination with side plates or stop-castings having front and rear stops, of front and rear followers, a longitudinally-arranged spring, a draw-bar and draw-bar extension, a longitudinally-sliding friction-shell having an interior friction-face parallel to the draw-bar, a plurality of segmental sliding friction-blocks inside said shell and having exterior friction-faces in sliding frictional contact with the shell, and provided each with square bearings at one end to engage the follower and a wedge bearing against said segmental friction-blocks at their middle, said spring bearing at one end against said wedge and at its other end against said friction-shell, substantially as specified.

7. In a friction draft-rigging the combination with side plates or stop-castings having front and rear stops, of front and rear followers, a longitudinally-arranged spring, a draw-bar and draw-bar extension, a longitudinally-sliding friction-shell having an interior friction-face parallel to the draw-bar, a plurality of segmental sliding friction-blocks inside said shell and having exterior friction-faces in sliding frictional contact with the shell, and provided each with square bearings at one end to engage the follower and a wedge bearing against said segmental friction-blocks at their middle, said spring bearing at one end against said wedge and at its other end against said friction-shell, and a seat-block interposed between the rear end of said spring and said friction-shell, substantially as specified.

8. In a friction draft-rigging, the combination with side plates or stop-castings having front and rear stops, of front and rear followers, a longitudinally-arranged spring, a draw-bar and draw-bar extension, a longitudinally-sliding friction-shell having an interior friction-face parallel to the draw-bar, segmental sliding friction-blocks inside said shell and having exterior friction-faces in sliding frictional contact with the shell and provided with square bearings at one end to engage the follower and a wedge bearing against said segmental friction-blocks at their middle, said spring bearing at one end against said wedge and at its other end against said friction-shell, and a seat-block interposed between the rear end of said spring and said friction-shell, said friction-shell and seat-block having interengaging shoulders, substantially as specified.

## 754,671. TANDEM-SPRING FRICTION DRAFT-RIGGING. WILLIAM H. MINER, Chicago, Ill., assignor to W. H. Miner Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 30, 1903. Serial No. 183,111. (No model.)



*Claim.*—1. In a tandem-spring friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and longitudinally-arranged tandem springs, of a longitudinally-sliding friction shell or case, alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, segmental longitudinally-sliding friction-blocks inside said friction case or shell and having each an exterior friction-face in sliding frictional engagement with said shell, and provided each at one end with a recess to receive one of said springs, and a square or right-angle end bearing for one follower to abut against after the tandem spring at this end of said friction-blocks is compressed, and furnished each with an inclined bearing-face at its longitudinally middle portion, and a wedge bearing against the inclined faces of said sliding friction-blocks, the other tandem spring bearing at one end against said wedge and at its other end against the other follower, substantially as specified.

2. In a tandem-spring friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and longitudinally-arranged tandem springs, of a longitudinally-sliding friction shell or case, alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, segmental longitudinally-sliding friction-blocks inside said friction case or shell and having each an exterior friction-face in sliding frictional engagement with said shell, and provided each at one end with a recess to receive one of said springs, and a square or right-angled end bearing for one follower to abut against after the tandem spring at this end of said friction-blocks is compressed, and furnished each with an inclined bearing-face at its longitudinally middle portion, and a wedge bearing against the inclined faces of said sliding friction-blocks, the other tandem spring bearing at one end against said wedge and at its other end against the other follower, and an independent seat-block interposed between said last-mentioned spring and the follower at the end thereof to permit a partial compression of the spring before the frictional resistance comes into action, substantially as specified.

3. In a tandem-spring friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and longitudinally-arranged tandem springs, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, segmental longitudinally-sliding friction-blocks inside said friction case or shell and having each an exterior friction-face in sliding frictional engagement with said shell, and provided each at one end with a recess to receive one of said springs, and a square or right-angle end bearing for one follower to abut against after the tandem spring at this end of said friction-blocks is compressed, and furnished each with an inclined bearing-face at its longitudinally middle portion, and a wedge bearing against the inclined faces of said sliding friction-blocks, the other tandem spring bearing at one end against said wedge and at its other end against the other follower, substantially as specified.

4. In a tandem-spring friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and longitudinally-arranged tandem springs, of a longitudinally-sliding friction shell or case, alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, segmental longitudinally-sliding friction-blocks inside said friction case or shell and having each an exterior friction-face in sliding frictional engagement with said shell, and provided each at one end with a recess to receive one of said springs, and a square or right-angle end bearing for one follower to abut against after the tandem spring at this end of said friction-blocks is compressed, and furnished each with an inclined bearing-face, and a wedge bearing against the inclined faces of said sliding friction-blocks, the other tandem spring bearing at one end against said wedge and at its other end against the other follower, substantially as specified.

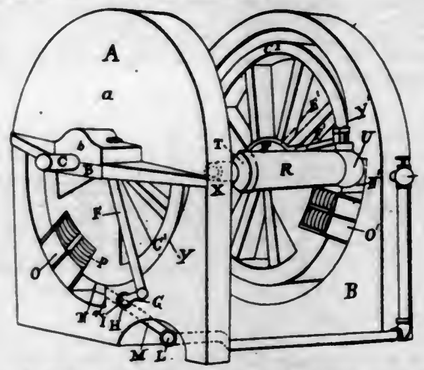
5. In a tandem-spring friction draft-rigging, the combination with the draw-bar, draw-bar extension, side plates or stop-castings, front and rear followers, two tandem longitudinally-arranged springs, a longitudinally-sliding friction-shell having an interior friction-surface, segmental sliding friction-blocks inside said shell having exterior friction-faces engaging the shell and provided each with a recess at one end to receive one of said tandem springs, and a plain or non-wedging bearing-face to engage one follower after the spring contained in the recesses of the friction-blocks is compressed, a wedge or spreader bearing against said sliding friction-blocks, the other tandem spring being interposed between said wedge and the other follower, substantially as specified.

6. In a tandem-spring friction draft-rigging, the combination with the draw-bar, draw-bar extension, side plates or stop-castings, front and rear followers, two tandem longitudinally-arranged springs, a longitudinally-sliding friction-shell having an interior friction-surface, segmental sliding friction-blocks inside said shell having exterior friction-faces engaging the shell and provided each with a recess at one end to receive one of said tandem springs, and a plain or non-wedging bearing-face to engage one follower after the spring contained in the recesses of the friction-blocks is compressed, a wedge or spreader bearing against said sliding friction-blocks, the other tandem spring bearing at one end against said wedge, and an independent seat-block abutting against one follower and against one end of said last-mentioned spring, substantially as specified.

7. In a tandem-spring friction draft-rigging, the combination with the draw-bar, draw-bar extension, side plates or stop-castings, front and rear followers, two tandem longitudinally-arranged springs, a longitudinally-sliding friction-shell having an interior friction-surface, segmental sliding friction-blocks inside said shell having exterior friction-faces engaging the shell and provided each with a recess at one end to receive one of said tandem springs, and a plain or non-wedging bearing-face to engage one follower after the spring contained in the recesses of the friction-blocks is compressed, a wedge or spreader bearing against said sliding friction-blocks, the other tandem spring being interposed between said wedge, an independent seat-block abutting against one follower and against one end of said last-mentioned spring, said seat-block and friction shell or case having interengaging shoulders, substantially as specified.

## 754,672. ROTARY STEAM-ENGINE. HENRY C. MITCHELL, Andover, Mass. Filed June 23, 1903. Serial No. 162,758. (No model.)

*Claim.*—1. In a non-reversing rotary engine operated by steam expansion, the combination of a supply-pipe, a half-rotary valve, an eccentric and rod, and a single lever for operating the valve, a double-stem piston and cylinder in which said piston moves having an abrupt steam-entrance shoulder and tapering beyond the exhaust to a steam-tight joint, subsidiary exhaust-grooves and a fly-wheel carrying said rotatable cylinder and piston.




2. In a non-reversing rotary engine, a supply-pipe, a valve therefor operated by an eccentric and a lever, a double-stem piston, a cylinder having a plurality of packing-rings distributed along the piston in grooves, a fly-wheel carrying said rotatable cylinder and piston, an eccentric carried by said fly-wheel and connected with a lever for operating said valve, an exhaust X, a receiver R, and a second similar piston, cylinder, fly-wheel carrying same, and eccentric; substantially as described and shown.

3. In a rotary fluid-engine, the combination of a casing provided through part of its periphery with an annular steam-space, a rotating disk forming the inner wall of said steam-space, an outwardly-pressed piston carried by said disk and adapted to close said steam-space when outwardly pressed, a supply-pipe entering said steam-space, an adjustable valve therein driven by an eccentric from said disk to operate said valve, an exhaust-port opening into said steam-space, and subsidiary exhaust-grooves in said casing across the exhaust-port, as and for the purpose described, all substantially as described

4. In a non-reversing rotary steam-engine, the combination of the double-stem piston O having the grooves I with the steam-packing W composed of resilient metal substantially circumferential to the form of the piston, and closely fitting the same, and broken at its lower part to admit of a spring action as required.

5. In a rotary engine operated by steam expansion, a double-stemmed piston O having packing-grooves 1 and the stems *o*, *o*; substantially as and for the purpose described.

## 754,673. ATTACHMENT FOR ATHLETIC SHOES. JAMES G. MITCHELL, Charleroi, Pa. Filed Mar. 31, 1903. Serial No. 150,393. (No model.)

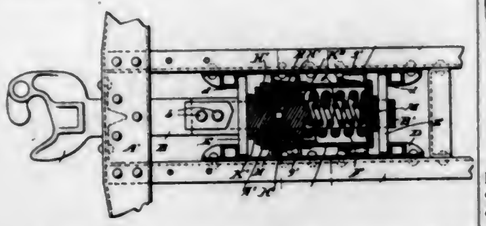


*Claim.*—An attachment for shoes comprising a pad made up of two sections of material fastened together and provided with spur-receiving apertures, the lower layer of said material having horizontally-disposed apertures, a spring seated in said apertures, and bracket-shaped hooks actuated by said springs and designed to engage over the sole of the shoe, as set forth

## 754,674. FRICTION DRAFT-GEAR FOR RAILWAY-CARS. PETER M. MOORE, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,897. (No model.)

*Claim.*—1. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the case or shell, and a plurality of wedges or in-

clines for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip or press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, said seat-block and said friction shell or case having interengaging shoulders, substantially as specified.



2. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the case or shell, and having each two inclined or wedging faces, one at each end thereof, a plurality of wedges, one at each end of said friction-blocks, for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip and press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.

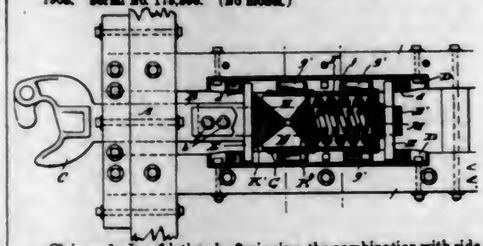
3. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of case or shell, and having each two inclined or wedging faces, one at each end thereof, a plurality of wedges one at each end of said friction-blocks for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip and press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, said seat-block and said friction shell or case having interengaging shoulders, substantially as specified.

4. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the case or shell, and a plurality of wedges or inclines for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip or press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, said seat-block having at its rear end an internal flange or shoulder $g^3$, and said seat-block having an exterior shoulder $m$ engaging said interior shoulder on the case or shell, substantially as specified.

5. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the case or shell, and a plurality of wedges or inclines for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip or press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.

## 754,675. FRICTION DRAFT-RIGGING FOR RAILWAY-CARS.

PETER H. MOORE, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,898. (No model.)



*Claim.*—1. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, rectangular sliding friction-blocks, operating-wedges therefor, and a rectangular sliding friction shell or case surrounding and inclosing said parts, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

2. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, rectangular sliding friction-blocks, operating-wedges therefor, and a rectangular sliding friction shell or case surrounding and inclosing said parts, said sliding friction-blocks having wedging or inclined operating-faces at the inner corners thereof, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

3. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a polygonal sliding friction shell or case having a plurality of interior friction-surfaces, a plurality of polygonal sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-faces of said case or shell, and a plurality of wedges or inclines for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip or press against each other, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

4. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a polygonal sliding friction shell or case having a plurality of interior friction-surfaces, a plurality of polygonal sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-faces of said case or shell, and a plurality of wedges or inclines for causing the sliding friction-surfaces of the friction-blocks and shell to forcibly grip or press against each other, said sliding friction-blocks having inclined or wedging operating-faces at each end thereof, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case substantially as specified.

5. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, longitudinally-arranged spring and followers, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a wedging or inclined face at each end thereof, and a pair of operating-wedges, one at each end of said sliding friction-blocks, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

6. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, longitudinally-arranged spring and followers, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a wedging or inclined face at each end thereof, a pair of operating-wedges, one at each end of said sliding friction-blocks, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.



7. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a rectangular sliding friction-shell having a plurality of interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a plurality of exterior friction-faces engaging said shell, and each a cornerwise wedging or inclined face, and an operating-wedge, substantially as specified.

8. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a rectangular sliding friction-shell having a plurality of interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a plurality of exterior friction-faces engaging said shell, and each a cornerwise wedging or inclined face at each end thereof, and a pair of operating-wedges, one at each end of said sliding friction-blocks, substantially as specified.

9. In a friction draft-rigging, the combination with side plates or stop-castings, a draw-bar, draw-bar extension and followers, of a frictional and spring resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell having each a plurality of exterior friction-faces engaging said shell, and operating-wedges for operating or exerting pressure against said sliding friction-blocks diagonally of the sliding friction-shell, substantially as specified.

10. In a friction draft-rigging, the combination with side plates or stop-castings, a draw-bar, draw-bar extension and followers, of a frictional and spring resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell, operating-wedges for operating or exerting pressure against said sliding friction-blocks diagonally of the sliding friction-shell, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.

11. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, sliding friction-blocks, operating-wedges therefor, and a sliding friction shell or case surrounding and inclosing said parts, the interior portion of said shell surrounding the spring being larger than the friction-surface portion thereof, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

12. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, sliding friction-blocks, operating-wedges therefor, and a sliding friction shell or case surrounding and inclosing said parts, said friction-shell having an enlargement at the inner end of its interior friction-surface, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

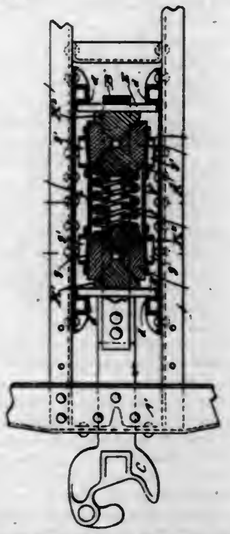
## 754,676. TANDEM FRICTION SPRING DRAFT-RIGGING FOR RAILWAY-CARS.

PETER H. MOORE, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,900. (No model.)

*Claim.*—1. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a sliding friction-shell having interior friction-surfaces at each end thereof, a plurality of sliding friction-blocks inside said shell at each end thereof and confined thereby from lateral or transverse movement, said friction-blocks having each a wedging or inclined face at each end thereof, substantially as specified.

2. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, a sliding friction-shell having interior friction-surfaces at each end thereof, a plurality of sliding friction-blocks inside said shell at each end thereof and confined thereby from lateral or transverse movement, and two pairs of operating-wedges, one wedge being at each end of each set of sliding friction-blocks, substantially as specified.

3. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, a hexagonal sliding friction-shell having interior friction-faces at each end thereof, two tandem sets of sliding friction-blocks, triangular in cross-section, inside said shell and confined thereby from lateral or transverse movement, and operating-wedges, substantially as specified.

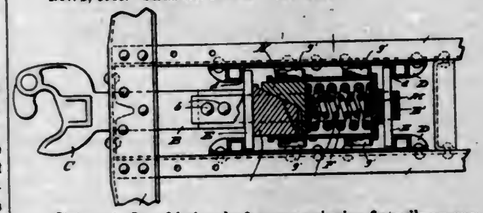


4. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, a hexagonal sliding friction-shell having interior friction-faces, sliding friction-blocks, each triangular in cross-section, inside said shell and confined thereby from lateral or transverse movement, and having each a wedging or inclined face, and an operating-wedge, substantially as specified.

5. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, a hexagonal sliding friction-shell having interior friction-faces, sliding friction-blocks each triangular in cross-section inside said shell and confined thereby from lateral or transverse movement and having each a wedging or inclined face at each end thereof and operating-wedges, one at each end of said sliding friction-blocks, substantially as specified.

## 754,677. FRICTION SPRING DRAFT-GEAR FOR RAILWAY-CARS.

PETER H. MOORE, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,902. (No model.)



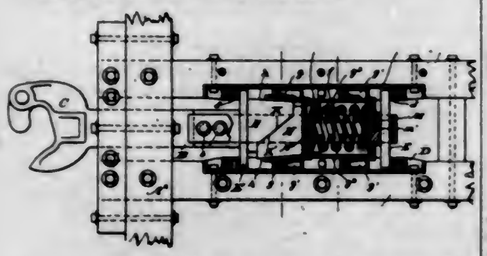
*Claim.*—1. In a friction draft gear or rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, plain flat followers having parallel faces, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and of said friction-blocks to frictionally grip or forcibly press against each other, said friction-blocks being independent of and in separate pieces from the followers, substantially as specified.

2. In a friction draft gear or rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having interior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and of said friction-blocks to frictionally grip or forcibly press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.

3. In a friction draft gear or rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and of said friction-blocks to frictionally grip or forcibly press against each other, the interengaging wedging or inclined operating-faces of said friction-blocks being diagonal or cornerwise of the blocks, substantially as specified.

4. In a friction draft gear or rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having interior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and of said friction-blocks to frictionally grip or forcibly press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, the interengaging wedging or inclined operating-faces of said friction-blocks being diagonal or cornerwise of the block, substantially as specified.

## 754,678. FRICTION SPRING DRAFT-RIGGING FOR RAILWAY-CARS. Peter H. Moore, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,903. (No model.)



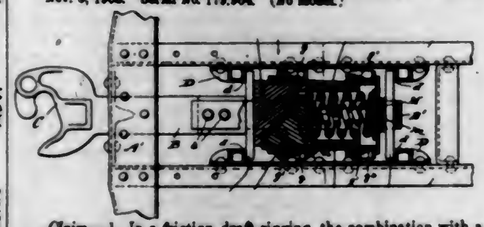
*Claim.*—1. In a friction-gear or draft-rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior slightly-tapering friction-surface terminating in a straight portion, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces seating directly on each other for causing the sliding friction-surfaces of the friction shell or case and of said friction-blocks to frictionally grip or forcibly press against each other, substantially as specified.

2. In a friction-gear or draft-rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior slightly-tapering friction-surface terminating in a straight portion, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces for causing the sliding friction-surfaces of the friction case or shell and of said friction-blocks to frictionally grip or forcibly press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a lateral compression of the spring before the follower engages the friction shell or case, substantially as specified.

3. In a friction-gear or draft-rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior slightly-tapering friction-surface terminating in a straight portion, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces seating directly on each other for causing the sliding friction-surfaces of the friction shell or case and of said friction-blocks to frictionally grip or forcibly press against each other, the interengaging wedging or inclined operating-faces of said friction-blocks being in a vertical plane, substantially as specified.

4. In a friction-gear or draft-rigging for railway-cars, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior slightly-tapering friction-surface terminating in a straight portion, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces for causing the sliding friction-surfaces of the friction case or shell and of said friction-blocks to frictionally grip or forcibly press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a lateral compression of the spring before the followers engage the friction shell or case, the interengaging wedging or inclined operating-faces of said friction-blocks being in a vertical plane, substantially as specified.

## 754,679. FRICTION SPRING DRAFT-RIGGING FOR RAILWAY-CARS. Peter H. Moore, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,904. (No model.)



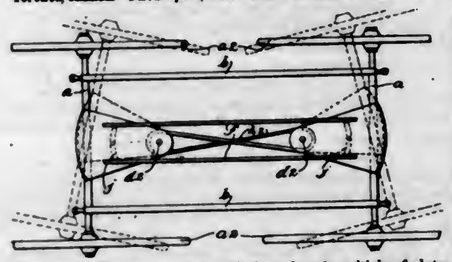
*Claim.*—1. In a friction draft-rigging, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and each provided with a projecting wing extending on each side of the spring and embracing the same, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and friction-blocks, to frictionally grip or forcibly press against each other, said followers and said sliding friction-blocks being in separate pieces and independent of each other, substantially as specified.

2. In a friction draft-rigging, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and friction-blocks, to frictionally grip or forcibly press against each other, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.



3. In a friction draft-rigging, the combination with a draw-bar, draw-bar extension, longitudinally-arranged spring, followers, and side plates or stop-castings, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and each provided with a projecting wing extending on each side of the spring and embracing the same, and having exterior friction-faces in sliding frictional engagement with the interior friction-surface of the case or shell, and provided with interengaging wedging or inclined operating-faces for causing the sliding friction-surfaces of the friction shell or case and friction-blocks, to frictionally grip or forcibly press against each other, said friction-blocks having inserted wearing-plates on their friction-faces, said followers and said sliding friction-blocks being in separate pieces and independent of each other, substantially as specified.

## 754,680. RUNNING-GEAR FOR VEHICLES. Robert A. Moore, Toronto, Canada. Filed Apr. 9, 1903. Serial No. 151,695. (No model.)



*Claim.*—1. The combination with the axles of a vehicle of plates rigidly connected therewith and extending inwardly in the direction of the center of the truck-frame, a rigid longitudinal frame provided with end plates which rest on the first-named plates and which are pivotally connected therewith at their inner ends, drums secured to the bottom portions of the first-named plates at the inner ends thereof and belts or cables secured to and passing around said drums and crossed between the same, substantially as shown and described.

2. The combination with the axles of a vehicle of plates rigidly connected therewith and extending inwardly in the direction of the center of the truck-frame, a rigid longitudinal frame provided with end plates which rest on the first-named plates and which are pivotally connected therewith at their inner ends, drums secured to the bottom portions of the first-named plates at the inner ends thereof and belts or cables secured to and passing around said drums and crossed between the same, said rigid frame forming a support for the upper parts of the vehicle, substantially as shown and described.

## 754,681. ELECTROMAGNETIC DEVICE. Rudolf K. Müller, Zurich, Switzerland. Filed Sept. 20, 1902. Serial No. 124,177. (No model.)

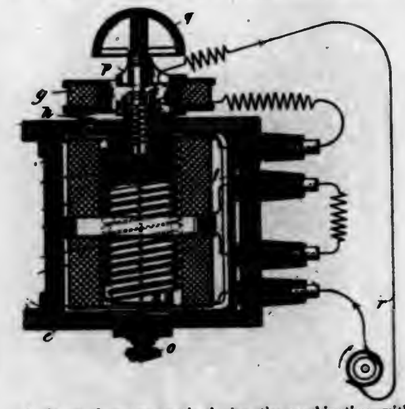
*Claim.*—1. In a device of the character described, a coil, a second coil movably mounted relative to the first coil, yielding means connecting the supports of the two coils, and a member mounted on the second coil, the two coils adapted to be connected with a source of alternating electric current and so wound that their magnetic fluxes will be opposed.

2. In a device of the character described, a coil, a core, a second coil movably mounted relative to the first coil, yielding means connecting the supports of the two coils, and a member mounted on the second coil, the two coils adapted to be connected with a source of alternating electric current and so wound that their magnetic fluxes will be opposed.

3. In an electromagnetic device, the combination, with a coil, of a refrigerating-pipe arranged to cool the same and doubled upon itself whereby eddy-currents are neutralized.

4. In an electromagnetic device, the combination, with a coil, and a core, of a refrigerating-pipe arranged to cool the core and coil and doubled upon itself whereby eddy-currents are neutralized.

5. In an electromagnetic device, the combination with a coil, and a core within the coil, of a pipe disposed between the core and coil and consisting of a continuous hollow tube doubled upon itself and adapted for the circulation of a refrigerating medium.



6. In an electromagnetic device, the combination, with a coil, and a core within the coil, of a pipe disposed between the core and coil and adapted for the circulation of a refrigerating medium, said pipe consisting of a continuous hollow tube doubled upon itself and arranged about the core in such manner that the respective coils of the tube alternate thus preventing self-induction and equalizing the cooling effect.

7. In a device of the character described, a coil composed of two windings arranged in series, a core composed of insulated sections, a refrigerating-spiral disposed between the core and windings and consisting of a continuous pipe doubled upon itself, a second coil arranged upon and axially displaceable relative to the first coil, springs connecting the supports of the two coils, and a member carried by the second coil, the two coils adapted to be connected with a source of alternating electric current and so wound that the magnetic fluxes of their respective windings will be opposed.

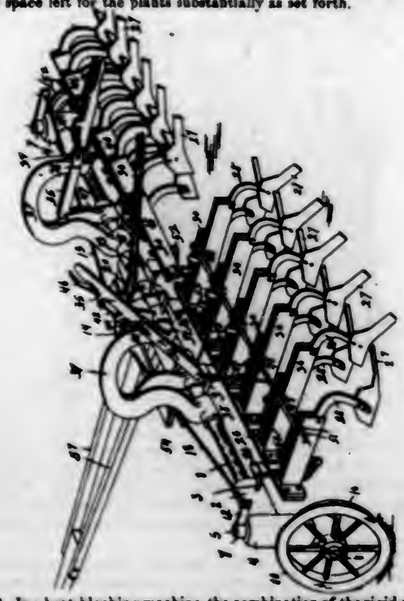
8. In a device of the character described, a coil composed of a plurality of windings arranged in series, a laminated core common to the windings, a refrigerating-spiral enveloping the core and arranged between the core and windings and consisting of a continuous pipe doubled upon itself in such manner as to neutralize eddy-currents, a similar spiral surrounding the windings of the coil, a second coil mounted upon and axially displaceable relative to the first coil, springs connecting the supports of the two coils, means for adjusting the tension of the springs, a member carried by the second coil, the two coils adapted to be connected with a source of alternating current and so wound that the lines of force of their respective magnetic fields are opposed.

9. In a device of the character described, a coil composed of a plurality of windings arranged in series, a laminated core composed of insulated plates, a hollow spiral disposed about the core between the same and the windings and consisting of a continuous pipe doubled upon itself, a similar spiral surrounding the windings of the coil, a second coil mounted upon and axially displaceable relative to the first coil, a member carried by the second coil, the two coils adapted to be connected with a source of alternating electric current and so wound that the lines of force of their magnetic fields will be opposed whereby the movable coil will be intermittently repelled, and adjustable yielding means for returning said second coil.

## 754,682. BEET-BLOCKING MACHINE. Albert R. Mundt, Chesterfield township, Macomb county, Mich., assignor of one-half to George W. Tucker, Chesterfield, Mich. Filed May 11, 1903. Serial No. 156,567. (No model.)

*Claim.*—1. In a beet-blocking machine, the combination of the fixed axle, a bracket swiveled at each end of said axle and carrying an outwardly-extending journal, transporting-wheels mounted on the journals of said brackets, rods connected with the swiveled stems of said brackets, a lever mounted on the axle between its ends to which the ends of said rods are coupled, said lever being pivoted to swing in the arc of a horizontal circle, a bar extending parallel with the axle and hinged thereto, rearwardly-extending divided beams mounted upon said bar to move longitudinally thereof, a series of hoes piv-

oted between the divided sides of said beams, said hoes being arranged in pairs to leave an open space between them for the blocking of the beet-plants, the ends of said hoes overlapping on each side of the space left for the plants substantially as set forth.



2. In a beet-blocking machine, the combination of the rigid axle, the transporting-wheels at the ends of said axle, the bar hinged in the rear of the axle, beams mounted in pairs to slide longitudinally on said bar, means for raising and lowering a series of said beams in unison, said hoes having standards pivoted between said beams, said standards having horizontal end portions which lie between the sides of said beams, a spring attached to the horizontal end of each standard for maintaining each hoe-beam normally in place, whereby each hoe may pass over an obstruction without effecting the other hoes in the gang.

3. In a beet-blocking machine, the combination of the fixed axle the transporting-wheels at the ends of said axle, the bar parallel with the axle and hinged to the rear thereof, the hoe-carrying beams secured to said bar, to render them laterally adjustable, standards pivoted in pairs between the sides of said beams, a hoe secured to each of said standards, one hoe in each pair being in advance of the other, a guide upon each of the standards adapted to lie between the sides of said beams, and a spring attached to the standards to yieldingly retain the hoes in a working relation with the ground.

4. In a beet-blocking machine, the combination with the fixed axle, of the transporting-wheels at the ends of said axle, a bar secured to the axle and extending parallel therewith, the beams secured to said bar, the hoe-standards pivoted between said beams, means for normally preventing movement of said standards upon their pivots, hoes attached to said standards, said hoes being arranged in pairs, one in advance of the other and spaced to afford room for a beet-plant between them, the rear ends of said hoes extending rearwardly and curving laterally, so as to work the entire surface of the ground between the plants which are left by the hoes.

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**754,683. COMBINATION HANGING BASKET AND POT. FRANK NEBEL, Los Angeles, Cal. Filed Mar. 16, 1903. Serial No. 147,905. (No model.)**

*Claim.*—1. A hanging basket, a pot, and means for fastening the pot to the basket comprising two detachable members, one member being fastened to the basket, and the other member adapted to be permanently secured to the pot.

2. A hanging basket, means for suspending said basket, a pot extending below and around said basket, and a connection detachably fastening the pot to the basket to support the pot.

3. A hanging basket, a pot, and means for fastening the pot to the basket comprising two detachable members, one member being clamped to the basket and provided with depending wings, the other member secured to the pot and adapted to be supported by said wings.

4. A plant-basket, a pot, and means for fastening the pot to the basket comprising two detachable members, one member being clamped to the basket, the other member comprising a T-bar secured to the bottom of the pot, and suitable packing around the post of the T-bar for preventing leakage from the pot.



5. A plant-basket, a pot, a T-bar bolted to the bottom of the pot, a bracket fastened to the basket, and a pair of wings on the basket engaging the T-bar.

6. A plant-basket, a pot, a T-bar having a threaded post which projects through the bottom of the pot, a flange on the post, an impervious washer between the flange and the bottom of the pot, and means connected with the basket detachably engaging the T-bar.

7. A plant-basket, a pot, a bracket, a stationary clip on the bracket, a clip slidably mounted on the bracket, said clips engaging the basket, and means on the bottom of the pot detachably connecting it to the bracket.

8. A plant-basket, a pot, a bracket, a stationary clip on the bracket, a clip slidably mounted on the bracket, a pair of wings depending from the bracket, and a T-bar connected to the pot and engaging the wings.

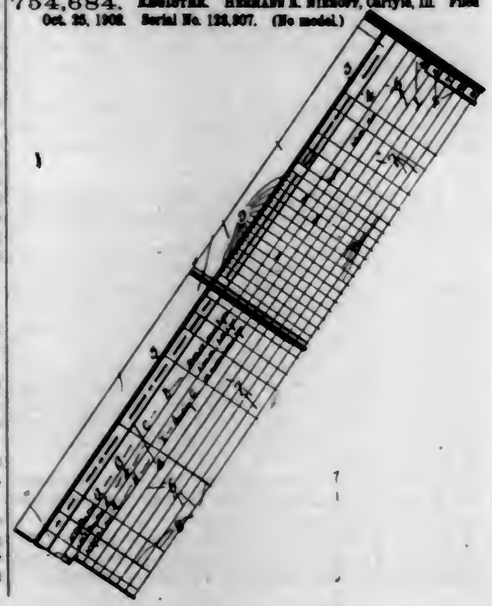
9. A plant-basket, a pot, a bracket, a stationary clip on the bracket, a clip slidably mounted on the bracket, a pair of wings depending from the bracket, each wing having a V-shaped notch, and a T-bar connected to the pot, the horizontal bar of the T lying in the notches.

10. A hanging basket having open meshes, a receptacle, and a fastening device for detachably supporting said receptacle below said basket, said device being provided with projecting means adapted to enter a mesh of the basket.

11. A hanging basket having open members, a receptacle, and a fastening device for supporting said receptacle below said basket, said device having oppositely-disposed clamping means provided with projections adapted to enter said meshes.

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**754,684. REGISTER. HERMAN A. NIEMOYT, Carlyle, Ill. Filed Oct. 25, 1902. Serial No. 128,907. (No model.)**



*Claim.*—A register for notes and the like comprising a book having a plurality of leaves, each leaf being provided with a proper designating character to indicate the day of the month, and each leaf being ruled to provide a plurality of separate columns and successively designated for data indicative of the number of the note, the date, the drawer or maker, the indorser or surety, the amount, discount and time which the note is to run, and separate parallel columns designated for data indicating different months of the year, and additional columns, one of which is for data indicating when the note is to be paid, another for the amount paid, and a separate column indicating interest; substantially as described.



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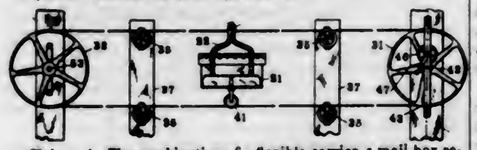
**754,685. STOPPER FOR PREVENTING REFILLING BOTTLES. GEORGE R. OKEY, Indianapolis, Ind., assignor, by direct and mesne assignments, to the National Non-Refillable Bottle Company, Indianapolis, Ind., a Corporation of Arizona. Filed June 20, 1903. Serial No. 162,314. (No model.)**



*Claim.*—A bottle-stopper consisting of two sections the upper section provided with a partition and a plurality of semicircular notches at the edge of its lower seating end, openings in the wall above the partition and grooves in the outer wall terminating in the wall-openings above the partition and connecting the notches at its lower end, the lower section having semicircular notches in the edge of its upper end into which the wall-grooves terminate as shown and described.

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**754,686. MAIL-BOX CARRIER. GEORGE R. OKEY, Indianapolis, Ind., assignor, by direct and mesne assignments, to Okey Rural Mail Box Company, Indianapolis, Ind., a Corporation of Indiana. Filed Nov. 23, 1903. Serial No. 182,221. (No model.)**



*Claim.*—1. The combination of a flexible carrier, a mail-box secured to said carrier, transmission-wheels at the ends of the route over which the carrier passes, one of said transmission-wheels having a hollow hub with a pinion rigidly secured thereto, a bracket bearing a stud-shaft upon which said transmission-wheel is mounted and also having a bearing for a second shaft, said second shaft, a gear-wheel thereon engaging with said pinion, and a crank for driving said shaft and said gear-wheel, substantially as shown and described.

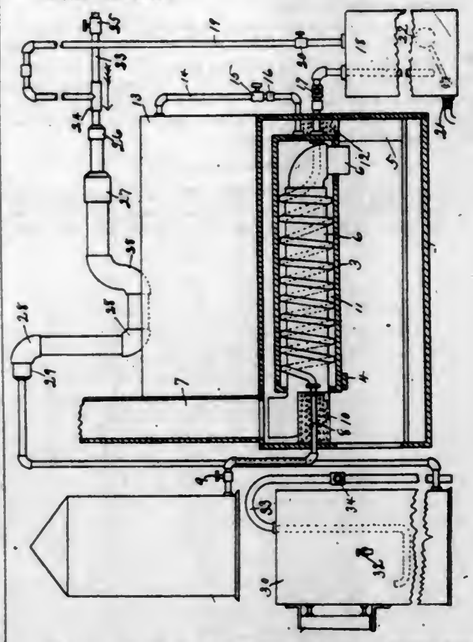
2. The combination of a flexible carrier, suitable wheels on which the carrier is mounted, a box connected to said carrier where the ends come together, and a hanger on said box for the purpose of making said attachment, said hanger being provided with a winding-spool, and also having a projection extending below the surface of the frame in which the spool is mounted containing perforations through which the carrier passes, whereby the carrier is enabled to pass through the grooves of the supporting-wheels and also whereby the tension of the carrier may be adjusted.

3. The combination of a mail-box having a hanger which extends from one side up over the top of said box, means for attaching the carrier to said hanger at a point above the box including a winding-spool for adjusting the tension of the carrier, said carrier, vertically-positioned wheels situated at suitable points along the route and at the ends thereof for supporting said carrier, whereby the mail-box is enabled to hang supported in upright position from end to end of the route provided, substantially as set forth.

4. The combination of a flexible carrier, transmission and supporting wheels therefor, and a mail-box secured to said carrier by means of an overhanging hanger with which it is provided and which is also provided with a guide-wheel on the under side adapted to engage with the lower member of the carrier whereby swaying is prevented, said guide-wheel being thinner than the supporting-wheels thus enabling it to pass over said supporting-wheels, substantially as set forth.

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**754,687. APPARATUS FOR REFINING CRUDE PETROLEUM. JAMES M. O'NEALL, Dallas, Tex., assignor to British American Power Company. Filed Jan. 29, 1901. Renewed Aug. 27, 1903. Serial No. 171,025. (No model.)**



*Claim.*—1. Apparatus for refining crude oil comprising means for converting the volatile oil into vapor by heat, a receptacle for collecting and separating the vapor and the non-volatile matter, a condenser for converting the vapor back to oil, and means for forcing the vapor into a fluid in the condenser.

2. In an apparatus for refining crude oil provided with a furnace and a pipe for conveying oil through the furnace; means for insulating said pipe whereby the burning or scorching of the oil is prevented and heat is applied uniformly to said pipe as the oil is passing through the furnace whereby the volatile oil is converted into vapor, and means for collecting and condensing the vapor.

3. In an apparatus for refining crude oil provided with a furnace, a pipe for conveying oil through said furnace, and means for collecting and condensing the vapor; means for insulating said pipe in said furnace and means for distributing heat uniformly thereto whereby the oil is converted into vapor during its passage through said furnace without charring or scorching the oil consisting of a pipe or tube mounted in said furnace and inclosing said oil-pipe and means for forcing hot steam in said tube or pipe about said oil-pipe.

4. In an apparatus for refining oil provided with a furnace, a pipe for conveying oil through said furnace, and means for collecting and condensing vapor; means for insulating said pipe in said furnace and distributing heat uniformly thereto whereby the oil is converted to vapor during its passage through said furnace without charring or scorching the oil consisting of a pipe or tube mounted in said furnace, a smaller pipe mounted in said pipe or tube and having open communication with said furnace, said oil-pipe being coiled about said smaller pipe within the larger pipe or tube, said larger pipe or tube being closed about said smaller pipe and said oil-pipe, and means for applying hot steam to the coil of said oil-pipe.

5. In an apparatus for refining crude oil provided with a furnace, an oil-pipe for conveying oil through said furnace, and means for collecting and condensing the vapor; a closed tube or pipe for protecting said oil-pipe in said furnace, insulation for protecting said oil-pipe between the walls of the furnace and the ends of said tube or pipe, and means for forcing hot steam or hot air in said closed tube or pipe.

6. In an apparatus for refining crude oil provided with a furnace and means for conveying oil through said furnace whereby the volatile oil is converted into vapor; means for forcing the gas into a fluid or liquid and a condenser for condensing the vapor into oil.

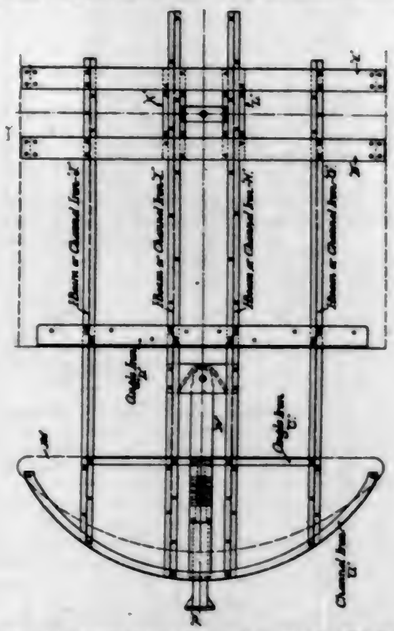
7. In an apparatus for refining crude oil provided with means

for converting volatile oil into vapor and a separator for collecting the vapor and the residue or non-volatile matter and separating the vapor therefrom; means for forcing the vapor into a liquid and a condenser consisting of a series of pipes of different diameters and connected at different angles.

8. In an apparatus for refining crude oil provided with means for converting the volatile oil into vapor and means for collecting the vapor and the involatile matter and separating the vapor therefrom; a pipe for conveying the vapor to a condenser, the condenser consisting of a series of pipes of different diameters connected together at different angles, and a receiver for collecting and separating the products of the condenser.

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754,688. CAR-PLATFORM. NIEL PAULSON, Newark, Ohio, assignor of one-half to Albert H. Sisson, Newark, Ohio. Filed Oct. 30, 1902. Renewed Oct. 26, 1903. Serial No. 178,699. (No model.)



*Claim.*—1. In combination, framing for supporting the platform of a car, a bumper applied to said framing, a swing-bar pivotally connected to the framing and slidably supported by the aforesaid bumper, and a draw-bar applied to said swing-bar, substantially as set forth.

2. In combination, framing for supporting the platform of a car, a bumper applied to said framing and provided with a reinforcing-flange, a swing-bar pivoted at one end to the framing and supported at its other end by the reinforcing-flange of the bumper, and a draw-bar applied to said swing-bar, substantially as specified.

3. In combination, a series of longitudinal beams disposed in parallel relation and spaced apart, a transverse beam firmly attached to each of the longitudinal beams and adapted to have the end sill of a car-body secured thereto, a second transverse beam firmly attached to the several longitudinal beams and having the nose piece of the platform supported thereby, and a third beam transversely arranged and curved forward between its ends and secured to each of the aforesaid longitudinal beams and having its terminal portions attached to the aforementioned nose-piece, said curved beam constituting a bumper, substantially as set forth.

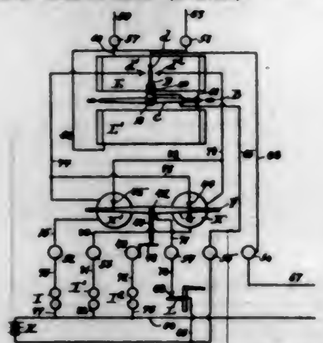
4. In combination, a series of longitudinal beams disposed in parallel relation and spaced apart, transverse beams firmly attached to the several longitudinal beams, the foremost transverse beam being curved and constituting a bumper, and a bolster comprising upper and lower members connected at their ends and separated intermediate of their ends and receiving the intermediate longitudinal beams in the space and having the lowermost member of the bolster crossing over the side longitudinal beams, the members of the bolster being firmly attached to the longitudinal beams at the point of crossing, substantially as described.

5. In combination, a series of longitudinal beams transversely spaced, the side beams having their rear ends in a lower plane than the intermediate beams and the part near their rear ends upwardly curved to clear the car-wheels, and a bolster comprising upper and lower members connected at their ends and spaced apart intermediate of their ends and resting upon the side longitudinal beams and receiving the intermediate longitudinal beams between the upper and lower members, substantially as set forth.

6. In combination, longitudinal beams, bolsters spaced apart and firmly connected to the longitudinal beams, longitudinal bars located beneath the beams and connected thereto and to the bolsters and having the middle portion depressed, plates located above the depressed parts of said bars and secured thereto and coming between the bolsters, and a body-plate secured to and supported by said plates, substantially as set forth.

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754,689. ELECTRICAL SELECTIVE APPARATUS. FRANK D. PEARNE and CHARLES L. KRUM, Chicago, Ill., assignors to Pearne Electric and Manufacturing Company, Chicago, Ill., a Corporation. Filed Feb. 3, 1902. Serial No. 92,304. (No model.)



*Claim.*—1. The combination with a line-circuit and with two independent, separate branch circuits, of a relay in said line-circuit, means controlled by said relay for closing either of said branch circuits, a pair of locking-magnets, one controlled by each of said branch circuits and a shunt around said circuit-controlling means arranged to be closed by the operation of said locking-magnets through the selected branch circuit.

2. The combination with a line-circuit and with two independent, separate branch circuits, of a polarized relay in said line-circuit comprising a pivoted armature having means for controlling said branch circuits, means for holding said armature in central position with both of said branch circuits open, means for rocking said armature in one or the other direction to close either of said branch circuits, a locking-magnet in each of said branch circuits, means controlled by said locking-magnets and a shunt around said circuit-controlling means arranged to be closed through the selected branch circuit by said means.

3. The combination with a line-circuit and with two independent, separate branch circuits, of a relay in said line-circuit comprising a permanent field-magnet, a pivoted armature held in normal central position thereby and means for rocking said armature in one or the other direction, a contact-arm controlled by said armature and normally held thereby out of engagement with the terminals of said separate branch circuits but arranged to close either of the latter as said armature is rocked in one or the other direction, a locking-magnet in each of said branch circuits, a common pivoted armature for said locking-magnets, arranged to be rocked in one or the other direction thereby and a shunt around said contact-arm arranged to be closed through the selected branch circuit by the movement of said locking-armature.

4. The combination with a line-circuit and with two separate independent branch circuits, of a relay comprising a permanent field-magnet having two like poles and one unlike pole, an armature extending in line with and normally held in central position between said like poles and an electromagnet for rocking said armature in one or the other direction, a contact-arm controlled by said relay-armature and normally held out of contact with the terminals of said branch circuits but arranged to close one or the other of the latter as said armature is moved, a locking-magnet in each of said branch circuits, a common centrally-pivoted armature for said locking-magnets, and a shunt around said contact-arm arranged to be closed through the selected branch circuit by the movement of said locking-armature.

5. The combination with a line-circuit and with two normally open branch circuits controlling receiving devices, of means controlled said line-circuit for closing either of said branch circuits, a locking-magnet in each of said branch circuits and a shunt arranged to be closed by said locking-magnets through the selected branch circuit.

6. The combination with a line-circuit and with two independent, normally open branch circuits controlling separate receiving devices, of a relay controlled by said line-circuit for closing either of said branch circuits, a pair of locking-magnets arranged side by side one in either of said branch circuits, a common centrally-pivoted armature arranged to be moved in one or the other direction by said locking-magnets and a shunt arranged to be closed by the movement of said armature through the selected branch circuit.

7. The combination with a line-circuit and with two normally open branch circuits controlling separate receiving devices, of a relay in said line-circuit arranged to close either of said branch circuits, a pair of locking-magnets arranged side by side, one in either of said branch circuits, a common centrally-pivoted armature, a permanent field-magnet arranged to hold said armature in normal central position and a shunt arranged to be closed by said armature through the selected branch circuit when said armature is rocked in one or the other direction by the operation of said locking-magnets.

8. The combination with a line-circuit and with two independent, normally open branch circuits controlling separate receiving devices, of means controlled by said line-circuit for closing either of said branch circuits, a pair of locking-magnets, one arranged in either of said branch circuits, a common pivoted armature normally held in central position, a third branch circuit controlling a third receiving device and a shunt controlled by said pivoted armature and normally closed thereby through said third branch circuit but arranged to be broken through said third branch and closed through either of the normally open branches when said armature is rocked in one or the other direction by the operation of said locking-magnets.

9. The combination with a line-circuit and with two separate branch circuits, of means operated by said line-circuit for controlling said separate branch circuits, a locking-magnet in each of said branch circuits and a shunt-circuit around said circuit-controlling means arranged to be actuated by each of said locking-magnets.

10. The combination with a line-circuit and with two independent, separate branch circuits, of a relay in said line-circuit, switch-contacts in said branch circuits controlled by said relay, a pair of locking-magnets, one controlled by each of said branch circuits and shunt-circuits around said switch-contacts controlled respectively by said locking-magnets.

11. The combination with a line-circuit and with two independent, separate branch circuits, of a relay in said line-circuit, means operated by said relay for controlling said branch circuits, a pair of locking-magnets controlled respectively by said separate branch circuits, a shunt around said circuit-controlling means having switch-contacts controlled by said locking-magnets and an unlocking-switch in said shunt.

12. The combination with a line-circuit and with two independent, separate branch circuits, of a relay in said line-circuit, means controlled by said relay for closing either of said branch circuits, a pair of locking-magnets controlled respectively by said separate branch circuits, a shunt around said circuit-controlling means arranged to be closed by the operation of said locking-magnets through the selected branch circuit and an unlocking-switch in said shunt.

13. The combination with a line-circuit and with two independent, separate branch circuits, of a polarized relay in said line-circuit comprising switch-contacts for respectively controlling said separate branch circuits, a locking-magnet in each of said branch circuits, a shunt-circuit around the switch-contacts of said relay, switch-contacts in said shunt-circuit controlled by said locking-magnets and an unlocking-switch in said shunt-circuit.

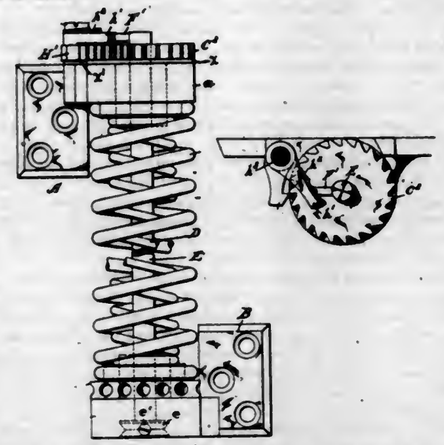
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754,690. DOOR CHECK AND CLOSER. WILLIAM PELZER, New York, N. Y. Filed July 17, 1896. Serial No. 599,554. (No model.)

*Claim.*—1. In a door-check, the combination with a mechanical device for retarding or checking the closing movement of a door, of means for throwing said device out of retarding or checking action at a predetermined point in the closing movement, substantially as set forth.

2. In a door-check, the combination with a mechanical device for gradually retarding or checking the closing movement of a door, of means for throwing said device out of retarding or checking action at a predetermined point in the closing movement, substantially as set forth.



3. In a door-check, the combination with a spring for retarding or checking the closing movement of a door, of a device cooperating with said spring during the closing movement to effect the retarding or checking action, and means for throwing said device out of operative engagement with said spring at a predetermined point, substantially as set forth.

4. In a combined door closer and check, the combination with means for closing the door, of a mechanical device for retarding or checking the closing movement, and means for throwing said device out of retarding or checking action at a predetermined point in the closing movement, substantially as set forth

5. In a combined door closer and check, the combination with means for closing the door, of a mechanical device for gradually retarding or checking the closing movement, and means for throwing said device out of retarding or checking action at a predetermined point in the closing movement, substantially as set forth.

6. In a combined door closer and check, the combination of a closing-spring, a retarding or checking spring, a device cooperating with the latter spring during the closing movement to effect the retarding or checking action, and means for throwing said device and spring out of operative relation at a predetermined point, substantially as set forth.

7. In a combined hinge and door-check, the combination with the hinge-leaves and knuckles, of a mechanical device for gradually retarding or checking the closing movement, substantially as set forth.

8. In a combined hinge and door-check, the combination with the hinge-leaves and knuckles, of a mechanical device for retarding or checking the closing movement, and means for throwing said device out of retarding or checking action at a predetermined point, substantially as set forth.

9. In a combined hinge and door-check, the combination with the hinge-leaves and knuckles, of a spring carried by the hinge, and means whereby said spring is placed under tension for retarding or checking the closing movement, substantially as set forth.

10. In a combined hinge and door-check, the combination with the hinge-leaves and knuckles, of a spring carried by the hinge, a device cooperating with said spring for retarding or checking the closing movement, and means for throwing said device and spring out of operative relation at a predetermined point, substantially as set forth.

11. In a combined spring-hinge and door-check, the combination with the hinge-leaves and knuckles, of a closing-spring carried by the hinge, and a mechanical device operatively connected with the hinge for gradually retarding or checking the closing movement, substantially as set forth.

12. In a combined spring-hinge and door-check, the combination with the hinge-leaves and knuckles, of a closing-spring carried by the hinge, a mechanical device operatively connected with the hinge for retarding or checking the closing movement, and means for throwing said device out of retarding or checking action at a predetermined point, substantially as set forth.

13. In a door-hinge, the combination with the leaves and knuc-

kles, of two springs carried thereby, one being operatively connected with the hinge elements to effect the closing movement and the other being operatively connected with the hinge elements to retard or check the closing movement, substantially as set forth.

14. In a door-hinge, the combination with the leaves and knuckles, of two springs carried thereby, one being operatively connected with the hinge elements to effect the closing movement and the other being operatively connected with the hinge elements to retard or check the closing movement, and means for throwing the latter spring out of retarding or checking action at a predetermined point, substantially as set forth.

15. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a retarding or checking spring also carried thereby, a device carried by the hinge and to which the latter spring is secured, and means coöperating with said device during the closing movement to effect the retarding or checking action, substantially as set forth.

16. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a retarding or checking spring also carried thereby, a device carried by the hinge and to which the latter spring is secured, means coöperating with said device during the closing movement to effect the retarding or checking action, and means for throwing the retarding or checking mechanism out of operative relation at a predetermined point, substantially as set forth.

17. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a retarding or checking spring also carried thereby, a disk carried by the hinge and to which the latter spring is secured, and a cam coöperating with said disk during the closing movement to effect the retarding or checking action, substantially as set forth.

18. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a retarding or checking spring also carried thereby, a disk carried by the hinge and to which the latter spring is secured, a cam coöperating with said disk during the closing movement to effect the retarding or checking action, and means for throwing said cam out of operative engagement with the said disk at a predetermined point, substantially as set forth.

19. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a retarding or checking spring also carried thereby, two devices carried by the hinge and to which the latter spring is secured, means for locking one of said devices to one side of the hinge, and means coöperating with the other one of said devices during the closing movement and whereby the retarding or checking action is effected, substantially as set forth.

20. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a retarding or checking spring also carried thereby, two devices carried by the hinge and to which the latter spring is secured, means for locking one of said devices to one side of the hinge, means coöperating with the other one of said devices during the closing movement, whereby the retarding or checking action is effected, and means for throwing the retarding or checking mechanism out of operative relation at a predetermined point, substantially as set forth.

21. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, two disks carried by the hinge and to which the latter spring is secured, a device for locking one of said disks to one side of the hinge, and a cam coöperating with the other disk during the closing movement and whereby the retarding or checking action is effected, substantially as set forth.

22. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, two disks carried by the hinge and to which the latter spring is secured, a device for locking one of said disks to one side of the hinge, a cam coöperating with the other disk during the closing movement and whereby the retarding or checking action is effected, and means for throwing the retarding or checking mechanism out of operative relation at a predetermined point, substantially as set forth.

23. In a door-hinge, the combination with the leaves and knuckles, of tubular pintle-sections for the knuckles, collars sleeved on the inner ends of said pintle-sections, a closing-spring connected with said collars, two disks having shanks extending through the pintle-sections, a retarding or checking spring secured to said shanks, a device for locking one of said disks to one side of the hinge, and a cam coöperating with the other disk during the closing movement and whereby the retarding or checking action is effected, substantially as set forth.

24. In a door-hinge, the combination with the leaves and knuckles, of tubular pintle-sections for the knuckles, collars sleeved on the inner ends of said pintle-sections, a closing-spring connected with said collars, two disks having shanks extending through the pintle-sections, a retarding or checking spring secured to said shanks, a device for locking one of said disks to one side of the hinge, a cam coöperating with the other disk during the closing movement whereby the retarding or checking action is effected, and means for throwing the retarding or checking mechanism out of operative relation at a predetermined point, substantially as set forth.

25. In a door-hinge, the combination with the leaves and knuckles, of tubular pintle-sections for the knuckles, collars sleeved on the inner ends of said pintle-sections, a closing-spring connected with said collars, two disks having tubular shanks extending through the pintle-sections, a retarding or checking spring secured to said shanks, a device for locking one of said disks to one side of the hinge, a cam coöperating with the other disk during the closing movement whereby the retarding or checking action is effected, a cam adjacent to one of said disks and carried by a rod extending through the shanks and adjustably secured to the other disk, and a finger coöperating with the last-named cam to place the first-named cam out of operative engagement with its disk at a predetermined point, substantially as set forth.

26. In a door-hinge, the combination with the leaves and knuckles, of a mechanical device for retarding or checking the closing movement, and means for reversing the operative elements of said device relative to the two sides of the hinge, substantially as set forth.

27. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, a mechanical device for retarding or checking the closing movement, and means for reversing the operative elements of said device relative to the two sides of the hinge, substantially as set forth.

28. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring carried thereby, means for retarding or checking the closing movement, and means for operatively engaging the elements of the retarding or checking means with the hinge elements, said means being reversible to permit the use of the hinge with doors moving in opposite directions, substantially as set forth.

29. In a door-check, the combination with two members one arranged for attachment to a door and the other to its casing, of a mechanical device operatively connected with said members for retarding or checking the closing movement of the door, means for throwing said device out of retarding or checking action at a predetermined point, and means whereby the retarding or checking element may be maintained in inoperative position, substantially as set forth.

30. In a combined door closer and check, the combination with two members, one arranged for attachment to a door and the other to its casing, of a closing-spring operatively connected with said members, a mechanical device also operatively connected with said members for retarding or checking the closing movement of the door, means for throwing said device out of retarding or checking action at a predetermined point, and means whereby the retarding or checking element may be maintained in inoperative position, substantially as set forth.

31. In a door-hinge, the combination with the leaves and knuckles, of a mechanical device for retarding or checking the closing movement, and means whereby said device may be maintained in inoperative position throughout the closing movement, substantially as set forth.

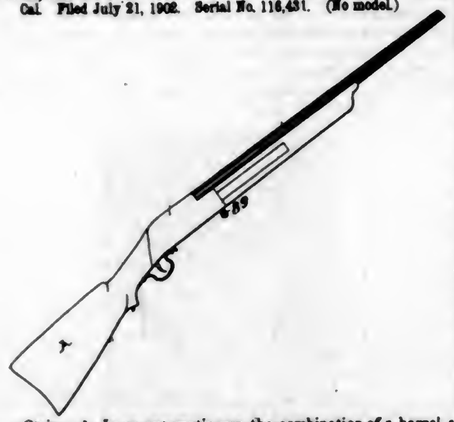
32. In a door-hinge, the combination with the leaves and knuckles, of a mechanical device for retarding or checking the closing movement of the door, means for throwing said device out of retarding or checking action at a predetermined point, and means whereby the retarding or checking element may be maintained in inoperative position throughout the closing movement, substantially as set forth.

33. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring, means for cutting said spring out of action, a mechanical device also combined with the hinge for retarding or checking the closing movement, and means whereby said device may be maintained in inoperative position throughout the closing movement, substantially as set forth.

34. In a door-hinge, the combination with the leaves and knuckles, of a closing-spring, means for cutting said spring out of action, a mechanical device also operatively connected with the hinge for retarding or checking the closing movement, means for throwing said device out of retarding or checking action at a predetermined point, and means whereby the retarding or checking element may be maintained in inoperative position throughout the closing movement, substantially as set forth.



754,691. AUTOMATIC GUN. CHARLES PETERSEN, San Francisco, Cal. Filed July 21, 1902. Serial No. 116,431. (No model.)



*Claim.*—1. In an automatic gun, the combination of a barrel, a compression-chamber, a piston movable therein, a port opening between the barrel-chamber and one end of the compression-chamber, a valve in said piston through which gases may pass to equalize the pressure on opposite sides of the piston, a piston-rod extending through each end of the compression-chamber, breech mechanism connecting with one end of said rod and retracting means tending to operate in opposition to said controlling medium.

2. In an automatic gun, the combination of a barrel, a compression-chamber, port connections between said chamber and the barrel-chamber, a piston movable in the compression-chamber, a valve in said piston through which the gases may pass to equalize the pressure on opposite sides of the piston, a piston-rod extending through said chamber, breech mechanism operated by one end of said piston-rod, a retracting-spring on the other end of said rod and exhaust-valves in said chamber operated by the movements of the piston.

3. In an automatic gun, the combination with breech-loading mechanism of a barrel, a compression-chamber, connections between the barrel and chamber whereby gases generated by discharge are admitted to said chamber, a piston movable in said chamber, a valve in the piston by which the pressure on opposite sides of said piston is equalized during the progress of the missile through the barrel and means by which the gases in the space on one side of the piston are released coincidently with the departure of the missile from the muzzle whereupon an inequality of pressure on the opposite sides of the piston is effected to operate the latter.

4. In an automatic gun, the combination of a barrel, a compression-chamber, a port connecting said chamber and barrel, a piston movable in said chamber, a valve-controlled port connecting the ends of the chamber on opposite sides of the piston, a piston-rod extending through both ends of said chamber, breech mechanism connecting with one end of said rod, and retracting means on the other end thereof.

5. The combination in an automatic gun of a compression-chamber, connections therebetween and the barrel through which gases generated in explosion may be admitted to said chamber, a piston movable in the latter, a piston-rod extending through said chamber, a cross-head on one end of said piston-rod exterior to the chamber, retracting means on the other end of said rod acting in opposition to the confined gases in the chamber, a breech-bolt, means by which a cartridge is inserted into the receiving-chamber of the breech, a cartridge-carrier in said receiving-chamber by which the cartridge is lifted into line with the bolt when the latter is retracted, and connections between said bolt, cartridge-carrier and cross-head by which the said parts are operated coördinately.

6. The combination in an automatic gun of a compression-chamber, a piston therein, means for admitting a propelling medium to move said piston, a piston-rod extending exterior to said chamber, a breech-bolt, a bar by which cartridges are fed into the receiving-chamber of the breech, a carrier by which cartridges are conveyed into line with the breech-bolt when the latter is retracted, and connections between said bolt, bar and carrier and the end of said piston-rod whereby the said bolt, bar and carrier are moved to coöperate on each reciprocation of the piston.

7. The combination in an automatic gun, of a compression-chamber, a piston therein, a piston-rod, a cross-head on said rod exterior to the chamber, a reciprocating breech-bolt, a hammer adapted to be cocked by the rearward movement of the bolt, arms connecting said bolt and the cross-head of the piston-rod, a bar connected with said cross-head and adapted to insert a cartridge into the receiving-chamber of the breech, a cartridge-carrier, slotted links secured to the said cross-head, and intermediate connections between said slotted links and carrier by which the latter is operated on the reciprocation of the piston.

8. The combination in an automatic gun, of a compression-chamber, a piston therein, a piston-rod, a cross-head on said rod exterior to said chamber, a breech-bolt, a guide-block in which said bolt is slidable, a spring-pressed vertically-operating lock-block located in rear of said guide-block, pivoted sears, arms connecting said bolt and cross-head on the piston-rod, said arms having cam-surfaces engaging said sears to operate the latter, a sliding plate by which the top of the receiver is closed, projections on the arms engaging said plate to move it simultaneously with the breech-bolt, a bifurcated hammer, means including a bar connected with the piston-rod cross-head by which a cartridge is inserted into the receiving-chamber of the breech, a vertically-movable cartridge-carrier, slotted links connected to said cross-head and knee-levers intermediate of the carrier and said links.

9. In a gun, the combination of a breech-bolt, a vertically-operating cartridge-carrier, arms connected with the bolt, toggle-levers having one member connected with the gun-frame and the other with the carrier, means connecting said arms and levers whereby they are operable in unison, and means by which said bolt and carrier are moved successively at each movement of their respective arms and levers.

10. In a gun a breech mechanism including a reciprocating breech-bolt, a bifurcated hammer adapted to be cocked by the bolt on its rearward movement, arms connected with said bolt, means including a feed-bar to insert a cartridge into the receiving-chamber of the breech, a cartridge-carrier, knee-levers having one member connected with the gun-frame and the other with said carrier, and connections between a source of power and said bolt-arms, feed-bar and knee-levers by which they are moved in unison.

11. In a gun, the combination of a breech-bolt, actuating-arms therefor, a vertically-movable cartridge-carrier in the receiving-chamber, knee-levers having one end pivoted in the frame and the other to the carrier, slotted links engaging said knee-levers, and connections between the outer ends of said first-named arms and said links by which said arms and links may be moved in unison to operate the bolt and carrier in suitable relation to each other.

12. In a gun, the combination with the receiving-chamber thereof, of a horizontally-reciprocating breech-bolt, a vertically-movable cartridge-carrier, means including a horizontally-operating bar by which cartridges are drawn singly into the receiving-chamber, arms connecting with said breech-bolt, knee-levers having one member pivoted to said carrier and the other member pivoted to the breech and means by which said arms, bar and knee-levers are given a coördinate movement.

13. In a gun, a breech mechanism, including a reciprocable breech-bolt, a guide-block in which said bolt is slidable, a cross-head on said bolt, actuating-arms engaging said cross-head, gas-operated means with which said arms are connected, a vertically-reciprocable cartridge-carrier and connections between said gas-operated means and carrier whereby the carrier and bolt are given a coördinate movement.

14. In a gun, a breech mechanism including a reciprocable breech-bolt, a cross-head thereon, arms engaging said cross-head, means by which said arms are actuated, a hammer, a pivoted sear with which said hammer is engaged to cock the piece, and connections between said sear and arms by which the sear is given a positive oscillating movement.

15. In a gun, a breech mechanism, including a breech-bolt, arms connected with a source of power by which the breech-bolt is actuated, a hammer, pivoted sears adapted to be engaged by said arms so as to be given a positive oscillating movement to engage said hammer when the arms and bolt are at their farthermost point in one direction and to release the hammer when said bolt and arms are at their farthermost point in the other direction.

16. In a gun, a breech mechanism including a reciprocable breech-bolt, a guide-block in which said bolt is movable, a cross-head on said bolt, arms engaging said cross-head exterior to the guide-block, cam-surfaces on said arms, a hammer, sears having cam-surfaces, one end of said sears engaging a cam-surface of the arms which operate the bolt, and the arms having projections engaging cam-surfaces of the sears whereby the latter are oscillated positively by the movement of the arms and breech-bolt

17. In a gun, a breech mechanism including a reciprocable breech-bolt, a fixed guide-block in which said bolt is slidable, a fixed block rearward of said guide-block, a spring-pressed vertically-operating lock-block intermediate of said fixed blocks, pivoted sears operable in relation to the movements of the bolt and a hammer adapted to be pressed back by the breech-bolt when the latter is retracted and engaged by said sears.

18. In a gun, the combination of a reciprocable breech-bolt, guide and lock blocks therefor, a bifurcated hammer, actuating-arms for said bolt, means for operating said arms, pivoted sears having cam-surfaces engaging corresponding cam-surfaces on said arms and means by which a cartridge is introduced into the receiving-chamber in line with the breech-bolt.

19. In a gun, the combination of a reciprocable breech-bolt, guide and locking means therefor, a bifurcated hammer straddling the magazine, said hammer pivoted intermediate of its ends, links on the shorter arm of said hammer, springs engaging said links adapted to throw the hammer forward into engagement with the breech-bolt which carries the firing-pin, dogs engaging notches on said hammer to connections between said dogs and the trigger, actuating-arms for said bolt, means for operating said arms, sears engaging cam-surfaces on said arms and having a positive oscillatory movement according as the bolt moves back and forth.

20. In a gun having a magazine-passage in the stock, a receiving-chamber, a horizontally-reciprocable breech-bolt, a vertically-movable cartridge-carrier in the receiving-chamber, means by which a cartridge may be inserted into the receiver upon the carrier, and a hammer straddling the magazine-passage and movable rearwardly with the movement of the breech-bolt.

21. In a gun, having a magazine-passage in the stock, a receiving-chamber, a cartridge-carrier movable in said chamber, means by which a cartridge may be inserted into the receiving-chamber said carrier comprising vertically-operating guide-plates, and hinged supports on said plates, which are adapted to pass out and around a cartridge lying in the receiving-chamber when the carrier descends and to engage beneath the cartridge to raise the latter when the carrier is lifted.

22. In a gun of the character described, the combination with the receiving-chamber thereof, of a reciprocable breech-bolt, a horizontally-operating bar by which cartridges are drawn singly into the chamber, and hinged cutters actuated by said bar to sever a cartridge from a chain.

23. In a gun of the character described, the combination with the magazine and receiving-chamber thereof, of means for retaining a chain of cartridges in the magazine, hinged cutter-doors disposed in said magazine, a reciprocating feed-bar operable between said doors by which a cartridge is engaged and drawn into the receiving-chamber, and having cam-slots on said bar by which said doors are operated to close and sever said cartridge from the chain.

24. In a gun of the character described, the combination with the magazine-chamber and receiving-chamber thereof, of a reciprocable breech-bolt, a cartridge-carrier movable vertically in the receiving-chamber, means connected with the breech-bolt for operating the carrier, a bar 52 by which cartridges are drawn from the magazine into the receiving-chamber, connections between the breech-bolt and the said bar, and the hinged cutters in operative connection with said bar by which the cartridge is severed.

25. In a gun of the character described, the combination with a magazine-chamber adapted to receive a chain of cartridges of feed mechanism by which the cartridges may be delivered singly into the receiving-chamber and hinge-cutters operable by said feed mechanism by which the cartridge may be severed from the rest of the chain.

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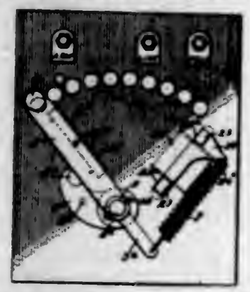
## 754,692. RHEOSTAT. CLAUDE R. PITRAT, Amsterdam, N. Y., assignor to the Magneto Electric Company, Incorporated, Amsterdam, N. Y. Filed Aug. 8, 1903. Serial No. 168,306. (No model.)

*Claim.*—1. In a rheostat, a contact-arm consisting of a plurality of members, a keeper mounted between said members, an electromagnet for coöperating with said keeper, as specified.

2. In a rheostat, an electromagnet having pole-pieces, a contact-arm including a pair of parallel members, a keeper mounted between said members to coöperate and be self-adjustable with respect to said pole-pieces, for the purposes specified.

3. In a rheostat, an electromagnet having pole-pieces, a contact-arm including a pair of parallel members, a keeper pivoted between said members to coöperate and be self-adjustable with respect to said pole-pieces, for the purposes specified.

4. In a rheostat, a contact member pivotally secured to the base and including a contact-arm and a pair of supplemental arms, means for joining said arms to move in unison, a self-adjustable keeper mounted between said pair of supplemental arms, an electromagnet for coöperating with said keeper to hold said arms to their adjusted position, one of said supplemental arms having an extension, a coil-spring secured to said extension, a bracket member secured to the rheostat-base, said coil-spring having its other end secured to said bracket member, for the purposes specified.



5. In a rheostat including a base, a pivot-stud mounted thereon, a contact member composed of a lower spring contact-arm pivotally secured at one end to the pivot-stud, a pair of supplemental arms likewise mounted on the pivot-stud and extending parallel to the contact-arm, means for holding said supplemental arms separated and in tight electrical engagement with said pivot-stud, a keeper mounted between said supplemental arms, the lowermost supplemental arm having its pivot end in contact with the pivot end of the contact-arm, for the purposes specified.

6. In a rheostat, a pivot-stud, a contact member composed of a lower spring contact-arm, and parallel-disposed supplemental arms likewise mounted on said pivot-stud, a washer mounted on said stud above the said arms, a coil-spring for holding said supplemental arms separated, with the upper arm in tight electric contact with said washer and the lower supplemental arm and the contact-arm in tight electric contact with the base of the said stud, for the purposes specified.

7. In a rheostat including a base, a pivot-stud mounted thereon, a contact member composed of a lower spring contact-arm pivotally secured at one end to the pivot-stud, a pair of supplemental arms likewise mounted on the pivot-stud and extending parallel to the contact-arm, means for holding said supplemental arms separated, a keeper mounted between said supplemental arms, the lowermost supplemental arm having its end in contact with the pivot end of the contact-arm, means for causing said supplemental arms to move in unison, said means including a lug passing through apertures in the supplemental arms, a keeper and a contact-arm, for the purposes specified.

8. A contact-arm for rheostats, including a plurality of parallel members, one of which has an extension, a coil-spring connected to said extension and with the base of the rheostat, for the purposes specified.

9. In a rheostat, a contact-arm, an electromagnet having pole-pieces, a bracket secured to the rheostat-base by said pole-pieces, a coil-spring secured to said bracket and said arm, for the purposes specified.

10. In a rheostat including a base, a pivot-stud mounted thereon, a contact member consisting of a lower contact-arm pivotally secured at one end to the pivot-stud, a pair of supplemental arms likewise mounted on the pivot-stud and extending parallel to the contact-arms, means for holding said arms separated, a self-adjustable keeper mounted between said supplemental arms, the lowermost supplemental arm having its pivot end in contact with the pivot end of the contact-arms, means for causing said arms to move in unison, said means including a lug passing through apertures in the supplemental arms, the keeper and the contact-arm, the free ends of the supplemental arms being joined together, all being arranged substantially as shown and for the purposes described.

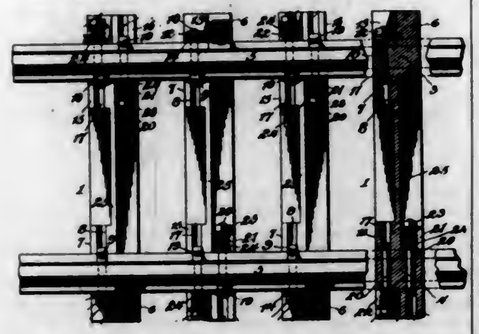
11. In a rheostat, a base portion, a plate having a pivot-stud and a stop-lug, secured to said base, a contact-arm pivotally secured to said stud with its pivoted end in contact with the said plate, a pair of supplemental arms pivoted to said pivot-stud and arranged parallel to said contact-arm, a coil-spring disposed around said pivot-stud between said supplemental arms, a washer secured to the pivot-stud above the supplemental arms, said coil-spring being adapted to maintain the said arms in tight electric contact with the washer and to maintain the lower supplemental arm and the contact-arm in tight electric engagement with the plate and with each other, a supplemental washer disposed between the free ends of the supplemental arms, a screw-bolt passing through said supplemental arms and said supplemental washer, a handle secured to said bolt, said lower supplemental arm having an extension, a spring secured thereto, a keeper mounted between said supplemental arms, a lug carried by the upper arm and passing through apertures in the keeper, the lower supplemental arm and the contact-arm causing said arms to move in unison, an electromagnet mounted upon the under side of said base, pole-pieces mounted on the upper side of the base and having portions for connecting with the ends of the magnet-core, a plate having a bracket portion to which the spring connected with the extension of the lower supplemental arm is secured, said plate and said magnet being held on said base by said pole-pieces, all being arranged substantially as shown and described.

12. In a rheostat including a contact-arm, an electric magnet mounted on the under side of the rheostat-base, an apertured bracket member mounted on the upper side of the said base, pole-pieces having projecting portions adapted to project through said bracket member apertures, and through apertures in the rheostat-base, and to be secured to said electromagnet, all being arranged substantially as shown and for purposes described.

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## 754,693. METALLIC CROSS-TIE. CYRUS W. PLATT, Windfall, Ind. Filed July 28, 1903. Serial No. 167,337. (No model.)



*Claim.*—1. The combination with rails, of reversely-arranged cross-ties, each provided at one end with rigid fastening means and having yieldable fastening means at the other end, whereby the rails will be rigidly clamped at regular intervals and the cross-ties permitted to expand and contract without spreading the rails, substantially as described.

2. A cross-tie provided at one end with rigid rail-engaging devices and having yieldably-mounted rail-engaging devices at the other end, substantially as described.

3. The combination of a metallic cross-tie provided at one end with a fixed rail-engaging device, a fastening device adjustably mounted on such end of the cross-tie for rigidly clamping a rail in engagement with the said device, and means mounted at the other end of the cross-tie for yieldably engaging a rail, substantially as described.

4. The combination of a metallic cross-tie provided at one end with a rigid rail-engaging jaw, an adjustable bolt mounted on the cross-tie and arranged to clamp a rail in engagement with the said jaw, fastening devices located at the other end of a cross-tie and arranged to engage the opposite sides of a rail, and springs for yieldably holding such fastening devices in engagement with the rail, substantially as described.

5. The combination of a metallic cross-tie provided at its ends with chairs, a rigid jaw arranged at the outer end of one of the chairs, an adjustable fastening device arranged adjacent to the jaw in position for clamping a rail rigidly in engagement with the same, and yieldably-mounted fastening devices located at the other chair, substantially as described.

6. The combination of a metallic cross-tie provided at its ends with enlargements forming chairs, one of the enlargements having a rigid rail-engaging jaw at its outer end, an adjustable fastening device passing through the enlargement having the jaw, said fastening device being arranged to coöperate with the jaw for rigidly clamping a rail, and yieldably-mounted fastening devices extending through the other enlargement, substantially as described.

7. The combination of a metallic cross-tie provided at its ends with enlargements having inner and outer extensions, the outer extension of one of the enlargements being provided with a rigid rail-engaging jaw and the other extensions being longitudinally slotted, an adjustable fastening device coöperating with the said jaw for rigidly engaging a rail and mounted in the slot of the adjacent inner extension, and fastening devices operating in the slots of the other extensions and provided with springs, substantially as described.

8. The combination of a metallic cross-tie having a bottom flange and provided at its upper face with enlargements forming chairs and having reversely-disposed extensions, said cross-tie being also provided with an upper longitudinal flange connecting the inner extensions of the enlargements, a rigid jaw arranged on the extension at the outer side of one of the enlargements, an adjustable fastening device coöperating with the jaw and mounted on the other extension of such enlargement, and yieldable fastening devices arranged at the extensions of the other enlargement, substantially as described.

9. The combination of a metallic cross-tie provided at its ends with enlargements forming chairs and having reversely-disposed longitudinal extensions of a width less than the cross-tie located at opposite sides thereof and forming recesses at opposite sides of the cross-tie, and means mounted on the extensions for engaging the rails and having adjusting devices located in the recesses, substantially as described.

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## 754,694. ELECTRIC POCKET-LAMP. ANGELICA R. POST, Boston, Mass. Filed Dec. 30, 1903. Serial No. 187,112. (No model.)



*Claim.*—1. An electric lamp for the vest-pocket, comprising an oblong flat case, a removable holder fitting snugly within the case at one end, means for retaining the same in said case, said holder having a plurality of cells arranged side by side therein, a lamp carried by said casing at its other end and swinging means for operating said lamp.

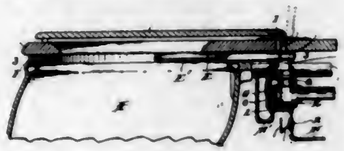
2. An electric lamp for the vest-pocket, comprising a case having flat top and bottom ends, rounded edges and flat sides, a battery consisting of a plurality of cells arranged side by side and extending longitudinally of the case, a holder containing said cells and having substantially the same shape as the case, but having its upper end spaced from the top of the case, a lamp at the top of the case above the cells, and means for retaining said holder and battery within the case.

3. An electric lamp for the vest-pocket, comprising a case having flat top and bottom ends, rounded edges and flat sides, the bottom end being removable, a holder inclosed within the case and adapted to be inserted through the bottom thereof, said holder being shorter than the case to provide the space at the top thereof, a plurality of cells contained within the holder and extending longitudinally of the case, a lamp at the top of the case above the cells and a circuit-closing device on one edge of the case adjacent the top thereof.

4. An electric lamp for the vest-pocket, comprising a case having a flat top and bottom, rounded ends, and flat sides $a'$, $a^1$, a battery consisting of a plurality of cells arranged side by side, a holder containing them and having substantially the same shape as the case, means for retaining said holder and battery within the case, and a circuit-closing device at one end of said case and adjacent the top thereof, and a movable guard for preventing accidental closing of said circuit, said guard being hinged at its upper end to hang over said circuit-closing device.

5. An electric lamp for the vest-pocket, comprising a case having flat top and bottom ends, rounded edges and flat sides, a battery consisting of a plurality of cells arranged side by side and extending longitudinally of the case, a holder containing said cells and situated within the case, a circuit-closing device at one edge of the case adjacent the top thereof, a swinging guard to prevent accidental operation of the circuit-closing device, said guard having an arm arranged to engage one of the contacts of the circuit-closer when the guard is turned about its pivot.

**754,695. VENTILATING DEVICE FOR WATER-CLOSETS.** JAMES H. POWERS, Detroit, Mich., administrator of Walter J. Powers, deceased, assignor to John J. Foster, Windsor, Ontario, Canada. Filed Nov. 29, 1901. Serial No. 84,198. (No model.)



*Claim.*—1. In combination with a ventilating-pipe, a fan-casing forming a section of and in axial line with said pipe, a shaft extending longitudinally within the axis of said casing and mounted at one end in a bearing within said casing, a fan-wheel mounted upon said shaft within said casing, and means mounted on the same common shaft and in axial line with said pipe and fan-wheel for actuating said shaft and fan-wheel, said means being disposed beyond the end of said casing and a housing for said means formed in part by the bottom of said casing.

2. In combination with a ventilating-pipe, a fan-casing formed by a section of said pipe and having its fan-chamber concentric with the axis of said pipe, a housing on said casing and having its upper wall formed by the bottom wall of the casing, a shaft extending longitudinally within the axis of said chamber and projecting into said housing, said housing having a bearing for one end of the shaft, the other end of the shaft having a bearing in the opposite end of said casing, a fan-wheel mounted on said shaft, and a motor-wheel carried by said shaft within the housing and below the bearing of the lower end of said shaft.

3. In combination with a ventilating-pipe, a fan-casing forming a section of said pipe, a housing at one end of said casing and having its upper wall formed by the bottom wall of the casing, passages leading to said housing, a shaft disposed longitudinally of said casing and having a bearing at one end in the wall of said housing and at the other end within said casing, a closure for the lower end of the housing, a motor-wheel within said housing, and a fan-wheel in said casing, said motor and fan-wheel being mounted upon said shaft in axial line with said housing and casing, the closure for said housing forming a bearing for said shaft.

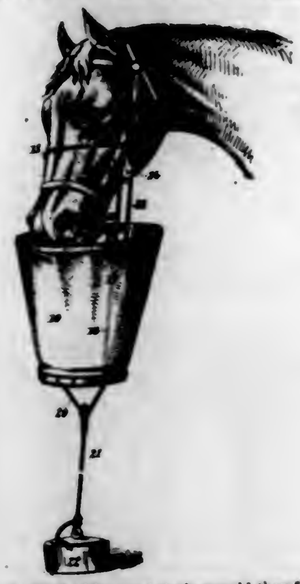
4. In a ventilating device for water-closets, in combination with the bowl, seat, and ventilating-pipe of a water-closet, a sheet-metal conduit adapted to be inserted between the seat and the upper rim of the bowl at the rear side of said bowl and open at its forward side and connected at the rear of the bowl with said ventilating-pipe, a filling-strip on the rim of the bowl with its ends abutting said conduit and supporting said seat, and means for exhausting the air from said bowl through said conduit.

5. In a ventilating device for water-closets, in combination with the bowl, seat, and ventilating-pipe of a water-closet; a sheet-metal conduit adapted to be secured to the rear side of the bowl-rim beneath the cover, which conduit is extended laterally along the rim at each side of the bowl, is provided with an elongated opening in its curved inner side adjacent to the rim of the bowl, and is extended rearwardly beyond the bowl-rim and provided with a flanged opening for the attachment of the ventilating-pipe: and means for exhausting the air from the bowl through said conduit.

6. In a ventilating device for water-closets, in combination with the bowl, seat, seat-cover, and ventilating-pipe of a water-closet; a sheet-metal conduit adapted to be secured to the rim of said bowl at the rear thereof and extended rearwardly beyond the same and provided with a flanged opening for the attachment of the ventilating-pipe, a plate to close said opening, a rod pivoted to said plate and to the said seat-cover, and means for exhausting the air from the bowl when the said cover is raised.

7. In a ventilating device for water-closets, in combination with the bowl, seat, seat-cover, and flush and ventilating pipes of a water-closet; a sheet-metal conduit adapted to be secured upon the rim of the bowl beneath the seat and provided with an inner curved edge having an elongated opening adjacent to the bowl-rim, said conduit being also provided with a rearward extension having a flanged opening in its bottom, a plate to close said flanged opening, an arm on the pivot of the seat-cover, a rod connecting said arm and plate, a fan-casing having an upper open end to receive the flange of said flanged opening and having an opening in its side to receive the ventilating-pipe, a housing in the lower end of said casing provided with an intake and a discharge-opening, a water-supply pipe communicating with the intake-opening, and a waste-pipe connecting the discharge-opening with the flush-pipe, a vertical shaft journaled in bearings in the axis of the casing, a fan-wheel mounted in said shaft, a motor-wheel secured in said shaft within said housing, a valve in the said water-supply pipe, an operating-arm on the stem of said valve, an arm secured to the pivot of the seat-cover, and a rod connecting the arm on the cover and the arm on the valve.

**754,696. FEED-BAG FOR HORSES.** JOHN RATHER, New York, N. Y. Filed Dec. 5, 1903. Serial No. 183,850. (No model.)



*Claim.*—1. The feed-bag, and the hanger 11 therefor, the latter having guides 14, combined with the rope or cord 15 looped below the bag and having its side members extended upwardly and thence through said guides and fastened to the bag, and a stay-cord connected with said rope 15; substantially as set forth.

2. The feed-bag, and the hanger 11 therefor, the latter having guides 14, combined with the rope or cord 15 looped below the bag and having its side members extended upwardly and thence through said guides and fastened to the bag, and a stay-cord connected with said rope 15, said bag at its lower part having guides through which said side members pass; substantially as set forth.

3. The feed-bag, and the hanger 11 therefor, the latter having guides 14, combined with the rope or cord 15 looped below the bag and having its side members extended upwardly and thence through said guides and fastened to the bag, and a stay-cord connected with said rope 15, said bag in its bottom having the holes 18 through which said side members pass; substantially as set forth.

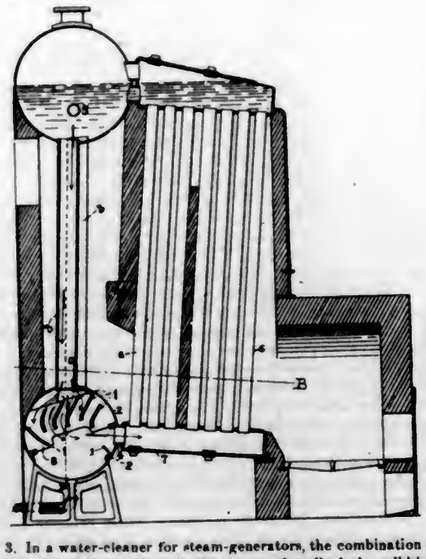
4. The feed-bag, and the hanger 11 therefor, the latter having guides 14, combined with the rope members 16 extending upwardly from below the bag and thence through said guides and thence secured to the bag, and means for securing said members to a point of resistance below the bag; substantially as set forth.

5. The feed-bag, and the hanger 11 therefor, the latter having guides 14, combined with the rope members 16 extending upwardly from below the bag and thence through said guides and thence secured to the bag, means for preventing said members from sliding unduly upwardly when the bag is suspended, and means for securing said members to a point of resistance below the bag; substantially as set forth.

**754,697. STEAM-BOILER.** CHARLES B. REARICK, St. Louis, Mo. Filed Aug. 5, 1899. Serial No. 726,246. (No model.)

*Claim.*—1. In a water-cleaner for steam-generators, the combination of suitable plates for collecting, in the manner described, the solid impurities in the circulating water of a steam-boiler, such plates being placed in the boiler below the water-line therein, with a feed-water inlet entering the circulating water before it reaches such plates.

2. In a water-cleaner for steam-generators, the combination of suitable plates for collecting, in the manner described, the solid impurities in the circulating water of a steam-boiler, such plates being placed below the water-line and in a chamber of the boiler through which the circulating water and newly-introduced feed-water is compelled to pass before coming in contact with the main portion of the heating-surface of the boiler.



3. In a water-cleaner for steam-generators, the combination of suitable plates for collecting, in the manner described, the solid impurities in the circulating water of a steam-boiler, such plates being placed in the boiler below the water-line and in the circulating current of water therein with the feed-water entering the circulating water before it reaches such plates.

4. In a water-cleaner for steam-generators, the combination of suitable removable plates for collecting, in the manner described, the solid impurities in the circulating water of a steam-boiler, such removable plates being placed within the boiler and below the water-line therein and at a point where there is a movement of the water.



**754,698. AMUSEMENT APPARATUS.** WILLIAM S. REED, Leominster, Mass., assignor to James A. Tirrell, trustee, Boston, Mass. Filed Feb. 28, 1903. Serial No. 145,437. (No model.)

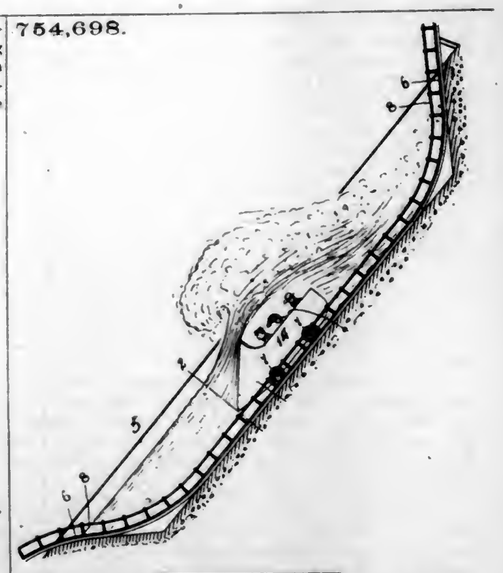
*Claim.*—1. An apparatus of the character stated, comprising a track having elevated portions and a depressed portion, a body of water in which the depressed portion of the track is submerged, and a vehicle having wheels adapted to run on said track, the body of said vehicle having a pointed front adapted to displace the water and prevent its entrance into the body of the vehicle, the said vehicle being guided by the track into, through, and out of the water.

2. An apparatus of the character stated, comprising a track having elevated portions and a depressed portion, inverted guard-rails parallel with the track, a body of water in which the depressed portions of the track and guard-rails are submerged, and a vehicle having wheels adapted to run on the track and projections extending under the guard-rails, the body of said vehicle having a pointed front adapted to displace the water, the said vehicle being guided by the track into, through, and out of the water and prevented from derailment while in the water by said guard-rails and projections.

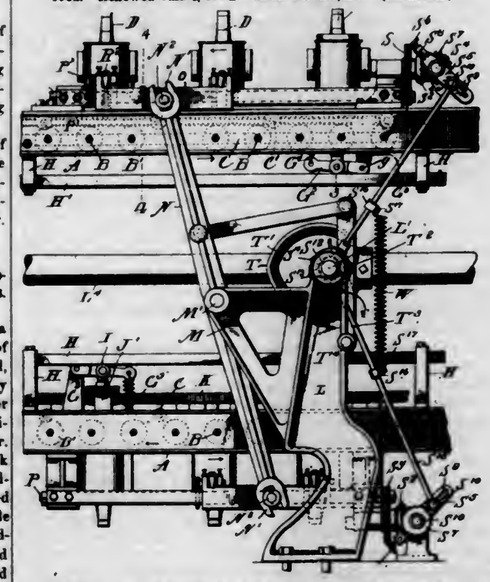
3. An apparatus of the character stated, comprising a track having elevated portions and a depressed portion, a body of water through which the depressed portion passes, the portion of the track entering the water being inclined, to send a car through the water by gravitation, a car having wheels adapted to run on the track, and means for preventing the derailment of the car while it is in the water.

4. A vehicle of the character stated, comprising a body having a pointed or substantially conical front end forming a water-deflector, and a hold extending from the said deflector to the rear end of the vehicle, the upper portion of the deflector being above and in advance of the hold, and wheels connected with the lower portion of said body and adapted to run therewith through a body of water.

**754,698.**



**754,699. CAN-SOLDERING MACHINE.** JOHN G. RENFUSS and MARTIN O. RENFUSS, Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company, a Corporation of Delaware. Filed Mar. 1, 1902. Renewed Jan. 4, 1904. Serial No. 187,737. (No model.)



*Claim.*—1. A machine for soldering tops and bottoms to the body portions of cans, comprising an endless-chain carrier, means secured to and moving with the latter for holding and rotating the cans on the carrier, and a solder-holding carriage having a variable movement, and solder-feeding means, as set forth.

2. A machine for soldering tops and bottoms to the body portions of cans, comprising a continuously-moving endless-chain carrier, means secured to and moving with the latter for holding the rotating cans on the carrier, a solder-carriage having a variable motion, means for operating the same, and solder-feeding mechanism, as set forth.

3. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier and means for rotating the cans in perpendicular positions with tops and bottoms thereon, which are held to said carrier, a solder-supporting carriage having a variable

motion, and means for feeding the solder as the carriage is traveling at the same speed of and with the carrier.

4. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier and means holding the cans perpendicular and for rotating the same with tops and bottoms thereon, which are held to said carrier, a variably-movable reciprocating carriage with solder-feeding mechanism thereon adapted to move with and in the direction of the travel of said carrier during the soldering process, an oscillating lever for actuating said carriage and means for operating said lever, as set forth.

5. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier having a continuous motion and means for rotating the cans with tops and bottoms thereon, which are held perpendicular to said carrier, a variably-movable reciprocating carriage with solder-feeding mechanism thereon adapted to move with and in the direction of the travel of said carrier during the soldering process, an oscillating lever for actuating said carriage and means for imparting a variable motion to said carriage, as set forth.

6. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier, means for rotating cans with tops and bottoms thereon, a reciprocating solder-carriage, a guide-bar passing longitudinally through the latter, means for feeding solder from the carriage while the latter is in motion and mechanism for imparting an accelerated motion to the solder-carriage while the solder-feeding means is at rest, as set forth.

7. A machine for soldering tops and bottoms to the body portions of cans, comprising an endless carrier on which the can-bodies with tops and bottoms thereon are held and rotated, carriages with solder-feeding mechanism thereon adapted to travel adjacent to and along with successive cans and at the same rate of speed as the carrier during the soldering process, and having an accelerated speed on the return movement of said carriage, as set forth.

8. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier on which cans with tops and bottoms thereon are held and rotated, a longitudinally-movable horizontally-disposed solder-carriage and means for feeding the solder while the carriage is traveling with a can, as set forth.

9. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier, to which cans with tops and bottoms thereon, are held and rotated, horizontally-disposed and longitudinally-reciprocating carriages having variable movements, solder-feeding mechanism thereon, an oscillating lever for reciprocating said carriages simultaneously in opposite directions, as set forth.

10. A machine for soldering the tops and bottoms to the bodies of cans, comprising an endless carrier on which cans, with tops and bottoms thereon, are held and rotated, longitudinally-movable carriages, solder-feeding mechanism thereon, an oscillating lever for actuating said carriages, an operating-shaft, a grooved cam-wheel rotating therewith, a pivoted lever having a lug thereon which travels in the groove of said cam, and a pivotal link connection between said levers, as set forth.

11. A machine for soldering tops and bottoms to the bodies of cans, comprising an endless carrier, rotary clamping-plates mounted on the carrier, a stationary rack-bar, and gear-wheel connections between the same and said plates, a horizontally-disposed and longitudinally-reciprocating solder-carriage, and cam-wheel, connections between the same and said carriage for imparting a variable movement to the latter, as set forth.

12. A machine for soldering the tops and bottoms on cans, comprising an endless-chain carrier, rotary clamping-plates mounted on the links of said carrier, one of said plates being spring-actuated, a stationary rack-bar and gear-wheel connections between the same and said spring-actuated plates, whereby as the carrier passes by a rack-bar, a can, frictionally held by the clamping-plates, will be rotated, carriages and solder-feeding mechanism thereon, a cam-wheel, and connections between the same and said carriage for imparting variable reciprocating movements to said carriages, as set forth.

13. A machine for soldering tops and bottoms on cans, comprising an endless-chain carrier, clamping-plates carried by each link of the chain carrier, one of said plates being swiveled and the other being spring-actuated, a stationary rack-bar, and gear connections between the same and said spring-actuated clamping-plate, whereby as the carrier travels by the rack-bar, said spring-actuated plate will be positively driven, a horizontally-disposed and longitudinally-movable solder-feeding apparatus adapted to travel adjacent to the rotating cans, as set forth.

14. A machine for soldering tops and bottoms on cans, comprising an endless-chain carrier, a clamping-plate mounted on each link of the chain carrier, one of said plates being spring-actuated, a shaft secured to said spring-actuated plate, a gear-wheel rotating with said shaft, a horizontally-disposed rack-bar, gear connections between said rack-bar and gear-wheel on said shaft, and guard-wings carried by the link and adapted to partially surround the can, and reciprocating horizontally-disposed solder-carrying apparatus designed to move adjacent to the rotary cans, as set forth.

15. A machine for soldering tops and bottoms on cans, comprising an endless carrier, a yoke secured to each link, a clamping-plate swiveled at the end of said yoke, a guard-plate adapted to partially surround the can, a clamping-plate with a shaft secured thereto, a sleeve journaled in the link, said shaft being splined to said sleeve, a spring-actuated lever pivoted at one end to the link and fastened to said shaft, a spring secured at one end to said lever and at its other end fastened to the link, and solder-feeding mechanism adapted to travel with the carrier and adjacent to successive cans during the soldering process, as set forth.

16. A machine for soldering tops and bottoms on cans, comprising an endless carrier, a yoke secured to each link, a clamping-plate swiveled at the end of said yoke, a guard-plate adapted to partially surround the can, a clamping-plate with a shaft secured thereto, a sleeve journaled to said link, and in which sleeve, said shaft is splined, a spring-actuated lever pivoted at one end to the link and fastened to said shaft, a spring secured at one end to said lever and at its other end fastened to the link, antifriction-rollers carried by said lever, and tracks on which said rollers travel while the clamping members are in engagement with the tops and bottoms of a can, and solder-feeding mechanism adapted to travel with the carrier and adjacent to two or more consecutive cans, while the soldering is being effected, as set forth.

17. A machine for soldering tops and bottoms on cans, comprising an endless carrier, a yoke secured to each link, a clamping-plate swiveled at the end of said yoke, a stop-plate adapted to partially surround the can, a clamping-plate with a shaft secured thereto, a sleeve journaled in the link, and in which sleeve said shaft is splined, a spring-actuated lever pivoted at one end to the link and fastened to the shaft, a spring secured at one end to said lever and at its other end fastened to the link, antifriction-rollers journaled on said lever, a frame on which the carrier is mounted, yokes secured to said frame, and tracks carried by said yokes, and on which tracks said antifriction-rollers are adapted to travel while the clamping members are in engagement with the tops and bottoms of a can, and the solder-feeding mechanism adapted to travel with the carrier and adjacent to two or more consecutive cans while the soldering is being effected, as set forth.

18. A machine for soldering tops and bottoms on cans, comprising an endless carrier, a yoke secured to each link, a clamping-plate swiveled at the end of said yoke, a stop-plate adapted to partially surround the can, a clamping-plate with a shaft secured thereto, a sleeve journaled in each link, and in which sleeve said shaft is splined, a gear-wheel keyed to said sleeve, a rack-bar, a gear-wheel adapted to engage said rack-bar and in mesh with the gear on said sleeve, a spring-actuated lever pivoted at one end to the link, collars for holding said lever to said shaft, antifriction-rollers journaled on said lever, a frame on which the carrier is mounted, yokes secured to said frame, tracks carried by said yokes and on which tracks the antifriction-rollers are adapted to travel while the clamping members are in engagement with the tops and bottoms of the cans, and feeding mechanism adapted to travel with the carrier and adjacent to two or more consecutive cans, while the soldering is being effected, as set forth.

19. A machine for soldering tops and bottoms on cans, comprising a frame, an endless carrier traveling thereon, clamping means held by each link of the carrier and means for rotating the can as it travels with the carrier, a reciprocating carriage, solder-feeding mechanism carried thereby comprising a set of friction driving-wheels between which a wire of solder is driven, an operating-shaft, a grooved cam rotating therewith, a pivoted lever mounted on the frame of the machine and having a lug traveling in the grooves of said cam, an oscillating lever having connection with said carriage, pivotal link connections between said levers, a cam on said shaft, and a rod having a forked end, an antifriction-roller on said rod engaging said cam, a ratchet-and-pawl gear connection, actuated by said rod, whereby solder is fed against the cans while said carriage is travelling with the carrier, as set forth.

20. A machine for soldering tops and bottoms on cans, comprising an endless carrier, means for holding and rotating cans on said carrier, a reciprocating carriage, an oscillating lever for actuating said carriage, a grooved cam, an operating-shaft on which the same is mounted, a pivoted lever with antifriction-roller thereon, which latter travels in the groove of said cam, pivotal link connections between said levers, a cam on said shaft, a forked rod actuated thereby, a pivotal lever, a spring-actuated pawl thereon, a ratchet-wheel on the shaft on which said pawl-carrying lever is mounted, said forked rod being adjustably held to the pawl-carrying lever, grooved friction feeding-wheels between which a wire of solder is adapted to be fed against a can while the solder-feeding mechanism and carrier are traveling together during the solder-feeding process, and gear connections between the ratchet-wheel and said feeding-wheels, as set forth.

21. A machine for soldering tops and bottoms on cans, comprising an endless-chain carrier, means carried by each link of the carrier for clamping and rotating a can with tops and bottoms thereon, an oscillating lever, an operating-shaft, a grooved cam rotating therewith, a pivoted lever having a roller adapted to travel in the groove of said cam, pivotal link connections between said levers, two reciprocating carriages, solder-feeding mechanism carried by said carriages, the opposite ends of the oscillating lever adapted to actuate the carriages simultaneously in opposite directions, cams mounted on the operating-shaft, forked rods, antifriction-rollers on said rods, actuated by said cams, said rods adapted to operate the solder-feeding mechanism, adjustable collars mounted on said rods, and a spring connecting said collars, as set forth.

22. A machine for soldering tops and bottoms on cans, comprising an endless-chain carrier, a frame on which the carrier is mounted, antifriction-wheels journaled on said frame, the links of the chain carrier adapted to ride upon said antifriction-wheels, keepers adapted to hold said links in contact with the antifriction-wheels, can-clamping plates carried by the links of the chain, a rack-bar fastened to the frame, a gear mechanism in mesh with said rack-bar adapted to rotate the cans held by the clamping-plates, a solder-feeding mechanism adapted to travel with the carrier and adjacent to consecutive cans, and means for actuating the solder-feeding mechanism, as set forth.

23. A machine for soldering tops and bottoms on cans, comprising a frame, an endless-chain carrier mounted thereon, clamping-plates carried by each link of the carrier, a horizontally-disposed rack-bar and geared connections therewith for rotating one of said clamping-plates, a reciprocating carriage mounted horizontally adjacent to the carrier, an oscillating lever, adapted to actuate said carriage, frictional feed-wheels having grooved circumferences, and mounted on the solder-carriage and between which a wire of solder is adapted to be fed against a rotary can, guideways on the opposite sides of the frictional feed-wheels through which the wire is fed, and means for positively rotating the solder-feeding wheels, as set forth.

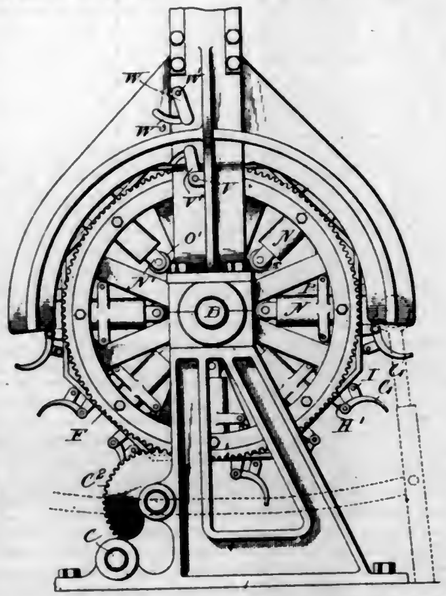
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**754,700. MACHINE FOR PUTTING TOPS AND BOTTOMS ON CANS. John G. Renfuss and Martin O. Renfuss, Philadelphia, Pa., assignors to the Bureau Can and Manufacturing Company, a Corporation of Delaware. Filed Mar. 12, 1902. Renewed Jan. 4, 1904. Serial No. 187,738. (No model.)**

*Claim.*—1. A machine for putting tops and bottoms on the body portions of cans comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and bottoms for the cans are fed to locations in the paths of the ends of the body portions of the cans, yielding antifriction-wheels mounted at the exit ends of said chutes and adapted to engage the tops and bottoms, fixed vertical parallel walls between which said tops and bottoms contact as they are carried forward by the cans, whereby said tops and bottoms are clapped over the end of a body portion of a can, as set forth.

2. A machine for putting tops and bottoms on the body portions of cans comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes disposed at angles to each other, through which the tops and bottoms for the cans are fed to locations in the paths of the ends of the body portions of the cans, arms pivotally mounted at the exit ends of said chutes, and antifriction-wheels journaled on said arms, and springs bearing against the arms to hold said wheels against the tops and bottoms of the cans, fixed vertical parallel walls between which said tops and bottoms contact as they are carried forward by the cans, whereby said tops and bottoms are clapped over the ends of the body portions of the cans, as set forth.

3. A machine for putting tops and bottoms on the body portions of cans, comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and the bottoms of the cans are fed to locations in the paths of the ends of the body portions of the cans, a plurality of pivotal members being provided for engaging the tops and bottoms each at two locations to hold the tops and bottoms to receive the can-bodies, fixed vertical parallel walls between which said tops and bottoms are carried and against which they contact, whereby said tops and bottoms are clapped over the ends of the body portions, as set forth.




4. A machine for putting tops and bottoms on the body portions of cans, comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and the bottoms of the cans are fed to locations in the paths of the ends of the body portions of the cans, a plurality of spring-actuated antifriction-wheels adapted to contact with the flanges on the tops and bottoms to hold the same against the wall of the chute as the body portion of a can contacts with said tops and bottoms, fixed vertical parallel walls between which said tops and bottoms are carried and against which they contact, whereby said tops and bottoms are clapped over the ends of the body portions, as set forth.

5. A machine for putting tops and bottoms on the body portions of cans, comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and bottoms of the cans are fed to locations in the paths of the ends of the body portions of the cans, pins mounted in the walls of the chutes, links, rocking on said pins, antifriction-rollers carried by said link and adapted to be held yieldingly in opposite directions against each top and bottom of the can, fixed vertical parallel walls between which said tops and bottoms are carried and against which they contact, whereby said tops and bottoms are clapped over the ends of the body portions, as set forth.

6. A machine for putting tops and bottoms on the body portions of cans, comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and bottoms of the cans are fed to locations in the paths of the ends of the body portions of the cans, pins mounted in the walls of said chutes opposite each other, each pin having a link adapted to rock thereon, a pin carried at the end of each link, an antifriction-roller mounted at the other end of the link, and a spring fixed at one end to the head of the pin and its other end engaging the link, curved slots in which said pins are adapted to travel, fixed vertical parallel walls between which said tops and bottoms are carried and against which they contact, whereby said tops and bottoms are clapped over the ends of the body portions, as set forth.

7. A machine for putting tops and bottoms on the body portions of cans comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and bottoms of the cans are fed to locations in the paths of the ends of the body portions of the cans, fixed vertical parallel walls between which said tops and bottoms are carried and against which they contact, offsets in said walls in which the lower ends of the chutes are disposed at angles to each other, bosses projecting from the outer walls of said

chutes, rocking pins carried in said bosses, links fastened to said pins, and antifriction-wheels carried by said links and adapted to contact with the flanges of tops and bottoms of cans, as set forth.

8. A machine for putting tops and bottoms on the body portions of cans, comprising a rotating carrier with clamping-jaws thereon for holding the cans, chutes through which the tops and bottoms of the cans are fed to locations in the paths of the ends of the body portions of the cans, fixed vertical parallel walls merging into outwardly-diverging portions, offsets in the inner faces of said walls, in which the lower ends of said chutes are disposed, the lower ends of said chutes being recessed, a yielding link pivoted to each chute, and an antifriction-wheel carried by each link and having a play in the recess of the chute, as set forth.

9. A machine for putting tops and bottoms on the body portions of cans, comprising a rotating polygonal carrier, clamping-jaws arranged in pairs about said carrier and projecting from the flat faces about its periphery, an operating-shaft, a stationary cam, an integral hollow cylindrical and radially-disposed portion projecting from each polygonal face of the carrier, hollow members telescoping over said cylindrical portions, and having connections with said clamping-jaws, an antifriction-wheel carried by each of said telescoping members and adapted to move said clamping-arms as the antifriction-wheels move about the peripbery of said cam, whereby the body portion of the can is automatically gripped and held, chutes through which the tops and bottoms for the cans are fed to locations in the paths of the end portions of the can-bodies, fixed vertical and parallel walls between which said tops and bottoms are carried and by which they are applied onto the ends of the cans, as set forth.

10. A machine for putting tops and bottoms on the body portions of cans, comprising a frame, a shaft mounted therein, a polygonal wheel rotating with said shaft, clamping-jaws arranged in pairs about the periphery of said wheel and projecting from the flat faces about the periphery thereof, and pivotally connected thereto, a stationary cam, a hollow open-ended and radially-disposed cylindrical portion extending from each polygonal face of said wheel, a hollow member telescoping over said cylindrical portion, an antifriction-wheel carried by each of said telescoping members, adjustable pivotal connections between said members and clamping-jaws, whereby as said wheel rotates, and the antifriction-wheels travel about the periphery of said cam, a pair of jaws is thrown into clamping relation with the body portion of a can, chutes through which the tops and bottoms for the cans are fed to locations in the paths of the end portions of the can-bodies, fixed vertical and parallel walls between which said tops and bottoms are carried and by which they are applied onto the ends of the cans, as set forth.

11. A machine for putting tops and bottoms on the body portions of cans, comprising a frame, a shaft mounted therein, a polygonal wheel journaled on said shaft, lugs on the flat faces about the periphery of said wheel, clamping-jaws arranged in pairs and pivotally mounted on said lugs, a hollow open-ended cylindrical and radially-disposed portion projecting inward from each polygonal face of said wheel, a cylindrical shell with one end closed telescoping over said cylindrical portion, an antifriction-wheel carried on the closed end of each of said shells, adjustable connections between said cylindrical shell and the clamping-jaws, a stationary cam on which said antifriction-wheels travel, and springs for holding the antifriction-wheels against the cam, chutes through which the tops and bottoms for the cans are fed to locations in the paths of the end portions of the can-bodies, fixed vertical and parallel walls between which said tops and bottoms are carried and by which they are applied onto the ends of the cans, as set forth.

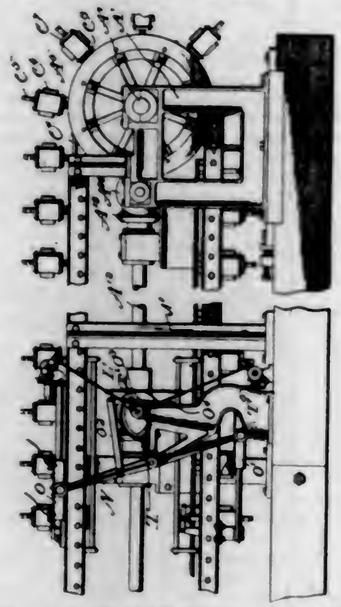
12. A machine for putting tops and bottoms on the body portions of cans, comprising a frame, a shaft mounted therein, a wheel having a polygonal periphery, each face about the periphery on the wheel being provided with a pair of clamping-jaws pivoted to the wheel, each face having a radially-disposed hollow cylindrical projection, a hollow telescoping member mounted over each of said cylindrical portions, a spring seated in a recess in the end of the cylindrical portion, and said telescoping member, an antifriction-wheel journaled at the end of each telescoping member, a stationary cam about which said friction-wheel travels, laterally-projecting arms on each telescoping member, and adjustable pivotal connections between said arms and clamping-jaws, chutes through which the tops and bottoms for the cans are fed to locations in the paths of the end portions of the can-bodies, fixed vertical and parallel walls between which said tops and bottoms are carried and by which they are applied onto the ends of the cans, as set forth.

13. A machine for putting tops and bottoms on the body portions of cans, comprising a frame, a shaft mounted therein, a skeleton wheel with polygonal periphery journaled on said shaft, a series of clamping-jaws arranged in pairs about the periphery of said wheel and means for operating said jaws, whereby the body portions of the cans are clamped and held while receiving the tops and bottoms therefor, guide-plates having wings extending down over the upper portion of the wheel, said plates being parallel at locations between which the cans are carried while receiving the tops and bottoms thereof and designed to contact with and hold the tops and bottoms on the body portion of a can, the downwardly-extending ends of said wings diverging, chutes, through which the tops and bottoms are fed to the body portions of the cans, the inner wall of each of said guides being notched at positions opposite each other for the reception of the lower ends of said chutes, a recessed portion adjacent to the lower ends of the chutes through which the tops and bottoms pass to positions to be caught by the ends of the body portion of the can, as set forth.

14. A machine for putting the tops and bottoms on the body portions of cans comprising a frame, a shaft mounted therein, a polygonal wheel journaled on said shaft, lugs projecting from each flat edge of the periphery, jaws pivotally mounted on said lugs, a cylindrical flanged member seated in a hollow cylindrical portion of each face, a hollow telescoping member mounted over said hollow cylindrical portion of the wheel, a spring bearing against said telescoping member, an antifriction-wheel, and a cam against which said antifriction-wheel contacts, lugs projecting in opposite directions from the telescoping member, pins carried by the lugs on said jaws and telescoping member, threaded eyebolts mounted on said pins, an interior threaded turn buckle mounted over the threaded portions of said bolts, and means for feeding the tops and bottoms to locations in the paths of the body portions of the cans, as set forth.

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**754,701. CAN-MAKING MACHINE.** JOHN G. RENFUSS and MARTIN O. RENFUSS, Philadelphia, Pa., assignors to the Bureau Can and Manufacturing Company of Delaware. Filed May 29, 1902. Renewed Jan. 4, 1904. Serial No. 187,740. (No model.)



*Claim.*—1. In a can-making machine, a mandrel on which the body portion of a can is formed, a transferring-arm mounted to swing at right angles to the length of said former, and means for depositing a can-body upon said arm, as set forth.

2. In a can-making machine, a mandrel on which the body portions of cans are formed, a transferring-arm mounted to swing at right angles to the length of said former, the upper free end of said arm being concaved and adapted to swing so that said concaved portion will be in alinement with the former and designed to receive a can-body, and means for depositing the can-body upon said arm, as set forth.

3. In a can-making machine, the combination with a rotary carrier carrying clamping means for holding the body portions of



cans, oscillating transferring-arms with their free ends positioned at locations diametrically opposite with reference to said carrier, and means for actuating said arms simultaneously to convey a body portion of a can to the carrier and transfer a can with the top and bottom applied thereto from the carrier. as set forth.

4. In a can-making machine, a rotary can-body carrier, clamping-jaws mounted thereon, oscillating can-transferring arms with their free ends concaved, and positioned at locations diametrically opposite each other with reference to said carrier, pivotal link connections between said arms, and means for actuating the same, whereby a can-body is fed to the rotary carrier simultaneously with the removal of a can with top and bottom applied thereto from the carrier, as set forth.

5. In a can-making machine, a mandrel on which the body portions of cans are formed, an apparatus for applying the tops and bottoms thereto, mechanism for soldering the same, oscillating transferring-arms with pivotal link connections, whereby said arms simultaneously convey a can-body from said former to the mechanism where its top and bottom are applied, and transfer the can with the top and bottom thereon, to the mechanism for soldering the can, as set forth.

6. In a can-making machine, a mandrel on which the body portions of cans are formed, apparatus for applying the tops and bottoms thereto, mechanism for soldering the same, oscillating arms for simultaneously transferring a can-body from said former, to the apparatus for applying the top and bottom, and conveying the can with its top and bottom onto the mechanism for soldering the same, as set forth.

7. In a can-making machine, a mandrel on which the body portions of cans are formed, apparatus for applying the tops and bottoms thereto, a rotary carrier with clamping-jaws thereon, and means for applying tops and bottoms to the can-bodies, a mechanism for soldering the tops and bottoms, and transferring-arms moving simultaneously to convey a can-body from said former to said rotary carrier, and transfer a can with its top and bottom applied from the carrier to the soldering mechanism, as set forth.

8. In a can-making machine, a mandrel on which the body portions of cans are formed, apparatus for applying the tops and bottoms thereto, a rotary carrier with clamping-jaws thereon, and means for applying tops and bottoms to the can-bodies, a mechanism for soldering the tops and bottoms. and transferring-arms moving simultaneously to convey a can-body from said former to said rotary carrier, and transfer a can with its top and bottom applied from the carrier to the soldering mechanism, said clamping-jaws designed to lift the can off the transferring-arms, as set forth.

9. In a can-making machine, a mandrel on which the body portions of cans are formed, a rotary carrier with can-clamping jaws mounted thereon and means for applying the tops and bottoms on the cans as they move with said carrier, apparatus for soldering the tops and bottoms, transferring-arms designed to move simultaneously in opposite directions to convey a can-body from said former to said carrier and transfer a can with its top and bottom applied to the portion of the machine where it is soldered, as set forth.

10. In a can-making machine, a mandrel on which the body portion of a can is formed, a rotary carrier with clamping-jaws mounted thereon, means for applying the tops and bottoms to the cans, apparatus for soldering the same, oscillating transferring-arms with their free ends disposed at locations diametrically opposite each other with reference to said rotary carrier and designed to simultaneously convey a can-body from said mandrel to the rotary carrier and carry a can with its top and bottom applied thereto, from the carrier to the soldering apparatus, as set forth.

11. In a can-soldering machine, a mandrel on which the body portion of a can is formed, a rotary carrier with clamping-jaws mounted thereon, means for applying the tops and bottoms to the cans, apparatus for soldering the same, oscillating transferring-arms with their free ends concaved, and disposed at locations diametrically opposite each other with reference to said carrier, and designed to simultaneously convey a can-body to said carrier from said mandrel, and transfer a can with its top and bottom applied thereto, from the carrier to can-soldering mechanism, as set forth.

12. In a can-making machine, a mandrel about which the body portion of a can is formed, a rotary carrier with clamping-jaws thereon, and means for applying the tops and bottoms to the can-bodies, parallel and vertically-disposed plates positioned on opposite sides of said carrier, oscillating transferring-arms, the upper free ends of which are designed to alternately pass between the opposite ends of said plates in conveying a can-body from said mandrel to mechanism for applying the tops and bottoms, and transferring a can with its top and bottom onto mechanism where they are soldered, as set forth.

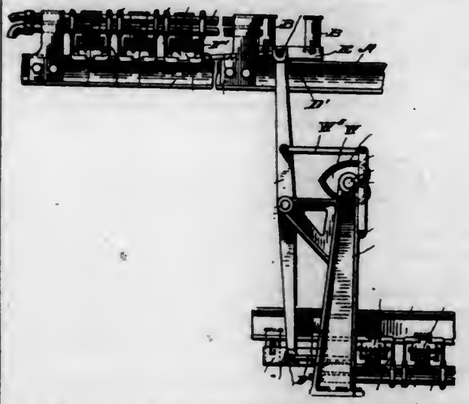
13. In a can-making machine, the combination with the mandrel about which the can-body is formed, means for applying the tops and bottoms to the can-bodies, an oscillating transferring-arm, and means for pushing a can-body off said mandrel onto said transferring-arm, whereby said can-body may be conveyed to mechanism for applying the top and bottom to the body portion of the can, as set forth.

14. In a can-making machine, the combination with a mandrel about which the can-body is formed, mechanism for applying the tops and bottoms to the cans, an oscillating transferring-arm, a pivoted forked arm adapted to engage the end of a can-body and push the same off the mandrel onto said transferring-arm, as set forth.

15. In a can-making machine, the combination with the mandrel about which the can-body is formed, mechanism for applying the tops and bottoms to the can-bodies, an oscillating transferring-arm, means for operating the same, an arm, the end of which engages a longitudinal recess in said mandrel, and means for actuating said arm, whereby a can-body is pushed off the end of said mandrel onto said transferring-arm, as set forth.

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**754,702. APPARATUS FOR FLUXING CANS.** JOHN G. RENFUSS and MARTIN O. RENFUSS, Philadelphia, Pa., assignors to the Bureau Can and Manufacturing Company of Delaware. Filed Aug. 1, 1902. Renewed Jan. 4, 1904. Serial No. 187,741. (No model.)



*Claim.*—1. A fluxing apparatus, comprising a horizontally-reciprocating flux-containing receptacle, means for moving the same, flux-feeding wheels in contact with one another, one of said wheels adapted to rotate within said receptacle, said wheels designed to be driven by frictional contact with a moving can, and means for adjusting the said wheels to rotate in different positions, as set forth.

2. A fluxing apparatus, comprising a flux-containing receptacle, a support therefor having dovetailed connection with said receptacle, flux-feeding wheels in contact with one another, one of said wheels adapted to rotate within the flux-receptacle, said wheels being driven by a frictional contact with a moving can, and means for adjusting the wheels to rotate in different positions, as set forth.

3. A fluxing apparatus, comprising a flux-containing receptacle, a member having bracket-arms upon which said receptacle is movably held, and means for supporting the bracket-arms, a shaft journaled in the flux-receptacle, a frictional flux-feeding wheel rotating with said shaft, slotted arms rising from the receptacle, a shaft guided in said slots, and a flux-wheel P, links guiding said shaft and the flux-wheel R' arranged as shown and described, and means for holding said flux-wheels to operate in different positions, as set forth.

4. A fluxing apparatus comprising a flux-containing receptacle, frictional feed-wheels in contact with one another, one of which rotates within said flux-containing receptacle, said wheels adapted to be rotated by frictional contact with a rotating can, an oscillating lever, a standard on which the same is mounted, a cam-wheel, a second lever pivoted to said standard, an antifriction-roller carried by said second lever and traveling in a groove in said cam-wheel, and connections between said levers, and pivotal link connections between said oscillating lever and fluxing device, for imparting a varying movement to the fluxing apparatus, as set forth.

5. A fluxing apparatus, comprising a receptacle, reciprocating

tubular portions, bracket-arms carried by said tubular portions, a fluxing-receptacle adjustably held on said bracket-arms, flux-feeding wheels, one of which is mounted to rotate in said receptacle and having frictional contact with one another and adapted to be rotated by frictional contact with a moving can, an oscillating lever and connections between the same and said tubular portions, whereby the latter are reciprocated, as set forth.

6. A fluxing apparatus comprising a flux-containing receptacle, bracket-arms supporting said receptacle, dovetailed connections between said receptacle and bracket-arms, flux-feeding wheels in frictional contact with one another, one of said wheels mounted to rotate within the receptacle, said wheels actuated by frictional contact with a rotary can, and means for imparting a reciprocating movement to the fluxing apparatus, as set forth.

7. A fluxing apparatus comprising a receptacle, means for supporting the same, and imparting a reciprocating movement thereto, flux-feeding wheels in contact with one another, one of which wheels rotates within the flux-receptacle, said wheels adapted to be driven by frictional contact with a rotary can, and means for adjusting said wheels to rotate in different positions, as set forth.

8. A fluxing apparatus comprising a receptacle, a shaft mounted on standards carried thereby, crank-arms carried by said shaft, fluxing-wheels carried by said crank-arms, said flux-feeding wheels adapted to be operated by contact with a rotary can, and means for imparting a reciprocating movement to the fluxing apparatus.

9. A fluxing apparatus comprising a receptacle, a bracket-arm on which the same is adjustably held, one face of the bracket-arm being recessed, tubular portions to which said arm is clamped, frictional flux-wheels in contact with one another, said wheels being actuated by frictional contact with a rotary can, and means for reciprocating said tubular portion to which the fluxing apparatus is attached, as set forth.

10. A fluxing apparatus comprising a fluxing-receptacle, a bracket-arm supporting the same, reciprocating tubular portions to which said bracket-arm is supported, beveled frictionally-driven wheels in contact with one another, one of which wheels rotates within a flux-receptacle, said wheels being adapted to be driven by frictional contact with a rotating can, as set forth.

11. A fluxing apparatus comprising a flux-receptacle, bracket-arms supporting the same, means imparting a reciprocatiag movement thereto, a shaft supported by standards mounted on the flux-receptacle, a bevel-wheel rotating with said shaft, crank-arms mounted on the shaft, a second shaft carried by said crank-arms, a flux-feeding wheel thereon, and a bevel-wheel carried by said second shaft and adapted to be driven by a rotating can, said wheels being in contact with one another and adapted to receive flux from the receptacle and transfer it to a rotating can, as set forth.

12. A fluxing apparatus comprising a flux-containing receptacle, means for imparting a reciprocating movement thereto, flux-feeding wheels mounted on the receptacle and in contact with one another, and adapted to be driven by frictional contact with a rotating can, a screw having an adjusting-nut thereon adapted to hold the friction-wheels in adjusted positions.

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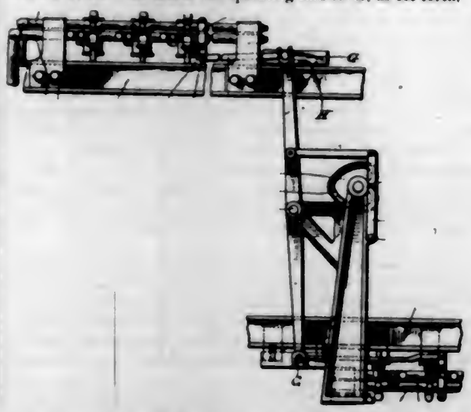
**754,703. APPARATUS FOR HEATING CANS PREPARATORY TO THEIR BEING FLUXED AND SOLDERED.** JOHN G. REHFUSS and MARTIN O. REHFUSS, Philadelphia, Pa., assignors to the Bureau Can and Manufacturing Company of Delaware. Filed Aug. 2, 1902. Renewed Jan. 4, 1904. Serial No. 187,742. (No model.)

*Claim.*—1. An apparatus for heating cans preparatory to being fluxed and soldered, consisting in combination with the movable carrier, cans carried thereby, reciprocating tubes, through which air and gas pass, burners having communication with said tubes and adapted to direct flames from gas mixed in said burners against the moving cans, as set forth.

2. An apparatus for heating cans preparatory to being fluxed and soldered, comprising reciprocating air and gas tubes, a burner carried thereby and having communication with said tubes whereby air is mixed with gas in said tube within the burner, nozzles carried by said burner and adapted to direct impinging flames against each other and against a seam to be soldered as the burner travels with the can, as set forth.

3. An apparatus for heating cans, consisting in combination with an endless carrier, cans traveling therewith, a burner having communication with said gas-pipe, and air-tubes communicating with said air-pipe and leading into said burner, nozzles carried by the burner into which said air-pipes lead, the ends of said nozzles adapted to direct flames so as to impinge against each other at a location adjacent to a seam in the can, and means for moving the burner with the cans, as set forth.

4. An apparatus for heating cans comprising in combination with an endless carrier and cans traveling therewith, gas and air tubes, a burner having communication with said gas-pipe, nozzles carried by said burner, air-tubes leading through the burner and into said nozzles having communication with said air-tube, and adapted to direct flames which will impinge against each other adjacent to a seam of a can, and an oscillating lever, and connections between the same and said burner, and means for operating said lever, as set forth.




5. An apparatus for heating cans comprising in combination with an endless carrier and cans mounted thereon, gas and air tubes having a reciprocating movement, a burner fastened to and adapted to move with said tubes, communication between said burner and gas-tube, nozzles carried by the burner, air-tubes passing through the burner and partially through said nozzles and communicating with said air-pipe, the ends of said nozzles adapted to direct two flames to impinge against each other at a location adjacent to a seam of a can, a standard, an oscillating lever mounted on the latter, a cam-wheel, a link pivoted to said lever, an arm pivoted to said standard and connected to said link, an antifriction-wheel carried by said arm and traveling in a groove in said cam-wheel, and pivotal rod connections between said lever and burner, as set forth.

6. An apparatus for heating cans, consisting of reciprocating gas and air tubes, supports therefor, a burner carried by said tubes and having communication with said gas-tubes, nozzles carried by said burner, air-tubes passing through the burner-chamber and partially through said nozzles and communicating with said air-pipe, and means for imparting a variable movement to said burner adjacent to an endless carrier on which cans are mounted, as set forth.

7. An apparatus for heating cans comprising reciprocating gas and air tubes, means for supporting the same, a burner carried by said tubes having communication with and provided with nozzles for directing flames to impinge against each other at angles, and means for imparting a variable movement to said burner, as set forth.

8. An apparatus for heating cans comprising sets of air and gas tubes adapted to reciprocate in pairs simultaneously in opposite directions, burners mounted on said tubes and communicating therewith, nozzles on the burners adapted to direct flames so as to impinge each other adjacent to the seams of cans, said burners adapted to be reciprocated simultaneously in opposite directions with the movable tubes and adjacent to the tops and bottoms of cans adapted to be carried by an endless carrier, as set forth.

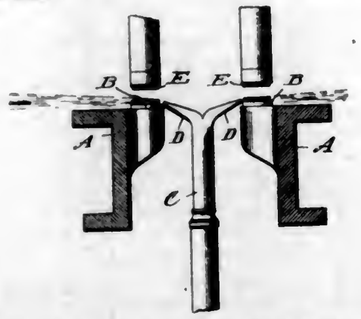
9. An apparatus for heating cans comprising a burner having a cylindrical portion, a gas and an air tube, communication between the interior of said chamber and gas-tube, open-ended air-tubes mounted in apertures in the base of said gas-chamber of the burner and having communication with an air-tube, a plate seated on a shoulder on the inner wall of said burner-chamber, nozzles carried by said plate and into which said nozzles the ends of said air-tubes extend, said nozzles being bent so as to direct flames to impinge against each other, as set forth.

10. An apparatus for heating cans for fluxing and soldering, comprising a burner, a gas-pipe having communication with the chamber of the burner, open-ended air-tubes mounted in apertures in the base of said burner and having communication with an air-pipe, a plate seated on a shoulder formed on the inner end of said gas chamber and burner, nozzles carried by said plate into which the ends of said air-tubes pass, a washer seated on said plate, and a threaded cap fitted to the wall of the chamber of the burner and adapted to hold said plate in place, said nozzles being of unequal length, the longer of which is downwardly bent, said nozzles adapted to direct two flames so as to impinge against each other at an angle, as set forth



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**754,704. PNEUMATIC MEANS FOR REMOVING CAN TOPS AND BOTTOMS FROM FORMING-DIES.** JOHN G. REHFUSS and MARTIN O. REHFUSS, Philadelphia, Pa., assignors to the Bureau Can and Manufacturing Company of Delaware. Filed July 14, 1903. Serial No. 165,464. (No model.)

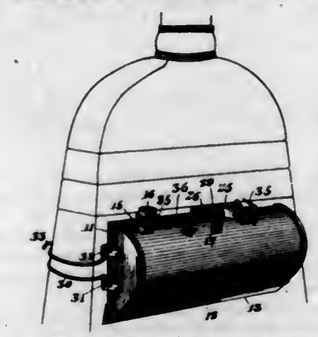



*Claim.*—1. In combination with cutting-dies for forming disks, a pneumatic passage-way having branching pipes positioned with their exit ends disposed in opposite directions adjacent to the cutting-dies and designed to direct a pneumatic current against the disks to remove said disks from the dies, as set forth.

2. In combination with cutting-dies, a pneumatic passage-way having branching pipes positioned with their exit ends disposed in opposite directions and adjacent to the cutting-dies, the ends of said pipes being contracted and adapted to direct a pneumatic current through the same to remove the disks from between the dies, as set forth.

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**754,705. BROOM-MOISTENER.** WILLIAM S. REYNOLDS, Dayton, Oreg. Filed Jan. 29, 1903. Serial No. 141,058. (No model.)

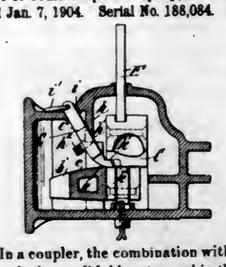



*Claim.*—1. A device of the class described comprising a reservoir provided at its bottom with an opening, a compartment extending longitudinally of the reservoir and provided with discharge-openings, said compartment being located beneath the bottom of the reservoir with the said bottom forming its top wall, a tube provided with a lateral orifice and extending through the top of the reservoir and having its lower end surrounding the opening of the bottom of the reservoir, a valve rotatably mounted in the lower end of the tube and resting flat upon the bottom of the reservoir and provided with an opening, a valve-stem connected with the valve and projecting from the upper end of the tube, and a notched flange mounted on the reservoir and receiving the projecting portion of the stem, substantially as described.

2. A device of the class described comprising a tapering reservoir provided at its bottom with an opening, a lower compartment consisting of a tapered inverted cap receiving the bottom of the reservoir and provided with discharge-openings, a tube provided with a lateral orifice and extending through the top of the reservoir and having its lower end surrounding the opening of the bottom of the same, a valve rotatably mounted at the lower end of the tube and provided with an opening, a stem connected with the valve and projecting from the top of the tube, a spring for yieldably holding the valve, and means mounted on the reservoir for engagement with the projecting portion of the handle for locking the valve in its adjusted position, said spring permitting the stem to be engaged with and disengaged from the said means, substantially as described.

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**754,706. CAR-COUPLING.** WILLARD F. RICHARDS, Buffalo, N. Y., assignor to Gould Coupler Company, New York, N. Y., a Corporation. Filed Jan. 7, 1904. Serial No. 188,084. (No model.)




*Claim.*—1. In a coupler, the combination with the knuckle, and movable lock, of a lock-set slidably arranged in the draw-head with its lower portion supported by the knuckle and engaging the lock, and which when the lock is moved to release the knuckle moves downwardly into a position between the knuckle and lock to support the latter, substantially as set forth.

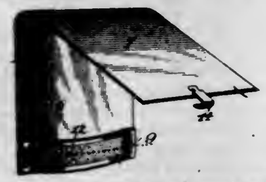
2. In a coupler, the combination with the horizontally-swinging knuckle having a tailpiece, and a vertically-movable lock, of a lock-set slidably mounted in the draw-head with its lower end resting on the tailpiece of the knuckle and against one face of the lock when the knuckle is closed, and which when the lock is lifted moves downwardly and laterally into a position with its lower end between the knuckle and the lock to support the latter, substantially as set forth.

3. In a coupler, the combination with the knuckle, and movable lock, of a lock-set slidably mounted in the draw-head with its lower end resting on the knuckle and against the lock when the knuckle is closed, and having an inclined face engaging the knuckle and a seat for the lock, said inclined face acting to move the lower end of the lock-set laterally to place its seat below the lock when the latter is lifted, substantially as set forth.

4. In a coupler, the combination with the knuckle, and movable lock, of a lock-set slidably arranged in the draw-head with its upper end projecting out of the coupler and its lower end supported by the knuckle and engaging the lock when the knuckle is closed and which, when the lock is moved to release the knuckle moves to a position between the knuckle and lock to support the latter, substantially as set forth.

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**754,707. MATCH-CASE.** SAMUEL ROBERT, New York, N. Y. Filed Jan. 25, 1904. Serial No. 190,546. (No model.)




*Claim.*—1. As a new article of manufacture, a match-case comprising an oblong-shaped piece of material containing two folds only, one fold being at the end of said piece and arranged to form a pocket for the matches, and means for securing the ends of said fold directly to the main piece of material, the other fold being at the opposite end of the piece and of such width as to cover the said pocket, and a match-striking surface arranged to be covered by said latter fold, substantially as described.

2. As a new article of manufacture, a match-case comprising an oblong-shaped piece of material containing two folds only, one fold being at the end of said piece and arranged to form a pocket for the matches, and means for securing the ends of said fold directly to the main piece of material, the other fold being at the opposite end of the piece and of such width as to cover the said pocket, and a match-striking surface on the outer side of the fold forming the pocket, substantially as described.

3. As a new article of manufacture, a match-case comprising a piece of material containing two folds only, one end bent upon itself to from a pocket, means for securing said bent portion to the main piece of material, the other fold being at the opposite end of the piece, and a match-striking surface on the case.

4. As a new article of manufacture, a match-case comprising a piece of material containing two folds only, one of said folds formed by bending the lower end upon itself to form a pocket, means for securing said fold to the main piece of material, the other fold forming a flap extending toward the pocket, and a striking-surface on the case.

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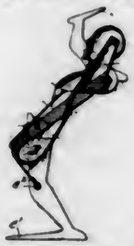
**754,708. BUSH OR LINER FOR CASKS AND MEANS FOR ATTACHING SAME.** JAMES ROSS and ALEXANDER W. MACKENZIE, Edinburgh, Scotland. Filed Mar. 19, 1903. Serial No. 148,591. (No model.)



*Claim.*—A bush or liner for bung-holes of casks having a cylindrical exterior and a conical interior and with the smaller diameter of the cone at the inner end of the bush, said bush being provided externally with a taper screw-thread which starts at nothing at the inner part of the bush and increases in height as it winds around said cylindrical surface and approaches the outer part of the bush, said bush being provided with means in its conical walls at the inner end thereof by which it can be screwed into place and having also a flange at its outer end, the opening in the bush extending clear through the same for the reception of the bung, said opening being of the same diameter as the smaller diameter of the cone, substantially as described.

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**754,709. TOY.** CHARLES A. SCADDING, Buffalo, N. Y. Filed June 27, 1903. Serial No. 163,325. (No model.)



*Claim.*—1. The combination of a body provided at opposite ends with chambers connected by one or more passages, a shiftable weight in said body which passes from one chamber to the other, members pivoted to said body adjacent to said chambers, and alternately serving as supports on which said body turns, and means for limiting the relative swinging movement between said members and the body, substantially as set forth.

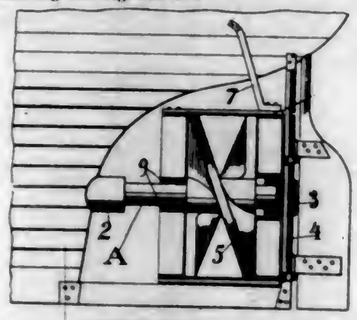
2. The combination of a hollow body, a shiftable weight confined in and movable lengthwise of said body, legs pivoted to said body adjacent to one end thereof, arms pivoted to said body adjacent to the opposite end thereof, means for limiting the relative swinging movement between said body and said arms and legs, said arms and legs alternately serving as supports on which said body turns, substantially as set forth.

3. A figure comprising a body provided at opposite ends with chambers connected by one or more restricted passages, mercury confined in said body and movable from one chamber to the other through said passage or passages, arms pivoted to said body adjacent to one of said chambers, stops to limit the swing of said arms, legs pivoted to said body adjacent to the other chamber, stops to limit the swing of said legs, said figure operating automatically to perform a series of handsprings or somersaults down a flight of steps, substantially as set forth.

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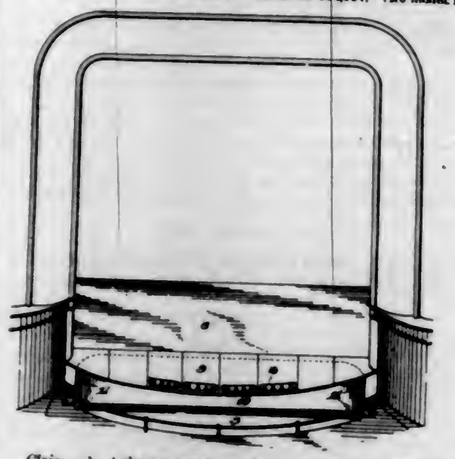
**754,710. PROPELLING APPARATUS FOR VESSELS.** MARX P. SCHITZEL, Oakland, Cal. Filed Jan. 2, 1903. Serial No. 137,483. (No model.)

*Claim.*—The combination of a propeller-shaft, a propeller fixed thereto, a vertical post in rear of the propeller and provided with a horizontal bearing for the rear end of the shaft, said post serving, also, for the hanging and support of the rudder, a cylinder and fixed braces extending therefrom, said cylinder projecting in front and rear of the propeller, rings surrounding the shaft proximate to each end of the propeller and having an interior diameter slightly in excess of that of the shaft, one of said rings inclosing the said horizontal bearing, and radial plates in front of and behind the propeller and connecting said rings and band




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**754,711. THEATER BUILDING.** ADOLF SCHLICHTER, Allegheny, Pa. Filed Dec. 10, 1903. Serial No. 184,537. (No model.)



*Claim.*—1. A theater constructed with an orchestra-pit extending rearward beneath the stage and through the plane of the proscenium-wall.

2. A theater constructed with an orchestra-pit extending rearward beneath the stage, the walls of that portion of the orchestra-pit beneath the stage being rounded to prevent the formation of sound-retarding corners or angles.

3. A theater constructed with an orchestra-pit extending rearward beneath the stage, the pit being entirely closed save at the front.

4. A theater constructed with an orchestra-pit extending rearward beneath the stage, the pit being closed save at the front and having its walls rounded to avoid corners or angles.

5. A theater constructed with an orchestra-pit extending rearward beneath the stage and accessible from the front only, the walls thereof being smooth and continuous or unbroken by doors, windows, or other openings.

6. A theater constructed with an orchestra-pit extending through the plane of the proscenium-wall, said wall extending the whole length of the orchestra-pit and reaching upward to the floor thereof.

7. A theater constructed with an orchestra-pit extending through and partially supported by the base portion of the proscenium-wall which reaches to the floor thereof, the stage overhanging the orchestra-pit, and a fire-wall at the rear of the said pit and reaching to the stage-floor.

8. In a theater, the proscenium-wall, the orchestra-pit extending through the plane of said wall with the lower portion of the wall extending the entire length of the pit and reaching upward to the floor thereof, a fire-wall back of the proscenium-wall and the orchestra-pit and extending upward to the stage-floor, and a filling of non-combustible material between said walls.



9. In a theater, the proscenium-wall, the orchestra-pit extending through the plane of said wall with the lower portion of the wall extending the entire length of the pit and reaching upward to the floor thereof, a fire-wall back of the orchestra-pit and proscenium-wall and connecting at its ends with the latter, the fire-wall reaching upward to the stage-floor, and a filling of non-combustible material between said walls.

10. In a theater, the stage thereof constructed with a non-combustible floor in the plane of the fire-curtain.

11. In a theater, the proscenium-wall, the main body of the stage-floor stopping short of said wall, and a non-combustible floor portion forming a continuation of the main body of said floor and extending to said wall to receive the fire-curtain.

12. In a theater, the proscenium-wall, an orchestra-pit extending backward through the plane of said wall, and a stage-floor having a non-combustible front portion overhanging the orchestra-pit and adapted to receive the fire-curtain.

13. In a theater, the proscenium-wall, a fire-wall at the rear of and parallel with the proscenium-wall and extending upward to the stage-floor, the stage-floor having a non-combustible front portion extending to the proscenium-wall and adapted to receive the fire-curtain.

14. In a theater, the proscenium-wall, a fire-wall at the rear of the proscenium-wall and reaching upward to the stage-floor, forwardly-extending floor-supports secured to the fire-wall, and the stage-floor having a non-combustible front portion sustained by said supports and adapted to receive the fire-curtain.

15. In a theater, the proscenium-wall, a fire-wall at the rear of the proscenium-wall and extending upward to the stage-floor, an orchestra-pit extending through the plane of the proscenium-wall and rearward to the fire-wall, forwardly-extending floor-supports secured to the fire-wall and overhanging the orchestra-pit, and the stage-floor having a non-combustible front portion sustained by said supports.

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**754,712. COFFIN.** JOSEPH J. SCHNEIDER, Chicago, Ill. Filed Apr. 13, 1903. Serial No. 152,380. (No model.)



*Claim.*—1. In a coffin having side and end walls, the combination of an upright rod mounted adjacent to one of the end walls, and a metallic T-shaped supporting-bracket having a concave upper surface movably mounted upon such rod entirely supported thereby and having a free end extending outward therefrom for supporting the head of a corpse and permitting it to be moved without moving the rest of the body, substantially as described.

2. In a coffin having side and end walls, the combination of a plurality of upright rods mounted adjacent to such walls, a separate independently-movable supporting-bracket for each rod slidably mounted thereon and provided with means for holding it in any desired raised or lowered position, substantially as described.

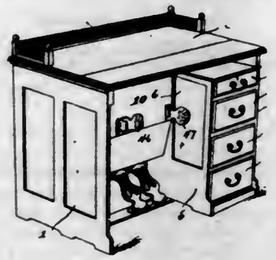
3. In a coffin having side and end walls, the combination of a plurality of upright rods mounted adjacent to such walls, and separate head and shoulder supporting brackets slidably mounted upon such rods each independently movable upward and downward and each provided with a perforation therethrough loosely fitting the rod upon which it is mounted when at right angles thereto and in binding engagement with such rod when in diagonal relation thereto whereby the head and each shoulder, respectively, may be raised or lowered independently into any desired position within certain limits and supported in such position without moving the whole body, substantially as described.

4. In a coffin having side and end walls, the combination of a plurality of upright rods mounted adjacent to such walls each having an upper portion extending at an angle to the upright portion thereof and attached at the extreme end of such upper angular portion to the wall near which it is mounted, separate independently-movable brackets slidably mounted upon each of such rods, and means for supporting such brackets in their adjusted position, substantially as described.

5. In a coffin having side and end walls, the combination of an upright rod mounted adjacent to each side wall and one of the end walls, each having its upper end extending backward from the upright portion toward and attached to the wall near which it is mounted, a head-supporting bracket movably mounted upon the upright rod adjacent to the end wall, shoulder-supporting brackets mounted upon the upright rods adjacent to the side walls, and movable separately and independently of the head-supporting bracket and means for holding such brackets in any desired raised or lowered position upon the rods, substantially as described.

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**754,713. ORGAN.** DANIEL SCHUSTEK, Chicago, Ill., assignor to Herbert L. Andrews, Chicago, Ill. Filed Feb. 3, 1902. Serial No. 92,414. (No model.)



*Claim.*—1. A combined desk and organ-casing comprising stationary end and back walls, a movable top with guideways thereon extending parallel with the top surface of the desk, rigid connections between the casing and said guideways whereby said top is mounted to shift bodily rearwardly and forwardly, and is maintained in a horizontal position at both limits of adjustment, said movable top being made sectional and the front portion thereof hinged to the rear portion so as to be lifted up leaf-fashion.

2. In combination with a desk or table top support and a top mounted thereon consisting of two sections hinged together, means for imparting a bodily-shifting movement and a simultaneous hinge movement of the hinged section comprising means for guiding the top bodily in horizontal direction, a fixed guide arranged to extend in angular relation to the horizontal top and a fulcrum-arm rigidly united with the hinged section and operatively engaging said angular guide substantially as described.

3. In a desk or analogous structure the combination with the stationary end walls thereof, of a movable top consisting of two sections hinged together and means for imparting a bodily-shifting movement to said top and a simultaneous hinging movement of one section thereof comprising guides upon one member, parallel ways upon the other member, with which said guides are operatively engaged, a fixed guide arranged to extend in angular relation to the plane of bodily movement of the top, an arm rigidly mounted upon the hinged or swinging section of the top and engaging said angularly-disposed guide, the end of said arm engaged with the guide constituting a shifting fulcrum, substantially as described.

4. In a desk, of the character described, the combination with the fixed end and rear walls thereof, of a shiftable top consisting of front and rear sections hinged together so as to permit the front section to lift up leaf-fashion and means for imparting a bodily-shifting movement of said top section and a simultaneous hinging movement of the leaf-section comprising guide grooves, or ways, upon the respective ends of said top section, guide-lugs rigidly mounted upon the respective end walls of the desk and engaging said ways a pair of laterally-opposite guides arranged in angular relation to the guide grooves or ways of the table-top, one at each end thereof, and fulcrum-arms rigidly united with the hinged section of the top and operatively engaging said angularly-disposed guides substantially as described.

5. In a combined desk and organ mechanism, the combination of the stationary end and rear walls, a shiftable top comprising front and rear sections hinged together, the bank of keys arranged beneath and in rear of the front hinged section when the latter is in its normal closed position and means for guiding into and supporting said shiftable top section in a retracted position to expose the keys when the hinged section is lifted up substantially as described.

6. In a desk of the character described, the combination with the stationary end walls, of a shiftable top, consisting of front and rear sections hinged together so as to permit the front section to lift

up leaf-fashion, means for permitting bodily-shifting movement of said top section comprising guide grooves or ways upon the respective ends of said top section, guide-lugs rigidly mounted upon the respective end walls of the desk and engaging said ways and means for disengaging said desk-top bodily, comprising transverse slots formed in said ways and communicating with the main slots thereof through which said guide-lugs may pass when the table-top is lifted up bodily.

7. In a device of the character described, the combination of a swell-board forming a hinged portion of the rear wall of the casing, a shiftable top and an automatic locking mechanism operating to lock said swell-board and controlled by said shiftable top, comprising a catch member mounted upon the swell-board, a locking-lever and operative connections between said lever and shiftable top, substantially as described.

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**754,714. BAND-FASTENER. FRITZ SEIBLMAIR, Münich, Germany. Filed May 8, 1903. Serial No. 156,316. (No model.)**



*Claim.*—A fastening device for the ends of bands of ready-made neckties and the like, consisting of a plate of sheet metal adapted to be sewed to one end of the band, a rim or bend at one edge of said plate, a second plate hinged to the other end of the first plate, a lip along the free edge of the second plate for the reception of the rim or bend of the other plate, two tongues toothed at the edges stamped and bent out so as to project from the second plate, a guide-plate sewed to the other end of the band, with two side edges bent sidewise and curved inside, substantially as described and shown and for the purpose set forth.

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**754,715. SEMIELLIPTIC SPRING. THOMAS A. SHEA, Oswego, N. Y., assignor to George B. Sloan, Jr., Oswego, N. Y. Filed July 3, 1903. Serial No. 164,694. (No model.)**



*Claim.*—1. As a new article of manufacture, an end plate fitted to a leaf-spring, and having an end projection to engage with end and under surface of the main leaf and to be engaged by the second leaf.

2. As a new article of manufacture, an end plate fitted to a leaf-spring, and having an integral end extension extending first downwardly to engage with the end of the main leaf and then inwardly to engage with the under surface of the main leaf, and adapted to be engaged also by the second leaf.

3. As a new article of manufacture, an end plate for semielliptic springs, substantially equal in width to the spring and provided with a shoulder or flange extending across its end, equal in depth and length to the end of the main leaf, and with an inwardly-extending lug centrally arranged on the under surface of the shoulder, adapted to engage with the under surface of the main leaf and with an opening in the second leaf.

4. In a semielliptic spring, the combination with the main leaf of usual form and the second leaf perforated near its end, of an end plate or bearing-plate fitted to rest on the main leaf, an integral shoulder on the plate fitted to the end of the main leaf, and an integral locking-lug on the shoulder to engage with the under surface of the main leaf and with a perforation in the second leaf.

5. In a semielliptic spring, the combination with the main leaf of usual form and a second leaf perforated near its end and extending outwardly beyond the main leaf, of an end plate fitted to rest on the outer end of the plate, substantially equal in depth to the thickness of the main leaf, and an integral lug on the lower surface of the shoulder, inwardly extending therefrom to engage with the under surface of the main leaf and to fit the outer end of the perforation in the second leaf.

6. In a semielliptic spring, the combination with the main leaf of usual form and with the second leaf slotted near its end and extending outwardly beyond the main leaf, of an end plate or bearing-plate fitted to the upper surface of the main leaf at its end, an integral flange or shoulder extending across the end of the plate and downwardly depending therefrom, substantially equal in depth to the thickness of the main leaf and adapted to engage with its end, an integral lug on the lower surface of the flange inwardly extending to engage with the under surface of the main leaf and adapted to engage with the outer end of a slot in the second leaf.

7. In a semielliptic spring, the combination with the main leaf of usual form, of an end plate fitted to rest on the main leaf at its end, an integral flange or shoulder extending across the outer end of the end plate and being substantially equal in depth to the thickness of said leaf, an inwardly-extending lug on the lower surface of the flange having a curved front end and adapted to engage with the under surface of the main leaf, and the second leaf having its end extending outwardly to lie substantially flush with the outer end of the end-plate shoulder and provided with a slot fitting said lug.

8. In a semielliptic spring, the combination with the main leaf of usual form, of an end plate or bearing-plate fitted to rest on the end of the main leaf, integral side flanges on the plate curved on their inner surfaces to engage with the upper portion of the main leaf and having their outer surfaces arranged substantially flush with the widest portion of the main leaf, an integral flange or shoulder extending across the end of the end plate and downwardly extending to an extent substantially equal to the thickness of the end main leaf to engage therewith, an integral lug having a curved outer end on the lower surface of said flange or shoulder and inwardly extending therefrom to engage with the under surface of the main leaf, and the second leaf having its end arranged to extend outwardly beyond the main-leaf end and to lie flush with the end of the end plate, and provided with a slot near its end formed to receive said lug and fitted to the curved outer end, substantially as described and shown.

9. As a new article of manufacture, an end plate for a leaf-spring, substantially equal in width to the spring and provided with a shoulder or flange substantially equal in depth to the thickness of the main leaf, said flange having an extension to engage with the under surface of the main leaf and with an opening in the lower leaf or leaves.

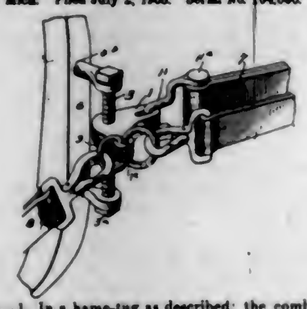
10. In a semielliptic spring, the combination with the main leaf having rounded edges of usual form, of an end plate fitted to the end of the main leaf and provided with integral side flanges less in depth than one-half the thickness of the main leaf, said flanges being rounded on their inner surfaces to fit the sides of the leaf and having straight outer surfaces to lie flush with the outer edge of the main leaf.

11. In a semielliptic spring, the combination with the main leaf having rounded edges of usual form, of an end plate having an integral extension to engage with the end and under surface of the main leaf, and integral side flanges on the plate less in depth than the thickness of the main leaf, rounded on their inner surfaces to fit the sides of the leaf, and having outer faces lying substantially flush with the widest portion of the main leaf.

12. The combination with a semielliptic spring composed of a series of leaves, of an end plate supported on the main or top leaf and having an integral extension extending downwardly across the end of the leaf and thence inwardly, engaging permanently with the under surface of the said top leaf.

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**754,716. HAME-TUG FASTENER. ALEXANDER G. SHIELDS, L'Anse, Mich. Filed July 2, 1903. Serial No. 164,060. (No model.)**



*Claim.*—1. In a hame-tug as described; the combination with brackets projected laterally from the hame, and a screw-bolt rotatably mounted in said brackets and held from endwise movement therein; of a triangular-shaped tug-piece mounted on the said bolt for vertical adjustment and horizontal oscillation, a means at the outer ends of said tug-piece for connecting with the breast and trace straps, as set forth.

2. In a hame-tug as described, the combination with the screw-bolt and supports for mounting the same vertically on the hame-piece; of a substantial triangular-shaped tug member having a threaded aperture at its apex end to engage the screw-bolt, a ring in one of its outer ends for connecting with the breast-strap and a loop at the other outer end for connecting with the trace-strap, as set forth.

3. The hereinbefore-described improvement in hame-tugs comprising the combination of eyebolts detachably connected to and projected laterally from the hame, a screw-bolt detachably and rotatably mounted in the eyes of said bolts, and held from vertical movement therein; of a triangular-shaped tug-piece having a threaded aperture in its apex end to engage the threaded bolt an elongated slot in one of its outer ends and an aperture in the other outer end, a loop including a detachable bolt for connecting the trace and a ring in the apertured end of the tug for connecting with the breast-strap, all being arranged substantially as shown and described.

4. The hereinbefore-described improvement in hame-tugs, comprising in combination with the eyebolts detachably connected to and projected from the hame, a screw-bolt detachably and rotatably mounted in the ends of said eyebolts and held from vertical movement therein; of a triangular-shaped apertured tug-piece having a threaded aperture in its apex end to engage the screw-bolt, and an elongated slot in one of its outer ends, a loop including a detachable bolt for connecting with the trace and passing through said elongated slot, a pair of rings held in the apertured end of the tug-piece one for connecting with the breast-strap and one for connecting with the breeching, for the purposes specified.

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**754,717. DOMESTIC BOILER. SAXTON C. SHOUP, Fostoria, Ohio. Filed Oct. 17, 1903. Serial No. 177,463. (No model.)**



*Claim.*—A covered vessel of the kind stated, having a row of open tubes extending through the bottom thereof and upwardly within the same, a regulating-valve in the upper part of the vessel, to allow the escape of heated air therefrom and a removable tray on each side of the row within the vessel.

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**754,718. HEADBOARD FOR HARVESTERS. JOHN F. STEWARD, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill., a Corporation of New Jersey. Filed Oct. 8, 1903. Serial No. 176,208. (No model.)**



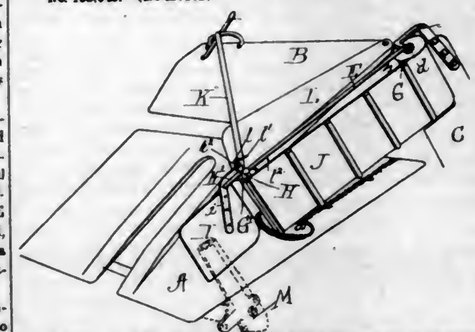
*Claim.*—1. In a harvester, in combination, a grain-cover and a deck forming a grain passage-way, and an automatically-operated headboard hinge-connected above said passage-way and at the rear end thereof in a position to diagonally traverse in a downward and forward direction the said grain passage-way and free to yield to the grain passing therethrough, substantially as described.

2. In a harvester, in combination, a grain-cover and a deck forming a grain passage-way, and an automatically-operated headboard hinge-connected to the rear end of said grain-cover in a position to diagonally traverse in a downward and forward direction the said grain passage-way and free to yield to the grain passing therethrough, substantially as described.



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**754,719. BUTT-ADJUSTER FOR HARVESTERS. JOHN F. STEWARD, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill., a Corporation of New Jersey. Filed Nov. 20, 1903. Serial No. 182,045. (No model.)**




*Claim.*—1. In a butt-adjuster for grain-harvesters, in combination, a roller-supporting rod consisting of a longitudinally-extending portion provided with two parallel transversely-disposed arms at the upper and lower ends thereof, an adjuster-driving roller journaled upon the upper arm of said roller-supporting rod, means for communicating motion to the said driving-roller, supports for rigidly sustaining said rod and roller, a roller journaled upon the lower arm of said supporting-rod, an endless butt-advancer passing over said rollers, and means for controlling the position of the adjuster, substantially as described.

2. In a butt-adjuster for grain-harvesters, in combination, an adjuster-driving roller, means for supporting said driving-roller, an adjuster-rod in connection with said supporting means, said adjuster-rod extending from a point immediately above the said roller and in a direction substantially at right angles to the axis thereof, a lower roller, the bearing of which is supported on and releasably secured to the free end of said adjuster-rod, a butt-advancer passing over the said rollers, and means for controlling the position of said adjuster, substantially as described.

3. In a butt-adjuster for grain-harvesters, in combination, a roller-supporting rod consisting of a longitudinally-extending portion having at the upper end thereof an arm extending transversely relative thereto and continuous therewith, a driving-roller journaled on said arm, means for supporting the said adjuster applied to the arm of said rod, a roller adjustably secured to the free end of the said supporting-rod, a canvas passing over the said rollers, and a lever for controlling the position of the adjuster, substantially as described.

4. In a butt-adjuster for grain-harvesters, in combination, a roller-supporting rod consisting of a longitudinally-extending portion having at the upper end thereof an arm extending transversely relative thereto and continuous therewith, a driving-roller journaled on said arm, means for supporting the said adjuster applied to the arm of said rod at points above and below the said driving-roller, a roller adjustably secured to the free end of the said supporting-rod, a canvas passing over the said rollers, and a lever for controlling the position of the adjuster, substantially as described.

5. In a butt-adjuster for grain-harvesters, in combination, upper and lower rollers, a supporting-frame therefor, means for operating the said adjuster, a lever for controlling the position of the adjuster pivotally connected to the free end of said supporting-frame, an adjuster extension free to move rearwardly having its pivotal connection with the said supporting-frame coincident with but independent of the pivotal connection of said controlling-lever therewith, substantially as described.

6. In a butt-adjuster for grain-harvesters, in combination, upper and lower rollers, a supporting-frame therefor, means for operating the said adjuster, a lever for controlling the position of the adjuster pivotally connected to the free end of the said supporting-frame, the said lever being provided with a laterally-deflected end, and an adjuster extension free to move rearward but restrained from forward movement by said laterally-deflected end and having its pivotal connection with the said supporting-frame coincident with the pivotal connection of the lever therewith, substantially as described.

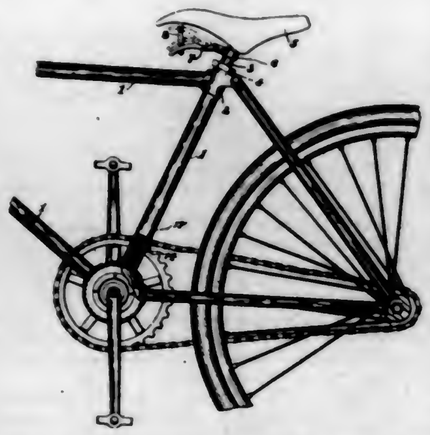
7. In combination with a butt-adjuster for grain-harvesters, a lever for controlling the position thereof, a grain-cover and an adjuster-shield pivotally secured at its upper end to the said grain-cover and at its lower end connected with and operated by the said controlling-lever, substantially as described.

8. In combination with a butt-adjuster comprising an adjuster-frame, upper and lower rollers, an endless butt-advancer passing thereover, and means for controlling the position of said adjuster, a grain-deck having that portion of its surface depressed which lies beneath the path of travel of the said lower roller of the adjuster, substantially as described.

9. In a butt-adjuster for grain-harvesters, in combination, upper and lower rollers, a supporting-frame therefor, means for operating the said adjuster, a lever for controlling the position of the adjuster pivotally connected to the free end of said supporting-frame, an adjuster extension also pivotally connected to the free end of said supporting-frame but independent of the pivotal connection of the controlling-lever, the said adjuster extension being free to move rearwardly but restrained from forward movement by the said controlling-lever, substantially as described.

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754,720. BICYCLE. CHRISTOPHER H. STILSON, New York, N. Y. Filed Oct. 28, 1902. Serial No. 129,072. (No model.)



*Claim.*—1. The combination in a bicycle with a shaft, of a driver thereon having a plurality of radial arms, a radially-movable member on each arm, a drum adapted to be engaged by said movable member, and a sleeve secured to said drum for carrying a sprocket-wheel.

2. The combination in a bicycle with a pedal-shaft, of a pinion or gear keyed thereon, a drum loosely mounted on said shaft having a sleeve secured thereto, a plurality of planetary gears on said drum one set of the same adapted to mesh with said pinion, an internal gear in mesh with another set of the planetary gears, and means for shifting said internal gear into and out of engagement with said planetary gear.

3. The combination with a shaft, of a driving member thereon, one or more radial arms on said driving member, a radially-movable member on each arm, a driven member, and means on said driven member adapted to be engaged by said movable member on the radial arms.

4. The combination in a bicycle with a shaft, of pedals secured to said shaft, a driving member on said shaft, radial arms on said driving member, a movable member on each arm, means adapted to be engaged by said movable member, a sleeve secured to said means and rotatable on said shaft, and a sprocket-wheel carried by said sleeve.

5. The combination in a bicycle with a shaft, of pedals secured thereto, a driving member thereon, radial arms on said driving member, a spring-controlled movable member on each arm, means adapted to be engaged by said movable member having a sleeve, and a sprocket-wheel carried by said sleeve.

6. The combination in a bicycle with a shaft, of a driver thereon, an arm on said driver, a radially-movable member on said arm, and means adapted to be engaged by said movable member.

7. The combination in a bicycle with a shaft, of a driver thereon having one or more radial arms, a movable member on each arm, and a driven member adapted to be engaged by said movable member.

8. The combination in a bicycle with a pedal-shaft, of a driver secured thereto, a drum mounted thereon, a sleeve secured to said drum, planetary gears on said drum one of the same adapted to mesh with said driver and an internal gear adapted to mesh with another of the said planetary gears.

9. The combination with a shaft, of a driving member secured thereto, a driven member loosely mounted thereon and having notches, movable members on said driving member adapted to enter said notches, means for radially moving said movable members, and hand-controlled means for shifting said moving means.

10. The combination with the pedal-shaft of a bicycle, of a power-transmitter loosely mounted with reference to the pedal-shaft, a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said power-transmitter, transmitting-gears interposed between said shaft and said power-transmitter, and means for operating the clutch and also changing the relative condition of said gears to thereby disconnect said shaft from the power-transmitter and render the gears operative to transmit motion and conversely to connect said shaft with said power-transmitter and render said gears inoperative.

11. The combination with the pedal-shaft of a bicycle, of a power-transmitter loosely mounted with reference to the pedal-shaft, a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said transmitter, a driving-pinion rigid with said shaft, transmitting-gears, one of which meshes with said pinion, and means for operating the clutch and also changing the relative condition of said transmitting-gears to thereby disconnect said shaft from the power-transmitter and render the gears operative to transmit motion and conversely to connect said shaft with said power-transmitter and render said gears inoperative.

12. The combination with the pedal-shaft of a bicycle, of a power-transmitter loosely mounted with reference to the pedal-shaft, a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said power-transmitter, a driving-pinion rigid with said shaft, transmitting-gears, one of which meshes with said pinion, a gear with which another of said transmitting-gears is adapted to engage and from which it may be disengaged, and means for operating the clutch and effecting the engagement of the said other transmitting-gear with and its disengagement from said gear with which it is adapted to engage.

13. The combination with the pedal-shaft of a bicycle, and a power-transmitter loosely mounted with reference to the pedal-shaft, of a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said power-transmitter, a driving-pinion rigid with said shaft, transmitting-gears, one of which meshes with said pinion, a gear with which another of said transmitting-gears is adapted to engage and from which it may be disengaged, and a cam-operating member for shifting the clutch and effecting the engagement of the said other transmitting-gear with and its disengagement from said gear with which it is adapted to engage.

14. The combination with the pedal-shaft of a bicycle, and a power-transmitter loosely mounted with reference to the shaft, of a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said power-transmitter, a driving-pinion rigid with said shaft, transmitting-gears, one of which meshes with said pinion, a gear with which another of said transmitting-gears is adapted to engage and from which it may be disengaged, a rotatable and longitudinally-slidable member for operating the clutch and effecting the engagement of the said other transmitting-gear with and its disengagement from said gear with which it is adapted to engage, and means for effecting the longitudinal movement of said slidable member during its rotation.

15. The combination with the pedal-shaft of a bicycle, and a power-transmitter loosely mounted with reference to the pedal-shaft, of a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said power-transmitter, a driving-pinion rigid with said shaft, transmitting-gears, one of which meshes with said pinion, a gear with which another of said transmitting-gears is adapted to engage and from which it may be disengaged, a cam-operating member for shifting the clutch and effecting the engagement of the said other transmitting-gear with and its disengagement from said gear with which it is adapted to engage, an actuator-rod for said member and which extends upward within reach of the rider, and a connection between said rod and said member.

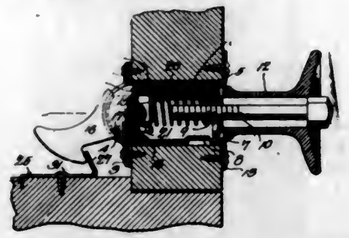
16. The combination with the pedal-shaft of a bicycle, and a power-transmitter loosely mounted with reference to the shaft, of a driver rigid with said shaft, a clutch for connecting the driver with and disconnecting it from said power-transmitter, a driving-pinion rigid with said shaft, transmitting-gears, one of which is in mesh with said pinion, a gear with which another of said transmitting-gears is adapted to engage and from which it may be disengaged, a cam-operating sleeve for shifting the clutch and effecting the engagement of the said other transmitting-gear with and its disengagement from said gear with which it is adapted to engage, a telescopic actuator-rod for said member and which extends upward within reach of the rider, and a connection between said rod and said member.

17. The combination with the crank-hanger of a bicycle, of a shell detachably secured in said hanger, a pedal-shaft mounted in said shell, a speed-changing gear also mounted in said shell, and an actuator-rod extending upward through the frame of the bicycle to a point accessible to the rider.

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754,721. LATCH. DANIEL W. TOWER, Grand Rapids, Mich. Filed Apr. 22, 1903. Serial No. 153,838. (No model.)



*Claim.*—1. In combination, a casing, a yoke carried by the casing, a dome-shaped cap-piece secured to the casing and provided with a diametrical slot, a catch extending through the slot and pivotally connected to the yoke, and a spring bearing against the catch to maintain the same in locked position.

2. In combination, a pivotally-mounted catch having a pair of diametrically-opposed shoulders, a spring bearing against one of the shoulders and serving to normally maintain the catch in locking position and a push-knob mechanism having operative connection with the opposite shoulder for moving the catch to unlocking position against the stress of the spring.

3. In combination, a pivotally-mounted catch having a pair of oppositely-directed shoulders, a spring bearing against one of such shoulders and serving to maintain the catch in locking position, a longitudinally-movable member adapted to engage the opposite shoulder for movement of the catch to unlocking position and a push-knob adjustably connected to said member.

4. In combination, a pivotally-mounted catch, having a pair of oppositely-directed shoulders, a spring bearing against one of the shoulders and serving to maintain the catch in locking position, a slidable shell having a tubular portion provided with an internal thread, and a push-knob having a threaded stem adjustable in the threaded tubular portion.

5. In combination, a pivotally-mounted catch, having a pair of oppositely-directed shoulders, a yoke for the support of the catch, said yoke having a spring-receiving slot, a helical spring bearing against one of the shoulders and having a portion entering the slot to thereby prevent contact with the opposite shoulder and a push-knob having operative connection with said opposite shoulder.

6. In combination, a pivotally-mounted catch having a pair of oppositely-directed shoulders, a spring bearing against one of the shoulders, means for preventing contact of the spring with the opposite shoulder, and a push-knob having operative contact with said opposite shoulder.

7. In combination, a pivoted catch, a spring bearing directly on one side of the pivot-pin of the catch and normally maintaining the latter in locked position, a longitudinally-movable member for positively engaging the opposite side of the catch and moving the same to unlocking position, means for limiting the movement of said member in both directions, and a push-knob engaging said member and adjustable with respect thereto.

8. In combination, a pivotally-mounted catch, a spring for normally maintaining the catch in locked position, a longitudinally-movable member for moving the catch to unlocking position, and forming also a casing and a bearing for the spring, means for preventing rotative movement of said member, a head or knob having a non-circular push-knob-guide opening, and a push-knob extending through said opening and adjustably connecting the longitudinally-movable member.

9. In a device of the class specified, the combination with a cylindrical body portion having a depression or inset and provided at one end with an annular flange, a dome-shaped cap-piece secured at the flange and provided with a diametrical slot, a catch extending through the slot, a yoke carried by the cap-piece and to which said catch is pivotally connected, said yoke being provided with a spring-receiving slot, a longitudinally-movable shell disposed within the body portion and slotted for the reception of the depressed or inset of said body portion, said shell bearing at one end against a portion of the catch and being provided at its opposite end with a threaded tubular neck, a push-knob having a threaded stem adapted to the threaded neck, a spring bearing against the catch to maintain the same in locked position and having a portion entering the slot of the yoke, a knob or head having an opening for the passage of the push-knob, and a face-plate or escutcheon for securing the knob in position.

10. The combination with a catch, of a keeper comprising a body portion, having an opening for the passage of a securing device, and provided with an integral prong for engagement with the surface to which the keeper is to be attached, said prong being initially bent outward so that its pointed entrance end shall be approximately in the general plane of the base of the catch.

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754,722. WHEELED VEHICLE OR MACHINE. LORIN W. TOWER, Keene, N. H. Filed Feb. 21, 1901. Serial No. 48,275. (No model.)



*Claim.*—1. The combination with a frame, three supporting-wheels therefor, one of which is also a guiding-wheel, and a head supported upon said guiding-wheel and provided with conical bearing-surfaces, of a conical hood that is carried by said frame, fits over and rests exclusively upon said bearing-surfaces and is movable relatively thereto in one plane only.

2. The combination with a frame, three supporting-wheels therefor, one of which is also a guiding-wheel, and a head supported upon said guiding-wheel and having a conical bearing-surface, of a conical hood that is rigidly connected to said frame and rests solely upon said bearing-surface and is movable relatively thereto in one plane only.

3. The combination with a frame and supporting-wheels therefor, of a frusto-conical head supported by at least one of said wheels and having a plurality of inclined, annular bearing-surfaces in different horizontal planes, and a conical hood that constitutes a part of said frame, fits over and rests exclusively upon the bearing-surfaces of said head and is movable relatively thereto in one plane only.

4. The combination with a frame, supporting-wheels therefor and a head supported upon at least one of said wheels and provided with two frusto-conical bearing-surfaces in different horizontal planes and separated by an annular recess, of a conical hood that is carried by said frame, fits over and rests exclusively upon said surfaces and is movable relatively thereto in one plane only.

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754,723. LEVELING INSTRUMENT. GEORGE G. TOWNSEND, Frostburg, Md. Filed June 16, 1903. Serial No. 161,706. (No model.)

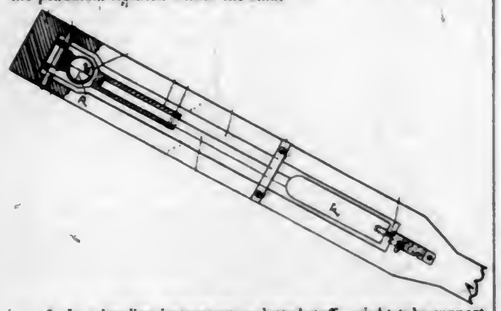
*Claim.*—1. In a leveling instrument, a slotted staff, a sight-tube support suspended within the staff-slot, and a pendulum suspended from the tube-support and situated in said slot, and a screw and opposing spring for adjusting the relation of the pendulum to the said support.

2. In a leveling instrument, a slotted staff, a sight-tube support suspended within the staff-slot, and a pendulum suspended from the tube-support and situated within said slot, and means for preventing the pendulum swinging in a plane transverse to the length of the tube, said means consisting of the parts of the staff immediately adjacent the slot.

3. In a leveling instrument, a slotted staff, a sight-tube support suspended within the staff-slot, and a pendulum suspended from the tube-support and situated in said slot, and means for preventing the pendulum swinging in a plane transverse to the length of the tube, said means consisting of the parts of the staff immediately adjacent the slot, and stops S to limit the swing of the pendulum within the slot in a direction lengthwise the tube.

4. In a leveling instrument, a slotted staff, a sight-tube support suspended within the staff-slot, and a pendulum suspended from the

tube-support and situated in said slot, and means for preventing the pendulum swinging in a plane transverse to the length of the tube, said means consisting of the parts of the staff immediately adjacent the slot, and a wind-guard embracing the staff and also embracing the pendulum situated within the staff.



5. In a leveling instrument, a slotted staff, a sight-tube support suspended within the staff-slot, and a pendulum suspended from the tube-support and situated in said slot, and a spring-stop R to hold the pendulum immovable.

6. In a leveling instrument, the slotted staff, the hollow tube-support suspended in the staff-slot, the pendulum having a rod extending into the hollow of the support and filling the same in a direction transverse to the length of the tube and pivoted therein near the mouth of said hollow, the support having a hollow flared-in shape to permit the rod to swing on a pivot in a direction lengthwise the tube, and having walls fitting the pendulum-rod to prevent transverse oscillation.

7. In a leveling instrument, the slotted staff, the hollow tube-support suspended in the staff-slot, the pendulum having a rod extending into the hollow of the support and filling the same in a direction transverse to the length of the tube and pivoted therein near the mouth of said hollow, the latter being flared in shape to permit the rod to swing on a pivot in a direction lengthwise the tube, and an adjusting-screw and opposing spring bearing on the rod within the hollow.

8. In a leveling instrument, the rotatable staff, the sight-tube suspended in said staff, and similar eyepieces, one in each end of the tube, said eyepieces each comprising a partially-closed end of the tube provided with a peep-hole and an opening beside the closed part provided with a cross-wire.

9. In a leveling instrument, a supporting-staff, a sight-tube, a sight-tube support suspended in the staff, and a pendulum suspended from said support, the support being pivoted in the staff above the situation of the tube.

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754,724. PUZZLE. LEONARD VAN PUTTEN, Holland, Mich. Filed Oct. 12, 1903. Serial No. 176,633. (No model.)



*Claim.*—1. A puzzle comprising a spindle provided on one end with a fixed knob and at the other end with a knob mounted to turn loosely on the spindle, blocks mounted to turn loosely on the spindle, between the knobs, and projections on opposite faces of adjacent blocks and the said loose knob, as set forth.

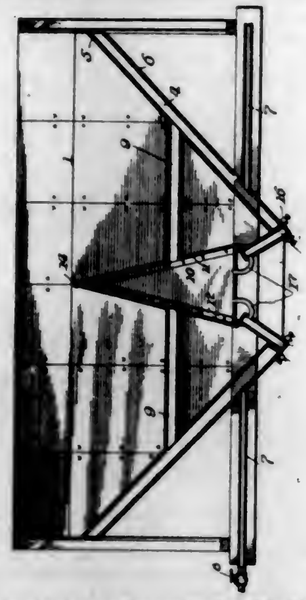
2. A puzzle comprising a spindle provided at one end with a fixed knob and at the other end with a knob mounted to turn loosely on the spindle, blocks mounted to turn loosely on the spindle, between the knobs, projections on opposite faces of adjacent blocks and the said loose knob, and legends on the peripheral face of each of the blocks, properly-alined legends of the several blocks forming a set, as set forth.

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754,725. STEEL CAR. PETER WAGNER, North Braddock, Pa. Filed Dec. 21, 1903. Serial No. 186,035. (No model.)

*Claim.*—1. In a steel car, the combination of double walls forming steam-jackets, a central dome communicating with said jackets, hopper-doors having steam-jackets formed therein, flexible connections leading from said central steam-dome to said steam-jackets formed in said doors, substantially as described.

2. In a steel car, the combination of double walls forming steam-jackets, a central dome communicating with said jackets, hopper-doors having steam-jackets formed therein, flexible connections communicating with said hopper-doors, and said steam-dome, and drain-cocks arranged at the lower end of said doors, substantially as described.



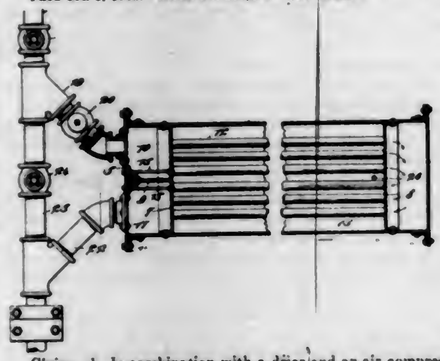
3. In a steel freight-car, the combination of double walls forming the sides of the car extending partly to the top thereof, inclined sides forming double walls having drain-cocks arranged at the lower end thereof, a central steam-dome communicating with said double walls, hopper-doors connected to said steam-dome having steam-jackets formed therein, substantially as described.

4. In a steel car, the combination of double side walls forming steam-jackets, a central steam-dome communicating with said jackets, doors hinged to the lower end of said steam-dome, flexible connections communicating with said steam-dome and doors, and means to operate said doors, substantially as described.

5. In a steel car, the combination of double side walls forming steam-jackets, a central steam-dome communicating with said steam-jackets, a steam train-line communicating with said jackets, hinged doors having steam-jackets formed therein, and means to convey the steam from said steam-dome into the doors, substantially as described.

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754,726. AIR-HEATER. JOHN WATERHOUSE, New York, N. Y. Filed Oct. 1, 1902. Serial No. 125,470. (No model.)



*Claim.*—1. In combination with a drier and an air-compressor, a heater, an exhaust-trap having communication with the heater, a pipe leading from the compressor, a valve in said pipe, a branch leading from the pipe into one end of the heater, a valve in said branch, a branch leading from said heater to the drier, a by-pass connecting the two branches, and a valve in the by-pass, the said valve in the branch and the valve of the by-pass being directly in front of the heater and close together, and the said branch valve being between the other two valves.

2. A heater for the purpose described, comprising a cylinder, outer headers on the ends of said cylinder, inner headers arranged in the cylinder and spaced from the outer headers, a partition arranged in one of said spaces, angle-plates bolted to said partition and to the inner header, and bolts attached to said partition for passing through the outer header, substantially as specified.



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754,727. RAIL-JOINT. WILLIAM WATKINS, Monessen, Pa. Filed Dec. 5, 1903. Serial No. 183,868. (No model.)

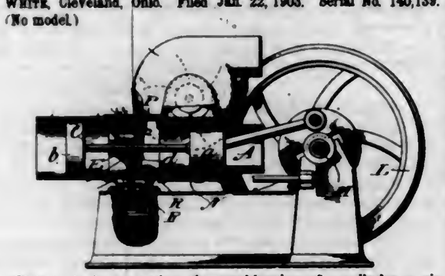


*Claim.*—1. A rail-joint comprising in combination with a saddle-plate, a rail-chair having portions thereof bent upwardly to embrace the rails and portions bent downwardly to embrace the side edges of said plate, said plate and upwardly-bent portions of the chair having spike-notches therein, said plate and chair being spiked to the cross-ties, the downwardly-bent chair portions extending between the cross-ties.

2. A rail-joint comprising in combination with a saddle-plate, a rail-chair having portions embracing the plate and the rail, with the rail-embracing portions spiked to the cross-ties, and auxiliary saddle-plates seating on said saddle-plate and simultaneously spiked therewith to the cross-ties.

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754,728. COOLING DEVICE FOR EXPLOSIVE-ENGINES. JAMES WHITE, Cleveland, Ohio. Filed Jan. 22, 1903. Serial No. 140,139. (No model.)



*Claim.*—1. In an engine, the combination of a cylinder, a piston working therein, a piston-rod extending through the head of the cylinder, a stuffing-box or packing for the piston-rod, an inclosed air-space about the stuffing-box or packing, and means for causing air to circulate through the said air-space to keep the stuffing-box or packing cool, substantially as set forth.

2. In an explosive-engine, the combination of an explosion-cylinder, a piston-rod extending through the head of the same, a stuffing-box or packing for the piston-rod, an air-space about the said stuffing-box, and means for causing an air circulation about the said stuffing-box to cool the same, substantially as set forth.

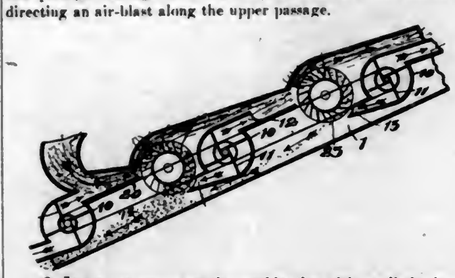
3. In an explosive-engine, the combination of an explosion-cylinder, a casing G surrounding the same, means for causing circulation of air through the said casing, a piston-rod extending through the head of the cylinder, a stuffing-box or packing for the piston-rod, and an air-space about the said stuffing-box also connected with the said means for causing a circulation of air, substantially as set forth.

4. In an explosive-gas engine, the combination of an explosion-cylinder, a casing surrounding the same, means for causing a circulation of air through the casing, a piston-rod extending through the head of the cylinder, a stuffing-box or packing for the piston-rod, and a casing inclosing an air-space about the said stuffing-box or packing, the said casing being connected with the casing surrounding the explosion-cylinder, whereby air is caused to circulate about both the stuffing-box and explosion-cylinder to keep them cool, substantially as set forth.

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754,729. GRAIN-SEPARATOR. JAMES K. WHITE, Mansfield, Ohio. Filed May 14, 1903. Serial No. 157,078. (No model.)

*Claim.*—1. In a grain-separator, the combination with an idler-cylinder having buckets, and a surrounding screen; of a casing having a passage leading to and over said cylinder outward, and a second passage leading beneath said cylinder inward, and means for directing an air-blast along the upper passage.



2. In a grain-separator, the combination with a cylinder having buckets, and a surrounding screen; of a casing having a passage leading diametrically toward and thence curving upward over said cylinder outward, a partition within the casing beneath this passage, and a lower passage leading along within the casing beneath the cylinder inward, and means for directing air-blasts outward along the upper passage and inward along the lower passage.

3. In a grain-separator, the combination with an upwardly-inclined casing having a passage leading outward along its top and another passage leading inward along its bottom; of a series of separating-cylinders journaled within the casing between said passages, partitions dividing the latter from each other, buckets within the cylinders, screens surrounding them and of different mesh on different cylinders, and means for directing an air-blast outward along the upper passage and inward along the lower passage.

4. In a grain-separator, the combination with an upwardly-inclined casing having a passage leading outward along its top and another passage leading inward along its bottom; of a series of separating-cylinders journaled within the casing between said passages, partitions dividing the latter from each other, buckets within the cylinders, screens surrounding them and of different mesh on different cylinders, and means for directing an air-blast outward along the upper passage and inward along the lower passage, said cylinders being rotated by said air-blasts only.

5. In a grain-separator, the combination with an upwardly-inclined casing having a passage leading outward along its top and another passage leading inward along its bottom; of a series of separating-cylinders journaled within the casing between said passages, partitions dividing the latter from each other, buckets within the cylinders, screens surrounding them and of different mesh on different cylinders, means for directing an air-blast outward along the upper passage and inward along the lower passage; and a series of rotary fans located within the casing between the cylinders each having an upper mouth directing an air-blast outward along the upper passage and a lower mouth directing an air-blast inward along the lower passage.

6. In a grain-separator, the combination with a casing having a passage leading along its top and another passage leading along its bottom; of a series of separating-cylinders journaled within the casing between said passages, buckets within the cylinders, screens surrounding them, a series of fans journaled in the casing between the cylinders, each having an upper mouth directing a blast of air outward along the upper passage and a lower mouth directing a blast of air inward along the lower passage, and means for rotating these fans in unison, the cylinders being driven by the air-blasts only.

7. In a grain-separator, the combination with a cylinder having buckets provided with closed inner ends, and surrounding screen, of a casing having a passage leading to and over said cylinder outward, a second passage leading beneath said cylinder inward, and means for directing an air-blast along the outer passage.

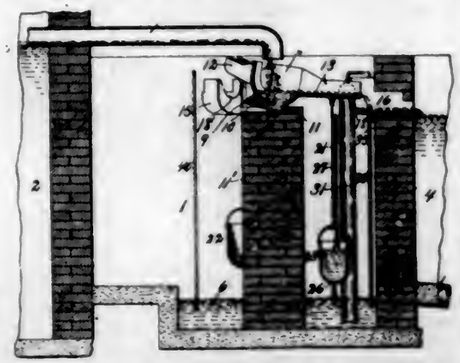
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754,730. LIQUID-DISTRIBUTING SYSTEM. ROGER B. WILLIAMS, Jr., and EZRA B. WHITMAN, New York, N. Y. Filed Apr. 29, 1903. Serial No. 154,812. (No model.)

*Claim.*—1. In a liquid-distributing system, a liquid-receiver having separate outlets in radial lines at an angle with each other and tiltable in the direction of each outlet, and means actuated by portions of the accumulating overflow from one of the outlets to automatically tilt the receiver in the direction of one of its other outlets.

2. In a liquid-distributing system, a liquid-receiver balanced to tilt in different radial angles and having a plurality of outlets one at each tilting angle the receiver being automatically and successively

tilted in the direction of each outlet by portions of the accumulated liquid escaping from one of the outlets.



3. In combination with a tiltable bowl having separate outlets radiating at different angles from the center of the bowl, a liquid-supply discharging continuously into the bowl, and means actuated by portions of the accumulated discharge from one of the outlets for tilting the bowl in the direction of one of its other outlets.

4. In combination with a tiltable bowl having separate outlets extending in different radial lines from the center of the bowl, a liquid-supply discharging continuously into the bowl and separate devices for successively tilting the bowl in the direction of its outlets, the device for each outlet being brought into action by portions of the accumulated discharge from one of the other outlets.

5. A liquid-feed and a receiving-bowl having separate outlets in different radial lines, said bowl being balanced to tilt in the direction of and to discharge from each outlet successively and separately and separate devices actuated by the discharge from said outlets to tilt the bowl whereby a continuous cycle of automatic discharges is established.

6. In combination, a liquid-feed, a receiving-bowl having radial channeled arms and adapted to tilt in the direction of each arm, buckets suspended from the arms, and means to conduct portions of the accumulated discharge from one arm to the bucket of another arm whereby the bowl is tilted in the direction of the latter arm.

7. In combination, a liquid-feed, a receiving-bowl having radial channeled arms and adapted to tilt in the direction of each arm, buckets suspended from the arms, and means to conduct portions of the accumulated discharge from one arm to the bucket of another arm whereby the bowl is tilted in the direction of the latter arm, said buckets having drainage-orifices.

8. In combination, a liquid-supply, a tank receiving the liquid, an overflow-pipe leading from the tank and determining the level of the liquid therein, a siphon having one leg immersed in the liquid in the tank, an upright pipe connected to the overflow-pipe and tapped into the siphon whereby the liquid flowing through the overflow and downwardly into the upright pipes causes a partial vacuum in the siphon to automatically start the flow of liquid from the tank through the siphon.

9. In combination with a plurality of tanks, means for discharging liquid into the tanks, separate siphons immersed in the liquid of the tanks to draw off the water from each tank separately, each tank having an overflow-conduit discharging beneath the water-line and tapped into the siphon of one of the other tanks at a point above the water-line whereby the overflow from one tank brings into action the siphon of the other tank with which its overflow is connected to discharge the same.

10. In a liquid-distributing system, a liquid-feed, a tiltable bowl receiving the liquid and provided with channeled arms for conducting the liquid from the bowl, separate tanks for receiving the liquid from said arms, buckets attached to the arms, overflow-conduits leading from the tanks, that from one tank discharging into the bucket of another tank, separate siphons for drawing off the liquid from the tanks additional overflow-conduits from said tanks, that from one tank being connected to produce a partial vacuum in the siphon of another tank to start the flow therein.

11. In combination with a series of tanks and a liquid-supply, a bowl receiving the liquid from the supply and provided with a series of outlets radiating at different angles from the center of the bowl one for each tank, said bowl being adapted to be tilted in the direction of each outlet, overflow-conduits for the tanks, separate devices actuated by the separate overflows to successively tilt the bowl in the direction of each outlet, and automatic devices brought into action by the liquid in the tanks to successively empty the latter.

12. In combination, a liquid-supply, a tank receiving the liquid, an overflow-pipe leading from the tank, a second liquid-containing tank, a siphon having one leg immersed in the liquid in the second tank, a liquid seal for the other end of the siphon, and an upright pipe connected to the overflow and also to the upper portion of the siphon, whereby the liquid from the overflow descending in the upright pipe causes a partial vacuum in the upper end of the siphon and starts the flow of liquid from the second tank through the siphon.

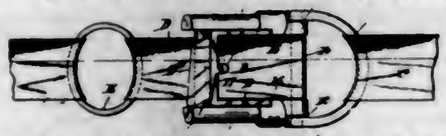
13. In a liquid-distributing system, a bowl and radial bearings therefor, the bowl having outlets between the bearings and tiltable in the direction of the outlets, in combination with means for supplying liquid to the bowl and automatic means for tilting the bowl successively in the direction of each outlet.

14. In a liquid-distributing system, a support having radial grooves, a bowl having its bottom provided with radial ribs seated in the grooves, channeled arms projecting radially from the bowl between its ribs, means for supplying liquid to the bowl, and means actuated by the liquid overflowing from one of the arms to tilt the bowl in the direction of one of the other arms.

15. In a liquid-distributing system, a bowl and support therefor, one of the parts having radial grooves and the other radial ribs seated in the grooves, channeled arms projecting radially from the bowl, buckets suspended from the arms, means to supply liquid to the bowl, a receptacle for each arm to receive the liquid therefrom, and separate overflow-pipes discharging into the buckets.

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**754,781. BUCKLE. ABRAHAM ADDINGTON, Cedarville, Cal. Filed May 5, 1903. Renewed Jan. 13, 1904. Serial No. 188,926. (No model.)**



*Claim.*—1. A buckle consisting of a main frame, a bail pivotally connected with one end of the main frame, a cross-bar at the other end of the main frame, and a spring-controlled locking-frame pivoted within the main frame and adapted when in locking position to be in close proximity to the cross-bar of the main frame for the purpose of locking material to said cross-bar when the material is passed between the locking-frame and the cross-bar.

2. A buckle consisting of a main frame, comprising side pieces and a cross-bar connecting the side pieces at one end, a bail located at the open end of the main frame, a pivot-pin passed through the free end portions of the side members of the main frame and through the bail, and a spring-controlled locking-frame pivoted in the main frame, comprising side members and a connecting cross-bar, which cross-bar is a locking-bar, being provided with teeth at its outer longitudinal surface adapted to substantially engage with the cross-bar of the main frame when the locking-frame is in locking position.

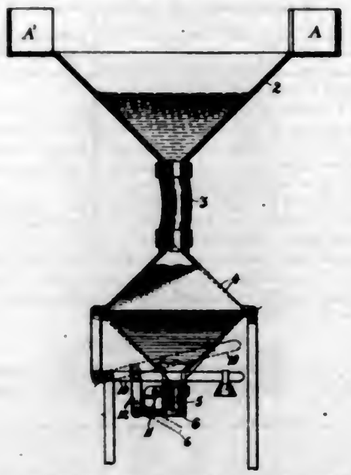
3. A buckle consisting of a main frame, comprising side pieces and a cross-bar connecting the side pieces at one end, a bail located at the open end of the main frame, a pivot-pin passed through the free end portions of the side members of the main frame and through the bail, a spring-controlled locking-frame pivoted in the main frame, comprising side members and a connecting cross-bar, which cross-bar is a locking-bar, being provided with teeth at its outer longitudinal surface adapted to substantially engage with the cross-bar of the main frame when the locking-frame is in locking position, a handle for the locking-frame, and stops carried by the main frame limiting the movement of the locking-frame in one direction, whereby the locking-frame can be carried from the main frame in one direction only, as set forth.

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**754,782. AUTOMATIC SILT AND SAND SEPARATOR. CHARLES ALLEN, El Paso, Tex. Filed June 8, 1903. Serial No. 160,485. (No model.)**

*Claim.*—1. In a settling apparatus, the combination with a conduit-section having a side opening forming a lateral discharge, a second conduit-section having a side opening presented toward the discharge of the first section said sections being separated from each other, and a fluid-container forming a transverse continuous connection between the discharge of one conduit-section and the inlet of the second section, of a subjacent tilting tank having communication with said container, and having a valve-controlled sand-discharge automatically governable in unison with the oscillations of said tank.





2. In a settling apparatus the combination with a fluid-conduit composed of overlapping sections separated from each other and having their inner sides open to divert the flow and form a lateral passage from one section to the other, and a fluid-container occupying the space between the sections and having opposite sides connecting with and forming a lateral communication between the open sides of the sections, of an inclosed subjacent tilting tank having communication with said container and having a sand-discharge outlet, and a valve in said outlet operatable automatically in unison with the tilting of the tank.

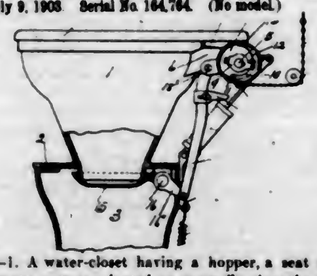
3. In a settling apparatus, an inclosed tank hinged at one end and resiliently supported at the other, and capable of a limited oscillating movement, communications between said tank and a source of water-supply, said tank having an inclined bottom and a sand-discharge outlet therein, means for counterbalancing the tank, and a valve in said outlet connected with the counterbalance connections and operatable in unison with the oscillations of the tank.

4. In a settling and separating apparatus, the combination of a box having an inclined bottom interposable in a fluid-conduit, a closed tank having an inclined bottom disposed subjacent to said box, said tank pivoted at one side and having counterbalanced connections at the opposite side, flexible fluid-conducting connections between said box and tank, and a valve-controlled sand-discharge outlet operatable by the said counterbalanced connections.

5. The combination with parallel flume-sections open on their adjacent sides and closed at their outer and opposite ends, of interposed inclined-bottomed settling-boxes, the opposite portions of which connect directly with said open sides thereby forming a continuous lateral passage from one section to the other, and a tiltable tank in relation to each box and communicating therewith, said tanks having each a valve-controlled sand-discharge outlet.

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**754,783. WATER-CLOSET. PATRICK A. ALLEN, Toledo, Ohio. Filed July 9, 1903. Serial No. 164,764. (No model.)**



*Claim.*—1. A water-closet having a hopper, a seat pivotally attached thereto, a trap adapted to normally close the throat of said hopper, a loosely-mounted member having connection with said trap, means rigidly connected to the pivot of said seat adapted to engage and move said member and cause said trap to open when said seat is raised, and adjustable means for releasing said engaging means at a predetermined point to permit said trap to return to its normal position.

2. A water-closet having a hopper, a seat pivotally attached thereto and adapted to be automatically raised when released, a trap pivotally mounted adjacent to and adapted to close the throat of said hopper, a disk loosely mounted on the pivot of said seat and connected to said trap, a dog attached to said pivot and adapted to engage said disk and cause a limited rotary movement thereof and said trap to be opened when said seat is raised, and means for releasing said dog to permit said disk and trap to return to their normal positions.

3. A water-closet having a hopper, a seat pivoted thereto, a rotatable member, a trip-chain attached to said member and adapted to be tripped by a movement thereof, a dog movable with the pivot of said seat and adapted to engage and move said member, and adjustable means movable with said member and adapted to trip said dog at a predetermined point.

4. A water-closet having a hopper, a seat pivoted thereto and adapted to be automatically raised, a disk loosely mounted on the pivot of said seat, a trip-chain attached to said disk, a dog attached to said pivot and adapted to engage said disk and cause a limited rotary movement thereof and said chain to be tripped when said seat is raised, and means for tripping said dog at a predetermined point.

5. In a water-closet, a hopper, a seat pivotally attached thereto and adapted to automatically rise when released, a disk mounted adjacent to said seat, a trip-chain connected to said disk, a trap adapted to close the throat of said hopper and having connection with said disk, means rigidly connected to and moved by the pivot of said seat for causing a rotary movement of said disk and movements of said trap and trip-chain, and adjustable means adapted to limit the movement of said disk and means, substantially as described.

6. A water-closet having a hopper, a seat pivoted thereto and adapted to be automatically raised, a trap for closing the throat of said hopper, a trip-chain for causing a flush of water in said hopper, a movable member having connection with said trap and chain, means connected to the pivot of said seat for engaging and causing a movement of said member when said seat is raised and a simultaneous flushing of said hopper and opening of said trap, and a member adapted to engage and release said means and permit said movable parts to return to their normal positions.

7. A water-closet having a hopper, a seat pivoted thereto and adapted to automatically rise, a trap for closing the throat of said hopper, a trip-chain for causing a flush of water in said hopper, a movable member having connection with said trap and chain adapted to be normally retained in one position, a dog, movable with said seat, attached to the pivot thereof and adapted to engage said member and cause a desired movement thereof and a simultaneous flushing of the hopper and opening of said trap when said seat is raised, means for releasing said member, and means for causing a retarded movement of said parts.

8. A water-closet having a hopper, a seat pivoted thereto and adapted to automatically rise, a trap adapted to normally close the throat of said hopper, a trip-chain, a disk in connection with said trap and chain, a spring-pressed dog movable with said seat and adapted to engage said disk and cause a simultaneous movement of said trap and chain when said seat is raised, a member to release said dog, means engaging with said disk for causing a retarded movement thereof, and means for causing a retarded movement of said seat.

9. The combination in a water-closet of a hopper, a seat, pivoted thereto, a member loosely mounted on the pivot of said seat, a dog rigid to said pivot and adapted to move said member, a trip-chain connected to and adapted to be pulled by the movement of said member and adjustable means for tripping said dog at a predetermined point.

10. The combination in a water-closet, of a hopper, a seat pivoted thereto, a member loosely mounted on the pivot of said seat, a pawl secured to and adapted to be turned by a movement of said pivot and to engage and rotate said member, a trap adapted to close the throat of said hopper, connection between said trap and member for causing a movement of the latter to move the former and means for tripping said pawl at a predetermined point in its movement, substantially as described.

11. The combination with a water-closet having a hopper, a seat pivoted thereto, a trap adapted to normally close the throat of said hopper, and flushing means, of a rotatable disk having connection with said trap and flushing means, a dog adapted to be moved

by an upward movement of said seat and to rotate said disk and cause a simultaneous movement of said trap and flushing means and means adapted to coact with and trip said dog in its upward movement, substantially as described.

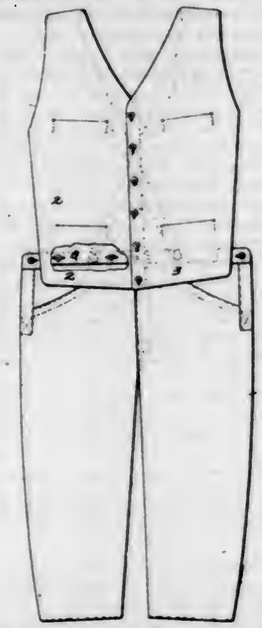
12. The combination with a water-closet having a hopper, a seat, a trap adapted to normally close the throat of said hopper, and flushing means, of a rotatable member having connection with said trap and flushing means, a ratchet member having a common axis with said seat and moved thereby, said ratchet adapted to engage and rotate said rotatable member a desired distance in one direction causing said trap to open and said hopper to be flushed, and automatic releasing means for said ratchet member.

13. The combination with a water-closet having a hopper, a seat, a trap adapted to normally close the throat of said hopper, and flushing means, of a disk having connection with said trap and flushing means and adapted to move the same, a ratchet member adapted to be moved by said seat and cause said disk to rotate a desired distance, said disk, seat and ratchet member having a common axis, and means for releasing said ratchet member and permitting said parts to return to their normal positions.

14. The combination with a water-closet having a hopper, a seat, a trap adapted to fit loosely around the throat of said hopper and normally close the same, and flushing means, of a disk and a ratchet member mounted on a common axis, said disk having connection with said trap and flushing means and adapted to move the same when said seat is raised causing said hopper to be flushed and said trap opened, releasing means to cause said parts to return to their normal positions, and separate means for causing retarded movements of said disk and seat, substantially as described.

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**754,734. WEARING-APPAREL.** LOUIS S. ALTHEIMER, St. Louis, Mo. Filed Sept. 3, 1903. Serial No. 171,745. (No model.)



*Claim.*—A detachable supporter for overalls and the like, composed of sections 2 and 3 the front portions of which are cut in the form of a vest, said portions terminating in continuous straps 4 and 5, the said continuations forming the completed suspenders; flaps 8 and 9 secured on the inside of said sections and running parallel with the lower edges thereof and located at points distant from the lower edge thereof, and being provided with buttonholes for attachment to the front portion of the overalls; and reinforcing-strips 6 stitched to the outer and inner edges of the sections 2 and 3 and to the ends of the flaps 8 and 9 by means of stitching 7, said reinforcing-strips passing from the lower front edge of the supporter to the ends of the straps 4 and 5, whereby the strain incident to the use of the garment is imparted to said straps, substantially as specified.

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**754,735. FLEXIBLE PHOTOGRAPHIC FILM.** FREDERICK A. ANTHONY, Hackensack, N. J. Filed Apr. 16, 1903. Serial No. 153,230. (No model.)

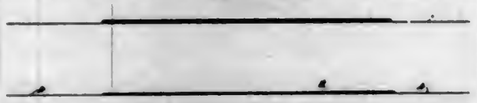
*Claim.*—1. A flexible photographic film embodying a suitable flexible support, a protective coating of soluble and colored material applied to one side of the support and a coating of sensitive material applied to the opposite side thereof.

2. A flexible photographic film embodying a suitable flexible support, a protective coating of soluble and colored material applied to one side of the support and a coating of sensitive material applied to the opposite side and designations of the kind stated upon the back of the soluble colored coating.

3. A flexible photographic film embodying a suitable flexible support, a protective coating of soluble and colored material applied to one side of the support, a coating of sensitive material applied to the other side of the support, designations of the kind stated upon the back of the soluble, colored coating and pieces of opaque or light-excluding material attached at the ends of the film to protect it against the action of light when rolled up.

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**754,736. PHOTOGRAPHIC FILM.** RICHARD A. ANTHONY, New York, N. Y. Filed Oct. 8, 1903. Serial No. 176,181. (No model.)



*Claim.*—1. A flanged spool having wound upon it a strip of opaque material having directly applied and permanently attached to one side thereof a coating of photographically-sensitive material and having designations on the other side.

2. A flanged spool having wound upon it a strip of opaque material having directly applied and permanently attached to one side thereof a coating of photographically-sensitive material and having designations on the other side, the ends of the opaque material extending beyond the part of the sensitive coating upon which the exposures are to be made.

3. A flanged spool having wound upon it a strip of opaque material, one side of which is partly covered with a coating of photographically-sensitive material permanently attached thereto and applied directly thereon, leaving uncoated ends of sufficient length to protect the photographically-sensitive coating from the action of light when coiled upon the flanged spool, and designations on the other or back side of the opaque material.

4. A flanged spool having wound upon it a strip of opaque material having designations on one side and having attached to its other side a shorter strip of paper having photographically-sensitive material directly applied thereon and permanently attached thereto.

5. As a new article of manufacture a sheet or strip of opaque material having a coating of photographically-sensitive material directly applied on one side thereof and permanently attached thereto and having designations on the back or uncoated side.

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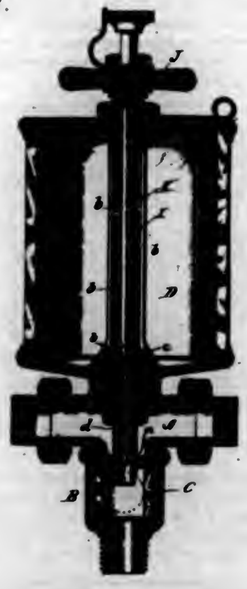
**754,737. LUBRICATOR.** JEROME J. ASH, Cincinnati, Ohio, assignor to the Lunkenheimer Company, Cincinnati, Ohio, a Corporation of Ohio. Filed Aug. 10, 1903. Serial No. 169,029. (No model.)

*Claim.*—1. In lubricator construction, a coupling leading to the parts to be lubricated and having as many branches as desired, a connection from a source of constant oil-supply under pressure leading into said coupling, an auxiliary oil-cup secured upon the top of said coupling and provided with a valve seated upon a valve-seat in said coupling and controlling the outlet from the source of constant oil-supply and containing therein an auxiliary valve controlling a passage from said oil-cup through the first-mentioned valve, substantially as described.

2. The combination of the connecting-chamber, A, with one or more branches adapted to be connected to a source of constant oil-supply, a connection from said chamber to the parts to be lubricated, an auxiliary oil-cup upon said chamber and provided with a valve controlling the exit from said chamber to the part to be lubricated, said valve being hollow and provided with an auxiliary valve for permitting the exit of the oil in the oil-cup through the main valve to the parts to be lubricated, substantially as described.

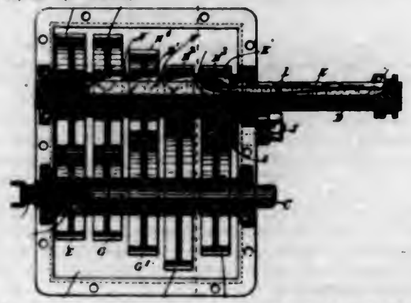


**754,737.**



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**754,738. VARIABLE-SPEED AND REVERSING GEAR.** HENRY R. BEVIER, Grand Rapids, Mich. Filed June 16, 1903. Serial No. 161,754. (No model.)



*Claim.*—1. The combination of a driving member, a gear fixed on the same, a counter-shaft, a gear fixed on the counter-shaft and engaging the driving-gear, a series of loose gears on the counter-shaft, a driven shaft, a series of fixed gears on the same and engaging the said loose gears, a loose gear on the counter-shaft, a fixed gear on the driven shaft, an idler-gear connecting the last-named gears, a shifting key in the counter-shaft, and means for shifting the key.

2. The combination of a driving member, a driving-gear fixed thereon, a counter-shaft having a keyway, a gear fixed on the counter-shaft, and engaging the driving-gear, a series of loose gears on the counter-shaft, loose collars between said gears, a key slidable in the keyway, and having a projection with inclined ends, a spring engaging the key, a sliding collar pivotally connected to the key, a series of gears fixed on the driven shaft and engaging the gears on the counter-shaft, a loose gear on the counter-shaft, an idler-gear engaged by said loose gear and a fixed gear on the driven shaft engaged by the idler.

3. The combination of a case, a driving member journaled in the case and having an internal bearing, a driving-gear fixed on the said member, a counter-shaft journaled in the case and having a keyway, a gear fixed on the counter-shaft and engaging the driving-gear, a driven shaft journaled in the case, and having one end journaled in the bearing in the driving member, a series of loose gears on the counter-shaft, fixed gears on the driven shaft and arranged in intermeshing pairs, with the loose gears, a loose gear on the counter-shaft, an idler engaged by said gear, a fixed gear on the driven shaft and engaging the idler, a shifting key in the keyway, and having inclines to engage the collars, a spring engaging the key, a sliding collar on the counter-shaft and connected to the key, and collars on the counter-shaft and between the gears.

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**754,739. COMBINATION-TOOL.** ALICE A. BLACKLE, Allegheny, Pa. Filed Jan. 6, 1904. Serial No. 187,911. (No model.)

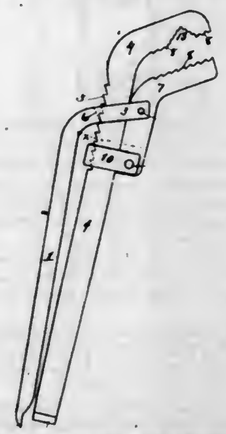


*Claim.*—1. In combination with an interiorly-threaded recessed handle, a blade having an intermediate threaded portion, for engagement with said threaded-handle recess, and a pair of spring-pressed fingers carried by the blade to be received in recess on the handle provided therefor.

2. In combination with a recessed handle, a blade, having a portion thereof extending into said handle-recess, and a pair of spring-pressed fingers carried by the blade and received in recessed portions provided therefor in the handle.

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**754,740. ADJUSTABLE WRENCH.** EDWARD BORDEWISCH and OTTO C. WOVERIN, Dayton, Ohio, assignors of one-third to Edward Bordewisch, Dayton, Ohio. Filed Dec. 26, 1903. Serial No. 186,660. (No model.)



*Claim.*—1. The tool herein described, comprising a wrench having a handle 1 with a curved end, a movable gripping member projected through said curved end and having its gripping end deflected, ratchet-teeth on one side thereof to engage with a tooth or projection on said curved end of the handle, a gripping-jaw pivoted to said curved end of the handle and having its gripping end deflected parallel with the gripping end of the adjustable member, a loop pivoted to said gripping-jaw and encompassing the adjustable member, as herein shown and described.

2. An adjustable wrench comprising a handle with a bifurcated curved end, said bifurcated end having a projection or tooth, an adjustable member projected through said bifurcated end and having teeth adapted to interlock with the tooth or projection on said bifurcated end, and whereby a fulcrum is provided in said handle for said member, the said member having its gripping end deflected on an incline, a gripping-jaw pivoted to said bifurcated end of said handle and having its gripping end extending parallel with the gripping end of said adjustable member, and a loop pivoted to said gripping-jaw and encompassing the body of the adjustable member, as herein shown and described.

3. An adjustable wrench comprising a handle with an end thereof terminating in a curved fork, a tooth or projection on said end, an adjustable member projected through said curved fork and having teeth thereon adapted to engage with the tooth on the fork, the gripping end of said member having a V-shaped notch and the said end being provided with gripping serrations, a gripping-jaw pivoted to the forked end of said handle and having its gripping end provided with serrations and lying parallel with the gripping end of the gripping member, and a loop pivoted to the lower end of said gripping-jaw and encompassing the body of the adjustable member, as herein shown and described.

754,741. FASTENING DEVICE FOR DRILL-BITS OR THE LIKE. Charles P. Breitenbuecher, Howard, Kans. Filed July 18, 1903. Serial No. 166,104. (No model.)



*Claim.*—1. A fastening device, comprising two detachably-connected members, and means for automatically tightening the joint therebetween in opposition to forces tending to separate said members.

2. A fastening device, comprising two detachably-connected members, and means adapted to be placed under tension for automatically tightening the joint between the members in opposition to forces tending to separate said members.

3. A fastening device, comprising two members united by a threaded joint, and means for automatically tightening this joint in opposition to forces tending to turn one member relatively to the other.

4. A fastening device, comprising two detachably-connected members, and a rod adapted to be placed under tension for automatically tightening the joint between the members in opposition to forces tending to separate said members.

5. A fastening device, comprising two detachably-connected members united by a threaded joint, and a rod adapted to be placed under tension for automatically tightening this joint in opposition to forces tending to turn one member relatively to the other.

6. A fastening device, comprising two detachably-connected members, and means adapted to be placed under regulated tension for automatically tightening the joint therebetween in opposition to forces tending to separate said members.

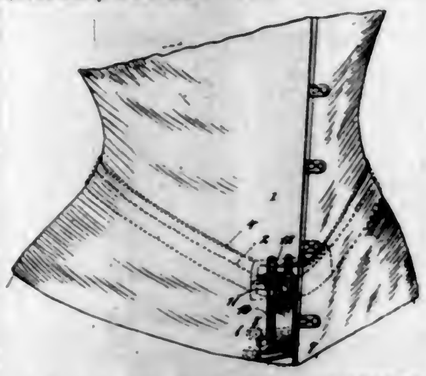
7. A fastening device, comprising a member having an inner cavity and a threaded bore leading thereto, another member having an extension entering said bore, and formed with a recess having rectangular sides, a rod fastened at one end in the base of said recess, and provided at its other end with lateral projections, the latter being located in said cavity, and means entering the cavity through the sides of said first-named member, and adapted to be adjusted to engage said projections to twist said rod.

8. A fastening device, comprising a member having an inner cavity and a threaded bore leading thereto, another member having an extension entering said bore, and formed with a recess having rectangular sides, a rod fastened at one end in the base of said recess, and provided at its other end with lateral projections, the latter being located in said cavity, and screws passing through the walls of said first-named member, for engaging said projections to place said rod under tension.

9. A fastening device, comprising two detachably-connected members, a rod partially located in each of the members, and means carried by one of the members for placing said rod under tension about the axis thereof.

754,742. COMBINATION WAIST ATTACHMENT AND SKIRT-SUPPORTER. Annie Buckelew, Lancaster, Cal. Filed Feb. 11, 1903. Serial No. 142,977. (No model.)

*Claim.*—1. In a device of the character described, the combination of a clamp for clamping the device to a corset, said clamp having a loop, a strap passing loosely through said loop, and extending upward therefrom, and hooks secured on the ends of said strap, bent downwardly and forwardly to engage the edges of the skirt and belt, substantially as described.



2. In a device of the character described, the combination of a double hook adapted to be pushed over the edge of the corset-steel, and having a loop, the strap attached to said double hook by said loop and the hooks at the upper ends of said strap, said hooks extending downwardly and forwardly, substantially as described.

754,743. SAFETY-PIN. Annie Buckelew, Lancaster, Cal. Filed June 12, 1903. Serial No. 161,121. (No model.)



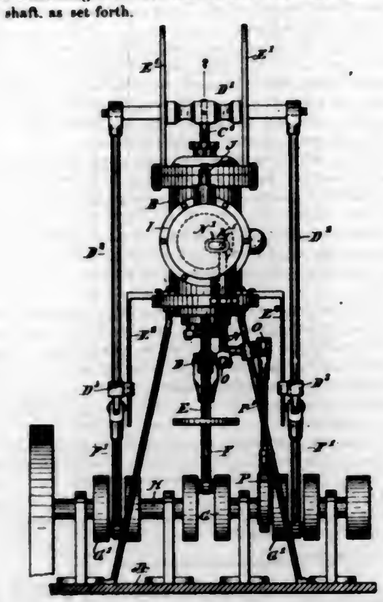
*Claim.*—A safety-pin comprising a strip of sheet metal having one end bent around to form a hinge, and the other end having its extended edges bent to form lips, and a double-pronged pin formed of a piece of wire bent at the middle and there engaging the hinge portion of the sheet-metal strip and the ends of the wire being sharpened to form prongs and engaging the lips, the hinge end of the strip having its extreme terminal portion enlarged, to lie between the bent portion of the pin and the strip in forming a hinge and having shoulders to press said pin away from said strip, and the other end of the strip being bent inward or downward as shown whereby the pin in its closed position is spaced from the strip and engages the lips with a spring-pressure, said strip being unobstructed on its entire outer surface and flat to receive a dress-hook, substantially as described.

754,744. ENGINE. Charles F. Chandler, Orange, N. J. Filed Sept. 28, 1903. Serial No. 174,887. (No model.)

*Claim.*—1. In an engine, the combination with a cylinder having an exhaust-port, and cylinder-admission ports, of which one leads to the middle of the cylinder and the other to the ends of the cylinder, pistons moving toward and from each other in the said cylinder, a main shaft, a steam-chest on the said cylinder, a rock-valve in the said steam-chest, having a port and a cavity for connecting the interior of the steam-chest with the admission-ports and the latter with the exhaust-port, means for rocking the valve on the said main shaft, cross-heads connected with the piston-rods of the said pistons, guides for the cross-heads, and a pitman for connecting one of the cross-heads with the crank on the main shaft, of slides connected by rods with the other cross-head and mounted to move on guideways attached to the cylinder, and pitmen connecting the said slides with cranks on the said main shaft, as set forth.

2. In an engine, the combination with a vertically-disposed cylinder provided with ports, the steam-chest, the valve for controlling said ports, the pistons arranged to move toward and from each other in the said cylinder, the upper and lower cross-heads mounted to slide vertically on guideways attached to the cylinder-heads, and connected with the piston-rods of the said pistons, and a pitman for connecting the lower cross-head with a crank on the main shaft, of vertical guideways having their upper ends extending inward and connected with the lower part of the cylinder, rods connected with the upper cross-head and provided with slides at their lower ends mounted to move vertically on the last-mentioned guideways, and pitmen connecting the lower ends of said rods with cranks on the main shaft, as set forth.





754,745. CATAPULT. Louis G. Clark, Helena, Mont. Filed Mar. 4, 1903. Serial No. 146,150. (No model.)



*Claim.*—1. A toy gun or catapult comprising a frame provided at its front end with a guard extending downward from the frame, and a spring throwing-arm connected with the frame at the upper end of the guard and capable of oscillation, said spring throwing-arm being limited in its movement by the guard, substantially as described.

2. A toy gun or catapult comprising a frame, a catch or stop located between the ends of the frame, and a spring throwing-arm connected with the frame in advance of the catch or stop and provided with means for engaging the same and extended beyond the catch or stop to form a trigger, substantially as described.

3. A toy gun or catapult comprising a frame provided between its ends with a catch or stop, a spring throwing-arm connected with the frame at the front end thereof, and provided at its outer end with means for engaging the catch or stop, and a guard extending from the front end of the frame and arranged in the path of the spring throwing-arm to limit the movement thereof, substantially as described.

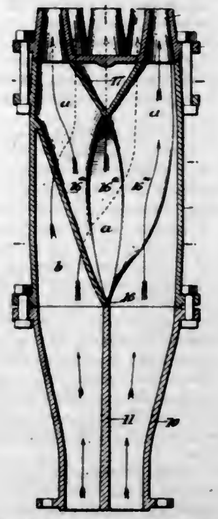
4. A toy gun or catapult comprising a frame having sides, a spring throwing-arm consisting of a loop connected with the front portion of the frame and having its sides separated to form a seat or support for a missile, and a catch or stop extending across the frame and provided with coils receiving the sides of the same, substantially as described.

5. A toy gun or catapult comprising a frame having sides, a transverse catch or stop connecting the sides of the frame, and a spring throwing-arm connected with the frame at the front portion thereof and provided near its outer end with an approximately U-shaped bend to receive the catch or stop and extending beyond the same to form a trigger, substantially as described.

6. A toy gun or catapult comprising a frame having sides, a transverse catch or stop connecting the sides between the ends thereof, a spring throwing-arm connected with the front portion of the frame and provided with a bend to engage the catch or stop and extending beyond the same to form a trigger, and a guard depending from the front portion of the frame and arranged in the path of the arm, substantially as described.

7. A toy gun or catapult comprising a frame having opposite sides coiled to form eyes and extending beyond the same to provide arms, a transverse supporting device extending through the eyes, a spring throwing-arm having coils arranged on the transverse supporting device, and a guard extending downwardly from the sides of the frame and provided with braces and connected with the said arms, substantially as described.

754,746. EXHAUST-NOZZLE. William S. Clarkson, Livingston, Mont. Filed Dec. 26, 1903. Serial No. 186,617. (No model.)



*Claim.*—1. An exhaust-nozzle, comprising a tubular outer shell or wall, and interior walls forming two distinct passages through the nozzle, for the purpose specified, said passages being arranged at the discharge end of the nozzle to discharge the steam with a uniform distribution around the sides of the nozzle.

2. An exhaust-nozzle, comprising a tubular outer shell or wall, and interior walls forming two groups of passages, for the purpose specified, the members of one group of passages alternating with the members of the other group of passages at the discharge end of the nozzle, uniformly to distribute the exhaust-steam from each group of passages.

3. An exhaust-nozzle, comprising a tubular exterior wall or shell, and an interior partition extending longitudinally therein, said partition dividing the shell into two passages at one end of the partition and the partition rounding and undulating from said end to the opposite end, there to form two groups of passages, one group at one side of the partition and the other group at the other side of the partition, the members of one group of passages alternating with the members of the other group of passages at the discharge end of the nozzle, whereby equally to distribute the exhaust-steam.

4. An exhaust-nozzle, comprising a tubular exterior wall or shell, an interior partition extending longitudinally therein, said partition dividing the shell into two sides at one end of the partition and the partition rounding and undulating from said end to the opposite end, there to form two groups of passages, one group at one side of the partition and the other group at the other side of the partition, the members of one group of passages alternating with the members of the other group of passages at the discharge end of the nozzle, whereby equally to distribute the exhaust-steam, and a conical spreader located centrally in the discharge end of the nozzle.

5. An exhaust-nozzle, comprising a tubular base portion having a longitudinal partition therein, and a body portion communicating with the base portion and comprising tubular exterior walls and an interior wall forming two passages within the body, said passages communicating respectively with the sides of the partition in the base.

6. A nozzle, comprising a tubular base-section having a longitudinally-extending partition therein, and a body-section communi-

cating with the base-section and comprising a tubular outer wall or shell and interior walls forming two groups of longitudinally-extending passages, said groups of passages respectively communicating with the base-section of the nozzle at the opposite side of the partition therein.

7. A nozzle, comprising a tubular base-section having a longitudinally-extending partition therein, and a body-section communicating with the base-section and comprising a tubular outer wall or shell and interior walls forming two groups of longitudinally-extending passages, said groups of passages respectively communicating with the base-section of the nozzle at the opposite side of the partition therein, and the interior walls of the body-section being arranged to alternate the members of one group of passages with the members of the other group of passages at the discharge end of the body-section.

8. A nozzle, comprising a base-section having two passages therein, a body-section communicating with the base-section and having walls forming two groups of passages, said groups respectively communicating with the passages of the base-section, and a tip communicating with the body-section and having opening nipples respectively communicating with the passages of the body-section.

9. An exhaust-nozzle, comprising a tubular exterior wall or shell, and an interior partition extending longitudinally therein, said partition dividing the shell into two passages at one end of the partition and the partition rounding and undulating from said end to the opposite end there to form two groups of passages, one group at one side of the partition and the other group at the other side of the partition, the members of one group of passages alternating with the members of the other group of passages at the discharge end of the nozzle, whereby equally to distribute the exhaust-steam, and a tip mounted on said exterior wall or shell and having nipples respectively communicating with the said passages.

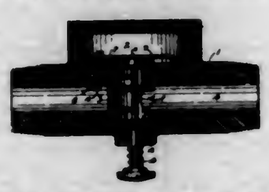
10. An exhaust-nozzle, comprising a tubular outer shell or wall, and interior walls forming two distinct passages through the nozzle, for the purpose specified, said passages being arranged at the discharge end of the nozzle to discharge the steam with a uniform distribution around the sides of the nozzle, and a tip mounted on the said wall or shell and having nipples respectively communicating with the said passages.

11. An exhaust-nozzle, comprising a tubular outer shell or wall, and interior walls forming two groups of passages, for the purpose specified, the members of one group of passages alternating with the members of the other group of passages at the discharge end of the nozzle, uniformly to distribute the exhaust-steam from each group of passages, and a tip having a circular row of nipples respectively communicating with said passages.

12. An exhaust-nozzle having a plurality of steam-passages running through it, and a tip mounted on the nozzle and having circular series of nipples constituting nozzles proper and respectively communicating with the said passages.

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**754,747. TRAP-VALVE.** Charles W. Clewell, Canton, Ohio. Filed Dec. 5, 1903. Serial No. 183,999. (No model.)



*Claim.*—1. A trap-valve comprising a case having an inlet-channel and an outlet-channel, a chamber above these channels, a trap-port between the inlet-channel and the chamber and an adjacent valve-port between the chamber and the outlet-channel; a trap in the chamber composed of a tubular stem adapted to operate freely in the trap-port, there being vents in the sides of the stem, a plate across the upper end of the stem, and a valve depending from the plate adapted to close the valve-port when the trap is down; and a spring-held lift-bar extended through the bottom of the case and adapted to raise the trap when it is down.

2. A trap-valve comprising a chamber, a trap-port entering and an adjacent valve-port leaving the bottom of the chamber, and a trap in the chamber composed of a tubular stem adapted to operate loosely in the trap-port, there being vents in the sides of the stem, a plate across the top of the stem, a valve depending from one end of the plate adapted to close the valve-port when the trap is down, the other end of the plate being bent down to rest on the bottom of the chamber when the valve is closed.

3. A trap-valve comprising a chamber, a trap-port entering and an adjacent valve-port leaving the bottom of the chamber, and a trap in the chamber composed of a tubular stem adapted to operate loosely in the trap-port, there being vents in the sides of the stem, a plate across the top of the stem, and a valve depending from the plate adapted to close the valve-port when the trap is down.

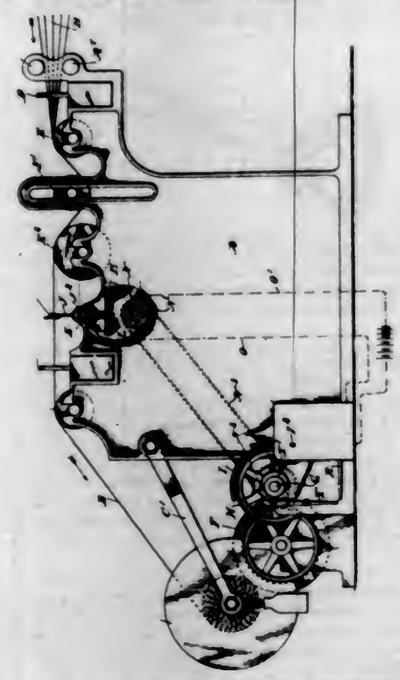
4. A trap-valve comprising a chamber, a trap-port entering and an adjacent valve-port leaving the bottom of the chamber, and a trap in the chamber composed of a tubular stem adapted to operate in the trap-port, there being vents in the sides of the stem, a plate across the top of the stem, means for constant constricted communication between the trap-port and the chamber, and a valve depending from the plate adapted to close the valve-port when the trap is down.

5. A gas-trap valve comprising a chamber, a trap-port entering and a valve-port leaving the chamber, a trap in the chamber adapted to be held up by the flow of gas into the chamber, there being a valve on the trap adapted to close the valve-port when the trap is down and to be held shut by the pressure of gas in the chamber, and means for constant constricted communication between the trap-port and the chamber.

6. A gas-trap valve comprising a chamber, a trap-port entering and a valve-port leaving the chamber, a trap in the chamber adapted to be held up by the flow of gas into the chamber, there being a valve on the trap adapted to close the valve-port when the trap is down, and means for constant constricted communication between the trap-port and the chamber.

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**754,748. ELECTRIC STOP-MOTION FOR WARPING-MACHINES.** John Cocker and Charles Dehn, Philadelphia, Pa. Filed Jan. 30, 1902. Serial No. 91,576. (No model.)



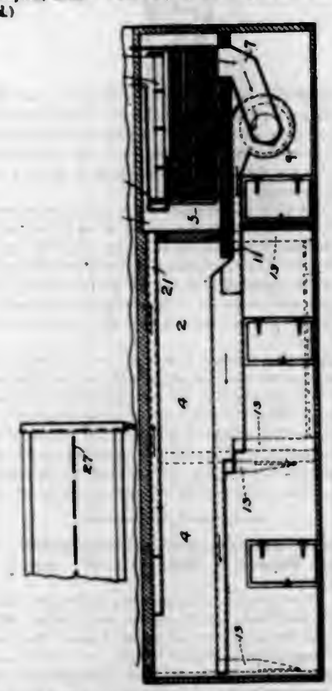
*Claim.*—1. In an electric stop-motion for warping-machines, an electric circuit provided with a fixed terminal formed of a metallic rod, and spaced metallic strips below the rod and connected therewith, a second terminal in the form of a revoluble metallic roller arranged below the strips, means for continuously revolving said roller, and circuit-closers in the form of rods provided at their upper ends with eyes by means of which they are suspended from the yarns and intermediate of their ends with loops to receive the said rod, the lower ends of the circuit-closers extending between the said strips and adapted to engage the rotating roller when a yarn breaks, as set forth.

2. In an electric stop-motion for warping-machines, an electric circuit, a fixed terminal comprising a metallic rod, spaced metallic strips below the rod, and a wire connecting the rod and strips, a second terminal in the form of a revoluble metallic roller arranged below the said strips, means for imparting a continuous rotary movement to said roller, and circuit-closers in the form of rods having eyes at their upper ends by which they are suspended from the yarns and elongated loops between their ends to receive the said rod, the lower ends of the circuit-closers extending between the metallic strips and adapted to engage the roller when the yarn breaks, as set forth.

3. In an electric stop-motion for warping-machines, the combination with a driving-shaft provided with fast and loose pulleys, a belt-shifter, and electrically-controlled mechanism for operating the belt-shifter, of a fixed terminal arranged in the circuit and formed of a metallic rod and spaced metallic strips below the rod and connected therewith, a revoluble metallic roller below the said strips, means for continuously revolving the roller from the said driving-shaft, and circuit-closers in the form of rods provided with eyes at their upper ends to receive the yarns and intermediate of their ends with elongated loops through which the said rod loosely passes, the lower ends of the rods passing between the metallic strips and adapted to engage the continuously-revolving roller when a yarn breaks, as set forth.

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**754,749. COLD-STORAGE APPARATUS.** Madison Cooper, Minneapolis, Minn. Filed July 3, 1899. Serial No. 722,633. (No model.)



*Claim.*—1. The combination, in a cold-storage apparatus, with means for cooling the air and with a deliquescent salt arranged in proximity to the cooling means for purifying and drying the air, of a storage-room provided with a perforated false floor forming an air-distributing duct at the bottom of the room, and a perforated false ceiling forming an air-duct at the top of the room, means for removing air from the upper part of the room through said perforated ceiling and conducting it to the place where it is purified, dried and cooled, and means for conducting said air from the place where it is purified, dried and cooled into said storage-room through said perforated floor.

2. The combination, in a cold-storage apparatus, with means for cooling the air and with a deliquescent salt arranged in proximity to the cooling means for purifying and drying the air, of a storage-room, means for removing the air from the upper part of said storage-room and conducting it to the place where it is purified, dried and cooled, and means for conducting the purified, dried and cooled air to, and distributing it through, the lower part of said storage-room.

3. The combination, in a cold-storage apparatus, with refrigerating-pipes, of troughs arranged above said pipes and adapted to hold chlorid of calcium, in a solid form, and to permit the brine formed by moisture of the atmosphere uniting with said chlorid of calcium to pass over said pipes to keep the same clear of frost, substantially as described.

4. The combination, in a cold-storage apparatus, with an air-cooling room provided with refrigerating-pipes, of troughs arranged above said pipes and adapted to hold deliquescent salt in a solid form and to permit the brine formed by moisture of the atmosphere uniting with said deliquescent salt to pass over said pipes to keep the same clear of frost, a storage-room, means for removing air from the upper part of the storage-room and conducting it to said air-cooling room, and means for conducting the air from said air-cooling room to, and distributing it through the lower part of said storage-room, for the purpose set forth.

5. The combination, in a cold-storage apparatus, with a refrigerating-surface, of means supporting a deliquescent salt in solid form above said refrigerating-surface so that the brine formed by the absorption of the moisture of the atmosphere by said salt passes over said refrigerating-surface and keeps the same free from frost.

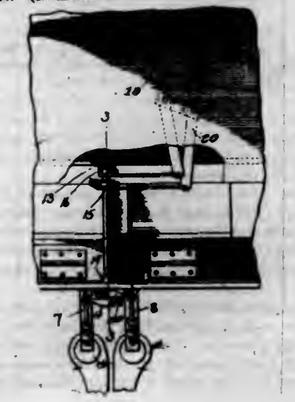
6. The combination, in a cold-storage apparatus, with a storage-room provided with a perforated false floor and with a perforated false ceiling, of an air-cooling room provided with refrigerating-surfaces, ducts connecting said air-cooling room with the space below said false floor, and above said false ceiling, means causing the air to pass from said air-cooling room into said storage-room through said perforated floor, and from said storage-room through said perforated ceiling and back to said air-cooling room and means located in said air-cooling room for supporting a deliquescent salt in solid form above said refrigerating-surfaces.

7. The combination, in a cold-storage apparatus, with a storage-room provided with a perforated false floor and with a perforated false ceiling, of an air-cooling room, ducts connecting said air-cooling room with the space below said false floor and above said false ceiling, means causing the air to pass from said air-cooling room into said storage-room through said perforated floor, and from said storage-room through said perforated ceiling back to said air-cooling room, and means in said air-cooling room for holding a deliquescent salt in solid form, whereby as the air passes through said air-cooling room it is dried and purified, for the purpose set forth.

8. The combination, in a cold-storage apparatus, with an air-cooling room provided with refrigerating-surfaces, of a storage-room, means for conducting air from said air-cooling room through said storage-room and back to said air-cooling room, means for holding a deliquescent salt in a solid form in said air-cooling room above said refrigerating-surfaces, whereby as the air passes through said air-cooling room it is purified and dried, for the purpose set forth.

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**754,750. PEDAL-STOP ACTION FOR AUTOMATIC PIANO-PLAYERS.** William F. Cooper, Jr., Chicago, Ill., assignor to The Cable Company, a Corporation of Illinois. Filed Dec. 21, 1903. Serial No. 186,917. (No model.)



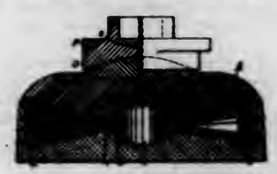
*Claim.*—1. A pedal-stop action for an automatic piano-player comprising fore and aft rock-shafts journaled on the case; lever-arms at the rear ends of such shafts, and plungers operated thereby for actuating the pedal-stops; upstanding lever-arms at the forward ends; horizontally-swinging levers fulcrumed on the case, having operating-fingers at their forward ends accessible to the operator, and links connecting their rear ends with said upstanding arms respectively.

2. A pedal-stop action for an automatic piano-player comprising rock-shafts mounted on the case having at their forward ends connections extending into position accessible to the operator, and having at their rear ends plunger-operating connections; plungers connected therewith for actuating the pedal-stops, and guide-brackets for said plungers mounted on the case for pivotal and fore and aft adjustment.

3. A pedal-stop action for an automatic piano-player comprising plungers for operating the pedal-stops; mechanism mounted on the case and connected with the plungers at their upper ends and extending into position accessible to the operator, and guide-brackets for the lower ends of the plungers having slotted horizontal arms and bolts taking through the slots in said arms for securing the brackets to the case with capacity for pivotal and fore and aft adjustment.

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754,751. CONICAL ROLLER-BEARING. JOHN P. COWING, Cleveland, Ohio. Filed July 23, 1903. Serial No. 167,388. (No model.)



*Claim.*—In a roller-bearing, the combination with the lower section having an inclined wearing-surface and an annular upwardly-extending flange, of an upper section having a wearing-surface inclined in the reverse direction to the wearing-surface of the said lower section, said upper section having an annular recess on its under side, which incloses the upper portion of the flange of the said lower section, a series of conical bearing-rollers arranged on the wearing-surface of the said lower section, and engaged by the wearing-surface of the said upper section, the said flange extending upwardly beyond the outer ends of the said rollers and entirely inclosing the same, a pin loosely mounted in the central recesses provided therefor in the lower face of the said upper section and upper face of the said lower section, respectively, center rings carried by said pin and arranged one above the other, the upper of the said rings having the lower portion of its periphery grooved, while the lower of said rings has the upper portion of its periphery grooved, the said grooves being adapted to receive the trunnions of the inner end of the said conical rollers, a rotative ring having apertures to receive trunnions on the outer ends of the said conical rollers, the said lower section having formed therein a recess arranged beneath the said rotative ring, antifriction-bearings arranged within the said recess, and antifriction-bearings between the ends of the said rollers and the said rotative ring, substantially as described.

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754,752. SHEET-GLASS MACHINE. SAMUEL DEBLEY, Converse, Ind., assignor of one-half to John Stehn, Arcadia, Ind. Filed Mar. 25, 1903. Serial No. 149,594. (No model.)

*Claim.*—1. A sheet-glass machine including two oppositely-placed stands, a series of pairs of rolls mounted between said stands, said pairs being mounted one above the other and in line with each other, and a fire-box extending between said stands under said rolls and on each side of the central line thereof.

2. A sheet-glass machine including two sets of rolls mounted apart from each other, each set of rolls being adapted to receive plastic glass and pass the same through them to form a sheet, and a reciprocating conveyer movable beneath said two sets of rolls for receiving on its surface the sheets of glass as the same come from said rolls.

3. A sheet-glass machine including a leer, a kiln adjacent one end of the leer with an opening from the kiln to the leer, a reciprocating conveyer movable in said kiln that passes the mouth of said leer, a pair of cooperating rolls mounted over said conveyer at a point removed from the mouth of the leer, said rolls being beside each other and between which the plastic glass may pass, and means for actuating said conveyer and rolls.



4. A sheet-glass machine including a pair of separate leers, a reciprocating conveyer that passes close to the mouths of said leers and at substantially the same level, and two sets of cooperating rolls mounted between the mouths of said leers over said conveyer and through which the glass may be passed to form it into a sheet that is deposited upon said conveyer.

5. A sheet-glass machine including a pair of separate leers, a conveyer that passes close to the mouths of said leers and at substantially the same level, two sets of cooperating rolls mounted between the mouths of said leers over said conveyer and through which the glass may be passed to form it into a sheet that is deposited upon said conveyer, and means for reciprocating said conveyer so that glass may be formed and conveyed while the conveyer is moving in either direction.

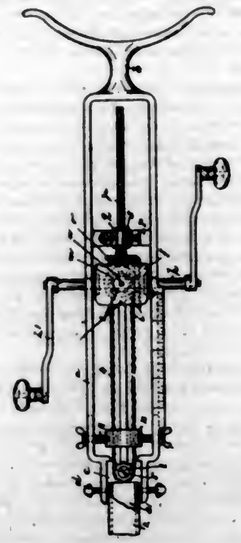
6. A sheet-glass machine including a pair of parallel leers separated from each other, a kiln adjacent the ends of said leers with an opening from the kiln into each leer, a conveyer movable in said kiln to pass the mouth of said leers, two sets of cooperating rolls mounted between the mouths of said leers and extending over said conveyer through which the glass may be passed to convert it into a sheet, said sets of rolls being separated to form a flattening-chamber between them, and means for actuating said rolls and conveyers.

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754,758. PORTABLE MORTISING CHAIN CUTTER. GIUSEPPE A. D'AMATO, Passaic, N. J. Filed Dec. 12, 1903. Serial No. 184,882. (No model.)

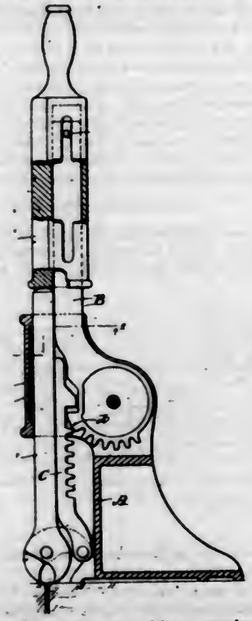
*Claim.*—In a portable mortising chain cutter, the combination with an elongated frame, open at one end, and provided with oppositely-arranged elongated slots, a crank-shaft penetrating said slots, a sliding carriage mounted on and forming bearings for said shaft, a second shaft revolubly mounted in said carriage and at right angles to the crank-shaft and receiving its motion from the latter, sprocket-wheels on said second shaft, a bar projecting from said carriage, a shaft penetrating the free end of said bar and secured therein, a cylindrical-shaped cutter on each side of the bar and revolubly mounted on the last-mentioned shaft, a sprocket-wheel connected with each of said cutters and in close proximity to the bar, endless sprocket-chains connecting the last-mentioned sprocket-wheels and the sprocket-wheels on the vertical shaft in the carriage, a series of individual cutters carried by the sprocket-chains, a guide-block adjustably arranged in the elongated frame between the cutters and the carriage and penetrated by the projecting bar, a bridge or cross piece secured in the frame in rear of the carriage, an internally-threaded sleeve or collar removably arranged on said cross-piece, a screw engaging said internally-threaded sleeve or collar, and means operated by the crank-shaft for rotating said screw, all said parts, substantially as and for the purposes described.





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754,754. NAIL-EXTRACTOR. ALBERT DUBLY, Sr., Menominee, Mich. Filed July 16, 1903. Serial No. 165,744. (No model.)

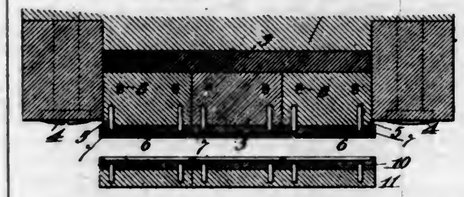



*Claim.*—1. A nail-extractor comprising a standard, a plunger guided in the standard and having its lower end in the form of a jaw, another jaw in pivotal connection with the jaw end of the plunger, a rack-bar guided in said standard parallel to said plunger and pivotally connected to the pivotal jaw, a lever having an offset rounded and spur-toothed end pivoted in the aforesaid standard to be engageable with the rack-bar, said end of the lever being provided with a radial lifting-lug engageable with a recess in said rack-bar, and a plunger-rammer reciprocative on said lever.

2. A nail-extractor comprising a standard a plunger guided in the standard and having its lower end in the form of a jaw, a friction-spring arranged under compression against the plunger, another jaw in pivotal connection with the jaw end of said plunger, a rack-bar guided in said standard parallel to the aforesaid plunger and pivotally connected to the pivotal jaw, a lever having an offset rounded and spur-toothed end pivoted in the aforesaid standard to be engageable with the rack-bar, said end of the lever being provided with a radial lifting-lug engageable with a recess in said rack-bar, and a plunger-rammer reciprocative of said lever.

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754,755. COMPRESSING-DIES. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Nov. 23, 1903. Serial No. 183,117. (No model.)



*Claim.*—1. The combination with a support, of a series of dies carried thereby and movable independently of the support and of each other, means for imposing pressure simultaneously on the dies, and a confined mass of non-compressible yielding material between the dies and the means which impose pressure thereon, substantially as set forth.

2. The combination with a support, of a series of dies carried thereby and movable independently of the support and of each other, means for imposing pressure simultaneously on the dies, and a confined mass of rubber between the dies and the means which impose pressure thereon, substantially as set forth.

3. The combination with a plunger to which pressure is applied, a series of independent dies operated simultaneously by the plunger, and a confined mass of yielding non-compressible material between the plunger and said dies, substantially as set forth.

4. The combination with a plunger to which pressure is applied, a series of independent dies operated simultaneously by the plunger, and a confined mass of rubber between the plunger and said dies, substantially as set forth.

5. The combination with a plunger to which pressure is applied, a frame carried by the same, a series of simultaneously-operated dies mounted in the frame and capable of independent movement with respect to each other and with respect to the frame, and a confined mass of yielding non-compressible material between said dies and plunger, substantially as set forth.

6. The combination with a plunger to which pressure is applied, a frame carried by the same, a series of simultaneously-operated dies mounted in the frame and capable of independent movement with respect to each other and with respect to the frame, and a confined mass of rubber between said dies and plunger, substantially as set forth.

7. The combination with a plunger, a frame carried by the same, a series of blocks mounted in said frame and capable of movement independently of each other and of the frame, a confined mass of yielding non-compressible material between said blocks and plunger, and a die removably carried by each of said blocks, substantially as set forth.

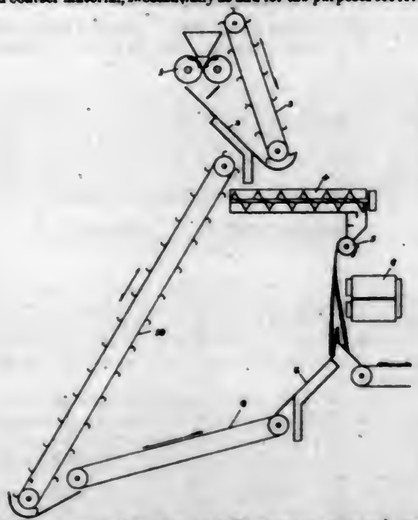
8. The combination with a plunger, a frame carried by the same, a series of blocks mounted in said frame and capable of movement independently of each other and of the frame, a confined mass of rubber between said blocks and plunger, and a die removably carried by each of said blocks, substantially as set forth.

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754,756. PROCESS OF SEPARATING ORES FROM MAGNETIC GANGUE. THOMAS A. EDISON, Llewellyn Park, N. J. Filed May 20, 1903. Serial No. 158,308. (No specimens.)

*Claim.*—1. The process of treating magnetic ores carrying a small proportion of a non-magnetic material to be recovered, which consists in grinding the ore to a sufficient fineness to free the non-magnetic particles, in adding thereto a predetermined and larger bulk of a coarser non-magnetic material, in subjecting the mixture to the action of a magnetic separator whereby the non-magnetic material to be recovered together with the added coarser material will be rejected as tailings, and finally in separating the added coarser material from the original non-magnetic material, substantially as and for the purposes set forth.

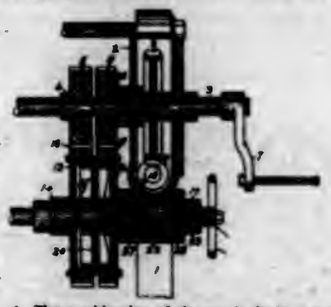
2. The process of treating magnetic ores carrying a small proportion of a non-magnetic material to be recovered, which consists in grinding the ore to a sufficient fineness to free the non-magnetic particles, in adding thereto a predetermined and larger bulk of a coarser non-magnetic material, in subjecting the mixture to the action of a magnetic separator whereby the non-magnetic material to be recovered together with the added coarser material will be rejected as tailings, and finally in screening the tailings to separate the added coarser material, substantially as and for the purposes set forth.



3. The process of treating nickeliferous ores composed essentially of pyrrhotite and a smaller proportion of a non-magnetic nickel compound, which consists in grinding the ore to a sufficient fineness to free the non-magnetic particles, in mixing therewith a predetermined and larger bulk of a coarser non-magnetic material, in subjecting the mixture to the action of a magnetic separator, whereby the non-magnetic nickel compound and added coarser material will be rejected as tailings, and finally in separating the non-magnetic nickel compound from the added coarser material, substantially as and for the purposes set forth.

4. The process of treating nickeliferous ores composed essentially of pyrrhotite and a smaller proportion of a non-magnetic nickel compound, which consists in grinding the ore to a sufficient fineness to free the non-magnetic particles, in mixing therewith a predetermined and larger bulk of a coarser non-magnetic material, in subjecting the mixture to a magnetic separator, whereby the non-magnetic nickel compound and added coarser material will be rejected as tailings and finally in screening the tailings so as to separate the non-magnetic nickel compound from the added coarser material, substantially as and for the purposes set forth.

## 754,757. INTERCHANGEABLE HAND AND MOTIVE POWER MECHANISM. CHARLES R. ELLICOTT and JOHN R. HOSKIN, Baltimore, Md. Filed Sept. 1, 1903. Serial No. 171,532. (No model.)



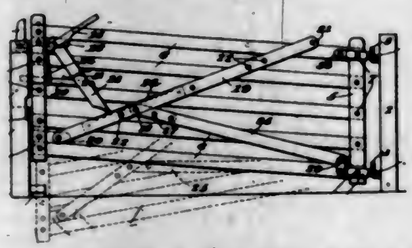
*Claim.*—1. The combination of the crank-shaft; a gear-wheel keyed to said crank-shaft; a worm-wheel loosely mounted on said crank-shaft and having a gear-wheel keyed to the hub thereof; means for driving said worm-wheel; the main shaft; a gear-wheel loosely mounted on said main shaft and meshing with the gear-wheel on the crank-shaft; a gear-wheel loosely mounted on the main shaft and meshing with the gear-wheel upon the hub of the worm-wheel; a friction-clutch keyed to the main shaft; and means to throw the said clutch in or out of engagement with either of the gear-wheels on the main shaft.

2. The combination of the crank-shaft; a gear-wheel keyed to said crank-shaft; a worm-wheel loosely mounted on said crank-shaft and having a gear-wheel keyed to the hub thereof; means for driving said worm-wheel; the main shaft; a gear-wheel loosely mounted on the main shaft and meshing with the gear-wheel on the crank-shaft; a gear-wheel loosely mounted on the main shaft, meshing with the gear-wheel keyed to the hub of the worm-wheel, and having an integral hollow hub; a friction-clutch keyed to said main shaft and having an integral sleeve projecting into the hollow hub and screw-threaded on the inner surface; a secondary shaft secured to, and revoluble independent of, the main shaft and having screw-threads to mesh with the threads on the integral sleeve; and a wheel keyed to the secondary shaft for revolving the latter, whereby the said clutch is thrown in or out of engagement with either of the gear-wheels on the main shaft.

3. The combination of a housing; a crank-shaft projecting through the said housing and having a gear-wheel keyed thereto; a worm-wheel within the housing loosely mounted upon the crank-shaft and having its hub projecting through one side of the said housing; a gear-wheel keyed to the hub of the worm-wheel; a shaft projecting into the housing and having a worm thereon which meshes with the said worm-wheel; the main shaft; a gear-wheel loosely mounted upon the main shaft and meshing with the gear-wheel on the crank-shaft; a gear-wheel loosely mounted on the main shaft and meshing with the gear-wheel keyed to the hub of the worm-wheel; and having an integral hollow hub; a friction-clutch keyed to said main shaft and having an integral sleeve projecting into said hollow hub and screw-threaded in the inner surface; a secondary shaft secured to, and revoluble independent of, the main shaft and being screw-threaded to mesh with the threads on the integral sleeve; and a wheel keyed to the secondary shaft for revolving the latter, whereby the said clutch is thrown in or out of engagement with either of the gear-wheels on the main shaft.

4. The combination of a shaft having a fixed and a loose gear thereon, means for driving said shaft, means for driving said loose gear independently of the shaft upon which it is mounted, a second shaft having gears loose thereon meshing with the gears of the first-mentioned shaft, and means for locking either of said loose gears carried by the second-mentioned shaft to said shaft.

## 754,758. FARM-GATE. CHARLES P. BURNEY, Madisonville, Ohio, assignor of one-half to Everett W. Townsley, Madisonville, Ohio. Filed Feb. 13, 1903. Serial No. 143,193. (No model.)



*Claim.*—1. The combination of a gate comprising stiles and rails pivoted at their ends to the stiles, blocks held to the stiles at top and bottom of one end of the gate, connected braces extended diagonally across the rails of the gate, one brace being pivotally connected with one of said blocks and the other brace having pivotal connection with the other end of the gate and a locking-brace also having pivotal connection with the other of said blocks and having engagement with the connected braces for locking the same in adjusted position.

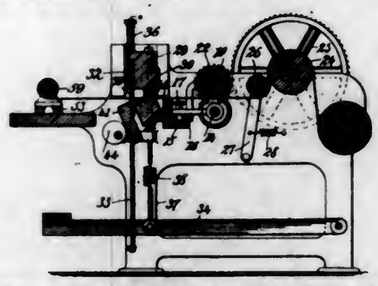
2. The combination of a gate comprising stiles and rails pivoted at their ends to said stiles, connected braces extended diagonally across the rails, one of said connected braces having pivotal connection with the gate and the other of said connected braces being swingingly connected with the gate, and a locking-brace pivotally connected with the gate and adapted for engagement with the connected braces to lock the same in adjusted position, substantially as set forth.

3. The combination of a gate comprising stiles and rails pivoted at their ends to said stiles, connected braces extended diagonally across the rails, one of said connected braces having pivotal connection with the gate, links for connecting the end of the other brace for pivotal and swinging movement with relation to the gate and a locking device carried on the gate and engaged with the connected braces for holding the same in adjusted position, substantially as set forth.

4. The combination of a gate comprising stiles and rails pivoted to said stiles, a main brace extended diagonally across the rails and held for sliding movement across the same, a locking-brace having an end adapted for engagement with the main brace for locking the same in adjusted position and blocks secured to the stiles at the free or swinging end of the gate and below and above the respective upper and lower rails of the gate, the lower end of the main brace having pivotal connection with the lower block and the upper end of the locking-brace having pivotal connection with the upper block, substantially as set forth.



## 754,759. MACHINE FOR TRIMMING AND APPLYING SHADE GOODS. EPHRAIM O. ROGERS, Salt Lake City, Utah. Filed May 12, 1903. Serial No. 156,766. (No model.)



*Claim.*—1. The combination with a frame, of rockably-mounted members, means for rocking said members to crease the fabric between them, and means for moving said fabric into the space between said members prior to the rocking thereof.

2. The combination of a stationary member, a movable creaser-bar coacting therewith, a movable wall coacting with the creaser-bar, said parts serving to form two creases in a section of fabric, and means for operating said parts.

3. The combination of a stationary member, a movable creaser-bar coacting therewith, a movable wall coacting with the creaser-bar, said parts serving to form two creases in a section of fabric, means for operating said parts, and means for pressing the fabric between said parts prior to the creasing movement thereof.

4. The combination of a stationary member, a movable creaser-bar coacting therewith, a movable wall coacting with the creaser-bar, said parts serving to form two creases in a section of fabric, means for operating said parts, and two blades serving to press said fabric between said parts prior to the creasing action thereof.

5. The combination of a stationary member, a movable creaser-bar coacting therewith, a movable wall coacting with the creaser-bar, said parts serving to form two creases in a section of fabric, and means for operating said parts, such means comprising a cam bearing against one of the parts and means for mounting and operating the cam.

6. The combination with a frame, of a stationary member, a movable creaser-bar coacting therewith, a movable creaser-wall coacting with the bar, means for operating the bar and wall, a cross-head, a blade carried directly thereby, and a second blade yieldingly mounted on the cross-head, said blade coacting with the creaser bar and wall.

7. The combination with creasing devices, of a cross-head movable toward and from the same, a blade carried directly by the cross-head, and a second blade carried yieldingly thereby.

8. The combination with creasing devices, of a cross-head movable toward and from the same, a blade carried directly thereby, a second blade carried movably on the cross-head, a spring actuating the second blade, a spring actuating the cross-head, and means for operating the cross-head and the second-named blade successively.

9. The combination with creasing devices, of a cross-head movable toward and from the same, a blade carried directly thereby, a second blade carried movably on the cross-head, a spring actuating the second blade, a spring actuating the cross-head, means for operating the cross-head and the second-named blade successively, said means for operating the cross-head and second blade comprising a treadle, an extensive connection between the treadle and cross-head, and a connection between the treadle and second blade, the latter connection permitting a certain independent movement of the treadle.

10. The combination with a frame, of a stationary member, a rocking creaser-bar coacting therewith, a swinging wall coacting with the creaser-bar, means for operating said bar and wall, a cross-head, a blade carried thereby, a rod in connection with the cross-head, a spring bearing between the cross-head and creaser-bar, a second spring bearing between the creaser-bar and frame, a second blade movably mounted on the cross-head, a spring acting between the second blade and cross-head, a rod in connection with the second blade, and means for successively moving the said rods.

11. The combination with a frame having means for carrying and operating on a shade fabric, of a guide, a bearing adjustable thereon, and serving to carry one end of the shade-roller, a second bearing adjustable on the guide, a head revolubly mounted in the bearing and capable of engaging the other end of the shade-roller, and means for revolving the head.

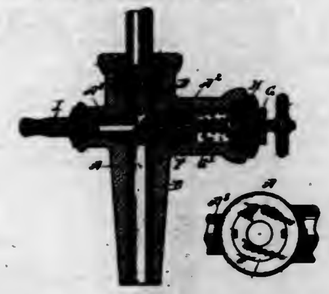
12. The combination with a frame having means for carrying and operating on a shade fabric, of a guide, a bearing adjustable thereon and serving to carry one end of the shade-roller, a second bearing adjustable on the guide, a head revolubly mounted on the bearing and capable of engaging the other end of the shade-roller, means for revolving the head, said means comprising a revolubly-driven sleeve, and a shaft in connection with the head and slidably fitted in the sleeve, said sleeve and shaft being engaged to drive the one from the other.

13. The combination of a framing, two cutting devices mounted at the sides of the framing respectively to trim the edges of a length of fabric, creasing means mounted on the framing to which the fabric is passed, as it moves from the cutting devices, and means for operating the cutting and creasing devices.

14. The combination of a framing, two cutting devices mounted at the sides of the framing respectively to trim the edges of a length of fabric, creasing means mounted on the framing to which the fabric is passed as it moves from the cutting devices, means for operating the cutting and creasing devices, and a strip or bar extending transversely of the framing between the cutting and creasing devices and adapted to have a knife run over it to sever the fabric into lengths.

15. The combination of a framing, a transverse guide thereon, a bracket adjustably mounted on the guide, two coacting rotary cutters carried by the bracket, two shafts on which said cutters are respectively splined, and means for driving the shafts.

## 754,760. BARREL-TAP. HERMAN FREESFELD, Hoquiam, Wash. Filed Mar. 6, 1903. Serial No. 146,445. (No model.)



*Claim.*—1. A beer-tap, consisting of a bung-body having a bore for the passage of the supply-pipe, and provided with a recessed and internally-screw-threaded head, and with oppositely-arranged tubular projections below the head and of unequal diameter, the bore of the larger projection being of greater diameter than the bore of the body and intersecting the same obliquely, and forming a valve-seat, a nipple secured to the smaller projection and adapted for connection with an air or gas supply, a packing in the recess of the head, a nut screwing into said head upon the packing, a bearing detachably secured to the outer end of the larger projection, a slide-valve fitting in the bore of the larger projection and adapted to move onto said valve-seat across the bore of the body, said valve having a rec-

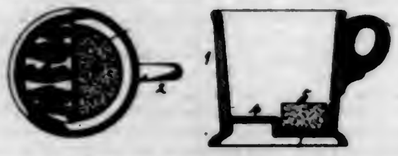
tangular body whose inner end is beveled downwardly, and a rod mounted in the said bearing and having a handle at its outer end and a screw-threaded inner end engaging the said valve, as set forth.

2. A beer-tap, comprising a bung-body having a bore for the passage of a supply-pipe and provided with oppositely-arranged tubular projections of unequal diameter, the bore of the larger one being of greater diameter than the bore of the body and intersecting the same obliquely, forming a valve-seat, the smaller projection serving as a means for connection with air or gas supply, a slide-valve fitting in the bore of the larger projection and adapted to be moved onto the valve-seat across the bore of the body to close and open the same, said valve having a rectangular body with a beveled inner end, a bearing in the outer end of the larger projection, and a rod mounted to turn in said bearing and having a screw-threaded inner end engaging the valve, as set forth.

3. A beer-tap, comprising a bung-body having a bore for the passage of a supply-pipe and provided with oppositely-arranged tubular projections of unequal size, the bore of the larger projection being of greater diameter than the bore of the body and intersecting the same obliquely, forming a valve-seat, the smaller projection serving as a means for connection with air or gas supply, a slide-valve in the larger projection and adapted to move onto the valve-seat across the bore of the body to close and open the same, said valve having a rectangular body whose inner end is beveled downwardly and inwardly, and means for operating the said valve, substantially as herein shown and described.

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754,761. **SHAVING-MUG.** Irving R. Foltz, Rockford, Ill. Filed Feb. 12, 1903. Serial No. 143,154. (No model.)

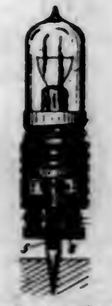


*Claim.*—1. A lather-mug comprising a relatively deep vessel having its bottom proper arranged on two different planes to provide a soap-receptacle and a slightly-elevated lather-rubbing surface respectively, at the bottom of the vessel, the said uppermost plane communicating unobstructedly throughout its entire length with the lower plane.

2. A lather-mug comprising a relatively deep vessel having curved side walls, the bottom proper of the vessel being arranged on two different planes to provide a soap-receptacle and a lather-rubbing surface respectively at the bottom of the mug, the surface of the said uppermost plane being undulating and communicating unobstructedly throughout its entire length with the lower plane.

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754,762. **ELECTRIC-SOCKET SUPPORT.** Edwin R. Gill, New York, N. Y. Filed Mar. 14, 1902. Renewed Dec. 23, 1903. Serial No. 186,412. (No model.)



*Claim.*—1. As a means for conveying current to electric lamps, two insulated conductors, two separable clamping members applied to opposite sides of said conductors and a piercing and conducting point on each member each adapted to penetrate the insulation on one of said conductors, substantially as described.

2. A socket-shell having a conducting piercing-point, a nut having a conducting piercing-point, a screw fitting said nut and a washer of insulating material in said shell and surrounding said screw.

3. An attachment for electric sockets, comprising two parts each provided with a piercing-point, a screw for connecting said parts and means cooperating with said screw for supporting the whole.

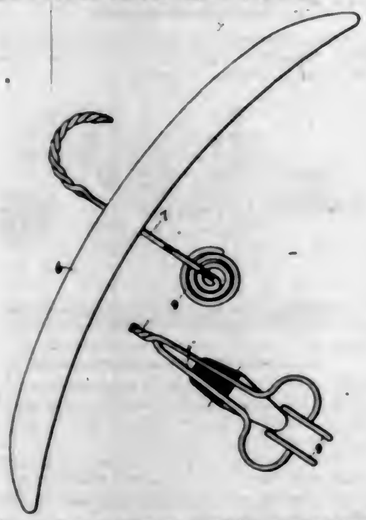
4. An attachment for electric sockets, comprising two parts each provided with a piercing-point, and a screw for connecting said parts, said screw being provided with a sharp point suitable for providing support for the whole.

5. A socket-shell provided on its under side with a piercing-point, a washer in the bottom of said shell, a nut provided with a piercing-point and a conducting-screw adapted to form a central terminal within said shell, said screw passing through said washer and screwing into said nut so as to form an electric connection therewith.

6. A screw-threaded cylindrical shell, a conducting piercing-point carried thereby, a metallic nut having a second piercing-point and a metallic screw fitting said nut and attaching the same to said shell.

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754,763. **SKIRT-HANGER.** Samuel J. Goldsmith, Chicago, Ill. Filed Nov. 27, 1902. Serial No. 132,776. (No model.)



*Claim.*—1. A garment-hanger comprising a garment-supporting cross-bar, and a clamp between the ends of the bar having arms extending through the middle of the bar and terminating in a hook above the same.

2. A garment-hanger comprising a garment-supporting cross-bar having openings diverging downwardly through the middle thereof, and opposite clamp members between the ends of the bar and slidable through the openings and terminating in a hook above the same.

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754,764. **EXPANSION-BOLT.** John B. Gottwals, Philadelphia, Pa., assignor to John Orr, Philadelphia, Pa. Filed Apr. 22, 1903. Serial No. 153,747. (No model.)



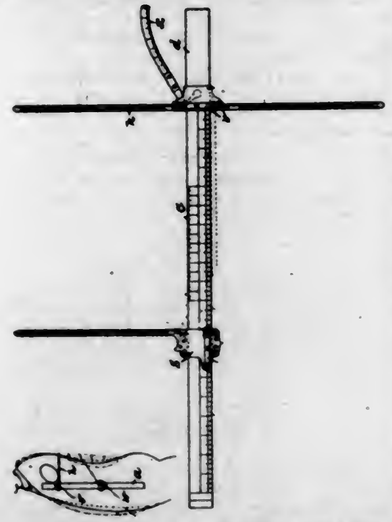
*Claim.*—1. An expansion-bolt comprising a shell formed of a plurality of sections, a nut mounted in said shell, a tapered plug in said shell and a screw fitted in said nut, said plug having a bore therein and said screw having its point entering said bore and being centered on the base thereof.

2. An expansion-bolt comprising a shell formed of a plurality of sections having on the interior thereof, tapered recesses which point toward the rear of the shell and polygonal recesses located near the front of the shell, an angular nut occupying the latter-named recesses and held therein against longitudinal and lateral movements, a hollow tapered plug movably occupying said tapered recesses and a screw passing through and engaging with said nut and freely entering said plug and having its point adapted to be seated on the base of the bore thereof.



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754,765. **TAILOR'S MEASURE.** Stephen M. Griffin, Summit, N. J. Filed Aug. 26, 1903. Serial No. 170,763. (No model.)



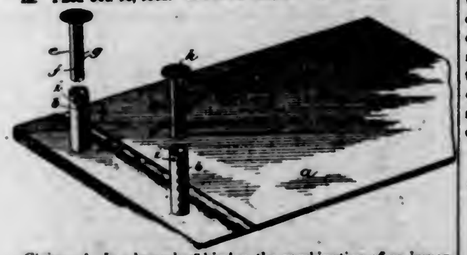
*Claim.*—1. The combination of an arm provided with a scale, a caliper, a block arranged on said arm and having parallel wings, said caliper being pivoted in the block between the wings, and a latch carried by the block and engageable with the caliper to hold the same in a given position relatively to the arm, substantially as described.

2. The combination of an arm provided with a scale, a tape-scale, a lever or swinging arm, said tape-scale being pivotally connected to said swinging arm eccentrically thereof, and a pivot for said swinging arm arranged intermediate the edges of said first-named arm, substantially as described.

3. The combination of an arm provided with a scale, a tape-scale, a lever or swinging arm, said tape-scale being pivotally connected to said swinging arm eccentrically thereof, a pivot for said swinging arm arranged intermediate the edges of said first-named arm, and means for securing said swinging arm with its point of connection with the tape at either of two positions, substantially as described.

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754,766. **LOOSE-LEAF BINDER.** James L. Hanson, Chicago, Ill. Filed Oct. 16, 1902. Serial No. 127,556. (No model.)



*Claim.*—1. In a loose-leaf binder, the combination of an imperforate tubular member provided with an inwardly-projecting stud, a pin member having a longitudinal groove and a plurality of inclined cams extending to such groove and forming between them a plurality of inclined grooves opening into the longitudinal groove at an acute angle thereto, substantially as described.

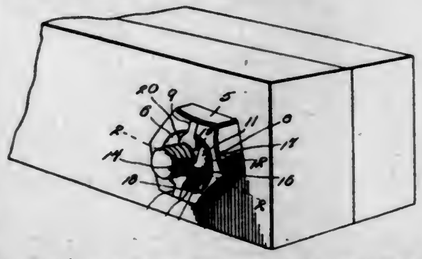
2. In a loose-leaf binder, the combination of a tubular member provided with an inwardly-projecting stud, and a cylindrical pin member having a longitudinal groove and a plurality of inclined cams extending to such groove, each having an outer surface flush with the cylindrical surface of the pin and forming a portion thereof, such cams forming between them a plurality of inclined grooves opening into the longitudinal groove at an acute angle thereto, substantially as described.

3. In a loose-leaf binder, the combination of a back cover, a plurality of upwardly-extending tubular portions each provided with an inwardly-projecting stud and secured to such cover, and a headed cylindrical pin member for each of such tubular members each having a longitudinal groove and a plurality of inclined cams extending downwardly at an incline to such groove and forming between them a plurality of grooves opening into the longitudinal groove at an incline, each of such cams having its outer surface flush with the cylindrical peripheral surface of the pin and forming a part thereof, substantially as described.

4. In a loose-leaf binder, the combination of a back cover, a plurality of upwardly-extending tubular portions each provided with an inwardly-projecting stud and secured to such cover, and a headed cylindrical pin member for each of such tubular members each having a longitudinal groove and a plurality of inclined cams extending downwardly at an incline to such groove and forming between them a plurality of grooves opening into the longitudinal groove at an incline, each of such cams having its outer surface flush with the longitudinal peripheral surface of the pin and forming a part thereof, and a perforated front cover in which such pin members are mounted, substantially as described.

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754,767. **NUT-LOCK.** Jesse R. Hendrix, Lanham, W. Va. Filed Sept. 26, 1903. Serial No. 174,797. (No model.)



*Claim.*—1. A nut-lock comprising a bolt, a nut disposed upon the bolt, said nut having a recess in its upper face and dovetail slots connecting with the recess, an annular washer disposed within the recess and upon the bolt, means for preventing rotation of the washer, said washer having ratchet-teeth upon its outer periphery, a dog pivoted within the recess, means for holding the dog at times in engagement with the ratchet-teeth, and at times out of engagement with said teeth and keys removably engaged with the slots and projecting over the washer to hold the latter within the recess.

2. A nut-lock comprising a bolt, a nut disposed upon the bolt and having a recess in its upper face, an annular washer having ratchet-teeth upon its outer periphery disposed within the recess and upon the bolt, means for preventing rotation of the washer, a dog pivoted within the recess, a spring-plate pivoted to the inner face of the recess and adapted to be turned into and out of engagement with the dog to hold the latter at times in engagement with the ratchet-teeth, a second spring of lesser strength than the first spring disposed within the recess and bearing against the dog and holding the latter out of engagement with the teeth of the washer when the first-named spring is disengaged from the dog and means for preventing the accidental disengagement of the washer from the recess.

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754,768. **PROCESS OF MAKING ANTHRAQUINONE DYES.** Eduard Hepp, Frankfort-on-the-Main, and Ernst Wolffer, Höchst-on-the-Main, Germany, assignors to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation of Germany. Filed Oct. 15, 1903. Serial No. 177,178. (No specimens.)

*Claim.*—1. The herein-described process of making new anthraquinone dyestuffs, which consists in treating 1.4.5.8 leucotetraoxyanthraquinone with the sulfo-acids of primary aromatic amins and then isolating the resulting dyestuff sulfonic acids from the mixture of reaction in the manner hereinbefore described, substantially as set forth.

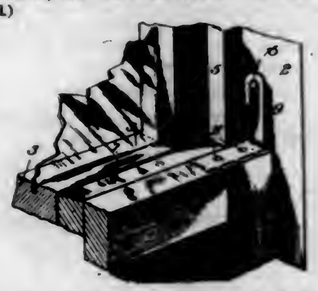
2. The herein-described process of making a new anthraquinone dyestuff, which consists in treating 1.4.5.8 leucotetraoxyanthraquinone with sulfanilic acid and then isolating the resulting dyestuff sulfonic acid from the mixture of reaction in the manner hereinbefore described, substantially as set forth.

3. The herein-described new dyestuff sulfonic acids, obtainable by condensing 1.4.5.8 leucotetraoxyanthraquinone with the sulfo-acids of primary aromatic amins, which dyestuffs, when dry and pulverized, are dark powders, soluble in water and ammonia with a blue color, dyeing mordanted or unmordanted wool fast blue shades.

4. The herein-described dyestuff sulfonic acid obtainable by condensing 1.4.5.8 leucotetraoxyanthraquinone with sulfanilic acid, being when dry and pulverized a dark-blue powder soluble in water and ammonia with a blue color and which is separated by adding to the aqueous solution an excess of mineral acids, soluble in concentrated sulfuric acid yielding a blue solution, giving when heated with dilute caustic alkalies and zinc-dust an orange solution which when filtered assumes the initial blue color on being exposed to the air, dyeing mordanted or unmordanted wool blue shades distinguished by their fastness to light, acids and alkalies.

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754,769. **SEPARABLE HINGE FOR SCREENS.** HENRY B. HIGGINS, Denver, Colo. Filed Nov. 20, 1902. Serial No. 133,071. (No model.)



*Claim.*—1. A separable hinge comprising in its construction a plate adapted to be secured upon the top of a screen-frame and having a hook portion extending upwardly substantially at right angles thereto.

2. A hanger for screens comprising in its construction the right and left hanger attachments each formed of a base-plate portion and a substantially perpendicular flat hook and adapted to be secured to the opposite upper corners of a screen-frame.

3. The separable hinge comprising in its construction the base-plate 8 having a plurality of sharp downwardly-turned spurs, and the inwardly-turned hook perpendicular to said plate, substantially as described.

4. The separable hinge for screens comprising in its construction the sheet-metal integral plate and hook, said hook being bent at a right angle to the plate and said plate having the spurs 10 and nail-holes, substantially as described.

5. A separable hinge for screens comprising in its construction right and left hangers adapted to be secured to the opposite upper corners of a screen-frame and each consisting of a plate 8, and hook 9 bent upward therefrom, and pivot-pins or nails adapted to be secured in position to be engaged by said hooks.

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754,770. **SEPARABLE HINGE FOR SCREENS.** HENRY B. HIGGINS, Denver, Colo. Filed Nov. 24, 1902. Serial No. 133,664. (No model.)



*Claim.*—1. A separable hinge for screens comprising horizontally and vertically slotted boxes adapted to be secured to the window-frame above the screen-frame and hanger-plates adapted to be secured upon the top of the screen-frame and having upwardly and outwardly extending pivot-arms adapted to be held in said boxes, substantially as described.

2. The window-screen hanger comprising the inverted-hook boxes and the hanger-plates having curled ends constituting pivots, substantially as described.

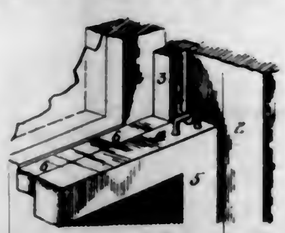
3. A separable hinge for screens comprising sheet-metal hanger-boxes adapted to be secured to the window-frame above the screen and sheet-metal plates adapted to be secured to the top of the screen and having the upwardly and outwardly bent curled arms, pivoted in said boxes, substantially as described.

4. A separable hinge comprising boxes constructed to form hooks and adapted to the sides of a window-frame above the top of a screen, and pivots adapted to be secured to the top of a screen, each of said pivots consisting of a sheet-metal base portion attachable to a screen and an integral curled or rolled portion projecting upwardly and horizontally from the base and adapted to pivotally engage said hooks.

5. A separable hinge-pivot adapted to be secured to the top of a screen, said pivot consisting of a sheet-metal base portion and an integral curled or rolled portion projecting upwardly and horizontally from the base.

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754,771. **HANGER FOR HALF-SIZED SCREENS.** HENRY B. HIGGINS, Denver, Colo. Filed Apr. 15, 1903. Serial No. 152,732. (No model.)



*Claim.*—1. The combination of the window-frame and the blind-stops thereof, with the screen arranged in said window-frame and against the outer sides of said blind-stops, a screen hanger or support arranged closely above the top of the screen at each edge thereof to prevent the lifting of the screen vertically while it is in place against said blind-stops, each said hanger comprising a loop that is open at the top and which is provided with a steep outer side or end for engagement by a pintle on said screen and whereon said pintle tends to slide downward and thereby thrust the screen closely against the blind-stops, substantially as described.

2. A separable screen hanger or hinge member comprising the open-topped hook or loop that is composed of the straight portion or shank 7, the driving-spud arranged at the end thereof, and the hook-forming portions 11 and 12, the latter occupying an acute angle, with respect to the shank 7, substantially as described.

3. A separable hinge for half-size screens comprising the upper part or loop composed of the shank 7, the spud 8, and the portions 11 and 12, the latter occupying an acute angle with respect to the shank 7, in combination with a pintle comprising a shank and a pintle proper, at right angles thereto, said upper part being adapted for attachment to a window-blind stop, and said pintle being adapted for attachment to the top of a screen, substantially as described.

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754,772. **ICE-TANK.** JOHN I. HOPKINS, Chicago, Ill. Filed Aug. 13, 1900. Serial No. 26,630. (No model.)



*Claim.*—1. In a refrigerating apparatus, the combination of a plurality of ice-tanks secured in fixed adjustment and provided with



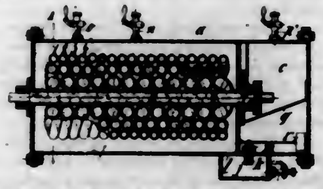
openings in their lower ends, a closed pipe which extends beneath said tanks, openings in said pipe, means to secure said pipe to said tanks with the openings therein in communication with the openings in said tanks, whereby said tanks will be sealed in series, said pipe being removable and adapted to be replaced by caps whereby said tanks may be sealed separately, substantially as described.

2. In a refrigerating apparatus, the combination of a plurality of ice-tanks having hopper-shaped bottoms, openings in the lower ends thereof, a pipe which extends beneath said tanks, branch pipes thereon and means to secure said branch pipes to said tanks in register with the openings in the bottoms thereof, said means comprising downward projections on said tanks, lateral lugs or flanges on said branch pipes provided with openings adapted to receive said downward projections on said tanks, holes formed in said downward projections on said tanks and wedges inserted through said holes beneath said lateral lugs or flanges on said branch pipes, substantially as described.

3. The combination with an ice-tank and an overflow-pipe therefrom of means to secure said overflow-pipe to said tank, said means consisting of a flanged taper seat formed around the overflow-opening in the tank and a plate in an opening in which the overflow-pipe is secured, said plate being wedge-shaped to fit the taper seat on said tank and the relation being such that when fully seated therein the overflow-pipe will be in communication with the overflow-opening in said tank, substantially as described.

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754,773. **APPARATUS FOR THE PURIFICATION OF GAS.** FRANÇOIS JAS, Paris, France. Filed July 3, 1903. Serial No. 164,111. (No model.)



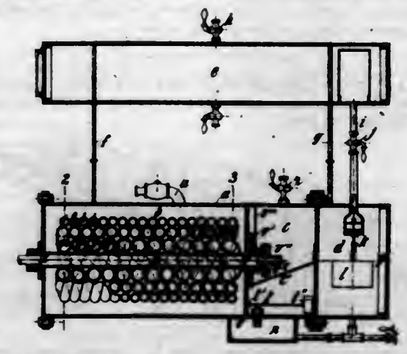
*Claim.*—1. An apparatus for the purification of gas, consisting of a cylindrical vessel closed at either end and provided with a transverse partition dividing the same into two compartments, a shaft in one of said compartments hollow at one end and journaled in the partition and in one end of the vessel, and a plurality of pipes wound spirally around said shaft and rotatable with the same having their open ends diametrically the farthest distance from the shaft and their other ends terminating in the hollow end of the shaft for discharging their contents into the other compartment, substantially as set forth.

2. An apparatus for the purification of gas, consisting of a cylindrical vessel closed at either end and provided with a transverse partition dividing the same into two compartments, a shaft in one of said compartments hollow at one end and journaled in the partition and in one end of the vessel, a plurality of pipes wound spirally around said shaft and rotatable with the same, having their open ends diametrically the farthest distance from the shaft and their other ends terminating in the hollow end of the shaft for discharging their contents into the other compartments, an inclined plate in said last-named compartment below the discharge end of the shaft, a chamber connecting the compartments for returning the liquid from the last-named compartment to the compartment containing the pipes, and a valve for said chamber, substantially as set forth.

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754,774. **CARBURETER.** FRANÇOIS JAS, Paris, France. Filed July 3, 1903. Serial No. 164,112. (No model.)

*Claim.*—1. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at one end protruding into the second compartment, a discharge-valve in the upper part of said second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its other end terminating in the hollow end of the shaft, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting the third compartment with the first, means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, and pipes connecting the upper part of the first and third compartments with the upper part of the reservoir for the equalization of pressure in said reservoir and compartments, substantially as set forth.



3. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at one end protruding into the second compartment, a valve in the upper part of said second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its other end terminating in the hollow end of the shaft and each increasing in cross-section from its outermost convolution to its innermost, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, and means controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

4. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at its end protruding into the second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its outer end terminating in the hollow end of the shaft and each increasing in cross-section from its outermost convolution to its innermost, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, an inclined plate in said second compartment below the hollow end of the shaft, a discharge-valve for the upper part of the second compartment, a valved opening in the bottom of said second compartment communicating with said connecting means, and means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

5. A carbureter, comprising a cylinder divided by partitions into three compartments, means in one compartment for intimately mixing a liquid and gas adapted to discharge into the second compartment, a gas-discharge valve in said second compartment, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, and means in said third compartment controlling the valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

6. A carbureter, comprising a cylinder divided by partitions into three compartments, means in one compartment for intimately mixing a liquid and gas adapted to discharge into the second compartment, a gas-discharge valve in said second compartment, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting the third compartment with the first, means in said third compartment controlling said valved supply-pipe de-

pending on the height of the liquid in the first and third compartments, and pipes connecting the upper part of the first and third compartments with the upper part of the reservoir for the equalization of pressure in said reservoir and compartments, substantially as set forth.

7. A carbureter, comprising a cylinder divided by partitions into three compartments, means in one compartment for intimately mixing a liquid and gas adapted to discharge into the second compartment, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, an inclined plate in said second compartment below the discharge end of said mixing means, a gas-discharge valve for the upper part of the second compartment, a valved opening in the bottom of said second compartment communicating with said connecting means, and means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

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**754,775. HOISTING DEVICE FOR LIVE STOCK.** LAFAYETTE W. JOHNSON, Jerome Junction, Ariz. Filed July 29, 1903. Serial No. 167,430. (No model.)



*Claim.*—1. In hoisting mechanism for live stock, a gangway comprising a main section and an auxiliary section movably connected thereto, and normally forming a vertical gate for the main section, means for hoisting said gangway, and means for permitting the auxiliary section thereof when hoisted to assume a horisontal position to open the gangway for the exit of stock, and to form an extension for the floor of the gangway.

2. In hoisting mechanism for live stock, a gangway comprising a main section, and an auxiliary section movably connected thereto, the one section normally occupying a substantially horisontal position, and the other a vertical position, means for hoisting said gangway, means whereby the auxiliary section thereof is caused to gradually assume a substantially horizontal position, and means for imparting an inclination to said main section on the said gangway attaining a predetermined height.

3. In hoisting mechanism for live stock, a gangway comprising a main section, and an auxiliary section movably connected thereto, the one section normally occupying a substantially horizontal position, and the other a vertical position, means for hoisting said gangway, means whereby the auxiliary section thereof is caused to gradually assume a substantially horizontal position, and rollers for imparting an inclination to the main section on the said gangway attaining a predetermined height, one of said rollers being mounted in advance of the other, and at a greater elevation.

4. In hoisting mechanism for live stock, a gangway, means for hoisting the same substantially horizontally, and means for imparting an inclination thereto on the said gangway reaching a predetermined height, said means comprising suspensory cables, an ascending drum, and devices for rotating the drum to wind said cables thereon from one side while paying them out from the other.

5. In hoisting mechanism for live stock, a gangway, means for hoisting the same substantially horizontally, and means for imparting an inclination thereto on the said gangway reaching a predetermined height, said means comprising suspensory cables, an ascending drum, guides for the drum, and devices for rotating the drum to wind the cables thereon from one side while paying them out from the other.

6. In hoisting mechanism for live stock, a gangway, means for hoisting the same substantially horizontally, and means for imparting an inclination thereto on the said gangway reaching a predetermined height, said means comprising suspensory cables, an ascending drum, pulleys and rails for guiding the drum, and devices for rotating the drum to wind the cables thereon from one side while paying them out from the other.

7. In hoisting mechanism for live stock, a gangway, means for hoisting the same substantially horizontally, and means for imparting an inclination thereto on the said gangway reaching a predetermined height, said means comprising suspensory cables, an ascending horizontal drum having a rigid shaft, link-rods pendent from said shaft, and connecting with the gangway, and devices for rotating the shaft to wind the cables on the drum from one side while paying them out from the other.

8. In hoisting mechanism for live stock, a gangway, an ascending drum having a rigid shaft, suspensory cables from the drum to the gangway, link-rods from the shaft to the gangway, hoisting-cables, means for preventing rotation of the shaft until the drum has reached a predetermined height, and means for then rotating the shaft.

9. In hoisting mechanism for live stock, a gangway, an ascending drum having a rigid shaft, suspensory cables from the drum to the gangway, link-rods from the shaft to the gangway, hoisting-cables, means for preventing rotation of the shaft until the drum has reached a predetermined height, and a rack and pinion for then rotating the shaft.

10. In hoisting mechanism for live stock, a gangway, an ascending drum having a rigid shaft, suspensory cables from the drum to the gangway, link-rods from the shaft also to the gangway, a horizontal rod connecting said link-rods beneath the gangway, hoisting-cables, means for preventing rotation of the shaft until the drum has reached a predetermined height, and means for then rotating said shaft.

11. In hoisting mechanism for live stock, a gangway, an ascending drum having a rigid shaft, suspensory cables from the drum to the gangway, link-rods from the shaft also to the gangway, a horizontal rod connecting said link-rods beneath the gangway, hoisting-cables, means for preventing rotation of the shaft until the drum has reached a predetermined height, and a rack and pinion for then rotating said shaft.

12. In hoisting mechanism for live stock, a gangway, means for hoisting the same substantially horizontally, and means for imparting an inclination thereto on the said gangway reaching a predetermined height, said means comprising duplicate uprights, an ascending drum having a shaft provided with shoes moving upon said uprights, and trip devices for said shoes.

13. In hoisting mechanism for live stock, a gangway, means for hoisting the same substantially horizontally, and means for imparting an inclination thereto on the said gangway reaching a predetermined height, said means comprising duplicate standards having plates secured thereto, and said plates each being bent at a suitable part of its height, to form a trip, and also provided with a series of teeth, and an ascending drum having a shaft provided with shoes adapted to pass over said trips, and also provided with pinions for engaging said teeth.

14. In hoisting mechanism for live stock, the combination with duplicate standards, and a connecting cross-beam therefor, of a gangway, an ascending drum having a shaft, suspensory cables from the drum to the gangway, link-rods hung upon the shaft, and supporting guide-pulleys at the upper ends thereof, said link-rods being connected together beneath the gangway, hoisting-cables attached at one end to the cross-beam, and passing beneath said guide-pulleys, thence over other guide-pulleys suspended from said beam, means for preventing rotation of the shaft until the drum has reached a predetermined height, and means for then rotating said shaft.

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**754,776. LADDER-HANGER.** SIMON C. JOHNSON, DeKalb, Ill. Filed May 23, 1903. Serial No. 158,366. (No model.)

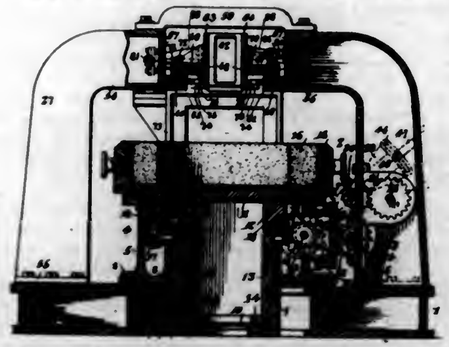


*Claim.*—As an article of manufacture, a ladder-hanger comprising a shank having integral divergent fingers at one end that are oblong in cross-section and are formed with spaced terminal rung-engaging hooks, said fingers being twisted upon their longitudinal axes to obtain broad-bearing surfaces for the hooks, an integral hanger-hook projecting from the end of the shank opposite the rung-engaging hooks, said shank being furthermore provided with a longitudinally-disposed slot, another rung-engaging hook disposed in opposing relation to and located on the same side of the shank as the spaced hooks, said latter rung-engaging hook having a base portion that is offset and slidably rests flat against one face of the shank, a bolt passing through the base portion and the slot of the shank to secure the hook against movement, and a nut threaded on the bolt.



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**754,777. GEAR-MOLDING MACHINE.** FERDINAND KEPP, Brooklyn, N. Y. Filed Aug. 27, 1903. Serial No. 171,029. (No model.)



*Claim.*—1. In a gear-molding machine, the combination with a base having an opening; of a table-supporting frame rigidly secured to the base and having a bearing-sleeve extended into the opening therein and provided at its lower end with a bearing-flange, and a rotary flask-supporting table provided with a hollow cylindrical journal mounted to revolve in the bearing-sleeve and having an end flange opposed to the bearing-flange of the sleeve.

2. In a gear-molding machine, the combination with a base having an opening; of a table-supporting frame rigidly secured to the base and having a bearing-sleeve extended into the opening therein and provided at its lower end with a bearing-flange, a rotary flask-supporting table provided with a hollow cylindrical journal mounted to revolve in the bearing-sleeve and having an end flange opposed to the bearing-flange of the sleeve, and an annular wear-plate interposed between said flanges.

3. In a gear-molding machine, the combination with a base and a flask-supporting table; of rigid front and rear supports rising from the base, a pattern-carriage slidably mounted on said supports, means for moving said carriage, and a pattern-slide mounted at the front end of the carriage to support a pattern above the table.

4. In a gear-molding machine, the combination with a base and a flask-supporting table; of tracks located in a higher plane than the table, a long pattern-carriage provided with a cross-head mounted on the tracks, an independent rear support for the carriage, means for moving the carriage, and a pattern-slide adjustably supported by the front end of said carriage.

5. In a gear-molding machine, the combination with a base and a flask-supporting table; of a front supporting-arch rising from the base, a pattern-carriage supported by the arch, and means at the front end of said carriage for supporting a pattern and means for supporting the carriage in rear of the arch.

6. In a gear-molding machine, the combination with a base and a flask-supporting table; of a supporting-arch, a pattern-carriage slidably mounted in the arch, a separate support rising from the base and sustaining the rear end of the carriage, and means for supporting a pattern at the front end of the pattern-carriage.

7. In a gear-molding machine, the combination with a base and a flask-supporting table; of a pair of columns rising from the base and having their upper ends deflected toward each other spaced apart and connected to form a housing, a pattern-carriage slidably mounted in said housing, and means for mounting a pattern at the front end of said carriage.

8. In a gear-molding machine, the combination with a base and a flask-supporting table; of, a housing located above the table, a long pattern-carriage slidably mounted in said housing, a rear supporting-column located in rear of the housing to support the rear end of the carriage, and means for adjustably mounting a pattern at the front end of the carriage.

9. In a gear-molding machine, the combination with a base and a flask-supporting table; of a housing located above the table and provided with tracks, a main slide or pattern-carriage having a cross-head movable on said tracks, a rear supporting-column rising from the base and supporting the rear end of the carriage, and means for adjustably mounting a pattern at the front end of said carriage.

10. In a gear-molding machine, the combination with a base and a flask-supporting table; of a pair of columns having spaced horizontally-disposed upper ends, bridge-plates connecting the upper ends of the columns, opposed flanges extending from the opposed ends of the columns and provided with tracks, a main slide constituting the pattern-carriage and provided with a cross-head movable upon said tracks, a rear supporting-column for the rear end of the main slide, and a vertically-adjustable pattern-slide mounted at the front end of the main slide and disposed to support a pattern above the table.

11. In a gear-molding machine, the combination with a base and a flask-supporting table; of a long main slide, independent front and rear rigid supports therefor, brackets carried by said supports, a slide-operating screw mounted in the brackets, a traveling nut engaging the screw and having connection with the slide, and means located at the front end of the slide for supporting a pattern above the table.

12. In a gear-molding machine, the combination with a base and a flask-supporting table; of front and rear supports rising from the base, a long main slide constituting a pattern-carriage having slidable connection with said supports, a bracket extending laterally from said slide, a traveling nut mounted in the bracket, a slide-operating screw engaging the nut and disposed parallel with the slide at one side thereof, and a hand-wheel for rotating the screw to effect the longitudinal movement of the slide.

13. In a gear-molding machine, the combination with a base and a flask-supporting table: of a main slide constituting the pattern-carriage, a rigid support for the slide, means for moving the slide longitudinally, and stop mechanism designed to limit the movement of the slide, and including a stop mounted on the rigid support.

14. In a gear-molding machine, the combination with a base and a flask-supporting table; of a long main slide constituting a pattern-carriage, front and rear supports rising from the base and sustaining the opposite ends of the slide, means for moving the slide longitudinally, and an adjustable stop mechanism for limiting the movement of the slide.

15. In a gear-molding machine, the combination with a base and a flask-supporting table; of a support, a main slide constituting a pattern-carriage mounted on said support, and stop mechanism including a stop member carried by the support and a stop-rod adjustably carried by the slide and having a stop-finger disposed to engage the stop.

16. In a gear-molding machine, the combination with a base and a flask-supporting table; of a support rising from the base, a main slide constituting a pattern-carriage mounted on the support, means for moving the slide longitudinally, a pair of brackets extending laterally from the slide, a stop-rod adjustably retained by said brackets and having a stop-finger, and an adjustable stop mounted on the support in the path of the stop-finger to limit the movement of the slide.

17. In a gear-molding machine, the combination with a base and a rotary flask-supporting table; of rigid supports rising from the base, a main slide mounted on said supports, means for moving the slide, vertically-movable pattern-supporting means mounted at the front end of the slide, and table-operating mechanism carried in part by a slide-support.

18. In a gear-molding machine, the combination with a base and a rotary flask-supporting table: of a pair of supporting-columns rising from the base and provided with tracks, a slide movable along said tracks and constituting a pattern-carriage, means carried by one of said columns for moving the slide, and means carried by the other column for operating the table.

19. In a gear-molding machine, the combination with a base and a rotary flask-supporting table; of a supporting-arch comprising a pair of connected columns rising from the base, a main slide constituting a pattern-carriage supported by the arch, carriage-supporting means in rear of the arch, table-operating mechanism including a handle-lever, and an index-plate secured to one of the columns and arranged to limit the movement of the handle-lever.

20. In a gear-molding machine, the combination with a base; of a flask-supporting table, elevated tracks, a main slide constituting a pattern-carriage said slide being provided with a cross-head movable on the tracks and with guide-flanges located at the rear end of the slide, and a rear supporting-column rising from the base and having guideways for the reception of the guide-flanges on the slide.

21. A main slide or pattern-carriage for gear-molding machines in the form of a long casting provided adjacent to its front end with a cross-head and having longitudinal guide-flanges at the rear end thereof in combination with front and rear supports engaging the cross-head and guide-flanges.

22. In a gear-molding machine, the combination with a base having a central opening and an arch rising from the base, a pattern-carriage slidably supported above the opening by the arch, and a pattern movable with the carriage, of a table-supporting frame bolted upon the base and comprising inner and outer cylinders, the inner cylinder being extended below the outer cylinder and into the opening in the base and provided with an end bearing, a flask-supporting table having a pendent journal fitted within the inner cylinder of the table-supporting frame and resting upon the end bearing of the latter, and table-operating means housed in part within the outer cylinder of the frame.

23. In a gear-molding machine, the combination with a base, and a flask-supporting table, of a pair of columns rising from the base and having lateral extensions spaced apart and connected to form a housing, tracks supported within said housing, a pattern-slide mounted in the housing and slidably supported by the tracks, and means for supporting a pattern from the carriage.

24. In a gear-molding machine, the combination with a base, and a flask-supporting table, of a pair of columns having spaced upper ends formed with opposed flanges provided with tracks, a main slide constituting the pattern-carriage and provided with a cross-head movable upon said tracks, and means for supporting a pattern from the carriage.

25. In a gear-molding machine, the combination with a base, and a flask-supporting table, of a pair of columns having spaced horizontally-disposed upper ends, opposed flanges extending from the ends of the columns, a main slide disposed between the ends of the columns and slidably supported by the flanges, and means for supporting a pattern from the slide.

26. In a gear-molding machine, the combination with a base, and a flask-supporting table, of a main slide constituting a pattern-carriage located above the table, columns rising from the base at opposite sides of the slide and extended to form a supporting-arch for the same, and a pattern carried by the slide.

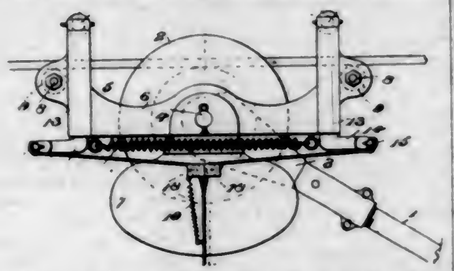
27. In a gear-molding machine, the combination with a base, and a flask-supporting table, of a main slide constituting a pattern-carriage located above the table, columns rising from the base at opposite sides of the slide, and having track-supports provided with tracks located in the same horizontal plane for the support of said slide, and means for supporting a pattern from the slide.

28. In a gear-molding machine, the combination with a base, and a flask-supporting table, of a main slide constituting a pattern-carriage located above the table, and a stationary arch spanning the flask-supporting table and disposed transversely of the slide to support the same for movement in a horizontal plane.

29. In a gear-molding machine, the combination with a base, and a flask-supporting table, of an arch rising from the base and spanning the table, said arch comprising a pair of columns having opposed ends provided with tracks, a bridge-plate connecting the columns above the tracks, and a main slide constituting the pattern-carriage located below the bridge-plate and provided with a cross-head engaging the tracks.

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**754,778. TROLLEY-WHEEL RETAINER. JAMES A. KILPATRICK, Niles, Ohio. Filed Dec. 19, 1903. Serial No. 186,223. (No model.)**



*Claim.*—1. In combination with a trolley-pole and a trolley-wheel, a pivotally-mounted retainer-frame, means tending by gravity to normally hold such frame horizontally, and retainers carried by such frame normally extended across the conductor-wire.

2. In combination with a trolley-pole and a trolley-wheel, a pivotally-mounted retainer-frame, means tending to normally hold such frame horizontally, two sets of retainer-arms carried by the frame, and means connecting the corresponding arms of each set for increasing the tension on one set of arms when the other set is opened.

3. In combination with a trolley-pole and a trolley-wheel, a pivotally-mounted retainer-frame, weight members depending from such frame, and retainer-arms carried by the latter.

4. In combination with a trolley-pole and a trolley-wheel, a retainer-frame pivotally mounted on the axle-pin of said trolley-wheel, weight members depending from such frame, and retainer-arms carried by the latter.

5. In combination with a trolley-pole and a trolley-wheel, a frame having at its ends two sets of retainer-arms, the arms of each set being movable both forwardly and rearwardly, springs for normally holding said arms transversely of the frame, and the trolley-rope secured to one arm of each set of arms, as set forth.

6. The combination with the frame, of the upright rods at the ends thereof, two sets of retainer-arms secured to such rods and extended transversely of the frame, and two springs, each spring engaging one arm of each of the two sets of arms, as set forth.

7. The combination with the frame, of the two sets of horizontally-disposed retainer-arms, upright rods therefor, one rod of each set having a cranked portion, springs connecting said rods, and the trolley-rope secured to said cranked portions, as set forth.

8. The combination with the pivotally-mounted frame having upright bearings at its ends, of two sets of rods mounted in said bearings, one rod of each set having a cranked portion, arms secured to the upper ends of said rods, rollers mounted in said frame below said arms, springs connecting corresponding arms of the two sets of arms, and the trolley-rope secured to said cranked portions, as set forth.

9. The combination with the frame and the two sets of pivoted retainer-arms, of the trolley-rope secured to one arm of each set of arms, and a spring for normally taking up the weight of the rope, as set forth.

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**754,779. ATTACHMENT FOR JACKET-KETTLES, &c. FRED M. KIMBALL, Boston, Mass., assignor to Clarence H. Lovell, Melrose, Mass., and Nathan R. Covel, Boston, Mass. Filed Nov. 7, 1903. Serial No. 180,239. (No model.)**



*Claim.*—1. An attachment for jacket-kettles, radiators and other heating devices adapted to be connected with the interior space of the kettle, radiator, or other heating device, and to a return-pipe leading to a boiler, and formed with an interior chamber adapted to receive the products of condensation, and communicating with interior space of the kettle, radiator or other heating device, a transverse chamber adapted to be connected with a main supply-pipe leading from a boiler, and provided with a passage-way leading to the interior space of the kettle, radiator or other heating device and with a nipple in its opposite wall having a passage of greater area than the passage in the other wall; a conduit in the floor of condensation-chamber and communication with the return-pipe to a boiler; and valves or cocks intermediate of the attachment and the supply and return pipes, and a valve or cock in the main supply-pipe between the device to be heated and the connection between said supply-pipe and the attachment, substantially as and for the purpose set forth.

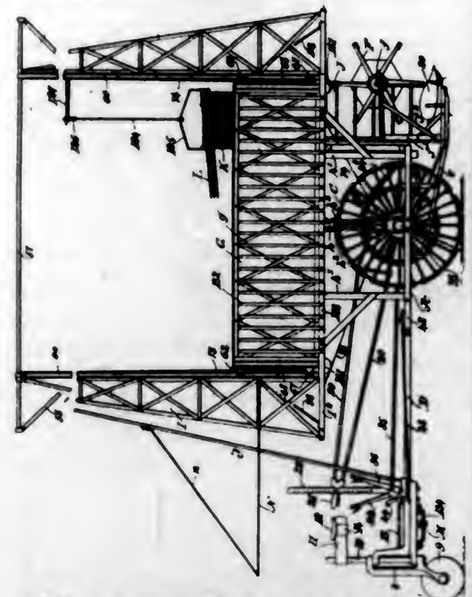
2. In combination with a jacket-kettle or other heating device and valve-controlled steam-supply and return pipes connected therewith, an attachment such as described, connected directly with the steam-space of the heating device and the return steam-pipe and connected also with the steam-supply pipe by a valve-controlled pipe, and having a pipe leading from the steam-chamber of said attachment into the steam-space of the heating device, substantially as and for the purpose set forth.

3. An attachment for steam-kettles, radiators and other heating devices, consisting of a body adapted for connection with steam supply and return pipes and formed with a vertical interior condensing-chamber; a transverse steam-chamber provided with an upward steam-passage and a vertically-disposed steam-nipple; and a conduit with a restricted passage arranged in the floor of the condensing-chamber and extending above the same, substantially as and for the purpose hereinbefore set forth.



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**754,780. COMBINED HEADER AND STACKER. JOHN H. KINDWATER, Manhattan, Kans. Filed Oct. 4, 1902. Serial No. 125,948. (No model.)**



*Claim.*—1. A combined harvester and stacker comprising a wheeled frame, a cutting apparatus thereon, a grain-barge carried by the frame and capable of a rising-and-falling movement thereon, means for transferring harvested grain from the cutter apparatus to said barge, and means for bodily hoisting the barge.

2. A combined header and stacker having a suitable cutter apparatus, a vertically-movable barge disposed in an elevated position, grain-carrying devices between the cutter apparatus and said barge, and means for bodily hoisting said barge.

3. A combined header and stacker having a suitable cutter apparatus, a barge normally occupying a raised position in a plane above the cutter apparatus, grain-carrying devices between said cutter apparatus and the barge, and power-driven devices for hoisting said barge bodily by the movement of the machine.

4. A combined harvester and stacker having a cutter apparatus, a grain-barge capable of an up-and-down movement relative to said cutter apparatus, tiltable supports for said barge, means for loading said barge with grain harvested by the cutter apparatus, a hoisting mechanism for bodily raising the barge and its tiltable supports to an elevated position, and means for tilting said barge to a dumping position when elevated by said hoisting mechanism.

5. A combined header and stacker, comprising a wheeled frame carrying a cutter apparatus, an elevated platform supported on said frame in a horizontal plane above the cutter apparatus, a barge or receiver arranged when lowered to rest on said platform, grain-carrying devices between the cutter apparatus and said barge, and means for bodily hoisting and dumping the barge.

6. A combined header and stacker, comprising a wheeled frame carrying a cutter apparatus, vertical guides extending upwardly from said frame, a barge slidably fitted to said guides, grain-carrying devices between the barge and the cutter apparatus, and means for bodily lifting said barge when loaded.

7. A combined header and stacker, comprising a wheeled frame having a cutter apparatus, an elevated platform above said cutter apparatus, vertical guides rising above said platform, a barge slidably fitted to said guides and arranged to rest on said platform, means for bodily raising said barge when loaded, and grain-carrying devices between the cutter apparatus and the barge.

8. In a combined header and stacker, the combination with a cutter apparatus, of a vertically-movable barge, normally occupying an elevated position with respect to said cutter apparatus, an elevator arranged to receive the grain from said cutter apparatus, and a conveyer for transferring grain from the elevator to the barge, said conveyer being shiftable out of the path of the barge.

9. A combined harvester and stacker having a wheeled frame, a cutter apparatus thereon, an up-and-down-movable grain-barge mounted on said frame and adapted when lowered to lie above said cutter apparatus, means for bodily hoisting said barge, a platform-conveyer adjacent to said cutter apparatus, an upstanding elevator arranged to receive its load from said platform-conveyer, another conveyer between the elevator and the barge, a drive-shaft, and independent trains of driving connections for collectively operating the cutter apparatus, the elevator, and the conveyer devices independently of the barge-hoisting mechanism.

10. In a combined header and stacker, the combination with a suitable cutter apparatus, and means for carrying grain therefrom, of vertical guides, a barge slidably fitted to said guides, means for bodily raising the barge, and a conveyer disposed in overhanging relation to the barge and shiftable out of path thereof.

11. In a combined header and stacker, the combination with a wheeled frame, and a cutter apparatus, of vertical guides extending above said frame, wheeled carriages slidably fitted to said vertical guides, a receptacle pivotally supported on said carriages, conveyer devices for transferring harvested grain from the cutter apparatus to the receptacle when the latter is lowered, means for bodily hoisting the receptacle and the carriages, and means for moving said receptacle when hoisted to a dumping position.

12. In a combined header and stacker, the combination with a wheeled frame, a cutter apparatus, and suitable grain-carriers, of vertical guides extending above said frame, a barge having pivotal and slidable connection with said guides, means for bodily hoisting said barge, when loaded by the grain-carriers, to an elevated position, and means for tilting said barge when in said elevated position and discharging its load upon a stack.

13. A combined harvester and stacker having a wheeled frame, a drive-shaft, a cutter apparatus on said frame, an up-and-down-movable grain-barge carried by the frame, a hoisting mechanism for bodily raising the barge, and means whereby the cutter apparatus and the barge-hoisting mechanism may be driven from the drive-shaft independently of each other.

14. A combined harvester and stacker having a wheeled frame, a drive-shaft, a cutter apparatus on said frame, an up-and-down-movable grain-barge carried by said frame, a hoisting mechanism for bodily raising said barge, a conveyer mechanism between the cutter apparatus and the barge, driving connections for operating the cutter apparatus and the conveyer mechanism collectively from the drive-shaft, and other driving connections for operating the barge-hoisting mechanism from the drive-shaft independently of the cutter apparatus and the conveying mechanism.

15. A combined header and stacker comprising a wheeled frame carrying a cutter apparatus, an elevated platform fixed to said frame and disposed above the cutter apparatus, towers rising from the elevated platform and provided with guide-rails, carriages slidably fitted to said rails, a barge mounted on said carriages, means driven by the wheeled axle and connected with said carriages to bodily raise the barge, and conveyer devices between the cutter apparatus and the barge.

16. In a combined header and stacker, the combination of a wheeled frame carrying a cutter apparatus, an elevated barge, a hoisting mechanism for bodily raising said barge, a conveyer in rear of the cutter apparatus, an elevator arranged to receive its load from said conveyer, an upper conveyer having pivotal connection with said elevator and arranged to overhang the barge, and means for raising said upper conveyer out of the path of the barge.

17. In a combined header and stacker, the combination of a tiltable barge, means for bodily hoisting the barge, a cutter apparatus, an elevator, a horizontal upper conveyer arranged to receive its load from the elevator and disposed in overhanging relation to the barge, and a chute carried by the free end of the upper conveyer and extending over the barge to deliver the load centrally thereto.

18. In a combined header and stacker, the combination of a wheeled axle, a cutter apparatus, a vertically-movable barge, means for transferring grain from the cutter apparatus to the barge, a drum fast with said wheeled axle, cables coiled on the drum and connected with said barge to bodily hoist the latter, means for locking the drum on the elevation of the barge, and means for tilting the barge when raised.

19. A combined harvester and stacker having a wheeled frame, upright barge-guides on said frame, an up-and-down-movable grain-barge limited to slidable movement by said guides, a hoisting mechanism for bodily raising said barge, a cutter apparatus, a conveyer mechanism between the cutter apparatus and the barge, and means for operating said parts in due order.

20. In a combined grain header and stacker, the combination of a cutter apparatus, a main axle, an intermediate shaft 109 connected with said cutter apparatus, a horizontal conveyer in rear of the cutter apparatus and driven by said intermediate shaft, an elevator having two endless conveyers arranged to receive a load from the horizontal conveyer, means driven by the shaft 109 for driving both conveyers of the elevator, a vertically-movable barge, means for bodily hoisting said barge, and an upper conveyer overhanging the barge and driven by one of the elevator-conveyers.

21. A combined harvester and stacker having a wheeled frame, upright barge-guides on said frame, tiltable supports slidably confined by said guides, a grain-barge carried by said supports, a hoisting mechanism for bodily raising the barge and its supports, a cutter apparatus on said frame, and means for transferring harvested grain from said cutter apparatus to said barge.

22. A combined harvester and stacker having a wheeled frame, a drive-shaft, a cutter apparatus on said frame, an up-and-down-movable grain-barge carried by said frame, means for driving the cutter apparatus from the drive-shaft while the machine is operating in the field of grain to be harvested, a hoisting mechanism for said barge, and independent driving connections between the drive-shaft and the barge-hoisting mechanism for bodily hoisting the barge to an elevated position on the frame during the period of transit of the machine from the field of cutting operations to the place of deposit of the load in the barge.

23. A combined harvester and stacker comprising a wheeled frame, a cutting apparatus thereon, an up-and-down-movable grain-barge, means for supporting the barge in its lowered position on the frame, a hoisting mechanism for bodily raising the barge from the supporting means and to a discharging position, and means for transporting grain from the cutter apparatus to the barge when the latter is in its lowered position.

24. A combined harvester and stacker, comprising a wheeled frame carrying a cutter apparatus, an up-and-down-movable barge, means for restraining the barge from swaying during the periods of such up-and-down movement, a hoisting mechanism for bodily raising the barge, and means for transferring grain from the cutter apparatus to the barge when the latter is lowered.

25. The combination with a wheeled frame, a drive-shaft, and a cutter apparatus, of an up-and-down-movable barge carried by the cutter apparatus, a hoisting mechanism for bodily raising the barge to a discharging position, means for guiding the barge when operated by the hoisting mechanism, means for transferring grain from the cutter apparatus to the barge when the latter is lowered, and means adapted to be actuated by the drive-shaft and controllable at will for operating either the hoisting mechanism or the cutter apparatus and grain-carrier.

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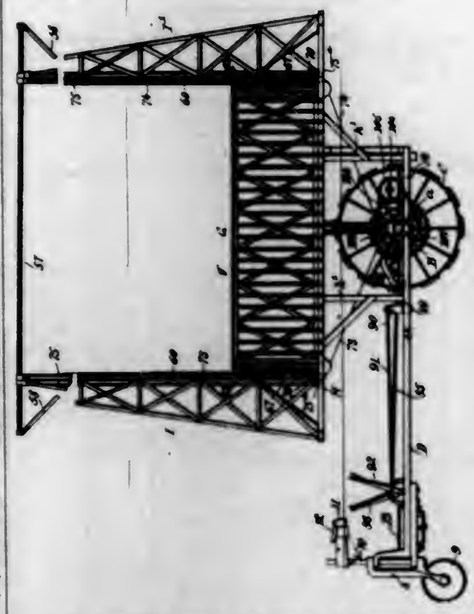
**754,781. HOISTING MECHANISM FOR STACKERS.** JOHN H. KINDWATER, Ellis, Kans. Original application filed Oct. 4, 1902, Serial No. 125,948. Divided and this application filed July 22, 1903. Serial No. 166,585. (No model.)

*Claim.*—1. A portable harvester and stacker having a main axle, a wheeled frame, vertical towers erected on said frame, vertical guides within said towers, wheeled carriages arranged to travel on said guides, a barge slidable between the towers, guide-plates fixed to said barge and having pivotal connection with the carriages, and means operated by the axle for bodily hoisting said carriages and the barge.

2. In a combined harvester and stacker, the combination with vertical guide-rails, of carriages arranged to travel on said rails, a barge, vertical guide-plates fixed to said barge and pivoted to said carriages, said guide-plates being provided with rollers which travel on the guide-rails and are adapted to be shifted with the barge when it is dumped, and a hoisting mechanism for bodily raising the carriages and the barge.

3. In a combined harvester and stacker, the combination of channeled rails, carriages fitted slidably to said rails and having rollers arranged to travel thereon, a barge, guide-plates fixed to the barge and having rollers which travel on the rails, means for connecting the guide-plates pivotally to said carriages, and a hoisting mechanism for bodily elevating the barge and the carriages.

4. In a portable harvester and stacker, the combination with a main axle, and a vertically-movable barge, of a hoisting mechanism operable by said axle and effective in bodily raising the barge, means for maintaining the barge in such raised position, and means controllable by the rotation of the axle for lowering the barge at a required speed.



5. In a portable harvester and stacker, the combination of a main axle, and a vertically-movable barge, of a hoisting-drum loose on said axle, hoisting-cables connected to the drum and to the barge, a brake mechanism cooperating with the drum, a lowering mechanism between the drum and the axle, and clutches between the axle and the drum for operating the hoisting mechanism or the lowering mechanism at will.

6. The combination with vertical guides, of slidable carriages having wheels arranged to ride against the guides and limited to vertical movement thereon, guide-plates pivoted to said carriages and having wheels also arranged to ride on the guides, a hoisting mechanism for the carriages, and a barge fixed to said guide-plates; the barge and its attached guide-plates being tiltable to a dumping position.

7. The combination with vertical guides, of wheeled carriages limited to slidable travel on the guides, each carriage having an offset guide-face, guide-plates pivoted near their lower ends to the carriages and having rollers near their upper ends disposed to ride on the guides, said guide-plates having offset feet arranged to ride against the offset guide-faces of the carriages, and a barge fixed to the guide-plates and movable therewith to a dumping position on the axis afforded by the pivotal connection between the carriages and the guide-plates.

8. In a combined harvester and stacker, the combination with suitable guides and traveling carriages adapted thereto, of a barge having pivotal connection with said carriages, plates fixed to the barge, and stops fastened adjustably to said plates and arranged to impinge the guide-rails, for limiting the dumping movement of the barge.

9. In a combined harvester and stacker, the combination of a main axle, a wheeled frame, suitable towers erected on said frame and provided with guides, a barge movable between the towers, wheeled carriages slidable on the guides and having pivotal connection with the berge, hoisting-cables attached to said barge, a hoisting-drum loose on the axle and having hoisting-cables attached thereto, means for clutching said drum to the axle, means for locking the drum against rotation, and means actuated by the axle for controlling the rotation of the drum and lowering the barge.

10. In a combined harvester and stacker, the combination of a main axle, a wheeled frame, vertical towers erected on the frame and having suitable guides, a barge movable between the towers, a hoisting-drum mounted loosely on said axle, hoisting-cables connected to the barge and coiled on said drum, a clutch controllable at will and arranged to make the drum fast with the axle, means for locking the drum against rotation when free from the clutch, and means for controlling the drum and lowering the barge by the rotation of the axle.

11. In a combined harvester and stacker, the combination with a barge and hoisting-cables therefor, of a main axle, a drum mounted loosely on said axle and held from endwise displacement thereon, a clutch for making said drum fast with the axle, means for locking the drum against rotation, and speed-reducing gearing between the drum and the axle.

12. In a combined harvester and stacker, the combination with a barge and hoisting-cables therefor, of an axle, a drum loose thereon, a clutch for making said drum fast with said axle, a brake interlocking with said drum, a train of speed-reducing gearing between the drum and the axle, and another clutch for throwing one member of said train of gearing into and out of fast relation with the axle.



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**754,782. PROCESS OF PREPARING WOOD AND THE PRODUCT THEREOF.** MAX LICHTENBERGER, New York, N. Y., assignor to Louis Wertheimber, New York, N. Y. Filed June 25, 1903. Serial No. 163,063. (Specimens.)

*Claim.*—1. The method herein described consisting in subjecting wood sawdust to the action of a bleaching agent and then subjecting the bleached sawdust to the action of a dye-bath.

2. The herein-described process consisting in subjecting wood sawdust to the bleaching action of chlorid of lime and then to a dye-bath consisting of an anilin coloring-matter.

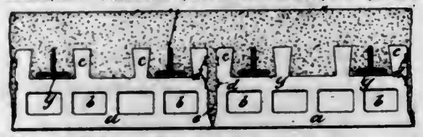
3. The method herein described consisting in first grinding or reducing to a pulverulent form ordinary wood sawdust then subjecting such sawdust to the action of a bleaching agent and finally dyeing the bleached mass.

4. The herein-described process consisting in reducing ordinary sawdust to a pulverulent form then subjecting the same to the action of a bleaching agent; drying the bleached mass and finally subjecting it to the action of a dye-bath.

5. As a new article bleached and dyed sawdust.

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**754,783. FIREPROOF CONSTRUCTION.** GUSTAV LIEBAU, Maurer, N. J. Filed Nov. 29, 1902. Serial No. 133,270. (No model.)



*Claim.*—1. In fireproof construction, a flat arch composed of tiles or bricks having ribs, in combination with a superimposed mass of mortar or concrete filling the spaces between said ribs, and transverse metal strips embedded in said mass between the ribs of the tiles, substantially as described, and extended beyond the ribs.

2. A flat arch composed of tiles or bricks having upper projections or ribs whose sides converge to form dovetail spaces, in combination with a superimposed mass of mortar or concrete, and metal strips extended outward beyond the ribs and embedded in said mass in said dovetail spaces, substantially as described.

3. A flat arch composed of tiles or bricks having upper projections or ribs and lateral basal projections separating the sides of the tiles of adjoining courses, the outer faces of the tiles having dovetail slots *d*, in combination with a mass of mortar or concrete filling the spaces between the tiles and between the ribs thereof, and transverse metal strips embedded in said mass between the ribs of the tiles, substantially as described.

4. A flat arch composed of hollow tiles having upper longitudinal dovetailed ribs with longitudinal dovetail slots on their opposite outer faces and basal projections separating the sides of the tiles of adjoining courses, in combination with a mass of mortar or concrete filling the spaces between said tiles and between the ribs thereof, and transverse metal strips embedded in the mass between said ribs, substantially as described.

5. A flat arch composed of lower and upper courses of tiles or brick, in combination with a mass of mortar or concrete between such upper and lower courses and transverse metal strips embedded in said mass, substantially as described.

6. A flat arch composed of lower and upper courses of hollow tiles or brick, in combination with a mass of mortar or concrete between such upper and lower courses, and upper and lower transverse metal strips embedded in said mass in pairs, substantially as described.

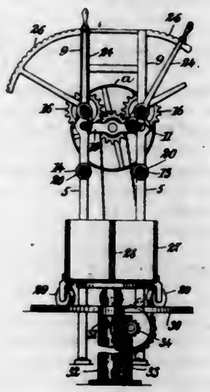
7. A flat arch composed of lower and upper courses of hollow tiles or bricks, provided with oppositely-projecting ribs; in combination with a mass of mortar or concrete between such upper and lower courses, and transverse metal strips embedded in the mass between the ribs of the tiles of such upper and lower courses, substantially as described.

8. A flat arch composed of lower and upper courses of hollow tiles or brick, combined with a mass of mortar or concrete between such upper and lower courses, the adjacent faces of the upper and lower courses being formed with oppositely-disposed dovetailed spaces in which said mass is disposed.

9. A flat arch composed of lower and upper courses of hollow tiles or brick, combined with a mass of mortar or concrete between such upper and lower courses, the adjacent faces of the upper and lower courses being formed with oppositely-disposed dovetailed spaces in which said mass is disposed, and transverse metallic strips embedded in said mass.

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**754,784. APPARATUS FOR TREATING YARN.** HERMAN LINDENBERG, West Hoboken, N. J. Filed Aug. 6, 1903. Serial No. 168,495. (No model.)



*Claim.*—1. The combination with a frame including a side member hinged at its lower portion, of yarn-supporting shafts journaled in said frame, a plurality of bearing-collars loose on said shafts, means carried by said collars for tensioning the yarn upon the yarn-supporting shafts, and a solution-containing vat mounted beneath the shafts.

2. The combination of yarn-supporting means including a plurality of shafts, a tensioning device suspended from one of said shafts, a bracket in which the tensioning device rests when in its inoperative position, a solution-containing vat mounted beneath the yarn-supporting shafts, and means for moving said vat relative to said shafts.

3. The combination of a frame including a hinged side member, yarn-supporting means carried by said frame, a vat mounted beneath the yarn-supporting means, and means for adjusting said vat vertically relatively to the yarn-supporting means.

4. The combination of a frame, including a hinged side member, yarn-supporting means including an upper shaft and a lower shaft, a tension-roll movably suspended from the upper shaft, a rotatable solution-containing vat mounted adjacent to the shafts and roll, and means for adjusting said vat vertically relatively to the yarn-supporting shafts, substantially as set forth.

5. The combination of a frame including a movable member, yarn-supporting means carried by said frame, a solution-containing vat arranged adjacent to the yarn-supporting means, a yarn-tensioning device movably suspended from the yarn-supporting means, and means for locking the tensioning device in a desired position of adjustment.

6. The combination of a frame, yarn-supporting shafts journaled therein, a tensioning device for the yarn supported from one of the shafts, and means including a segment and a latching device engaging with said segment for locking and holding the tensioning device in a position of adjustment.

7. The combination of a main frame, including a movable side member, yarn-supporting means carried by the frame, a tensioning

device for the yarn, a rotatable solution-containing vat mounted adjacent to the yarn-supporting means, and power-transmitting devices, including a rack-and-pinion mechanism for moving said vat vertically relatively to the yarn-supporting means.

8. The combination with yarn-supporting means, of a tensioning device for the yarn, including a roll and means for oscillating said roll relatively to the yarn-supporting means, a receptacle designed to contain solutions for treating the yarn, mounted adjacent to the supporting and tensioning means, means including a rack-and-pinion mechanism for moving the receptacle relatively to the yarn-supporting means, and a brake mechanism for checking the movement of the receptacle, substantially as set forth.

9. The combination of a frame including a movable member, yarn-supporting means carried by said frame and means for locking the movable member stationary relatively to the yarn-supporting means, such locking means including a latch carried by the movable member and designed to engage with the stationary portion of the machine, and a locking-lever engaging with said latch, substantially as set forth.

10. The combination of a frame, a plurality of rotatable yarn-supporting shafts carried thereby, collars loosely mounted on one of said shafts, a tensioning device, including a roll supported in said collars, and means including a locking-lever and a toothed segment designed to be engaged by the lever for adjusting the tensioning devices.

11. The combination of a frame, a yarn-supporting shaft, bearing-collars loose on said shaft, a lever connected to each of said collars for moving the latter, and a roll carried by said collars.

12. The combination of a frame, a yarn-supporting shaft, bearing-collars loose on said shaft, a roll carried by the collars, means for rocking the collars upon the shaft, and means for locking the collars with their roll in any position to which they may be rocked.

13. The combination of a yarn-supporting shaft, a tension-roll, a rocking connection between the shaft and the roll, and a lever for rocking the connection.

14. The combination of a plurality of yarn-supporting shafts spaced apart, a bracket connecting said shafts, said bracket having an enlarged recessed portion, and a movable yarn-tensioning device designed when in its normal inoperative position to seat in the recessed portion of the bracket.

15. The combination of a frame, vertically-depending hanger-arms carried by said frame, yarn-supporting shafts carried by said arms, a yarn-tensioning roll movably connected to one of said shafts, a bearing-bracket for said roll, and means for locking the roll against movement when in its operative position.

16. The combination of a frame, including a movable member and a stationary portion, hanger-arms, yarn-supporting means journaled in said arms, and means for locking the movable frame member to an adjacent hanger-arm, substantially as set forth.

17. The combination of a frame, a toothed segmental rack carried by said frame, yarn-supporting means, a movable yarn-tensioning device, and means operated by the yarn-tensioning device and adapted to engage with the rack for locking said device against movement.

18. The combination of a frame, yarn-supporting means, a yarn-tensioning roll movable relatively to the yarn-supporting means, a lever for moving said roll, and means including a segmental rack and a locking-detent for holding the tensioning-roll against movement.

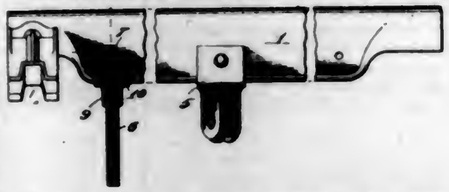
19. The combination of a frame, including a stationary portion and a movable member, a plurality of hanger-arms, yarn-supporting shafts carried by said arms, and means for locking the movable member to certain of said arms.

20. In a machine for treating yarn or the like, a plurality of yarn-supporting shafts spaced apart, and a tensioning-roll designed to be rocked in a path lying between the yarn-shafts, substantially as set forth.

21. The combination of a frame, including a stationary portion and a hinged member, yarn-supporting means carried by said frame, a rotatable vertically-movable vat arranged beneath the yarn-supporting means, and a brake mechanism for checking the movement of the vat.

22. The combination of a frame, a plurality of rotatable yarn-supporting shafts, means for imparting a rotary motion to one of said shafts, means for transferring the motion to a second of the yarn-supporting shafts, a rotatable vat mounted beneath the yarn-supporting shafts, means for moving said vat vertically, and a brake mechanism for checking the movement of the vat, substantially as set forth.

## 754,785. BRAKE-BEAM. ARTHUR LITSCHGY, St. Louis, Mo., assignor, by direct and mesne assignments, to Chicago Railway Equipment Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 24, 1903. Serial No. 174,366. (No model.)



*Claim.*—1. As a new article of manufacture, a brake-beam of flanged form having portions of the flanges at its ends upset onto the web of the beam, substantially as set forth.

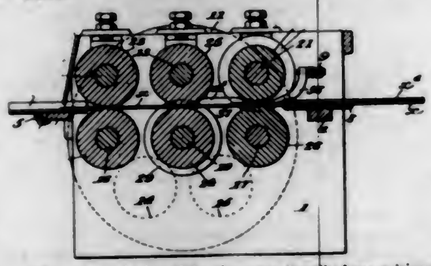
2. As a new article of manufacture, a brake-beam of flanged form having portions of the flanges at its ends upset onto the web of the beam thereby furnishing ends of T shape, substantially as set forth.

3. A brake-beam of flanged form having portions of its flanges at the ends thereof upset onto the web of the beam, and having said ends compressed to thicken the brake-head-receiving parts of the beam, substantially as set forth.

4. The combination with a brake-beam of flanged form, of a finger-guard having an arm passing through the web of said beam, and a clip for securing said finger-guard to the beam; said clip comprising a sleeve fitted to the finger-guard, a socket projecting from said sleeve to engage one of the flanges of the beam, and a leg extending from said sleeve and having a forked end fitted to the arm of said finger-guard, substantially as set forth.

5. The combination with a brake-beam of flanged form, of a finger-guard having an arm passing through the web of said beam, and a clip for securing said finger-guard to the beam, substantially as set forth.

## 754,786. SHEET-METAL-EDGING MACHINE. EDWIN F. LOCKWOOD, Bellevue, Ky. Filed June 15, 1903. Serial No. 161,541. (No model.)



*Claim.*—1. A device of the character described comprising two parallel series of driven shafts, each series comprising an upper and a lower shaft parallel with each other, two sets of corresponding edging-rolls held on each series of shafts, each set of rolls being adapted to bend an edge portion of a metal sheet passed between them and dies or formers extended between the respective rolls of each set on one series of shafts and around which the metal sheet is adapted to be bent.

2. A device of the character described comprising two parallel series of driven shafts, each series comprising an upper and a lower shaft parallel with each other, two sets of corresponding edging-rolls held on each series of shafts, each set of rolls being provided with set-screws for holding them to their respective upper and lower shafts, and being adapted to bend an edge portion of a metal sheet passed between them and dies or formers extended between the respective rolls of each set on one series of shafts and around which the metal sheet is adapted to be bent.

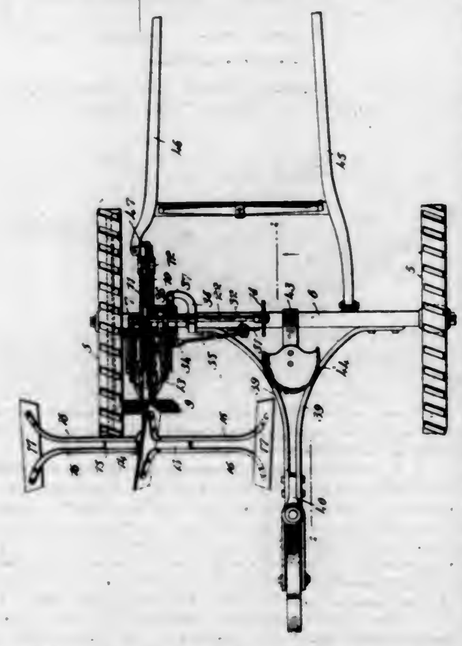
3. A device of the character described comprising two parallel series of driven shafts, each series comprising parallel upper and lower shafts, two sets of corresponding edging-rolls held on each series of shafts and adapted to bend opposite edge portions of a metal sheet passed between them, one roll of each set being provided with a peripheral projection adapted to bend an edge of the metal sheet over an end of the other roll of that set, and one roll of each set on one series of shafts having a circumferential recess in which the bent edge portion of the metal sheet is adapted to be received and dies or formers extended between each set of rolls on that series of shafts and held in said circumferential recesses.

4. A device of the character described comprising two parallel series of driven shafts, each series comprising parallel upper and lower shafts, two sets of corresponding edging-rolls held on each series of shafts and adapted to bend opposite edge portions of a metal sheet passed between them, each set of rolls on one series of shafts being alined with a set of rolls on the other series of shafts and being adapted to bend an edge of the metal sheet in a direction opposite to that in which the opposite edge of such sheet is bent by the other set of rolls on that series of shafts and dies or formers extended between the rolls of each set on one series of shafts and having oppositely-directed supporting-shanks.

5. A device of the character described comprising two parallel series of driven shafts, each series comprising parallel upper and lower shafts, two sets of corresponding edging-rolls held on each series of shafts and adapted to bend opposite edge portions of a metal sheet passed between them, each set of rolls on one series of shafts being alined with a set of rolls on the other series of shafts and being adapted to bend an edge of the metal sheet in a direction opposite to that in which the opposite edge of each sheet is bent by the other set of rolls on that series of shafts, dies or formers extended between the rolls of each set on one series of shafts and having oppositely-directed supporting-shanks, feed-rolls extended in front of said parallel upper and lower shafts with their bight arranged to grip a metal sheet to direct it between the edging-rolls, a feed-table extended in front of the feed-rolls and over which metal sheets are adapted to be fed and a fender also extended in front of the feed-rolls and formed of a metal plate the lower edge of which is spaced above the feed-table to permit a metal sheet to be fed over said table beneath the said edge of the fender.



## 754,787. COTTON-CHOPPER. THOMAS J. LOWRY, Mountairy, N. C. Filed Aug. 14, 1903. Serial No. 169,466. (No model.)



*Claim.*—1. In a cotton-chopping machine, the combination of ground-wheels and an axle connecting the same, of a rocking frame mounted upon said axle, a shaft journaled in said rocking frame, cutting devices carried by said shaft, means for imparting motion to the shaft from the ground-wheels, whereby the cutting devices will be actuated, means for rocking the frame to raise and lower the cutting devices, and means including a clutch mechanism for holding the rocking frame against movement in any position in which it may be adjusted, whereby the cutting-blades will be held against movement, higher or lower relative to the ground, substantially as set forth.

2. A device of the class described, including ground-wheels and an axle connecting the same, a cog-rack carried by one of said wheels, a rotatable shaft supported transversely of the axle and between the ground-wheels, and a gear-wheel carried by said shaft and meshing with the cog-rack, the construction being such that a rotary motion will be imparted to the shaft and the cutting device carried by said shaft and means including a clutch mechanism for holding the cutting devices in a position of adjustment, substantially as set forth.

3. A device of the class described, including ground-wheels and an axle connecting the same, of a rotatable shaft supported at a point between said ground-wheels, a cutting device carried by said shaft, a cultivating device mounted beneath the shaft, means for raising and lowering the cutting device and the cultivating device relative to the ground, and means including a two-part clutch mechanism for holding the cutting device and the cultivating device in various positions of adjustment relative to the ground, substantially as set forth.

4. A device of the class described, including ground-wheels and an axle connecting the same, a rocking frame mounted on said axle, a rotatable shaft supported upon the frame, means for imparting a rotary motion from one of the ground-wheels to the shaft, a cutting device carried by said shaft, and means, including a toothed rack, a pivoted locking-lever, and a connection between the lever and the shaft for raising and lowering the shaft and the cutting device, substantially as set forth.

5. In a device of the class described, the combination with the ground-wheels and an axle connecting the same, of a rocking frame carried by said axle, means for rocking the frame upon the axle, and means including a two-part clutch mechanism one part of said clutch being rotatable for holding the frame in any position to which it has been moved or rocked upon the axle, substantially as set forth.

6. In a device of the class described, the combination of the ground-wheels and an axle connecting the same, such axle having a downwardly-inclined or dropped portion, a rocking frame mounted upon the axle at such downwardly-inclined portion, a shaft journaled in said frame, a bevel gear-wheel carried by said shaft and designed to mesh with a cog-rack carried by one of the ground-wheels, a cutting device carried by said shaft, and means for rocking the frame upon the axle, the construction being such that the cutting device may be raised and lowered relative to the ground, and the bevel gear-wheel thrown out of engagement with the cog-rack, substantially as set forth.

7. In a device of the class described, the combination with the ground-wheels and an axle connecting the same, of a rocking frame carried by said axle, a shaft journaled in said frame, a cutting device carried by said shaft, means including a toothed segment, a locking-lever, and a connection between the lever and the frame for raising and lowering the frame with the shaft and the cutting device, and means, including a locking-lever and a two-part clutch member, one part of the clutch being rigid to the axle, and the other part slidable thereon, for locking frame in an adjusted position, substantially as set forth.

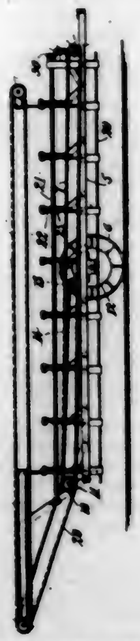
8. A device of the class described, comprising a sulky-machine, including a pair of ground-wheels, one of said wheels having a circular toothed rack secured thereto, a rocking frame mounted intermediate the ground-wheels, a rotatable shaft carried by said frame, a bevel gear-wheel carried by said shaft and intermeshing with the rack, a cultivating device adjustably mounted beneath the shaft, a cutting device carried by said shaft, means, including a toothed segment, a locking-lever, and a connection between the lever and the cultivating device, for raising and lowering the cultivating device and the cutting device relative to the ground, and means for locking the cultivating device and cutting device in their raised non-active position, substantially as set forth.

## 754,788. TOPPER AND STRIPPER FOR CANE-HARVESTERS. GEORGE D. LOCK, New Orleans, La. Filed July 27, 1903. Serial No. 167,101. (No model.)

*Claim.*—1. A trailer for a harvesting-machine comprising a wheel-mounted frame, an endless carrier in said frame, shafts extended along the opposite sides of said frame, topping-blades carried by said shafts, fixed blades coacting with the first-named blades, and uprights supporting the fixed blades, and plates extended outward from said uprights and provided with stripping-holes.

2. A trailer for a harvesting-machine, comprising a frame mount-

ed on wheels, an endless conveyer or carrier, uprights at the sides of said frame, cutter-plates on said uprights, shafts extended along said uprights, cutters carried by said shafts and coacting with the cutter-plates, arms extended upward from said uprights and provided with stripping-holes, and guard-plates extending partly around the holes.



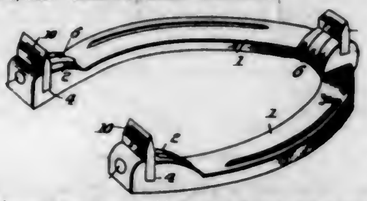
3. A trailer for a cane-harvester, comprising a wheel-mounted frame, an endless carrier extended along said frame, shafts extended along the sides of the frame, guiding connections between said shafts and the endless carrier, driving connections between said endless carrier and the wheels of the trailer, topping-blades on said shafts, and an endless carrier above the first-named carrier and extended rearward thereof.

4. A trailer for a cane-harvester, comprising a wheel-mounted frame, carriers on said frame, platforms arranged along the sides of the frame, and stripping devices comprising plates extended laterally from the frame over the platforms and provided with holes and guides extending partly around the holes.

5. A trailer for a cane-harvester, endless carriers, a wheeled frame supporting said carriers, uprights at the sides of the carriers, rotary topping-blades, fixed blades on the uprights, and stripping devices supported by the uprights and extended outward therefrom.

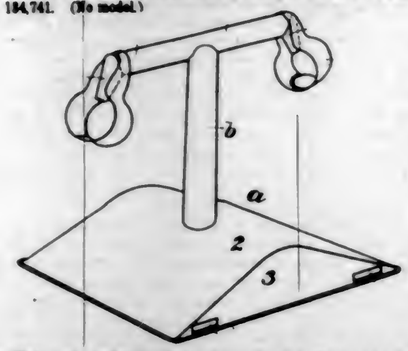
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**754,789. HORSESHOE.** JOHN A. MARTIN, Chester, W. Va. Filed Nov. 9, 1903. Serial No. 180,408. (No model.)



*Claim.*—A horseshoe provided at its calk ends and at its toe portion on the underneath face with enlargements provided each with a socket extending transverse of the shoe, the said enlargements having openings therethrough extending longitudinally of the shoe, of calks and a toe fitted in the respective enlargements and having openings therethrough, and securing-rivets extending through said openings and the openings extending longitudinally of the shoe, and each having a head lying within a recess in the enlargement, substantially as described.

**754,790. FOUNTAIN ATTACHMENT FOR WASHBOILERS.** WILLIAM A. MAYER, Everett, Mass. Filed Dec. 11, 1903. Serial No. 184,741. (No model.)



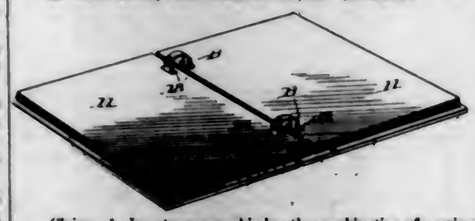

*Claim.*—1. A device of the character described, comprising a bottomless casing having a crowning top, and a substantially vertical uptake communicating with the higher portion of said top, said uptake having one or more outlets at its upper portion provided with deflecting shields or guards

2. A device of the character described comprising a bottomless casing having a crowning top, a substantially vertical uptake connected with the higher portion of said top, and partitions intersecting across the bore of said uptake and substantially dividing the interior of said casing into a plurality of non-communicating bottomless chambers, each of which has an inclined top opening independently into said uptake, said compartments being each provided with an inlet-opening.

3. A device of the character described, comprising a bottomless casing, an uptake extending from said casing and provided with an outlet, and a deflecting shield or guard affixed to said outlet and having a deflecting portion arranged opposite the outlet, and relatively large outlets at opposite sides of the deflecting portion.

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**754,791. TEMPORARY BINDER.** JOHN P. MEITZER, Chicago, Ill. Filed Oct. 31, 1903. Serial No. 179,202. (No model.)




*Claim.*—1. In a temporary binder, the combination of a pair of upright guides arranged opposite one another and having their adjacent sides open, and a top provided with spring sides adapted to fit in said guides between the sides thereof, the guides and spring sides being provided with engaging devices held normally in engagement by the outward spring-pressing action on the part of the spring sides, substantially as described.

2. In a temporary binder, the combination of a clip comprising a base having its ends provided with upright flat guides which are provided at their edges with inwardly-extending sides and are open between said sides, and a top provided with spring sides adapted to fit and work in said guides between the sides thereof, the guides being provided with apertures and the spring sides of the top with projections adapted to fit in said apertures and held normally therein by the spring action of the sides, substantially as described.

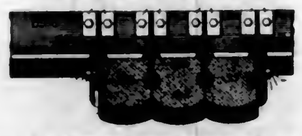
3. In a temporary binder, the combination of a pair of upright guides arranged opposite one another and having their adjacent sides open, the side walls of said guides extending inwardly, a top provided with spring sides adapted to fit in said guides, the sides being of a less width than the side walls of the guides, whereby the latter project inwardly beyond the inner faces of the spring sides, and engaging devices on the guides and sides, substantially as described.

4. In a temporary binder, the combination of a base provided at its ends with flat upright guides made with their adjacent sides open and having inwardly-extending side walls, a top provided with flat spring sides adapted to fit in said guides between the side walls thereof, said side walls extending in beyond the inner faces of said sides, apertures in the guides, and lugs on the spring sides, the lugs being adapted to engage the apertures and being held normally in engagement therewith by the outward spring-pressing action on the part of the spring sides, substantially as described.



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**754,792. FURNACE.** DOUGAL J. MCKENZIE, Chicago, Ill. Filed Apr. 7, 1902. Serial No. 101,726. (No model.)



*Claim.*—1. In a furnace of the class described, provided with a combustion-chamber, the combination of a grate portion, an arch-wall formed of a plurality of parallel-arranged tiles having convex lower surfaces independently and longitudinally arranged at the front upper portion of the furnace, substantially as described.

2. In a furnace of the class described provided with a combustion-chamber, the combination of a supporting-grate, an arch-wall formed of a plurality of parallel-arranged tiles provided with convex lower surfaces independently and longitudinally arranged at the front upper wall of the furnace and inclined inwardly and upwardly, substantially as described.

3. In a furnace of the class described provided with a combustion-chamber, the combination of a grate mounted therein, a plurality of brackets arranged at the upper forward part of the furnace-chamber and provided with depending webs and rod-shaped tracks extending downwardly and forwardly thereof, a box-shaped piece extending across the furnace in front of the brackets to which it is secured, and a plurality of tiles having recesses corresponding to the rod-shaped tracks arranged parallel to and independently of each other and longitudinal of the furnace at the front upper portion, substantially as described.

4. In a furnace of the class described provided with a combustion-chamber, the combination of a grate mounted therein, a plurality of supporting-brackets at the front upper portion of the combustion-chamber provided with depending web and round rod-shaped track portions extending downwardly and forwardly thereof at an incline, a metallic hollow box open at each end arranged across the furnace and supported by the side walls thereof and secured to the independent brackets and their tracks to assist in supporting the same, and a plurality of tiles arranged parallel and provided with recesses at the side portions thereof and with concave lower surfaces removably engaged with the rod-shaped tracks of the supporting-brackets arranged longitudinal of the furnace at the front upper portion thereof and inclining inwardly and upwardly, substantially as described.

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**754,793. PISTON-ROD.** HUGO A. J. NEUHAUS, Görlitz, Germany, assignor to Actien-Gesellschaft Görlitzer Maschinenbau-Anstalt und Eisengiesserei, Görlitz, Germany. Filed June 12, 1902. Serial No. 111,261. (No model.)

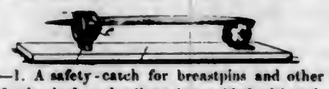


*Claim.*—1. A resilient piston-rod for tandem steam-engines under tension to bulge upward between its ends, combined with pistons on the rod, which draw the same axially into a straight line, and slides for supporting the ends of the rod, substantially as specified.

2. A series of pivotally-connected resilient piston-rods for tandem steam-engines under tension to bulge upward between their ends, combined with pistons on the rods, which draw the same axially into a straight line, and slides for supporting the ends and the joint of the rods, substantially as specified.

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**754,794. SAFETY-CATCH FOR BREASTPINS.** JOHN C. NORDT, West Hoboken, N. J. Filed Nov. 13, 1903. Serial No. 181,070. (No model.)

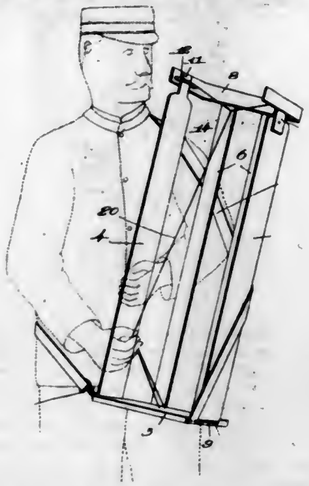


*Claim.*—1. A safety-catch for breastpins and other articles, consisting of a hook-shaped tail-stock provided with a shoulder at one side and an outwardly-bent end or stop at the opposite side, an inclined face on the shank of the tail-stock, a tubular cylindrical center portion located in the eye of the tail-stock and provided with curled-up rims or flanges and having a longitudinal opening on its peripheral surface which opening registers with the open portion of the tail-stock, and a projecting catch on the center part opposite the open portion of the same, said catch being bent over from one side flange toward the other for moving the center part in the eye of the tail-stock on its axis into open or closed position for receiving and locking the pin-tongue, substantially as set forth.

2. In a breastpin or other article, the combination of a hook-shaped tail-stock, the shank of which is provided with a shoulder or abutment at one side, an outwardly-bent end or shoulder and a raised portion or projection adjacent to said end or stop, with a tubular center part, turning in the eye of the tail-stock and provided with curled-up rims at both sides engaging the sides of the tail-stock, an opening coinciding with the open end of the tail-stock, and a catch at the point opposite said opening of the center part, substantially as set forth.

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**754,795. MAIL-CARRIER.** FRANKLIN P. O'NEILL, Boston, Mass. Filed May 20, 1903. Serial No. 157,997. (No model.)



*Claim.*—1. A carrier for mail-matter having a bottom, a back and two sides, the front and top of said carrier being open, and the back and one of the sides being spaced from each other to provide an opening extending the length of the carrier through which the user may insert one hand to assist in placing the mail in the carrier.

2. A carrier for mail-matter having a bottom, a back and two sides, the front and top of said carrier being open, and means to suspend said carrier from the user's body with one of its sides resting against said body.

3. A carrier for mail-matter having a bottom, a back, two sides, an open front, and means to attach said carrier to the body of the user, one of the sides being flexible, whereby it adapts itself to the shape of the body.

4. A carrier for mail-matter having a bottom, a back, two sides and an open front, and means to attach said carrier to the body of the user, the back and one side being separated from each other to provide a hand-space through which the user may insert one hand to assist in placing the mail in the carrier.

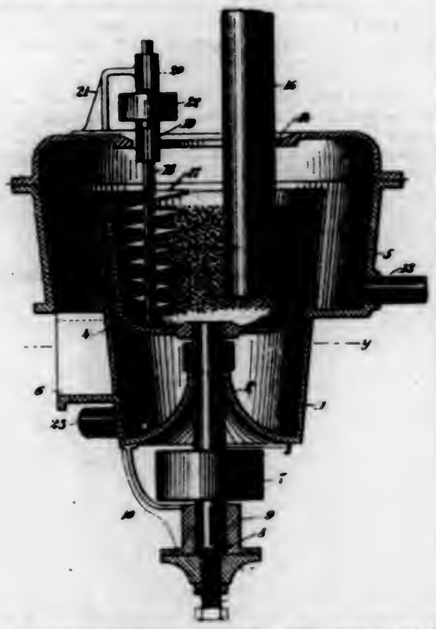
5. A carrier for mail-matter having a bottom, a back, two sides and an open front, one of said sides being removable, and means to attach the carrier to the body of the user.

6. A carrier for mail-matter having a bottom, a back, two sides and an open front, one of said sides being removable, and one side being spaced from the back to provide an opening extending from the top to the bottom of the carrier, and through which the user may insert one hand to assist in placing the mail in the carrier.

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**754,796. CENTRIFUGAL MACHINE.** JOSEPH H. OSTRANDER, Ticonderoga, N. Y. Filed July 15, 1903. Serial No. 165,639. (No model.)

*Claim.*—1. A centrifugal separator comprising a tank, a perforated bowl mounted to rotate therein, a casing surrounding the upper portion of the tank and having an opening in its top and an outlet in its lower portion, a feed-pipe extended through said opening into the bowl and nearly to the bottom thereof, and a conveyer for moving material from said bowl into said casing.



2. A centrifugal separator comprising a tank, a shaft extended through the bottom thereof, a perforated bowl mounted on said shaft within the tank and having its upper edge flared outward to engage over the top of the tank, a casing surrounding the upper portion of the tank and having an outlet, and a worm conveyer arranged in the bowl for discharging material from said bowl into said casing.

3. A centrifugal separator comprising a tank, a perforated bowl mounted to rotate in the tank, a casing surrounding the upper portion of the tank and having an opening in its top and having an outlet in its lower portion, a feed-pipe extended through said opening into the bowl and nearly to the bottom thereof, and a screw conveyer carried by a vertical shaft for moving material from said bowl into said casing.

4. A centrifugal separator comprising a tank, having an outlet, a perforated bowl mounted to rotate in said tank, a casing surrounding the upper portion of said tank and having an outlet at its lower portion, a water-pipe leading into said casing, a feed-pipe leading into said bowl and nearly to the bottom thereof, a vertically-disposed conveyer-screw operated in the bowl, and an outlet-pipe for said tank.

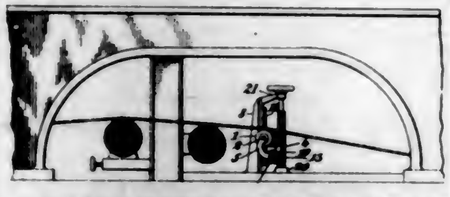
5. A centrifugal separator comprising a tank having a conoidal bottom provided with an opening, a shaft extended through said opening, a perforated bowl mounted on said shaft within the tank, means for causing the adjustments of said shaft and bowl, a casing surrounding the upper portion of the tank and having a water-inlet and also having an outlet for separated matter, a cover on said casing having an opening at the top, a pipe leading through said opening into the bowl, and a vertically-disposed worm conveyer arranged in the bowl.

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**754,797. FELT-SPREADER. Joseph H. Outhander, Ticonderoga, N. Y. Filed Sept. 24, 1903. Serial No. 174,439. (No model.)**

*Claim.*—1. A felt-spreader comprising a plurality of rollers, a curved rod on which the rollers are mounted to rotate independently one of another, and means for vertically adjusting said rod.

2. A felt-spreader comprising a plurality of rollers, a rod formed in the arc of a circle and on which the rollers are mounted, a tube, supporting connections between said tube and rod, standards, brackets movable vertically along said standards and having angular openings to receive correspondingly-shaped portions of the tube, a shaft extended through the tube, pinions on said shaft, racks on the standards with which the pinions engage, and means for rotating the shaft.

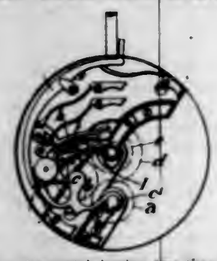


3. A felt-spreader comprising a plurality of short rollers, a longitudinally-curved rod on which the rollers are mounted to rotate, a supporting-tube for said rod, standards, brackets movable vertically along said standards and having angular openings to receive correspondingly-shaped portions of the tube, racks on said standards, a shaft extended through the tube, pinions on the shaft for engaging with said racks, a worm-wheel on the shaft, and a worm engaging with the worm-wheel.

4. A felt-spreader comprising a plurality of rollers arranged in the arc of a circle, a tubular support for the rollers, standards, brackets movable vertically along said standards and having angular openings to receive correspondingly-shaped portions of the tube, latches mounted to swing on the brackets for engaging the upper sides of the angular portions of the tube, and means for moving the tube with the brackets vertically along the standards.

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**754,798. STOP-WATCH. Emile Phillipps, Geneva, Switzerland. Filed Dec. 16, 1902. Serial No. 136,371. (No model.)**



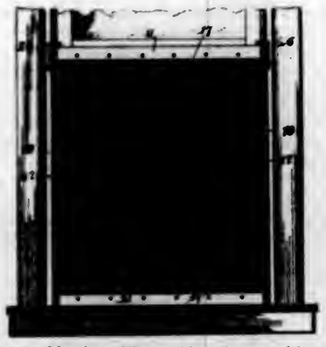
*Claim.*—1. In a stop-watch having two time-period-indicating mechanisms, a shaft, a cam-wheel and a ratchet-wheel secured together and loose on said shaft, a cam-wheel secured to one end of said shaft, a ratchet-wheel secured to the other end of said shaft, a clutch between and the parts of which are connected to the adjacent faces of said cam-wheels, means for keeping said clutch normally in engagement, means for actuating the cam-wheel which is loose on said shaft to start, stop and return both hands of the mechanisms to the zero position, and means for actuating the said cam-wheel fixed on the shaft to stop the second mechanism and to return the same to zero and repeat the movement again while the first mechanism is in operation.

2. In a stop-watch having two time-period-indicating mechanisms, a tubular arbor, one end of which is recessed conically, a hand of the first mechanism on the other end of said tubular arbor, an arbor passing through said tubular arbor and having a conical shoulder at one end adapted to fit into and engage the conical recess in the end of the said tubular arbor, a hand of the second mechanism secured to the other end of said arbor, a spring tending to keep the conical shoulder of said arbor in engagement with the recessed portion of said tubular arbor, a spring-lever, having a projection on one side thereof, a rocking lever having a wedge-edge arm adapted to engage the said projection of the spring-lever, and means for actuating the said rocking lever to cause the said arm thereof to engage the said projection of the spring-lever and raise the said spring-lever to cause the disengagement of the said conical shoulder of the said arbor from the said recessed portion of the said tubular arbor.

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**754,799. SCREEN. Delmar D. Pinkham, Longview, Tex. Filed Jan. 16, 1903. Serial No. 139,222. (No model.)**

*Claim.*—1. The combination with a guide-strip having an outstanding hook portion, of a screen comprising wire-netting and a side bar comprising flanges, one of which is doubled over the edge of the wire-netting, said doubled flange being interlocked with the hook portion of the guide-strip, the other flange being independent thereof.



2. The combination with a guide-strip comprising a rear wall and outstanding side walls, one of which is provided with a flange that overhangs the rear wall and terminates short of the other side wall, of a screen having an angularly-disposed frame-piece that is slidably engaged in the guide-strip between the rear wall and the overhanging flange and between the side walls.

3. The combination with a screen including a frame-piece having spaced flanges, one of which is doubled upon itself to form clamping-leaves, and netting having an edge arranged between the clamping-leaves, of a guide having a hook portion in which the doubled flange is slidably interlocked, the other flange being outside and independent of said hook portion.

4. The combination with a guide, of a screen including a netting-sheet having an edge bent at an angle to the main portion, and a frame-piece comprising an angle-bar, one flange of which rests against the main sheet, the other flange being arranged in angular relation thereto and doubled upon itself to form clamping-leaves that embrace the angular edge of the netting, said doubled flange slidably engaging the guide.

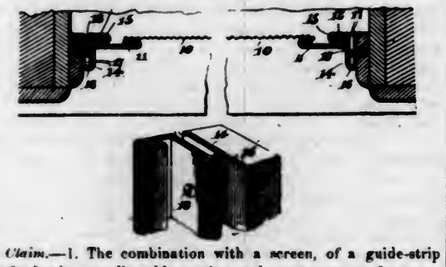
5. In a screen, a frame comprising spaced uprights, each having a flange which is doubled to form clamping-leaves, and spaced transverse bars having offset ends that are clamped between the leaves of the uprights.

6. In a screen, a frame comprising spaced uprights, each upright being formed of an angle-bar, one flange of which is doubled upon itself to form clamping-leaves, and transverse bars extending across the space between the uprights and resting against the flanges thereof, said transverse bars having offset ends that are clamped between the leaves of the uprights.

7. In a screen, a frame comprising spaced uprights, each upright being formed of an angle-bar, one flange of which is doubled upon itself to form clamping-leaves, and transverse bars extending across the space between the uprights and resting against the flanges thereof, said transverse bars being doubled and having offset ends that are clamped between the leaves of the uprights, and netting extending across the space within the frame, the edges of said netting being clamped between the leaves of the upright and the doubled portions of the transverse bars.

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**754,800. SCREEN. Delmar D. Pinkham, Longview, Tex. Filed Mar. 9, 1903. Serial No. 146,935. (No model.)**



*Claim.*—1. The combination with a screen, of a guide-strip therefor having an adjustable portion, and common means for securing the strip to a window-frame and moving the adjustable portion of said strip.

2. The combination with a screen, of a guide-strip therefor having a doubled portion, the walls of which are spaced apart, and means connecting the walls to relatively move them.

3. The combination with a screen, of a guide-strip therefor having a screen-engaging portion slidably associated with the screen, an extensible fastening portion, and means for securing the extensible portion to a window-frame.

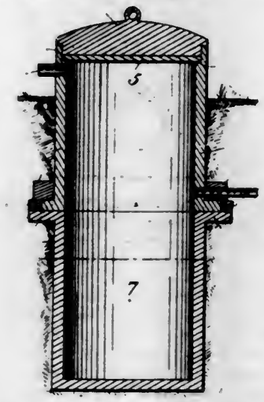
4. The combination with a screen, of a guide-strip therefor having a screen-engaging portion, and a doubled fastening portion, and devices passing through the doubled portion for contracting the same.

5. The combination with a screen, of a guide-strip therefor provided with a screen-engaging portion, and a doubled fastening portion, said doubled portion having its walls spaced apart, and securing devices for fastening the strip to a window-frame, said devices passing through the spaced walls.

6. The combination with a screen, of a guide-strip therefor formed of sheet metal and having an outstanding screen-engaging hook portion, and a substantially U-shaped fastening portion located in angular relation to the hook portion and having its walls spaced apart, and securing-screws for fastening the strip to a window-frame, said screws passing through the U-shaped portion of the strip and being arranged to draw the walls thereof toward each other.

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**754,801. CISTERN-TOP. Sanford Pomroy, Byron, Minn. Filed Nov. 2, 1903. Serial No. 179,583. (No model.)**



*Claim.*—1. A device of the character described for cisterns embracing a cylinder having around its lower end a lateral enlargement or flange, said cylinder or receptacle having an inner shoulder at its upper end, and an inner, and an outer, cover, said inner cover being applied to said inner shoulder and the top cover applied over all.

2. A device of the character described for cisterns, comprising a cylinder having near its upper end, an inlet connecting with the house pipe or spout and, near its lower end, an overflow-pipe, said cylinder having, at its lower end, a lateral enlargement or flange, and, at its upper end, an inner shoulder, for the application thereto of an inner cover, an outer cover being applied over all.

3. A device of the character described having near its upper end an inner shoulder and at its lower end a lateral flange or enlargement, in combination with a cistern having a corresponding flange at its upper end, extending beyond the plane of the flange, first referred to, a layer of masonry placed on the latter flange, and a second masonry layer overlying or breaking joints with said first-referred-to flange and masonry layer.

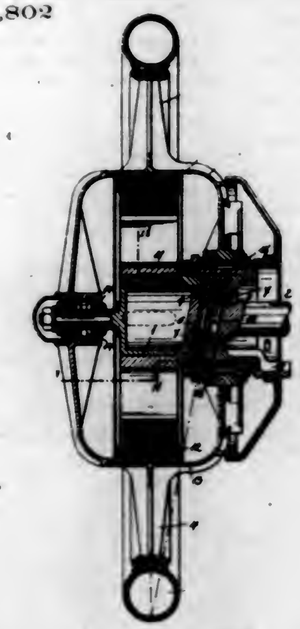
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**754,802. STEERING DEVICE FOR MOTOR-VEHICLES. Ferdinand Porsche and Ludwig Lohner, Vienna IX, Austria-Hungary. Filed July 3, 1902. Serial No. 114,801. (No model.)**

*Claim.*—1. The combination of the axle, the wheel, a hollow journal for the wheel, the end of the axle projecting into said journal, and a pivotal connection between the axle and journal having its axial line disposed acutely to the plane of the wheel, substantially as described.

2. The combination of the axle, the wheel, a hollow journal for the wheel, the end of the axle projecting into said journal, alined cones screwed into said journal and forming a pivotal connection between the axle and the journal, and a bolt connecting said cones, substantially as described.

754,802



especially in oil-cake, consisting in treating a suspension of double salts of the said phosphorus compound with alkaline earths and heavy metals with hydrogen sulfid, filtering for removing the precipitated metal sulfid, evaporating the filtered liquid to a syrupy consistency, precipitating the alcohol, drying, and finally pulverizing.

6. As a new article of manufacture, the herein-described mixture of acid salts of the organic assimilable phosphorus compound of vegetable foodstuffs, corresponding to the formula $C_9H_5P_3O_9$, which constitutes, in dry state, a white powder, soluble in water, free from inorganic phosphates and containing more than twenty per cent. of its own weight of phosphorus.

754,803. **ORGANIC PHOSPHORUS COMPOUND AND PROCESS OF MAKING SAME.** SWIGEL POSTERNAK, Meudon, France. Filed Mar. 21, 1902. Serial No. 99,367. (Specimens.)

*Claim.*—1. The herein-described process for obtaining the assimilable phosphorus compound contained in most vegetable foodstuffs and especially in oil-cake, consisting in suitably comminuting the vegetable material, treating the comminuted vegetable material with an alkali lye in order to loosen the aleurone bodies, treating further the mass with a dilute mineral acid, filtering and mixing the filtered liquid with a heavy metal salt, a salt of an alkaline earth, an alkaline salt of an organic acid, and an alkaline substance, in order to precipitate the phosphorus compound in presence of a free organic acid in the form of double salts of alkaline earths and heavy metals, treating a suspension of the said double salts in water with hydrogen sulfid and filtering for removing the heavy metal as sulfid, and finally evaporating the filtered liquid.

2. The herein-described process for obtaining the assimilable phosphorus compound contained in most vegetable foodstuffs and especially in oil-cake, consisting in treating the vegetable material with a dilute mineral acid, filtering and mixing the filtered liquid with a heavy metal salt, a salt of an alkaline earth, an alkaline salt of an organic acid and an alkaline substance, in order to precipitate the phosphorus compound in presence of a free organic acid in the form of double salts of alkaline earths and heavy metals, treating a suspension of the said double salts in water with hydrogen sulfid and filtering for removing the heavy metal as sulfid, and finally evaporating the filtered liquid.

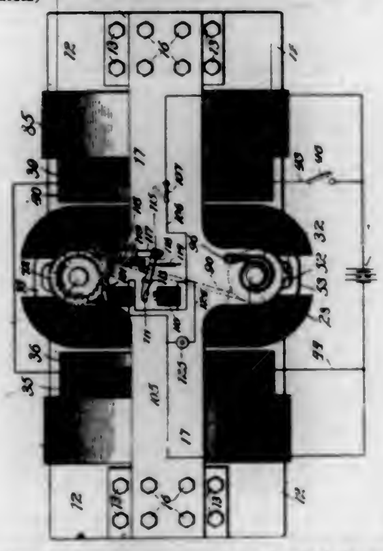
3. The herein-described process for obtaining the assimilable phosphorus compound contained in most vegetable foodstuffs and especially in oil-cake, consisting in mixing an extract of the vegetable material in a mineral acid with a heavy metal salt, a salt of an alkaline earth and an alkaline salt of an organic acid and an alkaline substance, in order to precipitate the phosphorus compound, in presence of a free organic acid, in the form of double salts of alkaline earths and heavy metals, treating a suspension of the said double salts in water with hydrogen sulfid and filtering for removing the heavy metal as sulfid, and finally evaporating the filtered liquid.

4. The herein-described process for obtaining the assimilable phosphorus compound contained in most vegetable foodstuffs and especially in oil-cake, consisting in treating a suspension of double salts of the said phosphorus compound with alkaline earths and heavy metals with hydrogen sulfid, filtering for removing the precipitated metal sulfid, and finally evaporating the filtered liquid.

5. The herein-described process for obtaining the assimilable phosphorus compound contained in most vegetable foodstuffs, and especially in oil-cake, consisting in treating a suspension of double salts of the said phosphorus compound with alkaline earths and heavy metals with hydrogen sulfid, filtering for removing the precipitated metal sulfid, evaporating the filtered liquid to a syrupy consistency, precipitating the alcohol, drying, and finally pulverizing.

6. As a new article of manufacture, the herein-described mixture of acid salts of the organic assimilable phosphorus compound of vegetable foodstuffs, corresponding to the formula $C_9H_5P_3O_9$, which constitutes, in dry state, a white powder, soluble in water, free from inorganic phosphates and containing more than twenty per cent. of its own weight of phosphorus.

754,804. **SPEED-REGULATING MAGNETIC CLUTCH.** CHARLES A. PRATT, Oakpark, Ill. Filed Dec. 7, 1903. Serial No. 184,188. (No model.)



*Claim.*—1. In mechanism of the class described, the combination of two transmission-disks mounted in substantially parallel planes, transmitting mechanism adapted to communicate power from one of said disks to the other, magnetic mechanism adapted to move one of said disks toward the other and means adapted to vary the position of said transmitting mechanism with reference to the disks, whereby the speed of rotation of one of said disks with reference to the other is varied.

2. In mechanism of the class described, the combination of two transmission-disks mounted in substantially parallel planes, transmitting mechanism adapted to communicate power from one of said disks to the other, magnetic mechanism adapted to move one of said disks toward the other and means operated by electricity adapted to vary the position of said transmitting mechanism with reference to the disks, whereby the speed of rotation of one of said disks with reference to the other is varied.

3. In mechanism of the class described, the combination of two transmission-disks mounted face to face in line with each other, transmitting mechanism interposed between the faces of said disks adapted to communicate power from one of said disks to the other, magnetic means adapted to move one of said disks toward the other and mechanism adapted to vary the position of said transmitting mechanism with reference to the disks, whereby the speed of rotation of one of said disks with reference to the other is varied.

4. In mechanism of the class described, the combination of two transmission-disks mounted face to face in line with each other, transmitting mechanism interposed between the faces of said disks adapted to communicate power from one of said disks to the other, magnetic means adapted to move one of said disks toward the other, mechanism operated by electricity adapted to vary the position of said transmitting mechanism with reference to the disks, whereby the speed of rotation of one of said disks with reference to the other is varied.

5. In mechanism of the class described, the combination of a shaft, two transmission-disks mounted face to face upon said shaft, transmitting mechanism adapted to communicate power from one of said disks to the other, magnetic means adapted to move one of said disks toward the other and devices operated by electricity adapted to vary the position of said transmitting mechanism with reference to the disks whereby the speed of rotation of one of said disks with reference to the other disk is varied.

6. In mechanism of the class described, the combination of two transmission-disks mounted face to face, the adjacent faces of said disks being cut away in the arc of a circle, a transmitting-wheel, adapted to communicate power from one of said disks to the other, mounted in said curved surfaces between said disks and magnetic means adapted to move one of said disks toward the other of said disks upon said transmitting-wheel, mechanism operated by electricity adapted to vary the position of said transmitting-wheel upon the faces of said disks whereby the speed of one of said disks is varied with reference to the speed of the other disk.

7. In mechanism of the class described, the combination of a shaft, two transmission-disks mounted face to face thereon, the adjacent faces being cut away in the arc of a circle, transmitting mechanism adapted to communicate power from one of said disks to the other, the same being mounted in said curved surfaces between said disks and magnetic means adapted to move one of said disks toward the other of said disks upon said transmitting mechanism and mechanism operated by electricity adapted to vary the position of said disks whereby the speed of the rotation of one disk may be varied with reference to the speed of the other of said disks.

8. In mechanism of the class described, the combination of a shaft, two transmission-disks mounted thereon with their faces toward each other, transmitting mechanism adapted to communicate power from one of said disks to the other, interposed between said disks, a magnet inclosing the hub of one of said disks connecting through a switch to a source of electrical energy adapted, when the switch is closed, to move one of said disks toward the other disk upon the transmitting mechanism.

9. In mechanism of the class described, the combination of a shaft, two transmission-disks mounted thereon with their faces toward each other, transmitting mechanism adapted to communicate power from one of said disks to the other, interposed between said disks, a magnet inclosing the hub of one of said disks connecting through a switch to a source of electrical energy adapted when the switch is closed to move one of said disks toward the other upon said transmitting mechanism and gears or pulleys upon the hubs of said disks adapted to deliver and receive power through said disks.

10. In mechanism of the class described, the combination of a shaft, transmission-disks mounted thereon, a transmitting-wheel interposed between and in engagement with said disks, said wheel being made up of two or more laminæ mounted side by side upon the same shaft said laminæ being capable of revolving independently each of the other.

11. As an article of manufacture for use in power-transmitting mechanism, where the speed of rotation of the power-wheel communicating with the wheel of this manufacture is different at different sides or edges of the transmission-wheel, a transmission-wheel composed of a set of two or more thin laminæ placed side by side and adapted to rotate at relatively different speeds while the entire combined wheel is rotated in the same direction for transmitting power.

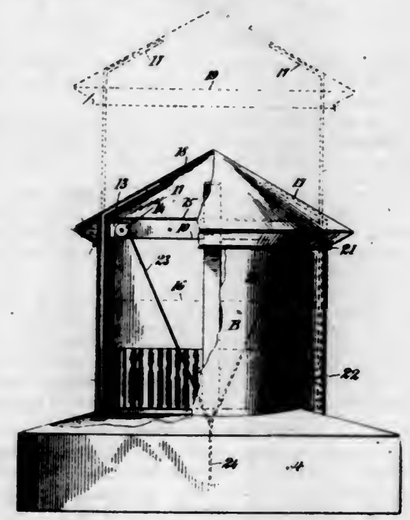
12. In mechanism of the class described, the combination of a shaft having a section of its length made of non-magnetic material, transmission-disks independently mounted on said shaft on opposite sides of said non-magnetic portion of the shaft, transmission mechanism between the faces of said disks and magnetic means operating upon said disks adapted to move one disk toward the other upon said transmitting mechanism.

13. In mechanism of the class described, the combination of two transmission-disks, transmitting mechanism interposed between said disks, a shaft carrying said transmitting mechanism, a ratchet-wheel upon said shaft, a pawl adjacent to said ratchet-wheel normally held away from it, a magnet adapted when energized, to hold said pawl in contact with said ratchet-wheel, a second pawl mounted adjacent to said ratchet-wheel adapted to be moved toward and from said ratchet-wheel to communicate motion thereto, a second magnet adapted when energized, to move said second pawl into contact with said ratchet-wheel and means adapted to withdraw said second pawl from said ratchet-wheel when said second magnet is deënergized and means adapted, when both pawls are released from contact with said ratchet-wheel to move said ratchet-wheel and the shaft to which the wheel is attached, in the opposite direction.

14. In mechanism of the class described, the combination of two transmission-disks, transmitting mechanism interposed between said disks, a shaft carrying said transmitting mechanism, a ratchet-wheel upon said shaft, a pawl adjacent to said ratchet-wheel normally held away from it, a magnet adapted when energized, to hold said pawl in contact with said ratchet-wheel, a second pawl mounted adjacent to said ratchet-wheel adapted to be moved toward and from said ratchet-wheel to communicate motion thereto, a second magnet adapted when energized, to move said second pawl into contact with said ratchet-wheel, means adapted to withdraw said second pawl from said ratchet-wheel when said maguet is deënergized and a spring adapted, when both pawls are released from said ratchet-wheel, to move said ratchet-wheel and the shaft to which it is attached, in the opposite direction from the motion communicated by the moving pawl.

15. In mechanism of the class described, the combination of two transmission-disks mounted face to face, transmitting mechanism, interposed between said disks on opposite sides of the diameter, parallel shafts supporting said transmitting mechanism, a spring adapted to move one of said shafts in one direction, connecting mechanism so connecting said shafts that said spring is also adapted to simultaneously move the other shaft in the opposite direction, a ratchet-wheel mounted upon said second shaft and two electrically-operated pawls detachably engaging said ratchet-wheel, adapted when energized to move said shafts against the action of said spring.

754,805. **VENTILATOR.** FRANK J. PROCHASKA, Park River, N. D. Filed Nov. 1, 1902. Serial No. 129,654. (No model.)



*Claim.*—1. In a ventilator, a body or ventilating tube, a screen at the upper end of the tube, a reinforcing-ring at the upper end of the ventilating-tube, provided with guide-openings, pulleys located at opposing guide-openings, a conical cap for the ventilating-tube, said cap having a marginal triangular extension, the lower wall of which engages the outer surface of the tube when the cap is lowered, standards attached to the cap and passed through the said guide-openings, a guide-sleeve mounted to slide in the tube and to which the lower ends of the standards are secured, and ropes or chains attached to the lower ends of opposing standards passed up over the pulleys, and then down the tube to within reach of the operator, as described.

2. In a ventilator, a body or ventilating tube, a screen at the upper end of the tube, pulleys supported by the tube below the screen, a conical cap for the ventilating-tube, said cap being adapted to rest upon the upper end of said tube and provided with a marginal triangular extension, the lower wall of which is adapted for engagement with the exterior of the ventilating-tube when the said cap is lowered, standards having guided movement in the ventilating-tube and connected with the cap, and ropes or chains connected with the lower portions of opposing standards passed up over the said pulleys and then down the tube within reach of the operator, substantially as described.

3. In a ventilator, the combination with a tube, of a conical cap having guided movement on said tube and adapted to rest upon the upper end of the same, said cap having a marginal extension, the lower wall of which engages the outer surface of the tube when the cap is lowered, and means for raising and lowering said cap, as set forth.

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**754,806. BIRD-CAGE.** JOSEPH A. QUELCH, New York, N. Y. Filed Dec. 10, 1903. Serial No. 184,556. (No model.)



*Claim.*—1. The combination with a bird-cage of a paper-roll support attached thereto and from which paper may be drawn over the bottom of the cage.

2. The combination with a bird-cage, of hangers depending from the bottom thereof, a paper-holding roller having bearings in the said hangers and a paper strip passing from said roller over the bottom of the cage.

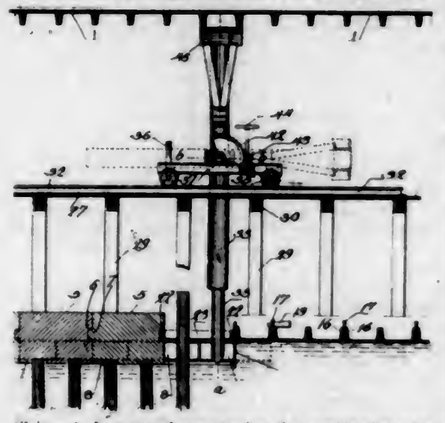
3. The combination with a bird-cage, of a bottom therefor having one end forming a tearing or cutting blade for paper, hangers attached to the bottom of the cage and forming legs, a roller for paper having bearings in said hangers, and a paper strip extended from the roller over the bottom of the cage.

4. The combination with a bird-cage, of a paper-roll holder attached thereto, a paper strip extending from the holder onto the cage-bottom, and a gravel-distributer connected with the cage.

5. The combination with a bird-cage, of a paper-roll holder attached thereto from which paper passes through the cage, a gravel-hopper having an opening at the bottom, and rods attached to said hopper and having hook ends for engaging with a part of the cage.

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**754,807. TUNNEL CONSTRUCTION.** JAMES W. REID, New York, N. Y. Filed Nov. 9, 1903. Serial No. 180,350. (No model.)



*Claim.*—1. In a tunnel construction, the combination with a cylindrical shell, of a series of transverse concrete blocks joined to the base of said shell.

2. In a tunnel construction, the combination with an arched tunnel-wall, of transverse blocks joined to its springers.

3. In a tunnel construction, the combination with an arched tunnel-wall, of interlocking transverse blocks joined to its springers.

4. In a tunnel construction, the combination with an arched tunnel-wall, of transverse blocks joined to its springers, and longitudinal beams embedded in said blocks, each beam extending through a plurality of blocks.

5. In a tunnel construction, the combination with a segmental shell, of a continuous concrete bed joined to the base of said shell formed of transverse blocks, having embedded therein longitudinal girders adapted to break joints between said blocks and piles driven beneath said concrete bed and having their tops engaging the same.

6. The method of tunnel construction consisting in forming a segmental tunnel-shell, removing floor-segments in the base of said tunnel-shell, driving piles from within the tunnel through the openings formed, and securing the tops of said piles to said tunnel-shell.

7. The herein-described method of constructing tunnels which consists in forming a segmental tunnel-shell, removing floor-segments, driving straight piles through the openings made by the removal of said floor-segments from within the tunnel, forming a concrete bed upon the tops of said piles, and securing said bed to the tunnel-shell.

8. The herein-described method of constructing tunnels which consists in forming a segmental tunnel-shell, removing floor-segments, driving piles through the openings thus formed, forming a load-distributing member upon the tops of said piles and securing said load-distributing member to said tunnel-shell.

9. The herein-described method of tunnel construction which consists in forming a segmental tunnel-shell, removing floor-segments, providing a hydraulic cylinder adapted to receive a pile, placing a pile in the hydraulic cylinder and applying hydraulic pressure to force said pile down through the openings in the floor of said tunnel.

10. The herein-described method of constructing a reinforced tunnel which consists in constructing a segmental tunnel-shell, forming temporary openings in the floor of said segmental tunnel-shell, mounting a hydraulic cylinder adapted to receive a pile within said tunnel-shell, placing a pile in said cylinder and providing hydraulic means for driving piles from said hydraulic cylinder through the openings in the base of said tunnel-shell.

11. The herein-described method of constructing a reinforced tunnel which consists in forming a segmental tunnel-shell, removing segments in the base of said tunnel-shell, providing a tramway within said tunnel and mounting thereon a hydraulic cylinder adapted to receive piles, placing piles in said cylinder, forcing said piles from said hydraulic cylinder through the base of said tunnel, forming a concrete bed upon the tops of said piles and securing said bed to said tunnel-shell.

12. The herein-described method of constructing tunnels which consists in forming a segmental tunnel-shell, removing segments from the floor of said shell, excavating a trench therebeneath, forcing piles down through the openings formed in the bottom of the tunnel-shell, filling said trench with concrete and securing said concrete to said tunnel-shell.

13. In a tunnel construction, the combination of metallic segments provided with transverse beveled faces, with beveled plates adapted to be received between said beveled faces, and means for withdrawing said beveled plates to loosen said segments.

14. In a tunnel construction, the combination with a cylindrical segmental tunnel-shell, of platforms arranged along the sides and at substantially the height of the center of said tunnel-shell, leaving an opening therebetween, and tracks laid upon said platforms.

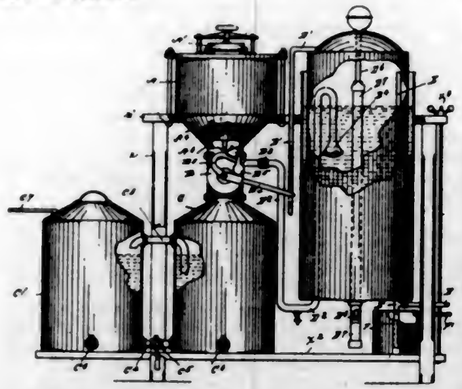
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**754,808. ACETYLENE-GAS GENERATOR.** WILLIAM A. ROBERTSON, Alameda, and DAVID P. HEAP, San Francisco, Cal.; said Heap assignor to said Robertson. Filed Aug. 18, 1902. Renewed Sept. 19, 1903. Serial No. 173,783. (No model.)

*Claim.*—1. In an acetylene-gas generator, the combination with a carbid-receptacle, a generator removably connected to said carbid-receptacle, of a measuring-drum between the generator and the carbid-receptacle, a lever attached to said measuring-drum for operating the same, a curved arm connected to said measuring-drum and a weight operating on said curved arm which assists the lever in opening and closing the measuring-drum.

2. In an acetylene-gas generator, the combination with a carbid-receptacle, a generator, a measuring-drum between the carbid-receptacle and the generator, of a gasometer-bell, a rod secured to and adapted to be raised and lowered by said gasometer-bell, a lever secured to the shaft of the measuring-drum and adapted to be operated by said rod, a curved arm attached to the shaft of the measuring-drum, and a weight adapted to work backward and forward over said arm.



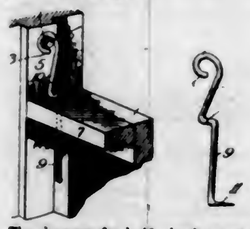


3. In an acetylene-gas generator, the combination with a carbid-receptacle, a generator below said receptacle, of a measuring device between said carbid-receptacle and the generator consisting of a hollow drum, a peripheral opening in its side, said opening being oblique to the opening in the bottom of the carbid-receptacle, a seat for said drum having a depending lip adapted to hold the contents of the drum until turned in dumping position, and means for operating said drum.

4. In an acetylene-gas generator, the combination with a carbid-receptacle, of a measuring-box removably connected thereto and having a depending hopper therein, a measuring-drum within said box and seated against said depending hopper, an oblique opening in said measuring-drum, the edge of said opening causing a shearing action between itself and the edge of the depending hopper in the measuring-box.

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**754,809. SEPARABLE HINGE FOR SCREENS.** CALVIN ROWLAND, Denver, Colo., assignor to the Rowland Manufacturing Company, Denver, Colo., a Corporation of Colorado. Filed July 2, 1903. Serial No. 164,054. (No model.)



*Claim.*—1. The hanger for half-sized screens, having at one end a sharp, right-angled spud, to be driven into the screen-frame and having at the other end an oppositely-turned loop or eye that opens downwardly and terminates in an underlying end, 13, substantially as described.

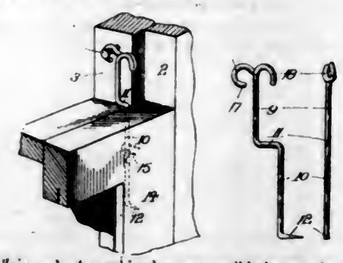
2. The hanger for half-sized screens, comprising the lower portion 9 provided with a sharp, right-angled spud 11, the offset or gaged portion 10 extending from the opposite side of the portion 9 and the upper portion 8 provided with the open curl or eye that terminates in a downwardly-turned, underlying end 13, substantially as described.

3. The combination, of the window-screen, with the blind-stop, the pivot-pin provided in said stop, the hanger having a straight portion secured upon the inner side of the screen-frame and having a spud 11 driven thereinto and also provided with the inwardly-turned gage portion 10 and the upwardly-extending curved portion, terminating in the open loop or eye, having its end beneath said pivot-nail, to engage said nail when the screen-frame is raised, substantially as described.

4. The wire-screen hanger, comprising the straight portion 9 having a fastening portion at its end, the gage portion 10, the upper portion 8 and the open loop or eye 12, terminating in the underlying end 13, substantially as described.

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**754,810. SEPARABLE HINGE FOR SCREENS.** CALVIN ROWLAND, Denver, Colo., assignor to the Rowland Manufacturing Company, Denver, Colo., a Corporation of Colorado. Filed July 2, 1903. Serial No. 164,056. (No model.)



*Claim.*—1. A combined or convertible hanger for half and full size screens, having an offset upper portion provided with oppositely-extending hooks, substantially as described.

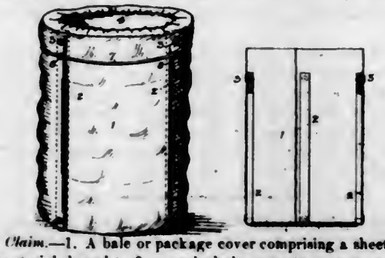
2. A combined or convertible screen-hanger, comprising a fastening portion, an upper portion, offset with relation thereto, and provided with oppositely-turned hooks upon its upper end, substantially as described.

3. A combined or convertible hanger for half and full size screens, comprising a lower portion, 10, provided with spud, 12, a gage portion, 11, the upper portion, 9, and the closed and open hooks, 16 and 18, substantially as described.

4. A combined or convertible hanger for half-size and full-size screens, comprising the lower or fastening portion, the upper portion, 9, terminating in the closed hook, 16, and having its intermediate portion formed into the hook, 18, substantially as described.

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**754,811. BALE OR PACKAGE COVER.** ISAAC SCHLICHTER, Philadelphia, Pa. Filed Nov. 27, 1903. Serial No. 182,942. (No model.)



*Claim.*—1. A bale or package cover comprising a sheet of textile material shaped to form an inclosing structure, permanently secured together with a closed end or bottom, and having a series of independent battens or braces secured to the body of textile material forming the cover.

2. A bale or package cover comprising a sheet of textile material shaped to form an inclosing structure, permanently secured together with a closed end or bottom, and having a series of independent battens or braces secured to the body of textile material in line with the greatest dimension of the cover.

3. A bale or package cover comprising a sheet of material shaped to form an inclosing structure and permanently secured together with a closed end or bottom secured thereto, independent battens or braces secured to the body of the material in line with the greatest dimension of the cover, and a hoop or band for encircling the bale or package after the latter has been filled.

4. A bale or package cover comprising a sheet of material shaped to form an inclosing structure and permanently secured together with a closed end or bottom secured thereto, independent battens or braces secured to the body of the material in line with the greatest dimension of the cover, a hoop or band for encircling the bale or package after the latter has been filled, and means for securing said hoop or band to the battens or braces.

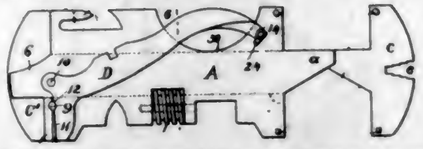
5. A bale or package cover comprising a sheet of textile material shaped to form an inclosing structure permanently secured together with an integral end or bottom formed by folding said material, and having a series of battens or braces secured to the body of textile material forming the finished cover.

6. A bale or package cover comprising a sheet of textile material shaped to form an inclosing structure permanently secured to-

gether with an integral end or bottom formed by folding said material and having a series of battens or braces secured to the body of textile material in line with the greatest dimension of the finished cover.

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754,812. COMBINATION-TOOL. HENRY SCHMIDT and VICTOR IKKIVAR, Collegepoint, N. Y. Filed Aug. 5, 1902. Serial No. 118,546. (No model.)



*Claim.*—1. A combination-tool comprising a handle having a longitudinal passage-way and provided with a stepped end, and a slide provided with jaws, the faces of one matching one end of the handle for the purpose of forming different wrench-sockets on opposite sides, and the other jaw being provided with a plier-surface, and a plier-lever pivoted to the handle and coöperating with the plier-surface for the holding of metal, substantially as described.

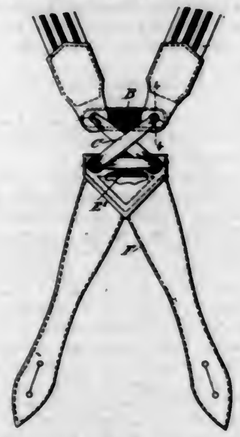
2. A combination-tool comprising a handle having a longitudinal passage-way and provided with a stepped end, a slide provided with jaws, the faces of one matching one end of the handle for the purpose of forming different wrench-sockets on opposite sides, and said jaw containing a tapered socket for small nuts, and the other jaw being provided with a plier-surface, and a plier-lever pivoted to the handle and coöperating with the plier-surface for the holding of metal, substantially as described.

3. A combination-tool comprising a handle having a longitudinal passage-way and provided with a stepped end, a slide provided with jaws, the faces of one matching one end of the handle for the purpose of forming different wrench-sockets on opposite sides, and said jaw containing a tapered socket for small nuts, and the other jaw being provided with a plier and cutting surface, a plier-lever pivoted to the handle and coöperating with the plier and cutting surface for the holding and severance of metal, substantially as described.

4. A combination-tool comprising a handle having longitudinal passage-way and provided with a stepped end, a slide provided at one end with a jaw having its face adjacent to the ends of the handle matching said end of the handle for the purpose of forming wrench-sockets, and transversely-projecting pins secured in the handle and in the jaw for the purpose of forming an adjustable spanner, substantially as described.

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754,813. GARMENT-SUPPORTER. LEONARD R. SCHOCH, Chicago, Ill. Filed June 13, 1903. Serial No. 161,305. (No model.)



*Claim.*—1. A connection for the spaced members of a garment-supporter, comprising a link pivotally connected with the ends of one member, and a lacing connecting the link at its pivots with spaced eyes on the other member, as set forth.

2. A connection for the members of a garment-supporter, comprising a link pivotally connected with the ends of one member, and a lacing connecting the link at its pivots with spaced eyes on the other member, the strands of the said lacing crossing each other diagonally, as set forth.

3. A connection for the members of a garment-supporter, comprising a link pivotally connected with the ends of one member, and a lacing connecting the link at its pivots with spaced eyes on the other member, the strands of the said lacing being doubled and crossing each other diagonally, one set of strands passing between the members of the other set of strands, as set forth.

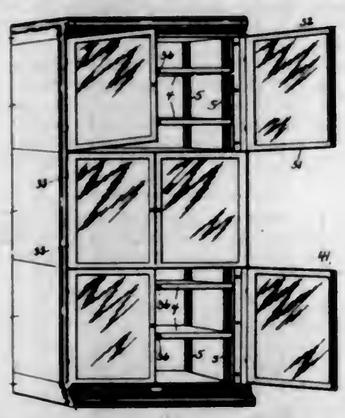
4. A garment-supporter comprising a pair of separate straps, a link pivotally connecting the straps with each other, a suspending end spaced from the straps and link, and a lacing engaging the straps and links at their pivotal connection and connected with the said suspending end, as set forth.

5. A garment-supporter comprising a pair of straps, a link engaging forks in the ends of the straps, a suspending end having a head provided with spaced eyelets, and a lacing extending through the eyelets and through registering openings in the said link and the said straps, as set forth.

6. A garment-supporter comprising a pair of straps, a link engaging forks in the ends of the straps, a suspending end having a head provided with spaced eyelets, and a lacing extending through the eyelets and through registering openings in the said link and the said straps, the said lacing extending diagonally from each strap to an eyelet of the said head, as set forth.

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754,814. EXTENSIBLE CASE. EDWARD G. SCHRIEFER, Cincinnati, Ohio. Filed Feb. 3, 1902. Serial No. 92,462. (No model.)



*Claim.*—1. The combination of a case-section comprising a back and sides and having open-ended top and bottom, with a shelf and means for supporting the shelf, constructed and arranged for permitting the shelf to be passed entirely through the section up and down while the top and bottom of the shelf are maintained in substantially horizontal planes, a door for the section swinging on a substantially vertical axis, and means between the shelf and door, part of said means attached to said shelf and movable with the shelf and part of said means rigidly secured to said door for holding the door in closed relation, irrespective of various shelf elevations.

2. The combination of a case-section comprising a back and sides and having open top and bottom, a shelf, means for securing the shelf in the case-section at various heights, a door for the section swinging in substantially upright positions and means between the shelf and door for holding the door in closed relation irrespective of various heights of the shelf in the case-section.

3. The combination of a case-section comprising a back and sides and having open top and bottom, a door therefor, a shelf, means for supporting the shelf at various heights in the section, means including a spring between the door and shelf, part of said means movable with said shelf for holding the door in closed position at various shelf elevations.

4. The combination of a case-section comprising a back and sides and having open top and bottom, a shelf, means for securing the shelf in the case-section at different elevations, a door for the section swinging on a substantially vertical axis, means secured to and extending vertically of the door, and means secured to the shelf for being engaged by said latter means irrespective of various elevations of the shelf in the section for holding the door in closed relation.

5. In an extensible case, the combination of case-sections, comprising a back and sides and having open top and bottom, a shelf adjustably supported in each case-section, a top unit, and a bottom unit, a door for each section swinging separately on a substantially vertical axis, and means for separately securing each door to its section in closed position, part of said means secured to the shelf and part of said means secured to the door of said section, with the part of said means secured to the shelf adjustable with the shelf to various elevations and engaging the part of said means secured to the door at said various elevations.

6. In an extensible case, the combination of case-sections, comprising a back and sides and having open top and bottom, a shelf adjustably supported in each section, a top unit, and a bottom unit, a door for each section swinging separately on a substantially vertical axis, and means for separately securing each door to its section in closed position, part of said means secured to the shelf and part of said means secured to and extending up and down on the door of said section and arranged to be engaged by said part secured to the shelf at various elevations with a flexible dust-strip between each door and adjacent doors.

7. The combination of a case-section comprising a back and sides and having open-ended top and bottom, a shelf, a shelf-strip secured to each of said sides, each shelf-strip having a series of openings, and a shelf-support, said support having a hook at top and a hook at bottom for taking into said openings, said shelf and its support collectively having a recess and projection, for securing the shelf and sides together and for holding the sides against sidewise displacement, whereby said case-section may be handled as an entirety with the sides thereof reinforced by the shelf.

8. The combination of a case-section comprising a back and sides and having open top and bottom, with a shelf arranged to be passed up and down entirely through the section, and means for supporting the shelf in the section at various heights, a door for the section swinging in substantially upright positions, means carried by the shelf and movable therewith to various elevations in the section, and means between said latter means and the door for holding the door in closed relation irrespective of various positions in which the shelf is supported.

9. The combination of a case-section comprising a back and sides and having open top and bottom with a shelf and means for supporting the shelf in the section at various elevations, a door for the section swinging in upright positions, and means supported by the shelf and carried with the shelf when moved to said various elevations and means extending up and down on the door arranged to engage said means carried by the shelf at various shelf elevations.

10. The combination of a case-section comprising a back and sides and having open top and bottom, a shelf, means for supporting the shelf in the case-section at different elevations, a door for the section swinging in substantially upright positions, means secured to and extending up and down on the door and means secured to the shelf for interengaging with said latter means at various shelf elevations.

11. The combination of superposed case-sections comprising back and sides and having open top and bottom, superposed shelf-strips secured to the sides having series of openings, a shelf and a shelf-support, said support having a hook at top and a hook at bottom for respectively taking into openings of two superposed shelf-strips thereby spanning superposed sides, substantially as described.

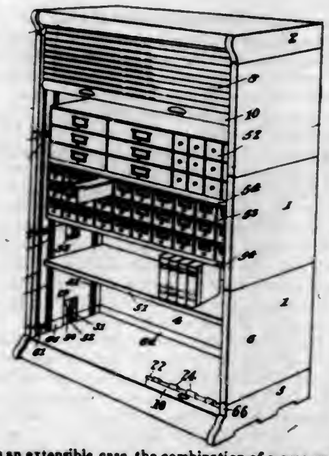
12. The combination of superposed case-sections comprising a back and sides and having open top and bottom, superposed shelf-strips secured to the sides having series of openings, a shelf, a shelf-support at each end thereof, each of said supports having a hook for taking into said openings, and means between said shelf and supports for limiting movement of said supports longitudinally of the shelf.

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754,815. EXTENSIBLE CASE. EDWARD G. SCHRIEFER, Cincinnati, Ohio. Filed Feb. 3, 1902. Serial No. 92,463. (No model.)

*Claim.*—1. In an extensible case, the combination of a case-section comprising a back and sides and being open-ended at top and bottom, and a flexible curtain-section therefor of substantially the height of the case-section arranged to be passed upwardly past the case-section.

2. In an extensible case, the combination of case-sections, each comprising a back and sides and being open-ended at top and bottom, and flexible curtain-sections, each of said curtain-sections being substantially the height of a case-section, with means for connecting the curtain-sections.



3. In an extensible case, the combination of a case-section comprising a back and sides and being open-ended at top and bottom, and constructed and arranged for permitting a cabinet unit to be passed up and down therethrough while the top and bottom of the cabinet unit are maintained in substantially horizontal planes, a top unit, means for connecting a case-section and the top unit, the front of the case-section having grooves and the top unit having grooves for forming continuous grooves when the case-section and top unit are united, with a flexible curtain-section adapted to be moved in the grooves of the case-section or in the groove of the top unit.

4. In an extensible case, the combination of case-sections, each comprising a back and sides and being open-ended at top and bottom, a top unit and a bottom unit for forming a case, a curtain-section for each case-section, means for connecting the top unit to a case-section against upward movement, and means for connecting the curtain-sections for forming a composite curtain.

5. In an extensible case, the combination of a bottom unit having upwardly-extending back and sides, a case-section comprising a back and sides and having open top and bottom, a top unit, each unit and section having grooves for a curtain, a raising-piece for the curtain in the grooves of the bottom unit, and means for temporarily securing the same therein, a curtain-section in the grooves of the case-section, and means for temporarily securing the same therein, and a curtain-section in the grooves of the top unit, and means for temporarily securing the same therein, with the top unit, the case-section and the bottom unit arranged to be placed one above the other for forming a case, and means for interconnecting the raising-piece and the curtain-sections for forming a composite curtain for the case.

6. In an extensible case, the combination of a case-section comprising a back and sides and being open at the top and bottom and a flexible curtain-section, with means connecting each side of the case-section with the curtain-section for supporting the curtain-section in the case-section.

7. In an extensible case, the combination of a case-section comprising a back and sides and being open-ended at top and bottom, and a curtain-section, with means connecting each side of the case-section with the curtain-section for supporting the curtain-section in the case-section and for holding the sides of the case-section against sidewise displacement.

8. In an extensible case, the combination of a top unit having grooves for a curtain, a back between the grooves and lower end of the top unit, an apron movably secured to the top unit and taking past the grooves for arresting the passage of dust, with the apron arranged to be moved out of range of the grooves by the curtain.

9. In an extensible case, the combination of a top unit having grooves for a curtain, a back between the grooves and lower end of the top unit, an apron pivoted to the top unit and taking past the grooves for arresting the passage of dust, rolls on the apron adapted to be engaged by the curtain, with the apron arranged to be moved out of range of the grooves by the curtain.

10. The combination of case-sections each comprising a back and sides but being open-ended at top and bottom for forming a continuous open front and interior when said case-sections are placed

one above another, and a flexible curtain-section for each case-section, with means for connecting said curtain-sections for forming a united curtain.

11. In an extensible case, the combination of case-sections, comprising a back and sides and being open-ended at top and bottom, with a flexible curtain-section for each case-section of substantially the height of the case-section, means for connecting the flexible curtain-sections for forming a composite flexible curtain, a top unit, the case-sections having grooves and the top unit having a curved groove for receiving the flexible curtain.

12. In an extensible case, the combination of a case-section comprising a back and sides but being open-ended at top and bottom, and a flexible curtain-section therefor of substantially the height of the case-section, a top unit, the case-section having grooves and the top unit having curved grooves for receiving the flexible curtain.

13. In an extensible case, the combination of case-sections comprising a back and sides but being open-ended at top and bottom, a top unit and a bottom unit for forming a case, a flexible curtain-section for each case-section and means for connecting the curtain-sections for forming a composite flexible curtain.

14. In an extensible case, the combination of case-sections comprising a back and sides and being open-ended at top and bottom, and curtain-sections of substantially the height of case-sections, moving up and down with relation thereto, and means for connecting the several curtain-sections for forming a connected curtain moving as an entirety.

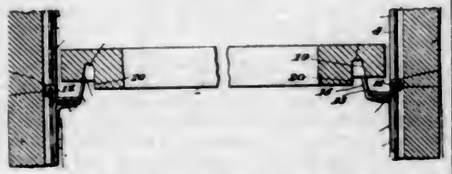
15. The combination of a section for an extensible case, comprising a back and two sides and being open-ended at top and bottom, a cabinet unit therefor, substantially filling the space between the inside faces of said sides with the inner front edge for each of said sides substantially within the vertical planes of extension of the inner and outer side faces of said sides for permitting the cabinet unit to be introduced into the section from the front of said section, means for supporting the cabinet unit in the section adjustable to various elevations, and constructed and arranged for permitting the cabinet unit to be passed entirely through the section up and down while the top and bottom of the cabinet unit are maintained in substantial horizontal planes.

16. The combination of case-sections comprising a back and two sides and being open-ended at top and bottom, a cabinet unit therefor substantially filling the space between the inside faces of said sides with the inner front edge for each of said sides substantially within the vertical planes of extension of the inner and outer side faces of said sides for permitting the cabinet unit to be introduced into the case-section from the front of said section, means for supporting the cabinet unit at various elevations in a case-section or overlapping case-sections, and constructed and arranged for permitting the cabinet unit to be passed entirely through a case-section up and down while the top and bottom of the cabinet unit are maintained in substantially horizontal planes.

17. In an extensible case, the combination of a case-section comprising a back and sides and being open-ended at top and bottom, a flexible curtain-section therefor of substantially the height of the case-section, a bottom unit having upwardly-extending back and sides, a part of a flexible curtain therein, means for connecting said latter part and said flexible curtain-section, said part and flexible curtain-section arranged to be passed upwardly past the case-section, and a top section into which said flexible curtain-section passes.

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754,816. **ADJUSTABLE SHELF-SUPPORT.** EDWARD G. SCHRIEBER, Cincinnati, Ohio. Filed Apr. 30, 1902. Serial No. 105,388. (No model.)



*Claim.*—1. The combination with a pair of sides and a shelf, of shelf-strips secured to and extending up and down on each side at the inner face thereof, and shelf-supports releasably engaging said shelf-strips at various elevations and extending from said sides under the ends of the shelf, said shelf-strips having a groove and said supports having a downwardly-projecting shank extending into said groove, said shelf and supports having interengaging inclined faces acting to draw the sides toward the shelf while seating the shelf with relation to the sides.

2. The combination with a pair of sides and a shelf, of shelf-strips secured to and extending up and down on each side at the inner face thereof, and shelf-supports releasably engaging said shelf-strips at various elevations and extending from said sides under the ends of the shelf, said shelf-strips having a groove and said supports having a downwardly-projecting shank extending into said groove, and means between the shelf and sides acting to draw the sides inwardly while seating the shelf, said means and shelf adjustable up and down on the sides.

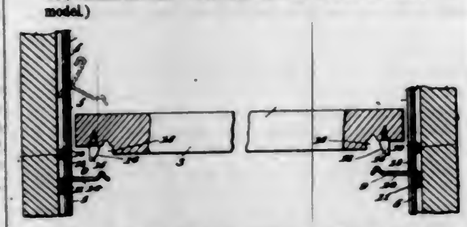
3. The combination of a pair of sides each having a pair of grooves in its inner face, four shelf-strips, one in each of said grooves and extending up and down on the side, each of said shelf-strips having a groove in its outer face and a flange at each side of said groove projecting sidewardly from said groove in substantially the plane of the inside face of said side, a pair of shelf-supports releasable from said shelf and sides, one at each end of the shelf extending beyond said end from said shelf-strips, said shelf-stripe having openings for receiving said supports and said shelf-supports having shanks taking into said grooves in said shelf-strips.

4. The combination of a pair of sides each having a pair of grooves in its inner face, four shelf-strips, one in each of said grooves and extending up and down on the side, each of said shelf-strips having a groove in its outer face and a flange at each side of said groove projecting sidewardly from said groove in substantially the plane of the inside face of said side, a pair of shelf-supports releasable from said shelf and sides, one at each end of the shelf extending beyond said end from said shelf-strips, said shelf-strips having openings for receiving said supports and said shelf-supports having shanks taking into said grooves in said shelf-strips, with means between the shelf and shelf-support for relatively drawing the shelf and side toward each other while seating the shelf.

5. In an adjustable shelf-supporting device the combination with the sides of a case and a shelf therefor, said sides having grooves 7 and 8, shelf-strips 4 having grooves 6 and openings 5 and also having sidewardly-extending flanges located in the grooves 8, supports 9 having a hook 10 arranged to engage in said openings 5, said supports further having depending shank 12 and depending tail 14 taking into the said groove 6 and also having a finger 15, the shelf having an opening 18 the outer wall of which is arranged to engage said finger 15, and constructed and arranged for relatively drawing the shelf and side toward each other when seating the shelf.

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754,817. **ADJUSTABLE SHELF-SUPPORT.** EDWARD G. SCHRIEBER, Cincinnati, Ohio. Filed Apr. 30, 1902. Serial No. 105,389. (No model.)



*Claim.*—1. In an adjustable shelf-support, the combination of a support, means for adjustably connecting said support to a side, said support having an opening, the sides, and a shelf adjustable up and down between the same, said shelf having a projection projecting downwardly from the under side of the shelf between the ends of the shelf and having an inclined face extending transversely to the side taking into the opening and relatively drawing the side and shelf toward each other while seating the shelf on said support.

2. In an adjustable shelf-support, the combination with the sides and a shelf, of a support for each end of the shelf, means for adjusting the supports and shelf up and down between the sides and connecting said supports to said sides, each of said supports having a recess taking under the shelf, said shelf at each end having a projection projecting downwardly from its under side between the ends of the shelf, and said projections each having an inclined face and taking into the respective recesses, and thereby relatively drawing the side and shelf toward each other by pressure applied on the shelf.

3. The combination of a pair of sides each having a pair of grooves in its inner face, four shelf-strips, one in each of said grooves and extending up and down on the side, each of said shelf-strips having a groove receding outwardly and a flange at each side of said groove projecting sidewardly from said groove in substantially the plane of the inside face of said side, a pair of shelf-supports releasable from said shelf and sides, one at each end of the shelf extending beyond said end from said shelf-strips, said shelf-strips having openings for receiving said supports, said shelf-supports each having a recess under the shelf and said shelf at each end having a projection extending downwardly from the under side of said shelf and between the ends of said shelf into said recess, each of said projections having an inner inclined face taking against the inner wall of said recess.

4. The combination with a pair of sides and a shelf, of shelf-strips secured to and extending up and down on each side at the inner face thereof and shelf-supports, with means thereon engaging said shelf-strips for adjustably positioning said supports at various elevations on said shelf-strips, said shelf-supports extending from said sides under the ends of the shelf, each shelf-support having a recess under the shelf, said shelf having a projection at each end between its ends extending downwardly from the bottom of said shelf and releasably engaging a shelf-support at each end of the shelf, said projections having inner inclined faces engaging the inner walls of said respective recesses.

5. In combination with a pair of sides and a shelf, a sheet-metal shelf-support having a hook struck from its body and thereby forming an opening, and a peg on the bottom of the shelf taking into said opening, said peg having an inner inclined face engaging the inner wall of said opening.

6. In an adjustable shelf-support the combination with a pair of sides and a shelf, of a releasable shelf-support for each end of the shelf taking under and longitudinally beyond the end of the shelf, shelf-strips extending up and down on the inside of said sides, said strips having longitudinal grooves receding outwardly and openings extending from said grooves, and said sides having grooves in rear of said strip, said shelf-supports having segregated hooks taking into said openings and a ledge, the ledge having an opening and the shelf having a projection at its bottom, the inner edge of which projection is inclined outwardly and downwardly and arranged to engage the inner wall of said opening in said ledge.

7. In an adjustable shelf-support the combination with a pair of sides and a shelf, of a releasable shelf-support for each end of the shelf taking under and longitudinally beyond the end of the shelf, shelf-strips extending up and down on the inside of said sides, said strips having longitudinal grooves receding outwardly and openings extending from said grooves, and said sides having grooves in rear of said strips, said shelf-supports having segregated hooks located one above the other, the lower of said hooks being longer than the upper, said hooks taking into said openings, each of said shelf-supports also having a ledge, the ledge having an opening and the shelf having a projection at its bottom, the inner edge of which projection is inclined outwardly and downwardly and arranged to engage the inner wall of said opening in said ledge.

8. In an adjustable shelf-support, the combination with two sides and a shelf, of a shelf-strip secured to each side, a support for each end of the shelf having segregated hooks 10 and 11 at the upper and lower parts thereof respectively and said shelf-strips having openings 5 between the strips and supports for adjustably positioning the supports on the sides, said support at each end of the shelf having a recess 14 and said shelf at each end having a projection, said projection having an inner inclined face and taking from the shelf into the recess at each end of the shelf, and said inner inclined face taking against the inner wall of said recess at each end of the shelf.

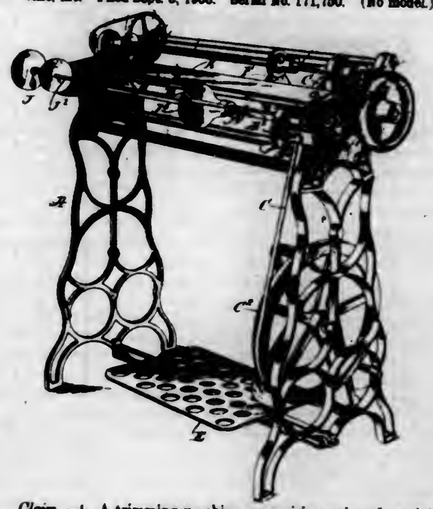
9. In an adjustable shelf-support, the combination with two sides and a shelf, of a shelf-strip secured to each side, a releasable support for each end of the shelf having upper and lower hooks 10 and 11 at the upper and lower parts thereof respectively, said lower hooks being longer than the upper, said shelf-strips having openings 5 for said hooks for permitting adjustable positioning of the supports on the sides, said supports each having a recess 14 under the shelf, said shelf at each end having a projection, each of said projections having an inclined inner face, and said projections projecting downwardly from the under side of the shelf between the ends of the shelf and taking from the shelf into the recess at each end of the shelf, substantially as described.

10. In an adjustable shelf-support, the combination with the two sides and a shelf, of shelf-strips 4 secured to each side and shelf-supports 9 having connecting-web 17 and a plurality of segregated hooks 10 11 projecting longitudinally of the shelf, and said shelf-strips having openings 5 for said hooks, for adjustably positioning the shelf on the sides, said shelf-support at each end of said shelf having a recess 14 under the shelf and said shelf having a projection 15 extending downwardly from its under side between its ends taking into the recess, and each of said projections having inner inclined face 16 taking against the inner wall of recess 14.



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754,818. **TRIMMING-MACHINE.** NEAL M. SCHUSTER, Kirksville, Mo. Filed Sept. 3, 1903. Serial No. 171,750. (No model.)



*Claim.*—1. A trimming-machine, comprising pairs of revoluble disk knives, a treadle device for driving the knives, and a roll-supporting device comprising a bar mounted to slide lengthwise, brackets carried by the bar, and a rod fulcrumed on one bracket and engaging the other bracket, as set forth.

2. A trimming-machine having a roll-supporting device comprising a bar mounted to slide lengthwise, means for moving the bar lengthwise, brackets secured on the bar, and a rod fulcrumed on one bracket and engaging the other bracket, as set forth.

3. A trimming-machine having a roll-supporting device comprising a bar mounted to slide lengthwise, means for moving the bar lengthwise, brackets, of which one is permanently secured on the bar and the other adjustably fastened on the bar and provided with a slot, and a rod fulcrumed on the fixed bracket and adapted to pass with its free end into the slot of the adjustable bracket, as set forth.

4. A trimming-machine having pairs of trimmers, a support for the roll to be trimmed, and manually-controlled means for shifting the said support bodily in the direction of the length of the roll, the said means consisting of a slide-bar having a worm, a worm-wheel in mesh with the worm and a gearing for turning the worm, as set forth.

5. A trimming-machine, having trimming-knives, a roll-supporting device comprising a bar mounted to slide lengthwise, brackets secured to the bar, and a rod fulcrumed on one bracket and engaging the other bracket, and a winding-up device, as set forth.

6. A trimming-machine comprising trimmers mounted to rotate, a support for the roll to be trimmed, manually-controlled means for shifting the support bodily in the direction of the length of the roll, the said means consisting of a bar mounted to slide and provided at one end with a worm, a worm-wheel in mesh with the worm, and means for turning the worm-wheel, and a winding-up device for the roll, as set forth.

7. A trimming-machine, comprising pairs of revoluble trimmers, a roll-supporting device comprising a bar mounted to slide lengthwise, brackets on the bar, and a rod fulcrumed on one bracket and engaging the other bracket, means for shifting the said bar, a winding-up device, and a treadle device for driving the trimmers and winding-up device, as set forth.

8. A trimming-machine, comprising pairs of trimming-knives, a winding-up device, means for driving the knives and winding-up device, and a roll-supporting device comprising a bar mounted to slide, a bracket on the said bar, a rod adapted to receive the roll and having at one end a ball-and-socket connection with the said bracket, and an adjustable bracket on the bar having a radial slot to receive the free end of the rod, the said bracket being adapted to engage one end of the roll, and means on the rod for engaging the other end of the roll, as set forth.

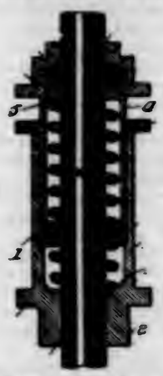
**754,819. WEATHER-STRIP.** JOSEPH S. SENGLAR, St. Louis, Mo. Filed Feb. 26, 1903. Serial No. 145,558. (No model.)



*Claim.*—1. A device of the kind described comprising a horizontal strip, adapted to move vertically, brackets carried by a door adjacent its lower edge and having diagonal slots formed in them transverse to the said strip, stirrups secured to said strip, a rod having shoulders thereon, said rod passing through the slots of the brackets and the stirrups and adapted to engage the stirrups and lift the said strip when actuated in a forward direction, and means for actuating said rod.

2. A device of the kind described comprising a weather-strip, stirrups having eyes on their sides secured to said strip, spring-wire loops having their ends bent upward and their side members engaging said eyes, the said spring-loops being adapted to bear downward on the stirrups, slotted brackets carried by a door adjacent its lower edge, a rod having shoulders and collars formed thereon, said rod passing through the slots of the brackets and the stirrups, coiled springs around said rod, said springs bearing at one end against a collar and at the opposite end against a bracket, respectively, and adapted to force said rod forward and bring the shoulders into engagement with the stirrups, and means for returning the rod to its normal position.

**754,820. STUFFING-BOX.** CLAIR D. SHORTS, Fern, Pa. Filed June 17, 1903. Serial No. 161,812. (No model.)



*Claim.*—1. A stuffing-box comprising a cylindrical casing, an auxiliary casing adjustably mounted within the same, a follower mounted within the auxiliary casing, stuffing material mounted thereon, means for normally holding the follower in engagement with the stuffing material whereby the same is compressed, comprising a spring member carried by said casings, and means carried by the auxiliary casing for adjusting said spring, substantially as described.

2. A stuffing-box in combination with a shaft or axle which is adapted to pass through said stuffing-box, of a cylindrical casing, an auxiliary casing adjustably secured therein, stuffing material carried within said auxiliary casing, a follower mounted within said casing, means carried within said casings to normally hold the follower in engagement with the stuffing whereby the same will be compressed and normally held in engagement with the periphery of the shaft adapted to pass therethrough, means carried by said auxiliary casing to regulate the tension of the means for holding the follower in contact with the stuffing, substantially as described.

3. A stuffing-box comprising a cylindrical casing interiorly threaded, an auxiliary casing adjustably mounted within and engaging the threaded portion of the first-named casing, stuffing mounted within the auxiliary casing, a follower adapted to engage the stuffing, and adjustable means adapted to engage the follower to force the same into engagement with the stuffing, and means carried by the auxiliary casing for adjusting the last-named means, substantially as described.

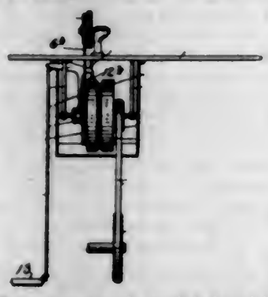
4. A stuffing-box comprising a cylindrical casing, an auxiliary casing adapted to be secured within the first-named casing, means carried by said auxiliary casing whereby the same may be adjusted within first-named casing, stuffing material secured in the auxiliary casing, a follower mounted within said casing, a spring carried by said casings for normally holding said follower in engagement with the stuffing whereby the same will be compressed, means carried by the auxiliary casing for adjusting said spring, substantially as described.

**754,821. BOLTING-SIEVE CLEANER.** CHARLES A. SHULTS, Portland, Oreg. Filed July 17, 1903. Serial No. 165,961. (No model.)



*Claim.*—A bolting-sieve cleaner, consisting of a block, and a plurality of short legs on a side of the block, having convexly-rounded free ends, that seat on the stretched sieve-cloth and adapt the block to move over the sieve-cloth.

**754,822. REVERSIBLE TRANSMITTER.** SAMUEL T. SIBBOSS and WALTER T. MOORE, Columbus, Ohio. Filed Nov. 25, 1903. Serial No. 182,661. (No model.)



*Claim.*—1. The combination of a fixed shaft, a pinion, a driven pulley carrying said pinion, a wheel having an inward-facing series of cogs, an additional pinion intergeared with said pinion and cogs, a driving-pulley, and means for shipping the last named into engagement with said wheel, said pulleys and wheel being loose upon said shaft.

2. The combination of a fixed shaft, a pinion, a driven pulley carrying said pinion, a wheel having an inward-facing series of cogs or teeth, an additional pinion intergeared with said cogs or teeth and pinion, a driving-pulley equipped with an impinging face for engagement with said wheel, and means for effecting the shipment of said driven pulley, said pulleys and wheel being loose upon said shaft.

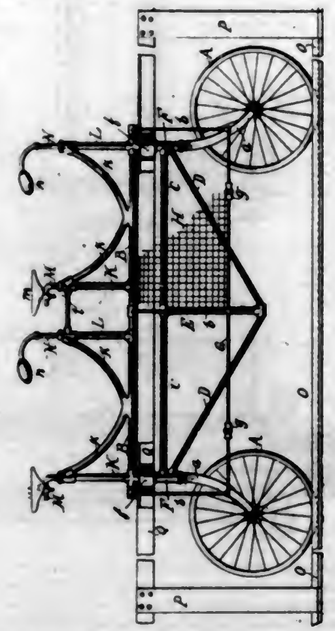
3. The combination of a fixed shaft, a pinion, a driven pulley carrying said pinion, a wheel having an inward-facing series of cogs, an additional pinion intergeared with said cogs and pinion, a driving-pulley having a friction engaging face, and a shipping-lever adapted to effect the shipment of the latter pulley into engagement with said wheel, said lever having an arm engaging a collar on said latter pulley, said pulley and wheel being loose upon said shaft.

4. The combination of a fixed shaft, a pinion, a driven pulley carrying said pinion, a wheel having an inward-facing series of cogs, an additional pinion intergeared with the aforesaid pinion and cogs, a driving-pulley having an impinging face, a shipping-lever adapted to be suitably actuated and having an arm engaging a collar on said driving-pulley, said lever also having a spring-pressed brake adapted to engage a lateral rim or flange of said driving-pulley.

**754,823. AUTOMATIC COASTING-CYCLE.** EDWARD A. SMITH, New York, N. Y. Filed Dec. 3, 1903. Serial No. 183,684. (No model.)

*Claim.*—1. A frame for cycles and the like, comprising sleeves F F, horizontal members B C, inclined members D D, a vertical member E, guide-shoes or rollers *f f*, seats or saddles, and handles or handle-bars: the said horizontal members B and C being situated respectively above and below the plane of the rollers *f f*, substantially as herein set forth.





2. A frame for cycles and the like, comprising sleeves F F, horizontal members B C, inclined members D D, a vertical member E, guide-shoes or rollers *f f*, seats or saddles, handles or handle-bars, supports *b b b*, a horizontal rod G, a network H, and foot-rests *g g*, substantially as herein set forth.

3. A cycle comprising a frame consisting of sleeves F F, horizontal members B C, inclined members D D, a vertical member E, horizontally-revolving wheels or rollers *f f*, vertically-revolving wheels mounted in forks which are pivotally attached to said frame, seats or saddles, and handles or handle-bars; the horizontal members B and C being respectively above and below the plane of the wheels or rollers, substantially as herein set forth.

4. A cycle comprising a frame consisting of sleeves F F, horizontal members B C, inclined members D D, a vertical member E, horizontally-revolving wheels or rollers *f f*, vertically-revolving wheels mounted in forks which are pivotally attached to said frame seats or saddles, and handles or handle-bars, said vertically-revolving wheels and their forks being free from control by the handles or handle-bars, and the horizontal members B and C of the frame being situated respectively above and below the plane of the wheels *f f*, substantially as herein set forth.

5. A cycle comprising a frame consisting of sleeves F F, horizontal members B C, inclined members D D, a vertical member E, horizontally-revolving wheels or rollers *f f*, vertically-revolving wheels mounted in forks which are pivotally attached in said frame, seats or saddles, and handles or handle-bars, supports *b b b*, a horizontal rod G, a network H and foot-rests *g g*; said vertically-revolving wheels and their forks being free from control by the handles or handle-bars, and the horizontal members B and C of the frame being situated respectively above and below the plane of the wheels or rollers *f f*, substantially as herein set forth.

6. The combination with an automatic coasting-cycle, comprising a frame provided with guide-shoes or horizontal rollers, a saddle and handle-bars, and wheels mounted in forks which are pivotally attached to said frame, said forks being free from control by the handle-bars; of a track therefor, comprising a grooved rail adapted to receive the wheels of a cycle, and uprights on each side of said rail bearing guard-rails adapted to engage with guide-shoes or horizontal rollers on the upper part of the frame of a cycle.

7. The combination with an automatic coasting-cycle, comprising a frame consisting of sleeves F F, horizontal members B C, inclined members D D, a vertical member E, guide-shoes or horizontally-revolving rollers *f f*, seats or saddles, handles or handle-bars, and vertically-revolving wheels mounted in forks, which are pivotally attached to said frame, said horizontal members B and C being respectively above and below the plane of the rollers *f f*; of a track therefor comprising a grooved rail adapted to receive the vertically-revolving wheels of a cycle, and uprights on each side of said rail bearing guard-rails adapted to engage with guide-shoes or horizontally-revolving rollers on the upper part of the frame of a cycle.

8. The combination with an automatic coasting-cycle, comprising a frame provided with guide-shoes or rollers, a saddle and handle-bars, and wheels mounted in forks which are pivotally attached to said frame, said forks being free from control by the handle-bars; of a track therefor, comprising a grooved rail adapted to receive the wheels of a cycle, and uprights on each side of said rail bearing angular guard-rails adapted to engage with the guide-shoes or rollers on the upper part of the frame of a cycle to limit the upward and sidewise movement of the cycle.

**754,824. PROCESS OF MAKING SULFATE OF ALUMINIUM.** HOWARD SPENCE, Manchester, England. Filed Apr. 20, 1903. Serial No. 153,374. (No specimens.)

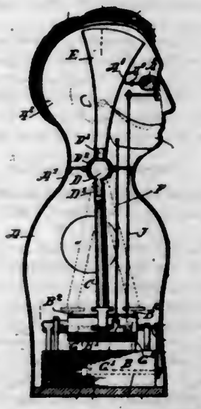
*Claim.*—1. The process for the manufacture of crystallized sulfate of alumina containing two molecules of $SO_3$ for each molecule of $Al_2O_3$ which consists in subjecting alumina in excess to the action of hot sulfuric acid under pressure so as to obtain a solution of sulfate of alumina containing an excess of alumina, treating this solution with available lime suspended in water until the desired basicity is obtained, filtering the resulting mixture, evaporating the filtered solution and separating the crystallized basic sulfate therefrom, substantially as described.

2. In the manufacture of crystallized basic sulfate of alumina, the process which consists in subjecting alumina in excess to the action of hot sulfuric acid under pressure so as to obtain a solution of sulfate of alumina containing an excess of alumina, substantially as described.

3. In the manufacture of crystallized basic sulfate of alumina, the process which consists in treating a solution of sulfate of alumina containing an excess of alumina with available lime suspended in water until the desired basicity is obtained, filtering the resulting mixture, evaporating the filtered solution and separating the crystallized basic sulfate therefrom, substantially as described.

4. In the manufacture of crystallized basic sulfate of alumina, the process which consists in treating a solution of sulfate of alumina containing an excess of alumina, with available lime suspended in water until the desired basicity is obtained and filtering off the resulting solution from the insoluble matters, substantially as described.

**754,825. SPEAKING FIGURE.** GEORGE W. SPENCER and ALVAN LYNDE, Atlantic City, N. J. Filed June 4, 1903. Serial No. 160,059. (No model.)



*Claim.*—1. A speaking figure comprising a hollow body, in imitation of a human being, and provided with movable parts for covering and uncovering openings in the body, a phonograph arranged in the said body and having a sound-emitting tube discharging its sounds into the head of the body, and means driven by the said phonograph and connected with the said movable parts, to actuate the latter, as set forth.

2. A speaking figure comprising a hollow body, having a head forming a resonating-chamber and having sound-discharging openings, and a phonograph in the lower portion of the body, provided with a sound-emitting tube discharging into the head of said hollow body, as set forth.

3. A speaking figure comprising a hollow body, having a head forming a resonating-chamber and having sound-discharging openings, a phonograph in the lower portion of the body, provided with a sound-emitting tube discharging into the head of said hollow body, and a ball-and-socket joint in the sound-emitting tube, said ball and socket being arranged in the neck of the said body, as set forth.

4. A speaking figure comprising a hollow body, having a head forming a resonating-chamber and having sound-discharging openings, a phonograph in the lower portion of the body, provided with a sound-emitting tube, a ball-and-socket joint in the neck of the said body and in which the discharge end of the said sound-emitting tube is secured, and a funnel extending in the head of the body and discharging into the same, said funnel being held at its apex end on the fixed member of the ball-and-socket joint, as set forth.

5. In a speaking figure, the combination with a hollow body in imitation of a human being, provided with movable parts and in its head with a screen-covered opening, of a phonograph in the lower portion of the said body, provided with a sound-emitting tube leading into the head, and having a ball-and-socket-joint connection with the said head at the neck of the body, and means for actuating the said movable parts from the phonograph, as set forth.

6. In a speaking figure, the combination with a hollow body having a hinged lip and slidable eyes, of a phonograph in the said body, and means, actuated from the phonograph and connected with the said lip and the said eyes, to swing the lip up and down and to slide the eyes sidewise, as set forth.

7. In a speaking figure, the combination with a hollow body having a hinged lip and slidable eyes, of a phonograph in the said body, and means, actuated from the phonograph and connected with the said lip and the said eyes, to swing the lip up and down and to slide the eyes sidewise, the said means comprising a bell-crank lever connected with the slidable eyes, a pitman connecting the bell-crank lever with a crank-arm on the phonograph-shaft, and a pitman connecting a crank-arm on the phonograph-shaft with the said pivoted lip, as set forth.

8. In a speaking figure, the combination with a hollow body having eye-openings in its head, and a phonograph in said body, of a bar mounted to slide endwise in the head, eyes secured directly on said bar in rear of the openings of the head, and means for operating the said bar from the phonograph, as set forth.

9. In a speaking figure, the combination with a hollow body having eye-openings in its head, and a phonograph in said body, of a bar mounted to slide endwise in the head, eyes on the bar in rear of the openings of the head, a bell-crank lever connected with said bar, and means for operating said bell-crank lever from the phonograph, as set forth.

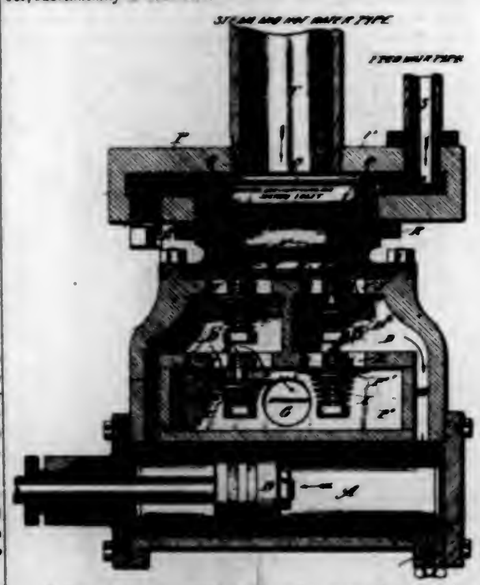
10. A speaking figure, comprising a hollow body in imitation of a human being, the head of the body forming a resonating-chamber, and provided with a movable lip and movable eyes in rear of openings therein, a phonograph in the lower portion of the body, a sound-emitting tube discharging its sounds into the head of the body, and means for operating the lip and eyes from the phonograph, as set forth.

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**754,826. HEATING AND CONDENSING FEED-PUMP.** William Tate, Greensboro, N. C. Filed Nov. 27, 1903. Serial No. 182,801. (No model.)

*Claim.*—1. In a feed-water heater, and in combination, a pump, a connected chamber, the chamber being divided into compartments, having communicating passage-ways with the pump, valves in the compartments, a heating and condensing chamber communicating with the pump, through the said valves and compartments, a water-space surrounding the said heating and condensing chamber, in open communication therewith through a reduced passage-way, steam and hot-water conveying means, to the said heating and condensing chamber, and water-conveying means leading into the said water-chamber, substantially as described.

2. In combination with a double-acting pump, an extension having an inner heating and condensing chamber, a water-chamber on the said extension, communicating with the said heating and condensing chamber through a passage-way, one of whose walls is adjustable with respect to the other, steam and hot-water conveying means leading through the said heating and condensing chamber, and feed-water conveying means leading into the said water-chamber, substantially as described.



3. The combination with a double-acting pump, of an extension, having an inner heating and condensing space, an adjustable water-chamber on the said extension, having water-conveying means leading thereto, and a spraying passage-way in open communication with the said heating and condensing space, and steam and hot-water conveying means leading into the extensions heating and condensing space, substantially as described.

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**754,827. LINE-CHALKING DEVICE.** Frank M. Thompson, East Liverpool, Ohio, assignor of two-thirds to George A. Moon and Eddie R. Smith, East Liverpool, Ohio. Filed June 10, 1903. Serial No. 160,837. (No model.)



*Claim.*—1. The improvement in line-chalkers herein described comprising the casing having a body for the reel and the reel therein, and the chamber extending from said body and adapted to receive the chalk, plugs at the inner and outer ends of said chamber, tubes extending through said plugs and having end plates perforated for the passage of the line, caps screwed on said tubes, perforated disks held within said caps and against the end plates of the tubes, and the shuttle movable longitudinally in the chalking-chamber between the end plugs thereof substantially as set forth.

2. A line-chalker having a chalking-chamber, an end plug therefor, a tube extending through said plug, a cap on the end of said tube and a disk within the cap and having a perforation for the passage of the line substantially as set forth.

3. A line-chalker comprising the chalking-chamber, the tubes at the opposite ends of and opening at their inner ends into said chamber, the caps on the tubes and having contracted openings for the passage of the line and the plugs receiving said tubes and closing the ends of the chalking-chamber substantially as set forth.

4. The combination in a line-chalker of the chalking-chamber, the plugs fitting in the ends of said chamber, means carried by the plugs for wiping the surplus chalk off the line and the shuttle movable in the chalking-chamber and arranged for operation by the line substantially as set forth.

5. A line-chalker comprising the reel-casing, a chalking-chamber extending from the reel-chamber, a shuttle movable in said chalking-chamber, means for excluding the chalk from the reel-chamber, and means for guarding the outlet for the line from the chalking-chamber substantially as set forth.

6. A line-chalker having a chalking-chamber, and a shuttle movable in the chalking-chamber and arranged for operation by the line substantially as set forth.

7. A line-chalker comprising a chalk-chamber, and a shuttle movable longitudinally therein substantially as set forth.

8. A line-chalker having a chalking-chamber and a shuttle movable longitudinally in the chalking-chamber and having a portion around which the line may be coiled whereby the shuttle may be moved in opposite directions by the line as the latter is correspondingly moved substantially as set forth.

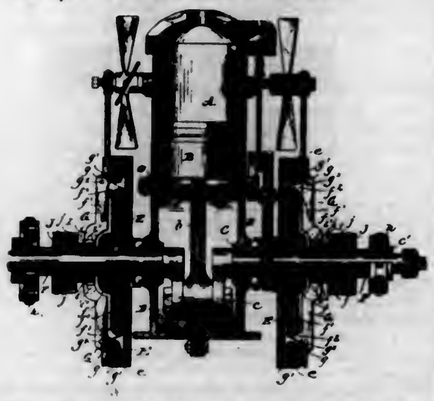
9. A line-chalker comprising the casing having a reel-chamber and a chalk-chamber extending therefrom, plugs at the inner and outer ends of the chalk-chamber and having guarded passages for the line and the shuttle movable longitudinally within the chalk-chamber between the plugs thereof substantially as set forth.

10. A line-chalker comprising a chalk-chamber and a shuttle movable therein and provided with means whereby it may be moved by the line as the latter is moved through the chamber.

11. The combination of the casing having a body for the reeling mechanism and a chamber for the chalk, means controlling communication between the chalk-chamber and the body, means controlling the outlet for the line from the chalking-chamber and an agitating device movable in the chalking-chamber and arranged for operation by the line for preventing the clogging of the chalk within its chamber.

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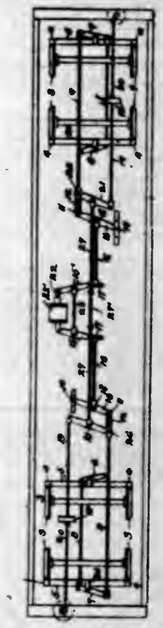
**754,828. CLUTCH MECHANISM.** Charles F. Thoms, Highland town, Md., assignor of one-half to David Wright, Highlandtown, Md. Filed Sept. 27, 1902. Serial No. 125,124. (No model.)



*Claim.*—The combination with the shaft C, of the wheel E fixedly mounted thereon and having a laterally-projecting rim, a sleeve F loosely mounted on the shaft adjoining the wheel, spider-arms integral with and projecting from the inner end of the sleeve and each having a pair of forwardly-projecting ears at its outer end, right-angle levers G pivoted between the ears of the spider-arms, the short horizontal members of said levers carrying shoes which engage the rim while the longer members thereof extend substantially parallel with the spider-arms, a collar slidably mounted upon the sleeve and pivotally connected to the inner ends of the longer members of the aforesaid levers, an annular flange at the outer end of said collar, a grooved collar slidable upon the sleeve independent of the flanged collar and having bent fingers engaging the flange thereon, and a shifting-lever having a yoke engaging the grooved collar, the parts being constructed and arranged as herein shown and described.

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**754,829. BRAKE FOR PASSENGER-CARS.** Max Tolte, St. Paul, Minn. Filed May 17, 1902. Serial No. 107,749. (No model.)



*Claim.*—1. A brake system for railway-cars, comprising an air-cylinder with its levers, truck-levers and lever-rods, brake rods and stands, in combination with a pair of floating levers, each connected with said brake-rods at one end and with said lever-rods at the other, a collapsible connection between said air-cylinder levers and said lever-rods, and a collapsible connection between said floating levers, substantially as described.

2. In a brake system for railway-cars, an air-cylinder with its levers, truck-levers, lever-rods, brake rods and stands, combined with a pair of levers, one of which is floating and the other pivotally fixed at one end to the body of the car, said floating lever being connected to said brake-stand at one end and to said lever-rod at the other and operable by said brake-stand independently of the fixed lever, said fixed lever being collapsibly connected with said lever-rods at its free end, and being intermediately coupled to the air-cylinder levers, substantially as described.

3. In a brake apparatus for railway-cars, the combination of the air-cylinder with its levers and rods, the truck levers and rods, the brake stand and rods, with the stationary stops, 19', the levers, 21, fulcrumed on said stationary stops, and tied to the lever-rods, and the levers, 10, collapsibly connected with the lever-rods and coupled to the air-cylinder levers, substantially as described.

4. In a brake for railway-cars, the combination with the air-brake apparatus, of levers, 10, fixed pivots therefor on the body of the car, rods, 9, having in their ends, pivot-slots, 12, auxiliary levers, 21, and the flexibly-joined tie-rods, 27, connecting said levers, 21, substantially as described.

5. In a brake apparatus for railway-cars, the combination comprising air-cylinder, 22', with its levers and rods, the rod, 16, the lever, 10, the draft-rod, 9, having the pivotal slot connection, 12, with said lever, 10, and the lever, 21, having pivotal connections at or near the end of said rod, 9, substantially as described.

6. In a hand-brake apparatus for railway-cars, the combination comprising air-cylinder, 22', with its associated parts, rods, 16, draft-rods, 9, levers, 10, fixed at one end thereof, having at the other end

a flexible connection with said draft-rods, 9, tie-rods, 27, and chain connection, 27', and levers, 21, pivoted to said rods, 9, and to said tie-rods, 27, substantially as described.

7. In a brake system for railway-cars, the air-cylinder with its levers and rods, the usual brake-stands, chains, and rods, 19, in combination with draft-rods, 9, connecting-rods, 27, a flexible connection, 27', between said rods, 27, lever, 10, levers, 21, pivoted intermediately to rods, 27, pivotal connections at one end of levers, 21, with said rods, 9, and at the other end of said levers, 21, with hand-brake rods, 19, and flexible connections between said rods, 9, and said lever, 10, substantially as described.

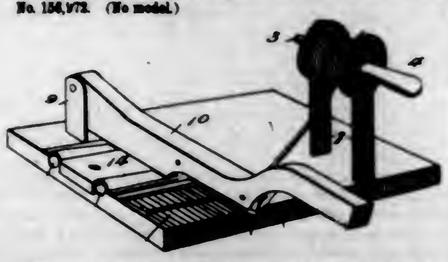
8. A brake system for railway-cars, comprising the usual air-cylinder with its levers, the truck levers and rods and brake-stands, in combination with levers, 21, rods, 27, chain connections, 27', levers, 10, coupled to levers, 21, and connections between levers, 21, and brake rods and stands and flexible connections with the air-brake mechanism, substantially as described.

9. A brake system for passenger-cars and the like comprising the usual truck-levers and draft-rods, brake-stands and automatic brake mechanism, in combination with the levers 21, collapsibly connected with respective brake-stands and pivotally connected with respective draft-rods, the collapsible connection or tie between said levers 21, and the levers 10 having fixed pivots and connected with said automatic mechanism and said draft-rods, substantially as described.

10. A brake system for passenger-cars and the like comprising the usual truck levers and rods, brake-stands, and air-brake mechanism, in combination with levers 21 connected with the brake-rods and brake-stands, a chain connection between said levers 21, levers 10 having fixed pivots and having slot and pin connections with said brake-rods and rods connecting said levers 10 to the air-brake mechanism, substantially as described.

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**754,880. MACHINE FOR PREPARING BLASTING CHARGES.** PERRIN J. TRATHAC, Angels Camp, Cal. Filed May 13, 1903. Serial No. 156,972. (No model.)



*Claim.*—1. In a machine of the character described, a base having a cavity to receive a fuse for compression, a plate covering the cavity and having an opening communicating with said cavity, and a compressing device operating through the opening in the plate to compress the fuse in the cavity.

2. In a machine of the character described, a base provided with a cavity to receive a fuse, a plate covering the cavity and having an opening communicating with said cavity, a movable arm, and means carried by the movable arm and operating through the opening in the plate to compress the fuse in the cavity.

3. In a machine of the character described, a base provided with a cavity to receive a fuse, a plate covering the cavity and having an opening communicating therewith, a movable arm, a compressing device on said arm and operating through the opening in the plate to compress the fuse in the cavity, said device including a means to retain the powder in the fuse during the compressing operation.

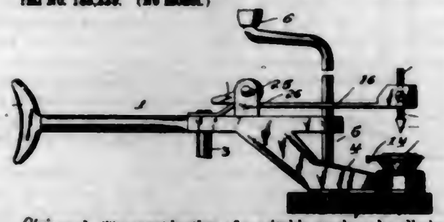
4. In a machine of the character described, a base provided with a cavity to receive a fuse, a plate covering the cavity and having an opening communicating therewith, a movable arm, a compressing device on said arm, comprising a plate having depending side and end flanges, said device operating through the opening to compress a fuse in the cavity.

5. In a machine of the character described, a base having a cavity to receive a fuse and provided with a rib, a plate covering said cavity and having an opening communicating therewith, a movable arm, and means carried by the arm and operating through the opening in the plate to coact with said rib to crimp a fuse-cap.

6. In a machine of the character described, a base having a cavity to receive a fuse for compression, a plate covering the cavity and having an opening communicating with said cavity, a compressing device operating through the opening in the plate to compress a fuse, and means to normally hold the device in inoperative position.

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**754,881. WRENCH.** JOHN A. ADOLF, Eldon, Iowa, assignor of one-half to Joshua K. Sloan, Eldon, Iowa. Filed Nov. 30, 1903. Serial No. 183,239. (No model.)



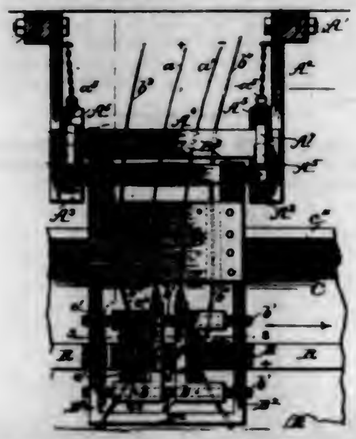
*Claim.*—1. The combination of a suitable stock or handle-bar, a revolving nut-wrench mounted upon the same, a spring-arm upon said stock, an adjustably-mounted bolt-engaging claw upon said spring-arm, and a cam-lever for adjusting said spring-arm, substantially as described.

2. The combination of a stock having an arm-brace and a hand-grip, a tubular shaft journaled in said stock and forming a chuck, a nut-holding device removably secured in said chuck, means for revolving said shaft, a spring-arm upon said stock, a bolt-engaging claw carried by said spring-arm, and a cam-lever for adjusting said spring-arm, substantially as described.

3. The combination of a stock having an arm-brace, and a hand-grip, a tubular shaft journaled in said stock and having a recessed head at one end, a nut-holder removably secured in said head, a pinion upon the opposite end of said shaft, a crank-shaft, a gear upon said crank-shaft meshing with said pinion, and a bolt-holding means carried by said stock and coacting with said nut-holder, substantially as described.

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**754,882. ELECTRIC-RAILWAY PLOW.** JOHN H. AKERS, Washington, D. C. Filed Aug. 3, 1903. Serial No. 168,796. (No model.)



*Claim.*—1. An electric-railway plow having vertically-hinged frames with horizontally-projecting arms, shoes mounted on said arms to slide thereon and springs to force the shoes out and allow them to yield inwardly substantially as described.

2. An electric-railway plow having spring-hinged frames and spring-pressed shoes mounted to slide on the frames substantially as described.

3. An electric-railway plow comprising resilient shoes hinged about vertical axes, shoe-frames carrying the shoes, insulated supports for the shoe-frames consisting of horizontal supporting-straps extending from side to side of the plow-frame substantially as described.

4. An electric-railway plow comprising resilient shoes hinged about vertical axes, shoe-frames having channeled horizontal arms, and non-conducting supporting-straps passing through said arms and secured to the sides of the plow substantially as described.



5. An electric-railway plow comprising a main frame having flexible non-conducting supporting-straps, shoe-frames hung upon the said straps and yielding shoes pivoted in said frames substantially as described.

6. An electric-railway plow comprising a main frame, resilient shoes hinged within the same about vertical axes and flexible non-conducting operating-lines attached at their lower ends to the plow-frame, extending through the shoes at a point outside the axial center and then extended up through the hollow shank of the plow substantially as and for the purpose described.

7. An electric-railway plow comprising a main frame with resilient shoes made of less thickness than the slot, and flexible operating-lines for throwing the shoes into the plane of the plow-frame substantially as described.

8. An electric-railway plow having a cross-head at its upper end, combined with hangers attached to the car and bearing supporting ribs or flanges at their lower edges, detachable retaining-bars and means for locking them above the ends of the cross-head substantially as described.

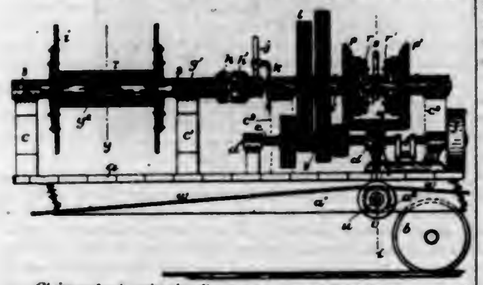
9. An electric-railway plow having outwardly-projecting supports at its upper end combined with hangers having inwardly-facing transverse channels carrying the plow-supports, and detachable retaining-bars to prevent the plow from rising substantially as described.

10. An electric-railway plow having outwardly-projecting supports at its upper end combined with hanger-plates having transverse inwardly-projecting ribs or flanges along their lower edges for sustaining the ends of the plow-supports with a free lateral movement, detachable transverse retaining-bars arranged above the plow-supports, and seats and locking devices for holding the retaining-bars substantially as shown and described.

11. An electric-railway plow having outwardly-projecting supports at its upper end combined with two hanger-plates having transverse channels for the plow-supports to work in and two hook-seats on each hanger-plate, and two parallel tie-bars having notched or hooked ends fitting in said seats and holding the hanger-plates against spreading apart substantially as described.

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**754,883. SEINE-HAULING APPARATUS.** HARRY C. ALBEE, Portland, Oreg. Filed Aug. 6, 1903. Serial No. 168,285. (No model.)



*Claim.*—1. A seine-hauling apparatus comprising a car and suitable supports or bearings thereon; a horizontal engine-shaft *e*, counter-shafts *g*, *g'*, journaled in said bearings; a spool fast on the shaft *g'*; a clutch adapted to couple the shaft *g'* with the shaft *g*; means for transmitting the motion of the engine-shaft *e* to the counter-shaft *g*, at variable speed; a transversely-journaled shaft *u*; gearing adapted to rotate such shaft; a drum on such shaft; a friction-cable running on such drum, and mechanism, including a clutch, for transmitting the motion of the shaft *g*, to the operating-gear of the shaft *u*, such mechanism being adapted to rotate the drum-shaft *u*, in either direction, substantially as described.

2. A seine-hauling apparatus comprising a car and suitable supports or bearings thereon; engine-shaft *e* and counter-shafts *g*, *g'*, journaled in said bearings; a spool fast on the shaft *g'* the journaled boxes for said shaft *g'* being made with removable caps, so as to allow the removal of such shaft together with its spool and the substitution of another shaft and spool; a clutch adapted to couple the shaft *g'* to the shaft *g*; means for transmitting the motion of the engine-shaft *e* to the counter-shaft *g*, at variable speed; a transversely-journaled shaft *u*; gearing adapted to rotate such shaft; a drum on such shaft; a friction-cable on such drum, and mechanism, including a clutch, for transmitting the motion of the shaft *g*, to the operating-gear of the shaft *u*; such mechanism being adapted to rotate the drum-shaft *u*, in either direction, substantially as described.

3. A seine-hauling apparatus comprising a car and suitable supports or bearings thereon; engine-shaft *e* and counter-shafts *g*, *g'*, journaled in said bearings; a spool fast on the shaft *g'*, the journal-boxes for the shaft *g'* being made with removable caps so as to allow the removal of such shaft together with its spool and the substitution of another shaft and spool; a clutch adapted to couple the shaft *g'* with the shaft *g*; gears of different speed, fast on the shaft *g*; movable gears of different speed on the engine-shaft *e*, and means for placing said gears of the respective shafts in engagement with each other; a transversely-journaled shaft *u*, gear adapted to rotate such shaft; a drum on such shaft; a friction-cable on such drum, and mechanism, including a clutch, for transmitting the motion of the shaft *g* to the operating-gear of the shaft *u*; such mechanism being adapted to rotate the drum-shaft *u*, in either direction, substantially as described.

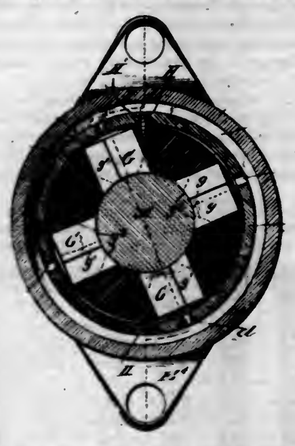
4. A seine-hauling apparatus comprising a car and suitable supports or bearings thereon; engine-shaft *e* and counter-shafts *g*, *g'*, journaled in said bearings; a spool fast on the shaft *g'*, the journaled boxes for the shaft *g'* being made with removable caps, so as to allow the removal of such shaft together with its spool, and the substitution of another shaft and spool; a clutch adapted to couple the shaft *g'* with the shaft *g*; gears of different speed fast on the counter-shaft *g*; a sleeve 9 made with integral gears *n*, *o*, longitudinally movable on the engine-shaft *e*; and a shifting-lever for placing either of the gears *n*, *o*, in engagement with the gears on the shaft *g*; a transversely-journaled shaft *u*; gearing adapted to rotate such shaft; a drum on such shaft; a friction-cable on such drum, and mechanism, including a clutch, for transmitting the motion of the shaft *g*, to the operating-gear of the shaft *u*; such mechanism being adapted to rotate the drum-shaft *u*, in either direction, substantially as described.

5. A seine-hauling apparatus comprising a car and suitable supports or bearings thereon; a horizontal engine-shaft *e*, counter-shafts *g*, *g'*, journaled in said bearings; a spool fast on the shaft *g'*; a clutch adapted to couple the shaft *g'* with the shaft *g*; and means for transmitting the motion of the engine-shaft *e* to the counter-shaft *g*, at variable speed, substantially as described.

6. A seine-hauling apparatus comprising a car and suitable supports or bearings thereon; engine-shaft *e* and counter-shafts *g*, *g'*, journaled in said bearings; a spool fast on the shaft *g'*, the journaled boxes for said shaft *g'* being made with removable caps, so as to allow the removal of such shaft together with its spool and the substitution of another shaft and spool; a clutch adapted to couple the shaft *g'* to the shaft; and means for transmitting the motion of the engine-shaft *e* to the counter-shaft *g* at variable speed, substantially as described.

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**754,884. ROD-PACKING.** NUNNALLY H. ALBERDOT, Columbus, Ga. Filed Aug. 21, 1903. Serial No. 170,286. (No model.)



*Claim.*—1. The improvement in rod-packing herein described, comprising the box or casing, the cage to fit therein and having an opening for a rod to be packed, radial mortises leading from said opening and arranged in pairs and in a set of single mortises intermediate said pairs, the pairs of mortises and the intermediate mortises lapping at their inner ends, the blocks operating in said mortises and made in sections and slidable upon each other at their meeting edges, and curved at their inner ends to conform to a rod, the retain-

ing-band fitting upon the cage and having ports for the passage of steam to operate upon the packing-blocks, and the end plate having openings for the passage of steam to operate between the retaining-band and the box or casing, and also provided with means for preventing the turning of the cage on the rod, substantially as and for the purposes set forth.

2. A rod-packing comprising a cage having radial mortises, packing-blocks movable radially in said mortises, a retaining-band fitting over the cage and having ports for the passage of steam or the like to operate upon the radially-movable blocks, and a box or casing substantially as set forth.

3. A packing comprising a cage having radial mortises for packing-boxes, said mortises being arranged in a series of pairs alternating with a series of single mortises, the single mortises and mortises of the pairs lapping and communicating at their inner ends, and packing-blocks operating in said mortises substantially as set forth.

4. The combination with the box or casing having an end plate, of the cage and its packing-blocks within the box or casing, the retaining-band encircling the cage and the packing-blocks and having ports for the passage of steam and the like to the packing-blocks, and the end plate having openings for the passage of steam to the retaining-band substantially as set forth.

5. A rod-packing comprising the box or casing, the cage therein, the packing-blocks operating in the cage, the retaining-band encircling the cage, and having ports, and the end plate having openings for the passage of steam into the box or casing substantially as set forth.

6. A rod-packing comprising the cage having radial mortises for packing-blocks, the packing-blocks operating in said radial mortises and arranged in pairs slidable upon each other at their inner edges, and means for admitting steam or the like to operate upon the outer ends of the said blocks substantially as set forth.

7. The combination of the box or casing, the cage therein and having radial mortises for the packing-blocks, the packing-blocks in said radial mortises, the retaining-band encircling and secured to the cage and having ports for the passage of steam or the like to the packing-blocks and the end plate having openings to admit steam between the retaining-band and the box or casing substantially as set forth.

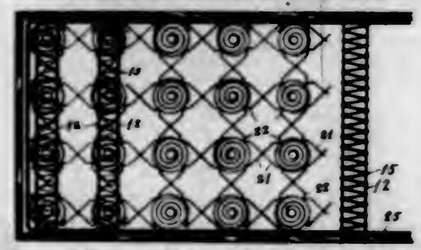
8. The combination of the box or casing, the cage, the packing-blocks movable in the cage and arranged in pairs slidable upon each other at their inner edges and curved at their inner ends to fit a rod, a retaining-band encircling and secured to the cage and having ports for the passage of steam or the like to operate upon the packing-rods and means for admitting steam or the like to operate between the retaining-band and the box or casing substantially as set forth.

9. The combination of the box or casing having a fixed end plate, the opposite end plate fitted to the box or casing and having openings for the passage of steam or the like, the cage fitting in the box or casing, the packing-blocks operating in the cage, and the retaining-band encircling and secured to the cage and having ports for the passage of steam or the like to operate upon the packing-blocks substantially as set forth.

10. The combination of the box or cage, the end plate fitted thereto and having perforations for the passage of steam or the like and provided on its inner ends with a projecting lug, the cage having the radial groove to receive said lug on the end plate, and the packing devices carried by the cage substantially as set forth.

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754,835. COUCH-SPRING. RUDOLF A. ANDERSON, Jamestown, N. Y. Filed Dec. 10, 1902. Serial No. 134,662. (No model.)




*Claim.*—1. In a couch having a suitable frame, wire slats composed of heavy cross-wires, the ends of said wires having attachment to said frame, a stiff wire interlaced between said cross-wires, and each end of said interlaced wire attached to the frame.

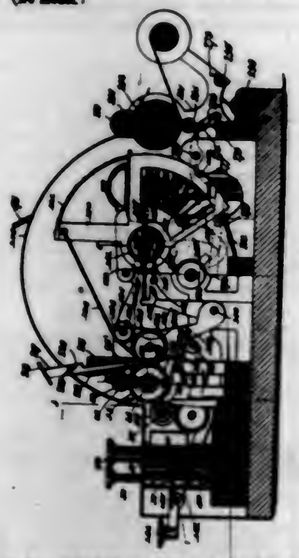
2. In a couch-bottom, wire slats composed of heavy wires cross-wise of the frame and having their ends attached thereto, a stiff wire continuously interlaced between said side wires and attached to said frame, cone springs on said slats having their bottom coils interlocked with said interlacing wire, and suitable connecting-wires for the top of said cone springs.

3. In a couch-bottom, cone springs having a suitable support, connecting-wires for the tops of said springs which run diagonally outside the tops of said cone springs, a return curve in said connecting-wire toward said spring-top opposite each spring, and a link for attaching said curve to the spring.

4. In a couch having a suitable frame, a couch-bottom composed of wire slats having heavy cross-wires with ends attached to said frame, wire interlaced between said cross-wires, cone springs on said slats interlocked with said interlacing wire, connecting-wires for the tops of said springs having return curves opposite to and outside of each spring and connected loosely thereto.

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754,836. CALCULATING AND RECORDING MACHINE. CLARENCE D. BAIRD, Alexandria, Tenn., assignor of one-half to John F. Roy and James Jones, Alexandria, Tenn. Filed Oct. 23, 1903. Serial No. 178,473. (No model.)



*Claim.*—1. In a calculating-machine, a plurality of indicating-disks, a shaft on which said disks are arranged, means for locking a selected disk to said shaft, a plurality of finger-keys each adapted to be moved to the same extent, vertical racks of equal length secured one to each finger-key, and intervening gearing between the racks and the shaft of the indicating-disk, said gearing being proportioned to the values represented by the keys to which they are connected.

2. In a calculating-machine, a plurality of indicating-disks, a shaft on which said disks are mounted, means for locking a selected disk to said shaft, a plurality of finger-keys each adapted to receive movement to a similar extent, and gearing connections between the keys and the disk-shaft, the diameters of the gears connected to the keys being proportioned to the values represented by said keys.

3. In a calculating-machine, a plurality of indicating-disks, a shaft carrying the disks, means for locking a selected disk to the shaft, a plurality of finger-keys adapted to receive movement to a similar extent, vertical racks connected to said keys, a separate gear intermeshing with each of the racks, a primary shaft having a gearing connection with the indicating-disk shaft, and a plurality of pinions of different diameter carried by the primary shaft and intermeshing with the rack-actuated gears, the diameters of said gears being proportioned to the values represented by the keys to which they are connected.

4. In a calculating-machine, a plurality of indicating-disks, a shaft carrying the same, means for locking a selected disk to said shaft, a plurality of finger-keys each adapted to receive movement to a similar extent, racks carried by said finger-keys, a gear-wheel engaging each rack, a primary shaft having a gearing connection



with the indicating-disk shaft, intermeshing pinions of varying size carried by the rack-actuated gears and by the primary shaft, and means for locking the pinions of the latter shaft in one direction of movement and for releasing the same in the opposite direction of movement.

5. In a calculating-machine, the combination with a plurality of indicating-disks, of a shaft carrying said disks, means for locking a selected disk to the shaft, a plurality of finger-keys adapted to receive movement to a similar extent, hollow standards forming guides for the shanks of said keys, springs disposed in the standards and adapted to return the keys to initial position, a plate or bar carried by each shank and provided with rack-teeth, all of said racks being of the same length, a primary shaft having a gearing connection with the indicating-disk shaft, and gearing connecting each of the racks independently to the primary shaft, the diameters of the gears being proportioned to the values represented by the keys to which they are connected.

6. In a calculating-machine, the combination with a plurality of indicating-disks, of a hollow shaft carrying said disks, a carriage disposed in said hollow shaft and having a disk-locking key, a plurality of finger-keys having gearing connections with the hollow shaft, a spacing-key adapted to control the movement of the carriage, pins or fingers carried by the keys and adapted for engagement with the spacing-key, and means for locking said spacing-key in inoperative position.

7. In a calculating-machine, the combination with a plurality of indicating-disks, of a hollow shaft carrying the disks, a locking-key carried by the shaft and movable into engagement with any one of the disks, means for moving said key, a spacing-lever for controlling the key-moving means, mechanism for locking the spacing-lever in inoperative position, and a plurality of finger-keys each adapted to engage with and depress the spacing-lever when the latter is permitted to assume an operative position.

8. In a calculating-machine, a hollow shaft, a series of disks mounted loosely thereon and having key slots or seats, a locking-key carried by the shaft and adapted to engage in said key slots or seats, a rack-bar extending through the hollow shaft and having swiveled connection with the locking-key, a spring-drum having teeth engaging said rack, and an escape mechanism for controlling the movement of said drum.

9. In a calculating-machine, a hollow shaft, a series of disks mounted loosely thereon and having key slots or seats, a locking-key carried by the shaft and adapted to engage in said key slots or seats, a rack-bar extending through the hollow shaft and having swiveled connection with the locking-key, a spring-drum having teeth engaging said rack, a pinion intermeshing with the drum-teeth, a disk connected to the pinion and having escapement-teeth, pawls adapted to engage said escapement-teeth, and a cam controlling the movement of said pawls.

10. In a calculating-machine, a hollow shaft, a series of disks mounted loosely thereon and having key slots or seats, a locking-key carried by the shaft and projecting through an elongated slot therein, a rack-bar extending through the hollow shaft and having swiveled connection with the locking-key, a spring-drum having teeth intermeshing with the rack-bar, a pinion intermeshing with the drum-teeth, a disk connected to the pinion and being provided with escapement-teeth, a pair of pawls adapted to operatively engage the escapement-teeth, a pivoted cam for moving the pawls alternately to releasing position, and a spacing-lever connected to said cam.

11. In a calculating-machine, a hollow shaft, a series of disks mounted loosely thereon and having key seats or slots, a key carried by the shaft and projecting through an elongated slot therein, a rack-bar extending through the hollow shaft and having swiveled connection with the key and provided with a scale for indicating the position of the key within the shaft, a spring-drum having teeth intermeshing with said rack-bar, and an escapement mechanism for controlling the operative movement of said spring-drum.

12. In a calculating-machine, a hollow shaft, a series of disks mounted loosely thereon and having key slots or seats, a key carried by the shaft and projecting through an elongated slot therein, a rack-bar connected to the key, a stationary spindle, a sleeve mounted thereon, a drum forming part of the sleeve and provided with peripheral teeth for engagement with the rack-bar, a spring having one end connected to the drum and its opposite end to the stationary spindle, an escapement mechanism for controlling the action of the spring, a bevel-pinion secured to the sleeve, and a curved rack intermeshing with said pinion and serving as a means for transmitting a winding movement to the spring.

13. In a calculating-machine, an indicating-disk shaft having a recess at one end, a plurality of indicating-disks mounted loosely on the shaft, means for locking a selected disk to the shaft, a double gear-wheel mounted on the shaft at the recessed end thereof, a longitudinally-movable stem mounted in the recessed portion of the shaft and connected to the double gear-wheel to thereby permit of the adjustment of said gear-wheel on the shaft, a primary shaft, finger-keys having gearing connections with the primary shaft, a gear-wheel secured to the primary shaft, and an idler-gear intermeshing with the primary-shaft gear, the double gear-wheel being adjustable on its shaft to intermesh with either the primary-shaft gear or the idler-gear.

14. In a calculating-machine, a shaft, a plurality of disks including an initial and a secondary disk, mounted on said shaft and bearing designating-marks, an adjustable cam situated between said disks, ratchet-wheels carried by the secondary disk and having oppositely-facing teeth, a pair of oppositely-facing pawls carried by the initial disk for engaging said teeth, said pawls being under the control of the cam to permit the engagement of either pawl with its ratchet-wheel, gear-segments carried by the cams, a hollow shaft disposed above the disk-carrying shaft, a plurality of pinions carried thereby and intermeshing with the segments, means for normally locking said pinions to the shaft, an engaging device disposed at the outer end of the pinion-locking mechanism for turning the pinions and cams, a primary shaft, gears connecting the primary shaft to the indicating-disk shaft, and a finger-key mechanism for imparting differential movement to said primary shaft.

15. In a calculating-machine, a shaft, a plurality of disks including an initial and a secondary disk, mounted on said shaft and bearing designating-marks, an adjustable cam situated between said disks, ratchet-wheels carried by the secondary disks and having oppositely-facing teeth, a pair of oppositely-facing pawls carried by the initial disk for engaging said teeth, said pawls being under the control of the cam to permit the engagement of either pawl with its ratchet-wheel, gear-segments carried by the cams, a hollow shaft disposed parallel with the disk-carrying shaft, pinions disposed on the hollow shaft and engaging said segments, a longitudinally-movable spindle disposed within said hollow shaft and provided with locking-keys for engaging the segments, means for rotating the spindle and the hollow shaft and pinions, a primary shaft, gearing connecting the primary shaft to the indicating-disk shaft, and a finger-key mechanism for imparting differential movement to said primary shaft, substantially as specified.

16. In a calculating-machine, a shaft, a plurality of disks mounted on said shaft and bearing designating-marks, an adjustable cam situated between said disks, teeth carried by the secondary disk, a pair of oppositely-facing pawls carried by the initial disk for engaging said teeth, said pawls being under the control of the cam to permit the engagement of either pawl with said teeth, a hollow shaft disposed parallel with the disk-carrying shaft, a plurality of pinions mounted on the hollow shaft and adapted for engagement with gear-segments on the several cams, a longitudinally-movable rod disposed in the hollow shaft and having locking-keys for engagement with said pinions, a turning knob disposed at the end of the rod, a primary shaft, a plurality of gear-wheels connecting the primary shaft to the indicating-disk shaft and one of said wheels being adjustable to alter the direction in which motion is imparted to said indicating-disk shaft, an adjustable stem carrying said gear-wheel, and means for interlocking the adjustable stem and said longitudinally-movable rod.

17. In a calculating-machine, an indicating-disk shaft, a plurality of finger-keys having a gearing connection therewith, means for adjusting a portion of the gearing connection to alter the direction in which movement is imparted to said shaft, a plurality of indicating-disks mounted on the shaft, a transferring mechanism disposed between adjacent disks, means for adjusting the position and direction and operation of the transferring mechanism, and means for interlocking the gearing-adjusting mechanism and the adjusting means of the transferring mechanism.

18. In a calculating-machine, a revoluble indicating-disk shaft, an actuating mechanism adjustable for imparting movement in either direction to said shaft, a plurality of indicating-disks carried by the shaft, a transfer mechanism disposed between adjacent disks, means for adjusting the transfer mechanism for operation in either direction, and means for interlocking the disk-actuating mechanism and the adjusting device of the transfer mechanism.

19. In a calculating-machine, an indicating-disk shaft having a recessed end, a longitudinally-adjustable stem disposed in the recessed end of the shaft, a grooved knob connected to the stem, a double gear-wheel mounted on the shaft and connected to said stem, a primary shaft, a gear-wheel disposed therein, an intermediate gear engaging

the primary-shaft gear, said gears being so arranged that the double gear-wheel may be moved into engagement with either the primary-shaft gear or the intermediate gear, a plurality of indicating-disks mounted on the indicating-disk shaft, a transfer mechanism disposed between adjacent disks, cams for adjusting the position of the transfer mechanism, gear-segments on said cams, a hollow shaft arranged parallel with the indicating-disk shaft, a series of pinions mounted on said hollow shaft and intermeshing with said segments, a longitudinally-movable rod mounted in the hollow shaft, a plurality of locking-keys carried by the rod and adapted to engage said pinions, a turning-knob having an operative connection with the end of said rod, and a locking-lug operable by said rod and adapted to engage in the grooved knob of the gear-wheel-adjusting mechanism.

20. In a calculating-machine, an indicating-disk shaft, a plurality of indicating-disks mounted loosely thereon, means for engaging a selected disk with the shaft, a mutilated gear forming part of each disk, a hollow shaft disposed parallel with the indicating-disk shaft, a series of pinions mounted loosely on the hollow shaft and engaging said mutilated gears, a longitudinally-movable rod carried by the hollow shaft and provided with locking-keys for engagement with said pinions, a revoluble gear-wheel, and a pinion carried by the rod and movable into engagement with said gear-wheel when the several pinions are locked to the hollow shaft.

21. In a calculating-machine, a plurality of indicating-disks each having gear-teeth, a type-carrier for each indicating-disk, a reel having a gearing connection with each indicating-disk, and a flexible connection between the reel and the type-carrier to thereby permit adjusting movement of the latter from rotative movement of the indicating-disk in either direction.

22. In a calculating-machine, the combination with a plurality of indicating-disks, of a shaft on which said disks are loosely mounted, means for turning all of the disks in reverse direction to restore the same to zero-indicating position, a type-carrier for each disk, and mechanism connecting the type-carrier to the disk to permit adjustment of said type-carrier from a movement of the indicating-disk in either direction.

23. In a calculating-machine, a plurality of indicating-disks each having gear-teeth, a type-carrying segment for each of the indicating-disks, connecting mechanism including a gear-wheel between each disk and its corresponding segment, and an automatic mechanism for successively engaging the gear-wheels with the indicating-disk gears.

24. In a calculating-machine, a plurality of indicating-disks each having gear-teeth, type-carrying segments of a number equal to the indicating-disks, an operative connection, including a gear-wheel, between each type-disk and its corresponding segment, said gear-wheels being normally held out of engagement with the indicating-disk gears, and means for automatically and successively engaging the disk-gears with their respective gear-wheels.

25. In a calculating-machine, an indicating-disk shaft, a series of toothed indicating-disks mounted thereon, means for returning said disks to their zero position, type-carriers of a number equal to the number of indicating-disks, an operative connection, including a gear-wheel, between each type-disk and its corresponding indicating-disk, means for successively engaging the respective gear-wheels with the disk-gears in advance of the movement of the latter to indicating position, means for disconnecting all of the gears to permit the independent return of the type-carriers to zero position, and means for imparting operative movement to the type-carriers as the indicating-disks are returned to zero position.

26. In a calculating-machine, a hollow shaft, a plurality of indicating-disks mounted thereon, a locking-key carried by the shaft and adapted to lock a selected disk thereto, a longitudinally-movable bar connected to the key, means for imparting a step-by-step movement to said bar, a plurality of type-carriers adapted to be operated by the disks, and means controlled by said longitudinally-movable bar for permitting the operative connection of the disks to said type-carriers.

27. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the gear-teeth of a disk, mechanism for governing the positions of the levers and the intermeshing of the gears, and flexible connections between the type-carrying segments and the reels.

28. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the gear-teeth of a disk, mechanism for governing the positions of the levers and the intermeshing of the gears, and a flexible connecting device connected at one end to its type-segment and bifurcated at its opposite end and connected to the reel, said flexible connecting device being wound upon the reel in either direction of movement of the latter.

29. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, mechanism for governing the positions of the levers and the intermeshing of the gears, and a chain connecting each reel and segment, the reel-connected end of said chain being bifurcated and connected at different points on the periphery of the reel to thereby permit winding movement in either direction of rotation of the reel.

30. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, mechanism for governing the positions of the levers and the intermeshing of the gears, a chain connecting each reel and segment, an annular groove formed in the reel for the reception of the main portion of the chain, recesses disposed in the periphery of the reel at each side of the groove, and connecting-sections of chain extending between the main chain and different points on the periphery of the reel to thereby permit winding movement in either direction of rotation of said reel.

31. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the gear-teeth of a disk, mechanism for governing the position of the levers and the intermeshing of the disks, a type-carrier for each disk, a chain connecting the type-carrier to the reel and adapted to be wound on the latter, and a guide-roller mounted above said reel and in contact with the chain.

32. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, flexible connections between the type-carrying segments and the reels, means for preventing the engagement of gear-wheels with inactive indicating-disks, and means for returning the indicating-disks to zero position to thereby transmit an operative movement to the type-segments.

33. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, a shaft disposed parallel with the line of indicating-disks, a plurality of pinions normally loosely mounted on said shaft, a series of finger-operated keys for preventing contact between inactive indicating-disks and their adjacent gear-wheels and for automatically locking the series of pinions to the shaft, and means for revolving said shaft to restore the indicating-disks to zero position.

34. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, mechanism for governing the positions of the levers and the intermeshing of the gears, a chain connecting each reel and segment, a guiding-wheel in contact with each chain at a point adjacent to the reels, a shaft carrying the series of chain-guiding wheels, spacing-blocks disposed between the wheels, springs carried by said spaced blocks and tending to force the pivoted levers in the direction of the indicating-disks, and means for turning the indicating-disks to restore the same to zero position.

35. In a calculating-machine, a plurality of indicating-disks, finger-key mechanism for rotating the same, a recording mechanism including type-carriers of a number equal to the number of indicating-disks, mechanism for transmitting the movement of each indicating-disk to one of the type-carriers, and means for automatically permitting the operative engagement of said mechanism with the indicating-disks in advance of the operative movement of each indicating-disk and for preventing such connection between unoperated disks and their type-carriers.

36. In a calculating-machine, a plurality of indicating-disks, finger-key mechanism for rotating the same, a recording mechanism including type-carriers of a number equal to the number of indicating-disks, said type-carriers being normally disconnected from the disks, and means for automatically permitting the operative connection of a disk and type-carrier in advance of the movement of said disk and for preventing such connection between unoperated disks and their type-carriers.



37. In a calculating-machine, a plurality of indicating-disks having keyways, a hollow shaft carrying said disks, a locking-key carried by the shaft and adapted to successively engage and lock the disks thereto, gear-teeth on each indicating-disk, a plurality of pivoted levers, a gear-wheel and a reel carried by each lever, a type-carrier, a flexible connecting device between each type-carrier and reel, a rack-bar connected to the locking-key, and webbed rod connected to the rack-bar and adapted to hold the pivoted levers in inoperative position, and means for imparting a step-by-step movement to the rack-bar and the webbed rod.

38. In a calculating-machine, a hollow shaft, a plurality of indicating-disks carried by the shaft and provided with keyways, a locking-key carried by the shaft and adapted to engage and lock the indicating-disks thereto, a rack-bar connected to the locking-key, means for imparting a step-by-step movement to said rack-bar, gear-teeth on each indicating-disk, a plurality of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, a series of type-carriers, a flexible connecting device between each type-carrier and one of the reels, a rod normally in contact with the levers and holding the gears out of engagement with the gear-teeth of the indicating-disks, and means for connecting said rod to the rack-bar.

39. In a calculating-machine, a hollow shaft, a plurality of indicating-disks carried by the shaft and provided with keyways, a locking-key carried by the shaft and adapted to engage and lock the indicating-disks thereto, a rack-bar connecting with the locking-key, means for imparting a step-by-step movement to said rack-bar, gear-teeth on each indicating-disk, a plurality of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the gear-teeth of a disk, a series of type-carriers, a flexible connecting device between the type-carrier and one of the reels, a webbed rod normally engaging with the levers and holding the gear-wheels out of mesh with the gear-teeth of the disks, a connecting-link between the rack-bar and the webbed rod and in which said rod may be circumferentially adjusted to remove its webbed portion from engagement with the levers, and means for temporarily locking said webbed rod in adjusted position.

40. In a calculating-machine, a hollow shaft, a plurality of indicating-disks carried by the shaft and provided with keyways, a locking-key carried by the shaft and adapted to engage and lock the indicating-disks thereto, a rack-bar connected to the locking-key, means for imparting a step-by-step movement to said rack-bar, a continuous and a mutilated gear on each indicating-disk, a plurality of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the continuous gear of a disk, a series of type-carriers, a flexible connecting device between each type-carrier and one of the reels, a webbed rod normally engaging with the levers and holding the gear-wheels out of mesh with the gear-teeth of the disks, a connecting-link between the rack-bar and the webbed rod and in which said rod may be circumferentially adjusted to remove its webbed portion from engagement with the levers, finger-keys adapted to engage the webbed portion of the rod and move the same to disengaged position, a hollow shaft disposed parallel with the indicating-disk shaft, a plurality of pinions mounted on said hollow shaft and engaging the mutilated gears of the disks, a longitudinally-movable rod disposed within said hollow shaft and provided with a plurality of locking-keys for engagement with the pinions, said rod having an inclined or pointed end portion, a lever having an inclined face adapted to engage with the end of the rod, means for operatively connecting said lever to the finger-keys, and means for turning the rod and shaft to restore the indicating-disks to zero position.

41. In a calculating-machine, a plurality of indicating-disks each having a mutilated gear, a hollow shaft disposed parallel with the line of indicating-disks, pinions mounted on said shaft and engaging the mutilated gears, a rod disposed within the shaft and having a plurality of locking-keys for engagement with the pinions, said rod having an inclined or pointed end portion, a pivoted lever having an inclined face for engaging the end of the rod and forcing the keys to pinion-engaging positions, a revoluble gear-wheel, and a pinion carried by the rod and movable into mesh with said gear-wheel to thereby permit the turning of the rod and disk-engaging pinions and the restoration of the disks to zero position.

42. The combination with a plurality of indicating-disks, of finger-key mechanism for rotating said disks, a normally inactive mechanism for restoring the disks to zero position, type-carriers operable from the several disks but normally disengaged therefrom, and means for simultaneously engaging the disks and type-carriers and for locking the restoration mechanism in operative position.

43. In a device of the class described, a hollow cylindrical support, a segment mounted thereon, a plurality of radially-disposed type-bars carried by the segment, means for moving the segment to adjust any one of the type-bars to imprinting position, a striker-bar carried by the support, means for positively moving the striker-bar away from the type and for locking the same in position, means for releasing said striker-bar, and a spring for forcing the striker-bar into engagement with an adjusted type-bar.

44. In a device of the class specified, a pivotally-mounted segment, a plurality of radially-disposed type-bars guided in said segment, means for moving the segment to adjust any one of the type-bars to imprinting position, a striker-bar, a compression-spring for retracting the striker-bar, a latch for locking said bar in retracted position, a spring for forcibly moving the striker-bar against the end of a selected type-bar, means for compressing the first spring to permit the operation of the second spring, and means for releasing the latch, substantially as specified.

45. In a device of the class specified, a pivotally-mounted type-segment, a plurality of radially-disposed type-bars carried thereby, means for adjusting the segment to move any one of the type-bars to imprinting position, a striker-bar, a compression-spring for retracting the striker-bar, a lever in engagement with the end of said striker-bar and movable in one direction by the action of said spring, means for positively moving said lever in the opposite direction to effect the compression of the spring, a latch for locking the striker-bar in retracted position, a spring for forcibly moving the striker-bar against the end of a selected type-bar, a pivotally-mounted latch-releasing bar, and a lug carried by said lever for engagement with the latch-releasing bar.

46. In a calculating-machine, a plurality of indicating-disks, finger-key mechanism for rotating the same, a plurality of pivoted segments, radially-disposed type-bars carried by each of said segments, a spring retracted and propelled striker-bar adapted to force a selected type-bar of each segment against a recording-surface, a normally disconnected mechanism extending between each disk and segment, means for automatically permitting the operative connection of a disk and segment in advance of the movement of said disk, and a plurality of cam-controlled levers for permitting the retractive movement of the striker-bars and for effecting the simultaneous release of all of the striker-bars.

47. In a calculating-machine, a plurality of indicating-disks, finger-key mechanism for rotating the same, a plurality of type-segments connected one to each of the disks and adapted to be operated successively as said disks are rotated, a plurality of type-bars carried by each segment and adjustable to a position corresponding to the indicating-disk movement, and means for simultaneously moving all of said type-bars against a recording-surface.

48. In a calculating-machine, a plurality of indicating-disks finger-key mechanism for rotating the same, a plurality of type-segments connected one to each of the disks and adapted to be operated successively as said disks are rotated, a plurality of type-bars carried by each segment and adjustable to a position corresponding to the indicating-disk movement, a plurality of spring-retracted striker-bars, means for locking said striker-bars in retracted position, means for positively preventing a retractile movement of striker-bars of which the related segments and disks have received no operative movement, and means for simultaneously releasing all of the retracted striker-bars.

49. In a calculating-machine, a plurality of indicating-disks, finger-key mechanism for rotating the same, a plurality of pivoted segments connected one to each of said disks, radially-disposed type-bars carried by each segment and movable thereby to imprinting position, striker-bars for effecting the imprinting movement of the type-bars, pivoted levers controlling the operation of the striker-bars, a cam-shaft, a series of cams carried thereby and adapted to engage said levers, longitudinally-movable finger-bars for locking any of said levers in inoperative position at will, and means for revolving the cam-shaft to permit simultaneous movement of all of the striker-bars.

50. In a calculating-machine, a plurality of indicating-disks, mechanism for rotating the same, a plurality of pivoted segments connected one to each of said disks, radially-disposed type-bars carried by each segment and movable thereby to imprinting position, striker-bars for effecting the imprinting movement of the type-bars, pivoted levers controlling the operation of the striker-bars, a cam-shaft, a series of cams carried by the shaft and adapted to engage said levers, a plurality of longitudinally-movable finger-bars arranged one in operative relation to each of the levers and adapted to engage and lock any of said levers in inoperative position, and

interengaging pins or lugs connecting said bars in a continuous series to permit the depression of all or any number of said bars by the movement of one of the bars.

51. In a calculating-machine, a plurality of indicating-disks having key-levers, a hollow shaft carrying said disks, a locking-key carried by the shaft and adapted to successively engage and lock the disks thereto, gear-teeth on each indicating-disk, a plurality of pivoted levers, a gear-wheel and a reel carried by each lever, a pivoted segment, a flexible connecting device between each segment and reel, a plurality of type-bars carried by each segment and movable thereby to imprinting position, striker-bars for moving the selected type-bars, striker-bar-controlling levers, a webbed rod adapted to hold the pivoted levers and the striker-bar-controlling levers in inoperative position, a rack-bar connected to the disk-locking key and to said webbed rod, means for imparting a step-by-step movement to the rack-bar to permit the interengagement of the lever-carried gears and the gear-teeth of the disks, a cam-shaft, and a plurality of cams mounted on the shaft for operative engagement with the striker-bar-controlling levers, the striker-bar-controlling levers of non-operated disks being retained in locked position by said webbed rod, substantially as specified.

52. In a calculating-machine, a plurality of indicating-disks having continuous and mutilated gears, a shaft disposed parallel with the line of indicating-disks, a plurality of pinions normally loosely mounted on said shaft and engaging the mutilated gears, a plurality of pivoted segments, type-bars carried thereby, means for connecting the segments and disks, striker-bars for forcing the type-bars to imprinting position, striker-bar-controlling levers, a series of finger-operated keys for locking the controlling-levers connected to non-operative segments and for automatically locking the series of pinions to the shaft, and means for revolving said shaft to restore the disks to zero position.

53. In a calculating-machine, a plurality of indicating-disks having gear-teeth, type-carrying segments, a series of pivoted levers, a gear-wheel and a reel carried by each lever, the gear-wheel being adapted to intermesh with the teeth of a disk, flexible connections between the type-carrying segments and the reels, springs for returning the segments to zero position after each operation, and means for disconnecting the gear-wheels from the gear-teeth of the disks to permit the returning movement of the segments independent of said disks.

54. In a calculating-machine, the combination with indicating devices, of type-segments, a casing inclosing the same and provided with a visual opening, arcuate strips carried by the segments and provided with type-face-indicating devices, and a reflector arranged at the opening and arranged at such an angle as to permit the operator to observe the type-face-indicating devices in said reflector.

55. In a calculating-machine, a hollow shaft, a plurality of indicating-disks mounted thereon, a locking-key for engaging and locking successive disks to the shaft, a spring-drum for imparting a step-by-step movement to the key, a series of type disks or segments, means for connecting the segments to the indicating-disks, means for controlling the imprinting movement of the types carried by the segments, a ribbon mechanism, ratchet-feed devices for the ribbon, and a main shaft having an operative connection with the spring-drum, the type-imprinting mechanism, and the ratchet-feed of the ribbon mechanism.

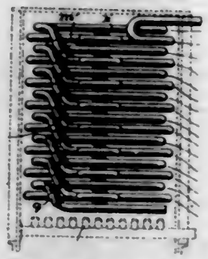
56. In a calculating-machine, a hollow shaft, a plurality of indicating-disks mounted thereon, a locking-key for engaging and locking successive disks to the shaft, a spring-drum imparting a step-by-step movement to the key, a main crank-shaft, a beveled gear-segment mounted loosely thereon, a bevel-pinion intermeshing with the segment and connected to the spring-drum, and a radial arm rigidly secured to the main shaft and adapted to engage said segment to effect a winding movement of said spring-drum.

57. In a calculating-machine, a plurality of indicating-disks, each having a mutilated gear, restoration-disks, a hollow shaft, restoration-pinions mounted on said pinions and adapted to engage the mutilated gears, a main shaft having an operating-gear, a longitudinally-movable rod disposed within the hollow shaft and provided with pinion-locking keys, a pinion carried by the hollow shaft and adapted for operative connection with the gear of the main shaft, and means for automatically shifting said longitudinal rod to lock the restoration-pinion and to intermesh the pinion with the connecting-gearing of the main shaft when the recording mechanism of the machine is to be adjusted for imprinting a grand total.

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**754,837. STEAM-BOILER.** ROBERT W. BARTON, Chicago, Ill. Filed Mar. 2, 1903. Serial No. 145,751. (No model.)

*Claim.*—1. A boiler of the class described, comprising superimposed units, each of which is composed of an angularly-formed coil and a spirally-formed coil, one spacing the other from the next adjacent coil of the next adjacent unit, and connections between the respective units to establish communication between them, said connections including means to prevent the passage of water by gravity through the coils, a water-feed connection to the lower coil of the uppermost unit and a steam-discharge connection to one of the lower units.



2. A boiler of the class described, comprising superimposed units, each of which is composed of dissimilarly-formed coils, one spacing the other from the next adjacent coil of the next adjacent unit, and connections between the respective units to establish communication between them, said connections including means to prevent the passage of water by gravity through the coils, a feed-water connection to the upper unit, and a steam-discharge connection to one of the lower units.

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**754,838. TANK AND HEATER.** JOEL F. BATH, Urbana, Ohio. Filed May 7, 1903. Serial No. 156,085. (No model.)

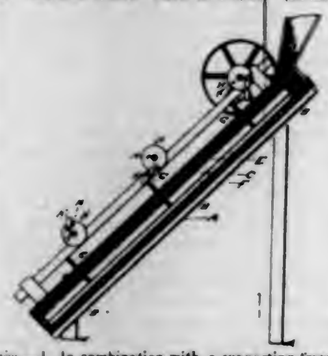


*Claim.*—1. The combination of a cement tank, a heater-casing secured thereto, intermediate spacing means, and a non-conducting packing in the intermediate space thus formed to prevent the crumbling of the cement by the intensity of the heat in the casing.

2. The combination of a cement tank, a heater-casing connected with and spaced from the same, said casing having a hinged lid, a grate, an ash-pit and a front door having a damper, a flange inclosing the space between the rear wall of the heater-casing and the adjacent end of the tank, and non-conducting material packed in said space.

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**754,839. VIBRATING SCREEN.** WILLARD J. BELL, Newaygo, Mich. Filed Nov. 5, 1903. Serial No. 179,953. (No model.)



*Claim.*—1. In combination with a supporting-frame, a spring-supported screen, a plurality of revolving disks, each disk carrying a weight, and means for dropping the said weight upon the screen to produce a sudden downward movement against the action of the supporting-springs, for the purpose of agitating the material placed on said screen.

2. In combination with a frame, a spring-supported screen, a plurality of revolving disks, a weight carried by each disk, a stop on said disk, a pivot connecting the said weight to the disk, a stop on the disk for carrying the weight into a striking position, a plurality of vibrating surfaces or posts attached to the screen to receive the blow of the weight, whereby the screen is depressed by each stroke of said weight, substantially as described.

3. In combination with a screen-frame, a plurality of screens, one placed above the other and securely attached together, a plurality of springs supporting the said screens, a plurality of posts attached to the screen-frames, a plurality of revolving disks, each disk carrying a weight and means for giving an intermittent stroke upon one of the said posts, thereby suddenly depressing said screen.

4. In combination with a supporting-frame, a plurality of screens securely attached together, a plurality of vibrating posts carried by the screen-frame, a plurality of supporting-springs, a plurality of revolving disks, each disk carrying a weight which is dropped upon one of the said vibrating posts to suddenly depress the same for the purpose of agitating the screens, and a flexible connection between the screen-frame and the supporting-frame.

5. In combination with a spring-supported screen, a plurality of disks carried upon revolving shafts, each disk provided with a hub and suitable means for adjusting the said disk upon the shaft, a weight carried by each disk and pivotally connected thereto, and a stop carried by each disk for carrying the weight into a striking position, substantially as described.

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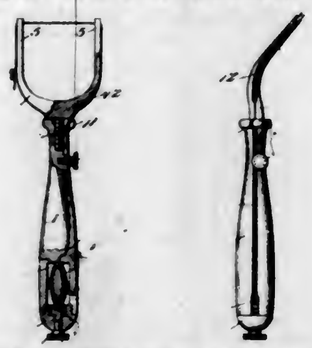
**754,840. TOBACCO-PIPE.** JOSEPH BERCHTOLD, Hesperia, Cal. Filed Dec. 5, 1903. Serial No. 183,939. (No model.)



*Claim.*—The combination with the bowl of a pipe; of a stem formed of semicylindrical sections having longitudinally-extending grooves adapted to register and form a passage, parallel beads extending longitudinally along the inner face of one of the sections and at opposite sides of the groove in said section, similarly-disposed grooves being provided within the inner face of the other section and adapted to receive the beads, an enlargement at one end of one of the sections and having a passage therethrough alining with the registering grooves, said enlargement forming an inclined shoulder at its inner end and adapted to overlap and engage one end of the other section of the stem, and a tapered threaded end to the stem detachably engaging the bowl whereby the sections are securely retained in proper relation to each other.

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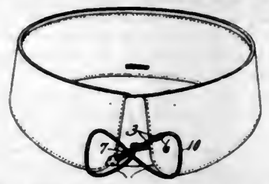
**754,841. TOOTH-CLEANING IMPLEMENT.** GEORGE C. BENSONEY, Channing, Tex. Filed Nov. 28, 1903. Serial No. 183,064. (No model.)



*Claim.*—In an implement of the class set forth, the combination of a handle having a forked head at one end and a longitudinally-disposed chamber in the opposite end, a removable cap to close the said chamber, said cap carrying a rotatable plug having an angular socket in its inner end exposed to the said chamber, and a milled head at its rear end adjacent to the outer surface of the cap, and a bobbin having a strand thereon removably disposed in longitudinal position in the chamber and having its rear end shaped similarly to and fitted in the angular socket at the inner end of the plug, the opposite end of the bobbin rotatably engaging the front wall of the chamber, the strand carried by the bobbin being drawn over the forked head.

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**754,842. COLLAR-BUTTON AND TIE.** HENRY L. BLAIR, Herkimer, N. Y. Filed Dec. 10, 1903. Serial No. 184,603. (No model.)



*Claim.*—1. A combined collar-button and tie permanently united to each other.

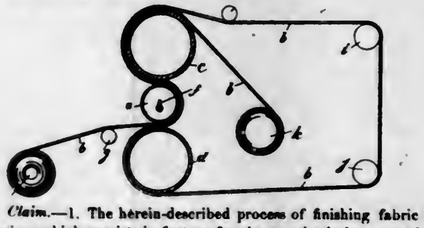
2. A tie having one end provided with a collar-button and a clasp fastened to the other end of the tie.

3. The combination with a collar-button having a socket, of a tie having one end inserted in the socket, the walls of the latter being crimped or compressed upon the tie to fasten the two parts together.

4. In combination with a tie, a collar-button fastened to one end of the tie and a bifurcated member secured to the opposite end of the tie for the purpose set forth.

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**754,843. METHOD OF FINISHING FABRICS.** HENRY BOCK, Lodi, N. J., assignor to Henry W. Boettger, New York, N. Y. Filed Mar. 25, 1903. Serial No. 149,468. (No specimens.)

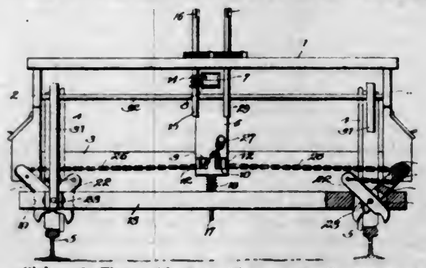


*Claim.*—1. The herein-described process of finishing fabric in the piece which consists in first performing a calendering operation on the fabric and subsequently finishing the same by recalendering, the layer of the fabric which is being recalendered being in contact with a layer of fabric undergoing the first calendering operation.

2. The herein-described process of finishing satin in the piece which consists in first performing a calendering operation on the satin and subsequently finishing the same by recalendering, the layer of the satin which is being recalendered being in contact with a layer of the satin undergoing the first calendering operation, the face of one layer being against the back of the other layer substantially.

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**754,844. TRACK-BRAKE FOR CARS.** JOHN A. BRADER, Allentown, Pa. Filed June 4, 1903. Serial No. 160,136. (No model.)



*Claim.*—1. The combination with a car, of rails upon which the same travels, a member associated with the car and provided with horizontal and vertical guide-rollers, a brake-beam, a chain or the like connected with the brake-beam and extended over the horizon-

tal roller, means for operating the same, pivoted brake-jaws associated in pairs with the brake-beam, chains or the like extended around the vertical guide-rollers and connected with the brake-jaws for operating the same, and means for operating said chains.

2. The combination with a car, of rails upon which the same travels, a member associated with the car and provided with horizontal and vertical guide-rollers, a guide carried by the member, a brake-beam movable upon the guide a spring tending to force the beam downward, a chain or the like connected with the beam and extended over the horizontal roller, means for operating the chain to raise the beam, pivoted brake-jaws associated in pairs with the beam, chains or the like extended around the vertical guide-rollers and connected with the brake-jaws for operating the same, and means for operating the chains.

3. The combination with a car, of rails upon which the same travels, a member associated with the car and provided with horizontal and vertical guide-rollers, a brake-beam, a chain or the like connected with the beam and extended over the horizontal roller, means for operating the same, pivoted brake-jaws arranged in pairs and carried by the brake-beam, chains or the like connected to the brake-jaws for operating the same, means for operating the chains, and a spring interposed between the chains and the operating means.

4. The combination with a car, of rails upon which the same travels, a movable brake-beam, pivoted brake-jaws associated in pairs with the brake-beam and weighted to open by gravity, the primary jaw of each pair being provided with a guide-roller, chains or the like connected with the secondary jaws and extended around the guide-rollers of the primary jaws and means for operating the chains to close the jaws.

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**754,845. ASTRONOMICAL CLOCK.** JOHN C. BURKE, Middleboro, Ky. Filed May 7, 1903. Serial No. 156,007. (No model.)



*Claim.*—1. In a clock, the combination with a casing having an oval slot therein; of a stationary arbor within and adjacent to one end of the oval, a gear loosely mounted upon the arbor, a gear fixed upon the arbor, an arm loosely mounted upon the arbor and secured to the revoluble gear, a gear journaled upon the arm and meshing with the fixed gear, a slide upon the arm, a pitman connecting said slide and the gear on the arm, and an earth-sphere extending from the slide and adapted to travel within the slot in the casing.

2. In a clock, the combination with a casing having an oval slot therein; of a stationary arbor within and adjacent to one end of the oval, a gear loosely mounted upon the arbor, a gear fixed upon the arbor, an arm loosely mounted upon the arbor and secured to the revoluble gear, a gear journaled upon the arm and meshing with the fixed gear, a slide upon the arm, a pitman connecting said slide and the gear on the arm, an earth-sphere extending from the slide and adapted to travel within the slot in the casing, a disk journaled within the casing adjacent to the revoluble gear, tongues extending from the periphery of said disk, a tongue extending from the gear and adapted to successively engage the tongues of the disk, and a year-indicating hand connected to the disk and revoluble therewith.

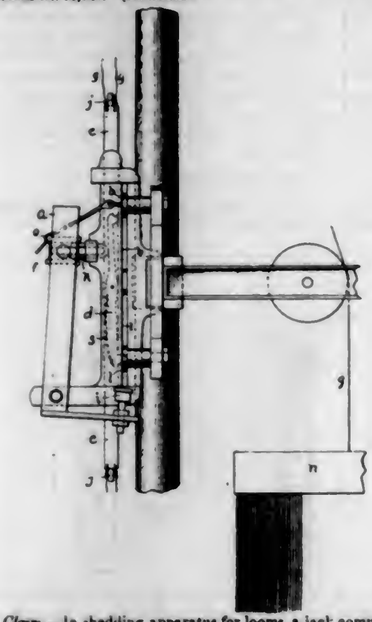
3. In a clock, the combination with a central arbor, and means for rotating the same; of a stationary arbor, a gear loosely mounted thereon, a stationary sun-sphere connected to the stationary arbor, an earth-sphere mounted upon and adapted to move around the central arbor, means for moving the earth-sphere in an oval about the sun-sphere, and gears for transmitting motion from the central arbor to the earth-sphere.

4. In a clock, the combination with a central arbor, and means for rotating the same; of a stationary arbor, a gear loosely mounted thereon, a stationary sun-sphere connected to the stationary arbor, an earth-sphere mounted upon and adapted to move around the central arbor, means for moving the earth-sphere in an oval about the sun-sphere, arbors revolubly mounted within the casing, a year-indicating hand connected to one of the arbors, a month-indicating hand connected to the second arbor, a hand for indicating the day of the month connected to another arbor, and a train of gears operated by the central arbor for transmitting motion to the rotary arbors and to the arm of the earth-sphere.

5. In a clock, the combination with a main arbor, drums at opposite sides thereof, and means for rotating the drums; of arbors removed from and arranged at intervals around the main arbor, hands connected thereto, means for transmitting rotary motion from the main to the surrounding arbors, a central gear 128, means for transmitting motion thereto from the first-mentioned arbor, a stationary arbor forming a bearing for said gear, a stationary sun-sphere connected to the stationary arbor, an earth-sphere mounted upon and adapted to move with the central gear, and means for moving the earth-sphere in an oval about the sun-sphere.

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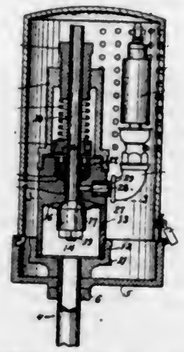
**754,846. SHEDDING APPARATUS FOR LOOMS.** NICOLAS CHAIZE and JACQUES CHAIZE, St. Etienne, France. Filed Dec. 1, 1900. Serial No. 38,347. (No model.)



*Claim.*—In shedding apparatus for looms, a jack composed of a flat, rectangular tube having pivoted within it a hooked lever, and provided with holes in one edge to permit the hooks to protrude and a slot in the opposite edge to admit a needle, and a spring housed within said tube and bearing against said lever.



**754,847. AUDIBLE ALARM FOR AIR-BRAKING SYSTEMS.** JAMES H. CLARK, Portage, Wis., assignor to the J. H. Clark Company, Portage, Wis., a Corporation of Wisconsin. Filed May 22, 1902. Serial No. 108,479. (No model.)



*Claim.*—1. The combination with the train-pipe of an air-braking system, of a valve-casing, a valve in said casing exposed to the pressure in said pipe and adapted to be held to its seat by said pressure, an audible alarm in communication with said valve-casing, a stem for said valve, a stop on said stem, regulable means carried by said casing between said stop and said valve for limiting the movement of said valve, and a spring unexposed to the pressure in said pipe for operating said valve in opposition to said pressure.

2. The combination with the train-pipe of an air-braking system, of a casing in communication with said pipe, a whistle in communication with said casing, a valve interposed between said pipe and said whistle and exposed to the pressure in said pipe, a stem for said valve extending beyond said casing, a collar on said stem, regulable means surrounding said valve-stem for limiting the movement of said valve, a spring surrounding said stem for operating said valve in opposition to the pressure in said pipe, and a nut for varying the tension of said spring.

3. The combination with the train-pipe of an air-braking system, of a valve-casing in communication with said pipe, a whistle in communication with said valve-casing, a valve in said casing between said pipe and said whistle, a stem for said valve extending beyond said valve-casing, a collar on said stem, a nut threaded into said casing and surrounding said valve-stem between said valve and said collar, a spring surrounding said valve-stem, and means for varying the tension of said spring.

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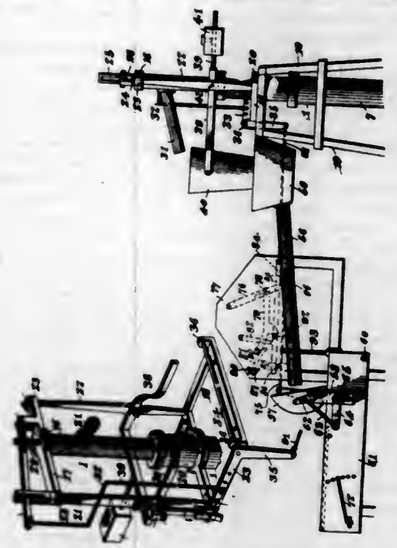
**754,848. AUTOMATIC STOCK-WATERING MACHINE.** SHELTON C. CLARK, Beatrice, Nebr., assignor of one-half to J. F. Lewis and A. R. Lewis, Beatrice, Nebr. Filed June 11, 1903. Serial No. 161,089. (No model.)

*Claim.*—1. In an apparatus of the class described, the combination with a supply-pipe having a valve, of operating mechanism connected with the valve for opening the same, and an oscillatory bucket-carrying frame movable independently of the valve and provided with a bucket to receive the water and arranged to hold the valve open and to release the same, substantially as described.

2. In an apparatus of the class described, the combination with a supply-pipe having a valve, of operating mechanism connected with the valve for opening the same and provided with a trip for automatically releasing the same, a movable bucket arranged to receive the water, and means movable independently of the valve for locking the valve in its open position until the bucket receives its supply and for releasing the same to permit the same to close after the bucket has received its supply, substantially as described.

3. In an apparatus of the class described, the combination with a source of supply having an automatically-closing valve, of operating mechanism connected with the valve for opening the same, said operating mechanism being provided with a trip for automatically releasing the valve, and means movable independently of the valve for locking the valve in an open position until a predetermined quantity of water has been obtained, substantially as described.

4. In an apparatus of the class described, the combination with a pipe having a valve, of operating mechanism connected with the valve for opening the same and provided with a trip for automatically releasing the valve, and a weighted oscillatory frame movable independently of the valve and provided with a bucket and arranged to hold the valve in an open position until the bucket has received a supply of water, said frame being movable to release the valve when the bucket has received its supply, substantially as described.



5. In an apparatus of the class described, the combination with a supply-pipe having a valve, of operating mechanism connected with the valve for opening the same and provided with a trip for automatically releasing the valve, and an oscillatory frame movable independently of the valve and pivoted between its ends and provided at one side of the pivotal point with a weight and having a bucket at the opposite side, said frame being arranged to lock the valve in its open position until the bucket has received it supply, substantially as described.

6. In an apparatus of the class described, the combination with a supply-pipe having a valve, of a lever connected with the valve, a movable device connected with the lever, means for operating the movable device to open the valve, and a weighted oscillatory bucket-carrying frame movable independently of the valve and provided with a bucket and arranged to engage the said movable device for locking the valve open while the bucket is receiving its supply, substantially as described.

7. In an apparatus of the class described, the combination with a supply-pipe having a valve, of a movable device connected with the valve for opening the same, operating mechanism for actuating the movable device, and an oscillatory bucket-carrying frame provided with a bucket and arranged to engage the movable device for holding the valve open while the bucket is reciving its supply, substantially as described.

8. In an apparatus of the class described, the combination with a supply-pipe having a valve, of a movable device connected with the valve, operating mechanism for actuating the movable device, and an oscillatory bucket-carrying frame movable independently of the valve and provided with a movable member arranged to engage and release the said movable device, substantially as described.

9. In an apparatus of the class described, the combination with a supply-pipe provided with a valve, of a movable device connected with the valve, operating mechanism for actuating the movable device, a weighted oscillatory frame movable independently of the valve and provided with a member arranged to engage and release the removable device, and a bucket carried by the frame, substantially as described.

10. In an apparatus of the class described, the combination with a supply-pipe having a valve, of a movable device connected with the valve, means for actuating the movable device for opening the valve, a weighted oscillatory frame movable independently of the valve and provided with an arm arranged to engage the movable device, and a bucket carried by the oscillatory frame and adapted when filled to move the same in the opposite direction to the weight, substantially as described.

11. In an apparatus of the class described, the combination with a supply-pipe, of a movable device connected with the valve for open-

ing the same, operating mechanism for actuating the movable device, an oscillatory frame movable independently of the valve and pivoted between its ends and provided at one end with a weight, said frame being provided at its other end with a bucket, and means carried by the movable frame to engage and release the movable device, substantially as described.

12. In an apparatus of the class described, the combination with a supply-pipe, of a movable device connected with the valve for opening the same, means for actuating the movable device for opening the valve, a movable bucket, and means movable independently of the valve for holding the valve open and for releasing the valve when the bucket receives its supply, substantially as described.

13. In an apparatus of the class described, the combination with a supply-pipe having a valve, of means for opening the valve, a movable bucket arranged to receive the water from the supply-pipe, and a weighted bucket-carrying frame movable independently of the valve and movable in one direction by its weight to lock the valve open and in the opposite direction by the bucket to release the valve, substantially as described.

14. In an apparatus of the class described, the combination with a supply-pipe having a valve, of operating mechanism for opening the valve, means for tripping the valve from the operating mechanism, and means movable independently of the valve for locking and releasing the valve, whereby the same will be maintained in an open position until a predetermined quantity of water is obtained, substantially as described.

15. In an apparatus of the class described, the combination of a supply-pipe having a valve, operating mechanism for opening the valve, means for automatically closing the valve, and means movable independently of the valve for locking the valve in an open position and for releasing the same after a predetermined quantity of water has been obtained, substantially as described.

16. In an apparatus of the class described, the combination of a supply-pipe having a valve, operating mechanism for opening the valve, means for tripping the valve from the operating mechanism, means movable independently of the valve for locking the valve in an open position and for releasing the same after a predetermined quantity of water has been obtained, and means for automatically closing the valve, substantially as described.

17. In an apparatus of the class described, the combination of a supply-pipe having a valve, operating mechanism for opening the valve, and means movable independently of the valve for locking the valve in an open position and for releasing the same after a predetermined quantity of water has been obtained, substantially as described.

18. In an apparatus of the class described, the combination of an upright supply-pipe provided with a valve and having a nozzle, an approximately horizontal bucket-carrying frame movable independently of the valve and fulcrumed at opposite sides of the supply-pipe and provided at the back with a weight, a bucket mounted at the front of the frame and arranged to receive water from the said nozzle, an oscillatory arm connected with the bucket-carrying frame, a movable member connected with the valve and arranged in the path of the said arm, and means for operating the movable device, substantially as described.

19. In an apparatus of the class described, the combination with an upright supply-pipe having a valve and provided with a nozzle, upright bars located at opposite sides of the supply-pipe, a top cross-piece forming a cap for the supply-pipe and connecting the bars, a guide extending upward from the cross-bar at one end thereof, a lever fulcrumed on the cross-bar and connected with the valve and arranged in the guide, an oscillatory arm connected with the lever, operating mechanism for actuating the arm, and a weighted bucket-carrying frame movable independently of the valve and having a bucket and provided with a movable member arranged to engage the arm, substantially as described.

20. In an apparatus of the class described, the combination of a supply-pipe having a valve, a weighted bucket-carrying frame provided with a bucket, an arm connected with the valve and provided with a lug, a weighted oscillatory frame provided with a bucket, and a depending arm connected with the said frame and having a forked or bifurcated portion and provided with an antifriction device mounted therein and arranged to be engaged by the said arm, substantially as described.

21. In an apparatus of the class described, the combination of a supply-pipe having a valve, a bell-crank lever connected with the valve for opening the same, an oscillatory bucket-carrying frame movable independently of the valve and arranged to engage and release the bell-crank lever, a depressible platform connected with the bell-crank lever, and means for tripping the same, substantially as described.

22. In an apparatus of the class described, the combination of a supply-pipe having a valve, a depressible platform, means for connecting the platform with the valve for opening the same, a movable drinking-trough, means for conducting the water to the drinking-trough, and means operable by the platform for moving the drinking-trough to arrange the same in position to receive water and to empty the water therefrom, substantially as described.

23. In an apparatus of the class described, the combination of a supply-pipe having a valve, a depressible platform connected with the valve for opening the same, a movable drinking-trough arranged to receive the water from the supply-pipe, and means operable by the platform for emptying the trough when the pressure is removed from the said platform, substantially as described.

24. In an apparatus of the class described, the combination of a movable drinking-trough, means for supplying water to the same, a depressible platform, and means operable by the platform for emptying the water from the trough when the pressure is removed from the said platform, substantially as described.

25. In an apparatus of the class described, the combination of a movable drinking-trough, means for supplying water to the same, a depressible platform, and means operated by the platform for arranging the drinking-trough to receive water when the platform is depressed and for inverting the drinking-trough to empty the same when the pressure is removed, substantially as described.

26. In an apparatus of the class described, the combination of a pivotally-mounted drinking-trough, means for supplying water to the same, and means for automatically tilting the trough to arrange it to receive the water and also to empty the water, substantially as described.

27. In an apparatus of the class described, the combination of a pivotally-mounted drinking-trough, means for supplying water to the same, a depressible platform, and means operable by the depressible platform for tilting the trough to arrange it to receive water and also to empty the water, substantially as described.

28. In an apparatus of the class described, the combination of a tilting drinking-trough, a depressible platform connected with and arranged to operate the trough, a supply-pipe provided with a nozzle and having a valve, means operable by the platform for opening the valve, an oscillatory bucket-carrying frame provided with a bucket, and a pipe or conduit arranged to discharge into the drinking-trough and provided with a tank or receptacle to receive the water from the bucket, substantially as described.

29. In an apparatus of the class described, the combination of a supply-pipe provided with a valve and having a nozzle, a movable bucket arranged to receive the water from the nozzle and provided at the bottom with a valve having a depending stem, a drinking-trough, and a pipe or conduit emptying into the drinking-trough and having a receptacle at its upper end arranged in the path of the bucket and adapted to be engaged by the valve-stem for opening the valve, substantially as described.

30. In an apparatus of the class described, the combination with a supply-pipe having a valve, operating mechanism connected with the valve for opening the same, a weighted oscillatory frame movable independently of the valve and provided with means for holding the valve in its open position and for releasing the same, and a bucket carried by the frame and provided with an automatically-opening valve, substantially as described.

31. In an apparatus of the class described, the combination of a supply-pipe having a valve, means for operating the valve for opening the same, a weighted oscillatory frame movable independently of the valve and provided with means for holding the valve in its open position, said frame being movable in one direction by its weight, and a bucket carried by the frame and adapted when filled to move the same in the opposite direction, said bucket being provided with an automatically-opening valve, substantially as described.

32. In an apparatus of the class described, the combination of a pivotally-mounted drinking-trough, a depressible platform connected with the drinking-trough and oscillating the same, a shaft provided with a spring engaging the depressible platform, and means for adjusting the shaft for varying the tension of the spring, substantially as described.

33. In an apparatus of the class described, the combination of a pivoted drinking-trough, a depressible platform connected with and actuating the trough, a shaft having a spring engaging the platform, an arm connected with the shaft, and means for securing the arm in its adjusted position, substantially as described.

34. In an apparatus of the class described, the combination of a pivoted drinking-trough, a transverse shaft having an arm connected with that of the drinking-trough, a depressible platform, arms depending from the platform and the shaft, and means for connecting such depending arms, substantially as described.

35. In an apparatus of the class described, the combination with a supply-pipe having a valve, a reciprocating bar connected with the valve, operating mechanism, a trip-dog connected with the operating mechanism and engaging the reciprocating bar, and means for automatically throwing the trip-dog out of such engagement, substantially as described.

36. In an apparatus of the class described, the combination with a source of supply having a valve, of a reciprocating bar connected with the valve, a trip-dog engaging the bar, an inclined trip arranged in the path of the dog and adapted to disengage the same automatically and a depressible platform connected with the dog, substantially as described.

37. In an apparatus of the class described, the combination with a source of supply having a valve, of a reciprocating bar, a lever, a trip-dog carried by the lever and engaging the bar, means for automatically throwing the trip-dog out of such engagement and a depressible platform connected with the dog, substantially as described.

38. In an apparatus of the class described, the combination with a source of supply having a valve, of a reciprocating bar, a lever, a dog carried by the lever and engaging the bar, an inclined trip arranged in the path of the trip-dog and a depressible platform connected with the latter, substantially as described.

39. In an apparatus of the class described, the combination with a source of supply having a valve, of a reciprocating bar having a slot, an upright lever, a dog carried by the lever and having a tooth or projection extending into the slot, means for automatically tripping the dog and a depressible platform connected with the latter, substantially as described.

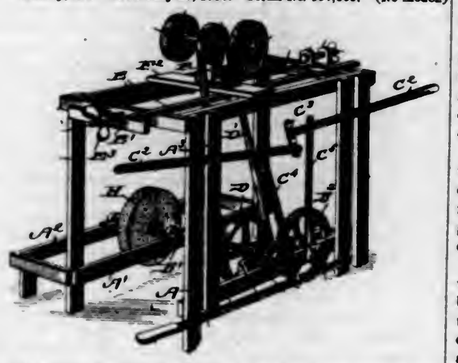
40. In an apparatus of the class described, the combination with a source of supply having a valve, of a horizontal reciprocatory bar having a slot, an upright lever extending into the slot, a dog pivoted to the lever and having a projection extending into the slot, an adjustable inclined trip arranged in the path of the dog and a depressible platform connected with the latter, substantially as described.

41. In an apparatus of the class described, the combination of a casing, guides arranged in the casing and provided with antifriction devices, a slotted bar supported by the antifriction devices and provided in its slot with an antifriction device, an upright lever operating in the slot of the bar, a dog pivoted to the lever and provided with a tooth extending into the slot of the bar, said dog being also provided with an antifriction device, and an inclined trip arranged to receive the antifriction device of the dog, substantially as described.

42. In an apparatus of the class described, the combination of a slotted casing having notches, an inclined trip provided at one end with means for engaging the notches, a fastening device operating in the slot, and located at the other end of the trip for securing the same in its adjustment, a reciprocating bar, a dog engaging the bar and arranged to be thrown out of such engagement with the trip, and means for actuating the dog, substantially as described.

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**754,849. HAND OR FOOT POWER MACHINE. JAMES P. CLINE, Charity, Mo. Filed July 25, 1903. Serial No. 167,005. (No model.)**



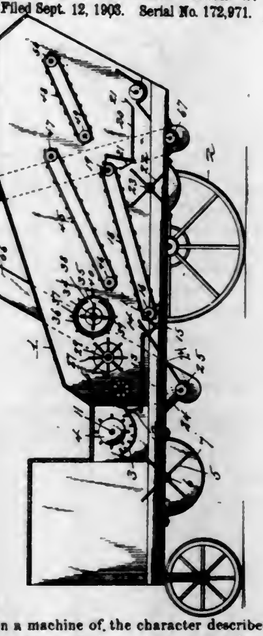
*Claim.*—1. A device of the kind described comprising a foot-lever, a hand-lever, a link connecting said hand-lever with the foot-lever, a second hand-lever projecting in a direction opposite to that of the first, a link pivotally connecting the two hand-levers and a link connecting the second hand-lever with a crank-arm.

2. A device of the kind described comprising a frame, a gear having a crank-arm, a hand-lever pivotally secured to each end of the frame, the pivotal points being adjustable, an adjustably-pivoted link connecting the inner ends of the two levers, and an adjustable link connecting one lever with the crank-arm.

3. A device of the kind described comprising a main frame, a rotatable shaft journaled therein, a gear-wheel having a cranked arm journaled adjacent said shaft a pinion on the shaft meshing with the gear-wheel, a foot-lever pivoted to the frame, a hand-lever pivoted to the frame, a link connecting the hand and foot levers, means for connecting the hand-lever and the crank-arm of the gear-wheel, a pulley on the shaft, a movable frame sliding on the main frame, a pulley carried on the movable frame and a belt running over the two pulleys.

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**754,850. THRESHING-MACHINE. AUSTIN W. COLLIE, Brentwood, Cal. Filed Sept. 12, 1903. Serial No. 172,971. (No model.)**



*Claim.*—1. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a reciprocating grate below and adjacent the concave, a grain-drag, means operated by the drag for reciprocating the grate, and an inclined series of reel-carriers above the grate and adjacent the concave.

2. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a reciprocating grate below and adjacent the concave, a grain-drag, means operated by the drag for reciprocating the grate, mechanism below the grate for discharging grain laterally from the machine, an inclined series of reel-carriers above the grate and adjacent the concave, and a rotary fan inclosed by and operated in unison with one of the shredders.

3. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a reciprocating grate below and adjacent the concave, a grain-drag, means operated by the drag for reciprocating the grate, an inclined grain-board below the grate, and means upon the board for discharging material laterally from the machine.

4. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a fan below and adjacent the concave, a reciprocating grate adapted to receive material from the concave, means below the grate for discharging material laterally from the machine, a grain-drag, mechanism operated thereby for reciprocating the grate, an inclined series of reel-carriers above the grate, straw-carriers above the drag, and a fan below the drag and carriers.

5. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a fan below and adjacent the concave, a reciprocating grate below and adjacent the concave, an endless apron, means operated thereby for reciprocating the grate, an inclined series of reel-carriers above the grate, a fan in alinement with said carriers, a casing partly inclosing the fan, rollers journaled upon the casing, rings revolubly mounted upon the rollers, a series of teeth connecting the rings, means for transmitting rotary motion from the fan to the rings and teeth, straw-carriers above the apron, and a fan below the apron and carriers.

6. In a machine of the character described, a reel-carrier comprising a shaft, a fan thereon, a casing partly inclosing the fan, rollers permanently secured upon the casing, rings revolubly mounted upon the rollers, series of teeth connecting the rings and extending longitudinally of the casing, and means for transmitting rotary motion from the shaft to the rings.

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**754,851. SHOE-LACE HOLDER.** NELSON COMP, Hartford, Conn. Filed Dec. 10, 1903. Serial No. 184,621. (No model.)

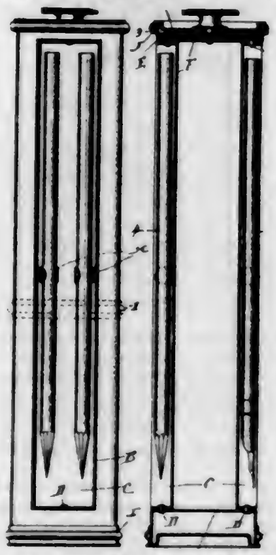


*Claim.*—1. A shoe-lace holder comprising a casing, having a slotted rim, a tongue or yoke adapted to clamp the knotted portion of a shoe-lace between it and the casing, and a lock element for the tongue or yoke having a stud to operate in the slot of the rim, substantially as described.

2. A shoe-lace holder, comprising a casing having a slotted rim, a pivoted yoke or tongue to clamp the knotted portion of a shoe-lace, between it and the casing, and a yoke element having a plurality of notches to engage the free end of the pivoted yoke or tongue and a stud operating in the slot of the rim, substantially as described.

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**754,852. SCHOOL COMPANION.** THOMAS CRAWFORD, Philadelphia, Pa. Filed May 12, 1903. Serial No. 156,754. (No model.)



*Claim.*—1. In a device of the character described, a casing polygonal in cross-section, openings provided in each side of the casing, pan-shaped receptacles adapted to fit said openings, said receptacles pivoted at each end in the ends of the casing, and means for revolving said receptacles so as to bring their open side outward or inward, as and for the purpose specified.

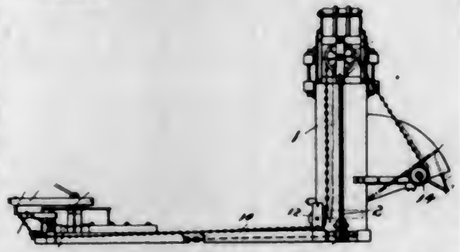
2. In a device of the character described, a casing polygonal in cross-section, said casing being provided with openings formed through each face, shallow pan-shaped receptacles adapted to fit said openings, said receptacles being pivoted in each end of the casing, means for revolving all of said receptacles simultaneously so as to bring their open side outward or inward, and means for holding said receptacles in either position, as and for the purpose specified.

3. In a device of the character described, a hollow casing, polygonal in cross-section, said casing being provided with openings through each face, pan-shaped receptacles adapted to fit in said openings and pivoted in each end of the casing, a small cog-wheel secured to one of the pivots of each receptacle, a central gear-wheel meshing with all of the cog-wheels, means for revolving the central gear-wheel, and a band surrounding the casing and adapted to slide upon the same for holding the receptacles in either position, as and for the purpose specified.

4. In a device of the character described, a hollow casing polygonal in cross-section and provided with elongated openings formed through each face, pan-shaped receptacles fitted in said openings and pivoted in each end of the casing, cog-wheels secured to the pivots upon one end of the receptacle, a central gear-wheel meshing with all of the cog-wheels, a knob secured to the shaft of the central gear-wheel, a metallic band surrounding the casing and adapted to slide thereon for the purpose of holding the receptacles in either position, and a device contained within the receptacles for holding the utensils in place, as and for the purpose specified.

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**754,853. DOOR-CLOSER FOR BALING-PRESSES.** EDWARD DAVIS, West Berkeley, Cal. Filed Oct. 28, 1901. Serial No. 80,333. (No model.)



*Claim.*—1. A device of the class described consisting of a suitable crank extending across the door of the hay-press, a wheel keyed to said crank, a secondary reach in the path of the main reach of the press, and a chain leading from said secondary reach and wound about said wheel, movement of said secondary reach being directed to revolve said wheel and force said door upward against said press for the purpose set forth.

2. In combination with a vertical baling-chamber, of hopper-wings extending outward from one vertical side of the chamber, a door hinged at its lower end to or near said vertical side and forming the bottom of the hopper, a crank journaled in said wings and connected to the under side of said door by means of a plurality of arms, a main reach, a secondary reach in the path of the main reach, a wheel keyed to said crank and a chain leading from said secondary reach and adapted to revolve said wheel and force said door upward against said vertical side for the purpose set forth.

3. A device of the class described consisting of a suitable crank extending across the door of the hay-press, a wheel keyed to said crank, a secondary reach in the path of the main reach of the press, a chain leading from said secondary reach and connected to said wheel, and a plurality of arms pivoted to said crank and connected to said door, movement of said secondary reach being directed to revolve said wheel and force said door upward against said press substantially as and for the purpose set forth.

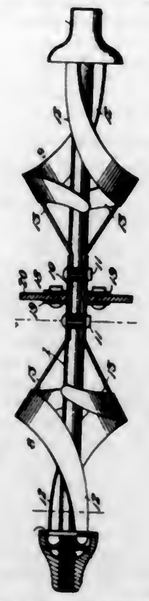
4. A device of the class described consisting of a suitable crank extending across and connected with the door of the hay-press, a secondary reach in the path of the main reach of the press, a pulley forward of said secondary reach, a chain leading from said secondary reach forward to and over said pulley and then backward and connected with said crank by suitable connections, backward movement of said secondary reach being directed to operate said crank and force said door upward against said press for the purpose set forth.

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**754,854. TUBE-CLEANER.** ELZA T. DAVIS, Pensacola, Fla. Filed May 7, 1903. Serial No. 156,063. (No model.)

*Claim.*—1. A flue-cleaner, comprising a supporting-rod having screw-threaded portions, a pair of spirally-arranged blades located in front and in rear of the center of said rod, slotted disks slidably engaging the free ends of the blades, and adjusting devices on the threaded portions of the rod for advancing the disks.



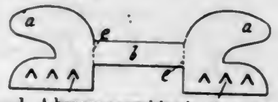


2. A flue-cleaner, comprising a supporting-rod provided with threaded portions and having front and rear pairs of spirally-disposed blades, the free ends of which extend in opposite directions, slotted disks engaging the ends of the blades to adjust the lateral projection of the same, and nuts rotatable against the disks and mounted on the threaded portions of the rod.

3. A flue-cleaner, comprising a supporting-rod provided with threaded portions and having front and rear pairs of spirally-disposed blades, the free ends of which extend in opposite directions, recessed nuts having internally-rabbeted shoulders, and disks loosely mounted within the nuts and adapted to be advanced by the rotation of the nuts, said disks having slots which receive the free ends of the blades.

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**754,855. SECURING STRIPS OF WOOD, &c., TO IRON BEAMS.** SOLOMON DAVIS, New York, N. Y. Filed Oct. 28, 1903. Serial No. 178,915. (No model.)



*Claim.*—1. A hanger comprising hook portions, attaching portions and a cross or joining strip uniting the two portions, said hook portions being made to face in the same direction and said attaching portions being open or spaced at their lower ends to expose the under face of the strip or article engaged thereby.

2. A hanger formed of one piece of material and comprising hook and attaching portions with a cross or uniting strip intermediate the attaching portions, said hook portions being made to face in the same direction and said attaching portions being located at the extremities of the cross portion and depending below the same and spaced or open to expose the under face of a strip or article engaged thereby.

3. A hanger of sheet metal comprising a cross-piece with hook portions and attaching portions both being arranged in the same planes and at right angle to the cross-piece, said cross-piece adapted to sit across the top of a molding while the attaching portions engage the sides of a molding clear of the bottom or lower edge.

4. A hanger comprising hooks and attaching portions adapted to engage the sides of a molding, the hooks being made to face in the same direction and spaced or separated to give a steady support.

5. A hanger comprising a hook portion adapted to be slipped on and off one edge of a beam or support, a cross portion, and attaching portions, said cross portion being located between the hook and attaching portions and said attaching portions being made to depend from the extremities of the cross portion, so that the cross-piece can be seated on the top of a molding while the attaching portions engage the sides thereof.

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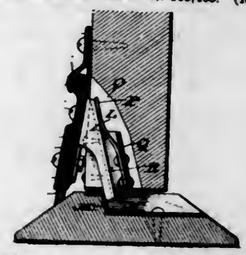
**754,856. RED-VIOLET AZO DYE.** AUGUST DORRER, Ludwigshafen-on-the-Rhine, Germany, assignor to the Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden. Filed Dec. 2, 1902. Serial No. 134,564. (No specimens.)

*Claim.*—1. As a new product the new class of azo coloring-matters which can be obtained by combining a diazo compound of an aromatic amido sulfo-acid with 1,8-naphthalene-diamin, which are soluble in water and in concentrated sulfuric acid, and which dye animal fiber from the acid-bath, which coloring-matters on reduction by means of ammonia and zinc-dust yield a sulfo-acid of a primary amin and 1.8.4-triamido-naphthalene.

2. As a new article of manufacture the azo coloring-matter which can be obtained by combining the diazo derivative of 1.4-naphthylamin-sulfo-acid with 1.8-naphthalene diamin, which coloring-matter is soluble in water, yielding a red-violet solution and is also soluble in concentrated sulfuric acid yielding a blue solution, which dyes animal fiber from the acid-bath a red-violet shade, which shade on treatment with potassium bichromate turns brown, which coloring-matter on reduction by means of ammonia and zinc-dust yields 1.4-naphthylamin-sulfo-acid and 1.8.4-triamido-naphthalene.

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**754,857. WEATHER-STRIP.** HARVEY EAGER, Newcomerstown, Ohio. Filed Dec. 2, 1903. Serial No. 183,465. (No model.)



*Claim.*—1. The combination in a hinge-acting weather-strip, of a folded lower plate having a packing-strip at its lower edge, a folded plate adapted to be secured to a door and with its lower edges bent into socket form, adapted to receive and provide hinge-acting connection and support for the said lower plate, yielding means operating for holding the lower plate to elevated adjustment, and a finger on the lower plate, adapted for engagement with a fixed shoulder, on the threshold, and whereby the said plate is drawn down to closing position, upon closure of the door, substantially as described.

2. In a weather-strip, the combination of a packing-strip and support, a plate adapted to be secured to a door and having hinge connection with the packing-strip support, a spring on the door, holding the packing-strip and its support yieldingly elevated, a fixed shoulder on the door-sill and a finger on the packing-strip support, adapted for engagement with the said shoulder, upon closure of the door, substantially as described.

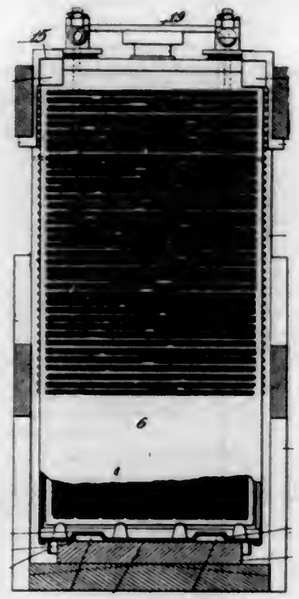
3. The combination of an upper folded plate, adapted to be secured to a door and provided with a socket along its lower edge, a lower folded plate with an upper edge arranged in the said socket, providing hinge-acting connection with the said upper plate, a packing-strip at the lower edge of the lower plate, a downwardly-inclining finger on the lower plate, a spring on the door, a U-shaped plate set into the door, providing support for the said spring, and a trough-like depressed plate on the door-sill, having a shoulder at one end, with which the said finger engages, upon closure of the door, a free end on said spring being adapted for engagement with a groove in the rear edge of the said finger and operating to yieldingly hold the packing-strip elevated, upon opening action of the door, substantially as described.

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**754,858. STORAGE-BATTERY TRAY.** THOMAS A. EDISON, Llewellyn Park, N. J., assignor to Edison Storage Battery Company, Orange, N. J., a Corporation of New Jersey. Filed Nov. 28, 1902. Serial No. 133,114. (No model.)

*Claim.*—1. The combination with a series of cells, of a tray for receiving the same, means for supporting the cells and for insulating the cells from each other at their bottoms, and means at the top of

the cells for locking them in position in said tray, substantially as set forth.



2. The combination with a series of cells, of a tray for receiving the same, having a series of pedestals or blocks on its bottom, each adapted to support one of the cells, and means at the tops of the cells for locking them in position in said tray, substantially as set forth.

3. The combination with a series of cells, of a tray for receiving the same, having a series of pedestals or blocks on its bottom, each adapted to support one of the cells, and means at the tops of the cells for locking them in position in the tray and electrically insulating them at their upper ends, substantially as set forth.

4. The combination with a series of cells, of a tray for receiving the same, having a series of pedestals or blocks on its bottom, each adapted to support one of the cells, and an overhanging rim independent of the cells and secured to the block and extending completely around the same, substantially as set forth.

5. The combination with a series of cells, of a tray for receiving the same, having a series of pedestals or blocks on its bottom, each adapted to support one of the cells, and an insulating-skirt between each cell and the corresponding block or pedestal and independent of the cell, substantially as set forth.

6. The combination with a series of cells, of a tray for receiving the same, having a series of pedestals or blocks on its bottom, each adapted to support one of the cells, an insulating-skirt independent of the cells and arranged between each of the cells and the corresponding block or pedestal, and grooves forming discharging-channels in the bottom of the tray between the blocks or pedestals, substantially as set forth.

7. The combination with a series of cells, of a tray for supporting the same, having on its bottom a series of blocks or pedestals, one for each cell, a stud on each block, and an insulating-skirt between each cell and the corresponding supporting-block, the skirt being formed with a struck-up socket engaging over said stud and engaging a recess in the bottom of the cell, substantially as set forth.

8. The combination with a series of cells, of a tray for supporting the same, having slatted side braces, and locks engaging beneath said side braces and engaging the tops of the cells, substantially as set forth.

9. The combination with a series of cells, of a tray for supporting the same, having slatted side braces, locks engaging beneath said side braces and engaging the tops of the cells, and webs on said locks for electrically insulating the cells, substantially as set forth

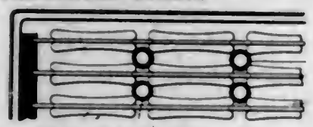
10. The combination with a series of cells, of a tray for supporting the same, having slatted side braces, locks engaging beneath said side braces and engaging the tops of the cells, and a groove formed in the bottom of each web, substantially as set forth.

11. The combination with a series of cells, of a tray for supporting the same, having slatted side braces, locks engaging beneath said side braces and engaging the tops of the cells, and a shoulder formed substantially in line with the bottom of each web, substantially as set forth.

12. The combination with a series of cells, of a tray for supporting the same, having blocks or pedestals on its bottom for supporting the cells and insulating-locks for securing the cells at their upper ends within the tray, substantially as set forth.

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**754,859. REVERSIBLE GALVANIC BATTERY.** THOMAS A. EDISON, Llewellyn Park, N. J., assignor to Edison Storage Battery Company, Orange, N. J., a Corporation of New Jersey. Filed Nov. 28, 1902. Serial No. 133,118. (No model.)



*Claim.*—1. In a reversible galvanic battery, the combination with the electrode-plates carrying perforated pockets containing the active material, said pockets projecting beyond the face of the corresponding electrode-plate, of insulating separating-tubes arranged longitudinally between the plates and guided by said pockets and made of material which is unaffected by electrolytic action in the electrolyte, substantially as and for the purposes set forth.

2. In a reversible galvanic battery, the combination with the electrode-plates carrying perforated pockets containing the active material, said pockets projecting beyond the face of the corresponding electrode-plate, of glass separating-tubes arranged longitudinally between the plates and guided by said pockets, substantially as and for the purposes set forth.

3. An insulating-support for the electrode-plates of reversible galvanic batteries, comprising a metal plate unaffected by electrolytic action, and glass rods or tubes carried by said plate, substantially as and for the purposes set forth.

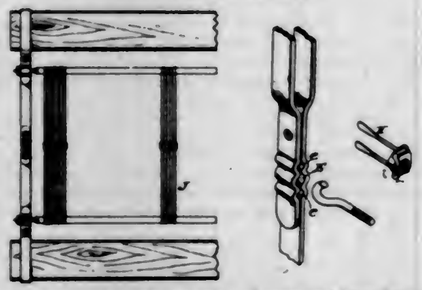
4. An insulating-support for the electrode-plates of reversible galvanic batteries, comprising a metal plate unaffected by electrolytic action, and slotted glass rods or tubes carried by said plate, substantially as and for the purposes set forth.

5. An insulating-support for the electrode-plates of reversible galvanic batteries, comprising a plate, integral lugs formed on said plate, and glass rods or tubes carried by said lugs, substantially as and for the purposes set forth.

6. An insulating-support for the electrode-plates of reversible galvanic batteries, comprising a plate, integral lugs formed on said plate, and slotted glass rods or tubes carried by said lugs, substantially as and for the purposes set forth.

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**754,860. HEDDLE-BAR FASTENING.** WILLIAM FEHR and JACOB KAUFMANN, Philadelphia, Pa.; said Fehr assignor to Steel Heddle Manufacturing Company, a Corporation of New Jersey. Filed June 22, 1903. Serial No. 162,521. (No model.)



*Claim.*—1. A heddle consisting of upper and lower bars combined with end frames formed of flat metal looped over the upper and lower bars and formed in bends or creases creating two or more transverse apertures, adjusting-hooks having their shanks extend through a portion of said apertures, horizontal bars connected at each end with the hooks of opposite end frames, heddle-wires or warp-guiding devices carried by said last-mentioned bars, adjusting-nuts for the shanks of the hooks, and locking devices for locking the nuts against rotation held in the transverse apertures of the end frames not occupied by the hook-shanks.



2. A heddle consisting of upper and lower bars combined with end frames formed of flat metal looped over the upper and lower bars and formed in bends or creases creating two or more transverse apertures, adjusting-hooks having their shanks extend through a portion of said apertures, horizontal bars connected at each end with the hooks of opposite end frames, heddle-wires or warp-guiding devices carried by said last-mentioned bars, adjusting-nuts for the shanks of the hooks, locking devices for locking the nuts against rotation each consisting of a bent-wire clip fitting the nut and provided with two shanks extending through the transverse apertures in the end frames and by which the locking device is held against rotation.

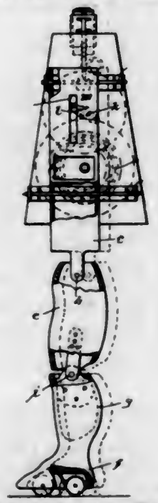
3. A heddle consisting of upper and lower bars combined with end frames of flat metal looped over the upper and lower bars and formed in bends or creases creating two or more transverse apertures, adjusting-hooks having their shanks extend through a portion of said apertures, horizontal bars connected at each end with the hooks of opposite end frames, heddle-wires or warp-guiding devices carried by said last-mentioned bars, adjusting-nuts for the shanks of the hooks, locking devices for locking the nuts against rotation each consisting of a bent-wire clip fitting the nut and provided with two shanks extending through the transverse apertures in the end frames and by which the locking device is held against rotation and further having the ends of the shanks bent over the end frames so as to hold the locking device in position and the hooks against longitudinal movement.

4. In a heddle, the combination of the end frames formed with transverse openings, adjustable hooks carried by the end frames adjacent to said transverse openings, horizontal bars for the heddle-wires carried by said hooks, adjusting-nuts carried by the shanks of the hooks, and locking-clips engaging said nuts and having shanks extending through the transverse openings in the end frames.

5. In a heddle, the combination of the end frames formed with transverse openings, adjustable hooks carried by the end frames adjacent to said transverse openings, horizontal bars for the heddle-wires carried by said hooks, adjusting-nuts carried by the shanks of the hooks, and locking-clips engaging said nuts and having shanks extending through the transverse openings in the end frames, and bent over on the inner side to secure said clips in locking engagement with the nuts.

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**754,861. MECHANISM FOR WALKING DOLLS OR OTHER TOY FIGURES GOING ON ROLLS.** PAUL FUCHS, Berlin, Germany, assignor to The Firm of Treude and Metz, Lasaphe, Westphalia, Germany. Filed Feb. 6, 1903. Serial No. 142,230. (No model.)

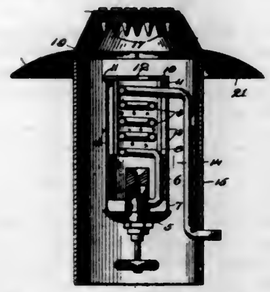


*Claim.*—1. The combination in a walking doll or other moving toy figure of a body having two sides vertically slotted, horizontal guides on said sides, a leg secured to each of said guides, a spring-actuated shaft in the body and two cranks, one on each end of said shaft, engaging in the respective vertical slots of the guides, substantially as described.

2. In a walking doll or other moving toy figure the combination with the two sides of the body, of a horizontal rod on each side, a guide-piece slidable on each rod and provided with a vertical slot, a leg secured to each guide-piece, a shaft journaled in the body, a crank at each end of the shaft engaging in the slot of the respective guide-pieces, said cranks being on opposite sides of the shaft, and rolls on the legs provided with means to prevent backward movement, substantially as described.

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**754,862. OIL-BURNING BRANDING IMPLEMENT.** GEORGE FULLER, Washington, D. C. Filed Oct. 26, 1903. Serial No. 178,580. (No model.)



*Claim.*—1. In a branding implement, the combination of a spiral pipe-coil, a tubular sleeve surrounding the coil with separated air-passages between the coil and the sleeve, and an open-end casing surrounding the sleeve, as set forth.

2. In a branding implement, the combination of a vaporizing-coil, a tubular sleeve surrounding the coil, strips or bars between the coil and the sleeve and separating the space between the coil and the sleeve into air-passages, and the casing surrounding the sleeve, as set forth.

3. In a branding implement, the combination of a vaporizing-coil, a tubular sleeve surrounding the coil with an air-space therebetween, a baffle-plate partly covering the sleeve to centralize the flame, and a casing surrounding the sleeve and plate, as set forth.

4. In a branding implement, the combination of a vaporizing-coil, a sleeve surrounding the coil with an air-space therebetween, strips or bars in the air-space to divide it, a baffle-plate having a central opening and partly covering the sleeve, and a casing having open ends and surrounding the sleeve and the plate, as set forth.

5. The combination, with a vaporizing-coil, and a tube surrounding it with an interval or space between the coil and the tube, of means carried by and within the tube for interrupting the passage of air through the space.

6. The combination, with a vaporizing-coil, and a tube surrounding it with an interval or space between the coil and the tube, of means within the tube to interrupt the passage of air through the space, and a plate to deflect the air and centralize the flame at the top of the tube.

7. In a branding implement, the combination with the casing having open ends, and an oil-burner inclosed by the casing, of a branding-plate, a hood depending from the plate and supported by one end of the casing with an interval therebetween, lugs projecting from the plate and surrounded by the hood, and an apron projecting from the hood and overhanging the casing, substantially as and for the purpose set forth.

8. In a branding implement, the combination with the casing having open ends, and the branding-plate having a hood supported by one end of the casing to form a fire-box or heating-chamber with an interval between the hood and the casing-top, of an igniter-cup, a vaporizing-coil, a sleeve having legs standing on the cup and surrounding the coil with an air-space therebetween, strips or bars extending the length of the coil and dividing said space, and a baffle-plate having pins fitting the sleeve and partly covering one end of the sleeve, substantially as shown and described and for a purpose set forth.

9. In a branding-stamp heater, the combination of a vaporizing-coil, a tube surrounding the coil with a space therebetween, strips or bars the length of the coil upon the inside of the tube, and a plate to cover said space and the coil and having an aperture central with the coil.

10. In a branding-stamp heater, the combination of a vaporizing-coil, a tubular sleeve surrounding the coil with a space therebetween and projecting above and below the coil, bars within the

sleeve and extending part of its length, and a disk or plate to cover the top of the sleeve and having an aperture central with the coil.

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754,863. ELECTRICAL PLUG AND RECEPTACLE. GILBERT W GOODRIDGE, Bridgeport, Conn., assignor to the Bryant Electric Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Oct. 9 1903. Serial No. 176,389. (No model.)



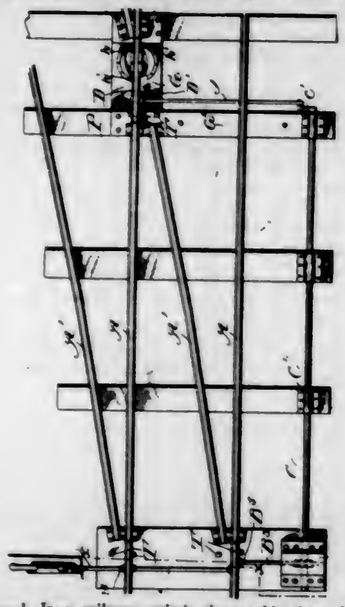
*Claim.*—1. A plug-receptacle, consisting of an insulating-body having holes through it, with a plain metal single tube in each of said holes, carrying a binding-screw at its rear end, and a securing-pin passing through lateral openings in the body and secured in the tubes, all substantially as described.

2. A receptacle, comprising a body in combination with a face-plate and screws and nuts by which said face-plate is secured to the body, the screw-heads being secured in holes in the back of the plate by the metal of the plate forced down over the screw-heads.

3. A receptacle-plug consisting of a hollow insulating-body with a button in the open end of said body, and an oblong chamber behind said button, contact-pins on the outer side of said button, contacts on the inner side thereof within said chamber, securing-screws for the button passing through the thickened walls of the plug-body, and nuts for the securing-screws.

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754,864. RAILWAY-SWITCH. THOMAS E. GUNNERSON, Crestone, Colo. Filed July 29, 1903. Serial No. 167,426. (No model.)



*Claim.*—1. In a railway-switch, the combination with the switch-rails and rails of the main track, a switch-stand, connections therefrom to the sliding or shifting rails, a swinging rail connected to the sliding rails through a rock-shaft, pinion and rack-bar and pitman, a turn-table to carry said swinging rail, consisting of a bed-plate having a stepped or shouldered upper surface, a disk resting on said bed-plate and secured to the swinging rail, segmental retaining plates or flanges secured to the bed-plate and embracing said disk, the diagonally opposite edges of the flanges or retaining-plates being respectively beveled and straight to form stops for the swinging rail when in its open or closed position.

2. In a railway-switch, the combination with the switch-rails and rails of the main track, a switch-stand, connections therefrom to the sliding or shifting rails, a swinging rail, a turn-table carrying said swinging rail, consisting of a bed-plate having a stepped or shouldered upper surface, a disk resting on the low portion of said bed-plate and secured to the swinging rail, segmental retaining plates or flanges secured to the low portion of said bed-plate and embracing said disk, a rock-shaft having a crank at one end, pitmen pivotally secured to said crank, a pinion secured to the opposite end of the rock-shaft, a rack-bar pivotally secured to one of the shifting rails, a shoe embracing the flanges of the swinging rail near its longer end, said shoe being pivotally secured to the pitmen, all substantially as shown and described.

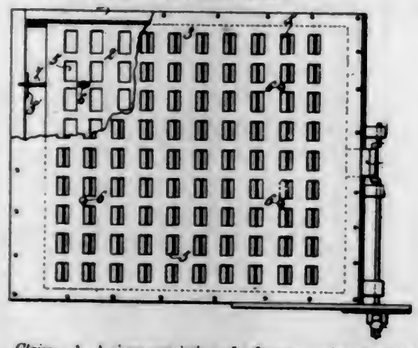
3. In a railway-switch the combination with the switch-rails and rails of the main track, a switch-stand, connections therefrom to the sliding or shifting rails, a swinging rail, a turn-table carrying said swinging rail, consisting of a bed-plate having a stepped or shouldered upper surface, a disk resting on the low portion of said bed-plate and secured to the swinging rail intermediate its ends, segmental retaining plates or flanges secured to the low portion of said bed-plate and overhanging the periphery of said disk, a rock-shaft having a crank at one end, a pitman pivotally secured to said crank, a pinion secured to the opposite end of said shaft, a shoe embracing the flanges of one of the shifting rails, a rack-bar secured to said shoe and adapted to engage the pinion on the rock-shaft, a shoe embracing the flanges of the swinging rail near its longer end, said shoe pivotally secured to the pitmen, a wedge-shaped block inserted between the converging ends of the main-track and switch rail, and fastenings for securing said block in place and fastening the said converging ends of the rails to the said block.

4. In a railway-switch the combination with the switch-rails and rails of the main track, a switch-stand, connections therefrom to the shifting rails, a swinging rail, a turn-table carrying and having secured to it said swinging rail, a rock-shaft having a crank at one end pivotally connected through a pitman with one end of the swinging rail, a pinion secured to the opposite end of the rock-shaft, a rack-bar pivotally secured to one of the shifting rails and adapted to engage the pinion on the rock-shaft, whereby movement of the shifting rails will cause the swinging rail to register with one of the switch-rails or with one of the main-track rails.

5. In a railway-switch the combination with the switch-rails and rails of the main track, a switch-stand, connection therefrom to the shifting rails, a swinging rail, a turn-table to which said swinging rail is secured, a rock-shaft provided with a crank at one end, a pitman secured to said crank at one end and at its opposite end to the swinging rail, a pinion on the opposite end of the rock-shaft, a bearing-plate provided with a central opening to receive said pinion and rock-shaft, a rack-bar pivotally secured at one end to one of the shifting rails and engaging the pinion on the rock-shaft, and a cap-box fitting over said pinion and rack.

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754,865. SIEVE. FREDERICK W. HASCH, Cecil, Ohio. Filed July 11, 1903. Serial No. 165,162. (No model.)



*Claim.*—1. A sieve consisting of a frame, a series of superposed plates carried thereby having openings, the lower plate being adjustable with respect to the upper one to bring said openings into or out of registration, flat longitudinal strips set edgewise below the lower plate in parallelism with each other, with their upper edges contiguous to the lower plate, and notched plates supported by the frame, and the notches of which receive the ends of said strips.

2. A sieve consisting of superposed plates having openings, one of the plates being adjustable with respect to the other to bring said openings into or out of registration, a shaft having a crank portion, a strap provided with a sleeve to embrace said crank portion, said strap being fastened to the adjustable plate, the frame of the sieve being apertured to receive said strap, and manually-controlled means for operating said shaft.

3. A sieve consisting of a frame, superposed plates carried thereby having openings, the lower plate being adjustable with respect to the upper one to bring the openings in the plates into or out of registration, and the upper plate having depending angularly-disposed lips projecting downward through the slots in the lower plate, longitudinal flat strips set edgewise below the lower plate in parallelism with each other with their upper ends contiguous to the lower plate, notched plates fastened to the frame, the notches of which receive the ends of said strips, a shaft having a crank portion, a strap provided with a sleeve to embrace said crank portion, said strap being fastened to the adjustable plate, a hand-lever secured to said shaft, a detent carried by the hand-lever, and a toothed sector in position to be engaged by the detent.



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754,866. BAKE-OVEN. HERMAN HRACKER, San Diego, Cal. Filed July 25, 1903. Serial No. 167,012. (No model.)



*Claim.*—1. In a device of the class set forth, the combination of an oven, a furnace located at the center below the oven and having a rear upwardly-inclined wall continuing into a bottom wall of less inclination and which descends to the front of the furnace, the top of the furnace being arched and the rear wall and the top of the furnace leading to a central opening establishing means of communication between the furnace and oven, the upper terminal of the rear wall leading directly to the rear wall of the said opening, removable means for closing the opening between the oven and the furnace and operative from the interior of the oven, and an oil-burner having a steam connection and suspended within the furnace above the inclined bottom of the latter and having its inner injecting end in line with the rear inclined wall to deflect the heat upwardly through the opening between the oven and furnace, the burner being under steam-pressure to drive the heat therefrom forcefully against the rear inclined wall.

2. In a device of the class set forth, an oven, a furnace beneath the front extremity of the oven and having a bottom wall inclined upwardly from its front terminal to the lower termination of a rear wall arranged at a greater angle and extending upwardly to the wall separating the oven and furnace and leading to a central opening forming the sole means of communication between the oven and furnace, the upper part of the opening having a seat arranged thereabout with a recess at the center of the front portion thereof, a cover adapted to be removably held in the seat and have its upper surface flush with the bottom surface of the oven, the said cover having at the center an under recess leading to a vertical opening therethrough, and a pry-iron insertible into the oven and having an end to engage the central recess and opening in the cover through the medium of the said recess formed in the seat to receive the cover.

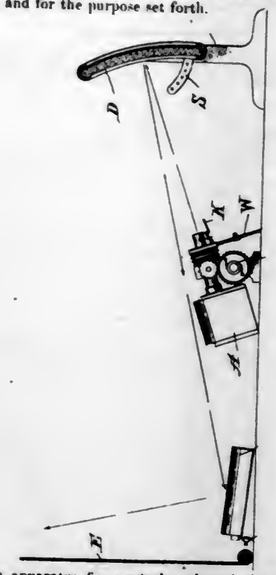
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754,867. APPARATUS FOR PRODUCING SCENIC EFFECTS. EDGAR O. HEALY, Chicago, Ill., assignor of one-half to Gerard Van Schaick, Highland Park, Ill. Filed Apr. 4, 1903. Serial No. 151,201. (No model.)

*Claim.*—1. In an apparatus for producing theatrical light effects, the combination with a lantern, of a concaved mirror upon which the light from the lantern is reflected, and a convexed mirror arranged to receive the light reflected from said concaved mirror, and a curtain arranged to receive the reflection of the light from said convexed mirror, as and for the purpose set forth.

2. In an apparatus for producing theatrical light effects, the combination with a curtain, of a concaved mirror arranged behind said curtain and to reflect light toward the same a convexed mirror arranged to reflect light from said concaved mirror to said curtain, and a lantern arranged to project light upon said concaved mirror, and means for adjusting the relative angle of inclination of these parts, as and for the purpose set forth.

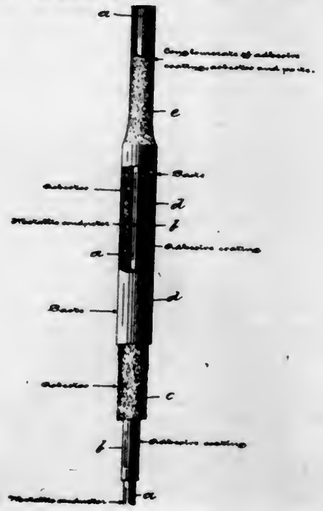
3. In an apparatus for producing theatrical light effects, the combination with a lantern, of a mirror upon which the light from such lantern is projected, a curtain arranged to receive the reflected light from such mirror, and means arranged in the line of travel of the light and interposed between the reflecting-mirror and the curtain to receive the light from such mirror, said means operating to convert said light into arc or bowed form before falling upon the curtain, as and for the purpose set forth.



4. In an apparatus for producing theatrical light effects, the combination with a plurality of lanterns, a reflecting-mirror upon which the light from said lanterns is projected, a curtain, said mirror operating to reflect the light toward said curtain, a convexed mirror arranged to receive the light reflected from said first-mentioned mirror and to reflect the same to the curtain, each of said lanterns provided with a shutter, and means for opening and closing said shutters independently and at will, as and for the purpose set forth.

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754,868. FIRE AND WATER PROOF INSULATING COVERING FOR METALLIC SURFACES. JOHN A. HEANY, Philadelphia, Pa., assignor to the Teter-Heany Developing Company, Charleston, W. Va., a Corporation of West Virginia. Filed May 10, 1902. Serial No. 106,670. (No specimens.)



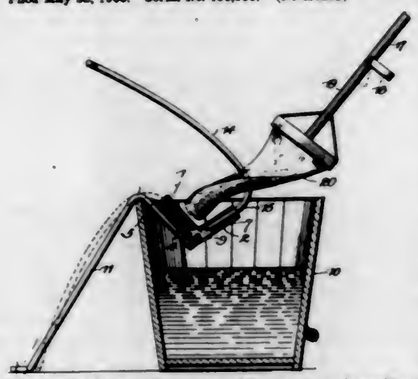
*Claim.*—An electric conductor having a waterproof cohering adhesive mass formed of gluey substances applied as a coating to the conductor, flocculent asbestos agglomerated with said coating and a covering formed of the waterproof gluey substances combined with fireproofing materials agglomerated with the asbestos and the gluey coating of the conductor to form an insulating mass, wherein the materials and asbestos are thoroughly intermingled and firmly united to the conductor.

754,869. WREST-PLATE. Eduard Hilger, Aix-la-Chapelle, Germany. Filed Jan. 26, 1903. Serial No. 140,491. (No model.)



*Claim.*—In a wrest-plate for pianofortes and similar instruments the combination with the web, of a hollow border, a hollow base-bridge whose cavity is in communication with the cavity of said border, and a hollow treble-bridge whose cavity is also communicating with the cavity of said border.

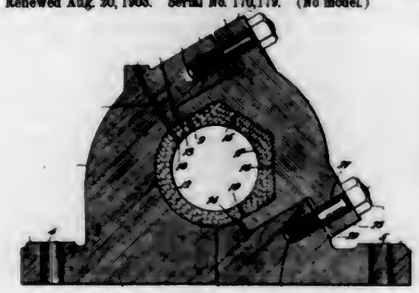
754,870. MOP-WRINGER. Charles E. Hill, Millington, Mich. Filed May 22, 1903. Serial No. 158,355. (No model.)



*Claim.*—1. A mop-wringer comprising a prop, a depending jaw carried by the prop, a compression-jaw hinged to the first-named jaw and a foot-lever having a curved end connected to the compression-jaw and movable into a position in close proximity with the prop to force the two jaws together.

2. A mop-wringer, comprising a prop for engagement with the floor and having an intermediate bend, a rigid flanged jaw carried by the prop on one side of the bend, a second jaw hinged to the first-named jaw and movable to a position between the flanges, and a lever having a curved end attached to the second-named jaw and movable to a position substantially parallel with the prop to clamp the jaws together.

754,871. ANGULAR PEDESTAL. Charles H. Howland-Sherman, Washington, D. C., assignor, by direct and mesne assignments, to the Howland-Sherman Manufacturing Company, Wilmington, Del., and Baltimore, Md., a Corporation of Delaware. Filed Nov. 9, 1901. Renewed Aug. 20, 1903. Serial No. 170,179. (No model.)



*Claim.*—1. Combined in a pedestal, a frame, brasses each having a flattened portion on each side, and a cap having portions designed to engage the frame and the flattened portions of the brasses, substantially as set forth.

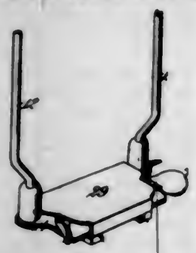
2. Combined in a pedestal, a frame, brasses each having oppositely-arranged flattened portions, and a cap having flanges designed to engage the frame and the flattened portions of the brasses and lock the brasses against rotation, substantially as set forth.

3. Combined in a pedestal, a frame, brasses each having an exterior flattened portion on each side lying in the same plane, and a cap having flanges in the plane of said flattened portions and designed to engage and lock both brasses against rotation, substantially as set forth.

4. Combined in a pedestal, a frame having a curved recess in its inner side, an inner brass fitted to said recess and provided with opposite flattened surfaces, an outer brass having a polygonal exterior surface, and a cap shaped to fit the exterior surface of the outer brass and provided with flanges designed to engage the frame and the flattened side surfaces of both brasses, substantially as set forth.

5. Combined in a pedestal, a frame having a curved recess in its side, an inner brass designed to fit said recess and provided with a flattened surface on each side, an outer brass having a polygonal exterior surface, and a cap shaped to fit the exterior surface of the outer brass and provided with flanges designed to engage the frame and the flattened side portions of both brasses, substantially as set forth.

754,872. LENS-CARRIAGE-SECURING MEANS. Charles E. Hutchings, Rochester, N. Y., assignor, by mesne assignments, to Rochester Optical Company, Rochester, N. Y., a Corporation of New York. Filed Apr. 9, 1903. Serial No. 151,936. (No model.)



*Claim.*—1. In a camera, the combination with the camera-bed, and a runway thereon, of a lens-carriage adjustably mounted on the runway and comprising a plate provided on its under side with two parallel grooved strips which embrace the sides of the runway, one of said strips being fixed and the other movable toward and from the adjacent edge of the runway, a spring arranged to normally hold the movable strip in engagement with the runway, a stud on the plate, and a cam-lever pivoted to said plate and engaging said stud for moving the said strip out of the engagement with the runway, substantially as described.

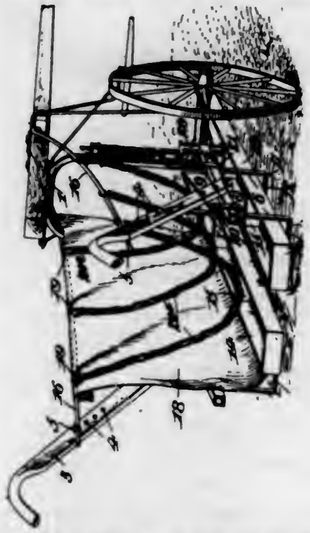
2. In a camera, the combination with the camera-bed, and a runway thereon, of a lens-carriage adjustably mounted on the runway and comprising a plate provided on its under side with two parallel grooved strips which embrace the sides of the runway, one of said strips being fixed and the other movable toward and from the adjacent edge of the runway, a spring arranged to normally hold the movable strip in engagement with the runway, a stud fixed on the plate and projecting through a slot in said plate, and a slotted cam-lever pivoted to said plate and embracing said stud for moving the said strip out of engagement with the runway, substantially as described.

3. In a camera, the combination with the camera-bed and a runway thereon, of a lens-carriage adjustably mounted on the runway and comprising a plate provided on its under side with two parallel grooved strips which embrace the sides of the runway, one of said strips being fixed and the other movable toward and from the adjacent edge of the runway, a spring arranged to normally hold the movable strip in engagement with the runway, headed screws passing through slots in the said plate and screwed into the said movable strip, a stud on the plate, a slotted cam-lever pivoted to the plate and embracing said stud for moving the movable strip out of engagement with the runway, substantially as and for the purpose specified.

4. In a camera, the combination with the camera-bed and a runway thereon, of a lens-carriage adjustably mounted on the runway and comprising a plate provided on its under side with two parallel grooved strips which embrace the sides of the runway, one of said strips being fixed and the other movable toward and from the adjacent edge of the runway, a spring arranged to normally hold the movable strip in engagement with the runway, a stud on the plate, a slotted cam-lever pivoted to the plate and embracing said stud for moving the movable strip out of engagement with the runway, said lever at its free end being provided with a finger-hold, and an arm fixed on the plate and provided with a thumb-rest, substantially as described.

5. In a camera, the combination with the camera-bed and a runway thereon, of a lens-carriage adjustably mounted on the runway and comprising a plate provided on its under side with two parallel grooved strips which embrace the sides of the runway, one of said strips being fixed and the other movable toward and from the adjacent edge of the runway, a projection on the under side of the plate, a spring coiled intermediate its ends about said projection and bearing at its free ends against the movable strip to normally hold the latter in engagement with the edge of the runway, and a lever for moving said strip out of engagement with the runway, substantially as and for the purpose described.

754,873. BOLL-WEEVIL CATCHER. Sanford V. Ivy, Butler, Tex. Filed Nov. 14, 1903. Serial No. 181,233. (No model.)



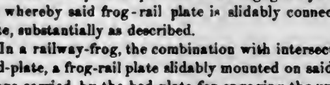
*Claim.*—1. In a weevil-catcher, the combination with the beams of a cultivator, of hangers adjustably secured to said beams and lateral extensions integral with said hangers, of pans adjustably secured to said extensions, chains suspended over the pans from the cultivator-frame.

2. In a weevil-catcher, the combination with the beams of a cultivator, of hangers adjustably secured to said beams, and lateral extensions integral with said hangers, of pans adjustably secured to said extensions, chains suspended over the pans from the cultivator-frame, and shields connected to the pans and cultivator-frame.

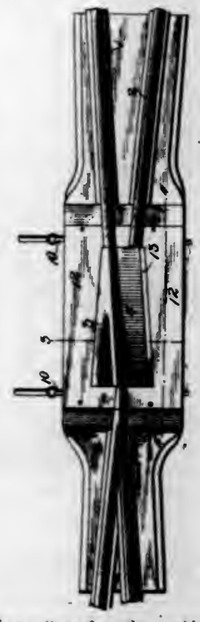
3. In combination with a cultivator, a weevil-catcher comprising hangers adjustably secured to the beams of the cultivator, lateral extensions integral with said hangers, pans adjustably secured to said extensions, and spaced apart, rods secured to the cultivator, curtains extending from said rods to each pan, and chains suspended over the pans from the said rods.

754,874. STRAW-RACK FOR GRAIN-SEPARATORS. Joseph Johannbeck, Wabasso, Minn. Filed June 16, 1903. Serial No. 161,641. (No model.)

*Claim.*—A straw-rack for grain-separators, comprising a series of parallel reciprocating sections, and shafts provided with cranks alternately arranged in different directions and adapted to actuate said sections, each section comprising longitudinal bars notched in their edges, slats seated in said notches, a pair of cross-bars connecting the longitudinal bars at each end, a plate connecting the cross-bars, a journal-box secured to the plate and receiving the coacting shaft-crank, and lugs projecting from the plate and bracing said journal-box, substantially as described.



754,875. RAILWAY-FROG. Alnon A. Kimball and William J. Conners, Scanlon, Minn. Filed Nov. 12, 1903. Serial No. 180,898. (No model.)



*Claim.*—1. In a railway-frog, the combination with intersecting tracks, of a bed-plate, guides formed on said bed-plate, a frog-rail plate slidably mounted on said bed-plate between said guides, and means for engaging the upper surface of the sliding frog-rail plate when said plate is adjusted to clear the same of snow and ice.

2. In a railway-frog, the combination with intersecting tracks, of a bed-plate, guides formed on said bed-plate, a frog-rail plate slidably mounted on said bed-plate between said guides, locking-grooves formed on said frog-rail plate and locking ribs or cleats formed on said bed-plate in position to be engaged by said locking-grooves whereby said frog-rail plate is slidably connected to said bed-plate, substantially as described.

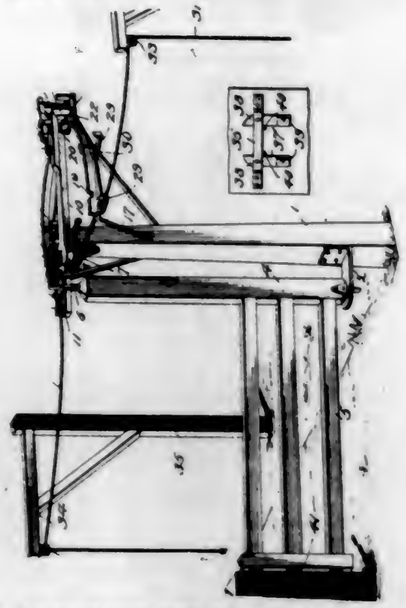
3. In a railway-frog, the combination with intersecting tracks, of a bed-plate, a frog-rail plate slidably mounted on said bed-plate, and means carried by the bed-plate for engaging the upper surface of the frog-rail plate when the latter is actuated to clear the same of snow and ice, substantially as described.

4. In a railway-frog, the combination with intersecting tracks, of a bed-plate, guides formed on said bed-plate, a frog-rail plate slidably mounted on said bed-plate between said guides, locking-grooves formed on said frog-rail plate and locking ribs or cleats formed on said bed-plate in position to be engaged by said locking-grooves whereby said frog-rail plate is slidably connected to said bed-plate, and plates having beveled or sharpened edges and removably secured to said guides in position to engage said frog-rail plate and clear the same of snow, ice or debris, substantially as described.

754,876. GATE-OPENER. George C. Laney, Kamas, Utah. Filed Sept. 2, 1903. Serial No. 171,665. (No model.)

*Claim.*—1. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed upon the post, and a bearing carried by said lever in which the gate is journaled, said bearing being movable with relation to the fulcrum of the operating-lever.

2. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed on the post, a bearing on the lever in which the gate is journaled, said bearing being shiftable with relation to the fulcrum of the lever, and means for shifting the said bearing.



3. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed on the post, and a bearing in which the gate is journaled, said bearing being slidably arranged upon the lever.

4. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed on the post, a bearing in which the gate is journaled, said bearing being slidably arranged upon the lever, and means for sliding the bearing.

5. In a gate-operating means, the combination with a post and a gate pivoted thereto, of a lever fulcrumed on the gate-post of a bearing in which the gate is journaled, said bearing being slidably mounted upon the lever, and an oppositely-threaded bar engaging the lever and bearing for adjusting said bearing with relation to the fulcrum of the operating-lever.

6. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed upon the post provided with a bearing in which the gate is journaled, a curved track supported by the post and provided with recesses, a latch pivotally mounted upon the lever and adapted to engage said recesses to hold the gate in open or closed position, a lifting-lever fulcrumed upon the operating-lever and engaging the latch to lift the same out of engagement with the recesses in the curved track, and means for operating said lifting-lever.

7. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed on the post, a bearing on the lever in which the gate is journaled, means for adjusting said bearing with relation to the fulcrum of the lever, projections upon said bearing and the lever, and an oppositely-threaded rod engaging said projections and by means of which the bearing is adjusted.

8. In a gate-operating means, the combination with a post, of an operating-lever fulcrumed upon the post and provided with a bearing in which the gate is journaled, a curved track, a locking means carried by the operating-lever and cooperating with said track, guides supported by said track, and a cable extending through said guide-eyes and connected to the lever and the locking means.

9. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed upon the post and operatively connected to the gate to swing the same, a curved track, a latch pivotally mounted at one end of the operating-lever and arranged to cooperate with the track to hold the gate in open and closed position, a lifting-lever engaging the latch and means to operate said lifting-lever to lift the latch and swing the operating-lever.

10. In a gate-operating means, the combination with a post and gate pivoted thereto, of an operating-lever fulcrumed upon the post and operatively connected to the gate to swing the same, a curved track, a latch mounted at one end of the operating-lever and arranged to cooperate with the track to hold the gate in open and closed position, a catch pivoted to the said latch, a lifting-lever fulcrumed on the operating-lever and engaging said catch, and means to operate said lifting-lever to lift the latch and swing the operating-lever.

11. In a gate-operating means, the combination with a post and a gate pivoted thereto, of an operating-lever fulcrumed upon the post and operatively connected to the gate to swing the same, a curved track, a latch mounted at one end of the operating-lever and arranged to cooperate with the track to hold the gate in open and closed position, a spring-pressed catch pivoted to said latch, a lifting-lever engaging said catch, means to hold said lever and catch in engagement, and means to operate said lifting-lever to lift the latch and swing the operating-lever on its fulcrum.

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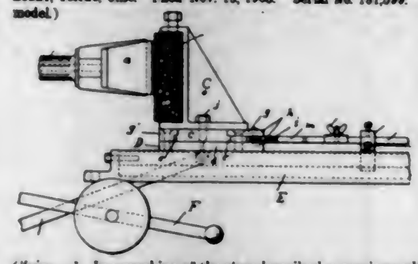
**754,877. DRESS-SHIELD.** JANE H. LEE and NANNIE R. CONKLING, St. Louis, Mo. Filed July 6, 1903. Serial No. 164,300. (No model.)



*Claim.*—A dress-shield, comprising lobes 1 1 having their concave edges depending between said lobes and concealed thereby and stitched together by means of stitching 2, lobes 3 3 having their concave edges oppositely disposed to the concave edges of the lobes 1 1 and being stitched together by means of stitching 4; a sheet of impervious material located between said lobes and between the concave edges of said lobes 1 1 and 3 3 and not attached to said edges, the convex edges of said lobes and said sheet of impervious material being bound by means of binding 5 and secured together by means of stitching 6, and a transversely and longitudinally elastic fastening-strip 9 located between said lobes and projecting from the convex edge of said shield and depending between the lobes 3 3, substantially as specified.

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**754,878. GRINDING AND POLISHING MACHINE.** JOHN R. LOBET, Toledo, Ohio. Filed Nov. 18, 1903. Serial No. 181,599. (No model.)



*Claim.*—1. In a machine of the class described, a carriage adapted to have a reciprocatory movement therein, a stone-carrying bracket mounted on and transversely movable of said carriage, a rack on said bracket, a member in engagement with said rack, and means for imparting motion to said member and bracket at each reciprocatory movement of said carriage.

2. In a machine of the class described, a carriage adapted to have a reciprocatory movement, a movable polishing medium mounted thereon, a member adapted to engage and impart movement to said medium, and adjustable means for engaging and imparting motion to said member at each reciprocatory movement of said carriage.



3. In a machine of the class described, a longitudinally-movable carriage, a bracket mounted on said carriage and adapted to carry a polishing-stone and to have a transverse movement, a pivotally-mounted member adapted when moved to impart motion to said bracket, and means for engaging and moving said member when said carriage is moved, said means adapted to have its position changed to reverse the movement of said member, substantially as described.

4. In a machine of the class described, a longitudinally-movable member, a transversely-movable element carried by said member, a pinion mounted on said carriage and adapted to engage said element, and means secured in adjacent position to said pinion and adapted to rotate same and cause a transverse movement of said element when said member is moved.

5. In a machine of the class described, a reciprocatory carriage, a transversely-movable element thereon, a member meshing with a rack on said element, adjustable means mounted in the line of movement of said carriage, and reversible means carried thereby and adapted to have engagement with and impart motion to said member when said carriage is reciprocated, substantially as described.

6. In a polishing-machine, a reciprocatory carriage having a transversely-movable polishing element thereon, a rack on said element, a pinion mounted on said carriage and meshing with said rack, an adjustable member secured in alinement with said pinion, arms pivotally mounted on said member and adapted to engage said pinion and impart intermittent motion thereto as said carriage is reciprocated, and means for reversing the position of said arms, substantially as described.

7. The combination, in a machine of the class described, of a movable carriage having a polishing medium movably mounted thereon, a movable element in engagement with said medium and adapted when moved to impart motion thereto, a member mounted in adjacent position to said element and adapted to engage and move the same when said carriage is moved, and means for reversing the movement of said element, substantially as described.

8. The combination in a polishing-machine, of a reciprocatory carriage, a bracket movably mounted thereon and carrying a polishing medium, a rack on said bracket, a pinion mounted on said carriage and engaging said rack, a member adjustably mounted in alinement with said pinion, an element carried by said member and adapted to engage and impart motion to said pinion and cause a movement of said bracket when said carriage is reciprocated, and means for reversing the position of said element and movement of said pinion, substantially as described.

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**754,879. CLOTHES-POUNDER.** VICTOR T. LYNCH and EMERY W. LYNCH, Columbus, Ga. Filed Dec. 19, 1903. Serial No. 185,878. (No model.)

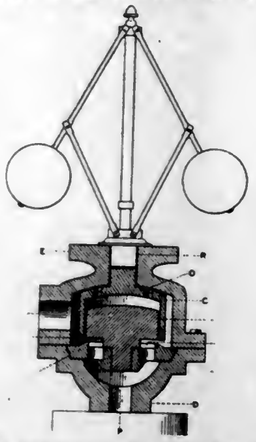


*Claim.*—1. An implement of the character described comprising a conical chamber open at the bottom and with a handle extending from the apex thereof, said chamber having exterior longitudinal air-chambers open at their lower ends, an annular tubular member supported within said conical chamber and spaced from the bottom thereof and likewise from the side walls of the same and provided with apertures communicating with the interior of the chamber, air-tubes connecting said tubular member with said air-chambers, and air-tubes connected to said tubular member through the walls of said conical chamber and spaced from its bottom.

2. An implement of the character described comprising a conical chamber open at the bottom and with a handle extending from the apex thereof, said chamber divided interiorly into compartments by transverse vertical partitions and with exterior longitudinal air-chambers opening downwardly in transverse alinement with the bottom of said conical chamber, an annular tubular member supported within said conical chamber and spaced from the bottom thereof and likewise from the side walls of the same and provided with apertures communicating with the interior of the chamber, air-tubes connecting said tubular member with said air-chambers, and air-tubes connected to said tubular member through said conical chamber and spaced from its lower edge.

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**754,880. GOVERNOR-VALVE.** DANIEL J. LYON, Greenwich, Conn. Filed Sept. 22, 1902. Serial No. 124,285. (No model.)



*Claim.*—In a governor-valve, the combination with the casing having a steam-inlet, a valve-seat provided with a central opening therein, a plurality of openings surrounding the central opening in said seat, a middle section having a stem secured to the said central opening of the valve-seat, of a valve for inclosing said middle section, said valve being provided with openings in its crown or top portion, and said middle section serving as a guide for the said valve, substantially as specified.

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**754,881. DEVICE FOR PREVENTING THE CREEPING OR WANDERING OF THE RAILS OF RAILROADS.** EMIL MASIK, Vienna, Austria-Hungary. Filed Jan. 4, 1904. Serial No. 187,700. (No model.)



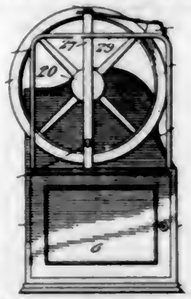
*Claim.*—1. In combination with a rail, a bed-plate or chair for the same, a sleeper carrying the bed-plate or chair and the rail and a bolt or screw for securing the rail and the bed-plate or chair to the sleeper a spring-steel plate adapted to be interposed between the head of the bolt or screw on the one hand and the foot of the rail and the bed-plate or chair on the other hand, the inner edge of such spring-steel plate being curved or convex in an upward direction and the outer downwardly-projecting ends of such edge being adapted to bite into the metal of the foot of the rail substantially as described.

2. In combination with a rail, a bed-plate or chair for the same, a sleeper carrying the bed-plate or chair and the rail and a bolt or screw for securing the rail and the bed-plate or chair to the sleeper a spring-steel plate adapted to be interposed between the head of the bolt or screw on the one hand and the foot of the rail and the bed-plate or chair on the other hand, the inner edge of such spring-steel plate being curved or convex in an upward direction and the outer downwardly-projecting ends of such edge being adapted to bite into the metal of the foot of the rail and a spring-ring serving as washer adapted to be interposed between the head of the bolt or screw and the spring-steel plate, substantially as described.

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**754,882. CHURN.** JEFFERSON D. METCALF, Darrington, Miss., assignor of one-half to William E. Wisner, Darrington, Miss. Filed Oct. 7, 1903. Serial No. 176,121. (No model.)

*Claim.*—1. In a churn-operating device, the combination with a motor, of a shaft operated thereby, a pitman eccentrically held on the shaft and provided with a lower laterally-extending terminal, a dasher-rod through which the lower laterally-bent terminal of the pitman extends, and a spring engaging the upper end of the dasher-rod to exert an upwardly-directed force on the latter.



2. In a churn, the combination with a support, of a motor, a shaft driven by the motor, an eccentrically-arranged pin on the shaft, a dasher-rod, a pitman connecting said rod and wrist-pin, a spring engaging the rod to lift the same, a dasher on the rod comprising a frame including spring members adapted to engage the dasher-rod, and a rotatable element carried by the frame.

3. In a churn, the combination with a support, of a motor, a shaft operated by the motor, an eccentrically-arranged wrist-pin on the shaft, a dasher-rod, a pitman connecting said rod and pin, a frame, a spring on said frame to lift the rod, a dasher on said rod, comprising a frame including horizontal and vertical members, said vertical members being secured to the rod, a shaft secured to the horizontal members and one of the vertical members, and a rotatable element on the shaft having spirally-arranged blades.

4. In a churn, the combination with a support, of a motor, a shaft operated by the motor, an eccentrically-arranged wrist-pin on the shaft, a dasher-rod having an opening at its lower end, a pitman connecting said pin and rod, a frame, a spring on the frame engaging the rod to lift the same, a dasher comprising a frame including spring members one of which is provided with a pin adapted to be projected through the opening in the dasher-rod and extended through an opening in the other spring member.

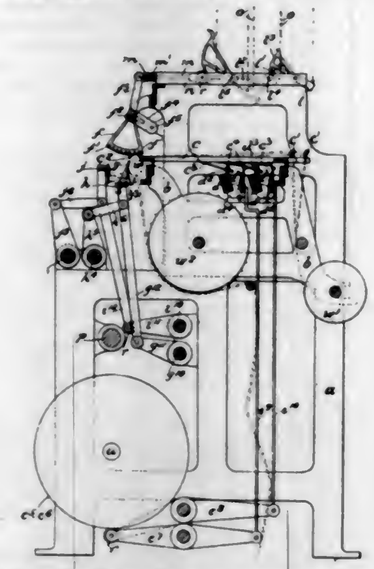
5. In a churn, the combination with a support, of a motor, a shaft driven by the motor, a horizontal member held at an elevation by the support, a vertically-reciprocating dasher-rod movable through the said member, a pitman eccentrically carried by the shaft and connected to the dasher-rod below the said member, and a spring engaging the upper terminal of the dasher-rod above the member.

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**754,883. APPARATUS FOR THE MANUFACTURE OF TUFTED FABRICS. GAVIN MORTON, Darvel, Scotland, assignor of one-half to Wallace Fairweather, Glasgow, Scotland. Filed June 6, 1902. Serial No. 110,472. (No model.)**

*Claim.*—1. In an apparatus for the manufacture of tufted fabrics and in combination, an intermittently-moving frame, a plurality of sliding bars fitted thereon, adapted to serve as warp-carriers, a plurality of tuft-yarn holders arranged in proximity to the forward ends or eyes of said warp-carriers, means for bringing successive pairs of the warp-carriers under the tuft-holders, gripping and shearing devices actuated in unison for gripping and shearing off taft lengths of yarn, and for drawing them in loop form over and through between adjacent pairs of warps to knot or tie them on these warps, means for moving the alternate warp-carriers in opposite directions to form a warp-shed, and means for carrying a shot or shots of weft-thread through the warp-shed to bind the knotted tufts, and to form with the warps the backing or groundwork of the fabric.

2. In an apparatus for the manufacture of tufted fabrics and in combination, suitable end standards, an intermittently-moving frame, a plurality of sliding bars fitted thereon and adapted to serve as warp-carriers, a plurality of tuft-yarn selectors, and mechanism operated from a jacquard to present any one of a series of colored tuft-yarn ends carried by the selectors in proximity to the forward ends or eyes of said warp-carriers, means for bringing successive pairs of the warp-carriers under the tuft-holders, gripping and shearing devices actuated in unison to enter between the warps and the adjacent warp-carriers, and to grip and shear off tuft lengths of yarn, and draw them in loop form over and through between adjacent pairs of warps to knot or tie them on these warps, means for moving the alternate warp-carriers in opposite directions to form a warp-shed, and means for carrying a shot or shots of weft-thread through the warp-shed to bind the knotted tufts and to interweave with the warps the backing or groundwork of the fabric.



3. In a machine for weaving or producing tufted fabrics the combination with a suitably-supported frame having cross-grooves and sliding bars fitted and furnished with eyes to serve as warp-carriers, of means for imparting intermittent endwise movement to the frame, tuft-yarn holders, means for successively sliding each pair of a group of the warp-carriers forward into proximity with said tuft-yarn holders to present the warps to tuft-forming devices, and means for sliding the alternate warp-carriers in opposite directions to shed the warp after a row of tufts have been tied to the warps so that a binding shot or shots of weft may be inserted between the warps.

4. In a machine for weaving or producing tufted fabrics the combination of a suitably-supported frame having intermittent endwise movement, and a plurality of warp-carrying bars fitted to slide in grooves transversely thereof, means for imparting the intermittent movement to the frame, means for sliding forward the warp-carriers in successive pairs, and means for sliding the alternate warp-carriers to right and left as and for the purpose set forth.

5. In a machine for weaving or producing tufted fabrics the combination of a suitably-supported frame, means for imparting intermittent endwise movement thereto, a plurality of warp-carrying bars fitted to slide in grooves transversely of the frame, rocking bars located under the warp-carriers and means for operating them, notched spring-wires attached to the warp-carriers engaging the rocking bars whereby they are operated to shed the warp, and vertically-moving bars notched at intervals to raise the spring-wires out of engagement with the rocking bars while allowing pairs at intervals to engage these bars whereby the warp-carriers are projected forward in pairs at intervals as and for the purpose set forth.

6. In a machine for weaving or producing tufted fabrics the combination with a movable frame having grooves and a plurality of warp-carrying bars adapted to slide in said grooves in said movable frame, of a tuft-yarn holder located in proximity to the ends of a forwardly-projected pair of such bars, and carrying the end of a tufted yarn-thread, a tuft-gripping device mechanically operated to enter between one of the warp-carriers and a warp-thread carried thereby, and to engage the end of the tuft-yarn, a tuft shearing and gripping device similarly operated to enter between the adjacent warp-carrier and a warp-thread carried thereby on the opposite side, and to shear off a tuft length from the tuft-yarn, and in conjunction with the other gripping device to draw the bight or loop of the tuft over or round the pair of warps and the free ends of the tuft between the pair of warps so as to knot or tie the tuft to the warps as described.

7. In a machine for producing tufted fabrics the combination



of devices for inserting and knotting or tying a tuft of yarn to a pair of warp-threads, comprising a pair of warp-carrying bars, a tuft-yarn holder located in proximity to the ends thereof, and carrying tuft-yarn thread, a jawed gripper opening and closing to engage the taft-yarn end, and a combined shears and gripper similarly acting to cut off a tuft length and engage its end, and means for operating the gripper and shears so that they draw the bight or loop of the tuft over the pair of warps with the free ends between the warps so as to tie the tuft thereto.

8. In a machine for producing tufted figured fabrics, the combination with a tuft-yarn holder having a plurality of yarn-delivery eyes, of pattern mechanism connected thereto and composed of a plurality of beam-levers, connected to a jacquard, each having cam-surfaces at one end bearing upon the pivot center of the adjacent lever, the said pivot centers being fitted in grooved or slotted guides along which they are free to slide, and a spring or counterweight for drawing them toward one end of the guide.

9. In a machine for producing tufted fabrics, the combination with a bar carrying a plurality of jawed tuft-yarn grippers, each composed of a fixed jaw secured to the bar and a movable jaw closed by a spring, and a notched bar arranged to act on the movable jaw to open it, and means for imparting relative movement to the gripper-carrying bar and the notched bar for effecting the opening of the jaws of the series of grippers.

10. In a machine for producing tufted fabrics, a tuft-yarn gripper for drawing off the tufting-yarn and knotting it to the warps composed of a fixed jaw having a longitudinal channel and a movable solid jaw pivoted thereto so as to rest in said channel, and a spring arranged to close the movable jaw as described.

11. In a machine for producing tufted fabrics a tuft-yarn shearing and gripping device for cutting off a length of tuft-yarn presented to it, gripping it and knotting it to the warps, the said device being composed of a single fixed jaw and a movable twin jaw pivoted thereto and forming with the fixed jaw means for shearing the yarn and for gripping the end of the cut length, and a spring arranged to close the movable jaw as described.

12. In a machine for producing tufted fabrics, the combination with a traversing bar and warp-carrying bars of a weft-carrier fixed to the end of said traversing bar, and means for operating it to traverse the open shed of warp-threads, the said carrier being provided with pulleys arranged to bear against the under side of the warp-carriers and whirls under which the weft is led and by means of which it is pressed down between the shed-warps as described.

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**754,884. CABLE-CLIP. JAMES MCFARLANE, Allegheny, Pa. Filed June 3, 1903. Serial No. 159,974. (No model.)**



*Claim.*—1. An integral open cable clip having crossed ends inturned to form hooks which face each other, and the body portion of the clip being bent askew, so that said hooks may engage a supporting wire side by side.

2. An open cable clip having the body portion bent into a helical circumference so that the hooks of the clip may be practically the same width as the body of the clip and may engage a suspension wire side by side, substantially as described.

3. A cable clip consisting of a band of metal bent into an open circumference and the extended ends thereof bent into hooks which face toward the center of the circumference, and the side of the clip being bent askew so that the hooks may lie side by side when in place.

4. An integral cable clip having a circumferential body portion, and two hooks crossing over and facing each other in position, and an offset portion between the body and the hooks to give additional flexibility, substantially as described.

5. An open spring cable clip consisting of a circumferential body portion ending in crossed shanks having inturned hooks to face each other, whereby the clip may be placed upon the cable and afterward sprung over the messenger wire, substantially as described.

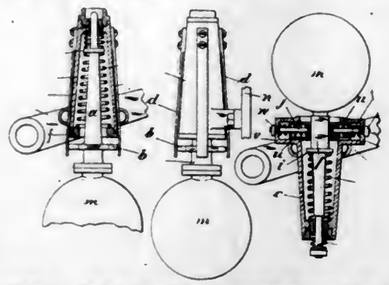
6. A cable clip consisting of a sheet-metal band bent into circumferential form with its edges forming helices, and ending in hooks which both face outward, the outer edges of the metal being turned under to reinforce and stiffen the hook, substantially as described.

7. A clip consisting of a band portion ending in a double offset bend and a hook at each end, the bend of the metal being about an axis oblique to the plane of the edges of the clip, whereby both hooks may rest side by side upon a supporting wire, substantially as described.

8. A suspension hook consisting of a flat band of sheet metal bent into circumferential form with the two sides set askew and ending in outwardly-turned hooks, substantially as and for the purposes described.

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**754,885. AUTOMATIC FIRING DEVICE FOR ORDNANCE. LUDWIG OBRY, Triest, Austria-Hungary. Filed Sept. 12, 1903. Serial No. 172,964. (No model.)**



*Claim.*—1. In a device of the character described, the combination with the firing device, of a spring-support for the same and embodying oppositely-acting springs, acting at an angle to the length of said support and the amplitude of oscillation of which is limited in that direction which corresponds to the pressure in the normal position, said springs serving to maintain said device and to bring the same back to a definite normal position.

2. In a device of the character described, the combination with the automatic firing devices, of a spindle supporting the same and provided with a flange having a regular polygonal form, a casing for said spindle and flat springs mounted on the periphery of said casing to act against said flange.

3. In a device of the character described the combination with the automatic firing devices of a spindle supporting the same and provided with a flange having a regular polygonal form, a casing for said spindle and flat springs mounted on the periphery of said casing to act against said flange and springs of different power acting in opposite directions on said spindle.

4. In a device of the character described a spring-support for the automatic firing device, the same comprising an endwise-movable spindle a ball-joint for one end thereof oppositely-acting springs of different power acting on said spindle and means acting at an angle to the direction of movement of the spindle for limiting the amplitude of oscillation in a direction corresponding to the pressure in the normal position.

5. In a device of the character described, the combination of an endwise-movable spindle springs disposed to act in opposite directions thereon, and means cooperating with said spindle for absorbing lateral shocks.

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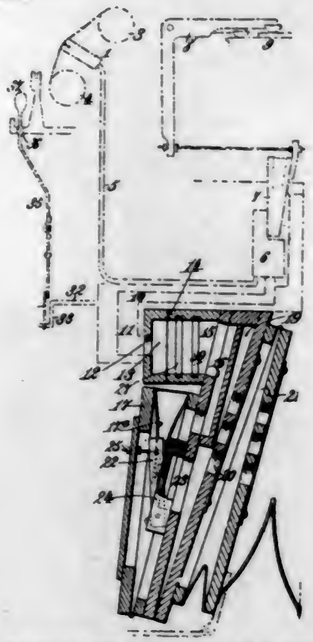
**754,886. MEANS FOR REGULATING THE EXPRESSION OF MECHANICAL MUSICAL INSTRUMENTS. ROBERT W. PAIN, New York, N. Y., assignor to the Aeolian Company, New York, N. Y., a Corporation of Connecticut. Filed Aug. 21, 1903. Serial No. 170,362. (No model.)**

*Claim.*—1. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension having independent communication with said chamber, and means for selectively cutting part of said exhausters into and the others out of circuit with all the motor-pneumatics.

2. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension having independent communication with said chamber, and manually-operable means for selectively cutting part of said exhausters into and the others out of circuit with all the motor-pneumatics.

3. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension having independent communication with said chamber, and means comprising a gate to control such communication and adapted to be operated to selectively

open and close communication between each of said exhausters and said pneumatics.



4. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension, a valve-box located in the circuit of communication between said pneumatics and said exhausters and provided with a series of independent passages leading to said exhausters and to said chamber, and means comprising a gate in said valve-box to selectively open and close said passages.

5. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension, having independent communication with said chamber, means comprising a gate to selectively open and close communication of each of said exhausters with said pneumatics, and a vacuum-maintainer in communication with said exhausters.

6. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension comprising a main or controlling exhauster, said series of exhausters having independent communication with said chamber, and means for selectively cutting part of said exhausters into and the others out of circuit with said motor-pneumatics.

7. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension comprising a main or controlling exhauster, said series of exhausters having independent communication with said chamber, and manually-operable means for selectively cutting part of said exhausters into and the others out of circuit with said motor-pneumatics.

8. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension comprising a main or controlling exhauster, said series of exhausters having independent communication with said chamber, and means comprising a gate to selectively cut part of said exhausters into and others out of communication with said pneumatics.

9. In a mechanical musical instrument, the combination with motor-pneumatics, a chamber common to all of said pneumatics, and a vacuum-maintainer, of a series of exhausters of different tension having independent communication with said chamber and with said vacuum-maintainer, means comprising a gate to selectively open and close the communication of each of said exhausters with said motor-pneumatics, and valves to control the communication of said exhausters with the vacuum-maintainer.

10. In a mechanical musical instrument, the combination with motor-pneumatics, a chamber common to all of said pneumatics, and a vacuum-maintainer, of a series of exhausters of different tension having independent communication with said chamber and also having independent communication with said vacuum-maintainer, means comprising a gate to selectively open and close the communication of each of said exhausters with the motor-pneumatics, and valves located in said exhausters to control the communication of the latter with the vacuum-maintainer.

11. In a mechanical musical instrument, the combination with motor-pneumatics, a chamber common to all of said pneumatics, and a vacuum-maintainer, of a series of exhausters of different tension having independent communication with said chamber, and also having independent communication with said vacuum-maintainer, means comprising a gate to selectively open and close the communication of each of said exhausters with the motor-pneumatics, and valves located in and operated by a movable element of said exhausters to control the communication of the latter with the vacuum-maintainer.

12. In a mechanical musical instrument, the combination with motor-pneumatics, a chamber common to all of said pneumatics, and a vacuum-maintainer, of a series of exhausters of different tension having independent communication with said chamber, and comprising a main or controlling exhauster and supplemental exhausters, means comprising a gate to selectively open and close the communication of each of said exhausters with the motor-pneumatics, and valves to control the communication of the supplemental exhausters with the vacuum-maintainer.

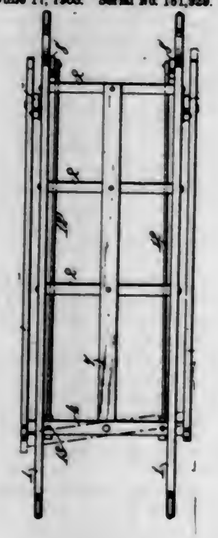
13. In a mechanical musical instrument, the combination with motor-pneumatics, a chamber common to all of said pneumatics, and a vacuum-maintainer, of a series of exhausters of different tension having independent communication with said chamber, means comprising a gate to selectively open and close the communication of said exhausters with said chamber, and a gate to cut the series of exhausters out of operation.

14. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension having independent communication with said chamber, means comprising a gate and a device connected to and operating said gate to selectively cut part of said exhausters into and others out of circuit with all the motor-pneumatics, and a guide-scale cooperating with said gate-operating device to guide the performer in manipulating the gate.

15. In a mechanical musical instrument, the combination with motor-pneumatics and a chamber common to all of said pneumatics, of a series of exhausters of different tension having independent communication with said chamber, means comprising a gate, and a handle connected to and operating said gate to selectively cut part of said exhausters into and others out of circuit with all the motor-pneumatics, and a guide-scale cooperating with said handle to guide the performer in manipulating the gate.

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754,887. COASTING-SLED. WILBUR F. PARMELEE, Kalamazoo, Mich. Filed June 17, 1903. Serial No. 161,929. (No model.)



*Claim.*—1. In a coasting-sled, pivoted steering devices, actuating means therefor embodying a locking-bar, and means for holding the locking-bar normally against operation.

2. In a coasting-sled, the combination of frictional steering devices, steering-rods connecting at one end therewith, a locking-bar connecting with the opposite ends of the steering-rods, and means for normally holding the locking-bar against movement.

3. In a coasting-sled, runners provided near their forward ends with longitudinal openings having their upper walls provided each with a locking-notch, a locking-bar arranged within the openings, means for holding the locking-bar normally in engagement with the locking-notches, steering devices, and steering-rods connecting with the locking-bar and with the steering devices.

4. In a coasting-sled, a steering device comprising a pivoted arm, and means for locking the same, and a disk carried by the arm and disposed at an angle with relation thereto.

5. In a coasting-sled, a steering device comprising a pivoted arm, and means for locking the same, and a disk carried thereby and inclined in front outward or inward from the runner.

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754,888. STRUCTURAL ARRANGEMENT APPLICABLE TO FLOORING, ROOFING, &c. EDWARD L. PEASE, Darlington, England. Filed Apr. 7, 1903. Serial No. 151,509. (No model.)

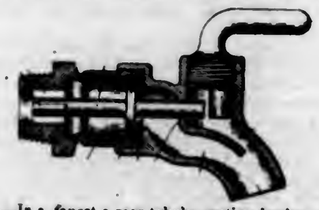


*Claim.*—1. In structural arrangements for flooring, roofing, and the like, the combination of supports each provided with a dovetailed projection, boards provided with tapering edges adapted to fit under said dovetailed projections, and packing between the edges of the boards and the dovetailed projection, substantially as described.

2. In structural arrangements for flooring, roofing, and the like, the combination of supports each provided with a dovetailed projection, boards provided with tapering edges, metal strips engaging said supports and boards, packing between the tapered edges of said boards and said dovetailed projections, and means whereby several boards may be combined together in a panel, substantially as described.

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754,889. BIB OR FAUCET. CHARLES PECK, Philadelphia, Pa. Filed Mar. 9, 1903. Serial No. 147,002. (No model.)

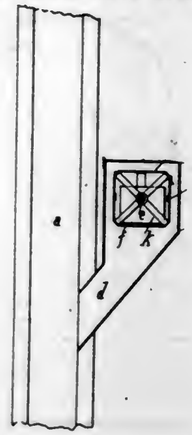


*Claim.*—In a faucet a rear tubular section having a threaded nipple, a front section threaded to the rear section, a shoulder formed in the front section, a washer lying against the shoulder of the front section having its edge seated between the front and rear members, a web depending in the passage of the front section, said web having an opening concentric with the opening of the rear section, a valve-stem having one end projecting through and slidable in the opening of the web and having wings in its rear end slidable in the rear section, a valve on the stem seated against the washer, a plug threaded in the top of the front section, a pin depending from the lower face of the plug and positioned eccentrically to said plug, the pin being revolved within the front section to contact with and move the valve-stem substantially as described.

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754,890. DEVICE FOR REMOVING GARBAGE. EMIL O. POPPE, Kirchberg, Germany. Filed Mar. 9, 1903. Renewed Feb. 9, 1904. Serial No. 192,849. (No model.)

*Claim.*—In devices for conveying house and kitchen refuse into the yard a stationary box closed by a hinged cover in proximity of and in communication with a vertical flue in combination with a revoluble frame or cage within said box, one trunnion of said cage being extended through the wall of the box, carrying a crank outside of the same, said frame or cage having a hinged cover to permit of placing a garbage-receptacle into the cage and securing the same therein substantially as described and for the purpose set forth.



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754,891. MOUSE-TRAP. THOMAS L. RAY, Fort Worth, Tex. Filed Apr. 5, 1901. Serial No. 54,553. (No model.)



*Claim.*—1. A mouse-trap having an apartment for housing a number of mice, an entrance-apartment, and a weighted bar carrying a door normally open, said bar being pivoted whereby the weight of a mouse will close said door whenever the mouse approaches the door in attempts to escape.

2. A mouse-trap having an apartment for housing a number of mice, an entrance-apartment having an opening for entrance therein, and a weighted bar having an opening therethrough registering normally with the opening to said entrance-apartment and carrying a door for automatically closing said opening whenever a mouse approaches said opening in attempts to escape.

3. A mouse-trap having an apartment for housing a number of mice, an entrance-apartment having an opening for entrance therein and an opening for escape to said first-named apartment, and a bar pivotally mounted and having an opening therethrough, said bar being bent upward at the front thereof and carrying a door integral therewith and having the rear end thereof weighted whereby the opening through said bar is made to register normally with the opening into said entrance-apartment.

4. A mouse-trap having an apartment for housing a number of mice, an entrance-apartment having an opening for entrance therein and an opening for escape to said first-named apartment, a bar pivotally mounted, a weight attached to the rear end of said bar, and a door formed integral with the front end of said bar, said bar being bent upward to form said door and having an opening therethrough below said door registering with the entrance-opening to said entrance-apartment.

5. A mouse-trap having an apartment for housing a number of mice, an entrance-apartment provided with an opening for entrance therein and with an opening for escape to said first-named apartment, a bar pivotally mounted and having the rear end thereof weighted, means for preventing mice from going on said weighted end, and a door formed integral with said bar, said bar being bent upward at the front end to form said door and having an opening therethrough below said door registering normally with the entrance-opening to said entrance-apartment whereby the weight of a mouse will automatically close said door whenever the mouse approaches said entrance in attempts to escape.

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754,892. FISHING-TACKLE. SILAS ROBBINS, Omaha, Nebr. Filed Dec. 2, 1903. Serial No. 183,467. (No model.)

*Claim.*—1. In a fishing-tackle, the combination of a line, a hook-connecting device on the line, and a hook detachably secured in said

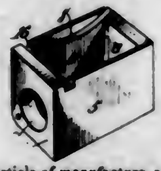
connecting device, and having a pointed upper end arranged in and guarded by said connecting device.



2. In a fishing-tackle, the combination of a line, a hook-connecting device on the line, and a hook detachably secured in said connecting device, and having a pointed upper end arranged in and guarded by said connecting device, and also having a barbed forward end, and a comparatively slender bight portion adjacent to said barbed end for rendering easy its withdrawal from a fish in the direction of the point of the barbed end.

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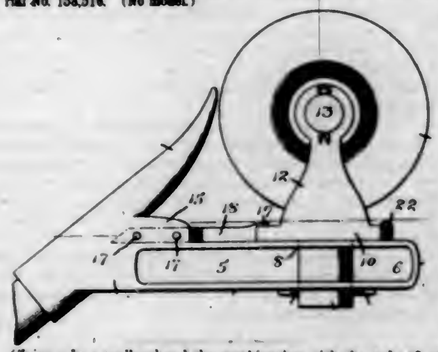
754,893. **PHOTOGRAPHIC VIEW-FINDER.** JOHN A. ROBERTSON, Rochester, N. Y., assignor, by mesne assignments, to Rochester Optical Company, Rochester, N. Y., a Corporation of New York. Filed Jan. 26, 1903. Serial No. 140,656. (No model.)



*Claim.*—As a new article of manufacture, a finder-box for cameras molded in a single integral piece from rubber without seams or joints and comprising a rectangular casing open upon its upper side and having formed in its front end a circular aperture, a lens-tube fitted in said aperture, laterally and inwardly projecting angular flanges formed upon the interior of said casing, a reflector seated on said flanges, flanges formed on the opposite interior faces of the casing, the upper edges of which are concaved, a magnifying-lens seated on such concaved flanges, the forward edge of the casing being transversely grooved, a pivot-pin rotatably arranged in said groove, and a hood comprising a flat lid having two approximately triangular depending sides which are mounted on the ends of said pin, substantially as and for the purpose specified.

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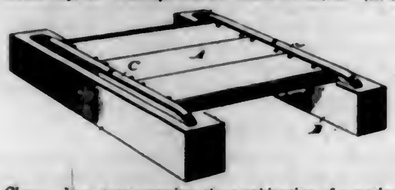
754,894. **SELF-ADJUSTING WHEEL.** EDGAR A. ROOT and CHARLES M. WALLACE, Huntington, W. Va. Filed May 23, 1903. Serial No. 158,516. (No model.)



*Claim.*—In a trolley-head the combination with the pole of an arm and a finger thereon, said arm comprising upper and lower members formed with alining apertures, the upper member being provided with a lug, a projection arranged at the junction of the arm and the finger and having a longitudinal recess therein, a flat spring set upon edge and having one end rigidly secured within said longitudinal recess and formed at its other end with a rounded head, a spindle extending through the apertures in the upper and lower members of the arm, a harp carried by the spindle, said harp comprising a base-plate integral with the spindle, vertical arms integral with the plate, a wheel journaled in the arms, said plate being formed with a semicircular recess to receive the rounded head on the spring, and a peripheral slot into which the lug on the upper member of the arm projects.

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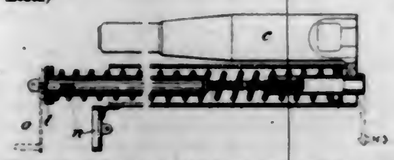
754,895. **SIDEWALK OR STREET-CROSSING.** JAMES A. ROSE, Prairie City, Ill. Filed Apr. 3, 1903. Serial No. 151,005. (No model.)



*Claim.*—In a street-crossing, the combination of a section comprising transverse sills spaced apart and embedded in the street-rails secured longitudinally upon said sills and means to secure said rails together as and for the purposes herein specified.

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754,896. **FLUID-BRAKE FOR RECOIL-GUNS.** ERNST K. ROTHE, Eisenach, Germany, assignor to the Firm of Fahrzeughabrik Eisenach, Eisenach, Germany. Filed Oct. 3, 1903. Serial No. 175,683. (No model.)



*Claim.*—1. A fluid-brake for recoil-guns, comprising a brake-cylinder provided with a hollow externally-threaded reduced portion, a hollow socket engaging said reduced portion, a detachable plug closing said cylinder at the end of said reduced portion whereby the cylinder may be filled on removing the plug, said hollow socket rotatably associated with a lug on the rear of said gun, a recuperating-spring surrounding said brake-cylinder, and a tubular casing around said spring.

2. In a fluid-brake for recoil-guns, the combination of a gun-carriage, a gun having a lug thereon, a hollow socket, rotatably associated with said lug, a brake-cylinder having a hollow externally-threaded reduced portion closed by a screw-plug at the end thereof, said reduced portion engaging said hollow socket, an external collar on said brake-cylinder, a spring surrounding said brake-cylinder and bearing at one end against the collar on said cylinder, a casing around said spring and attached to the gun-carriage, a collar arranged in said casing against which the other end of said spring bears, a stationary piston and piston-rod extending through said brake-cylinder, a hinged cap upon one end of said casing, and means for locking said cap to said piston-rod.

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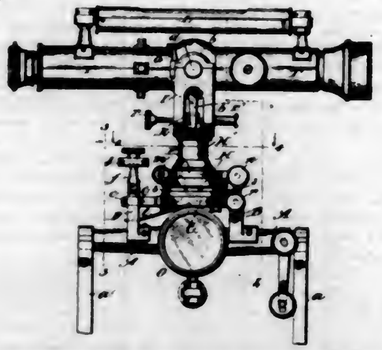
754,897. **SLOPE-STAKE ATTACHMENT FOR ENGINEERS' TRANSITS.** WILLIAM G. RUSSELL, Russell, Kans. Filed Feb. 9, 1903. Serial No. 142,470. (No model.)

*Claim.*—1. The combination, with a transit proper, of a slope-stake attachment comprising a telescope with level, a vertical pivot-post in which the said telescope is mounted so that it may rotate horizontally and vertically, leveling-screws applied to the base of said telescope, a hinged piece to which the base-piece is attached, and a gradienter-screw arranged for adjusting the hinged piece as shown and described, whereby the perpendicular axis of the attachment-telescope may be pitched to the right or left and in the same plane with the axis of transit or main telescope.

2. The combination, with the transit proper including the main telescope O having a horizontal support upon which it may swing vertically of the slope-stake attachment comprising the telescope and level, a pivot-post in which said telescope is journaled and adapted to rotate and swing, and means for adjusting the telescope which consist of a horizontal pivoted base-plate, a spring secured



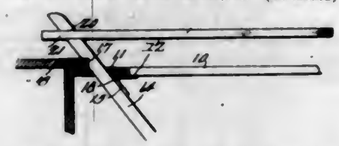
to said plate, a gradienter-screw for adjusting the spring-supported free end of said base-piece, and means for adjusting the telescope horizontally and clamping it on the base-piece, substantially as described.



3. The combination, with the transit-telescope journaled as described, of the attachment comprising a pivoted telescope and level having a vertical axis, two opposite brackets fixed vertically on the axis of transit-telescope, a base-piece hinged in horizontal position to one of said brackets, and means applied to the other bracket for adjusting the free end of said base-piece vertically, and means for leveling and clamping the attachment as a whole, substantially as described.

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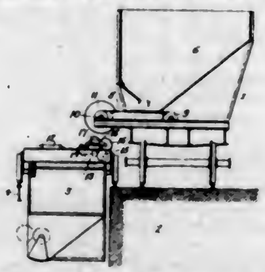
754,898. **IRONING-TABLE.** WILLIAM O. SCHELLHAMER, Salina, Colo. Filed Nov. 5, 1903. Serial No. 179,979. (No model.)



*Claim.*—In an ironing-board, the table member having a recess in one end, a leg member intermediately hinged to said table member at the base of said recess and projectable therethrough said leg member provided with a transverse recess in its rear side for engagement with a support and with oppositely-disposed recesses in its side edges in advance of said rear recess, and a sleeve-board having longitudinal spaced arms for detachable engagement with said side recesses, substantially as specified.

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754,899. **DISCHARGING DEVICE FOR DUMP-CARS.** JOHN W. SEAVER and GEORGE H. HULETT, Cleveland, Ohio, assignors to the Wellman-Seaver-Morgan Company, Cleveland, Ohio, a Corporation of Ohio. Filed June 12, 1903. Serial No. 161,197. (No model.)



*Claim.*—1. The combination of a dump-car divided into a series of bins each having a discharging device independent of the others, and a lorry having driving mechanism constructed to engage either of said discharging devices by a movement either of the car or lorry, substantially as specified.

2. The combination of an elevated platform or support, a dump-car mounted so as to travel thereon, and a lorry mounted so as to travel in front of said elevated platform or support, said dump-car having a series of bins each with independent discharging device, and said traveling lorry having operating mechanism constructed to engage with either of said discharging devices, substantially as specified.

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754,900. **BLACKBOARD-ERASER.** PAUL SEITH and GEORGE KAPHINGST, Appleton, Wis. Filed Aug. 19, 1903. Serial No. 170,010. (No model.)

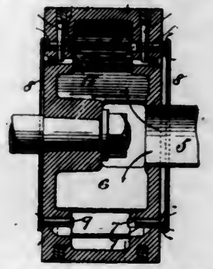


*Claim.*—1. In a blackboard-eraser, the combination, with a brush and plates of felt arranged on each side of the brush; of a tank for cleaning fluid arranged behind the said brush and felt, and provided with means for permitting the fluid to pass from the tank to the said brush.

2. In a blackboard-eraser, the combination, with a base-plate having a longitudinal groove, of a row of bristles set in the said groove, plates of felt secured to the base-plate on each side of the bristles, a tank secured on the other side of the base-plate, and means for permitting the fluid to pass from the said tank to the said bristles.

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754,901. **COMPRESSOR FOR AIR OR OTHER GASEOUS BODIES.** HENRY C. SERGEANT, Westfield, N. J., assignor to The Ingersoll-Sergeant Drill Company, New York, N. Y., a Corporation of West Virginia. Filed Nov. 20, 1903. Serial No. 181,912. (No model.)



*Claim.*—1. The combination with the piston of a compressor constructed with an annular passage and with two valve-seats one within the inner circumference of said passage and the other outside of the outer circumference of said passage, of a ring-valve having internal and external flanges which form valve-faces corresponding respectively with said seats and having an annular stem which enters said passage and between the inside and outside of which and the inner and outer walls of the said passage there are spaces constituting two ports to the valve.

2. The combination with the piston of a compressor constructed with an annular passage and with two valve-seats one within the inner circumference of said passage and the other outside of the outer circumference of said passage, of a ring-valve having internal and external flanges which form valve-faces corresponding respectively with said seats and having an annular stem which enters said passage and on the sides of which are projections fitting the walls of said passage.

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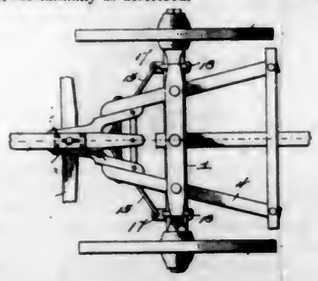
754,902. **DRAFT ATTACHMENT FOR VEHICLES.** FRANK H. SHARP, Howard, N. Y. Filed Aug. 6, 1903. Serial No. 168,529. (No model.)

*Claim.*—1. In a draft attachment for vehicles, the combination with an axle and a pivoted tongue, of a slide supported by said tongue, means for connecting said slide to the lower side of said axle and a doubletree pivotally connected to said slide, substantially as described.

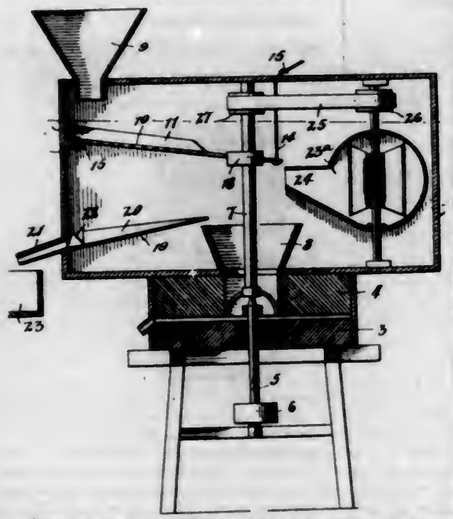
2. In a draft attachment for vehicles, the combination with an axle and a pivoted tongue, of a plate slidingly supported by said tongue, draft-rods pivotally connected at one end to said sliding plate and at their opposite ends to said axle, and a doubletree pivotally mounted on said plate, substantially as described.

3. In a draft attachment for vehicles, the combination with an axle and a pivoted, slotted tongue, of guides carried by said tongue, a plate slidably mounted in said guides, means for limiting the forward movement of said plate, draft-rods pivotally connected at one

end to the inner end of said plate, and at their opposite ends to the lower side of said axle, a bracket-arm connected to said plate a doubletree arranged between said arm and said plate, and a draw-bolt passing through the slot in said tongue and through openings in said plate, doubletree and bracket-arm, whereby said doubletree is pivotally connected to said plate and said plate slidably connected to said tongue, substantially as described.



754,903. GRIST-MILL. Samuel I. Shelby, Salem, Ky. Filed July 6, 1903. Serial No. 164,418. (No model.)



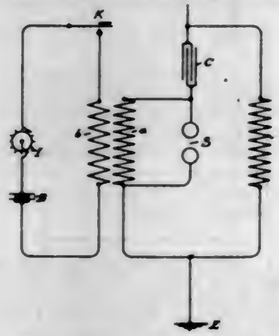
*Claim.*—1. In a grist-mill, the combination with a casing, a reducing device in the lower portion and a hopper on the upper part thereof, and a conductor for guiding the grain to said reducing device, of a sieve having its receiving end located below the hopper and pivoted to vibrate laterally and having its outlet end located above said conductor, the said screen inclining downward between the hopper and conductor, means disposed above and coaxially with said conductor for acting upon the discharge end of the sieve to vibrate the same, and a discharge-chute located below the sieve and extending at a reverse inclination thereto, having its inner end disposed substantially in the plane of the inner end of the screen, and provided at its outer end with an outlet extending to the exterior of the casing, substantially as described.

2. In a grist-mill, the combination with a casing, a reducing device in the lower portion and a hopper on the upper part thereof, and a conductor for guiding the grain to said reducing device, of a sieve having its receiving end located below the hopper and pivoted to vibrate laterally, and having its outlet end located above said conductor, the said sieve inclining downward between the hopper and conductor, means disposed above and coaxially with said conductor for acting upon the discharge end of the sieve to vibrate the same, a discharge-chute located below the sieve and extending at a reverse inclination thereto, having its inner end disposed substantially in the plane of the inner end of the screen, and provided at its outer end with an outlet extending to the exterior of the casing, and a blower within said casing arranged to direct a blast of air over the conductor and on a line between the screen and chute, and inversely to the direction of travel of the grain upon the screen, substantially as described.

3. In a grist-mill, the combination with a casing, a reducing device therein, and a conductor for guiding the grain to said reducing device, of a shaft extending upward from and in coaxial alinement with the conductor, a sieve having its receiving end located below the hopper and pivoted to vibrate laterally and having its outlet end located above said conductor and provided with an extension open for the passage of the shaft, the said screen inclining downward between the hopper and shaft, a cam carried by the shaft and acting on the said extension to vibrate the screen, means connected to the tip of the operating extension beyond the cam for vertically adjusting the screen, and a discharge-chute located below the sieve and extending at a reverse inclination thereto, having its inner end disposed substantially in the plane of the inner end of the separating portion of the screen, and provided at its outer end with an outlet extending to the exterior of the casing, substantially as described.

4. In a grist-mill, the combination with a casing, a reducing device therein, and a conductor for guiding the grain to said reducing device, of a shaft extending upward thereon and in coaxial alinement with the conductor, a screen or sieve having its receiving end located above said conductor and comprising a perforated body portion having an outlet at one end and an open frame extension at the opposite end for the passage of said shaft, said screen inclining downward between the hopper and shaft, a cam carried by the shaft, and acting on the said frame extension to vibrate the screen, and a discharge-chute located below the screen and extending at a reverse inclination thereto, having its inner end disposed substantially in the plane of the separating portion of the screen, and comprising a body portion, said flanges deepening toward the outlet end of the body portion, a discharge-spout at the center of the outlet end, and guides or deflectors between the said flanges and spout.

754,904. WIRELESS SIGNALING SYSTEM. Harry Shoemaker, Philadelphia, Pa., assignor to Marie V. Gehring and the Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Filed June 11, 1902. Serial No. 111,090. (No model.)



*Claim.*—1. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, and a radiating-circuit connected to the terminals of said winding.

2. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, and a radiating-circuit subjected to the excessive potential across the terminals of said winding.

3. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, and a radiating-circuit connected in shunt to said winding.

4. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, an aerial conductor having a connection with terminal of said winding, and an earth connection with the remaining terminal of said winding.

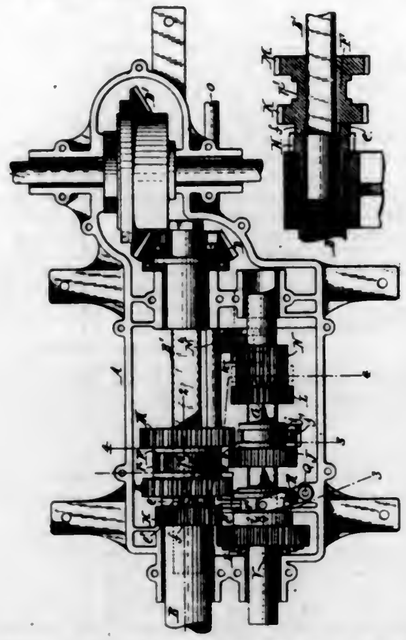
5. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, a radiating-circuit subjected to the excessive rise of potential across the terminals of said winding, and means for supplying energy to the freely-oscillating circuit.

6. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, a radiating-circuit connected to the terminals of said winding, and means for supplying energy to the freely-oscillating circuit.

7. In a wireless signaling system, a freely-oscillating circuit, an inductance-winding included in said circuit, a radiating-circuit connected to the terminals of said winding, means for supplying energy to said freely-oscillating circuit, and means for controlling the energy-supply.



754,905. VARIABLE-SPEED GEARING. Albert B. Shultz, Herman J. Ham, and Carl Thorden, Buffalo, N. Y., assignors to E. R. Thomas Motor Company, Buffalo, N. Y. Filed Oct. 28, 1903. Serial No. 178,870. (No model.)



*Claim.*—1. A variable-speed gearing comprising a driving-shaft, a pinion on the driving-shaft, a driven shaft, a clutch for connecting or disconnecting the driving and driven shafts, an axially-movable counter-shaft, a gear-wheel secured to said counter-shaft and movable into and out of mesh with the pinion on the driving-shaft, and gearing for operatively connecting the counter and driven shafts, substantially as set forth.

2. A variable-speed gearing comprising a driving-shaft, a pinion on the driving-shaft, a driven shaft, a clutch for connecting or disconnecting the driving and driven shafts, an axially-movable counter-shaft, a gear-wheel secured to said counter-shaft and movable into and out of mesh with the pinion on the driving-shaft, a pinion turning with the counter-shaft but held against axial movement therewith, and a gear-wheel turning with the driven shaft and movable axially thereon into and out of mesh with the pinion on the counter-shaft, substantially as set forth.

3. A variable-speed gearing comprising a driving-shaft, a pinion on the driving-shaft, a driven shaft, a clutch for connecting or disconnecting the driving and driven shafts, an axially-movable counter-shaft, a gear-wheel secured to said counter-shaft and movable into and out of mesh with the pinion on the driving-shaft, a pinion having a flat-sided bore which receives a correspondingly-shaped part of the counter-shaft for permitting the shaft to slide through the pinion but to compel these parts to turn together, a stationary fork which engages the annular groove in the hub of said counter-shaft pinion for holding the latter against axial movement with the counter-shaft, and a gear-wheel turning with the driven shaft and movable axially thereon into and out of mesh with the pinion on the counter-shaft, substantially as set forth.

4. A variable-speed gearing comprising a driving-shaft, a pinion on the driving-shaft, a driven shaft, a clutch for connecting or disconnecting the driving and driven shafts, an axially-movable counter-shaft, a gear-wheel secured to said counter-shaft and movable into and out of mesh with the pinion on the driving-shaft, a pinion secured to the counter-shaft, and a gear-wheel turning with the driven shaft and movable axially thereon into and out of mesh with the pinion on the counter-shaft, substantially as set forth.

5. A variable-speed gearing comprising a driving-shaft, a pinion on the driving-shaft, a driven shaft, a clutch for connecting or disconnecting the driving and driven shafts, an axially-movable counter-shaft, a gear-wheel secured to said counter-shaft and movable into and out of mesh with the pinion on the driving-shaft, an intermediate reversing-pinion, a stationary pivot for the reversing-pinion, a main reversing-pinion, secured to the counter-shaft so as to move axially therewith and coöperating with said intermediate reversing-pinion, and a gear-wheel turning with the driven shaft and movable axially thereon into or out of mesh with said intermediate reversing-pinion, substantially as set forth.

6. A variable-speed gearing comprising a driving-shaft, a primary pinion on the driving-shaft, a driven shaft, a clutch for connecting or disconnecting the driving and driven shafts, an axially-movable counter-shaft, a primary gear-wheel secured to the counter-shaft and movable into and out of mesh with the primary pinion on the driving-shaft, a secondary pinion turning with the counter-shaft but held against axial movement therewith, a secondary gear-wheel turning with the driven shaft but movable axially thereon into and out of mesh with the secondary pinion, a tertiary pinion and a main reversing-pinion secured to said counter-shaft, an intermediate reversing-pinion, a stationary pivot for the reversing-pinion and meshing with the main reversing-pinion, and a tertiary gear-wheel turning with the driven shaft but movable axially thereon into mesh with either the tertiary pinion or the intermediate reversing-pinion, substantially as set forth.

7. A variable-speed gearing comprising a driving-shaft, a driven shaft, a clutch for connecting and disconnecting the driving and driven shafts, a pinion arranged on the driving-shaft, a gear-wheel movable axially into and out of mesh with said pinion, a rock-shaft, a fork connected with said rock-shaft and engaging with an annular groove in the hub of said gear-wheel, a rock-arm also connected with said rock-shaft, a tappet which moves in unison with said clutch and engages said rock-arm for shifting said gear-wheel, and gearing operatively connecting said gear-wheel and driven shaft, substantially as set forth.

8. A variable-speed gearing comprising a driving-shaft, a driven shaft, a counter-shaft, a sleeve sliding on the driven shaft and provided with clutch-teeth adapted to be engaged with or disengaged from clutch-teeth of the driving-shaft, a pinion mounted on the driving-shaft, a shipper-rod, a fork connected with the shipper-rod and engaging with an annular groove in said sleeve, a gear-wheel mounted on the counter-shaft and movable axially into and out of engagement with said pinion, a rock-shaft, a fork secured to said rock-shaft and engaging with an annular groove in the hub of said gear-wheel, a rock-arm also secured to said rock-shaft, and a tappet secured to said shipper-rod and adapted to engage said rock-arm, substantially as set forth.

9. A variable-speed gearing comprising a driving-shaft, a driven shaft, a counter-shaft, a sleeve sliding on the driven shaft and provided with clutch-teeth adapted to be engaged with or disengaged from clutch-teeth on the driving-shaft, a pinion mounted on the driving-shaft, a shipper-rod, a fork connected with the shipper-rod and engaging with an annular groove in said sleeve, a gear-wheel mounted on the counter-shaft and movable axially into and out of engagement with said pinion, a rock-shaft, a fork secured to said rock-shaft and engaging with an annular groove in the hub of said gear-wheel, a rock-arm also secured to said rock-shaft, a tappet secured to said shipper-rod and adapted to engage said rock-arm, and a spring interposed between said gear-wheel and an adjacent stationary part, substantially as set forth.

10. A variable-speed gearing comprising a driving-shaft, a driven shaft, a counter-shaft, a sleeve sliding on the driven shaft and provided with clutch-teeth adapted to be engaged with or disengaged from clutch-teeth on the driving-shaft, a pinion mounted on the driving-shaft, a shipper-rod, a fork connected with the shipper-rod and engaging with an annular groove in said sleeve, a gear-wheel mounted on the counter-shaft and movable axially into and out of engagement with said pinion, a rock-shaft, a fork secured to said rock-shaft and engaging with an annular groove in the hub of said gear-wheel, a rock-arm also secured to said rock-shaft, a tappet secured to said shipper-rod and adapted to engage said rock-arm, a spring-pressed follower engaging said rock-arm, and a spring interposed between said gear-wheel and an adjacent stationary part, substantially as set forth.

11. A variable-speed gearing comprising a driving-shaft, a driven shaft, a counter-shaft, a sleeve sliding on the driven shaft and provided with clutch-teeth adapted to be engaged with or disengaged

from clutch-teeth on the driving-shaft, a pinion mounted on the driving-shaft, a shipper-rod, a fork connected with the shipper-rod and engaging with an annular groove in said sleeve, a gear-wheel mounted on the counter-shaft and movable axially into and out of engagement with said pinion, a rock-shaft, a fork secured to said rock-shaft and engaging with an annular groove in the hub of said gear-wheel, a rock-arm also secured to said rock-shaft and provided with a gear-segment, and a tappet arranged on the shipper-rod and having gear-teeth adapted to engage the teeth of said segment, substantially as set forth.

12. A variable-speed gearing comprising a driving-shaft, a driven shaft, a counter-shaft, a sleeve sliding on the driven shaft and provided with clutch-teeth adapted to be engaged with or disengaged from clutch-teeth on the driving-shaft, a pinion mounted on the driving-shaft, a shipper-rod, a fork connected with the shipper-rod and engaging with an annular groove in said sleeve, a gear-wheel mounted on the counter-shaft and movable axially into and out of engagement with said pinion, a rock-shaft, a fork secured to said rock-shaft and engaging with an annular groove in the hub of said gear-wheel, a rock-arm also secured to said rock-shaft, a gear-segment arranged on said rock-arm and having its foremost tooth longer than its other teeth, and a tappet secured to the shipper-rod and having gear-teeth adapted to mesh with the teeth of said gear-segment, substantially as set forth.

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754,906. **DIVIDERS.** TERRAY R. SKINNER, Dubois, Pa. Filed Mar. 12, 1903. Renewed Feb. 8, 1904. Serial No. 192,714. (No model.)



*Claim.*—1. An instrument of the class described, comprising a leg, a nut pivoted thereto, and a leg having a screw member engaging the nut and bearing against the first-mentioned leg, to move the legs angularly when the nut is revolved on the screw member, substantially as described.

2. An instrument of the class described, comprising a leg, a nut pivoted thereto, and a leg having a screw member engaging the nut and bearing against the first-mentioned leg, to move the legs angularly toward each other when the nut is revolved on the screw member, in one direction, and a spring coacting with the nut and screw member, to spread the legs apart when the nut is revolved in the reverse direction, substantially as described.

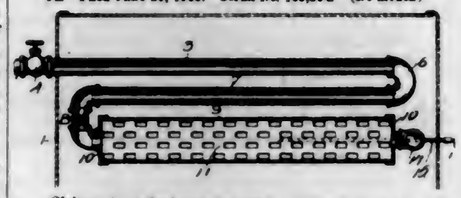
3. An instrument of the class described, comprising a leg, a nut pivoted thereto, and a leg having a screw member engaging the nut and bearing against the first-mentioned leg, substantially as described.

4. An instrument of the class described, comprising a leg, a nut pivoted thereto, a leg having a screw member engaging the nut and bearing against the first-mentioned leg, and a spring to spread the legs apart, substantially as described.

5. An instrument of the class described, comprising a leg, a nut pivoted thereto, a spring bearing between said nut and leg, and a leg having a screw member engaging the nut and bearing against the first-mentioned leg, substantially as described.

6. An instrument of the class described, comprising a leg, a nut pivoted thereto, a leg having a screw member engaging the nut and bearing against the first-mentioned leg, and a lock-nut 8 on said screw member, substantially as described.

754,907. **FEED-WATER PURIFIER.** JAMES M. SMITH, Sharon Pa. Filed June 29, 1903. Serial No. 163,594. (No model.)



*Claim.*—1. A feed-water purifier, comprising a casing adapted to be horizontally disposed, a longitudinal horizontal perforated diaphragm separating the interior of said casing to form superposed separating and sediment chambers, said chambers being in communication only through the perforations of said diaphragm, water inlet and discharge connections at the ends of the upper or separating chamber, and a sediment-discharge at the end of the sediment-chamber below the said water-discharge, substantially as described.

2. A feed-water purifier, comprising a casing adapted to be horizontally disposed, a longitudinal horizontal perforated diaphragm separating the interior of said casing to form superposed separating and sediment chambers, said chambers being in communication only through the perforations of said diaphragm, water inlet and discharge connections at the ends of the upper or separating chamber, and a sediment-discharge at the end of the sediment-chamber below the water-discharge connection and extending some distance into said chamber, substantially as described.

3. A feed-water purifier comprising a casing adapted to be horizontally disposed, a longitudinal horizontal perforated diaphragm separating the interior of said casing to form superposed separating and sediment chambers, said chambers being in communication only through the perforations of said diaphragm, caps closing the ends of said chamber, water inlet and discharge connections upon said caps at the ends of the upper or separating chamber, and a valved blow-off pipe entering the outlet end of the sediment-chamber through the cap carrying the water-discharge connection, substantially as described.

4. In a feed-water heater and purifier, the combination of a water-supply pipe, reversely-extending conducting-pipes connected thereto, and pipes extending back and forth in parallel relation, and a separator disposed parallel with the pipes and comprising a casing, a longitudinal horizontal perforated diaphragm separating the interior of said casing to form superposed separating and sediment chambers, said chambers being in communication only through the perforations of said diaphragm, a water-inlet connection between said conducting-pipes and one end of the separating-chamber, a water-discharge connection at the opposite end of said chamber, and a sediment-discharge at the end of the sediment-chamber below the said water-discharge, substantially as described.

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754,908. **FLUID-PRESSURE BRAKE.** GEORGE M. SPENCER and CHRISTOPHER J. GRELLNER, St. Louis, Mo. Filed Apr. 8, 1903. Serial No. 151,698. (No model.)

*Claim.*—1. In a fluid-pressure brake system, the combination of a pressure-chamber, a vacuum-chamber, an operative piston and cylinder, means to connect opposite ends of the cylinder with each other, means to connect the vacuum-chamber with one end of the cylinder, and suitable means or appliances to withdraw the fluid from the vacuum-chamber and compress it into the pressure-chamber.

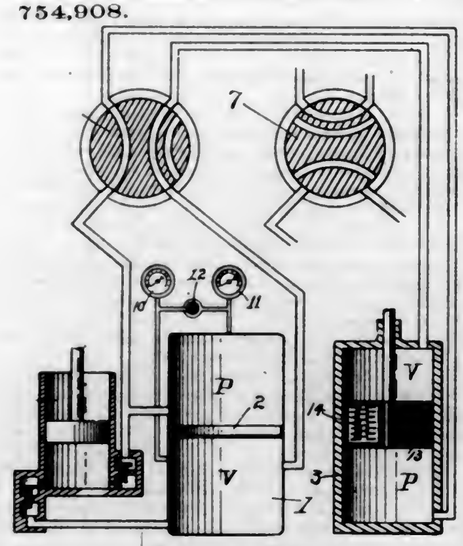
2. In a fluid-pressure brake system, an operative brake-cylinder controlled by a valve or valves communicating with a vacuum-chamber at one end and a pressure-chamber at the opposite end with means to connect the two ends of the brake-cylinder; means to connect the vacuum and pressure chamber independently with each other, and means to withdraw the fluid from the vacuum-chamber and force it into the pressure-chamber.

3. In a fluid-pressure brake system, an independent vacuum and pressure chamber with means to control the fluid, between opposite ends of a brake-cylinder, between the vacuum and pressure chambers and between the vacuum-chamber and one end of the brake-cylinder simultaneously with the opening of the communication between the opposite end of the brake-cylinder and the pressure-chamber.

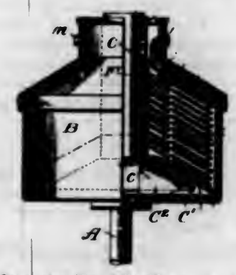
4. In the operating of fluid-pressure brakes, means to equalize opposite sides of a brake-piston during release and means to release the pressure from one side only, during application of brakes, either into the open air or into a vacuum-chamber.



754,908.



754,909. **CENTRIFUGAL LIQUID-SEPARATOR.** THOMAS H. SPRIGGS, Washington, D. C. Filed June 1, 1903. Serial No. 159,658. (No model.)



*Claim.*—1. In a centrifugal liquid-separator, the combination with a bowl having a cylindrical bottom portion, a conical cap screwed thereon, the said cap being provided with a cylindrical neck with an opening in the top thereof for the cream, of a tube for the whole milk mounted in the center of said bowl and terminating in an enlarged conical portion, with vanes projecting from said conical portion and spacing the same above the bottom of the bowl, a conical deflector mounted in said bowl above the conical portion of said tube but spaced therefrom, a double series of downwardly-inclined concentric deflecting-disks mounted in said bowl above said conical deflector, the inner series of disks being provided with vertical openings near the central tube, and a plurality of bent pipes leading from the interior of said bowl near the outer periphery of the outer disks and opening outward through the neck of said bowl, substantially as described.

2. In a centrifugal liquid-separator, the combination with a bowl having a cylindrical bottom portion, a conical cap screwed thereon, the said cap being provided with a cylindrical neck with an opening in the top thereof for the cream, of a tube for the whole milk mounted in the center of said bowl and terminating in an enlarged conical portion, vanes spaced above the bottom of the bowl, a conical deflector mounted in said bowl above the conical portion of said tube but spaced therefrom, a series of downwardly-inclined deflecting-disks mounted in said bowl above said conical deflector and provided with vertical openings near the central tube, and a plurality of bent pipes leading from the interior of said bowl near the outer periphery of said disks and opening outward through the neck of said bowl, substantially as described.

3. In a centrifugal liquid-separator, the combination with a bowl having a cylindrical bottom portion, a conical cap screwed thereon, the said cap being provided with a cylindrical neck with

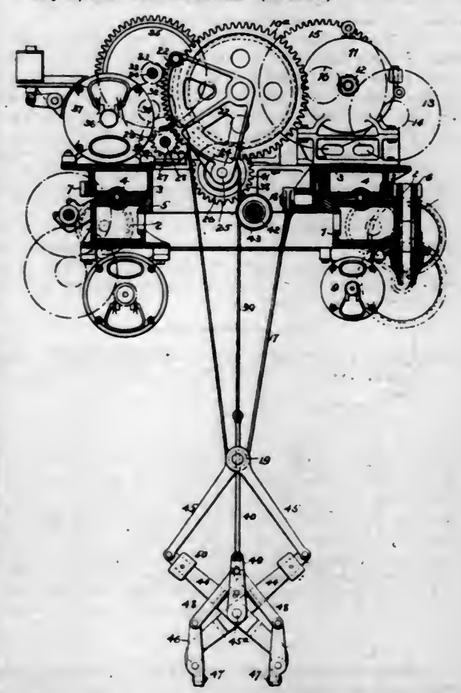
milk mounted in the center of said bowl and terminating in an enlarged conical portion, with vanes projecting from said conical portion and spacing the same above the bottom of the bowl, a conical deflector mounted in said bowl above the conical portion of said tube but spaced therefrom, a sleeve mounted on said tube, a series of downwardly-inclined deflecting-disks secured to said sleeve and provided with vertical openings near the central tube, a second series of deflecting-disks concentric with but exterior to the first series, and a plurality of bent pipes leading from the interior of said bowl near the outer periphery of said disks and opening outward through the neck of said bowl, substantially as described.

4. In a centrifugal liquid-separator, the combination with a bowl having a cylindrical bottom portion, a conical cap screwed thereon, the said cap being provided with a cylindrical neck with openings in the top thereof for the cream, of a feed-tube for the whole milk mounted in the center of said bowl and terminating in an enlarged conical portion, vanes projecting from said conical portion and spacing the same above the bottom of the bowl, a conical deflector mounted in said bowl above the conical portion of said tube but spaced therefrom, a series of downwardly-inclined deflecting-disks mounted in said bowl above said conical deflector and provided with vertical openings near the central tube, and a plurality of bent pipes leading from the interior of said bowl near the outer periphery of said disks and opening outward through the neck of said cap, substantially as described.

5. In a centrifugal liquid-separator, the combination with a bowl having a cylindrical bottom portion, a conical cap screwed thereon, the said cap being provided with a cylindrical neck with an opening in the top thereof for the cream, of a tube for the whole milk mounted in the center of said bowl and terminating in an enlarged conical portion, with vanes projecting from said conical portion and spacing the same above the bottom of the bowl, a sleeve mounted on said tube, a series of downwardly-inclined deflecting-disks secured to said sleeve and provided with vertical openings near the central tube, a second series of deflecting-disks concentric with but exterior to the first series, and a plurality of bent pipes leading from the interior of said bowl near the outer periphery of said disks and opening outward through the neck of said bowl, substantially as described.

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754,910. **INGOT-CRANE.** CLARENCE L. TAYLOR, Alliance, Ohio, assignor to the Morgan Engineering Company, Alliance, Ohio. Filed May 27, 1903. Serial No. 159,044. (No model.)



*Claim.*—1. In an overhead traveling crane, the combination with a main drum and means for rotating same, of an auxiliary drum geared to the main drum so as to be actuated thereby and means for changing the position of the auxiliary drum with relation to the main drum.

2. In an overhead traveling crane, the combination with a main drum, of an auxiliary drum and means for changing the position of the auxiliary drum with relation to the main drum.

3. In an overhead traveling crane, the combination with a main drum, of an auxiliary drum, gearing connecting the two drums whereby they are caused to move in unison, and means for changing the position of the auxiliary drum with relation to the main drum.

4. In an overhead traveling crane, the combination with a trolley and a turn-table thereon, of two drums carried by said turn-table and means for changing the relative positions of the two drums.

5. In an overhead traveling crane, the combination with a trolley, of a main drum, means for rotating the latter, an auxiliary drum located in a plane below the main drum and gearing for rotating the auxiliary drum.

6. In an overhead traveling crane, the combination with a trolley, a main drum thereon and means for rotating said drum, of movable bearings normally located in a plane below the main drum, an auxiliary drum in said bearings, means for rotating the auxiliary drum and means for moving the bearings.

7. In an overhead traveling crane, the combination with a trolley and a turn-table thereon, of a main drum on said turn-table, an auxiliary drum geared up to said main drum so as to rotate therewith, and means for moving the auxiliary drum in the arc of a circle concentric with the axis of the main drum.

8. The combination with a main drum, of an auxiliary drum, gearing connecting the main and auxiliary drums, a guiding sheave or roller below the auxiliary drum and means for swinging the auxiliary drum in the arc of a circle partly around the main drum.

9. The combination with a main drum, and a motor and gearing for same, of an auxiliary drum geared up to the main drum so as to be rotated thereby, a guiding sheave or roller below the auxiliary drum for maintaining the cable of the auxiliary drum always in the line of the vertical axis of the main drum, and means for swinging the auxiliary drum in a direction toward and over the guiding-sheave.

10. The combination with a main drum and means for rotating same, of frames mounted on the axis of the main drum, an auxiliary drum carried by said frames, toothed wheels connecting the two drums, and means for swinging the frames.

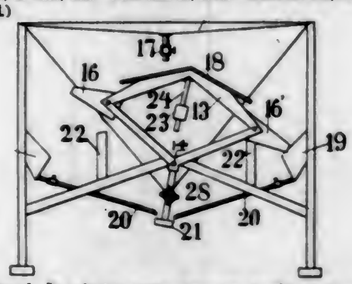
11. The combination with a main drum and means for rotating same, of frames mounted on the axis of the main drum, an auxiliary drum carried by said frame, gearing connecting the two drums, a guiding sheave or roller below the auxiliary drum, and means connected with the frames for swinging the auxiliary drum toward and away from the guiding sheave or roller.

12. The combination with a main drum and means for rotating same, of toothed segments mounted on the axis of the main drum, means for rocking said segments, an auxiliary drum carried by said segments and gearing connecting the two drums.

13. The combination with a main drum and means for rotating same, of toothed segments mounted on the axis of the main drum, means for rocking said segments, an auxiliary drum carried by the segments, gearing connecting the two drums and a guiding sheave or roller below the auxiliary drum.

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**754,911. AUTOMATIC ORE AND SLIME SEPARATOR.** CHAS. ALLEN, El Paso, Tex. Filed Jan. 27, 1903. Serial No. 140,736. (No model.)




*Claim.*—1. In a device of the character described, the combination with an intermittently-oscillating tank or hopper hinged at one end and counterbalanced connections with the opposite end said tank or hopper having an inclined bottom and a discharge-passage in said bottom, of a valve in said passage connected with the counterbalanced connections and operable in unison with the oscillations of the tank.

2. In a device of the character described, the combination of a tank hinged at one end and counterbalanced connections whereby the tank is resiliently supported at the opposite end, said tank having a sand-discharge passage in its bottom and a valve in conjunction with said passage automatically operable by the counterbalanced connections during the movement of the tank about its hinges.

3. In a device of the character described, the combination with an intermittently-oscillating tank having a pulp-feed inlet, said tank hinged at one end and counterbalanced connections supporting the opposite end, a sand-outlet in the bottom of the tank and connected with and controlled by the counterbalanced connections, said tank having a surface-water outlet, of means for preventing surface currents, and means for drawing off the floating slimes at intervals corresponding with the oscillations of said tank.

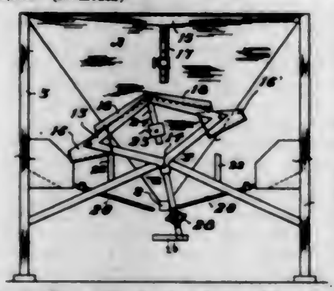
4. In a device of the character described, the combination of a tank hinged at its upper edge at one end, and counterbalanced connections whereby it is resiliently supported at the other, said tank having a pulp-feed inlet and separate sand and water outlets, means connecting the sand-outlet with the counterbalanced connections whereby the latter automatically controls said outlet, and slotted baffles substantially as described disposed adjacent to the feed-inlet.

5. In a device of the character described, the combination of a tank hinged at its upper edge at one end and having its opposite end resiliently supported on counterbalanced levers, a discharge-pipe in the bottom of the tank, a valve in said pipe, and connections between said valve and levers to operate the valve in unison with the oscillations of the tank.

6. In a device of the character described, the combination of a tank hinged at its upper edge at one end and having downwardly-converging sides and bottom and a discharge-outlet in said bottom, a valve in said outlet, counterbalanced levers of the first class resiliently supporting the tank opposite the hinged end thereof, connections between said levers and valve, a pulp-feed trough adjacent to the movable end of the tank, and means upon the tank by which the floating slimes may be collected.

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**754,912. AUTOMATIC ORE AND PULP SAMPLER.** CHARLES ALLEN, El Paso, Tex. Original application filed Jan. 27, 1903, Serial No. 140,736. Divided and this application filed Sept. 2, 1903. Serial No. 171,632. (No model.)




*Claim.*—1. The combination in a device of the character described, of a tilting tank or hopper having a sand-outlet in its bottom and a separate water-outlet, a valve in said first-named outlet controlled automatically by the tiltings of said hopper, a spout movable across the path of said sand-outlet and operatable intermittently by the action of the discharged water from the tank.

2. In a device of the character described, the combination with a settling tank or hopper having a sand-outlet, and a separate water-outlet, of an oscillating frame carrying buckets and operatable by the discharge-water from the tank, and a sample-receiver and means whereby it is moved across the path of the sand-outlet.

3. In a device of the character described, the combination with a settling tank or hopper having separate sand and water outlets, of an oscillating frame, tilting buckets mounted on said frame adapted to be filled alternately on successive oscillations of the frame, and a sample-receiver and means connecting it with the oscillating frame whereby it is movable across the path of the sand-outlet, into which receiver the contents of said buckets are delivered.

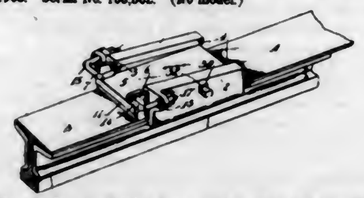
4. In a device of the character described, the combination with a settling tank or hopper having separate sand and water outlets, of an oscillating frame, a sample-receiver and connections between the same and the oscillating frame whereby the receiver is movable across the path of said sand-outlet in unison with the oscillations of said frame, tilting buckets carried by the latter and adapted alternately to discharge their contents into said receiver.

5. In a device of the character described, the combination with a sand-discharge passage, of a sample-receiver intermittently movable across the path of said passage, means for effecting such intermittent movement, and means for automatically delivering water to the receiver coördinately with the actuation of the receiver.



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**754,913. RAILWAY-RAIL JOINT.** AMOS BARNES, Detroit, Mich., assignor of two-thirds to William Barnes, Pontiac, Mich. Filed June 29, 1903. Serial No. 163,562. (No model.)



*Claim.*—1. In a rail-joint support, in combination with fish-plates, each of which is provided with a hanger provided with an inturned inclined grooved flange, a wedge-plate provided with flanges adapted to engage in the grooves of the first-mentioned flanges, substantially as described.

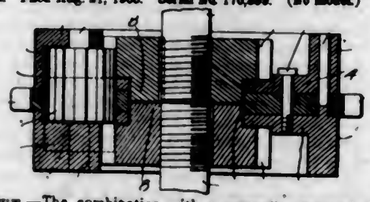
2. In a rail-joint support, in combination with fish-plates, each of which is provided with a hanger having an inturned grooved flange with the bottom of the groove inclined to the body of the fish-plate, a wedge-plate provided with flanges, the face of the flanges being inclined to the body of the wedge-plate, and means for holding the wedge-plate in position in the grooved flange of the fish-plates, substantially as described.

3. In a rail-joint support, in combination with fish-plates provided with an inclined engaging part, a wedging tie-plate engaging the fish-plates underneath the rail, and means for holding the wedge in place, substantially as described.

4. In a rail-joint support, in combination with fish-plates provided with inclined engaging parts, a wedging tie-plate engaging the fish-plates underneath the rail and a cushion interposed between the wedge and the rails, substantially as described.

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**754,914. DIFFERENTIAL GEARING.** HARRY R. BAYLEY, Indianapolis, Ind., assignor of one-half to William S. Holcombe, Bedford, Ind. Filed Aug. 21, 1903. Serial No. 170,239. (No model.)



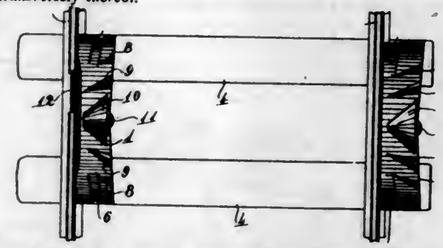

*Claim.*—The combination with a centrally-disposed driving member, of a pair of flange members removably attached to and lying respectively upon opposite sides of the driving member and each having a transverse socket, a plurality of integral pins carried by one of the members and extending through registering openings provided in the driving member and other flange member, a pair of pinions seated one in each of the sockets and having overlapped intermeshing portions, a pair of gears in mesh each with one of the pinions, a pair of shafts each carrying and driven by one of the gears and connecting-bolts extending through the driving and flange members.

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**754,915. CAR-REPLACER.** EDWARD BEST, Superior, Wis. Filed Sept. 8, 1903. Serial No. 172,348. (No model.)

*Claim.*—1. In car-replacers, the combination of a body portion having longitudinally-inclined ends and rotary guiding means mounted in said body portion and extending above its upper surface, substantially as described.

2. In car-replacers the combination of a body portion having longitudinally-directed downwardly-inclined ends, and provided with transversely-directed inclined ribs upon its upper surface, and a roller mounted in said body portion and adapted to form an inclined plane projecting above the upper surface of said body portion and directed transversely thereof.




3. In car-replacers, the combination of a body portion having longitudinally-directed downwardly-inclined ends, provided with diagonally-directed grooves formed therein and provided with transversely-directed ribs upon its upper surface adapted to form inclined planes sloping transversely of said body portion, the upper edge of said body portion being beveled for a portion of its length on the side nearest the low ends of said ribs, substantially as described.

4. In car-replacers, the combination of a body portion having each end shaped as an inclined plane extending upwardly from the extreme end to the plane of the central portion of said replacer, and provided with a roller journaled in said body portion and projecting above the same with its axis extending transversely thereof, said roller having its upper face inclined transversely of said replacer at an angle to the direction of the rotation of said roller, substantially as described.

5. In a car-replacer, the combination of a body portion provided with inclined approaches at each end having diagonally-directed grooves formed in such ends, stationary means formed upon the upper surface of said body portion adapted to jolt and guide over toward one side of said replacer any transversely-movable wheel mounting thereon, a roller journaled in said body portion and projecting above the same and adapted to guide over to said side of said body portion at an angle to the direction of its rotation any transversely-movable wheel revolving against said roller, substantially as described.

6. In a car-replacer, the combination of a base having a central portion and longitudinally downwardly inclined ends, and provided with grooves formed in the upper surfaces of such inclined ends, respectively, and directed diagonally from the extreme ends toward one side of said base, a cone-shaped roller rotatably mounted in the central portion of said base with its apex directed toward said side thereof, said roller projecting above the upper surface of said base, inclined ribs positioned on the upper surface of said base at opposite sides of said roller with their lower ends directed toward said side of said base, and means for securing said base in position, substantially as described.

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**754,916. HAT-FASTENER.** FRANK S. BONDFIELD, San Francisco, Cal. Filed June 11, 1902. Serial No. 111,133. (No model.)




*Claim.*—As an improved article of manufacture, a hat-fastening consisting of a piece of spring-wire bent to form a head and diverging pin members the outer extremities of which are curved outwardly in opposite directions; and a staple formed from a single piece of sheet metal and made with a wide flat central portion provided with struck-up portions forming guides for the pin members, said staple having a projecting tongue at each end tapering to a point and said tongues capable of being forced through the hat and then bent at right angles to secure the staple and its attached pin members independent of other fastening means.

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**754,917. CURTAIN-POLE.** DANIEL SHEEN, Hazleton, Pa., assignor of one-half to A. F. Wendel, Hazleton, Pa. Filed Sept. 5, 1903. Serial No. 172,115. (No model.)

*Claim.*—1. A curtain-fixture of the character described, comprising a supporting-pole, a supplemental member for clamping the curtain onto the said pole, said supplemental member being hinged to the supporting-pole to drop down onto the upper surface thereof whereby to permit the curtain being pulled over the upper and lower faces of the said supplemental member and to hang pendent from the outer or free end thereof and whereby a pull tension on that part of the curtain that hangs pendent from the supplemental member holds the said supplemental member clamped against the upper face of the supporting-pole and clamps a portion of the curtain between it and the said pole, for the purposes specified.



2. A curtain-fixture of the character stated, comprising a main pole member, supplemental curtain-supporting members hingedly and removably mounted at one side of the main pole member, and adapted to lie in a horizontal plane, and on the top of the main pole member for the purposes specified.

3. In a curtain-fixture, a pole comprising an elongated rod having a flat horizontally-disposed upper face, supplemental flat curtain-carrying bars carried by said rod to lie in a plane parallel to the flat face of the rod with their outer or free edge projected from the front side of the said rod whereby to clamp the curtain against the said flat face and pendently supporting it, for the purposes specified.

4. In a curtain-pole, an elongated member having a horizontally-disposed flat face, curtain-receiving bars, means carried by the elongated member and the curtain-receiving bars for hingedly and removably joining said bars to said elongated member, and said bars being adapted to lie in a horizontal plane and to project beyond the front side of the elongated member.

5. In a curtain-pole, an elongated member having a horizontally-disposed flat face, curtain-receiving bars, means carried by the elongated member and the curtain-receiving bars for hingedly and removably joining said bars to said elongated member, and said bars being adapted to lie in a horizontal plane, said means including lugs or pins carried by the elongated member and eyes carried by the curtain-receiving bars, for the purposes specified.

6. In a curtain-fixture, comprising an elongated rod having an upper horizontally-disposed flat face running lengthwise thereof, radially-disposed suitably-spaced pins secured to the said rod at the rear thereof, a supplemental curtain-receiving bar having eyes for cooperating with said pins mounted on said rod to lie in a plane parallel to the flat face of the rod, said bar being adapted to loosely carry a curtain, for the purposes specified.

7. A curtain-fixture, comprising an elongated rod having an upper horizontally-disposed flat face running lengthwise thereof, radially-disposed suitably-spaced pins secured to the said rod at the rear thereof, a supplemental curtain-receiving bar having eyes for cooperating with said pins mounted on said rod to lie in a plane parallel to the flat face of the rod, said bar being adapted to carry a curtain, and to hold the curtain between the bars and the flat face of the rod.

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**754,918. MEGAPHONE ATTACHMENT FOR PASSENGER-CARS. WILLIAM H. BRUST, Pittsburg, Pa., assignor of one-third to Daniel J. Cable, Pittsburg, Pa. Filed June 10, 1902. Serial No. 160,902. (No model.)**



*Claim.*—1. A megaphone attachment for cars, comprising a pair of oppositely-disposed tubes, one of which has its entrant end projected beyond the rear end, and the other has its entrant end projected beyond the front end of the car, a sound-distributer joined with the adjacent ends of the tube, a funnel joined to the said sound-distributer, means mounted within said funnel and operable from either end of the car for closing the opening communicating between the sound-distributer and the funnel for the purposes specified.

2. A megaphone attachment for cars, comprising a pair of oppositely-disposed tubes, one of which has its entrant end projected beyond the rear end, and the other has its entrant end projected beyond the front end of the car, a sound-distributer joined with the adjacent ends of the tubes, a funnel joined to the said distributer, means mounted within said funnel and operable from either end of the car for closing the opening communicating between the sound-distributer and the funnel, said means including a flap-valve mounted to swing within said funnel for the purposes specified.

3. The combination in a megaphone attachment as described, with the tubes A and B and the sound-distributer C detachably connected with the inner ends of the said tubes A and B, said distributer including a pendent portion $c^2$, of a valve device mounted in the said portion $c^2$ automatically adjustable to close said pendent portion $c^2$ whereby to provide an uninterrupted sound-tube between the front and rear platforms, a second valve located in the said distributer normally held to its open position, and means operable from either end of the car for shifting the said second valve to close off either of the tubes A and B, and a separate means operable from either end of the car for opening the valve devices within the portion $c^2$ of the distributer, all being arranged substantially as shown and for the purposes described.

4. The combination in a megaphone as described, with the tubes A and B having mouthpieces adapted to project beyond the car ends; of a sound-distributer C detachably connected with the inner ends of the tubes A and B, said distributer including an open portion $c^2$ of a valve device mounted in said portion $c^2$, to cut off either of the tubes A and B, said valve having a crank mounted outside of the distributer C, cord connections between said crank and either end of the car, whereby said valve can be operated from either end of the car, and a funnel $c^3$ connected to the open portion $c^2$, a flap-valve mounted within said funnel for closing said open portion $c^2$ to provide an uninterrupted sound-tube between the front and rear platforms, said last-named valve being spring-held to its closed position; and said last-named valve having a crank mounted on the outside of the funnel, cord connections between either end of the car and said crank, whereby said funnel-valve may be operated from either end of the car for the purposes specified.

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**754,919. CLASP. FERDINAND CHARBOT and LOUIS GIRARDOT, Paris, France. Filed Mar. 22, 1902. Renewed Jan. 12, 1904. Serial No. 189,796. (No model.)**



*Claim.*—1. The combination of one piece of rigid material and a spring thereto attached, of another piece of rigid material and a lever thereto attached and all arranged so that when the said lever and the said spring are engaged, the resilience of the said spring may be made to draw the said two pieces into firm contact.

2. The combination of one piece of rigid material and a spring having a loop, and pivoted thereby to said piece, of another piece of rigid material and a lever pivoted thereto, and all the parts so arranged that when the said lever engages the said spring it may be made, by its resilience, to draw the said pieces into firm contact.

3. The combination with one piece of rigid material, and a spring having a loop at each end thereof, and pivoted by one of said loops, to said piece of another piece of rigid material, and a lever pivoted thereto, and all so arranged that when the said lever engages the free loop of said spring, the said spring may be made, by its resilience, to draw the said pieces into firm contact.

4. The combination with one piece of rigid material, and a helical spring having a loop at each end thereof, and pivoted by one of said loops to said piece, of another piece of rigid material, a metallic plate, having ears, fastened thereon, a lever pivoted in said ears, and all arranged so that when the said lever engages the loop on the free end of the said spring, the spring may be made by its resilience to draw the said pieces into firm contact.

5. The combination with one piece of rigid material, a screw in said piece, and a helical spring, having a loop on each end and pivotally fastened to said screw by one of said loops, of another piece of rigid material, a metallic plate, having ears, fastened thereon, and a lever having two parts, one a longer bent part, and the other a shorter bill part, pivoted in said ears, and all arranged so that when said lever engages the loop on the free end of said spring, it will by being turned in one direction cause the said spring by its resilience to draw the said pieces into firm contact, and by being turned in the opposite direction to release the parts so that they may be easily separated.



**754,920. SIGHT FOR SHOTGUNS. PAUL O. ETTERICH, New York, N. Y., assignor to Marie Etterich, New York, N. Y. Filed July 11, 1903. Serial No. 165,099. (No model.)**

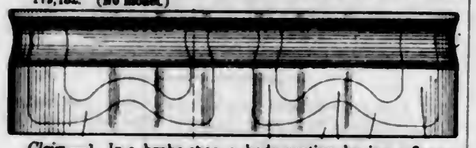


*Claim.*—1. In a double-barrel shotgun, the combination with the barrels and the connected upper rib, of a narrow upwardly-projecting rib-sight immovably affixed to the upper rib and extending substantially throughout the length of the barrels, substantially as and for the purpose specified.

2. In a shotgun, a narrow upwardly-projecting rib-sight immovably affixed and extending substantially the length of the barrel or barrels, substantially as and for the purpose specified.

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**754,921. BRAKE-SHOE AND METHOD OF PRODUCING SAME. CHARLES G. ETTE, St. Louis, Mo. Filed Oct. 30, 1903. Serial No. 179,132. (No model.)**



*Claim.*—1. In a brake-shoe, a body portion having a flange-groove, and an insert embedded in said body portion, said insert having a body portion in the tread of said brake-shoe, and projections upon said body portion of said insert and extending into and embedded in the flange-groove portion of said body portion, said extensions having backwardly and inwardly inclined inner faces which embrace a substantially wedge-shaped filler portion of the body portion of said brake-shoe; substantially as described.

2. In a brake-shoe, a body portion having a flange-groove therein, and an insert embedded in said body portion, said insert comprising a connector embedded in the tread of said brake-shoe, transverse end pieces connected by said connector and also in said tread, and backwardly and outwardly extending projections upon said end pieces and embedded in the flange-groove portion of said body portion, said transverse end pieces and their extensions having their inner faces inclining backwardly and inwardly; substantially as described.

3. The method of producing composite brake-shoes which consists in first producing an insert, coating said insert with a material which is a non-conductor of heat, and then casting the body portion of the shoe about the insert so coated, whereby chilling and shrinkage of said body portion about said insert is prevented; substantially as described.

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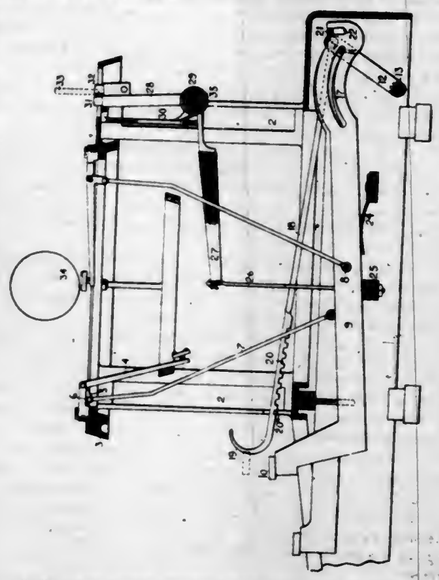
**754,922. TYPE-WRITING MACHINE. CARL GABRIELSON, Greenville, N. J., assignor to Jacob Feibel, New York, N. Y. Original application filed Aug. 16, 1900, Serial No. 27,102. Divided and this application filed Dec. 31, 1900. Serial No. 41,569. (No model.)**

*Claim.*—1. In a type-writing machine, the combination of a type, a key, means for automatically decreasing the leverage of the key upon the type during its printing stroke, and independent means for adjusting the purchase or leverage of the key upon the type, the construction and arrangement being such that the leverage may at will be temporarily changed by said adjusting means without altering the operation of said automatic leverage-decreasing means.

2. In a type-writing machine, the combination with a series of type-bars and a series of keys, of means for automatically decreasing the direct purchase or leverage upon said type-bars during the printing strokes of the keys, and independent means for effecting an adjustment of the leverage of the keys upon the type-bars, the construction and arrangement being such that the leverage may at will be temporarily changed by said adjusting means without interfering with the operation of said automatic leverage-decreasing means.

3. In a type-writing machine, the combination with a series of independently-movable types, of a series of keys, a series of levers operated by said keys, means between said levers and said types for automatically decreasing the purchase of said key-levers upon said types during the printing strokes of the keys, and independent means for effecting an adjustment of the leverage of said key-levers upon said type-bars, the construction and arrangement being such that the leverage may at will be temporarily changed by said adjusting means without interfering with the operation of said automatic leverage-decreasing means.

4. In a type-writing machine, the combination of a series of independently-movable types, a series of key-operated levers, means arranged between said levers and said types for automatically decreasing the purchase or leverage of said levers upon said types during their printing strokes, and means arranged at the fulcrums of said levers for effecting at will a fixed adjustment of the leverage of said key-levers upon types.



5. In a type-writing machine, the combination of a series of independently-movable types, a series of key-levers of the second order, connections between said key-levers and said types such that the purchase of said levers upon said types automatically decreases during their printing strokes, and means arranged at the rear ends of said levers for effecting at will a fixed adjustment of their leverage upon said types.

6. In a type-writing machine, the combination of a series of independently-pivoted type-bars having arms 5, a series of key-operated levers, links connecting the levers to said type-bar arms, said arms normally extending crosewise of said links, and extending substantially longitudinally of said links when the type-bars are in printing position, whereby the leverage of said levers upon said type-bars is automatically decreased during their printing strokes, and means for shifting the fulcrum-points of said levers.

7. In a type-writing machine, the combination of a set of type-operating levers, a transverse fulcrum-bar for said levers, and means for effecting a relative movement between said levers and said fulcrum-bar, in a direction longitudinally of said levers and so as to change the leverage of the latter on their connected types.

8. In a type-writing machine, the combination of a series of type-bars, a series of key-bearing levers, a series of links directly connecting said key-levers to said type-bars, a fulcrum-bar for said levers, and means for adjusting said bar relatively to the points of attachment of said links.

9. In a type-writing machine, the combination of a type, a key-operated lever connected thereto, a fulcrum-bar for said lever, and means for moving said fulcrum-bar toward or away from the load-point of the lever.

10. In a type-writing machine, the combination of a series of type-bars, a series of levers operatively connected thereto, a fulcrum-bar extending transversely of said levers, and means for moving said fulcrum-bar longitudinally of said levers and so as to change the leverage of the latter on their connected types.

11. In a type-writing machine, the combination of a type, a key-operated lever, a prolonged bearing formed or provided upon said lever, a fulcrum supported upon the frame of the machine and engaged by said bearing, and means for moving said fulcrum along said bearing.

12. In a type-writing machine, the combination with a series of types of a series of key-operated levers each having a prolonged bearing edge or surface, each of said bearing edges or surfaces co-

inciding with the others, a transversely-arranged fulcrum-rod engaging all of said bearing edges or surfaces, and means for adjusting said fulcrum-rod along said bearing edges or surfaces.

13. In a type-writing machine, the combination with a series of type-operating levers of a transversely-arranged swinging fulcrum-rod, and bearing edges formed upon said levers concentrically with the axis of motion of said swinging fulcrum-rod.

14. In a type-writing machine, the combination with a series of type-operating levers having coincident slots of a transverse fulcrum-rod engaging said slots, and means for adjusting said rod along said slots and toward or away from the load-points of the levers.

15. In a type-writing machine, the combination with a series of type-operating levers of fulcrum-rod 11, rocker-arms 12, and arc-shaped slots 17 provided in said levers.

16. In a type-writing machine, the combination of a series of type-operating levers, a movable fulcrum for said levers, a finger-piece arranged at the keyboard of the machine, and connecting devices extending from said finger-piece to said movable fulcrum, whereby the latter may be adjusted to change the leverage of said levers.

17. In a type-writing machine, the combination of type-operating levers 9, fulcrum-rod 11 adjustable longitudinally of the levers to change the leverage thereof on their connected types, rocker-arms 12, shaft 13, rod 18, and finger-piece 19.

18. In a type-writing machine, the combination of a set of type-operating levers, a transverse fulcrum-bar for said levers, means for effecting a relative movement between said levers and said fulcrum-bar, in a direction longitudinally of said levers and to change the leverage thereof on their connected types, and means for preventing endwise displacement of said levers relatively to one another.

19. In a type-writing machine, the combination of a series of type-bars, a series of key-bearing levers, a series of links directly connecting said key-levers to said type-bars, a fulcrum-bar for said levers, means for adjusting said bar relatively to the load-points of the levers so as to change the leverage thereof on their connected type-bars, and means for preventing endwise displacement of the levers.

20. In a type-writing machine, the combination of a series of type-bars, a series of levers operatively connected thereto, a fulcrum-bar extending transversely of said levers, means for moving said fulcrum-bar longitudinally of said levers so as to change the leverage on their connected type-bars, and means for preventing endwise displacement of said levers.

21. In a type-writing machine, the combination with a series of types of a series of key-operated levers each having a prolonged bearing edge or surface, each of said bearing edges or surfaces coinciding with the others, a transversely-arranged fulcrum-rod engaging all of said bearing edges or surfaces, means for adjusting said fulcrum-rod along said bearing edges or surfaces, a fixed transverse rod, and slots in the levers engaging said fixed rod.

22. In a type-writing machine, the combination of a series of type-bars, a series of key-operated levers, a series of links attached to the type-bars and converging toward the key-levers, a fulcrum-rod for said levers, means for adjusting said rod longitudinally of said levers, and a universal bar arranged in the path of the levers and in proximity to the points of attachment of said links to said levers, said universal bar being connected to a carriage-feeding mechanism.

23. In a type-writing machine, the combination of a series of types, a series of key-operated levers positively connected thereto, and a transverse rod movable in a direction crosswise of its length for changing the leverage of said levers upon said types.

24. In a type-writing machine, the combination of a series of types, a series of key-operated levers, each of which is pivoted to vibrate on a single axis, and means for simultaneously adjusting the distance between the load-points and axes of all of said levers.

25. In a type-writing machine, the combination of a type, a key-operated lever connected thereto, a movable pivot for the latter, and means for holding said pivot in different positions, said lever being adapted to swing about said pivot during the entire key-stroke.

26. In a type-writing machine, the combination of a type-bar, a key-operated lever connected thereto, and a shiftable pivot for altering the dip of said lever.

27. In a type-writing machine, the combination of a type-bar, a slotted key-operated lever connected thereto, and a shiftable pivot in engagement with said slot.

28. In a type-writing machine, the combination of a series of types, a series of key-operated pivoted levers, and means for simultaneously adjusting the distance between the load-points and axes of all said levers and for maintaining said distance fixed under each adjustment during the operation of the machine.

29. In a type-writing machine, the combination with a series of type-bars and a series of key-levers, of means independent of said key-levers for automatically decreasing the direct purchase or leverage upon said type-bars during the printing stroke, and independent means for effecting an adjustment of the leverage of the keys upon the type-bars.

30. In a type-writing machine, the combination with a series of type-bars, of a series of key-levers each of which is pivoted to swing on a single axis, means independent of said key-levers for automatically decreasing the purchase or leverage upon said type-bars during the printing strokes, and independent means for adjusting the distance between the load-point and axes of all of said levers.

31. In a type-writing machine, the combination with a series of type-bars, of a series of key-levers, means independent of said key-levers for automatically decreasing the purchase or leverage upon said type-bars during the printing strokes, and independent means for adjusting the distance between the load-points and axes of all of said levers and for maintaining said distance fixed under each adjustment during the operation of the machine.

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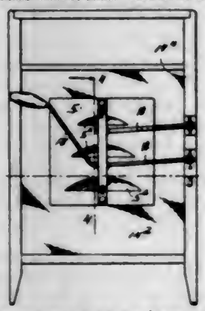
**754,923. BARREL. FRANK R. GAGE, Dayton, Ohio, assignor to Veneer Barrel Machine Co., Chicago, Ill. Filed July 9, 1903. Serial No. 114,911. (No model.)**



*Claim.*—A barrel having lining-hoops arranged at its extremities on the interior thereof, heads seating on said lining-hoops and formed with peripheral grooves, with packing-strips arranged in the grooves and extending beyond the periphery of said heads, said heads being of less diameter than the interior of the barrel, and further lining-hoops secured on the interior of the barrel and engaging the opposite faces of the said heads, said lining-hoops of each head closing the space between said head and the interior periphery of the barrel on each of the faces of said heads.

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**754,924. CLOTHES-WASHING DEVICE. CHARLES H. GUNN, San Jose, Cal. Filed Feb. 3, 1903. Serial No. 141,747. (No model.)**



*Claim.*—The combination with a support, of a washing device comprising a block, a metal piece applied thereto, a metal strap projecting outwardly from said piece, sockets formed in the two pieces, balls engaging said sockets, parallel arms secured to the balls, whereby the arms are pivotally connected with the block, the other extremities of the arms being hinged to lugs which are pivotally connected with the support, and an operating-handle connected with the device.

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**754,925. MASSAGE DEVICE. OTTOMAR ZAR-ADUSHT-HANISH, Chicago, Ill., assignor of two-thirds to Harry George and Carolyn Driver, Chicago, Ill. Filed Aug. 22, 1903. Serial No. 170,470. (No model.)**

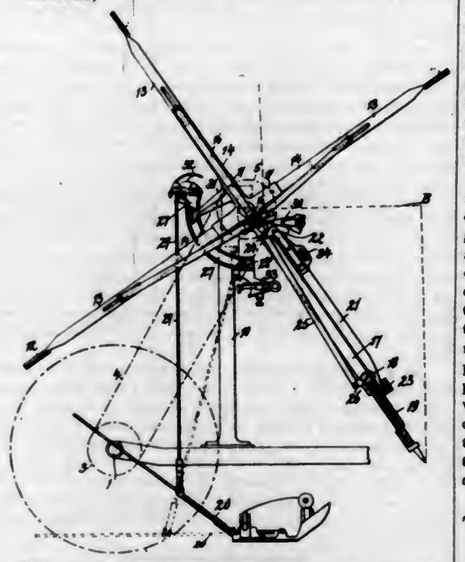
*Claim.*—The combination of a ball or spherical body, and a body having a recess or socket adapted to receive a portion of the spherical body so as to bear against said portion at every point, while a portion of the latter protrudes, the engaging surfaces of the two bodies being sufficiently smooth to allow the one to move within or upon the other when the device is in use.





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**754,926. HARVESTER. BERNARD HOLTHAUS, Oldenburg, Germany. Original application filed June 11, 1903, Serial No. 159,702. Divided and this application filed Dec. 11, 1903. Serial No. 184,751. (No model.)**



*Claim.*—1. In a harvester, the combination, with a grain-platform, and a rotary reel, of a rake pivotally mounted on the reel and serving to discharge the cut grain from the platform, an arm pivotally mounted on the reel, a transverse bar carried by the arm, a connection between the arm and the rake, and means for retarding the motion of the arm, whereby the rake will discharge the grain from the platform and the transverse bar will serve to prevent the deposit of freshly-cut grain during such discharge.

2. In a harvester, the combination, with a grain-platform, and a rotary reel, of a rake pivotally mounted on the reel and serving to discharge the cut grain from the platform, an arm pivotally mounted on the reel, a transverse bar carried by the arm and occupying a position immediately behind the rake, a connection between the arm and the rake, and means for retarding the motion of the arm, whereby the rake will discharge the grain from the platform and the transverse bar will serve to prevent the deposit of freshly-cut grain during such discharge.

3. In a harvester, the combination, with a grain-platform, and a rotary reel, of a rake pivotally mounted on the reel and serving to discharge the cut grain from the platform, an arm pivotally mounted on the reel, a transverse bar carried by the outer end of the arm, a projection from the opposite end of said arm, a projection from one side of the rake, a connection between said projections, and a projection from a fixed portion of the apparatus operating to retard the onward movement of the arm, whereby the rake will be actuated in such manner as to facilitate the discharge of the grain from the platform and the transverse bar will serve to prevent the deposit of freshly-cut grain during such discharge.

4. In a harvester, the combination, with a grain-platform, and a rotary reel, of a rake pivotally mounted on the reel and serving to discharge the cut grain from the platform, an arm pivotally mounted on the reel, a transverse bar carried by the arm, a connection between the arm and the rake, a guide mounted on a fixed portion of the apparatus, and a roll carried by the arm whereby the guide will contact with the roll as the reel rotates and temporarily retard the movement of the arm and its bar, causing, at the same time, a movement of the rake independent of the reel, facilitating the discharge of the grain from the platform and preventing the deposit of freshly-cut grain during such discharge.

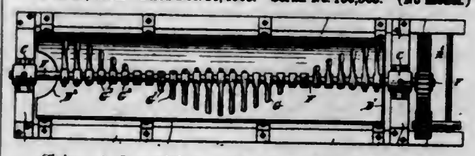
5. In a harvester, the combination, with a grain-platform, and means for periodically raising and lowering the same, of a rotary reel, a rake pivotally mounted on the reel and serving to discharge the cut grain from the platform, an arm pivotally mounted on the reel, a transverse bar carried by the arm, a connection between the arm and the rake, and means for retarding the motion of the arm, whereby the rake will discharge the grain from the platform and the transverse bar will serve to prevent the deposit of freshly-cut grain during such discharge.

6. In a harvester, the combination, with a grain-platform, a reel, a segmental guide-plate, a roll traveling in the guide and a connection between the roll and the platform, of a rake pivotally mounted on the reel, an arm pivotally mounted on the reel, a transverse bar carried by the arm immediately behind the rake, a connection between the arm and the rake, means carried by the reel for releasing the roll and allowing the platform to drop, of means operating simultaneously to retard the onward movement of the arm, whereby the rake will discharge the cut grain from the lowered platform and the transverse bar will prevent the deposit of freshly-cut grain during such discharge.

7. In a harvester, the combination, with a grain-platform, a reel, a segmental guide-plate, a roll traveling in the guide, an arm carried by the reel and operating to push the roll upward in the guide, a recess for the retention of the roll in its uppermost position, a lever pivoted near the recess, a second arm carried by the reel and operating to contact with the lever and expel the roll from the recess, and a connection between the roll and the platform whereby the platform will be periodically raised and lowered as the reel rotates, of a rake pivotally mounted on the reel, an arm pivotally mounted on the reel, a transverse bar carried by the arm and occupying a position immediately following the rake, a stationary guide-plate, and a roll carried by the arm in such position as to contact with the guide-plate at the moment the roll is expelled from the recess, whereby the rake will be actuated in such manner as to facilitate the discharge of the grain from the platform and the bar will temporarily prevent the deposit of freshly-cut grain during such discharge.

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**754,927. MACHINE FOR MIXING CONCRETE, &c. JOHN R. KENNELL, Detroit, Mich., assignor of one-half to Clarence C. Lowry, Detroit, Mich. Filed Dec. 26, 1903. Serial No. 186,566. (No model.)**



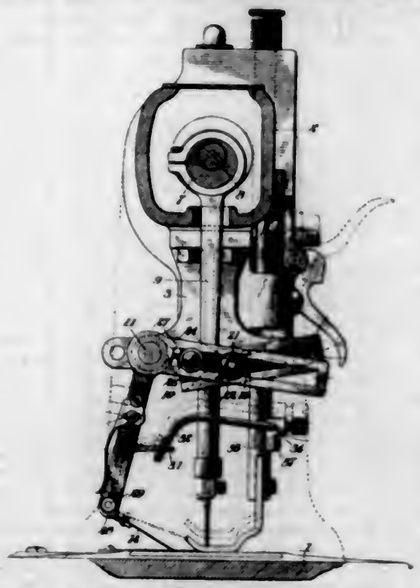
*Claim.*—1. In a mixing-machine, the combination of a supporting-frame consisting of parallel I-beams secured together by tie-bolts provided with nuts engaging the inner and outer sides of the webs of said beams, brackets secured to the upper side of said beams at each end of the frame, bearings on said brackets, a U-shaped trough having a closed and an open end and supported by the tie-rods, braces secured at one end to said beams and at their opposite ends to the sides of the trough near its upper edge, a shaft in said bearings extending in the axis of the trough, agitators on said shaft consisting of blades extending at an angle to the path of their travel around the shaft to feed the material toward the open end of the trough, and means for actuating said shaft.

2. In a concrete-mixer, the combination of a supporting-frame consisting of two parallel I-beams secured together by tie-rods extending through openings in the webs of the beams and provided with nuts engaging the inner and outer sides of said webs, a U-shaped trough having an open and a closed end and having its bottom cut away at its open end to form a discharge-opening, flat iron bars bent to form brackets and secured at their ends to the beams near each end of the trough, bearings secured to said brackets, a shaft in said bearings, agitators consisting of sleeves to engage the shaft and provided with blades formed to extend at an angle to the path

of travel of the blades around the shaft and secured to the shaft in a spiral row extending once around the shaft, set-screws to secure the agitators to the shaft, a water-supply pipe having a perforated head extending longitudinally of the trough above the same near its closed end, and means for turning the shaft.

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754,928. **RUFFLING MECHANISM FOR SEWING-MACHINES.** Alexander Lauscher, Bridgeport, Conn., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Apr. 29, 1903. Serial No. 154,867. (No model.)



*Claim.*—1. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a suitable bearing therefor, a lever fixed upon one end of said rock-shaft, a spring-pressed ruffling-blade on said lever, and a lever projecting radially from the other end of said rock-shaft, in combination with a second rock-shaft, a bearing therefor parallel with the first-mentioned rock-shaft, a lever projecting radially from said second rock-shaft and crossing the radially-projecting lever on the first rock-shaft, means for coupling the radially-projecting levers at different points between their ends, and means to vibrate said levers.

2. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a suitable bearing therefor, a lever mounted upon one end of said rock-shaft, a spring-pressed ruffling-blade on said lever, and a slotted lever mounted upon the other end of said rock-shaft, in combination with a second rock-shaft, a bearing therefor parallel with the first-mentioned rock-shaft, a grooved lever on said second rock-shaft, means for coupling said slotted lever and grooved lever together, and means for vibrating said levers.

3. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a suitable bearing therefor, a lever mounted upon one end of said rock-shaft, a spring-pressed ruffling-blade on said lever, and a longitudinally-slotted lever mounted upon the other end of said rock-shaft, combined with a second rock-shaft, a bearing for said second rock-shaft arranged parallel with the bearing for the first-mentioned rock-shaft, a longitudinally-grooved lever on said second rock-shaft, an adjustable stud connecting said levers, and means for vibrating said levers.

4. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a suitable bearing therefor, a lever mounted upon one end of said rock-shaft, a spring-pressed ruffling-blade on said lever, and a longitudinally-slotted lever mounted upon the other end of said rock-shaft, combined with a second rock-shaft, a bearing for said second rock-shaft arranged parallel with the bearing for the first-mentioned rock-shaft, a longitudinally-grooved lever on said second rock-shaft, an adjustable stud connecting said levers, a driving-shaft for the sewing-machine, and a connection between said driving-shaft and levers for vibrating the latter.

5. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a suitable bearing therefor, a lever mounted upon one end of said rock-shaft, a spring-pressed ruffling-blade on said lever, and a longitudinally-slotted lever mounted upon the other end of said rock-shaft, combined with a second rock-shaft, a bearing for said second rock-shaft arranged parallel with the bearing for the first-mentioned rock-shaft, a longitudinally-grooved lever on said second rock-shaft, an adjustable stud connecting said levers, a sewing-machine driving-shaft, an eccentric thereon, and a pitman connected to said eccentric at one end and to one of the levers at the other end.

6. In a sewing-machine, having an overhanging arm, and a needle-driving shaft, a ruffling mechanism comprising a bracket made fast to the overhanging arm, parallel bearings at front and rear of said bracket, a horizontal rock-shaft in each of said bearings, a slotted lever mounted upon one end of one of said rock-shafts, a spring-pressed ruffling-blade fast on the said lever, and a slotted lever mounted upon the other end of said rock-shaft, combined with a grooved lever fast on the end of the other rock-shaft, an adjustable coupling for connecting said slotted and grooved levers, and means for transmitting motion to said slotted and grooved levers from the driving-shaft.

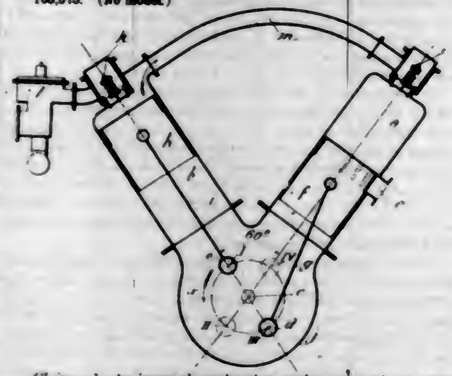
7. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a bearing in which it is mounted, a lever fast to one end of said rock-shaft, a spring-pressed bell-crank lever pivoted at the lower portion of said lever, and a ruffling-blade fast to one arm of said bell-crank lever, the other arm of said bell-crank lever extending over toward the presser-bar of the sewing-machine, in combination with said presser-bar, and a finger carried by said bar and in engagement with the projecting arm of the bell-crank lever.

8. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a bearing in which it is mounted, a lever fast to one end of said rock-shaft, a spring-pressed bell-crank lever pivoted at the lower portion of said lever, and a ruffling-blade fast to one arm of said bell-crank lever, the other arm of said bell-crank lever extending over toward the presser-bar of the sewing-machine, in combination with said presser-bar, and an adjustable finger carried by said bar and in engagement with the projecting arm of the bell-crank lever.

9. In a ruffling mechanism, for sewing-machines, a horizontal rock-shaft, a bearing in which it is mounted, a lever fast to one end of said rock-shaft, a bell-crank lever pivoted at the lower portion of said lever, a spring bearing upon said bell-crank lever, means to vary the pressure of said spring upon said bell-crank lever, and a ruffling-blade fast to one arm of said bell-crank lever, the other arm of said bell-crank lever extending over toward the presser-bar of the sewing-machine, in combination with said presser-bar, and a finger carried by said bar and in engagement with the projecting arm of the bell-crank lever.

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754,929. **INTERNAL-COMBUSTION ENGINE FOR CYCLES.** Hippolyte Lepape, Paris, France. Filed July 1, 1903. Serial No. 165,373. (No model.)



*Claim.*—1. An internal-combustion engine comprising a power-cylinder and a pump-cylinder arranged in a V shape with their axes at an angle of about sixty degrees to each other, a piston in each cylinder, piston-rods and a common crank-shaft formed with two cranks at one hundred and eighty degrees to each other, connected to the respective piston-rods, substantially as described and shown and for the purpose set forth.



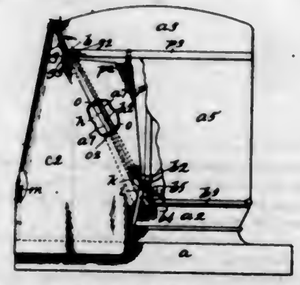
2. An internal-combustion engine comprising a power-cylinder and a pump-cylinder arranged in a V shape, with their axes at an angle of about sixty degrees to each other, a piston in each cylinder, piston-rods, a common crank-shaft formed with two cranks at one hundred and eighty degrees to each other, connected to the respective piston-rods, and a pipe connecting the force end of the pump-cylinder to the inlet end of the power-cylinder, substantially as described and shown and for the purpose set forth.

3. An internal-combustion engine comprising a power-cylinder and a pump-cylinder arranged in a V shape, with their axes at an angle of about sixty degrees to each other, a piston in each cylinder, piston-rods, a common crank-shaft formed with two cranks at one hundred and eighty degrees to each other, connected to the respective piston-rods, a pipe connecting the force end of the pump-cylinder to the inlet end of the power-cylinder and a carbureter connected to the pump-cylinder, substantially as described and shown and for the purpose set forth.

4. The combination of the wheels and diamond frame of a motor-cycle with an internal-combustion engine fastened to the interior of said frame, said engine comprising a power-cylinder and a pump-cylinder arranged in V shape with their axes at an angle of about sixty degrees to each other, a piston in each cylinder, piston-rods, a common crank-shaft formed with two cranks one hundred and eighty degrees apart, said cranks being connected to said piston-rods respectively, a pipe connecting the force end of the pump-cylinder to the inlet end of the power-cylinder, a carbureter connected with the pump-cylinder and suitable inlet- and outlet ports, and valves, substantially as described.

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754,930. **STORM-CURTAIN FOR VEHICLES.** Bernard S. D. S. Martin, McPherson, Kans. Filed Apr. 28, 1903. Renewed Feb. 17, 1904. Serial No. 194,079. (No model.)



*Claim.*—1. A storm-curtain frame or holder for buggies and other vehicles adapted to be connected with the hood thereof and comprising a top plate or strip adapted to be detachably connected with the top front portion of the hood-frame, spring members pivotally connected with the opposite ends thereof, spiral springs connected with said spring members, hook members connected with said spiral springs and adapted to engage the knobs at the opposite sides of the top portion of the hood-frame, side-rod members connected with said hook members spiral springs in the side-rod members and other hook members connected with said side-rod members and adapted to engage knobs at the bottom side portions of the hood-frame, substantially as shown and described.

2. A storm-curtain frame or holder for buggies and other vehicles adapted to be connected with the hood thereof and comprising a top plate or strip adapted to be detachably connected with the top front portion of the hood-frame, spring members pivotally connected with the opposite ends thereof, spiral springs connected with said spring members, hook members connected with said spiral springs and adapted to engage the knobs at the opposite sides of the top portion of the hood-frame, side-rod members connected with said hook members, spiral springs connected with the lower ends of said side-rod members and other hook members connected with said springs and adapted to engage knobs at the bottom side portions of the hood-frame, substantially as shown and described.

3. A storm-curtain frame or holder for buggies and other vehicles adapted to be connected with the hood thereof and comprising a top plate or strip adapted to be detachably connected with the top front portion of the hood-frame, spring members pivotally connected with the opposite ends thereof, spiral springs connected with said spring members, hook members connected with said spiral springs and adapted to engage the knobs at the opposite sides of the top portion of the hood-frame, side rods connected with said hook members, spiral springs connected with the lower ends of said side rods, and other hook members connected with said springs and adapted to engage knobs at the bottom side portions of the hood-frame, the lengths of said rods being adjustable, and a storm-curtain detachably connected with said storm-curtain frame or holder, substantially as shown and described.

4. A storm-curtain frame or holder for buggies or other vehicles comprising a top strip or bar adapted to be detachably connected with the top portion of the hood-frame of the vehicle, side rods composed of separate members and connected with the opposite ends of said strip or bar by spring devices, hooks connected with said spring devices and adapted to engage knobs at the opposite sides of the top portion of the hood-frame, and other hook devices connected with the lower ends of said rods and adapted to engage knobs at the bottom of the opposite side portions of the hood-frame, substantially as shown and described.

5. A storm-curtain frame or holder for vehicles comprising a top and side portions the lengths of the side portion being adjustable and said side portions being also provided at the top and bottom thereof with spring-hooks adapted to engage knobs at the top and bottom of the sides of the hood of the vehicle, substantially as shown and described.

6. A storm-curtain frame or holder for vehicles, said frame or holder being provided with spring-hooks adapted to engage knobs or bars at the top and bottom of the sides of the hood of the vehicle, substantially as shown and described.

7. A storm-curtain frame or holder for vehicles, comprising a top and side portions, the side portions being adjustable in length, substantially as shown and described.

8. A storm-curtain frame or holder for vehicles adapted to be detachably connected with the hood of the vehicle and provided with a storm-curtain the side members of which are provided with backwardly-directed flaps which extend backwardly of the front side portions of the hood, substantially as shown and described.

9. A storm-curtain frame or holder for vehicles adapted to be detachably connected with the hood of the vehicle, and a storm-curtain detachably connected with said frame or holder, said curtain being provided at the side with flaps which extend backwardly of the front side portions of the hood, substantially as shown and described.

10. A storm-curtain frame or holder for vehicles adapted to be detachably connected with the hood of the vehicle, and a storm-curtain detachably connected with said frame or holder, said curtain being provided at the side with flaps which extend backwardly of the front side portions of the hood, and the side portions of the curtain being also provided with a plurality of pockets through which the side portions of the frame or holder may be passed, substantially as shown and described.

11. The combination with a detachable frame or holder for the storm-curtain of a vehicle, of a storm-curtain provided at the sides thereof with a plurality of pockets arranged side by side and adapted to receive the side members of the frame or holder whereby the curtain may be adjusted, substantially as shown and described.

12. The combination with a detachable frame or holder for the storm-curtain of a vehicle, of a storm-curtain provided at the sides thereof with a plurality of pockets arranged side by side and adapted to receive the side members of the frame or holder whereby the curtain may be adjusted, the sides of the curtain being also provided with extensions or flaps which extend backwardly of the front side portions of the hood, substantially as shown and described.

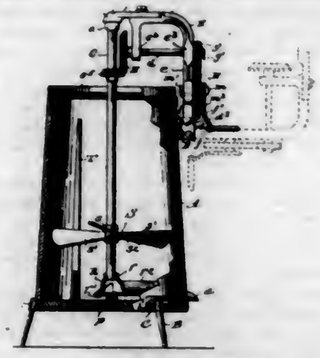
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754,981. **BUTTER-SEPARATOR.** Joseph Meyrick, Jr., Louisville, Ky., assignor of one-half to George E. Cain, Louisville, Ky. Filed Sept. 26, 1903. Serial No. 174,653. (No model.)

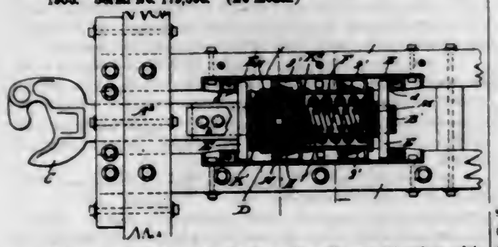
*Claim.*—1. In a butter-separator, the combination, of the barrel, a pivot-bearing secured near the upper end thereof, a frame pivoted in said bearing and carrying the driving mechanism, the separator-shaft geared to the latter, a spherical portion at the upper end of the separator-shaft, a casting bifurcated at one end and provided with a socket at its other end, the bifurcated end being slidable upon the frame and the socket adapted to receive the spherical head of the separator-shaft, and a set-screw threaded in the frame to impinge on the bifurcated end of the casting.

2. In a butter-separator, the combination, of the barrel, a pivot-bearing secured near the upper end thereof, a frame pivoted in said bearing to swing to and from the barrel, means for locking the frame in its upright position, a driving-shaft carried by the frame, a hollow separator-shaft having a spherical upper end with an opening

through the same, and a socket laterally adjustable upon the frame and having an opening in line with the opening in the spherical head of the separator-shaft; together with a combined agitator and aerator attached to the lower end of the hollow shaft and having a conical bearing stepped in the bottom of the barrel, said combined agitator and aerator comprising a hub and hollow arms triangular in cross-section and rearwardly beveled at their outer ends, the parts being combined and arranged substantially as shown and described.



754,932. **FRICTION DRAFT-GEAR FOR RAILWAY-CARS.** PETER N. MOORE, Milwaukee, Wis., assignor to John J. Hennessey, Milwaukee, Wis., and William H. Miner, Chicago, Ill. Filed Nov. 5, 1903. Serial No. 179,890. (No model.)



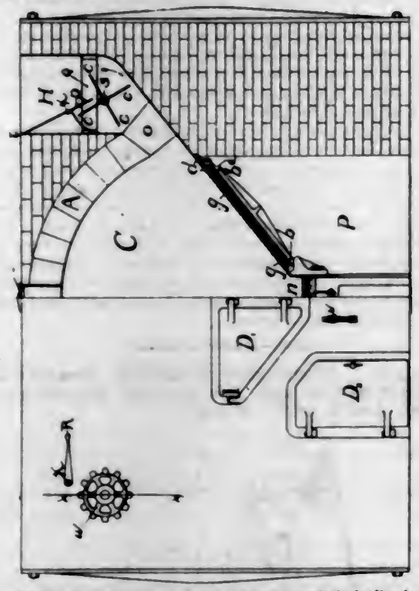
*Claim.*—1. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a sliding friction-shell having an interior friction-surface, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement and having each a wedging or inclined face at each end thereof, and a pair of operating-wedges, one at each end of said sliding friction-blocks, said friction-blocks being provided with a peripheral groove and a spring or band surrounding the same and fitting in said groove, substantially as specified.

2. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a sliding friction-shell having a slightly-tapering interior friction-surface terminating in a straight portion, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement and having each a wedging or inclined face at each end thereof, and a pair of operating-wedges, one at each end of said sliding friction-blocks, whereby the friction-surface of the shell is caused to continually wear smooth, substantially as specified.

3. In a friction draft-gear, the combination with stationary stop-plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having a slightly-tapering interior friction-surface terminating in a straight portion, sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having each a slightly-tapering exterior friction-surface in sliding frictional engagement with the interior friction-surface of the case or shell, and wedges or inclines for causing said sliding friction-block and sliding friction-shell to forcibly grip or press against each other, substantially as specified.

754,933. **FURNACE FOR BURNING TAN OR LIKE FUEL.** DAVID M. MYERS, New York, N. Y. Filed Mar. 2, 1903. Serial No. 145,633. (No model.)

*Claim.*—1. In a furnace for burning spent tan and like fuel, and in combination; inclined grate devices having horizontal apertures from which opposed drafts may be directed through said fuel to a focus of combustion; an inclined dead-plate in upper continuation of said grate devices and over which dead-plate said fuel passes subject to the drying and distilling influence of the reverberatory draft recoiling toward said dead-plate from said focus; and means to enter said fuel and feed the same over said dead-plate to said grate devices in a uniform supply; said instrumentalities cooperating for the continuous delivery and perfect combustion of said fuel, substantially in the manner set forth.




2. In a furnace, a grate device having oppositely-inclined grate-surfaces presenting substantially horizontal draft-apertures to produce a concentrated draft and combustion of high consequent efficiency, substantially as described.

3. In a furnace, oppositely-inclined grates down which the fuel is to be fed, said grates presenting elongated, shallow, horizontal draft-apertures arranged to direct the drafts from said grate-surfaces in vigorous opposition to each other so that a powerful, reverberatory draft is produced and acts upon the fresh fuel at or near the region of its entrance to said grate-surfaces, to heat the same, substantially as described.

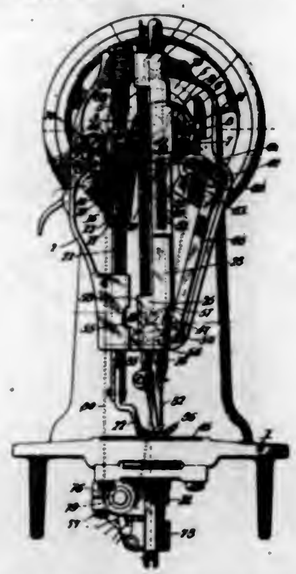
4. In a furnace, oppositely-inclined grate-surfaces, and a dead-plate over which the fuel is fed to said surfaces, said grate-surfaces having substantially horizontal draft-apertures arranged to produce a reverberatory draft reacting from the center of combustion back toward said dead-plate to heat the latter and the fresh fuel passing thereover, substantially as described.

5. A furnace of the class described, comprising an inclined combustion-grating; a relatively long and narrow feed-chute the bottom of which is adjacent said grating, and the upper part whereof serves as a hopper to receive the fuel, different portions of said grating being inclined in opposition to each other toward a center or focus of combustion and having substantially horizontal draft-openings to produce a reverberatory draft; and rotating stoker devices in said feed-chute to enter said fuel and feed the same down through said chute and over said inclined grating toward said focus of combustion, substantially in the manner and for the purpose set forth.

754,934. **FEEDING MECHANISM FOR SEWING-MACHINES.** DONALD NOBLE, Bridgeport, Conn., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Apr. 29, 1903. Serial No. 154,679. (No model.)

*Claim.*—1. In a sewing-machine, having an overhanging arm and a driving-shaft therein, an oscillating frame pivoted to said arm, a reciprocating needle-bar, a reciprocating feed-bar, independent bearings in said frame for said needle-bar and feed-bar, and a presser-bar, in combination with a T-shaped rock-lever pivotally connected at one end with said presser-bar and connected with the feed-bar, and connections between the other end of said rock-lever and driving-shaft for actuating the same, including a bell-crank lever pivoted to the overhanging arm, and a rotary eccentric on the driving-shaft.





2. In a sewing-machine, having an overhanging arm and a driving-shaft therein, an oscillating frame pivoted to said arm, a reciprocating needle-bar, a reciprocating feed-bar, independent bearings in said frame for said needle-bar and feed-bar, and a presser-bar, in combination with a T-shaped rock-lever pivotally connected at one end with said presser-bar and connected with the feed-bar, and connections between the other end of said rock-lever and driving-shaft for actuating the same, including a bell-crank lever pivoted to the overhanging arm, and a rotary eccentric on the driving-shaft.

3. In a sewing-machine, having an overhanging arm and a driving-shaft therein, an oscillating frame pivoted to said arm, a reciprocating needle-bar and a reciprocating feed-bar, independent bearings in said frame in which the needle-bar and feed-bar are respectively mounted, and a presser-bar, in combination with a T-shaped rock-lever pivotally attached at one end to said presser-bar and provided at its other ends with slots, a bell-crank lever pivoted to the overhanging arm, slide-blocks respectively applied to said feed-bar and to the bell-crank lever and engaging respectively the said slots, and connections between said bell-crank lever and said driving-shaft.

4. In a sewing-machine, having an overhanging arm and a driving-shaft therein, an oscillating frame pivoted to said arm, a reciprocating needle-bar and a reciprocating feed-bar, independent bearings in said frame for these bars, a presser-bar, a rotary eccentric on said shaft, and operative connections between said eccentric, feed-bar and presser-bar, including a bell-crank lever pivoted to the overhanging arm, whereby said feed-bar and presser-bar are alternately raised and lowered, in combination with a stitch-regulating lever adjustably secured to said overhanging arm, a pair of links pivotally joined together at one of their respective ends and having their opposite ends respectively pivoted to said stitch-regulating lever and said oscillating frame, and connections between said links and said eccentric.

5. In a sewing-machine, having an overhanging arm and a driving-shaft therein, an oscillating frame pivoted to said arm, a reciprocating needle-bar, a reciprocating feed-bar, independent bearings in said frame for said bars, a presser-bar, a rotary eccentric on said shaft, and connections between said eccentric, feed-bar and presser-bar, including a bell-crank lever pivoted to the overhanging arm, whereby said feed-bar and presser-bar are alternately raised and lowered, in combination with a stitch-regulating lever adjustably secured to said overhanging arm, a pair of links pivotally joined together at one of their respective ends and having their opposite ends respectively pivoted to said stitch-regulating lever and said oscillating frame, a stationary cam on the arm, a stud connected with said eccentric movably and also engaging said cam, and a link pivoted at its lower end to the joint of the pair of links and having its upper end pivoted to said stud.

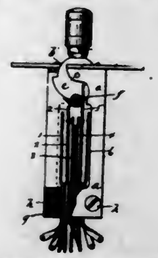
6. In a sewing-machine, an oscillating frame, a reciprocating needle-bar, a reciprocating feed-bar, independent bearings in said frame in which said bars are mounted, a presser-bar, a driving-shaft, a rotary eccentric on said shaft, connections between said eccentric, feed-bar and presser-bar whereby said feed-bar and presser-bar are alternately raised and lowered, and means between said eccentric and oscillating frame for actuating said frame, in combination with a work-support, a loop-taker mounted in bearings beneath the work-support, a take-off lever pivoted beneath the work-support and having its upper end sheltered within a groove in the work-support, a shaft journaled beneath said work-support, an eccentric on said shaft, and connections between said eccentric and said take-off lever including means to vary the position of said take-off lever.

7. In a sewing-machine, an oscillating frame, a reciprocating needle-bar, a reciprocating feed-bar, independent bearings in said frame in which said bars are mounted, a presser-bar, a driving-shaft, a rotary eccentric mounted on said shaft, connections between said eccentric, feed-bar and presser-bar, whereby said feed-bar and presser-bar are alternately raised and lowered, and means between said eccentric and oscillating frame for actuating said frame, in combination with a grooved work-support, a loop-taker mounted in bearings beneath the work-support, a take-off lever pivoted beneath the work-support and having its upper end sheltered within the groove in the work-support, a shaft journaled beneath said work-support, a rotary eccentric on said shaft, a lever adapted to engage said eccentric and pivoted concentrically with said take-off lever adjacent thereto, and means for adjustably connecting said take-off and lever, whereby the length of bobbin-thread supplied each stitch may be increased or diminished.

8. In a sewing-machine, a reciprocating needle, a work-support having an elongated needle-hole, a loop-taker suitably journaled beneath the work-support and provided with a bobbin, and a thread-take-off lever located at the rear of the needle between said loop-taker and the needle-hole in the work-support, in combination with a presser-bar and feed-bar, means to alternately raise and lower the same and means to reciprocate the feed-bar to feed the material while the needle is in it in a direction toward said take-off lever, means for moving the take-off lever in a direction opposite to the feed of the material while the presser-bar is down, and means to alter the position of the take-off lever, whereby a length of thread proportional to the length of stitch is drawn from the bobbin and the material is prevented from puckering.

9. In a sewing-machine, a work-support having an elongated needle-hole, a loop-taker journaled beneath the work-support and provided with a bobbin, a thread-take-off lever located at the rear of the needle between said loop-taker and the elongated needle-hole in the work-support and pivoted at its lower end, a rock-lever pivoted concentrically with said take-off lever, a shaft journaled in bearings beneath the work-support, an eccentric on said shaft with which the take-off lever coöperates, and means for adjustably connecting said rock-lever and take-off lever, in combination with means for feeding the material while the needle is in it.

754,935. **RINGING AND LISTENING KEY.** CHARLES H. NORTH, Cleveland, Ohio, assignor to the North Electric Company, Cleveland, Ohio, a Corporation of Ohio. Filed Sept. 14, 1901. Serial No. 75,388. (No model.)



*Claim.*—1. In a switching-key of the class described, the combination with a plurality of contact-making springs closely-mounted in parallel, vertical planes, of an operating-lever pivotally mounted above the said springs to oscillate therebetween, and an interposed roller part carried thereon near its lower end to lie between the springs, which it is adapted to flex into and out of contact when oscillated by the lever, substantially as set forth.

2. In a switching-key of the class described, the combination with the channeled mounting-block, of a plurality of contact-making springs closely mounted therein in parallel, vertical planes, an operating-lever pivotally mounted at a distance above the springs, and an interposed roller part carried thereon near its end to lie between the springs, which it is adapted to flex into and out of engagement when oscillated by the lever, substantially as set forth.

3. In a switching-key of the class described, the combination with a plurality of sets of springs closely mounted in parallel, vertical planes, of an operating-lever pivoted midway between said sets of springs and at a distance above them, and an interposed roller part carried thereon near its lower end in position to lie between the springs, which it is adapted to flex into and out of contact when oscillated by the lever, substantially as set forth.

4. In a switching device of the class described, the combination of a plurality of contact-making springs, of thin spacing-insulators separating the same, paired engaging shoulders provided on the springs and insulators, a channeled insulating-block shaped to receive the assembled group of springs and insulators, a second, opposing block securely mounting all of the parts within the channeled supporting part through the medium of their engaging shoulders, and suitable switching mechanism associated with the said springs, substantially as set forth.

5. In a ringing and listening key, the combination with a vertical frame *a*, of channeled insulating-blocks disposed in the lower portion thereof, paired vertical contact-springs 1 1′ to 6 6′ and spacing insulating-strips *i* clamped in the channeled blocks, an oscillating lever *e* and actuating-rollers *f* provided thereon and disposed between springs 2 2′ and 5 5′, all mounted within the frame and adapted to effect the several switching changes demanded of the key, substantially as set forth.

6. In a switching device substantially as set forth, the combination with a supporting-frame, of a plurality of contact-springs mounted therein, an operating-lever and actuating-rollers mounted thereon and retained in position by the adjacent frame.

7. In a ringing and listening key, the combination with a plurality of vertically-mounted contact-springs, of an upright frame inclosing and supporting the same, an oscillating operating-lever mounted within said frame, and a roller-actuating part for the springs disposed thereon, adapted to flex said springs into and out of engagement with each other, substantially as set forth.

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**754,936. FLEXIBLE TUBE.** STEPHEN PALMER, Troy, N. Y., assignor to Marcus M. Waterman, James K. P. Pine, James J. Child, Herbert R. Northrup, and George W. Daw, Troy, N. Y. Filed Nov. 17, 1903. Serial No. 181,538. (No model.)



*Claim.*—1. A flexible tube comprising a spirally-wound metal strip, and a rigid locking member between the overlapping coils of said strip and constituting the sole means for locking the edges of the strip.

2. A flexible tube comprising a spirally-wound metal strip having oppositely-bent flanges at its longitudinal edges, and a locking-wire located between the overlapping edges of the coils and between the flanges of the respective coils to lock them together.

3. A flexible tube comprising a spirally-wound metal strip having oppositely-bent flanges at its longitudinal edges and faces adjacent to its flanges, and a locking-wire coiled with the strip and located between the faces and flanges of the overlapping coils of said strip.

4. A flexible tube comprising a spirally-wound strip and a spirally-wound locking-wire interposed between the overlapping edges of the strip, substantially as set forth.

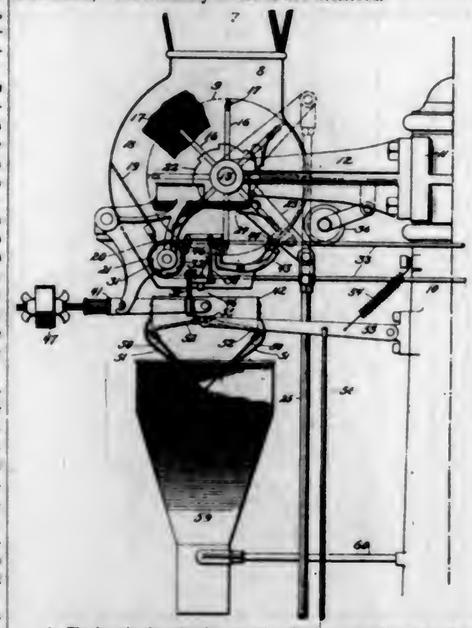
5. A flexible tube comprising a spirally-wound strip having longitudinal recesses and a spirally-wound wire interposed between the overlapping edges of the strip and located in said recesses.

6. A flexible tube comprising a spirally-wound strip having flanges at its edges bent in opposite directions, and a continuous spirally-wound wire interposed between the oppositely-bent flanges on the overlapping edges of the strip, substantially as set forth.

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**754,937. MEASURING AND WEIGHING MECHANISM.** RUFUS L. PATTERSON, New York, N. Y. Original application filed Aug. 20, 1897, Serial No. 648,936. Divided and this application filed Nov. 19, 1901. Serial No. 82,907. (No model.)

*Claim.*—1. In combination with flexible hoppers 1, having spreading hoops 2, threaded standard 3, clamp 4, and vertically-adjustable standards 5, all substantially as shown and described.



2. The herein-described measuring device consisting of a wheel having a series of pockets of definite and like capacity; and means substantially such as described and shown for rotating the wheel to different determinate distances at each operation, whereby one or more pockets may be emptied at each operation.

3. In combination with a wheel having a series of pockets; a ratchet-wheel; a pawl-carrier; a pawl mounted upon said carrier; and means for varying the throw of the pawl-carrier to cause the pawl to ride back over one tooth or more than one and to advance the wheel to discharge a corresponding number of pockets, substantially as shown and described.

4. In combination with a pocketed measuring-wheel, provided with a ratchet-wheel; a pawl-carrier; a pawl movable with the carrier and adapted to engage and turn the ratchet-wheel; an actuating-lever for moving the pawl-carrier; a rod connected with the pawl-carrier and adjustably connected with the actuating-lever; and a cam for moving said lever, the adjustable connection of the rod with the lever permitting the stroke of the pawl-carrier to be varied to determine the number of pockets of the measuring-wheel brought to the delivery-point.

5. In a machine for measuring and weighing merchandise, the combination of a pocketed measuring-wheel; a hopper inclosing said wheel and having one of its walls conforming closely to the periphery thereof; a ratchet-wheel 22 applied to the axle of said measuring-wheel; a pawl-carrier 23 provided with pawl 24; rod 25; slotted lever 26; and cam 28 for actuating said lever, whereby the throw of the pawl-carrier may be varied and the pocketed wheel thereby caused to deliver at each movement a predetermined and definite quantity of material.

6. In combination with a pocketed measuring-wheel and means for rotating the same progressively, a hopper having one of its walls conforming closely to the periphery of said wheel; a dribbling-roll; driving-gear for said roll; a scale-pan; and mechanism connected with the scale-pan and serving to stop the rotation of the roll when the scale-pan descends.

7. In combination with a shell or casing 8, a pocketed measuring-wheel 9 having its periphery arranged to travel in close proximity to one of the walls of said shell or casing; means, substantially as shown, for rotating said wheel; a dribbling-roll 21; a scale-beam 41; a dog 37 adapted to hold the dribbling-roll against rotation; and connections such as shown and described between the scale-beam and the dog, whereby the latter is held out of engagement when the scale-beam is elevated and is drawn into engagement when the beam is lowered.



8. In combination with a pocketed measuring-wheel provided with a ratchet-wheel; a pawl adapted to engage with and to rotate said ratchet-wheel; a pawl-carrier for supporting and actuating said pawl; a dribbling-roll provided with a ratchet-wheel; a dog adapted to engage said ratchet-wheel and hold the dribbling-roll against rotation, a lever adapted to withdraw the dog from engagement with the ratchet-wheel; and a projection upon the pawl-carrier adapted to engage the lever and to move the same to withdraw the dog from the ratchet.

9. In combination with measuring-wheel 9 provided with ratchet-wheel 22; pawl-carrier 23 provided with pawl 24 and finger 44; dribbling-roll 21 provided with ratchet-wheel 32; scale-beam 41; dog 37 adapted to engage with ratchet-wheel 32; a connection between the scale-beam and said dog; and a lever 43 interposed between the dog 37 and the finger 44 and adapted when acted upon by said finger to withdraw the dog from engagement with the ratchet-wheel 32.

10. In combination with shell or casing 8 and measuring-wheel 9; partition 19 provided with flexible edge 20; dribbling-roll 21; and means for imparting rotation to the measuring-wheel and to the dribbling-roll.

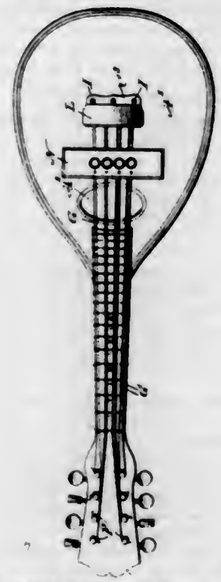
11. In combination with scale-beam 41 and its pan 42, stops 45 and 46; bar 40 carried by the scale-beam and playing between said stops; a lever 53 connected with the scale-pan and serving to positively discharge the same; and means, substantially as shown and described, for actuating said lever.

12. In combination with scale-beam 41 carrying pan 42; stops 45 and 46; bar 40 carried by the scale-beam and arranged to play between said stops; pivoted gates 50 applied to the scale-pan; a lever 53 having a loose connection with said gates; a spring 54 serving normally to elevate the lever 53; a cam 28; a lever 57 actuated by said cam; and a rod 56 connecting the levers 57 and 53, substantially as and for the purpose set forth.

13. In combination with the continuously-rotating shaft 34 provided with a pulley; a dribbling-roll 21 provided with a pulley 31 and with a ratchet-wheel 32; a belt 33 connecting the two pulleys; a dog or detent adapted to engage the ratchet of the dribbling-roll; and a belt-tightener acting upon the belt 33 and serving to tighten the same sufficiently to drive the dribbling-roll when the latter is not locked by the dog or detent.

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**754,938. COMBINATION BRIDGE AND TAILPIECE.** EMILE REACH, Jersey City, N. J., assignor to Oscar Schmidt, Jersey City, N. J. Original application filed Mar. 21, 1903, Serial No. 148,367. Divided and this application filed May 20, 1903. Serial No. 157,933. (No model.)

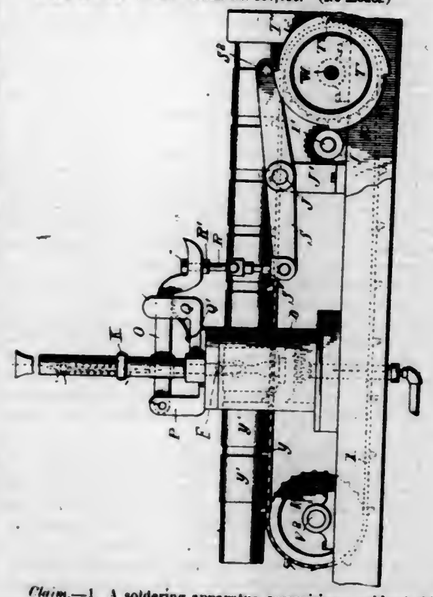


*Claim.*—1. A stringed musical instrument having a body provided with a bass-bar on the under side of the belly of the body, a strengthening-strip abutting against said bar, and a combination bridge and tailpiece on the body over the said strengthening-strip, the said tailpiece having at its rear end an angular extension fitting the belly and secured to the same, and to the strengthening-strip, and a bridge loosely carried by the tailpiece and resting upon the belly of the instrument, with its upper edge projecting above the tailpiece.

2. In a stringed musical instrument, a combination bridge and tailpiece on the body of the instrument, said tailpiece having at its rear end an angular extension secured to the belly of the body and extending upwardly and forwardly, the front end of said tailpiece being free, and a bridge loosely held in vertical position by the free end of the tailpiece and resting upon the belly of the instrument with its upper edge projecting above the tailpiece.

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**754,939. APPARATUS FOR SOLDERING CANS.** JOHN G. REEFUS and MARTIN O. REEFUS, Philadelphia, Pa. Filed Apr. 3, 1902. Renewed Jan. 4, 1904. Serial No. 187,739. (No model.)



*Claim.*—1. A soldering apparatus comprising a solder-holding receptacle with a recess therein, a hollow piston working in the latter, a plunger mounted within said piston and having a movement independent thereof, a nozzle projecting from the receptacle and communicating through a duct with said recess, as set forth.

2. A soldering apparatus comprising a solder-holding receptacle with a recess therein, a hollow piston with an apertured wall and plunger, a nozzle, a duct communicating between the same and said recess, means for feeding a supply of molten solder into said recess on the upward throw of the piston and a plunger for forcing the solder from said recess to and through the nozzle, on the downward throw of said piston and plunger, as set forth.

3. A soldering apparatus comprising a solder-holding receptacle, a hollow piston working in a recess in said receptacle, a plunger carried by said piston, a nozzle, a duct communicating between the same and said recess, and means for alternately feeding a supply of molten solder from the receptacle into said recess, and forcing the solder by said plunger and piston from the recess through the duct and nozzle, as set forth.

4. A soldering apparatus comprising a solder-containing receptacle having a chambered portion, a nozzle communicating with said chambered portion, a hollow piston snugly fitting the walls of said chambered portion, and an adjustable plunger mounted within said piston, as set forth.

5. A soldering apparatus comprising a solder-receptacle having a chambered portion in the bottom thereof, a nozzle communicating with said chambered portion, a hollow piston adapted to reciprocate in said chambered portion and snugly fit against the walls thereof and provided with an apertured wall, and a plunger working in said piston below the aperture in the wall thereof, as set forth.

6. A soldering mechanism comprising a solder-receptacle having a chambered portion in the bottom thereof, a nozzle, a duct communicating between the nozzle and said chambered portion, a hollow piston working in said chambered portion, a plunger adjustably mounted within the hollow piston, and means for actuating the same, whereby solder is allowed to enter said chambered portion as the piston is raised, as set forth.

7. A soldering apparatus comprising a solder-containing receptacle, a nozzle and duct leading from a recess in said pot and communicating with the nozzle, a hollow pump-piston working in said recess, and a plunger mounted within said piston, and means for operating said piston and plunger, whereby molten solder is forced through the duct and nozzle against a can to be soldered, as set forth.

8. A soldering apparatus comprising a containing-receptacle, a hollow apertured piston working in a recess in the pot, a nozzle, and a duct communicating between the same and said recess, a plunger adjustably held within said piston, and means for operating said piston and plunger, as set forth.

9. A soldering apparatus comprising a solder-containing receptacle, a hollow piston with apertured wall, working in a recess in said receptacle, a nozzle, a duct communicating between the same and said recess, a plunger having a flaring end and adjustably held within the hollow piston, and means for operating said piston and plunger, whereby an intermittent stream of solder is forced from the receptacle to and through the nozzle, and against the can to be soldered, as set forth.

10. A can-soldering apparatus comprising a receptacle, a reciprocating hollow piston with an apertured wall, working in a recess in said receptacle, a plunger having a flaring end adapted to be held so as to allow more or less solder to pass between its flaring end and the end of the hollow piston as the latter is raised, a nozzle, a duct communicating between the same and said recess, and a lever adapted to reciprocate said piston and plunger, as set forth.

11. A soldering apparatus comprising a solder-holding receptacle, a hollow piston having an apertured wall, working in a recess in said receptacle, a plunger having a flaring end, and a stem mounted within the hollow pistoo, and means for adjusting said stem, whereby the plunger may be held at different locations with reference to the hollow end of the piston, a nozzle, a duct communicating between same and said recess, an oscillating lever, and means for imparting a variable reciprocating movement to said piston and plunger, as set forth.

12. A soldering apparatus comprising a receptacle, a spring-actuated hollow piston with apertured wall, which works snugly in a recess in said receptacle, a plunger mounted in said piston, a nozzle, a duct communicating between the same and said recess, and an oscillating lever connected to said piston and adapted to impart a variable motion to said piston and plunger, as set forth.

13. A soldering apparatus comprising a solder-containing receptacle, a hollow piston with apertured wall, adapted to work in a recess in said receptacle, a plunger adjustably held within said piston, a nozzle, a duct communicating between said nozzle and recess, a pivotal lever connected to the shank portion of said piston, a rotary wheel having segment cam-surfaces about its circumference, and an oscillating arm actuated by said wheel connected to one end of said lever, whereby a variable motion is imparted to said piston and plunger, as set forth.

14. A soldering apparatus comprising a receptacle, a hollow piston with apertured wall, working in a recess in said receptacle, a plunger mounted within said receptacle, a nozzle, a duct communicating between the same and said recess, a lever pivoted at one end and connected to the shank portion of said piston, a spring fixed at one end and adapted to hold said lever at its highest limit, and means for imparting a variable movement to said lever, as set forth.

15. A soldering apparatus comprising a receptacle, a hollow piston with apertured wall, mounted to work in a recess in said receptacle, a plunger adjustably held within said piston, a nozzle, a duct communicating between the same and said recess, a lever pivoted at one end and connected to the shank portion of said piston, a spring adapted to hold said lever at its highest throw, a rocking arm or lever having pivotal connection with said pivoted lever, a rotatable wheel having a series of cam-surfaces about its circumference, and an antifriction-wheel pivotally mounted on said rocking arm and adapted to ride upon the circumference of said wheel, and means for imparting a variable movement to said piston, as set forth.

16. An apparatus for soldering cans comprising a solder-receptacle, a spring-actuated hollow piston with apertured wall, working in a recessed portion of said receptacle, a plunger adjustably held within said piston and adapted to work in said recess, a nozzle, a duct communicating between the same and said recess, a pivotal lever connected to the shank portion of said piston, a spring bearing said lever, a rocking lever connected to said pivotal lever, a rotatable wheel having a series of cam-surfaces terminating abruptly in shoulders about its circumference, and an antifriction-wheel mounted upon the rocking lever and adapted to travel about the circumference of said wheel, whereby a variable motion is imparted to the piston and plunger, as set forth.

17. A soldering apparatus comprising a receptacle, a hollow piston with apertured wall working in a recess in said receptacle, a plunger adjustably mounted within said piston, a nozzle, a duct communicating between said nozzle and recess, a pivotal spring-actuated lever passing through the shank portion of said piston, a rocking lever, a wheel having a series of segment-cams terminating abruptly about the circumference of said wall, an antifriction-wheel carried by said rocking lever and adapted to ride upon the circumference of said wheel, and connections between said levers, as set forth.

18. A soldering apparatus comprising a solder-receptacle, a reciprocating hollow spring-actuated piston with apertured wall, working in a recess in said receptacle, a plunger adjustably mounted within the piston, a nozzle, a duct communicating between the same and said recess, a pivotal lever passing through an aperture in the solid shank of said piston, a spring held yieldingly against the under edge of said lever, a rocking lever having adjustable connections between the same and said pivotal lever, a wheel having a series of cam-surfaces about its circumference terminating in abrupt shoulders, and an antifriction-wheel carried by said rocking lever and adapted to travel upon said cam-surfaces, as set forth.

19. A soldering apparatus comprising a solder-holding receptacle, a heating-chamber underneath the same, a chimney and flue leading from said heating-chamber to said chimney, a bracket-arm carried by the chimney, a piston guided in an aperture in said arm, the lower end of said piston being hollow and provided with an aperture, said piston adapted to work in a recess in said receptacle, a plunger adjustably held within the piston, a nozzle, a duct communicating between the same and said recess, a pivotal lever passing through the shank portion of said piston, a spring held yieldingly against the under edge of the pivotal lever, a rocking lever and adjustable connections between same and said pivotal lever, a wheel having a series of cam-segments about its circumference, and an antifriction-wheel carried by the rocking lever and adapted to travel upon said cam-surfaces, as set forth.

20. A soldering apparatus comprising a receptacle, a hollow piston with apertured wall, working in a recess in said receptacle, a nozzle, a duct communicating between said nozzle and recess, a plunger having a flaring end adjacent to the open end of said piston, a stem in said plunger mounted within said piston, and an adjusting-screw adapted to bear against the end of said stem to regulate the distance of space between said plunger and the open end of the piston, and means for imparting a variable reciprocating movement to said piston and plunger, as set forth.

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**754,940. CAN-MAKING MACHINE.** JOHN G. RENTON and MARTIN O. RENTON, Philadelphia, Pa. Filed Apr. 26, 1902. Serial No. 104,870. (No model.)

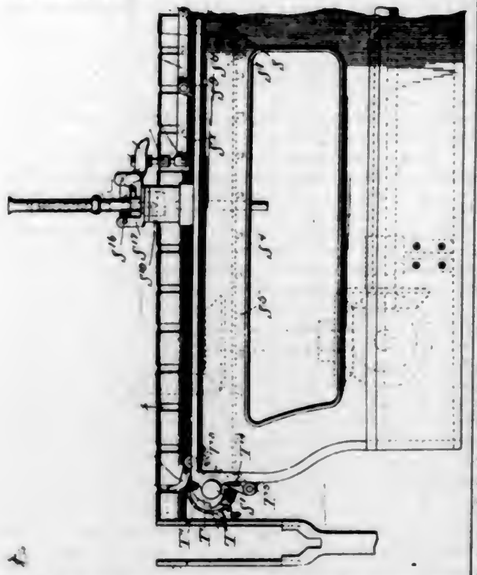
*Claim.*—1. A can-making machine comprising means for raising a sheet of tin, and automatically-operated mechanism for holding the tin suspended, and means for pushing said sheet forward to be fed to a location underneath the shearing-knife where the sheet is cut into strips, a carrier having an intermittent movement on which the strips are fed, means for stamping the tops and bottoms for the cans out of said strips, and shearing the ends of the strips, mechanism for crimping the ends of the strips, a former, and clamping-jaws designed to hold the strip with its crimped edges against the former, and turn and interlock the ends, and a slide, toggle-joint connections for clenching the seam, and means for operating the same, as set forth.

2. A can-making machine comprising means for raising a sheet of tin, supporting-plates automatically thrown underneath the sheet to support the same while it is being pushed forward to be fed to a location where the sheet is cut into strips, and means for stamping the tops and bottoms for the cans out of said strips and afterward shearing the waste ends, oscillating crimping-arms provided to turn the edges of the can, and means for turning the strip about a former and interlocking said crimped ends, a slide, toggle-joint connections for clenching the seam, and means for operating the same, as set forth.

3. A can-making machine comprising means for raising a sheet of tin, supporting-plates automatically thrown underneath the sheet to support the same while it is being pushed forward to be fed to a location where the sheet is cut into strips, and means for stamping the tops and bottoms for the cans out of said strips and afterward shearing the waste ends, oscillating crimping members for turning the ends of said strips, mechanism for turning the ends about the former and interlocking and clenching the same, and a reciprocating means for feeding the body portion of a can upon the former, as set forth.



location where the sheet is cut into strips, and means for stamping the tops and bottoms for the cans out of said strips and afterward shearing the waste ends, means for turning the strip about a former and interlocking the crimped ends, a slide, toggle-joint connections for clenching the seam, and means for operating the same, all operated automatically, as set forth.



4. A can-making machine comprising means for raising a sheet of tin, supporting-plates thrown underneath the sheet to support the same while it is being fed forward, frictional feed-rollers for carrying the sheet forward to a location to be cut into strips by a shearing-knife, an intermittent-feeding carrier on which the strips are deposited, means for stamping the tops and bottoms out of said strips, and afterward shearing the waste ends, oscillating crimping members for turning the ends of said strips, mechanism for turning the ends about the former and interlocking and clenching the same, and a reciprocating means for feeding the body portion of a can upon the former, as set forth.

5. A can-making machine comprising means for raising a sheet of tin, movable plates which are fed underneath the sheet after being raised, and adapted to support the sheet while it is being pushed forward, a shearing-knife for cutting the sheet into strips and depositing the same upon an intermittent carrier, means for stamping tops and bottoms for the cans out of said strips and afterward shearing the waste ends, oscillating crimping members for turning the edges of said strips, clamping means for raising the strip with crimped ends against a former and bringing the edges together and interlocking the same, a reciprocating slide adapted to engage diametrically opposite portions of a can, and feed the same forward upon the former, as set forth.

6. A can-making machine comprising a carriage on which a pile of sheets of tin is adapted to be carried, and means for imparting an intermittent motion to said slide, whereby a pile of tin is fed forward, means for raising sheets of tin singly from said pile, movable supporting-plates on which the sheets are held suspended while being pushed forward to be fed to a location where the sheet is cut into strips, and means for punching the tops and bottoms for the cans out of said strips, and afterward shearing the waste ends, an intermittent carrier on which the strips are fed, oscillating crimping members for turning the edges of the strips, and means for turning the strips about a former and interlocking the edges and clenching the same, and mechanism for feeding the body portion of the can thus formed forward upon the former, as set forth.

7. A can-making machine comprising a frame, a carriage on which a pile of sheets of tin is deposited and means for imparting an intermittent movement to said slide to a location underneath the mechanism for receiving the sheets singly, movable plates which are thrown underneath the sheet which has been previously raised from the pile, oscillating arms for pushing the sheet upon said supporting-plates, to be fed forward to a location underneath a shearing-knife where the sheet is cut into strips and deposited upon an intermittent carrier, means for punching the tops and bottoms for the cans out of said strips and afterward shearing the waste ends, oscillating crimping members adapted to turn the edges of the strips, a former and means for turning the strip with crimped edges about said former and interlocking the edges and clenching the same, and feeding the body portions of the cans thus formed forward upon the former, as set forth.

8. A can-making machine comprising a frame having a table, a reciprocating carriage working thereon and adapted to carry a pile of sheets of tin, means for imparting an intermittent movement to said carriage, antifriction-wheels mounted on the table and adapted to contact with the under sheet of the pile as it is fed forward, means for raising singly sheets of tin from said pile, movable plates which are thrown under the edges of the sheet after it has been raised, an oscillating arm adapted to push the sheet, suspended by said plates forward to be fed to a location underneath the shearing-knife, means for stamping the top and bottom for the can from said strip, an intermittent carrier on which the strips are fed, means for shearing the waste ends after the tops and bottoms have been cut therefrom, oscillating members adapted to crimp the edges of the strips, and means for turning the strips about a former, interlocking the crimped ends and clenching the same, and mechanism for feeding the body portion thus formed forward upon the former, as set forth.

9. A can-making machine comprising a frame, a table, a carriage mounted thereon and adapted to hold a pile of sheets of tin, antifriction-wheels mounted in said table, means for raising singly sheets of tin from said pile, movable plates which are thrown under the edges of the sheet after it has been raised, an oscillating arm adapted to push the sheet, suspended by said plates, forward, to be fed to a location underneath the shearing-knife, an operating-shaft, a cam-wheel mounted loosely thereon, an arm pivotally mounted on a stationary pin at one end, an antifriction-wheel carried by said arm adapted to travel in a groove in said cam-wheel, link connections between said arm and said carriage, clutch mechanism adapted to throw said cam into motion with the operating-shaft, whereby said carriage will be fed forward, as set forth.

10. A can-making machine comprising a frame, a table, a reciprocating carriage mounted thereon designed to carry a pile of sheets of tin, means for imparting an intermittent movement to said carriage, and means for raising a sheet of tin from said pile, movable supporting-plates adapted to be thrown underneath the edges of the sheet, and an oscillating arm for pushing the sheet forward upon said supporting-plates to be fed forward to a location where the sheet is cut into strips, an intermittent endless carrier on which the strips are deposited, means for stamping the tops and bottoms for the cans out of said strips, and afterward shearing the waste ends, oscillating members adapted to crimp the edges of said strips, means for raising the strip with crimped edges against a former, and for turning the sheet about the same and interlocking the edges, a clenching-slide and toggle-link connections, a slide having arms which are designed to be seated in grooves at locations diametrically opposite each other in the former, and adapted to push the body portions thus formed forward upon the former, and an endless carrier for advancing the body portions of the cans to be soldered, as set forth.

11. A can-making machine comprising a means for raising sheets of tin and feeding the same forward to locations where they are cut into strips by a shearing-knife, an intermittent carrier on which the strips are fed, means for stamping the tops and bottoms from the strips, and afterward shearing the waste ends, oscillating members for crimping the edges of the strips, a former about which the strips are turned and their edges interlocked and clenched, means for pushing the body portions of the cans thus formed forward on the former, an endless carrier for conveying the body portions, and the automatic soldering device for feeding molten solder over the seams as the cans are in motion, as set forth.

12. A can-making machine comprising means for raising sheets of tin, supporting the same and feeding the same forward, a shearing-knife for cutting the sheets into strips, an intermittent endless carrier on which the strips are deposited, means for stamping the tops and bottoms for the cans out of said strips and afterward shearing the waste ends thereof, oscillating members for crimping the edges of the strips, a former, clamping means for turning the strip about the former and interlocking its ends, means for clenching its interlocked ends, and reciprocating feed mechanism for pushing the body portion of the can thus formed forward on the former, an endless carrier for conveying the cans to be soldered, a soldering mechanism, and means for automatically forcing molten solder over the seam as the body portions of the cans are fed forward on the former, as set forth.

13. A can-making machine comprising means for raising sheets of tin and holding the same suspended while being pushed forward, a shearing-knife for cutting the sheets into strips, an intermittent endless carrier on which the strips are deposited, means for stamping the tops and bottoms for the cans and afterward shearing the ends thereof, oscillating members for crimping the edges of the strips, a former, and means for clamping the strip against the former and turning the ends about the same and interlocking the edges and clenching the same, a reciprocating slide having arms adapted to feed the body portion of the can thus formed forward on the carriage, an endless carrier for continuing the movement of the body portion of the can to be soldered, soldering mechanism, means for feeding molten solder upon the seam while the can is in motion, and means for pushing off the soldered body portions from the end of the former, as set forth.

14. A can-making machine comprising means for raising a sheet of tin, movable plates for holding the sheet, an oscillating arm for pushing the sheet forward to be fed to a location where the sheet is cut into strips, an intermittent endless carrier on which the strips are fed, means for stamping tops and bottoms for the body portions of the cans out of said strips, and for shearing the waste ends and crimping the strips, while said endless carrier is at rest, and mechanism for turning the strips about the former to interlock the edges thereof, and clenching the same, as set forth.

15. A can-making machine comprising means for raising a sheet of tin, movable plates for holding the same suspended, oscillating means for pushing the sheet forward, a reciprocating shearing-knife for cutting said sheet into strips, an intermittent endless carrier on which the strips are deposited, means for simultaneously stamping the tops and bottoms out of said strips, and afterward shearing the waste ends thereof, oscillating members adapted to crimp the edges of said strips, a former, and clamping means upon which the strips are fed, and means for turning the strip about the former and interlocking and clenching the edges thereof, as set forth.

16. A can-making machine comprising means for raising a sheet of tin, movable plates for supporting the sheet, oscillating means for pushing the sheet forward, a reciprocating shearing-knife adapted to cut the sheet into strips, an intermittent endless carrier on which the strips are deposited, means for stamping the tops and bottoms for cans out of said strips, shearing-knives for cutting the waste ends of the strips, oscillating members adapted to crimp the edges of said strips, a former, means for clamping the strips against the former and automatically interlocking and clenching the edges, a reciprocating slide having a bifurcated arm, the longitudinal portions of which are disposed in diametrically opposite grooves in the former, the ends of said arms being bent toward each other and adapted to engage the rear edge of the body portion of a can and feed the same forward on the former, as set forth.

17. A can-making machine comprising a frame, means for raising sheets of tin, movable supports which are thrown under the sheet when raised, and means for pushing said sheet forward upon the supporting-plates to be fed forward to shearing means where the sheet is cut into strips, an intermittent carrier on which the strips are deposited, stamping means for cutting the tops and bottoms for the cans out of said strips, and shearing means for cutting the waste ends, oscillating crimping members pivoted adjacent to their lower ends, antifriction-wheels carried by the latter, grooved cams in which said antifriction-wheels travel whereby said crimping members may be tilted in unison, a former, means for holding the strips against and turning the same about the former and interlocking the crimped edges, clenching means, and feeding-arms for advancing on the former the body portion of the can thus formed, as set forth.

18. A machine for making cans comprising a frame, means for raising sheets of tin and feeding the same forward, a shearing-knife for cutting the sheet into strips, an intermittent endless carrier on which the strips are deposited, stamping-dies and means for reciprocating the same against the ends of said strips whereby the tops and bottoms for the cans are cut, shearing-knives for trimming the waste ends of the strips, oscillating crimping-arm, cam-wheels, and antifriction-rollers carried by said crimping-arms and actuated by said cams, a former, movable jaws for raising the strip against and turning the same about said former and interlocking the edges thereof, a sliding clenching member, double toggle-link and lever connections therewith, a cam adapted to actuate said links and lever, and means for feeding the body portion of the can forward upon the former to be soldered, as set forth.

19. A can-making machine comprising the frame, means for raising sheets of tin and feeding the same forward, a reciprocating knife for shearing the sheet into strips, an intermittent carrier on which the strips are deposited, means for stamping the tops and bottoms for the cans out of said strips, and knives for shearing the waste ends, oscillating crimping members adapted to crimp the ends of said strips, cam-wheels, antifriction-rollers carried by the arms of said crimping members and actuated by said cam, a former, movable clamping means on which the strips are singly deposited from said intermittent carrier, a cam, and means for operating the same whereby the jaws are moved to clamp the sheet against the former, and a second cam for turning the edges about the former to interlock the crimped edges thereof, a reciprocating clenching-slide, double toggle-link connections therewith, a reciprocating slide having a bifurcated arm adapted to feed the body portions of the cans on the former, a shaft with two cams thereon, one of which is adapted to actuate said clenching member, the other designed to reciprocate the bifurcated feeding-arm, as set forth.

20. A can-making machine comprising a frame, means for raising sheets of tin, and supporting the same, and feeding the same forward on its supports, a reciprocating knife for shearing the sheets into strips, an intermittent carrier on which the strips are deposited, means for cutting from said strips the tops and bottoms for the cans, and flanging the same, oscillating crimping members for turning the edges of the strips to be interlocked, movable clamping-jaws on which the strips are fed on the intermittent carrier, means for clamping the strip of tin against the former, turning the ends of the strip about the former and clenching the same, a reciprocating clenching member, double toggle-link connections therewith, a cam adapted to actuate said toggle-links, a slide having a bifurcated arm adapted to feed the body portions of the cans forward on the former, a link pivoted on a stationary pin at one end, the other end pivotally connected to said slide, and a rocking arm having pivotal connection with said link, and an antifriction-roller carried by said arm, and the cam on which said antifriction-roller travels, and means for operating said cams, as set forth.

21. A machine for making cans comprising a frame, and means for raising sheets of tin, supporting and feeding the same forward on said supports, a reciprocating shearing-knife designed to cut said sheets into strips of a width equal to the length of the body portion of a can, reciprocating carriages, die cutting-knives secured thereto, adapted to cut the tops and bottoms for the cans from said strips, an intermittent carrier on which the strips are fed, reciprocating knives for cutting the waste ends of the strips, eccentrics, and pivotal connections between the same and said reciprocating carriages or slides, gear connections for driving said eccentrics, crimping members pivoted adjacent to their ends, antifriction-rollers carried by the arms of said crimping members, cams on which said rollers travel, a former, and means for bending the strip about the same and interlocking its crimped edges and clenching the same, and means for feeding the body portion of the can thus formed forward upon the former, as set forth.

22. A can-making machine comprising means for raising sheets of tin, supporting the same, and feeding the sheets forward, a reciprocating knife for shearing the sheet into strips, an endless carrier on which the strips are fed, a rotating shaft, an arm carried thereby, an antifriction-wheel carried by said arm, which is adapted to impart an intermittent movement to said carrier, means for stamping the tops and bottoms for the cans, shearing the waste ends and afterward crimping the edges, and means for turning the strips about a former and interlocking and clenching the crimped edges of the strips, as set forth.

23. A machine for making cans comprising means for raising sheets of tin, feeding the same forward when held in a raised position, a reciprocating shearing-knife for cutting the sheet into strips, an endless-chain carrier, sprocket-wheels on which the chain is mounted, a wheel having recesses in its circumference mounted to rotate with one of said sprocket-wheels, a rotatable arm, an antifriction-wheel carried thereby, which is adapted at each revolution to engage in one of said recesses and impart an intermittent movement to said chain, and means for stamping the tops and bottoms for the can, shearing the waste ends, and crimping the edges of the strips as they are fed forward on said carrier, and means for turning the strips about a former, interlocking and clenching the edges thereof, as set forth.

24. A machine for making cans, comprising means for raising sheets of tin, movable supporting devices for holding the sheets suspended, and means for pushing the sheets forward on their supporting devices, a reciprocating knife for cutting the sheet into strips, an endless carrier comprising sprocket-wheels, a sprocket-chain mounted thereon, having lugs arranged in pairs on said links, a driving-wheel rotating with one of said sprocket-wheels and provided with radial recesses in its circumference and equidistant, a rotating arm, an antifriction-wheel carried by said arm and adapted at each rotary movement to engage in one of said recesses and impart an intermittent movement to said carrier, means for stamping the tops and bottoms for the cans from said strips and afterward shearing the waste ends and crimping the edges of the strips, preparatory to their being turned to form the body portion of the can, as set forth.

25. A can-making machine comprising means for raising the sheets of tin, holding the same in a raised position, an oscillating mechanism for pushing the plates forward, friction feeding-rollers between which the sheets are fed, a reciprocating knife for cutting the sheet into strips, friction feed-rollers arranged in pairs, between which the strips that have been cut are fed, an intermittent endless carrier having lugs arranged in pairs on the links thereof, and adapted to receive the strips for passing between said friction feed-rollers, means for stamping the tops and bottoms from said strips as they are fed forward by said carrier, reciprocating knives for cutting the waste ends of the strips, oscillating crimping members pivoted adjacent to the ends of the strips and adapted to crimp said edges, means for clamping the strips with crimped edges against a former, and turning the strips about the said former, and clenching the edges thereof, a feeding-slide having a bifurcated arm which is adapted for feeding the cans forward on the former.

26. A can-making machine comprising means for feeding sheets of tin forward to be cut into strips, from which tops and bottoms for the cans are stamped, shearing-knives for cutting the waste ends of the strips after the tops and bottoms have been cut therefrom and means for crimping and bending the strips about a former and interlocking the edges thereof, an endless carrier having lugs which are adapted to engage the rear edges of the body portions of the cans and advance the same on the former and a vertically-movable rack having lugs thereon which form stops to hold the strips while the tops and bottoms are being stamped and the edges crimped, and means for soldering the clenched seams as they are fed underneath the soldering mechanism, as set forth.

27. A can-making machine comprising means for feeding sheets of tin forward and cutting the same into strips, an intermittent carrier on which the strips are fed, means for stamping the tops and bottoms for the cans out of said strips and shearing the waste ends and afterward crimping the edges, while the strips are on said carrier, and at rest, means for turning the strips about a former, interlocking and clenching the edges, a reciprocating plate having arms adapted to feed the body portions of the cans thus formed forward upon the former, an endless carrier adapted to receive the cans from said reciprocating carrier, and soldering means whereby a stream of molten solder is fed against the interlocked seam as it is fed by said endless carrier forward upon the former, as set forth.

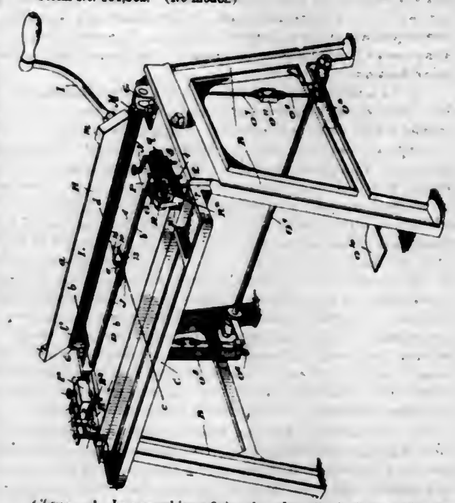
28. A can-making machine comprising means for feeding sheets of tin forward into the machine and cutting the same into strips of a width equal to the length of the body portion of a can, an intermittent carrier on which the strips are fed forward, means for stamping the tops and bottoms for the cans from said strips and shearing the waste ends, crimping members for turning the edges of said strips, means for turning the strips about a former and interlocking and clenching the edges, an endless carrier, and means for pushing the body portion of the can after the edges have been clenched, onto said endless carrier, a solder-pump and solder-feeding nozzle and means for operating the piston of the pump to force the molten solder over the seam of the body portion of a can, and means for shutting off the feeding of the solder after the end of the can passes said nozzle, as set forth.

29. In a can-making machine, the combination with a mechanism for intermittently feeding sheets of tin to positions to be prepared for making the body portions of cans, of a vertically-movable rack, horizontally-disposed strips forming a portion of said rack, and means for moving said rack so that said strips will be thrown in advance of the sheets of tin, as the intermittent carrier comes to rest, for the purpose of steadying the sheets while the ends are being sheared from said sheets, and the tops and bottoms punched therefrom, as set forth.

30. In a can-making machine, the combination with mechanism for intermittently feeding sheets of tin into positions to be prepared for forming the body portions of cans, of reciprocating rods mounted in suitable bearings in the frame of the machine, a rack supported by said rods, strips forming a portion of said rack, a cross-piece fastened to the lower ends of said rods, a cam-wheel for raising and lowering said cross-piece, said rack being adapted to be actuated so that the strips thereon will be positioned in advance of the sheets of tin as the sheet-feeding mechanism comes to a rest, and provided for the purpose of steadying the sheets as the tops and bottoms are punched therefrom, and the ends of the sheets crimped, as set forth.



## 754,941. MACHINE FOR BORDERING CALENDARS OR SIMILAR SHEETS. JOHN F. ROSS, Toronto, Canada. Filed June 15, 1903. Serial No. 161,502. (No model.)



*Claim.*—1. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge, and means for operating said former, of a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

2. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former, from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

3. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former, from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender pivoted to said bed constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by said operating means for said former, and means for enabling said bender to move backward.

4. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting

thereon and against said former; spring-held stop-strips held in said bed and against which said metal strip abuts to prevent its backward movement; the said beveled bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by the operating means for said former, and means for enabling said bender to move backward.

5. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former, from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender comprising a yielding portion constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the pivoted portion of said bender pivoted on said bed; means for yieldingly connecting the said portions of the bender together; the said yielding portion of said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; spring-held stop-strips held in said bed and against which said metal strip abuts to prevent its backward movement, the inner ends of said stop-strips being separated and constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween, a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head 9 of said eyelet in proper position; the said yielding portion of the bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by said operating means for said former.

6. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender comprising a yielding portion constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the pivoted portion of said bender pivoted on said bed; means for yieldingly connecting the said portions of the bender together; the said yielding portion of said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; two spring-held stop-strips held in said bed and against which said metal strip abuts to prevent its backward movement, the inner ends of said stop-strips being separated and constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween, a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head 9 of said eyelet in proper position; the said yielding portion of the bender designed to be moved backward by the forward movement of said former, and being locked down upon said metal strip before the former advances, by said operating means for said former.

7. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed; means for raising up said former from said bed, when it is returned to normal, and means for horizontally moving said former, of a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to be operated adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; two spring-held stop-strips held in said bed and against which said metal strips abut to prevent their backward movement, the inner ends of said stop-strips being separated and constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween and upon said metal strips; a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head 9 of said eyelet in proper position; the said bender being locked down upon said metal strip and eyelet before the former advances by said operating means for said former and designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

8. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed, and provided with a concave lower edge which is normally held free of the surface of said bed, and means for horizontally moving said former, of means, at a slight forward movement of said former, for pinching its concave lower edge down upon said bed so that the metal strip cannot pass between same and said bed.

9. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed, and means for horizontally moving said former, of means, at a slight forward movement of said former, for pinching its concave lower edge down upon said bed so that the metal strip cannot pass between same and said bed, and means for raising the concave lower edge of said former free of the surface of said bed when said former is returned to normal so as to release the bordered edge of the calendar.

10. In a machine of the class described, the combination with a bed; a bender pivoted thereto and designed to be moved down upon said bed and bend the metal strip resting thereon, and then move backward; means for enabling said bender to move backward, and means, against which said metal strip is bent, for moving said bender backward, of means for locking said bender down upon said metal strip during the whole of its backward movement.

11. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge; means for releasing the bordered edge of the sheet from said former, and means for operating said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling the said bender to move backward.

12. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed, and means, at a slight forward movement of said former, for pinching its concave lower edge down upon said bed, of means for horizontally moving said former.

13. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating thereon and provided with a concave lower edge; means for operating said former; a bender pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge *a* designed to operate adjacent the concave lower edge of said former so as to always be the required distance from the front edge *i* of said former, the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward, of means for maintaining the required distance of the knife-edge *a* of the bender from the front edge *i* of the former.

14. In a machine of the class described, the combination with a bed; two spring-held stop-strips held in said bed and against which the metal strip to be operated upon abuts, the inner ends of said stop-strips being constructed to form a throat to permit of the advance of the eyelet whose tongue rests therebetween and upon said metal strip, and a suitably-constructed eyelet-stud spring-held in said bed and situated so as to support the head of said eyelet in proper position, of a bender pivoted to said bed and designed to be moved down upon said stop-strips and eyelet-stud which are depressed so that the said bender will press upon the eyelet and strip.

15. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge, and means for operating said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former; the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; the said beveled bender designed to be moved backward by the forward movement of said former, and means for enabling said bender to move backward.

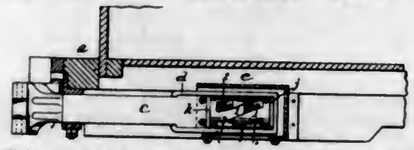
16. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge, and the ends *q*, and means for operating said former, of a bender, pivoted to said bed, constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former, the said bender designed to be moved down upon said bed and bend the metal strip resting thereon and against said former; means for preventing the backward movement of said metal strip, the said beveled bender being constructed with the ends *m* so that the ends *q* of said former will abut thereagainst and move backward said beveled bender during the forward movement of said former, and means for enabling said bender to move backward.

17. In a machine of the class described, the combination with a bed, and a horizontally-reciprocating former operating on said bed provided with a concave lower edge; of bell-crank levers pivoted to said bed having their upper portions R operating in the slots R with which said former is provided; a locking-bar pivoted to the upper portions of said bell-crank levers and provided with slots *r;* studs secured in said former and operating in the said slots in said locking-bars, and suitable guides for said locking-bars, all arranged to operate as set forth and for the purpose specified.

18. In a machine of the class described, the combination with a bed; a horizontally-reciprocating former operating on said bed and provided with a concave lower edge which is normally held free of the surface of said bed; means for pinching said former down upon said bed at a slight forward movement of same; a bender pivoted to said bed and constructed with a beveled portion which terminates in a knife-edge designed to operate adjacent the concave lower edge of said former, of bell-crank levers pivoted to said bed having their upper portions R operating in the slots R' with which said former is provided; a locking-bar pivoted to the upper portions of said bell-crank levers and provided with slots *r;* studs secured in said former and operating in the said slots in said locking-bars, and suitable guides for said locking-bars, all arranged to operate as set forth and for the purpose specified.



## 754,942. RAILWAY-CAR-COUPLING ATTACHMENT. WILLIAM THORNBURGH, Vermilion, Ohio, assignor to Thomas H. Simpson, Detroit Mich. Filed July 24, 1903. Serial No. 166,352. (No model.)



*Claim.*—1. A draft apparatus comprising box-followers, and end plates contacting with the outer ends of the box-followers, said box-followers constructed with oppositely-extended tongues having spirally-curved edges and intermediate spirally-curved ways, the tongues of the box-followers respectively, fitting into the ways of the opposite box-followers, and longitudinally and spirally movable in said ways, the tongues of said followers having frictional contact at their adjacent edges, substantially as and for the purpose described.

2. A draft apparatus comprising a spring, box-followers about opposite ends of the spring, each of said followers constructed with longitudinally-extended tongues having spirally-curved edges and intermediate spirally-curved ways, the tongues of one of said followers fitting into the ways of the opposite follower, and laterally-immovable end plates having frictional contact with the adjacent extremities of the box-followers, the tongues of said followers having a reciprocatory and spiral movement in the ways of the opposite followers upon the compression and recoil of the spring, the tongues of said followers having frictional contact at their adjacent edges.

3. A draft apparatus comprising box-followers, and end plates having frictional contact with the outer ends of the box-followers respectively, said box-followers constructed with oppositely-extended tongues having spirally-curved edges, and intermediate spirally-curved ways, the tongues of one of the box-followers fitting into the ways of the opposite box-follower and longitudinally and spirally movable in said ways, said box-followers being of equal diameters throughout their length, the tongues of said followers having frictional contact at their adjacent edges.

4. A draft apparatus comprising a spring, and box-followers about opposite ends of the spring, said box-followers having longitudinally-extended interlocking tongues having spirally-curved edges and intermediate spirally-curved ways whereby, upon the compression and recoil of the spring, said followers will have a longitudinal and spiral movement.

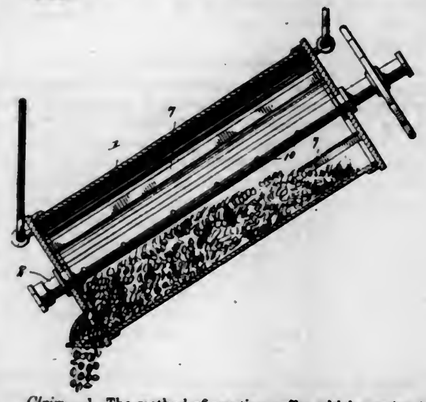
5. A draft apparatus comprising side plates, end plates laterally immovable within said plates, a spring-box, box-followers about opposite ends of the spring having interlocking longitudinally-extended tongues having spirally-curved edges and intermediate spirally-curved ways, the outer extremities of said followers having frictional contact with said end plates, and a draw-bar yoke whereby, upon endwise movement of the yoke, said box-followers will have a reciprocatory and spiral movement.

6. A draft apparatus comprising a spring, box-followers about opposite ends of the spring having oppositely-extended interlocking tongues having spirally-curved edges, intermediate spirally-curved ways and laterally-immovable end plates, the extremities of said followers having a rotatable frictional contact with said end plates, and the interlocking tongues of the box-followers having frictional contact one with another at their adjacent edges, whereby upon a compression or recoil of the spring said box-followers will have a reciprocatory and spiral movement for the purpose described.

7. A draft apparatus comprising box-followers each constructed with a head at its outer end, and oppositely-extended tongues having spirally-curved edges and intermediate spirally-curved ways, a spring located between said heads and within said tongues, the tongues of one of the box-followers fitting into the ways of the other box-follower and longitudinally and spirally movable in said ways, said box-followers when closed together forming a cylindrical structure.

8. A draft apparatus comprising duplicate box-followers, said box-followers each constructed with a head, with oppositely-extended tongues having spirally-curved edges, and with intermediate spirally-curved ways, the tongues of one of the box-followers fitting into the ways of the opposite box-follower, and longitudinally and spirally movable in said ways.

## 754,943. METHOD OF ROASTING COFFEE. THEODORE R. TIMBY, Brooklyn, N. Y. Filed Feb. 14, 1901. Serial No. 47,301. (No model.)

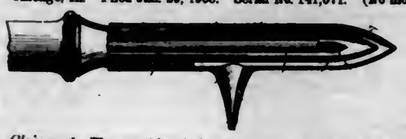


*Claim.*—1. The method of roasting coffee which consists in inclosing coffee-beans in a strong receptacle, heating the same, withdrawing air and gases from the receptacle, cooling the coffee, and restoring thereto gases withdrawn from coffee.

2. The method of roasting coffee which consists in inclosing coffee-beans in a strong vessel, creating a partial vacuum in the vessel, heating the beans to a roasting temperature and storing the gases driven off from the coffee by heat, and afterward restoring such gases to coffee-beans under pressure.

3. The step in the art of roasting coffee which consists in partially withdrawing air therefrom, then developing gases from the beans by heat applied at a roasting temperature, storing the gases so developed, and restoring them to the beans under pressure.

## 754,944. TOOL FOR PYROGRAPHIC WORK. ZELL N. TYSOWSKA, Chicago, Ill. Filed Jan. 29, 1903. Serial No. 141,071. (No model.)



*Claim.*—1. The combination with a pyrographic tool having a walled combustion-chamber; of a scorcher attachment comprising an external sheath adapted to completely inclose the walls of the combustion-chamber, said sheath being provided with a discharge-nozzle for directing the issuing gases in a fine hot stream, substantially as described.

2. A scorcher attachment for a pyrographic tool comprising an external sheath adapted to completely inclose the combustion-chamber, said sheath being extended at its end in the form of a nozzle having a fine issue-orifice substantially as and for the purpose described.

3. A pyrographic tool comprising a gas-supply tube, a combustion-chamber inclosing the supply-tube and having an escape-orifice

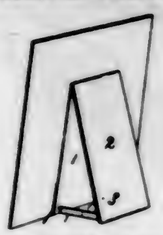
for the burned gases, and an external sheath having a scorcher-nozzle, the combustion-chamber of the pyrographic point being located between the escape-orifice from the combustion-chamber and the scorcher-nozzle of the sheath, whereby the escaping burned gases are made to travel exteriorly over the combustion-chamber and be reheated in passing from the escape-orifice of the combustion-chamber to the scorcher-nozzle substantially as described.

4. A pyrographic scorcher comprising a walled combustion chamber having an escape-orifice for the burned gases, a reservoir-chamber exterior to the combustion-chamber and in open communication with the escape-orifice of said combustion-chamber, and a nozzle communicating with the reservoir-chamber and having a fine issue-orifice whereby the pulsations of the pumping-bulb are received in the reservoir-chamber and a practically continuous and uniform stream of hot gases is made to issue from the nozzle substantially as described.

5. A tool for pyrographic purposes, consisting of the combination with a hollow pyrographic point having an interior combustion-chamber and provided with an escape-orifice for the discharge of the hot gases; of a scorcher consisting of a sheath constructed and arranged to be attached to said pyrographic point to inclose the entire end of the same, and having a nozzle through which the said products of combustion or hot gases from said escape-orifice may be projected with precision against the work to be scorched, substantially as described.

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**754,945. EASEL.** JOHN WESER, Newark, N. J., assignor to the Whitehead & Hoag Company, Newark, N. J., a Corporation of New Jersey. Filed Dec. 26, 1902. Serial No. 136,720. (No model.)



*Claim.*—1. An easel comprising front and back sections hinged to each other, a base-section hinged to the lower portions thereof so as to permit the lateral edges to be turned out of the same plane with the body of said base-section for the purpose of imparting strength against compression.

2. An easel comprising front and back sections hinged to each other, a base-section hinged to the lower end thereof, said base-section being so constructed as to allow the edges to be turned out of the same plane with the base and having a central lateral crease therein.

3. An easel comprising front and back sections hinged to each other, a base-section hinged to the lower ends of said sections, said base having slotways upon each side adjacent to the lower ends of the upright sections for the purpose of allowing the edges of the base-section to be turned out of the plane with the body thereof.

4. An easel comprising front and back sections hinged to each other, a base-section secured to the lower ends thereof and having slotways upon each side adjacent the uprights, said base-section being weakened on lines between the heads of said slotways for the purpose of allowing the edges of the base to be turned out of the plane of the base to impart strength to said base.

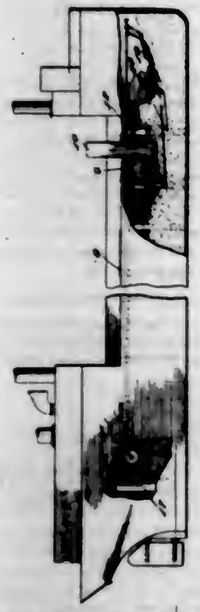
5. An easel comprising front and back sections hinged to each other, a base-section hinged to the lower ends of said upright sections and having lateral slotways adjacent the junction of the uprights and the base, said base-section being weakened on lines between said slotways and central laterally-extending crease or slotway for the purpose set forth.

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**754,946. SHOVELING DEVICE.** JAMES G. WHITAKER, Ogdensburg, N. Y. Filed May 28, 1903. Serial No. 158,740. (No model.)

*Claim.*—1. A mechanism for moving materials from place to place comprising a power-drum, a material-engaging shovel or scraper, a cable connecting the same with the said drum, an overhaul-cable connected with the scraper-cable for pulling it from its drum and an overhaul-spool for operating the same.

2. A material-transfer mechanism comprising a power-drum and a shovel connected therewith, line-piping connecting a pressure-supply with the drum-operating mechanism, the said line-piping extending to opposite points where the shovel is to be operated and means for connecting the shovel mechanism with the line-piping at different points and controlling the flow of pressure through the same.



3. A material-transfer mechanism comprising material-moving shovel or member, a power winding-drum connected with said shovel for moving it from place to place, a line of pressure-conducting pipe leading from the pressure-supply to the said drum mechanism and doubled upon itself opposite the points where the shovel is to be operated, means carried by the shovel for connecting the branches of the line-piping opposite said points of operation and controlling means mounted on the said shovel for regulating the flow of pressure through said piping.

4. A shoveling mechanism comprising a shovel, a power-drum, a cable connecting the shovel therewith, an overhaul-spool, a cable connecting the overhaul-spool with the said shovel-cable, sheaves for regulating the direction of the cable mounted at points opposite the place where the shovel is to be operated, means for delivering pressure to the drum-controlling mechanism the connections with the said pressure-regulating means being capable of movement to points opposite the said sheaves so as to be controlled by the operator of the shovel.

5. A shovel-controlling mechanism comprising a cable connected with the shovel, a power-drum for winding in the cable, an overhaul-spool for unwinding the cable, a cable connecting the overhaul-spool with the power-cable, means located at different distances from the drum for permitting the movement of the cable, said means also being capable of adjustment to different heights with respect to the material operated upon by the shovel.

6. A material-shoveling mechanism comprising a shovel, a cable for hauling the same, a drum for winding in the cable, an overhaul-cable connected with the hauling-cable at a suitable point intermediate its length for unwinding the hauling-cable, sheaves for directing the movement of the said cable in the direction of the pull thereof upon the shovel, means for supporting the said sheaves at distances from the drum and stanchions for supporting the said sheaves at different heights with respect to the materials operated upon.

7. A material-shoveling mechanism for vessels, barges and the like comprising a power-shaft, a drum mounted thereon, a shovel connected with the drum, a cable forming said connection, sheaves mounted at points opposite the hatches of said vessel for causing the cable to draw the shovel toward said hatches, pressure-supplying mechanism for operating the said drum provided with line-pipes extending opposite of all said hatches, means carried by the shovel for controlling the flow of pressure through said piping, adjustable connections carried by the shovel and means opposite each hatch for engaging said adjustable connections.

8. A shoveling mechanism comprising a winding-drum and an overhaul-drum, a shovel connected therewith, a power-shaft for operating said drums, a friction mechanism for the power-drum and a friction mechanism for the overhaul-spool, a pressure-piston for operating said friction mechanism and means extending from the pressure-cylinder to the shovel for controlling the application of pressure to said cylinder, and the consequent operation of the friction device for connecting the drum and spool with the power-shaft.

9. A material-shoveling mechanism, comprising a shovel, a cable connecting the same with the power-drum, a power-drum for operating such cable, a power-shaft carrying said drum, a friction mechanism for connecting the drum with the shaft, a pressure mechanism for operating the friction device and means extending to the shovel for controlling the application of power to the pressure device.

10. A shoveling mechanism comprising a shovel, a power-drum, a cable for moving the shovel, the said drum operating to wind in the cable, a power-shaft for rotating the drum, a friction mechanism for connecting the drum with the shaft, a pressure-cylinder for controlling the application of the friction mechanism, piping for introducing pressure to the cylinder, a valve controlling the flow of pressure through said piping, a line of piping extending to the shovel from said valve and thence to the pressure-supply and a valve carried by the said shovel for controlling the pressure through said shovel-piping and effecting the valve which controls the admission of pressure to the said cylinder.



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**754,947. ADJUSTABLE HEEL FOR SHOES.** AMOS WESTWOOD, Oakland, Cal., assignor of one-half to Isaac Fiel, San Francisco, Cal. Filed Aug. 5, 1902. Serial No. 118,434. (No model.)



*Claim.*—An adjustable-tread heel comprising a heel-body, an interlocking plate of resilient material permanently secured to the bottom face of the body said plate having a central aperture, a circular recess surrounding said aperture, alternating radial ribs and depressions in said recess; a removable and adjustable tread composed of a circular pad, and an interlocking plate of resilient material secured permanently to one face thereof, said plate having a central aperture and a circular boss surrounding said aperture, alternating radial ribs and depressions on the face of said boss, adapted to interlock with the corresponding parts or the bottom of the heel-body in any position of adjustment of the pad, and a screw-bolt fastening the pad to the body.

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**754,948. ARTIFICIAL STRAW.** JOHN H. WHITE, Englewood, N. J. Filed Aug. 8, 1903. Serial No. 168,714. (No model.)



*Claim.*—1. As an article of manufacture, an artificial straw comprising a longitudinally-ribbed tube of paper, the spaces between the ribs reinforced by a stiffening material.

2. As an article of manufacture, an artificial straw comprising a longitudinally-ribbed tube of paper, the spaces between the ribs reinforced by a coating of paraffin.

3. As an article of manufacture, an artificial straw comprising a longitudinally grooved and ribbed tube of paper, the grooves of which contain a stiffening material.

4. As an article of manufacture, an artificial straw comprising a longitudinally grooved and ribbed tube of paper, the grooves of which contain paraffin.

5. As an article of manufacture, an artificial straw comprising a longitudinally grooved and ribbed tube of paper, the grooves, and the spaces between the ribs, of which contain a stiffening material.

6. As an article of manufacture, an artificial straw comprising a longitudinally grooved and ribbed tube of paper, the grooves, and the spaces between the ribs, of which contain paraffin.

7. As an article of manufacture, an artificial straw comprising a longitudinally grooved and ribbed tube of paper completely enveloped by a coating of paraffin, whereby the spaces between the ribs are reinforced by a stiffening material.

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**754,949. HAIR-DRESSING DEVICE.** JOHN T. WILCOX, Carlstadt, N. J. Filed Oct. 29, 1903. Serial No. 178,992. (No model.)



*Claim.*—1. A hair-dressing device comprising a body or back portion and a continuous row of teeth extending therefrom and integral therewith, having their points irregularly formed in alternating sections of long and short teeth intermediate the ends of the comb.

2. In a hair-dressing device, the combination with a longitudinally-curved back or body portion, of a continuous row of teeth extending therefrom integral therewith and formed in sections or divisions of alternating long and short teeth intermediate the ends of the comb.

3. In a hair-dressing device, the combination with a longitudinally-curved back or body portion, of teeth extending therefrom integral therewith and formed in alternating long and short sections, the points of the teeth being arranged on a line of reverse curves and gradually increasing in length from the shortest teeth of the short sections to the longest teeth of adjacent long sections.

4. In a hair-dressing device, the combination with a longitudinally-curved resilient back or body portion, of teeth of varying lengths extending therefrom and having their front ends or points included in an irregular line whose general direction is a curve of less radius than the curve of the part of the back to which their rear or inner ends join.

5. In a hair-dressing device, the combination with a longitudinally-curved resilient back or body portion, of teeth extending therefrom, the points of the teeth being on a line of reverse curves whose general direction is a curve of less radius than that of the curve of the part of the back from which they project, said teeth being included in a plane corresponding to the surface of a section of a cone and directed toward the apex of the cone.

6. A hair-dressing device, comprising a longitudinally-curved resilient back and a row of teeth extending forwardly from the rear edge of the back, formed with their outer ends or points included in an irregular line having a general curvature of less radius than that of the curvature of the part of the back to which the inner ends of the teeth connect.

7. A hair-dressing device, comprising a longitudinally-curved resilient back and a row of teeth extending forwardly from the rear edge of the back, formed with their outer ends or points included in an irregular line having a general curvature of less radius than the curvature of the part of the back to which the inner ends of the teeth connect, said teeth being included in a plane corresponding to the surface of a section of cone and directed toward the apex of the cone.

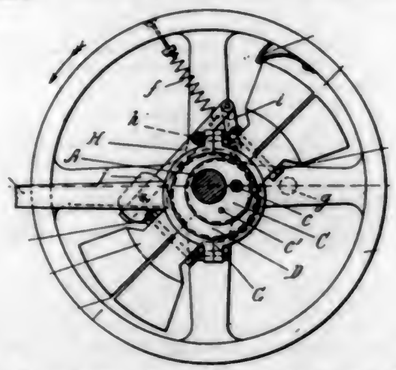
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**754,950. VALVE-GEAR.** FRANK WILLIAMS, Troy, Pa. Filed Nov. 28, 1903. Serial No. 182,960. (No model.)

*Claim.*—1. In a valve-gear, the combination, with an engine-driving shaft, and an inner eccentric rigidly connected therewith; of an inertia governor-arm provided with an outer eccentric which is journaled on the said inner eccentric, said arm and outer eccentric being formed in two parts so as to be adjustable to the said inner eccentric and being also provided with means for securing the said parts together, a spring which holds the said arm in a prearranged position, and an eccentric-rod for operating the steam-supply valve, said rod being worked by the said outer eccentric, substantially as set forth.

2. In a valve-gear, the combination, with an engine-driving shaft, and a wheel secured thereon; of an inner eccentric mounted on the said shaft, means for rigidly connecting the said eccentric with the said wheel in different positions, an inertia governor-arm

provided with an outer eccentric which is journaled on the said inner eccentric, a spring which holds the said arm in a prearranged position, and an eccentric-rod for operating the steam-supply valve, said rod being worked by the said outer eccentric, substantially as set forth.



3. In a valve-gear, the combination, with a driving-shaft, and a fly-wheel rigidly secured thereon and provided with a stop; of an inner eccentric also rigidly connected with the said shaft, a rigid governor-arm which forms an inertia weight, an outer eccentric rigidly connected to and supporting the said arm, said outer eccentric and arm being journaled on the said inner eccentric, a spring arranged between the said arm and fly-wheel and normally holding the said arm against the said stop, and an eccentric-rod worked by the said outer eccentric.

4. In a valve-gear, the combination, with a driving-shaft, and a carrier secured thereon; of an inner eccentric rigidly connected with the said shaft, an outer eccentric mounted loosely on the said inner eccentric, a rigid governor-arm which forms an inertia weight and which is rigidly connected to and supported by the said outer eccentric, a spring connected to the said carrier and holding the said governor-arm in a prearranged position, and an eccentric-rod worked by the said outer eccentric.

5. In a valve-gear, the combination, with a driving-shaft, and a carrier secured thereon; of an inner eccentric rigidly connected with the said shaft, an outer eccentric mounted loosely on the said inner eccentric, a rigid governor-arm which forms an inertia weight and which is rigidly connected to and supported by the said outer eccentric, a lever operated by centrifugal force said lever being pivoted to the said carrier and operatively connected with the said governor-arm, a spring connected to the said carrier and holding the said governor-arm in a prearranged position, and an eccentric-rod worked by the said outer eccentric.

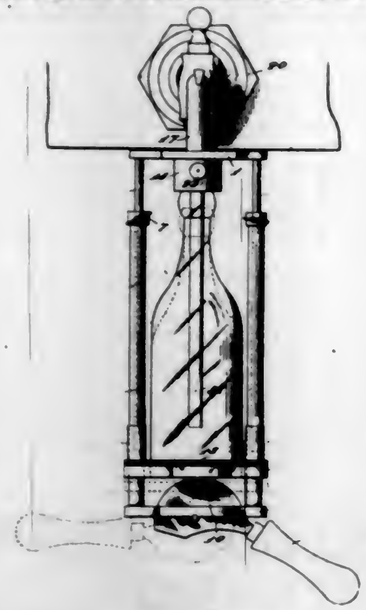
6. In a valve-gear, the combination, with a driving-shaft, and a carrier secured thereon; of an inner eccentric rigidly connected with the said shaft, an outer eccentric mounted loosely on the said inner eccentric, a rigid governor-arm which forms an inertia weight and which is rigidly connected to and supported by the said outer eccentric, a lever operated by centrifugal force and pivoted to the said carrier, a link pivotally connecting the said lever with the said governor-arm, a spring arranged between the said carrier and the said lever and holding the said governor-arm and lever in a prearranged position, and an eccentric-rod worked by the said outer eccentric.

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**754,951. BOTTLE-FILLING APPARATUS. JAMES ANDERSON, Liberty Center, Ohio. Filed Jan. 26, 1903. Serial No. 140,540. (No model.)**

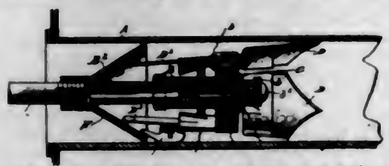
*Claim.*—1. In a mechanism of the class described, the combination with vertical hollow standards spaced apart and a cross-brace rigidly securing said standards together, a cross-head above said standards, vertical rods fixed to said cross-head and telescoping within said standards, means for locking said rods at various longitudinal adjustments, elongated, guiding-sleeves slidably surrounding said hollow standards, a block or platen carried by said sleeves, and a cam carried by said cross-brace designed to engage said block or platen, substantially as described.

2. In a mechanism of the class described, the combination of hollow standards, a cross-brace connecting the same, a cross-head spaced from said standards, rods carried by said head telescoping within the standards, a block or platen slidably engaging said standards above said cross-brace, guiding means for said platen engaging said standards, and means carried by said cross-brace for moving the platen longitudinal of the standards, substantially as described.



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**754,952. TUBE-SCRAPER. EDWARD M. SMITH, WILLIAM H. CARPENTER, and EDWARD R. WEIDENHOFT, Peoria, Ill.; said Smith and Carpenter assignors of one-half to Henry Oelkers, Peoria, Ill. Filed Aug. 24, 1900. Renewed Aug. 14, 1903. Serial No. 169,555. (No model.)**



*Claim.*—1. A tube-scraper, comprising a main body portion, a sleeve slidable on said body, scraping means carried thereby, spring-arms extending rearwardly from said sleeve carrying means adapted to flexibly engage the walls of a tube being scraped to retain the sleeve in a position relatively stationary to the body portion supporting said sleeve, substantially as described.

2. A tube-scraper, comprising a main body portion, a sleeve slidably mounted thereon, scraping means supported by said sleeve, a handle provided at its end with a conical chamber adapted to act on the scraping means, auxiliary mechanism carried by the said sleeve arranged to have a flexible bearing relation to the walls of the tubing being scraped, holding the sleeve in a fixed position when it is designed to move the main body portion and conical member from disengagement with the scraping means, substantially as described.

3. In a tube-scraper, the combination with a body part and a sleeve slidably arranged on said body part, scraping means carried by said sleeve, a series of radial arms extending from said sleeve, and a series of spring-engaging devices carried by said arms adapted to engage the wall of a tube being scraped for forming a frictional bearing for the sleeve within the tube, substantially as described.

4. In a tube-scraper, the combination with a body part having a squared portion and a handle from its opposite end, a sleeve slidable on said squared portion of the body part, scraping means carried by said sleeve, means for causing the expansion of or contraction of said scraping means, radial arms of said sleeve having channel portions, spring-arms secured in said channel portions of the radial arms and impinging-blocks secured to the free ends of said spring-arms, substantially for the purpose described.

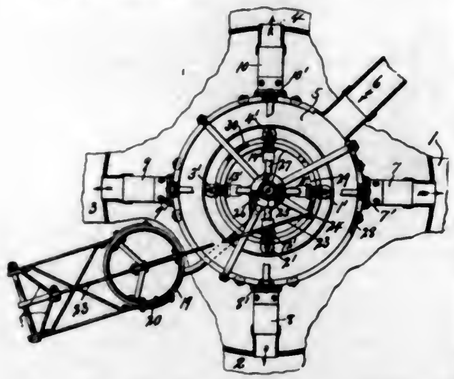
5. In combination with a slidable member of a scraper, of the



arms G, the members G' having lateral extensions $g$, and channel-faces $g'$, in which one end of the arms G are secured, substantially as described.

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**754,953. LIQUID-DISTRIBUTING SYSTEM. ROGER B. WILLIAMS, Jr., and EZRA B. WHITMAN, New York, N. Y. Filed May 15, 1903. Serial No. 157,219. (No model.)**



*Claim.*—1. In a liquid-distributing apparatus, a liquid-receiver having a series of outlets and separate valves therefor, separate receptacles for the outlets having valved overflow-openings, a float-chamber receiving liquid from the overflow-openings, a float actuated by the liquid, and means actuated by the float and operatively connected to successively open the valves of said receptacles.

2. In a liquid-distributing apparatus, a liquid-receiver having a series of outlets and separate valves therefor, separate receptacles receiving the liquid from the outlets and provided with overflow and drainage openings, valves for said openings, a float-chamber connected to the overflow-openings, a float in said chamber and operatively connected to open the valves of the several receptacles one after another.

3. In a liquid-distributing system, a liquid-receiver having a series of outlets and separate valves therefor, separate receptacles for the outlets having valved overflow-openings and valved drainage-openings, and means controlled by the overflow from one receptacle for opening the valves of another receptacle.

4. In a liquid-distributing apparatus, a conduit for the liquid having a valved outlet, a receptacle for the outlet, a stand-pipe leading from the receptacle having an overflow-opening and a drainage-opening, separate valves for said openings and mechanism controlled by the overflow for operating said valves.

5. In a liquid-distributing system, a conduit for the liquid having outlets, separate receptacles for the outlets having stand-pipes provided with valved drainage-openings, and overflow-openings, and means controlled by the overflow of one receptacle for operating the drainage-valve of another receptacle.

6. In a liquid-distributing system, a conduit having a valved outlet, a receptacle for the outlet having a stand-pipe provided with a valved overflow-opening, a float-chamber connected to the overflow, a float movable in the chamber, and means actuated by the float and operatively connected to simultaneously open the valves as the float rises.

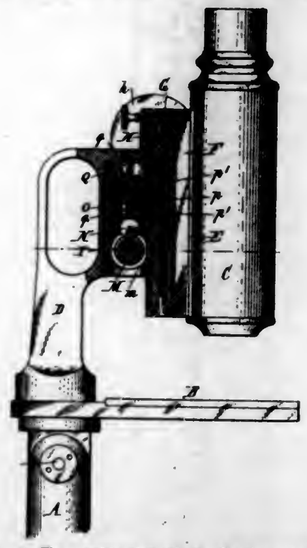
7. In a liquid-distributing system, a receptacle for the liquid, a stand-pipe having a valved drainage-opening connected to the receptacle and provided with a valved overflow, a float-chamber connected to the overflow, a float in said chamber and means actuated by the float and operatively connected to open and close said valves.

8. In a liquid-distributing system, a receptacle having a valved outlet, a stand-pipe connected to the receptacle and having separate drainage and overflow openings and separate valves therefor, and means actuated by the overflow and operatively connected to successively operate said valves.

9. In a liquid-distributing system, a conduit having a plurality of outlets and separate valves therefor, separate receptacles for the outlets having valved overflows, and means actuated by the overflow from one of the receptacles and operatively connected to close the valves of that receptacle and to open the similar valves of another receptacle whereby the flow from the conduit is diverted from one receptacle to the other.

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**754,954. FINE ADJUSTMENT FOR MICROSCOPES. CARL F. DIECKMANN, Buffalo, N. Y., assignor to Spencer Lens Company, Buffalo, N. Y. Filed Dec. 9, 1903. Serial No. 184,379. (No model.)**



*Claim.*—1. The combination of an adjusting-cone, means for turning and moving the same longitudinally, a movable member, and a part which is connected to said movable member and bears against said adjusting-cone, substantially as set forth.

2. In a microscope, the combination of the tube, a coarse adjustment for the same, and a fine adjustment comprising a longitudinally-movable screw operating-shaft arranged horizontally adjacent to said tube, and means operated by said shaft for moving said tube, substantially as set forth.

3. The combination of a microscope-tube, an adjusting-cone for the same, means for turning and moving said cone longitudinally, and a part which is connected to said tube and bears against said adjusting-cone, substantially as set forth.

4. The combination of a microscope-tube, a supporting-arm for the same, an adjusting-cone mounted in said arm to turn and move longitudinally, means for operating said cone, and a part which is connected to said tube and bears on said supporting-cone, substantially as set forth.

5. The combination of a microscope-tube, a shaft provided with a screw-threaded portion, a stationary nut in which the threaded portion of said shaft works, an adjusting-cone on said shaft, and a roller connected to said tube and bearing on said adjusting-cone, substantially as set forth.

6. The combination of a microscope-tube, a shaft provided with a screw-threaded portion, a stationary nut in which the threaded portion of said shaft works, a universally-movable bearing-block for said shaft, an adjusting-cone on said shaft, and a roller connected to said tube and bearing on said adjusting-cone, substantially as set forth.

7. The combination of a microscope-tube, an adjusting-cone, means for turning and moving said cone longitudinally, a roller bearing on said cone, and a block adjustably connected to said tube and on which said roller is journaled, substantially as set forth.

8. In a fine adjustment for microscopes, the combination of a movable member, an operating-shaft, a rotatable cone mounted on one of said parts and a device on said other part bearing against said cone, substantially as set forth.

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**754,955. ROTARY MOTOR FOR FLUE-CLEANERS. AUGUST LEMKE, Detroit, Mich. Filed May 26, 1903. Serial No. 158,827. (No model.)**

*Claim.*—1. In a rotary motor for flue-cleaners, the combination with a casing having detachable sleeve-sections at opposite ends, transverse members carried by the sleeves provided each with bearings, of a rotary member within the casing having end extensions projecting through the transverse members, complementary bearing members on the extensions in operative relation to the bearing mem-

bers on the transverse members, and a connection for introducing a fluid into the casing.



2. In a rotary motor for flue-cleaners, the combination with an elongated casing, a spirally-formed member within the casing having end extensions, bearing members carried by the opposite ends of the casing, bearing members carried by the extensions in operative relation to said other bearing members, and means for adjusting the said bearing members relative to each other in a direction longitudinal to the casing.

3. In a rotary motor for flue-cleaners, the combination with a casing consisting of a tube having detachable sleeve-sections at its ends, transverse members carried by the sleeves provided with raceways formed therein, a spiral housed within the casing having end extensions projecting through the transverse members, cones adjustably arranged upon the extensions in operative relation to the raceways, and antifriction devices within said raceways.

4. In a rotary motor for flue-cleaners, the combination with a cylindrical casing, of a spirally-arranged blade within the casing having stem extensions at opposite ends, supporting-bearings carried by the casing, bearings carried by the stem extensions, and adjustable longitudinal thereof, and means for locking the bearings in adjusted position.

5. In a rotary motor for flue-cleaners, the combination with an elongated tubular casing, of a rotary member within the casing having extensions at opposite ends, antifriction-bearings for the extensions, and means for adjusting the members of the bearings independently of each other.

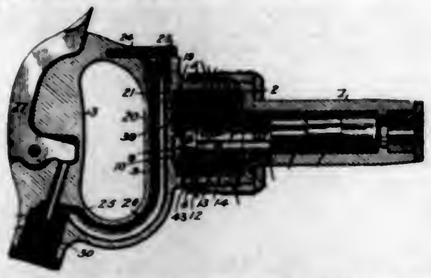
6. In a rotary motor for flue-cleaners, the combination with an elongated casing, of a spirally-formed blade within the casing, stem extensions on opposite ends of the blade, bearings for the stems comprising raceways, and means for adjusting the bearings at opposite ends longitudinally.

7. In a rotary motor for flue-cleaners, the combination with a metallic casing having detachable and adjustable sleeve-sections at its opposite ends, transverse bars carried by the sleeve, provided each with a central opening, of a rotary spiral within the casing having end extensions projecting through the openings in the transverse bars, and a connection for introducing the fluid into the casing.

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**754,956. PNEUMATIC TOOL. CLARENCE W. PECK, Painted Post, N. Y., assignor, by direct and mesne assignments, to Imperial Pneumatic Tool Company, Athens, Pa. Filed Jan. 30, 1901. Serial No. 45,344. (No model.)**

*Claim.*—1. The combination, in an impact-tool, of a cylinder, a reciprocating piston therein, an open-ended ported valve movable in line with the piston in a chamber at one end of the cylinder, said valve having a head of greater diameter than its body, and means for directing a flow of motive fluid to said enlarged head to throw the valve in one direction, the valve being moved in the opposite direction by the motive fluid compressed within the interior of the same by the moving piston.



2. The combination, in an impact-tool, of a cylinder, a reciprocating piston therein, an open-ended ported valve movable in line with the piston in a chamber at one end of the cylinder, said valve having a head of greater diameter than its body, means for directing the motive fluid around the outside of said body so that the valve will be balanced in its chamber during the inlet and exhaust of the motive fluid, and means for directing a flow of motive fluid to the enlarged head of the valve to throw the same in one direction, the valve being thrown in the opposite direction by the motive fluid compressed within the interior of the valve by the moving piston.

3. The combination, in an impact-tool, of a cylinder, a reciprocating piston therein, inlet and exhaust passages for the motive fluid, a cup-like valve movable in a chamber at the rear end of the cylinder, into which chamber the rear end of the piston passes as it approaches the rearward end of its stroke, and means for shifting said valve by the motive fluid to change the direction of flow of the motive fluid to and from the ends of the cylinder.

4. The combination, in an impact-tool, of a cylinder, a reciprocating piston therein, inlet and exhaust passages for the motive fluid, a cup-like valve movable in a chamber at the rear end of the cylinder, into which chamber the rear end of the piston passes as it approaches the rearward end of its stroke, and a passage for admitting the motive fluid under normal pressure to the rear end of said valve-chamber, whereby the valve will be moved forward by motive fluid under normal pressure and to the rear by motive fluid compressed therein by the piston.

5. The combination in an impact-tool of a cylinder, a reciprocating piston therein, inlet and exhaust passages for the motive fluid, a cup-like valve movable in a chamber at the rear end of the cylinder, into which chamber the rear end of the piston passes as it approaches the rearward end of its stroke, said valve having a head of greater area than the piston-receiving chamber formed by the valve, and means for exerting the normal pressure of the motive fluid upon said enlarged head of the valve, whereby the valve will be moved in one direction by the motive fluid under normal pressure and in the opposite direction by the motive fluid compressed therein by the piston.

6. The combination in an impact-tool of a cylinder, a reciprocating piston therein, inlet and exhaust passages for the motive fluid a cup-like valve movable in a chamber at the rear end of the cylinder, into which chamber the rear end of the piston passes as it approaches the rearward end of its stroke, an enlarged head on said valve, and a passage leading from the chamber which receives said enlarged head to a point in the cylinder where it will be uncovered by the piston when the latter reaches the forward end of its stroke, whereby the valve will be moved in one direction by motive fluid under normal pressure and in the opposite direction by motive fluid compressed by the piston.

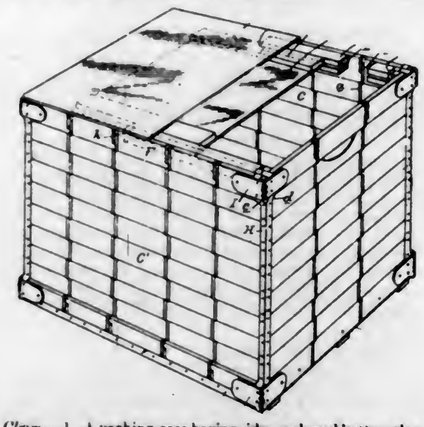
7. A pneumatic tool comprising a cylinder, a piston reciprocating therein, a valve-box at one end of the cylinder in axial alinement therewith, a prolongation of the cylinder within the valve-box, a cylindrical cup-like valve reciprocating within the valve-box in an annular space between the box and said prolongation, admission and exhaust passages to and from the valve-box, means for admitting air under pressure to the admission-passage, and ports and passages whereby the opposite sides of the piston and valve are placed in alternate communication with said admission and exhaust passages.

8. A pneumatic tool comprising a cylinder, a piston reciprocating therein, a cylindrical valve-box encircling one end of the cylinder, a cylindrical valve reciprocating in an annular space provided therefor between valve-box and cylinder, a head on the valve of larger diameter reciprocating in a chamber provided therefor at one end of the valve-box, admission and exhaust passages to and from the valve-box, means for admitting air under pressure to the admission-passage, and ports and passages whereby the opposite sides of the piston are placed by the valve in alternate communication with said admission and exhaust passages and whereby the valve is actuated by direct air-pressure at one stroke of the piston and by compression of the air between it and the piston during the return stroke.

9. A pneumatic tool of the type described comprising the handle 3, the cylinder 1 provided with the flange 2, the coupling-nut 4 and jam-nut 5 whereby the handle and cylinder are fastened together, the valve-box 6 and bushing 7 secured in place within the handle by means of the cylinder-coupling, the valve 8 reciprocating within the valve-box in the space between it and said bushing, and the several ports and passages whereby the piston and valve are operated in the manner set forth.

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**754,957. CASE. GUSTAVE A. SCHWANBECK, Detroit, Mich., assignor to Schwanbeck Brothers, Detroit, Mich., a Corporation. Filed Nov. 11, 1901. Serial No. 81,938. (No model.)**



*Claim.*—1. A packing-case having sides, ends and bottom thereof formed of fabric, comprising longitudinal adjacent opposite crimped flat bands and cross-slats extending longitudinally of the same secured together by said bands, the bended portion of said bands constituting a flat bearing for the top and bottom of the adjoining slats, the upper ends of said flat bands passing around rails at the top of the sections, said rails being relatively heavier than the cross-slats, and the parts when assembled forming a smooth uninterrupted inner surface for the ends and bottom throughout their entire length.

2. A packing-case having the ends and bottom thereof formed of a single piece of fabric comprising longitudinal oppositely-crimped thin flat bands or ribbons and cross-slats secured together thereby, sides formed of separate sections of said fabric having heavy top and bottom rails woven in, the end sections having heavy top rails woven in, and reinforcing-strips arranged inside the case in the angles between said ends and bottom.

3. A packing-case having the sides and bottom thereof formed of a fabric composed of slats arranged adjacent and in close proximity to each other and adjacent thin metallic securing-bands having a flat surface and crimped with square bends to embrace said slats alternately upon opposite sides thereof, the square bends of the bands constituting a flat bearing for the top and bottom of the adjoining slats, and one of said slats being relatively heavier than the remaining slats, all of said slats when assembled being flush upon their inner surface.

4. In a packing-case, the combination with side sections formed of woven-slat fabric, of a corner-post extending vertically in the corner formed by adjacent sides and a metallic angle-strip embracing the outer face of said corner, the end of said strip being slitted in the angle to form separate sections, and said sections being crossed over the end of said post and lapped over the adjacent inner sides thereof.

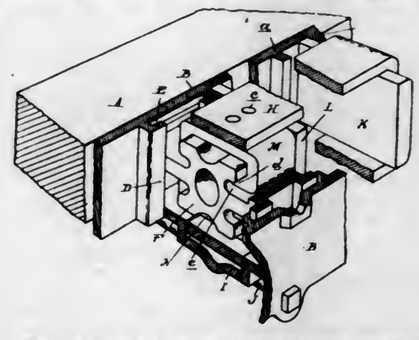
5. In a packing-case, the combination with side sections formed of woven-slat fabric having heavy rails at their upper edges flush with the inner face of the fabric and projecting outward, of a corner-post arranged in the angle formed by adjacent sides, a metallic angle-strip embracing the outer faces of said corner, said strip being slitted in the angle at the end to form separate sections and said sections being bent to pass around said heavy rails, cross the top of said post and lap the adjacent inner faces thereof, and a metallic angle-piece for the corner of said heavy rail overlapping said angle-strip.

6. In a packing-case, the combination of side and bottom sections formed of woven fabric, the side sections having a heavy rail adjacent to said bottom, and said bottom overlapping the lower edge of said heavy rail, a metallic angle-strip embracing the corner formed by said side and bottom and a longitudinally-extending shoe-strip covering the lower flange of said angle-strip and secured to said bottom.

7. A packing-case having the sides and bottom thereof formed of a fabric comprising slats adjacent and in close proximity to each other, and adjacent oppositely-crimped metallic bands inclosing said slats alternately upon opposite sides thereof, the top and bottom slats of the side sections being relatively heavier than the remaining slats and woven into the fabric by the bands, which pass over one side, around the upper edge and are secured to the opposite side upon the return-bend.

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**754,958. DRAFT-RIGGING. WILLIAM THORNBURGH, Detroit, Mich., assignor, by mesne assignments, to T. H. Simpson, Detroit, Mich. Filed Feb. 18, 1903. Serial No. 143,991. (No model.)**



*Claim.*—1. In a draft-rigging, the combination of the side plates, of a tie between these plates intermediate the ends thereof, resilient means upon opposite sides of the tie, and a draft attachment adapted to operate the resilient means simultaneously, said draft attachment having an interlocking engagement with the tie.

2. In a draft-rigging, the combination of the side plates, of a tie connecting the plates intermediate the ends thereof, springs on opposite sides of said tie, and the draft attachment connected to act upon, and simultaneously move the springs, said draft attachment having an interlocking engagement with the tie.

3. In a draft-rigging, the combination of the side plates, of a detachable tie connecting the plates at or near the middle thereof, resilient means upon opposite sides of the tie, and a draft attachment adapted to operate the resilient means simultaneously, said draft attachment having an interlocking engagement with the tie.

4. In a draft-rigging, the combination of the side plates, of guides in said plates at or near the middle, and a tie-block detachably engaged in said guides, resilient means upon opposite sides of the tie, and a draft attachment adapted to operate the resilient means simultaneously, said draft attachment having an interlocking engagement with the tie.

5. In a draft-rigging, the combination of the side plates, of vertical guides in said plates intermediate the ends, a tie-block detachably engaged in said guides, and a removable bottom plate for normally holding said block in position, and permitting its withdrawal when said bottom plate is removed, resilient means upon opposite sides of the tie, and a draft attachment adapted to operate the resilient means simultaneously, said draft attachment having an interlocking engagement with the tie-block.

6. In a draft-rigging, the combination of the side plates, an intermediate tie-block connecting the same, the draft-yoke, and lugs on said yoke having an interlocking sliding engagement with said tie-block.

7. In a draft-rigging, the combination of the side plates, a middle tie-block, followers on opposite sides of the block, the yoke, having central lugs engaging said followers, springs on opposite sides of

the block within the yoke, and lugs centrally on the yoke, engaging the said followers and interlocking with the tie-block.

8. In a tandem draft-rigging, the combination of the side plates, and springs, of a draw-bar adapted to operate upon the springs simultaneously, a middle cross-block shouldered against the side plates against which the springs upon the opposite sides thereof are compressed by the movement of the draw-bar, and means for slidably interlocking the draw-bar with the cross-block.

9. In a tandem draft-rigging, the combination of the side plates, middle, vertical guides, a cross or tie block engaging said guides, a removable bottom plate holding said cross or tie block in position, the yoke, hooked lugs on the yoke engaging guideways in the cross or tie block, followers on opposite sides of said block actuated by the engagement therewith of the lugs in movement of the yoke, and springs abutting against the followers between the side plates.

10. In a tandem draft-rigging, the combination of the side plates, of a middle cross-block, the yoke, having members on opposite sides of said block, and an interlocking sliding engagement between the two members of the yoke and said block.

11. In a draft-rigging, the combination of side plates, a tie between the plates intermediate the ends thereof, resilient means upon the opposite sides of the tie, and a draft attachment adapted to simultaneously compress the resilient means, said draft attachment having a sliding interlocking engagement with the tie.

12. In a draft-rigging, the combination of side plates, a detachable tie-block between the plates intermediate the ends thereof, resilient means upon the opposite sides of the tie, and a draft attachment adapted to simultaneously compress the resilient means, said draft attachment having a sliding interlocking engagement with the tie-block.

13. In a draft-rigging, the combination of side plates, an intermediate block between the same, a draft-yoke, and means on the yoke for slidably interlocking the same with the block.

14. In a draft-rigging, the combination of side plates, an intermediate block between the same, resilient means at the opposite sides of the block, a draft-yoke, and means for loosely interlocking the yoke with the block, said block constituting an abutment for the resilient means.

15. In a draft-rigging, the combination of side plates, a detachable intermediate block between the same, a draft-yoke, and means for loosely interlocking the yoke with the block.

16. In a draft-rigging, the combination of side plates, a detachable intermediate block between the same, resilient means at the opposite sides of the block, a draft-yoke, and means for loosely interlocking the yoke with the block, said block constituting an abutment for the resilient means.

17. In a draft-rigging, the combination of side plates, a detachable intermediate block between the same, spring members at the opposite sides of the block, a draft-yoke, and means for loosely interlocking the yoke with the block, said block constituting a stationary abutment for the spring members.

18. In a draft-rigging, the combination of side plates, an intermediate block between the same, resilient means at the opposite sides of the block, a draft-yoke operatively associated with the resilient means, and means for loosely interlocking the yoke with the block said block constituting an abutment for the resilient means.

19. In a draft-rigging, the combination of side plates, an intermediate tie-block connecting the same, resilient means at the opposite sides of the block, a draft-yoke operatively associated with the resilient means, and means for loosely interlocking the yoke with the block, said block constituting an abutment for the resilient means.

20. In a draft-rigging, the combination of side plates, an intermediate block between the same, spring members at the opposite sides of the block, a draft-yoke operatively associated with the spring members and imparting simultaneous movement thereto, and means for loosely interlocking the yoke with the block.

21. In a draft-rigging, the combination of side plates, an intermediate block between the same, spring members at the opposite sides of the block, a draft-yoke operatively associated with the spring members, and imparting a simultaneous movement thereto, and means for loosely interlocking the yoke with the block, said block constituting an abutment for the spring members.

22. In a draft-rigging, the combination of side plates, a detachable intermediate tie-block connecting the same, spring members at the opposite sides of the block, a draft-yoke operatively associated with the spring members, and imparting a simultaneous movement thereto, and means for loosely interlocking the yoke with the block, said block constituting a stationary abutment for the spring members.

23. In a draft-rigging, the combination of side plates, a block between the same, and a draft-yoke having an interlocking connection with the block.

24. In a draft-rigging, the combination of side plates, an intermediate block between the same, and a draft-yoke having an interlocking connection with the block.

25. In a draft-rigging, the combination of side plates, an intermediate detachable block between the same, and a draft-yoke having a sliding interlocking connection with the block.

26. In a draft-rigging, the combination of side plates, an intermediate block between the same, resilient means upon one side of the block, a draft-yoke operatively associated with the resilient means, and means on the yoke for slidably interlocking the same with the block.

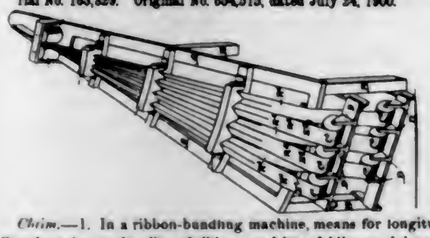
27. In a draft-rigging, the combination of side plates, an intermediate detachable block between the plates, a spring member upon one side of the block, and a draft-yoke operatively associated with the resilient means, said draft-yoke having an interlocking connection with the block.

28. In a draft-rigging, the combination of side plates, a detachable intermediate block between the same, a spring member upon one side of the block, a draft-yoke operatively associated with the spring member, and means for slidably interlocking the yoke with the block.

29. In a draft-rigging, the combination of side plates, an intermediate block between the same, resilient means upon one side of the block, a draft-yoke operatively associated with the resilient means, and means for loosely interlocking the yoke with the block, said block constituting an abutment for the resilient means.

# REISSUES.

12,204. **PAPER-FOLDING MACHINE.** EDWIN D. CASTERLINE, Los Angeles, Cal., assignor to the Single-Sheet Paper Company, Los Angeles, Cal., a Corporation of California, and the Interlock Paper Company, San Francisco, Cal., a Corporation. Filed June 30, 1903. Serial No. 163,829. Original No. 654,515, dated July 24, 1900.



*Claim.*—1. In a ribbon-bundling machine, means for longitudinally advancing a plurality of ribbons and interfolding each interjacent ribbon with a plurality of adjacent ribbons.

2. In a ribbon-bundling machine, means for longitudinally advancing and transversely bending a plurality of ribbons to interfold each interjacent ribbon with the ribbons on opposite sides thereof

3. In a ribbon-bundling machine, means for longitudinally advancing and transversely bending and condensing a plurality of ribbons to interfold each interjacent ribbon with the ribbons on opposite sides thereof.

4. In a ribbon-bundling machine, means for longitudinally advancing a plurality of ribbons, and means for transversely bending and interfolding each interjacent ribbon with the ribbons on opposite sides thereof.

5. In a ribbon-bundling machine, means for longitudinally advancing and transversely bending a plurality of ribbons, and means for transversely condensing the ribbons to interfold each interjacent ribbon with the ribbons on opposite sides thereof.

6. In a ribbon-bundling machine, means for longitudinally feeding a plurality of ribbons into the machine, and means for forming the ribbons into a bundle in which each interjacent ribbon is interfolded with the ribbons on opposite sides thereof.

7. In a ribbon-bundling machine, means for forming a longitudinal crease in each ribbon and interfolding the ribbons to form a web in which each interjacent ribbon is interfolded with the ribbons on opposite sides thereof, and means for feeding the ribbons in the direction of their length to such creasing and interfolding means.

8. In a ribbon-bundling machine, means for forming a longitudinal crease in each ribbon and for progressively interfolding the ribbons to form a web in which each interjacent ribbon is interfolded with ribbons on both sides.



9. In a ribbon-bundling machine, means for progressively forming a longitudinal crease in each ribbon and for interfolding the ribbons to form a web in which each interjacent ribbon is interfolded with ribbons on both sides.

10. In a ribbon-bundling machine, means for forming an approximately central longitudinal crease in each ribbon and for simultaneously and progressively interfolding the ribbons to form a web in which each interjacent ribbon is interfolded with ribbons on both sides.

11. In a ribbon-bundling machine, means for simultaneously creasing a plurality of continuous ribbons and progressively interfolding the same during the creasing operation to thereby form a web in which interjacent ribbons are interfolded with ribbons on both sides.

12. In a ribbon-bundling machine, a plurality of convergent folders adapted to form longitudinal creases in a plurality of ribbons and to simultaneously and progressively interfold the ribbons to form a web in which each interjacent ribbon is interfolded with ribbons on both sides.

13. A machine for interfolding a plurality of strips or ribbons, comprising a plurality of folding devices arranged on convergent lines and adapted to independently and progressively fold the strips or ribbons and to simultaneously interfold the progressively-folding strips with each other.

14. A folding-machine comprising a plurality of folding devices arranged on convergent lines and each adapted for independent engagement with a strip to be folded, said folding devices serving to progressively fold the independent strips and simultaneously interfold the progressively-folding strips with each other.

15. A device for interfolding a plurality of independent strips comprising a plurality of converging members adapted to fold alternate strips in opposite directions, the construction being such that the independent strips are progressively interfolded to form a compact web at the discharge end of the machine.

16. A machine for interfolding independent strips of material, comprising independent strip-holders, and convergent dies adapted to give each strip a longitudinal fold and during the folding operation to progressively interfold the wings of each strip with the wings of adjacent strips on either side of it.

17. In a paper-folding machine, the combination of means for holding rolls of paper ribbon, drawing-dies each of which consists of two serrated blocks with the serrations of the one block engaging in the serrations of the other block, but spaced therefrom sufficiently to allow the free passage of the paper ribbon through it, said dies being adapted to give to each ribbon a longitudinal fold and to unfold the wings of each ribbon between the wings of the adjacent ribbons at each side of it, substantially as described.

18. In a machine for folding paper, the combination of means for holding rolls of paper ribbon, drawing-dies each of which consists of two serrated blocks with the teeth of one block engaging in the notches of the other, whereby the paper may be drawn through said dies and folded longitudinally, and the guides H between which the ribbons are finally compressed, substantially as described.

19. In a machine for folding ribbons of paper together with each ribbon folded lengthwise, and with the wings of each ribbon engaged between the wings of two adjacent ribbons, a trough or table, a folding mechanism at each end of said table provided with serrated folding-dies, whereby ribbons of paper folded lengthwise may be drawn from each folding mechanism, and the ribbon from one mechanism engaged with the ribbon from the opposite mechanism, substantially as described.

# DESIGNS.

36,848. **HAT-PIN HEAD.** WILLIAM TURTON, Kearney, N. J., assignor to Frank H. La Pierre, East Orange, N. J. Filed Feb. 10, 1904. Serial No. 193,020. Term of patent 3½ years.



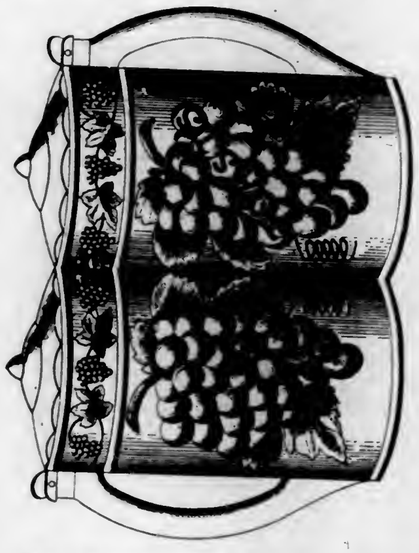
*Claim.*—The ornamental design for a hat-pin head, as shown

36,849. **METALLIC BORDER FOR TABLEWARE.** ALBERT STEFFIN, New Bedford, Mass., assignor to the Fairpoint Corporation, New Bedford, Mass. Filed Feb. 11, 1904. Serial No. 193,200. Term of patent 7 years.



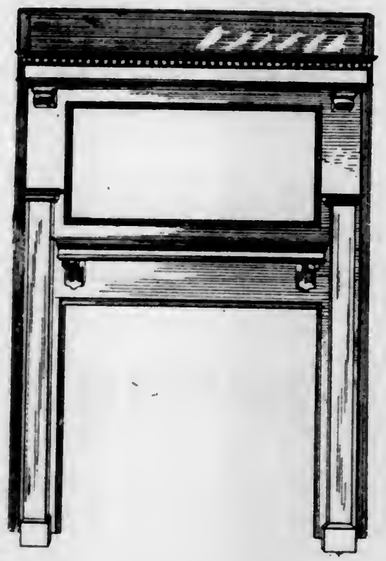
*Claim.*—The ornamental design for a metallic border for tableware, as shown.

36,850. **BOOK-COVER.** WILLIAM M. RHOADS, Denver, Colo. Filed Feb. 6, 1904. Serial No. 192,456. Term of patent 14 years.



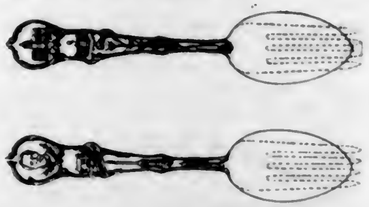
*Claim.*—The ornamental design for a book-cover, substantially as shown.

36,851. **MANTEL.** FELIPPE A. BROADBENT, Baltimore, Md. Filed Jan. 22, 1904. Serial No. 190,243. Term of patent 7 years.



*Claim.*—The ornamental design for a mantel as herein shown.

36,852. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. JOSEPH E. STRAKER, Jr., Attleboro, Mass., assignor to Watson and Newell Company, a Corporation of Rhode Island. Filed Feb. 20, 1904. Serial No. 194,615. Term of patent 7 years.



*Claim.*—The ornamental design for the handle of a spoon, fork or similar article as shown.

36,853. MUG. LOUIS W. RICK, New York, N. Y. Filed Feb. 19, 1904. Serial No. 194,441. Term of patent 3½ years.



*Claim.*—The ornamental design for a mug, substantially as shown.

36,854. PAPER-KNIFE. LOUIS W. RICK, New York, N. Y. Filed Feb. 19, 1904. Serial No. 194,442. Term of patent 3½ years.



*Claim.*—The ornamental design for a paper-knife, substantially as shown.

# TRADE-MARKS

## REGISTERED MARCH 15, 1904.

42,227. BOOKS MADE OF TEXTILE FABRIC. HENRY SAMUEL DEAN, London, England. Filed Jan. 13, 1904.



The representation of two dogs pulling a book. Used since June 25, 1903.

42,228. BOOKS MADE FROM TEXTILE FABRIC. HENRY SAMUEL DEAN, London, England. Filed Jan. 13, 1904.

**RAC**

The word "RAC." Used since May 12, 1902.

42,229. CHILDREN'S UNDERWAISTS. THE H. & W. COMPANY, Newark, N. J. Filed Feb. 15, 1904.

**PANSY**

The word "PANSY." Used since January 1, 1903.

42,230. COTTON PIECE GOODS. GRINNELL WILLIS & CO., New York, N. Y. Filed Feb. 6, 1904.




The word "CONQUEROR" and the representation of a male figure in erect posture on a central panel, the figure being nude except for a breech-cloth, a torch on a panel at each side of the figure, and a border inclosing the panels. Used since August 23, 1902.

42,231. COTTON PIECE GOODS. GRINNELL WILLIS & CO., New York, N. Y. Filed Feb. 6, 1904.




The word "STARLIGHT" and the representation of a nude female figure, partially draped, on a starry field. Used since September 25, 1902.

42,232. FRICTION-MATCHES. THE OHIO MATCH COMPANY, Wadsworth, Ohio. Filed Feb. 19, 1904.

**RADIUM**

The word "RADIUM." Used since October 23, 1903.

42,233. CERTAIN NAMED BEVERAGE. W. H. HUTCHINSON & SON, Chicago, Ill. Filed Nov. 25, 1903.

CINCINNATUS

The word "CINCINNATUS." Used since September 20, 1903.

42,234. FRUIT JELLIES AND PRESERVES. GEORGE L. HARTING, Philadelphia, Pa. Filed Feb. 2, 1904.



A monogram of the letters "G L H." Used since May 15, 1896.

42,235. OYSTERS IN CANNED AND BULK FORM. THE TOKE POINT OYSTER CO., Tacoma, Wash. Filed Jan. 7, 1904.

TOKE POINT

The words "TOKE POINT." Used since January 1, 1900.

42,236. COTTON-SEED OIL. KENTUCKY REFINING CO., Louisville Ky. Filed Feb. 5, 1904.

Snowflake

The word "SNOWFLAKE." Used since January 1, 1889.

42,237. COTTON-SEED OIL. KENTUCKY REFINING CO., Louisville, Ky. Filed Feb. 5, 1904.

EXCELSIOR

The word "EXCELSIOR." Used since January 1, 1898.

42,238. STOCK-FOODS OR CONDITION-POWDERS. WEST COAST STOCK FOOD CO., Pasadena, Cal. Filed Nov. 3, 1903.

42,238.



The representation of a horse standing on its hind feet, with a man standing in front holding it by a strap. In the background are shown trees and a portion of a house. Used since November, 1902.

42,239. INSECT-POWDERS AND LIQUID VERMIN-EXTERMINATORS. CHARLES R. WOODRUFF, Dodge, Nebr. Filed Mar. 17, 1903

RENTE-RUFF

The hyphenated word "RENTE-RUFF." Used since September 1, 1901.

42,240. LOCAL ANESTHETIC FOR THE PAINLESS EXTRACTION OF TEETH. HENRY L. WHEELER, New York, N. Y. Filed Jan. 13, 1904.

DENTUNDO

The word-symbol "DENTUNDO." Used since January 1, 1893.

42,241. PILLS. LANMAN & KEMP, New York, N. Y. Filed Jan. 4, 1904.



The representation of a decorative border, including an external rectangular outline, within which is formed a banner-like representation having at its corners the inwardly-rounded outline, the space between the inner banner and the outer margin of the border being decorated by scroll and flower work. Used since October 1, 1860.



42,242. REMEDY FOR CERTAIN NAMED DISEASES. RUSSELL W. WHITLATCH, New York, N. Y. Filed Feb. 3, 1904.

HELENINE

The word "HELENINE." Used since December 7, 1900.

42,243. MEDICINE FOR THE CURE OF CERTAIN NAMED DISEASES. ALPOLI COMPANY, Kingston, N. Y. Filed Jan. 22, 1904.




The word "ALPOLI," together with the portrait of Father Grey, a priest, in which he is represented as holding an anchor in one hand and having his other hand upraised, and the words "FATHER GREY'S." Used since August 10, 1903.

42,244. MEDICINES FOR CURE OF FEMALE COMPLAINTS. DR. RICHARDS DYSPEPSIA TABLET ASSOCIATION, New York, N. Y. Filed Feb. 17, 1904.

GRANTILLAS

The word "GRANTILLAS." Used since January 2, 1904.

42,245. MEDICINE FOR DISEASES OF THE INTERNAL ORGANS. GEORGE PHIPPS, St. Paul, Minn. Filed Jan. 11, 1904.

Forest Root

The words "FOREST ROOT." Used since March 1, 1901.

42,246. PILE REMEDY. CAROLINE MAYNE, New York, N. Y. Filed Feb. 4, 1904.

ANAKESIS

The word "ANAKESIS." Used since 1867.

42,247. CONES USED AS A REMEDY FOR CERTAIN NAMED DISEASES. ALFRED J. SMILLIE, Chicago, Ill. Filed Feb. 9, 1904.

42,247.




The words "ANOYL" and "PROTECTO" inclosed between the sides of concentric triangles and the figures of two angels within the inner triangle. Used since January 1, 1901.

42,248. SALVE. CHARLES L. BUDDENBOHN, Baltimore, Md. Filed Sept. 17, 1903.

CUTINOL

The word "CUTINOL." Used since August 26, 1901.

42,249. ANTISEPTIC EMOLLIENT. SCHAEFER CHEMICAL COMPANY, Portland, Me., and Boston, Mass. Filed Feb. 13, 1904.



The word "SCHAEFERINE." Used since January 1, 1904.

42,250. DISINFECTANT. CARL REINSCHILD, New York, N. Y. Filed Jan. 30, 1904.

GERMEX

The word "GERMEX." Used since December, 1903.

42,251. TABLES AND APPLIANCES FOR PLAYING CERTAIN NAMED GAMES. THE KNICKERBOCKER COMPANY, Jackson, Mich. Filed Nov. 5, 1903.

POOLETTE

The word "POOLETTE." Used since September 1, 1903.

42,252. CERTAIN NAMED RECEPTACLES. THE HARTMANN TRUNK COMPANY, Racine, Wis. Filed Feb. 8, 1904.



The representation of a three-leafed clover. Used since October 15, 1903.

42,253. CARPET-SWEEPERS. NATIONAL SWEEPER COMPANY, Marion, Ind. Filed Feb. 8, 1904.

PERPETUAL

The word "PERPETUAL." Used since November 21, 1900.

42,254. CARPET-SWEEPERS. NATIONAL SWEEPER COMPANY, Marion, Ind. Filed Feb. 8, 1904.

MONARCH

The word "MONARCH." Used since November 21, 1900.

42,255. CERTAIN NAMED FURNITURE. THE BOOKLOVERS LIBRARY, Camden, N. J., and Philadelphia, Pa. Filed Jan. 30, 1904.

Tabard Inn

The words "TABARD INN." Used since July 1, 1903.

42,256. FILES AND RASPS. G. & H. BARNETT COMPANY, Philadelphia, Pa. Filed Feb. 11, 1904.

BLACK DIAMOND

The words "BLACK DIAMOND." Used since 1865.

42,257. CERTAIN NAMED ARTICLES OF FIBER COMPOSITION. JOSEPH M. GRAMER, Toledo, Ohio. Filed Jan. 11, 1904.

TIFCO

The word "TIFCO." Used since July, 1903.

42,258. ROPES, CORDS, TWINE FIBER, TWINE, AND BINDERS' TWINE. INTERNATIONAL HARVESTER COMPANY OF AMERICA, Chicago, Ill. Filed Feb. 24, 1903.




The representation of a shield inclosing the letter "C." Used since February 13, 1903

THE NORRIS PETERS CO.

# LABELS

## REGISTERED MARCH 15, 1904.

10,819.—*Title:* "DISCOUNT." (For Newspapers, Periodicals, Magazines, Pamphlets, &c.) S. B. HUTCHINSON, Ypsilanti, Mich. Filed February 20, 1904.

10,820.—*Title:* "SMITH'S TENDER JOINT SHOE." (For Shoes.) CONRAD G. SMITH, Cumberland, Md. Filed February 20, 1904.

10,821.—*Title:* "SHAMROCK FLAXETTE." (For Handkerchiefs.) ACHESON HARDEN & Co., New York, N. Y. Filed December 11, 1903.

10,822.—*Title:* "THE MAGIC CURLER." (For Hair-Curlers.) JOHN B. HALL, Philadelphia, Pa. Filed February 19, 1904.

10,823.—*Title:* "MARCH'S HAIR HEALTH." (For Hair and Scalp Cleanser.) JASPER G. MARCH, Chestertown, N. Y. Filed January 22, 1904.

10,824.—*Title:* "SMOKER'S TEETH POWDER." (For Tooth-Powder.) WEAVER CONGER COMPANY, Groton, N. Y. Filed February 19, 1904.

10,825.—*Title:* "CUTI BALM." (For a Lotion.) EMMA REITH, Kansas City, Mo. Filed February 18, 1904.

10,826.—*Title:* "WELSH'S EMBRO." (For a Liniment.) SCOTCH EMBROCATION Co., Pasadena, Cal. Filed February 17, 1904.

10,827.—*Title:* "THE MERCHANT PRINCE." (For Cigars.) AUGUST J. SCHMIDT, New York, N. Y. Filed November 25, 1903.

10,828.—*Title:* "ROYAL IRIS." (For Cigars.) AMERICAN LITHOGRAPHIC Co., New York, N. Y. Filed February 10, 1904.

10,829.—*Title:* "ROYAL IRIS." (For Cigars.) AMERICAN LITHOGRAPHIC Co., New York, N. Y. Filed February 10, 1904.

10,830.—*Title:* "FLOR DE ASTOR." (For Cigars.) PARK & TILFORD, New York, N. Y. Filed February 19, 1904.

10,831.—*Title:* "WHITE STAR." (For Gin.) HENRY GRAVIER, New York, N. Y. Filed February 20, 1904.

10,832.—*Title:* "TARBELLE WHISKEY." (For Whisky.) PATRICK MCINTYRE, Asheville, N. C. Filed February 9, 1904.

10,833.—*Title:* "LOCHINVAR OLD HIGHLAND SCOTCH." (For Whisky.) THE NEW YORK IMPORTATION Co., New York, N. Y. Filed February 19, 1904.

10,834.—*Title:* "MAPO." (For Syrup.) DANIEL P. INGHAM, Knoxville, Pa. Filed February 18, 1904.

10,835.—*Title:* "WYOMING CONDENSED MILK." (For Condensed Milk.) UNITED STATES CONDENSED MILK Co., Deansboro, N. Y. Filed February 19, 1904.

10,836.—*Title:* "PURITY BRAND CONDENSED MILK." (For Condensed Milk.) UNITED STATES CONDENSED MILK Co., Deansboro, N. Y. Filed February 19, 1904.

10,837.—*Title:* "NU-TREX FLAKED WHEAT FOOD." (For Cereal Food.) AMERICAN FINE ART Co., Milwaukee, Wis. Filed February 20, 1904.

10,838.—*Title:* "THREE MINUTE PLUM PUDDING." (For a Food Preparation.) ALBERT T. KNAPP, Medford, Mass. Filed February 17, 1904.

10,839.—*Title:* "GOOD CHAIRS." (For Chairs.) THE BUCKEYE CHAIR Co., Ravenna, Ohio. Filed December 16, 1903.

10,840.—*Title:* "THE LIGHTNING FIRE EXTINGUISHER." (For Fire-Extinguishers.) THE SUFFOLK CHEMICAL Co., Boston, Mass. Filed February 3, 1904.

# PRINTS

## REGISTERED MARCH 15, 1904.

922.—*Title:* "FOXY GRANDPA'S MULTIPLIER." (For a Multiplier.) FRANK J. SMITH, Northport, N. Y. Filed February 11, 1904.

923.—WITHDRAWN.

924.—*Title:* "NON-AQUA." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed February 12, 1904.

925.—*Title:* "PRIDE OF REIDSVILLE." (For Smoking-Tobacco.) ROBERT HARRIS & BRO., Reidsville, N. C. Filed February 18, 1904.

926.—*Title:* "BROMO-SELTZER." (For Bromo-Seltzer.) EMERSON DRUG Co., Baltimore, Md. Filed February 17, 1904.

927.—*Title:* "ATHLOPHOROS." (For a Medicine.) THE ATHLOPHOROS Co., New Haven, Conn. Filed February 19, 1904.

928.—*Title:* "OZOMULSION." (For Medicine.) THE OZOMULSION Co., New York, N. Y. Filed February 17, 1904.

929.—*Title:* "GOLDEN RULE HAIR RESTORATIVE." (For a Hair-Restorative.) THE CITIZENS WHOLESALE SUPPLY Co., Columbus, Ohio. Filed February 19, 1904.

930.—*Title:* "THE VICTOR JEWEL PREMIUM MACHINE." (For Talking-Machines and Accessories.) VICTOR TALKING MACHINE Co., Camden, N. J. Filed February 20, 1904.

931.—*Title:* "ALL NATIONS USE THE SINGER." (For Sewing-Machines.) THE SINGER MANUFACTURING Co., New York, N. Y. Filed February 18, 1904.

932.—*Title:* "C. D. & T." (For Electric Cars.) THE CINCINNATI, DAYTON, AND TOLEDO TRACTION Co., Cincinnati, Ohio. Filed December 18, 1903.

933.—*Title:* "THE ROMÜNDER 'COMFORT' PASSENGER CAR." (For Passenger-Cars.) HERMANN ROMÜNDER, Milwaukee, Wis. Filed February 19, 1904.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### ARNOLD *v.* VAUGHEN AND CABOT *v.* ARNOLD AND FISHER.

*Decided December 2, 1903.*

1. INTERFERENCE—BURDEN OF PROOF—SOLE APPLICANT—PRIOR JOINT APPLICATION.

Where two parties file an application as joint inventors and upon discovering that it was a mistake one of them files an application as sole inventor and is placed in interference with a third party, *Held* that the sole applicant can derive no benefit from the earlier joint application in determining the burden of proof in the interference.

2. SAME—SAME—SAME—JUDGMENT WITHOUT TESTIMONY.

The burden of proof in any proceeding rests on the party against whom judgment would be rendered if no evidence were adduced on either side. A party cannot be adjudged the first and sole inventor merely because he filed a prior application as joint inventor with another party.

APPEAL on motion.

AUTOMATIC BLAST TEMPERATURE-REGULATING VALVES.

Application of Lawrence L. Arnold. Application of Samuel W. Vaughen and John W. Cabot. Application of Lawrence L. Arnold and Henry W. Fisher.

*Messrs. Christy & Christy* and *Mr. Darwin S. Wolcott* for Arnold.

*Mr. E. W. Anderson* for Vaughen and Cabot.

*Mr. Darwin S. Wolcott* for Arnold and Fisher.

ALLEN, *Commissioner:*

This is an appeal by Arnold from the decision of the Primary Examiner denying his motion to shift the burden of proof in the above-entitled interference.

It appears that on August 29, 1902, Arnold and Fisher filed a joint application, Serial No. 121,414, disclosing the subject-matter of the present interference. This application was formally abandoned on June 12, 1903, the letter of abandonment stating that the joint applicants believed Arnold to be the sole inventor. Arnold's sole application was filed June 3, 1903. The application of Vaughen and Cabot was filed January 10, 1903. Arnold contends that in view of the facts that he was one of the joint applicants of the application filed August 29, 1902, and as the letter abandoning this application states that the joint applicants believe him to be the sole inventor of the subject-matter thereof, the burden of proof should not be placed upon him as against an applicant who filed his application subsequent to August 29, 1902, though prior to the date on which he (Arnold) filed his sole application. This contention is not thought to be sound.

Rule 116 provides that:

In original proceedings in cases of interference the several parties will be presumed to have made the invention in the chronological order in which they filed their completed applications for patents clearly illustrating and describing the invention; and the burden of proof will rest upon the party who shall seek to establish a different state of facts.

As a general rule the burden of proof in any proceeding rests on the party against whom judgment would be rendered if no evidence were adduced on either side. *Jones on Evidence* (vol. 1, sec. 174) states that:

The test, therefore, as to the burden or *onus* of proof is simply to consider which party would be successful if no evidence were given.

In the present proceeding if no testimony was taken by either party the only theory on which judgment could be awarded to Arnold would be that his sole application is a continuation of the prior joint application of Arnold and Fisher. Since joint applicants are a different identity from one of them individually, (*Lovrien* v. *Banister et al.*, 18 O. G., 299; *Kohler* v. *Kohler and Chambers*, 43 O. G., 247,) it follows that so far as *prima facie* evidence of invention is concerned a sole applicant can gain no advantage from a prior joint application for which he is one of the applicants. If the circumstances are as stated by Arnold, he can introduce testimony at the proper time to show the true state of facts. The decision of the Primary Examiner denying Arnold's motion to shift the burden of proof is affirmed.

### IN RE DUNCAN & DUNCAN.

*Decided February 25, 1904.*

1. COPIES OF APPLICATIONS NOT FURNISHED—REQUEST BY INVENTOR AFTER ASSIGNMENT.

After an inventor has assigned his entire interest in his invention and the assignee has asserted his right to prosecute the application, copies of the application will not be furnished to parties having no interest in the invention at the mere request of the inventor.

2. SAME—RULE OF SECRECY—OWNER OF INVENTION.

The rule that applications will be preserved in secrecy is intended primarily for the benefit of the owner of the invention, and his rights will be safeguarded by the Office in so far as possible.

3. SAME—RIGHTS OF INVENTOR—SHOWING OF REASONS.

The inventor or his agent will be permitted to see his application after assignment upon the consent of the assignee or upon showing good reason for wishing to see it, such as to enable him to prepare foreign applications or to draw proper lines of division between it and some other application.

IN the matter of the request of Duncan & Duncan to obtain certified copy of application of James W. Paterson.

ALLEN, *Commissioner:*

An order by Duncan & Duncan for a certified copy of an application filed by James W. Paterson has been presented to me for my approval.

The authority under which Duncan & Duncan ask for the copy consists of a letter from the inventor, Paterson, asking that Herbert E. Keeler or his attorney be permitted to obtain a copy of the application and a letter by Keeler appointing Duncan & Duncan his attorneys to secure the copy.

It appears that the inventor, Paterson, has assigned his entire interest in the invention and application to the Curtain Supply Company, of Chicago, and that assignee has asserted its right to take charge of the prosecution of the application to the exclusion of the inventor. (Rule 5.) It has appointed its own attorneys to prosecute the case.

This request presents for decision the question whether in view of Rule 15, requiring that applications be preserved in secrecy, this Office should furnish copies of a pending assigned application to a party who has no interest in the application or the invention merely because the inventor requests it. The rule of secrecy is of course intended primarily for the benefit of the party who owns the invention and who is to receive the patent if one is granted. He is the one most interested in keeping the invention secret, and he is the one entitled to demand that his rights be safeguarded by this Office in so far as possible. After an inventor has parted with his entire interest in the invention and has received the consideration for it it may very well be that he has no disposition to keep the application secret for the benefit of the assignee. There seems to be no reason why this Office, at his request and in the absence of the consent of the assignee, should furnish copies of the application to a party who has no interest in the invention.

It is doubtful if the Office should refuse to permit the inventor or his agent to see his application after assignment if he has good reason for wishing to see it, such as to enable him to prepare foreign applications or to draw proper lines of division between it and some other application. (*Ex parte McLaughlin*, 55 O. G., 864.) It is certainly justified, however, in refusing to furnish a copy to someone who has no interest in the invention and who, in so far as appears, is not seeking the copy to protect the rights of the inventor. It is no hardship to require that the request for the copy be accompanied by the consent of the assignee. The mere request of the inventor is not sufficient without further reason being shown.

The refusal to approve the request for the copies in this case is not based upon any suspicion that there is here any lack of good faith, but upon the belief that in order to protect the rights of assignees and prevent fraud it is necessary to have a general rule against furnishing copies of applications except to parties in interest.

The request for the copy is denied.

## EX PARTE AVERY.

*Decided March 3, 1904.*

FEES—CERTIFICATE OF DEPOSIT—TRANSFER FROM ONE CASE TO ANOTHER.

Where payment is made to a subtreasurer by one party on account of patent fees and a certificate of deposit is received, *Held* that the certificate will not be received as payment by a different party in a different application except upon the consent of the person in whose name it was issued. *Held*, further, that it is effective after receipt by the Office as of the date of the consent to its use in the case and not as of the date of the payment to the subtreasurer.

ON reference.

APPARATUS FOR GENERATING GAS.

*Mr. L. M. Hopkins* for the applicant.

ALLEN, *Commissioner:*

A certificate has been filed in the above-entitled case showing that twenty dollars was paid to the subtreasurer at San Francisco on January 22, 1904, on account of patent fees. The question is presented whether that certificate should be accepted as the final fee in this case.

The above-noted certificate was issued to Charles Schenck, Jr., "on account of patent fees Improvements in Speed Indicators," and it was presented to this Office on January 29 with the request that it be applied to the present application, filed by Avery for a different class of invention. It was not accompanied by the consent of Schenck to its use in this case, and therefore the attorney for this applicant was notified that it could not be accepted as the final fee in this application. The six months allowed for the payment of the final fee expired January 29, the very day that this certificate was received. The certificate was subsequently returned to the attorney, and on February 26 it was again filed, together with the written consent of Schenck to its use in this case. When received the second time, however, the application was forfeited.

Where a payment of patent fees is made to a subtreasurer, specifying the case, it is effective as of the date of the payment and not the date when the certificate reaches this Office; but this is true only when the money is to be applied for the purpose specified when it was paid. Where it is transferred to some other case, the date of the payment in the second case is the date of the transfer.

In the present case it is very clear that this Office was in receipt of no fee of twenty dollars which it could apply to this application until February 26, when the consent of Schenck was filed. The application was then forfeited, and therefore the fee was paid too late and cannot be accepted.

## IN RE LAUNDRY BLUE COMPANY.

*Decided March 7, 1904.*

ASSIGNMENTS OF TRADE-MARKS—MUST IDENTIFY CASE.

Assignments of trade-marks will not be recorded unless they identify same application or registration.

IN the matter of the request of The Laundry Blue Company for the recording of certain instruments purporting to be assignments of a trade-mark.

ALLEN, *Commissioner:*

This is a petition that certain instruments in writing, purporting to be assignments of a trade-mark consisting of the words "Wiggle Stick," be recorded in this Office.

The instruments do not identify by date and number any registered trade-mark or any application for registration, and for that reason they were not recorded. The rules require assignments to identify the application before they will be recorded.

There are vast numbers of trade-marks which are not registered in this Office, and there seems to be no reason why this Office should record assignments of such trade-marks. It is justified in refusing to record instruments which do not identify applications or registrations.

The petition is denied.





## DECISIONS OF THE U. S. COURTS.

### Court of Appeals of the District of Columbia.

### PAUL v. JOHNSON.

*Decided February 2, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION—LACK OF DILIGENCE.
   *Held* that Paul was the first to conceive the invention, but was the last to reduce to practice, and that he was not exercising diligence when Johnson entered the field and filed his application, and that therefore Johnson is to be regarded as the first inventor.
2. SAME—LACK OF DILIGENCE—MAKING OF DRAWINGS.
   Where during the time between his conception and his reduction to practice Paul had drawings of the invention made, but put them to no use and locked them up in his desk, *Held* not to constitute diligence in adapting and perfecting the invention.
3. SAME—SAME—EXCUSE FOR DELAY—SICKNESS OF INVENTOR.
   Where sickness is alleged as the excuse for delay in reducing to practice or filing an application, *Held* that it must constitute a continued disability such as would excuse diligence during the entire period when diligence was required to be exercised.
4. SAME—SAME—FAILURE TO FILE APPLICATION.
   Where Paul had a conception of the invention so complete and definite in 1891 that he could have given the necessary information from which an application for patent could have been prepared, *Held* that there was no reason or necessity for delaying the application until 1896 and that his delay shows a lack of diligence.
5. SAME—SAME—APPLICATIONS UPON OTHER INVENTIONS.
   Where during the period of delay when Paul says he was unable to do anything it appears that he filed applications relating to other inventions, *Held* that his claim that the delay was unavoidable is not sustained.
6. SAME—FIRST TO REDUCE TO PRACTICE—PRIMA FACIE RIGHT TO PATENT.
   It is a fundamental principle of patent law that the first to reduce to practice is *prima facie* the first inventor and entitled to a patent, and he can be deprived of that right only by showing that some one else was first to conceive the invention and exercised diligence thereafter in perfecting it.
7. SAME—NO DILIGENCE BY FIRST TO REDUCE TO PRACTICE NECESSARY.
   There is no requirement of law for the exercise of diligence on the part of the first to reduce to practice, and no lack of diligence can be imputed to him, since he was, in fact, the first to give the invention to the public by a reduction to practice. The comparative diligence of the parties is not material.

*Mr. Wallace Greene* and *Mr. Robert N. Kenyon* for the appellant.

*Mr. William W. Dodge* for the appellee.

ALVEY, *C. J.:*

This is an appeal taken in an interference proceeding from the decision of the Commissioner of Patents. The interference was declared between the application of Andrew G. Paul, filed August 5, 1896, and the application of Warren S. Johnson, filed April 1, 1896. The subject-matter of the respective claims for patent is an improvement in heating systems. The issue of the interference is declared in a single count and in the following terms:

> In combination with a radiator, a supply-pipe for delivering a heating medium thereto, a valve for regulating the delivery of heating medium, a fluid-pressure motor for actuating said valve, a pipe communicating with the fluid-pressure motor and with the radiator, an exhausting device communicating with said pipe, a vent for said pipe located between the motor and the exhauster, and a thermostatic valve applied to said vent.

Neither party claims to have reduced his invention to actual practical use. Both stand upon constructive reduction to practice. Paul being the junior party upon record the burden of proof is upon him to show not only priority of invention but that he had been and was, at the time his opponent entered the field, in the exercise of due and reasonable diligence in perfecting his invention and in the assertion of his right thereto, as opposed to the claim of Johnson, the senior party in the Office and in the assertion of his claim.

In his preliminary statement, Paul alleges that he conceived the invention of the issue on or about the 1st of January, 1891; that he made drawings of said invention, and about the same time he explained the invention to others; but that he has never made a model of the invention in issue, and that he has never embodied the invention in a full heating system.

Johnson, in his preliminary statement, sets forth that he conceived the invention in issue on or about the 15th day of June, 1895, and communicated such invention to one or more persons on or about July 2, 1895; that drawings or sketches were made on or about July 2, 1895; but that no model of the apparatus was made, and that the invention has not been embodied in full-sized operative form, and has never been in public use, nor on sale. That other drawings were made subsequent to the date of the original drawings made.

The time from which each party can claim reduction to practice is that of the time of filing his application, thus establishing constructive reduction to practice; as neither party claims to have made a practical device embodying the invention before that time, and therefore does not claim to have reduced his invention to actual practical use.

All the tribunals of the Patent Office have proceeded upon the assumption, which seems to be well founded in fact, that conception and disclosure on the part of both Paul and Johnson had been established with reasonable certainty as alleged in their respective preliminary statements; and we are satisfied that they were right in that conclusion. The question, and, indeed, the only material question involved, is one of reasonable diligence on the part of Paul in reducing his invention to practice as against the claim of Johnson.

Paul was first to conceive and make disclosure of the invention, but last to reduce to constructive practice by filing his application on the 5th of August, 1896—about five years and seven months after conception, and more than four months after the application of Johnson had been filed. The Examiner of Interferences decided that Johnson was entitled to priority, because of the want of diligence on the part of Paul. This ruling was reversed on appeal to the Examiners-in-Chief, upon the ground that, in the opinion of the Board, composed of two members, there was no lack of diligence on the part of Paul, and he was therefore entitled to priority. On appeal to the Commissioner of Patents this latter ruling was reversed, and priority of invention was awarded to Johnson; the Commissioner being of opinion that Paul was lacking in diligence. It is from this decision of the Commissioner that this appeal is taken by Paul.

The reason set up and urged by Paul for the delay that occurred between the time of his conception and disclosure of the invention to the time of his constructive reduction to practice by filing his application, is that he was sick, and therefore unable to perfect and adopt his invention at or before the time when his opponent Johnson entered the field. If this contention was clearly supported by the evidence it would afford a good answer to the claim of priority by Johnson. But the evidence fails to support his contention; that is to say, it fails to show a continued disability that would excuse diligence during the entire period when diligence was required to be exercised.

As already stated, Paul's conception and disclosure were as early as 1891. By the evidence produced by him, it is shown that on October 25, 1894, he had made the drawing, Paul's Exhibit No. 1, which, coupled with the oral evidence of witnesses, proves a definitely-matured conception of the invention of the issue before that time. Paul's witness Shiffington proves that, in 1891, a disclosure was made to him so complete and definite that he could have given the necesary information and details of the invention from which an application could have been prepared for a patent covering the invention as now claimed. If this be so, there was no reason or necessity for the long delay in making the application; and other circumstances in the case strongly tend to substantiate this fact. Paul could have made the application at pleasure after conception; certainly at any time after October 25, 1894, the time at which, as it appears, he had procured to be made the drawing, Paul's Exhibit No. 1. This drawing of Paul's, of October 25, 1894, appears to have been made, according to his own account, not for the then present use, but for future purposes; for he says that his purpose in having it made was "that he might have the system patented." It is true, as said by the Commissioner, Paul does not say in his testimony that the drawing was made to form a part of an application for a patent; and it does not appear to be of a character required for that purpose. As concluded by the Commissioner in his opinion, the drawing was apparently intended merely to constitute written evidence of his invention, as he directed the draftsman to date it, and make a minute thereof for that purpose, and he at once put it away in his desk with his private papers, and locked it up. This drawing, as it appears, did not include the exhauster, because, as stated by the draftsman Perry, that would be understood. Perry was a witness for Paul, and when asked why the drawing did not show an exhauster on the end of the air-pipe in the figure of the drawing of October 25, 1894, he replied that it was because it is generally understood that there is invariably an exhauster in connection with any application of the Paul system. Nor did this drawing include the thermostat, because Paul did not wish to disclose his plan of thermostatic control to those who might see the drawing. In regard to this omission from the drawing, the witness says:

I asked Mr. Paul at the time if I should include the thermostat connection with the valve, and he said he thought it was unnecessary as it would make the drawing more complicated, and was a matter he could cover by description. To the best of my recollection Mr. Paul also said that so long as he could cover the features of the thermostat readily by description, and as it was a stock affair which could be applied by anybody to anything, he did not care particularly about conveying the idea to everybody who might see the drawing. I asked him at the time if I should not make another drawing and show a thermostat similar to the electrothermostat which controlled the heating system in the office of the John Hancock Building, where I had previously been employed, and he thought the description would be sufficient. He simply wished to cover the main features.

And Paul himself gave substantially the same explanation. He says, in reply to the question as to what he supplied to Perry from which to make the drawing:

I provided him with a detail sketch, and also with the diagram and a casing of the form I desired to use. I also explained to him that in making this drawing it was not necessary for him to show the connection to the thermostat on the wall as it would complicate the drawing, and that this sheet had other devices on it and would probably be seen by a number of people that I did not care to have see the plan of control by thermostat that I had devised. I explained to him fully the operation; also that any form of thermostat could be used that was adapted for the purpose.

This drawing was at once made, as directed, but instead of taking it to any attorney to have an application for patent prepared, Paul took the drawing and locked it up with his private papers, where it remained until brought forward for the purposes of this case.

But there are other admitted facts in the case that militate strongly against Paul's claim to priority. Paul was able to and did prepare and file several other applications for patents relating to heating systems, between September 1895 and August 5, 1896. Why not have prepared and filed the application for patent for the invention now in question? There does not appear any reason for the delay, or for pushing other applications ahead of the present application. It is urged on behalf of Paul that between September 1895 and February 28, 1896, the time of placing his claim in this case in the hands of his attorney, he was diligently employed in developing and perfecting this and allied inventions; but there is really no evidence upon which a rational conclusion can be based, that he was doing anything in regard to the present invention. It is not shown what remained to





be done, after the drawing of October 25, 1894. He appears to have been employed in preparing other applications for the Office, but not the application in this case. Paul was asked as a witness:

How many applications for patents were filed by you between the time of your return to business, after your sickness, in September 1895, and August 5, 1896, including this latter date?

The answer was, *nine*. He was then asked:

How many of these applications related to the subject of thermostatic control of heating systems?

and the answer was, *seven*. He was therefore engaged within the time mentioned in perfecting and adapting other heating systems of a kindred character, resulting in applications for patents; and if he could perfect and adopt other kindred inventions with a view to making applications for patents therefor, it is difficult to perceive why he could not have perfected, if it required perfecting, the present application before the time at which it was filed.

It is urged on behalf of Paul, that even though he were lacking in diligence up to February 28, 1896, the time when he communicated with and placed the matter of his claim to invention in the hands of his counsel, he should, nevertheless, prevail, because of the alleged lack of diligence on the part of Johnson, and from which time Paul had become active. But this contention, if sustained, would contravene a well-settled principle of patent law. As well said by the Commissioner in his opinion, it is a fundamental principle of patent law that the first to reduce to practice is *prima facie* the first inventor and entitled to a patent. Prior to the act of July 4, 1836, his right was absolute and subject to no exception. It has been repeatedly held by the Supreme Court of the United States, that he is to be regarded as the inventor and entitled to the patent who first brought the machine to perfection and made it capable of useful operation. The first and only exception made to this established rule was that made by the act of Congress of July 4, 1836, now embodied in section 4920 Revised Statutes of the United States, wherein it is provided that any one sued for infringement of a patent may show—

that the plaintiff had surreptitiously or unjustly obtained the patent for that which was in fact invented by another, *who was using reasonable diligence in adapting and perfecting the same.*

Nothing is said as to diligence on the part of the first to reduce to practice, and no lack of diligence can be imputed to him, since he was in fact the first to give the invention to the public by a reduction to practice. The principle is well and clearly stated by Judge Taft, in delivering the opinion of the Circuit Court of Appeals of the Sixth Circuit, in the case of *Christie* v. *Seibold*, (reported in O. G., 1650.) In that case the judge said:

The diligence of the first reducer to practice is necessarily immaterial. It is not a race of diligence between the two inventors in the sense that the right to the patent is to be determined by comparing the diligence of the two, because the first reducer to practice, no matter what his diligence or want of it, is prior in right, unless the first conceiver was using reasonable diligence at the time of the second conception and the first reduction to practice.

The same principle has been announced by this court in several cases, referred to in the decisions in the Patent Office, and by counsel in their briefs. (*Yates* v. *Huson*, 8 App. D. C., 93; 74 O. G., 1732; *Bader* v. *Vajen*, 14 App. D. C., 241; 87 O. G., 1235; *Austin* v. *Johnson et al.*, 18 App. D. C., 83; 95 O. G., 2685.)

That Johnson conceived the invention and made disclosure thereof on or about the dates mentioned in his preliminary statement, and made drawings or sketches thereof on or about July 2, 1895, are facts established to the satisfaction of all the tribunals of the Patent Office, and in which findings we entirely concur. Indeed there is no serious question made of the correctness of such findings. But the real question being one of diligence on the part of Paul, and the proof being insufficient to establish the fact that he was exercising reasonable diligence at the time when Johnson entered the field, the latter, being first to reduce to practice, is entitled to the award of priority of invention, and the decision of the Commissioner of Patents must therefore be affirmed. It is accordingly so ordered. And it is hereby directed that a certificate of the proceedings had on this appeal and of this decision be made and returned to the Commissioner of Patents, that the same may be entered of record according to law. Decision of Commissioner affirmed and certificate directed.

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## Court of Appeals of the District of Columbia.

### TRISSELL v. THOMAS.

*Decided February 2, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION.

*Held* that Thomas was the last to conceive the invention, but the first to reduce to practice, and that Trissell was not exercising diligence when Thomas entered the field, and that therefore Thomas is to be regarded as the first inventor.

2. SAME—SAME—REDUCTION TO PRACTICE.

Where it appears that Thomas constructed a hay-loader and the testimony is ample and satisfactory to show that the device was successfully tested and operated during three successive hay-making seasons, *Held* that the device is a reduction to practice notwithstanding the fact that another device was subsequently constructed embodying an improvement not necessarily connected at all with the invention of the issue, even though it be admitted that the second device was a better one than the first.

3. SAME—SAME—SAME—LENGTH OF TIME CONSUMED IN MAKING TESTS—NO UNFAVORABLE INFERENCE.

From the length of time taken for the tests of a hay-loader—three successive years in the hay-making seasons of the year—no inference can be deduced unfavorable to the inventor. On the contrary, considering the nature of the device and the purpose for which it was intended and that the best possible test was that which could be made in the outward operation of the machine in the field in the work for which it was intended, his care and diligence are rather to be commended, in view of the fact that there were no rivals in the field so far as he knew and there being no testimony to show fraud, suppression, concealment, or improper action of any kind.

*Mr. Paul Finckel* and *Mr. Alfred M. Allen* for the appellant.

*Mr. Harry A. Toulmin* for the appellee.

MORRIS, *J.*:

This is an appeal from a decision of the Commissioner of Patents in an interference case, wherein the subject-matter of controversy is as to the right of priority of invention of an improvement in hay-loaders, described as follows:

In a hay-loader, a crank-shaft, with a series of cranks thereon, and a sectional pulley secured to the medial portion of one of said cranks at the axis of rotation of said shaft, and a bearing for said pulley supported in the frame.

The Examiner of Interferences in the Patent Office describes the device in this apt language:

The subject-matter of this interference set forth in a single count, is a means for supporting the crank-shaft in a hay-loader. The peculiar character of this means is due to the shape of the crank-shaft which is bent so as to form a series of zigzags, each constituting a crank. The problem solved by the invention under consideration was to arrange a bearing for the shaft between its ends where it was coincident or parallel with its axis. The means employed consists of a sectional pulley made fast to the medial part of one of the cranks, and having its center in the axis of the shaft. The periphery of this pulley is grooved and a U-shaped iron bolted to a bar supported by the frame parallel with and above the crank-shaft acts as a bearing for the pulley.

Frank N. Trissell, the appellant, is a patentee of the invention, having filed his application therefor in the Patent Office on August 6, 1900, and received a patent thereon on October 9, 1900. Thomas, the appellee, filed his application on November 12, 1900, a little over one month after the issue of the patent to Trissell. Trissell in his preliminary statement alleged that he had conceived and disclosed the invention in October of 1893, and reduced it to practice in a full-sized machine completed about October 24, 1899. Thomas in his preliminary statement alleged that he had conceived and disclosed the invention in February and March of 1897, and reduced it to practice by the completion of a full-sized machine in July, 1898, which was successfully operated in the years 1898, 1899 and 1900.

Both parties assigned their claims, Trissell to the Ohio Rake Company of Dayton, Ohio, and Thomas to the Thomas Manufacturing Company, of Springfield, Ohio.

All three of the tribunals of the Patent Office, with concurrent unanimity, decided in favor of Thomas, the appellee, and awarded him judgment of priority of invention. From the decision of the Commissioner of Patents to that effect appeal has been taken to this court.

The facts of this case are few and simple. It is conceded, certainly it is not at all contested, that Trissell, the appellant, conceived the invention in the year 1893, and that he reduced it to practice in the autumn of the year 1899. On the other hand, it is conceded also on behalf of Trissell, that the appellee Thomas conceived the invention in March of 1897, and embodied it in a full-sized device which was practically tested on a hay-loader in the year 1898. It is not conceded, however, by Trissell, that this device embodied the invention in contrary; and in fact, this is the main question in controversy between the parties. There is also another concession on the part of Trissell of a fact patent on the record,—that from the time of his conception of the invention in 1893, if he then did conceive it, down to and after the time of Thomas's conception in 1897, and down to and after the time of Thomas's construction in 1898 of the device claimed by him to be a reduction to practice, Trissell was wholly quiescent as to this invention and did absolutely nothing whatever toward its reduction to practice. If, therefore, the construction of Thomas in 1898 was a reduction to practice by him, it is very evident that Trissell, by his long and unexplained delay from 1898 to 1898, lost any benefit that he might have had from his prior conception. If, on the other hand, Thomas's act of 1898 was not a reduction to practice, it is possible for Trissell to connect his reduction to practice in 1899 with his prior conception in 1893. For then there will have been no intermediate action by Thomas, or by any one else.

The only question at issue, therefore, between the parties is, whether the action of Thomas in 1898 was a reduction of the invention to practice; and the answer to this question does not seem to us to be very difficult. We fully concur in the answer that has been given to it by the Commissioner of Patents, and by the other tribunals of the Patent Office. The testimony is so full and complete, and by unimpeached witnesses, that the Thomas device was successfully tested and operated in the three successive years of 1898, 1899 and 1900, during the hay-making seasons of those several years, that the efficacy of the test is put beyond a doubt. In fact, the objection to the test seems to be based mainly on the fact that Thomas was not content with the test of one year, but preferred to test it actually in the field for three successive years, and in the further fact that, during those years, Thomas came to the conclusion that another device, that of a pivotal connection for the supporting-strap of the present invention, not necessarily connected at all with the present invention, was necessary to the perfection of his invention, and therefore, as it is argued, admitted that his invention without the pivotal connection was imperfect and inoperative. But this objection is without substantial foundation. While a device with a pivotal connection for the supporting-strap may be a better device than that which is now here in issue, it does not follow that the device of Thomas, without the pivotal connection, was inoperative and unsuccessful. On the contrary, the testimony that it was successfully operated throughout three successive years is ample and satisfactory; and it has been so held by all the tribunals of the Patent Office.

From the length of time taken for the tests, three successive years in the hay-making seasons of the year, no inference can be deduced unfavorable to Thomas. On the contrary, when we consider the nature of the device and the purpose for which it was intended, and that the best possible test was that which could be made in the actual operation of the machine in the field in the work for which it was intended, his care and diligence are rather to be commended, in view of the fact that there were no rivals in the field of invention so far as he knew: and he seems to have known nothing of Trissell's action until after the issue of the patent to the latter. There is no testimony to show fraud, suppression, concealment, or improper action of any kind on the part of either inventor.

We find no reason to disturb the conclusion reached by the Commissioner of Patents in his well-reasoned and able opinion in the case; and we are of opinion that his judgment should be affirmed, and that the award of priority of invention should be in favor of the appellee John H. Thomas.

The clerk of the court will certify this opinion, and the proceedings of the court in the premises, to the Commissioner of Patents according to law.

Affirmed.



Patents Nos. 754,959 to 755,600.

# THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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| Canada | 9 | 1 | Persia | | |
| Cape Colony | | | Queensland | | |
| Chile | | | Roumania | | |
| China | | | Russia | 1 | |
| Costa Rica | 1 | | San Salvador | | |
| Cuba | | | Scotland | 2 | 1 |
| Denmark | 2 | | South Africa | | |
| Ecuador | | | Spain | | |
| England | 29 | 1 | Sweden | 3 | |
| France | 7 | 1 | Switzerland | 3 | |
| Germany | 33 | 2 | Transvaal, South Africa | 1 | |
| India | 1 | | Victoria | 1 | |
| Ireland | 1 | | Western Australia | | |
| Italy | | | | | |
| Japan | | | Total to citizens of foreign countries | 108 | 6 |
| Java | | | | | |
| Mexico | | | | | |

## Disclaimer.

452,618.—*James Scott*, Pittsburg, Pa. BOSH-PLATE FOR FURNACES. Patent dated May 19, 1891. Disclaimer filed March 15, 1904, by the assignees, *Edwin E. Smeeth, Smeeth Copper and Bronze Co., George Best*, and *Best Manufacturing Co.*

Enter their disclaimer—

"To claim 6 of said Letters Patent, which is in the following words, to wit:

"In combination with a furnace, a series of encircling water-cooled bosh-plates set in arched recesses in the furnace-wall, from which they are freely removable, and a band encircling the furnace at the arches, substantially as and for the purpose described."

## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., February 16, 1904.*

To the next of kin and legal representatives of Samuel B. Locklin, deceased, late of Boston, Mass.:

Notice is hereby given that on October 14, 1903, an interference was declared between the patent to Samuel B. Locklin, No. 706,574, August 12, 1902, and a pending application, the issue of the said interference being claims 1 to 4 of the patent.

Notice is further given that the time within which the statements demanded by Rule 110 must be filed has been extended to April 5, 1904.

This notice will be published in the OFFICIAL GAZETTE for six weeks.

F. I. ALLEN,
*Commissioner.*

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business March 15, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended. | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Mar. 2 | Mar. 2 | 174 |
| 321 | I. Tillage, etc., and Fences | Feb. 18 | Feb. 20 | 168 |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Feb. 17 | Feb. 18 | 219 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Feb. 17 | Feb. 15 | 274 |
| 109 | XVI. Telegraphy and Telephony | Feb. 17 | Jan. 21 | 216 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Feb. 16 | Mar. 1 | 265 |
| 244 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Feb. 16 | Mar. 1 | 256 |
| 172 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Feb. 16 | Mar. 1 | 157 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Feb. 16 | Feb. 24 | 275 |
| 148 | XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Feb. 16 | Feb. 16 | 267 |
| 233 | IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc. | Feb. 16 | Feb. 15 | 406 |
| 327 | XVIII. Steam-Engineering, etc. | Feb. 16 | Feb. 15 | 188 |
| 137 | VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus. | Feb. 16 | Feb. 15 | 329 |
| 318 | VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc. | Feb. 16 | Jan. 30 | 145 |
| 159 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography. | Feb. 15 | Mar. 1 | 127 |
| 308 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Feb. 15 | Mar. 1 | 254 |
| 152 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Feb. 15 | Mar. 1 | 317 |
| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Feb. 15 | Mar. 1 | 249 |
| 232 | X. Carriages and Wagons | Feb. 15 | Feb. 26 | 228 |
| 142 | IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution. | Feb. 15 | Feb. 15 | 360 |
| 315 | XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers. | Feb. 15 | Feb. 12 | 278 |
| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Feb. 15 | Feb. 11 | 267 |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Feb. 15 | Feb. 8 | 386 |
| 234 | XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements. | Feb. 15 | Jan. 25 | 305 |
| 308 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Feb. 15 | Jan. 7 | 502 |
| | *Between one and two months.* | | | |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Feb. 12 | Jan. 18 | 313 |
| 289 | XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc. | Feb. 11 | Feb. 5 | 287 |

*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended. | No. of applications awaiting action. |
|---|---|---|---|---|
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Feb. 8 | Feb. 23 | 230 |
| 312 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Feb. 8 | Feb. 8 | 339 |
| 128 | II. Farm Products, etc., Lubricators, Presses, etc. | Feb. 8 | Jan. 27 | 311 |
| 112 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Feb. 8 | Jan. 7 | 395 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Jan. 27 | Jan. 6 | 388 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Jan. 25 | Jan. 4 | 285 |
| 123 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Jan. 22 | Feb. 6 | 381 |
| 368 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Jan. 20 | Jan. 11 | 555 |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Jan. 19 | Dec. 21 | 541 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Jan. 15 | Jan. 11 | 342 |
| | *Between two and three months.* | | | |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Dec. 24 | Dec. 2 | 441 |

Total number of applications awaiting action.....11,320

| | | | |
|---|---|---|---|
| *Under one month.* | | | |
| *Designs | Mar. 1 | Mar. 7 | 49 |
| †Trade-Marks | Feb. 23 | Mar. 11 | 63 |
| ‡Labels and Prints | Mar. 12 | Mar. 15 | 3 |

### Attorneys.

(ORDER No. 1,580.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., March 14, 1904.*

Pursuant to the provisions of section 487 of the Revised Statutes, and with the approval of the Secretary of the Interior, E. T. Thomas, of 302 Broadway, New York, N. Y., registry number 1,122, is hereby disbarred from practice before the United States Patent Office for gross misconduct.

F. I. ALLEN,
*Commissioner.*

### Access to Pending Applications.

RULE 18. Before any attorney, original or associate, will be allowed to inspect papers or take action of any kind, his power of attorney must be filed. But general powers given by a principal to an associate cannot be considered. In each application the written authorization must be filed. A power of attorney purporting to have been given to a firm or copartnership will not be recognized, either in favor of the firm or of any of its members, unless all its members shall be named in such power of attorney.

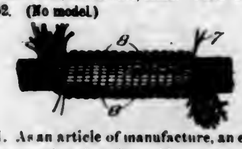
### Foreign Patents.

RULE 39. The receipt of Letters Patent from a foreign government will not prevent the inventor from obtaining a patent in the United States, unless *the application on which the foreign patent was granted was filed more than twelve months prior to the filing of the application in this country, in which case no patent shall be granted in this country.*

# PATENTS

## GRANTED MARCH 22, 1904.

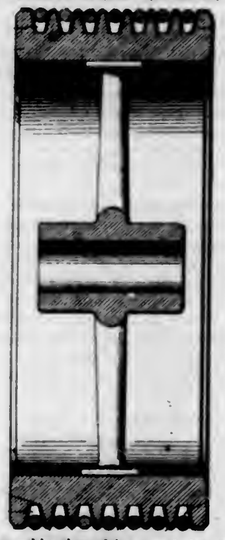
**754,959. COVERED ELASTIC BAND.** JOHN ASHWORTH and FRED N. ASHWORTH, Somerville, Mass. Filed Sept. 28, 1903. Serial No. 174,852. (No model.)



*Claim.*—1. As an article of manufacture, an elastic band in combination with a covering therefor, said covering consisting of a series of fibrous strands extending longitudinally of said elastic band and a helical retaining-strand wound around said longitudinal strands under tension, each of said longitudinal strands forming a series of loops extending longitudinally of said elastic band.

2. As an article of manufacture, an elastic band in combination with a covering therefor, said covering consisting of a series of fibrous strands extending longitudinally of said elastic band and a helical retaining-strand wound around said longitudinal strands under tension, said longitudinal strands each forming a series of loops one loop of each of said series located between each of the successive convolutions, respectively, of said helical strand.

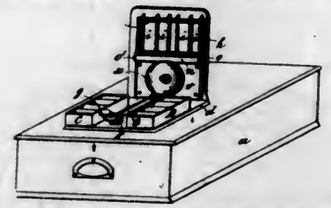
**754,960. BELT-PULLEY.** ERNEST BAUER, Chicago, Ill. Filed Dec. 23, 1902. Serial No. 136,392. (No model.)



*Claim.*—The combination with a wood rim-pulley having a plurality of annular grooves with inclined walls and a plurality of inverted-V-shaped ribs spaced apart by said grooves, of bands of wear-resisting material, said bands being substantially V-shaped, with their open sides facing inwardly and disposed upon the inverted-V-shaped ribs contacting closely with the side walls of said ribs and constituting wear-surfaces supported by the side walls of the ribs for cables running in the grooves of said pulley.

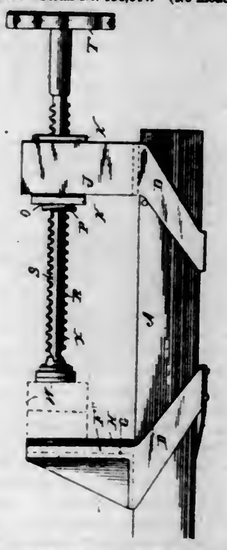
**754,961. CASH-TILL.** FREDERICK W. BAYNES, London, England, assignor to Philip Eckhaus, West Kensington, England. Filed Dec. 2, 1902. Serial No. 133,639. (No model.)

*Claim.*—1. The combination, in a cash-till, of a box *a* having a drawer *b* divided by a partition, a base-plate *d*, pivoted lever *c*, vertical plate *h*, ribs *i* forming ticket-channels open at the top, slide *j*, spindle *n*, bearings *o o'* on plate *h*, longitudinal catch-plate *p*, having notches *r*, opening *t* through base-plate *d* and top of box *a*, pin *u* on spindle *n*, having a loose connection with the slide *j* whereby the downward movement of the slide rocks the spindle *n*, all substantially as set forth, and shown.



2. In a cash-till, the combination with the box having a drawer therein provided with coin and ticket receptacles, of a vertical plate above the box having ribs forming guideways for the tickets communicating at their bottoms with the ticket-receptacle, a rock-shaft pivotally supported by said plate, a retaining-plate carried by said rock-shaft having recesses corresponding to the ribs in the vertical plate, the portions of the retaining-plate between the said ribs being adapted to enter the guideways, a spindle on the rock-shaft, a slide in one of the guideways adapted to oscillate the spindle and retaining-plate and a lever having drawer-locking means and connections from the said lever to the slide for operating the retaining-plate, substantially as described.

**754,962. CLAMP.** WILLIAM B. BENNETT, Grand Rapids, Mich. Filed May 12, 1903. Serial No. 156,817. (No model.)



*Claim.*—1. In a clamp, the combination of a base or support, a standard mounted thereon and forming an abutment, an open standard also mounted on the support, a sectional bearing-block in said

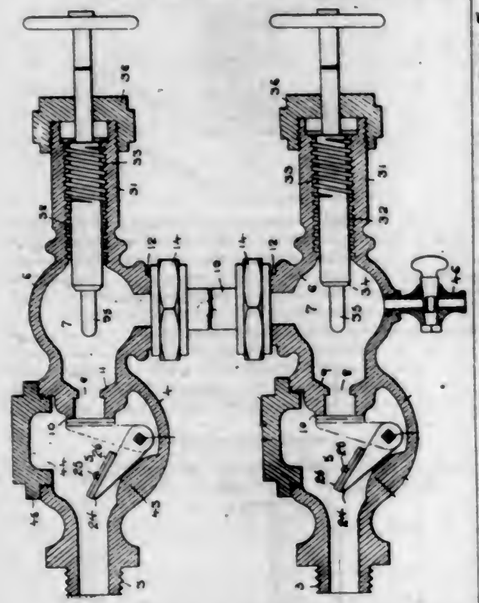
standard, a threaded collar mounted in said bearing-block and a clamping-screw having flat sides to slide in said collar and threads to engage the threads of the collar to effect the binding, said standards each having a depending loop embracing the support and securing said standards.

2. In a clamp, the combination of a support, the pair of loops fitting upon said support, the standard formed on one of the loops and providing a stop, the open standard formed on the other loop, the bearing-block mounted in said standard, the collar in the bearing-block, the screw having flat sides and thread, the handle on one end of the screw and the adjustable clamping-head on the other end of the screw.

3. In a clamp, the combination of a support, a pair of standards carried by the support, a bearing-block fitting in one of the standards and composed of two interlocking members, a bearing-collar fitting in said block, and a clamping-screw movable and adjustable in said collar.

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**754,963. WATER-GAGE. LAWRENCE A. BERTRAM, Allegheny, Pa. Filed May 9, 1903. Serial No. 156,423. (No model.)**



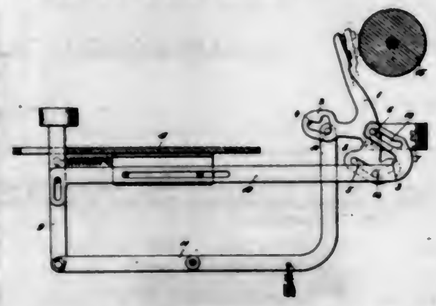
*Claim.*—1. In a gage of the class described, the combination of the upper and lower heads, having chambers therein and a port connecting said chambers, each head having a check-valve in one of the chambers adapted to close the port and means rigidly engaging and connecting the said valves to lock them in their opened or closed position as long as said means is in engagement therewith.

2. In a gage of the class described, the combination of the upper and lower heads having chambers therein, and a port connecting said chambers, a spindle rotatably mounted in one of the chambers of each head, a check-valve mounted on the spindle and arranged to close the ports, and means detachably engaging and connecting the spindles to lock them against rotation, said means being movable from the spindles by lateral movement.

3. In a gage of the class described, the combination of the heads, having chambers therein and an extension, said chambers being connected by a port, a spindle rotatably mounted in one of the chambers of each head, a check-valve mounted on the spindle and arranged to close the ports, and a locking-bar provided with recesses engaging the spindles to hold them against rotation.

4. In a gage of the class described, the combination of the heads having chambers therein, and a port connecting the chambers, a spindle rotatably mounted in one of the chambers of each head, a check-valve on the spindle, and arranged to close the port, each spindle being extended exterior to the head and formed with a squared portion and a locking member connecting the spindles and formed with seats to engage the squared portions thereof.

**754,964. TYPE-WRITING MACHINE. HEINRICH BOTTENDORF and JULIUS M. BERG, Frankfort-on-the-Main, Germany. Filed Sept. 28, 1901. Serial No. 76,978. (No model.)**



*Claim.*—1. In a type-writing machine, the combination with a key, and a type-bar carrying two types, of mechanism intermediate said type-bar and key, operatively connecting the same and adapted to be operated by a downward pressure of the key to move one of said types into printing position, and independent mechanism operatively connecting the key-bar and type-bar adapted to be operated by a pulling movement upon the key, to move the other type to printing position.

2. In a type-writing machine, the combination with a type-bar carrying two types, and a key-bar, of independent connections between said type-bar and key-bar for each type, adapted to be operated by independent movements of said key-bar, to bring one or the other of the types into printing position.

3. In a type-writing machine, the combination with a key-bar, and a type-bar carrying two types, of a connection between said key-bar and type-bar for throwing the type-bar into contact with the printing-cylinder, and an independent connection between said key-bar and type-bar for lowering the type-bar, and throwing it into contact with said cylinder.

4. In a type-writing machine, the combination with a key-bar, and a type-bar carrying two types, and having two projecting slotted arms, and an independent connection between each of said arms and the key-bar.

5. In a type-writing machine, the combination with a key-bar, and a type-bar carrying two types, and having two oppositely-projecting arms, and a key-lever loosely connected to one of said arms, and a longitudinally-movable rod connecting the other arm to the key-bar.

6. In a type-writing machine, the combination with a key-bar, and a type-bar carrying two types, and having projecting slotted arms, of means connecting the key-bar and type-bar, whereby when the key-bar is depressed, one of said types is thrown into printing position, and when a pulling pressure is exerted upon the connecting means, the other type is presented in printing position.

7. In a type-writing machine, the combination with a key-bar, and a type-bar carrying two types, having projecting slotted arms, and a laterally-projecting pin, a key-lever having a pin projecting into the slot of one of said arms, and a connecting-rod loosely connected at one end to the key-bar, and slotted at its opposite end to receive the pin of the type-bar.

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**754,965. HOLDER FOR TANK-FLOATS. GEORGE A. BLAKE, New Bedford, Mass. Filed Apr. 30, 1903. Serial No. 155,039. (No model.)**



*Claim.*—1. The combination with a valve-float, of a washer or disk seated on the float, a frame formed by a plurality of interlocked wire loops, surrounding the float and extending across said disk or washer to connect it to the float, and means for connecting the washer or disk to a valve rod or stem.

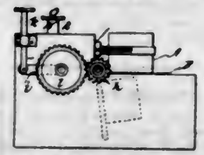
2. The combination with a valve-float, of a holder or frame for said float consisting of a single wire bent to extend around the float in different intersecting planes, and means for connecting said holder or frame to a valve rod or stem.

3. The combination with a valve-float, of a washer or disk seated on the float and provided with grooves or notches, a frame formed by a single wire surrounding the float on intersecting planes and securing the disk or washer thereon by extending through the grooves or notches therein, and means for connecting the washer or disk to a valve rod or stem.



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**754,966. GLASS-MOLD-OPERATING APPARATUS. LOUIS BUONO, Monaco, Pa., assignor to the Phoenix Glass Company, Pittsburg, Pa., a Corporation of West Virginia. Filed Oct. 8, 1901. Renewed July 21, 1903. Serial No. 166,496. (No model.)**



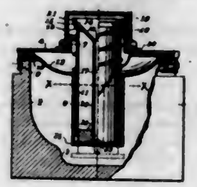
*Claim.*—1. In a glass-mold-operating apparatus, the combination of a platform, a tank, a hinged plate adapted to swing downwardly into said tank, a rocking shaft to which said plate is secured, mechanism comprising gearing on the shaft, a treadle and lever for positively rocking said shaft to immerse the plate in the tank and a counterpoise arranged to return said plate to its normal position, substantially as described.

2. In a glass-mold-operating apparatus, the combination of a platform, a tank, a rocking shaft, a plate attached to said shaft, a two-part mold each half of which is independently hinged on a vertical standard on said plate, means comprising a treadle and gearing for positively rocking said shaft to immerse the mold and means for automatically returning the plate to its normal horizontal position and means for positively swinging both halves of the mold simultaneously on their pivotal point to close the mold and for automatically opening the mold, substantially as described.

3. In a glass-mold-operating apparatus, the combination with a swinging base-plate, a two-part mold having its members independently hinged on a standard on said base-plate, of pivoted arms embracing the mold members, toggle-levers connected to said pivoted arms, a vertically-movable standard to which said toggle-levers are connected and springs adapted to spread the mold members apart and raise said standard when the standard is released from pressure, substantially as described.

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**754,967. AUTOMATIC INKSTAND. ALEXANDER C. BURNHAM, New York, N.Y. Filed Apr. 27, 1903. Serial No. 154,392. (No model.)**



*Claim.*—1. In a device of the type set forth, a reservoir having a tube on its interior, a depressible member in the tube, a dip-cup on the said member, with a passage extending through the cup and member, said passage being in communication with the reservoir only when the said member is depressed, and means secured to the depressible member adapted to close communication with the reservoir when said member is elevated by contact with said tube.

2. In a device of the type set forth, a reservoir having a tube on its interior, a depressible member in the tube carrying a dip-cup, means for establishing communication between the cup and the reservoir when said member is depressed, and means carried by the said depressible member adapted to normally close the communication with the reservoir by contact with said tube.

3. In a device of the type set forth, a reservoir having a tube on its interior, a depressible member carrying a dip-cup mounted in the tube, said member and cup having a passage therethrough, the member having openings therein to establish communication with the reservoir and passage, and a plug having radial openings therein adapted to close said communication secured to said member.

4. In a device of the character described, the combination with a reservoir, of a tube secured within the same, a depressible member mounted therein, a dip-cup provided with a tube thereon carried by said member, said member having openings in the lower end thereof adapted to communicate with the reservoir, and a plug provided with radial openings and an outwardly-extending flange carried by said member adapted to contact with the first-named tube to close communication with the reservoir, substantially as described.

5. In a device of the type set forth, a reservoir, a tube on the interior thereof, a cap for supporting said tube, a closing-cap securing said cap between itself and the upper end of the reservoir, a depressible member in the tube, said member when depressed establishing communication with the reservoir, and means carried by the member engaging with the tube for sealing the communication with the reservoir.

6. In a device of the type set forth, a reservoir, a cap mounted thereon, a tube secured thereto, a depressible member carrying a dip-cup, said member provided with openings adapted to communicate with the reservoir, means normally closing the communication carried by the said member, and a closing-cap engaging the tube-supporting cap, substantially as described.

7. In a device of the type set forth, a reservoir, a cap and a tube supported thereby, a closing-cap engaging said cap, a second closing-cap arranged on said first-named closing-cap, and a member operating in said tube with means for establishing communication between the member and the reservoir when the member is depressed.

8. A device of the type set forth, embracing a reservoir, a tube on the interior thereof, a vertically-slidable apertured spring-pressed member in the tube, and means carried by the said member to permit communication with the reservoir when in a depressed position, and to close said communication when said member is in its normal position, comprising a plug provided with radial openings and having an outwardly-extending flange thereon adapted to contact with the reservoir-tube.

9. A device of the type set forth embracing a reservoir, having a tube on its interior, means for supporting the tube, a closing-cap engaging said means, a second closing-cap engaging said first-named closing-cap, and a spring-pressed vertically-slidable member in said tube, said member being perforated for establishing communication with the reservoir when in its depressed position.

10. A device of the type set forth, combining with an inclosed ink-reservoir, a tube suspended therein, an apertured pen-cup, a depressible, spring-pressed sliding member carrying said cup, provided with a duct, and reciprocally mounted in said tube; the pen-cup normally not being in communication with the ink-reservoir; a closure of valviform construction adapted to mechanically seal the communication between the pen-cup and ink-reservoir, all arranged for joint operation, substantially as herein shown and specified.

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**754,968. TELEPHONE. MARTIN C. BURT, Chicago, Ill. Filed Mar. 17, 1903. Serial No. 148,204. (No model.)**



*Claim.*—1. In a telephone, the combination with a diaphragm carrying armatures, of a series of magnets for the armatures, circuits leading to the magnets, and a switch arranged in operative position relative to the telephone and adapted for closing the circuits through one or more of the magnets.

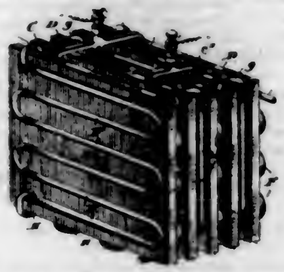
2. In a telephone, the combination with a diaphragm having a series of ring armatures thereon, of a series of magnets arranged respectively one within the other and having their cores adjacent to said armatures, circuits connected with said magnets, and a single switch designed to close the circuits of one or more of the magnets.

3. In a telephone, the combination with a diaphragm, of a series of magnets having hollow cores arranged one within and insu-

lated from each other and the forward ends of which are perforated, armatures on the diaphragm, circuits leading from the magnets, and a switch for the circuits.

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754,969. **STORAGE BATTERY.** MARTIN C. BURT, Chicago, Ill. Filed Aug. 13, 1903. Serial No. 169,342. (No model.)



*Claim.*—1. In a battery-cell, positive and negative plates, in combination with cooling instrumentalities comprising an air-conductor arranged between said plates, and means for forcing air through said conductor.

2. In a battery-cell, positive and negative plates, in combination with cooling instrumentalities comprising a coiled pipe arranged between said plates, and means for forcing air through said pipe.

3. In a battery-cell, positive and negative plates, in combination with cooling instrumentalities comprising an air-conductor arranged between said plates and also outside of the same, and means for forcing air through said conductor.

4. In a battery-cell, positive and negative plates, in combination with cooling instrumentalities comprising a coiled pipe arranged between said plates and also outside of the same, and means for forcing air through said pipe.

5. In a battery-cell, positive and negative plates in combination with cooling instrumentalities comprising an air-conductor arranged between, at the sides of, and beneath said plates, and means for forcing air through said conductor.

6. In a battery-cell, positive and negative plates, in combination with cooling instrumentalities comprising a coiled pipe arranged between, at the sides of, and beneath said plates, and means for forcing air through said pipe.

7. In a battery-cell, positive and negative plates, in combination with means for elevating the plates above the bottom of the cell comprising a coiled pipe underlying the under edges of the plates.

8. In a battery-cell, positive and negative plates, and cooling instrumentalities comprising a perforated pipe arranged in adjacence to said plates, and means for forcing air through said pipe.

9. In a battery-cell, positive and negative plates, and cooling instrumentalities comprising a coiled perforated pipe arranged in adjacence to said plates, and means for forcing air through said pipe.

10. In a battery-cell, positive and negative plates, and cooling instrumentalities comprising a perforated pipe underlying said plates and means for forcing air through said pipe.

11. In a battery-cell, positive and negative plates, and cooling instrumentalities comprising a coiled perforated pipe underlying said plates, and means for forcing air through said pipe.

12. In a battery-cell, positive and negative plates, in combination with cooling instrumentalities comprising a coiled pipe arranged between, at the sides of, and beneath said plates, and means for forcing air through said pipe, that portion of the pipe underlying the plates being perforated.

13. In combination with a battery-cell, cooling instrumentalities comprising an open air-conductor, and means operatively associated therewith for forcing air through said conductor and into the electrolyte of the cell.

14. In combination with a battery-cell, cooling instrumentalities comprising an open air-conductor, and means operatively associated therewith for forcing air through said conductor and into the electrolyte of the cell, said cell being provided with an outlet for said air at the upper portion thereof.

15. In combination with a battery-cell, cooling instrumentalities comprising an open air-conductor, and means operatively associated therewith for forcing air through said conductor and into the electrolyte of the cell, said cell being provided with an outlet for said air and the gas expelled thereby at the upper portion thereof.

16. In combination with a battery-cell, cooling instrumentalities comprising an open air-conductor, and means operatively associated therewith for forcing air through said conductor and into the electrolyte of the cell, said cell being provided with an outlet for said air and the gas expelled thereby at the upper portion thereof, and a perforated hood or baffle between said outlet and the interior of the cell.

17. In combination with a battery-cell, means for forcibly expelling the gases therefrom.

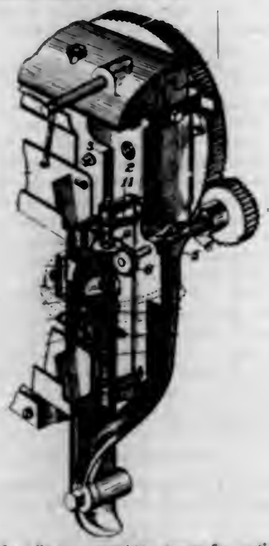
18. In combination with a battery-cell, means for forcibly expelling the gases therefrom comprising an open air-conductor leading into the interior of said cell, and means for forcing air through said conductor.

19. In combination with a battery-cell, means for forcibly expelling the gases therefrom and a perforated hood or baffle into which the gases pass previous to their discharge.

20. In combination with a battery-cell, means for forcibly expelling the gases therefrom comprising an open air-conductor leading into the interior of said cell, means for forcing air through said conductor, and a perforated hood or baffle into which the gases pass previous to their discharge.

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754,970. **ATTACHMENT FOR LINOTYPE-MACHINES.** EDWARD B. CLARK, Pittsburg, Pa., assignor of part, by direct and mesne assignments, to Imperial Machine Company, Pittsburg, Pa., a Corporation of Pennsylvania, and Samuel B. Whinery, Pittsburg, Pa. Filed June 15, 1903. Serial No. 161,427. (No model.)



*Claim.*—1. In a linotype-machine, means for casting linotypes, and a frame having a slot, through which the linotypes are discharged, in combination with a cutter for cutting off the ends of the linotypes.

2. In a linotype-machine, means for casting linotypes, and a frame having a slot, through which the linotypes are discharged, in combination with a cutter for cutting off the ends of the linotypes and adjustable means whereby the linotype may be cut the desired length.

3. In a linotype-machine, means for casting linotypes, and a frame having a slot, through which the linotypes are discharged, in combination with a cutter for cutting off the ends of the linotypes, and an adjustable rest to gage the lengths of the trimmed linotypes.

4. In a linotype-machine, a stick, a cutter for cutting off the ends of the linotypes, a rest to support the linotypes preliminarily to the cutting thereof, and means for storing the trimmed linotypes successively in the stick.

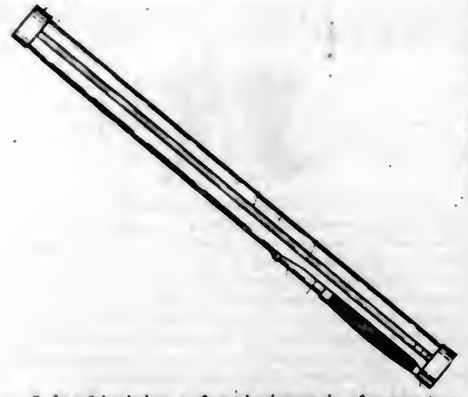
5. In a linotype-machine, a stick, a cutter for cutting the ends of linotypes, an adjustable rest to support the linotypes preliminarily to the cutting thereof, and means for storing the trimmed linotypes successively in the stick.

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754,971. **FISHPOLE-KEEP.** RICHARD J. CLOHERTY, Cincinnati, Ohio. Filed July 27, 1903. Serial No. 167,116. (No model.)



*Claim.*—1. In a fishpole-keep, a frame having a series of grooves to receive the pole-sections, and ferrules at opposite ends of the frame to retain the pole-sections in place, one of said ferrules being adapted to move endwise on the frame to release or lock the pole-sections in place.



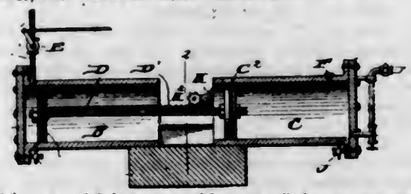
2. In a fishpole-keep, a frame having a series of grooves to receive the pole-sections, ferrules at opposite ends of the frame to retain the pole-sections in place, one of said ferrules being adapted to move endwise on the frame to release the pole-sections, and means for holding it normally in position to lock the pole-sections in place.

3. In a fishpole-keep, a frame having a series of grooves to receive the pole-sections, ferrules at opposite ends to retain the pole-sections in place, one of said ferrules being adapted to move endwise on the frame to release the pole-sections, means for holding said ferrule normally in position to lock the pole-sections in place, and a lock adapted to hold the ferrule in position to release the pole-sections.

4. In a fishpole-keep, a frame having a series of grooves to receive the pole-sections, a rigid ferrule at one end of the frame to retain one end of the pole-sections in place, a movable ferrule at the opposite end of the frame adapted to move endwise on the frame to lock the pole-sections in place or to release them, and means for retaining the ferrule in position to lock the pole-sections in place.

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754,972. **LUBRICATOR.** FRANK J. COLLIDGE, Galva, Ill. Filed Feb. 25, 1903. Serial No. 145,030. (No model.)



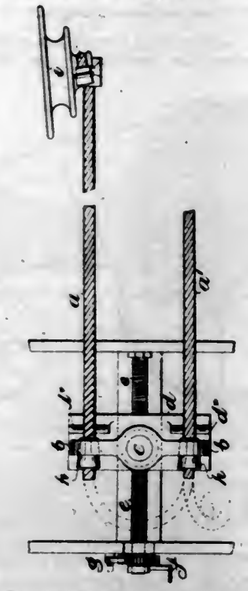
*Claim.*—1. A lubricator comprising two cylinders mounted tandem, a piston in each cylinder, a rod connecting the pistons, said rod having rack-teeth formed on it, a rotatable shaft arranged between the pistons and transverse to the rod, a cog-wheel on said shaft meshing with the rack-teeth on the rod, a ratchet on said shaft, a bracket, a pawl pivoted to the bracket and adapted to engage the ratchet, and means for admitting steam into one cylinder in the rear of the piston therein, an oil-feed pipe leading from the other cylinder, and means for rotating the shaft.

2. A device of the kind described comprising a steam-cylinder, an oil-cylinder in advance of and spaced from the steam-cylinder, a piston in each cylinder, a piston-rod having a rack-bar formed thereon connecting the pistons, a revoluble shaft carrying a cog-wheel, said wheel meshing with the rack, a handle on one end of said shaft, means for admitting steam in the rear of the piston in the steam-chamber, means for conveying oil from the oil-cylinder, and means for locking the pistons against rearward movement.

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754,973. **SELF-ACTING MULE AND TWINER.** JOHN T. CONNELLY, Manchester, England. Filed Mar. 6, 1903. Serial No. 146,587. (No model.)

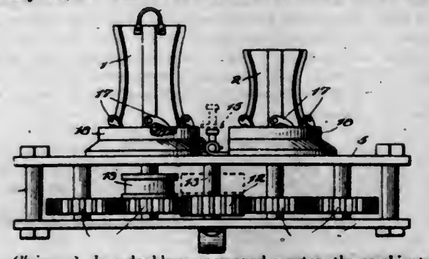
*Claim.*—1. In self-acting mules and twiners, a carriage-square, a two-armed swivel-piece with an opening in each arm; means for pivotally supporting such swivel-piece upon the carriage-square; means for adjusting it to and fro; and means for limiting its swivel movements; in combination with a drawing-up band passing through each of the said openings in the arms of the swivel-piece; a tube of conical formation and in two parts fitting arounnd the said band and within each of the said openings; a pair of drawing-up scrolls, a bracket, with opening, upon each drawing-up scroll; and further tubes of conical formation and in two parts fitting around the scroll ends of the band, and within the openings in the brackets, as set forth.



2. In self-acting mules and twiners, a carriage-square, a two-armed swivel-piece with an opening in each arm and two depending parts; means for pivotally mounting the said swivel-piece upon the carriage-square; means for arresting the rotary movements of the swivel-piece; and means for adjusting it to and fro, as for the purposes set forth.

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754,974. **DOUBLE OR COMPOUND CAPSTAN.** JOHN A. CURRY, Keywest, Fla. Filed Oct. 2, 1903. Serial No. 175,532. (No model.)



*Claim.*—1. In a double or compound capstan, the combination of a capstan and spindle therefor, a cog carried on said spindle, and a series of cogs adapted to mesh with said cog, a similar capstan and spindle therefor, a cog carried on said spindle, a series of cogs adapted to mesh with said cog, a centrally-located cog and a vertically-movable spindle therefor, said centrally-located cog being adapted to mesh with said cogs on the capstan-spindles, a strap adapted to hold said centrally-located cog in mesh with said cogs on said capstan-spindles, and a spring for raising said centrally-located cog out of engagement with said cogs on said capstan-spindles.

2. In a double or compound capstan, the combination of a capstan and spindle therefor, a cog carried on said spindle, and a series of cogs adapted to mesh with said cog, a similar capstan and spindle therefor, a cog carried on said spindle, and a series of cogs adapted to mesh with said cog, a centrally-located cog adapted to mesh with

said cogs on said spindles, and means for throwing said centrally-located cog into and out of engagement with said cogs on said spindles.

3. In a double or compound capstan, the combination of two capstans and spindles therefor, cogs carried on said spindles, a series of cogs adapted to mesh with each of said cogs, and an intermediate cog adapted to transmit the motion of one of said spindles to the other, and means for disconnecting said spindles.

4. In a capstan, the combination of two plates, and a capstan and spindle carried on said plates, a cog carried on said spindle, and a series of cogs adapted to mesh with said cog on said spindle.

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**754,975. MECHANICALLY-PROPELLED VEHICLE.** DAVID M. DEARING, Jackson, Mich. Filed Feb. 19, 1903. Serial No. 144,115. (No model.)




*Claim.*—1. Propelling mechanism, comprising a rock-shaft, a driving element fixed thereto, a rotating shaft or axle, ratchet-wheels fixed thereto, gear-segments of different radii fixed to the rock-shaft and reciprocating simultaneously in an arcuate path, a gear-wheel loose on the rotating shaft and in direct mesh with the larger segment and provided with a vibratory pawl engaging one of said ratchet-wheels, an idler meshing with the smaller segment, and a second gear-wheel loose on the rotating shaft and meshing with said idler and provided with a vibratory pawl engaging the other ratchet-wheel, the teeth of the ratchet-wheels being so disposed as to impart continued forward motion to the rotary shaft upon the vibration of the said driving element and the reciprocation of said gear-segments, substantially as described.

2. Propelling mechanism comprising a rock-shaft, a driving element fixed thereto, a driven shaft having a rotary motion, and gearing between said shafts for imparting continuous rotary motion to the driven shaft upon the back-and-forth motion of the rock-shaft and driving element, said gearing including two reciprocatory gear elements fixed to the rock-shaft and two secondary or driven gears, said driven gears being directly mounted upon the driven shaft and reversely driven by the simultaneous reciprocation of the said gear elements, and a pawl-and-ratchet connection between each driven gear and the shaft to impart motion thereto when moved in one direction and to turn loosely thereon when moved in the opposite direction, substantially as described.

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**754,976. TOWEL OR OTHER RACK.** CHARLES G. DOLMER, Newark, N. J. Filed Mar. 17, 1903. Serial No. 148,259. (No model.)




*Claim.*—1. A rack comprising a clamp, a horizontally-disposed saddle provided with a series of perforations, a set of rods removably arranged in said perforations, and a spring bearing against said rods to steady them.

2. A rack, comprising a clamp, a hollow saddle secured to said clamp having a series of perforations arranged in its upper and lower walls, said saddle having its ends arranged in line with the inner edge of the clamp, and a series of rods arranged in said perforations.

3. A rack, comprising a clamp, a horizontally-disposed curved saddle having perforations passing through it, adapted to be secured at its center to the clamp, and having its ends in line with the inner edge of the clamp, in combination with a set of rods arranged in said perforations, each rod having its engaging end bent at an obtuse angle to the rod.

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**754,977. JAR-CLOSURE.** FRANK R. DOPHEIDE, Palmyra, Ill. Filed Apr. 30, 1903. Serial No. 156,009. (No model.)



*Claim.*—1. The combination with a receptacle having an upright engaging portion and provided at the top thereof with a seat, of an elastic packing-ring, and a plug having a lower reduced portion carrying the packing-ring in applying the same to the receptacle, said plug being also provided with upper and lower shoulders arranged at an inclination, the intermediate portion between the shoulders being vertical and adapted to compress the packing between it and the engaging face of the receptacle and the upper shoulder of the plug being adapted to compress the packing-ring against the seat of the receptacle, substantially as described.

2. The combination with a receptacle having an upright engaging face and provided with a shoulder or seat, of a packing-ring, and a plug having a packing-ring-receiving portion and provided with an upright engaging face and having a shoulder at the top thereof for forcing the packing-ring against the shoulder or seat of the receptacle, one of the parts being provided with a beveled rib for engaging the elastic packing-ring, substantially as described.

3. The combination with a receptacle provided with an interiorly-arranged horizontal seat and having a vertical engaging portion beneath the same, a packing-ring constructed of thin flat elastic material, and a plug provided at the top with an annular enlargement forming a head and extending over the upper edges of the receptacle, said plug having a lower reduced portion for carrying the packing-ring and provided with upper and lower inclined shoulders, the intermediate portion between the shoulders being vertical and arranged to compress the packing between it and the vertical engaging face of the receptacle, and the upper shoulder being arranged to compress the packing-ring against the seat, substantially as described.

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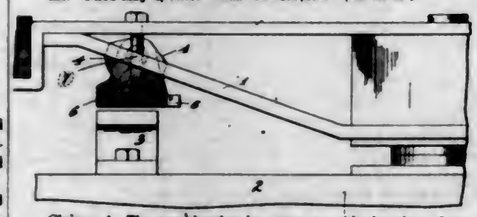
**754,978. PROCESS OF MANUFACTURING HYDROFLUORIC ACID.** CHARLES A. DOBSON, New York, N. Y. Filed July 31, 1902. Serial No. 117,808. (No specimens.)

*Claim.*—1. The process of making hydrofluoric acid from hydrofluorsilicic acid, which consists in treating the hydrofluorsilicic acid with an excess of a metallic compound, thereby producing a fluorid, and then subjecting such fluorid to the action of superheated steam, thereby liberating hydrofluoric acid, substantially as described.

2. The process of making hydrofluoric acid from a mixture of hydrofluorsilicic acid and hydrofluoric acid, which consists in treating said mixture with an excess of a metallic compound, thereby producing a fluorid, and then subjecting such fluorid to the action of superheated steam, thereby liberating hydrofluoric acid, substantially as described.

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**754,979. TRANSOM SIDE BEARING.** MAX DORN, St. Louis, Mo. Filed May 4, 1903. Serial No. 155,496. (No model.)

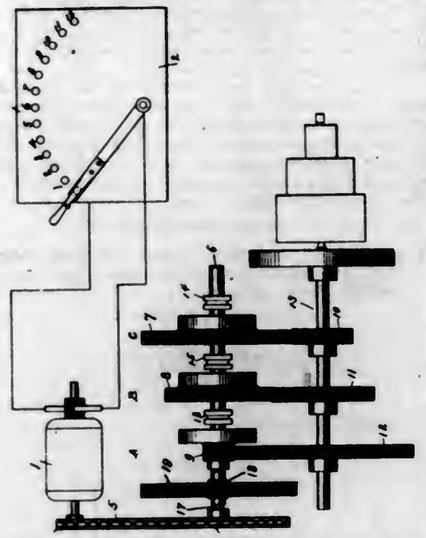



*Claim.*—1. The combination in a transom side bearing of two parts, one above the other, the lower part being attached to the upper part so as to rest rigidly on circular or arc surfaces by means of bolts so as to be adjustable to any transom regardless of the angle with the horizontal of that portion of the transom to which the side bearing is attached, and means for placing the strain on circular surfaces, all substantially as set forth.

2. The combination of a transom side bearing in two pieces the lower part being fastened to the upper part so as to rest rigidly on circular or arc surfaces by means of bolts so as to be adjustable to any transom regardless of the angle with the horizontal of that portion of the transom to which the side bearing is attached and means for placing the strain on circular surfaces, all substantially as set forth.

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**754,980. SYSTEM OF SPEED REGULATION FOR MOTOR-DRIVEN MACHINERY.** GANO S. DUNN, East Orange, N. J., assignor to Crocker-Wheeler Company, Ampere, N. J., a Corporation of New Jersey. Filed Aug. 20, 1903. Serial No. 170,225. (No model.)




*Claim.*—1. In a system of speed regulation for motor-driven machinery, the combination with a motor and means for supplying current thereto to drive said motor at various speeds covering a predetermined range, of a driven shaft, a plurality of trains of gears adapted to connect said motor to said driven shaft, the velocity ratios of said gear-trains being proportioned so that the entire range of speeds obtainable with each successive train, beginning with the slowest, covers a portion of the range obtainable with the next succeeding faster train.

2. In a system of speed regulation for motor-driven machinery, the combination with a motor and means for supplying current thereto to drive said motor at various speeds covering a predetermined range, of a driven shaft, a plurality of gears adapted to connect said motor to said driven shaft, the speeds obtainable with each successive gear-train, beginning with the slowest, covering substantially from one-third to two-thirds of the range of the next succeeding faster train.

3. In a system of speed regulation, for motor-driven machinery, the combination with a motor and means for supplying current thereto to drive said motor at various speeds covering a predetermined range, of a driven shaft, a plurality of trains of gears adapted to connect said motor to said driven shaft, the velocity ratios between the motor and the driven shaft of the several trains of gears increasing successively in geometrical ratio by overlapping steps.

4. In a system of speed regulation for motor-driven machinery, the combination with a motor and a controller regulating the current supplied to said motor, the controller-handle of said controller adapted to occupy a plurality of positions in which said motor is caused to run at a plurality of corresponding speeds, of a driven shaft and a plurality of trains of gears connecting said driven shaft and said motor, said trains of gears being proportioned to give successively increasing velocity ratios between said motor and said driven shaft, such that the lower portion of the range of speeds obtainable with one train of gears is also obtainable with the higher portion of the range of speeds obtainable with the next succeeding train.

5. In a system of speed regulation the combination with a motor and means for regulating the speed of said motor through a predetermined range, of a driven shaft, a plurality of alternative trains of gears connecting said motor to said driven shaft proportioned to give a plurality of successively-increasing velocity ratios between said motor and said driven shaft such that a portion of the range of speeds obtainable with one train of gears is covered by a portion of the range of speeds obtainable with the next succeeding train.

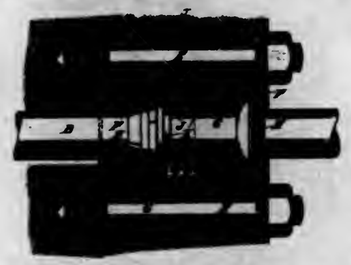
6. In a system of speed regulation the combination with a motor and means for regulating the speed of said motor through a predetermined range, of a driven shaft, a plurality of alternative trains of gears connecting said motor to said driven shaft proportioned to give a plurality of velocity ratios between said motor and said driven shaft, increasing successively in geometrical proportion, and such that the range of speeds obtainable with one train of gears overlaps a portion of the range obtainable with the next succeeding train.

7. In a system of speed regulation for motor-driven machinery the combination with a motor and means for driving said motor through a predetermined range of speeds of a driven shaft and plurality of trains of gearing adapted to alternatively connect said motor to said driven shaft, the ratios of said trains taken in pairs consecutively proportioned to be substantially less than the ratio of the highest motor speed to the lowest motor speed.

8. In a system of speed regulation for motor-driven machinery the combination with a motor and means for running said motor through a predetermined range of speeds of a driven shaft a plurality of alternative trains of gears adapted to connect said motor with said driven shaft, the gear ratios of said trains of gears taken in pairs consecutively, being equal and substantially less than the total speed range of the motor expressed by the ratio of its highest to its lowest speed.

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**754,981. METALLIC ROD-PACKING.** WILLIAM C. EBERHARDT, Sayre, Pa. Filed Aug. 7, 1903. Serial No. 168,679. (No model.)



*Claim.*—1. In a rod-packing, the combination with a suitable chamber and gland, through which the rod passes, of a vibrator-cup having an interior tapered bore, a split metallic tapered packing ring or rings within said cup, spring means forcing said rings into said cup and the latter toward one end of the chamber, and a knuckle-ring interposed between the vibrator-cup and said end of the chamber, said knuckle-ring having opposite convex surfaces and the cup and said end of the chamber having corresponding concave surfaces in contact therewith.

2. In a rod-packing, the combination of an outwardly-pressed member inclosing the rod, and means for preserving a steam-tight connection between the rod and said member, of a gland, and an interposed knuckle-ring between said gland and member having opposite convex surfaces fitting corresponding concave surfaces in said gland and member.

3. In a rod-packing, the combination with a suitable chamber and gland, through which the rod passes, of two oppositely-spring-pressed members inclosing the rod, means for preserving steam-tight connections between the rod and said members, and knuckle-rings interposed between said members and the inner end of said chamber and gland, said rings having opposite convex surfaces contacting with corresponding concave surfaces in the inner end of said chamber, said gland and said members.

4. In a rod-packing, the combination with a suitable chamber and gland, through which the rod passes, of two oppositely-disposed vibrator-cups having interior conical bores, split metallic tapered packing-rings within said cups, spring means forcing said rings into said cups and forcing the latter apart, and knuckle-rings having opposite convex surfaces interposed between said cups and the inner end of said chamber and gland, the latter having corresponding concave surfaces in contact with said knuckle-rings.

5. In a rod-packing, the combination with a steam-chest or the like having an opening for the rod, of a two-part gland having openings for the rod and chambered around the rod to contain the packing devices, means for securing the parts of said gland together to the steam-chest, and two oppositely-spring-pressed sets of packing devices inclosed within said gland, forming steam-tight connections between the rod and said gland members.

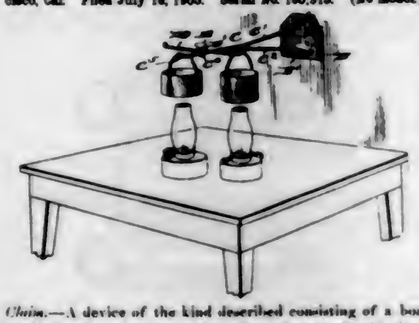
6. In a rod-packing, the combination with a steam-chest or the like having an opening for the rod, of a two-part gland having openings for the rod and chambered around the rod to contain the packing devices, means for securing the gland members together to the steam-chest, two oppositely-disposed vibrator-cups inclosing packing-rings contained within the gland, means forcing said packing-rings into said cups and closely around the rod and forcing said cups apart, and knuckle-rings interposed and ball-seated between said cups and gland members.

7. In a rod-packing, the combination with a stationary part through which the rod passes, of a member inclosing said rod spring-pressed toward said part, means for preserving a steam-tight connection between the rod and said member, and a knuckle-ring having opposite convex surfaces interposed between said member and part, the latter having corresponding concave surfaces coacting with said convex surfaces.

8. In a rod-packing, the combination with a suitable chamber and gland, through which the rod passes, of oppositely-spring-pressed packing devices in said chamber forming steam-tight joints between the rod and inner end of the chamber and gland, and an oil-cup having a duct communicating with said chamber between said devices.

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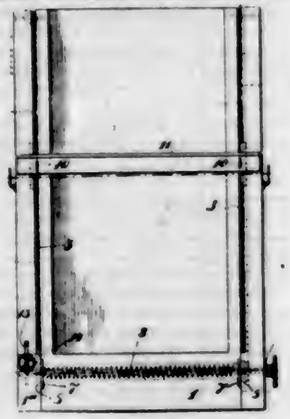
**754,982. HEATING DEVICE.** JESSIE A. EDWARDS, San Francisco, Cal. Filed July 16, 1903. Serial No. 165,815. (No model.)



*Claim.*—A device of the kind described consisting of a board having clips, and a set-screw passing through one of said clips, a bracket-arm bifurcated and having the rear ends of each member turned in opposite directions and adapted to engage the clips, said bracket-arms having a boss, a cross-arm having a boss, and the binding-screw passing through the bosses, substantially as described.

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**754,983. COPY-HOLDER.** ARTHUR C. EMMS, New York, N. Y. Filed July 15, 1903. Serial No. 165,708. (No model.)



*Claim.*—1. In a device for the purpose specified, a support for the copy, a shaft mounted in bearings in said support, a spring which rotates said shaft in one direction, an endless carrier driven by said shaft, a line-marker mounted on said carrier, and an escapement device operatable by hand and controlling the rotation of said shaft under the influence of the said spring.

2. In a device for the purpose specified, a support for the copy having in it a recess for a pad, a transversely-disposed shaft rotatively mounted in bearings on said support, a spring coiled about said shaft for rotating it in one direction, a knob on said shaft for rotating it to wind the spring, an endless carrier on the support and operated by said shaft, a line-marker mounted on said carrier and extending over the face of the support, and an escapement device, operatable by hand, which controls the rotation of said shaft under the influence of its spring.

3. In a device for the purpose specified, the support for the copy, the endless-chain carrier thereon for the line-marker, the brackets 10 on the said carrier, and the retainer on the support to sustain the respective brackets when folded down flat.

4. In a copy-holder, the combination with the support for the copy, the endless-chain carrier thereon, the transverse shaft 6, mounted rotatively in the holder, the spring 8 about said shaft and adapted to rotate it, the sprocket-wheels on said shaft adapted for driving said chain carrier, the escapement-wheel 12 secured on said shaft, and the rocking anchor 13, having pallets engaging the teeth of the wheel 12 and an operating-arm, substantially as set forth.

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**754,984. DETACHABLE BLADE FOR STEAM-TURBINES.** ERNST E. P. FAGERSTRÖM, Sundbyberg, Sweden. Filed Apr. 1, 1903. Serial No. 150,594. (No model.)




*Claim.*—1. In a steam or water turbine the combination of a wheel with transversal, radial slits or grooves, metal-sheet vanes inserted with their flat sheet-metal stems therein, and pins for securing the said stems in the wheel, said pins engaging the said stems directly.

2. In a steam or water turbine the combination of a wheel with transversal, radial slits or grooves, channels or enlargements in said grooves, metal-sheet vanes inserted with their flat stems therein and pins driven through the said channels or enlargements for clamping the stems against the wheel.

3. In a steam or water turbine the combination of a wheel with transversal, radial slits or grooves, metal-sheet vanes, inserted with their flat stems therein, apertures in the said stems, near their edges, grooves at the outer surfaces of the wheel and pins inserted through the apertures in each stem and with their ends resting in the grooves.

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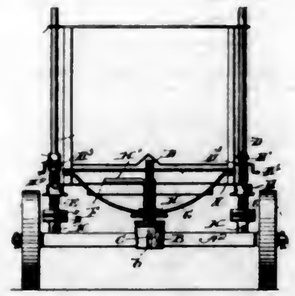
**754,985. LEVELING MECHANISM FOR VEHICLES.** JOSEPH A. FLITZ, Sioux Falls, S. D. Filed Aug. 6, 1903. Serial No. 168,514. (No model.)

*Claim.*—1. In a leveling device for vehicles, &c., the combination with the body and axles of a leveling mechanism mounted centrally of the front axle, and leveling mechanisms mounted one at each end of the rear axle said mechanisms being independent of each other; substantially as described.

2. In a leveling mechanism for vehicles, &c., the combination with the leveling mechanism pivotally mounted centrally of the front axle, of the two leveling mechanisms pivotally mounted at each end of the rear axle, said mechanisms being independent of each other; substantially as described.

3. In a leveling device for vehicles, &c., the combination with the saddle mounted on the axle, the posts carried thereby, the threaded sleeves surrounding said posts, the nuts through which the sleeves work, supports for the vehicle-body carried by said nuts, and means for turning said sleeves to elevate or lower the nuts, to adjust the level of the body; substantially as described.





4. In a leveling device for vehicles, &c., the combination with the saddle carried by the axle, of the post secured thereto, the screw-threaded sleeve surrounding said post, and the ball-bearing between said screw and saddle, the nut through which the screw works, and the support for the vehicle-body carried by the nut, and means for operating said screw; substantially as described.

5. In a leveling device for vehicles the combination, with the saddles carried by the rear axle, of the saddle-posts, the screw-threaded sleeves surrounding said posts, the nuts through which the sleeves work, the rear sill, pivotally connected at each end to said nuts, and means for operating said screws; substantially as described.

6. In a leveling device for vehicles, the combination with the saddle, of the saddle-posts, the screw-threaded sleeves surrounding said posts the nuts through which the sleeves work, the gear-wheels secured to the top of the sleeves, the brackets carried by the saddle-posts, and the worms journaled therein and meshing with the gears on the sleeves; substantially as described.

7. In a leveling device such as described, the combination with the running-gear embodying axles and ground-wheels and a body, of a leveling device pivotally mounted centrally of the front axle to swing transversely with the body and a leveling device pivotally mounted on the rear axle at each side of and connected with the body; substantially as described.

8. In a leveling device such as described, the combination with the running-gear embodying front and rear axles and ground-wheels, of the body pivotally connected with the front axle at a central point, and rear leveling devices interposed between the rear axle and each side of the body and each embodying a vertical member pivotally connected with the axle and working in guides held by the body and means for adjusting said body on each of the vertical members independently; substantially as described.

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**754,986. RACE-TRACK BARRIER.** CHARLES E. FOULKS, Covington, Ky. Filed Apr. 27, 1903. Serial No. 154,428. (No model.)



*Claim.*—1. In a barrier, the opposite supporting-frames, the elastic or spring arms pivoted at one end, and adapted to be sprung at their free ends laterally out of their normal path of travel, and to return thereto when released, means for locking said arms in said lateral position, and mechanism for turning said arms on their pivots when released to lift the barrier out of the way of the horses, whereby the elasticity of the arms assists to free them when the latch is tripped.

2. In a barrier, the opposite supporting-frames, the pivoted spring-arms adapted to be sprung at their free ends out of their normal path of travel, and to return thereto when released, means for turning said arms on their pivots when released to elevate the barrier, mechanism for locking the free ends of said arms with their free ends downward by springing them out of their normal position, so that the elasticity or spring of the arms between their pivots and their free ends insures their release when the latch is tripped.

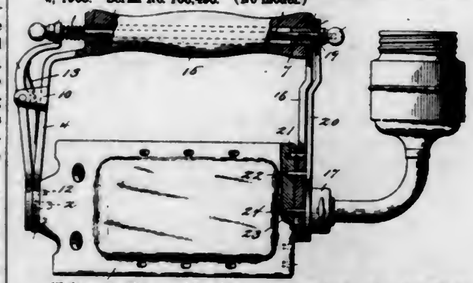
3. In a barrier, the opposite supporting-frames, the pivoted arms, a barrier attached at opposite ends to the free ends of said arms, a recess and latch to receive and lock one of said arms in the lower position, a recess to receive the free end of the other arm, said arm being locked therein by the strain exerted by the barrier, and adapted to be automatically released when the latch releases the strain on the barrier.

4. In a barrier the opposite supporting-frames, the arms pivoted thereto, a barrier connected to the free ends of said arms, a latch adapted to lock one of said arms in the lower position, and means operated by the strain of the barrier for locking the other arm in the lower position, so that when the latch is released both arms are released.

5. In a barrier, the upright posts, the detachable supporting-frames mounted thereon, the pivoted spring-arms, means for throwing said arms to the raised position when released, a barrier connected to the free ends of said arms, a latch adapted to lock one of said arms in the lower position, and means operated by the strain of the barrier for locking the other arm in the lower position, so that when the latch is released both arms are released.

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**754,987. SAD-IRON.** HENRY C. FOX, Louisville, Ky. Filed Aug. 6, 1903. Serial No. 168,490. (No model.)



*Claim.*—1. The combination with a sad-iron; of a handle pivotally connected to the ends thereof, a lever fulcrumed upon one end of the handle, pins thereon adapted to engage one end of the iron, a rod slidably mounted within the handle and engaging the lever, an arm on the rod, pins extending therefrom adapted to engage the other end of the iron, and means for holding the pins normally in engagement with the iron.

2. The combination with a sad-iron; of a handle pivotally mounted upon the ends thereof, a lever fulcrumed upon one end of the handle, pins extending therefrom and adapted to engage one end of the iron, a rod slidably mounted within the handle and engaging the lever, an arm on the rod, pins extending therefrom and adapted to engage the other end of the iron, and a spring for holding the pins normally in engagement with the ends of the iron.

3. The combination with an iron; of an arm pivotally connected to one end thereof, an extension to said arm having integral sleeves at the ends thereof, a grip mounted upon the extension and sleeves, a rod slidably mounted within the extension, a lever pivoted to the arm and engaged by the rod, a pin extending from the lever and adapted to lock the arm to one end of the iron, an arm pivotally connected to the other end of the iron and connected to the extension, an arm on the rod, pins extending from the last-mentioned arm and adapted to engage the other end of the iron, and a spring upon the rod and between the lever and extension.

4. The combination with a sad-iron; of a handle pivotally connected to the ends thereof, pins slidably mounted within the ends of the handle and normally seated in recesses in the ends of the iron, means mounted within the handle for simultaneously retracting the pins from engagement with the ends of the iron, and mechanism for holding the pins normally seated in the recesses.

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**754,988. COMBINED MOISTENING AND SEALING DEVICE FOR ENVELOPS OR THE LIKE.** LOUIS FRITZ and WILLIAM W. DRYDEN, Philadelphia, Pa., assignors of one-third to Godfrey Stmidheiser, Philadelphia, Pa. Filed July 24, 1903. Serial No. 166,800. (No model.)

*Claim.*—1. In a device of the character described, a sealing means, a moistener arranged in front of the sealing means, and an operating-handle provided with a fluid-container in communication with said moistener, said device arranged so that the flap is introduced between said moistener and sealing means to first moisten one side of the flap and then from the opposite side seal the flap.

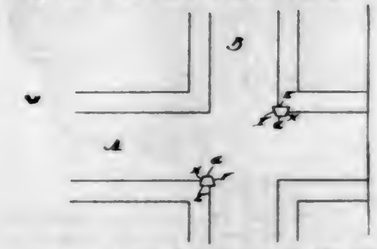


2. In a device of the character described, a moistener and a sealing means operatively connected with each other, said parts separated to permit of the entrance of the flap to be sealed, and arranged so that the moistener and sealing means operate upon opposite sides of the flap in the moistening and sealing of said flap.

3. In a device of the character described, a hollow handle, a water-reservoir carried by said handle, a hollow shaft connected with said handle and in communication therethrough with the water-reservoir, a hollow bar in open communication with said shaft and carried by said shaft, a moistener carried by the hollow bar and sealing-rolls loosely turning upon said shaft adjacent to and in the rear of the moistener.

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754,989. **STREET-LAMP.** William J. Peter, New York, N. Y. Filed Oct. 17, 1899. Serial No. 733,896. (No model.)



*Claim.*—1. A street-designating corner-lamp, comprising two parallel faces and two faces oblique to each other and to the parallel faces, at least one of the parallel faces having thereon a name designating a street, and both of the oblique faces having thereon a name designating a cross-street, substantially as described.

2. A street-designating corner-lamp, composed of a four-sided non-rotating lantern with two parallel faces and two faces oblique to each other and to the parallel faces, and a light centrally arranged in said lantern, the two oblique faces of the latter being in width equal to one and smaller than the other of the said parallel faces, and the distance between the said parallel faces being not less than half the width of the larger of said faces, substantially as described.

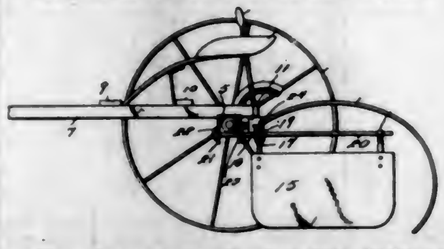
3. A street-designating corner-lamp, composed of a four-sided non-rotating lantern with two parallel faces and two faces oblique to each other and to the parallel faces, and a light centrally arranged in said lantern, the two oblique faces of the latter being in width equal to one and smaller than the other of the said parallel faces, the distance between the said parallel faces being not less than half the width of the larger of said faces, at least one of the parallel faces having thereon a name designating a street, and both of the oblique faces having thereon a name designating a cross-street, substantially as described.

4. A street-designating corner-lamp, composed of a polyhedral non-rotating lantern with two parallel faces and two faces oblique to each other and to the parallel faces, and a light centrally arranged in said lantern, the two oblique faces of the latter being in width equal to one and smaller than the other of the said parallel faces, and the distance between the said parallel faces being not less than half the width of the larger of said faces, substantially as described.

5. A street-designating corner-lamp, composed of a polyhedral non-rotating lantern with two parallel faces and two faces oblique to each other and to the parallel faces, and a light centrally arranged in said lantern, the two oblique faces of the latter being in width equal to one and smaller than the other of the said parallel faces, the distance between the said parallel faces being not less than half the width of the larger of said faces, at least one of the parallel faces having thereon a name designating a street, and both of the oblique faces having thereon a name designating a cross-street, substantially as described.

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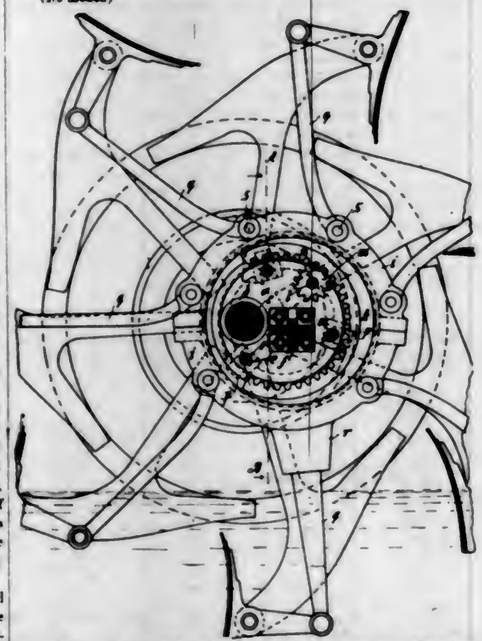
754,990. **HAY-RAKE ATTACHMENT.** James Gerry, Wisdom, Mont. Filed June 10, 1903. Serial No. 160,787. (No model.)



*Claim.*—The combination with a wheeled rake, of rods connected to the axle of the rake and extending rearwardly therefrom, collars rigidly secured to said bars, guard-plates suspended freely from the rods between the wheels and the ends of the rake and projecting rearwardly beyond the wheels to prevent passage of hay from the rake to the wheels, and hangers for supporting the plates, one of said hangers for each plate being split longitudinally at its upper end to form spaced members said members being disposed on opposite sides of the collar.

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754,991. **PADDLE-WHEEL FOR VESSELS.** Ernst H. H. Gottlebe, Magdeburg, Germany. Filed May 13, 1903. Serial No. 156,964. (No model.)



*Claim.*—1. A paddle-wheel with adjustable angle-paddles comprising a rotary shaft, an eccentric surrounding said shaft, an eccentric-ring on said eccentric, an outer eccentric-ring, blade-carrying levers mounted on said outer eccentric-ring and means for partly rotating the inner eccentric-ring relatively to the eccentric substantially as set forth.

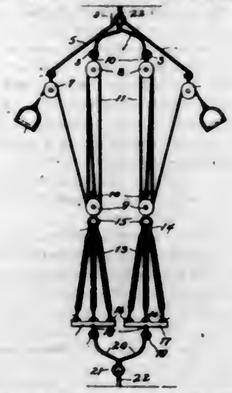
2. A paddle-wheel with adjustable angle-paddles, comprising a rotary shaft, an eccentric surrounding said shaft, a toothed eccentric-ring on said eccentric, an outer eccentric-ring, blade-carrying levers mounted on said outer eccentric-ring and a rotatable pinion engaging said toothed eccentric-ring, substantially as set forth.

3. A paddle-wheel with adjustable angle-paddles comprising a rotary shaft, an eccentric surrounding said shaft, an eccentric-ring, on said eccentric, an outer eccentric-ring, blade-carrying levers mounted on said outer eccentric-ring, and means for partly rotating the inner eccentric-ring relatively to the eccentric in combination with clamping means for securing the two eccentric-rings in adjusted position, substantially as described.



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754,992. **EXERCISING APPARATUS.** Charles A. Graebner, Warsaw, Ind. Filed Mar. 26, 1903. Serial No. 149,672. (No model.)

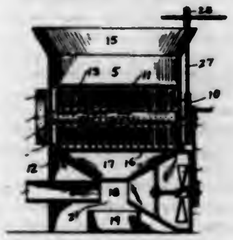


*Claim.*—1. In combination with a pair of oppositely-disposed yokes, pulleys carried by one of said yokes, coupling-bars carried by the other yoke, a resilient connecting means attached to said bars, pulleys attached to the said resilient connecting means, cords passing over all of the said pulleys, rods carried by one of said yokes and having their free ends formed with eyes and means supported by said eyes through which the free ends of said cords pass.

2. An apparatus of the type set forth comprising a pair of yokes, formed with an intermediate and end eyes, a coupling means engaging the end eyes of one of said yokes, pulleys engaging the end eyes of the other yoke, intermediate pulleys, a resilient connection between said coupling means and intermediate pulleys, a pair of rods engaging the intermediate eye of one of said yokes, pulleys supported by said rods, cords passing over the first-named pulleys, intermediate pulleys, and last-named pulleys, substantially as described.

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754,993. **BEAN-HULLER.** Oscar C. Gramling, Hanson, Fla. Filed Sept. 14, 1903. Serial No. 173,142. (No model.)



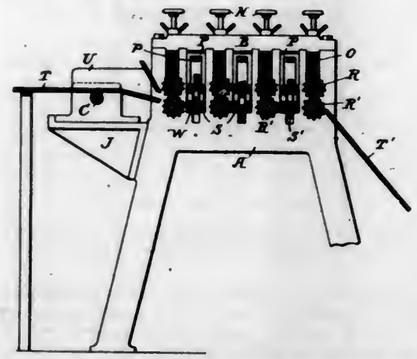
*Claim.*—1. A machine of the class described, comprising a casing, a threshing-cylinder in the casing, means disposed respectively above and below the cylinder and cooperating therewith to thresh material supplied thereto and spaced from the sides of the casing to permit of passage of said materials at the sides thereof, and spaced slats disposed in position to support said materials in position for treatment by the cylinder and said cooperating means.

2. A machine of the class described comprising a threshing-chamber, a hopper disposed to discharge to the threshing-chamber, a threshing-cylinder in the chamber, means disposed respectively above and below the cylinder and spaced from the sides of the chamber for cooperation with the cylinder to thresh materials supplied thereto, slats disposed to support said materials in position for treatment by the cylinder and said cooperating means, a chute below the slats disposed to receive therefrom, a receptacle and an air-blast apparatus disposed to discharge transversely below the chute and over the receptacle.

3. A machine of the class described comprising a cylinder having spikes, a concave above the cylinder, having spikes disposed for cooperation with those of the cylinder, and a concave disposed below the cylinder, said concave comprising spaced slats disposed transverse of the cylinder and having spikes cooperating with those of the cylinder.

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754,994. **MACHINE FOR TREATING FIBROUS PLANTS.** William B. Gray, Glenanne, Ireland. Filed Feb. 3, 1903. Serial No. 141,764. (No model.)



*Claim.*—1. In a machine for scutching fibrous plants, the combination of a supporting-frame, a pair of slotted, stationary blades supported on said frame with a space between them, a movable slotted blade in the space between the stationary blades and provided with a cage at each end, eccentrics supported within the cages, means for rotating the eccentrics, and a pair of rotatable fluted rollers on each side of the blades, substantially as set forth.

2. In a machine for scutching fibrous plants, the combination of a supporting-frame, a pair of slotted, stationary blades supported on said frame with a space between them, a movable slotted blade in the space between the stationary blades and provided with a cage at each end, rotatable shafts extending through said cages and each carrying a boss, eccentrics within the cages adjustably secured to the bosses, and a pair of rotatable, fluted rollers on each side of the blades, substantially as set forth.

3. In a machine for scutching fibrous plants, the combination of a supporting-frame, a pair of slotted, stationary blades supported on said frame with a space between them, a movable slotted blade in the space between the stationary blades and provided with a cage at each end, eccentrics supported within the cages, means for rotating the eccentrics, a pair of rotatable fluted rollers on each side of the blades, and means for varying the pressure between the rollers of each pair, substantially as set forth.

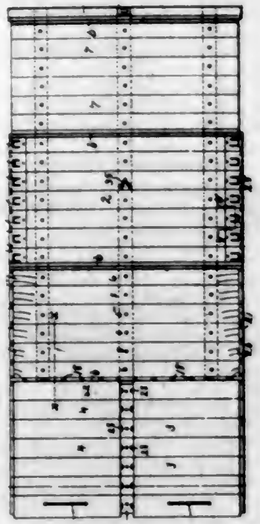
4. In a machine for scutching fibrous plants, the combination of a supporting-frame, a pair of slotted, stationary blades supported on said frame with a space between them, a movable slotted blade in the space between the stationary blades and provided with a cage at each end, eccentrics supported within the cages, means for rotating the eccentrics, a pair of rotatable fluted rollers meshing with each other, on each side of the blades, means for positively driving one of the rollers of each pair, and means for varying the pressure between the rollers of each pair, substantially as set forth.

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754,995. **FOLDING RECEPTACLE.** Alfred Greene, Milwaukee, Wis., assignor of one-half to Robert A. Kiefer, Milwaukee, Wis. Filed Apr. 3, 1903. Serial No. 150,867. (No model.)

*Claim.*—1. In a device of the described class, the combination of front, back, bottom and top walls formed of a series of parallel slats permanently connected by continuous rows of hinges; end walls, formed of slats having swinging end connection with the slats of one of the first-mentioned walls and foldable to superposed positions thereon; and means for detachably connecting the end slats with slats on the opposite side of the receptacle from those to which

they are hinged, together with means for connecting the respective sides of the slats at the respective ends of the first-mentioned series



2. In a device of the described class, a series of slats having flexible side connection with each other and adapted to form some of the walls of a receptacle; similar slats having flexible end connection with some of the slats of said series, and adapted to form the remaining walls of the receptacle; and a lock for securing the several parts in position, said flexible end connections being adapted to permit the slats forming said remaining walls to be folded inwardly to positions parallel with and superposed upon the slats to which they are connected.

3. In a device of the described class, a complete set of inclosing and permanently-connected walls, each formed in multiple sections, having flexible connection with each other, the sections of some of the walls having side connection with each other and the sections of other walls being separate from each other, but having independent end connections with the first-mentioned wall-sections whereby all the sections may be adjusted to parallel positions and rolled up in the form of a continuous roll.

4. In a device of the described class a series of slats flexibly connected by a continuous hinge-band composed of separate elements, each secured to the outer face of a slat; other slats arranged in sets, each independent of the others in the set, but having flexible end connection with one slat of said series and detachable connection with another slat of said series, all the slats being cooperatively arranged to form the walls of a receptacle.

5. In a device of the described class, a belt of interconnected parallel sections having detachable connection at one point, and adapted to form a plurality of receptacle-walls; and a series of sections independent of each other but having end connection with some of the belt-sections and detachable end connection with opposing belt-sections, forming additional walls for the receptacle when fully connected.

6. In a device of the described class, a belt of interconnected parallel sections having detachable connection at one point, and adapted to form a plurality of receptacle-walls; and a series of sections independent of each other but having end connection with some of the belt-sections and detachable end connection with opposing belt-sections, forming additional walls for the receptacle when fully connected, said additional wall-sections being arranged to fold individually on the inner face of one of the belt-walls.

7. In a device of the described class, a belt of interconnected sections having detachable connection at one point and adapted to form a plurality of receptacle-walls; a set of hinges located on the exterior surfaces of said walls and forming the connections between the sections; all of the sections except the corner-sections having abutting edges adapted to permit movement on said hinges in but one direction, and said corner-sections being formed with beveled edges adapted to permit movement in two directions, whereby adjacent walls may be adjusted at right angles to each other, together with end walls formed of a series of sections independent of each other but flexibly connected with and foldable upon the interior surfaces of the belt-sections.

8. In a device of the described class, a belt of interconnected parallel sections having detachable connection at one point, and adapted to form a plurality of receptacle-walls; a series of sections, each independently secured by a flexible connection to the end of one of the belt-sections and adapted to coöperate in forming other walls for said receptacle; means for securing each of said independently-connected sections to a belt-section of an opposing wall from that to which it is connected by the flexible connection, said sections with end connection being foldable upon the belt-sections when the detachable connections are released, and said belt-sections being arranged to be rolled up with the others in the form of a cylindrical roll.

9. In a device of the described class, a belt of interconnected parallel sections having detachable connection at one point, and adapted to form a plurality of receptacle-walls; a series of sections, each independently secured by a flexible connection to the end of one of the belt-sections and adapted to coöperate in forming other walls for said receptacle; means for securing each of said independently-connected sections to a belt-section of an opposing wall from that to which it is connected by the flexible connection, said sections with end connection being foldable upon the belt-sections when the detachable connections are released, and said belt-sections being arranged to be rolled up with the others in the form of a cylindrical roll, together with a locking device adapted to hold said sections in both a folded and an expanded position.

10. In a device of the described class, a series of wall-sections, each provided with a recess; a catch-plate of resilient material, covering said recess; said catch-plate having an aperture and slits at the sides of the aperture subdividing said plate to form a tongue; a series of swinging wall-sections each having a latch-plate adapted to enter the aperture in a corresponding catch-plate and provided with an extremity bent in one direction to form a hook adapted to engage under the plate on the opposite side of the aperture from said tongue; said aperture being of sufficient dimensions to permit the tongue to react in the rear of the catch-plate when the latter is in its interlocking position and said swinging wall-section being adapted to move over the tongue when the latter is pressed inwardly.

11. In a device of the described class, the combination of a set of flexibly-connected walls adjustable at right angles to each other; an end wall hinged to one side wall of said set and arranged to swing over the surface of the bottom wall of the set; a set of hooks on said end wall adapted to move in curved channels 20 in the bottom wall, and a set of catches adapted to engage said hooks when the hook-carrying wall is swung to its extreme position in one direction.

12. In a device of the described class, the combination of a set of flexibly-connected walls adjustable at right angles to each other; an end wall hinged to one side wall of said set and arranged to swing over the surface of the bottom wall of the set; a set of hooks on said end wall, adapted to move in curved channels 20 in the bottom wall; a set of catches adapted to engage said hooks when the hook-carrying wall is swung to its extreme position in one direction; and a set of hooks on the end wall arranged to interlock with suitable catches in the other side wall of said set.

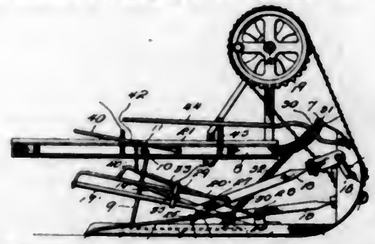
13. In a device of the described class, a receptacle having each of its walls formed in multiple sections; some of said walls having sections parallel with those of other walls and connected together by series of hinges arranged in the form of a continuous band; and walls formed in sections having end hinge connection with some of the sections provided with the band-hinges; said last-mentioned walls being adjustable at right angles to the walls having the band-hinges, and said hinges being formed to permit all the walls to fold in superposed positions.

14. In a device of the described class, a receptacle having each of its walls formed in multiple sections; some of said walls having sections parallel with those of other walls and connected together by series of hinges arranged in the form of a continuous band; and walls formed in sections having end hinge connection with some of the sections provided with the band-hinges; said last-mentioned walls being adjustable at right angles to the walls having the band-hinges, and said hinges being formed to permit all the walls to fold in superposed positions together with an internal tray for said receptacle having its walls formed in sections similarly connected.

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**754,996. MOTOR-SLED. THORSTEIN HALLDORSON, Mountain, N. D. Filed June 10, 1903. Serial No. 160,790. (No model.)**

*Claim.*—1. The combination with a sled, of a crank-shaft having cranks disposed one at each side of each runner of the sled, a lever pivoted upon each runner, a pair of guide-rollers supported by each of the levers, propelling-legs having guide-frames engaged each with a guide-roller, each of the legs being connected to a crank of the crank-shaft, and means for holding each of the levers yieldably with the connected propelling-legs in active positions.



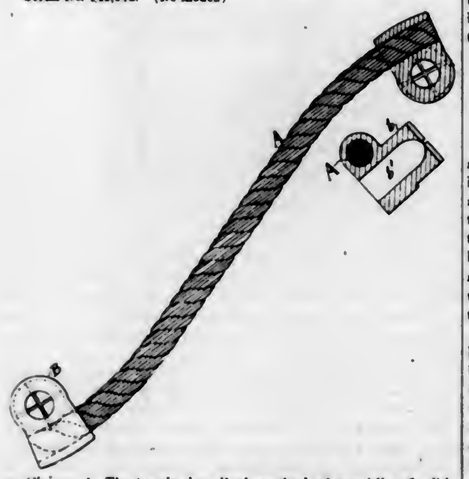
2. The combination with a sled, of a crank-shaft having cranks disposed one at each side of each runner of the sled, a lever pivoted upon each runner, a pair of guide-rollers supported by each lever, propelling-legs having guide-frames engaged each with a roller, each of the legs being connected to a crank-shaft, and adjustable means for holding each of the levers yieldably with the connected propelling-legs in active positions.

3. The combination with a sled, of a crank-shaft, a lever pivoted at each side of the sled, guide-pulleys supported from each lever and adjustable longitudinally thereof, a plurality of propelling-legs each having a guide-frame engaged with a guide-pulley and having its forward end connected with a crank-shaft, feet pivoted adjacent to their forward ends to the legs respectively, springs disposed to hold the levers yieldably in lowered positions, pivoted levers engaged with the springs for adjusting the tensions thereof, means for holding the tension-levers at different points of their adjustments, and lifting-levers connected with the first-named levers and adapted to lift and hold them in raised positions.

4. The combination with a sled, of a crank-shaft, a lever pivoted at each side of the sled, guide-pulleys supported from each lever and adjustable longitudinally thereof, a plurality of propelling-legs each having a guide-frame engaged with a guide-pulley and having its forward end connectedwith a crank of the crank-shaft, feet pivoted adjacent to their forward ends to the legs respectively, springs disposed to hold the levers yieldably in lowered positions, and lifting-levers connected with the first-named levers and adapted to lift and hold them in raised positions.

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**754,997. METHOD OF PROVIDING CABLES OR OTHER FLEXIBLE BODIES WITH SOLID ENDS. GEORGE G. M. HARDINGHAM, London, England, assignor to Felten & Guilleaume Carlswerk Actien-Gesellschaft, Mülheim-on-the-Rhine, Germany. Filed Mar. 21, 1903. Serial No. 148,912. (No model.)**



*Claim.*—1. The herein-described method of providing flexible bodies with solid terminals and simultaneously forming a drift-pin opening therein, which consists in inserting the flexible body in a lateral socket in a terminal, placing the latter in a forming-tool and by forcing a punch transversely into the solid substance of the terminal displacing laterally the metal thereof and forcing the same against and into intimate contact with the flexible body and thereby forming an integral connection between the terminal and flexible body, substantially as set forth.

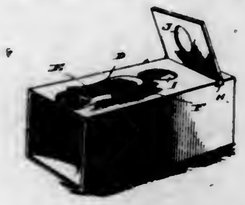
2. The herein-described method of providing flexible bodies having divided ends with solid terminals and simultaneously forming a drift-pin opening therein, which consists in inserting the divided ends in lateral sockets in a terminal, placing the latter in a forming-tool and by forcing a punch transversely into the solid substance of the terminal displacing laterally the metal thereof and forcing the same against and into intimate contact with the ends of flexible body and thereby forming an integral connection between the flexible body and terminal, substantially as set forth.

3. A rail-bond for electric railways, consisting of a terminal, a lateral socket and a drift-pin opening in said terminal, a flexible body secured in said socket, the securing means consisting of material laterally displaced from the walls adjacent the drift-pin opening, substantially as set forth.

4. A rail-bond for electric railways, consisting of a terminal, lateral sockets and a drift-pin opening therebetween in said terminal, a flexible body having divided ends secured in said sockets, the securing means consisting of material laterally displaced from the walls adjacent the said drift-pin opening substantially as set forth.

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**754,998. SHOE-BLACKING STAND. JOHN H. HARPER, Butler, Pa. Filed May 5, 1902. Serial No. 106,032. (No model.)**



*Claim.*—1. A shoe-blacking stand comprising a movable foot-rest, a blacking-receptacle and a movable lid adapted to close the receptacle, the foot-rest adapted to retain the lid in closed position.

2. A shoe-blacking stand comprising a suitable support, a recessed lid movably secured thereto, a foot-rest independent of the lid and movably mounted upon the support apart from the lid, the foot-rest adapted to engage and retain the lid in closed position.

3. A shoe-blacking stand comprising a portable box having an opening for permitting access to its interior and provided with a recess located in one wall thereof, a lid hinged to the box and adapted to close the recess and a pivoted foot-rest mounted upon the box independently of the lid, the foot-rest provided with a latch adapted to engage and retain the lid in closed position.

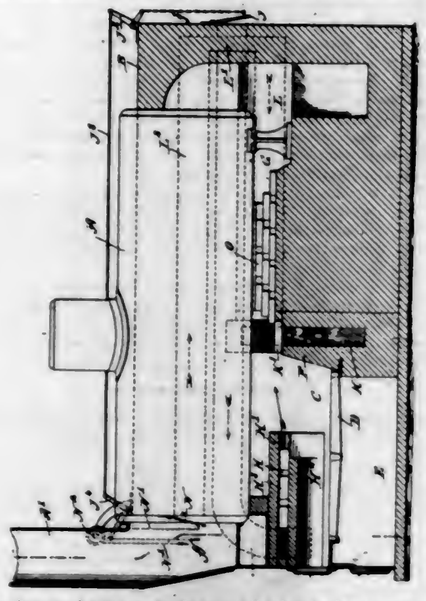
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**754,999. SMOKE-CONSUMING FURNACE. JOHN B. HARRIS, Nashville, Tenn. Filed Mar. 27, 1903. Serial No. 149,815. (No model.)**

*Claim.*—1. A smoke-consuming furnace, comprising a fire-box, air-chambers for delivering heated air to the smoke and gases arising from burning fuel in the fire-box, one of the air-chambers being arranged in the front top portion of the fire-box and the other in the bridge-wall in the rear of the fire-box, an air-duct extending in the side wall of the furnace and leading from the said front air-chamber to the rear end of the furnace and opening into the outer air, and a second air-duct in the side wall of the furnace, leading from the bridge-wall chamber to the rear of the furnace and to the front thereof and opening into the outer air, as set forth.

2. A smoke-consuming furnace, comprising a fire-box, air-chambers for delivering heated air to the smoke and gases arising from burning fuel in the fire-box, one of the air-chambers being arranged in the front top portion of the fire-box and the other in the bridge-wall in the rear of the fire-box, air-ducts extending in the side walls of the furnace and leading from the opposite sides of the front air-chamber to the rear end of the furnace and opening into the outer air, and air-ducts in the side walls of the furnace and leading from opposite sides of the bridge-wall air-chamber to a branch duct at the rear end of the furnace and then extending to the front end of the furnace and opening into the outer air, as set forth.

3. In a smoke-consuming furnace, a fire-box having a grate, an air-chamber in the front top portion of the fire-box and formed of spaced arches, said chamber extending horizontally partially over the grate, and air-ducts leading from the said chamber to the rear end of the furnace and opening into the outer air, as set forth.



4. In a smoke-consuming furnace, a fire-box having a grate, an air-chamber in the front top portion of the fire-box and formed of spaced arches, the upper one of which projects beyond the lower one, said chamber extending horizontally partially over the grate, and air-ducts leading from the chamber to the rear end of the furnace and opening into the outer air, as set forth.

5. In a smoke-consuming furnace, a fire-box having a grate, an air-chamber in the front upper portion of the fire-box and formed of spaced arches, the upper one of which projects beyond the lower one, said chamber extending horizontally partially over the grate, and filled with retaining devices in the form of checker-bricks, air-ducts leading from the chamber to the rear of the furnace and opening into the outer air, and doors for said ducts, under the control of the operator, as set forth.

6. A smoke-consuming furnace provided with a fire-box, a combustion-chamber, a bridge-wall in the rear of the fire-box, an air-chamber in the bridge-wall, bricks spaced apart on the top of the chamber, to form spaced top openings for the escape of the air from the said air-chamber into the said combustion-chamber, and checker-bricks arranged in the combustion-chamber, in the rear of and above the said spaced bricks, as set forth.

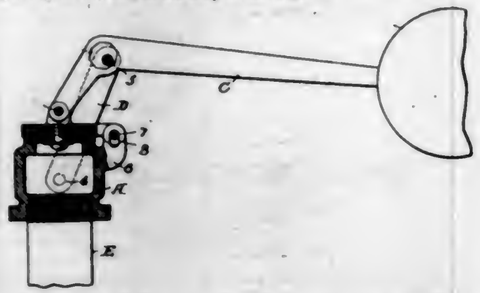
7. A smoke-consuming furnace provided with a fire-box, a combustion-chamber, a bridge-wall in the rear of the fire-box, an air-chamber in the bridge-wall, bricks spaced apart on the top of the chamber, to form spaced top openings for the escape of the air from the said air-chamber into the said combustion-chamber, and checker-bricks arranged in the combustion-chamber, in the rear of and above the said spaced bricks, the front end of the check-bricks being arranged in step form, as set forth.

8. A smoke-consuming furnace provided with a fire-box, a combustion-chamber having retarding means therein, a bridge-wall in the rear of the fire-box, an air-chamber in the bridge-wall, bricks spaced apart on the top of the chamber, to form spaced top openings for the escape of the air from the said air-chamber into the said combustion-chamber, and air-ducts opening into the said air-chamber and extending first rearwardly, along the side walls of the furnace, to then connect by branch ducts in the back of the furnace with longitudinal ducts arranged in the side walls of the furnace, and opening to the outer air at the front of the furnace, as set forth.

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**755,000. VALVE DEVICE. CHANCEY C. HEDBERG, Des Moines, Iowa. Filed July 7, 1903. Serial No. 164,598. (No model.)**

*Claim.*—1. The combination with the casing having a valve-seat, of a valve fitted to said seat, hung to a pivot at one side of the seat and pivoted to the end of a bell-crank lever, and swinging links supporting said lever, substantially as set forth.




2. The combination of the casing having a valve-seat at the end, and an arm at one side, a valve adapted to said seat and hung to said arm, a bell-crank lever having a short arm pivoted at the end to said valve and a long arm connected to a float, and links pivoted to the sides of the casing and to the lever, substantially as set forth.

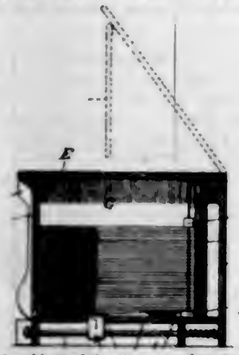
3. The combination with valve, lever and connecting-links, of a pivot-pin for the links, an angular stud in which the pin is placed eccentrically and a socket for the stud in the lever, substantially as set forth.

4. The combination with a socketed lever, of an angular stud fitted to said socket, and an eccentric pivot-pin carried by said stud, substantially as set forth.

5. The combination with the casing having a valve-seat, of a valve fitted to said seat, hung to a pivot at one side of the seat and pivoted to the end of a bell-crank lever, swinging links supporting said lever, and lugs 9, 9 arranged on the casing to limit the swinging of the links in one direction, substantially as set forth.

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**755,001. BAG-HOLDING CABINET. ARTHUR S. HENDERSON, Loudon, Tenn., assignor of one-half to J. B. Malcomb, Loudon, Tenn. Filed Apr. 16, 1903. Serial No. 152,893. (No model.)**




*Claim.*—1. A cabinet of the character described having one or more bag-compartments, said cabinet consisting of suitable side, bottom and back members, a top hinged to the back member, and a front hinged to said top, the lower edge of said front when down being slightly above the bottom, thus leaving a horizontal slot between said lower edge and bottom, and an extractor at the bottom of the cabinet adapted to engage the lowermost of a pile of bags within a compartment and withdraw it through said slot between said front and bottom.

2. A cabinet of the character described having one or more bag-compartments, in which the bags are placed one upon another with their bottom folds at the front and all facing downward, said cabinet consisting of suitable side and back members, a raised bottom, a top hinged to the back, and a front hinged to the top, the lower edge of said front when down being slightly above the bottom, thus leaving a horizontal slot between said lower edge and bottom, each bag compartment or receptacle of the cabinet having a longitudinal slot in its bottom, a slide in said slot carrying an extractor which when the slide is moved forward engages the fold of the lowermost bag of the pile and withdraws said bag through said horizontal lower slot at the front, and means for manipulating said slide.

3. A bag-holder comprising a receptacle, in which the bags are designed to be placed one upon another with their bottom folds at the front end and all facing downward, a horizontal slot at the front of said receptacle immediately above the bottom thereof, a central longitudinal slot in the bottom of said receptacle, a slide working in said latter slot having a wide projection normally standing slightly behind said bottom folds of the bags and adapted when the slide is moved forward to engage the fold of the lowermost bag and withdraw the bag through said front horizontal slot, and means for manipulating said slide.

4. A bag-holder comprising a receptacle, in which the bags are designed to be placed one upon another with their bottom folds at the front end and all facing downward, a horizontal slot at the front of said receptacle immediately above the bottom thereof, a longitudinal slot in the front part of the bottom of said receptacle, a pull-rod below the bottom spring actuated rearward, and means projecting from said rod through said longitudinal slot carrying an extractor, the latter consisting of a doubled or folded plate disposed flatwise on the bottom and adapted when the rod is pulled forward to engage the fold of the lowermost bag.

5. A bag-holder comprising a receptacle, in which the bags are designed to be placed one upon another with their bottom folds at the front and all facing downward, said receptacle having an elevated bottom, a horizontal slot in the front thereof immediately above said bottom, a longitudinal slot in the front part of said bottom, a slide working in said latter slot, and a wide flat doubled or folded plate carried by said slide adapted when the slide moves forward to embrace the fold and engage its rear edge, thus moving the bag out through the front slot of the receptacle, and means for manipulating said slide.

6. In combination with a receptacle having a lower front slot, and an extractor for withdrawing the lowermost bag of a pile through said slot, a block removably fitted in the rear of said receptacle and having a wire secured thereto on which the rear ends of the bags are impaled.

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**755,002. BINDER. EMIL HERRMANN, Downers Grove, Ill. Filed Nov. 24, 1902. Serial No. 132,665. (No model.)**



*Claim.*—1. A binder comprising a plurality of binder-strips and separate intermediate strips, said binder-strips being of greater width than said intermediate strips so as to project beyond the ends of said latter strips, and means extending transversely and longitudinally of the said binder-strips and intermediate strips for loosely connecting the said binder-strips and intermediate strips together.

2. A binder comprising a plurality of binder-strips and separate intermediate strips, said binder-strips being of greater width than said intermediate strips so as to project beyond the ends of said latter strips, means extending transversely and longitudinally of the said binder-strips and intermediate strips for loosely connecting said binder-strips and intermediate strips together, and attaching-strips secured to said binder at opposite sides thereof for attaching covers thereto.

3. A binder comprising a plurality of sheets of flat material of different widths folded upon a central line and adapted to form binder-strips and intermediate strips, said binder-strips extending beyond the ends of said intermediate strips, and means for loosely connecting the said binder-strips and intermediate strips together.

4. A binder comprising a plurality of sheets of flat material of different widths folded upon a central line and adapted to form binder-strips and intermediate strips, said binder-strips extending beyond the ends of said intermediate strips, means for loosely connecting the said binder-strips and intermediate strips together, and attaching-strips secured to said binder at opposite sides thereof for attaching covers thereto.

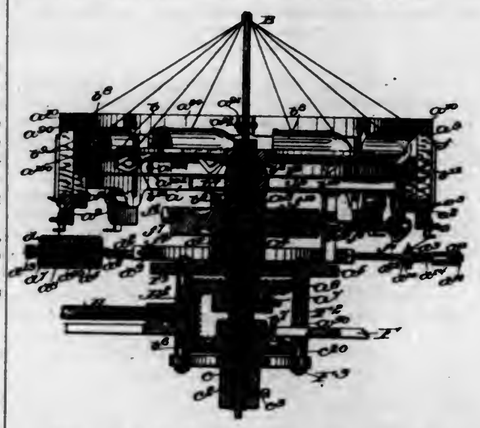
5. A binder comprising a plurality of sheets of flat material of different widths folded upon a central line and adapted to form binder-strips and intermediate strips, said binder-strips extending beyond the ends of said intermediate strips, means for loosely connecting said binder-strips and intermediate strips together, attaching-strips secured to said binder at opposite sides thereof for attaching covers thereto, and an adhesive substance upon said projecting portions of said binder-strips.

6. A binder comprising a plurality of strips folded together to form binder-strips and intermediate strips, said intermediate strips lying between the binder-strips, and means connecting said binder-strips and intermediate strips together so that they may turn independently of each other, substantially as described.

7. A binder comprising a plurality of sheets of flat material of different widths folded together and adapted to form binder-strips and intermediate strips, said binder-strips extending beyond said intermediate strips, and means connecting said binder-strips and intermediate strips together so that they may turn independently of each other, substantially as described.

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**755,003. BRAIDING-MACHINE. WALTER HILL, Wallingford, Conn. Filed Oct. 14, 1901. Serial No. 78,583. (No model.)**



*Claim.*—1. In a braiding-machine, the combination with a bobbin-carrier provided with a shuttle-race; of means for guiding the bobbin-threads back and forth across said shuttle-race; a shuttle carrier or propeller provided with an engaging member extending across the path of travel of the shuttle and inclined upward from a point below the shuttle toward the braiding-point; and shuttles provided with engaging members inclined downward toward the cooperating engaging member of the propeller.

2. In a braiding-machine, the combination with a bobbin-carrier provided with a shuttle-race; of means for guiding the bobbin-thread back and forth across said shuttle-race; a shuttle carrier or propeller having an engaging shoulder, the engaging surface of which is in line with the bobbin-thread; and shuttles having corresponding engaging shoulders, the shuttles and propeller having inclined surfaces converging toward said shoulders.

3. In a braiding-machine, a bobbin-carrier; shuttles; and guides for the bobbin-threads consisting of arms pivotally connected with the bobbin-carrier between adjacent bobbins; and means for oscillating said arms, whereby each arm constitutes a guide for two of the bobbin-threads.

4. In a braiding-machine, the combination of a bobbin-carrier having a shuttle-raceway formed therein; a series of removable shuttles freely movable in said raceway; a propeller making loose contact with said shuttles; means for rotating the carrier and propeller in opposite directions; and means carried by the bobbin-carrier for guiding the threads extending from the bobbins on the bobbin-carrier and causing them to interweave with the shuttle-threads.

5. In a braiding-machine, the combination of a bobbin-carrier having a substantially continuous shuttle-raceway formed therein; a series of shuttles freely movable in said raceway, said shuttles occupying a horizontal position and maintaining the bobbins or cops carried thereby in a like position; a propeller making loose driving contact with said shuttles; means for rotating the carrier and propeller relatively to each other; and thread-guides for the threads of the bobbins carried by the bobbin-carrier and adapted to cause

said threads to interweave with the shuttle-threads, substantially as described.

6. In a braiding-machine, the combination of a bobbin-carrier rotatable about a vertically-disposed axis and having a shuttle-raceway formed therein, said raceway lying in a substantially horizontal plane; a series of shuttles loosely mounted in said raceway and having their longitudinal axes in a plane parallel with the raceway; a propeller making loose driving contact with said shuttles; guides supported upon the bobbin-carrier for the threads extending from the bobbins mounted upon said carrier, said guides positively placing the threads alternately above and below the shuttles; and means for causing the bobbin-carrier and propeller to rotate in reverse directions.

7. In a braiding-machine, the combination of a bobbin-carrier; a shuttle-guide formed in said carrier; one or more shuttles loosely mounted in said guide; means for moving said shuttles in opposition to the movement of the bobbin-carrier; and thread-guides connected to the bobbin-carrier for directing the threads from the bobbins alternately above and below the shuttles, substantially as described.

8. In a braiding-machine, the combination of a bobbin-carrier; a shuttle-guide carried thereby; a series of shuttles freely movable in or upon said guide; a shuttle-driver making loose contact with said shuttles; bobbin-thread guides carried by the bobbin-carrier, said guides positively raising and lowering the threads, substantially as described; and means for moving the carrier or driver, one relatively to the other.

9. In a braiding-machine, the combination of a bobbin-carrier; a shuttle-guide formed therein; one or more shuttles loosely mounted in said guide; means making loose connection with said shuttles for driving the same; means for rotating the bobbin-carrier and the shuttle-driving means in opposite directions; thread-guides carried by the bobbin-carrier; and means for actuating said thread-guides.

10. In a braiding-machine, the combination of a bobbin-carrier; a shuttle-guide carried thereby; a shuttle-propeller; a series of shuttles driven by but wholly disconnected from said propeller; and bobbin-thread guides supported upon the carrier for positively placing the bobbin-threads above and below the plane of the shuttle-guide

11. In a braiding-machine, the combination of a bobbin-carrier; a shuttle-raceway formed therein; a plurality of shuttles loosely mounted in said raceway and freely removable therefrom; a shuttle-propeller making loose driving contact with said shuttles; means for rotating said propeller in opposition to the movement of the bobbin-carrier; and movable thread-guides mounted upon said carrier for guiding the bobbin-threads to opposite sides of the shuttles through openings formed in the carrier and extending across the shuttle-raceway.

12. In a braiding-machine, the combination of an annular bobbin-carrier formed of a series of sections separated one from the other to form openings for the passage therethrough of the bobbin-threads; a shuttle-raceway formed in said carrier; a plurality of shuttles loosely mounted in and freely removable from said raceway; a propeller for said shuttles making loose driving contact therewith; guide-fingers for the bobbin-threads mounted upon the carrier adjacent to the spaces or openings intermediate the sections of the carrier; and means for actuating said fingers to positively place the bobbin-threads above and below the plane of the shuttle-raceway.

13. In a braiding-machine, the combination of a bobbin-carrier provided with a shuttle-race; thread-guides mounted on the bobbin-carrier for moving the bobbin-threads across said shuttle-race; a series of shuttles loosely mounted in the shuttle-race, each shuttle being provided with an inclined engaging surface or projection; and a shuttle-propeller having inclined engaging members making loose driving contact with the corresponding projections on the shuttles.

14. In a braiding-machine, the combination of a bobbin-carrier; a horizontally-disposed shuttle-race formed upon or in said carrier; a series of shuttles guided by said race and having their major axes in a horizontal plane; means for propelling the shuttles; guides for the bobbin-threads movable in a plane adjacent to and substantially parallel with said shuttle-race; and a stationary cam for moving said guides past said shuttle-race, whereby, by a relatively short movement of the guides, the bobbin-threads may be so positioned as to readily pass over and under the shuttles, substantially as described.

15. In a braiding-machine, the combination of a bobbin-carrier; a raceway formed therein; a series of shuttles loosely mounted in said raceway; a propeller making loose driving contact with said shuttles; guides for the bobbin-threads, said guides being mounted upon the carrier and movable in a plane adjacent to and substantially parallel with the shuttle-race, the threads passing through openings formed in and extending across the raceway and toward the braiding-point at the middle of the carrier; tension devices interposed between the bobbins and said guides; and a take-up between each of said tension devices and the corresponding guide.

16. In a braiding-machine, the combination of a bobbin carrier; a sectional shuttle-raceway formed in said carrier, whereby spaces are left intermediate the adjacent sections; a series of horizontally-disposed shuttles mounted in said raceway; and means for guiding the bobbin-threads above and below the shuttles between the adjacent sections, whereby a relatively small movement of the bobbin-thread is required to clear the shuttle, substantially as described.

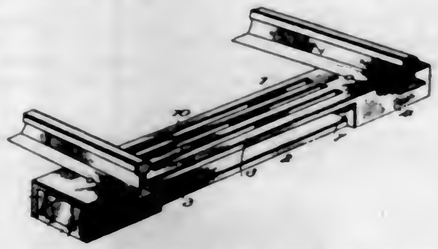
17. In a braiding-machine, the combination of a rotary bobbin-carrier provided with a sectional shuttle-raceway having spaces between the adjacent sections thereof; a series of horizontally-disposed shuttles loosely mounted in said raceway; means for propelling the shuttles in said raceway; and means for guiding the bobbin-threads above and below the shuttles between adjacent sections of said shuttle-raceway, substantially as described.

18. In a braiding-machine, a bobbin-carrier having a sectional shuttle-raceway formed therein, the upper members of said raceway being movable to facilitate the placing of the shuttles in said raceway or the removal of the shuttles therefrom, substantially as described.

19. In a braiding-machine, the combination of a bobbin-carrier having a shuttle-raceway formed therein, one side of said raceway having readily-removable sections; and a series of shuttles loosely mounted in said raceway, whereby any one of the shuttles may be readily removed and as readily replaced by movement of one of said sections, substantially as described.

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**755,004. RAILROAD-TIE. WILLIAM W. HOLSTON, Morristown, and CHLAS L. FISHER, Whitepine, Tenn. Filed June 25, 1903. Serial No. 163,119. (No model.)**



*Claim.*—1. A railroad-tie comprising upper and lower members, each consisting of a body provided adjacent the end portions with boxings, the boxings upon the upper member being adapted to receive the boxings of the lower member.

2. A railroad-tie comprising upper and lower members, each member consisting of a plate or body portion provided adjacent the end portions thereof with boxings, the boxings of the upper member being adapted to receive the boxings disposed upon the lower member, and filler-blocks disposed within the corresponding boxings carried by one of the aforesaid members.

3. In a railroad-tie consisting of upper and lower members, the lower member comprising a plate or body portion provided at its ends with boxings, filler-blocks disposed within the aforesaid boxings, the upper member consisting of a corresponding body portion provided at its ends with boxings to receive the boxings of the lower member.

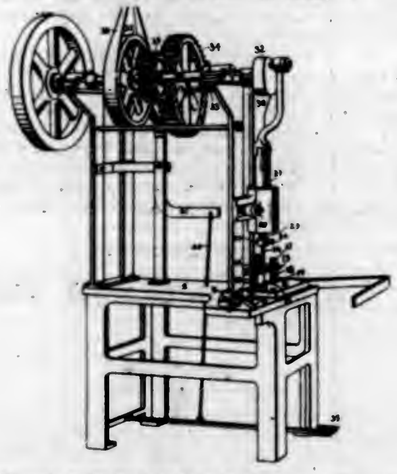
4. In a railroad-tie consisting of upper and lower members, said members being provided upon their end portions with boxings, the body portions of the said upper members intermediate the aforesaid boxings being provided with openings therein.

5. A railroad-tie consisting of upper and lower members, said members comprising each a body portion provided at its ends with boxings, the said body portion of the upper members being provided with longitudinal openings therein intermediate the boxings carried thereby.

6. A railroad-tie consisting of upper and lower members, the lower member comprising a body or plate portion having boxings projected therefrom, the sides of the boxings being undercut, filler-blocks having inclined sides disposed within the said boxings, the upper member being provided adjacent its ends with corresponding boxings of a size to receive the boxings of the lower member, and means for preventing displacement of the filler-blocks from within the boxings of the lower member.



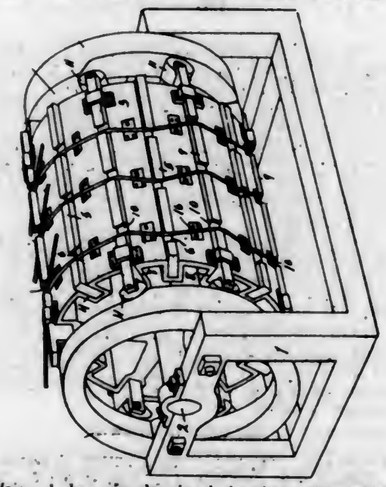
**755,005. SPRING-HEAD-PINNING MACHINE. DANIEL L. HOLWICK, Canton, Ohio, administrator of Charles F. Shoemaker, deceased. Filed Feb. 14, 1903. Serial No. 143,364. (No model.)**



*Claim.*—A spring-head-centering machine comprising a bed-plate, an adjacent spring-held presser-plate having an aperture therein, stops limiting the departure of one plate from the other, a centering-pin adapted to operate through the presser-plate aperture toward and from the bed-plate, and a presser-head adapted to thrust the presser-plate toward the bed-plate, at or near the completion of the pin-stroke.

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**755,006. WIRE-CLAMPING DEVICE. GEORGE L. HOXIE, Adrian, Mich., assignor of one-half to Alfred W. Smith, Adrian, Mich. Filed May 20, 1903. Serial No. 157,913. (No model.)**



*Claim.*—1. In a wire-clamping device, the combination of the movable agent, fixed shoulders mounted thereon, against which the strand of wire is adapted to lie, movable members interposed between said fixed shoulders adapted to engage and carry the wire out of alinement therewith, whereby the wire becomes crimped between the fixed shoulders and is locked against slipping.

2. In a device for the purpose set forth, the combination of the rotary agent having fixed engaging shoulders at intervals thereon, movable members interposed between said fixed shoulders having means for engaging the wire and carrying said wire by the movement thereof out of circumferential alinement with the fixed shoulders and means for actuating said movable members simultaneously with the rotation of said rotary agent.

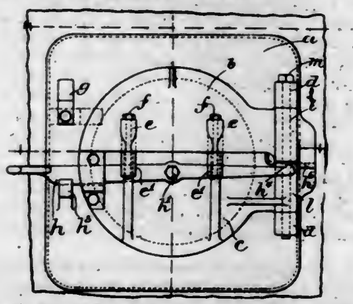
3. In a device for the purpose set forth, the combination of the rotary agent around which the wire is adapted to be wound, engaging shoulders on said rotary agent against which the wire is adapted to lie, means for shifting said engaging shoulders to place them out of circumferential alinement and thereby cramp the wire between them to securely clamp the wire to said agent as it is wound thereon.

4. In a device for the purpose set forth, the combination of a rotary agent around which the wire is adapted to be wound, said agent having fixed shoulders adapted to engage the wire, longitudinally-movable members mounted on the rotary agent between said fixed shoulders having means of engaging the wire and means for shifting said longitudinally-movable members to cramp the wire between said fixed shoulders, and means for returning said movable members to the normal position to release said wires.

5. In a device for the purpose set forth, the combination of the rotary cylinder, the fixed shoulders thereon adapted to engage the wire, the longitudinally-movable bars interposed between said fixed shoulders also having shoulders adapted to engage the wire, anti-friction-rollers at the ends of said movable bars and cam-rings at the ends of the cylinder adapted to engage said rollers to shift the bars longitudinally and clamp the wire between the shoulders carried thereby and the fixed shoulders.

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**755,007. FURNACE-DOOR. HENRY H. HUFF, Boston, Mass., assignor to Huff Locomotive Appliance Company, Kittery, Me. Filed July 6, 1903. Serial No. 164,296. (No model.)**



*Claim.*—1. A furnace-door divided into two sections independently hinged, the adjacent edges of the two sections being formed to create an opening between the sections.

2. A furnace-door divided into two sections independently hinged, the lower portion of the upper section being offset outwardly to form a hood and create an opening between the two sections.

3. A furnace-door divided into two independently-hinged sections, means for independently securing the swinging ends of the sections, and means for detachably connecting the sections so that they may be operated either singly or as one door.

4. A furnace-door comprising two sections each having at one end a hinge member engaged with a fixed complemental hinge member, coupling ears or lugs formed on said sections, and coupling-bolts adapted to engage said ears or lugs.

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**755,008. COMBINED SECTIONAL POST AND LOCK. ANDREW D. HULQUIST, Chicago, Ill., assignor to J. S. McDonald, Chicago, Ill. Filed June 10, 1903. Serial No. 160,906. (No model.)**



*Claim.*—1. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates and the opposite end section of which is removably secured thereto; a bolt secured to the other plate which extends longitudinally into the last-mentioned end section of said tube; and means for interlocking said tube and bolt.

2. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates and the opposite end section of which is removably secured thereto; a bolt secured to the other

plate which extends longitudinally into the last-mentioned end section of said tube; and automatic means for interlocking said tube and bolt.

3. A combined sectional post and lock comprising two clamping-plates; a jointed tube consisting of a section suitably secured to and projecting from one of said plates, an opposite end section, and an intermediate section removably secured to said first-mentioned section at one end and having said end section removably secured to its opposite end; a bolt secured to the other plate and extending longitudinally into said end section; and means for interlocking said tube and bolt.

4. A combined sectional post and lock comprising two clamping-plates; a jointed tube consisting of a section suitably secured to and projecting from one of said plates, an opposite end section, and an intermediate section removably secured to said first-mentioned section at one end and having said end section removably secured to its opposite end; a bolt secured to the other plate which extends longitudinally into said end section; and automatic means for interlocking said tube and bolt.

5. A combined sectional post and lock comprising two clamping-plates; a tube consisting of several removably-connected sections secured to and projecting from one of said plates; a bolt secured to and projecting from the other plate into said tube; and independent means for locking said bolt to said tube.

6. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates and the opposite end section of which is removably secured thereto; a bolt secured to the other plate and extending longitudinally into the last-mentioned end section of said tube; and means capable of movement in directions transverse to each other for interlocking said tube and bolt.

7. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates and the opposite end section of which is removably secured thereto; a rotatable bolt secured to the other plate which extends longitudinally into the last-mentioned end section of said tube; and means for interlocking said tube and bolt.

8. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates and the opposite end section of which is removably secured thereto; a rotatable bolt secured to the other plate which extends longitudinally into the last-mentioned end section of said tube; and means for interlocking said tube and bolt.

9. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates, and the opposite end section is removably secured thereto and has an uneven interior surface; a bolt secured to the other plate which extends into said end section and a ball for interlocking said bolt and tube.

10. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates, and the opposite end section is removably secured thereto and has a circumferentially-corrugated interior surface; a rotatable bolt secured to the other plate which extends into said end section; and a ball for interlocking said bolt and tube.

11. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates, and the opposite end section is removably secured thereto and has an uneven interior surface; a bolt secured to the other plate which extends into said end section having longitudinally-disposed pockets; and a ball seated in each of said pockets for interlocking said bolt and tube.

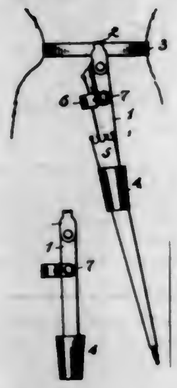
12. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates, and the opposite end section is removably secured thereto, the opening in the unsecured end of which is restricted in diameter, and has an uneven interior surface; a bolt secured to the other plate which extends into said end section having its unsecured end provided with a head of greater diameter which has longitudinally-disposed elongated pockets in its circumference; and a ball seated in each of said pockets for interlocking said bolt and tube.

13. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates, and the opposite end section is removably secured thereto, the opening in the unsecured end of which is restricted in diameter, and has a circumferentially-corrugated interior surface; a bolt secured to the other plate which extends into said end section having its unsecured end provided with a head of greater diameter which has longitudinally-disposed elongated pockets in its circumference; and a ball seated in each of said pockets for interlocking said bolt and tube.

14. A combined sectional post and lock comprising two clamping-plates; a jointed tube one section of which is suitably secured to and projects from one of said plates, and the opposite end section is removably secured thereto, the opening in the unsecured end of which is restricted in diameter, and has an uneven interior surface; a rotatable bolt secured to the other plate which extends into said end section having its unsecured end provided with a head of greater diameter which has longitudinally-disposed elongated pockets in its circumference; and a ball seated in each of said pockets for interlocking said bolt and tube.

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**755,009. UMBRELLA-CARRIER.** AUGUSTA J. ISEL, Kansas City, Mo. Filed Feb. 16, 1903. Serial No. 143,695. (No model.)

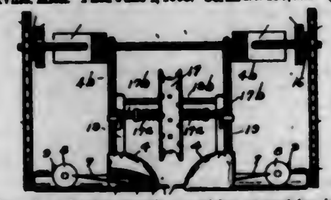


*Claim.*—1. In an umbrella-carrier, the combination with a supporting member provided at one end with means for attaching to the wearing-apparel, and having a sheath at the other end comprising a flexible strap for encircling the umbrella, one end of the strap being provided with two rows of studs disposed parallel with each other transversely across the strap, the other end of the strap being provided with a row of sockets disposed so as to be engaged by either row of studs, of a strap secured to the supporting member and provided with releasable means for securing the two ends of the said strap together.

2. In an umbrella-carrier, the combination with a supporting member comprising a strap one end of which is provided with means for securing to the wearing-apparel, and having at the other end a sheath adapted to receive therein the umbrella and comprising a flexible strap having the form of the envelop of the frustum of a cone, the said strap being provided at one end with two transversely-disposed parallel rows of studs, the other end being provided with a row of sockets adapted to engage each row of studs, of releasable means for engaging the handle of the umbrella and supported by the supporting member.

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**755,010. BEET-HARVESTING MACHINE.** CHARLES C. IRVING, Rockville, Mich. Filed June 1, 1903. Serial No. 159,630. (No model.)



*Claim.*—1. A beet-harvesting machine comprising in combination a supporting-frame mounted on wheels; a topping device comprising a pair of slightly-separated shoes pivotally suspended below the frame, a pair of horizontal reciprocating knives, one carried by each shoe, said knives being adapted to meet centrally between the shoes, means operated by the wheels for imparting a reciprocating motion to said knives, a gage-wheel secured to the shoes revolubly mounted above and centrally between them, and a deflecting-trough in the rear of said shoes; together with means for limiting the position of the topping mechanism below the frame; means for raising the forward end of the frame; and means for guiding the machine to bring the beets centrally between the shoes.

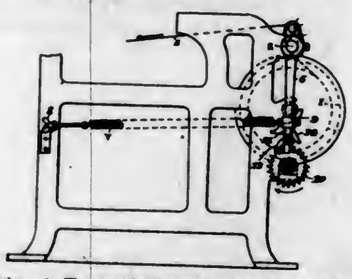


2. In a beet-harvesting machine, a topping device comprising a pair of pivotally-suspended slightly-separated shoes; a pair of horizontal reciprocating knives carried by said shoes, and arranged to meet centrally between the shoes; means for imparting a reciprocating motion to said knives; a deflecting-trough in the rear of said shoes, and a revolubly-mounted gage-wheel secured to the shoes above and centrally between them.

3. In a beet-harvesting machine a topping device comprising a pair of pivotally-suspended slightly-separated shoes; a pair of horizontal reciprocating knives carried one by each shoe, and arranged to meet centrally between the shoes; means for imparting a simultaneously opposite reciprocating motion to said knives; a deflecting-trough in the rear of the shoes; and a gage-wheel secured to these shoes, being revolubly mounted above them and yieldingly held centrally between them; and means for adjusting the height of said gage-wheel above the shoes.

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**755,011. AUTOMATIC LET-OFF MOTION FOR LOOMS.** JOHAN A. JANSSON, Stockholm, Sweden. Filed Nov. 12, 1901. Serial No. 82,014. (No model.)



*Claim.*—1. The combination of the warp-beam, an escapement-wheel 10 retaining the same, the double pawl 13, engaging said escapement-wheel and being provided with a projection 14, a whip-roll 3, a shaft therefor and a pendulum-lever 6 hanging down from said shaft and having a lateral projection 15, thereon, a spring 7 being connected with said lever for keeping the warp in tension, the projection 14 of the pawl being in the path of the projection 15, whereby the disengagement of the escapement-wheel 10 is effected.

2. In an automatic let-off for looms, the combination with the frame and warp-beam journaled therein, a shaft journaled parallel therewith, a tension-bar having arms connecting it to said shaft, an arm depending from said shaft, an escapement-wheel journaled in the frame in proximity to the end of said arm, gearing connecting said wheel with the warp-beam, a double pawl on the frame engaging with the escapement-wheel and having an abutment, a projection or abutment on said arm adapted to strike the abutment on the pawl and an adjustable spring for exerting tension on said arm, substantially as described.

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**755,012. TILE-DITCHING MACHINE.** EDWARD JESCHKE, Bellevue, and CHARLES W. JESCHKE, Lorain, Ohio. Filed Dec. 15, 1902. Serial No. 135,254. (No model.)

*Claim.*—1. In a tile-ditching machine of the character described, wings or spreaders each adapted to be independently adjusted both vertically and horizontally, as set forth.

2. In a tile-ditching machine of the character described, the combination of an excavator, with independent horizontally and vertically adjustable wings or spreaders, as set forth.

3. In a tile-ditching machine of the character described, the combination of a pivoted beam carrying an excavator, with independently horizontally and vertically adjustable wings or spreaders, as set forth.

4. In a tile-ditching machine of the character described, the combination of a frame having pivoted thereon a rack-beam, an excavator, secured on said beam, and means for adjusting said beam and excavator, with independent horizontally and vertically adjustable wings or spreaders, as set forth.

5. In a tile-ditching machine of the character described, the combination of the frame and a pivoted beam carrying an excavator, and means, substantially as described, for adjusting said beam to set said excavator to cut at various depths, with independent vertically and horizontally adjustable wings or spreaders, as set forth.



6. In a tile-ditching machine of the character described, the combination of the frame, an adjustable support carrying an excavator, and means for setting said excavator to cut at various depths, with independent vertically and horizontally adjustable wings, or spreaders, and means for holding said wings or spreaders in any desired position, as set forth.

7. In a machine of the character described, the combination of a beam or support B, a rack-beam C pivoted thereto, and excavator secured to said rack-beam, and means for adjusting said rack-beam and thereby the excavator, with horizontally and vertically adjustable wings or spreaders, arms secured thereto and guides on said beams B and C, adapted to receive said arms and to permit them to slide thereon, and means for holding said arms in locked position on said guides, as set forth.

8. In a machine of the character described, the combination with a beam or support B, a rack-beam C pivoted thereto, an excavator secured to said rack-beam, and means for adjusting said rack-beam and excavator, of vertically and horizontally adjustable wings or spreaders, pivoted sections or points secured to the forward end of said wings or spreaders and adapted to adjust themselves as the said wings or spreaders are raised or lowered, and means, substantially as described, for holding said wings or spreaders in locked position, as set forth.

9. In a tile-ditching machine of the character described, wings or spreaders adapted to be vertically and horizontally adjusted, said wings being provided on their forward ends with pivoted sections, adapted to adjust themselves as the said wings or spreaders are raised or lowered, as set forth.

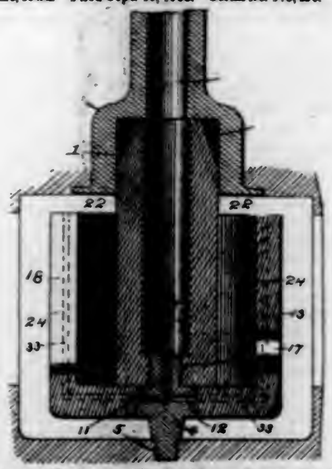
10. In a tile-ditching machine of the character described, the combination with the frame having pivoted thereon a rack-beam, an excavator secured on said beam, means for adjusting said beam and excavator, and the angular cutting-blades connected to the forward end of said rack-beam for marking the width of the excavation, of vertically and horizontally adjustable wings or spreaders, provided on their forward ends with pivoted sections adapted to adjust themselves as the said wings or spreaders are raised or lowered, as set forth.

11. In a tile-ditching machine of the character described, the combination with the frame having pivoted thereon a rack-beam, an excavator secured on said beam, means for adjusting said beam and excavator, and the angular cutting-blades connected to the for-

ward end of said beam for marking the width of the excavation, of vertically and horizontally-adjustable wings or spreaders, provided on their forward ends with pivoted sections, adapted to adjust themselves as the said wings are raised or lowered, and means, substantially as described, for holding said wings or spreaders in locked position, as set forth.

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755,013. **WHEEL CONSTRUCTION.** WILLIAM KIRCHMAN, Centerville, Iowa. Filed Sept. 16, 1903. Serial No. 173,436. (No model.)




*Claim.*—1. The herein-described means for constructing wheels, comprising the central tubular core member 1, a centering and anchoring closure 4 therefor, threaded into the inner end of the member 1 and having the terminal 5, a member 8 having a tubular extension 10 adapted to receive and hold the upper end of said central core member, and an oil-box-forming sand core having vents communicating with the vents in the anchoring-closure 4, whereby the escaping gases through said vents will raise the temperature of the central core member to a proper degree and thereby temper the bearing-face of the axle-receiving wheel-hub, said sand core also being provided with means to form the walls of the oil-box with the requisite thickness and also form the next adjacent or auxiliary hub-section and wheel-spokes, all combined substantially as specified and for the purpose set forth.

2. In wheel-casting a tubular core member 1, having a closure 4 fitting the inner end of said core member, said closure having a centering and anchoring terminal 5, and vent ducts or bores 11 and 12, a hollow guiding and centering member 8 for the opposite end of the core member, whereby when said parts are assembled the said ducts or bores will lead the escaping gases from the sand surrounding said parts into the bore of the core member 1 and raise the temperature thereof, as and for the purpose set forth.

3. In casting a metal core member 1 tubular throughout and open at each end, a centering member 4 fitting the inner end thereof, said centering member having intersecting bores or vent-ducts and a centering-terminal 5, a hollow centering member 8 to receive the outer end of said core member whereby the gases created, incident to casting, will pass through said ducts into the core member and raise the temperature thereof, as and for the purpose set forth.

4. A tubular core member to form the axle-bore of a car-wheel or the like and means to convey the gases created in the sand incident to the casting process and deliver the same into the bore of said core member, said gas-conveying means consisting of the combined closure and centering member 4 having a threaded end fitting the inner end of the core member and also having a plurality of intersecting bores providing communication between the surrounding sand and the bore of the core member and also having a centering-terminal 5, and means to center the outer end of the core member and convey the gases therefrom as and for the purpose set forth.

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755,014. **EYEGLASSES.** HENRY R. KIRSTEIN, Rochester, N. Y. Filed Oct. 6, 1902. Serial No. 126,008. (No model.)

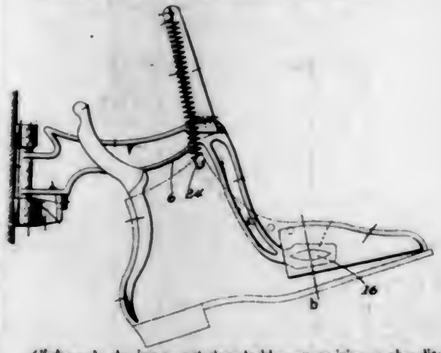
*Claim.*—1. In eyeglasses, the combination with the lenses and the bridge-spring having the substantially horizontally-extending loops arranged in rear of the lenses and between the center and the point of attachment to the lenses, of the yielding guard-arms secured to the lenses at one end and having the bearing-pads at the other, said pads being located between the rear ends of the loops in the bridge and the central portion thereof.




2. In eyeglasses, the combination with the lenses and the bridge-spring having the substantially horizontally-extending loops arranged in rear of the lenses and between the center and point of attachment to the lenses, of the yielding guard-arms attached to the lenses at one end, thence extending in rear of the loops and forwardly and having the bearing-pads at the free ends arranged between the rear ends of the loops of the bridge-spring and the forward portion of said spring.

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755,015. **SHOE-HOLDER.** CLEMENTS B. KOSTERS, Buffalo, N. Y. Filed May 26, 1903. Serial No. 158,836. (No model.)




*Claim.*—1. An improved shoe-holder comprising a plurality of members adapted to fit within and support a shoe and one of said members having a curved portion and another being slidably mounted on said curved portion, substantially as set forth.

2. An improved shoe-holder comprising a plurality of members having depending parts adapted to extend within and support a shoe and one of said members having a curved portion and another being adapted to have a combined sliding and pivotal movement on said curved portion, substantially as set forth.

3. An improved shoe-holder comprising a stationary member, a slidable member having support from the stationary member, said stationary member having means whereby the slidable member is adapted to have a curved path of movement and said members having depending parts adapted to fit within the toe and heel of a shoe, substantially as set forth.

4. An improved shoe-holder comprising a stationary member having a curved portion, a slidable member having a slot through which the curved portion extends and adapted to have a combined longitudinal sliding pivotal movement on said curved portion; said members having depending parts adapted to fit within the toe and heel of a shoe, substantially as set forth.

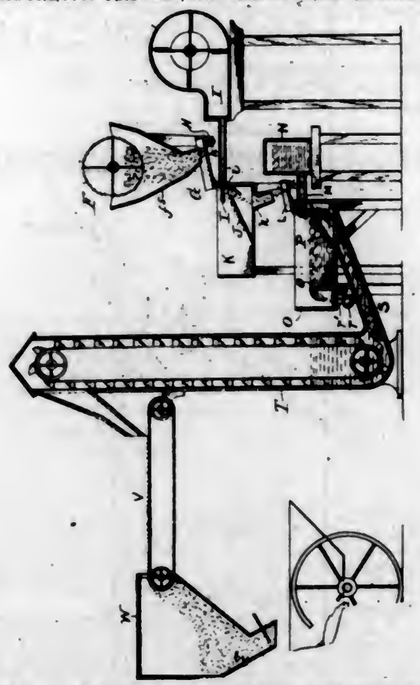
5. In a device of the class described, a plurality of adjustable members having means for supporting the lower portion of a shoe or the like, one of said members having tapering depressions, a standard having a forked end provided with inwardly-extending flanges adapted to wedge in the depressions and a spring supported from the standard and adapted to support the upper in stretched position.

6. In a device of the class described, a plurality of adjustable members having means for supporting the lower portion of a shoe or the like, one of said members having a depression, a standard having a forked lower end detachably engaging in said depression, and a spring depending from said standard and adapted to be attached to a shoe-upper.



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755,016. **COAL-SEPARATING APPARATUS.** CHARLES H. KOYL, New York, N. Y. Filed June 8, 1903. Serial No. 160,656. (No model.)



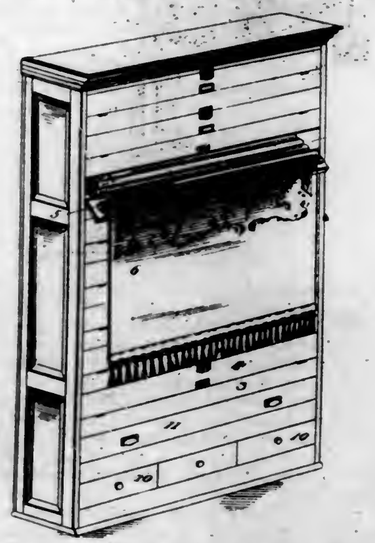

*Claim.*—1. In an apparatus for separating coal from clinker and other refuse, the combination of the following instrumentalities viz: a substantially horizontal nozzle terminating in a wide, shallow, substantially horizontal discharge-mouth from which the fluid will issue in a wide shallow horizontal stream; means for supplying fluid under pressure to said nozzle; a vibrating feed-shelf having a discharge-mouth of a width substantially the same as that of the fluid-discharge mouth and arranged immediately above the latter so that the material passing from the shelf will be delivered upon the surface of the stream of fluid below, the shelf being set at a slight rearward inclination relatively to the nozzle; means for vibrating the shelf; a receptacle below, and a partition in said receptacle to one side or the other of which the different components of the mass under treatment will pass according to their different specific gravities, substantially as and for the purpose hereinbefore set forth.

2. In apparatus for separating coal from clinker and other refuse, the combination of the following instrumentalities viz: a substantially horizontal air-nozzle terminating in a wide shallow mouth from which the air will issue in a wide shallow horizontal stream; means for supplying air under pressure to said nozzle; a vibrating feed-shelf having a discharge-mouth of the same width with that of the air-nozzle and arranged immediately above and at a slight rearward inclination relatively to the nozzle; a receptacle below and a partition in the receptacle to one side or the other of which the different components of the mass under treatment will pass according to their specific gravities; a second vibrating feed-shelf arranged below and to communicate with that compartment of the receptacle above containing the mixed clinker and coal resulting from the air-separating operation; a substantially horizontal water-nozzle with a wide shallow discharge-mouth, arranged immediately below the discharge end of the screen, the latter being set at a slight rearward inclination relatively to the nozzle so that the mixed coal and clinker from the screen shall be launched upon, rather than dropped into the stream of water issuing from the nozzle; means for supplying water under pressure to said nozzle; and means for carrying off the clinker separated out from the coal by the action of the water, substantially as hereinbefore set forth.

3. In apparatus for separating coal from clinker and other refuse, the combination of the following instrumentalities viz: a nozzle terminating in a wide, shallow horizontal discharge-mouth; means for supplying water under pressure to said nozzle; means for feeding upon the surface of the wide, shallow stream of water issuing from said nozzle, the material to be acted on; a water-tight receptacle below divided by a partition with two bins, into one or the other of which the different components of the mass under treatment will pass according to their different specific gravities; and a wall or dam o over which the water passes from the receptacle having its top in a plane slightly below the plane of the bottom of the discharge-mouth in the nozzle, substantially as and for the purpose set forth.

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755,017. **WINDOW-SHADE CABINET.** ALBERT B. KRETSCHMER, Lebanon, Kans. Filed Sept. 29, 1903. Serial No. 175,072. (No model.)




*Claim.*—1. A cabinet comprising a plurality of compartments, rigid confining-sections partially closing the fronts of the respective compartments, doors hingedly secured so as to completely close the fronts of the compartments, and supporting-brackets carried by the said doors for holding shades.

2. A cabinet for window-shades comprising a plurality of compartments, rigid confining-sections partially closing the fronts of the respective compartments, doors hingedly secured to the confining-sections, and supporting-brackets disposed upon the inner sides of the doors.

3. In a cabinet, the combination with a plurality of compartments, rigid confining-sections partially closing the fronts of the respective compartments, doors hingedly secured to the confining-sections adapted to swing downwardly when opened, shade-supporting brackets disposed upon the inner sides of the doors, and means for securing the doors in closed position.

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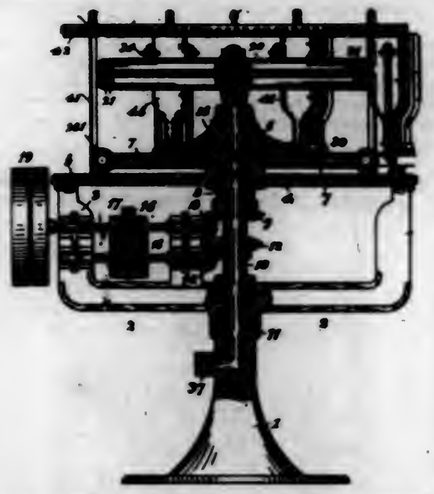
755,018. **BOTTLE-WASHING MACHINE.** PHILIP D. LAIBLE, Newark, N. J. Filed June 4, 1903. Serial No. 160,000. (No model.)

*Claim.*—1. In a bottle-washing machine, the combination of a horizontally-revolving frame having radial extensions or sections hinged to swing in vertical plane, an upright interior brush upon each section adapted to receive upon itself an inverted bottle, other brushes adapted to engage the exterior of the bottle, means for supplying water, an interrupted track beneath said hinged sections, and means for rotating each bottle upon its interior brush.

2. In a bottle-washing machine, a revolving frame, means upon said frame for rotatably supporting bottles, brushes upon said frame adapted to engage said bottles, a driving-wheel concentric with said frame and adapted to engage the bottles to rotate them on their supports independent of the motion of the frame, and water-supply means.

3. In a bottle-washing machine, a revolving bottle-carrying

frame, interior and exterior bottle-brushes upon said frame in relatively fixed relation to each other, a driving-wheel independent of said brushes and said frame, adapted to engage the bottles to rotate them, and water-supply means.



4. In a bottle-washing machine, a revolving bottle-carrying frame, interior and exterior bottle-brushes upon said frame in relatively fixed relation to each other, a driving-wheel independent of said brushes and said frame, adapted to engage the bottles to rotate them, bearing-rollers upon said frame adapted to hold the bottles against said driving-wheel, and water-supply means.

5. In a bottle-washing machine, the combination of a series of traveling hinged sections each adapted to rotatably support a bottle, means for rotating said bottles, and a track for said sections having a portion of different altitude from the main portion and adapted to tip said hinged sections and disengage the bottles from said rotating means.

6. In a bottle-washing machine, the combination of a series of traveling hinged sections each adapted to rotatably support a bottle, means for rotating said bottles, a track for said sections having a portion of different altitude from the main portion and adapted to tip said hinged sections and disengage the bottles from said rotating means, and brushes adapted to brush the bottles while being rotated.

7. In a bottle-washing machine, the combination of a series of traveling hinged sections each adapted to rotatably support a bottle, means for rotating said bottles, a track for said sections having a portion of different altitude from the main portion and adapted to tip said hinged sections and disengage the bottles from said rotating means, brushes to engage the bottles, and means adapted to supply water to the bottles while rotating and to shut off the water when the bottle-carrying sections are tipped.

8. In a bottle-washing machine, a revolving frame having radial arms or extensions hinged to swing in a direction perpendicular to their plane of revolution, means for rotatably supporting a bottle on each section, brushes upon each section adapted to engage the interior and the exterior of the bottle, a driving-wheel concentric with said radial arms or extensions, guiding means swinging said frame-sections to alternately throw the bottles against said driving-wheel and disengage them therefrom, and a water-supply.

9. In a bottle-washing machine, the combination of a revolving frame having radial hinged sections each adapted to rotatably support an inverted bottle, means adapted to frictionally engage the bottles when the carrying-sections are in normal position, and a track beneath said sections, having a depressed portion adapted to allow the said hinged sections to drop out of normal position and disengage the said bottles from said rotating means.

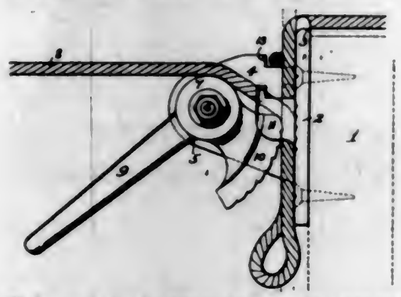
10. In a bottle-washing machine, a revolving frame, supporting means upon said frame for rotatably holding an annular series of bottles, a driving-wheel having a padded periphery adapted to engage the inner side of said series of bottles to rotate them, brushes arranged to engage the bottles, and water-supply means.

11. In a bottle-washing machine, a revolving frame for rotatably holding an annular series of bottles; a driving-wheel having a broad tire of felt adapted to engage the inner side of said series of bottles to rotate them, brushes arranged to engage the bottles, and water-supply means.

12. In a bottle-washing machine, a revolving frame having radial arms or sections hinged to swing in a direction at right angles to their plane of revolution, means on each section for rotatably supporting a bottle, a brush upon each section adapted to enter the interior of a bottle thereon, other brushes adapted to engage the exterior of a bottle, a driving-wheel concentric with said frame and adapted to peripherally engage the bottles to rotate them, means for swinging said sections alternately against and away from said driving-wheel, and a water-supply.

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**755,019. ROPE-CLAMPING DEVICE.** JOSEPH LEIGHTHAM, Reading, Pa., assignor of one-half to Jacob Weida, Reading, Pa. Filed Sept. 12, 1903. Serial No. 172,985. (No model.)



*Claim.*—1. A rope-clamping device comprising a base-plate having a lever-carrying ear projecting therefrom at right angles, and a pivoted clamping-lever having a cam-faced rope-engaging end swinging adjacent to the opposing face of the plate, the upper edges of said plate and ear being provided with retaining-stops for the clamped ropes bent over the same in different directions.

2. A rope-clamping device comprising a base-plate having a lever-carrying ear and a parallel guard-ear, and a clamping-lever pivoted to said carrying-ear and having a cam-faced rope-engaging end arranged to swing between said ears to clamp the interposed rope or ropes, the upper edges of said plate and ears being provided with retaining-stops for the differently-extending ropes.

3. A rope-clamping device comprising a base-plate having a lever-carrying ear and a parallel guard-ear on each side thereof, similar clamping-levers pivoted to said carrying-ear one on each side thereof and each provided with a cam-shaped rope-engaging end adapted to swing between said lever-carrying ear and an adjacent guard-ear, the upper edges of said lever-carrying ear and base-plate being provided with retaining-stops for the differently-extending ropes.

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**755,020. RAIL-CLAMP.** ORLANDO D. LENT, Peekskill, N. Y. Filed Aug. 3, 1903. Serial No. 167,964. (No model.)

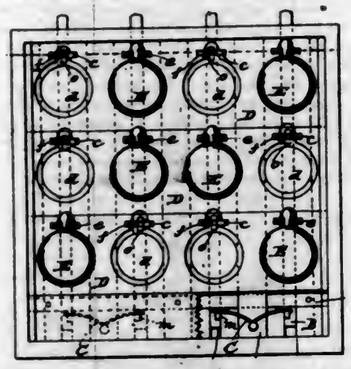


*Claim.*—1. The combination in a rail-clamp of the rail ends, side plates fitted to opposite sides of the rails, flanges at or near the ends of the side plates, clamp-hooks applied to the flanged parts of the side plates, and set-screws in the clamp-hooks to compress the side plates against the rails.

2. The combination in a rail-clamp with the ends of the rails, of side plates oppositely fitting the sides and bottoms of the rails, flanges on the sides of the side plates, countersunk holes in the ends of the flanges and bottom edges of the side plates, a notch in the bottom of one side plate, and an interlocking projection on the bottom of the other side plate to engage with the said notch, and clamp-hooks to embrace the side plates at their flanges, with points on one arm to engage with countersinks on one of the side plates, and set-screws in the other arm to engage with the countersinks in the other side plate, all as set forth.



**755,021. DISPLAY-TRAY.** BERTRAM LEBHEIM, Providence, R. I., assignor of one-half to George C. Ruckstuhl, Providence, R. I. Filed Nov. 5, 1903. Serial No. 179,880. (No model.)

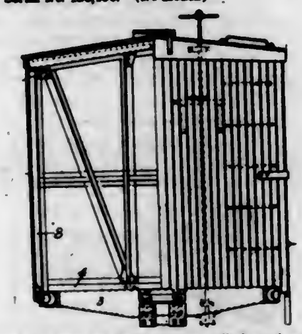


*Claim.*—1. In a display-tray, the combination with a body portion comprising a base and upright walls, of engaging means upon the base, and a cover fixed in the body portion above the engaging means provided with series of slots therein and with series of beveled depressions adjacent the slots and channels in said depressions at right angles to and traversing said slots.

2. In a display-tray, of the character described, the combination with a body portion comprising a base and upright walls, of engaging means for an ornament upon the base, projections on said engaging means, a transverse retainer for said means, springs engaging said projections and a cover mounted in the body portion above the engaging means provided with a passage for the ring of the ornament, and a circular depression for the body of the ornament, as and for the purpose set forth.

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**755,022. STEEL-FRAME BOX-CAR.** CHARLES A. LINDSTRÖM and ARNOLD STUCKI, Allegheny, Pa., assignors to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Oct. 21, 1902. Serial No. 128,156. (No model.)



*Claim.*—1. A box-car, having a so-called steel underframe including side sills, a superstructure comprising metallic side plates, posts and braces connecting the side plates and the side sills, and of angular cross-section, nailing-strips applied to said posts, and longitudinal stringers applied to the side sills, and lining and sheathing applied on opposite sides of the posts and braces respectively and inclosing said posts and braces, substantially as described.

2. In a steel-frame box-car, an underframe having end sills with vertically-projecting inner flanges rising above the underframe, combined with a superstructure having end posts and braces applied to said flanges, nailing-strips applied to the posts and braces, and lining and sheathing applied to opposite sides of the nailing-strips and inclosing the posts, braces, nailing-strips and flanges.

3. In a steel-frame box-car, the combination of an underframe, a wooden superstructure including a lining, end sills, and angle-bars interposed between the end sills, flooring and lining.

4. In a steel-frame box-car, an underframe having offset transoms adjacent the door-posts, the said offset transoms being widest at the center sills with which they are connected.

5. In a box-car, an underframe comprising side sills of substantially uniform cross-section throughout, bellied center sills, and transoms arranged opposite the door-posts and of greatest width next the center sills.

6. In a box-car, the combination with grab-irons, ladder-rungs and the like, of thimbles interposed between the lining and siding and receiving the bolts for fastening the said irons, substantially as described.

7. A steel-frame box-car, having an underframe, a superstructure provided with angular side plates, posts and braces rigidly secured to the side sills of the underframe and to the said side plates in compression, the said posts and braces being of angular cross-section, and supplied with nailing-strips to receive the lining and sheathing and serving to prevent the bulging out of the sides of the car, substantially as described.

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**755,023. INK-WELL.** FREDERICK C. LUETHY, Chicago, Ill., assignor of one-half to John D. Harmon, Chicago, Ill. Filed Oct. 3, 1903. Serial No. 175,680. (No model.)



*Claim.*—1. An ink-well having a horizontally-disposed diaphragm provided with an opening and a downwardly-extending flange surrounding said opening, a stoppered opening in the bottom of the vessel in alinement with the opening in the diaphragm, an outwardly-opening dip-cup, an ink-passage connecting the latter with the lower compartment of the receptacle, and an air-vent connecting the dip-cup with the lower compartment directly below the diaphragm.

2. An ink-well comprising a receptacle having an approximately horizontal diaphragm provided with an opening, connecting the upper and lower compartments formed by said diaphragm, a flange surrounding said opening and extending to the normal ink-level in the lower compartment, a dip-cup connected with the lower compartment by an ink-passage and an air-vent, a lever fulcrumed in said lower compartment and having one end extended upwardly through the opening in the diaphragm, a valve carried by said upwardly-extending end of the lever, and a float carried by the opposite end of the latter.

3. In a fountain ink-well having a main compartment or reservoir, a lower compartment, a dip-cup connected with said lower compartment, a diaphragm separating said compartments, and an opening in said diaphragm, in combination with a float-operated valve adapted to close the opening in said diaphragm.

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**755,024. WAGON STAKE OR STANDARD.** FALKLAND R. A. MACKINNON, Grand Rapids, Wis., assignor of one-half to John Schnabel, Grand Rapids, Wis. Filed May 16, 1903. Serial No. 157,651. (No model.)



*Claim.*—1. A wagon-stake comprising a tubular shell formed of sheet metal and adapted to rest at its lower end upon the bolster or other support of a vehicle, said sheet metal having its upright margins outturned and extending to the bottom of the shell and secured together and tapered to form a longitudinal brace.

2. A wagon-stake comprising a continuous tubular shell arranged to rest upon the bolster and formed of sheet metal having its

side margins outturned and fastened together forming a longitudinal brace on the exterior of the tubular shell.

3. A wagon-stake comprising a tubular shell formed of sheet metal having its side margins turned outwardly and tapered, said margins resting against each other and secured together, a depending shank secured within the shell, and links attached to intermediate portions of the brace.

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**755,025. SPRING-BALANCE.** SAMUEL R. MUNSON, New Britain, Conn., assignor to Landers, Frary and Clark, New Britain, Conn. Filed Nov. 14, 1902. Serial No. 131,334. (No model.)

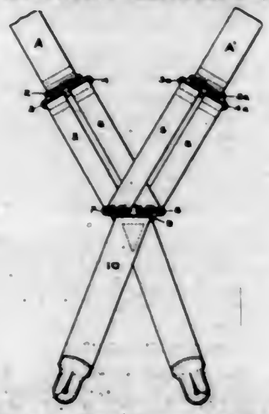


*Claim.*—1. In a suspension spring-balance, a case, and the suspension-lug for the balance-spring depending from the upper end of the said case, the said lug having an eye at its lower end for the attachment of the upper end of the said spring, and between the said eye and upper end of the case an intermediate malleable portion of symmetrical form, for adjusting the said eye along a central line to and from the said upper end of the case by bending the said intermediate malleable portion.

2. A suspension spring-balance consisting of a case-body, in combination with a graduated face-plate which with the said body constitutes the case, a suspension-lug permanently secured in the upper part of the said case and having at its upper end, outside of the case means for suspending the spring-balance, and within the said case, at the extreme upper end thereof, a malleable portion in the form of an oval ring, the balance-spring with its upper end secured to the lower end of the said suspension-lug, below the said malleable portion, the draw-bar having a pointer, adjacent to and in front of the said graduated face-plate, and means, outside of the case at the lower end of the said draw-bar for suspending the load to be weighed.

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**755,026. SUSPENDERS.** HUGH G. MACWILLIAM, New Rochelle, N. Y. Filed June 23, 1902. Serial No. 112,745. (No model.)




*Claim.*—1. A pair of suspenders comprising the shoulder-straps, a trouser-tab, a double loop carried by said trouser-tab, and a pair of straps connected at their rear ends with the shoulder-straps, and intermediately and independently threaded through the eyes of said trouser-tab loop, said connecting-straps being separated an equal distance at their trouser-tab and shoulder-strap ends, as and for the purpose set forth.

2. A pair of suspenders comprising the shoulder-straps, a trouser-tab, a double loop carried by the trouser-tab, double loops carried by the rear ends of the shoulder-straps, the distance between the eyes of said trouser-tab loop being substantially equal to the distance between the eyes of each shoulder-strap loop, and a pair of straps independently connected at their ends to the eyes of the shoulder-strap loops, and intermediately threaded through the eyes of the trouser-tab loop.

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**755,027. DEVICE FOR PREVENTING INCRUSTATION OF STEAM-BOILERS.** JOHN M. MATHEWS, St. Louis, Mo. Filed Mar. 7, 1903. Serial No. 146,698. (No model.)

*Claim.*—1. A device of the kind described comprising a pipe having a collar thereon, a harp-bracket arranged upon the pipe and resting on the collar, pipe-sections carried by the upper portion of the harp-bracket, a vertical glass tube secured at its lower end to the first-mentioned pipe and at its opposite end to the upper portion of the harp-bracket, a vertical bore leading downward from one of the pipe-sections above and in alinement with the glass tube, a nozzle arranged in the lower end of the bore and extending into the tube, the other pipe-section opening downwardly into the tube to one side of the nozzle, and a needle-valve passing through the upper portion of the harp-bracket and adapted to close the upper end of the bore, means for making a tight joint around the stem of the valve, and means for fastening the bracket to the collar.



2. A device of the kind described comprising a pipe having a collar thereon, a harp-bracket carried by the pipe and bearing on said collar, means for locking the bracket on the collar, pipe-sections carried by the bracket at the end opposite the collar, one of said pipe-sections having a contracted neck terminating in a tubular nipple portion, a glass tube secured at one end to the first-mentioned pipe its opposite end extending into the nipple, stuffing-boxes arranged adjacent each end of the tube, a vertical bore leading from the other pipe-section into the nipple, a valve-seat formed in said bore, an adjustable needle-valve adapted to cooperate therewith and a nozzle having one end fitting into said bore and the other end extending into the glass tube.

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**755,028. DIE-OPENING MECHANISM.** SINGLETON A. MAXWELL, Athens, Ga., assignor to Ideal Opening Die Company, a Corporation of New York. Filed Dec. 22, 1902. Serial No. 136,180. (No model.)



*Claim.*—1. In a die-opening mechanism, a stock, a head carrying collapsible dies, and mounted to have a rotary movement relative to the stock, releasable means for engaging the head and the stock, and cooperative connections between the dies and the stock arranged to expand the dies by relative rotation of the head and the stock when the engagement of the head and stock is released, substantially as described.

2. The combination with a stock having die-expanding means, of a die-head adapted to releasably engage said stock and carrying expansible dies engaging said expanding means, said die-head being mounted to have longitudinal and rotary movement relatively to the stock, and means permitting disengagement of the stock and die-head to expand the dies, substantially as described.

3. In a die-opening mechanism, a stock having cams fixed thereto, a die-head carrying movable dies arranged to be engaged by the cams, clutch connections between the head and the stock adapted to lock the dies in cutting position, and means permitting the connection to be released and the dies expanded by the cams upon rotary movement of the die-head, substantially as described.

4. In a die-opening mechanism, a stock having cams fixed thereto, a die-head carrying movable dies controlled by the cams, clutch connections between the head and the stock adapted to lock the dies in cutting position and to permit disengagement of the die-head by longitudinal movement, so as to permit the dies to expand by rotary movement, substantially as described.

5. In a die-opening mechanism, a die-head carrying movable dies, a stock having means controlling the dies, the head and stock being connected so as to permit rotary and longitudinal movement of the die-head, means for locking the die-head against rotary movement and means permitting the die-head to be released and the dies expanded by the rotation of the die-head, substantially as described.

6. In a die-opening mechanism, a die-head having dies, and mounted to have longitudinal and rotary movement, a stock having a clutch for engaging the die-head to prevent rotary movement, means permitting disengagement of the die-head and stock by longitudinal movement, and cams on the stock for controlling the dies, substantially as described.

7. In a die-opening mechanism, the combination with a stock carrying a clutch and adjustable cams, of a die-head adapted to be held from rotation by the clutch and carrying dies engaged by the cams, a connection between the stock and die-head permitting rotary and longitudinal movement of the die-head, the cams moving the dies when the die-head is disengaged and rotated, substantially as described.

8. In a die-opening mechanism, the combination with a stock having a clutch and fixed cams, of a die-head carrying movable dies engaged by said cams, the die-head being mounted to have longitudinal and rotary movement and engaging said clutch to prevent rotation, said clutch permitting the die-head to be moved longitudinally and rotated to expand the dies, substantially as described.

9. In a die-opening mechanism, a stock having a clutch and fixed cams projecting beyond the clutch, a die-head carrying movable dies controlled by the cams and having means adapted to engage the clutch to lock the dies in cutting position, and means permitting the longitudinal movement of the die-head to disengage the die-head, and rotary movement to expand the dies, substantially as described.

10. In a die-opening mechanism, the combination with a stock, of a die-head carrying movable dies and mounted to move longitudinally and to rotate, means for locking the die-head and stock to prevent relative rotation and means comprising cams fixed on the stock for controlling the dies when the die-head is disengaged and free to rotate, substantially as described.

11. In a die-opening mechanism, the combination with a stock carrying fixed cams, of a die-head connected to the stock so as to have a limited longitudinal and rotary movement, and carrying movable dies controlled by said cams, means for locking the die-head to the stock, and means permitting the release and rotation of the die-head to expand the dies, substantially as described.

12. In a die-opening mechanism, the combination of a stock, a die-head adapted to engage the stock and lock the dies, movable dies in the die-head, means permitting the disengagement and rotation of the die-head, and means fixed on the stock for expanding the dies as the head rotates, substantially as described.

13. In a die-opening mechanism, the combination of a tubular stock, a die-head having a sleeve carried in the stock and attached thereto by a pin projecting into a slot in the die-head sleeve so as to have limited longitudinal and rotary movement, cams on said stock, a clutch-ring adapted to engage said die-head and locked to the stock by said cams, dies in the die-head engaging with said cams, and means permitting the release and rotation of the die-head to open the dies, substantially as described.

14. A die-holder, expansible dies therein, means whereby they may be simultaneously expanded, and means for adjustably limiting said expansion to an amount equal to the depth of the thread.

15. In a die-opening mechanism, the combination with a stock, of a die-head carrying expansible dies, and adjustable means for limiting the expansion of the dies so as to just clear the work, substantially as described.

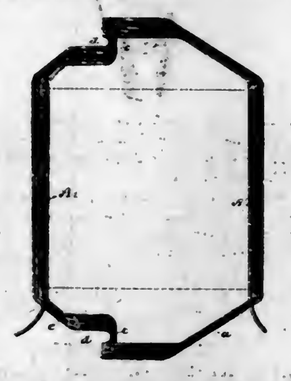
16. In a die-opening mechanism, the combination with a stock, of a die-head rotatably mounted thereon and carrying expansible dies controlled by the rotation of the die-head, and means for varying the rotation of the die-head according to the diameter of the work, substantially as described.

17. In a die-opening mechanism, the combination of a stock, a die-head rotatably mounted on said stock carrying dies, an angularly-adjustable pin on one of said parts cooperating with limiting means on the other part, and die-expanding means arranged to be rendered effective by the rotation of the die-head, substantially as described.

18. In a die-opening mechanism, the combination with a stock-carrying die-expanding means, of a rotatable die-head carrying expansible dies, means for locking the dies by locking the die-head against rotation, and means permitting the die-head to be released and rotated to expand the dies, substantially as described.

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**755,029. ARMATURE WINDING OR COIL.** FRANK A. MERRICK, Johnstown, Pa., assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Nov. 9, 1899. Renewed Dec. 16, 1901. Serial No. 86,089. (No model.)




*Claim.*—1. An armature coil or winding having end connections, two portions of which are obliquely disposed in a cylindric plane concentric with the longitudinal axis of the armature and two other portions of which are disposed transversely of said axis, substantially as described.

2. An armature coil or winding having parallel equal sides and end connections the two outer portions of which are disposed obliquely in a cylindric plane concentric with the longitudinal axis of the armature, and inner portions of which lie transversely of the said axis, substantially as described.

3. An armature coil or winding of the character described, having parallel side portions and end connections consisting of oblique portions adjacent to each side portion, intermediate transverse portions, and a short connecting portion joining together the intermediate portions and bent toward the axis of the armature and also in the longitudinal direction of such axis.

4. An armature coil or winding having straight sides and bent ends, portions of the latter being shaped to lie side by side with corresponding portions of the adjacent coils in a cylindric plane concentric with the armature axis, and other portions to overlie corresponding portions of adjacent coils in a direction transverse to said axis with their edgewise planes perpendicular as desired.

5. An armature coil or winding having straight sides and symmetrically-bent ends which leave the sides obliquely in the cylindrical plane of said sides, and are thence bent transversely to the longitudinal axis of the coil, with an intermediately-connecting portion deflected toward the axis of the armature, and also in the longitudinal direction of said axis, substantially as described.

6. An armature coil or winding having straight parallel sides lying in radially-converging planes, the conductors composing said sides passing from one side to the other by end portions having arms bent obtusely to the respective sides and extended in a cylindric plane concentric with the axis of the armature and thence carried inwardly toward each other transversely across the ends of the armature, the two arms being connected by short compound bends whereby the inner wire of one arm becomes the outer wire of the other arm, and vice versa, substantially as described.

7. An armature-coil having straight parallel sides and symmetrically-bent ends disposed partly within the cylindrical plane of the sides by means of an oblique end extension beyond the armature-core at each side and partly in planes transversely to the armature axis by means of transverse and inward deflections, which also reverse the relative dispositions of the individual turns or conductors composing the coil, so that the inner conductor of one side becomes the outer conductor of the opposite side, substantially as described.

8. The herein-described armature coil or winding having the straight sides A, A' and the symmetrically-bent ends consisting each of the oblique portions *a* and *c*, the transverse portions *b* and *d*, and

the bent portion *c* connecting the portions *b* and *d*, substantially as described.

9. The herein-described armature coil or winding having the straight sides A, A' and the symmetrically-bent ends consisting each of the oblique portions *a* and *c*, the transverse portions *b* and *d*, and the bent portions *c* connecting the portions *b* and *d*, the portions *a* and *b* being relatively longer than the portions *d* and *c*, substantially as described.

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**755,080. SHOE-LACE FASTENER.** CHARLES F. KIMM, Agur, Cal. Filed Mar. 5, 1903. Serial No. 146,402. (No model.)

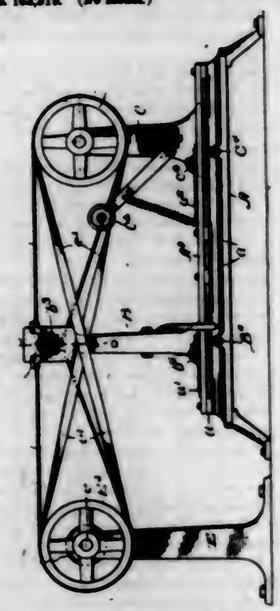


*Claim.*—1. A shoe-lace fastener comprising a stem having a hook projecting therefrom and lying with its bill transversely above the stem, and arc-shaped webs projecting upwardly from the stem, toward and beneath the bill.

2. A shoe-lace fastener comprising a stem having a continuous flange at one end, said flange at one side of the stem being continued to form the lower member of a hook lying with its bill above and transversely of the stem, the flange radiating from the stem and the sides of the radiating portions being bent upwardly in the direction of the bill of the hook and forming thereby arc-shaped webs projecting from the stem which lie in spaced relation with the said bill of the hook.

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**755,081. POLISHING AND BUFFING MACHINE.** LAWRENCE B. MILLER and CORNELIUS J. BARRY, Chicago, Ill. Filed June 30, 1903. Serial No. 163,319. (No model.)



*Claim.*—1. In a device of the class described, the combination with two driven pulleys, of two idler-pulleys mounted in line with each other upon a longitudinally-movable shaft, and a buffer-belt running from each of said driven pulleys over said idler-pulleys.

2. In a device of the class described, the combination with two driven pulleys, of two idler-pulleys mounted upon a longitudinally-movable shaft, a guide in line with said pulleys, and buffer-belts running from each of said driven pulleys over said idler-pulleys.

3. In a polishing-machine, the combination with a suitable driving-pulley and a polishing-belt driven by said pulley, of an idler-pulley over which said belt runs, and suitable means for supporting said idler-pulley and permitting it to move longitudinally to permit the article to be polished to take its place in contact with the belt.

4. In a device of the class described, the combination with two driven pulleys, of two idler-pulleys mounted upon a yielding longitudinally-movable shaft, buffing-belts running from said driven pulleys over said idler-pulleys, and a guide in line with said idler-pulleys, said pulleys being normally spring-pressed toward said guide.

5. In a device of the class described, the combination with two driven pulleys, of two idler-pulleys mounted upon a longitudinally-movable shaft, buffing-belts running from said driven pulleys over said idler-pulleys, and suitable guide-pulleys for maintaining the proper position of said buffing-belts.

6. In a device of the class described, the combination with two driven pulleys, of a pivoted spring-pressed arm, rotatable in a plane at right angles to the planes of said driven pulleys, two idler-pulleys journaled upon the end of said arm and normally parallel to said driven pulleys, and suitable buffing-belts running over said idler-pulleys.

7. In a device of the class described, the combination with two driven pulleys, of a pivoted spring-pressed arm, rotatable in a plane at right angles to the planes of said driven pulleys, two idler-pulleys journaled upon the end of said arm and normally parallel to said driven pulleys, suitable buffing-belts running over said idler-pulleys, the idler-pulley farthest removed from said arm being tapered to permit it to return to position after being removed from the belts.

8. In a device of the class described, the combination with a suitable base, of two standards bearing shafts, one of said shafts being suitably driven, means of connection between said first shaft and said second shaft, whereby said second shaft is driven by said first shaft, pulleys upon each of said shafts and driven therewith, a third standard intermediate said first two standards, a longitudinally-movable shaft journaled thereon, two idler-pulleys upon said last-named shaft, and buffer-belts passing about said idler-pulleys from said driven pulleys.

9. In a device of the class described, the combination with a suitable base, of two standards, shafts mounted therein, means for synchronizing the rotation of said shafts and for driving one of them, and pulleys upon each of said shafts and driven thereby, of a third standard having a suitable guide, a longitudinally-movable shaft in line with said guide, two idler-pulleys upon said longitudinally-movable shaft, and buffer-belts running from said driven pulleys over said idler-pulleys.

10. In a device of the class described, the combination with a suitable base, of two standards, shafts therein, means for synchronizing the movements of said shafts, and for driving one of them and pulleys upon each of said shafts and driven thereby, of a third standard having a suitable guide, an arm pivoted thereto to swing in a vertical plane parallel to said shafts, a shaft secured to the end of said arm, two idler-pulleys journaled upon said shaft and belts running from said driven pulleys and about said idler-pulleys.

11. In a device of the class described, the combination with a suitable base, a fixed standard, a movable standard mounted on said base and movable longitudinally of the same, and shafts bearing pulleys and journaled in each of said standards, of a movable standard mounted between said first two standards, and bearing a longitudinally-movable shaft, idler-pulleys upon each of said shafts, and belts running from said first-named pulleys to the idler-pulleys.

12. In a device of the class described, the combination with a suitable base, a fixed standard, a movable standard mounted on said base and movable longitudinally of the same, and shafts bearing pulleys and journaled in each of said standards, of a second movable standard bearing a longitudinally-movable shaft, idler-pulleys upon the last-named shaft, belts running from said first-named pulleys to the idler-pulleys, and means for fixing the position of said first movable standard.

13. In a device of the class described, the combination with a suitable base, a fixed standard, a movable standard mounted on said base and movable longitudinally of the same, and shafts bearing pulleys and journaled in each of said standards, of a second movable standard bearing a longitudinally-movable shaft, idler-pulleys upon said longitudinally-movable shaft, belts running from said first-named pulleys to the idler-pulleys, a ratchet-bar on said base, and a pawl on said first movable standard, adapted to fix the position of the same.

14. In a device of the class described, the combination with a suitable base, a fixed standard, a movable standard mounted on said base and movable longitudinally of the same, and shafts bearing pulleys and journaled in each of said standards, of a second movable standard bearing a longitudinally-movable shaft, idler-pulleys upon said longitudinally-movable shaft, belts running from said first-named pulleys to the idler-pulleys, and means for moving each of said standards.



15. In a device of the class described, the combination with a suitable base, a fixed standard, a movable standard mounted on said base and movable longitudinally of the same, and shafts bearing pulleys and journaled in each of said standards, of a second movable standard bearing a longitudinally-movable shaft, idler-pulleys upon each of said shafts, belts running from said first-named pulleys to the idler-pulleys, rack-bars on said standards, and pinions mounted on said base adapted to move said standards longitudinally of said base.

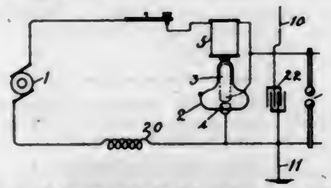
16. In a device of the class described, the combination with a suitable base and two driven pulleys journaled thereon, the distance between said pulleys being variable, of a suitable standard mounted upon said base and between said pulleys, a link pivoted to said standard and rotatable in the plane of said pulleys, an arm pivoted to said link and rotatable in planes at right angles to the plane of said pulleys, a shaft secured to the end of said arm, a spring for holding said arm in a position where said shaft is parallel to the axis of said pulleys, idler-pulleys upon said shaft, and belts running from said driven pulleys over said idler-pulleys.

17. In a device of the class described, the combination with a suitable base and two driven pulleys, the distance between said pulleys being variable, of a suitable standard mounted upon said base and between said pulleys, a link pivoted to said standard and rotatable in the plane of said pulleys, an arm pivoted to said link and rotatable in planes at right angles to the plane of said pulleys, a shaft secured to the end of said arm, a spring for holding said arm in a position where said shaft is parallel to the axis of said planes, idler-pulleys upon said shaft, belts running from said first-named pulleys over said idler-pulleys, and a guide in line with said idler-pulleys.

18. In a polishing-machine, the combination with a polishing-belt and means for driving the same, of an idler-pulley over which said belt runs, a guide substantially in line with and at one end of the idler-pulley, and supporting devices for the pulley, movable longitudinally therewith to permit the article to be polished to be thrust through the guide and take the place of the idler-pulley.

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**755,082. APPARATUS FOR WIRELESS TRANSMISSION OF ENERGY.** DANIEL M. MOORE, Newark, N. J. Filed Apr. 18, 1903. Serial No. 153,175. (No model.)




*Claim.*—1. In an apparatus for the wireless transmission of energy, the combination of a generator, an interrupter in the circuit thereof having its contacts in a vacuum, a condenser charged by the energy developed through interruptions of the circuit, and a spark-gap connected to the circuit of the condenser.

2. In an apparatus for the wireless transmission of energy, the combination substantially as described of an electromagnetic circuit-interrupter having its contacts in a vacuum, a key or other device for controlling the circuit and a condenser and spark-gap bridging said contacts.

3. The combination substantially as described of a vacuum-break and a disruptive spark-gap and a condenser in parallel with one another around said vacuum-break.

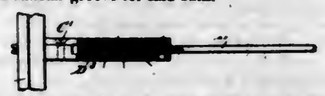
4. The combination of a spark-gap, condenser, and antennæ and ground-wires connected around a vacuum-break.

5. The combination with a vacuum-break of a condenser and a spark-gap in parallel, and a transformer one winding of which is in a branch around the vacuum-break while the other winding is connected to the condenser and spark-gap.

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**755,083. TYPE-BAR BEARING.** LOUIS MYERS, Hartford, Conn., assignor to Underwood Typewriter Company, New York, N. Y., a Corporation of New Jersey. Filed June 30, 1903. Serial No. 163,766. (No model.)

*Claim.*—1. A type-bar bearing comprising spaced opposing members, a type-bar, the pivot portion of which extends between said members, a central ball arranged to rotate about its own axis and engaging said type-bar on one side, and a series of traveling balls engaging said type-bar on the other side, and also engaging the adjacent member of the bearing, one of the surfaces engaged by said traveling balls being flat or smooth, and the other of said surfaces having an annular groove for said balls.

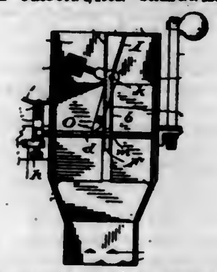


2. A type-bar bearing comprising two spaced opposing members, a pivot connecting said members and having a central bearing, two type-bars the pivot portions of which are arranged between said bearing members and perforated for the passage of said pivot, said type-bars having depressions on their inner or opposing faces to receive said central bearing, and annular bearings on the outer surfaces of the type-bars.

3. A type-bar bearing comprising spaced opposing members, a type-bar, the pivot portion of which extends between said members, a central bearing engaging said type-bar on one side, and a series of traveling balls engaging said type-bar on the other side, and also engaging the adjacent member, one of the surfaces engaged by said traveling balls being flat or smooth, and the other of said surfaces having an annular groove for said balls.

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**755,084. AUTOMATIC WEIGHING APPARATUS.** WALTER NORTHROP, Toronto, Canada, assignor to Howson & Howson, trustees, Philadelphia, Pa. Filed Oct. 4, 1902. Serial No. 125,980. (No model.)



*Claim.*—1. In automatic weighing apparatus provided with weigh-scales and a delivery-spout, the combination of a horizontally-pivoted valve adapted to close the spout; means tending to turn the valve to close the spout; a lock-arm secured to the pivot of the valve; a pivoted trip-lever adapted to engage the lock-arm to hold the valve in its open position and weighted so that normally it tends to release the said lock-arm; the scale-beam adapted when in its raised position to directly engage the trip-lever to hold it in position to engage and lift the lock-arm; means for limiting the movement of the trip-lever; and means for stopping the motion of the valve as it reaches the closed position, substantially as described.

2. In automatic weighing apparatus provided with weigh-scales and a delivery-spout, the combination of a horizontally-pivoted valve adapted to close the spout; means tending to turn the valve to close the spout; a lock-arm secured to the pivot of the valve; a pivoted trip-lever adapted to engage the lock-arm to hold the valve in its open position and weighted so that normally it tends to release the said lock-arm; the scale-beam provided with an adjustable contact-piece adapted when the beam is in its raised position to engage the trip-lever to hold it in position to engage the lock-arm; means for limiting the movement of the trip-lever; and means for stopping the motion of the valve as it reaches the closed position, substantially as described.

3. In automatic weighing apparatus provided with weigh-scales and a delivery-spout, the combination of a horizontally-pivoted valve adapted to close the spout; means tending to turn the valve to close the spout; a lock-arm secured to the pivot of the valve; a pivoted trip-lever adapted to engage the lock-arm to hold the valve in its open position and adjustably weighted so that normally it tends to release the said lock-arm; the scale-beam provided with an adjustable contact-piece adapted when the beam is in its raised position to engage the trip-lever to hold it in position to engage the lock-arm; means for limiting the movement of the trip-lever; and means for stopping the motion of the valve as it reaches the closed position, substantially as described.

4. In automatic weighing apparatus provided with weigh-scales and a delivery-spout, the combination of a horizontally-pivoted valve adapted to close the spout; means tending to turn the valve to close the spout; a lock-arm secured to the pivot of the valve; a pivoted

trip-lever adapted to engage the lock-arm to hold the valve in its open position and adjustably weighted so that normally it tends to release the said lock-arm; the scale-beam provided with an adjustable contact-piece adapted when the beam is in its raised position to engage the trip-lever to hold it in position to engage the lock-arm; adjustable means for limiting the movement of the trip-lever; and means for stopping the motion of the valve as it reaches the closed position, substantially as described.

5. In automatic weighing apparatus provided with weigh-scales and a narrow delivery-spout, the combination of a substantially vertical pivoted flap adapted by its movements to control the said spout; a weighted arm secured to the pivot of the flap and tending to cause the flap to occupy its cut-off position; an arm secured to the pivot and provided with a beveled end; and the scale-beam having a pin thereon adapted to be engaged by the beveled end of the said arm, substantially as described.

6. In automatic weighing apparatus provided with weigh-scales and a narrow delivery-spout, the combination of a substantially vertical pivoted flap adapted by its movements to control the said spout; an adjustably-weighted arm secured to the pivot of the flap and tending to cause the flap to occupy its cut-off position; an arm secured to the pivot and provided with a beveled end; and the scale-beam having a pin thereon adapted to be engaged by the beveled end of the said arm, substantially as described.

7. In automatic weighing apparatus provided with weigh-scales and a narrow delivery-spout, the combination of a substantially vertical pivoted flap adapted by its movements to control the said spout; a weighted arm secured to the pivot of the flap and tending to cause the flap to occupy its cut-off position; an arm secured to the pivot and provided with a bevel-sided end connected to the arm by a rule-joint; and the scale-beam having a pin thereon adapted to be engaged by the beveled end of the said arm, substantially as described.

8. In automatic weighing apparatus provided with weigh-scales and a narrow delivery-spout, the combination of a substantially vertical pivoted flap adapted by its movements to control the said spout; an adjustably-weighted arm secured to the pivot of the flap and tending to cause the flap to occupy its cut-off position; an arm secured to the pivot and provided with a bevel-sided end connected to the arm by a rule-joint; and the scale-beam having a pin thereon adapted to be engaged by the beveled end of the said arm, substantially as described.

9. In automatic weighing apparatus a delivery-spout; means for cutting off the flow of material through the said spout; a pivoted arm controlling the said means and having a bevel-sided end; and means normally tending to cause the parts to assume the cut-off position, in combination with weigh-scales, the beam of which continuously engages the beveled side of the end when the beam is up during the last stages of the weighing, and releases it when the beam descends to the position of balance, substantially as described

10. In automatic weighing apparatus the combination of a delivery-spout; partitions dividing the spout into a large passage-way at one side, a narrow passage-way in the center and a reservoir at one side, having a closed top with an opening therein over the central passage-way; valves pivoted by a common spindle and adapted to open and close the lower ends of the large passage-way and the reservoir; a substantially vertical flap pivoted so that it may be turned to direct material flowing through the small opening in the top of the reservoir either into the reservoir or into the narrow central passage-way; means normally held inoperative for causing the valves and flap to close the passage-ways and the bottom of the reservoir; and a scale-beam adapted, when acted upon by the delivery of a sufficient weight of material, to release successively the said means substantially as described.

11. In automatic weighing apparatus, the combination of a delivery-spout provided with a large stream-passage and a small stream-passage; oscillating mechanism for controlling each of said passages; arms connected to and oscillating with the said mechanism; wires connected to the said arms and engaging one another so that the opening of the large stream-passage will simultaneously open the small stream passage-way while the large stream passage-way may be cut off independent of the other; means tending to maintain the oscillating passage-closing mechanism in the closed position; means for normally retaining the said passage-closing mechanism in the open position; and a scale-beam adapted when acted upon by the delivery of a sufficient weight of material to release successively the closing mechanism of the two passages, substantially as described.

12. In automatic weighing apparatus the combination of a delivery-spout; partitions dividing the spout into a large passage-way at one side, a narrow passage-way in the center and a reservoir at one side; valves pivoted by a common spindle and adapted to open and close the lower ends of the large passage-way and the reservoir; a substantially vertical flap pivoted so that it may be turned to direct material flowing through the top of the reservoir either into the reservoir or into the narrow central passage-way; means normally held inoperative for causing the valves and flap to close the passage-ways and the bottom of the reservoir; and a scale-beam adapted, when acted upon by the delivery of a sufficient weight of material, to release successively the said means substantially as described.

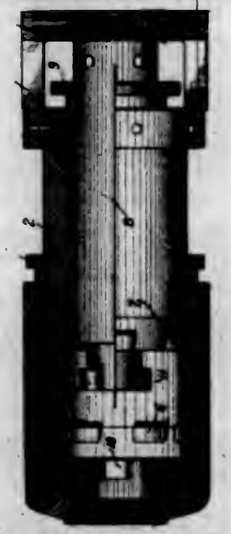
13. In automatic weighing apparatus, the combination of a delivery-spout provided with a large stream-passage and a small stream-passage; a scale-beam; means controlled by the scale-beam for closing the large stream-passage; means for cutting off the small stream-passage; a pivoted arm controlling the said means and having a bevel-sided end, and means normally tending to cause the arm to assume the cut-off position, the scale-beam being adapted during the final stage of the weighing when in its raised position to continuously engage the said beveled end and to release it when it drops, substantially as described.

14. In automatic weighing apparatus provided with weigh-scales and a delivery-spout, the combination of mechanism controlling the flow from the delivery-spout; a rocking lock-arm controlling the said mechanism; means tending to turn the controlling mechanism to the cut-off position; a pivoted trip-lever adapted to engage the lock-arm to hold the delivery-controlling mechanism in its feeding position and weighted so that it tends to release the said lock-arm; and the scale-beam adapted when in its raised position to engage the trip-lever to hold it in position to engage the lock-arm; substantially as described.

15. In automatic weighing apparatus provided with weigh-scales and a delivery-spout, the combination of a delivery-spout provided with two passages for material; mechanisms controlling the flow of said passages; rocking arms controlling said mechanisms; wires connected to the said arms and engaging one another so that the moving of one lock-arm to the feeding position simultaneously moves the other to the feed position, while permitting consecutive closing; means tending to retain the said passage-controlling mechanisms in the closed position; means for normally retaining the passage-controlling mechanisms in the feeding position; and a scale-beam adapted when acted upon by the delivery of a sufficient weight of material to release successively the closing mechanism of the two passages; substantially as described.

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755,035. **FLUID-PRESS.** ARCHIBALD M. O'BRIEN, Philadelphia, Pa., assignor to Niles-Bement-Pond Company of Jersey City, N. J. Filed Jan. 18, 1904. Serial No. 189,490. (No model.)



*Claim.*—1. In a fluid-press, the combination, substantially as set forth, of a cylinder, a circular series of lugs projecting inwardly from the circular wall thereof near its inner end, a second circular series of lugs rigidly supported by the cylinder inwardly beyond the first series and arranged in a circle of lesser diameter than that of the first series, an annular plunger working in the cylinder and having lugs upon its inner end adapted to interlock with the first series of lugs in the cylinder, and a plunger working within the annular plunger and having at its inner end a series of lugs adapted to interlock with the second series of lugs within the cylinder.

2. In a fluid-press, the combination, substantially as set forth, of a cylinder, a circular series of lugs projecting inwardly from the circular wall thereof near its inner end, a second circular series of lugs rigidly supported by the cylinder inwardly beyond the first series and arranged in a circle of lesser diameter than that of the first series, an annular plunger working in the cylinder and having lugs upon its inner end adapted to interlock with the first series of lugs in the cylinder, a plunger working within the annular plunger and having at its inner end a series of lugs adapted to interlock with the second series of lugs within the cylinder, a machine part disposed in front of the outer ends of the plungers to be operated by them alternatively or conjointly, and arms projecting from said machine part and adapted to straddle the projecting end of the inner plunger and abut upon the face of the annular plunger.



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755,036. **AUTOMATIC SIPHON-VALVE.** ARTHUR O'BRIEN, Chicago, Ill., assignor to Arthur H. Rugg and Thomas G. McCulloh, Chicago, Ill. Filed Jan. 23, 1902. Serial No. 90,911. (No model.)




*Claim.*—1. In a valve, the combination with a two-chambered valve-casing, of a valve-seat through which the chambers communicate, a valve-closure seated thereon, a peripheral flange on the valve-closure seating below the same, a valve-cylinder inclosing the valve closure and seat, and apertured adjacent to the discharge-orifice and a deflector movable with the valve-closure and acting to direct fluid toward the discharge-orifice.

2. In a valve, the combination with the casing comprising an inner and an outer chamber, a passage through which the chambers communicate, a valve-closure seated to close said passage, a valve-cylinder integral with the casing surrounding said valve-closure, and provided with an aperture directed toward the valve-orifice and so formed as to converge the fluid therein and a deflector located above said aperture and acting to deflect the fluid toward the orifice.

3. In a valve, the combination with a valve-casing having an unobstructed delivery, of a valve seated therein and comprising a valve-seat, a valve-closure therefor, a peripheral flange on the valve-closure extending below the valve-seat, a valve-cylinder inclosing the valve seat and closure, a deflecting-guide movable with the valve-closure and engaging over the valve-cylinder, and an aperture in the valve-cylinder directed toward the orifice and formed to converge the flow into the orifice.

4. The combination with a two-chambered valve-casing, of a sleeved passage connecting the chambers, a valve-closure seated thereon, a flange thereon extending below the top of the sleeve, a valve-cylinder inclosing the valve-closure and provided with an aperture opening toward the orifice and formed to converge the fluid thereinto, a deflecting-guide within said valve-cylinder located normally above said aperture and a guide-deflector located normally above the valve-cylinder and held from rotation by parts on the casing.

5. In a valve of the class described, a casing comprising an inner and an outer chamber, a valve-closure therein, deflecting means acting to converge the flow into the discharge-orifice, an upwardly-extending stem on the valve-closure, an adjustable cap on the casing, an adjusting-shaft adjustably engaged on the stem, a spring engaged in the cap and acting to hold the valve closed, said cap and adjusting-shaft being adapted for simultaneous adjustment, to vary the tension of the spring.

6. In a valve, the combination in a casing comprising inner and outer communicating chambers, the outer having an unobstructed delivery-orifice, of a valve-closure in the passage between the chambers, deflecting means adjacent thereto acting to converge the flow into the discharge-orifice, a stem on said closure, a cap adjustably secured on the casing and forming the top of the outer chamber, an adjusting-shaft passing through the cap and adjustably engaging the stem, a spring engaging against the cap and acting to close the valve, means on the adjusting-rod for lifting the valve-closure, and means for adjusting the cap and adjusting-shaft simultaneously to vary the tension of the spring.

7. In a valve, the combination with the valve-casing, of a reciprocating valve-closure thereon, deflecting means acting to converge the flow into the spout-orifice, an adjustable cap forming the top of the casing, a spring engaged in the cap and acting to hold the valve closed, an adjusting-shaft passing through the cap and adjustably connected with the valve-closure, means for adjusting the cap and adjusting the shaft simultaneously to vary the tension of the spring, and a lever pivoted on the outer end of the adjusting-shaft and adapted to actuate the valve.

8. In a valve of the class described, the combination with the valve-casing, of a cap thereon, an adjusting-shaft extending through and positively engaged in the cap and connected with the valve-closure, a spring engaged in the cap and acting to hold the valve closed, said cap and adjusting-shaft being similarly screw-threaded with the casing and valve-closure whereby rotation of the cap serves to adjust the tension of the spring and vary the adjustment of the adjusting-shaft, and a lever engaged on the adjusting-shaft and bearing at all times upon the cap by means affording an antifriction-bearing.

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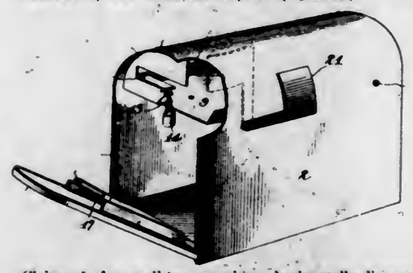
755,037. **GARMENT-FASTENING.** PETER ORLEANS, Dusseldorf, Germany. Filed Jan. 12, 1903. Serial No. 138,592. (No model.)



*Claim.*—A garment-fastening composed of a hook-and-eye member having an oblong attaching-eye of a width to snugly fit the thread, a garment having a perforated fold inclosing said eye, a machine-seam within the eye and flanked by the elongated sides thereof, and a pair of machine-seams at the front and back of the eye, substantially as specified.

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755,038. **MAIL-BOX.** CHARLES W. PALMER, St. Louis, Mo. Filed Nov. 6, 1903. Serial No. 180,072. (No model.)




*Claim.*—1. In a mail-box, a casing, a horizontally-disposed partition dividing the casing into a plurality of compartments each of which has an opening for the insertion of mail-matter, and means for moving the partition to permit the withdrawal of the mail from both compartments through the opening of the lowermost compartment, the partition, when lowered forming a chute for delivering the mail to the front of the box.

2. In a mail-box, a casing, a movable partition dividing the casing into upper and lower compartments each having an opening for the insertion of mail-matter, the partition being movable by gravity to form a mail-discharge chute for the passage of the mail from the upper compartment through the opening of the lower compartment.

3. In a mail-box, a casing having upper and lower compartments each provided with an opening for the insertion of mail, the opening of the lower compartment serving as a withdrawal-opening for the contents of both compartments, and a movable partition separat-

ing the said compartments, said partition when lowered forming an inclined chute along which the mail from the upper compartment may travel to the front opening.

4. In a mail-box, a casing, a pivoted horizontal partition dividing the casing into upper and lower compartments each of which has a separate mail-insertion opening, said partition being movable to form an inclined delivery-chute for the mail of the upper compartment.

5. In a mail-box, a casing, a pivotally-mounted horizontal partition dividing the casing into upper and lower mail-compartments each having a separate mail-insertion opening, said partition being movable to form an inclined delivery-chute for the contents of the upper compartment, and means for normally locking said partition in an approximately-horizontal position.

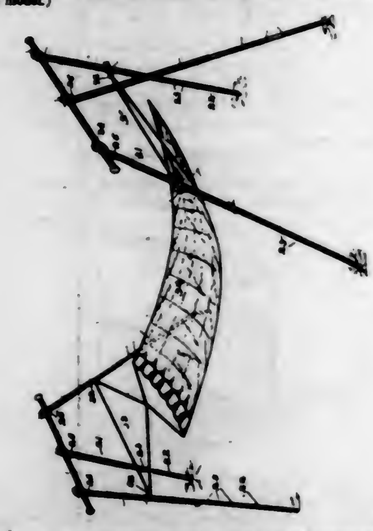
6. In a mail-box, a casing, a horizontal partition pivoted to the casing at a point near the rear end thereof and dividing said casing into upper and lower compartments each of which has a separate insertion-opening, said partition being movable to form an inclined chute for delivering the contents of the upper compartment to the front end of the lower compartment.

7. In a mail-box, a casing, a pivotally-mounted horizontal partition dividing the casing into a plurality of compartments of which the lower is open and the upper is provided with a mail-insertion opening, a locking means for holding the partition in approximately-horizontal position, and an external door for closing the opening of the lower compartment.

8. In a mail-box, a casing having an open front end, a hinged door for closing said end, a vertical plate arranged at the upper portion of the box and provided with a letter-receiving opening, said plate having a rearwardly-extending flange, a partition pivoted at its rear end to the side walls of the box and adapted to fit under the flange, a staple carried by the flange and extending through an opening in the front end of the partition, a locking means for engaging the staple, and auxiliary compartments arranged on the movable door, substantially as specified.

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**755,039. ADJUSTABLE AND COLLAPSIBLE SUPPORT.** ESTELLA G. PATTEN, Chicago, Ill. Filed July 25, 1903. Serial No. 166,939. (No model.)



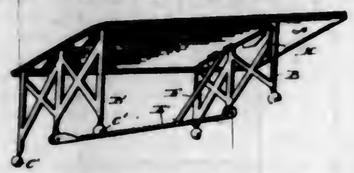
*Claim.*—1. The combination with a main bar, of a series of supporting-legs therefor, a securing-clamp located on the upper portion of each of said legs and having an opening to receive the main bar, means to fix the clamps on said bar, said clamps constructed so that they, as well as the legs on which they are secured, may have an angular movement longitudinally with respect to the main bar, substantially as described.

2. The combination with a main bar, of a series of supporting-legs therefor, a securing-clamp located on the upper portion of each of said legs, said clamps comprising two semicircular pieces in cross-section having in their lower ends a socket to receive the leg and in their upper ends a concavity, a split spherical piece having an opening for the main bar and located in said cavity, and means to clamp the members of the said piece on said bar, substantially as described.

3. In a support for a hammock, the combination with two main or connecting bars, of a series of supporting-legs therefor, a securing-clamp located on the upper portion of each of said legs and having an opening to receive the main bars, means to fix the clamps on said bars, said clamps constructed so that they, as well as the legs on which they are secured, may have an angular movement longitudinally with respect to the bar, substantially as described.

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**755,040. ARM-REST.** ALBERT R. PECK, Knoxville, Tenn. Filed June 26, 1903. Serial No. 163,165. (No model.)



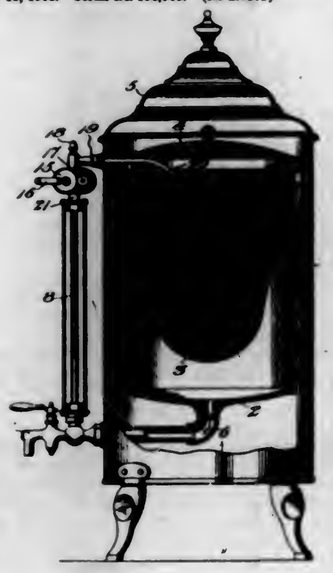
*Claim.*—1. In an arm-rest, the combination with a plane plate of leg-like supports hinged to the lower side of the plate between its lateral edges to fold in the same direction against the plate, a link pivotally connecting the supports at some distance above their free ends, and means for locking the link at any desired point in the path it follows as the supports fold; whereby the plate is secured at any desired height.

2. In an arm-rest, the combination with a plane plate, of leg-like supports hinged to the lower side of the plate between its lateral edges to fold in the same direction against the plate, a ratchet-bar pivotally connecting the supports at some distance above their free ends and moving longitudinally as the supports fold, and a pawl pivoted to the plate and adapted to engage said ratchet-bar and lock it at any point in its path.

3. In an arm-rest, the combination with a plate of two supports hinged to the lower side of the plate to swing in the same direction from perpendicular position, a ratchet-bar pivotally connecting said supports above their free ends, a pawl pivoted to the plate in position to engage the ratchet-bar at any point in its path and resist swinging movement of the supports, and a handle located beneath the marginal portion of the plate and operatively connected with the pawl, substantially as set forth.

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**755,041. COFFEE-URN.** BERT PETERMAN, Dallas, Tex. Filed May 13, 1903. Serial No. 156,963. (No model.)





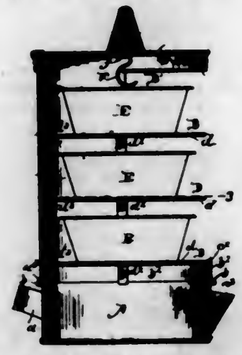
*Claim.*—1. In combination with an urn and its gage, a removable pump attached to said gage whereby a continuous circuit of liquid may be drawn from and into the urn through said gage, and an air-vent connected with the pump to be opened when said pump is not in use to cause the liquid to return to its level

2. In combination with an urn and its gage, a removable pump-casing at one end of the gage, a channel between the casing and the urn and a pump within the casing whereby a continuous flow of liquid is drawn from the urn and through the channel by way of said gage.

3. In combination with an urn and its gage, a removable pump-casing at one end of the gage, a channel between the casing and the urn, a pump within said casing whereby a continuous circuit of liquid may be drawn from and into the urn by way of the channel through the gage, and an air-vent connected to said pump-casing to be opened when the pump is not in use thereby causing the liquid to return to its level.

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**755,042. STEAM-COOKER.** PAUL J. PHILLIPS, Chicago, Ill. Filed Dec. 29, 1902. Serial No. 137,083. (No model.)



*Claim.*—1. In a steam-cooker, the combination of a bottom tank for containing water, a semicylindrical body having an opening on one side with a continuing ring of the body at the top and at the bottom of the opening and attached at its lower edge to the upper edge of the tank with an exterior head at the joint between the body and the tank, and a semicylindrical sliding door located exteriorly of and conforming to the curvature of and adapted to close the opening of the body and having a continuing ring at the top and at the bottom and riding at its lower edge on the bead between the body and the tank as a track, substantially as described.

2. In a steam-cooker, the combination of a bottom tank for containing water, a semicylindrical body having an opening on one side with a continuing ring of the body at the top and at the bottom of the opening and attached at its lower edge to the upper edge of the tank with an exterior bead at the joint between the body and the tank, a semicylindrical sliding door located exteriorly of and conforming to the curvature of and adapted to close the opening of the body and having a continuing ring at the top and at the bottom and riding at its lower edge on the bead between the body and the tank as a track, and a series of shelves spaced apart and located one above the other within the body, substantially as described.

3. In a steam-cooker, the combination of a bottom receptacle provided on one side with an inlet-opening for supplying water thereto, a semicylindrical body having an opening on one side with an upper ring and a lower ring continuing from and completing the circle at the top and bottom of the body and attached at its lower edge to the upper edge of the receptacle with an exterior bead at the joint, and a sliding door of semicylindrical shape adapted to close the opening in the body and having an upper ring and a lower ring conforming to the curvature of the body and the upper and lower rings thereof and located exteriorly of the body, substantially as described.

4. In a steam-cooker, the combination of a bottom receptacle provided on one side with an inlet-opening for supplying water thereto, a semicylindrical body having an opening on one side with an upper ring and a lower ring continuing from and completing the circle at the top and bottom of the body and attached at its lower edge to the upper edge of the receptacle with an exterior bead at the joint, a sliding door of semicylindrical shape adapted to close the opening in the body and having an upper ring and a lower ring conforming to the curvature of the body and the upper and lower rings thereof and located exteriorly of the body and a series of open shelves spaced apart and located one above the other within the body, substantially as described.

5. In a steam-cooker, the combination of a bottom tank, having an outwardly-turned flange on its upper edge, a spout on one side of the tank and opening therointo for supplying water to the tank, a semicylindrical body having an opening on one side with an upper ring and a lower ring continuing from and completing the circle at the top and bottom of the body and the lower ring having a reversely-turned flange to receive the flange at the top of the tank uniting the tank and body and forming an exterior bead at the joint, a top attached to the upper end of the body and the upper ring and having its periphery projecting beyond the circle of the body and ring, a sliding door of semicylindrical shape adapted to close the opening in the body and to fit between the bead around the body at its lower end and the projecting edge of the top and having an upper ring and a lower ring conforming to the curvature of the body and of the upper and lower rings of the body and located exteriorly of the body, and a vertically-disposed stop on the body and adapted to limit the travel of the door, substantially as described.

6. In a steam-cooker, the combination of a semicylindrical body having an opening on one side thereof, a row of rests on the body adjacent to each side of the opening, a row of back rests on the body centrally in front of the opening, each back rest consisting of an upper and lower part with a space between them, and a series of shelves located within the body, each shelf consisting of a rim and crossing strips for the rims to enter the double back rest and to lie upon the single side rests supporting the shelf within the body, substantially as described.

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**755,043. FOLDING STOOL.** GEORGE W. PIKE and FRANK M. ANDRUS, Newburg, Ohio. Filed Nov. 27, 1903. Serial No. 183,856. (No model.)



*Claim.*—1. In a stool, in combination, a post having a socket in its head, a tilting seat having a slotted stem on the under side thereof movable into or out of the socket, and a pin in the post, extending across the socket and through the slot.

2. In a stool, the combination, of a post having forks at the upper end and a socket between the forks, a seat, a stem extending from the seat and having a slotted tongue fitting between the forks and into the socket, and a pivot-pin extending between the forks and through the slot, permitting the seat to be lifted and tilted on the pivot.

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**755,044. BOX-PULL.** MYERS S. RAFIELD, Colorado Springs, Colo. Filed Dec. 15, 1903. Serial No. 185,237. (No model.)



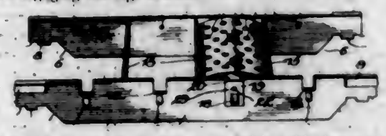
*Claim.*—The combination, in a box-pull, of square shafts, a cylindrical casing inclosing spiral springs, screw-caps for said casing, with grips having on the inner sides thereof projecting shoulders, and teeth, substantially as described.

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**755,045. FURNACE.** JOSEPH RABINOFF, Lawrence, Kans. Filed Sept. 14, 1903. Serial No. 173,149. (No model.)

*Claim.*—1. In a furnace, a frame comprising side members pro-

vided at the ends thereof with extended shoulders having downwardly-extending lugs, in combination with end spacing members each consisting of a cap fitted between said shoulders and provided at its ends with U-shaped flanges engaging said shoulders and having slots engaging the lugs thereof.



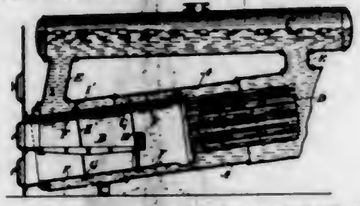
2. In a furnace, a grate-frame, comprising side bars provided with extended shoulders having downwardly-extending lugs and enlargements or reinforcements at their upper edges, in combination with end pieces consisting of caps interposed between said shoulders and provided with U-shaped flanges engaging said shoulders and bearing against the enlargements thereof, said flanges being provided with slots engaging the downwardly-extending lugs of said shoulders.

3. In a furnace, a furnace-casing having supporting-flanges and a grate-frame supported upon said flanges, said frame being composed of suitably-spaced side pieces having extended shoulders, and end pieces, the latter consisting of caps having U-shaped flanges in which the extended shoulders of the side pieces are supported, said caps being mounted upon the supporting-flanges of the furnace-casing.

4. In a furnace, a grate-frame provided with notches in one side thereof and with wedge-shaped projections below said notches, in combination with boxings having grooved sides engaging the edges of said notches, said boxes being provided with slots to engage the wedge-shaped projections of the frame.

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**755,046. STEAM-BOILER. DAVID W. ROSS, Amherst, Canada. Filed Apr. 9, 1903. Serial No. 151,732. (No model.)**



*Claim.*—1. The combination in a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box made of plates having flanged joints and a calking-ring in one of said joints made eccentric, the upper part of which ring extends from said plates to the crown of the boiler-shell.

2. The combination in a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box made of plates having flanged joints, a calking-ring in one of said joints which projects inwardly from the plates toward the boiler-shell more and more from below upwardly, so that at its upper part it extends to the crown of the boiler-shell and cuts off the space between the shell and the plates.

3. The combination of a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box made of plates having outwardly-extending flanges, bolts through the flanges and a baffle-plate arranged transversely of the boiler, the upper part thereof extending from the plates to the crown of the boiler-shell.

4. The combination in a boiler provided with means whereby continuous water circulation is afforded, of an internal fire-box, a baffle-plate of eccentric construction located between the fire-box and the shell-plates of the boiler which closes the space between them at the top, but increasingly opens it from the top downward.

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**755,047. BOTTLE-SEAL. ALEXANDER R. ROBERTSON, Pass Christian, Miss. Filed Mar. 17, 1903. Serial No. 98,561. (No model.)**

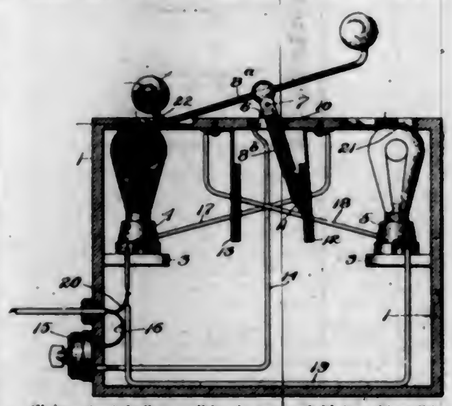
*Claim.*—1. The combination with a bottle having the neck thereof formed with exterior annular flanges or beads spaced from each other, of a spring-catch formed of a strip of sheet metal corrugated transversely and bent into annular form to lie between said beads, the upper edge of said strip at the outer corners of the corrugations being cut away or beveled for the purpose specified, and a cap adapted to fit over the beads on the neck of the bottle and to receive the spring-catch, said cap having an internal shoulder adapted to engage the lower edge of the spring-catch, to hold the cap in place.



2. In a bottle-seal, the combination with the neck of the bottle and with the sealing-cap thereof, said parts having beads or shoulders, for the purpose specified, of a spring-catch for holding the cap in position, said catch being formed of a sheet of spring metal corrugated transversely and bent into annular form to lie around the neck of the bottle, substantially as described, the upper edge of said strip of metal at the outer corners of the corrugations thereof being cut away or beveled to facilitate placing the cap in position.

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**755,048. AUTOMATIC CIRCUIT-CLOSER. JAMES L. RUSSELL, Boston, Mass. Filed Nov. 2, 1903. Serial No. 179,433. (No model.)**



*Claim.*—1. A hollow walking-beam; a fluid in said walking-beam; a heater coöperatively arranged with relation to one end of the walking-beam; a heater coöperatively arranged with relation to the other end of the walking-beam, and means for operating the heaters to cause the fluid in the walking-beam to shift and oscillate the latter.

2. A hollow walking-beam; a fluid in said walking-beam; a heater coöperatively arranged with relation to one end of the walking-beam; a heater coöperatively arranged with relation to the other end of the walking-beam; and means for operating the heaters alternately to cause the fluid in the walking-beam to shift and oscillate the latter.

3. A hollow walking-beam; a fluid in said walking-beam; a heater coöperatively arranged with relation to one end of the walking-beam; a heater coöperatively arranged with relation to the other end of the walking-beam, and automatic means for operating the heaters alternately to cause the fluid in the walking-beam to shift and oscillate the latter.

4. A hollow walking-beam; a fluid in said walking-beam; a heater coöperatively arranged with relation to one end of the walking-beam; a heater coöperatively arranged with relation to the other end of the walking-beam, and automatic means controlled by the walking-beam for operating the heaters alternately to cause the fluid in the walking-beam to shift and oscillate the latter.

5. The combination with an automatic motor comprising a hollow walking-beam; a fluid in said walking-beam; a lamp or the like coöperatively arranged with relation to one end of the walking-beam; a lamp or the like coöperatively arranged with relation to the other end of the walking-beam, and means for operating the lamps alternately to cause the fluid in the walking-beam to shift and oscillate the latter, of a casing inclosing the lamps and made with a transparent wall.

6. The combination with a motor comprising a hollow walking-beam; a fluid in said walking-beam; a lamp or the like coöperatively arranged with relation to one end of the walking-beam; a lamp or the like coöperatively arranged with relation to the other end of the walking-beam, and means for operating the lamps alternately to cause the fluid in the walking-beam to shift and oscillate the latter, of a casing inclosing the lamps made with a removable transparent wall.

7. In combination, a hollow walking-beam a fluid in said walking-beam; an electric heater coöperatively arranged with relation to one end of the walking-beam; an electric heater coöperatively arranged with relation to the opposite end of the walking-beam; circuits for said heaters and means for operating the circuits and heaters alternately to cause the fluid in the walking-beam to shift and oscillate the latter.

8. In combination, a hollow walking-beam; a fluid in said walking-beam; a lamp coöperatively arranged with relation to one end of the walking-beam; a lamp coöperatively arranged with relation to the opposite end of the walking-beam; circuits for said lamps, and means for operating the circuits and lamps alternately to cause the fluid in the walking-beam to shift and oscillate the latter.

9. In combination, a hollow walking-beam; a fluid in said walking-beam; a lamp coöperatively arranged with relation to one end of the walking-beam; a lamp coöperatively arranged with relation to the opposite end of the walking-beam; circuits for said lamps and a switch controlled by the walking-beam for operating the circuits and lamps alternately to cause the fluid in the walking-beam to shift and oscillate the latter.

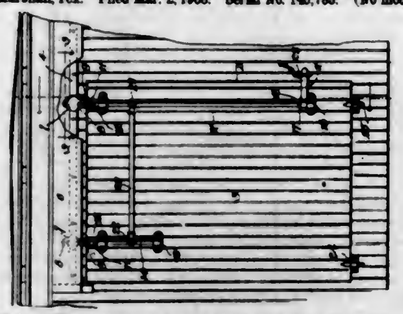
10. In combination, a hollow walking-beam; a fluid in said walking-beam; a lamp coöperatively arranged with relation to one end of the walking-beam; a lamp coöperatively arranged with relation to the opposite end of the walking-beam; circuits for said lamps; a switch controlled by the walking-beam for operating the circuits and lamps alternately to cause the fluid in the walking-beam to shift and oscillate the latter, and a casing inclosing the lamps and made with a transparent wall.

11. In combination, a hollow walking-beam made with an enlargement at each end; a fluid within and partly filling said walking-beam; a lamp coöperatively arranged with relation to one end of the walking-beam; a lamp coöperatively arranged with relation to the opposite end of the walking-beam; circuits for said lamps; a pair of fixed contacts in said circuits; a movable contact in said circuits operated by the walking-beam, and a casing inclosing said lamps made with a transparent wall.

12. In combination, a hollow walking-beam made with an enlargement at each end; a fluid partly filling said walking-beam; a lamp coöperatively arranged with relation to one end of the walking-beam; a lamp coöperatively arranged with relation to the opposite end of said walking-beam; circuits for said lamps; a switch controlled by the walking-beam for operating the circuits and lamps alternately to cause the fluid in the walking-beam to shift and oscillate the latter, and a switch for controlling said circuits independently of the walking-beam.

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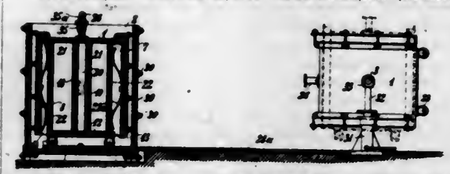
**755,049. CAR-DOOR. THOMAS W. SALING and JAMES MCKIEL, Marshall, Tex. Filed Mar. 2, 1903. Serial No. 145,783. (No model.)**



*Claim.*—The combination with a framework having a doorway, of a track or guide associated with the framework, a pair of hangers mounted for travel on the track or guide and each provided with a horizontal arm, a door sustained by the hangers and seated in the doorway to close the same, a pair of head-blocks eccentrically pivoted respectively to the horizontal hanger-arms, a pair of vertical shafts operatively connected with the door and fixedly associated respectively with the head-blocks, means for rotating one of the shafts, and a rod connecting the shafts whereby they are simultaneously rotated for moving the door directly outward transversely from the doorway.

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**755,050. APPARATUS FOR DYEING, &c. PAUL SCHIRP, Barmen, Germany. Filed Mar. 18, 1903. Serial No. 148,285. (No model.)**

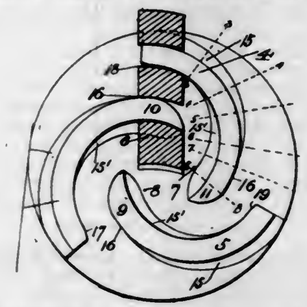


*Claim.*—1. In an apparatus for dyeing, bleaching, washing and otherwise treating textile materials by liquids a fixed vat 2, having removable side walls 29, screws 30, for connecting tightly said side walls to the vat in combination with a tub 1, rollers 28 carrying said tub, rails $28^a$ in said vat allowing to pull the tub out of the vat without raising it therein, pins 3 at the side walls of the tub, lifting devices 31, 32 for taking up said pins 3 of the tub and raising or lowering and turning the tub 1 conveniently outside of said vat 2, the whole as described and illustrated and for the purpose set forth.

2. In an apparatus for dyeing, bleaching, washing and otherwise treating textile materials by liquids a fixed vat 2 having removable side walls 29, screws 30 for connecting tightly said side walls to the vat, rails $28^a$ in the bottom of said vat, in combination with a tub 1, rollers 28 carrying said tub on rails $28^a$, a pump $26^a$ at the side of said vat and connected to the tub 1 by pipes 26, 27 perforated diaphragms 18, 19 in the middle of said tub and forming a chamber 20 between them for introducing the liquid therein and free spaces 21 at both sides thereof, false perforated sides 22 for each of these spaces, closing covers 7, 8, perforated tubes $35^a$ on the top of the tub for taking up trial cops 35, the whole as described and illustrated and for the purpose set forth.

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**755,051. RADIOHELICAL CAM-GEARING. HENRY J. SCHMICK, Hamburg, Pa. Filed July 16, 1903. Serial No. 165,733. (No model.)**



*Claim.*—1. A driving-shaft, a member supported thereon and provided with a plurality of separate radiohelical working members having transverse angular engaging surfaces on their onter sides; in combination with a revoluble member provided with peripheral radial members engaged successively by the angular surfaces of said working members, and a power-transmitting shaft.

2. A driving-shaft, a member supported thereon and provided with a plurality of separate radiohelical working members having transverse angular engaging surfaces on both sides thereof; in combination with a revoluble member provided with peripheral radial members engaged successively by the angular surfaces of said working members, and a power-transmitting shaft.

3. A driving-shaft, a member supported thereon and provided with a plurality of separate radiohelical working members having engaging surfaces of varying angularity on their outer sides; in combination with a revoluble member provided with peripheral radial members engaged successively by the angular surfaces of said working members, and a power-transmitting shaft

4. A driving-shaft, a member supported thereon and provided with a plurality of radiohelical working members having engaging surfaces of varying angularity on both sides thereof; in combination with a revoluble member provided with peripheral radial members engaged successively by the angular surfaces of said working members, and a power-transmitting shaft.

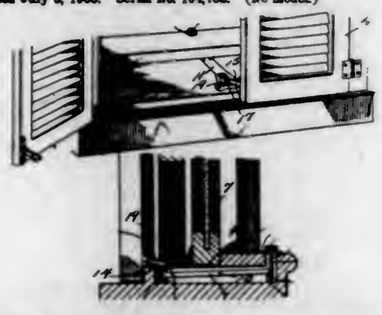
5. A driving-shaft, a member supported thereon and provided with a plurality of radiohelical working members having oppositely-inclined transverse angular engaging surfaces on opposite sides thereof; in combination with a revoluble member provided with peripheral radial members engaged successively by the angular surfaces of said working members, and a power-transmitting shaft.

6. A driving-shaft, a member supported thereon and provided with a plurality of radiohelical working members overlapping each other at their adjacent ends and whose adjacent overlapping sides are vertical and then incline in opposite directions, throughout the length of the members; in combination with a revoluble member provided with peripheral radial members engaged successively by said working members, and a power-transmitting shaft.

7. A revoluble member provided with peripheral radial members; in combination with a driving-shaft, a member supported thereon and provided with a plurality of radiohelical working members of a thickness approximately equal to the width of spaces between said peripheral members, and having angular surfaces engaging the peripheral members.

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**755,052. BLIND-FASTENER.** HENRY A. SCHMIDT, Phœbus, Va. Filed July 3, 1903. Serial No. 164,732. (No model.)



*Claim.*—In a window construction the combination with shutters carrying pivoted fastening-hooks of a recessed sill, a perforated plate closing the recess and disposed for engagement of its perforation by the fastening-hooks, a lever pivoted within the recess and having a transverse head lying below the perforation in the plate and adapted for engagement of the hooks to disengage them from the perforation when the lever is moved upon the pivot, a plunger pivoted to the end of the lever at the other side of the pivot from the transverse head and passing upwardly through the sill a spring disposed between the last-named end of the lever and the bottom of the recess to hold the transverse head normally depressed.

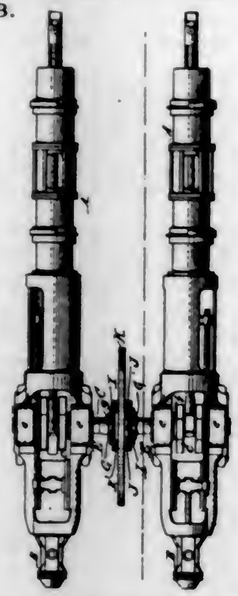
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**755,053. SHAFT-COUPLING.** CLARENCE N. SCOTT, Buffalo, N. Y., assignor to International Steam Pump Company, New York, N. Y. Filed Dec. 3, 1903. Serial No. 183,550. (No model.)

*Claim.*—1. The combination of a shaft comprising a plurality of non-interlocking sections arranged axially in line, non interlocking flanges arranged on the opposing ends of said sections, bolts passing lengthwise through said flanges and rigidly connecting the same, a sectional ring surrounding two adjacent flanges, bolts connecting the sections of the ring and rigidly clamping the same on both flanges, and keys interposed between said ring and flanges, substantially as set forth.

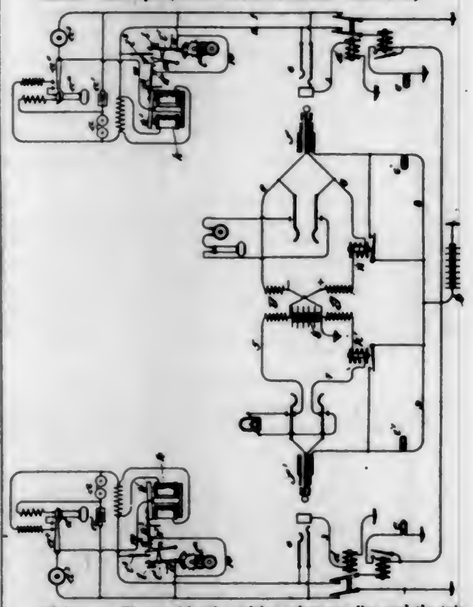
2. The combination of divided bearings, a shaft comprising a plurality of non-interlocking sections rotating in said bearings and provided with shoulders engaging the side of said bearings for holding the shaft against axial movement therein, non-interlocking flanges arranged on the opposing ends of said sections, longitudinal bolts rigidly connecting said flanges, a sectional wheel having its hub surrounding two adjacent flanges, bolts connecting the sections of the wheel and clamping the same rigidly on both flanges, and longitudinal keys seated in grooves formed in the bore of the wheel and the periphery of the flanges, substantially as set forth.

**755,058.**



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**755,054. SERVICE-METER FOR TELEPHONE-LINES.** CHARLES R. SCRIBNER, Chicago, and FRANK R. MCBERTY, Evanston, Ill., assignors to the Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 3, 1900. Serial No. 11,100. (No model.)



*Claim.*—1. The combination with a telephone-line and the telephone apparatus thereof at the substation and means for making connection with the line at the central office, of a polarized electromagnet at the substation and mechanism controlled thereby for rendering the telephone apparatus inoperative, and means for applying to the line at the central office current of either polarity for operating said magnet, substantially as described.

2. The combination with a telephone-line, of the telephone apparatus thereof and a polarized magnet controlling the operation of said telephone apparatus, an answering-plug and a calling-plug for



making connection with the line in the central office, and sources of current of different polarity connected with the said plugs; whereby the operative condition of the telephone apparatus is determined by the plug with which connection is made to the line, as described.

3. The combination with a telephone-line and the telephones at the substation thereof, a service-meter or toll-charging device at the substation and means for manually operating said meter, mechanism adapted to render the telephonic apparatus inoperative, and a magnet controlling said mechanism, an answering-plug for making connection with the line at the central office, and a source of current connected therewith adapted to excite the magnet to prevent the use of the telephone when a call is answered, and a device operated manually in the actuation of the meter for rendering said telephones operative, as described.

4. The combination with a telephone-line and transmitting and receiving telephones therefor, of a polarized relay and a shunt of the transmitting-telephone controlled thereby, an answering and a calling plug for making connection with the line either in response to a call or in compliance with an order from a different line, respectively, a source of current connected with the answering-plug adapted to operate the polarized relay to close the shunt, and a source of current connected with the calling-plug adapted to open the shunt, and independent means at the subscriber's station for opening the shunt, said means controlling a service-meter, substantially as described.

5. In combination with a telephone-line, means for calling the central office from the station thereof, and telephone apparatus at the station, of a device at the substation adapted to render an essential part of said telephone apparatus inoperative, and a magnet controlling said device, an answering and a calling plug for making connection with the line at the central office, a source of current applied through the answering-plug adapted to operate said magnet, an independent manually-operated device at the substation adapted to render the telephone apparatus operative, and a service-meter or toll-collecting appliance operated by said device, substantially as described.

6. The combination with a telephone-line and a receiving and a transmitting telephone thereof at the substation, and means for calling the office from the substation, of an electromagnet controlling the current through the transmitting-telephone, an independent manually-operated device also controlling the current through the transmitting-telephone, and a service-meter actuated by said device in its movement, an answering and a calling plug at the central office for making connection to the line, and a source of current automatically applied through said answering-plug in making connection with the line for actuating said magnet to break the current through the transmitting-telephone, as described.

7. The combination with the telephones and the line-circuit thereof, of a magnet controlling the operative condition of the telephones, and means for applying current to the line at the central office to excite said magnet, a manually-operated push and a service-meter actuated thereby, mechanism adapted to break the control of said magnet over the telephone, said mechanism being actuated by the push, and means for retaining said mechanism in position for its actuation by the push during the excitement of the magnet, as described.

8. The combination with the telephones and the telephone-line, of the polarized magnet and the switch-contacts controlling the current through the transmitting-telephone, a catch carried by the armature of the magnet, a manually-operated push and a service-meter actuated thereby, and a lever also operated by said push adapted to be brought into engagement with said catch, and means controlled by said lever for destroying the control of the polarized magnet over the current through the telephone, substantially as described.

9. In combination in a service-meter for telephone-lines the following elements: telephone apparatus, a magnet controlling the circuit of the telephones, and means at the central office for exciting the magnet to render the telephone apparatus inoperative; a service-meter at the substation, a push for manually operating it, and switch-contacts of the push controlling the circuit of the line to render the line inoperative in all positions of the push save its normal, and a device independent of the magnet operated by said push controlling the condition of the telephone apparatus to make them operative; said magnet being adapted to retain said device in position when it has been actuated; whereby the user of the telephone is compelled to register an answered call, and is prevented from making subsequent calls without registering, as described.

10. The combination with a telephone-line extending from a substation to a central office, of a magnet connected with the line at the substation, and mechanism controlled by said magnet for rendering inoperative the telephone apparatus at the substation, whereby the use of such telephone apparatus may be prevented, a source of current at the central office adapted to energize said magnet, to actuate said mechanism, means for connecting said source of current with the line, a toll device at the substation, and a releasing appliance actuated in the operation of said toll-counter, for restoring the operative condition of the substation-telephone apparatus, substantially as set forth.

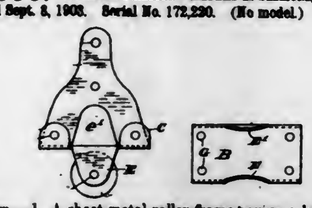
11. In a connection-registering appliance, the combination with a relay device adapted to be connected to line, the armature of which is designed to be operatively actuated by current of predetermined character, of a controlling-circuit extending to the instrument served, adapted to be opened and closed by said relay, whereby said instrument may be rendered temporarily inoperative, a meter device and manually-controlled means for actuating the same and for restoring the controlled instrument to service, substantially as set forth.

12. In a connection-registering device of the class described, the combination with a polarized relay adapted to be connected to line, of a circuit-controlling armature therefor adapted to be actuated by current of given polarity, means controlled by said armature for temporarily rendering inoperative the associated or controlled instrument, a meter device and means for actuating said armature and meter device, where the instrument may be restored to service and a connection is registered, substantially as set forth.

13. In a connection-register for telephone-lines, the combination with a polarized electromagnet adapted to be connected in circuit with the telephone instrument, of an armature designed to respond operatively to current of a given polarity, a controlling-circuit governed thereby adapted to render the telephone instrument temporarily inoperative, a counting-train and means for jointly actuating the same and for restoring the instrument to service, substantially as set forth.

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**755,055. ROLLER-FRAME.** ALBERT L. SIMMONS, Bristol, Conn. Filed Sept. 8, 1903. Serial No. 172,220. (No model.)



*Claim.*—1. A sheet-metal roller-frame having a base-plate and a pair of roller-ears integral with and extending downwardly from said base-plate, one or more of said ears having an inward bend extending up to and forming a concavity in said base-plate.

2. A sheet-metal roller-frame comprising a base-plate and a plurality of roller-ears extending downwardly from said base-plate, said ears having holes for the reception of a roller-journal and one or more of the ears having an inward bend extending from its hole up to and forming a concavity in said base-plate.

3. A sheet-metal roller-frame having a base-plate and a side plate integral with said base-plate and extending upward at one side of the same, and a downwardly-extending roller-ear at each of two opposite sides of said base-plate, one of said ears being integral with one of said plates and cut out of the other plate.

4. A sheet-metal roller-frame having a base-plate and a side plate integral with said base-plate and extending upward at one side of the same, and a roller-ear integral with one of said plates and cut out of the other plate and extending downwardly from said base-plate, and one or more upwardly-extending lugs on the opposite side of said base-plate.

5. A sheet-metal roller-frame comprising a base, a roller-ear turned down centrally of each of two opposite sides thereof, an arm extending upwardly from one of said sides and joined to the base on both sides of the roller-ear, and one or more ears turned upward from the opposite side of the base.

6. A sheet-metal roller-frame comprising a base, a roller-ear turned down centrally from each of two opposite sides thereof, and an arm extending upwardly from one of said sides and joined to the base on both sides of the roller-ear which is located on that side.

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**755,056. ROLLER-FRAME.** ALBERT L. SIMMONS, Bristol, Conn. Filed Sept. 8, 1903. Serial No. 172,221. (No model.)

*Claim.*—1. A sheet-metal roller-frame having a base-plate and a pair of downwardly-extending ears, and having one or more in-

ward corrugations extending across the line of juncture of at least one of said ears and said base-plate and including a part of said ear and base-plate.



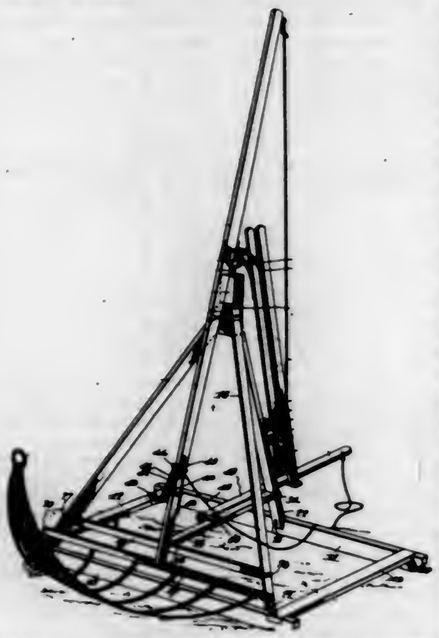
2. A sheet-metal roller-frame having a base-plate and a pair of downwardly-extending ears, and having a corrugation at each side of each ear, the axes of said corrugations extending across the lines of juncture of the ears and base-plate.

3. A sheet-metal roller-frame having a base-plate and a pair of downwardly-extending ears, said ears being dished inwardly and having corrugations extending transversely of the line of juncture of the ears and base-plate, and located at each side of the ears.

4. A sheet-metal roller-frame having a base-plate and a pair of downwardly-extending ears and also having a corrugation located at each side of each ear and formed partly in the ear and partly in the base-plate, said ears and corrugations lying wholly within the main side lines of the base.

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**755,057. HAY-STACKER.** JOHN C. SHAVER, Edina, Mo., assignor of one-half to O. D. Jones, Edina, Mo. Filed Apr. 3, 1903. Serial No. 150,954. (No model.)



*Claim.*—1. In a device of the class described, a supporting-frame, a vertical boom-support carried by said frame, a swivel-standard carried by said boom-support, a boom carried by said standard and vertically movable therein, a load-support carried by one end and an operating-cable carried by the other end of said boom, a laterally-extended frame movably connected at one end with said swivel-standard and at the other end with the supporting-frame, means for actuating said laterally-extended frame to cause the rotation of said boom, and cable-guiding means carried by said movable frame, substantially as described.

2. In a device of the class described, a supporting-frame, a vertical boom-support carried by said frame, a swivel-standard carried by said boom-support, a boom carried by said standard and vertically movable therein, a load-support carried by one end and an operating-cable carried by the other end of said boom, a movable frame formed with spaced supports connected with said standard by one end and with the supporting-frame at their other ends and adapted to receive the boom between them when said boom is operated, means for actuating said movable frame, and cable-guiding means carried by said spaced supports, substantially as described.

3. In a device of the class described, a supporting-frame, a vertical boom-support carried by said frame, a swivel-standard carried by said boom-support, a boom carried by said standard and vertically movable therein, a load-support carried by one end and an operating-cable carried by the other end of said boom, a movable frame having spaced supports connected with said standard at one end and with a supporting lever-arm leading from their other ends, said arm being pivotally attached to the supporting-frame in vertical alinement with said standard, and cable-guiding means carried by said movable frame, substantially as described.

4. In a device of the class described, a supporting-frame, a vertical boom-support carried by said frame, a swivel-standard carried by said boom-support, a boom carried by said standard and vertically movable therein, a load-support carried by one end and an operating-cable carried by the other end of said boom, a movable frame formed with spaced supports having laterally-extended brackets at one end secured to said standard, said supports being connected at their other ends with said supporting-frame, said spaced supports being adapted to receive the boom between their upper ends when said boom is actuated, means for actuating said movable frame, and cable-guiding means carried by said spaced supports, substantially as described.

5. In a device of the class described, a supporting-frame, a vertical central boom-support, inclined bars between said central support and the extremities of the frame, a standard mounted for rotation upon said boom-support, a boom carried by said standard and vertically movable therein, a movable frame laterally extended and movably connected at one end with said standard and at the other to said inclined bar-supports, and cable-guiding means carried by said movable frame, substantially as described.

6. In a device of the class described, a supporting-frame, a vertical boom-support carried by said frame, a swivel-standard carried by said boom-support, a boom carried by said standard and vertically movable therein, and carrying a load-supporting sling at one end, a trip-hook carried by said boom and adapted to engage said sling, and a trip-catch yieldably engaging said trip-hook, and means under the control of the operator for releasing said trip-catch, substantially as described.

7. In a device of the class described, a base-frame, a vertical boom-support carried by said base-frame, a swivel-standard carried by said boom-support, a boom carried by said standard and vertically movable therein, and carrying a load-supporting sling at one end, a trip-hook intermediately pivoted upon said boom and adapted to engage said sling by one end, a trip-catch yieldably engaging the other end of said trip-hook, and means under the control of the operator for releasing said trip-catch, substantially as described.

8. In a device of the class described, a supporting-frame, a boom-support carried thereby, a vertically-movable boom mounted on said support, a load-support carried by one end of said boom and operating means by the other end thereof, a movable frame hingedly secured at one end to said supporting-frame and having spaced bars connected at their upper ends with said boom-support.

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**755,058. DOOR-STOP.** JOHN H. SHAW, New Haven, Conn., assignor to Sargent & Company, New Haven, Conn., a Corporation of Connecticut. Filed Jan. 16, 1904. Serial No. 189,339. (No model.)

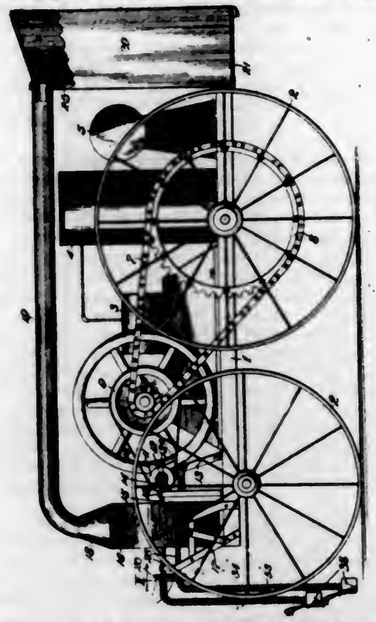


*Claim.*—1. In a door-stop, the combination with the bracket adapted to be secured to the door, or other article; of a screw pivotally secured to said bracket; means for yieldingly locking said screw in certain positions with said bracket; a cylindrical casing adapted to be screwed onto said screw; and a pin inserted transversely in said screw and limiting the longitudinal movement of said cylindrical casing in said screw, substantially as described.

2. In a door-stop, the combination with the bracket adapted to be secured to the door, or other article; of a screw pivotally secured to said bracket; means for yieldingly locking said screw in certain positions with said bracket; a cylindrical casing having internal threading to engage said screw, the diameter of the rest of the interior of said casing being greater than the portion having the internal threading; and a pin inserted transversely in said screw, and being of a length greater than the lesser diameter of the threaded portion of said casing, substantially as described.



**755,059. COTTON-PICKING MACHINE.** JOHN W. SHAW, Lawrence, Kans. Filed Nov. 27, 1903. Serial No. 182,823. (No model.)



*Claim.*—1. In a machine of the character described, a fan-casing, a driven fan therein, one or more tubes or thimbles communicating with said casing, a driven flexible tube communicating with each thimble, a casing journaled at the front end of and communicating with said tube and having an opening, a pair of toothed rollers journaled in said casing for direct contact with the cotton-bolls, means for rotating said rollers inwardly and rearwardly to pick the cotton within the casing, and means for creating a suctional blast through the casing and the communicating tube and thimble.

2. In a machine of the character described, a fan-casing, a driven fan therein, one or more tubes or thimbles communicating with said casing, a driven flexible tube communicating with each thimble, a casing journaled at the front end of and communicating with said tube and having an opening, a pair of toothed rollers journaled in said casing for direct contact with the cotton-bolls, driven gearing rotating said rollers inwardly and rearwardly to pick the cotton within the casing, partitions for the casing between said rollers and said gearing, and means for creating a suctional blast through the casing and the communicating tube and thimble.

3. In a machine of the character described, a fan-casing, a driven fan therein, one or more tubes or thimbles communicating with said fan-casing, a driven flexible tube communicating with each thimble, a thimble secured to the front end of said tube and equipped at its front end with a crown-gear, a casing journaled on said thimble and inclosing said crown-gear, a pair of shafts journaled in said casing and equipped with cotton-picking rollers, gearing connecting said rollers at one end, a cog-wheel mounted at the opposite end of one of said rollers, an idler-gear connecting said cog-wheel with the crown-gear, and partitions between the ends of said rollers and said gearing.

4. In a machine of the character described, a fan-casing, a driven fan therein, one or more tubes or thimbles communicating with said casing, a driven pinion journaled on the front end of each thimble, and provided with a tubular extension registering with said thimble, a flexible tube secured upon each pinion extension, a thimble secured in the front end of each tube and equipped with a crown-gear, a flexible spiral shaft encircling the tube and connected rigidly at one end with the pinion, and at the other end with the crown-gear, a casing journaled on the thimble and inclosing the crown-gear, a pair of shafts journaled in said casing and equipped with cotton-picking rollers, gearing connecting said rollers at one end, a cog-wheel mounted at the opposite end of one of said rollers, an idler-gear connecting said cog-wheel with the crown-gear, and partitions between the ends of said rollers and said gearing.

5. In a machine of the character described, a fan-casing, a driven fan therein, one or more tubes or thimbles communicating with said casing, a driven pinion journaled on the front end of each thimble and provided with a tubular extension registering with said thimble, a flexible tube secured upon each pinion extension, a thimble secured in the front end of each tube and equipped with a crown-gear, a flexible spiral shaft encircling the tube and connected rigidly at one end with the pinion, and at the other end with the crown-gear, a casing journaled on the thimble and inclosing said crown-gear, a handle secured rigidly to said casing, a pair of shafts journaled in said casing and equipped with cotton-picking rollers, gearing connecting said rollers at one end, a cog-wheel mounted at the opposite end of one of said rollers, an idler-gear connecting said cog-wheel with the crown-gear, and partitions between the ends of said rollers and said gearing

6. In a machine of the character described, a fan-casing, a driven shaft extending through the same and provided with a fan within the casing, a gear-wheel upon said shaft, one or more tubes or thimbles communicating at their rear ends with the fan-casing, a pinion journaled on each thimble and meshing with the fan-shaft gear, a flexible tube rigidly connected at its rear end to said pinion and communicating with said thimble, a crown-gear having a thimble fitting in and secured to the front end of said tube, a spiral flexible shaft encircling said tube and connected rigidly at its opposite ends with the pinion and crown-gear, a casing journaled on the last-named thimble and inclosing the crown-gear, a pair of shafts journaled in said casing and equipped with cotton-picking rollers, gearing connecting said rollers at one end, a cog-wheel mounted at the opposite end of one of said rollers, an idler-gear connecting said cog-wheel with the crown-gear, and partitions between the ends of said rollers and said gearing.

7. In a machine of the character described, the combination with a suction-fan and means for operating the same, and a flexible rotating tube, of a casing communicating with and journaled at the front end of said tube, and having an opening opposite said tube, and a pair of rollers journaled in said casing between said opening and said tube, and rotating rearwardly and inwardly, each roller comprising a shaft, a series of superposed collars formed in their proximate faces with registering radial grooves connected at their inner ends, and teeth projecting from said collars and comprising substantially V-shaped wires secured in said registering grooves with their ends projecting outwardly beyond the periphery of the collars.

8. A cotton-picking machine, comprising a wheeled frame, a motor mounted on said frame and geared to certain of its wheels, a crate carried at the rear end of said frame and provided in the upper end of its rear wall with a screen-covered opening, a suctional fan mounted on the front end of said frame and geared to said motor, a tube connected to the upper portion of said suctional fan, and communicating with the crate at the opposite side from and in line with said screen-covered opening, means for picking the cotton, and flexible tubes connecting said means with the suctional fan.

9. A cotton-picking machine, comprising a wheeled frame, a motor mounted on said frame and geared to certain of its wheels, a crate carried at the rear end of said frame and provided in the upper end of its rear wall with a screen-covered opening, and having a hinged bottom, a suctional fan mounted on the front end of said frame and geared to said motor, a tube connected to the upper portion of said suctional fan, and communicating with the crate at the opposite side from and in line with said screen-covered opening, means for picking the cotton, and flexible tubes connecting said means with the suctional fan

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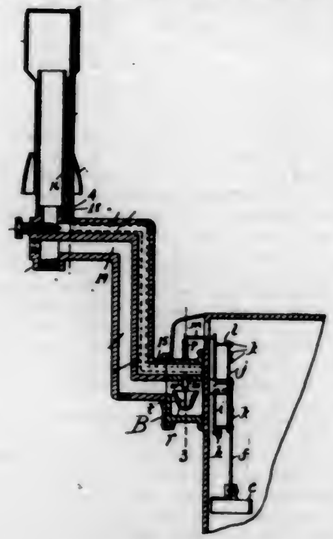
**755,060. TIME GAS-LIGHTING MECHANISM.** NATHANIEL H. SHAW, Boston, Mass. Filed Apr. 14, 1903. Serial No. 152,544. (No model.)

*Claim.*—1. In a device of the class described a burner; a gas-conduit connecting with the main supply adjacent its outlet, projecting laterally from said supply and returning to discharge into said burner; a valve interposed in said conduit: and a time mechanism for operating said valve.

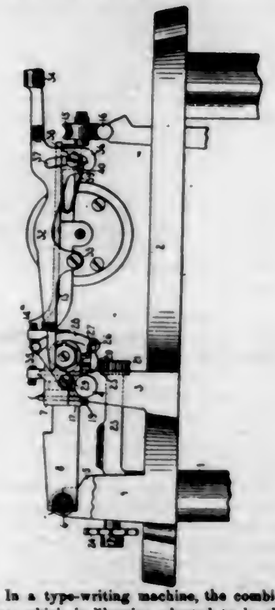
2. In a device of the character described the burner in combination with the angular conduit, H, projecting laterally and downwardly from the base thereof and provided with ducts 19 and 22 arranged substantially as specified: a valve connecting said ducts: and a time mechanism for operating said valve.

3. In combination, the burner, the gas-chamber: the angular gas-conduit projecting laterally and downwardly therefrom and provided with the main and pilot-light ducts opening into said gas-chamber: valves interposed between said ducts within said chamber: and a time mechanism on said conduit for operating said valves substantially in the manner specified.

4. The supply, the burner, the pilot-burner and the lantern housing the same in combination with the gas-conduit having ducts connecting said supply with said burners within said housing and projecting laterally and downwardly therefrom outside said housing: valves interposed between the supply and burner ducts: and a time mechanism on said conduit for operating said valves substantially as described.



## 755,061. TYPE-WRITING MACHINE. CHARLES H. SHEPARD, New York, N. Y., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Original application filed July 17, 1903, Serial No. 115,923. Divided and this application filed Jan. 7, 1903. Serial No. 138,151. (No model.)



*Claim.*—1. In a type-writing machine, the combination of a swinging carriage which is likewise adapted to be shifted transversely for upper and lower case printing, a carriage-feed element carried by said carriage, a coöperating feed element carried by the framing of the machine, and a carriage-release key at the front of the carriage which is adapted to disengage the feed elements whether the carriage be in the printing position or is swung back out of the operative position.

2. In a type-writing machine, the combination of a truck, a swinging platen-frame, a transversely-movable carriage feed-rack carried by the truck, a coöperating feed element carried by the framing of the machine, and a hand-operated carriage-release key carried by the platen-frame and extending to the front portion thereof, and at all times in coöperative relation with the feed-rack to move it transversely in order to disengage it, whether the platen-frame be swung back or is in the operative position.

3. In a type-writing machine, the combination of a truck, a swinging platen-frame connected thereto, a transversely-movable carriage feed-rack carried by the truck, a coöperating feed element carried by the framing of the machine, a carriage-release key carried by the platen-frame and extending to the front portion thereof, and a pivoted device connected to the said feed-rack and operatively connected at all times to release the key, whereby the rack may be moved transversely in order to disengage it, whether the platen-frame be swung back or is in the operative position.

4. In a type-writing machine, the combination of a truck, a swinging platen-frame which is likewise adapted to be shifted transversely for upper and lower case printing, a transversely-movable carriage feed-rack carried by said truck, a coöperating feed element carried by the framing of the machine, and a carriage-release key which is carried by the platen-frame and extending to the front portion thereof and coöperates with the feed-rack to move the same transversely to disengage the feed elements whether the platen-frame be in the printing position or is swung back out of the operative position.

5. In a type-writing machine, the combination of a swinging carriage which is likewise adapted to be shifted transversely for upper and lower case printing, a transversely-movable carriage feed-rack, a coöperating feed element, a carriage-release key carried by the carriage and extending to the front thereof, and a coöperating lever pivoted to the carriage and connected to the rack, whereby a movement of the release-key will effect a disengagement of the rack from its coöperating feed element whether the platen-frame be in the operative position or be swung back.

6. In a type-writing machine, the combination of a swinging carriage, a feed element carried by the carriage, coöperating carriage-feeding devices carried by the framing of the machine, means for shifting the platen transversely for upper and lower case printing and independently of the feed element carried by the carriage, a pivoted angle-lever connected to the feed element on the carriage, a carriage-release key carried by the carriage and in operative relation to but disconnected from the angle-lever, the relation and disposition of the parts being such that the release of the carriage may be effected through said release-key whether the carriage be in the operative position or be swung back to the inoperative position.

7. In a type-writing machine, the combination of a truck, a swinging platen-frame connected to the truck and adapted to be shifted relatively thereto for upper and lower case writing, a carriage-feed element movably mounted on said truck, an angle-lever pivoted to the truck and connected to said feed element, coöperating carriage-feeding devices carried by the framing of the machine, and a carriage-release key carried by the platen-frame and coöperating with the said angle-lever to disengage the carriage-feed elements whether the platen-frame be in the operative position or be swung back to the inoperative position.

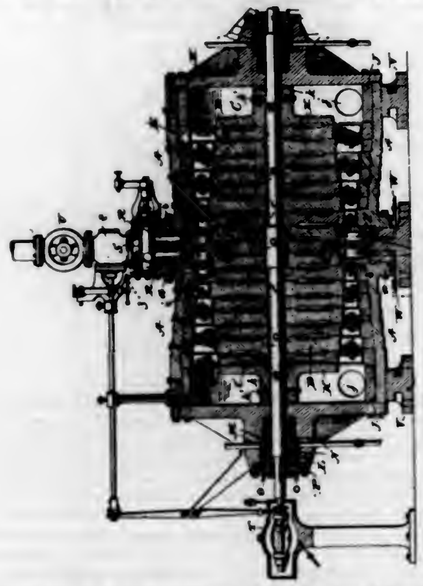
8. In a type-writing machine, the combination of a carriage, a carriage-feed element carried thereby, coöperative carriage-feeding devices carried by the framing of the machine, a lever pivoted to the carriage and pivoted to the feed element carried by the carriage, and a release-key carried by the carriage and extending to the front portion thereof and in operative relation to said lever whether the carriage be in the operative position or be swung back to the inoperative position.

9. In a type-writing machine, the combination of a truck, a swinging platen-frame connected to move relatively to the truck for upper and lower case writing, a laterally-movable feed-rack carried by the truck, feeding devices coöperating with said feed-rack, a release-key carried by the platen-frame and extending to the front portion thereof and disconnected from the feed-rack but in operative relation thereto, to release the rack from engagement with the said feeding device whether the platen-frame be in the operative position or be swung back to the inoperative position.

10. In a type-writing machine, the combination of a truck, a swinging platen-frame connected to move relatively to the truck for upper and lower case writing, a laterally-movable feed-rack carried by the truck, a feed-pinion with which said feed-rack meshes, an angle-lever pivoted to the truck and connected to the feed-rack, and a release-key lever pivoted to the platen-frame and disconnected from the angle-lever but in operative relation thereto whether the platen-frame be in the operative position or be swung back to the inoperative position, whereby the platen may be shifted for upper and lower case writing without interference by the release-key lever and the carriage may be released by said lever whether the platen-frame be in the operative position or be swung back to the inoperative position.



## 755,062. STEAM-TURBINE. FRANK D. SHEPHERD, Salt Lake City, Utah. Filed Aug. 11, 1903. Serial No. 169,120. (No model.)



*Claim.*—1. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest between the two cylinders, a series of pistons in each cylinder consisting of disks having peripheral blades that successively increase in length, and rings in each cylinder having inwardly-projecting blades, said rings being of successively-increasing diameter, the steam-chest having ports that deliver steam first to the piston with the shortest peripheral blades.

2. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the two cylinders, a series of pistons in each cylinder having steam-engaging blades, a series of blade-carrying rings in the cylinder that increase in diameter, beginning nearest the steam-chest, and a removable head closing each cylinder end.

3. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders, a series of pistons having fluid-engaging blades in each cylinder, a series of rings in each cylinder that increase in diameter beginning nearest the steam-chest, a removable head closing the outer end of the cylinder, and a filling-ring next the removable head having an opening or openings coinciding with the exhaust opening or openings of the cylinder.

4. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders consisting of a chambered ring, the sides of the ring having ports, a series of pistons having steam-engaging blades in each cylinder, a shaft on which the pistons are mounted having a shoulder to engage an end one of the pistons, and a clamping-disk engaging the other end one of the pistons.

5. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders, consisting of a chambered ring, the sides of the ring having ports, a series of pistons having steam-engaging blades in each cylinder, a shaft on which the pistons are mounted, having a shoulder to engage an end one of the pistons, and a clamping-disk engaging the other end one of the pistons, said clamping-disk having a hub adapted to engage the cylinder end.

6. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders, consisting of a chambered ring, the sides of the ring having ports, a series of pistons having steam-engaging blades in each cylinder, a shaft on which the pistons are mounted, having a shoulder to engage an end one of the pistons, a clamping-disk engaging the other end one of the pistons, a series of blade-carrying rings in each cylinder that increase in diameter successively, beginning nearest the steam-chest, and a filling-ring in the cylinder having a hole or holes alining with an exhaust port or ports in the cylinder.

7. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders, a series of pistons in each cylinder, consisting of disks having peripheral blades that successively increase in length, beginning nearest the steam-chest, a shaft on which said disks are mounted, a shoulder or enlargement on the shaft engaging an end one of the series of disks, a clamping-disk engaging the other end piston-disk of the series, a series of blade-carrying rings in each cylinder, that successively increase in diameter beginning nearest to the steam-chest, a removable head closing the outer end of the cylinder, a filling-ring in the cylinder next the said head, having a hole or holes alining with an exhaust port or ports in the cylinder, and means for holding said spacing-ring and said blade-carrying rings from rotation.

8. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders, outwardly-extending flanges on the two cylinders, bolts passing through said flanges into the sides of the steam-chest, a series of pistons in each cylinder, having steam-engaging blades that successively increase in length beginning nearest the steam-chest, a series of rings in each cylinder that successively increase in diameter beginning nearest the steam-chest, and a removable head closing the outer end of each cylinder.

9. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders, a series of pistons in each cylinder, a shaft on which said pistons are mounted, a ring having two annular chambers, and separated by a partition, the side walls of said ring having ports for the passage of steam from each chamber into the cylinder, and a reversing-valve.

10. In a steam-turbine, the combination of two cylinders in line with each other, a steam-chest intermediate the cylinders which consists of a chambered ring having ports leading to the cylinders, a series of pistons in each cylinder, a shaft on which the pistons are mounted, and a partition intermediate the two series of pistons within and fitting said chambered ring.

11. In a steam-turbine, the combination of two cylinders, a steam-chest intermediate the cylinders having a two-chambered ring, ports opening through each side of the ring, a series of pistons in each cylinder, and a partition between the two series of pistons comprising a disk and an inwardly-projecting flange on said ring.

## 755,063. PIN-CLASP. WILLIS G. SHOCKEY, Chicago, Ill. Filed May 11, 1903. Serial No. 156,506. (No model.)



*Claim.*—1. In a pin-clasp, the combination of a clasping-bar provided at one end with a clasping-lip formed by giving the material composing the bar an upward curve and doubling back the material upon itself beneath the bar to form a socket, a clasping-loop pivotally mounted on the bar, and a pin pivotally mounted on the bar and adapted to have its point engaged by the socket, substantially as described.

2. In a pin-clasp, the combination of a clasping-bar provided at one end with a loop or sleeve formed integral with the bar and provided at its other end with an upwardly-projecting lip formed by giving the material composing the bar an upward turn and doubling back the material upon itself to form a socket beneath the bar, a clasping-loop passing through the loop in the bar, and a pin having in its end an eye adapted to encircle the clasping-loop and provided with a point adapted to be engaged by the socket, substantially as described.

3. In a pin-clasp, the combination of a clasping-bar provided at one end with a loop or sleeve formed integral with the bar and provided at its other end with an upwardly-projecting lip formed by giving the material composing the bar an upward turn and doubling back the material upon itself to form a socket beneath the bar, a clasping-loop passing through the loop in the bar, and a pin provided

on its end with a coil adapted to encircle the clasping-loop and provided with a yoke adapted to contact the under face of the clasping-bar after the pin-point has been sprung into the socket, substantially as described.

4. In a pin-clasp, the combination of a clasping-bar provided at one end with two loops or sleeves having a space between them and provided at its other end with a clasping-lip formed by giving the material composing the bar an upward turn and doubling back the material upon itself to form a socket beneath the clasping-bar, the clasping-loop passing through the sleeves in the bar, and a pin provided on its end with a coil encircling the clasping-loop between the loops of the bar and adapted to have its point sprung into the socket, substantially as described.

5. In a pin-clasp, the combination of a clasping-bar provided at one end with two loops or sleeves having a space between them and provided at its other end with a clasping-lip formed by giving the material composing the bar an upward turn and doubling back the material upon itself to form a socket beneath the clasping-bar, the clasping-loop passing through the sleeves in the bar, and a pin provided at its end with a triple coil encircling the clasping-loop and provided with a yoke adapted to contact the under face of the clasping-bar to arrest the movement of the pin and allow the pin-point to be sprung under tension into the socket, substantially as described.

6. In a pin-clasp, the combination of a clasping-bar provided at one end with a sleeve adapted to receive a clasping-loop and provided at the other end with a lip formed of two sections by giving the material composing the bar an upward turn and doubling back the material upon itself to form a socket beneath the bar, a tongue cut from one of the sections of the lip and passed through a hole in the other to unite the two sections, and a pin pivotally mounted with respect to the bar and adapted to have its point engaged by the socket substantially as described.

7. In a pin-clasp, the combination of a clasping-loop, a clasping-bar provided at one end with a sleeve and provided at the other end with a lip formed of two sections by giving the material composing the bar an upward turn and doubling back the material upon itself to form a socket beneath the bar, a tongue cut from one of the sections of the lip and passed through a hole in the other to unite the two sections, and a pin provided on its end with a coil adapted to encircle the clasping-loop and provided with a yoke adapted to contact the under face of the clasping-bar after the pin-point has been sprung into the socket, substantially as described.

8. In a pin-clasp, in combination with a clasping-bar and socket, a pin pivotally mounted with respect to the bar and consisting of a shank provided at one end with a sleeve formed by bending the material composing the pin to have an initial exterior loop terminating in a yoke passing around the shank of the pin, the yoke terminating in a final exterior loop the latter terminating in an interior loop, from which the shank projects through the yoke, substantially as described.

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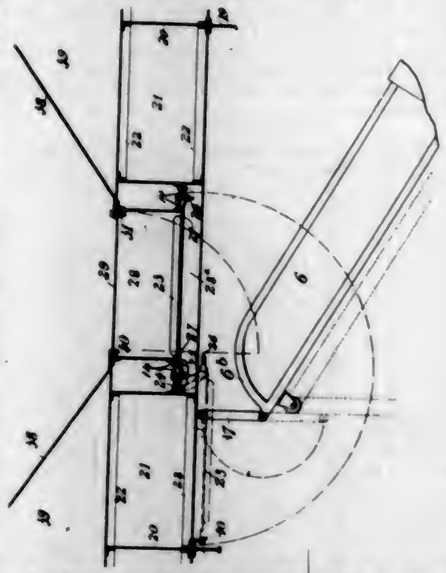
**755,064. APPARATUS FOR DISCHARGING LOOSE CARGO FROM VESSELS. HARRY SMOOMITH, Ormiston, Erith, England. Filed Oct. 10, 1902. Serial No. 126,770. (No model.)**

*Claim.*—1. For facilitating the discharge of loose cargo, a navigable vessel having a cargo-discharge opening through the lower portion of its hull, a water-tight door secured to said vessel and adapted to close said opening, a supplementary door secured to said vessel inside said water-tight door, said two doors being independently attached and supported, whereby the weight of the loose cargo on the inner door will not be transmitted to the outer water-tight door.

2. For facilitating the discharge of loose cargo, a navigable vessel having cargo-discharge openings through the lower portion of its hull, water-tight doors hinged at one side to said vessel so as to open outward, hinge-bolts attached to said vessel and adapted to hold said doors in a position to close said openings in a water-tight manner, and supplementary doors hinged to said vessel at the inner portion of said openings and arranged to open outward.

3. For facilitating the discharge of loose cargo, a navigable vessel having discharge-openings through the lower portion of its hull, false sides arranged to incline outward toward the said openings, water-tight doors adapted to be secured to said vessel so as to close said openings, and supplementary doors secured to said vessel at the inner side of said water-tight doors.

4. For facilitating the discharge of loose cargo, a navigable vessel having cargo-discharge openings through the lower portion of its hull, seats surrounding the outer ends of the openings and located between said openings and the outer surface of the vessel's hull, water-tight doors secured to said vessel so as to close against said seats and be located inside the outer surface of said hull, and supplementary doors located at the inner ends of said openings.



5. A navigable vessel having a cargo-discharge opening through the lower portion of its hull, a pair of independently supported and fastened doors secured over said opening, one of said doors being secured at the inner portion of said opening and the other being made water-tight and secured at the outer portion of said opening, and means whereby both said doors may be opened outwardly.

6. For facilitating the discharge of loose cargo, a navigable vessel having cargo-discharge openings through its bottom, water-tight doors hinged at one side to the bottom of said vessel so as to open downward and adapted to be held in the position to close said openings in a water-tight manner by hinge-bolts attached to the vessel, and supplementary doors hinged to the bottom of said vessel at the upper part of said openings and arranged to open downward.

7. For facilitating the discharge of loose cargo, a navigable vessel having discharge-openings through its bottom, false sides arranged to incline downward toward the said openings, water-tight doors secured to the bottom of said vessel and adapted to close said openings, and supplementary doors secured to the bottom of said vessel above said water-tight doors.

8. For facilitating the discharge of loose cargo, a navigable vessel having cargo-discharge openings through the lower portion of its hull, outer main doors for closing said openings in a water-tight manner, links for jointing each of said doors at one edge to said vessel, means for detachably securing the outer edge of each door to said vessel, and supplementary doors arranged at the inner side of said main doors and at a distance therefrom.

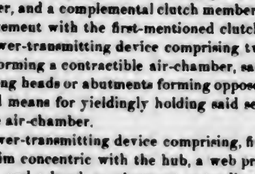
9. A navigable vessel having cargo-discharge openings through the lower portion of its hull, separate main and supplementary doors adapted to close and open said openings, and longitudinal stiffening means adapted to strengthen the lower portion of said vessel, substantially as described.

10. A navigable vessel having cargo-discharge openings through the lower portion of its hull, separate main and supplementary doors adapted to close and open said openings, a pair of longitudinal girders arranged like bilge-keels at the under side of the vessel, longitudinal girders arranged inside the vessel, and cross members connected to said longitudinal girders, substantially as described.

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**755,065. IRONING-BOARD ATTACHMENT. FRED K. SMALL, Lisbon Falls, Me. Filed July 18, 1903. Serial No. 166,143. (No model.)**

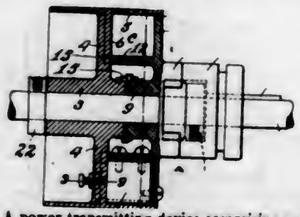
*Claim.*—1. An ironing-table having a socket with a covering-plate therefor having an elongated aperture, in combination with a sleeve-board having a supporting-standard terminating in a T-head with the arms thereof extending longitudinally of said sleeve-board, and with a reduced neck adjacent to said arms, corresponding in diameter to said aperture and adapted for insertion in said socket when said sleeve-board is turned at right angles to said table, the standard being enlarged adjacent said neck to form a supporting-shoulder for holding said T-head out of engagement with the bottom of the table-socket.



2. A supporting-standard having an apertured plate extending laterally from one end and provided at its other end with a T-head with the arms thereof extending at right angles to said apertured plate, said standard having a reduced neck portion adjacent the arms of said head and a laterally-extending shoulder formed at the juncture of the body of the standard and the neck to provide means for engaging a supporting-surface.

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**755,066. POWER-TRANSMITTING DEVICE. WILLIAM R. SMITH, Buffalo, N. Y. Filed July 18, 1903. Serial No. 166,120. (No model.)**



*Claim.*—1. A power-transmitting device comprising a plurality of rotatable sections collectively forming a contractible air-chamber, and means carried by one section to limit the independent rotation of the other section to contract the chamber and form a cushion of compressed air therein.

2. A power-transmitting device comprising a plurality of rotatable sections collectively forming a contractible air-chamber, and means carried by one section to limit the independent rotation of the other section said chamber having a restricted air vent or outlet to permit the gradual escape of air from said chamber.

3. A power-transmitting device comprising two rotary sections collectively forming a contractible air-chamber, said sections having heads or abutments which compress the air in said chamber and meet to positively engage the sections.

4. A power-transmitting device comprising two rotatable sections collectively forming a contractible air-chamber, one section carrying means to limit independent rotary movement of the other, one of said sections having a power-receiving portion and the other a clutch member, and a complemental clutch member movable into and out of engagement with the first-mentioned clutch member.

5. A power-transmitting device comprising two rotary sections collectively forming a contractible air-chamber, said sections having air-compressing heads or abutments forming opposed ends of the air-chamber, and means for yieldingly holding said sections in position to extend the air-chamber.

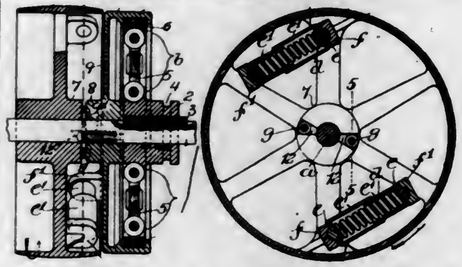
6. A power-transmitting device comprising, first, a section having a hub, a rim concentric with the hub, a web projecting inwardly from the rim, and a head or abutment extending crosswise of the rim; secondly, another section having a hub, a web projecting outwardly therefrom, an annular flange projecting from one side of the web, a head or abutment extending crosswise of the annular flange, and a clutch member projecting from the opposite side of the web, said rim, webs, annular flange, and abutments forming a segmental compressible air-chamber of which the abutments are the ends, a spring connecting the two sections and yieldingly holding them in position to extend the air-chamber; thirdly, a shaft on which the hubs of said sections are loosely rotatable; and fourthly, a clutch member rotatively engaged with the shaft and movable into and out of engagement with the first-mentioned clutch member.

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**755,067. POWER-TRANSMITTING DEVICE. WILLIAM R. SMITH, Buffalo, N. Y. Filed Aug. 10, 1903. Serial No. 168,851. (No model.)**



*Claim.*—1. A power-transmitting device comprising a driven member having an adjustable clutch part mounted to slide on the shaft and rotatively engaged therewith, a driving member composed of a primary section and a secondary section, the primary section being formed to engage a driver, while the secondary section is provided with a clutch part adapted to engage the clutch part on the driven member, means for yieldingly transmitting power from the primary section to the secondary section, whereby the motion of the secondary section and of the driven member engaged therewith may be retarded by an increased load, and means actuated by such retardation for moving the adjustable clutch part to disconnect the driving member from the driven member



2. A power-transmitting device comprising a shaft, an adjustable clutch part mounted to slide on the shaft and rotatively engaged therewith, a primary driving-section loosely mounted on the shaft, a secondary driving-section loosely mounted on the shaft beside the primary section and having a clutch part adapted to engage the clutch part on the shaft, yielding connections between the said sections permitting the motion of the secondary section and of the shaft engaged therewith to be retarded by an increased load, and means actuated by such retardation for moving the adjustable clutch part to disconnect the driving member from the driven member.

3. A power-transmitting device comprising a shaft, a clutch part mounted to slide on the shaft and rotatively engaged therewith, a secondary driving-section mounted loosely on the shaft and having a clutch part adapted to engage the said sliding clutch part, push-pins movable in said secondary section to displace the sliding clutch part, said push-pins being normally held out of engagement with said clutch part, a primary driving-section loosely mounted on the shaft, and power-transmitting springs connecting the two sections, the primary section being provided with means for moving the push-pins against the sliding clutch part when the springs have received a predetermined load.

4. A power-transmitting device comprising a driven member having an adjustable clutch part, a driving member composed of a primary section and a secondary section, the latter having a clutch part formed to engage the said adjustable clutch part, a compression-spring interposed between bearings or abutments on said sections and adapted to yieldingly transmit motion from the primary to the secondary section, means operated by a predetermined compression of the spring for separating the clutch parts, and means for retarding the compression of the spring when the inertia of the driven member is being overcome.

5. A power-transmitting device comprising a driven member having an adjustable clutch part, a driving member composed of a primary section and a secondary section, the latter having a clutch part formed to engage the said adjustable clutch part, a yielding connection between the two sections composed of, first, a telescopic air-chamber, one part of which is engaged with the primary section and the other with the secondary section, and secondly, a compression-spring, said connection permitting the movement of the secondary section and of the shaft engaged therewith to be retarded, and means operated by the retardation of the secondary section for separating the clutch parts.

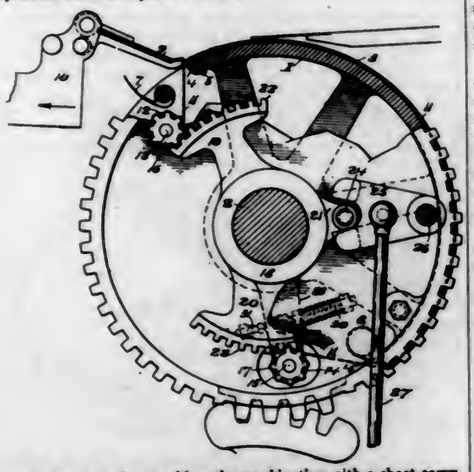
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**755,068. SHEET-DELIVERY MECHANISM. WILLIAM SPALCKHAVER, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Nov. 3, 1902. Serial No. 130,534. (No model.)**

*Claim.*—1. In a printing-machine, the combination with a sheet-carrying cylinder, of a delivery mechanism, a tympan on the cylinder, and means for giving the tympan a movement with respect to the cylinder after the delivery mechanism receives the sheet to shift the sheet on the cylinder, substantially as described.

2. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a tympan on the cylinder, and means

for giving the tympan a movement with respect to the cylinder after the delivery mechanism receives the sheet to shift the sheet on the cylinder, substantially as described.



3. In a printing-machine, the combination with a sheet-carrying cylinder, of a delivery mechanism including suitable grippers for seizing the edge of the sheet, a movable sheet-carrier on the cylinder, and means for giving the carrier a movement after the grippers have seized the sheet to shift the sheet on the cylinder, substantially as described.

4. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism including suitable edge-grippers, a movable sheet-carrier on the cylinder, and means for giving the carrier a movement with respect to the cylinder after the grippers have seized the sheet to shift the sheet on the cylinder, substantially as described.

5. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism including suitable grippers, a tympan on the cylinder, and means for giving the tympan a movement after the grippers have seized the sheet to shift the sheet on the cylinder, substantially as described.

6. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism including suitable edge-grippers, a pair of reels mounted in the cylinder, a sheet-carrier connected to the reels and overlying the sheet-supporting surface of the cylinder, means for operating the reels to give the carrier a movement with respect to the cylinder to shift the sheet on the cylinder, substantially as described.

7. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, take-up and give-up mechanisms operating on the carrier, means for operating said mechanisms to give the carrier a movement to shift the sheet on the cylinder, the take-up mechanism being constructed to deliver the carrier slightly faster than it is taken up by the take-up mechanism, substantially as described.

8. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, winding and unwinding reels to which said carrier is connected, and means for operating the reels to give the carrier a movement to shift the sheet on the cylinder, the unwinding-reel being constructed to give up more carrier than is taken up by the winding-reel, substantially as described.

9. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, winding and unwinding mechanisms to which the carrier is connected, and means including a lever mechanism for actuating said winding and unwinding mechanisms, said means being brought into operation after the delivery mechanism has seized the sheet, substantially as described.

10. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, winding and unwinding reels to which the carrier is connected, pinions on said reels, a two-armed lever having racks engaging said pinions, and a cam and suitable connections for rocking the lever to operate the reels to give the carrier a movement to shift the sheet on the cylinder, substantially as described.

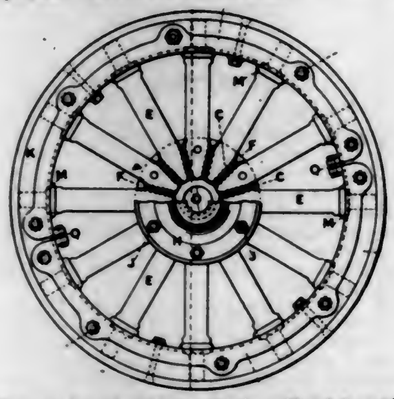
11. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, winding and unwinding reels to which said carrier is connected, means including a lever mechanism and suitable connections for operating the reels, the construction being such that the unwinding-reel delivers slightly more carrier than is taken up by the winding-reel, substantially as described.

12. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, a winding-reel to which said carrier is connected, an unwinding-reel, a carrier therefor, a spring operating on the reel-carrier to place the sheet-carrier under tension, and means for operating the reels to give the sheet-carrier a movement to shift the sheet on the cylinder, the unwinding-reel and its operating means being constructed to pay out more of the sheet-carrier than is taken up by the winding-reel, substantially as described.

13. In a printing-machine, the combination with a stop-cylinder, of a delivery mechanism, a sheet-carrier, winding and unwinding reels to which said carrier is connected, pinions on said reels, a lever mechanism including suitable racks for operating the pinions, and a spring-controlled carrier for the unwinding-reel, the construction being such that more of the sheet-carrier is paid out by the unwinding-reel than is taken up by the winding-reel, substantially as described.

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**755,069. WHEEL.** THOMAS D. STAGG, Selby, England. Filed Sept. 3, 1903. Serial No. 172,302. (No model.)



*Claim.*—1. In a wheel, the combination, with a hub provided with spoke-sockets which are open in front and which are wider at the front than at the back and which have also inclined bottoms, of spokes having end portions which normally fit against the inclined sides and bottoms of the said pockets, and means for setting up the said spokes as their said end portions shrink and become loose in the said pockets.

2. In a wheel, the combination, with a hub provided with spoke-sockets which are open in front and which are wider at the front than at the back and which have also inclined bottoms, of spokes having end portions which normally fit against the inclined sides and bottoms of the said pockets, means for setting up the said spokes as their said end portions shrink and become loose in the said pockets, and means for preventing the said spokes from sliding longitudinally of the said pockets when being set up.

3. In a wheel, the combination, with a felly, of a rim formed of two trough-shaped parts which inclose the inner periphery of the felly, fastening devices securing together the ends of the said parts of the rim, and spokes having tangs which engage with pockets in the said rim and felly.

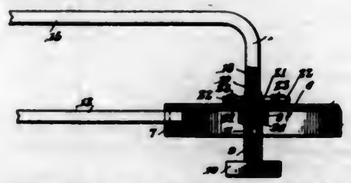
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**755,070. PALLET-JEWEL-SETTING DEVICE.** DAVID F. STALEY, Highpoint, N. C., assignor of one-half to Albert P. Staley, Highpoint, N. C. Filed Jan. 27, 1904. Serial No. 190,231. (No model.)

*Claim.*—1. In a pallet-jewel-setting device, the combination with a base having a jewel-supporting surface, of a pallet-supporting device extending above an intermediate portion of the jewel-supporting surface, and having an arbor-receiving socket.

2. In a pallet-jewel-setting device, the combination with a base having a jewel-supporting surface, of a pallet-supporting device extending above an intermediate portion of the jewel-supporting surface and having an arbor-receiving socket, and a movable clamp coacting with the upper end of the pallet-supporting device and also having an arbor-receiving socket.





3. In a pallet-jewel-setting device, relatively-adjustable pallet and jewel supports.

4. In a pallet-jewel-setting device, the combination with a base having a substantially flat face constituting a support for pallet-jewels, of a pallet-support adjustably mounted on an intermediate portion of the base and movable toward and from the supporting device thereof.

5. In a pallet-jewel-setting device, the combination with a base having a substantially flat face constituting a support for pallet-jewels and furthermore having an intermediate opening, of a pallet-supporting stem threaded in the opening and adjustable above the jewel-supporting face thereof.

6. In a pallet-jewel-setting device, the combination with a disk-base having a substantially flat upper face constituting a support for pallet-jewels and having a centrally-disposed opening, of a pallet-supporting stem threaded in the opening and adjustable above the jewel-supporting face thereof, said stem being provided with an arbor-receiving socket, and a handle projecting from one side of the base.

7. In a pallet-jewel-setting device, the combination with relatively-adjustable pallet and jewel supports, of means for clamping a pallet upon the pallet-support.

8. In a pallet-jewel-setting device, the combination with relatively-adjustable pallet and jewel supports, of a pallet-clamp coacting with and operating in opposition to the pallet-support.

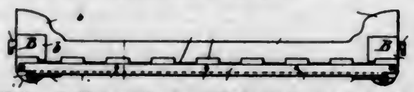
9. In a pallet-jewel-setting device, the combination with a pallet-jewel-supporting base, of a pallet-support adjustably mounted with respect to the base, and a yielding holding-clamp operating in opposition to the pallet-support.

10. In a pallet-jewel-setting device, the combination with a pallet-jewel-supporting base, of a pallet-support adjustably mounted on the base, a clamp having a portion coacting with the pallet-support, and a spring for urging the clamp against the said support.

11. In a pallet-jewel-setting device, the combination with a base having a substantially flat face constituting a jewel-support, of a pallet-supporting steam threaded through an intermediate portion of the base and movable above the jewel-supporting face, said stem having an arbor-receiving socket, and a spring-pressed clamping device operating in opposition to and having a portion in alinement with the stem, said portion being also provided with an arbor-receiving socket.

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**755,071. BEDSTEAD.** JOHN R. STONE, Blossom, Tex. Filed Nov. 19, 1901. Serial No. 82,894. (No model.)



*Claim.*—1. The combination with the side rail of a bedstead provided with end depending perforated plates, of a slat-supporting rail carrying a metallic strip having parallel end ears or loops thereon adapted to embrace and be bolted to the perforated plates.

2. The combination with the side rail of a bedstead provided with end depending perforated plates, of a slat-supporting rail having an extended metal strip secured thereto and having end projecting loops adapted to embrace and be bolted to the perforated plates.

3. The combination with the side rail of a bedstead provided with end depending perforated plates, of a slat-supporting rail having an extended metal strip secured to the vertical side thereof and terminating at the ends in flat pairs of parallel loops embracing and bolted to said perforated plates.

4. The combination with the side rail of a bedstead having side recesses at the ends, of plates B, located therein and having thinner centrally-depending perforated plates, and a slat-supporting rail carrying a metallic strip having parallel end loops embracing and bolted to said perforated plates.

5. The combination with the side rail of a bedstead having the end recesses with lower narrower throats, of plates B, comprising upper thicker and lower thinner portions the latter lying in and depending below the throats presenting perforated plates, and a slat-supporting rail carrying a metallic strip having parallel end ears extending horizontally to one side of the same to embrace and be bolted to the perforated plates and support the slat-rail against the vertical inner side of the side rail.

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**755,072. PUMP.** MIRAM C. STOUFFER, Mineralridge, Ohio, assignor of two-thirds to J. N. Cole and H. G. Huffman, Youngstown, Ohio. Filed Mar. 12, 1903. Renewed Oct. 3, 1903. Serial No. 175,699. (No model.)



*Claim.*—1. In a pump, the combination of an outer cylinder, an uptake-pipe connected to the upper end thereof, a double-valved hollow tube projecting into said cylinder and having its lower end connected in the lower end of the cylinder, a disk surrounding and rigidly secured to the tube near its upper end, a valve slidingly mounted upon said hollow tube intermediate of its length, and an inner cylinder carrying said sliding valve and having the upper end of the hollow tube and the disk projecting therein.

2. In a pump, the combination of an outer cylinder, a double-valved hollow tube projecting into said cylinder from its lower end, a disk surrounding and secured near the upper end of said tube, a valve slidingly mounted upon said tube, and an inner cylinder surrounding the upper end of the tube having its lower end connected to said sliding valve so that the valve and cylinder will be slidably mounted upon the tube.

3. In a pump, the combination of an outer cylinder, an uptake-pipe connected to the upper end thereof, a hollow tube having a check-valve at each end secured in the lower end of said cylinder, a disk surrounding and secured to the upper end of said tube, a sliding valve mounted upon said tube intermediate of the ends thereof, an inner cylinder carrying said sliding valve slidably mounted upon the tube and also slidably surrounding said disk, and a piston-rod connected to said inner cylinder.

4. In a pump, the combination of an outer cylinder, an uptake-pipe connected to the upper end thereof, a hollow tube having a check-valve at each end and a disk valve above the lower check-valve, a stationarily-mounted disk surrounding and carried near the upper end of said tube, a casing surrounding said lower check-valve and disk valve to secure the tube in place within the cylinder, a sliding disk valve mounted upon the tube, an inner cylinder having its lower end carrying said sliding disk valve and slidably surrounding said stationary disk, and a piston-rod connected to said inner cylinder.

5. In a pump, the combination of an outer cylinder, an uptake-pipe connected therewith, a hollow tube mounted in the lower end thereof provided with openings through its body near its upper end, a disk surrounding said tube near its upper end, a check-valve mounted in each end of said tube, a valve slidingly mounted upon said tube, an inner cylinder having its lower end carrying said sliding valve and surrounding the upper end of the tube and its disk, and a rod to raise and lower the inner cylinder and the sliding valve.

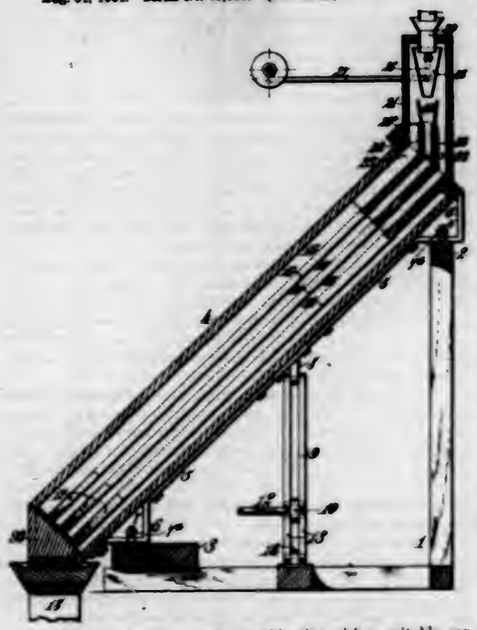
6. In a pump, the combination of an outer casing, a perforated disk mounted in the lower end thereof, a hollow tube surrounded by and connected to said disk and extending upward therefrom provided with openings near its upper end, a casing carrying a check-valve connected to said tube below the said disk, a check-valve mounted in the upper end, a flap below the last-mentioned check-valve secured to the tube above the openings, a sliding disk valve mounted upon the tube intermediate of its length, and an inner cylinder having its lower end carrying the sliding flap and having the flap contacting its interior.

7. In a pump, the combination of an uptake-pipe, an enlarged cylinder connected thereto, a perforated disk mounted in the lower end of said cylinder, a hollow tube connected to said disk, a check-valve at each end of said tube, a stationarily-mounted disk surrounding the upper end of said tube, a circular valve slidingly mounted upon said tube intermediate of its ends, an inner cylinder of lesser diameter than the circular valves having its lower end carrying the sliding valve and slidably surrounding said disk, and a piston-rod connected to the upper end of the inner cylinder and extending through the uptake-pipe.

8. In a pump, the combination of an uptake-pipe, an enlarged cylinder connected thereto, a circular valve mounted in the lower end thereof, a hollow tube provided with openings in its sides near its upper end, check-valves mounted in the ends of said tube, a circular disk connected to the tube above the openings therein, a valve slidingly mounted on said tube, an inner cylinder carrying said sliding valve and surrounding said disk, and a solid piston-rod connected to said inner cylinder.

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**755,073. SCREEN.** THOMAS L. STURTEVANT, Newton, and THOMAS J. STURTEVANT, Quincy, Mass., assignors to the Sturtevant Mill Company, Portland, Me., and Boston, Mass., a Corporation. Filed Aug. 31, 1901. Serial No. 73,986. (No model.)



*Claim.*—1. In a screen, the combination with a suitable supporting-frame; of an inclined screen-box supported thereby; a toggle connected to said screen-box and to a fixed part; means for throwing said toggle past its center to impart an intermittent movement to said screen-box; guides on said supporting-frame to confine the movements of the screen-box to a true vertical line and prevent lateral play thereof; and rigid stops to suddenly arrest the movements of the screen-box and cause a screening flow of the material; whereby "skipping" of the material over the screening-surface is avoided.

2. In a screen, the combination with a suitable supporting-frame; of an inclined screen-box; rigid supports forming pounding-blocks upon which said screen-box normally rests; means for securing said screen-box to said rigid supports, said means serving also to limit the vertical movements of said box and suddenly arrest such vertical movements; and a toggle for reciprocating said box and causing it to pound upon said rigid supports.

3. In a screen, the combination with a suitable supporting-frame; of an inclined screen-box; rigid supports forming pounding-blocks upon which said screen-box normally rests; securing-bolts to hold said box in position on said rigid supports and confine its movements to a vertical direction; adjustable stop-nuts on said bolts to limit the vertical movements of said screen-box; and a toggle for reciprocating said box and causing it to pound between said rigid supports and said limiting-nuts.

4. In a screen, the combination with a suitable supporting-frame; of an inclined screen-box; supporting-straps secured to the under side of said screen-box; said straps having outwardly-bent portions to form supporting-feet for the said screen-box; rigid supports forming pounding-blocks upon which said feet rest; bolts passing through said outwardly-bent straps to secure said screen-box to said rigid supports; said bolts allowing a limited vertical movement to said screen-box; and a toggle for reciprocating said screen-box and causing it to pound upon said rigid supports.

5. In a screen, the combination with a screen-box; of a plurality of screens therein; means for reciprocating said screen-box in a true vertical line to prevent "skipping" of the material over the screen; an independent feedway for each of said screens, a feeding-hopper movable over said feedways at right angles to the line of movement of said screen-box; and means for imparting a regular feeding movement to said hopper; so that it will deliver material to each of said screens in regular succession.

6. In a screen, the combination with a screen-box; of a plurality of superposed screens therein; independent feedways for said screens; means for reciprocating said screen-box in a true vertical line to prevent "skipping" of the material over the screens; a hopper pivoted above said feedways; means for swinging said pivoted hopper over said feedways at right angles to the line of movement of said screen-box, so that it will deliver material to each of said screens in regular succession; and regulating-gates to control the mouths of said feedways and proportion the flow of material to the screens.

7. In a screen, the combination with an inclined screen-box; of a plurality of screens mounted therein; independent feedways for said screens; a hopper-box carried by said screen-box; a screen-feeding hopper in said hopper-box; means for moving said hopper over the mouths of said feedways with a regular feeding movement; and means for vertically reciprocating said screen-box.

8. In a screen, the combination with an inclined screen-box; of a plurality of screens mounted therein; independent feedways for said screens; a hopper-box carried by said screen-box; a screen-feeding hopper pivoted in said hopper-box above said feedways; means for imparting a regular swinging feeding movement to said hopper; and means for reciprocating said screen-box vertically.

9. In a screen and in combination; a vibrating screen-box; screens mounted therein; independent feedways for said screens; a hopper-box carried by said vibrating screen-box; a delivery-chute entering said hopper-box; a screen-feeding hopper pivoted in said hopper-box intermediate said delivery-chute and said screen-feedways; and means for swinging said hopper above said feedways so as to deliver material to each of said screens in turn.

10. The combination with a plurality of vertically-reciprocating screens; of means for vibrating said screens; a series of independent horizontally-arranged feedways for said screens; a horizontally-swinging hopper in feeding relation to said screens; and means for giving a horizontal feeding swing to said hopper above the screen-feedways, so as to deliver material to each feedway at regular intervals.

11. In a screen, the combination with a single inclined screen-box; of means for vibrating said box; a plurality of superposed screens and screen-pans in said box; independent feedways for said screens; a pivoted feeding-hopper adapted to swing above said feedways and deliver material to each at regular intervals; and means for proportioning the flow through said feedways to the feeding intervals of the said hopper.

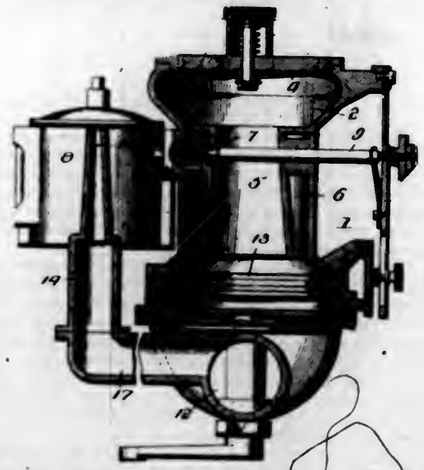
12. In a screen, the combination with an inclined screen box; of a plurality of superposed screens in said box; independent feedways for said screens; means for vibrating said screen-box; a hopper-casing mounted on said screen-box over said feedways; a pivoted hopper mounted in said casing above said feedways; means for imparting regular swinging movements to said hopper, whereby it delivers to each feedway in turn; and a feed-chute delivering to said swinging hopper.

13. In a screen, the combination with a supporting-frame, of an inclined screen-box mounted thereon, a plurality of superposed screens in said box, screen-pans beneath said screens, toggle mechanism for vibrating said box, independent feedways for said screens, a single swinging hopper to deliver material to each of said feedways in turn, independent delivery-chutes for said screens and screen-pans, and inclined guide-plates for diverting the fines and tailings to opposite sides of the screen-box.



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**755,074. DOUBLE CARBURETER FOR EXPLOSIVE-ENGINES.** THOMAS L. STURTEVANT, Quincy, and THOMAS J. STURTEVANT, Wellesley, Mass. Filed Mar. 3, 1903. Serial No. 145,959. (No model.)



*Claim.*—1. Fuel-supplying apparatus for gas-engines, comprising the combination with a main carbureter having a fuel-inlet, and a throttle-valve controlling said fuel-inlet, whereby the amount of fuel supplied from said main carbureter may be varied or completely shut off; of an auxiliary carbureter coöperating with said main carbureter, said auxiliary carbureter having an open fuel-outlet, whereby a desired minimum fuel-supply for the engine is afforded.

2. Fuel-supplying apparatus for gas-engines, comprising the combination with a main carbureter having air and oil inlets, valves controlling said inlets, a fuel-outlet; a throttle-valve controlling said fuel-outlet, whereby the amount of fuel supplied to the engine from said main carbureter may be varied or completely shut off, of an auxiliary carbureter coupled and coöperating with said main carburter, said auxiliary carbureter having open air and oil inlets, and an open fuel-outlet, whereby a desired minimum fuel-supply for the engine is afforded.

3. Fuel-supplying apparatus for gas-engines comprising the combination with a main carbureter having an air-inlet of relatively large area and a valve controlling said inlet, of an auxiliary carbureter having an open air-inlet of relatively small area, whereby a desired constant minimum supply of fuel to the engine will be afforded.

4. In a fuel-supplying apparatus for gas-engines, the combination with a main carbureter provided with a mixing-chamber, an air-inlet valve controlling the supply of air to said chamber, a fuel-supply valve delivering to said chamber, and a throttle-valve controlling the outlet from said chamber and by which the fuel-supply to the engine from said main carbureter may be regulated or entirely shut off, of an auxiliary carbureter delivering to the fuel-passage to the engine and by which a desired minimum fuel-supply is afforded.

5. Fuel-supplying apparatus for explosion-engines comprising the combination with a main carbureter having a valve-controlled air-inlet, a valve-controlled oil-inlet, and a throttle-valve-controlled fuel-outlet; of an auxiliary carbureter having an open air-inlet, an open oil-inlet, and an open fuel-outlet, both carbureters delivering to the engine through a common passage-way.

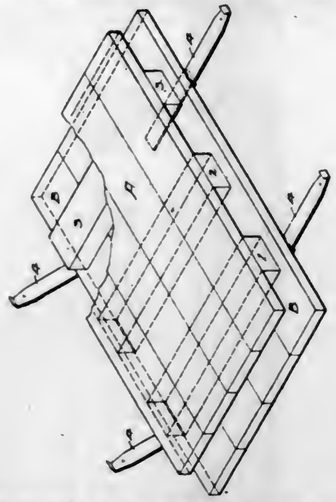
6. Fuel-supplying apparatus for explosion-engines comprising the combination with a main carbureter having a vacuum-controlled valve for the air-inlet, a valve-controlled oil-inlet, and a throttle-valve-controlled fuel-outlet, of an auxiliary carbureter having an open air-inlet, an open oil-inlet, and an open fuel-outlet, both carbureters delivering to the engine through a common passage-way.

7. In fuel-supplying apparatus for explosion-engines, the combination with a main carbureter having an air-inlet, an oil-inlet, and a fuel-outlet, of an oil-reservoir, a throttle-valve controlling said fuel-inlet, whereby the supply of fuel to the engine from said main carbureter may be varied or completely shut off, a valve to control said oil-inlet connected with and operable from said throttle-valve, and an auxiliary open carbureter having an open oil-passage connecting with said reservoir, whereby a desired constant minimum supply of fuel to the engine is maintained while the engine is running.

8. An oil-reservoir for carbureters having a downwardly-flaring vertical carbureting-chamber formed integral with the side wall of said reservoir and open to the outer air at its upper end, and an oil-passage traversing the wall of said reservoir, said oil-passage communicating with the chamber of said reservoir and delivering to said carbureting-chamber near the upper reduced open end thereof and at a point above the normal oil-level in the reservoir.

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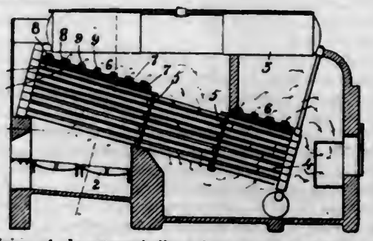
**755,075. REICING-PLATFORM.** CHARLES W. SURPLUS, Chicago, Ill. Filed Sept. 26, 1903. Serial No. 174,838. (No model.)



*Claim.*—A reicing device consisting of a platform adapted to fit within a receptacle to be reiced, means for limiting the inward movement of the said platform consisting of a second larger platform fitting over the opening in the said receptacle, spacing means for securing the platforms in a fixed relation, and means for securing the device to the receptacle, comprising hinges each having one member secured to the outer platform and the other member provided with an inturned end.

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**755,076. BOILER-FURNACE.** SAMUEL R. THOMPSON, East Lexington, Mass., assignor of one-half to Frank H. Thompson, Arlington, Mass. Filed June 22, 1901. Renewed Aug. 1, 1903. Serial No. 167,948. (No model.)



*Claim.*—1. In a steam-boiler, a furnace, a group of water-tubes, and a perforated refractory partition placed across the path of the furnace-gases and lying against the group of tubes, said partition having a series of channels on its side next the tubes and transverse to the length of said tubes, for the circulation of gases.

2. In a steam-boiler, a furnace, a group of water-tubes, and a perforated refractory partition placed across the path of the furnace-

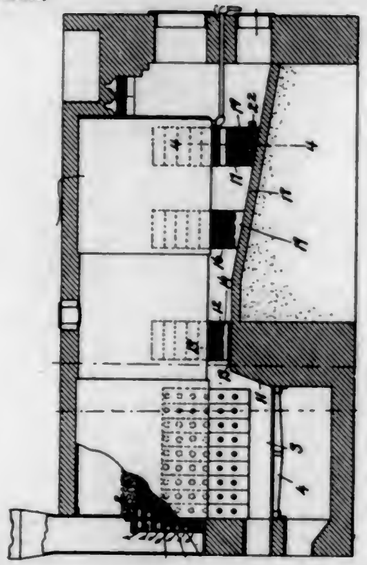
gases and lying against the group of tubes, the side of said partition away from the tubes having numerous outstanding projections to increase the heat radiating and absorbing surface thereof.

3. In a steam-boiler, a furnace, a group of water-tubes, and a perforated refractory partition placed across the path of the furnace-gases and lying against the group of tubes, the side of said partition away from the tubes having numerous outstanding projections to increase the heat radiating and absorbing surface thereof, the perforations of said partition extending through said projections.

4. A section or block for boiler-partitions comprising an elongated tile of refractory material having a longitudinal channel on one side and on the other side a series of nozzle-like projections, said tile also having ducts or apertures traversing the partition through said projections.

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755,077. **BOILER-FURNACE.** SAMUEL B. THOMPSON, East Lexington, Mass., assignor of one-half to Frank H. Thompson, Arlington, Mass. Filed June 22, 1901. Renewed Aug. 1, 1903. Serial No. 167,949. (No model.)



*Claim.*—1. The combination of a boiler, a fire-box or furnace, and an upright refractory heat-radiating plate at the side of the fire-box, having its lower edge supported by the side wall thereof and its upper edge resting loosely against the boiler and adapted to move vertically with respect thereto.

2. The combination of a boiler, a fire-box or furnace, and an upright refractory heat-radiating plate at the side of the fire-box, having its lower edge supported by the side wall thereof and its upper edge resting loosely against the boiler and adapted to move vertically with respect thereto, said plate being separated from the side wall of the fire-box by a chamber open at its rear end and communicating with the main fire-chamber by numerous perforations which traverse the plate.

3. A section or block for heat-radiating furnace-plates, comprising an elongated tile of refractory material, having transverse perforations and a lateral projection or foot at one end extending in the same direction as the perforations.

4. The combination of a furnace and a partition located across the path of the furnace-gases and comprising an aggregated series or group of parallel open tubes composed of refractory material and provided circumferentially with longitudinal ribs or corrugations, the openings in and the spaces between said tubes constituting passages through the partition for the furnace-gases.

5. The combination of a boiler, its casing or setting having a rear wall provided with an opening, a floor under the boiler back of the furnace, a refractory partition located above said floor transversely of the path of the furnace-gases and having an opening next to the floor and directly accessible through the said rear-wall opening, and a refractory filling or closure for said partition-opening.

6. The combination of a furnace, a boiler provided with fire-tubes and having an uptake at one end, and a refractory cover for said end of the boiler provided with openings registering with the apertures of the fire-tubes, said cover being interposed between the delivering ends of the tubes and the uptake and preventing access of relatively cold air from the uptake to said tubes.

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755,078. **BIT-STOCK.** DRAYTON H. TRUSDELL, Fremont, Nebr. Filed July 31, 1902. Serial No. 116,473. (No model.)



*Claim.*—1. The combination with a suitable housing, of a shaft extending from said housing, a pinion-wheel secured to said shaft, a drill or bit chuck secured to the lower end of said shaft, an articulated shaft extending from said housing, a pinion secured to said articulated shaft meshing with said first-mentioned pinion, a sleeve holding said articulated shaft, and an adjustable boss holding said sleeve, being adjustably secured to said housing.

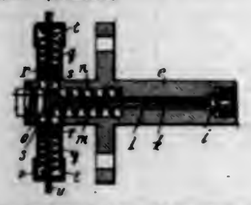
2. The combination with a suitable housing, of a shaft extending from said housing, a pinion secured to said shaft at one end, a chuck secured to said shaft at the remaining end, an articulated shaft extending from said housing, a pinion secured to said articulated shaft meshing with aforesaid pinion, a collar working about the first member of said articulated shaft, a boss adjustably secured to said collar and to aforesaid housing, an angular housing secured to said collar, the remaining end of said articulated shaft extending through said housing at an angle to the first member of said shaft, as and for the purpose set forth.

3. The combination with a suitable housing, of a pinion within said housing, a shaft extending from said pinion, a chuck secured to said shaft, a second pinion within said housing meshing with aforesaid pinion, a shaft secured to said second pinion, a sleeve secured to said shaft, a boss working upon said sleeve, said boss being adjustably secured to said housing, a universal joint secured to said shaft and a second shaft extending from said joint, and an angular housing secured to said sleeve and containing the last-mentioned shaft, as and for the purpose set forth.

4. The combination with a suitable housing, of the pinion within said housing, a shaft extending from said pinion, a chuck secured to said shaft, a second pinion meshing with aforesaid pinion, a shaft extending from said second pinion, a sleeve supporting said last-mentioned shaft, a boss working upon said sleeve and being adjustably secured to aforesaid housing, a spring interposed between said boss and sleeve to force said boss into engagement with said housing, an angular housing secured to said sleeve, a universal joint within said angular housing and secured to said last-mentioned shaft, and a second shaft extending from said universal joint, all arranged as and for the purpose set forth.

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755,079. **FUEL-INJECTOR FOR OIL-ENGINES.** NELSON L. TUCK and WILLIAM W. TUCK, Brooklyn, N. Y. Filed July 22, 1903. Serial No. 166,523. (No model.)



*Claim.*—1. In a hydrocarbon or explosion engine, a fuel-injector provided with a spring-seated valve opening toward the cylinder, catches for holding said valve on its seat, and means controlled by the pressure of the hydrocarbon for releasing said catches, in combination, substantially as described.

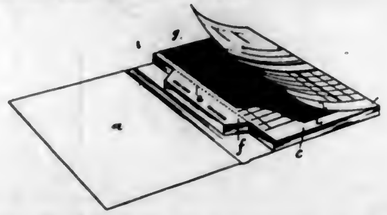
2. In a hydrocarbon or explosion engine, a fuel-injector provided with a valve opening toward the cylinder, a collar on the valve-stem, cams coacting with said collar to seat said valve, and means controlled by the pressure of the hydrocarbon for causing said cams to permit said valve to be unseated, in combination, substantially as described.

3. In a hydrocarbon or explosion engine, a fuel-injector provided with a spring-seated valve opening toward the cylinder, spring-catches arranged to hold said valve on its seat, and means controlled by the pressure of the hydrocarbon for causing said catches to release said valve, in combination, substantially as described.



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755,080. **MANIFOLDING SALES-RECORDING BOOK.** FREDERICK M. TUREK, New York, N. Y., assignor to Tracy Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Aug. 26, 1901. Serial No. 73,278. (No model.)



*Claim.*—1. A pack of sales-slips each comprising a sheet folded upon itself to form duplicate slips and provided at one edge with a binding-stub cut away at its ends, the stubs of the several sheets being suitably bound together, substantially as described.

2. A pack of sales-slips each comprising a sheet folded upon itself to form duplicate slips and provided at one of its vertical edges with a binding-stub cut away at its ends, the stubs of the several sheets being suitably bound together, substantially as described.

3. A pack of sales-slips each comprising a sheet folded upon itself to form duplicate slips and provided at one edge with a binding-stub cut away at its ends, the stubs of the several sheets being suitably bound together, in combination with a transfer-sheet folding inwardly over the slips in a direction transverse to the fold of the sheets, substantially as described.

4. A pack of sales-slips each comprising a sheet folded upon itself to form duplicate slips and provided at one of its vertical edges with a binding-stub cut away at its ends, the stubs of the several sheets being suitably bound together, in combination with a transfer-sheet folding inwardly over the slips in a direction transverse to the fold of the sheets, substantially as described.

5. A pack of sales-slips each comprising a sheet folded upon itself to form duplicate slips and provided at one edge with a binding-stub cut away at its ends, the stubs of the several sheets being suitably bound together, in combination with a removable transfer-sheet folding inwardly over the slips in a direction transverse to the fold of the sheets, said transfer-sheet being substantially twice the size of the writing-surface of the slips whereby it may be folded over and held in position by engagement with the edges of the slips and be reversed to bring a fresh portion of its surface into writing position, substantially as described.

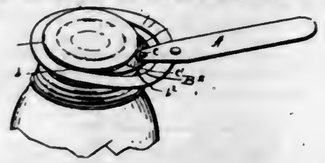
6. A pack of sales-slips each comprising a sheet folded upon itself to form duplicate slips and provided at one of its vertical edges with a binding-stub cut away at its ends, the stubs of the several sheets being suitably bound together, in combination with a removable transfer-sheet folding inwardly over the slips in a direction transverse to the fold of the sheets, said transfer-sheet being substantially twice the size of the writing-surface of the slips whereby it may be folded over and held in position by engagement with the edges of the slips and be reversed to bring a fresh portion of its surface into writing position, substantially as described.

7. A sales-recording book consisting of a cover and a pack of sales-slips each comprising a sheet folded upon itself to form superposed duplicate slips and provided at one side edge with a binding-stub, the upper faces of the several sheets being ruled at right angles to their stubs and the stubs thereof being suitably bound together and to the left-hand side edge of the right-hand half of the cover but disconnected from the left-hand half of the cover, substantially as described.

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755,081. **FRUIT-JAR WRENCH.** WILLIAM A. TWINING, Cleveland, Ohio, assignor to William R. Donnelly, Cleveland, Ohio. Filed Jan. 26, 1903. Serial No. 140,406. (No model.)

*Claim.*—A jar-wrench comprising a solid ring lying in a straight plane throughout its length, said ring having its inner face to one side of its center formed with oppositely-disposed curved cut-out portions, a lever pivoted to one face of said ring intermediate the cut-out portions thereof, and a jaw having a curved outer face pivoted to the under face of the inner end of said lever whereby it will lie within said ring, the curved face of said jaw being adapted for engagement with the curved walls of the cut-out portions of said ring substantially as and for the purpose specified.



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755,082. **PIPE FITTING AND TESTING APPARATUS.** WILLIAM VANDERMAN, Willimantic, Conn. Filed May 21, 1903. Serial No. 158,130. (No model.)



*Claim.*—1. A pipe-fitting including a section of pipe having a lengthwise opening, a chamber intersecting said opening with a shoulder extending completely around the chamber at the entrance of the lengthwise opening thereto, said section also having a lateral opening of a dimension lengthwise of the section as long as that of the chamber and means for closing the lateral opening.

2. A pipe-fitting including a section having a lengthwise opening and a chamber intersecting said opening with a shoulder at each end of the chamber, each shoulder extending completely around the lengthwise opening thereto, said section also having a lateral opening of a dimension lengthwise of the section as long as that of the chamber, and means for closing the lateral opening.

3. A pipe-fitting including a section having a lengthwise opening and a chamber intersecting said opening with a shoulder extending about said chamber at the entrance of the lengthwise opening thereto, said section also having a lateral rectangular-shaped opening as wide as the diameter of the lengthwise opening into the chamber, and means for closing the lateral opening.

4. A pipe-fitting including a chamber with openings through each end wall thereof, a groove extending about the main opening into said chamber, a cover having a flange arranged to extend into said groove and having its inner surface beveled, means for securing the cover in place and a packing filling said groove about the flange and adapted to be calked whereby said packing will be wedged between the beveled face of the flange and the wall of the groove.

5. A pipe-fitting including a chamber having openings through each end wall thereof, a groove extending around the main opening into the chamber, a cover having a flange extending about the outer edge thereof and adapted to project into said groove, a packing filling said groove about the flange and adapted to be calked, said flange having its inner face beveled whereby the calking of the packing will cause the wedging action of said calking between the flange and groove.

6. In a pipe-fitting, in combination, a section having a chamber with openings through each end wall thereof, a shoulder extending around said openings, a test-plug including a disk and a strut adapted to rest against said shoulders, means for securing the disk and strut, a tube projecting through said strut and disk, a pipe connected with said tube and a valve located therein, and means for closing the main opening into the chamber.

7. A pipe-fitting including a section having a chamber with an opening through each end wall thereof, a shoulder extending around each of said openings, means for closing the main opening into the chamber, a pipe-fitting including a disk and a strut adapted to rest against said shoulders, a tube extending through and slidable within an opening in the disk and strut, means for securing the disk in position, a set-nut appurtenant to the strut, a pipe connected with the tube, and a valve controlling the opening through the tube.

8. A pipe-fitting including a chamber having openings through each end wall, a projecting lip extending about the chamber and forming a groove between the lip and wall of the chamber, a cover provided with a flange, said flange and wall of the chamber when

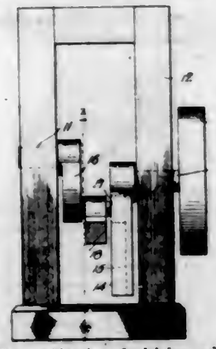
in place forming a tapered recess, a packing filling the groove about the flange and adapted to be calked, said flange and groove being relatively arranged to permit access to the packing.

9. A pipe-fitting adapted for use in the discharge of a water system, said fitting including a section having a chamber with a shoulder at one end, a valve adapted to fit said shoulder within the chamber, means for forcing the valve against the shoulder, and means for introducing a fluid through the valve.

10. A pipe-fitting including a section adapted for use in the discharge of a water system, said section having a chamber with a shoulder at each end thereof, a test-plug including a valve and a support each adapted to rest against one of said shoulders within the chamber, means for forcing the valve and support against their respective shoulders and means for introducing the fluid through the valve.

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**755,083. CRANK-MOVEMENT FOR WELL-DRILLS. WARREN R. VANDEWERKER, Clark, S. D. Filed Mar. 25, 1903. Serial No. 149,538. (No model.)**

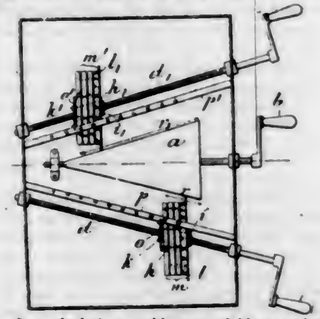


*Claim.*—1. The combination of a driving and driven shaft whose axes produced are parallel, an arm projecting laterally from the driving-shaft and fixed thereon, a sliding member mounted on said arm, a crank projecting laterally from the driven shaft and fixed thereon, and a crank-pin fixed on said crank at such a distance from the driven shaft that it describes a circle including the driving-shaft, said pin being journaled in the sliding member upon the arm carried by the driving-shaft.

2. The combination of a driving-shaft and a driven shaft whose axes produced are parallel, an arm fixed to the driving-shaft and projecting laterally therefrom, said arm being provided with a longitudinal groove in the inner face thereof, a crank fixed to the driven shaft and having a crank-pin fixed in its free end and extending in a line parallel with said shafts, said crank-pin being fixed at such a distance from the driven shaft as to describe a circle including the driving-shaft, and a block loosely mounted on the crank-pin and slidably engaging the groove in the arm carried by the driving-shaft.

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**755,084. CALCULATING-MACHINE. JOHANNES VERNERSEN, Hellerup, Denmark. Filed Oct. 30, 1902. Serial No. 129,483. (No model.)**



*Claim.*—In a calculating-machine a revoluble cone-shaped member, a number of disk-shaped friction-disks having their edges in contact with the surface of said cone and being rotated by the revolving of it, spindles carrying said friction-disks and corresponding counting apparatus operatively connected with the spindles, and means for adjusting the disks lengthwise from the apex of the cone and means for placing the disks in any desired position to the sloping surface of the cone, substantially as set forth.

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**755,085. FRAME FOR BAGS, &c. FELIX VIASO, West Somerville, Mass., assignor to Columbia Jewelry Company, North Cambridge, Mass., a Copartnership. Filed Jan. 18, 1904. Serial No. 189,410. (No model.)**



*Claim.*—1. A bag frame or head composed of a ring having two depending ring-shaped flanges, and a bag-holding ring inserted between said depending flanges and concealed by the top of the ring.

2. A bag frame or head composed of a ring having two depending flanges, and a bag-holding ring inserted into the space between said flanges and held in place by contact with one of said flanges.

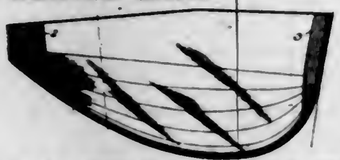
3. A bag frame or head composed of a ring having two depending flanges, and a bag-holding ring inserted into the space between said flanges and fitted to the inner depending flange.

4. A bag frame or head composed of metal bent to form a top and two depending flanges, and a lid or cover hinged to the junction of said top and the outer depending flange.

5. A bag frame or head composed of metal presenting a top and two depending flanges, part of the top and the exterior flange being slitted and depressed to form a recess and provided with pintle-holes, a lid having knuckles, and a pintle inserted through the pintle-holes and through the knuckles of the lid or cover.

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**755,086. MUSICAL INSTRUMENT AND PROCESS OF COVERING SAME. WALTER J. VOORHEIS, Saginaw, Mich. Filed Sept. 8, 1903. Serial No. 172,401. (No model.)**



*Claim.*—1. In a stringed musical instrument, the combination with the shell, of a covering fixedly secured throughout its area in contact with the exterior of the shell.

2. In a stringed musical instrument, the combination with the shell, of a covering adhesively secured throughout its area in contact with the exterior of the shell.

3. In a stringed musical instrument, the combination with the shell, of a skin fixedly secured throughout its area in contact with the shell.

4. In a stringed musical instrument, the combination with the shell, of a skin fixedly secured throughout its area in contact with the exterior of the shell.

5. The combination with a shell for stringed instruments of a skin covering secured in contact with the entire bottom and side walls of the shell.

6. In a stringed musical instrument, the combination with the shell, of a covering adhesively secured throughout its area to the exterior of the shell.

7. In a stringed musical instrument, the combination with the shell, of a skin adhesively secured throughout its area to the exterior of the shell.

8. The combination with the shell of a stringed instrument, of a covering fixedly secured thereto throughout its area to the shell, under tension.

9. The process of forming a shell for stringed instruments, stretching a skin around the shell in a moist condition, and drying the skin on the shell.

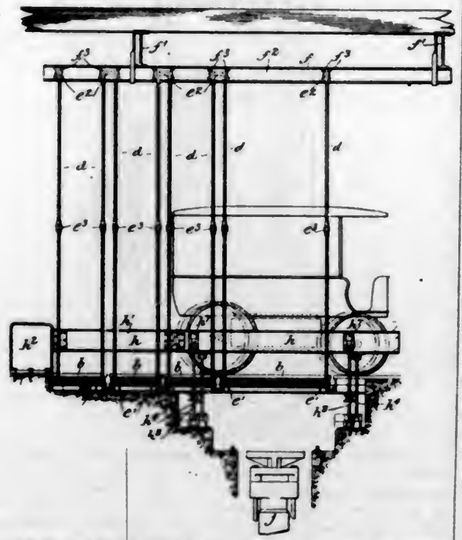


10. The process of forming a shell for stringed instruments, stretching and cementing a skin to the shell in a moist condition, and drying the skin.

11. The process of forming a shell for stringed instruments of a number of pieces, stretching and cementing to the shell thus formed a skin in a moist condition, and drying the skin on the shell.

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**755,087. POSITIONING APPARATUS FOR VEHICLES. GEORGE A. WARD, New York, N. Y., assignor to Electric Vehicle Company, Jersey City, N. J., a Corporation of New Jersey. Filed Dec. 23, 1902. Serial No. 136,317. (No model.)**



*Claim.*—1. In a positioning apparatus for vehicles, the combination of freely-swinging platforms suspended from above by upwardly-extending members and forming a table adapted to receive a vehicle, and a guide-frame coöperating therewith to center the vehicle with respect to a fixed point outside of the table.

2. In a positioning apparatus for vehicles, the combination of freely and laterally moving platforms hung on suspenders swinging freely from above and forming a table adapted to receive a vehicle, and yieldingly-suspended guide-bars coöperating therewith to center the vehicle with respect to a fixed point outside of the table.

3. In a positioning apparatus for vehicles, the combination of independent and laterally-swinging platforms forming a table to receive a vehicle, and obliquely-disposed lateral guide-bars coöperating with certain of said platforms to center the vehicle on the remaining of said platforms.

4. In a positioning apparatus for vehicles, the combination of independent and laterally-swinging platforms forming a table to receive a vehicle, and obliquely-disposed lateral guide-bars which are yieldingly supported coöperating with certain of said platforms to center the vehicle on the remaining of said platforms.

5. In a positioning apparatus for vehicles, the combination of independent and laterally-swinging platforms forming a table to receive a vehicle, obliquely-disposed lateral guide-bars coöperating with certain of the platforms to center the vehicle, and parallel guide-bars for retaining the vehicle in its central position on the remaining of said platforms.

6. In a positioning apparatus for vehicles, the combination of independent and laterally-swinging platforms forming a table to receive a vehicle, and a frame for guiding or directing the vehicle, said frame being centrally placed with respect to said table.

7. The combination with a stationary loading and unloading device, of a vehicle-positioning apparatus comprising freely-swinging platforms forming a table adapted to receive a vehicle, and a yieldingly-supported guide-frame coöperating therewith, said frame being centrally placed with respect to said loading and unloading device.

8. The combination with a stationary loading and unloading device, of a vehicle-positioning apparatus comprising independent and laterally-swinging platforms forming a table to receive a vehicle, and obliquely-disposed lateral guide-bars coöperating with certain of said platforms to center the vehicle with respect to said loading and unloading device.

9. In a positioning apparatus for vehicles, the combination of suspended platforms arranged side by side and forming a table adapted to receive a vehicle, a supporting-frame therefor, suspension-rods pivoted to said platforms and frame, and guide-bars coöperating with said platform to center the vehicle with respect to a fixed point outside said table.

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**755,088. ANTIFRICTION-BEARING. WILLIAM J. WEBER, FREDERICK C. DEYHERLE, and WILLIAM M. DEYHERLE, St. Louis, Mo. Filed Oct. 3, 1902. Serial No. 125,727. (No model.)**

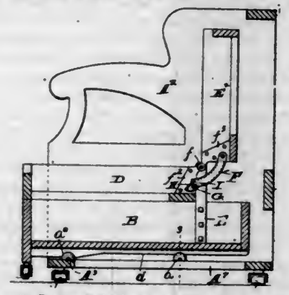


*Claim.*—1. In an antifriction-bearing, the combination of a barrel having end rings provided with ball-sockets extending through the rings, and a series of separated rollers of uniform diameter having ball-shaped ends seated in said ball-sockets, to protrude therethrough and furnish end bearing contact for each roller, substantially as described.

2. In an antifriction-bearing, the combination of a barrel having an end ring provided with ball-sockets extending through the ring, a series of fingers carried by said end ring, a second end ring provided with ball-sockets extending therethrough and said latter ring being detachably connected to said fingers, and a series of separated rollers of uniform diameter having ball-shaped ends projecting through said sockets to furnish end bearing contact for each roller, substantially as set forth.

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**755,089. SOFA-BED. FRANK B. WERSEL, Jr., Mount Lookout, Ohio. Filed Dec. 3, 1902. Serial No. 133,789. (No model.)**



*Claim.*—1. In a sofa-bed, the combination of base-box, seat and back portions, standards rising from said box, whereon said seat and back portions are independently pivoted, stationary lugs carried by one of said pivoted portions, engaging links carried by the other pivoted portions, said links automatically engaging and disengaging by gravity said lugs and locking said pivoted portions together when said pivoted portions assume a position substantially at right angles to each other they lock said pivoted members against independent pivotal movement and permit said pivoted portions to move together on a common pivot, substantially as described.

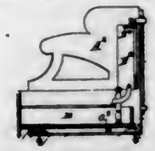
2. In a sofa-bed, a stationary base-frame provided with rollers journaled in bearings on the top of said base-frame, a seat-frame, transverse tracks attached to the lower side of a movable seat-frame, the front end of said tracks provided with inclines to raise the seat-frame from the floor, half-round notches in the high portion of the transverse tracks to engage with the rollers attached to the base-frame, substantially as described.

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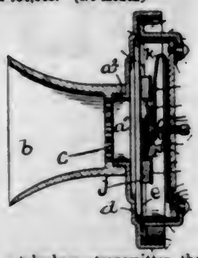
**755,090. SOFA-BED. FRANK B. WERSEL, Jr., Mount Lookout, Ohio. Filed June 1, 1903. Serial No. 159,458. (No model.)**

*Claim.*—In a sofa-bed, the combination of a base-box, seat, stationary base, and back portions, end standards hinged to said stationary base-frame, vertical rods attached at their upper ends to the end standards, brackets, the lower ends of the rods passing through said brackets, which connect the end standards to the base-frame,

the end standards being connected to the base-frame at their lower ends by hinges, substantially as described.



755,091. TELEPHONE-TRANSMITTER. JOSEPH A. WILLIAMS, Cleveland, Ohio, assignor to the Williams Telephone & Supply Company, Cleveland, Ohio, a Corporation of West Virginia. Filed Apr. 10, 1903. Serial No. 151,965. (No model.)




*Claim.*—1. In a telephone-transmitter, the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a plate, an annular flange formed integral with said plate, and arranged at a greater distance from the face of the said diaphragm than the said plate is from said diaphragm, a retaining and cushioning ring arranged between said flange and said diaphragm and a quantity of pulverized carbon arranged between said plate and said diaphragm, substantially as described and for the purpose set forth.

2. In a telephone-transmitter the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a carbon-receptacle, a cone-shaped stud formed on the outer surface of said receptacle, a bridge spanning said casing, and a flat spring secured at one end to said bridge and having an eye formed in its other end and arranged to receive the end of the cone-shaped stud.

3. In a telephone-transmitter, the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a ring secured in said casing for holding said diaphragm in position, arms formed integral with said ring at diametrically opposite sides thereof, a bridge spanning said arms, a carbon-receptacle, a cone-shaped stud formed on the exterior of said carbon-receptacle, a spring secured at one end to said bridge and having an eye formed on the other end adapted to receive the end of said stud, a head formed on said stud, a screw arranged in said bridge in line with the said head and a cushion arranged between said head and said screw, substantially as described.

4. In a telephone-transmitter, the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a carbon-receptacle, a cone-shaped stud formed on the exterior surface of said carbon-receptacle, a spring secured at one end to said casing and having a socket formed in its other end adapted to receive the end of the stud, a head formed on the end of said stud, a cushioning-pad secured on the end of said head and an adjustable screw secured in said casing in line with said head, substantially as described.

5. In a telephone-transmitter the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a carbon-receptacle, a cone-shaped stud formed on the outer surface of said receptacle, a bridge spanning said casing and a spring secured at one end to said bridge and having its other end arranged to form a universal bearing for said cone-shaped stud.

755,092. LINE-WIRE CLAMP. HERMAN C. WILLIS, Janesville, Wis., assignor of one-half to Henry Mulberger, Watertown, Wis. Filed Oct. 17, 1903. Serial No. 177,406. (No model.)

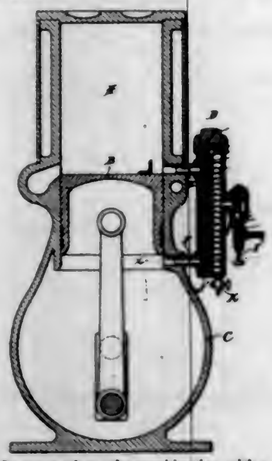


*Claim.*—1. A line-wire clamp, comprising a doubled spring-strip, having a movable link at one end, and an upturned edge or lip at the other, for engagement with said link.

2. A line-wire clamp, comprising a doubled spring-strip, having a movable link at one end, and an upturned edge or lip at the other, and opposed transverse grooves or beads adjacent to the bend of said strip for the reception of the wires.

3. The combination with the outer line-wire of the inner house-wire, whose end is wrapped around said line-wire, and a spring-clamp folded over the thus-wrapped wire, and held tightly against the same whereby a positive electrical connection is obtained without the use of solder.

755,093. VAPORIZER FOR HYDROCARBON-ENGINES. NORMAN A. WRIGHT, Pontiac, Mich. Filed July 1, 1903. Serial No. 163,843. (No model.)




*Claim.*—1. In a vaporizer, the combination with a casing provided with an intake-port and ports communicating with the cylinder and crank-case of the engine, of a series of perforated plates in the casing between the intake-port and the port communicating with the crank-case of the engine, whereby upon the upstroke of the piston, liquid fuel will be drawn through the intake-port of the casing and through the plates into the crank-case, and upon the downstroke of the piston will be forced through the casing into the cylinder.

2. In a vaporizer, the combination with a casing communicating through a port near its upper end with the cylinder of the engine and through a port near its lower end with the crank-case, of means for introducing gasolene through an inlet-port in the casing, and a series of perforated plates extending across the casing between the inlet for the gasolene and the outlet to the crank-case.

3. In a vaporizer, the combination with a casing communicating with the engine-cylinder through a port near its upper end and with the crank-case through a port near its lower end, a valve communicating with said casing through an intake-port therein for the admission of liquid fuel, and a series of perforated plates in the casing between the intake-port and the other ports therein.

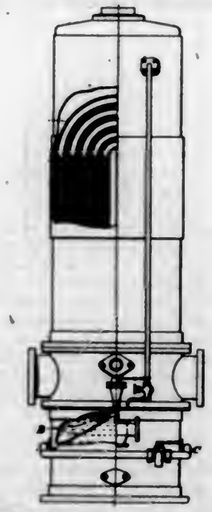
4. In a vaporizer, the combination with a casing communicating with the engine-cylinder through a port near its upper end and with the crank-case through a port near its lower end, a mixing-valve communicating with said casing intermediate its ends through an intake-port therein, a rod extending in the axis of the casing, a series of perforated disks secured to said rod and extending across the casing between the intake-port and the other ports thereof, and a screw-plug to close the upper end of the casing.

5. In a vaporizer, the combination with a casing having a port near its upper end communicating with the cylinder of the engine and a port at a distance from its lower end, communicating with the crank-case, a mixing-valve communicating with the casing intermediate its ends through an intake-port therein, a cock in the lower end of the casing, and a series of perforated disks in said casing between the intake-port and the ports communicating with the cylinder and crank-case.

6. In a vaporizer, the combination with a casing having a cylindrical chamber opening through one end and provided with ports at distances from its ends communicating with the cylinder and crank-case, and with an intake-port intermediate its ends, a valve-casing communicating with the intake-port, a valve in said casing to control the admission of air and oil thereto, a rod having an eye in its upper end and extending in the axis of the casing, a screw-plug to close the upper end of the chamber and engage the eye in the rod, and wire-gauze disks fitting within said chamber and secured to said rod between the intake-port and the other ports in the casing.

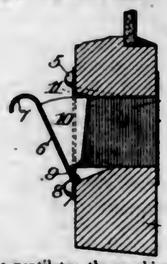


755,094. FEED-WATER HEATER. WILLIAM WRIGHT, New Wandsworth, England, assignor of one-half to David Crewe, Pahiatua, Wellington, New Zealand. Filed Oct. 25, 1901. Serial No. 79,931. (No model.)




*Claim.*—In combination with a water-heater, a tube for the passage of the water and a strip, extending through the said tube, of wave-like form, said strip being out of contact with the tube at the apices of the wave-like portions, substantially as described.

755,095. VENTILATOR. FREDERICK G. YAWMAN, Rochester, N. Y., assignor of one-half to Charles Englert, Jr., Rochester, N. Y. Filed Sept. 18, 1902. Serial No. 123,861. (No model.)



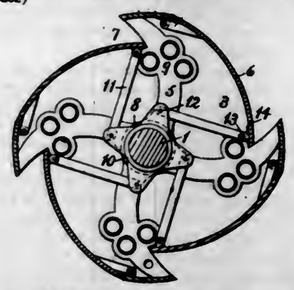

*Claim.*—1. In a ventilator, the combination with the apertured base-plate, of a second plate or closure pivoted to the base-plate by an open or separable hinge connection at one edge of the aperture having the inwardly-projecting segmental wings at the ends extending through the aperture in the base-plate and bearing upon the upper edge of the opening and having the projections at the ends of said wings adapted to engage the rear side of the base-plate to limit the opening movement of the closure.

2. In a ventilator, the combination with the apertured base-plate, of a closure therefor embodying a plate having an open-hinge connection at its lower edge with the lower edge of the aperture in the base-plate and having the segmental wings at the sides extending through the aperture in the base-plate with their edges engaging one edge of said aperture, and an outwardly-projecting flange at the upper edge of the closure forming a lifting-handle therefor.

3. In a ventilator, the combination with an apertured base-plate, of a closure therefor embodying a plate having segmental wings at the sides, the upper ends of which are adapted to engage the upper edge of the aperture in the base-plate and provided with an outwardly-extending curved lip at the top forming a lifting-handle and having inwardly and downwardly extending lugs at the bottom engaging the lower side of the aperture in the plate to form a hinge connection therewith.

4. In a ventilator, the combination with a base-plate having an aperture and recesses located at the lower edges thereof, of a closure consisting of a plate provided with downwardly-extending projections lying in the recesses on the base-plate, the segmental wings at the ends cooperating with the upper side of the aperture in the base-plate and the projections at the inner ends of the wings adapted to engage the rear side of the base-plate to limit the opening movement of the closure and the outwardly-extending flange at the upper edge of the closure forming a lifting-handle.

755,096. SKEINING OR WINDING CYLINDER. JOSEPH H. YOUNG, Northampton, Mass. Filed June 23, 1903. Serial No. 163,560. (No model.)




*Claim.*—1. In combination with a shaft, a skeining or winding cylinder comprising fixed members loosely supported on said shaft, collapsible peripheral segments pivotally connected with said fixed members, and means fast on the shaft to operate said segments.

2. The combination with a skeining or winding cylinder comprising fixed members and movable peripheral segments pivotally connected with said fixed members, of a shaft supporting the fixed members but adapted to rotate independently thereof, and means fast on said shaft to operate said segments.

3. In combination, a shaft, a skeining or winding cylinder comprising fixed members loosely supported on said shaft and collapsible peripheral segments pivotally connected with said fixed members, means fast on the shaft to operate said segments, and means for locking such members to the shaft as are loosely mounted thereon.

4. In combination, a shaft, a skeining or winding cylinder comprising fixed members loosely supported on said shaft and collapsible peripheral segments pivotally connected with said fixed members, means fast on the shaft to operate said segments, and means adapted to prevent the inward displacement of the segments.

5. In combination, a shaft, a skeining or winding cylinder comprising fixed members loosely supported on said shaft and collapsible peripheral segments pivotally connected with said fixed members, means fast on the shaft to operate said segments, and means adapted to lock the independent movable members to the shaft and prevent inward displacement of the segments or to release the same.

6. The combination with a skeining or winding cylinder comprising fixed members and movable peripheral segments pivotally connected with said fixed members, of a shaft supporting the fixed members but adapted to rotate independently thereof, means fast on said shaft to operate said segments, and means adapted to lock the independent movable members to the shaft and at the same time prevent inward displacement of the segments.

7. The combination with a skeining or winding cylinder comprising alternately arranged fixed and collapsible peripheral segments, the collapsible segments being pivotally connected with the fixed segments, of a shaft supporting the fixed segments but adapted to rotate independently thereof, and means fast on said shaft to operate the collapsible segments.

8. The combination with a skeining or winding cylinder comprising end plates and fixed members having movable peripheral segments pivotally connected therewith, of a shaft supporting the cylinder but adapted to rotate independently of certain parts thereof and means fast on said shaft to operate said segments.

9. The combination of a skeining or winding cylinder comprising end plates and fixed members having movable peripheral segments pivotally connected therewith, one of said end plates being cut away to provide for the inward displacement of said segments, a shaft supporting the cylinder but adapted to rotate independently

of certain parts thereof, and means fast on said shaft to operate the segments.

10. The combination of a skeining or winding cylinder comprising end plates and fixed members having movable peripheral segments pivotally connected therewith, one of said end plates being cut away to provide for the inward movement of said segments, inwardly-extending lips on the segments adapted to close the openings in the end plate when the segments are outwardly disposed, a shaft supporting the cylinder but adapted to rotate independently of certain parts thereof, and means fast on said shaft to operate the segments.

11. The combination of a skeining or winding cylinder comprising end plates and fixed members having movable peripheral segments pivotally connected therewith, one of said end plates being cut away to provide for the inward movement of said segments, inwardly-extending lips on the segments adapted to close the openings in the end plate when the segments are outwardly disposed, a shaft supporting the cylinder but adapted to rotate independently of certain parts thereof, means fast on said shaft to operate the segments, and means for internally heating the cylinder.

12. The combination with a shaft for a skeining or winding cylinder, of arms loosely mounted on said shaft and having peripheral segments fixed to their outer ends, movable peripheral segments pivotally connected with said fixed segments, collars fast on the shaft, and links pivotally connected with said collars and movable segments.

13. The combination with a shaft for a skeining or winding cylinder, of end plates and arms loosely mounted on said shaft, one of said end plates being cut away for the purpose described, fixed peripheral segments mounted on the outer ends of said arms, movable peripheral segments pivotally connected with said fixed segments and provided with inwardly-extending lips adapted to close the aforesaid openings when the movable segments are outwardly disposed, collars fast on such shaft, and links pivotally connected with said collars and movable segments.

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**755,097. SAFETY-PIN.** CHRISTIAN ANDERSEN, St. Louis, Mo., assignor to Lock Safety Pin Company, St. Louis, Mo., a Corporation of Missouri. Filed Nov. 9, 1903. Serial No. 180,402. (No model.)



*Claim.*—1. A safety-pin comprising a body portion, a piercing member or prong connected thereto, a sheath at one end of the body portion having a socket for receiving the point of said prong, the latter having an eye located adjacent to the point, a guide bridging the space between the body portion and the socket of the sheath, and a locking-tongue disposed substantially in the plane of the line of draft, carried by said guide and adapted to enter the eye of the prong, substantially as set forth.

2. A safety-pin having a body portion, a piercing member or prong connected thereto and having an eye located adjacent to the point thereof, a sheet-metal guide secured to the body portion at a point opposite the free end of the prong, a locking-tongue disposed in the plane of the line of draft carried by the guide and adapted to enter the eye of the prong, and a sheath for the reception of the point of the prong, substantially as set forth.

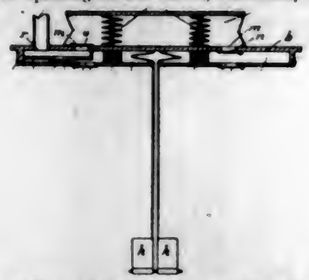
3. A safety-pin comprising a body portion, a piercing member or prong connected thereto, a sheath at one end of the body portion having a socket for receiving the point of said prong, the latter having an eye located adjacent to the point, a guide bridging the space between the body portion and the socket of the sheath, a locking-tongue folded from the body of the guide and adapted to enter the eye of the prong, the wall of the sheath-socket having a pocket or depression for receiving the base of the fold thus formed, substantially as set forth.

4. A safty-pin having a body portion, a piercing member or prong connected thereto and having an eye located adjacent to the point or free end thereof, a sheet-metal guide secured to the body portion at a point adjacent to the free end of the prong, and a locking-tongue disposed in the plane of the line of draft carried by the guide and adapted to enter the eye of the prong, substantially as set forth.

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**755,098. MECHANICAL PIANO-PLAYER.** GUSTAV BARTHEL, Dresden, Germany. Filed Mar. 31, 1903. Serial No. 150,430. (No model.)

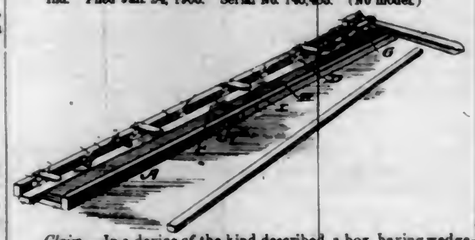
*Claim.*—1. In a mechanical piano-player, the combination with the channel leading to the key-striking action, of a casing communicating therewith, a wind-chest communicating with said casing, a pair of sucking-bellows, one of said bellows communicating with said wind-chest, the other of said sucking-bellows communicating with said casing, said bellows being provided with suitable outlets, and means for operating the said bellows, substantially as specified.



2. In a mechanical piano-player, the combination with the channel of the key-striking action, a casing communicating therewith, a wind-case communicating with said casing by a suitable port, a valve opening into said wind-chest provided for said port, a sucking-bellows communicating with said wind-chest by a suitable port, a valve opening into said sucking-bellows for said last-named port, a second sucking-bellows communicating with said casing by a suitable port, a valve opening into said second sucking-bellows for said port between said second sucking-bellows and said casing, both of said bellows being provided with valved outlet-ports, and means for operating said sucking-bellows, substantially as specified.

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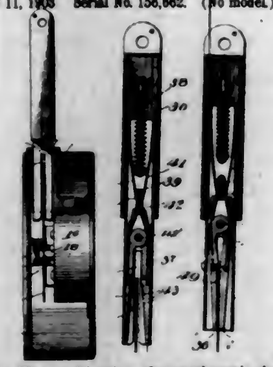
**755,099. TRACE-HOLDER.** CHARLES A. BERTRAND, Logootee, Ind. Filed Jan. 24, 1903. Serial No. 140,403. (No model.)



*Claim.*—In a device of the kind described, a box, having wedge-shaped projections upon the interior of one side, a clamping-bar having wedge-shaped projections, a lever pivoted to the box a link connecting the lever and clamping-bar, the guides attached to the box and overlapping the clamping-bar, the bail carried by the clamping-bar, and the post attached to the box and adapted to contact with the bail, as specified.

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**755,100. WATCHMAN'S CLOCK.** ALOIS BEYER, Chicago, Ill. Filed May 11, 1903. Serial No. 156,662. (No model.)



*Claim.*—1. The combination of a watchman's clock carrying a record-sheet, and a station instrument operated by said clock and comprising movable jaws adapted to make an impression on said sheet.

2. The combination of a watchman's clock carrying a record-sheet, and an impression device operated by said clock and comprising pivoted jaws adapted to make an impression on said sheet.

3. The combination of a watchman's clock carrying a record-sheet, and an impression device comprising movable jaws provided with complementary male and female dies and adapted to enter the clock and make an impression on said sheet.

4. The combination of a station instrument having an impression device comprising movable jaws, and a watchman's clock provided with an opening to receive said jaws, and adapted to operate the jaws when forced thereon to make an impression on a sheet carried by the clock.

5. The combination of a station instrument having an impression device comprising movable jaws, means acting to hold said jaws normally open, a clock provided with an opening to receive the jaws and carrying a record-sheet, and means carried by the clock to cause the jaws to make an impression on said sheet.

6. The combination of a station instrument having an impression device comprising movable jaws, spring-plates acting on the jaws to hold them normally open, a clock provided with an opening to receive the jaws and carrying a record-sheet, and a cross-bar in said opening adapted to act on the plates to cause the jaws to make an impression on said sheet.

7. A station instrument for a watchman's clock having an impression device comprising pivoted jaws, plates acting to hold the jaws normally open and made to approach close to each other behind the pivot of the jaws, and means to act on said plates to cause the jaws to make a record on an interposed sheet.

8. A station instrument for a watchman's clock comprising a frame, a spring-pressed impression device carried by and slidable within the frame, and means for causing the impression device to make a record on a sheet when pressure is applied to move the impression device within the frame in opposition to its spring

9. A station instrument for a watchman's clock comprising a frame, a spring-pressed sleeve movable in the frame, an impression device carried by the sleeve and consisting of jaws, means for holding the jaws normally open, and means for causing the jaws to make a record on an interposed sheet when the sleeve is moved in opposition to its spring.

10. A series of station instruments for a watchman's clock each instrument having an impression device consisting of a pair of movable jaws, one of said jaws having thereon female dies corresponding to all the other instruments and the other jaw having a single male die, and means for causing the male and its corresponding female die to make a record on an interposed sheet.

11. The combination of a station instrument, a clock provided with an opening to receive said instrument and carrying a sheet, a spring-pressed impression device carried by the instrument and comprising movable jaws, and means for moving the impression device in opposition to its spring when the clock and instrument are engaged to cause the jaws to make a record on the sheet.

12. The combination of an impression device comprising a pair of pivoted jaws normally held open, a clock provided with an opening to receive said impression device and carrying a sheet, and a cross-bar in the opening of the clock to act on the jaws and cause them to make a record on the sheet when the clock and impression device are engaged.

13. In a watchman's clock, the combination of a casing comprising a removable back, a record-sheet, a knife adapted to mark the sheet inside of its edge when the back is put on the casing, and means for operating the knife to similarly mark the sheet when the back is unlocked.

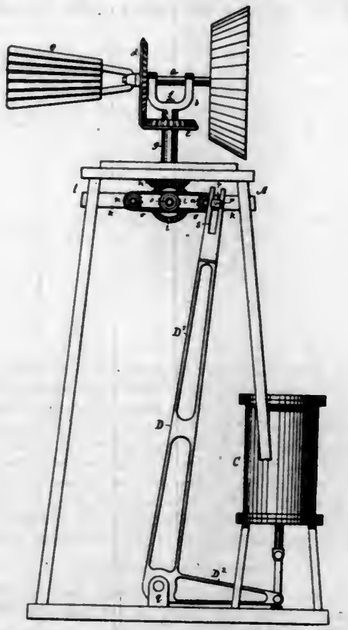
14. In a watchman's clock, the combination of a casing comprising a removable back, a record-sheet, a knife, means carried by the back for pressing the sheet down into engagement with the knife, and means for withdrawing the knife from engagement with the sheet when the back is locked.

15. In a watchman's clock, the combination of a casing comprising a removable back, a record-sheet, a knife, means carried by the back for pressing the sheet down into engagement with the knife, and locking means for the back adapted to withdraw the knife from engagement with the sheet when the back is locked and cause the knife to mark the sheet when the back is unlocked.

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**755,101. WIND-ENGINE.** CHARLES F. BLACKSTTER, Minneapolis, Minn. Filed Feb. 28, 1903. Serial No. 145,616. (No model.)

*Claim.*—1. In a wind-engine the combination with the wind-wheel and pump, of the intervening mechanism consisting of the lever D having a slotted opening *s*; the sprocket-wheels *l* and *m* driven by the said wind-wheel and carrying the link belt *o*; and the pin *p* connecting the said lever, with the said link belt, whereby power is transferred from the said wind-wheel to the said pump, substantially as shown and described.



2. In a wind-engine, the combination with the tower, the wind-wheel and the pump, of the interposed mechanism, embodying a beveled gear-wheel rigidly affixed to the shaft of the said wind-wheel; a beveled gear-wheel loosely journaled upon a vertical spindle, the teeth of which engage those of the said beveled gear-wheel, a sleeve affixed to the said beveled gear-wheel; a beveled gear-wheel affixed to the said sleeve; a horizontal shaft having a beveled gear-wheel thereon, the teeth of which engage those of the beveled gear-wheel affixed to the said sleeve; a driving sprocket-wheel affixed upon the said horizontal shaft; similar sprocket-wheels journaled in the said tower and in line with the said first-named sprocket-wheel, and a chain carried by the said sprocket-wheels, one link of which carries a horizontally-extending pin to which the upper end of the said lever is connected, substantially as shown and described.

3. In a wind-engine, the combination with the tower, wind-wheel and pump, of a link-belt driving-chain, one link of which carries a horizontally-extending pin; means for driving the said chain from the said wind-wheel and a lever, pivotally affixed at the base of the said tower, the long arm of which is loosely journaled upon the horizontal pin of the said driving-chain, and the short arm of which is pivotally connected to the piston-rod of the said pump, whereby the said pump is operated by the said wind-wheel substantially as shown and described.

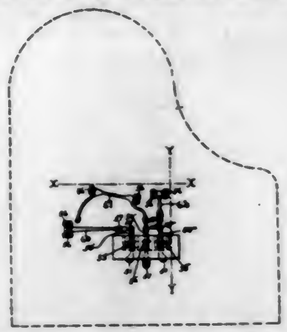
4. In a wind-engine, the combination with the tower and pump, of a wind-wheel, a revoluble support therefor, a sleeve carrying a gear-wheel actuated by said wind-wheel, rotatable means actuated by said gear, a bell-crank lever pivotally mounted at the base of the tower, adapted to actuate the pump, and means driven by the said last-named rotatable means having a slidable connection with the long arm of the lever, to actuate the same, substantially as described.

5. In a wind-engine the combination with the wind-wheel and pump, of a pivoted rocking member adapted to actuate the pump-piston, means having a slidable connection therewith to operate the same, rotatable means carrying the last-named means, and a vertical rotatable member actuated by the wind-wheel adapted to drive said rotatable means, substantially as described.

6. In a wind-engine, the combination with the tower, wind-wheel and pump, of a rocking means mounted in the base of the tower, having one end connected with the pump, means slidably connected with

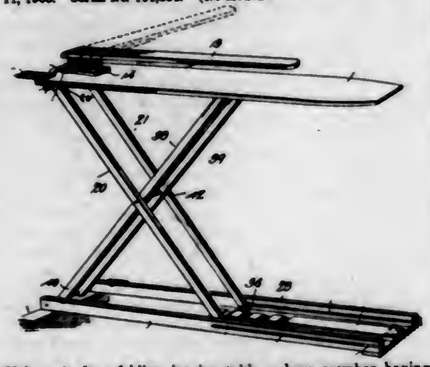
the other end of the rocking means, rotatable means carrying the same, and a rotatable sleeve adapted to actuate the rotatable means, said sleeve being driven by the wind-wheel, substantially as described.

755,102. PEDAL-ACTION FOR GRAND PIANOS. WILLIAM C. BOSENBURY, Richmond, Ind., assignor to Starr Piano Company, Richmond, Ind. Filed Apr. 6, 1901. Serial No. 54,705. (No model.)



*Claim.*—In a pedal-action for pianos, the combination with a pivoted pedal having a cup-shaped recess formed therein, of a lever consisting in part of a body portion, pintles on the ends of said body portion, brackets secured to the under side of the piano adapted to support the lever by the pintles, oppositely-curved arms extending out from near the ends of said body portion, one of said arms provided with a slot and both provided with recesses, a vertical rod adapted to engage one of said arms and the pedal, the other arm adapted to act as an operating-lever, and a screw engaging said slot and adapted to adjustably limit the downward movement of said arms.

755,103. IRONING-BOARD. STEPHEN L. BOYD, Kosciusko, Miss., assignor of one-half to W. A. Campbell, Hesterville, Miss. Filed June 11, 1903. Serial No. 161,033. (No model.)



*Claim.*—1. In a folding ironing-table, a base member having longitudinal slots and a resilient plate having spaced transverse recesses, a table member, leg members movably connected by one end to said table member and movably engaging said slots, and provided with means for detachably engaging said resilient plate, and other leg members movably connected by one end to said base member and movably engaging the table member by the other end, and pivoted to said first-mentioned leg members intermediately of their ends.

2. In a folding ironing-table, a base member having longitudinal slots and a resilient plate having spaced transverse recesses, a table member, having a guide-plate spaced from the under face thereof, leg members movably connected by one end to said table member and movably engaging the slots in said base and provided with means for engaging said resilient plate, and leg members movably connected by one end to said base and having means disposed in the space between said guide-plate and said table member and pivoted to said first-mentioned leg members intermediately of their ends substantially as described.

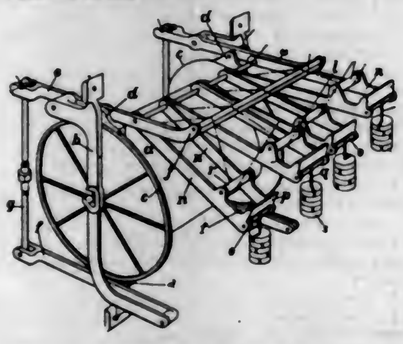
3. In a foldable ironing-table, a base member formed of spaced sides having oppositely-disposed longitudinal slots, and with a resilient plate having spaced transverse recesses and extending between said spaced base members, a table member, spaced leg members movably connected by one end to said table member and united at their other ends by a rod extending through said slots and likewise engaging said spaced recesses in said resilient plate, and leg members movably connected by one end to said base members and movably engaging said table member by their other ends and pivotally connected to said first-mentioned leg members intermediately of the ends thereof, substantially as described.

4. In a foldable ironing-table, a base member formed of spaced sides connected at the ends by transverse supports and with longitudinal slots formed by removing the central portion of said side members and with spacer-blocks secured between the said divided portions, a resilient plate connected to one of said end supports and extending between the base members, spaced leg members movably connected by one end to said table member and united at their other ends by a rod extending through said slots and likewise engaging said spaced recesses in said resilient plate, and leg members movably connected by one end to said base member and movably engaging the table by the other end, and pivoted intermediately of their ends to said first-mentioned leg members intermediately of the ends of the first-mentioned leg members, substantially as described.

5. In a device of the character described, a table member having a supporting-base, a clip spaced from said table member, a sleeve-board having a supporting-block and pivotally and detachably connected to the table adjacent to said clip and having an extending toe adapted to extend beneath said clip when the sleeve-board is swung on its pivot in a certain predetermined position to hold it on the table and when said board is swung into another position said toe is released from said clip.

6. In a device of the character described, a table member, spaced bearings secured thereto beneath said table member near one end, a pivot-rod supported in said bearings, leg members having recesses in their ends at one side and engaging said rod, straps inclosing said rod within said recesses and connected to said leg members, a cleat disposed between said leg members and having recessed extensions forming stops to limit the outward movement of said leg members, a base-support, and means carried by said base-support for securing said leg members in their distended position, substantially as described.

755,104. LET-OFF FOR LOOMS. THOMAS BRINDLE and MERRILL O. STERRY, Pawtucket, R. I. Filed Jan. 31, 1902. Serial No. 92,011. (No model.)



*Claim.*—1. The combination, in a let-off device with a warp-beam, of brakes to control the rotation of the warp-beam, a plurality of take-ups each controlling the tension of a separate warp, and connections between the said brakes and take-ups whereby the brakes may be shifted by any one of the take-ups.

2. The combination in a let-off device with a warp-beam containing a plurality of warps, a separate take-up for each warp, brakes engaging the beam to retard its rotation, and connections between the take-ups and the brakes whereby an excess of tension on any one warp shall cause the brakes to release the beam.

3. In a let-off mechanism, the combination with a warp-beam to contain a plurality of warps, and brake devices to control the rotation of the beam having a member to be engaged by the several warps, of independent, pivoted take-ups, each bearing upon and supported by a separate warp and each adapted to independently control the said brake devices.

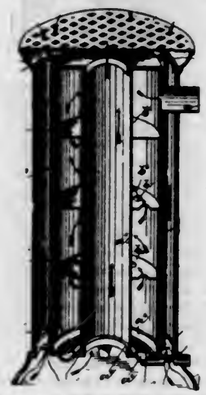
4. In a let-off device, the combination with a brake mechanism having a member engaged with the warp, of independent movable members connected with and controlling the said brake mechanism, each member engaging one or more warp-threads.

5. A let-off device for looms comprising two pairs of oppositely-arranged and pivoted levers carrying brake-shoes, one lever of each pair having an open and vertical slot and notches each side of the slot, a connecting-rod between said levers of each pair to cause them to move in opposite directions, each said rod being pivoted to one lever and having a cross-pin to rest in the said notches, a connecting-rod between the lever of one pair and the corresponding lever of the other pair, and a weighted frame pivoted to the last-mentioned lever and adapted to rest upon the warp which is passed over the last-mentioned rod.

6. In a let-off device for looms, the combination with a warp-beam, of levers *f* having brake-shoes *d* engaging with the beam and pivotally-mounted connecting-rods *g* having cross-pins *h*, levers *e* also having brakes to coact with on the levers *f*, and notches *i* in which the cross-pin *h* can be seated to join the levers *e* and *f*, a cross-bar *k* and a rod *m*, a plurality of take-ups mounted on the rod *m*, having weights hung from their outer ends, and guide-rolls mounted adjacent the said ends, substantially as described.



755,105. STOVE. HENRY H. BROWN, Washington Court-House, Ohio, assignor to the Wonder Manufacturing Company, Washington Court-House, Ohio, a Corporation of Ohio. Filed May 22, 1903. Serial No. 158,218. (No model.)



*Claim.*—1. In a stove such as described, the combination with the side walls of the fire-chamber, of a series of partitions in said chamber between the burners and outlet for said chamber, having perforations therein, each succeeding partition from said burners having a less number of said perforations so disposed as to guide the heat-currents from one side to the other of said chamber, substantially as specified.

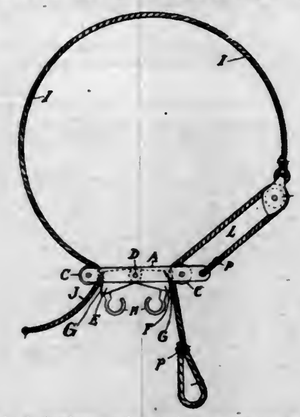
2. In a stove such as described, a base consisting of radial arms with a plurality of rings thereon leaving openings on each side thereof, one of said rings having a channel formed on the upper surface thereof and a casing forming a conduit opening into said channel, all cast integrally, substantially as specified.

3. In a stove such as described, a base consisting of radial arms with a plurality of rings thereon leaving openings on each side thereof, one of said rings having a channel formed therein and a casing forming a conduit opening into said channel, all cast integrally, said channeled ring forming one portion of a burner, another channeled ring forming the other portion having a plurality of perforations therein, and means to secure said portions together, substantially as specified.

4. In a stove such as described, a base consisting of radial arms with a plurality of rings thereon leaving openings on each side thereof, supporting-legs, one of said rings having a channel formed on the upper surface thereof and a casing forming a conduit opening into said channel, all cast integrally, said channeled ring forming one portion of a burner, another channeled ring forming the other portion and having a plurality of upwardly-extending projections with perforations extending into said channel, and means to secure said portions together, substantially as specified.

5. In a stove such as described, the combination with three shells forming side walls of a fire-chamber, a central air-shaft and an air-space about the outer walls of said chamber, a series of partitions in said chamber having perforations therein, each succeeding partition from the lowest having a less number of said perforations so disposed as to guide the heat-currents from one side to the other of said chamber, of a base consisting of radial arms with a plurality of rings thereon leaving open spaces on each side thereof, one of said rings having a channel formed on the upper side thereof, and a casing forming a conduit opening into said channel cast integrally, said channeled ring forming one portion of a burner, another channeled ring forming the other portion and having a plurality of upwardly-extending cone-shaped projections with perforations extending into said channel, and means to secure said portions together, a top consisting of a circular portion having a central opening therein, a ring outside of said portion and arms connecting said portion and ring, said portion and ring having laterally projecting flanges, all cast integrally, and means extending from said top to said base to bind and secure the parts together, substantially as specified.

755,106. SHOCK-SQUEEZING DEVICE. WILLIAM I. BROWN, St. Paul, Minn. Filed June 18, 1903. Serial No. 161,961. (No model.)



*Claim.*—1. A shock-squeezing device comprising in combination a primary single rope adapted to be taken about the shock, a pulley-block secured to one end of the rope and an elongated frame secured with one end to the other end of it, a rope-pulley in the frame, a dog pivoted in the frame adjacent the pulley, a secondary rope secured to the other end of the frame and passed through the pulley-block and thence through the frame between the pulley and the dog therein, and a substantially ring-shaped finger-hold on the dog, and a suitable handhold at the operating end of the secondary rope, substantially as and for the purpose set forth.

2. A shock-squeezing device comprising in combination a primary rope adapted to be taken about the shock, a pulley-block secured to one end of the rope and an elongated frame secured to the other end of it, a rope-pulley in the frame, a dog pivoted adjacent the pulley, a secondary rope secured to the end of the frame nearest the pulley-block and passed through the frame between the pulley and the dog therein, and a suitable finger-hold on the dog and a suitable handhold on the operating end of the secondary rope, and another dog and sheave or pulley in the frame holding the primary rope in an adjustable and detachable manner; both of said dogs being normally disengaged from the ropes and provided with substantially ring-shaped finger-holds in which to insert two fingers in operating the dogs so as to engage or disengage the ropes.

3. A shock-squeezing device comprising in combination a slotted frame, a single primary rope secured with one end to one end thereof and having at its other end a pulley-block open at one side, a secondary rope placed over the pulley in the block and having one end fixed to the opposite end of the frame and the other end passed through the frame, a pulley in the frame at one side of the rope and a beveled corrugated dog at the opposite side of the rope to engage and hold the rope against retraction while the shock is being tied; said dog being normally disengaged from the rope, substantially as and for the purpose set forth.

4. A shock-squeezing device comprising in combination, an elongated frame, a rope-pulley in the frame, a single rope secured with one end to one end of the frame and adapted to go about the shock, a doubled rope slidingly engaging the other end of the single rope and having one end fixed to the frame and the other end slid-

ing over the pulley in the frame so as to gain power by the doubled rope, and a normally disengaged pivoted dog or cam to hold the part of the rope sliding through the frame clamped against the pulley when so adjusted by the hand.

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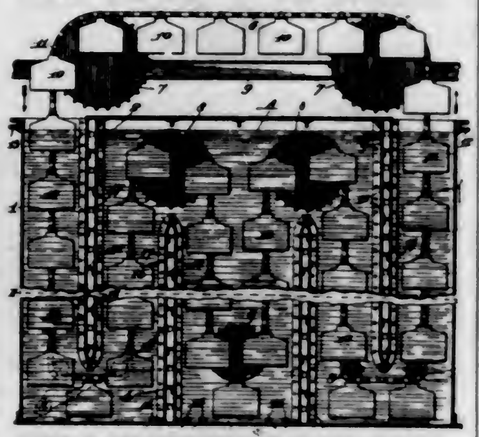
755,107. WINDOW-WEIGHT. JOHN W. BRYANT, Minneapolis, Minn. Filed Oct. 22, 1903. Serial No. 178,001. (No model.)



*Claim.*—A weight of the character described having an axial passage, with an entrance-slot radiating therefrom and extending on a line that is not parallel therewith, substantially as described.

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755,108. PASTEURIZER. AUGUST A. BUSCH, RUDOLF GULL, and THOMAS J. BARRY, St. Louis, Mo. Filed May 26, 1902. Serial No. 108,934. (No model.)



*Claim.*—1. In a pasteurizer, a tank formed into compartments by means of upwardly and downwardly extending partitions; said partitions being formed with air-chambers and the walls of said partitions being supported by means of strips that do not extend entirely across the partitions; the walls of said tank being perforated opposite the partitions, substantially as set forth.

2. In a pasteurizer, the combination of a tank divided into compartments, endless chains passing through the compartments, and baskets carried by said chains, said baskets consisting of perforated end pieces and wire-gauze bottoms and sides, and having doors hinged at their upper ends to the ends of the baskets, substantially as set forth.

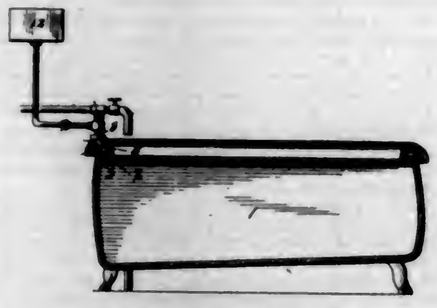
3. In a pasteurizer, the combination of a tank divided into compartments, endless chains passing through the compartments, baskets carried by the chains and having hinged doors, bars pivoted to the baskets and which are adapted to be moved to an inclined position by the closing of the doors and to be held in a horizontal position if the doors are not closed, and an electric bell adapted to be sounded by said bars when in a horizontal position, substantially as and for the purpose set forth.

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755,109. BATH-TUB. OTTO DONNENIUS, New York, N. Y. Filed Aug. 24, 1903. Serial No. 170,570. (No model.)

*Claim.*—1. A bath-tub having means arranged around its upper edge whereby water and other fluid may be discharged against the sides thereof to cleanse the same, a water-supply pipe, a valved branch pipe connecting said supply-pipe with said discharging means, a tank or receptacle containing an antiseptic solution and a valved pipe connecting said tank with said branch water-supply pipe, whereby an antiseptic fluid may be introduced and mixed with the water in said pipe and discharged therewith against the sides of said tub, substantially as described.

2. A bath-tub provided with an injector for discharging water against the sides thereof, a water-supply pipe, a container for an antiseptic solution, and valve mechanism for supplying either water or solution to the said injector or combining the same so that the antiseptic fluid will be discharged with the water against the sides of the tub.



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755,110. KNOT-TYING IMPLEMENT. HOWARD D. COLMAN, Rockford, Ill. Filed Feb. 23, 1903. Serial No. 96,097. (No model.)



*Claim.*—1. A tying-bill comprising a shaft having an outer member, an intermediate member, a third member detachable from the shaft, and means for attaching said last-mentioned member to the shaft and holding it in engagement with the intermediate member.

2. A tying-bill comprising a shaft having a clamping member, an intermediate shearing and clamping member, a shearing member detachable from the shaft, and means for attaching said last-mentioned member to the shaft and holding it in engagement with said intermediate shearing and clamping member.

3. A tying-bill comprising a shaft having an integral clamping member, an intermediate shearing and clamping jaw pivotally mounted on said shaft, a bill-spring detachable from the shaft, and means for attaching said bill-spring to the shaft and holding it in engagement with the shearing and clamping jaw.

4. A detachable bill-spring for tying-bills, having a raised boss on the surface of said bill-spring, to provide slack for stripping the knot from the tying-bill.

5. A bill-spring for tying-bills, having a raised boss on the surface of said bill-spring, to provide slack for stripping the knot from the tying-bill.

6. A bill-spring for tying-bills, having a raised boss on the surface of said bill-spring, with an opening in said boss for receiving the pivot-pin of the tying-bill.

7. A detachable bill-spring for tying-bills, having a shearing edge and a spring-shank, said shank being spirally twisted to produce a uniform pressure of the shearing edge of the bill-spring upon an opposing shearing edge.

8. A knotter-shaft flattened at its forward end and provided with a holder for receiving the shank of a bill-spring.

9. A knotter-shaft flattened for a portion of its length and having a sleeve to provide a holder for the shank of a bill-spring.

10. A detachable thread-guide for knot-tying implements, having a perforated body portion and a spring-arm integral with said body portion, which arm is adapted to embrace a fixed portion of the tying mechanism to hold said thread-guide in place.

11. A spring for knot-tying implements, having a loop adapted to embrace the arm upon which it is intended to be mounted, and two ears extending from said body portion adapted to engage portions of the arm to hold said spring from lateral displacement.



12. In a knot-tying implement, in combination, a tying-bill comprising a shaft having an outer member, an intermediate member, a third member detachable from the shaft, and means for attaching said last-mentioned member to the shaft and holding it in engagement with the intermediate member; means for rotating said tying-bill; and means for actuating said intermediate member.

13. In a knot-tying implement, in combination, a tying-bill comprising a shaft having an outer member, an intermediate member, a third member detachable from the shaft, and means for attaching said last-mentioned member to the shaft and holding it in engagement with the intermediate member; means for rotating said tying-bill; means for actuating said intermediate member; and means for tightening the knot and stripping it from said tying-bill.

14. In a knot-tying implement, in combination, a tying-bill comprising a shaft having an outer member, an intermediate member, a third member detachable from the shaft, and means for attaching said last-mentioned member to the shaft and holding it in engagement with the intermediate member; means for rotating said tying-bill; means for actuating said intermediate member; and a thread-holding mechanism comprising a thread-clamping arm having two spring-fingers, and a thread-holding arm having a forward end adapted to carry the thread between said spring-fingers.

15. In a knot-tying implement, in combination, a knotter-shaft; a detachable bill-spring; a shearing and clamping jaw pivotally mounted between said shafts and said bill-spring; means for attaching said bill-spring to said shaft and holding it in engagement with said shearing and clamping jaw; means for rotating said knotter-shaft; means for actuating said shearing and clamping jaw; a thread-clamp; and means for pulling up the slack in the thread between the thread-clamp and the tying-bill to tighten the knot and strip said knot from the tying-bill.

16. In a knot-tying implement, in combination, a knotter-shaft; a detachable bill-spring; a shearing and clamping jaw pivotally mounted between said shaft and said bill-spring; means for attaching said bill-spring to said shaft and holding it in engagement with said shearing and clamping jaw; means for rotating said knotter-shaft; means for actuating said shearing and clamping jaw; a thread-clamp; means for operating said thread-clamp to clamp the thread; and means for drawing up the slack in the thread between said thread-clamp and the tying-bill and strip said knot from the tying-bill.

17. In a tying-bill, in combination, a knotter-shaft having a hooked forward end; a rib on said forward end; a bill-spring; and a shearing and clamping jaw pivotally mounted between the forward end of the knotter-shaft and said bill-spring, said shearing and clamping jaw being provided with a shear edge on one side and with a groove on the other side.

18. In a knot-tying implement, in combination, a tying-bill comprising a shaft having an outer member, an intermediate member, a third member detachable from the shaft, and means for attaching said last-mentioned member to the shaft and holding it in engagement with the intermediate member; means for rotating said tying-bill; a cam-barrel for actuating said intermediate member; a thread-clamp comprising a thread-clamping arm having two spring-fingers, and a thread-holding arm hooked at its forward end and adapted to carry the thread between said spring-fingers; and means for moving said thread-clamp to tighten the knot and strip it from the tying-bill.

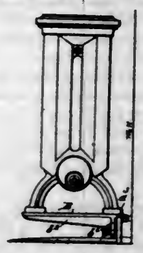
19. In a knot-tying implement, in combination, a knotter-shaft flattened at its forward end; a bill-spring having a boss upon its side to provide additional slack in the thread; a sleeve secured to said shaft for receiving the end of said bill-spring; a pivot-pin fixed with relation to said knotter-shaft and adapted to enter an opening in said bill-spring; a shearing and clamping jaw loosely mounted upon said pivot-pin; means for rotating said knotter-shaft; a cam-barrel for actuating said shearing and clamping jaw; and means for tightening the knot and stripping the threads from the clamping-jaw.

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755,111. SUPPORT FOR RADIATORS OR THE LIKE. GEORGE H. COLTON, Hiram, Ohio. Filed Sept. 28, 1903. Serial No. 174,902. (No model.)

*Claim.*—1. In a support for radiators or the like, the combination with a base portion provided with an upwardly-projecting portion cut away to form a seat, of a supporting element secured to said upwardly-projecting portion within said seat and provided with a screw for engaging said upwardly-projecting portion to render the latter and said supporting element relatively adjustable.

2. In a support for radiators or the like, the combination of a base portion having an upper convex surface, sides converging from the back toward the front, and an upwardly-projecting portion at the back, a supporting element hinged to the top of said upwardly-projecting element, and a screw seated in such supporting element and engaging said upwardly-projecting element, whereby the former may be adjusted relatively to said base portion.



3. In a support for radiators or the like, the combination of a base having an upwardly-projecting portion at one extremity, a supporting element supported upon such portion so as to be capable of angular adjustment in vertical planes, and provided, intermediately of its ends, with a downwardly-projecting lug; and a screw seated in said lug and engaging said upwardly-projecting portion of said base.

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755,112. MOLD FOR MARKING MEAT PRODUCTS. JAMES CUNNING, Indianapolis, Ind. Filed Oct. 25, 1902. Serial No. 128,767. (No model.)

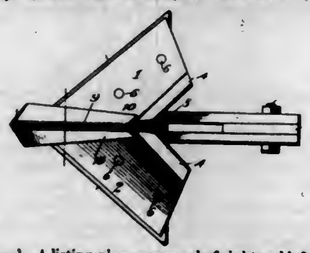


*Claim.*—1. In a device for molding and marking prepared-meat products, an oblong mold preferably four-sided, and open at one end, a removable casing adapted when filled within the said mold with said products to conform closely to the walls of said mold and having perforations through the walls of said mold to facilitate drainage, drying and smoking, and thereby causing an effective marking upon those portions of the casing exposed by said perforations.

2. In a device for molding and marking prepared-meat products, an oblong mold preferably four-sided and open at one end, a removable casing adapted when filled with said products within the said mold to conform closely to the walls of said mold, and having perforations through the walls of said mold to facilitate drainage, drying and smoking and thereby causing marking upon those portions of the external surface of said casing exposed by said perforations, effective as distinguishing marks useful in commerce, and a bail by which to suspend the mold during the drainage, drying and smoking process.

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755,113. LISTING-PLOW. ENOS P. CURREY, Wellington, Kans. Filed Apr. 4, 1903. Serial No. 151,102. (No model.)



*Claim.*—1. A listing-plow composed of right and left hand members, a spacing-bar interposed between the landsides of said members and provided with sockets to inclose the points thereof, and auxiliary connecting means.

2. In a listing-plow, the combination of right and left hand members, a spacing member interposed between the landsides of the same and constituting a point provided with sockets to inclose the points of said right and left hand members, and auxiliary spacing and connecting means.

3. In a listing-plow, the combination of right and left hand plow members, including supporting-plates, wear-plates and blades forming shares which are reversibly clamped between said supporting-plates and wear-plates, and a point having a bar interposed between the landsides of the right and left hand plow members and provided

with sockets receiving the points of the shares of said right and left hand members.

4. A listing-plow comprising right and left hand plow members provided with blades forming shares frictionally retained in position, between the supporting and wear plates in combination with a point interposed between the landsides of the right and left hand plow members and having sockets for the reception of the points of said shares.

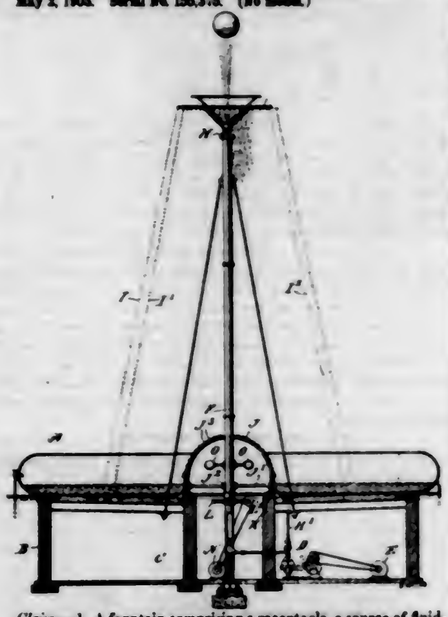
5. In a listing-plow, the combination with right and left hand plow members, of a point comprising a bar inserted between the landsides of said plow members and having a top plate extending laterally and forming flanges overlapping the wear-plates of the plow members, and a bottom plate coacting with said top plate to form sockets in which the points of the right and left hand plow members are seated.

6. A listing-plow composed of right and left hand plow members and an interposed point member having side flanges overlapping the entire inner side edges of the wear-plates of said plow members.

7. In a listing-plow, the combination with right and left hand plow members, of an interposed point member having laterally-extending flanges overlapping the entire inner side edges of the wear-plates of said plow members, sockets forming seats for the points of said plow members which are thereby prevented from spreading, and auxiliary connecting means.

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**755,114. FOUNTAIN. FREDERICK C. DAHN, Guthrie, Okla. Filed May 2, 1903. Serial No. 155,375. (No model.)**



*Claim.*—1. A fountain comprising a receptacle, a source of fluid-supply therefor, jet-pipes disposed above said receptacle and communicating with the source of fluid-supply, and nozzles provided in said jet-pipes; a part of said nozzles being arranged at an angle to the remaining part, whereby to project the fluid streams to produce a lattice or trellis extending from the jet-pipes to the receptacle, substantially as specified.

2. A fountain comprising a receptacle, a source of fluid-supply therefor, jet-pipes disposed above said receptacle and communicating with the source of fluid-supply, nozzles provided in said jet-pipes; a part of said nozzles being arranged at an angle to the remaining part, whereby to project the fluid streams to produce a lattice or trellis extending from the jet-pipes to the receptacle, and illuminating devices disposed in proximity to said lattice or trellis adapted to project beams of light thereupon, substantially as specified.

3. A fountain having concentric jet-pipes provided with nozzles, extending downwardly and outwardly, the nozzles in one pipe standing in an opposite direction to the nozzles in the other pipe, to cause the streams of liquid issuing from the nozzles to cross each other, to form diamond-shaped spaces, as set forth.

4. A fountain having a basin, a hemisphere rising centrally in the basin and provided with colored electric lights, a stand-pipe rising centrally in the basin, through the hemisphere, jet-pipes arranged concentrically on the said stand-pipe and connected therewith, and nozzles in the said jet-pipes, extending downwardly and outwardly, to throw their streams of liquid into the basin, as set forth.

5. A fountain having a basin, a hemisphere rising centrally in the basin and provided with colored electric lights, a stand-pipe rising centrally in the basin, through the hemisphere, jet-pipes arranged concentrically on the said stand-pipe and connected therewith, and nozzles in the said jet-pipes, extending downwardly and outwardly, to throw their streams of liquid into the basin, the nozzles in one pipe standing in an opposite direction to the nozzles in the other pipe, to cause the streams of liquid issuing from the nozzles to cross each other, to form diamond-shaped spaces, as set forth.

6. A fountain provided with a basin adapted to contain water, and jets of mercury falling into the water, to produce loud sounds and to prevent the mercury from spattering and being lost, as set forth.

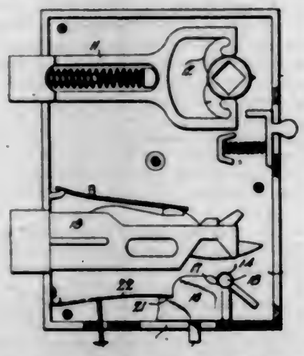
7. In a fountain, an illuminating device comprising a rotatable casing, translucid sections therein, a bearing for said casing, means for illuminating said casing, an annular section encircling said casing having angular faces, and operating means adapted to cooperate with the angular faces of the annular section to rotate the casing, substantially as specified.

8. In a fountain, an illuminating device comprising a rotatable casing, translucid sections therein, a bearing for said casing, means for illuminating said casing, an annular section encircling said casing, having transverse angular faces, and operating means adapted to cooperate with the angular faces of the annular section to rotate the casing; substantially as specified.

9. In a fountain an illuminating device comprising a rotatable casing, means for illuminating the same, translucid sections irregularly arranged in said casing, trunnions arranged upon opposite sides of said casing, an annular band encircling said casing intermediate the trunnions thereon, transverse serrations arranged upon said annular band, a bearing for said casing, a source of fluid-supply, and a nozzle arranged on said bearing communicating with the source of fluid-supply adapted to project the operating fluid against the serrations of the band encircling the casing whereby to rotate said casing, substantially as specified.

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**755,115. KEYHOLE-GUARD. DANIEL D. DORSEY, Allentown, Pa. Filed Mar. 27, 1903. Serial No. 149,675. (No model.)**



*Claim.*—The combination with a lock-casing having keyholes, of a block slidably disposed in said casing and adapted to be moved to cover and form a closure for the keyholes, said block having a recess in its rear end forming graduated stop-engaging surfaces, and a recess in its front end to receive the key-stock when the keyholes are partly closed, a movable stop cooperating with said graduated surfaces to lock said block in a plurality of positions and partly or completely cover said keyholes, and independent means operative exteriorly of the lock-casing for actuating said block and stop.

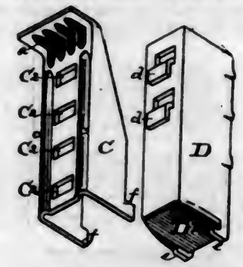
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**755,116. FLOOR-JOIST HANGER. WILLIAM D. DEXTER, Cleveland, Ohio. Filed July 9, 1903. Serial No. 164,907. (No model.)**

*Claim.*—The herein-described two-part adjustable floor-joist hanger, consisting of part C, having corner corrugations c c, the lugs



*f f* on lower front corners, the holes $C^3$ in the back between said corrugations c c, and the corrugated hanging-hook C' on the upper end, in combination with the part D having closed bottom D', the hooks *d d* in the back, and the projections *d'' d''* on its front edges, constructed to operate substantially as described.



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**755,117. RETURN-BALL MEGAPHONE. GEORGE F. DUNN, Brockton, Mass. Filed June 22, 1903. Serial No. 162,481. (No model.)**



*Claim.*—1. A device comprising a body part in the form of a hollow cone having a return-ball connected thereto by a resilient cord secured at the lower edge of the large end of the cone, said cone having an overhanging striker end projecting at the upper edge.

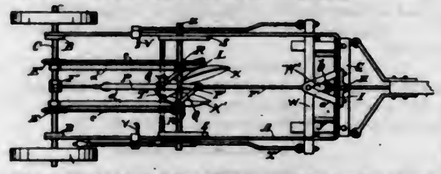
2. A device comprising a hollow cone having one side shorter than the other side, thereby providing an overhanging striker end, and a return-ball secured by a resilient cord to said cone for striking against said overhanging end and lodging within the cone.

3. A device comprising a cone having a return-ball attached thereto by a resilient cord, and a flexible, ribbon-like barrier movably secured through said cone adjacent the small end thereof for receiving said ball, said ribbon-like device having its ends extending to the outside for being externally secured.

4. A device comprising a hollow cone of thin, stiff material having an overhanging portion at one side of its large end, an eyelet in the shorter side opposite said overhanging side, a resilient cord secured at one end to said eyelet and having at its other end a return-ball, opposite slits through the walls of said cone adjacent the small end thereof, and a flexible strip passed through the cone and said slits, and adapted to be detachably secured at its ends for providing a ball-stopping barrier within the cone.

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**755,118. BEET-PULLER. CHARLES A. DYER, Los Angeles, Cal., assignor to American Sugar Beet Implement Company, Butte, Mont. Filed Mar. 30, 1903. Serial No. 150,933. (No model.)**



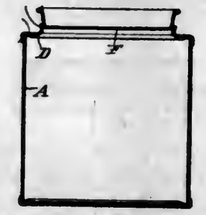
*Claim.*—1. In a device for pulling beets of the character herein described having cutting-disks, means to throw the cutting-disks into and out of operative position, comprising upright supports in the lower end of which are revolubly mounted the cutting-disks, the upper end terminating in a sliding block engaging a vertically-movable cross-bar; a cross-bar arranged to operate in a vertical groove in upright standards; upright standards mounted on the frame and having a slide-operating groove therein; a lever pivoted on the frame and being provided with clutch mechanism to hold the lever in any desired position; a connecting-rod extending from the short end of the lever to the sliding block.

2. In a beet-pulling apparatus of the character herein described the cutting-disks and means to hold them in alinement with the row of beets to be pulled, comprising foot-rests slidably mounted on the frame and being operatively connected with pivoted means in the forward end of the frame, whereby the movement forward of either foot will tend to throw the cutters in the direction of the foot exerting the impulse.

3. In a beet-puller of the character herein described the cutting-disks one on each side of the row of beets, and means to change the distance between the disks, comprising the clutch-lever P pivoted at P'; a toothed sector T secured on a cross-bar Z; a clutch mechanism on said lever; connecting-rods Q extending from the lever P and connected with the slide R, the said slide R having a longitudinal movement on the cross-bar Z.

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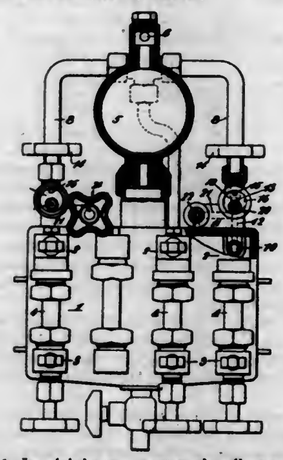
**755,119. CAN. EDMUND ECKART, New Rochelle, N. Y. Filed Dec. 1, 1903. Serial No. 183,342. (No model.)**



*Claim.*—A can or other receptacle, having the edges of the upper portion bent downwardly and inwardly forming an acute angle with the side of the can, and then bent upwardly again and outwardly forming an obtuse angle between the two said bent portions of the edge, with an upwardly and outwardly flaring neck extending from the upwardly and outwardly bent portion of the edge, the said bent portions of the edge being sufficiently flexible to give in two directions toward the base and sides of the can when the cover is pressed down, the first downwardly and inwardly bent portion of the edge being adapted to assume a more acute angle with the side of the can under pressure, and the other upwardly and outwardly bent portion of the edge being adapted to assume a substantially horizontal ultimate position as the cover is pressed down, for substantially the purposes set forth.

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**755,120. AUXILIARY SIGHT-FEED FOR LUBRICATORS. FRANK W. EDWARDS, Logansport, Ind., assignor to the Chicago Lubricator Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 18, 1902. Serial No. 90,336. (No model.)**



*Claim.*—1. In a lubricator, a rectangular oil-reservoir, the conduit 10 arranged within and at the top of the reservoir and exposed to the heat of its contents, and an upper feed-arm, a tallow-pipe and a boiler connection severally opening into said conduit, combined with an auxiliary sight-feed comprising a feed-chamber communicating with said conduit, a valve for controlling such communication, a separate oil-passage communicating with said feed-chamber and with the reservoir, and a valve to control the flow of oil into the said feed-chamber, substantially as described.

2. In a lubricator, the combination of an oil-reservior, a pipe

arranged in the top thereof, an upper feed-arm, and a tallow-pipe with both of which the said pipe communicates, a boiler connection with said reservoir-pipe, and an auxiliary sight-feed, having a body or casing integral with the reservoir, and comprising a feed-chamber communicating with said reservoir-pipe and a separate oil-passage communicating with said feed-chamber and with the reservoir, and means to control the flow of oil into and out of the said feed-chamber, substantially as described.

3. The combination of an oil-reservoir, a pipe arranged in the top thereof, an upper feed-arm, and a tallow-pipe with both of which the said pipe communicates, a boiler connection with said reservoir-pipe, and an auxiliary sight-feed, comprising a feed-chamber communicating with said reservoir-pipe, and a separate oil-passage communicating with said feed-chamber and with the reservoir, and means to control the flow of oil into and out of the said feed-chamber, substantially as described.

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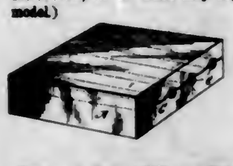
**755,121. ELECTRICAL APPARATUS FOR THERAPEUTIC PURPOSES.** FREDERICK C. FISHER, Bristol, England. Filed Sept. 21, 1903. Serial No. 174,075. (No model.)

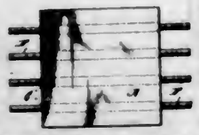


*Claim.*—In electric apparatus for therapeutic purposes in combination, a series of electric induction-coils, a belt carrying said series of induction-coils, an interrupter also carried by the said belt and inserted in the primary circuit, said interrupter consisting of laminated cores, coils surrounding said laminated cores, a pivoted armature, a fixed arm or lever extending over said pivoted armature, a contact-point carried by said arm and engaging with said armature, springs holding said armature in contact position, the current being broken between the armature and said point when the armature is directed to the coils, aforesaid series of induction-coils being arranged in groups, and all connected in series, the secondary circuit of each group being connected to contact-plates which when the belt is worn are in contact with the body so that the current passes from one contact or pair of contact-plates to another through the body, an adjustable resistance-plate carried by the belt and inserted in the secondary circuit substantially as described herein.

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**755,122. BUILDING CONSTRUCTION.** GEORGE F. FISHER, North Tonawanda, N. Y. Filed May 28, 1903. Serial No. 159,120. (No model.)





*Claim.*—1. In a building, a floor or the like consisting of a series of blocks placed edge to edge and having strengthening-tubes extending therethrough and connecting-plugs entering the strengthening-tubes of two abutting blocks for tying the same together.

2. In a building, a floor or the like consisting of a series of composition blocks having alined strenghtening-tubes embedded therein, and connecting-plugs entering the ends of said tubes for tying the blocks together.

3. In a building, a floor or the like consisting of a series of composition blocks having a metallic trellis embedded therein and tubes passing through said trellis and extending from edge to edge of said blocks, and plugs entering the said tubes for tying the blocks together.

4. In a building, a floor or the like consisting of a series of blocks, plugs entering said blocks and connecting the same together, and clips held between the blocks and being secured to said plugs, said clips extending from the space between said blocks to permit of furring being secured thereto.

5. In a building, a floor or the like consisting of a series of blocks, plugs entering said blocks and connecting the same together, and clips held between said blocks and each having an eye through each of which one of said plugs is passed, said clips extending from the space between said blocks to permit of furring being secured thereto.

6. A composition building-block having a series of tubes embedded therein, and securing-clips also embedded in said block and being secured with one end to one of said tubes and having their other ends projecting from the block for connection with the frame of the building.

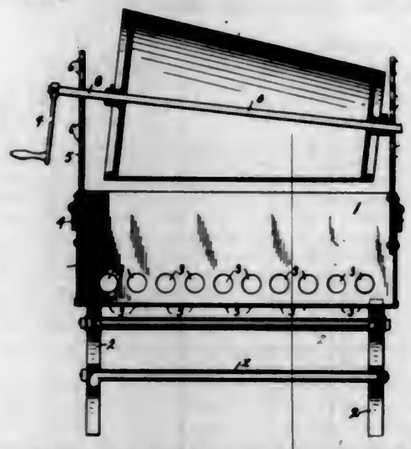
7. A composition building-block having a tube embedded therein, and a securing-clip also embedded in said block and having an eye at one end through which said tube is passed and its other end projecting from the block for engagement with the frame of the building.

8. A composition building-block having a plurality of tubes embedded therein, and a securing-clip secured to one of said tubes and being passed over a second tube and terminating in a projecting securing end whereby the block is secured to the frame of the building.

9. In a building, the combination of two supporting-girders, a building-block bearing with two opposite marginal portions on said girders and having a metallic trellis embedded therein and strengthening-tubes arranged parallel with said girders and passing through said trellis.

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**755,123. BAKING APPARATUS.** CHRISTINE J. T. FLYGARE, Minneapolis, Minn. Filed July 24, 1903. Serial No. 166,923. (No model.)



*Claim.*—1. In a baking apparatus, the combination of a fire-receptacle, a drum which is smaller at one end than at the other and is adapted to receive upon its outer surface the material to be baked, means for supporting said drum above the fire-receptacle, and means adapting the drum to be revolved upon its axis in that position, substantially as shown and described.

2. In a baking apparatus, the combination of a fire-receptacle, a tapering drum adapted to receive upon its outer surface the material to be baked, means for adjustably and removably supporting said drum above the fire-receptacle and at the axis of the drum, said drum being adapted to be revolved about said axis, substantially as specified.

3. In a baking apparatus, the combination of the fire-box 1, the standards 5 provided with the notches 6, the drum 7 adapted to receive upon its outer surface the material to be baked, the shaft 8, and the crank 9 substantially as herein set forth.

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**755,124. BOW-SPRING.** IVAN FOX, Lansdowne, Pa. Filed July 7, 1903. Serial No. 164,532. (No model.)



*Claim.*—1. A bow spring for eye glasses comprising a body portion which is crooked in cross section, and end portions which are crooked in cross section.

2. A bow spring for eye glasses embodying a body portion which is concavo-convex in cross-section and end portions which are concavo-convex in cross section.

3. A bow spring for eye glasses, the edges of the main or body portion of which are bent in one direction, and the edges of the opposite ends of which are bent in the opposite direction.

4. A bow spring for eye glasses comprising a semi-tubular body portion and semi-tubular end portions, substantially as described.

5. A bow spring for eye glasses comprising a semi-tubular body portion, and semi-tubular end portions, the curvature of the end portions being the reverse of that of the body portion, substantially as described.

6. A bow spring for eye glasses comprising a body portion which consists of a tubular portion and semi-tubular portions upon opposite sides of the tubular portion, and semi-tubular end portions, the curvature of the latter being the reverse of that of the semi-tubular portions of the body, substantially as described.

7. A bow spring for eye glasses, the edges of the main or body portion of which are bent inwardly, and the edges of the end portions of which are bent outwardly, substantially as described.

8. A bow spring for eye glasses comprising a tubular portion, portions of arcuate shape in transverse section upon opposite sides of said tubular portion, and end portions of arcuate shape in transverse section, the curvature of the two arc-shaped portions being in opposite directions, substantially as described.

9. A bow spring for eye glasses, comprising a tubular portion, and end portions, the edges of which are out of the planes of the cental portions of said ends, substantially as described.

10. A bow spring for eye glasses, comprising a tubular portion, and end portions, the edges of which are deflected outwardly from the central portions thereof, substantially as described.

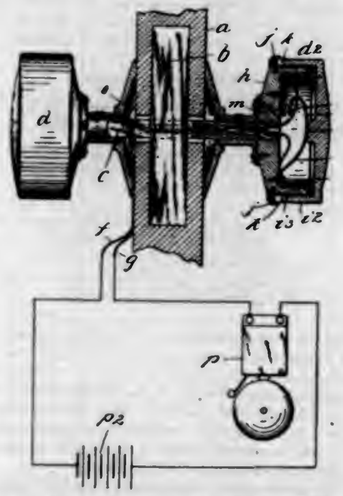
11. A bow spring for eye glasses comprising a tubular portion and end portions which are crooked in cross section.

12. A bow spring for eye glasses comprising a body portion which is curvilinear in cross section and end portions which are curvilinear in cross section.

13. A bow spring for eye glasses consisting of a thin metallic strip bent transversely and longitudinally, the central portion of said bow spring being formed into a tube, and the portions thereof upon opposite sides respectively of said tube being curved transversely to form portions of arcuate shape in transverse section, and portions at the opposite ends of said spring the edges of which are bent transversely in directions opposite to that which the remaining portion of the spring is bent, substantially as described.

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**755,125. ALARM DEVICE.** WILLIAM FRIEDBERG, New York, N. Y. Filed Nov. 11, 1903. Serial No. 180,648. (No model.)



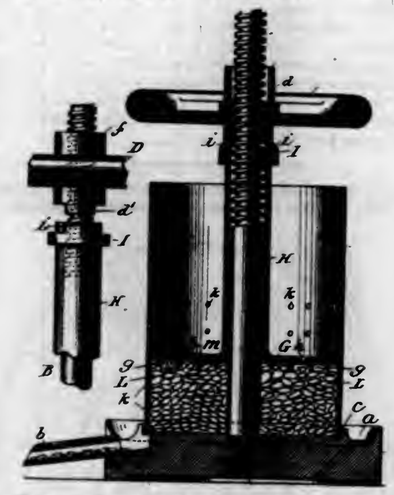
*Claim.*—1. In an apparatus of the class described, a hollow spindle for door-knobs provided at one end with a knob composed of an inner and an outer part, the outer part being provided with a rim which incloses a corresponding rim formed on the inner part, said outer part being also movable on the inner part longitudinally of the spindle, and two contact devices placed within said knob and normally separated and adapted to be brought together by pressure on the outer part of the knob, substantially as shown and described.

2. In an apparatus of the class described, a hollow spindle for door-knobs provided at one end with a knob composed of an inner and an outer part, the outer part being provided with a rim which incloses a corresponding rim formed on the inner part, said outer part being also movable on the inner part longitudinally of the spindle, and two contact devices placed within said knob and normally separated and adapted to be brought together by pressure on the outer part of the knob, said hollow spindle being also provided with electric wires which pass therethrough and into said knob, substantially as shown and described.

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**755,126. FRUIT-PRESS.** FRANK FÜRST, New York, N. Y. Filed Aug. 28, 1903. Serial No. 171,044. (No model.)



*Claim.*—1. The combination, in a fruit-press, of a holder, a base provided with a guide and pressure rod, a follower provided with a forked sleeve and sliding upon said rod, and an actuating hand-wheel mounted upon said rod and provided with a forked hub to form a detachable, rotating clutch connection between such follower and hand-wheel, substantially as set forth.

2. The combination, in a fruit-press, of a holder, a base provided with a guide and pressure rod, a follower provided with a forked sleeve and sliding upon said rod, an actuating hand-wheel mounted upon said rod and provided with a hub forked at one end and uniform at the other end to form an alternative rotating or non-rotating connection between such follower and hand-wheel, substantially as set forth.

3. The combination, in a fruit-press, of a holder, a base provided with a guide and pressure rod, a follower provided with a forked sleeve and sliding upon said rod, an actuating hand-wheel mounted upon said rod and provided with a forked hub, and a ring-clutch interposed between the follower-sleeve and the hand-wheel hub to lock the same in rotating connection in one direction and to be unlocked by reversing the rotation of the hand-wheel, substantially as set forth.

4. The combination, in a fruit-press, of a holder, a base provided with a guide and pressure rod, a follower provided with a forked sleeve and sliding upon said rod, an actuating hand-wheel mounted upon said rod and provided with a forked hub, and a clutch-collar provided with fingers having ribs or stops on their under edges to engage with the upper angles of the forked sleeve, such fingers being in detachable connection with the forked hub of said hand-wheel, substantially as set forth.

5. The combination, in a fruit-press, of a holder, a base provided with a guide and pressure rod, a follower having a sleeve and sliding upon said rod, an actuating hand-wheel mounted upon said rod, and a ring-clutch adapted to slide down on such follower-sleeve out of connection with said actuating hand-wheel, substantially as set forth.

6. The combination, in a fruit-press, of a holder, a base provided with a central, guide and pressure rod, a follower provided with a sleeve to slide upon such central rod, said sleeve having a juice-port near its junction with the follower, and an actuating hand-wheel mounted upon said rod, substantially as set forth.

7. The combination, in a fruit-press, of a base provided with a circumferential gutter, a discharge-duct, an annular groove and a

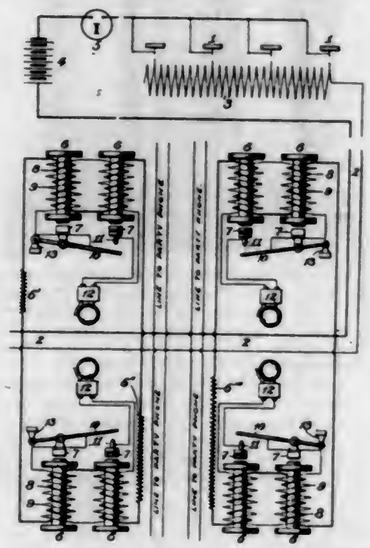
central screw-threaded rod, a perforated holder seated within said groove, a perforated follower provided with projections on its under side and having a sleeve sliding upon said rod, an actuating hand-wheel threaded upon said rod, and a detachable clutch connection between such sleeve and hand-wheel, substantially as set forth.

8. The combination, in a fruit-press, of a base provided with a circumferential gutter, a discharge-duct, an annular groove and a central screw-threaded rod, a perforated holder seated within said groove, a perforated follower provided with projections on its under side and having a sleeve sliding upon said rod, an actuating hand-wheel threaded upon said rod, and a detachable clutch connection consisting of a sliding collar between such sleeve and hand-wheel, substantially as set forth.

9. The combination, in a fruit-press, of a base provided with a circumferential gutter, a discharge-duct, an annular groove, and a central screw-threaded rod, a perforated holder seated within said groove, a perforated follower provided with projections on its under side and having a forked sleeve sliding upon said rod, an actuating hand-wheel threaded upon said rod and having a forked hub, substantially as set forth.

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**755,127. ELECTRIC SELECTIVE SYSTEM.** JULIUS A. GERDES, St. Louis, Mo. Filed Feb. 3, 1903. Serial No. 93,112. (No model.)



*Claim.*—1. In an electric selective system, the combination of a main line, means for sending varied or diverse electrical impulses along the main line from the central station, a series of selective electromagnets in circuit with the main line, and arranged in pairs with different electromotive intensities, one of said pair of electromagnets having a like electromotive intensity to an electromagnet in a preceding pair, and the other electromagnet having a like electromagnetic intensity to an electromagnet in a succeeding pair, a series of circuit-closers interdependently controlled by said selective electromagnets, a series of signal devices arranged in locations remote from each other, and a series of local circuits, each one of which embraces a signal device, and a selective circuit-closer, substantially as set forth.

2. In an electric selective system, the combination of a main line, means for sending varied or diverse electrical impulses along the main line from the central station, a series of selective electromagnets in circuit with the main line and arranged in pairs of different electromotive intensities, one of said pair of electromagnets having a like electromotive intensity to an electromagnet of a preceding pair, and the other electromagnet having a like electromagnetic intensity to an electromagnet in a succeeding pair, a series of circuit-closers interdependently controlled by said selective electromagnets, one contact-finger of each circuit-closer being controlled by one selective electromagnet and the companion contact-point by the next adjacent selective electromagnet, the said contact-fingers comprising bars fulcrumed at one end to stationary brackets and pivotally connected at their middle with armatures of their selective electromagnets, a series of signal devices arranged in locations remote from each other, and a series of local circuits, each one of which embraces a signal device and a selective circuit-closer, substantially as set forth.

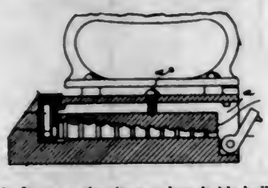
3. In an electric selective system, the combination of a main line, means for sending varied or diverse electrical impulses along the main line from the central station, a series of selective electromagnets in circuit with the main line and arranged in pairs of different electromotive intensities, one of said pair of electromagnets having a like electromotive intensity to an electromagnet of a preceding pair, and the other electromagnet having a like electromagnetic intensity to an electromagnet in a succeeding pair, a series of circuit-closers interdependently controlled by said selective electromagnets, a series of secondary windings arranged within the influence of the primary windings of said electromagnets, a series of signal devices arranged in locations remote from each other, and a series of local circuits, each one of which embraces a signal device and a secondary winding and a selective circuit-closer, substantially as set forth.

4. In an electric selective system, the combination of a main line, means for sending varied or diverse electrical impulses along the main line from the central station, a series of selective electromagnets in circuit with the main line, and arranged in pairs with different electromotive intensities, a series of circuit-closers interdependently controlled by said selective electromagnets, a series of secondary windings arranged within the influence of the primary windings of said electromagnets, a series of signal devices arranged in locations remote from each other, and a series of local circuits, each one of which embraces a signal device, a secondary winding and a selective circuit-closer, substantially as set forth.

5. In an electric selective system, the combination of a main line, means for sending varied or diverse electrical impulses along the main line from the central station, a series of selective electromagnets in circuit with the main line, a series of circuit-closers interdependently controlled by said selective electromagnets, one contact-finger of each circuit-closer being controlled by one selective electromagnet and the companion contact-point by the next adjacent selective electromagnet, the said contact-fingers comprising bars fulcrumed at one end to stationary brackets and pivotally connected at their middle with armatures of their selective electromagnets, a series of secondary windings arranged within the influence of the primary windings of said electromagnets, a series of signal devices arranged in locations remote from each other, and a series of local circuits, each one of which embraces a signal device, a secondary winding and a selective circuit-closer, substantially as set forth.

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**755,128. PRESSING-IRON.** RICHARD GRANT, New York, N. Y. Filed Dec. 9, 1903. Serial No. 184,496. (No model.)

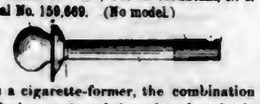


*Claim.*—1. In a pressing-iron, a detachable hollow flame guide or cover formed with an open bottom and constructed and arranged to rest directly upon the bottom of the iron, the chamber of the flame-guide being contracted in height and enlarged in width from the front to the rear of the same, the latter being also formed with corrugations on the under surface thereof extending rearwardly at an angle from the center of the said flame-guide to distribute the heat evenly along the entire face of the same.

2. In a pressing-iron, a detachable hollow flame guide or cover formed with an open bottom and constructed and arranged to rest directly upon the bottom of the iron, the chamber of the flame-guide being contracted in height and enlarged in width from the front to the rear of the same, the latter being also formed with corrugations on the under surface thereof extending rearwardly at an angle from the center of the said flame-guide to distribute the heat uniformly along the entire face of the same, and also having corrugations on the sides of the chamber to direct the heat uniformly over the pressing-surface of the iron.



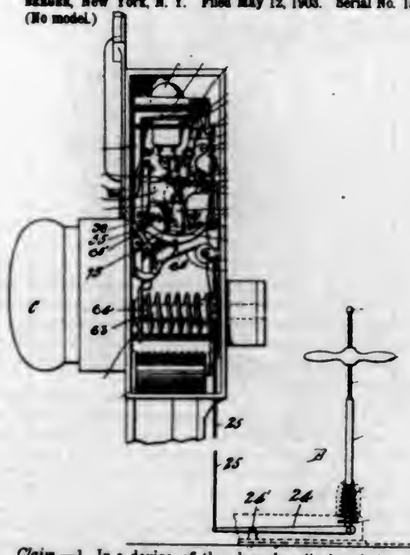
**755,129. CIGARETTE-FORMER.** JAMES R. GREEN, Winston-Salem, and JACOB A. HILL, Brown Mountain, N. C. Filed June 1, 1903. Serial No. 159,669. (No model.)



*Claim.*—In a cigarette-former, the combination with a filling-tube having a flaring or funnel-shaped end and a locking element upon the other end, of a removable cap arranged upon the last-mentioned end of said tube and having a coacting locking element, and a packing-rod to enter said tube and having a tapering head to wedgingly engage the funnel in said tube, substantially as described.

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**755,130. COIN-OPERATED APPARATUS.** JOHN HEIMENBERGER, New York, N. Y. Filed May 12, 1903. Serial No. 156,830. (No model.)



*Claim.*—1. In a device of the class described, a dial, an indicating-hand adjacent to the dial, a revoluble shaft carrying the hand provided with a screw-thread of long pitch, a slide-nut mounted upon the shaft mechanism for moving the slide-nut so as to rotate the shaft, and actuating mechanism adapted to be coupled with the slide-nut-actuating mechanism upon the insertion of a coin.

2. In a device of the class described, a dial, an indicating-hand adjacent the dial, a revoluble shaft carrying the hand provided with a multiple screw-thread, a smooth slide-shaft located adjacent to the dial-shaft, a slide-nut having a screw-thread mounted upon the two-shaft mechanism for making the slide-nut so as to rotate the shaft, and actuating mechanism adapted to be coupled with the slide-nut-actuating mechanism upon the insertion of a coin.

3. In a lifting-machine, a lifting-rod, a hollow post through which the lifting-rod reciprocates, an adjustable handle upon the upper portion of the lifting-rod, a pivoted lever attached to the lower end of the lifting-rod, a conical helico-spiral spring within the hollow post interposed between the top of the post and the pivoted lever, a rod connected to the pivoted lever, a chain, cord, or band connected at one end to the top of the rod and at the other end to the front coin-lever, a pulley over which the cord, chain, or band passes on its way from rod to lever, a rear coin-lever adapted to be actuated by the front coin-lever upon the insertion of a coin, and an indicating device in actuating connection with the rear coin-lever.

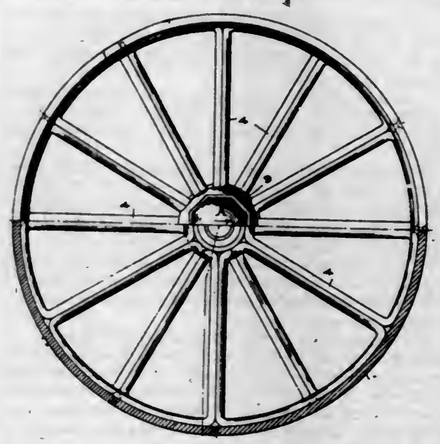
4. In a combined lifting and punching machine, a lifting-rod, a hollow post through which the lifting-rod reciprocates, an adjustable handle upon the upper portion of the lifting-rod, a pivoted lever attached to the lower end of the lifting-rod, a conical helico-spiral spring within the hollow post interposed between the top of the post and the pivoted lever, a rod connected to the pivoted lever, a chain, a cord or band connected at one end to the top of the rod and at the other to the front coin-lever, a pulley over which the cord or band passes on its way from rod to lever, a rear coin-lever adapted to be actuated by the front coin-lever upon the insertion of a coin, an indicating device in actuating connection with the rear coin-lever, and an audible electric alarm included in a normally broken circuit of conductors, and a contact-piece carried by the coin-lever.

5. The combination with the indicating device of a coin-operated machine, a worm-shaft connected to the indicating means, a nut engaging said worm-shaft, a pivoted member having its upper end connected to said nut, a lower pivoted member having its upper end flexibly connected to the upper member, a brake mechanism, a punching-pad connected to move said members when struck, and a signaling device whereby a signal will be made when the indicating mechanism has made a certain movement, and will be continued during the further movement of the indicating mechanism, substantially as described.

6. In a coin-operated machine, the combination of a casing, an indicating mechanism, a worm-shaft connected with said mechanism, a nut fitting and traveling on said shaft, an upper movable member connected with said nut, a lower movable member, a yielding connection between said members to prevent shock or breakage, a brake mechanism, and a punching-pad connected with the lower member.

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**755,131. WHEEL FOR VEHICLES.** HENRY S. HELE-SHAW, Liverpool, and ROBERT P. HELLIWELL, Waterloo, England. Filed Apr. 10, 1903. Serial No. 152,059. (No model.)



*Claim.*—1. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub and connecting the rim to the hub, the sectors of each series abutting against each other throughout the entire extent of the wheel; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

2. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub and connecting the rim to the hub, the portions of the sectors joining the centers to the peripheries being shaped to form, when assembled, the spokes of the wheel and the sectors of each series abutting against each other throughout the entire extent of the wheel; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

3. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub and connecting the rim to the hub, the peripheries of the sectors being unconnected with the rim and having a radius of curvature less than that of the interior of the rim; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

4. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub and connecting the rim to the hub, the sectors being built up of section metal bent to shape and the sectors of each series abutting against each other throughout the entire extent of the wheel; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

5. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub and connecting the rim to the hub, the sectors being built up of section metal bent to shape, the radial parts of adjacent sectors abutting to form spokes, said sectors having their ends bent inwardly to abut each other, and resting on the hub; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

6. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub, and connecting the rim to the hub, the sectors being built up of solid half-round section metal bent to shape, the radial parts of adjacent sectors abutting together to form circular spokes, said adjacent parts being unconnected; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

7. In a wheel, in combination with the rim and the hub; two series of sectors, splayed outwardly on opposite sides of the medial plane of the wheel from rim to hub and connecting the rim to the hub, the sectors of the two series being relatively disposed so that the joints of the one series come opposite the centers of the other series; and means for expanding the peripheries of the sectors by drawing the central portions thereof together; substantially as described.

8. In combination with the hub, the sectors and the means for drawing the centers of the sectors together, the rim recessed to house the peripheries of the sectors and hold them contiguously; substantially as described.

9. In combination with the rim, the hub, the sectors and means for drawing the centers of the sectors together, the stops interposed between the sectors and attached to the rim; substantially as described.

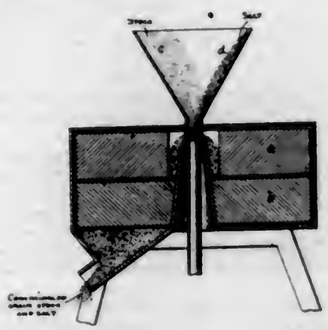
10. In combination with the rim, the sectors, the hub and the flanges, the means for locking the axially-adjustable flange consisting of a prismatic lock-nut, and a prismatic cap fitting thereon and having spring-clips adapted to engage over the flanges and between the arms of the sectors; substantially as described.

11. In combination, the recessed rim, the sectors formed of section metal, the hub, the flanges on the hub recessed to house the bent inner ends of the sectors, and the means for locking the adjustable flange; substantially as described.

12. In combination, the rim recessed annularly to house the peripheries of the sectors contiguously, the sectors of section metal the peripheries of which are bent to a smaller radius of curvature than the said recess, the hub, the flange on the hub, capable of rotation thereon but incapable of axial movement from the center, the screwed flange axially movable on the screwed part of the hub and adapted when the rib, sectors and flanges are rotated relatively to hub, to move axially relatively to the other flange, and the locking means; substantially as described.

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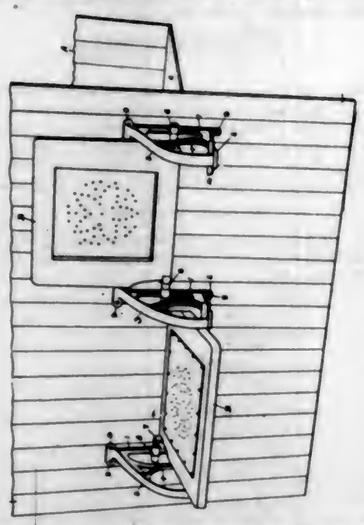
**755,182. PROCESS OF CLEANING MILLSTONES. JEWETT A. HENKEL, Bedford City, Va. Filed Aug. 3, 1903. Serial No. 168,084. (No specimens.)**



*Claim.*—The herein-described process of cleaning millstones, consisting in passing common salt, together with the stock, between the working surfaces of the millstones, by the operation of the millstones while grinding the stock.

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**755,133. COLISEUM-CHAIR. MICAJAH C. HENLEY, Richmond, Ind. Filed Mar. 7, 1903. Serial No. 146,704. (No model.)**

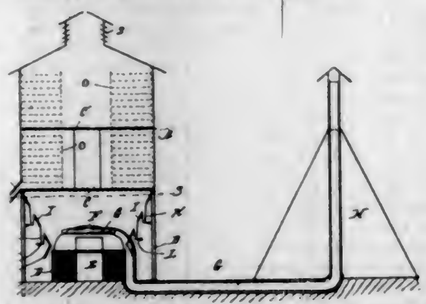


*Claim.*—1. As a new article of manufacture a bracket comprising a wall-plate formed with an outwardly-curved arm, lugs formed integral with the lower ends of said arm and extending on opposite sides thereof, and hollow bearings formed integral with said wall-plate at an approximately central point above said lugs, and projecting on opposite sides of said bracket.

2. The combination with the supporting means, of brackets secured to said supporting means, bearings formed integral with said bracket at an approximately central point and projecting on opposite sides thereof, lugs formed integral with the lower edge of the forward end of said bracket, and projecting on opposite sides thereof, a seat, clips secured to the rear end of said seat, and extending thereabove, and pintles formed integral with the upper ends of said clips, and extending partly through the bearings of said brackets, the forward portions of said seats engaging the said lugs, substantially as described.

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**755,134. DRY-HOUSE. OTTO HEYMOHN, San Carlos, Costa Rica, assignor of one-half to Francis Alsdorff, Punta Arenas, Costa Rica. Filed Aug. 22, 1903. Serial No. 170,478. (No model.)**



*Claim.*—1. A dry-house consisting essentially of a furnace, supporting-legs removed from said furnace so that the sides of the furnace are open to the air, a smoke-flue leading from the top of the furnace and thence downward under ground, a chimney removed from the furnace to which the smoke-flue leads, inclined walls leading upward and outward from the furnace, an open-work floor above said walls, and a dry-room above said floor.

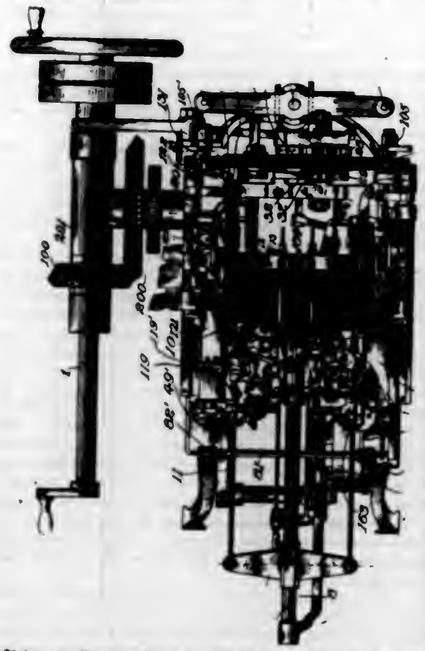
2. The combination of a furnace, a chamber above said furnace having inclined side walls provided with downwardly-projecting air-ducts, and valves controlling said ducts.

3. The combination of a furnace, inclined walls extending upward and outward from said furnace, air-ducts extending downward from said walls and valves at the lower ends thereof, air-gates hinged to the walls at the sides of the furnace, and a drying-room above said chamber.

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**755,135. STRAIGHT-KNITTING MACHINE. HARRY A. HOUSEMAN, Philadelphia, Pa., assignor to Standard Machine Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed May 5, 1903. Serial No. 155,732. (No model.)**



*Claim.*—1. The combination, with the needle-bed, of a cam-plate, means to reciprocate said cam-plate forwardly and backwardly, the stitch-cam 142 behind the slide-cam, having an inclined inner edge, the switch-cam in advance of the slide-cam, and a needle-shifter 147 behind the stitch-cam, and means for sliding said needle-shifter inwardly during the back stroke of the cam-plate, beyond the rear end of the inclined inner edge of the switch-cam, thereby moving the needle-shifter into position to cause the needle in alinement therewith to engage said inclined inner edge of the stitch-cam and be moved thereby into knitting position.

2. The combination, with a bank of needles, of a cam-plate, means to reciprocate the cam-plate forwardly and backwardly, a needle-shifter and a stitch-cam carried by the cam-plate, the stitch-cam having an inner guideway, means for moving the needle-shifter inwardly opposite the inner guideway of the stitch-cam, and means to move one of said needles out of its normal position and into the path of travel of said needle-shifter, thereby causing said needle-shifter to move said needle into position to direct it along the inner guideway of the stitch-cam.

3. The combination, with a bank of needles, of a cam-plate, means to reciprocate the cam-plate forwardly and backwardly, a needle-shifter and a stitch-cam carried by the cam-plate, the stitch-cam having an inner guideway, means for moving the needle-shifter inwardly opposite the inner guideway of the stitch-cam, and means to move one of said needles out of its normal position and into the path of travel of said needle-shifter, thereby causing said needle-shifter to move said needle into position to direct it along the inner guideway of the stitch-cam, and a guard-cam adjacent to the stitch-cam adapted to yield to permit said needle to be so moved.

4. The combination, with the two banks of needles, and the stitch-cam of each bank, of means for moving one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter on the cam-plate back of the stitch-cam, adapted when moved into operative position to direct said needle over the stitch-cam on the return movement of said knitting-cams and during the operation of the needles of the other bank, and a cam adapted to engage said needle and restore it to its normal position, thus causing said needle to knit with the needles of the opposite bank, and mechanism for moving said needle-shifter into operative position.

5. The combination, with the two banks of needles and a set of knitting-cams for each bank, of means to move, at a predetermined time, one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams, and mechanism for moving said needle-shifter relatively to said cams to cause the same to shift said needle after the latter is so actuated.

6. The combination, with the two banks of needles and the knitting-cams for each bank, of means to move, at a predetermined time, one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams, and mechanism for moving said needle-shifter relatively to said cams to cause the same to shift said needle after the latter is so actuated, a movable cam adapted when in operative position to engage and actuate said needle-shifter mechanism, and means to control the position of said cam.

7. The combination, with two banks of fashioning-needles and the knitting-cams for each bank, of the pattern-rolls adjacent thereto, means to move said rolls along the needle-bed, means enabling said rolls to actuate needles in alinement and to move, at a predetermined time, one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams, and connections between the pattern-rolls and needle-shifter adapted to actuate the latter relatively to said cams to cause the same to shift said needle, after the latter is so actuated by said rolls, and during the operation of the needles of the other bank.

8. The combination, with two banks of fashioning-needles and the knitting-cams for each bank, of the pattern-rolls adjacent thereto, means to move said rolls along the needle-bed, means enabling said rolls to actuate needles in alinement therewith, and to move, at a predetermined time, one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter, moving with the knitting-cams, mechanism for moving said needle-shifter to cause the same to shift said needle, a movable cam adapted when in operative position to engage and operate said needle-shifter mechanism, and connections between said pattern-rolls and said movable cam, whereby said cam is moved into and out of operative position.

9. The combination, with the two banks of needles and the knitting-cams for each bank, of the pattern-rolls, means to move said rolls along the needle-bed, means enabling said rolls to move one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams and adapted, when moved into operative position, to shift said needle after the latter is so actuated, a pivoted lever connected with said needle-shifter, a roller on said lever, a movable cam adapted when in operative position to engage said roller and actuate the same to move said needle-shifter into operative position, and connections between the pattern-rolls and said movable cam.

10. The combination, with the two banks of needles and the knitting-cams for each bank, of the pattern-rolls adjacent thereto, means to move said rolls along the needle-bed, means enabling said rolls to move one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams and adapted, when moved into operative position, to shift said needle after the latter is so actuated, a block to which said needle-shifter is secured, a pivoted lever engaging said block, a spring normally holding said lever and the needle-shifter out of operative position, a movable cam adapted when in operative position to engage said roller and move the same against the tension of its spring, and connections from the pattern-rolls to said movable cam.

11. The combination, with the two banks of needles and the knitting-cams for each bank, of the pattern-rolls adjacent thereto, means to move said rolls along the needle-bed, means enabling said rolls to move, at a predetermined time, one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving the knitting-cams, and mechanism for moving said needle-shifter to cause the same to shift said needle, after the latter is so actuated, a movable cam adapted when in operative position to engage and actuate said needle-shifter mechanism, a rock-shaft sustaining said cam, and means controlled by the pattern-rolls to rock said shaft.

12. The combination, with the two banks of needles and the knitting-cams for each bank, of the rolls adjacent thereto, means to move said rolls along the needle-bed, means enabling said rolls to move, at a predetermined time, one of the needles of one bank into

a different position from the other needles of said bank, a needle-shifter moving with one of the knitting-cams, and mechanism for moving said needle-shifter to cause the same to shift said needle, after the latter is so actuated, a movable cam adapted when in operative position to engage and actuate said needle-shifter mechanism, a block to which said cam is secured, a rock-shaft sustaining said block, a dog secured to said rock-shaft, a rotary cam with which said dog engages, and means to rotate said rolls and rotary cam in unison.

13. The combination, with the two banks of needles and the knitting-cams for each bank, of the rolls adjacent thereto, means to move said rolls along the needle-bed, means enabling said rolls to move one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams and adapted, when moved into operative position, to shift said needle after the latter is so actuated, a block to which said needle-shifter is secured, a pivoted lever engaging said block, a spring normally holding said lever and the needle-shifter out of operative position, a movable cam adapted when in operative position to engage said roller and move the same against the tension of its spring, a block to which said cam is secured, a rock-shaft sustaining said block, a dog secured to said rock-shaft, a rotary cam with which said dog engages, and means to rotate said rolls and rotary cam in unison.

14. The combination, with the two banks of needles and a set of knitting-cams for each bank, of means to move, at a predetermined time, one of the needles of one bank into a different position from the other needles of said bank, a needle-shifter moving with the knitting-cams, and mechanism for moving said needle-shifter relatively to said cams to cause the same to shift said needle, after the latter is so actuated, and a pivoted guard-cam located opposite the needle-shifter and adapted to be engaged and moved by said needle while the latter is being shifted.

15. The combination, with the stationary needle-bed, of the reciprocating cam-plate, the knitting-cams carried thereby, a stitch-cam, a block on which said cam is mounted, a projection on said block, guides on the cam-plate, a cam slidable in said guides and adapted to engage said projection and move said block, and a lug adapted to engage and move said cam at each stroke of the cam-plate.

16. The combination, with the stationary needle-bed, of the reciprocating cam-plate, the knitting-cams carried thereby, a stitch-cam, adapted to be moved into and out of position to draw the stitches, a block on which said cam is mounted, a spring engaging said block and normally holding the stitch-cam in one position, a projection on said block, guides on the cam-plate, a cam adapted to slide in said guides, a projection on said sliding cam, the cam-slide, and a lug on the cam-slide which is adapted to engage the projection on the sliding cam and move the latter at each reciprocation of the cam-plate, whereby the sliding cam, at alternate reciprocations of the cam-plate, engages the projection on the block and moves the stitch-cam, against the action of the spring, into the other position.

17. In a straight-knitting machine, the combination with fashioning-needles, mechanism for successively moving said needles into operation and for moving and holding the same out of operation, a yarn-carrier, a roller on the yarn-carrier, a cam adapted to engage said roller and thereby move the yarn-carrier out of operative position, and means to move said cam into position to engage said roller.

18. In a straight-knitting machine, the combination, with fashioning-needles, of mechanism for successively moving said needles into operation and for moving and holding the same out of operation, a yarn-carrier, a rock-shaft, a cam secured thereto, and means to rock said shaft and means on the yarn-carrier adapted, when said shaft is rocked, to be engaged by said cam, whereby said yarn-carrier is actuated.

19. In a straight-knitting machine, the combination, with fashioning-needles, of mechanism for successively moving said needles into operation and for moving and holding the same out of operation, a yarn-carrier, a spring adapted to normally hold said yarn-carrier in operative position, a roller on the yarn-carrier, a rock-shaft, a cam on said rock-shaft adapted to engage said roller when the shaft is rocked and thereby move the yarn-carrier out of operative position, and means to rock said shaft.

20. In a straight-knitting machine, the combination, with the fashioning-needles, and the yarn-carrier, of pattern-rolls, means enabling said rolls to successively move said needles into operation, means for shifting said rolls into inoperative position, devices for moving said yarn-carrier out of operation and means to actuate said yarn-carrier-operating devices prior to said shifting of the rolls.

21. The combination, with fashioning-needles and the yarn-carrier, of pattern-rolls, a cam, mechanism for turning said rolls and cam in unison, mechanism for shifting said rolls longitudinally step by step in one direction, mechanism normally inoperative for returning said rolls longitudinally in the other direction, means enabling said rolls to move said needles out of knitting position at one point in their rotation and hold them out of knitting position during the return of the rolls, devices for moving the yarn-carrier out of operation normally inoperative but adapted to engage and be actuated by said cam, and means to move said roll-returning mechanism and yarn-carrier-actuating mechanism into operative position.

22. In a straight-knitting machine, the combination, with fashioning-needles and the yarn-carrier, of pattern-rolls, a cam, means for turning said pattern-rolls and cam in unison, a lever, connections between said lever and the yarn-carrier, and means to move said lever into engagement with said cam.

23. In a straight-knitting machine, the combination, with fashioning-needles and the yarn-carrier, of pattern-rolls, a cam, means for turning said pattern-rolls and cam in unison, a rock-shaft, a lever on the rock-shaft, a cam-bar on the rock-shaft adapted to operate said yarn-carrier, and means to move said lever into engagement with said cam.

24. In a straight-knitting machine, the combination, with fashioning-needles and the yarn-carrier, of pattern-rolls, a cam, means for turning said pattern-rolls and cam in unison, a rock-shaft, a lever on the rock-shaft, a cam-bar on the rock-shaft, a roller on the yarn-carrier, a spring normally holding said lever out of engagement with the cam, and means to move said lever into engagement with said cam, thereby subsequently causing said cam to actuate said lever to turn said shaft, thereby causing said cam-bar to engage said roller and lift said yarn-carrier out of operative position.

25. In a straight-knitting machine, the combination, with the regular and fashioning needles, the reciprocating cam-plate and the yarn-carrier carried thereby, of a tiltable cam arranged opposite the fashioning-needles only and adapted when tilted to engage and move the yarn-carrier out of operative position during its passage over the fashioning-needles, means for normally holding the yarn-carrier in operative position, whereby the same is always in operative position while passing over the regular needles, and means for tilting said cam.

26. In a straight-knitting machine, the combination, with the fashioning-needles and the yarn-carrier, of pattern-rolls, a cam, means for turning said rolls and cam in unison, a rock-shaft, a lever on the rock-shaft, a cam-bar on the rock-shaft, a roller on the yarn-carrier, a second lever connected with the first lever, a spring connected with the second lever, and means to operate said second lever.

27. The combination, with the fashioning-needles and the yarn-carrier, of pattern-rolls, means enabling said rolls to move said needles into position to be actuated, mechanism for shifting said rolls out of operative position, devices for unlocking said rolls to permit them to be so shifted, and mechanism for moving said yarn-carrier out of operative position, said yarn-carrier-operating mechanism being connected with the roll-unlocking devices.

28. The combination, with the fashioning-needles and the yarn-carrier, of rotatable pattern-rolls, means enabling said rolls to move said needles into position to be actuated, mechanism for shifting said rolls out of operative position, devices for unlocking said rolls to permit them to be so shifted, a cam turning with said rolls, mechanism for moving said yarn-carrier out of operative position, and connections between the yarn-carrier-operating mechanism and the roll-unlocking devices whereby the latter move the former into engagement with said rolls.

29. The combination, with fashioning-needles and the yarn-carrier, of pattern-rolls, mechanism for turning said rolls, mechanism for shifting said rolls longitudinally step by step in one direction, mechanism for returning said rolls longitudinally in the other direction, means enabling said rolls to hold said needles out of operation during the return of the rolls, devices for moving the yarn-carrier out of operation, a bar 49 adapted to move said roll-returning mechanism and yarn-carrier-operating devices into operative position, and means to operate said bar.

30. In a straight-knitting machine, the combination, with the fashioning-needles and the yarn-carrier, of pattern-rolls, means controlled thereby to operate said needles, roll-turning mechanism, mechanism for shifting said rolls forwardly step by step, mechanism for shifting said rolls backwardly out of operative position, means to actuate said pattern-rolls, a spring normally holding said yarn-carrier into operative position, a roller carried by said yarn-carrier, a rock-shaft, a cam-barcarried by said shaft adapted to engage said roller when the shaft is rocked, a lever connected with said rock-shaft so as to turn the same, a cam on the shaft of one of the pattern-rolls, a second lever pivoted between its ends, a link connecting one end of said second lever with said first lever, a spring acting upon the other end of said second lever and normally holding the first lever out of engagement with said cam, a projection on the other end of said second lever, and a bar actuated by the pattern mechanism and adapted to engage said projection to move the first lever into engagement with the cam.



31. The combination, with the needles, of a latch-opener extending from a point transversely opposite the needle-bed toward a point in advance of the needles and thence extending toward the needles, and means enabling said latch-opener to yield upwardly when engaged by a needle to enable the edge of the end of the latch-opener to open the latch.

32. The combination, with the needles, of a yieldingly-supported latch-opener having a curved end portion, the concave side of which is in line of movement of a needle raised above the level of the needle-bed, whereby when said needle strikes said curved end it will lift said latch-opener and ride along and beyond its edge.

33. The combination, with the needles, of a spring-supported latch-opener pivoted at a point transversely opposite the latch end of the needle and extending obliquely toward a point in advance of the needles and thence bent upon itself toward the needles.

34. The combination, with the needles, of a latch-opener, the end whereof extends transversely to the plane of the needle-bed, and means enabling said latch-opener to yield in a direction transverse to the plane of the needle-bed when engaged by a needle.

35. The combination, with the needles, of a latch-opener having a curved end and sharp edge, said curved end extending transversely to the plane of the needle-bed, the concave side of which is adapted to be engaged by a needle whose latch end is displaced out of its bed, said latch-opener being yieldingly supported so that, when its curved end is so engaged by said needle, it will be moved thereby away from the plane of the needle-bed until said needle rides beyond its edge.

36. The combination, with the needles, of a latch-opener pivoted above and transversely opposite the latch end of the needles and extending upward, thence in a direction oblique to the plane of the needle-bed and toward a point in advance of the needles, and thence curved downwardly toward the needles, the edge of the end thereof being normally in line of movement of the latches of the needles, a spring normally holding said latch-opener in its normal position, but permitting the latch-opener to move away from its normal position when the concave side of its curved end is engaged by a needle displaced from its normal position.

37. In a straight-knitting machine, the combination, with the cam-plate, of a cross-head 7, a rod 8 on which said cross-head is adapted to reciprocate, means for reciprocating said cross-head, a rod 171, a cross-head 170 adapted to reciprocate on the rod 171, links connecting the cam-plates and cross-head 170, and a yielding connection between the two cross-heads adapted to be severed in the event of resistance to movement of the cam-plates.

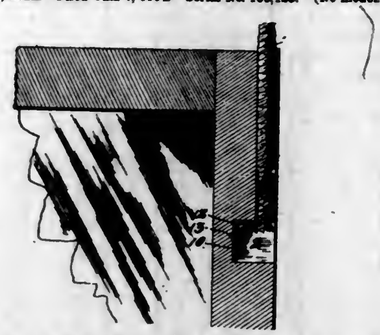
38. In a straight-knitting machine, the combination, with the cam-plates, of a cross-head, means for reciprocating the same, a second cross-head connected with the cam-plates, one of said cross-heads having a conical recess, a locking-pin, having a tapered head, carried by the other cross-head, a spring normally seating said pin in said recess, whereby the two cross-heads are detachably secured together, a second pin in the last-named cross-head, and a spring normally holding the second pin against the locking-pin and adapted to move said second pin into locking engagement with the locking-pin when the latter is forced out of said conical recess.

39. In a straight-knitting machine, the combination, with the cam-plates, of a cross-head, means for reciprocating the same, a second cross-head connected with the cam-plates, and having a conical recess, a locking-pin, having a tapered head, carried by the second cross-head, a spring normally seating said pin in said recess, whereby the two cross-heads are detachably secured together, a second pin in said second cross-head, a spring normally holding the second pin against the locking-pin, and a notch in the locking-pin adapted to receive the head of the second pin when the locking-pin is forced out of said conical recess.

40. In a straight-knitting machine, the combination, with the cam-plates, of a cross-head, means for reciprocating the same, a second cross-head connected with the cam-plates, and having a conical recess, a locking-pin, having a tapered head, carried by the second cross-head, a spring normally seating said pin in said recess, whereby the two cross-heads are detachably secured together, a second pin in said second cross-head, a spring normally holding the second pin against the locking-pin, and a notch in the locking-pin adapted to receive the head of the second pin when the locking-pin is forced out of said conical recess, and a third pin extending through a slot in the second cross-head and engaging an orifice in the locking-pin to prevent the latter from turning.

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## 755,136. SASH-CORD FASTENER. GEORGE W. HOWARD, New London, Conn. Filed Jan. 7, 1904. Serial No. 188,125. (No model.)



*Claim.*—1. A sash-cord fastener, consisting of a tapering socket, having a removable cord-holding plate, means for retaining said plate in place, and means for attaching said socket to the window-sash, substantially as described.

2. A sash-cord fastener, consisting of a tapering socket, having a removable cord-holding plate, means for retaining said plate in place, an attaching-plate formed on said socket and teeth or prongs formed on said plate to engage said sash and hold said fastener in place, substantially as described.

3. A sash-cord fastener consisting of a tapering socket, having an opening in one side of the same, retaining guide-flanges formed on the edges of said opening, a cord holding or clamping plate adapted to slidably engage said flanges and close said opening and clamp the end of a sash-cord in said socket, cord-engaging teeth formed on said plate, an attaching-plate formed on said socket, teeth or prongs formed on said plate to engage the window-sash and removably hold said socket in place, substantially as described.

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## 755,137. NON-CONDUCTING WALL. HORACE H. JUDSON, Stratford, Conn., assignor to the Nonpariel Cork Manufacturing Company, New York, N. Y., a Corporation. Filed Jan. 18, 1904. Serial No. 189,432. (No model.)



*Claim.*—1. A non-conducting wall comprising a layer of brickwork, a layer of cement laid thereon, an outer layer of cork and a layer of cement applied to the cork and having channels formed therein, the two layers of cement being placed in contact whereby the layer of cork is retained in place.

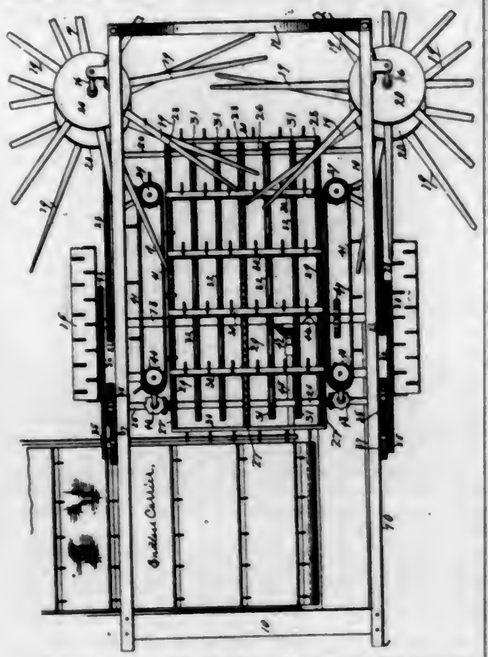
2. A non-conducting wall comprising a layer of brickwork, a layer of cement laid thereon, an outer layer of cork in strips, and a layer of cement applied to the strips of cork, the layer of cement upon the cork having channels and cross-walls formed therein, and the two layers of cement being placed in contact, whereby the strips of cork are retained in place and dead-air spaces are formed between the cork and the brick wall.

3. The method of making non-conducting walls which consists in applying a layer of cement to a brick wall, applying a layer of cement to strips of cork, forming longitudinal channels and cross-walls in the layer of cement upon the strips of cork and then applying the strips of cork to the face of the wall with the layers of cement in contact, so that suction is produced whereby the strips of cork are held in place and dead-air spaces are formed between the cork and the brickwork.

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## 755,138. MACHINE FOR LOADING BOUND GRAIN ON WAGONS. BENJAMIN S. KEMPTON, Paton, Iowa, assignor of part, by direct and mesne assignments, to L. A. Rothe, Chas. F. Linnan, and F. B. Keeler, Pocahontas county, Iowa, and D. M. Kelleher, Polk county Iowa. Filed Nov. 4, 1901. Serial No. 81,154. (No model.)

*Claim.*—1. In a sheaf gatherer and loader, a frame, supporting-wheels therefor, a pair of reels which both gather and lift, bearings attached to the frame to maintain the shafts of the reels in a position whereby the radiating arms carried by the shafts travel in intersecting paths which are upward and rearward over the forward portion of the frame,



2. In a machine of the kind described, an inclined conveyer, clearing-bands maintained at a higher plane than the conveyer and actuated at a faster rate of travel than the conveyer, gathering and lifting reels having radial arms, the shafts of the reels being maintained so that the arms thereof will move in forward and downward inclined orbits and over the forward portions of the conveyer and clearing-bands.

3. In a machine for the purpose set forth, the combination with an inclined conveyer, of gathering and lifting reels maintained so that the shafts of the reels will be inclined forward with respect to the frame, the upper ends of the shafts from which project the arms of the reels being in advance of the lower ends.

4. In a machine for gathering shocks or sheaves, a frame, an inclined conveyer mounted between the side bars of the frame, and a pair of rotatable reels having radial arms, the shafts of the reels being maintained so the upper ends will be forward of the lower ends, the arms of the reels moving in forward and downward inclined orbits with respect to the line of travel of the machine.

5. In a machine for the purpose set forth, an open-ended frame, a conveyer maintained between the side bars of the frame, reels comprising shafts and radial arms, the shafts being forwardly and upwardly inclined with respect to the frame and to the direction of travel of the machine, the arms of each reel as they approach each other moving rearward and upward to engage and lift sheaves from the ground and place them on the conveyer, substantially as set forth.

6. In a machine for the purpose set forth, a frame, a conveyer between the side bars of the frame, and a pair of coacting reels, the shafts of the reels being connected to the forward portion of the frame and maintained so the upper ends of the shafts will be forward of the lower ends; or forwardly inclined with respect to the line of travel of the machine; and an upper and a lower set of arms on each shaft which project at right angles from the forwardly-inclined shafts, substantially as shown.

7. In a machine for the purpose set forth, the combination with an endless carrier, of reels mounted in advance and on opposite sides of the carrier, the arms on each reel being of a length sufficient to extend beyond the longitudinal center of the carrier.

8. In a machine for the purpose set forth, the combination with a frame, an endless carrier, a pair of reels mounted on the frame in advance of and on opposite sides of the carrier, the reels comprising shafts which are maintained at a forward and upward inclination with respect to the frame and direction of travel of the machine, two sets of radial arms attached to each shaft, the arms on one shaft being opposite to those on the other shaft and arranged so that the arms on one shaft will enter the interstices between the arms of the opposite shaft, substantially as shown.

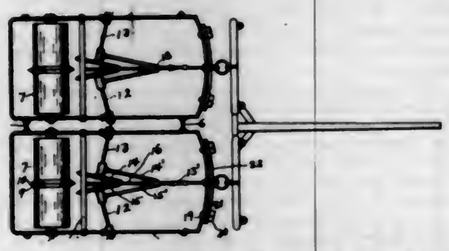
9. In a machine for the purpose set forth, the combination with inclined endless conveyers maintained at right angles one to the other and one in advance of the other, of endless belts with projecting fingers operatively supported at a higher elevation than the front part of the forward elevator and having a higher rate of travel than said elevator, and gathering and lifting reels supported to operate in front and above the forward portions of the first elevator and the endless belts, substantially as shown.

10. In a device of the class described, the combination with a frame, of two shafts rotatably attached at the front end of said frame and extending forwardly and upwardly therefrom, and coacting arms on the shafts to gather and lift shocks of sheaves.

11. In a device of the class described, the combination of a frame, an endless carrier, sheaf gathering and lifting means comprising rotatable shafts attached to the front portion of the frame in bearings which maintain the shafts at an upward and forward inclination with respect to the frame and to the line of travel of the machine, and gathering and lifting arms on each shaft, for the purpose set forth.

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**755,139. HARROW.** JOHN W. KERR and COLWELL D. KERR, Plateau City, Colo. Filed July 17, 1903. Serial No. 165,969. (No model.)



*Claim.*—A harrow comprising a frame, a roller journaled transversely in the frame and having a circumscribing flange, disks mounted in advance of the flange of the roller and adjustable to lie at various angles, shafts for carrying the said disks, means for holding the disks in different adjusted positions consisting of a notched segment mounted eccentric of the said shafts when said shafts are in alinement, a bifurcated lever adapted to receive the notched segment and bearings for the said shaft on the extremities of the arms of the bifurcated lever, and bearings for the said shaft pivoted to the sides of the said frame.

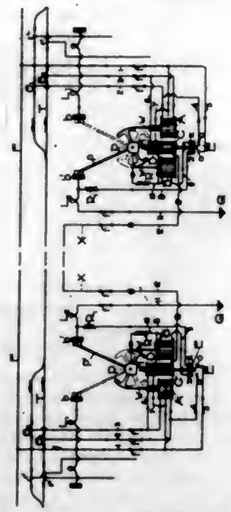
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**755,140. ELECTRIC RAILWAY-SIGNAL.** BERTRAM M. KENNEDY, Pittsburg, Pa. Filed June 21, 1902. Serial No. 112,569. (No model.)

*Claim.*—1. In a signaling system, the combination with a line-wire, of a vehicle provided with a traveling contact bearing upon said wire, a signaling-wire extending over one block or division of the road and normally grounded at each end, a switch for disconnecting one end of said signal-wire from the ground and connecting it to the source of current-supply, two magnets for operating the said switch, one connected to a contact for setting the signal and the other to a contact for restoring it, and means for controlling the latter magnet from the opposite end of the block over the said signal-wire.

2. In a signal system, the combination with a line-wire, of a vehicle provided with a contact device bearing thereon, a signal-wire extending over one block or division of the road, a switch at each end of said wire for connecting one end to the ground or to the source of current-supply, signaling devices in the circuit of which the said signal-wire forms a part, a setting-magnet for said switch connected with a contact at one end of the block, a restoring-magnet therefor controlled by the interruption of the signal-line, contacts for said restoring-magnets, a magnet in the signal-line operating said contacts, and means at the opposite end of the block for breaking the signal-line circuit, whereby the rupture of the signal-circuit at the leaving end of the block may cause the operation of the restoring mechanism at the entering end.





3. In a railway signal system, the combination with a signal-line extending along a block or section of the railway, of a dead-centered switch-arm at each end of the said line determining the connection of the line to the ground or to the source of the current-supply, signal devices operated by the current of said line, oppositely-acting magnets for each switch-arm to throw it on one side or the other of the dead-center, a retaining device for said arm and controlling-contacts for each magnet, those for one magnet being controlled by a car entering the block and those for the other magnet controlled by the car leaving the block.

4. In a signaling system, the combination with a line-wire of a vehicle provided with a contact device bearing thereon, a signal-wire extending over one block or section of the road, a switch at each end of said wire for controlling its connections with the ground or the source of current-supply, signaling devices adapted to be included in the circuit of which the said signal-wire forms a part, a setting-magnet for the said switch, means for temporarily disabling or rendering the said magnet inoperative so long as a car is on the said block, a clearing-magnet and a retaining device adapted to be operated at the farther end of the block to prevent the operation of the switch at that end of the signal-wire.

5. In a signaling system, the combination with a signal-wire extending along a block or division of the road, a switch at each end for controlling its connection with the ground or the source of supply, a setting device for the switch at the near end of the block, a restoring-magnet therefor at the same end and a clearing-magnet operated at the farther end of the block and controlling the said restoring-magnet.

6. In a signaling system, the combination with a signal-wire extending over one block or division of the road, of a switch at each end for controlling its connection with the ground or the source of current-supply, signaling devices adapted to be included in the circuit of which the said line-wire forms a part, a setting device for the switch at the near end of the block, a locking device controlled from the farther end of the block and a restoring-magnet controlled by the said locking device.

7. In a signaling system, the combination with a signal-wire extending over one block or division of the road, a switch at each end for connecting it either to the source of electric supply or the ground, a setting-magnet for said switch, a contact controlled by a passing vehicle for energizing the said setting-magnet, means for disabling or rendering the said setting device temporarily inoperative so long as a car is on the block, a locking device controlled from the opposite end of the block and a restoring-magnet controlled by the said locking device.

8. In a signaling system, the combination with a signal-wire extending over a block or division of the road, a switch at each end for connecting it either to ground or to the source of current-supply, signal devices adapted to be included by the action of one of said switches in a circuit of which the said signal-wire forms a part, a magnetic device controlling the switch and provided with two coils, one a setting-coil and the other a clearing-coil, contacts for each of said coils controlled respectively by cars entering and leaving a block, means for disabling the setting-coil while a car is on the block, a locking device set by the setting-coil at the entrance end of a block and controlled by contacts at the leaving end operated by the clearing-coil at said leaving end, a restoring device, and a retaining-magnet at the farther end of the block energized simultaneously with the clearing-magnet.

9. In a signaling system, the combination with a signal-wire extending along a block or division of the road, a switch at each end of the line for connecting it either to the ground or the source of electric supply, a setting-magnet therefor operated by a contact controlled by a car at the beginning of the block, a clearing-magnet therefor at the end of the block controlled by a contact operated by the car, a locking-coil for each switch, contacts therefor controlled by the said setting-magnet, a restoring-magnet controlled by each of the said locking-magnets and a retaining-magnet at the end of the block for preventing the throwing over of the switch at that end.

10. In a signaling system, the combination with a signal-wire extending over one block or division of the road, a switch at each end for connecting it either with the ground or the source of electric supply operating-magnets for the said switches and means for controlling the said magnets through the controller of an electrically-propelled vehicle on the railway.

11. In a signaling system, the combination with a signal-wire and electric signaling devices of a controlling-switch therefor, an operating-magnet connected to an insulated section of trolley-wire, an electrically-propelled vehicle and a controller for the propelling-motors thereof controlling also the said operating-magnet.

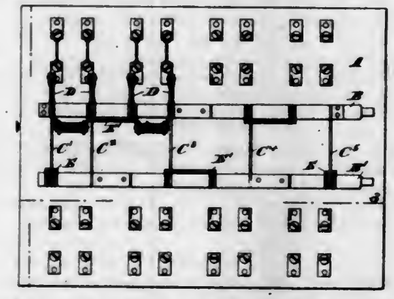
12. In a signaling system, the combination with a signal-wire extending along a block or division of the road, of electric signaling devices operated thereby, signal-setting devices, retarded signal-restoring devices, locking devices and a magnet for said locking devices responding in advance of the restoring devices to a current admitted to the line when the apparatus is in a set condition.

13. In a signaling apparatus, the combination with signal-setting devices, of a quick-acting locking-magnet therefor in the main line and a slow-acting restoring-magnet controlled by the locking-magnet whereby the restoring-magnet is prevented from operating upon the return of the line-current after a temporary interruption.

14. In a signaling apparatus, the combination with a signal-wire extending along a block or division of the road, signaling devices operated by the current in said signal-wire, automatic circuit-closers at each end of said signal-wire, a setting-magnet connected with the circuit-closer at the beginning of a block and operating the same, a locking-magnet in the main line controlling the setting-magnet and a slow-acting restoring-magnet controlled by the locking-magnet.

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**755,141. ELECTRICAL SWITCH MECHANISM.** HUBERT KRANTZ, Brooklyn, N. Y. Filed June 29, 1903. Serial No. 163,482. (No model.)



*Claim.*—1. In electrical switch mechanism, the combination of bus-bars, approximately flat cross-bars and switches, with means for supporting said cross-bars edgewise to said bus-bars, said means adapted to make electrical connection between said cross-bars and bus-bars, and the ends of said cross-bars forming contacts for said switches.

2. In electrical switch mechanism, the combination of switches, bus-bars, and approximately flat cross-bars the ends of which form contacts for said switches, with means for supporting said cross-bars edgewise to said bus-bars and at a distance therefrom to permit the

ends of the cross-bars being approximately flush with the bus-bars, said means also adapted to make electrical connection between said cross-bars and bus-bars.

3. In electrical switch mechanism, the combination of bus-bars, and switches, with an approximately flat cross-bar adapted to be supported edgewise to said bus-bars, and electrically connected to one of said bus-bars, said cross-bar being provided with U-shaped ends forming four contacts for said switches.

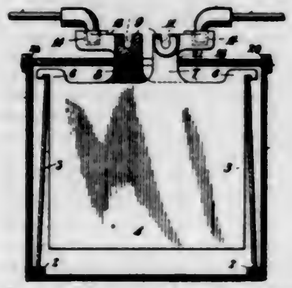
4. In electrical switch mechanism, the combination of bus-bars, with an approximately flat cross-bar supported edgewise to said bus-bars, said cross-bar being provided with U-shaped ends, one of which is secured to one of said bus-bars to support the cross-bars edgewise to, and make electrical connection with, said bus-bar.

5. In electrical switch mechanism, the combination of a base-plate, and bus-bars resting thereon, with approximately flat cross-bars provided with angle-pieces adapted to make electrical connection with said bus-bars and support the cross-bars above and edgewise to said bus-bars.

6. In an electrical switch mechanism, the combination of a bus-bar, with a cross-bar comprising a flat strip having a portion projecting therefrom, the end of said portion being bent at an angle and connected to said bus-bar, whereby the body of the cross-bar is electrically connected to said bus-bar and supported edgewise thereto.

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**755,142. STORAGE-BATTERY CONSTRUCTION.** Simon Lake, Bridgeport, Conn. Filed Dec. 17, 1903. Serial No. 185,465. (No model.)



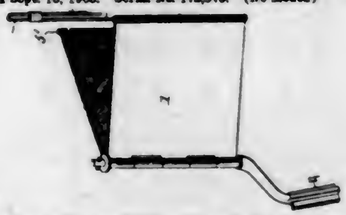
*Claim.*—1. A storage-battery cell comprising series of plates of opposite polarity, and sectional bus-bars built up of component members permanently connected with the plates of like polarity with interposed distance-pieces.

2. A storage-battery cell comprising series of plates of opposite polarity each provided with transverse bosses, and distance-pieces interposed between said bosses upon adjacent plates of like polarity to form with the same composite bus-bars connecting the plates of each series.

3. A storage-cell comprising series of plates of opposite polarity having the surfaces of their upper portions prepared for union with contiguous members similarly prepared, and interposed distance-pieces with their adjacent faces similarly prepared and united therewith in electrically perfect joints by application of heat, as in soldering, or the like, combined with means for mechanically securing said parts together in a sectional bus-bar.

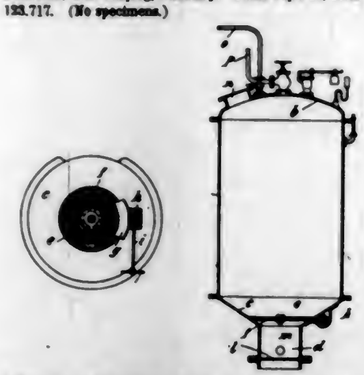
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**755,143. TRAIN-SIGNAL.** John D. Landers, Winnipeg, Canada. Filed Sept. 10, 1903. Serial No. 172,575. (No model.)



*Claim.*—A signal-flag comprising a pair of hinged leaves, loops formed at the free edges of said leaves, and a locking wire or rod having its end portions bent into parallelism and inserted within said loops, one of said loops and end portions having shoulders or stops to prevent the complete withdrawal of said rod.

**755,144. METHOD OF STEEPING GRAIN.** Valentin Lapp, Lindenau, near Leipsig, Germany. Filed Sept. 17, 1902. Serial No. 123,717. (No specimens.)



*Claim.*—1. The process of steeping grain, consisting in alternately subjecting the grain, in a closed vessel to the action of water at 12° centigrade and liquid air and finally subjecting the grain to the action of water at 15° centigrade, substantially as described.

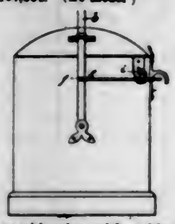
2. The improved process of steeping grain, consisting in immersing the grain in water at about 12° centigrade, then drawing off the water and subjecting the grain to the action of liquid air, then repeating these changes once or oftener and finally immersing the grain in water at about 15° centigrade, substantially as described.

3. The method of steeping grain consisting in immersing the grain, in a closed vessel, in water at substantially 12° centigrade for about four hours, then drawing off the water, and subjecting the wet grain to the action of liquid air for about one hour, repeating said changes or treatments once or oftener and finally immersing the grain in water at about 15° centigrade.

4. The method of steeping grain, consisting in immersing the grain in water in a closed vessel, then drawing off the water and introducing liquid air into the vessel and subjecting the grain to the action and pressure of the same as it expands, then again introducing water into the vessel while maintaining the pressure, repeating said treatment once or oftener and finally introducing water at a higher temperature into the vessel substantially as described.

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**755,145. PORTABLE BIN FOR DUST OR REFUSE.** Elias Lebach, Cologne, Germany, assignor to The Firm of Saubrita, Gesellschaft mit Beschränkter Haftung, Cologne, Germany. Filed Aug. 1, 1903. Serial No. 167,881. (No model.)



*Claim.*—1. The combination with a bin of a carrying-bail, a cover attached thereto, a hook fixed to the wall of the bin and a locking-handle engaging said hook at one end and the bail at the other end to prevent movement of the latter substantially as described.

2. The combination with a bin of a pivoted carrying-bail, a cover attached thereto, a hook fixed to the wall of the bin, and having its vertical part bent inwardly and a locking-bar in the form of a handle connected at one end to the said bail and at the other provided with an elongated eye adapted to engage the aforesaid hook, substantially as described.

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**755,146. NUT-LOCK.** Albert I. Lindley, Bedford, Ohio. Filed Feb. 2, 1904. Serial No. 191,656. (No model.)

*Claim.*—1. A nut-lock comprising superposed nuts, a washer therebetween having a groove on both sides, a projection on the nuts extending into said grooves, and means for preventing rotation of the washer.



2. A nut-lock comprising superposed nuts, a washer therebetween having grooves on both sides and wedge-shaped wings extending between the nuts, a projection on the nuts extending into the grooves, and means for preventing rotation of the washer.



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**755,147. VEHICLE-TIRE.** Paul W. Litchfield, Akron, Ohio. Filed June 8, 1903. Serial No. 160,507. (No model.)

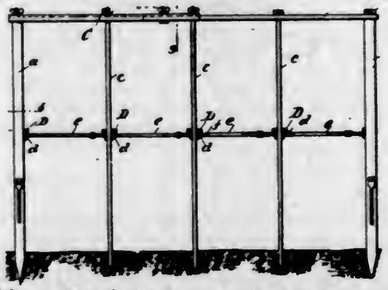


*Claim.*—1. The combination with a felly having a rigid band or rim extending around the periphery thereof, centrally disposed and of less width than the width of the felly and provided with outwardly-flaring side walls, of a tire comprising an outer casing split at its inner periphery and formed with attaching portions to fit on each side of the rim and project beyond the sides of the felly, an inner inflatable casing adapted to seat in the space between said flaring wall when inflated, and clamping-plates detachably secured to the respective sides of the felly for compressing said attaching portions of the outer casing and forcing them into contact with the flaring walls of the rim.

2. The combination with a felly having a rim extending around the periphery thereof, centrally disposed and of less width than the width of the felly and having outwardly-flaring side walls and its outer face provided with a continuous recess, of a tire split at its inner periphery and formed with attaching portions adapted to fit on each side of the rim and project beyond the sides of the felly, clamping-plates detachably secured to the respective sides of the felly adapted to compress said attaching portions and force the same into contact with the flaring walls of the rim, and an inflatable inner casing adapted to extend into said recess of the rim.

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**755,148. RACE-TRACK APPLIANCE.** Robert R. Logan, New York, N. Y. Filed Aug. 25, 1903. Serial No. 170,683. (No model.)



*Claim.*—1. In mechanism for race-tracks of the character described, the combination of a plurality of independent tapes at the finish-line, and an electric circuit constituted by a plurality of branch circuits connected with the tapes, each tape when struck by a racer being adapted to interrupt the current only in the respective branch circuit.

2. In mechanism for race-tracks of the character described, an electric circuit constituted by a plurality of branch circuits, a goal over the finish-line, and a plurality of tapes on such goal adjustable vertically independently of each other, each of such tapes having electrical connection in a different branch of said electric circuit.

3. In a race-timing device, the combination of a plurality of indicating devices for the several contestants, mechanism for starting said indicating devices simultaneously, and individual finish devices for each of said indicating devices.

4. In a race-timing device, the combination of a plurality of indicating devices for the several contestants, mechanism for starting said indicating devices simultaneously, and individual devices adapted to be actuated by each of the contestants at the finish and to control the respective indicating devices.

5. In a race-timing device, the combination of a plurality of electrically-controlled indicating devices, one for each of the contestants, a circuit-closer for starting all of said indicating devices simultaneously, and individual interrupters, each in circuit with one of said indicating devices and adapted to be actuated by the respective contestant at the finish.

6. In a race-timing device, the combination with a plurality of electrically-actuated indicating devices, one for each contestant, a plurality of interrupters located at the finish, one for each contestant and adapted to be actuated by the contestants, a circuit having branches or shunts, each containing one of said indicating devices and one of said interrupters, and a circuit-closer common to all of said branches or shunts.

7. In a race-timing device, the combination of a plurality of indicating devices for the several contestants, mechanism for starting said indicating devices simultaneously and at the same time giving a starting-signal, and individual finish devices for each of said indicating devices.

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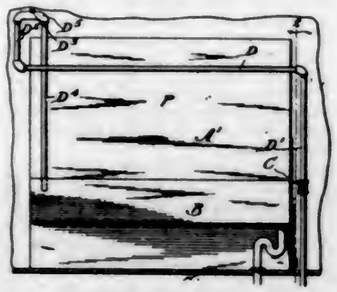
**755,149. DRAFT-EVENER.** John M. W. Long, Hamilton, Ohio, assignor to the Long & Allstatter Company of Hamilton, Ohio. Filed Jan. 25, 1904. Serial No. 190,433. (No model.)



*Claim.*—1. In an evener, the combination, substantially as set forth, of a tongue, an evener-bar at right angles thereto and having its center of length at one side of the tongue, hitching devices at each end of the evener-bar, a radius-bar disposed substantially parallel with the evener-bar and having its inner end pivoted to the tongue and having its outer end pivoted to that end of the evener-bar having the lesser projection to the side of the tongue, and an angularly-disposed drag-link having its rear end pivoted to the tongue and having its forward end pivoted near the mid-point in the length of the evener-bar.

2. In an evener, the combination, substantially as set forth, of a tongue, an evener-bar at right angles thereto and having its center of length at one side of the tongue, hitching devices at each end of the evener-bar, a radius-bar disposed substantially parallel with the evener-bar and having its inner end pivoted to the tongue and having its outer end pivoted to that end of the evener-bar having the lesser projection to the side of the tongue, and an angularly-disposed drag-link having its rear end pivoted to the tongue and having its forward end pivoted near the mid-point in the length of the evener-bar, the evener-bar and the drag-link being provided each with a longitudinal series of pivot-holes for selective use in pivoting these parts together.

**755,150. WATER-SUPPLY.** ALPHONSE MAJOR, New York, N. Y. Filed June 4, 1903. Serial No. 160,004. (No model.)



*Claim.*—1. In a water-supply having a sprinkler D *d*, and surface A', an upward-extending pipe $D^3$ connected with the supply, horizontal extension $D^3$ with vent $D^3$ and final descending pipe $D^4$ combined and arranged to serve substantially as herein specified.

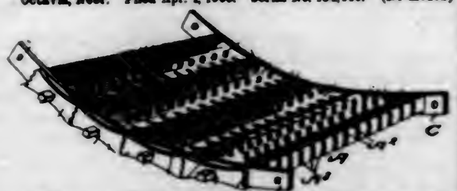
2. In a water-supply having a sprinkler D *d* and surface A', an upward-extending pipe $D^3$ connected with the supply after it has passed the sprinkler, horizontal extension $D^3$ with vent $D^3$ and final descending pipe $D^4$ combined and arranged to serve substantially as herein specified.

**755,151. RAIL-JOINT.** REUBEN O. MILLARD and THOMAS L. HENRY, Catawissa, Pa. Filed Jan. 31, 1903. Serial No. 141,349. (No model.)



*Claim.*—The combination with a plurality of rails having their meeting end portions longitudinally cut away on one side, said cut-out portion presenting a perpendicular wall, of an elongated fish-plate having a tread portion adapted to aline with the tread of the rails and to extend from the inner end of the cut-out portion of one rail to the inner end of the corresponding portion of the meeting rail, the base portion of said fish-plate being of equal length as the tread portion and adapted to bear against the perpendicular walls of the rails, said base portion having an outwardly-extending flange adapted to fit in the cut-out portion of the rail-flanges, central, integral end portions projecting from each end of the fish-plate and adapted to rest between the tread of the rails and the flange at the base, said end portions having flanges continuous with the flange of the base portion of the fish-plate and adapted to bear on the non-cut-out portions of the base-flanges of the rails, the said fish-plate being longitudinally slotted from the end of one of the projecting end portions to the end of the other projecting portion, and having perforations alining with said slot, and a coacting fish-plate adapted to be secured upon the opposite sides of the rails.

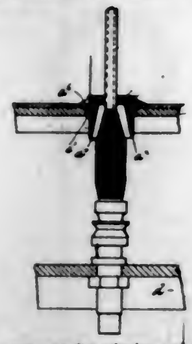
**755,152. CONCAVE FOR THRESHING-MACHINES.** SYLVESTER S. MIESLER, David City, Nebr., assignor of one-half to Manna Keller, Octavia, Nebr. Filed Apr. 4, 1903. Serial No. 151,119. (No model.)



*Claim.*—1. A concave for threshing-machines comprising a plurality of similar sections, each section being reversible and provided with teeth or spikes and having its edges slotted, as set forth.

2. A concave for threshing-machines comprising a plurality of sections, each section being reversible and having its upper and lower face concaved, one of said faces being provided with teeth or spikes, the edges of each section being provided with a series of slots, the bars for supporting the sections, the bearing-plates in which the bars are journaled, and the locking-plates carried upon the extended ends of the bars, said locking-plates being adapted to engage one another, substantially as set forth.

**755,153. APPARATUS FOR SPINNING AND DOUBLING.** ROBERT W. MONCRIEFF, Newport Pagnell, England. Filed Feb. 11, 1902. Serial No. 93,623. (No model.)



*Claim.*—1. In apparatus for spinning and doubling, the combination with a positively-driven spindle; of a spindle-rail; bearings in said spindle-rail in which said spindle is mounted; a suitably-actuated copping-rail, having an opening of larger size than the cop in said rail; a twisting-disk having a truncated cone shape, such disk being loosely mounted on said spindle-blade and having its lower side in frictional contact with the said copping-rail, and being provided with a downwardly-projecting rim having at its lower end hooks for the yarn passing through onto the spindle-blade, said rim extending through the said opening in the copping-rail and free to rotate therein without contacting; and the drag-cords arranged to press against the conical surface of the disk to obtain the necessary tension of the yarn and to prevent said disk rising off the copping-rail, substantially as specified.

2. In apparatus for spinning and doubling, the expansible bush for use with taper spindles, tubes or bobbins, comprising a divided ring and the elastic ring placed around said ring to hold it together, substantially as specified.

**755,154. COKE QUENCHING AND BLEACHING APPARATUS.** EDWIN A. MOORE, Philadelphia, Pa. Filed Sept. 18, 1902. Renewed Aug. 26, 1903. Serial No. 170,878. (No model.)

*Claim.*—1. A coke quenching and bleaching apparatus, consisting of a receptacle provided with laterally-movable doors at both its ends, means for supplying water thereto, an outlet for water at the bottom and at one end of the receptacle, an outlet for steam, and means for controlling said outlet.

2. A coke quenching and bleaching apparatus, consisting of a receptacle composed of separable hollow transverse sections, doors at each end of the receptacle, means for supplying water to each section, an outlet for water at one end of the receptacle, and an outlet for steam.

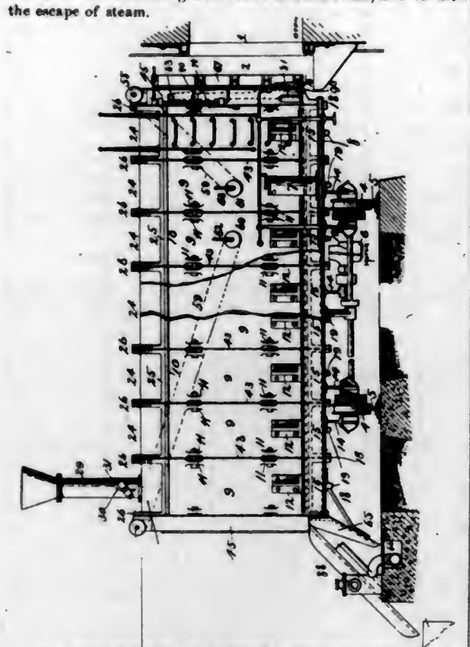
3. A coke quenching and bleaching apparatus, consisting of a receptacle provided with a vestibule or extension for engagement with a coke-oven, doors separate from the vestibule at both ends of the receptacle, means for supplying water thereto, an outlet for steam, and means for controlling said outlet.

4. A coke quenching and bleaching apparatus, consisting of a receptacle composed of separable hollow transverse sections, a vestibule or extension at one end for engagement with a coke-oven, doors at both ends of the receptacle, means for supplying water to each section, an outlet for steam, and means for controlling said outlet to exclude air, and to allow the escape of steam.

5. A coke quenching and bleaching apparatus, consisting of a receptacle provided with a foldable vestibule or extension, laterally-movable doors at both ends of the receptacle, means for supplying water thereto, an outlet for steam, and means for controlling said outlet.



6. A coke quenching and bleaching apparatus, consisting of a receptacle composed of separable hollow transverse sections, a vestibule having foldable sides and bottom at one end of the receptacle for engagement with a coke-oven, doors at both ends of the receptacle, means for supplying water to each section, an outlet for steam, and means for controlling said outlet to exclude air, and to allow the escape of steam.



7. A coke quenching and bleaching apparatus, consisting of a receptacle having doors at both ends, and provided with a vestibule or extension at one end having laterally-swinging sides and a vertically-swinging bottom for engagement with a coke-oven, means for swinging said sides, means for lowering and raising said bottom, and means for supplying water to the receptacle.

8. A coke quenching and bleaching apparatus, consisting of a receptacle composed of separable hollow transverse sections, a vestibule or extension at one end having laterally-swinging sides and a vertically-swinging bottom for engagement with a coke-oven, doors at both ends of the receptacle, means for supplying water to each section, an outlet for steam, and means for controlling said outlet to exclude air, and to allow the escape of steam.

9. A receptacle for coke provided with doors at both ends thereof, and having a vestibule provided with laterally-swinging sides, and a vertically-swinging bottom, and means for operating said sides and bottom to fold them upon each other.

10. A receptacle for coke having a box-frame at one end, a vestibule provided with laterally-swinging sides and a vertically-swinging bottom pivotally connected to said box-frame and constructed to fold upon each other, and means for operating said sides and bottom.

11. A coke quenching and bleaching apparatus, consisting of a receptacle provided with laterally-movable doors at one end, a vestibule or extension outside the doors, and means for supplying water to the receptacle.

12. A coke quenching and bleaching apparatus, consisting of a receptacle provided with laterally-movable doors, racks on the doors, pinions engaging said racks, and means for supplying water to the receptacle.

13. A coke quenching and bleaching apparatus, consisting of a receptacle, having a hollow casing or frame at one end, laterally-movable doors within the casing, means for moving the doors, and means for supplying water to the receptacle.

14. A coke quenching and bleaching apparatus, consisting of a receptacle composed of separate hollow sections detachably secured together at their adjacent ends, and means for supplying water to each section.

15. A coke quenching and bleaching apparatus, consisting of a receptacle composed of hollow transverse sections, separated at their lower ends and in communication at their upper ends, and means for supplying water thereto.

16. A coke quenching and bleaching apparatus, consisting of a receptacle composed of hollow transverse sections having separable sides and ends, and means for supplying water thereto.

17. A coke quenching and bleaching apparatus, consisting of a receptacle composed of separable hollow transverse sections, and means for supplying water thereto.

18. A coke quenching and bleaching apparatus, consisting of a receptacle provided with hollow sections composed of sides having flanges at both ends, a top section open at its ends, and a bottom section having transverse ends.

19. A coke quenching and bleaching apparatus, consisting of a receptacle provided with hollow transverse sections composed of sides having flanges at both ends, a top section open at its ends, a bottom section having transverse ends, and a detachable bottom between the sides.

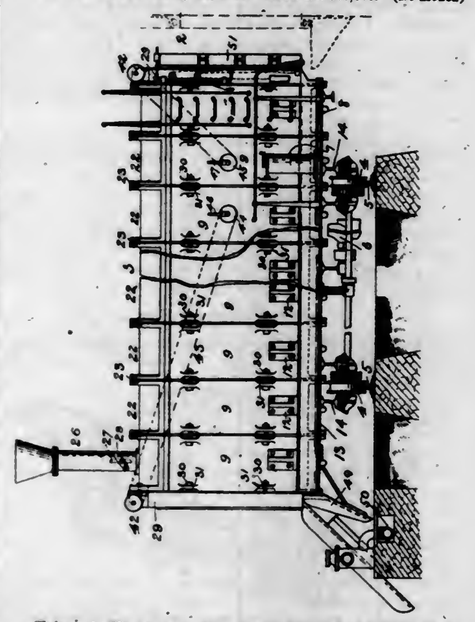
20. A coke quenching and bleaching apparatus, consisting of a receptacle having a coke-chamber, a chamber above the coke-chamber, a passage between said chambers, water-leveling devices controlling said passage, and means for supplying water to the coke-chamber.

21. A coke quenching and bleaching apparatus, consisting of a receptacle composed of hollow sections forming a coke-chamber, a permanent bottom for said coke-chamber in each section, a separate and renewable supplemental bottom, and means for supplying water to the coke-chamber.

22. A coke quenching and bleaching apparatus, consisting of a receptacle having hollow sections, and packing interposed between the adjacent ends of the sections.

23. A coke quenching and bleaching apparatus, consisting of a movable receptacle having a coke-chamber therein; in combination with a coke-oven, a pusher for discharging coke from the oven into said receptacle, and a separate pusher for discharging the coke from the receptacle.

**755,155. PROCESS OF QUENCHING AND BLEACHING COKE.** EDWIN A. MOORE, Philadelphia, Pa. Original application filed Sept. 18, 1902, Serial No. 123,925. Divided and this application filed Nov. 20, 1902. Renewed Aug. 26, 1903. Serial No. 170,879. (No model.)



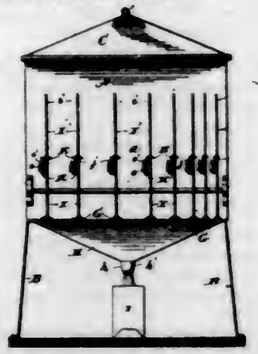
*Claim.*—1. The process of extinguishing and bleaching coke, which consists in transferring hot coke from an oven into a receptacle from which atmospheric air is excluded, deluging the coke with water and discharging the excess of water as rapidly as it is supplied, and then subjecting the coke to steam generated in the receptacle by the heat in and the water on the coke.

2. The process described which consists in transferring hot coke

from an oven into a receptacle from which atmospheric air is excluded, deluging the coke with water and discharging the excess of water as rapidly as it is supplied, and then subjecting the coke to steam generated in the receptacle by the heat in and the water on the coke, and discharging the steam from the receptacle, and then drying the coke.

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755,156. **GROCER'S CABINET.** SAMUEL R. MOORE, Ada, Ind. Ter., assignor of one-half to I. H. Van Eaton, Ada, Ind. Ter. Filed Aug. 13, 1903. Serial No. 169,367. (No model.)



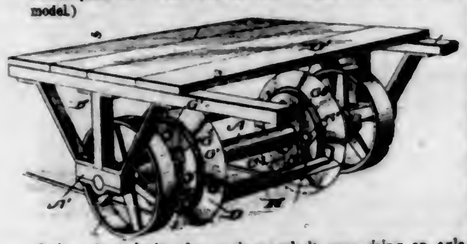
*Claim.*—1. In a cabinet of the character described, the combination with a receiving-hopper, of a series of measuring vessels below the same and communicating therewith, outlets for the vessels, gates for closing the outlets, operating-levers upon the front of the cabinet for each of the gates, and individual indicating devices for each of the vessels mounted in suitable bearings upon the front of the cabinet and operatively associated with the respective levers, the indicating characters of said devices facing forwardly relative to the front of the cabinet.

2. In a grocer's cabinet, the combination with the casing, of a receiving-hopper, a series of measuring vessels below the same, and communicating therewith, outlets for the vessels, gates for closing the outlets, outwardly-extended brackets upon the front of the casing adjacent its opposite sides, operating-levers for the gates pivoted to the brackets, supplemental brackets upon the front of the casing adjacent each of the measuring vessels and an individual indicating device the vessels mounted upon said supplemental brackets and operatively associated with the respective levers.

3. In a cabinet of the character described, the combination of a receiving-hopper, a series of measuring vessels below the same, and communicating therewith, inlets and outlets for the vessels, gates for closing the outlets, operating-levers upon the front of the cabinet for each of the gates, and indicating devices for each of the vessels mounted in suitable bearings upon the front of the cabinet and operatively associated with the respective levers, said indicating devices comprising a rotary disk, and characters on the periphery of the disk facing forwardly relative to the front of the casing.

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755,157. **DEVICE FOR CUTTING ASPHALT.** THOMAS F. MORAN, Philadelphia, Pa. Filed May 28, 1903. Serial No. 159,196. (No model.)



*Claim.*—1. A device for cutting asphalt, comprising an axle mounted upon ground-wheels, and a cutting-disk mounted also upon the axle independent of the said ground-wheels, and of a diameter greater than the diameter of the ground-wheels.

2. A device for cutting asphalt comprising an axle mounted upon ground-wheels, and a pair of cutting-disks mounted also upon the axle, said cutting-disks being of a diameter greater than the ground-wheels and independent of the said ground-wheels, and the frame for carrying the axle, as specified.

3. In a device of the kind described, the combination with the frame, axle and ground-wheels, of the cutting-disks mounted upon the axle, and the cutting-blade connecting the cutting-disks, as specified.

4. In a device for cutting asphalt the combination with the frame, axle and ground-wheels, of the cutting-disks mounted upon the axle, and means for adjusting said cutting-disks upon the axle, as specified.

5. The combination with the frame, axle and ground-wheels, of the cutting-disks arranged upon the axle, the journal-boxes, the packing-blocks, and the plates for holding the journal-box and packing-blocks in place, substantially as described.

6. The combination with the frame, axle and ground-wheels, of the cutting-disks arranged upon the axle, the journal-boxes, the packing-blocks, and the plates for holding the journal-box and packing-blocks in place, and the cutting-blades connecting the cutting-disks at diametrically opposite points.

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755,158. **SCENIC PLEASURE-RAILWAY.** ARTHUR C. MORGAN, Detroit, Mich. Filed Apr. 18, 1903. Serial No. 153,303. (No model.)



*Claim.*—1. In a scenic railway, the combination with an upper and a lower course or track, a gradient connecting the lower end of the lower course with the upper end of the upper course, and a portion curved around said gradient intermediate the upper and lower courses, of a framework for supporting both courses, and a tunnel intermediate the upper and lower courses and through which one of the courses extends, said framework also forming the framework for said tunnel.

2. In a pleasure-railway, the combination of a continuous spiral track forming upper and lower courses, one directly above the other, a tunnel intermediate the upper and lower courses, a gradient extended above and below said tunnel and connecting the lower end of the lower course with the upper end of the upper course, a curved portion extending around at one side of the gradient intermediate the upper and lower courses and connecting the lower end of the upper course with the upper end of a lower course; and a common framework for supporting the courses.

3. In a pleasure-railway, the combination of a continuous spiral track forming upper and lower courses, one directly above the other, a gradient connecting the lower end of the lower course with the upper end of the upper course, a portion curved inward around said gradient intermediate the upper and lower courses, and a series of frames for supporting the courses consisting of inclined side posts, cross-ties connecting said posts and upon which the different courses of the track are supported, and uprights at each side of the track secured to the cross-ties.

4. In a scenic railway, the combination of a continuous spiral track forming an upper and a lower course connecting the lower end of the lower course with the upper end of the upper course and a portion curved around said gradient intermediate the upper and lower courses, a series of frames for supporting the courses consisting of inclined side posts, cross-ties connecting said posts upon which the tracks are laid, vertical bars at each side of the lower course, and a tunnel inclosing the lower course and disposed below the upper course, the frames forming the framework for the tunnel.

5. In a scenic railway, the combination of a continuous spiral track forming an upper and a lower course, a steep gradient intermediate the upper and lower courses, a portion curved inward around the gradient, a series of frames for supporting the courses each consisting of inclined side posts, cross-ties connecting said side posts upon which the track-rails are supported, uprights at each side of the track and extending upward beyond the same, bars secured to the upper ends of the uprights and to the posts, and vertical bars at each side of the lower course, guide-rails secured to the inner sides of the uprights, a tunnel inclosing the lower course, the cross-ties and vertical bars of each frame forming the frame for said tunnel, and a walk at each side of the upper course and walks upon each side of said gradient and curved connecting portion.

6. In a scenic railway, in combination, with a track comprising upper and lower courses in a continuous spiral form and a tunnel inclosing said track and interposed between the upper and lower courses, of doors for said tunnel, a rock-shaft having upwardly-extending arms and an arm extending upward in the path of the car, connecting-rods connecting the ends of the arms and the doors, hooks to engage the doors and hold the same open, springs to close the same, a rock-shaft at the opposite side of the doors and having upwardly-extending arms, connecting-rods connecting said arms and said hooks, and an arm on the last-named rock-shaft extending upward in the path of the car.

7. In a pleasure-railway, in combination with a track supported upon a suitable framework, guide-rails at each side of said track and at a distance above the same, a brake-shoe consisting of a flexible member secured at one end to the framework to engage the side of the car at its opposite end, a vertically-disposed pivoted lever, and means embodying a vertically-disposed lever, a longitudinally-movable push-bar connected therewith, and means connecting said levers below the track and operated by said first-mentioned lever for forcing the free end of the shoe into the path of the car.

8. In a pleasure-railway, in combination with a track supported upon a suitable framework, uprights extending upward at each side of said track, guide-rails secured to said uprights, a flexible member secured at one end to said uprights below the guide-rail, a push-bar longitudinally movable in bearings on the frame and engaging the free end of said member, a lever pivoted intermediate its ends to the frame and its upper end to the push-bar, a lever pivoted to the frame at the opposite side of the track, and a connecting-rod connecting said levers and disposed beneath the track.

9. In a pleasure-railway, the combination with a spirally-arranged track having a steep gradient connecting the lower end of the lower course with the upper end of the upper course, and a portion curved around said gradient intermediate the upper and lower courses, and means for drawing cars up said gradient, of a framework for supporting said track, uprights on said framework at each side of the track, guide-rails secured to the inner sides of said uprights, a series of dogs pivotally secured to the frame along the gradient portion of the track and projecting into the path of the car at one side, a shoulder on each dog, stops to limit the inward movement of said dogs, and springs to hold the dogs in engagement with the stops.

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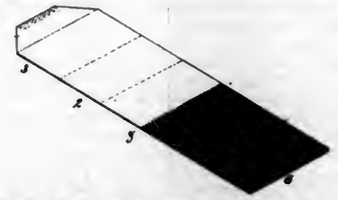
755,159. **SELF-SEALING MANIFOLDING WRITING-SHEET.** WILSON MORTON, Chicago, Ill.; Sidney Carr Carroll, administrator of said Morton, deceased, assignor to the United States Sales Book Company, Chicago, Ill., a Corporation of Illinois. Filed Dec. 27, 1902. Serial No. 136,533. (No model.)

*Claim.*—1. A writing-sheet comprising an original writing-page, a copy-page, a carbon transfer-page, and a sealing-envelop portion.

2. A writing-sheet comprising portions adapted to fold into original and duplicate manuscript leaves having a transfer-page therebetween, and one of said leaves being provided with an ensealing portion.

3. An article of the class described comprising an original writing-leaf, a detachable copy-leaf, and suitable transfer material therebetween, one of said leaves being provided with sealing means.

4. A writing-sheet partly coated with a transfer material and adapted to be folded into, successively, an original manuscript page, a carbon-page, a copy-page and a mailable manuscript, the latter having a sealing-flap.



5. An article of the class described comprising individually-detachable original and duplicate manuscript leaves, each thereof except the last having a transfer-page adapted to transmit writing to the underlying page, and one of said leaves being provided with an ensealing portion.

6. A writing-sheet comprising an ensealing portion and a plurality of writing-sheets adapted to fold upon each other with a carbonized surface therebetween and a sealing-flap upon one of said folded portions.

7. A sealing-sheet of paper provided with an integral or substantially integral original manuscript leaf coated with a transfer material adapted to transfer writing upon said sealing-sheet.

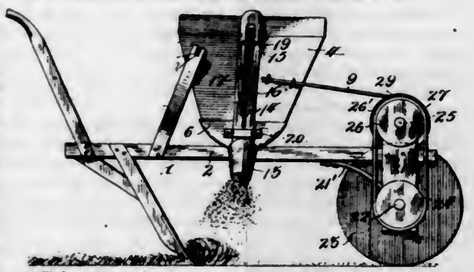
8. A writing-sheet, consisting of a sheet of paper carbonized upon substantially one-fourth of its surface and provided with a sealing-flap, said writing-sheet being adapted to be folded upon itself with the carbonized surface between the folds and the sealing-flap upon the uncarbonized fold.

9. A manifolding writing-sheet consisting of a writing-sheet having a carbonized surface covering substantially one-fourth of its surface, an envelop portion opposite said carbonized portion, and suitable perforations between said carbonized and uncarbonized portions facilitating separation thereof, the uncarbonized portion being provided with means for sealing the same when folded.

10. A manifolding writing-sheet adapted to be folded upon itself and comprising when folded two detachably-connected leaves or original and duplicate manuscript portions, a carbonized surface on one leaf and between both thereof, and a sealing and address portion on the other leaf, one of said sheets being adapted to receive original impressions and to transmit same to the other leaf, the latter leaf being adapted to fold into envelop form and to be sealed upon itself by said flap.

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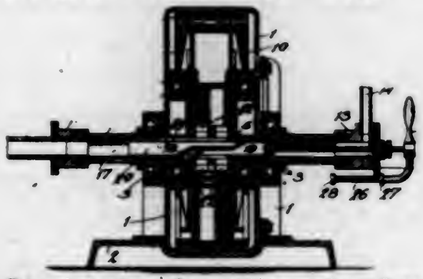
755,160. **FERTILIZER-DISTRIBUTER.** MICHAEL MCLEOD, Isom, Ga. Filed Nov. 2, 1903. Serial No. 179,576. (No model.)



*Claim.*—1. A distributer comprising a frame-beam having a ground implement at the rear thereof, rear bearing-standards rising from the rear portion of the beam and provided with open bearings, front bearing-standards extending above and below the beam at the front portion thereof and arranged on opposite sides of said beam, transverse shafts journaled in the upper and lower ends of the said front standards above and below the beam, a ground-wheel mounted upon one end of the lower transverse shaft, a power-wheel upon the opposite end of said shaft, a power-wheel upon one end of the upper transverse shaft, a connection between the two power-wheels to communicate motion from one to the other, a tappet-wheel on the upper transverse shaft between the upper ends of the standards, and a hopper provided with trunnions at its rear engaging the said open bearings in the rear standard and with a tappet-lever at its front projecting forward and engaging said tappet-wheel, substantially as described.

2. A distributer comprising a supporting-frame having a ground implement at the rear and a ground-wheel at the front thereof, a hopper having a pivotal connection at its rear with the frame, and provided with a side outlet, a tappet-wheel upon the frame above the ground-wheel and driven therefrom, a tappet-lever coacting with said tappet-wheel to support the front of the hopper and impart vibratory motion thereto, a vertically-adjustable longitudinally-slotted controlling-plate governing the side outlet of the hopper, an apertured lug projecting from the hopper through the slot in the plate, an adjusting-rod having a bent lower end connected to the plate below the bottom of the slot in said plate and having a threaded upper end extending through the aperture in the lug, and an adjusting-screw upon said threaded end of the rod, substantially as described.

755,161. ROTARY ENGINE. HERMAN NIELSEN, New York, N. Y., assignor to the Reciprocating Rotary Engine Company, New York, N. Y. Filed Dec. 12, 1903. Serial No. 184,904. (No model.)



*Claim.*—1. A rotary engine comprising a stationary frame, a shaft set eccentric to the axis of said frame, radially-disposed cylinders mounted on and secured to said shaft, pistons in said cylinders, said pistons being suspended in their respective cylinders from yokes set concentric with the axis of said frame.

2. A rotary engine comprising a shaft, a plurality of radially-disposed cylinders mounted on and secured to said shaft, pistons in said cylinders, said pistons being connected to yokes independent of each other, and bearings eccentric to the axis of said shaft and common to all the yokes.

3. In a rotary engine the combination of a hollow shaft having steam inlet and exhaust connections, a valve in said shaft, radially-disposed cylinders mounted on said shaft and having ports communicating with said shaft, pistons in said cylinders, said pistons being directly connected to yokes independent of each other, and bearings eccentric to the axis of said shaft and common to all the yokes.

4. In a rotary engine the combination of a hollow shaft mounted for rotation in suitable bearings, a plurality of radially-disposed cylinders mounted on said shaft, means to admit steam through said shaft to the cylinders and to permit the escape of exhaust-steam, pistons in said cylinders, said pistons being directly connected to yokes independent of each other, and bearings eccentric to the axis of said shaft and common to all the yokes.

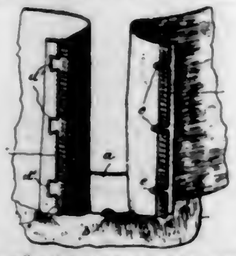
5. In a rotary engine the combination of a stationary frame, a shaft supported in bearings in said frame and eccentric with the axis thereof, radially-disposed cylinders mounted on said shaft, pistons in said cylinders, yokes independent of each other from which said pistons are freely suspended, said yokes having a bearing concentric with the axis of said frame, and means to admit steam to said cylinders and to exhaust the same therefrom.

6. In a rotary engine the combination of a stationary frame, circular bearings carried by said frame and concentric with the axis thereof, a shaft mounted eccentric with the axis of said frame, radially-disposed cylinders secured to said shaft, pistons in said cylinders having their points of suspension in supports concentric with the axis of said frame and movably supported upon said circular bearings.

7. A rotary engine comprising a shaft, a plurality of radially-disposed cylinders mounted on and secured to said shaft, pistons in said cylinders, said pistons being directly connected to yokes independent of each other, bearings for said yokes eccentric with the axis of said shaft, said yokes being supported on said bearings so as to have a sliding movement toward and from each other during the rotation of the cylinders.

8. In a rotary engine the combination with a shaft, of a plurality of radially-disposed cylinders mounted on and secured to said shaft, pistons in said cylinders, said pistons being pivotally suspended on yokes independent of each other, bearings for said yokes eccentric with the axis of said shaft, said yokes being supported on said bearings so as to have a sliding movement toward and away from each other during the rotation of the cylinders.

755,162. COMBINATION COLLAR-FASTENER. MARIA OLSSON, Rock Island, Ill. Filed Dec. 10, 1903. Serial No. 184,643. (No model.)



*Claim.*—In a collar-fastener, two members each formed of a single piece, bent on itself to form parallel sections, one of said sections having hooks bent from one of its sections and the other member having eyes bent from one of its sections, the last-named member having its sections converged at the lower end and bent inwardly to form a hook.

755,163. DUPLICATING OR COUNTER-CHECK APPLIANCE. EDWARD PARKER, Bristol, England. Filed May 24, 1902. Serial No. 108,774. (No model.)



*Claim.*—1. A duplicating or counter-check appliance comprising a casing, a removable writing-plate mounted therein, a movable carbon-sheet holder secured to said casing and extending over said writing-plate and a cutter slidably mounted at one end of said casing, substantially as shown and described.

2. In a duplicating or counter-check appliance of the class described a casing, a writing-plate, and strips of paper mounted in said casing and passing over said writing-plate; a pressure-plate hinged to one side of said casing and detachably secured to the opposite side thereof and a cutter slidably mounted on said pressure-plate, substantially as shown and described.

3. In a duplicating or counter-check appliance comprising a casing, a writing-plate on said casing and strips of paper mounted in said casing and passing over said writing-plate; a carbon-sheet holder consisting of a plate secured to said casing an arm hinged thereto and having sliding movement thereon said arm extending transversely of and between said strips of paper, substantially as shown and described.

4. In a counter-check appliance, a casing, a writing-plate mounted therein, said plate being downwardly and outwardly curved near its outer end and provided with a friction-plate adjacent to said end, a plurality of upwardly-extending springs secured to said writing-plate adjacent to said friction-plate, and said writing-plate being provided with a cutting edge at its outer end, substantially as shown and described.

755,164. PITMAN CONNECTION. HARRISON PRATT, Giles, Nebr. Filed Oct. 29, 1903. Serial No. 179,056. (No model.)

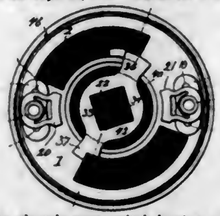


*Claim.*—1. A pitman connection comprising a head having a rib, the said rib having a recess, a block journaled in the recess, said block having a transverse tapering bore, a pitman having a laterally-projecting tapered finger, said finger having a longitudinal bore, and a bolt passing through the block and the tapered finger, and a nut secured upon the threaded end of the bolt, as set forth.



2. A pitman connection comprising in combination a head having a rib, said rib being formed with a recess, a block journaled in said recess, one of the journals being adjustable, said block having a transverse tapering bore, a pitman having a laterally-projecting tapered finger, adapted to fit into the tapered bore of the block, said finger having a longitudinal bore, a bolt passing through the block and the finger arranged therein, a nut secured upon the threaded end of the bolt, the side faces of said nut being notched, and a spring secured to the sides of the pitman and adapted to engage the nut and hold it against rotation, substantially as described.

755,165. ELECTRIC SWITCH. ASHLEY P. PECK, Milwaukee, Wis., assignor to Hart & Hegeman Manufacturing Company of Hartford, Conn. Filed Sept. 21, 1903. Serial No. 174,125. (No model.)

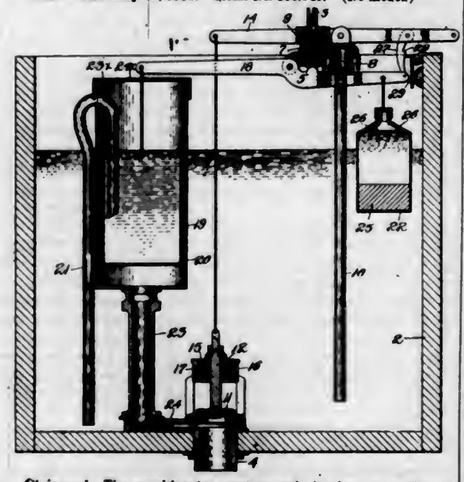


*Claim.*—1. An electric snap-switch having a base of insulating material, stationary spring-contacts mounted upon the base, rotatory contacts adapted to make and break contact with the stationary spring-contacts, and barriers of insulating material extending upwardly from the base and inclosing a section of the path of the rotatory contacts between but not inclosing the stationary contacts, substantially as specified.

2. An electric snap-switch having a base of insulating material, stationary contacts mounted upon the base, rotatory contacts adapted to make and break contact with the stationary contacts, and barriers of insulating material extending upwardly from the base between the stationary contacts in the path of the rotatory contacts and having grooves through which the movable contacts pass, substantially as specified.

3. An electric snap-switch having a base of insulating material, stationary contacts mounted upon the base, rotatory contacts adapted to make and break contact with the stationary contacts, blocks of insulating material inclosing all but the ends of the rotatory contacts, and barriers of insulating material extending upwardly from the base between but not inclosing the stationary contacts and adapted to shield the exposed ends of the rotatory contacts immediately as they leave the stationary contacts when moved to open the circuit, substantially as specified.

755,166. FLUSHING-TANK. CHARLES H. PHILLIPS, Malden, Mass. Filed May 12, 1902. Serial No. 106,849. (No model.)



*Claim.*—1. The combination with a tank having an outlet, of an inlet-valve and automatic means for opening the inlet-valve when the tank is emptied and closing the inlet-valve when the tank is filled comprising an open receptacle for water which is filled and emptied by such means, the capacity of which receptacle is such that when filled it will exert an excessive valve-closing pressure on the inlet-valve, substantially as described.

2. The combination with a tank having an outlet, of an inlet-pipe discharging directly into the tank and provided with an inlet-valve, means for opening and closing the inlet-valve comprising an open receptacle adapted to contain and retain sufficient water to close and to hold closed the inlet-valve, and automatic devices for emptying receptacle when the tank is emptied and for filling the receptacle from the tank when the tank is filled, substantially as described.

3. The combination with a tank having an outlet, of an inlet-pipe discharging directly into the tank and provided with an inlet-valve, means for operating the inlet-valve comprising an open receptacle for water the weight of which is adapted to close the inlet-valve and means for filling said receptacle from the tank to close the inlet-valve when the tank is filled and to empty said receptacle to open the inlet-valve when the tank is emptied, substantially as described.

4. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising a receptacle adapted to contain and retain sufficient water to close and hold closed the inlet-valve and automatic devices for emptying the receptacle when the tank is emptied and for filling the receptacle when the tank is filled, operating to retard the emptying of the receptacle so that the emptying shall not be complete until the tank is substantially emptied, substantially as described.

5. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising an open receptacle adapted to contain and retain sufficient water to close and hold closed the inlet-valve, and a siphon connecting the receptacle with the tank operating to empty the receptacle when the tank is emptied and to fill the receptacle when the tank is filled, substantially as described.

6. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising an open receptacle adapted to contain sufficient water to close the inlet-valve and a siphon for filling the receptacle when the tank is filled constructed and arranged to empty the receptacle after the tank has been emptied, said receptacle being of such capacity that when partially filled it will operate to close the inlet-valve, and when completely filled will operate to exert an excess of pressure upon the inlet-valve to hold it closed, substantially as described.

7. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising an open receptacle adapted to contain and retain sufficient water to close and hold closed the inlet-valve and siphonic connections between the receptacle and the tank operating to empty the receptacle when the tank is emptied and to fill the receptacle after the tank has been filled, substantially as described.

8. The combination with a tank having an outlet, of an inlet-valve and means for opening and closing the inlet-valve comprising an open receptacle the capacity of which is such that when filled it will exert an excessive valve-closing pressure on the inlet-valve and siphonic connections between the receptacle and the tank operating to empty the receptacle when the tank is emptied and to fill the receptacle from the tank after the tank has been filled, substantially as described.

9. A flushing-tank having, in combination a tank provided with an outlet of an inlet-pipe provided with an inlet-valve, said inlet-valve operating to close against the pressure of the supply-water, a lever for operating the inlet-valve, an open receptacle hung upon said lever, said receptacle having a capacity such that when filled with water it will exert a pressure upon the inlet-valve greater than the pressure of the water opposed to it, and connections between the tank and the receptacle for emptying the receptacle when the tank is emptied and for filling the receptacle when the tank is filled, substantially as described.

10. The combination with a tank provided with an outlet, of an inlet-pipe provided with an inlet-valve, said inlet-valve operating to close against the pressure of the supply-water, a lever for operating the inlet-valve, an open receptacle for water hanging on said lever, a siphon having one leg extended nearly to the bottom of the tank and below the lowest level of the water in the tank and having the other leg extending into said receptacle, the bend in the siphon being located at the highest level of the water in the tank, said siphon operating to fill the receptacle and close the inlet-valve when the water in the tank rises to the highest level, and thereafter to

lower the level in the tank by discharging it into the receptacle, substantially as described.

11. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising a receptacle for water and automatic devices for emptying the receptacle when the tank is emptied and filling the receptacle when the tank is filled acting to deliver an additional amount of water to refill the bowl, substantially as described.

12. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising a receptacle, a casing therefor having an outlet to the bowl, and automatic devices for emptying the receptacle when the tank is emptied and filling the receptacle when the tank is filled acting to deliver an additional amount of water to refill the bowl, substantially as described.

13. The combination with a tank having an outlet, of an inlet-valve, means for opening and closing the inlet-valve comprising an open receptacle adapted to contain sufficient water to close the inlet-valve, and siphonic connections for emptying the receptacle when the tank is emptied and for filling the receptacle when the tank is filled, said receptacle and siphonic connections being constructed and arranged so that the filling of the receptacle is started only when the tank has been filled to a predetermined level and continues beyond the time necessary to fill the receptacle so that additional water is supplied to refill the bowl, substantially as described.

14. The combination with a tank having a supply-inlet and a valve controlling the same, of a valve-operating lever, a receptacle suspended therefrom and arranged to exert a valve-closing force on the inlet-valve, means for withdrawing liquid from said receptacle when the tank empties and for supplying liquid to said receptacle when the tank fills, and a second receptacle suspended from said lever and arranged and weighted to counterbalance the valve-closing receptacle when empty, said second receptacle being normally filled with liquid and so located as to extend below the normal level of liquid within the tank, substantially as described.

15. The combination with a tank having an inlet and an outlet and valves controlling the same, of means for opening the inlet-valve when the tank empties and for closing said valve when the tank fills, an operating-lever connected to the outlet-valve, a latch pivoted to said lever and provided with a shoulder, a pivoted catch arranged to engage said shoulder when the outlet-valve is opened, and an arm movable with the means which control the inlet-valve and located in front of said catch when the inlet-valve is closed, substantially as described.

16. The combination with a tank having an inlet and an outlet and valves controlling the same, of means for operating the inlet-valve comprising a receptacle the weight of which is adapted to exert a closing force on said inlet-valve, means for withdrawing liquid from said receptacle when the tank empties and for supplying liquid to said receptacle when the tank fills, a latch arranged to hold the outlet-valve open, and means operative with the emptying of the receptacle for releasing said latch, substantially as described.

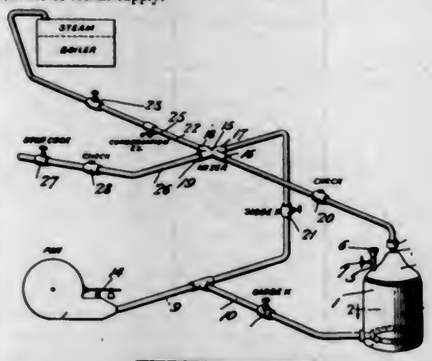
17. The combination with a tank having a supply-inlet and an outlet and valves controlling the same, of a lever controlling the inlet-valve, a receptacle suspended from said lever and arranged to exert a valve-closing force on said inlet-valve, a casing surrounding said receptacle and protecting the same from the buoyant effect of liquid in the tank, and a siphon having its longer leg located in the tank and its shorter leg located in the receptacle, substantially as described.

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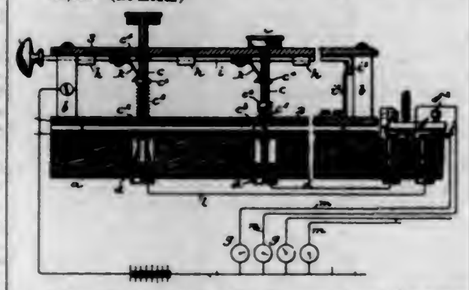
**755,167. CARBURETER.** WILLIAM P. PHILLIPS, Jacksonville, Fla., assignor of one-half to Marcus Scott, Jacksonville, Fla. Filed Sept. 26, 1903. Serial No. 174,806. (No model.)

*Claim.*—1. In a device of the class described, a tank having a dome, a pipe connecting said dome with one branch of a mixing-chamber, a blower having a safety-valve, a pipe connecting the outlet of said blower with a second branch of the mixing-chamber, a globe-valve upon said pipe, a branch pipe connecting said pipe between the blower and the globe-valve with the tank and terminating within the latter in a coil having a plurality of perforations, a globe-valve upon the latter pipe regulating the amount of air passing from the blower to the tank, a check-valve upon the exit-pipe from the tank, an exit-pipe connected with a third branch of the mixing-chamber, a regulating-valve upon said exit-pipe, a valved steam-supply pipe connected with a fourth branch of the mixing-chamber, and an outlet for water of condensation situated upon said steam-supply pipe between the valve on the latter and the mixing-chamber.

2. In a device of the class described, a hydrocarbon-tank, a blower, and a mixing-chamber suitably disposed with relation to each other, a valved connection between the blower and the mixing-chamber, a valved branch pipe connecting the blower-pipe with the hydrocarbon-tank near the lower end of the latter, said branch pipe being connected with the blower-pipe at a point between the valve upon the latter and the blower, a pipe connection between the top of the hydrocarbon-tank and the mixing-chamber, a check-valve in the latter pipe, means for distributing carbureted air from the mixing-chamber, and a valved pipe connecting the mixing-chamber with a source of steam-supply.




**755,168. APPARATUS FOR RECORDING STATISTICAL DATA.** CHARLES F. PIDGIN, Boston, Mass. Filed Aug. 17, 1899. Serial No. 727,532. (No model.)



*Claim.*—1. An apparatus of the character described comprising a plurality of counters, a suitable support for a sheet such as paper, a plurality of electrical contacts below said support each of said contacts being adapted to be put into electrical connection with a counter, manually-movable devices adapted to perforate the sheet and complete the circuit through said contacts, and a normally open switch for simultaneously connecting a plurality of counters with a plurality of manually-movable devices.

2. An apparatus of the character described, comprising a base, a paper-guide mounted thereon, a plurality of counters, a plurality of contacts in circuit with said counters and located below said guide, and a corresponding number of pins or plungers having penetrating ends arranged to perforate a card or paper in said guide, said pins or plungers being adapted to close the circuits through said contacts.

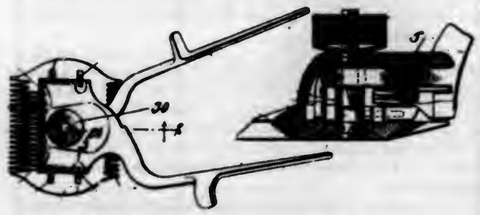
3. An apparatus of the character described, comprising a base, a paper-guide mounted thereon, a plurality of counters, a plurality of contacts in circuit with said counters and located below said guide, and a corresponding number of pins or plungers having penetrating ends arranged to perforate a card or paper in said guide, said pins or plungers being adapted to close the circuits through said contacts, collars located on said pins or plungers, springs for normally retaining said pins or plungers in a raised position, detents arranged to engage said collars and hold said pins or plungers against the action of said springs, and a normally open switch for simultaneously connecting a plurality of counters with a plurality of said pins or plungers.

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**755,169. SHEARING AND CLIPPING DEVICE.** JOSEPH K. PRIEST, Nashua, N. H., assignor to American Shearer Manufacturing Company, Nashua, N. H., a Corporation of New Hampshire. Filed Aug. 3, 1903. Serial No. 167,972. (No model.)



*Claim.*—1. In clipping mechanism, the combination with the frame and the movable cutting-plate, of a comb-plate pivotally connected with the frame and provided with a plurality of sets of teeth adapted for registry with those of the cutting-plate, and a locking device for effecting the temporary rigid connection of the comb-plate with the frame and movably carried by one of them so as to be capable of movement from the locking position to a releasing position in which the comb-plate is free to turn about its pivot.



2. In clipping mechanism, the combination of an operatable cutting-plate, guides for preventing the rotation of said cutting-plate, a comb-plate provided with a plurality of series of teeth and adapted for adjustment to bring said series severally into operative registry with the teeth of said cutting-plate, a pivot maintaining said comb-plate in operative relation to said cutting-plate about which said comb-plate turns and means operatable independently of said guides and pivot for locking and releasing said comb-plate against and for rotative adjustment about said pivot and relatively to said cutting-plate.

3. In clipping mechanism, the combination of an operatable cutting-plate, means for operating said cutting-plate, a comb-plate provided with a plurality of series of teeth, a tension-retaining member engaging said comb-plate and maintaining the same in operative contact with said cutting-plate, said comb-plate being movable independently of the adjustment of said tension-retaining member to bring said series severally into operative registry with the teeth of said cutting-plate.

4. In clipping mechanism, the combination of an operatable cutting-plate, means for operating said cutting-plate, a bolt mounted for longitudinal movement and restricted against rotation, a shoulder on said bolt, a comb-plate provided with a plurality of series of teeth of different depths about its periphery, mounted to turn on said bolt to bring said series severally into operative registry with the teeth of said cutting-plate, and a tension device for adjusting said bolt longitudinally to draw said comb-plate, by means of said shoulder, against said cutting-plate.

5. In clipping mechanism, the combination of an operatable cutting-plate, means for operating said cutting-plate, a bolt mounted substantially perpendicularly of the plane of movement of said cutting-plate for longitudinal movement and restricted against rotation, a shoulder on said bolt, a comb-plate provided with a plurality of series of teeth of different depths about its periphery, mounted to turn on said bolt to bring said series severally into operative registry with the teeth of said cutting-plate, said bolt provided with a thumb-nut and spring to draw said comb-plate, by means of said shoulder, against said cutting-plate with the desired tension.

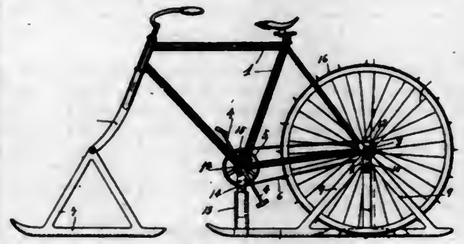
6. In clipping mechanism, the combination of an operatable cutting-plate, means for operating said cutting-plate, a comb-plate provided with a plurality of series of teeth of different depths upon its periphery, said comb-plate mounted for adjustment to bring said series severally into operative registry with the teeth of said cutting-plate, and a spring locking device for securing said comb-plate in said positions of registry.

7. In clipping mechanism, the combination of an operatable cutting-plate, means for operating said cutting-plate, a comb-plate provided with a plurality of series of teeth of different depths upon its periphery, a tension-retaining device maintaining said comb-plate in operative contact with said cutting-plate with any desired tension, said comb-plate adjustable independently of said tension-retaining device to bring said series severally into operative registry with the teeth of said cutting-plate, and a manually-releasable dog for securing said comb-plate in said position of registry.

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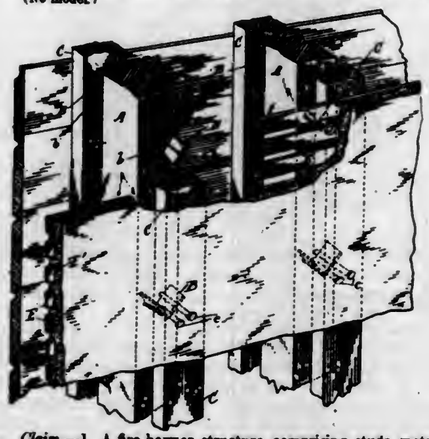
**755,170. SNOW-BICYCLE.** JOHN B. REED, Bessemer, Mich. Filed Oct. 20, 1902. Serial No. 177,728. (No model.)

*Claim.*—The combination with the frame, rear traction-wheel and driving-gear of a bicycle, of a runner applied to the front fork of said frame, the rear runner 8 having the side brackets 9, sheath 13 and slot 20, the straps 10 pivoted to the rear forked ends of said frame and adjustably secured to said brackets 9 the yoke 14 applied to the crank-shaft hanger of said frame and having a stem telescoping within said sheath 13, and the detachable toothed tire 16 applied to the rear traction-wheel with its teeth 17 arranged to work through the slot 20 of said runner 8, substantially as described.



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**755,171. FIRE-BARRIER WALL, PARTITION, &c.** HENRY ROOT, San Francisco, Cal. Filed Oct. 12, 1903. Serial No. 176,636. (No model.)



*Claim.*—1. A fire-barrier structure comprising studs, metallic spacers applied thereto, strips applied to the spacers, sheathings applied to the strips, and a filling of non-inflammable material occupying the space between the sheathings, and embedding the studs, strips and spacers.

2. A fire-barrier structure comprising studs, inner and outer sheathings, metallic V-shaped spacers applied edgewise between and separating the sheathings from the studs, and a filling of non-inflammable material occupying the space between the sheathings, and embedding the studs and spacers.

3. A fire-barrier structure comprising studs, metallic V-shaped spacers applied edgewise between and separating the sheathings from the studs, said spacers being disposed with their open bases facing the direction from which the filling is inserted, and a filling of non-inflammable material occupying the space between the sheathings, and embedding the studs and spacers.

4. A fire-barrier structure comprising studs, metallic V-shaped spacers applied edgewise thereto, strips applied to the other edges of the spacers, sheathings applied to the strips, and a filling of non-inflammable material occupying the space between the sheathings, and embedding the studs, strips and spacers.

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**755,172. POCKET UTENSIL.** PEARL M. RYAN, Atlanta, Ga. Filed Mar. 31, 1902. Serial No. 100,713. (No model.)



*Claim.*—1. The combination with a casing, comprising a back and side walls as specified and having a longitudinal channel, in the said back and an opening in said channel communicating with the external air, and a groove between said side walls adapted to carry

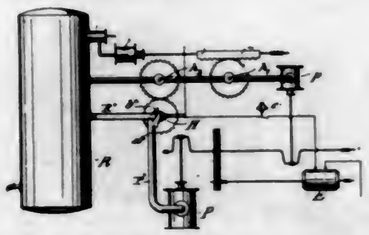
operating elements, of a mouthpiece extending from said casing through which said channel passes, and a whistle-plug in said mouthpiece, and all forming a sounding device.

2. The combination with a casing comprising a back and parallel side walls, one of which side walls is removable, and which said back is pierced with a longitudinal channel having an opening therein communicating with the external air, said side walls having a groove between them adapted to carry operating implements, of a mouthpiece extending from casing and through which said channel passes, and a whistle-plug in said mouthpiece.

3. The combination with a casing comprising a back and parallel side walls, and having a groove between said side walls extending through the whole length of said back, and adapted to carry pivoted implements, one of said side walls being removable, and said back being pierced with a longitudinal channel having an opening therein communicating with the external air, of a mouthpiece extending from said casing and through which said channel passes, and a whistle-plug in said mouthpiece.

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**755,173. ELECTROPNEUMATIC SYSTEM OF DRIVING.** JOHANN SAHULKA, Vienna, Austria-Hungary. Filed Apr. 18, 1903. Serial No. 153,298. (No model.)



*Claim.*—1. A system of driving for electrical power plants, electrical railways in particular (locomotives, motor-carriages,) consisting in the combination of the driving-axle with a pneumatic motor, or with a group of such motors, for starting; and an electric motor, or a group of such motors, for the ordinary driving; both motors being in connection with each other by means of only the driving-axle, and a controlling device common to all said motors.

2. A system of driving for electrical power plants, electrical railways in particular, consisting in the combination of the driving-axle with a pneumatic motor, or with a group of such motors, for starting; an electric motor, or a group of such motors, for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means to drive the axle in starting and when turning at moderate speeds by solely the pneumatic motor; means to drive the axle at periods of full speed by solely the electric motor; and a controlling device common to all said motors for throwing them into and out of action at the proper time.

3. A system of driving for electrical power plants, electrical railways in particular, consisting in the combination of the driving-axle with a pneumatic motor, or with a group of such motors, for starting; an electric motor, or group of such motors, for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means to drive the axle in starting and when rotating at moderate speed by the pneumatic motor; means to drive the axle during the whole working time by the electric motor; and a controlling device common to all said motors.

4. A system of driving for electrical power plants, electrical railways in particular, consisting in the combination of the driving-axle with a pneumatic motor, or group of such motors, for starting; an electric motor, or group of such motors, for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means to couple the motors or groups of motors with the axle; and a controlling device common to all said motors.

5. A system of driving for electrical power plants, electrical railways in particular, consisting in the combination of the driving-axle with a pneumatic motor, or group of such motors, for starting; an electric motor, or group of such motors, for the ordinary driving, and a brake-operating and motor-controlling apparatus.

6. A system for driving electrical power plants, electrical railways in particular, consisting of the combination of the driving-axle with a pneumatic motor, or group of such motors, for starting; an electric motor, or group of such motors, for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means for controlling the motors; and a centrifugal regulator which interrupts automatically the circuit of the electric motors when the speed of rotation of the axles falls below a certain rate.

7. A system of driving for electrical power plants, electrical railways in particular, consisting of the combination of the driving-axle with a pneumatic motor, or group of such motors, for the starting; an electric motor, or group of such motors, for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means for controlling the motors; and a centrifugal regulator which interrupts automatically the circuit of the electric motors when the speed of rotation of the axles falls below a certain rate.

8. A system of driving for electrical power plants, electrical railways in particular, consisting of the combination of the driving-axle; a pneumatic motor for the starting; an electric motor for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means to control the motors; a pneumatic accumulator; a small compressor for feeding the accumulator; and an automatic device for throwing said compressor out of operation.

9. A system of driving for electrical power plants, electrical railways in particular, consisting in the combination with the driving-axle of a pneumatic motor for the starting; an electric motor for the ordinary driving, both motors being in connection by means of only the driving-axle; means for controlling the motors; a pneumatic accumulator; a small compressor for feeding the accumulator; and means for driving the compressor from the axle to be driven.

10. A system of driving for electric power plants, electrical railways in particular, consisting in the combination of the driving-axle with a pneumatic motor for starting; an electric motor for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means for controlling the motors; a pneumatic accumulator; a small compressor feeding the accumulator; a small electric motor for driving the compressor; a starting device which tends to throw the small electric motor out of circuit; a solenoid which tends to insert the small electric motor into the circuit; and a device which throws the motor out of the circuit when the pressure in the accumulator attains a maximum.

11. A system of driving for electrical power plants, electric railways in particular, consisting in the combination of the driving-axle with a pneumatic motor for starting; an electric motor for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; means for controlling the motors; a pneumatic accumulator; a small compressor for feeding the accumulator; a small motor for driving the compressor; means for driving the compressor from the axle; and means for coupling the compressor either with the small motor or with the driving mechanism actuated by the axle.

12. A system of driving electric railways in which the multiple-units system is used, consisting in the combination in every motor-car of the driving-axles with a pneumatic motor for starting; an electric motor for the ordinary driving, both motors being in connection with each other by means of only the driving-axle; a controller common to the motors; a pneumatic accumulator; a small compressor for feeding the accumulator; electrical conductors extending from end to end of the car equal in number to that of the isolated line conductors; and a pipe for compressed air extending from end to end of the car, said pipe forming a connection among the pipes between the pneumatic motors and the controllers.

13. A system of driving electrical railways in which the multiple-units system is used, consisting in the combination in every motor-car of the driving-axles with a pneumatic motor for starting and with an electric motor, both motors being in connection with each other by means of only the driving-axles; a controller common to the motors; a pneumatic accumulator; a small compressor for feeding the accumulator; electrical conductors extending from end to end of the car and equal in number to that of the isolated line conductors; a pipe for compressed air extending from end to end of the car, said pipe forming a connection among the pipes between the pneumatic motors and the controllers; and a second pipe for compressed air extending from end to end of the car and forming a connection among the pipes between the pneumatic accumulator and the controller.

14. In an electropneumatic system of driving, the combination of a shaft; a pneumatic motor for driving said shaft; an electric motor for driving said shaft; and a device by which to load the pneumatic motor at starting and simultaneously run the electric motor idle and to load the electric motor after speed is gained and simultaneously run the pneumatic motor idle.

15. In an electropneumatic system of driving, the combination of a shaft; a pneumatic motor for driving said shaft; an electric motor for driving said shaft; said motors being connected with each other through only said shaft; and a controller device by which the pneumatic motor is permitted to work only at starting and the electric motor to work only after speed has been gained.

16. In an electropneumatic system of driving, the combination of a shaft; a pneumatic motor for driving said shaft; an electric motor for driving said shaft, said motors being suitably arranged to transmit power to said shaft; and a controller device by which the pneumatic motor is thrown out of action and the electric motor is thrown into action.



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**755,174. SAFETY-FASTENER.** ARTHUR SCHAEFFER, Berlin, Germany. Filed Apr. 12, 1902. Serial No. 102,580. (No model.)



*Claim.*—1. In combination a plate *a* head *c* having a pivot *b* rotatably mounted in said plate a plate-like part *d* carried by said pivot *b* on one side of said plate *a*, a helical pin *n* and means for limiting the amount of rotation of said parts, substantially as described

2. In combination a plate *a*, head *c* having a pivot *b* rotatably mounted in said plate, a plate-like part *d* carried by said pivot *b* on one side of said plate *a*, a helical pin *n* and a catch *g* on the plate *a* arresting a tooth *f* on the part *d* for limiting the amount of rotation of the parts *c* and *d*, shank *b* and pin *n*, substantially as described.

3. In combination a plate *a*, a head *c* having a pivot *b* rotatably mounted in said plate, a plate-like part *d* carried by said pivot *b* on one side of said plate *a*, a helical pin *n* and a spring *k* catching a notch on the head *c* for limiting the amount of rotation of said parts, substantially as described.

4. In combination a plate *a*, a head *c* having a pivot *b*, a plate-like part *d* fixed to pivot *b* on one side of said plate *a*, a helical pin *n* the pivot *b* being provided with a screw-thread engaging a thread in the plate *a* for the purpose of limiting the amount of rotation of the pin *n* by the abutment of the parts *c* and *d* against the upper and under surface of plate *a* respectively, substantially as described.

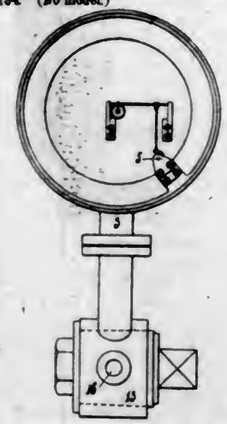
5. In combination a plate *a*, a head *c* on one side thereof having a pivot *b* projecting through an opening in said plate *a*, a plate-like part *d* carried by said shank *b* on one side of plate *a*, a helical pin *n* carried by the plate *a* a suitable bent pin *e* carried by the part *d* centrally of the helical pin *n*, and means for limiting the amount of rotation of said movable parts, substantially as described.

6. In combination a plate *a*, a head *c* having a pivot *b* rotatably mounted in said plate, a plate-like part *d* carried by said pivot *b* on one side of said plate *a*, a helical pin *n* means for limiting the amount of rotation and means for preventing injury to the user of said parts, substantially as described.

7. In combination a plate *a*, a head *c* having a pivot *b* rotatably mounted in said plate, a plate-like part *d* carried by said pivot *b* on one side of said plate *a*, a helical pin *n*, a spring-tongue *z* fastened to the plate *a*, and covering the point of the unscrewed helical pin *n* and means for limiting the amount of rotation of said parts, substantially as described.

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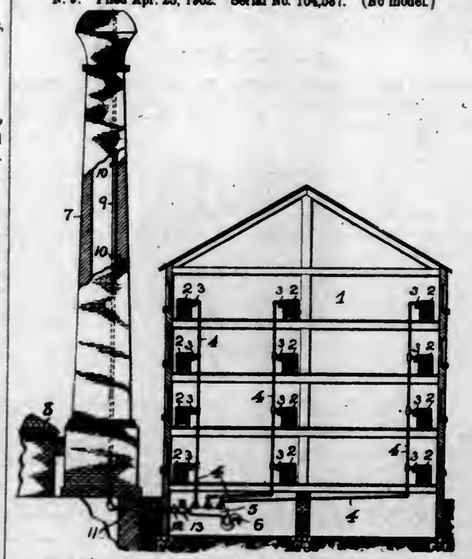
**755,175. DIFFERENTIAL HIGH AND LOW PRESSURE GAGE.** GEORG M. SCHUSTER, Chemnitz, Germany. Filed Jan. 22, 1903. Serial No. 140,134. (No model.)



*Claim.*—In a differential draft-pressure gage for measuring the difference of pressure between two points the combination of two membranes arranged in a case said membranes having supporting-plates and forming with the latter hollow chambers, channels leading into the said hollow chambers and means for placing the latter in communication with the chambers or the like in which the pressure is to be measured, substantially as set forth.

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**755,176. HEATING SYSTEM.** JAMES M. SEYMOUR, Jr., Newark, N. J. Filed Apr. 25, 1902. Serial No. 104,587. (No model.)



*Claim.*—1. The combination, with a heating system, comprising, a radiator and an air-line, of a hot or heated shaft, a stand-pipe in said shaft, said stand-pipe entering said shaft at a point near its bottom and terminating at a point near its top but below the upper open edge of said shaft, and said stand-pipe being heated by said shaft, said stand-pipe being also connected at a low point with said air-line for conducting the foul air from the radiator and said air-line to the highest point of said shaft, substantially as and for the purposes set forth.

2. The combination, with a heating system, comprising, radiators, air-valves, and air-lines, of a header in which all of the air-lines terminate, a hot or heated shaft, a stand-pipe in said shaft, said stand-pipe entering said shaft at a point near its bottom and terminating at a point near its top but below the upper open edge of said shaft, and said stand-pipe being heated by said shaft, said stand-pipe being also connected at a low point with said air-lines for conducting the foul air from the radiators and said air-lines to the highest point of said shaft, substantially as and for the purposes set forth.

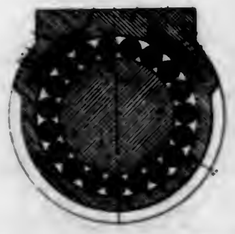
3. The combination, with a heating system, comprising, radiators, air-valves, and air-lines, of a header in which all of the air-lines terminate at their lowest points, a trap or water seal in said air-lines, a hot or heated shaft, a stand-pipe in said shaft, said stand-pipe entering said shaft at a point near its bottom and terminating at a point near its top but below the upper open edge of said shaft, and said stand-pipe being heated by said shaft, said stand-pipe being also connected at a low point with said air-lines for conducting the foul air from the radiators and said air-lines to the highest point of said shaft, substantially as and for the purposes set forth.

4. The combination, with a heating system, comprising, a radiator and an air-line, of a hot or heated shaft, a stand-pipe in said shaft, said stand-pipe entering said shaft at a point near its bottom and terminating at a point near its top but below the upper open edge of said shaft, and said stand-pipe being heated by said shaft, said stand-pipe being also connected at a low point with said air-line for conducting the foul air from the radiator and said air-line to the highest point of said shaft, and an expansion means in said shaft for attaching said stand-pipe in position within said shaft but allowing for the expansion of said pipe when heated, substantially as and for the purposes set forth.

5. The combination, with a heating system, comprising, radiators, air-valves, and air-lines, of a header in which all of the air-lines terminate, a hot or heated shaft, a stand-pipe in said shaft, said stand-pipe entering said shaft at a point near its bottom and terminating at a point near its top but below the upper open edge of said shaft, and said stand-pipe being heated by said shaft, said stand-pipe being also connected at a low point with said air-lines for conducting the foul air from the radiators and said air-lines to the highest point of said shaft, and an expansion means in said shaft for attaching said stand-pipe in position within said shaft but allowing for the expansion of said pipe when heated, substantially as and for the purposes set forth.

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755,177. ROLLER-BEARING. WILLIAM S. SHARPNECK, Chicago, Ill., assignor of two-thirds to James L. Onstott and Frederick C. Vehmeyer, Chicago, Ill. Filed Dec. 30, 1902. Serial No. 137,123. (No model.)



*Claim.*—1. The combination, with a journal, a series of rollers and a roller-box supporting said rollers around said journal, of segmental bearing members projecting from the upper surface of the box, said bearing members being adapted to support the entire load successively upon a minority number of said rollers.

2. The combination, with a journal, a series of rollers concentric therewith and a box supporting said rollers, of a pair of individual segmental bearing members rigidly held in and projecting from the bearing-surface of the box, said bearing members having their projecting edges beveled at an acute angle with relation to the surface of the journal and sustaining all of the load of the vehicle upon the rollers in contact with such bearing members.

3. The combination, with a journal, an annular series of rollers substantially concentric with said journal, a roller-bearing box adapted to sustain the lower of said rollers, of a pair of separate bearing members presenting segmental bearing-surfaces in the upper portion of said box, each adapted to sustain successively a limited plurality out of the total number of rollers in said series and sustain all of the load upon said rollers.

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755,178. PLOW. GEORGE W. SIMMONS, Yellow River, Ga. Filed Nov. 30, 1903. Serial No. 183,172. (No model.)



*Claim.*—1. In a plow, a standard, a blade supported upon the front side of said standard, a heel-bolt extending through said blade and standard, a nut upon said heel-bolt, screwed tightly against the rear side of the standard and having a boss upon its rear side, and an auxiliary blade mounted pivotally upon said boss.

2. In a plow, a standard, a blade upon the front side of said standard, a connecting-bolt, nuts upon the latter, one of said nuts being provided with a boss upon its rear side, and an auxiliary blade mounted pivotally upon said boss between the nuts.

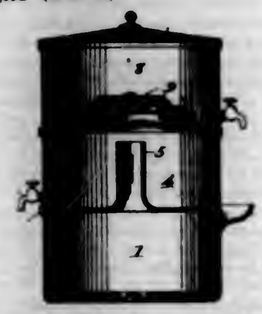
3. In a plow, a standard, a blade upon the front side of the latter, a connecting-bolt, an auxiliary blade mounted pivotally with relation to the axis of said bolt, and means for adjusting and retaining said auxiliary blade.

4. In a plow, a standard, a blade upon the front side of said standard, a connecting-bolt extended rearwardly of said standard, a blade having right and left hand wings mounted pivotally with relation to the axis of said bolt, nuts upon said bolt, one of said nuts being provided with a boss supporting the pivoted blade which is confined between said nuts, a slotted bracket extending rearwardly from the plow-beam, an operating-lever fulcrumed in said slot and having pivotal engagement with the winged blade, and means for retaining said operating-lever in various positions to which it may be adjusted.

5. A plow having a beam, handles, a rung connecting the latter, and a standard, a blade supported upon the front side of said standard, a heel-bolt extending through the latter, a blade having right and left hand wings mounted pivotally with relation to the axis of said heel-bolt, means for retaining said blade upon said heel-bolt, and a slotted bracket extending rearwardly from the plow-beam, a resilient operating-lever having pivotal connection at its lower end with the winged blade, and bearing at its upper end against the rung connecting the plow-handles, and catches upon said rung engaging said operating-lever to retain the latter in adjusted position.

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755,179. WATER-STILL. FREDERICK H. SMITH, Chicago, Ill., assignor to Philip P. Menard, Chicago, Ill. Filed Mar. 9, 1903. Serial No. 146,884. (No model.)




*Claim.*—A water-distilling apparatus, comprising a boiler open at top and provided with a filling-lip at one side thereof, a vapor-chamber adapted to rest upon the boiler and open at top and having a fixed bottom provided with an upwardly-extending inlet-pipe, a water-reservoir adapted to rest upon the vapor-chamber and provided with a fixed dome-shaped condensing bottom and a discharge-cock, the latter adapted to supply water therefrom to the filling-lip of the boiler, and a cover for the water vessel, substantially as described.

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755,180. WALL-PACKER FOR OIL-WELLS. HARRY SMITH and WILLIAM WRIGHT, Franklin, Pa. Filed Aug. 13, 1903. Serial No. 169,390. (No model.)



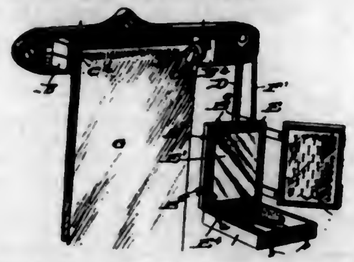
*Claim.*—1. In a wall-packer for oil-wells, a cup-shaped packing portion composed of elastic material, with its upper edge reinforced in such a manner as to render the same non-elastic, the lower portion of said packing extended into a sleeve, whereby the packer is adapted to be attached to the tubing or casing.

2. In a wall-packer for oil-wells a cup-shaped packing portion, composed of elastic material, the lower end of said packing portion being extended into a sleeve, whereby said packing is adapted to be attached to the tubing, or casing; the walls of said sleeve being rendered non-elastic by reinforcements embedded within the structural walls thereof, in combination with means adapted to prevent said sleeve from expanding between said reinforcements.



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755,181. TOILET APPLIANCE. JOHN R. SMITH, Erie, Pa. Filed July 16, 1903. Serial No. 165,234. (No model.)



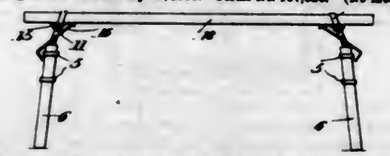
*Claim.*—1. A device of the kind described comprising a base-plate adapted to be secured to a wall, an arm pivoted to said plate, a casing secured to the arm, said arm being adapted to fold on the base-plate, a hook pivoted to the base, a pin secured to the casing adapted to be engaged by the hook when the arm is in a vertical position.

2. The combination with a base-plate adapted to be secured to a wall, of a frame having a mirror on one side, a tray hinged to an edge of said frame, a second frame having a cushion on its inner face and hinged to the first-mentioned frame, the said frames being adapted to fold one upon another, means for locking the frames together when folded, and an arm pivoted at one end to the base-plate and secured at the opposite end to one of the frames, the said frames and tray when folded being adapted to rest against the upper edge of the base-plate.

3. A device of the kind described comprising a base-plate, an arm pivoted to the plate, a frame secured to the non-pivoted end of the arm, a tray hinged to the lower edge of the frame and adapted to fold upward against the face of the frame, and a second frame hinged to the side of the first-mentioned frame and adapted to fold over the bottom of the tray when the latter is folded against the first-mentioned frame, and means for locking the two frames together when folded.

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755,182. TRESTLE-FRAME. GEORGE H. SMYTH, Colorado Springs, Colo. Filed July 25, 1903. Serial No. 167,096. (No model.)



*Claim.*—1. The combination in a device of the class described, of a frame, guide members for a pair of trestle-legs at the sides of said frame, and single means for securing both legs in the guide members.

2. The combination in a device of the class described, of a frame, guide members at the sides of said frame for a pair of trestle-legs, and means for simultaneously clamping both legs in said guide members.

3. The combination in a device of the class described, of a frame, guide members for a pair of trestle-legs at the side of said frame, and an extensible clamping member adapted to engage both legs simultaneously.

4. The combination in a device of the class described, of a frame, guide members at the sides of the frame for a pair of trestle-legs, and an extensible clamping member slidably mounted in openings in the sides of said frame and adapted to force both legs outward simultaneously.

5. The combination in a device of the class described, of a frame, guide members at the sides of the frame for a pair of trestle-legs, two squared shanks slidably mounted in the sides of said frame and provided with oppositely-disposed threads at their inner ends, and a turnbuckle in engagement with said threaded ends.

6. The combination in a device of the class described, of a frame, a pair of eyes at each side of said frame, and an extensible clamping member arranged transversely in the frame between the eyes of each pair, and adapted to engage simultaneously the members inserted in eyes.

7. The combination in a device of the class described, of a frame having a closed upper end, a pivoted supporting-plate mounted in said frame, a pivotally-supported brace member mounted in said frame and adapted to engage the outer end of said supporting-plate, and means for forcing said brace member against said plate.

8. The combination in a device of the class described, of a frame having a closed upper end, a pivoted supporting-plate in the upper portion of said frame, a pivoted plate having a threaded opening mounted in said frame below said supporting-plate, and a threaded brace member mounted in the lower plate and adapted to engage with the free end of the supporting-plate.

9. The combination in a device of the class described, of a frame having a closed upper end, an adjustable bar in the upper portion of said frame, a plate pivotally supported on said bar, a brace member pivotally supported beneath said bar, and means for bringing said brace member into engagement with the free end of said plate.

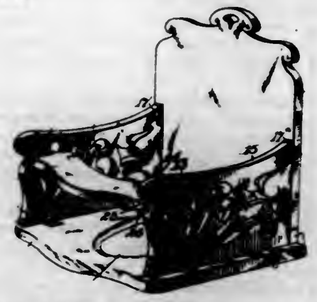
10. The combination in a device of the class described, of a frame closed at its upper end, a transverse bar in said frame near the upper end, a supporting plate provided on the under surface with a step-block for engagement with bar, a brace member pivotally mounted in said frame below said bar, and means for bringing said brace member into engagement with one end of said plate.

11. The combination in a device of the class described, of a frame closed at its upper end, a transverse bar secured in said frame, a supporting-plate having on its under surface a step-block for engagement with said bar, a loop attached to the under surface of said plate and encircling said bar and said block, and a brace member adjustably supported in said frame and adapted for engagement with said plate.

12. The combination in a device of the class described, of a frame closed at its upper end, a pivotally-mounted supporting-plate having the free end thereof bent downwardly and provided with an opening, a plate pivotally mounted in said frame below the supporting-plate and provided with a threaded opening, a brace-rod mounted in the threaded opening in the lower plate and having a tapered end adapted for engagement with the opening in the supporting-plate.

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755,183. FOLDING SEAT. WILLIAM H. SPANJER and HENRY J. SPANJER, Newark, N. J. Filed Sept. 11, 1903. Serial No. 172,735. (No model.)



*Claim.*—1. A folding seat, comprising a seat portion, side pieces adapted to be folded down upon the seat portion, a back adapted to fold down over the side pieces, and adjusting means on the bottom of the seat portion adapted to fit different-sized receptacles and when fitted to prevent lateral displacement of the seat.

2. A folding seat, comprising a seat portion, side pieces hinged to the seat portion and adapted to be folded down thereon, a back hinged to the seat portion and adapted to fold down over the side pieces, means on the back and side pieces to engage one another and secure the side pieces in their extended position, a shelf or tray, means on the side pieces for receiving the shelf, means for locking the shelf to the side pieces, and means on the bottom of the seat portions for adjusting the seat to different-sized receptacles, said adjusting means preventing the lateral displacement on the receptacle when adjusted.

3. A folding seat, comprising a seat portion, folding side pieces, a back adapted to fold down on the side pieces, a series of knobs on the bottom of the seat portion arranged in sliding relation thereto, and means for securing the knobs at predetermined points to provide adjustment of the knobs toward and from one another, and means for locking the knobs in their adjusted positions.

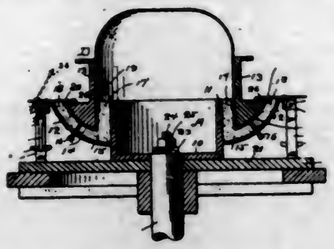
4. A folding seat, comprising a seat portion having an opening therein, hinged side pieces adapted to fold toward one another onto the seat portion, a back arranged to fold down over the side pieces, latches on the ends of the side pieces arranged to engage with holding means on the sides of the back to lock the side pieces in their extended positions, a shelf or tray, means for securing the shelf to the side pieces, knobs arranged at the bottoms of the seat portion and arranged to slide thereon, and means for locking the knobs in their adjusted positions.

5. An article of the kind described, comprising a seat portion, an adjusting means on the bottom of the seat portion moving to fit different-sized receptacles, and when fitted, acting to prevent lateral movement of the seat portion.

6. An article of the kind described, comprising a seat portion, members arranged to slide on the bottom thereof, and means for securing the sliding members, said members being adapted to fit over different-sized receptacles and prevent any side motion of the seat portion when placed on the receptacle.

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**755,184. HAT-HOLDER.** CHARLES I. STERLING, South Norwalk, Conn. Filed June 11, 1903. Serial No. 160,998. (No model.)



*Claim.*—1. A hat-holder comprising a metallic base and a stationary bed to receive a curled hat-body formed on said base, said bed comprising a plastic hard-setting composition.

2. A hat-holder consisting of a metallic base, a stationary bed to receive a curled hat-body formed on said base, said bed comprising a plastic hard-setting composition and means for retaining a hat-body in place on the bed.

3. A hat-holder consisting of a metallic base, a bed to receive a curled hat-body formed therein of plastic hard-setting composition and pivoted locking-arms which retain a hat-body firmly in place on the bed.

4. A hat-holder consisting of a metallic base, a bed to receive a curled hat-body formed therein of plastic hard-setting composition and having protecting-rings on the outer face of the body portion at the top and around the inner face of the brim portion at the top molded therein, and means for retaining a hat-body in place on the bed.

5. A hat-holder comprising a metallic base consisting of an attaching-plate, a body-flange and a brim-flange, a bed to receive a curled hat-body formed in said base of plastic hard-setting composition and means for retaining a hat in place on the bed.

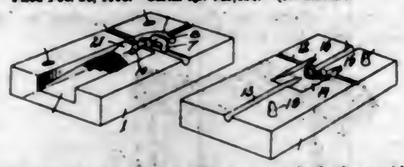
6. The combination with a shaft having a threaded rod extending from the end thereof and a cross-piece secured thereto and having a lug extending therefrom, of a hat-holder consisting of a metallic base, a bed to receive a curled hat-body formed therein, said base having an opening through which the shaft extends and an opening to receive the lug, a plate having a recess in one side to receive the threaded rod and resting upon the end of the shaft and the base and a nut upon the rod by which the plate is locked in place.

7. A hat-holder consisting of a metallic base, a bed to receive a curled hat-body formed therein, locking-arms on opposite sides of the holder to engage a hat-brim and means for swinging the arms into and out of operative position.

8. A hat-holder consisting of a metallic base, a bed to receive a curled hat-body formed therein, pivoted locking-arms on opposite sides of the holder, for the purpose set forth, a shaft by which they are carried and which also carries a pinion, another pinion meshing therewith and carrying a hand-lever and a rack engaged by the hand-lever whereby the arms may be locked either in or out of operative position.

9. A hat-holder having a molded bed for supporting the brim of a hat, said bed comprising a plastic hard-setting composition.

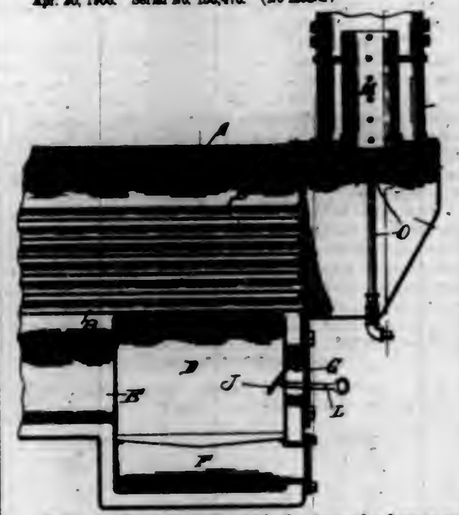
**755,185. DIES FOR TYING INTERSECTING WIRES.** CHARLES S. STURTEVANT, Adrian, Mich., assignor, by direct and mesne assignments, to Adrian Wire Fence Company, Adrian, Mich., a Corporation. Filed Feb. 26, 1903. Serial No. 146,120. (No model.)



*Claim.*—In a device for the purpose set forth, the combination of the opposed dies, one of said dies having in its face, channels adapted to receive the crossed wires and having curved concavities separated by a curved dividing wall and across which concavities one of said channels extends, the other of said dies having channels which register with the channels in the first-mentioned die and having a depression with laterally-extending concaved branches, which branches cross one of said channels and register with the opposite ends of the curved concavities of the die first mentioned.

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**755,186. FURNACE.** WILLIAM SUMMERS, Chicago, Ill. Filed Apr. 20, 1903. Serial No. 153,470. (No model.)



*Claim.*—1. The combination with the front of a furnace provided with draft-openings, of a deflecting-plate arranged to direct the draft downwardly against the grate and a blower arranged adjacent to the stack, said blower being provided with a substantially circular horizontal portion closed at one end and provided with a series of steam-ports in its upper face, substantially as described.

2. The combination with the front of a furnace provided with draft-openings, of a deflecting-plate arranged to direct the draft downwardly against the grate, a petticoat-pipe arranged in the stack, a bushing arranged to close the space between the periphery of the petticoat-pipe and the inner face of the stack, and a blower arranged below and adjacent to the petticoat-pipe, said blower being provided with a substantially horizontal portion of substantially circular form, said horizontal portion being closed at one end and being provided with a series of steam-ports in its upper face and being connected with a suitable source of steam-supply.

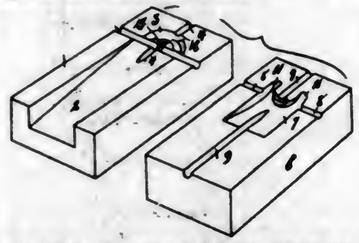
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**755,187. DIE.** GEORGE S. TUFFANY, Tecumseh, Mich., assignor, by mesne assignments, to Adrian Wire Fence Company, Adrian, Mich., a Corporation. Filed June 19, 1903. Serial No. 162,189. (No model.)

*Claim.*—1. Dies having transverse registering channels for the reception of the cross-wires, one of said dies having an inclined way and a semicircular recess, the other of said dies having a central concavity with curved branches leading from opposite sides thereof, which curved branches register with the opposite terminals of said semicircular recess



2. The combination of the dies, one die having an inclined way and a transverse channel below the plane of the highest point of said way, a semicircular recess whose terminals abut upon said channel, the other of said dies having a central concavity crossed by a transverse channel, said central concavity having curved branches which register with the terminals of the semicircular recess in the first-mentioned die, and a registering channel in the face of each die at right angles to the first-mentioned channel.

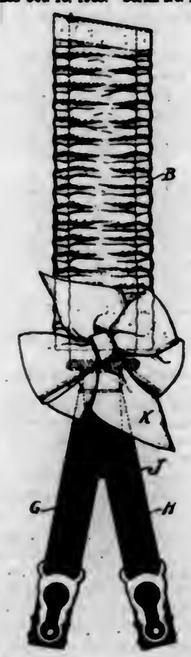


3. In a device for the purpose set forth, the combination of the opposed dies having registering channels in their inner faces which cross at right angles, one of said dies having concaved branches which cross one of the channels below the plane of the bottom thereof, the other of said dies having a semicircular recess which registers with the terminals of said branches to direct the ends of the tying-staple past each other and under one of the crossed wires.

4. The combination of the opposed dies having registering cross-channels in the meeting faces thereof, a semicircular recess in one of said dies crossed by one of said channels and depressed below the plane of the bottom thereof, the opposite die having a depression and concaved branches crossing one of the channels therein, said concaved branches being adapted to lead the ends of the staple into the opposite terminals of said semicircular recess in the opposing die to direct said ends past each other and cause them to lie concentric in the same plane.

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**755,188. HOSE-SUPPORTER.** EDGUND C. TOOKER, Larchmont, N. Y. Filed Oct. 16, 1903. Serial No. 177,257. (No model.)



*Claim.*—1. A hose-supporter comprising a main strap, a shirred covering therefor, an adjusting-fastener carried by said strap, a pair of extension straps or tapes having their ends united, the ends of both of said straps passing through the fastener and being adjustably gripped therein, substantially as described.

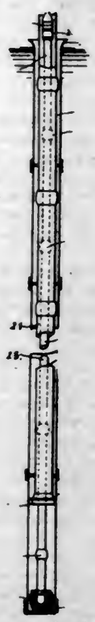
2. A hose-supporter comprising a single main strap adapted to be secured to a corset or the like, a fastener secured to the lower end of said strap and a pair of extension-tapes having their ends united, the united ends of said tapes passing through said fastener and being adapted to be adjustably held therein whereby either one or both of said extension-tapes may be lengthened.

3. A hose-supporter comprising a main strap, a shirred covering therefor, an adjusting-fastener secured to said strap at the lower end thereof, a pair of extension-tapes adjustable through said fastener and an ornamental device secured in front of the lower end of said strap and concealing the lower end of said shirred covering.

4. A hose-supporter comprising a main strap, an adjusting-fastener secured at the lower end thereof, a pair of extension-tapes having the united ends passing through said fastener and adjustable therein for increasing or decreasing the length of both tapes simultaneously and an ornamental device secured in front of and concealing said fastener.

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**755,189. SAFETY APPARATUS FOR ELEVATORS.** SUSANNA R. TRAPP, New York, N. Y. Filed Dec. 1, 1903. Serial No. 183,846. (No model.)



*Claim.*—1. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted therein, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, whereby upon the descent of the car at an unsafe speed an air-cushion will be formed for the car; substantially as set forth.

2. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted therein, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, whereby upon the descent of the car at an unsafe speed an air-cushion will be formed for the car, the upper portion of said cylindrical rod being provided with means for regulating said air-cushion; substantially as set forth.

3. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston-rod mounted therein and having a piston upon its upper end, and a cylindrical rod to travel with the car and within said cylinder, and having a contracted portion adapted to said piston, whereby, upon the descent of the car at an unsafe speed an air-cushion will be formed for the car; substantially as set forth.

4. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston-rod mounted therein and having a piston upon its upper end, and a cylindrical rod to travel with the car and within said cylinder, and having a contracted portion adapted to said piston, whereby, upon the descent of the car at an unsafe speed, an air-cushion will be formed

for the car, combined with means for regulating said air-cushion; substantially as set forth.

5. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston supported from within said cylinder, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, whereby, upon the descent of the car at an unsafe speed, an air-cushion will be formed for the car, the said cylindrical rod being provided with a piston; substantially as set forth.

6. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston supported from within said cylinder, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, whereby, upon the descent of the car at an unsafe speed, an air-cushion will be formed for the car, the said cylindrical rod being provided with a piston and with means for regulating the air-cushion; substantially as set forth.

7. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, and the cylindrical rod to travel with the car and within said cylinder and having an upper contracted portion adapted to said piston, whereby, upon the descent of the car at an unsafe speed, an air-cushion will be formed for the car, the said rod having a piston upon its lower portion and a piston adjacent to the lower part of its upper contracted portion; substantially as set forth.

8. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, and the cylindrical rod to travel with the car and within said cylinder and having an upper contracted portion adapted to said piston, whereby, upon the descent of the car at an unsafe speed, an air-cushion will be formed for the car, the said rod having a piston upon its lower portion and a piston adjacent to the lower part of its upper contracted portion, and the said rod also being provided with means for regulating said air-cushion; substantially as set forth.

9. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, whereby, upon the descent of the car at an unsafe speed, an air-cushion will be formed for the car, the said cylindrical rod being provided with means for preventing the formation of a vacuum therein during the ascent of the car and also with means for controlling the escape of air from said rod; substantially as set forth.

10. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, and a blow-off pipe from said rod, said pipe being provided with a controlling-valve; substantially as set forth.

11. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston-rod seated in the lower end of said cylinder and having a piston upon its upper end, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston; substantially as set forth.

12. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, the base-block within the lower end of said cylinder, and having the rounded recess in its upper end, a piston-rod set within said cylinder and having its lower rounded end seated within said recess and at its upper end having a piston, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston; substantially as set forth.

13. A safety apparatus for elevators comprising a cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, and a cylindrical rod to travel with the car and within said cylinder and adapted to said piston, said rod carrying an external piston composed of two clamping parts and a flexible packing-ring; substantially as set forth.

14. A safety apparatus for elevators comprising a cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, and a cylindrical rod in telescopic sections to travel with the car and within said cylinder and adapted to said piston, said cylindrical rod when extended being of the length of the elevator-shaft below the car when the latter is in its upper position; substantially as set forth.

15. A safety apparatus for elevators comprising the cylinder extending downwardly below the elevator-shaft, a piston mounted from within the same, a cylindrical rod in telescopic sections to travel with the car and within said cylinder and adapted to said pistons, and means for effecting and controlling the movement of the lower one of said sections; substantially as set forth.

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**755,190. HOOK AND HOLDER FOR EXTENSION-LADDERS.** LOUIS J. TRIPP and FRANK M. RICE, Rochester, N. Y., executors of James Sutton Tripp, deceased. Filed July 10, 1903. Serial No. 164,964. (No model.)



*Claim.*—1. In extension-ladders, a hook-supporting frame comprising a T-shaped plate, the upper members of the plate provided with stop-arms and the lower member with a bolt-opening and a bearing-plate, the stop-arms and bearing-plate of equal lengths; the stop-arms provided with points to engage the rail, substantially as set forth.

2. In extension-ladders, a hook-supporting frame comprising a T-shaped plate, the upper members of the plate provided with stop-arms, and the lower member with a bolt-opening and a bearing-plate, the stop-arms and bearing-plate of equal lengths and each provided with points, whereby in applying the plate to the side of a ladder-rail, the said plate will adjust itself parallel therewith, substantially as set forth.

3. In extension-ladders, the combination of a T-shaped holder provided at one side with a pair of stop-arms and a bearing-plate each having a pointed end, a bolt-opening in the lower member of the plate, a bolt adapted to fit therein to secure the plate to the rail and at the same time serve as a bearing for the locking-bar, with a locking-bar having an eye at its lower end, and a hook with a curved slide at its upper end, the locking-bar provided with a central opening, and a rib with an intermediate lug, and a trip-lever pivotally connected with the lug, substantially as and for the purpose set forth.

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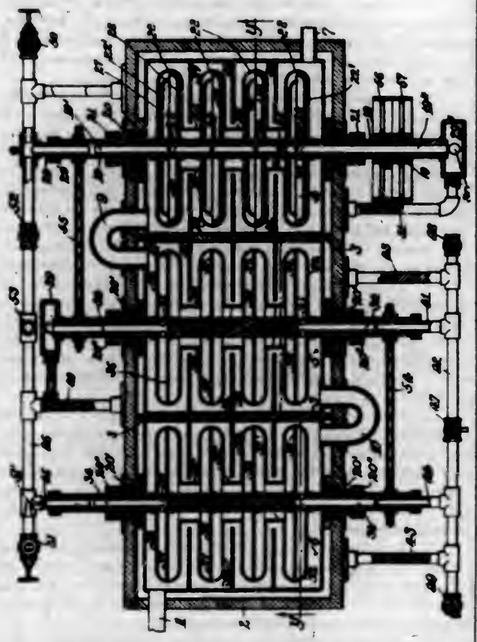
**755,191. CONTINUOUS PASTEURIZER.** THEODORE L. VALENTINE, Fort Atkinson, Wis., assignor to Creamery Package Mfg. Co., Chicago, Ill., a Corporation of Illinois. Filed Aug. 26, 1902. Serial No. 121,281. (No model.)

*Claim.*—1. In a pasteurizer or the like, the combination of a plurality of closed compartments in communication, with a rotary heater and a rotary cooler of large area having horizontal axes provided in said compartments respectively for rapidly heating and cooling the liquid flowing through said compartments, and means for rotating said heater and cooler, substantially as described.

2. In a pasteurizer or the like, the heating and cooling compartments, in combination with a cover for said heating-compartment adapted to prevent evaporation from said compartment, means connecting said compartments and a plurality of rotary hollow internally heated and cooled devices provided in said compartments, respectively, substantially as described.

3. In a pasteurizer or the like, a plurality of fluid-compartments suitably connected for the flow of liquid from one to the other, in combination with a heater arranged in one of said compartments, coolers arranged in the other compartments and means for causing the cooling fluid to flow through said coolers toward the point at which the liquid from the heating-compartment enters the first cooling-compartment substantially as described.





4. In a pasteurizer or the like, the plurality of liquid-compartments having diagonally-opposed connecting-passages, in combination with rotary heaters and coolers arranged in said compartments respectively, substantially as described.

5. In a pasteurizer or the like, the connected liquid-compartments in combination with the rotary disk heaters and coolers provided in said compartments and containing tortuous passages for heating and cooling fluids and the walls of the heaters being protected from the direct effect of the heating fluid, substantially as described.

6. In a pasteurizer or the like, the liquid compartment or receptacle in combination with the shaft extending through said compartment, the hollow disks provided upon said shaft, the steam-condensing baffle-disks contained in said disks and means for supplying a heating fluid from said shaft to said disks and discharging the same from the last disk on said shaft, substantially as described.

7. In a pasteurizer or the like, the liquid compartment or receptacle, in combination with a plurality of hollow disks suitably connected, steam-condensing baffle-disks provided in said hollow disks, means for supplying a heating fluid thereto and for discharging the condensed fluid therefrom, substantially as described.

8. The rotary heater for pasteurizers and the like comprising the hollow shaft, the hollow disk provided thereon, means for supplying a heating fluid to said shaft and for discharging the same from said disk on the exterior of said shaft.

9. The rotary heater for pasteurizers and the like, comprising the hollow shaft, the hollow disks provided thereon, means for supplying a heating fluid through said shaft and for discharging the same from said disks on the exterior of said shaft and the steam-condensing baffle plates or disks provided within said hollow disks, as and for the purpose specified.

10. The rotary heater for pasteurizers and the like, comprising a hollow shaft, a plurality of hollow disks provided thereon and suitably connected one with the other, jet-openings provided in said shaft and the steam-condensing baffle plates or disks arranged close to the walls of said disks, as and for the purpose specified.

11. In a pasteurizer or the like, the liquid receptacle or compartment, in combination with the rotary cooler comprising a shaft, a plurality of hollow disks provided thereon and suitably connected one to another, the partition-disks provided within said hollow disks and ducts in the ends of said shafts for supplying and discharging the cooling fluid to and from the first disk and the last disk of the series, substantially as described.

12. The rotary cooler for pasteurizers and the like, comprising the shaft provided with ducts in its ends, in combination with a plurality of hollow disks provided upon said shaft, said ducts communicating with the end disks on said shaft, the cylindrical connections between said disks having passages or openings for the cooling fluid, substantially as described.

13. In a pasteurizer or the like, the liquid receptacle or compartment having inlet and discharge openings at its opposite ends, in combination with a plurality of rotary disks arranged in said compartment and a plurality of deflecting-plates, said deflecting-plates extending from the sides of the compartment and between the several rotary disks and extending substantially to the top of said compartment, as and for the purpose specified.

14. In a pasteurizer or the like, a plurality of liquid-compartments having suitable covers and connected for the flow of liquid from one to the other, in combination with the rotary heater and cooler provided in said compartments, the shafts of said heater and cooler extending through the ends thereof and heating and cooling fluid connections with said shafts for supplying and emptying said rotary devices, substantially as described.

15. In a pasteurizer or the like, the combination with the machine-body, containing a plurality of liquid-compartments in combination with inlet and outlet ducts for the compartments, the by-pass projecting from said body and connecting the compartments, the rotary heater and cooler in said compartments respectively, the shafts thereof, the drain-heads at the ends of said shafts and the fluid-inlet connections with said shafts, substantially as described.

16. In a heater for pasteurizers and the like, the shaft in combination with a hollow disk provided thereon, means for supplying and discharging heating fluid to and from said disk and the condensing baffle-plates provided with said disk and between which the heating fluid is first admitted, substantially as described.

17. The pasteurizer or the like comprising a plurality of liquid-compartments connected for the flow of liquids therethrough, the covers for said compartments, a rotary heater provided in one of said compartments, a rotary cooler provided in another, heating and cooling fluid connections therefor, respectively, and said heater and cooler being in operation only partially immersed in the liquid under treatment, substantially as described.

18. The pasteurizer or the like, comprising a liquid-compartment having inlet and outlet openings for the fluid, a rotary heater provided in said compartment and a cover for said compartment, having an outlet-opening for the escape of gases and filled thereby to exclude air when the machine is in operation, substantially as described.

19. In a pasteurizer or the like, two compartments or spaces, one for heating the liquid and the other for cooling the same, in combination with a heater provided in and substantially filling the first compartment and heated by a fluid which flows longitudinally through said heater, a cooler provided in and substantially filling the other compartment and cooled by fluid which flows longitudinally through said cooler, means for moving said heater and cooler, a liquid-inlet for said first compartment, a liquid-outlet for the other compartment, a connection or duct between the compartments, and said inlet, said connection and said outlet being so arranged that the liquid under treatment flows through the compartments in directions opposite to the flow of the heating and cooling fluids in said heater and said cooler, respectively, substantially as and for the purpose specified.

20. In a pasteurizer or the like, a first compartment or liquid-space, in combination with a second compartment to receive the liquid from the first compartment, a rotary hollow heater arranged in the first compartment and having a suitable discharge opening or outlet at its end, a steam connection to the opposite end of said heater, means within the heater preventing the direct contact of the steam with the internal walls thereof, a rotary hollow cooler provided in the second compartment and having a suitable outlet at its end, a cooling-fluid connection to the other end of the cooler, and the internal walls of said cooler being exposed to the cooling fluid, substantially as described.

21. In a heater for pasteurizers or the like, a hollow disk, in combination with tubular connections, concentric with the disk, for conducting steam and water to and from the same, and means arranged within the hollow disk preventing the direct play of steam upon the internal walls thereof.

22. A heater for pasteurizers or the like, comprising a hollow lens-shaped disk, in combination with tubular inlet and discharge

connections therefor, and means within the disk forming water-film spaces upon the inner walls thereof, as and for the purposes specified.

23. In a heater for a pasteurizer or the like, a plurality of hollow disks, mounted upon a suitable shaft, means for supplying steam to the interior of said disks, means for conducting the water of condensation from the disks, and means in each disk for condensing the steam which enters it and for maintaining films of water upon the interior walls of the disks to protect said walls from the direct effect of the steam, substantially as described.

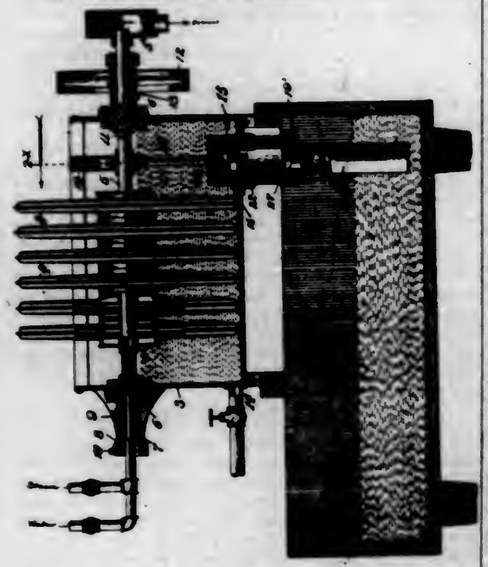
24. In a pasteurizer or the like, two compartments or spaces, connected for the flow of liquid from one to the other, in combination with hollow shafts extending through said compartments, double-walled heating-disks mounted upon one of said shafts, single-walled cooling-disks mounted upon the shaft in the other compartment, and means connected with said shafts for supplying hot and cold fluids thereto, substantially as described.

25. In a pasteurizer or the like, the combination, of the communicating fluid-compartments having an inlet and an outlet respectively, and constituting together a path for a flowing stream of liquid, with a plurality of rotating heating devices, connected together throughout, provided in one of said compartments, a plurality of rotary cooling devices, connected together throughout, provided in the other of said compartments, means for internally heating and cooling said heating and cooling devices respectively, and suitable means for rotating said devices in their compartments, to heat and cool the flowing fluid therein, substantially as described.

26. The rotary heater for pasteurizers and the like, comprising a shaft, in combination with a plurality of hollow disks provided thereon, said shaft being provided with steam-jets for directing steam into said hollow disks, the baffle-disk provided in each hollow disk and having inwardly-turned, flanged edges that substantially overlap said disks, protecting the inner walls of their hollow disks from the direct heat of the steam from said jets, and suitable means for conducting water of condensation from said hollow disks, substantially as described.

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**755,192. SELF-FILLING HEATER OR COOLER.** THEODORE L. VALERIUS, Fort Atkinson, Wis., assignor to Creamery Package Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 24, 1903. Serial No. 140,397. (No model.)



*Claim.*—1. The combination, of the vat or reservoir, with a pump arranged therein for supplying liquid to the reservoir, a rotary heating or cooling member, and means connecting said rotary member with the pump for operating the same; substantially as described.

2. The combination, of the stationary vat, with the pump, having its cylinder fixed in the walls of the vat, the movable heating or cooling member in said vat, and means in connection therewith for operating the pump to supply liquid to the reservoir; substantially as described.

3. In a heater or cooler, the combination, of a vat or reservoir, with the rotary heating or cooling member therein, the shaft of said member, a suitable pump, and a pump-rod arranged upon said shaft within said reservoir; substantially as described.

4. In a heater or cooler, the combination, of the vat or reservoir, with the rotary member therein, having a rotating shaft, the pump-cylinder located in the walls of said reservoir, the pump connected with and operated from said shaft, and a suitable intake connected with said cylinder; substantially as described.

5. In a heater or cooler, the combination, of a vat or reservoir, provided with an outlet in one end and a pump in the other, and the rotary heating or cooling member located in the vat between said outlet and pump; substantially as described.

6. In a heater or cooler, the combination, of a vat or reservoir, provided with an outlet in one end and a pump in the other, and the rotary heating or cooling member located in the vat between said outlet and pump, and means for supplying tempering fluid to said member, and causing the same to flow therethrough toward the end of the vat which contains the pump; substantially as described.

7. In a device of the class described, the combination, of the vat or reservoir, provided with an outlet at one end, with a pump-cylinder entering the other end of the vat, an intake therefor, the piston in said cylinder, the rotary heating and cooling member, a rotary shaft in said vat or reservoir, and means thereon within the vat for operating said piston during the rotation of said member; substantially as described.

8. In a device of the class described, the combination, of the vat or reservoir, with the fluid-conducting shaft therein, the rotary heating or cooling member comprising a plurality of hollow disks upon said shaft, the outlet for the vat, the pump arranged between the opposite end of the vat and the first disk of said member, a cam upon said shaft, and a pump-rod thereon for operating said pump; substantially as described.

9. In a device of the class described, the combination, of the vat or reservoir, with the rotary shaft therein, the rotary member on said shaft, bearings for the shaft in the walls of said vat, and said shaft having a spiral groove within said bearings for discharging impure collections; substantially as described.

10. In a device of the class described, the combination, of the vat or reservoir, with the moving member therein, the pump-cylinder detachably secured in the bottom of said reservoir, the pump-piston operated with said member, the intake-pipe, and the valved head of the cylinder wherein said pipe is secured, and means for forcing said head toward the vat to seat the head upon the lower end of the cylinder; substantially as described.

11. The combination, of the milk or cream vat 2, with the milk-tempering reservoir arranged above said vat, the tempering member in said reservoir, the pump-cylinder extending into the bottom of said reservoir, the valved piston operated with said member, and the valved intake of the cylinder, depending into said vat 2; substantially as described.

12. The combination, of the tempering vat or reservoir, with the boss on the bottom thereof, the pump-cylinder fitting said boss and seated against the same, the adjustable lower head of said cylinder hung from the bottom of said reservoir, the valve therein, an intake-pipe connected therewith, the valved pump-piston, and the valve-rod extending upward therefrom, into the reservoir for operation with the tempering member therein; substantially as described.

13. The combination, of the reservoir-bottom, with the internally and externally finished tubular cylinder 15, fitting and opening in said bottom, the supporting-bolts 23, the valved cylinder-head detachably supported thereby, the intake-pipe detachably supported in said head, the piston, the valve therein, a piston-operating rod 17, and its wrist-pin in said piston; substantially as described.

14. The combination, with the milk or cream vat 2 of the tempering-reservoir raised above the same, and provided with an overflow, adapted to discharge into said vat, the rotary or movable member in said tempering-reservoir, means for operating the same, the pump-cylinder, an intake hanging from said reservoir, to conduct liquid from the vat to the reservoir, the valve of said cylinder, and the valved piston operated from within the reservoir with said member; substantially as described.

15. The milk or cream vat 2, in combination with the milk-heater located above the same, and provided with its own pump for raising milk or cream from said vat; substantially as described.

16. The combination, of the milk or cream vat 2, with the heater arranged above the vat, means for elevating milk or cream thereto from the vat, the outlet of said heater, and the overflow thereof adapted to discharge into said vat 2; substantially as described.

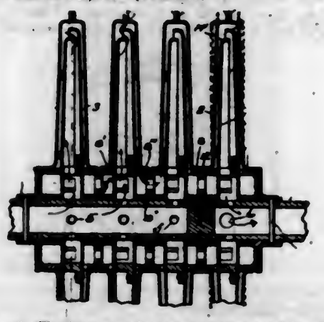


17. In a heater or cooler, the combination, of the vat or reservoir, with the rotary tempering member therein, the shaft of said member for conducting the tempering fluid to said member, the fluid connection 7, and a rigid part thereon wherein the part 7 is adjustably held; substantially as described.

18. The combination, of the vat or reservoir, with the tempering member therein, the pump-cylinder rising through the bottom of said reservoir, and having a suitably-valved intake, and the piston in said cylinder operated with said member; substantially as described.

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**755,193. ROTARY HEATER OR COOLER.** THEODORE L. VALERIUS, Fort Atkinson, Wis., assignor to Creamery Package Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 24, 1903. Serial No. 140,398. (No model.)



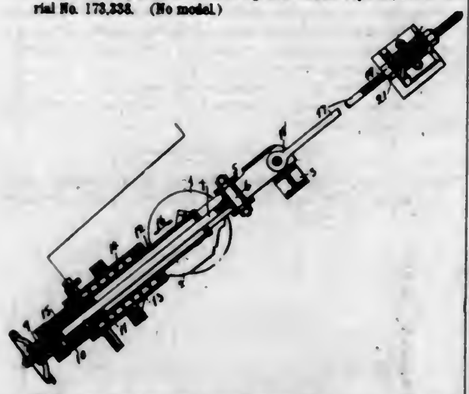
*Claim.*—1. The heater and cooler disk comprising thin metal disk sides having central openings and secured together at their peripheries in combination with the spreading means that distend the central portion of the disk, holding its sides under tension; substantially as described.

2. In a rotary heater or cooler, the combination, of the hollow hub composed of a plurality of collars, with deflecting-plates 15 and 15 arranged between said collars and the hollow disks inclosing said plates and arranged upon said collars, and said disks being held distended at their centers by said collars; substantially as described.

3. In a rotary heater, the combination, of the shaft, with the hub-collars thereof and deflecting-disks held in said hub, a suitable spreader, and the hollow disk secured upon said hub, having an expanded center and holding said deflecting plates or disks under pressure; substantially as described.

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**755,194. TRAVELING OVEN.** THOMAS VICARS and JOHN VICARS, the younger, Barlestown, England. Filed Sept. 15, 1903. Serial No. 173,338. (No model.)



*Claim.*—1. In combination with a traveling oven an expansible device extending into the oven and fixed at one end therein and at the other end connected to the movable chain-pulley slides, substantially as described.

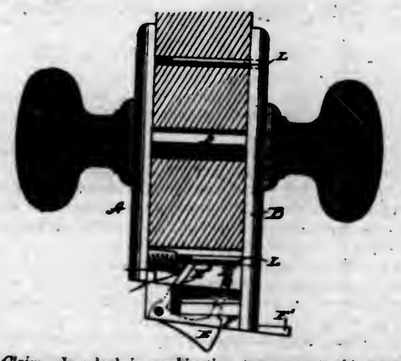
2. In combination with a traveling oven an expansible device extending into the oven and fixed at one end therein and at the other end connected by a balance-lever to the movable chain-pulley slides substantially as described

3. In combination with a traveling oven an expansible device extending into the oven and fixed at one end therein a balance-lever connected to the movable chain-pulley slides, and a tension device connecting the balance-lever to the expansible device substantially as described.

4. In combination with a traveling oven an expansible device extending into the oven and fixed at one end therein and at the other end connected to the movable chain-pulley slides, and a tension device adapted to draw the expansible device outwardly substantially as described.

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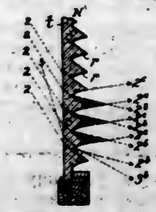
**755,195. LOCK.** HENRY G. VOIGHT, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn., a Corporation of Connecticut. Filed Dec. 16, 1903. Serial No. 185,907. (No model.)



*Claim.*—In a lock in combination, two separate side plates arranged to bear against opposite sides of a door at the edge thereof, two knobs arranged to rotate dependently, a face-plate carried by one of the said plates and arranged to overstand the edge of the door and overlap the edge of the other side plate, an adjustable means of connection between said side plates near the forward edge of each and to the rear of said face-plate, a latch-slide carried by one of the said side plates only, a latch bolt or head operatively connected therewith, a roll-back operatively connected with said slide and with both of said knobs, all arranged whereby said plates may be applied to doors of different thicknesses, and the latch-bolt be operatively connected with both knobs.

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**755,196. ILLUMINATING STRUCTURE.** FRANK L. O. WADSWORTH, Williams Bay, Wis., assignor to Pressed Prism Plate Glass Company, a Corporation of West Virginia. Filed Oct. 26, 1898. Serial No. 694,830. (No model.)



*Claim.*—1. An illuminating structure, one face of which has a series of straight parallel prismatic elements, one face of each prism being flat throughout its length and the other face concave throughout its length whereby the light-rays passing therefrom are distributed uniformly back of the structure, substantially as set forth.

2. An illuminating structure in two sections, one having straight prisms each with a curved deflecting-face which acts to diverge the rays of light falling thereon, and the other with a series of curved faces which act conversely to converge the rays of light falling thereon, substantially as set forth.

3. An illuminating structure for the transmission of light, having two sections, one having a series of separated curved deflecting-faces, and the other also with a series of curved faces, the curvatures of the two series of faces being complementary, whereby the divergence of the rays of light by the first set of surfaces is just compensated by the convergent action of the second set of surfaces substantially as and for the purpose described.

4. The combination in an illuminating structure, of a section having separated curved deflecting-faces, and a second section having a series of curved faces, with means for adjusting one section in respect to the other, substantially as set forth.

755,197. **ILLUMINATING STRUCTURE.** FRANK L. O. WADSWORTH, Allegheny, Pa., assignor to Pressed Prism Plate Glass Company, a Corporation of West Virginia. Filed Apr. 30, 1902. Serial No. 105,372. (No model.)



*Claim.*—1. An illuminating structure having a plane transparent face upon one side and obtuse-angled prism elements on the other, one face of each prism arranged to deflect the principal light-rays upon the said plane face at less than the critical angle, and the other prism face arranged to act as a totally reflecting-face for the said deflected rays, substantially as set forth.

2. An illuminating structure having a plane emergence face and a series of prism elements at the opposite side each with a transparent incidence face and a total internal reflecting-face at an obtuse angle to the incident face, substantially as set forth.

3. An illuminating structure having a plane emergence face and a series of prism elements at the opposite side, one face transparent and the other face totally reflecting for rays falling upon it in the plane of incidence, the two faces making an obtuse angle with each other, substantially as set forth.

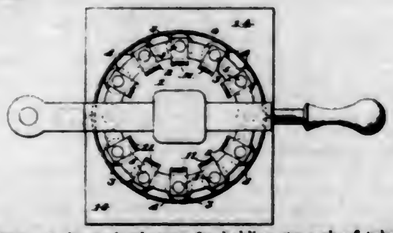
4. An illuminating structure having a series of prism elements on its receiving side, each with a transparent incident face and a face, the surface of which is formed to receive the principal rays of light incident thereon at less than the critical angle and reflect them through the emergence face, substantially as set forth.

5. An illuminating structure having prism elements on the receiving side and a plane emergence face on the other, one face of each prism element provided with a series of smaller auxiliary prisms at right angles to the line of the prisms adapted to totally reflect the principal light-rays incident thereon, substantially as set forth.

6. An illuminating structure having on one side a series of obtuse-angled prisms, each with a plane transparent face and a second face formed of a series of auxiliary prisms running across the face of the main prisms, at right angles to the line of the prisms, substantially as described.

7. An illuminating structure having a series of obtuse-angled prisms each of which is provided with a face consisting of a series of parallel auxiliary prisms at an angle to the line of the main prisms and adapted to totally reflect all light falling upon them from the interior of the plate in a plane at right angles to the said main prisms, substantially as described.

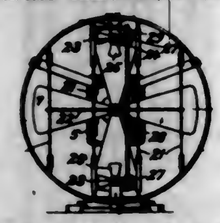
755,198. **IMPLEMENT FOR TRUING THE ENDS OF TUBING.** EDWARD D. WEBB, Chester, Pa., assignor of one-half to Francis A. Forwood, Chester, Pa. Filed Aug. 26, 1903. Serial No. 170,731. (No model.)



*Claim.*—1. In an implement for holding the ends of tubes in true cylindric form during the operation of cutting screw-threads thereon, a body having a plurality of radial equidistant slots means for holding said body against rotation within the tube, a bearing fitted radially adjustably in each slot and separate and independent means for adjusting radially each bearing in each slot rollers having cylindric faces fitted in each of said bearings and arranged to stretch and hold the tube in true circular form as described and shown.

2. In an implement of the kind specified a radially-slotted body bearings fitted radially adjustably in said slots, rollers having cylindric faces and tapering end with journals fitting in said bearings and a tapering key fitted between each bearing and the bottom of the slot containing said bearing to independently adjust each bearing and roller in radial direction as set forth.

755,199. **DEFLECTOR FOR FAN-MOTORS.** HAROLD B. WELLMAN, New York, N. Y., assignor to General Incandescent Arc Light Company, New York, N. Y., a Corporation. Filed June 18, 1903. Renewed Feb. 19, 1904. Serial No. 194,493. (No model.)



*Claim.*—1. The combination with a fan-motor, of an air-deflector, and means driven by the air-blasts from the motor for moving the blades of the deflector.

2. The combination with a fan-motor, of a series of air-deflector blades, and means driven by the air-blasts from the motor for moving said blades.

3. The combination with a fan-motor, of a fan-guard, a series of deflector-blades pivoted in said guard, and means for oscillating said blades driven by the air-blasts from the motor.

4. The combination with a fan-motor, of a fan-guard, a device carried by said guard adapted to be driven by an air-blast from the motor, and a series of deflector-blades mounted in said guard and adapted to be moved by said air-driven device.

5. The combination with a fan-motor, a fan-guard, an air-driven device mounted in front of the fan of the motor, and a series of deflector-blades also in front of the fan of the motor and adapted to be moved by said air-driven device.

6. The combination with a fan-motor, an air-driven device located in front of said fan, a series of air-deflectors, and means for communicating the motion of the air-driven device to the deflectors.

7. The combination with a fan-motor, of a small fan situated in front of the fan of said motor, a shaft on which said first-named fan is mounted, a worm on said shaft, a second shaft carrying a pinion cooperating with the worm, a series of deflector-blades, and means interposed between the shaft carrying the pinion and the deflector-blades for oscillating the deflector-blades.

8. A deflector for air-currents, comprising a series of pivoted parallel blades, and a device energized by a delivered air-current for oscillating said blades.

755,200. **SUSPENSION DEVICE FOR STABLE-BEAMS.** JULIUS WERNER, Neumünster, Germany. Filed Oct. 7, 1903. Serial No. 176,147. (No model.)



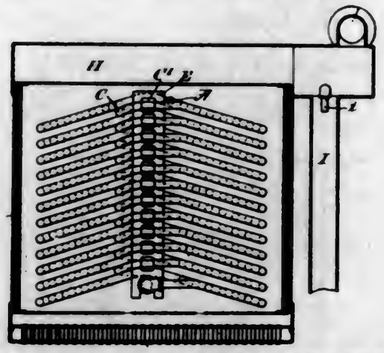
*Claim.*—In combination with a stable-beam, a suspension device for the beam, comprising a hoop having a slot in the bottom and being linked to the ordinary chain, a link having strong spring-arms bent away from each other and freely engaging said hoop, and a hook attached to the lower end of the spring substantially as set forth.



755,201. **PROCESS OF MANUFACTURING SODIUM SULFID.** JOHN F. WHITE, Buffalo, N. Y., assignor to General Chemical Company, New York, N. Y., a Corporation of New York. Filed Dec. 27, 1902. Serial No. 136,782. (No specimens.)

*Claim.*—The process of producing sodium sulfid, which consists in heating niter cake in the presence of coal and salt.

755,202. **FLASH-BOILER.** GEORGE R. WHITNEY, Bridgeport, Conn., assignor to Whitney Motor Wagon Company, Kittery, Me., a Corporation of Maine. Filed Dec. 20, 1902. Serial No. 136,010. (No model.)



*Claim.*—1. A steam-generator containing a series of connected superposed generating-coils, each of uniform bore throughout, at least one of said coils having a portion higher than another portion which is nearer the inlet end thereof.

2. A steam-generator containing a series of superposed generating-coils, at least one of which has a portion higher than another portion which is nearer to the inlet end thereof, connections between said coils and a baffle-plate protecting said connections.

3. A steam-generator containing a series of superposed generating-coils connected in series and approaching a source of heat whereby the water is heated progressively, one or more of said coils having a portion higher than another portion which is nearer to the inlet end thereof, connections between said coils, and protecting means for said connections.

4. A steam-generator containing a series of connected coils, each depressed on opposite sides of a diametral line to resist gravitation of water therethrough.

5. In a steam-generator, a helical generating-coil the axis of which occupies different levels at different points.

6. A steam-generator containing a generating-conduit of helical formation, the axis whereof occupies different levels at different points.

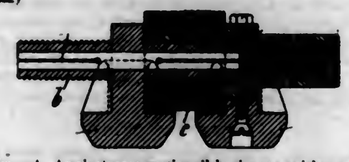
7. A steam-generator containing a generating-coil, parts of the axis of a plurality of convolutions of which lie in a different plane from that of other parts of said axis.

8. In a steam-generator a series of superposed generating-coils, lineal portions of each coil being trapped one from another.

9. In a steam-generator a series of superposed generating-coils, one or more having undulatory axis or axes.

10. In a steam-generator a series of superposed generating-coils, at least one of which presents a lineal portion at a higher level than another lineal portion.

755,203. **ELECTROMAGNETIC RAIL-BRAKE.** KARL A. WILDE, Hamburg, Germany. Filed Dec. 1, 1903. Serial No. 183,395. (No model.)



*Claim.*—1. An electromagnetic rail-brake comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

2. An electromagnetic rail-brake comprising a plurality of interchangeable pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

3. An electromagnetic rail-brake comprising a plurality of pole-pieces provided with tubular split extensions detachably connected together, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

4. An electromagnetic rail-brake comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon and means to prevent angular displacement of the pole-pieces, substantially as set forth.

5. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon, means to prevent angular movement of the pole-pieces and means to prevent longitudinal displacement thereof, substantially as set forth.

6. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon and an independent more or less rigid connection between the end pole-pieces, extending through the intermediate pole-pieces, substantially as set forth.

7. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with tubular extensions detachably connected together, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon and a cable extending through the series of pole-pieces, substantially as set forth.

8. An electromagnetic rail-brake, comprising a plurality of pole-pieces having interfitting tubular extensions, brake-shoes carried by said pole-pieces and coil-boxes mounted thereon, substantially as set forth.

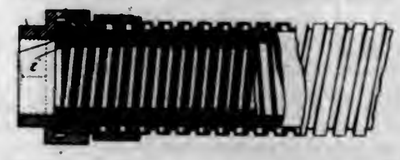
9. An electromagnetic rail-brake, comprising end pole-pieces and interchangeable intermediate pole-pieces, all of said pole-pieces having interfitting extensions, brake-shoes carried by the pole-pieces and coil-boxes mounted thereon, substantially as set forth.

10. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with interfitting tubular extensions, brake-shoes carried by said pole-pieces, coil-boxes mounted thereon, means to prevent angular movement of the pole-pieces and means to prevent endwise displacement thereof, substantially as set forth.

11. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with interfitting tubular extensions, brake-shoes carried by said pole-pieces and coil-boxes mounted on the extensions between the pole-pieces, for the purpose set forth.

12. An electromagnetic rail-brake, comprising a plurality of pole-pieces provided with interfitting tubular extensions, brake-shoes carried by said pole-pieces, coil-boxes mounted on the extensions between the pole-pieces and means to prevent angular movement and longitudinal displacement of said pole-pieces, substantially as set forth.

755,204. **COUPLING FOR THE PIPES OF RAILROAD-CARS.** EMIL WITTENHAHN, Pforzheim, Germany. Filed Dec. 30, 1903. Serial No. 187,096. (No model.)



*Claim.*—1. A coupling device for connecting the pipes of railroad-cars and the like, comprising in combination, a treble hose consisting of an inner metallic hose, an intermediate elastic hose and an outer metallic hose, a conical collar on the end of the inner hose between the same and the elastic hose, a coupling member on the end of the outer hose, against the inner wall of which member the conical collar presses the elastic hose, a second coupling member adjustably secured to the first said coupling member and a washer located between the abutting faces of the said coupling members, substantially as described.

2. A coupling device for connecting the pipes of railroad-cars and the like, comprising in combination, a treble hose consisting of an inner metallic hose, an intermediate elastic hose and an outer metallic hose, a conical flanged collar on the end of the inner hose between the same and the elastic hose, a coupling member on the end

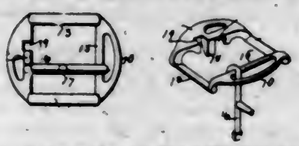
of the outer hose, against the inner wall of which member the conical collar presses the elastic hose, a second coupling member adjustably secured to the first said coupling member and a washer located between the abutting faces of the said coupling members, substantially as described.

3. A coupling device for connecting the pipes of railroad-cars and the like, comprising in combination, a treble hose consisting of an inner metallic hose, an intermediate elastic hose, and an outer metallic hose, a conical collar on the end of the inner hose between the end of the same and the elastic hose, a screw-collar on the end of the outer hose, against the inner wall of which collar the conical collar presses the elastic hose, a sleeve having a hexagonal projection screwed over the said outer collar and a washer located between the abutting faces of the outer collar and sleeve, substantially as described.

4. A coupling device for connecting the pipes of railroad-cars and the like, comprising in combination, a treble hose consisting of an inner metallic hose, an intermediate elastic hose, and an outer metallic hose, a conical collar on the end of the inner hose between the end of the same and the elastic hose, a flanged coupling member on the end of the outer hose, against the inner wall of which collar the conical collar presses the elastic hose, a second flanged coupling member bolted to the first, and a washer located between the abutting faces of the said two coupling members, substantially as described.

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**755,205. BUCKLE FOR CONNECTING CHECKREINS WITH DRIVING-LINES.** JACOB F. BUFALL, Alden, Iowa, assignor of two-thirds to William J. Attwood and James W. Draper, Alden, Iowa. Filed Jan. 5, 1904. Serial No. 187,840. (No model.)



*Claim.*—1. A buckle-frame consisting of two parallel sides connected at their ends by integral loops and one of the sides provided with a slot and a recess and the other side with a tongue-carrier pivotally and slidably connected therewith, for the purposes stated.

2. A buckle composed of a frame consisting of two parallel sides in the form of segments of a circle, cross-pieces in form of loops connecting the ends of the segments, one of them provided with an elongated opening and the other side provided with a projection at its central portion, a slot for the passage of the free end of a tongue-carrier and a recess for retaining the free end of a tongue-carrier and a tongue-carrier having a fixed tongue projecting at right angles therefrom and pivotally and slidably connected with the side that has an elongated slot, as and for the purposes stated.

3. A buckle-frame consisting of two parallel sides connected at their ends by integral loops and one of the sides provided with a slot and a recess and the other side with a tongue-carrier pivotally and slidably connected therewith in combination with a check-strap and a driving-line, for the purposes stated.

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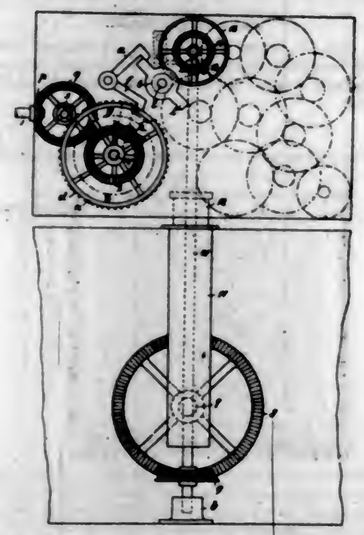
**755,206. COIN-FREED GAS-METER.** HERMANN ARON, Charlottenburg, Germany. Filed Feb. 24, 1902. Serial No. 96,227. (No model.)

*Claim.*—1. In a coin-freed gas-meter, the combination, with a gradually-closing gas-valve, and means operated by the meter to close said valve, of means for stopping the motion of the moving parts of said meter, and means for imparting to the stopping device an accelerated motion with relation to the device for closing the valve.

2. In a coin-freed gas-meter, the combination, with mechanism for starting the supply of gas, of a disk controlling the amount of gas to be supplied, a disk controlling the gas-valve, a planet-wheel gearing the axis of which carries the said two disks, and stop-levers controlled by the disk *d*, to stop the motion when the gas-valve is shut off.

3. In a gas-meter, the combination, with a gas-valve, of means for gradually closing said valve, means for positively stopping the operation of the moving parts of said meter and means for imparting to said stopping means a speed relatively greater than the speed of the valve-closing means.

4. In a gas-meter, the combination, with a gas-valve and a closure therefor, of means operated by the recording mechanism for causing the gradual closing of said valve, stopping means connected in train with the moving parts of said meter and moving at a relatively higher rate of speed than the valve-closing mechanism, and means for releasing and engaging said stopping means simultaneously with the opening and closing of the valve.



5. In a gas-meter, the combination, with a supply-valve, a closure therefor, and movable parts such as a drum or bellows, of means mounted for rotation in one direction by positive impulse and in the opposite direction under the influence of the recording mechanism and serving to open and to close said valve, stopping means connected in train with the recording mechanism and mounted for rotation at a relatively higher rate of speed than the valve opening and closing mechanism and adapted to engage and disengage the stop mechanism.

6. In a gas-meter, the combination, with a supply-valve and closure therefor, and movable parts such as a drum or bellows, of a disk mounted for rotation in one direction by positive impulse and in the opposite direction under the influence of the recording mechanism, a lug carried by the disk and so disposed as to engage in one position and effect a closure of the valve, a second disk cooperating with the first disk and having in its periphery a notch, a rotating stop mechanism connected in train with the movable supply parts of the meter and moving at a higher rate of speed than the valve-closure, and a lever mounted adjacent to the stop mechanism and disk and held normally out of engagement with the stop mechanism by the periphery of the disk but permitted to engage said stop mechanism when the revolution of the disk brings the notch into juxtaposition to said lever.

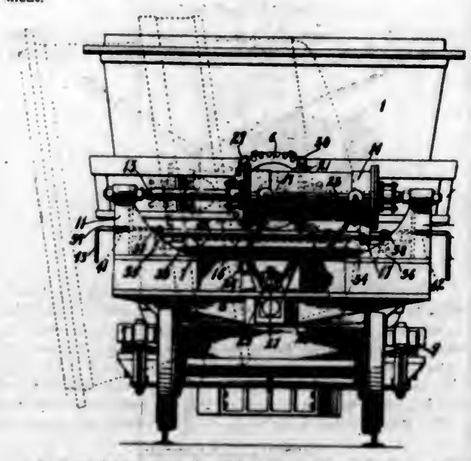
7. In a gas-meter, the combination with a supply-valve, a closure therefor and movable supply parts such as a drum or bellows, of a disk mounted for rotation in one direction by positive impulse and in the opposite direction under the influence of the recording mechanism, a lug carried by the disk and so disposed as to engage and effect a closure of the valve when in one position, a second disk cooperating with the first disk, a notch with beveled approaches, a spring-controlled arm mounted upon the axis of the disk and serving to cover the approach to the notch, a stop mechanism connected in train with the moving parts of the meter and rotating at a higher rate of speed than the valve-closure, and a lever mounted adjacent to the stop mechanism and disk and held normally out of engagement with the stop mechanism by the periphery of the disk but permitted to suddenly engage said stop mechanism when the revolution of the disk brings the notch into juxtaposition to said lever.

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**755,207. DUMPING-CAR.** KARL P. ASTRON, Newark, N. J., assignor to M. H. Treadwell & Company, New York, N. Y., a Corporation of New York. Filed Sept. 3, 1903. Serial No. 171,617. (No model.)

*Claim.*—1. The combination with a car-body supported to tilt and travel laterally, of a cylinder arranged to travel laterally back and forth and connected with the car-body for imparting to the car-body its laterally-traveling movement, means for actuating the cylinder and means for tilting the car-body during its traveling movement.





2. A car-body mounted to tilt and travel laterally in combination with a laterally-traveling motor for imparting to the car its laterally-traveling movement, means for tilting the car during its traveling movement and means for connecting the car with the motor in different relative positions whereby the said motor may force the car into dumping position in each of two opposite directions.

3. The combination with a car-body and its supporting-frame provided with racks for tilting the car-body as it travels transversely along its support, of a motor mounted to move transversely on the supporting-frame, the said motor being connected with the car-body to cause it to travel together with the motor transversely along the support and a valve for regulating the supply of the motive fluid to the motor.

4. The combination with a car-body and its supporting-frame provided with a rack for causing the car-body to tilt as it travels along the frame, of a spur gear-wheel carried by the car-body and engaging the said rack, a cylinder mounted on the frame to travel back and forth, a bearing engaged with the cylinder and with the car-body and a key for holding the said bearing in its position in engagement with the cylinder for causing the car-body to travel with the cylinder.

5. The combination with the car-body provided with a spur-wheel and its supporting-frame provided with a rack engaging the spur-wheel, of a motor consisting of a cylinder bodily movable back and forth, a fixed piston-rod forming a support for the cylinder, a guide-rod for holding the cylinder against rotary displacement, a piston fixed to said piston-rod within the cylinder and means for connecting the cylinder with the car-body whereby the motor is moved rapidly together with the cylinder.

6. The combination with the car-body and its supporting-frame, the car-body being mounted to tilt and travel transversely on the frame, of a movable buffer fixed to the track on which the car-body travels for limiting the tilting movement of the car-body in either of two opposite directions and a motor for moving the car along its track.

7. The combination with the car-body and its supporting-frame, the car-body being provided with trunnions on which it tilts and moves laterally, of a buffer fixed to the trunnions for relieving the shock at the limit of the tilting movement of the car-body and a motor for moving the car-body laterally and thereby tilting it.

8. The combination with the car-body and its supporting-frame, the car-body being mounted on trunnions to travel laterally and tilt, of a bodily-reciprocating cylinder engaged with a trunnion for operating the car and a locking device for engaging the cylinder at the limit of its bodily-reciprocating movement to hold the parts in position.

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**755,208. MEANS FOR REMOVING JAR-STOPPERS.** MARY J. BARRETT, Jackson, Mich. Filed Mar. 23, 1901. Serial No. 52,555. (No model.)

*Claim.*—In a device of the kind described, the combination with a bottle having interior and exterior shoulders formed adjacent its upper end, of a flat circular disk adapted to close the mouth of the bottle, a wire bent around the bottle and adapted to rest on the exterior shoulder, said wire having its ends twisted and spring-coils formed on opposite sides of the bottle said coils being adapted to bind the wire to the bottle, and a flexible metallic band secured at one end to the wire and passed under the circular disk, and thence upwardly, its central portion resting on the interior shoulder formed in the bottle and adapted to support the disk.



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**755,209. BASE-BALL CATCHER.** JAMES R. BENNETT, Momence, Ill. Filed Feb. 18, 1903. Serial No. 144,019. (No model.)



*Claim.*—1. A device for catching balls comprising a body having an open forward end, means for closing the same, yielding means for automatically operating said first-named means after the balls have passed into the body, a flexible means arranged in the body adapted to be engaged by and give to the balls, and means whereby the player can hold the device in an elevated or operative position.

2. A device of the type set forth comprising a body portion having its forward end and bottom provided with openings, means for automatically closing the opening in the forward end of said body portion, and a depending pocket communicating with the last-named opening, said pocket being provided in its side with an opening, substantially as and for the purpose specified

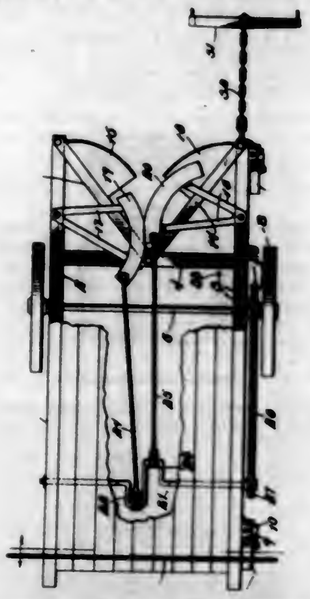
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**755,210. CORN-HARVESTER.** TAYLOR BOGGS, Chillicothe, Ohio. Filed Nov. 10, 1903. Serial No. 180,500. (No model.)

*Claim.*—1. In a machine of the class described, pivotally-mounted frames, curved cutters supported by said frames, and means for swinging said frames in opposite directions with relation to each other.

2. In a machine of the class described, a wheel-supported frame having forwardly-extended side pieces, frames pivotally mounted upon the extended ends of said side pieces, curved cutters supported by said frames, a double crank-shaft, pitmen connecting the cranks of

said shaft with the cutters, and means for transmitting motion to said crank-shaft from the axle of the machine.



3. In a corn-harvesting device, a wheel-supported frame having cross-pieces and side pieces, the latter extended in front of the front cross-piece, braces connecting the ends of said side pieces with the center of the front cross-piece, guides supported by said braces, and cutting apparatus, including pivotally-mounted frames, curved coöperating cutters supported upon said frames and means for swinging the latter oppositely to each other in horizontal lines.

4. In a corn-harvesting machine, a rectangular frame, a revoluble axle supporting said frame, a loose supporting-wheel at one end and a fixed driving-wheel at the other end of said axle, caster-wheels supporting the front and rear ends of the side of the frame adjacent to the driving-wheel, frames mounted pivotally upon the sides of the frame at the front end of the same and carrying curved coöperating cutters, a transversely-disposed double crank-shaft, pitmen boxed upon the cranks of said shaft and having pivotal connection with the rear ends of the cutters, and means for transmitting motion to the crank-shaft from the driving-wheel of the machine.

5. In a corn-harvesting machine, a cutting apparatus comprising a pair of frames mounted pivotally to swing in horizontal planes and having divergent arms and coacting curved cutters secured upon and connecting the divergent arms of said frames.

6. In a corn-harvesting machine, a cutting apparatus comprising two pivotally-mounted frames having divergent arms, coacting curved cutters mounted upon the divergent arms of said frames, and reciprocatory operating means connected with the cutters.

7. In a corn-harvesting machine, a pair of curved coöperating cutters, frames having apices and divergent arms supporting said cutters upon their divergent arms, pivotal supporting means for the apices of said frames, and means for swinging the latter upon their respective pivots in horizontal planes.

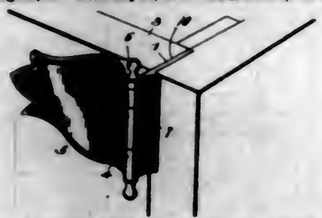
8. In a corn-harvesting machine, a pair of curved coacting cutters, pivoted supporting means for the same, and means for longitudinally reciprocating said cutters and for incidentally swinging them in horizontal planes upon the pivots of the supporting means.

9. In a corn-harvesting machine, a wheel-supported frame, cutting means including a pair of curved coacting cutters, pivoted supporting means for the same, and means for imparting to said cutters a swinging and longitudinally-reciprocatory movement, means for guiding stalks into engagement with said cutters, a stalk-supporting device at the rear end of the frame, a driver's seat supported upon one side of the frame, and a draft attachment connected with the side of the frame supporting said seat.

10. In a corn-harvesting machine, a cutting apparatus comprising a pair of frames having front and rear legs, pivotally mounted to swing in horizontal planes, the front and rear legs of said frames being of unequal length, and curved coacting cutters supported upon the outer ends of said frames.

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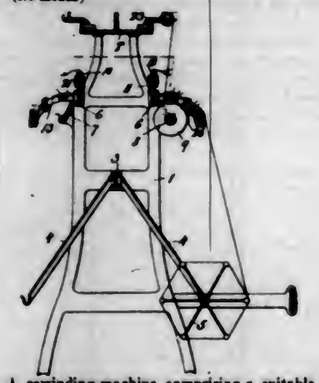
755,211. HINGE. THOMAS T. BOBINS and FRANK PRITCHEY, Huntingdon, Pa. Filed May 26, 1903. Serial No. 159,173. (No model.)



*Claim.*—A hinge comprising a primary leaf adapted for attachment to a door-jamb and a secondary leaf adapted for attachment to the door, said leaves being pivotally connected and normally extending at right angles one to the other, and a gage-stop provided upon the inner face of the primary leaf to bear upon the outer edge of a leaf-receiving socket formed in the jamb, the bearing-face of the stop being in a plane coincident with the plane of the inner face of the secondary leaf when the parts are in normal closed position.

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755,212. REWINDING-MACHINE. EDWARD R. BRADLEY, Stonington, Conn., assignor to the Atwood-Morrison Company, Stonington, Conn., a Corporation of New Jersey. Filed Sept. 15, 1902. Serial No. 123,374. (No model.)



*Claim.*—A rewinding-machine comprising a suitable frame, a driving-pulley, means for supporting a skein-reel, brackets for supporting a winding-bobbin used as a delivery-bobbin, the said driving-pulley serving to wholly support and drive a rewinding-bobbin and drive and partially support a winding-bobbin and brackets having vertical slots for retaining the rewinding-bobbin in position on the pulley and having inclines for taking part of the weight of the winding-bobbin off the driving-pulley.

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755,213. ATMOSPHERIC BURNER FOR INCANDESCENT GAS-LIGHTING. JOHN W. BRAY, Leeds, England. Filed July 14, 1903. Serial No. 165,503. (No model.)

*Claim.*—1. In an atmospheric burner for incandescent gas-lighting, the combination of the upper part A, having an enlarged end and carrying a tip and having its lower end internally screw-threaded, a tube B screw-threaded externally at its upper end and screwed into the lower end of the upper part A, a gallery D screwed onto the tube B and extending upwardly and a guard F screwed onto the tube B and extending downwardly from its point of support, the ends of said guard projecting down to a point flush with the end of the tube B, substantially as described.

2. In combination with a tube A having its upper end enlarged, a gauze screen therein, a holding-socket K removably fitted to said tube, a wire-gauze screen carried by said socket and a tip also carried by the said socket, the said screens having a space between them and clips for holding the socket to the tube, substantially as described.

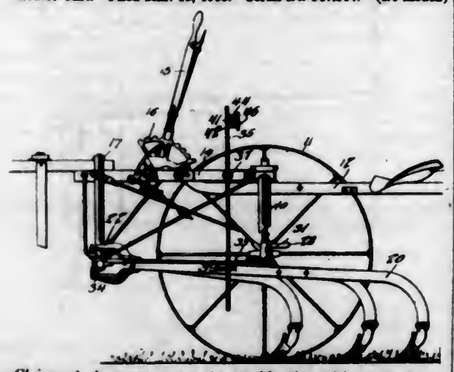


755,218



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755,214. CULTIVATOR. URI H. BROWN, Zanesville, Ohio, assignor to Brown Manufacturing Company, Zanesville, Ohio, a Corporation of Ohio. Filed Mar. 13, 1903. Serial No. 147,567. (No model.)



*Claim.*—1. In a cultivator, the combination with an arch and a shovel-beam carried on said arch and adapted to swing laterally and vertically thereon, of a lever pivoted on said shovel-beam, a clip mounted on said arch and laterally adjustable thereon, and a link connected at its rear end with one arm of said lever and at its forward end with said clip, substantially as described.

2. In a cultivator, the combination with an arch having outward-projecting ends, shovel-beams carried on said arch and adapted to swing vertically and laterally thereon, of levers pivoted on said shovel-beams, clips mounted on said projecting ends and laterally adjustable thereon, and links connected at their rear ends with said levers and at their forward ends with said clips, substantially as described.

3. In a cultivator, the combination with an arch, shovel-beams carried on said arch and adapted to swing laterally and vertically thereon, of conical pivots mounted on said beams, foot-levers having bearings conically bored to rotatably support said levers on said pivots, and links connected at their forward ends with said arch and at their rear ends with said levers, substantially as described.

4. In a cultivator, the combination with an arch, and shovel-beams carried by said arch and adapted to swing vertically and laterally thereon, of levers pivoted on said shovel-beams, links connected at their forward ends with said arch, to one side of the forward ends of said shovel-beams, and at their rear ends with one arm of said levers, and a yoke connecting said shovel-beams, substantially as described.

5. In a cultivator, the combination with an arch, and shovel-beams carried by said arch and adapted to swing vertically and laterally thereon, of levers pivoted on said shovel-beams, links connected at their forward ends with said arch to one side of the forward ends of said shovel-beams and at their rear ends with one arm of said levers, and a separable yoke connecting said shovel-beams, substantially as described.

6. In a cultivator, the combination with a frame, an arch carried by said frame, and shovel-beams carried on said arch and adapted to be swung vertically and laterally, of levers pivoted on said shovel-beams, links connected at their forward ends with said arch to one side of the forward end of said shovel-beams and at the rear ends with one arm of said levers, and a separable yoke pivotally mounted on said cultivator-frame and connecting said shovel-beams, substantially as described.

7. In a cultivator, the combination with a frame, an arch carried by said frame, and shovel-beams carried on said arch and adapted to be swung vertically and laterally, of levers pivoted on said shovel-beams, links connected at their forward ends with said arch to one side of the forward ends of said shovel-beams and at the rear ends with one arm of said levers, levers pivoted on said frame and slidingly connected at their lower ends with said shovel-beams and having their upper ends projecting above said frame, cross-bars pivoted to the upper ends of said levers, and means for detachably and adjustably securing said cross-bars together, substantially as described.

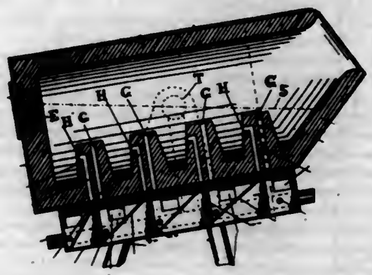
8. In a cultivator, the combination with a frame, shovel-beams carried by said frame and adapted to swing vertically and laterally, and means for swinging said beams laterally, of levers pivoted on said shovel-beams, links connected at their forward ends with said arch to one side of the forward ends of said shovel-beams and at the rear ends with one arm of said levers, levers pivoted on said frame and slidingly connected at their lower ends with said shovel-beams and having their upper ends projecting above said frame, cross-bars pivoted to the upper ends of said levers, and means for detachably and adjustably securing said cross-bars together, substantially as described.

9. In a cultivator, the combination with a frame, and a shovel-beam carried by said frame and adapted to swing laterally, of a lever pivoted on said shovel-beam, a link connected at its forward end with said frame to one side of said shovel-beam and at its rear end with one arm of said lever, and a spring connected with the said arm of said lever and with said shovel-beam, substantially as described.

10. In a cultivator, the combination with an arch, and a shovel-beam mounted on said arch and adapted to swing vertically and laterally thereon, of a lever pivoted on said shovel-beam, a link connected at its forward end with said arch, to one side of the shovel-beam, and at its rear end with one arm of said lever, and a spring connected with the said arm of said lever and with said shovel-beam forward of the pivotal point of said lever, substantially as described.

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755,215. CONVERTER FOR MAKING STEEL, &c. WALTER R. BURROW, Norfolk, Va. Filed May 17, 1902. Serial No. 107,814. (No model.)



*Claim.*—1. A horizontally-operated centrally-pivoted converter for making malleable iron and steel having vertical and horizontal twyers in the direction of the length of the converter, the said converter or vessel revolving completely through different angles on its axis or trunnions as described.

2. A horizontally-operated tilting converter for making iron and steel, having a plurality of refractory ribs, corrugations or bands, integral with and extending above the lining of the converter; to or near the axis or trunnions, the said ribs or corrugations suitably spaced in the direction of the length of the vessel and occupying one-half of the inner circumference of the converter, and the said ribs or bands containing horizontal and vertical twyers or blast-orifices, the said twyers discharging at right angles to each other, as described.

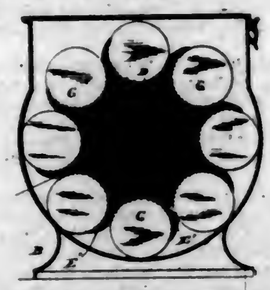
3. A horizontally-operated converter for molten iron and steel having a plurality of twyers spaced along its length and refractory corrugations or ribs on the inner circumference of the lining and the vertical and horizontal twyers through the said corrugations or ribs to the wind-box, the horizontal twyers having their direction of discharge at right angles to the vertical twyers and blowing toward the closed end of the converter, the said twyers supplied by the blast from a wind-box on the pouring side of the vessel as described.

4. A horizontally-operated pivoted converter having vertical and horizontal twyers spaced along the length of the converter and having their direction of discharge at right angles to each other and refractory corrugations or ribs projecting above the lining, to and above the axis of the converter and a horizontally-divided wind box or reservoir having inclined guide and deflecting plates, and regulating valves and pipes, controlling the blast in each division of the said wind-box, as described.

5. A horizontally-operated movable converter for making steel having vertical and horizontal twyers having their direction of discharge at right angles to each other, and refractory ribs or corrugations carrying the said twyers, and a horizontally-divided wind-box having deflecting-plates, nozzles, blast-pipes, regulating-valves and a slag-door at the bottom or closed end of the converter, as described.

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**755,216. ICE-CREAM FREEZER.** JAMES W. CARRIER, Peoria, Ill., assignor to Frank C. Hitchcock, Princeville, Ill. Filed July 27, 1903. Serial No. 167,097. (No model.)



*Claim.*—1. In an ice-cream freezer, a receptacle for containing the freezing mixture, a member therein adapted to revolve in a vertical plane, there being recesses in its periphery, a series of separable cells or containers for the mixture to be frozen, the same adapted to seat in the recesses, a flange at each side of the cell for preventing the cells leaving the member sidewise, the sides and bottom of the receptacle being formed concentric with the revoluble member, the cells being held in place in the recesses during the revolution of the member in the manner described except at the upper position where they are held in place by gravity as set forth.

2. In an ice-cream freezer, the receptacle A for containing the freezing mixture, a revoluble member E therein, the same having a series of recesses therein in its periphery, in combination with a series of cells G for containing the mixture to be frozen said cells consisting of two separable portions, each said cell adapted to lie within a recess of the member E, a flange H on each portion of the cell for holding the latter in its said recess, the bottom of the receptacle A being concentric with the member, the cells being held in their recesses by contact with said bottom as described.

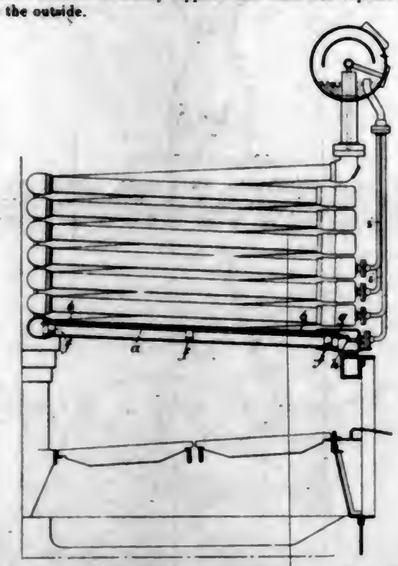
3. In an ice-cream freezer, the receptacle A for the freezing mixture, the member E therein having recesses in its periphery, the shaft D for carrying it and the crank F for revolving the member, in combination with a series of cells for containing the mixture to be frozen, said cells adapted to seat in the recesses in the member E, the same consisting of two members separable for the purposes described, there being the indentations I in one portion of the cell, the projections J on the other portion for engaging the indentations I for holding the two portions together, flanges H for holding the cells in place in the recesses against side movement, the bottom of the receptacle A being curved to conform to and approach the periphery of the member E to hold the cells in place in their recesses as set forth.

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**755,217. DEVICE FOR REMOVING STEAM FROM THE HEATING-SURFACES OF STEAM-GENERATORS.** SIDNEY M. COSMOND, London, England. Filed Sept. 4, 1903. Serial No. 171,893. (No model.)

*Claim.*—1. In steam-generators having a plurality of heating-surfaces so situated that the steam generated thereon tends to pass in contact with them in rising to the steam-space, a device for extracting the steam by simple gravity action consisting of pipes separated from the source of heat leading to the steam-space from the neighborhood of the heating-surfaces and orifices in such pipes placed in close proximity to the heating-surface on which the steam is generated.

2. In steam-generators having a plurality of heating-surfaces so situated that the steam generated thereon tends to pass in contact with them in rising to the steam-space, a device for extracting the steam by simple gravity action consisting of pipes separated from the source of heat leading to the steam-space from the neighborhood of the heating-surfaces and orifices in such pipes placed in close proximity to the upper internal surfaces of nearly horizontal tubes which are internally supplied with water and exposed to heat on the outside.

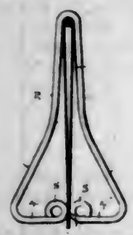


3. In steam-generators, a combination of a nearly horizontal steam-generating tube having the source of heat outside, a steam-extracting pipe connected thereto, a steam-space, an ascension-pipe leading to the steam-space and a branch connection between the extracting and ascension pipes.

4. In steam-generators, a combination of a nearly horizontal steam-generating tube having the source of heat outside, a perforated steam-extracting pipe therein, such pipe being sustained with its perforations close to the upper internal surface of the steam-generating tube, a steam-space, an ascension-pipe leading to the steam-space and a branch connection between the extracting and ascension pipes.

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**755,218. CLOTHES-PIN.** AUSTIN O. CRAVER, Jonestown, Miss. Filed Apr. 18, 1903. Serial No. 153,206. (No model.)



*Claim.*—As an improved article of manufacture, a clothes-pin formed of a single piece of wire bent centrally upon itself to form an elongated loop the upper end of which being free and unobstructed, and the opposite members of said loop being continued by diverging legs creating inward pressure against their extremities turned inwardly upon a horizontal plane and terminating in eyes.

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**755,219. FELTED FABRIC AND PROCESS OF PRODUCING SAME.** GEORGE DAVIDS, Jr., New York, N. Y. Filed Jan. 21, 1904. Serial No. 189,966. (No specimens.)

*Claim.*—1. As a new article of manufacture, a felted fabric having a smooth wool side and a shaggy mohair side, said fabric being composed of wool and mohair with the wool predominating at one side and the mohair at the other side of the middle line of the thickness thereof; substantially as set forth.



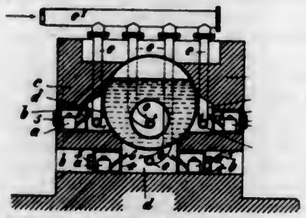
2. As a new article of manufacture, a felted fabric having a smooth wool side and a shaggy mohair side, said fabric being composed of wool and mohair with some of the mohair extending to but not beyond the surface of said wool side; substantially as set forth.

3. The process of producing a felted fabric composed of wool and mohair consisting in forming a bat of wool and a bat of wool and mohair mixed together, placing these bats into face to face contact with each other, subjecting the composite bat thus formed to hardening treatment and then felting the same; substantially as set forth.

4. The process of producing a felted fabric composed of wool and mohair consisting in forming a bat of wool and a bat of wool and mohair mixed together, bringing these bats into face to face union with each other and felting the same together to form a fabric, shearing the wool side of the fabric to smooth-finish the same and remove any protruding mohair, and napping up the surface of the mohair side of the fabric; substantially as set forth.

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**755,220. SMOKE-CONSUMING APPARATUS.** GUSTAV A. DOBBEL, Altona, Germany. Filed Feb. 12, 1902. Serial No. 93,739. (No model.)



*Claim.*—1. In a furnace, the combination with the flues thereof, of channels communicating therewith and the exterior of the furnace, and means adjustable in said channels transversely to the flues to ignite products of combustion passing through the flues, substantially as and for the purpose specified.

2. In a furnace, the combination with the flues thereof; of means within the flues to supply a supporter of combustion, channels communicating with said flues and the exterior of the furnace, and lamps in said channels adjustable transversely to the flues to ignite the products of combustion, substantially as and for the purpose specified.

3. The combination with a furnace having longitudinal flues of horizontal channels arranged perpendicular to the flues and leading from the exterior of the furnace, removable lamps in said channels adjustable transversely to the flues, and air-supply pipes arranged longitudinally of the flues, substantially as and for the purpose specified.

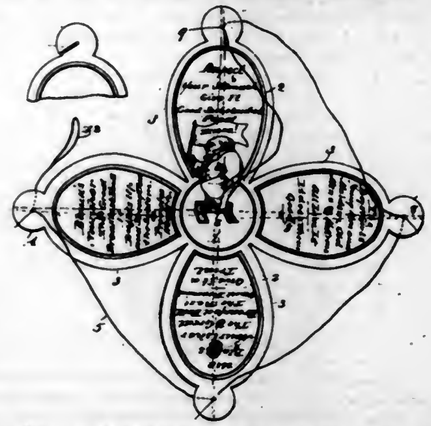
4. In a furnace, the combination with the flues thereof; of perforated pipes longitudinally disposed in the flues to supply a supporter of combustion, channels leading to the flues from the exterior of the furnace and lamps in said channels adjustable transversely to the flues to ignite the products of combustion, substantially as and for the purpose specified.

5. In a furnace, the combination with the flues thereof; of channels leading to the flues from the exterior of the furnace, a casing approximately fitting each channel and having an air-inlet and flame orifice, and a lamp in each casing, substantially as and for the purpose set forth.

6. In a furnace, the combination with the flues thereof; of perforated air-supply pipes longitudinally disposed in said flues, channels leading to the flues from the exterior of the furnace, casings having an air-inlet and flame orifice fitting the channels, a lamp in each casing, the flame of which passes through the flame-orifice to ignite the products of combustion in the flues, substantially as and for the purpose set forth.



**755,221. ADVERTISING DEVICE.** JOHN H. DYER, Cleveland, Ohio. Filed Jan. 25, 1904. Serial No. 190,427. (No model.)



*Claim.*—1. In an advertising device, a plurality of side pieces and integral bottom, so arranged as to form a closed package when the adjacent edges of the sides are brought together, in combination with perforated overlapping upper extremities for the side portions, a cord secured to the bottom and passing through the perforations in the overlapping sides, and means for retaining the sides in their closed position, substantially as described.

2. In an advertising device, in combination with side pieces shaped to form a closed package when their meeting edges are brought together, and an integral bottom, of a cord secured to said bottom, overlapping upper extremities to the sides through which the cord passes, a knot on the cord above said overlapping extremities, and an image or characteristic device within the package, substantially as described.

3. In combination in a sample-package, a bottom, integral side leaves, adapted to form an inclosure for advertising matter when brought together at their apices, means for detachably securing said leaves together, and means for forcibly separating said side leaves when released, substantially as described.

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**755,222. PROCESS OF TREATING PLUMBIFEROUS ORES.** ERNST W. ESCHA, Düsseldorf, Germany. Filed Oct. 5, 1903. Serial No. 175,766. (No specimens.)

*Claim.*—1. The process of treating plumbiferous ores at high temperatures and diminishing the chemical and physical reactions taking place between the walls of the vessels employed and the ores or ore products present during the treatment, said process consisting in conducting the treatment in receptacles composed largely of clay and carborundum, in the relative proportion of not less than twenty-five per centum, nor more than ninety per centum of carborundum, and not more than seventy-five per centum, nor less than ten per centum of clay.

2. The improvement in the art of treating plumbiferous ores at high temperatures which consists in conducting the treatment in receptacles exposing clay and carborundum at the surfaces of their walls to the action of the said ores or ore products in such proportions whereby the carborundum protects the clay and the clay protects the carborundum and the injurious action of the ores on such surfaces is thereby diminished by the conjoint use of the clay and carborundum, for substantially the purposes set forth.

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**755,223. SECTIONAL MOLDED VESSEL.** WILLIAM B. PESH, Washington, Pa. Filed Dec. 23, 1902. Serial No. 136,414. (No model.)

*Claim.*—1. A two-part vessel having one part reversible to fit in the other and means for hermetically joining the two parts together in either position.

2. A vessel formed of two parts with contact surfaces making a liquid tight joint between the parts and reversible so that one part may be placed inside the other for packing.

3. A two part vessel provided with a small orificed-head made integral with the neck, the portion bearing the head and neck being invertible to go inside of the body of the vessel and having a liquid tight joint between the two parts.

4. A two-part vessel consisting of a body portion provided with a conical ground seating surface, and a neck portion provided with a depending annular flange to enter the body portion and with a circumferential flange having both sides conical and ground to fit upon the ground seat of the body portion, and a screw-ring to hold the two parts in place, substantially as described.



5. A two-part vessel adapted to have one part thereof inverted and inserted in the other part and means for making a water tight joint between the two parts when in inverted position.

6. A vessel consisting of a body part having a conical ground surface for a joint, a top part having a conical ground surface to fit with the said ground surface of the body part, and a metallic ring with attaching means for fastening the two parts together, either in upright or inverted position.

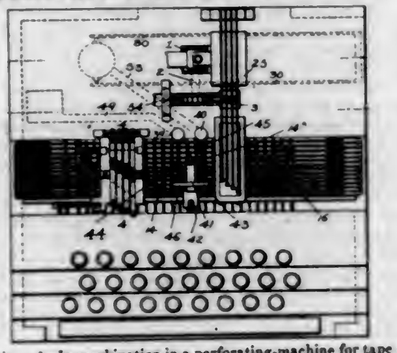
7. The combination of a body part *a* provided with a ground surface *f*, an upper portion *b*, provided with an annular rim *d* having a conical ground surface on both sides thereof, and a metallic ring *e* adapted to be screwed to the body part and clamp the top part in place by means of rim *d*, substantially as described.

8. A closed two-part vessel consisting of a body portion having a surface dressed for a joint, a neck portion provided with an integral head having capillary openings therein, said neck and head portion being invertible and provided with a flange so as to fit upon the bearing surface of the body in either upright or inverted position, substantially as described.

9. In a two-part vessel having one part invertible, an annular flange on the invertible part designed to make a hermetical joint with the other part either in upright or inverted position.

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**755,224. PERFORATOR.** JOHN GELL, London, England. Filed Aug. 3, 1903. Serial No. 168,102. (No model.)



*Claim.*—1. In combination in a perforating-machine for tape or the like a series of punches, a series of stops for regulating the action of the tape-feed mechanism, means for selecting the punches into predetermined groups and for setting the stops, said means including a series of parallel selecting-bars and selecting-combs with connections therefrom to a keyboard, pneumatic means for operating the punches, pneumatic means for feeding the tape and valves controlling the said pneumatic means, said valves being controlled by one of the selecting-bars, substantially as described.

2. In combination a series of punches, interlocking pins for selecting said punches into predetermined groups, a slider for carrying the selected pnuches down, a series of stop-feed pins, lever connections for setting the said feed-pins, a series of parallel selecting-bars for operating the interlocking pins and the lever connections of the stop-feed pins, selecting-combs controlling the selecting-bars; a keyboard with connections to the selecting-combs, pneumatic means for operating the slider, pneumatic means for feeding the tape and valve mechanism controlled from the selecting-bars for controlling the pneumatic means, substantially as described.

3. In combination in a perforating-machine, tape-feed mechanism comprising a feed-girder, links supporting the same, a lantern-wheel operated from the feed-girder, a lever 21 having a check-tooth for engaging the lantern-wheel and arranged to operate the feed-girder, stop-feed pins for limiting the movement of the feed-girder and an air-cylinder and piston, said piston being connected with the lever 21, substantially as described.

4. In combination with a tape-feed wheel a feed-girder, parallel links upon which the said girder is supported, a toothed wheel on the shaft of the feed-wheel, a pawl operated by the feed-girder for turning the toothed wheel, and air-cylinder, a piston and connections between the said piston and feed-girder, substantially as described.

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**755,225. PROCESS OF MAKING PRINTING-PLATES.** BOGDAN GREVIUS, Berlin, Germany. Filed Apr. 7, 1902. Serial No. 101,737. (No specimens.)

*Claim.*—1. A process of making printing-plates, which consists in coating a plate with an actinic film capable of being rendered insoluble by the action of light, producing an actinic impression on the film, developing it, coating with a second actinic film capable of taking ink, removing those portions consisting of two layers and leaving the single layer as a printing-surface, substantially as described.

2. A process of making printing-plates, which consists in coating a plate with an actinic film capable of being rendered insoluble by the action of light, producing an actinic impression on the film, developing it, coating with a different film also capable of being rendered insoluble by the action of light and exposing it to light, removing those portions consisting of two films, to leave the plate coated in parts with a single film rendered insoluble and capable of acting as a printing-surface, substantially as described.

3. A process of making printing-plates, which consists in coating a plate with an actinic film capable of being rendered insoluble in water by the action of light, producing an actinic impression on the film, developing it, coating the film with a second different film capable of being rendered insoluble by the action of light, exposing said film to light, coating it with an acid-resist, removing those portions consisting of two layers and a coating of the acid-resist to leave the design consisting of the second layer, and etching the plate and removing the acid-resist, substantially as described.

4. A process of making printing-plates, which consists in coating a plate with chromated gum, producing an actinic impression on the film, developing it, coating the developed film with chromated albumen, rendering it insoluble, removing those portions consisting of two layers of film and etching the plate, substantially as described.

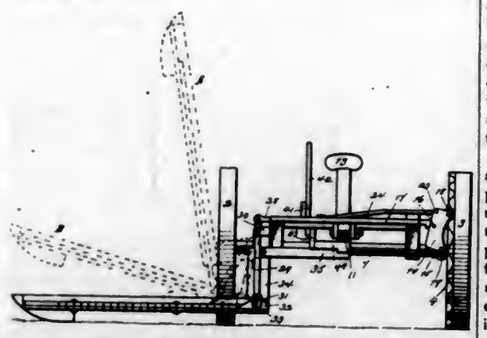
5. A process of making printing-plates, which consists in coating an aluminium plate with an actinic film capable of being rendered insoluble in water by the action of light, producing an actinic impression on the film, developing it, coating the film with one of chromated albumen, rendering it insoluble, coating this with an acid-resist, removing those portions having two layers of film by an acid-bath, removing the acid-resist to leave an albumen printing-surface, substantially as described.

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**755,226. MOWING-MACHINE.** NORMAN F. GRAVES, Alma, Ill. Filed July 27, 1903. Serial No. 167,203. (No model.)

*Claim.*—1. In a mower, the combination of a body, a cutting apparatus, an arm secured to said cutting apparatus and pivoted to said body, a driving-wheel having its inner face provided with a series of corrugations, a rocking lever adapted to be rocked by said corrugations, a rod carrying said rocking lever, and means for moving said rod and rocking lever out of engagement with said corrugations, a reciprocating rod secured to said rocking lever adapted to be reciprocated thereby, a vertical rocking lever connected to said cutting apparatus and adapted to be rocked by said reciprocating rod through intermediate connections, and means for swinging said cutting apparatus and arm up upon the pivot of said arm.

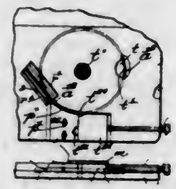
2. In a mower, the combination of a body, a cutting apparatus, an arm secured to said cutting apparatus and pivoted to said body at a point considerably above said cutting apparatus, a rocking lever fulcrumed above said pivotal point of said arm, and means for rocking said rocking lever, a link pivoted to said arm, an operating-lever connected to said link, the whole arranged whereby said arm and cutting apparatus are swung up on the pivot of said arm by said operating-lever, and the cutting apparatus operated by said rocking lever when said cutting apparatus is in a position raised above the horizontal.



3. In a mower, the combination of a body, a cutting apparatus secured thereto, means for operating said cutting apparatus, a tongue pivoted to said body, a wedge member and rod for carrying the same, and means for moving said rod to drive said wedge under said tongue to raise the after end thereof.

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**755,227. LOOSE-NAILING MACHINE.** FRANK D. HAGAR, Boston, Mass., assignor to Hagar Shoe Machinery Company, Boston, Mass., a Corporation of Maine. Filed Mar. 14, 1903. Serial No. 147,711. (No model.)



*Claim.*—1. In an apparatus of the class described, a hopper for the nails, a raceway to convey the nails therefrom, a reciprocating driver, a plate having a throat through which the nails are driven into the work and provided with a curved transferring-slot leading from the lower end of the raceway to the throat, the width of said slot up to the throat being less than the width of a nail-head, a rotatable, peripherally-toothed transferrer adapted to engage the shanks of the nails below said plate and transfer them from the raceway to the throat, the heads of the nails resting upon the top of the slotted plate at each side of the slot and their shanks depending through the latter, and means to reciprocate the transferrer step by step.

2. In an apparatus of the class described, a reciprocating driver, a plate having a throat through which the nails are driven into the work, said plate having a circularly-curved slot leading to the throat, a transferrer rotatably mounted beneath the slotted plate and having a toothed periphery concentric with said slot, a raceway to deliver nails to the outer end of the slot, the transferrer engaging the shanks of and taking the nails one by one from the raceway and moving them through the slot to the throat, and the nail-heads resting upon the top of the slotted plate, and means, including a ratchet axially secured to the transferrer, and a cooperating pawl, to advance the transferrer one tooth for each reciprocation of the driver.

3. In an apparatus of the class described, a reciprocating driver, a plate having a throat in the driver-path and a nail-transferring slot leading thereto, means to vary the size of the throat to permit the use of nails having heads of different sizes, a raceway to deliver nails to the outer end of the slot, a rotatable, peripherally-toothed transferrer to engage the shanks of the nails below the slot and move them therethrough from the raceway to the throat, and means to rotate said transferrer step by step.

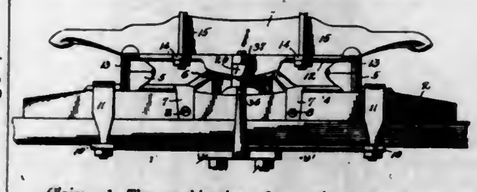
4. In an apparatus of the class described, a reciprocating driver, a plate having a throat in the driver-path and a nail-transferring slot leading thereto, a throat-plate having one side of the throat formed therein, means to adjust the throat-plate in or out, to vary the size of the throat, and an independently-adjustable plate forming a portion of the outer wall of the transferring-slot, whereby the width of the latter may be maintained constant irrespective of the size of the throat.

5. In an apparatus of the class described, a reciprocating driver, a base-plate having a throat-opening therein and a circular recess in its upper face, a toothed transferrer rotatably mounted in said recess, a cover-plate for the base-plate, having a transferring-slot concentric with the transferrer, to sustain the nails with their shanks depending between the teeth of the transferrer, said cover-plate having one side of a driving-throat formed therein, and means adjustably mounted on the cover-plate to complete the throat and vary the size thereof to accommodate nails having heads of different sizes.

6. In an apparatus of the class described, a rotatable driver-shaft, a reciprocating driver operatively connected therewith, a base-plate having an adjustable throat in the driver-path, a raceway, a rotatable, toothed transferrer to convey the nails from the raceway to the throat, a ratchet axially secured to the transferrer, a sliding pawl to cooperate with and actuate the pawl and advance the transferrer step by step, a rocking lever connected at one end by a ball-and-socket joint with the pawl, and a cam on the driver-shaft in operative engagement with the other end of the lever, to rock the same in accordance with the reciprocations of the driver.

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**755,228. RUNNING-GEAR FOR VEHICLES.** VAN ORAN JEFFRIES, Columbus, Ohio, assignor of one-half to James Strader, Columbus, Ohio. Filed Aug. 17, 1903. Serial No. 169,645. (No model.)



*Claim.*—1. The combination of an axle member having an arched portion provided with vertically-alined pendent and upstanding pivot-pins, a reach member to project beneath and at opposite sides of the arched portion of the axle member and provided with a socket to receive the pendent pivot-pin, a bolster member having a portion to project across the top of the axle member at opposite sides thereof and provided with a socket to receive the upstanding pivot-pin, the rear portion of the bolster member being rigidly connected to the reach member, and a substantially L-shaped bracket having its rear portion connected to the reach member and its upstanding part piercing and rigidly connecting the front portions of the reach member and the bolster member.

2. The combination of an axle member having an arched portion provided with vertically-alined upstanding and pendent pivot-pins, a reach member projected beneath the arched portion of the axle member at opposite sides thereof and provided with a socket to receive the pendent pivot-pin, a bolster member lying above the reach member and provided with a socket to receive the upstanding pivot-pin, a member for application to the under side of an axle and provided with a socket in vertical alinement with the pivot-pin, and a substantially L-shaped bracket having one end connected to the reach member, its opposite end connected to the forward portions of the reach member and the bolster member, and provided with a pivot-pin for engagement with the socket of the lower axle member.

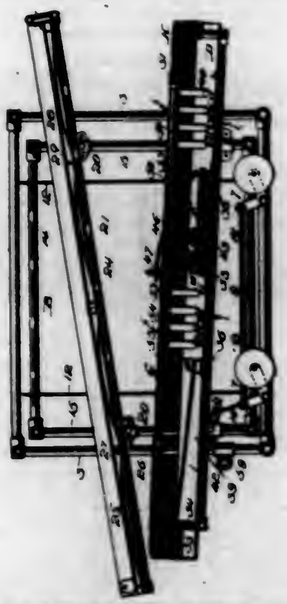
3. The combination of an axle, a plate applied to the lower side thereof and having a socket projected in rear of the axle, an upper axle member having an arched portion projected in rear of the axle and provided with upstanding and pendent pivot-pins in vertical alinement with the socket of the lower axle member, a reach, a reach member having a tongue portion projected beneath and in front of the arched portion of the axle member and provided with a socket receiving the pendent pivot-pin, a bolster, a bolster member applied to the under side of the bolster and having a socket receiving the upstanding pivot-pin, a substantially L-shaped bracket having its horizontal member lying beneath the axle with its upstanding member connected to the front end of the reach member, the horizontal member of the bracket having an upstanding pivot-pin fitting the socket of the lower axle member, and fastening means connecting the rear portions of the bolster member, the reach member and the bracket with the front portion of the reach.

**755,229. COIL FOR ELECTROMAGNETS OR OTHER PURPOSES.** FRIEDRICH KLINGELFUSS, Basle, Switzerland. Filed Sept. 24, 1900. Serial No. 31,389. (No model.)



*Claim.*—A coil for electromagnets and the like in which the wire windings of the coil are wound in spirals on disks arranged perpendicular to the axis of the coil and consisting of insulating material, these spirals proceeding alternately plainly or in echelon, thus forming layers perpendicular to the axis of the coil, the value of the insulation between every two conductor parts being proportional to their tension difference, the coil being wound in one piece of any length, running by turns alternately from outside to inside and oppositely, at each change forming a layer.

**755,230. AMALGAMATOR AND CONCENTRATOR.** KINSEY LARUE, Denver, Colo., assignor, by mesne assignments, to Edith Rocco, Philadelphia, Pa. Filed July 7, 1902. Serial No. 114,662. (No model.)



*Claim.*—1. In an amalgamator and concentrator, a trough having reservoirs for mercury-baths, an arrastra located between the reservoirs, which arrastra consists of a fixed and a movable block, one adapted to slide over the other, one end of the movable block having a vertical movement, substantially as specified.

2. In an amalgamator and concentrator, an amalgamating and concentrating trough provided with reservoirs, an arrastra located between the reservoirs, which arrastra consists of a fixed and a movable block, the movable block being adjustably connected to a rocking shaft, the said rocking shaft adapted to impart a vertical movement to one end of the movable block, the movable block adapted to slide over the fixed block, substantially as specified.

3. In an amalgamator and concentrator, an amalgamating and concentrating trough provided with reservoirs, drain-plugs in the said reservoirs, a fixed frame located over the said amalgamating and concentrating trough, plates upon the said frame carrying a series of fingers which extend down into the said reservoirs, an arrastra located between the said reservoirs, which arrastra consists of a block fixed in the bottom of the trough, and a movable block adjustably connected by rods to a rocking shaft, the said rocking shaft adapted to impart a vertical movement to one end of the movable block, and means for imparting a jerking or jarring motion to the said trough, substantially as specified.

4. In an amalgamator and concentrator, an amalgamating and concentrating trough having reservoirs therein, a fixed frame located over the trough having plates thereupon carrying a series of fingers which extend down into the reservoirs, an arrastra located between the reservoirs, which arrastra consists of a block secured in the bottom of the trough, and a block connected by adjustable rods to a rocking shaft, the said shaft mounted between angular levers upon a fixed frame, lugs upon the trough for engaging the levers, and means for imparting a jerking or jarring motion to the said trough, substantially as specified.

5. In an amalgamator and concentrator, an amalgamating and concentrating trough mounted upon adjustable brackets, reservoirs located within said trough, drain-plugs in the reservoirs, a frame located over the trough upon adjustable brackets, plates secured to the frame, fingers extending from the plates into the reservoirs, an arrastra located between the reservoirs, the arrastra consisting of two blocks, one of which is secured to the trough, the other having adjustable rods by which it is secured to a rocking shaft, the said shaft mounted upon the frame, arms upon the shaft for engaging lugs upon the trough, a screen covering the said trough and frame, a rod for locking the screen to the frame, and means for reciprocating the said troughs, substantially as specified.

6. In an amalgamator and concentrator, a main frame, a vibratory frame located within the main frame, an upper amalgamating-trough and a lower amalgamating and concentrating trough carried by the vibratory frame, reservoirs carried in the amalgamating and concentrating trough, agitating-fingers carried by plates secured to a frame mounted upon adjustable brackets on the main frame and extending into the reservoirs carried by the concentrating-trough, and an arrastra located between the reservoirs in the concentrating-trough, consisting of two blocks, one fixed to the bottom of the amalgamating and concentrating trough, and the other adjustably secured to a rocking shaft mounted between levers upon the adjustable frame, substantially as specified.

7. In an amalgamator and concentrator, a main frame, a frame mounted to swing in the main frame, an upper amalgamating-trough and a lower amalgamating and concentrating trough, adjustably mounted upon and carried by the said swinging frame, screens in the amalgamating-trough through which the gold and fine ore pass, a removable guard in the trough with means for locking the same in position, an adjustable frame mounted on the main frame between the troughs, plates upon the adjustable frame, agitating-fingers carried by the said plates extending into reservoirs in the concentrating-trough, drain-plugs in the reservoirs, a pivoted gate in one end of the concentrating-trough, a deflecting-plate in the concentrating-trough, a screen covering the said concentrating-trough and adjustable frame, and means for imparting motion to the swinging frame, substantially as specified.

8. In an amalgamator and concentrator, a main frame, a vibratory frame located within the main frame, arms upon the vibratory frame, adjustable stops mounted upon said arms, an upper amalgamating-trough and a lower amalgamating and concentrating trough carried by the said vibratory frame, a frame adjustably mounted upon the main frame, plates upon the adjustably-mounted frame, agitating-fingers upon the plates, reservoirs in the amalgamating and concentrating trough adapted to receive the fingers, an arrastra located between the reservoirs, a screen covering the adjustably-mounted frame and amalgamating and concentrating trough, a driving-shaft, a support for the said shaft, cams located on the shaft, arranged for engagement with the said adjustable stops, and tension devices connecting the main frame with the vibratory frame, substantially as specified.

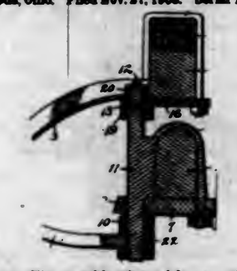
9. In an amalgamator and concentrator, a main frame, a frame mounted to swing in the main frame, tension devices connecting the main frame with the swinging frame, the said device controlling the movement of the swinging frame in one direction, arms upon the swinging frame, adjustable stops upon the said arms, a driving-shaft carried by the main frame, disks upon the driving-shaft, revolving sleeves upon the disks adapted to engage the adjustable stops for imparting motion to the swinging frame, an amalgamating-trough provided with screens in its bottom at a point in its length, a removable guard with means for locking the same in the amalgamating-trough, the amalgamating-trough being supported in the swinging frame, and an amalgamating and concentrating trough also mounted in the swinging frame below the amalgamating-trough, the receiving end of the amalgamating and concentrating trough being below the screens in the amalgamating-trough, reservoirs located in the amalgamating and concentrating trough, adapted to receive mercury-baths, a frame adjustably mounted upon the main frame, plates upon the adjustably-mounted frame, fingers upon the plates extending into the said reservoirs, an arrastra located between the said reservoirs, comprising a block secured to the amalgamating and concentrating trough and a second or upper block adjustably connected to a rocking shaft secured between levers pivoted to the adjustably-mounted frame, the said levers adapted to engage lugs upon the sides of the amalgamating and concentrating trough, and a screen covering the said amalgamating and concentrating trough and adjustably-mounted frame, substantially as specified.



10. In an amalgamator and concentrator, a main frame, wheels upon the frame, means for raising or lowering the wheels, an auxiliary frame mounted to swing in the main frame, an inclined amalgamating-trough adjustably supported in the swinging frame, and provided with screens and a guard in its bottom, an amalgamating and concentrating trough also adjustably supported in the swinging frame below the amalgamating-trough, the amalgamating and concentrating trough being inclined in an opposite direction to the amalgamating-trough, a driving mechanism for imparting end motion to the swinging frame, tension devices connecting the main frame to the swinging frame, which tension devices are adjustable, reservoirs located in the amalgamating and concentrating trough, a frame adjustably mounted upon the main frame, plates upon the adjustably-mounted frame, fingers upon the said plates, which fingers extend into the said reservoirs, an arrastra located between the said reservoirs, which arrastra comprises a block secured in the amalgamating and concentrating trough and another block adjustably secured to a shaft mounted between levers, said levers pivoted to the adjustably-mounted frame, lugs upon the amalgamating and concentrating trough, adapted to engage the free ends of the levers, and a screen covering the said adjustably-mounted frame and amalgamating and concentrating trough, substantially as specified.

11. In an amalgamator and concentrator, a main frame, wheels upon the frame, means for raising and lowering the wheels, an auxiliary frame mounted to swing in the main frame, an inclined amalgamating-trough adjustably supported in the swinging frame, screens in the bottom of the said trough, a guard covering the bottom of the amalgamating-trough, with means for locking the same within the trough, an amalgamating and concentrating trough also adjustably supported in the swinging frame, below the amalgamating-trough, the amalgamating and concentrating trough being inclined in an opposite direction to the amalgamating-trough, a pivoted gate at the elevated end of the amalgamating and concentrating trough, a deflecting-plate in the elevated end of the amalgamating and concentrating trough, and reservoirs in the amalgamating and concentrating trough, a frame adjustably mounted in the main frame having plates secured thereto, fingers upon the plates extending into the reservoirs, an arrastra located between the reservoirs, comprising a lower block secured in the amalgamating and concentrating trough, and an upper block, adjustably connected to a shaft mounted between levers pivoted to the frame supporting the fingers, the said blocks adapted to rub together, tension connections between the main frame and swinging frame, and a driving-shaft mounted on the main frame, disks upon the shaft, revolving sleeves upon the disks, adapted to engage adjustable stops upon the swinging frame, substantially as specified.

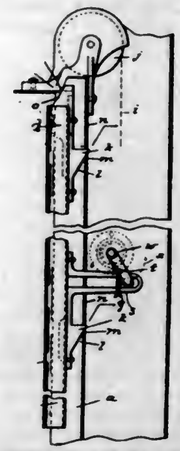
**755,231. FIFTH-WHEEL CONSTRUCTION.** HENRY A. LANHAM, Columbus, Ohio. Filed Nov. 27, 1903. Serial No. 183,851. (No model.)



*Claim.*—1. The combination with an axle, a bolster, a reach connected to the bolster and fifth-wheel bearing members coöperating with the axle and the bolster and reach, of a plate applied to the bolster and provided with a socket, a clip embracing the axle with one side projected above and below the opposite side to form an integral king-bolt, the upper end of the king-bolt being pivotally received within the socket, a tie-bar having openings receiving the lower end portions of the sides of the clip, nuts applied to the sides of the clip to hold the tie-bar against the axle, and a reach-bracket hung from the reach and provided with a socket pivotally receiving the lower end of the king-bolt.

2. As a new article of manufacture, an inverted substantially U-shaped axle-clip having one side projected above and below the opposite side to form an integral king-bolt, the opposite terminals of the bolt portion being screw-threaded, the upper portion of the bolt being smooth and tapered upwardly below and adjacent to the upper terminal screw-threaded portion to form a bearing, and the lower portion of the bolt having screw-threads which are separated from the lower terminally-screw-threaded part by a smooth bearing portion.

**755,232. SHEET-METAL REVOLVING WINDOW.** JOHN T. LEONARD, New York, N. Y. Filed May 25, 1903. Serial No. 158,606. (No model.)



*Claim.*—1. The combination with the vertically-grooved frame and sash and the telescopic stop having limited vertical movement, of the incline on the upper end of the stop and the fixed part on the frame coacting therewith to effect lateral thrust of the upper part of the stop through limited lengthwise movement of the stop, and the crank and yoke to effect said lengthwise movement of the stop, and also to effect lateral movement of the lower part of the stop coincidently with said lateral movement of the upper part.

2. The combination with the vertically-grooved frame and sash and the telescopic stop having limited vertical movements, of the incline and fixed part coöperating with one end of the stop and the crank and yoke coöperating with the other end thereof both acting to thrust the stop back through limited lengthwise movement of the stop, and to effect such lengthwise movement.

3. The combination with the vertically-grooved frame and sash and the telescopic stop having limited vertical movement, of the inclines and fixed parts coöperating therewith to effect lateral thrust of the stop through limited lengthwise movement thereof, also the incline and fixed part coöperating with one end of the stop, and the crank and yoke coöperating with the other end of said stop together to effect reverse lateral thrust thereof through reverse lengthwise movement of the stop, and to effect such lengthwise movement of the stop.

**755,238. CORSET-ATTACHMENT BLOUSE-EXTENDER.** JULIUS LINDAUER, Paris, France. Filed Aug. 4, 1903. Serial No. 168,188. (No model.)



*Claim.*—1. A blouse-extender corset formed of an ordinary corset in combination with four bands of fabric *a b c d* placed transversely on each side of the busks so as to form a series of pockets, two identical springs R′ inserted in said pockets on each side of the busks, two other identical springs R having each one end engaged in one of the pockets above the spring R′ and the other end curved and engaged in another pocket, substantially as and for the purpose set forth.

2. A blouse-extender corset formed of an ordinary corset in combination with bands of fabric *a b d* and one whaleboned band *c* secured to the corset on each side of the busks so as to form a series of pockets, two identical springs R' inserted in said pockets on each side of the busks, two other identical springs R formed each of two strips *g* and *h* secured in one sheath and separated from each other by a soft portion, said portion surrounding the whaleboned band *c*, while the strip *h* remains underneath said band and the strip *g* is curved after passing downwardly through the pocket *c* between strips *h* and spring R' so as to engage its free end under the pocket *b*, substantially as and for the purpose set forth.

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**755,234. PAIL. JESSE W. NICHOLS, Chicago, Ill., assignor to Armour & Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 20, 1903. Serial No. 153,513. (No model.)**



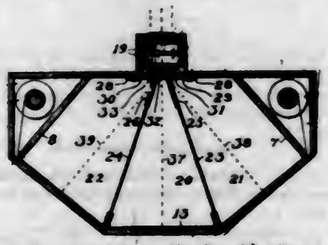
*Claim.*—1. In combination with a sheet-metal pail, provided with an aperture or recess adapted to receive an ear and surrounded by an inturned flange portion, a hollow pail-ear consisting of a cup-shaped member seated within the aperture or recess of the pail and fitting within the surrounding flange thereof, a marginal flange upon the outer end of said cup-shaped member, a disk-shaped member closing the outer side of the cup-shaped member and permanently crimped thereto, and means permanently securing said ear within its seat in the pail-body.

2. In combination, a pail-body provided with an ear-aperture and an inturned cylindric flange surrounding said aperture, a hollow pail-ear comprising a cup-shaped member of a diameter to fit the flanged aperture of the pail-body and provided with a marginal outturned flange, a disk member having its margins crimped over the margins of the cup-shaped member and resting against the outer surface of the pail-body, the margin of the cup-shaped member at the inner end thereof being expanded to overlie the contiguous inner margin of the flange of the pail-aperture, substantially as described.

3. In combination, a pail-body provided with an ear-aperture and an inturned cylindric flange surrounding said aperture, a rabbet surrounding the flanged aperture, a hollow pail-ear comprising a cup-shaped member of a diameter to fit the flanged aperture of the pail-body and provided with a marginal outturned flange, a disk member having its margins crimped over the margins of the cup-shaped member and resting within said rabbet, the margin of the cup-shaped member at the inner end thereof being expanded to overlie the contiguous inner margin of the flange of the pail-aperture, substantially as described.

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**755,235. CAMERA. HUGH O'DONNELL, Pittsburg, and WILLIAM C. SOUTH, Berwyn, Pa. Filed Sept. 28, 1903. Serial No. 174,909. (No model.)**



*Claim.*—1. In a camera, in combination with a lens, a plurality of non-actinic reflectors dividing the light passing through said lens, and mechanism for holding a sensitized surface across the path of the light reflected from each of said reflectors, substantially as specified.

2. A camera having a plurality of chambers, a lens communicating with said chambers, mirrors oblique to and dividing the light passing through said lens, and mechanism for holding a sensitized surface in the respective chambers in the paths of the reflected and direct light from said lens, substantially as specified.

3. A camera having a plurality of chambers, a lens communicating with said chambers, and a non-actinic reflector dividing the light passing through said lens, substantially as specified.

4. In a camera, a lens, in combination with a mirror comprising a glass plate having a frosted, non-actinic back, substantially as specified.

5. In a camera, a lens, in combination with a mirror comprising a glass plate having its back ground and blackened, substantially as specified.

6. In a camera, a compartment, a plurality of partitions dividing said compartment into separate chambers, a lens-tube communicating with said chambers, mirrors in said partitions receiving rays of light passing through said tube, and screens in the path of said light-rays, substantially as specified.

7. In a camera, a lens, in combination with a mirror, mechanism adapted for passing a film across the path of the direct and reflected rays from said lens, and means for simultaneously exposing sections of said film to direct and reflected rays from said lens, substantially as specified.

8. In a camera, a lens or lenses, in combination with a compartment divided into a plurality of chambers arranged to receive light from said lens or lenses, mechanism for holding sections of a film in the rear of said compartment, and mirrors for reflecting light entering lateral chambers of said compartment, substantially as specified.

9. In a camera, a lens, a mirror disposed to divide the light passing through said lens, and means for preventing interference with said mirrored rays by direct rays passing through said lens, substantially as specified.

10. In a camera, a lens, a mirror disposed to divide light passing through said lens, in combination with an apertured stop having light-sections of varied size, and light-filters to whose ratios the sizes of said sections are adjusted, substantially as specified.

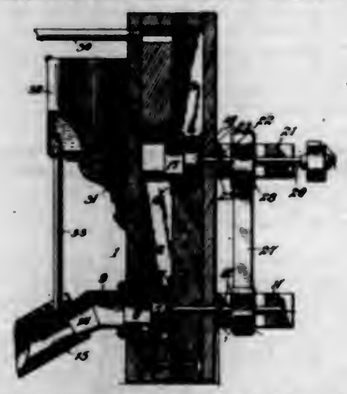
11. In a camera, a lens, in combination with a chamber disposed to receive light from said lens, a mirror disposed to reflect said light, a screen disposed between said lens and mirror, and means for cutting off the direct rays passed by said lens and disposed to interfere with said reflected rays, substantially as specified.

12. In a camera, a lens, in combination with a chamber disposed to receive light from said lens, a mirror disposed to reflect said light, and a slide disposed between said lens and mirror for cutting off rays disposed to interfere with rays reflected by said mirror, substantially as specified.

13. In a camera, a lens, in combination with mirrors disposed in the path of light passing from said lens, a slide for cutting off interfering rays, mechanism for holding a sensitized surface disposed to receive light reflected by said mirrors, and color-screens disposed between said lens and mirrors, substantially as specified.

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**755,236. PUMP. HENRY J. PARR, Angleton, Tex., assignor, by mesne assignments, of one-half to Rufus Clark Darrough, Houston, Tex. Filed Feb. 13, 1903. Serial No. 143,270. (No model.)**



*Claim.*—1. In a pump of the class described, the combination of a plurality of communicating chambers or compartments arranged in different vertical planes, and a plurality of rotary suction devices arranged at different elevations and in different vertical planes and rotating on horizontal axes at the bottoms of the chambers or compartments, said suction devices being provided with central inlets and peripheral discharge-openings, the inlet of one rotary suction device being extended into the upper end of the adjacent chamber or compartment so as to receive its supply from the peripheral discharge-openings of the other suction device, substantially as described.

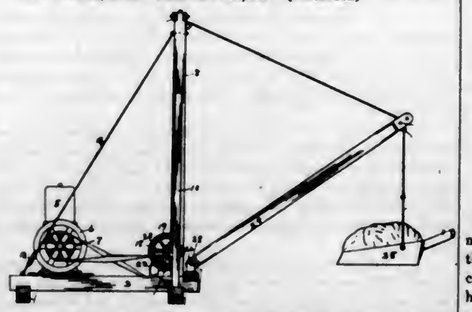
2. A pump of the class described comprising a vertical casing provided with a plurality of communicating vertical chambers or compartments arranged in different vertical planes, and a plurality of suction devices rotating on horizontal axes in the chambers or compartments at the lower ends thereof and provided with central inlets and peripheral discharge-openings, the inlet of one rotary suction device being extended from the lower end of its chamber or compartment into the upper end of the adjacent chamber or compartment and being located directly above the other rotary suction device, substantially as described.

3. A pump of the class described comprising a casing provided with a plurality of upright communicating chambers offset from each other, vertically-disposed pumping-wheels arranged at the lower ends of the chambers and having central inlets and peripheral discharge-openings, a plate or partition interposed between the chambers and receiving the inlet of the adjacent wheel and means for operating the wheels, substantially as described.

4. A pump of the class described comprising an upright pump-casing having a plurality of communicating chambers offset from each other and arranged in a vertical series, a plurality of vertically-disposed wheels arranged at the lower ends of the chambers and having central inlets and peripheral discharge-openings, shafts arranged horizontally and connected with the wheels, and means for connecting the shafts and for rotating the same, substantially as described.

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**755,237. EXCAVATOR. ORANGE P. PEACH, Rushton, Mich. Filed Dec. 14, 1903. Serial No. 185,013. (No model.)**



*Claim.*—1. In an excavator, the combination of a base-frame, a motor supported by the frame, uprights, a drum journaled in said uprights, a pulley supported at the upper ends of said uprights, a boom swiveled at one end on said base-frame, two pulleys journaled in the outer end of said boom, a rope wound around said drum and passing upward and over the pulley carried by the uprights, thence through between the pulleys in said boom end, a digging implement secured to the outer end of said rope, and a button secured to said rope to contact with and raise the outer end of said boom.

2. In an excavator, the combination of a base-frame, a motor supported by the frame, uprights, a drum journaled in said uprights, a pulley supported at the upper ends of said uprights, a boom swiveled at one end on the base-frame, two pulleys journaled in the outer end of said boom, a rope wound around said drum and passing upward and over the pulley carried by the uprights, thence through between the pulleys in said boom end, a digging implement secured to the outer end of said rope, and a button secured to said rope to contact with and raise the outer end of the boom, said digging implement comprising a cross-bar, a guiding-handle and a series of parallel curved steel knives secured to said cross-bar.

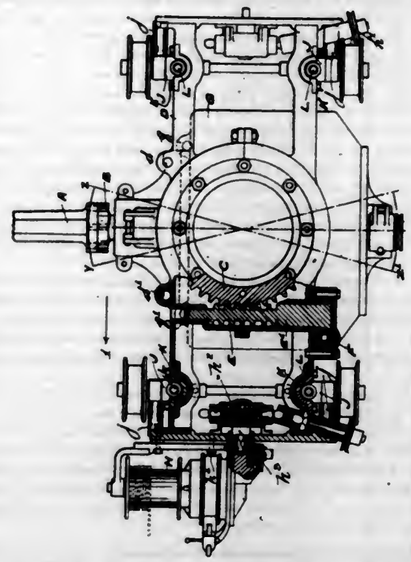
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**755,238. MACHINERY FOR CUTTING COAL OR OTHER MINERALS. HENRY C. PEAKE and JOHN R. ENGLISH, Walsall Wood, near Walsall, England. Filed Oct. 21, 1902. Serial No. 128,118. (No model.)**

*Claim.*—1. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame and a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, substantially as set forth.

2. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, standard-brackets detachably connected to the frame and wheeled standards vertically adjustable with respect to the said brackets, substantially as set forth.

3. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a rotatable bed supporting the said bar and motor, a supporting-frame for the said bed, standards detachable and adjustable with respect to the said frame, and rail-wheel axles arranged at right angles on each of the said standards, substantially as set forth.



4. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, hauling-gear detachably connected to the said frame and hauling-gear driving mechanism at each end of the same, standard-brackets detachably connected to the frame and wheeled standards vertically adjustable with respect to the said brackets, substantially as set forth.

5. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, hauling-gear detachably connected to the frame and hauling-gear driving mechanism at each end of the same, a pulley on the said motor, a flexible transmitter conveying power from the said pulley to the said driving mechanisms, standard-brackets detachably connected to the frame and wheeled standards vertically adjustable with respect to the said brackets, substantially as set forth.

6. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said bar and motor and reversible with respect to the said frame, worm-teeth around the periphery of the said bed and turning mechanism carried on the frame and gearing with the said teeth, substantially as set forth.

7. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, worm-teeth around the periphery of the said bed, turning mechanism carried on the frame and gearing with the said teeth, standard-brackets detachably connected to the frame and wheeled standards vertically adjustable with respect to the said brackets, substantially as set forth.

8. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a rotatable bed supporting the said bar and motor, worm-teeth around the periphery of the said bed, turning mechanism in gear with the said teeth, a supporting-frame for the said bed and turning mechanism, standards detachable and adjustable with respect to the said frame, and rail-wheel axles arranged at right angles on each of the said frames, substantially as set forth.

9. In machines for cutting coal and other minerals, the combi-

nation consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, worm-teeth around the periphery of the said bed, turning mechanism carried on the frame and gearing with the said teeth, hauling-gear detachably connected to the frame and hauling-gear driving mechanism at each end of the same, standard-brackets detachably connected to the frame and wheeled standards vertically adjustable with respect to the said brackets, substantially as set forth.

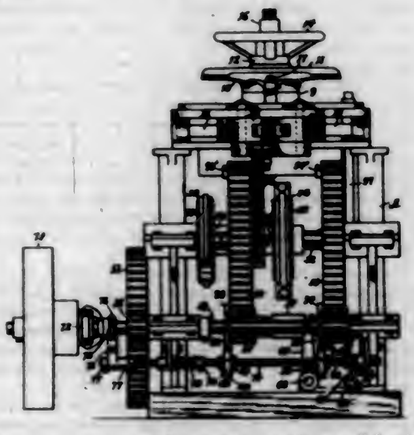
10. In machines for cutting coal and other minerals, the combination consisting of a rotatable cutter-bar, a motor connected with the said bar, a supporting-frame, a rotatable bed carrying the said cutter-bar and motor and reversible with respect to the said frame, worm-teeth around the periphery of the said bed, turning mechanism carried on the frame and gearing with the said teeth, hauling-gear detachably connected to the frame and hauling-gear driving mechanism at each end of the same, a pulley on the said motor, a flexible transmitter conveying power from the said pulley to the said driving mechanism, standard-brackets detachably connected to the frame and wheeled standards vertically adjustable with respect to the said brackets, substantially as set forth.

11. In machines for cutting coal and other minerals, the combination consisting of an electric motor, a cutter-bar directly connected with the armature-shaft of the said motor, a supporting-frame and a rotatable bed carrying the said motor and cutter-bar and reversible with respect to the said frame, substantially as set forth.

12. In machines for cutting coal and other minerals, the combination consisting of a motor, a rotatable cutter-bar connected with the said motor and having projecting ribs with intervening grooves or spaces, a cutter in each of the said grooves fitting within the rib at one side and abutting against the rib at the opposite side of the groove, a supporting-frame and a rotatable bed carrying the said motor cutter-bar and cutters and reversible with respect to the said frame, substantially as set forth.

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**755,239. HORSE-COLLAR-BLOCKING MACHINE.** WILLIAM R. PRATT, Lakemills, Wis., assignor to Frank B. Fargo and Enoch J. Fargo, Lakemills, Wis. Filed Mar. 16, 1903. Serial No. 147,903. (No model.)



*Claim.*—1. In a horse-collar-blocking machine, a roll-forming member movable vertically, a forming-block member with a wale-forming member rigid thereto and movable toward and from the roll-forming member and means adapted to move the roll-forming member and the forming-block and wale-forming members toward and from each other synchronously.

2. In a horse-collar-blocking machine, a vertically-movable bed-piece, a roll-forming member supported and free to move laterally on the bed-piece, and a forming-block member encircled by and movable through the roll-forming member.

3. In a horse-collar-blocking machine, a vertically-movable bed-piece, a roll-forming member supported and movable laterally on the bed-piece, a forming-block member with a wale-forming member rigid thereon, and centrally-disposed means for supporting and raising and lowering the forming-block member and the wale-forming member and on which support said members have lateral play.

4. In a horse-collar-blocking machine, a vertically-movable guide-rod, a hub adjustable endwise thereon, and a combined wale-forming and forming-block member swiveling on the hub and having lateral play thereon.

5. In a horse-collar-blocking machine, a frame, crease-forming lever members mounted on the frame to have endwise and lateral movement, means adapted to force them endwise, and bell-cranks mounted on the frame at the rear ends of the crease-forming members and disposed to be engaged and actuated by the crease-forming members as they are forced rearwardly and by such movement to otherwise engage the crease-forming members and force them toward each other.

6. In a horse-collar-blocking machine, a frame, crease-forming lever members mounted on the frame to have endwise and lateral movement and provided with beveled rear ends, means adapted to force the crease-forming members endwise, and bell-cranks mounted on the frame adapted to be engaged and actuated by the crease-forming members when moved rearwardly and to thereupon engage the beveled ends of said crease-forming members and force them toward each other.

7. In a horse-collar-blocking machine, a frame, a framing-block member mounted on the frame to have vertical movement and a limited amount of lateral play, a vertically-disposed rib on the forming-block member at its rear, and an adjustable stop on the frame adapted to receive the bearing of the rib against it and prevent a displacement of the forming-block member rearwardly.

8. In a horse-collar-blocking machine, a frame, clamping-levers, segmental intermeshing gears pivoted on the frame and connected eccentrically to movable extremities of the clamping-levers, a rock-shaft fixed to and forming the pivot of one of said gears, an eccentric, and a rod connecting the eccentric to a crank-arm on the rock-shaft.

9. In a horse-collar-blocking machine, a frame, clamping-levers, segmental intermeshing gears pivoted on the frame and connected eccentrically to movable extremities of the clamping-levers, a rock-shaft fixed to and forming the pivot of one of said gears, an eccentric, a rod connecting the eccentric to a crank-arm on the rock-shaft, and means for holding the eccentric against rearward movement.

10. In a horse-collar-blocking machine, movable clamping-arms a rock-shaft connected mechanically to and for moving the clamping-arms, an eccentric connected mechanically to and for oscillating the rock-shaft, a wheel concentric with the eccentric and revoluble therewith, cam-teeth on the wheel, and means adapted to be engaged by the cam-teeth for releasing the driving mechanism and stopping the machine.

11. In a horse-collar-blocking machine, a gear-actuating rock-shaft provided with a crank-arm, an eccentric on a driven shaft, an eccentric-strap, an eccentric-rod pivoted to the eccentric-strap, a head on the rod provided with a laterally-projecting pin, and a block revoluble on the pin and to which the end of said crank-arm is pivoted.

12. In a horse-collar-blocking machine, a frame, guiding-pins fixed in and projecting downwardly from the frame, a bed-piece movable vertically on said pins, a roll-forming member resting on the bed-piece, a guide-rod movable vertically in the frame and about which the bed-piece has a bearing, a forming-block member and a wale-forming member rigidly connected together and mounted on the guide-rod, and means for moving the guide-rod down and the bed-piece up concurrently.

13. In a horse-collar-blocking machine, concurrently-movable wale-forming and roll-forming members, a revoluble shaft, an eccentric fixed on the shaft, means connecting the eccentric mechanically and operatively to the roll-forming member and to the wale-forming member, a cog-wheel on the shaft, cam-teeth on the cog-wheel, and means to be engaged by the cam-teeth on the cog-wheel adapted to trip an arm and put the eccentric out of action.

14. In a horse-collar-blocking machine, a frame, a shaft, a wheel thereon for rotating the shaft, releasable means for rotating the wheel and shaft, an eccentric on the shaft, means actuated by the eccentric for raising and lowering the collar-forming members, and a hanger-hook adapted to engage an eccentric-pin on the wheel and prevent backward movement of the eccentrics and connected parts.

15. In a horse-collar-blocking machine, a frame, a shaft, a wheel and an eccentric held to synchronous rotation on the shaft, releasable means for rotating the wheel and the eccentric, means actuated by the eccentric for moving clamping-arms, and means adapted to engage the wheel and prevent backward movement of the wheel and eccentric when the wheel is released from its driving mechanism.



**755,240. VULCANIZED WOOD AND PROCESS OF VULCANIZING SAME.** WILLIAM POWELL, Liverpool, England. Filed Dec. 9, 1902. Serial No. 134,526. (No specimens.)

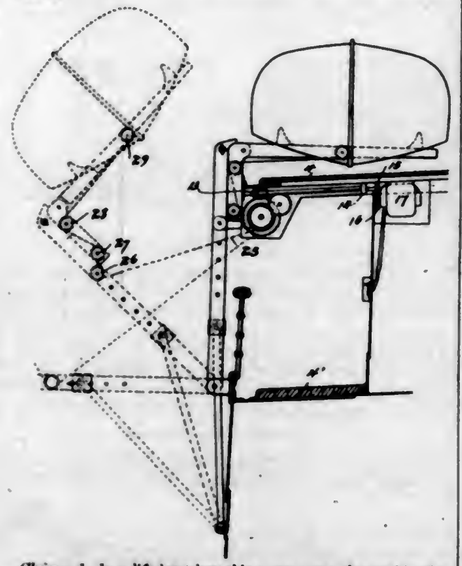
*Claim.*—1. The herein-described vulcanized and solidified timber, namely, timber with the interstices or pores filled with caramelized saccharine matter, constituting a hard solidified vegetable mass; substantially as described.

2. The process of vulcanizing and solidifying timber consisting in first impregnating it with foreign saccharine syrup, and subsequently artificially heating it, and solidifying and caramelizing the sugar; substantially as described.

3. The process of vulcanizing and solidifying timber, consisting in boiling the timber in a solution of syrup of saccharine matter, then heating such timber so saturated with the syrup by hot dry air at temperatures such as specified, and driving off the moisture and solidifying and caramelizing the saccharine matter therein; as set forth.

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**755,241. LIFE-BOAT-LAUNCHING APPARATUS.** WILBUR F. POWERS, Camden, N. J. Filed Apr. 13, 1903. Serial No. 152,422. (No model.)



*Claim.*—1. In a life-boat-launching apparatus, the combination with davits hinged to swing outwardly, of a pair of racks mounted to reciprocate in suitable ways parallel with the planes of oscillation of the davits, motor mechanism for positively actuating said racks, cooperating cables and paying-out mechanism automatically and positively operated simultaneously with the movement of the racks.

2. In a life-boat-launching apparatus, the combination with a pair of davits hinged to swing outwardly and provided at their swinging ends with folding and supporting arms, of means for operating said davits comprising a pair of reciprocatory rack-bars mounted to reciprocate in alinement with the planes of movement of the respective davits and adapted to respectively engage the latter, outer driven gear mechanism for simultaneously actuating said rack-bars, a pair of cable-drums intergeared with the rack-bars and operable at a peripheral speed coequal with the speed of movement of the rack-bars, cables operatively connected with said drums extending thence to the davits and operatively connected with the latter in such manner as to control the movements of the davits and the folding arms thereof, and brake mechanism for manually controlling the movements of said drums, substantially as described.

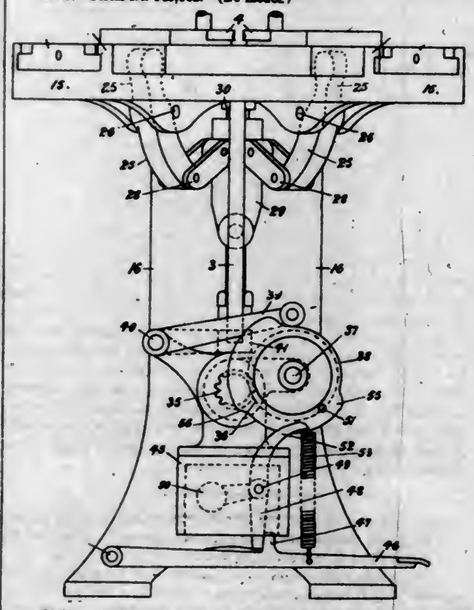
3. In an apparatus of the character referred to, the combination of the main shaft, a pair of cable-drums mounted rigidly thereon, driving-gears mounted upon the main shaft, rack-bars mounted upon a suitable support and arranged to reciprocate transversely of the main shaft, intermediate gears interposed between the driving-gears of the main shaft and the rack-bars and having driving connection with each, a worm-gear loosely mounted upon the main shaft, a clutch mechanism for at will operatively connecting said worm-gear to the main drive-shaft, a worm-shaft operatively engaging said worm-wheel, an electric motor having driving connections with said worm-shaft, and means for controlling the motor, substantially as described.

4. In an apparatus of the character referred to, the combination of the main shaft, a pair of cable-drums mounted rigidly thereon, driving-gears mounted upon the main shaft, rack-bars mounted upon a suitable support and arranged to reciprocate transversely of the main shaft, intermediate gears interposed between the driving-gears of the main shaft and the rack-bars and having driving connection with each, a worm-gear loosely mounted upon the main shaft, a clutch mechanism for at will operatively connecting said worm-gear to the main drive-shaft, a worm-shaft operatively engaging said worm-wheel, an electric motor having driving connections with said worm-shaft and means for controlling the motor, a friction brake-wheel rigidly mounted upon the main shaft, a brake-band operatively engaging said brake-wheel, and a hand-lever for actuating said brake-band, substantially as described.

5. In an apparatus of the character referred to, the combination of a ship and the upper deck thereof, of a pair of davits hinged to the side of the vessel to oscillate in planes transverse to said side, a pair of rack-bars mounted in suitable ways upon the under side of said upper deck and in alinement with the respective davits, a main shaft mounted to extend transversely of the rack-bars and below the same, gears forming driving connections between said main shaft and rack-bars, drums mounted upon said main shaft, cables operatively connected with the respective drums and with the davits, a worm-gear loosely mounted upon the main shaft, a clutch mechanism for throwing said worm-gear into and out of driving connection with the main shaft, a worm-shaft operatively engaging said worm-gear, an electric motor geared to said worm-shaft, circuit connections and a switch mechanism for controlling the motor and a brake mechanism for controlling the rotation of the main shaft when the worm-gear is disconnected from driving engagement therewith.

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**755,242. APPARATUS FOR THE MANUFACTURE OF METAL CANISTERS.** WILLIAM A. READ, Liverpool, England. Filed Feb. 17, 1903. Serial No. 143,862. (No model.)



*Claim.*—1. In a squeezing-machine for joining the body and end or ends or top or bottom of canisters, horizontally-reciprocating slides with squeezing-tools, having in their operating vertical edges an inclined deep and narrow groove with parallel sides, adapted to receive and press and support both sides of the seamed edge of the canister, and tilt it upward; and a canister-carrier adapted to move up and down across the face of said tools, substantially as described.

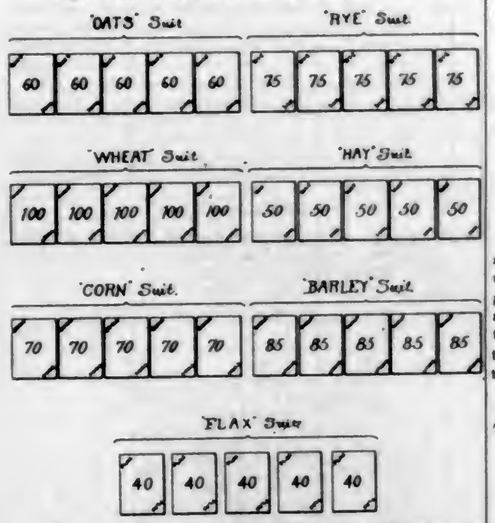
2. A machine for joining the body and an end or ends or top or bottom of canisters by a double-seamed joint, comprising hori-

zontal tool-supporting slides operated from a main driving-shaft, a cam adapted to revolve at less speed than said shaft, a canister-supporting part movable vertically, and operating means between said cam and said support, whereby said support is intermittently moved to successive horizontal positions, said cam having a plurality of parts of successively-increasing radius on its operative part; substantially as set forth.

3. In a machine for joining the body and an end or ends or top or bottom of canisters by a double-seamed joint, comprising horizontal tool-supporting slides operated from a main driving-shaft, a cam adapted to revolve at one-third the speed of said shaft, and having three parts of successively-increasing radius on its operative part; a canister-supporting part movable vertically; operating means between said cam and said support, whereby said support is intermittently moved to three successive horizontal positions; a foot-lever; a clutch mechanism between the main driving-shaft and a driving-wheel, operated by said foot-lever; and a detent mechanism adapted to be released by the cam-shaft in its revolution, whereby said clutch is automatically operated and the machine stopped: substantially as set forth.

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**755,243. CARD GAME.** RALPH L. REED, Springfield, Ill. Filed Aug. 15, 1903. Serial No. 169,566. (No model.)



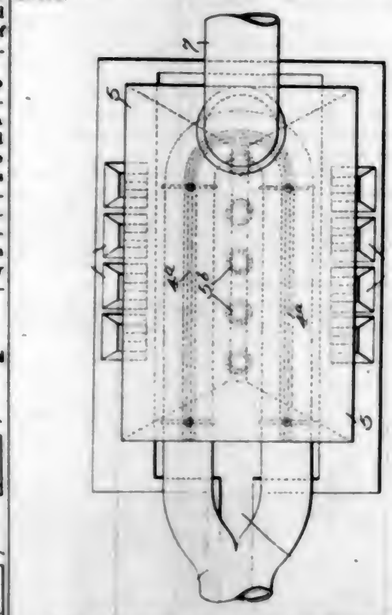

*Claim.*—A game apparatus comprising a pack of cards composed of a plurality of groups, each group containing the same number of cards and every card of a group bearing upon its face a name or designation common to all cards of that group, such name or designation distinctive of the cards of one group differing from the names or designations distinctive of the cards of all the other groups, the face of each card of a group being a facsimile of the face of every other card of such group, and a number or character disposed upon the face of all the cards of each group indicating the permanent value of that group, such number or character on all the cards of each group being the same, and differing from the number or character on the cards of other groups.

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**755,244. DEVICE FOR SEPARATING FLUE-DUST FROM GAS.** WILLIAM A. RIDDELL and JOSEPH RIDDELL, Sharon, Pa. Filed July 25, 1903. Serial No. 167,051. (No model.)

*Claim.*—1. A device for separating flue-dust from the gas coming from a blast-furnace, comprising a closed tank having a water-inlet and a water-outlet whereby water is maintained in said tank at a determined level, a pipe extending horizontally in said tank slightly above said water-outlet, said pipe being stationary and having an opening in its lower side only directed against the surface of the water, a gas-inlet to the pipe and a gas-outlet from the tank, substantially as described.

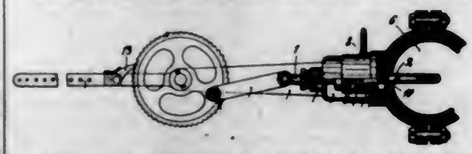
2. In combination, a tank containing water, a pipe extending horizontally at a slight distance above the level of the water in said tank and having an elongated opening or slot extending longitudinally in its under side, a gas-inlet to the pipe and a gas-outlet from the tank, the gas issuing from the elongated opening having to cross a free space to reach the surface of the water, substantially as described.



3. In combination, a tank having a contracted lower portion, a water-inlet and a water-outlet from said tank arranged to maintain water therein at a predetermined level, a horizontally-disposed gas-supply pipe located in said tank with a gas-exit in its lower side, a gas-outlet from said tank above the water-level, means at the bottom of said tank for delivering the sediment from the tank, and a trough into which the sediment is delivered, the overflow-pipe from the tank emptying into said trough, substantially as described.

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**755,245. LUBRICATOR.** OLAF L. A. RIDDELA, Hövik, near Christiania, Norway. Filed July 14, 1903. Serial No. 165,523. (No model.)



*Claim.*—1. In a lubricator, the combination of an oil-reservoir, a feeding-rod passing through said reservoir and into a steam-carrying part, means for moving the rod to and fro, and a chamber 2 in said rod arranged in an inclined direction to the rod-axis and open to one side of the rod only, a smaller chamber 9 open to the other side of the rod and being connected with the chamber 2 and which chambers during the movement of the rod feed oil from the oil-reservoir to the steam-carrying part.

2. In a lubricator, the combination of an oil-reservoir, two feed-rods passing through said reservoir and into a steam-carrying part, a double-armed lever 21 connected with said rods in order to move them alternately to and fro, an oscillating arm 22 operating the lever 21, and a chamber 2 in each rod, said chambers being arranged in an inclined direction to said rods and feeding alternately oil from the oil-reservoir to the steam-carrying part.

3. In a lubricator, the combination of an oil-reservoir, a feeding-rod passing through said reservoir and through a stuffing-box into a steam-carrying part, a stuffing-box 5, a ring 17 introduced into said stuffing-box and having an internal segmental groove 20 and passages in said ring and the wall of the stuffing-box connecting said groove with the atmosphere, and a chamber 2 in said rod arranged in an inclined direction to the rod-axis and which chamber during the movement of the rod feeds oil from the oil-reservoir to the steam-carrying part.

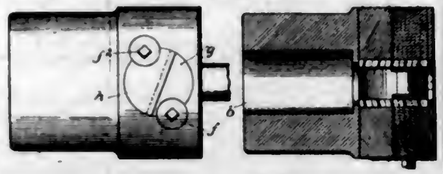


4. In a lubricator, the combination of an oil-reservoir, a feeding-rod passing through said reservoir and through a stuffing-box into a steam-carrying part, a stuffing-box 5, a ring 17 introduced in said stuffing-box and having an internal segmental groove 20 and passages in said ring and the wall of the stuffing-box connecting said groove with the atmosphere, a ring 19 introduced in the stuffing-box 5 and provided with an internal segmental groove 27 and pressed against the ring 17 with intermediate packing, and a chamber 2 in said rod arranged in an inclined direction to the rod-axis and which chamber during the movement of the rod feeds oil from the oil-reservoir to the steam-carrying part.

5. In a lubricator, the combination of an oil-reservoir, a feeding-rod 1 passing through said reservoir and into a steam-carrying part, means for moving the rod to and fro, and a chamber 2 in said rod, said chamber being, at the end which opens in the direction of the steam flow, narrowed at 9, and being arranged in an inclined direction to the rod-axis and which chamber during the movement of the rod feeds oil from the oil-reservoir to the steam-carrying part.

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**755,246. CHUCK.** OLIN S. ROCKWELL, Enfield, and SIDNEY E. HORTON, Windsor Locks, Conn., assignors to the E. Horton & Son Company, Windsor Locks, Conn., a Corporation of Connecticut. Filed July 17, 1903. Serial No. 165,935. (No model.)



*Claim.*—1. In combination in a chuck, a body part having an opening, a jaw-recess extending laterally of said opening, a pair of jaws having its members located both on one side of said opening and in said recess, and means whereby the jaws may be operated independently.

2. In combination in a chuck, a body part having an opening and a jaw-recess extending laterally of said opening, pairs of jaws arranged in said jaw-recess, the members of each pair being located side by side and bearing one upon the other, and means for independently operating the members of each pair of jaws.

3. In combination in a chuck including a body part having an opening and a jaw-recess extending laterally of said openings, pairs of jaws located in the jaw-recess; the members of each pair being located side by side and having a bearing upon each other, and screws for independently operating the members of each pair of jaws.

4. In a chuck, in combination, a body part having an opening and a jaw-recess located laterally of said opening, pairs of jaws oppositely arranged in the jaw-recess, the members of each pair being divided on a line extending lengthwise of the jaws whereby a sliding movement of the members one upon the other is permitted, and means for independently operating the jaws.

5. In a chuck, in combination with a body part having an opening and a jaw-recess located laterally of said opening, pairs of chuck-jaws oppositely arranged in said recess, the members of each pair being divided on a lengthwise line to provide an extended bearing-surface for the one upon the other, and means for independently operating the jaws.

6. In a chuck, in combination, a body part having an opening, a jaw-recess located on one side of said opening, a pair of jaws located in said recess, both on one side of said opening and having a bearing-surface the one upon the other, means appurtenant to said members for supporting each other against lateral movement, and means for independently operating the jaws.

7. In a chuck, in combination, a body part having an opening, a jaw-recess located on one side of said opening, a pair of jaws located in said recess, both on one side of said opening, one of the members of the pair having an overlapping part arranged to abut against and support the opposite member, and means for independently operating the jaws.

8. In a chuck, in combination, a body part having an opening and a jaw-recess located laterally of said opening, pairs of jaws oppositely disposed in said opening, each pair being divided on a lengthwise line and one member of each pair having an overlapping part to back up and support the opposite member, and an operating-screw for independently moving the oppositely-disposed members of each pair.

9. In a chuck, in combination, a body part having an opening a jaw-recess located on one side of said opening, a pair of jaws having its members located side by side in said recess on one side of said opening, said jaws having frictional and positive holding means for an article placed therein.

10. In combination in a chuck, a body part having an opening and a jaw-recess located on one side of said opening, pairs of jaws oppositely arranged in said jaw-recess, each on one side of said opening, the members of each pair being located side by side and bearing one upon the other, said jaws having frictional and positive holding means for an article placed therein, and means for independently operating the jaws.

11. In combination in a chuck, a body part having an opening and a jaw-recess extending laterally of said opening, pairs of jaws oppositely arranged in said jaw-recess, the members of each pair being located side by side, frictional holding means on two oppositely-disposed jaw members, and positive holding means on the other two jaws for holding an article with a positive grasp, and means for independently operating the jaws.

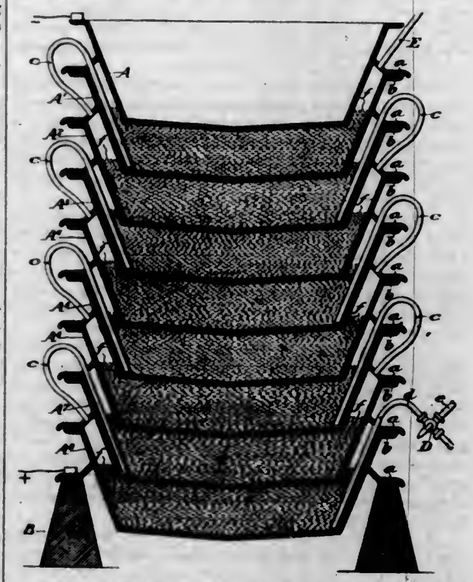
12. In combination in a chuck, a body part having an opening and a jaw-recess extending laterally of said opening, pairs of jaws oppositely arranged in said jaw-recess, each on one side of said opening, one member of each pair being mortised into the opposite member and sliding thereon, frictional and positive holding means between the oppositely-disposed members of each pair, and means for independently operating the jaws.

13. In combination in a chuck, a body part having an opening, a jaw-recess extending laterally of said opening, a pair of jaws having its members located side by side in said recess and bearing one upon the other, and means for independently moving the members of the pair in the same direction to clamp a piece of work.

14. In combination in a chuck, a body part having an opening, a jaw-recess extending laterally of said opening a pair of jaws located in said recess and means for independently moving the members of said pair of jaws.

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**755,247. MANUFACTURE OF SULFURIC ACID.** PEDRO G. SALOM, Philadelphia, Pa. Filed June 17, 1902. Serial No. 112,032. (No specimens.)

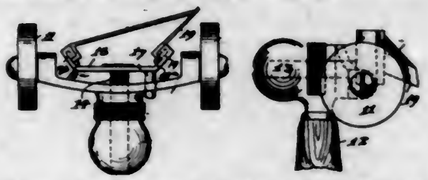


*Claim.*—1. The hereinbefore-described process for the manufacture of sulfuric acid, which consists in passing a current of sulfurous-acid gas through a series of independent but communicating receptacles, each of which constitutes an electrolytic cell, and progressively oxidizing said current by electrolytic action, in the presence of water, during the passage of the current through said series, substantially as set forth.

2. The hereinbefore-described process for the manufacture of sulfuric acid, which consists in the progressive oxidation of sulfurous-acid gas, in the presence of water, in a series of divided but com-

municating receptacles, by electrolytic action; progressively transferring the contents of each receptacle into the next one of the series; and replenishing the first receptacle and discharging the contents of the ultimate receptacle, from time to time, substantially as described.

**755,248. DEVICE FOR GROOVING OR TAPPING RUBBER OR OTHER SAP-YIELDING TREES.** CORA A. SANBORN, Chicago, Ill. Filed Aug. 22, 1903. Serial No. 170,387. (No model.)



*Claim.*—1. In an instrument for the purpose described, the combination with a cross-head and an operating-handle, of a V-shaped gouge secured to said cross-head, and guides carried by the cross-head adapted to engage the surface of the tree on either side of the gouge to limit the penetration of the latter, substantially as described.

2. In an instrument for the purpose described, the combination with a cross-head and an operating-handle, of a V-shaped gouge secured to said cross-head, and rollers mounted on the ends of the cross-head and adapted to engage the surface of the tree on either side of the gouge to limit the penetration of the latter, substantially as described.

3. In an instrument for the purpose described, the combination with a cross-head and an operating-handle, of a gouge-holder mounted on said cross-head, and a gouge, said gouge-holder and gouge being provided with integral interlocking parts, respectively, substantially as described.

4. In an instrument for the purpose described, the combination with a cross-head and an operating-handle, of a gouge-holder mounted on said cross-head, and a gouge, said gouge-holder and gouge being provided with integral interlocking parts, respectively, and guides carried by the cross-head adapted to lie in contact with the surface of the tree on either side of the gouge to limit the penetration of the latter, substantially as described.

5. In an instrument for the purpose described, the combination with a cross-head and a main operating-handle extending downwardly therefrom, of an auxiliary handle extending outwardly or rearwardly therefrom, substantially at right angles to said main handle, a gouge-holder having a stem mounted in said cross-head and auxiliary handle, and a gouge removably carried by said gouge-holder, substantially as described.

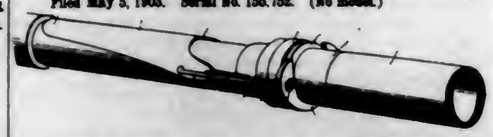
6. In an instrument for the purpose described, the combination with a cross-head and a main operating-handle extending downwardly therefrom, of an auxiliary handle extending outwardly or rearwardly therefrom, a gouge-holder having a stem mounted in said cross-head and auxiliary handle, means for effecting the longitudinal adjustment of said stem in its support, and a gouge removably carried by said gouge-holder, substantially as described.

7. In an instrument for the purpose described, the combination with a cross-head and a main operating-handle extending downwardly therefrom, of a transversely-slotted auxiliary handle extending outwardly or rearwardly therefrom, a gouge-holder having a threaded stem mounted in said cross-head and auxiliary handle, a gouge removably carried by said gouge-holder, an internally-threaded thumb-nut mounted on said threaded stem and confined in the slot of the auxiliary handle, and means for preventing the rotation of the gouge-holder while permitting its in and out adjustment relatively to the cross-head, substantially as described.

8. In an instrument for the purpose described, the combination with a cross-head and guide-rollers rotatably mounted on the opposite ends thereof, of an operating-handle extending downwardly from said cross-head, a gouge-holder mounted in said cross-head and adjustable toward and from the same in a direction substantially at right angles to the handle, and a generally V-shaped gouge removably carried by said gouge-holder and having its penetrating point disposed substantially in a plane determined by the axis of said guide-rollers and the points of tangency of the latter upon the object subjected to the operation of the device, substantially as described.

9. In an instrument for the purpose described, the combination with a V-shaped gouge having its cutting-blades formed upwardly convergent or retreating relatively to their lower cutting edges at and adjacent to the point of the gouge, of means connected thereto to render the same manually operable in grooving the bark of a tree, substantially as described.

**755,249. PIPE-COUPLING.** JAMES T. SEALS, Hazleton, Ind. Filed May 5, 1903. Serial No. 155,752. (No model.)



*Claim.*—A coupling of the class set forth, comprising pipe-sections having coupling-heads, a shifting yoke held adjacent to one of said heads, the latter having guide devices thereon, an operating element pivotally connected in rear of the head carrying the yoke and arranged to serve as a lock, and connecting-rods movably extending from the element through the guide devices and terminally attached to the yoke.

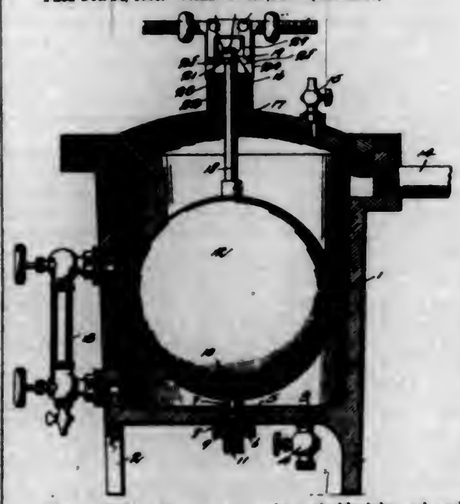
**755,250. ANIMAL-LEADER.** HERMANN O. SHIPPERT, Kings Valley, Oreg. Filed Dec. 18, 1903. Serial No. 185,701. (No model.)



*Claim.*—1. An instrument of the class described, comprising a shaft having a hook at one end, a bolt slidably mounted upon the stem of the hook and adapted to close the latter, and a rod attached to the bolt and slidably mounted upon the shaft, said rod having a laterally-directed terminal portion and the shaft having a socket for engagement by said terminal portion to hold the rod against longitudinal movement.

2. An instrument of the class described, comprising a shaft a hook at one end of the shaft, a bolt slidably mounted upon the stem of the hook and movable into and out of position to close the latter, said shaft having a recess in its end portion opposite to the hook, guides upon the shaft, and a rod slidably engaged with the guides, said rod being attached at one end to the bolt and having its opposite end portion bent to form a loop and a terminal projection at right angles to the body of the rod and adapted to engage the recess.

**755,251. STEAM-TRAP.** SEBASTIAN STEINMITZ, Scranton, Pa. Filed Dec. 24, 1903. Serial No. 186,421. (No model.)



*Claim.*—1. In a steam-trap, a casing, suitable inlet and outlet openings therein, a float in the casing, a stem projecting upwardly from the float, dogs for engaging the stem to retard the descent of the float during the recession of the water.

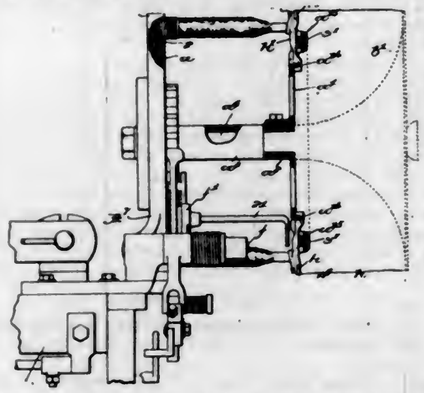
2. In a steam-trap, a casing, suitable inlet and outlet openings therein, a float in the casing, a stem on the float projecting upwardly, an enlargement on the stem having a double camming-surface, and dogs engaging the enlarged portion to retard the descent of the float during the recession of the water.

3. In a steam-trap, a casing, suitable inlet and outlet openings therein, a float in the casing, a stem projecting upwardly therefrom, an enlargement on the stem having a double camming-surface, dogs for engaging the enlargement to retard the descent of the float during the recession of the water and means for holding the dogs in engagement with the enlargement.

4. In a steam-trap, a casing, suitable inlet and outlet openings therein, a float in the casing, a valve carried by the float, wings for guiding the valve, a stem projecting upwardly from the float, an enlargement on the stem having a double camming-surface, dogs for engaging the enlargement to retard the descent of the float during the recession, of the water.



**755,252. FILLING-FEEDER FOR AUTOMATIC LOOMS.** EDWARD B. STIMPSON, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Oct. 15, 1903. Serial No. 177,132. (No model.)



*Claim.*—1. A filling-feeder comprising a plate adapted to sustain the heads of a series of filling-carriers, a connected plate, tip-holders movably mounted thereon to engage and sustain the tips of the filling-carriers, and springs to maintain the tip-holders in operative position.

2. A filling-feeder comprising a plate adapted to sustain the heads of a series of filling-carriers, a connected plate, a corresponding series of rocking tip-holders mounted thereon, and springs to maintain the tip-holders in operative position and in yielding engagement with the filling-carriers.

3. A filling-feeder comprising a plate adapted to sustain the heads of a circularly-arranged series of bobbins or cop-skewers, a parallel and connected plate, a series of rocking holders mounted thereon and adapted to receive and hold the tips of bobbins or cop-skewers, and springs to individually act upon and maintain said holders in operative position.

4. A filling-feeder comprising a plate adapted to sustain the heads of a series of filling-carriers, a connected plate, having openings opposite the filling-carriers, tip-holders movably mounted on the plate within the openings, and springs to individually maintain the tip-holders in yielding engagement with the filling-carriers.

5. A filling-feeder comprising a plate adapted to sustain the heads of a circularly-arranged series of filling-carriers, a parallel connected plate having a corresponding series of openings, spring-seats on the plate, tip-holders mounted to rock in the openings of the said plate, and coiled springs interposed between the backs of the tip-holders and the seats and fixedly sustained by the latter, to yieldingly maintain the tip-holders in operative position.

6. A filling-feeder comprising a plate having a series of circularly-arranged pockets to receive the heads of the filling-carriers, a parallel and connected plate, a corresponding series of tip-holders mounted to rock thereon, each holder having its face shaped to receive the tip of a filling-carrier, and springs to press the tip-holders toward the head-supporting plate.

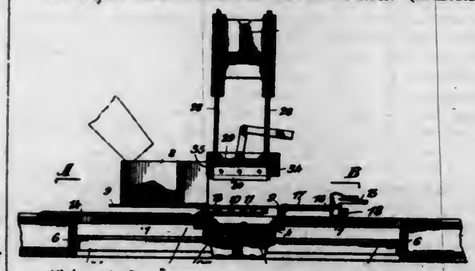
7. A filling-feeder comprising two connected, parallel and circular plates, one of said plates having circularly-arranged means to hold the heads of a series of filling-carriers, inwardly-rocking and oppositely-located tip-holders mounted on the other plate, each holder having its face recessed to receive the tip of a filling-carrier, and springs to normally press the tip-holders inward to thereby yieldingly retain the filling-carriers in position.

8. A filling-feeder comprising two connected, parallel and circular plates, one of said plates having circularly-arranged means to hold the heads of a series of filling-carriers, inwardly-rocking and oppositely-located tip-holders mounted on the other plate, each tip-holder having a substantially U-shaped recess and a central, radial socket in its face, and springs to yieldingly maintain the tip-holders in operative position.

9. A filling-feeder comprising two connected, parallel and circular plates, one of said plates having circularly-arranged means to hold the heads of a series of filling-carriers, the other plate having opposite radial openings, spring-seats on the outer face of the plate and spanning each opening, a series of tip-holders mounted in and adapted to rock at the inner ends of the openings, lateral ears on each holder, to engage the plate, and limit inward movement of the holder, and a spring interposed between the back of each holder and the adjacent spring-seat.

10. A filling-feeder comprising two connected and parallel circular ends, one of said ends having a series of circularly-arranged pockets to receive the heads of the bobbins or cop-skewers, the other end of the feeder having oppositely-arranged openings, and a spring-controlled tip-holder mounted in each opening, each tip-holder having on its face a U-shaped seat to receive the tip of a bobbin, the seat being provided with an elongated radial socket within it, to receive the tip of a cop-skewer.

**755,253. CEMENT-PLATE PRESS.** LOUIS STRELLI, Zurich, Switzerland. Filed Nov. 18, 1902. Serial No. 131,845. (No model.)



*Claim.*—1. In cement-presses with rotating table and forms let into the same, a filling device with a stationary hopper, a plate serving to close the hopper-exit located at a certain distance above the table and provided with an aperture corresponding in size to the cross-sectional area of the form, a frame applied to the bottom of said plate, surrounding the said aperture and filling the space between plate and table, a stamp, the head of which is provided with projecting portions corresponding to the raised ribs, ridges, nibs or the like to be formed on the cement plate, means for vertically reciprocating the stamp-head, means for advancing the closing-plate between hopper and stamp-head so that the aperture of the said plate alternately comes below the hopper, and below the stamp-head simultaneously with a mold after the latter and the frame of the aperture are filled with material, for the purpose of imparting a preliminary pressure at certain parts of the mold on descent of the stamp-head, so that after the main pressing operation the cement plate, of different thicknesses at different parts, is of uniform density throughout, substantially as described.

2. In cement-presses with rotating table and forms let into the same, a filling device with a stationary hopper, a plate serving to close the hopper-exit, located at a certain distance above the table and provided with an aperture corresponding in size to the cross-sectional area of the form, a frame applied to the bottom of said plate, surrounding the said aperture and filling the space between plate and table, a device for imparting preliminary pressure to certain parts of the material in the mold, means for moving the closing-plate between the preliminary pressing device and the hopper, and a grid suspended by the frame surrounding the aperture of the closing-plate, for the purpose during filling of the mold of preventing displacement of a layer of color which may be applied to the bottom of the mold, and of hindering an accumulation of material in the frame of the closing-plate during striking off the roughly-filled form by the said frame, all substantially as described.

3. In cement-presses with rotating table and forms let into the same, a filling device with a stationary hopper, a plate serving to

close the hopper-exit, located at a certain distance above the table and provided with an aperture corresponding in size to the cross-sectional area of the form, a frame applied to the bottom of said plate, surrounding the said aperture and filling the space between plate and table, a grid in this frame, a stationary plate located above the table below the hopper, said plate extending nearly to the hopper-front for the purpose, in conjunction with the grid, of preventing disturbance of the uniform distribution of a layer of color applied to the bottom of the mold by the material entering the mold, all substantially as described.

4. In a cement-press, a rotating table having forms, a feed-hopper, a periodically-oscillated plate to close the hopper and having an opening therein, means carried by the table to move said plate first in one direction and then in an opposite direction, a preliminary and a main press, substantially as described.

5. In a cement-press, a rotating table having forms, therein, a feed-hopper, a periodically-oscillated plate to close the hopper and having an opening therein, means to temporarily connect the plate and table to use both in unison and means to subsequently move the plate in a direction opposite to that of the table, substantially as described.

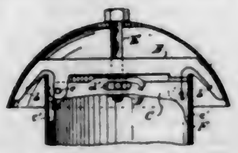
6. In a cement-press, a periodically-rotating table, forms therein, a feed-hopper, a plate to normally close said hopper and having an opening therein, means to temporarily lock the plate and table together during the filling of the form, means to press part of the material in the form, means to move the plate after the preliminary pressing into register with the next succeeding form and a device on the plate to strike the filled form smooth during the latter movement of the plate, substantially as described.

7. In a cement-press, a periodically-rotating table, forms therein, a feed-hopper, a movable plate to normally close the same and having an opening therein, a grid in said opening and a frame below the plate surrounding the opening, a stationary plate projecting under the hopper and acting as stop for said frame and movable plates, a preliminary press, means to temporarily lock the movable plate to the table when grid and form register to move both to the preliminary press, means to then unlock the movable plate, lever mechanism to return said plate to register with the next preceding form and a main press, substantially as described.

8. The combination with a rotating table having forms therein, of a preliminary press and a main press, a guide-rail below the table having a cam-surface, studs in the table and sliding on said rail and capable of being projected through the table by said cam-surface, a hopper, a plate normally closing the hopper and having an opening therein capable of registering with the forms and passing below the hopper, a locking-lever pivoted to the plate and adapted to be engaged by a stud, means to lift the lever from the stud, a two-armed lever-link connected to the plate and supported over the table also adapted to be engaged by a stud, substantially as described.

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**755,254. VENTILATING-PIPE FOR SEWER SYSTEMS. FRANK STRUBE, Grand Rapids, Mich. Filed Aug. 7, 1903. Serial No. 168,691. (No model.)**

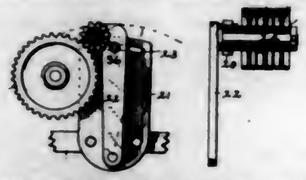


*Claim.*—In combination with a ventilator-pipe for sewers, and an open inverted cap therefor; a detached supporting-frame in said cap, clamping-arms pivoted at one end each to opposite ends of the supporting-frame, thence extending across the frame lapping by each other and having clamping-jaws at opposite ends in position to engage the inner surface of the pipe, a nut pivotally connected with said arms at the longitudinal center, and a bolt passed through the cap and engaging said nut, substantially as and for the purpose set forth.

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**755,255. DOWEL-MACHINE. MARTIN P. STUTSMAN, Cumberland, Ind. Filed June 16, 1903. Serial No. 161,655. (No model.)**

*Claim.*—1. In a feed mechanism for dowel-machines, a cog-wheel on a fixed shaft, an arm adjustable about a pivot outside of the axis of the fixed shaft, said arm carrying a second shaft, a cog-wheel mounted on the second shaft and engaging the first cog-wheel, a belt-pulley mounted in a fixed manner on said sleeve and a pair of loose pulleys, one on each side of the fixed pulley, to which power is applied, and a straight and a crossed belt to apply such power.



2. In a feed mechanism for dowel-machines, a cog-wheel mounted on a fixed shaft, a fixed plate at right angles to the shaft on which said wheel is mounted, an arm pivoted at one side of the axis of the shaft to said plate said plate having a slot concentric with the said pivot, a bolt passing through the arm and through the slot of the plate and means to tighten the bolt to secure the arm, a shaft carried by said arm, a sleeve mounted on the last shaft, a cog-wheel mounted on the sleeve in a fixed manner said last cog-wheel engaging the first, a belt-pulley mounted in a fixed manner on said sleeve and a pair of loose pulleys, one on each side of the fixed pulley, to which power is applied and a straight and a crossed belt to apply such power.

3. In a feed mechanism for dowel-machines, a fixed shaft, a cog-wheel mounted thereon, a shaft adjustable in its distance from said first shaft to permit of the introduction thereon of cog-wheels to mesh with the first-named cog-wheel, of different sizes to change the speed of the feed, a sleeve loosely mounted on the adjustable shaft, a cog-wheel mounted in a fixed manner on the sleeve, a belt-pulley mounted in a fixed manner on the sleeve, a pair of loose pulleys mounted on said sleeve, one on each side of the fixed pulley, a straight and a crossed belt operating on said pulleys, a shifting-rod, loops carried thereby to engage and cause the belts to move from one pulley to the next by the longitudinal movement of the rod, guides to hold the rod and a spring to return the rod to a normal position.

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**755,256. MEANS FOR MAKING BUTTER. CHARLES M. TAYLOR, Jr., Philadelphia, Pa. Filed Oct. 20, 1902. Serial No. 127,943. (No model.)**



*Claim.*—1. Means for making butter which comprise a pan, a pad consisting of a folded an absorbent sheet and arranged in the pan, and a box permeable by the fluid constituents of cream and impermeable by the butter constituents thereof and arranged in the pan above the pad, substantially as described.

2. Means for making butter comprising a pan, a pad consisting of an absorbent sheet provided with pile or looped faces separated by bars adapted to be folded and unfolded, said pad arranged in the pan, and a box arranged in the pan and on the pad and permeable by the fluid and impermeable by the buttery constituents of cream, substantially as described.

3. Means for making butter comprising the combination of two boxes nested together and whereof the inner one is permeable by the fluid and impermeable by the buttery constituents of cream, and a pad interposed between the bottoms of said boxes, substantially as described.

4. Means for making butter comprising the combination of two boxes nested together and whereof the inner one is permeable by the fluid and impermeable by the buttery constituents of cream, a pad interposed between the bottoms of said boxes, and means for securing together the side and end walls of said boxes, substantially as described.

5. Means for making butter comprising the combination of a pan having its side and end walls vertical in respect to its bottom, a textile pad consisting of a sheet having pile or looped parts separated by plain bars and adapted to be folded, and an open-top box consisting of folded paper and adapted to fit upon the pad and in the pan, substantially as described.

6. Means for making butter comprising the combination of a pan having its side and end walls vertical in respect to its bottom, a textile pad consisting of a sheet having pile or looped parts separated by plain bars and adapted to be folded, an open-top box consisting of folded paper and adapted to fit upon the pad and in the pan, and clips for connecting the side and end walls of the pan and box, substantially as described.



**755,257. BANK. ISAAC H. TEUBNER, Boston, Mass., assignor of one-half to Chester H. Sanger, Boston, Mass. Filed May 11, 1903. Serial No. 156,552. (No model.)**



*Claim.*—1. In a bank for money in the form of bills, a casing having a slot through which the bills are fed, and a removable member, means carried by said member to feed the bills into the casing and a lock for securing said member to the casing, said lock being constructed so as to be released only from the inside of the casing by the accumulated mass of bills.

2. In a bank for money in the form of bills, a casing having a bill-receiving slot and a removable end, means to lock said end in place, said means being constructed so as to be released only from the inside of the casing, and means to feed the bills into the casing.

3. In a portable bank for accumulating money in the form of bills, a casing having a slot through which bills are fed and a removable end, locking means situated in the end of the casing for locking said removable end to the casing, said locking means being released by the mass of bills in the casing when it reaches a certain bulk.

4. In a bank for accumulating money in the form of bills, a casing having a slot through which bills are fed and a removable end, a spindle carried by said removable end and on which bills are rolled, and means interior of the casing to lock the end to the casing, said means being released when the roll of bills on the spindle reaches a predetermined bulk.

5. In a bank for accumulating money in the form of bills, a slotted casing, a removable head for said casing, locking means interior of the casing to lock the head to the casing, and a spindle on the interior of the casing and onto which the bills are rolled, said locking means being constructed to be released by the roll of bills when it reaches a predetermined size.

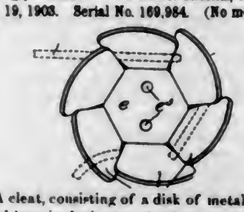
6. In a bank for accumulating money in the form of bills, a slotted casing having a removable head, a spindle carried by said head and on which the bills are rolled as they are fed into the casing, a locking-finger also carried by the head, and a keeper carried by the casing to engage said finger, said finger being constructed to be released from the keeper to enable the head to be removed when the roll of bills reaches . predetermined size.

7. In a bank for accumulating money in the form of bills, a casing having a slot through which bills are fed and a removable end, a longitudinal spindle carried by said removable end, a pair of locking-fingers also carried by said removable end, said fingers extending parallel to the spindle, keepers rigid with the casing to engage said fingers and thereby lock the removable end in place, said fingers being adapted to be released from the keepers by the roll of bills on the spindle.

8. In a bank for accumulating money in the form of bills, a slotted casing, a spindle on which the bills are wound, a roll extending parallel to the spindle, feeding-cords connecting said roll and spindle, whereby as the spindle is turned the cords are wound from the roll onto the spindle to feed the bills into the casing and roll them about the said spindle.

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**755,258. CLEAT. WILLIAM B. THOMAS, Jr., Germantown, Pa. Filed Aug. 19, 1903. Serial No. 169,984. (No model.)**



*Claim.*—A cleat, consisting of a disk of metal struck up to form a flat polygonal base and wings projecting upwardly and outwardly from the perimeter of the base, said wings arranged so that their contiguous edges overlap to form contracted openings or recesses, substantially as described.

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**755,259. CUSHION-TIRE. JOHN H. TOOLE, Chicago, Ill. Filed Jan. 2, 1904. Serial No. 187,421. (No model.)**

*Claim.*—1. In a cushion-tire, the combination with a rim, of an elastic body having a longitudinal seat, a retaining-band around said seat, and extending around said body, and a series of band-supports independent of the elastic body and separate from the band.



2. In a cushion-tire, the combination with a rim, of an elastic body, a retaining-band at each side of the body and a series of band-supports, independent of the elastic body and separate from said band.

3. In a cushion-tire, the combination with a rim, of an elastic body having a longitudinal seat, a retaining-band, and a series of band-supports extending between the sides of the body and the rim, and having seats formed therein, said band extending around said seats.

4. In a cushion-tire, the combination with a rim, of an elastic body having a longitudinal seat, a retaining-band around said seat, and a series of band-supports extending between the side of the body and the rim, and beneath the elastic body.

5. In a cushion-tire, the combination with a rim, of an elastic body, a retaining-band at each side of the body, and a series of band-supports between the side of the body and the rim, and extended beneath the elastic body.

6. In a cushion-tire, the combination with a rim of an elastic body having longitudinal seats, a plurality of retaining-bands engaging said seats, and a series of band-supports at each side, the supports at one side being connected to those on the other, across the rim-channel and beneath the elastic body.

7. In a cushion-tire, the combination with a rim, of an elastic body, a retaining-band at each side of the body, and a series of band-supports at each side, the supports at one side being connected to those on the other, across the rim-channel and beneath the base of the elastic body.

8. In a cushion-tire, the combination with a rim, of an elastic body, a retaining-band at each side of the body and a series of band-supports at each side, the supports at one side being connected to those on the other, across the rim-channel beneath the base of the elastic body, the supports having seats therein.

9. In a cushion-tire, the combination with a rim, an elastic body having a longitudinal seat, a retaining-band, extending around said seat, and a series of band-supporting strips overlying said seat and having legs adjacent a side of the body and within the rim.

10. In a cushion-tire, the combination with a rim, an elastic body having a longitudinal seat, a retaining-band, extending around said seat, and a series of band-supporting strips having seats overlying said longitudinal seat and having legs adjacent a side of the body and within the rim.

11. In a cushion-tire, the combination with a rim, an elastic body having a longitudinal seat, a retaining-band, extending around said seat, a series of band-supporting strips overlying said longitudinal seat, having legs adjacent a side of the body and extended beneath the body.

12. In a cushion-tire, the combination with a rim of an elastic body, a retaining-band at each side of the body, and a series of band-supporting strips fitting around the base and sides of the elastic body.

13. In a cushion-tire, the combination with a rim of an elastic body, a retaining-band at each side of the body, and a series of band-supporting strips fitting around the base and sides of the elastic body and having seats therein.

14. In a cushion-tire, the combination with a rim, of an elastic body having a flange or seat formed, on each of its sides, a retaining-band extending around each of the flanges and a series of band-supporting strips each of which fits around the base and sides of the elastic body and lies between the body and the band.

15. In a cushion-tire, the combination with a rim, of an elastic body having a flange or seat formed on each of its sides, a retaining-band extending around each of the flanges and a series of band-supports, each fitting between the base of the elastic body and the rim.

16. In a cushion-tire, the combination with a rim, of an elastic body having a flange or seat formed on each of its sides, a retaining-band extending around each of the flanges and a series of band-supports fitting between the base of the elastic body and the rim, each support extending between one of the bands and the body.

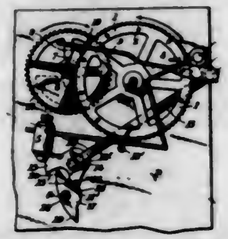
17. In a cushion-tire, the combination with a rim, of an elastic body having a flange or seat formed on each of its sides, a retaining-band extending around each of the flanges and a series of band-supports fitting between the base of the elastic body and the rim,

each support extending between one of the bands and the body and having seats therein.

18. In a cushion-tire, the combination with a rim, of an elastic body having a flange or seat formed on each of its sides, a retaining-band extending around each of the flanges and a series of band-supports extending across the rim-channel, and fitting between the base of the body and the rim, and each support extending between one of the bands and the body.

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**755,260. CLOCK STRIKING MECHANISM.** ROBERT TURRIN, Zurich, Switzerland, assignor to Eugen Guhl, Zurich, Switzerland. Filed Nov. 28, 1902. Serial No. 133,171. (No model.)



*Claim.*—1. In a clock having hour and half-hour striking mechanism, the combination of a minute-arbor, a twelve-tooth ratchet or step-wheel controlling the hour-striking work, loosely mounted on said arbor so as to normally rotate with it through friction and having the gap between two teeth bridged over, and provided with a lateral stop, an hour-wheel having a stop which engages said stop of the ratchet-wheel and carries the latter with it, a hammer-striking mechanism, a releasing-lever carried by the hammer-shaft, means for imparting a reciprocating motion to said lever, means for imparting an up-and-down motion to the same, and a pin projecting from said releasing-lever end and engaging with the teeth of said ratchet-wheel, whereby the latter is given a retrograde motion, tooth by tooth, until the pin rests upon the said bridge and so stops the striking, all substantially as described.

2. In a clock having hour and half-hour striking mechanism, the combination of a minute-arbor, a twelve-tooth ratchet or step-wheel controlling the hour-striking work, loosely mounted on said arbor so as to normally rotate with it through friction, and having the gap between two teeth bridged over, and provided with a lateral stop, an hour-wheel having a stop which engages said stop of the ratchet-wheel and carries the latter with it, a hammer-striking mechanism, a releasing-lever carried by the hammer-shaft, means for imparting a reciprocating motion to said lever, means for imparting an up-and-down motion to the same, and a pin projecting from said releasing-lever end and engaging with the teeth of said ratchet-wheel, whereby the latter is given a retrograde motion tooth by tooth until the pin rests upon the said bridge and so stops the striking, a cam-disk having two projections mounted on the minute-arbor, a weighted sleeve loosely mounted on the releasing-lever pin and having a pin traveling on the surface of said cam and engaging at each half-hour with the projections of the cam-disk, and two projections which receive between them the lower end of the releasing-lever, all substantially as described.

3. In a clock having hour and half-hour striking mechanism, the combination of a hammer-shaft, means for operating the same, cranks on said shaft, an arbor carried by said cranks, a releasing-bar having a pin at its lower extremity mounted at one end of said arbor, a stop-lever mounted at the opposite end of said arbor, a pinion-shaft, means for rotating same once at each stroke, an arm projecting from said pinion-shaft and adapted to be engaged by the stop of the stop-lever, a cam mounted on said pinion-shaft for raising said stop-lever, a minute-arbor, a twelve-tooth ratchet or step-wheel controlling the hour-striking work, loosely mounted on said arbor so as to normally rotate with it through friction, and having the gap between two teeth bridged over, and provided with a lateral stop, an hour-wheel having a stop which engages said stop of the ratchet-wheel and carries the latter with it, a releasing-lever carried by the hammer-shaft, means for imparting a reciprocating motion to said lever, means for imparting an up-and-down motion to the same, and a pin projecting from said releasing-lever end and engaging with the teeth of said ratchet-wheel, whereby the latter is given a retrograde motion tooth by tooth until the pin rests upon the said bridge and so stops the striking, a cam-disk having two projections mounted on the minute-arbor, a weighted sleeve loosely mounted on the releasing-lever pin and having a pin traveling on the surface of said cam and engaging at each half-hour with the projections of the cam-disk, and two projections adapted to receive between them the lower end of the releasing-lever, all substantially as described.

4. The combination with the striking mechanism of a clock, a let-off lever vibrating with the hammer and means controlled by the minute-hand arbor to actuate the let-off lever and let off the striking mechanism at each revolution of the minute-hand arbor; of a step-wheel having twelve teeth and a stop adapted to move synchronously with the minute-hand arbor, means to cause the step-wheel to move synchronously with the hour-hand before the striking of the hour and until the minute-hand arbor completes a revolution, and means on the let-off lever to turn the step-wheel in a direction opposite to the hands of the clock one-twelfth of a revolution for each hour-stroke to bring its stop in position to stop the vibration of the let-off lever and lock the striking mechanism, substantially as described.

5. The combination with the striking mechanism of a clock, a let-off lever vibrating with the hammer and means controlled by the movements of the minute-hand arbor to actuate the let-off lever and release the striking mechanism at each half-revolution of the minute-hand arbor; of a step-wheel having twelve teeth and a stop, adapted to move synchronously with the minute-hand arbor, means to cause said wheel to move synchronously with the hour-hand before the striking of the hour and until the minute-hand arbor has made a complete revolution, means on the let-off lever to turn the step-wheel in a direction opposite to the hands of the clock one-twelfth of a revolution for each stroke to bring its stop in position to stop the vibration of the let-off lever and lock the striking mechanism and means to prevent this backward movement of the step-wheel when the half-hour is struck, substantially as set forth.

6. The combination with the striking mechanism of a clock, a let-off lever vibrating with the hammer and means controlled by the minute-hand arbor to actuate the let-off lever and let off the striking mechanism; of a controlling device revoluble with the minute-hand arbor, means to cause said device to move synchronously with the hour-hand before the striking of the hour and before the minute-hand arbor has completed a revolution, said let-off lever adapted to impart a backward angular movement to said controlling device for each hour-stroke, and said controlling device adapted to act on the let-off lever and cause the latter to throw the striking mechanism out of operation when the hour has been struck, substantially as set forth.

7. The combination with the striking mechanism of a clock, a let-off lever vibrating with the hammer and means controlled by the minute-hand arbor to actuate the let-off lever and let off the striking mechanism; of a controlling device revoluble with the minute-hand arbor, means to cause said device to move synchronously with the hour-hand before the striking of the hour and before the minute-hand arbor has completed a revolution, said let-off lever adapted to impart a backward angular movement to said controlling device for each hour-stroke, and said controlling device adapted to act on the let-off lever and cause the latter to throw the striking mechanism out of operation when the hour has been struck, and means preventing backward angular movement of the controlling device when the half-hour is struck, substantially as set forth.

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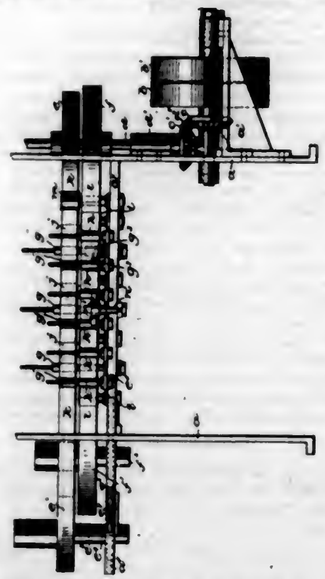
**755,261. BELT-DRIVEN TWISTING-MACHINE.** JOSEPH H. TYMAN, Paterson, N. J. Filed Feb. 25, 1903. Serial No. 145,109. (No model.)

*Claim.*—1. A vertical shaft, two pulleys mounted thereon and to be revolved thereby, two carrier-pulleys and their bearings, each of said carrier-pulleys having relation to one of the pulleys on the vertical shaft, and two belts, one passing around each of the pulleys on the vertical shaft and the corresponding carrier-pulley, in combination with two rows of spindles on each side of the machine, the spindles of one of said rows on each side of the machine being adapted to be driven by contact with the outside of one of said belts, and the spindles of the other of said rows on each side of the machine being adapted to be driven by contact with the inside of the other of said belts.

2. A belt, *l*, and means for driving the same, and two spindles, *h h*, adapted to be driven by contact with the outside of said belt, in combination with a belt, *k*, adapted to travel in the same direction as the belt *l*, means for driving the belt *k*, and a spindle, *g*, adapted to be driven by contact with the inside of said belt *k*, substantially as and for the purpose described.

3. The spindle-rail $a^3$, the spindle *g* mounted thereon, the plate *o*, the spindles *h h*, mounted in the plate *o*, and means for sliding the plate *o* to move the spindles *h h* into contact and out of contact with their driving-belt, in combination with the belts *k* and *l*, and means for driving the same, substantially as and for the purpose described.





4. The spindle-rail $a^3$, the spindle *g*, the spindles *h h*, the belts *k* and *l*, running in the same direction and approximately parallel with each other, the inner surface of one of said belts being adapted to drive the spindle *g* by contact therewith, and the outer surface of the other of said belts being adapted, by contact therewith, to drive the spindles *h h* in a direction opposite to that in which the spindle *g* is driven, means to drive the belts, the guard-pulleys *j*, the pulleys *i*, and the pressure-pulley *g'*, and means to press the same against the belt *k*, in combination with means, brought into action on the breakage of a thread, to relieve the spindles from the pressure of their respective belts.

5. The rail $a^3$, the spindle *g*, the sliding plate *o*, the spindles *h h* upon the plate *o*, and means for driving the spindles, in combination with the yielding brake *o'*, upon the plate *o*, the support *n'*, the brake $n^3$, free to rock on the support, and having the brake-fingers $n^3$, and means to relieve the several spindles of their driving means upon the breakage of a thread, and, through the movement of the sliding plate *o*, bring the yielding brake *o'* into contact with the spindle *g*, and bring the spindles *h h* into contact with their respective brake-fingers $n^3$, substantially as and for the purpose described.

6. A vertical shaft, two pulleys mounted thereon and to be revolved thereby, two carrier-pulleys having distinct and independent supports, one of said carrier-pulleys having relation to each of the pulleys on the vertical shaft, two belts, one passing around each of the pulleys on the vertical shaft and the corresponding carrier-pulley, and guide-pulleys to control the line of one of said belts, in combination with two rows of spindles on each side of the machine, the spindles of one of said rows on each side of the machine being adapted to be driven by contact with the outside of one of said belts, and the spindles of the other of said rows on each side of the machine being adapted to be driven by contact with the inside of the other of said belts.

7. In a machine of the class described, the support *n'* and the brake $n^3$, free to rock on the support, and having the brake-fingers $n^3$, in combination with the two spindles *h h*, and means to bring such spindles *h h* into contact with their respective brake-fingers $n^3$ after the spindles *h h* are relieved of their driving means, substantially as and for the purpose described.

8. A vertical shaft, two pulleys mounted thereon and to be revolved thereby, two carrier-pulleys having distinct and independent bearings, each of said bearings being independently adjustable in relation to its distance from the vertical shaft, and one of said carrier-pulleys having relation to each of the pulleys on the vertical shaft, in combination with two belts adapted to revolve spindles, one of said belts passing around each of the pulleys on the vertical shaft and the corresponding carrier-pulley, and two rows of spindles on each side of the machine, the spindles of one of said rows on each side of the machine being adapted to be driven by contact with the outside of one of said belts, and the spindles of the other of said rows on each side of the machine being adapted to be driven by contact with the inside of the other of said belts.

9. The guard-pulleys *j*, the spindle *g* and its pillar, the belt *k*, and means for driving the belt, in combination with the pressure-pulley *g'*, the bracket $g^3$, supporting the pressure-pulley *g'*, and mounted on and free to turn upon the pillar of the spindle *g*, and the spring $g^4$, having one of its ends fixedly secured, and its other end pressing against the bracket $g^3$, substantially as and for the purpose described.

10. The guard-pulley *j*, the spindle *g* and its pillar, the belt *k* and means for driving the belt, in combination with the pressure-pulley *g'*, the bracket $g^3$, supporting the pressure-pulley *g'* and mounted on and free to turn upon the pillar of the spindle *g*, the spring $g^4$, having one of its ends fixedly secured and its other end pressing against the bracket $g^3$, and means, brought into operation when the parts are to be stopped, to cause the pressure-pulley *g'* to cease to press the belt *k* against the spindle *g*, substantially as and for the purpose described.

11. The spindle-rail $a^3$, the sliding plate *o*, the spindles *h h* mounted on the sliding plate *o*, and a belt to drive the spindles *h h*, the rod *p*, capable of being moved vertically, and means, brought into action by the vertical movement of the rod *p*, to move the sliding plate *o* alternately outward and inward, and thereby move the spindles *h h* alternately out of contact with and into contact with their driving-belt in combination with the support *n'* and the brake $n^3$, free to rock on the support, and having the brake-fingers $n^3$.

12. A row of spindles to twist single threads, a row of spindles to receive and twist the doubled threads into which said single threads are formed, two belts, running in the same direction and approximately parallel with each other, and means to drive said belts, the outer surface of one of said belts being adapted, by contact therewith, to drive the spindles composing one of said rows, and the inner surface of the other of said belts being adapted, by contact therewith, to drive the spindles composing the other of said rows in a direction opposite to that in which the spindles of the first row are driven.

13. A series of groups of three spindles each, two of the spindles of each group being adapted to twist single threads and the third spindle of each group being adapted to twist a doubled thread, said groups of spindles being so located as to form two rows of spindles on each side of the machine, the spindles to twist the single threads forming one row, and the spindles to twist the doubled threads forming the other row, two belts, running in the same direction and approximately parallel with each other, and means to drive said belts, the outer surface of one of said belts being adapted, by contact therewith, to drive the spindles composing one of said rows, and the inner surface of the other of said belts being adapted, by contact therewith, to drive the spindles composing the other of said rows, in combination with means to stop the twisting operation of any individual group of said spindles upon the breakage of a thread.

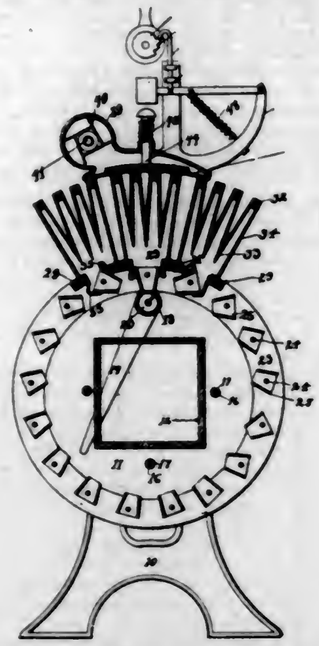
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**755,262. DUST-COLLECTOR.** JOHN H. WALSH, Mason City, Nebr. Filed Mar. 15, 1902. Serial No. 98,248. (No model.)

*Claim.*—1. In a dust-collector, the combination of two stationary disks, each having a cam-groove, a rotatable side plate on each of said disks, a series of cloth-covered filter-sections secured between the side plates and open only to the interior of the machine, a chute adjacent to the inner end of each filter-section and open at its inner and outer ends, a flexible strip connecting the sides of the chutes and the filter-sections, shafts fixed to the chutes and crank-arms on the shafts, rollers on the crank-arms to enter the grooves in the stationary disks and means for receiving and carrying off dust from the uppermost chute, for the purposes stated.

2. A dust-collector comprising in combination two stationary end pieces, an air-trunk for introducing dust-laden air through one of said end pieces, a rim rotatably mounted on each end piece, a series of cloth-covered filter-sections secured to said rims and open at their inner ends, a chute at the inner end of each section, means for tilting said chutes when at their upper limit of movement to allow the solid contents thereof to drop and for holding said chutes throughout the rest of their rotation in position to prevent solid substance from dropping from the section downwardly, a dust-conveyer below the uppermost chute, a fan above the uppermost filter-section so arranged that the air from said fan must pass through

the cloth of the section and means for rotating the rims bearing the filter-sections intermittently, for the purposes stated.



3. A dust-collector, comprising in combination two stationary end pieces, a conveyer for introducing dust-laden air through one of said end pieces, a rim rotatably mounted on each end piece, a series of cloth-covered filter-sections secured to said rims and open at their inner ends, a chute at the inner end of each section, means for inclining the chutes during the rotation of the rims, a dust-conveyer below the uppermost chute, a fan above the uppermost filter-section, means for inclosing the uppermost filter-section so that the air from said fan must pass through the cloth of the section, means for rotating the rims bearing the filter-sections intermittently, and means for striking the uppermost filter-section when it is directly above the conveyer, for the purposes stated.

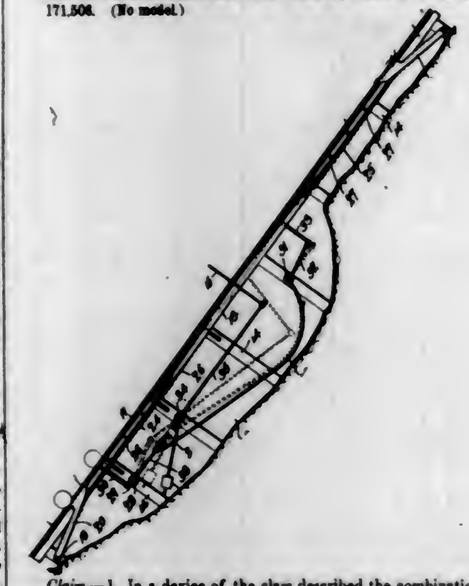
4. An improved dust-collector, comprising in combination two stationary end pieces, supporting-legs attached thereto, two circular rims rotatably mounted on the end pieces, a number of cloth-covered filter-sections mounted upon the rotatable rims and covered on all sides except the side toward the interior of the machine, means for discharging a current of dust-laden air to the interior of the machine, an open-topped trough on the interior of the machine, one of said end pieces having an eccentric groove with an enlarged portion near its top, a shaft mounted in said trough and projected through the end pieces, a wiper on the shaft, a screw on the shaft to carry the contents of the trough to a point of discharge, a chute for each cloth-covered filter-section open at its top and bottom, a supporting-shaft for each chute, said shaft having bearings in the rotatable rims, a lever on one end of each shaft, a roller on each lever to enter the eccentric groove and another roller on each lever to be engaged by the wiper on the screw-shaft and means for driving the screw-shaft.

5. An improved dust-collector, comprising in combination two stationary end pieces, supporting-legs attached thereto, two circular rims rotatably mounted on the end pieces, a number of cloth-bearing filter-sections mounted upon the rotatable rims and covered on all sides except the side toward the interior of the machine, means for discharging a current of dust-laden air into the interior of the machine, an open-topped trough on the interior of the machine, one of said end pieces having an eccentric groove provided with an enlarged portion near its top, a shaft mounted in said trough and projecting through the end pieces, a wiper on one end of said shaft, a screw on the shaft carrying the contents of the trough to a point of discharge, a chute open at its top and bottom for each cloth-bearing filter-section, a shaft for supporting each chute, said shaft having its bearing in the rotatable rims, a lever on the end of each of said shafts, a roller on each of said levers to enter the eccentric groove and another roller on each of said levers to be engaged by the wiper on the screw-shaft, means for rotating the screw-shaft and flexible strips connecting the edges of each chute with the edges of the adjacent filter-section.

6. An improved dust-collector, comprising in combination two stationary end pieces, supporting-legs attached thereto, two circular rims rotatably mounted on the end pieces, a number of cloth-bearing filter-sections mounted upon the rotatable rims and covered on all sides except the side toward the interior of the machine, means for discharging a current of dust-laden air into the interior of the machine, an open-topped trough on the interior of the machine, one of said end pieces having an eccentric groove provided with an enlarged portion near its top, a shaft mounted in said trough and projecting through the end pieces, a wiper on one end of said shaft, a screw on the shaft carrying the contents of the trough to a point of discharge, a chute open at its top and bottom for each cloth-bearing filter-section, a shaft for supporting each chute, said shaft having its bearings in the rotatable rims, a lever on the end of each of said shafts, a roller on each of said levers to enter the eccentric groove and another roller on each of said levers to be engaged by the wiper on the screw-shaft, means for rotating the screw-shaft and flexible strips connecting the edges of each chute with the edges of the adjacent filter-section, and means for automatically turning said levers on the shafts of the chutes from a downwardly to an upwardly inclined position when on their upward movement.

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**755,263. RAILWAY-GATE. THOMAS S. WHITE, West Frankfort, and MARSHALL M. NEAL, Benton, Ill. Filed Sept. 1, 1903. Serial No. 171,508. (No model.)**



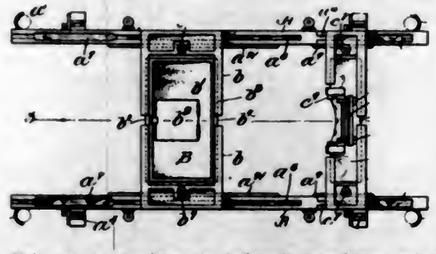
*Claim.*—1. In a device of the class described the combination with railway-track rails, of reversely-disposed trip-rails arranged adjacent said track-rails in position to be operated by a passing train, spaced transversely-arranged shafts disposed between said rails on opposite sides of the gate opening in a plane below the track, and connected respectively with the trip-rails, a shaft disposed intermediately of said spaced shafts and in alinement therewith, a weighted arm attached to said intermediate shaft, a yoke member extending laterally from said intermediate shaft on one side and spaced arms extending from the other side, a vertically-arranged gate mounted on the free ends of said spaced arms, arms extending respectively from said spaced shafts and movably engaging said yoke, the arm connecting the remote shaft being curved downwardly to provide for the downward movement of the gate.

2. In a device of the class described the combination with railway-track rails, of reversely-disposed trip-rails arranged adjacent to the track-rails in position to be operated by a passing train, a vertically-movable gate, an operating-shaft disposed transversely in a plane below said track and having a weighted arm attached thereto, connecting means between said shaft and gate, means for connecting said shaft with one of said trip-rails, and a rod connected with said shaft and extending beneath the gate and connected with the other trip-rail, said rod being spaced from said gate a distance sufficient to permit the depression of the gate below the track.

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**755,264. ATTACHMENTS FOR BEDSTEADS. ASA WILCHER, Everett, Mass. Filed Mar. 9, 1903. Serial No. 146,845. (No model.)**



*Claim.*—1. An attachment for bedsteads comprising a pair of side bars; means for detachably fastening the side bars to a bedstead, and an extensible cross-bar mounted on the side bars and adapted to be used by the occupant of the bedstead.

2. An attachment for bedsteads comprising a pair of side bars; means for detachably fastening the side bars to a bedstead, and an extensible cross-bar secured to the side bars with provision for adjustment longitudinally thereof.

3. An attachment for bedsteads comprising a pair of side bars; means for detachably fastening the side bars to a bedstead above the side rails of the latter, whereby they can be placed in position and removed at will, and two extensible cross-bars adjustably mounted on the side bars, one of which is provided with a back-rest and the other with a table.

4. An attachment for bedsteads comprising a pair of extensible side bars; means for detachably fastening the side bars to a bedstead, an extensible cross-bar, and a back-rest on said cross-bar.

5. An attachment for bedsteads comprising a pair of side bars; means for detachably fastening the side bars to a bedstead; an extensible cross-bar mounted upon said side bars; means for adjusting said cross-bar longitudinally of the side bars; and a back-rest on said cross-bar.

6. An attachment for bedsteads, comprising a pair of extensible side bars; means on said side bars for engaging the ends of a bedstead; an extensible cross-bar; means for fastening the ends of the cross-bar to the side bars with provision for adjustment of said cross-bar longitudinally of the side bars, and a back-rest on said cross-bar.

7. An attachment for bedsteads, comprising a pair of side bars; means on the said side bars for engaging the ends of a bedstead; a cross-bar fixed at its ends to the side bar; an adjustable section on the said cross-bar, and means for supporting said section in an inclined position.

8. An attachment for bedsteads comprising a pair of side bars; means for detachably fastening the side bars to a bedstead; one or more cross-bars carried by the side bars and adapted to be used by the occupant of the bedstead, and legs on the side bars for engaging the side rails of a bedstead to support the side bars above the side rails.

9. An attachment for bedsteads comprising a pair of side bars; means for detachably fastening the side bars to a bedstead; an extensible cross-bar mounted on the side bars and adapted to be used by the occupant of the bedstead, and legs on the side bars for engaging the side rails of the bedstead to support the side bars above the side rails.

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**755,265. AUTOMATIC GAS-VALVE. FERDINAND WILKE, Akron, Ohio, assignor of one-half to William Champ Lilly, Akron, Ohio. Filed June 30, 1903. Serial No. 163,731. (No model.)**

*Claim.*—1. In a gas-valve, a suitable shell provided with a valve-seat, a valve therein having a vertical stem projecting out of said shell, a diaphragm attached to and arranged to uphold the said valve-stem while the pressure of the fluid in said shell exceeds the degree to which the device is set, an unattached weight supported above and adapted to fall upon the upper end of said valve-stem, and means for supporting said weight and releasing the same when said diaphragm is somewhat depressed, substantially as set forth.

2. In a gas-valve, a shell provided with an inlet, an outlet and a valve-seat, a chamber above said valve-seat communicating with said outlet, a valve therein having a vertical stem projecting out of said chamber, a diaphragm fitted in said chamber attached to said valve-stem and adapted to uphold said valve while the fluid-pressure in said chamber exceeds the degree to which the device is set, an unattached weight supported above and adapted to fall upon the upper end of said valve-stem, and means for supporting said weight and releasing the same when said diaphragm is somewhat depressed, substantially as set forth.



3. In a gas-valve, a shell provided with an inlet, an outlet and a valve-seat, a bell-shaped chamber above said valve-seat communicating with said outlet, a valve therein having a vertical stem projecting out of said chamber, a flexible diaphragm formed to fit against the inner walls of said chamber when distended by fluid-pressure and having its center closely attached to said valve-stem, suitable means for securing the periphery of said diaphragm to the bottom of said chamber, a weight supported above said valve-stem, and means for supporting and releasing said weight when said diaphragm is somewhat depressed, substantially as set forth.

4. In a fluid-pressure valve, a shell provided with an inlet and an outlet communicating through a valve-seat, a bell-shaped chamber above said valve-seat communicating with said outlet, a valve therein formed to fit against said valve-seat, a flexible diaphragm fitted to the inner walls of said chamber when distended by fluid-pressure, and a valve-stem closely attached to the center of said diaphragm and projecting vertically out of said chamber, suitable means for securing the periphery of said diaphragm to the bottom of said chamber, a weight supported in guides above said valve-stem, and means for supporting and releasing said weight when said diaphragm is somewhat depressed, substantially as set forth.

5. In a fluid-pressure valve, a suitable shell provided with a valve-seat, a valve therein having a vertical stem projecting out of said shell, a diaphragm secured in said shell having at its center a suitable attachment to said valve-stem, a guided weight adapted to fall upon the end of said valve-stem, suitable guides for said weight, and a trigger adapted to support said weight and to release the latter upon a slight descent of said valve-stem, substantially as set forth.

6. In a fluid-pressure valve, a suitable shell provided with a valve-seat, a valve therein having a vertical stem projectiug out of said shell, a diaphragm secured in said shell having at its center a suitable attachment to said valve-stem, a weight adapted to fall upon the end of said valve-stem, suitable guides for said weight, and a trigger pivoted to one of said guides having a short arm to support said weight and a long arm to engage a suitable holder upon said valve-stem, substantially as set forth.

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**755,266. SPRING-RETAINING-CLIP. ELMER E. WILT and CHARLES T. WILT, Chicago, Ill. Filed Aug. 17, 1903. Serial No. 169,711. (No model.)**



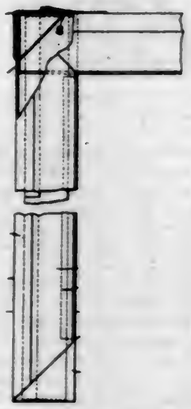
*Claim.*—1. The combination with a thin, sheet-material support, of a clip made of a continuous piece of wire and comprising the longitudinal retaining members $b$ joined at the front of the clip, the coils $b^3$, and the attaching members $b^2$, said retaining members and the coils being located wholly in front of said support and the attaching members extending through and lying against the rear face of the support and attached thereto, said retaining members being curved away from the face of the support between the ends thereof and being inclined away from the support at their outer ends, said clip being made narrower than the support and contained wholly within the side edges thereof.

2. The combination with a thin sheet-material support, of a clip

made of a continuous piece of wire and comprising the longitudinal retaining members *b* which are joined by a transverse member at the front end of the clip, the coils $b^2$ which lie against the front face of said support, the transversely-directed parts $b^3$ in rear of the coil, which extend through two apertures in said support, and the rearwardly-directed attaching-arms $b^4$ which lie flat against the rear face of the support and are fastened thereto, said retaining members *b* being made straight for a distance in front of said coils and the straight parts thereof lying flat against the front face of the support, the retaining members being provided in front of said straight portions with outwardly-curved parts $b^5$ to afford between the support and said curved parts a space to receive an article to be retained by the clip, and the front ends of said members and the transverse connecting member being bent obliquely outwardly from the support to facilitate the insertion of an article into the space between the support and said curved parts $b^5$ of the retaining member.

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**755,267. PICTURE-FRAME. MAX WIENOTT, Breslau, Germany. Filed Apr. 29, 1902. Serial No. 105,161. (No model.)**



*Claim.*—1. A frame composed of a number of hollow sections, the ends of the front wall or part of each section being cut off on one angle and the ends of the rear wall or part of the same section being cut off on a different angle, whereby portions of the rear wall or part project beyond the front wall at the ends of each section, said sections being arranged with the projecting ends of the rear walls of adjacent sections overlapping each other, and means connecting said sections, substantially as described.

2. A frame composed of a number of hollow sections, the front wall or part of each section being cut off in an oblique direction at one end and the corresponding end of the rear or back wall of the section being cut off on a different angle, the sections being assembled so that the ends of the rear or back parts of adjacent sections overlap, and means connecting the sections, substantially as described.

3. A frame consisting of a number of hollow sections, the front wall or part of each section being cut off in an oblique direction at both ends and the ends of the rear part or wall of said section being cut off in a different direction, said sections being arranged so that the ends of the rear parts of adjacent sections overlap each other, and means connecting said sections, substantially as described.

4. A frame consisting of a number of sections, the ends of adjacent sections fitting together, and a series of connecting-strips, each passing through the interior of a portion of the frame and through apertures formed in the meeting ends of adjacent sections to the outside of the frame, substantially as described.

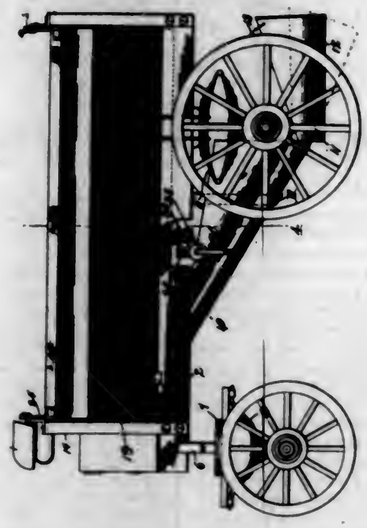
5. A frame consisting of a number of hollow sections, the ends of adjacent sections fitting together, and a series of connecting-strips, each passing through apertures formed in the side walls of meeting ends of adjacent sections and having their ends connected holding said sections in position, substantially as described.

6. A frame composed of a number of hollow sections, the ends of the front wall or part of each section being cut off on one angle and the ends of the rear wall or part of the same section being cut off on a different angle, whereby portions of the rear wall or part project beyond the front wall at the ends of each section, said sections being arranged with the projecting ends of the rear walls of adjacent sections overlapping each other, and a series of connecting-strips each passing through apertures formed in the walls of adjacent sections, substantially as described.

7. In a frame, the combination with two meeting sections, of a flexible strip extending through a portion of the space within the frame and outwardly through apertures formed in said sections, said strip having an opening near one end and a tongue-like part at its other end adapted to be passed through said opening, substantially as described.

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**755,268. DUMPING-VEHICLE. FREDERICK I. R. AKERS, Chicago, Ill. Filed May 29, 1903. Serial No. 159,241. (No model.)**



*Claim.*—1. In a dumping-vehicle, the combination of a body divided longitudinally and having its divisions separable from each other to form an opening between them, an inclined chute arranged under the body, and an incline secured in the end of the body, to one of its divisions only and overlapping the other, for inducing the contents to slide toward said chute.

2. In a dumping-vehicle, the combination of a divisible body of semicylindrical form in cross-section, a chute arranged under said body, means for separating the divisions of the body, and means in one end of the body for working the contents longitudinally thereof toward the chute.

3. In a dumping-vehicle, the combination of a semicylindrical divisible body, a chute arranged under the body, means for moving the divisions of the body relatively in a transverse direction, and means operatively connected therewith in one end of the body for simultaneously working the contents in that side toward said chute.

4. In a dumping-vehicle, the combination of a semicylindrical divisible body, a chute arranged under the body, and an incline secured within the body to one end of one of the divisions thereof and overlapping the other division for working the contents toward said chute.

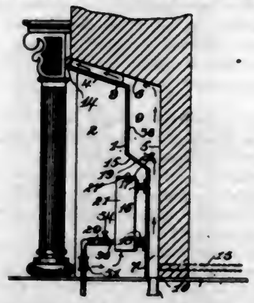
5. In a dumping-vehicle, the combination of a semicylindrical divisible body, a segmental inclined plate secured in one end of the body to one of the divisions thereof and overlapping the other of its divisions, contiguous to the bottom of the body, and an inclined chute arranged below the body and extending from a point contiguous to said plate.

6. In a dumping-vehicle, the combination of a body comprising two sections, each having its bottom struck on the arc of a circle and relatively movable, the inner lower edges of both of said bottom portions being formed at an angle to the longitudinal axis of the body, so that when the divisions of the body separate the space between them will be equally divided down the center of the body.

7. In a dumping-vehicle, the combination of a body comprising two relatively movable sections, the lower inner edges of both of which extend at an angle to the longitudinal axis of the body, and converging toward the forward end of the body, so that the separation of the divisions of the body will commence at the rear end of the body.



**755,269. HEATING APPARATUS. ERNEST H. BENNETT, East Orange, N. J. Filed Apr. 21, 1903. Serial No. 153,642. (No model.)**



*Claim.*—1. The combination of a fireplace, a sheet-metal frame substantially of contour corresponding to the walls of a fireplace and thereby forming a set of air-ducts, and an elongated burner member provided with an elongated mixing-screen upon the whole or portion of which may be carried flames of different widths whereby to vary the heat imparted thereby to the frame.

2. In combination with a fireplace, a sheet-metal frame of contour corresponding to the walls of a fireplace and thereby forming a set of air-ducts, and a burner under said frame and therewithin comprising an elongated member provided with compartments and a continuous diaphragm and whose flame is governed by the number of compartments in use.

3. In combination with a fireplace, a sheet-metal frame of contour corresponding to the walls of a fireplace, and thereby forming a set of air-ducts, and a burner under said frame and therewithin comprising an elongated member provided with compartments and a continuous diaphragm and whose flame is governed by individual ports leading to the compartments which are separately usable.

4. In combination with a fireplace, a sheet-metal frame of contour corresponding to the walls of a fireplace and thereby forming a set of air-ducts, an offset in said frame and intermediate said ducts, and an elongated burner comprising a series of independent mixing-tubes to which individual supply-ports supply the fuel whereby the whole or a portion of the burner-flame may impinge the offset, thereby varying the heat of the apparatus.

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**755,270. FASTENER FOR SHOES. CHARLES D. BRENT, Cromwell, Otago, New Zealand. Filed Oct. 9, 1903. Serial No. 176,404. (No model.)**



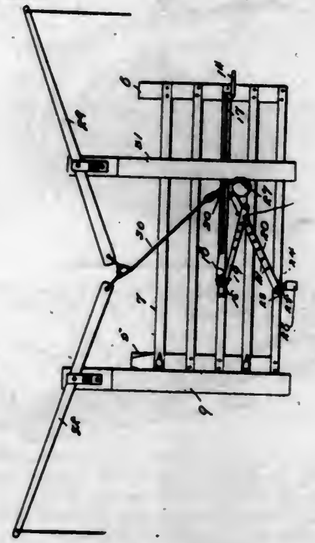
*Claim.*—A fastener consisting of two hooked portions having their shanks curved, one of said shanks being internally threaded and the other externally threaded and connected together substantially as described.

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**755,271. GATE. JOHN F. BURKHARDT, San Antonio, Tex. Filed Dec. 11, 1903. Serial No. 184,713. (No model.)**

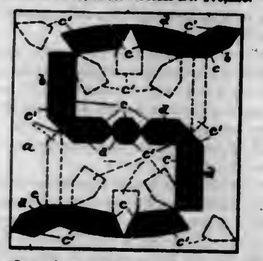
*Claim.*—1. The combination with a hinge-post and a latch-post, of a gate hinged to the gate-post, a keeper upon the latch-post, a pivoted latch upon the gate movable into and out of engagement with the keeper-plate when the gate is in closed position, a lever pivoted upon the gate, connections between the lever and latch, a toggle pivoted at one end to said lever and at its opposite end to a rotatable support, one of the members of the toggle projecting beyond the pivotal connection of the members of the toggle, a weight mounted upon said projecting portion, and a lever connected with said weight and adapted to raise it.

2. The combination with a hinge-post and a latch-post, of a gate hinged to the hinge-post, a keeper-plate upon the latch-post, an angular latch pivoted upon the gate and movable into and out of engagement with the keeper-plate when the gate is in closed position, a lever pivoted upon the gate, a rod connected to said lever and to one end of the angular latch, a clevis pivoted to the lever, a toggle including a member pivoted to the clevis, a rotatable head to which the opposite end of the second member of the toggle is pivoted, one member of the toggle extending beyond its pivotal connection with the other member, a weight carried by said extending portion, a post spaced from the hinged post in the path of opening movement of the gate, and levers pivoted to the last-named post and the hinged post respectively and connected with said weight for raising the latter.



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**755,272. CHANGEABLE SIGN. GEORGE E. BURNHAM, Central Falls, R. I. Filed Oct. 8, 1903. Serial No. 176,229. (No model.)**



*Claim.*—1. In a changeable sign, the combination of a base, a plurality of pairs of plates, one plate of each pair being fixed to said base, the other plate of each pair being hinged to the first-named plates, the plates of the respective pairs being slotted at points adjacent their pivotal connections, and means extending through said slots and being connected to the movable plates for operating the same.

2. In a sign of the type set forth, a base, a plurality of pairs of hinged plates, said plates being arranged in pairs with one plate of each pair fixed to the base, said plates being slotted at points adjacent their hinged connections, said base formed with slots registering with the slots of the said plates, levers projecting through the slots of said base and having their inner ends connected to the movable plates of said pairs, and means for actuating said levers.

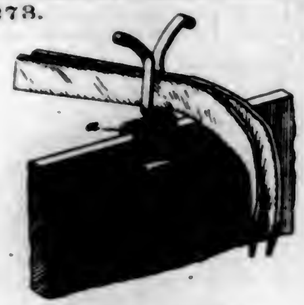
3. In a sign of the type set forth, a fixed plate, and a second plate hinged thereto, both of said plates being slotted at their connected ends, the side walls of the slot of said movable plate being formed with grooves, a lever projecting through said slots, and a pin carried by said lever engaging the grooves of said slot.

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**755,278. REIN-HOLDER. THOMAS F. B. CLAGETT, Washington, D. C. Filed Sept. 22, 1903. Serial No. 174,236. (No model.)**

*Claim.*—A rein-holder, including an attaching member, comprising an inverted substantially U-shaped clip, and a spring-pressed disk guided in one arm thereof which coacts with the other arm, and a rein-holder comprising a single strip of metal having parallel arms with outwardly-deflected free ends, and a fastening device extending through the doubled contiguous ends of said clip and holder to support the latter in a vertical position from the top of the former, substantially as described.

755,273.



755,274. CORD-HOLDER. ALBERT R. CLARK, Terryville, Conn. Filed May 19, 1903. Serial No. 157,755. (No model.)



*Claim.*—1. In a cord-holder, a casing, locking-plates secured in the casing, a reciprocating locking-dog, a pivoted lever engaging the locking-dog for reciprocating the same to clamp a cord against the locking-plates, and means for guiding the locking-dog, substantially as described.

2. In a cord-holder, the combination with recessed locking-plates, of a reciprocating locking-dog provided with a bifurcated end, a pin standing between the said end to guide the locking-dog, and an eccentrically-pivoted lever having a lug engaging with the locking-dog to reciprocate the said dog between said locking-plates, substantially as described.

3. In a cord-holder, the combination with a casing having a top and a bottom, of a bifurcated reciprocating locking-dog having a toe and provided with V-shaped recesses, rigidly-secured locking-plates having concavities and bosses, and means for reciprocating the locking-dog between the locking-plates to clamp a cord between the said toe and bosses and in the said concavities and recesses, substantially as described.

4. In a cord-holder, the combination with a casing, of an angular reciprocating locking-dog having a cam-slot and provided with bifurcated ends, a pin secured to the casing and standing between the furcations of the locking-dog to guide the same, independent locking-plates rigidly secured in the casing, an eccentrically-pivoted lever on the casing, a depending lug from the lever engaging the cam-slot of the locking-dog for reciprocating the locking-dog between the locking-plates to clamp a cord, and a guide-pin fixed in the casing for preventing the cord from becoming crossed, substantially as described.

755,275. BOTTLE-CLOSURE. FRANCIS W. H. CLAY, Pittsburg, Pa. Filed Apr. 13, 1903. Serial No. 152,312. (No model.)



*Claim.*—1. The combination with a vessel provided with two seating surfaces of different diameter, of a concave resilient disk buckled inward from normal position and resting in contact with said two surfaces by leverage stress induced by the buckling movement.

2. The combination, of a vessel having within its mouth an annular rib and an inwardly projecting ledge, and a resilient disk concaved upward and having an expansible flange to cooperate with the ledge of the vessel mouth to induce a thrust between the disk and the said rib when the disk is buckled inward.

3. In a bottle stopping device a concave disk having an annular bearing surface lying in a plane without the plane of the edge of the disk, whereby indenting the concave body of the disk alters the distance apart of the planes of the edge and of the said bearing surface, for the purpose described.

4. The combination with a vessel formed with a mouth having an annular bearing ledge and an annular bearing rib, of a concaved disk of resilient material adapted to be buckled or reversed in its concavity for the purpose specified.

5. A vessel having a mouth provided with two annular bearing surfaces therein of different diameters, combined with a concaved disk of resilient material adapted to induce pressure on the said two bearing surfaces by reversing the concavity of the disk, substantially as described.

6. A bottle stopper comprising a resilient disk having a concaved center, an annular rib, and a divided annular flange outside the said rib, for the purpose described.

7. The combination with a resilient stopper disk, of a vessel having a mouth with a seating rim and an abutment ledge of different diameter from, but lying in nearly the same plane as, the said rim, for the purpose specified.

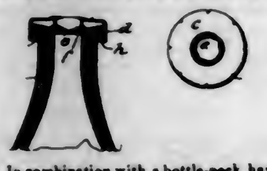
8. A bottle closure comprising in combination the bottle mouth having two bearing surfaces, and a resilient concave disk, the disk being adapted to engage its rim and catch under one of said surfaces by buckling inward and to rest by leverage stress on the other of said surfaces.

9. A vessel having a mouth provided with two annular bearing surfaces for vertical pressure, being of different diameters, combined with a concaved disk adapted to fit in the said mouth and rest on one of the said bearing surfaces and to expand its edges to engage the other of the bearing surfaces, when buckled in or reversed in its concavity, substantially as described.

10. A bottle stopping device comprising a disk of general concaved form having split or divided edges and having annular corrugations, substantially as described.

11. A bottle having a mouth provided with an annular rib therein, an annular retaining lip outside of the said rib, combined with a concaved disk having an annular ridge corresponding to the said rib of the bottle and a split outside flange whose edge lies in a different plane from that of the said ridge, to engage the said retaining lip of the bottle when the disk is buckled inward.

755,276. BOTTLE-CLOSURE. FRANCIS W. H. CLAY, Pittsburg, Pa. Filed Oct. 7, 1903. Serial No. 176,040. (No model.)



*Claim.*—1. In combination with a bottle-neck having retaining means for the cap, a metallic stopper-cap sprung out of normal position and exerting a self-induced pressure on the surface of the bottle surrounding the mouth thereof, substantially as described.

2. A bottle-closing cap having an anchorage on the bottle-neck, a portion engaging the mouth of the bottle to close it, and being under a constant stress exerting a pressure by its own resiliency upon said engaging portion.

3. The combination of a bottle having a seating-surface, a packing, an anchorage-ledge, and a resilient metallic cap beat out of normal position and engaging the ledge and the seating-surface whereby it presses on the packing by a self-induced elasticity, substantially as described.

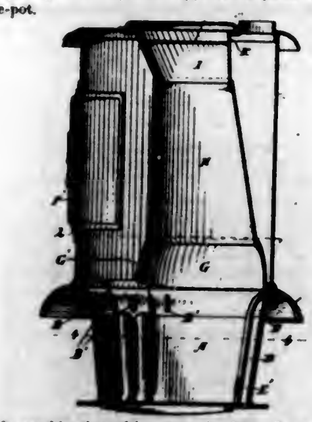
4. The combination with a bottle having a seating-surface and an annular anchorage-ledge, of a resilient metallic cap having a part engaging the bottle-seating surface, a flange outside said part, and depending legs engaging said ledge.

5. The combination with a bottle having an achorage-ledge sloping on the outside, and a seating-surface, of a cap having a seating portion and a divided annular depending flange to engage said anchorage when the cap is pressed on the neck.

755,277. HEATING-STOVE. PETER J. COFFEIN, Grand Rapids, Mich. Filed Sept. 24, 1903. Serial No. 174,460. (No model.)

*Claim.*—1. In combination with a stove having a fire-pot, a body above the fire-pot, and a top to the body having an opening and a cover; a coking-chamber, a magazine and a funnel extending continuously from the opening in said top to the fire-pot, and detachably supported in place solely by the fire-pot and top.

2. In combination with a wood-burning stove comprising a fire-pot, a body above the fire-pot provided with a front door, and a top having an opening and a cover: a removable coal-burning attachment of tubular form, and engaging the top of the fire-pot at the rear and sides thereof, and extending continuously from the fire-pot to the opening in the top, and supported in place solely by the top and fire-pot.



3. In combination with a stove having a fire-pot, a body having a front opening, and a top having a top opening, detachable parts supported in place solely by the fire-pot and top and comprising a funnel-section removable through the top opening, a magazine removable through the front opening, and a coking-chamber also removable through the said front opening.

4. In a stove, a truncated conical fire-pot having an air-chamber in its upper portion, openings from said air-chamber into the front portion only of the fire-pot, an inlet to admit cold air to said air-chamber, two vertical air-passages near the front of the fire-pot and extending from the base of the store to the air-chamber, vertical slots connecting the said passages with the interior of the fire-pot, a vertical passage at the rear of the fire-pot and connecting the air-chamber and base of the stove, and openings from said passage into the fire-pot near the bottom thereof.

5. In combination with a wood-burning stove, comprising a fire-pot, a cylindrical body above the fire-pot and having a front door, and a top having an opening and a cover for said opening; a coking-chamber resting upon the fire-pot and disconnected therefrom at the front only, a magazine above the coking-chamber and having an opening into the interior of the store and a flange connecting it to the top, and an inner cover in the magazine and below said opening.

6. In combination with a wood-burning stove, comprising a fire-pot, a body having a front door and a top having an opening and a cover; a removable coal-burning attachment comprising a coking-chamber adapted to rest upon the fire-pot at the rear thereof and supported thereby, a truncated conical magazine adapted to rest upon the coking-chamber, and a funnel-section adapted to rest upon the magazine and to fit within the opening of the top and having an opening into the body of the stove, and an inner cover below the said opening.

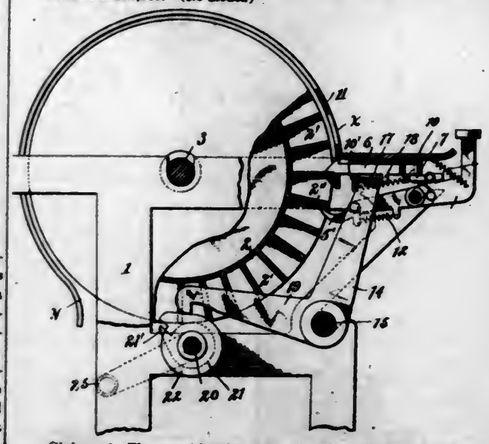
7. In a wood-burning stove, the combination of a top having an opening and a cover, a body having a front door, a fire-pot having an air-chamber, and vertical flues, and openings from the air-chamber and flue at the front side of the fire-pot only, and a detachable coal-burning attachment comprising a tubular structure extending continuously from the fire-pot to the opening in the top, and disconnected from the fire-pot at the front only.

8. The combination of a fire-pot having an annular air-chamber at the top, means for admitting cold air to said air-chamber, air-passages near the front of the fire-pot connecting said chamber with the base of the stove, slots connecting said chamber and passages with the interior of the fire-pot at the front portion only thereof, a removable coking-chamber resting on the fire-pot at the rear portion thereof and having a thickened front portion extending across above the fire-pot and opposite said air-openings, a magazine above the coking-chamber, a funnel-top to the magazine, two closures to said top and spaced apart, and an opening between said closures for the escape of gases.

755,278. MANUFACTURE OF ARTIFICIAL-FUEL BLOCKS. WILLIAM Y. CRONEMANN, Freeland, Pa., assignor of one-half to Hiram Maley, Freeland, Pa. Filed Feb. 6, 1903. Serial No. 142,161. (No specimens.)

*Claim.*—The process of making artificial-fuel blocks, consisting in thoroughly intermingling, in suitable proportions, slightly-moist anthracite-coal culm and dry pulverized resin, incorporating with the mixture a quantity of asphalt rendered fluid by means of a volatile solvent, then subjecting the product in suitable masses to the simultaneous action of heat and pressure until the moisture and the solvent of the asphalt have been vaporized and the resin has been melted.

755,279. MECHANICAL CASHIER. ISAAC S. DEMENT, East Orange, N. J., assignor to American Mechanical Cashier Company, New York, N. Y., a Corporation of New York. Filed July 23, 1903. Serial No. 167,285. (No model.)



*Claim.*—1. The combination of a plurality of rotary cash-receptacles movable into cash-discharging position, individual operating means for moving the receptacles step by step, means for locking the receptacles, and means for simultaneously unlocking and progressing the cash-receptacles independent of the individual operating means.

2. The combination of a plurality of rotary cash-receptacles, provided with pockets and movable to bring their pockets successively to cash-discharging position, individual operating means for moving the receptacles step by step, means for locking the receptacle independent of but operatively connected to the individual operating means, and means for unlocking the cash-receptacles and simultaneously progressing the same independent of the individual operating means.

3. The combination of a plurality of rotary cash-receptacles, movable into cash-discharging position, means for moving the receptacles individually into discharging position, means for separately locking the receptacles, and means for simultaneously operating the locking means, and progressing the cash-receptacles independent of the individual operating means.

4. The combination of a plurality of rotary cash-receptacles movable step by step into cash-discharging position, means for individually operating and locking the receptacles in the discharging positions, cam-operated means for simultaneously operating the locking means, and means for progressing the receptacles independent of the individual operating means.

5. The combination of a plurality of rotary cash-receptacles, movable step by step to cash-discharging position, means for locking the receptacles in discharging position, a cam-controlled oscillating bar capable of moving the locking devices simultaneously into and out of engagement with the cash-receptacles, an operating-shaft carrying said cams, and a series of devices on said shaft engaging the receptacles to progress them when the shaft is rotated.

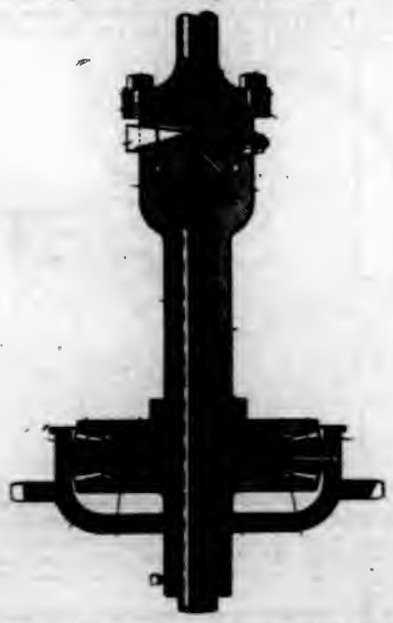
6. The combination of a plurality of rotary cash-receptacles movable step by step to cash-discharging position, means for locking the receptacles in discharging position, an operating-shaft having thereon a series of devices adapted to engage the receptacles once during each rotation of said shaft, cams on said shaft, levers operated by the cams, and a horizontal bar controlled by said cams and levers to simultaneously operate the locking means to free the receptacles and allow the devices on the operating-shaft to progress the receptacles.

7. The combination of a plurality of rotary cash-receptacles movable step by step to cash-discharging position, means for locking the receptacles in discharging position, a handle-controlled op-

erating-shaft, means on the shaft for operating the receptacles, cams on the shaft, levers controlled by the cams and having a bar engaging the locking means, whereby each revolution of the operating-shaft will simultaneously operate the locking means and progress all the receptacles to the succeeding discharging position.

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755,280. VEHICLE-AXLE. Myron H. Dutrick, Sterling, Ill. Filed Dec. 16, 1903. Serial No. 185,260. (No model.)



*Claim.*—1. In a device of the character described, the combination of an axle-section, an axle-section in alinement therewith and equipped with a sleeve extension journaled on the first-named section, means being provided for confining the sleeve against longitudinal movement with relation to said first-named axle-section, and differential gear mechanism having a gear connected with said first-named axle-section and a gear connected with said sleeve extension, for the purpose set forth.

2. In a device of the character described, the combination of an axle-section provided at its inner end with a head, an axle-section having its inner end provided with a head adjacent to said first-named head, a sleeve extension secured to said second-named axle-section and recessed to receive said heads, and differential gear mechanism having a gear connected with said first-named axle-section and a gear connected with said sleeve extension, for the purpose set forth.

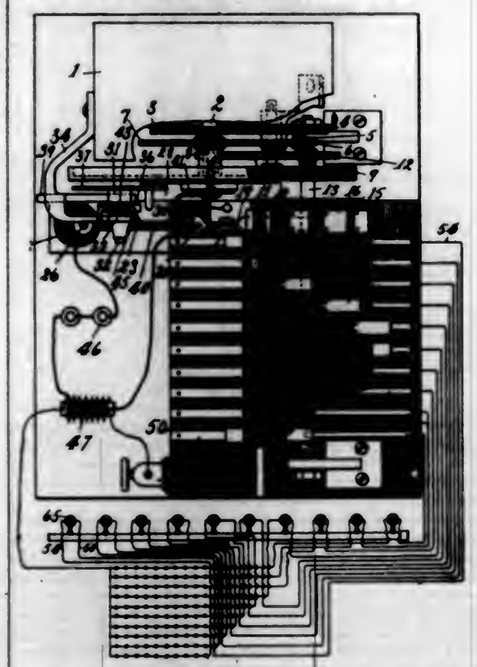
3. In a device of the character described, the combination of an axle-section provided at its inner end with a flanged head, an axle-section having an enlarged end abutting against said head and provided at the base of its enlargement with a flange, a sleeve having a bell equipped with a flange abutting against the flange of said second-named axle-section, means detachably securing the sleeve to the second-named axle-section, and differential gear mechanism having a gear fixed to the free end of said sleeve and a gear fixed to said first-named axle-section, for the purpose set forth.

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755,281. ELECTRIC TIME-SWITCH. Joseph Dilbas and Ernest de Mersanier, San Francisco, Cal. Filed Aug. 27, 1903. Serial No. 170,295. (No model.)

*Claim.*—1. In an apparatus of the character described, the combination of groups of gas-jets, a plurality of wires, each having a number of breaks therein, adjacent to corresponding gas-jets, means for introducing the wires in succession into an electric circuit, and means for starting and stopping an electric current in said circuit, substantially as described.

2. In an apparatus of the character described, the combination of groups of gas-jets, a plurality of wires, each having a number of breaks therein, adjacent to corresponding gas-jets, means for introducing the wires in succession into an electric circuit, and means for starting and stopping a number of times in succession an electric current in said circuit, substantially as described.



3. In an apparatus of the character described, the combination of a plurality of gas-jets, wires, each having a break adjacent to a gas-jet, means for introducing each wire in succession into an electric circuit, and means for starting and stopping an electric current in each circuit so formed, substantially as described.

4. In an apparatus of the character described, the combination of a plurality of gas-jets, wires, each having a break adjacent to a gas-jet, means for introducing each wire in succession into an electric circuit, and means for rapidly starting and stopping a number of times in succession an electric current in each circuit so formed, substantially as described.

5. In an apparatus of the character described, the combination of a plurality of gas-jets, wires, each having a number of breaks adjacent to corresponding gas-jets, a drum and devices carried thereby for introducing each wire in succession into an electric circuit, means for rotating said drum, and devices carried by said drum and operating simultaneously with the closures of the said circuits to start and stop an electric current in the said circuit, substantially as described.

6. In an apparatus of the character described, the combination of a plurality of gas-jets, wires, each having a number of breaks adjacent to corresponding gas-jets, a drum and devices carried thereby for introducing each wire in succession into an electric circuit, means for rotating said drum, and devices carried by said drum and operating simultaneously with the closures of the said circuits to rapidly start and stop an electric current a number of times in succession in the said circuit, substantially as described.

7. In an apparatus of the character described, the combination of a plurality of gas-jets, wires, each having a plurality of breaks therein, adjacent to corresponding gas-jets, a drum and means for revolving the same, a common electric circuit, means carried by said drum for introducing the wires in succession into said circuit, a vibrating contact-maker, means operated by the revolution of the drum at the time when each wire is so introduced to vibrate said contact-maker to make and break contact a number of times in succession, and means whereby the making and breaking of said contact starts and stops a current through said wire, substantially as described.

8. In an apparatus of the character described, the combination of a plurality of gas-jets, wires, each having a number of breaks therein, adjacent to corresponding gas-jets, means for introducing the wires in succession into an electric circuit, and means for rapidly starting and stopping a number of times in succession an electric current in said circuit, substantially as described.



9. In an apparatus of the character described, the combination of a plurality of gas-jets wires, each having a number of breaks therein, adjacent to corresponding gas-jets, a corresponding number of contact-plates connected to said wires, a common contact-plate in an electric circuit, a drum, cams carried by said drum and arranged to make in succession contacts between the common contact-plate and the series of plates, a mercury vessel in an electric circuit, a metallic needle vibrating into and out of contact with the mercury, means operated by the revolution of the drum during each of the periods of contact between the common contact-plate and the series of plates to vibrate said needle, and means whereby the making and breaking of the circuit by said needles starts and stops a current through the common contact-plate and the plate connected therewith, substantially as described.

9. In an apparatus of the character described, the combination of a plurality of gas-jets wires, each having a number of breaks therein, adjacent to corresponding gas-jets, a corresponding number of contact-plates connected to said wires, a common contact-plate in an electric circuit, a drum, cams carried by said drum and arranged to make in succession contacts between the common contact-plate and the series of plates, a mercury vessel in an electric circuit, a metallic needle vibrating into and out of contact with the mercury, means operated by the revolution of the drum during each of the periods of contact between the common contact-plate and the series of plates to vibrate said needle, means whereby the making of the circuit by said needle starts and stops a current through the common contact-plate and the plate connected therewith, and a device for controlling the number of contacts with the mercury, substantially as described.

10. In an apparatus of the character described, the combination of a plurality of gas-jets, wires each having a break adjacent to a corresponding gas-jet, means for introducing each wire in succession into an electric circuit, a driving mechanism for said introducing means, timing mechanism operated by the driving mechanism and arranged at suitable intervals to render said introducing mechanism operative and then inoperative, and means for starting and stopping an electric current in each circuit so formed, substantially as described.

11. In an apparatus of the character described, the combination of a plurality of gas-jets, wires each having a break adjacent to a corresponding gas-jet, means for introducing each wire in succession into an electric circuit, a driving mechanism for said introducing means, timing mechanism operated by the driving mechanism and arranged at suitable intervals to render said introducing mechanism operative and then inoperative, said timing mechanism comprising a four-armed block and successively-advancing pegs operating said arms to turn said block, and means operated by the movement of said block to permit or prevent the closure of a circuit, and means for starting and stopping an electric current in each circuit so formed, substantially as described.

12. In an apparatus of the character described, the combination of a plurality of gas-jets, wires each having a break adjacent to a corresponding gas-jet, means for introducing each wire in succession into an electric circuit, a clockwork mechanism for driving said introducing means, a wheel driven by said clockwork mechanism and arranged to make a revolution in twenty-four hours, devices carried by said wheel arranged thereon at an adjustable interval, means for starting and stopping an electric current in each circuit so formed, and means operated by said devices in succession for rendering said starting and stopping means first operative and then inoperative, substantially as described.

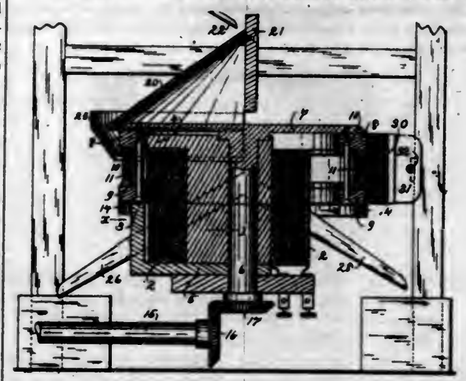
13. In an apparatus of the character described, the combination of a plurality of gas-jets, wires each having a break adjacent to a corresponding gas-jet, means for introducing each wire in succession into an electric circuit, means for starting and stopping an electric current in each circuit so formed, and a tally-lamp in each circuit indicating by the change in its condition the starting or stopping of the electric current in the circuit, substantially as described.

14. In an apparatus of the character described, the combination of a plurality of gas-jets, wires each having a break adjacent to a corresponding gas-jet, means for introducing each wire in succession into an electric circuit, means for starting and stopping an electric current in each circuit so formed, and a tally-lamp in each circuit ignited by the passage of an electric current in the circuit, substantially as described.

15. In an apparatus of the character described, the combination of a plurality of gas-jets, wires each having a break adjacent to a corresponding gas-jet, means for introducing each wire in succession into an electric circuit, means for starting and stopping an electric current in each circuit so formed and a row of indicating devices, one in each circuit indicating by the change of condition the passage of a current in each circuit, substantially as described.

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755,282. ELECTROMAGNETIC SEPARATOR. Myron Dixon, Milwaukee, Wis. Filed May 23, 1903. Serial No. 158,396. (No model.)



*Claim.*—1. The combination of a shaft; a pair of rigidly-connected magnetizable rings separated by non-magnetic material, and supported from said shaft; an electromagnet having one pole-piece in proximity to one face of one of the rings, and the other pole-piece in proximity to a face of the other ring substantially at right angles to said face of the first-mentioned ring.

2. The combination of a substantially vertical shaft; a cap-plate therefor of non-magnetic material; a pair of magnetizable rings rigidly secured to the under side of the cap-plate; a ring of non-magnetic material interposed between said magnetizable rings; an electromagnet eccentric to the rings and having pole-pieces in proximity to the rings at one side of the magnet; and means for feeding material against the outer faces of the rings.

3. The combination of a substantially vertical shaft; a cap-plate therefor of non-magnetic material; a pair of magnetizable rings rigidly secured to the under side of the cap-plate; a ring of non-magnetic material interposed between said magnetizable rings; an electromagnet eccentric to the rings and having pole-pieces in proximity to the rings at one side of the magnet; and means for feeding material against the outer faces of the rings, said magnetizable rings being each formed of a series of segments connected by non-magnetic material.

4. The combination of a substantially vertical shaft and a non-magnetic cap-plate therefor; a pair of rings subdivided into insulated segments and connected with the cap-plate; a ring of non-magnetic material interposed between the magnetizable rings, and covering the opposing faces thereof; said non-magnetic ring having a concave outer face; means for feeding material against said concave face; and an electromagnet having pole-pieces in proximity to those portions of the respective magnetizable rings which are traversing the line of feed.

5. The combination of a drum formed of magnetizable and non-magnetizable rings revoluble on a vertical axis; an electromagnet eccentrically located within the drum; said electromagnet having one pole-piece projecting at one side of the magnet into proximity with the inner face of the drum near one end and another pole-piece of opposite polarity projecting from the same side of the magnet into proximity with the opposing end of the drum; together with a semiconical distributing-shield secured at its upper end to a frame-bar 21 and having its base covering the side occupied by the magnet pole-pieces, and a concave reversing-shield 25 opposing the lower edge of the distributing-shield.

6. The combination of an electromagnet having pole-pieces projecting at right angles to each other and a set of non-magnetically-connected magnetizable carriers arranged to travel into and out of the magnetic field of said electromagnet; one of said carriers being arranged to move over one of said pole-pieces and the other carrier at the side of the opposing pole-piece.

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755,288. GLOBE FOR LAMPS. Robert M. Dixon, East Orange, N. J., assignor to the Safety Car Heating & Lighting Company, a Corporation of New Jersey. Filed Feb. 12, 1902. Serial No. 93,712. (No model.)

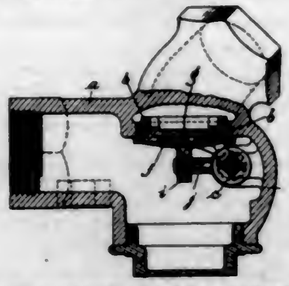
*Claim.*—1. As a new and useful article of manufacture, a globe for car-lamps consisting of the translucent body *a* closed at its bottom and having at its upper edge an abruptly-inturned circumferential lip *b* arranged to be engaged by clasps from within.

2. As a new and useful article of manufacture, a globe for car-lamps consisting of a bowl-shaped body and having at its upper edge an abruptly-inturned circumferential lip arranged to be engaged by clasps from within, the said lip bounding the open space at the top of the globe.



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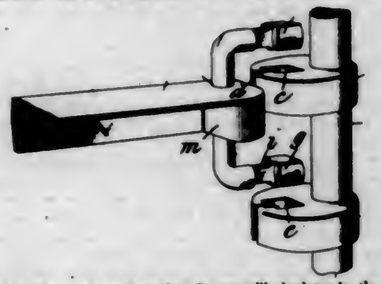
**755,284. END TRAIN-PIPE VALVE.** ROBERT M. DIXON, East Orange, N. J., assignor to the Safety Car Heating & Lighting Company, a Corporation of New Jersey. Filed Oct. 27, 1902. Serial No. 128,920. (No model.)



*Claim.*—In an end train-pipe valve the combination of a valve-casing *a* having therein a concave-faced seat *b*, a bracket or support *c* located within the valve-casing, a valve-spindle *d* passing through the support, a convex-faced valve *f* combined with a notch or drip-conduit at its edge and means for operating the valve from the exterior of the valve-casing.

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**755,285. BEDSTEAD-FASTENER.** HARRY A. DUNBAR, Asheville, N. C. Filed July 27, 1903. Serial No. 167,198. (No model.)



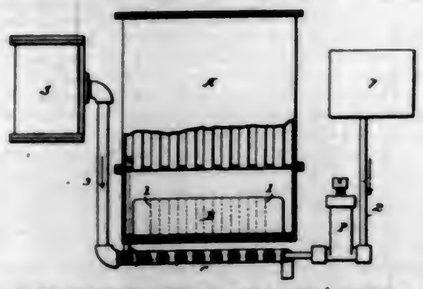
*Claim.*—In a corner-fastening for metallic bedsteads, the combination with a corner-post, and a side rail formed by a bar right-angular shape in a cross-section, of a pair of lugs projecting laterally from said post arranged one above the other, and each provided with a tapering socket having a channel leading from the same, a vertically-disposed yoke extending through the horizontal member of the side rail and abutting against the inner face of the vertical member thereof, the ends of said yoke terminating in tapering heads designed to coact with said sockets in the lugs, and a block of metal cast about the intermediate portion of the yoke and engaging the under and inner faces of the vertical and horizontal members of the side rail, substantially as described.

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**755,286. FEED-WATER HEATER.** STERLING ELLIOTT, Boston, Mass. Filed Aug. 19, 1902. Renewed Sept. 23, 1903. Serial No. 174,379. (No model.)

*Claim.*—1. The combination with a boiler, and vapor-burner below the same, of a heater-pipe arranged below the burner to heat the air passing upward to the burner, substantially as set forth.

2. The combination with an engine, boiler, and burner, of a pipe below the burner communicating with the exhaust of the engine, and a tube extending through the coil and communicating with the feed-water supply, substantially as set forth.



3. The combination with an engine, boiler, and burner, of a pipe below the burner communicating with the exhaust of the engine, and a tube extending through the coil and communicating with the feed-water supply to direct the feed-water in a direction the reverse of that in which the steam flows through the outer pipe, substantially as set forth.

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**755,287. ANTIFRICTION END-THRUST DEVICE.** SAMUEL S. BYERLAND, Philadelphia, Pa. Filed Aug. 22, 1902. Serial No. 120,687. (No model.)



*Claim.*—1. A thrust-bearing comprising collars having hardened inner faces, an intermediate collar having an intact inner wall and having a series of main sockets extending from the outer edge or periphery of the collar inwardly and which are open at their sides and have concave walls, cylindrical rollers with flat ends arranged in said sockets so that their cylindrical faces protrude through the side openings of the sockets and have rolling contact with the hardened inner faces of the adjoining collars, and an annulus or band mounted on the periphery of said intermediate collar and acting to retain the rollers, substantially as described.

2. A thrust-bearing comprising collars having hardened inner faces, an intermediate collar having an intact inner wall and having a series of main sockets extending from the outer edge or periphery of the collar inwardly and which are open at their sides and have concave walls, a plural number of rollers with flat ends and cylindrical faces arranged in each of said sockets with their cylindrical faces protruding through the side openings of the sockets and impinging against the hardened inner faces of the adjoining collars, balls separating said rollers and arranged endwise thereof, and an encircling band or annulus for confining the balls and rollers, substantially as described.

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**755,288. LAST.** ANNE G. FITZ, Auburn, Me. Filed June 29, 1903. Serial No. 163,087. (No model.)



*Claim.*—1. A last divided transversely by lines of cut forming an open space at the top and abutting surfaces below said open space, a union having one end pivotally anchored in the fore part and the other end pivotally anchored in the heel part whereby one part may have a swinging motion relative to the other and a transverse supporting-bar carried by said union, the ends of which extend beyond the sides of the union and are adapted to rest upon the bottom of said open space partly on the fore part and partly on the heel part.

2. A last divided transversely by lines of cut forming an open space at the top and abutting surfaces below said open space and a link connection, one end pivotally mounted in the fore part and the other in the heel part whereby one part may have a swinging motion relative to the other, said link carrying a transverse bar, the ends of which extend beyond the sides thereof and are adapted, when in normal position, to rest upon the wood at the bottom of said open space, and to rise in said open space when one part of said last is turned relative to the other.

3. A last divided transversely by lines of cut forming an open space extending downwardly from the top into the body of the last and abutting surfaces below said open space, said abutting surfaces being V-shaped in horizontal transverse section, and a union pivotally connecting the two parts, whereby one part may have a swinging motion relative to the other for shortening the last.

4. A last divided transversely by lines of cut forming an open space at the top and abutting surfaces below said open space, a link connecting the two parts, the ends of the link being pivotally mounted in the fore and heel parts respectively, means for limiting the turning of the heel part on the pivot in the heel part, whereby the heel part has two pivot movements, one on the pivot in the heel part as a center, the other on the pivot in the fore part as a center, and means for locking said parts in their normal relation.

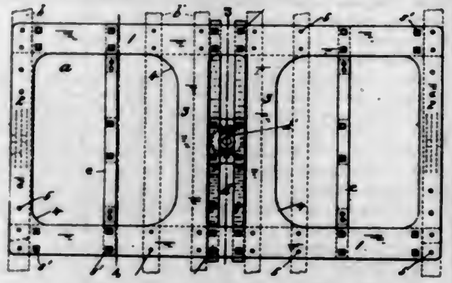
5. A last divided transversely by lines of cut forming an open space at the top and abutting surfaces below said open space, a link connecting the two parts, the ends of the link being pivotally mounted in the fore part and heel part respectively and means for limiting the turning of the heel part on the pivot in the heel part, whereby the heel part has two pivot movements, first on the pivot in the heel part as a center and then on the pivot in the fore part as a center.

6. A last divided transversely by lines of cut which form a gap extending into it from the top and abutting surfaces below said gap, said parts being provided with a union having its ends pivotally mounted, one in the fore part and the other in the heel part, and carrying a transverse bar, the ends of which extend beyond the sides of the union and rest upon the wood of the last at the bottom of said gap when the parts of the last are in normal position, whereby said bar leaves its seat when one part of the last is turned relative to the other.



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**755,289. CAR BODY-BOLSTER.** GEORGE G. FLOYD and CLARENCE H. HOWARD, St. Louis, Mo., assignors to American Steel-Body Double-Bolster Co., St. Louis, Mo., a Corporation of New Jersey. Filed Jan. 9, 1904. Serial No. 188,394. (No model.)

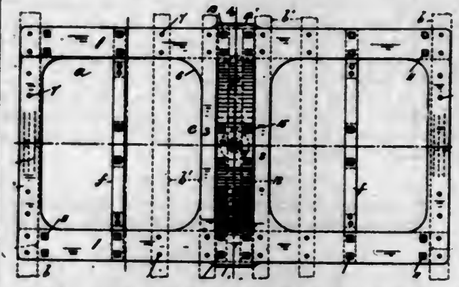


*Claim.*—1. In a car body-bolster of the class described, the combination of a plate adapted to bear against the car-sills and having two opposite lugs under each side portion thereof, an arch-bar dependent from and fixed to the plate at each side portion thereof transversely to the car-sills and between the said lugs, a truss extending between and fixed at its ends to the said bars and corresponding side portions of the plate respectively, a center-bearing casting fixed to the truss, and means for securing the plate to the car-sills, substantially as described and for the purpose set forth.

2. In a car body-bolster of the class described, the combination of a plate consisting of two opposite side pieces and of cross-pieces uniting the side pieces, the said pieces being adapted to bear against the car-sills and having lateral gussets at their junction to each other, and each side piece having two opposite lugs on its under face, all the said parts being integral throughout, an arch-bar dependent from and fixed to the plate at each side portion thereof transversely to the car-sills and between the said lugs, a truss extending between and fixed at its ends to the said bars and corresponding side pieces of the plate respectively, a center-bearing casting fixed to the truss, and means for securing the plate to the car-sills, substantially as described.

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**755,290. CAR BODY-BOLSTER.** GEORGE G. FLOYD and CLARENCE H. HOWARD, St. Louis, Mo., assignors to American Steel-Body Double-Bolster Co., St. Louis, Mo., a Corporation of New Jersey. Filed Jan. 9, 1904. Serial No. 188,395. (No model.)

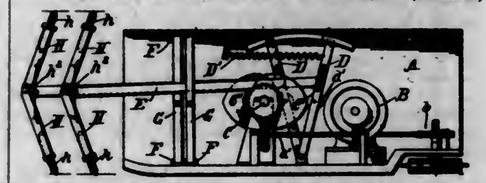


*Claim.*—1. In a car body-bolster of the class described, the combination of a plate adapted to bear against the car-sills and having two opposite lugs under each side portion thereof, and having an upwardly-projecting pocket, an arch-bar dependent from and fixed to the plate at each side portion thereof transversely to the car-sills, and between the said lugs, a truss consisting of two bottom arch-bars extending between and fixed at their ends to the said bars dependent from the plate, and to the corresponding side portions of the plate thereover respectively, and having their middle portions fixed to the top of the said pocket, a center-bearing casting fixed to the truss, and means for securing the plate to the car-sills, substantially as described and for the purpose set forth.

2. In a car body-bolster of the class described, the combination of a plate consisting of two opposite side pieces, and of cross-pieces uniting the side pieces, the said pieces being adapted to bear against the car-sills and having lateral gussets at their junction to each other, each side piece having two opposite lugs on its under face, and one of the said cross-pieces having an upwardly-projecting pocket, all the said parts being integral throughout, an arch-bar dependent from and fixed to the plate at each side piece thereof transversely to the car-sills and between the said lugs, a truss consisting of two bottom arch-bars extending between and fixed at their ends to the said bars dependent from the plate, and to the corresponding side pieces of the plate thereover respectively, and having their middle portions fixed to the top of the said pocket, a center-bearing casting fixed to the truss, and means for securing the plate to the car, substantially as described.

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**755,291. COAL-MINING MACHINE.** WASHINGTON POGUE, Dayton, Ohio. Filed Aug. 26, 1903. Serial No. 170,874. (No model.)



*Claim.*—1. A mining-machine having mechanism for moving the same including anchors in constant contact with the top and bottom of the gallery but free to move up and down independently of the machine, and means for advancing said anchors and for drawing the machine toward said anchors, substantially as described.

2. A mining-machine having mechanism to move the same including pivoted arms, a spring construction to maintain said arms in constant contact with the top and bottom of the gallery, said arms being free to move vertically independently of the said machine and means for alternately operating said anchors, substantially as described.

3. A mining-machine having propelling means including alternately-advancing anchors for engaging the top and bottom of the gallery-operating means and means for varying the direction of movement, substantially as described.

4. In a mining-machine the combination with the bars provided with the anchor-arms for engaging top and bottom of the gallery, guiding-frames for such bars and means for operating said bars in alternation, substantially as described.

5. In a mining-machine the combination with the bars having

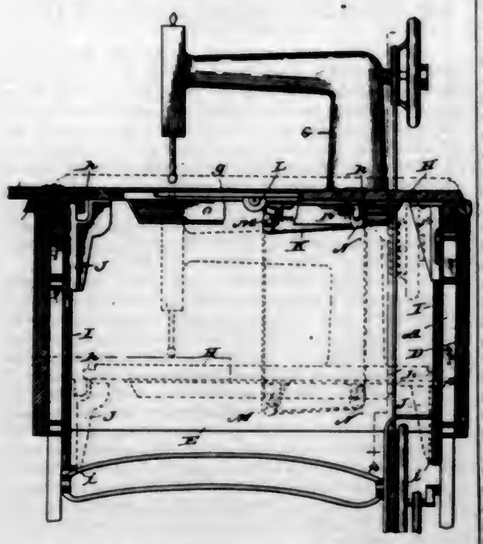
anchor-arms for engaging top and bottom of the gallery, of the sliding frames, the swiveled frames and means for operating said bars, substantially as described.

6. In a mining-machine, the combination with the main frame, of bars having a pivotal connection with the said machine but free to move vertically independently of the said main frame, anchor-arms pivoted to said bars, a spring construction for maintaining said arms in constant contact with the top and bottom of the gallery and operative means for said arms, substantially as described.

7. In a mining-machine, the combination with the bars and their attached anchor-arms of the swiveled frames and the sliding frames for guiding the same and actuating mechanism for said bars, substantially as described.

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**755,292. SEWING-MACHINE CABINET.** WILLIAM C. FREE, Chicago, Ill. Filed July 18, 1902. Serial No. 116,063. (No model.)



*Claim.*—1. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a platform movable up and down and adapted to carry a machine-head, a pulley supported by the cabinet at one side of said opening, a cable attached to the cabinet at the opposite side of said opening, whence it crosses the opening, below the top, passes upward over said pulley and is attached to the leaf and means engaging the cable between its point of attachment to the cabinet and its point of contact with the pulley, for transmitting movement from the cable to the platform, substantially as described.

2. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a platform movable up and down and adapted to carry a machine-head, a pulley supported by the cabinet at one side of said opening, a cable attached to the cabinet at the opposite side of said opening whence it crosses the opening, below the top, passes upward over said pulley and is attached to the leaf, pulleys engaging the cable between its point of attachment to the cabinet and its point of contact with the pulley first aforesaid, and means interposed between said pulleys and the platform, whereby as the leaf is opened said pulleys are moved upward and the platform is moved with them, substantially as described.

3. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a horizontal platform adapted to support a machine-head and movable bodily up and down, guides for confining the platform to rectilinear movement, a pulley supported by the cabinet at one side of said opening, a cable attached to the cabinet at the opposite side of said opening, whence it crosses the opening, below the top, passes upward over said pulley and is attached to the leaf, and means carried by the platform and engaging the cable between its point of attachment to the cabinet and its point of contact with said pulley for transmitting movement from the cable to the platform, substantially as described.

4. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a horizontal platform adapted to support a machine-head and movable bodily up and down, a pulley supported by the cabinet at one side of said opening, a cable attached to the cabinet at the opposite side of said opening whence it crosses the opening, below the top, passes upward over said pulley and is attached to the leaf, and vertical guides at the two remaining sides of said opening for guiding the platform in its up and down movement, and holding it horizontal, substantially as described.

5. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a horizontal platform adapted to support a machine-head and movable up and down, a pulley supported by the cabinet at one side of the opening, a cable attached to the cabinet at the opposite side of said opening whence it crosses the opening, passes over said pulley, and is attached to the leaf, pulleys carried by the platform and engaging the cable, vertical guides located at the remaining two sides of the opening, and slides carried by the platform and engaging the guides, substantially as described.

6. In a sewing-machine cabinet, the combination of a top having an opening through it, a hinged leaf adapted to cover said opening, a platform movable up and down and adapted to support a machine-head, a pulley supported by the cabinet at one side of the opening, a cable attached to the cabinet at the opposite side of said opening whence it crosses the opening, below the top, passes over said pulley and is attached to the leaf, and means carried by the platform and engaging the cable between its point of attachment to the cabinet, and its point of contact with the pulley through the medium of which the platform is supported, said point of attachment and pulley being located in a vertical plane which passes through the center of gravity of the platform and its accessories, substantially as described.

7. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a horizontal platform movable bodily up and down and adapted to carry the machine-head, a pulley supported by the cabinet at one side of said opening, a cable attached to the cabinet at the opposite side of said opening whence it crosses the opening below the top, passes over said pulley and is attached to the leaf, and pulleys carried by the platform and engaging the cable between its point of attachment to the cabinet and its point of contact with the pulley first aforesaid, the several pulleys and the point at which the cable is attached to the cabinet being so located that the depending portions of the cable are vertical, substantially as described.

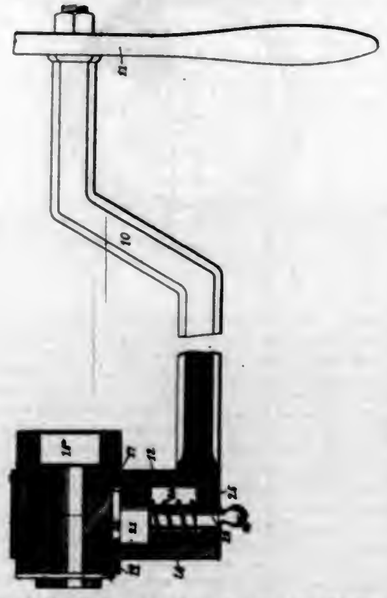
8. In a sewing-machine cabinet the combination of a top having an opening through it, a leaf hinged to the top at one end of said opening and adapted when closed to cover the opening and when open to form an extension of the top, a horizontal platform movable bodily up and down and adapted to support a machine-head, a pulley supported by the cabinet at the rear side of said opening, a cable attached to the cabinet at the front side of said opening, said pulley and the point of attachment of the cable being so located that a line passing from the circumference of the pulley to said point of attachment lies in a vertical plane which crosses said opening, said cable being passed over said pulley and attached to the leaf, means engaging the cable between its point of attachment to the cabinet and its point of contact with the pulley for transmitting movement from the cable to the platform, vertical guides secured to the frame of the cabinet at the ends of the opening and lying in a vertical plane passing centrally through the opening, and slides carried by the platform and engaging the guides, substantially as described.

9. In a sewing-machine cabinet, the combination of a top having an opening through it, a hinged leaf adapted when closed to cover the opening and when open to form an extension of the top, a platform movable up and down and adapted to carry the machine-head, a pulley supported by the cabinet at one side of said opening, a cable attached to the cabinet at the opposite side of said opening whence it crosses the opening, passes over said pulley and is attached to the leaf, a pair of pulleys carried by the platform and engaging the cable, and means for guiding the platform in its up-and-down movement, the platform being provided with a part which enters the opening and fits it snugly, and with flanges for engaging the under side of the top and preventing the further upward movement of the platform as the leaf is nearing its open position, substantially as described.

10. In a sewing-machine cabinet, the combination of a top having an opening through it, a leaf hinged to the top at one end of the opening and adapted when closed to cover said opening and when open to form an extension of the top, a horizontal platform movable bodily up and down and adapted to support a machine-head, guides for confining the platform to a rectilinear movement, a pulley supported by the cabinet at the rear side thereof, a cable having one end attached to the cabinet at the front side thereof and its other end attached to the leaf, a pair of pulleys located in a vertical plane touching the periphery of the pulley first aforesaid and the point at which the cable is attached to the cabinet, and brackets attached to the platform and supporting said pair of pulleys with the periphery of one of them in vertical line with the periphery of the pulley first aforesaid and the periphery of the other in vertical line with the point at which the cable is attached to the cabinet, substantially as described.

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**755,293. WRENCH FOR CYLINDER-TEETH.** WILLIAM H. GEORGE, Dexter, Iowa. Filed Jan. 12, 1903. Serial No. 138,650. (No model.)



*Claim.*—1. In a device of the class described, the combination of a nut-holder having a ratchet-toothed periphery, a spring-pressed pawl moving to and from the center of the nut-holder, and a tooth on the spring-pressed pawl at one side of its longitudinal center, said tooth having a straight face on its side nearest the longitudinal center of the pawl, said face being parallel with the longitudinal center of the pawl, said tooth also having a flat end substantially at right angles to the longitudinal center of the pawl.

2. An improved cylinder-wrench, comprising a handle portion, a right-angled extension at one end of the handle portion, a nut-holder rotatably mounted in the extension and having on its periphery straight ratchet-teeth parallel with the handle, a spring-actuated pawl in said extension, a disk at one end of the pawl and a tooth formed on the end of the said disk adjacent to the ratchet-teeth and wholly at one side of the longitudinal center of the pawl, the inner face of said tooth being straight and parallel with the longitudinal center of the pawl, the outer face of said tooth being rounded and the end of said tooth being flat and substantially at right angles to the longitudinal center of the pawl.

3. An improved cylinder-wrench, comprising a handle, a hollow right-angled extension at one end of the handle, a nut-holder rotatably mounted in the extension and having ratchet-teeth on its periphery parallel with the handle, a pawl mounted in the hollow extension and comprising a straight body portion, a disk at one end of the pawl and a tooth on the face of the disk adjacent to the nut-holder, said tooth being arranged wholly at one side of the longitudinal center of the pawl, its outer face being rounded and forming a continuation of the periphery of the disk, its inner face being straight and parallel with the longitudinal center of the pawl and its end being substantially at right angles to the longitudinal center of the pawl, a screw-threaded plug in the hollow extension and having an opening in it through which the body portion of the pawl projects, and an extensile coil-spring in the hollow extension, one end engaging the said plug and the other end the said disk, for the purposes stated.

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**755,294. WINDOW-SCREEN.** LEANDER GOETZ, Hagerstown, Md. Filed Nov. 9, 1903. Serial No. 180,490. (No model.)



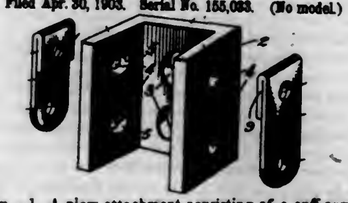
*Claim.*—1. A screen for windows comprising in combination with the frame of a window, strips secured to the inner faces thereof and provided with longitudinal grooves, a screen-frame, plates secured thereto and projecting beyond the edge thereof, and adapted to be guided in one of said grooves, and a latch on the opposite edge of the screen adapted to be guided in the other groove, as set forth.

2. A screen for windows comprising in combination with the frame of a window, strips secured to the inner faces thereof and having longitudinal grooves, one of which is provided with recesses in the bottom thereof, plates secured to the screen-frame and projecting beyond one edge thereof adapted to be guided in one of said grooved strips, a spring-actuated latch and casing therefor mounted upon the opposite edge of the screen, said latch adapted to be guided in one of said grooved strips, and to seat in one of said recesses to lock the screen, as set forth.

3. A window-screen comprising in combination with grooved strips adapted to be attached to the casing of a window or door, one of said grooved strips being provided with recesses in the bottom thereof, plates secured to said screen projecting beyond one edge thereof and designed to be guided in one of said grooved strips, a casing secured to the opposite edge of the screen, a spring-actuated latch mounted in said casing, a handle projecting from the latch and guided in a transverse slot in the covering of the casing, the end of said slot adapted to limit the outer throw of the latch, the latter adapted to be guided in one of said grooved strips and to seat in one of said recesses, whereby the screen may be locked, as set forth.

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**755,295. PLOW ATTACHMENT.** JOHN D. HEARD, New Holland, Ga. Filed Apr. 30, 1903. Serial No. 155,033. (No model.)



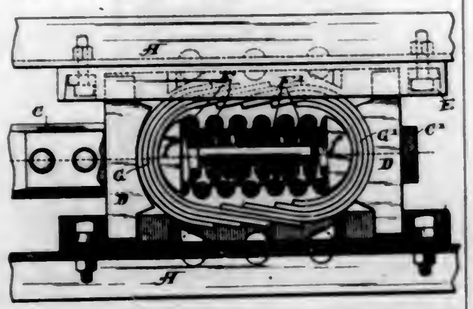
*Claim.*—1. A plow attachment consisting of a cuff comprising a rear plate and two side walls extending forwardly from and at

right angles to said plate, the latter being provided with a plurality of perforations and said side walls being provided each with two perforations countersunk at their inner ends, in combination with flat-headed bolts extending through said perforations in the side walls and having nuts at their outer ends, and washers carried by said nuts and having their upper ends bent upon themselves, thereby doubling the thickness of the upper portions of said washers and providing for an intermediate space between the lower ends of the washers and the adjacent sides of the side walls of the cuff.

2. The combination with a plow-stock, of an attachment consisting of a cuff, comprising a rear plate having a plurality of perforations for the passage of the heel-bolt, and forwardly-extending side walls, each provided with perforations countersunk at their inner ends for the passage of connecting-bolts, ears mounted upon said bolts and provided at their lower ends with curved slots concentric with the upper bolt-holes and provided at their upper edges with obliquely-extending flanged supporting members, and reversible harrow-sections having curved teeth, the teeth at the ends of said harrow-sections having screw-threaded ends, and adjusting-nuts bearing against the upper and under sides of said harrow-sections and adapted for connection with the flanged supporting means.

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755,296. **DRAFT-RIGGING.** JAMES A. HIMSON, Chicago, Ill. Filed June 24, 1903. Serial No. 162,359. (No model.)




*Claim.*—1. In a draft-rigging the combination with a draw-bar and its yoke, of two springs which are closed together by the draft and buffing thrusts of the draw-bar, said springs having inclined, coacting, frictional surfaces and each comprising a plurality of leaves which are relatively shiftable when placed under stress.

2. In a draft-rigging, the combination with a draw-bar and its yoke, of two interacting wedge-shaped springs which are closed together by the drafting and buffing thrusts of the draw-bar, said springs each comprising a plurality of leaves which are relatively shiftable with respect to each other when the springs are placed under tension.

3. In a draft-rigging, the combination with a draw-bar and its yoke, of two U-shaped springs, one of which is made flaring at its open end to receive the arms of the other spring and means whereby said springs are closed together during the buffing and draft thrusts of the draw-bar.

4. In a draft-rigging, the combination with the draw-bar and its yoke, of two U-shaped springs, one of which is made flaring at its open end to receive the arms of the other spring, said springs each comprising a plurality of separate leaves which are relatively shiftable during the opening and closing movements of said springs.

5. In a draft-rigging, the combination with the draw-bar and its yoke, of two U-shaped springs, one of which is made flaring at its open end to receive the arms of the other spring, said springs each comprising a plurality of separate leaves which are relatively shiftable during the opening and closing movements of said spring, the leaves which make up each spring being made of varying lengths and the longer leaf of the inside spring being located on the outside of said spring while the longer leaf of the larger or outside spring is located on the inner side of said spring to frictionally engage said outer longer leaf of the inner spring.

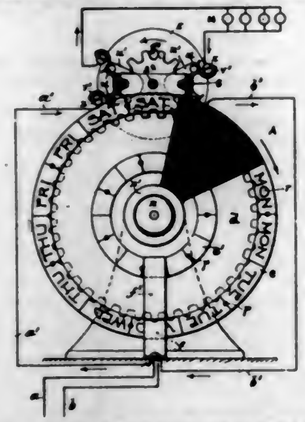
6. In a draft-rigging, the combination with a draw-bar, and its yoke, draft-plates, follower-bars extending through the yoke and engaging pockets in said draft-plates, of two U-shaped springs seated at their closed ends against the follower-bars, one of said springs being made flaring at its open end to receive the arms of the other spring.

7. In a draft-rigging, the combination with a draw-bar, and its yoke, draft-plates, follower-bars extending through the yoke and engaging pockets in said draft-plates, of two U-shaped springs seated at their closed ends against the follower-bars, one of said springs being made flaring at its open end to receive the arms of the other spring, each spring being made of a plurality of leaves which are relatively shiftable during the opening and closing movements of the springs.

8. In a draft-rigging, the combination with a draw-bar, and its yoke, draft-plates, follower-bars extending through the yoke and engaging pockets in said draft-plates, of two U-shaped springs seated at their closed ends against the follower-bars, one of said springs being made flaring at its open end to receive the arms of the other spring, and a coiled spring located between the arms of the inner U-shaped spring and acting at its ends against the closed parts of said springs.

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755,297. **AUTOMATIC CIRCUIT-BREAKER FOR ELECTRIC TIME OR OTHER SWITCHES.** ARTHUR W. HUTCHINS, Providence, R. I. Filed May 15, 1903. Serial No. 157,277. (No model.)




*Claim.*—1. A circuit-breaker having contact members or brushes connected with or cut into the conducting-wires of an electric circuit, a movable disk or member provided with independent conducting-plates in engagement with said brushes to maintain a normally closed circuit, an insulated or non-conducting member arranged with respect to and moving in unison with said disk and capable of passing between said brushes and conducting-plates to open the circuit, a switch interposed in the electric circuit adapted to control the action of the circuit-breaker and a means connecting said switch with the circuit-breaker to actuate the same, substantially as described.

2. The combination, with an intermittingly-revoluble non-conducting index-wheel provided with independent current-conducting members or plates, of independently-yielding contact-brushes in normal electrical engagement with said plates and electrically connected with the main conductors of an electric circuit, a thin non-conducting adjustably-mounted member i adapted to move in unison with said wheel, whereby the rotation of the latter is capable of forcibly interposing said member i between the brushes and said plates of the wheel to temporarily open the circuit, means engaging said index-wheel for retaining the same, and a switch connected in the lighting-circuit adapted to engage with said last-named means whereby said intermittently-revoluble index-wheel is actuated, substantially as described.

3. The combination of a suitably-mounted revoluble disk or wheel *d*, two independent current-conducting rings or terminals, *e'*, *e*, secured to each of the two faces of said wheel whereby the latter is adapted to normally carry the current therethrough from one side to the other, two pairs of fixed current-conducting brushes, *f'*, *f*, in normal yielding engagement with the corresponding conductors, *e'*, *e*, said brushes being interposed in and connected with the conductors of an electric circuit, and a non-conducting member partly covering said conductors, *e'*, *e*, capable of being adjustably secured in position with respect to said wheel and moving concurrently therewith, substantially as hereinbefore described and for the purpose set forth.

4. In a device of the type set forth, the combination of a time-switch comprising a rotatable member, insulating means mounted for



rotation therewith adapted to temporarily render the said switch inoperative for a determined period, a switch for controlling the operation of the time-switch connected in a lighting-circuit, and means adapted to be actuated by said last-named switch adapted to engage with the time-switch to actuate the same, substantially as described.

5. In combination with a lighting-circuit, a time-switch connected therein being adapted for daily, weekly, and monthly indications of time, said switch comprising a rotatable insulated member, independent contact-plates carried thereby, yielding contact-brushes in normal engagement with said plates, an adjustably-mounted conducting member adapted to move with the rotatable member, between said brushes to temporarily open the circuit, rotatable means for engaging the said time-switch and a second switch engaging with said rotatable means adapted to control the action of the same, said second switch being in the lighting-circuit, substantially as described.

6. The combination with an electric-lighting circuit, a time-switch adapted for indication of daily, weekly and monthly divisions of time, comprising a rotatable member, independent conducting contact-plates, mounted thereon, a series of yielding brushes in normal engagement with the said plates, a circuit-breaking member adjustably mounted on the rotatable member and movable therewith, a second switch interposed in the lighting-circuit for controlling the action of the circuit-breaker, rotatable means connecting said second switch with the time-switch whereby the latter is adapted to be actuated, substantially as described.

7. In combination with an electric circuit, an intermittently-movable time-switch comprising a rotatable member having independent contact-plates thereon, means for normally engaging the plates for closing the circuit, means adjustably mounted on said rotatable member adapted to disengage said last-named means from contact with said plates, and means for actuating said adjustable means, connected in said lighting-circuit, comprising a second switch and a gearing actuated thereby in engagement with said movable time-switch, substantially as described.

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755,298. **COMBINED BEET THINNING AND CULTIVATING MACHINE.** ARTHUR IRELAND, Roy, Utah. Filed June 18, 1902. Serial No. 112,240. (No model.)



*Claim.*—1. In a machine of the class described, an axle, bearings at opposite ends of the axle and having arms projecting therefrom, a transverse front bar rigidly connecting the arms, longitudinal bars horizontally pivoted at their front ends to the respective arms and provided with vertical hinges near their front ends independent of their respective horizontal pivots, transverse parallel rear bars connecting the rear ends of the longitudinal bars, teeth carried by the transverse rear bars, and a supporting-wheel adjustably connected to the transverse rear bars.

2. In a machine of the class described, an axle, a rectangular frame having a vertical and horizontal hinged connection with the axle, standards adjustable transversely on the rear bar of the frame, weeding-knives pivoted to the standards and adapted to be adjusted angularly with relation to the surface of the ground, means to hold them in such adjusted positions, a supporting-wheel clamped to the rear bar of the frame and adapted to be adjusted transversely thereon, and means to hold the frame at different elevations.

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755,299. **POWDER-BOX.** HENRY B. KENT, New Brunswick, N. J. Filed Jan. 14, 1904. Serial No. 189,036. (No model.)



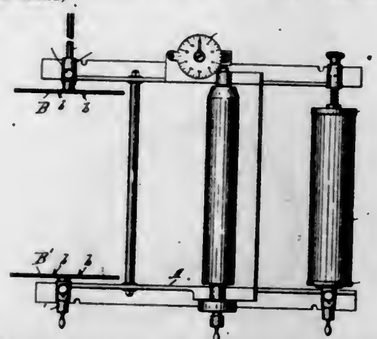
*Claim.*—1. In a closure for containers of the character described, the combination of a neck portion having a discharge-opening, and a turning cap within the neck portion adapted to control said discharge-opening, the inner end of said cap being expanded or flared and having a portion cut away to coact with a stop upon said neck to limit the movement of said cap, substantially as described.

2. In a closure for containers of the character described, the combination of a neck portion having a discharge-opening, an internal annular bead and an internal stop, a turning cap within said neck adapted to control said discharge-opening and having an annular groove to coact with said bead, and an annular flange formed by expanding or flaring its inner end within said neck, said flange having a portion cut away to coact with said stop to limit the turning movement of said cap, substantially as described.

3. In a can or bottle top, the combination of a neck portion formed upon a flaring body portion and having a discharge-opening, an integral stop formed in said flaring body portion, a turning cap within said neck adapted to control its discharge-opening and formed with a flaring flange to bear against said flaring body portion, said flange having a portion cut away to coact with said stop to limit the movement of said cap, and a coacting annular groove and bead formed in said neck and cap, substantially as described.

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755,300. **MEASURING DEVICE.** HORACE F. LEICK and MARTIN J. O'DONNELL, Cleveland, Ohio. Filed Jan. 2, 1902. Serial No. 88,071. (No model.)




*Claim.*—In a machine of the type set forth, a frame formed with end and intermediate standards, spool-receiving chucks mounted in the end standards, a pair of rollers journaled in the intermediate standards, one above the other, and lying below said chucks, a horizontal arm formed integral with each of said intermediate standards, a straight-edge, and bolts extending through said straight-edge and horizontal arms.

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755,301. **PEDAL-MOUNTING.** LOUIS LEMIEUX, New York, N. Y., assignor to Charles Ramsey, New York, N. Y. Filed June 24, 1901. Serial No. 65,761. (No model.)

*Claim.*—1. A bracket for pivotally mounting pedal-levers to, and in combination with, the frame of a musical instrument, which consists of one piece of resilient metal in form of a yoke, the two ends of which are fixed to the frame of the musical instrument, the end of the pedal being pivotally held in place between the sides of said yoke by the resiliency thereof, substantially as shown and described.



2. A bracket for pivotally mounting pedal-levers for musical instruments, which consists of one piece of resilient metal in form of a yoke, the two ends of which are made flat or set substantially at right angles to the sides of said yoke, and either one or both of said ends having an oblong hole or slot through which by a screw the bracket is fixed to the musical instrument, and whereby the sides of said yoke are made adjustable toward or from each other, substantially as shown and described.

## 755,302. EXTRACTION OF COPPER FROM COMMINUTED MINERAL MIXTURES. ERNEST A. LE SUEUR, Ottawa, Canada. Filed May 27, 1899. Serial No. 718,436. (No specimens.)

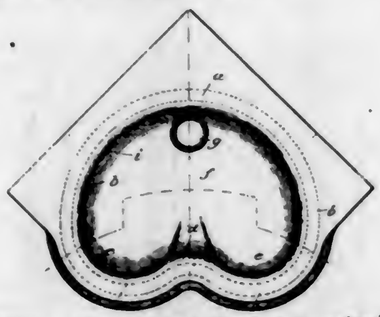
*Claim.*—1. The method of dissolving metallic copper out of mixtures containing it which consists in treating said mixtures with ammoniacal solution containing a reagent or mixture of reagents capable of oxidizing copper, substantially as described.

2. The method of dissolving metallic copper out of mixtures containing it which consists in treating said mixtures with an ammoniacal solution containing cupric compound or compounds, substantially as and for the purposes set forth.

3. The method of dissolving metallic copper out of mixtures containing it which consists in treating said mixtures with an ammoniacal solution containing a cupric compound or compounds and a salt or salts of ammonia, substantially as set forth.

4. The method of obtaining metallic copper from mixtures containing it which consists, first in treating said mixtures with an ammoniacal solution containing a cupric compound or compounds so as to dissolve the desired copper, then in removing a portion of the total copper contents of the solution, and lastly in using the partially-exhausted solution over again to dissolve fresh copper as before, substantially as described.

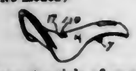
## 755,303. WASHBASIN. PATRICK J. MADDEN, Chicago, Ill. Filed Sept. 12, 1902. Serial No. 123,066. (No model.)



*Claim.*—1. As a new article of manufacture, a washbasin, the rear wall, the end walls and the end portions of the front wall of which follow a continuous curve which sharply decreases in radius at said end portions of the front wall, while the intermediate portion of said front wall follows a sharp reverse curve, resulting in a sharp reëntering portion at the intermediate portion of the front wall and outwardly and forwardly extending coves or recesses at the end portions of the front wall, the front wall being sloped downward and rearward and the rear wall being vertical, substantially as described.

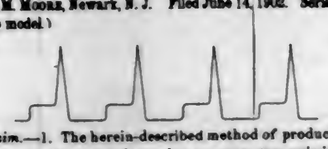
2. As a new article of manufacture, a washbasin, the rear wall, the end walls and the end portions of the front wall of which follow a continuous curve which sharply decreases in radius at said end portions of the front wall while the intermediate portion of the front wall follows a sharp reverse curve resulting in a sharp reëntering portion at the intermediate portion of the front wall and outwardly and forwardly extending coves at the end portions of the front wall, the front and end walls being sloped downward and inward, the rear wall being vertical, and the bottom being sloped rearward, substantially as described.

## 755,304. HARNESS-TREE. RICHARD MILLER, New Berlin, Ohio, assignor to William H. Hoover, New Berlin, Ohio. Filed May 23, 1902. Serial No. 108,666. (No model.)



*Claim.*—As an improved article of manufacture, a harness-tree formed of sheet metal and provided with channels upon its diverging portion, a compound curved depression located between the upper ends of the channel, a raised portion formed upon the tree and located at an angle to the compound curved depression, a strap-loop provided with an upturned tang, and a recess located at the end of the loop, a seat provided with a downward-extending tang adapted to be located in the recess of the loop, said seat provided with an aperture adapted to receive the upturned tang of the loop, and a strengthening-bar curved to correspond with the curvature of the depression in the tree, all arranged, substantially as and for the purpose specified.

## 755,305. PEAKED-WAVE WIRELESS TRANSMISSION. DANIEL M. MOORE, Newark, N. J. Filed June 14, 1902. Serial No. 111,591. (No model.)

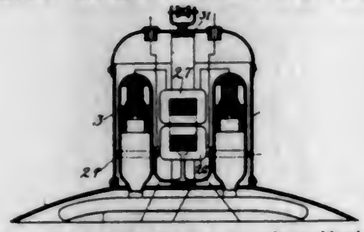


*Claim.*—1. The herein-described method of producing waves of radiant energy in space telegraphy or power transmission consisting in impressing upon the ether repeated changes of electrical potential or polarization which, graphically described, would be a series of waves of highly-peaked form.

2. The herein-described method of producing waves of radiant energy for space telegraphy or power transmission, consisting in setting up a series of changes of electric potential in an electric circuit by making and breaking a circuit in a high vacuum as described, thereby subjecting the ether to a series of waves or pulsations of impressed energy or polarization which, graphically represented, would be of highly-peaked form.

3. In the art of wireless transmission of energy, the improvement consisting in generating free electromagnetic waves or vibrations by abruptly breaking a closed circuit in a high vacuum.

## 755,306. ELECTRIC TUBE-LIGHTING. DANIEL M. MOORE, Newark, N. J. Filed Jan. 19, 1903. Serial No. 139,559. (No model.)

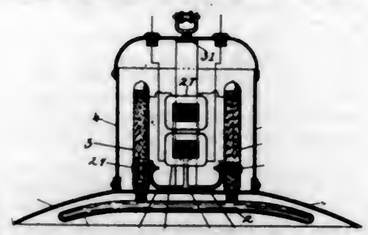


*Claim.*—1. In an electric-lighting system, the combination substantially as described of a lamp composed of a sealed tube or receiver of glass having internal electrodes, a protective casing and transformer whose secondary terminals are contained in said casing and are there in immediate union with the leading-in wires or conductors for the lamp.

2. In an electric-lighting system, a danger-proof box containing a potential-raising transformer and the terminals of a tube containing a gas adapted to be rendered luminous by the current from said transformer and distributed as described over or through the spaces to be illuminated, and internal electrodes connected to said transformer.



## 755,307. ELECTRIC TUBE-LAMP. DANIEL M. MOORE, Newark, N. J. Filed Feb. 6, 1903. Serial No. 142,131. (No model.)

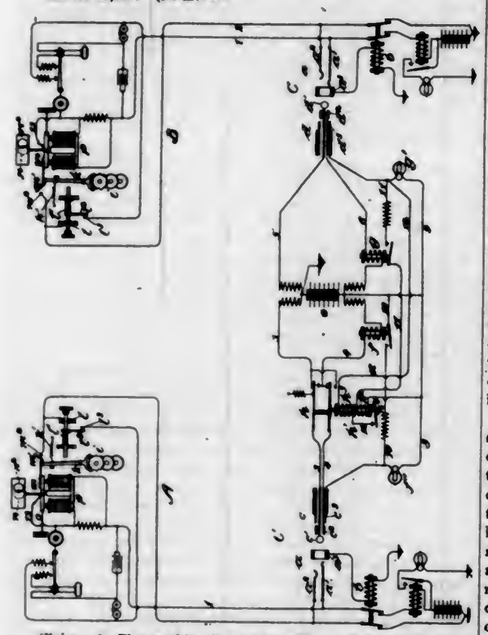


*Claim.*—1. A portable electric-lighting device comprising a transformer, an inclosure, a tube containing a gas adapted to be rendered luminous and means supported by the portable structure carrying the transformer for supporting the tube, said transformer and the tube-terminals being inclosed while the portion of the tube used for lighting extends through the walls of the inclosure.

2. In an improved electric-lighting system employing a gas adapted to be rendered luminous by electric energy, the combination substantially as described of a tube of glass containing said gas or gases and returning upon itself to bring its ends into proximity, a transformer, and a suitable box to inclose the same as well as the tube-terminals and tube ends which support the tube.

3. A portable electric-lighting device comprising a transformer, a translucent tube containing a gas adapted to be rendered luminous by the current from said transformer, a holder for supporting said tube and transformer with the ends of the tube connected to the transformer and an inclosure for the transformer and ends of said tube, as and for the purpose described.

## 755,308. SERVICE-METER FOR TELEPHONE-LINES. FRANK R. McBERTY, Evanston, Ill., assignor to the Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed July 16, 1900. Serial No. 23,729. (No model.)



*Claim.*—1. The combination with a calling and a called line and switching apparatus for uniting them, of a toll device at the substation of the calling-line adapted for manual operation, a blocking device, a telephone-switch at the substation of the called line, means controlled by said telephone-switch for setting the blocking device, and a releasing appliance actuated in the operation of the toll device for counteracting or restoring the blocking device, substantially as set forth.

2. In a telephone-exchange system, the combination with a calling and a called line extending from substations to a central office, of link conductors at the central office for uniting said lines, a polarized magnet connected with the calling-line and a signal-indicator operated thereby, a source of current, a reversing-switch at the central office controlling the flow of current in the calling-line, a circuit for operating said reversing-switch established in making connection with the called line, and a switch at the called station controlling said circuit; whereby the response of the called subscriber is indicated by the display of said signal at the calling-station.

3. In a telephone-exchange system, the combination with a telephone-line extending from a substation to a central office, of an operator's answering-plug at the central office for making connection with said line in response to a call, a connecting-plug and a cord-circuit uniting the same with the answering-plug, said connecting-plug being adapted to make connection with another telephone-line, a magnet at the calling-station connected with the telephone-line thereof, a signal-indicator operated by said magnet, a source of current, an electromagnetic switch at the central office for controlling the flow of current through said magnet, and a circuit for controlling said electromagnetic switch, established by connection of the connecting-plug with the called line, substantially as set forth.

4. In a telephone-exchange system, the combination with two telephone-lines extending from substations to a central-office switch-board, of means at the central office for connecting the lines together, a signal-indicator at the substation of one of the lines, means controlled by a switch at the central office for actuating said signal-indicator, electromagnetic mechanism controlled by the flow of current in the other line for operating said switch, and means at the substation of said last-mentioned line for determining the flow of current therein, substantially as set forth.

5. In a telephone-exchange system, the combination with two telephone-lines extending from substations to a central-office switch-board, of an operator's plug-circuit for connecting the lines together in response to a call from substation of one of said lines, a magnet and means controlled by said magnet for interfering with the transmission of telephonic voice-currents between the telephones at the respective stations, whereby telephonic communication between said stations is prevented, a source of current adapted to energize said magnet, an electromagnetic switch controlling the flow of current through said magnet, and a circuit controlling said electromagnetic switch, established by the connection of the plug-circuit with the called line, substantially as set forth.

6. In a telephone-exchange system, the combination with two telephone-lines extending from substations to a central-office switch-board, of means at the central office for connecting the lines together in response to a call from the substation of one of said lines, a magnet and blocking mechanism controlled by said magnet for interfering with the transmission of telephonic voice-currents between the telephones at the respective stations, whereby telephonic communication between said stations may be prevented, an electric circuit including said magnet with a source of current, a toll-counter at the substation of the calling-line adapted to be manually operated, a device actuated in the operation of said toll-counter for controlling said blocking mechanism, whereby the operative condition of the system may be restored upon the operation of said toll-counter, and means controlled through the agency of a switch at the called station for changing the electrical condition of the circuit including said magnet, substantially as set forth.

7. The combination with a telephone-line extending from a substation to a central office and a pair of plugs and a plug-circuit for connecting said line with another line, a polarized electromagnet at the substation of the first-mentioned line and blocking mechanism controlled by said magnet for rendering the telephone at said station inoperative, said magnet being adapted to actuate said blocking mechanism only when traversed by current of a given polarity, a toll-counter and a device associated with said toll-counter and actuated in the operation thereof for counteracting said blocking mechanism, a battery connected with the calling-line at the central office, the normal connection of said battery with the line being opposite to that required for the actuation of said blocking mechanism, and means, controlled through the agency of a switch at the called station, for reversing the connection of said battery with the calling-line, whereby said blocking mechanism is operated and the calling subscriber compelled to operate his toll-counter in order to use his telephone, substantially as set forth.

8. The combination with a telephone-line and a service-meter therefor, of a blocking device adapted to prevent the use of the telephone-line and a manually-operated appliance controlling said meter

and said blocking device to render the blocking device ineffective, a signal at the substation of the line and actuating-circuits therefor associated with the line, an electromagnetic switch controlling said actuating-circuits, and circuit connections of the magnet of said switch made operative in establishing connection with the called line; substantially as described.

9. The combination with a telephone-line and a service-meter therefor, of a manually-operated part at the substation adapted to actuate the service-meter, a blocking device for preventing the use of the telephone and a controlling-magnet for said blocking device, said blocking device being also controlled by said manually-actuated part to render the blocking device inoperative in the movement of the service-meter, an electrically-controlled signal at the substation and an electric circuit controlling said magnet of the blocking device and said signal, and a switch made operative in establishing connection with a line called for for closing said circuit; whereby the establishment of connection with the called station is signaled to the calling-station and the telephone at the latter station is blocked until the call is registered, as described.

10. The combination with a calling and a called line extending from a substation to a central office and link conductors for uniting said lines, of a visible signal at the calling-station, an electromagnetic switch at the central office and a source of current controlled thereby for operating said visible signal, a switch at the called station, and means controlled by said last-mentioned switch for operating said electromagnetic switch, as set forth.

11. In combination two telephone-lines and link conductors for uniting them, a visible signal at the calling-station and a circuit therefor, an electrically-actuated switch controlling said circuit, said switch being itself controlled by the telephone-switch at the called station, and an electric locking device on said switch actuated in the initial response of the switch adapted to prevent its further operation, the circuit of said locking device being completed in registering contacts of the link conductor and the called line; whereby the signal at the calling-station is operated in the use of the telephone at the called station, but is thereafter placed out of control of the called station during the continuance of the connection, as described.

12. In combination two telephone-lines and link conductors uniting them, a service-meter of the calling-line and a blocking mechanism controlling the use of the telephone at the calling-station, a manually-operated part for actuating said service-meter and said blocking device to render the blocking device inoperative, an electromagnet actuating the blocking device to prevent the use of the telephone, and a circuit of said electromagnet, an electrically-actuated switch controlling the circuit of said electromagnet, said switch being itself controlled by the telephone-switch of the called station, and a locking-circuit of said switch closed when the switch is actuated, said locking-circuit being completed in registering contacts associated with the link conductor and the called line; whereby the blocking mechanism of the calling-line is controlled from the called station at the initial movement of the telephone-switch at the latter station, but is free from such control thereafter during the existence of the connection, as described.

13. In an automatic connection-registering system for telephone-exchanges, the combination with the central-office apparatus, of means for automatically altering the flow of current in the calling subscriber's line controlled from the called-subscriber's station, and at the calling-subscriber's station, registering apparatus comprising a relay connected to line, the armature of which is designed to be operatively actuated by current of predetermined character, a controlling-circuit extending to the instrument controlled, adapted to be opened and closed by said relay, whereby said instrument may be rendered temporarily inoperative, a meter device and means for actuating the meter and for restoring the controlled instrument to service, substantially as set forth.

14. In a telephone system, the combination with the calling-subscriber's instrument, of a polarized relay device adapted, when energized by current of one polarity, to render the instrument temporarily inoperative, a registering appliance, means for jointly restoring the instrument to service and for actuating the registering appliance, central-office apparatus for effecting the desired connections, and in addition thereto, automatically-actuated circuit-controlling apparatus governed by the called subscriber, adapted to supply current of the requisite polarity to the said relay device, substantially as set forth.

15. In combination with a telephone-exchange system, a reversing-relay provided in the answering side of the cord-circuit, said relay being automatically controlled by the called subscriber, and at the calling-subscriber's instrument, a polarized relay adapted to respond to current from the relay and temporarily render the instrument inoperative, a call-registering appliance and means for actuating the latter and for restoring the subscriber's instrument to service, substantially as set forth.

16. In combination with a telephone system, a reversing-relay provided in the answering side of the operator's cord-circuit, said relay being automatically controlled by the called subscriber, under normal conditions, a nullifying-key connected with said relay, and at the calling-subscriber's station, a polarized connection-registering appliance adapted to be actuated by the reversing-relay, substantially as set forth.

17. In combination with a telephone-exchange system, a reversing-relay in the answering side of the cord-circuit, means for automatically energizing the same when the called subscriber answers, and at the calling-subscriber's station, a telephone instrument, a polarized electromagnet, an armature, a controlling-circuit governed thereby, adapted to shunt the subscriber's transmitter, a counting-train and manually-controlled means for jointly actuating the counting-train and for breaking the shunt-circuit, substantially as set forth.

18. In a telephone-exchange system, the combination with a subscriber's instrument, of a relay device adapted to shunt the transmitter-circuit thereof, a counting-train, manually-controlled means for jointly actuating the counting-train and opening the shunt-circuit, central-office apparatus and in the answering side of the cord-circuit, means controllable from the called-subscriber's station for actuating said relay device to close the shunt-circuit of the transmitter, substantially as set forth.

19. The combination with a calling and a called line and apparatus at a central office for uniting them, of a toll device for the calling-line, an automatic blocking device adapted when actuated to render the system inoperative for telephonic communication between the calling and the called stations, apparatus controlled at the called station for setting said blocking device, and means actuated in the operation of said toll device for restoring to their normal condition the parts affected by said blocking device, whereby the operative condition of the system is reestablished.

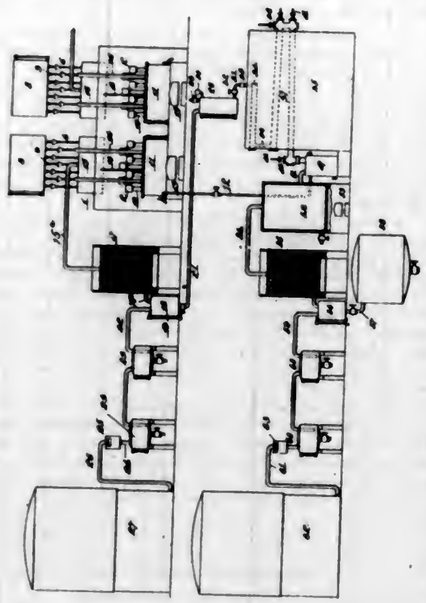
20. The combination with a calling and a called line and means at the central office for uniting them, of a toll device at the substation of the calling-line adapted for manual operation by the subscriber, a blocking device adapted when actuated to prevent telephonic communication between the calling and the called stations, means controlled through the agency of the telephone-switch at the called station for operating said blocking device, and means controlled in the operation of the toll device for counteracting or making inoperative said blocking device.

21. The combination with a calling and a called line and apparatus at a central switchboard for uniting them, of a toll device at the substation of the calling-line, an electromagnetic switch at the central office adapted to change the electrical condition of the calling-line, an electromagnet at the calling-substation responsive to the change produced by said electromagnetic switch, mechanism controlled by said electromagnet for rendering the apparatus at the calling-station inoperative for telephonic purposes, means controlled at the substation of the called line for setting said electromagnetic switch, and means controlled in the actuation of said toll device for restoring said switch.

22. The combination with a telephone toll-line extending from a substation to a central office, of a toll device at the substation adapted for manual operation by the subscriber, a polarized electromagnet associated with the toll device and connected with the telephone-line, an armature for said electromagnet controlling the operation of the toll device, said armature also controlling a switch for rendering the telephone apparatus inoperative, a plug-circuit at the central office adapted to connect the toll-line with another line in response to a call initiated from the toll-line, a source of current in the plug-circuit, a blocking-switch controlling the application of current to the toll-line and adapted when actuated to direct current over the toll-line to energize said polarized electromagnet, whereby the armature of said magnet is moved to release the toll device and simultaneously to render the telephone apparatus at the calling-substation inoperative, a switch at the called station, a supervisory relay for the called line at the central office, controlled by said switch at the called station, a circuit for the blocking-switch controlled through the agency of said supervisory relay, and means, controlled in the operation of the toll device at the calling-substation, for reversing the operation of the armature of the electromagnet, to reestablish the operative condition of the telephone apparatus, substantially as set forth.



**755,309. MANUFACTURE OF THE BENZOLS AND THEIR HOMOLOGUES. ALEXANDER NIKIFOROFF, Moscow, Russia. Filed Sept. 8, 1902. Serial No. 122,531. (No specimens.)**



*Claim.*—1. The process of treating raw materials, substantially as set forth, for the production of an aromatic distillate capable of yielding benzol, which consists in subjecting the raw material to a preliminary decomposition to separate hydrocarbons having a boiling-point of approximately 200° centigrade or under, and in then subjecting the distillate so secured to the effect of a temperature of about 750° centigrade and under a pressure above the atmosphere, as and for the purposes described.

2. The process of treating raw materials, substantially as set forth, for the production of an aromatic distillate capable of yielding benzol, which consists in subjecting the raw material to the effect of decomposition under a temperature of approximately 500° centigrade, in collecting the vaporized distillate having a boiling-point of approximately 200° centigrade or under, and in subjecting such distillate to the effect of a temperature of about 750° centigrade under a pressure above the atmosphere, as and for the purposes described.

3. The process of treating raw materials, substantially as set forth, for the production of an aromatic distillate capable of yielding benzol, which consists in decomposing the raw material under the effect of heat, in condensing the volatile distillate having a boiling-point of 200° centigrade or under, and in subjecting such distillate to the effect of a temperature of about 750° centigrade under a pressure above that of the atmosphere, in collecting the distillate of the second decomposition whose boiling-point is approximately 200° centigrade or over, and in separately collecting the aromatic distillate of the second decomposition whose boiling-point is 200° centigrade or under, as and for the purposes set forth.

4. The process of treating raw materials, substantially as set forth, for the production of an aromatic distillate capable of yielding benzol, which consists in decomposing the raw material under the effect of heat, in condensing the volatile distillate having a boiling-point of 200° centigrade or under, in subjecting such distillate to the effect of a temperature of above 750° centigrade under a pressure above that of the atmosphere, in collecting the distillate of the second decomposition whose boiling-point is approximately 200° centigrade or over, in separately collecting the aromatic distillate of the second decomposition whose boiling-point is 200° centigrade or under, and in subjecting the uncondensed vapor of the second decomposition to the effect of a solvent, as and for the purposes set forth.

5. The process of treating raw materials, substantially as set forth, for the production of an aromatic distillate capable of yielding benzol, which consists in decomposing the raw material under the effect of heat, in condensing the volatile distillate having a boiling-point of 200° centigrade or under, in subjecting such distillate to the effect of a temperature of above 750° centigrade under a pressure above that of the atmosphere, in collecting the distillate of the second decomposition whose boiling-point is approximately 200° centigrade or over, in separately collecting the aromatic distillate of the second decomposition whose boiling-point is 200° centigrade or under, in subjecting the uncondensed vapor of the second decomposition to the effect of a solvent, and in finally collecting the uncondensed permanent gas, as and for the purposes set forth.

6. The process of treating a hydrocarbon derived from raw material, substantially as set forth, and whose boiling-point is 200° centigrade or less, which consists in subjecting such hydrocarbon to the effect of a temperature of about 750° centigrade under a pressure above atmospheric, and in subsequently condensing and collecting the aromatic distillate, as and for the purposes set forth.

7. The process of treating a hydrocarbon derived from raw material, substantially as set forth, and whose boiling-point is 200° centigrade or less, which consists in subjecting such hydrocarbon to the effect of a temperature of above 750° centigrade under a pressure above that of the atmosphere, in collecting and condensing the aromatic distillate, and in passing the uncondensed distillate through a solvent, as and for the purposes set forth.

8. The process of treating a hydrocarbon derived from raw material, substantially as set forth, and whose boiling-point is 200° centigrade or less, which consists in subjecting such hydrocarbon to the effect of a temperature of above 750° centigrade under a pressure above that of the atmosphere, in collecting and condensing the aromatic distillate, in passing the uncondensed distillate through a solvent, and in subsequently collecting the permanent gas, as and for the purposes set forth.

9. The process of treating a hydrocarbon derived from raw material, substantially as set forth, and whose boiling-point is 200° centigrade or less, which consists in subjecting such hydrocarbon to the effect of a temperature of above 750° centigrade under a pressure above that of the atmosphere, in collecting and condensing the vaporized distillate whose boiling-point is above 200° centigrade, and in separately condensing the aromatic distillate whose boiling-point is above 200° centigrade, as and for the purposes set forth.

10. The process of obtaining benzol from raw materials, substantially as set forth, which consists in subjecting the raw material to the effect of high heat, in condensing the distillate having a boiling-point of 200° centigrade or less, in subjecting such distillate to the effect of a temperature above 750° centigrade under a pressure above that of the atmosphere, in condensing the aromatic distillate derived from the second decomposition, and in fractionally distilling the aromatic distillate so obtained, as and for the purposes set forth.

11. A step in the process of obtaining benzol from a hydrocarbon whose boiling-point is 200° centigrade or less, derived from the decomposition of crude materials, substantially as set forth, which consists in subjecting the hydrocarbon to the effect of a temperature above 750° centigrade under a pressure above that of the atmosphere, in collecting and condensing the aromatic distillate, and in fractionally distilling such distillate, as and for the purposes set forth.

12. A step in the process of treating raw materials, substantially as set forth, preparatory to the decomposition thereof for the production of an aromatic distillate from which benzol can be immediately derived, which consists in subjecting a current of the raw material to contact with a surface heated to 500° centigrade whereby the material is gradually raised in temperature, and in collecting the products of decomposition thus obtained and separating those whose boiling-point is approximately 200° centigrade or less, from those whose boiling-point is above 200° centigrade, as and for the purposes set forth.

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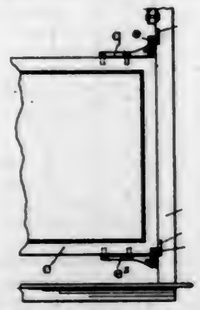
**755,310. PROTECTOR FOR PNEUMATIC TIRES. LÉON NIORÉ, Château-Renault, France. Filed Dec. 7, 1903. Serial No. 184,218. (No model.)**

*Claim.*—A protector for pneumatic tires of all kinds, comprising a leather band 1 shaped according to the form of the tire, and which is attached to the rim by lugs 2 provided with hooks 3 which engage with the same or in any other suitable manner, said band 1 being combined with a tread 6 also of leather firmly attached to the former by means of rivets 7 the internal head of which is embedded in the india-rubber of the pneumatic tire, the second band 6 being armed or shod by means of riveted nails substantially as described.

755,310.

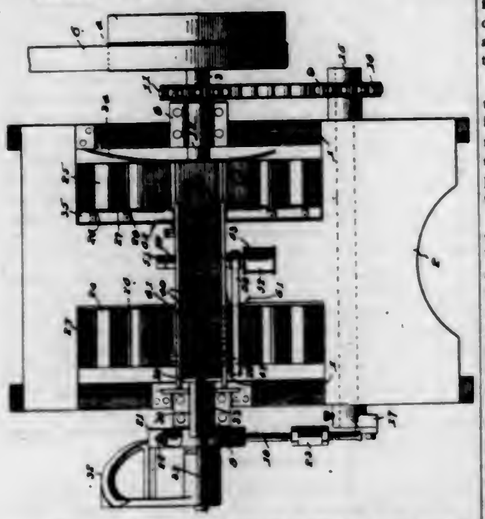


## 755,311. HINGED SUPPORT FOR WINDOW-SASH. FREMONT D. PALMER, Norwich, Conn. Filed Nov. 28, 1903. Serial No. 183,310. (No model.)



*Claim.*—In combination, a window-frame, a sash slidably mounted therein, said sash being provided with holes in its upper and lower edges, and hinges removably attached to the window-frame and formed with spurs adapted to engage the said holes.

## 755,312. MACHINE FOR FILLING AND ASSEMBLING SLIDE-BOXES. GEORGE W. PERRY, Springfield, Ohio. Filed Oct. 19, 1903. Serial No. 177,582. (No model.)



*Claim.*—1. A machine for filling and assembling boxes, comprising an intermittently-rotating carrier composed of two separate drums having alined peripheral slideways, a fixed slideway between the drums, a filling-hopper located above said fixed slideway, and means for moving the box-bodies from one drum to the other along said fixed slideway, substantially as described.

2. A machine for filling and assembling boxes, comprising an intermittently-rotating carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, a fixed slideway between the drums, a filling-hopper located above said fixed slideway, means for successively shifting each box-body from its drum to the cover-carrying drum along the fixed slideway, and means for holding the cover while the filled box-body is being inserted therein, substantially as described.

3. A machine for filling and assembling boxes, comprising an intermittently-rotating carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, a fixed slideway between the drums, a filling-hopper located above said fixed slideway, means for successively shifting each box-body from its drum to the cover-carrying drum along the fixed slideway, means for holding the cover while the filled box-body is being inserted therein, and means for discharging the completed package from the drum which carries it, substantially as described.

4. A machine for filling and assembling boxes, comprising an intermittently-rotating carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, a fixed slideway between the drums, a filling-hopper located above said fixed slideway, a plunger reciprocating in the plane of the fixed slideway to successively shift each box-body from its drum to the cover-carrying drum along the fixed slideway, and an abutment for holding the cover against longitudinal movement while the filled box-body is being inserted therein, substantially as described.

5. A machine for filling and assembling boxes, comprising an intermittently-rotating carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, a fixed slideway between the drums, a filling-hopper located above said fixed slideway, a plunger reciprocating in the vertical plane of the fixed slideway to successively shift each box-body from its drum to the cover-carrying drum along the fixed slideway, an abutment for holding the cover against longitudinal movement while the filled box-body is being inserted therein, and means for discharging the completed package from the drum by which it is carried, substantially as described.

6. A machine for filling and assembling boxes, comprising an intermittently-rotating carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, a fixed slideway between the drums, a filling-hopper located above said fixed slideway, a plunger reciprocating in the vertical plane of the fixed slideway to successively shift each box-body from its drum to the cover-carrying drum along the fixed slideway, an abutment for holding the cover against longitudinal movement while the filled box-body is being inserted therein, and a second plunger for discharging the completed package from the drum by which it is carried, substantially as described.

7. In a machine for filling and assembling boxes, the combination, with a carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, of a fixed slideway between the drums, and a spring located adjacent to the receiving-mouth of said slideway, to push back the box-bodies as they approach said fixed slideway, substantially as described.

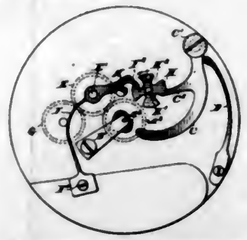
8. In a machine for filling and assembling boxes, the combination, with a carrier composed of two separated drums to receive the box bodies and covers respectively, said drums having alined peripheral slideways, of a fixed slideway between the drums, a reciprocating plunger for successively shifting each box-body from its drum to the cover-carrying drum along the fixed slideway, means for holding the cover while the filled box-body is being inserted therein, and a spring located adjacent to the discharging end of the fixed slideway to press the box-body completely into the cover, substantially as described.

9. In a machine for filling and assembling boxes, the combination, with an intermittently-rotating carrier composed of two separated drums having alined peripheral slideways, a fixed slideway between the drums, and means for moving the box-bodies from one drum to the other along said fixed slideway, of a ratchet-clutch for actuating said carrier, a shaft, and a connecting-rod from said shaft to actuate said ratchet-clutch, said connecting-rod being provided with means for adjusting its length to insure the proper registering of the fixed and movable slideways, substantially as described.

10. In a machine for filling and assembling boxes, the combination, with a rotating shaft provided with a cam, and a plunger actuated thereby, of a fixed slideway, and a carrier comprising a hollow shaft loosely mounted on said rotating shaft and provided with separated drums having alined peripheral slideways, the fixed slideway being located between said drums, substantially as described.



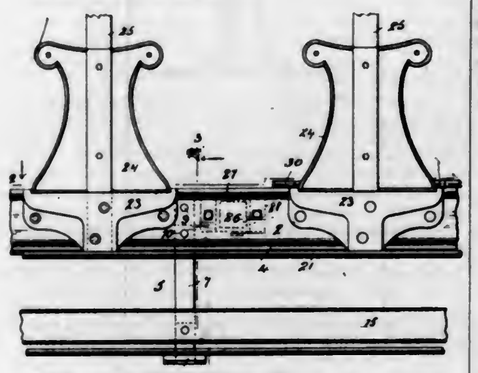
## 755,313. STOP-WATCH. JOSEPH PETRILLO, Brooklyn, N. Y., assignor to Victor Nivois, Brooklyn, N. Y. Filed Apr. 26, 1902. Serial No. 104,751. (No model.)



*Claim.*—1. In a stop-watch, the combination of an actuating star-wheel, a driven wheel, a spring-arm carrying a driving-wheel for engagement with said driven wheel and engaging with said star-wheel, the said spring-arm having a spring-shank which is secured to the frame of the watch and is curved so as to enable the driving-wheel to yield in any direction, for the purpose of securing immediate and instantaneous engagement of the driving-wheel with the driven wheel.

2. The combination of a timing-hand, a stop mechanism and a fly-back mechanism for said hand, a cam mounted to turn and controlling the stop mechanism and the fly-back mechanism, a ratchet-wheel connected with the cam, an operating member arranged to slide adjacent to the ratchet-wheel and to engage the same, said member having a lip extending over the face of the ratchet-wheel and being also capable of moving transversely in relation to the ratchet-wheel, and a spring acting on said member with a tendency to throw it longitudinally outward and also transversely toward the ratchet-wheel.

## 755,314. STREET-CAR. CHARLES K. PICKLES, Philadelphia, Pa., assignor to John A. Brill, Philadelphia, Pa. Filed Apr. 17, 1903. Serial No. 153,001. (No model.)



*Claim.*—1. In a car or similar vehicle, a sill having an outwardly-extending flange, and a step secured to said flange by means secured under said flange and step.

2. In a car or similar vehicle, a sill having an outwardly-extending flange, and a step coextensive longitudinally with said sill, and means below the flange and step for supporting them adjacently and in the same plane.

3. In a car or similar vehicle, a frame comprising side sills made of bulb-iron, means for connecting said sills, and flanges forming a part of steps secured to said sills.

4. In a car-frame, a sill, with an outwardly-extending flange at its lower edge, a hanger secured thereto and provided with a horizontal portion extending under said flange and adapted to receive a step-plate.

5. In a car-frame, a sill with an outwardly-extending flange at its lower edge, a hanger secured thereto and provided with a horizontally-extending portion, a step-plate resting on said portion, a running-board secured to said hanger, and brace reinforcing said hanger.

6. In a car-frame, a sill with an outwardly-extending flange at its lower edge, a hanger secured thereto and adapted to support a step-plate in connection with said flange and a running-board pivotally connected with said hanger.

7. In a car-frame or similar device, a sill, a hanger fixed thereto, a brace secured to said hanger, a step, and a running-board also fixed to said hanger.

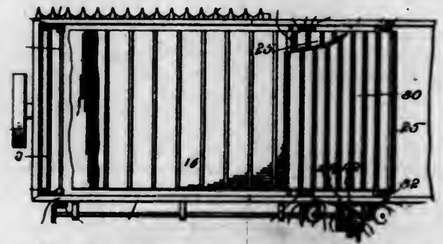
8. In a car-frame, a bulb-iron sill with an outwardly-projecting lower flange and a hanger secured to said flange.

9. In a car-frame, a sill with an outwardly-projecting lower flange forming a part of a step, a hanger secured to said sill, and a step plate or board resting on said hanger and completing the step.

10. In a car-frame, a sill with an outwardly-projecting lower flange, a hanger secured to said sill, a brace secured to said hanger, and a step-plate on the hanger coöperating with said flange to form a step.

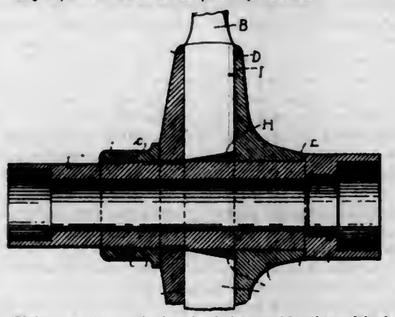
11. In a car-frame, a sill with a projecting lower flange, a hanger secured to said sill, a brace secured to said hanger, a running-board and a step plate or board also secured to said hanger, said step-plate coöperating with said flange to form a step.

## 755,315. BELT-ADJUSTER FOR HARVESTERS. JOHN O. QUALLEY, Adams, Minn. Filed Nov. 11, 1903. Serial No. 180,733. (No model.)



*Claim.*—In a harvester, the combination with a plurality of belts each having a pair of supporting-rollers, of a rock-shaft for one roller of each belt having radiating arms to which said roller is journaled, a gear carried by each rock-shaft, shafts having gears engaging the gears of the rock-shafts, said gears and shafts being arranged for movement one from another, an additional gear-wheel engaged with the gear of one of the rock-shafts and provided with a shaft, means connected with the last-named shaft for rotating it, and means for holding the rotating means against operation.

## 755,316. WHEEL. JOSEPH G. RAPSER, Jr., Salem, Nebr. Filed May 29, 1903. Serial No. 159,237. (No model.)



*Claim.*—1. In a vehicle-wheel the combination with the metal boxing, the tire and the fellies, of a divided metal wedge adapted fit around said boxing and the face of which is oblique, the wedge-shape spokes adapted to form a solid one against another and with said wedge, the back collar and the shoulder on said boxing with which said collar engages, the face-collar consisting of a front section and an inside piece to serve as a washer and provided with a thread to engage with the boxing, substantially as shown and described.

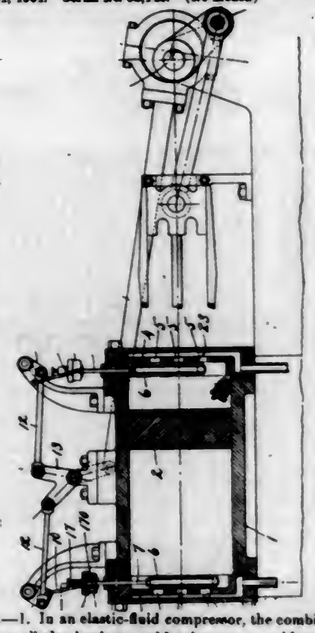
2. In a wheel, the combination with the boxing, fellies and tire, of wedge-shape spokes with inside ends beveled, a divided wedge fitted between the boxing and said beveled ends of the spokes, and the collars hugging the boxing and inclosing between their inner sides the contacting wedge-shape ends of said spokes and the divided wedge, substantially as described and for the purpose specified.

3. In a wheel a divided wedge with its upper side beveled permitting adjustment with the beveled ends of the spokes, its inner side contacting with the collar and in line with the periphery of the spokes, its outer edge spaced from the collar to permit wear, substantially as described and shown.

4. The combination with the boxing of a wheel, of a divided wedge its outside beveled, a shoulder on the boxing, a back collar fitted at its base between said shoulder and wedge, a face-collar, the wedge-shaped spokes having beveled ends adapted to set upon said wedge and the entire sides of the wedge ends of which are held firmly between said collars, substantially as described and for the purpose specified.

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755,817. COMPRESSOR-VALVE. SIDNEY A. REEVE, Worcester, Mass., assignor to Charles F. Brown, trustee, Reading, Mass. Filed Mar. 21, 1901. Serial No. 52,148. (No model.)



*Claim.*—1. In an elastic-fluid compressor, the combination of a compression-cylinder having a grid-valve seat, a grid-valve mounted on said seat, said valve and seat having relatively sliding frictional holding-surfaces adapted to be held together by a difference in the pressures on opposite sides of the valve, positively-moving valve-operating mechanism, and valve-opening resilient means interposed between said mechanism and the valve and brought into opposition to the holding effect of said surfaces by the action of said valve-operating mechanism for permitting a variation in the time of opening the valve.

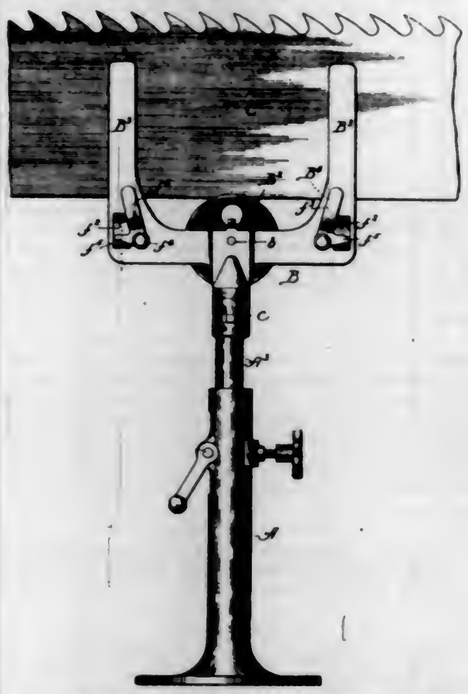
2. In an elastic-fluid compressor, the combination of a compression-cylinder having a grid-valve seat, a grid-valve mounted on said seat, said valve and seat having relatively sliding frictional holding-surfaces adapted to be held together by a difference in the pressures on opposite sides of the valve, positively-moving valve-operating mechanism, a valve-opening spring interposed between said mechanism and the valve, and brought into opposition to the holding effect of said surfaces by the action of said valve-operating mechanism and a dash-pot for cushioning the valve-opening movement produced by said spring.

3. In an elastic-fluid compressor, the combination of a compression-cylinder having a grid-valve seat, a grid-valve mounted to slide on said seat and adapted to be held thereto by a difference in the pressures on opposite sides of the valve, positively-moving valve-operating mechanism, a dash-pot having members positively attached respectively to and movable with said mechanism and the valve, and a valve-opening spring interposed between said mechanism and the valve.

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755,318. SAW-GUIDE. HENRY P. SCHOFIELD, Chicago, Ill., assignor to Covel Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed May 27, 1903. Serial No. 158,946. (No model.)

*Claim.*—1. A saw-guide, comprising a standard provided with a stationary guide member having perforations, pivoted guide members having short arms at their lower ends entering said perforations and capable of being dropped from their vertical position, and locking devices for engaging said arms supported on pivots adjacent to said perforations, for the purpose set forth.



2. A saw-guide, comprising a standard equipped with a guide-head having two vertical stationary guide members, a roller journaled in said head between said guide members, pivoted guide members opposed to said first-named guide members and having short cam-arms at their lower ends, and a pair of cam-levers supported on pivots perpendicular to said guide members, for the purpose set forth.

3. A saw-guide, comprising a base portion having a tubular standard provided at one side of its upper portion with a slot and flanking lugs, a shaft journaled in said lugs, and equipped with a handle and pinion, a guide-head for a saw having a vertical guide-channel, and a stem swivelly supporting said guide-head and telescoping with said tubular standard and provided with a rack engaged by said pinion, for the purpose set forth.

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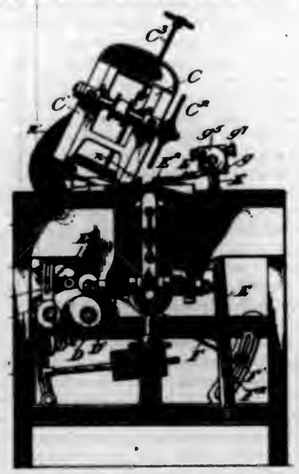
755,319. SAW-SHARPENING MACHINE. HENRY P. SCHOFIELD Chicago, Ill., assignor to Covel Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed May 29, 1903. Serial No. 159,258. (No model.)

*Claim.*—1. In a saw-sharpening machine, the combination with the grinding-wheel gate of adjustable inclination and shaft for actuating the same, of a rock-arm connected with said gate, and a pivot for said rock-arm adjustable with relation to said shaft in such manner that said rock-arm may be maintained substantially perpendicular to the connecting-rod of the grinding-wheel gate, for the purpose set forth.

2. In a saw-sharpening machine, the combination with the grinding-wheel gate of adjustable inclination and the shaft for actuating the same, of a rock-arm connected with said gate, a stationary part having a curved slot struck on a radius about a point near said shaft, and a pivot for said rock-arm adjustably secured in said slot, for the purpose set forth.

3. In a saw-sharpening machine, the combination with the grinding-wheel gate of adjustable inclination and the cam of the actuating-shaft therefor, of a rock-arm connected with said gate and having a bearing on said cam, a frame portion having a slot struck on a radius from substantially the point of contact between said cam and arm in the depressed position of said arm, and a pivot adjustably secured in said slot, for the purpose set forth.





4. In a saw-sharpening machine, the combination with the grinding-wheel gate and the cam of the actuating-shaft therefor, of a rock-arm connected with said gate and having a pivot at one side of said cam, a rack-equipped vertically-movable stop-bar, and an adjusting-lever equipped with a toothed sector meshing with the rack of said bar, for the purpose set forth.

5. In a saw-sharpening machine, the combination with the grinding-wheel gate of adjustable inclination, its connecting-rod, and an actuating-cam, of a rock-arm bearing upon said cam, an adjustable pivot for one end of the rock-arm of a character to permit the rock-arm to be maintained substantially perpendicular to the connecting-rod, and an adjustable stop for the other end thereof, for the purpose set forth.

6. In a saw-sharpening machine, the combination with the grinding-wheel gate, its connecting-rod and an actuating-cam, of a rock-arm bearing upon said cam, and having an extension adjustably joined to said connecting-rod, a stop-arm pivotally joined to said rock-arm adjacent to said extension, means for adjusting the stop-arm with relation to the rock-arm, and a stop carried by the frame for engaging said stop-arm, for the purpose set forth.

7. In a saw-sharpening machine, the combination with the gate-actuating rock-arm, of a vertically-movable rack-equipped stop-bar, and an adjusting-lever having a toothed sector engaging the rack of said bar, for the purpose set forth.

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755,320. APPARATUS FOR HEATING AIR. WALTER K. SEELYE, Dubuque, Iowa. Filed June 13, 1902. Serial No. 111,451. (No model.)



*Claim.*—1. In a device of the character described, a single casing providing an unobstructed air-chamber within the casing, an electric coil surrounding said casing and adapted to supply and maintain varying degrees of heat to different parts of the chamber, and connections with the electric source, for the purposes shown.

2. In a device of the character described, an air-chamber of variant size, an electric coil surrounding said chamber and said coil electrically reinforced around a portion of the chamber to adapt it to supply and maintain varying degrees of heat to different parts of the chamber, and connections with the electric source, for the purposes shown.

3. In a device of the character described, an air-chamber of variant size, an electric coil with additional windings of the coil around a portion of the air-chamber, suitable connection with an electric supply, and means for controlling the electric supply.

4. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber adapted to supply different degrees of heat to different parts of the chamber, a handle, connections with the electric source through the handle, an air-valve, and connections between the air-supply and the valve through the handle, for the purposes shown.

5. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber, connections with the electric source, a handle, connection with the air-supply, and a nozzle loosely attached to the air-chamber and adapted to be pivotally turned, for the purposes shown.

6. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber wound with additional wire around a portion of the chamber, connection with the electric source, a handle, a valve, connection between the air-supply and the valve, and a rheostat.

7. In an air-heating apparatus, an air-chamber, an electric coil around said chamber, connections with the electric source, a valve, connection with the air-supply, and a rheostat provided with resistance-coils, a switch, and a spring attached to the switch, whereby a full current with the electric coil is automatically prevented.

8. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber and reinforced electrically at different parts of the chamber, connection with the electric source, an air-valve, a connection between the air-supply and valve, and a nozzle pivotally attached to the air-chamber, for the purposes shown.

9. In a device of the character described, an air-chamber of variant size, an electric coil surrounding said chamber said coil reinforced around a portion of said chamber, connections with the electric source a nozzle pivotally secured to the air-chamber, an air-valve, connection between the air supply and valve, and a handle for operating the device.

10. In a device of the character described, an air-chamber of variant size, an electric coil surrounding said chamber and providing additional resistance around a portion of the chamber, connection with the electric source, an air-valve, connection with the air-supply, a nozzle pivotally attached to the air-chamber, and a handle for operating the apparatus.

11. An air-heating apparatus consisting of an air-chamber of variant size, an electric coil surrounding said chamber and adapted to supply and maintain variant degrees of heat to different parts of the chamber, connections with the electric source, a nozzle pivotally attached to the air-chamber, a handle, an air-valve interposed between the handle and air-chamber, connection between the valve and air-supply through the handle, and a casing surrounding the air-chamber, as and for the purposes shown.

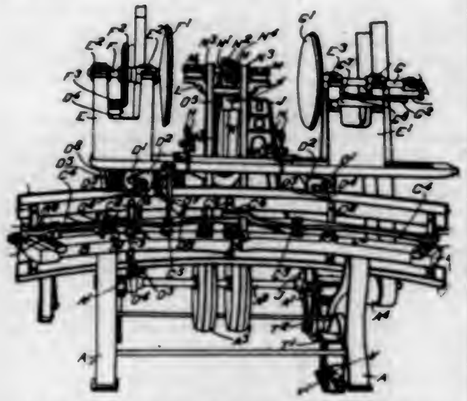
12. An air-heating apparatus consisting of an air-chamber, an electric coil surrounding said chamber and adapted to supply and maintain variant degrees of heat to different parts of the chamber, connections with the electric source, a nozzle pivotally attached to the air-chamber, a handle, an air-valve, connections between the air-valve and air-supply, a casing surrounding the air-chamber, and rheostat with a switch and spring attached to the switch, whereby a full current with the electric coil is automatically prevented.

13. An air-heating apparatus consisting of an unobstructed air-chamber formed by a single surrounding casing, an electric coil around said chamber said coil provided with additional windings around different parts of the air-chamber adapted to supply and maintain variant degrees of heat to different parts of the air-chamber, connection with the electric source, an air-valve, connection with the air-supply through the valve, a nozzle, and a handle for operating the apparatus.

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755,321. MACHINE FOR PLANING OR SMOOTHING SURFACES OF CURVED OR IRREGULAR OBJECTS. CHARLES W. SMITH, Townsend, Mass., assignor to ANSON D. FESSENDEN, Townsend, Mass. Filed Aug. 15, 1903. Serial No. 169,663. (No model.)

*Claim.*—1. In a machine for smoothing irregular objects, such as barrels, means for clamping the object; power-driven means for feeding the object rotatively and longitudinally before the cutters; a rotary cutter; means for supporting said rotary cutter in a manner to permit it to swing toward and from the object being smoothed, and to oscillate in a horizontal plane, so that its axis will be parallel to the surface being smoothed; adjustable guiding means arranged to prevent the rotary cutter from removing more than a determined thickness of material from the surface being smoothed, said guiding means being automatically adjustable to guide the rotary cutter from both the rough surface of the object and the smoothed surface thereof.



2. In a machine for smoothing the surfaces of regular and irregular objects, means for clamping the object; power-operated means for feeding the object both rotatively and longitudinally before a smoothing-cutter; a supporting-frame pivotally attached to the machine; bearings for a rotary cutter pivotally mounted in the supporting-frame; a rotary cutter; means for revolving the rotary cutter adjustable to its different positions; and guiding means for limiting the thickness of material removed by the rotary cutter from either the rough surface of the object or from the smoothed surface thereof.

3. A machine for smoothing the surface of curved or irregular objects, means for clamping, revolving and feeding the object longitudinally; a smoothing-head revolubly mounted in oscillating bearings; smoothing means secured in said smoothing-head; means to move said smoothing-head toward and from the work to be smoothed; adjustable guiding means to cause the smoothing-head to follow the outline of the surface to be smoothed; and means for revolving the smoothing-head.

4. In a mechanism for smoothing the surfaces of irregular objects, means for clamping, revolving and feeding the object; a cutter-head; smoothing-cutters mounted thereon; an oscillating frame in which said cutter-head is revolubly mounted; a swinging frame in which said oscillating frame is revolubly mounted; means for moving said swinging frame from and toward the object to be smoothed; guiding means adjustably secured to the oscillating frame; means for moving one of said guides on said oscillating frame to gage the depth of cut of the cutters; and means for revolving said cutting-head.

5. In a device for smoothing the surfaces of irregular objects, a revolving cutter-head having cutters mounted thereon; said cutters; a frame in which said cutter-head is revolubly mounted, said frame being so constructed and arranged as to permit the cutter-head to swing toward and from the object being smoothed and to allow it to swing in a horizontal plane so that its axis may be turned at different angles to the axis of the object being smoothed; and automatically-adjustable guiding means adapted to gage the depth of cut from both the rough and the smoothed surfaces of the object to be smoothed.

6. In a machine for smoothing curved and irregular objects, means for holding and revolving the object; means for feeding the object in both a straight and curved line; means for smoothing the straight and irregular surfaces of the object; and guides for regulating the depth of cut of the smoothing means from both the rough and smooth surfaces.

7. In a machine for smoothing the surfaces of curved objects, means for clamping, revolving and feeding said objects; revolving cutters pivoted to the frame of said clamping and feeding mechanism; means for keeping the said revolving cutters in alinement and in cutting contact with the surfaces being smoothed; and means for gaging the depth of cut from both the rough and smooth surfaces.

8. In a machine for smoothing the surface of curved objects, clamping, revolving and feeding mechanism comprising a frame having tracks adjustable to either a straight or curved line; a bed supported upon and arranged to move in the direction of said tracks; a stationary head-stock and an adjustable head-stock mounted on said bed; spindles revolubly mounted in said head-stocks; clamping means mounted on said spindles; means for revolving said spindles and self-adjusting feed mechanism for feeding said bed longitudinally.

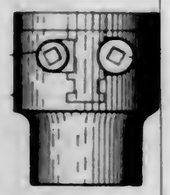
9. In a machine for finishing the surfaces of barrels and other curved and irregular objects, means for clamping, revolving and feeding said objects longitudinally; a revolving cutter arranged so that its axis will swing to a position parallel to the surface being finished; means for holding said revolving cutter in cutting contact with the object being smoothed; adjustable guiding means for gaging the depth of material removed by the cutters from the rough surfaces when the object is being revolved but not fed longitudinally; and means for adjusting said gages so they will gage the depth of cut when the object is being revolved and fed longitudinally.

10. A machine for finishing the surfaces of curved objects, comprising means for clamping, revolving and feeding an object longitudinally in a line approximating the curvature of the object; revolving cutters and guides so constructed and arranged that the cutting edge of said cutters will be parallel to the surfaces to be smoothed; means for revolving said cutter-head; and means for automatically adjusting one of said guides to gage the depth of cut from both the rough and the smooth surfaces.

11. A finishing-cutter, comprising a revolving cutter-head and means for revolving same; cutters mounted on said cutter-head; guides mounted adjacent the ends of said cutter-heads; means for automatically adjusting one of said guides; and means for causing said cutters to move into cutting contact with the object to be finished.

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**755,322. DRILL-CHUCK.** EMERSON R. SMITH, Oneida, N. Y. Filed Sept. 5, 1903. Serial No. 172,096. (No model.)



*Claim.*—1. A drill-chuck having jaws, means engaging one side of the jaws for moving the same simultaneously toward and from each other, the said jaws having guideways on the other side, separate sliding blocks engaging said guideways and formed on their outer sides with right and left hand screw-threads respectively, and a screw-rod having right and left hand threads in mesh with the threads on the outer sides of the blocks, the said blocks being arranged to move in and out on the said screw-rod, the guideways having shoulders at their inner ends adapted to be engaged by the said blocks to move the jaws toward each other, independent of the means on the other side, as set forth.

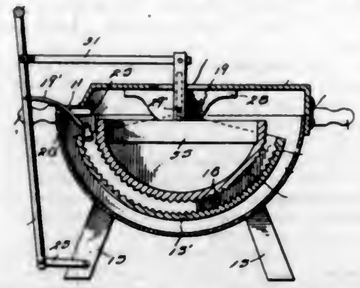
2. A drill-chuck having gripping-jaws mounted to slide, an operating screw-rod engaging one side of the jaws for moving the same simultaneously toward and from each other, a second screw-rod mounted to turn in the chuck-body, but held from longitudinal movement, and sliding blocks separate from the jaws and screw-rod, the jaws having stops or shoulders adapted to be engaged by the blocks, the said sliding blocks being moved toward and from each other simultaneously by the said screw-rod, as set forth.

3. A drill-chuck provided with jaws having guideways on one side, sliding blocks movable independent of the jaws and engaging said guideways, the said blocks being formed on their outer sides with right and left hand screw-threads respectively, a screw-rod mounted to turn in the chuck-body but held from longitudinal movement, the said rod being out of contact with the said jaws, the said screw-rod having right and left hand threads in mesh with the threads of the said blocks, to move the blocks simultaneously toward or from each other, the jaws having shoulders at the inner ends of the guideways forming stops adapted to be engaged by the inner ends of the said blocks to move the jaws toward each other, as set forth.



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**755,323. WASHING-MACHINE.** LOUIS W. SMITH, Anacortes, Wash. Filed July 22, 1903. Serial No. 166,596. (No model.)



*Claim.*—1. A washing-machine comprising a body portion, a concave rubber pivoted within the body portion, means for oscillating the rubber, a cover for the body portion having a slot therethrough, cleats depending from the sides of the slot, and having grooves in their inner faces a second rubber disposed within the body portion for coöperation with the first-named rubber, said second rubber having a stem passed through the slot, trunnions carried by the stem and lying in the slots, said second rubber having recesses in its upper face to receive the cleats to prevent lateral movement of the rubber and means for moving the second rubber upon its trunnions.

2. A washing-machine comprising a body portion, a concaved rubber pivoted in the body portion and having pivoted arms extending from the body portion, a cover for the body portion having an opening therethrough, cleats depending from the cover at the sides of the opening, a second rubber having a stem passed between the cleats and through the opening of the cover, trunnions carried by the stem, said cleats having vertical slots in their inner faces in which the trunnions are slidably and pivotally received and the second rubber having slots in its upper face in which the cleats are slidably received to hold the rubber against lateral displacement, a pivoted lever to which the arms of the first rubber are pivoted, and a pitman pivoted to the lever and to the stem of the second rubber.

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**755,324. PNEUMATIC TOOL.** WILLIAM H. SOLEY, Philadelphia, Pa., assignor of one-half to Thos. H. Dallett Co., a Corporation of New Jersey. Filed Sept. 18, 1903. Serial No. 173,653. (No model.)



*Claim.*—1. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve in said chamber, said valve having pressure-surfaces of different areas, a constant connection between the source of supply and the valve-chamber contiguous to the pressure-surface of greater area and a passage from that portion of the valve-chamber to the piston-chamber.

2. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve in said chamber, said valve having pressure-surfaces of different areas, a constant connection between the source of supply and the valve-chamber contiguous to the pressure-surface of greater area and a passage from that portion of the valve-chamber to the piston-chamber, adapted to be closed by the piston in its movement.

3. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve in said chamber, said valve having pressure-surfaces of different areas, an orifice through the pressure-surface of greater area, and a passage from the valve-chamber contiguous to said orifice extending to the piston-chamber.

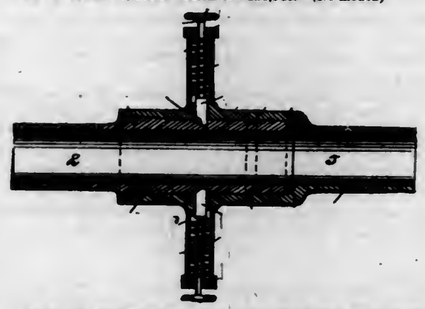
4. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve in said chamber, said valve having pressure-surfaces of different areas, an orifice through the pressure-surfaces of greater area, and a passage from the valve-chamber contiguous to said orifice extending to the piston-chamber, adapted to be closed by the piston in its movement.

5. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve in said chamber, said valve having pressure-surfaces of different areas, an orifice through the pressure-surface of greater area, the interior of the valve being in constant communication with the air-supply, and a passage from the valve-chamber contiguous to said orifice extending to the piston-chamber.

6. In a pneumatic tool, in combination, a piston-chamber, a piston in said chamber, a valve-chamber, a valve in said chamber, said valve having pressure-surfaces of different areas, an orifice through the pressure-surface of greater area, the interior of the valve being in constant communication with the air-supply, and a passage from the valve-chamber contiguous to said orifice extending to the piston-chamber, adapted to be closed by the piston in its movement.

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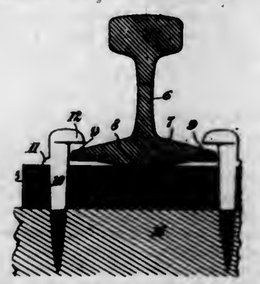
**755,325. HOSE-COUPLING.** GEORGE SOUTAR, East Pittsburg, Pa. Filed Oct. 9, 1902. Serial No. 126,543. (No model.)



*Claim.*—A hose-coupling comprising male and female members, said male member having one of its ends exteriorly enlarged for a considerable portion of its length, said female member having its end offset to entirely receive said enlarged portion of the male member and to permit the bores of said members to be continuous and uninterrupted, the inner end of said male enlarged portion and the outer end of the female offset portion being flush with each other and being for engagement with the hose whereby the latter will close the joint formed between said portions, said male member at its extremity being inclined, and said female member at the inner end of its offset portion being correspondingly formed to receive said inclined end of the male member, a gasket seating against said female inclined portion and on the bottom of the offset portion thereof, a gasket carried in a depressed portion of the male member, the opposite end of the male member being inclined outwardly and the opposite end of the female member being flared outwardly to receive said last-named end of the male member, and means for securing said members against movement.

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**755,326. RAIL.** LOUIS STEINBERGER, New York, N. Y. Filed Oct. 31, 1903. Serial No. 179,333. (No model.)



*Claim.*—1. As an article of manufacture, a rail comprising a body portion of metal provided with a curved surface upon which said rail may rest, in stable equilibrium.

2. A rail comprising a body portion provided with a downwardly-projecting portion extending throughout the entire length of the rail and integral therewith, for resting upon supporting members and sustaining the rail in stable equilibrium.

3. A rail comprising a body portion provided with a downwardly-projecting surface of small area for engaging supporting mechanism and thereby sustaining the rail in stable equilibrium.

4. As an article of manufacture, a rail comprising a body portion having a convex portion for engaging a supporting-surface for the purpose of allowing said rail to rock in a direction lateral to its general length.

5. A rail comprising a body portion provided with a downwardly-projecting portion for engaging a flat surface, and thereby sustaining said rail in stable equilibrium.

6. A third rail comprising a body portion provided with a downwardly-projecting portion for constantly engaging a supporting-surface so as to allow said rail to move, and provided with other surfaces for limiting the movements of said body portion.

7. A third rail comprising a body portion provided with a downwardly-projecting portion upon which said body portion is free to rock, and also provided with other surfaces disposed upon either side of said downwardly-projecting surface for limiting the extent of rocking movement of said body portion.

8. A third rail comprising a body portion provided with a downwardly-projecting central portion upon which said body portion is free to rock, and a pair of flanges disposed upon either side of said downwardly-projecting central portion for limiting the rocking movements of said body portion.

9. A third rail comprising a body portion of metal provided with a rocker-like surface extending throughout the entire length of said body portion and integral therewith, and a pair of flanges integral with said body portion and disposed upon either side of said rocker-like portion for limiting the rocking movement thereof.

10. A third rail comprising a flat supporting-surface, in combination with a rail member resting thereupon, said rail member being provided with a rocker-like surface, and means for preventing excessive movement of said rail member relatively to said supporting-surface.

11. A third rail, comprising a flat supporting-surface and a rail member resting directly thereupon, said rail member being provided with a downwardly-projecting portion engaging a comparatively small area of said flat surface and sustaining the rail in stable equilibrium thereupon.

12. A third rail comprising a flat supporting-surface and a rail member resting directly thereupon, said rail member being provided with a downwardly-projecting portion engaging a comparatively small area of said flat surface and sustaining the rail in stable equilibrium thereupon, and means for preventing excessive movement of said body portion relatively to the said flat surface.

13. A third rail comprising a flat supporting member, a rail member provided with a rocker-like surface engaging the same, and metallic fastening members connected with said flat supporting member for preventing excessive movement of said rail member relatively thereto.

14. A third rail comprising a flat supporting member, a rail member provided with a rocker-like surface engaging the same, and threaded metallic spikes screwed into said flat supporting member and provided with heads for preventing excessive movement of said rail member relatively to said flat supporting member.

15. A third rail comprising a rail member provided with a rocker-like portion, supporting mechanism for said rail member, and a plurality of metallic spikes rigidly connected with said supporting members and provided with stop portions for engaging said rail member when the movements thereof exceed a definite limit, said spikes being provided with shoulders for positioning said stop portions of said spikes relatively to said supporting mechanism.

16. A third rail comprising a rail member provided with a rocker-like portion, supporting mechanism engaged by said rocker-like portion, and limiting-stops engaging said supporting mechanism but normally out of engagement with said rail member, said limiting-stops being provided with portions to be intermittently engaged by said rail member and also provided with shoulders for engaging said supporting mechanism.

17. A third rail comprising supporting mechanism, a rail member resting thereupon and free to rock, and a plurality of spikes provided with threads and with shoulders for engaging said supporting mechanism.

18. A third rail comprising a plurality of members of insulating material to be mounted upon cross-ties, and a rail member mounted upon said members of insulating material and free to rock thereupon.

19. A third rail comprising a plurality of plates of insulating material to be mounted upon cross-ties, a rail member loosely mounted upon said plates and free to move relatively thereto, and means for preventing excessive movement of said rail member relatively to said plates.

20. A third rail comprising a plurality of plates of insulating material to be mounted separately upon cross-ties, a rail member loosely engaging said plates and free to move relatively thereto, and a plurality of metallic members secured to said plates and free to be engaged by said rail member for preventing excessive movement of the same.

21. A third rail comprising a plurality of flat plates of insulating material, means for supporting the same, a rail member provided with a rocker-like surface resting directly upon said plates so as to permit of relative movement between said rail and said plates, and mechanism connected with said plates for preventing excessive movement between said rail member and said plates.

22. A third rail comprising a surface of insulating material, and a rail member resting directly thereupon said surface and said rail member being of such conformity that said rail member is free to move relatively to said surface.

23. A third rail comprising a surface of insulating material and a rail member resting directly thereupon, said surface and said rail member being of such conformity that said rail member is free to move relatively to said surface, and means for limiting the movement of said rail member relatively to said surface upon which it rests.

24. A rail comprising a body portion provided with means for forming a variable space between proximate surfaces of the rail and of the support therefor.

25. A rail comprising a body portion provided with a surface for engaging a supporting member, the character of this surface being such as to cause the area of contact to shift laterally as said rail is rocked.

26. In a third rail, the combination of a rail member and a supporting member engaged thereby, the surfaces of said rail member and of said supporting member being of such a conformity as to cause the area of contact to shift laterally as the rail is rocked.

27. In a third rail, the combination of a supporting member and a rail member for engaging the same, said rail member being free to move relatively to said supporting member, the surfaces of said members being of such conformity that the area of contact shifts laterally as said rail member is rocked.

28. A third rail comprising supporting mechanism, a rail member resting thereupon and free to rock, and a plurality of fastening members detachably engaging said rail-supporting mechanism.

29. A third rail comprising a support of insulating material, and a rail member mounted directly upon said support of insulating material and free to move relatively thereto.

30. A third rail comprising a plurflity of supports of insulating mateal to be mounted separately, a rail member loosely mounted upon and directly engaging said supports and free to rock laterally thereupon, and means for limiting the rocking motions of said rail member relatively to said supports.

31. A third rail comprising a plurality of supports of insulating material, a rail member provided with a surface of arbitrary conformity for the purpose of supporting the rail in stable equilibrium, said surface of arbitrary conformity resting directly upon said supports of insulating material so as to permit of relative movement between said rail member and said supports, and mechanism detachably connected with said supports for preventing excessive movement between the same and said rail member.

32. A rail comprising a body portion provided with a surface of arbitrary conformity for the purpose of supporting the rail in stable equilibrium, said rail being also provided with means integral therewith, for engaging a stationary surface and thereby limiting the movements of said body portion.

33. A rail held in stable equilibrium by a bearing-surface resting upon a single line of support.

34. A rail held in stable equilibrium along a single line of support approximately in the center of said rail.

35. A rail supported upon a bearing-surface, and approximately upon a central line thereof.

36. A rail supported upon a central line for the purpose of enabling said rail to move angularly in relation to its support.

37. A rail, engaging a support and free to rock thereupon by a rolling motion.

38. A rail, comprising a body member and a support, said body member engaging said support along a single central line, whereby said rail is movable relatively to said support independently of any rocking movement therebetween.



39. A rail, provided with a single convex portion for engaging a support, and thereby sustaining said rail in stable equilibrium.

40. A rail, provided with a single bearing portion for engaging a support, and thereby sustaining said rail approximately upon a single central line of said bearing portion.

41. As an article of manufacture, a rail comprising a body portion of metal provided upon its lowest portion with a mechanical bearing-surface of rotund conformity for resting upon a support.

42. As an article of manufacture, a rail provided with a mechanical bearing-surface of suitable conformity to engage a comparatively small area of a support, and thereby sustain said rail in stable equilibrium.

43. As an article of manufacture, a rail comprising a body portion provided with a rotund bearing-face upon which said rail may rest, and also provided with portions for engaging a support and thereby serving as a limiting-stop.

44. As an article of manufacture, a rail comprising a body portion provided with a mechanical bearing-surface of arbitrary conformity for the purpose of engaging a support, and thereby supporting said rail in stable equilibrium and free to rock.

45. As an article of manufacture, a rail comprising a body portion of metal provided with a mechanical contact-face disposed below the center of gravity of said rail for the purpose of engaging the bearing-surface and allowing said rail to rock thereupon.

46. As an article of manufacture, a rail comprising a body portion provided with a mechanical bearing-surface for engaging a support, said bearing-surface being of rocker-like conformity.

47. A rail, comprising a body portion of metal, and a downwardly-projecting mechanical bearing-surface integral therewith, said downwardly-projecting mechanical bearing-surface being curved in a direction crossing its general length for engaging a bearing-surface, and thereby supporting said rail over a movable fulcrum-point.

48. As an article of manufacture, a rail consisting of a metallic body portion having a convex mechanical bearing-face integral therewith for engaging a supporting-surface, said bearing-face having a suitable curvature for allowing said rail to rock without tipping over.

49. A rocking rail held in stable equilibrium upon a flat supporting-surface.

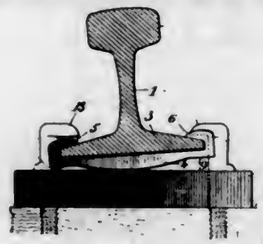
50. A rail provided with a single curved bearing-surface integral therewith for engaging a support and thereby sustaining said rail in stable equilibrium.

51. A rocking rail having its seating-surface formed by a portion projecting downwardly from its under side.

52. A rail having a seating-surface of rotund conformity projecting downwardly for the purpose of resting upon a support.

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755,327. TRACK STRUCTURE. LOUIS STEINBERGER, New York, N. Y. Filed Nov. 9, 1903. Serial No. 180,369. (No model.)




*Claim.*—1. A track structure, comprising a rail-section and a separate rocker connected therewith for supporting the same.

2. A track structure, comprising a rail-section provided with a flat bottom, and a rocker provided with a flat portion for engaging said bottom and with a rotund portion for engaging a support.

3. A track structure, comprising a rail-section having a cross-section of substantially T shape, and a rocker connected with the bottom of said rail and provided with a rotund surface for engaging a support.

4. A track structure, comprising a rail-section provided at its bottom with base-flanges, and a rocker engaging said bottom and provided with members for overlapping said base-flanges.

5. A track structure, comprising a rail-section and a separate rocking member connected therewith for engaging a supporting-surface and thereby sustaining said rail-section in stable equilibrium.

6. A track structure, comprising a rail-section having base-flanges and a rocker connected with said rail-section, said rocker being provided with malleable portions bent into engagement with said flanges.

7. A track structure, comprising a rail-section of ordinary construction, and members rigidly connected therewith for engaging a support, thereby sustaining said rail-section in stable equilibrium.

8. A track structure, comprising a rail-section, and a rocker rigidly connected therewith for engaging a rigid supporting-surface, thereby sustaining said rail-section in stable equilibrium.

9. A track structure, comprising a rail-section, and a member rigidly connected therewith, said member being provided with a rotund portion for engaging a support and with malleable flanges for gripping said rail-section.

10. A track structure, comprising a rail-section, and a rocker provided with malleable flanges for gripping the same.

11. A track structure, comprising a rail-section provided with a base portion having flanges, and a rocker engaging said base portion and provided with members engaging said flanges.

12. A track structure, comprising a rail-section, and a rocker having substantially the form of a strap and extending transversely across said rail-section.

13. A track structure, comprising a rail-section, and a rocker having substantially the form of a strap and extending transversely across said rail-section, said strap being provided with malleable flanges integral therewith for engaging said rail-section.

14. A track structure, comprising a rail-section, and a member having substantially the form of a strap, said member extending transversely across said rail-section and being relatively thick at its middle portion and provided with means whereby said strap may be secured upon said rail-section.

15. A track structure, comprising a rail-section, and a rocker connected rigidly thereto, said rocker being provided with a portion for permanently engaging a support, thereby sustaining said rail-section in stable equilibrium, said rocker being further provided with portions for intermittently engaging a fixed surface for the purpose of limiting the rocking movement of said rail-section.

16. A track structure, comprising a rail-section and a metallic member provided with a portion for engaging a support, thereby sustaining said rail-section in stable equilibrium, said metallic member being further provided with comparatively thin portions for engaging a fixed surface and thereby limiting the movement of said rail-section.

17. As an article of manufacture, a metallic rocker provided with a rotund portion and with malleable flanges for securing said member to a rail-section

18. As an article of manufacture, a metallic rocker having the form of a strap thick at its middle portion and comparatively thin at its ends, said ends terminating in malleable flanges for engaging the flanges of a rail.

19. As an article of manufacture, a metallic rocker having a convex portion for engaging a support, a flat portion for engaging the bottom of a rail-section, and malleable flanges for gripping the flanges of said rail-section.

20. As an article of manufacture, a metallic rocker having a rotund portion for permanently engaging a support, a flat portion for engaging the bottom face of a rail, and anvil-surfaces for intermittently engaging a fixed surface, thereby limiting the movements of said rocker.

21. A track structure, comprising a block of insulating material to be mounted upon a cross-tie, a rocker mounted upon said block, and a rail-section connected with said rocker.

22. A track structure, comprising a support of insulating material, a rocker mounted thereon and free to move relatively thereto, a rail-section rigidly connected with said rocker, and limiting-stops for preventing excessive movements of said rail-section.

23. A track structure, comprising a block of insulating material, means for supporting the same, a rail provided with a rocker extending transversely across the same and beyond the edges thereof, and limiting-stops disposed in close proximity to said rail-section but out of contact with said rocker.

24. A track structure, comprising a block of insulating material mounted upon a cross-tie, fastening members engaging said block of insulating material and said cross-tie, said fastening members being provided with lugs, a rocker loosely engaging said block of insulating material and free to move relatively thereto, and a rail-section connected rigidly with said rocker and movable therewith, said rail-section being adapted to engage said lugs which form limiting-stops therefor.

25. A track structure, comprising a support of insulating mate-

rial, a rail-section provided with a rocker engaging the same, said rail being thus free to rock, and limiting-stops for engaging portions of said rail-section, thereby preventing excessive movements of the same.

26. A track structure, comprising a rail-section, a member connected therewith and engaging a support, said member being provided with means for sustaining said rail-section in stable equilibrium.

27. As an article of manufacture, a detachable rocker member provided with means for securing said member to a rail-section.

28. A track structure, comprising a rigid support of insulating material, a rail-section provided with a detachable rocker engaging the same, said rail-section being free to rock on said rigid support.

29. A track structure, comprising a rail-section and a member connected thereto, said member being of arbitrary conformity for engaging a support and thereby sustaining the rail in stable equilibrium.

30. A track structure, comprising a body portion, and a separate rocking member connected therewith for loosely engaging a support, and thereby sustaining said body portion in stable equilibrium.

31. A track structure, comprising a body portion, and a separate member connected therewith and provided with a supporting-face for sustaining said body portion approximately upon a single central line.

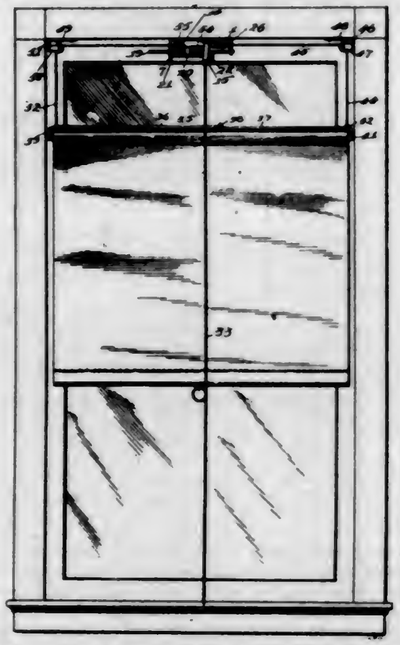
32. A track structure, comprising a body portion, and a separate member connected therewith, said member being provided with a portion for engaging a support so as to sustain said rail upon a single central line.

33. As an article of manufacture, a rocker for rails provided with means for connecting the same with a rail-section.

34. As an article of manufacture, a rocker for rails provided with means for engaging a rail-section, and with a surface for engaging a support.

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**755,828. AUTOMATIC DROP-FIXTURE.** HERBERT M. STURGIS, Kansas City, Mo., assignor of two-thirds to Ivan H. Shoemaker and F. R. Wear, Kansas City, Mo. Filed Feb. 3, 1903. Renewed Jan. 25, 1904. Serial No. 190,617. (No model.)



*Claim.*—1. In an automatic drop-fixture of the character described, a plate stamped from a single piece of sheet metal and provided with an integrally-elongated perforated flange 3, integral perforated ears 4 and 5, right-angular rods mounted in said ears and flange, a frame 15 provided with a projecting shoulder 29 pivoted to one of said right-angular rods, a rod 25 carried by said plate, and an elongated pawl mounted on said rod and provided with a slanting face 28 which is adapted to be engaged by the shoulder 29 when the frame 15 is pushed to the right, whereby said pawl may be operated, substantially as specified.

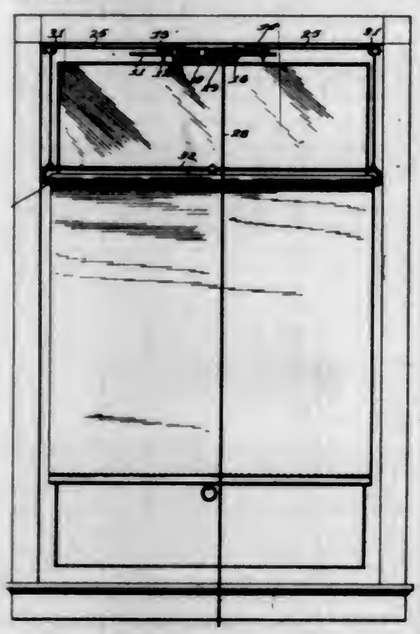
2. An automatic drop-fixture, comprising a plate stamped from a single piece of metal and provided with an elongated perforated flange 3, perforated ears 4 and 5, portions 7 and 9 having a hole 8, slot 10 and opening 11; right-angular rods 12 mounted in perforations in said flange 3 and ears 4, sheave-pulleys 14 carried by said rods, a plate 15 pivoted to one of said rods, a rod 25 mounted in the opening 11 and perforated ear 5, a pawl pivoted to said rod adapted to be elevated when the frame is pushed toward the right, a rod 19 rotatably and slidingly mounted in the hole 8 and slot 10, and a cord-drum rigidly fixed to said rod, substantially as specified.

3. In an automatic drop-fixture, a plate 1 adapted to be secured to a window-casing, the same being stamped from a single piece of sheet metal and provided with an elongated perforated flange 3 and perforated ears 4, right-angular rods 12 mounted in said ears and said flange, a plate 13 secured to the ends of said rods for strengthening and holding the same in parallel position relative to each other, and sheave-pulleys 14 rotatably and slidingly mounted on said rods and held from displacement thereon by means of said plate 13, and being limited in their sliding movement by said plate and the flange 3, substantially as specified.

4. An automatic drop-fixture, comprising a plate stamped from a single piece of metal and provided with an elongated perforated flange 3, perforated ears 4 and 5, portions 7 and 9 having the hole 8, slot 10 and opening 11; right-angular rods 12 mounted in perforations in said flange 3 and ears 4, a plate 13 for holding the ends of said rods 12 in parallel alinement, sheave-pulleys 14 carried by said rods and having their adjustable movement limited by the flange 3 and the plate 13, a plate 15 pivoted to one of said rods, a rod 25 mounted in the opening 11 and perforated ear 5, a pawl pivoted to said rod and adapted to be elevated when the frame is pushed toward the right, a rod 19 rotatably and slidingly mounted in the hole 8 and slot 10, and a cord-drum 20 provided with tapering slots, rigidly fixed to said rod, substantially as specified.

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**755,829. AUTOMATIC DROP-FIXTURE.** HERBERT M. STURGIS, Kansas City, Mo., assignor of two-thirds to Ivan H. Shoemaker and F. R. Wear, Kansas City, Mo. Filed Aug. 4, 1903. Serial No. 168,237. (No model.)



*Claim.*—1. An automatic drop-fixture, comprising a pair of brackets, integral projecting perforated ears formed on said brackets, a rod, said rod supported by said ears, a sliding rod supported by the brackets, a cord-roller mounted upon said sliding rod, a cord carried by said roller, holes bored through said roller through which the cord is passed, substantially as specified.



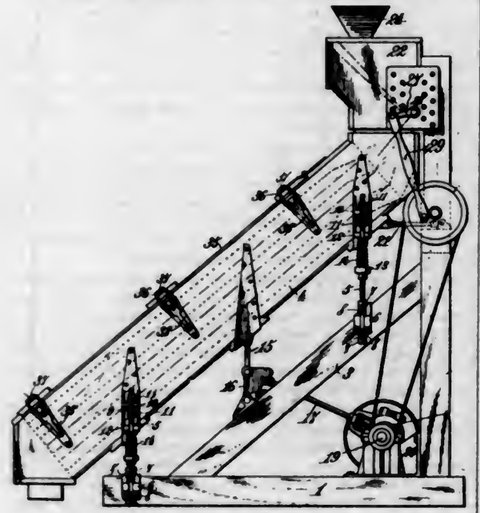
2. An automatic drop-fixture, comprising a pair of brackets, integral projecting perforated ears formed on each of said brackets, a rod bent twice at right angles passed through the perforations in said ears, a sliding rod supported by the said brackets, a cord-roller mounted upon said sliding rod, an operating-cord carried by the roller, a cap secured to one end of said roller, a shouldered bracket located upon said sliding rod, a slot formed in the projecting end of the said bracket, the slotted end of said bracket engaging the rod bent twice at right angles preventing said bracket from turning, notches formed in the shoulder of said bracket, pawls carried by the cap and adapted to engage with the notches in said bracket, washers mounted upon the sliding rod to retain the shouldered bracket in position, a semicircular-shaped slotted arm mounted upon the rod bent twice at right angles to guide the coiling of an operating-cord, substantially as specified.

3. A device of the class described, comprising a wood roller, an operating-cord carried by said roller, a sliding rod upon which said wood roller is mounted, a pair of brackets supporting said sliding rod and roller, a rod bent twice at right angles held by said brackets, holes bored through the said wood roller, a groove formed in said roller connecting the holes, a cord passed through the holes, the portion of said cord extending from hole to hole embedded in the groove, lugs formed on the sliding rod to retain the roller in position, a cap secured to one end of said roller, pawls pivotally carried in said cap, a shouldered bracket mounted upon the sliding rod and engaging with the rod bent twice at right angles, washers mounted upon said sliding rod retaining the shouldered bracket in position, pulleys mounted upon the rod bent twice at right angles over which the cord is guided, an arm held upon the rod bent twice at right angles, said arm bent around a portion of the roller, a slot formed in said arm for the guiding of the operating-cord, substantially as specified.

4. A device of the class described, comprising a pair of brackets mounted upon a rod 14, a sliding rod, a wood roller rigidly mounted upon said sliding rod, an arm 29 carried by the rod 14, pulleys mounted upon the rod 14, holes 26 bored through the wood roller, a groove 27 formed in the roller from hole to hole, a cord passed through said holes and groove, a cap secured to one end of the roller, an operating-cord 28 wound around said roller and secured to said cap, the said operating-cord 28 passing through a slot formed in the arm 29 whereby said cord is guided upon the roller, substantially as specified.

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**755,830. SHAKING-SCREEN.** THOMAS L. STURTEVANT, Quincy, and THOMAS J. STURTEVANT, Newton Center, Mass., assignors to Sturtevant Mill Company, Portland, Me., and Boston, Mass., a Corporation of Maine. Filed Mar. 19, 1902. Serial No. 98,937. (No model.)



*Claim.*—1. In a screen, and in combination, a frame, fixed screen-supports mounted thereon, a screen slidingly mounted on said supports, means for vibrating said screen, fixed stops on said supports between which said screen vibrates and by which its movements are suddenly arrested, and springs independent of the screen-vibrating mechanism for upholding said screen and balancing it midway of the said stops.

2. In a screen and in combination, a frame, screen-supporting rods carried by said frame, a screen slidingly mounted on said rods, fixed stops on said rods to limit the sliding movement of said screen on the said supporting-rods, springs encircling said rods to uphold said screen and balance it midway between said stops, and means for vibrating said screen between said stops.

3. In a screen, the combination with a suitable frame, of screen-supports yieldingly mounted on said frame so as to give vertically under abnormal screen vibrations, a screen slidingly mounted on said yielding supports, means for vibrating said screen, rigid stops on said supports between which said screen vibrates and by which its movements are suddenly arrested, and balancing-springs on said supports to hold said screen midway between said rigid stops.

4. In a screen, the combination with a suitable frame, of screen-supporting rods yieldingly mounted on said frame so as to give vertically under abnormal screen vibrations, an inclined screen slidingly mounted on said rods, means for vibrating said screen, rigid stops adjustably mounted on said rods, between which said screen vibrates and by which its movements are suddenly arrested, and balancing-springs encircling said rods and supporting said screen midway between said rigid stops.

5. In a screen, the combination with a suitable frame, of screen-supporting rods yieldingly mounted on said frame so as to give vertically under abnormal screen vibrations, an inclined screen slidingly mounted on said rods, means for vibrating said screen, rigid stops adjustably mounted on said rods, between which said screen vibrates and by which its movements are suddenly arrested, balancing-springs encircling said rods and supporting said screen midway between said rigid stops, and means for varying the tension of one or more of said springs to adjust them to the weight of the screen.

6. In a screen, the combination with a suitable frame, of screen-supporting rods having spring-mountings on said frame so as to give vertically under abnormal screen vibrations, an inclined screen slidingly mounted on said rods, means for vibrating said screen, rigid stops adjustably mounted on said rods, between which said screen vibrates and by which its movements are suddenly arrested, spiral balancing-springs encircling said rods and supporting said screen midway between said stops, and adjusting-nuts on said rods to vary the tension of said springs.

7. In a screen, the combination with a suitable frame, of screen-supporting rods having spring-mountings on said frame so as to give vertically under abnormal screen vibrations, an inclined screen slidingly mounted on said rods, means for vibrating said screen, rigid stops adjustably mounted on said rods between which said screen vibrates and by which its movements are suddenly arrested, spiral balancing-springs encircling said rods and supporting said screen midway between said stops, adjusting-nuts on said rods to vary the tension of said springs, and a radius-bar forming a pivotal connection between said screen and frame to confine the movements of said screen to a vertical direction.

8. In a screen, the combination with a suitable frame, of open-eared supports on said frame, screen-supporting rods mounted in said supports and vertically movable therein, supporting-springs on said rods, said springs being held between said supports and adjustable nuts on said rods, a screen having supporting-ears engaging said rods at their upper ends, adjustable rigid stops between which said screen-supporting ears play and by which the movements of said screen are suddenly arrested, means for vibrating said screen vertically on its supporting-rods, and balancing-springs to hold said screen midway between said rigid stops mounted on said rods between said screen-supporting ears and adjustable nuts.

9. In a screen, the combination with a suitable frame, of a stationary feed-box mounted thereon, a screen-box supported by said frame and provided with a plurality of screens, means for vibrating said screen-box vertically, a telescoping feeding connection between said stationary feed-box and said vibrating screen-box, and means within said feed-box to deliver material to each of the screens in regular succession.

10. In a screen, the combination with a frame, of a plurality of inclined screens, a stationary feed-box above said screens, means for vibrating said screens vertically toward and from said feed-box, and a swinging feed-plate within said feed-box to deliver material to each of the mouths of said inclined screens in regular succession.

11. In a screen, the combination with a frame, of a stationary feed-box mounted thereon, a screen-box having a telescoping connection with said feed-box and provided with a plurality of screens,

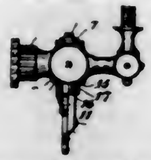
means for vibrating said screen-box toward and from said feed-box, a distributing-plate in said feed-box, and a moving feed-plate to receive the material from said distributing-plate and deliver it to each of the plurality of screens in regular succession.

12. In a screen, the combination with a frame, of a stationary feed-box, a screen-box mounted on said frame and having a feeding connection with said feed-box, a plurality of screens in said screen-box, means for vibrating said screen-box, a distributing-plate having a spreading ridge mounted in said feed-box and adapted to deliver the material from its lower end in a relatively thin even stream, and a swinging feed-plate to receive the material from said ridged distributing-plate and deliver it to each of said screens in regular alternation.

13. In a screen, the combination with a frame, of a plurality of inclined screens, a stationary feed-box above said screens, means for vibrating said screens vertically toward and from said feed-box, a stationary ridged distributing-plate within said feed-box to spread the material out into a thin, uniform stream, and a swinging feed-plate which receives the material from said distributing-plate and delivers it in regular succession to each of the mouths of said inclined screens.

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**755,331. SAFETY GAS-COCK. HENRY P. THIELS, Newark, N. J.**
Filed June 4, 1903. Serial No. 160,008. (No model.)



*Claim.*—1. In a gas-cock, the combination with a valve-casing providing a radially-disposed peripheral recess, and a valve-plug fitted to said casing and being longitudinally recessed at one side, of a leaf-spring fastened at one extremity in the outer end of the recess of the valve-plug and extending from said fastened extremity toward the inner end of the recess, said spring being bent at its inner end portion to normally lie away from the floor of the recess and having at its extremity a lip bent outward at substantially right angles and adapted to normally enter the said recess of the valve-casing.

2. In a gas-cock, providing a valve-casing flanged at its outer end and having a recess in said flange, the combination of a valve-plug recessed at one side, and a leaf-spring secured to said valve-plug at its outer end and being inclined toward its inner end away from the bottom of said recess and having at its extremity a lip normally projecting into the said recess of the valve-casing.

3. The combination with a gas-cock having a valve-casing, of a valve-plug fitting said casing and being recessed at its side, and a leaf-spring in said recess, fastened at its outer end to the valve-plug and extending from said fastening toward the inner end of the valve-plug, said spring being adapted at its inner end to engage the valve-casing, and adapted to receive pressure intermediate of said ends.

4. The combination of a valve-casing providing a valve-seat having a recess at its edge, a valve-plug fitting said seat and being recessed at one side, and a leaf-spring lying in said recess and having its outer end fastened to the valve-plug and its inner end adapted to enter said recess of the valve-casing, said spring being intermediate of its fastening to the valve-plug and said inner end bent outward away from the floor of the valve-plug recess and adapted to receive pressure.

5. In a gas-cock, the combination with a valve-casing providing peripheral seats, of a valve-plug longitudinally recessed at one side, and a spring mounted in said recess and being fastened at its outer end to the valve-plug and extending from such point of fastening toward the inner end of the valve-plug and lying away from the floor of the recess, and an outward projection at the inner extremity of the spring adapted to enter said seats of the valve-casing.

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**755,332. SAFETY GAS-COCK. HENRY P. THIELS, Newark, N. J.**
Filed Sept. 14, 1903. Serial No. 173,083. (No model.)

*Claim.*—1. In a gas-cock the combination with a casing, and a valve-plug having a lateral longitudinal groove with side walls, of a leaf-spring normally lying in said groove away from the bottom thereof, said spring being fastened at its outer end to the valve-plug and adapted at its inner end to engage the valve-casing.

2. In a gas-cock, the combination with a valve-plug casing having in its walls a radial recess, and a valve-plug having a lateral longitudinal groove with side walls, of a leaf-spring lying in said groove and being fastened at its outer end to the valve-plug and adapted at its inner extremity to enter said recess in the valve-casing.



3. In a gas-cock, the combination of a valve-plug casing having in its walls a recess opening only into the plug-seat and being concealed from the exterior, a valve-plug having a lateral longitudinal groove, and a leaf-spring lying in said groove and being fastened at its outer end to the valve-plug and adapted at its inner end to enter the said valve-casing recess.

4. In a gas-cock, the combination of a valve-plug casing having in its wall a recess with its floor inclining from an outer point of the edge of said casing inwardly toward the plug-seat, a valve-plug having a lateral longitudinal groove, and a leaf-spring lying in said groove and having its outer end fastened to the valve-plug and its inner extremity bent outwardly backward at an acute angle to the main portion of the spring and adapted to fit said recess in the edge of the valve-casing.

5. In a gas-cock, the combination with a valve-casing having in the valve-seat a recess opening out through the edge of the casing, a valve-plug having an annular bead or flange adapted to lie adjacent to the valve-casing to hide said recess and having a longitudinal groove, and a leaf-spring lying in said groove and being fastened at its outer end to the valve-plug and adapted at its inner end to enter said recess.

6. In a gas-cock, a casing, a valve-plug having a flattened outer end and a lateral longitudinal groove, of a leaf-spring having a broad outer end fastened to the flattened portion of the plug and a narrow inner portion lying in said groove and adapted at its extremity to engage the said casing.

7. In a gas-cock, a casing, a valve-plug having a flattened outer end and a lateral longitudinal groove, of a leaf-spring having an outer end fastened flatwise upon the flattened end of the plug, said spring being adjacent to said fastened offset or bent outward, and having beyond said offset a narrowed inner end lying in said groove and adapted to engage the said casing.

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**755,333. FOLDABLE CONVEYER. JAMES H. TORREY, Buffalo, N. Y.** Filed Mar. 10, 1903. Serial No. 147,092. (No model.)

*Claim.*—1. In a conveying apparatus, the combination of a sectional foldable frame having an inner leg, an outwardly-extending member, and a depending leg, means for hoisting said members of the foldable frame, a counterweight connected with the foldable part of said frame and guided for movement in a path lateral with respect to the inner frame-leg, and an endless conveyer operatively fitted to the frame members.

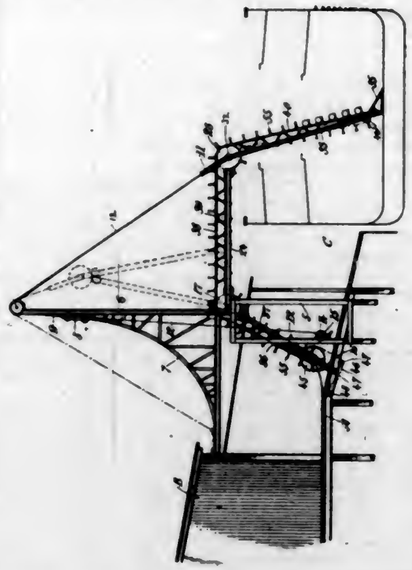
2. In a conveying apparatus, a conveyer-frame having inner and outer legs connected pivotally to the respective end portions of an intermediate member and adapted to be adjusted or folded relatively one to the other, means for counterweighting the frame, and a hoisting mechanism connected with said frame, in combination with an endless conveyer operatively fitted to the frame members and conforming readily to changes in positions thereof.

3. In a conveying apparatus, the combination with an upright frame, of a sectional conveyer-frame having an outer leg pivoted to an intermediate frame member, a counterweight having a cable guided by the upright frame and attached to the conveyer-frame at the pivotal joint between the outer and intermediate members of the conveyer-frame, and hoisting-cables also guided by the upright frame and connected to the foldable conveyer-frame.

4. In a conveying apparatus, the combination with an upright frame, and a guide-track, of a foldable conveyer-frame arranged to extend outwardly and downwardly from said upright frame, a weight-carriage adapted to said track, a cable between said weight-carriage and the foldable conveyer-frame, a hoisting mechanism connected with said conveyer-frame, and an endless conveyer operatively fitted to the conveyer-frame.

5. In a conveying apparatus, an adjustable conveyer-frame consisting of inner and outer legs, and an intermediate member pivotally connected one to the other, guide-surfaces on the parts adjacent the pivotal connection thereof, and track-rails on said parts forming with the guide-surfaces practically continuous supports for a conveyer, and an endless conveyer adapted to said track-rails and the guide-surfaces of said conveyer-frame.





6. In a conveying apparatus, a conveyer-frame consisting of inner and outer legs connected pivotally and by an intermediate member, and lengths of track-rails carried by the several members of the conveyer-frame and foldable therewith, said track-rails cooperating with the pivotal connections between the frame members to afford continuous track-surfaces, in combination with means for adjusting the conveyer-frame, and an endless conveyer operatively fitted to said conveyer-frame.

7. In a conveying apparatus an adjustable conveyer-frame comprising inner and outer legs, and an intermediate member, plates fastened to certain frame members and having pivotal connection with other frame members, said plates being furnished with suitable guide-surfaces, and lengths of track-rails carried by the respective members of the frame and operatively disposed with relation to the guide-surfaces on said plates, in combination with means for adjusting said frame, and an endless conveyer operatively fitted to the tracks and guide-surfaces of the conveyer-frame.

8. In a conveying apparatus, an endless conveyer provided with outwardly-projecting flights, a cross-rod supported by said flights, and intermediate filling-pieces attached to said cross-rod.

9. In a conveying apparatus, the combination of a foldable sectional frame having an inner stationary leg, and an outer foldable leg connected by an intermediate pivotal member, a driving-shaft on the inner stationary leg of the frame, an idle shaft on the outer foldable leg of the frame, an endless conveyer operatively fitted to said shafts and to the members of the frame, tightening devices mounted on the stationary leg of the frame and engaging with said endless conveyer, and means for locking the tightening devices in their adjusted positions.

10. A conveying apparatus having a frame consisting of an intermediate member and legs pivoted to the respective ends of the intermediate member, one of said legs and the intermediate member being foldable in close relation laterally with respect to each other, a hoisting mechanism connected to said frame for bodily lifting the intermediate member and one of the legs, a continuous endless conveyer supported by the frame, and groups of guide devices carried by the frame at the pivotal joints thereof; certain of said guide devices engaging with the leads of the conveyer on opposite sides of the frame-joints for keeping the latter in a taut condition at points where the conveyer conforms to the angle of the frame.

11. A conveying apparatus having a frame member pivotally supported at a fixed point, a leg pivoted to the outer end of the frame member, a continuous endless conveyer, a group of guide devices, one guide engaging with the opposing faces of the respective leads of the conveyer and other guide devices located on the respective sides of the pivot between the member and the leg and engaging with the other side of one lead of the conveyer from the first-named guide, and means for raising the frame member, the leg and the conveyer; said leg and a portion of the conveyer being movable to variable positions relative to the frame member.

12. In a conveying apparatus, a foldable frame having members, hinge-plates pivotally connecting said members, guides on said plates, other guides movable with the frame members, and an endless conveyer supported by the frame and fitted to said guides, the latter being effective in retaining the conveyer in a taut condition.

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**755,334. VALVE. FREDERICK F. TUNBERG, Philadelphia, Pa.**
Filed Sept. 24, 1903. Serial No. 174,409. (No model.)



*Claim.*—1. A valve comprising a longitudinally-bored body and a plurality of lateral passages, an inlet-valve closing one end of said bore and having a spindle projecting thereinto, a stem passing through the other end of said bore and longitudinally adjustable therein, manually-operated means outside of said body for reciprocating said stem, said stem fitting snugly in said bore and adapted to close one of said lateral passages and to contact with the spindle of said inlet-valve whereby the closing of one of said lateral passages admits fluid from said inlet to the other lateral passage and the opening of said bore between said lateral passages permits the closing of said inlet-valve by the fluid-pressure.

2. A valve comprising a tubular body having an inlet-port adjacent one end and a plurality of lateral ports, an inlet-valve closable by fluid-pressure, a stem fitted snugly in the bore of said body and having a recess and a reduced portion beyond said recess having longitudinal and lateral bores, a packing in said recess, a bushing on said reduced portion and a tapered extension-piece on said reduced portion beyond the bushing and having a longitudinal bore communicating with the longitudinal bore of the said reduced portion of the stem.

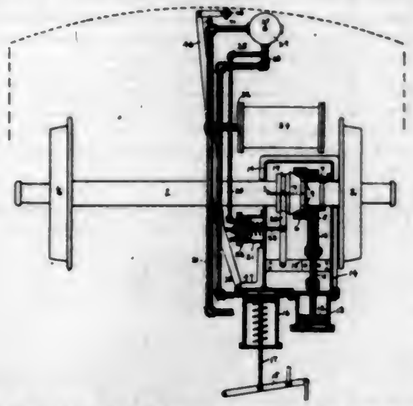
3. A valve comprising a tubular body having an inlet-port adjacent one end and a plurality of lateral ports, an inlet-valve closable by fluid-pressure, a stem snugly fitted in the bore of said body and having a recess and a reduced portion, a packing in said recess, longitudinal and lateral passages in said stem, a bushing on said reduced portion, a tapered extension-piece on said reduced portion having a longitudinal bore communicating with the longitudinal bore of the stem, said extension-piece having a pin provided with wings with a passage through said pin.

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**755,335. AIR-BRAKE. WILBUR J. VAUGHN, Detroit, Mich., assignor of two-thirds to Francis C. Osborn and Edward C. Van Husan, Detroit, Mich.** Filed Apr. 27, 1903. Serial No. 154,424. (No model.)

*Claim.*—1. In an air-brake for cars, the combination of the car-

axle, an air-pump, normally inoperative means for connecting said air-pump to said car-axle, and a plurality of means for making said connection operative.



2. In an air-brake for cars, the combination of the axle, an air-pump, a clutch for operatively connecting said air-pump and axle, and a plurality of means for operating said clutch.

3. In a car, the combination of the axle, an air-pump, connecting means between the axle and pump, a friction-clutch for making said connecting means operative, a receiver, a pneumatic cylinder and piston for operating said clutch, and a foot-lever for operating said clutch.

4. In an air-brake for cars, the combination of the car-axle, an air-pump, a friction-clutch for operatively connecting said air-pump and axle, a casing, a lever in said casing for operating said clutch, and a second lever extending to the dashboard of the car for actuating the first-named lever.

5. In a car, the combination of an axle, an air-pump having one member of a friction-clutch, a second member of said clutch revoluble with the axle, pneumatic means for operating the clutch, an auxiliary lever for operating said clutch and a plate so situated that it may be actuated by the foot of the operator for actuating the lever.

6. In a car, the combination of the axle, an air-pump, an eccentric for driving said pump, a friction-clutch connecting said eccentric to the axle, a lever to operate the clutch, a pneumatic piston and cylinder to operate said lever and a foot-lever to operate said clutch-operating lever.

7. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting said axle and pump, pneumatically-operated means for making said connection operative, and auxiliary means for making said connection operative.

8. In an air-brake for cars, the combination of the car-axle, an air-pump, a clutch for operatively copnecting said axle and air-pump, pneumatically-operated means for operating said clutch, and auxiliary means for operating said clutch.

9. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting said axle and pump, a lever for making said connection operative and pneumatically-operated means for making said connection operative.

10. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting the axle and air-pump, a lever for making said connection operative and an air-cylinder and piston for making said connection operative.

11. In an air-brake for cars, the combination of the car-axle, an air-pump, a clutch for operatively connecting said axle and pump, a lever for operating said clutch and pneumatically-operated means for operating said clutch.

12. In an air-brake for cars, the combination of the car-axle, an air-pump, a clutch for operatively connecting said air-pump and axle, a lever for operating said clutch and an air-cylinder and piston for operating said clutch.

13. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative connections between the axle and pump, pneumatically-operated means for making said connection operative, a receiver, a manually-operated rotary controller-valve at the front of the car for governing all the operation of the connection, a shaft to turn said valve, and a handle supported by the dashboard attached to said shaft to operate said valve.

14. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means connecting the axle and pump, a pneumatic cylinder and piston for making said connection operative, a receiver, and a manually-operated rotary controller-valve for governing the passage of air from the receiver to the pneumatic cylinder, so that said pump will be operated whenever air is discharged from said receiver, and an auxiliary lever for operating the connecting means.

15. In an air-brake for cars, the combination of the car-axle an air-pump, a clutch for operatively connecting said axle and pump pneumatically-operated means for operating said clutch, a receiver, and a manually-operated rotary controller-valve for permitting and preventing the passage of air from the receiver to the clutch-operating means, an upright shaft at the dashboard of the car for turning said valve, and a handle for said shaft.

16. In an air-brake for cars, the combination of the car-axle an air-pump, a clutch for operatively connecting the axle and pump, a pneumatic cylinder and piston for making said connection operative, a receiver, and a manually-operated rotary controller-valve for permitting and preventing the passage of air from the receiver to the clutch-operating cylinder, an upright shaft at the dashboard of the car for turning said valve, and a handle for said shaft.

17. In an air-brake for cars, the combination of the axle, an air-pump, normally inoperative means connecting the axle and pump, pneumatically-operated means for making said connection operative, a controller for governing the operation of the connection and other auxiliary means for making said connection operative.

18. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative connections between the axle and air-pump, pneumatically-operated means for making said connection operative, a controller for governing the operation of the connection and an auxiliary lever for making said connection operative.

19. In an air-brake for cars, the combination of the axle, an air-pump, normally inoperative connections between the air-pump and axle, a pneumatic cylinder and piston for making said connection operative, a controller for said cylinder and piston and other auxiliary means for making said connection operative.

20. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative connections between the axle and pump, a pneumatic cylinder and piston for making said connection operative, a controller for said piston and cylinder and an auxiliary lever for making said connection operative.

21. In an air-brake for cars, the combination of the car-axle, an air-pump, a clutch for operatively connecting the axle and pump, pneumatically-operated means for operating said clutch, a controller for governing the operation of said clutch and other auxiliary means for operating said clutch.

22. In an air-brake for cars, the combination of the car-axle, an air-pump, a clutch for operatively connecting said axle and pump, pneumatically-operated means for operating said clutch, a controller for governing the operation of the clutch, and an auxiliary lever for operating said clutch.

23. In an air-brake, the combination of the car-axle, an air-pump, a clutch for operatively connecting the axle and pump, a pneumatic cylinder and piston for making said connection operative, a controller for governing said operation, and other auxiliary means for operating said clutch.

24. In an air-brake for cars, the combination of the car-axle, an air-pump, a clutch for operatively connecting said pump and axle, a pneumatic cylinder and piston for operating said clutch, a controller for governing said operation, and an auxiliary lever for making said connection operative.

25. In an air-brake, the combination of the car-axle, an air-pump, normally inoperative means for connecting the axle and pump, means for rendering said connection operative, a brake-cylinder, and a controller for so governing the connecting means that it may be operative during the time that the brake-cylinder is inoperative.

26. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting the axle and pump, means for rendering said connection operative, a brake-cylinder, and a controller for governing the connecting means that it must be operative during the time that the brake-cylinder is operative.

27. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting the pump and axle, means for rendering said connection operative, a brake-cylinder, a controller for so governing the connecting means that it may be operative during the time the brake-cylinder is inoperative but must be operative during the time that the brake-cylinder is operative.

28. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting the pump and axle, means for rendering said connection operative, a brake-cylinder, a controller for so governing the connecting means that it may be operative during the time the brake-cylinder is inoperative, but must be operative during the time that the brake-cylinder is operative, and other auxiliary means for operating said connection.

29. In an air-brake for cars, the combination of the car-axle, an air-pump, normally inoperative means for connecting the pump and axle, means for rendering said connection operative, a brake-cylinder, a controller for so governing the said connection that it may be operative during the time that the brake-cylinder is inoperative, but must be operative during the time that the brake-cylinder is operative, and an auxiliary lever for operating said connection.

30. In an air-brake for cars, the combination of the axle, an air-pump, a clutch for connecting the axle and pump, pneumatically-operated means for operating said clutch, a brake-cylinder, and a controller for permitting the passage of the fluid to the clutch-operating means before and without its escape to the brake-cylinder.

31. In an air-brake for cars, the combination of the axle, an air-pump, a clutch for connecting the axle and pump, an air-cylinder and piston for operating the clutch, a brake-cylinder, and a controller for permitting the passage of the fluid to the brake-cylinder only after permitting it to escape to the clutch-operating cylinder, but permitting its escape to the clutch-operating cylinder without its escape to the brake-cylinder.

32. In an air-brake for cars, the combination with the axle, of an air-pump, a clutch for connecting the pump to the axle, a brake-cylinder, an air-cylinder and piston for operating said clutch, a controller so constructed that a partial operation of the handle will permit the escape of the fluid to the clutch-operating cylinder only, and a further operation of the handle will permit the escape of the fluid to the brake-cylinder.

33. In an air-brake, the combination of the car-axle, an air-pump, a clutch for connecting the pump to the axle, a receiver, a brake-cylinder, an air-cylinder for operating the clutch, a controller-valve having passages, pipes connecting said valve with the receiver the brake-cylinder and the clutch-operating cylinder, a handle for said controller having three operative positions, the first of said positions causing the connection of the brake and clutch cylinders with the exhaust, the second position connecting the clutch-cylinders with the receiver, and the third position connecting the brake-cylinder and keeping the clutch-cylinder connected with the receiver.

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**755,336. FIREPROOF BUILDING STRUCTURE.** GUY B. WAITE, New York, N. Y. Filed July 27, 1903. Serial No. 167,170. (No model.)



*Claim.*—1. In a fireproof structure of the character described, the combination of a shop-made arch beam or lintel and suspenders slinging it from the floor-girders, said arch-beam being supplemented by concrete or the like cast in at one or both ends to fill it out to and against the floor-girders in such a manner as to resist the vertical strains through the arch, substantially as described.

2. In a fireproof structure of the character described, the combination with a shop-made arch beam or lintel cut or molded to a stock length and one or more wire suspenders embedded therein longitudinally thereof and projecting from its ends whereby it may be slung from the tops of the floor-girders, of a supplemental concrete filling or bedding cast in at one or both ends of said arch-beam and filling it out to and against the floor-girders in such a manner as to resist the vertical strains through the arch, substantially as described.

3. In a fireproof structure of the character described, the combination with the floor-girders, of arch-beams extending transversely of and between adjacent floor-girders, said arch-beams extending to a height above the level of the tops of the floor-girders and being stepped at one end directly on the lower flange of one floor-girder and supported at the other end by the lower flange of the other floor-girder through an interposed filling of concrete or the like, substantially as described.

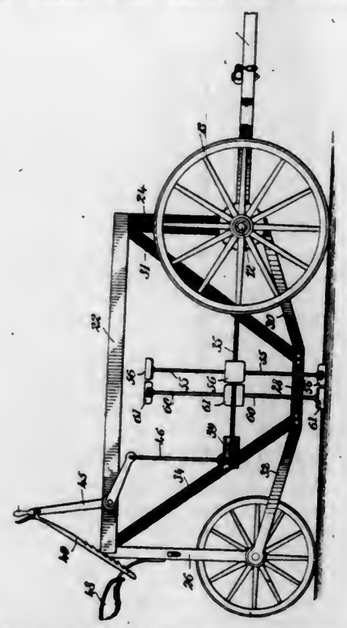
4. In a fireproof structure of the character described, the combination with the floor-girders, of arch-beams of inverted-T shape in cross-section disposed transversely of and between adjacent floor-girders, said arch-beams each having its vertical rib or web extended to a height above the tops of the floor-girders and being stepped at one end directly on the lower flange of one floor-girder and supported at the other end by the lower flange of the other floor-girder through an interposed filling of concrete or the like, substantially as described.

5. In a fireproof structure of the character described, the combination with the floor-girders, of shop-made arch beams or lintels cut in stock lengths disposed between adjacent girders, each of said arch-beams having a vertical rib or web and being further provided with suspenders embedded therein longitudinally thereof by which it is slung over the tops of the floor-girders and supported therefrom during construction, and concrete or the like cast in at one or both ends of said arch-beam and filling it out to and against the floor-girders in such a manner as to support the vertical strains through the arch, substantially as described.

6. The herein-described method of erecting fireproof structures which consists in cutting or molding to standard or stock lengths factory-made arch-beams, slabs, or lintels, suspending the latter from and between the floor-girders during construction, and molding in place an end filling of concrete or the like to fill out the end of the factory-made beam to and against the floor-girder and to support the vertical strains through the arch, substantially as described.

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**755,337. COTTON-CHOPPER.** CALVIN H. WALTERS, Springfield, Mo. Filed Oct. 14, 1903. Serial No. 176,980. (No model.)



*Claim.*—1. In a device of the character described the combination of an axle having a pair of wheels secured thereto, a frame supported upon said axle, a pair of longitudinally-extending cutter-shafts spaced laterally from each other and rotatably mounted on the device, means at the forward ends of said shafts for connecting them pivotally with said axle to swing radially therefrom in vertical planes, means also at said forward ends of the shafts by which they each receive rotary motion from said axle, a cutter carried by each of said shafts between its ends, a bearing-box at the rear end of each shaft, a pair of bars connecting said bearing-boxes together, the bars being connected at their outer ends to the boxes and telescoping with each other at their inner ends for adjustment to or from each other, a set-screw for holding said telescoping bars in their adjusted relation to each other, and means for manually raising or lowering said boxes to regulate the depth of cut to be taken by said cutters.

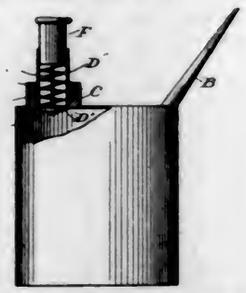
2. In a device of the character described, the combination of a framework having a bearing, an axle rotatable in said bearing, a wheel secured to each extremity of said axle, a journal-box loosely mounted on said axle adjacent one wheel, a shaft having one end journaled in said box and extending rearwardly, a second journal-box loosely mounted on said shaft and adjacent the other wheel, a second shaft having one end journaled in said second box and ex-

tending rearwardly, a journal-box on the rearward end of each of said shafts, a tube secured to one of said latter boxes, a rod secured to said other latter box and slidable in said tube, a bolt for clamping said rod and tube in adjusting position, a bevel-gear on the forward portion of each of said shafts, a bevel-gear on each end of said axle, which latter gear engages with one of the said bevel-gears respectively, means for adjusting each of said bevel-gears on the axle and the adjacent journal-box along the axle, and a cutting member on each shaft.

3. In a device of the character described, the combination of a frame having a bearing, an axle rotatable in said bearing, a wheel secured to each end of said axle, a bearing-box loose on the end portion of each of said axles, a shaft journaled in each of said latter bearing-boxes and extending rearwardly, a journal-box on the rear end of each of said shafts, a connecting member between said latter bearing-boxes, a bell-crank lever pivotally connected to each of said latter bearing-boxes, a rack-bar connected with each of said bell-cranks, and a cutting member on each of said shafts.

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**755,338. OIL-CAN.** JAMES WILKINSON, Philadelphia, Pa. Filed July 6, 1903. Serial No. 164,369. (No model.)




*Claim.*—1. In an oil-can, a reservoir, a spout extending from said reservoir, a cylinder removably secured to the reservoir and communicating with the interior thereof, a piston adapted to operate within the cylinder, a spring for normally holding the piston outward, a valve adapted to normally close the opening between the reservoir and the cylinder, said valve being connected to the piston so as to be removed from its seat when the piston is pressed inward, as and for the purpose specified.

2. In an oil-can, a reservoir, a spout extending from said reservoir, a removable cylinder connected with the reservoir, said cylinder communicating with the interior of the reservoir, a piston fitted to slide within the cylinder and extending normally from the outer end thereof, a spring interposed between the inner end of the cylinder and the piston, a valve adapted to normally close the opening between the cylinder and the reservoir, said valve connected to the piston and adapted to be removed from its seat when the piston is pressed inward, as and for the purpose specified.

3. In an oil-can, a reservoir, a spout extending from said reservoir, an internally-threaded boss extending outward from said reservoir, a cylinder adapted to be threaded within said boss, an opening through the inner end of the cylinder and communicating with the reservoir, an annular flange surrounding said opening, a piston fitted to slide within said cylinder and normally extending from the outer end thereof, a spring interposed between the annular flange and the inner end of the piston, a valve adapted to normally seat against the inner end of the cylinder, a rod connecting said valve with the piston, as specified.

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**755,339. TOY.** IRA D. WORCESTER, Pittsburg, Pa. Filed Aug. 18, 1903. Serial No. 169,353. (No model.)

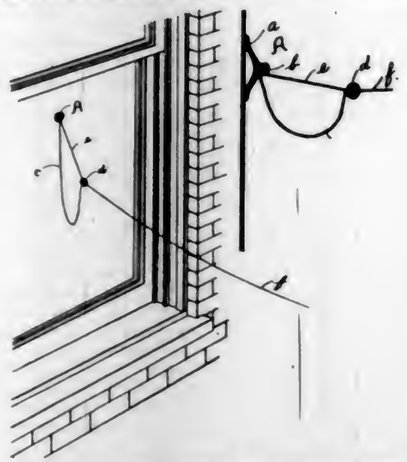
*Claim.*—1. A toy comprising a suction device, a tapping device externally supported therefrom, and an elastic connection therebetween.

2. A toy comprising a suction device and a tapping device externally supported therefrom by elastic means.

3. A toy comprising a suction device and a tapping device suspended therefrom by means of an elastic string, substantially as specified.

4. A toy comprising a suction device, a string attached thereto, and a tapping device attached to said string a short distance therefrom, substantially as specified.

5. A toy comprising a suction device and a tapper loosely suspended from the outer side thereof.




6. A toy comprising a suction device having a projection or knob on the outer side thereof, and a tapper supported from said knob at a short distance from said suction device, for the purpose specified.

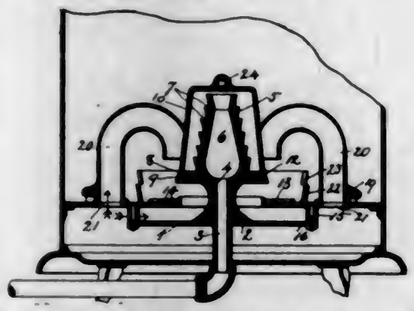
7. A toy comprising a suction device and a tapper supported therefrom out of contact therewith, for the purpose specified.

8. A toy comprising a suction device and a tapper supported from the outer side thereof and out of contact therewith, for the purpose specified.

9. A toy comprising a suction device, a tapper supported externally therefrom, and means for operating said tapper, for the purpose described.

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**755,340. OIL-BURNER.** JOSHUA M. YOUDSER, Oakland, Cal., assignor of one-half to G. A. Champlin, Sioux City, Iowa. Filed Nov. 2, 1903. Serial No. 179,633. (No model.)



*Claim.*—1. In an oil-burner the combination of a base-plate, a vaporizer supported thereon at the top of which the oil discharges, a retort-casing closed at the top and forming with said vaporizer a retort-chamber from which the vapor is discharged downward, a burner-plate, having a central aperture to surround the vaporizer, onto which the vapor generated is discharged, and arched air-tubes for conducting air and discharging the same downwardly onto said burner-plate in proximity to the place of discharge of the generated vapor, said tubes being arranged to be heated by the flames of said vapor, substantially as described.

2. In an oil-burner the combination of a base-plate, a vaporizer supported thereon at the top of which the oil discharges, a retort-casing closed at the top and forming with said vaporizer a retort-chamber from which the vapor is discharged downward, a burner-plate, having a central aperture to surround the vaporizer, onto which the vapor generated is discharged, and arched air-tubes for conducting air and discharging the same downwardly onto said burner-plate in proximity to the place of discharge of the generated vapor, said tubes being arranged to be heated by the flames of said vapor, and a serrated wall on said burner-plate for distributing the flames, substantially as described.

3. In an oil-burner the combination of a base-plate, a vaporizer supported thereon at the top of which the oil discharges, a retort-casing loosely supported upon the vaporizer and closed at the top and forming with said vaporizer a retort-chamber from which the vapor is discharged downward, a burner-plate, having a central aperture to surround the vaporizer, onto which the vapor generated is discharged, and arched air-tubes for conducting air and discharging the same downwardly onto said burner-plate in proximity to the place of discharge of the generated vapor, said tubes being arranged to be heated by the flames of said vapor, substantially as described.

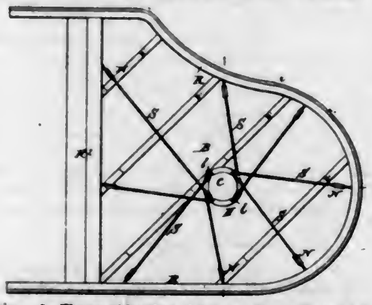
4. In an oil-burner, the combination of the base-plate having a central boss, the oil-supply pipe passing therethrough, the vaporizer screwed onto said pipe and resting on said boss said vaporizer being of a general conical form and having concentric troughs increasing in diameter downward, the retort-casing closed at the top and forming with said vaporizer a retort-chamber having a downwardly-extending opening, and a burner-plate spaced from the base-plate having a central opening to permit the air to pass therethrough, the flames discharging downward from said opening onto said burner-plate, and arched air-tubes discharging the air downwardly in proximity to the discharge of the gas from the vaporizer, substantially as described.

5. In an oil-burner, the combination of the base-plate having a central boss, the oil-supply pipe passing therethrough, the vaporizer screwed onto said pipe and resting on said boss said vaporizer being of a general conical form and having concentric troughs increasing in diameter downward, the retort-casing closed at the top and forming with said vaporizer a retort-chamber having a downwardly-extending opening, and a burner-plate spaced from the base-plate having a central opening to permit the air to pass therethrough, the flames discharging downward from said opening onto said burner-plate, and pivoted arched air-tubes discharging the air downwardly in proximity to the discharge of the gas from the vaporizer, substantially as described.

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**755,341. PIANO CONSTRUCTION.** PAUL M. ZEIDLER, New York, N. Y. Filed July 10, 1903. Serial No. 164,944. (No model.)



*Claim.*—1. The combination with a sounding-board and the rim-case to which it is attached, of a series of stay-rods the outer extremities of which are connected with the said rim-case, and the inner extremities of which are connected with a centralizing-hub which is otherwise free and unattached, together with said centralizing-hub supported solely by said rods, and with means for adjusting the tension exerted by said stay-rods, for the purpose set forth.

2. The combination of a sounding-board, a rim-case the parts of which are united integrally and to which said sounding-board is secured, a series of stay-rods the outer extremities of which are connected with the said sounding-board rim-case, and the inner extremities of which are connected with a centralizing-hub which is otherwise free and unattached, together with said centralizing-hub supported solely by said rods, and means for adjusting the tension exerted by said stay-rods, for the purpose described.

3. The combination of a sounding-board, a rim-case the parts of which are united integrally and to which said sounding-board is attached, a series of stay-rods the outer extremities of which are connected to the said sounding-board rim-case, and the inner extremities of which are connected tangentially with a centralizing-hub which is otherwise free and unattached, said centralizing-hub, and means for adjusting the tension of said stay-rods, for the purpose described.

4. The combination of a sounding-board, a rim-case the parts of which are united integrally, and to which said sounding-board is attached, a series of stay-rods the outer extremities of which are connected in a common plane, or substantially so, to the sounding-board rim-case, the inner extremities of said stay-rods being connected alternately in different planes to a centralizing-hub in such manner as to truss the said sounding-board rim internally, and means for adjusting the tension of said stay-rods for the purpose described.

5. The combination of a sounding-board rim-case, the parts of which are united integrally and to which said sounding-board is attached, a series of stay-rods the outer extremities of which are connected by universal joints with the said sounding-board rim-case, and the inner extremities of which are connected tangentially with a centralizing-hub which is otherwise free and unattached, said centralizing-hub, and means for adjusting the tension of said stay-rods for the purpose set forth.

6. The combination of a sounding-board, a rim-case the parts of which are united integrally and to which said sounding-board is attached, a series of stay-rods the outer extremities of which are connected in a common plane, or substantially so to said sounding-board rim-case by means of universal joints, the inner ends of said stay-rods being connected alternately in different planes to a centralizing-hub in such manner as to truss the said sounding-board rim internally, and means for adjusting the tension of said stay-rods, for the purpose set forth.

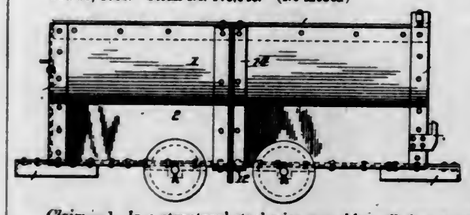
7. The combination with a sounding-board and the rim-case to which it is attached, of a centralizing-hub free and unattached, and a series of rods connected tangentially with said hub and to the rim-case.

8. The combination with a sounding-board and the rim-case to which it is attached, of a centralizing-hub free and unattached, a series of rods connected tangentially to said hub and to the rim-case, and a self-adjusting bearing between said rods and rim-case.

9. The combination with a sounding-board, the rim-case attached thereto, and the rim-brace, of a centralizing-hub, a series of rods connected tangentially to said hub, and to the rim-case, said hub being otherwise free and unattached, and a self-adjusting bearing between said rods and rim-case and rim-brace.

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**755,342. MINE OR PIT CAR.** JAMES H. ALLEN, Coal Valley, Pa., assignor of three-eighths to C. A. Rankin, McKeesport, Pa. Filed Oct. 28, 1903. Serial No. 178,848. (No model.)



*Claim.*—1. In a structural-steel mine-car, side walls having inturned flanges at the lower edges, a bottom riveted to said flanges, standards secured to the sides at the front end thereof and extending above the sides, a shaft journaled in said extending ends, a door hinged to said shaft, angle-strips secured to the sides at the rear end thereof, and having one of their flanges extending inwardly and sheared at the upper end, a rear end riveted to said inwardly-extending flanges of the angle-strips, angle-strips secured to the upper edge of the sides and to the upper edge of the rear end, and angle-braces secured to the sides, substantially as described.

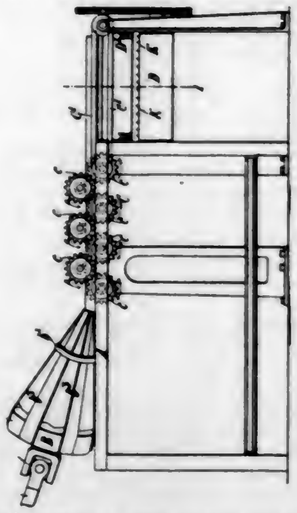
2. In a structural mine-car, side walls having inturned flanges at the lower edges, a bottom riveted to said flanges, standards secured to the sides at the front end thereof and extending above the sides, a shaft journaled in said extending ends, a door hinged to said shaft, angle-strips secured to the sides at the rear end thereof, and having one of the flanges thereof extending inwardly, a rear end wall riveted to the inwardly-extending flanges of said angle-strips, and angle-iron bumpers bent to the U-shape form and riveted to the bottom at each end of the car, substantially as described.

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**755,343. MACHINE FOR ROLLING AND CUTTING CANDY.** EDWARD W. BARRATT, Wood Green, England. Filed Oct. 16, 1903. Serial No. 177,336. (No model.)

*Claim.*—1. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and means for incising or cutting said sticks.

2. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, means for carrying the severed lengths from the drawing or pulling means to the rolling means, and means for incising or cutting said sticks.



3. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, a band conveyer for carrying the severed lengths from the drawing or pulling means to the rolling means, and means for incising or cutting said sticks.

4. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, a series of grooved wheels for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, a band conveyer for carrying the severed lengths from the drawing or pulling wheels to the rolling means, and means for incising or cutting said sticks.

5. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, a series of grooved wheels for drawing or pulling the candy from said receptacle, endless bands between which severed lengths of said drawn or pulled candy are rolled into cylindrical sticks, a band conveyer for carrying the severed lengths from the drawing or pulling rollers to the endless bands, and means for incising or cutting said sticks.

6. A candy rolling and cutting machine consisting in the combination of an oscillatory receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks and means for incising or cutting said sticks.

7. A candy rolling and cutting machine consisting in the combination of an oscillatory receptacle for the plastic candy, a universal joint connecting said receptacle with its actuating device to permit of its being turned about its axis by hand, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and means for incising or cutting said sticks.

8. A candy rolling and cutting machine consisting in the combination of an oscillatory base-piece, resilient members projecting from said base-piece and converging at their free ends to form a conical receptacle for the plastic candy, a universal joint connecting said receptacle with its actuating device to permit of its being turned about its axis by hand, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and means for incising or cutting said sticks.

9. A candy rolling and cutting machine consisting in the combination of an oscillatory base-piece, resilient converging members on said base-piece forming a conical receptacle for the plastic candy, a sliding ring embracing said resilient members, a universal joint connecting said receptacle with its actuating device to permit of its being turned about its axis by hand, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and means for incising or cutting said sticks.

10. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, a series of grooved wheels peripherally covered with flexible material for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and means for incising or cutting said sticks.

11. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, a series of grooved wheels surrounded by endless bands of flexible material for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and means for incising or cutting said sticks.

12. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, a series of grooved wheels peripherally covered with flexible material, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, an endless-band conveyer driven from said series of grooved wheels for carrying the severed lengths to the rolling means, and means for incising or cutting said sticks.

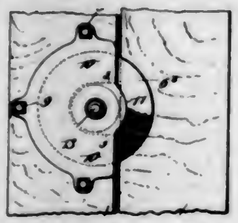
13. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, means for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, and a series of serrated blades situated at right angles to the cylindrical sticks for incising or cutting the latter.

14. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, a pair of endless bands for rolling severed lengths of said drawn or pulled candy into cylindrical sticks, the upper one of said bands extending beyond the lower one at the outlet end and the lower one extending beyond the upper one at the inlet end, means for carrying the severed lengths from the drawing or pulling means to the nip of said endless bands, a series of serrated blades supported beneath and in close proximity to the extended part of the upper endless band, and a chute down which the cylindrical sticks fall after being acted upon by said blades substantially as described.

15. A candy rolling and cutting machine consisting in the combination of a receptacle for the plastic candy, means for drawing or pulling the candy from said receptacle, a pair of endless bands for rolling severed lengths of the drawn or pulled candy into cylindrical sticks, a band conveyer for carrying the severed lengths from the drawing or pulling means to a point adjacent to the endless bands, an incline for conducting the said severed lengths from the aforesaid band conveyer to the nip of the endless bands, means for adjusting the position of said incline with respect to the endless bands, and means for incising or cutting said sticks substantially as described.

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**755,344. BEARING FOR ELEVATOR-CARRIAGE ROLLERS.** JAMES BARRETT, New York, N. Y. Filed Aug. 8, 1903. Serial No. 168,787. (No model.)



*Claim.*—1. In an elevator, the combination with a guide, and a carriage having a recessed stile, of a roller mounted on said carriage to partly occupy the stile, said roller having flanges or face-plates disposed for engagement with the stile and with said guide.

2. In an elevator, the combination with an upright frame, and a carriage, of a roller provided with flanges or face-plates, said roller being mounted on the carriage to ride upon the frame, and the flanges or face-plates of the roller being disposed for engagement with the respective sides of the carriage and a guide.

3. In an elevator, a carriage, complemental bracket-plates fixed thereto, an arbor supported by said bracket-plates, and a roller mounted on said arbor.

4. In an elevator, a carriage, complemental bracket-plates fixed thereto and provided with bearings on their opposing faces, an arbor supported by said bracket-plates, and a recessed roller revoluble on said arbor and having engagement with said bearings of the bracket-plates.

5. In an elevator, a carriage, bracket-plates fixed thereto and provided with bearings on their opposing faces, an arbor supported by said bracket-plates, and a roller revolubly mounted on said arbor; said roller having recesses or grooves in its ends for the reception of the bearings of the bracket-plates.

6. In an elevator, a carriage, bracket-plates fixed thereto and provided on their opposing faces with bearings, an arbor supported by said bracket-plates, and a divided flanged roller revolubly mounted on said arbor and engaging with the bearings of the bracket-plates.



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**755,345. PIANO-PROTECTOR.** GEORGE P. BENT, Chicago, Ill. Filed Oct. 20, 1902. Serial No. 128,025. (No model.)

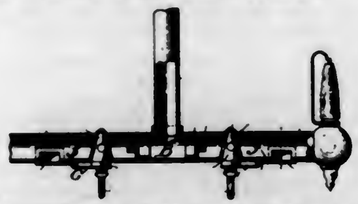


*Claim.*—1. A piano-protector comprising a flat rectangular frame adapted to be applied to a horizontal surface of a piano and to extend across the same from side to side and front to rear and adapted also to project out in front of the piano-legs and beyond the sides of the piano, substantially as described.

2. A device of the class specified, comprising a rectangular frame, consisting of a front strip 1, end strips 2, 2, having edge pieces 6, 6, and braces 3, 3, the whole constituting a flat frame adapted to be removably secured to the bottom of a piano and to project out beyond the edges thereof when the piano is in a vertical position.

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**755,346. GAS-FIXTURE.** SAMUEL BERNHEIM, New York, N. Y. Filed June 1, 1903. Serial No. 159,475. (No model.)



*Claim.*—1. The combination with a gas-fixture including a hanger and horizontal arm, the latter provided at its outer extremity with a burner, and having an intermediately-located longitudinally-disposed air-admission opening, of a cock in said arm contiguous to the opening and having a horizontal port adapted to be turned parallel with said opening, and a valve controlling said opening and operatively connected with the cock.

2. The combination with a gas-fixture including a hanger and horizontal arm, the latter provided at its outer extremity with a burner, and having an intermediately-located longitudinally-disposed air-admission opening, of a cock in said arm contiguous to the opening and having a horizontal port adapted to be turned parallel with the opening, and a valve controlling said opening and detachably connected with the cock to be operable thereby.

3. The combination with a gas-fixture including a hanger and horizontal arm, the latter provided at its outer extremity with a burner and having an intermediately-located longitudinally-disposed air-admission opening, of a cock in said arm contiguous to the opening and having a horizontal port adapted to be turned parallel with the said opening, a valve controlling the latter, and a spring-yielding finger carried by the cock and detachably engaging said valve.

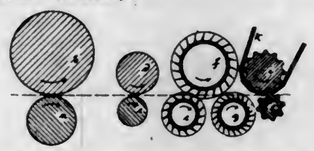
4. The combination with a gas-fixture including a hanger and a horizontal arm, the latter provided at its outer extremity with a burner and having an intermediately-located longitudinally-disposed air-admission opening, a coupling connecting said arm with the hanger and having a nozzle projecting into the arm, of a cock in said arm between the nozzle and opening and having a horizontal port adapted to be turned parallel with the said opening, and a valve for the latter operatively connected with the cock.

5. The combination with a gas-fixture including a hanger and horizontal arm, the latter provided at its outer extremity with a burner and having an intermediately-located lower air-admission opening with guide-ribs external thereto, of a cock in said arm contiguous to the opening, a curved plate slidingly guided in said ribs and a connection between the plate and the cock.

6. The combination with a gas-fixture including a hanger and horizontal arm the latter provided at its outer extremity with a burner having an intermediately-located lower air-admission opening with guide-ribs external thereto, a curved plate slidingly guided in said ribs, and having a slotted portion, a coupling connecting the hanger and arm and having a nozzle projecting within the arm, a cock in the arm between the nozzle and opening, and a spring-yielding finger carried by the cock and engaging the slotted portion of the plate.

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**755,347. DRAWING-FRAME FOR TEXTILE FIBERS.** ALFRED BIETENHOLZ, Lössum-Blumenthal, Germany. Filed Feb. 26, 1902. Serial No. 95,769. (No model.)



*Claim.*—1. In a drawing-frame for textile fibers, the combination with a set of feed-rollers and a set of drawing-rollers, for feeding and drawing the sliver, of two lower porcupine-rollers beneath the sliver and between the lower of said feed-rollers and the lower of said drawing-rollers, and an upper porcupine-roller above the sliver intermediately between said two lower porcupine-rollers, said three porcupine-rollers being small in diameter and having as many needles as possible and arranged for intersecting the sliver, and all of said rollers being so arranged that the sliver passes in a straight line or plane from the feed-rollers to the drawing-rollers, substantially as set forth.

2. In a drawing-frame for textile fibers, the combination with a set of feed-rollers and a set of drawing-rollers, for feeding and drawing the sliver, of a lower porcupine-roller beneath the sliver and between the lower of said feed and drawing rollers, and an upper porcupine-roller above the sliver acting in conjunction with the lower porcupine-roller, said porcupine-rollers being small in diameter and having as many needles as possible and arranged for intersecting the sliver, and all of said rollers being so arranged that the sliver passes in a straight line or plane from the feed-rollers to the drawing-rollers, substantially as set forth.

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**755,348. GUIDE FOR SEWING-MACHINE HEMMERS.** HENRY BLASKOFF, New York, N. Y. Filed Mar. 31, 1903. Serial No. 150,400. (No model.)



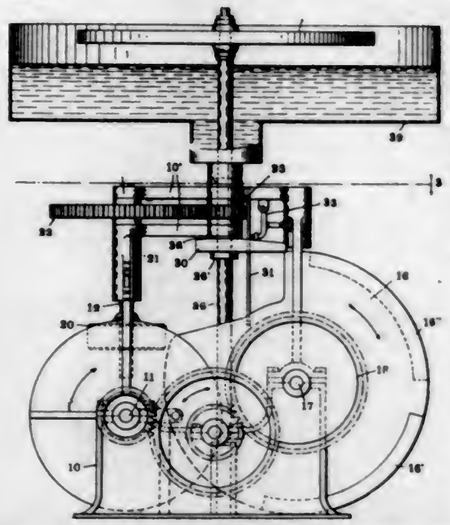
*Claim.*—1. A curler-guide for sewing-machine hemmers, comprising a plate, a guide thereon, a curler-body, means for adjustably connecting the curler-body and plate, a curler-shank hinged to the curler-body, a curler proper carried by the shank, and a weight attached to the curler proper.

2. A curler-guide for sewing-machine hemmers, comprising a plate, two guides carried thereby in longitudinal alinement with each other and lying over the plate, a curler-body lying on the plate, means for connecting the curler-body and plate to allow the curler-body

longitudinal adjustment transversely of the guides, a curler-shank hinged to the curler-body, and a curler proper carried by the shank and curved upward and thence downward toward the plate, said shank and curler proper lying over the plate between said guides thereof

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**755,849. PAINT-DIPPING MACHINE. HENRY L. BORNMAN, Indianapolis, Ind. Filed Oct. 30, 1903. Serial No. 179,176. (No model.)**



*Claim.*—1. In a paint-dipping machine, the combination, with a rotatable shaft adapted to receive the articles to be painted, of means for rotating said shaft, means for automatically reversing the direction of rotation of the shaft, a receptacle for paint, and means for bringing the article into and out of the paint.

2. In a paint-dipping machine, the combination, with a rotatable shaft adapted to receive the articles to be painted, of means for rotating said shaft, means for automatically reversing the direction of rotation of the shaft, a receptacle for paint, means for bringing the article into and out of the paint, and means for varying the speed of the shaft.

3. In a paint-dipping machine, the combination, with a rotatable shaft to which the article may be secured, of a paint-tank through which said shaft extends, means for rotating said shaft in either direction, means for automatically raising and lowering said shaft through the tank, and means for automatically reversing the direction of rotation of said shaft.

4. In a paint-dipping machine, the combination, with a rotatable shaft to which the articles may be secured, of a paint-tank through which said shaft extends, means for rotating said shaft in either direction, means for automatically raising and lowering said shaft through the tank, means for automatically reversing the direction of rotation of said shaft, and means for varying the speed of rotation of said shaft.

5. In a paint-dipping machine, the combination of a rotatable shaft to receive the articles to be painted, a paint-receptacle, driving-disks 12 and 13, wheel 30 arranged between said disks to be engaged by either of said disks, driving connections between said wheel and the rotatable shaft, a cam drivingly connected with said disks, means operated by said cam for raising and lowering the rotatable shaft, and means operated by said cam for shifting the disks with relation to the wheel so as to change the direction of rotation thereof.

6. In a paint-dipping machine, the combination of a rotatable shaft to receive the articles to be painted, a paint-receptacle, driving-disks 12 and 13, wheel 30 arranged between said disks to be engaged by either of said disks, driving connections between said wheels and the rotatable shaft, a cam drivingly connected with said disks, means operated by said cam for raising and lowering the rotatable shaft, means operated by said cam for shifting the disks with relation to the wheels so as to change the direction of rotation thereof, and means for radially adjusting said wheels with relation to the disk for changing the speed of rotation of the rotatable shaft.

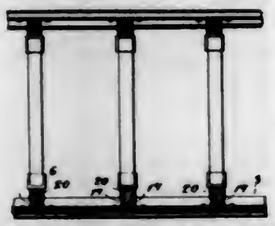
7. In a paint-dipping machine, the combination, with a rotatable shaft to which the articles may be secured, of a paint-tank through which said shaft extends, means for rotating said shaft in either direction, means for automatically raising and lowering said shaft through the tank, means for automatically reversing the direction of rotation of said shaft, and means for holding the shaft up away from the automatic raising and lowering means.

8. In a paint-dipping machine, the combination, with a rotatable shaft to which the articles may be secured, of a paint-tank, means for rotating the shaft in either direction, means for automatically bringing the article into and out of the paint, and means for automatically reversing the direction of the shaft.

9. In a paint-dipping machine, the combination, with a rotatable shaft to which the articles may be secured, of a paint-tank, means for rotating said shaft, means for automatically bringing the article into and out of the paint, means for automatically reversing the direction of rotation of said shaft, and means for varying the speed of rotation of said shaft.

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**755,850. CAR-FRAME. GEORGE M. BRILL and WILLIAM H. HEULINGS, Jr., Philadelphia, Pa., assignors to John A. Brill, Philadelphia, Pa. Filed Mar. 16, 1903. Serial No. 147,914. (No model.)**



*Claim.*—1. In a car or similar vehicle, side sills, chairs secured thereto, stanchions secured in said chairs, crossings extending between the chairs, and a tie-beam extending between the chairs.

2. In a car or similar vehicle, side sills, chairs secured thereto, parallel guides on said chairs forming a groove between them, and a grooved stanchion fixed in said chairs so that the grooves in said stanchion form a continuation of the groove in the casting.

3. In a car or similar vehicle, side sills, chairs secured thereto and crossings uniting certain of said chairs, said crossings containing an inverted T-iron.

4. In a car or similar vehicle, side sills, crossings connecting said sills, said crossings comprising a T-iron, the vertical web of which is sandwiched in between two other members of the crossing.

5. In a car or similar vehicle, side sills, chairs secured thereto, crossings engaging said chairs and stanchions engaging said crossings and chairs.

6. In a car or similar vehicle, side sills composed of inverted T-irons, chairs secured thereto, said chairs being provided with two seats, one for a stanchion and one for a crossing.

7. In a car or similar vehicle, side sills, chairs fixed to said sills, stanchions fixed to said chairs, and crossings connecting certain of said chairs and engaging the stanchions therein.

8. In a car or similar vehicle, side sills, chairs secured thereto, said chairs being provided with a vertical and slotted wall and crossings uniting certain of said chairs and passing through said slotted walls.

9. In a car or similar vehicle, crossings and stanchions engaging with said crossings.

10. In a car or similar vehicle, stanchions and crossings engaging therewith, said crossings comprising a T-bar sandwiched in between two other members.

11. As an article of manufacture, a crossing comprising a T-bar, the vertical web of which is sandwiched in between two other members.

12. As an article of manufacture, a chair comprising a plate, a bottom extending therefrom, vertical walls at the edges of said bottom.

13. As an article of manufacture, a chair provided with a seat for a stanchion, and a seat for a crossing extending outwardly and horizontally from the stanchion-seat.

14. As an article of manufacture, a chair provided with a seat for a stanchion, and an outwardly and horizontally extending seat for a crossing, the said seats being in the same vertical plane.

15. As an article of manufacture, a chair provided with parallel ridges adapted to receive a sash.



16. As an article of manufacture, a chair provided with parallel ridges adapted to receive a sash, and a seat for a crossing.

17. As an article of manufacture, a chair provided with parallel ridges forming a groove which is adapted to receive a sash, and a seat for a stanchion.

18. As an article of manufacture, a chair with parallel ridges forming a groove between them adapted to receive a sash, and a seat made integral with said chair.

19. As an article of manufacture, a chair provided with parallel ridges forming a groove between them, and means for engaging crossings and stanchions.

20. As an article of manufacture, a chair provided with parallel ridges forming a groove between them adapted to receive the sash, and seats for a stanchion and a crossing, said seats being separated by a partition.

21. In a car or similar vehicle, side sills, chairs secured to said sills, crossings secured in said chairs, side posts in said chairs, and resting on said crossings.

22. In a car or similar vehicle, angle-metal side sills, chairs secured thereto, inverted T-irons, crossings secured in said chairs, side posts resting on the lower webs of said crossings, and recessed to receive the upright web.

23. A car or similar vehicle, having inverted T-iron side sills, chairs secured to the vertical web of said sills and resting on the lower horizontal web of said sills.

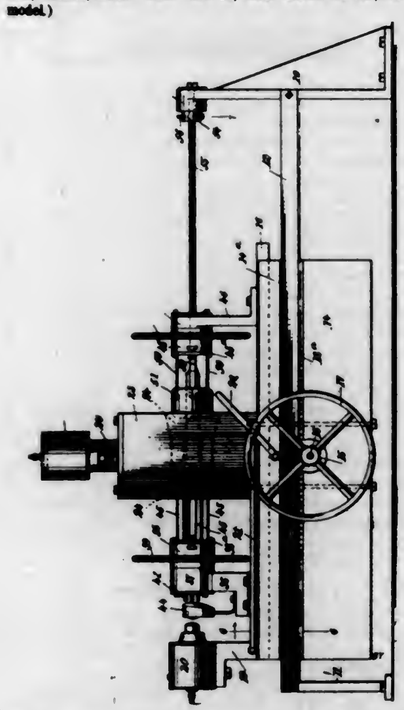
24. In a car or similar vehicle, side sills formed of inverted T-irons, chairs to receive the side posts and crossings, attached to the upright webs of said side sills and resting on one of the lower webs of said side sills.

25. A car having side sills, crossings composed of inverted T-irons and beams secured to said T-irons and resting on the lower webs thereof, and chairs secured to said side sills adapted to receive the ends of said T-iron crossings and beams.

26. In a car or similar vehicle, side sills of angle-iron, chairs secured to said side sills, crossings secured in said chairs, and resting endwise against said side sills.

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**755,851. MACHINE FOR REPAIRING DRILLS. JAMES J. BROSSIT, Granite, Mont. Filed Nov. 13, 1902. Serial No. 131,118. (No model.)**



*Claim.*—1. The combination of a housing, a hammer working therewith, a sectional tool capable of fitting within the housing and of being actuated by the hammer, a second tool movable axially toward and from the first tool, means for driving the second tool, and a means for mounting both tools to permit the simultaneous rotation thereof.

2. In a machine for repairing drills, the combination of a housing, a hammer working therewith, a sectional tool capable of projecting into the housing, a mounted wheel, spring-arms attached to the wheel and carrying the sections of the tool, a second tool carried by the wheel to move axially toward and from the first-named tool, and means for operating the second tool.

3. In a machine for repairing drills, the combination of a stationary framing, comprising a horizontal rail, a carriage mounted to move on said rail, a hammer mounted on the carriage, a slide mounted to move on the carriage, tools mounted on the slide at opposite sides of the hammer, said tools being movable with the slide alternately to coact with the hammer, and means for attaching the drill to the said framing.

4. In a machine for repairing drills, the combination with a framing, comprising horizontal rails, of a carriage mounted to move thereon, gearing having elements respectively on the carriage and rails to facilitate the operation of the carriage, a slide movable on the carriage, a connection between the carriage and slide to move the latter, a hammer mounted on the carriage, two tools mounted on the slide at opposite sides of the hammer and movable with the slide alternately to coact with the hammer, and means on the framing for attaching the drill.

5. In a machine for repairing drills, the combination of a stationary framing, comprising horizontal rails, a carriage mounted to move on said rails, a hammer mounted on the carriage, a slide mounted to move on the carriage, tools mounted on the slide at opposite sides of the hammer, said tools being movable with the slide alternately to coact with the hammer, and means for attaching the drill to the said framing, the said tools being each in sections independently movable and being mounted to turn on the slide to present said sections successively to the hammer.

6. In a machine for repairing drills, the combination of a framing, comprising a horizontal rail, a carriage movable thereon, a hammer mounted on the carriage, a slide mounted to move on the carriage, two tools each comprising independent sections, spring-arms attached to said sections, members to which the spring-arms of each tool are respectively attached, means for revolubly mounting said members, the tools coacting with the hammer substantially as described, and means on the framing for attaching a drill thereto.

7. The combination with a support, of a housing, a hammer mounted therein, a sectional tool, and means for mounting the sectional tool to turn in the housing.

8. The combination with a support, of a housing mounted thereon, a hammer movable in the housing, a sectional tool, arms attached to the sections of said tool, a member to which said arms are connected, and means for mounting said member to turn and means to move said member toward and from the housing, whereby the tool-sections may be projected into the housing and turned therein.

9. In a machine for repairing drills, the combination with a support and a hammer thereon, of a plurality of tool-sections, spring-arms attached thereto, a member to which said arms are connected, means for revolubly mounting said member, edgers movable longitudinally of the spring-arms toward and from the said tool-sections, said edgers passing through the center of the means for mounting the spring-arms to turn, and means for operating the edgers.

10. In a machine for repairing drills, the combination with a support and a hammer, of a plurality of tool-sections adapted to coact with the hammer, spring-arms to which said sections are attached, a hub with which said arms are connected, means in which the hub is mounted to turn, edgers also mounted in the hub and movable longitudinally of said spring-arms, and a means for operating the edgers

11. In a machine for repairing drills, the combination with a support and a hammer, of a plurality of tool-sections adapted to coact with the hammer, spring-arms to which said sections are attached, a hub with which said arms are connected, means in which the hub is mounted to turn, edgers also mounted in the hub and movable longitudinally of said spring-arms, and a means for operating the edgers, the said means for operating the edgers comprising a hammer-block movable toward and from the edgers and a hammer operating the block.

12. A machine for repairing drills having a bar or drawing-tool, comprising a plurality of independently-movable sections adapted to embrace the drill, and formed with diagonal serrated or rough-

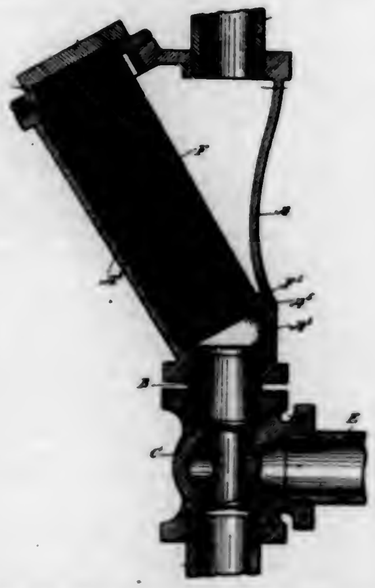
cned portions adapted to be engaged with the cutting edges of the drill, for the purpose specified, and also having matching cavities adjacent to the said serrated portions to receive the head of the drill.

13. In a machine for repairing drills, the combination with a support, of a tool comprising a plurality of sections, spring-arms to which said sections are attached, a hub with which the spring-arms are connected, means for mounting the hub to turn, and a hammer coacting with the tool.

14. A machine for repairing drills having a tool comprising a plurality of independently-movable sections with opposing walls forming a cavity to receive the drill, said walls having surfaces thereon to act on the drill, and means for operating the tool, said means for operating the tool comprising a hammer, and the tool being mounted to turn, whereby to present its sections consecutively to the hammer.

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**755,352. STRAINER.** FRANCIS G. BROWN, Sheffield, Ala. Filed Sept. 10, 1903. Serial No. 172,582. (No model.)

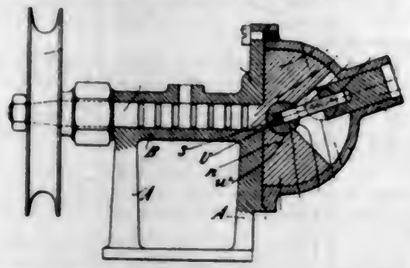


*Claim.*—1. A pipe-line attachment, comprising a strainer-casing having an inlet and an outlet in alinement with each other, the casing being narrow at its inlet and gradually widening toward its outlet, and a cylindrical strainer held in the casing and having one end open and the other end closed, said strainer being held at an acute angle to the direct line leading from the inlet to the outlet with its open end opening directly over the inlet of the casing, and its closed end held to one side of the outlet.

2. A pipe-line attachment, comprising a strainer-casing having an inlet and an outlet in alinement with each other, the casing being reduced in width at its inlet end and being gradually widened toward its outlet end, an internal seat surrounding the inlet of the casing, a cylindrical strainer within said casing, said casing having an opening for the insertion of the strainer at its outlet end, at one side of its outlet-opening, and a cap closing said strainer-opening, the cylindrical strainer having one end open and resting upon said seat surrounding the inlet of the casing, and its other end seated in said cap and closed by the top of the cap, whereby to provide a strainer-casing larger at its outlet end than at its inlet end, and having its strainer held at an angle to the direct line of passage of the water through said casing.

3. A pipe-line attachment comprising a casing connected with the inlet-pipe and the outlet-pipe of a pipe-line, and a cylindrical strainer held in the said casing and provided at its ends with exterior bands, of which one is seated in a seat in the casing, adjacent to the inlet thereof, so that the open end of the strainer opens into the inlet end of the casing, and the other band of the strainer is held in a cap on the casing, as set forth.

**755,353. PUMP OR MOTOR.** LOUIS M. A. BUTIN, Paris, France. Filed Feb. 17, 1903. Serial No. 143,828. (No model.)



*Claim.*—A pump, consisting of a semispherical casing provided with a socket and with inlet and exhaust ports, a face-plate provided with a central opening attached to said casing, spherical sectors joined at their convergent ends and provided with a groove at the joining of said ends, a shaft journaled in the central opening of said face-plate and connected with said spherical sectors, a hinge-pin having a groove movable in the groove of said spherical sectors, a half-disk engaging the groove of said hinge-pin and provided with a shaft rotatable in the socket of the casing, and springs interposed between the hinge-pin and half-disk, substantially as set forth.

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**755,354. DRYING-CYLINDER FOR TEXTILE MACHINERY.** CHARLES C. BUTTERWORTH, Philadelphia, Pa., assignor to H. W. Butterworth & Sons Company, a Corporation of Pennsylvania. Filed Jan. 19, 1904. Serial No. 189,661. (No model.)



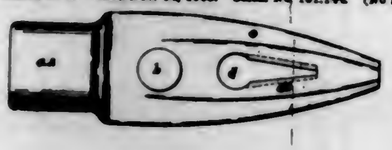
*Claim.*—1. In a drying-cylinder for textile machinery, the combination of the cylinder having hollow bearings, a hollow bearing-stud provided with ports and having a shoulder at it outer end and also fastened into the hollow bearing at one end of the cylinder, and a discharge-pipe having a hollow head loosely journaled upon the hollow bearing-stud and held in position by the shoulder and its end extended close to the bottom of the cylinder.

2. In a drying-cylinder for textile machinery, the combination of the cylinder having hollow bearings, a hollow bearing-stud provided with ports and having a shoulder at its outer end and also fastened into the hollow bearing at one end of the cylinder, and a discharge device consisting of a hollow head having annular chamber *h* and loosely journaled upon the hollow bearing-stud and held in position by the shoulder and a pipe screwed into the head and having its end extended close to the bottom of the cylinder.

3. In a drying-cylinder for textile machinery, the combination of the cylinder, with an inwardly-projecting hollow stud centrally secured to one end of the cylinder for discharging the water of condensation and having a perforated cylindrical portion, a head loosely journaled upon the stud and inclosing the perforations thereon while permitting free flow of water through them, and a discharge-pipe secured to the hollow head and extending close to the bottom of the cylinder, the head and tube under the action of gravity retaining a substantially stationary position during the rotation of the cylinder and at all times being in condition to permit the discharge of the water of condensation.

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**755,355. HAMMER OR MALLET.** GUSTAV CARLSEN, Port Richmond, N. Y. Filed Nov. 14, 1903. Serial No. 181,144. (No model.)

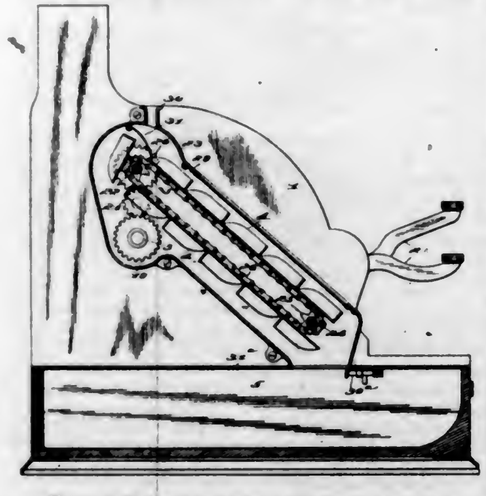




*Claim.*—A hammer provided at one end with the usual pole or head, the opposite end thereof being tapered at both the front and the back sides, said hammer being provided with a transverse handle-opening and in the tapered portion thereof with another transverse opening parallel with the handle-opening and having a wedge-shaped extension which also extends through the hammer, or through said tapered portion, and the side walls of which are chambered out centrally so as to form clamping-jaws at the opposite sides of said tapered portion, substantially as shown and described.

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**755,356. CASH-REGISTER.** THOMAS CARROLL, Dayton, Ohio, assignor to the National Cash Register Company, Dayton, Ohio, a Corporation of New Jersey. Filed Apr. 7, 1899. Serial No. 712,064. (No model.)



*Claim.*—1. In a cash-register, the combination with a series of keys, of an operating device actuated thereby, a coin-conveyer connected to the operating device comprising an endless chain having coin-receiving buckets which are open at one end only, a coin-chute which is arranged to discharge coins into the open end of said buckets, and a movable guard normally positioned to guide the coins from the chute into the buckets and adapted to be displaced by the buckets to close the chute.

2. In a cash-register, the combination with operating devices, of a casing having a sight-opening, an endless coin-conveyer in said casing having coin-supporting projections, a chute for introducing coins to said conveyer and a movable guard for said chute arranged to be operated to close the chute by being struck by the coin-supporting projections.

3. In a cash-register the combination with an inclosing casing having spaced supporting-flanges therein, an endless coin-conveyer comprising coin-buckets which are arranged to extend across between and slide on said flanges and a connecting-belt which passes between and free of said flanges, a coin-chute arranged to discharge into said buckets, and a movable guard normally positioned to guide the coins from the chute into the buckets and adapted to be displaced by the buckets to close the chute.

4. In a cash-register, the combination with operating devices, of a coin-conveyer provided with a series of coin-receiving buckets, a chute for introducing coins to said buckets, and a movable guard for said chute arranged to be operated by the contact of said buckets to close the chute.

5. In a cash-register, the combination with operating devices, of a coin-conveyer, a movable cover for the same, a cash-drawer and a lock for said cover only accessible for operation by hand when the drawer is open.

6. In a cash-register, the combination with operating devices, of an endless coin-conveyer, a hinged cover for the same, a cash-drawer arranged to receive the coins from the conveyer and a latch for the said cover only accessible for operation by hand when the drawer is open.

7. In a cash-register, the combination with an inclosing casing having a sight-opening and a coin-receiving passage, of an endless coin-conveyer mounted in said casing and having coin-receiving buckets and a hinged guard operated by the coin-buckets for closing the coin-receiving passage.

8. In a cash-register, the combination with an inclosed casing having a sight-opening and a coin-receiving passage, of an endless coin-conveyer mounted in said casing and having coin-receiving buckets, and a movable guard normally positioned to guide the coins from the receiving-passage to the buckets and arranged to be displaced by the coin-buckets to close the coin-receiving passage, substantially as and for the purpose described.

9. In a cash-register the combination with operating devices, of a casing having a sight-opening, an endless coin-conveyer in said casing having coin-supporting projections, a chute for introducing coins to said conveyer and a movable guard for preventing the passage of the coins through the chute arranged to be operated by the endless conveyer.

10. In a cash-register the combination with operating devices, of a coin-displayer, a movable cover for said displayer, a cash-drawer arranged to receive the coins discharged from the displayer and a lock for said movable cover which becomes accessible for operation when the drawer is open.

11. In a cash-register, the combination with operating devices, of a coin-conveyer provided with a series of coin-receptacles, a chute for introducing coins to said receptacle, and a movable guard normally positioned to guide the coins from the chute into the receptacles and adapted to be displaced by the coin-receptacles to close the chute.

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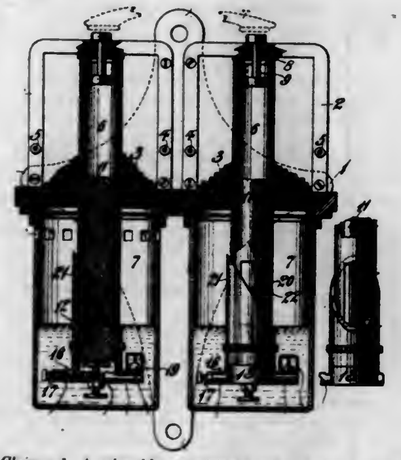
**755,357. COMPOSITION FOR LAYING DUST.** ROBERT A. CHERBROUGH, New York, N. Y. Filed Jan. 28, 1904. Serial No. 190,957. (No specimens.)

*Claim.*—1. A composition for laying dust consisting of porous clay impregnated with petroleum or other oil.

2. A composition for laying dust consisting of porous clay impregnated with petroleum or other oil in substantially the proportions specified.

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**755,358. RETARDING DEVICE FOR ELECTRIC-CIRCUIT BREAKERS.** ALGERNON K. CHETNEY, Philadelphia, Pa. Filed Dec. 2, 1903. Serial No. 183,437. (No model.)



*Claim.*—1. A solenoid comprising a coil, a tube, a core in said tube and means for successively admitting to said tube behind said core a liquid and an aeriform fluid.

2. In a solenoid, a coil, a tube, a core in said tube and adjustable means for admitting to said tube behind said core a liquid and an aeriform fluid.

3. In a solenoid, a coil, a core, a tube in which said core is supported, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of liquid from said receptacle into said tube whereby the movement of said core is retarded and means for breaking the partial vacuum behind said core during its entering movement.

4. In a solenoid, a coil, a core, a tube in which said core is supported, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of liquid from said receptacle into said tube whereby the movement of said core is retarded and adjustable

means for breaking the partial vacuum behind said core during its entering movement.

5. A solenoid comprising a coil, a tube, a core in said tube and means for successively admitting to said tube behind said core a plurality of fluids of different viscosities.

6. In a solenoid, a coil, a tube, a core in said tube and adjustable means for admitting to said tube behind said core a plurality of fluids of different viscosities.

7. In a solenoid, a coil, a core, a tube in which said core is supported, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of liquid from said receptacle into said tube whereby the movement of said core is retarded and means for admitting air to said tube behind said core during its entering movement.

8. In a solenoid, a coil, a core, a tube in which said core is supported, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of liquid from said receptacle into said tube whereby the movement of said core is retarded and adjustable means for admitting air to said tube behind said core during its entering movement.

9. In a solenoid, a coil, a tube, a core supported in said tube, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of such liquid from said receptacle into said tube, separate means for the flow of such liquid from said tube into said receptacle and means for admitting air to said tube during the entering movement of said core.

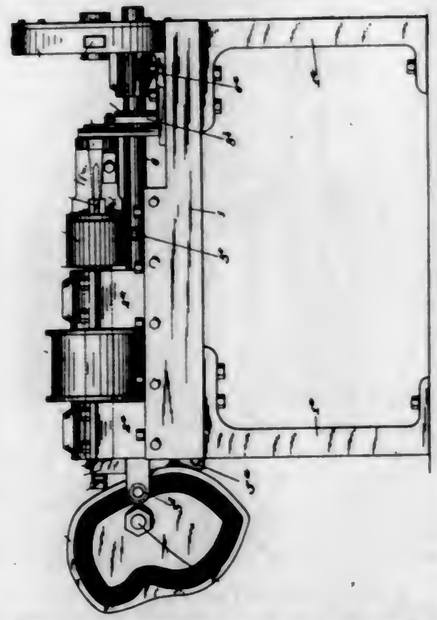
10. In a solenoid, a coil, a tube, a core supported in said tube, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of liquid from said receptacle into said tube and a lateral opening in said tube.

11. In a solenoid, a coil, a tube, a core supported in said tube, a liquid-receptacle surrounding the lower end of said tube, means for retarding the flow of liquid from said receptacle into said tube, a lateral opening in said tube and a sleeve adjustable over said lateral opening.

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## 755,359. MACHINE FOR TENONING AND BORING IMPLEMENT-HANDLES.

Gustaf S. Clow, Columbus, Ohio. Filed Oct. 14, 1903. Serial No. 177,060. (No model.)



*Claim.*—1. In a machine for tenoning and boring implement-handles, the combination of a tool for simultaneously tenoning and boring the handle-blank, a reciprocating carriage for supporting the tool, means for rotating the tool, and means for automatically gaging and chucking or holding the handle-blank while the tenoning and boring tool is moved onto it.

2. In a machine for tenoning and boring implement-handles, the combination of a tool for simultaneously tenoning and boring the handle-blank, a reciprocating carriage for supporting the tool, means for rotating the tool, means for automatically chucking or holding the handle-blank while the tenoning and boring tool is moved onto it, and means for reciprocating the tool-carriage twice during one operation of the chucking device.

3. In a machine for tenoning and boring implement-handles, the combination of a tool for simultaneously tenoning and boring the handle-blank, a reciprocating carriage for supporting the tool, means for rotating the tool, means for automatically chucking or holding the handle-blank while the tenoning and boring tool is moved onto it, a stop or gage for limiting the insertion of the handle-blank into the chucking device, and means for automatically moving said stop or gage into operative position when the chuck is inoperative and moving said stop or gage out of operative position when the handle is chucked.

4. In a machine for tenoning and boring implement-handles, the combination of a tool for simultaneously tenoning and boring the handle-blank, a carriage for supporting the tool, and means for reciprocating the same, means for rotating the tool, a chucking device and a gage, and a shaft having cams for operating said chucking device and gage.

5. In a machine for tenoning and boring implement-handles, the combination of a tool for simultaneously tenoning and boring the handle-blank, a carriage for supporting the tool, and means whereby the carriage may be reciprocated, means for rotating the tool, a chucking device and a gage, and a shaft having cams for operating the chucking device and gage, and means for connecting the said shaft and the means for reciprocating the aforesaid carriage whereby the same may be simultaneously operated.

6. In a machine for treating or shaping the tool-holding end of implement-handles, the combination of a tool for cutting said end of the handle-blank, a reciprocable carriage for supporting the tool, means for automatically reciprocating the carriage, means for rotating the tool, means for automatically chucking or holding the handle-blank while the cutting-tool and handle-blank are brought together to do the cutting.

7. In a machine for treating implement-handles, the combination of a tool for cutting the implement-holding end of the blank thereof, a support for the tool, means for rotating the tool, means for automatically gaging and chucking or holding the handle-blank, and means for automatically bringing the tool and the handle-blank together to effect the cutting operation.

8. In a machine for treating implement-handles, the combination of a tool for cutting the implement-holding end of a handle-blank, a reciprocable carriage for supporting the tool, a cam for reciprocating said carriage, and means for rotating the tool, a power-shaft 6, a gage, and a chucking device, cams on the shaft 6 for operating the chuck and gage, and gearing for operating the tool-carriage-reciprocating cam from the shaft 6.

9. In a machine for treating implement-handles, the combination of a tool for cutting the implement-holding end of the handle-blank, a reciprocable carriage for supporting the tool, means for rotating the tool, a cam for reciprocating said carriage, a power-shaft 6, a chucking device, an adjustable gage 8 for limiting the insertion of the handle into the chuck, cams on the shaft 6 for operating the chuck and gage, substantially as described, and gearing for operating the tool-carriage-reciprocating cam from the shaft 6.

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## 755,360. BOTTLE-STOPPER.

Joseph Combs, Philadelphia, Pa. Filed Sept. 2, 1903. Serial No. 171,685. (No model.)



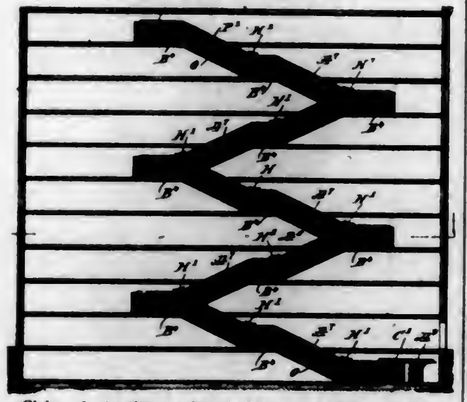
*Claim.*—1. A stopper comprising a cup-shaped cap having a flat top and a cylindrical wall terminating in outwardly-curved scallops, and a cork of the form of an inverted conic frustum having its upper rim portion held in the upper rim portion of the cap whereby there is formed a V-shaped groove adapted to engage both the inside and outside of necks of various sizes and the lower portion of the cork substantially flush with the ends of said scallops, substantially as set forth.

2. A stopper comprising a cup-shaped cap having top and cylindrical walls and a cork of the form of an inverted conic frustum having its top rim portion held in contact with the union of the top and cylindrical walls and having its lower portion inclined inward from such union to provide a V-shaped annular groove adapted to engage both the inside and outside of neck-walls of various thicknesses, substantially as described.

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## 755,361. ELEVATOR.

Daniel R. Condon, San Francisco, Cal. Filed Sept. 15, 1903. Serial No. 173,271. (No model.)



*Claim.*—1. An elevator for a building comprising a fixed continuous track having an up-run and a down-run, landings at each floor for both the up-run and down-run, each of the runs having a horizontal portion at each landing, a loop connecting the lower ends of the runs with each other, a plurality of connected trucks mounted to travel on the said track, cars suspended from the said trucks, the trucks and cars forming an endless train and the cars being arranged to carry loads on both the up and down runs, and means for imparting a continuous traveling motion to the said train, as set forth.

2. An elevator provided with spaced elevator-shafts and floor-landings, and an endless track having an up-run in one shaft and a down-run in the other shaft, the upper ends of the runs being connected with each other and the lower ends terminating in a loop, the endless track being disposed horizontally at each floor-landing, on both the up and down runs, as set forth.

3. An elevator provided with spaced elevator-shafts and floor-landings, and an endless track having an up-run in one shaft and a down-run in the other shaft, the upper ends of the runs being connected with each other and the lower ends terminating in a loop, the endless track being disposed horizontally at each landing on both the up and down runs and the floor-landings being disposed horizontally and projecting across the shafts underneath the floors of the cars, as set forth

4. An elevator provided with an endless track having an up-run and down-run, each run having a series of inclined, and straight horizontal portions alternating with each other and connecting a plurality of stories in a building on both the up and down runs, the horizontal portions being arranged at each floor-landing and the inclined portions extending between the floor-landings and an endless train of suspended cars mounted to travel on the said track.

5. An elevator provided with spaced elevator-shafts and floor-landings, an endless track having an up-run in one shaft and a down-run in the other shaft, the floor-landings on both the up and down runs projecting into the shaft, the upper ends of the runs being connected with each other and the lower ends terminating in a loop, an endless train of suspended cars mounted to travel on the said track, and a fixed support or floor below the cars, and parallel to the car-path the said support extending from the said projecting portion of one floor-landing to the projecting portion of the next floor-landing, and following the curvature and inclination of the track and the train, as set forth.

6. An elevator comprising a fixed continuous track, an endless train of trucks mounted to travel along the said track, cars suspended from the said trucks and a revolving power-wheel having arms engaging rollers on the trucks, to impart a traveling motion to the train, as set forth.

7. An elevator having a fixed continuous track having an up and down run, an endless train of trucks mounted to travel on the said track, cars suspended from the said trucks and a power sprocket-wheel mounted to turn and adapted to engage with its sprockets or arms, rollers on the trucks of the said cars, as set forth.

8. An elevator having a fixed continuous track, an endless train of cars mounted to travel on the said track, each car carrying a pair of spaced friction-rollers, and a power sprocket-wheel having pairs of sprockets, one of the sprockets of each pair being adapted to engage one of the rollers on a car for driving in one direction and the other sprocket being adapted to engage the other roller of a car for driving in the reverse direction, as set forth.

9. An elevator having a fixed continuous track, an endless train of cars mounted to travel on the said track, each car carrying a pair of spaced friction-rollers, and a power sprocket-wheel having pairs of sprockets, one of the sprockets of each pair being adapted to engage one of the rollers on a car for driving in one direction, and the other sprocket being adapted to engage the other roller of a car for driving in the reverse direction, the sprockets being spaced farther apart than the rollers, as set forth.

10. An elevator comprising a fixed continuous track having an up-run, a down-run, a loop connecting the lower ends of the runs with each other, a guide-rail on the up and down runs of the track and terminating at the ends of the said loop, an endless train of trucks mounted to travel on the said track, cars suspended from the said trucks, friction-rollers carried by the trucks and mounted to travel on the said guide-rail, and a power sprocket-wheel at the said loop, having sprockets for engaging the said rollers, as set forth.

11. An elevator provided with an endless track having alternating inclined and horizontal portions, trucks mounted to travel on the said track, cars suspended from the trucks, and curved guide-rails for guiding the truck-wheels at the junctions of the inclined and horizontal portions, as set forth.

12. An elevator provided with a continuous track having alternating inclined and horizontal portions, a horizontal loop connecting the lower ends of the track with each other, trucks mounted to travel on the said track, cars suspended from the trucks and a hinge connection between opposite sides of adjacent cars, as set forth.

13. An elevator provided with a continuous track, cars mounted to travel on the said track, and a hinge connection between opposite sides of adjacent cars, the hinge connection consisting of a fixed vertical rod on one side of a car and friction-rollers journaled on the opposite side of the adjacent car and engaging the said rod, as set forth.

14. An elevator provided with an endless train of cars mounted to travel up and down in a building and fixed floor-landings in the building having projecting portions extending into the passage-way for the cars and on which the cars travel as set forth.

15. An elevator provided with an elevator-shaft having floor-landings, provided with projecting portions extending into the shaft, and cars mounted to travel in the said shaft and above the projecting portions of the landings, as set forth.

16. An elevator provided with elevator-shafts forming passage-ways, each floor of the building in which the elevator is located forming landings having portions projecting into the passage-ways, and cars traveling in the said passage-ways and over the said projecting portions of the floors, as set forth.

17. An elevator provided with an elevator-shaft forming a passage-way, the floors of the building in which the elevator is located forming landings projecting into the passage-way, supports extending from one projecting portion of the floor-landing to another, and cars traveling in the passage-way immediately above the said supports and over the said projecting portions of the floors, as set forth.

18. An elevator provided with an elevator-shaft, a train of cars mounted to travel spirally in the said shaft, and railings in the shaft, on opposite sides of the cars, to form a passage-way for the cars, the said railings forming a complete inclosure for the track and moving parts of the elevator, as set forth.

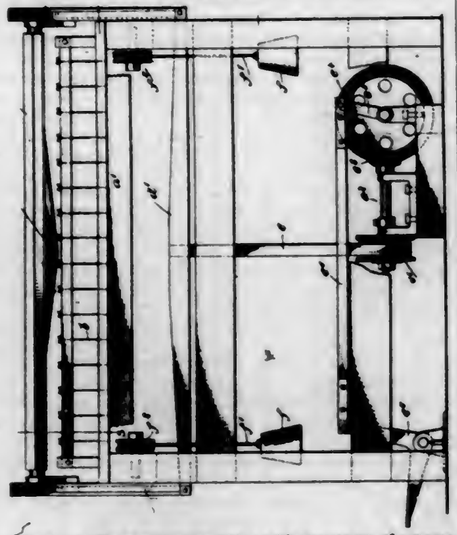
19. An elevator provided with an elevator-shaft, extending through a plurality of stories in a building, a train of suspended cars mounted to travel spirally in the said shaft, and railings in the shaft, on opposite sides of the cars, to form a passage-way for the cars, the outer railing having openings at the landing of each floor of the building in which the elevator is located, as set forth.

20. An elevator provided with a continuous track, trucks mounted to travel on said track, cars suspended from the said truck, and a hinge connection between adjacent cars comprising a fixed vertical rod on one car and a friction-roller carried by the other car and engaging the said rod on the side adjacent to the car supporting the rod, as set forth.

21. An elevator having a fixed continuous track, a train of cars having trucks mounted to travel on the said track, vertically-disposed pivot-pins in the ends of each truck, connected by links with the corresponding pins of the trucks of the adjacent cars, friction-rollers mounted to turn on the said vertically-disposed pins, a guide-rail on which the friction-rollers travel, and a power sprocket-wheel having pairs of sprockets, one of the sprockets of each pair being adapted to engage one of the said friction-rollers of a car for driving in one direction and the other sprocket being adapted to engage the other roller of a car for driving in a reverse direction, as set forth.

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**755,362. MACHINE FOR STAMPING SOAP, &c. LLEWELLYN L. CONWAY, Louisville, Ky., assignor of one-half to Louisville Soap Company, Louisville, Ky. Filed Nov. 5, 1901. Renewed Sept. 29, 1903. Serial No. 175,100. (No model.)**



*Claim.*—1. The combination with a table or support, of a stamp mounted to move toward and from the same and also to turn, means for moving the stamp toward and from the table, a gear attached to the stamp, and a stationary rack with which the gear meshes.

2. The combination with a table or support, of stanchions mounted thereon, bars arranged to slide in the stanchions, means for actuating the bars, a stamp carried to turn in the bars, a gear attached to the stamp, and a stationary rack with which the gear is meshed.

3. The combination with a table, of a stamp located over the same, means for mounting it to move vertically, said means comprising sliding vertical bars at each side of the table, a horizontal beam connected to the lower ends of said sliding bars and extending between them under the table, means tending to raise the beam, and means for drawing the beam down against said raising means.

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**755,363. DEVICE FOR EXTERMINATING INSECTS ON PLANTS. THOMAS M. COTTLE, Mountcalm, Tex. Filed Jan. 8, 1904. Serial No. 188,239. (No model.)**

*Claim.*—1. A device for destroying insects on plants, comprising a suitable fire-box, means for allowing the smoke or fumes to escape, a curved hood and a curved frame projecting therefrom and an apron extending over the frame, and suitable means for adjustably connecting the device to a wheeled vehicle, substantially as and for the purpose set forth.

2. A device for destroying insects on plants, comprising a suitable fire-box provided with means for the escape of the smoke or fumes, a curved hood projecting from the fire-box, a suitable frame adjustably connected thereto, an apron extending over the frame, and means for connecting the device to a wheeled vehicle, substantially as and for the purpose described.

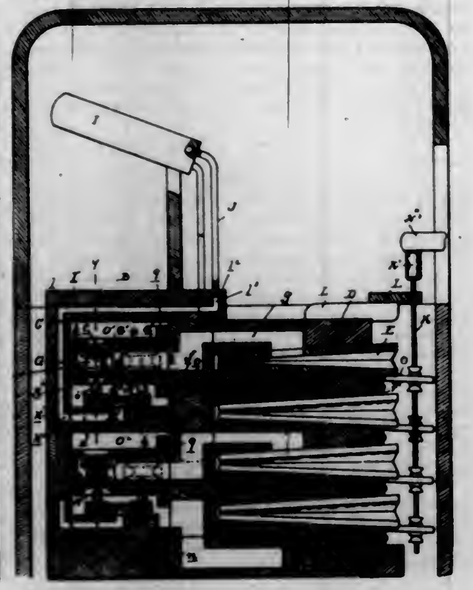
3. A device for destroying insects on plants, comprising a suitable fire-box with means for the escape of the smoke or fumes, an apron and a suitable support therefor, a suitable clamp adapted to be adjustably connected to an arm upon a wheeled vehicle, an angle-brace connecting with the clamp, an angle-brace connected to the fire-box and adjustably connected to the brace connecting with the clamp, substantially as and for the purpose specified.



4. A device for destroying insects on plants, comprising a suitable fire-box provided with means for the escape of the smoke or fumes, a curved apron extending from the fire-box, a curved frame adjustably connected thereto, a suitable apron extending over the frame, and means for adjustably connecting the device to a wheeled vehicle, substantially as and for the purpose set forth.

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**755,364. SELF-PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS. JOSEPH COURVILLE, Detroit, Mich., assignor to Farrand & Votey Organ Company, Detroit, Mich., a Corporation of Michigan. Filed May 27, 1901. Serial No. 62,076. (No model.)**

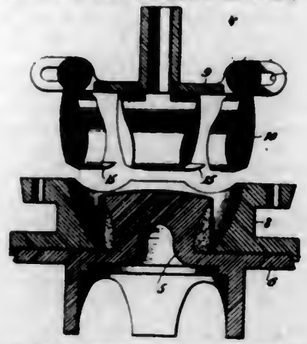




*Claim.*—In a self-playing attachment for musical instruments a pneumatic action comprising a chest containing a vacuum-chamber, a plurality of shelves projecting laterally from one wall of said chest, tiers of key-actuating pneumatics, respectively connected to said shelves, a valve-board for each pair of shelves arranged within said chest and separating the vacuum and atmospheric-pressure chambers, said board containing a double series of valve-cells, and laterally-extending passages respectively connecting the cells of the two series with individual passages leading to the motor, in the shelves for the two tiers, valves in said cells for alternately closing said oppositely-opening ports, and primary pneumatics in the vacuum-chamber for operating said valves.

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**755,365. HAT-SHAPING MACHINE. MARI A. CUMING, New York, N. Y., assignor to M. A. Cuming & Company, New York, N. Y. Filed Oct. 27, 1902. Serial No. 128,846. (No model.)**



*Claim.*—1. In a hat-machine, a crown-die, a forming-die comprising segmental swinging sections, and a ring having a curved or cam-shaped inner surface for causing movements of the swinging sections, the said ring also forming a holding device for the hat material.

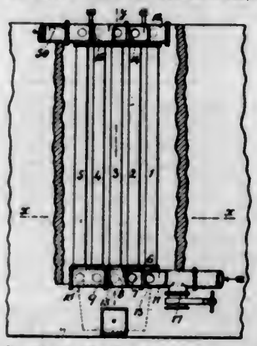
2. In a hat-machine, a crown-die and a forming-die, the said forming-die consisting of a carrier and segmental members mounted to swing on the carrier and also mounted to slide relatively to said crown-die.

3. In a hat-machine, a crown-die of bell shape, a ring for surrounding the crown-die, the said ring having a curved or cam-shaped inner surface, a forming-die consisting of a carrier, segmental members mounted to swing on the carrier, and spacing-plates, the said spacing-plates being connected to the lower edge of one section and loosely engaged with the lower end of the adjacent section.

4. In a hat-machine, a crown-die, a ring for surrounding the crown-die, the said ring having a peripheral flange for engaging or clamping the hat material, and a forming-die consisting of a carrier, and segmental members mounted to swing on the carrier.

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**755,366. HEATER FOR WATER. ARTHUR W. ERSTRÖM, Stockholm, Sweden. Filed Oct. 1, 1902. Serial No. 125,478. (No model.)**



*Claim.*—1. In a heater for liquids, the combination with tubes in groups, a top pipe having a separate compartment for each group of tubes and a bottom pipe common to all the groups of tubes permitting the liquid to circulate through the heater, of means for automatically connecting all the said compartments in the top pipe, thereby permitting the steam-pressure to be uniformly distributed in the upper part of the heater, substantially as described and for the purposes set forth.

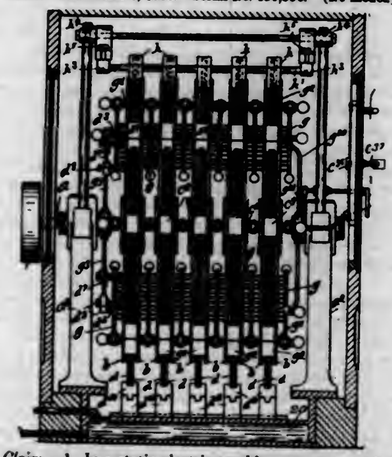
2. In a heater for liquids, the combination with tubes in groups, a top pipe having a separate compartment for each group of tubes and a bottom pipe having a separate compartment for each group of tubes, thereby permitting the liquid to circulate through the heater, of automatic return-valves in each of the said compartments in the top pipe whereby the steam-pressure may be uniformly distributed in the whole upper part of the heater and automatic return-valves in each of the said compartments in the bottom pipe, substantially as described and for the purposes set forth.

3. In a heater for liquids, the combination with tubes in groups, a top pipe having compartments for the groups of tubes and a bottom pipe common to the groups of tubes, permitting the liquid to circulate through the heater, of means for automatically connecting all the said compartments in the top pipe, thereby permitting the steam-pressure to be uniformly distributed in the upper part of the heater, substantially as described and for the purposes set forth.

4. In a heater for liquids, the combination with tubes in groups, a top pipe having compartments for the groups of tubes and a bottom pipe having compartments for the groups of tubes thereby permitting the liquid to circulate through the heater, of automatic return-valves in each of the said compartments in the top pipe whereby the steam-pressure may be uniformly distributed in the whole upper part of the heater and automatic return-valves in each of the said compartments in the bottom pipe, substantially as described and for the purposes set forth.

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**755,367. STATIC ELECTRIC MACHINE. ERNEST E. FEWKES, Newton, Mass., assignor of one-half to Frederick W. Cole, Newton, Mass. Filed June 1, 1903. Serial No. 159,559. (No model.)**



*Claim.*—1. In a static electric machine, one or more inductor-plates having inductors at diametrically opposite points, and one or more revolving non-charging generating-plates, and an independent charging device for the inductors, substantially as described.

2. In a static electric machine, one or more inductor-plates having inductors at diametrically opposite points, and one or more revolving, non-charging generating-plates, and an independent charging device for the inductors comprising a charging-plate secured to the shaft bearing said generating-plates, substantially as described.

3. In a static electric machine, one or more inductor-plates having inductors at diametrically opposite points, and one or more revolving, non-charging generating-plates, combined with a revolving charging-plate, two charging-brushes engaging it, located at diametrically opposite points, and means for connecting said brushes with all of the inductors at the corresponding side of the machine, substantially as described.

4. In a static electric machine, a plurality of inductor-plates each having inductors at diametrically opposite points, a plurality of revolving, non-charging generating-plates located adjacent to said inductor-plates, combined with a revolving charging-plate, charging-brushes located at diametrically opposite points, and conductors connecting said brushes with the several inductors at the corresponding side of the machine, substantially as described.

5. In a static electric machine, a plurality of inductor-plates, each having inductors at diametrically opposite points, a plurality of revolving non-charging generating-plates located adjacent to said inductor-plates, combined with a revolving charging-plate, charging-brushes located at diametrically opposite points, bars extending lengthwise of the machine to which said brushes are connected, and conductors leading from the several inductors to said bars, substantially as described.

6. In a static electric machine, one or more revolving non-charging generating-plates, and a revolving charging-plate, equalizing-combs for all the plates and electrical connections between the equalizing-combs of the charging-plate and the equalizing-combs of the generating-plates, substantially as described.

7. In a static electric machine, a pair of circular revolving plates, a plate-holder supporting them comprising a collar having a shoulder, a flange, and a pair of clamping-plates, and means for securing said plate-holder to the shaft, substantially as described.

8. In a static electric machine, a pair of circular revolving plates, a plate-holder supporting them comprising a collar having a shoulder, a flange, a pair of clamping-plates and screws passing through the clamping-plates into the flange substantially as described.

9. In a static electric machine, a pair of circular revolving plates, a plate-holder supporting them comprising a collar having one or more spring-tongues, and a pair of clamping-plates, and set-screws passing through the clamping-plates which press said spring-tongues into firm engagement with the shaft, substantially as described.

10. In a static electric machine, an inductor-plate divided on the line of its neutral zone, and sliding shoes supporting the separate parts of said plate, substantially as described.

11. In a static electric machine, an inductor-plate divided on the line of its neutral zone, a sliding shoe supporting each part of said plate, said shoes being disposed in alinement, and a horizontal guideway on which said shoes slide, substantially as described.

12. In a static electric machine, a divided inductor-plate, blocks supporting the upper ends thereof, and detachable means for connecting said blocks to the frame, substantially as described.

13. In a static electric machine, equalizing-combs located at diametrically opposite points at the end of the machine, and supported by the inductor-plates, and a cross-bar mounted on the frame which engages said equalizing-combs, substantially as described.

14. In a static electric machine, the combination of the generating-plates and inductor-plates, a pair of equalizing-combs located at diametrically opposite points, and a pair of collecting-combs also located at diametrically opposite points, and a swinging cross-bar which, when in one position, engages the equalizing-combs and when in another position, engages the collecting-combs, to thereby short-circuit the machine, substantially as described.

15. In a static electric machine, the combination of the generating-plates and inductor-plates, a pair of equalizing-combs, located at diametrically opposite points, and a pair of collecting-combs also located at diametrically opposite points, a cross-bar pivoted on the frame which, when in one position, engages the equalizing-combs, and when in another position engages the collecting-combs to thereby short-circuit the machine, and means for swinging said cross-bar on its pivot, substantially as described.

16. In a static electric machine, the combination with the collecting-combs, and resistance devices connected to the terminals thereof comprising two members, one of which is movable relative to the other, said members having alternately-disposed insulated spherical ends, and means for moving said member and for holding it securely in whatever position it may be set, substantially as described.

17. In a static electric machine, the combination with the collecting-combs, and resistance devices connected to the terminals thereof comprising two members, one of which is movable relative to the other, each having alternately-disposed insulated spherical ends, an arm attached to said movable member, a longitudinally-movable bar loosely connected to said arm, and means for holding said bar in whatever position it may be set, substantially as described.

18. In a static electric machine, the combination with the collecting-combs, and resistance devices connected to the terminals, bars thereon comprising two members, one of which is movable relative to the other, each having alternately-disposed insulated spherical ends, an arm attached to said movable member, a longitudinally movable other than round bar, rotatably connected to said arm, which passes through an other than round hole in the casing, substantially as described.

19. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two members bearing insulating-fingers having spherical conducting ends and disposed alternately with relation to each other, one of said members being movable with relation to the other to produce air-gaps and to vary the sizes of said gaps, substantially as described.

20. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two members bearing insulating-fingers having spherical conducting ends disposed alternately with relation to each other, the spherical ends being yieldingly connected to the fingers on one of the members and means for moving one of said members with relation to the other member to produce air-gaps, and to vary the sizes of said gaps, substantially as described.

21. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two members bearing insulating-fingers having spherical conducting ends disposed alternately with relation to each other, one of said members being movable with relation to the other to produce air-gaps and to vary the sizes of said gaps, and means for moving said member and for securing it in whatever position it may be set, substantially as described.

22. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two sets of balls alternately arranged with relation to each other, a support for each set of balls, means for moving one of said supports with relation to the other to produce air-gaps, and to vary the sizes of said gaps and means for securing said movable support in whatever position it may be set, substantially as described.

23. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two sets of balls alternately arranged with relation to each other, a support having insulating-fingers for each set of balls, means for moving one of said supports with relation to the other to produce air-gaps, and to vary the sizes of said gaps and means for securing said movable support in whatever position it may be set, substantially as described.

24. In a static electric machine, the combination with the collecting-combs having spring-acting terminal connections, resistance devices adapted to engage the same, swinging doors to which said resistance devices are attached which, when closed, place the resistance devices into engagement with the terminals of the collecting-combs, substantially as described.

25. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two sets of balls, alternately arranged, a support for each set of balls, one of said supports being movable with relation to the other, a longitudinally-movable bar loosely connected to said movable support and means for holding said bar in whatever position it may be set, substantially as described.

26. A resistance device adapted to be connected to the terminals of the collecting-combs of a static machine, comprising two members, one of which is movable with relation to the other, and one of which consists of a support bearing a plurality of insulating-fingers having conducting ends, substantially as described.

27. A resistance device for electric currents of high potential, consisting of a series of insulating-fingers and a conductor supported at the extremity of each finger, each conductor being separated from the others by an air-space, substantially as described.

28. A resistance device for electric currents of high potential, consisting of a series of insulating-fingers and a conductor supported at the extremity of each finger, each conductor being separated from the others by an air-space, and means for varying the resistance of said device, substantially as described.

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**755,368. INGOT-PERFECTING MACHINE. ROBERT W. HUNT, Chicago, Ill. Filed May 20, 1903. Serial No. 158,044. (No model.)**

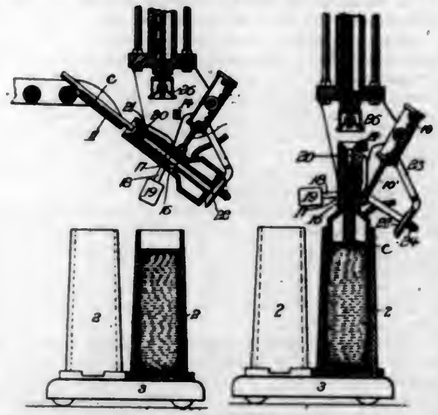
*Claim.*—1. An ingot-perfecting machine, comprising a suitable frame that is movable above the ingot-mold stand, in combination, with means for moving said frame, to position the same, an elongated rod-cozy carried by said frame and a rod-driver also provided in said frame, for driving a rod from said cozy into an ingot placed beneath it, substantially as described.

2. In an ingot-perfecting machine, the combination, of the ingot-mold stand, with a rod-cozy, and means for driving a rod from said cozy, as and for the purpose specified.

3. An ingot-perfecting machine, comprising an ingot-press, having a laterally-movable member adapted to guide the perfecting rod or billet, in combination, with a billet-driver operable in said member when the latter is in its normal position, substantially as described.

4. An ingot-perfecting machine, comprising a suitable frame, in combination, with a rod or billet cozy, to receive a rod or billet, a latch for holding said rod or billet therein and means for forcibly expelling the rod or billet from said cozy, substantially as described.





5. An ingot-perfecting machine, comprising a suitable frame including or provided with a movable cozy laterally movable with respect to said frame, to contain a perfecting rod or billet, in combination with means for operating said cozy and a billet-driver provided on said frame, to forcibly expel said rod or billet from said cozy, substantially as described.

6. An ingot-perfecting machine, comprising a suitable frame, in combination with means for moving said frame, a rod or billet holder in said frame, a billet-driver and scale-removing means, for brightening the rod or billet prior to its expulsion from said holder, substantially as described.

7. An ingot-perfecting machine, comprising a vertically-movable billet holder or cozy, in combination, with a billet-driver and means for cooling said cozy substantially, as described.

8. An ingot-perfecting machine, comprising, in combination, the vertically and laterally movable frame, the rod or billet chute, the cozy trunnioned in said frame to receive a rod or billet from said chute, means for operating said cozy and a billet-driver, substantially as described.

9. An ingot-perfecting machine, comprising a movable frame, in combination with means for operating the same, a billet-cozy arranged in said frame and provided with an enlarged lower end, to fit an ingot-mold, and a billet driver, substantially as described.

10. An ingot-perfecting machine, comprising a movable frame, in combination with means for operating the same, a billet-cozy arranged in said frame, provided with a tapered lower end, to fit an ingot-mold, suitable rod-holding means in connection with said cozy, and a rod or billet-driver, substantially as described.

11. An ingot-perfecting machine, comprising a vertically and laterally movable frame, in combination with means for actuating the same, a perfecting rod or billet holder movably arranged in said frame, means upon said frame for operating said cozy, a suitable latch for holding a rod or billet in said cozy, a billet-driver provided on said frame and means for projecting same into said cozy to forcibly expel a rod or billet therefrom, substantially as described.

12. An ingot-perfecting machine, comprising a suitable frame, in combination with a swinging billet-cozy arranged therein and having a central bore, to receive a rod or billet, means for operating said cozy and a corrugated or rasp-like billet-stop arranged beneath said cozy, as and for the purpose specified.

13. The combination of an ingot-mold containing a partially-solidified ingot with a power-actuated mechanism for guiding and driving an elongated billet or rod through the top and into the interior of said ingot, substantially as described.

14. The combination of an ingot-mold containing a partially-solidified ingot with a press having a pressure-foot to rest upon the top of said ingot in said mold and a mechanism for holding, guiding and driving an ingot-perfecting rod into said ingot while the same is pressed upon by said foot, substantially as described.

15. An ingot-perfecting apparatus, comprising a rod or billet holder movably supported above the ingot-mold stand and adapted to receive and temporarily support a perfecting-rod, in combination with means for driving such a rod from said holder and into an ingot placed beneath the holder, substantially as described.

16. In an ingot-perfecting machine, a perfecting-rod cozy, movably supported above an ingot-mold stand and adapted to receive and support a perfecting-rod, in combination with means for lowering said cozy and pressing the same upon a molded ingot upon said stand, and means, independently operable, for driving a rod from said cozy into an ingot so positioned, substantially as described.

17. In an ingot-perfecting apparatus, a vertically and laterally movable frame, in combination with means for moving the same, a perfecting-rod guiding and holding device, movably arranged in the lower end of said frame, a driver provided on said frame and adapted to operate in said guide and means for operating said driver to expel from said guide a rod or billet previously placed therein, substantially as described.

18. An ingot-perfecting machine, comprising a suitable frame, in combination with means for moving the same vertically and laterally above an ingot-mold stand, a driver or plunger rod, means provided on said frame for operating said driver, and a perfecting-rod holder arranged in said frame and capable of assuming two positions—one permitting and the other preventing the movement of the driver therethrough, substantially as and for the purpose specified.

19. In an ingot-perfecting machine, a suitable frame, in combination with a driver-cylinder provided thereon, a driver projecting from said cylinder and a perfecting-rod holder arranged beneath said cylinder and movable with relation thereto, substantially as described.

20. In an ingot-perfecting machine, a suitable frame suspended above an ingot-mold stand, in combination with means for moving said frame vertically and laterally, a driver provided on said frame, means on said frame for actuating the driver, and a perfecting-rod cozy suspended in said frame beneath said driver and its actuating means, substantially as described.

21. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod holder or cozy suspended in said frame and movable to first receive and then secure a perfecting-rod therein, and a rod-driver provided upon said frame above said holder, substantially as described.

22. In an ingot-perfecting machine, a perfecting-rod holder or cozy pivotally suspended above an ingot-mold stand and adapted to assume different positions, in combination with a perfecting-rod driver operable through said holder in only one of the positions of said holder, substantially as described.

23. In an ingot-perfecting machine, a perfecting-rod cozy, adapted to contain a perfecting-rod and normally occupying a vertical position, in combination with a driver operable through said cozy when in its vertical position, and means for inclining said cozy, substantially as and for the purpose specified.

24. In an ingot-perfecting machine, a suitable frame, in combination with a driver vertically movable therein, a perfecting-rod cozy that is normally in alinement with said driver, and means for moving said cozy out of alinement therewith to receive a perfecting-rod, substantially as described.

25. In an ingot-perfecting machine, a suitable frame, in combination with a driver longitudinally movable therein, a perfecting-rod holder provided in said frame and normally in alinement with said driver, means for moving said holder out of alinement with said driver to receive a perfecting-rod, and means for temporarily securing a rod placed in said holder, substantially as described.

26. In an ingot-perfecting machine, a suitable frame, in combination with a driver longitudinally movable therein, a perfecting-rod guide and holder provided in said frame, said guide and holder being normally in alinement with said driver but adapted to be moved out of alinement therewith, and a latch or securing device provided in connection with said holder and automatically operable by the movement of said driver, substantially as described.

27. In an ingot-perfecting machine, a suitable frame, in combination with a driver longitudinally movable therein, a perfecting-rod guide and holder provided in said frame, said guide and holder being normally in alinement with said driver but adapted to be moved out of alinement therewith, and a latch or securing device provided in connection with said holder and automatically operable by the movements of said holder and said driver, substantially as described.

28. In an ingot-perfecting machine, a suspended frame, in combination with a driver longitudinally movable therein, a perfecting-rod cozy arranged in said frame and normally in alinement with said driver, and means upon the frame for moving said cozy with relation to said driver, to receive a perfecting-rod, substantially as described.

29. In an ingot-perfecting machine, a suitable frame, in combination with a driver-rod, means for actuating said rod, a perfecting-rod cozy normally in alinement with said driver-rod, and a latch

provided upon said cozy and operable by said driver, substantially as described.

30. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod cozy suspended therein, means upon the frame for swinging said cozy, a bottom rod-stop upon said frame and a driver also on said frame, substantially as described.

31. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod cozy movable in said frame, a driver for expelling a rod from said cozy, a latch provided in connection with said cozy, and a bottom stop for cooperation with said cozy in one of its positions, substantially as described.

32. In an ingot-perfecting machine, a suspended frame and means for moving same vertically, in combination with a driver upon and longitudinally movable in said frame, a rod or billet holder suspended in said frame beneath said driver and means for actuating said holder and for securing the same in its normal position, substantially as described.

33. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod cozy pivotally suspended therein, means upon the frame for swinging said cozy and for securing the same in its normal position, a latch operable to secure a perfecting-bar in said cozy when the latter is in its normal position and a driver operable to free said latch and expel a rod from said cozy, substantially as described.

34. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting rod or billet holder, a latch in connection therewith for securing a rod or billet therein, and a driver for freeing said latch and expelling a rod or billet from said holder, substantially as described.

35. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod cozy movably supported in said frame, means upon the frame for operating said cozy, a yielding bottom stop provided on said frame for cooperation with said cozy, a latch provided in connection with said cozy and a suitable driver, substantially as described.

36. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod feeder, a rod-cozy provided in said frame, means upon the frame for moving the cozy beneath said feeder and for returning the cozy to its normal position, and a driver for expelling a rod from the cozy when the cozy is in its normal position, substantially as described.

37. In an ingot-perfecting machine, a vertically and laterally movable frame suspended above an ingot-mold stand, in combination with a perfecting-rod feeder adjacent to said frame, a rod cozy or holder provided in said frame and movable therewith, a rod-driver provided upon said frame and means upon the frame for positioning said cozy opposite said driver or opposite said feeder, substantially as described.

38. In an ingot-perfecting machine, a vertically and laterally movable frame, above an ingot-mold stand, in combination with a perfecting-rod feeder adjacent to said frame, a rod cozy or holder provided in said frame and movable therewith, a rod-driver provided upon said frame, means upon the frame for relatively positioning said cozy opposite said driver or opposite said feeder, and a latch automatically operable to secure a rod received into the cozy from said feeder, said latch being adapted to yield to said driver, substantially as described.

39. In an ingot-perfecting machine, a frame suspended above an ingot-mold stand, in combination with means for actuating said frame, a perfecting-rod cozy hanging from the lower end of said frame and having an open upward end, means for inserting a perfecting-rod in the upper end of said cozy and means for expelling said rod through the lower end of said cozy, substantially as described.

40. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod cozy containing a central bore and open at its upper and lower ends, a latch provided in connection with said cozy and having an operating part at the upper end thereof, whereby said latch is operable by the entrance of a perfecting-rod, and a rod-driver, substantially as described.

41. In an ingot-perfecting machine, a perfecting-rod cozy suspended above an ingot-mold stand and provided with a central bore, in combination with a latch extending into said bore, a driver, and means for positioning said cozy to receive a perfecting-bar or said driver, substantially as described.

42. In an ingot-perfecting machine, a perfecting-rod cozy suspended and laterally-movable above an ingot-mold stand and provided with a lower end conforming in size and shape to the upper end of an ingot-mold, in combination with means for raising and lowering said cozy, and a driver normally removed from said cozy but adapted to operate therethrough, substantially as described.

43. In an ingot-perfecting machine, a vertically and laterally movable cozy or rod-holder, open at its upper end to receive a perfecting-rod and at its lower end to discharge such a rod, in combination with a driver for expelling the rod from said cozy, substantially as described.

44. In an ingot-perfecting machine, a vertically and laterally movable cozy or rod-holder, open at its upper end to receive a perfecting-rod and at its lower end to discharge such a rod, in combination with a driver for expelling a rod from said cozy, and said cozy having a broad lower end or pressure-foot to rest upon the top of the ingot, substantially as described.

45. In an ingot-perfecting machine, a suspended frame, in combination with means for moving the same vertically and laterally, a perfecting-rod cozy provided in the lower part of said frame, the lower end of said cozy constituting a pressure-foot, a driver provided on said frame and operable in said cozy, and means upon said frame for positioning said cozy to receive a perfecting-rod or said driver, substantially as described.

46. In an ingot-perfecting machine, a suitable frame, in combination with means for moving the same as required, a cozy suspended in the lower part of said frame, means upon the frame for operating said cozy, a driver provided in the upper part of the frame and a deflector through which said driver is operable, arranged above said cozy, substantially as described.

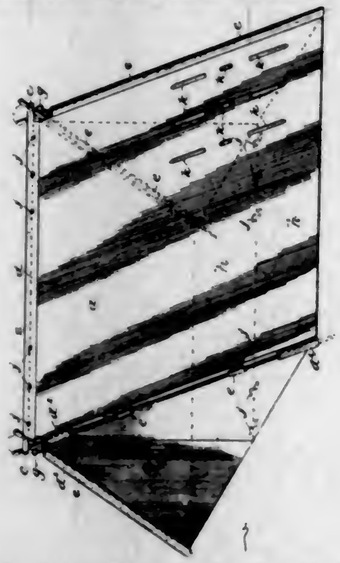
47. In an ingot-perfecting machine, a suitable frame and means for moving the same as required, in combination with a cozy trunnioned in said frame, fluid-actuated means on said frame for operating said cozy and a suitable rod-driver, substantially as described.

48. In an ingot-perfecting machine, a suitable frame, in combination with a perfecting-rod guide arranged in said frame, means for temporarily holding a rod in said guide, and rod-driving means provided on said frame, substantially as described.

49. In an ingot-perfecting machine, a suitable frame, in combination with means for moving said frame, a rod cozy or holder provided in the lower part of said frame, a rod-driver arranged in the upper part of said frame, means upon the frame for actuating said cozy with relation to said driver, and a yielding rod-stop provided upon the frame for cooperation with the cozy in one of its positions, substantially as described.

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**755,369. TENT. WILLIAM Y. HUNTER, Middelburg, Transvaal. Filed Dec. 2, 1902. Serial No. 133,637. (No model.)**



*Claim.*—1. A tent, the covering whereof consists of a substantially rectangular piece of material having a transverse sleeve adapted to receive a pole, said covering further having sleeves at the margins thereof adapted to receive poles, and eyelets formed in said first sleeve and in the edges of said covering remote from said first sleeve, said covering being adapted for folding whereby said eyelets may register with each other, and straps carried by said covering and adapted to cooperate with said eyelets when said covering is folded.

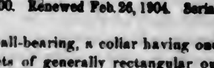
2. An A-tent, the covering whereof comprises two substantially similar parts and a transverse sleeve at the meeting-line of said parts, said sleeve being adapted to receive the ridge-pole of the tent, other sleeves formed in the edges of said parts and adapted to receive the A-poles, flaps carried by said parts and adapted to constitute doors when said tent is erected, eyelets formed in said first sleeve and in the edges of said parts, said eyelets being adapted to register when said covering is folded, and straps carried by said covering and cooperating with said eyelets.

3. An A-tent, the covering whereof comprises two substantially rectangular parts having a transverse sleeve at the meeting-line thereof adapted to receive a ridge-pole, other sleeves for the A-poles of said tent, the edges of said parts being adapted to be turned under whereby said covering may constitute also a floor for said tent, eyelets in said edges and eyelets in said transverse sleeve and straps carried by said covering which may cooperate with said eyelets when said covering is folded.

4. A tent comprising a covering having a transverse sleeve adapted to receive a ridge-pole, other sleeves, A-poles carried therein, a pin connecting said A-poles at their point of intersection, flaps carried by said covering and constituting doors for said tent when erected, eyelets formed in said covering, straps carried by said covering and adapted to cooperate with said eyelets when said covering is folded.

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**755,370. MOUTHPIECE FOR PIPES OR CIGAR-HOLDERS. CHARLES KNEBLER, Troy, Ohio. Filed Aug. 4, 1902. Serial No. 118,326. (No model.)**



*Claim.*—1. In a mouthpiece, the combination with the mouthpiece having the draft-opening therethrough, of a valve at the mouth-tip of said mouthpiece for closing said opening, and a spring connection pivotally connected to said valve at one side of its center for yieldingly holding said valve to close said opening, whereby said valve opens upon one edge of its seat as a fulcrum, substantially as specified.

2. In a mouthpiece, the combination with the mouthpiece having the draft-opening therethrough, said opening being enlarged a portion of its length, a valve-seat in said opening, a valve on said seat, a spring in the enlarged portion of said opening, and said spring being connected at one end to said valve for normally holding said valve on its seat, and having its remaining end hooked over a shoulder in and terminating within said draft-opening, substantially as specified.

3. In a mouthpiece, the combination of the mouthpiece having the draft-opening therethrough, said opening having an enlarged portion, a tubular member removably secured in said enlarged portion of said opening and extending to the mouth-tip end of said mouthpiece, a valve closing the mouth-tip end of said member, and means secured to said tubular member for yieldingly holding said valve closed, said tubular member being removable from the mouth-tip end of said mouthpiece, substantially as specified.

4. In a mouthpiece, the combination of the mouthpiece having the draft-opening therethrough, said opening having an enlarged portion, a tubular member removably mounted in said enlarged portion of said opening, a valve seated on one end of said member and closing said end, and a coil-spring in the bore of said tubular member and having one end connected to said valve and the other end connected to said member, substantially as specified.

5. In a mouthpiece, the combination of the mouthpiece having the draft-opening therethrough, said opening having an enlarged portion, a tubular member removably mounted in said enlarged portion of said opening, a valve seated on and closing one end of said member, a coil-spring in the bore of said member, and said spring being flexibly connected to said valve at a point to one side of its center and also connected to the opposite end of said member, substantially as specified.

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**755,371. BALL-BEARING. OLIVER C. KNIPE, Norristown, Pa. Filed Sept. 22, 1900. Renewed Feb. 26, 1904. Serial No. 196,479. (No model.)**

*Claim.*—In a ball-bearing, a collar having one of its side faces provided with offsets of generally rectangular outline leaving recesses or pockets between them for the reception of balls, the bottoms of said recesses being beveled outwardly, balls in said recesses, a cup to accommodate the balls, and a cap to maintain said parts assembled, substantially as described.



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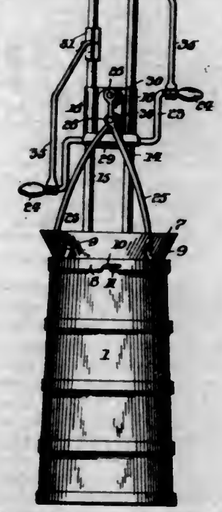
**755,372. MANUFACTURING ORE BRICKS. JOSEPH KOENIGER, Cologne, Germany. Filed July 8, 1902. Serial No. 114,830. (No model.)**

*Claim.*—1. The process for manufacturing weatherproof bricks for smelting purposes from sandy ores or ore-dust, ore residues, tunnel-dust, burnt iron and copper pyrite residues and from similar material, which consists in mixing the materials which are to be submitted to the process in a dry condition with lime, magnesia and borax and then intimately mixing the resultant mass with dilute crude sulfuric acid, then pressing and molding the mixture and drying the resultant bricks.

2. As a new article of manufacture, a smelting-brick consisting of ore material, lime, magnesia, borax and diluted sulfuric acid, as set forth.

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**755,373. DOUBLE-RECIPROCATING-DASHER CHURN. EDMUND M. KYLE, North Belle Vernon, Pa. Filed Oct. 24, 1903. Serial No. 178,432. (No model.)**



*Claim.*—1. A churn comprising a churn-body or receptacle having a lid provided with openings, a shield fitted in the upper end of the churn-body or receptacle and secured to the periphery of said churn-body, brace-rods supported by said shield, a coupling supported by said brace-rods and provided with a pair of sleeves, a shaft journaled in said coupling and having a pair of cranks, dasher-rods operating through said sleeves and carrying dashers operating in the churn-body, and links pivotally connected to the cranks at one end and to the dasher-rods at the other end, substantially as described.

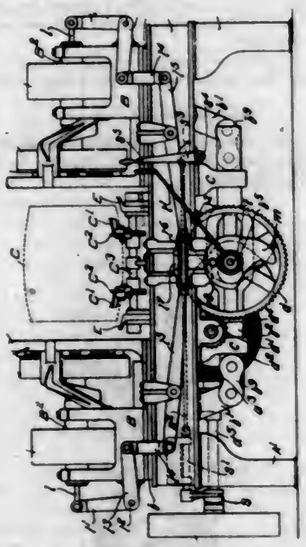
2. A churn comprising a churn-body or receptacle having a lid provided with a pair of openings, a frusto-conical shield fitted in the upper end of the churn-body or receptacle, brace-rods secured at their lower ends to said shield, a coupling secured to the upper ends of said brace-rods and having sleeves alining with the openings in

the lid, a shaft journaled in the coupling and provided with antifriction-bearings, cranks carried by said shaft, and links connected at one end to the cranks and at their other end to dasher-rods and dasher-rods operating through said sleeves and openings in the lid, and provided on their lower end with dashers, substantially as described.

3. A churn comprising a churn-body or receptacle provided with a lid having a pair of openings, a supporting-shield engaging in the upper end of the church-body or receptacle, a securing-band connected to said shield and embracing the periphery of the churn-body at the top thereof, a coupling supported from the shield and provided with a pair of sleeves alining with the openings in the lid, dasher-rods operating through said sleeves and openings and provided with dashers on their lower ends, a shaft journaled in the coupling and having cranks on its ends set at the half with respect to each other, sleeves secured to the dasher-rods above the coupling, and links connecting said sleeves to the respective cranks, substantially as described.

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**755,374. BARREL-FINISHING MACHINE. ROSWELL A. LARCEY and CHARLES W. SMITH, Townsend, Mass., assignors to Anson D. Fessenden, Townsend, Mass. Filed Apr. 1, 1903. Serial No. 150,562. (No model.)**



*Claim.*—1. In a machine for finishing the ends of barrels, a bed; platens slidably mounted on said bed; means operated by the main shaft for moving the said platens longitudinally in both directions; head-stocks adjustably mounted on said platens; clamping-rings secured to said head-stocks; cutter-carrying heads revolubly mounted in said head-stocks; cutters mounted on said cutter-carrying heads; and means operated through the medium of the main shaft for moving said cutters into cutting contact with the ends of a barrel.

2. In a machine for finishing the ends of a barrel, a bed; platens slidably mounted on said bed; head-stocks adjustably mounted on said platens; a main driving-shaft mounted in said bed; intermediate shafts in said bed and driven from said main driving-shaft; cams on one of said driving-shafts, said cams adapted to move the platens longitudinally; clamping-rings secured to said head-stocks; cutter-carrying heads revolubly mounted on said head-stocks; means for revolving said cutter-carrying heads; leveling-cutters, chamfering-cutters, crozing-cutters and howeling-cutters slidably and adjustably mounted on said cutter-carrying heads; cams for moving said cutters into cutting contact with the ends of a barrel, movable through the medium of levers mounted on the head-stocks; a slide-block mounted on the bed adapted to contact with the ends of said levers; a cam mounted on one of said intermediate shafts for operating the slide-block, as set forth.

3. In a machine for finishing the ends of barrels, comprising a bed; a slidable platen; head-stocks mounted thereon; clamping-rings in said head-stocks; cutters revolubly mounted on said head-stocks; adjustable gages for positioning the barrel in line with the clamping-rings; and adjustable fingers for holding the barrel central between the clamping-rings, and for withdrawing the barrel from both clamping-rings, substantially as described.

4. In a barrel-finishing machine, a bed, having platens slidably mounted thereon; head-stocks adjustably mounted on said platens; clamping-rings mounted on said head-stocks; adjustable gages mounted on said bed; positioning and withdrawing fingers mounted on said bed; and means for releasing said positioning-fingers and for ejecting the barrel when finished.

5. In a barrel-finishing machine, a bed; longitudinally-slidable platens mounted thereon; means for moving said platens longitudinally; head-stocks adjustably mounted in said platens; clamping means mounted on said head-stocks; means for positioning the barrel laterally and longitudinally so that it will enter said clamping-rings; means for withdrawing the barrel from said clamping-rings; and means for automatically releasing and ejecting said barrel from the machine when finished.

6. In a machine for finishing the ends of barrels, a bed; platens slidably mounted on said bed; head-stocks adjustably mounted on said platens; means for moving said platens longitudinally; clamping means mounted on said head-stocks; means for positioning a barrel both laterally and longitudinally, so that its ends will enter said clamping-rings an equal distance; and means for automatically releasing the positioning means when said barrel is finished.

7. In a machine for finishing the ends of a barrel, means for clamping the ends of a barrel; means for finishing the end of a barrel, comprising a revolving cutter-carrying head, and means for moving it longitudinally; guides on the face of said cutter-carrying head; cutter-carrying blocks slidably mounted in said guides; cutters adjustably mounted on said cutter-carrying blocks; a cam mounted in said cutter-carrying head for moving said cutter-blocks radially, said cam being so shaped and arranged as to cause the leveling-cutter to complete its cut before the chamfering-cutter, and to cause the crozing-cutter to complete its cut before the howeling-cutter; and means for operating said cam from the main driving-shaft by means of intermediate shafts, gearing, and a cam mounted thereon operating a slide-block as set forth.

8. In a machine for finishing the ends of a barrel, comprising a bed; clamping-rings and head-stocks longitudinally slidable thereon; cutter-carrying heads revolubly mounted in said head-stocks; cutters mounted on said revolving heads and adapted to move radially thereon, said cutters being moved into and out of cutting contact with the ends of a barrel by means of a driving-shaft and intermediate shafts having cams mounted thereon, operating-levers attached to cams in said cutter-carrying heads as set forth.

9. In an automatic machine for finishing the ends of barrels, adjustable to finish barrels of different lengths, comprising means for positioning, clamping, finishing both ends of a barrel, releasing and ejecting the same, all said means being operated by a driving-shaft revolubly mounted in the bed of said machine.

10. In a machine for automatically clamping and finishing the ends of barrels of different lengths, comprising a bed; platens slidably mounted on said bed; and head-stocks longitudinally adjustable on said platens; revoluble cutter-carrying heads mounted in said head-stocks; cutters slidably mounted on the inner faces of said cutter-carrying heads; means for moving said cutters radially through the medium of levers mounted upon the head-stocks, said means comprising an intermediate shaft mounted in bearings attached to the bed; a cam mounted on said intermediate shaft; a slide-block slidably mounted in guides attached to the bed; a longitudinal groove in said slide-block adapted to receive and move the ends of said levers to cause the cutters to move into and out of cutting contact with the ends of a barrel to finish the same; and a driving-shaft adapted to drive said intermediate shaft, as set forth.

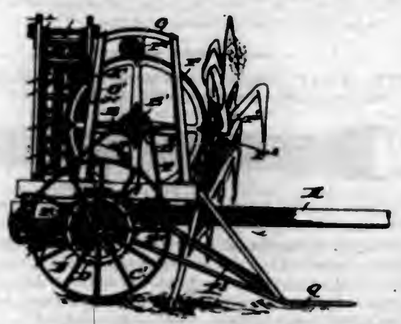
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**755,375. CORN-HARVESTER. NILS LOGAN and IVER I. FLO, Albert Lea, Minn. Filed Jan. 5, 1903. Serial No. 137,900. (No model.)**

*Claim.*—1. In a corn-harvester, the combination with a revoluble drum, of fingers carried by the drum, cutting-blades above the drum, and means for rotating the drum.

2. In a corn-harvester, the combination with a revoluble drum, of fingers carried adjacent each end of the drum, a frame over the drum, cutting-blades on the frame, a conveyer in the rear of the drum adapted to receive ears of corn from the drum, and means for rotating the drum and actuating the conveyer.

3. In a corn-harvester, the combination with a revoluble drum, fingers carried by the drum, cutting-blades above the drum, parallel husking-rollers in the rear of the drum, means for revolving the drum and the rollers, an endless conveyer adapted to convey the corn to a wagon and means for actuating the conveyer.



4. In a corn-harvester, the combination with a revoluble drum, of sets of fingers in alinement with each other positioned adjacent each end of the drum, a frame carrying inclined cutting edges over the drum, husking-rollers in the rear of the drum, an endless conveyer in the rear of the drum and means for rotating the drum and rollers and actuating the conveyer.

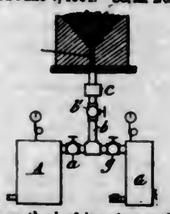
5. In a corn-harvester, the combination with a wheeled frame, a revolvable drum mounted thereon, fingers carried adjacent each end of the drum, a frame carrying cutting-blades over the drum, guards in front of the drum, husking-rollers parallel with, below, and in the rear of the drum, an upwardly-inclined chute at one end of the frame, parallel rollers carried by said chute, means connecting one of said rollers with one of the rollers in the rear of the drum, an endless conveyer passing along the rollers in the rear of the drum, and in the chute, and means for rotating the drum and rollers and actuating the conveyer.

6. In a corn-harvester, the combination with a suitable wheeled frame, a main revolvable axle carried by said frame, a second axle carried by the frame above the first, a hollow drum mounted thereon, fingers carried by the drum, cutting-blades above the drum, a set of horizontal husking-rollers in the rear of the drum, a set of inclined rollers adjacent one end of the horizontal rollers, a conveyer adapted to travel adjacent said rollers, means for communicating motion from the main axle to the axle carrying the drum, means for imparting motion from the main axle to the rollers, and means for actuating the conveyers.

7. In a corn-harvester, the combination with a suitable frame, a drum mounted on the frame, an upwardly-inclined chute in the rear of the drum and projecting over one side of the frame, parallel rollers below and in the rear of the drum, corresponding rollers in the chute, a universal joint connecting one of the rollers in the chute with one in the rear of the drum, an endless conveyer having cleats traveling above and below the rollers, a frame having cutting edges above the drum, means carried by the drum for forcing corn between the drum and the frame, and means for rotating the drum and rollers and actuating the conveyer.

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**755,376. METHOD OF COMBUSTION. CHARLES E. LOCKE, New York, N. Y. Filed June 7, 1901. Serial No. 63,549. (No specimens.)**



*Claim.*—1. The method of burning explosive gaseous mixtures which consists in causing the mixture to move with a velocity greater than the rate of propagation of inflammation through the mixture, and then reducing the velocity to the rate of propagation of inflammation and preventing diffusion with other gas, by causing the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the place where spreading begins, and burning the mixture at the surface at which the velocity is equal to the rate of propagation of inflammation, substantially as described.

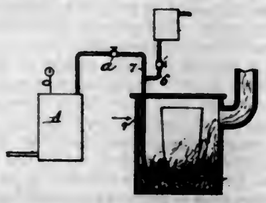


2. The method of burning explosive gaseous mixtures which consists in causing the mixture to flow through an opening with a velocity greater than the rate of propagation of inflammation through the mixture, and then reducing the velocity to the rate of propagation of inflammation and preventing diffusion with other gas, by causing the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the opening or place where spreading begins, and burning the mixture at the surface at which the velocity is equal to the rate of propagation of inflammation, substantially as described.

3. The method of burning explosive gaseous mixtures which consists in causing the mixture to flow with a velocity greater than the rate of propagation of inflammation through the mixture into a space subdivided so as to cause the mixture as it advances to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the place where spreading begins, and burning the mixture at the surface at which the velocity is equal to the rate of propagation of inflammation, substantially as described.

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**755,377. METHOD OF BURNING LIQUID OR GASEOUS FUELS. CHARLES E. LOCKE, New York, N. Y. Filed July 30, 1901. Serial No. 70,230. (No model.)**



*Claim.*—1. The method of burning fluid fuel which consists in causing the fuel and a suitable combustion-supporting gas in proportions such that there will be an excess of fuel over the quantity required for perfect chemical combination with the oxygen of the supporting-gas to flow into a hot combustion-bed, the supporting-gas moving with such velocity as to cause the resulting mixture to move with a velocity greater than the rate of propagation of inflammation through the mixture, and the combustion-bed being of such a nature as to cause the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the place where the spreading begins, thereby reducing the velocity of the mixture to the rate of propagation of inflammation and preventing diffusion with other gas; and burning within the bed so much of the fuel as therein forms with the supplied oxygen an explosive gaseous mixture and burning at or beyond the surface of the bed the remainder of the fuel, substantially as described.

2. The method of burning liquid fuel which consists in causing the fuel and a suitable combustion-supporting gas in proportions such that there will be an excess of fuel over the quantity required for perfect chemical combination with the oxygen of the supporting-gas to flow into a hot combustion-bed whereby the fuel will be vaporized and mix with the gas, the supporting-gas moving with such velocity as to cause the resulting mixture to move with a velocity greater than the rate of propagation of inflammation through the mixture, and the combustion-bed being of such a nature as to cause the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the place where the spreading begins, thereby reducing the velocity of the mixture to the rate of propagation of inflammation and preventing diffusion with other gas; and burning within the bed so much of the fuel as therein forms with the supplied oxygen an explosive mixture, and burning at or beyond the surface of the bed the remainder of the fuel, substantially as described.

3. The method of burning liquid fuel which consists in causing the fuel and a suitable combustion-supporting gas to flow into a hot combustion-bed whereby the fuel will be vaporized and mix with the gas, the supporting-gas moving with such velocity as to cause the resulting mixture to move with a velocity greater than the rate of propagation of inflammation through the mixture, and the combustion-bed being of such a nature as to cause the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance

from the place where the spreading begins, thereby reducing the velocity of the mixture to the rate of propagation of inflammation and preventing diffusion with other gas, and burning the fuel at least partially within the bed, substantially as described.

4. The method of burning fluid fuel which consists in causing the fuel and a suitable combustion-supporting gas in proportions such that there will be an excess of fuel over the quantity required for perfect chemical combination with the oxygen of the supporting-gas to flow into a hot combustion-bed, the supporting-gas moving with such velocity as to cause the resulting mixture to move with a velocity greater than the rate of propagation of inflammation through the mixture, and the combustion-bed being of such a nature as to cause the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the place where the spreading begins, thereby reducing the velocity of the mixture to the rate of propagation of inflammation and preventing diffusion with other gas; burning within the bed so much of the fuel as therein forms with the supplied oxygen an explosive mixture, and burning at or beyond the surface of the bed the remainder of the fuel; and varying the proportions of the fuel and gas to change the character of the surface flame, substantially as described.

5. The method of burning fluid fuel which consists in causing the fuel and a suitable combustion-supporting gas to flow into a hot combustion-bed, the supporting-gas moving with such velocity as to cause the resulting mixture to move with a velocity greater than the rate of propagation of inflammation through the mixture, and the combustion-bed being of such a nature as to cause the mixture to spread out so that the successive surfaces of uniform velocity shall have adjacent points in any such surface at substantially the same distance from the place where the spreading begins, thereby reducing the velocity of the mixture to the rate of propagation of inflammation and preventing diffusion with other gas; burning the fuel at least partially within the bed; and varying the proportions of the fuel and gas to change the character of the flame from one having no surface flame to one having a surface flame of greater or less length, as desired, substantially as described.

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**755,378. METHOD OF MAKING NITRIC ACID.** WALTER MILLS, London, England, assignor to A. O. Granger, Cartersville, Ga. Filed May 25, 1903. Renewed Feb. 24, 1904. Serial No. 196,110. (No specimens.)

*Claim.*—1. The process of manufacturing nitric acid which consists in dissolving lead-carrying substances in hydrofluosilicic acid; in then reacting upon the silicofluorid of lead with a salt of nitric acid; and in then separating the nitric acid from the nitrate of lead formed.

2. The process of manufacturing nitric acid which consists in dissolving lead-carrying substances in hydrofluosilicic acid having a specific gravity of about 1.80; in then reacting upon a solution of the silicofluorid of lead so formed to form nitrate of lead; and in then separating the nitric acid from the nitrate of lead.

3. The process of manufacturing nitric acid which consists in heating a mixture of a lead-carrying substance and concentrated hydrofluosilicic acid; in then reacting upon a solution of the silicofluorid of lead so formed to form nitrate of lead; and in then separating the nitric acid from the nitrate of lead.

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**755,379. METHOD OF MAKING FLUORIDS AND SILICATES.** WALTER MILLS, London, England, assignor to A. O. Granger, Cartersville, Ga. Filed May 25, 1903. Renewed Feb. 24, 1904. Serial No. 196,111. (No specimens.)

*Claim.*—1. The process of manufacturing metallic fluorids which consists in precipitating the silicofluorid of the metal from a solution of silicofluorid of lead by adding thereto a nitrate and then subjecting the precipitated silicofluorid to the requisite amount of heat to form the compound desired.

2. The process of manufacturing metallic fluorids which consists in precipitating the silicofluorid of the metal from a solution of silicofluorid of lead by adding thereto an alkali nitrate, and then subjecting the precipitated silicofluorid to the requisite amount of heat to form the compound desired.

3. The process of manufacturing metallic fluorids which consists in dissolving lead-carrying substances in heated concentrated hydrofluosilicic acid; in then precipitating the hydrofluosilicic acid with an alkali nitrate, and in then subjecting the precipitated silicofluorid to the requisite amount of heat to form the compound desired.

4. The process of manufacturing metallic silicates which consists in dissolving lead or a lead-carrying compound in heated concentrated hydrofluosilicic acid; in then precipitating the hydrofluosilicic acid with a nitrate; in then mixing the precipitated silicofluorid with silicious material; and in then subjecting the mixture to the requisite amount of heat to form the silicate desired.

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**755,380. BINDER.** JOSEPH MONTGOMERY, Fort Worth, Tex. Filed June 3, 1903. Serial No. 159,860. (No model.)



*Claim.*—1. The combination with a plurality of leaves, of a binder therefor, comprising a rod carrying tubular studs, which studs are designed to pass through registering perforations formed in the leaves, a second rod, carrying pins which are inserted in such perforations from the opposite edge, the pins being designed to enter the tubular studs of the opposite rod, and a spring clamping-back for retaining such rods in position, substantially as set forth.

2. A binder comprising rods designed to bear upon the opposite longitudinal edges of a book or the like, and a spring clamping-back independent of the rods, adapted to hold the latter in position, said clamping-back having a hollow rib at each longitudinal edge thereof, said rib forming a seat for the adjacent rod, substantially as set forth.

3. In a binder, the combination of a plurality of rods, a clamping-back for said rods, said back being substantially U-shaped in cross-section and having a hollow rib extending longitudinally, each rib being designed to seat one of the rods, and cover-engaging strips formed on the ends of the clamping-back, substantially as set forth.

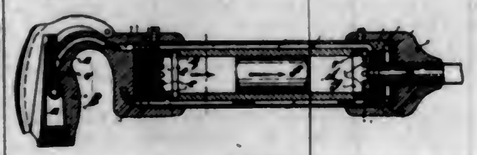
4. In a binder, the combination of a rod having tubular studs thereon, a second rod provided with pins for entering the tubular studs when the rods are employed for binding a book, a clamping-back adapted to secure the rods in their opposite position, and strips at the ends of the clamping-back, designed to be folded inward upon said back for securing a cover to the book, substantially as set forth.

5. In a binder for leaves, the combination with binding-rods, of a spring-metal back, said back having hollow outwardly-extending ribs formed along the longitudinal edge thereof, said ribs being designed to seat the binding-rods, and strips formed on said binder-back adapted to be folded inward upon the back, the construction being such that a cover for the leaves may be retained in position by said strips, substantially as set forth.

6. The combination of a plurality of rods, a resilient clamping-back for said rods, and a plurality of cover-engaging strips formed on said clamping-back, substantially as specified.

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**755,381. PNEUMATIC HAND-HAMMER.** AUGUST T. F. HENIA, Südende, Germany. Filed Apr. 23, 1902. Serial No. 104,963. (No model.)



*Claim.*—1. In a pneumatic hammer a removable handle-piece, a removable nose-piece, means for detachably securing same to cylinders of different lengths, a plunger-piston, and a removable valve-piston at either end of the cylinder removable therefrom when the end pieces are removed actuated in one direction by the air-pressure and in the other by the plunger-piston, substantially as shown and described.

2. In a pneumatic hammer, a cylinder, a plurality of air-passages formed longitudinally of the cylinder in the wall thereof, a valve-piston located in the cylinder at either end capable of a limited reciprocative movement therein adapted to open and close the ports of the air-passages so as to bring both sides of such valve-pistons alternately into communication with the air-pressure passage and the exhaust-passage, and a plunger-piston reciprocated in the cylinder by the air-pressure adapted to force the valve-pistons to the end of the cylinder upon impact therewith, substantially as shown and described.

3. In a pneumatic hammer, a cylinder, a plurality of air-passages formed longitudinally of the cylinder in the wall thereof, a valve-piston located in the cylinder at either end capable of a limited reciprocative movement therein adapted to open and close the ports of the air-passages so as to bring both sides of such valve-pistons alternately into communication with the air-pressure passage and the exhaust-passage, a plunger-piston reciprocated in the cylinder by the air-pressure adapted to force the valve-pistons to the end of the cylinder upon impact therewith, and means for causing an air-cushion to be formed behind the valve-piston to receive the first impacting force of the plunger-piston and for releasing the air so compressed behind such valve-piston during the latter portion of the outward move of such piston.

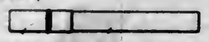
4. In a pneumatic hammer, a cylinder, a plunger-piston, an enlarged recess formed in each end of the cylinder, a valve-piston reciprocating in each of such recesses having an inwardly-faced central recess provided with perforations in the peripheral wall and with an annular groove upon the periphery of the base, an air-entrance passage provided with an air-port at either end extending longitudinally of the casing, a like air-exhaust passage at either end with two ports one adapted to be put into and out of registry the one with the perforations and the other with the peripheral groove of the adjacent valve, such exhaust-passage being in free communication with the atmosphere and extending longitudinally of the casing, a valve-actuating air-passage in free communication at one end with the chamber between the outer face of the valve and the cylinder end and provided at the other with a port adapted to be brought into and out of communication with the cylinder upon the reciprocation of the valve adjacent to the port, a similar passage reversely located so as to perform a like function for the other valve, and an exhaust air-passage for each of the valve-pistons in communication at one end with the chamber between the outer face of the valve-piston and the casing end and provided at the other with a port adapted to be brought into and out of communication with the peripheral groove of the valve-piston as the same is reciprocated, substantially as shown and described.

5. In a pneumatic hammer, a cylinder, a plunger-piston, an enlarged recess formed in each end of the cylinder, a valve-piston reciprocating in each of such recesses having an inwardly-faced central recess provided with perforations in the peripheral wall and with an annular groove upon the periphery of the base, an air-entrance passage provided with an air-port at either end extending longitudinally of the casing, a like air-exhaust passage provided at either end with two ports one adapted to be put into and out of registry the one with the perforations and the other with the peripheral groove of the adjacent valve, such exhaust-passage being in free communication with the atmosphere and extending longitudinally of the casing, a valve-actuating air-passage in free communication at one end with the chamber between the outer face of the valve and the cylinder end and provided at the other with a port adapted to be brought into and out of communication with the cylinder upon the reciprocation of the valve adjacent to the port, a similar passage reversely located so as to perform a like function for the other valve, and an exhaust air-passage for each of the valve-pistons in communication at one end with the chamber between the outer face of the valve-piston and the cylinder end and provided at the other with a port adapted to be in communication with the peripheral groove of the valve-piston only during the latter portion of the outward movement of such piston, substantially as shown and described.

6. In a pneumatic hammer, a cylinder, a plunger-piston, an enlarged recess formed in each end of the cylinder, a valve-piston reciprocating in each of such recesses having an inwardly-faced central recess provided with perforations in the peripheral wall and with an annular groove upon the periphery of the base, an air-entrance passage provided with an air-port at either end extending longitudinally of the casing, a like air-exhaust passage provided at either end with two ports one adapted to be put into and out of registry the one with the perforations and the other with the peripheral groove of the adjacent valve, such exhaust-passage being in free communication with the atmosphere and extending longitudinally of the casing, a valve-actuating air-passage in free communication at one end with the chamber between the outer face of the valve and the cylinder end and provided at the other with a port adapted to be brought into and out of communication with the cylinder upon the reciprocation of the valve adjacent to the port, a similar passage reversely located so as to perform a like function for the other valve, and an exhaust air-passage for each of the valve-pistons in communication at one end with the chamber between the outer face of the valve-piston and the cylinder end and provided at the other with a port adapted to be in communication with the peripheral groove of the valve-piston only during the latter portion of the outward movement of such piston, such groove at the same time in communication with the port of the air-exhaust passage, substantially as shown and described.



**755,382. DEVICE FOR TESTING ELECTRIC CURRENTS.** CHARLES OLIVER, Woolwich, England. Filed Nov. 20, 1902. Serial No. 133,200. (No model.)



*Claim.*—1. A detector or appliance for use in testing for electric currents, comprising a rod of insulatory material provided with a coating of a substance of low electrical conductivity, and means at one end of said rod rendering the end more highly conductive than the remainder of the rod, substantially as set forth.

2. A detector or appliance for use in testing for electric currents, comprising a rod of resisting material of low electrical conductivity, means at one end of said rod rendering the end more highly conductive than the rod itself, and a case or cover for said rod, substantially as set forth.

3. A detector or appliance for use in testing for electric currents, comprising a rod of insulatory material provided with a coating of a substance of low electrical conductivity, and a metal cap at one end of said rod, substantially as set forth.

4. A detector or appliance for use in testing for electric currents, comprising a rod of resisting material of low electrical conductivity, a metal cap at one end of said rod, and a case or cover for said rod, substantially as set forth.

5. A detector or appliance for use in testing for electric currents, comprising a strip or rod of wood provided with a coating of a substance of low electrical conductivity, substantially as set forth.

6. A detector or appliance for use in testing for electric currents, comprising a strip or rod of wood provided with a substance of low electrical conductivity, and a metal cap at one end of said strip or rod, substantially as set forth.

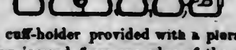
7. A detector or appliance for use in testing for electric currents, comprising a strip or rod of wood provided with a coating of a substance of low electrical conductivity, a metal cap at one end of said strip or rod, and a case or cover for said strip or rod, substantially as set forth.

8. A detector or appliance, for use in testing for electric currents, comprising a strip or rod of wood, a coating of black-lead and shellac thereon, and a metal cap at one end thereof, substantially as and for the purposes hereinbefore set forth.

9. A detector or appliance, for use in testing for electric currents, comprising a strip or rod of wood, a coating of black-lead and shellac thereon, a metal cap at one end thereof and a case or cover to receive therein said resisting material, substantially as and for the purposes hereinbefore set forth.

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**755,383. CUFF-HOLDER.** WILLIAM H. PAGE, Burlington, N. J. Filed Nov. 6, 1903. Serial No. 180,104. (No model.)



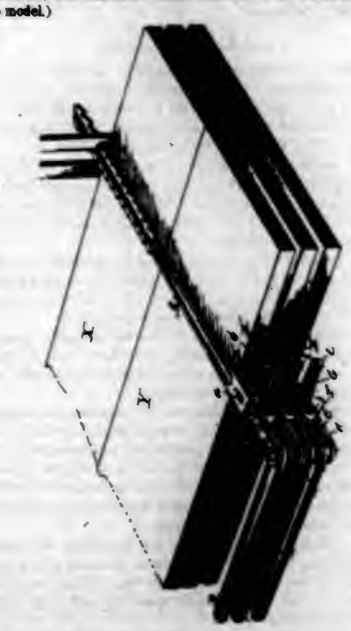
*Claim.*—1. A cuff-holder provided with a plurality of buttonhole-slots extending inward from one edge of the same, the inner ends of said slots being rounded, said slots being so formed as to provide a throat between this rounded portion and the mouth of the slots, the walls of the slots at this throat portion being formed resilient and adapted to spread to allow the shank of the button to pass therethrough, and a button formed with the attachment adapted to be buttoned into the cuff, as and for the purpose specified.

2. A cuff-holder provided with a plurality of buttonhole-slots extending inward from one edge of the same, said slots being constructed to form throats with resilient walls, a button formed with the attachment adapted to button into the cuff, a portion of the buttonhole-slots being arranged forward of said cuff-button, as and for the purpose specified.

3. A cuff-holder formed of thin resilient material and provided with a plurality of buttonhole-slots extending inward from one edge of the same, said slots so constructed as to form throats with resilient walls through which the shank of the wristband-button is adapted to pass, a button formed with the attachment adapted to be buttoned to the cuff, a portion of said buttonhole-slots being arranged forward of the cuff-button and a portion rearward of the same, as specified.

4. A cuff-holder formed of one piece of wire bent into rectilinear form, said wire so bent as to form buttonhole-slots extending inward from one edge of the same, the inner end of said slots being formed round, and the wire so bent as to form throats or narrow passages between the rounded portion and the mouth of the slots, a button formed with the attachment and extending outward from one side of the same, said button being formed by the bending of the wire in a spiral form, as and for the purpose specified.

**755,884. CLAMPING DEVICE FOR GLUE-PRESSES. ALBERT R. PALMER, Norvell, Mich. Filed Dec. 19, 1903. Serial No. 185,895. (No model.)**



*Claim.*—1. A clamping device for glue-presses, consisting of a clamping-bar, a movable clamping-jaw, an operating hand-lever connecting therewith, and a movable wedge adapted to act upon the clamping-jaw to take up the slack before the lever is operated, substantially as and for the purpose set forth.

2. A clamping device for glue-presses, consisting of a clamping-bar, a movable clamping-jaw, a pivoted hand-lever, a slidable bracket, a toggle-link connecting the lever and bracket together, and a wedge connecting the bracket with the clamping-jaw, substantially as and for the purpose specified.

3. A clamping device for glue-presses, consisting of a clamping-bar, a pivoted hand-lever, a slidable bracket, a toggle-link connecting the lever with the bracket, a slidable clamping-jaw, a slidable wedge having guide-flanges which engage grooves in the bracket and clamping-jaw, substantially as and for the purpose described.

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**755,885. CASH-REGISTER. EDWARD B. PARKHURST, Woburn, Mass., assignor to the National Cash Register Company, Dayton, Ohio, a Corporation of Ohio. Filed Jan. 17, 1902. Serial No. 90,377. (No model.)**

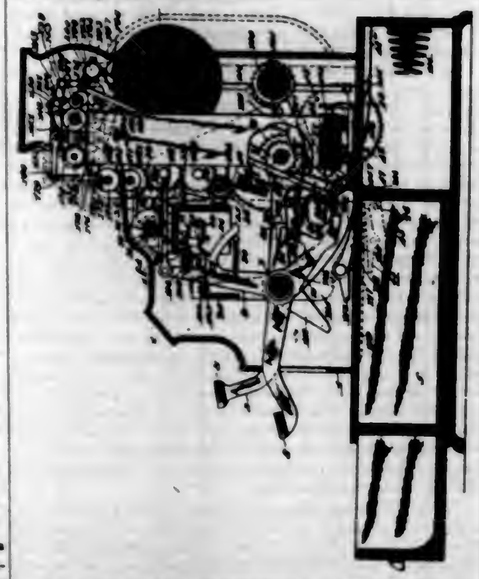
*Claim.*—1. In a cash-register, the combination with a plurality of keys, of a registering mechanism, devices connected to each key for operating said mechanism and a pivoted lever for each of said devices adapted to be operated by the keys to throw said devices into mesh with the registering mechanism and devices mounted on said keys for engaging and moving said levers.

2. In a cash-register, the combination with a plurality of keys, of a registering mechanism, movable rack-bars mounted on said keys, pivoted levers for raising said rack-bars into engagement with the registering mechanism and means for operating said levers by the keys and independently of the racks.

3. In a cash-register, the combination with a plurality of keys, of operating-arms on said keys operating-racks mounted on said arms graduated arms also formed on said keys, a register arranged to be operated by said racks, an indicator, and indicator-operating devices adapted to be positively operated by the graduated arms of said keys.

4. In a cash-register, the combination with a plurality of keys, of a movable frame adapted to be operated by the same, laterally-movable devices mounted on the frame for locking the keys to said frame, means for positively operating said devices by the movement of the frame, and relatively stationary devices for locking the unoperated keys, also arranged to be operated upon the movement of the frame.

5. In a cash-register, the combination with a plurality of keys having locking-lugs, of a movable frame, an independently-movable plate mounted on said frame and having hook-locking fingers extending between the respective keys, means for positively actuating said movable plate upon the movement of the frame to cause said hook-fingers to hook over the lugs of the operated keys and thus hold them against the frame.



6. In a cash-register, the combination with a plurality of keys, of a movable frame, a longitudinally-slidable key-locking plate mounted on said frame, a slidable key-locking plate mounted on the main frame, devices connecting said plates whereby they are caused to slide together in one direction and means mounted on the main frame for moving one of said plates upon the operation of the movable frame.

7. The improved mechanism for registering devices comprising a registering device, a toothed wheel to operate the same, a pawl to prevent retrograde movement of the said parts, actuating devices for said toothed wheel, stationary means to hold said devices in engagement with said toothed wheel as they are moved in one direction, and holding them from engagement therewith during their movements in the opposite direction, and a positively-actuated switching device acting upon the said devices at or adjacent to the starting end of the movement of the latter and serving to place the same in position to engage said toothed wheel in its next advancing movement.

8. In a cash-register, the combination with a registering-wheel, actuating means for said wheel, a stationary device for holding the actuating means in engagement with said toothed wheel as said means is moved in one direction and holding it from engagement therewith during its movement in the opposite direction, and a positively-actuated switching device arranged to be engaged by the actuating means whereby the latter is elevated to engage the stationary device at the proper time.

9. In a cash-register, the combination with a check-printing mechanism, of a movable arm carrying a platen, and means mounted independently of said arm for moving it and arranged to be suddenly arrested to allow the arm to continue its movement and strike a quick rebounding blow.

10. In a cash-register, the combination with a plurality of keys formed with standards of graduated lengths, of a rock-frame fulcrumed concentric with the keys and arranged to be moved different distances by said standards as the latter are raised upon the operation of the keys, a pinion operated by said rock-frame, an indicator carrying a pinion, and a pivoted lever carrying racks which engage the respective pinions.

11. In a cash-register, the combination with a plurality of keys, of a registering mechanism, racks mounted on said keys for operating said mechanism, stationary projections on said racks arranged to force said racks into engagement with the registering mechanism and pivoted levers for independently lifting said racks to engagement with the registering mechanism.

12. In a cash-register, the combination with a suitable frame, of a series of keys, a registering mechanism, racks mounted on said keys, stationary projections on the frame and rigid projections formed on said racks and arranged to engage the projections of the frame to force the racks into mesh with the registering mechanism and hold them there during registering.

13. In a cash-register, the combination with a series of keys of a registering mechanism, racks mounted on said keys for operating said mechanism, rigid projections on said racks for holding them to engagement with the registering mechanism, and movable devices mounted independently of the racks for lifting said racks to engagement with said mechanism.

14. In a cash-register, the combination with a suitable frame of a series of keys, a registering mechanism, racks mounted on said keys, lifting projections on said racks, and lifting projections mounted on the frame in such manner that the first-mentioned projections will engage and ride up and over them in one direction and under them in the opposite direction, and means for positively lifting the rack-bars to cause the rack-bar projections to engage the lifting projections.

15. In a cash-register, the combination with a series of keys, of a registering mechanism, racks pivotally mounted on said keys, lifting-flanges on said racks, pivoted levers for independently lifting said racks, latches for temporarily holding said levers in the positions to which they are moved and trip-arms on said keys arranged to engage and move said levers.

16. In a cash-register, the combination with a plurality of keys, of a registering mechanism, a gear-wheel communicating with said mechanism, a cash-drawer, and a projection mounted on said drawer so as to engage and operate the gear-wheel and means for moving said drawer projections out of communication with the gear at a certain predetermined time.

17. In a cash-register, the combination with a series of keys, of a movable frame common to all of the keys and arranged to be moved by the same, a cash-drawer and a pivoted weighted stop-pawl which normally rests upon the top of said drawer and is thus supported out of the path of the movable frame but is allowed to descend by gravity to move into the path of said frame when the drawer is opened.

18. In a cash-register, the combination with a plurality of operating-keys, of a rack adapted to be positively operated by any one of said keys, a visual indicator, a lever connected to said indicator, and means positively meshing with the teeth of said rack for transmitting the movements of the same to said lever.

19. In a cash-register, the combination with a series of keys, of a registering mechanism, a series of racks mounted on said keys, and a stationary device for positively lifting and holding the racks to engagement with the registering mechanism as they are moved in one direction and from engagement therewith when moved in an opposite direction.

20. In a cash-register, the combination with a series of keys, of a registering mechanism, register-operating arms mounted on said keys, graduated arms also mounted on said keys, a movable frame arranged to be operated by said latter arms, an indicator, means connecting the indicator and movable frame and a printing device connected to said indicator so as to be operated to an equal degree therewith.

21. In a cash-register, the combination with a series of keys, of a registering mechanism, register-operating arms mounted on said keys, graduated arms also mounted on said keys, a movable frame arranged to be operated by said latter arms, an indicator, means connecting the indicator and movable frame, a gear on said indicator and a printing device carrying a gear meshing with the aforesaid gear.

22. In a cash-register, the combination with a plurality of keys, of a registering mechanism, an indicator, rack-bars connected to said keys and adapted to operate said mechanism, lifting-flanges mounted on said bars and of different lengths according to the denominations of the keys to which they are connected, and relatively stationary means arranged to be engaged by said flanges and controlled by the keys.

23. In a cash-register, the combination with a plurality of keys, of a registering mechanism, rack-bars mounted on said keys and adapted to engage said mechanism, pivoted levers for raising said rack-bars, a spring-pressed catch for each key for holding its lever in either of its adjusted positions and devices connected to the keys for operating said levers.

24. In a cash-register, the combination with a plurality of keys, of a registering mechanism, rack-bars pivotally mounted on said keys, and formed with lifting-flanges and lifting projections mounted on the frame so as to be struck by the lifting-flanges to force the rack-bars to engagement with the registering mechanism on the forward stroke and away from the same on the back stroke and means for positively lifting the rack-bars to cause the flanges to engage the lifting projections.

25. In a cash-register, the combination with a check-printing mechanism having a plurality of types, of an arm carrying a platen, and an operating-nose, a shaft supporting said arm and provided with an operating-nose adapted to strike the first-mentioned nose, and means for operating said shaft.

26. In a cash-register, the combination with a plurality of keys, of graduated standards mounted on the same, a movable frame adapted to be operated by said standards, an indicator, a pinion adapted to be operated by said frame and communicating with the indicator, reversely-facing ratchet devices connected to said pinion, a pawl normally engaging one of said ratchets, and a pawl adapted to be thrown into engagement with the remaining ratchet upon the operation of the keys.

27. In a cash-register, the combination with a plurality of keys, of a registering mechanism, a train of gearing communicating with said mechanism, a cash-drawer, a pivoted operating-pawl mounted on the drawer and adapted to engage one of said gears and means mounted on the frame for disengaging said pawl from said gear after a predetermined movement.

28. In a cash-register, the combination with a plurality of keys, of a movable frame adapted to be operated thereby, a printing mechanism, a paper-strip-supply roll, a receiving-roller, a weighted pawl arranged to be raised by said frame and adapted to operate said latter roller when released and allowed to descend.

29. In a cash-register, the combination with a plurality of keys, of a slidable key-locking plate, a second slidable key-locking plate, devices connecting said plates whereby they are caused to slide together laterally but one of the same may be moved forward independently and means for moving one of said plates.

30. In a cash-register, the combination with a plurality of keys, of a registering mechanism, movable rack-bars mounted on said keys, and movable devices arranged to be engaged by the keys and thus actuated to force the racks into engagement with the registering mechanism.

31. In a cash-register, the combination with a series of keys, of a registering mechanism, movable rack-bars mounted on said keys and devices arranged to be set by the keys to positions in which they will be engaged by the rack-bars whereby the latter are actuated and moved into engagement with the registering mechanism.

32. In a cash-register, the combination with a plurality of keys, of a registering mechanism, rack-bars mounted on said keys, movable devices for raising said rack-bars into engagement with the registering mechanism and means for operating said movable devices by the keys and independently of the racks.

33. In a cash-register the combination with a plurality of keys, of a registering mechanism, movable racks mounted on said keys and means arranged to be set by the keys so that they will be engaged by the racks to lift the latter.

34. In a cash-register, the combination with a plurality of keys, of a registering mechanism, movable racks mounted on the keys and lifting devices mounted independently of the keys but arranged to be operated by the same and move into the path of said racks whereby the latter are lifted by engagement therewith.

35. In a cash-register, the combination with a plurality of keys, of a frame arranged to be moved by said keys, a movable locking-plate mounted on said frame for locking the operative keys thereto, a movable locking-plate mounted independently of the frame for locking the unoperative keys and means connecting the two plates whereby they are simultaneously operated to lock and unlock the keys.

36. In a cash-register the combination with a printing mechanism, of a movable member carrying a platen and means mounted independently of said member for operating it and arranged to be suddenly arrested in its movement to allow said member to continue its movement alone.

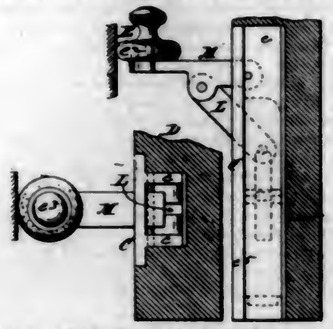
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**755,886. DOOR-CHECK. EDWARD J. PARRIS, Middletown, N. Y. Filed Nov. 9, 1903. Serial No. 180,475. (No model.)**

*Claim.*—1. In a door-check, the combination of a bolt and a toggle-joint confined within the door for operating the bolt, substantially in the manner set forth.

2. In a door-check, the combination with the casing, of a bolt the outer end of which is provided with a resilient contact, a toggle-

joint confined within the door for actuating said bolt, and an elastic buffer combined with said toggle-joint for the purpose set forth.



3. In a door-check, the combination with the casing, of a bolt provided at its outer end with a resilient contact, and a toggle-joint for operating said bolt, the actuating-lever of said toggle-joint being formed with an elastic buffer for the purpose set forth.

4. In a door-check, the combination with the casing countersunk in the door, of a bolt provided at its outer end with a resilient contact, and a toggle-joint confined within the door for operating said bolt, the actuating-lever of said toggle-joint being formed with a knob to facilitate manipulation, and being also provided with a buffer extending beyond said knob.

5. In a door-check, the combination of a casing formed with a recess for the reception of a spring-detent, said spring-detent having a V-shaped shoulder, a bolt provided with a longitudinal recess and provided at its lower end with a resilient contact and formed with a notch for engagement with said spring-detent, and a toggle-joint having one member pivoted in said recess for actuating said bolt, as set forth.

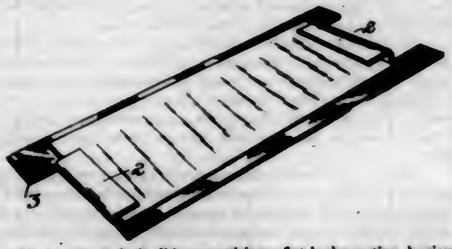
6. In a door-check, the combination with the casing, of a bolt B provided with the resilient contact $b$, and the toggle-joint for actuating said bolt, said toggle-joint being confined in the door and consisting of the link L and manipulating-lever M pivotally mounted in said casing and disposed to throw said lever into a horizontal position at right angles to the face of the door to serve as a buffer, as set forth.

7. In a door-check, the manipulating-lever M, the stud $e$ on said lever formed with the annular groove $e'$ and the buffer $e^3$ for the purpose set forth.

8. A door-check comprising the plate C, ribs $c$ $c$ one of which is formed with the recess $c^3$, the back plate $c'$, the spring-detent $d$, the bolt B provided with the resilient contact $b$ and formed with the notch $b^2$, the link L, the manipulating-lever M formed with the stud $e$, knob $e^2$ and the buffer $e^3$, the whole arranged and operating substantially as shown and described.

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**755,387. ACCOUNT-REGISTER AND DESK-SLIDE. CONRAD PAUL, Pittsburg, Pa. Filed Aug. 7, 1903. Serial No. 168,798. (No model.)**



*Claim.*—1. A desk-slide comprising a flat body portion, having upturned end flanges, said flanges being formed by slitting the body portion at each end at points adjacent to its sides, and bending the portion lying therebetween.

2. A desk-slide comprising a flat body portion, flanges secured to the body portion at its opposite ends, a lug formed integral with the forward end of the said body portion, and extensions formed integral with body portion and projecting in the rear of the rear flange of the slide, substantially as described and for the purpose specified.

**755,388. BUFFING-ROLL. MAGNUS PREVOST, Haverhill, Mass., assignor of seven-tenths to Henri R. Prevost and Louis F. Roger, Haverhill, Mass. Filed Nov. 1, 1902. Serial No. 129,662. (No model.)**



*Claim.*—1. A buffing-roll having two semicylindrical sections pivotally connected at one side of its axis, each section having a longitudinally-extending slot opposite said pivotal connection, a textile strip passing over the surface of said sections about the meeting edges thereof opposite said pivotal connection, and through said slots with its end portions connected to its intermediate portions, and a cushion secured to said strip, substantially as described.

2. A buffing-roll having two semicylindrical sections pivotally connected at one side of its axis providing meeting edge portions at opposite sides of said axis, one of said edge portions consisting of a longitudinally-extending bar removably connected to one of said sections, each section having a longitudinally-extending slot opposite said pivotal connection, a textile strip passing over the surface of said sections about said bar and the opposite meeting edge of the other section, and through said slots with their end portions lying between said surface and the intermediate portions thereof, and a cushion secured to said strip, substantially as described.

3. A buffing-roll having two semicylindrical sections pivotally connected at one side of its axis, a pair of clamping-bars removably connected to said sections at the opposite side of said axis and adapted to be brought into engagement when the roll is closed, a textile strip passing over the surface of said section, and about said bars, and a cushion secured to said strip, substantially as described.

4. A buffing-roll having two end collars, each comprising two semicircular sections having overlapping ears at one side of the axis of the roll, a rigid pivot-rod passing through each of said ears and means for holding said rod from longitudinal movement with relation thereto, a pair of removable clamping-bars and a pair of semicylindrical sheet-metal supports, each bar and support being rigidly secured at one end to one section of one collar and at the opposite end to the corresponding section of the other collar, said bars being arranged opposite said pivot-rod, a textile strip passing over said sections and about said bars and a cushion connected to said strip, substantially as described.

5. A buffing-roll having two end collars each comprising two semicircular sections having overlapping ears at one side of the axis of the roll, a rigid pivot-rod passing through each of said ears and having shoulders which engage the inner ears of said sections, a pair of clamping-bars and a pair of semicylindrical sheet-metal supports, each bar and support being rigidly secured at one end to one section of one collar and at the opposite end to the corresponding section of the other collar, said bars being arranged diametrically opposite said pivot-rod, and their upper sides being substantially on a level with the surface of said supports and at such distance therefrom as to provide longitudinally-extending slots therebetween, a textile strip passing about said bars, through said slots and over the surface of said supports, to which it is secured, and a felt cushion secured to said strip, substantially as described.

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**755,389. MACHINERY FOR MANUFACTURING POTATO-FLOUR BY MEANS OF ROLLS. OTTO REISLE and HERMAN RAUSCHARTER, Vienna, Austria-Hungary, assignors to Gesellschaft zur Verwertung Landwirtschaftlicher Produkte, G. M. B. H., Berlin, Germany. Filed May 19, 1903. Serial No. 157,812. (No model.)**





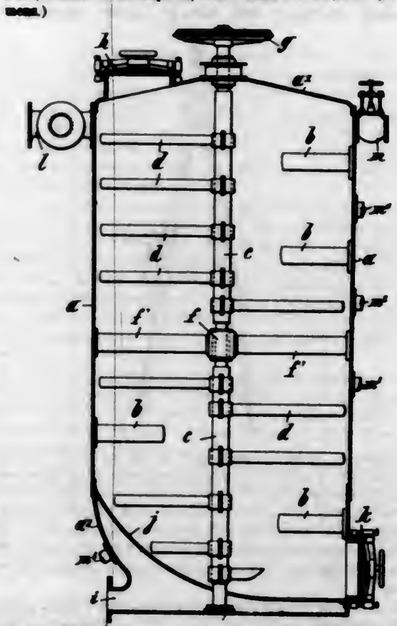
*Claim.*—1. In a machine for manufacturing potato-flour, the combination with a hopper having a knife-grate bottom, of a knife-roll to cut the whole potatoes, a pair of steam-heated crushing-rollers and means for removing the steam or watery vapor formed by the material passing between the said pair of rollers.

2. In a machine for manufacturing potato-flour, the combination with a hopper having a knife-grate bottom, of a knife-roll to cut the whole potatoes, a pair of steam-heated crushing-rollers, strippers extending longitudinally of and bearing upon the upper surfaces of the respective rollers, and means for removing the steam or watery vapor formed by the material passing between the said pair of rollers.

3. In a machine for manufacturing potato-flour, the combination with a hopper having a knife-grate bottom, of a knife-roll to cut the whole potatoes, a pair of steam-heated crushing-rollers, strippers extending longitudinally of and bearing upon the upper surfaces of the respective rollers, a collecting-box for receiving the material, and means for removing the steam or watery vapor formed by the material passing between the said pair of rollers.

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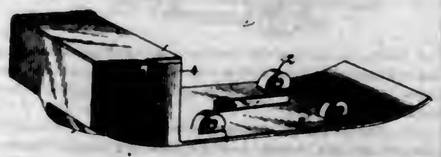
**755,390. MANUFACTURE OF DEXTRIN. GEORGES REYNAUD, Paris, France. Filed Sept. 10, 1902. Serial No. 122,817. (No specimens.)**



*Claim.*—The herein-described process for treating peat for the industrial manufacture of dextrin (achroodextrin), consisting in mixing the material in water of about twice the weight of the material, and heating the resultant mass under pressure in a digester to a temperature of about 160° to 220° centigrade during about two hours to convert the cellulose of this peat into achroodextrin.

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**755,391. ELECTRIC-RAILWAY SHOE. HENRY ROSENFELD, New York, N. Y. Filed Aug. 19, 1903. Serial No. 170,104. (No model.)**



*Claim.*—1. An electric-railway shoe having a rib on its under side, the sides of said rib being divergent from the front rearward.

2. An electric-railway shoe having a rib on its under side, and a weight-holder on its upper side.

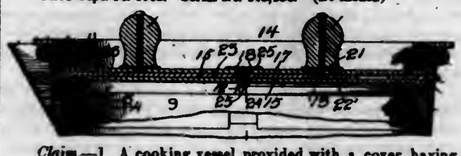
3. An electric-railway shoe having a rib on its under side, the sides of said rib being divergent from the front rearward, and a weight-holder on the upper side of the shoe.

4. An electric-railway shoe having a rib on its under side, the sides of said rib being divergent from the front rearward, and a weight-holding box on the upper side of the shoe.

5. An electric-railway shoe having a rib on its under side, the sides of said rib being divergent, and a weight-holding box on the upper side of the shoe at its forward end.

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**755,392. STEAM-COOKER. PETER S. RUNBERG, Norway, Mich. Filed Sept. 14, 1903. Serial No. 173,150. (No model.)**



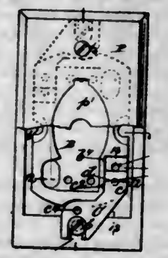
*Claim.*—1. A cooking vessel provided with a cover having a latch, and a vent-opening, a sliding and laterally-movable valve-plate governing said opening and connected to the latch, and means for adjusting the plate in one direction to project or retract the latch and at an angle to such direction to lock the plate in one or the other of its adjusted positions.

2. A cooking vessel provided with a cover having a slot therein provided with offsets, and having also a vent-opening, a valve-plate having a vent-opening adapted to be brought into coincidence with said vent-opening in the cover, a latch carried by said valve-plate and actuated thereby, and an operating-handle working in said slot and connected with the plate and adapted, when adjusted longitudinally in the slot, to project or retract the latch, and when adjusted into one of said offsets to lock the parts against movement, the adjustment of said plate also controlling the escape of steam through the vent-opening, substantially as described.

3. A cooking vessel provided with a cover having top and bottom plates, a latch-opening and a vent-aperture, a latch adjustable in said latch-opening, a valve arranged between said plates and connected to the latch and adjustable to operate the latch and open or close said vent-aperture, and means for locking said valve in adjusted position, substantially as described.

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**755,393. ELECTRIC CONNECTION. FRANK J. RUSSELL, New York, N. Y. Filed Nov. 6, 1903. Serial No. 180,016. (No model.)**



*Claim.*—1. The combination with a conduit-outlet of a terminal-box formed with a plurality of reversible bracket angle-plates together with means for securing said bracket angle-plates to the conduit-outlet in different positions, whereby the terminal-box may be secured to the conduit-outlet at different distances from the center of the terminal-box.

2. The combination of a terminal-box, two bracket angle-plates reversible thereon, a conduit-outlet, and means for securing the said bracket angle-plates thereto in different positions, whereby the terminal-box may be secured to the conduit-outlet at different distances from the center of the terminal-box.

3. The combination of a terminal-box formed with two bracket-seats each provided with two bolt-holes, two bracket angle-plates the shanks of which are adapted to fit the said seats, each shank being formed with a bolt-hole, and the outer end of each bracket-plate being formed with a bolt-head seat and screw-nut hole, together with a conduit-outlet formed with two diametrically-opposed bolt-holes, for the purpose described.

4. The combination of an elongated terminal-box formed with diagonally-opposed seats for reversible bracket-plates, detachable means for securing said reversible angle-plates in position, said re-

reversible angle-plates each formed with a bolt-head seat and a screw-nut hole, extending radially from the center of the terminal-box in either position of the plate, a conduit-outlet formed with diametrically-opposed plates for the purpose described.

5. The combination of a terminal-box, reversible angle-plates thereon, each formed with a nut-hole for engagement with one of the screws by which the cover-plate is secured in position, said cover-plate and securing-screws and detachable means for securing the reversible angle-plates to the terminal-box for the purpose described.

6. The combination of a terminal-box reversible angle-plates thereon, each formed with an elongated bolt-head seat extending radially from the center of the terminal-box in either position of the angle-plate, detachable means for securing the said angle-plates upon the terminal-box, a conduit-outlet formed with diametrically-opposed bolt-holes, and screw-bolts for securing the conduit-outlet to the said angle-plates, for the purpose described.

7. The combination of an elongated terminal-box formed with diagonally-opposed seats for the shanks of two reversible angle-plates, each seat being formed with two bolt-holes parallel to the central longitudinal plane of the terminal-box, said reversible angle-plates the shanks of each being formed with a screw-nut hole, and the outer end of each being formed with an elongated bolt-head seat and screw-nut hole extending radially from the center of the terminal-box in either position of the angle-plate, bolts for securing the angle-plates to their seats on the terminal-box, a conduit-outlet formed with diametrically-opposed bolt-holes, bolts for securing said conduit-outlet to the angle-plates, a cover-plate formed with bolt-holes and screw-bolts for securing the cover to the angle-plates, for the purpose described.

8. The combination of an elongated terminal-box, reversible angle-plates secured thereon by means which are detachable, each of said reversible angle-plates being formed with an elongated seat for the head of a screw-bolt and with a screw-nut hole, said elongated seat and screw-nut hole being so formed upon the angle-plate that when the latter is in one position on the terminal-box they will be in alinement with the central longitudinal plane of the terminal-box and when in the other position in line with the transverse central plane of the terminal-box, a conduit-outlet formed with diametrically-opposed bolt-holes, screw-bolts for securing the conduit-outlet to the said angle-plates, a cover-plate and screw-bolts for securing said cover to the said angle-plates for the purpose described.

9. The combination of the conduit-outlet A formed with the internal lugs $a'$, $a'$, having screw-nut threads therein, the terminal-box B, formed with the screw-bolt seats $b'$, the screw-bolts $b$, the reversible angle-plates C, detachable means for securing the said angle-plates to the terminal-box, the cover P, and means for securing it to the said angle-plates for the purpose described.

10. The combination of the conduit-outlet A, formed with diametrically-opposed screw-bolt holes $a$, the terminal-box B, formed with the seats $b^3$, and bolt-holes $b^2$, $b^4$, the reversible angle-plates C, formed with the screw-nut holes $c'$, elongated seats $c^3$, and nut-screw holes $c^4$, the anchor-bolts $d$, the screw-bolts $b$, for securing the conduit-outlet to the angle-plates C, the cover-plate P and the screw-bolts $p$, for securing the cover-plate to said angle-plates C, for the purpose set forth.

11. The combination of the conduit-outlet A, formed with the diametrically-opposed screw-bolt holes $a$, the terminal-box B, formed with the seats $b^3$, screw-bolt holes $b^2$, $b^4$ and straight edge $b^7$, the reversible angle-plates C, formed with the screw-nut holes $c^4$, straight edge $c^2$, elongated seat $c^3$, and screw-nut holes $c^4$, the anchor-bolts $d$, the screw-bolts $b$, for securing the conduit-outlet A, to the angle-plates C, the cover P, and the screw-bolts $p$, for securing the cover to the said angle-plates for the purpose described.

12. The combination with the terminal-box B and conduit-outlet A, formed with the diametrically-opposed screw-holes $a$, of the reversible bracket angle-plates C, formed with the elongated screw-head seats $c^2$, the edges of which are made V-shaped in cross-section for the purpose described, detachable means for securing the said angle-plates to the terminal-box, and bevel-headed screws $b$, for securing the said angle-plates to the conduit-outlet, substantially as and for the purpose set forth

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**755,394. AUGER.** JEFFERSON H. SCAIFE, Camilla, Ga. Filed Nov. 30, 1903. Serial No. 183,171. (No model.)

*Claim.*—An auger having its cutting-head provided at its upper end with a stem, the outer portion of which is concentric with the cutting-head and the inner portion of which is laterally offset and eccentric to the cutting-head, and a gage slidable on said laterally-offset, eccentric portion of the stem, extending over the center of the cutting-head and having means to secure it to the said laterally-offset portion of the stem.



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**755,895. COMPASSES.** GEORG SCHONNER, Nuremberg, Germany. Filed Nov. 7, 1903. Serial No. 180,256. (No model.)



*Claim.*—1. A pair of compasses having one of the legs thereof provided with a groove or elongated aperture in its inner face extending to the end of said leg, an insertion-piece adapted to fit said leg, and a spring closing the entire open side of said opening and bearing against the side of the insertion-piece and a set-screw extending through the opposite wall of said leg for swinging the insertion-piece against the tension of the spring substantially as described.

2. In a pair of compasses an insertion-piece such as described, a spring $e$ bearing against one side of the insertion-piece, a screw $g$ arranged opposite the spring $e$ on the leg $c$ of the compasses and adapted to move said insertion-piece $a$ toward the middle of the compasses against the resistance of the spring $e$, and in this manner to operate a fine adjustment of the width of the compasses, substantially as set forth.

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**755,896. COMPASSES.** GEORG SCHONNER, Nuremberg, Germany. Filed Nov. 7, 1903. Serial No. 180,257. (No model.)



*Claim.*—1. In a pair of compasses the combination with one of the legs thereof, of a pin slidingly carried thereby, and independent screw-operated means carried by said leg for sliding said pin substantially as described.

2. The combination with one of the legs of a pair of compasses, of a pin slidingly carried thereby, a threaded spindle mounted to slide lengthwise of said leg and having an operative connection with the pin, and a nut on said spindle with means for preventing movement of the same longitudinally of the leg substantially as described.

3. The combination with one of the legs of a pair of compasses of a pin mounted to slide in a guide in said leg, a threaded spindle slidingly supported at the side of the leg, a pin projecting from said spindle and engaging the pin, a nut on said thread and stops on each side of said nut for preventing movement of the same longitudinally of the leg substantially as described.



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**755,897. ELEVATOR-GATE.** CHARLES C. SCHREIBER, Cincinnati, Ohio, assignor to The L. Schreiber & Sons Company, Cincinnati, Ohio, a Corporation. Filed Jan. 6, 1904. Serial No. 187,863. (No model.)



*Claim.*—1. In an elevator-door a pair of tracks, two door members slidably mounted on said track respectively, two wheels, an endless carrier connecting them fixed to one of said door members, two wheels being of different diameter than the first-named wheels, an endless carrier connecting them, fixed to the other door members and journal-supports for said wheels, means connecting the first-named pair of wheels and means connecting the second-named pair of wheels, substantially as described.

2. In an elevator-door a pair of tracks, two door members sliding thereon respectively, two shafts fixed above the casing upon opposite sides of the doorway, upon each shaft a pair of wheels which are of different diameter fixed to rotate in unison, the said wheels being situated so that two of them turn in the plane of one door movement and two of them turn in the plane of the other door movement, and endless carriers connecting the wheels in the same plane and also connected to said door members respectively, substantially as described.

3. A pair of endless-belt carriers of different sizes secured together and mounted upon a common shaft, with a second pair at the opposite side of the elevator-shaft, two door members and connections from said door members one to the larger and one to the smaller carrier, substantially as described.

4. In combination with two door members sliding in parallel planes, a pair of wheels of different diameter fixed to rotate in unison in the respective planes of travel of said two door members, a duplicate set of wheels, and two endless carriers connecting the wheels in the same plane, one door member being fixed to one carrier and the second door to the other carrier, substantially as described.

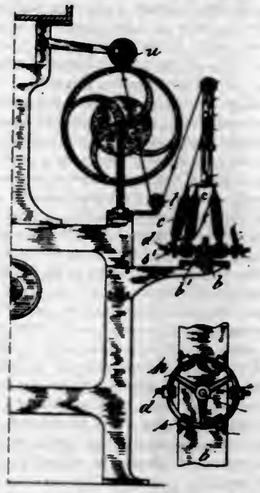
5. In combination with two differentially-traveling door members sliding in parallel planes, parallel tracks in the frame, rollers riding on said tracks and supporting said door members respectively, two pairs of wheels differing in diameter journaled on each side of the frame, each pair being fixed to rotate in unison, one member of each pair turning in the planes of said door members, endless carriers connecting the wheels in the same plane, and connections between the doors and the endless carriers, substantially as described.

6. In a doorway, parallel tracks, rollers thereon, two door members supported by said rollers and slidable in parallel planes, a pair of wheels of different diameter fixed to rotate in unison, said wheels being journaled on the door-frame with its members in the respective planes of the parallel tracks, a duplicate pair of wheels journaled on the other side of the door-frame, an endless carrier connecting the two wheels of the same plane fixed to one of said door members, and a second endless carrier connecting the two wheels fixed to the second door member, whereby when said doors are slid in either direction they travel at differential speeds, substantially as described.

7. A door-operating device comprising parallel tracks, door members sliding thereon respectively, wheels of different diameter fixed to rotate in unison in the planes of the door members respectively, said wheels being supported on the casing, and transmitting devices between each wheel and its respective door member, whereby one of said doors is caused to be moved faster than the other, substantially as described.

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**755,898. BOBBIN-WINDER.** CARL SCHWARTZ, München-Gladbach, Germany. Filed Oct. 6, 1903. Serial No. 175,823. (No model.)



*Claim.*—1. In a bobbin-winder, the combination of a wheel with cop-spindles, and means for adjustably securing the spindles to the wheel, substantially as specified.

2. In a bobbin-winder, the combination of a wheel with cop-spindles having forked feet adapted to straddle the rim of the wheel, and clamp-screws for adjustably securing the feet to the rim, substantially as specified.

3. In a bobbin-winder, the combination of a wheel with cop-spindles, means for adjustably securing said spindles to the wheel, a standard, a vertically-adjustable arm connected thereto, and a guide-eye and roller secured to the arm above the wheel, substantially as specified.

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**755,899. GAS-ENGINE COOLER.** CHARLES E. SHAMBAUGH, Lafayette, Ind. Filed June 30, 1903. Serial No. 163,723. (No model.)

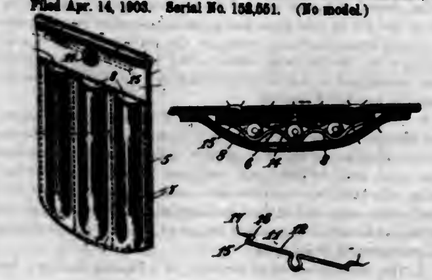


*Claim.*—1. The combination with an engine-cylinder, of radially-disposed plates grooved lengthwise thereof on opposite sides, ribs between the grooves having series of transverse projections, substantially as described.

2. The combination with an engine-cylinder, of radially-disposed plates seated in longitudinally-arranged grooves in the cylinder, the said plates being grooved lengthwise thereof on opposite sides, the ribs between the grooves having series of transverse projections formed by struck-up portions, substantially as described.

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**755,400. PENCIL-POCKET.** HARRY R. SHARP, Hartford, Conn. Filed Apr. 14, 1903. Serial No. 152,551. (No model.)



*Claim.*—1. A pencil-pocket comprising a back and a front portion united to form a pencil-receptacle, a two-ply reinforced portion on the back; a fastener consisting of a wire held between the plies of the reinforced portion on a line transverse to the contemplated line of the pencils when in the receptacle and having its ends bent and protruding through the back and bent outwardly toward the sides of the pocket and having sharp extremities.

2. A pencil-pocket comprising a back and a front portion united to form a pencil-receptacle; a spring fastening member held by and passing through the back, extending toward the sides and provided with pointed ends, said member occupying a position transverse to the contemplated line of the pencil when in the receptacle.

3. The combination with a pencil-receptacle, of a wire having a short bend or bight in its central portion to reduce the springiness of the wire and stiffen the same; bent ends protruding through the material of the receptacle and carrying fastening-points; and means securing the wire at the bend or bight to the receptacle.

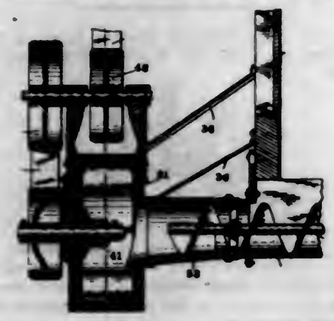
4. The combination with a pencil-receptacle, of an extension therefrom; a wire having its major portion upon one side of said extension and having bends to permit the ends of the wire to protrude through such extension and such protruding ends being bent outwardly toward the sides of the receptacle and adapted to engage the fabric of a garment to hold the receptacle in place upon a wearer.

5. The combination with a pencil-pocket, of a fastening device carried thereby and comprising a wire transversely disposed thereon and stiffened by a comparatively short midward bend; and points carried by the wire and adapted to engage the fabric of a garment of the wearer.

6. The combination of a pencil-pocket, a spring fastening member secured thereto and comprising a wire transversely disposed relatively to the pocket and having a midward comparatively short bight, points at its ends to enter the fabric of a garment of the wearer and having integral abutments adjacent to such points to limit their entry into such fabric.

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**755,401. CENTRIFUGAL ELEVATOR.** JOSEPH K. SHARPE, JR., Indianapolis, Ind., assignor to the Pneumatic Elevator and Weigher Company, Indianapolis, Ind., a Corporation of Indiana. Filed Jan. 21, 1903. Renewed Aug. 31, 1903. Serial No. 171,454. (No model.)



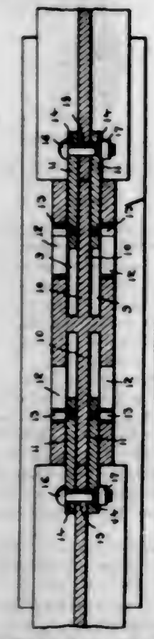
*Claim.*—1. The combination, with a threshing-machine, of a housing secured thereto opposite the grain-delivery spout and having a central opening in the side nearest the threshing-machine, a grain-throwing wheel mounted in said housing also having a central opening in its side nearest the threshing-machine adapted to receive the grain as it comes from said grain-delivery spout in through the housing-opening and to act as a centrifugal grain-impelling device, a duct leading from the neck of said housing in an inclined direction to the desired point of discharge, a separating-head on the end of said pipe, and a discharge-outlet on the under side of said separating-head, whereby the grain is thrown in a direct line from the throwing-wheel to the point of separation and thence discharged in one direction while the air and dust are discharged in another direction.

2. The combination, in an elevator, of a housing, a throwing-wheel therein, a duct leading directly from the discharge-opening of the housing to the required point of delivery and provided with a vent on its outer or under side, said duct being composed of two sections adjustable one upon the other, and a separating-head connected to the outer end of said duct and adapted to discharge the grain in one direction and permit the air to escape in another direction, substantially as set forth.

3. The combination in an elevator, of a housing having a material-receiving opening on one side, a throwing-wheel having a corresponding opening registering therewith, a shaft to said throwing-wheel carried by a bearing on said housing on the other side, a counter-shaft arranged upon said housing, pulleys on said shafts, a belt running from a pulley on the counter-shaft, to a pulley on the throwing-wheel shaft and another belt running from another pulley on the counter-shaft to a pulley on a shaft on the separator, substantially as shown and described.

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**755,402. RAILWAY-RAIL JOINT.** LAMER A. SHELDON, Lincoln, Nebr., assignor of one-half to F. H. Finke, Lincoln, Nebr. Filed Sept. 2, 1903. Serial No. 171,679. (No model.)



*Claim.*—1. In a rail-joint the combination with the rails, of a connecting-block arranged between the ends of the rails, and a movable locking member carried by the block and adapted to be projected from said block to engage the rail, and means for fastening the locking member to the rail.

2. In a rail-joint the combination with the rails, of a connecting-block arranged between the ends of the rails, oppositely-arranged passages within said block, and locking members movably arranged within said passages and adapted to be projected from said block to engage the web of the rail to form the joint.

3. In a rail-joint, the combination with the rails, of a connecting-block arranged between the rails, locking members slidably arranged upon the block and adapted to be projected to engage the webs of the rails to complete the joint.

4. In a rail-joint, the combination with the rails, of a connecting-block arranged between the rails, locking members slidably arranged upon the block and adapted to be projected to engage the webs of the rails, and means to fasten the locking members to the rails.

5. In a rail-joint, the combination with the rails, of a connecting-block arranged between the rails, pairs of passages formed in each end of the connecting-block, and slidable locking members arranged in said passages and adapted to engage the webs of the rails upon opposite sides thereof.

6. In a rail-joint, the combination with the rails, of a connecting-block formed at its ends with channeled members in which the rails are seated, said block being also formed with oppositely-arranged passages, locking members slidably arranged within said passages and adapted to engage the webs of the rails, slots in the connecting-block, and pins mounted on the locking members and projecting into said slots.

7. In a rail-joint, the combination with the rails, of a connecting-block arranged between the rails, locking members slidably arranged upon the block and adapted to engage the webs of the rails, means to limit the movement of said locking members and means to connect them to the rails.



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**755,403. DRUM-HOLDER.** WILLIAM H. SEPP, Frankford, Pa. Filed July 25, 1903. Renewed Aug. 31, 1903. Serial No. 170,805. (No model.)



*Claim.*—1. In combination in a drum-holder, a folding tripod, a rod adjustable vertically within said tripod, a shank pivoted horizontally to the upper end of said rod, a thumb-nut for holding said shank at any position, a drum-rest consisting of two crossed bars pivoted together at the center, a socket formed with the lower bar underneath the pivot, said socket adapted to receive the shank connected to the vertical rod, adjustable clips arranged upon the ends of the crossed bars for the purpose of clamping and holding the drum in position, as and for the purpose specified.

2. In combination in a device of the character described, a folding tripod having a tubular central portion, a rod adapted to slide within this tubular portion and adjustable vertically therein, a shank horizontally pivoted to the upper end of said rod, means for tightening this pivotal point so as to hold the shank in any position placed, a drum-rest consisting of two crossed bars pivoted together at their center, a thumb-nut for holding the bars in any position placed relative to one another, a socket carried by the drum-rest adapted to receive the shank upon the rod, adjustable clips secured upon the ends of the bars for the purpose of clamping and holding the drum in place, as specified.

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**755,404. TYPE-ARM BEARING FOR TYPE-WRITING MACHINES.** JOHN A. SMITH, Cleveland, Ohio, assignor to Elliott-Fisher Company, New York, N. Y., a Corporation of Delaware. Filed Oct. 24, 1903. Serial No. 178,600. (No model.)



*Claim.*—1. The combination with a bearing-bracket, comprising a base, a substantially circular narrow plate upstanding therefrom, an arcuate seat extending beyond the plate at the lower side thereof and an annular bearing member concentric with the plate and extending laterally therefrom above the seat; of a second bearing member in the form of a disk opposed to the outer side or end of the first-named bearing member and adjustable relatively thereto, an external ball-groove formed conjointly in the two members, a type-arm having a substantially circular hub opposed to the upstanding plate of the bracket, said hub being formed with an eye for the reception of the bearing members and with an internal ball-groove, and balls located in the ball-race defined by the several grooves.

2. The combination with a bearing-bracket comprising a base, a narrow plate upstanding therefrom at one side of the edge thereof and an annular bearing member extending laterally from the plate; of a second bearing member in the form of a disk opposed to the first-named bearing member, an internally and externally threaded expansible sleeve extending from the disk and screwed into the bearing-bracket, a locking-bolt screwed into the sleeve and having a wedge-shaped end accessible from the side of the bracket opposite the disk and designed to expand the sleeve to lock the bearing members in their relatively adjusted positions, an external ball-groove formed conjointly in the two members, and a type-arm formed with an eye for the reception of the bearing members and with an internal ball-groove, and balls located in the ball-race defined by the several grooves.

3. The combination with a bearing-bracket having a bearing member and a threaded bore, of a disk having an expansible sleeve screwed into the bore, a type-arm formed with an eye receiving both the bearing member and the disk and having one side face substantially flush with the outer face of the latter, and a locking-bolt screwed into the sleeve and having a wedge-shaped end accessible from the side of the bracket opposite the type-arm.

4. The combination with a bearing-bracket having a peripherally-grooved bearing member and a threaded bore, of a peripherally-grooved disk having an expansible sleeve screwed into the bore and also having a tool-receiving recess in its outer face, a type-arm formed with an eye and with an internal groove and having one side face substantially flush with the outer face of the disk, a locking-bolt screwed into the sleeve and having a wedge-shaped end accessible from the side of the bracket opposite the type-arm, and balls within the ball-race defined by the several grooves.

5. The combination with a bearing-bracket having an annular laterally-extended bearing member, of a second bearing member in the form of a disk opposed thereto, an internally and externally threaded expansible sleeve extended into the bearing-bracket from said disk, and a locking-bolt screwed into the sleeve and having a wedge-shaped end accessible from the side of the bracket opposite the bearing members, a type-arm having an eye for the reception of said bearing members, a ball-race formed conjointly in the bearing members and type-arm, and balls in the ball-race.

6. The combination with a bracket comprising a base, a plate at one edge thereof, and an annular bearing-bracket formed with a peripheral groove and with a threaded bore extending entirely through the bracket, of a second bearing member opposed to the first-named member and having an external groove and an internally and externally threaded sleeve screwed into the bore of the bracket, a type-arm opposed to one side of the bracket and having an eye receiving the bearing members and also having an internal groove, one side of the type-arm being substantially flush with the outer end of the second bearing member, a locking-bolt screwed into the expansible sleeve and having a trunco-conical head accessible from the outer side of the bracket, and balls located in the race defined by the several grooves.

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**755,405. HEATING-CUP.** ERCOLE SORRENTINO, Bradford, Pa. Filed Nov. 16, 1903. Serial No. 181,402. (No model.)

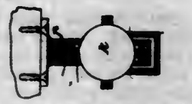


*Claim.*—1. A heating-cup comprising a body portion having a bottom and also a circumferentially-arranged fluid-containing channel at its lower end, a support for the cup connected to the bottom, and a handle extending outward below the line of the flame from said fluid-channel.

2. A heating-cup comprising a body portion, having a bottom and a circumferentially-arranged fluid-receiving channel around its lower end, and a support connected to the bottom and of a diameter at the point of connection not exceeding the diameter of the bottom, for the purpose described.

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**755,406. BEARING FOR BALLS ROLLING ON TWO RAILS.** FRANZ SPENGLER, Berlin, Germany. Filed June 26, 1902. Serial No. 113,246. (No model.)



*Claim.*—1. In combination in a ball-bearing, a body portion adapted to be connected with the load to be supported, said body portion having a circular opening therein, a ball placed centrally in

said opening, small balls between said ball and the top and bottom of said opening, and means arranged laterally at the bottom of said body portion and on each side thereof upon which said ball travels.

2. In combination in a ball-bearing, a ball, a track having two portions, supporting the ball on each side of its vertical diameter, a body portion encircling the ball and having its lower portion extending down between the supporting portions of the track, and small balls between said body portion and the ball.

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**755,407. SOCKET MEMBER.** PAUL H. STEIN, Bristol, Conn. Filed Nov. 28, 1903. Serial No. 183,967. (No model.)

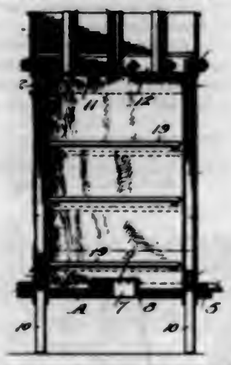


*Claim.*—1. In a socket member, the combination, with a flat base member radially slotted to form spring-segments thereof and located upon one side of a fabric, of a reinforcing concavo-convex bead surrounding said flat base, a cap-piece located upon the opposite side of said fabric, and having an annular rim which lies in the concave portion of said bead and means for securing said cap-piece to said base member.

2. In a socket member, the combination, with a flat base member radially slotted in such manner as to form spring-segments of said base and located upon one side of a fabric, of a flange carried by each of said segments and a cap-piece located upon the opposite side of the fabric and adapted to be engaged by said flanges.

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**755,408. COOLER.** JOHN J. STEPHENSON, Winters, Cal. Filed Nov. 7, 1903. Serial No. 180,222. (No model.)



*Claim.*—1. A cooler of the character described comprising a frame, a drip-pan supported by the frame, and having a ventilating-opening, a water-supply tank carried by the frame, and consisting of a bottom section having ventilating-tubes, and an outer casing arranged loosely about the bottom section, a textile absorbent material about the frame with its upper end disposed between the flange of the bottom section and the casing and its lower end reaching into the drip-pan, clamping-plates on the casing, and clamping-screws projected through the plates, the casing, the textile material and the flange.

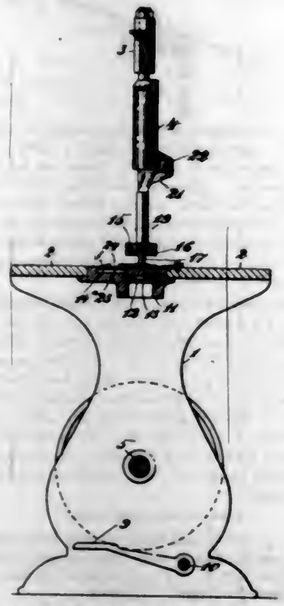
2. A cooler of the character described comprising a frame, a drip-pan supported by the frame and having a ventilating-opening, a water-supply tank consisting of a bottom section having ventilating-tubes, and a vertical flange about it, and an outer casing arranged loosely about the bottom section, inner and outer textile absorbent material about the frame, disposed with a space between them, and having their upper ends between the flange of the bottom section and the casing and their lower ends extending into the drip-pan, clamping-plates on the casing, and clamping-screws projected through the plates, the casing, the textile material and the flange.

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**755,409. CREASING-PRESS.** EDWIN B. STIMPSON, New York, N. Y. Filed July 15, 1903. Serial No. 165,702. (No model.)

*Claim.*—1. A press for the purpose specified, having a reciprocating upper die, a lower die, and a support for the lower die consisting of two plates having springs between them and means for limiting their movements apart.

2. The combination with the press-frame having a channel-piece, of the lower die, a cushioned support for same in the channel in said piece, the upper die, the die-plate carrying the upper die, the guide-pins on said die-plate, said pins extending down through the support for the lower die, the stems 19 on said die-plate, said stems having heads 20, the blocks 21, with recesses to receive said heads, the cross-head of the press, and the blocks 22, mounted in grooves in the cross-head and having each a groove to receive a block 21, substantially as set forth.

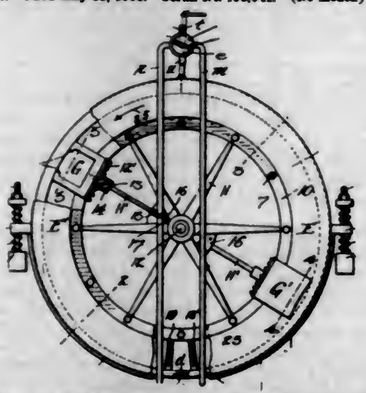


3. In a press for the purpose specified, the channel-piece 11, having in it a recess 23, the lower die having a projecting shelf to enter said recess 23, said shelf being beveled at its front edge, and a cushioned support for the lower die.

4. In a press for the purpose specified, the lower die 14, having a projection-shelf 14ª provided with a groove 24, and a guide G set in said groove, said guide comprising a base-plate 25, provided with a slit 27, and a screw-hole in said slit, a guide-plate 26 on said base-plate, and a screw 28 set in hole in the base-plate and adapted to expand it laterally and cause it to fit tightly in said recess 23, substantially as set forth.

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**755,410. STEAM-ENGINE.** WILLIAM H. STOHLMANN, Gilmore, Nebr. Filed May 25, 1903. Serial No. 158,641. (No model.)



*Claim.*—1. In combination in a rotary engine a ring, a steam-chest embracing the same and adapted to rotate thereon, rotary valves carried by the steam-chest and adapted to open or close the passage through the said steam-chest, means for opening or closing the said valves and abutment means carried by the ring, the said valves turning on axes which extend radially in respect to the center of the engine, substantially as described.

2. In combination in a rotary engine an expansion-ring having an eccentric inner surface, a steam-chest arranged to rotate about the said ring and carrying valves bearing on the inner eccentric face of the ring, the said valves being arranged to rotate and also to move radially of the engine, means for turning the said valves, said means being rendered effective by the radial reciprocation of the valves and abutment means arranged on the ring, substantially as described.

3. In combination in a rotary engine, an expansion-ring, a steam-chest associated with said ring and upon which said steam-chest rotates, valves carried by the steam-chest and arranged to be turned to close or open the passage therein and abutment means carried by the expansion-ring, said abutment means being adapted to allow the passage of the valves, the said valves turning on axes which extend radially in respect to the center of the engine, substantially as described.

4. In combination in a rotary engine the expansion-ring, a valve-chest of annular form engaging the said ring and rotating thereon, valves carried by the said steam-chest and arranged to close or open the passage therein and abutment means carried by the expansion-ring, the said valves turning on axes which extend radially in respect to the center of the engine, substantially as described.

5. In combination a ring, a steam-chest embracing the ring to rotate therein, rotary valves carried by the steam-chest and having openings therein to aline with the passage in the steam-chest, abutments on the ring to which the openings in the valves are fitted, said valves having radial movement and screw-threaded stems passing through nuts carried by the steam-chest with springs for pressing the valve-stems outwardly, substantially as described.

6. In combination in a rotary engine a ring, a valve-chest rotating thereon and having rotary valves, abutment means carried by the ring and means for rotating the valves, the said ring having channels *y* in its lower portion for the escape of steam past the valves, substantially as described.

7. In combination in a rotary engine, a ring yieldingly supported, a steam-chest adapted to rotate on the said ring, abutment means carried by the ring, valves carried by the steam-chest, a steam-supply valve, a connection between the same and the steam-chest and means for controlling the position of the said valve from the position of the ring.

8. In combination in a rotary engine a ring yieldingly supported, a rotary steam-chest, valves carried thereby, abutment means carried by the ring, a steam-supply valve and a lever between the said ring and the supply-valve for operating the same automatically according to the position of the ring, substantially as described.

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**755,411. GARMENT-HOOK.** GERTRUDE STRICKER, Baker, Kans. Filed Dec. 19, 1903. Serial No. 185,353. (No model.)



*Claim.*—1. In a device of the character described, the combination with a braid having eyes permanently connected thereto; of a second braid, a series of hooks permanently secured thereto, each hook being formed in a single length of wire and bent to form a shank, a bill, oppositely-bent arms and extensions, said bill, arms and extensions being arranged at one side of the braid, and inwardly-bent ends to the extensions integral with the arms and arranged with the shank, at the other side of the braid, said ends having braid-engaging lugs integral therewith.

2. The combination with a braid having eyes permanently secured thereto; of a second braid, hooks permanently secured thereto, each of said hooks being formed in a single piece of wire and comprising a shank, a bill at one end thereof, oppositely-bent arms at the other end of the shank, extensions to the arms and inwardly-extending ends to the extensions adapted to clamp the braid upon the extensions and braid-engaging lugs integral with said ends.

3. The combination with a braid having a looped wire projecting therefrom and forming an eye, said eye comprising parallel depressed arms, clamping extensions and lugs upon the extensions; of a second braid, a hook permanently secured to the said braid and formed in a single piece of wire, said hook comprising a shank, a bill at one end thereof, oppositely-extending arms at the other end of the shank, extentions to the arms and inwardly-extending ends to the extensions adapted to clamp upon the braid, and braid-engaging lugs integral with said ends.

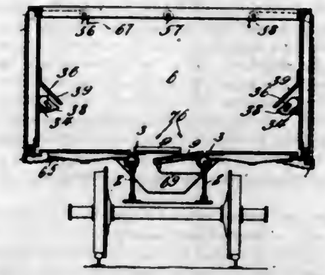


4. The combination with an eye having parallel arms provided with similar depressed portions, clamping extensions integral with the arms and lugs upon the extensions; of a hook formed in a single piece of wire and comprising a shank, a bill at one end thereof, oppositely-extending arms integral with the shank, extensions thereto, inwardly-projecting ends to the extensions and lugs upon said ends.

5. In a device of the character described, a hook formed in a single length of wire and comprising a shank, a bill at one end thereof, oppositely-bent arms integral with the other end of the shank, extensions projecting from the arms, inwardly-projecting ends to said extensions and lugs integral with the ends.

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**755,412. DUMP-CAR.** VICTOR M. SUHNA, New York, N. Y. Filed Apr. 11, 1903. Serial No. 152,225. (No model.)



*Claim.*—1. In a car, the combination with a sill having a tube integral therewith, and a car-body mounted upon said sill; of a bottom section hinged upon said tube, an operating-strip extending through and slidably mounted within the tube, and a flexible connection between said strip and the bottom section, whereby said section may be swung upon its hinge.

2. In a car, the combination with a sill having a tube integral therewith and extending longitudinally thereof; of a car-body mounted upon the sill, a bottom section thereto hinged to the tube, an operating-strip extending through and slidable within the tube, and a connecting-strip secured to said operating-strip and extending over said body and secured to the bottom section.

3. In a car, the combination with sills having tubes thereon and extending longitudinally thereof; of a car-body mounted upon the sills, bottom sections to the car-body hinged upon the tubes of the sills, operating-strips extending through and slidably mounted within the tubes, pulleys upon the body, and flexible strips upon said pulleys and connected at opposite ends to the operating-strips and the bottom sections, respectively.

4. In a car, the combination with sills having tubes at the upper edges thereof; of outwardly and inwardly extending bottom sections hinged upon said tubes, operating-strips extending through and slidably mounted within the tubes, and flexible means whereby said operating-strips may be connected to the bottom sections for raising the same.

5. In a car, the combination with a sill, a car-body mounted thereon, and a bottom section hinged to said sill; of a dog pivoted within the body and adapted to support said section in inclined position, a roller below said dog for holding the same in position under the section, and means for operating said roller from or toward the dog.

6. The combination with a sill, a car-body thereon, and a bottom section hinged upon said sill; of a guard-strip within said body, a dog pivoted beneath the strip and adapted to support the section in contact with the strip, a roller for holding the dog in position under the section, and means for operating said roller.

7. The combination with a sill, a car-body mounted thereon, and a bottom section hinged to the sill; of a dog pivoted within the body and adapted to support said section in inclined position, and means for holding said dog in position beneath the section.

8. The combination with a car-body having a bottom section hinged thereto; of dogs pivoted to the side of said body and adapted to support said section in inclined position, means for holding the dogs in position beneath the inclined section, and a rod for operating said means simultaneously from or toward the dogs.

9. The combination with a car-body having a hinged bottom section, and means for holding said section in inclined position; of a supporting-strip for holding the sections in horizontal position, ar-

arm thereto, a roller upon the arm, and means for operating the roller whereby said arm and strip may be released.

10. The combination with a car-body having a hinged bottom section, and means for supporting said section in inclined position; of a supporting-strip within the body for holding the section in horizontal position, an arm to said strip, a roller normally mounted upon the arm and adapted to hold the strip in position beneath the section.

11. The combination with a car-body having a bottom section hinged therein; of a supporting-strip for holding said section in a horizontal position, an arm to the strip, a roller mounted upon the arm and adapted to lock the strip in supporting position, a dog pivoted within the body and adapted to support the section in inclined position, a roller thereunder for holding said dog beneath the section, a lever fulcrumed upon the lock, and means whereby said rollers may be operated from said lever.

12. The combination with a car-body having a bottom section hinged therein; of a supporting-strip hinged to the side of the car and adapted to support said section, arms extending from the strip, a roller upon each arm whereby the strip is held in supporting position, an operating-lever, and a rod connecting said lever to the rollers whereby the arms may be released simultaneously.

13. The combination with a car-body having a bottom section hinged therein; of a longitudinally-movable dog pivoted within said body and adapted to support said section in inclined position, a rod within the body, rollers journaled thereon and adapted to hold the dogs in supporting position, and means for operating said rollers in unison.

14. The combination with a car-body having a bottom section hinged therein; of longitudinally-movable dogs pivoted within said body and adapted to support said section in inclined position, a rod extending under the dogs, rollers thereon for holding said dogs in supporting position, a supporting-strip hinged to the body and adapted to hold said section in horizontal position, arms thereto, rollers normally mounted upon the arms and adapted to hold said strip in position beneath the section, a rod connecting the rollers, and a lever connected to the rods whereby the supporting dogs and strip may be operated simultaneously for releasing the section.

15. The combination with a car-body having a hinged bottom section and a guard-strip within said body; of a series of longitudinally-movable dogs pivoted beneath said guard-strip and adapted to support the section in inclined position, means for holding the dogs in supporting position, a rod connecting said means whereby the dogs may be released simultaneously, a supporting-strip hinged to the body and adapted to support said section, arms extending therefrom, means upon the arms for holding the strip in supporting position, a rod connecting said means whereby the arms may be released simultaneously, an operating-lever fulcrumed upon the body and connected to said rods, and springs for returning the lever and rods to normal positions.

16. The combination with a car-body having sills thereunder and cylindrical portions thereto; of side and central bottom sections hinged upon said cylindrical portions, means for holding the outer edges of the side sections in inclined or horisontal position, and means for securing the central sections together.

17. The combination with a car-body having central bottom sections hinged therein; of a sliding bolt upon one of said sections adapted to engage the end of the car whereby the sections are held in inclined positions, and means for locking the sections together.

18. The combination with a car-body having central bottom sections hinged therein; of an angle-iron upon one of said sections and having an aperture therein, a lock-casing upon the opposite section, a bolt slidably mounted within said casing and adapted to project into an aperture in the angle-iron, whereby said sections are secured together.

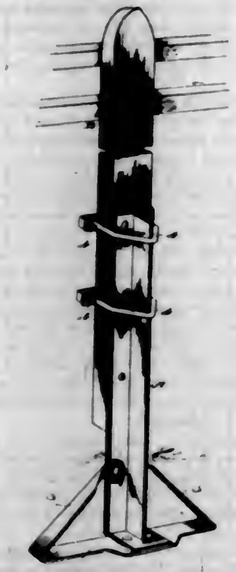
19. In a car of the character described, the combination with hinged bottom sections; of an angle-iron secured to one of said sections and having an aperture therein, a casing upon the opposite section, a tubular bolt slidably mounted within the casing and normally projected therefrom, said bolt being adapted to project into the aperture in the angle-iron, a laterally-movable catch within the bolt, a plunger, a piston within the bolt connected to the plunger, and a pivoted strip engaging said piston and catch whereby the catch and bolt may be retracted simultaneously.

20. The combination with a car-body having bottom sections hinged thereto, and a revoluble rod arranged adjacent to said sections; of locking means upon the adjoining edges of the sections, and a flexible connection between the rod and locking means, whereby the sections may be unlocked from one end of the car.

21. The combination with a car-body having bottom sections hinged therein; of a casing upon one of said sections, a spring-pressed tubular bolt normally extending from said casing and adapted to engage the opposite section, a laterally-movable spring-pressed catch within the bolt, a piston within the bolt, a centrally-pivoted strip connecting said catch and piston, a plunger within the bolt and casing and connected to the piston, a rod journaled beneath the car and extending longitudinally thereof, and a flexible connection between said rod and plunger, whereby when said rod is revolved the catch and bolt will be simultaneously retracted by the plunger.

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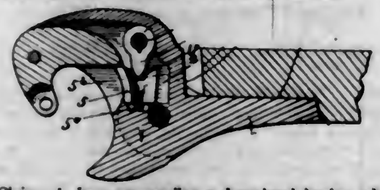
**755,418. POLE.** STEPHEN J. TERRY, Lawton, Pa. Filed Apr. 28, 1903. Serial No. 154,670. (No model.)



*Claim.*—A pole for telegraph and similar wires comprising a T-rolled lower portion, an upper section, clips embracing the sections, a plate through which the ends of the clips extend and means for securing the clips to the plate.

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**755,414. CAR-COUPLING.** GEORGE R. TOMLINSON, Pekin, Ill. Filed Aug. 26, 1903. Serial No. 170,571. (No model.)




*Claim.*—1. In a car-coupling, a draw-head having a hook or "knuckle" locking dog or latch provided with a vertical offset or ledge, about midway a lateral surface thereof, and an actuating-cam therefor in effecting the uncoupling operation, said draw-head having an elongated recess receiving that portion of said dog having said lateral ledge or offset, said ledge or offset engaging a shoulder formed by the forward edge of said recess.

2. In a car-coupling, a draw-head equipped with a hook or "knuckle" locking dog or latch provided with a notch or recess and its forward end or edge adapted to occupy a normally projected position in the hook or "knuckle" receiving chamber of said draw-head, and a cam for actuating said dog in effecting the uncoupling operation, said cam having a tooth engaging said notch.

3. In a car-coupling, a draw-head equipped with a hook or "knuckle" locking dog or latch occupying a normally projected position in the hook or "knuckle" receiving chamber of said draw-head, a cam adapted to engage said dog or latch, and means for actuating said cam for automatically returning said dog or latch to its initial position after the inner end of the "knuckle" or hook of a meeting draw-head has passed said dog or latch.



4. In a car-coupling, a draw-head equipped with a hook or "knuckle" locking dog or latch occupying a normally projected position in the hook or "knuckle" receiving chamber of said draw-head and having a notch, a cam having a tooth engaging said notch, and means for actuating said cam for automatically returning said dog to its initial position, after the inner end of the "knuckle" or hook of a meeting draw-head has passed said dog or latch.

5. In a car-coupling, a draw-head equipped with a hook or "knuckle" locking dog or latch, a cam adapted to engage said dog or latch, and having its pivot or shaft adapted to turn in said draw-head, and a spring connected to said shaft and draw-head, whose action holds said dog or latch normally projected into the hook or "knuckle" receiving chamber of said draw-head.

6. In a car-coupling, the combination of a draw-head, a hook or "knuckle" locking latch or dog arranged in the chamber of said draw-head, a cam having a tooth or projection engaging said dog or latch, a shaft or pivot inserted into said cam and having a lateral notch, and a pin engaging said notch and inserted into draw-head.

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**755,415. PROCESS OF PURIFYING BRINE.** WILLIAM TRAFTON, New Brighton, England. Filed Nov. 25, 1902. Serial No. 132,784. (No specimens.)

*Claim.*—1. The process for treating alkaline chlorid solutions, which consists in adding to the solution a sulfate of the alkali whose chlorid is to be purified in an amount chemically equivalent to the chlorids of calcium and magnesium present in the solution; then adding the chemical equivalent in line of the deleterious amount of magnesia present whereby calcium sulfate is formed and magnesium hydrate is precipitated, then adding freshly-precipitated barium carbonate to the mass, the chemical equivalent of the amount of alkaline earth sulfate present in the solution, and lastly, treating the resulting sulfate of baryta so as to obtain further freshly-precipitated barium carbonate for further use.

2. The step in the purification of alkaline chlorid solutions, which consists in precipitating the alkaline earth sulfate by freshly-precipitated and still-hydrated carbonate of barium.

3. The step in the process of treating alkaline chlorid solutions, which consists in changing the chlorids of the alkaline earths present into sulfates by means of the sulfate of the alkali whose chlorid solution is to be treated, and then precipitating the sulfates by means of carbonate of barium.

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**755,416. MECHANISM FOR CONVERTING RECIPROCATING INTO ROTARY MOTION, AND VICE VERSA.** CHARLES TUCKFIELD, East Molesey, England. Filed Mar. 12, 1900. Serial No. 8,386. (No model.)




*Claim.*—1. In mechanism of the kind described the combination of a reciprocating rod, a member fixed thereto having an endless spiral groove, a stationary member to engage the groove, a rotatory member, a driving-rod extending through the reciprocating member but held from reciprocating with it, a means for supporting the ends of the driving-rod outside the reciprocating member, substantially as set forth.

2. In mechanism of the kind described, the combination with a reciprocating member having two opposite endless spiral grooves of fixed abutments, one engaging each groove, and situated on opposite sides of the reciprocating member, substantially as set forth

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**755,417. METHOD OF PHOTOGRAPHIC HALF-TONE FOR BOOK-PRINTING AND LITHOGRAPHY.** JAN VILIM, Prague, Austria-Hungary, and FRIEDRICH HAUSER, Naefels, Switzerland; said Hauser assignor to said Vilim. Filed May 14, 1902. Serial No. 107,346. (No specimens.)

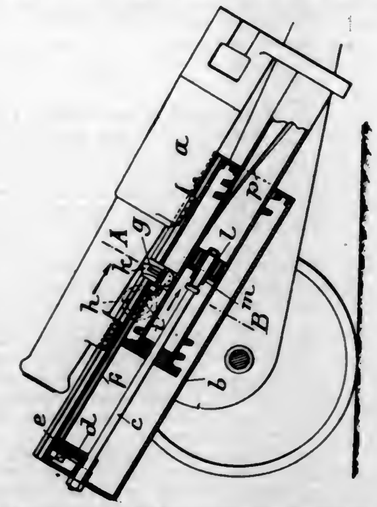
*Claim.*—1. In photolithography, the process of preparing a half-tone plate, consisting in coating the plate with sensitive asphalt dissolved in mutually-repulsive solvents, and evaporating the solvents, substantially as specified.

2. In photolithography, the process of preparing a half-tone plate, consisting in coating the plate with sensitive asphalt dissolved in a mixture containing alcohol and chloroform, and evaporating the solvent.

3. In photolithography, the process of preparing a half-tone plate, consisting in coating the plate with a solution of sensitive asphalt in a mixture of benzol, alcohol, ether and chloroform, and evaporating the solvent in a moist atmosphere.

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**755,418. RECOIL-BRAKE FOR GUNS.** KARL VÖLLER, Dusseldorf, Germany. Filed Jan. 4, 1904. Serial No. 187,727. (No model.)




*Claim.*—1. In brake apparatus for guns recoiling upon the carriage an arrangement for automatically reducing the extent of recoil on the gun being elevated consisting of a brake-cylinder, a piston-rod, means for rotating the latter during the elevation of the gun, a piston arranged on the said piston-rod and composed of a disk valve that can slide longitudinally but cannot turn on the piston-rod and a valve-seat rotatable on the piston-rod and provided with passages for the braking fluid, a feather on the valve seat and a groove arranged in the brake-cylinder and engaged by the said feather, substantially as described and for the purpose set forth.

2. In brake apparatus for guns recoiling upon the carriage an arrangement for automatically reducing the extent of recoil on the gun being elevated consisting of a brake-cylinder, a piston-rod, means for rotating the latter during the elevation of the gun, a piston arranged on the said piston-rod and composed of a disk valve that can slide longitudinally but cannot turn on the piston-rod and a valve-seat rotatable on the piston-rod and provided with passages for the braking fluid, a feather on the valve-seat, a groove arranged in the brake-cylinder and engaged by the said feather and means for regulating the passages of the valve-seat during the forward motion of the gun, substantially as described and for the purpose set forth.

3. In brake apparatus for guns recoiling upon the carriage an arrangement for automatically reducing the extent of recoil on the gun being elevated consisting of a brake-cylinder, a piston-rod, means for rotating the latter during the elevation of the gun, a piston arranged on the said piston-rod and composed of a disk valve that can slide longitudinally but cannot turn on the piston-rod and a valve-seat rotatable on the piston-rod and provided with passages for the braking fluid, a feather on the valve-seat, a groove arranged in the brake-cylinder and engaged by the said feather and a second disk valve that can slide longitudinally but cannot turn on the piston-rod, substantially as described and for the purpose set forth.

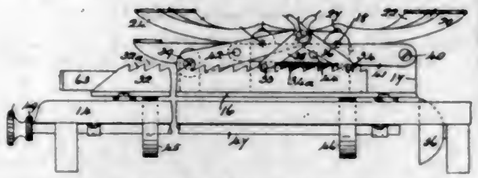
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**755,419. WINDOW-FRAME.** THOMAS F. WARE, Steamboat Springs, Nev. Filed Dec. 28, 1903. Serial No. 186,864. (No model.)




*Claim.*—A window-frame having a recess in one side and provided with a detachable slide-plate having a parting-strip section to partially fill the recess, and a detachable slat having an inner strip-section to complete the filling of the recess, and means to secure the said slat in place.

**755,420. WRITING-MACHINE.** ALFRED WAYBE, Handsworth, England. Filed July 13, 1903. Serial No. 165,366. (No model.)



*Claim.*—1. In a writing-machine, the combination of a transversely-corrugated indentation-bed, a carriage adapted to travel over said bed, a plurality of style-operating finger-levers pivoted upon the carriage and each provided with a recess, a plurality of styles arranged in alinement with the corrugations of said bed and each provided with a head movably fitting in the recess of its respective lever, and suitable means for imparting movement to said carriage.

2. A writing-machine comprising two banks of style-operating levers extending in opposite directions, the levers of each bank arranged parallel to one another, a traveling carriage carrying said levers.

3. In a writing-machine, a carriage, a toothed rack, a pair of shifting levers for the carriage, pawls carried by the levers and engaging in the teeth of the rack, a lever 41 connected to the carriage, a lever 38 connected to said pair of levers, a spacing-lever 43, cross-bars attached to said levers 38, 41 and 43, and a plurality of style-operating levers pivoted upon the carriage.

4. In a writing-machine, a spacing mechanism comprising a rack-bar, a pair of levers pivotally connected together at their upper ends and at their lower ends provided with lugs adapted to engage the teeth of the rack, said levers at their lower ends connected together by an expanding spring, and means for depressing the levers, causing their lower ends to spread apart.

5. In a writing-machine, the combination with a traveling carriage, a plurality of styles and a lever mechanism mounted upon the carriage for operating the styles, a variable stop mechanism, said mechanism consisting of a bar terminating at one end in a stop which extends toward the carriage, said bar further provided with locking-notches and openings and studs extending through said openings, for supporting said bar.

6. In a writing-machine, the combination with a traveling carriage, a plurality of styles and a lever mechanism mounted upon the carriage for operating the styles, a variable stop mechanism, said mechanism consisting of a bar terminating at one end in a stop which extends toward the carriage, said bar further provided with locking-notches and openings and studs extending through said openings, for supporting said bar, a warning-bell, and a double striker therefor.

7. A writing-machine comprising two banks of style-operating levers extending in opposite directions, and a traveling carriage carrying said banks of style-operating levers.

8. A writing-machine comprising two banks of style-operating levers extending in opposite directions, the levers of each bank arranged parallel to and in close proximity to one another and of different length, and a traveling carriage carrying said banks of style-operating levers.

9. A writing-machine comprising two banks of longitudinally-extending style-operating levers, and a space-depressing lever extending in the same direction as the style-operating levers and arranged at one side of and below said levers.

10. A writing-machine comprising two banks of style-operating levers extending in opposite directions, and a space-depressing lever arranged at one side of the said two banks of style-operating levers.

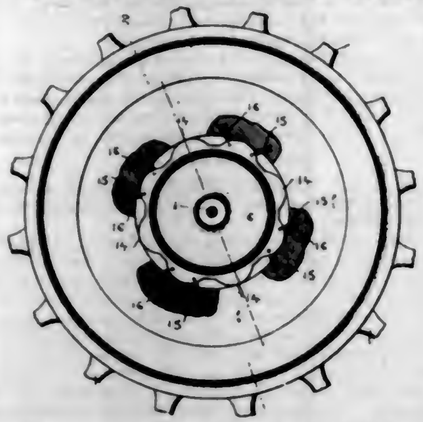
11. A writing-machine comprising two banks of style-operating levers extending in opposite directions, the levers of each bank arranged parallel to and in close proximity to one another, and a space-depressing lever arranged at one side of the said two banks of style-operating levers.

12. A writing-machine comprising a style-operating lever pivotally connected at one end, and a style movably connected at its upper end in the said lever.

13. In a writing-machine for the blind, two banks of style-operating levers extending in opposite directions, a separate fulcrum means extending through one end of the levers of each bank of levers, and a style for each of said levers of each bank of levers, said styles at their upper ends engaging in the said levers.

14. In a writing-machine, a rack-bar, a pair of levers pivotally connected at their upper ends and at their lower ends provided with lugs adapted to engage the teeth of the rack, said levers at their lower ends connected together by an expanding spring, means for depressing the levers causing their lower ends to spread apart, and finger-tips for said levers, said finger-tips adapted to permit of raising simultaneously the levers so as to lift the lugs clear of the teeth of the rack.

**755,421. VEHICLE-WHEEL.** BRENTON B. WEAVER, Glace Bay, Canada. Filed Dec. 12, 1903. Serial No. 184,989. (No model.)



*Claim.*—1. In a device of the character described, the combination with an axle having a box thereon; of a resilient ring surrounding the box and having a recessed portion, a hub having a central aperture within which the ring is located, means extending from the hub and projecting into the recessed portion of the ring for preventing independent movement of the hub and ring, face-plates surrounding the axle and at opposite sides of the hub and ring, rings upon the hub and overlapping the face-plates, and resilient packing upon the hub in alinement with the face-plates.

2. In a device of the character described, the combination with an axle having a box thereon, and a detachable ring upon the box; of a resilient tube surrounding the box, a bead thereon secured to the box, recessed ears integral with the tube, a hub inclosing the tube and having recesses therein, and means for securing the ears to the hub.

3. In a device of the character described, the combination with an axle having a box thereon; of rings detachably connected to the box, a resilient tube surrounding the box, a bead thereon engaged by the rings, recessed ears extending from the tube, a recessed hub inclosing the tube and ears, springs secured at their opposite ends within the recesses in the hub and the ears, respectively, and face-plates surrounding the axle and at opposite sides of the hub.

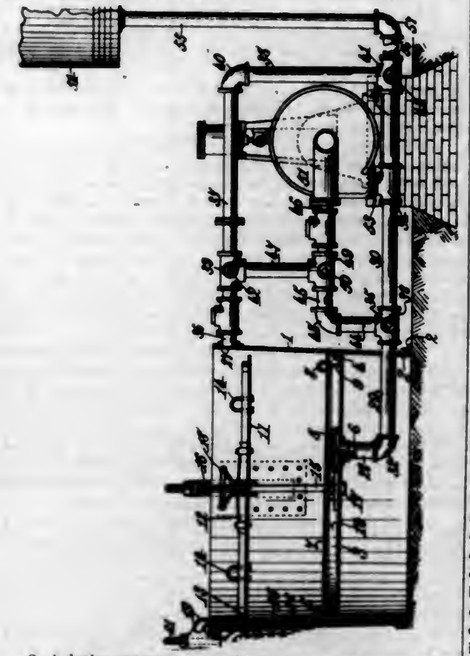
4. In a device of the character described, the combination with an axle having a box thereon, and detachable rings upon the box; of a resilient tube surrounding the box, a bead thereon engaged by the rings, recessed ears extending from the tube, a hub inclosing the tube and ears and having recesses therein, circular flanges upon the faces of the hub, retaining-rings secured to the flanges, face-plates surrounding the axle at opposite sides of the hub and projecting between the hub and retaining-rings, and springs within the recesses in the hub and ears.

5. In a device of the character described, the combination with an axle having a box thereon, and detachable rings upon the box; of a resilient tube surrounding the box, a bead thereon engaged by the rings, recessed ears extending from the tube, a hub inclosing the tube and ears and having recesses therein, circular flanges upon the faces of the hub, retaining-rings secured to the flanges, face-plates surrounding the axle at opposite sides of the hub and projecting between the hub and retaining-rings, resilient packing in alinement with the face-plates, and coiled springs detachably secured within the recesses in the hub and ears, respectively.

**755,422. APPARATUS FOR DYEING.** JAMES A. WILLARD, Chattanooga, Tenn., assignor to Vacuum Dyeing Machine Company, Chattanooga, Tenn., a Corporation of Tennessee. Filed Nov. 4, 1903. Serial No. 179,248. (No model.)



*Claim.*—1. In a dyeing apparatus, an open vat having an imperforate bottom and adapted to contain a body of dye liquor, a removable perforated plate arranged above the bottom thereof, said plate of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, a compression-plate operating within said vat at the bottom thereof and of a diameter substantially equal to the inner diameter of said vat at the lower end thereof, means for retaining the compression-plate in its adjusted position, a pump, means communicating with said pump for suitably circulating dye liquor through the said vat, and means carried by the said plates and adapted to be engaged by a suitable hoisting device for removing said plates from said vat.



2. A dyeing apparatus comprising an open vat having an imperforate bottom and adapted to contain a body of dye liquor, a removable perforated plate supported upon the bottom of said vat and of a diameter substantially equal to the inner diameter of said vat at the bottom thereof, said plate provided with a plurality of yokes, a removable and an adjustable compression-plate supported within said vat and provided with a plurality of yokes, said removable and adjustable compression-plate of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, said yokes of each of the said plates adapted to be engaged by an elevating device for removing said plates from said vat, adjustable means carried by said vat and adapted to engage said compression-plate for retaining it in its adjusted position, and means communicating with said vat for circulating a dye liquor therethrough.

3. A dyeing apparatus comprising a vat provided with an imperforate bottom suitably removed from its lower end and adapted to contain a body of dye liquor, a removable perforated plate arranged in said vat and provided with a supporting member adapted to rest upon said bottom, said plate further provided with means adapted to be engaged by a hoisting device to permit of the removal of the plate from the vat and said plate of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, a removable and adjustable compression-plate arranged in and supported by said vat and carrying a guiding and retaining member and further provided with means adapted to be engaged by a hoisting device to permit of removing said adjustable plate from said vat, said adjustable plate of a diameter substantially equal to that of the inner diameter of said vat, means arranged in the said vat at the bottom thereof for adjusting the said compression-plate, means carried by the vat and adapted to engage said guide and member for retaining the compression-plate in its adjusted position, and means for circulating a dye liquor through the vat.

4. An apparatus of the character described comprising an open vat having an imperforate bottom and adapted to contain a body of dye liquor, a removable perforated plate arranged therein, supported upon the bottom of said vat, provided with means for attaching it to a hoisting device and of a diameter substantially equal to that of the inner diameter of the vat at the bottom thereof, a removable and adjustable perforated compression-plate arranged in said vat and provided with means for attaching it to a hoisting device and of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, adjustable means carried by said vat and adapted to engage said compression-plate for retaining it in its adjusted position, a deflector interposed between the bottom of said vat and said removable perforated plate, and means communicating with said vat for circulating a dye liquor therethrough.

5. A dyeing apparatus comprising an open vat having an imperforate bottom and adapted to contain a body of dye liquor, a removable perforated plate supported by the bottom of said vat and provided with means adapted to be connected to a hoisting device so as to permit of the removal of said plate, said plate of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, a removable and adjustable compression-plate arranged in said vat and provided with means for attaching it to a hoisting device to permit of its removal from said vat, said compression-plate of a diameter substantially equal to that of the inner diameter to said vat at the bottom thereof, means carried by said vat and adapted to engage said compression-plate for retaining it in its adjusted position, a primary dye-liquor supply and exhaust pipe communicating with said vat, a secondary dye-liquor supply and exhaust pipe communicating with said vat, means for establishing communication between the said pipes, a dye-liquor feed-pipe communicating with said pipes, a pump communicating with said dye-liquor feed-pipe and said other pipes, and operating means for said pump.

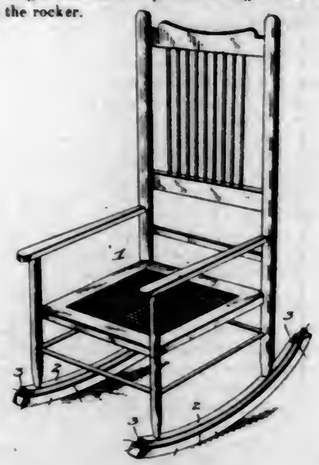
6. An apparatus of the character described comprising an open vat having an imperforate bottom and adapted to contain a body of dye liquor, a removable perforated plate arranged in said vat and provided with a supporting member adapted to rest upon the bottom of said vat for retaining said plate a suitable distance above said bottom, said plate of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, an adjustable compression-plate operating in said vat and provided with a guide and retaining member and of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, means carried by the said plates to permit of attaching them to a hoisting device so as to remove said plates from said vat, means for adjusting said compression-plate, means carried by the said vat and adapted to engage the said guide and retaining member for securing said compression-plate in its adjusted position, and means communicating with said vat for circulating a dye liquor therethrough.

7. An apparatus of the character described comprising a vat having an imperforate bottom and adapted to contain a body of dye liquor, a removable perforated plate arranged in said vat and provided with a supporting member adapted to rest upon the bottom of said vat, an adjustable compression-plate operating in said vat and provided with a guide and retaining member, means carried by the said plates to permit of attaching them to a hoisting device, means for adjusting said compression-plate, means carried by the vat and adapted to engage the said guide and retaining member for securing said compression-plate in its adjusted position, and means communicating with said vat for circulating a liquid therethrough.

8. An apparatus of the character described comprising an open vat having an imperforate bottom and adapted to contain a body of dye liquor, a perforated plate arranged therein and having a supporting member adapted to rest upon the bottom of the vat for suitably spacing the said plate from said bottom forming thereby a receiving-chamber, said plate of a diameter substantially equal to that of the inner diameter of said vat at the bottom thereof, a deflector arranged in said receiving-chamber, a compression-plate operating in said vat and provided with a guide and retaining member and of a diameter approximately equal to that of the inner diameter of said vat at the bottom thereof, means for adjusting the said compression-plate, means carried by the vat and adapted to engage said guide and retaining means for securing the said compression-plate in its adjusted position, means communicating with said vat for circulating a liquid therethrough, and means carried by the said plate and adapted to be connected to a hoisting device so that the said plates can be removed from said vat.

**755,423. ROCKER-SHOE.** CHARLES A. WILLIAMSON, New Cumberland, Pa. Filed Aug. 27, 1903. Serial No. 170,985. (No model.)

*Claim.*—In an elastic shoe for rockers, the combination of side flanges embracing the sides of the rocker, converging end flanges embracing the ends of the rocker, and plates embedded in the end flanges, said plates having openings through which the material comprising the flanges extends, said plates forming means for fastening the shoe to the rocker.



**755,424. PLOW.** WILLIAM H. WILSON, Grossbeck, Tex. Filed July 17, 1903. Serial No. 164,980. (No model.)

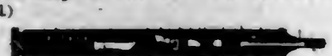


*Claim.*—1. A plow having a standard provided on opposite sides with curved grooves, in combination with clamps having portions to engage the grooves, a gage carried by the clamps, and means for binding the clamps in position upon the standard.

2. The combination with a plow-standard provided on opposite sides with curved grooves, of clamps, the opposed faces of which are provided with a gage-shank seat and the plow-standard seat and with lugs for engaging the grooves in the standard, a gage having a shank engaging the shank-seat, and means for binding the clamps upon the standard.

3. The combination with a plow-standard provided on opposite sides with curved grooves, of clamps, the opposed faces of which are provided with a gage-shank seat and a plow-standard seat and with lugs arranged on a curved line for engaging the grooves in the standard, a gage having a shank engaging the shank-seat, and means for binding the clamps upon the standard.

**755,425. AUTOMATIC DENTAL PLUGGER.** ALEXANDER W. WIENER, Chicago, Ill. Filed July 11, 1903. Serial No. 165,080. (No model.)



*Claim.*—1. In a dental automatic plugger, a barrel, a hammer mounted therein, a spindle slidably mounted in said barrel and arranged to project therefrom, a pawl carried by the said spindle and arranged to coact with the hammer, one of said coacting elements being provided with an inclined rack having a series of step-like teeth, and the other of said elements being provided with a coacting tooth, and means operated by the movement of the barrel relative to the spindle, for moving the pawl laterally during the said movement of the barrel, to permit the tooth of one element to successively pass the rack-teeth of the coacting element to cause the hammer to be successively lifted and released by the pawl.

2. In a dental automatic plugger, a barrel, a plunger arranged within said barrel, a spring for pressing said hammer constantly in a forward direction, a spindle slidably mounted in the barrel to project from the forward end thereof, a pawl carried by said spindle, and adapted to coact with the hammer, one of said coacting elements being provided with a series of teeth disposed in step-like arrangement, and a coacting member being provided with a tooth designed for engagement therewith, and means for moving said pawl laterally during the movement of the barrel relative to the spindle, to permit the teeth of the one coacting member to successively pass the tooth of the other.

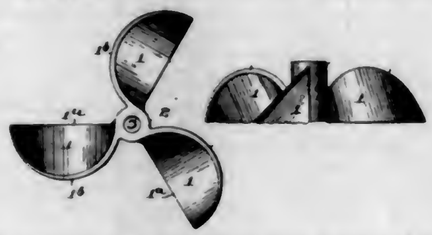
3. In a dental automatic plugger, the combination with a barrel of a spring-actuated hammer mounted for reciprocation therein, an inclined rack having a series of step-like teeth, carried by the hammer, a spindle slidably mounted in the barrel and arranged to project therefrom, a laterally-movable pawl carried by the spindle and arranged to coact with the rack carried by the hammer, means for holding said pawl normally at one limit of its movement, and means for moving the pawl laterally during the movement of the barrel relative to the spindle.

4. In a dental automatic plugger, the combination of a barrel, a hammer mounted for reciprocation therein, a spindle slidably mounted in said barrel and arranged to project therefrom, a pawl carried by said spindle arranged to coact with the hammer, one of said coacting elements being provided with a rack having a series of step-like teeth, and the other of said elements being provided with a coacting tooth, and an inclined guide carried by the barrel arranged to direct the movement of the pawl laterally during the movement of the barrel relative to the spindle, whereby the teeth of the rack carried by the one element are caused to successively engage and release the tooth of the coacting element.

5. In a dental automatic plugger, a barrel, a spring-actuated hammer mounted for reciprocation therein, an inclined rack carried by said hammer, a spindle slidably mounted in the barrel, a pawl pivotally mounted on said spindle and arranged to coact with the hammer-rack, means for normally maintaining said pawl at one limit of its pivotal movement in alinement with a relatively forward tooth of the hammer-rack, and an inclined guide carried by the barrel and arranged to cooperate with the pawl to move said pawl laterally during the movement of the barrel relative to the spindle.

6. In a dental automatic plugger, the combination with the barrel 6, of a spring-actuated hammer 9, mounted therein and provided with an inclined rack on its forward end, a spindle 14, slidably mounted in the forward end of said barrel, a toothed pawl 21, pivoted in the spindle, a spring for maintaining said pawl at one limit of its movement, a pin 24 carried by said pawl, and a guide 10 arranged in the path of movement of the pin 24 and inclined in parallelism to the hammer-rack.

**755,426. PROPELLER.** JEROME I. WOOD, Philadelphia, Pa. Filed June 26, 1902. Renewed Aug. 18, 1903. Serial No. 169,943. (No model.)



*Claim.*—A propeller whose blades are curvilinear in the direction of their length, the sides of the blades being straight transversely, and their edges convergent arcs in planes at right angles to each other, the inner or leading one of said edges being substantially in a plane passing longitudinally through the major axis of the hub, and the outer one of said edges in a plane at right angles to said axis, substantially as set forth.

**755,427. WIRE-FENCING STANDARD AND BATTEN.** JOHN WRIGHT, St. Heliers Bay, near Auckland, New Zealand. Filed Oct. 27, 1903. Serial No. 178,752. (No model.)

*Claim.*—A supporting and spacing device for fence-wires, comprising a standard having a portion of its length concavo-convex and the remaining portion flat, said concavo-convex portion of said standard provided with a plurality of slits adapted to receive the fence-wires, and said flat portion adapted to be inserted in the ground for retaining the standard in an upright position, a rod extending parallel to the standard and supported thereby and adapted to retain the fence-wires within said slits, a spiral batten adapted to receive the fence-wires, and a reinforcing-rod for said batten, substantially as herein shown and described.





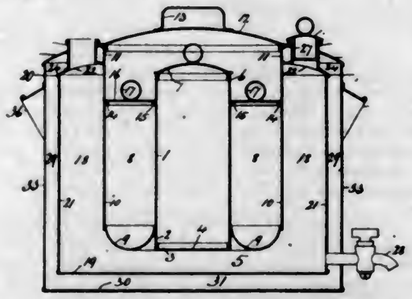
**755,428. BLUE-SULFUR DYE AND PROCESS OF MAKING SAME.** JULIUS ABEL, Mannheim, and ARTHUR LÜTTRINGHAUS, Ludwigshafen-on-the-Rhine, Germany, assignors to the Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden. Filed Oct. 17, 1902. Serial No. 127,737. (No specimens.)

*Claim.*—1. As a new product the coloring-matter which directly dyes cotton from a bath containing sodium sulfid blue shades, and which dissolves in caustic-soda lye yielding a blue solution from which solution the coloring-matter cannot be precipitated by means of pure air, but from which it can be precipitated by means of carbonic-acid gas.

2. The process of manufacturing blue coloring-matter which consists in heating a mixture of a thiazin body and phenol with sulfur and alkali sulfid.

3. The process of manufacturing blue coloring-matter which consists in heating a mixture of methylene-violet and phenol with sulfur and alkali sulfid.

**755,429. COOLING OR REFRIGERATING APPARATUS.** BENJAMIN ADDY, Leeds, England. Filed May 8, 1903. Serial No. 156,270. (No model.)

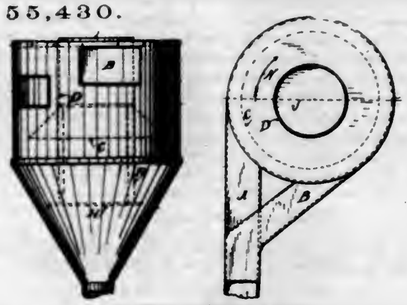


*Claim.*—A cooling apparatus comprising a receptacle for the material to be cooled, an ice-chamber within said receptacle and projecting above the same, a second ice-chamber surrounding the receptacle and projecting above the same, the walls of the two chambers providing a cold-air chamber above the receptacle, the second ice-chamber extending beneath the receptacle and being in communication with the first-mentioned ice-chamber, an insulating-chamber surrounding said second chamber and overlying the same to completely inclose said second chamber, and an entrance-opening to the second chamber formed through the insulating-chamber.

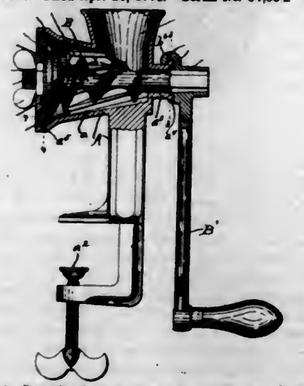
**755,430. METHOD OF SEPARATING DUST FROM DUST-LADEN AIR.** WILLIAM R. ALLINGTON, Saginaw, Mich. Filed Nov. 27, 1903. Serial No. 183,789. (No model.)

*Claim.*—A method of separating dust from dust-laden air, which consists in conveying the dust-laden air into a suitable receptacle and giving a rotary motion to such dust-laden air by means of counteracting currents, the force in one direction dominating the opposing force so as to produce and keep up the rotary movement of the air within the chamber.

**755,430.**



**755,431. CUTTING APPARATUS.** JOSEPH N. AUSTIN and MILAN D. FARNAM, Syracuse, N. Y., assignors, by direct and mesne assignments, to Syracuse Machine Company, Syracuse, N. Y., a Corporation of New York. Filed Apr. 26, 1901. Serial No. 57,554. (No model.)



*Claim.*—1. In a food-cutter, a casing, a shaft mounted therein, a handle removably connected to said shaft by an angular socket at one end, a segmental flange extended from said handle concentric with said shaft, and a rigid projection on said casing engaging said flange to prevent longitudinal displacement.

2. A cutting apparatus comprising a frame provided with a feeding-passage having internal ribs, a forcing member arranged within the feeding-passage and having a part thereof extended beyond the internal ribs and provided with a peripheral feeding-rib interposed between the ends of said internal ribs and the exit of the feeding-passage and formed of greater diameter than the inner faces of the internal ribs, substantially as and for the purpose described.

3. A cutting apparatus comprising a stationary frame provided with a feeding-passage having internal ribs terminating at the inner side of the exit of the feeding-passage, a forcing member rotating within the feeding-passage and having one extremity extended beyond the outer ends of the internal ribs and provided with a peripheral substantially helical rib having a portion thereof formed of greater diameter than the outer ends of the internal ribs and movable between said internal ribs and the exit of the feeding-passage, substantially as and for the purpose specified.

4. A cutting apparatus comprising a frame provided with a feeding-passage having internal ribs, a plate having cutting edges and openings for the passage of the material, and a forcing member rotating within the feeding-passage and having one extremity extended beyond the outer ends of the internal ribs and provided with a peripheral substantially helical rib having a portion thereof formed of greater diameter than the outer ends of the internal ribs and movable between said internal ribs and the plate across the openings of said plate, substantially as and for the purpose described.

5. A cutting apparatus comprising a frame provided with a feeding-passage and a hub alined with the feeding-passage and formed with a peripheral enlargement, a forcing member arranged within the feeding-passage, and a handle for actuating the forcing member, said handle being provided with an open-ended and open-sided socket for receiving the peripheral enlargement, and having shoulders for engaging opposite surfaces of said enlargement and preventing endwise movement of the handle, substantially as and for the purpose set forth.

6. A cutting apparatus comprising a frame provided with a feeding-passage and a hub alined with the feeding-passage and formed with a peripheral enlargement, a forcing member arranged within the feeding-passage and having one extremity extended beyond said enlargement and formed angular in cross-section, and a handle provided with an open-ended and open-sided socket for receiving the peripheral enlargement and having shoulders for engaging opposite surfaces of said enlargement and preventing endwise movement of the handle, said handle being formed with a passage of angular cross-section for receiving the angular end of the forcing member, substantially as and for the purpose described.

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**755,432. OIL-CAN FASTENER.** WILLIAM RAINSBRIDGE, Banning, Pa. Filed Sept. 5, 1903. Serial No. 172,112. (No model.)



*Claim.*—1. A receptacle having oppositely-disposed overlapping hooks, connected to one side thereof, one of said hooks being longer than the other, and projecting beyond the edge of the receptacle.

2. A receptacle having oppositely-disposed overlapping hooks, connected to one side thereof, one hook being longer than the other, the shorter hook having a laterally-projecting inner end as set forth.

3. The combination with an oil-can, of the downwardly-extending hook connected to one side thereof, and the upwardly-extending hook connected to the oil-can, adjacent the lower end, said lower hook resting beneath the upper hook and having a laterally-projecting upper end, the upper hook being offset intermediate its ends, said upper hook extending below the lower edge of the oil-can, and having its lower end bent outwardly, as set forth.

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**755,433. FORGING APPARATUS.** JAMES H. BAKER, Pittsburg, Pa. Filed Sept. 21, 1903. Serial No. 174,051. (No model.)

*Claim.*—1. A swaging-roll provided with a pivoted hook adapted to engage and draw the blank, substantially as set forth.

2. A swaging-roll provided with a pivoted hook and a limiting-abutment therefor, substantially as set forth.

3. The combination with a pair of swaging-rolls, of a separately-movable hook secured to one of the rolls and adapted to engage and draw a blank between the rolls, substantially as set forth.

4. The combination of pairs of upper and lower swaging-rolls with an intervening stationary die and a laterally-acting compressing-die, substantially as set forth.

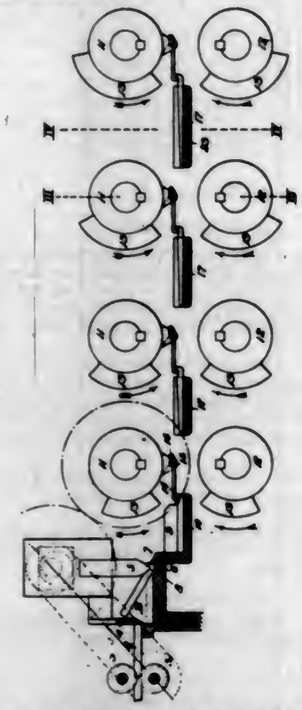
5. The combination with a pair of swaging-rolls, of a pair of swaging-dies located beyond the rolls, and friction-buffers located beyond the swaging-dies, substantially as set forth.

6. The combination with a pair of swaging-rolls, of a pair of swaging-dies located beyond the rolls, and friction-buffers located beyond the swaging-dies, with means secured to one of the rolls for engaging and drawing the blank between said rolls, substantially as set forth.

7. The combination of head-forming dies, directing-guides, a supporting-platform provided with friction-buffers, swaging-rolls, means for ejecting the blank from the head-forming dies to the rolls, means connected with one of the rolls for engaging the blank and drawing it between the rolls, with means for actuating the head-forming dies and the swaging-rolls, respectively, substantially as set forth.

8. The combination of head-forming dies, vertically-disposed directing-guides in advance thereof adapted to receive the blank and to maintain it with the top edge upwardly, a supporting-base for the blank, swaging-rolls beyond said base, means for ejecting the blank from the head-forming dies to the rolls, with means for engaging the head of the blank and drawing it between the swaging-rolls, and connected means for actuating the head-forming dies and the swaging-rolls respectively, substantially as set forth.

9. The combination of head-forming dies, vertically-disposed directing-guides in advance thereof adapted to receive the blank and to maintain it with the top edge upwardly, a supporting-base for the blank, friction-buffers located at the front end of the supporting-base adapted to engage the head of the blank, means for ejecting the blank from the head-forming dies to the rolls, swaging-rolls beyond said buffers, with means for engaging the head of the blank and drawing it between the swaging-rolls, and connected means for actuating the head-forming dies and the swaging-rolls respectively, substantially as set forth.



10. The combination of head-forming dies, vertically-disposed directing-guides in advance thereof adapted to receive the blank and to maintain it with the top edge upwardly, a supporting-base for the blank, friction-buffers located at the front end of the supporting-base adapted to engage the head of the blank, means for ejecting the blank from the head-forming dies to the rolls, swaging-rolls beyond said buffers, with means for engaging the head of the blank and drawing it between the swaging-rolls, and connected means for actuating the head-forming dies and the swaging-rolls respectively, substantially as set forth.

11. The combination of shears, head-forming dies, vertically-disposed directing-guides in advance thereof adapted to receive the blank and to maintain it with the top edge upwardly, a supporting-base for the blank, swaging-rolls beyond said base, means for ejecting the blank from the head-forming dies to the rolls, with means for engaging the head of the blank and drawing it between the swaging-rolls, and connected means for actuating the head-forming dies, shears and swaging-rolls respectively, substantially as set forth.

12. The combination of head-forming dies, vertically-disposed directing-guides in advance thereof adapted to receive the blank and to maintain it with the top edge upwardly, a supporting-base for the blank, swaging-rolls beyond said base, means for ejecting the blank from the head-forming dies to the rolls, with means for engaging the head of the blank and drawing it between the swaging-rolls, and stationary and laterally-movable compressing-dies respectively adapted to compress the blank at right angles to the line of reduction of the swaging-rolls, adjacent to said rolls, and connected means for actuating the head-forming dies, the laterally-movable compressing-die, and swaging-rolls respectively, substantially as set forth.

13. A stationary swaging-die provided with spring-controlled horizontal retractile pins adapted to support the blank thereon, and a movable die cooperating therewith, with means for actuating the movable die, substantially as set forth.

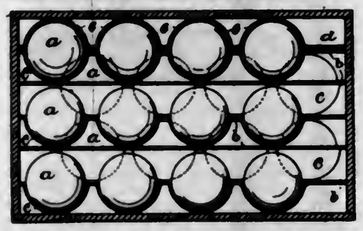
14. In apparatus for forging tapered keys, the combination with lower and upper head-forming dies, of a longitudinally-movable blank-shifting device adapted to project the end of the blank upon the lower die, mechanism operatively connecting the lower die and said shifting device, and means for operating the lower die and actuating the shifting device, substantially as set forth.

15. In apparatus for forging tapered keys, the combination of lower and upper head-forming movable dies, means for operating the dies, blank-shifting mechanism actuated by movement of the lower die, and a supporting device adapted to receive the free end of the blank when tilted upwardly by the head-forming operation and to maintain it in an inclined position for downward travel beyond the dies, with a blank-projecting spring adapted to engage the end of the blank and to project it in the direction of its travel, substantially as set forth



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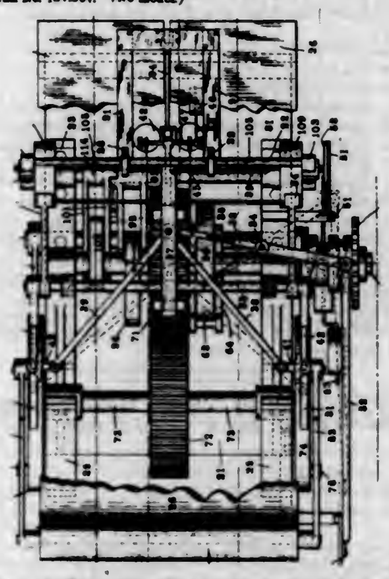
**755,434. MEANS FOR HOLDING EGGS DURING TRANSIT.** ALBERT L. BARSTAD and OLAF L. BARSTAD, Stavanger, Norway. Filed Sept. 16, 1903. Serial No. 173,450. (No model.)



*Claim.*—Nesting-plates for packing eggs, each formed of a single sheet of material having pockets formed therein closed at their bottoms and arranged in rows, the rows of pockets along two adjacent edges of each plate being a greater distance from said edges than the rows of pockets on the other two edges, said pockets being sufficiently distanced from one another and of such depth that when one plate is turned one hundred and eighty degrees with respect to the plate next below, the bottoms of the pockets of the upper plate will rest on the plane surface of the plate next below and between the pockets therein without touching the eggs in said plate, substantially as described.

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**755,435. SHEET-FOLDING MACHINE.** CHARLES W. BENNETT, Elwood, Ind., assignor to American Sheet and Tin Plate Company, Pittsburg, Pa., a Corporation of New Jersey. Filed May 16, 1903. Serial No. 157,367. (No model.)



*Claim.*—1. The combination, in a sheet-folding machine, of a sheet-receiving table, a sheet-gripping frame and rollers arranged above the table, a sheet-folding roll arranged to travel over said table, fold-line-determining devices arranged intermediate the ends of the path of the sheet-folding roll, and mechanism for operating said several devices, whereby the sheet is held to position, folded over at the predetermined line, and flattened down at the folded line.

2. The combination, in a sheet-folding machine, of a main shaft bearing a series of cams, arms carried by suitable pivots or rock-shafts extending into the paths of said cams, a sliding frame, connections between one of said arms and said sliding frame, sheet-holding rollers, connections between said sheet-holding rollers and another of said arms, a sheet-folding roll, and connections between said sheet-folding roll and another of said arms.

3. The combination, in a sheet-folding machine, of a suitable table for receiving the sheets, arms arranged at the sides of said table and adapted to be swung over said sheet temporarily during the earlier portion of the folding operation and to be swung back to initial position during the latter part of the folding operation, and a folding-roller adapted to first swing one end of the sheet up and over said arms and then on its return movement to complete the fold by pressing the folded portions closely together.

4. The combination, in a sheet-folding machine, of a suitable table therefor, stop-pins placed in said table against which the sheets are to be placed for folding, a sliding frame adapted to be thrust out over the end of the sheet as the machine begins its operation, fold-line-determining arms adapted to be swung in across the sheet at a point substantially midway thereof, a folding-roller adapted to raise the free end of the sheet and fold the same over onto the said frame, holding-rollers adapted to be brought forward and clamp the folded end of the sheet onto said frame and there hold it while the folding is completed, means for withdrawing the fold-line-determining arms from across the sheet, and means for driving the folding-roller back over the folded line of the sheet and compressing the sheet at said fold-line closely together.

5. The combination, in a sheet-folding machine, with the table thereof, of fold-line-determining arms mounted in vertical bearings at the sides of said table, arms extending horizontally below the table from the shafts of the fold-line-determining arms, links extending from said arms inwardly and diagonally to a common point of union, means for moving the structure to which said links are united and thus swinging the fold-line-determining arms simultaneously on their pivot-shafts, a latch for holding said structure to its moved position until released, means for retracting said structure and throwing the fold-line-determining arms back into initial position, and means for disengaging said latch when the first folding operation is accomplished.

6. The combination, in a sheet-folding machine, of a main shaft, a driving-clutch mounted on said shaft whereby the shaft will be driven when said clutch is thrown into engagement, fold-line-determining arms mounted at the sides of the table of the machine, a lever whereby said arms may be swung across the sheet, connections by which the clutch may be operated and the machine set in motion, and a lever by which first the fold-line-determining arms are operated and then the clutch-operating connections shifted, whereby the sheet is first secured to be properly folded and then the mechanism for performing the folding set in motion at the proper relative times.

7. The combination, in a sheet-folding machine, of a suitable table, horizontally-positioned fold-line-determining arms located at the sides of said table on vertical pivot-shafts, and means for swinging said shafts axially, whereby the fold-line-determining arms are swung transversely of the table across the sheet being folded and then swung back to their initial position parallel with the sides of the table after the folding has been done.

8. The combination, in a sheet-folding machine, of a reciprocally-moving holding-frame, reciprocally-moving holding-rollers arranged to cooperate with said frame, telescopically-yielding arms carrying the latter and provided with segmental wings, levers arranged alongside said wings, and cams adapted to operate said levers when said rollers arrive at the final holding-point and thus cause said rollers to forcibly grip the sheets during the final holding operation.

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**755,436. ART OF MANUFACTURING TUBES.** LEWIS O. BENTEL, Pittsburg, Pa., assignor of two-thirds to John M. Petty and W. A. Caven, Pittsburg, Pa. Filed Feb. 12, 1903. Serial No. 143,005. (No model.)

*Claim.*—1. In the art of manufacturing tubes, the method of making a tube which consists of forming lips on the lateral edges of a tube-sheet, the lips on one of said edges being narrower than said other edge, said lips being respectively adjacent to the opposite faces of said sheet and their combined thickness being greater than the thickness of said sheet, whereby when said sheet is bent up into tubu-

lar form, and said lips overlap, a recess is left between the edge of said narrower lip and the opposing shoulder on the opposite edge of said sheet, and subjecting said lips to a welding action whereby the surplus thickness of metal in said lips is so forced down that said recess is filled and said lips are united into a combined butt and lap weld



2. In the art of manufacturing tubes, the method of making a tube which consists in forming lips upon the lateral edges of a tube-sheet, the lip on one edge of said sheet being narrower and of greater thickness than said other lip, said lips being respectively adjacent to the opposite faces of said sheet and their combined thickness being greater than the thickness of said sheet, whereby when said sheet is bent up into tubular form, and said lips overlap, a recess is left between the edge of said narrower lip and the opposing shoulder on the opposite edge of said sheet, and subjecting said lips to a welding action whereby the surplus thickness of metal in said narrower lip is forced down into said recess, thereby forming a combined butt and lap weld tube.

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755,437. **EGG-POACHER.** JULIA A. BEURY, Beury, W. Va. Filed Dec. 7, 1903. Serial No. 184,097. (No model.)



*Claim.*—1. As a new article of manufacture, an egg-poacher consisting of one or more receptacles having non-perforate walls or bodies, and a perforated bottom provided with a handle D, and supported in position by radial tongues B, substantially as hereinbefore set forth.

2. In combination with a receptacle A, having radial tongues B, the perforated bottom C of eccentric contour, the greater area of which is greater than the area between the oppositely-disposed tongues B, and provided with a handle D, substantially as and for the purpose set forth.

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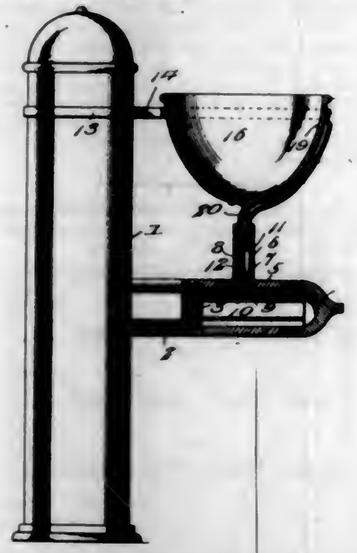
755,438. **DRINKING-FOUNTAIN.** DAVID J. BLENKSTOCK, Brooklyn, N. Y. Filed Sept. 2, 1903. Serial No. 171,682. (No model.)

*Claim.*—1. An attachment for fire-plugs comprising a tubular extension, a tubular arm communicating with the interior of the extension, a basin, a stem thereto slidably mounted within the arm and having a passage therein communicating with the interior of the basin, and a valve in the arm operated by the stem.

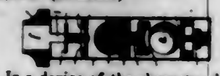
2. A fountain attachment comprising a tubular extension, a tubular arm extending therefrom and communicating therewith; a valve slidably mounted within the arm, a basin, and a stem extending from the basin and into the arm and supported by the valve, said stem having a passage communicating at the opposite ends with the arm and basin respectively.

3. A fountain attachment comprising a tubular extension, a tubular arm thereon communicating therewith, a spring-valve within the arm, a basin, a stem extending therefrom and slidably mounted within the arm, said stem being supported by the valve and having a passage therein opening at opposite ends into the arm and basin respectively, and a guide for the basin.

4. The combination with a fire-plug having an outlet-pipe and a guide-ring secured to the plug; of a tubular extension detachably connected to the outlet-pipe, a cap upon the extension, a tubular arm on the extension and communicating therewith, a valve within the arm, a basin slidably mounted within the guide-ring, and a stem to the basin slidably mounted in the arm and supported by the valve, said stem having a passage therein opening at the opposite ends into the arm and basin respectively.



755,439. **STOPPER FOR PREVENTING THE REFILLING OF VESSELS.** PIERRE DOMERGUE, Paris, France. Filed Aug. 19, 1901. Serial No. 72,562. (No model.)

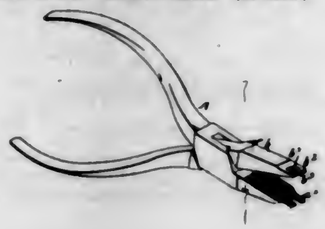


*Claim.*—1. In a device of the character described, the combination with a lower flat valve *d* and a heavy sphere *e* loading said valve, of a stop limiting the opening of the valve without throttling the flow of the liquid as the vessel is being emptied, consisting of a lower cylindrical part *k* whose diameter is slightly less than that of the stopper and being hollowed out at its lower face to form a cylindrical cavity for the reception of the sphere *e*, an annular disk *h*, a central diametrical part *j* connecting the part *k* with the disk *h*, a cork ball *b* seating on the disk *h*, and a rod carried by the ball *b* and guided in an opening in the part *j*.

2. In a stopper of the character described, the combination with a tube *a*, of a valve *d*, a spindle therefor, a guide for said spindle, a ball *e* upon the valve and whose diameter is slightly less than the bore of the tube, a cylindrical stop *k* concentric with the tube and having its lower face hollowed out, a circular seating *h* secured to the tube and integral with the stop *k*, a ball *b* resting on the seating and having a pin seated in the ball, said pin sliding in an aperture in the stop *k* and said ball *b* being adapted to coact with the ring *h* in the manner described to prevent entry of liquid through the said ring, annular rings *g*, *l*, one above the other and secured to the tube, a flat disk *n* arranged between the rings and whose diameter is less than the bore of the tube and connected with the said rings, and a rod carried by the disk adapted to serve as a stop for the ball *b*, all as and for the purpose set forth.

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755,440. **PLIERS.** HERMAN R. BOSSCHER, Philadelphia, Pa. Filed Nov. 27, 1903. Serial No. 183,940. (No model.)





*Claim.*—1. The combination in a pair of pliers, of two jaws, one jaw being forked to engage the post of an eyeglass, the other jaw having an opening through which the post of the eyeglass extends, the side members of said jaw being shaped to engage the guard of the eyeglass, while allowing the flanges of the post to be free so as to hold the guard securely to the post while it is being attached thereto, substantially as described.

2. The combination in a pair of pliers, of two jaws, one jaw being forked to engage the post of an eyeglass and the other jaw having a squared opening through which the post extends and which will clamp the guard to the post while it is being attached thereto, substantially as described.

3. The combination in a pair of pliers, of two jaws, one jaw being forked to engage the post and having recesses in the forked portions so that the body of the jaw will press against the bottom of the socket of the post, and the other jaw having an opening through which the post extends so that it will clamp the guard to the post while it is being secured thereto, substantially as described.

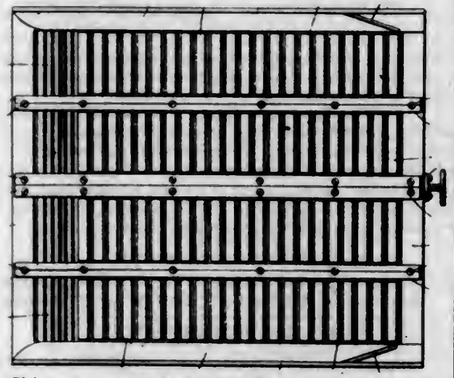
4. The combination in a pair of pliers, of two jaws, one jaw being forked to engage the post and the other jaw having an opening through which the post extends and having an internal projection on one side member to engage a guard mounted in the socket of the post, substantially as described.

5. The combination in a pair of pliers, of two jaws, one jaw being forked to engage the post and the other jaw having an opening through which the post extends, and having an internal projection on each side member to engage a guard mounted in the socket of the post, substantially as described.

6. The combination in a pair of pliers, of two jaws, one jaw forked and the other jaw having an opening to receive the flanges of the post of an eyeglass, the bearing-face of the jaw being beveled at the corners, substantially as described.

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755,441. **CHAFFER FOR THRESHING-MACHINES.** WILLIAM R. BRADLEY, Battlecreek, Mich., assignor to Nichols and Shepard Company, Battlecreek, Mich. Filed Nov. 22, 1902. Serial No. 132,384. (No model.)



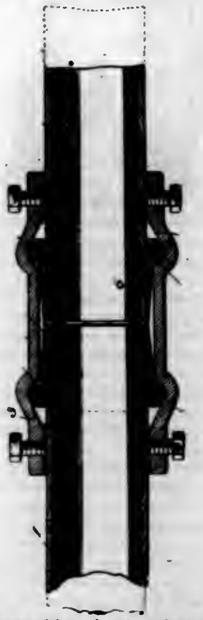
*Claim.*—A grain-pan for threshing-machines comprising an imperforate surface adapted to conduct the material, and a screen constituting a rearward extension of the pan-surface in substantially the plane thereof and comprising a series of slats having their axes practically in line with their upper edges, and means for simultaneously adjusting the angle of said slats without substantially altering the plane of the surface of the screen.

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755,442. **AUTOMATIC COUPLING.** ELI F. BRICKELL, Bradford, Pa., assignor of one-third to August G. Nelson, Bradford, Pa. Filed Oct. 24, 1903. Serial No. 178,441. (No model.)

*Claim.*—1. A coupling comprising a housing adapted to receive the end of a pipe, said housing having a packing-receiving space, a packing located therein, and a member within said housing adapted to be engaged by the end of the pipe and be forced against the packing by the endwise movement of the pipe to compress it.

2. A coupling comprising a housing adapted to receive the adjacent ends of two pipes, said housing provided with two packing-receiving recesses adjacent the ends of said pipes, packings located in said recesses, and a member located within said housing and adapted to engage said packings, said member having a portion normally in the path of the pipe ends as they are placed in the housing and forced by the endwise movement of the pipe in engagement with said packings for compressing them.



3. A coupling comprising a housing adapted to receive the end of a pipe, said housing having an annular packing-recess located external said pipe, an annular packing located therein, and movable means located within said housing, said means having a portion adapted to be engaged by the said pipe when placed in the housing and moved by the endwise movement of the pipe to compress said packing.

4. A coupling comprising a housing adapted to receive the end of a pipe, said housing having an annular packing-recess located external said pipe, an annular packing located therein, and an expanding means located within said housing, said means adapted to be engaged by said pipe when placed in the housing and expanded in contact with said packing by the endwise movement of said pipe.

5. A coupling comprising a housing adapted to receive the adjacent ends of two pipes, said housing having two packing-recesses located respectively external the ends of said pipes, packings within said recesses, and laterally-expanding compressing means within said housing and located between said recesses, said means adapted to engage said packings and having a portion engaged by the ends of said pipes when they are placed within the housing and forced laterally by the endwise movement of the pipe to compress said packings.

6. A coupling comprising a housing adapted to receive the adjacent ends of two pipes, said housing having packing-receiving recesses located respectively external the ends of said pipes, packing located therein, and a packing-compressing member within said housing, the ends of said member adapted to engage said packings to compress them, and provided with a normally inwardly-extending portion adapted to be forced outward by the ends of said pipes when placed in said housing.

7. A coupling comprising a housing adapted to receive the adjacent ends of two pipes, said housing having packing-recesses at each end, packings within said recesses, and a longitudinally-extending packing-compressing member within the housing, the ends of said member adapted to engage said packings and an intermediate portion normally in the path traveled by the ends of said pipes and adapted to be forced outward, the housing having an intermediate contracted portion adapted to prevent the said member from expanding outward between its ends.

8. A coupling comprising a housing adapted to receive the ends of a pipe, said housing having an annular wedge-shaped packing-recess, a packing within said recess, and a member within said housing adapted to be engaged by the end of said pipe and forced endwise against said packing by the endwise movement of the pipe to compress it within said wedge-shaped recess.

**755,443. CAR-DOOR.** DANIEL G. BRUNNER, Elizabethtown, Pa. Filed July 29, 1903. Serial No. 167,457. (No model.)



*Claim.*—1. A car-door comprising outwardly independently movable planks, and independently-sliding bolts carried by said door-frame for each plank.

2. The combination with a door-frame, of a door formed of independent horizontal sections, means carried by one side of the door-frame for receiving the ends of said sections, and independent locking means for each section carried by the opposite side of the frame.

3. The combination with a door-frame, of a door formed of independent horizontal members, means carried by one side of the door-frame for receiving the ends of said members, and sliding bolts carried by the opposite side of the frame for holding said members independent of each other.

4. The combination with a door-frame, of a door formed of independent horizontal members, a vertically-arranged member carried by one side of the door-frame and adapted to receive the opposite ends of said members, and a series of sliding bolts carried by the opposite side of the frame for each member.

5. The combination with a door-frame, of a door formed of two or more independent horizontal members, a vertically-arranged member carried by one side of the door-frame and adapted to receive the ends of said members, a vertically-arranged plate carried by the opposite side of the frame, and outwardly-sliding bolts carried by said plate and adapted to hold said horizontal members independent of each other.

6. The combination with a door-frame, of a door formed with two or more independent horizontal sections, a vertically-arranged channel-iron carried by one side of said frame and having an outwardly-flared outer wall, and adapted to receive the ends of said sections, a vertically-arranged plate carried by the opposite side of the frame, and outwardly-sliding bolts carried by said plate, and adapted to hold said horizontal door-sections independent of each other.

7. The combination with a door-frame, of a door formed with two or more independent horizontal sections, a vertically-arranged channel-iron carried by one side of said frame and having an outwardly-flared outer wall, and adapted to receive the ends of said sections, a vertically-arranged plate carried by the opposite side of the frame, and outwardly-sliding bolts carried by said plate and adapted to hold said horizontal sections independent of each other, and means carried by each bolt for holding it in its outward position.

8. The combination with a door-frame, of a door formed with two or more independent horizontal sections, a vertically-arranged channel-iron carried by one side of said frame and having an outwardly-flared outer wall into which the said sections are adapted to pass, a vertically-arranged plate carried by the opposite side of the frame and having horizontal bolt-receiving openings therein, outwardly-sliding bolts resting in said openings and having laterally-turned outer ends, and means carried by said bolts for locking them in an outward position independent of each other.

9. The combination with a door-frame, of a door formed with two or more independently-horizontal sections, a vertically-arranged channel-iron carried by the side of said frame and adapted to receive the ends of the sections, a vertically-arranged plate carried by the opposite side of the frame and having horizontal bolt-receiving openings therein, outwardly-sliding bolts within said recesses and of a width less than that of said openings, the outer ends of said bolts turned laterally and notches within the lower faces of said bolts and adapted to engage said vertical angle-iron.

10. The combination with a door-frame, of a door formed of independent horizontal sections, means carried by one side of the door-frame for receiving the ends of said sections, sliding bolts carried by the opposite sides of the frame for holding said sections independent of the other, and means for holding said bolts in an outward position.

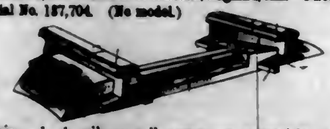
11. The combination with a door-frame, of a door formed of independent horizontal sections, means carried by one side of the door-frame for receiving the ends of said sections, a plate carried by the opposite side of the door-frame and bolt-receiving opening therein, and sliding bolts within said openings in said plate and having recesses in their lower faces, the lower wall of the bolt-receiving openings adapted to enter the recess in the sliding bolt, whereby the bolts are locked in an outward position.

12. The combination with a door formed with two or more independent horizontal sections, a vertically-arranged channel-iron carried by the side of said frame and adapted to receive the ends of said sections, a vertically-arranged plate carried by the opposite side of the frame and having horizontal bolt-receiving openings therein, outwardly-sliding bolts resting in said openings, and having laterally-turned ends, means for preventing said bolts from pressing out of said openings, and means carried by said bolts for locking them in an outward position independent of each other.

13. The combination with a door formed with two or more independently-horizontal sections, a vertically-arranged channel-iron carried by the side of said frame and adapted to receive the ends of said sections, a vertically-arranged plate carried by the opposite side of said frame and having horizontal bolt-receiving openings therein, outwardly-sliding bolts resting in said openings and having laterally-turned outer ends, means for preventing said bolts from passing out of said openings, the said bolts having notches in their lower faces adapted to receive the upper wall of the opening in said vertically-arranged plate.

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**755,444. RAILWAY-RAIL CONNECTION.** WATT T. BROWN, Lock No. 3, and WILLIAM C. WATSON, Ragland, Ala. Filed Jan. 4, 1904. Serial No. 187,704. (No model.)

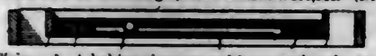


*Claim.*—1. A railway-rail connection comprising a metallic tie having recesses at its ends, the outer wall of each recess being extended to form a brace designed to contact with the webs of rails, the inner wall of each recess having an offset or notch, the rails having flanges which have recessed portions, and a wedge member designed to force said rails so that the recesses thereof will engage said notches in the wall of the recesses of the ties, as set forth.

2. A railway-fastening comprising a metallic tie having its lower face concaved and provided with recesses at its ends, each of which is provided with a notched portion adjacent to each end of the recess, the outer wall of the recess being extended to form a brace adapted to bear against the web of the rails, a wedge member, and rails having recesses adapted to be held by said wedge member in the notches in the inner wall of the recess, as set forth.

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**755,445. SIFTING MACHINE OR SCREEN.** WILLIAM L. BURNER, Columbus, Ohio. Filed Aug. 6, 1903. Serial No. 168,511. (No model.)



*Claim.*—1. A bolting-sieve comprising a cloth and a frame, and having a cleaning device comprising an open jarring-frame independent of the first-named frame and attached directly to the under side of the cloth and provided with a raceway extending from end to end thereof, and a roller-weight in said raceway movable longitudinally therein by the motion of the sieve and delivering blows at the ends of the raceway to the ends of the jarring-frame, the latter serving to jar the cloth.

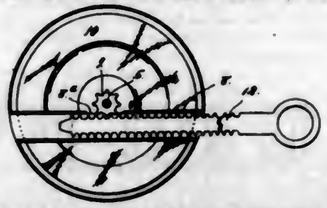
2. A bolting-sieve comprising a cloth and a frame, and having a cleaning device comprising an open jarring-frame independent of the first-named frame and attached directly to the under side of the cloth and provided with a tubular raceway extending from end to end thereof, plugs in the ends of said tubular raceway bearing against the ends of the jarring-frame, and a weight-roller in said tubular raceway acting by the motion of the sieve to apply blows against the said plugs and thereby communicate concussion through them and the jarring-frame to the cloth.

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**755,446. SPINNING-TOP.** JAMES M. BUTCHER, St. Louis, Mo., assignor, by mesne assignments, to World's Fair Novelty Company, a Corporation of Missouri. Filed Feb. 12, 1903. Serial No. 143,008. (No model.)



*Claim.*—1. A toy comprising a shell, a weighted spindle inclosed by the shell and whose extremities engage bearings therein permitting independent movement of the two parts, a gear fast on the spindle, and an open-ended guide-tube made fast to the shell and having an opening into which the cogs of the gear protrude.



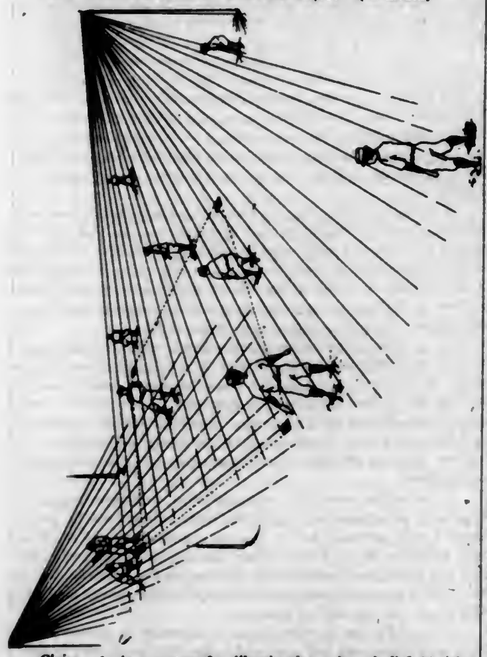
2. The combination of a shell, a spindle journaled therein, a disk fast on the spindle, a gear also fast on the spindle, a guide-tube fast on the shell and open to receive the cogs of the spindle, and arranged to permit the insertion of an operating device tangential to the gear.

3. The combination of a spherical shell, a spindle revolubly mounted therein, a pinion applied to the spindle, a disk also applied to the spindle, and a guide-tube fast on the shell and registering with openings therein to permit the insertion of an operating device, the guide-tube having an opening into which the cogs of the pinion protrude.

4. The combination of a shell, a spinning device inclosed thereby and taking bearing therein to permit independent movement, and a device for operating the spinning device, the shell being provided with a guide whereby the operating device is made to move in a straight line and in operative engagement with the spinning device.

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**755,447. SYSTEM FOR ILLUMINATING FIELDS SO THAT GAMES MAY BE PLAYED AT NIGHT.** GEORGE F. CAHILL, Holyoke, Mass. Filed Dec. 26, 1903. Serial No. 186,618. (No model.)



*Claim.*—1. In a system for illuminating a base-ball field, (*a*) a plurality of lights for illuminating said field; (*b*) a plurality of screens for said lights; said screens being so formed and positioned with relation to each light that players facing said light, when in their normal positions facing the batsman will be shaded or protected from the direct rays of said light; and (*c*) a light or lights for illuminating space above the field where batted balls may pass.

2. In a system for illuminating a base-ball field, comprising lights, reflectors and shades, the combination, with a light to the rearward of the batsman shining upon the batsman and parts of the field, and a screen to prevent the light from shining in the eyes of in-fielders, when in their normal positions facing the batsman; of another light to the rearward of the pitcher falling upon the basemen and parts of the field, and a screen to prevent said light from shining in the eyes of the batsman or catcher when in their normal positions facing the pitcher.

3. In a system for illuminating a base-ball field, comprising lights, reflectors and shades, (*a*) a light to the rearward of the batsman shining upon the batsman and parts of the field, and a screen to prevent the light from shining in the eyes of in-fielders, when in their normal positions facing the batsman; (*b*) a light to the rearward of the pitcher falling upon the basemen and parts of the field and a screen to prevent said light from shining in the eyes of the batsman or catcher when in their normal positions facing the pitcher; and (*c*) means to illuminate the space above the field.

4. In a system for illuminating a base-ball field, (*a*) two lights, one backward from the batter and the other backward from the pitcher, and adapted to throw light upon the pitcher, batsman and intervening space; (*b*) a screen so arranged with relation to the light backward from the pitcher as to shade said light from the eyes of the batsman; and (*c*) another screen so arranged with relation to the light backward from the batsman as to shade said light from the eyes of the pitcher.

5. In a system for illuminating a base-ball field, (*a*) a light above the batsman to illuminate the batsman and part of the in-field; (*b*) a screen to shade said light from the eyes of the basemen facing toward the batsman and said light; (*c*) another light to the front of said batsman to illuminate the pitcher and part of the in-field; and (*d*) a screen to shade said last-mentioned light from the eyes of the batsman.

6. In a system for illuminating a base-ball field, (*a*) a light above the batsman to illuminate the batsman and part of the in-field; (*b*) a screen to shade said light from the eyes of the basemen facing toward the batsman and said light; (*c*) another light to the front of said batsman to illuminate the pitcher and part of the in-field; (*d*) a screen to shade said last-mentioned light from the eyes of the batsman; and (*e*) means to illuminate the space above the field where batted balls may pass.

7. In a system for illuminating a base-ball field, (*a*) a light situated more to the rear than to the front of a player facing the home plate from one direction; (*b*) another light situated more to the rear than to the front of another player facing the home plate from a different direction; (*c*) a screen for said light first above mentioned so formed and positioned as to obscure said light from the eyes of the player second above mentioned; (*d*) another screen for the light second above mentioned so formed and positioned as to obscure said light from the eyes of the player first above mentioned; and (*e*) a reflector for each of said lights to concentrate the rays thereof upon a definite area.

8. In a system for illuminating a base-ball field, (*a*) a light situated more to the rear than to the front of a player facing the home plate from one direction; (*b*) another light situated more to the rear than to the front of another player facing the home plate from a different direction; (*c*) a screen for said light first mentioned so formed and positioned as to obscure said light from the eyes of the player second above mentioned; (*d*) another screen for the light second above mentioned so formed and positioned as to obscure said light from the eyes of the player first above mentioned; (*e*) a reflector for each of said lights serving to concentrate its rays upon a definite area; and (*f*) means to illuminate the space above the field.

9. In a system for illuminating a base-ball field, embracing a plurality of lights and shades therefor, (*a*) a light situated with relation to the home plate so that its rays will illuminate space around the home plate including the batsman and the ball in the early stages of its flight from the bat; (*b*) a screen to shade the rays of said light from the eyes of a player facing toward the home plate and watching the movement of said ball; (*c*) another light to illuminate space occupied by said player above mentioned; (*d*) a screen to shade the rays of said light from the eyes of the batsman; (*e*) a light to illuminate space above the field where said batted ball may pass; and (*f*) a screen to shade the rays of said last-mentioned light from the eyes of the player above mentioned facing toward the home plate and watching the movement of said ball.

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**755,448. SELF-IGNITING INCANDESCENT GAS-BURNER.** JEAN CANELLOPOULOS, Paris, France. Filed Nov. 4, 1902. Serial No. 130,040. (No model.)

*Claim.*—1. A self-igniting incandescent gas-burner, comprising a

main burner, a valve for the same, a pilot-burner in said main burner, a valve for the pilot-burner, and thermostatic means centrally of said main burner controlling said main and pilot burner valves, substantially as set forth.



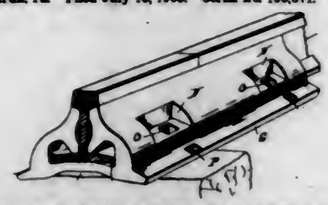
2. A self-igniting incandescent gas-burner, comprising a burner-tube provided with a socket at its lower end, a cap in said burner-tube having openings, a main burner on said burner-tube, a pilot-burner in said main burner, a valve for the same, a rod centrally of said main burner connected with the pilot-burner valve, a valve for said main burner movable on said rod, a spring interposed between said pilot-valve and main valve, and a spring interposed between said main valve and cap, substantially as set forth.

3. A self-igniting incandescent gas-burner, comprising a burner-tube provided with a socket at its lower end, a cap in said burner-tube having openings, a main burner on said burner-tube, a pilot-burner in said main burner, a valve for the same, a rod centrally of said main burner connected with the pilot-burner valve, a valve for said main burner movable on said rod, a spring interposed between said pilot-valve and main valve, a spring interposed between said main valve and cap, and means adapted to take up the abnormal elongation of the rod without affecting the position of the valves, substantially as set forth.

4. A self-igniting incandescent gas-burner, comprising a burner-tube provided with a socket at its lower end, a cap in said burner-tube having openings, a main burner on said burner-tube, a pilot-burner in said main burner, a valve for the same, a spindle on said pilot-burner valve screw-threaded at its upper end, a rod centrally of said main burner, a valve for said main burner movable on said spindle, a spring interposed between said pilot and main valve, a spring interposed between said main valve and cap, and a sliding pawl on the rod adapted to engage with the screw-theaded end of the valve-spindle for taking up the abnormal elongation of the rod, substantially as set forth.

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**755,449. RAIL CHAIR AND JOINT.** CONRAD A. CARRADOR, Plumrun, Pa. Filed July 18, 1903. Serial No. 166,071. (No model.)

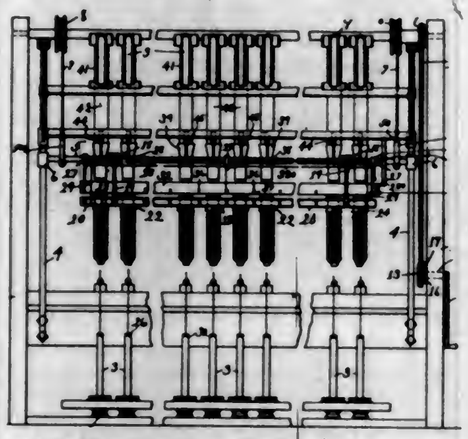


*Claim.*—In a rail joint and chair, the combination with the rail and ties of the joint and chair consisting of the base portion supporting the foot of the rail, the lateral flanges to rest upon the tie, the side walls or fish-plates having the engaging portions resting against and supporting the head, web and foot of the rail, fastening devices engaging the side walls and flanges, and said joint and chair forming the cushioning-spaces under the base portion and foot of the rail.

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**755,450. DOFFER FOR SPINNING AND TWISTING FRAMES.** DUNCAN R. CAREY, South Lawrence, Mass. Filed Oct. 8, 1903. Serial No. 176,206. (No model.)

*Claim.*—1. In combination with a spinning-frame, a vertically-moving carrier, a series of bobbin-holders mounted thereon, means for automatically supplying empty bobbins thereto, a series of doffers connected together and arranged to engage the upper ends of the bobbins while on the spindles, means for moving said doffers vertically to lift the filled bobbins from the spindles and means for moving the bobbin-holders to deliver the empty bobbins thereto, substantially as described.



2. In combination with a spinning-frame, a series of tubular bobbin-holders open at both ends, means for discharging empty bobbins into the upper ends thereof, independent supporting means for engaging the lower ends of the bobbins while in the holders, means for holding said bobbin-holders in register with the spindles and for moving said supporting means transversely to the holder to permit the bobbins to drop onto the spindles, substantially as described.

3. In combination with a spinning-frame, a series of tubular bobbin-holders arranged in a straight line and open at their lower ends, a bobbin-supporting means extending below the lower end of each holder, and in line with the line of said holders, means for holding the said bobbin-holders in register with the spindles, and means for moving said supporting means to one side of the line of the holders to permit the bobbins to drop onto the spindles, substantially as described.

4. In combination with a spinning-frame, a vertically-movable carrier, a series of bobbin-holders mounted thereon, and open at their lower ends, a bobbin-support extending below the lower ends of each holder and pivotally connected to said carrier, said support being arranged to swing to one side of said holders to permit the bobbins to fall onto the spindles when said holders are moved into the register therewith, substantially as described.

5. In combination with a spinning-frame, a series of magazines, a series of bobbin-holders, means for simultaneously discharging a single bobbin from each magazine into each holder, means for supporting the bobbins in the holders, means for simultaneously moving said holders so that the bobbins are carried into register with the spindles, and means for simultaneously releasing the bobbins in the holders to permit the bobbins to drop upon the spindles, substantially as described.

6. In combination with a spinning-frame, a series of magazines, a series of bobbin-holders, means for simultaneously discharging a single bobbin into each holder, a series of doffers, means for causing said doffers to lift the filled bobbins simultaneously from the spindles and means for simultaneously discharging the empty bobbins in the holders upon the spindles after the filled bobbins have been lifted therefrom, substantially as described.

7. A doffer for spinning-frames comprising a hollow casing open at its lower end and adapted to pass over the tip of a bobbin, automatic engaging means therein for connecting the bobbin and casing when they are brought into engagement, and means for moving said casing vertically, substantially as described.

8. A doffer for spinning-frames comprising a hollow casing open and flaring or bell shaped at its lower end and adapted to pass over the tip of a bobbin, automatic engaging means therein for connecting the bobbin and casing when they are brought into engagement, and means for moving said casing vertically, substantially as described.



9. In combination with a spinning-frame, a vertically-moving doffer having a vertically-arranged cavity in its under side cylindrical at its upper end and flaring at its lower end, and a bobbin-engaging device borne by said doffer adapted to connect the bobbin with the doffer when the bobbin enters said cavity, substantially as described.

10. In combination with a spinning-frame, a bobbin provided with an annular groove near its upper end, a vertically-movable doffer comprising a hollow casing open at its lower end, and a latch extending into said cup adapted to automatically enter the groove of the bobbin when the bobbin is within the cup, substantially as described.

11. In combination with a spinning-frame, a bobbin having an annular groove adjacent its tip, a doffer having a cavity, cylindrical at its upper end and adapted to fit on said tip, a latch having one end normally held within said cavity in position to enter said groove and movable to one side thereof, and means for moving said doffer vertically, substantially as described.

12. In combination with a spinning-frame, a vertically-movable carrier, a series of bobbin-holders mounted thereon, and open at their lower ends, a bobbin-supporting means extending below the lower ends of each holder, means, pivotally connected to said carrier and suspended below said supporting means, for lifting the bobbins from the spindles, and means permitting movement of said supporting means to one side of said holders to permit the bobbins therein to fall onto the spindles, substantially as described.

13. In combination with a spinning-frame, a carrier, a bobbin-holder mounted thereon, a bobbin-magazine arranged above said holder having an inclined bottom and with an opening at the lower end of said inclination through which a bobbin may pass, a stop adjacent said opening preventing the bobbins from sliding therethrough, means for moving said holder into register with said opening and for lifting the bobbin held by said stop over the stop to discharge the same into the holder, substantially as described.

14. In combination with a spinning-frame, a carrier, a bobbin-holder mounted thereon, a bobbin-magazine arranged above said holder having an obliquely-disposed bottom, and an opening therein at its lower end, a stop adjacent said opening to prevent the bobbins from sliding through said opening, said bottom having a slot in its lower end, a finger on said holder adapted to pass through said slot and to lift the bobbin held by said stop above the stop to discharge the bobbin into said holder, and means for sustaining the bobbin in the holder, substantially as described.

15. In combination with a spinning-frame, a vertically-movable carrier, an open-ended bobbin-holder mounted thereon, a bobbin-magazine arranged in and having its bottom inclined downwardly toward the path of movement of said holder and terminating at one side thereof, the lower end portion of said bottom being provided with a narrow slot, a stop at the lower end of and at one side of said slot, and an obliquely-disposed finger connected to said holder and movable therewith through said slot and above said stop, substantially as described.

16. In combination with a spinning-frame, a vertically-movable carrier, an open-ended bobbin-holder mounted thereon, a bobbin-magazine arranged in and having its bottom inclined downwardly toward the path of movement of said holder, and terminating at one side thereof, the lower end portion of said bottom being provided with a narrow slot, a stop at the lower end of and at one side of said slot, an obliquely-disposed finger connected to said holder and movable therewith through said slot and above said stop, said finger being of such length that it will extend beyond the base of the bobbin resting against said stop and will enter the bore of the next bobbin, substantially as described.

17. In combination with the spinning-frame having a series of spindles, means for simultaneously supplying a bobbin to each of said spindles, and means, independent of said bobbin-supplying means, for pressing the bobbins down on the spindles after they have been placed thereon by said supplying means, substantially as described.

18. In combination with a spinning-frame having a series of spindles, a series of bobbin-containing holders, means for causing the bobbins to fall from said holders onto said spindles, and means for thereafter pressing the bobbins down on said spindles, substantially as described.

19. In combination with a spinniug-frame having a series of spindles, of a depressor arranged to engage the upper ends of said bobbins after they have been placed on the spindles, and to force them down on said spindles simultaneously, substantially as described.

20 In combination with a spinning-frame having a series of spindles, of a depressor for forcing the bobbins down on said spindles having a series of yielding bobbin-engaging portions, substantially as described.

21. In combination with a spinning-frame having a series of spindles, of a depressor for forcing the bobbins down on said spindles having a series of flexible, upwardly-yielding bobbin-engaging portions, substantially as described.

22. In combination with a spinning-frame having a series of spindles, of a depressor for forcing the bobbins down on said spindles comprising a flexible band or strap extending over the ends of the spindles, and means for supporting the upper sides of said band between each spindle, substantially as described.

23. In combination with a spinning-frame having a series of spindles, of a depressor for forcing the bobbins down on said spindles comprising two parallel walls extending divergently at their lower edges and longitudinally of the line of spindles, and a bobbin-engaging device between said walls and connected thereto, and means for moving said depressor vertically, substantially as described.

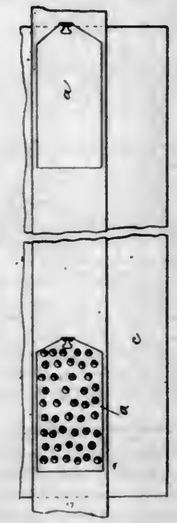
24. In combination with a spinning-frame having a series of spindles, of a depressor for forcing the bobbins down on said spindles, comprising an elongated casing, a flexible strap or band connected at its ends to said casing and a series of transversely-extending bars connected to said casing above said strap or band and between each spindle, substantially as described.

25. In combination with a spinning-frame, a series of bobbin-magazines, each comprising a downwardly-inclined bottom, side supports, an end support at the lower end of the bottom, and between said side support, said bottom having a bobbin-discharge opening at its lower end and a stop adjacent said opening, and means for lifting the bobbins separately over said stop and causing them to pass through said opening, substantially as described.

26. In combination with a spinning-frame, a series of bobbin-magazines each comprising a downwardly-inclined bottom, parallel side supports for the upper and lower ends of the bobbins providing an open space between them, an end support at the lower end of the bottom and between said side support, said bottom having a bobbin-discharge opening at its lower end and a stop adjacent said opening, and means for lifting the bobbins separately over said stop and causing them to pass through said opening, substantially as described.

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**755,451. DELIVERY-APRON FOR CONFECTIONERY-COATING MACHINES.** GABRIEL CARLSON, Springfield, Mass. Filed July 23, 1903. Serial No. 166,726. (No model.)



*Claim.*—1. The combination with an endless apron, of a strip of flexible material removably attached thereto, the forward end of which strip is oblique to the sides thereof.

2. The combination with an endless apron, of a strip or plate of flexible material, the forward end of which tapers to a point, and suitable means located at said point to removably attach said strip to the apron.

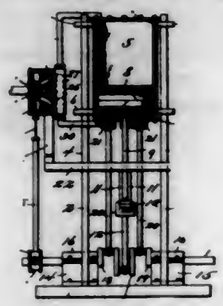
755,452. DEVICE FOR UNLOADING AND DISTRIBUTING EARTH, MANURE, &c., FROM WAGONS. WLADISLAW VON CHELMICKI, Zydowo, Germany. Filed Mar. 24, 1903. Serial No. 149,314. (No model.)



*Claim.*—1. A device of the character described, comprising an axle, wheels carrying the same, a frame supported upon such axle, a crank-shaft held in the frame and having a plurality of cranks, and bars formed with teeth and connected to the said cranks, substantially as and for the purpose set forth.

2. A device of the character described, comprising an axle, wheels carrying the same, an internally-toothed crown attached to one of these wheels, a frame supported upon the axle, a counterweight adapted to balance the frame upon such axle, a crank-shaft having a plurality of cranks arranged at angles of one hundred and eighty degrees relatively to each other, a toothed wheel mounted on the crank-shaft and gearing with the said toothed crown, and bars formed with teeth and connected to the said cranks, substantially as and for the purpose set forth.

755,458. STEAM-ENGINE. JOHN M. CLARK, Whitestone, N. Y. Filed Apr. 11, 1903. Serial No. 152,314. (No model.)



*Claim.*—1. In a single-acting steam-engine, the combination of a reciprocable steam-cylinder, a reciprocable piston in the steam-cylinder, means to operate the cylinder and the piston in relatively opposite directions, a valve-chest formed with sleeves, oppositely-extending steam-pipes slidingly disposed in the sleeves and rigidly connected to and opening into opposite ends of the steam-cylinder, and means to actuate the valve.

2. In a steam-engine, a reciprocable steam-cylinder, a valve-chest formed with steam-sleeves, steam-pipes extending from opposite ends of the cylinder and having their end portions slidingly arranged in the sleeves and operatively fixed to the cylinder, a valve in the valve-chest, a piston in the steam-cylinder, a crank-shaft connected to the piston and the cylinder to reciprocate them in relatively opposite directions, and an eccentric on the crank-shaft and connected to the valve.

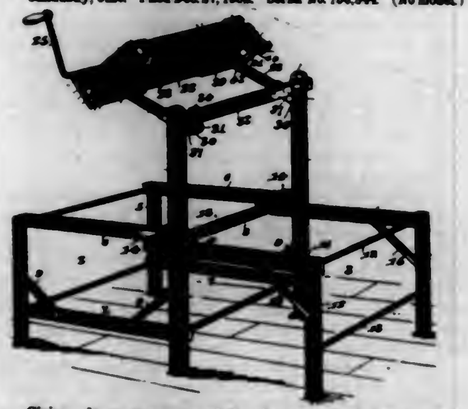
755,454. CLINKER-TONGS. CHARLES CLEAR, St. Louis, Mo. Filed Nov. 2, 1903. Serial No. 179,460. (No model.)

*Claim.*—In a clinker-tongs, the combination of a channel-shaped bar having a handle at its outer end and provided with a longitudinal slot, a sliding bar on the flat side of said channel-bar, a rivet in said sliding bar to slide in the slot in said channel-bar; the rear part of said sliding bar being twisted to form an integral handle extending at a right angle to the bar, a pair of twisted jaws forming forward gripping members, and rearwardly-extending arms at right angles thereto and pivoted to the flat side of said channel-bar, and a pair of connecting-links pivoted to said jaw-arms and to said sliding bar, substantially as and for the purposes set forth.

755,454.



755,455. LAUNDRY APPARATUS. RAYMOND C. COBURN, Upper Sandusky, Ohio. Filed Dec. 27, 1902. Serial No. 136,844. (No model.)



*Claim.*—In an apparatus of the class described, the combination with washing mechanism, of a horizontally-adjustable section extending beyond the washing mechanism, and a clamp comprising opposite parallel bars consisting of inner horizontal portions secured to the adjustable section, upright intermediate portions rising from the horizontal portions and the outer horizontal upper portions projecting from the upper ends of the intermediate vertical portions and provided with depending jaws having projections or spurs at their inner faces adapted to be embedded in the sides of a wooden tub and forming shoulders arranged to lie under the strengthening wire or rod of a sheet-metal tub, a transverse piece connecting the intermediate upright portions of the parallel bars and forming a support, an adjustable jaw interposed between the transverse connecting-piece and the said jaws, and an adjusting device mounted on the transverse connecting-piece and connected with and adapted to actuate the adjustable jaw for engaging the same with the inner face of a tub, substantially as described.

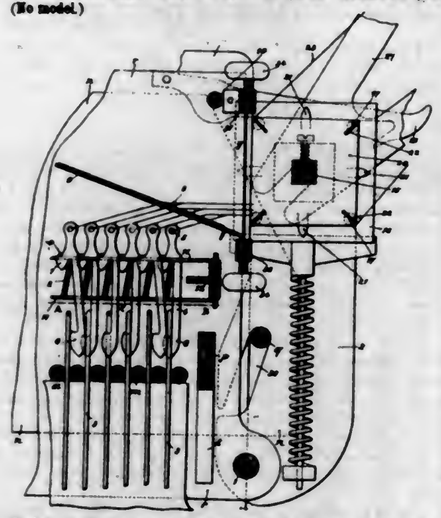
755,456. AUTOMATIC CUT-OFF FOR GLASS-TUBE WATER-GAGES. WALTER COGER, Bisbee, Ariz. Filed Nov. 5, 1903. Serial No. 179,960. (No model.)

*Claim.*—In an automatic cut-off valve for glass boiler water-gages, the combination with a boiler-fitting and a valve controlling the same, of a glass tube, a removable valve-casing which receives the end of the glass tube and has a shoulder to support the glass tube and having a bridge across its interior beyond the end of the glass tube, a spring-actuated valve having a stem slidable through the bridge, said valve being adapted to seat, under pressure, in the valve-casing, and a coupling or union detachably connected to the boiler-fitting and to the valve-casing.





755,457. JACQUARD MECHANISM FOR LOOMS. LOUIS COIN, Tassin la Demi-Lune, France. Filed Feb. 17, 1902. Serial No. 94,540. (No model.)



*Claim.*—1. In a jacquard mechanism for looms, a vertically-movable griff, a plurality of lifting-hooks, a plurality of needles independent of said hooks, and a plurality of latches carried by said griff connected to the needles and adapted when the needles are at rest to engage said hooks and when the needles are pushed back to be free of said hooks thereby causing the griff when rising to draw after it those of the hooks engaged by the latches.

2. A jacquard mechanism for looms comprising a needle-plate, a plurality of needles having their extremities at one end in the same vertical plane parallel to the needle-plate and their other ends in the same horizontal plane, a vertically-movable griff, a plurality of latches carried by said griff and connected at their upper end to said needles, and a plurality of lifting-hooks adapted to be engaged and elevated by the free end of said latches when the said needles pass through the opening of the cards.

3. A jacquard mechanism for looms comprising a vertically-movable griff-casing, a vertically-movable outer casing adapted to engage with and elevate said griff-casing, and a jacquard-cylinder connected with said griff-casing and adapted to be moved against the griff-casing by the outer casing previous to the elevation of the griff-casing, said cylinder participating in the vertical movement of said griff-casing.

4. A jacquard mechanism for looms comprising a vertically-movable griff-casing provided with a needle-plate, a jacquard-cylinder connected with said casing and adapted to be brought against the needle-plate and to participate in the vertical movement of the griff-casing, and means for vertically moving said casing and cylinder and for moving the cylinder against the needle-plate previous to the imparting of a vertical movement thereto.

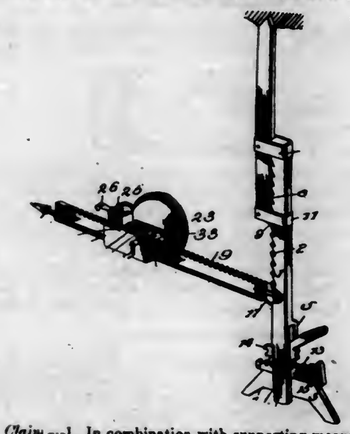
5. A jacquard mechanism comprising a vertically-movable outer casing, a vertically-movable inner casing engaged by and elevated by said outer casing, a jacquard-cylinder, a pair of brackets for supporting said cylinder and connected at their lower ends to said inner casing, said brackets provided with an obliquely-extending slot, a spindle carried by said outer casing and engaging in said slot for moving said cylinder against said inner casing when the outer casing is elevated, griff-bars carried by said inner casing, needles arranged in said inner casing, and a needle-plate connected with the inner casing and through which the needles extend.

6. In a jacquard mechanism for looms, a pair of standards, a jacquard-cylinder, a series of rollers 24, 25 and 26, an endless card passing around said cylinder and roller 24, axles for said rollers, a pair of frames pivoted on the axle of the cylinder and provided with notches in their free ends to receive the axles of the rollers, a pair of guard-plates for keeping the axles of the rollers in the same place, and means for retaining said rollers 25 and 26 equal distances from the axle of the cylinder and the frames immovable.

7. A jacquard mechanism for looms comprising a vertically-movable casing, a plurality of needles carried thereby, griff-bars arranged in said casing, a plurality of oscillatory and gravity-return latches mounted in said bars and connected at one end to said needles, said latches adapted to be elevated by said bars when the casing is moved, and a plurality of lifting-hooks adapted to be engaged and elevated by the latches when the latter are in their normal positions.

8. A jacquard mechanism for looms comprising a vertically-movable casing, a plurality of needles carried thereby, griff-bars arranged in said casing, a plurality of oscillatory and gravity-return latches mounted on said bars and connected at one end to said needles, said latches adapted to be vertically moved by said bars when movement is imparted to the casing, a plurality of lifting-hooks adapted to be engaged and elevated by the latches when the latter are in their normal positions, separating-wires arranged in said casing for said hooks, stop-wires arranged in said casing for the said latches, and keeper-wires arranged in said casing for said needles.

755,458. MINER'S DRILL. WILL D. COX, Marshfield, Ohio. Filed Sept. 29, 1903. Serial No. 175,059. (No model.)



*Claim.*—1. In combination with supporting means for drill-operating mechanism, a base, a supporting-post movably mounted upon said base, a wedge for actuation of said supporting-post, and a lever arranged for actuation of said wedge.

2. The combination with supporting means for drill-operating mechanism, a base, a supporting-post adjustable upon the base, and means comprising a wedge and cam-lever for adjusting the position of the post upon the base.

3. The combination with supporting means for drill-operating mechanism, a supporting-post, an arm vertically adjustable upon said post, a base secured to the lower end of the post, a pin-and-slot connection between the base and the post, and independent means for actuating the post to raise and lower the same upon the base.

4. The combination with supporting means for drill-operating mechanism, of a supporting-post longitudinally toothed, a vertical arm adjustably mounted upon the post and cooperating with the toothed portions thereof, a base having a pin-and-slot connection with the post, a cam-lever pivoted to the post, a wedge secured to the post and cooperating with the base and cam-lever to cause actuation of the post.

5. The combination with supporting means for drill-operating mechanism, of a toothed supporting-post, a vertical arm adjustable relative to the supporting-post and provided with means cooperating with the toothed portion of the latter to fix its relative adjustment, a bar spaced from the supporting-post, a base secured by a pin-and-slot connection intermediate the bar and post, a toothed cam-lever pivoted between the said bar and post, a toothed wedge for coöperation with the cam-lever to cause actuation of the post and to fix the position of the same relative to the base, and a supporting-arm projected from the supporting-post.

6. The combination of supporting means for drill-operating mechanism, a base, a post adjustable upon the base, a pin-and-slot connection between the post and the base, and independent means for raising and lowering the post upon the base.

7. The combination with a toothed supporting-arm, a carrier mounted upon the supporting-arm, a drive-gear disposed upon the carrier, a drill also disposed upon the carrier, and a worm for cooperation with the toothed portion of the supporting-arm to cause advancement of the carrier, said worm being rotatably and pivotally mounted to permit of engagement and disengagement thereof from the toothed portion of the supporting-arm.

8. The combination with a toothed supporting-arm, a carrier mounted thereon, a transverse worm-shaft disposed upon the carrier, a drive-gear mounted upon the worm-shaft, a worm pivotally and rotatably mounted upon the carrier and adapted for actuation by the worm-shaft aforesaid, a drill-holder, a gear-wheel for actuation of the drill-holder and adapted for coöperation with the drive-gear operated simultaneously with the worm aforesaid, the said worm engaging the toothed portion of the supporting-arm to advance the carrier.

9. The combination with a toothed supporting-arm, a carrier mounted thereon, a transverse worm-shaft disposed upon the carrier, a drive-gear mounted upon the worm-shaft, a drill-actuating gear meshing with the drive-gear aforesaid, and a worm engaging the toothed portion of the supporting-arm to advance the carrier, said worm being provided with a toothed portion engaging the main worm-shaft whereby said worm is actuated.

## 755,459. DRAFT ATTACHMENT FOR HARNESS. JOHN CRUTHERS, Naco, Ariz. Filed Dec. 28, 1903. Serial No. 186,766. (No model.)

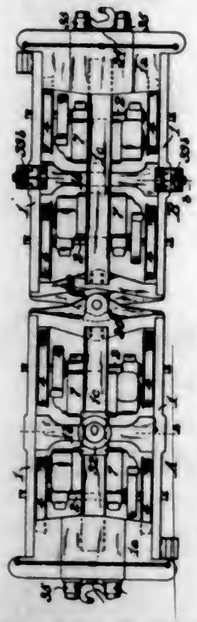


*Claim.*—A draft attachment comprising a suitable clip-plate, a slotted hook pivoted thereto, the slot of said hook extending beyond the front edge of the clip-plate, and a link adapted to engage or disengage the hook, the rear end of said link being elliptical in cross-section to form a cam-wedge, the same being located in the slot of the hook and its greatest dimension being substantially equal to the distance from the front edge of the clip-plate to the end of the slot in the hook, substantially as and for the purpose set forth.

## 755,460. ELECTRIC LOCOMOTIVE. WILLIAM DALTON and FRANCIS J. COLE, Schenectady, N. Y., assignors to American Locomotive Company, New York, N. Y., a Corporation of New York. Filed Nov. 17, 1903. Serial No. 181,471. (No model.)

*Claim.*—1. In an electric locomotive, the combination of two main supporting-trucks, driving-axles journaled in bearings in said trucks, electric motors, each supported on one of said trucks and adapted to rotate one or more of the driving-axles thereof, coupling mechanism by which said trucks are connected with the capability of relative horizontal movement but rigidly in a longitudinal vertical plane, and a cab-supporting frame which is carried upon said trucks with the capacity of relative horizontal movement.

2. In an electric locomotive, the combination of two main supporting-trucks, driving-axles journaled in bearings in said trucks, electric motors, each supported on one of said trucks and adapted to rotate one or more of the driving-axles thereof, coupling mechanism by which said trucks are connected with the capability of relative horizontal movement but rigidly in a longitudinal vertical plane, a cab-supporting frame, a center-bearing through which said frame is supported on one of the trucks, and side bearings through which it is supported on the other truck.



3. In an electric locomotive, the combination of two or more main supporting-trucks, driving-axles journaled in bearings in said trucks, electric motors, each supported on one of said trucks, and adapted to rotate one or more of the driving-axles thereof, coupling mechanism by which said trucks are connected with the capacity of relative horizontal movement, but rigidly in a longitudinal vertical plane, a cab-supporting frame which is carried upon said trucks with the capacity of relative horizontal movement, and draft mechanism connected directly to the frame of one or both of the end trucks.

4. In an electric locomotive, the combination of two or more main supporting-trucks, driving-axles journaled in bearings in said trucks, electric motors, each supported on one of said trucks and adapted to rotate one or more of the driving-axles thereof, coupling mechanism by which said trucks are connected with the capacity of relative horizontal movement, but rigidly in a longitudinal vertical plane and substantially without relative vertical movement, and draft mechanism connected directly to the frame of one or both of the end trucks.

5. In an electric locomotive, the combination of two main supporting-trucks, driving-axles journaled in bearings in said trucks, electric motors, each supported on one of said trucks, and adapted to rotate one or more of the driving-axles thereof, coupling mechanism by which said trucks are connected with the capability of relative horizontal movement but rigidly in a longitudinal vertical plane, a cab-supporting frame which is carried upon said trucks with the capacity of relative horizontal movement, and draft mechanism connected directly to the frames of the trucks.

6. In an electric locomotive, the combination of two main supporting-trucks, driving-axles journaled in bearings in said trucks, electric motors, each supported on one of said trucks and adapted to rotate one of the driving-axles thereof, coupling mechanism by which said trucks are connected with the capacity of relative horizontal movement but rigidly in a longitudinal vertical plane, and means connected with the coupling mechanism for permitting a limited degree of relative tipping movement or lateral inclination of the trucks while maintaining their rigidity in a longitudinal vertical plane.

7. In an electric locomotive, the combination of a motor-truck, an independent cab-supporting frame, side-bearing roller-supports fixed to the truck-frame and having upwardly and inwardly projecting arms, rollers journaled in said supports, bearing-plates fixed on the cab-supporting frame in position to contact with the rollers, and guide-plates projecting downwardly from the cab-supporting frame and having flanges engaging the arms of the roller-supports, said plates allowing free radial motion of the truck while preventing sidewise movement of the frame thereon or elevation of the frame therefrom.

8. In an electric locomotive, the combination of two motor-trucks, coupling-transoms fixed to the adjacent ends of the frames of said trucks and having overlapping perforated lugs or eyes, blocks, fitting with a limited degree of lateral movement in the lugs of one of the coupling-transoms, and a coupling-pin passing through said blocks and through the lugs of the other coupling-transom.

9. In an electric locomotive, the combination of two motor-trucks, coupling-transoms fixed to the adjacent ends of the frames of said trucks and having overlapping perforated lugs or eyes, blocks, fitting with a limited degree of lateral movement in the lugs of one of the coupling-transoms, elastic packing interposed between the ends of said blocks and the adjacent walls of the recesses in the lugs, and a coupling-pin passing through said blocks and through the lugs of the other coupling-transom.

10. In a motor-truck for electric locomotives, the combination of side frame members, a coupling-transom uniting the side frame members at one end, a bumper-beam member uniting the opposite ends of the side frame members, draft and buffing apparatus connected to the bumper-beam member, and a longitudinal center-sill connected, at its opposite ends, to the bumper-beam member and to the coupling-transom.

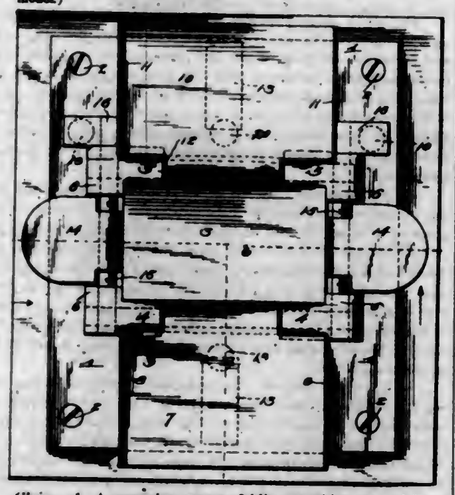


## 755,461. PROCESS OF MANUFACTURING ALLOYS OF COPPER AND IRON. JAMES D. DARLING, Philadelphia, Pa., assignor of one-half to Richard M. Popham, Philadelphia, Pa. Filed June 30, 1903. Serial No. 163,808. (No specimens.)

*Claim.*—1. The hereinbefore-described process for the manufacture of alloys of copper and iron, which consists in preparing a melted bath of one of said constituents in metallic form and adding thereto a mixture of an oxid of the other constituent metal with calcium carbid, substantially as set forth.

2. The hereinbefore-described process for the manufacture of alloys of copper and iron, which consists in preparing a bath of melted copper and adding thereto a mixture of an oxid of iron with calcium carbid, substantially as set forth.

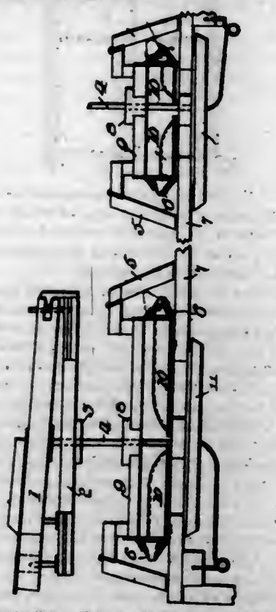
## 755,462. WRAPPING-PAPER-FOLDING MACHINE. ALBERT A. DEMER, Chicago, Ill. Filed Sept. 21, 1903. Serial No. 174,036. (No model.)



*Claim.*—1. A wrapping-paper-folding machine comprising a fixed central portion, a table on which it is secured, side wings pivotally mounted at opposite sides of the table, having weights to lower them and provided at their ends with lugs at right angles thereto, to overlap at the ends of the fixed central portion, pivotally-mounted end wings at the ends of the fixed central portion, a vertically-movable operating-head below the table, means to actuate the head, rods, of unequal length, projecting from the upper side of the head, guides for said rods, and springs to depress the head, said rods on the upstroke of the head successively upturning the end and side wings in the order named, the overlapping end lugs of the side wings passing over the outer sides of the end wings, substantially as described.

2. A folding-machine of the class described, comprising a relatively fixed center piece, wings at the sides thereof adapted to be turned to an upright position, oppositely-disposed wings, having fixed coöperating lug portions at right angles thereto to pass on the outer sides of the first-mentioned wings when the wings are in an upright position, and means to operate the wings.

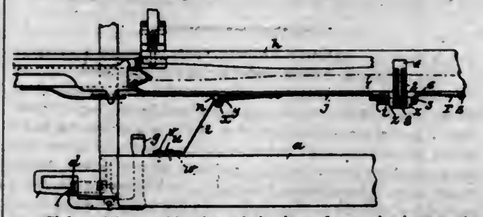
## 755,463. CELL-BOARD FOR REED-ORGANS. CARLO D'ESTE, Homestead, and JOHN R. KEAN, Allegheny, Pa. Filed Aug. 28, 1903. Serial No. 171,072. (No model.)



*Claim.*—1. A cell-board for reed-organs comprising a plurality of cells formed from a single piece of metal, the side walls thereof lying in parallel planes and merging at their upper ends in a curved top wall, said side and top walls at the inner end of the cells being curved downwardly to the point adjacent the lower edge of said side walls, substantially as and for the purpose specified.

2. In combination with the cells, a cover therefor having its opposite edges flush with the outer ends of said cells, and mutes hinged to the opposite edges of said cover and closing the ends of said cells, said mutes being normally disposed at right angles to the adjacent ends of said cells.

## 755,464. WEFT-STOP-MOTION MECHANISM FOR LOOMS. AUGUST D'HUYVETTERS, Paterson, N. J. Filed Aug. 6, 1903. Serial No. 168,439. (No model.)

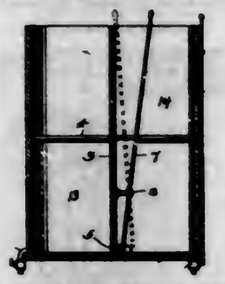


*Claim.*—The combination of the loom-frame, the batten, the controller, a movable member mounted on the frame and engaging said controller, a recessed bar mounted on the batten and adapted to engage said movable member, a spring connected at one end to the batten and at the other end to said bar, a catch controlled from the filler and engageable in the recess of said bar for holding the bar in position to engage said movable member upon a break in the filler, a plurality of guides on the batten through which said bar

passes, a strap secured at one end to said bar intermediate of said guides and at the other end to said frame, said strap having a running engagement with one of said guides whereby the pull of the strap will be always in the direction of the longitudinal movement of the bar.

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**755,465. LIQUID-MEASURE.** PATRICK J. DOYLE, Spencer, Mass. Filed Sept. 2, 1903. Serial No. 171,613. (No model.)



*Claim.*—1. A portable measuring-receptacle, uncovered at its top for the admission of liquid and adapted for use independently of any other receptacle, provided with a vertical partition, an opening provided with a valve at the bottom of said partition, and a suitable draw-off valve, substantially as described.

2. A portable measuring-receptacle entirely open at its top and adapted for use independently of any other receptacle, provided with an interior graduation-mark, a vertical partition, an opening provided with a valve in the bottom of said partition and means for manually operating said valve, substantially as described.

3. A portable measuring-receptacle, adapted for use independently of any other receptacle, provided with a vertical partition dividing the same into two chambers of equal capacity, said receptacle being uncovered at its top whereby liquid may be introduced into either chamber independently, an outlet provided with a valve at the bottom of one of said chambers, and an opening at the bottom of said partition having a valve, substantially as described.

4. A portable measuring vessel provided with a partition dividing the vessel into two chambers, an opening provided with a valve in said partition, draw-off cocks for the chambers, and means for manipulating said cocks, substantially as described.

5. A portable measuring vessel provided with a vertical partition dividing the vessel into two chambers, said partition having an opening in the bottom thereof provided with a valve and an extension-lever whereby the valve may be operated from the top of the receptacle, substantially as described.

6. An open-top measuring vessel adapted for use independently of any other receptacle and divided into two chambers, each of said chambers being subdivided by a suitable graduation-mark, draw-offs provided with valves whereby a quantity of liquid corresponding to the capacity of any chamber may be drawn off, substantially as described.

7. A measuring vessel provided with a partition dividing the vessel into two chambers of equal capacity, said partition having an opening in the bottom thereof provided with a valve, a draw-off for each chamber, an interior graduation-mark intermediate the top and bottom of the vessel, and extension-levers for operating the valve in the partition and one of the draw-offs, substantially as described.

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**755,466. RATCHET-WRENCH.** JOHN H. DUNBAR, Youngstown, Ohio. Filed July 2, 1903. Serial No. 164,071. (No model.)

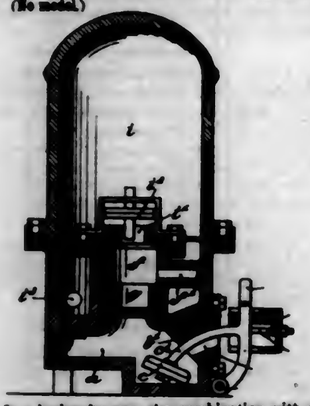
*Claim.*—1. In a ratchet-wrench, the combination with the shank having a ratchet-face, of the sliding jaw member having a nut element, a spring-pressed catch-pawl pivotally held at one end to the sliding jaw member, and a locking-screw mounted in the nut element and arranged to have a binding engagement directly against the free end of the pawl in a direction for wedging the said free end in locked engagement with the ratchet-teeth, said screw being provided at one end with an exterior operating-handle.

2. In a ratchet-wrench, the combination with the shank having a ratchet-face, of a sliding jaw member provided at one end with a nut element, a spring-pressed catch-pawl pivotally mounted within the sliding member and provided at its free end with an engaging tooth or point and opposite the latter with a lock-seat, and a locking device consisting of a screw-rod mounted in the nut element in parallelism to the shank and provided at its outer end with an operating-lever handle and at its inner end with a binding-nose movable into and out of the said lock-seat



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**755,467. HYDRAULIC RAM.** GEORGE H. BARLE, Jr., Bryn Mawr, and GEORGE B. SHANKLIN, Wayne, Pa. Filed Dec. 10, 1903. Serial No. 184,605. (No model.)



*Claim.*—1. In a hydraulic ram, the combination with a drive-pipe having an outlet, a valve adapted to seat with the inner end of said outlet and carrying an arm and pivoted lever provided with a bucket adjustably connected with said lever and movable with said valve, of a cylinder in communication with the drive-pipe at a point in proximity to the valve, when seated, and a piston in said cylinder adapted to force water from a different source than through the drive-pipe, into a reservoir, substantially as and for the purpose described.

2. In a hydraulic ram, the combination with a drive-pipe having an outlet provided with a removable section or pipe, a valve adapted to be seated with one end of the removable section or pipe of said outlet, said valve carried by an arm and a pivoted lever provided with a bucket adjustably connected with said lever and movable with said valve, of a cylinder communicating with the drive-pipe at a point in proximity to the valve, when seated, and a piston in said cylinder adapted to force a fluid from a different source than through the drive-pipe into a reservoir, substantially as and for the purpose described.

3. In a hydraulic ram, the combination with a drive-pipe having a valve-closed outlet, and a valve for opening and closing said outlet carried by an arm and pivoted lever, and having a bucket adjustably connected with said lever and movable with said valve, of a cylinder communicating with said drive-pipe at a point close to said outlet and a vertically-operating piston in said cylinder, substantially as and for the purposes described.

4. In a hydraulic ram, the combination with a drive-pipe having an outlet, a valve for opening and closing said outlet, carried by an arm and pivoted lever, and having a bucket adjustably connected with said lever and movable with said valve, of a cylinder communicating with said drive-pipe at a point close to said outlet, and a vertically-operated piston in said cylinder, substantially as and for the purposes described.

5. In a hydraulic ram, the combination with a drive-pipe having a valve-closed outlet and a valve for opening and closing said outlet carried by an arm and pivoted lever having a bucket operated by said valve, of a cylinder connected with the drive-pipe, and a piston adapted to be operated therein to force a fluid from a different source than through the drive-pipe into a reservoir, substantially as and for the purposes described.

6. In a hydraulic ram, the combination with a drive-pipe provided with a valve-seated outlet and a valve for opening and closing said outlet, carried by a curved arm integral with a vertically-pivoted lever carrying a movable bucket, of a cylinder in communication with said drive-pipe, a piston vertically movable in said cylinder, a separate source of supply of fluid to a reservoir, and a check-valve interposed between said cylinder and reservoir, substantially as and for the purposes described.

7. In a hydraulic ram, the combination with a drive-pipe having an outlet provided with a valve connected with a pivoted lever having connection with an adjustable bucket, of a cylinder wherein a piston is adapted to be afforded vertical movement, a fluid-inlet in said cylinder communicating with a reservoir carried by said cylinder, and a check-valve interposed between said cylinder and reservoir, substantially as and for the purposes described.

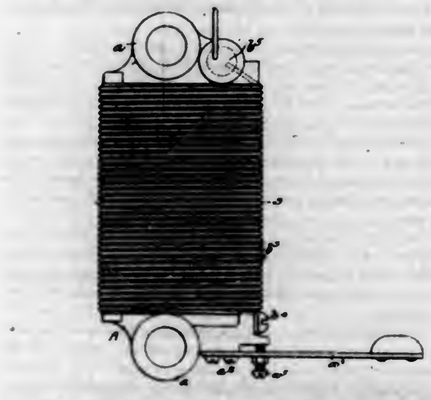
8. In a hydraulic ram, the combination with a drive-pipe, the outlet whereof is provided with a valve controlled as to its range of movement by an arm and pivoted lever carrying a bucket, the latter adapted to be adjusted toward and away from said lever, of a cylinder provided with a piston movable therein and having an outlet for fluid communicating through said cylinder with a reservoir and a valve-controlled device interposed between said cylinder and reservoir, substantially as and for the purposes described.

9. In a hydraulic ram, the combination with a drive-pipe closed at one end by a valve having an operating-arm formed integral with a lever mounted on and movable with a shaft, and a bucket controlling said lever, of a cylinder provided with a piston, an inlet for fluid independent of the fluid-inlet of the drive-pipe to a reservoir, and a valve device interposed between said cylinder and reservoir to control the flow of fluid thereto, substantially as and for the purposes described.

10. In a hydraulic ram, the combination with a drive-pipe closable at one end by a valve having an operating-arm connected with a lever, said lever mounted on a counterweighted movable shaft, a bucket connected with said lever by an arm on which it is adapted to be adjusted, of a cylinder carrying a reservoir, a piston movable in said cylinder and a check-valve device interposed between said cylinder and reservoir, substantially as and for the purposes described.

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**755,468. RHEOSTAT.** ARTHUR C. EASTWOOD, Cleveland, Ohio. Filed Dec. 21, 1903. Serial No. 186,141. (No model.)



*Claim.*—1. A resistance-section consisting of a metallic supporting-body, a resistance material wound thereon, and electrically connected to said body, with a piece for making electrical contact also connected to said body, substantially as described.

2. A resistance-section consisting of a metallic plate, a covering of insulating material therefor, resistance material wound on said plate and electrically connected thereto, and a contact also connected to the plate, substantially as described

3. A rheostat consisting of sections of resistance each including a metallic body having a winding in electrical contact therewith, means for connecting together the windings of the several sections, contacts carried by the metallic bodies of the sections and a movable element also having contacts placed to coact with the contacts on said sections, substantially as described.

4. In a rheostat, the combination of a series of metallic plates, windings on the plates in electrical connection therewith, metallic fingers in electrical connection with the plates and a movable element placed to engage said fingers, substantially as described.

5. In a rheostat, the combination of a series of supporting-grids each having a winding of resistance material, contact-fingers carried by certain of the grids and in electrical contact with the windings thereon, with an element carrying contacts for engagement with the fingers, substantially as described.

6. In a rheostat the combination of a winding of resistance material, a series of contact-fingers connected thereto at intervals, with a metallic cylinder having a series of contact-plates projecting from and in electrical connection with it, substantially as described.

7. The combination of a body of resistance material having contact-fingers connected to it at intervals, a metallic cylinder having contact-pieces in electrical contact with it, said contact-pieces being provided with washers of insulating material between them and said cylinder, substantially as described.

8. The combination in a rheostat of a frame, a standard thereon, a series of metallic plates having portions in engagement with said standard, windings of resistance material upon the plates, contact-fingers in electrical connection with certain of the plates and with the windings thereon, with an element carrying contacts for engagement with said fingers, substantially as described.

9. A resistance-section consisting of a plate of metal, a winding of resistance material thereon connected at one end to said plate, and a finger also in electrical connection with the plate and having means whereby it may be adjusted, substantially as described.

10. A section of a rheostat consisting of a metallic plate, a winding of resistance material thereon, means for holding said plate in position on a frame, a finger projecting from said plate in the plane thereof, said finger being in electrical connection with the winding on the plate, substantially as described.

11. The combination in a rheostat of a supporting-frame, a series of plates thereon, windings of resistance material on the plates and in electrical connection therewith, with means for connecting together the windings of adjacent plates and means for insulating said plates from each other, substantially as described.

12. The combination in a rheostat of a series of plates having means for retaining them in position and contact-fingers projecting from them, a resistance material wound on said plates and connected to said fingers, with a rotatable cylinder having its axis parallel to the axis of the series of plates and contact-plates on said cylinder for engagement with said fingers, substantially as described.

13. A resistance-section consisting of a metallic grid, with a contact-finger mechanically attached to and in electrical contact with said grid, substantially as described.

14. A rheostat consisting of a series of grids formed of electrically-conducting material, means for electrically connecting said grids together, contact-fingers connected directly to the grids and contacts for coacting with said fingers, substantially as described.

15. A resistance-section including a metallic plate and a contact-piece in mechanical and electrical connection therewith, said piece being constructed to slidingly engage another contact or contacts, substantially as described.

16. A resistance-section including a metallic plate and a contact-finger mechanically and electrically connected therewith, substantially as described.

17. In an electric controller, the combination of a series of contact-fingers with a metallic cylinder having contacts thereon and washers of insulating material between said contacts and the surface of the cylinder, substantially as described.

18. A resistance-section including a metallic plate and a contact-finger mechanically and electrically connected therewith, with means for adjusting the position of said finger relatively to a surface engaged thereby, substantially as described.

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**755,469. DEVICE FOR PRODUCING ON TEXTILE FABRICS A SILKY LUSTER.** JOSEPH HOX, Duesseldorf, Germany. Filed Aug. 20, 1902. Serial No. 120,361. (No model.)

*Claim.*—1. As a device for producing a silky luster upon textile fabrics, a pressing-tool having upon its working surface rows of bodies having each an angular base and triangular sides, the latter having at least two different inclinations, substantially as described.

2. As a device for producing a silky luster upon textile fabrics, a pressing-tool having upon its working surface rows of bodies having each an angular base and triangular sides, the latter having at

least two different inclinations, and the common point of meeting of all said sides being located outside the middle of the base, substantially as described.



3. As a device for producing a silky luster upon textile fabrics, a pressing-tool having upon its working surfaces rows of bodies having each an angular base and triangular sides, the latter having at least two different inclinations, the common point of meeting of all said sides being located outside a line extending perpendicularly through the middle of the base, substantially as described.

4. As a device for producing a silky luster upon textile fabrics, a pressing-tool having upon and as its working surface rows of bodies having each a quadrangular base and triangular sides, the latter having each at least three different inclinations, substantially as described.

5. As a device for producing a silky luster upon textile fabrics, a pressing-tool having upon or as its working surface rows of bodies having each an angular base and triangular sides, the latter having different inclinations, and said rows crossing each other at angles other than right angles, substantially as described.

6. As a device for producing a silky luster upon textile fabrics, a pressing-tool having upon and as its working surface rows of bodies having each a rhombic base and triangular sides, the latter being all of different area, substantially as described.

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**755,470. CORSET.** MARY J. ELLIOTT, Port Huron, Mich. Filed Nov. 13, 1903. Serial No. 181,948. (No model.)



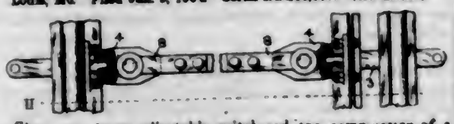
*Claim.*—1. A corset-stay provided with fastening elements for connection with complementary elements upon a companion stay and having hooks stamped up therefrom to engage and retain nether garments in their adjusted positions, substantially as described.

2. A corset having upon the lower portion of its front fastening-stay a series of hooks stamped up therefrom, said hooks being relatively arranged to engage different articles of wearing-apparel in their adjusted positions, substantially as described.

3. A corset provided with stays having fastenings for engagement with each other, one of said stays being longer than the other, forming an extension projecting below the lower edge of the corset, said extension carrying garment-engaging devices, substantially as described.

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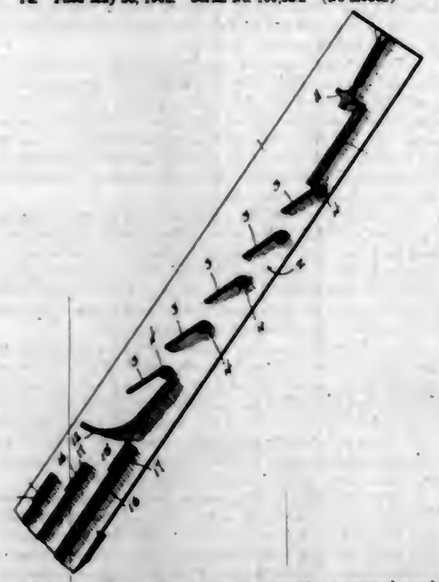
**755,471. ADJUSTABLE SWITCH-ROD.** HENRY ELLIOT, Jr., St. Louis, Mo. Filed Jan. 9, 1904. Serial No. 188,393. (No model.)



*Claim.*—1. In an adjustable switch-rod, the combination of a bar, brackets secured to the switch-points and resting upon the bar, eccentrics fitting in holes formed in the brackets, straps secured to the switch-bar and which overhang said brackets, bolts having non-circular portions fitting in non-circular holes formed in the eccentrics, and means for holding the bolts from turning after adjustment, substantially as set forth.

2. In an adjustable switch-rod, the combination of a bar, brackets secured to the switch-points and resting upon the switch-bar, eccentrics fitting in holes formed in the brackets and which are provided with non-circular openings, straps secured to the switch-bar and which overhang said brackets, and bolts having non-circular portions fitting in the non-circular eccentrically-located holes in said eccentrics; said straps being provided with non-circular enlargements of the bolt-openings to receive the non-circular heads of said bolts, substantially as set forth.

**755,472. COAL-SEPARATOR.** FREDERICK H. REBER, Scranton, Pa. Filed May 23, 1902. Serial No. 109,324. (No model.)



*Claim.*—1. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of adjustable interconnected slats which constitute the only means for closing the opening in said mid-length portion of the chute, an upturned curved resting-wall arranged below the series of said adjustable interconnected slats and projecting above the plane thereof and a lower discharge-opening below said wall.

2. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of adjustable interconnected slats which constitute the only means for closing the opening in said mid-length portion of the chute, an upturned curved resting-wall arranged below the series of said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, and a series of auxiliary delivery-chutes for receiving the material directed into said opening.

3. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of adjustable interconnected slats which constitute the only means for closing the opening in said mid-length portion of the chute, an upturned curved resting-wall arranged below the series of said adjustable interconnected slats and projecting above the plane thereof, a lower-discharge-opening below said wall, a series of auxiliary delivery-chutes for receiving the material directed into said opening, and cushions cooperating with said delivery-chutes.

4. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a receiving-table located at the upper end thereof, an impelling-wheel to which the material is adapted to be fed from the receiving-table, a feed-apron adapted to receive the material from the impelling-wheel, a series of adjustable interconnected slats for receiving the material from the feed-apron, an upturned curved resting-wall arranged below said adjustable interconnected slats and projecting above the plane thereof, and a lower discharge-opening below said wall.

5. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a receiving-table located at the upper end thereof, an impelling-wheel to which the material is adapted to be fed from the receiving-table, a feed-apron adapted to receive the material from the impelling-wheel, a series of adjustable interconnected slats for receiving the material from the feed-apron, an upturned curved resting-wall arranged below said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, and a series of auxiliary delivery-chutes for receiving the material directed into said opening.



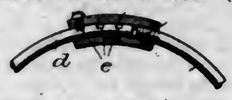
6. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a receiving-table located at the upper end thereof, an impelling-wheel to which the material is adapted to be fed from the receiving-table, a feed-apron adapted to receive the material from the impelling-wheel, a series of adjustable interconnected slats for receiving the material from the feed-apron, an upturned curved resting-wall arranged below said adjustable interconnected slats and projecting above the plane thereof, a lower discharge-opening below said wall, a series of auxiliary delivery-chutes for receiving the material directed into said opening, and cushions cooperating therewith.

7. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of slats arranged within the central or mid-length portion of said receptacle or chute and pivotally supported at their lower edges, a common adjusting device having similar connections with the pivoted supports of all of the slats to effect the synchronous adjustment thereof, an upturned curved resting-wall arranged below the series of said slats and projecting above the plane thereof, and a lower discharge-opening below said wall.

8. In a coal-separator, a separating receptacle or chute which in its central or mid-length portion is open above and below and closed at its sides only, a series of slats arranged within the central or mid-length portion of said receptacle or chute and pivotally supported at their lower edges, cranks having connection with the extremities of the pivoted supports, an adjustable lever connected to said cranks and cooperating with a toothed catch-plate to provide for locking the series of slats in an adjusted position, an upturned curved resting-wall arranged below the series of said slats and projecting above the plane thereof, and a lower discharge-opening below said wall.

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**755,473. DOG-COLLAR.** FREDERICK H. REB, Jr., Lafayette, Ind. Filed July 20, 1903. Serial No. 166,385. (No model.)



*Claim.*—1. As an article of manufacture, a dog-collar comprising a spring-wire bent approximately into the form of a circle, and a device for securing together the ends of said wire, substantially as described.

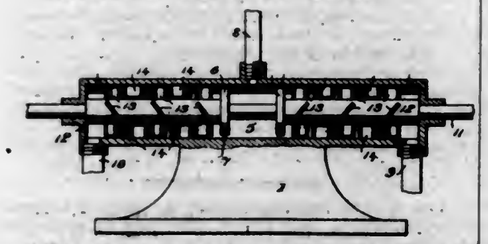
2. As an article of manufacture, a dog-collar comprising a spring-wire bent approximately into the form of a circle, and a device for adjustably securing together the ends of said wire, substantially as described.

3. As an article of manufacture, a dog-collar comprising a spring-wire screw-threaded at one end and adapted to be bent approximately into the form of a circle, and a ferrule or fastening device to which the other end of said spring-wire is secured, substantially as described.

4. As an article of manufacture, a dog-collar comprising a spring-wire screw-threaded at one end and with a series of notches cut near the other end, said wire being adapted to be bent approximately into the form of a circle, a curved ferrule for uniting the ends of said wire, and a set-screw adapted to pass through said ferrule and into one of said notches, substantially as described.

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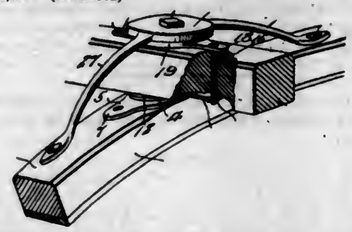
**755,474. STEAM-TURBINE.** JOSEPH B. EVANS, Selma, Ala. Filed Dec. 12, 1903. Serial No. 184,980. (No model.)



*Claim.*—A turbine of the class set forth, consisting of an elongated cylinder having a single motive-medium-admitting pipe connecting with the center of the upper portion thereof, and exhaust-pipes connecting with the opposite lower extremities, a shaft extending longitudinally through the cylinder and having thereon angularly-arranged radial blades arranged in reverse positions on opposite sides of the center of the cylinder, the shaft on opposite sides of the center of the cylinder at the inner terminals of the blades being provided with heads of less diameter than the interior of the cylinder and forming a chest between them for the reception of the motive medium, the motive medium passing from the chest in opposite directions between the said heads and the inner surface of the cylinder, and abutments extending into the cylinder between the blades on the opposite extremities of the shaft and disposed at reverse angles to said blades, the blades and abutments at opposite extremities of the shaft and cylinder being in reverse positions.

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**755,475. COUPLING FOR DOUBLETREES.** JOHN R. FILLMAN and WILLIAM DAVIS, Meno, Okla. Filed Oct. 28, 1903. Serial No. 178,890. (No model.)

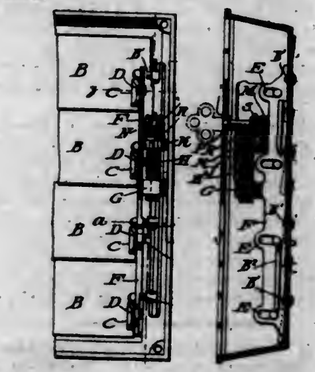


*Claim.*—1. In a coupling of the class set forth, the combination with two parts adapted to be connected by the coupling, one of said parts being superposed over the other, a pivot-bolt extending vertically through the said parts, antifrictional devices interposed between the parts and also having the pivot-bolt passing centrally therethrough, an upper bearing-plate secured to the upper side of the top part, a cap fitted over said plate and having arms projecting from diametrically opposite points thereof and terminally attached to the lower part, the said arms clearing the opposite sides of the upper part, antifrictional devices being interposed between the cap and bearing-plate and the pivot-bolt passing centrally through both the bearing-plate and the cap.

2. In a coupling of the class set forth, the combination with a pole and a doubletree, of a bearing-plate on the pole, a plate on the doubletree formed with an angular flange surrounding said bearing-plate, bearing-balls between said plates, a bearing-plate on the upper side of the doubletree, a cap-piece fitted over the last-named plate and provided with oppositely-projecting arms terminally secured to opposite portions of the pole, bearing-balls between the plate on the upper side of the doubletree and the cap-piece, and a coupling-bolt passing through the doubletree and pole and the bearing-plate and cap-piece on the upper side of the doubletree, as well as the bearing-plates between the pole and the doubletree.

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**755,476. HOT-AIR REGISTER.** JOHN FINNEGAN, Philadelphia, Pa., assignor to Philadelphia Hardware and Malleable Iron Works, a Corporation of Pennsylvania. Filed May 18, 1903. Serial No. 157,576. (No model.)



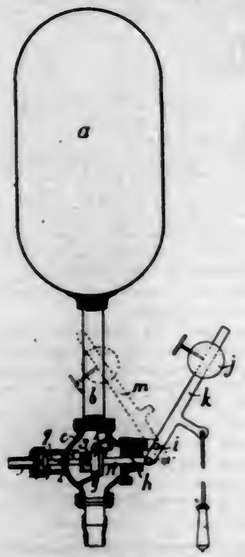
*Claim.*—1. A hot-air register comprising a frame having a face-plate, a pivotal damper or valve mounted on said frame, a sliding

plate in said frame adapted to engage said valve to open and close the same and carrying an interiorly-threaded boss, a stationary plate on said frame and having an ear thereon, a screw journaled in said ear and engaging the threads of said boss, a gear-wheel on said screw, a post rotatably mounted on said stationary plate and adapted to have a separate key applied thereon and a gear-wheel on said post, said gear-wheels intermeshing, and said face-plate having an opening in which the end of said post is accessible and in which said key may be introduced.

2. In a hot-air register, a frame having a face-plate, a damper or valve mounted thereon, a sliding plate on said frame engaging said valve to open and close the register, said plate having an interiorly-threaded boss thereon, a stationary plate in said frame, the same having an ear thereon, a screw, the latter being journaled in said ear and engaging said boss, a post mounted on said ear, its outer end being adapted to have a key removably fitted thereon, a gear-wheel connected with said post and a gear-wheel connected with said screw, said gear-wheels intermeshing, and said face-plate having an opening in which the key-engaging end of said post is accessible.

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**755,477. WASH APPARATUS.** CHARLES F. V. FLINT, Frederikeberg, Denmark. Filed June 9, 1903. Serial No. 160,758. (No model.)



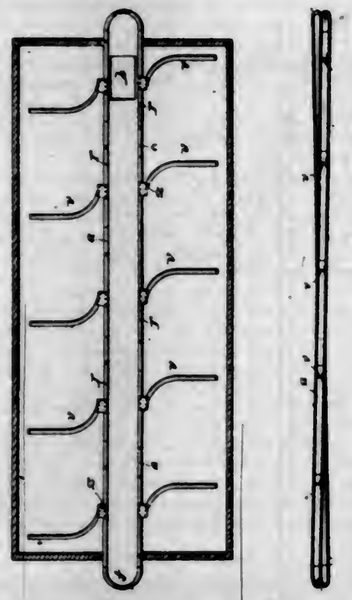

*Claim.*—1. In a flushing device for water-closets, an air-tight tank, pipe connections for placing said tank in communication with a source of supply of water under pressure and also the part to be flushed, valve devices for closing the communication with the part to be flushed and placing the reservoir in communication with the source of water-supply, said valve devices including means whereby when a certain amount of pressure is secured in the reservoir the valve devices are automatically reversed to cut off the water-supply and discharge the reservoir into the part to be flushed, substantially as described.

2. In combination, a valve-casing having three branches, a pipe for supplying water under pressure connected to one branch, an air-tight reservoir connected to another branch, a pipe for leading to the part to be flushed from the third, a partition in said valve-casing having a large opening or valve-seat therein, a valve-rod having a piston-valve fitting said opening and serving to open and close the same and having a second valve controlling the entrance of water to the reservoir, an operating-lever connected to said valve-rod, and a weight on said lever arranged to be overbalanced by the pressure of water on the piston-valve, substantially as described.

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**755,478. FREIGHT-TRANSFER FOR WAREHOUSES OR FACTORIES.** JOHN GILMORE, Owensboro, Ky. Filed May 22, 1903. Serial No. 158,266. (No model.)

*Claim.*—1. In a warehouse freight-transfer, the combination with the uniformly-inclined elevated suspended bearing-track, of the suspended carrier and the automatic gradual-increase friction-brake, substantially as specified.



2. In a warehouse freight-transfer, the combination with the elevated main suspended bearing-track rail and the elevated suspended bearing side-track rail of the rabbeted switch-rail plate, the pivoted switch-rail and the holding-latch, substantially as specified.

3. In a warehouse-transfer, the combination with the elevated main suspended bearing-track, the elevated cross-track, and the suspended carrier, of the crossing-plate having the rectangular roller-bearing and the intervals or ways for the passage of the arms of the carrier, substantially as specified.

4. In a warehouse-transfer, the inclined direct main elevated suspended bearing-track, the reversely-inclined elevated return suspended bearing-track, and the shifting-loop tracks at the ends of said direct and reverse tracks connecting the same, substantially as specified.

5. In a warehouse-transfer, the combination with the elevated uniformly-inclined and increase friction-brake bearings track-rails having the suspended track-bearings of the suspended roller-carrier, and the friction-brake lever pivoted to said roller-carrier, substantially as specified.

6. In a warehouse-transfer, the combination with the reversely and uniformly inclined elevated suspended bearing-tracks, the suspended carrier, and the automatic gradual-increase friction-brake, substantially as specified.

7. In a warehouse-transfer, the combination with the suspended bearing elevated track, and the pivoted switch-rail, of the switch-plate, the holding-latch and the electric switch-button, substantially as specified.

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**755,479. MANUFACTURE OF STARCH.** ROBERT GOLDSCHMIDT, Tajhovits, and JAN HASEK, Smichov, Austria-Hungary. Filed Apr. 11, 1903. Serial No. 152,252. (No specimens.)

*Claim.*—The process of producing starch from potatoes, consisting in grinding the potatoes to a pulp, treating the same with chemicals to prevent fermentation, separating the whole mass of the pulp directly, by centrifugal action, into its solid and liquid parts, drying and grinding the said solids, and separating the starch therefrom while dry.

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**755,480. PENCIL-SHARPENER, &c.** EDWIN M. GOLDSMITH, Philadelphia, Pa. Filed July 21, 1902. Serial No. 116,433. (No model.)

*Claim.*—1. A point-protector comprising a tube, a blade intermediate the ends of said tube, a sleeve movable on said tube and adapted to alternately cover and expose said blade and means for preventing the detachment of said sleeve from said tube.



2. A point-protector comprising a tube having pencil and eraser engaging ends, a blade intermediate said ends, a sleeve movable on said tube and adapted to alternately cover and expose said blade and means for preventing the detachment of said sleeve from said tube.



3. A point-protector comprising pencil and eraser engaging portions, a cut-away portion intermediate said engaging portions, a blade carried by said cut-away portion, a sleeve adapted to alternately cover and expose said blade and means on said tube portions for retaining said sleeve thereon.

4. A point-protector comprising a tube, a blade and an abrading-surface intermediate the ends of said tube, a sleeve movable on said tube and adapted to alternately cover and expose said blade and means for preventing the detachment of said sleeve from said tube.

5. A point-protector comprising pencil and eraser engaging portions, a cut-away portion intermediate said engaging portions, a blade and an abrading-surface, carried by said cut-away portion, a sleeve adapted to alternately cover and expose said blade and means on said tube portions for retaining said sleeve thereon.

6. A point-protector comprising a tube having a cut-away portion intermediate its length, a longitudinally-disposed blade secured in said tube adjacent said cut-away portion and a movable sleeve adapted to alternately cover and expose said blade.

7. A point-protector comprising a tube having a cut-away portion intermediate its length, a longitudinally-disposed blade secured in said tube adjacent said cut-away portion and at each end thereof and a movable sleeve adapted to alternately cover and expose said blade.

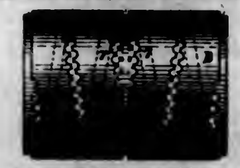
8. A point-protector comprising a tube having pencil and eraser engaging portions, a cut-away portion intermediate said engaging portion, a blade adjacent said cut-away portion and a sleeve longitudinally adjustable on said tube and adapted to alternately cover said blade and extend beyond the eraser-engaging end of said tube.

9. A point-protector comprising tubular end portions and an intermediate portion consisting of end bands secured in the adjacent ends of said end portions and a blade connecting said bands.

10. A point-protector comprising tubular end portions and an intermediate portion consisting of end bands secured in the adjacent ends of said end portions and a blade integral with and connecting said bands.

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**755,481. ROTARY TURBINE-ENGINE.** GUSTAV GRIESSER, Berkeley, Cal. Filed Dec. 12, 1902. Serial No. 134,855. (No model.)



*Claim.*—1. A rotary turbine comprising a cylindrical drum, a journaled shaft upon which it is mounted, spirally-disposed and connected chambers formed upon the periphery and extending in right and left directions from the central portion of said drum, a cylindrical casing within which the drum is revoluble, means for delivering an elastic fluid under pressure into one end of the spiral chamber and means for exhausting the fluid from the opposite end.

2. A rotary turbine-engine comprising a cylindrical drum mounted upon a centrally-journaled shaft, spirally-disposed connected chambers extending around the drum in right and left directions from the central portion thereof, grooves or channels with which opposite ends of said chambers connect, a cylindrical casing within which the drum fits and is revoluble, valves by which an elastic fluid under pressure may be admitted to the grooves to pass through the chambers and valves through which the fluid may be exhausted after completing its work.

3. A rotary turbine-engine comprising a cylindrical drum, a journaled shaft upon which it is mounted and turnable, grooves or channels formed around the center and ends of said drum, spirally-disposed and connected expansion-chambers having their inner ends connected with the central groove and having their convolutions around the drum in opposite directions from the center to the ends, said spirals having their outer ends connected with the outermost grooves, an inclosing casing within which the drum is revoluble and inlet and outlet valves connecting with the circumferential grooves of the drum.

4. A rotary turbine-engine consisting of a cylindrical drum mounted upon a centrally-journaled shaft, and an inclosing casing within which the drum fits and is revoluble, grooves or channels made respectively around the center and the ends of the drum, right and left spirally-disposed and connected expansion-chambers extending around the drum and having their ends connected with the central and end channels respectively, valve-chambers having inlet and exhaust ports, said ports connecting respectively with the inlet and exhaust ends of the spiral chambers.

5. A rotary turbine-engine consisting of cylindrical centrally-journaled revoluble drum and a corresponding casing within which it fits and is turnable, grooves or channels formed around the ends and around the center of the drum, right and left spirally-disposed and connected expansion-chambers formed around the periphery of the drum with their ends connecting respectively with the outer and central grooves, valves having connections with the center and end channels, ports in said valves connecting respectively with inlets for an elastic fluid under pressure and with an exhaust for the same, and means for connecting said ports with either the end or central grooves of the drum, whereby the elastic fluid may be admitted to the grooves and chambers, and exhausted therefrom to revolve the drum in either direction.

6. A rotary turbine-engine comprising a cylindrical centrally-journaled revoluble drum and an exterior casing within which it fits and is turnable, grooves or channels formed respectively about the ends and center of the drums, right and left spirally-disposed and connected expansion-chambers passing around the drum and having their ends connected with the outer and central grooves, valve-chambers connected with each of the grooves, cylindrical valves fitting and turnable in said chambers, each having inlet and exhaust ports and corresponding passages connecting therewith and means for moving the valves in unison whereby the propelling elastic fluid may be admitted and exhausted to propel the drum in either direction.

7. A rotary turbine-engine consisting of a centrally-journaled cylindrical drum, a corresponding closed casing within which it is revoluble, grooves or channels made around the ends and center of the drum, right and left spirally-disposed and connected expansion-chambers formed around the surface of the drum, with their ends connecting respectively with the outer and central grooves, cylindrical valve-chambers connecting with the casing in line with each of said grooves, cylindrical valves fitting and turnable in said chambers having inlet and exhaust passages and ports by which said passages may be connected either with the outer or inner grooves, rocker-arms upon the outer ends of the valve-stems and a connecting-rod and actuating-lever by which the valves may be turned in unison to admit and exhaust an elastic fluid under pressure and to revolve the drum in either direction

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**755,482. RECOIL-OPERATED FIREARM.** CLIFFORD R. S. J. HALLS, Hampton Wick, England, assignor to the Halls Automatic Fire Arms Syndicate, Limited, London, England, a Corporation of Great Britain. Filed Oct. 13, 1902. Serial No. 127,067. (No model.)

*Claim.*—1. In a magazine-gun, the combination with the extension, provided at its forward end with a pin, and a stationary member disposed thereover and provided with angular slots, of a bolt provided at its rear end with a pin, and a series of lazy-tongs pivotally connected with the pins of the extension and of the bolt, and having studs to engage the angular slots.

2. In a magazine-gun, the combination with the extension, provided at its forward end with a pin, and a stationary member disposed thereover and provided with angular slots, of a bolt provided at its rear with a pin, a series of lazy-tongs pivotally connected with the pins of the extension and of the bolt and having studs to engage the angular slots, and gripping means disposed in the path of movement of the bolt.

3. In a magazine-gun, the combination with the extension provided at its forward end with a pin, and a stationary member disposed thereover and provided with angular slots, of a bolt provided at its rear end with a pin, a series of lazy-tongs pivotally connected with the pins of the extension and of the bolt, and having studs to engage the angular slots, and a grip arranged on each side of the gun and in the path of movement of the bolt.

4. In a magazine-gun, the combination with the extension, provided at its forward end with a pin, and a stationary member disposed thereover and provided with angular slots, of a bolt provided at its rear end with a pin, a series of lazy-tongs pivotally connected

with the pins on the extension and of the bolt and having studs to engage the angular slots, grips carried by the extension-frame and buttresses for holding the grips in locked engagement with the bolt.



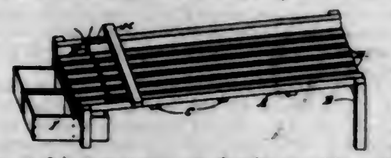
5. In a magazine-gun, an extension provided with a passage-way, intermediate of its ends with abutments and at its forward end with a stud or projection, a bolt mounted in the passage-way and provided with an upward-projecting pin, a cover for the extension having its under side provided with angular recesses, grips carried by the extension-frame and adapted to engage with the abutment, and a series of lazy-tongs pivotally connected with the pins of the bolt and of the extension and having its terminal links provided with pins to engage the angular recesses.

6. In a magazine-gun, an extension provided with a passage-way and with a stop therein, a bolt having a cartridge-extractor and provided with a slot to engage the stop and with an upward-projecting pin, means carried by the extension for cushioning the bolt, lazy-tongs operatively connected with the bolt and with the extension, grips carried by the extension-frame and adapted to engage buttresses on the extension, and a lid or cover for the carriage-case and provided with means to interlock with the studs or projections on the forward terminal links of the lazy-tongs, substantially as and for the purpose specified.

7. In a magazine-gun, a hammer-shifter provided at its forward end with a slot and with lateral recesses, and at its rear end with a recess, a hammer having pintles to engage the lateral recesses, a sear adapted to engage the rear recess, a trigger, a spring-pressed lever carried by the trigger to engage the sear, a lever to retract the hammer-shifter, and a spring to project it.

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**755,483. GATE FOR FRUIT-CHUTES.** ALEXANDER HAMILTON, Alhambra, Cal. Filed Feb. 14, 1903. Serial No. 143,454. (No model.)



*Claim.*—1. In a fruit-chute a gate therefor comprising a finger-bar having a plurality of fingers adapted to pass up through the bottom of the chute to stop the passage of the fruit therethrough; a bail flexibly joined to the ends of said finger-bar; said bail being adapted to be turned upon the top of the chute to hold the gate in its closed position.

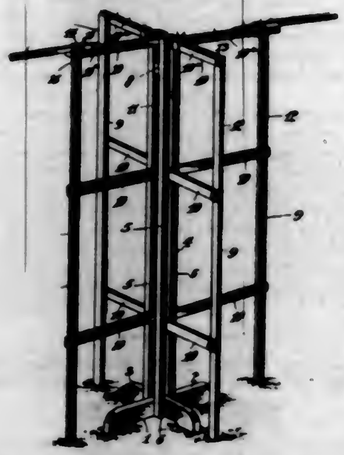
2. In a fruit-drying chute having side and a slatted bottom, a gate therefor comprising a finger-bar having a plurality of fingers adapted to pass between the slats of the bottom; and means to elevate said gate comprising a bail passing transversely across said slats, operatively secured to said finger-bar at the outer ends thereof and adapted to be turned at an angle to said fingers when they are elevated through the slats to their highest position and lock said fingers in said position.

3. In a fruit-drying chute having inclined slats on which to rest the drying fruit; a gate therefor comprising a finger-bar; a plurality of fingers adapted to pass between the slats and prevent the fruit from running down the chute when in an elevated position and arranged to permit the fruit to run down the chute when in the depressed position, means to depress and elevate the fingers comprising the transversely-attached handle-bar, swingingly secured to the finger-bar substantially as shown and described.

4. In a fruit-drying chute of the character herein described a cut-off gate therefor comprising a single transverse finger-bar disposed below the chute near the outlet thereof and having a plurality of fingers projecting upwardly therefrom adapted to pass up between the slats in the chute in closing the gate and to be dropped down below the line of the slats in opening the gate; and means to elevate said finger-bars and fingers and lock them in their elevated position.

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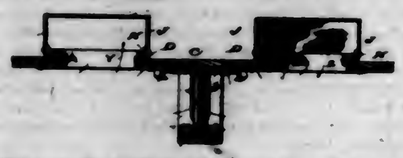
**755,484. CLOTHES-HORSE.** WILLIAM HARDOVE, Montreal, Canada, assignor to John A. Harris, New York, N. Y. Filed Apr. 14, 1903. Serial No. 152,562. (No model.)



*Claim.*—In a clothes-horse, in combination, a base composed of two sections crossed substantially at their middle, standards attached to said base in the angles between said sections, a block disposed between said standards near the upper extremities thereof, to which said standards attach, jointed frames having arms pivotally attached to the respective inner faces of said standards, said frames being adapted to fold into the spaces between said standards.

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**755,485. VENTILATING DEVICE.** CURTIS J. HARRINGTON, New York, N. Y., assignor to the Automatic Car Ventilator Company, New York, N. Y., a Corporation of Maine. Filed Oct. 20, 1903. Serial No. 177,787. (No model.)



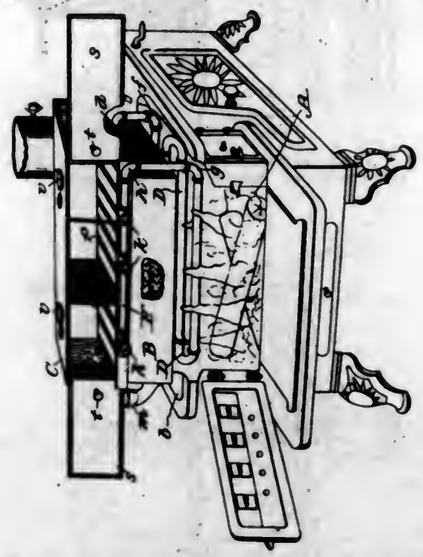
*Claim.*—1. The herein-described means for ventilating a car or other compartment, consisting of an exterior projecting air-deflector having a closed back and located between two adjacent and separated openings through the wall of the car or compartment, and adjustable deflectors arranged upon the inside of each of the said openings, whereby fresh air may be conducted through one of said openings into the interior of the car or compartment, and vitiated air withdrawn through the other of said openings, substantially as set forth.

2. In combination with a car or other compartment having adjacent, separated openings in the wall thereof, a projecting deflector having a closed back and located between said openings, and horizontally-adjustable deflectors arranged upon the inside of each of said openings, and adapted to direct ingoing and outgoing currents of air in different and independent horizontal planes, substantially as hereinbefore set forth.



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**755,486. APPARATUS FOR COOKING BY SUPERHEATED STEAM.** DAVID HARRINGTON, Dallas, Tex., assignor of one-half to Finis E. Laughlin, Dallas, Tex. Filed Nov. 16, 1903. Serial No. 181,293. (No model.)



*Claim.*—1. An apparatus of the character described having a fire-box, a boiler supported on said fire-box, an oven mounted on said boiler and provided with a plurality of compartments, and a pipe connected to said boiler and circulated through said fire-box and extending up to said oven for supplying the compartment of said oven with superheated steam.

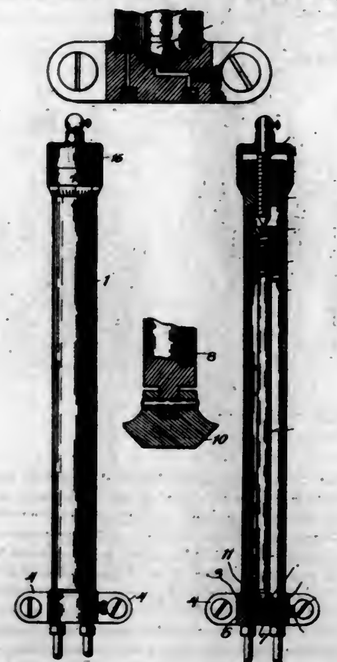
2. An apparatus of the character described having a fire-box, a boiler supported on said fire-box, an oven mounted on said boiler and provided with a plurality of compartments and ventilators and a drip-pipe, and a pipe connected to said boiler and circulated through said fire-box and extended up to said oven and provided with a plurality of valves for supplying the compartments of said oven with superheated steam.

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**755,487. THERMOSTAT.** DANIEL H. HAYWOOD, New York, N. Y., assignor to Davis & Roesch Temperature Controlling Company, New York, N. Y., a Corporation of New Jersey. Filed Dec. 23, 1903. Serial No. 186,809. (No model.)

*Claim.*—1. In a thermostat the combination with a tube or casing provided at one end with a valve-seat, of a laterally-flexible valve-stem arranged within the casing and coupled thereto unyieldingly at one end against relative longitudinal movement in one direction, and a valve adapted to engage said valve-seat having a jointed connection with the other end of said valve-stem and in close proximity to the valve-face, said valve-stem free to flex between its support at one end, and its jointed connection with the valve at the other, said jointed connection permitting limited relative movements of the parts, and thereby relieving the valve of tendency to tilt upon flexure of the valve-stem, the tube or casing and the valve-stem composed of materials having different coefficients of expansion.

2. In a thermostat the combination with a tube or casing provided at one end with a valve-seat, of a laterally-flexible valve-stem arranged within the casing and coupled thereto unyieldingly at one end against relative longitudinal movement in one direction, and a valve adapted to engage said valve-seat having a ball-and-socket connection with the other end of said valve-stem and in close proximity to the valve-face, said valve-stem free to flex between its support at one end, and its ball-and-socket connection with the valve at the other, said ball-and-socket connection permitting such flexure while relieving the valve of tendency thereby to tilt, the tube or casing composed of a material having a greater coefficient of expansion than the material of which the valve-stem is composed.



3. In a thermostat, the combination with a tube or casing provided at one end with a valve-seat having a tapered face, of a laterally-flexible valve-stem arranged within the casing, and coupled thereto unyieldingly at one end against relative longitudinal movement in one direction, said valve-stem unguided throughout its length beyond its point of support, a tapered valve adapted to engage said valve-seat having a jointed connection with the free end of said valve-stem and in close proximity to the valve-face, said valve-stem free to flex between its support at one end, and its jointed connection with the valve at the other, said jointed connection permitting limited relative movements of the parts, and thereby relieving the valve of tendency to tilt upon flexure of the valve-stem, the tube or casing and the valve-stem composed of materials having different coefficients of expansion.

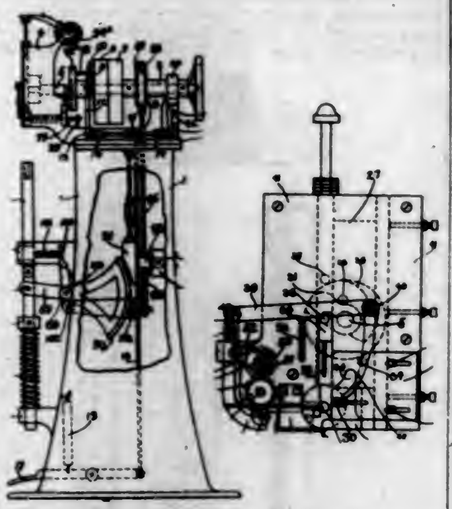
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**755,488. SHOE-FORMER.** FORREST A. HEATH, Jersey City, N. J. Filed June 10, 1903. Serial No. 160,943. (No model.)



*Claim.*—A shoe-former having the general appearance of a stick and composed of two slender approximately similar sections, one of the sections having an end portion hollow or tubular and internally threaded and the other section being externally threaded to screw into the tubular section to admit of lengthening and shortening the stick, both sections having their outer ends transversely expanded to provide a head and knob to facilitate turning of the sections and to present an extended surface for contact of the ends of the stick with, respectively, the toe and heel portions of the shoe, substantially as specified.

**755,489. SHOE-NAILING MACHINE.** WILLIAM HEATON, Woodley, near Stockport, England. Filed Dec. 17, 1900. Serial No. 40,152. (No model.)



*Claim.*—1. In a nailing-machine of the character described the combination of the awl 25 and its carrier 26, vertically-moving slide 27, and an adjustable plate 45 with an inclined slot 44, which guides the awl-carrier in a lateral direction at the same time that it rises with the slides 27, substantially as and for the purpose described.

2. In a nailing-machine of the character described the combination with the awl 25, its sliding carrier 26, the driver-bar 36 and vertically-moving slide 27, of a lever 42 actuated by the driver-bar 36 to move the awl-carrier 26 independently of the slide 27 to feed the work under the driver, substantially as described.

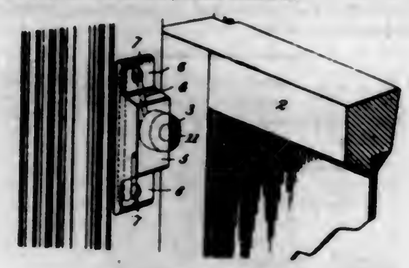
3. In a nailing-machine of the character described, the combination with a reciprocable driver-bar, a pin carried thereby and means for reciprocating the said driver-bar, of a pivoted angle-lever, one arm of which is adapted to be engaged and actuated by the pin on the driver-bar, as described, the awl-plate, the vertically-movable slide carrying the awl-plate, a roller on the awl-plate adapted to be engaged and actuated by the other arm of the angle-lever, and an adjustable plate 45, having a slot in which the roller on the awl-plate is adapted to move, for the purpose set forth.

4. In a nailing-machine of the character described, the combination with a reciprocable driver-bar, a pin carried thereby and means for reciprocating the said driver-bar, of a pivoted angle-lever, one arm of which is adapted to be engaged and actuated by the pin on the driver-bar, as described, the awl-plate, the vertically-movable slide carrying the awl-plate, a roller on the awl-plate adapted to be engaged and actuated by the other arm of the angle-lever, an adjustable plate 45 having a slot in which the roller on the awl-plate is adapted to move, a link 47 carried by one arm of the angle-lever, an arm 48 to which one end of the link is pivoted, said arm being loose on a spindle, a pinion and a ratchet-wheel fast on said spindle, a pawl on the arm 48 engaging the ratchet-wheel, a second pinion with which the first pinion engages, a feed-roller fast on the spindle which carries the said second pinion, and a second feed-roller adapted to cooperate with the first feed-roller for the purpose set forth.

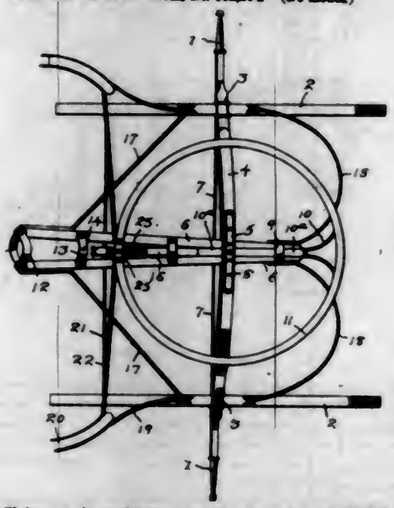
5. In a nailing-machine of the character described, the combination with the driver and means for feeding the wire, of a fixed block 58 having a passage for the wire, a cutter comprising a circular block adapted to be oscillated, a bush arranged within the said circular block and having a passage for the reception of the end of the wire, a sleeve at one end of which the circular block is integrally formed, a rod passing through the sleeve with one end flush with the face of the said block and having said end partially cut away and forming a shutter at the end of the passage for the wire in the block, and means for imparting an oscillating movement to the circular block.

**755,490. SASH-HOLDER.** DAN O. HIATT, Greenlawn, N. Y. Filed Dec. 12, 1903. Serial No. 184,962. (No model.)

*Claim.*—A combined antirattler and sash-holder comprising a metal casing having a closed side 9 and inturned flanges 8, and screw-openings through said casing and flanges, a spring-rod arranged within the casing, said rod having U-shaped portions coincident with the screw-openings, and a spring-arm having an outwardly-turned bearing portion 10, and an elastic roller mounted on said bearing, substantially as and for the purpose described.



**755,491. VEHICLE-GEAR.** THOMAS H. HOLMAN, Akron, Ohio. Filed June 19, 1903. Serial No. 162,304. (No model.)



*Claim.*—1. In a vehicle-gear of the character described the combination with a bed and a truss-brace extending longitudinally thereof; of hounds secured between the bed and brace, a bridge connecting the hounds, shaft-shackles, a truss-brace connecting the shackles and hounds, a fifth-wheel, and braces connecting said wheel and the hounds.

2. In a vehicle-gear the combination with blocks, a bed, and a truss-brace for the bed; of hounds secured to the bed and brace, shaft-shackles, a truss-brace connecting the shackles and hounds, pole-bridges connecting the hounds, a shoe connecting the hounds, a fifth-wheel, braces secured thereto, a strip between the hounds and connected to the braces a detachable stop-strip between the hounds, braces connecting the blocks and hounds, and braces connecting the blocks and shackles.

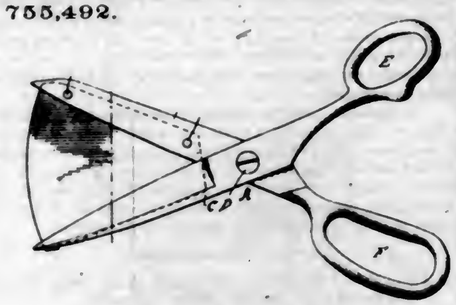
3. In a vehicle-gear of the character described the combination with a bed, and a truss-brace extending longitudinally thereof; of hounds secured between the bed and brace, a bridge connecting the hounds, blocks secured to the bed, braces connecting the blocks and hounds, a fifth-wheel, braces connecting the wheel and hounds, shaft-shackles, and a truss-brace connecting the shackles and hounds.

**755,492. MAIL-SHEARS.** HIRAM G. HOGE, Carthage, Mo. Filed July 30, 1903. Serial No. 167,647. (No model.)

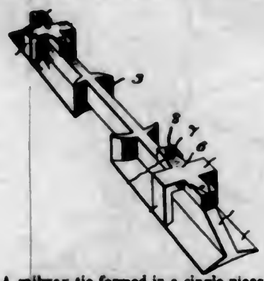
*Claim.*—A guard-plate for mail-shears, substantially triangular in form, having means whereby it may be secured to the outer side of one blade of a pair of shears, and provided at one of its outer corners with a lateral outturned portion forming a stop to coact with the other blade for the purpose set forth.



**755,492.**



**755,493. RAILROAD-TIE.** SAMUEL B. HOOVER, Reco, Nebr., assignor of one-half to Henkel F. Warner, Reco, Nebr. Filed Nov. 4, 1903. Serial No. 179,846. (No model.)



*Claim.*—1. A railway-tie formed in a single piece of metal and comprising oppositely-arranged similar base portions having concaved lower faces, and integral longitudinally-extending bars upon the base portions and extending therebetween, concaved heads at the inner ends of the base portions, and rail-securing means upon the longitudinally-extending bars.

2. A railway-tie formed in a single piece of metal and comprising oppositely-arranged similar base portions and having concaved lower faces, a longitudinally-extending bar integral with the base portions and extending therebetween, oppositely-disposed similar heads at the inner ends of the base portions and having concaved inner faces, a cross-bar upon each base portion, and means for securing a rail to each cross-bar.

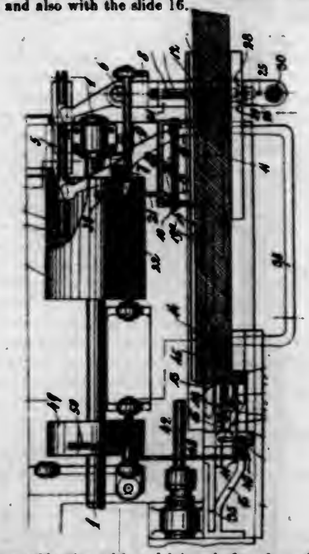
3. A railway-tie formed in a single piece of metal and comprising oppositely-arranged similar base portions having concaved lower faces, a longitudinally-extending bar integral with the base portions and extending therebetween, oppositely-disposed similar heads at the inner ends of the base portions and at opposite sides of the bar, said heads having concaved inner faces, a cross-bar upon each base portion, recessed arms integral therewith, and rail-engaging plates detachably secured within the arms.

4. A railway-tie formed in a single piece of metal and comprising oppositely-arranged similar base portions having concaved lower faces, a longitudinally-extending bar integral therewith and extending between the base portions, concaved heads at the inner ends of the base portions and projecting from the sides of the bar, standards upon the base portions and integral therewith, cross-bars upon the standards and integral therewith and with the base portions, oppositely-extending recessed arms integral with the cross-bars, and reversible rail-engaging plates detachably secured within the recessed arms.

**755,494. MACHINE FOR PRODUCING CYLINDRICAL TUBES AND TUBE-LIKE PAPER OBJECTS, &c.** RUDOLF HERRSTEINER, Prague, Austria-Hungary. Filed Feb. 13, 1902. Serial No. 93,921. (No model.)

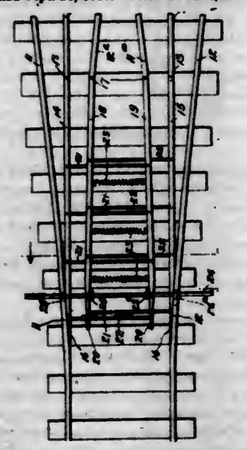
*Claim.*—1. In a machine of the character described, the combination with a driving-shaft, and a roller carried thereby, of a rod movably operated from the roller in a longitudinal direction, a two-armed lever actuated by the said rod, a slide 16, an oscillatable clamping-bar carried by said slide, an oscillated lever actuated from the roller on the driving-shaft and operating to lift the clamping-bar from the slide as described, means intermediate the slide and the said two-armed lever whereby said slide is operated.

2. In a machine of the character described, the combination with a driving-shaft, and a roller carried thereby, of a rod movably operated from the roller in a longitudinal direction, a two-armed lever actuated by the said rod, a slide 16, an oscillatable clamping-bar carried by said slide, an oscillatable lever actuated from the roller on the driving-shaft and operating to lift the clamping-bar from the slide, as described, a slide-piece 26 adjustably mounted in a slot in the two-armed lever, a lever 31 engaged by the piece 26, said lever 31 having a slot, a slide-piece 33 movable in the latter slot, a guide-plate 10 and a connection between the slide-piece and the guide-plate and also with the slide 16.



3. The combination with a driving-shaft and a roller thereon, of a two-armed oscillatable lever 9 operated from said shaft, a guide-plate having slots 13, 15, a slide 35, the support carried by the slide and having a slot, a bolt connecting the slide with the guide-plate, said bolt extending through the slot 13, a rod connecting the bolt with the lever 9, a slide 39 connected with a slot in slide 35, and having pins extending into the slots 15, a clamping-bar carried by the slide 39 and means for operating the said clamping-bar from the roller on the driving-shaft.

**755,495. RAILROAD-SWITCH.** THOMAS J. HOUGHTON, Graniteville, Vt. Filed Sept. 23, 1903. Serial No. 174,936. (No model.)

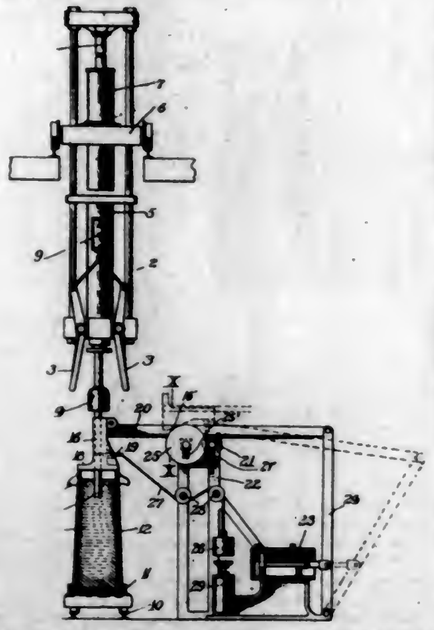


*Claim.*—In a railroad-switch, the combination of main-line rails 10, 10, $10^a$, $10^a$, side turnout rails 11, $11^a$, 12, $12^a$, movable rails 14, 15 pivotally mounted at 13 at the ends of rails $10^a$, $10^a$, movable rails 18, 19 pivotally mounted at 17 at the ends of the rails $12^a$, $11^a$,

tie-bars connecting movable rails 14 and 19, tie-bars connecting movable rails 18 and 15, spring 23 connecting movable rails 18 and 19 and acting to draw said rails together and to force the rails 14 and 15 apart depending apertured lugs upon said movable rails, an operating-rod slidably mounted in the apertures of said lugs, and stops upon said operating-rod adapted to engage said lugs to move said rails, substantially as described.

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**755,496. APPARATUS FOR PERFECTING INGOTS.** MOSHEY W. HUFF, Chicago, Ill. Filed May 20, 1903. Serial No. 158,045. (No model.)



*Claim.*—1. An ingot-perfecting apparatus, comprising a stripping-machine, in combination with a rod or billet holder for operation between the same and the top of the ingot-mold, as and for the purpose specified.

2. An ingot-perfecting apparatus, comprising a stripping-machine for removing the molds from successive ingots, in combination with a holder for grasping and holding a perfecting bar or billet, used to fill and finish an ingot, and means for actuating said holder in conjunction with said stripping-machine; whereby said bar or billet may be driven into an ingot, substantially as described.

3. An ingot-perfecting apparatus, comprising an ingot-stripping machine provided with a power-actuated plunger and also having suitable mold hooks or links, in combination with a rod or billet holder movable toward and from said stripping-machine, beneath the same, and means for operating said holder, substantially as described.

4. An ingot-perfecting apparatus, comprising an ingot-stripping machine provided with a power-actuated plunger and also having suitable mold hooks or links, in combination with a rod or billet holder movable toward and from said stripping-machine, beneath the same, means for operating said holder and the ingot-perfecting bar or billet slidably held in said holder and adapted to be driven into an ingot by the plunger of said stripping-machine, substantially as described.

5. An ingot-perfecting apparatus, comprising a stripping-machine adapted for vertical movement above an ingot-mold stand, in combination with a rod or billet holder laterally movable above said mold-stand and comprising a guide-block, having bar-gripping means, and a mechanism for actuating said block, substantially as described.

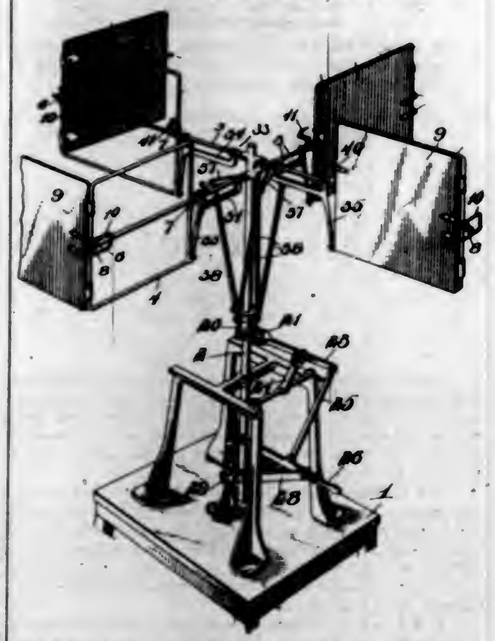
6. The ingot-perfecting attachment, for stripping-machines, comprising a suitable frame, in combination with a rod or billet holder and means for moving the same upon said frame, to position said holder beneath the stripping-machine or withdraw it therefrom, substantially as described.

7. The ingot-perfecting attachment, for stripping-machines, comprising a suitable frame, in combination with a rod or billet holder movable thereon and adapted to assume two positions, means upon said holder for gripping a rod or billet and a suitable mechanism for closing said gripping means in one position of the holder and opening the same in the other position of the holder, substantially as described.

8. An ingot-perfecting apparatus, comprising a stripping-machine, in combination with a frame arranged in proximity thereto, a bar or beam movable on said frame, a rod or billet holder carried by said beam and provided with a base adapted to rest upon the top of an ingot-mold arranged beneath the stripping-machine, said holder being adapted for slight vertical movement and being provided with rod-gripping means, substantially as described.

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**755,497. WINDMILL.** BENJAMIN S. HYATT, Vinita, Ind. Ter. Filed Nov. 30, 1903. Serial No. 183,280. (No model.)



*Claim.*—1. In a windmill, a plurality of horizontally-disposed radial arms, a shaft to which the arms are connected, open frames carried by the arms and adjustable to varying angular positions, and vanes having vertical pivots formed by the outer bars of said frames and movable to inoperative positions under the influence of centrifugal force.

2. In a windmill, a plurality of horizontally-disposed radial arms, a shaft to which the arms are connected, an approximately rectangular frame mounted on each arm and adjustable to varying angular positions, a vane pivoted to the outer bar of each frame, and a stop carried by the vane and adapted to engage against the frame-carrying arm in any position of adjustment of said frame.

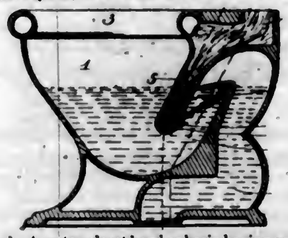
3. In a windmill, a plurality of horizontally-disposed arms, a shaft to which the arms are connected, an approximately rectangular frame mounted on each arm and adjustable to varying angular positions, and a vane having vertical pivots formed by the outer bar of said frame, the pivotal connection being at the extreme outer edge of the vane.

4. In a windmill, a vertical shaft, a plurality of radially-disposed arms carried thereby, vane-carrying frames pivotally mounted on said arms, vanes carried by said frames, means for moving said frames to a horizontal position, catches secured to the arms and catch-engaging means carried by the vanes and serving by interlocking with the catches to hold both the vanes and arms in position.

5. In a windmill, a vertical shaft, a plurality of radially-disposed arms carried thereby, vane-carrying frames pivotally mounted on the arms, collars connected in pairs and arranged on the arms, means for connecting one collar of each pair to one of the frames, a vertically-movable collar on the shaft, rods connecting the collar to the second collar of each pair, means for adjusting the vertically-movable collar, and a locking means for holding the same in adjusted position.

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**755,498. WATER-CLOSET.** WILLIAM KULOW, Kokomo, Ind., assignor to Columbia Pottery and Manufacturing Company, Kokomo, Ind. Filed Sept. 18, 1903. Serial No. 173,685. (No model.)



*Claim.*—1. A water-closet bowl or basin having arranged within itself a separate lower end-closed flushing chamber or pocket having, near its lower end, an upward and rearward inclined jet-nozzle and, a short distance above the latter, an additional correspondingly-inclined jet-nozzle, jointly delivering their water-jet into the upper part of the trap, said flushing-chamber and trap and the outlet member of said trap, all being rectangular and relatively contracted throughout in cross-section.

2. A water-closet bowl or basin having depending within itself a separate lower end-closing flushing-chamber, with said end removed some distance from the bottom of the bowl-chamber, said flushing-chamber forming one wall of one arm of the trap and having said wall provided with water-outlets, arranged near the bottom of said flushing-chamber and at a point farther upward, respectively, said water-outlets being inclined upward and rearward and delivering into the upper part of said trap.

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**755,499. STORE-SERVICE LADDER.** GEORGE LANE, Poughkeepsie, N. Y. Filed Jan. 18, 1904. Serial No. 189,475. (No model.)



*Claim.*—1. The combination with a trackway having a slot disposed substantially along the longitudinal median line thereof, of a supporting-bracket made in a single or integral piece comprising an upwardly-extending leg, a downwardly-extending leg, and a body having shoulders bearing against the rear of the trackway substantially along the longitudinal median line thereof, whereby the lower rear part of the trackway is left clear, and a tenon of reduced size on the bracket which is passed through the opening in the trackway and provided with a retaining-head bearing on the trackway.

2. The combination with a trackway having an elongated slot disposed substantially along the longitudinal median line thereof, of a supporting-bracket made in a single or integral piece comprising an upwardly-extending leg and a downwardly-extending leg which are separated by a bifurcation, a body at which the bifurcation terminates having shoulders bearing against the rear of the trackway beyond the opposite ends of the elongated slot therein, and a flattened or elongated tenon member narrower than the body aforesaid fitting said slot and provided with an upset or riveted head on the trackway, whereby the lower part of the trackway is left clear.

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**755,500. UMBRELLA-RIB CONNECTION.** JAMES O. LARRABEE, Oakland, Cal. Filed May 20, 1903. Serial No. 157,892. (No model.)



*Claim.*—1. The combination with an umbrella-rib, of a non-corrodible socket-piece having a channel into which the rib fits, said rib and socket-piece having matching perforations, and a locking member having a tongue or part to enter said perforations and thereby lock the rib to the socket-piece.

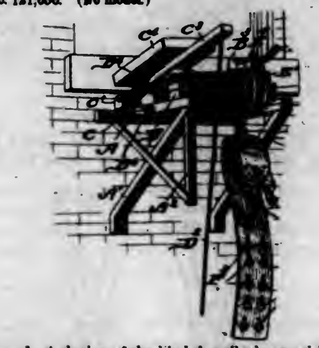
2. The combination with umbrella-ribs, and the top notch, of socket-pieces each having one end connected with said notch and having the other end provided with a socket to receive the rib, said rib and socket-piece each having a perforation to be alined when the rib is in place in the socket, and a latch carried by the socket-piece and having a tongue to enter said alined perforations and thereby lock the socket-piece and rib together.

3. The combination with an umbrella-rib made U-shaped in cross-section, of a socket-piece, means for connecting one end of the socket-piece with the top notch into which the ribs converge, said rib slidably fitting said socket-piece, and a lever secured within the socket-piece and provided with a tongue, said rib and socket-piece having coincident slots to receive said tongue.

4. The combination of a hollow U-shaped umbrella-rib of a correspondingly-shaped socket-piece having interned edges forming a guide into which the end of the rib is slidable, a lever-arm having one end fixed in one end of the socket-piece, said lever extending substantially within the curvature of the socket-piece and rib and having a tongue projecting from it, a slot made through the rib and a similar coincident slot in the socket-piece adapted to receive the tongue when they register therewith and lock the rib to the socket-piece.

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**755,501. FIRE-ESCAPE.** NELS LARSEN, St. Paul, Minn., assignor of one-half to A. N. Grants, St. Paul, Minn. Filed Aug. 30, 1902. Serial No. 121,660. (No model.)



*Claim.*—1. A device of the kind described comprising a drum, a cable thereon, a recessed block arranged adjacent the drum, a threaded rod in the recess, a brake-shoe having a reduced portion resting in the recess and a curved portion extending over the drum, and a handle having a threaded bore working on the rod, and adapted to regulate the pressure of the shoe on the drum.

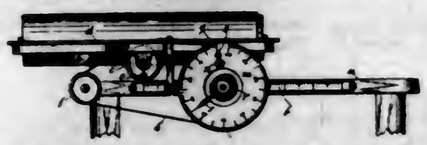
2. A fire-escape comprising a frame, boxings carried by the frame, a shaft carrying a flanged drum said shaft being journaled in the boxings, a block arranged on one of the boxes said block having upwardly-extending lugs, a vertical, threaded rod arranged between said lugs, a block adapted to slide on the rod between the lugs, a brake-shoe carried by the slidable block and adapted to engage the periphery of the flange, and a handle having a centrally-arranged, threaded perforation, said handle being adapted to work on the threaded rod and force the brake-shoe into engagement with the flange

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**755,502. INDICATOR FOR TYPE-WRITERS.** JAMES H. D. LA TOUCHE, Berhampur, Bengal, India. Filed Nov. 16, 1903. Serial No. 181,436. (No model.)

*Claim.*—1. The combination of a type-writer, a revolvable indi-

cator mounted thereon, including an adjustable ring and a pointer, means for revolving said indicator by the movement of the type-writer carriage, and means for returning said indicator to its original position, substantially as described.



2. The combination of a type-writer frame, a revoluble indicator-wheel mounted thereon and consisting of a back, a ring-face adapted to be clamped at different positions upon said back, an adjustable pointer, means for revolving said indicator-wheel by the movement of the carriage, and a spring for returning said wheel to its initial position, substantially as described.

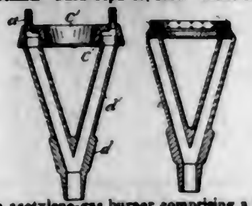
3. The combination of a type-writer frame provided with an index-bar, a revoluble indicator-wheel pivotally mounted on said frame, said indicator-wheel including a back, a circular face adjustable upon said back, means for clamping said face in different positions upon said back, a movable pointer, and means for clamping said pointer in different positions in front of the face of said indicator-wheel, means for revolving said indicator by the movement of the type-writer carriage, and means for restoring said indicator to its original position when the type-writer carriage is moved to the left, substantially as described.

4. The combination of a type-writer casing, a pivot-pin secured to the front of said casing, an indicator-wheel mounted on said pin, said indicator-wheel including a back, and a face adjustable upon said back, an adjustable pointer, a spring connected to said pivot and to said indicator-wheel, and means for moving said indicator-wheel against the tension of the spring by the travel of the type-writer carriage during the operation of writing, substantially as described.

5. The combination of a type-writer-frame, a pivot-pin rigidly fixed in the front of said frame, an indicator-wheel revolubly mounted on said pivot-pin, a spring attached to said pivot-pin and to said wheel, said indicator-wheel including grooved back, a face movable on said back, a clamp for fastening said face to said back, a movable pointer, a clamp for said pointer, and a cord passing around said indicator-wheel in the groove thereof and attached to the type-writer carriage, whereby the movement of the type-writer carriage in writing turns the indicator-wheel against the tension of said spring, substantially as described.

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755,503. **ACETYLENE-GAS BURNER.** GEORGE M. LAUDER, Glasgow, Scotland. Filed Sept. 19, 1903. Serial No. 173,887. (No model.)



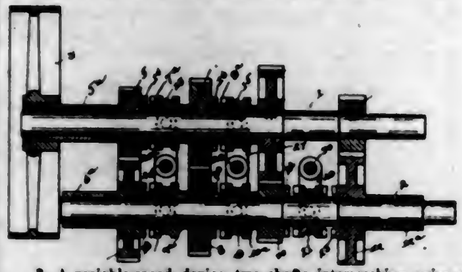

*Claim.*—An acetylene-gas burner comprising a burner-body of base metal, said burner-body consisting of an annular trough *c*, tubular branches *d'* connecting the space within said trough to the gas-supply pipe, a cover *c'* inclosing the space within said trough, said cover being provided with concentric rows of orifices and nipples having a platinum surface secured in said orifices, said nipples being formed with axial gas-passages and lateral air-inlets as shown and described.

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755,504. **VARIABLE-SPEED MECHANISM.** CHARLES F. LAUB, Cincinnati, Ohio, and ALBERT B. ROBINSON, Covington, Ky., assignors to the American Tool Works Company, Cincinnati, Ohio, a Corporation. Filed Oct. 19, 1903. Serial No. 177,596. (No model.)

*Claim.*—1. In a variable-speed device, two shafts, three or more pairs of intermeshing gear-wheels of varying diameter, some of which are loose, some of which are fixed, and some of which are loose but fixable to a shaft, means for connecting together two or more of the gear-wheels on the same shaft, means for engaging a fixable gear-wheel with its shaft and a drive, substantially as specified.

2. In a variable-speed device, two shafts, pairs of intermeshing gear-wheels of varying diameter, loose on said shafts, means for connecting together gear-wheels on the same shaft, means for fixing some of the gear-wheels to the shaft, and means for rotating the prime member of the system, substantially as specified.



3. A variable-speed device, two shafts, intermeshing pairs of gear-wheels of varying diameter thereon, some of said gear-wheels being loose, some fixed, and some loose but fixable on said shafts, one intermeshing pair of the loose gears, having sleeves abutting the opposing faces of another pair of loose gears, sliding clutches on said sleeves, adapted to fix together two gear-wheels on the same shaft, means for rotating one of the loose gear-wheels, and means for fixing a fixable gear-wheel to its shaft, substantially as specified.

4. In a variable-speed device, two shafts, pairs of intermeshing gear-wheels of varying diameter thereon, some loose, some fixed, and some loose but fixable thereon, clutches between the gears adapted to lock a loose gear to a fixed gear, a clutch between one of the fixable gears and its shaft, a shifting-arm between the loose-gear clutches adapted to alternately engage and disengage them and means for rotating one of the members, substantially as specified.

5. In a variable-speed device, two shafts, three pairs of intermeshing gear-wheels of varying diameter thereon, some loose, some fixed and some loose but fixable, clutches and shifting means therefor substantially as shown for giving a minimum of four speed changes, and means for rotating one of the members, substantially as specified.

6. In a variable-speed device, two shafts, three pairs of intermeshing gear-wheels thereon, two of the gears being loose, two being fixed, and two loose but fixable means for clutching a loose gear to another gear on the same shaft, means for fixing either of the fixable gears to a shaft, and means for rotating one of the members, substantially as specified.

7. In a variable-speed device, two shafts, four pairs of intermeshing gear-wheels of varying diameter thereon, clutching, fixing and shifting means, for producing eight changes of speed, substantially as specified.

8. A variable-speed device comprising two shafts a minimum of three pairs of intermeshing gears thereon of varying diameter, one of the intermeshing pairs being loose on its respective shafts, a driving-wheel, two of the remaining gear-wheels being fixed, and two loose but fixable to the shaft, clutches between the pair of loose gear-wheels and the next adjacent pair of gear-wheels, adapted to fix two gear-wheels together to revolve as a unit on each shaft, and means for fixing either of the fixable gear-wheels to a shaft, substantially as specified.

9. In a variable-speed device, two shafts, a minimum of three pairs of intermeshing gear-wheels of varying diameter thereon, one pair of which is loose on said shaft, two of the remaining four gear-wheels being fixed and two loose but fixable on said shafts, clutches between the first and second pairs of gear-wheels adapted to fix two gear-wheels together to revolve as a unit on said shafts respectively, a shifting-arm engaging said clutches and adapted to alternately engage and disengage the clutches on opposite shafts, a shifting-clutch between the second and third pairs of intermeshing gear-wheels adapted to fix either of the two fixable gear-wheels to its shaft, and a driving-wheel, substantially as specified.

10. In a variable-speed device, two shafts, a minimum of three pairs of intermeshing gear-wheels of varying diameter thereon, one pair of which is loose thereon, two of the remaining four gear-wheels being fixed, and two loose but fixable to said shafts, shifting-clutches on said shafts between the loose and the next adjacent pairs of intermeshing gear-wheels, adapted to fix two gear-wheels together to revolve as a unit on each shaft, a transverse shaft between said first-named shafts, an arm thereon engaging said clutches for alternately shifting them, a handle for operating said transverse shaft, a clutch between the fixed and the fixable gears adapted to fix either of the latter to its shaft, means for throwing said last-named clutch, and a drive, substantially as specified.



11. In a variable-speed device, two shafts, a minimum of three pairs of intermeshing gear-wheels of varying diameter thereon, one intermeshing pair being loose, two of the remaining gears being fixed and two loose but fixable to said shafts, clutches between the loose pair and the next adjacent pair, a clutch between said fixed and fixable gears, means for shifting said clutches to give a minimum of four speeds, and a drive, substantially as specified.

12. A speed-variator comprising two shafts, a set of six gears of varying ratios arranged in series on the two shafts, clutch-and-lever mechanism on both shafts by suitable manipulation of which four changes of speed may be obtained, substantially as specified.

13. A speed-variator comprising a frame, two shafts parallel to each other, a loose gear-wheel on either shaft carrying at one end of its hub the means for receiving power from some outside source and clutch-and-lever mechanism for connecting said loose gear-wheel in train with the other gears, substantially as specified.

14. A speed-variator comprising a frame, two parallel shafts, six gears mounted on the two parallel shafts, said gears being disposed oppositely in pairs in the same plane, clutch-and-lever mechanism on both shafts, a pair of rock-shafts, rocker-arms and clutch-forks carried by said rock-shafts, and a pair of levers for the purpose of shifting the clutches, substantially as specified.

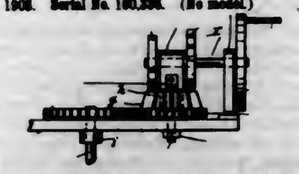
15. In a speed-variator, a frame, two shafts, a pair of intermeshing gear-wheels loosely mounted on said shafts, a power-wheel fixed to one of said gear-wheels, a second pair of intermeshing gear-wheels on said shafts, having elongated hubs extended toward said first-named pair of gear-wheels, the said second pair of gear-wheels being also loosely mounted on their shafts, clutches splined on the said hubs and adapted to engage the first-named gear-wheels, whereby two gear-wheels on the same shaft may be fixed to rotate as a unit, means for shifting said clutches, and means for fixing a loose gear-wheel to its shaft, substantially as described.

16. In a variable-speed device, two shafts, a loose and a fast gear on one shaft, loose gears on the other shaft, means for fixing said gears in proper driving relation, and a power-wheel mounted to rotate with the loose gear for imparting or receiving motion, substantially as specified.

17. In a variable-speed device, two shafts, pairs of intermeshing gears of varying diameter, loose thereon, means for fixing two gears together on their shaft, and means for fixing a selected gear to its shaft, substantially as specified.

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755,505. **GEARING.** MILES J. LAWLER, Parnell, Iowa. Filed June 6, 1903. Serial No. 160,396. (No model.)

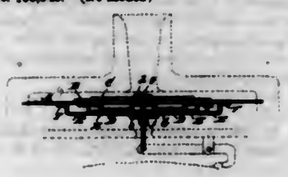


*Claim.*—1. The combination, with a supporting-plate, a stationary supporting-shaft having a bearing at one end, and means for rigidly securing the other end of the said shaft to the said plate; of a driving-shaft journaled in the said bearing, two toothed segments secured on the said driving-shaft, one on each side of the said bearing, and a toothed wheel journaled on the said stationary shaft between the said plate and bearing and gearing with the said toothed wheels alternately.

2. The combination, with a driving-wheel rim provided with a hub and radial arms which have wheel-teeth between the said rim and hub and at their edges, of two toothed segments which gear into the said wheel-teeth alternately, and means for revolving the said segments simultaneously.

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755,506. **DIAPHRAGM FOR SOUND-PRODUCING INSTRUMENTS.** ZEPHIRE J. LE FEVRE, Los Gatos, Cal. Filed Jan. 9, 1904. Serial No. 188,348. (No model.)

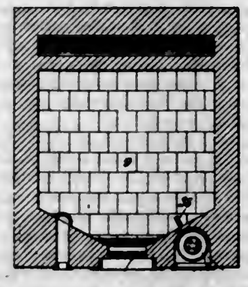


*Claim.*—1. A diaphragm for sound-producing instruments, comprising a plurality of disks of suitable material and of gradually-diminished diameters secured together, one lying flat upon the other, a plurality of radial braces having its outer ends secured to the larger one of the disks, and a reinforce-disk located between the radial braces and secured thereto, substantially as and for the purpose set forth.

2. A diaphragm for sound-producing instruments comprising a plurality of disks of gradually-diminished diameters, one lying flat upon the other and secured together, two sets of radial braces each set being of different lengths and having feet with flat surfaces which are secured to the under side of the larger one of the plurality of disks, and a reinforce-disk located between the two sets of braces, said braces having their surfaces which come in contact with the reinforce-disk formed flat to facilitate connecting them thereto, substantially as and for the purpose described.

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755,507. **BAKER'S OVEN.** WILLIAM LEHR, New York, N. Y. Filed July 1, 1903. Serial No. 163,889. (No model.)



*Claim.*—1. The combination in an oven, of a baking-chamber, a fire-box arranged beneath the baking-chamber, a passage-way for directing heat to the rear of and above the baking-chamber, a door arranged at the mouth of the baking-chamber, a vertical ventilating-flue arranged at the front of the oven and communicating with the upper mouth portion of the passage-way at a point outside the door of the baking-chamber, a damper for controlling said ventilating-flue, a smoke-flue for the oven, a damper for said smoke-flue, a regulating-flue connecting with the passage-way near the upper rear portion of the latter, and a damper for said regulating-flue.

2. The combination of an oven having a recess formed in the front wall thereof, a baking-chamber within said oven, a boiler located in the recess in the wall, means for leading steam from the boiler into the baking-chamber, a fire-box beneath the chamber, a passage-way extending from the fire-box, at a point below the baking-chamber around the latter to a point above the same, a heat-regulating flue communicating with the baking-chamber, a damper for controlling said flue, and a vertical ventilating-flue establishing communication between the upper mouth portion of the passage-way and the mouth of the baking-chamber.

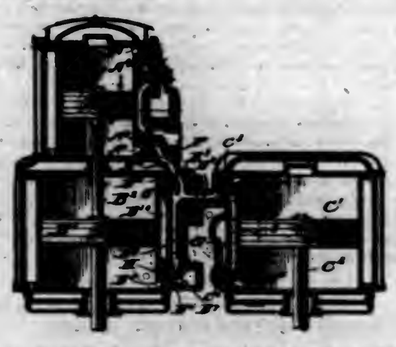
3. The combination of an oven having a baking-chamber therein, means for supplying steam to the oven, a fire-box beneath the baking-chamber, a passage-way leading around the oven, for conducting the products of combustion from the fire-box, a vertical heat-regulating flue communicating with the upper portion of the baking-chamber, a smoke-flue communicating with the passage-way, a vertical ventilating-flue establishing communication between the mouth of the oven and the upper mouth portion of the passage-way, and dampers for controlling the regulating-flue, the smoke-flue and the ventilating-flue.

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755,508. **COMPOUND ENGINE.** FREDERICK LINCOLN, Warren, Mass.; Alice G. Lincoln administratrix of said Frederick Lincoln, deceased. Filed Feb. 13, 1902. Serial No. 93,951. (No model.)

*Claim.*—1. The combination with a high-pressure cylinder having inlet and exhaust ports, of a low-pressure cylinder arranged in tandem with the high-pressure cylinder, a valve-controlled passage being arranged between the two cylinders, the low-pressure cylinder having an exhaust-port adjacent the end opposite the high-pressure cylinder, a common piston-rod, pistons on said rod, one piston being arranged in each cylinder, a second low-pressure cylinder arranged adjacent the first low-pressure cylinder and having an exhaust-port adjacent one end and a valve-controlled inlet-port adjacent the opposite end in communication with the passage between the two first-

mentioned cylinders, a piston-rod in the second low-pressure cylinder and a piston on said rod.



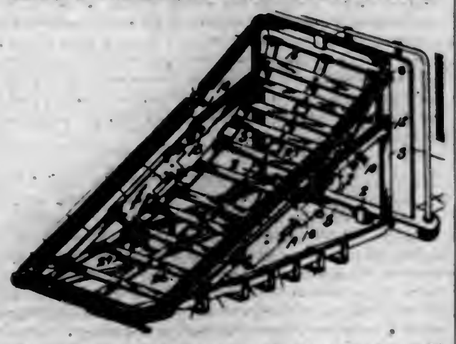
2. An engine of the kind described comprising three cylinders, two of said cylinders being arranged tandem, and having suitable pistons and piston-rods, a steam-pipe connected to one of said cylinders, a vacuum-pump having connection with each cylinder, valves adapted to admit steam successively through each of the three cylinders from the steam-pipe mentioned, and means for automatically actuating the said valves.

3. A compound engine comprising a high-pressure cylinder and two low-pressure cylinders, a piston-rod common to the high-pressure cylinder and one of the low-pressure cylinders, a piston in each cylinder, a piston and piston-rod in the other low-pressure cylinder, means for creating a vacuum below the pistons on the common piston-rod and above the piston in the other low-pressure cylinder, means for admitting live steam to the high-pressure cylinder only, means for cutting the supply of said steam off when a quarter-stroke has been made, and means for passing a portion of said steam successively into and through the two low-pressure cylinders, substantially as and for the purpose described.

4. A compound engine, comprising a high-pressure cylinder, having a steam-inlet, a two-way valve, inlet and exhaust ports and inlet and exhaust cut-off valves, a passage connecting the inlet and exhaust ports, an exhaust-passage leading from the exhaust-port, a secondary cylinder having inlet and exhaust ports, and inlet and cut-off valves adjacent thereto, a passage connecting the inlet and exhaust ports, an exhaust-port leading from the inlet-port and the exhaust-passage leading from the exhaust-port, a passage leading from the exhaust-ports of the secondary cylinder, and a tertiary cylinder having the inlet and exhaust ports, and inlet and cut-off valves arranged adjacent thereto, a passage connecting the inlet and exhaust ports, an exhaust-passage communicating with the exhaust-port, and a passage communicating with the passage leading from the main cylinder to the secondary cylinder, said main and secondary and tertiary cylinders having suction means connected or communicating with its exhaust-passages, as specified

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755,509. **CAR-FENDER.** GEORGE LEHARD and PHILIP LEHARD, Sublett, Mo. Filed Mar. 9, 1903. Serial No. 146,978. (No model.)



*Claim.*—1. A car-fender, consisting of a supporting-frame, side rails connected to said frame, a basket or receptacle supported between said rails, levers connected to said basket and frame, and automatic catches between the levers and side rails for rigidly securing the rails when lowered but permitting the entire fender to be raised to a vertical position when said catches are disengaged.

2. A car-fender, consisting of a frame, a pair of side rails pivoted at their inner ends to the frame, front and side buffer-springs, a catch basket or receptacle mounted between the frame and side rails and automatic connections for securing the side rails when lowered and permitting them to rise when struck to form a catch-receptacle.

3. A car-fender, consisting of a frame, side rails pivoted to said frame, a basket supported between the side rails and frame, angular levers pivoted to the frame and having their upper ends connected to the basket, and automatic catches between the lower ends of the levers and the side rails.

4. A car-fender, consisting of a frame, side rails pivoted to said frame, a basket supported between the side rails and frame, a combined basket support and guard carried by the side rails, and pivotal and adjustable connections between the side rails and frame to permit the raising and lowering of said side rails.

5. A car-fender, consisting of a supporting-frame, a pair of angle-levers fulcrumed to said frame, a pair of pivoted side rails, pivotal and adjustable connections between the side rails and the lower ends of the angular levers, and a flexible basket having its upper end secured to the upper ends of the angle-levers and its lower end secured to the side rails.

6. A car-fender, consisting of a frame, a pair of pivoted side rails, buffer-springs connecting the forward ends of said rails, buffer-springs between the side rails and frame, angle-levers pivoted to the frame, connections between the angle-levers and side springs, a basket connected to the levers and side rails and automatic catches between the levers and side rails for holding the basket in position for use and allowing it to form a catch-receptacle when struck.

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755,510. **CORN-CUTTER.** THOMAS J. LOVE, Lincoln, Ill. Filed Oct. 30, 1903. Serial No. 179,120. (No model.)



*Claim.*—1. The improved corn-cutter herein described comprising the frame having the side beams diverging rearwardly, the wheels supporting the rear end of said frame, the runner at the front end of the frame, the platform on the frame, the cutter having the front and rear blades arranged one in advance of the other the rear blade being at a greater angle to the direction of motion than the front one, the carrier for said cutter hinged at its inner edge to the body of the implement, fastenings for securing said carrier extended in position for use, the standard J inclining transversely across the platform opposite the front end of the cutter-carrier and the retaining-frame L extending transversely the machine adjacent to the rear end of the cutter and inclining in the reverse direction to the inclination of the standard J and cooperating with the standard in holding the corn when cut substantially as set forth.

2. The improved corn-cutter herein described comprising the frame having the diverging side beams, the platform, the cutter at one side of the platform, the carrier for said cutter movably connected with the frame, the standard J inclining transversely across the platform opposite the front end of the cutter, the frame K in advance of the standard J and extending approximately in the direction of movement of the machine, and the retaining-frame L extending transversely the machine adjacent to the rear end of the cutter and inclining in a direction the reverse of the inclination of the standard J substantially as set forth.

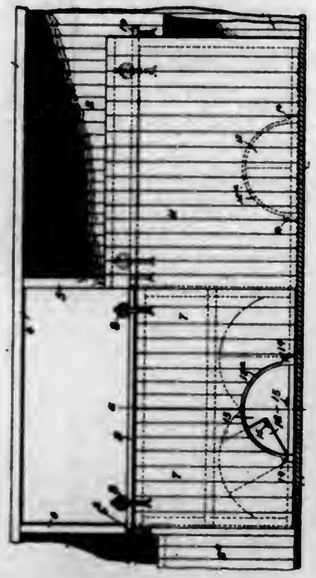
3. A corn-cutter comprising the framing, the cutter at one side thereof, the standard J inclining transversely across the machine in front of the cutter and the retaining-frame L extending reversely across the machine adjacent to the rear end of the cutter and inclining in a direction the reverse of the inclination of the standard J substantially as set forth.

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755,511. **GRAIN-DOOR FOR CARS.** JOHN R. MACLAGHLIN, Vancouver, Canada. Filed Sept. 29, 1903. Serial No. 176,089. (No model.)



*Claim.*—1. The combination with a car having the usual door-opening in the side thereof, and a rail slidable across the said opening and connected to the car-body; of a supplementary door slidable on the inner side of the car over the usual door-opening and supported upon the said rail for endwise sliding movement, said supplementary door having an opening and a closure member upon said supplementary door for closing the opening therein.



2. As a grain-door for box-cars, a supplementary door slidable on the inner side of the car across the existing doorway, a rail adapted to sustain the running-sheaves of such door, which rail is slidable endwise telescopically together that the portion across the door may be removed therefrom.

3. As a grain-door for box-cars, a supplementary door slidable on the inner side of the car across the existing doorway, a housing against the inner side of the car to receive such door and shield it from the grain within the car and a rail on which the door is hung by means of sheaves, such rail being in two sections, the section across the doorway being slidable endwise on the section within the housing, substantially as and for the purpose specified.

4. For a car of the character described; a supplementary door slidable across the inner side of the main door-opening in the said car, the said supplementary door having a relief-opening and a hollow chamber in communication with the said relief-opening, and a closure part mounted in the said hollow chamber to close over the relief-opening, as set forth.

5. A supplementary door for grain-cars slidable across the inside of the usual doorway thereof, said supplementary door having hollow spaces which extend lengthwise thereof, and a relief-opening in communication with the said spaces, a pair of pivoted door-sections mounted within the spaces of the supplementary door adapted to fold back into the said spaces when turned to their open position.

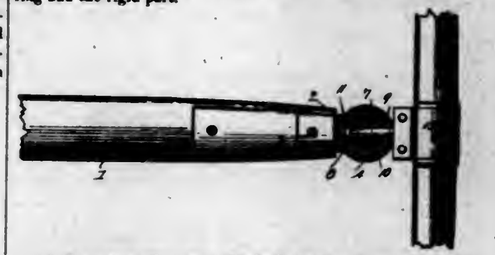
6. As a supplementary grain-door for cars, the rail 10 secured within the car-siding, the rail 9 slidable telescopically on 10, the door 7 carried by sheaves 8 on the rails 9, 10, the housing 11 to inclose the door when run clear of the doorway, the relief-opening 13 closable with doors 12 pivotally mounted on pins 14, all substantially as described.

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755,512. **NECK-YOKE.** CASSIUS MAPLES, Laurens, N. Y. Filed June 16, 1903. Serial No. 161,590. (No model.)

*Claim.*—1. In a connecting means for a pair of draft members, a stud carried by one member, clamping means carried by the second member, and an intervening member free for rotative movement with respect to both the clamping means and the stud.

2. In a connecting means for a pair of draft members, a rigid part carried by one member, a ring pivoted on the rigid part, and clamping means on the second member and directly engaging the ring and the rigid part.



3. In a connecting means for draft members, a rigid device carried by one member, rigid clamping means on the second member, and an intervening member engaged by the clamping means and free for rotative movement with respect to both the rigid device and the clamping means.

4. In a connecting means for a pair of draft members, a stud carried by one member, clamps carried by the second member, and having journals, a ring pivoted on the stud and rotatable on the journals.

5. In a connecting means for draft members, a headed stud carried by one member, clamps on the second member, and provided with journals, an interposed ring engaged by journals and through which the stud projects for engagement by the journals.

6. In a connecting means for draft members, a stud on one member, clamping devices on the second member and provided with projections having sharp terminals, and a ring on the projections, through which the head projects for the engagement of the terminals with the stud adjacent to the head.

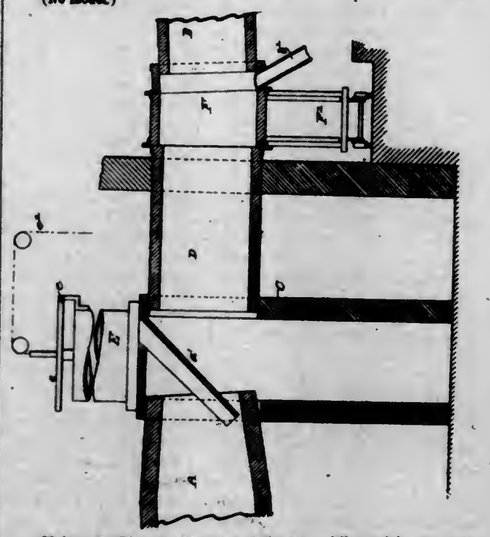
7. In a connecting means for draft members, a stud on one member, a pair of clamps on the second member, and having inwardly-disposed projections, and a ring on the projections and having an opening and an alining socket for the stud.

8. In a connecting means for draft members, a stud on one member, a ring having an opening and an alining socket, for the reception of the stud and clamps on the second member engaging the ring and the stud.

9. In a connecting means for draft members, a stud on one member, a ring having an opening and an alining socket for the reception of the stud and clamps on the second member engaging the ring and the stud but permitting free rotative movement of the ring and the stud.

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755,513. **COMBINED ROTARY KILN AND DRIER.** CHARLES A. MATCHAM, Allentown, Pa. Filed Jan. 11, 1904. Serial No. 188,513. (No model.)



*Claim.*—1. The combination of a rotary kiln, a drier, a stack between the kiln and the drier and with which both communicate,

with means for regulating the flow of the products of combustion from the kiln, substantially as described.

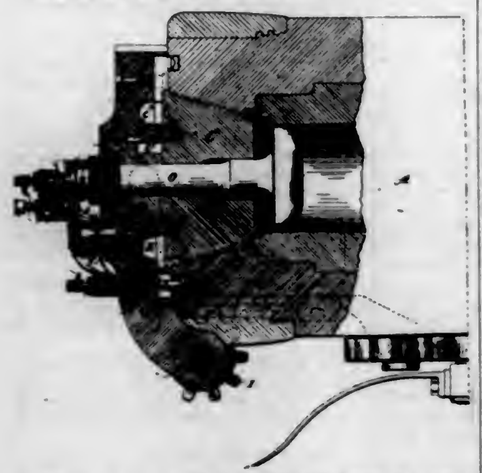
2. The combination of a rotary kiln, a drier, a stack communicating with one end of the kiln and one end of the drier, a valve in said stack to regulate the flow of the products of combustion, and a stack at the opposite end of the drier, substantially as described.

3. The combination of a rotary kiln, a stack, a flue connection, both the rotary kiln and flue connection communicating with the stack, a rotary drier, a coupling forming connection between one end of the rotary drier and the flue, and a stack at one end of the rotary drier, substantially as described.

4. The combination of a rotary kiln, a stack with which the kiln communicates, a flue connection communicating with the stack, a rotary drier, a coupling between the flue connection and one end of the rotary drier, a truck upon which the flue connection is mounted, and a stack at the opposite end of the drier, substantially as described.

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**755,514. FIRING MECHANISM FOR BREECH-LOADING GUNS.** JOHN F. MEYER and SIGARD A. S. HAMMAR, South Bethlehem, Pa., assignors to the Bethlehem Steel Company, South Bethlehem, Pa. Filed Feb. 3, 1901. Serial No. 45,756. (No model.)



*Claim.*—1. In combination with the breech-block of a gun, a firing mechanism having a movable member, connections between said member and the block, whereby said member derives motion from the block, and means whereby said member may be moved independently of the breech-block, substantially as and for the purpose described.

2. In combination with the breech-block of a gun, a firing mechanism having a movable member, connections between said member and the breech-block whereby said member derives motion from the breech-block, said connections being separable, whereby said member may be moved independently of the breech-block, substantially as and for the purpose described.

3. In combination with breech mechanism, a block movable to and from firing position, an extractor carried by the block, connections whereby said block derives motion from the breech mechanism, and means whereby said member may be moved independently of the breech mechanism, substantially as and for the purpose described.

4. In combination with breech mechanism, a block movable to and from firing position, an extractor consisting of a bar pivoted to the block, connections whereby said block derives motion from the breech mechanism, and means whereby the block may be moved independently of the breech mechanism, substantially as and for the purpose described.

5. In combination with the breech mechanism of a gun, a firing mechanism, a sliding and oscillating block carrying a member of the firing mechanism, a pivoted arm, a pivotal connection between the latter and the block whereby the latter is given both its sliding and oscillating movements from the arm, and means for rocking said arm, substantially as and for the purpose described.

6. In combination with the breech-plug of a gun, a firing mechanism, a block carrying a member of the firing mechanism, a piece swiveled to the plug on which the block is slidingly mounted, a pivoted arm, a pivotal connection between the latter and the block, and means for rocking said arm, substantially as and for the purpose described.

7. In combination with the rotatable breech-block of a gun, a sliding and oscillating block carrying a member of the firing mechanism for shifting the same to and from firing position, and means for moving said movable block comprising gearing that connects it with the breech-block, whereby the turning of the latter actuates said movable block, substantially as described.

8. In combination with the breech mechanism of a gun, an electric firing mechanism, a movable block carrying one member of a circuit opening and closing device, an arm carrying one member of another circuit opening and closing device, a connection between the block and arm whereby the block receives motion from the arm, and a connection between the arm and the breech mechanism whereby the arm receives motion from the latter, substantially as described.

9. In combination with the rotatable block of a breech mechanism, an electric firing mechanism, a movable block carrying one member of a circuit opening and closing device, an arm carrying one member of another circuit opening and closing device, a connection between the block and arm, whereby the block receives motion from the arm, and gearing between the arm and breech-block, whereby the arm receives motion from the latter, substantially as described.

10. In combination with the block of a breech mechanism, means for rotating the block, an electric firing mechanism, a circuit opening and closing device having a movable contact, an arm for moving such contact, a collar connected with the arm having teeth and a part connected to the breech-block having a notch and a circumferential groove to respectively coöperate with said teeth, substantially as and for the purpose described.

11. In combination with the rotatable block of a breech mechanism, a movable bracket or carrier therefor, an electric firing mechanism, circuit opening and closing means actuated by the rotation of the block, and circuit opening and closing means controlled by the movement of the bracket or carrier, substantially as described.

12. In combination with the block of a breech mechanism, a movable bracket or carrier therefor, an electric firing mechanism, a circuit opening and closing device comprising an arm geared to and receiving motion from the breech-block, and a circuit opening and closing means carried by the bracket or carrier, substantially as described.

13. In combination with breech mechanism, a firing mechanism, a movable part on which is mounted a member of the firing mechanism for moving said member to and from firing position, and an extractor consisting of a bar movably mounted upon and carried with said part, whereby when the latter is moved to take it from firing position, the extractor will be moved to perform its function, substantially as described.

14. In combination with breech mechanism, a firing mechanism, a sliding block on which is mounted a member of the firing mechanism, and an extractor consisting of a bar movably mounted upon and carried by said block, substantially as described.

15. In combination with breech mechanism, a firing mechanism, a sliding block on which is mounted a member of the firing mechanism, and an extractor consisting of a bar having a wedge, pivoted to the block, substantially as described.

16. In combination with breech mechanism, an electric firing mechanism including an electrode carried by a movable block, a swinging support for the block in which the latter is slidingly mounted, an arm pivoted to the block for sliding the same and a suitable support for said arm, substantially as described.

17. In combination with a breech mechanism, an electric firing mechanism, an automatic circuit opening and closing mechanism, and a safety-circuit opening and closing mechanism having an electrode in position to normally close the circuit that is movable at will to a position to open the circuit, substantially as described.

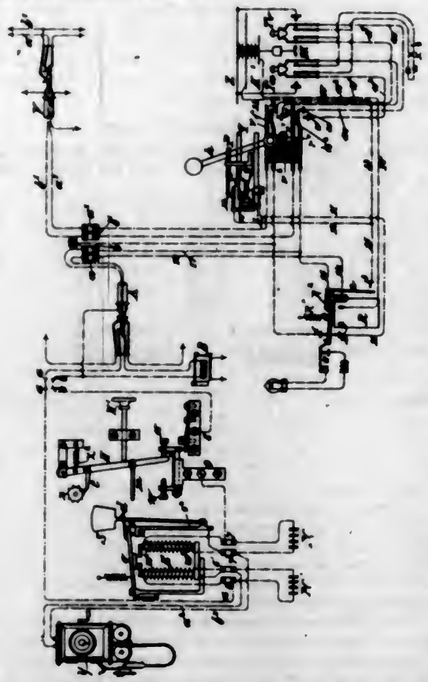
18. In a gun, the combination with a breech mechanism, an electric firing mechanism, an automatic circuit opening and closing mechanism, a safety-circuit opening and closing mechanism, comprising two electrodes, respectively on fixed and movable parts of the gun, and means whereby at will one of said electrodes may be moved to and held in position where it cannot touch the other electrode, substantially as described.

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**755,515. COUNTING SYSTEM FOR TELEPHONES.** JOHANN H. MEYER, Magdeburg, Germany. Filed May 26, 1902. Serial No. 108,962. (No model.)



*Claim.*—1. The combination with a telephone-line and the telephones at the substation thereof, a service-meter or toll-charging device at the substation, and means for manually operating said meter, mechanism adapted to render the telephonic apparatus inoperative, and a magnet controlling said mechanism, an answering-plug for making connection with the line at the central office, and a source of current connected therewith adapted to excite the magnet to prevent the use of the telephone when a call is answered, and a device operated manually in the actuation of the meter for rendering said telephone operative, manually-actuated mechanism at the central station adapted to connect called and calling stations, and means to cause a break in one point of said circuit in the line, an automatic relay at the central station to control said break and connections between it and said manually-operated mechanism at the central office to cause it to be energized on the movement of the mechanism, and connections between the relay, mechanism and line, to cause said relay to be deënergized upon the movement of said magnet-controlling mechanism at the calling-station and thus establish the circuit at the aforesaid break, as set forth.



2. In combination with a telephone-line, means for calling the central office from the station thereof, and telephone apparatus at the station, of a device at the substation adapted to render an essential part of said telephone apparatus inoperative, and a magnet controlling said device, an answering and a calling plug for making connection with the line at the central office, a source of current applied through the answering-plug adapted to operate said magnet, an independent manually-operated device at the substation adapted to render the telephone apparatus operative, and a service-meter or toll-collecting appliance operated by said device, manually-actuated mechanism at the central station adapted to connect called and calling stations and means to cause a break in one point of said circuit in the line, an automatic relay at the central station to control said break and connections between it and said mechanism to cause it to be energized on the movement of the mechanism and connections between the relay, mechanism and line, to cause said relay to be deënergized upon the movement of said magnet-controlling mechanism at the calling-station and thus establish the circuit at the aforesaid break, as set forth.

3. The combination with a telephone-line extending from a substation to a central office, of a magnet connected with the line at the substation, and mechanism controlled by said magnet for rendering inoperative the telephone apparatus at the substation, whereby the use of such telephone apparatus may be prevented, a source of current at the central office adapted to energize said magnet, to actuate said mechanism, means for connecting said source of current with the line, a toll device at the substation, and a releasing appliance actuated in the operation of said toll-counter, for restoring the operative condition of the substation telephone apparatus, manually-operated mechanism at the central station adapted to connect called and calling stations and means to cause a break in one point of said circuit in the line, an automatic relay at the central station to control said break and connections between it and said manually-operated mechanism at the central office to cause it to be energized on the movement of the mechanism, and connections between the relay, mechanism and line, to cause said relay to be deënergized upon the movement of said magnet-controlling mechanism at the calling-station and thus establish the circuit at the aforesaid break, as set forth.

4. A telephone counting system for telephone subscribers, consisting of instruments Y, an electromagnetic switch adapted to be operated by direct current, and when so operated to cut out the instruments Y, a circuit-interrupter and a counting mechanism, in combination with a central station having a manually-operated switch and an automatic relay, connections and contacts for the switch and relay so disposed that when the called and calling subscribers have been connected, before the counter has been operated, and upon the operation of the switch, that a break will occur in the circuit at the relay and upon operating the said circuit-breaker this broken circuit will be automatically connected at the relay, as and for the purpose described.

5. A telephone counting system comprising instruments Y, and line-wires, an electromagnetic switch, comprising two coils, one connected to one line-wire and to the instruments, the other connected to the other line-wire and also to the instruments, an armature and a shunt cut-out operated thereby, to cut out said instruments from the circuit, a circuit-interrupter and a counting mechanism, in combination with a central station having a manually-operated switch and an automatic relay, connections and contacts for the switch and relay so disposed that when the called and calling subscribers have been connected, and before the counter has been operated, that upon the operation of the switch a break will occur in the circuit at the relay, and upon operating the said circuit-breaker this broken circuit will be automatically connected at the relay, as and for the purpose described.

6. A telephone counting system comprising a counter, an electromagnetic switch having terminals and a non-inductive resistance-bridge, a circuit-breaker, line-wires connected to the terminals, and to a set of instruments Y, in combination with a central station having a manually-operated switch and an automatic relay, connections and contacts for the switch and relay so disposed that when the called and calling subscribers have been connected and before the counter has been operated that upon the operation of the switch a break will occur in the circuit at the relay and upon operating the said circuit-breaker this broken circuit will be automatically connected at the relay, as and for the purpose described.

7. A telephone counting system comprising a counter, an electromagnetic switch having coils, polarized cells bridging the coil-terminals, a set of instruments, connections from the switch-terminals to the central station, a manually-operated switch, an automatic relay at the central station, and means for causing a break in the otherwise completed circuit from calling to called subscriber at the relay before the operation of the counter, as and for the purpose set forth.

8. A telephone counting system, comprising an electromagnetic switch having two oppositely-wound coils and a pair of terminals for each coil, a non-inductive bridge resistance for each pair of terminals, a telephonic-instrument set and a counter mechanism, connections from the switch-terminals to the central station, a manually-operated switch, an automatic relay at the central station and a means for causing a break in the otherwise completed circuit from calling to called subscriber at the relay before the operation of the counter, as and for the purpose set forth.

9. A counting system for telephones, comprising a counter, an electromagnetic switch having a non-inductive bridge resistance across its terminals, a signaling device operated by said switch, instruments Y and a line, the set of telephonic instruments adapted to be in circuit with the magnetic switch when no direct current is passing, the non-inductive bridge resistance then offering the alternating currents a passage through the counting device, and mechanism operated by the switch upon the passage of the direct current to cut out the instruments, connections from the switch-terminals to the central station, a manually-operated switch, an automatic relay at the central station, and a means for causing a break in the otherwise completed circuit from calling to called subscriber at

the relay before the operation of the counter, as and for the purpose set forth.

10. A telephone counting system comprising a counter, an electromagnetic switch having an armature, two coils, and contact-point 5, in combination with a set of instruments Y, line-wires, a connection from a different side of the line to each coil and from each coil to the instruments, a connection from one coil to the contact 5, and from the other to the armature, and connections from the switch-terminals to the central station, a manually-operated switch, an automatic relay at the central station and a means for causing a break in the otherwise completed circuit from calling to called subscriber at the relay before the operation of the counter, as and for the purpose set forth.

11. A telephone-counter, comprising a train of counting-wheels, a pivoted operating-lever, a pawl on the lever, a current-interrupter in circuit with the line and a signaling device, said lever on its movement to count, being adapted to break the circuit at the interrupter and to mechanically move the signaling device, and further adapted to prevent the reëstablishment of the circuit until in position to again count, substantially as described.

12. A telephone-counter, comprising counting mechanism and means to manually actuate said mechanism, and a current-interrupter comprising a conductive sliding piece in circuit with the line, said means on its movement to count, being adapted to break the circuit at the interrupter by moving the sliding piece and adapted to prevent the reëstablishment of the circuit until in position to count again, substantially as described.

13. A telephone counting system, comprising instruments, a counter, a pivoted operating-lever, a pawl on the lever, and a current-interrupter in the subscriber's circuit to be operated by the lever, in combination with a magnetically-released signal-drop, said lever on being moved to count being adapted to lift the drop, and also break the subscriber's circuit and to reëstablish said circuit and leave the drop raised upon moving into position prior to again counting, substantially as described.

14. A telephone-counter, comprising a train of counting-wheels, a pivoted operating-lever, a pawl on the lever and a normally closed circuit-interrupter to be opened by the lever, in combination with a set of instruments Y, an electromagnetic switch adapted to cut out said instruments upon a passage of direct current, and to be so released upon the operation of the counter and the opening of the circuit-interrupter as to cut in the instruments, as and for the purpose set forth.

15. A calling-station having instruments, and an instrument-controlling switch, a circuit-interrupter and counter, in combination with a central station, having a relay, an armature therefor, a hand-switch adapted to cut in and out operator's telephone, and a plug for the called subscriber and one for the calling subscriber, a battery, said hand-switch having contacts, connections to said contacts adapted in one position of the switch to momentarily send a current from the battery through the relay, to attract its armature, thereby breaking at the relay the circuit to the plug of the called subscriber, and to connect the poles of the battery to both branches of the line to the calling subscriber, and suitable contact-points for the relay, at which points, the means for interrupting the circuit at the calling-station is adapted, by releasing said relay-armature, to cut out the central battery and establish the circuit from the calling to the called station, substantially as described.

16. A telephone counting system, comprising a hand-switch contacts and connections therefor, a relay for a central station, said relay having an armature with front and back contact-points, a contacting arm carried by the armature and a point 3 therefor, in combination with a plug V connected on one side to the contacting arm through said switch connections and on the other to the front point, also through said switch connections, a battery connected, one pole to the relay, and one pole to the point 3, a momentarily-operated contact-point *k* connected to the said front contact-point 2 and an insulated contact *w* connected to the battery, a frame adapted to momentarily connect the contact *w* and the point *k* and a calling-station having an instrument, an instrument-controlling switch, a counter and a circuit-interrupter, as and for the purpose set forth.

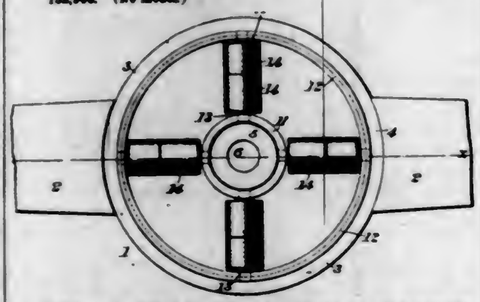
17. In combination with a calling-station having instruments, a counter, an instrument-controlling switch, a circuit-interrupter, a central station having a relay, a battery, a hand-switch comprising two rods with openings of unequal length, a lever passing through said openings, a contact *w* and a contact-point *k* both in the frame and insulated, means carried by the rod having the greater opening to contact between the frame and contact *k*, and means carried by the other rod to contact with the contact *w*, and connections between the relay, battery and points *k* and *w*, as and for the purpose described.

18. A hand-switch having two rods *p*, *q*, two contacts *w*, *k*, two contacts *v*, *v'*, and a plug and wires connected to the last-named contacts, in combination with contacts $l^0$, $16^0$, a relay, an armature therefor, front and back contact-joints 1 and 2, the back contact being connected to contact $l^0$, a contacting arm connected to contact $16^0$, a contact 3, a battery connected to contact 3, and to contact *w* on one side, and to the relay and front contact 2 on the other side, and a connection from contact 2 to contact *k*, in combination with a calling-station having instruments, instrument-controlling switch, a circuit-interrupter and counter, substantially as described.

19. A telephone-counter system, having an electromagnetic instrument-controlling switch, a counter and a set of telephonic instruments at the calling-station, a switch and relay at central station, connections therefrom to the calling-station, a plug V at the central station, said switch having contact means and connections adapted, upon the operation of the switch, to send a current to the calling-station to signal the calling subscriber that the desired subscriber is connected, and means to send a current through the relay, thereby cutting off the calling subscriber by operating the instrument-switch, thereby cutting out said instruments, and means connected with the counter to automatically switch in said instruments, connect the subscribers and deënergize the relay, after registering the message, substantially as described.

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**755,516. FIFTH-WHEEL FOR VEHICLES.** HARRY MILLER and GEORGE L. RIEDEL, Philadelphia, Pa. Filed Nov. 28, 1903. Serial No. 182,968. (No model.)



*Claim.*—1. A fifth-wheel comprising upper and lower transom-plates, an intervening loose antifriction device, and a vertically-arranged boss on one of said plates, the other plate freely encircling said boss, said device consisting of concentric collars and rollers mounted thereon, said rollers being located at intervals within said collars and the inner collar freely encircling said boss.

2. A fifth-wheel comprising upper and lower sections, a boss on one of said sections apertured to receive a king-bolt, an aperture in the other section adapted to encircle said boss and a detachable antifriction device comprising concentric collars one of which is adapted to freely encircle said boss, a plurality of radial pins connecting said collars and rollers freely movable on said pins, said pins and rollers being located at intervals in the space between said collars.

3. A fifth-wheel comprising upper and lower sections, a chamber between said sections, a boss on one of said sections apertured to receive a king-bolt, an aperture in the other section adapted to encircle said boss and a detachable antifriction device comprising concentric collars, a plurality of radial pins connecting said collars and rollers freely movable on said pins, and a concentric flange on one of said sections adapted to surround said chamber within which said device is freely contained, said pins and rollers being located at intervals in the space between said concentric collars.

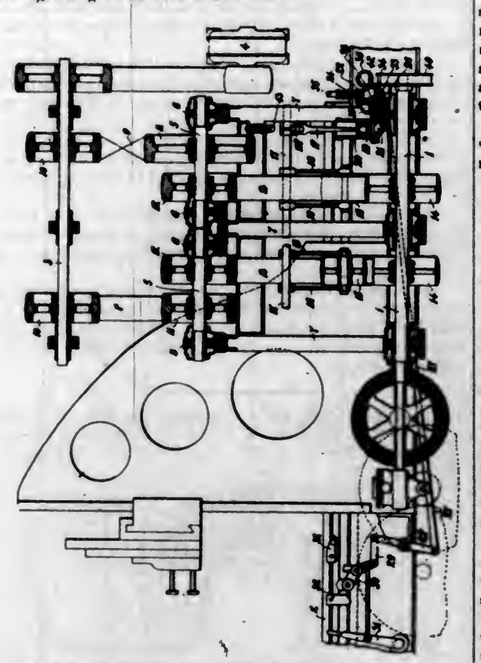
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**755,517. REVERSING MEANS FOR MACHINE-TOOLS, &c.** WILLIAM C. MITCHELL, Manchester, England. Filed June 22, 1903. Serial No. 162,061. (No model.)

*Claim.*—1. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, and means for tightening one or other of said belts at will.

2. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, and means for tightening one or other of said belts.





3. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, and means operated by a moving part of the machine for automatically and periodically tightening one or other of said belts.

4. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shaft separately with the machine-shaft, idler or jockey pulleys engaging the said belts, and means for moving said jockey-pulleys to tighten one or other of said belts at will.

5. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, idler or jockey pulleys coacting with said belts, and rocking arms for advancing and retracting said idler or jockey pulleys into and out of engagement therewith.

6. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, idler or jockey pulleys engaging with said belts, and means operated by a moving part of the machine for operating said jockey-pulleys, to tighten one or other of said belts at will.

7. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, and fluid-pressure cylinders with connections for imparting motion to said rocking arms.

8. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, fluid-pressure cylinders with connections to said rocking arms and a valve for controlling the supply of fluid to the operating-cylinders.

9. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, fluid-pressure cylinders with connections to said rocking arms and a valve operated by a moving part of the machine for controlling the supply of fluid to the operating-cylinders.

10. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from said main shaft, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, fluid-pressure cylinders with connections to said rocking arms, and a brake upon the machine-shaft controlled by the fluid-supply to the arm-operating cylinders.

11. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions from the said main shaft, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, cylinders with connections to said rocking arms, a valve controlling the supply of fluid to the operating-cylinders, a brake on the machine-shaft, a brake-cylinder provided with a piston normally under fluid-pressure, and means for connecting the said brake to said piston so that the brake is normally held in the "off" position.

12. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions therefrom, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, cylinders with connections to said rocking arms, a brake on the machine-shaft, a brake-cylinder and a piston normally under fluid-pressure, means for connecting the said brake to said piston, so that the brake is normally held in the "off" position, a fluid-receiving chest common to all the cylinders, a valve for supplying the arm-operating cylinders alternately under normal working and for exhausting the brake-cylinder upon abnormal movement of a part of the machine, and means to apply the brake when the brake-cylinder is exhausted.

13. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions therefrom, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, cylinders with connections to said rocking arms, stops for limiting the travel of the latter and absorbing shock, a fluid-controlled brake upon the machine-shaft and a fluid-receiving chest and valve for controlling the supply to the arm-operating and brake cylinders.

14. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts driven in opposite directions therefrom, belts connecting said counter-shafts separately with the machine-shaft, rocking arms, idler or jockey pulleys carried by the arms, cylinders with connections to said rocking arms, a brake on the machine-shaft, a brake-cylinder and a piston normally under fluid-pressure, means for connecting the said brake to said piston, so that the brake is normally held in the "off" position, a fluid-receiving chest common to all the cylinders, a valve automatically operated by the machine for supplying the arm-operating cylinders alternately under normal working and for exhausting the brake-cylinder upon abnormal movement of a part of the machine, and means to apply the brake when the brake-cylinder is exhausted.

15. A reversing mechanism embodying a machine-shaft, a main shaft, two counter-shafts, heavy-rimmed pulleys keyed on said main and counter shafts, the momentum whereof is utilized to partially overcome starting and reversing resistance, open and crossed belts on said pulleys connecting the said main and two counter shafts, belts connecting said counter-shafts separately with the machine-shaft, and means for tightening one or the other of the said latter belts at will.

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**755,518. WRENCH.** GEORGE MOORE, Shippingport, Pa. Filed Nov. 14, 1903. Serial No. 181,223. (No model.)



*Claim.*—1. A wrench having a fixed jaw member and a movable jaw member, equipped with an actuating part provided with a conically-winding thread, said fixed jaw member having its shank adapted to be engaged by said thread.

2. A wrench provided with a fixed jaw member, having its shank provided with a series of arcuate notches whose concavities face in the general direction of the longitudinal plane thereof, and a movable jaw member equipped with an actuating part provided with a conically-winding thread engaging said notches.

3. A wrench provided with a fixed jaw member having its shank

provided with a series of arcuate notches whose concavities face in the general direction of the longitudinal plane of said shank, and a movable jaw member equipped with an actuating part arranged obliquely to said fixed shank and having a conically-winding thread engaging said notches.

4. A wrench provided with a fixed jaw member having its shank provided with a series of arcuate notches whose concavities face in the general direction of the longitudinal plane of said shank, and a movable jaw member equipped with a worm provided with a conically-winding thread engaging said notches.

5. A wrench provided with a fixed jaw member having its shank provided with a series of arcuate notches whose concavities face in the general direction of the longitudinal plane of said shank, and having forwardly-inclined rear surfaces and slightly rearward inclined forward surfaces, and a movable jaw member carrying an axially-pivoted worm arranged at an inclination to said shank and having a conically-winding thread engaging said notches.

6. A wrench provided with a fixed jaw member having its shank provided with a series of arcuate notches whose concavities face in the general direction of the longitudinal plane of said shank, and having forwardly-inclined rear surfaces and slightly rearward inclined forward surfaces and a movable jaw member carrying an axially-pivoted worm having a milled peripheral edge and a conically-winding thread engaging said notches, and arranged diagonally to said shank.

7. A wrench provided with a fixed jaw member having its shank provided with a series of arcuate notches, whose concavities face in the general direction of the longitudinal plane of said shank, and have forwardly-inclined rear surfaces and slightly rearward inclined forward surfaces, a movable jaw member fitted upon said shank, and an inclined worm, with its axis or pivot bearing in said movable jaw, said worm having a milled circumferential edge and a conically-winding thread engaging said notches.

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**755,519. PROCESS OF PREPARING FOR DISTRIBUTION ORGANISMS WHICH FIX ATMOSPHERIC NITROGEN.** GEORGE T. MOORE, Washington, D. C. Filed May 4, 1903. Serial No. 155,995. (No specimens.)

*Claim.*—The process of preparing for distribution nitrogen-gathering organisms, which consists in moistening suitable absorbent material with a solution in which such organisms are suspended, and afterward thoroughly drying the said material substantially as hereinbefore described.

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**755,520. WRENCH.** JAMES T. MOORE, Portsmouth, Va., assignor of one-half to William H. White, Portsmouth, Va. Filed Apr. 17, 1903. Serial No. 153,003. (No model.)



*Claim.*—1. A wrench comprising relatively rotatable jaws, one of which has a cam-face and the other having a portion overhanging said cam-face and adapted to act in conjunction therewith.

2. A wrench having a jaw provided with a depression having a cam-face, an annular piece seated in said depression, and another jaw secured to said annular piece and adapted to hold the nipple against said cam-face.

3. A wrench having a cam-shaped jaw, an annular piece seated in a depression in said jaw, a jaw secured to said annular piece and means on said annular piece for aliuing the spoke on the wrench.

4. A wrench having a cam-shaped jaw provided with a depression, an annular piece seated therein and adapted to rotate, lugs secured to said annular piece, another jaw secured to said annular piece, and means between said annular piece and said first-mentioned jaw for preventing accidental rotation.

5. In a nipple-wrench, the combination of a circular jaw, an annular piece adapted to rotate within said circular jaw, said annular piece having an overhanging jaw, and lugs on said annular piece cooperating with said jaw to hold the wrench in alinement on the spoke.

6. In a nipple-wrench, the combination of an annular piece having a jaw, cam means surrounding said annular piece for clamping the nipple against said jaw and means for holding the two parts together.

7. A wrench comprising pivoted jaws, one of which has a cam-face and an overhanging jaw acting in conjunction with said cam-face.

8. A wrench having relatively rotatable jaws and lugs cooperating with one of said jaws to aline the wrench on the spoke to be operated upon.

9. A wrench having relatively rotatable jaws, one of which is provided with a cam-face, and the other being provided with an overhanging jaw and lugs adapted to operate in conjunction to hold the spoke in alinement.

10. A wrench comprising two members pivoted together, one of which has an arc-shaped cam, and the other being provided with means for engaging the work comprising a member adapted to move over the cam.

11. A wrench comprising two members pivoted together, one of which has a cam and the other being provided with means for holding the work at two different points, and to cause engagement of the work by the cam.

12. A wrench comprising relatively rotatable jaws, one of which has a cam-face, and the other being provided with means for aliuing the wrench on the work, and means for causing the engagement of the work by the cam.

13. A wrench comprising two pivoted members, one of which is provided with a cam-face and the other being provided with a vertical slotted flange adapted to aline the wrench on the work, said flange also provided with a projecting jaw for holding the work to be engaged by the cam.

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**755,521. APPLIANCE FOR CLEANING TINS, POTS, AND OTHER VESSELS OR UTENSILS.** WILLIAM G. MORTIMER, Toorak, Victoria, Australia. Filed Dec. 30, 1903. Serial No. 187,222. (No model.)



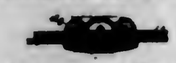
*Claim.*—1. A device of the character described comprising the combination with a handle, of a scraper connected thereto and constructed of elastic material having its lower face formed with a plurality of cutters extending in a curved line from the center of said face to the edges of the scraper and said scraper provided with three edges, two of which are straight and form a right angle and the other extending in the form of an arc, the meeting-points of the edge extending in the form of an arc and the straight edges being rounded off.

2. A device of the character described comprising the combination with a handle, of a scraper connected thereto and constructed of elastic material having its lower face formed with a plurality of cutters extending in a curved line from the center of said face to the edges of the scraper and said scraper provided with three edges, two of which are straight and form a right angle and the other extending in the form of an arc, the meeting-points of the edge extending in the form of an arc and the straight edges being rounded off, and the lower face of said scraper further provided with hatches between the cutters and said edges.

3. A device of the character described comprising a scraper of elastic material having its working face formed with a plurality of cutters extending from the center of said face to the edges of the scraper, and a handle extending into the scraper and provided with shoulders of different diameters suitably spaced apart and between which a portion of the scraper is clamped, thereby securing the handle to the scraper.

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**755,522. SEPARABLE BUTTON.** HERMANN MÖLLER, Barmen, Germany. Filed Jan. 22, 1903. Serial No. 140,163. (No model.)

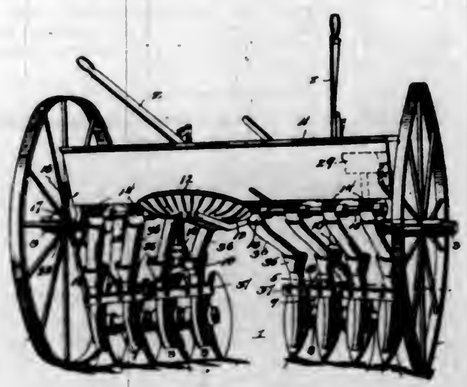


*Claim.*—A separable button comprising a socket member consisting of an upper and a lower section, said upper section having its top provided with a conical depression and further provided with an inwardly-projecting annular rim extending below the top and adapted to engage the object to which said socket member is adapted to be secured, said rim and depression forming an annular opening, and said lower section provided with a sleeve slitted to form a series of upwardly-extending projections adapted to extend around the rim and into the annular opening formed by the rim and depression for connecting said sections together and to the object to which the socket member is adapted to be secured, a spring-ring arranged within said lower section and supported by the bottom thereof, in combination with a stud member comprising an upper and a lower section, the former of which consists of a stud having a hollow upper portion and a solid lower portion, said latter portion provided with a screw-threaded opening and the said lower section of the stud member consisting of a counter-plate carrying a pointed screw adapted readily to pierce the cloth or fabric and to engage when rotated in the screw-threaded opening for connecting the sections of the stud member together and to the object to which the stud member is to be secured, the upper section of said stud member adapted to engage in said socket member so as to connect the two members together



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**755,523. SEED-DRILL ATTACHMENT.** BENJAMIN MYLOR, Gex, Ky. Filed July 14, 1902. Serial No. 115,564. (No model.)



*Claim.*—1. In an agricultural machine of the class described, the combination with bearing-wheels thereof, of a main drill-box carried by the machine, an auxiliary grass-seed sower carried by the main box, a main feed-shaft extending through the main box, a feed-shaft for the grass-seed sower, a sprocket-chain and clutch connection between one end of the main feed-shaft and the adjacent bearing-wheel, and a sprocket-chain connection between the other end of the main feed-shaft and the grass-seed-sower shaft.

2. In an agricultural machine of the class described, the combination with bearing-wheels, of a main drill-box carried by the machine, a main feed-shaft extending longitudinally of the box and having one end projecting therefrom, said shaft carrying feed devices, a toothed collar fixed upon the projecting end of the feed-shaft, a sprocket-wheel fixed to one of the bearing-wheels, another sprocket-wheel loosely journaled and longitudinally slidable upon the main feed-shaft, said latter wheel having teeth that are movable into and out of engagement with the teeth of the collar, a lever engaging the wheel for moving the same longitudinally, and a sprocket-chain connecting the wheels.

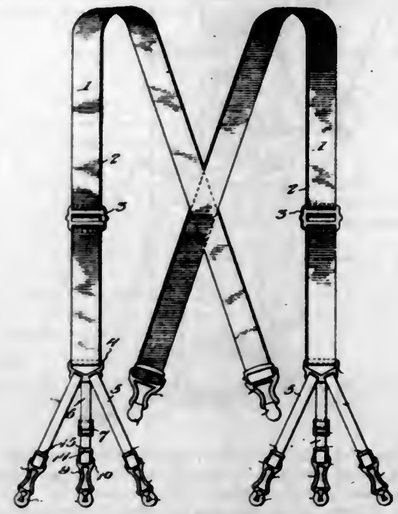
3. In an agricultural machine of the class described, the combination with bearing-wheels and a depending forked standard carrying a gang of disks, of a main drill-box carried by the machine, feeding mechanism driven by one of the bearing-wheels, spaced hangers attached to the forks of the gang-carrying standard and having flanged outer ends, a supporting-bar bolted to the flanges of the hangers, and drill-tubes connected with the drill-box and secured to the supporting-bar.

4. In an agricultural machine of the class described, the combination with bearing-wheels and a depending forked standard carrying a gang of disks, of a main drill-box carried by the machine, feeding mechanism driven by one of the bearing-wheels, spaced hangers attached to the forks of the gang-carrying standard and having flanged outer ends, a supporting-bar comprising sections having their ends overlapped, drill-tubes connected with the drill-box and located transversely of the bar, and clips securing the tubes to the bar, one of said clips passing through the overlapped ends of the sections and constituting means for securing said sections together.

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**755,524. SUSPENDERS.** WILLIAM O. MCCURDY, Oakdale, La. Filed July 11, 1903. Serial No. 165,180. (No model.)

*Claim.*—1. Suspenders having doubled terminal portions, wear-clips with slots in the upper terminals thereof through which the portions of the terminals of the suspenders are passed, the said terminals of the suspenders surrounding the exterior of the clips, couplings directly engaging the clips, and clasps carried by the lower terminals of the couplings.



2. A pair of suspenders, having doubled terminal portions provided with suspending devices, doubled straps held by said terminal portions, clips carried by the lower extremities of the straps and constructed of duplicate integral members formed with opposed slots in the upper terminals thereof, the straps surrounding the exterior of the clips and reversely threaded through the said slots, couplings directly engaging with parts of the clips, and clasps carried by the lower terminals of the couplings.

3. A pair of suspenders, having doubled terminal portions provided with suspending devices, doubled straps held by said devices, clips carried by the lower extremities of the straps and constructed to form lower enlarged curved extremities from which upper converged members continue and terminate in outwardly-turned ends, the upper terminals of the clips having opposite slots therein through which the straps are reversely threaded, the straps surrounding the exterior of the clips, couplings directly engaging with parts of the clips, and clasps carried by the couplings.

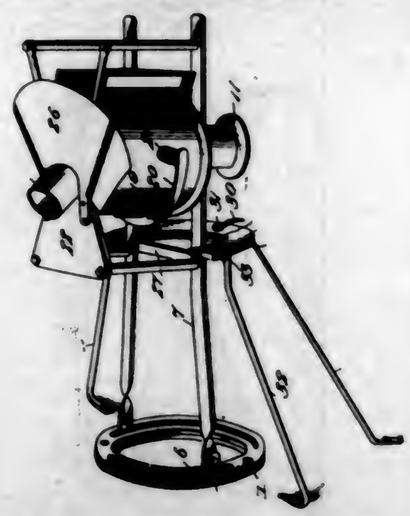
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**755,525. STAMP-BATTERY GUIDE.** WILLIAM S. MCDONOUGH, Ouray, Colo., assignor of one-half to Thomas H. Woods, Ouray county, Colo. Filed Mar. 24, 1903. Serial No. 149,383. (No model.)



*Claim.*—A guide for stamp-mills, comprising a girth or rail, a continuous solid guide-beam extending longitudinally thereof and having vertically-extending grooves therein, section-blocks arranged in the same, said blocks having squared ends abutting one against the other for rigidity and having vertical grooves adapted to cooperate with the grooves in said continuous beam and form guideways for the stems of the mill, bolts extending through the section-blocks, continuous beam and girth or rail, affording provision for the removal of any block separately, said bolts being provided with squared collars countersunk in the continuous beam, to prevent the bolts from turning, and elongated washers upon the bolts outside of the section-blocks and extending vertically along the blocks substantially the depth of said blocks, thereby affording provision for substantially equal distribution of the strain along the depth of the section-blocks, and lugs on the washers for preventing said washers from turning, for substantially the purposes set forth.

**755,526. CONVEYER.** ERNEST B. NELSON, Burchinal, Iowa. Filed Sept. 10, 1902. Serial No. 122,846. (No model.)



*Claim.*—1. In a device of the character described, a casing comprising oppositely-arranged spring-pressed sections hinged together, and a beater revolubly mounted within the casing.

2. A device of the character described comprising a casing formed of a pair of oppositely-arranged spring-pressed sections forming a spout, and a beater revolubly mounted within the casing.

3. In a device of the character described, the combination with arms and means for adjustably supporting the same; of a casing mounted upon the arms and formed of oppositely-arranged spring-pressed sections having a spout, a revoluble beater within the casing, a tubular inlet, and a shield inclosing the inlet and the top of the casing.

4. In a device of the character described, the combination with adjustable supporting-arms; of oppositely-arranged sections mounted upon the arms and forming a casing, arms embracing the casing, springs interposed between the arms and the sections of the casing, a revoluble beater mounted within the casing, and an inlet to the casing above the beater.

5. In a device of the character described, the combination with adjustable supporting-arms; of oppositely-arranged sections supported by the arms and hinged together to form a casing, arms embracing the sections, springs interposed between the arms and sections, a beater revolubly mounted within the casing, an inlet-tube upon the casing and above the beater, and a shield inclosing the tube.

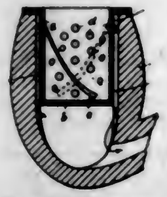
6. In a device of the character described, the combination with adjustable supporting-arms; of sections hinged together and supported by the arms, said sections forming a casing having an outlet-spout, arms embracing the sections, springs interposed between the arms and the sections, a beater revolubly mounted within the casing and an inlet-tube opening into the top of the casing.

7. In a device of the character described, the combination with adjustable supporting-arms having standards thereon, an inlet-tube supported by the standards and a shield inclosing the tube; of oppositely-arranged sections hinged together and supported by the arms, said sections forming a casing having an outlet-spout, a revoluble beater within the casing and below the inlet-tube, and means for holding the sections of the casing normally in contact at their adjoining edges.

8. In a device of the character described, the combination with supporting-plates, a ring revolubly mounted therebetween and arms pivoted to and extending from the ring; of means for supporting the arm in extended position, oppositely-arranged sections supported upon the arms and forming a casing having an outlet-spout, a revoluble beater within the casing, standards upon the arms, an inlet-tube supported thereby above the casing, and means for holding the casing-sections normally in contact.

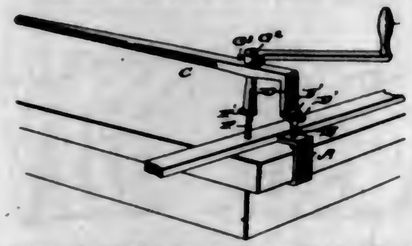
**755,527. TOBACCO-PIPE.** IGNATZ HEUBERGER, Suss, Austria-Hungary. Filed Nov. 2, 1901. Serial No. 80,945. (No model.)

*Claim.*—1. A tobacco-pipe comprising a bowl, a downwardly-extending groove in the inner wall of said bowl, a tobacco-container with a closed bottom, fitting in said bowl a downwardly-inclined slot in the lateral wall of said container and a series of small perforations in the lateral wall of the container, substantially as described.



2. A tobacco-pipe comprising a bowl, a plurality of vertical grooves in the inner wall of said bowl, a tobacco-container with a closed bottom, fitting in said bowl, a plurality of spiral slots in the lateral wall of said container and a series of perforations in lateral wall of the container, substantially as described.

**755,528. DRILL.** WILLIAM H. NEWTON, Barnesville, Ga. Filed June 27, 1903. Serial No. 163,414. (No model.)



*Claim.*—1. A drill comprising a clamp having an eyebolt, a lever angled adjacent one end, a stud carried by the lower end of the angled portion of the lever adapted to detachably engage the eyebolt, a stock carried by the lever, and means for rotating the stock.

2. A drill of the kind described comprising a clamp having a clamping-screw provided with an eye at its outer end, a lever having an arm provided with a stud adapted to engage the eye, a stock having one end passing through the lever and a crank fastened upon said end of the stock, substantially as described.

3. A drill of the kind described comprising an essentially rectangular-shaped clamp, a clamping-bolt passing through one member of the same and having an eye at its outer end, a lever having an arm, said arm carrying a stud adapted to engage the eye of the clamping-bolt, a stock having a reduced end and passing through an aperture in the lever, and the crank-handle secured to said end of the stock, substantially as described.

**755,529. VACUUM EVAPORATING APPARATUS.** CHARLES CREWAT, New York, N. Y. Filed Aug. 17, 1903. Serial No. 169,667. (No model.)

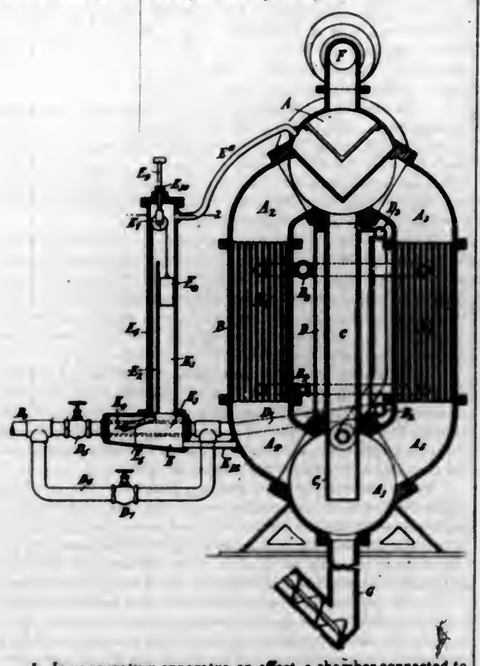
*Claim.*—1. In evaporating apparatus, an effect, a float-chamber connected with the vapor-space and the liquor-space of said effect, a float in said chamber, a feed-pipe to supply liquor to said effect, a valve in said pipe, a lever secured to said valve to control the same, a pulley within said chamber, a rod secured to said pulley extending through the wall of said chamber and adjustable with relation thereto, and a cord secured to said lever and said float and passing over said pulley.

2. In evaporating apparatus, an effect, a float-chamber connected to said effect, a float in said chamber, a feed-pipe to supply liquor to said effect, a valve in said pipe, and means connecting said valve and float comprising adjusting means extending outside said chamber to regulate the amount of liquor in said effect.

3. In evaporating apparatus, an effect, a float-chamber connected to said effect and receiving liquor therefrom, a float in said chamber, a feed-pipe to supply liquor to said effect, a valve in said pipe connected with said float to be operated thereby, a cut-off adjacent said valve and a valved by-pass in said feed-pipe around said cut-off and valve.



4. In evaporating apparatus, an effect having submerged heating-tubes, a chamber connected to said effect to receive liquor therefrom, a feed-pipe to supply liquor to said effect, a valve in said pipe, adjustable operating means in said chamber connected with said valve to be operated by the level of liquor in said chamber and to control the amount of liquor in said effect and means extending outside of said chamber to adjust said operating means.



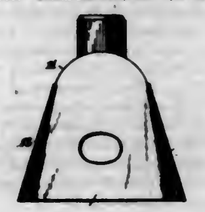
5. In evaporating apparatus, an effect, a chamber connected to said effect to receive liquor therefrom, a feed-pipe to supply liquor to said effect, a valve in said pipe, adjustable operating means in said chamber connected with said valve to be operated by the level of liquor in said chamber and to control the amount of liquor in said effect and means extending outside of said chamber to adjust said operating means.

6. In feeding apparatus, a liquor-pipe, a valve in said pipe, a float-chamber connected to said pipe beyond said valve, a float in said chamber, a lever secured to said valve to control the same, a pulley within said chamber, a rod secured to said pulley extending through the wall of said chamber and adjustable with relation thereto and a cord secured to said lever and said float and passing over said pulley.

7. In feeding apparatus, a liquor-feed pipe, a valve in said pipe, a float-chamber connected to said pipe beyond said valve, a float in said chamber and means connecting said valve and float comprising adjustable means for extending outside said chamber to regulate the operation of said valve.

8. In feeding apparatus, a liquor-feed pipe, a valve in said pipe, a chamber connected to said pipe beyond said valve to receive liquor therefrom, adjustable operating means in said chamber connected with said valve to be operated by the level of liquor and to control the amount of liquor fed through said pipe, and means extending outside of said chamber to adjust said operating means.

**755,530. STEAM-BOILER.** ALFRED PARFITT, Topeka, Kans. Filed Apr. 20, 1903. Serial No. 154,664. (No model.)



*Claim.*—1. In a steam-boiler, a fire-box having outwardly-curved walls, said walls decreasing in curvature toward the upper portion of the box.

2. In a steam-boiler, the combination with a horizontal shell, of a fire-box depending from the shell and having its lower end projecting beyond the sides of the shell, the side walls of said box being outwardly curved and said curvature decreasing toward the upper end of the box.

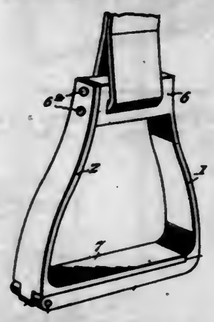
3. In a steam-boiler, the combination with a horizontal shell, of a fire-box depending from one end of the shell and having its lower end projecting beyond the sides of the shell, said fire-box comprising a convexedly-curved foundation-ring located at the lower end of the fire-box, and outwardly-curved wall-sheets secured to the ring and decreasing in curvature toward their upper ends.

4. In a steam-boiler, a fire-box having curved side walls, said walls decreasing in curvature toward one end of the box.

5. In a steam-boiler, a shell and a fire-box depending from one end thereof, said fire-box having outwardly-curved side walls that are arranged in convergent relation.

6. In a steam-boiler, the combination with a horizontal shell, of a fire-box located at one end thereof, said box having convergently-disposed side walls, each wall comprising spaced parallel outwardly-curved sheets, the curvature of which gradually decreases toward the convergent ends of the walls.

**755,531. SAFETY-STIRRUP.** EMMERT L. PARRISH, Crockett, Tex. Filed May 13, 1903. Serial No. 156,962. (No model.)



*Claim.*—1. In a stirrup, the combination of a stationary member provided with an arm slitted longitudinally on either side of its center to provide a spring, said arm having a portion thereof reduced, a movable member having an arm adapted to rest upon said reduced portion to provide a foot-piece with an unobstructed bearing-surface, and means to fulcrum the movable member upon the stationary member.

2. In a stirrup, the combination of a stationary member provided with an arm slitted longitudinally on either side of its center to provide a spring, said arm having a portion thereof reduced, a movable member having an arm adapted to rest upon said reduced portion to provide a foot-piece with an unobstructed bearing-surface, a flange secured to the arm of the movable member and extending throughout its entire length, said flange being adapted to engage the spring, and means to fulcrum the movable member upon the stationary member.

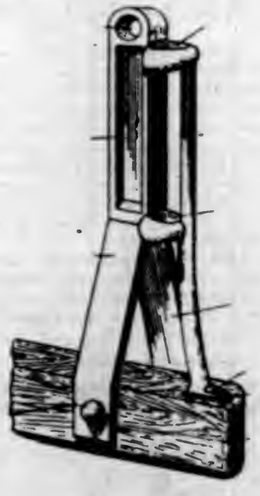
**755,532. WAGON-BOLSTER.** JOHN W. PATTERSON, Madisonville, Ky. Filed Apr. 1, 1903. Serial No. 150,612. (No model.)

*Claim.*—1. A wagon-standard comprising a standard member proper, an upright brace member, and loops or bands arranged between the two former members all secured together, said standard and brace member being relatively fixed, and parallel from the lower stake-receiving loop, upward to the upper stake-receiving loop.

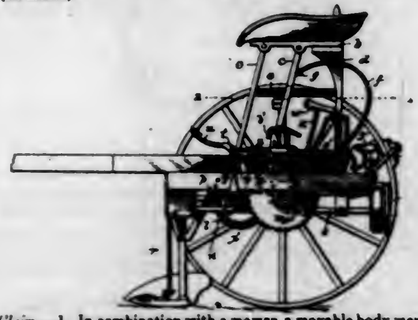
2. A wagon-standard embracing a standard member proper, having upper panel-like portion terminating downward in lower divergent portions or legs, an upright brace member having an apertured lateral base-flange, and loops or bands interposed between said two former members all secured together, said standard and brace member being relatively fixed, and parallel from the lower stake-receiving loop, upward to the upper stake-receiving loop.

3. A device of the character described, embracing a standard member, a brace member, and stake-receiving loops arranged between said members at their upper ends and some distance below

said upper ends respectively, all of said parts being in fixed relation, said brace member being presented toward the edge of said standard member and having connection with the upper surface of the bolster, and said standard and brace member being parallel from the lower stake-receiving loop, upward to the upper stake-receiving loop.



755,588. MOWER. GEORGE J. PATTON and STELLER A. MARTELLER, Nokesville, Va. Filed Apr. 9, 1903. Serial No. 151,790. (No model.)



*Claim.*—1. In combination with a mower, a movable body member, a device for normally holding it in position, means actuated by the body member for automatically throwing into operative position the cutting mechanism when the body member is moved out of its normal position by the driver in seating himself, and a manually-operated device for stopping the cutting mechanism independently of the movement of the body member, this device being connected directly to said automatic means.

2. In combination with a mower, a body member and devices for normally elevating it, means actuated by the body member for automatically braking the cutter mechanism and also disengaging it when the body member is elevated, and foot-operated devices for stopping the cutting mechanism independently of the body member, these devices being connected directly to said automatic means.

3. In combination with a mower, a depressible seat member and means for normally elevating it, devices actuated by the seat member for automatically stopping the cutting mechanism when the seat is elevated and automatically freeing it when the seat member is depressed, and foot-operated devices for stopping the cutting mechanism independently of the seat member, these devices being connected directly to said automatic means.

4. The combination with a mower, cutter-driving mechanism normally held out of engagement, means for throwing into engagement the cutter-driving mechanism by the act of the driver in seating himself, and foot-operated devices for throwing the cutter-driving mechanism out of engagement while the driver is in his seat, these devices being connected to and forming part of said means.

5. In combination with a mower, a brake normally tending to brake the cutter mechanism, a depressible body member and means, independent of the means for normally applying the brake, for normally elevating the body member, and means connected to the body member for removing the brake, against its normal tendency, when the body member is depressed.

6. The combination with a mower and a depressible seat member, consisting essentially of a pair of parallel uprights or standards pivotally supported on the frame, a seat, pivotally supported on these uprights, and a spring device for normally maintaining the uprights in an upright position, of means for locking the cutter against action when the seat member is elevated.

7. In combination with a mower, a movable body member and spring-actuated devices for holding it normally in position, means connected to the body member for stopping the cutting mechanism when the body member is allowed to assume its normal position, spring-actuated additional devices for stopping the cutting mechanism, these devices being connected directly to said means and being operable independently of the body member.

8. In combination with a mower, a spring-actuated body member and means connected thereto for normally disengaging the cutter mechanism when the driver leaves his seat, a spring *v* normally tending to hold the cutter mechanism in engagement against the action of the body member and connected means, and a foot-lever and connections for independently disengaging the cutter mechanism against the action of said spring *v* while the driver is seated.

9. In combination with a mower, a body member and a device for holding it in its normal position, means connected to the body member for automatically disengaging the cutter mechanism embodying an extensible push-rod, a spring normally tending to hold the cutting mechanism in engagement, and a foot-lever connected to the disengaging devices for the purpose set forth.

10. In combination with a mower, a brake-wheel on one of the shafts of the cutter-driving mechanism, a brake-band normally tending to clasp this wheel, a seat member and means for holding it in its normal position, and means connecting the brake-band to the seat member, whereby the band is expanded when the driver is seated and contracted and applied when the driver leaves his seat.

11. In combination with a mower, a movable body member and a spring for holding it normally in position, means for automatically stopping the cutting mechanism when the body member is allowed to assume its normal position and for throwing it into operative position when the body member is moved out of its normal position, means for locking the body member in either its normal or abnormal position, and spring-actuated additional devices for stopping the cutting mechanism independently of the movement of the body member, these devices being connected directly to said automatic means.

12. In combination with a wheeled mower, a movable seat member and a device for normally holding it in position, means connected to said seat member for disengaging the cutting mechanism when the seat member is allowed to assume its normal position and for throwing it into engagement when the seat member is moved to an abnormal position, and devices connected to said means for automatically directly braking the cutter mechanism independently of the transporting-wheels when the seat member assumes its normal position and for releasing it when the seat member is moved out of its normal position.

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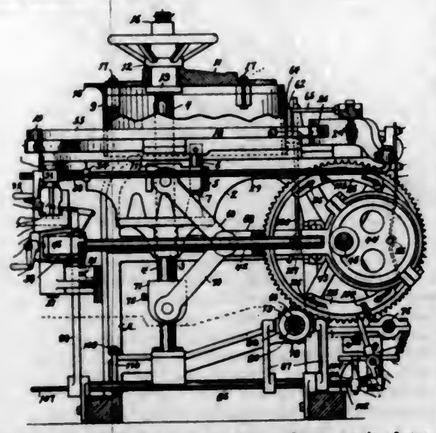
755,534. HORSE-COLLAR-BLOCKING MACHINE. WILLIAM R. PEER, Lakemills, Wis., assignor to Frank B. Fargo and Enoch J. Fargo, Lakemills, Wis. Filed Oct. 12, 1903. Serial No. 176,614. (No model.)

*Claim.*—1. In a horse-collar-blocking machine, a frame, a forming-block, a pair of elongated hame-crease-forming members pivoted at one end eccentrically on wheel-segments, means for rotating the wheel-segments, levers mounted on the frame adapted to engage the distant ends of the crease-forming members and force them toward each other, and means connecting the means for rotating the wheel-segments operatively with the levers for forcing the distant ends of the crease-forming members toward each other.

2. In a horse-collar-blocking machine, a frame, a pair of elongated crease-forming members, intermeshing wheel-segments axled on the frame and to which the front ends of the crease-forming members are pivoted eccentrically, a crank-arm secured operatively to the shaft or axle of one of the wheel-segments, connected and cooperative levers pivoted on the frame adapted to engage the distant ends of the crease-forming members and force them toward each other, a rod connecting an arm of one of the cooperative levers to the crank-arm on the shaft of the wheel-segment, and means for rotating said wheel-segment shaft.



3. In a horse-collar-blocking machine, a frame, a pair of elongated crease-forming members, wheel-segments meshing with each other and axled on the frame and to which the front ends of the crease-forming members are pivoted eccentrically, a shaft axled in the frame on which one of the wheel-segments is fixed, a crank-arm on the shaft, and means connected to driven parts of the mechanism whereby the shaft and wheel-segments are oscillated and the crease-forming members are operated.



4. In a horse-collar-blocking machine, a frame, a pair of elongated clamping crease-forming members pivoted at one end eccentrically on intermeshing wheel-segments axled on the frame, operatively-connected levers pivoted on the frame adapted to engage and force the distant ends of the crease-forming members toward each other, a crank-arm on the shaft of one of the wheel-segments, a rod connecting the crank-arm and an arm of one of the levers at the distant end of the crease-forming members, another crank-arm on the shaft of the wheel-segments, a rod connected to said last-mentioned crank-arm and to reciprocating mechanism.

5. In a horse-collar-blocking machine, a wheel-segment pivoted on the frame and to which a clamping member is pivoted eccentrically, a crank-arm on the shaft of the wheel-segment, a lever pivoted on the frame and adapted to engage a distant portion of the clamping member, a rod hinged to an arm of the distant lever and extending through a block swiveling in said crank-arm, a nut turning on the rod against the block, and a spring about the rod adapted to hold the block against the nut yieldingly.

6. In a horse-collar-blocking machine, a wheel-segment pivoted on the frame and to which a clamping member is pivoted eccentrically, a crank-arm loose on the shaft of the wheel-segment and provided with a stop-boss, a collar splined on said shaft and provided with radial shoulders adapted to engage the stop-boss on the crank-arm and hold the shaft to oscillation with the crank-arm after lost motion, and means for oscillating the shaft.

7. In combination in a horse-collar-blocking machine, a frame, a clamping member, a wheel-segment to which the clamping member is pivoted eccentrically, the shaft of the wheel-segment, a crank-arm loose on the shaft, an eccentric, an eccentric-strap and its rod connected to the crank-arm loose on the shaft, an ancillary crank-arm fixed on the shaft, and a screw adapted to adjust the relation between the crank-arm loose on the shaft and the ancillary crank-arm fixed on the shaft.

8. In a horse-collar-blocking machine, a frame, a pair of clamping hame-crease-forming members, means adapted to bring together the front ends of said clamping members, means adapted to engage and bring together the rear ends of said clamping members, means connecting the means for bringing together the front ends of the clamping members operatively to the means for bringing together the rear ends of the clamping members so as to cause the two ends of the clamping members to be brought toward each other synchronously, and means for automatically locking the mechanism for operating the clamping devices releasably.

9. In a horse-collar-blocking machine, the combination with a frame, a revoluble cog-wheel provided with an eccentric stud-pin and an eccentric carrying a strap and its reciprocating rod, of a spring-latch fixed on the frame and adapted to engage the stud-pin and hold the wheel and the eccentric at a dead-center home position releasably.

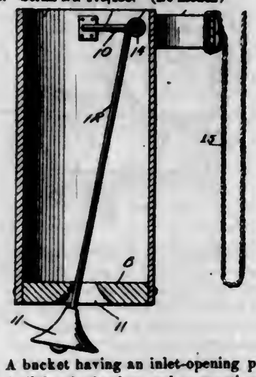
10. In a horse-collar-blocking machine, the combination with a frame, and a revoluble cog-wheel provided with an eccentric stud-pin and an eccentric carrying a strap and its reciprocating rod, of a spring-latch adapted to engage the stud-pin and hold the wheel and the eccentric at a home position releasably, a block hinged on the frame in which the latch is adjustable endwise, and set-screws adapted to tilt the block and adjust the tension of the spring-latch.

11. In a horse-collar-blocking machine, a pair of elongated crease-forming members at a little distance apart and arranged to be drawn toward each other in shaping a collar, a bridge interposed between adjacent ends of the clamping members, and means supporting the bridge loosely in place and permitting it to assume a position to complete the inner contour of the crease-forming members when they are brought near to each other.

12. In combination, a pair of clamping hame-crease-forming members initially at a little distance apart, means for moving the members toward each other, a plate secured loosely to one member and lapping onto the other member, and a bridge on the plate interposed between the clamping members at their inner edges at the front or large end of the collar, and adapted when the clamping members are moved toward each other to fill the space between the members and make the contour of the inner edge of the clamping members complete and unbroken.

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755,535. WELL-BUCKET. OLEN PIERRE, Husser, La. Filed Oct. 30, 1903. Serial No. 179,155. (No model.)



*Claim.*—1. A bucket having an inlet-opening provided with a valve, a pivoted bail for the bucket and connections between the bail and the valve, said valve being movable with the bail into and out of closed position when the bail is swung into and out of active position to suspend the bucket.

2. A bucket having an inlet-opening, and outwardly-opening valve for the opening, a pivoted bail for the bucket, a crank-arm movable with the bail and a rod connected with the valve and crank-arm and adapted to hold the valve in closed position when the bucket is suspended by its bail.

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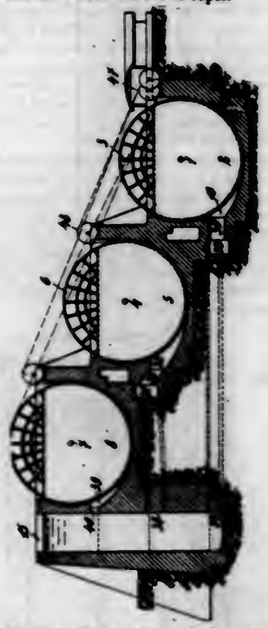
755,586. APPARATUS FOR RAISING OR SINKING VESSELS IN LOCK-CHAMBERS. FERDINAND POKORNÝ, Moravská Ostrava, Austria-Hungary. Filed Oct. 19, 1903. Serial No. 177,616. (No model.)

*Claim.*—1. In an apparatus for raising and lowering vessels in lock-chambers, the combination with the lock-chamber, of a series of auxiliary chambers communicating with said lock-chamber at the bottom thereof, rotating cylinders in said auxiliary chambers provided with open segmental portions, whereby the water may flow into said auxiliary chambers, when the segmental portions are at the bottom, and ejected therefrom when the closed portions of the cylinders are turned to the bottom.

2. In an apparatus of the character set forth, the combination with a lock-chamber, of auxiliary chambers communicating therewith, hollow displacement-cylinders in said chambers, axles on which said cylinders rotate, segmental portions of said cylinders being open, and means for rotating said cylinders on their axles.

3. In an apparatus of the character set forth, the combination with a lock-chamber, of a plurality of series of auxiliary chambers arranged to open at their bottoms into said lock-chamber at different heights, and segmental displacement-cylinders in said chambers, whereby the water may be raised to different levels in said lock-chamber.

4. In an apparatus of the character set forth, the combination with a lock-chamber, of lateral supply-chambers communicating with said lock-chamber through bottom conduits, segmental hollow displacement-cylinders in said auxiliary chambers, having open segmental parts, rims around said cylinders, ropes adapted to engage with said rims, and drive-sheaves for said ropes.

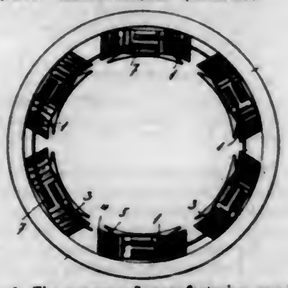


5. The combination with a segmental displacement-cylinder provided with counterweights, and having a peripheral rim, of a drive-rope, a threaded bolt with which said rope is connected, a tapped lug on said rim for said bolt, and lock-nuts for locking said bolt.

6. The combination with a lock-chamber, of auxiliary chambers, displacement-cylinders closely fitting in said chambers, axles on which said cylinders are mounted, an open segmental portion on said cylinders, and counterweights for said cylinders, substantially as described.

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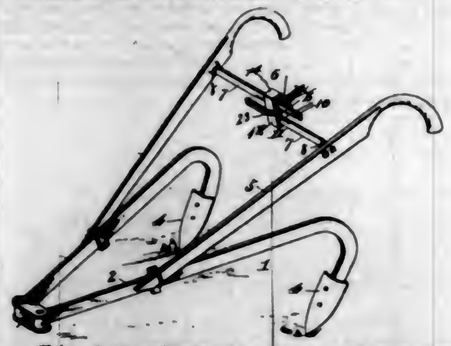
**755,587. COIL FOR DYNAMO-ELECTRIC MACHINES.** FERDINAND PORSCHE and LUDWIG LOEBNER, Vienna, Austria-Hungary. Filed July 11, 1903. Serial No. 115,304. (No model.)



*Claim.*—1. The process of manufacturing spools or coils for dynamo-electric machines out of a metallic band and a band of insulating material which consists in winding the said bands in laminated arrangement together into the form of a coil, and thereafter cutting away the superfluous portions of the same in order to give the coil the required concavo-convex form, substantially as described.

2. The process of manufacturing spools or coils for dynamo-electric machines out of a metallic band and a band of insulating material which consists in winding the said bands in laminated arrangement together into the form of a coil, and at a temperature higher than the atmospheric temperature, and thereafter cutting away the superfluous portions of the same in order to give the coil the required concavo-convex form, substantially as described.

**755,588. CULTIVATOR.** HARRISON R. PORTER, Buda, Tex. Filed Nov. 5, 1903. Serial No. 179,975. (No model.)

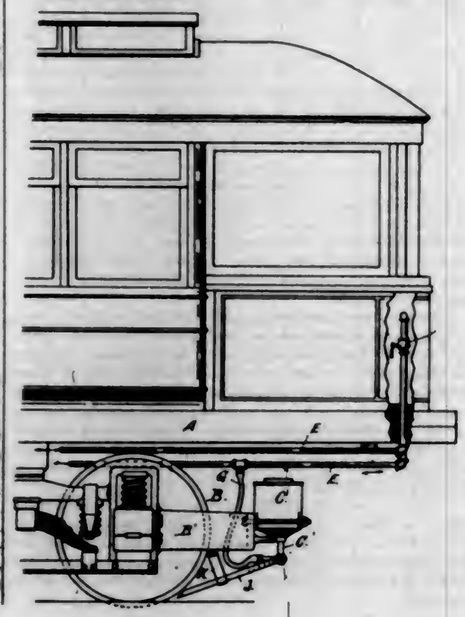


*Claim.*—1. In a cultivator, the combination with bars or beams pivotally mounted to swing toward or from each other, of a guide-frame, rack-bars connected to the bars or beams and extending through the guide-frame, a shaft in said guide-frame, a pinion in the latter on said shaft, between and engaging the rack-bars to actuate the latter, an operating-wheel slidably mounted on said shaft and frictionally engaging one side of the frame, and a spring bearing against said wheel to create friction between it and the frame, to prevent casual rotation of the shaft, said rack-bars, guide-frame and pinion forming the sole connection between the said bars or beams.

2. In a cultivator, the combination with bars or beams pivotally mounted to swing toward and from each other, of a guide frame, rack-bars connected to the bars or beams and extending through the guide-frame, a shaft journaled in the guide-frame, a pinion in the latter on said shaft and engaging the rack-bars to actuate the latter, an operating-wheel slidably mounted on the shaft and frictionally engaging one side of the frame, and a coiled extensile spring on the shaft, bearing against one side of the wheel to prevent the casual rotation of the shaft, by the friction of the wheel against the frame, said rack-bars, guide-frame and pinion forming the sole connection between the said bars or beams, substantially as described.

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**755,589. PNEUMATIC SANDER FOR CAR-TRUCKS.** CHARLES A. PRATTE, Denver, Colo., assignor of two-thirds to R. Tyler Smith and George A. Green, Denver, Colo. Filed Oct. 30, 1903. Serial No. 179,247. (No model.)





*Claim.*—1. The combination with a vehicle-truck pivoted with reference to the body of the vehicle, of a sand-receptacle mounted on the truck, an ejector connected in operative relation with the sand-receptacle, and means mounted on the body of the car and connected with the ejector for supplying the latter with air.

2. The combination with a vehicle-truck pivoted with reference to the body of the vehicle, of a sand-receptacle mounted on the truck, an ejector also mounted on the truck and connected in operative relation with the said receptacle, and means mounted on the body of the car for supplying the ejector with the necessary fluid for operating purposes.

3. The combination with a vehicle-truck, pivoted with reference to the body of the vehicle, of a sand-box mounted on the truck, means connected with the box for conducting sand therefrom to the rails of the track, and an ejector mounted on the truck and connected in operative relation with the sand-box, and means mounted on the car-body for supplying the ejector with operating fluid.

4. The combination with a vehicle-truck, the latter being pivoted with reference to the body of the vehicle, of a sand-box mounted on the truck-frame, an air-service pipe mounted on the body of the car, an ejector connected in operative relation with the sand-box, and a flexible conduit leading from the air-service pipe to the ejector for the purpose set forth.

5. The combination with a vehicle-truck, mounted to swing on a vertical axis with reference to the body of the car, of a sand-box mounted on the truck, two outlets at the bottom of the sand-box, an ejector connected in operative relation with each outlet, an air-service pipe mounted on the body of the car, and a flexible device leading from the air-service pipe to the ejectors.

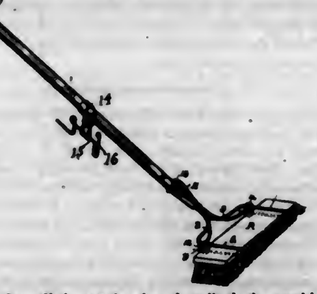
6. The combination with a car provided with a truck movable with reference to the body of the car in the usual manner for the purpose of rounding curves, an air-service pipe mounted on the body of the car and extending upwardly through the platform, a valve connected with the upwardly-extending portion of the air-service pipe, the said valve being accessible to the person in charge of the car for controlling the passage of air, a flexible conduit leading from the air-service pipe, a sand-box mounted on the truck, two outlets leading downwardly from openings in the sand-box, said outlets having enlarged lower extremities, a pipe extending transversely of the truck, an ejector connected with each end of said pipe and projecting into the enlarged sand-box outlets, the flexible air-pipe being connected with the pipe between the two ejectors, and suitable means for conducting the sand from the sand-box enlargements to the track-rails, substantially as described.

7. A sander comprising a sand-receptacle mounted on the truck, and an ejector also mounted on the truck and connected in operative relation with the receptacle, and means mounted on the body of the car for supplying the necessary fluid for operating purposes.

8. In a pneumatic sander, the combination with a sand-receptacle mounted on a truck pivotally connected with the body of the car, and means mounted on the car-body and connected with the sand-receptacle for supplying the necessary air for operating purposes.

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**755,540. COMBINED BRUSH AND MOP HOLDER.** HARRY G. PRICE, South Bend, Ind. Filed Jan. 27, 1903. Serial No. 140,756. (No model.)



*Claim.*—1. In a device of the class described, the combination of a frame having upper and lower brush-head-engaging members which are open at one end, and a clamp on the members arranged to close the open ends and engage the brush-head.

2. In a device of the class described, a mop-holder comprising a frame provided with resilient end pieces having a normally outwardly springing tendency, and a mop-holding rod engaging the ends of said end pieces.

3. In a device of the class described, upper and lower brush-head-engaging members, a rod connecting the outer ends of said members, and a clamp on the inner ends of the upper members.

4. In a device of the class described, a resilient frame having upper and lower brush-head-engaging members and provided with eyes, a rod engaging said eyes to connect the outer ends of the members, and a spring-clamp on the inner ends of the upper members.

5. A combined brush and mop holder comprising a spring-metal frame secured to the handle and having the end pieces 4 provided with eyes, a detachable mop-holding rod engaged in said eyes, lower brush-head-engaging members merging from said eyes and extending rearwardly and parallel to the pieces 4, a spring-clamp enveloping the pieces 4 and the lower brush-head-engaging members at the inner ends thereof, and means to hold the clamp in engagement with the brush.

6. In a device of the class described, upper and lower brush-head-engaging members, having a normally outwardly springing tendency and a mop-holding rod detachably engaging the outer ends of said brush-head-engaging members.

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**755,541. WHIFFLETREE-COUPLING.** JOHN R. PRIDE, Tecumseh, Okla. Filed Nov. 4, 1903. Serial No. 179,813. (No model.)



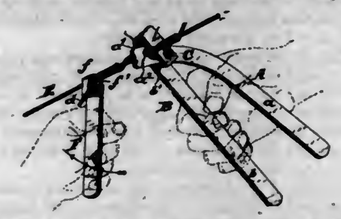
*Claim.*—1. A whiffletree-coupling consisting of two members each of which is provided with a central headed stud, and a rabbeted flange concentric therewith, the other member being provided with a circular boss having a circumferential flange to engage said rabbeted flange, and a slot with flanges extending along opposite sides thereof and adapted to engage beneath the head of said stud.

2. A whiffletree-coupling comprising two members one of which is in the form of a sleeve or clip adapted to embrace the whiffletree, said clip being divided at one side only and provided with means for clamping the same upon the doubletree, the two members being provided with interlocking means located directly between the trees, substantially as described.

3. A whiffletree-coupling comprising two members, one of which is in the form of a sleeve or clip adapted to embrace a doubletree and having means for clamping the same around the doubletree, the two members being provided with interlocking flanges, and an interlocking headed stud and radial slot therefor, substantially as described.

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**755,542. SPLICING-TOOL.** ABRAHAM B. PROBASCO, near Lebanon, Ohio. Filed May 27, 1903. Serial No. 158,975. (No model.)



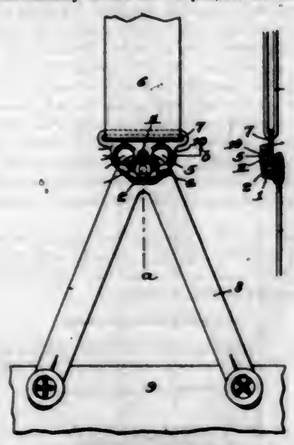
*Claim.*—A wire-holding tool consisting of two flat members which form the jaws and handles thereof, a part of one member near one end being bent over on itself, but with a space between these contiguous parts, the edges of which parts form double jaws on one side, the other member containing the complementary jaw being fitted into the space between these two parts, and a pivot passing through all three of them, thereby also holding the bent-over part in position.

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**755,543. SUSPENDERS.** JOSHUA PUSEY, Lima, Pa., assignor of one-half to Charles D. Williams, Philadelphia, Pa. Filed June 16, 1903. Serial No. 161,643. (No model.)

*Claim.*—1. The combination with suspenders having the usual web portion, and the strap portion adapted to be secured to the trousers, of the stud secured to said strap portion and having the enlargement on its free end, and the plate secured to said web portion and having the oblique slot adapted to receive the shank of said

stud; said slot having an enlargement at its upper end for the passage of said enlargement of the stud, all constructed and adapted to operate substantially as and for the purpose set forth.



2. The combination with suspenders having the usual web portion, and the strap portion adapted to be secured to the trousers, of the stud secured to said strap portion and having the enlargement on its free end, and the plate secured to said web portion and having an oblique slot adapted to receive the shank of said stud; said slot having an enlargement at its upper end for the passage of said enlargement of the stud, together with a spring adapted to prevent the accidental escape of the latter through said enlargement of the slot, all constructed and adapted to operate substantially as and for the purpose set forth.

3. The cast-off device for suspenders comprising the stud, having the enlarged head and adapted to be attached to one part of the suspenders, and the plate adapted to be attached to the other part of the suspenders, and having an oblique slot adapted to receive the shank of said stud, with an enlargement at its outer end for the passage of the head of said shank, together with the upturned flange around a portion of said enlargement, the height of said flange above the surface of said plate being greater than the length of the shank of the stud, substantially as and for the purpose set forth.

4. The cast-off device for suspenders, comprising as one member thereof, the stud adapted to be secured to one part of the suspenders, and as the other member a plate adapted to be secured to the other part of the suspenders, and having the slot adapted to receive the shank of said stud, with the enlargement at its outer end for the passage of the head of the stud, together with the upturned inwardly-inclined flange around a portion of said enlargement, substantially as and for the purpose set forth.

5. The cast-off device for suspenders comprising the stud, adapted to be secured to one part of the suspenders, and having the enlarged head, and the plate adapted to be secured to the other part of the suspenders, and having the approximately V-shaped slot adapted to receive the shank of said stud, with enlargements at the outer ends of said slot for the passage of the head of the stud, substantially as and for the purpose set forth.

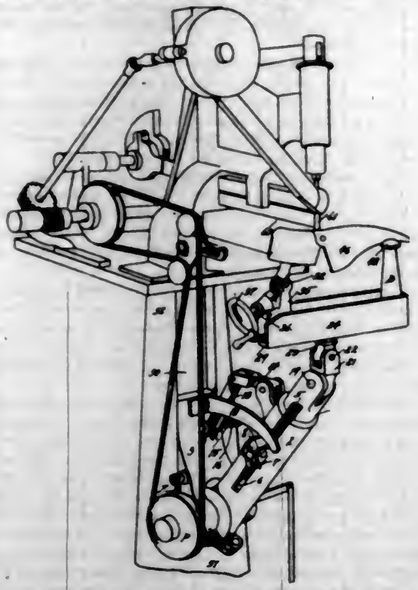
6. The cast-off device for suspenders comprising the stud, adapted to be secured to one part of the suspenders, and having the enlarged head, and the plate adapted to be secured to the other part of the suspenders, and having the approximately V-shaped slot adapted to receive the shank of said stud, with enlargements at its outer ends for the passage of the head of the stud, together with the upturned flange around a portion of said enlargements, and the spring integral with said plate, for preventing the accidental disengagement of the stud from said slot, substantially as set forth.

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**755,544. LASTING-JACK.** CHARLES F. PYE, Essex, Canada, assignor of one-half to the Krentler Brothers Company, Detroit, Mich. Filed Mar. 9, 1903. Serial No. 146,911. (No model.)

*Claim.*—1. In a lasting-jack, in combination with a standard, a jack-supporting post pivotally connected thereto, a stem for the jack slidingly connected to the pivoted post, a ratchet-and-pawl connection between the post and the stem, means for automatically disengaging the pawl and ratchet, and a spring arranged to actuate the sliding stem, substantially as described.

2. In combination with a pedestal, a stem slidingly connected therewith, a swinging post pivotally connected to the sliding stem, a lasting-jack stem slidingly connected to the pivoted post, a jack-head connected by a universal joint to the sliding stem, means for reciprocating the pivoted post and the parts carried thereby, a ratchet-and-pawl connection between the pivoted post and the sliding jack-stem and an arm fixed to the pedestal-stem and extending into the path of the pawl, substantially as described.



3. In combination with a pedestal, a stem slidingly connected therewith, a swinging post pivotally connected to the sliding stem, a lasting-jack stem slidingly connected to the pivoted post, a jack-head connected by a universal joint to the sliding stem, means for reciprocating the pivoted post and the parts carried thereby, means for balancing the pivoted post and the parts carried by it, a ratchet-and-pawl connection between the pivoted post and the jack-stem, and an arm fixed to the pedestal-stem and extending into the path of the pawl, substantially as described.

4. In combination with a machine-pedestal, a machine-support adjustable vertically on said pedestal, a post pivoted to the machine-support, a jack-supporting stem slidingly connected to said post, means for interlocking the post and stem, and means for automatically disengaging the interlocking means, substantially as described.

5. In a lasting-jack, in combination with a reciprocating extensible jack-support, a jack-head held by universal-joint connections thereto, a last-carriage constituting part of the jack-head, a spring for extending the jack-support and lifting the carriage, means to lock together the parts of the extensible jack-support and means brought into action by the reciprocation of the jack-support to disengage the lock, substantially as described.

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**755,545. TYPE-WRITING MACHINE.** WILLIAM P. QUENTELL, New York, and FRANKLIN JUDSON, Brooklyn, N. Y., assignors to the Postal Typewriter Company, New York, N. Y., a Corporation of New York. Filed Sept. 23, 1903. Serial No. 174,339. (No model.)

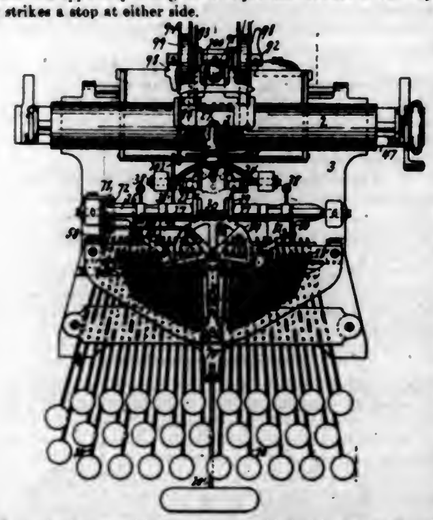
*Claim.*—1. A wheel type-writing machine provided with a stop-arm for arresting rotation of the wheel, a printing-escapement for preventing premature dip of the wheel, and means for connecting the escapement with the stop-arm so that the escapement will be released when the stop-arm is arrested, said escapement having a certain looseness to allow limited freedom or dip to the wheel before the escapement is released.

2. A wheel type-writing machine provided with a stop-arm, stops for the arm, and a ratchet moving with said arm and made to prevent rebound when the arm strikes a stop.

3. A wheel type-writing machine provided with a rotating stop-arm, stops for the arm, a ratchet made to rotate with the arm, and a pawl made to engage the ratchet to prevent rebound.

4. A wheel type-writing machine provided with a stop-arm, stops for the arm at each side of the machine, and an index-gear ratchet with oppositely-facing teeth to prevent rebound as the stop-arm strikes a stop at either side.





5. A wheel type-writing machine provided with a segment and stop-arm actuated by the rotation of the wheel, an index-gear ratchet carried by the segment, and a pawl for the ratchet to prevent rebound as the arm strikes a stop.

6. A wheel type-writing machine provided with a rocking frame for the wheel, means for rotating and stopping the wheel, an index-gear ratchet, and a pawl actuated by the rocking frame and made to engage the ratchet to prevent rebound on the stoppage of the rotation of the wheel, said pawl and ratchet being made to swing in parallel planes and the pawl being made to yieldingly engage the ratchet to allow the same to move for bringing a type into position, but to prevent return of the ratchet until the pawl is withdrawn.

7. A wheel type-writing machine provided with a rocking frame for the wheel, means for rotating and stopping the wheel, an index-gear ratchet mounted clear of the rocking frame, a pawl for the ratchet, and actuating means for the pawl to throw the same into engagement when the frame begins to rock or oscillate.

8. A wheel type-writing machine provided with a rocking frame for the wheel, an index-gear ratchet for the wheel mounted clear of the rocking frame, a pawl for the ratchet and a cam actuated by the frame for moving the pawl.

9. A wheel type-writing machine provided with a rocking frame for the wheel, a pawl, an index-gear ratchet for the wheel mounted separately therefrom and normally located clear of the pawl, and a cam secured to the rocking frame and made to move the pawl into engaging position so that the pawl will engage the ratchet.

10. A wheel type-writing machine provided with means for rotating and stopping the wheel, an index-gear ratchet and a pawl for the ratchet to prevent rebound on the stoppage of the wheel, said pawl having a spring or yielding tooth for engagement with the ratchet.

11. A wheel type-writing machine provided with means for rotating and stopping the wheel, an index-gear ratchet, and a pawl for the ratchet to prevent rebound, said pawl having a tooth portion made separate from the pawl to secure sensitive or quick action or engagement.

12. A wheel type-writing machine provided with an index-gear ratchet and pawl to prevent rebound, said pawl having a tooth portion pivotally mounted on the end portion of the pawl, and a spring for the tooth portion to hold the same in active or engaging position.

13. A wheel type-writing machine provided with an index-gear ratchet, a pawl for the ratchet, and a double-acting cam for the pawl to move the latter into and out of action or engaging position.

14. A wheel type-writing machine provided with a stop-arm, an index-gear ratchet, and a pawl for the ratchet, said pawl being normally out of engaging position and being moved to engaging position before the wheel is stopped to prevent rebound.

15. A wheel type-writing machine provided with a stop-arm, an index-gear ratchet, a pawl for the ratchet, means for moving the pawl into action and means for moving the pawl out of action.

16. A wheel type-writing machine provided with an oscillating or tilting frame for the wheel, an escapement for the frame, a cam actuated by the frame, and an index-gear ratchet combined with a pawl actuated by the cam, said escapement allowing a certain looseness or play for the frame to rock and move the pawl to active position prior to the rotation of the type-wheel.

17. A wheel type-writing machine having a tilting type-wheel shaft provided with a lateral extension, and a slotted guide-piece and a fixed shaft-lock with which said extension coacts.

18. A wheel type-writing machine having a tilting frame with a type-wheel shaft provided with a lateral extension extended each side of the shaft, a slotted guide-plate extended from the tilting frame parallel with the shaft and engaged by the extension to prevent rotation of such shaft and a fixed shaft-lock adapted to be engaged by such extension to lock the shaft against longitudinal movement when printing.

19. A type-writing machine having a type-wheel, a longitudinally-movable non-rotary tilting shaft on which the wheel is rotatably mounted, and a shaft-lock to hold the shaft against longitudinal movement when the wheel is printing, said lock being adjustable with respect to the printing line or point of the wheel to hold said wheel-shaft fixed during printing.

20. A wheel type-writing machine having a rocking frame, a wheel-shaft carried by said frame, an adjustable fixed shaft-lock on a fixed part of the machine, a shaft-guide carried by the rocking frame to prevent the shaft from rotating, and a spring carried by the rocking frame and made to engage the shaft to hold or bring the same to normal position.

21. A wheel type-writing machine having a rocking frame, a shaft for the wheel carried by the frame, a shaft-lock, a holding-screw for securing the shaft-lock, and oppositely-located adjusting-screws for setting the lock with respect to the printing point or line.

22. A wheel type-writing machine having a rocking wheel-shaft provided with a lateral extension and an adjustable lock into which the extension engages when the shaft moves the wheel to printing position, said extension having an antifriction-roller to contact with the lock.

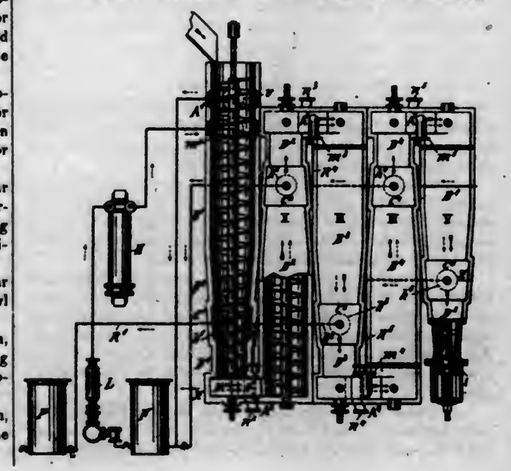
23. A type-writing machine provided with a ribbon-carrying frame having a shaft with ratchet and spools, a lever with pawl for the ratchet, a key, and means for conveying motion from the key to the lever, said frame being hung or made to vibrate to swing clear for exposing the writing.

24. A type-writing machine having a type-wheel made to rock for the printing stroke, a rocking frame for the wheel, a ribbon-spool-carrying frame mounted clear of the wheel-frame and provided with spools, a ratchet and pawl for the spools, and a driving-lever for the pawls actuated by the rocking frame.

25. A wheel type-writing machine having a rocking frame and an index-gear ratchet for the wheel, a pawl for the index-gear and a ribbon-spool frame both pivoted clear of the rocking frame, and a pawl-actuating cam and ribbon-spool-actuating arm secured to the rocking frame to be actuated thereby.

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**755,546. DIFFUSION-BATTERY.** ALOIS RAK, Cesky Brod, Austria-Hungary. Filed Aug. 1, 1903. Serial No. 167,857. (No model.)



*Claim.*—1. The combination in a continuous battery for the manufacture of sugar from beet-roots, cane or the like, of a series of rotary worm-presses, each terminating in a narrow juice-stopper D', dividing parts C' interposed before said stoppers, each press being provided with an outlet having a sieve therein, through which the juice flows off, a conduit R from the channel A', a measuring-cistern P into which said conduit leads, a conical stopper G in the last diffuser of said battery adapted to maintain a pressure in said diffuser, the arrangement being such that the diffusing liquid passes from one diffuser to another without the necessity of auxiliary means.

2. The combination in a continuous battery for the manufacture of sugar from beet-roots, cane or the like, of a series of rotary worm-presses each terminated by the narrow juice-stopper D', a dividing part C' for driving off the juice, communicating channels A' between the worm-casings leading from the exit of the closing part D' to the widened part of the next worm, rotating shovels M in said channels secured to the shafts of the worms, and auxiliary shovels N in the center of said channels, said parts being adapted for transporting the slices perpendicularly to the direction of the worms and means for regulating the discharge from the last diffuser whereby the pressure in the battery may be regulated.

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755,547. COMBINED BODY-BRACE AND CORSET. HOWARD C. RASH, Salina, Kans., assignor to Natural Body Brace Company, Salina, Kans., a Corporation of Kansas. Filed Dec. 14, 1903. Serial No. 185,084. (No model.)



*Claim.*—1. A body-brace comprising, a corset, shoulder-straps secured at their lower ends to the lower rear portions of the corset, an abdominal plate or support and straps extending from the back of the corset around to said plate or support.

2. A body-brace comprising, a corset, shoulder-straps secured at their lower ends to the lower rear portions of the corset, an abdominal plate or support, straps extending from the back of the corset around to the said plate or support and perineal straps to assist in holding the abdominal plate or support in place.

3. A body-brace comprising a corset having openings on the lower portion of its back, buckles or fastenings on the outer side of the back adjacent to said openings, shoulder-straps extending downwardly along the inner side of the corset-back and through said openings to the buckles or fastenings, an abdominal support and straps extending from the back of the corset around to the abdominal support.

4. A body-brace comprising, a corset having openings in the lower portion of its back, pairs of buckles or fastenings on the outer side of the corset-back and adjacent to said openings, shoulder-straps extending at their lower ends through said openings into connection with the upper buckles, an abdominal support, straps extending from the corset-back around to said abdominal support, and perineal straps extending from the other rear buckles to buckles on the abdominal supporter-straps.

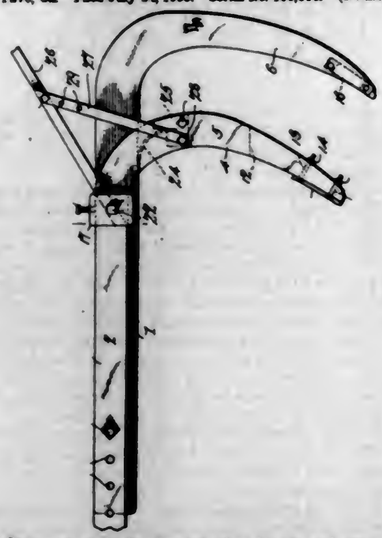
5. A body-brace, comprising a corset, shoulder-straps connected at their lower ends to the lower ends of the corset-back, an abdominal plate or support, straps secured to the corset-back and to the said plate or support, slides on the forward ends of said straps provided with buckles, and perineal straps secured to the corset-back and to said buckles on the slides.

6. A body-brace comprising, a corset, having shoulder-straps, a separable abdominal plate or support, pivoted buckles on each section, pairs of straps extending from the corset-back around to the said buckles, and perineal straps to assist in holding the abdominal plate in position.

7. A body-brace comprising, a corset, shoulder-straps secured at their lower ends only to the lower end of the corset-back, and a separable abdominal support, having pairs of straps secured at their rear ends only to the corset-back at different heights.

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755,548. PLOW. BENJAMIN C. REESE and GEORGE W. BROOME, Pavo, Ga. Filed July 24, 1903. Serial No. 166,886. (No model.)



*Claim.*—1. A duplex beam having downturned rear ends cooperating to form a standard, in combination with a center beam interposed between and pivotally connected with the side members of the duplex beam and having a standard, and spring supporting means for the center beam interposed between the side members which cooperate to form the standard of the duplex beam.

2. A duplex beam, a pivotally-mounted center beam interposed between and spacing the side members of said duplex beam, a connecting member having an opening for the passage of the side members of the duplex beam, said opening being provided with a bottom slot for the insertion between said side members of the center beam, and set-screws disposed to bear against the outer sides of the side members of the duplex beam to cause the latter to frictionally engage the sides of the center beam.

3. A plow-frame comprising side beams having downturned rear ends cooperating to form a standard, a center beam having a standard, a connecting device having an opening for the passage of said center beam and side beams, said opening having a slot in the bottom thereof forming brackets for the support of the side members and admitting of the vertical movement of the center beam, a set-screw bearing against the upper edge of the center beam, and set-screws bearing against the outer sides of the side beams.

4. A plow-frame comprising a center beam and a duplex beam having side members pivotally connected with and spaced by said center beam, the side members of the duplex beam having downturned rear ends cooperating to form a standard, a connecting device having an opening for the accommodation of the center beam and the side members of the duplex beam, said opening having a slot in its lower side for the passage of the center beam, set-screws disposed to bear against the outer sides of the said members of the duplex beam, a set-screw bearing against the upper edge of the center beam, and spring supporting means for the latter.

5. A duplex frame having side members provided with downturned rear ends cooperating to form a standard, a center beam mounted pivotally between and spacing said side members, a connecting-clamp having an opening for the admission of said side members and center beam, said opening being slotted at its lower end for the passage of said center beam, a block mounted between the side members of the standard of the duplex beam, and a spring mounted in said block bearing against the under side of the center beam.

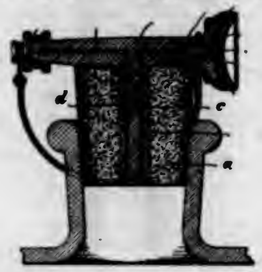
6. A duplex beam having side members provided with downturned rear ends cooperating to form a standard, a center beam mounted pivotally between the side members of the duplex beam, a connecting device having an opening for the passage of the side members of the duplex beam and adapted for the vertical adjustment between said side members of the center beam, slots in said connecting device adjacent to the outer sides of the side members of the duplex beam, and handles mounted in said slots.

7. A duplex beam having downturned rear ends cooperating to form a standard, a center beam mounted pivotally between said side members, a connecting device having a central opening for the accommodation of the side members of the duplex beam and for the disposition between said side members of the center beam, said connecting device being provided with slots adjacent to the said side members, set-screws extending through the side walls of said slots and bearing against the outer sides of the side members of the duplex beam, and plow-handles extending through said slots and provided with perforations engaged by the said set-screws.

8. A duplex beam having side members provided with downturned rear ends cooperating to form a standard, a center beam mounted pivotally between the side members of said duplex beam, a connecting device having an opening for the passage of the center beam and the side members of the duplex beam and means for the vertical adjustment of the center beam, slots in said connecting device adjacent to the outer sides of the side members of the duplex beam, a block secured between the side members of the standard of the duplex beam, a supporting-spring for the center beam mounted in said block, bolts for the securement of the latter, plow-handles mounted in the slots of the connecting device, set-screws extending through the side walls of said slots and through the plow-handles and bearing against the outer sides of the side members of the duplex beam, and handle-supporting braces connected with said handles and with one of the bolts securing in position the spring-carrying block between the side members and the standard of the duplex beam.

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755,549. DROPPING-STOPPER. KARL RETTIG, Spandau, Germany. Filed Aug. 18, 1903. Serial No. 169,879. (No model.)




*Claim.*—1. In a dropping-stopper the combination with a cork which may be put into the neck of a bottle, a T-shaped body inserted therein, two channels passing through the shank and the arms of the body, a flange arranged at the end of one arm, being concave on its outer side, an india-rubber cap having a central perforation inclosing the said flange and leaving a small cavity between the flange and the cap as set forth.

2. In a dropping-stopper the combination with a cork, which may be put into the neck of a bottle, a T-shaped body inserted therein, two channels passing through the shank and the arms of the body, a flange being arranged at the end of one arm, the channel ending in the said arm being enlarged and an india-rubber cap, having a small central perforation, inclosing the said flange and leaving a small cavity between the flange and the cap, as set forth.

3. In a dropping-stopper the combination with a cork, which may be put into the neck of a bottle, a T-shaped body inserted therein, two channels passing through the shank and the arms of the body, a flange being arranged at the end of one arm, the channel ending in the said arm, being enlarged and threaded within, a threaded stopper screwed into the enlarged channel, said stopper ending in a flange, shaped concave on its outer side and convex on the opposite side, an angular channel extending partially across the threaded part of the said stopper and ending near the flange of the stopper, an india-rubber cap, having a small central perforation, inclosing the flange of the arm of the body and the flange of the threaded stopper, as set forth.

4. In a dropping-stopper the combination with a cork, which may be put into the neck of a bottle, a T-shaped body inserted therein, two channels passing through the shank and the arms of the body, the channel of one arm adapted to be closed by a threaded cap, a flange being arranged at the end of the other arm, the channel ending in the latter arm being enlarged and threaded within, a threaded stopper screwed into the enlarged channel, a flange arranged at the free end of the stopper, shaped concave on its outer side, and convex on the opposite side, an angular channel extending partially across the threaded part of the stopper and ending near the flange thereof, a packing-ring arranged between the mouth of the channel and the flange, and an india-rubber cap, having a small central perforation, inclosing the flange of the arm of the T-shaped body and the flange of the threaded stopper, as set forth.

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755,550. CLUTCH. CHARLES M. RHODES, Steubenville, Ohio. Filed Nov. 17, 1902. Serial No. 131,646. (No model.)



*Claim.*—1. The combination with the shaft and the fixed friction members mounted thereon, of brake-shoes slidably mounted at a point exterior of the peripheries of said friction members, and means arranged between the said friction members for forcing the said brake-shoes into engagement with the peripheries thereof.

2. The combination with the casing formed with guideways, of a shaft projecting through the said casing, friction members secured on the said shaft, brake-shoes slidably mounted in the said guideways, and means for forcing the said brake-shoes into and out of engagement with the said friction members.

3. The combination with the shaft and the friction members fixed thereon, of brake-shoes arranged at points exterior of the periphery of the said friction members, and means for simultaneously operating the said shoes to engage with the said friction members.

4. The combination with the shaft and the friction members of a movable member formed with cam-slots, brake-shoes, and pins secured to the said brake-shoes and arranged in the said slots.

5. The combination with a plurality of rotatable members, and means for rotating the said members, of brake-shoes arranged adjacent the periphery of the said members, said brake-shoes being arranged in pairs, a pin connecting each pair of shoes, and a loosely-mounted member arranged between the said rotatable members and being formed with eccentrically-disposed slots in which the said pins are arranged.

6. The combination with the shaft, of a pair of disks fixed upon the said shaft, a loosely-mounted member arranged between the said disks, said last-named member being formed with eccentric cam-slots, a shoe arranged adjacent the periphery of each of the said disks and means for connecting the said shoes, said means projecting through the slots of the said movable member, substantially as and for the purpose specified.

7. The combination with the shaft, of a disk fixed upon the said shaft, there being a hub formed integral with the said disk, a second disk fixed upon the outer end of the said hub, brake-shoes arranged adjacent the peripheries of the said disks, means for securing the said brake-shoes in pairs, and a loosely-mounted member arranged between the said disks and engaging the said means for operating the brake-shoes, substantially as and for the purpose specified.

8. The combination with the casing formed with guideways and a shaft projecting through the said casing, of a plurality of members fixed upon the said shaft, brake-shoes arranged in the said guideways

of the casing, and means arranged in the said casing for operating the brake-shoes into and out of engagement with the said members.

9. The combination with the casing provided with an opening and the shaft projecting therethrough, of a pair of disks fixed upon the shaft, brake-shoes, a loosely-mounted member for forcing the said brake-shoes into and out of engagement with the said disks, and an operating-lever secured to the last-named member and projecting through an opening in the said casing.

10. The combination with the shaft, of a disk fixed upon the shaft, there being a stepped hub formed integral with the said disk, a second disk keyed upon the outer stepped portion of the said hub, a loosely-mounted member arranged on the inner stepped portion of the said hub, brake-shoes arranged adjacent the peripheries of the said disks, and means carried by the said loosely-mounted member for operating the said brake-shoes.

11. The combination with the casing provided with guideways, of a shaft projecting through the said casing, a disk fixed upon the said shaft, there being a hub formed integral with the said disk, a second disk fixed upon the said hub, brake-shoes slidably mounted in the guideways of the said casing, pins connecting the said brake-shoes whereby the latter are arranged in pairs, and a member loosely mounted upon the said hub between the disks and provided with cam-slots through which the said pins project, substantially as described.

12. The combination with the casing formed with guideways and the shaft projecting through the said casing, of friction members mounted on the said shafts, brake-shoes, pins connecting the said brake-shoes, said brake-shoes having extended portions arranged in the said guideways, and means for forcing the said shoes into and out of engagement with the said friction members.

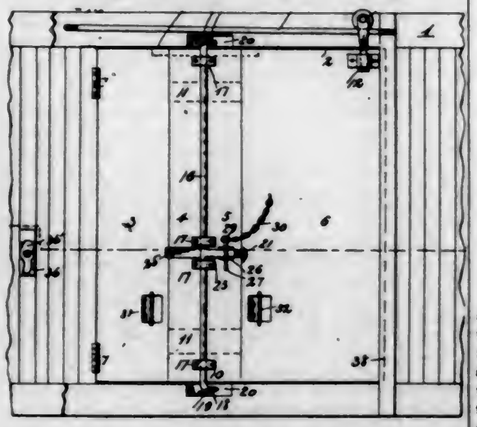
13. The combination with the shaft, and the fixed friction members mounted thereon, of a movable member having extended portions formed with cam-slots, brake-shoes, and a connecting means for the said brake-shoes, said connecting means being arranged in the said cam-slots, substantially as and for the purpose specified.

14. The combination with the shaft, and the friction members mounted thereon, of a movable member having extended portions formed with cam-slots, brake-shoes, and pins connecting the said brake-shoes, said pins being arranged in the said cam-slots.

15. The combination with the casing formed with guideways, and a shaft projecting through the said casing, of friction members mounted on the said shaft, a movable member, brake-shoes slidably mounted in the said guideways, means carried by the said movable member for actuating the said brake-shoes, and a lever secured to the said movable member and projecting through the said casing.

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**755,551. FOLDING DOOR.** WHEELER RICHARDSON, Elizabethton, Tenn., assignor of two-thirds to Napoleon L. Murrell and Edwin C. Alexander, Elizabethton, Tenn. Filed July 27, 1903. Serial No. 167,184. (No model.)



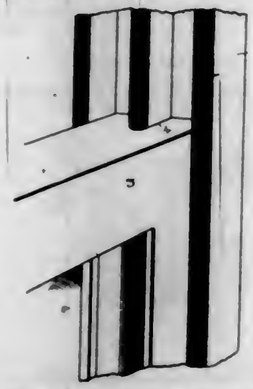
*Claim.*—1. The combination with a supporting structure, of a folding door comprising sections or panels 3, 4, 5, 6, the combined width of the sections 3, 4, 5, being equal to that of section 6, the section 3 being hinged to the side of the supporting structure and to the section 4, the section 5 being hinged to the section 6, and said sections 4 and 5 being secured rigidly together, a roller carried by the section 6, a rod 14 shaped as described and secured to the said supporting structure, and upon which rod the said roller is adapted to travel, and means adapted to lock the sections when in their extended position against folding movement.

3. The combination with a supporting structure, of a folding door comprising sections 3, 4, 5, 6, the combined width of the sections 3, 4, 5, being equal to that of section 6, the section 3 being being hinged to the side of said supporting structure and to the section 4, and section 5 being hinged to the section 6, and said sections 4 and 5 being secured rigidly together, but spaced apart so as to form a recess between them, a roller carried by section 6, a rod 14 shaped as described and secured to said supporting structure, and upon which rod the said roller is adapted to travel, a locking-rod rotatably mounted in the recess between the sections 4 and 5 and provided with hooked ends, and loops or staples secured to the said supporting structure adapted to be engaged by said hooked ends.

4. The combination with a supporting structure, of a folding door comprising sections 3, 4, 5, 6, the combined width of sections 3, 4, 5, being equal to that of section 6, the section 3 being hinged to the said supporting structure and to the section 4, the section 5 being hinged to the section 6, and said sections 4 and 5 being rigidly secured together and being spaced apart to form a recess between them, a roller carried by section 6, a rod 14 shaped as described and secured to said supporting structure and upon which rod the said roller is adapted to travel, a locking-rod rotatably arranged within the recess between the sections 4 and 5 and having hooked ends, loops or staples secured to the supporting structure and adapted to be engaged by said hooked ends, and an operating-handle secured to the locking-rod and adapted to seat within the recess between the sections 4 and 5.

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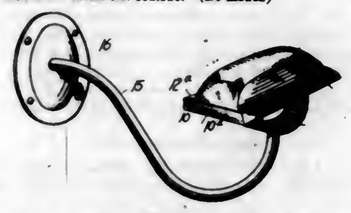
**755,552. WEATHER-STRIP FOR WINDOWS.** JAMES T. ROBERTS, Claremont, Colo., assignor of one-half to Samuel O. Roberts, Claremont, Colo. Filed May 2, 1903. Serial No. 155,354. (No model.)



*Claim.*—The combination with a window-sash, having a U-shaped groove opening through the outer edge of the side portion thereof and a frame having a guide defined therein for removably receiving the grooved side portion of the sash, of an elongated U-shaped metal strip extending fully throughout the vertical length of the center of the guide in the frame and having the extremities thereof straight and bearing against the frame, the inward extent of the strip being equal to the groove in the side portion of the sash and said strip fully inclosed by the sash, and fastening devices driven at intervals through the center of the arch of the strip into the frame, the hollow part of the strip having portions of the fastening devices exposed therein to provide intermediate bracing means which prevents loose movement in inward and outward direction of the said strip.



**755,553. SOAP-LOCK.** GEORGE D. SHELL, Denver, Colo. Filed Nov. 21, 1902. Serial No. 132,325. (No model.)



*Claim.*—1. A soap-lock comprising a soap-holder open to allow a cake of soap to enter but constructed to hold it securely in place except in the direction of entrance, and a plate to which said holder is secured, the said plate having a part closing the soap-entering space of the holder whereby the cake of soap cannot be removed until the holder is detached from the plate.

2. A soap-lock comprising a holder having an open way to allow a cake of soap to enter but constructed to prevent the removal of the cake of soap except by a movement in the plane of the entering way, and a plate to which said holder is secured, the said plate having a part which closes the soap-entering way of the holder when the latter is secured in place.

3. A soap-lock comprising a plate having an opening and provided at its outer edge with upwardly-projecting flanges, and a soap-holder in which a cake of soap may be inserted, said holder having a stud adapted to pass through the opening in the plate, and means applied to the stud for locking the holder in place, the flanges of the plate preventing the removal of the soap.

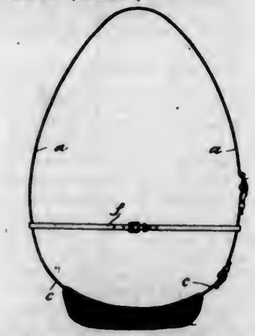
4. A soap-lock comprising a suitable support, a plate made fast to said support and provided with an opening, and a soap-holder provided with a stud passing through the opening of the plate and secured in place, the soap-holder being constructed to permit the removal and insertion of a cake of soap when the holder is detached from the plate, and the said plate being constructed to prevent the removal of the cake of soap after the holder is applied to the plate.

5. A soap-lock comprising a plate having upwardly-projecting flanges, the said plate having an opening in its body portion, a holder having inwardly-projecting flanges shaped to engage counterpart flanges formed on a cake of soap, said holder having a stud projecting through the opening of the plate, and means applied to said stud for locking the holder in place.

6. A soap-lock comprising a suitable support, a plate mounted thereon and having a bow-shaped part underneath, and provided with an opening above the bow-shaped part, and a holder proper having inwardly-projecting flanges adapted to engage flanges formed on a cake of soap, the said holder having a stud projecting from the opening in the plate and having a conical upper part engaging a socket of similar shape formed in the plate, and a nut applied to the stud whereby the holder is secured in place, the said holder having an open way to allow the cake of soap to enter, and the said plate having a part which closes said soap-entering way when the holder is secured in place on the plate.

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**755,554. DEVICE FOR CARRYING CHILDREN.** THOMAS O. TURNBULL, Kawhia, near Auckland, New Zealand. Filed Oct. 24, 1902. Serial No. 128,571. (No model.)



*Claim.*—1. A device for carrying children, the same consisting of a neck or shoulder band, adjustable in length, the bottom ends of which are narrowed down and secured together so as to form a frame, and a small hammock of any suitable material suspended upon such frame, as herein specified.

2. A device for carrying children, the same consisting of a neck or shoulder band, adjustable in length, the bottom ends of which are narrowed down and secured together so as to form a frame, a small hammock suspended upon such frame, and a restraining-strap the two ends of which are respectively attached to the two dependent parts of the neck or shoulder band, as herein specified.

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**755,555. WHIP HOLDER AND STRETCHER.** JOHN A. WEAVER, Greeley, Colo. Filed Oct. 10, 1903. Serial No. 176,559. (No model.)



*Claim.*—1. A whip holder and stretcher comprising two members, one of which is provided with a yieldingly-retained device adapted to engage one part of the whip, and a clamping device adapted to engage the other part of the whip, the two parts being arranged to hold the whip securely in place, the yieldingly-retained part being bodily movable in a line connecting the two parts.

2. The combination of a yieldingly-retained holding device and a clamping device, the two parts being located in suitable proximity to each other, and one of the parts being bodily movable in a line connecting the two parts.

3. In a whip-holder, the combination of two separated devices adapted to engage two different parts of the whip, one of the said devices being yieldingly retained, vertically movable bodily and having a pair of rigid jaws.

4. The combination of two devices located in suitable proximity to each other for holding a whip, one of the said devices being spring-retained, and bodily movable in a line connecting the two devices.

5. The combination of two members, one member consisting of a plate, a pin mounted thereon, a claw slidably mounted on the pin, and a spring surrounding the pin and acting on the claw; the other member consisting of a device adapted to receive and hold a part of the whip remote from the claw, the latter being adapted to receive the cracker end of the whip.

6. The combination of two members, one member consisting of a plate, a pin mounted thereon, a claw slidably mounted on the pin and having a flat part engaging the plate to prevent the claw from turning, and a spring surrounding the pin and acting on the claw; the other member consisting of a clamping device adapted to hold the part of the whip remote from the claw.

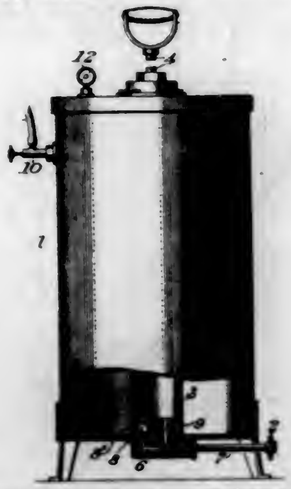
7. The combination of two members, one member consisting of a plate provided with a pin, a holding device slidably mounted on the pin and comprising a claw, two parallel parts provided with openings through which the pin passes, and a part extending at right angles to the parallel parts and engaging the face of the plate to prevent the claw from turning, and a spring surrounding the pin and bearing upon one of the parallel parts of the claw; the

other member consisting of a device provided with clamping-jaws adapted to receive and hold the part of the whip remote from its small end.

8. A whip-holder comprising a yieldingly-retained claw and a clamping device, the two parts being suitably separated, the claw being bodily movable in a line connecting the two devices.

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**755,556. COMBINED AIR-COMPRESSOR AND STORAGE-TANK.** ISAAC N. WILFONG, Jr., Philadelphia, Pa. Filed Nov. 14, 1903. Serial No. 181,156. (No model.)




*Claim.*—1. In combination, a storage-tank, a compression-pump within said tank, a solid metal fitting forming the connection between the lower ends of said tank and said pump and having a passage therein leading from said pump to said tank and a check-valve in said passage.

2. In combination, a storage-tank, a compression-pump within said tank, a fitting forming the connection between the lower ends of said tank and said pump, a check-valve in said fitting, said fitting having a port opening into said tank beyond said valve and a manually-operated valve in said fitting between said pump and said check-valve and having a handle exterior of said tank.

3. In combination, a storage-tank, a compression-pump within said tank, a fitting forming the end of said pump and its connection with said tank and having a passage connecting said pump with said tank, a check-valve and a manually-operated valve in said passage.

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**755,557. CONVERTING MATTES.** ROBERT H. AIKEN, Jerome, Ariz. Filed Apr. 4, 1902. Serial No. 101,314. (No specimens.)

*Claim.*—1. The process of converting matte which consists in placing molten matte in a converter having non-fluxing walls, introducing suitable non-molten fluxing material at a high temperature, and subjecting the whole to an oxidizing-blast.

2. The process which consists in holding mattes in molten condition in a converter, raising suitable flux material to a high temperature and adding it, in a non-molten state, to the matte in the converter, and subjecting the whole to the usual blowing.

3. The process of converting mattes which consists in adding to molten matte in a converter suitable non-molten flux material at a high temperature, subjecting the contents of the converter to an oxidizing-blast, and maintaining the converter-walls at a temperature below that at which slag readily forms.

4. The process of converting mattes which consists in subjecting a charge of molten matte in a converter to an oxidizing-blast and meantime adding to the charge, at a rate approximately corresponding to the rate of formation of oxid material, proper for fluxing such charge, at a temperature approximately that at which slag forms from the products of the particular matte and fluxing materials.

5. The process of converting mattes which consists in highly heating material suitable for fluxing the particular matte and progressively or gradually introducing it, during the process of blowing, into a converter containing molten matte at approximately the rate of its consumption.

6. The process of converting mattes which consists in subjecting molten matte in a converter to an oxidizing-blast, highly heating flux material outside the converter, and, during the process of blowing, adding such heated material to the mass in the converter at a rate approximately that of its combining to form a flux.

7. The process of converting mattes which consists in introducing into a converter containing molten matte non-molten flux material at a high temperature and subjecting the whole to an oxidizing-blast.

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**755,558. TUBE FOR BOILERS.** THOMAS W. BARBER, Westminster, England. Filed Oct. 23, 1903. Serial No. 178,345. (No model.)



*Claim.*—1. A tube for boilers and the like having a bore formed with a zigzag passage through it which is provided at intervals with constricted portions and with portions of larger area between the constricted portions.

2. A tube for boilers and the like bent and flattened at intervals throughout its length and on opposite sides to provide a zigzag bore with constricted portions on opposite sides of the tube and with portions of full size between said constricted portions.

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**755,559. DIVIDED LAST.** EDWARD S. BEACH, Brookline, Mass., assignor to Tyler Hinged Last Company, Charleston, W. Va., and Brockton, Mass., a Corporation of West Virginia. Filed Mar. 10, 1902. Serial No. 97,402. (No model.)




*Claim.*—1. The combination, in a transversely-divided last, of a fore part; a heel part; and a bow-spring one arm of which is inserted in and interlocked with the fore part; the other arm of which is inserted in and interlocked with the heel part; and the head portion of which extends downwardly toward the bottom of the last; said last being formed with a top recess and at the bottom thereof with a transverse chamber extending through the last; the head portion of the spring extending into said chamber and being free to flex therein, and of a width less than the length of said chamber; a pair of plugs in said chamber, one at each side of said spring, and each fixed to one of said parts, and each having a curved surface with which a correspondingly-curved surface of the other of said parts contacts; the spring acting to keep the fore part and heel part normally in alinement.

2. A last comprising a fore part and heel part with a bow-spring which permanently connects said parts and holds them normally in alinement; and fixed, guiding plugs, one on each side, of said spring, provided with heads overlapping one of said parts.

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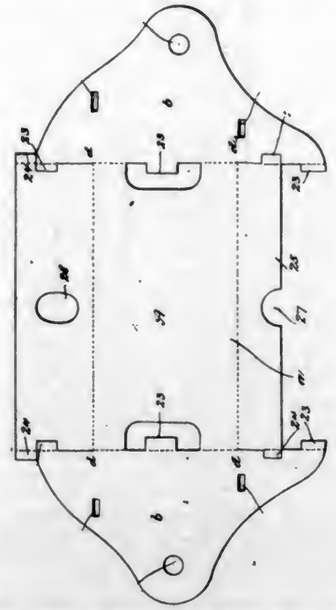
**755,560. SHEET-METAL CHAIR-IRON.** HARRY W. BOLLES and CHARLES J. TRAVERS, Port Washington, Wis., assignors to Gilson Manufacturing Company, a Corporation. Filed Feb. 29, 1903. Serial No. 145,297. (No model.)

*Claim.*—1. A chair-spider, comprising a sheet-metal yoke having upturned ends forming spreader-supports, and between the same a cross-plate, also of sheet metal, and connected to the said standards, said yoke and cross-plate having registering openings the metal about which is drawn therefrom so as to combine to produce a socket for the reception of the upper end of the adjusting-screw.

2. A chair-spider, comprising a sheet-metal yoke having upturned ends forming standards for supporting the spreader, said standards having slots or mortises, and a cross-plate arranged between the standards and provided at its end with tenons entering and headed up in said slots or mortises, said cross-plate and yoke having registering openings, the metal about the two openings being drawn in opposite directions and meeting to form a socket for the reception of the upper end of the adjusting-screw.

3. A chair-spider, comprising a sheet-metal spreader having an upper horizontal central connecting portion and its opposite ends depending to form pivoting ears, and between the same having its longitudinal edges turned down between said ears and connected thereto.





4. A chair-spider, comprising a sheet-metal spreader having an upper horizontal connecting portion, opposite depending pivoting ears having slots, and between said pivoting ears said spreader having its longitudinal edges downwardly bent and provided with tenons entering and headed up in said slots.

5. A chair-spider, comprising, a sheet-metal spreader having an upper horizontal connecting portion and depending ends forming ears, said connecting portion having one of its edges downwardly bent between and abutting the ears and forming a transverse brace for and spacing the same apart.

6. A chair-spider, comprising, a spreader consisting of a central connecting portion having depending ears, and between the same having depending longitudinal edges abutting at their ends against the ears and serving to brace the same, and a spring-tension device supported by one of said longitudinal edges.

7. A chair-spider, comprising, a sheet-metal spreader consisting of a central connecting portion having depending arms and between the same having opposite depending longitudinal edges, having openings, and a bolt mounted in the openings of the two edges, a hand-wheel at one end of the bolt and received by the opening in the front depending edge, a pair of compression-plates at the opposite side of the spreader, the inner one of which pair bears against the rear depending edge, and springs interposed between said plates.

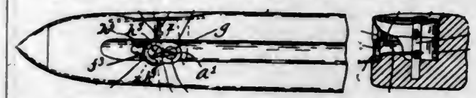
8. A chair-spider, comprising, a spreader formed of sheet metal and having depending pivoting ears and intermediate parallel connecting-flanges, the latter having openings, a yoke having standards extending upwardly between and pivoted to the ears of the spreader, a transverse brace-plate having its ends connected to the standards and between the same having an opening, and a spring-tension mechanism having its bolt passing through the openings in the brace-plate and rear flange of the spreader, its hand-wheel bearing against the brace-plate and its inner compression-plate secured and bearing against the said rear depending flange of the spreader.

9. A chair-spider, comprising, a sheet-metal yoke having end standards and an intermediate hole forming a socket, a spreader formed of sheet metal and having depending end ears, and between the same depending side flanges bracing the said depending ears, a pivoting bolt or pintle connecting the ears and standards, spider-arms secured to the upper side of the spreader, a sheet-metal brace-plate secured to the yoke-standards and a spring-tension arrangement carried by the latter and the rear flange of the spreader.

10. A chair-spider, comprising, a yoke, a central flanged opening, and vertical standards, a cross-piece secured between said standards and having a flanged opening meeting that of the yoke, a spreader having a horizontal upper connecting portion and depending side and end flanges, the latter being pivoted to the standards and the former having openings, spider-arms mounted on the spreader, a transversely-curved brace connecting the standards and having an opening in rear of the opening in the front flange, a tension-bolt located in said openings, compression-plates and springs carried thereby at the rear of the spreader, and a hand-wheel or nut bearing against the said brace.

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**755,561. HAND-THREADING SHUTTLE.** DAVID BROWN, Lawrence, Mass., assignor of one-half to John A. Abercrombie, Lawrence, Mass. Filed July 23, 1903. Serial No. 166,675. (Model.)



*Claim.*—1. In a loom-shuttle, in combination, the body, a slotted eye connected thereto, said body having a bobbin-containing recess, and a threading-slot leading to the slot of said eye from said recess, said eye having a hook or beak at the outer end of its slot, and a thread-support at one side of said hook for holding the thread away from the end thereof as it is drawn through the eye, substantially as described.

2. In a loom-shuttle, in combination, the body, a slotted eye connected thereto, said body having a bobbin-containing recess, and a threading-slot leading to the slot of said eye from said recess, said eye having a hook or beak at the outer end of its slot, and thread-supports at opposite sides of the end of said hook for holding the thread outside of said end, substantially as described.

3. In a loom-shuttle, in combination, the body having the bobbin-recess, a thread-passage in its side, and a threading-slot leading therefrom to said passage, a slotted eye secured to said body having its opening adjacent said thread-passage, said body being recessed at one side of said thread-passage beneath said eye, to connect the threading-slot and the slot of said eye, and supports for holding the thread to one side of the outer end of the eye-slot, substantially as described.

4. In a loom-shuttle, in combination, the body having the bobbin-recess and the thread-passage through its side, an eye comprising a shank secured to the body and a curved hook providing an opening in register with said passage, said body having a threading-slot leading from said recess to said passage, the end of said hook forming one side of said slot at its outer end, substantially as described.

5. In a loom-shuttle, in combination, the body having the bobbin-recess and the thread-passage through its side, an eye comprising a shank secured to the body and a curved hook providing an opening in register with said passage, said body having a threading-slot leading from said recess to said passage, the end of said hook forming one side of said slot at its outer end, and extending to one side of said passage, substantially as described.

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**755,562. COCOA CONFECTION AND PROCESS OF MAKING SAME.** CHARLES H. BURCKETT and MARY M. BURCKETT, Glenridge, N. J.; said Charles H. Burckett assignor to said Mary M. Burckett. Filed Sept. 3, 1902. Serial No. 121,962. (No specimens.)

*Claim.*—1. A confection consisting of butterless cocoa-beans, water, a starch-converting ferment, butter of cocoa-beans, an emulsifying agent, a neutralizing agent and sugar.

2. A confection consisting of butterless cocoa-beans, water, malt extract, butter of cocoa-beans, gum-arabic, carbonate of soda and sugar.

3. The herein-described process of removing the butter from cocoa-beans by pressure, heating with water and agitating to break the starch-cells of the cocoa-beans, adding a starch-converting ferment and digesting the mixture with heat to saccharize the starch of the cocoa-beans.

4. The herein-described process of removing the butter from cocoa-beans by pressure, heating with water and agitating to break the starch-cells of the cocoa-beans, adding a starch-converting ferment and digesting the mixture to saccharize the starch of the cocoa-beans, and adding the butter which was previously removed.

5. The herein-described process of removing the butter from cocoa-beans by pressure, heating with water and agitating to break the starch-cells of the cocoa-beans, adding a starch-converting ferment and digesting the mixture to saccharize the starch of the cocoa-beans, adding the butter which was previously removed, and adding an emulsifying agent.

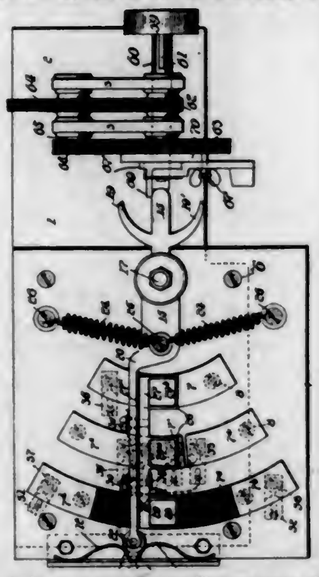
6. The herein-described process of removing the butter from cocoa-beans by pressure, heating with water and agitating to break the starch-cells of the cocoa-beans, adding a starch-converting ferment and digesting the mixture to saccharize the starch of the cocoa-beans, adding the butter which was previously removed, adding an emulsifying agent, adding a neutralizing agent, heating and agitating until the butter is emulsified.

7. The herein-described process of removing the butter from cocoa-beans by pressure, heating with water and agitating to break the starch-cells of the cocoa-beans, adding a starch-converting ferment and digesting the mixture to saccharize the starch of the cocoa-bean, adding the butter which was previously removed, adding an emulsifying agent, adding a neutralizing agent, heating and agitating until the butter is emulsified, adding sugar, heating and agitating.

8. The herein-described process of removing the butter from cocoa-beans by pressure, heating with water and agitating to break the starch-cells of the cocoa-beans, adding malt-extract and digesting the mixture to saccharize the starch of the cocoa-beans, adding the butter which was previously removed, adding gum-arabic, adding carbonate of soda, heating and agitating, adding sugar, heating and agitating.

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**755,563. AUTOMATIC CONTROLLING DEVICE.** JACOB H. COLE, Allegheny, Pa. Filed July 15, 1903. Serial No. 165,558. (No model.)



*Claim.*—1. In an automatic controlling apparatus, the combination with a rotatable shaft, of mechanism including an insulation-plate, segments mounted on said plate, an oscillatory brush-arm mounted on the said plate, brushes carried by said arm for engagement with the segments, a driving-motor having its armature and field-coils arranged in parallel and its armature-shaft geared to the rotatable shaft, an electrical circuit from the driving-motor to the segments, and means between the brush-arm and the driving-motor for engagement with the arm to shift the position of the latter and shunt the electric current wholly from the armature through the field-coils to stop the driving-motor, substantially as described.

2. In a device of the character described, the combination with a rotatable shaft and a driving-motor therefor having its armature and field-coils in series, of a circuit-shunting mechanism connected to the circuit of said motor and including an oscillatory brush-arm and means interposed between the brush-arm and driving-motor, including a rotary member for operating said brush-arm to shift the position of the same and shunt the current from the armature to the field-coils, substantially as described.

3. In a device of the character described, the combination with a rotatable shaft, a driving-motor geared thereto and an electric circuit connected to said motor and including a brush-arm, and means connected to the rotatable shaft, for engagement with said brush-arm to move the same and shunt the circuit of said motor so as to shunt the current from the armature through the field-coils at a predetermined time, substantially as described.

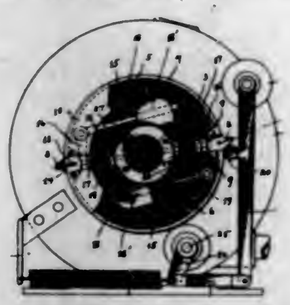
4. In a device of the character described, a rotatable shaft, a driving-motor geared to said shaft, an electric circuit connected with the motor, an oscillating arm for controlling said circuit, and a circuit-shunting device connected to the rotatable shaft, said shunting device comprising separate contacts connected respectively to the field-coils and both brushes of the armature and a resistance between the field-coil contacts for shunting the circuit to said motor at a predetermined time, substantially as described.

5. In a device of the character described, the combination with a rotatable shaft and a driving-motor geared to said shaft, of mechanism connected to said shaft and in circuit with the motor for shunting the latter at a predetermined time, an oscillatory brush-arm included in said mechanism, rotary means moving with said shaft for engagement with said arm to move the same into position to shunt the circuit, and means for normally holding the arm in its circuit-completing position, substantially as described.

6. In an apparatus of the class described, the combination with a driven shaft, a driving-motor geared to said shaft, and a circuit to said motor, of means including an oscillatory brush-arm and separate contacts for shunting the motor-current wholly from the armature through the field-coils for controlling said circuit to stop the motor, mechanical means between said brush-arm and the motor for shifting the brush-arm into position for controlling the circuit, and means for normally holding the brush-arm in its circuit-completing position, substantially as described.

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**755,564. ENGINE-GOVERNOR.** DORWIN W. COLE, Toledo, Ohio, and DAVID H. PERRY, Wyandotte, Mich. Original application filed May 27, 1903, Serial No. 158,980. Divided and this application filed Aug. 3, 1903. Serial No. 168,715. (No model.)



*Claim.*—1. In a valve-gear for engines, the combination with a rock-valve, of a rock-arm adapted to actuate the valve to open and close a port or ports, a wheel on the engine-shaft adapted to engage the rock-arm and provided with radial ways through its periphery, trip-heads in the ways and having limited radial movement therein to project at different distances beyond the periphery of the wheel and adapted to actuate the rock-arm to open the valve-ports proportionate in time and distance to the projection of the heads, and at fixed periods of the revolution of the shaft, means to automatically actuate the rock-arm to close the valve when released by the trip-heads, radial bosses on the wheel-hub provided with orifices radial to the hub, stems for the trip-heads extending into and movable in the orifices of the bosses, yoke-collars fixed on the stems, coil-springs mounted on the stems between the collars and the bosses and adapted to yieldingly hold the trip-heads projected to the outward limit of their movement, and a bell-crank for each trip-head pivotally mounted at its angle to the wheel-web and having the free end of one arm bifurcated and engaged with the yoke-collar of a trip-head stem, and the free end of the other arm weighted and held normally inward toward the hub by the stem-coil, substantially as and for the purpose set forth.

2. In an adjustable valve-gear for engines, the combination with a wheel on the engine-shaft having spring-projected trip-heads adapted to actuate a rock-valve at fixed periods of the revolution of the shaft, and having weighted levers so connected to the trip-heads that they will under the action of centrifugal force draw the trip-heads radially inward proportionately to the velocity of the wheel and the resistance of the springs of the trip-heads, of means to adjust the resistance of the springs of the trip-heads, substantially as and for the purpose set forth.

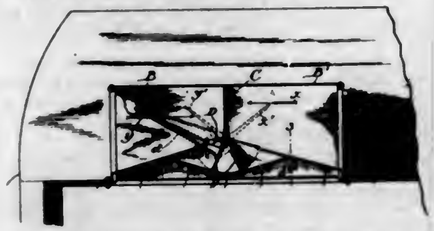


3. In an adjustable valve-gear for engines, the combination with a rock-valve, of a rock-arm adapted to actuate the valve to open and close a port or ports, a wheel on the engine-shaft having spring-projected trip-heads adapted to engage the rock-arm at fixed periods of the revolution of the shaft and actuate it, and having weighted levers so connected to the trip-heads that they will under the action of centrifugal force produced by the revolution of the wheel draw the trip-heads radially inward proportionately to the velocity of the wheel and the resistance of the springs of the trip-heads, a collar movably mounted on the shaft adjacent to the hub of the wheel, adjusting wedge-bars projecting from the collar on opposite sides of the hub between the springs of the trip-heads and their bases, adapted when moved in one direction to increase the compression of the springs of the trip-heads and when moved in the opposite direction to diminish such compression, and means to move the collar forward and backward on the shaft substantially as and for the purpose set forth.

4. In an adjustable valve-gear for engines, the combination with a rock-valve, of a rock-arm adapted to actuate the valve to open and close a port or ports, a wheel on the engine-shaft having spring-projected trip-heads adapted to engage the rock-arm at fixed periods of the revolution of the shaft and actuate it, and have weighted levers so connected to the trip-heads that they will under the action of centrifugal force produced by the revolution of the wheel draw the trip-heads radially inward proportionately to the velocity of the wheel and the resistance of the springs of the trip-heads, a collar movably mounted on the shaft adjacent to the hub of the wheel, adjusting wedge-bars projecting from the collar on opposite sides of the hub between the springs of the trip-heads and their bases, adapted when moved in one direction to increase the compression of the springs of the trip-heads and when moved in the opposite direction to diminish such compression, a circumferential groove in the collar, a yoke-collar provided with trunnions mounted in the groove of the collar, a lever having a lower end portion pivoted to a support, a central yoke portion encircling the collar and pivotally mounted on the trunnions of the yoke-collar, and an upper-end handle portion, and means to lock the lever in various positions in the arc of its movement substantially as and for the purpose set forth.

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**755,565. VENTILATOR.** WILLIAM P. COOPER, Chicago, Ill. Filed Apr. 18, 1902. Serial No. 103,486. (No model.)



*Claim.*—1. A ventilator embracing a casing having open ends and an apertured double side wall adapted to be rigidly secured on the side of a car with the opening in the side wall opening into the car, a gate pivotally secured in the ventilator, means for normally holding the same in position to close the side aperture and a broad tail integral with the gate and acting to hold said gate open when the car is in motion.

2. In a ventilator, a sector-shaped gate pivoted at its apex, means acting normally to hold said gate in a closed position, and a broad tail on the gate extending beyond the pivot and subject to air-currents acting to open the gate, said air-currents passing the tail acting to exhaust the air from the compartment to be ventilated.

3. In a device of the class described, the combination with an open-ended casing, adapted to be secured longitudinally of a car, and opening into the same through one of its sides, of a gate pivoted in the casing in position to normally close said side opening, a relatively broad tail secured on the gate on the opposite side of the pivot therefrom and acting when the car is in motion to open the gate and means acting to close the gate when the car is at rest.

4. The combination with a casing, open at its ends, of an inwardly-inclined side wall having a vertical aperture therethrough, outwardly-directed partitions integral with said side wall, a vertical opening between said partitions, means for attaching the casing to a car or the like with the opening in said side communicating with the interior of the car, a sector-shaped gate pivoted in the casing, means acting to hold said gate normally in position to close said opening between the partitions, a tail on said gate extending beyond the pivot in the path of the air-current caused by the motion of the car and actuated thereby to open the gate, said inwardly-inclined wall acting as a stop for the gate when in its open position.

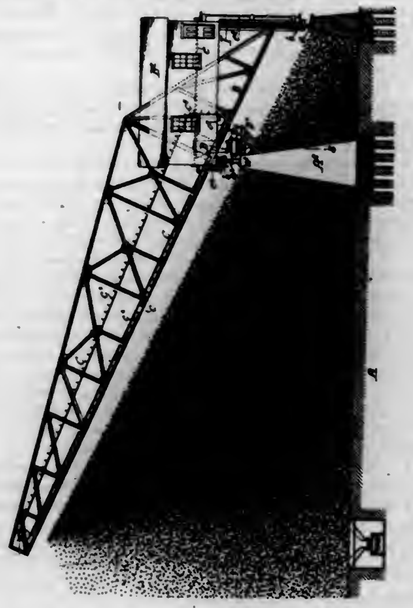
5. In a ventilator, a casing provided with open ends and a side having an aperture therethrough, a sector-shaped gate pivoted to normally close said aperture in the side, inclined walls extending from the ends of said apertured side wall inwardly into radial distances with the pivot and forming at their inner ends stops for the gate when in its open position, a broad integral tail on said gate extending beyond the pivot into the path of the air-current produced by the car when in motion and a spring engaged on the gate and casing and acting to close the gate when the car stops.

6. The combination with a car having ventilator-openings therein, of a gate pivoted to close one of said openings when the car is at rest and a broad tail secured on the gate and extending normally at approximately right angles with the car and adapted to be actuated to open the gate by the air-currents produced by the car's motion.

7. In a ventilator an apertured wall communicating with a car, a pivoted gate, means adapted normally to hold the gate in position to close said aperture, means for opening the same operated by the air-current caused by the motion of the train which also acts to exhaust the air from the car.

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**755,566. STORAGE APPARATUS.** JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn., a Corporation of Connecticut. Original application filed Apr. 30, 1903, Serial No. 156,062. Divided and this application filed June 11, 1903. Serial No. 161,012. (No model.)



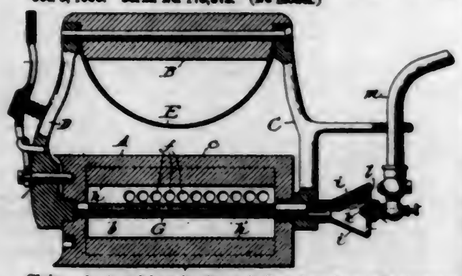
*Claim.*—1. The combination of a track, a structure movable on said track, a discharge-conveyer carried by said structure, an endless-belt conveyer mounted parallel with the track, and means for feeding the conveyer on the moving structure from the belt, said discharge mechanism being mounted on the movable structure, substantially as described.

2. The combination of a piling-floor, a track at one side of the piling-floor, a movable structure mounted on the track and having an extension overhanging the piling-floor, a conveyer on the extension, an endless-belt conveyer mounted parallel with the track, discharge mechanism for said belt conveyer carried by the moving structure, a hopper on the moving structure so situated as to receive material as it is discharged from the endless-belt conveyer and to feed it to the conveyer of the moving structure, substantially as described.

3. The combination in a storage structure, of a piling-floor, a wall at one side of the floor, a series of piers projecting from the piling-floor some distance from the wall and at a greater height than the said wall, rails mounted on the wall and on the piers, a movable structure having an extension, the said structure being arranged on an incline and having wheels mounted on the said rails, an endless conveyer on the said moving structure, said conveyer arranged to carry material up the extension and discharge it above the piling-floor, an endless-belt conveyer arranged parallel with the rails, guides for said conveyer carried by the piers, discharge-wheels for the belt conveyer carried by the movable structure, said discharge-wheels being so situated as to discharge the material from the belt into the path of the conveyer of the movable structure, substantially as described.

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**755,567. SAD-IRON.** ALFRED L. BOGLER, Trenton, N. J. Filed Oct. 5, 1903. Serial No. 175,873. (No model.)



*Claim.*—1. A sad-iron having a hollow interior, and a burner-tube for heating said interior, said burner-tube having a number of openings in its wall, said openings being small and closely contiguous to each other and adapted to prevent the flame from striking back when the iron is in use.

2. A sad-iron having a hollow interior and a burner-tube within such interior said burner-tube having a series of narrow slits closely contiguous to each other and adapted to prevent the flame striking back when the iron is in use.

3. A sad-iron having a hollow interior, a burner-tube extending within said interior said burner-tube having a series of small and closely-contiguous openings adapted to obviate the striking back of the flame, and a chamber connected with said burner-tube and adapted to receive and mix air with the gas admitted to the burner-tube.

4. A reversible sad-iron having two smoothing-faces and hollowed interiorly, and having a burner-tube extending within said interior, said burner-tube having a number of small openings closely contiguous to each other and adapted to prevent the striking back of the flame when the iron is in use, and having ventilating-openings in the opposite side walls of said iron, said openings in one side of the iron being so located relatively to the said openings in the other side of the iron as to lie in a common plane therewith at an angle with the planes of the smoothing-faces of the iron, said openings being adapted to cause a diagonal cross-draft through the interior of the iron when in use, whichever face of the iron is uppermost.

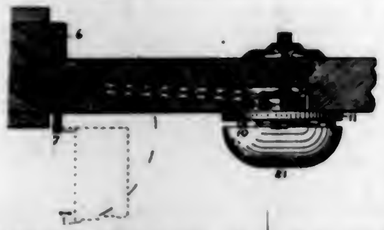
5. A sad-iron having a hollow interior and having a burner-tube extending within said interior said burner-tube having a number of small openings closely contiguous to each other and adapted to prevent the striking back of the flame when the iron is in use, and having ventilating-openings in the opposite side walls of said iron, the said openings on one side thereof being placed higher than the said openings on the other side thereof, and adapted to produce a diagonal cross-draft within the iron when in use.

6. A sad-iron hollowed interiorly and having apertures for the admission of air in the interior of the iron on one side of the iron near the bottom of the heating-chamber, and other apertures on the opposite side of the iron near the upper part of the heating-chamber for the exit of products of combustion; a burner-tube extending within said chamber and having a number of small and closely-contiguous openings therein adapted to obviate the striking back of the flame when in use, an air and gas mixing chamber contiguous to said burner-tube, and an injector for projecting gas into said burner-tube, said injector having a needle-valve adapted to regulate the flow of gas therethrough.

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**755,568. AUTOMATIC WINDING DOOR-BELL.** VIVIAN B. FULLER, Indianapolis, Ind. Filed May 11, 1903. Serial No. 156,501. (No model.)

*Claim.*—1. In a self-winding spring-actuated door-bell, the combination, with a spindle, of a sleeve mounted on the spindle, a drum mounted on the sleeve, a coiled spring having one end fastened to the spindle and the other end secured to said drum, a gong, a hammer, means for vibrating the hammer by the force of the spring to sound the gong, a hinged door, means connecting the door and sleeve whereby by the movement of the door the sleeve will be rotated to wind the spring, a spring-actuated overwinding-preventer to prevent the overwinding and means for regulating the tension of the overwinding-preventer.



2. In a self-winding spring-actuated door-bell, the combination with a spindle, of a sleeve mounted on the spindle, a drum mounted on the sleeve, a coiled spring having one end fastened to the spindle and the other end secured to said drum, a gong, a hammer, means for vibrating the hammer by the force of the spring to sound the gong, a hinged door, means connecting the door and sleeve whereby by the movement of the door the sleeve will be rotated to wind the spring, an overwinding-preventer to prevent the overwinding of the spring and means for changing the sensitiveness or strain at which the overwinding means will operate.

3. In a self-winding spring-actuated door-bell, a spindle, a sleeve mounted loosely on the spindle and adapted to rotate therewith in one direction only, a drum rotating with the sleeve, a spring fastened to the spindle at one end and to the drum at the other, a gong, a hammer, means for vibrating the hammer by the force of the spring, a second drum mounted in a fixed manner on the sleeve, a ratchet-wheel mounted loosely on the sleeve, a spring flexibly connecting the ratchet-wheel and second drum, a door, and means by the swinging of the door for oscillating the ratchet-wheel.

4. In a self-winding spring-actuated door-bell, a spindle, a sleeve mounted loosely on the spindle, means for preventing rotation of the sleeve except in one direction, a drum rotating with the sleeve, a spring fastened to the spindle at one end and to the drum at the other, means for vibrating the hammer by the force of the spring to ring the gong, a second drum mounted in a fixed manner on the sleeve, a ratchet-wheel mounted loosely on the sleeve, a spring flexibly connecting the ratchet-wheel and second drum, a third drum mounted on the second drum, a spring flexibly connecting the third drum with a fixed support, a pawl carried by the third drum and engaging the teeth of the ratchet-wheel, a door, and a flexible tie connecting the third drum with the frame of the door whereby the swinging of the door will wind the first-named spring.

5. In a bell-ringing apparatus, a spindle, a sleeve loosely mounted thereon, a drum carried by the sleeve, a pawl and ratchet to allow rotation of the sleeve and drum in one direction only, a spring connected at one end with the spindle and with the drum at the other, a second drum mounted in a fixed manner on the sleeve, a ratchet-wheel mounted loosely on the sleeve and having a mutilated hub taking into the bore of the second drum, a coiled spring between the hub and rim of the drum having one end secured to the drum and the other to the ratchet-wheel, a post from the sleeve taking in the mutilation of the hub, a third drum mounted upon the first drum, a spring flexibly connecting the third drum with a fixed support, a pawl pivoted to the third drum and engaging the teeth of the ratchet-wheel, a lever extension from the third drum, a door, a frame to which the door is hinged and a flexible tie connecting the lever extension with the door-frame.

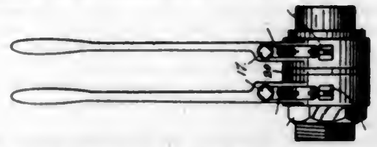
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**755,569. RATCHET-WRENCH.** GUS FREELAND, Denver, Colo. Filed Aug. 10, 1903. Serial No. 168,802. (No model.)

*Claim.*—1. In a ratchet-wrench, the combination of a head having an exterior ratchet zone, and a nut-socket at the end, two collars surrounding the ratchet zone, each being provided with a spring-held dog or click and a lever arm or handle, and suitable means for holding the operating-collars in position on the head.

2. The combination of a head having a bolt-hole therein, a nut-socket at the end of the bolt-hole, a ratchet zone surrounding the head, a stop-collar at one end of said zone, a nut at the other end of the zone, and two loose collars interposed between the nut and stop-collar, each loose collar having a spring-held dog engaging the ratchet-teeth, and an operating lever-arm also connected with each loose collar.





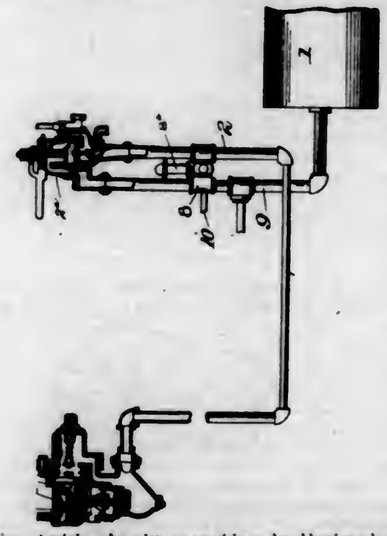
3. In a ratchet-wrench, the combination of a head having an exterior ratchet zone, a longitudinal opening centrally located, and a nut-socket in each end, said sockets communicating with the central opening, two loose collars surrounding the ratchet zone, each being provided with a spring-held dog and a lever arm or handle, a washer separating the two collars, a stop-collar mounted on one end of the head, and a nut screwed on the other end of the head, the nut and the stop-collar holding the loose collars in operative relation with the head.

4. In a ratchet-wrench, the combination of a head having an exterior ratchet zone, said head being provided with two jaws at one extremity, the said jaws being adjustably mounted on the head whereby they may be regulated to fit nuts of different sizes, loose collars surrounding the ratchet zone, each being provided with a spring-held dog and a lever arm or handle, and suitable means for holding the operating-collars in position on the head.

5. In a ratchet-wrench, the combination of a head having an exterior ratchet zone, the said head having a central opening and a nut-socket composed of two movable jaws at each end of the head, an adjusting-screw provided with right and left threads engaging the two jaws at each end of the head, two loose collars surrounding the ratchet zone, each of said collars being provided with a spring-held dog and a lever arm or handle, and suitable means for holding the operating-collars in position on the head, substantially as described.

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**755,570. TRIPLE-VALVE PISTON AND CONNECTION.** ALBERT H. GELTZ and LEE I. HOSACK, Alliance, Ohio, assignors to C. B. McLean, Pittsburg, Pa. Filed May 26, 1902. Serial No. 109,118. (No model.)



*Claim.*—A triple-valve piston comprising a head having a knob, a stem provided with inner and outer slide-valve collars, an axial port extending through the knob, head, and stem to a point adjacent to the inner collar, and a radial port and concave valve-seat connecting with the axial port between the head and inner collar, a bridge-plate having a stem opening and secured to the head and inner collar over the valve-seat, a disk-valve having a convex face seating on the valve-seat and a stem extending into the radial port and into the stem opening in the bridge-plate.

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**755,571. HAIRCLOTH-LOOM.** JOHN B. GRAY, Central Falls, R. I. Filed Apr. 21, 1903. Serial No. 153,688. (No model.)



*Claim.*—1. In a haircloth-loom, the combination of two fixed beams, a nipper-bar movable on the beams and provided with nipper-jaws, and a weft tension device, arranged and operating substantially as and for the purpose specified.

2. In a haircloth-loom, the combination of two fixed beams, a nipper-bar movable on the beams and provided with nipper-jaws, and a weft tension device comprising wires movable crosswise of the beams into forcible contact with the weft on opposite sides thereof, substantially as described.

3. In a haircloth-loom, the combination of two fixed beams, a nipper-bar movable on the beams and provided with nipper-jaws, a guideway extending across the beams, a movable plate mounted in said guideway and having two upright posts or rods, a third post or rod properly mounted, and means adapted to move said three posts or rods into forcible contact with a weft on opposite sides thereof, substantially as described.

4. In a haircloth-loom, the combination of two fixed beams, a nipper-bar movable on the beams and provided with nipper-jaws, a guideway extending across the beams, a slidable plate in said guideway having two upright posts or rods, means for giving a reciprocating movement to said plate, an oscillating arm properly mounted above the upper ends of said posts or rods, and a downwardly-extending rod mounted on said oscillating arm and extending in a vertical plane between said two upright posts or rods and adapted to be oscillated with said arm by the contact of its lower end against the weft, substantially as specified.

5. In a haircloth-loom, the combination of two fixed beams, a nipper-bar movable on the beams and provided with nipper-jaws, a guideway extending across the beams, a slidable plate in said guideway having two upright posts or rods, means for giving a reciprocating movement to said plate, a bar properly mounted and adapted to slide upon a support, means adapted to impart a reciprocating movement to said sliding bar, and a lever pivotally mounted on said sliding bar and provided at its outer end with a downwardly-directed rod which extends in a vertical plane between said two upright posts or rods, which downwardly-extending rod when moved into contact with the weft is capable of imparting an upward oscillation to the outer end of said lever, substantially as described.

6. In a haircloth-loom, the improved weft tension device herein described, consisting of the combination of a sliding bar properly mounted, means adapted to give a reciprocating movement to said bar, a centrally-mounted rocker-arm, a link connecting said sliding bar and the upper end of said rocker-arm, two fixed beams, a guide-

way across said beams, a sliding plate in said guideway, a link connecting said sliding plate and the lower end of said rocker-arm, two upright posts on the sliding plate, a tilting lever mounted at the end of the sliding bar, and a downwardly-directed rod extending from the outer end of said lever in a vertical plane between said two upright posts or rods, all operating substantially as shown and for the purpose specified.

7. In a haircloth-loom, the improved weft tension device herein described, consisting of the combination of a rotatable shaft, a cam mounted on the shaft, a bent lever pivotally mounted at its bend on a proper support, with the upper edge of the horizontal portion of said bent lever in contact with said cam, a spring adapted to give return movement to said bent lever, when the latter is relieved of the pressure of said cam, a slotted bar mounted movably on a fixed pivot, a rocker-arm centrally mounted on said pivot, a link connecting said slotted bar with the upper end of the rocker-arm, two fixed beams, a guide across said beams, a sliding plate in the guideway, a link connecting the sliding plate and the lower end of the rocker-arm, two upright posts on the sliding plate, a tilting lever mounted at the forward end of the slotted bar, and a downwardly-directed rod extending in a vertical plane parallel with but between said two upright posts or rods, substantially as specified.

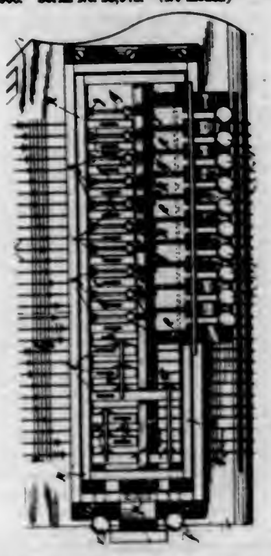
8. In a haircloth-loom, the combination of two fixed beams, a nipper-bar movable on the beams and provided with nipper-jaws, a weft tension device comprising wires movable crosswise of the beams into forcible contact with the weft on opposite sides thereof, and means of adjusting said tension device in relation to the weft, substantially as shown.

9. In a haircloth-loom, the combination of a nipper-bar properly mounted, means to impart a reciprocating movement to said nipper-bar, a nipper-jaw pivotally mounted on the nipper-bar and having an outwardly-projecting rear end, a guide-box through which the nipper-bar is movable, and a pivotally-mounted latch within the guide-box adapted to contact with said projection of the nipper-jaw, substantially as and for the purpose specified.

10. In a haircloth-loom the combination of a nipper-bar properly mounted, means to impart a reciprocating movement to said nipper-bar, a nipper-jaw pivotally mounted on the nipper-bar and having an outwardly-projecting rear end, a guide-box through which the nipper-bar is movable, a pivotally-mounted latch within the guide-box adapted to contact with said projection of the nipper-jaw on the outer side of said projection, and a spring properly mounted and bearing on the inner side of said projection and adapted normally to close said nipper-jaw, substantially as described.

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**755,572. ZITHER. RICHARD GUHR, Berlin, Germany. Filed July 17, 1900. Serial No. 23,972. (No model.)**



*Claim.*—1. The combination in a zither or the like of plectra shiftable laterally over the strings, a non-shiftable set of keys, and connections between the plectra and the keys permitting each key to operate a single and the same plectrum in every position of the plectra.

2. In a zither or the like, the combination with a bridge extending across and above the strings and fastened to the sounding-box of the zither, of a sliding frame laterally shiftable on said bridge, a series of plectra arranged on said sliding frame, means for actuating said plectra and also arranged in said sliding frame, a keyboard fastened to the stationary bridge and comprising a set of non-shiftable key-levers for manipulating said plectra-actuating means, said key-levers having their inner ends broadened so as to operate a single and the same plectrum in every position of the sliding frame bearing the plectra, substantially as described and for the purpose set forth.

3. In a zither or the like, the combination with a bridge extending across and above the strings and fastened to the sounding-box of the zither and a sliding frame a laterally shiftable on said bridge, of a series of prismatic bars *h* turning on gudgeons in said sliding frame, a series of plectra screwed to said prismatic bars *h*, the one-armed levers *g* arranged parallel to the prismatic bars *h* in the said sliding frame, the block *j* turning loosely on the levers *g* and connected by the pin *k* with the prismatic bar *h*, a keyboard fastened to the stationary bridge and comprising a set of non-shiftable key-levers *e* having their inner ends broadened and engaging the one-armed levers *g* by means of their broadened ends, substantially as described and for the purpose set forth.

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**755,573. BOTTLE-SEAL. FRANK A. HOOPS, Pittsburg, Pa. Filed Jan. 15, 1904. Serial No. 189,100. (No model.)**



*Claim.*—1. A bottle-seal comprising an annular head, a strap formed integral with said head, and means carried by said strap to fasten the same to the cork, substantially as described.

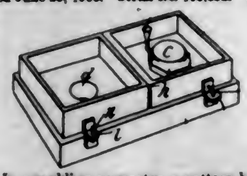
2. A bottle-seal comprising an annular head having a notch formed therein, a strap formed integral with said head, and fastening means carried at the free end of said strap, substantially as described.

3. A bottle-seal comprising a head, a strap formed integral therewith, and a heel carried at the lower end of said strap extending at right angles thereto, substantially as described.

4. A bottle-seal comprising an annular head having a notch formed therein, a strap formed integral with said head, a web formed between said strap and the head, and a heel formed at the lower end of said strap adapted to be inserted in the cork, all parts being arranged and constructed substantially as described.

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**755,574. MOLDING APPARATUS. PETER LARGIE, Granby, Canada. Filed June 25, 1903. Serial No. 163,052. (No model.)**



*Claim.*—1. In a molding apparatus a pattern-board having an aperture extending completely therethrough for receiving and bracing a sprue.

2. In a molding apparatus a combined pattern and follow board having an aperture therethrough for receiving and bracing a sprue.

3. In a molding apparatus the combination with a combined pattern and follow board having an aperture therethrough for receiving and bracing a sprue, of a sprue having its foot of sufficient length to project a short distance through said aperture substantially as described and for the purpose set forth.



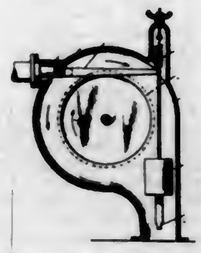
4. In a molding apparatus the combination with a pattern and the part of the flask above same of a sprue adapted to project from the pattern to the top of the part of the flask above same and means whereby said sprue is loosened from the ingate before being drawn.

5. In a molding apparatus, the combination with a pattern, a cope, and a drag, and means permanently hinging said cope and drag together, of means closing the space between the adjacent upper edges of said cope and drag when they lie upon the pattern ready to be rammed.

6. In a molding apparatus, the combination with a pattern, a cope, and a drag, and means permanently hinging said cope and drag together, of a flange carried by one of said hinged parts and extending across and closing the space between the adjacent upper edges of said hinged parts when they lie upon the pattern ready to be rammed.

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**755,575. SPEED-GOVERNOR. JAMES W. MACFARLANE, Glasgow, Scotland. Original application filed May 27, 1901. Serial No. 62,110. Divided and this application filed Feb. 5, 1903. Serial No. 142,083. (No model.)**



*Claim.*—1. The combination with the casing and a wheel within the casing, of a nozzle delivering fluid tangentially in a line central to the periphery of the wheel, a valve for the nozzle, a lever connected with the valve of the nozzle at one end to reduce or increase the supply through the nozzle, a baffle in alinement with the wheel and the nozzle, connected to the other end of the lever and moved in one direction by the spent fluid, to move the end of the lever thereby reducing the supply through the nozzle, and a spring connected to the casing and with the baffle to move the said baffle in the other direction to increase the supply.

2. In a speed-governor for water-wheels, turbines and the like, the combination with the casing and the water-wheel, of the nozzle, a lever connected at one end to the nozzle, and a baffle suspended from the other end of the lever, and moving the lever in one direction, and a spring connected with the baffle and the casing and moving the lever in the other direction.

3. In a speed-governor for water-wheels, turbines, and the like, the combination with the nozzle, a baffle consisting of a bucket provided with a contracted outlet, and connections between the baffle and the nozzle for controlling the supply through the nozzle.

4. In a speed-governor for water-wheels, turbines, and the like, the combination with a nozzle, of a lever secured at one end to the nozzle, a bucket having a contracted opening secured to the other end of the lever, and in the path of the spent fluid, and a spring for returning the bucket and lever to their normal positions.

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**755,576. GAME-BOARD. ORVILLE M. MORSE, Jackson, Mich. Filed Aug. 10, 1903. Serial No. 168,875. (No model.)**

*Claim.*—1. In a game-board, the combination of a frame, a support constituting a playing-green adjacent one end of said frame, a floor member comprising an objective field arranged at the same end of said table as said playing-green but at a different elevation, a return-cushion arranged at a point remote from said end of the table, and a movable transfer element arranged and adapted to form a path from said cushion either to the playing-green or to the objective field.

2. In a game-board, the combination with a frame, of a platform constituting a playing-green arranged at one level in the frame and extending near to one end thereof, a floor member constituting an objective field arranged in a plane below the platform and extending therebeneath to the said end of the frame, a return-cushion remote from said end, a transfer element, arranged to form a path from said cushion either to the playing-green or to the objective field, and yielding means for holding said transfer element in position of communication with the playing-green.

3. In a game-board, the combination with a frame, of a relatively elevated platform constituting a playing-green, a relatively lower floor member, constituting the objective field, a transfer member pivoted in the frame with its pivotal axis transverse to the frame arranged when elevated to present one of its ends close to the playing-green platform, in the same plane therewith, and when depressed to similarly approach the floor member in the same plane therewith, and means for normally holding said transfer member in elevated position with a light pressure.



4. In a game-board, the combination with a frame, of two supports arranged therein in different planes, a transfer member pivotally movable about an axis transverse to the frame adapted to communicate with either of said supports in the plane thereof and yielding means for normally holding said transfer member in communication with the upper plane.

5. In a game-board, the combination with a frame, of two supports mounted therein arranged in longitudinal alinement at different elevations, a transfer element pivoted in the frame transversely of its longitudinal axis arranged to communicate with either of said boards at its elevation, means arranged and adapted to yieldingly hold said element in position to communicate with one of said supports and restore the same to such position when moved therefrom, and means for preventing the recoil of said element after such restoration.

6. In a game-board, the combination of a frame, a platform 14 constituting a playing-green, a floor member 16 constituting an objective field, both arranged at one end of the table, a transfer member pivoted at the other end of said table and adapted to communicate with either the platform or the floor member, a resilient cushion arranged adjacent the rear end of said transfer member, and yielding means for normally maintaining said transfer member in communication with the platform 14.

7. In a game-board, the combination with a frame, of a platform arranged near the front end thereof, a floor member extending to the same end thereof, a transfer element pivoted in the frame transversely of its longitudinal axis arranged in rear of the platform, and adapted to receive a ball at the level of said platform and conduct it to the level of the floor member, and means for causing a rebound of the ball arranged at the rear end of the frame.

8. In a game-board, the combination with a frame, of two supports arranged therein in different planes, and a transfer member pivoted in the frame transversely of its axis and arranged to communicate with either of the supports, said transfer member comprising a flat portion adjacent the support and a portion remote from said support inclined relative to the flat portion.

9. In a game-board, the combination of a frame, two supports arranged therein in different planes, a transfer member pivoted in

the frame transversely of its axis, and arranged to communicate with either of the supports, said transfer member having a flat portion adjacent the supports and a portion remote from said supports inclined relative to the flat portion, and a return-cushion arranged adjacent the upper end of the inclined portion of said transfer member.

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755,577. **ELECTRIC VIBRATOR.** WILLIAM MACMILLAN, New York, N. Y., assignor of one-half to Egbert Winkler, New York, N. Y. Filed July 29, 1902. Serial No. 117,457. (No model.)



*Claim.*—1. In an electric vibrator the combination of an armature, electromagnetic means located on each side of the said armature, an inclosure, a pair of contacts located within the said inclosure, and a contact connected to the said armature also located within the said inclosure.

2. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure, a pair of contacts located within the said inclosure, a third contact connected to the said armature and adapted to make sliding contact with the first-named contact.

3. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure, a pair of contacts located within the said inclosure, a third contact operated by the said armature and guided by the walls of the said inclosure.

4. In an electric vibrator the combination of electromagnetic means, an armature operated by the said electromagnetic means, a contact-inclosure, a pair of contacts located within the said inclosure, a third contact adapted to be moved longitudinally in the said inclosure and to make sliding contact with the first-named contacts.

5. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure, a pair of contacts located at each end of the said inclosure, a sliding contact adapted to make contact with each of the first-named contacts and mechanically connected to the said armature.

6. In an electric vibrator the combination of an electric circuit and electromagnetic means connected in the said circuit, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure, a sliding contact guided by the walls of the said inclosure and adapted to make and break the said circuit; within the said inclosure.

7. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure, a contact located at each end of the said contact-inclosure, a sliding contact guided by the walls of the said inclosure and adapted to make sliding contact with the first-named contacts.

8. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure having a slot in one of its walls, a movable contact located within the said inclosure and mechanically connected to the said armature through the said slot, a shutter adapted to be operated by the said mechanical means for keeping the said slot closed, a contact adapted to make sliding contact with the first-named contact.

9. In an electric vibrator the combination of an electromagnetic means, an armature operated by the said electromagnetic means, a contact-inclosure having a slot, a sliding contact connected to the said armature, a shutter adapted to close the said slot and guided by the sides of the said inclosure, a contact adapted to make sliding contact with the first-named contact.

10. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure having a slot, a sliding contact mechanically connected to the said armature, a shutter movable with the said sliding contact to keep the said slot closed, a contact located at each end of the said inclosure and adapted to make sliding contact with the first-named contact.

11. In an electric vibrator the combination of electromagnetic means, an armature operated by the said electromagnetic means, a contact-inclosure having a slot, a sliding contact located within the said inclosure and mechanically connected to the said armature, a shutter also located within the said inclosure and connected to the said armature and adapted to keep the said slot closed, a pair of spring-contacts located within the said inclosure and adapted to make sliding contact with the first-named contact.

12. In an electric vibrator the combination of electromagnetic means, an armature adapted to be operated by the said electromagnetic means, a contact-inclosure having a slot, a sliding contact and a shutter guided by the sides of the said inclosure, the said shutter adapted to keep the said slot closed, a pair of spring-contacts adapted to press the said sliding contact and the said shutter against one of the walls of the said inclosure.

13. In an electric vibrator the combination of an armature, an electromagnet located on each side of the said armature, each magnet having a pair of poles adapted to operate upon the said armature, an inclosure, a pair of contacts within the said inclosure, a contact mechanically connected to the said armature and located within the said inclosure.

14. In an electric vibrator the combination of a pair of electromagnets, each magnet having a pair of poles, an armature located between the said magnets and adapted to be operated upon by the poles of each of said magnets, a contact-inclosure having a slot, a sliding contact mechanically connected to the said armature through the said slot, the said sliding contact being guided by the sides of the said inclosure, a shutter adapted to keep the said slot closed during the movements of the said contact, a pair of spring-contacts adapted to press upon the said sliding contact and to make and break contact therewith.

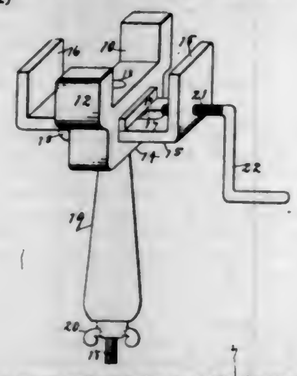
15. In an electric vibrator the combination of electromagnetic means, an armature operated by the said electromagnetic means, a contact-inclosure having a slot, a shutter and a sliding contact located within the said contact-inclosure and connected to the said armature and guided by the sides of the said inclosure, an insulating-strip carried at each end of the said sliding contact, a pair of spring-contacts located within the said inclosure and adapted to press the said sliding contact and the said shutter against one of the walls of the said inclosure and to alternately make contact with the said sliding contact as it is moved.

16. In an electric vibrator the combination of electromagnetic means, an armature actuated by the said electromagnetic means, a supporting-frame having a slot, an arm located on the said armature and passing through the said slot to the opposite side of the said frame, a shutter carried by the said arm for keeping the said slot closed, a contact also carried by the said arm, and a pair of contacts, one located on each side of the first-named contact.

17. In an electric vibrator the combination of a pair of electromagnets, an armature actuated by the said electromagnets, a supporting-frame having a slot and an inclosure, an arm carried by the said armature, a shutter supported on the said arm for closing the said slot, a contact also carried by the said arm located within the said inclosure, a pair of contacts, one located on each side of the first-named contact and connected with the said electromagnets, all of said contacts located in said inclosure.

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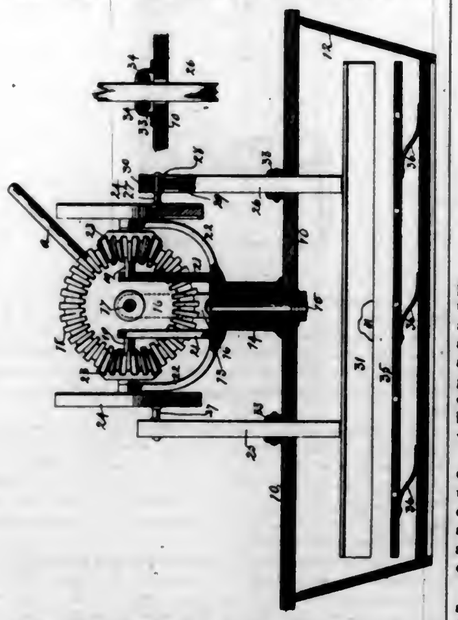
755,578. **WRENCH AND CLAMP COMBINED.** ALONZO L. NICHOLSON, Rockwell City, Iowa. Filed Apr. 23, 1903. Serial No. 154,083. (No model.)



*Claim.*—A nut-wrench and clamp combined, comprising two jaws rigidly connected by a cross-piece having an aperture at its center and a loop below the cross-piece having an aperture at its center, two elbow-shaped clamp-irons, each having a longitudinal slot in its end portion, a handle having a longitudinal bore, a screw-bolt extended through the coinciding apertures in the cross-piece that connects the wrench-jaws and the apertures in the loop and also through the slots in the clamp-iron, a nut on the end of screw having an integral handle-bolt and a screw seated in one of the clamp-irons, combined to operate in the manner set forth for the purposes stated.

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755,579. **WASHING-MACHINE.** CALVIN S. PAGE, Des Moines, Iowa. Filed Dec. 10, 1902. Serial No. 134,729. (No model.)



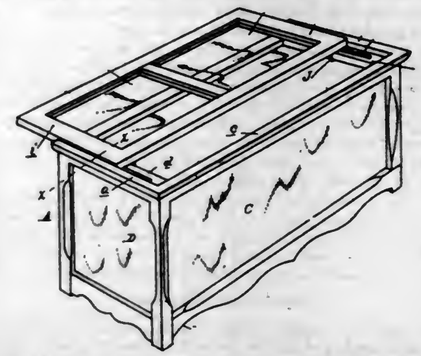
*Claim.*—1. In a washing-machine, a movable flat cover for a tub and a base for operative mechanism, a post fixed on top of the cover and base, a frame having branches for supporting rotatable shafts, a driver-shaft having a crank-handle at one end, a bevel gear-wheel fixed to the driver-shaft, two short rotatable shafts in alinement with each other and on opposite sides of the driver-shaft and at right angles to the driver-shaft, small miter-gears fixed to the short shafts, crank-wheels on the outer ends of the shafts and pitmen pivotally connected with the crank-wheels, two boards rigidly connected with each other in parallel position and connected with the lower ends of the pitmen to incline in opposite directions to the pitmen, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a washing-machine, a movable flat cover for a tub and a base for operative mechanism, a post fixed on top of the cover and base, a frame having branches for supporting rotatable shafts, a driver-shaft having a crank-handle at one end, a bevel gear-wheel fixed to the driver-shaft, two short rotatable shafts in alinement with each other and on opposite sides of the driver-shaft and at right angles to the driver-shaft, small miter-gears fixed to the short shafts, crank-wheels on the outer ends of the short shafts, pitmen pivotally connected with the crank-wheels and extended through apertures in the cover, and rubbing and pressing devices attached to the lower ends of the bars, arranged and combined to operate in the manner set forth for the purposes stated.

3. A washing-machine, comprising a movable flat cover for a tub and a base for operative mechanism, a post fixed on top of the cover and base, a frame having branches for supporting rotatable shafts, a driver-shaft having a crank-handle at one end, a bevel gear-wheel fixed to the driver-shaft, two short rotatable shafts in alinement with each other and on opposite sides of the driver-shaft and at right angles to the driver-shaft, small miter-gears fixed to the short shafts, crank-wheels on the outer ends of the short shafts and pitmen pivotally connected with the crank-wheels, extended through apertures in the cover, pounding and pressing devices attached to the lower ends of the pitmen, a tub and an auxiliary bottom having springs fixed to its under side, arranged and combined to operate in the manner set forth for the purposes stated.



755,580. **SHOW-CASE.** STEPHEN H. PARRISH, Ithaca, Mich. Filed July 23, 1902. Serial No. 116,511. (No model.)



*Claim.*—1. In a show-case, the combination with a body comprising a base, front and end sections, of rails forming the top portions of the end sections and case-front, the end tops being recessed and the recessed portions being in turn longitudinally grooved, a top arranged within the recessed portions for horizontal reciprocation and having grooves formed in its under side registering with the grooves in the end rails to form raceways therebetween, antifriction devices in said raceways and means carried by the top and engaging one of the side sections for preventing upward tilting of the top when in its open position.

2. In a show-case, the combination with an open-top body, comprising a base, side and end sections, of a top slidably mounted upon the body, raceways formed between the upper edges of the end sections and the under surface of the end portions of the top, antifriction devices in said raceways, and means carried by the top and engaging one of the side sections for preventing upward tilting of the top when in its open position.

3. In a show-case, the combination with the body, comprising a base, and side and end sections, of a top mounted upon the body for horizontal reciprocation, antifriction-bearings interposed between said top and body, and hook members carried by the top and engaging the side sections.

4. In a show-case, the combination with the body comprising the base, ends, and sides, of parallel ways at the upper edges of the ends, a top mounted upon the body for horizontal reciprocation, antifriction-bearings interposed between the ways and the top, and hooks depending from the top and engaging the under sides of the ways.

5. In a show-case, the combination with the body comprising front and rear side sections, ends, and a base, of a top mounted upon the body for horizontal reciprocation, antifriction-bearings interposed between said top and body, and a lock, operable from the front and rear of the case, for holding the top in its closed position.

6. In a show-case, the combination with a body comprising a base, front, back and end sections, of rails forming the top portions of the end sections and case-front, the end tops being recessed and the recessed portions being in turn longitudinally grooved, a top arranged within the recessed portions for horizontal reciprocation and having grooves formed in its under side registering with the grooves in the end rails to form raceways therebetween, antifriction devices in said raceways and hook members carried by the top and engaging one of the side sections.

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755,581. **BRACKET.** PERLIN M. READ, Philadelphia, Pa. Filed Dec. 10, 1903. Serial No. 184,525. (No model.)



*Claim.*—1. In a bracket, in combination, a pivot, and a wire the ends of which are secured to said pivot, said wire being bent to form

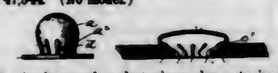
two arms, the lower one of which crosses the upper one near its outer end, said wire being further bent to form a horizontal seat for an object, then being bent upward and backward to form loops at the forward sides of the seat and finally around to form a bight.

2. In a bracket in combination, a pivot, and a wire the ends of which are secured to said pivot one above the other, said wire being bent to form two arms, the upper one of which will be horizontal and the lower inclined, the lower, or inclined arm, being bent at its outer end so as to pass over the upper or horizontal arm, said wire being further bent in opposite directions from the point of crossing to form a horizontal seat for an object then, at both sides, upward and backward to form loops, then backward to form a bight and finally at the center of the bight to form a loop.

3. In a bracket, in combination, a pivot, a wire the ends of which are secured to said pivot, said wire forming a horizontal arm *d* and an inclined arm *e* and being bent and crossed at *g h* as shown, and being further bent to form supports *i j*, loops *l o*, a bight *p* and a loop *r*, all substantially as and for the purposes set forth.

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**755,582. SOCKET MEMBER.** WILLIAM S. RICHARDSON, Boston, Mass., assignor to the Ball and Socket Fastener Company, Portsmouth, N. H., a Corporation of New Hampshire. Filed Feb. 14, 1901. Serial No. 47,344. (No model.)



*Claim.*—1. An integral socket-piece characterized by a dome-shaped head the arc of which is slightly greater than ninety degrees on either side of a vertical medial line, a body of inverted-conical shape of which the upper portion of the walls form a substantially tangential continuation of the curve of the head, and the lower portion of walls a restricted neck or socket-entrance, and a flange extending outward from such neck or entrance substantially at right angles to said medial line, whereby, upon the application of pressure in setting, said piece will collapse as set forth.

2. An integral socket member, characterized by a neck-section comprising the socket-entrance, the lower portion of said neck-section being continued into an outward-extending lower retaining-flange, the upper portion of such section being continued into a socket-chamber section, the walls of which extend upward and outward, first, for the distance of its embrace by the material at an easy angle sufficient to permit free movement of the ball member, then at an abrupt angle to form a retaining-flange at the upper surface of the material, and a comparatively flat head or closure to said chamber-section above said abrupt outward turn being formed by an abrupt inward turn of walls to a common center.

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**755,583. METHOD OF LASTING UPPERS.** NATHANIEL G. SHAW, Brockton, Mass., assignor of one-half to Geo. R. Keith Company, Brockton, Mass. Filed Jan. 9, 1904. Serial No. 188,396. (No model.)



*Claim.*—1. That improvement in the method of lasting blucher uppers, which consists in confining the rear central portion of the vamp against forward movement while the vamp is being lasted.

2. That improvement in the method of lasting blucher uppers, which consists in temporarily connecting the rear central portion of the vamp with the quarters before the vamp is lasted.

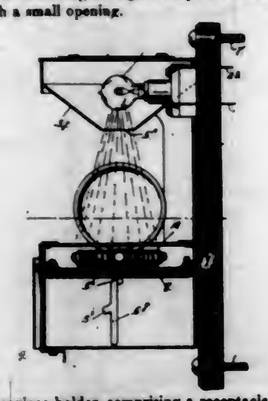
3. That improvement in the method of lasting blucher uppers, which consists in temporarily attaching a loop to the rear central portion of the vamp, and connecting said loop with the quarters before the vamp is lasted.

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**755,584. ILLUMINATED-TIMEPIECE HOLDER.** WARREN J. SHEPHERD, Denver, Colo., assignor of two-thirds to George Stickney, Lyons, Colo. Filed May 2, 1903. Serial No. 156,700. (No model.)

*Claim.*—1. An illuminated-timepiece holder comprising two parts suitably connected and separated, one being located directly above the other, the lower part having a movable transparent cover cut away to allow the lid of a watch to protrude, and the upper part being provided with a depending part having sloping sides and provided with an opening in its bottom to allow the rays of light to escape to the lower part, the lamp-holder being otherwise closed.

2. A timepiece-holder comprising a receptacle having a movable transparent cover, cut away on one side to allow a lid of a watch to protrude, and a lamp-holder located directly above the receptacle and concealing the light except at the bottom which is provided with a small opening.



3. A timepiece-holder comprising a receptacle having a movable transparent cover, cut away on one side to allow the lid of a watch to protrude, means for locking the cover in place, and a lamp-holder located directly above the receptacle and rigidly connected therewith, said holder concealing the light except at the bottom which is provided with a small opening directly above the lower receptacle.

4. A timepiece-holder comprising a receptacle, a vertically-adjustable false bottom provided with pins protruding through slots formed in the wall of the receptacle on opposite sides, offsets communicating with the slots, and a lamp-holder located directly above the said receptacle, rigidly connected therewith, and concealing the light except at the bottom which is provided with a small opening directly above the receptacle.

5. An illuminated-timepiece holder comprising upper and lower receptacles, one being located directly above the other, the lower receptacle having an adjustable false bottom, a hinged transparent cover cut away to allow the lid of a watch to protrude when the cover is closed, suitable means for locking the cover in place, an incandescent electric lamp located in the upper receptacle, and suitably connected with the wires of a circuit, the said receptacle being closed except at the bottom where a small opening is provided to allow the rays of light to expose the timepiece in the receptacle below, substantially as described.

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**755,585. METAL WINDOW-FRAME.** HENRY C. SMITH, Boston, Mass., assignor to Smith-Warren Company of Boston, Mass., a Corporation of Massachusetts. Filed Mar. 23, 1903. Serial No. 149,132. (No model.)

*Claim.*—1. A window-frame of rolled metal having an auxiliary piece or portion interposed between the head of the frame and the jamb portions thereof, and designed to make finished jointure or connection between said head and jamb portions, substantially as described.

2. A window-frame of rolled metal having an auxiliary piece or portion interposed between the sill of the frame and the jamb portions thereof, and designed to make finished jointure or connection between said sill and jamb portions, substantially as described.

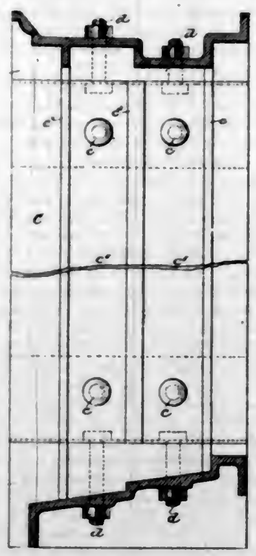
3. A window-frame the head sill and jamb portions of which are made of rolled metal, and means for uniting said jambs to said head and sill portions of the frame whereby the said jambs may have a longitudinal adjustment relatively thereto.

4. A window-frame the head, sill and jamb portions of which are made of rolled metal, angle-pieces having slots, and means whereby said jamb portions may be adjustably united to said head and sill portions of the frame through the instrumentality of said slotted angle-pieces, substantially as described.

5. A window-frame, the jamb portions of which are made of rolled metal and an auxiliary piece having substantially the configuration of the head of the frame, and adapted to be interposed between it and the top edge of each of its said jamb portions in continuation or extension thereof, substantially as and for the purposes set forth.

6. A window-frame, the jamb portions of which are made of rolled metal and an auxiliary piece having substantially the configuration of the sill of the frame, and adapted to be interposed between it and the bottom edge of each of its jamb portions and in continuation or extension thereof, substantially as and for the purposes set forth.





7. A window-frame, the jamb portions of which are made of rolled metal and auxiliary pieces having substantially the configuration of the head and sill of the frame, respectively, and adapted to be interposed between said head and sill and the top and bottom edges of each of its jamb portions and in continuation or extension thereof, substantially as and for the purposes set forth.

8. A window-frame, the jamb portions of which are made of rolled metal, angle-pieces for obtaining the joiuture of the separate jamb portions of the frame to the head thereof, the said angle-pieces having in extension a configuration substantially like that of the head of the frame, and which extension is adapted to be interposed between it and the top edge of each of its said jamb portions and in extension or continuation thereof, substantially as and for the purposes set forth.

9. A window-frame, the jamb portions of which are made of rolled metal, angle-pieces for obtaining the jointure of the said jamb portions of the frame to the sill thereof, the said angle-pieces having in extension a configuration substantially like that of the sill of the frame, and which extension is adapted to be interposed between said sill and the bottom edge of each of its said jamb portions and in continuation and extension thereof, substantially as and for the purposes set forth.

10. A window-frame, the head, sill and jamb portions of which are made of rolled metal, angle-pieces for obtaining the jointure of the said jamb portions of the frame to the head and sill thereof, respectively, the said angle-pieces having in extension a configuration substantially like that of said head or sill, and adapted to be interposed between said head or sill and the corresponding top or bottom edges of each of its said jambs and in continuation or extension thereof, substantially as and for the purposes set forth.

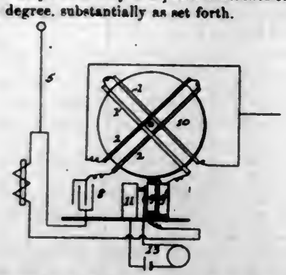
11. A rolled-metal frame, the separate head, sill or jamb portions of which have in combination therewith and in continuation or extension thereof an auxiliary piece or portion, substantially as and for the purposes set forth.

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**755,586. METHOD OF SELECTING ELECTRICAL IMPULSES.** DANIEL W. TROY, New York, N. Y. Filed July 11, 1903. Serial No. 165,152. (No model.)

*Claim.*—1. The method of selection herein set forth, consisting in causing a phase difference between currents produced by electromagnetic waves in receiving-conductors by means at the receiving-station related to and capable of causing a given phase difference at the frequency of the waves desired to be selected, and energizing by the phase-differing currents so produced responsive apparatus operative only at substantially such given phase difference.

2. The method of selecting electrical impulses herein set forth consisting in causing a phase difference between currents produced by such impulses in receiving-conductors by means at the receiving-station related to and capable of causing such phase difference of given degree at the frequency of the impulses desired to be selected, and energizing by such phase-differing currents so produced responsive apparatus operative only at a phase difference of approximately such given degree, substantially as set forth.



3. The method of selecting electrical impulses herein set forth, consisting in causing a phase difference between currents produced by such impulses in receiving-conductors by means at the receiving-station related to and capable of causing at the frequency of the impulses it is desired to select a given phase difference, and directing such out-of-phase currents so produced respectively in shunt relation through independent windings of apparatus operative only at approximately such phase difference between currents in said windings, substantially as set forth.

4. The method of selecting electrical impulses herein set forth, consisting in causing a phase difference between currents produced in receiving-conductors by such impulses by means at the receiving-station related to and capable of producing at the frequency of the impulses desired to select a given phase difference, and by directing such phase-differing currents so produced through independent windings of biphase responsive apparatus producing a mechanical force varying with a factor of the phase difference of such currents, and energizing by currents produced by said impulses a brake operative against said apparatus except approximately at the maximum mechanical force of such apparatus, substantially as set forth.

5. The method of selection herein set forth, consisting in causing a phase difference between currents produced in receiving-conductors by electrical impulses by means at the receiving-station related to and capable of producing a given phase difference at the frequency of the impulses it is desired to select, and by directing such phase-differing currents so produced respectively in shunt relation through independent windings of biphase responsive apparatus, producing a mechanical force passing through a maximum at a given phase difference between currents in said windings, and energizing by currents produced by such impulses a stop device operative against said responsive apparatus except at approximately such maximum, substantially as set forth.

6. The method of selecting electrical impulses consisting in causing a phase difference in currents produced in receiving-conductors by means at the receiving-station related to and capable of producing at the frequency of the impulses which it is desired to select a given phase difference, and by energizing by such out-of-phase currents so produced biphase responsive apparatus, producing a mechanical force passing through a maximum at a certain phase difference between such phase-differing currents so produced, and energizing by means of currents produced by such impulses a stop mechanism operative against said responsive apparatus except at approximately such maximum, substantially as set forth.

7. The method of selecting electrical impulses herein set forth consisting in receiving such impulses by conductors electrically tuned to the frequency of the transmitter from which it is desired to select, causing a phase difference in currents produced in receiving-conductors by such impulses by means at the receiving-station related to and capable of producing at the frequency of the transmitter from which it is desired to select a given phase difference in such currents, and, by energizing biphase responsive apparatus with such out-of-phase currents so produced, producing a mechanical force varying with a factor of the phase difference of such currents and passing a maximum at the phase difference corresponding to the frequency of such transmitter, and energizing by currents produced by such impulses a stop mechanism operative against such responsive apparatus except at approximately such maximum, substantially as set forth.

8. The method of selecting electrical impulses herein set forth consisting in receiving such impulses by electrically-tuned conductors, producing a phase difference between currents produced by such impulses in such conductors by means at the receiving-station related to and capable of causing such phase difference of given degree at the frequency of the impulses desired to be selected, and energizing by such phase-differing currents so produced responsive apparatus operative only at a phase difference of approximately such given degree substantially as set forth.

9. The method of selecting electrical impulses, received by electrically-tuned conductors at the receiving-station, and energizing current-operative biphase-responsive apparatus, consisting in producing by means of currents produced by such impulses a stop effect on such responsive apparatus except at approximately a given frequency, substantially as set forth.

10. The method of selecting electrical currents of wave character consisting in energizing by such currents in shunt relation responsive apparatus of biphase character, and, by phase-displacing means related to the frequency of the current desired to select, producing a mechanical force in such apparatus varying with a factor of phase difference between its windings, and energizing by such currents a stop mechanism operative against such apparatus except at approximately such maximum, substantially as set forth.

11. The method of selecting alternating, pulsatory or oscillatory currents consisting in splitting the phase of such currents at the receiving-station by means related to the frequency of the current desired to be selected and directing the phase-differing currents so produced in shunt relation through independent windings of a motor operative only when such currents have approximately a given phase difference, substantially as set forth.

12. The method of selecting herein set forth consisting in directing alternating currents by independent paths in shunt relation through separate windings of biphase-current-responsive apparatus operative only at substantially a given phase difference between the currents in its windings and producing an operative phase difference in said windings by means related to the frequency of the current to be selected, substantially as set forth.

13. The method herein set forth consisting in directing wave-produced currents by separate paths in shunt relation through independent windings of biphase-current-responsive apparatus operative only at approximately a given phase difference in such windings and producing an operative phase difference by means related to the frequency of the waves desired to be selected, substantially as set forth.

14. The method herein set forth consisting in splitting the phase of wave-produced currents by means at the receiving-station related to and capable of causing a given degree of phase difference at the frequency of the waves desired to be selected, and energizing by the components of such split-phase currents apparatus of biphase character operative only at approximately such given degree of phase difference, substantially as set forth.

15. The method herein set forth, consisting in splitting the phase of wave-produced currents by means related to the frequency of the waves desired to be selected, energizing by the components of such split apparatus of biphase character and preventing by current-operated brake mechanism any movement of such apparatus except at a certain phase difference in such components, substantially as set forth.

16. The method of selecting electrical waves herein set forth consisting in splitting the phase of wave-produced currents at the receiving-station by means capable of producing a given degree of phase difference at a given frequency, and energizing by the resulting phase-differing components responsive apparatus operative only at a phase difference of substantially such given degree, substantially as set forth.

17. The method herein set forth, consisting in dividing the energy of received electromagnetic waves, producing by a portion of such energy a force varying with a function of the frequency and producing by the other portion of such energy an oppositely-acting force less than the first only at substantially a given frequency of such waves, substantially as set forth.

18. The method of selection of electric waves herein set forth, consisting in producing by a portion of the energy of such waves a force varying with a function of their frequency and producing by another portion of the energy of such waves another and oppositely-acting force less than the first only at approximately a given frequency of such waves, substantially as set forth.

19. The method of selection herein set forth consisting in energizing a rotary field-motor by split-phase components of wave-produced currents and preventing the operation of such motor except at its maximum efficiency by a brake operated by wave-produced currents substantially as set forth.

20. The method herein set forth consisting in splitting the phase of wave-produced currents at the receiving-station by means capable of producing a phase difference of given degree at a given frequency, and energizing by the components so produced apparatus operative at a phase difference between such components of substantially such given degree, substantially as set forth.

21. The method herein set forth consisting in opposing forces produced by wave-produced currents and by means at the receiving-station related to the frequency of the waves desired to be selected causing an operative difference in such forces only at approximately such frequency, substantially as set forth.

22. The method herein set forth consisting in opposing forces produced by wave-produced currents and by means at the receiving-station related to the frequency of the waves desired to be selected causing an operative difference in such forces only at substantially such frequency, substantially as set forth.

23. The method of selection herein set forth consisting in producing by a portion of the energy of electromagnetic waves a force varying with a function of the frequency and producing by the remaining portion of such energy an opposing force less than the first only at substantially a given frequency, substantially as set forth.

24. The method herein set forth, consisting in receiving electrical impulses by electrically-tuned conductors at the receiving-station, opposing forces produced by currents caused by such impulses, and, by means related to the frequency of the waves desired to be selected, causing an operative difference between such forces only at substantially such frequency, substantially as set forth.

25. The method herein set forth consisting in combining selection by electrical syntony with selection by opposing forces produced by wave-produced currents, and by means related to a given frequency causing an operative difference between such forces only at substantially such frequency, substantially as set forth.

26. The method of selection herein set forth consisting in producing from a portion of the divided energy of electric waves a force having a maximum at substantially a given frequency, and from the other portion of such energy another force less than the first at such maximum, substantially as set forth.

27. The method of selection herein set forth consisting in dividing the energy of received electrical impulses and normally nullifying the action of the one portion of such energy by the other portion except at substantially a given frequency of the received impulses, substantially as set forth.

28. The method of selection herein set forth consisting in dividing the energy of received electrical impulses and by means related to a given frequency producing an operative excess in one of the portions of such energy over the other only at substantially such given frequency, substantially as set forth.

29. The method herein set forth consisting in dividing the energy of received electrical impulses and utilizing one portion of such energy to normally nullify the action of the remaining portion except at substantially a given frequency, substantially as set forth.

30. The method herein set forth consisting in producing by means related to the frequency of the impulses desired to be selected a phase difference between components of the received impulses and energizing by such components apparatus operative only at substantially a given phase difference between such components, substantially as set forth.

31. The method herein set forth consisting in splitting the phase of received electrical impulses by means related to the frequency of the impulses desired to be selected and energizing by the phase-differing components so produced apparatus responsive only at substantially a given phase difference between such components, substantially as set forth.

32. The method herein set forth consisting in receiving electrical impulses by conductors electrically tuned to the transmitter, and opposing forces produced by such impulses, and, by means related to a given frequency, causing an operative difference between such forces only at substantially such frequency, substantially as set forth.

33. The method herein set forth consisting in receiving electromagnetic waves by conductors electrically tuned to a given frequency and utilizing a portion of the energy of received electrical impulses to normally nullify the action of the remaining portion of such energy except at substantially such given frequency, substantially as set forth.

34. The method herein set forth consisting in dividing the energy of syntonically-received electrical impulses and producing by one portion of such energy a force varying with a function of the frequency, and having a maximum at a given frequency, and producing from the remaining portion of such energy a force less than the first only at substantially such given frequency of said impulses, substantially as set forth.



35. The method herein set forth consisting in energizing a rotary field-motor by split-phase components of an alternating current and preventing the operation of such motor except at its maximum efficiency by a brake operated by such current, substantially as set forth.

36. The method herein set forth, consisting in dividing the energy of received electromagnetic waves and opposing one portion of such energy against the other, and, by means related to a given frequency, producing an operative difference only at substantially such frequency of such waves, substantially as set forth.

37. The method herein set forth consisting in mutually opposing portions of the energy of received electromagnetic waves and by means related to a given frequency of such waves producing an operative difference only at substantially such given frequency, substantially as set forth.

38. The method herein set forth, consisting in receiving electromagnetic waves by syntonically-tuned conductors; mutually opposing portions of the received energy, and, by means at the receiving-station, producing an operative difference between such portions of such energy only at approximately a given frequency of such waves, substantially as set forth.

39. The method of selection herein set forth, consisting in causing one portion of the received energy of electrical impulses to nullify the action of the remaining portion except at substantially a given frequency of such impulses, substantially as set forth.

40. The method herein set forth consisting in causing one portion of the received energy of electrical impulses to act against the remaining portion of such energy and so produce an inoperative power factor from the received energy except at substantially a given frequency of such impulses, substantially as set forth.

41. The method herein set forth, consisting in combining with selection by electrical resonance selection by causing one portion of the received energy of electrical impulses to normally nullify the action of the remaining portion of such energy except at substantially a given frequency of such impulses, substantially as set forth.

42. The method herein set forth consisting in mutually opposing portions of the energy of syntonically-received electromagnetic waves, and by means related to a given frequency, producing an operative difference between such portions only at substantially such given frequency, substantially as set forth.

43. The method herein set forth consisting in combining selection by electrical syntony with selection by causing one portion of the energy of received electrical impulses to nullify the action of the remaining portion of such energy except when such received impulses have approximately a given frequency, substantially as set forth.

44. The method herein set forth, consisting in causing a phase difference between components of received impulses and energizing by such phase-differing components apparatus operative only at substantially a given frequency, substantially as set forth.

45. The method herein set forth, consisting in modifying by reactances the power factor of components of received impulses and energizing by such modified components a responsive device operative only at substantially a given frequency of such impulses, substantially as set forth.

46. The method herein set forth, consisting in modifying by respective reactances the power factor of components of received impulses and energizing by such respectively modified components responsive apparatus operative only at substantially a given frequency of such impulses, substantially as set forth.

47. The method herein set forth, consisting in dividing the received energy of electrical impulses and modifying the power factors of the components of the division, and energizing by such modified components apparatus operative only at substantially a given modification of such components, substantially as set forth.

48. The method herein set forth, consisting in causing phase differences between components of received impulses and energizing by such phase-differing components apparatus responsive only at substantially a given phase difference between such components, substantially as set forth.

49. The method herein set forth, consisting in causing, by means related to a given frequency, a phase difference between components of received impulses, and energizing by such phase-differing components apparatus reponsive only at substantially such given frequency, substantially as set forth.

50. The method herein set forth, consisting in causing, by means related to a given frequency, modifications in the power factor of divided components of received impulses, and energizing by such divided components apparatus operative only at substantially such given frequency, substantially as set forth.

51. The method herein set forth, consisting in producing varying power factors in respective components of received impulses and energizing by such components apparatus responsive only at substantially given power factors of such components, substantially as set forth.

52. The method herein set forth, consisting in varying the power factors of components of the energy of received impulses and energizing by such components apparatus operative only at substantially a given difference between the power factors of such components, substantially as set forth.

53. The method herein set forth consisting in producing two energy components from received impulses, opposing one against the other, and by means related to a given frequency producing an operative difference in such energy components only when such impulses have substantially a given frequency, substantially as set forth.

54. The method herein set forth consisting in producing more than one energy component from received impulses, varying the power factor of such components respectively and independently, and energizing by such components apparatus operative only at substantially a given frequency of such impulses, substantially as set forth.

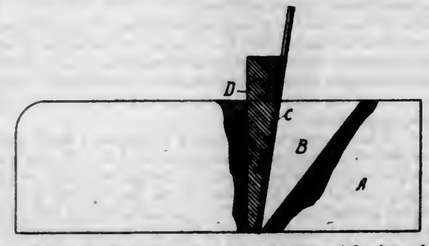
55. The method herein set forth consisting in modifying by separate reactances the phase of energy components of received electrical impulses and energizing by such phase-modified energy components apparatus operative only at substantially a given amount of phase modification in such components, substantially as set forth.

56. The method herein set forth consisting in energizing biphase apparatus operative only at substantially a given phase difference by separate energy components of received electrical impulses and by means related to a given frequency causing a phase difference between such energy components, substantially as set forth

57. The method herein set forth consisting in causing phase-differing components from received impulses and energizing thereby responsive apparatus operative only at substantially a given phase difference between such components, substantially as set forth.

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**755,587. SCRAPING-PLANE. WILLIAM ULERS, Los Angeles, Cal. Filed Oct. 29, 1903. Serial No. 179,070. (No model.)**




*Claim.*—1. A scraping-plane comprising a stock having a throat with abutments on the sides and in the front portion thereof; a plane-iron composed of thin resilient metal and having its lower edges formed into a scraping-surface; a rigid binding-wedge of a length substantially equal to the height of the stock having a circular face adapted to pass into said throat back of the scraper-iron and bind said iron in said stock in a forwardly-projecting curved form.

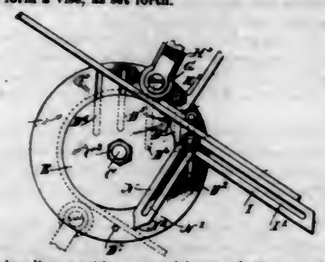
2. A scraping-plane comprising a stock having a throat with abutments on the sides and in the front portion thereof, the tops of said abutments projecting forwardly of the bottom thereof; a plane-iron composed of thin resilient metal and having its lower edge formed into a scraping-surface; a rigid binding-wedge having a circular face adapted to pass into said throat back of the scraper-iron and bind said iron in place in the stock and to produce in said iron a forwardly-projecting curve.

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**755,588. BENDING-MACHINE. WILLIAM VANDERLINDEN, Lansing, Ill., assignor of one-half to George Dekker, Lansing, Ill. Filed July 1, 1903. Serial No. 163,871. (No model.)**

*Claim.*—1. A bending-machine comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the axis of the platform, a templet held on the platform and on which

the bar is to be bent, a clamping device adjustable on the platform, for holding the bar to be turned, and a cam-lever adjustably fulcrumed on the said platform and operating in conjunction with the clamping device, to form a vise, as set forth.



2. A bending-machine, comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the axis of the platform, a templet held on the platform and around which the bar is to be bent, a clamping device adjustable on the platform for clamping the bar to hold it while being bent, and a distance-gage adjustably held on the platform and adapted to engage the end of the bar being bent to limit the distance the said end is bent toward the end of the bar that is held by the clamping device, as set forth.

3. A bending-machine comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the axis of the platform, a templet held on the platform and on which the bar is to be bent, and a clamping device adjustable on the platform, for holding the bar to be turned, the said clamping device consisting of two parallel bars adjustably held on the platform and having beveled ends, as set forth.

4. A bending-machine comprising a platform, a circular templet held thereon, a clamping member on the platform, a bending-tool mounted to swing on the standard and adapted to engage the bar opposite the peripheral face of the templet, and a distance-gage on the said platform for limiting the approach of the bent end toward the fixed portion of the bar, as set forth.

5. A bending-machine comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the said platform, and a clamping device held on the said platform, the clamping device having two members of which one is fixed on the platform and the other mounted to swing thereon, and a cam-lever fulcrumed on the platform and adapted to engage the pivoted clamping-lever to form a vise, as set forth.

6. A bending-machine comprising a platform, a templet thereon, a bending-tool mounted to swing and having its axis coinciding with the said platform, and a clamping device held on the said platform, the said clamping device being adjustable on the platform and having a member one end of which is beveled and the other end is segmental, as set forth.

7. A bending-machine comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the said platform, and a clamping device held on the said platform, the said clamping device being adjustable on the platform and having a clamping member, segmental on one end, and a circular templet on the platform and adapted to be peripherally engaged by the said segmental end, as set forth.

8. A bending-machine, comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the axis of the platform, a clamping device on the platform for clamping the bar to hold it while being bent, and a distance-gage held adjustably on the platform and adapted to engage with its end the end of the bar being bent, as and for the purpose set forth.

9. A bending-machine comprising a platform, a bending-tool mounted to swing and having its axis coinciding with the said platform, a clamping device held on the said platform, the said clamping device being adjustable on the platform and having a member beveled at one end, and a distance-gage held adjustably relative to the said beveled end of the clamping member, as set forth.

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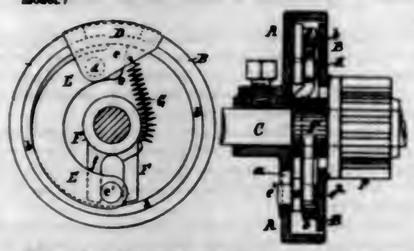
**755,589. COMPOSITION FOR RAZOR-STROPS.** MONTGOMERY WADDELL, New York, N. Y. Original application filed Mar. 4, 1903, Serial No. 146,099. Divided and this application filed Sept. 5, 1903. Serial No. 173,099. (Specimens.)

*Claim.*—1. A cake or stick for rubbing on the surface of razor-strops consisting of a material of a greasy nature which is hard at ordinary temperatures, the same having finely-divided aluminium incorporated with it, substantially as described.

2. A cake or stick for rubbing on the surface of razor-strops consisting of cocoa-butter having finely-divided aluminium incorporated with it, substantially as described.

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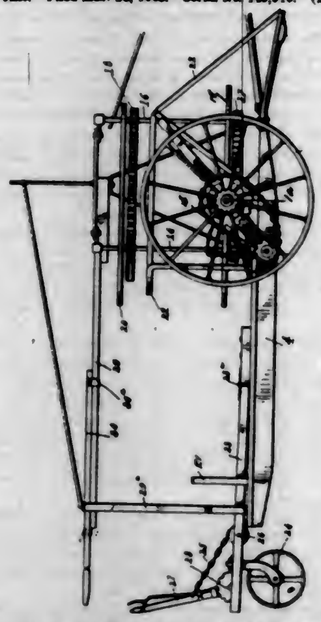
**755,590. POWER-TRANSMITTING MACHINERY.** EDWIN WILLIAMS, New York, N. Y. Filed Jan. 8, 1904. Serial No. 188,196. (No model.)



*Claim.*—In a power-transmitting device, in combination with the driving and driven members and their carrying-shaft, a grip-shoe and lever-grip connected together by a fulcrum-pin and wearing upon the outer and inner wall faces of one of said members, a controlling-collar on said carrying-shaft, a pin at the opposite end of said lever-grip connecting it with the controlling-collar and the other of said members, and a spring connection between said controlling-collar and the grip-shoe, substantially as and for the purposes set forth.

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**755,591. CORN-HARVESTER.** HARWELL L. BENNETT, Westerville, Ohio. Filed Mar. 28, 1903. Serial No. 149,919. (No model.)



*Claim.*—1. In a corn-harvester, the combination with supporting-wheels, of a platform, stalk-cutting means thereon, a drive-shaft carried by the platform and connected to one of the wheels and the stalk-cutting mechanism, means connected to the wheels and the shaft for supporting the platform from the wheels, a bar hinged to the platform and projected in rear thereof, a supporting-wheel carried by the bar, and means carried by the bar and connected to the platform for tilting the same upon the shaft.

2. In a corn-harvester, the combination with supporting-wheels, of a platform, stalk-cutting means thereon, a drive-shaft carried by the platform and connected to the cutting means, corresponding sprocket-wheels carried by the shaft and the hub of one of the wheels, a sprocket-chain connecting the sprocket-wheels, a ratchet-lever fulcrumed upon the hub and connected to the shaft for supporting and also for raising and lowering the platform, a rack carried by the platform for cooperation with the lever, a bar hinged to the platform and projected in rear thereof, a supporting-wheel carried by the bar, and means carried by the bar and connected to the platform for tilting the same upon the shaft.

3. The combination with supporting-wheels, of a platform, a shaft carried by the platform and driven from one of the wheels, means connected to the wheels and the shaft for supporting the platform upon the wheels, a bar hinged to the platform and projected in rear thereof, a supporting-wheel carried by the bar, and means carried by the bar and connected to the platform for tilting the latter upon the shaft.

4. The combination with supporting-wheels, of a platform, a shaft carried by the platform and driven from one of the wheels, means connected to the wheels and the shaft for supporting the platform upon the wheels and capable of adjustment to raise and lower the platform without interrupting the drive connection between the shaft and the wheels, a bar hinged to the platform and projected in rear thereof, a supporting-wheel carried by the bar, and means connected to the bar and the platform for tilting the latter upon the shaft.

5. The combination with supporting-wheels, of a platform, a shaft carried by the platform, and driven from one of the wheels, means connected to the wheels and the shaft for supporting the platform upon the wheels, a bar hinged to the platform and projected in rear thereof, a supporting-wheel carried by the bar, a ratchet-lever carried by the bar, and a connection between the lever and the platform for tilting the latter upon the shaft.

6. The combination with supporting-wheels, having stub-axles, of a platform, a shaft carried by the platform, sprocket-wheels upon the shaft and one of the stub-axles, a sprocket-chain running over the sprocket-wheels, a lever intermediately fulcrumed upon the stub-axle and pivotally connected to the shaft to constitute supporting and elevating means for the platform, means carried by the platform and cooperating with the lever to adjustably lock the latter, a bar hinged to the platform and projected in rear thereof, a supporting-wheel carried by the bar, and means extending between the platform and the bar for tilting said platform upon the shaft.

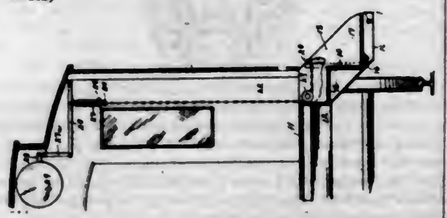
7. The combination with supporting-wheels, of a platform tiltably supported thereby, a bar hinged to and projected beyond the platform, a supporting-wheel for the bar, a cable-supporting guide carried by the bar, a cable connected to the platform and engaging the guide, and a ratchet-lever connected to the cable for tilting the platform upon its tiltable connection with the supporting-wheels.

8. The combination with supporting-wheels, of a platform tiltably carried thereby, a bar hinged to and projected at one side of the platform, a supporting-wheel for the bar, a roller upon the bar, a cable connected to the platform and running over the roller, and means carried by the bar and connected to the cable for tilting the platform upon its tiltable connection with the supporting-wheels.

9. The combination with supporting-wheels, of a platform tiltably carried thereby, a bar hinged to and projected at one side of the platform, a supporting-wheel for the bar, a roller upon the bar, a cable connected to the platform and running over the roller, and a ratchet-lever mounted upon the bar and connected to the cable for tilting the platform upon its tiltable connection with the supporting-wheels.

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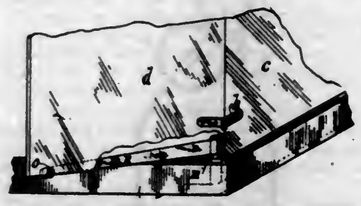
**755,592. AUTOMATIC REGISTER FOR CARS.** HENRY S. BUTLER, Des Moines, Iowa. Filed May 4, 1903. Serial No. 155,556. (No model.)



*Claim.*—In a device of the class described, the combination of a car and a fare-register, of a shaft, a stairway tread portion fixed to the shaft, a stop for limiting its movement, a lever fixed to the shaft and projected upwardly at one side of the stairway, a spring attached to said lever and to the stairway, normally holding the tread portion upwardly, an electric contact-point carried by the lever, a rounded stationary contact-point secured in the path of the contact-point carried by the lever, said contact-points engaging each other when the tread portion is lowered, an electric circuit in which the said contact-points are included, and an electromagnet also included in the circuit and operating the fare-register when the circuit is closed, arranged and combined substantially in the manner set forth, and for the purposes stated.

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**755,593. SHOW-CASE CONSTRUCTION.** OTTO DURR, Buffalo, N. Y. Filed Aug. 25, 1903. Serial No. 170,667. (No model.)



*Claim.*—1. In a glass structure, the combination with the closure part or door, of the glass-mounted hinge or hinges carrying the same in position to swing to and fro, and an auxiliary pivoted supporting part connected with and staying the door at a point relatively distant from the hinges, substantially as set forth.

2. In constructions of the class described, the combination with the swinging door, of its glass-supported hinges mounting the same from its pivoted edge, and an auxiliary hinged part rigidly mounted substantially in line with said hinges and connected to support the door near its free or swinging edge, substantially as set forth.

3. In a glass show-case, the combination with the glass sides thereof, of the glass plate forming the door, hinges connecting an edge thereof to one of the sides, a rigidly-mounted post, and a pivoted arm thereon substantially in line to swing with the hinges; said arm supporting the door at a point distant from the hinges and near its free edge, substantially as set forth.

4. In constructions of the class described, the combination with two angularly-abutting glass plates, of a flaring rubber packing-strip interposed between their presented faces, and means for tightly clamping or compressing said strip between the plates to form a tight joint, substantially as set forth.

5. In constructions of the class described, the combination with two angularly-abutting glass plates, of a flaring or wedge-shaped resilient packing-strip of greater width than the edge of the glass, interposed between the presented faces of the plates, and a screw device or clamp engaging the angularly-disposed plates and compressing the strip to cause its thicker edge to overlap and form a tight joint between the plates, substantially as set forth.

6. In a fastening for corners in glass construction, the combination with the two plates of glass meeting at an angle, of the strap secured to one of said plates and having a screw-threaded terminal extending through an opening in the second plate, a relatively large tapped part screwed upon the terminal exterior to, and bearing upon a large area of the latter plate to form a substantially tight joint between the plates, and means for interiorly securing the strap and tapped part to the respective plates, substantially as set forth.

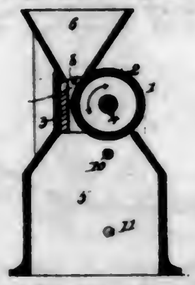
7. In a fastening for corners in glass construction, the combination with the two plates of glass meeting at an angle, of the strap secured to one of said plates and having a screw-threaded terminal extending through an opening in the second plate, a tapped part screwed upon the terminal exterior to, and bearing upon the latter plate to form a substantially tight joint between the plates, a yielding surface interposed between the plates and the strap and tapped part respectively, and means for interiorly securing the said strap and tapped part to the plates, substantially as set forth.

8. In a fastening for corners in glass show-case construction, the combination with the two plates of glass meeting at an angle, of the interior strap secured to one of said plates and having a screw-threaded terminal extending through a hole in the second plate, an elongated tapped part exteriorly screwed upon the terminal to engage the second plate, said strap and tapped part affording relatively large engaging surfaces for the plates, and interiorly-secured screw-bolts fastening the said parts to the respective glass plates, substantially as set forth.

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**755,594. MECHANICAL SORTER FOR SEED-CORN.** LEVI P. GRAHAM, Decatur, Ill. Filed Jan. 6, 1903. Serial No. 138,072. (No model.)

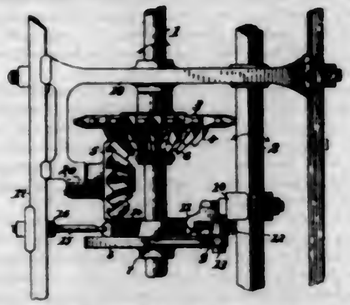
*Claim.*—1. In a mechanical sorter for seed-corn, the combination of a horizontal cylinder having spiral ribs extending from its longitudinal center in opposite directions and a surface opposed to a side of the cylinder and forming therewith a trough in which grains of corn will be arranged edgewise, the surface being separated from the cylinder far enough to form a slot through which suitable grains of corn may fall and the slot being open at its ends to permit the discharge of unsuitable grains.



2. In a mechanical sorter for seed-corn, the combination of a horizontal cylinder having spiral ribs extending from its longitudinal center in opposite directions, a surface opposed to a side of the cylinder and forming therewith a trough in which grains of corn will be arranged edgewise, the surface being separated from the cylinder far enough to form a slot through which suitable grains of corn may fall and the slot being open at its ends to permit the discharge of unsuitable grains, and a hopper above the cylinder between the ends thereof, substantially as described.

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**755,595. DRIVE-GEAR FOR CORN-PLANTERS.** WILLIAM S. GRAHAM, Canton, Ill., assignor to Parlin & Orendorff Company, Canton, Ill., a Corporation of Illinois. Filed June 5, 1903. Serial No. 160,256. (No model.)



*Claim.*—1. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a gear-wheel journaled loosely on the drive-shaft, a mutilated gear-wheel fastened onto the shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, and means for moving the shaft to carry the mutilated wheel into mesh with the pinion.

2. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a gear-wheel journaled loosely on the drive-shaft, a gear-wheel mutilated on opposite sides and fastened onto the shaft with its teeth normally in line with the teeth of the loose wheel, a pinion in mesh with the loose wheel and adapted to mesh with the mutilated wheel, and means for moving the shaft to carry the mutilated wheel into mesh with the pinion.

3. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a bevel-gear drive-wheel journaled loosely on the shaft, a bevel-gear mutilated wheel fastened onto the shaft and nesting with the loose wheel with its teeth normally in line with the teeth of the loose wheel, a bevel gear-pinion having teeth long enough to engage the teeth of the loose wheel and the teeth of the mutilated wheel, said pinion being in mesh with the loose wheel, and means for moving the drive-shaft to carry the mutilated wheel in mesh with the pinion.

4. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a sprocket-wheel journaled loosely on the shaft, a gear-wheel attached to the sprocket-wheel, a mutilated gear-wheel fastened onto the shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, and means for moving the shaft to carry the mutilated wheel into mesh with the pinion.

5. In driving-gear for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, and an arm on the check-row shaft adapted to engage the drill-shaft and move the mutilated wheel into mesh with the pinion.

6. In driving-gear for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, an extension on the drill-shaft and a yielding arm on the check-row shaft adapted to engage the extension on the drill-shaft.

7. In driving-gear for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, an extension on the drill-shaft having on its end an incline which terminates in a notch, a yielding arm on the check-row shaft and a pin on the end of the arm adapted to ride up the incline of the extension and engage the notch thereof.

8. In drive-gearing for seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a gear-wheel mutilated on opposite sides and fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, arms on the drill-shaft extending in opposite directions and having each an inclined outer surface terminating in a notch, a yielding arm on the check-row shaft, and a pin on the arm adapted to engage the notches.

9. In drive-gearing for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, a bracket attached to the check-row shaft, an arm hinged on the extended end of the bracket, a stop on the bracket limiting the swing of the arm away from the check-row shaft, a spring drawing the arm toward the stop, and a pin on the swinging end of the arm adapted to engage an extension on the drill-shaft.

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**755,596. SWEEPING-MACHINE.** ERASMUS L. KEYES, Hopedale, Ill. Filed Sept. 21, 1903. Serial No. 174,090. (No model.)



*Claim.*—1. A sweeping-machine, comprising the box-form frame, the rotary transverse brushes therein, the transverse fan-shaft and fan above and central of said brushes, the guard and partition plate inclosing said brushes fan-shaft and fan and dividing the box-form frame into upper and lower compartments, and partially dividing the upper dirt-compartment, front and rear inclined bottoms for the two halves of said dirt-compartment, and front and rear hinged doors for the same, substantially as specified.

2. A sweeping-machine, comprising the box-form frame, the rotary transverse brushes therein, the transverse fan-shaft and fan above and central of said brushes, the guard and division plate inclosing said brushes fan-shaft and fan and dividing the box-form frame into upper and lower compartments, and partially dividing the upper dirt-compartment, front and rear inclined bottoms for the two halves of said dirt-compartment, front and rear hinged doors for the same, a perforated cover for the dirt-compartment, and the hinged cover for the fan-casing, substantially as specified.



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**755,597. PROCESS OF BALING FIBROUS MATERIAL.** GEORGE A. LOWRY, Boston, Mass., assignor to Planters Compress Company, a Corporation of Maine. Filed Nov. 2, 1898. Serial No. 695,286. (No model.)



*Claim.*—1. The method of packing fibrous material which consists in drawing the fibers by concatenation from a mass of loose fibrous material so that they are approximately parallel one with another; highly compressing the material with the fibers thus arranged into a thin sheet of ultimate density, winding that sheet while under compression into the shape of a helix about an axis approximately parallel to the direction of compression and finally confining a group of such convolutions, by extraneous binding means, against expansion.

2. The method of packing fibrous material which consists in generating by concatenation in a mass of loose fibrous material, a stream of fibers leading out therefrom; and expressing the air from the stream by highly compressing the stream between opposed members and forming the compressed sheet in helical convolutions about an axis.

3. The method of packing fibrous material above described, consisting in drawing the fibers by concatenation from an amorphous mass into approximate parallelism, and subjecting the layer so formed in this condition to high compression and securing a multiplicity of such layers together against reëxpansion.

4. The method of packing fibrous material above described consisting in drawing the fibers by concatenation from an amorphous mass into approximate parallelism and compressing the layer so formed in this condition to ultimate density and securing a multiplicity of such layers together against reëxpansion.

5. The method of packing fibrous material above described, consisting in drawing the fibers by concatenation from an amorphous mass into approximate parallelism, and subjecting the fibers when thus arranged to high compression and securing them together against reëxpansion.

6. The method of packing fibrous material above described, consisting in drawing the fibers by concatenation from an amorphous mass into approximate parallelism and compressing the fibers when thus arranged to ultimate density and securing them together against reëxpansion.

7. The method of packing fibrous material above described consisting in drawing the fibers by concatenation from an amorphous mass into approximate parallelism to form a layer, compressing that layer to ultimate density and arranging a multiplicity of layers so formed together to form a bale.

8. The method of packing fibrous material above described, consisting in drawing the fibers by concatenation from an amorphous mass to form a helical layer and arranging a multiplicity of such layers together to form a cylindrical end-built bale.

9. The method of packing fibrous material above described, consisting in drawing the fibers by concatenation from an amorphous mass into approximate parallelism to form a helical layer, arranging a multiplicity of such layers together to form a cylindrical end-built bale, subjecting the layers to pressure to give density and securing them together against reëxpansion.

10. The method of packing fibrous material above described, consisting in drawing the fibers by concatenation from an amorphous mass to form a layer; subjecting such layer so formed to high compression and securing together a multiplicity of such layers.

11. The method of packing fibrous material above described consisting in drawing the fibers by concatenation from an amorphous mass and subjecting the fibers so drawn to high compression and securing the compressed fibers against reëxpansion.

12. The method of packing fibrous material above described, consisting in drawing fibers from an amorphous mass of loose material by the concatenating action of fibers embedded in a compressed mass, and compressing the fibers so drawn.

13. The method of packing fibrous material above described consisting in drawing fibers in a layer of substantially uniform thickness from an amorphous mass of loose material by the concatenating action of fibers embedded in a compressed mass, and compressing the fibers so drawn.

14. The method of packing fibrous material above described consisting in drawing fibers in a helical layer of substantially uniform thickness from an amorphous mass of loose material by the concatenating action of fibers embedded in a compressed mass, and compressing the fibers so drawn.

15. The method of packing fibrous material above described, consisting in drawing fibers in a helical layer of substantially uniform thickness from an amorphous mass of loose material by the concatenating action of fibers embedded in a compressed mass and compressing said layer against the compressed mass.

16. The method of packing fibrous material above described, consisting in drawing fibers from an amorphous mass of loose material into approximate parallelism by the concatenating action of fibers embedded in a compressed mass, and compressing the fibers so drawn.

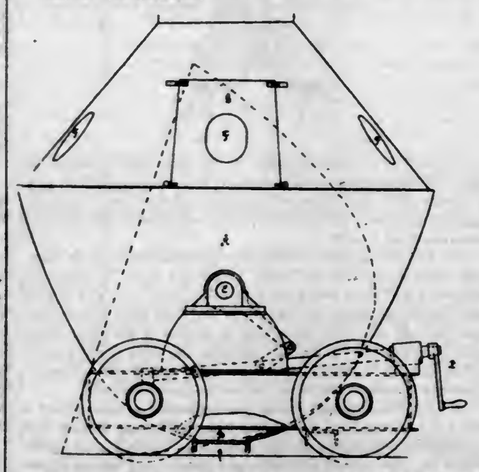
17. The method of packing fibrous material above described, consisting in drawing fibers in a layer of substantially uniform thickness from an amorphous mass of loose material into approximate parallelism by the concatenating action of fibers embedded in a compressed mass, and compressing the fibers so drawn.

18. The method of packing fibrous material above described, consisting of drawing fibers in a helical layer of substantially uniform thickness from an amorphous mass of loose material into approximate parallelism by the concatenating action of fibers embedded in a compressed mass and arranging a multiplicity of such layers together to form a cylindrical end-built bale and securing them together against reëxpansion.

19. The method of packing fibrous material above described, consisting in drawing fibers in a helical layer of substantially uniform thickness from an amorphous mass of loose material into approximate parallelism by the concatenating action of fibers embedded in a compressed mass, compressing said layer against the compressed mass, and arranging a multiplicity of such layers together to form a cylindrical end-built bale, and securing them against reëxpansion.

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**755,598. PROCESS OF DESULFURIZING LEAD ORES.** ADOLF SAVELSBERG, Ramsbeck, Germany. Filed Dec. 18, 1903. Serial No. 185,743. (No specimens.)



*Claim.*—1. The herein-described process of desulfurizing lead ores which consists in mixing raw ore with limestone and then subjecting the mixture to the simultaneous application of heat and a current of air in sufficient proportions to substantially complete the desulfurization in one operation, substantially as described.

2. The herein-described process of desulfurizing lead ores which process consists in first mixing the ores with limestone, then moistening the mixture, then filling it without previous roasting into a chamber then heating it and treating it by a current of air, as and for the purpose described.

3. The herein-described process of desulfurizing lead ores which consists in mixing raw ores with limestone, then filling the mixture into a chamber, then subjecting the mixture to the simultaneous application of heat and a current of air in sufficient proportions to substantially complete the desulfurization in one operation, the mixture being introduced into the chamber in partial charges introduced successively at intervals during the process, substantially as described.

4. The herein-described process of desulfurizing lead ores which process consists in first mixing the ores with limestone, then moistening the mixture, then filling it without previous roasting into a chamber then heating it and treating it by a current of air, the mixture being introduced into the chamber in partial charges introduced successively at intervals during the process, as and for the purpose described.

5. The herein-described process of desulfurizing lead ores which process consists in first mixing the ores with sufficient limestone to keep the temperature of the mixture below the melting-point of the ore, then filling the mixture into a chamber, then heating said mixture and treating it with a current of air, as and for the purpose described.

6. The herein-described process of desulfurizing lead ores which process consists in first mixing the ores with sufficient limestone to mechanically separate the particles of galena sufficiently to prevent fusion, and to keep the temperature below the melting-point of the ore by the liberation of carbon dioxid, then filling the mixture into a chamber, then heating said mixture and treating it with a current of air, as and for the purpose described.

## 755,599. KNIFE-SHARPENER.

FRED H. SMITH, Oakpark, and DAVID C. SAMUHAR, Chicago, Ill., assignors to F. H. Smith Manufacturing Co., Chicago, Ill., a Corporation. Filed Feb. 9, 1903. Serial No. 142,498. (No model.)



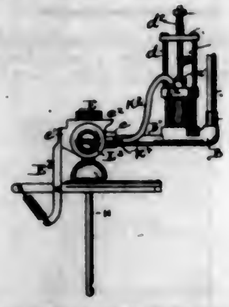
*Claim.*—1. A knife-sharpener having two disks provided on their edges with spiral cutting-ribs and means for supporting said disks with their axes substantially parallel and with their ribs intermeshing, the ribs of the two disks being respectively right and left, substantially as described.

2. A knife-sharpener having two disks provided on their edges with spiral cutting-ribs and means including a frame for rotatively supporting said disks with their axes substantially parallel and with their ribs intermeshing, the ribs of the two disks being respectively right and left, the upwardly-extending portion of the frame being provided with a narrow slot for admitting the blade to the cutters and for guiding it, and a handle at the upper end of said upwardly-extending portion of the frame, substantially as described.

3. A knife-sharpener having in combination a frame having a base and two standards rising therefrom and having narrow slots for admitting and guiding the blade, means for connecting the standards at top, two cutting-disks arranged between the lower portions of the standards, and studs upon which said disks are rotatively mounted, the standards being provided with openings through which said studs project and the ends of the studs being upset whereby they connect the lower portions of the standards, and a handle connecting the upper ends of said standards, substantially as described.

## 755,600. FILLING DEVICE FOR BOTTLES.

CHARLES A. CARLSON, Chicago, Ill. Filed Apr. 1, 1903. Serial No. 150,583. (No model.)



*Claim.*—1. In a filling device for bottles, the combination of a valve-casing provided with a syrup-passage, a water-passage and an air-equalization passage, a valve provided with corresponding passages adapted to communicate with the passages in the casing, the syrup-passage being placed in communication before the opening of the air and water passages, a filling-tube in communication with the syrup and water passages in the valve, an air-passage leading to the bottle in communication with the air-passage within the valve, and means automatically operated by the movement of the valve within the casing for forcing a predetermined amount of syrup through the syrup-passages in the valve, substantially as described.

2. In a filling device for bottles, the combination of a valve-casing provided with a syrup-passage, a water-passage and an air-equalization passage, a valve within the casing provided with a syrup-passage, a water-passage and an air-equalization passage adapted to communicate with the passages in the casing, the syrup-passage being placed in communication before the opening of the air and water passages, a filling-tube in communication with the syrup and water passages in the valve, an air-tube leading to the bottle in communication with the air-passage within the valve, and a cylinder provided with a piston automatically operated by the movement of the valve for forcing a predetermined amount of syrup through the syrup-passages, substantially as described.

3. In a filling device for bottles, the combination of a valve-casing provided with a syrup-passage, a water-passage and an air-passage and adapted to be secured to a tank containing carbonized water under pressure, a tube extending up from the air-passage in the casing and of a length to project above the water in the tank, a plug-valve within the casing provided with a syrup-passage, a water-passage and an air-equalization passage adapted to communicate with the passages in the valve-casing, a syrup-pipe leading to the syrup-passage in the valve-casing, a cylinder provided with a piston located on the syrup-pipe, a pressure-pipe fitted in the valve-casing and adapted to project above the water in the tank, a pressure-inlet passage in the valve-casing, a pressure-passage in the plug of the valve, a pressure-outlet passage in the valve-casing, and a pressure-pipe establishing communication between the valve-casing and the cylinder for operating the piston of the cylinder by means of pressure from the pressure-tank to force syrup through the valve into the bottle, substantially as described.

4. In a filling device for bottles, the combination of a valve-casing provided with a syrup-passage, a water-passage and an air-passage, a plug-valve within the casing provided with a filling-tube inserted thereinto, and further provided with a syrup-passage, a water-passage and an air-passage adapted to communicate with the passages in the valve-casing, an indentation in the filling-tube adapted to establish communication between the air-passage in the plug-valve and the interior of the bottle, an opening in the side of the filling-tube in communication with the syrup-passage in the valve-plug and the end of the pipe arranged to communicate with the water-passage in the valve-plug, a pipe leading from the valve-casing and adapted to project above the water in the tank to which the valve is attached, a pressure-inlet passage in the valve-casing, a pressure-tube leading upwardly therefrom, a pressure-passage within the valve-plug, a pressure-outlet passage in the valve-casing, a syrup-tube leading from the syrup-passage in the valve-casing, a cylinder on the syrup-tube, and a pipe for establishing communication between the cylinder and the pressure-outlet passage to operate the piston of the cylinder by the movement of the valve and force the syrup through the valve, substantially as described.

5. In a filling device for bottles, the combination of a valve-casing provided with a syrup-passage, a water-passage and a pressure-passage, a valve within the casing provided with a syrup-passage, a water-passage and a pressure-passage adapted to communicate with the passages in the casing, a piston in communication with the syrup-passages operating within a cylinder in communication with the pressure-passages for operating the piston by pressure admitted through the valve, substantially as described.

6. In a filling device for bottles, the combination of a valve-casing provided with a syrup-passage, a water-passage, and an air-equalization passage, a valve within the casing provided with corresponding passages adapted to communicate with the passages in the casing, a filling-tube in communication with the syrup and water passages, an air-passage leading to the bottle in communication with the air-passage within the valve, and a cylinder provided with a pressure-passage the piston of which is automatically operated by the movement of the valve for forcing the syrup through the syrup-passages, substantially as described.

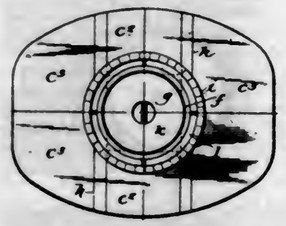
7. In a filling device for bottles, the combination of a valve and valve-casing provided with syrup, water and air passages, a cylinder provided with a piston adapted to force syrup through the valve, and a pressure-pipe establishing communication between the cylinder and valve for automatically operating said piston by means of pressure controlled by the movement of the valve, substantially as described.



# REISSUES.

## 12,205. CONSTRUCTION OF MANHOLES FOR CONDUITS.

HUGH C. BAKER, Jr., New York, N. Y. Filed Feb. 3, 1904. Serial No. 191,910. Original No. 734,153, dated July 21, 1903.



*Claim.*—1. A cover for a manhole, comprising parallel bars and bricks or blocks of two different shapes, substantially as shown and described.

2. A manhole for electrical and other conduits the inclosing or body wall of which is composed of separate layers of bricks or blocks of two different styles, said bricks or blocks being curved in such a manner that they form a manhole substantially elliptical in horizontal section, said manhole being also provided with a cover comprising parallel bars and bricks or blocks of two different shapes, substantially as shown and described.

3. A manhole for electrical and other conduits the inclosing or body wall of which is composed of separate layers of bricks or blocks of two different styles, said bricks or blocks being curved in such a manner that they form a manhole substantially elliptical in horizontal section, said manhole being also provided with a cover comprising parallel bars and bricks or blocks of two different shapes, and in which is a central opening provided with a removable cover, substantially as shown and described.

4. A manhole for electrical conduits the inclosing or body wall of which is substantially elliptical in horizontal section and composed of separate layers of bricks or blocks of two different shapes, the cover of the manhole being composed of transverse bars and bricks or blocks of two different shapes and provided with a central opening, substantially as shown and described.

5. A cover for manholes, composed of parallel bars and bricks or blocks of different shapes, two of said bricks or blocks being of the same shape and being placed between said bars, and four of said bricks or blocks being of the same shape and forming the end or side portions of the cover, substantially as shown and described.

6. A manhole for electrical and other conduits, the inclosing or body wall of which is composed of separate horizontal layers of bricks or blocks of different styles and placed end to end, the transverse thickness of the wall being the same as the transverse thickness of the bricks or blocks, said bricks or blocks being also curved so as to give the manhole the desired shape in horizontal section, and said bricks or blocks being adapted to be reversed in the separate horizontal layers so as to break joints, substantially as shown and described.

7. A manhole for electrical and other conduits, the inclosing or body wall of which is composed of separate layers of bricks or blocks of two different styles, said manhole being elliptical in horizontal section and the end corner bricks or blocks of each layer being abruptly curved at one end, and said bricks or blocks being adapted to be reversed in the separate horizontal layers so as to break joints, substantially as shown and described.

## 12,206. THILL-COUPLING.

HENRY C. INGRAHAM, Moodus, Conn. Filed Feb. 16, 1904. Serial No. 193,936. Original No. 748,610, dated Jan. 5, 1904.



*Claim.*—1. In a thill-coupling, the combination of a shaft-iron having its rear end enlarged and provided with a recess to receive the coupling-bolt, a lever pivotally mounted on the shaft-iron and having a short arm provided with a cross-bar to swing into and out of said recess, and a cam-shaped lever pivotally secured to the long arm of the lever and adapted to lock in engagement with the shaft-iron.

2. In a thill-coupling, the combination of a shaft-iron enlarged at its rear end and the intermediate portion of the enlargement recessed to receive the coupling-bolt, a lever pivoted at one side of said recess and having a short arm to enter the same said short arm of the lever provided with a recess and a transverse bar which swings into and out of the recess as the lever is lowered or raised about its pivotal connection, and a lever pivoted to the free end of the first-named lever and having a cam-face to lock into engagement with the shaft-iron.

3. In a thill-coupling the combination of a shaft-iron having an enlargement at its rear end said enlargement recessed in its intermediate portion and having the portion at one side of said recess forked or bifurcated; a lever pivoted within said forked portion and having a short arm to enter said recess said short arm recessed to initially receive the coupling-bolt and having a projecting spur at one side of the recess and a transverse bar at the opposite side thereof said bar adapted to be moved into and out of the recess of the shaft-iron when the lever is rocked about its pivotal connection, and a lever pivotally secured to the free end of the first-named lever and having a cam-face adapted to be forced into locked engagement with the shaft-iron.

4 A thill-coupling comprising a shaft-iron enlarged at the rear and having the intermediate portion of the enlargement recessed to receive the coupling-bolt; a lever pivoted to the shaft-iron at a point at one side of said recess and having a short arm recessed to initially receive said bolt and to form a spur and cross-bar said spur engaged by the entering coupling-bolt to rock the lever and cause the cross-bar to close into the recess of the shaft-iron behind the bolt; and a lever pivotally secured to the free end of the first-named lever and having a cam-shaped end to engage directly with the shaft-iron, said shaft-iron and cam-surface of the lever serrated and adapted to interlock one with the other.

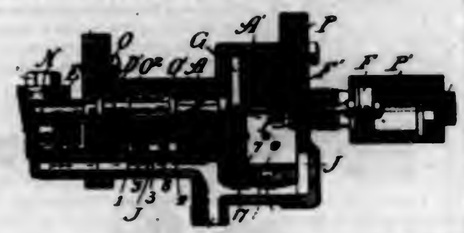
5. In a thill-coupling the combination of a shaft-iron having its rear end extended to one side of the plane of the main portion and provided with a recess for the coupling-bolt, a lever pivotally mounted upon said shaft-iron and having its short arm recessed and adapted to close the entrance to the first-named recess when the coupling-bolt is in place, and a cam-shaped lever pivotally secured to the long arm of the first-named lever and adapted to engage the shaft-iron to secure the parts in a locked position.

## 12,207. FLUID-PRESSURE BRAKE APPARATUS.

JOSEPH REICHMANN, Chicago, Ill. Filed Jan. 9, 1904. Serial No. 188,417. Original No. 733,875, dated June 30, 1903.

*Claim.*—1. In a fluid-pressure brake apparatus, the combination with appliances adapted to charge the brake-cylinder with air-pressure from the auxiliary reservoir and to charge the brake-cylinder with air-pressure from the main reservoir independently of the auxiliary reservoir, and to exhaust the air from the brake-cylinder

through an independent passage leading directly to the atmosphere, and a single line of pipe connection, of a main reservoir, a train-pipe, and a valve device interposed between the main reservoir and train-pipe and adapted to govern the supply of air-pressure from the main reservoir to the train-pipe, substantially as described.



2. In the triple valve of a fluid-pressure brake apparatus, the combination of ports through which the air from the auxiliary reservoir and from the main reservoir passes to the brake-cylinder, and from the brake-cylinder to the atmosphere to exhaust the air from the brake-cylinder, valves controlling said ports, and a piston for actuating the triple valve to charge the brake-cylinder with air from the auxiliary reservoir by reducing the train-pipe pressure and to charge the brake-cylinder with air from the main reservoir by increasing the train-pipe pressure, substantially as described.

3. In the triple valve of a fluid-pressure brake apparatus, the combination of a piston actuated in one direction by auxiliary-reservoir pressure and in the opposite direction by train-pipe pressure, and valves controlling the passages of air from the auxiliary reservoir and from the main reservoir to the brake-cylinder and from the brake-cylinder through an independent passage leading directly to the atmosphere, to charge the brake-cylinder with air from the auxiliary reservoir by reducing the train-pipe pressure and to charge the brake-cylinder with air from the main reservoir by increasing the train-pipe pressure, substantially as described.

4. In the triple valve of a fluid-pressure brake apparatus, the combination of a valve-chamber having ports through which air passes to the brake-cylinder from the auxiliary reservoir and from the main reservoir, and from the brake-cylinder to the atmosphere to exhaust the air from the brake-cylinder, a slide-valve and an auxiliary valve controlling said ports, and a piston movable by variation in the train-pipe pressure to actuate the triple valve to charge the brake-cylinder with air from the auxiliary reservoir by reducing the train-pipe pressure and to charge the brake-cylinder with air from the main reservoir by increasing the train-pipe pressure, substantially as described.

5. In the triple valve of a fluid-pressure brake apparatus, the combination of a valve-chamber having ports through which air passes to the brake-cylinder from the auxiliary reservoir and from the main reservoir, and from the brake-cylinder to the atmosphere to exhaust the air from the brake-cylinder, a piston-chamber having a port leading to the brake-cylinder, and a slide-valve and a piston-valve jointly controlling the said ports to charge the brake-cylinder with air from the auxiliary reservoir by reducing the train-pipe pressure and to charge the brake-cylinder with air from the main reservoir by increasing the train-pipe pressure, substantially as described.

6. In the triple valve of a fluid-pressure brake apparatus, the combination of a valve-chamber having ports through which air passes to the brake-cylinder from the auxiliary reservoir and from the main reservoir, and from the brake-cylinder through an independent passage leading directly to the atmosphere to exhaust the air from the brake-cylinder, a valve controlling the said ports and the valve Z in the passage 1 and actuated by the air-pressure from the main reservoir, substantially as described.

7. In the triple valve of a fluid-pressure brake apparatus, the combination of a port through which the air from the auxiliary reservoir passes to the brake-cylinder, a port leading to the atmosphere to exhaust the air from the brake-cylinder, a valve controlling said ports, a main piston operating to move the said valve in one direction by auxiliary-reservoir pressure, and an auxiliary piston actuated in one direction by valve-controlled air-pressure cooperating with the train-pipe pressure to force the main piston in the opposite direction to control the said ports leading to and from the brake-cylinder, substantially as described.

8. In the triple valve of a fluid-pressure brake apparatus, the combination of a valve-chamber having a port through which the air from the auxiliary reservoir passes to the brake-cylinder, a port leading to the atmosphere to exhaust the air from the brake-cylinder, a slide-valve controlling said ports, a piston-chamber, a main piston operating to move said slide-valve in one direction by auxiliary-reservoir pressure, the head P provided with the stuffing-box $P^2$, the cylinder P', the passage 8 between the brake-cylinder and the said cylinder P', and the piston F on a stem and actuated by air-pressure in the cylinder P' in conjunction with the main piston to move the said slide-valve in the opposite direction to control said ports, substantially as described.

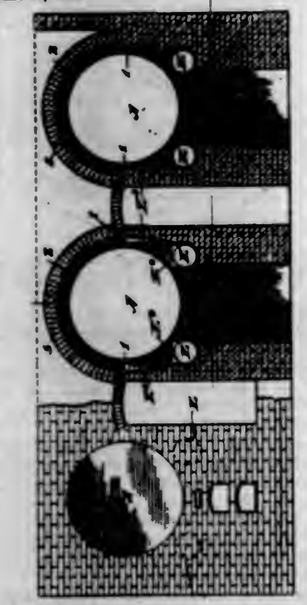
9. In the triple valve of a fluid-pressure brake apparatus, the combination of a piston controlling the releasing-valve, an auxiliary valve and an auxiliary piston for actuating it, and each controlled independently of the other by variation of the train-pipe air-pressure, and jointly controlling communication between the train-pipe and the brake-cylinder to reduce the train-pipe pressure by admitting the air into the brake-cylinder for the emergency application of the brakes, substantially as described.

10. In the triple valve of a fluid-pressure brake apparatus, the combination with the releasing-port communicating with the train-pipe of the piston-chamber E' having a piston $E^2$ and having direct communication with the auxiliary reservoir and the train-pipe, substantially as described.

11. In the triple valve of a fluid-pressure brake apparatus, the combination with the releasing-valve controlling communication with the train-pipe, of the chamber E, the valves $E^3$ and $E^4$, the spring $E^5$, the passage J and the passage $J^2$, substantially as described.

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**12,208. APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF WOOD.** GUSTAV O. GELERT, New Orleans, La., assignor, by mesne assignments, to Illinois Investment Company, a Corporation of West Virginia. Filed Dec. 24, 1902. Serial No. 136,503. Original No. 677,204, dated June 25, 1901.



*Claim.*—1. In an apparatus for the destructive distillation of wood, the combination of a closed retort, means for locally applying heat externally to a part only of said retort, to effect the progressive heating of the contents of the latter, and an eduction vapor-passage communicating with the retort at a point remote from the part thereof to which the heat is applied, whereby the vapors expelled are withdrawn from the cooler portion of the retort.

2. In an apparatus for the destructive distillation of wood, the combination of a closed retort, means for locally applying transmitted heat to a part only of said retort, to effect the progressive heating of the contents of the latter, and an eduction-passage communicating with the retort at a point remote from the part thereof to which the heat is locally transmitted.

3. In an apparatus for the destructive distillation of wood, the combination of a closed retort, means for locally applying heat exteriorly to the upper side only of said retort, means protecting the remaining portions of said retort from overheating, and an eduction pipe communicating with the lower part of the retort.

4. In an apparatus for the destructive distillation of wood, the combination of a closed elongated horizontally-disposed retort having its bottom inclined toward one end; means for circulating hot gases over the top of said retort; means protecting the sides and bottom of said retort from overheating, and an eduction-pipe communicating with the bottom of the retort and leading downwardly and outwardly therefrom.

5. In an apparatus for the destructive distillation of wood, the combination of a closed elongated horizontally-disposed retort having its bottom inclined toward one end; means for circulating hot gases over the top of said retort; means protecting the sides and bottom of said retort from overheating, and an eduction-pipe communicating with the bottom of the retort and leading downwardly and outwardly therefrom, said eduction-pipe being arranged to extend through a discharge-passage for the hot gases.

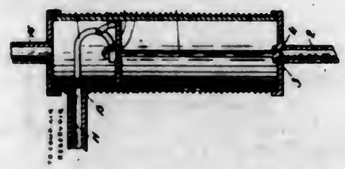
6. In an apparatus for the destructive distillation of wood, the combination substantially as described, of the retort having a vapor-discharge at its lower end, the furnace, the protecting-wall leading from said furnace rearwardly below the retort and forming a dead-air chamber below such retort, the flues arranged to receive the products of combustion from such protecting-wall at a point near the rear end of the retort and extending thence forward to a point near the front of the retort, and a casing provided with flues and passages for receiving the products of combustion from said flues and directing the same to the top of the retort, substantially as set forth.

7. In an apparatus for the destructive distillation of wood, the retort for receiving the wood provided with a discharge-pipe having the branch H, the branch I and the branch or discharge G, and provided with the valves *h*, *i* and *g* for controlling the discharge of the products of distillation, substantially as set forth.

8. An apparatus for the destructive distillation of wood comprising the retort for receiving the wood, the furnace, a protecting-partition between the furnace and retort, flues extending between the partition and retort and arranged at their rear ends to receive the products of combustion from the furnace and to discharge the same to the retort at the front end of the latter, means for directing such products substantially to the top of the retort, and the tar and vapor discharge at the lower end of the retort, substantially as described.

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**12,209. LUBRICATING DEVICE.** FRED L. HAWKINS, Gardner, Mass. Filed Nov. 6, 1903. Serial No. 180,135. Original No. 718,456 dated Jan. 13, 1903.



*Claim.*—1. The combination with a car, of a tank mounted below the car and adapted to contain lubricant under pressure, and a valved discharge-tube leading from said tank toward one of the rails on which the car is adapted to travel.

2. The combination with a car, of a tank mounted below the car and adapted to contain lubricant under pressure, a delivery-tube extending from said tank, a valve for said tube, and means for controlling the operation of the valve at a point on said car distant from the tank.

3. The combination with a car, of a tank mounted below the car and adapted to contain lubricant, a delivery-tube extending from said tank, a valve for said tube, means contained within the tank for operating the valve, and an air-pressure system for actuating said means.

4. The combination with a car, of a tank mounted below the car, a delivery-tube extending therefrom, a valve for the delivery-tube, means for supplying lubricant to the tank, a pressure system connected with said tank the pressure in which is adapted to be controlled at a point distant from the tank, and means, adapted to be acted upon by pressure in said system, for actuating the delivery-valve.

5. The combination with a car, of a tank mounted below the car and adapted to contain a comparatively large body of lubricant, a delivery-tube for said tank, means for raising the temperature of the lubricant in the tank, and a pressure system connected with the tank and adapted to supply pressure on the lubricant therein.

6. In a lubricating device, the combination with an oil-tank having a discharge-orifice and a valve for closing said orifice, of a compressed-air pipe communicating with said tank, a valve adapted to be operated by the admission of air into said tank, and a connection between the last-named valve and the first-named valve, whereby when the last-named valve is opened the first-named valve will be opened, substantially as set forth.

7. In a lubricating device, the combination with an oil-tank having a discharge-opening and a valve for closing said opening, said valve being provided with a stem, of a compressed-air pipe leading into said tank, a valve for closing said pipe, said valve being provided with a stem connected to the stem of the first-named valve and having a rocking movement, substantially as described.

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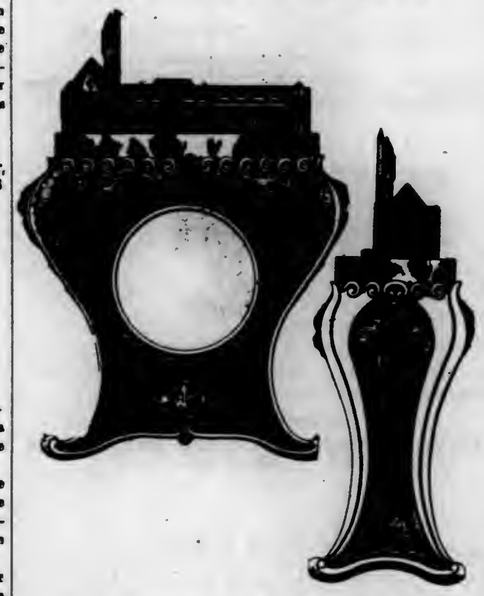
# DESIGNS.

**36,855. HAT-PIN HEAD.** WILLIAM TURTON, Kearney, N. J., assignor to Frank H. La Pierre, East Orange, N. J. Filed Feb. 10, 1904. Serial No. 193,019. Term of patent 3½ years.



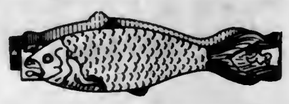
*Claim.*—The ornamental design for a hat-pin head, as shown.

**36,856. CLOCK-CASE.** LOUIS V. ARONSON, Newark, N. J. Filed Dec. 24, 1903. Serial No. 186,509. Term of patent 3½ years.



*Claim.*—The ornamental design for a clock-case as shown.

**36,857. FISHBONE-TONGS.** JAMES HAWKINS, Philadelphia, Pa. Filed Feb. 8, 1904. Serial No. 192,718. Term of patent 3½ years.



*Claim.*—The ornamental design for fishbone-tongs, as shown.

# TRADE-MARKS

## REGISTERED MARCH 22, 1904.

42,259. IMITATION TORTOISE-SHELL HAIR-PINS, HAIR-COMBS, AND HAIR ORNAMENTS. B. & J. Bass, New York, N. Y. Filed Dec. 29, 1903.

TORTONE

The word "TORTONE." Used since January 1, 1902.

42,260. SILKS. STEWART SILK COMPANY, Easton, Pa., and New York, N. Y. Filed Feb. 10, 1904.

ONESEAMO

The word "ONESEAMO." Used since January 1, 1903.

42,261. WORKINGMEN'S SHIRTS, OVERALLS, AND COATS. WEHR-WATT COMPANY, Fargo, N. D. Filed Sept. 8, 1903.




The words "GRAIN BELT," arranged in connection with a sheaf of grain. Used since November 1, 1901.

42,262. CERTAIN NAMED CLOTHING. THE F. B. C. CLOTHING Co., New York, N. Y. Filed Feb. 19, 1904.

That Totally Different

The words "THAT TOTALLY DIFFERENT." Used since January 2, 1903.

42,263. INFANTS' AND CHILDREN'S LEATHER SHOES. WILLIAM H. SCHREIER, Rochester, N. Y. Filed Jan. 18, 1904.

CHERUB

The word "CHERUB." Used since December 24, 1903.

42,264. LEATHER BOOTS AND SHOES. C. H. GREEN & Co., Manchester, N. H., and Boston, Mass. Filed Feb. 20, 1904.

Sunshine

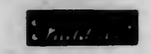
The word "SUNSHINE." Used since November, 1901.

42,265. LEATHER BOOTS AND SHOES. C. H. GREEN & Co., Manchester, N. H., and Boston, Mass. Filed Feb. 23, 1904.

SUNLIGHT

The word "SUNLIGHT." Used since February 15, 1904.

42,266. MEDICINAL TABLETS FOR CERTAIN NAMED DISEASES. ANNE ROGERS, Ottawa, Canada. Filed Jan. 14, 1904.



The word "FRUITATIVES," inclosed in quotation-marks and printed in white upon a black background. Used since April, 1903.

42,267. DANDRUFF-CURE AND HAIR-RESTORER. JAMES OTHO WHITENER, Hepzibah, W. Va. Filed Jan. 8, 1904.



The surname of the registrant, "WHITENER'S," associated with his portrait. Used since December 1, 1903.

42,268. TOOTH-PASTE, TOOTH-POWDER, AND LIQUID MOUTH-WASH. JOSEPH SAMPSON ROGERS, Hillsboro, Ill. Filed Feb. 13, 1904.

VIOLAFORM

The word "VIOLAFORM." Used since February 1, 1903.



42,269. DENTIFRICES. FREDERICK G. PLUMMER, London, England. Filed Jan. 25, 1904.

TVSCO

The word "TVSCO," the letters of which are made up of the representation of tusks. Used since November 6, 1902.

42,270. CASTOR-OIL. HARRY M. SWARTLEY, Keywest, Fla. Filed Nov. 4, 1903.




The representation of two concentric circles, within which are disposed the representation of Mephistopheles, masked as an innocent child, confronting the figure of Atlas, with outstretched arms, supporting a globe upon his shoulders, in the act of accepting the disguised form, associated with the words "PERFECT DISGUISE." Used since December 1, 1902.

42,271. BUTTER-OIL. KENTUCKY REFINING Co., Louisville, Ky. Filed Feb. 5, 1904.

ACME

The word "ACME." Used since January 1, 1897.

42,272. BUTTER-OIL. KENTUCKY REFINING Co., Louisville, Ky. Filed Feb. 5, 1904.

ECLIPSE

The word "ECLIPSE." Used since January 1, 1883.

42,273. CENTURION

The word "CENTURION." Used since January 1, 1901.

42,274. COTTON-SEED OIL. KENTUCKY REFINING Co., Louisville, Ky. Filed Feb. 5, 1904.

FRIEDEG

The word "FRIEDEG." Used since January 1, 1897.

42,275. COTTON-SEED OIL. KENTUCKY REFINING Co., Louisville, Ky. Filed Feb. 5, 1904.

APEX

The word "APEX." Used since January 1, 1892.

42,276. COTTON-SEED OIL. KENTUCKY REFINING Co., Louisville, Ky. Filed Feb. 5, 1904.

FAVORITE

The word "FAVORITE." Used since January 1, 1887.

42,277. SCOTCH WHISKY. PETER DAWSON, Dufftown and Glasgow, Scotland. Filed Feb. 25, 1904.




The words "BLUE BELL," together with the representation of a spray of blue-bells surrounded by an oval border. Used since November, 1889.

42,278. INK. SANFORD MANUFACTURING COMPANY, Chicago, Ill. Filed Feb. 15, 1904.

PREMADEL

The word "PREMADEL." Used since February 8, 1904.

42,279. PREPARED ROOFING. STANLEY R. HOLLAND, St. Louis, Mo. Filed Feb. 15, 1904.




The representation of a shell and the word "SHELLTEROID." Used since May 7, 1903.

42,280. STOVES AND THEIR PARTS. SCHUSTER & BAER AKTIENGESELLSCHAFT, Berlin, Germany. Filed Oct. 6, 1903.




The representation of a circle including the letters "S & B" and a rosette in its middle. At each side of the letters there is arranged a comet, and a band beneath the circle contains the word "REFORM." Used since 1898.

42,281. CARRIAGE-BOLTS. RUSSELL, BURDSALL & WARD BOLT & NUT Co., Port Chester, N. Y. Filed Jan. 6, 1904.

EMPIRE

The word "EMPIRE." Used since December 1, 1903.

42,282. CALF-WEANERS. BARBER WIRE & IRON WORKS, Lafayette, Ind. Filed Feb. 25, 1904.




A diamond-shaped figure inclosing the letters "N. S. N." Used since January 1, 1904.

42,288. CERTAIN NAMED KNITTING-MACHINE APPLIANCES. ERNST BIRKNER, Chemnitz, Germany. Filed Feb. 8, 1904.



The representation of a sinuous sword with crescents above and below and surrounded by rays. Used since December, 1891.

42,284. COFFEE AND SPICE MILLS. LANDERS, FRARY AND CLARK, New Britain, Conn. Filed Feb. 29, 1904.

UNIVERSAL

The word "UNIVERSAL." Used since February 16, 1904.

42,285. CERTAIN NAMED KNIFE-CLEANING MACHINES. LANDERS, FRARY AND CLARK, New Britain, Conn. Filed Feb. 29, 1904.

UNIVERSAL

The word "UNIVERSAL." Used since February 16, 1904.

42,286. MACHINES FOR CERTAIN NAMED PURPOSES. UNITED SHOE MACHINERY COMPANY, Paterson, N. J., and Boston, Mass. Filed Feb. 27, 1904.

SUMMIT

The word "SUMMIT." Used since January 26, 1904.

42,287. STONE-CHANNELERS. THE INGERSOLL-SERGEANT DRILL Co., New York, N. Y. Filed Dec. 23, 1903.

BRONCHO

The word "BRONCHO." Used since November 1, 1903.

PHOTO-LITH. THE NORRIS PETERS CO.

# LABELS

## REGISTERED MARCH 22, 1904.

10,841.—*Title:* "P. B. SHOE SUPERIOR QUALITY STYLE." (For Shoes.) PAUL BROTHERS, Philadelphia, Pa. Filed December 26, 1903.

10,842.—*Title:* "NEVER SLIP RUBBERIZED SOLES." (For Shoe-Soles.) THE HARRISBURG SHOE MFG. Co., Harrisburg, Pa. Filed December 28, 1903.

10,843.—*Title:* "'OLD STANDARD GERMANTOWN' LAMP-BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,844.—*Title:* "GERMANTOWN BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,845.—*Title:* "TORCH BLACK OR COMMERCIAL BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,846.—*Title:* "'EAGLE GERMANTOWN' LAMP BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,847.—*Title:* "'EXTRA DOUBLE REFINED SUPERIOR COACH PAINTERS' LAMP BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,848.—*Title:* "'SIGN PAINTERS' SPIRIT LAMP BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,849.—*Title:* "'GOLDEN STAR SPIRIT' LAMP BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,850.—*Title:* "'EXTRA CAR PAINTERS' LAMP BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,851.—*Title:* "'EXTRA CURRIERS' VELVET' LAMP BLACK." (For Lampblacks and Colors.) THE L. MARTIN COMPANY, New York, N. Y. Filed February 25, 1904.

10,852.—*Title:* "'XXX' PRESERVALINE." (For a Preservative and Colorant.) THE PRESERVALINE MANUFACTURING COMPANY, New York, N. Y., and Chicago, Ill. Filed February 23, 1904.

10,853.—*Title:* "GREEN TRADING STAMP BRAND FOR GROCERIES." (For Groceries.) THE SPERRY & HUTCHINSON Co., New York, N. Y. Filed February 26, 1904.

10,854.—*Title:* "PREFERRED HAM." (For Ham.) ARMOUR PACKING Co., Kansas City, Kans. Filed February 27, 1904.

10,855.—*Title:* "TRISCUIT." (For Bread.) THE NATURAL FOOD Co., Niagara Falls, N. Y. Filed March 1, 1904.

10,856.—*Title:* "JERSEY BUTTERS." (For Biscuits.) ONTARIO BISCUIT COMPANY, Buffalo, N. Y. Filed February 25, 1904.

10,857.—*Title:* "ONTARIO SODA BISCUIT." (For Biscuits.) ONTARIO BISCUIT COMPANY, Buffalo, N. Y. Filed February 25, 1904.

10,858.—*Title:* "PREMIUM BRAND." (For Butter.) CARL SCHALLINGER, Hutchinson, Minn. Filed February 25, 1904.

10,859.—*Title:* "PREMIUM BRAND." (For Butter.) CARL SCHALLINGER, Hutchinson, Minn. Filed February 25, 1904.

10,860.—*Title:* "PREMIUM BRAND." (For Butter.) CARL SCHALLINGER, Hutchinson, Minn. Filed February 25, 1904.

10,861.—*Title:* "WEAVER 'QUARTETTES.'" (For Butter.) C. H. WEAVER & Co., Chicago, Ill. Filed February 26, 1904.

10,862.—*Title:* "HOME." (For Condensed Milk and Evaporated Cream.) AMERICAN CONDENSED MILK Co., Ltd., Jackson, Mich. Filed February 18, 1904.

10,863.—*Title:* "COAN & HARBIN'S KOKE." (For a Beverage.) BLUFF CITY BOTTLING Co., Memphis, Tenn. Filed February 23, 1904.

10,864.—*Title:* "RED AND WHITE." (For Beer.) ADOLF WILMANNS, Milwaukee, Wis. Filed February 23, 1904.

10,865.—*Title:* "'AMERICAN CLUB' BRANDY." (For Cognac.) GEORGE SAYER & Co., Cognac, France. Filed February 23, 1904.

10,866.—*Title:* "P M BEST 10 YEAR OLD MARYLAND RYE WHISKEY." (For Whisky.) PHILLIP MALKAN, Chicago, Ill. Filed February 23, 1904.

10,867.—*Title:* "CONGRESS HOTEL CO. ANNEX BOURBON." (For Whisky.) CONGRESS HOTEL COMPANY, Chicago, Ill. Filed February 15, 1904.

10,868.—*Title:* "PRAIRIE BLOSSOM." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,869.—*Title:* "LA FAMA CUBANA DE TABACOS." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,870.—*Title:* "RACE KING." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,871.—*Title:* "VISTA HERMOSA." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,872.—*Title:* "GOLD SHARE." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,873.—*Title:* "COUNTRY TRADE." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,874.—*Title:* "DIVIDEND PAYER." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,875.—*Title:* "SAIL AND RAIL." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,876.—*Title:* "PLAINS MONARCH." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,877.—*Title:* "STARTWELL." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,878.—*Title:* "FLOR FINA CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,879.—*Title:* "HABANA CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,880.—*Title:* "EXQUISITOS CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,881.—*Title:* "PUROS FINO CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,882.—*Title:* "FINO CIGAR." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,883.—*Title:* "FINO CIGAR." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,884.—*Title:* "FLOR FINA CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed February 26, 1904.

10,885.—*Title:* "PETER'S FACE HARDENER." (For Toilet Preparation.) AUGUSTUS D. PETERS, Toledo, Ohio. Filed February 25, 1904.

10,886.—*Title:* "SCALPIA." (For Dandruff Cure.) WESTCHESTER DRUG CO., Port Chester, N. Y. Filed February 25, 1904.

10,887.—*Title:* "JOHNNY MACK MAHON'S RATTLESNAKE OIL." (For Medicine.) JOHN MACK MAHON, Gloucester City, N. J. Filed February 11, 1904.

10,888.—*Title:* "SLOAT'S DISTEMPER CURE." (For Medicine.) GEORGE V. SLOAT, Jr., Southampton, N. Y. Filed February 24, 1904.

# PRINTS

## REGISTERED MARCH 22, 1904.

934.—*Title:* "MEN'S APPAREL." (For Men's Apparel.) W. C. BOTH, Chicago, Ill. Filed February 23, 1904.

935.—*Title:* "MEN'S APPAREL." (For Men's Apparel.) HAYS, LEVI & CO., New York, N. Y. Filed February 25, 1904.

936.—*Title:* "LADIES' APPAREL." (For Ladies' Apparel.) MEYER-BOTH CO., Chicago, Ill. Filed February 23, 1904.

937.—*Title:* "ARTISTIC FOOTWEAR FOR WOMEN." (For Footwear.) ORAN MCCORMICK, Boston, Mass. Filed February 26, 1904.

938.—*Title:* "RADCLIFFE SHOE." (For Shoes.) THE RADCLIFFE SHOE CO., Boston, Mass., and Norway, Me. Filed February 25, 1904.

939.—*Title:* "EGG CHOCOLATES." (For Candy.) CHARLES A. ROACH, St. Paul, Minn. Filed February 25, 1904.

940.—*Title:* "THE AMERICAN GIRL." (For Candy.) CHARLES A. ROACH, St. Paul, Minn. Filed February 25, 1904.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### STURGIS *v.* HOPEWELL.

*Decided February 2, 1904.*

1. INTERFERENCE—MOTION TO DISSOLVE—TRANSMISSION.

Where a motion for dissolution was brought twenty-three days after the expiration of the twenty days allowed by Rule 122 and the reason given for delay is that the reference on which the motion is based was not found until after the expiration of the time allowed by the rule and it does not appear that the reference was not found in its expected place or that any attempt had been made to find the reference within the time allowed by the rule, *Held* that the Examiner of Interferences properly refused to transmit the motion.

2. SAME—SAME—SAME—DELAY IN BRINGING MOTION.

A motion to dissolve an interference will not be transmitted to the Primary Examiner after the twenty days fixed by the rule merely because no testimony has been taken. Good reasons must be shown for the delay. (*Arbetter* v. *Lewis*, 99 O. G., 1383, distinguished.)

3. SAME—SAME—SAME.

The transmission of motions for dissolution brought after the twenty days allowed by Rule 122, but before testimony is taken, without satisfactory showing of reasons for delay would nullify the provisions of the rule in this respect.

4. SAME—SAME—SAME—UNAVOIDABLE DELAY.

Motions to dissolve generally involve delay, which is often useless and vexatious. It is desirable that they be brought as soon as possible, and twenty days seems to be sufficient time for that purpose when not prevented by circumstances of a compelling nature.

5. SAME—SAME—SAME—RULE 126—DECISION OF EXAMINER OF INTERFERENCES NOT DISTURBED EXCEPT WHERE ABUSE OF DISCRETION.

Rule 126 provides sufficiently for the consideration of matters which might have been made the basis of motion under Rule 122, but which were not so presented, and the action of the Examiner of Interferences transmitting or refusing to transmit a motion brought after the twenty days allowed by the rule will not be disturbed except where there has been an abuse of discretion or his action is clearly erroneous.

APPEAL on motion.

CURTAIN-FIXTURES.

Application of Herbert M. Sturgis. Application of Frank B. Hopewell.

*Messrs. Higdon, Longan & Hopkins* for Sturgis.
*Messrs. Crosby & Gregory* for Hopewell.

ALLEN, *Commissioner:*

This is an appeal by Sturgis from the decision of the Examiner of Interferences refusing to transmit to the Primary Examiner his motion to dissolve the interference.

The motion is based upon the ground that the issues are not patentable in view of numerous structures and patents in the prior art, and particularly Patent No. 727,378 to Keeler. The motion was brought twenty-three days after the expiration of the twenty days allowed by Rule 122 for filing such motions. The only reason given why the motion was not brought earlier and within the time prescribed is that the patent to Keeler was not called to the attention of the moving party or his counsel until the 4th day of December, 1903, or sixteen days after the expiration of the twenty days within which the motion should have been brought. It does not appear that the patent to Keeler was improperly classified or not to be found in its expected place or that any attempt had been made on the part of Sturgis to find this patent or similar references within the twenty days, or before the date December 4, 1903, when the reference was found.

The Examiner of Interferences properly refused to transmit the motion under these circumstances. As stated in *Niedringhaus* v. *Marquard* v. *McConnell*, (101 O. G., 1610,) where the motion was not made within the proper time—

it is upon the moving party to show that it could not have been earlier made,

or, as in *Latham* v. *Force and Parenteau*, (82 O. G., 185)—

the delay which will be excused must be caused by circumstances which have something of a compelling power.

In *Lipe* v. *Miller*, (105 O. G., 1532,) referring to affidavits filed in excuse of a delayed motion for dissolution, it was said:

The affidavit accompanying Miller's motion is defective in that it does not appear therefrom that the patents on which he relies to anticipate the issue could not have been obtained earlier by the exercise of reasonable diligence. This alone is sufficient ground for denying the motion,

and in *Wilcomb* v. *Lasher*, (101 O. G., 666:)

It is not explained by Wilcomb or his attorneys why the search which resulted in finding the new references was not made earlier. So far as appears, the patents now relied upon were discovered in the place where they would naturally be expected to be found and that if careful and diligent search had been made in connection with the first motion for dissolution they would have been found at that time.

The appellant attempts to distinguish the present case from those cited above and bring the same under the decision on this subject in *Arbetter* v. *Lewis*, (99 O. G., 1383.) It is urged that the delay has not been great, that no testimony has been taken, and that this is the first time such a motion has been brought in this case. It does not appear that the decision in *Niedringhaus* v. *Marquard* v. *McConnell*, *supra*, was based on any of these grounds. On the other hand, in *Arbetter* v. *Lewis*

a previous motion by another party had been transmitted to the Primary Examiner which had not then been heard by him, and this, in addition to the fact that the delay was short and that the case had not progressed beyond the stage which interference proceedings usually reach within the first twenty days, warranted the transmission in that case.

As the appellant has made no satisfactory showing that the reference could not have been found before and the motion presented earlier, to grant his appeal would, in effect, nullify the clause in Rule 123 requiring such motions to be brought when possible within twenty days following approval of the preliminary statements. The appellant's contention leads to the position that transmission of such motions should not be limited to twenty days, but should be permitted, as a matter of course, at any time before testimony has been taken. Such variation of the present practice is not deemed advisable. Motions to dissolve generally involve delay, which is often useless and vexatious. It is desirable that they be brought as soon as possible, and twenty days seems to be sufficient time for that purpose when not prevented by circumstances of a compelling nature.

Rule 126 provides sufficiently for the consideration by the Office on its own motion of matters which might have been made the basis of the motion mentioned in Rule 122, but which were not so presented, (*Wethey* v. *Roberts*, 84 O. G., 1586,) and the action of the Examiner of Interferences transmitting or refusing to transmit a motion brought after the twenty days allowed by the rule will not be disturbed except when there has been an abuse of discretion or his action is clearly erroneous. (*Winter* v. *Slick* v. *Vollkommer*, 97 O. G., 1837.)

The decision of the Examiner of Interferences refusing to transmit the motion to dissolve is affirmed.

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## EX PARTE DAVIS.

*Decided February 6, 1904.*

DIVISIONAL APPLICATION—REQUIREMENT BY OFFICE—DOUBTS RESOLVED IN FAVOR OF APPLICANT.

Where an applicant divides his application upon a requirement of the Office and after one division has become a patent some question is raised whether there is a proper line of division and whether the second case should not be rejected upon the patent, *Held* that any and all doubts should be resolved in favor of the applicant. The Office should not by contradictory rulings deprive the applicant of substantial rights.

ON petition.

MACHINE FOR AUTOMATICALLY VENDING ELECTRIC SHOCKS.

*Messrs. Elliott & Hopkins* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner rejecting the claims in the above-entitled application upon Patent No. 665,539, granted to the applicant.

The Examiner's action was a rejection of the claims, and under the settled principles of practice it is appealable to the Examiners-in-Chief and is not reviewable upon petition. The present petition would therefore be dismissed without further comment if it were not for the fact that it is set forth in the petition that the applicant has been subjected to a peculiar hardship by a mistake of the Office in requiring division.

It is said that in the patented case the applicant was required to make a division between the subject-matter which appears in the patent and the subject-matter which is covered by the claims in the present application. He made that division, filing the present case, and the first application went to patent. The Examiner thereupon rejected the present claims upon the ground that there is no proper line of division between them and the matter contained in the patent. The Examiner has not in his answer discussed the question whether the present claims cover the matter required to be divided out of the first case; but if they do the applicant is certainly entitled to very liberal consideration of them. It is believed under the circumstances that the courts would go far to sustain such claims and would give great weight to the fact that the Office required that they be presented separately. The Examiner should resolve any and all doubts in the applicant's favor, since the applicant should not be deprived of adequate protection by contradictory rulings by the Office, except where it is beyond question that the patent if granted would be invalid.

It may be noted that the Examiner who has acted upon the present application is not the one who made the requirement for division.

The petition is dismissed.

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## EX PARTE STUART.

*Decided February 6, 1904.*

FINAL REJECTION—REASONABLE RIGHT OF AMENDMENT—PRACTICE.

Where the application covers a complicated machine and includes many claims and the applicant in apparent good faith amends every claim in the effort to make them allowable, *Held* that the Examiner should not finally reject the claims in the second action in the case on the ground that they are not changed. The applicant should have a reasonable opportunity to get his claims into allowable condition.

ON petition.

HORIZONTAL BAND-SAW.

*Mr. R. C. Wright* and *Mr. F. E. Stebbins* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner refusing to admit amendments after the date of his final rejection of June 5, 1903.

The application covers quite a complicated machine, and five sheets of drawings were necessary to illustrate it. As filed it included six claims, and in his first action, dated February 21, 1903, the Examiner rejected each of those claims upon references. On April 30, 1903, the applicant amended each one of the claims and presented a long argument, pointing out wherein he thought that the claims avoided the references. In reply the Examiner on June 5, 1903, required the applicant to rewrite the claims "in view of the multiplicity of





amendments" which he had made to the claims, and at the same time he informed the applicant that the amended claims "do not vary at all in substance and are not seen to avoid the former references." In this letter he finally rejected the claims and thereafter refused to enter amendments.

The final rejection was premature and should not be adhered to. As above stated, the applicant promptly amended every claim, and there is every evidence that he was proceeding in good faith to get the claims into allowable condition. He should not be cut off from the right of amendment in such a summary way in a complicated case like this even if the amendments did not, in fact, change the claims in substance, since it is the policy of the Office to give applicants every reasonable opportunity to get their claims into allowable condition. It is by no means clear that the amendment of April 30 did not change the claims in substance, since a mere inspection of the amended claims indicates that they do present a different idea of means. It is not of consequence whether or not the amendment avoids the references that had been cited, and that question is not presented for determination.

The petition is granted.

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## EX PARTE VAN HORN & SAWTELL.

*Decided February 19, 1904.*

1. TRADE-MARKS—APPLICANT'S SURNAME—SALIENT FEATURE.

The word "Van Horn" associated with a ram's forehead with horns *Held* not registrable as a trade-mark, since the salient feature of the mark is the surname of one of the applicants.

2. SAME—SAME—RELATIVE OBSCURITY OF NAME.

An applicant's name cannot be included as feature of a registered trade-mark unless it is reduced to a position of relative obscurity.

ON appeal.

TRADE-MARK FOR SURGICAL SUPPLIES.

Application filed May 9, 1903, No. 68,265.

*Messrs. Schreiter & Mathews* for the applicants.

ALLEN, *Commissioner:*

This is an appeal from an action of the Examiner of Trade-Marks refusing to register a trade-mark for surgical dressings and suture materials which—

consists of the conventional representation of a ram's forehead with horns associated with the word "Van Horn."

The name Van Horn is a common surname and one of the salient features of the corporate name. There is no contention on behalf of the appellant that this surname as such is registrable as a trade-mark, but it is contended that by being associated with the ram's horns this common surname is reduced to a position of relative obscurity, and therefore that the entire mark is a proper subject for registration.

The Examiner states that the ram's horns alone are believed to be registrable. The case is therefore one where the trade-mark is made up of two features—first the name "Van Horn," which is acknowledged not to be alone a proper subject for registration, and, second, the ram's horns, which are a proper subject for registration. Such a question arose in *ex parte Tabor*, (96 O. G., 1036,) in which it was sought to register the surname "Tabor" with a Latin cross. In this case I held:

The mark disclosed consists of two independent essential features—the cross, which is probably registrable, and the applicant's name, which is not registrable. The name cannot properly be included as an essential feature of a registered mark.

It also arose in *ex parte Cobb*, (103 O. G., 1913,) where it was sought to register the word "Cobb's" extending across a pair of crossed corncobs. The circumstances of this last case are very similar to the appellant's, where it is sought to use the word "Horn" upon a ram's horn. It was held in this case, however, that the word "Cobb's" was not reduced to a position of relative obscurity by having it extend across a pair of crossed corncobs, so in this case it is held that the name Van Horn is not reduced to a position of relative obscurity by being placed on a ram's horn, and therefore the decision of the Examiner of Trade-Marks refusing to register such mark is affirmed.

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## EX PARTE CHARLES A. MASTERS & COMPANY.

*Decided February 20, 1904.*

TRADE-MARK—"YALE"—GEOGRAPHICAL WORD—PROPER NAME.

*Held* that the word "Yale" has a geographical significance, and being a common surname is not such an arbitrary word as would make it the sole property of any one individual, and its registration as a trade-mark should be refused. (*Ex parte Peats*, 96 O. G., 1649.)

ON appeal.

TRADE-MARK FOR HOSIERY AND UNDERWEAR.

Application for registration filed November 16, 1903, No. 69,506.

*Mr. F. B. Brock* for the applicants.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the word "Yale" as applied to hosiery.

The question whether this word is a proper subject for a trade-mark was passed upon in *ex parte Peats*, (96 O. G., 1649,) in which it was held:

The word "Yale" is not an arbitrary word. It is true that to many people it would signify the great university at New Haven, Conn., named in honor of the historic personage Elihu Yale. The word "Yale" has, however, a geographical significance and is also a more or less common surname. Each of these facts has been shown to be true by the Examiner. It is clear, then, that the word "Yale" is not such an arbitrary word as would make it the sole property of any one individual.

The word "Yale" corresponds in all respects to the word "Bowdoin," which was refused registration as a trade-mark for coffee by Mr. Commissioner Duell in *ex parte Shaw, Hammond, and Carney*, (68 MS. Dec., 229.)

As this case corresponds in all respects to the case cited, the action of the Examiner in refusing to register the word "Yale" as applied to hosiery was right, and it is affirmed.

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## MCBRIDE *v.* KEMP.

*Decided March 3, 1904.*

1. SUSPENSION OF INTERFERENCE—INFRINGEMENT SUIT PENDING.

Where one of the parties to the interference is a patentee and he has brought suit in the courts against the other party for infringement, *Held* that the pendency of such suit is no reason for suspending the interference until its conclusion.

2. SAME—INTERFERENCE MUST PROCEED REGULARLY.

An interference is the only proceeding provided by law for directly determining which of two claimants is the first inventor, and such interference must proceed in a regular and orderly way without regard to any collateral investigation of that matter in a suit pending in the courts.

APPEAL on motion.

FEED MECHANISM FOR CARDING-MACHINES.

Application of Patrick L. McBride. Patent granted Harry Kemp January 13, 1903, No. 718,130.

*Mr. Albert M. Moore* and *Mr. Marcellus Bailey* for McBride.

*Messrs. Roberts & Mitchell* and *Mr. A. V. Cushman* for Kemp.

ALLEN, *Commissioner:*

This is an appeal by Kemp from the decision of the Examiner of Interferences denying his motion to suspend proceedings in the above-entitled interference.

The motion asked—

* * * that further proceedings in said interference be suspended until the final determination of the cause of Harry Kemp *v.* Patrick L. McBride now pending in the Circuit Court of the United States, District of Massachusetts, in Equity, No. 1708, and until the final determination of said cause in the Circuit Court of Appeals for the First Circuit in case said cause shall be appealed.

The present interference is between a patent granted to Kemp and an application subsequently filed by McBride, and it is said that the above-noted suit was brought by Kemp for an injunction restraining McBride from infringing his patent. It is further said—

that the issue in said action is that of priority of invention between said Kemp and said McBride.

The suggestion is made that the suit calls for the production of the same evidence which would be necessary in this interference and that to compel the parties to produce that evidence in the two proceedings would be an unnecessary hardship. The appellant, Kemp, assumes that the decree in the suit would be regarded by this Office as controlling in the interference and would warrant judgment without the taking of testimony.

In bringing this motion Kemp seems to have overlooked the fact that the statutes designate the tribunals of the Patent Office as the ones to determine the question of priority of invention between a patentee and an applicant claiming the same invention. This is by an interference proceeding. (Sec. 4904, Rev. Stats.) No other direct proceedings are provided for determining this question. It is true that when suit is brought on a patent under section 4920, Revised Statutes, as in the present case, the defendant may show as his defense that the patentee is not the first inventor and in doing so may produce evidence that he himself is the first inventor. It is clear, however, that in such suit the question directly at issue is not whether the patentee is the first inventor, and if any ruling is made upon that subject it is only incidentally and a collateral matter influencing the judgment upon the question at issue. It is apparent, therefore, that by this motion Kemp is attempting to substitute for the direct procedure fixed by statute for determining the question an indirect procedure, in which if the matter is determined at all it is only as a collateral matter. This is contrary to sound reason and is therefore not permissible.

It is possible that the evidence taken in the suit may have a bearing upon the question here directly involved and that the same evidence would be admissible here; but that does not avoid the necessity for conducting the interference in a regular and orderly way.

No reason is seen for suspending proceedings in this interference, and therefore the decision of the Examiner of Interferences is affirmed.

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## IN RE PATTERSON.

*Decided March 5, 1904.*

1. APPLICATION—PETITION TO INSPECT.

Where a party in interference testifying in his own behalf refers to his earlier application not in interference and its subject-matter, *Held* that the petition of his opponent to inspect said application will be granted.

2. SAME—SAME.

A party in interference cannot by referring to his application not in interference take advantage of allegations of fact and at the same time invoke the rule of secrecy to deprive his opponent of the means of controverting those facts or discrediting him.

3. SAME—SAME.

Where a party in interference refers to his application not in interference to establish allegations of fact, the right of his opponent to inspect this application exists without regard to any supposed identity of its subject and that of the case in interference.

IN the matter of the petition of William J. Patterson for permission to inspect the file of an application of Frank E. Johnson.

*Messrs. Kay & Totten* for the petitioner.

*Mr. James N. Cooke* and *Mr. W. B. Corwin* for Johnson.

ALLEN, *Commissioner:*

This is a petition by Patterson that he be granted permission to inspect the file of an application filed by Johnson on the 3d day of February, 1902.

An interference is in progress between another application of Johnson and a patent to Patterson. It appears that during the direct examination of Johnson in this interference as a witness in his own behalf reference was made to Johnson's application of February 3, 1902, which Patterson now wishes to inspect.

Patterson refers to this application as abandoned, while Johnson states that it is still pending; but whether it is one or the other is immaterial to the present question.

Johnson mentioned the application and referred to its subject-matter when testifying, and therefore is not entitled to invoke the rule of secrecy as against his opponent, who wishes to investigate his allegations. He cannot take advantage of his allegations of fact and at the same time deprive his opponent of the means of controverting those facts or discrediting him. Patterson is clearly entitled to see the application.

Johnson suggests that to permit Patterson to see his other application would be to rule, in effect, that it covers the same invention as that here in





controversy, whereas the Office has already made a contrary ruling; but in this suggestion Johnson is mistaken, since Patterson's right to see the application exists without regard to any supposed identity of the subject-matter of the applications.

The petition is granted.

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## EX PARTE ALLEN.

*Decided March 5, 1904.*

1. RECOMMENDATION BY THE EXAMINERS-IN-CHIEF—CASE REFERRED TO THE PRIMARY EXAMINER.

Where the Examiners-in-Chief award priority to an applicant in interference, but state reasons why they do not regard the issue to be patentable, and the Primary Examiner agrees with the Examiners-in-Chief and rejects the claims, but after amendments and affidavits becomes convinced that the claims are allowable, *Held* that the case should not be referred to the Commissioner for decision. (*Snider* v. *Bunnell*, 103 O. G., 890, distinguished.)

2. SAME—SAME.

The Primary Examiner is a tribunal created by law to pass upon questions of patentability in the first instance, and his favorable decision will not generally be reviewed. The exception to this rule which is directed in the case of *Snider* v. *Bunnell* does not extend to a favorable conclusion of the Primary Examiner based on amendments and affidavits filed subsequent to an adverse recommendation of the Examiners-in-Chief.

ON reference.

VALVE.

*Messrs. Chamberlin & Wilkinson* for the applicant.

ALLEN, *Commissioner:*

This application comes up for consideration upon reference by the Primary Examiner.

The Examiners-in-Chief awarded priority to the present applicant in the interference *Morgan* v. *Allen*, No. 21,769, but included in their decision a statement of reasons why they did not regard the issues to be patentable. The decision on priority became final, and this application was returned to the Primary Examiner for consideration of the questions raised by the Examiners-in-Chief. The Primary Examiner came to the same conclusions as the Examiners-in-Chief and rejected the claims. Several actions followed, in the course of which all the claims were amended and affidavits were filed to overcome the rejection. The Primary Examiner is now of the opinion that the claims are allowable. He states that as his final conclusions in this respect are in apparent conflict with the statements of the Examiners-in-Chief the case is referred to me for decision under the practice outlined in *Snider* v. *Bunnell*, (103 O. G., 890.)

In the case of *Snider* v. *Bunnell* the conclusions of the Primary Examiner upon questions remanded to him were directly opposed to the opinion upon the same questions previously announced by the Examiners-in-Chief in the statement accompanying their decision on priority. Under such circumstances the Examiner should refer the case to the Commissioner for decision.

But in the present case when remanded the Primary Examiner agreed with the conclusions of the Examiners-in-Chief and rejected the claims on the grounds to which their statement called attention. His final decision that the claims are allowable is based upon subsequent amendments, affidavits, and arguments, so that the questions passed upon and the facts considered by him are not those which were before the Examiners-in-Chief and which in their opinion required an adverse decision on the patentability of the claims. The final conclusion of the Examiner in this case is not a conflicting decision upon questions previously considered by the higher tribunal, but rather a favorable decision upon questions of patentability presented to the Office for the first time. The Primary Examiner is a tribunal created by law to pass upon questions of patentability in the first instance, and his favorable decisions will not generally be reviewed. The exception to this rule which is directed in the case of *Snider* v. *Bunnell*, *supra*, is based upon conditions which do not appear in the present case.

This case is returned to the Primary Examiner for such action as in his judgment is requisite.

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## BROWN *v.* LINDMARK.

*Decided March 5, 1904.*

1. APPEAL—FAVORABLE DECISION ON PATENTABILITY.

Where after decision by the Examiners-in-Chief holding the issues patentable B. contends that they are not, in fact, patentable unless amended, *Held* that the affirmative decision of the Examiners-in-Chief upon the patentability of the issues is final and will not be reviewed on appeal.

2. INTERFERENCE—MOTION—RETURN TO PRIMARY EXAMINER.

Where the issues are the claims of both parties and have been held patentable by the Examiners-in-Chief upon appeal on motion to dissolve and it appears from B.'s preliminary statement that he cannot prevail over L.'s record date, *Held* that the Examiner of Interferences properly denied B.'s motion to return the case to Primary Examiner for the consideration of interference in fact and re-formation of the issues in connection with the decision of the Examiners-in-Chief.

3. SAME—SAME—JUDGMENT ON RECORD.

Where L. moved for judgment on the record and B. moved that L.'s motion be dismissed, *Held* that the Examiner of Interferences properly denied B.'s motion, as L. had the right of appeal from the decision on his motion for judgment.

4. SAME—SAME—SAME—FOREIGN APPLICATION—JUDGMENT NOT DELAYED TO TAKE TESTIMONY.

Where the senior party moves for judgment on the record and his record date is prior to the date of introduction of the invention into this country set up in the preliminary statement of his opponent, *Held* that judgment will not be delayed solely that the junior party may take testimony concerning a foreign application which in the opinion of the Office cannot affect the result.

5. SAME—TESTIMONY—ACT OF MARCH 3, 1903.

Where B.'s preliminary statement goes back of L.'s record date only by reference to foreign applications and B.'s domestic application was filed prior to the act of March 3, 1903, *Held* that judgment will not be delayed solely that B. may take testimony concerning the foreign applications. (*Stiff* v. *Galbraith*, 107 O. G., 2532, distinguished.)

APPEAL on motion.

TURBINE.

Application of Charles E. L. Brown. Application of Fore G. E. Lindmark.

*Mr. Ellis Spear* for Brown.

*Mr. Park Benjamin* for Lindmark.

ALLEN, *Commissioner:*

This case comes before me on petition by Lind-

mark that the Examiner of Interferences be directed to render judgment on the record and on appeal by Brown from the action of the Examiner of Interferences refusing Brown's motion to remand the case to the Primary Examiner for further consideration.

Brown's appeal will be considered first. His motion before the Examiner of Interferences is as follows:

First, that the motion of Lindmark for judgment on the record be dismissed, and

Second, that the case be remanded to the Primary Examiner, in order that the limitations to the claims suggested by the Board of Examiners-in-Chief in their decision of December 22nd, 1903, may be inserted in the counts of the issue and their effect on this interference considered, and for such action as the Primary Examiner may deem right and proper.

The Examiner of Interferences properly denied the first clause of this motion on the ground that Lindmark had the right of appeal from the decision on his motion for judgment.

In the consideration of the second clause of this motion the following facts appear: After the approval of the preliminary statements and within the time allowed for such purposes Lindmark moved to dissolve the interference on the ground of non-interference in fact. The Primary Examiner denied this motion, but held that the issues were not patentable in view of new references which had been brought to the attention of the parties and considered at the hearing on the motion for dissolution. Lindmark appealed to the Examiners-in-Chief on the patentability of the issues, and they reversed the Primary Examiner, stating that the devices of each count must be such as to effect a certain result or operation which they recite. It is in view of this decision that Brown moves for the return of the case to the Primary Examiner. He contends that the issues are not patentable unless amended or construed in accordance with the decision of the Examiners-in-Chief and that if so construed they will not apply to his device. He urges on the appeal that the merits of the case be considered to see whether or not there is an interference in fact on the issues as interpreted by the Examiners-in-Chief and that the question of their novelty be further considered in connection with the constructions of both parties.

The patentability of the issues was decided affirmatively by the Examiners-in-Chief. Their affirmative decision on this question is final and will not be reviewed on this appeal; nor will the case be remanded to the Primary Examiner to re-form the issues or reconsider the question of interference in fact, as it does not appear that this can lead to any useful result. The issues are claims made originally by Lindmark, which were suggested to and adopted by Brown for the purpose of declaring this interference. It has been decided, and finally, that they are patentable in Lindmark's application. It is of no consequence whether they are or are not patentable to Brown or whether other issues might be formulated, as the earliest dates set up in Brown's preliminary statement which could be considered in the determination of priority do not overcome Lindmark's record date. This appears more fully in the following consideration of Lindmark's petition.

The action of the Examiner of Interferences denying Brown's motion to remand the case to the Primary Examiner is affirmed.

The petition filed by Lindmark is equivalent to an appeal from the action of the Examiner of Interferences refusing his motion for judgment on the record. It appears that both parties are foreigners and that the date of introduction of the invention into this country alleged in the preliminary statement of Brown is subsequent to Lindmark's filing date. Brown, however, in his preliminary statement alleges that he filed applications abroad and, among others, one in Switzerland, which is prior to Lindmark's record date; but Brown's application in the United States was prior to the act of March 3, 1903, which amended section 4887 of the Revised Statutes so as to permit inventors under certain circumstances to take advantage of the filing dates of foreign applications.

In the case of *Stiff* v. *Galbraith*, (107 O. G., 2532,) upon which the Examiner of Interferences based his decision, it was stated that the second clause of section 4887, Revised Statutes, was apparently not intended to have, and should not be given, a retroactive effect. Nevertheless, a motion for a commission to take testimony abroad to prove the filing of an application in England was granted in that case, although the domestic application was filed before the statute was amended. The reasons for this action are given in the decision, as follows:

The opinion of this Office as to the competency of the evidence in regard to the English application is not conclusive, however, of the appellant's rights. This Office is not the final authority in interferences, since an appeal may be taken to the Court of Appeals of the District of Columbia. The foreign application is undoubtedly relevant and material, provided it has the legal effect which Galbraith contends that it has under amended section 4887, Revised Statutes. He is entitled to the opinion of the court of appeals as well as the opinion of this Office as to his rights under that section, and this he cannot secure unless he is permitted to prove his English application. The question is an important one and has not been decided by any court. Under the circumstances it must be held that Galbraith should be permitted to prove his foreign application.

In those cases where testimony is to be taken other than that respecting the foreign application or where, so far as appears, such other testimony may be taken the reasoning of *Stiff* v. *Galbraith* applies and proof of the foreign application should also be permitted until the effect thereof has been passed upon by the courts. The case is different when the only testimony that can be taken is that to prove the foreign patent. When such is the case and the record date of the senior party is prior to the date of introduction of the invention into this country set up in the preliminary statement of his opponent, judgment should be rendered at once. The decision will not be delayed solely that the junior party may take testimony which, in the opinion of the Office, cannot affect the result.

The action of the Examiner of Interferences denying Lindmark's motion for judgment is reversed.



Patents Nos. 755,601 to 756,197.

THE

# OFFICIAL GAZETTE

OF THE

# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 109—No. 5. TUESDAY, MARCH 29, 1904. PRICE—$5 per year.

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| Trade-Marks | 23 | No. 42,288 to No. 42,310, inclusive. |
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| Reissues | None. | |
| Total issue | 654 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 2 | | Nevada | | |
| Alaska Territory | | | New Hampshire | 2 | |
| Arizona Territory | 1 | | New Jersey | 25 | |
| Arkansas | 1 | | New Mexico Ter't'y | | |
| California | 21 | 1 | New York | 86 | 17 |
| Colorado | 3 | | North Carolina | 1 | |
| Connecticut | 21 | 1 | North Dakota | 3 | |
| Delaware | | | Ohio | 43 | 6 |
| District of Columbia | 7 | | Oklahoma Territ'y | 5 | 1 |
| Florida | 3 | | Oregon | 2 | |
| Georgia | 2 | | Pennsylvania | 43 | 4 |
| Hawaii Territory | | | Porto Rico | | |
| Idaho | 2 | | Rhode Island | 5 | |
| Illinois | 45 | 4 | South Carolina | 2 | |
| Indian Territory | 1 | | South Dakota | 3 | |
| Indiana | 13 | | Tennessee | 7 | |
| Iowa | 10 | 1 | Texas | 7 | |
| Kansas | 9 | 1 | Utah | 2 | |
| Kentucky | 5 | | Vermont | 2 | |
| Louisiana | 1 | | Virginia | 5 | |
| Maine | | | Washington | 1 | |
| Maryland | 7 | | West Virginia | 1 | |
| Massachusetts | 60 | 1 | Wisconsin | 6 | 2 |
| Michigan | 19 | 2 | Wyoming | | |
| Minnesota | 6 | 1 | U. S. Army | | |
| Mississippi | 3 | | U. S. Navy | | |
| Missouri | 29 | 2 | | | |
| Montana | 2 | | Total to citizens of the United States | 529 | 44 |
| Nebraska | 5 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Prints. | Countries. | Patents and Designs. | Trade-Marks and Prints. |
|---|---|---|---|---|---|
| Argentina | | | Netherlands | | |
| Austria-Hungary | 4 | | Newfoundland | | |
| Belgium | | | New South Wales | | |
| Brazil | | | New Zealand | | |
| British West Indies | | | Norway | 1 | |
| Canada | 18 | | Queensland | 1 | |
| Cape Colony | | | Roumania | | |
| Chile | | | Russia | | |
| China | | | San Salvador | | |
| Costa Rica | | | Scotland | 4 | |
| Cuba | | 1 | South Africa | | |
| Denmark | 1 | | Spain | | 2 |
| Ecuador | | | Sweden | 1 | |
| England | 18 | 1 | Switzerland | | 1 |
| France | 5 | | Transvaal, South Africa | | |
| Germany | 17 | 2 | Turkey | 1 | |
| India | 1 | | Victoria | 2 | |
| Ireland | 2 | | Western Australia | | |
| Italy | 1 | | | | |
| Japan | 1 | | Total to citizens of foreign countries | 74 | 7 |
| Java | | | | | |
| Mexico | 1 | | | | |

## Changes in Classification.

(ORDER No. 1,579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., March 11, 1904.*

The following changes in the classification of patents are hereby directed to take effect this day:

In Division XXXVII, class 173, Electricity, Conductors, establish the following subclasses:

Conduits—
284. Boxes, pipe connections,
285. Conductors bracket-supported,
286. Integral sections,
287. Joints,
288. Lining,
289. Plural pipes—
290. Bracket-supported,
291. Separable-wall—
292. Conductors bracket-supported,
293. Plural pipes,

House-wiring—
294. Outlet-boxes—
295. Adjustable-face,
296. Plugged inlets,
297. Removable-wall.

Abolish subclasses—

Conduits—
250. Junction and distributing boxes,
248. Cleaning and wire drawing,

and establish in lieu thereof the following subclasses:

Conduits—
Junction-boxes—
298. Thermal cut-outs,
299. Overground—
300. Panel-board type,
301. Underground—
302. Panel-board type,
306. Wire-drawing—
307. Creepers,
308. Motors,
309. Sectional rods.

Connectors—
Plugs—
310. Single-contact,
Wire-splices—
303. Beveled-clamp,
Sleeved—
304. Bent or upset end,
305. Crimped or twisted.

F. I. ALLEN,
*Commissioner.*

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business March 22, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. | | No. of applications awaiting action. |
|---|---|---|---|---|
| | | New. | Amended | |
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Mar. 7 | Mar. 9 | 160 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Feb. 27 | Feb. 27 | 267 |
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| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Feb. 23 | Mar. 8 | 246 |
| 244 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Feb. 23 | Mar. 8 | 271 |
| 172 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Feb. 23 | Mar. 8 | 158 |
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| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Feb. 23 | Mar. 8 | 225 |
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| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Feb. 23 | Mar. 4 | 271 |
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| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Feb. 23 | Feb. 23 | 272 |
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| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Feb. 17 | Feb. 23 | 216 |

*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. | | No. of applications awaiting action. |
|---|---|---|---|---|
| | | New. | Amended | |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Feb. 15 | Feb. 19 | 390 |
| 128 | II. Farm Products, etc., Lubricators, Presses, etc. | Feb. 15 | Jan. 27 | 316 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Feb. 12 | Jan. 6 | 383 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Feb. 9 | Feb. 11 | 300 |
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Feb. 8 | Feb. 23 | 241 |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Feb. 1 | Jan. 4 | 523 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Jan. 30 | Jan. 7 | 289 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Jan. 25 | Jan. 14 | 322 |
| | *Between two and three months.* | | | |
| 368 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Jan. 21 | Jan. 18 | 570 |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Dec. 24 | Dec. 2 | 409 |
| | Total number of applications awaiting action | | | 11,208 |
| | *Under one month.* | | | |
| | *Designs | Mar. 9 | Mar. 7 | 21 |
| | †Trade-Marks | Mar. 11 | Mar. 18 | 48 |
| | ‡Labels and Prints | Mar. 22 | Mar. 22 | .... |

### Withdrawal After Payment of Final Fee.

RULE 165. * * * When the final fee has been paid upon an application for Letters Patent, and the case has received its date and number, it will not be withdrawn or suspended from issue on account of any mistake or change of purpose of the applicant or his attorney, nor for the purpose of enabling the inventor to procure a foreign patent. * * *

### Errors in Letters Patent.

RULE 170. * * * Mistakes not incurred through the fault of the Office, and not affording legal grounds for reissues, will not be corrected after the delivery of the Letters Patent to the patentee or his agent. * * *

### Communications to the Patent Office—Separate Letters.

RULE 9. A separate letter should in every case be written in relation to each distinct subject of inquiry or application. Assignments for record, final fees, and orders for copies or abstracts must be sent to the Office in separate letters.

*Papers sent in violation of this rule will be returned.*

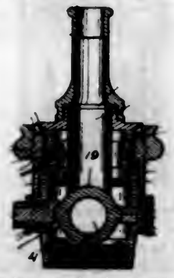
### Patents to Assignees.

RULE 200. In every case where it is desired that the patent shall issue to an assignee, the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 23.) The date of the record is the date of the receipt of the assignment at the Office.

# PATENTS

## GRANTED MARCH 29, 1904.

**755,601. HOSE-NOZZLE.** GUSTAF A. ANDERSON, Kansas City, Kans. Filed Nov. 18, 1902. Serial No. 131,809. (No model.)



*Claim.*—1. In a hose-nozzle, the combination with a tubular body provided with an outlet-opening and a valve-seat encircling the said outlet-opening, of a crank-shaft extending through one wall of the body at right angles to the axis of the body, a crank secured to the said crank-shaft, a screw mounted in the opposite wall of the body with its axis in line with the axis of the crank-shaft, and a rotatable valve having a hole diametrically therethrough in line with the said outlet-opening and at right angles to the crank-shaft, the said valve resting in the said valve-seat and supported at one side on the said screw and at the other side by the said crank-shaft with which the valve is rotatable, substantially as described.

2. The combination with a tubular body provided with an outlet-hole and a valve-seat encircling the said hole, the body being provided through opposite walls with two holes disposed axially in line with each other and at right angles to the axis of the body, one of the holes being screw-threaded, of a screw mounted in the said screw-threaded hole, a crank-shaft mounted in the opposite hole, a crank on said shaft, a packing-ring encircling the crank-shaft outside the body and provided with external screw-threaded periphery which engages the body, a cap mounted on the body and closing the said screw-threaded hole, and a valve in the body resting in the said valve-seat and supported at one side on the said screw and at the other side by the crank-shaft with which the valve is rotatable, the valve being provided with a diametrical hole therethrough at right angles to its axis, substantially as described.

3. In a hose-nozzle, the combination with a supporting-shell, of an inner shell mounted thereon and connecting interiorly therewith and provided with a discharge-opening at its upper end and having a plurality of radial holes therethrough and an annular peripheral groove connecting the outer ends of said holes, and having also an annular upwardly and outwardly beveled flange on its outer periphery and above the said annular groove, a ring-valve mounted on the upper end of the supporting-shell and encircling the inner shell toward the flange of which the ring-valve is adjustable, the said ring-valve forming with the inner shell a water-passage connecting with the said radial holes, a central vertical tube mounted in the outlet-opening of the inner shell, and a rotatable valve mounted in the supporting-shell and resting against the lower end of the said vertical tube, substantially as described.

4. In a hose-nozzle, the combination with a tubular body provided on its outer periphery with a beveled flange and having a central water-passage and a water-passage leading through the side wall below the flange, of a ring-valve encircling and adjustable upon the body toward and from the said flange and forming between the ring-valve and the body a water-passage connected with the aforesaid water-passage in the side wall, a valve controlling the central water-passage, and a rubber ring mounted on the ring-valve and adapted, when the ring-valve is properly adjusted, to be disposed opposite said flange, substantially as described.

5. In a hose-nozzle, the combination with a tubular body provided on its outer periphery with a flange having a beveled face and having a water-passage leading through the side wall of the body below the flange, of a tubular valve rotatively mounted upon the body and movable when rotated toward and from the said beveled face of said flange and forming with the body a water-passage connecting with the side-wall water-passage, and a resilient ring mounted upon and movable with the tubular valve and disposed so as normally to encircle said flange, substantially as described.

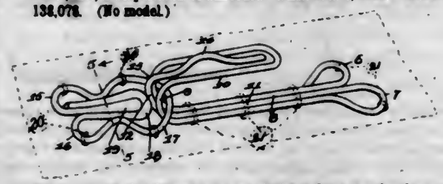
6. In a hose-nozzle, the combination with a tubular body comprising an upper and a lower shell detachably secured together, the upper shell being provided with a flange encircling its outer periphery and having a water-passage leading through the side wall, of a tubular valve rotatively mounted on the lower shell and movable when rotated toward and from the flange on the upper shell and forming with the upper shell a water-passage connected with the aforesaid water-passage, and a resilient ring mounted on said tubular valve and encircling said flange, substantially as described.

7. In a hose-nozzle, the combination with a tubular body provided on its outer periphery with an annular flange and provided with a central discharge-opening and a water-passage in its side wall below said flange, of a discharge-pipe fitted in said central opening and provided with a valve-seat at its inner end, a valve seated in said valve-seat, means for operating said valve, a ring-valve encircling said body and adjustable toward and from said flange and forming with said body a water-passage connected with the side-wall water-passage, and a resilient deflecting-ring mounted on said tubular valve and encircling said flange, substantially as described.

8. In a hose-nozzle, the combination with an upper shell provided with an annular flange on its outer periphery and provided with a central discharge-opening and a water-passage leading through its side wall, of a discharge-pipe fitted in said central opening and provided with a valve-seat at its inner end, a ring-valve encircling the said shell and adjustable toward and from said flange and forming with said shell a water-passage connected with the side-wall water-passage, a lower shell secured to the upper shell and upon which the said ring-valve is mounted, a rotatable valve seated in the valve-seat in said discharge-pipe, and means for rotating said rotatable valve, substantially as described.

9. In a hose-nozzle, the combination with a lower shell the upper end of which is externally and internally screw-threaded, of an upper shell fitted at its lower end to the internal screw-threads of the lower shell and provided with an annular flange on its outer periphery and a water-passage in its side wall below said flange and having also a central discharge-opening, a discharge-pipe fitted in said central discharge-opening and having a valve-seat at its inner end, a valve controlling said central discharge-opening and seated in said valve-seat, and a ring-valve fitted at its lower end to the externally-screw-threaded portion of the lower shell and movable when rotated toward or from the said flange, substantially as described.

**755,602. HOOK AND EYE.** CHRISTIAN ANDERSEN, St. Louis, Mo., assignor to Interlocking Hook and Eye Manufacturing Company, St. Louis, Mo., a Corporation of Missouri. Filed Jan. 6, 1903. Serial No. 138,078. (No model.)



*Claim.*—1. A hook and eye, consisting of an eye having a restricted opening; and a hook comprising: stitching-loops; a hook

member extending from the stitching-loops and forming a shank, a bend and a bill; a hump member extending from the stitching-loops, and having an offset at the bend, and having a yielding outwardly-projecting bend-hump, and having a yielding outwardly-projecting bill-hump; substantially as specified.

2. A hook and eye, consisting of an eye having a restricted opening; and a hook comprising: stitching-loops; a hook member extending from the stitching-loops and forming a shank, a bend and a bill; a hump member extending from the stitching-loops, and having a yielding outwardly-projecting bend-hump; and having a yielding outwardly-projecting bill-hump; substantially as specified.

3. A hook and eye, consisting of an eye; and a hook comprising stitching-loops; a hook member extending from the stitching-loops and forming a shank, a bend and a bill; a hump member extending from the stitching-loops, and having a yielding outwardly-projecting bill-hump; said eye comprising the stitching-loops 15 and 16; the eye-loop 17 connecting the outer ends of the stitching-loops, the restricting-bend 18 lying substantially in the plane of the loop 17 and being substantially concentric with the eye-loop; and the fastening-bar 19 running from the inner end of the loop 15 into the bend 18, said bend 18 and the bar 19 being rigidly connected together, thus making the eye-wire practically integral; so that when the hook is inserted into the eye, the members of the eye will scrape along the outer and inner surfaces of the bill of the hook, substantially as specified.

4. In a hook and eye, an eye comprising the stitching-loops 15 and 16; the eye-loop 17 connecting the outer ends of the stitching-loops, the restricting-bend 18 lying substantially in the plane of the loop 17 and being substantially concentric with the eye-loop; and the fastening-bar 19 running from the inner end of the loop 15 into the bend 18, said bend 18 and the bar 19 being rigidly connected together, thus making the eye-wire practically integral; so that when the hook is inserted into the eye, the members of the eye will scrape along the outer and inner surfaces of the bill of the hook, substantially as specified.

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**755,608. HOOK AND EYE.** CHRISTIAN ABERSOLD, St. Louis, Mo., assignor, by direct and mesne assignments, to Interlocking Hook and Eye Manufacturing Company, St. Louis, Mo., a Corporation of Missouri. Filed Feb. 24, 1902. Renewed Dec. 26, 1903. Serial No. 186,705. (No model.)

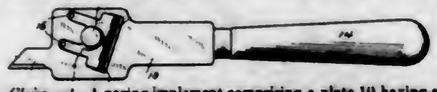


*Claim.*—1. In a hook and eye, a hook comprising a shank, a bend and a bill, composed of three substantially parallel bars, two of said bars being connected at the point of the bill and the free end of the third bar extending into the bill between the other two bars, said third bar having a hump extending outwardly from the bill of the hook; and a suitable eye to receive the hook, said eye having a restricted opening, the inner wall of which coacts with said hump, substantially as specified.

2. In a hook and eye, a hook comprising a shank, a bend and a bill, composed of three substantially parallel bars, two of said bars being connected at the point of the bill and the free end of the third bar extending into the bill between the other two bars, said third bar having a hump extending from the bill of the hook outwardly; and a suitable eye to receive the hook; said eye consisting of a wire bent to form a pair of stitching-loops, an eye-loop connecting the stitching-loops and forming an opening to receive the bill of the hook, and a restricting-bar connecting the opposite ends of the stitching-loops and extending into the eye-loop to engage the bill of the hook, said restricting-bar being in the same plane as the eye-loop, substantially as specified.

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**755,604. PARING IMPLEMENT.** ROBERT M. BABIN, Waterbury, Conn. Filed May 14, 1903. Serial No. 157,064. (No model.)



*Claim.*—1. A paring implement comprising a plate 10 having a slot, a plate 13 secured to plate 10 and carrying a cutting edge which projects through the slot and a set-screw threaded to engage plate 13 and bearing against plate 10, whereby the cutting edge may be adjusted, substantially as shown, for the purpose specified.

2. A paring implement comprising a plate 10 having a slot 11, a plate 13 secured to plate 10 in the rear of the slot and carrying a cutting edge projecting through the slot at an acute angle to the plates and having a slot 17 at the intersection of the cutting edge with plate 13 through which a paring may pass and a set-screw engaging plate 13 and bearing against plate 10.

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**755,605. TILTING BIN.** DUER F. BARNUM, Jersey City, N. J. Filed July 11, 1903. Serial No. 165,188. (No model.)



*Claim.*—1. A cabinet of bins comprising a frame, pivot-pins supported by the latter, bins pivotally mounted upon said pins, and a tilting latch adapted to normally engage the front swinging edge of the bin to hold the same within the frame and also to engage the rear edge of the bin when opened to hold the same within the frame, as set forth.

2. A cabinet of bins comprising a frame, each bin having a slotted side, pivot-pins supported by the frame and engaging said slots, a latch pivoted to the frame adjacent to the front of the bin and adapted to normally rest in the path of the swinging bin to hold the same locked, and designed, as the bin is opened, to hold the same within the frame, as set forth.

3. A cabinet of bins comprising a frame, bins, each of which has slotted sides, suitable socket-plates secured therein, pivot-pins carried by the frame and engaging said plates, a pivoted latch mounted upon the front of the frame and having a widened portion adapted to normally engage in the path of the swinging bin when closed, and adapted, when the bin is open, to engage the rear upper edge of the bin and hold the same in the frame, as set forth.

4. A cabinet of bins comprising a frame, bins therein, each of which is provided with slots in its opposite sides cut in from the bottom, socket-plates in said slots, pivot-pins supported by the frame and engaging said plates, a partition mounted parallel with the front face of the bin, a hook carried by the bin and engaging said partition, a gravity-latch pivoted in front of each bin and having a portion thereof projecting in the path of the bin, whereby the latter may be held locked when closed and hold the bin from withdrawal from the frame when open, as set forth.

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**755,606. CONVEYER SYSTEM.** CHARLES BENSCOTER, Chicago, Ill. Filed Apr. 28, 1902. Serial No. 154,243. (No model.)

*Claim.*—1. In a conveyer system, in combination, an endless traction-track, one portion of which is movable relatively to other portions thereof; and a cable-circuit on said traction-track.

2. In a conveyer system, in combination, two parallel stationary supporting structures; a stationary structure connecting one end of said parallel structures; a structure extending between said parallel structures and movable longitudinally thereof; an endless traction-track upon said structures; and a cable-circuit on said traction-track.

3. In a conveyer system, in combination, a stationary track comprising three parallel sections and a section uniting the two outer parallel sections; and a movable section uniting one of the outer parallel sections with the intermediate parallel section.

4. In a conveyer system, in combination, a stationary track comprising three parallel sections and a section uniting the two outer parallel sections; a movable section uniting one of the outer parallel sections with the intermediate parallel section; a cable-circuit on said stationary and movable sections; and means for traveling the cable.

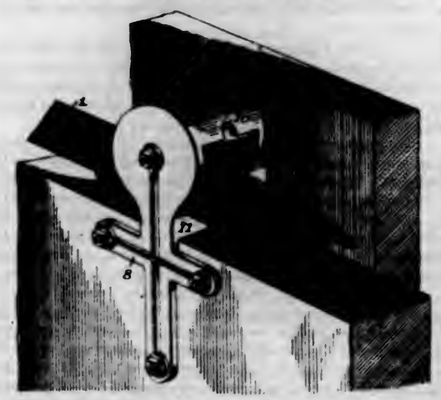
5. In a conveyer system, in combination, a stationary track comprising three parallel sections and a section uniting the two outer parallel sections; a movable section uniting one of the outer parallel sections with the intermediate parallel section; and a loading-tower movable longitudinally of one of the outer parallel sections of track.





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**755,607. DOOR-HANGER.** FREDERICK F. BUECHOFF, Chicago, Ill. Filed May 29, 1903. Serial No. 159,227. (No model.)



*Claim.*—1. In a hanger for doors and the like, the combination of a track-pulley, a pulley-frame, a track-rail of an angle-bar form with its apex arranged uppermost, and a supporting-bracket having an obliquely-disposed upward extension at its outer end fitting the under side of said track-rail, substantially as set forth.

2. In a hanger for doors and the like, the combination of a track-pulley, a pulley-frame, a track-rail of an angle-bar form with its apex arranged uppermost, and a supporting-bracket having an obliquely-disposed upward extension at its outer end fitting the under side of said track-rail, and provided with a tongue having spaced relation thereto to form a receiving-recess for the inner edge of the track-rail, substantially as set forth.

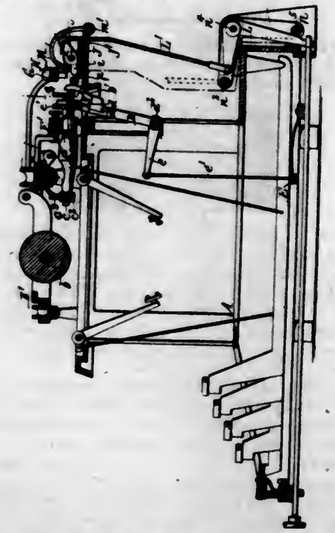
3. In a hanger for doors and the like, the combination of a track-pulley, a pulley-frame, a track-rail of an angle-bar form with its apex arranged uppermost, a supporting-bracket having supporting connection with said rail, and an obliquely-arranged retaining-roller journaled on the pulley-frame and having bearing upon the under side of the inclined outer member of the track-rail, substantially as set forth.

4. In a hanger for doors and the like, the combination of a track-pulley, a pulley-frame, a track-rail of an angle-bar form with its apex arranged uppermost, a supporting-bracket having supporting connection with said rail, a triangular lug on the inner side of the pulley-frame, and an obliquely-arranged retaining-roller journaled on said lug and having bearing upon the under side of the inclined outer member of the track-rail, substantially as set forth.

5. In a hanger for doors and the like, the combination of a track-rail of an angular form, a grooved track-pulley, and a pulley-carrying frame having a hood at its upper end, said hood having a central gap at one of its side edges and adapted to afford a guiding means in oiling the track and track-roller, substantially as set forth.

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**755,608. TABULATING MECHANISM FOR TYPE-WRITING MACHINES.** MANLEY H. BLAKESLEE, Buffalo, N. Y., assignor to Jarvis Typewriter & Tabulator Company, Buffalo, N. Y. Filed Jan. 17, 1903. Serial No. 139,448. (No model.)



*Claim.*—1. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a restoring device for returning said dogs to their inoperative position, means for holding said restoring device in its inoperative position, and a releasing device controlled by the paper-carriage and arranged to act upon said holding means, substantially as set forth.

2. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a restoring device for returning said dogs to their inoperative position, a latch for holding said restoring device in its inoperative position, and a releasing device controlled by the paper-carriage and arranged to engage said latch, substantially as set forth.

3. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a slide carrying said dogs, a restoring device for returning the dogs to their inoperative position, a latch for holding said restoring device in its inoperative position, releasing means movable with said slide and arranged to withdraw said latch, and a trip device controlled by the paper-carriage and arranged to engage said releasing means, substantially as set forth.

4. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a slide carrying said dogs, a restoring device for returning the dogs to their inoperative position, a latch for holding said restoring device in its inoperative position, a releasing-hook engaging with said latch and having an actuating-tappet, and a trip device controlled by the paper-carriage and arranged to engage the tappet of said releasing-hook, substantially as set forth.

5. In a tabulating mechanism for type-writing machines, the combination of the paper-carriage, a rack or support movable with the carriage and provided with tappet-seats and adjacent to said seats with a baffle device, and a tappet adapted to enter one of said seats and constructed to encounter said baffle device in one position

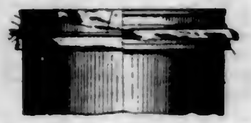
of the tappet and to clear the same in another position thereof, substantially as set forth.

6. In a tabulating mechanism for type-writing machines, the combination of the paper-carriage, a rack or support movable with the carriage and provided with tappet-seats and adjacent to said seats with a baffle device, and a tappet adapted to enter one of said seats and having an offset head arranged to clear said baffle device in one position of the tappet and to encounter the same in another position thereof, substantially as set forth.

7. In a tabulating mechanism for type-writing machines, the combination of the paper-carriage, a rack or support movable with the carriage and having tappet-seats and provided along one edge with a baffle-rail projecting above the rack, and a tappet comprising a stem adapted to enter one of said seats and an offset head constructed to clear said baffle-rail in one position of the tappet and to encounter the same in another position thereof, substantially as set forth.

## 755,609. STRAINING ATTACHMENT FOR MILK-CANS.

JAMES H. BLANEY, Penaghvale, Canada. Filed Oct. 15, 1903. Serial No. 177,173. (No model.)

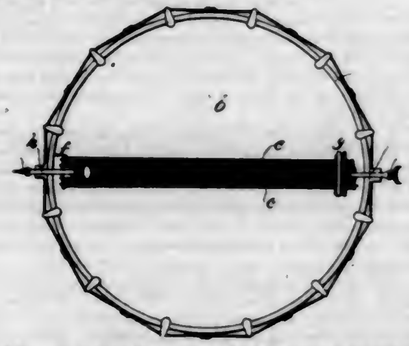


*Claim.*—1. In a device of the class described the combination of a vertical ring or band, an inwardly and downwardly sloping portion secured thereto, an upwardly-extending portion secured to the inwardly-sloping portion, a clamping-ring, and a cloth strainer adapted to be clamped between the inside of said clamping-ring and the outside of said upwardly-extending portion and to completely cover the upper opening of the milk-can as and for the purpose specified.

2. In a device of the class described in combination a vertical ring or band having a horizontal flange formed around its upper edge, an inwardly and downwardly sloping portion having its upper edge bent around said downwardly-extending flange and having a groove formed in its upper portion to receive the upper edge of the milk-can, an upwardly-extending portion secured to said inwardly and downwardly sloping portion and having the upper edge thereof bent around a stiffening-rod, a clamping-ring having the lower edge thereof bent around a stiffening-rod and a straining-cloth adapted to extend completely over the upper portion of the can and having its edges clamped between said clamping-ring and said upwardly-extending portion as and for the purpose specified.

## 755,610. SNARE-DRUM.

HARRY A. BOWER, Boston, Mass. Filed Oct. 24, 1903. Serial No. 178,314. (No model.)



*Claim.*—1. A drum having snares stretched across the head and snare-engaging members located outside the head and connected with the external hoop of the drum.

2. A drum having snares stretched across the head thereof, snare-supporting members located outside of the head and connected to the hoop, and means for adjusting said members to vary the tension of said snares.

3. A drum having snares stretched across the head thereof, and snare supporting and stretching members supported on the exterior of the drum and bedded against yielding portions of the head at points radially inward from the shell.

4. A drum having snares stretched across and outside of the head, snare-supporting members located within the circle of the strain-hoop and outside of the head, and means for moving one of said members toward and from the others.

5. A drum having snares stretched across the head, snare-supporting members located within the circle of the strain-hoop, and arms pivoted on the exterior of the said hoop and arched over the end thereof to support said members.

6. A drum having snares stretched across the head, snare-supporting members located within the circle of the strain-hoop, arms pivoted on the exterior of the said hoop and arched over the end thereof to support said members, and means for adjusting one of said arms about its pivot.

7. A drum having snares stretched across the head, snare-supporting members located within the circle of the strain-hoop, and arms secured to the exterior of the barrel and reaching over the strain-hoop, skin-hoop and the edge of the shell, to support the members.

8. A drum having extensible snares, means for securing the snares at one end, a member to which the snares are attached at the other end, means for adjusting said member longitudinally of the snares to vary the tension thereof, and means for adjusting said member toward and from the head without varying the tension of said snares.

9. A drum having extensible snares stretched across the head thereof, means for varying the tension of said snares, and means independent of the first said means for adjusting said snares toward and from the drum-head without varying the tension of said snares.

10. A drum having snares across the head thereof, a member engaging the snares at one end, a member engaging the snares at the other end, means for moving one of said members to stretch the snares, and independent means for moving one of said members to carry the snares at one end toward and from the head.

11. A drum having snares stretched across the head, snare-engaging members located outside the head for the ends of the snares, and means for outwardly displacing one of said members to separate the ends of the snares carried thereby from the lower head and to muffle the drum.

12. A drum having snare-engaging members located within the circle of the strain-hoop, hinged arms supporting said members and arching the hoop, and adjusting-screws adapted to vary the positions of said arms to move said members toward and from the plane of the head.

13. A drum having an arm supported by the lower hoop, a snare-engaging member hinged to said arm, and means for adjusting said member about its pivot relatively to the arm, the drum having also suitable means for engaging the opposite ends of the snares.

14. A drum having an arm hinged to the strain-hoop and provided with an adjusting device and with a snare-engaging member adjustable by said device relatively to said arm, the drum having also suitable means for engaging the opposite ends of the snares.

15. A drum having an arm supported by the lower hoop and provided with a snare-engaging member located at the inner portion of said arm, and an abutment for the outer portion of the arm, said abutment being movable to permit the displacement of the arm and the separation of the snares from the lower head, the drum having also suitable means for engaging the opposite ends of the snares.

16. A snare attachment for drums comprising a bracket adapted for engagement with the exterior portion of the drum, an arm pivoted between its ends to said bracket and bent so as to arch the end of the hoop, a snare-engaging member on one end of the arm, and an adjusting device on the other end of said arm to adjust said arm about its pivot.

17. A snare attachment for drums comprising a bracket adapted for engagement with the exterior portion of the drum, an arm pivoted between its ends to said bracket and bent so as to arch the end of the hoop, a snare-engaging member adjustably mounted on said arm, means for adjusting said member on said arm, and means for adjusting said arm about its pivot relatively to said bracket.

18. A snare attachment for drums comprising a bracket adapted for engagement with the exterior portion of the drum, an arm mounted on said bracket and carrying a snare-engaging member, means for adjusting said arm relatively to said bracket, and means independent of said adjusting means for moving said arm relatively to said bracket.

19. A drum having snare-engaging members located outside the lower head and within the circle of the lower hoop, one of said members having pins to engage bights in the strings forming the snares, while the other member is formed as a clamp to engage the end portions of said snares, and arched connections between said members and the lower hoop of the drum.

20. A drum having snares stretched across its lower head, a snare-engaging member located outside the lower head and within the circle of the hoop and formed as a clamp adapted to grasp the snares, the drum also having suitable means for engaging the opposite ends of the snares, in consequence of which said snares are stretched between said members.

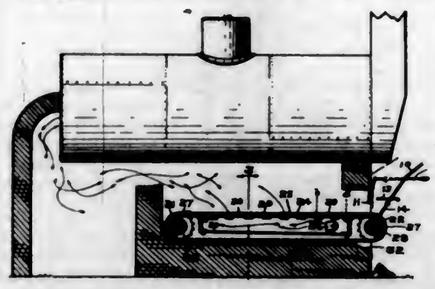
21. A drum having snares stretched across the head thereof and a muffling device supported upon the exterior of the barrel and having provisions in consequence of which a movement of said device effects a movement of the snares away from the head, substantially as described.

22. A drum having extensible snares stretched across the head thereof, a snare-supporting member, and a muffling-lever supported upon the exterior of the drum-barrel and adapted when operated to effect a movement of the said snare-supporting member bodily outward from the head.



## 755,611. MECHANICAL STOKER.

EUGENE BRETNEY and HARRY R. BRETNEY, Indianapolis, Ind. Filed Oct. 19, 1903. Serial No. 177,578. (No model.)



*Claim.*—1. In a furnace, a fuel-burning support embodying a box-like receptacle and a perforated top therefor, a blast-creating means within said receptacle adapted to discharge an air-blast longitudinally therethrough, and an endless drag-conveyer traveling about said receptacle structure, substantially as shown and described.

2. A receptacle for receiving an air-blast, a perforated top to said receptacle, aprons at the ends of said receptacle, driving mechanism positioned at both ends of said receptacle beneath said aprons, and an endless drag-conveyer surrounding said described structure and driven by said driving mechanism, as shown and described.

3. The combination, in a furnace, of a receptacle embodying a perforated fuel-supporting top, a blast-discharger leading into said receptacle, aprons at the respective ends of said receptacle, driving mechanism positioned beneath said aprons, a drag-conveyer surrounding said described structure operated by said driving mechanism, valves in said perforated top, and means for operating said valves, substantially as shown and described.

4. In an apparatus of the class described, a blast-receptacle embodying a fuel-supporting top, a drag-conveyer composed of chains and bars as shown and described traversing the upper and lower surface of said receptacle, and means for driving said conveyer, substantially as and for the purposes set forth.

5. In a furnace, a blast-receptacle embodying aprons at either end, a perforated fuel-supporting top covering said receptacle, valves connected with said top, driving mechanism at either end of said receptacle beneath said aprons, a drag-conveyer composed of chains and bars surrounding said described structure, a base as 31, and a discharge-outlet as 32, all substantially as shown and described and for the purpose set forth.

## 755,612. ARTIFICIAL FISHING-BAIT.

FRANK BURDETT, Gravenhurst, Canada, assignor, by direct and mesne assignments, to George Stevenson and Harry Brooks Howson, Toronto, Canada. Filed May 5, 1903. Serial No. 155,779. (No model.)



*Claim.*—An artificial fishing-bait comprising a strip of sheet metal doubled upon itself with a cross-bar *a* extending between, a wire extending centrally through the cross-bar and between the doubled sheet metal and wings on the opposite inner sides of the doubled sheet metal said wings being independent of each other and those on one side inclining in the opposite direction from those on the other side, substantially as described.

## 755,613. SEEDER AND PLANTER.

WILLIAM L. CASADAY, South Bend, Ind. Filed Jan. 26, 1903. Serial No. 140,678. (No model.)



*Claim.*—1. The combination with a rotative axle, and its wheels, of a bracket-arm on said axle extending at a right angle therewith, a non-rotative shaft rigidly secured on said arm and parallel with the axle, a frame journaled on said shaft at its front end and means for adjusting said shaft both above the axle and laterally thereof, thereby adjusting the elevation of the front end of the frame.

2. The combination with wheels, of an axle rotative therewith, radial arms on said axle, a shaft rigidly secured at the extremities thereof parallel with the axle, a frame, downwardly-extending bracket-arms on the frame, in which the shaft is adapted to partly rotate, and a laterally-directed arm integral with one of said radial arms and operatively connected with a lever adapted to adjust the elevation of the front end of the frame.

3. The combination with wheels, of an axle rotative therewith, radial arms journaled at one end on said axle, a shaft rigidly secured in the other ends of said arms, a frame having depending bracket-arms thereon journaled on the shaft, means for adjusting said shaft both laterally and vertically with respect to said axle and connecting means on the axle and shaft adapted to communicate the rotation of the axle to mechanism supported upon the frame, operated by the adjustment of the shaft with respect to the axle.

4. The combination with a frame, of centrally-located dropping mechanism thereon, centrally-alined opening and marking shovels secured on the frame, laterally-disposed covering-shovels at the rear end of the frame, a rearwardly-directed shoe acting to limit the operation of the covering-shovels, operating-handles, an axle, a shaft journaled at the front end of said frame, arms rigidly secured at the ends of said shaft and journaled on the axle, and means for adjustably supporting the front end of said frame with respect to said axle.

5. The combination with a frame, of dropping mechanism thereon, opening, marking and covering shovels thereon, means for limiting the depth to which the shovels operate and rotative means on the axle operatively connected with the dropping mechanism on the frame and means for elevating the frame with its shovels with respect to the axle thereby controlling the action and operation of said dropping mechanism.

6. The combination with wheels, of an axle adapted to revolve therewith, a radial bracket-arm on the axle, a laterally-directed arm

thereon, a non-rotative shaft journaled at the extremity of said bracket-arm parallel with the axle, a toothed segment and lever engaged on the frame, a detent on the lever adapted to engage the teeth of the segment, and a rod connecting the lever with said lateral arm and adapted when the lever is operated to adjust the shaft vertically and laterally of the axle.

7. The combination with wheels, of an axle rotative therewith, radial arms on said axle, a shaft rigidly secured at the extremity of said arms parallel with the axle, a frame supported on said shaft and means carried on the frame for adjusting said shaft with respect to the axle thereby vertically adjusting said frame.

8. The combination with wheels, of an axle rotative therewith, radial arms on said axle, a shaft rigidly secured at the extremity of said arms parallel with the axle, a frame supported on said shaft and means carried on the frame for adjusting said shaft with respect to the axle thereby vertically adjusting said frame, interlocking sprocket-wheels on the shaft, one of which is slidable longitudinally thereon and respectively adapted for chain connection with a sprocket-wheel on the axle, and a sprocket-wheel on the frame and means operated by the adjustment of the frame acting to force said interlocking sprocket-wheels out of engagement.

9. The combination with a rotative axle, of an arm secured thereon radially thereof, a shaft rigidly secured on said arm parallel with the axle, a frame supported on said shaft, sprocket-wheels on the shaft having clutch engagement with each other and adapted respectively to have operative engagement with a sprocket-wheel on the axle and sprocket-wheel on said frame, and a yoke pivoted on the frame and acting to separate said sprocket-wheels when the adjustment of the frame is varied.

10. In a device of the class described, a rotative axle, a non-rotative shaft carried thereon parallel therewith, a sprocket-wheel slidably secured on the axle and shaft respectively, a sprocket-chain thereon, means for sliding one of said sprocket-wheels on the shaft, and a guide-tightener slidably secured on the shaft and adapted both to adjust the tension of the chain and to adjust the sprocket-wheels correspondingly on the shaft and axle.

11. The combination with a plaate-frame, of operating-handles at the rear end thereof, adjustable rearwardly-directed supports at the rear end of said frame, shovels on said supports and adjustable means at the front end of the machine for varying the elevation of the frame comprising a shaft carried on said frame, an axle and supporting-wheels therefor, arms journaled on the axle and rigidly secured on said shaft and means thereon for raising and lowering the frame with respect to the axle.

12. The combination with a frame, of dropping mechanism supported thereon, an opening-shovel and a marking-shovel adjustably secured and centrally alined on the frame, a chute at the rear of the marking-shovel, laterally-disposed covering-shovels at the rear of the frame, adjustable rearwardly-directed shoes at the rear of said covering-shovels acting to limit the depth of operation thereof and means for adjusting the frame to permit operation of said shovels on both level ground and in the tops of furrows or ridges.

13. In a planter, the combination with the frame, and the planting mechanism thereon, of a supporting-axle, means thereon adapted to drop the front end of the frame rearwardly of the axle, adjustable opening and marking shovels centrally alined on the frame, covering-shovels laterally disposed at the rear end of the frame, means for limiting the depth of operation thereof, and adjustable means for determining the elevation of operation of the shovels and planting mechanism.

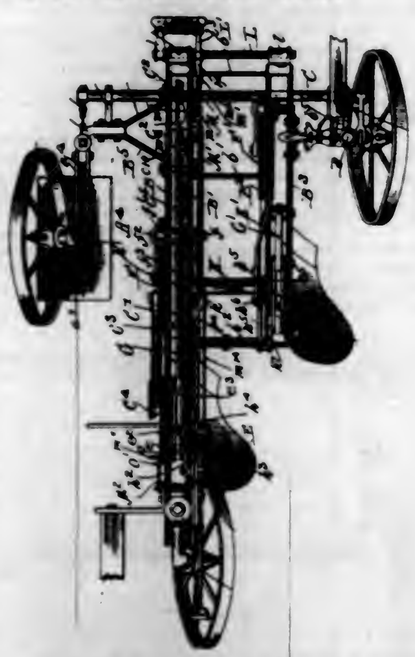
14. In a corn and cotton-seed planter, the combination with the planting mechanism and shovel-frame, of wheels supporting said shovel-frame, an axle therein, a shaft journaled transversely of the frame, and means thereon for adjusting the planting mechanism and shovels for operation either in level ground or on the tops of furrows or ridges.

15. In a machine of the class described the combination with a vertically-adjustable frame, of a transverse shaft journaled therein, a yoke pivoted on the frame and extending longitudinally of the shaft and an adjustable cam adapted to engage said yoke and acting to throw the machine into and out of operation dependent on the adjustment of the frame.

16. The combination with an adjustable frame, of a transverse shaft journaled thereon, a spring-operated clutch on said shaft, a yoke pivoted on the frame longitudinally of the shaft and adapted to engage at one end one of said clutch members, and a cam-lever adjustably secured on the shaft in position to engage the opposite end of said yoke when the frame is adjusted and throw said clutch members into and out of operative engagement.

## 755,614. GANG-PLOW. WILLIAM L. CASADAY, South Bend, Ind.

Filed May 7, 1903. Serial No. 156,973. (No model.)



*Claim.*—1. The combination with the frame of an agricultural implement, of a lever pivoted thereon and affording means for applying draft thereto, a spring connected with said lever and acting normally to support the weight of operating mechanism of the machine, a detent holding said draft mechanism in operative position and means for releasing said detent whereby the draft on said lever acts to elevate the mechanism of the machine.

2. The combination with the frame of an agricultural implement, of operating mechanisms thereon, a lifting-lever acting to support said mechanisms out of operative position, a draft-lever pivoted on the frame, a spring operatively connected with said draft-lever at one end with the lifting-levers at the other end, a detent acting to hold the draft-lever in a retracted position and means for releasing said detent whereby the draft on said lever acts to throw the operating mechanism upwardly and support the same.

3. The combination with the frame of an agricultural implement, of a plow supported thereon, one or more lifting-levers pivoted on the frame and engaging the plow and acting to lift the same, a draft-lever pivoted at the front end of the frame, a spring operatively connected with said lifting-lever and draft-lever and adjusted normally to support the weight of the plow, a detent acting to hold the draft-lever in operative position and means for releasing said detent whereby draft on said draft-lever acts to throw the plow upwardly and support the same.

4. The combination with a frame and the wheels thereof, of a plow adjustably supported therein, lifting-levers whereby said plows are adjusted into and out of operative position, an extensible draft appliance at the front end of the frame, a spring adjustably connected therewith and with said lifting-levers and adjusted normally to support the weight of the plow, a detent normally holding the draft appliance retracted and means for releasing said detent whereby the draft appliance is drawn forwardly and increasing the tension on the spring and elevating the plows.

5. In a riding-plow the combination with the frame, of a plow vertically adjustable therein, a lifting-lever engaged on the frame and plow and acting to elevate the plow, a hand-lever engaged upon the lifting-lever whereby the plow is adapted to be elevated manually, a spring secured at one end on one of said levers and operatively connected with a draft appliance, a detent holding said spring at a predetermined tension and means for releasing said detent whereby the draft of the team or the like acts on said spring to elevate the plow



6. In a gang-plow, the combination with the frame and wheels thereof, of means for elevating the front end of the frame when in operation, a plurality of vertically-movable plows adjustably supported in said frame one in advance and laterally of the other, of a series of compound levers acting to simultaneously lift both of said plows, means for actuating the same manually, a strong spring engaged on one of said levers and extending forwardly and normally acting to support a part of the weight of the plows and means under the control of the operator for applying the draft of the team to said spring thereby lifting the plows.

7. In a gang-plow the combination with the frame and its supporting-wheels, of means for elevating the front end of the frame thereon when in operation, a plurality of vertically-adjustable plows one in advance and laterally of the other, a series of compound levers pivoted on the frame and operatively connected with and acting to lift said plows, a hand-lever engaging the same and adapted to permit the plows to be elevated manually, an adjustable draft mechanism, a spring attached to one of said levers and adjustably connected on the draft mechanism, a detent holding said draft mechanism retracted and means under the control of the operator for releasing said detent whereby the draft of the machine acts to elevate the plows.

8. In a gang-plow, the combination with supporting-wheels of a frame, a plurality of plows vertically movable in the frame and positioned one in advance and laterally of the other, lifting-levers pivoted on the frame and operatively connected with all of the plows, means for actuating said levers manually to adjust the plows, a draft-lever at the front end of the machine, a bent lever pivoted adjacent thereto and connected at one end with the draft-lever, a spring adjustably engaged thereon at one end and at the other engaged to one of the lifting-levers, a detent holding said draft-lever in operative position and means under the control of the operator for releasing said detent therefrom whereby the draft of the team or the like is applied to lifting the plow.

9. The combination in a gang-plow with the frame and its wheels, of vertically-movable plows carried thereby, a draft appliance, a spring connecting said draft appliance with the plows and acting to communicate the draft thereto in lifting the plows, a detent acting to hold said plows from lifting until the detent is released.

10. In a gang-plow the combination with the frame and supporting-wheels, of vertically-movable plows therein, colters adjustably supported in the frame in advance of each plow, a plurality of levers pivoted on the frame and connected with the plows and colters, a crank also journaled on the frame and with which all of said levers are connected, a strong spring engaged on said crank, a draft-lever to which the forward end of said spring is adjustably engaged, a detent normally holding said draft-lever at an angle with the line of draft, means for releasing said detent whereby the draft is applied to said spring and acting to elevate plows and colters simultaneously.

11. The combination with the frame of a gang-plow, of vertically-movable plows and colters therein and a plurality of compound lifting-levers engaging the same, a crank journaled on the frame and with which said levers are connected, a hand-lever connected with said levers and acting simultaneously to raise the plows and colters and means for elevating the same operated by the draft of the machine.

12. The combination with the frame of a gang-plow, of a plurality of plows and colters supported therein, a plurality of compound lifting-levers engaged thereon, a crank with which all of said levers are connected, a draft-clevis pivoted at the front end of the frame, an integral rearwardly-extending lever-arm thereon, a two-armed segment pivotally connected by one of its arms with said lever arm, a detent engaging said segment, a strong pulling-spring engaged on said crank-arm and with the remaining arm of said segment, an operating-lever, a rod connecting said pawl or detent with the operating-lever and a latch acting to hold the plows in operative position and adapted to be released by the operating-lever simultaneously with the release of the detent.

13. The combination with a frame, of plows and colters vertically movable therein, a two-armed segment pivoted on the frame, a spring adjustably engaged on one of said arms and connected with said plows, a draft-lever engaging the other arm, a detent holding said draft-lever at an angle with the line of draft, a latch holding the plows and colters down and means under the control of the operator for simultaneously releasing said latch and detent whereby the draft of the team or the like is applied to elevate the plows and colters.

14. The combination in a gang-plow, of plows and colters upwardly movable therein and manually-operated means acting to operate the same simultaneously and resilient means under control of the operator adapting the motive power for the machine to be applied to lifting the plows and colters.

15. The combination with the frame of a gang-plow, of a plurality of plows and colters upwardly movable therein, of a detent acting to lock said plows in their operative position, a lever and segment adapted to elevate the front end of the frame, lifting-levers engaged on the plows and colters, a clevis pivoted at the front end of the frame and normally held at an angle with the line of draft, a notched segment pivoted on the frame and in engagement with said clevis and adapted to be partly rotated by the clevis when lifted into the line of draft, a spring adjustably engaged on said segment and with the elevating-levers of the plows and colters, a detent holding said segment and clevis from movement and a tripping-lever connected with said detent and positioned at the rear of the machine and acting to simultaneously release said detent and the latch for the plow, thereby applying the draft to the elevation of the plows and colters.

16. In a gang-plow the combination with the frame and its supporting-wheels, of means for elevating the front end of the frame comprising a shaft journaled at the front end thereof, crank-arms on said shaft, a link on the axle of one of the wheels on which one of said cranks engages, a toggle-lever connected with the opposite wheel and also operated by one of said cranks, and a lever acting to partly rotate said shaft thereby acting to lift the frame upwardly from the wheels, a yoke engaged by the last-named lever, a locking-lever for the plows connected therewith and means operated by the draft of the team or the like adapted to elevate the plows.

17. In a gang-plow the combination with the frame and the supporting-wheels, of means for elevating the frame on the front wheels thereof, upwardly-movable plows and colters, a detent normally holding the same in operative position, lifting-levers acting to move the plows and colters upwardly and support the same, a spring secured on one of said levers, a draft appliance to which the front end of the spring is engaged, and a lever acting to release the latch holding the plow and the detent engaging the draft appliance whereby the draft of the team or the like is applied to the lifting of the plows, a lever acting to elevate the front end of the frame and a connection thereon acting to simultaneously release the plows and colter.

18. In a gang-plow the combination with a frame and its supporting-wheels, of a lever acting to elevate the front of the frame thereof, rigid upwardly-directed knees secured on said frame, a plow at the rear of each knee, parallel bars connecting the same therewith, compound toggle-levers engaged on the plows and frame, a compound hand-lever engaging one of the same and adapted to permit the plow to be lifted manually, a two-armed segment pivoted on the frame, a spring connecting one of the arms with one of said levers for lifting the plows and a draft-lever pivoted on the frame and engaging the other of said arms, a detent holding the same normally at an angle with the line of draft and means adapted to release said detent simultaneously with the elevation of the frame thereby applying the draft to said spring and lifting the plows.

19. The combination with a frame and its supporting-wheels, of rigid knees engaged on the frame one in advance and laterally of the other, vertically-movable plows at the rear of each knee, parallel bars pivoted on the knees and the adjacent plows and acting to move the plow upwardly and forwardly compound lifting-levers engaged on one of the plows, and the frame, a crank journaled in the frame, levers secured thereto and operatively connected with the other plow, rolling colters pivoted to swing upwardly in the frame, levers for the colters connected with said crank, a draft-lever, a spring engaged on said crank and operatively connected with the draft-lever, means for holding said draft-lever at an angle with the line of draft and means for releasing the draft-lever and acting to direct the draft upon said spring thereby elevating the plows.

20. In a machine of the class described, the combination with the supporting-frame and wheels therefor, of vertically-movable plows and colters therein, a lifting-spring connected with said plows and colters, a two-armed segment pivoted on the frame, draft-levers also pivoted on the frame, a link pivotally connecting one of the arms of the segment with the end of the draft-lever, a turnbuckle connecting the other arm of the segment with said spring, said segment having notches in its periphery and a spring-controlled detent engaging in said notches and acting to release the draft-lever, whereby the draft is applied directly to said springs acting to elevate the plows and colters.

21. In a gang-plow the combination with the frame and supporting-wheels, of means for elevating the front end of the frame,

vertically-movable plows and colters supported in the frame, a latch acting to hold the plows in operative position, levers for lifting the plows, a draft-spring engaged thereon and operatively connected with a draft appliance, a detent normally holding the draft-spring out of action and means for simultaneously elevating the end of the frame and releasing the latch for the plow and said detent whereby the draft is applied on said spring thereby elevating the frame and the plows and colters in the frame simultaneously.

22. In a gang-plow the combination with the supporting-wheels, of a frame, a shaft journaled at the forward end thereof, toggle-joints connecting said shafts with the axles of the side wheels, a lever adapted to partially rotate said shaft to elevate the frame, a plurality of vertically-adjustable plows, an upright beam on each of said plows, a knee rigidly secured on the frame forward of each plow, toggle-bars connecting the beams and knees of corresponding plows, a lever for manually elevating said plows and means whereby said plows may be elevated by the draft of the team or the like.

23. In a gang-plow the combination with a vertically-adjustable frame, of a plurality of plows therein arranged one forwardly and laterally of the other, a colter forward of each plow, a knee rigidly secured on the frame in front of each beam, toggle-arms connecting said beams and knees, a bent lever pivoted at one end on the frame, a link pivoted at the other end thereof and on one beam, a shaft journaled in said frame, a rigid arm thereon, a rod connecting said arm and bent lever, means carried on the shaft acting by the rotation thereof to adjust the forward plow and colters simultaneously with the rear plow and means operated by the team or the like for actuating said bent lever.

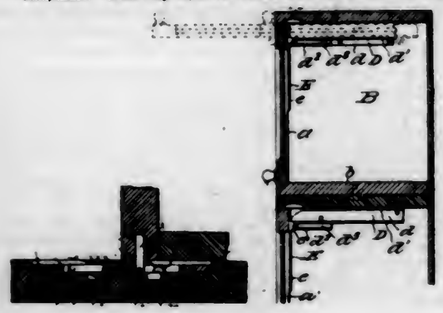
24. In a gang-plow the combination with a frame and supporting-wheels therefor, of a plurality of plows arranged one in front and laterally of the other, a colter in front of each plow, a beam on each of said plows extending upwardly through the frame, a knee rigidly secured on the frame adjacent to each beam, toggle-arms pivotally connecting adjacent beams and knees, a shaft journaled in said frame, a plurality of compound levers connected with said shaft and the plows and colters and means whereby said shaft is rotated by the draft of the team or the like and the plows and colters simultaneously elevated.

25. In a gang-plow the combination with the frame, of a plurality of plows and colters pivotally supported thereon, a shaft journaled in said frame and having an upwardly-extending arm thereon, a bent lever pivotally connected with one plow and with the frame, a rod connecting said lever with said arm, a lever carried on the shaft and pivotally connected with the other plow, toggle means connecting the colter with said shaft, a notched segment pivoted on the frame having outwardly-directed arms thereon, a draft-lever engaged on one arm, a coiled spring engaged on the other and on the shaft-arm acting when draft is applied to the draft-lever to simultaneously raise said plows and colters.

26. In a gang-plow the combination with the rear and laterally supporting wheels of a vertically-adjustable frame carried thereon, a shaft journaled on said frame and having a crank-arm at each end thereof, toggle means connecting said arms with the axles of the lateral wheels and acting when said shaft is rotated to raise and lower said frame, a notched segment rigidly secured on the frame, a lever pivoted adjacent thereto and adapted to engage therewith, a rod connecting said lever with the shaft, a lock carried on the frame and adapted to hold the plows at their lowermost position and a slotted rod connecting said lock with the lever and adapted to release the lock from said plows.

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**755,615. COMBINATION-CASE.** WILLIAM H. CHATTERTON, Melrose, Mass. Filed July 30, 1903. Serial No. 168,404. (No model.)



*Claim.*—1. A combining device for retaining two separable parts of combination-cases in relative juxtaposition, comprising a pin having a pivotal movement within the limits of a right angle, and means for retaining the pin in either extreme of its movement.

2. A combining device for retaining two separable parts of combination-cases in relative juxtaposition, comprising a pin carried by one of the cases and having a pivotal movement within the limits of a right angle, said pin being adapted to enter a recess of a superposed case when in raised position, and means for retaining the pin in either extreme of its movement.

3. A combining device for retaining two separable parts of combination-cases in relative juxtaposition, comprising a plate carried by one of the cases; a pin carried by said plate and having a pivotal movement within the limits of a right angle, and means carried by said plate for retaining the pin in either extreme of its movement.

4. A combining device for retaining two separable parts of combination-cases in relative juxtaposition, comprising a plate having a pivoted pin adapted to project in a direction at a right angle to the plane of the plate and to enter openings in a superposed case, and a combining hook or catch attached to said plate adapted to hold the pin in desired positions.

5. The combination with a plurality of cases having openings in the bottoms thereof, of combining devices permanently attached to the tops of the cases for retaining said cases in fixed relative positions, said devices comprising a plate having a pivoted pin adapted to project at a right angle to the plane of the plate, and a hook adapted to engage said pin in either its upright or nested positions.

6. The combination with a plurality of cases provided with openings in the bottoms thereof, of combining devices permanently attached to the tops of the cases for retaining said cases in fixed relative positions, said devices comprising a plate having a pin pivoted thereto and adapted to project from the upper side thereof and in a direction at a right angle to the plane of said plate, and a hook adapted to engage the pin of the case to which it is attached or of the opposing case.

7. A combining device for retaining separable parts of combination-cases in relative juxtaposition, said device comprising a plate having a pivoted pin attached thereto adapted to lie flush with the face of said plate and movable to a position to project at a right angle to the plane of the plate, said pin being adapted to enter a suitable opening in the bottom of a superposed case, and having a combining-hook movable to either retain said pin in a fixed position or engage the pin of an adjacent case to hold said cases against positive disengagement.

8. A case of the character described, having a door provided with stops, and door-hangers each comprising an attaching plate or base, a flange projecting therefrom and adapted to support said door slidingly thereon, one end of each flange being bent downward and backward to form a loop or stop, the stops of said flanges being adapted to coact with the corresponding stops carried by the door to limit the outward movement of the latter.

9. A case of the character described having a door provided with stops, and door-hangers each comprising an attaching plate or base, a flange projecting from its upper edge to support a shelf, and a flange projecting from its lower edge to slidingly support said door, one end of the lower flange being provided with a stop to coact with one of the door-stops to limit the outward movement of the door.

10. A case of the character described, having a plurality of doors, said doors being provided with stops, and means coacting with said doors and stops for guiding the doors in their inward and outward movements, said means comprising attaching-plates, each plate having a flange projecting from one edge to guide the door, said flange having an integral stop to coact with one of the door-stops to limit the outward movement of the door.

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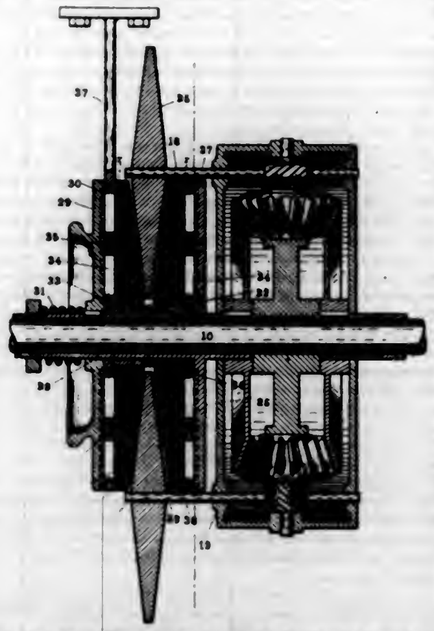
**755,616. SPEED-DIFFERENTIATING DEVICE.** FREDERICK H. CHESTER, Indianapolis, Ind. Filed June 26, 1903. Serial No. 163,007. (No model.)

*Claim.*—1. A speed-differentiating device consisting of a stationary member and a planetary member, a volute member forming the operating-face of one of said members, and means for projecting portions of said volute member into operative engagement with the other member.

2. A speed-differentiating device comprising disk-like friction members, a volute member forming the operating-face of one of said members, and means for projecting portions of said volute member into operative engagement with the other member.

3. In a speed-differentiating device, a stationary member and a planetary member, a series of laminæ arranged about the axis of one of said members and means for projecting one or more of said laminæ into operative engagement with the other member.





4. In a speed-differentiating device, disk-like friction members, a series of laminæ arranged about the axis of one of said members, and means for projecting one or more of said laminæ into operative engagement with the other member.

5. In a speed-differentiating device, a stationary member and a planetary member, and a series of laminæ arranged about the axis of one of said members and forming its operating-face, a series of radially-movable blocks arranged behind said laminæ, and means for shifting said blocks radially whereby successive substantially concentric sets of laminæ may be projected into operative engagement with the other member.

6. In a speed-differentiating device, disk-like friction members, and a series of laminæ arranged about the axis of one of said members and forming its operative face, a series of radially-movable blocks arranged behind said laminæ, and means for shifting said blocks radially whereby successive substantially concentric sets of laminæ may be projected into operative engagement with the other member.

7. In a speed-differentiating device, a stationary member and a planetary member, a volute spring forming the operative face of one of said members, a series of blocks arranged behind said spring, and means for adjusting said blocks radially with relation to said spring, whereby successive portions of said spring at different distances from the axis thereof may be projected into operative engagement with the other member.

8. In a speed-differentiating device, disk-like friction members, a volute spring forming the operative face of one of said members a series of blocks arranged behind said spring, and means for adjusting said blocks radially with relation to said spring, whereby successive portions of said spring at different distances from the axis thereof may be projected into operative engagement with the other member.

9. In a speed-differentiating device, a member consisting of a slotted plate, blocks radially movable within said slots, a plurality of laminæ arranged about the axis of said plate and engaged by said blocks, a volute-grooved plate engaging said blocks, and an element adapted to be engaged by projected portions of said laminæ.

10. In a speed-differentiating device, a stationary member consisting of a slotted plate, blocks radially movable within said slots, a plurality of laminæ arranged about the axis of said plate and engaged by said blocks, a volute-grooved plate engaging said blocks, and a planetary element adapted to be engaged by projected portions of said laminæ.

11. In a speed-differentiating device, a pair of plates provided on their adjacent faces with mating volute grooves, a pair of radially-slotted plates mounted between said disks, blocks mounted in said radial slots and engaged by said volute grooves, a volute spring wound about the axis of each plate and attached to said plate, the inner edges of each of said volute springs being engaged by one set of blocks, and a planetary member mounted between said volute springs and adapted to be engaged by projecting portions thereof.

12. The combination, in a speed-differentiating device, of a shaft, a pair of friction-disks mounted thereon and capable of movement toward and from each other but secured against independent rotation, other friction members extending between said disks, contact members interposed between said disks and said other friction members, and means operated by said disks for shifting the point of contact between said contact members and said other friction members.

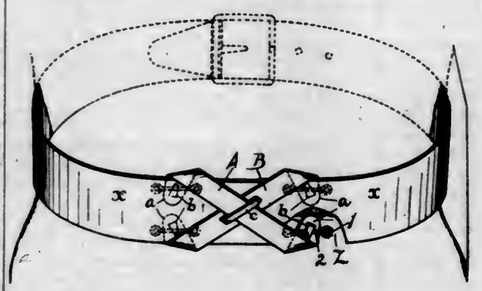
13. The combination, in a speed-differentiating device, of disks, as 25, contact members for operatively engaging with said disks composed of laminæ, and means for engaging successive portions of said laminæ with said disks.

14. The combination, in a speed-differentiating device, of two disk-like friction members, contact members operatively engaging therewith composed of laminæ and having transverse grooves cut through said laminæ, ribs on the adjacent parts entering said grooves, and means for engaging successive portions of said laminæ with said disks.

15. The combination, in a speed-differentiating device, of a member consisting of a slotted plate provided also with ribs, blocks radially movable within the slots in said plate, a plurality of laminæ arranged about the axis of said plate and engaged by said blocks and having grooves formed by transverse cuts therein engaging with said ribs, a volute-grooved plate engaging with said blocks, and a friction member adapted to be engaged by projected portions of said laminæ.

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**755,617. GARMENT-FASTENER.** ANNA CLEVES, Omaha, Nebr. Filed Apr. 21, 1903. Serial No. 153,690. (No model.)



*Claim.*—1. A garment-fastener comprising the combination of two rigid members adjustably secured, one to the other, each member having its ends bent at an angle, the ends of one member being bent toward the ends of the opposite member, each end being provided with an outwardly-extending ear, and suitable means secured to garments to engage said ends and said ears, all arranged substantially as and for the purpose set forth.

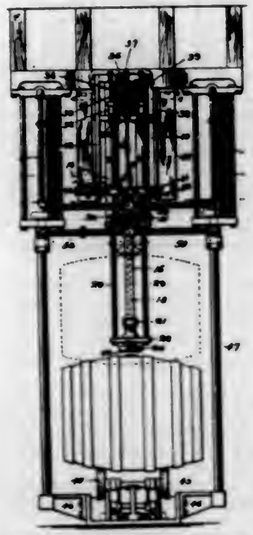
2. In a belt and garment fastener the combination of a belt-holding member having its opposite ends recurved, each recurved end being provided with an extending ear, said member being further provided with an outwardly-extending ear approximately midway of its ends, and a second counterpart member working within said ear, said second member also having its ends recurved, all arranged substantially as and for the purpose set forth.

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**755,618. APPARATUS FOR RACKING BEER.** HARRY W. COLBY, Chicago, Ill., assignor to Automatic Racking Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 2, 1902. Serial No. 88,170. (No model.)

*Claim.*—1. In a machine for filling packages with liquid containing gas, the combination of a reservoir for containing the liquid under pressure, a filling-tube connected to the reservoir, and having a valve at its lower end, a chambered sealing-head sliding on said filling-tube, the chamber of which is connected to the reservoir to equalize the pressure between the reservoir and the package, means for lifting the package up against the sealing-head and causing the latter to slide on the filling-tube until the lower end of the filling-tube with its valve is at or near the bottom of the package, and

means for operating the valve in the filling-tube, substantially as specified.



2. In a machine for filling packages with liquid containing gas, the combination of a reservoir for containing the liquid under pressure, a filling-tube connected to the reservoir and having a valve at its lower end, a chambered sealing-head sliding on said filling-tube, the chamber of which is connected to the reservoir, to equalize the pressure between the reservoir and the package, a hydraulic cylinder and piston for lifting the package up against the sealing-head, and causing the latter to slide on the filling-tube until the lower end of the filling-tube with its valve is at or near the bottom of the package, and means for operating the valve in the filling-tube, substantially as specified.

3. In a machine for filling packages with liquid containing gas, the combination of a reservoir for containing the liquid under pressure, a filling-tube connected to the reservoir, and having a valve at its lower end, a chambered sealing-head sliding on said filling-tube, the chamber of which is connected to the reservoir to equalize the pressure between the reservoir and the package, means for lifting the package up against the sealing-head and causing the latter to slide on the filling-tube until the lower end of the filling-tube with its valve is at or near the bottom of the package, and means for operating the valve in the filling-tube, the said sealing-head being connected to an air-compression device so that in its rise the sealing-head works against an increasing air-pressure, which operates as a spring to hold the sealing-head against the package, and to return said sealing-head when the package is lowered, substantially as specified.

4. In a machine for filling packages with liquid containing gas, the combination of a reservoir for containing the liquid under pressure, a filling-tube connected to the reservoir, and having a valve at its lower end, a chambered sealing-head sliding on said filling-tube, the chamber of which is connected to the reservoir to equalize the pressure between the reservoir and the package, means for lifting the package up against the sealing-head and causing the latter to slide on the filling-tube until the lower end of the filling-tube with its valve is at or near the bottom of the package, and means for operating the valve in the filling-tube, the said sealing-head being connected to an air-compression device so that in its rise the sealing-head works against an increasing air-pressure, which operates as a spring to hold the sealing-head against the package, and to return said sealing-head when the package is lowered, said air-compression device being provided with a regulable relief-valve, and an automatic check-valve which may be connected to a compressed-air supply, whereby a predetermined pressure may be maintained, substantially as specified.

5. In a machine for filling packages with liquid containing gas, the combination of a reservoir for containing the liquid under pressure, a filling-tube connected to the reservoir and having a valve at its lower end with means for operating the same, a chambered sealing-head sliding on said filling-tube, the chamber of which is connected to the reservoir to equalize the pressure between the reservoir and the package, a hydraulic cylinder and piston for lifting the package up against the sealing-head and causing the latter to slide on the filling-tube until the lower end of the filling-tube with its valve is at or near the bottom of the package; and an air-compression device connected to the sealing-head so that in its rise the sealing-head works against the increasing air-pressure which operates as a spring to hold the sealing-head against the package, and to return said sealing-head when the package is lowered, substantially as specified.

6. In a filling-machine for filling packages with liquid containing gas, the combination of a reservoir for containing the liquid under pressure, a filling-tube which when in operation extends substantially to the bottom of the package to be filled, a sealing-head sliding on the filling-tube and having a communication with said reservoir independent of the filling-tube, means for bringing the bottom of the package where the liquid is delivered and the said reservoir more nearly to the same horizontal level and thus diminishing the tendency of the beer to foam and at the same time causing the said filling-tube to extend to the bottom of the package, a foam-preventing valve for closing the filling-tube arranged at the lower end of said tube and operated by the bottom of the package, and means which causes the package and reservoir to approach said level and also opens said valve, substantially as set forth.

7. In a filling-machine for filling packages with liquid containing gas, the combination of a relatively stationary reservoir, a filling-tube also relatively stationary and adapted to extend when in operation substantially to the bottom of the package, a foam-preventing valve arranged at the lower end of the filling-tube, and means for raising the package to bring the bottom thereof where the liquid is delivered more nearly to the same horizontal level with the said reservoir and thus diminish the tendency of the beer to foam, said means also acting to operate the foam-preventing valve, substantially as set forth.

8. In a machine for filling packages with liquid containing gas, the combination of a package-support, hydraulic cylinders for lifting the package-support, a sealing-head lifted by the package, a pneumatic compression device against the pressure of which the sealing-head is lifted, a filling-tube having a valve at its delivery end, and an air-cylinder the piston of which is connected to the valve at the delivery end of the filling-tube for opening and closing the same, substantially as specified.

9. In a filling-machine, the combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame having mounted thereon a cylinder and piston for operating the sealing-head, a movable sealing-head to be operated by said piston, and a filling-tube having no vertical movement, substantially as specified.

10. In a filling-machine, the combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame having mounted thereon a cylinder and piston for operating the sealing-head, a movable sealing-head to be operated by said piston, and a filling-tube having no vertical movement, said filling-tube having a valve at its lower end, substantially as specified.

11. In a filling-machine the combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame having a cylinder and piston mounted upon it for operating the chambered sealing-head and a filling-tube having no vertical movement, and also mounted upon said swinging frame, and a chambered movable sealing device also mounted on said swinging frame, substantially as specified.

12. In a filling-machine the combination of a stationary cylinder containing its piston for raising and lowering the support of the package to be filled, a swinging frame having a cylinder and piston mounted upon it, and a filling-tube having no vertical movement, and also mounted upon said swinging frame, and a barrel-support adapted to be raised and lowered, and means for sealing the package when the filling-tube is inserted therein, substantially as specified.

13. The combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame, a cylinder and piston mounted on said swinging frame for operating the chambered sealing-head, a filling-tube having no vertical adjustment and having a valve at its lower end, with means for operating the same and a chambered movable sealing device, substantially as specified.

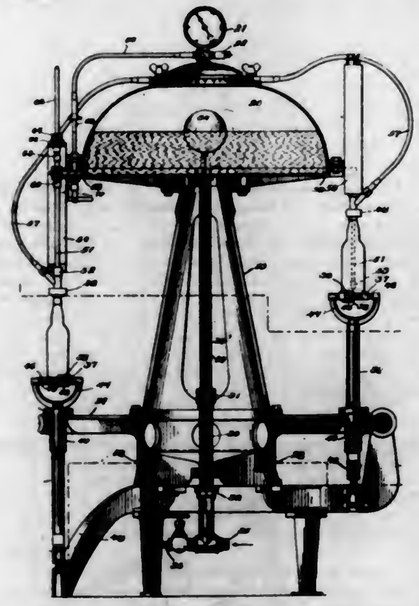
14. The combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame, a cylinder and piston mounted on said swinging frame for operating the sealing-head, a filling-tube having no vertical adjustment and having a valve at its lower end, with means for operating the same and a chambered sealing device, and a reservoir for containing the liquid under pressure, substantially as specified.

15. The combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame, a cylinder and piston mounted on said swinging frame for operating the chambered sealing-head, a filling-tube having no vertical adjustment and having a valve at its lower end with means for operating the same, a chambered movable sealing device, and a reservoir for containing the liquid under pressure, and a pipe or hollow tube connecting the chambered sealing-head with the upper portion of the reservoir.

16. The combination of a stationary cylinder containing its piston for raising and lowering the package to be filled, a swinging frame, a cylinder and piston mounted on said swinging frame for operating the chambered sealing-head, a filling-tube having no vertical adjustment and having a valve at its lower end with means for operating the same, a chambered movable sealing device, a reservoir for containing the liquid under pressure, a pipe or hollow tube connecting the chambered sealing-head with the upper portion of the reservoir, a pipe or hollow tube connecting the upper end of the stationary filling-tube and the lower portion of the reservoir, a sight-glass in the tube to the upper portion of the reservoir, and an adjustable section in this pipe passing through a stuffing-box into the sight-glass, substantially as specified.



## 755,619. BOTTLING-MACHINE. HARRY W. COLBY, Chicago, Ill., assignor to Automatic Racking Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Mar. 31, 1902. Serial No. 100,651. (No model.)



*Claim.*—1. In a bottle-filling machine, the combination of a reservoir for containing the liquid under pressure, a series of telescoping filling-tubes and sealing-heads, the former each provided with a valve at its delivery end and the latter sliding on the former to an extent approximately equal to the depth of the bottle to be filled, a series of bottle-supports, means for rotating together said filling-tubes, sealing-heads and bottle-supports, means for equalizing the pressure between the reservoir and the bottles being filled, and automatic means for raising and lowering the bottle-supports, successively, in the operation of the machine, substantially as specified.

2. In a bottle-filling machine, the combination of a rotary reservoir for containing the liquid under pressure, means for rotating said reservoir, a series of telescoping filling-tubes and sealing-heads, the former each provided with a valve at its delivery end and the latter sliding on the former to an extent approximately equal to the depth of the bottle to be filled and a series of bottle-supports, means for equalizing the pressure between the reservoir and the bottles being filled, all of these parts rotating with the reservoir, and automatic means for raising and lowering the bottle-supports, successively, in the operation of the machine, substantially as specified.

3. In a bottle-filling machine, the combination of a rotary reservoir for containing the liquid under pressure, means for rotating said reservoir, an axial ingress for said reservoir and rotating therewith, a stationary liquid-supply pipe jointed to said axial ingress, a valve for controlling the ingress the stem of which passes through said axial ingress, a compressed-air pipe communicating with the said stationary supply-pipe at the outer side of said valve and a float connected to said valve-stem and floating on the liquid contents of the reservoir, substantially as specified.

4. In a bottle-filling machine, the combination of a series of telescoping filling-tubes and sealing-heads, the former each provided with a valve at its delivery end and the sealing-head constructed to slide on the filling-tube to an extent approximately equal to the depth of the bottle to be filled and a series of bottle-supports, means for raising and lowering the bottle-supports, and a yielding means for compensating for the varying thicknesses of the bottoms of the bottles, to prevent the breaking of the same, substantially as specified.

5. In a bottle-filling machine, the combination of a filling-tube and a sealing-head, the former provided with a valve at its delivery end, the sealing-head constructed to slide on the filling-tube to an extent approximately equal to the depth of the bottle to be filled, a bottle-support for lifting the bottle and the sealing-head, said filling-tube being itself made yielding to the upward movement of the bottle-support, and means which will return it automatically to its normal position, whereby the varying thicknesses of the bottom of the bottle are compensated for and the breakage of the bottles avoided, substantially as specified.

6. In a bottle-filling machine, the combination of the filling-tube and the sealing-head, the former provided with a valve at its delivery end and the sealing-head constructed to slide on the filling-tube to an extent approximately equal to the depth of the bottle to be filled, a bottle-support for lifting the bottle and the sealing-head, said filling-tube being itself made yielding in the upward movement of the bottle-support against a spring, substantially as specified.

7. In a bottle-filling machine, the combination of a bottle-support, means for automatically raising and lowering said bottle-support, a filling-tube having a valve at its delivery end, a telescopic sealing-head sliding on said filling-tube to an extent approximately equal to the depth of the bottle to be filled and means for holding said sealing-head down with an approximate equal pressure on the bottle at every position said sealing-head may assume while in contact with the bottle, substantially as specified.

8. In a bottle-filling machine, the combination of a bottle-support, means for automatically raising and lowering said bottle-support, a filling-tube having a valve at its delivery end, a telescopic sealing-head sliding on said filling-tube to an extent approximately equal to the depth of the bottle to be filled and a weight applied to said sealing-head for holding it down, substantially as specified.

9. The combination of a liquid-package support, means for raising and lowering said support, a filling-tube, a movable sealing-head, a valve at the upper end of said filling-tube, a valve-rod connected to said valve, and a frictional connection between said valve-rod and said sealing-head, whereby the larger movement of the sealing-head may be communicated to and transformed into a smaller movement of the valve to open said valve when the sealing-head begins to rise and close said valve when the sealing-head begins to descend, substantially as specified.

10. The combination of a reservoir for containing the liquid under pressure, a movable liquid-package support, means for raising and lowering said support, a filling-tube long enough to extend approximately to the bottom of the package to be filled, a sealing-head having means independent of the filling-tube for communicating with said reservoir, and a valve at the lower end of said filling-tube operable by the movement of said support independently of the sealing-head, substantially as set forth.

11. The combination of a liquid-package support, means for raising and lowering said support, a filling-tube long enough to extend approximately to the bottom of the package to be filled, a valve at the upper end of said filling-tube and a valve at the lower end of said filling-tube, both operated by the movement of said support, substantially as specified.

12. In a bottling-machine, the combination, with bottle-filling devices, of a bottle-support mounted and held in proper relation to said filling devices, having two faces provided respectively with bot-

tle-centering devices of different sizes, and movable to bring either centering device into position for operation, and means for holding the support when adjusted.

13. The combination of a sealing-head having an air-cavity in its lower part and a filling-tube within the sealing-head having an enlargement at its lower end forming an annular valve independent of the liquid-controlling valve to close and open said cavity by the movement of the parts with respect to each other, substantially as specified.

14. The combination of a sealing-head having a pressure-conduit connected therewith and a filling-tube within the sealing-head having its lower portion formed as a valve independent of the liquid-controlling valve, and so constructed that when the lower end of the filling-tube is within the sealing-head it will act as a valve to close the pressure-conduit, substantially as specified.

15. The combination of the passage 58, the filling-tube connected to said passage by the stuffing-box 60, the valve 61 at the upper end of the filling-tube, the valve-rod 62 and the means for operating said rod and the stuffing-box 63, substantially as specified.

16. The combination of the reservoir for containing the beer under pressure, of a series of sealing-heads movable to an extent approximately equal to the depth of the package to be filled, filling-tubes each provided with a valve at its delivery end and bottle-supports, said sealing-heads communicating with the upper part of the reservoir and said filling-tubes with the lower part of the reservoir so that the bottle will be filled under equal pressure with that of the reservoir and a stationary cam-track for raising and lowering the bottles a distance greater than the height of the bottle, substantially as specified.

17. The combination of the stationary cam-track, the bottle-supports raised and lowered by the cam-track, the reservoir and its series of sealing-heads and filling-tubes the former sliding on the latter to an extent approximately equal to the depth of the package to be filled, and the latter each provided with a valve at its delivery end mounted to rotate with the bottle-supports, the axial ingress of the reservoir and the stationary ingress connected thereto by a stuffing-box and a valve in the ingress for opening and closing the same, substantially as specified.

18. The combination with a sealing-head and filling-tube, the former sliding upon the latter, of a valve at the upper end of the filling-tube and a weight applied to the sealing-head and surrounding an extension of the filling-tube with a frictional bearing, whereby the sealing-head is held down upon the bottle in the descent of the latter and the valve at the upper end of the filling-tube is operated, substantially as specified.

19. The combination of a filling-tube and sealing-head the latter movable on the former to an extent approximately equal to the depth of the package to be filled, a valve at the lower end of the filling-tube adapted to be opened and closed by the movement of the bottle, means for moving the bottle and an air-valve formed by contact between the filling-tube and sealing-head, substantially as specified.

20. The combination with the reservoir of a reciprocating sealing-head and filling-tube connected thereto the sealing-head moving on the filling-tube to an extent approximately equal to the depth of the package to be filled, a valve at the lower end of the filling-tube, a reciprocating bottle-support, and means for reciprocating said bottle-support and sealing-head the former to an extent approximately greater than the height of the package to be filled, substantially as specified.

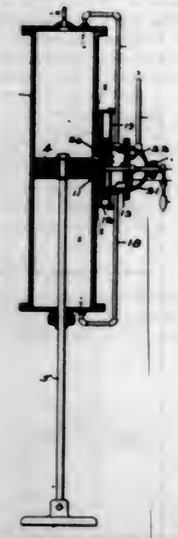
21. The combination of a reservoir for containing the liquid under pressure, a bottle-support and sealing-head movable vertically and horizontally together, a filling-tube having a valve at its lower end and long enough to reach the bottom of the package to be filled, and means for opening and closing the said valve, the said sealing-head having means independent of the filling-tube for communicating with the reservoir, substantially as and for the purpose described.

22. The combination of a sealing-head yielding to an extent approximately equal to the depth of the package to be filled and a bottle-support, of a weight applied to the sealing-head, and a filling-tube having a valve at its lower end for opening and closing it and being long enough to reach approximately to the bottom of the package to be filled, substantially as specified.

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**755,620. DEVICE FOR RAMMING SAND CORES. GEORGE A. CONRATH, Blairsville, Pa., assignor to the Penn Enamel-Ware Co., a Corporation of New York. Filed Aug. 6, 1903. Serial No. 168,488. (No model.)**

*Claim.*—1. In a power ramming device for sand molds, an engine comprehending a cylinder, of independent secondary valve-chambers each provided with a port communicating with said cylinder, parallel reciprocating slide-valves controlling said secondary ports, a primary valve-chamber communicating with the air-supply and with each of said secondary valve-chambers by separate ports, an oscillatable shaft carrying a valve for controlling said primary valve-ports, members operatively connecting said slide-valves with the member for operating the oscillating valve whereby they all move simultaneously, and exhaust passage-ways leading from each end of said cylinder to its respective secondary chambers, the ramming-head of said device being attached to the engine-piston, as set forth.



2. In a power ramming device for sand molds, an engine comprehending a cylinder, of independent secondary valve-chambers each provided with a port communicating with said cylinder, parallel gear-racks carrying slide-valves controlling said secondary ports, a primary valve-chamber communicating with the air-supply and with each of said secondary valve-chambers by separate ports, an oscillatable shaft carrying a valve for controlling said primary valve-ports, a pinion carried by said shaft to engage said gear-racks to cause said valves to move simultaneously, and an exhaust passage-way leading from each end of said cylinder to its respective secondary valve-chamber, the ramming-head of said device being attached to the engine-piston, as set forth.

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**755,621. WASHBENCH. WILLIAM COPELAND, Strong City, Kans. Filed May 2, 1903. Serial No. 155,419. (No model.)**

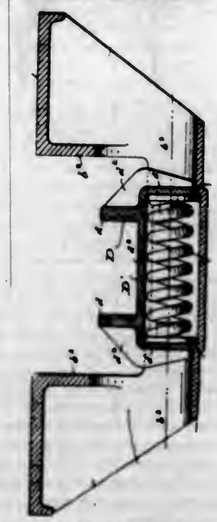


*Claim.*—In a washbench, a central support consisting of V-shaped standards, a cross-bar connecting the standards at their upper ends, braces connecting the legs of the V-shaped standards intermediate the ends thereof, supporting-frames pivoted to corresponding portions of the V-shaped standards, brace-rods passing through the standards, the braces of the standards and the inner end portions of the pivoted supporting-frames securing same together forming pivot means for the supporting-frames, said brace-rods being adapted to brace the central support, legs pivoted to the outer opposite sides of the supporting-frames, connecting-bars connecting the lower ends of the legs of each frame together, and supporting-bars rigidly secured to the under side of the supporting-frames, the supporting-frames and adjacent connecting-bars and legs being adapted to be folded upon the central support.



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**755,622. COUPLING STIRRUP AND CENTERING DEVICE FOR RAILWAY-CARS. WILBUR G. CORY, New Haven, Conn. Filed June 22, 1903. Serial No. 162,477. (No model.)**



*Claim.*—1. A car-coupler supporting and centering device, comprising in combination a stirrup or carry-iron having an internal guide-trough, channel or chamber formed therein to receive a centering device, spring and followers, and provided with shoulders or stops for the followers to abut against, of a centering device having upright flanges forming a seat for the coupler draw-bar, and depending ends or flanges fitting within said guide trough or channel of the stirrup or carry-iron, and embracing the followers, a spring and a pair of followers inclosed and embraced between said stirrup or carry-iron and said centering device, substantially as specified.

2. The combination with a car-coupler stirrup or carry-iron having a channel or chamber open at the top to receive a spring and a pair of followers, and provided with stops or shoulders for the followers to abut against, of a coupler-centering device having a seat for the draw-bar of the coupler, and provided with depending ends or flanges fitting within said channel or chamber of the stirrup or carry-iron to embrace and bear against the followers, substantially as specified.

3. The combination with a coupler-stirrup or carry-iron, having a channel or chamber to receive a spring, and shoulders or stops for the followers of the spring to abut against, of a coupler-centering device having a seat for the draw-bar of the coupler and ends fitting within said channel or chamber of the stirrup or carry-iron and embracing and bearing against the followers, and guides or flanges fitting the upper edges or faces of the webs or walls of the channel or chamber in the stirrup or carry-iron, and a spring and followers, substantially as specified.

4. A malleable-iron car-coupler stirrup or carry-iron, having horizontal webs or flanges $b\,b$ for attachment to the car, and depending webs or flanges $b'\,b^3$ and $b'\,b^3$ forming a space for the draw-bar between them, substantially as specified.

5. A malleable-iron car-coupler stirrup or carry-iron, having horizontal webs or flanges $b\,b$ for attachment to the car, and depending webs or flanges $b'\,b^3$ and $b'\,b^3$ forming a space for the draw-bar between them and provided with a channel or chamber B' formed by curved walls $b^3\,b^3$, substantially as specified.

6. A malleable-iron car-coupler stirrup or carry-iron, having horizontal webs or flanges $b\,b$ for attachment to the car, and depending webs or flanges $b'\,b^3$ and $b'\,b^3$ forming a space for the draw-bar between them and provided with a channel or chamber B' formed by curved walls $b^3\,b^3$ and furnished with shoulders or stops $b^4$, substantially as specified.

7. A car-coupler-centering device B, having upright flanges $d\,d$ forming a seat for the draw-bar of the coupler, and depending ends or flanges $d'\,d'$ to embrace and bear against the followers in combination with a carry-iron having an integral guide trough or channel within which said depending ends or flanges $d'\,d'$ fit, substantially as specified.

8. A car-coupler-centering device D, having upright flanges $d\,d$ forming a seat for the draw-bar of the coupler, and depending ends or flanges $d'\,d'$ to embrace and bear against the followers, and ribs or webs $d^3\,d^3$ uniting said flanges $d\,d'$ in combination with a carry-iron having an integral guide trough or channel within which said depending ends or flanges $d'\,d'$ fit, substantially as specified.

9. A car-coupler-centering device D, having upright flanges $d\,d$ forming a seat for the draw-bar of the coupler, and depending ends or flanges $d'\,d'$ to embrace and bear against the followers, ribs or webs $d^3\,d^3$ uniting said flanges $d\,d'$, and a horizontal bed $d^3$ provided with guides or flanges $d^4$, $d^4$, at its edges, substantially as specified.

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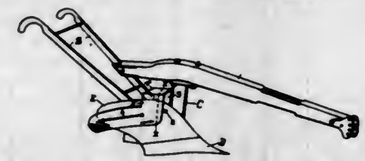
**755,623. BOTTLE-CLOSURE. KRAUTH H. CREESMAN, Naper, Nebr., assignor of one-tenth to Charles F. Zimmerman, Naper, Nebr. Filed June 3, 1903. Serial No. 159,952. (No model.)**



*Claim.*—The combination with a bottle, of a closure therefor comprising a thin frangible disk within the same, a wire doubled and looped through the center thereof, producing two strands extending therefrom, and a stopper through which the strands are threaded at a distance apart, the strands being twisted together upon the outer end of the stopper.

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**755,624. PLOW ATTACHMENT. JOHN D. CROWE, Webster, Ind. Filed June 5, 1903. Serial No. 160,211. (No model.)**

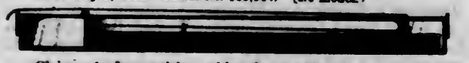


*Claim.*—1. In combination with a plow having a beam and a moldboard, of an attachment consisting of an upwardly, outwardly, and downwardly extending member, with a tailpiece extending to near the rearmost point of the moldboard and corresponding with the contour thereof, a brace-rod extending over the outer face of the tailpiece and secured thereto by rivets, slots formed in the upwardly-extending portion of the device to receive bolts, and the forward edges of the device flaring outward, all substantially as shown and described.

2. A plow attachment comprising a vertical securing portion, an outwardly-extending horizontal portion, a downwardly-extending outer portion, a tail portion extending rearward from the latter, a stiffening-bar secured to and extending longitudinally of the tail portion, and means for securing the attachment to a plow, all substantially as shown and described.

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**755,625. WRITING-TABLET. DAVID F. CURTIN, Butte, Mont. Filed May 1, 1902. Serial No. 105,517. (No model.)**



*Claim.*—1. In a writing-tablet, the combination of a receptacle for the writing material, a cover hinged thereto at one end thereof,

said cover having a transverse slot at or near its free end, and a cutting-blade secured to the hinged cover adjacent to the transverse slot therein and projecting outwardly from said cover.

2. A writing-tablet comprising a receptacle having a cover secured thereto and adapted to contain a continuous, alternately-folded strip of writing material, said receptacle having a transverse slot in one of its walls, and transverse tension-rods arranged within said receptacle in slightly-varying horizontal planes but in different vertical planes, whereby the said folded strip is held mainly below said tension-rods and passed alternately over and under said rods and passed through the aforesaid slot.

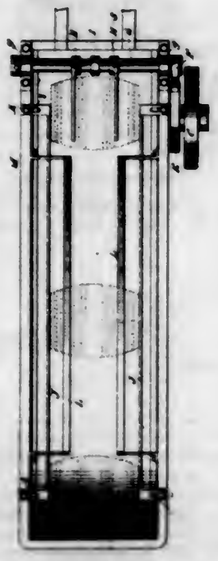
3. In a writing-tablet the combination of a receptacle adapted to receive the writing material, a cover hinged thereto at one end thereof, said cover provided with a transverse slot at or near its free end, a cutting-blade secured to said receptacle and projecting outwardly therefrom adjacent to said transverse slot, and transverse tension-rods secured within said receptacle.

4. In a writing-tablet the combination of receptacle divided into compartments by a transverse partition, covers hinged to said partition, one of said covers being provided with a transverse slot near its free end, and a cutting-blade secured to and projecting from the free end of one of the hinged covers.

5. In a writing-tablet the combination with a receptacle containing a continuous alternately-folded strip of writing material, of a plurality of transverse tension-rods secured within said receptacle in but slightly-varying horizontal planes but in different vertical planes, the strip being passed alternately over and under said rods, a cover hinged to the receptacle having a transverse slot adjacent to its free end, and a cutting-blade secured to said cover.

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**755,626. BARREL-SOAKING APPARATUS.** BALKIN DASHER, Whiteplains, N. Y. Filed Apr. 18, 1901. Renewed Sept. 14, 1903. Serial No. 173,174. (No model.)



*Claim.*—1. In a barrel-soaking apparatus, the combination of the tank A having the inclined depression-rails L and the adjustable guide-bars J, substantially as shown and described.

2. In a barrel-soaking apparatus, the combination of the tank A having the fixed rails L, the adjustable guide-bars J and means at one end to lift the barrel out of the tank, substantially as described.

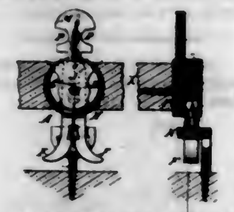
3. In a barrel-soaking apparatus, the combination of a tank, having the arms H H and the stop-rod I affixed to the shaft G, said shaft being provided with means to lift said stop-rod partially out of the tank, substantially as described.

4. The combination of the tank A, the rails L, the guide-bars J, the arms H H and the rod I affixed to the pivotal shaft G, said shaft being operated by a sectional cog, substantially as described.

5. In a barrel-soaking apparatus, the combination of the tank A having the fixed depression-rails L, the guide-bars J the shaft G provided at one end of the said tank and having the fixed arms H H and the stop-rod I operated by the sectional cog F in combination with the pulley C having the sectional cog-wheel E and journal in bracket e, substantially as shown and described.

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**755,627. FASTENER FOR BLINDS, SHUTTERS, DOORS, OR THE LIKE.** GEORGE DARLING, Fall River, Mass. Filed May 1, 1903. Serial No. 155,112. (No model.)



*Claim.*—1. A fastener, made up of a pair of pivoted jaws having outwardly-flaring end portions, and having in each of the opposite faces of said jaws, a slot to engage one side of a pin; a block centrally pivoted and lying between said jaws; a spring constantly pressing said jaws toward each other; a lever to move said block on its pivot and cause said jaws to open against the pressure of said spring, to disengage said jaws and said pin; and a notch in the outer portion of said lever to engage a second pin, said spring operating through said jaws and said block to force said lever with its notch back into its normal or locking position with said second pin.

2. In a fastener, a case; a pair of jaws, pivotally mounted in said case, and extending outwardly through an opening in the side of said case; means, in close proximity to said opening, engaging said jaws to close the same, and, with said jaws, practically closing said opening to incoming insects; and means to open said jaws.

3. In a fastener, a cylindrical case; a pair of jaws, pivotally mounted in said case, and extending outwardly through an opening in the side of said case; a flat spring lying on edge within said case, and having its ends engaging the outer side surface of said jaws, in close proximity to said opening for said jaws, the height of said spring exceeding that of said opening for said jaws; said spring and said jaws thus practically closing said opening to incoming insects and means to operate said jaws.

4. In a fastener, a case; a pair of jaws, pivotally mounted in said case, and extending outwardly through an opening in the side of said case; means, in close proximity to said opening, engaging said jaws to close the same, and, with said jaws, practically closing said opening to the weather and incoming insects; a lever, pivoted within the case to open said jaws and extending outwardly through a second opening in said case, said lever having shoulders extending sidewise, just within said case, and far enough always, to close said second opening to the weather and incoming insects.

5. In a fastener, a cylindrical case; a pair of jaws pivotally mounted in said case, and extending outwardly through an opening in the side of said case; a flat spring lying on edge within said case and having its ends engaging the outer side surfaces of said jaws in close proximity to said opening for said jaws, the height of the spring exceeding the thickness of the jaws: said spring and said jaws thus practically closing said opening to the weather, and incoming insects; a lever pivoted within the case, to operate said jaws, and extending outwardly through a second opening in said case, said lever having shoulders extending sidewise, just within said case, and far enough always to close said second opening to the weather, and incoming insects.

6. A cylindrical case for a fastener, mounted in a hole of corresponding diameter, in a movable body; a pair of jaws mounted on a pivot within said case; a lever, having an integral block lying between said jaws, and centrally pivoted upon a pin or screw, which passes through the bottom of said cylindrical case, between said jaws, and through said block, and then into said body, the axis of said pin or screw being different from that of the cylindrical case; the pin or screw thus preventing the case, with the fastener mounted therein, from turning in said hole in said body.

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**755,628. POCKET SEWING-AWL.** JAMES L. DAVIDSON, Los Angeles, Cal. Filed May 8, 1903. Serial No. 156,230. (No model.)

*Claim.*—1. A sewing-awl having a receptacle for thread, and an outlet for the thread at one end of the awl-handle, a thread-controller constructed to hold the thread at the other end of the handle, thus allowing the thread to be led along the outside of the handle where the same can be readily grasped by the hand rearward of the thread-controller.



2. A sewing-awl provided with a thread-controller at the front end of the handle, and means for supplying thread from the rear of the handle.

3. A sewing-awl having in its handle, a forwardly and rearwardly opening chamber for a thread-controller and also rearwardly-opening chambers to hold needles and other instruments, a thread-receptacle rearward of such chambers, a member forming a bottom for such receptacle, and a cover for the thread-receptacle forming the end of the handle.

4. A sewing-awl having a chambered handle, the chambers of which open rearwardly, a passage opening forwardly from one of the chambers, a spring thread-controller, a portion of which extends through said passage to receive the thread, a thread-receptacle at the rear of the handle, and a cover for said receptacle forming the end of the handle.

5. In a sewing-awl, a longitudinally-chambered stock having an opening at the front end communicating with a chamber of the stock, a chuck at the front end of the stock, a cover at the rear end of the stock, the same being furnished with a perforation to fit the nut of the chuck.

6. A sewing-awl furnished at one end with a chuck, and at the other end with a detachable perforated end piece, the perforation of which is adapted to fit the nut of the chuck to turn the same.

7. A sewing-awl handle provided with a chamber, a passage leading forward from the chamber, a spring in the chamber, and a member normally retracted by the spring extending through said passage and provided with an eye at its outer end to receive a thread.

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**755,629. PROCESS OF ANNEALING STEEL.** LEONARD D. DAVIS, Erie, Pa. Filed July 5, 1901. Serial No. 67,236. (No specimens.)

*Claim.*—1. The process of annealing steel which consists in immersing steel in a bath of molten metal which fuses between 1,000° to 1,500° Fahrenheit and gradually cooling steel.

2. The process of annealing steel which consists of immersing it in a bath of molten metal in which aluminium predominates and which is heated to a temperature of from 1,100° to 1,500° Fahrenheit and gradually cooling steel.

3. The process of annealing steel which consists in immersing steel in a bath of aluminium heated to a temperature of from 1,125° to 1,500° Fahrenheit and gradually cooling steel.

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**755,630. BELL.** WILLIAM W. DEAN, Chicago, Ill., assignor to Kellogg Switchboard and Supply Company, Chicago, Ill., a Corporation of Illinois. Filed Mar. 24, 1902. Serial No. 99,637. (No model.)



*Claim.*—1. In a signaling-bell, the combination with the operating-magnet thereof and its cores, of an armature for said magnet supported in front of and at an unvarying distance from said cores, an extension for the forward end of each core to extend the magnetic circuit of the magnet toward the armature, said extensions being connected with the body portion of the cores by means of overlapping portions so as to be independently adjustable axially of said cores and to maintain the continuity of the metallic path for the magnetic lines of force as well as to vary the relation of said extensions with respect to the said armature, and means for securing said extensions and cores together in adjusted positions, substantially as described.

2. In a signaling-bell, the combination with the operating-magnet and its cores, of an armature therefor supported at an unvarying distance from and adapted to be actuated by said magnet and cores, each core having a cylindrical bore in its forward end, an extension of the core having a stem fitting within the said bore and capable of being fixed in different longitudinal positions therein, whereby the poles of the magnet can be adjusted with reference to the armature and axially of the body of the core and secured in adjusted position, substantially as described

3. In a signaling-bell, the combination with the magnet-coils and cores therefor, each core having a threaded aperture in the forward end thereof, an extension of the core having a stem threaded into said aperture to permit the same to be adjusted axially of the core into various longitudinal positions and to be secured in such positions, and an armature supported at an unvarying distance from and adapted to be actuated wholly by the magnetism from said extensions, substantially as described.

4. In a signaling-bell, the combination with the magnet and its cores, of pole-pieces for said cores, an armature, said pole-pieces being adjustable with reference to the armature, and a support for the armature secured in fixed relation to said cores by the said pole-pieces, substantially as described.

5. In a signaling-bell, the combination with the magnet and its cores, of adjustable pole-pieces for said cores capable of a fixed and permanent adjustment therewith, an armature in operative relation with said pole-pieces, the adjustment of said pole-pieces serving to vary their positions with respect to the armature, and a support for the armature secured in unvarying relation to the forward ends of said cores by said pole-pieces, substantially as described.

6. In a signaling-bell, the combination with a two-coil magnet having a core for each coil, of an adjustable extension for each core, an armature in operative relation with said extensions, and a support for the armature carried by the said cores and secured thereto by the said extensions, substantially as described.

7. In a signaling-bell, the combination with a pair of coils and a core for each coil, a screw-bolt threaded into the end of each core, a supporting-plate carried upon said screw-bolts, check-nuts upon said bolts outside of the supporting-plate to secure the plate in position, and an armature mounted upon the said plate in operative relation with the heads of said screw-bolts, substantially as described.

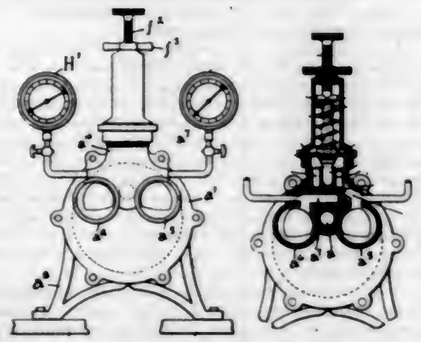
8. In a signaling-bell, the combination with the operating-magnet thereof and its cores, said cores extending beyond the forward ends of the magnet-coils, an armature-supporting plate placed against the forward ends of said cores, screws passing through said supporting-plate and into the cores, lock-nuts upon said screws outside of the plate and clamping the plate against the ends of the cores regardless of the longitudinal adjustment of the screws in the cores, and an armature pivoted intermediate its ends upon said support and having its ends in operative relation with the heads of said screws, substantially as described.

9. In a signaling-bell, the combination with a magnet having a pair of coils, of a core for each coil, a plate to which the rear ends of said cores are fixedly secured, said plate serving to complete the magnetic circuit of said cores and also as a supporting-plate by means of which the bell is secured in position, the forward ends of said cores being provided with threaded apertures, pole-pieces for said cores having threaded stems engaging said threaded apertures, whereby said pole-pieces are adjustable longitudinally of said cores, an armature pivoted between its ends and disposed in front of the ends of said pole-pieces in operative relation therewith, and a bell-tongue carried by said armature, substantially as described.

10. In a signaling-bell, the combination with a magnet having a pair of coils and a core for each coil, of a plate to which the rear ends of said cores are fixedly secured, gongs for the bell carried upon said plate, said plate serving to complete the magnetic circuit of said cores and to serve as a supporting-plate for the bell by which it is secured in position, the forward ends of said cores extending beyond the magnet-coils, an armature-support placed against said forward ends, screws extending through said support and into said cores, set-nuts upon said screws outside of said supporting-plate and binding the armature-support in place against the ends of the cores independently of the longitudinal position of the screws, rearwardly-extending lugs upon said armature-support intermediate its ends, an armature pivoted between said lugs and having its ends in operative relation with the heads of said screws, a bell-tongue carried by said armature and extending rearwardly toward the gongs, and a permanent magnet secured at one end to said supporting-plate and having its other end in proximity with the pivoted armature to polarize the same, substantially as described.

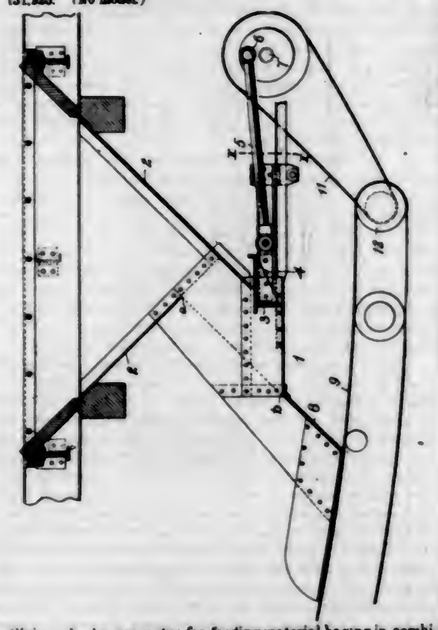
11. In an alternating-current bell-ringer the combination with an electromagnet, of an armature responsive thereto, a threaded stud facing said armature and adapted to enter the core of said magnet, and a check-nut threaded on said stud for fixing said stud in position, substantially as set forth.

755,631. ROTARY PUMP. HENRY R. DUCKBACH, Cincinnati, Ohio. Filed Apr. 13, 1900. Serial No. 12,669. (No model.)



*Claim.*—The combination of a rotary pump, an electric motor for rotating it, an induction and a discharge port in the pump, a by-pass connecting the ports, a valve controlling the opening and closing of the by-pass to be raised by a predetermined pressure at the discharge-port, an electric switch resting upon the valve, wires for conveying the motive power to the motor running into the switch and connected thereby when the valve is seated, and disconnected when the valve is raised from its seat, whereby when the pressure exceeds a predetermined limit, the by-pass is opened for releasing the pressure and for decreasing the speed of the motor, substantially as shown and described.

755,632. MECHANISM FOR FEEDING. RALPH H. DEMPSEY, Pittsburg, Pa., assignor to Tate Jones & Co., Incorporated, Pittsburg, Pa., a Corporation of New Jersey. Filed Nov. 19, 1902. Serial No. 131,925. (No model.)



*Claim.*—1. An apparatus for feeding material having in combination a receptacle having one or more sides sloping to a discharge-opening, a platform arranged to receive material from the receptacle and to check the movement of the material passing through the discharge-opening of the receptacle, and a reciprocating head for pushing material from the platform arranged to operate between the receptacle and the platform, substantially as set forth.

2. An apparatus for feeding material having in combination a receptacle, a stationary platform arranged below the discharge-opening of the hopper and extending beyond the edge of the discharge-opening a distance sufficient to prevent the material dropping off the platform in its movement from the hopper, and means for pushing the material from the platform, substantially as set forth.

3. In an apparatus for feeding material the combination of a receptacle, a platform arranged to receive the material passing through the discharge-opening of the receptacle and to check the free movement thereof, a reciprocating pusher, a conveyer to receive the material as it is pushed from the platform and means whereby the conveyer and pusher are controlled in their operation one by the other, substantially as set forth.

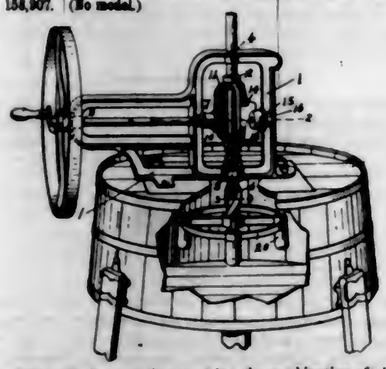
4. In an apparatus for feeding material, the combination of a receptacle, a platform arranged to receive material pressing through the discharge-opening of the receptacle, a reciprocating head for pushing the material from the platform, a conveyer arranged to receive the material from the platform, and means for controlling the conveyer and pushing-head the one by the other, substantially as set forth.

755,633. BUNG-MALLET. JOHN M. DIETERLE, St. Louis, Mo. Filed Feb. 14, 1903. Serial No. 143,528. (No model.)



*Claim.*—A device of the character described comprising in combination with a hollow cylinder provided in its wall with a vertically-disposed segmental opening and shoulders arranged adjacent the ends of said opening, of a removable member arranged in said segmental opening, and lugs formed integral with the upper and lower ends of the said member on opposite sides thereof, the upper lugs forming a wrench member and the lower lugs securing the removable member in place, substantially as described.

755,634. GEARING. JOHN DIETZ, Cincinnati, Ohio, assignor to Conrad Dietz, Cincinnati, Ohio. Filed May 27, 1903. Serial No. 158,907. (No model.)



*Claim.*—1. In a washing-machine, the combination of a housing, a driven shaft journaled in said housing, a female spiral in said housing, a male spiral on said driven shaft adapted to take into and engage said female spiral to rotate the driven shaft, a rack and rudder pivotally mounted on said driven shaft, a pinion adapted to engage said rack, means for supporting and rotating said pinion, and a guide adapted to engage said rudder to turn said rack in different positions to hold it in engagement with the pinion as it is being rotated.

2. In a washing-machine, the combination of a housing, a driven shaft journaled therein, a female spiral in said housing, a male spiral on said driven shaft adapted to take into and engage said female spiral to rotate the driven shaft, a rack and rudder pivotally mounted on said driven shaft, a pinion adapted to engage said rack, means for supporting and rotating said pinion, and a guide adapted to engage said rudder to turn said rack in different positions to hold it in engagement with the pinion as it is being rotated.

3. In a washing-machine, the combination of a housing, a driven shaft arranged and journaled vertically therein, a female spiral in said housing, a male spiral on said driven shaft adapted to take into and engage said female spiral to rotate the driven shaft, a rack and rudder pivotally mounted on said driven shaft, a pinion adapted to engage said rack, means for supporting and rotating said pinion, and a guide adapted to engage said rudder to turn said rack in different positions to hold it in engagement with the pinion as it is being rotated.

4. In a washing-machine, the combination of a housing, a driven shaft arranged and journaled vertically therein, a female spiral in said housing, a male spiral on said driven shaft adapted to take into and engage said female spiral to rotate the driven shaft, an elongated and endless rack and a rudder pivotally mounted on said driven shaft, a pinion adapted to engage said rack, means for supporting and rotating said pinion and a guide adapted to engage said rudder to turn said rack in different positions to hold it in engagement with the pinion as it is being rotated.

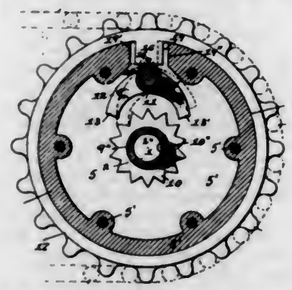
5. In a washing-machine, the combination of a housing, a driven shaft mounted in said housing, a male spiral on said driven shaft, a female spiral adapted to engage said male spiral to rotate the driven shaft, a rack on said driven shaft and a pinion adapted to engage said rack, means for rotating said pinion and means for holding said pinion and rack in engagement with each other.

6. In a washing-machine, the combination of a housing, a driven shaft journaled in said housing, a female spiral in said housing, a male spiral on said driven shaft adapted to take into and engage said female spiral, a rack on said driven shaft, a pinion adapted to engage and move said rack and a guide and rudder adapted to reverse the movements of said driven shaft.

7. In a washing-machine, a housing, a female spiral in said housing, a male spiral formed upon said driven shaft and adapted to take into said female spiral, a rack and rudder pivotally mounted upon said driven shaft, means for holding said rack and rudder from lengthwise movement upon said shaft, a pinion adapted to mesh with said rack and means for holding said rack and pinion in engagement with each other while the pinion is being rotated.

8. In a washing-machine, the combination of a housing a driven shaft journaled therein, a female spiral in said housing, a male spiral on said driven shaft adapted to engage said female spiral, a rack and rudder on said driven shaft and a guide to engage said rudder whereby the rack and pinion are held in engagement with each other and reverse longitudinal and rotary movements are produced, without reversing the movement of the driving mechanism.

755,635. TRANSMISSION MECHANISM. GEORGE DILLIE and HENRY P. DILLIE, Millvale, Pa. Filed May 8, 1903. Serial No. 156,163. (No model.)



*Claim.*—1. In a transmission mechanism, the combination of a shaft or axle formed in two sections, a casing around the ends of said sections, a sprocket-wheel loosely mounted on said casing and adapted to be operated by a chain from the driving mechanism, and means connecting said axle-sections and sprocket-wheel for revolving both or either of said sections.

2. In a transmission mechanism, the combination of a shaft or axle formed in two sections, a casing around the ends of said sections, a sprocket-wheel loosely mounted on said casing and adapted to be operated by a chain from the driving mechanism, ratchet-wheels secured on the ends of said sections and within said casing, double-pointed pawls mounted within said casing, and means connecting said pawls and the sprocket-wheels for tilting said pawls to engage said ratchet-wheels and revolve both or either of said sections.

3. In a transmission mechanism, the combination of a shaft or axle formed in two sections, a casing around the ends of said sections, a sprocket-wheel loosely mounted on said casing and adapted to be operated by a chain from the driving mechanism, ratchet-wheels secured on the ends of said sections and within said casing, double-pointed pawls mounted within said casing, and means connecting said pawls and the sprocket-wheels for tilting said pawls to engage said ratchet-wheels and revolve both or either of said sections.

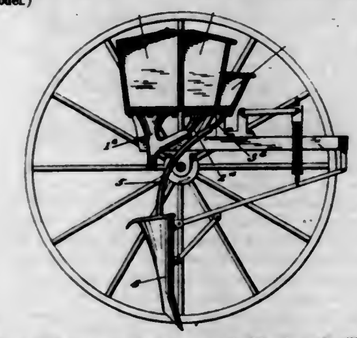
4. In a transmission mechanism, the combination of a shaft or axle formed in two sections, a casing around the ends of said sections, a sprocket-wheel loosely mounted on said casing and adapted to be operated by a chain from the driving mechanism, said sprocket-wheel having a lug or projection thereon adapted to extend through an opening in said casing and engage with the faces of the same, ratchet-wheels secured on the ends of said sections and within said casing, double-pointed pawls mounted within said casing, and means connected to said projection and to said pawls for tilting the said pawls to engage said ratchet-wheels and revolve either or both of said sections.

5. In a transmission mechanism, the combination of a shaft or axle formed in two sections, a casing around the ends of said sections, a sprocket-wheel loosely mounted on said casing and adapted to be operated by a chain from the driving mechanism, said sprocket-wheel having a lug or projection thereon extending through an opening in said casing, ratchet-wheels secured upon the ends of said sections and within said casing, and double-pointed pawls mounted within said casing and connected to said projection and said projection being adapted to engage with the end faces of said opening to form stops to tilt said pawls and allow them to engage said ratchet-wheels to revolve either or both on said sections.

6. A transmission mechanism, comprising a shaft or axle formed in two sections, a casing around the ends of said sections, a sprocket-wheel mounted on said casing and adapted to be operated by a chain from the driving mechanism, said sprocket-wheel having a lug or projection thereon adapted to extend through an opening in said casing and engage with the faces of the same, ratchet-wheels secured on the ends of said sections and within said casing, double-pointed pawls mounted within said casing, and means connecting said ratchet-wheels and sprocket-wheel for revolving both or either of said sections.

7. In a transmission mechanism, the combination of a shaft formed in two sections, a casing around the ends of said sections, a sprocket-wheel loosely mounted on said casing and adapted to be operated by a chain from the driving mechanism, said sprocket-wheel having a lug or projection thereon adapted to extend through an opening in said casing and engage with the faces of the same, ratchet-wheels secured on the ends of said sections and within said casing, double-pointed pawls mounted within said casing, means connected to said pawls for tilting said pawls to engage said ratchet-wheels and revolve either or both of said sections, and springs connected to said casing and engaging with said pawls for holding them in position for operating.

755,636. GRAIN-DRILL. FRANK P. DILL, Blendon township, Franklin county, Ohio. Filed Oct. 24, 1903. Serial No. 178,320. (No model.)

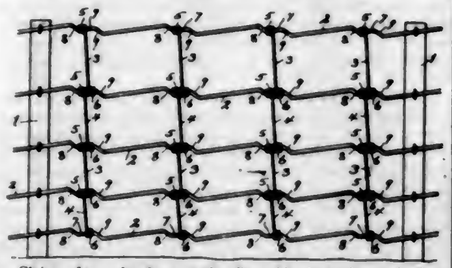


*Claim.*—The combination in a grain-drill having a fertilizer-box, a grain-seed box, a grass-seed box and a shoe, of a flexible conduc-

tor connected at one end to the discharge-opening of the grass-seed box leading into the top of the shoe and hanging removably therein.

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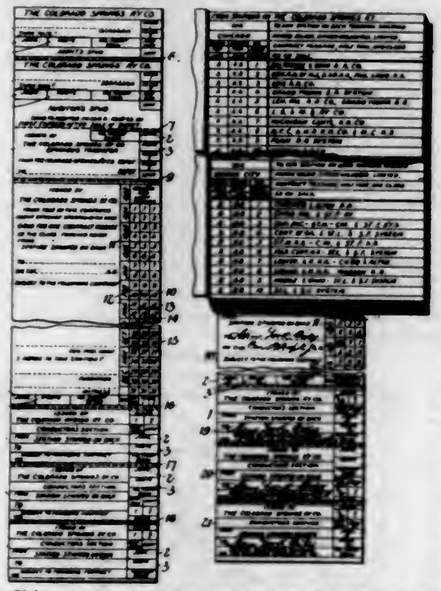
755,637. WIRE FENCE. WASHINGTON M. DILLON, Sterling, Ill. Filed Jan. 31, 1903. Serial No. 141,379. (No model.)



*Claim.*—In a wire fence, a plurality of horizontal strand-wires, seats formed in said strand-wires, guards projecting in opposite directions from opposite ends of the seats, the guard at one end of each seat projecting upwardly and the guard at the other end of the seat projecting downwardly, both guards extending in parallel diagonal planes, and stay-wires coming from opposite directions in diagonal planes meeting in the center of said seats and coiled loosely around the seats in opposite directions whereby the whole fence is rendered flexible in a vertical plane, the coils of the said stay-wires completely filling the seats and abutting the parallel guards to prevent longitudinal movement and forming a hinge-joint, substantially as described.

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755,638. TRANSPORTATION-TICKET SYSTEM. PRESTON C. DOCKSTADER, Colorado Springs, Colo. Filed Mar. 11, 1903. Serial No. 147,320. (No model.)

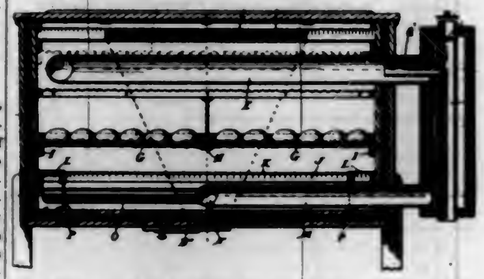


*Claim.*—1. A railroad transportation-ticket having its main body bearing matter rendering it good for passage, and a plurality of similar sections detachable from each other and from said main body, the main body and said sections having thereon designated spaces for the insertion of the destination and junction and route characters, and each section having a designated space for the insertion of the name of the railroad over which said section is good for passage, in combination with key-sheets having names or abbreviations of junctions and routes, said sheets also having thereon characters associated with the names of the respective routes.

2. A railroad transportation-ticket bearing matter rendering it good for passage, a plurality of similar sections detachable from each other and from said main body, agent's and auditor's stubs and omnibus-transfer section detachably connected to said ticket, said main body, stubs and sections bearing the same number and having designated spaces for the insertion of a junction-letter and route-number and of the destination, said similar sections having designated spaces for the insertion of the railroad over which the section is good for passage, in combination with a key-book containing a plurality of pages each containing a lettered junction and a plurality of numbered routes leading from said junction, the matter on the pages being alphabetically arranged.

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755,639. INCUBATOR. FRED R. DOLPH and SHERMAN R. KNAPP, Battlecreek, Mich. Filed June 10, 1903. Serial No. 160,877. (No model.)



*Claim.*—1. In an incubator, the combination of a case, a radiator in the case, horizontal plates above the radiator and extending from opposite sides of the case and partially across the same, means for admitting air above the plates, and means for withdrawing air from below the radiator.

2. In an incubator, the combination of a case, a radiator in the case, horizontal plates above the radiator and extending partially across the case, a vertical flue in the rear wall of the case and opening into the case above the plates, and means for removing air from the lower part of the case.

3. In an incubator, the combination of a case, a radiator, horizontal plates above the radiator and extending from opposite sides of the case and partially across the same, an upwardly-enlarged flue in the wall of the case and opening into the case above the plates, a gate to admit air to the flue, and means for removing the air from the lower part of the case.

4. In an incubator, the combination of a floor, perforated plates at the respective ends of the floor, pipes extending from beneath the perforated plates to a centrally-located T, and a pipe to remove the air from the T.

5. In an incubator, the combination of a floor having an imperforate central portion and perforated end portions, partitions beneath the floor, pipes extending through said partitions, and connected to a centrally-located T, and a pipe to remove air from the T.

6. In an incubator, the combination of a case, a floor near the bottom of the case and having a central portion of canvas and perforated plates extending across each end, partitions beneath the respective ends of the canvas portions of the floor, pipes extending through said partitions near each end thereof, a centrally-located T connected to said pipes, and a pipe extending from the T to outside the case.

7. In an incubator, the combination of a case, horizontal plates near the top of the case and extending oppositely and partially across the same, a radiator beneath the plates, a diffusion-screen and egg-trays below the radiator, a floor beneath the trays, openings near the respctive ends of the floor, pipes beneath the floor, a centrally-located T connected to the pipes, and a pipe connected to the T to remove the air therefrom.

8. In an incubator, the combination of a case, a flue in the rear wall of the case and opening into the top of the case, a plate extending horizontally from the rear wall of the case to near the front wall of the same, a second plate beneath the first-named plate and extending from the front wall of the case to near the middle of the same, a radiator beneath the plates, egg-trays beneath the radiator, a floor beneath the trays, and having a canvas middle portion and perforated end portions, pipes opening beneath the corners of the floor and extending to a centrally-located T and a pipe from the T to outside the case.

9. In an incubator, the combination of a case, a radiator in the upper part of the case, an air-heater opening into the radiator, a heating-flue in the air-heater and also opening into the raidiator, means for regulating the flow from the heating-flue into the radiator, and a foul-air pipe connecting the bottom of the case with the air-heater.

10. In an incubator, the combination of a case, a radiator in the upper part of the case, a foul-air pipe in the lower part of the case, an air-heater opening into the radiator and foul-air pipe, a heating-flue in the air-heater, a branch pipe to the heating-flue and opening into the axis of the radiator-pipe, and a damper to the heating-flue.

11. In an incubator, the combination of a case, a radiator in the upper part of the case, a foul-air pipe near the bottom of the case, an air-heater opening into both the radiator and the foul-air pipe, a heating-flue in the air-heater, a branch to said flue opening into the radiator, and a damper to control the flow of air through said branch and also adapted to allow the heated air to escape directly from the air-heater.

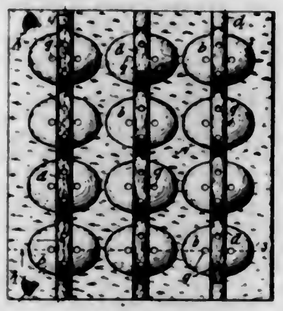
12. In an incubator, the combination of a case, an air-heater, a radiator opening into the air-heater, horizontal plates above the radiator and extending partially across the case in opposite directions, means for admitting cold air above the plates, a diffusion-screen and egg-trays below the radiator, a perforated floor beneath the egg-trays, pipes beneath the floor and opening into the air-heater, and a damper to permit the air to escape directly from the air-heater.

13. In an incubator, the combination of a case, an air-heating chamber, a heating-flue in said chamber and having lateral openings into the same, a damper to the flue, a radiator opening into the upper part of the air-heating chamber, and a foul-air pipe opening into the lower part of said chamber.

14. In an incubator, the combination of a case, a flue opening into the upper part of the case, horizontal plates extending partially across the case, a radiator beneath said plates, a diffusion-screen and egg-trays beneath said radiator, a floor beneath the trays, perforated plates at each end of the floor, foul-air pipes extending from beneath said plates, an air-heater connected to said pipes to receive air from the same, a heating-flue in said air-heater, and having lateral openings into the same, a branch from the flue and opening into the radiator and a damper to said flue, and located above the branch and openings of the flue.

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755,640. EGG-TRAY. HARRY R. DRAKE, Newark, N. Y., assignor to International Egg Carrier and Paper Company, Newark, N. Y. Filed Dec. 23, 1903. Serial No. 186,369. (No model.)



*Claim.*—1. An egg-tray comprising two similar sections or main parts each formed with ovate cavities in rows, the sections being placed together face to face with the cavities one upon another, two associated cavities together constituting a cell for receiving an egg, there being continuous air passages or channels traversing the rows of cavities in each section from side to side and opening out at both ends at the sides of the tray.

2. An egg-tray comprising two similar rectangular sections each formed with cavities in rows for receiving the eggs, the sections being placed together with the cavities one upon another, two cavities constituting a cell for receiving an egg, there being air passages or channels traversing the cavities, transversely disposed, said channels extending continuously from side to side of the tray and opening out at all four sides of the latter.

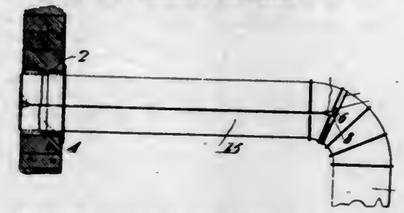
3. An egg-tray comprising two similar sections each formed with ovate cavities in rows, the sections being placed together with the cavities opposite in pairs constituting cells for receiving the eggs there being raised ribs or fenders on each section of the tray extending over said cavities in transverse directions extending entirely across the tray to the extreme opposite edges thereof.

4. A tray for holding eggs, consisting of two equal sections formed with cavities in rows and placed one upon the other, and parallel, continuous, raised, protecting-ribs traversing the cavities in one direction, and short separated ribs disposed transversely of the continuous ribs.

5. An egg-tray having two equal and similar sections or main parts, each having cavities and placed together with the cavities registering and two together forming an ovoidal cell for receiving an egg, there being raised protecting-ribs on each section over the cells, and perforations, through each section and through said ribs, leading to the cells.

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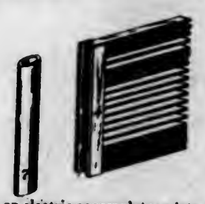
755,641. STOVEPIPE-HOLDER. CHARLES W. ELDERKIN, Butte, Mont., assignor of one-half to Edwin D. Elderkin, Butte, Mont. Filed Oct. 3, 1903. Serial No. 175,692. (No model.)



*Claim.*—In a device of the class described, the combination with a tie-band adapted to embrace a stovepipe and having a longitudinal slot, of a primary hook designed for engagement with the pipe-thimble, a secondary hook adapted for engagement through the slot in the band and having a stud, and a flexible connecting element having one end engaged with the primary hook and its other end detachably wrapped around the stud.

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755,642. ELECTRIC ACCUMULATOR-PLATE. CHARNONOVITZ P. ELIBSON, Paris, France. Filed Oct. 16, 1903. Serial No. 177,291. (No model.)



*Claim.*—1. In an electric accumulator-plate, a plurality of strips of thin flexible lead in juxtaposition and free at one end, a conducting-rib united to the ends of said strips on one side and having a longitudinal groove in its opposite side, a tube of conducting material constructed to be received in said groove and means for securing said tube.

2. In an electric accumulator-plate, a plurality of strips of thin flexible lead in juxtaposition autogenously soldered together at one end and free at the other end, the rib formed by said soldered ends having a longitudinal groove, a tube of conducting material constructed to be received in said groove and means for securing said tube.

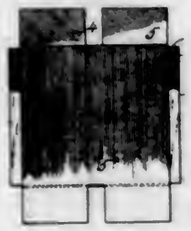
3. In an electric accumulator-plate, two sections formed of strips of thin flexible lead in juxtaposition free at their outer ends and united at their inner ends by a conducting-rib having a longitudinal groove, the said sections being placed with their grooved edges facing and a tube of conducting material received and secured in said grooves.

4. In an electric accumulator-plate, two sections each formed of flexible strips of lead alternately flat and corrugated free at their outer ends and united at their inner ends by a conducting-rib having a longitudinal groove, the said sections being placed with their grooved edges facing, a tube of conducting material seated in said grooves and a plurality of transverse connections securing said tube to said rib.

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755,643. PROCESS OF MAKING ELECTRIC ACCUMULATOR-PLATES. CHARNONOVITZ P. ELIBSON, Paris, France. Filed Oct. 16, 1903. Serial No. 177,292. (No model.)

*Claim.*—1. The process of making an electric accumulator-plate which consists in superposing a series of strips of thin flexible lead, soldering the ends of said strips, dividing said strips transversely into two sections of equal area and uniting said sections at their edges formed by said soldered ends.

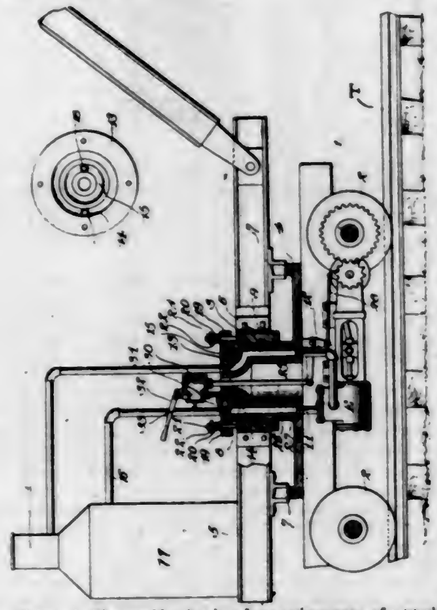


2. The process of making an electric accumulator-plate which consists in superposing on a suitable supporting-plate a series of strips of thin flexible lead of such length that their ends shall protrude beyond the edges of said plate autogenously soldering the protruding ends of said strips, dividing said strips transversely into two sections of equal area and uniting said sections at their autogenously-soldered edges.

3. The process of making an electric accumulator-plate which consists first in disposing on a suitable supporting-plate (1) guard-strips placed in their longitudinal edges protruding beyond the corresponding edges of said supporting-plate, (2) transverse strips of thin flexible lead superposed and having their ends extending to the edges of said guard-strips (3) guard-strips having their longitudinal edges coinciding the ends of said strips; second, clamping the aforesaid parts in position; third, autogenously soldering together the portions of said guard-strips and said transverse strips which protrude beyond said supporting-plate; fourth dividing the plate so united transversely into two sections of equal area; fifth uniting said sections at their autogenously-soldered edges.

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755,644. **LOCOMOTIVE-CRANE.** JAMES G. FAIRBANKS and GEORGE L. SAUER, Marion, Ohio. Filed Nov. 20, 1903. Serial No. 181,973. (No model.)



*Claim.*—1. The combination in a locomotive-crane, of a truck an engine supported directly on the truck, a platform rotatably mounted on the truck, a boiler carried by the platform, a steam-supply pipe and an exhaust-pipe connected with the engine, a steam-supply pipe and exhaust-pipe connected with the boiler, a member having passages therethrough fixed upon the truck and having the passages connected with the steam supply and exhaust pipes of the engine, and a member having channels therein connected with the steam supply and exhaust pipes of the boiler mounted for rotation with said platform and having its channels constantly in communication with the passages in the member fixed upon the truck.

2. The combination in a locomotive-crane, of a truck, an engine mounted upon the truck and having steam supply and exhaust pipes, a platform rotatably supported on the truck, a boiler mounted on the platform and having steam supply and exhaust pipes, a fixed member mounted on the truck and having passages therein connected with the steam supply and exhaust pipes of the engine, and a rotatable member having channels therein connected with the steam supply and exhaust pipes of the boiler disposed above said fixed member with the channels therein in communication with the passages in said fixed member.

3. The combination in a locomotive-crane, of a truck, an engine directly mounted on said truck, a center post carried by said truck and provided with passages therein, a steam-supply pipe and an exhaust-pipe connected with said engine and with the passages in said center post, a platform carried by said truck and arranged for rotation about said center post, a boiler mounted on said platform, a steam-supply pipe and an exhaust-pipe connected with said boiler, and a plate having grooves on the under surface thereof supported on the top of said center post with said grooves in communication with the passages in the center post and in communication with the steam supply and exhaust pipes of the boiler.

4. The combination in a locomotive-crane, of a truck, a center post rigidly mounted on the truck, a platform arranged for rotation about said center post, said center post being provided with passages disposed at different distances from the axis thereof, a member rotatably mounted on the top of said center post and provided on its under surface with concentric channels adapted to communicate with said passages, an engine mounted on the truck, a boiler mounted on the platform, steam and exhaust pipes leading from the boiler to the channels in said rotatable member and steam and exhaust pipes leading from the engine to the passages in said center post.

5. The combination in a locomotive-crane, of a truck, a center post mounted on said truck and having passages therein disposed at different distances from the center, a platform carried by said truck and arranged for rotation about said center post, a plate having channels on the under surface thereof rotatably mounted on top of said center post with the channels in communication with said passages, yielding means for holding said plate in contact with the top of said center post, an engine mounted on said truck and having steam and exhaust pipes communicating with the passages in the center post, and a boiler mounted on the platform and having steam and exhaust pipes communicating with the channels of the plate mounted on said center post.

6. The combination in a locomotive-crane, of a truck, an engine directly mounted on said truck, a center post carried by said truck and provided with passages extending upward therethrough and terminating at different distances from the axis of said post, steam and exhaust pipes leading from said engine to said passages, a platform supported by said truck and arranged to rotate about said center post, a plate having concentric channels on its under surface mounted on top of said center post and arranged for rotation with said platform, bolts extending upward from said platform through said plate, springs encircling said bolts to hold the plate constantly in contact with the top of said post, a boiler mounted on said platform, and steam and exhaust pipes leading from said boiler to the channels of said plate.

7. The combination in a locomotive-crane, of a truck, an engine directly mounted on said truck, a platform arranged for rotation on said truck, and mechanism for controlling the direction of movement of said engine comprising a steam-ram rigidly mounted on said platform and an operating-lever carried by said steam-ram.

8. The combination in a locomotive-crane, of a truck, an engine directly mounted on said truck, a platform rotatably supported on said truck, mechanism for controlling the direction of movement of said engine comprising a steam-ram rigidly mounted on said platform with its axis in alinement with the axis of rotation of the platform, a piston disposed in said axis of rotation and operatively connected with the engine, and mechanism for controlling the admission of steam into the ram, said mechanism being carried by the ram.

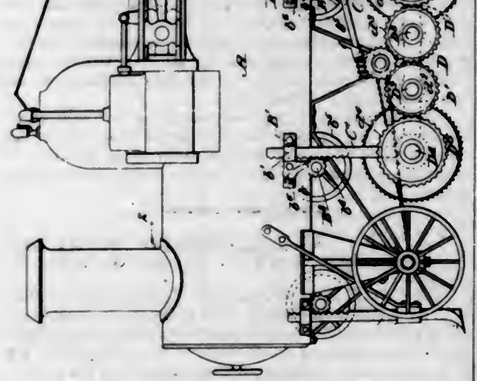
9. The combination in a structure of the class described, of a truck, an engine mounted on the truck, a platform rotatably mounted on the truck, a hollow center post upon the truck about which the platform turns, said center post having an eccentrically-placed channel extending longitudinally thereof, a source of pressure-supply mounted on the platform and continuously connected with said channel, and engine-controlling mechanism disposed in the hollow of the center post.

10. In a structure of the class described, a supporting member, a center post fixed upon said supporting member and having an eccentrically-disposed channel extending longitudinally thereof, a rotatable member carried by said supporting member and arranged to turn about said post, and a member connected with said rotatable member and held in contact with the end of said center post, said member being provided with a channel which is continuously in communication with the channel in said center post.

11. The combination of a supporting structure, a superstructure rotatably mounted upon the supporting structure, an engine carried by one of said structures, a source of pressure-supply carried by the other structure, pressure supply and exhaust pipes leading to and from said engine, pressure supply and exhaust pipes leading from and to said source of pressure-supply, and a connection between the pressure supply and exhaust pipes of the engine and the pressure supply and exhaust pipes of the source of pressure-supply, said connection comprising a fixed member having passages therethrough and a rotatable member having channels therein which are constantly in communication with the passages in the fixed member.

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755,645. **MACHINE FOR CUTTING TRENCHES THROUGH ASPHALTIC PAVEMENTS.** GRANVILLE FERNALD, Washington, D. C., assignor to Gustavus S. Fernald, St. Paul, Minn. Filed Oct. 20, 1903. Serial No. 177,739. (No model.)



*Claim.*—1. The combination in a machine for cutting parallel grooves in or through composition pavements, of a portable motor, a pair of parallel shafts carried by the motor, means between the motor and shafts for driving the shafts in opposite directions, and a pair of toothed cutters mounted on each shaft, the cutters on one shaft being in line with and of greater diameter than those on the other shaft so that the grooves made by the cutters on one shaft will be deepened by the cutters on the other shaft.

2. In a machine for cutting trenches through asphalt pavements a motor, a vertically-adjustable frame carried thereby, saws mounted on shafts carried by the frame, and gearing driven from the motor to effect a rotation of the shafts carrying the saws in opposite directions.

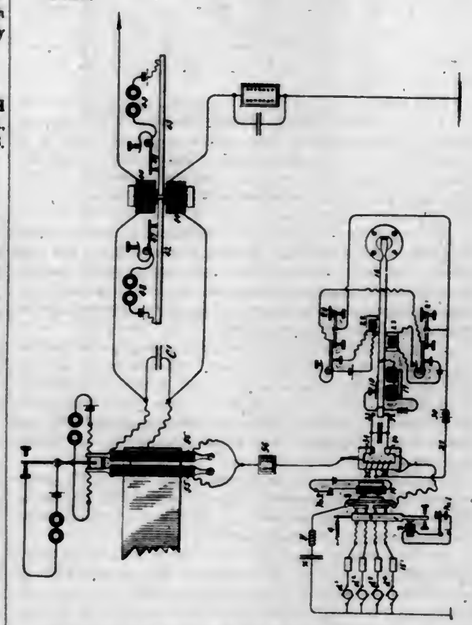
3. In a machine for the purpose set forth, a motor, a frame having rotary cutters in gear with each other and with the motor, gravers carried by the motor in advance of the rotary cutters and lifting-plows in rear of and in line with the cutters and gravers, substantially as shown.

4. In a machine for the purpose set forth, a motor or traction-engine, a frame comprising side links, brace-bars and standards adjustably connected to the frame of the motor, shafts carried by the frame, cutters on the shafts, a train of gears on the shafts and side links of the frame which are driven from the driving-wheels of the motor and turn the cutter-carrying shafts in opposite directions, and vertically-adjustable standards on the rear end of the traction-engine.

5. In a machine for cutting into or through composition pavements, the combination of a motor mounted on wheels, a shaft-supporting frame adjustably attached to the motor, a pair of parallel shafts carried by the frame, means between the shafts and motor for turning the shafts in opposite directions and a pair of toothed cutters adjustably secured on each shaft, substantially as shown.

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755,646. **MULTIPLEX TELEGRAPHY.** STEPHEN D. FIELD, Stockbridge, Mass. Filed Mar. 5, 1903. Serial No. 146,313. (No model.)



*Claim.*—1. A multiplex-telegraph system comprising a transmitter adapted to reverse the current on line and provided with means whereby such reversal will take place by a series of potential gradations from a maximum of one polarity to a maximum of the opposite polarity, in combination with receiving devices responsive to current reversals.

2. A multiplex-telegraph system, comprising a transmitter adapted to reverse the current on line and provided with means whereby such reversal will take place by a series of potential gradations from a maximum of one polarity to a maximum of the opposite polarity and means for changing the strength of current on the line, in combination with receiving devices responsive respectively to current-reversals and currents varying in strength.

3. A multiplex-telegraph system, comprising a combination-key having a plurality of contacts connected respectively with sources of current of various potentials and polarities, in combination with two local-circuit keys adapted to singly or together actuate the combination-key to send circuits of one or two transmissions to line, one transmission consisting of graduated changes from one polarity to another and the other consisting of currents of different strength, and receiving devices responsive respectively to current-reversals and currents varying in strength.

4. A multiplex-telegraph system, comprising a transmitting-key consisting of a rocking bar having a plurality of contacts arranged on each side of its axis and connected respectively with sources of current of various potentials and polarities, two pivoted contact-levers adapted to engage respectively with the contacts on each

side of the axis of said bar, in combination with two keys one of which is adapted to control the rocking of said bar, and the other to control the positions of the said contact-levers with respect to said bar, and a line-wire connected with said levers.

5. In multiplex telegraphy, a single key capable of simultaneously transmitting two different signals belonging to two different transmissions, one consisting of graduated current-reversals and the other of currents of different strength.

6. A multiplex-telegraph system, comprising apparatus for transmitting to line-currents of different value by a series of steps, in combination with apparatus for impressing simultaneously on the same circuit rhythmic crestless impulses of different periodicities.

7. In a system of telegraphy, the combination of a source of current, a line, a continuously-operating vibratory key, a signaling-key, and means operated thereby for controlling the rate of vibration of said vibratory key.

8. In multiplex telegraphy, a transmitting device consisting of a continuously-operating vibratory element, a plurality of signaling-keys common to said element and each controlling devices for giving different periodicities to said element, in combination with a receiving apparatus consisting of a plurality of vibratory elements adapted to respond respectively to the various periodicities established by said controlling devices and all adapted to respond to the periodicity of said key when not controlled by any of said devices, substantially as described.

9. In multiplex telegraphy, the combination of a source of current, a line, a single main-line vibratory transmitting-key carrying contacts, a plurality of finger-keys in local circuits and a plurality of weights adapted to be affixed to the vibratory key through the agency of said finger-keys and local circuits respectively so that each finger-key will give a different rate of vibration to the transmission-key.

10. In multiplex telegraphy, the combination of a source of current, a line, a single main-line vibratory transmitting-key carrying contacts, a plurality of finger-keys in local circuits and a plurality of suspended electromagnets respectively included in said local circuits and adapted when energized to attach themselves to said vibratory key, for the purpose set forth.

11. In multiplex telegraphy, the combination of a source of current, a line, a single main-line vibratory transmitting-key carrying contacts, a plurality of finger-keys in local circuits and a plurality of weights adapted to be affixed to the vibratory key through the agency of said finger-keys and local circuits respectively, and a signaling-circuit including said contacts and controlled by each of said local-circuit keys.

12. In telegraphy, the combination of a vibratory element, a plurality of electromagnets adapted to be magnetically attached to different points on said element and normally closed local circuits including finger-keys and said electromagnets.

13. In multiplex telegraphy, the combination of a vibratory transmitting-key carrying two contacts, a divided main-line coil whose outer terminals are respectively connected with contacts opposing said key-contacts, a tap-circuit from the middle of said coil including a source of current and said key-contacts, and a finger-key adapted to control said tap-circuit.

14. In multiplex telegraphy, the combination of a vibratory transmitting-key carrying two contacts, a divided main-line coil whose outer terminals are respectively connected with contacts opposing said key-contacts, a tap-circuit from the middle of said coil including a source of current and said key-contacts, a plurality of local circuits adapted to impart different periodicities to said transmitting-key and a plurality of finger-keys each of which is adapted to simultaneously control said tap-circuit and one of said local circuits, substantially as described.

15. In multiplex telegraphy, the combination of a vibratory transmitting-key carrying two contacts, a divided main-line coil whose outer terminals are respectively connected with contacts opposing said key-contacts, a tap-circuit from the middle of said coil including a source of current and said key-contacts, a finger-key adapted to control said tap-circuit, and a condenser across the contacts to which said outer terminals are connected.

16. In multiplex telegraphy, the combination of a vibratory transmitting-key carrying two contacts, two corresponding contacts with which the first two alternately collide, a divided main-line coil the outer terminals of which lead to the respective corresponding contacts and include two other coils inductively related to each other, a local circuit leading from the middle of the divided coil to the transmitting-key and including a source of electricity and a finger-key for said local circuit, substantially as described.

17. In multiplex telegraphy, the combination of a vibratory transmitting-key carrying two contacts, two corresponding contacts with which the first two alternately collide, a condenser across said corresponding contacts, a divided main-line coil the outer terminals of which lead to the respective corresponding contacts and include two other coils inductively related to each other, a local circuit leading from the middle of the divided coil to the transmitting-key and including a source of electricity and a finger-key for said local circuit, substantially as described.

18. In multiplex telegraphy, the combination of a main-line coil through which primary impulses are directed, a secondary coil in which corresponding signal impulses are induced by those in the main-line coil, said secondary coil being in series with the line, another inductive coil in which currents are induced by the impulses flowing in the main-line coil, which currents are sent through said secondary coil in the same direction as the induced signal impulses therein, to thereby round off or obliterate the crests of said signal impulses, substantially as described.

19. In multiplex telegraphy, the combination of a main-line divided coil, two other coils of equal resistance and number of turns, in inductive relation with each other, and having one terminal connected with the outer terminals of the divided coil respectively, two contacts with which the other terminals of the inductively-related coils respectively connect, a vibratory contact playing beween said two contacts and a local circuit leading from the middle of the divided coil to the vibratory contact and including a source of electricity, the windings being so arranged that the crests of the induced currents in each half of the divided coil will be obliterated.

20. In multiplex telegraphy, the combination of a main-line coil through which primary impulses are directed, a secondary coil in which corresponding signal impulses are induced by those in the main-line coil, said secondary coil being in series with the line, another inductive coil in which the inductive effect is adjustable and in which currents are induced by the impulses flowing in the main line coil, which currents are sent through said secondary coil in the same direction as the induced signal impulses therein, to thereby round off or obliterate the crests of said signal impulses, substantially as described.

21. In telegraphy, a vibratory device having attached to its opposite sides flexible cords fastened at right angles thereto, in combination with elastic devices attached at intermediate points to said cords and exerting a tension thereon substantially parallel to the vibratory device.

22. In multiplex telegraphy, the combination of a vibratory transmitting-key carrying two contacts, a divided main-line coil whose outer terminals are respectively connected with contacts opposing said key-contacts, a tap-circuit from the middle of said coil including a source of current and said key-contacts, a finger-key adapted to control the said tap-circuit and a condenser across the outer terminals of the divided coil.

23. In multiplex telegraphy, two transmitting-keys, one of which is a vibratory key, a grounded line including said keys in series and a shunt to earth from a point in the line between the two keys and including a condenser and a small retardation-coil, for the purpose set forth.

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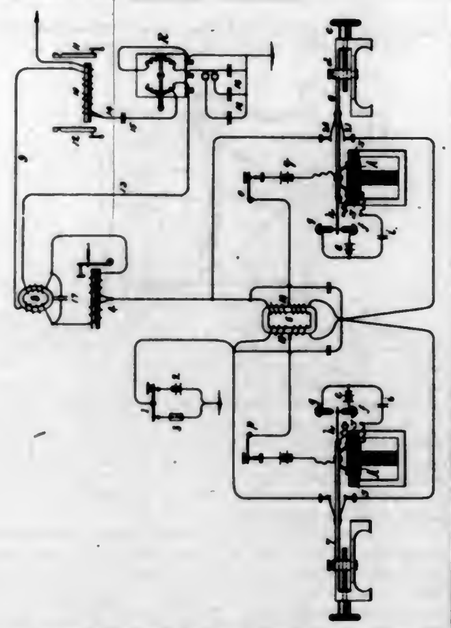
**755,647. MULTIPLEX TELEGRAPHY.** STEPHEN D. FIELD, Stockbridge, Mass. Filed Mar. 24, 1903. Serial No. 149,249. (No model.)

*Claim.*—1. A means for balancing a signaling-circuit, consisting of a rheostat in combination with a condenser, an equating-circuit, a portion of which forms a shunt to the condenser, and means whereby an alteration of the resistance in the equating-circuit will be accompanied by an alteration in the resistance of the shunt to the condenser, for the purpose set forth.

2. A means for balancing a signaling-circuit, consisting of a rheostat in combination with a condenser, an equating-circuit, a portion of which forms a shunt to the condenser, and a single switch-lever adapted to simultaneously alter the resistance in the equating-circuit and the shunt to the condenser, for the purpose set forth.

3. In a signaling system, the combination of a differentially-wound Morse relay, a duplex-wound receiver-magnet, a main line including the coils of the receiver-magnet and one of the coils of the relay, a balancing-rheostat, an equating-circuit including the other coil of the relay and connected to the rheostat and a tap-circuit from the middle of the winding of the duplex receiver to a point on the rheostat compensating for one-half the duplex winding, substantially as described.

4. In a signaling system, the combination of a differentially-wound Morse relay, a duplex-wound receiver-magnet, a main line including the coils of the receiver-magnet and one of the coils of the relay, a balancing-rheostat, an equating-circuit including the other coil of the relay and connected to the rheostat and a tap-circuit from the middle of the winding of the duplex receiver to a point on the rheostat compensating for one-half the duplex winding, and a condenser in said tap-circuit.



5. The combination of a main line, a duplex-tuned receiver having its coils therein and reversely wound, two tuned vibrators actuated by the receiver, a tap-circuit from between the two coils, a condenser in the tap-circuit and a rheostat to which the tap-circuit is connected.

6. In telegraphy, a vibratory element, two contacts with which said element is adapted to alternately engage, an electromagnet adapted to actuate the vibratory element, a battery, a condenser and two circuits one of which includes one contact, the battery, condenser and magnet, and the other the remaining contact, condenser and magnet.

7. In telegraphy, a main signaling-circuit, and a reed having contacts controlling said circuit, in combination with means independent of said main circuit for vibrating said reed consisting of a local source of current, a condenser, an electromagnet and an automatic switch whereby the charging and discharging currents of the condenser are alternately directed through the magnet.

8. In multiplex telegraphy, the combination of two vibratory transmitting elements and a duplex induction-coil, the windings of said coil being in series in the main line but reversely wound and each winding being divided into two parts adapted to be alternately energized by its own vibratory element.

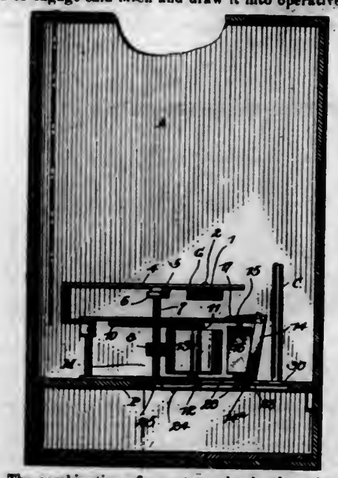
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**755,648. VENDING-MACHINE.** GIDEON W. GATH, David City, Nebr. Filed June 15, 1903. Serial No. 161,578. (No model.)

*Claim.*—1. The combination of a motor, a latch adapted to engage a member of said motor, a spring adapted to hold said latch out of operative position, and a trip operatively connected with said motor and adapted to engage said latch to draw it into operative position.

2. The combination of a motor, a latch pivotally mounted on the frame of said motor and adapted to engage an element of said motor to stop its movement, a spring adapted to hold said latch out of operative position, and a trip connected with said motor and adapted to engage said latch to draw it into operative position.

3. The combination of a motor, a latch adapted to engage an element of said motor to stop its movement, a spring engaging said latch and adapted to hold it out of operative position, a trip mounted for lateral and longitudinal movement and connected with said motor, and a spring engaging said trip and holding it normally in position to engage said latch and draw it into operative position.



4. The combination of a motor, a latch adapted to engage an element of said motor to stop its movement, a spring engaging said latch and adapted to hold it out of operative position, a trip operatively connected with said motor and mounted for lateral and longitudinal movement, a spring engaging said trip and holding it normally in position to engage said latch to draw it into operative position, and a stop to limit the lateral movement of said trip under the action of said spring.

5. The combination of a motor, a latch adapted to engage an element of said motor to stop its movement, a spring engaging said latch and adapted to hold it out of operative position, a trip having on one side thereof a lug one face of which is inclined so as to slide over said latch and another face of which is disposed at right angles to the side of the lug to engage said latch, said trip being mounted for longitudinal and lateral movement, and a spring engaging said trip and holding it normally in position to cause the lug thereon to engage said latch and draw it into operative position.

6. The combination of a motor, a latch adapted to engage an element of said motor and stop its movement, a spring engaging said latch and adapted to hold it normally in inoperative position, a trip operatively connected with said motor and having a lateral lug adapted to engage said latch, a spring engaging said trip and holding it normally in position for the lug thereon to engage said latch, and a coin-chute so placed that the trip extends across one side thereof in position to be engaged by a coin passing down the chute and thrown out of engagement with said latch by the action of the coin.

7. The combination of a motor, a latch adapted to engage an element of said motor to stop its movement, a spring engaging said latch and adapted to hold it normally out of operative position, a coin-chute having a notch in one side thereof, a trip operatively connected with said motor and provided with an extension having a cam-surface which lies in the notch of said coin-chute and having a lug for engagement with said latch to draw it into operative position, and a spring engaging said trip to hold it normally in position for the lug thereon to engage said latch.

8. The combination of a motor, a latch to engage an element of said motor to stop its movement, a spring adapted to hold said latch normally in inoperative position, a revolving arm on said motor, a trip carried by said arm, and a spring engaging said trip and holding it normally in position to engage said latch and draw it into operative position.

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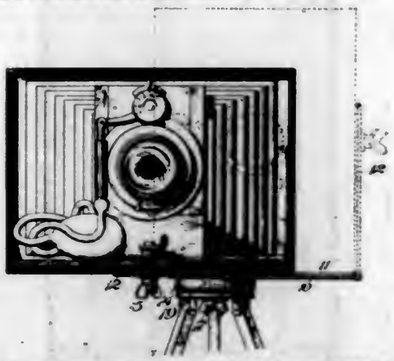
**755,649. CAMERA-SUPPORT.** WILLIAM G. GRIER, New York, N. Y. Filed Jan. 26, 1904. Serial No. 190,664. (No model.)

*Claim.*—1. A camera-support, comprising a pair of leaves pivotally attached to one another at one end, means on one leaf for securing it to a support, and means on the free end of the other leaf for pivotally supporting a camera.

2. A camera-support, comprising a pair of leaves hinged together at one end, means for attaching one of the leaves to a support, and means pivotally arranged on the free end of the second leaf to adjustably hold a camera.

3. A camera-support, comprising a pair of leaves hinged to-

gether at one end, one leaf having means for attaching it to a support, the second leaf having a short leaf pivotally attached to it other end, the short leaf being arranged to secure a camera.



4. A camera-support, comprising a leaf having means for attaching it to a support and having a hinge on one end, a second shorter leaf hinged to the first leaf and having a slot therein, a slotted third leaf pivotally secured to the other end of the second leaf, so that when the first and second leaves lie flat together, the third leaf projects beyond and rests partly on the first leaf, and means for attaching a camera to the third leaf through the slot.

5. The combination, of a camera-support, comprising a leaf pivotally attached to a second shorter leaf on one end, the second leaf having a slot, and a third leaf secured to the other end of the second leaf and having a slot, with a camera, adapted to be secured to the third leaf, and a screw connecting with the camera and passing through the slot, the slot in the second leaf allowing the passage of the camera-securing screw when the support is tilted to hold the camera perpendicular.

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**755,650. WRENCH.** ADOLPHUS GRANGER and WILLIAM HILLINGER, Royalcak, Mich. Filed Oct. 8, 1903. Serial No. 176,282. (No model.)

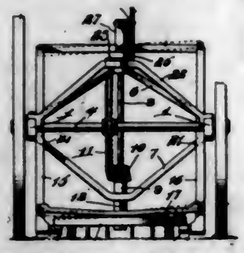


*Claim.*—1. In a wrench, a fixed jaw provided with a shank plain on its sides and threaded on its edge, a tubular handle having a screw-threaded engagement with the sliding jaw and provided on its inside with a threaded portion and a plain portion corresponding with that of the shank, and a stop on the inside of the handle to limit its rotation in either direction, by coming in contact with the shank, substantially as described.

2. In a wrench, a fixed jaw provided with a shank plain on its sides and threaded on its edge, a tubular handle having a screw-threaded engagement with the sliding jaw and provided on its inside with a threaded portion and a plain portion corresponding with that of the shank, and a V-shaped stop-lug on the inside of the handle to limit its rotation in either direction, by coming in contact with the shank, substantially as described.

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**755,651. ROTARY HARROW.** JOHN N. GRAVES, Cumby, Tex. Filed Dec. 26, 1903. Serial No. 186,746. (No model.)



*Claim.*—1. In a rotary harrow, a wheel-supported frame, a shaft journaled vertically in said frame, means for transmitting motion to said shaft from the rotary supporting means of the frame, a rotary harrow member slidable upon and connected with the shaft, and a vertically-movable frame supporting said rotary harrow member.

2. In a rotary harrow, a wheel-supported frame, a shaft journaled in said frame and deriving motion from the rotary supporting means, a rotary harrow member slidable upon and connected with said shaft, a vertically-slidable frame, and rotary supporting means connected with said frame and extending under and revolubly supporting the rotary harrow member.

3. In a rotary harrow, a wheel-supported frame, a vertical shaft journaled in said frame and deriving motion from the rotary supporting means, a rotary harrow member slidable upon and connected with said shaft, a vertically-slidable frame comprising side members and upper and lower cross-bars pivotally connected at the points of intersection, and rotary supporting means upon the lower ends of the side bars of said frame extending under and revolubly supporting the rotary harrow member.

4. In a rotary harrow, a wheel-supported frame, upwardly and downwardly extending arches connected with said frame, a vertically-slidable frame having side members disposed between the arch members and the axle, a vertical shaft journaled in the arch members and receiving motion from the rotary supporting means, a rotary harrow member slidable upon and connected with said shaft, and rotary supporting means for said rotary member connected with the side members of the vertically-slidable frame.

5. In a rotary harrow, a wheel-supported frame, a vertically-disposed shaft, means for transmitting motion to said shaft from the rotary supporting members of the frame, a rotary harrow member slidable upon and connected with said shaft, adjustable supporting means for said harrow member, and means for effecting adjustment of said supporting means and for retaining the latter, with the revoluble harrow member, in adjusted position.

6. In a rotary harrow, a wheel-supported frame, a shaft in said frame deriving motion from the rotary supporting members, a rotary harrow member upon said shaft, a vertically-slidable rectangular frame, loosely jointed at the corners thereof, rotary supporting means for the rotary harrow member journaled upon the side members of said slidable frame, an adjusting-lever, and a link connecting the latter with the top cross-bar of the vertically-adjustable jointed supporting-frame.

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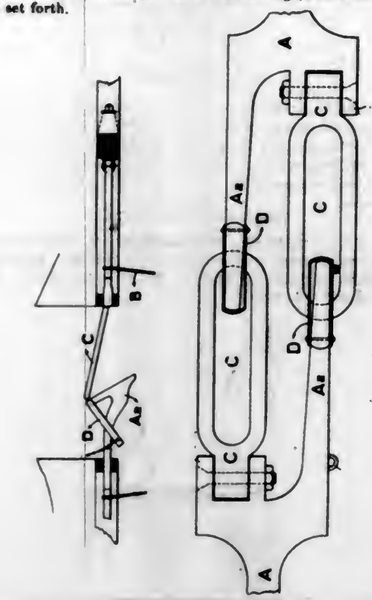
**755,652. COUPLING.** DAVID GREENBURY, Morayfield, Queensland, Australia. Filed Apr. 2, 1903. Serial No. 150,768. (No model.)

*Claim.*—1. In improvements in automatic couplings for railway wagons or carriages, a draw-bar having a pair of ears and an extended end forming a hook, in combination with a coupling-link pivoted between the ears, and a releasing-link pivoted to the hook, as and for the purpose set forth.

2. A draw-bar having a hook, a releasing-link pivoted thereto, a chain leading from said link and branched to either side of the railway-carriage, and a ring at the end of each branch; in combination with a rod journaled across the carriage, and hooks secured thereto in parallelism near its extremities, as and for the purpose set forth.

3. A draw-bar having short ears at one side and a long hook at the other, a coupling-link pivoted to the ears, and a releasing-link pivoted to the hook and adapted to swing across its throat to disengage the companion coupling-link therefrom; in combination with a chain leading from the lower portion of the releasing-link through an eye on the hook and then branched and carried over pulleys to the sides of the railway-carriage, rings at the ends of the branches, retaining-hooks for said rings, and means for moving these hooks simultaneously from either side of the carriage, as and for the purpose set forth.





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**755,653. MATCH COMPOSITION.** FREDERICK E. GRIMM, Utica, N. Y. Filed Jan. 11, 1904. Serial No. 188,652. (No specimens.)

*Claim.*—A match composition, consisting of glue, oxid of zinc, ground glass, gum-benzoin, amorphous phosphorus, sulfur flours, hyposulfite of lead and chlorate of potassium in about the proportions hereinbefore specified.

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**755,654. JEWEL-SETTING.** LEO GUILD, New York, N. Y. Filed June 5, 1903. Serial No. 160,158. (No model.)



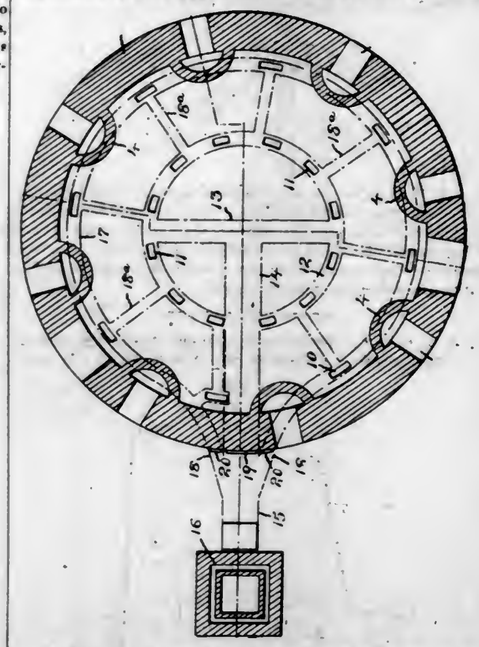
*Claim.*—1. In the manufacture of jewelry from materials which are hard or brittle at ordinary temperatures but which may be softened either in mass or topically by the application of heat, a process of setting jewels; said process consisting of first setting the jewels in the stock material sufficiently far to bring the girdles of the jewels onto the plane of the surface of the stock material, and then impressing a suitable heated tool into the stock material and by means of said tool raising a bur which is so formed as to contact the jewel above its girdle.

2. In the manufacture of jewels from materials which are hard or brittle at ordinary temperatures but which may be softened either in mass or topically by the application of heat, a process of setting jewels; said process consisting of first setting the jewels in the stock material sufficiently far to bring the girdles of the jewels onto the plane of the surface of the stock material, and then impressing a suitable heated tool into the stock material, and by one operation of said tool, impressing an ornamental design and raising a bur on the stock material; the bur being so formed as to contact the jewel above its girdle.

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**755,655. KILN.** THOMAS HAMPTON, West Elizabeth, Pa. Filed June 6, 1903. Serial No. 160,424. (No model.)

*Claim.*—1. In a kiln, the combination with the walls and dome; of furnaces within the walls, bags adjacent the furnaces, and a floor having inlets between adjoining bags, a cross-flue within the floor and communicating with the inlets, an outlet-flue communicating with the inlets and cross-flue, a main flue, and means for closing communication between the said main flue and the inlets and cross-flue.



2. In a kiln, the combination with the walls and dome; of furnaces within the walls, bags adjacent the furnaces, and a floor having inlets intermediate the bags, a cross-flue 13 communicating with the inlets and an outlet-flue 14 communicating with the inlets and cross-flue, and a stack removed from the kiln and having a main flue extending therefrom, said main flue communicating with the outlet-flue and having flues extending from opposite sides thereof to the inlets and communicating with the cross-flue.

3. In a kiln, the combination with the walls and dome; of furnaces within the walls, bags adjacent the furnaces; a solid floor having inlets intermediate the bags, concentric flues into the outer one of which opens the inlets, inlets in the inner concentric flue, a cross-flue communicating at its ends with opposite sides of the inner concentric flue, connecting-flues interposed between the concentric flues, an outlet-flue extending from the cross-flue and intersecting the inner concentric flue; a stack removed from the kiln and having a main flue extending therefrom and communicating with the outlet-flue 14 and at opposite sides with the ends of the outer concentric flue, and dampers within said ends and in the outlet-flue 14.

4. In a kiln, the combination with the walls and dome thereof; of furnaces within the walls, bags adjacent the furnaces, a solid floor having inlets intermediate the bags, concentric flues into the outer one of which opens the inlets, inlets in the inner concentric flue, a cross-flue communicating at its ends with opposite sides of the inner concentric flue, connecting-flues interposed between the concentric flues, an outlet-flue extending from the cross-flue and intersecting the inner concentric flue, a stack removed from the kiln and having a main flue extending therefrom and communicating with the outlet-flue and at opposite sides with the ends of the outer concentric flue, dampers within said ends and in the outlet-flue, and an auxiliary perforated floor comprising walls forming passages therebetween and tiles upon the walls.

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**755,656. RAILWAY SEMAPHORE-SIGNAL.** MARQUIS D. HARLOW, Wilkinsburg, Pa., assignor to the Union Switch and Signal Company, Swissvale, Pa., a Corporation of Pennsylvania. Filed Apr. 4, 1903. Serial No. 151,035. (No model.)

*Claim.*—1. A casting for a semaphore-signal heavier in one part than in another having a pivotal point and four openings concentrically arranged with reference to the pivotal point and relatively equally disposed in their concentric arrangement.

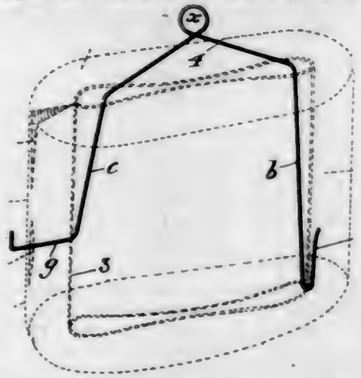
2. The combination in a semaphore-signal of a casting having a pivotal point and four openings concentrically arranged with reference to the pivotal point and relatively equally disposed in their concentric arrangement and a blade fastened to said casting and extending outwardly and tangentially therefrom.



3. The combination in a semaphore-signal, of a casting heavier in one part than another having a pivotal point and four openings concentrically arranged with reference to the pivotal point and relatively equally disposed in their concentric arrangement, and a blade fastened to said casting at its lighter weighted part and extending outwardly and tangentially therefrom.

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**755,657. TOILET-PAPER HOLDER.** SAMUEL S. HARRINGTON, Springfield, Mass. Filed Dec. 30, 1903. Serial No. 187,115. (No model.)



*Claim.*—1. Means for supporting a rolled-up package of paper in a hung-up position with one extremity of said paper free, consisting of a hanger having a loop on the upper extremity thereof, two arms pending therefrom for entrance into and supporting engagement with said package, the end of one of said arms extending through one side of said package and having its extremity upturned opposite the outer side thereof, substantially as described.

2. A package of rolled-up toilet-paper, a supporting-tube of paper-board on which said paper is rolled, a metal hanger for said roll having a supporting-loop above one end thereof, a leg on which is a hook engaging the lower end of said tube, and a second leg, the end of which extends through the side of said tube and package and has the extremity thereof turned upward opposite the outer side of said package, substantially as described.

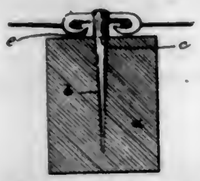
3. A package of rolled-up toilet-paper, a supporting-tube of paper-board on which said paper is rolled, a hanger for said roll having a part extending from the interior thereof beyond one end, and one extremity extending from said interior through and beyond the outer side thereof against which the paper is drawn in severing pieces therefrom, substantially as described.

4. A rolled-up package of toilet-paper having the slits *f* and *d* through one side thereof, a supporting-tube of paper-board on which said paper is rolled, a metal hanger for said roll having a supporting-loop above one end thereof, a leg on which is a hook engaging the lower end of said tube, and a second leg the end of which extends outwardly through one side of said tube and package, and has the extremity thereof turned upward opposite that part of the outer side of said package between said slits, substantially as described.

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**755,658. HOOK FOR SUPPORTING TENTING-CLOTH.** SAMUEL HARTMAN, Hartford, Conn. Filed Apr. 7, 1903. Serial No. 151,590. (No model.)

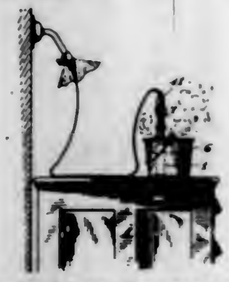
*Claim.*—1. A hook of the type set forth comprising a shank formed with a shoulder, of a plurality of branch arms formed integral with said shank and being bent downwardly, then in and up to form cloth-receiving hooks, the lower portion of said hook being arranged above the shoulder of said shank, substantially as described.



2. A device of the type set forth comprising a shank formed with a shoulder, downturned integral-hooked branch arms formed integral with said shank above said shoulder, the lowermost portions of said branch arms lying in a plane above said shoulder, and a boss formed integral with said shank, and extended above said branch arms.

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**755,659. ELECTRIC WATER-HEATER.** JAMES F. HATHAWAY, San Francisco, Cal., assignor of two-thirds to Felix B. Mulgrew and Julius M. Alexander, San Francisco, Cal. Filed Aug. 10, 1903. Serial No. 168,967. (No model.)



*Claim.*—1. An electric heater, the same comprising an outer casing, an interior hollow core extending through the head and bottom of the casing, an inner detachable heating-coil interposed between the core and casing and detachable means forming connection between the coil and a source of electrical supply.

2. An electric heater, the same comprising an outer casing, a detachable heating-coil arranged therein, a handle, detachable means forming connection between the handle and a source of electrical supply, and connection between said means and the heating-coil within the casing.

3. An electric heater, the same comprising an outer casing, a hollow core extending therethrough, an inner heating-coil interposed between the core and casing, detachable bottom for the casing having a screw-threaded engagement with the core and casing, a handle, connection between the handle and the heating-coil, and means for connecting the handle with a source of electrical supply.

4. An electric heater, comprising an outer casing, an inner hollow core integral with the head of the casing and extending slightly beyond the bottom thereof, a detachable bottom centrally apertured to receive the lower end of the core, a heating-coil interposed between the core and the interior surface of the casing, and means forming a connection between the coil and a source of electrical supply.

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**755,660. TAKE-DOWN GUN.** MELVIN HEPBURN, New Haven, Conn., assignor to the Marlin Firearms Company, New Haven, Conn., a Corporation of Connecticut. Filed Nov. 27, 1903. Serial No. 182,716. (No model.)

*Claim.*—1. In a take-down firearm in which the barrel is removable from the receiver by rotation, a reciprocating operating-rod carried forward of the receiver and arranged to project into the receiver, means to withdraw said rod entirely from the receiver and a latch to temporarily hold said rod in said withdrawn position.

2. In a take-down firearm in which the barrel is removable from the receiver by rotation, a reciprocating operating-rod carried forward of the receiver and arranged to project into the receiver, means to withdraw said rod entirely from the receiver and means to frictionally hold said rod in said withdrawn position, said means comprising a yielding latch and a shoulder or stud arranged to cooperate with the same.



3. In a take-down firearm in which the barrel is removable from the receiver by rotation, a reciprocating operating-rod carried forward of the receiver and arranged to project into the receiver, means to withdraw said rod entirely from the receiver and means to frictionally hold said rod in said withdrawn position, said means comprising a yielding latch and a shoulder or stud arranged to cooperate with the same, said latch being carried by said rod.



4. In a take-down firearm in which the barrel is removable from the receiver by rotation, a reciprocating operating-rod carried forward of the receiver and arranged to project into the receiver, means to withdraw said rod entirely from the receiver and means to frictionally hold said rod in said withdrawn position, said means comprising a yielding latch and a shoulder or stud arranged to cooperate with the same, said rod being grooved, said latch being carried in said groove, said stud or shoulder projecting into said groove and into the path of the said latch.

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**755,661. BAND-CUTTER AND FEEDER.** CHAUNCY H. HILL, Hopkins, Minn. Filed Oct. 7, 1901. Serial No. 77,763. (No model.)

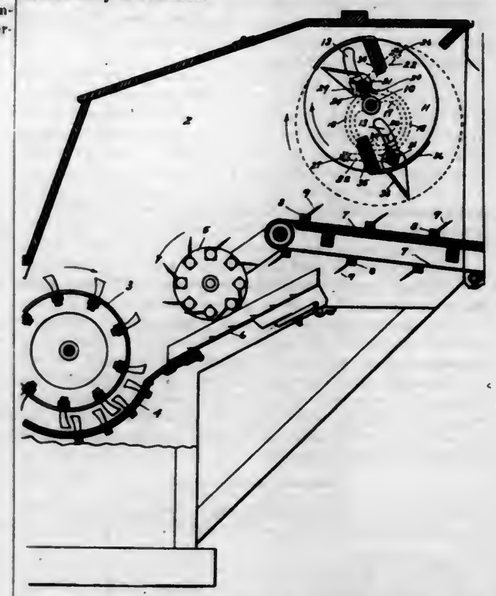
*Claim.*—1. In a band-cutter and feeder, the combination, with a revolving knife-cylinder, of a series of radially-reciprocating knives mounted therein, and means for operating said knives independently of their revolving movement with said cylinder, substantially as described.

2. In a band-cutter and feeder, the combination, with a revolving knife-cylinder, of a series of triangular knives mounted therein and means for reciprocating said knives radially during the revolution of said cylinder to project them lengthwise beyond and retract them within the circumference of said cylinder, substantially as described.

3. In a band-cutter and feeder, the combination, with a revolving knife-cylinder, of a series of radially-reciprocating knives mounted therein, means for operating said knives, and suitable guards between which said knives are reciprocated.

4. In a band-cutter and feeder, the combination, with a shaft, of heads mounted thereon, shafts carried by said heads substantially parallel with the axis thereof, means for reciprocating said shafts radially with respect to said heads, and a series of band-cutter knives secured on said shafts and projected lengthwise by the movement thereof, substantially as described.

5. In a band-cutter and feeder, the combination, with a shaft and the heads thereon, of knife-shafts carried by said heads substantially parallel with the axis thereof, means for reciprocating said knife-shafts sidewise and radially with respect to said heads, a series of knives provided on said shafts and projected lengthwise beyond the circumference of said heads by the reciprocation of said shafts and suitable guard-fingers between which said knives are operated, substantially as described.



6. In a band-cutter and feeder, the combination, with a knife-cylinder shaft, of heads secured thereon and provided with radial slots, knife-shafts slidably arranged in said slots, means for reciprocating said knife-shafts to move them toward or from the circumference of said heads, a series of knives provided on said shafts and alternately thrust out beyond and retracted within the circumference of said heads by the movement of said shaft, substantially as and for the purpose specified.

7. In a band-cutter and feeder, the combination, with a knife-cylinder shaft, of heads secured thereon and provided with radial slots, knife-shafts arranged in said slots and provided with crank-arms that are pivotally connected with said heads, means for reciprocating said knife-shafts laterally in said slots, a series of triangular knives provided at intervals on said knife-shafts and projected lengthwise by the outward movement thereof, and suitable guard-fingers between which said knives are reciprocated, substantially as described.

8. In a band-cutter and feeder, the combination, with the casing, of a knife-cylinder shaft mounted therein, heads secured on said shaft and provided with radial slots, knife-shafts arranged in said slots and having cranks pivoted on said heads, eccentrics secured on the said casing, straps provided on said eccentrics and pivotally connected, respectively, with said shafts, whereby the revolution of said cylinder-shaft will reciprocate said knife-shafts in said slots, and a series of knives secured on said knife-shafts and projected substantially in line with the radii of said heads by the outward movement of said shafts, substantially as described and for the purpose specified.

9. In a band-cutter and feeder, the combination, with a revolving knife-cylinder, of knife-shafts mounted therein and reciprocating laterally with respect thereto, and a series of knives adjustably arranged on said shafts and said knives being triangular in form and tapering to a point, for the purpose specified.

10. In a band-cutter and feeder, the combination, with a revolving knife-cylinder, of a series of knives mounted therein and reciprocating radially with respect thereto, means for operating said knives longitudinally during their revolving movement with said cylinder, a bundle-carrier provided beneath said cylinder and a series of spikes provided in said carrier and inclined toward the receiving end thereof to hold the lower portions of the bundles while the knives are cutting the bands, substantially as described.

11. In a band-cutter and feeder, the combination, with a revolving knife-cylinder, of shafts mounted therein substantially parallel with the axis thereof, means for reciprocating said shafts radially with respect to said cylinder, a series of triangular knives mounted

on said shafts and alternately projected or thrust outward and retracted by the reciprocation thereof, a bundle-carrier provided beneath said cylinder and adapted to deliver bundles in position to receive the longitudinal thrust of said knives, and a series of spikes or pins provided on said carrier and inclined toward the receiving end thereof to hold or retard the bundles while the knives are cutting the bands, substantially as described.

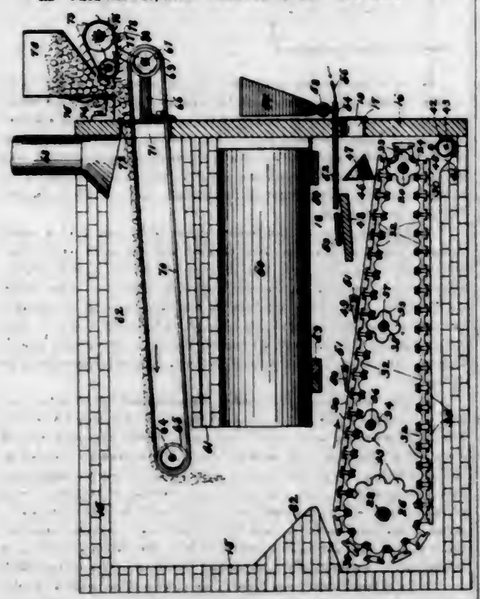
12. In a band-cutter and feeder, the combination, with a shaft and heads secured thereon, of knife-shafts provided between said heads and substantially parallel with said first-named shaft, means for reciprocating said knife-shafts and in a direction substantially at right angles thereto and laterally with respect to said heads-shaft a series of knives provided on said knife-shafts.

13. The combination, with a knife-cylinder shaft, of heads secured thereon, a knife-shaft mounted in said heads, means for operating said knife-shaft to move it sidewise toward or from the circumference of said heads and in a direction substantially at right angles to said cylinder-shaft, and a series of knives provided on said knife-shaft and arranged to be thrust out beyond and retracted within the circumference of said heads by the movement of said shaft.

14. The combination, with a knife-cylinder shaft, of knife-shafts arranged substantially parallel therewith, supports provided on said cylinder-shaft and wherein said knife-shafts are movable laterally with respect to said cylinder-shaft means for reciprocating said knife-shafts, and a series of knives provided on said knife-shafts and arranged to be laterally projected in a direction substantially at right angles to said cylinder-shaft and withdrawn toward the same by the revolution of said cylinder-shaft.

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**755,662. GARBAGE-CREMATORY. EDWARD E. HILL, Chicago, Ill. Filed June 10, 1903. Serial No. 160,841. (No model.)**



*Claim.*—1. In a garbage-crematory, the combination with a furnace having an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a feeder for comminuted material and air located in the front part of the furnace just above the grate, means to hold and supply comminuted material to the feeder, and means to force air under pressure through the feeder, substantially as described.

2. In a garbage-crematory, the combination with a furnace having an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a plurality of feeders for comminuted material and air located in the front part of the furnace just above the grate, means to hold and supply comminuted material to the feeders, and means to force air under pressure through the feeders, substantially as described.

3. In a garbage-crematory, the combination with a furnace having an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a feeder for comminuted material and air located in the front part of the furnace just above the grate, a water-front located transversely in the lower front portion of the furnace, a supply-pipe communicating with said water-front and with a source of water-supply, means to hold and supply comminuted material to the feeder, and means to force air under pressure through the feeder, substantially as described.

4. In a garbage-crematory, the combination with a furnace having an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a feeder for comminuted material and air located in the front part of the furnace above the grate, means to hold and supply comminuted material to the feeder, means to force air under pressure through the feeder, a water-front transversely located in the front lower portion of the furnace, water-receptacles transversely located in the furnace near the upper surface of the grate, and means to supply said receptacles, and water-front with water, substantially as described.

5. In a garbage-crematory, the combination with a furnace having an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a plurality of feeders for comminuted material and air located in the front part of the furnace above the grate, means to hold and supply comminuted material to the feeders, means to force air under pressure through the feeders, a retort-plate transversely located in the furnace between the feeders and grate, a water-front transversely located in front of said plate, and water-receptacles transversely located in parallelism with one another in the furnace near the upper surface of the grate, substantially as described.

6. In a garbage-crematory, the combination with a furnace having in its lower front end a transverse depression and in its upper portion a horizontal partition to form a channel between said partition and the top of the furnace, said furnace having an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a worm located in said transverse depression, and means located above the partition and extending through the inlet to convey garbage rearwardly through said channel, substantially as described.

7. In a garbage-crematory, the combination with a furnace, having an inlet for the garbage and an outlet for the smoke and gases and provided with a horizontal partition in its upper portion to form a channel between said partition and the top of the furnace, of a forwardly-movable endless grate located in its lower portion, a rearwardly-movable endless conveyer located in the channel above the partition and extending through the inlet, and means located above said conveyer to hold and supply garbage thereto, substantially as described.

8. In a garbage-crematory, the combination with a furnace having a horizontal partition in its upper portion and provided with an inlet for the garbage and an outlet for the smoke and gases, of a forwardly-movable endless grate located in its lower portion, a feeder for comminuted material and air located in the front part of the furnace just above the grate, means to hold and supply comminuted material to the feeder, means to force air under pressure through the feeder, a rearwardly-movable conveyer located above the said partition and extending through the inlet of the furnace, means to hold and supply garbage to the conveyer, substantially as described.

9. In a garbage-crematory, the combination with a furnace having a horizontal partition in its upper portion and provided with an inlet for the garbage and an outlet for the smoke and gases above said partition, of a forwardly-movable endless grate located in its lower portion, a feeder for comminuted material and air located in the front part of the furnace just above the grate, means to hold and supply comminuted material to the feeder, means to force air under pressure through the feeder, a water-front transversely located in the front portion of the furnace above the grate, a conveyer located above the partition and extending through the inlet for the garbage, and means to hold and supply garbage to the conveyer, substantially as described.

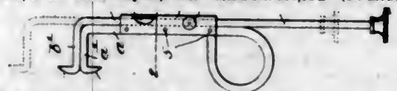
10. In a garbage-crematory, the combination with a furnace having an inlet for the garbage and an outlet for the smoke and gases and provided with a horizontal partition in its upper portion, of a forwardly-movable endless grate located in its lower portion, a feeder for comminuted material and air located in the front part of the furnace just above the grate, means to hold and supply comminuted material to the feeder, and means to force air under pressure through the feeder, a water-front transversely located in the front portion of the furnace above the grate, a retort-plate located between the feeder and grate, water-receptacles transversely located near the upper surface of the grate and in parallelism with one another, a rearwardly-movable conveyer located in the channel above the partition and extending through the garbage-inlet, and means to hold and supply garbage to the conveyer, substantially as described.

11. In a garbage-crematory, the combination with a furnace having in its lower front portion a transverse depression and in its upper front part an inlet and an outlet, said furnace being provided with an internal horizontal partition, of a boiler located in the furnace below said partition, a worm located in the said depression, a perforated pipe located above said worm, a forwardly-movable endless grate located in the lower portion of the furnace, a feeder for comminuted material and air located in the front part of the furnace just above the grate, means to hold and supply comminuted material to the feeder, means to force air under pressure through the feeder, means located above the partition and extending through the inlet to convey garbage to the rear of the partition and boiler, substantially as described.



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**755,663. FISH-MOUTH OPENER. JOHN E. HILL, Center Harbor, N. H. Filed July 30, 1903. Serial No. 167,524. (No model.)**



*Claim.*—1. In a device of the class described, two oppositely-movable jaws, an elongated jaw-carrier for each, said jaw-carriers being in parallelism and slidable longitudinally upon and relatively to each other, a long box-like guide for one jaw-carrier, rigidly mounted upon the other, and means to clamp the jaw-carriers from relative movement.

2. In a device of the class described, two elongated and parallel jaw-carriers having plane, opposed faces, one jaw-carrier being slidably mounted upon and movable longitudinally relatively to the other, the adjacent ends thereof being bent at right angles to form parallel jaws, a prong on each jaw, said prongs pointing in opposite directions, a guide on one jaw-carrier slidably embracing the other and a clamp-screw to prevent relative movement of the jaws when set.

3. In a device of the class described, two L-shaped members having their longer arms superposed one upon the other and their shorter arms movable toward and from each other, the latter constituting jaws, oppositely-turned prongs on the latter, a box-like guide fast on the longer arm of one member, to slidably receive the similar arm of the other member, and a set-screw on the guide to act upon and clamp the latter from longitudinal movement.

4. In a device of the class described, a straight, elongated jaw-carrier having a lateral jaw at one end and a ring at the other end, a box-like guide fast on said jaw-carrier, a second, longer jaw-carrier longitudinally slidable in the guide and having a lateral jaw in parallelism with the first-named jaw, a thumb-piece at the opposite end of said longer jaw-carrier, and a clamp-screw to prevent relative longitudinal movement of the jaw-carriers and thereby hold the jaws in adjusted position.

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**755,664. CANDLE AND SHADE HOLDER. ALFRED W. HOFFMANN, New York, N. Y., assignor to New-York Metal Specialty Manufacturing Co., New York, N. Y., a Corporation of New York. Filed July 10, 1903. Serial No. 164,970. (No model.)**



*Claim.*—1. A candle and shade holder, consisting of a base-plate, a retaining-plate recessed at its circumference, U-shaped wires each seated in adjacent recesses and provided with helically-bent portions above the retaining-plate, and supporting means for the retaining-plate connected to the base-plate, substantially as set forth.

2. A candle and shade holder, consisting of a base-plate provided with a drip-cup, a retaining-plate seated in said drip-cup, a candle-holding wire socket composed of U-shaped wires seated in recesses of the retaining-plate and provided with helically-bent portions above the same, and means for securing the retaining-plate in its seat in the drip-cup, substantially as set forth.

3. In a candle-holder, the combination, with a retaining-plate provided with recesses in its circumference, of U-shaped wires each seated in adjacent recesses of the retaining-plate, and helically-bent portions above the U-shaped portions for holding the candle, substantially as set forth.

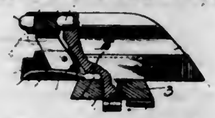
4. A candle and shade holder, consisting of a base, a drip-cup for the same, helically-bent wires retained at their lower ends in the drip-cup, the wires being provided with upwardly-extending and outwardly-flaring spring-arms, a shade-holding ring provided with a recessed rim having downwardly-extending lugs at both sides of each recess, said recesses being adapted to form frictional contact with the spring-arms for supporting the shade in any desired position thereon, substantially as set forth.

5. A candle and shade holder, consisting of a base, a retaining-plate recessed at its circumference supported by said base, and provided with a downwardly-extending screw-threaded socket, U-shaped wires seated in said recesses and provided with helically-bent portions above the retaining-plate, and a fastening-screw passing through the base and engaging the socket of the retaining-plate, substantially as set forth.

6. In combination with a candlestick composed of a base-plate, and a drip-cup provided with a central recess and outwardly-flaring ends, of a candle and shade holder, composed of a retaining-plate having a socket-shaped lower part seated in the central recess of the drip-cup and provided with circumferential recesses, U-shaped wires seated in said recesses passing upwardly, bent first to conform to the shape of the drip-cup, then bent helically, and lastly flaring upwardly and outwardly, a shade-holding ring provided with a recessed rim having downwardly-extending legs at both sides of each recess for forming a frictional contact with the upwardly-flaring spring-arms, and a screw connecting the base-plate, drip-cup and retaining-plate, substantially as set forth.

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**755,665. SIGHT FOR GUN-BARRELS. DANIEL H. HOLMAN, Moscow, Idaho. Filed Dec. 10, 1903. Serial No. 184,633. (No model.)**



*Claim.*—1. A sight comprising a base, a rigid member detachably carried by the base, a spring clamped between the base and the rigid member, and a movable member pivoted to said rigid member and bearing upon the spring.

2. In a sight, the combination with a fixed sight member and a movable sight member, of parallel flanges carried by the fixed member and between which the movable member is pivoted and a spring carried by one of the members and bearing against the other member to hold the movable member rigid in its adjusted position.

3. A sight comprising a base, a rigid part detachably carried by the base and having parallel flanges, a spring clamped between the base and the rigid part, and a movable part pivoted between the flanges and bearing upon the spring.

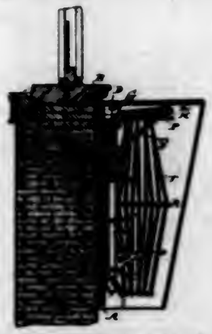
4. A sight comprising a rigid member having a convex designating mark or bead, a pivoted movable member having a mark and a concavity registering with the bead on the rigid member, a spring carried by the rigid member, said movable member having an angular heel adjacent its pivotal point against the different sides of which the spring bears to rigidly hold the movable member in its adjusted positions, the concave portion of said movable member fitting against the bead of the rigid member when the movable member is in operative position.

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**755,666. FIRE-ESCAPE. WILLIAM G. HORTON, San Francisco, Cal., assignor to Benjamin Kirkwood, San Francisco, Cal. Filed Mar. 10, 1903. Serial No. 147,180. (No model.)**

*Claim.*—1. In a fire-escape, the combination with a stationary frame located within a building and an outrigger having L-shaped

side bars pivotally attached to said stationary frame and movable lengthwise on its pivot and adapted to be swung over so as to project beyond a window-ledge, of a flexible ladder attached to the outer end of the outrigger.



2. In a fire-escape, the combination with a stationary frame located within a building of an outrigger pivotally attached to said stationary frame and movable lengthwise on its pivots, means for longitudinally adjusting said outrigger and locking it in its adjusted position, said means comprising parallel bars embracing the slotted side bars of the outrigger and bolts passing through the parallel bars and the slots in the side bars; and a flexible ladder attached to said outrigger.

3. In a fire-escape, the combination with an outrigger pivotally secured to a stationary part and a folding ladder attached to said outrigger, of a pivoted hanger attached to said stationary part and adapted to pass between the ropes of and support the ladder when folded, said hanger being provided with means for supporting it in a horizontal position when raised.

4. In a fire-escape, the combination with an outrigger, a stationary part to which said outrigger is pivotally attached and a folding ladder attached to said outrigger, of a hanger pivotally attached to the outrigger, a hanger-brace, and a step or support for said hanger-brace located on the stationary part.

5. In a fire-escape, the combination with a stationary frame, of an outrigger having L-shaped side bars with slots following the contour of the side bars, a cross-bolt on the stationary frame passing through the slots in the side bars and a ladder attached to said outrigger.

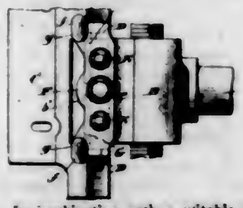
6. In a fire-escape, the combination with a stationary part adapted to be attached to a building and a flexible ladder, of a hanger, a brace pivotally attached to said hanger and a pivoted step or support for said hanger-brace arranged on the stationary part and provided with a counterweight.

7. In a fire-escape, a flexible ladder composed of hollow rungs and cable sides, the cable being in sections of double strands which pass through one rung and are looped over the ends of the rung above.

8. In a fire-escape, a flexible ladder composed of tubular rungs having split plugs in their ends, each formed with two holes and a circumferential groove, and cable-sections each of which passes through one hole in the plug at each end of a rung thence up and around the grooves in the plugs of the next rung, then down and through the other holes in the plugs and into the rung, where its ends are secured together

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755,667. **STONE-SAWING MACHINE.** GEORGE D. HUNTER, Bloomington, Ind. Filed May 26, 1903. Serial No. 158,862. (No model.)



*Claim.*—1. In combination with a suitable guide member, a bracket adapted to traverse the same having a detachable relatively weakened yieldable portion; substantially as described.

2. In combination with a guide member, a bracket adapted to traverse the same, a bearing-block between a portion of the guide and the bracket, means for retaining the block in place, adjusting means for the block, and a yieldable member associated with said adjustable means, substantially as described.

3. In combination with a suitable guide member, a bracket adapted to traverse the same having suitable engaging portions, and an independent relatively weakened detachable breakable portion operatively associated with said engaging portions, substantially as described.

4. A guide-bracket having an independent detachable breakable piece secured thereto, substantially as described.

5. In combination with a suitable guide member, a bracket adapted to traverse the same, having suitable projecting portions, a bearing-block interposed between one of said projecting portions, and the guide member, a breakable plate secured to the exterior of the projecting member adjacent the bearing-block, and an adjusting device for the bearing-block operatively related to the breakable plate and loosely engaging said projecting portion, substantially as described.

6. In combination with a suitable guide member, a bracket adapted to traverse the same having suitable projecting portions, a bearing between one of said projecting portions and the guide member, and a relatively weak detachable breakable piece operatively associated with said bearing, substantially as described.

7. In combination with a suitable guide member, a bracket adapted to traverse the same, having suitable projecting portions, a bearing-block interposed between one of said projecting portions and the guide member, means for confining said bearing-block against independent vertical movement, an elongated breakable plate secured to the exterior of the projecting portion adjacent the bearing-block, and separated adjusting-screws working through the respective ends of the breakable plate and loosely engaging said projecting portion, adapted to adjust the bearing-block laterally, substantially as described.

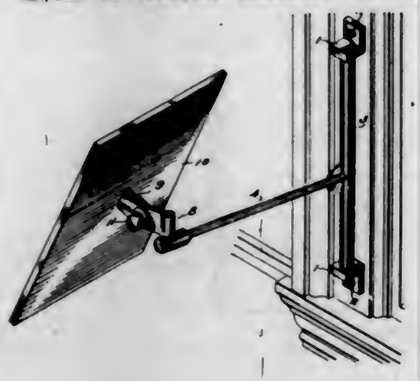
8. In combination with a suitable guide member, a bracket adapted to traverse the same having suitable projecting portions, bearing-blocks interposed between one of said projecting portions and the guide member, a breakable plate secured to the exterior surface of said projecting portion adjacent the bearing-block, means for adjusting the blocks laterally, and flanges on the breakable piece at the top and bottom thereof adapted to confine the bearing-blocks against independent vertical movement, substantially as described.

9. In combination with a suitable guide member, a bracket adapted to traverse the same having suitable projecting portions, bearing-blocks interposed between one of said projecting portions and said guide member having offset portions at one end adapted to engage the outer surface of a portion of the bracket, a breakable piece secured to the exterior surface of the projecting portions adjacent the bearing-blocks, means operatively associated with said breakable piece adapted to adjust the bearing-blocks laterally, and overhanging portions at the top and bottom of the breakable piece, adapted to confine the offset portions of the bearing-blocks between the same and the surface of the casting, substantially as described.

10. In combination with a suitable guide member, a bracket adapted to traverse the same having a detachable relatively weakened normally rigid portion yieldable when the parts are abnormally forced or strained, substantially as described.

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755,668. **MIRROR-SUPPORT.** JOSEPH H. HURLTHAL, Thompsonville, Conn. Filed Nov. 23, 1903. Serial No. 183,089. (No model.)





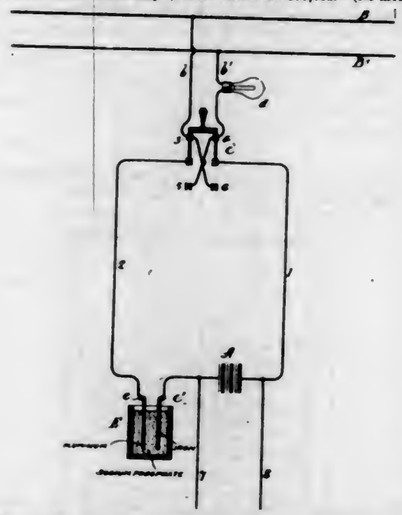
*Claim.*—1. A mirror-support having brackets, a post loosely supported by the brackets, an arm with its inner end engaging with and adapted to frictionally bite the post when its outer end is depressed, a strap swiveled to the outer end of the arm, and a plate hinged to the outer end of the strap, substantially as specified.

2. A mirror-support having a tubular post, an arm extending into the post, a head on the inner end of the arm, said head being of slightly smaller diameter than the interior of the post so that its upper part will engage the front wall of the interior of the post and its lower part will engage the back wall of the interior of the post, a stud at the outer end of the arm, a strap swiveled upon the stud, and a plate hinged to the strap, substantially as specified.

3. A mirror-support having brackets, a tubular slotted post loosely supported by the brackets, an arm extending into the post, a head on the inner end of the arm, said head being of slightly smaller diameter than the interior of the post so that its upper part will engage the front wall of the interior of the post and its lower part will engage the back wall of the interior of the post, a stud at the outer end of the arm, a strap swiveled upon the stud, and a plate hinged to the strap, substantially as specified.

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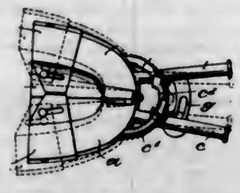
755,669. **CURRENT-SELECTOR FOR CHARGING SECONDARY BATTERIES.** MILLER R. HUTCHISON, New York, N. Y., assignor, by mesne assignments, to Hutchison Acoustic Company, a Corporation of New York. Filed May 5, 1903. Serial No. 155,762. (No model.)



*Claim.*—The combination of a main charging-circuit, a branch circuit leading therefrom and including in series a translating device, a storage battery to be charged and an electrolytic cell capable of preventing flow of current in one direction and permitting it to flow in the opposite direction, substantially as and for the purpose set forth.

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755,670. **DENTAL IMPRESSION-TRAY.** CHRISTOS JOANNIDI, Constantinople, Turkey. Filed Oct. 13, 1903. Serial No. 176,841. (No model.)



*Claim.*—1. A dental impression-tray, comprising two hinged double-walled or jacketed wings arranged so as to be adapted to diverge, means for extending the free ends of said wings, and means for circulating a cooling fluid through the jacketed wings of said tray.

2. A dental impression-tray having members adapted to be adjustably separated to form, as required, a tray of varying width and circumference and having portions adapted to support an impression compound double-walled to form jackets, means for connecting the jackets with each other, and means for circulating a cooling fluid through said jackets.

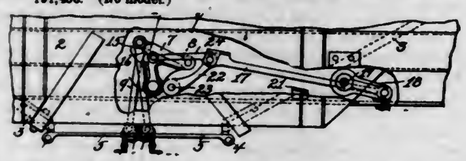
3. A dental impression-tray, comprising two wings hinged together at one end so as to be adapted to diverge, the base or biting-surface of each wing consisting of a series of removable plates separable from each other and from the body of the tray, combined with means for extending the free ends of each wing.

4. An adjustable dental impression-tray, comprising two wings hinged together at their forward ends and arranged to diverge at said hinge, combined with means for extending the free ends of each wing to extend the reach of the wings when moved to a divergent position with respect to each other.

5. An adjustable impression-tray, comprising two wings hinged together at their forward ends and arranged to diverge at said hinge, each wing having an inner portion, said portions forming in conjunction a palate-rest, in combination with means for adjusting the height of said palate-rest.

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755,671. **OPERATING MECHANISM FOR DUMPING-CARS.** SINCLAIR J. JOHNSON, Montclair, N. J. Filed Feb. 1, 1904. Serial No. 191,458. (No model.)



*Claim.*—1. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door having a linked connection with said lever of a lever fulcrumed eccentrically of the fulcrum-axis of the angle-lever and means for operating said eccentrically-fulcrumed lever and for transmitting motion to said angle-lever.

2. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door having a linked connection with said lever, of a transmitting-link pivoted to said angle-lever, means pivoted eccentrically to the angle-lever, for causing the outer end of said transmitting-link to travel in a prescribed path and an operating-bar for the link.

3. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door having a linked connection with said lever, of a transmitting-link pivoted to said angle-lever, means for causing the outer end of said transmitting-link to travel in a prescribed curved path, and an operating-bar for the link.

4. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, a transmitting-link pivoted to said angle-lever, means for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar for the link.

5. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, means for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar for the link

6. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, a radius-bar for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar for the link.

7. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, and means for causing the outer end of said transmitting-link to travel in a prescribed path, and cooperating projections on the angle-lever and the links pivoted thereto.

8. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, and means for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar extending longitudinally of the car and crank-connected at its end to a rock-shaft.

9. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to fold onto and come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, and a radius-bar for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar extending longitudinally of the car and crank-connected at its end to a rock-shaft.

10. In a hopper-door-operating mechanism, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, and means for causing the outer end of said transmitting-link to travel in a prescribed path, and cooperating projections on the angle-lever and the lever pivoted thereto, and an operating-bar extending longitudinally of the car and crank-connected at its end to a rock-shaft.

11. In a mechanism of the class described, the combination of a pair of hinged doors, links pivoted to the swinging edges of each, a suspension-link to whose end said first-mentioned links are pivoted, an angle-lever to which said suspension-link is pivoted and which is adapted to contact and by which it may be bodily swung, a jointed frame comprising a transmitting-link pivoted to said angle-lever and a radius-bar pivoted to a fixed point and an operating-bar extending between sills of the car.

12. In a mechanism of the class described, the combination of a pair of hinged doors, links pivoted to the swinging edges of each, a suspension-link to whose end said first-mentioned links are pivoted, an angle-lever to which said suspension-link is pivoted and upon which the suspension-link is adapted to be folded and contact, and by which it may then be bodily swung, a jointed frame comprising a transmitting-link pivoted to said angle-lever and a radius-bar pivoted to a fixed point and an operating-bar extending between the center sills of the car, and cooperating projections on said angle-lever and said suspension-link.

13. In a mechanism of the character described, the combination with a fulcrumed angle-lever and a door having a linked connection with said lever, of a transmitting-link pivoted to said angle-lever, means for causing the outer end of said transmitting-link to travel in a prescribed path approaching and receding from the axis of said fulcrum-lever, an operating-rod for actuating said transmitting-link, a rock-shaft, a rock-arm extending therefrom and to which said operating-rod is secured, and a stop for limiting the movement of said rock-shaft, said operating-rod, rock-shaft, rock-arm and stop constituting means for locking the door closed.

14. In a mechanism of the character described, the combination with a fulcrumed lever and a pair of doors, of links connected to said doors, a suspension-link to which the first-mentioned links are jointed and which is pivotally connected to said lever and adapted to be bodily swung by said lever as the doors approach their closed position, a radius-arm mounted on said car, a transmitting-link connecting the outer end of said radius-arm with said fulcrumed lever, a longitudinally-extending operating-bar for swinging said transmitting-link, a rock-shaft, a rock-arm and stop constituting means for locking the door closed.

15. In a mechanism of the character described, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the link pivoted to the angle-lever being adapted to come into contact with the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, a radius-bar to which the outer end of said transmitting-link is pivoted, and an operating-bar for actuating the transmitting-link and which operating-bar is longitudinally movable in the plane of movement of the radius-bar and the transmitting-link.

16. In a mechanism of the character described, the combination with a fulcrumed angle-lever and a door, of a pair of jointed links connecting said angle-lever with the swinging edge of the door, the end of the link pivoted to the angle-lever being adapted to come into contact with and rest upon a seat on the lever and be bodily swung thereby, a transmitting-link pivoted to said angle-lever, a radius-bar to which the outer end of said transmitting-link is pivoted, and an operating-bar for actuating the transmitting-link and which operating-bar is longitudinally movable in the plane of movement of the radius-bar and the transmitting-link.

17. In a mechanism of the character described, the combination with a door, a rotatably-mounted member connected therewith, a transmitting-link pivoted to said member, a radius-bar for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar for the link.

18. In a mechanism of the character described, the combination of a door, a fulcrumed angle-lever connected therewith, a transmitting-link pivoted to said lever, a radius-bar for causing the outer end of said transmitting-link to travel in a prescribed path, and an operating-bar for the link.

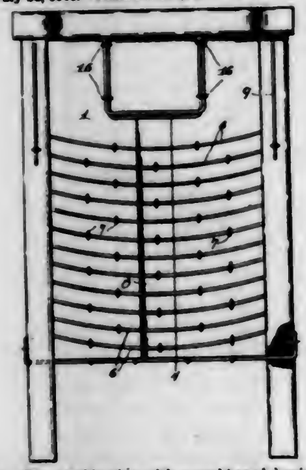
19. In a mechanism of the character described, the combination with a rotatable member and a door connected therewith, of a link one of whose ends is pivoted to said member, pivoted means for compelling the outer end of said link to travel in a prescribed path, the axis of said pivoted means being eccentric to the axis of said rotatable member, and an operating-bar for the link.

20. In a mechanism of the character described, the combination with an angle-lever, and a door connected therewith, of a link one of whose ends is pivoted to said member, pivoted means for compelling the outer end of said link to travel in a prescribed path, the axis of said pivoted means being eccentric to the axis of the angle-lever, and an operating-bar for the link.

21. In a mechanism of the character described, the combination with a rotatable member and a door connected therewith, of a link, one of whose ends is pivoted to said member, pivoted instrumentalities for compelling the outer end of said link to travel in a prescribed path, the axis of said movable members being eccentrically located, and an operating-bar for the link.

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**755,672. WASHBOARD.** JAMES B. JONES, Ardmore, Ind. Ter. Filed July 28, 1903. Serial No. 167,343. (No model.)



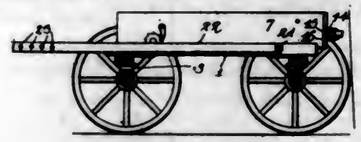
*Claim.*—The combination with a washboard having a longitudinally-disposed groove, of a series of transversely-disposed ribs associated with the face of the board and arranged at a downward inclination toward the groove, and a soap-holder situated above and communicating with the upper end of the groove.

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**755,673. MACHINE FOR DRIVING FENCE-POSTS.** RICHARD M. JONES, Bevier, Mo. Filed Sept. 15, 1902. Serial No. 123,444. (No model.)

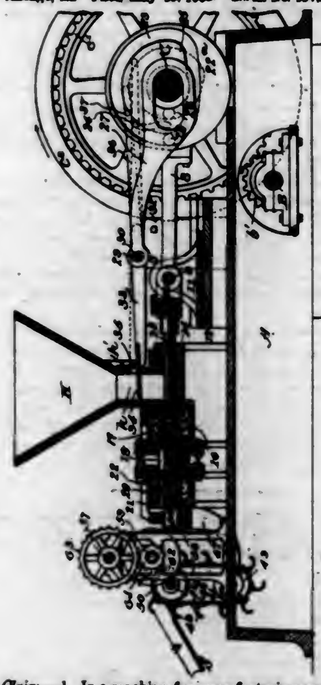
*Claim.*—In a fence-post driver, the combination with a vehicle and its bolsters, of a pair of parallel bars extending longitudinally of the vehicle, adjustable clips connecting the bars to the bolsters, a weight-guiding chute pivoted at one end to the bars and provided with inner guides, braces pivoted to the opposite ends of the bars and adjustably engaging the chute, a head slidingly mounted in the chute and engaging the guides, means for operating the head, a weight slidingly mounted in the chute beneath the head and provided with recessed lugs, grappling devices pivoted to the head with their upper ends projecting above the same and their lower ends provided with fingers for engaging the recessed lugs, and cams disposed at the upper end of the chute for actuating the grappling devices to automatically release the weight.





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**755,674. MACHINE FOR MANUFACTURING PEAT INTO BLOCKS FOR FUEL.** ROBERT A. KELLOGG and JOHN C. MORRISON, Chicago, Ill. Filed May 15, 1903. Serial No. 157,233. (No model.)



*Claim.*—1. In a machine for manufacturing peat fuel, the combination with means—maintained in a cool condition—for compressing the raw material into a succession of blocks or briquets one upon another, of means—maintained at a higher temperature—for imparting to the entire surfaces of such blocks or briquets after the formation thereof a coating, envelop, or crust of carbonaceous and tarry or oily natural constituents of the peat, for the purpose set forth.

2. In a machine for manufacturing peat fuel, the combination with a suitable feed for the raw material, a plunger, and a cool forming-tube or die alined with and adapted to receive such plunger, such device being so arranged and operated that a block or briquet may be formed in such forming-tube or die, of heated instrumentalities receiving the fully-formed block or briquet from such forming-tube or die for "searing" the sides and ends of the block or briquet.

3. In a machine for manufacturing peat fuel into blocks or briquets, the combination with a suitable hopper having a gravity-feed for the raw material, and with suitable driving mechanism, of a plurality of horizontally-disposed plungers or male dies, parallel to each other, a similar plurality of cool open-ended forming-tubes or female dies in alinement with said plungers or male dies and in communication with the hopper, and a corresponding plurality of alined heated tubes or passage-ways, in which the peripheries of the blocks or briquets are seared, and instrumentalities beyond the heated tubes, for catching, searing the flat ends or sides and finally discharging the finished blocks or briquets, substantially as set forth.

4. In a machine for manufacturing peat fuel, the combination with a horizontally-arranged forming-tube or female die, a plunger or male die in alinement therewith, means for operating said plunger or male die to compress the raw material within such forming-tube or female die, and with a vertically-arranged feed-hopper, of a plate adapted to enter and pass across the throat of said hopper and through the material contained therein previous to the plunger or male die passing into the forming-tube or female die, and mechanism operated from a moving part of the machine and serving to move said plate in and out of the hopper-throat in such manner that it will first cut off the charge of material and then have a downward movement to condense such charge between the die members, substantially as and for the purpose set forth.

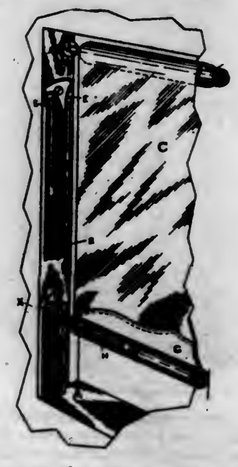
5. In a machine for manufacturing peat fuel, the combination with a horizontally-arranged forming-tube or female die, a plunger or male die in alinement therewith, and a revoluble eccentric-shaft for operating said plunger or male die to compress materials—as peat—within such forming-tube or female die, of a vertically-arranged feed-hopper, the lower part or throat of which is provided with a lateral opening in one of its walls, a plate adapted to enter the hopper-throat near the top of said opening and pass down through the material in a slanting direction so as to act as a forced feed and to pack down and hold charges of material in position between the die members, cam-and-lever mechanism operated from the eccentric shaft for projecting and retracting the plate, and supplementary mechanism connected therewith for imparting the slanting movement thereto, substantially as and for the purpose set forth.

6. In a machine for manufacturing briqueted and seared peat fuel, the combination with suitable driving and forming mechanism, and with heated tubes alined with and receiving the briquets from the forming mechanism and adapted to sear the peripheries thereof, of a twisted spout receiving the briquets from the heated tubes and directing them into the path of end searing devices, such latter devices consisting of a bucket carrier and two parallel heated disks, adapted to contact with the ends of the blocks taken up by said carrier from said twisted spout, and means for causing the carrier to move in one direction between the disks, and said disks to be revolved in the opposite direction, substantially as set forth.

7. In a machine for manufactoring peat into blocks for fuel, the combination with suitable driving mechanism including eccentrics, eccentric-rods, slide and cross head, and with horizontally-alined plunger, and forming and searing tubes, of a cross-bar, and connections therefrom to the cross-head whereby said cross-bar may be caused to move down intermittently and dislodge the individual briquets from the column of such issuing from the searing-tubes, substantially as set forth.

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**755,675. CURTAIN-FIXTURE.** JOHN KIRBY, Jr., Dayton, Ohio, assignor to the Dayton Manufacturing Company, Dayton, Ohio. Filed Oct. 12, 1903. Serial No. 176,702. (No model.)



*Claim.*—1. In a curtain-fixture, the combination of a spring-roller provided with a curtain one end of which is attached thereto and which is adapted to automatically wind thereon and to be unwound by hand in the usual manner, a rod attached to and extending across the free end of the curtain and extending beyond the edges thereof, and a longitudinally-slotted resilient tube attached

to a suitable support adjacent to each edge of the curtain, the extending ends of said rod being adapted to enter and traverse the longitudinal slots of said tubes and being thicker than the normal width of the slots, thus forcing them to expand and accommodate themselves thereto as the ends of the rods are raised or lowered therein, and whereby the tubes are caused to exert sufficient pressure upon the same to retain said rod at any desired height within the range of the tubes against the action of the spring-roller upon which the curtain is mounted.

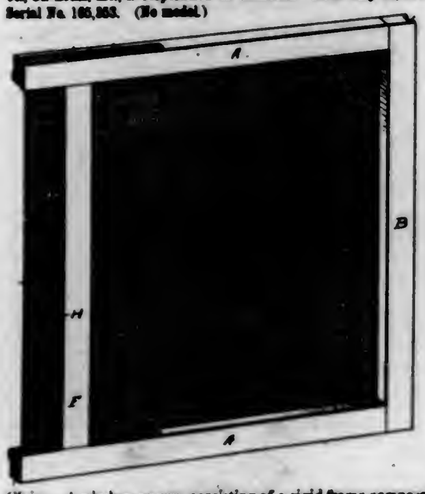
2. In a curtain-fixture, the combination with a spring-actuated roller having a curtain attached thereto adapted to wind and unwind thereon, of a slotted spring-tube attached to a suitable support adjacent to each edge of the curtain, a rod having hollow ends attached to the free end of the curtain, arms movable in said hollow ends of said rod adapted to traverse the interior of said tubes and to be acted upon by spring-pressure exerted thereby whereby the curtain will be held at any desired point within the longitudinal range thereof against the action of the spring-roller upon which it is mounted.

3. In a curtain-fixture, the combination with a spring-actuated roller having a curtain attached thereto adapted to wind and unwind thereon, of a slotted spring-tube attached to a suitable support adjacent to each edge of the curtain, a rod having hollow ends attached to the free end of the curtain, arms movable in said hollow ends of said rod having flattened portions adapted to traverse the slots of said tubes and to be acted upon by spring-pressure exerted thereby whereby the curtain will be held at any desired point within the range of said slots against the action of the spring-roller upon which it is mounted.

4. In a curtain-fixture, the combination with a spring-actuated roller having a curtain attached thereto adapted to wind and unwind thereon, of a slotted spring-tube attached to a suitable support adjacent to each edge of the curtain, a rod having hollow ends attached to the free end of the curtain, arms movable in said hollow ends of said rod having flattened portions adapted to traverse the slots of said tubes and enlarged heads adapted to traverse the interior thereof, the said flattened portions being acted upon by spring-pressure exerted by said tubes whereby the curtain will be held at any desired point within the range thereof against the action of the spring-roller upon which it is mounted.

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**755,676. ADJUSTABLE WINDOW-SCREEN.** MAX KOLP, St. Louis, Mo., assignor, by mesne assignments, of one-half to Kolf Screen Co., St. Louis, Mo., a Corporation of Missouri. Filed July 16, 1903. Serial No. 165,353. (No model.)

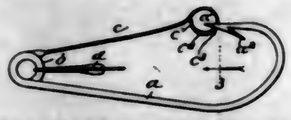



*Claim.*—A window-screen, consisting of a rigid frame composed of strips A and B, a sheet of gauze or similar material mounted thereon, the strips A being provided with slots E, the strip B being provided with the vertical groove L, and a vertical adjustable side piece F provided with the groove H and tongues G adapted to fit within the slots E, substantially as described.

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**755,677. FISH-HOOK.** CHARLES P. KEES, Chicago, Ill. Filed July 29, 1903. Serial No. 167,475. (No model.)

*Claim.*—1. An improved article of manufacture, comprising a hook having a suitable point and barb, and a self-closing depressible flat spring-guard carried by the shank of the hook and having at its extremity a curved portion provided with a slot through which the point of the hook projects.




2. An improved article of manufacture, comprising a hook having a suitable point and barb, and a self-closing depressible flat spring-guard carried by the shank of the hook and having at its extremity a curved portion provided with a slot through which the point of the hook projects, said guard terminating in a downturned point.

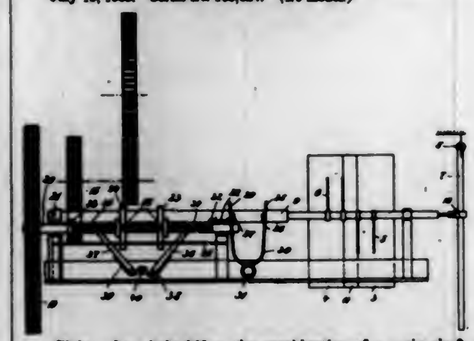
3. An improved article of manufacture, comprising a hook having a suitable point and barb, and a normally closed depressible spring-guard carried by the shank of the hook and having a flattened extremity, curved to form substantially a half circle and provided at said half-circle with a vertical slot to receive the point of the hook and through which the point extends, the lower end of said slot bearing against the under surface of the point of the hook, for the purpose set forth.

4. An improved article of manufacture, comprising a hook having a suitable point and barb, and a normally closed depressible guard formed integrally with the eye of the hook and having a flattened extremity formed into a loop, the upper portion of the loop having a vertical slot receiving the point of the hook and the lower portion of the loop being beveled at its under side to permit free depression of the guard from a position above the point of the hook, for the purpose set forth.

5. An improved article of manufacture, comprising a hook having a suitable point and barb, and a normally closed depressible guard formed integrally with the eye of the hook and having a flattened extremity formed into a loop, the upper portion of the loop having a vertical slot receiving the point of the hook and the lower portion of the loop comprising a downturned pointed extremity permitting free depression of the guard from a position above the point of the hook, for the purpose set forth.

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**755,678. BELT-SHIFTER.** BRUNO KUTER, Pröbeln, Germany, assignor to Prömbs and Freudenberg, Schwetzkitz, Germany. Filed July 15, 1903. Serial No. 165,627. (No model.)



*Claim.*—In a belt-shifter, the combination of a main shaft, a wheel driven from said main shaft, a shaft provided with screw-threads driven by said wheel, adjustable disks on said shaft, a rod engaging said disks to prevent them from turning, a slidable shift-bar, belt-forks on said bar, notches in said bar, spring-pressed pawls, one of which is adapted to engage with one of said notches when the bar is at the end of its movement, projections on said disk for engaging said pawls to release the latter from the bar, a spring, pins on said bar adapted to engage the ends of said spring whereby the latter may shift the bar when the engaged pawl is released, substantially as described.

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**755,679. SHEET-METAL BAND FOR PIPE-COVERINGS OR OTHER LIKE PURPOSES.** BERNARD H. LARKIN, Austin, Ill., assignor to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Jan. 14, 1904. Serial No. 188,971. (No model.)



*Claim.*—1. A pipe-covering band consisting of a long thin strip of sheet metal, having an integral loop at one end formed by a curved transversely-extending slit, the slitted portion having a fold therein to give a smooth rounded bearing for the free end of the band, substantially as specified.



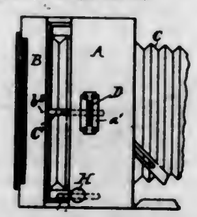
2. A pipe-covering band consisting of a long thin strip of sheet metal having an integral loop at one end formed by a curved transversely-extending slit, the slitted portion having a fold therein to give a smooth rounded bearing for the free end of the band, and the loop end of the band having a marginal hem or fold, substantially as specified.

3. The pipe-covering band D having at its loop end a transversely-extending curved slit and a folded portion $d^1$, substantially as specified.

4. The pipe-covering band D having at its loop end a transversely-extending curved slit and a folded portion $d^1$, said loop end having also a marginal fold or hem $d^6$, substantially as specified.

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**755,680. SWING-BACK FOR PHOTOGRAPHIC CAMERAS.** HARVEY W. LOUER, Rochester, N. Y., assignor to Century Camera Company, Rochester, N. Y., a Corporation of New York. Filed Nov. 20, 1902. Serial No. 132,082. (No model.)




*Claim.*—1. The combination of a camera-box as one part; a swing-back as the other part; three rods pivoted respectively, to one part, at separated points, and each extending through a socket-fastening on the other part.

2. The combination of a camera-box as one part; a swing-back as the other part; three rods pivoted, respectively, to one part, at separated points, and each extending through a socket-fastening on the other part; and means for locking said rods in their various positions of extension and retraction.

3. The combination of a camera-box as one part; a swing-back as the other part; adjustable pivotal supports between the sides of the two parts for one swing of said swing-back; a rod attached to the bottom of one of said parts; a collar attached to the other of said parts wherein said rod slides; and a lock for locking said rod and said collar in various positions of extension and retraction of said rod.

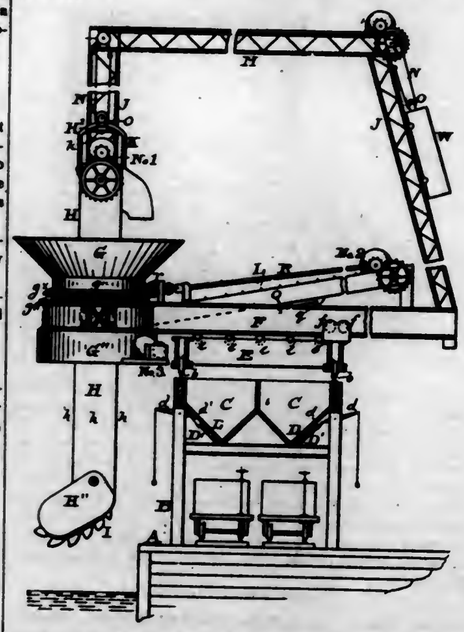
4. The combination of a camera-box as one part; a swing-back as the other part; extensible and retractible rods connecting said two parts and pivoted to one of said parts for producing one swing of said swing-back; a rod attached to the bottom of one of said two parts; a collar attached to the other of said parts in which said rod is extensible and retractible; and a locking-rod for locking said collar and said extensible and retractible rod together.

5. The combination of a camera-box as one part; a swing-back as the other part; extensible and retractible rods connecting the sides of the two parts for one swing of said swing-back; a nut held in a stationary bearing on one of said parts and revoluble on threads on each of said rods; a rod connected to the bottom of one of said two parts; a collar attached to the other of said parts in which said last-mentioned rod is extensible and retractible; and locking means for locking said collar and said last-mentioned rod together

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**755,681. HOISTING AND CONVEYING APPARATUS.** TIMOTHY LOUX, Cleveland, Ohio. Filed Nov. 17, 1902. Serial No. 131,634. (No model.)

*Claim.*—1. In a hoisting and conveying apparatus, a vertical elevator, consisting of a hollow beam, a swiveled pulley on the top of said beam, and a pivoted extension on its lower end, a cable supporting said beam by suspension, said cable running over pulleys on the elevator-carriage frame, and having a counterbalance-weight; a bucketed elevator supported and operated in said beam, and a motor mounted on the beam for operating the elevator substantially as described.




2. In a hoisting and conveying apparatus, a vertical elevator, consisting of a hollow beam, a swiveled pulley on the top of said beam, and a pivoted extension on its lower end, a cable supporting said beam by suspension, said cable running over pulleys on the elevator-carriage frame, and having a counterbalance-weight, a bucketed elevator supported and operated in said beam, and a motor mounted on the beam for operating the elevator, a carriage and framework for supporting the elevator and its supporting-cable, a turn-table supported by said carriage and through which the elevator-beam passes, and a motor on the carriage for turning the turn-table, substantially as described.

3. In a hoisting and conveying apparatus, a trestle, trough-bins in the upper part of said trestle, and track-rails on the top of the trestle, a carriage mounted to run on said track-rails, a second carriage mounted on said first carriage, a vertical elevator mounted on said second carriage, a rotative hopper on said carriage through which the elevator passes, a conveyer connected with said hopper, and means for operating the elevator, hopper and conveyer, substantially as described.

4. In a hoisting and conveying apparatus, a trestle, troughs supported in said trestle, doors in the bottoms of said troughs, track-rails on the top of the trestle, a carriage mounted to run on said rails, a second carriage mounted on said first carriage, a turn-table on the second carriage, a rotative hopper on said turn-table, a vertical elevator passing through the hopper and turn-table, a frame-work on the second carriage, a swiveled pulley-frame and cross-head on the top of the elevator, a cable attached to the pulley-frame, pulleys on the top of the carriage-frame over which said cable passes, a conveyer mounted on the second carriage in connection with the hopper, and means connected, respectively, with the carriages, the turn-table, the hopper, the elevator, and the conveyer, for operating them, substantially as and for the purpose described.

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**755,682. COMBINED BUREAU AND WALL TRUNK.** JAMES C. LYDICK, Chicago, Ill. Filed Apr. 3, 1901. Serial No. 54,176. (No model.)

*Claim.*—1. The combination with a trunk-body, of a plurality of drawer tills or trays slidably secured therein, the front surfaces of which form a portion of the front wall of the trunk, a cover hinged to the trunk-body to open in the plane of the rear wall, said drawer-tills adapted to open without raising the cover of the trunk, a reinforcing-rib at the upper and lower edge of each till-front, means for rigidly securing said drawer-tills in their closed position, a till above the drawer-tills, and accessible only when the cover is

raised and a compartment below the lower till and accessible only when said lower till is removed.



2. In a trunk the combination with a trunk-body, of a cover hinged thereto along the meeting edge thereof and adapted when open to lie in the plane of the rear wall, a plurality of drawer tills or trays slidably engaged through the front wall of the trunk and removable independent of the position of the cover, the front of said drawer-tills forming a part of the front wall of said trunk, a secret drawer below said tills and accessible only when the lower till is removed, an angle-iron strip hinged to the end walls of the trunk and adapted to engage over the end of the front walls of said drawers and means hinged thereon acting to lock within the front wall of the trunk.

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**755,688. ADJUSTABLE FLOAT FOR FISHING.** CORWIN F. MILLER, Wolcottville, Ind. Filed Sept. 2, 1902. Serial No. 121,861. (No model.)



*Claim.*—1. A fishing-float provided with means for clamping the line thereto, means for carrying that portion of the line to be submerged, and means for automatically releasing said portion when the line is submerged.

2. A fishing-float provided with a clamp for engaging the line, and means for adjusting the clamp to regulate the degree of engagement with the line.

3. A fishing-float having a recess formed in its upper end, a clamp mounted in the recess and adapted to frictionally engage the line, means to permit the line to play through its engagement with the clamp when greater force than the weight of the line and tackle is brought to bear upon the line, and means operating on the clamp to bind the line thereto.

4. A fishing-float provided with a recess in its upper end, a U shaped clamp mounted in said recess and provided with inwardly-projecting pins on one of its free ends, the other end of the clamp having apertures through which the pins are projected, and means for clamping the line between the pins of the clamp.

5. A fishing-float having a longitudinal groove and a recess in its upper end, a U-shaped clamp mounted in the recess, and having a transverse slot in its crown portion and provided at its upper ends with a transverse rib and groove between which the line is clamped, and means in the float for operating on the clamp to hold the line in engagement therewith.

6. A fishing-float adapted to carry that portion of the line to be submerged and provided at its lower end with means for holding the line in position upon the float, the said means permitting the line to be released when it is submerged.

7. A fishing-float adapted to carry that portion of the line to be submerged provided with means for clamping the line thereto, and means for automatically releasing said portion when the line is submerged.

8. A fishing-float having a longitudinal groove, and a recess in its upper end, means in the recess to clamp the line to the float, means at the lower end of the float to hold the line in the groove, and a soluble plug adapted to bind the line to the float and automatically release the same when the line is submerged.

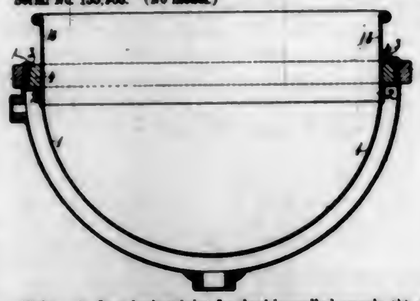
9. In a fishing-float, the combination with the line carried thereby, of means to automatically release the line when the float is submerged.

10. In a fishing-float, the combination with the line, of means for securing the line to the float, and means for automatically releasing the line when the float is submerged.

11. In a fishing-float, the combination with the line, of means to secure the line to the float and automatically release the same when the line is submerged, comprising a clamp carried at the upper end of the float, a revoluble locking-collar mounted on the lower end of the float, a cavity formed in the lower end of the float, and a soluble plug fitted in the cavity to bind the line upon the float and adapted to be dissolved to permit the line to be released therefrom when the float is submerged.

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**755,684. FASTENING THE JACKETS OF DOUBLE-WALLED VESSELS.** MAX MIESNER, Chemnitz, Germany. Filed Dec. 19, 1902. Serial No. 135,903. (No model.)

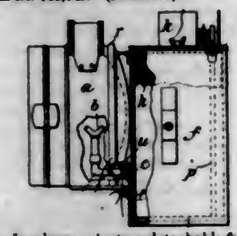


*Claim.*—1. In a jacket-joint for double-walled vessels, the combination of an inner vessel formed in two parts, having the upper edge of its bottom part hammered out to form an annular flange and upwardly-extending border, a ring having a slightly-beveled outer circumference, and having its inner circumference pressing against the upper portion of the inner vessel, said border being bent to engage with the outer circumference of said ring, a second ring provided with a suitably-beveled inner circumference, an outer vessel supported between said second ring and said border, said ring pressing the outer vessel against the border, whereby said outer vessel and border are pressed together between said rings.

2. In a jacket for double-walled vessels, the combination of an inner vessel comprising top and bottom portions, the upper edge of the bottom portion being hammered out to form an annular flange and upwardly-extending border, a ring having a beveled outer circumference and having its inner circumference pressed against the top part of the inner vessel, said border being bent to engage the outer beveled face of said ring, a second ring preferably provided with a beveled inner circumference, an outer vessel having its upper edge pressed between said border and second-named ring, the projecting edges of the outer vessel and of the border being upset over the said two rings, substantially as, and for the purpose set forth.

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**755,685. LAMP.** LEO MEYER, New York, N. Y. Filed June 26, 1903. Serial No. 163,045. (No model.)



*Claim.*—1. In a lamp, a lantern detachable from the lamp-body, a fuel-supply conduit in the lamp-body one end of which extends to the exterior of the lamp-body, a pipe within the lantern communicating with the burner therein and extending to the exterior of the lantern, the ends of said conduit and pipe being brought together to form a continuous conduit when the lantern is in place upon the lamp-body.

2. In a lamp, a lantern detachable from the lamp-body, a fuel-supply conduit in the lamp-body one end of which extends to and terminates in a nipple upon surface of the lamp-body, a rubber washer around the nipple, a pipe within the lantern communicating with the burner therein and extending to and terminating in the exterior surface of the lantern, the nipple being adapted to fit into the end of the pipe when the lantern is in place upon the lamp-body.



3. In a lamp, the combination with a lantern detachable from the lamp-body, and means for securing the lantern to the lamp-body, which means comprise a lug-and-bracket connection and a pin-and-sleeve connection, of a fuel-supply conduit in the lamp-body one end of which extends to the exterior of the lamp-body, a pipe within the lantern communicating with the burner therein and extending to the exterior of the lantern, the ends of said conduit and pipe being brought together to form a continuous conduit when the lantern is in place upon the lamp-body.

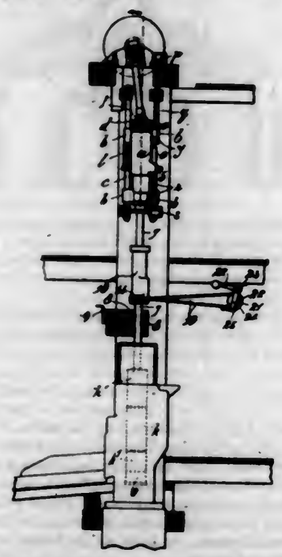
4. In a lamp, the combination with a lantern detachable from the lamp-body, means for securing the lantern to the lamp-body which means comprise a lug upon the lantern, a bracket upon the lamp-body adapted to receive the lug, sleeves upon the lantern and lamp-body and a pin adapted to be inserted into said sleeves to fasten the lantern to the lamp-body of a fuel-supply conduit in the lamp-body one end of which extends to the exterior of the lamp-body, a pipe within the lantern communicating with the burner therein and extending to the exterior of the lantern, the ends of said conduit and pipe being brought together to form a continuous conduit when the lantern is in place upon the lamp-body.

5. In a lamp-body having an outer inclosing body and an inner inclosed shell, a fuel-supply conduit within said outer inclosing body and adapted to communicate with the burner of the lamp, and a fuel-supply-pipe projecting from the inner shell the end of which pipe is adapted when the shell is secured within the outer body to be inserted into said body and into the fuel-supply conduit.

6. In a lamp having an outer inclosing body and an inner inclosed shell, a fuel supply conduit within the outer inclosing body both ends of which conduit terminate substantially in the surface of the outer inclosing body, a fuel-supply pipe projecting from the inner inclosed shell the free end of which is adapted to be inserted into one end of the fuel-supply conduit, and a burner upon but detachable from the outer inclosing body and communicating with the other end of the fuel-supply conduit.

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**755,686. STAMPING APPARATUS FOR CRUSHING ORES, &c.** DONALD B. MORISON, Hartlepool, England. Filed July 6, 1900. Serial No. 22,995. (No model.)



*Claim.*—1. Stamping apparatus comprising a gravity-stamp, lifting means for same, including a cylinder, a liquid-cushioned piston and an air-chamber, closed except for free connection with the liquid cushion, as set forth.

2. Stamping apparatus comprising a gravity-stamp, lifting means for same, including a cylinder, a liquid-cushioned piston and an air-chamber, in free connection with the liquid cushion, as set forth.

3. In stamping apparatus, the combination of a gravity-stamp, a positively-reciprocated lifting-cylinder, a piston connected to the stamp-head and located in said cylinder, a liquid-containing chamber communicating with the cylinder-space beneath the piston and a closed air vessel which also communicates with the cylinder-space beneath said piston but not with the cylinder-space above it and is sealed by the liquid, as set forth.

4. In stamping apparatus, the combination of a gravity-stamp, a positively-reciprocated cylinder, a piston connected to the stamp-head and located in said cylinder, a liquid-containing chamber, a port between said chamber and the cylinder-space beneath the piston, and an air vessel which communicates with said cylinder-space through another port at a lower level than the first-mentioned port, as set forth.

5. In gravity stamping apparatus, the combination with the positively-reciprocated cylinder, of a liquid-containing chamber formed around said cylinder and communicating with its lower part, a liquid-supply channel that communicates with the lower part of the liquid-reservoir, a discharge-channel that communicates with the upper part of the liquid-containing chamber, and an air vessel communicating with the cylinder only below the communication between it and the liquid-containing chamber, as set forth.

6. In gravity stamping apparatus, the combination with the positively-reciprocated cylinder, of a liquid-containing chamber formed around said cylinder and communicating freely with the upper part thereof and with the lower part thereof through a port, a liquid-supply channel that communicates with the lower part of the liquid-containing chamber, a discharge-channel that communicates with the upper part of the liquid-containing chamber and an air vessel communicating with the cylinder only below the communication between it and the liquid-containing chamber, as set forth.

7. In gravity stamping apparatus of the kind referred to, the combination of a positively-reciprocated cylinder, a piston connected to the stamp-head and located in said cylinder, a liquid-containing chamber communicating with the cylinder-space beneath said piston, a discharge-passage communicating with the upper part of said chamber, a port between the lower parts of said cylinder and passage, a pressure-relieving soft-metal tube connecting said port with said passage and the exterior of the apparatus and a drain-plug adapted to close communication through said soft-metal tube between said passage and the cylinder and the exterior of the apparatus, as and for the purpose specified.

8. In stamping apparatus, the combination of a stamp-stem formed in two parts, an adjusting-sleeve into which one part fits telescopically, means for fixing said part in the desired position in the sleeve and a tapered socket formed in said sleeve into which the other part tightly fits as and for the purpose specified.

9. In stamping apparatus, the combination of a stamp-stem formed in two parts, an adjusting-sleeve into which one part fits telescopically, a gib and keys for fixing said part in the desired position in said sleeve and a tapered socket formed in said sleeve into which the other part tightly fits, as and for the purpose specified.

10. In stamping apparatus, the combination of a stamp-stem in two parts, one of which is formed with a collar, a sleeve into which the part with the collar fits telescopically, means for securing said part in the desired position in the sleeve, washers arranged between the collar and sleeve and adapted to prevent the adjustment becoming accidentally altered and to compensate for the loss of weight of the stamp-head due to wear of its shoe, and means for fixing the other part of said stem to said sleeve, as set forth.

11. In stamping apparatus the combination with an adjustable stamp-stem formed in two parts one of which is formed with a collar, a sleeve into which the part with the collar fits telescopically, means for securing said part in the desired position in the sleeve, washers of horseshoe shape arranged between the collar and sleeve and having recesses and projections which are adapted to interlock, and means for fixing the other part to said sleeve, as and for the purposes specified.

12. In stamping apparatus, the combination with a stamp-stem of means for holding the same in its raised position comprising a block of less width at the bottom than at the top, means for supporting said block adjacent to said stem but leaving it free to tilt, and means for moving said block so that its wide part comes into contact with the stem and for holding said block in that position but allowing it to tilt, as set forth.

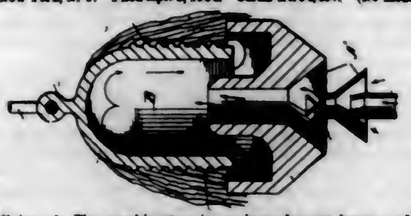
13. In stamping apparatus of the kind referred to, the combination of a stamp-stem, a pulley whose axis is at an angle to that of the stem and which is free to turn in one direction only and a flexi-

ble part passing around said stem and pulley and adapted to impart to the pulley a turning movement when the stem moves longitudinally in one direction and to impart a turning movement to the stem itself when it moves longitudinally in the other, as set forth.

14. In stamping apparatus, the combination of a stamp-stem, a pulley whose axis is at right angles to said stem, an endless band encircling said stem and pulley, a ratchet-wheel connected to said pulley, a weighted bell-crank lever carrying said pulley and ratchet-wheel and a pawl adapted to engage said ratchet-wheel, as set forth.

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**755,687. RETORT INCANDESCENT LIGHT. OTIS A. MYGATT, New York, N. Y. Filed Apr. 5, 1901. Serial No. 54,407. (No model.)**



*Claim.*—1. The combination, in an incandescent burner, of a gas-supply pipe and an air-supply conduit surrounding the same, an inverted cup or cupel of refractory material over the mouth of said pipe, and forming a combustion-chamber, and filaments of mantle material resting on the outer surface of the cup or cupel, with their lower ends near the edges of the cupel, substantially as described.

2. The combination, in a gas-light of the character described, of a gas-supply pipe and an air-supply conduit in proximity thereto, an inverted cup of fire-clay over the mouth of the gas-pipe, whereby a combustion-chamber is produced, a ring having a concave deflecting-face under the edge of said cup, and shreds of mantle material supported by the outer surfaces of the cup and ring, substantially as described.

3. In an incandescent illuminator, the combination of a gas-supply tube and an air-supply conduit, a cup or cupel of fire-clay or similar material inverted over the gas-supply tube and forming a combustion-chamber with its mouth toward said tube, and filaments of mantle material supported on the outside of the cup or cupel and having their ends projecting, so that the flame curving around the lower edges of the cupel encounters the filaments.

4. The combination of a gas-supply tube, an air-supply conduit, and a cup of refractory material with its mouth over said tube and passage, said cup being the combustion-chamber, external shoulders on the cup, and shreds of mantle material resting on said shoulders.

5. In an incandescent gas-light, the combination of a cupel of fire-clay or like material inside of which gas combustion takes place, and outer filaments of mantle material resting on and supported by the cupel.

6. The combination of a gas-supply pipe, an air-supply conduit, a retort into which said passages open, and filaments of material which is incandescent when highly heated, in proximity to the retort, and in position to be heated therefrom.

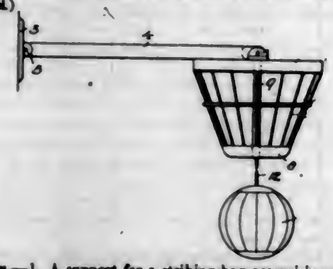
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**755,688. CABINET. NORMAN A. MCDONALD, Newaygo, Mich. Filed Jan. 2, 1904. Serial No. 187,542. (No model.)**



*Claim.*—A cabinet comprising a casing having a hinged side, braces pivotally connecting said side to the ends of the casing, a removable rack mounted within said casing with spaces intervening between the ends thereof and the ends of said casing, vertical partition-walls to said rack, cleats fastened to the opposite faces of said partitions and disposed at inclinations, the forward ends of the cleats being tapered and spaced back a short distance from the outer marginal edges of said partitions, substantially as shown and described.

**755,689. SUPPORT FOR STRIKING-BAGS. GEORGE MCFADDEN, New York, N. Y. Filed Nov. 19, 1903. Serial No. 181,847. (No model.)**



*Claim.*—1. A support for a striking-bag comprising upper and lower plates, and elastic means stretched between the edges of the plates for receiving the impact of the bag, substantially as described.

2. In a support for a striking-bag, elastic means for receiving the impact of the bag, said means being arranged in substantially inverted frusto-conical form, substantially as described.

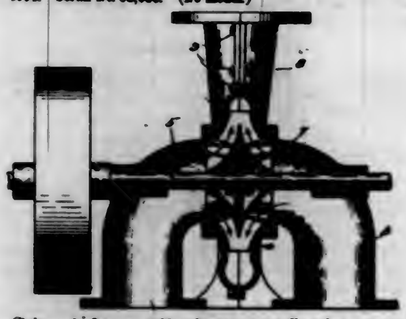
3. A support for striking-bags comprising upper and lower plates rigidly supported and elastic bands or cords stretched between the edges of said plates, substantially as described.

4. A support for striking-bags comprising a plate, an arm adjustably connected thereto having means for securing it to a wall or the like, a lower plate rigidly connected to said upper plate, and elastic contact means extending between said plates, substantially as described.

5. A support for a striking-bag comprising upper and lower plates suitably supported, elastic cords or bands connecting the edges of said plates, and a ring secured to all the cords intermediate of the plates, substantially as described.

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**755,690. CENTRIFUGAL PUMP. GORDON MCKAY, Newport, R. I., and WILLIAM O. HILDRETH, Lawrence, Mass. Filed Mar. 26, 1901. Serial No. 52,683. (No model.)**



*Claim.*—1. In a centrifugal pump, a scroll-casing, a rotary runner therein, said runner having a series of impelling-blades, an inlet to said casing situated in the axial line of said runner, and means to give the fluid prior to its encountering said impelling-blades a motion approximately tangential to the direction of motion of said blades.

2. In a centrifugal pump, a scroll-casing, a rotary runner having a series of impelling-blades forming between them radial passages, and means to give the fluid as it is delivered to said impelling-blades, a motion approximately tangential to the circle of movement of the said blades, said blades being inclined slightly at their receiving end whereby the radial movement of the fluid relative to the blades, as said fluid is encountered by the blades, is parallel to the receiving portion of the impelling-faces of said blades.

3. In a centrifugal pump, a scroll-casing, a rotary runner having a series of impelling-blades, said casing having an inlet situated in the axial line of the runner, and means to give the fluid prior to its delivery to the blades a movement in such a direction that the relative movement between the fluid and the blades is parallel to the receiving-faces of the blades.

4. In a centrifugal pump, a scroll-casing, a rotary runner inclosed thereby, said runner having a series of impelling-blades, combined with a series of stationary guiding-blades situated adjacent the receiving ends of the impelling-blades, said guiding-blades adapted to give the fluid as it leaves the same a motion in a direction approximately tangential to the circular movement of said impelling-blades.

5. In a centrifugal pump, a scroll-casing, a rotary runner therein, said runner having a series of impelling-blades, combined with a stationary guiding-disk having a series of guiding-blades, situated at the receiving side of the runner and adapted to give the fluid as it enters the runner a movement in a direction approximately tangential to the direction of movement of said impelling-blades.

6. In a centrifugal pump, a scroll-casing having an axial inlet and a tangential outlet, a rotary runner inclosed in said casing and having a series of impelling-blades, a stationary guiding-disk between said inlet and the runner, said guiding-disk having a series of guiding-blades which are inclined to the direction of movement of said impelling-blades, whereby as the fluid is delivered from said guiding-blades to the runner it is given a motion approximately tangential to the direction of movement of said impelling-blades.

7. In a centrifugal pump, a casing having an inlet and an outlet, a runner inclosed in said casing, means to rotate the same, said runner having a series of impelling-blades, a stationary guiding-disk between the inlet and the runner, said guiding-disk having a series of guiding-blades forming between them passages through said guiding-disk, said guiding-blades at their outer ends being approximately tangential to the direction of movement of said impelling-blades, whereby the fluid which is delivered to the runner has a motion in a direction approximately at a tangent to the direction of movement of said impelling-blades.

8. In a centrifugal pump, a scroll-casing having an inlet and an outlet, a runner having a series of impelling-blades mounted in said casing for rotation, means to rotate said runner, a series of guiding-blades between the inlet and the runner, said guiding-blades having their delivery ends inclined to the direction of motion of the said impelling-blades, and the receiving-faces of said impelling-blades being inclined in a radial line, whereby the fluid which is delivered to the runner has an approximately tangential motion, and the radial movement of said fluid relative to the impelling-blades is parallel to the receiving portion of the faces thereof.

9. In a centrifugal pump, a scroll-casing having an inlet and an outlet, a runner having a series of impelling-blades mounted in said casing for rotation, a stationary guiding-disk between said inlet and runner, said guiding-disk having a series of guiding-blades forming between them a series of passages through said disk, said guiding-blades at their delivery ends having a direction approximately tangential to the direction of movement of said impelling-blades, and the receiving portion of the faces of said impelling-blades being inclined to a radial line, whereby the fluid which is delivered to said runner has a direction in an approximately tangential direction, and the radial movement of said fluid relative to the impelling-blades is parallel to the receiving portion of the face thereof.

10. In a centrifugal pump, a rotary runner, a casing inclosing said runner and having an inlet situated in the line of the axis of the runner, said runner having a series of impelling-blades forming between them a series of approximately radial passages, each of said passages being of uniform cross-sectional area throughout its length, and means to give the water as it is delivered to said runner a motion in a direction approximately tangential to the motion of the impelling-blades.

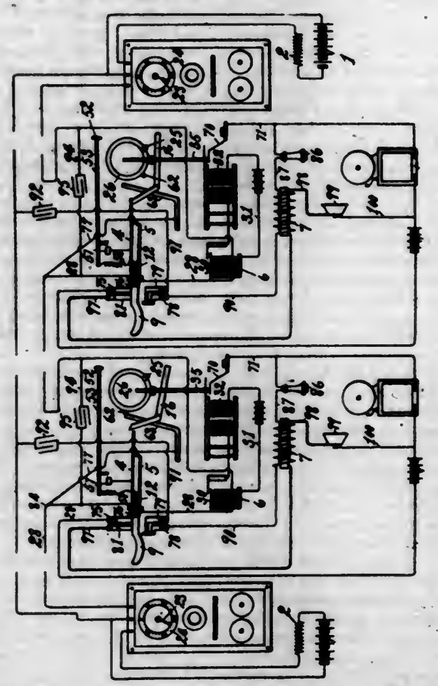
11. In a centrifugal pump, a casing having an inlet and an outlet, a rotary runner inclosed therein, said runner having a series of impelling-blades forming between them a series of approximately radial passages through the runner, said passages each being of a uniform cross-sectional area throughout its length, and a series of stationary guiding-blades situated between the inlet and the runner, said blades having their delivery ends extending in a direction nearly tangential to the direction of movement of the impelling-blades, whereby the fluid which is delivered to said runner has a movement in a direction approximately tangential to the direction of movement of the impelling-blades.

12. In a centrifugal pump, a casing having an inlet and an outlet, a rotary runner inclosed therein, said runner having a series of impelling-blades forming between them a series of approximately radial passages through the runner, said passages each being of a uniform cross-sectional area throughout its length, and a stationary guiding-disk between the inlet and the runner, said guiding-disk having a series of guiding-blades forming between them a series of passages through said disk, the delivery ends of said guiding-blades having a direction approximately tangential to the direction of movement of the said impelling-blades, and the receiving portion of the face of said impelling-blades being inclined to a radial line whereby the fluid is delivered to the runner with a direction of motion approximately tangential to the movement of the impelling-blades, the radial movement of said fluid relative to the impelling-blades being parallel to the receiving portion of the face thereof.

13. In a centrifugal pump, a casing, a rotary runner inclosed in said casing, said runner having a series of impelling-blades, said casing having an outlet and oppositely-disposed inlets in line with the axis of rotation of said runner, a stationary guiding-disk between each inlet and the runner, said disks each having a series of guiding-blades adapted to give the fluid a motion approximately tangential to the direction of movement of the impelling-blades.

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**755,691. TELEPHONE SELECTIVE SYSTEM. NOBLE S. MCKINSEY and ANTON R. NELSON, Susanville, Cal. Filed June 15, 1903. Serial No. 161,622. (No model.)**



*Claim.*—1. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, only one of said devices making said closure at a time, substantially as described.

2. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, only one of said devices making said closure at a time, and means independent of said opening and closing for impelling said device, substantially as described.

3. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, said devices all moving in unison but making their closures in succession, substantially as described.

4. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the

opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, said devices all moving in unison but making their closures in succession, and means independent of said opening and closing for impelling each device, substantially as described.

5. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch and a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, only one of said devices making said closure at a time, substantially as described.

6. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch and a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, only one of said devices making said closure at a time, and means independent of said opening and closing for impelling said device, substantially as described.

7. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch and a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, said devices all moving in unison but making their closures in succession, substantially as described.

8. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch and a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break closed by a revolving device, the revolution thereof being controlled by the opening and closing of the main line, said devices all moving in unison but making their closures in succession, and means independent of said opening and closing for impelling each device, substantially as described.

9. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels moving in unison but closing in succession and the other being made by means of an independent switch, substantially as described.

10. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by an independent switch, substantially as described.

11. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by an independent switch, substantially as described.

12. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, and the second closure being made by an independent switch, substantially as described.

13. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, substantially as described.

14. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being by an independent switch, substantially as described.

15. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second brake and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by an independent switch, substantially as described.

16. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels being in unison but closing in succession and the other closure being made by means of an independent switch and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

17. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station, between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

18. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

19. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing for impelling said wheel, and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

20. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.



21. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

22. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, said wheel moving in unison but closing in succession, and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

23. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels moving in unison but closing in succession and the other closure being made by the opening of the switch on the main wire, substantially as described.

24. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by the opening of the switch on the main wire, substantially as described.

25. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by the opening of the switch on the main wire, substantially as described.

26. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing for impelling said wheel, and the second closure being made by the opening of the switch on the main wire, substantially as described.

27. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by the opening of the switch on the main wire, substantially as described.

28. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being made by the opening of the switch on the main wire, substantially as described.

29. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by the opening of the switch on the main wire, substantially as described.

30. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels moving in unison but closing in succession and the other closure being made by means of an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

31. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by an independent switch, and means for preventing the closures of the latter switch more than once for each complete revolution of the wheel, substantially as described.

32. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

33. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

34. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

35. In a telephone system, the combination of a main wire having a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

36. In a telephone system, the combination of a main wire hav-

ing a switch at each telephone-station, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for each break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

37. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels moving in unison but closing in succession and the other closure being made by means of an independent switch, substantially as described.

38. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by an independent switch, substantially as described.

39. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by an independent switch, substantially as described.

40. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, and the second closure being made by an independent switch, substantially as described.

41. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, substantially as described.

42. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being by an independent switch, substantially as described.

43. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by an independent switch, substantially as described.

44. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels being in unison but closing in succession and the other closure being made by means of an independent switch and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

45. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station, between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

46. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

47. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, and the second closure being made by an independent switch, and means preventing more than one of the series of said independent switches being closed at a time, substantially as described.

48. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

49. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, and means for preventing more than one of the series of said independent switches being closed at a time, substantially as described.

50. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by an independent switch, substantially as described.



51. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels moving in unison but closing in succession and the other closure being made by the opening of the switch on the main wire, substantially as described.

52. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by the opening of the switches on the main wire, substantially as described.

53. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by the opening of the switch on the main wire, substantially as described.

54. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing for impelling said wheel, and the second closure being made by the opening of the switch on the main wire, substantially as described.

55. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by the opening of the switch on the main wire, substantially as described.

56. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being by the opening of the switch on the main wire, substantially as described.

57. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by the opening of the switch on the main wire, substantially as described.

58. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, all of said wheels moving in unison but closing in succession and the other closure being made by means of an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

59. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, only one of such closures being operatable at a time for all the wheels and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

60. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

61. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

62. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, only one of said wheels making a closure at a time, and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

63. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for said break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line, means independent of said opening and closing for impelling said wheel, only one of said wheels making a closure at a time, and the second closure being of an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

64. In a telephone system, the combination of a main wire having a switch at each telephone-station, a shunt around said switch, a switch in said shunt, a return-wire, a bridge at each telephone-station between the main and return wires having therein the secondary winding and ear-phone, a break closed by the opening of the main line, and a second break and two closures for each break, one of said closures being made by a revolving wheel, the revolution being controlled by the opening and closing of the main line,

means independent of said opening and closing for impelling said wheel, said wheels moving in unison but closing in succession, and the second closure being made by an independent switch, and means for preventing the closure of the latter switch more than once for each complete revolution of the wheel, substantially as described.

65. In combination with a main wire and a return-wire, a series of telephones distributed therealong, each telephone comprising a line bridging the main wire and the return-wire and containing the receiver and the secondary winding of the transmitter induction-coil, containing also a condenser, and having a break arranged to be closed by the opening of the main wire, said main wire having a relay for opening said break, a branch shunting said relay and containing a condenser, and means for breaking the main wire at any telephone, substantially as described.

66. In combination with a main wire, and a return-wire, a series of telephones distributed therealong, each telephone comprising a line bridging the main wire and the return-wire and containing the receiver and the secondary winding of the transmitter induction-coil, containing also a condenser, and having a break arranged to be closed by the opening of the main wire, said main wire having a relay for opening said break, a branch shunting said relay and containing a coadenser, means for breaking the main wire at any telephone, and a shunt for said means containing additional means for breaking and closing said main wire, substantially as described.

67. In a telephone system, the combination of a main wire and a return-wire or the earth, of a series of telephones distributed along the main wire, each telephone being on a bridge between the main wire and the return-wire or earth, said bridge being normally disconnected from the main wire, and means for breaking the main wire and connecting the bridge thereto, said bridge comprising the secondary induction-coil and receiver, and means operatable at the station where said main wire has been so broken for connecting the bridge at any other desired station with the main wire, substantially as described.

68. In a telephone system, the combination of a main wire and a return-wire or the earth, of a series of telephones distributed along the main wire, each telephone being on a bridge between the main wire and the return-wire or earth, said bridge being normally disconnected from the main wire, and means for breaking the main wire and connecting the bridge thereto said bridge comprising the secondary induction-coil and receiver, and means operatable at the station where said main wire has been so broken for connecting the bridge at any other desired station with the main wire, and shunts on the main wire for each of the intervening telephones, substantially as described.

69. In a telephone system, the combination of a main wire and a return-wire or the earth, of a series of telephones distributed along the main wire, each telephone being on a bridge between the main wire and the return-wire or earth, said bridge being normally disconnected from the main wire, and means for breaking the main wire and connecting the bridge thereto, said bridge comprising the secoadary induction-coil and receiver, and a condenser, and means operatable at the station where said main wire has been so broken for connecting the bridge at any other desired station with the main wire, substantially as described.

70. In a telephone system, the combination of a main wire and a return-wire or the earth, a series of telephones distributed therealong, each telephone having a bridge between the main wire and the return-wire having a break closed by the removal of the ear-phone from its hook, a local battery, the circuit of which has two branches one of which has successively the bell and the other the transmitter and primary winding, the former circuit being closed and the latter being broken when the ear-phone is on its hook and the latter being closed and the former broken when the former is removed, and means operatable in any telephone of the system for breaking the main wire and connecting the bridge thereto the breaking of the main wire operating to prevent such break being made at any station in the system, substantially as described.

71. In a telephone system, the combination of a main wire, a return-wire, a series of telephones distributed along the main wire comprising a bridge between the main and the return wire normally disconnected from the main wire, a break normally closed at each station of the main wire, means operatable at any station in the system for opening said break and thereby preventing the opening of the remainder of such breaks in the system a shunt for the main wire around said break containing an auxiliary break synchronously-moving devices at all the stations for successively connecting the bridges of the main wire, said devices moving when the main circuit is open and stopping when the main circuit is closed whereby the closure of the shunt-break at any desired point of advance of said synchronously-moving devices closes the corresponding bridge and brings the desired telephone into the circuit, substantially as described.

72. In a telephone system, in combination with a main line, a series of telephone mechanisms thereon, each mechanism comprising an ear-phone contact-springs normally closing the main line, a device for separating said contact-springs when the ear-phone is removed from the hook, a spring-actuated and suitably-controlled rotary wheel, the wheels of all the mechanisms being arranged to rotate in unison, said wheels at a certain point in their movement actuating said devices to bring them into position to separate the contact-springs of all the ear-phones, and means whereby when any ear-phone has been removed from the hook the corresponding contact-springs have been so separated, the devices of all the mechanisms of the system are shifted out of their relative position to separate said springs whereby the signaling party has the uninterrupted control of the line, substantially as described.

73. In a telephone system, the combination with the main line of a series of telephone mechanisms therefor, each mechanism comprising a rotating wheel, means independent of the continuity of the electric circuit whereby said wheels of all the mechanisms may be made to rotate in unison, means for arresting all the wheels at a corresponding point of rotation thereof, said wheels only when so arrested being in position to coöperate with a device for breaking the circuit, and a device in each mechanism coöperating with the device for breaking the circuit thereat, said coöperating device being operatable by the signaling party, and means whereby, on the operation of said latter device, the circuit is broken and the wheels are free to advance, whereby the signaling party has the only break on the line for the insertion of a telephone, substantially as described.

74. A system comprising a main line having at each station thereatong a normally closed break, a signaling-circuit having a break therein, a device for closing said break, said devices all moving in unison, but operating to exclusively close the breaks in succession, means for moving said devices, operative when the main line is closed but inoperative when it is open, and means for opening any of the said breaks in the line and thereby preventing the opening of any other of said breaks, whereby control of the line is had at the break so opened, substantially as described.

75. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers at the respective stations controlled by the opening and closing of the main line, and a loop-line with switch, inserted in each break so made, for so controlling said changers, substantially as described.

76. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers partly closing in succession and exclusively a series of branch lines at the respective stations controlled by the opening and closing of the main line at said break, means, operatable at said break, for further closing said lines simultaneously, and means actuated by the removal from its hook of the ear-phone of the party whose branch line is so exclusively partly closed, for completely closing said branch line, substantially as described.

77. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers caused to move a short distance from their zero position upon the breaking of the main line, but immediately afterward arrested thereby, means whereby the closing of the main line again starts said contact-changers, said contact-changers partly closing in succession and exclusively the talking-circuits at the several stations, and means whereby the removal of the selected party's ear-phone from its hook completely closes said talking-circuit, substantially as described.

78. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers caused to move a short distance from their zero position upon the breaking of the main line, but immediately afterward arrested thereby means whereby the closing of the main line again starts said contact-changers, said contact-changers partly closing in succession and exclusively the talking-circuits at the several stations, and means whereby the removal of the selected party's ear-phone from its hook completely closes said talking-circuit, and also the primary transmitter-circuit, substantially as described.

79. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers caused to move a short distance from their zero position upon the breaking of the main line, but immediately afterward arrested thereby, means whereby the closing of the main line again starts said contact-changers, said contact-changers partly closing in succession and exclusively the talking-circuits at the several stations, means whereby the removal of the selected party's ear-phone from its hook completely closes said talking-circuit, substantially as described.

80. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers caused to move a short distance from their zero position upon the breaking of the main line, but immediately afterward arrested thereby, means whereby the closing of the main line again starts said contact-changers, said contact-changers partly closing in succession and exclusively the bell-circuits of the several stations, and means whereby the breaking of the main circuit completely closes a selected bell-circuit, substantially as described.

81. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers caused to move a short distance from their zero position upon the breaking of the main line, but immediately afterward arrested thereby, means whereby the closing of the main line again starts said contact-changers, said contact-changers partly closing in succession and exclusively the bell-circuits of the several stations, and means whereby the breaking of the main circuit completely closes a selected bell-circuit, means under the control of the signaling party for partly closing the talking-circuit of the selected party, and means whereby the removal of the latter party's ear-phone from its hook breaks his bell-circuit and closes his talking-circuit, substantially as described

82. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers caused to move a short distance from their zero position upon the breaking of the main line, but immediately afterward arrested thereby, means whereby the closing of the main line again starts said contact-changers, said contact-changers partly closing in succession and exclusively the bell-circuits of the several stations, and means whereby the breaking of the main circuit completely closes a selected bell-circuit, means under the control of the signaling party for partly closing the talking-circuit of the selected party, and means whereby the removal of the latter party's ear-phone from its hook breaks his bell-circuit and closes his talking-circuit and primary transmitter-circuit, substantially as described.

83. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers controlled by the opening and closing of the main circuit, said contact-changers party closing in succession and exclusively the talking-circuits at the several stations, means whereby the breaking of the main circuit further partly closes the talking-circuits, and means whereby the removal of the called subscriber's ear-phone from its hook completely closes his talking-circuit, substantially as described.

84. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers controlled by the opening and closing of the main circuit, said contact-changers partly closing in succession and exclusively the talking-circuits at the several stations, means whereby the breaking of the main circuit further partly closes the talking-circuits, and means whereby the removal of the called-subscriber's ear-phone from its hook completely closes his talking-circuit and primary transmitter-circuit, substantially as described.

85. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers controlled by the opening and closing of the main circuit, said contact-changers partly closing in succession and exclusively the bell-circuits of the several stations, means whereby the breaking of the main circuit completely closes the selected bell-circuit and means whereby the removal of the called-subscriber's ear-phone from its hook breaks his bell-circuit, substantially as described.

86. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers controlled by the opening and closing of the main circuit, said contact-changers partly closing in succession and exclusively the bell-circuits of the several stations, means whereby the breaking of the main circuit completely closes the selected bell-circuit, means whereby the removal of the called-subscriber's ear-phone from its hook breaks his bell-circuit, means operatable by the calling subscriber for partly closing the signaled-party's talking-circuit and means whereby the removal of the latter's ear-phone from his hook completely closes said talking-circuit, substantially as described.

87. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers at the respective stations controlled by the opening and closing of the main line, said contact-changers partly closing in succession and exclusively the bell-circuits and talking-circuits, at the remaining stations, means whereby the breaking of the main circuit completely closes the bell-circuit then partly closed by the contact-changer and further closes the corresponding talking-circuit, and means whereby the removal of the corresponding phone from its hook breaks said bell-circuit and closes the corresponding talking-circuit, substantially as described.

88. A telephone system comprising a main line having a break at each station arranged to be opened by the removal of the ear-phone from its hook, synchronously-moving contact-changers at the respective stations controlled by the opening and closing of the main line, said contact-changers partly closing in succession and exclusively the bell-circuits and talking-circuits, at the remaining stations, means whereby the breaking of the main circuit completely closes the bell-circuit then partly closed by the contact-changer and further closes the corresponding talking-circuit, and means whereby the removal of the corresponding phone from its hook breaks said bell-circuit and closes the corresponding talking-circuit and also the primary transmitter-circuit, substantially as described.

89. A telephone system comprising synchronously-moving contact-changers at the respective stations, means whereby the breaking of the main circuit permits said contact-changers to advance a short distance, but immediately afterward arrests them, means whereby the closing of said circuit again starts said changers, said changers partly closing in succession and exclusively the bell-circuits of the system, means whereby the breaking of the main circuit completely closes the bell-circuit then partly closed, and means for closing the corresponding talking-circuit, substantially as described.

90. A telephone system comprising synchronously-moving contact-changers at the respective stations, means whereby the breaking of the main circuit permits said contact-changers to advance a short distance, but immediately afterward arrests them, means whereby the closing of said circuit again starts said changers, said contact-changers partly closing in succession and exclusively the talking-circuits of the system, means whereby the breaking of the main circuit further closes the selected talking-circuit then thus partly closed, and means whereby the removal of the corresponding ear-phone from its hook completely closes said talking-circuit, substantially as described.

91. A telephone system comprising synchronously-moving contact-changers at the respective stations, means whereby the breaking of the main circuit permits said contact-changers to advance a short distance, but immediately afterward arrests them, means whereby the closing of said circuit again starts said changers, said contact-changers partly closing in succession and exclusively bell-circuits and talking-circuits of the system, means whereby the breaking of the main circuit at any time completely closes the bell-circuit then thus partly closed and further partly closes the talking-circuit then thus partly closed, and means whereby the removal of the corresponding ear-phone from its hook breaks the bell-circuit and closes the talking-circuit, substantially as described.

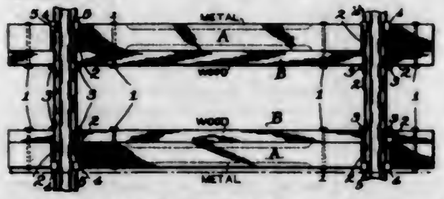
92. A telephone system comprising a series of contact-changers at the respective stations, means whereby said changers are permitted to advance only when the main circuit is closed, said changers partly closing in succession and exclusively bell-circuits of the system, means whereby the breaking of the main circuit at any time completely closes the bell-circuit then thus partly closed, and means for closing the corresponding talking-circuit, substantially as described.

93. A telephone system comprising a series of contact-changers at the respective stations, means whereby said changers are permitted to advance only when the main circuit is closed, said contact-changers partly closing in succession and exclusively talking-circuits of the system, means whereby the breaking of the main circuit at any time still further partly closes the talking-circuit then thus partly closed, and simultaneously closes the corresponding bell-circuit, and means whereby the removal of the called-subscriber's ear-phone from its hook completely closes said talking-circuit, substantially as described.

94. A telephone system, comprising a series of contact-changers at the respective stations, means whereby said changers are permitted to advance only when the main circuit is closed, said contact-changers partly closing in succession and exclusively bell-circuits and talking-circuit of the system, means whereby the breaking of the main circuit at any time completely closes the bell-circuit then partly closed and further partly closes the corresponding talking-circuit, and means whereby the removal of the called-subscriber's ear-phone closes his talking-circuit, substantially as described.

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**755,692. RAILROAD-TIE. WILLIAM A. NICHOLS, Sr., and JOHN F. NEFF, Belmont, Ohio. Filed Aug. 3, 1903. Serial No. 168,775. (No model.)**




*Claim.*—1. A railroad-tie composed of wood and metal secured together, the metal portion having grooves or depressions at the points where the rails rest on the ties, said grooves or depressions adapted to receive wooden blocks or wedges, whereby the rails rest entirely on wood.

2. The combination with a tie having transverse grooves for the rails, and rails, the bases of which are of less width than the grooves, of a bolt having a flanged head, one flange of which fits in the space formed between the edge of the base and the edge of the groove, and the other flange over the base of the rail whereby a rigid fastening is formed between the rail and tie.

3. The combination with a tie composed of two parts or sections, one section at least grooved transversely, and a rail the bases of which are narrower than the grooves, of an L-shaped bolt, a portion of the head of which enters the space between the edge of the groove and the rail-base, and another portion of which extends over the edge of the base and the shank extending through the sections of the tie whereby to hold them together.

4. The combination with a tie composed of wood and metal sections, metal sections having grooves or depressions opposite the rails, and adapted to receive wooden blocks or wedges therein, of bolts having L-shaped heads, said bolts extending through and securing the metal and wooden portions of the tie together, and the heads of the bolt overlapping the base of the rails, whereby the latter are held securely on the ties and the wedges or blocks are retained in the grooves or depressions of the metal portion of the rail.

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**755,698. COMBINATION BAG HOLDER OR RACK AND PRINTING DEVICE. WILLIAM A. O'KANE, Leavenworth, Kans. Filed May 28, 1903. Serial No. 159,317. (No model.)**




*Claim.*—1. A device of the kind described comprising a base-board, an upper bail connected thereto and extending downwardly, and a lower bail connected also to the base-board and extending upwardly, the lower bail projecting up into and resting upon the upper bail, substantially as described.

2. A device of the kind described, comprising a base-board, an upper bail connected thereto and extending downwardly, a lower bail connected also to the base-board and extending upwardly, said lower bail extending into and resting upon the upper bail, inking and printing rollers and arms for carrying the same, said arms being connected to the base-board, as set forth.

3. A device of the kind described, comprising a base-board, upper and lower bails constructed and arranged as described, printing and ink rollers, shield for the inking-roller, and arms for supporting the said rollers, substantially as set forth.

4. A device of the kind described, comprising a base-board, an upper bail connected thereto and extending downwardly, a lower bail connected to the base-board and extending upwardly, said lower bail extending into and resting upon the upper bail, a printing-roller, an inking-roller, a shield in which the inking-roller is arranged, the guide-lugs carried by the shield, and arms for supporting the printing and inking rollers, said arms being connected to the base-board between the upper and lower bails, substantially as set forth.

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**755,694. LEGGING. JOHN PEEL, Drayton, Canada. Filed Oct. 21, 1902. Serial No. 128,200. (No model.)**

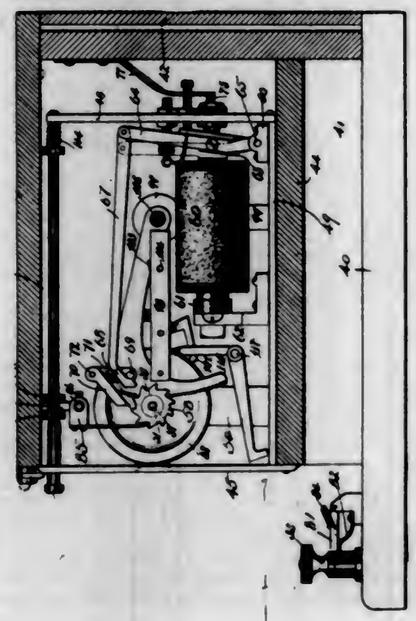



*Claim.*—1. A legging consisting of a seamless leg portion having an opening at one side thereof, an instep-covering integrally formed with the lower end of the front of the leg portion, a draw-strap connected to one side of the leg portion, draw-strap-engaging means connected to the other opposite meeting edges of the side, the draw-strap being arranged to engage said means to confine the instep-covering to the foot and hold the lower end of the opposite meeting edges together, substantially as specified.

2. In a legging the combination of a leg portion and an instep-covering integrally formed therewith having a side opening extending from the top to the bottom of the legging, a retaining-strap connected at one end to the lower edge of one side of the instep-covering and fitted at the other end with a loop, a draw-strap connected to the other side of the instep-covering and a loop and buckle connected to the lower end of the edges of the side opening, substantially as specified.

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**755,695. APPARATUS FOR COMPILING STATISTICS. CHARLES F. PIDGIN, Boston, Mass. Filed June 17, 1899. Serial No. 720,905. (No model.)**





*Claim.*—1. A counting-machine comprising a series of numeral-bearing wheels, devices for carrying from one of said wheels to the other, means for actuating the units-wheel, and means for resetting each of said wheels, said resetting means being normally in engagement with said wheels but supported independent thereof, and brought into operative position by the normal operation of said wheels.

2. A counting-machine, consisting of a series of numeral-bearing wheels, devices for carrying from one of said wheels to the other, means for actuating the units-wheel, and separate means for resetting each of said wheels independently of the others, said means comprising a pinion connected to each wheel and a weighted rack intermeshing with the pinion, and adapted to be raised by the rotation of the pinion.

3. A counting-machine, consisting of a series of numeral-bearing wheels, devices for carrying from one of said wheels to the other, means for actuating the units-wheel, and separate means for resetting each of said wheels independently of the others, said means comprising yielding stops to limit the reverse rotation of said wheels, pinions connected to said wheels, and weighted racks intermeshing with said pinions and raised by the forward rotation of said wheels.

4. A counting-machine, consisting of a series of numeral-bearing wheels, devices for carrying from one of said wheels to the other, means for actuating the units-wheel, a series of retaining-pawls for the wheels, means for throwing them out of operation simultaneously, a yielding stop for each wheel, a pinion connected to each wheel, and a weighted lever having segmental rack-teeth intermeshing with each pinion.

5. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, and means for carrying from one wheel to the wheel of the next higher order of value, the same comprising a ratchet connected to the last-mentioned wheel, a pivoted lever, a pawl pivotally mounted on the end of said lever and normally out of engagement with said ratchet-wheel, and means for periodically raising said lever, whereby said pawl is brought into engagement with said ratchet before said lever reaches the limit of its movement.

6. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, and means for carrying from one wheel to the wheel of the next higher order of value, the same comprising a ratchet connected to the last-mentioned wheel, a pivoted lever, a pawl mounted in one end thereof and normally disengaged from said ratchet, and a pin connected to the first-mentioned wheel and adapted to engage said lever, whereby said pawl is caused to engage said ratchet, said lever being provided with a slot, whereby said pin will pass out of engagement with said lever when the latter has reached the limit of its movement.

7. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, and means for carrying from one wheel to the wheel of the next higher order of value, the same comprising a ratchet connected to the last-mentioned wheel, a pin connected to the first-mentioned wheel, an independently-pivoted lever lying in the path of said pin and arranged to be lifted a predetermined distance thereby, a pawl pivoted upon the end of the lever and adapted to engage said ratchet, said pawl having a weighted end, and a stop to engage said end and hold the pawl out of engagement with the ratchet when the lever is at rest.

8. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, means for carrying from one wheel to the wheel of the next higher order of value, the same comprising a ratchet, a pawl normally out of engagement with the ratchet, and means for moving the pawl into initial engagement with the ratchet, and mechanism for holding the ratchet against movement when the pawl is initially engaged therewith.

9. A counting-machine comprising a series of numeral-bearing wheels, devices for carrying from one of said wheels to the other, an electromagnet, means for energizing the same, a pivoted lever carrying an armature for said magnet, an elongated pawl pivoted in the end of said lever and arranged to rotate the ratchet-wheel, said pawl having its free end bent downwardly, a stud upon which said end rests, and an inclined stop arranged to engage the bent end of said pawl.

10. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, means for carrying from one wheel to that of the next higher order of value, the same comprising a ratchet connected to the last-mentioned wheel, a pin connected to the first-mentioned wheel, an overhanging pivoted lever lying in the path of said pin and arranged to be lifted a predetermined distance thereby, said lever having a depending arm, and a pawl mounted in said depending arm and adapted to engage said ratchet.

11. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, means for carrying from one wheel to that of the next higher order of value, the same comprising a ratchet connected to the last-mentioned wheel, a pin connected to the first-mentioned wheel, an overhanging lever lying in the path of said pin and arranged to be lifted a predetermined distance thereby, said lever having a depending arm, a pawl mounted in said depending arm and adapted to engage said ratchet, a disk located adjacent each ratchet and having a series of pins projecting therefrom, and a spur on said overhanging lever adapted to engage said pins.

12. In a counting-machine, the combination of a series of numeral-bearing wheels representing different orders of value, means for carrying from one wheel to that of the next higher order of value, the same comprising a ratchet connected to the last-mentioned wheel, a pin connected to the first-mentioned wheel, an overhanging lever lying in the path of said pin and arranged to be lifted a predetermined distance thereby, said lever having a slot or opening to allow said pin to pass, the same being normally out of the path of said pin, and a pawl carried by said lever for engaging said ratchet.

13. In a counting-machine the combination of a series of numeral-bearing wheels representing different orders of value, means for carrying from one wheel to that of the next higher order of value, locking-levers for said wheels provided with weighted members holding them normally out of engagement, and means for automatically bringing said locking-levers into engagement with said wheels.

14. In a counting-machine the combination of a series of numeral-bearing wheels representing different orders of value, means for carrying from one wheel to that of the next higher order of value, pivoted locking-levers having weighted members, pins carried by said wheels, and arms formed on said locking-levers and projecting into the path of said pins.

15. A counting-machine comprising a series of numeral-bearing wheels, devices for carrying from one wheel to the other, means for actuating the units-wheel, a pinion connected to each wheel, a weighted rack intermeshing with said pinions and adapted to be raised by the rotation of the latter, ratchets carried by said wheels, retaining-pawls for the wheels, and a spring-pressed arm arranged to simultaneously disengage all of said pawls.

16. A counting-machine comprising a series of numeral-bearing wheels, devices for carrying from one wheel to the other, means for actuating the units-wheel, a pinion connected to each wheel, a weighted rack intermeshing with said pinions and adapted to be raised by the rotation of the latter, ratchets carried by said wheels, a rock-shaft, retaining-pawls for said ratchets mounted on said rock-shaft, a lug formed on said rock-shaft, and a spring-pressed arm adapted to engage said lug and rock said rock-shaft.

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**755,696. CUTTING-MACHINE. CHARLES J. FRANKARD, Jr., Troy, N. Y. Filed Oct. 17, 1900. Serial No. 33,337. (No model.)**

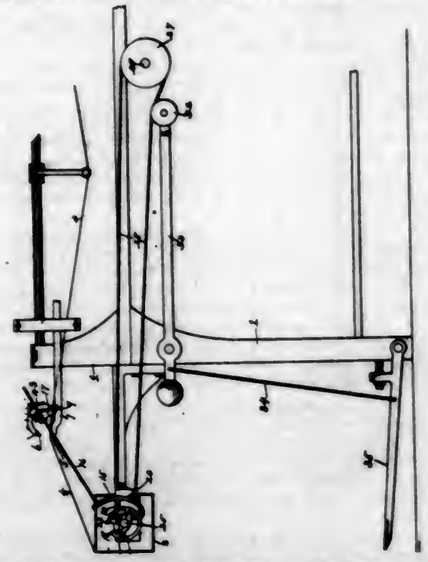
*Claim.*—1. Cutting mechanism comprising in combination a pair of blades movable one toward the other on an axis extending longitudinally of the blades, and oppositely and equally inclined each relatively to the axial plane intersecting the middle portion of its cutting edge.

2. Cutting mechanism comprising in combination a pair of approximately straight-edged blades movable one toward the other on an axis extending longitudinally of the blades, oppositely inclined, each relatively to the axial plane intersecting the middle portion of its cutting edge, and having every part of the cutting edge of each blade equidistant from the axis of movement with the cooperating part of the cutting edge of the other blade.

3. Cutting mechanism comprising in combination a pair of approximately straight-edged, relatively inclined blades movable relatively to one another on an axis extending longitudinally of the blades and having every part of the cutting edge of each blade equidistant from the axis of movement with the cooperating part of the cutting edge of the other blade.

4. In a cutting-machine and in combination, a supporting-frame; a form rotatively mounted upon said frame; cutting mechanism comprising a pair of blades one movable relatively to the other in the path of an arc of a circle, said blades being equally and oppositely inclined each relatively to the axial plane intersecting the middle portion of its cutting edge; and operating connections between said

movable blade and said form, whereby said movable blade is operated by rotation of said form, substantially as described.



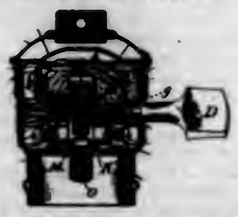
5. In a cutting-machine, the combination with a supporting-frame; and a form rotatively mounted upon said frame; of a stationary blade fixedly mounted upon the frame of the machine with its cutting edge horizontal and parallel with the axis of the form; a blade-supporting frame oscillatory upon an axis inclined in a vertical plane relatively to said stationary blade; and a coöperating blade so mounted upon said oscillatory frame that when the middle portions of said blades are in coöperative cutting engagement said movable blade will be inclined relatively to said stationary blade at double the angle of inclination of its axis of oscillation relatively to said stationary blade and operating connections whereby the oscillatory blade-supporting frame is operated by the rotary movements of said form.

6. Cutting mechanism comprising in combination a pair of shear cutting-blades movable one toward the other on an axis extending longitudinally of the blades and so arranged that an axial plane passed through any point of engagement of the two blades will bisect the shearing angle.

7. In a cutting-machine, the combination with an oscillatory frame, of a stationary blade having its cutting edge inclined relatively to a plane passing through the axis of oscillation of said frame and intersecting the middle portion of said cutting edge; a coöperating blade pivotally mounted in said frame to rock upon an axis extending longitudinally of said blade, and having its cutting edge oppositely and equally inclined relatively to a plane intersecting its middle portion and passing through the axis of oscillation of said frame; an adjustable stop adapted to limit the rocking movement of said coöperating blade; and means for yieldingly holding said blade against said stop.

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**755,697. ELECTRIC-INCANDESCENT-LAMP SOCKET.** GUY H. PROCTOR and JOHN R. DALEY, Somerville, Mass., assignors to New England Electric Manufacturing Company, Somerville, Mass. Filed July 30, 1903. Serial No. 167,533. (No model.)



*Claim.*—1. In combination with a two-part inclosing chamber of an incandescent-lamp socket, the supporting-standard F, the contact-spring L attached thereto, the supporting-standard N, the contact-spring M attached thereto, the hub D and its rod *d* supported by standard F, and the contact-piece E loosely carried on the rod *d*, substantially as described.

2. In combination with a two-part inclosing chamber of an incandescent-lamp socket, the supporting-standard F, the contact-spring L attached thereto, the supporting-standard N, the contact-spring M attached thereto, the hub D and its rod *d* supported by standard F, and the contact-piece E loosely carried on the rod *d*, the brackets G and H, the binding-screws G′ and H′ supported thereby, the screws *g* and A, and the lamp-terminal; substantially as described.

3. In combination with the cap, metal shell, and insulating-support of an incandescent-lamp socket, the connecting-brace T carried by the insulating-support and formed with two arms *t*, *t*, each having a perforation; substantially as described.

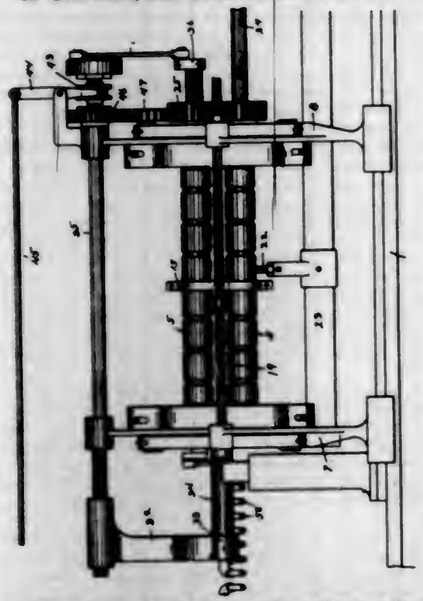
4. In an incandescent-lamp socket, the combination of a slotted shell, a slotted cap, an insulating-support for the make-and-break mechanism, a connecting-bar T having perforated arms and carried by said insulating-support, and holding-screws for said shell, cap, insulating-support and connecting-bar; substantially as described.

5. In combination with the shell, cap and insulating-support of an incandescent-lamp socket, a connecting-bar T carried by said support and screws holding said shell, cap, support and bar in position; substantially as described.

6. An incandescent lamp-socket constructed of the inclosing shell A, composed of the two parts B, C, the make-and-break mechanism composed of the supporting-standards F and N, contact-springs L and M, contact-piece E, rod *d*, supported by standard F and on which E is loosely carried, and its handle-hub D, the connecting-brace T having arms *t*, *t*, supported by the inclosing shell A, cap P, metal socket-shell R, fastening-screws S, S, a center-contact circuit connection, the brackets G and H, the binding-screws G′, H′, supported thereby, screws *f* and A for fastening and for completing the circuit, and a lamp-terminal; substantially as described.

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**755,698. SWAGING APPARATUS.** JAMES S. REED, Pittsburg, Pa. Filed Feb. 26, 1903. Serial No. 145,218. (No model.)



*Claim.*—1. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft bearing for substantially the entire distance between its bearings against one of said dies to actuate the same, and mechanism for rotating said cam-shaft.

2. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft bearing for substantially the entire distance between its bearings against each of said dies to actuate the same, and connecting-gearing for rotating said cam-shafts.



3. In a swaging-machine, the combination of a pair of dies provided with longitudinal working faces and arranged to coöperate with each other, a pair of cam-shafts bearing against one of said dies to reciprocate the same, and mechanism for rotating said cam-shafts.

4. In a swaging-machine, the combination of a pair of dies provided with longitudinal working faces and arranged to coöperate with each other, a pair of cam-shafts bearing against each die, and connecting-gearing for rotating said cam-shafts.

5. In a swaging-machine, the combination of a pair of dies provided with longitudinal working faces and arranged to move in a horizontal plane, a pair of cam-shafts bearing against each die to reciprocate the same, and springs arranged to hold said dies against said cam-shafts.

6. In a swaging-machine, the combination of a plurality of long dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft bearing against each die for actuating the same, independent adjustable bearings for each end of said cam-shafts, and mechanism for rotating said cam-shafts.

7. In a swaging-machine, the combination of a pair of long dies provided with longitudinal working faces, a pair of cam-shafts bearing against each die, bearings for said cam-shafts adjustable radially with reference to the axis of the dies, and mechanism for rotating said cam-shafts.

8. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft bearing against one of said dies, said shaft and die being so constructed as to contact with each other only at intervals along their lengths, and mechanism for rotating said cam-shaft.

9. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft bearing against one of said dies, projections on the die contacting with the cam-shaft, and means for rotating said cam-shaft.

10. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces, a cam-shaft bearing against each die, mechanism for rotating said cam-shafts, and a band surrounding said shafts intermediate their ends to prevent them from springing outwardly.

11. In a swaging-machine, the combination of a pair of dies provided with longitudinal working faces, a pair of cam-shafts for each die, connecting-gearing for rotating said cam-shafts in unison, concentric faces formed on said cam-shafts, and a band or yoke surrounding said shafts and engaging said concentric faces.

12. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft for each of said dies, mechanism for rotating said cam-shafts, said cam-shafts being each provided with a series of cam-faces and a concentric face, projections on the dies engaging said cam-faces, and a band or yoke surrounding said shafts and engaging said concentric faces.

13. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, a cam-shaft bearing against each of said dies for actuating the same, and housings in which said shafts are mounted, said housings being so mounted as to be movable toward and from each other in order to accommodate dies and cam-shafts of various lengths.

14. In a swaging-machine, the combination of a plurality of long dies provided with longitudinal working faces arranged to coöperate with each other, a cam-shaft for actuating each of said dies, a pusher for feeding a blank into the die, a screw connected to said pusher, a ratchet-clutch for intermittently rotating said screw in one direction, mechanism for rotating said screw in the opposite direction, and means for connecting either said mechanism or said ratchet-clutch to said screw.

15. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, actuating mechanism therefor, a pusher for feeding the blank into the dies, a screw-shaft engaging said pusher, a gear loose on said screw-shaft geared to the die-actuating mechanism, an intermittently-acting clutch member also loose on said screw-shaft and also connected to the die-actuating mechanism, and a clutch splined to said screw-shaft and arranged to engage either said gear or said intermittently-acting clutch on the screw-shaft.

16. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, mechanism for actuating the same, intermittently-operating mechanism for pushing the blank into the dies, a device for gripping the blank, a rocking bearing therefor, and connections between the die-actuating mechanism and said gripping device for rocking the latter.

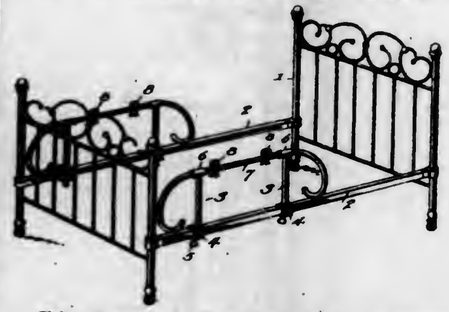
17. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces, a cam-shaft for each of said dies to actuate the same, intermittently-operating mechanism for pushing the blank into the dies, rocking gripping means for engaging the blank to rotate the same, a crank on one of the cam-shafts, and connections from the crank to said rocking means for actuating the latter.

18. In a swaging-machine, the combination of a plurality of dies provided with longitudinal working faces and arranged to coöperate with each other, mechanism for actuating the same, mechanism operated from the die-actuating mechanism for rotating the blank, and intermittently-operating mechanism for pushing the blank into the dies.

19. In a swaging-machine, the combination of a plurality of dies arranged to coöperate, a cam-shaft bearing against each of said dies, pushing mechanism for the blank, an intermittently-acting clutch operated from the cam-shafts for actuating said pushing mechanism, a rocking member for engaging the blank to rotate the same, and connections between one of the cam-shafts and said rocking member to actuate the latter.

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**755,699. BED ATTACHMENT.** ELISA R. ROBERTSON, New York, N. Y. Filed Aug. 29, 1903. Serial No. 171,266. (No model.)

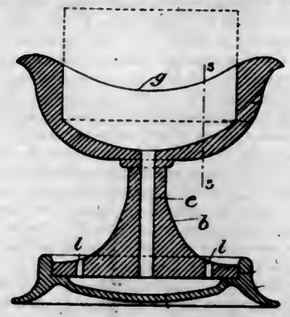


*Claim.*—1. An attachment for a bedstead for holding bed-coverings elevated, consisting of uprights, supporting-bars connected to the uprights and having depending curved terminals, removable clamps to which the lower ends of the uprights are hinged to permit said uprights to be lowered in an outward direction relative to a bed, and fastening-clips removably applied to the supporting-bars.

2. An attachment for a bedstead for the purpose set forth, consisting of clamps for removable application to a bed-rail, uprights hinged to the upper ends of the clamps near the outer sides of the latter, bars held on the upper ends of the uprights and having depending curved terminals extending outwardly beyond the uprights to increase the length of the attachment, and clips removably applied to the bars.

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**755,700. SOAP-RECEPTACLE.** WILLARD R. ROBINSON, Malden, Mass. Filed Oct. 13, 1902. Serial No. 127,080. (No model.)



*Claim.*—1. A soap-receptacle having a soap-receiving cavity formed to support a cake of soap edgewise and having its bottom

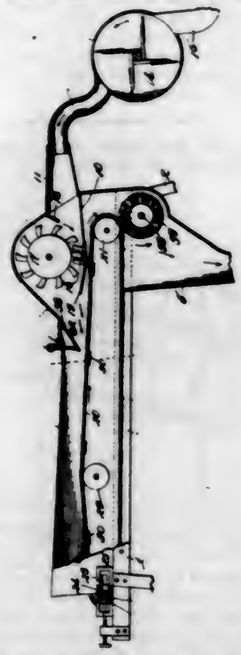
curved from end to end whereby said cake, when full size or reduced by use, will rest with only the ends of its lower edge in contact with said bottom.

2. A portable soap-receptacle having an elongated substantially rectangular soap-receiving cavity, the height of the side walls exceeding the lateral width of the cavity, whereby a cake of soap may be supported in edgewise position, the sides of the cavity being depressed at the center, and the bottom of the cavity being deeper at the center than at the ends.

3. The combination with a soap-receptacle comprising an enlarged foot-piece, a hollow stem, and a head having a soap-receiving cavity, of a separable base-tray for receiving said foot-piece, the said base-tray being formed with an internal shoulder and a central depressed portion, and the foot-piece being provided with a ventilating-opening.

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**755,701. COTTON-SEPARATOR.** JOHN L. ROLLINS, Norman, Okla. Filed June 25, 1903. Serial No. 163,048. (No model.)



*Claim.*—1. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, means to force unclean cotton into the casing and upon the conveyer in a direction opposite to that in which the latter is moving, to separate foreign elements, such as dirt and twigs, from the cotton on the conveyer, and means for removing the cotton from said conveyer.

2. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, and means for removing the cotton from said conveyer.

3. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, means for removing the cotton from said conveyer, and an adjustable valve in the casing at the point where the cotton is impaled on the conveyer, for the purpose of widening or narrowing the casing at such point and insuring the engagement of practically all of the cotton with the conveyer-teeth.

4. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, and a revolving brush for sweeping the cleaned cotton off the conveyer at its front end.

5. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means to introduce unclean cotton into the casing and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs and foreign elements from the impaled cotton, means for removing the cotton from said conveyer, and a hopper to receive the cleaned cotton as it is removed from the conveyer.

6. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, means above the conveyer for thoroughly shredding the cotton and loosening it from foreign elements, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter, for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, and means for removing the cotton from the conveyer.

7. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, a concave and a driven cylinder for thoroughly shredding the cotton and loosening it from the foreign elements, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, and means for removing the cotton from the conveyer.

8. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, means above the conveyer for thoroughly shredding the cotton and loosening it from foreign elements, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter, for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, an adjustable valve in the throat of the casing for deflecting the shredded cotton down upon the conveyer, and means for removing the cotton from the conveyer.

9. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, a concave and a driven cylinder for thoroughly shredding the cotton and loosening it from the foreign elements, a shelf over the conveyer and extending rearwardly from the concave, means for forcing such unclean cotton into the casing and into engagement with said shredding or loosening means, and assisted by the latter for forcing such shredded cotton upon the conveyer and separating such foreign elements therefrom, and means for removing the cotton from the conveyer.

10. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means for shredding the cotton and loosening it from foreign elements, a fan to force unclean cotton into the casing and into engagement with said shredding means, and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs, and foreign elements from the impaled cotton, and means for removing the cotton from said conveyer.

11. A cotton-separator, comprising a casing, a longitudinal endless conveyer operating therein, having teeth pointing substantially in the direction of its movement, means for shredding the cotton and loosening it from foreign elements, a fan to force unclean cotton into the casing and into engagement with said shredding means and to impale the cotton upon the conveyer-teeth, to separate the dirt, twigs, and foreign elements from the impaled cotton, means for removing the cotton from said conveyer, a screened opening in the air-blast tube to admit air to the casing rearward of the fan to check the force of the blast from the latter, and a door to partially or wholly close said opening.

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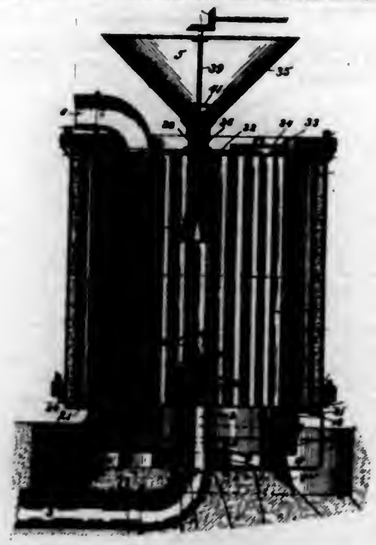
**755,702. GAS-PRODUCER.** JAMES G. SANDERSON, Scranton, Pa. Filed Jan. 31, 1900. Serial No. 3,395. (No model.)

*Claim.*—1. A gas-producer comprising a fuel-chamber having a continuous wall formed of a series of circumferentially-arranged individual water-tubes located in direct contact with each other and provided with passages for the ingress and egress of water therefrom, and bands encircling and impinging against the wall for holding the tubes in place.

2. A gas-producer comprising a fuel-chamber having a continuous wall formed of a series of circumferentially-arranged individual water-tubes located in direct contact with each other and provided with passages for the ingress and egress of water therefrom, a metallic sheathing surrounding the fuel-chamber and a non-conducting jacket located between the water-tubes and the sheathing.



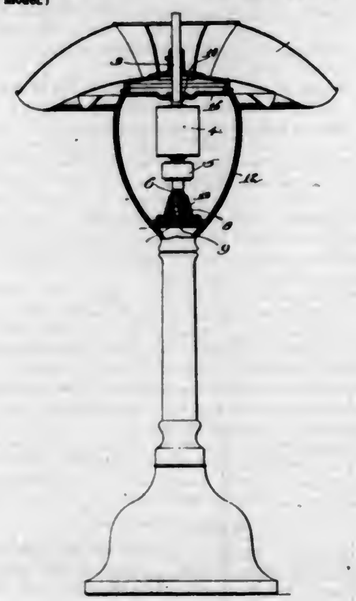
3. A gas-producer comprising a fuel-chamber having a continuous wall formed of a series of circumferentially-arranged individual water-tubes located in direct contact with each other and provided with passages for the ingress and egress of water therefrom, bands encircling and impinging against the wall for holding the tubes in place, a metallic sheathing surrounding the fuel-chamber and a non-conducting jacket located between the water-tubes and the sheathing.



4. A gas-producer comprising a fuel-chamber having a continuous wall formed of a series of circumferentially-arranged individual water-tubes located in direct contact with each other and each tube provided with a small tube at the bottom and a small tube at the top thereof for the ingress and egress of water therefrom, lower and upper annular water-chambers with which the small tubes are independently connected and means for conducting water to and from the water-chambers.

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**755,703. BEARING FOR VERTICAL SHAFTS.** EUGENE M. SANGER, Boston, Mass. Filed June 20, 1903. Serial No. 162,312. (No model.)



*Claim.*—1. A vertical shaft, a bearing member of self-lubricating insulating material and having a socket into which the lower end of the shaft sets, said bearing member insulating said end of the shaft and a centering-sleeve of similar material through which the shaft extends and by which it is centered and at its upper end insulated

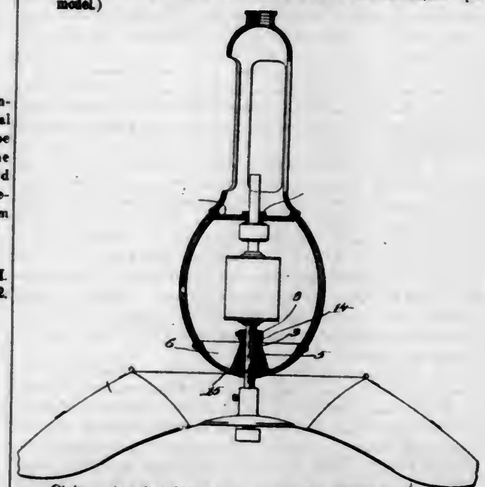
2. A vertical shaft, a bearing member of self-lubricating insulating material having a socket into which the lower end of said shaft sets, a ball in said socket on which the end of the shaft rests, and a centering-sleeve of similar material through which the shaft extends and by which its upper end is centered, said bearing member and centering-sleeve operating to insulate the shaft.

3. A self-lubricating insulated bearing for vertical motor-shafts, comprising a plate of self-lubricating insulating material, a sleeve of similar material supported by the plate and into which the lower end of the shaft extends, the weight of said shaft being supported by said plate, and a centering-sleeve also of the same material through which the shaft extends and by which its upper end is centered, said sleeves and plate serving to insulate the shaft.

4. In a self-lubricating insulated bearing for vertical shafts, a plate of self-lubricating insulating material, a sleeve of similar material supported by the plate and into which the lower end of the shaft sets, a metallic disk in said sleeve and resting upon said plate, an antifriction-ball on said disk, said ball furnishing the support for the end of the vertical shaft, and a centering-sleeve of self-lubricating insulating material through which the upper end of the shaft extends and by which it is centered, whereby the shaft is completely insulated.

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**755,704. BEARING FOR VERTICAL SHAFTS.** EUGENE M. SANGER, Boston, Mass. Filed June 20, 1903. Serial No. 162,313. (No model.)



*Claim.*—In a bearing for vertical shafts, a supporting-sleeve of self-lubricating material through which the shaft extends, a collar or flange rigid with the shaft and resting upon the upper edge of said sleeve, whereby the latter supports the entire weight of the shaft and a centering-sleeve of similar material through which the shaft projects and by which it is centered.

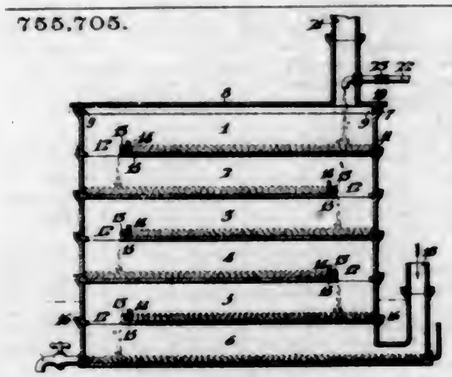
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**755,705. CHEMICAL ABSORPTION APPARATUS.** HERMAN G. SCHARCHE, Philadelphia, Pa., assignor to Harrison Bros. & Co., Incorporated, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Dec. 14, 1903. Serial No. 185,063. (No model.)

*Claim.*—1. In an absorption apparatus, the combination of a series of vertically-arranged compartments communicating by means of overflow-orifices alternately arranged, and means substantially as set forth, whereby the access of liquid to the respective regions of overflow is restricted to the bottom layer of liquid in each compartment.

2. In an absorbing apparatus, a vessel having a discharge-opening in its bottom; a wall adjacent to said opening; and a barrier of greater height than said wall arranged in the described relation thereto, said barrier being provided with an opening at the level of the bottom of the vessel, substantially as set forth.

755,705.



755,706. STOOL. FLORENCE SCHILLERBACH, Cleveland, Tenn. Filed Sept. 22, 1903. Serial No. 174,190. (No model.)

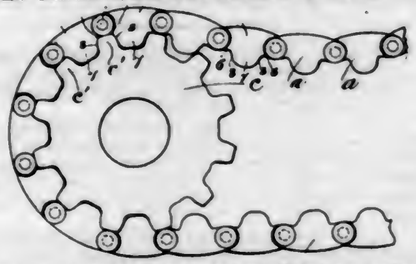


*Claim.*—1. In a stool, a base, lazy-tongs mounted on opposite sides thereof, a screw mechanism engaging with each of said lazy-tongs, and means connecting them together whereby said lazy-tongs are actuated simultaneously, of a frame mounted on the lazy-tongs and adjustably maintained in different vertical positions thereby, a platform rotatively adjustable on the frame and a guide depending from the frame in movable engagement with the lazy-tongs to maintain the frame in registration with the base in its different positions of adjustment.

2. In a stool, the combination with a rectangular base, a vertically-adjustable frame in registration therewith, a rectangular platform mounted thereon and rotatively adjustable in registration therewith, and a leaf hinged on one edge of the platform adapted to fold thereon and in registration therewith to double the area of the platform when opened, of lazy-tongs mounted in the base and engaging with the frame, screw mechanism arranged to actuate the lazy-tongs to move and maintain the frame in different vertical positions, and a vertical guide formed with an open slot depending from the frame and in movable engagement with the lazy-tongs, for the purpose specified.

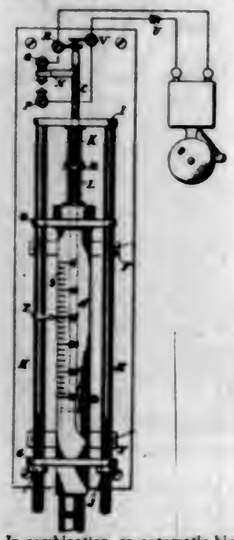
3. In a stool, the combination with a base formed with horizontal slots in its opposite sides, a frame formed with similar slots in its sides and vertically adjustable thereon, lazy-tongs movably mounted in the slots in the base and movably engaging with the slots in the frame, of a vertical guide formed with an open slot depending from the frame and movably engaging with the lazy-tongs, and screw mechanism mounted in the base and arranged to actuate the lazy-tongs to move and maintain the frame in different elevated positions.

755,707. DRIVE-CHAIN. CARL G. A. SCHMIDT, Jr., Columbus, Ohio. Filed Nov. 27, 1903. Serial No. 183,734. (No model.)



*Claim.*—A sprocket-chain comprising flat links having end portions which are pivotally connected by transverse pins, each link having oblique faces at the end portions of its inner edge, disposed so that in a portion of the chain which is curved on a sprocket-wheel, two of said faces on adjacent links conform to the outer end of a tooth of said wheel, each link having also a projection on its inner edge, located between the said oblique faces, said projection having end faces or shoulders, which are so disposed that in the said curved portion of the chain, the opposed shoulders on two adjacent projections have an extended bearing on the sides of a tooth of the wheel.

755,708. HIGH OR LOW PRESSURE SIGNAL-ALARM. FRANK H. SCHMITZ, New York, N. Y. Filed Sept. 4, 1903. Serial No. 172,013. (No model.)



*Claim.*—1. In combination, an automatic high or low pressure signal-alarm, consisting of a cylinder containing a piston carrying a rod or circuit-breaker, having an arm attached thereto and passing through a rectangular adjustable sliding frame, two spiral springs on said rod or circuit-breaker between the outer end of the adjustable sliding frame and the head of the cylinder, separated by an adjustable nut on the rod or circuit-breaker, for the purpose of holding the piston-rod or circuit-breaker in a stationary position; nuts on the ends of the arms or sides of the sliding adjustable frame for the purpose of regulating the amount of pressure required, an indicator or scale on said cylinder, on one of the arms of said frame a pointer to indicate the pressure, an electrical apparatus, as shown and described.

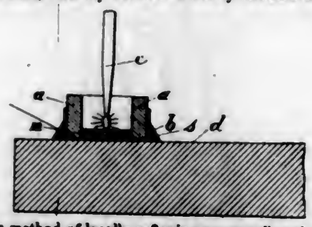
2. In combination, an automatic high or low pressure signal-alarm consisting of a cylinder containing a piston with a rod or circuit-breaker on said piston, a rectangular adjustable sliding frame on the outside of said cylinder, two spiral springs on said piston-rod or circuit-breaker between the end of the cylinder and the farther end of the adjustable sliding frame, an adjustable nut on said piston-rod between the two spiral springs, nuts on the arms or lower ends of the adjustable sliding frame for the purpose of adjusting the required pressure, a scale or indicator, a pointer on one of the arms of said frame, and an electrical apparatus for ringing a bell, substantially as shown and described.

3. In combination, an automatic high or low pressure signal-alarm, consisting of a pipe leading from a boiler or other receptacle to a cylinder containing a piston, a rod or circuit-breaker attached to the plunger on said piston, a rectangular adjustable sliding frame on the outside of said cylinder, two spiral springs on the piston-rod or circuit-breaker between the end of the cylinder and the farther end of the adjustable sliding frame, an adjustable nut on said piston-rod between the two spiral springs, nuts on the arms or lower ends of the adjustable sliding frame, for the purpose of adjusting the device to the required pressure, a scale or indicator, a pointer on one of the arms of said frame, an electrical apparatus for ringing a bell, substantially as shown and described.

755,709. METHOD OF LOCALLY SOFTENING OR ANNEALING HARDENED-STEEL PLATES. CHARLES P. E. SCHNEIDER, Le Creusot, France. Filed Oct. 12, 1903. Serial No. 176,718. (No specimens.)



*Claim.*—1. The method of locally softening or annealing the surface of steel, consisting in distributing heat to said surface by means of a molten substance in contact therewith, regularly supplying heat to said molten substance while in contact with said surface of steel and maintaining the temperature of the latter below that of its recalescence, whereby the steel is locally softened or annealed.



2. The method of locally softening or annealing the surface of steel, consisting in distributing heat to said surface by means of molten metal in contact therewith, regularly supplying heat to said molten metal, while in contact with said surface of steel and maintaining the temperature of the latter below that of its recalescence, whereby the steel is locally softened or annealed.

3. The method of locally softening or annealing the surface of steel consisting in applying to said surface metallic lead and fusing the same, whereby the steel becomes locally softened or annealed.

4. The method of locally softening or annealing the surface of steel consisting in applying to said surface a fusible substance whose temperature of fusion is lower than the temperature of recalescence of the steel to be softened, and then fusing the same, whereby the steel becomes locally softened or annealed.

5. The method of locally softening or annealing the surface of steel, consisting in applying to said surface a fusible substance, fusing the same, regularly supplying heat to said fused substance by means of an electric arc formed between said fused substance and a suitable electrode whereby said fused substance distributes heat to said steel surface, and maintaining the temperature of the steel surface below that of recalescence.

6. The method of locally softening or annealing the surface of steel, consisting in distributing heat to said surface by means of molten metal in contact therewith, regularly supplying heat to said molten metal while in contact with said surface by means of an electric arc formed between said molten metal and a suitable electrode and maintaining the temperature of the steel below that of its recalescence, whereby the molten metal distributes the heat of the electric arc to the surface of the steel, the latter thereby being locally softened or annealed.

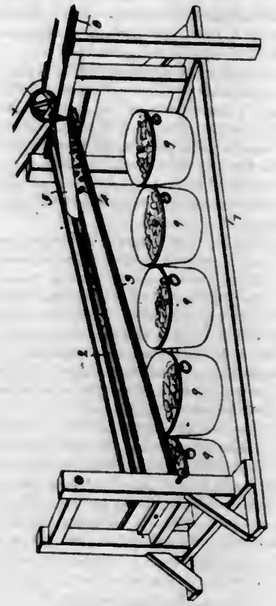
7. The method of locally softening or annealing the surface of steel armor-plate consisting in inclosing the given surface by a mold, applying to said inclosed surface a fusible metallic substance, heating the same to the fusion-point, regularly supplying heat to the fused metallic substance, whereby the latter distributes said heat to the said plate and maintaining the latter below the point of recalescence.

755,710. SHELL GRADER AND SEPARATOR. GARRETT W. SCHENCK, Muscatine, Iowa. Filed Feb. 26, 1903. Serial No. 146,602. (No model.)

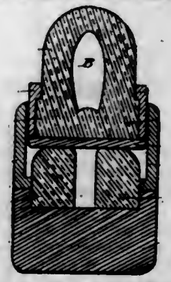
*Claim.*—1. In a device of the class described, the combination with a suitable framework, of a pair of rollers of unequal diameters mounted at an inclination therein, said rollers diverging uniformly throughout their entire length from their upper to their lower ends and the larger roller having a series of depressions at its upper receiving end, means for rotating the rollers in opposite directions, and means for delivering shells to the rollers.

2. In a device of the class described, the combination with a suitable framework, of a pair of rollers of unequal diameters mounted at an inclination therein, said rollers diverging uniformly throughout their entire length from their upper to their lower ends and the larger roller having a series of depressions provided at its upper receiving end, means for rotating the rollers in opposite directions, and a vibratory table for delivering shells in a partially-separated condition to the rollers.

3. In a device of the class described, the combination with a suitable framework, of a pair of rollers of unequal diameters mounted at an inclination therein, said rollers diverging uniformly throughout their entire length from their upper to their lower ends and the larger roller having a series of depressions provided at its upper receiving end, means for rotating the rollers in opposite directions, a vibratory table for delivering shells in a partially-separated condition to the rollers, and mechanism operable by one of the rollers for vibrating the table.



755,711. TIRE FOR VEHICLES. WILLIAM H. SEWELL, Belfast, Ireland. Filed Mar. 24, 1903. Serial No. 149,291. (No model.)



*Claim.*—1. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly secured to said felly, a metal rim interposed between the sides of said channel-shaped rim, having openings, and segments or balls protruding through said openings, having elongated bases so shaped as to lie securely within the channel of the channel-shaped rim.

2. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly secured to said felly, a metal rim interposed between the sides of said channel-shaped rim, having openings, pneumatic segments or balls protruding through said openings, the hollow space of said segments or balls being cigar-shaped, and elongated bases to said segments or balls, so shaped as to lie securely within the channel of the channel-shaped rim.

3. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly secured to said felly, an outer metal rim interposed between the sides of said channel-shaped rim, having openings, a plate lying between said rims, dividing the channel circumferentially, means for securing said plate to the outer rim, segments or balls protruding through the openings of the outer rim and having elongated bases lying securely within the part of the channel between said outer rim and said plate, and resilient means interposed between said plate and the bottom of the channel.

4. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly secured to said felly, an outer metal rim interposed between the sides of said channel-shaped rim, having openings, a

plate lying between said rims, dividing the channel circumferentially, means for securing said plate to the outer rim, pneumatic segments or balls protruding through said openings, the hollow space of said segments or balls being cigar-shaped, elongated bases to said segments lying securely within the part of the channel between said outer rim and said plate, and resilient means interposed between said plate and the bottom of the channel.

5. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly connected with said felly, an inverted channel-shaped rim closing the channel of first rim and having openings in the top plate, a plate in the channel dividing the same circumferentially, means for securing said plate to the inverted rim, segments or balls protruding through the top-plate openings in the inverted rim and having elongated bases lying securely in the outer space of the channel, and resilient means between said dividing-plate and the bottom of the channel.

6. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly connected with said felly, an inverted channel-shaped metal rim closing the channel of first rim, having openings in the top plate, a plate in the channel dividing the same circumferentially, means for securing said plate to the inverted rim, pneumatic segments or balls protruding through the top-plate openings in said inverted rim, the hollow space of said segments or balls being cigar-shaped, elongated bases to said segments or balls lying securely in the outer space of the channel, and resilient means between said dividing-plate and the bottom of the channel.

7. In a vehicle-tire, the combination of a felly, a channel-shaped metal rim rigidly connected with said felly, an inverted channel-shaped metal rim closing the channel of first rim and having openings arranged in zigzag in the top plate, a plate in the channel dividing the same circumferentially, means for securing said plate to the inverted rim, pneumatic segments or balls protruding through the top-plate openings in said inverted rim, the hollow space of said segments or balls being cigar-shaped, elongated bases to said segments or balls lying securely in the outer space of the channel, and resilient means between said dividing-plate and the bottom of the the channel.

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**755,712. TIRE FOR VEHICLE-WHEELS.** WILLIAM H. SEWELL, Belfast, Ireland. Filed Aug. 20, 1903. Serial No. 171,311. (No model.)



*Claim.*—1. In a vehicle-tire, the combination of a felly, an inner channel-shaped rim rigidly secured to said felly, an outer rim fitting over the channel of said inner rim having openings, a plate lying loosely between said rims and dividing the channel circumferentially, segments or balls protruding through the openings of the outer rim and having elongated bases lying securely between said outer rim and said plate, and resilient means interposed between said plate and the bottom of the channel.

2. In a vehicle-tire, the combination of a felly, a channel-shaped inner rim rigidly secured to said felly, an outer rim fitting over the channel of said inner rim, having openings, a plate lying loosely between said rims, dividing the channel circumferentially and having elongated slots, means securing said outer rim to the felly, said means passing loosely through said slots, segments or balls protruding through the openings of the outer rim and having elongated bases lying securely between said outer rim and said plate, and resilient means interposed between said plate and the bottom of the channel.

3. In a vehicle-tire, the combination of a felly, a channel-shaped inner rim rigidly secured to said felly, an outer sectional rim fitting over the channel of said inner rim, the sections of said outer rim having openings, a plate lying loosely between said rims dividing the channel circumferentially and having elongated slots, means securing the sections of said outer rim to the felly, said means passing loosely through said slots, segments or balls protruding through the openings of the sections of the outer rim and having elongated bases lying securely between said sections and said plate, and resilient means interposed between said plate and the bottom of the channel.

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**755,713. SUCTION AND FRICTION FOOT FOR LADDERS OR THE LIKE.** PHILIP SHAHARAN, Chicago, Ill. Filed July 15, 1903. Serial No. 166,547. (No model.)

*Claim.*—1. In a device of the class described the combination with a ladder-leg having a peripheral groove adjacent to the lower end thereof, a resilient pad, an outwardly-directed peripheral flange thereon receiving said leg end, an inwardly-directed rib on said flange adapted to seat in said groove and a suction and friction surface on the bottom of said pad.

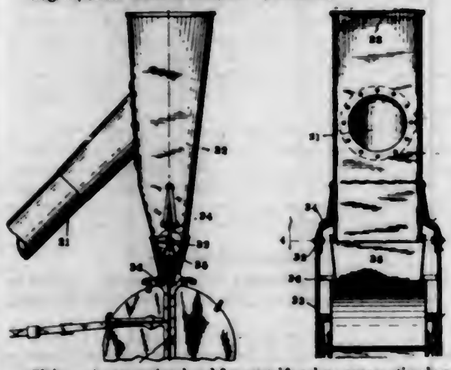


2. An article of manufacture comprising a resilient socketed pad to receive the end of the side member of a ladder or the like and having means therein adapted to rigidly engage the said end therein, a downwardly-directed peripheral flange at the bottom thereof adapted first to engage on the supporting-surface and to hold the ladder-foot from slipping partly by atmospheric pressure and projections on the face of said pad having a less altitude than the height of the flange and adapted to frictionally engage the supporting-surface when the flange is under compression.

3. The combination with the side members of a ladder, foot having a peripheral recess therein, of a friction-foot provided with an upwardly-opening receptacle having a rib projecting inwardly from the inner side thereof the bottom of said rib being at a right angle with the sides of the receptacle and the top oblique thereto, said ribs positively engaging in said recess, an integral downwardly-directed flange at the bottom of the foot and projections on said bottom positioned within the flange.

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**755,714. SEPARATING-HEAD FOR CENTRIFUGAL OR PNEUMATIC ELEVATORS.** JOSEPH K. SHARPE, Jr., Indianapolis, Ind., assignor to the Pneumatic Elevator and Weigher Company, Indianapolis, Ind., a Corporation of Indiana. Filed Jan. 21, 1903. Renewed Aug. 31, 1903. Serial No. 171,453. (No model.)




*Claim.*—A separating-head for centrifugal or pneumatic elevators comprising a body of considerably-greater size than the duct through which the material enters and with which said duct communicates, a perforate upper portion through which air and dust may escape above the point of entrance of the duct, and a discharge-mouth for the material at the lower portion below the point of entrance of the duct, substantially as and for the purpose set forth.

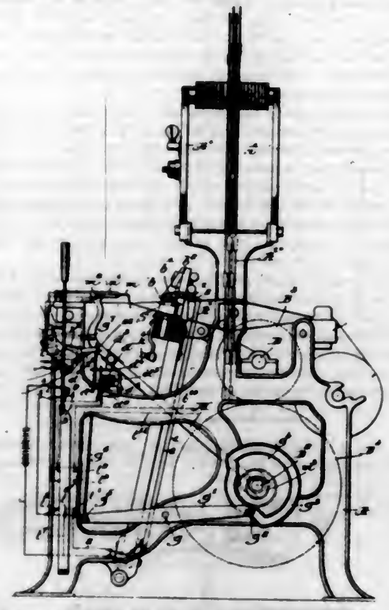
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**755,715. LOOM.** HARRY W. SMITH, Worcester, Mass. Filed Nov. 10, 1900. Serial No. 36,113. (No model.)

*Claim.*—1. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism for manipulating the warp-threads in the production of a figure or pattern, a filling-changing mechanism, and means for operating said filling-changing mechanism to effect a fresh supply of filling.

2. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figure or pattern, and a filling-changing mechanism operable to effect a fresh supply of filling prior to complete exhaustion of the filling in the shuttle, whereby fabrics may be woven in pattern or figure without a lost pick.





3. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figure or pattern, a detecting mechanism, and a filling-changing mechanism operable to effect a fresh supply of filling prior to complete exhaustion of the filling in the running shuttle, whereby fabrics may be woven in pattern or figure without a lost pick.

4. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism for manipulating the warp-threads in the production of a figure or pattern, a detecting mechanism disposed at one side of the loom, and a filling-changing mechanism for effecting a fresh supply of filling disposed on the other side of the loom.

5. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figure or pattern, a filling-changing mechanism, and electrically-controlled means for rendering the filling-changing mechanism operable to effect a change of filling in the running shuttle, whereby fabrics may be woven in pattern or figure without a lost pick.

6. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figure or pattern, a warp stop-motion to bring the loom to rest upon the breaking of a warp-thread, and a filling-changing mechanism operable to effect a fresh supply of filling prior to complete exhaustion of the filling in the running shuttle, whereby fabrics may be woven in pattern or figure without a lost pick.

7. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figure or pattern, an electrically-controlled warp stop-motion to bring the loom to rest upon the breaking of a warp-thread, a filling-changing mechanism, and means for rendering the filling-changing mechanism operable to effect a change of filling prior to complete exhaustion of the filling in the running shuttle, whereby fabrics may be woven in pattern or figure without a lost pick.

8. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figured fabric, a filling-changing mechanism operable to effect a change of filling in the running shuttle and means to stop the loom when the filling breaks.

9. In a loom the following instrumentalities, viz: a pattern-controlled shedding mechanism to manipulate the warp-threads in the production of a figured fabric, a warp stop-motion to stop the loom when a warp-thread breaks, a filling-changing mechanism operable to effect a change of filling prior to complete exhaustion of the filling in the running shuttle and means to stop the loom when the filling breaks.

10. In a loom, the combination of a pattern-controlled shedding mechanism for manipulating the warp-threads in the production of a figured fabric, a filling-detecting mechanism, a filling-changing mechanism operable to effect a change of filling prior to complete exhaustion of the filling in a running shuttle, and means to stop the loom when the filling breaks.

11. In combination with weaving mechanism proper of a loom, an automatic mechanism for supplying weft or filling, a pattern-controlled shedding mechanism, and intermediate connections between such mechanisms.

12. In combination with the weaving mechanism of a power loom, pattern-controlled shedding mechanism, a feeder for holding filling-carriers, mechanism for automatically delivering filling-carriers and ejecting an empty one, and connections between such mechanisms.

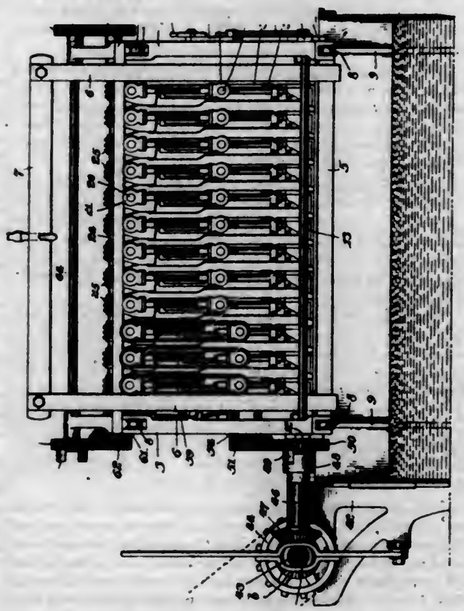
13. In a loom comprising weaving instrumentalities, the combination of a pattern-controlled shedding mechanism for manipulating the warp-threads, a feeder for containing filling-carriers, and a filling changing or replenishing mechanism for transferring a filling-carrier from the feeder to the weaving instrumentalities.

14. In a loom comprising weaving instrumentalities, the combination of pattern-controlled shedding mechanism for manipulating the warp-threads, a detecting mechanism, a feeder for holding filling-carriers, and a filling changing or replenishing mechanism for transferring a filling-carrier from the feeder to the weaving instrumentalities.

15. In combination with the weaving instrumentalities of a power-loom, pattern-controlled shedding mechanism for actuating the harness thereof, a feeder or magazine for containing filling-carriers, mechanism for automatically ejecting an empty carrier and delivering a filled one, and connections between said mechanism.

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**755,716. MERCERIZING APPARATUS.** ROBERT P. SMITH and GEORGE R. DRUM, Philadelphia, Pa. Filed May 31, 1902. Serial No. 109,636. (No model.)



*Claim.*—1. The combination with a tank provided at its respective corners with ledges or supports, of a yarn-carrying frame movable into and from said tank, longitudinal rock-shafts in said frame, stop-arms on said shaft, a vertically-movable slide, link connections between the same and a pair of said stop-arms, and means for actuating said slide, whereby the arms are simultaneously swung toward and from the respective ledges or supports.

2. In a mercerizing apparatus, the combination with a support, a transversely-extending shaft therein, bearings for the outer ends of said shaft, arms supporting said bearings, and diagonal braces converging from the outer ends of said arms to the support, of a vertically-adjustable carriage on said support comprising a body portion, a shaft or shafts extending laterally therefrom, bearings for the outer ends of said latter shafts, arms supporting said bearings, and diagonal braces converging from the outer ends of said latter arms to the carriage-body, together with a nut in said carriage-body, and a screw-shaft engaged with said nut, the last-named arms and braces being located to one side of the arms and braces first named and adapted to move in different planes so as to pass each other.

3. In a mercerizing apparatus, the combination with a support, a transversely-extending shaft therein, bearings for the outer ends of said shaft, arms supporting said bearings, and diagonal braces converging downwardly from the outer ends of said arms to the support, of a vertically-adjustable carriage on said support comprising a body portion, a shaft or shafts extending therefrom, bearings for the ends of said latter shaft or shafts, arms supporting said bearings, and diagonal braces converging upwardly from the outer ends of said latter arms to the carriage-body, the last-named arms and braces being located to one side of the arms and braces first named, and adapted to move in different planes so as to pass each other.

4. In a mercerizing apparatus, the combination with a tank and a clutch-shaft adjacent thereto, of a frame movable into and from said tank, yarn-supports on said frame, and means for rotating said supports, said means including a shaft and connections adapted to coact with the clutch-shaft when the said frame is raised in respect to the tank.

5. In a mercerizing apparatus, the combination with a tank, and a clutch-shaft adjacent thereto, of a frame movable into and from said tank, yarn-supports on said frame, and means for adjusting said supports toward and from each other, said means including clutch mechanism adapted to coact with the said clutch-shaft when the frame is in raised position.

6. In a mercerizing apparatus, the combination with a tank, and a clutch-shaft adjacent thereto, of a frame movable into and from said tank, upper and lower yarn-supports on said frame, means including a clutch device for rotating the upper supports, and means, including a clutch device, for rotating the lower supports, said clutch devices being arranged to coact with the said clutch-shaft when the frame is in the lowered and raised positions respectively.

7. In a mercerizing apparatus the combination with a tank, and a drive-shaft, of a frame movable into and from said tank, upper and lower yarn-supports on said frame, mechanism coacting with the drive-shaft to rotate the lower rollers when the frame is raised, and mechanism coacting with the drive-shaft to rotate the upper rollers when the frame is lowered.

8. In a mercerizing apparatus, the combination with a tank, and a drive-shaft, of a frame movable into and from said tank, upper and lower yarn-supports on said frame, mechanism coacting with the drive-shaft to rotate the lower rollers when the frame is raised, and mechanism coacting with the drive-shaft to rotate the upper rollers when the frame is lowered, together with means for connecting said mechanisms.

9. In a mercerizing apparatus, the combination with a tank, and a drive-shaft, of a frame movable into and from said tank, upper and lower yarn-supports on said frame, mechanism coacting with the drive-shaft to rotate the lower rollers when the frame is raised, mechanism coacting with the drive-shaft to rotate the upper rollers when the frame is lowered, means for adjusting the lower supports toward and from the upper supports, connections movable into and out of operation between said means and the first-named mechanism, gearing between the two mechanisms, and means for rendering said gearing operative or inoperative as desired.

10. In a mercerizing apparatus, the combination with a tank, and a clutch-shaft adjacent thereto, of a frame movable into and from said tank, yarn-supports on said frame, and mechanism for rotating said supports, said mechanism including a worm-shaft, upper and lower shafts, gearing between said latter shafts and the worm-shaft, means for disconnecting the gearing between the lower shaft and the worm-shaft, and clutch devices for the upper and lower shafts, respectively, said devices being arranged to coact with the said clutch-shaft when the frame is in the raised and lowered positions, respectively.

11. In a mercerizing apparatus, the combination with a tank, of a frame movable into and from the tank, a plurality of yarn-supports on said frame, having vertically-adjustable members, and means whereby the adjustable members of the respective yarn-supports may be independently or simultaneously adjusted.

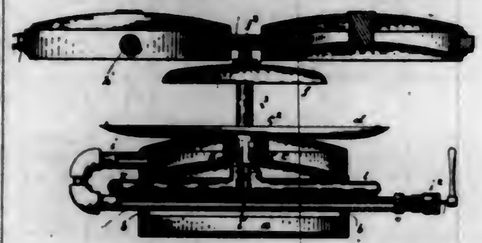
12. In a mercerizing apparatus, the combination with a tank, of a frame movable into and from the tank, a plurality of yarn-supports on said frame having vertically-adjustable members, screws connected with said members, a shaft, means for operatively connecting or disconnecting any or all of said screws with said shaft at will, a drive-shaft, and reversible driving mechanism between said first-named shaft and drive-shaft.

13. In a mercerizing apparatus, the combination with a tank, of a frame movable into and from the tank, a plurality of yarn-supports on said frame having vertically-adjustable members, screws connected with said members, a shaft, means for operatively connecting or disconnecting any or all of said screws with said shaft at will, a gear-wheel on said shaft, a drive-shaft, two oppositely-disposed gear-wheels thereon coacting with the gear-wheel first named, and means for rendering either of said oppositely-disposed gear-wheels fast on the drive-shaft.

14. In a mercerizing apparatus, the combination with a tank, of a frame movable into and from the tank, a series of yarn-supporting members relatively fixed on said frame, a complementary series of vertically-adjustable supports including carriages, screw devices for adjusting said carriages, a shaft, means whereby any or all of said devices may be connected with or disconnected from said shaft at will, and means for operating said shaft.

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**755,717. HYDROCARBON-BURNER.** ALEXANDER J. SMITHSON, Portland, Oreg. Filed Dec. 1, 1902. Serial No. 133,508. (No model.)



*Claim.*—1. In a hydrocarbon-burner, the combination of a lower generator having a central vertical flame-opening $c^3$; a superimposed generator; a pipe connected between the upper generator and the lower generator; an oil-supply pipe entering the upper generator; a discharge-pipe leading from and underneath the lower generator, and having a gas-vent discharging through the said central flame-opening of the latter; a primary convexed deflector under the upper generator and centrally positioned over said flame-opening, and a secondary convexed deflector on the lower generator of larger diameter than the primary deflector, substantially as described.

2. In a hydrocarbon-burner, the combination of a lower generator having a central vertical flame-opening $c^3$; a group of superimposed generators; a pipe connection between the group of upper generators and the lower generator; an oil-supply pipe entering the group of upper generators, a discharge-pipe leading from and underneath the lower generator, and having a gas-vent discharging through the said central flame-opening of the latter; a primary convexed deflector under the group of upper generators and centrally positioned over said flame-opening; and a secondary convexed deflector on the lower generator of larger diameter than the primary deflector, substantially as described.

3. In a hydrocarbon-burner, the combination of a lower generator having a central flame-opening $c^3$, and a superimposed generator, each of said generators comprising a crowning bottom and top; a pipe connection between the upper generator and the lower generator; an oil-supply pipe entering the upper generator; a discharge-pipe leading from and underneath the lower generator, and having a gas-vent discharging through said flame-opening of the latter; a primary convexed deflector under the upper generator and centrally positioned over said flame-opening, and a secondary convexed deflector on the lower generator of larger diameter than the primary deflector, substantially as described.

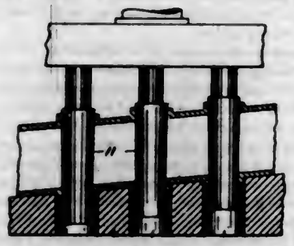
4. In a hydrocarbon-burner, the combination of a lower generator having a central flame-opening $c^3$, and a group of superimposed generators, each of said generators comprising a crowning bottom and top; a pipe connection between the group of upper generators and the lower generator; an oil-supply pipe entering the group of upper generators, a discharge-pipe leading from and underneath the lower generator, and having a gas-vent discharging through the said flame-opening of the latter; a primary convexed deflector under the group of upper generators; and a secondary convexed deflector on the lower generator of larger diameter than the primary deflector, substantially as described.

5. A hydrocarbon-burner comprising a pan, a lower generator supported centrally over such pan, and having a central flame-opening $c^3$; a superimposed generator; a pipe connection between the upper generator and the lower generator; an oil-supply pipe entering the upper generator; a discharge-pipe leading from and underneath the lower generator, and having a gas-vent discharging through the said flame-opening of the latter; a primary deflector convexed under the upper generator and centrally positioned over said flame-opening and a secondary convexed deflector on the lower generator of larger diameter than the primary deflector, substantially as described.

6. A hydrocarbon-burner comprising a pan; a lower generator supported over such pan, and having a central flame-opening $c^3$; a group of superimposed generators; a pipe connection between the group of upper generators and the lower generator; an oil-supply pipe entering the group of upper generators; a discharge-pipe leading from and underneath said lower generator, and having a gas-vent discharging through said flame-opening of the latter; a primary convexed deflector under the group of upper generators and centrally positioned over said flame-opening; and a secondary deflector on the lower generator, substantially as described.

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**755,718. METHOD OF FORMING BOILER-HEADERS.** JAMES P. SIMMONS, Barberton, Ohio, assignor to the Stirling Company, Chicago, Ill., a Corporation of New Jersey. Filed Feb. 14, 1903. Serial No. 143,349. (No model.)



*Claim.*—1. The method of making wrought-metal headers and other tubular articles, which consists in forming a wrought-iron tube into the desired shape with holes in opposite walls thereof and flanges around said holes, and thereafter bringing the flanges of oppositely-arranged holes into alinement by forcing into said holes in such manner as to engage the flanges of both holes simultaneously, means provided with two faces in exact alinement with each other.

2. The method of making wrought-metal headers and other tubular articles, which consists in forming a wrought-iron tube into the desired shape with holes in the opposite walls thereof and flanges around said holes, and then forcing a pin or plunger of greater length than the cross-section of the article into oppositely-arranged holes and bringing the flanges thereof into alinement.

3. The method of making wrought-metal headers and other tubular articles, which consists in forming a wrought-iron tube into the desired shape with holes in opposite walls thereof and flanges around said holes, and then when cold forcing a pin or plunger of greater length than the cross-section of the article into oppositely-arranged holes and bringing the flanges thereof into alinement.

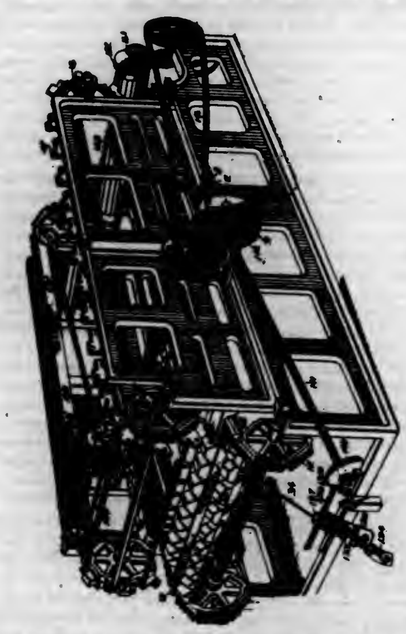
4. The method of making wrought-metal headers and other tubular articles, which consists in forming a wrought-iron tube into the desired shape with holes in opposite walls thereof, forming flanges around the holes in one wall thereof, thereafter forming flanges around the holes in the opposite walls thereof, and then while cold bringing the flanges of oppositely-arranged holes into alinement by forcing into said holes in such manner as to engage the flanges of both holes simultaneously, means provided with two faces in exact alinement with each other.

5. The method of making wrought-metal headers and other tubular articles, which consists in forming a wrought-iron tube into the desired shape with holes in opposite walls thereof, forming flanges around the holes in one wall thereof, thereafter forming flanges around the holes in the opposite wall thereof, and then forcing a pin or plunger of greater length than the cross-section of the article through oppositely-arranged holes and bringing the flanges thereof into alinement.

6. The method of making wrought-metal headers, which consists in forming a wrought-iron tube into the desired cross-section and with transverse corrugations on two opposite walls thereof and holes in the two remaining walls thereof, flanging the metal surrounding said holes, and then forcing a pin or plunger of greater length than the cross-section of the header through oppositely-arranged holes and bringing the flanges thereof into alinement.

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**755,719. WIRE-FABRIC LOOM.** JAMES W. SHEDDEKER, Adrian, Mich. Filed May 4, 1903. Serial No. 155,635. (No model.)



*Claim.*—1. In a loom for weaving wire fabric, the combination with the means for feeding the longitudinal wires continuously into the machine, of the longitudinally and transversely movable shuttles adapted to weave the transverse wires onto said longitudinal wires, and means for driving said shuttles.

2. In a loom for weaving wire fabric, the combination with the means for feeding the longitudinal wires continuously through the machine, of the shuttles carrying the bobbins which form the transverse wires, means for carrying said shuttles through the machine coincident with the movement of the fabric, means for moving the shuttles transversely of the fabric across the longitudinal wires, and means for driving said shuttles to cause them to wrap the transverse wires around the longitudinal wires.

3. In a machine for weaving wire fabric, the combination with means for carrying the longitudinal wires through the machine, of means for successively introducing the cross-wires into the machine and stringing them transversely of the longitudinal wires, and means for wrapping the transverse wires around the longitudinal wires while said longitudinal wires are moving through the machine.

4. In a machine for the purpose set forth, the combination with the continuously-moving clamp-bars having jaws for clamping the longitudinal wires, of the shuttles adapted to move longitudinal with the movement of the fabric and to cross the fabric transversely, said shuttles being adapted to wrap the transverse wires around the longitudinal wires between said clamp-bars during the continuous passage of the fabric through the machine.

5. In a machine for weaving wire fabric, the combination with the continuously-moving endless carriers adapted to engage and carry the longitudinal wires through the machine, of the continuously-moving endless carriers carrying the shuttles traveling in unison with the carriers which carry the wires, means for directing the shuttles to the longitudinal wires in succession as said wires and shuttles pass through the machine, and means forming a part of each shuttle for

wrapping the transverse wires, carried by the shuttles, around each of the longitudinal wires to form the woven fabric.

6. In a machine for the purpose set forth, the combination with the continuously-moving carriers having means for conveying the longitudinal wires into the machine, a series of shuttle-bars also mounted upon continuously-moving carriers, shuttles adapted to slide upon said bars, each of said shuttles having a rotary needle adapted to carry and wrap the transverse wire around the longitudinal wires, means for directing the shuttles to each of the longitudinal wires during the passage thereof through the machine, and means for returning each of the shuttles to its initial position at the forward end of the machine.

7. In a machine for the purpose set forth, the combination with the simultaneous movable upper and lower endless racks, means for driving said racks, clamps adapted to engage the longitudinal wires attached to and traveling with said lower racks whereby said wires are carried into the machine, shuttle-bars attached to and moving with the upper racks, shuttles adapted to carry the lateral wires mounted to slide upon said bars, means for causing said shuttles to successively engage each of the longitudinal wires and wrap the transverse wires therearound, and means for returning each of the shuttles to the initial position at the forward end of the machine.

8. In a machine for the purpose set forth, the combination with the continuously-movable carriers adapted to convey the longitudinal wires into the machine, of a series of shuttles movable through the machine with said wires, a zigzag way adapted to direct said shuttles to each of said longitudinal wires during their passage through the machine and to present the needles of said shuttles over each of said wires, means for operating the shuttles and driving their needles to wrap the lateral wires around the longitudinal wires, and means for returning each of the shuttles to its initial position at the forward end of the machine.

9. In a machine for the purpose set forth, the combination with the superimposed carriers, of the means for driving said carriers, the lower carriers having means for clamping and conveying the longitudinal wires into the machine, the upper of said carriers carrying the transverse wires and the means for weaving said transverse wires with said longitudinal wires, means also carried by the upper carriers for operating the weaving device whereby said wires are woven into an integral fabric in their passage through the machine

10. In a machine for weaving wire fabric, the combination with the endless carriers comprising hinged rack-sections adapted to pass around supporting-pulleys, a pinion engaging said rack-sections for driving them, clamping-bars extending between said racks and secured thereto, movable clamping-jaws in said bars adapted to receive the longitudinal wires between them, means for compressing said jaws to clamp said wires as they are fed into the machine, and means for weaving the lateral wires upon the longitudinal wires between said clamping-bars.

11. In a machine for the purpose set forth, the combination with the means for carrying the longitudinal wires into the machine, of a series of shuttles adapted to travel longitudinally of the machine with said wires and transversely thereof, each of said shuttles carrying a rotary needle adapted to embrace the longitudinal wires and wrap the transverse wires thereon, means for dropping said needle onto the longitudinal wires and raising it therefrom, and means for rotating said needles when embracing said wires.

12. In a machine for the purpose set forth, the combination with a traveling conveyer adapted to engage and carry the warp-wires into the machine, of a shuttle adapted to move into the machine with said wires and to cross the machine diagonally in its passage therethrough, said shuttle having a rotary needle adapted to embrace said warp-wires and carrying the woof-wire, means for dropping said needle upon each of the warp-wires and rotating it in that position to wrap the woof-wire therearound, means for raising the needle successively from each of the warp-wires preparatory to its passage to the succeeding wire, and means for rotating said needle only when embracing a warp-wire of the fabric.

13. In a machine for weaving wire fabric, the combination with the means for carrying the warp-wires into the machine, of a shuttle adapted to move longitudinally through the machine with said wires and to cross the machine transversely during said longitudinal movement, a rotary needle in said shuttle, means for lowering and raising said needle and imparting an intermittent rotation thereto.

14. In a machine for the purpose set forth, the combination with the means for conveying the warp-wires into the machine, of a shuttle adapted to travel longitudinally through the machine with said wires and transversely thereof during said longitudinal movement, means for moving the shuttle longitudinally and transversely of the machine, said shuttle having a rotary needle adapted to embrace the warp-wires, means for successively dropping the needle onto said wires and raising it therefrom, a rotary shaft for operating said needle, a drive-wheel upon said shaft, an endless driving agent passing over said wheel, supporting-pulleys at its opposite ends, one of said pulleys being connected with suitable driving-gears whereby motion is imparted to said driving agent.

15. In a machine for the purpose set forth, the combination with the means for carrying the warp-wires into the machine, of a traveling shuttle for weaving the woof-wires onto the warp-wires, said shuttle having a rotary needle adapted to carry the woof-wire in the form of a bobbin and to embrace the warp-wire when winding the bobbin thereon, means for lowering and raising said needle and means for imparting a rotary movement and a simultaneous longitudinal reciprocation thereto.

16. In a machine for weaving wire fabric, the combination with the means of carrying the warp-wires into the machine, of the traveling shuttle adapted to carry the woof-wire, said shuttle having a rotary needle adapted to wind the woof-wire around the warp-wires, a rotary shaft in the shuttle for driving the needle, a driving-wheel upon said shaft, an endless driver passing over said wheel, wheels supporting the ends of the said endless driver, a traveling pinion geared to one of said wheels, and a stationary rack in the path of said pinion.

17. In a machine for weaving wire fabric, the combination with the means for carrying the warp-wires into the machine, of the endless conveyer carrying the shuttle-bars, shuttles mounted to slide upon said bars, a rotary needle in each shuttle adapted to carry the bobbin which forms the woof-wire and to wind said bobbin around the warp-wires, means for raising and lowering the needle to enable it to successively pass between and engage the warp-wires, means for holding the needle in the raised position, a trip for disengaging said needle-holding means to allow the needle to fall, and a series of lugs upon the shuttle-bar adapted to successively engage said trip as the shuttle moves along said bar.

18. In a machine for weaving wire fabric, the combination with the means for feeding the warp-wires into the machine, of a shuttle adapted to move longitudinally with the warp-wires and to travel transversely of the machine across said wires, a vertically-movable needle-block in said shuttle, a needle journaled at the lower end of said block having a longitudinal channel for the reception of the warp-wires, means for raising the needle-block to carry the needle above the warp-wires, means for causing the needle-block to drop at predetermined intervals to place the needle upon each of the warp-wires, means for rotating the needle in that position and means for preventing the rotation of the needle when in a raised position.

19. In a machine for weaving wire fabric, the combination with the means for carrying the warp-wires into the machine, of a shuttle adapted to travel longitudinally of the machine and transversely of the warp-wires, a vertically-movable needle-block in said shuttle, a rotary needle in said block adapted to carry a bobbin forming the woof-wire and to weave said bobbin upon the warp-wires, a shaft journaled in the needle-block for driving said needle, a driving-pulley upon said shaft, a clutch interposed between the pulley and the needle and means for automatically disengaging said clutch when the needle-block is raised and engaging the clutch when the needle-block falls.

20. In a machine for weaving wire fabric, the combination with the means for carrying the warp-wires into the machine, of a shuttle-bar extending transversely of the machine, movable carriers attached to the ends of said bar for conveying it through the machine, a shuttle mounted to slide upon said bar, a movable needle-block in said shuttle, a rotary needle in the needle-block adapted to carry the woof-wire in the form of a bobbin and to wrap said woof-wire around the warp-wires as the shuttle travels through the machine, a shaft journaled in the needle-block for driving said needle, a sprocket-wheel on said shaft, an endless chain passing over one side of said wheel, sprocket-wheels carrying the ends of said chain mounted upon brackets supported by the movable carriers carrying the ends of the shuttle-bar, means for driving said chain to rotate the gear-wheel on the shuttle-shaft, as the shuttle moves through the machine, and means for taking up the slack of said driving-chain.

21. In a machine for the purpose set forth, the combination with the means for carrying the warp-wires into the machine, of a movable shuttle adapted to travel across said wires, said shuttle carrying a rotary needle, means for raising and lowering said needle, means for rotating said needle intermittently and means for reciprocating the needle longitudinally during its period of rotation.

22. In a machine for weaving wire fabric, the combination of a shuttle adapted to travel with the fabric, a vertically-movable needle in said shuttle and means for imparting an intermittent rotation to said needle.

23. The combination in a machine for weaving wire fabric, of a take-up or reel at the tail of the machine comprising lateral arms journaled upon a shaft, drums journaled in the ends of said arms, friction-disks on the ends of said drums, gear-wheels mounted contiguous thereto, a pinion on the shaft meshing with said gear-wheels, and means for crowding said gear-wheels and disks together to impart motion to said drums through said gears.

24. In a machine for the purpose set forth, the combination with the movable clamp-bars, jaws carried by said bars for clamping the longitudinal wires, shuttles disposed between said clamp-bars adapted to move longitudinally with the fabric and to cross the fabric transversely, said shuttles being adapted to wrap the transverse wires around the longitudinal wires between said clamp-bars.

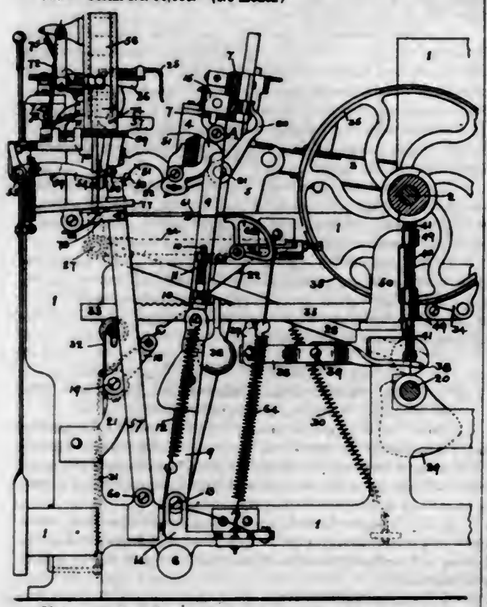
25. In a loom for weaving wire fabric, the combination with the means for feeding the longitudinal wires through the machine, of the shuttles carrying the bobbins which form the transverse wires, means for carrying said shuttles through the machine coincident with the movement of the fabric and for simultaneously moving the shuttles transversely of the longitudinal wires, and means for driving said shuttles to cause them to wrap the transverse wires around the longitudinal wires.

26. In a machine for weaving wire fabric, the combination with means for feeding the longitudinal wires into the machine, of a shuttle-bar adapted to travel with the longitudinal wires, a shuttle adapted to travel upon said bar, said shuttle having a rotary needle adapted to carry and wrap the transverse wire around the longitudinal wires, means for directing the shuttle along said bar to each of said longitudinal wires, means for driving the shuttle to wrap the transverse wire around each of the longitudinal wires, and means for returning the shuttle to its initial position at the forward end of the machine.

27. In a machine for weaving wire fabric, the combination with the means for carrying the warp-wires into the machine, of a shuttle adapted to move through the machine with said wires and to cross the machine transversely, a rotary needle in said shuttle, means for lowering and raising said needle, and means for imparting rotation thereto.

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## 755,720. WEFT-REPLENISHING MECHANISM FOR LOOMS FOR WEAVING. RIDLEY STARKIE, Burnley, England. Filed Mar. 4, 1902. Serial No. 96,663. (No model.)



*Claim.*—1. In a loom, a lathe, a shuttle-box at each end of the lathe having a falling bottom, two-part spring knife-jointed rods supporting the bottoms of the boxes, movable projections for collapsing the knife-jointed rods and lowering the shuttle-boxes, means for positioning the movable projections upon failure of the weft, means for discharging a spent shuttle from the shuttle-box at one side of the loom, means for withdrawing a fresh shuttle from the magazine and inserting it into the shuttle-box at the setting side of the loom, means for letting back the taking-up motion to compensate for the picks made while one shuttle is being discharged and a fresh one inserted, and stationary projections on the loom for resetting the knife-jointed rods, substantially as described.

2. In a loom, a vertically-movable shuttle-box at each end, spring knife-jointed rods for supporting said boxes, movable projections for collapsing said rods, means for positioning said projections on the failure of the weft, means for discharging a spent shuttle from one shuttle-box, means for inserting a fresh shuttle into the other shuttle-box, means for letting back the taking-up motion to compensate for the picks made while one shuttle is being discharged and a fresh one inserted, brake mechanism for checking the motion of the loom, clutch mechanism for temporarily disconnecting the driving means, and stationary projections for resetting said knife-jointed rods, substantially as described.

3. In a loom, the combination with the lathe vertically-movable shuttle-boxes at each end thereof and means for inserting a fresh shuttle and withdrawing the old one when the boxes are lowered, of spring knife-jointed rods supporting said boxes, movable projections for collapsing the rods, means for positioning said projections on the failure of the weft comprising a weft-hammer, a hammer-lever, means for imparting a quick lift and a long dwell thereto, a bell-crank lever, connections from said lever to the projections, and a weft-fork supported on said bell-crank lever, and means for restoring said knife-jointed rods to initial position, substantially as described.

4. In a loom the combination with the rising-and-falling shuttle-box at the setting-on side of the loom and a collapsible support therefor, of a magazine for the shuttles, a swinging push-lever for withdrawing a fresh shuttle from the magazine and inserting it into the shuttle-box, a pin projection on said push-lever, a latch-lever 54 and a balk-lever pivoted to the lathe below the shuttle-box and adapted to cause said projection to engage said latch-lever or to disengage said projection from said latch-lever to latch and unlatch the push-lever, substantially as described.

5. In a loom, the combination with the shuttle-magazine, of a swinging push-lever for ejecting the shuttles therefrom, means for latching and unlatching said lever, a rock-shaft adjacent to said magazine, arms or levers carried thereby, pins connected to said arms and adapted to enter the magazine, an arm or lever connected to said rock-shaft having a swivel on its lower end, and a pin or projection on the push-lever adapted to contact with said swivel, substantially as described.

6. In a loom, the combination, with the shuttle-magazine, and a swing-pusher for ejecting shuttles therefrom, of a rock-shaft operated by said pusher, a weft-fork, a weft-hammer, and a lever operated by said rock-shaft and having a projection adapted to prevent the weft-work from engaging the weft-hammer for one pick, substantially as described.

7. The combination with the shaft 19, the weft-fork 25 the weft-hammer 26, connections whereby said shaft is operated when the weft-fork engages the weft-hammer the projection 32 on said shaft, a brake adapted to be applied by said projection, a spindle 41 raised by said projection, of the sliding sleeve 42 loose on the crank-shaft and formed with a cam-surface 48 and clutch-teeth on one side, the driving-pulley 43 formed with corresponding clutch-teeth, the boss 46 fixed on the crank-shaft and constantly engaging the sleeve 42 with a driving connection and the springs 47 to normally press the clutch-teeth on the sleeve 42 into gear with the clutch-teeth on the driving-pulley 43, all substantially as and for the purposes herein set forth.

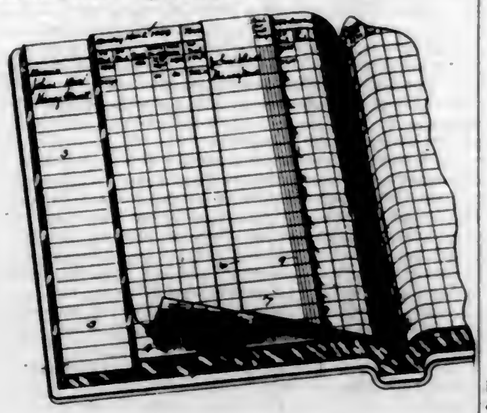
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## 755,721. ATTACHMENT FOR BANK-LEDGERS. ANTHONY STONEHOUSE, Larimore, N. D. Filed Mar. 17, 1903. Serial No. 148,162. (No model.)

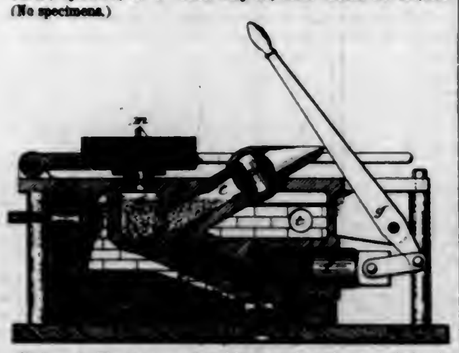
*Claim.*—1. The combination, with a bank-ledger leaf, having the depositors' names written at the left-hand end of the page, and horizontal lines leading from said names across the page, of a flexible plate arranged thereon and movable crosswise of the page, said plate bearing the names of the depositors opposite and corresponding to those written on said leaf at its left-hand edge and having a series of appropriately-designated blank spaces wherein the balances at the end of the week are entered, for the purpose specified.

2. The combination, with a bank-ledger leaf having a series of horizontal rulings and provided with appropriately-designated blank spaces at its left-hand edge to receive the names of depositors writ-

ten therein, of a series of shorter leaves following said first-named leaf and having horizontal rulings arranged to register with the rulings of said first-named leaf, said leaves being divided by vertical lines into sections appropriately designated for each day of the week, and a strip of paper having its edges bent around the edges of a leaf and slidable thereon and having blanks to receive names corresponding to the names of the depositors on said first-named leaf and opposite the same respectively, and said strip also having appropriately-designated blank spaces to receive the balances at the end of the week, substantially as described.



## 755,722. PROCESS OF MAKING METAL CASTINGS. GEORGE SYRON, Syracuse, N. Y. Filed July 28, 1903. Serial No. 167,265. (No specimens.)



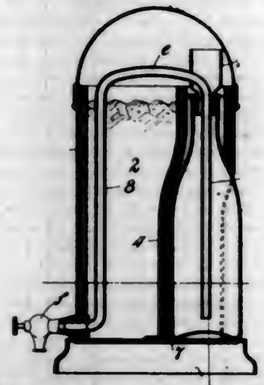
*Claim.*—1. The process of making metal castings consisting in introducing under the molten metal to be cast, a fluent or semifluent material of greater specific gravity and applying to the said introduced material artificial pressure sufficient to force the overlying molten metal into the mold or matrix.

2. The process of making castings of aluminium by melting said metal over a body of metal fusible at a lower temperature and of greater specific gravity, and while maintaining both of said metals in a molten state applying to the said fused heavier metal sufficient artificial pressure to force the overlying aluminium into the mold or matrix as set forth.

## 755,723. LIQUID-DISPENSING APPARATUS. VERNAL S. TAYLOR, Cambridge, Mass. Filed July 16, 1903. Serial No. 166,102. (No model.)

*Claim.*—1. A liquid-dispensing apparatus comprising a casing having an ice-receptacle, and a bottle-receptacle separated from the ice-receptacle by a wall or partition, a siphon the longer leg of which is in the ice-receptacle, while its shorter leg projects downwardly into the bottle-receptacle, and a faucet connected with the longer leg, the bottle-receptacle having an opening at its lower end to permit the endwise movement of a bottle into the receptacle in position to receive the shorter leg of the siphon.

2. A liquid-dispensing apparatus comprising a casing having an ice-receptacle, and a bottle-receptacle separated from the ice-receptacle by a substantially vertical wall or partition arranged to laterally support the ice in the receptacle and formed to partially surround the bottle, said bottle-receptacle being open at one side to display a bottle therein, a siphon having its longer leg in the ice-receptacle and its shorter leg in the bottle-receptacle, and a faucet connected with the longer leg of the siphon.



3. A liquid-dispensing apparatus comprising a casing having an ice-receptacle, and a bottle-receptacle separated from the ice-receptacle by a wall or partition, the bottle-receptacle being open at its lower end to permit the endwise insertion of a bottle, means for preventing endwise downward displacement of the bottle, a siphon having its longer leg in the ice-receptacle and its shorter leg in the bottle-receptacle, and a faucet connected with the longer leg of the siphon.

4. A liquid-dispensing apparatus comprising a casing having an ice-receptacle, and a bottle-receptacle separated from the ice-receptacle by a wall or partition arranged to laterally support the ice in the receptacle, a siphon having its longer leg in the ice-receptacle and its shorter leg in the bottle-receptacle, a faucet connected with the longer leg of the siphon, and means for starting a flow of liquid from the bottle through the siphon.

5. A liquid-dispensing apparatus comprising a casing having an ice-receptacle, and a bottle-receptacle separated from the ice-receptacle by a wall or partition, a siphon having its longer leg in the ice-receptacle and its shorter leg in the bottle-receptacle, a faucet connected with the longer leg of the siphon, and a stand-pipe formed to enter the neck of a bottle in the bottle-receptacle to increase the height of the column of liquid in the bottle and start the flow of liquid through the siphon.

6. A siphon having a stand-pipe located at its upper portion, said stand-pipe having a receiving end located above the crown of the siphon, and a delivering end located below the crown of the siphon and formed to enter the neck of a liquid-receptacle.

7. The combination of a liquid-receptacle having a contracted neck, a siphon having its shorter leg located within the receptacle, and a stand-pipe having a receiving end located above the crown of the siphon, and a delivering end located below the crown of the siphon and formed to enter said neck.

## 755,724. BRIDGE. JOSEPH TOULMIN, Cedar Rapids, Iowa. Filed Nov. 26, 1903. Serial No. 182,948. (No model.)

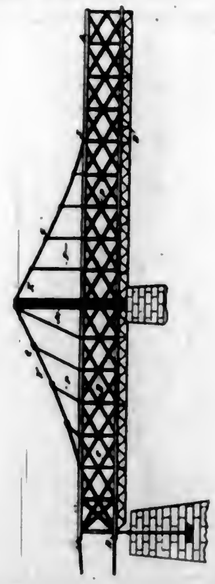
*Claim.*—1. In cantaliver suspension-bridges and like structures, the combination with supporting-towers and main trusses, of cables connecting at one end with fixed supports on said towers, and at the other with the upper chords, posts and diagonal braces of said trusses, substantially as and for the purpose set forth.

2. In a bridge structure, the combination with the main truss, cable and suspenders, of sleeves to support said suspenders on the cables, and supplemental cable-wires looped into said sleeves to prevent slipping.

3. The combination with a truss, supporting-cables, and suspenders, substantially as described, of sleeves to connect the suspenders to the cables, flanges at the side of said sleeves, and cross-ties connecting therewith.

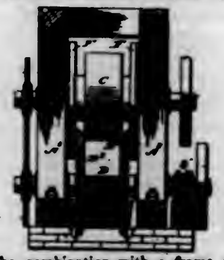
4. In a bridge structure, a truss composed of upper and lower chords, connecting diagonal braces, and extensible posts connecting at the ends with said chords and braces, whereby initial stresses may be imparted to the bracing.





5. In a bridge structure, the combination with pairs of cables separated at their upper ends, and converging at the lower ends, trusses supported by said cables, and suspenders to connect the cables and trusses, of sleeves to support the suspenders on the cables, and cross-ties connecting said pairs of cables, and whereby their lower ends may be drawn parallel.

## 755,725. ORE-CRUSHING MILL. ENOS A. WALL, Salt Lake City, Utah. Filed Feb. 6, 1903. Serial No. 142,142. (No model.)



*Claim.*—1. The combination with a frame and a lower roll mounted in fixed bearings therein, of an upper driven crushing-roll having free vertical movement toward and from the upper side of the lower roll, to crush the material passing between the rolls, and an independent driving means for rotating the upper roll in an opposite direction to the lower roll and at the same rate of speed.

2. The combination with a frame and a lower roll mounted in fixed bearings therein, and provided with a pulley for belt-driving, of an upper oppositely-driven crushing-roll having free vertical movement toward and from the upper side of the lower roll and provided with an independently-driven pulley of the same size as the pulley of the lower roll.

3. The combination with a frame and a lower belt-driven roll mounted in fixed bearings therein, of the upper crushing-roll free to move vertically, belt-driven in the opposite direction and at the same rate of speed as the lower roll, and means for preventing slipping and faster movement of the upper roll due to independent belt drives.

4. The combination with a frame, a lower belt-driven roll mounted in fixed bearings therein, shields at the ends of the roll and removable plates flush with the inner sides of the shields and overlapping the ends of the roll, of an upper crushing-roll having free vertical movement and belt-driven oppositely to and at the same rate of speed as the lower roll.

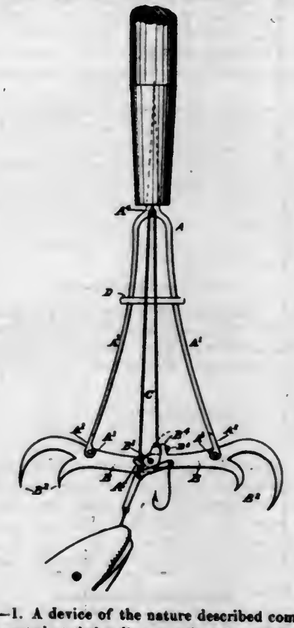
5. In combination with the crushing-rolls, one roll being placed above the other and journaled in bearings secured in guides in the main frame, so as to admit of free yielding up-and-down movement, the shields or guard-plates at the ends of the lower roll, and overlapping the ends of the upper roll sufficient to form a trough for the retention of the material to be crushed and to permit its being carried forward upon the surface of the lower roll across the point of crushing contact, and heavy balance-wheels attached to the main shaft of the upper roll at opposite ends of the said roll and within the frame, substantially as and for the purpose herein specified.

6. In combination with the one roll being placed above the other and journaled in bearings secured in guides in the main frame so as to admit of free yielding up-and-down movement said rolls being belt-driven, the shields or guard-plates at the ends of the lower roll and overlapping the ends of the upper roll sufficient to form a trough for the retention of the material to be crushed and to permit its being carried forward upon the surface of the lower roll across the point of crushing contact, the heavy balance-wheels attached to the main shaft of the upper roll, and gear-wheels placed upon the ends of main shafts of the crushing-rolls and engaged in such manner as to control the speed of the upper roll and prevent its slipping upon the face of the lower roll, substantially as and for the purposes herein specified.

7. In a crushing-mill, a roll having end shields of greater diameter than the rolls, and provided on their inner faces with annular recesses extending inwardly within the radius of the roll and segmental wear-plates removably secured in said recesses, flush with the inner faces of the shields.

8. An ore-crusher comprising, a main frame having vertical guideways, a lower belt-driven roll having its bearings fixed, annular shields at the ends of said roll, an upper oppositely belt-driven crushing-roll in the vertical plane of the lower roll and having an unobstructed movement to and from the face of the lower roll, meshing gears of the same size on the shafts of the said rolls to prevent slipping and faster movement of the upper roll due to inequalities of belt-driving, and a feed-chute of the same width as the face of the lower roll and delivering thereon, substantially as and for the purposes herein specified.

## 755,726. FISHING HOOK AND GAFF. CHARLES H. WARD, Jackson, Mich., assignor to Thomas B. Taylor, Jackson, Mich. Filed Apr. 21, 1903. Serial No. 153,641. (No model.)



*Claim.*—1. A device of the nature described comprising arms jointedly connected at their adjacent ends and provided with a hook at their outer ends respectively, a fork having resilient arms at-

tached to said jaws respectively intermediate the ends of said jaws, a line arranged to trip said jaws to permit the jaws to close, and a fish-hook connected with said line, whereby the jaws will be operated when a pull is exerted upon the hook attached to said line.

2. A device of the nature described comprising arms jointedly connected at their adjacent ends, and each provided with a hook at its outer end, resilient arms attached at one of the ends thereof to said jaws respectively intermediate the ends of said jaws, a sliding collar embracing said arms, a line arranged to trip said jaws to permit the jaws to close by the resilience of said arms, and a hook upon said line, whereby the jaws will be operated when a pull is exerted upon the hook attached to said line.

3. A device of the nature described comprising jaws jointedly connected at their adjacent ends and provided with a hook at their outer end, a resilient arm attached to each of said jaws intermediate the ends of the jaws, a line arranged to trip the jaws permitting the jaws to close, a hook upon one end of said line, and means to hold the jaws in closed position, the jointed connection of said jaws the one with the other being below a line through the centers of the connection of the jaws with said arms, whereby the jaws will be operated when a pull is exerted upon the hook attached to said line.

4. A device of the nature described comprising jaws pivotally connected together at their adjacent ends and each provided with a hook at its outer end, a fork having resilient arms connected at their lower ends with said jaws intermediate the ends of the jaws respectively, a line to trip said jaws, and a hook upon said line, said jaws provided with detent-lugs substantially as and for the purpose described, whereby the jaws will be operated when a pull is exerted upon the hook attached to said line.

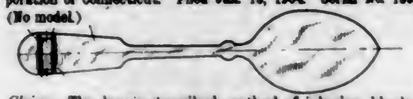
5. A device of the nature described comprising reciprocally opening and closing jaws jointedly connected at their adjacent ends and each provided with a hook at its outer end, a line arranged to trip said jaws by a pull upon said line, a hook connected with said line, and spring-arms connected with said jaws intermediate the ends of the jaws, the line being secured at one end thereof near the point of the pivotal connection of the two jaws the one with the other, and arranged to elevate the inner ends of the arms when a pull is exerted upon the hook connected therewith.

6. A device of the nature described comprising arms jointedly connected at their adjacent ends and each provided with a hook at its outer end, longitudinally-immovable resilient arms rigidly connected together at one extremity thereof and attached at the opposite extremity thereof to said jaws respectively intermediate the ends of said jaws, a line secured at one end thereof near the point of the pivotal connection of the two jaws one with the other and arranged to trip said jaws to permit the jaws to close by the resilience of said arms, a hook upon the opposite end of said line, and a sliding collar embracing the resilient arms, whereby the jaws will be operated when a pull is exerted upon the hook attached to said line.

7. A device of the nature described comprising arms jointedly connected at their adjacent ends and provided with a hook at their outer ends respectively, a fork having a shank and resilient arms attached to said jaws respectively intermediate the ends of said jaws, a line secured at one end thereof near the point of the pivotal connection of the two jaws one with the other and thence lead upward adjacent to the shank of the fork and provided with a hook at its opposite end whereby said jaws will be tripped by a pull exerted upon the hook connected therewith.

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**755,727. METHOD OF INLAYING BLANKS FOR FLAT-METAL TABLEWARE. WILLIAM A. WARNER, Bridgeport, Conn., assignor to the Holmes and Edwards Silver Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Jan. 18, 1904. Serial No. 189,394. (No model.)**



*Claim.*—The herein-described method of inlaying blanks for flat-metal tableware which consists in forming a recess in the blank to receive the precious metal leaving slight retaining-walls at the ends of the recess, then fusing a piece of precious metal in the recess and then subjecting the blank to the action of dies, whereby form is imparted to the blank and the retaining-walls are broken away.

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**755,728. WAVE-MOTOR. DAVID G. WEEKS, Bonanza, Colo. Filed Jan. 6, 1904. Serial No. 187,923. (No model.)**

*Claim.*—1. The combination with a vessel having a flaring open mouth and a tube or cylinder communicating with the small end thereof, of a plunger mounted in said tube for operation by the waves, and a transmitting device connecting the plunger with the device to be operated.



2. The combination with a floating vessel, having a flaring open mouth and a tube or cylinder communicating with the small end thereof, of a plunger mounted in said tube or cylinder and an air-pump the piston of which is connected to said plunger.

3. The combination with a floating vessel having an open flaring mouth, and a horizontal pipe at the small end thereof, of a vertical tube or cylinder communicating at its lower end with said horizontal tube, an air-pump cylinder on the upper end of the plunger-cylinder, and a rod connecting the plunger with the pump-piston.

4. In combination with a floating vessel having one end constructed with a flaring, open mouth, the small end connected with horizontal pipe, an upright tube-well leading from said pipe, a plunger mounted therein, and an air-pump actuated by said plunger, the upper end of the tube-well being provided with an air-cushion chamber, to cushion the upstroke of the plunger.

5. In combination with a floating vessel one end constructed with an open mouth and one or more upright tube-wells, communicating therewith, of plungers in said tube-wells, and water-tight ballast-compartments in the vessel to regulate the relation of the said open mouth to the water-line.

6. In combination with a floating vessel one end constructed with an open mouth, and the upright tube-wells, of plungers in the tube-wells, air-pumps operated by said plungers, and storage-tanks on board for the storage of compressed air from the pumps.

7. In combination with a floating vessel having one end constructed with an open mouth and one or more upright well-tubes communicating therewith, plungers in the tubes, air-pumps operated by the plungers and the gate-valves shutting off one or more of these tube-wells.

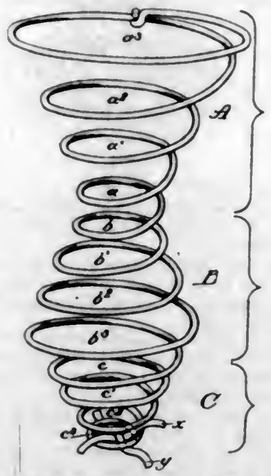
8. In combination with a floating vessel constructed with an open mouth at one end, and the upright tube-wells connected in series therewith, of the plungers in the tubes and connected with the mechanism to be operated, the vessel being anchored by heavy weights so as to allow the waves to break into the said open mouth.

9. In combination with a floating vessel constructed at one end with an open mouth and the upright pipe-wells, of the plungers, the air-pumps operated thereby, the upper and lower ends of the air-pumps being provided with a cap or air-cushion receiving the pump-piston on the upward and downward strokes.

10. A wave-power mechanism comprising, a floating vessel having in one end a flaring mouth, a horizontal tube communicating with the small end thereof, vertical tube-wells opening at their lower ends into said horizontal pipes and a valve in the horizontal pipe in advance of every tube-well, of plungers in the tube-wells, air-pumps at the upper ends of the tube-wells and having their piston-rods extending down to and connected with the plungers, and air-tanks on the vessel having valved communication with the several air-pumps.



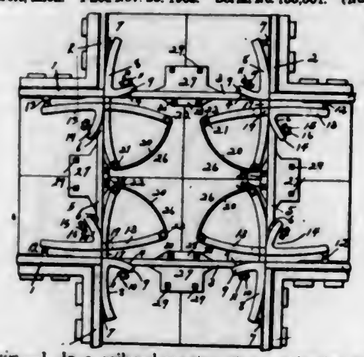
**755,729. SPRING. ORVANDO D. WHITE, Chicago, Ill. Filed Apr. 13, 1903. Serial No. 152,296. (No model.)**



*Claim.*—An upholstery-spring composed of a single strand of wire coiled in three sections, each section having a set of relatively soft coils, two of the sections meeting at their reduced ends and one of which sections is dereloped at its free end into an enlarged coil, and the third section springing from the base of the other of the first-mentioned sections and having a reduced end adapted to engage a suitable support.

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**755,730. RAILROAD-CROSSING. GEORGE W. WILLEBRANDS, Detroit, Mich. Filed Nov. 29, 1902. Serial No. 133,301. (No model.)**



*Claim.*—1. In a railroad-crossing, the combination with the main rails of the tracks, of the short rails interposed between the main rails, the movable sections adapted to move into position to fill the opening between the main rails and the interposed short rails by contact of the wheel, said movable sections being directly connected so as to operate in unison.

2. In a railroad-crossing, the combination of the main track-rails having openings therein at the junction of said rails, a pair of movable members at each of said junctions adapted to move into said openings to establish a continuity of the rails, and to move out of said openings to allow of the passage of the flange of the wheels, means connecting each pair of said movable members together to cause them to move in unison.

3. In a railroad-crossing, the combination of the main track-rails, short rails interposed between the main rails and spaced at their ends therefrom, movable sections carrying members adapted to fill the space between the main rails and the short interposed rails, said movable sections being connected so that by a movement of one section the other is actuated to cause its closing member to fill the space between the ends of the short rails and the main rails of the track.

4. In a railroad-crossing, the combination of the main rails, the short rails interposed between the main rails and spaced therefrom, movable sections lying between the ends of the short rails and the main rails, having extending members adapted to fill the space between said rails, the ends of said movable sections lying contiguous to the rails of the track in one position, and a cross-bar connecting the ends of said movable sections to impart the movement of one section to the other.

5. In a railroad-crossing, the combination of the main rails having openings therein at the point of crossing, movable sections carrying members adapted to fill said openings to effect a continuity of the track, each of said sections being adapted to receive movement from engagement with the flange of the wheel, and a connection between said movable sections whereby the movement imparted to one of said sections by the passage of the wheel actuates the other of said sections to carry the member thereon into the opening between the rails.

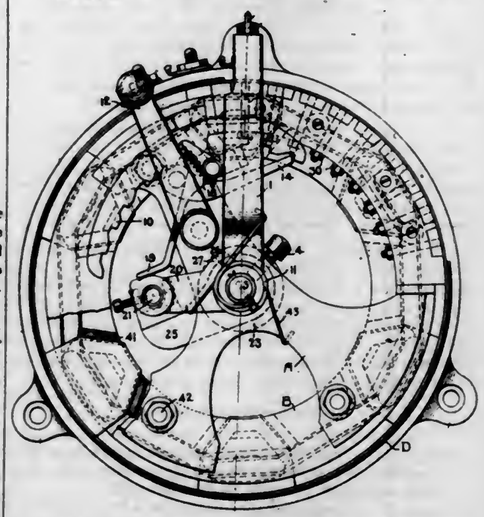
6. In a railroad-crossing, the combination of the main rails of the track, short rails interposed between the main rails having beveled ends which are spaced from the main rails, movable sections having curved members which coincide with the bevel of the ends of the short rails, and are adapted to fill the space between them and the main rails to establish a continuity of the rails of the track, a connecting-rod pivoted to the ends of said movable sections whereby the movement of either section by the passage of the wheel of the car will impart movement to the other section and carry its curved member into position to effect a continuity of the rail over which said wheel is passing.

7. In a railroad-crossing, the combination with the main rails, the short rails interposed between the main rails and spaced therefrom, movable sections carrying members adapted to fill the space between the short rails and the main rails, a connecting-rod between said movable sections to impart movement from one to the other, said connecting-rod being in the nature of a spring which will allow a movement of one section without movement of the other should the section to which movement is imparted by said rod become locked.

8. In a railroad-crossing, the combination of the main rails, the short rails interposed between the main rails, movable sections adapted to establish a continuity of the track between the main rails and the short rails, base-plates upon which said parts are mounted, flanges upon said short rails, and bolts passing through said flanges and through said plates.

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**755,731. CONTROLLER FOR ELECTRIC MOTORS. MAGNUS W. ALEXANDER, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed June 13, 1903. Serial No. 161,337. (No model.)**



*Claim.*—1. The combination with the contact-arm of a controller, of an independent actuating-lever having detachable connection with the said contact-arm, current-controlled means for releasing the connection between said arm and lever, and means to automatically return said arm to cut in resistance and restore said releasing means to operative position.

2. The combination with the contact-arm of a controller, of an independent actuating-lever having a pawl-and-ratchet connection with said contact-arm, current-controlled means for disengaging said pawl-and-ratchet connection, and means to automatically return said arm to cut in resistance and restore said disengaging means to operative position.

3. The combination with the contact-arm of a controller, of means to move said arm to its off position, an independent lever having a pawl-and-ratchet connection with said contact-arm, a latch to hold said arm in the respective positions to which it is moved by the said lever, and current-controlled means independent of said lever for tripping said latch and pawl to release said contact-arm.

4. The combination with the contact-arm of a controller, of a spring to move said arm to its off position, a segmental ratchet on said arm, an independent actuating-lever provided with a pawl adapted to engage said ratchet, a latch-lever pivoted upon a stationary part and adapted to engage said ratchet and hold said contact-arm in the respective positions to which it is moved by the said actuating-lever, and current-controlled means independent of said actuating-lever for tripping said latch-lever and pawl to release said controller-arm and permit it to return to its off position under the stress of its spring.

5. The combination with the contact-arm of a controller, of a spring to move said arm to its off position, a segmental ratchet connected to said arm, an independent actuating-lever provided with a pawl adapted to engage said ratchet, a latch-lever pivoted upon a stationary part and having a shoe on its front end adapted when moved in one direction to engage said pawl and when moved in the opposite direction to engage said ratchet and hold said contact-arm in the respective positions to which it is moved by the actuating-lever, a spring connecting the forward end of said pawl and rear end of said latch-lever, and current-controlled means for engaging said latch-lever to release said controller-arm from said latch and pawl.

6. The combination with the contact-arm of a controller, of an independent actuating-lever eccentrically pivoted with respect to said contact-arm, and a pawl-and-ratchet connection between said arm and lever whereby the contact-arm is moved step by step when the actuating-lever is oscillated.

7. The combination with the contact-arm of a controller, of a circular rack mounted upon said arm, an independent actuating-lever provided with a spring-pressed pawl adapted to engage said rack, a latch-lever pivotally mounted on a stationary pin and adapted to engage said rack when in normal position and to engage said pawl when moved out of engagement with said rack, and current-controlled releasing means for engaging said latch-lever to release said controller-arm upon abnormal condition of current.

8. In a controller, the combination of a series of contacts arranged in the surface of a cylinder, a contact-arm pivoted about the axis of said cylindrical surface and having its free end offset and provided with a carbon-brush, a hook-shaped plunger engaging said brush, and a spring carried in a recess in said arm and acting upon said plunger to force said brush into engagement with said contacts.

9. A support for resistance-coils comprising a bottom plate provided with a series of channeled posts, a top plate provided with lugs adapted to engage the tops of said posts, a series of insulating-blocks located in the channels of said posts and provided in their outer surfaces with transverse grooves for the reception of the resistance-wire, and means for clamping said plates in fixed relation.

10. A support for resistance-coils comprising a bottom plate provided with a series of channeled posts and guide-lugs, a top plate provided with guide-lugs, space-plates located between the tops of said posts and the top plate, a series of insulating-blocks located in the channels of said posts and adapted to support the inner coils, a second series of insulating-blocks superposed upon the aforementioned blocks and adapted to support the outer coils, and a casing surrounding said coils and engaging said space-plates.

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**755,732. ELECTRIC MOTOR.** RALPH H. BARKER, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Aug. 7, 1903. Serial No. 168,556. (No model.)

*Claim.*—1. In a dynamo-electric machine, a frame, pole-pieces fixed thereto, field-coils for the pole-pieces, an armature, end shields secured to the frame, and means carried by the end shields for preventing movement of the field-coils in proximity to the armature.

2. In an electric motor, a frame, pole-pieces thereon, field-coils for the pole-pieces, an end shield secured to the frame, and means carried by the end shield for holding the field-coils in place.

3. In an electric motor, a frame, pole-pieces thereon, field-coils for the pole-pieces, end shields secured to the frame, and interior projections on each end shield for supporting a side of each field-coil.



4. In a dynamo-electric machine, a frame, pole-pieces thereon, field-coils for the pole-pieces, and a brush-holder yoke arranged to support the field-coils.

5. In an electric motor, a frame, pole-pieces fixed thereto, field-coils for the pole-pieces, an armature, an end shield, and a brush-holder yoke supported thereon and extending between the field-coils and the armature.

6. In a dynamo-electric machine, a frame, pole-pieces thereon, field-coils for the pole-pieces, and a brush-holder yoke having its edges corresponding in shape to the shape of the field-coils and arranged to support the field-coils.

7. In a dynamo-electric machine, a frame, an end shield, an armature, a brush-holder yoke supported on the end shield, and brushes mounted on the side of the yoke farther from the armature.

8. In an electric motor, a frame, a shaft, an armature carried thereby, an end shield formed with a bearing for the shaft, a brush-holder yoke supported on the end shield, said yoke having a central opening, a commutator mounted on the shaft and extending within the opening in the brush-holder yoke, and brushes mounted on the side of the yoke farther from the armature.

9. In a dynamo-electric machine, a frame, pole-pieces thereon, field-coils for the pole-pieces, an armature, a commutator, a brush-holder yoke mounted between the field-coils and the armature, and brushes mounted on the side of the yoke farther from the armature and bearing on the commutator.

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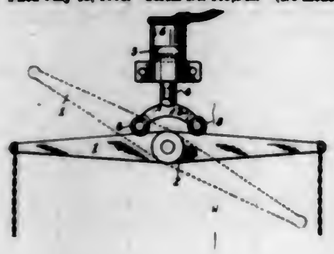
**755,733. MOTOR.** THOMAS BARROW, Plainfield, N. J., assignor to Pedrick and Ayer Company, Plainfield, N. J. Filed Jan. 6, 1903. Serial No. 138,191. (No model.)



*Claim.*—A motor, comprising a group of oscillating power-cylinders with connected power-transmitting devices mounted upon a stationary support all arranged within a surrounding and cooperating rotating frame, combined with means for transmitting the power to an operating-shaft and valve devices for regulating the motive fluid, as set forth.

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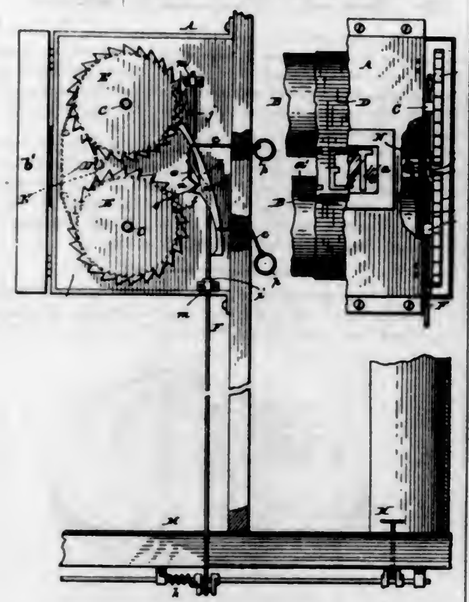
**755,734. VALVE-OPERATING MECHANISM.** THOMAS BARROW, Plainfield, N. J., assignor to Pedrick and Ayer Company, Plainfield, N. J. Filed July 13, 1903. Serial No. 165,942. (No model.)



*Claim.*—A valve-operating mechanism, comprising an oscillating lever connecting with means for operating the valve, in combination with a yoke engaging the lever on opposite sides of its pivotal point and a pneumatic pressure device for normally holding the yoke in a horizontal position and automatically restoring the same when released from a tilted position, as set forth.

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**755,735. STATION-INDICATOR.** ORLANDO H. BISSELL, Washington, D. C. Filed July 22, 1903. Serial No. 166,606. (No model.)



*Claim.*—1. In a station-indicating device, the combination of the revoluble rollers, ratchet-wheels secured to said rollers, a strip of flexible material having one end secured to one of said rollers and its other end secured to the other roller, a vertical movable rod, a pawl pivoted to said rod to operate said ratchet-wheels and means for operating said pawl from the platform of a car.

2. In a station-indicator, the combination of a pair of rollers arranged one above the other, flexible material bearing the names of the stations connecting said rollers and adapted to be wound from one roller to the other, ratchet-wheels secured to said rollers, a vertically-movable rod, a pawl pivoted to said rod for operating said ratchet-wheels, means for throwing the pawl into position to engage either of said rollers, and means for imparting movement to said rod to cause the pawl to operate said ratchet-wheels.

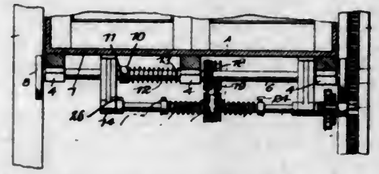
3. A station-indicator comprising a pair of rollers arranged one above the other, ratchet-wheels secured to said rollers, a strip of flexible material having marked thereon the names of the stations, connecting said rollers and adapted to be unwound from one roller onto the other, a vertically-movable rod, a pawl pivoted to said rod, means for adjusting said pawl to engage either of said rollers, a shaft connected to said rod, and a pin connected to said shaft for imparting a partial revolution thereto.

4. A station-indicator comprising a pair of rollers arranged one above the other, ratchet-wheels secured to said rollers, a strip of flexible material, bearing the names of the stations, connecting said rollers and adapted to be unwound from one roller and onto the other, friction guide-rollers for said flexible material, a pawl adapted to be adjusted for engagement with either of said rollers, a rod carrying said pawl, means for imparting a vertical movement to said rod, and means for retarding the revolution of said first-named rollers.

5. In a station-indicator, the combination of a pair of rollers, a strip of flexible material connecting said rollers and adapted to be wound off one roller onto the other, ratchet-wheels secured to said rollers, a pawl for operating said wheels, a rod for operating said pawl, means for adjusting said pawl to engage either of said ratchet-wheels, means for operating said rod, and means for retarding the movement of said rollers.

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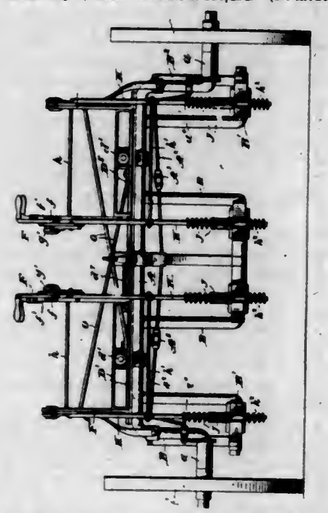
**755,736. SAFETY DEVICE FOR ELEVATORS.** FRANCIS BLANDING, Brockton, Mass. Filed Mar. 19, 1903. Serial No. 148,579. (No model.)



*Claim.*—The combination in an apparatus of the class described of gripper-shafts, gripper-cams rigidly associated with said shafts, springs associated with said gripper-shafts to hold the cams normally in inoperative position, an actuating-shaft, disks rigidly secured to the gripper-shafts, a disk loosely journaled on the actuating-shaft, spiral springs coiled on the actuating-shaft upon opposite sides of the disk and having one end of each attached to the disk, set-collars attached to the other ends of said springs, means for adjusting the position of said set-collars upon the actuating-shaft, flexible connections between the disk on the actuating-shaft and the disks on the gripper-shafts, and a clutch-controlled driving mechanism adapted to have traveling engagement with an elevator-guide, whereby motion may be imparted to said actuating-shaft when the speed of the elevator-car is abnormally accelerated.

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**755,737. WHEEL-CULTIVATOR.** FRANCIS L. BLOCK, Sidney, Ill. Filed May 9, 1903. Serial No. 156,424. (No model.)



*Claim.*—1. In a wheel-cultivator, the combination with a frame, of a guideway upon the frame, a tongue extending out from the frame, and pivoted intermediate its ends thereto, a roller at the rear end of the tongue slidable within the guideway, and means for adjusting the tongue.

2. In a wheel-cultivator, the combination with a frame, of a rearwardly-curved guideway thereon, a single tongue extending out from the frame at one side of the center thereof, a roller at the rear end of the tongue engaging the guideway, a draft-rigging arranged at one side of the tongue, and means for adjusting the tongue.

3. In a wheel-cultivator, the combination with an axle and a frame carried thereby, of two longitudinally-extending bars pivoted to the frame, rollers upon the bars arranged to travel upon rearwardly-curved bearings upon the frame, downwardly-extending supporting-bars located below the frame and secured to said pivoted bars, and means for adjusting the pivoted bars transversely of the frame.

4. In a wheel-cultivator the combination with an axle and a frame carried thereby, of two longitudinally-extended bars pivoted to the frame, rollers at the ends of the bars operatively associated with rearwardly-curved bearings upon the frame, downwardly-extended supporting-bars located below the frame and secured to said

pivoted bars, a pivotal connection between the pivoted bars, and means for adjusting the pivoted bars transversely of the frame.

5. In a wheel-cultivator the combination with an arched axle and a frame carried thereby, of pivoted bars mounted on the frame, guides on the frame for the rear ends of the pivoted bars, rollers upon the pivoted bars arranged to engage the guides for forming a connection between the rear ends of the pivoted bars, means for adjusting the pivoted bars transversely of the machine, and an arched supporting-bar connected to the pivoted bars.

6. In a wheel-cultivator, the combination with a frame, of a plow-beam, and means for elevating and lowering the plow-beam comprising a rocking lever pivoted to the frame, a variable-acting spring connected to one end of the rocking lever and movable toward and from the fulcrum of the lever, and a lifting-spring at the opposite end of the rocking lever.

7. In a wheel-cultivator, the combination with a frame, of a plow-beam, and means for elevating and lowering the plow-beam comprising a lever pivoted to the frame, a variable-acting adjustable spring movable toward and from the fulcrum of the lever, and a lifting-spring at the opposite end of the lever.

8. In a wheel-cultivator, the combination with a frame, of an upright upon the frame, a plow-beam, and means for elevating and lowering the same comprising a lever pivoted to the upright, a rocking lever pivoted to the upright and connected with said pivoted lever, a connection between the rocking lever and the plow-beam, and lifting-springs connected with the opposite ends of the rocking lever.

9. In a cultivator the combination with a frame, of uprights on the frame, rocking levers pivoted on the uprights, a connection between the rocking levers and the plow-beams, lifting-springs connected with the opposite ends of the rocking levers, and a hand-lever for actuating the rocking levers.

10. The combination with a frame and plow-beam, of an upright upon the frame having an outwardly-extending portion, links extending from the plow-beams, rocking levers pivoted intermediate their ends to the upright, to which the links are connected, lifting-springs for one end of the rocking levers connected to the outwardly-extending portion of the upright, movable connections between the rocking levers and the lifting-springs, whereby the said connections approach and recede from the fulcrum of the rocking levers during the movement thereof, supplemental lifting-springs at the opposite ends of the rocking levers, and a hand-lever for actuating the rocking levers.

11. The combination with a scraper, of a shank thereon having an outwardly-bent portion curved back upon itself to form a recess for the shank, a plate, adjustable connection between the curved portion of the plate and the shank, and an adjustable connection between the plate and the plow-beam.

12. In a cultivator the combination with a plow-beam and a double-U-shaped supporting-bar, of clips on the lower portions of the supporting-bar, clevises, means for angularly adjusting the clevises on the clips, and a connection between the clip and the plow-beam substantially as and for the purpose specified.

13. In a cultivator the combination with a plow-beam and a double-U-shaped supporting-bar, of clips on the lower portions of the supporting-bar, a clevis, means for angularly adjusting the clevis on the clip, and an adjustable connection between the clip and the plow-beam.

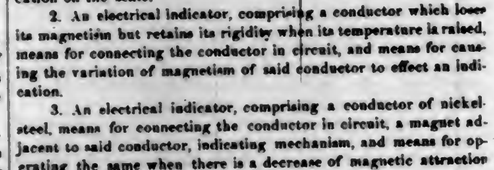
14. In a cultivator the combination with a beam of a cultivating implement adjustably secured thereon having a plate having an outwardly-bent portion curved back upon itself to form a recess for affording a shank, a pivotal connection between the plate and the shank, said connection being longitudinally adjustable, and an elongated slot in the plate and a bolt passing through said slot and beam substantially as described.

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**755,738. EXPANSION-COMB FOR WARPING, BEAMING, OR OTHER MACHINES. ALBERT R. BROOKS, Lowell, Mass., assignor to T. C. Entwistle Company, Portland, Me., a Corporation of Maine. Filed Aug. 31, 1903. Serial No. 171,340. (No model.)**

*Claim.*—1. The skeleton frame or open box comprising a top formed by two parallel strips arranged at an interval from each other, a bottom having parallel strips arranged at an interval from each other; a comb arranged in said box and having dents guided by said intervals, heads to which all said strips are secured and expanding means supported by said heads.

2. The skeleton frame or open box comprising a top formed by two parallel strips arranged at an interval from each other, a bottom having a guide-slot, said top and bottom being separated from each other, a comb arranged in said box and having dents guided by said slot, heads to which all said strips are secured and expanding means supported by said heads.

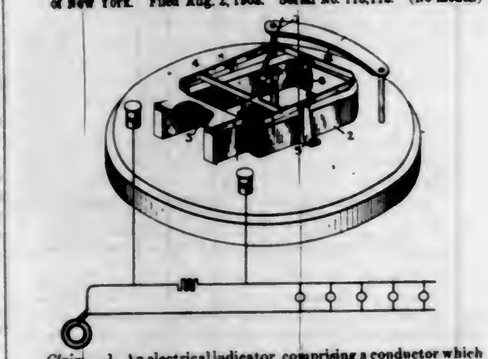


3. The combination of a comb-box, the comb, brackets secured to the ends of said comb-box, spindles rotary in said brackets, tapes or straps connecting the ends of said comb with said spindles, ratchets and hand-wheels rotary with said spindles, pawls to engage said ratchets and latches to prevent accidental disengagement of said pawls from said ratchets.

4. In an expansion-comb, the combination of a suitable frame or box, upper and lower springs, dents arranged parallel with each other in said springs, expanding means arranged midway between said upper and lower springs, and a stop-rod passing through holes with which said dents are provided, below said upper springs and in contact therewith to support said upper springs.

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**755,739. MAXIMUM-DEMAND INDICATOR. HARRY W. BROWN, Boston, Mass., assignor to General Electric Company, a Corporation of New York. Filed Aug. 2, 1902. Serial No. 118,112. (No model.)**



*Claim.*—1. An electrical indicator, comprising a conductor which is magnetic at low temperatures but non-magnetic at higher temperatures, means for connecting the conductor in circuit, a scale, and means for causing the variation of magnetism to effect an indication on the scale.

2. An electrical indicator, comprising a conductor which loses its magnetism but retains its rigidity when its temperature is raised, means for connecting the conductor in circuit, and means for causing the variation of magnetism of said conductor to effect an indication.

3. An electrical indicator, comprising a conductor of nickel-steel, means for connecting the conductor in circuit, a magnet adjacent to said conductor, indicating mechanism, and means for operating the same when there is a decrease of magnetic attraction between said conductor and magnet.

4. An electrical indicator, comprising a conductor of nickel-steel, means for connecting the conductor in circuit, a magnet adjacent to said conductor, means for permitting a relative movement of said conductor and magnet as the conductor becomes non-magnetic, and a pointer actuated by said movement.

5. A maximum-demand meter, comprising a conductor of nickel-steel, means for connecting the conductor in circuit, an indicator, means for moving the indicator as the magnetism of the conductor decreases, and means whereby an increase in the magnetism of the conductor does not affect the indicator.

6. An electrical indicator, comprising a conductor of nickel-steel, a permanent magnet having its poles adjacent to said conductor, a pivoted frame on which said conductor is mounted, and a pointer adapted to be actuated by said frame.

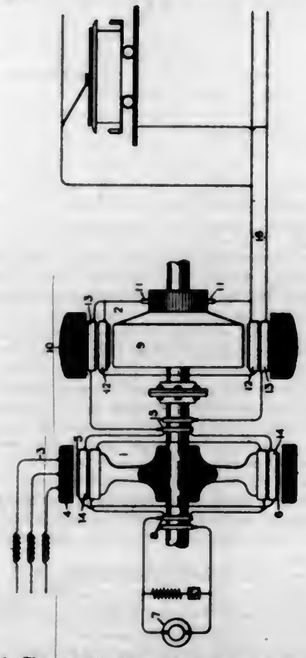
7. An electrical indicator, comprising a conductor of nickel-steel, a permanent magnet having its poles adjacent to said conductor, a pivoted frame on which said conductor is mounted, a pointer adapted to be actuated by said frame, and means for retaining said pointer in the position to which it is moved.



8. An electrical indicator, comprising a conductor of nickel-steel, a permanent magnet having its poles adjacent to said conductor, a pivoted frame on which said conductor is mounted, a pointer adapted to be actuated by said frame, a ratchet adjacent to said pointer, and a detent-pawl on said pointer engaging with said ratchet.

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**755,740. SYSTEM OF ELECTRICAL DISTRIBUTION. HAROLD W. BOCK, Niagara Falls, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 4, 1902. Serial No. 122,067. (No model.)**



*Claim.*—1. The combination with a motor-generator set for transferring energy between an alternating-current system and a direct-current system, said motor-generator set having a motor-winding and a generator-winding, of means for regulating the voltage on the alternating-current system in response to variation of load on the direct-current system.

2. The combination of a synchronous alternating-current motor, a direct-current generator coupled thereto, and means for varying the field excitation of said motor in response to variation of load on said generator.

3. The combination of a synchronous alternating-current motor, a direct-current generator driven thereby, translating devices fed by said generator, a winding on the field of said motor, and means for passing through said winding current flowing from said generator to said translating devices.

4. The combination of a synchronous alternating-current motor, a generator driven thereby, means for supplying a substantially constant excitation to the field of said motor, and means for superposing upon said excitation a supplemental excitation variable in response to variation of load on said generator.

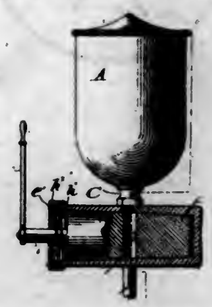
5. The combination of a synchronous alternating-current motor, a generator driven thereby, inductive supply-mains leading to said motor, and means for varying the excitation of said motor in response to variation of load on said generator, thereby producing a regulation of voltage in the alternating-current system.

6. The combination of an alternating-current motor of the synchronous type having an internal revolving field, a direct-current generator driven thereby, and means for passing current in series with the leads of said generator around a winding on the field of said motor.

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**755,741. LUBRICATING DEVICE. BENJAMIN F. CAMPBELL, Little Rock, Ark., assignor of one-half to John R. Coates, Little Rock, Ark. Filed Jan. 30, 1904. Serial No. 191,966. (No model.)**

*Claim.*—1. In a lubricating device, the combination of a reservoir or cup, a valve-casing connected thereto and provided with a tapering bore, a valve or plug conforming with the bore of the casing and having a lubricant-charging chamber extending therethrough, a pipe for the introduction of air or fluid pressure connected to one side of said casing, a second pipe for transmission of the charge of lubricant connected to the opposite side of said casing, means for holding the plug or valve with the lubricant-charging chamber in position to receive a supply of lubricant and devices for turning said plug or valve to shut off communication between the lubricant-charging chamber and reservoir or cup, and bring the said chamber into register with the said pipes to thereby forcibly discharge a definite supply of lubricant to the parts to be lubricated.




2. In a lubricating device, the combination of a reservoir or cup, a valve-casing connected thereto, and provided with a tapering bore, a valve or plug conforming with the bore of the casing and having a lubricant-charging chamber extending therethrough, a pipe connected to said casing for introducing a blast of air or other fluid, an oppositely-disposed pipe connected to said casing for transmitting the charge of lubricant, means for turning the valve or plug to bring the lubricant-charging chamber into register with said oppositely-disposed pipes, and a spring for returning the valve or plug to its original position when said means is released.

3. In a lubricating device, a lubricant reservoir or cup, a valve-casing connected thereto and having a tapering bore, a valve or plug fitting the bore of the casing and having a lubricant-charging chamber extending therethrough, means for positively turning said valve or plug in the casing and a spring disposed between one end of the casing and valve or plug and connected to said parts, said spring acting to force the valve lengthwise of the casing to form a proper joint between the valve and casing and to return the valve to its original position when the means for positively turning said valve or plug is released.

4. In a lubricating device, a reservoir or cup, a casing having a tapering bore connected thereto, a valve formed with a taper corresponding to the taper of the bore of the casing and provided with a lubricant-charging chamber extending therethrough, a pipe connected to said casing for introducing a blast of air or other fluid, an oppositely-disposed pipe connected to said casing for transmitting the charge of lubricant, a handle for positively turning said valve or plug to close connection between the reservoir or cup and the lubricant-charging chamber, and a spring disposed between one end of the casing and plug or valve to maintain a close joint between said parts, one end of the spring being connected to the valve and the other end to the casing to act by its torsional force to return the valve to its initial position when the handle is released.

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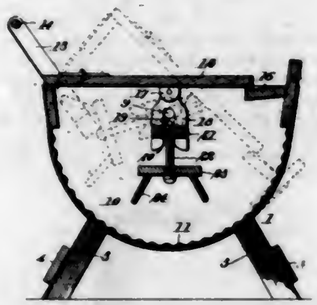
**755,742. WASHING-MACHINE. HENRY R. CARPENTER, Davenport, Iowa. Filed May 26, 1903. Serial No. 159,814. (No model.)**

*Claim.*—1. A washing-machine comprising a rocking body, an agitator connected to and movable with the body, and means located within the body for accelerating the movements of the agitator with relation to the movements of the body.

2. A washing-machine comprising a rocking body, an agitator pivotally connected with the body and mounted for oscillatory movement within the same, and means located within the body for swinging the agitator in the same direction with and at a greater rate of speed than the body.

3. A washing-machine comprising a body, an agitator pivotally hung from the top of the body and capable of a swinging movement therein, means located within the body for swinging the agitator simultaneously with the body and in the same direction therewith,

and for accelerating the movements of the agitator with relation to the movements of the body.



4. A washing-machine comprising a rocking body, trunnions on which the body is journaled, an agitator pivotally connected with the top of the body and capable of a swinging movement therein, and means carried by the trunnions for swinging the agitator in the same direction with and at a greater rate of speed than the body.

5. A washing-machine comprising a body, trunnions on which the body is journaled, an agitator mounted for oscillation within the body, and means located in the body connecting the body and the agitator for moving the agitator in the same direction with the body.

6. A washing-machine comprising a body, trunnions on which the body is journaled, an agitator mounted for oscillation within the body, means located in the body connecting the body and the agitator for moving the agitator in the same direction with the body, and at a greater rate of speed than the body.

7. In a washing-machine, the combination with a frame having trunnions fixed therein, of a body journaled on the trunnions and mounted for oscillation within the frame, an agitator pivotally connected with the top of the body and having an engagement within the body with the trunnions for moving the agitator in the same direction with the body at each oscillation thereof.

8. In a washing-machine, the combination with a frame having trunnions fixed therein, a body journaled on the trunnions and adapted to rock thereon, an agitator pivotally connected to the top of the body and mounted for oscillation therein and having a connection within the body with the trunnions at a point above the journal for the body, whereby the agitator is swung in the same direction with and at a greater speed than the body.

9. In a washing-machine, the combination with a frame having trunnions fixed therein, said trunnions having a vertically-offset portion provided with a lug, a body journaled on the trunnions and mounted for oscillation within the frame, an agitator pivotally connected with the top of the body and engaged with the lug of the trunnions whereby the agitator will move in the same direction with and at a greater speed than the body upon the oscillation of the latter.

10. A washing-machine provided with a rocking body, trunnions on which the body is journaled, hangers pivotally connected with the top of the body, an agitator supported by the hangers, and means on the trunnions to be engaged by the hangers for moving the agitator in the same direction with the body and accelerating its movement with relation thereto.

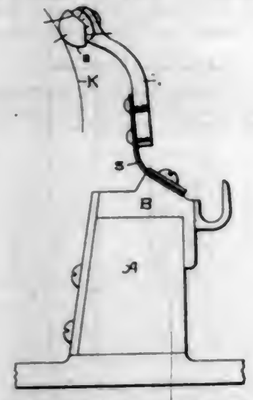
11. In a washing-machine, the combination with a frame, of trunnions fixed in said frame and having an upwardly-disposed extension at one end provided with a lug, a body journaled on the trunnions between the frame and the extension, bifurcated hangers pivotally connected with the top of the body and engaging the lug, a block connecting the hangers, a stem depending from the block, and an agitator loosely mounted upon the stem.

12. In a washing-machine, the combination with a frame, and a body mounted for oscillation within said frame, of trunnions for the body, and an agitator pivotally connected with the body and having a sliding pivotal engagement with the trunnions, as and for the purpose set forth.

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**755,743. REMOVABLE CONTACT-FINGER TIP. FRANK R. CASE, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed July 9, 1902. Serial No. 114,873. (No model.)**

*Claim.*—1. The combination with a contact-finger recessed at one end and having a hole extending therethrough, of a removable contact-tip having a projection engaging said recess, and a rivet portion extending through said hole so as to fasten said tip rigidly to said finger.



2. The combination with a contact-finger tip having a contact-face and a wedge-shaped projection opposite said contact-face, of a contact-finger having a hole therethrough and a wedge-shaped recess extending across said finger at right angles to the axis of said hole, and means for securing the tip to the finger, the said means being adapted to cooperate with said projection in such manner as to prevent relative movement of said tip and finger and to allow the strain on said tip when the latter is in engagement with a moving contact-surface to be taken up by one of the side walls of said recess.

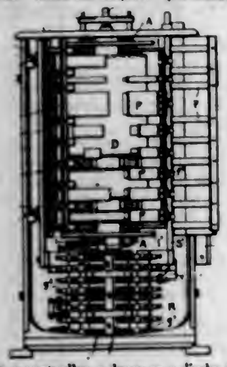
3. The combination with a contact-finger tip having a contact-face and a wedge-shaped projection opposite said contact-face and also a rivet portion extending from said projection, of a contact-finger having a wedge-shaped recess extending across said finger in a direction at right angles to the direction of movement of the contact-surface with which the contact-face of said tip is adapted to engage and also having a hole extending therethrough for receiving said rivet portion.

4. As an article of manufacture, a contact-finger tip having a curved contact-face, a wedge-shaped projection opposite said face, and a rivet portion formed integral with said tip and extending at right angles from said projection.

5. As an article of manufacture, a contact-finger having upon one side a wedge-shaped recess extending across said finger adapted to receive a removable tip, and a hole extending from said recess to the opposite side of said finger and at right angles to said recess.

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**755,744. CONTROLLER. FRANK R. CASE, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Oct. 1, 1902. Serial No. 125,575. (No model.)**



*Claim.*—1. In a controller, a drum or cylinder having a plurality of projecting contact-segments on its periphery, a single magnet-core contiguous to said drum having a plurality of projections or lugs which extend between and are adapted to embrace said segments, a single coil for magnetizing said core, and contact-fingers adapted to engage said segments in the path of the fluxes produced in said core by said magnetizing-coil.



2. In a controller, a drum of magnetic material provided with a plurality of projecting contact-segments, a magnetic core arranged adjacent to said drum and provided with a plurality of lugs projecting between said contact-segments into proximity with said drum, a coil for magnetizing said core to produce a magnetic flux which passes through said drum, and a row of contact-fingers located in the path of the magnetic flux produced by said core and adapted to engage said contact-segments.

3. In a controller, a drum of magnetic material, a magnet-core arranged adjacent to said drum, a single coil for magnetizing said core to produce a magnetic flux which passes through said drum, and a plurality of rows of contact-fingers adapted to engage with the contacts on said drum, said fingers being arranged in the path of the magnetic flux produced in said core.

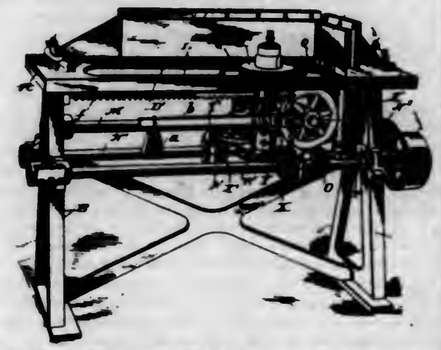
4. In a controller, a rotatable drum or cylinder of magnetic material, a fixed magnet-core arranged adjacent to said drum, means for magnetizing said core, and a row of contact-fingers arranged on each side of said core in the path of the magnetic flux produced in said core, said fingers being adapted to engage with the contact-segments on the periphery of said drum.

5. In a controller, a drum having projecting segments on its periphery, a magnetic core having projecting lugs arranged adjacent to said drum, the said lugs lying between the projecting segments of said drum or cylinder, means for magnetizing said core, and a row of contact-fingers arranged on each side of said core in the path of the magnetic flux produced in said core, said fingers being adapted to engage with the contact-segments on the periphery of said drum.

6. In a controller, a drum having projecting segments on its periphery, a magnetic core having projecting lugs arranged adjacent to said drum, the said lugs lying between the projecting segments of said drum or cylinder, means for magnetizing said core, a row of contact-fingers arranged on each side of said core in the path of the magnetic flux produced in said core, said fingers being adapted to engage with the contact-segments of the periphery of said drum, and an insulating-covering for said core and projecting lugs.

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**755,745. LUMBER-FEEDING MACHINE. CHARLES R. CLEVELAND, Fond du Lac, Wis. Filed Dec. 26, 1903. Serial No. 186,577. (No model.)**



*Claim.*—1. In a machine for feeding lumber, the combination of two alining feed-rolls; a second pair of feed-rolls, movable toward and from said first pair, the distance between the first or initial feed-roll of said movable pair and its companion roll being greater than that between the remaining rolls; and means controllable by the second or final feed-roll for periodically separating and thereby rendering the initial feed-roll and its companion roll inoperative.

2. In a machine for feeding lumber, the combination of a pair of rolls arranged to grasp and feed a piece of lumber; a second pair of feed-rolls arranged to receive said lumber; and means for releasing the grip of the first pair of rolls as the second pair comes into action.

3. In a machine for feeding lumber, the combination of a pair of rolls arranged to grasp and feed a piece of lumber; a second pair of feed-rolls arranged to receive said lumber; and means automatically operated by said second pair of rolls for releasing the grip of the first pair as said second pair comes into action.

4. In a machine for feeding lumber, the combination of a pair of rolls arranged to grasp and feed a piece of lumber; a second pair of feed-rolls movable toward said first pair and arranged to receive said piece of lumber; means automatically operated by said second pair of rolls for releasing the grip of the first pair as said second pair comes into action; and means tending normally to hold said rolls in their closest relation.

5. In a machine for feeding lumber, the combination of a bed; a hopper carried thereby; a pair of feed-rolls located adjacent to the hopper and arranged to withdraw the stock therefrom; a second pair of feed-rolls located in rear of the hopper and in line with the stock advanced by the first pair of feed-rolls; and means for automatically throwing the initial feed-rolls into and out of action.

6. In a machine for feeding lumber, the combination of a primary feeding mechanism; a final feeding mechanism; and connections intermediate said mechanisms for automatically throwing the primary mechanism out of action as the final mechanism takes hold of the stock.

7. In a machine for feeding lumber, the combination of a primary feeding mechanism; a final feeding mechanism; and connections intermediate said mechanisms automatically throwing the primary mechanism out of action as the final mechanism takes hold of the stock, and returning said primary mechanism to its operative position when the stock is discharged from the final feeding mechanism.

8. In a machine for feeding lumber, the combination of a bed; a hopper mounted thereon; a pair of feed-rolls located in line with one side of said hopper; a second pair of feed-rolls, said second pair of rolls being out of alinement with each other; a carriage for supporting said second pair of feed-rolls, said carriage being mounted upon suitable guides or ways; and means for normally holding the carriage and feed-rolls supported thereby up to the work.

9. In a machine for feeding lumber, the combination of a bed; a hopper mounted thereon; a pair of feed-rolls located in line with one side of the hopper; a carriage slidably mounted beneath the bed; a pair of feed-rolls supported by said carriage, the rolls being out of alinement with each other, substantially as described; and means for holding the carriage and feed-rolls supported thereby up to the work.

10. In a machine for feeding lumber, the combination of a bed; a hopper mounted thereon; a pair of feed-rolls in approximate alinement with one side of said hopper; a carriage slidably mounted beneath the bed; a pair of feed-rolls supported by said carriage, said rolls being out of alinement with each other; means for securing an initial adjustment of the carriage; and means for yieldingly holding the carriage up to its work.

11. In a machine for feeding lumber, the combination of a bed; a hopper mounted thereon; a pair of feed-rolls in approximate alinement with one side of said hopper; a carriage slidably mounted beneath the bed; a pair of feed-rolls supported by said carriage, the rolls being slightly out of alinement with each other, substantially as described; a rack; a pinion mounted upon the carriage and meshing with the rack; a shaft upon which said pinion is mounted; a weighted lever connected to the shaft; and a stop for limiting the descent of the lever.

12. In a machine for feeding lumber, the combination of a bed; a hopper mounted thereon; a pair of feed-rolls in approximate alinement with one side of said hopper; a carriage; ways for supporting said carriage beneath the bed; a pair of feed-rolls supported by said carriage; a rack mounted beneath the bed; a shaft on said carriage; a pinion carried by the shaft and meshing with the rack; a hand-wheel secured upon the outer end of said shaft; a lever fulcrumed upon the shaft; means for connecting said lever to the hand-wheel; and a stop to prevent the lever from descending below a predetermined point.

13. In a machine for feeding lumber, the combination of a bed; suitable supports therefor; shafts L and M extending beneath the bed intermediate said supports; a frame K mounted upon said shafts; a pair of vertically-disposed shafts mounted in said frame; a feed-roll mounted upon the upper end of each of said shafts; power-shafts extending beneath the frame in line with said vertically-disposed shafts; gearing intermediate said power-shafts and the vertical shafts; a carriage slidably mounted upon the shafts L and M; a pair of vertically-disposed shafts supported by said carriage, said shafts being slightly offset or out of alinement, substantially as described; a feed-roll carried by each of said shafts; gearing intermediate said shafts and the power-shafts; a rack secured beneath the bed; a horizontally-disposed shaft mounted upon the carriage; a pinion carried by said shaft and meshing with the rack; a hand-wheel secured to the outer end of the horizontal shaft; a weighted lever fulcrumed upon said shaft; means for securing the shaft to the hand-wheel; and a stop for the lever.

14. In a machine for feeding lumber, the combination of a bed; a hopper comprising a fixed side and a vertically-adjustable side; a

pair of feed-rolls approximately in alinement with said fixed side; a second pair of feed-rolls movable toward and from said first-mentioned feed-rolls; means for holding said rolls up to their work; and means for permitting adjustment of the initial feed-roll of said last-mentioned pair.

15. In a machine for feeding lumber, the combination of a bed; a hopper comprising a vertically-adjustable member E, and a member F fixed to the bed and provided with an undercut portion, substantially as described; a pair of feed-rolls in approximate alinement with said member F, the edge of the first of said rolls projecting slightly beyond the outer face of said undercut portion; a second pair of feed-rolls movable toward and from said first-mentioned rolls; means for holding said second pair of rolls up to the work; and means for adjusting the initial roll of said second pair vertically with relation to the bed, substantially as described.

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**755,746. COMPUTING-YARDSTICK.** WILLIAM S. COSBURN, Paris, Tex. Filed Mar. 12, 1903. Serial No. 147,474. (No model.)



*Claim.*—1. A folding computing scale-board, consisting of an inner section provided upon its upper side or face with suitable calculating indicia, and an outer section hinged to said inner section and adapted to be folded upon the same, said outer section having coöperating calculating indicia on both sides thereof, substantially as and for the purpose set forth.

2. A folding computing scale-board consisting of an inner section, and an outer section hinged to said inner section and adapted to be folded upon the same, a vertical column of spaces containing figures representing the price per yard of goods, a horizontal line of spaces containing figures representing amounts of goods in money values, and horizontal lines of spaces containing figures representing amounts of goods in inches, arranged upon the upper side of said inner fixed section, and similarly-arranged lines and columns of figures arranged upon both sides of said outer foldable section, substantially as and for the purpose described.

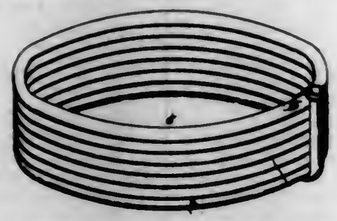
3. A folding computing scale-board having horizontal lines and vertical columns or spaces containing figures representing amounts of goods and prices per yard and fractions of a yard of the same, said spaces being formed by parallel grooves formed upon the surface of said boards and colored alternately in different colors, substantially as and for the purpose described.

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**755,747. BATH-TUB.** HENRY P. COLE, Knoxville, Tenn. Filed Apr. 4, 1903. Serial No. 151,101. (No model.)

*Claim.*—1. A bath-tub the side walls of which comprise a series of inflatable tubes extending around the tub.

2. A bath-tub the side walls of which comprise a series of superposed inflatable tubes.



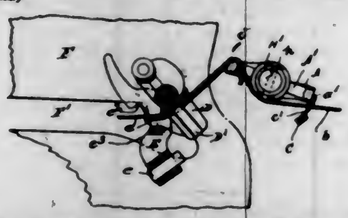
3. A bath-tub having collapsible side walls containing a series of inflatable tubes extending horizontally around the tub.

4. A bath-tub the side wall of which consists of a series of superposed endless inflatable tubes.

5. In a bath-tub, the combination with a flexible bottom, of a side wall joined to the outer edge thereof, consisting of a series of superposed endless inflatable tubes.

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**755,748. GRAIN-BINDER.** CHARLES COLAHAN, Chicago, Ill. Filed Oct. 21, 1902. Renewed Jan. 2, 1904. Serial No. 187,543. (No model.)



*Claim.*—1. The combination with the knotter with its jaws normally trending outward in the direction of the discharge of the bundle, the needle-arm, the rotary cord-holder provided with two oppositely-extending arms, devices coöperating with said arms for alternately seizing the cord from the needle by one arm and simultaneously releasing the tied end by the other arm and means for actuating said arms and devices substantially as shown and described.

2. The combination with the knotter with its jaws normally trending outward in the direction of the discharge of the bundle, of a cord supporting and stripping arm having its cord-supporting face over the breastplate-slot in advance of the grainward side of the knotter-jaws, and an oblique pivot for said arm upon which it swings in a plane parallel with the plane of the outwardly-trending jaws and their shaft substantially as and for the purposes specified.

3. The combination to form a cord-holder for grain-binders, of a revolving shaft, two oppositely-extending fixed bars rigidly secured to the foot thereof, upturned at their outer ends and having clamping-faces on top of said upturned ends, overlying counterpart arms having a transverse pivotal connection with the shaft on which they may be rocked in a plane parallel with the shaft, and carrying jaws at their outer ends to coact with the jaws on said bars, and means for alternately raising and depressing said arms substantially as shown.

4. The combination to form a cord-holder for grain-binders, of a revolving shaft, two oppositely-extending bars rigidly secured to the foot thereof having upturned ends and bearing fixed clamping-jaws at the top thereof, a hub pivoted to said shaft, arms rigid with and partaking of the rocking movement of said hub over the fixed bars and bearing counterpart clamping-jaws at their ends, and means for rocking the hub as the shaft revolves, to depress one of the arms to clamp the new cord and simultaneously raise the other arm to release the old end of the cord.

5. The combination to form a cord-holder for grain-binders, of a revolving shaft, two oppositely-extending bars rigidly secured to the foot thereof having upturned ends and bearing fixed clamping-jaws at the top thereof, a hub pivoted to said shaft, arms secured to the hub, projecting over and corresponding in contour with the opposing contour of the lower fixed arms thereobeneath, and having upstanding lugs and overhanging counterpart jaws and means for rocking the hub as the shaft revolves substantially as shown and described.

6. The combination, to form a cord-holder for grain-binders of a revolving shaft, two oppositely-extending bars rigidly secured to the foot thereof having upturned outer ends, and having clamping-jaws thereon, a hub pivotally secured to said shaft on a central transverse axis above said bars, cams formed upon the hub extending thereabout from one end of the pivot-pin to the other on both sides of the axis thereof, arms extending from the hub at right angles to said pivot-pin over the fixed bars and having jaws at their outer ends to coact with the jaws upon said bars, and a pressure-finger adjustably secured to the frame to act upon said cams.



7. The combination of a binder-arm with a revoluble cord-holder having a rotary shaft, a bar fixed thereto, and having an upwardly-turned end with a clamping-surface at the top thereof, an arm pivoted to the shaft by a transverse pivot above said bar and partaking of the opposing contour of the latter, with upstanding lug at its outer end forming an abutment for the cord, an overhanging jaw carried by said lug, means for oscillating said pivoted arm to grasp the cord, and means for operating said parts whereby the binder-arm in its retreat lays the cord strand just grasped, inside of said upstanding lug, whereby said strand is wrapped around the lug in the continued revolution of the holder.

8. The combination with the knotter revolving on its axis and normally resting with its jaws trending outwardly in the direction of discharge of the bundle, of the slotted breastplate, the arm E, vibrating upon oblique pivot $e$ and arranged between the breastplate and knotter and having its extended cord-supporting face $e'$ parallel with and slightly in advance of the grainward side of the knotter-jaws, and a shoulder $e^3$ extending over the cord-slot to support and prevent the escape of the cord substantially as shown and described.

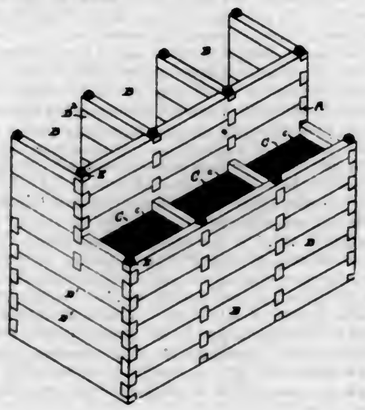
9. The combination with the holder-shaft, its oppositely-projecting fixed clamping-arms, the overlying clamping-arms oscillating on a pivot transverse to the shaft, and means for actuating the oscillating arms, of the curved cord-guide, the cord-stop, the knife opposite said cord-stop, the knotter, and the needle-arm arranged to lay the cord over said guide.

10. In a grain-binder having an open slotted breastplate in combination with the knotter normally resting on one side thereof, with its jaws trending outwardly in the direction of the discharge of the bundle, the arm E vibrating on oblique pivot $e$ on the opposite side of said slot, and having its cord-supporting extended face $e'$ parallel with and slightly in advance of the grainward side of the knotter, and with a shoulder $e^3$ trending across the slot to prevent the escape of the cord as it is being grasped by the knotter-jaws, and the stripping-hook $e^3$ at the opposite end to hold the crossed bundle strands up at the side of the knotter as it strips the loop therefrom substantially as shown and described.

11. In a grain-binder having an open slotted breastplate in combination with a knotter, the arm E pivoted to the knotter-frame above said slot and having its cord-supporting extended face $e'$ trending across the slot parallel with and in advance of the side of the knotter and provided with a shoulder $e^3$ extending over the slot, thus maintaining the cord at the side of the knotter and preventing its escape as it is being grasped by the knotter-jaws, and the stripping-hook $e^3$, substantially as and for the purposes described.

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**755,749. JIG-TANK.** GEORGE T. COOLEY, Oronogo, Mo., assignor of one-half to Guy H. Elmore, Joplin, Mo. Filed Dec. 19, 1901. Serial No. 86,551. (No model.)



*Claim.*—1. A jig-tank constructed of separate side timbers, having interlocking tongues to form the corner-joints, said tongues being beveled in the planes of the meeting sides, and held together by draw-bolts passing through the tongues, substantially as specified.

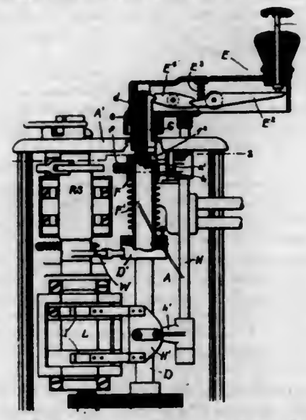
2. A jig-tank constructed of separate side timbers, having interlocking tongues to form the corner-joints, said tongues having one of their interlocking surfaces beveled in the planes of one of the meeting sides and the other surface beveled in the planes of the other meeting side, and held together by draw-bolts passing through the tongues, substantially as specified.

3. A jig-tank composed of planks laid one above the other, and having the seams between the planks packed by two longitudinal packing-strips having a dead-water space between them, substantially as specified.

4. A tank having dovetailed corner-joints with the engaging surfaces of the members beveled in the planes of the two meeting sides of the vessel, and its seams packed by two longitudinal packing-strips having a space between them, substantially as specified.

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**755,750. EMERGENCY-BRAKE.** FRED B. COREY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed July 16, 1903. Serial No. 165,718. (No model.)



*Claim.*—1. In combination, a brake actuated by fluid-pressure, a motorman's valve for controlling the operation of said brake, a motor-controller, an emergency-valve for applying said brake, means for operating said emergency-valve to cause the brake to be applied when the controller-handle is released by the operator, and means for preventing said motorman's valve from being left in such a position as to render the operation of the emergency-valve ineffective to apply the brake.

2. The combination with an air-brake system, of a motorman's valve for controlling the operation of the brakes, an emergency-valve operatively connected to the air-brake system, means for operating said emergency-valve to cause the brakes to be applied when the operator becomes incapacitated, and means for moving the motorman's valve automatically from a position in which the operation of the emergency-valve is rendered ineffective into a position which does not prevent the brakes from being applied by the emergency-valve.

3. In combination, a motorman's valve for an air-brake system constructed and arranged to connect the train-pipe to main reservoir through wide and restricted passages for certain positions of said valve and to atmosphere through wide and restricted passages for other positions of said valve, an emergency-valve operatively connected to the air-brake system, means for operating said emergency-valve to cause the brakes to be applied when the operator becomes incapacitated, and means for moving the motorman's valve automatically from a position in which the operation of the emergency-valve is rendered ineffective into a position which does not prevent the brakes from being applied by the emergency-valve.

4. In combination, a motorman's valve for an air-brake system constructed and arranged to connect the train-pipe to main reservoir through wide and restricted passages for certain positions of said valve and to atmosphere through wide and restricted passages for other positions of said valve, a motor-controller, an emergency-valve operatively connected to the air-brake system, means operatively connected to the motor-controller for actuating said emer-

gency-valve to cause the brakes to be applied when the operator becomes incapacitated, and means for moving the motorman's valve automatically from a position in which the operation of the emergency-valve is rendered ineffective into a position in which the emergency-valve operates effectively to cause the brakes to be applied.

5. In combination, a motorman's valve for an air-brake system constructed and arranged to connect the train-pipe to main reservoir through wide and restricted passages for certain positions of said valve and to atmosphere through wide and restricted passages for other positions of said valve, a controlling-handle, an emergency-valve operatively connected to the air-brake system, means operatively connected to said handle for actuating said emergency-valve when the controlling-handle is released by the operator, and means for moving the motorman's valve automatically from a position in which the operation of the emergency-valve is rendered ineffective to apply the brakes into a position which does not prevent the effective operation of the emergency-valve.

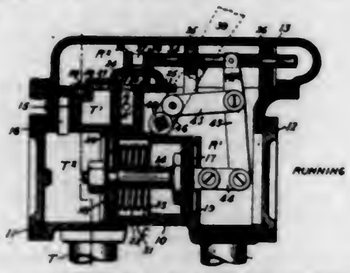
6. In combination, a motorman's valve for an air-brake system constructed and arranged to connect the train-pipe to main reservoir through wide and restricted passages for certain positions of said valve and to atmosphere through wide and restricted passages for other positions of said valve, a motor-controller, an emergency-valve operatively connected to the air-brake system, means operatively connected to the motor-controller for opening the motor-circuit and for actuating said emergency-valve to cause the brakes to be applied when the operator becomes incapacitated, and means for moving the motorman's valve automatically from a position in which the operation of the emergency-valve is rendered ineffective into a position in which the operation of the emergency-valve will cause the brakes to be applied.

7. In combination, a motorman's valve for an air-brake system constructed and arranged to connect the train-pipe to main reservoir through wide and restricted passages for certain positions of said valve and to atmosphere through wide and restricted passages for other positions of said valve, a motor or motors, a motor-controller therefor, a controlling-handle, an emergency-valve, means for opening the motor-circuit and for operating said emergency-valve when the handle is released by the operator, and means for moving the motorman's valve automatically from a position in which the operation of the emergency-valve is rendered ineffective into such a position that the brakes may be applied when the emergency-valve is operated.

8. In combination, a motorman's valve for a "straight" air-brake system, means for returning said valve automatically to the "running" position when the operating means for said valve is released by the operator in the "quick-release" position or in any intermediate position between said "quick-release" and "running" positions, a motor-controller, an emergency-valve operatively connected to said air-brake system, and means for operating said emergency-valve to cause the brakes to be applied when the operating means for said controller is released by the operator.

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**755,751. MOTORMAN'S OR ENGINEER'S VALVE.** FRED R. COREY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Aug. 13, 1903. Serial No. 169,352. (No model.)




*Claim.*—1. In a regulating-valve for air-brake systems, the combination of a valve for controlling the passage of air to and from the train-pipe, manually-operated means having a positive and unyielding connection with said valve for initially moving it to supply compressed air to the train-pipe, and pneumatically-operated means connected to said valve and responsive to the resulting increased train-pipe pressure to move said valve to cut off said supply.

2. In a regulating-valve for air-brake systems, the combination of a slide-valve for controlling the passage of air to and from the train-pipe, manually-operated means having a positive and unyielding connection with said valve for initially moving it to supply compressed air to the train-pipe, and pneumatically-operated means responsive to the resulting increased train-pipe pressure to move said valve to cut off said supply.

3. A regulating-valve for air-brake systems, comprising a casing provided with main-reservoir, train-pipe and exhaust ports and connections, a valve for controlling communication between said ports, a lever pivoted to said casing and having a positive and unyielding connection with said valve and operable to move the valve to establish communication between said main-reservoir and train-pipe ports, and a movable member connected to said valve and subjected to train-pipe pressure and movable upon an increase of such pressure to move said valve to cut off said communication between the main-reservoir and train-pipe ports.

4. In a regulating-valve for air-brake systems, the combination of a valve for controlling the passage of air to and from the train-pipe, manually-operated means having a positive and unyielding connection with said valve for initially moving it to permit the air to escape from said train-pipe, and pneumatically-operated means responsive to the resulting decreased train-pipe pressure to move said valve to cut off said escape.

5. A regulating-valve for air-brake systems, comprising a casing provided with main-reservoir, train-pipe and exhaust ports and connections, a valve for controlling communication between said ports, a lever pivoted to said casing and having a positive and unyielding connection with said valve and operable to move the valve to establish communication between said train-pipe and exhaust ports, and a movable member connected to said valve and subjected to train-pipe pressure and movable upon a decrease of such pressure to move said valve to cut off said communication between the train-pipe and exhaust ports.

6. In a regulating-valve for air-brake systems, the combination of a valve for controlling the passage of air to and from the train-pipe, manually-operated means having a positive and unyielding connection with said valve for initially moving it, in one braking operation, to a position to admit compressed air to the train-pipe and in the other braking operation to a position to permit the escape of air from the train-pipe, and pneumatically-operated means responsive to the resulting increase or decrease of train-pipe pressure to move said valve to cut off said supply or exhaust respectively.

7. A regulating-valve for air-brake systems, comprising a casing provided with main-reservoir, train-pipe and exhaust ports and connections, a valve for controlling communication between said ports, a lever pivoted to said casing and having a positive and unyielding connection with said valve and operable to move the valve, in one braking operation, to establish communication between said main-reservoir and train-pipe ports and in another braking operation to establish communication between said train-pipe and exhaust ports, and a movable member connected to said valve and subjected to train-pipe pressure and operable upon an increase in such pressure to move said valve to cut off the communication between said main-reservoir and train-pipe ports and operable upon a decrease of such pressure to cut off the communication between said train-pipe and exhaust ports.

8. A regulating-valve for air-brake systems, comprising a casing provided with main-reservoir, train-pipe and exhaust ports and connections, a valve for controlling communication between said ports and thereby the passage of air to and from the train-pipe, a piston, a controlling-lever pivoted to said casing, a connecting-lever connected at one point to said piston, at another to said valve and at another to said controlling-lever, said controlling-lever being operable to move said connecting-lever about its connection with said piston to move said valve and said piston being operable upon changes in train-pipe pressure to move said connecting-lever about its connection with said controlling-lever also to move said valve.

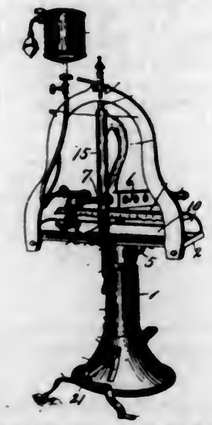
9. A regulating-valve for air-brake systems, comprising a casing provided with main-reservoir, train-pipe and exhaust ports and connections, a valve for controlling communication between said ports and thereby the passage of air to and from the train-pipe, a piston subjected to opposing train-pipe and main-reservoir pressures, a controlling-lever pivoted to said casing, a connecting-lever connected at one point to said piston, at another to said valve and at another to said controlling-lever, said controlling-lever being operable to move said connecting-lever about its connection with said piston to move said valve to establish a communication whereby the train-pipe pressure will be changed and the piston thereby operated to move said connecting-link about its connection with said controlling-lever to move said valve to cut off said communication.

10. A regulating-valve for air-brake systems, comprising a casing provided with main-reservoir, train-pipe and exhaust ports and connections, a valve for controlling communication between said ports and thereby the passage of air to and from the train-pipe, means having a positive and unyielding connection with said valve for setting it in advance for any desired train-pipe pressure whereby the necessary communication is established between said ports to charge or exhaust the train-pipe as may be required, and means for automatically cutting off said communication when the predetermined pressure has been reached.



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**755,752. IRONING-MACHINE.** ROSARIO D'ANGELO, Oswego, N. Y. Filed Nov. 24, 1902. Serial No. 132,620. (No model.)



*Claim.*—1. In an ironing-machine of the character described, the combination of a main support therefor, a bed mounted upon said support, a bracket extending above the support, with an axially-movable rock-shaft mounted in said bracket and bed, a sleeve movable with the shaft rigidly secured thereto, with a burnishing-iron mounted on the sleeve, a spring surrounding the shaft and engaging the bed and the lower end of the sleeve to normally retain the said sleeve in its upper position, said shaft extending through said bed, with means connected thereto to pull said shaft downwardly against the spring whereby said sleeve and burnishing-iron are lowered, said bracket supporting the fuel-supply, and a handle for manipulating said iron connected to the sleeve and to the iron.

2. In an ironing-machine of the type set forth, the combination with a main support therefor, and a bed mounted on the support, of a bracket secured by its ends to said bed and extending for a distance thereabove, a vertically-movable shaft journaled in the front face of the bracket, a rearwardly-projecting bearing secured to the bed engaging the other end of said shaft, a sleeve rigidly secured to the shaft with a burnishing-iron secured to the sleeve, a spring surrounding the shaft and interposed between the bed and the said sleeve of the shaft, the lower end of said shaft projecting below the bed, and means for depressing said shaft whereby the burnishing-iron may be lowered, the fuel-supply being supported on the rear face of the bracket at the upper end thereof, and a handle for manipulating said iron connected to the sleeve and to the iron.

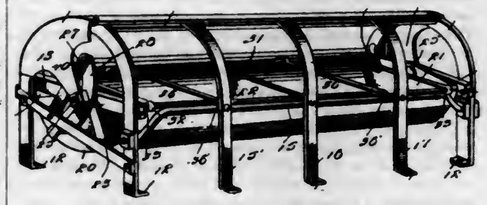
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**755,758. HOG-TROUGH.** JOHN C. DAVIS, Carwile, Okla. Filed Oct. 29, 1903. Serial No. 179,026. (No model.)

*Claim.*—1. A hog-trough comprising a supporting-frame, a feeding-pan mounted in the frame and movable to dump its contents, a dividing-rack disposed above the pan and connections between the rack and pan for moving the rack away from the pan when the latter is moved into dumping position.

2. A hog-trough comprising a supporting-frame, a feeding-pan pivoted in the frame and movable into and out of dumping position, a dividing-rack pivoted to the side of the pan which is uppermost when the pan is in tilted position, and guides with which the rack is engaged, said guides being disposed to direct the free edge of the rack away from the pan when the latter is tilted.

3. A hog-trough comprising a pan, and a supporting-frame for the pan comprising dividing means at the edge of the pan arranged to permit of access of hogs between them to the pan, said pan being movable in the frame into and out of dumping position and arranged to close the interspaces between the dividing means when in dumping position.

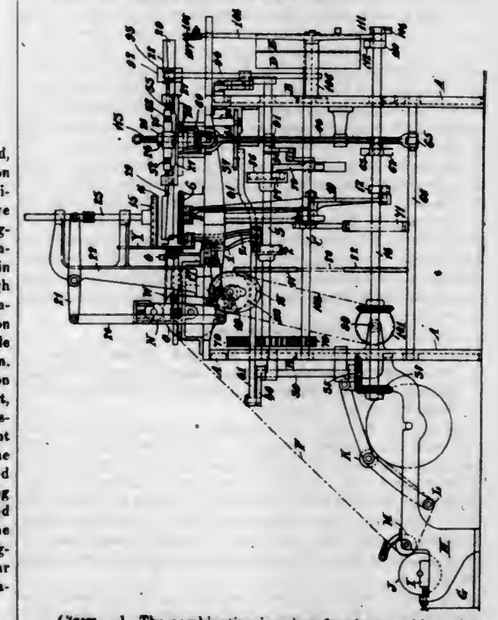


4. A hog-trough comprising a pan and a supporting-frame for the pan, said pan being movable in the frame into and out of dumping position and arranged to close the frame at the feeding side thereof when in dumping position, and means at the opposite side of the frame from the feeding side, for shifting the pan

5. A hog-trough comprising a frame, hangers pivoted in the frame, a pan having its ends engaged in the hanger, a rack pivotally connected with one edge of the pan and movable into and out of position with the opposite edge of the pan as the pan is tilted and means for tilting the pan.

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**755,754. MACHINERY FOR FORMING OR MAKING PAPER BAGS.** CHARLES H. DAY and ALBERT DAY, Leeds, England. Filed Nov. 1, 1902. Serial No. 129,770. (No model.)



*Claim.*—1. The combination in a bag-forming machine of the radiating arms with a "bag-former" made in two parts sliding one upon the other, and mounted upon each of said arms, a rod connected to the sliding portion of the "former," a runner mounted upon said rod, a cam against which the runner presses, a vertical shaft upon which the cam is fixed, a skeleton ratchet constructed as described fixed to the under side of the radiating arms, a pawl upon a plate, and a brake-spring arranged to act upon the upper surface thereof, all substantially as set forth.

2. The combination in a bag-forming machine of the radiating arms with a "bag-former" made in two parts sliding one upon the other, and mounted upon each of said arms, a rod connected to the sliding portion of the "former," a runner mounted upon said rod, a cam against which the runner presses, a vertical shaft upon which the cam is fixed, a skeleton ratchet constructed as described fixed to the under side of the radiating arms, a pawl upon a plate, a brake-

spring arranged to act upon the upper surface thereof, a stop and the means described for operating the same, all substantially as set forth.

3. The combination in a bag-forming machine of framework having a vertical shaft mounted thereon, with radiating arms mounted upon said shaft, a "bag-former" made in two parts sliding one upon the other mounted upon each of said arms, a runner connected to each "former," a cam fixed upon the said vertical shaft, against which the runner acts, the means described for raising and lowering the vertical shaft and rotating the said arms, a table with an adjustable folding-mold, and a plunger mounted vertically over the folding-mold, means for intermittently actuating the plunger, all substantially as set forth.

4. The combination in a bag-forming machine of framework having a vertical shaft mounted thereon, with radiating arms mounted upon said shaft, a "bag-former" made in two parts sliding one upon the other mounted upon each of said arms, a runner connected to each "former," a cam fixed upon the said vertical shaft, against which the runner acts, the means described for raising and lowering the vertical shaft and rotating the said arms, a table with an adjustable folding-mold, a plunger mounted vertically over the folding-mold, means for intermittently actuating the plunger, drawing-roller mounted on the framework of the machine, guide-rollers over which the paper is led to the drawing-rollers, an adhesive-material tank, rollers revolving in said tank, a knife for cutting the length of paper, the means described for actuating the said knife, and for conveying the paper over the adjustable folding-mold, all substantially as set forth.

5. The combination in a bag-forming machine, of the framework, a table mounted thereon, an adjustable folding-mold thereon, a pair of drawing-rollers, a ratchet-wheel mounted upon the end of one of the drawing-rollers, a pawl composed of a number of loose plates, a holder slotted to receive the pawl-plates, the means described for intermittently reciprocating the pawl, adhesive-material tank, the wheels for applying the adhesive material to the paper, a vertical shaft mounted upon the framework, with radiating arms mounted upon said shaft, a "bag-former" made in two parts sliding one upon the other mounted upon each of said arms, a runner connected to each "former," a cam fixed upon the said vertical shaft, against which the runner acts, the means described for raising and lowering the vertical shaft and rotating the said arms, a table with an adjustable folding-mold thereon, and a plunger mounted vertically over the folding-mold, means for intermittently actuating the plunger, and wiper-plates, levers upon which the said plates are mounted and the means for actuating the same, the means for imparting motion from the driving-shaft of the machine, wiper-plates working over the folding-mold, and the means described for intermittently actuating the same, and creasers constructed as described, and the means for intermittently actuating the same, substantially as described.

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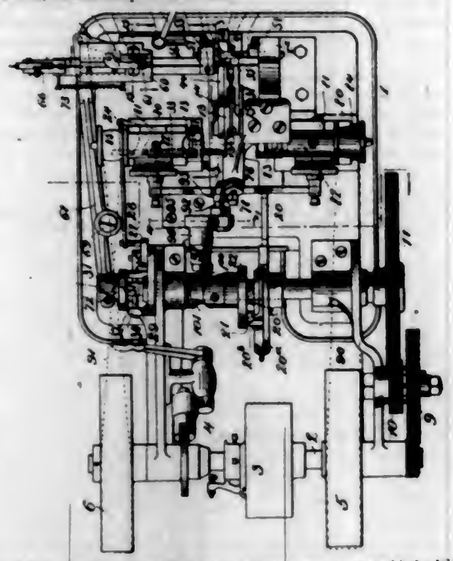
**755,755. STAPLE-MAKING MACHINE.** HORACE L. EDES and WILLIAM EDES, New York, N. Y., assignors to Williams Wire Hinging Machine Company, a Corporation of New York. Filed Mar. 27, 1903. Serial No. 149,790. (No model.)

*Claim.*—1. A staple-making machine comprising a carrier provided with means for gripping wire, means for feeding wire to the gripping means, means for cutting the wire into lengths while held by the gripping means, cutters located on opposite sides of the carrier and out of line with the wire-feeding devices for pointing the ends of wire lengths projecting from the carrier, means for moving the carrier from the wire-receiving to the wire-pointing positions, and means for holding the carrier in such positions, substantially as described.

2. A staple-making machine comprising a rotative carrier provided with means for gripping wire, and a finger located in the path of the wire to coact with the moving carrier to bend the wire into staple form, during the movement of the carrier, said carrier having a groove for the passage of the finger during the bending of the wire, substantially as described.

3. A staple-making machine comprising a rotative carrier provided with means for gripping wire, a finger located in the path of the wire to coact with the carrier to bend the wire into staple form during the movement of the carrier, said carrier having a groove for the passage of the finger, means to open the gripper during the bending of the wire to permit the ends of the wire to approach each other, and means for ejecting staples from the carrier, substantially as described.

4. A staple-making machine comprising a carrier provided with a gripper to hold wire and having a circumferential groove, and a finger adapted to enter said groove and to engage a wire held by the gripper to bend the pointed wire into staple form, by and during the movement of the carrier, and means to release the hold of the gripper upon the wire upon the engagement of the finger with the wire, substantially as described.



5. A staple-making machine comprising a carrier provided with means for gripping wire, a device arranged in the path of movement of the wire held by the gripper arranged to come in contact with the wire and bend it into staple form, and means constructed and arranged to thrust said device to eject the finished staple, substantially as described.

6. A staple-making machine comprising a carrier provided with a plurality of grippers to hold lengths of wire, means for intermittently rotating said carrier, means for locking the carrier in operative positions, wire feeding and cutting devices alined with one gripper of the carrier when held stationary, wire-pointing devices alined with another gripper when the carrier is held stationary, and means for operating the pointing devices, substantially as described.

7. A staple-making machine comprising a carrier provided with a plurality of grippers to hold lengths of wire, means for intermittently rotating said carrier, means for locking the carrier in operative positions, wire feeding and cutting devices alined with one gripper of the carrier when held stationary, wire-pointing devices alined with another gripper when the carrier is held stationary, and means located in the path of a pointed wire adapted to bend the same into staple form during the movement of the carrier from one stationary position to another, substantially as described.

8. A staple-making machine comprising a carrier provided with a plurality of grippers to hold lengths of wire, means for intermittently rotating said carrier, means for locking the carrier in operative positions, wire feeding and cutting devices alined with one gripper of the carrier when held stationary, wire-pointing devices alined with another gripper when the carrier is held stationary, a finger located in the path of the pointed wire adapted to engage the wire and cause the same to be bent during the travel of the carrier from one stationary position to another, the carrier having a groove to cooperate with the finger, and means to cause staples to be ejected from the carrier, substantially as described.

9. A staple-making machine comprising a rotative carrier, a gripper pivotally connected therewith and provided with a forked end adapted to coact with part of the carrier to hold lengths of wire, means for pointing the wire lengths when held by the gripper, a finger adapted to engage the pointed wire lengths, means for supporting said finger in operative position, and means for opening the gripper whereby its forked end will straddle said finger to permit free passage of the carrier past the finger, the carrier having a groove to permit the passage of the finger, substantially as described.

10. A staple-making machine comprising a rotative carrier provided with a circumferential groove, a gripper pivotally supported upon the carrier and provided with a groove and a forked end alined with the groove of the carrier, means to open and close the gripper, means to feed wire to the gripper, means for pointing wire lengths held by the gripper, and a finger adapted to enter said grooves and pass between the forks of the gripper to engage wire held by the gripper to bend it into staple form, substantially as described.

11. A staple-making machine comprising a rotative carrier provided with a circumferential groove, a gripper pivotally supported upon the carrier and provided with a groove and a forked end alined with the groove of the carrier, means to open and close the gripper, means to feed wire to the gripper, a finger adapted to enter said grooves and pass between the forks of the gripper to engage wire held by the gripper to bend it into staple form, and means for thrusting the finger to eject staples, substantially as described.

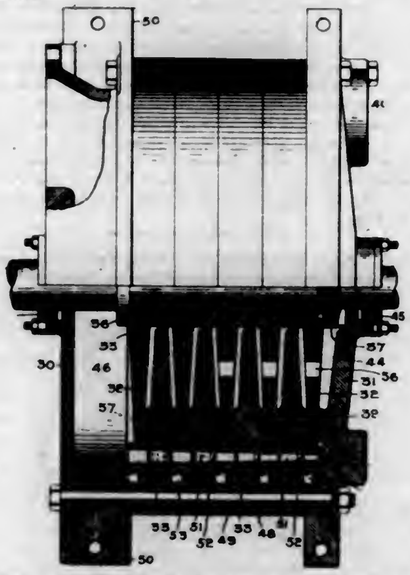
12. A staple-making machine comprising a rotative carrier, a gripper pivotally carried thereby and adapted to coact with part of the carrier to hold wire lengths, means for feeding wire to the gripper, a finger adapted to engage wire to bend it into staple form, an arm carrying said finger and movably supported concentric with the axis of the carrier, and a spring to coact with said arm to thrust the finger to eject staples from the carrier, the carrier having a groove to permit the passage of the finger, substantially as described.

13. A staple-making machine having a rotative carrier provided with means for gripping wire, means for feeding wire to the gripper, a guide for the wire located adjacent to the carrier, means for adjusting said guide laterally with respect to the carrier, a knife supported adjacent to the guide to be adjusted therewith for cutting wire held by the carrier, and means for pointing such wire, substantially as described.

14. A staple-making machine comprising a rotative carrier provided with a plurality of grippers to hold wire, means for intermittently rotating said carrier, means for holding the carrier in different positions, means for feeding wire to the grippers, rotary cutters located on opposite sides of the carrier, and means for moving said cutters toward and from the carrier to operate upon the ends of wire held thereby, the means for feeding wire to the carrier and for moving the cutters toward and from the wire being arranged to operate while the carrier is held in one position, substantially as described.

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**755,756. ELASTIC-FLUID TURBINE.** WILLIAM L. R. EMMET, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Dec. 5, 1902. Serial No. 133,995. (No model.)



*Claim.*—1. In an elastic-fluid turbine, the combination of a plurality of diaphragms, each of which forms a section of the casing and divides it into compartments, wheels for the compartments which are separated from the walls of the diaphragms by small clearances, segmental chambers which are formed within the diaphragms for collecting the fluid discharged from the preceding wheel, and fluid-discharging passages which are also formed in the diaphragms and open into the chambers.



2. In an elastic-fluid turbine, the combination of a casing, diaphragms which divide the casing into compartments, wheels for the compartments, a plurality of nozzles which deliver fluid to the first wheel, subdivided fluid-discharging passages between one compartment and the next, the number of said divisional passages increasing as the pressure of the fluid decreases, chambers which collect the fluid streams from the bucket-wheels and deliver it to the succeeding fluid-discharge passages, and separately-actuated valves which control the passage of motive fluid through the nozzles.

3. In an elastic-fluid turbine, the combination of a casing, a diaphragm which divides the casing into compartments, the diaphragm being provided with a segmental collection-chamber and a passage which receives fluid from the chamber and delivers it to an adjacent wheel, the said chamber and passage being situated between the surfaces of the diaphragm, and bucket-wheels which revolve in close proximity to said surfaces and prevent cross leakage.

4. In an elastic-fluid turbine, the combination of a plurality of diaphragms which are provided with peripheral rings that form the casing, means for uniting the rings, collection-chambers which are formed in the diaphragms, sets of fluid-passages also formed in the diaphragms that expand toward the exhaust, bucket-wheels that are situated between the diaphragms and revolve in proximity thereto, and seperate valves for controlling the supply of motive fluid to the passages.

5. In an elastic-fluid turbine, the combination of a casing, a plurality of diaphragms for dividing the casing into compartments, the diaphragms successively increasing in thickness near their periphery, a number of nozzles which are distributed around the casing, separate valves for controlling the passage of fluid through the nozzles, a single wheel for each compartment, and collection-chambers and expanding working passages which are formed in the diaphragms.

6. In an elastic-fluid turbine, the combination of a casing, a diaphragm for the casing, bucket-wheels, and a receptacle formed in the diaphragm which is situated adjacent to a wheel and in a position to receive the water of condensation.

7. In an elastic-fluid turbine, the combination of a casing, a diaphragm for the casing, bucket-wheels, a receptacle formed in the diaphragm which surrounds a portion of a wheel for collecting the water of condensation, and a conduit connecting with said receptacle.

8. In an elastic-fluid turbine, a casing comprising a plurality of diaphragms, each diaphragm having formed therein a segmental collection-chamber, a nozzle that extends at an angle to the plane of the diaphragm and opens into the chamber, and bucket-wheels arranged to move in close proximity to the walls of the segmental collection-chambers.

9. In an elastic-fluid turbine, the combination of a plurality of diaphragms, each having an enlarged peripheral flange which engages with an adjacent flange, a collection or pressure chamber, and a water-receiving receptacle.

10. In an elastic-fluid turbine, the combination of a casing which includes a number of diaphragms having inclined concentric walls, with bucket-wheels situated between the diaphragms, each of said wheels being provided with a web that has the same inclination as a diaphragm-wall.

11. As an article of manufacture, a diaphragm for a turbine, comprising a main body portion which is bored to receive the driving-shaft, and a peripheral flange that forms a part of the external casing of the turbine, the said flange being cut away to form a chamber for a bucket-wheel and also to form a water-collecting receptacle, the said receptacle opening into the wheel-chamber.

12. In an elastic-fluid turbine, the combination of a casing divided into compartments, a bucket-wheel mounted in each compartment and arranged to run close to its inclosing walls, nozzles for delivering fluid to the wheel, and a segmental collection or pressure chamber between each pair of wheels which receives motive fluid from one wheel and discharges it against the next.

13. In an elastic-fluid turbine, the combination of a casing divided into compartments, a bucket-wheel mounted in each compartment which revolves in close proximity to the walls of the compartment, nozzles for delivering fluid to the wheels, the cross-sectional area of the successive nozzles increasing toward the exhaust, and a segmental collection-chamber for each compartment which is situated in line with a high-pressure nozzle and discharges into a number of nozzle-sections, the successive chambers in the several compartments gradually enlarging and the number of nozzle-sections increasing toward the exhaust.

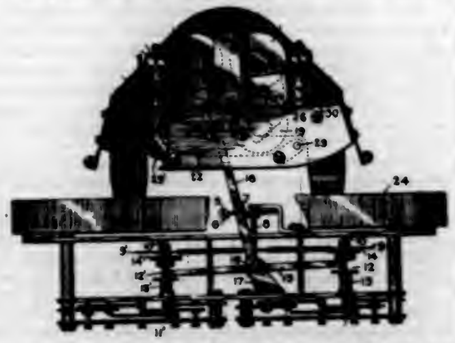
14. In an elastic-fluid turbine, the combination of a plurality of bucket-wheels, casings for the wheels, and passages formed in the casing for conveying fluid from one side of a wheel to another to balance end thrust.

15. In an elastic-fluid turbine, the combination of a bucket-wheel, a fluid-carrying passage arranged to discharge fluid against the wheel, a passage for conveying fluid from one side of the wheel to the other for balancing the end thrust, and a receptacle which has an opening adjacent to the discharge side of the wheel for receiving water due to condensation.

16. In an elastic-fluid turbine, the combination of a bucket-wheel, a fluid-carrying passage arranged to discharge fluid against the bucket-wheel, and a receptacle which has a restricted throat, the said throat being situated adjacent to the discharge side of the wheel.

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**755,757. MULTIPLE-RATE METER.** ALEXANDER J. R. FIDGO, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed July 21, 1903. Serial No. 166,431. (No model.)



*Claim.*—1. A multirate meter comprising a meter-motor, two dial-trains, a plurality of electromagnets, a clock, means whereby the clock closes circuit to the electromagnets at determinate hours, means actuated by the magnets for alternately connecting the dial-trains with the meter-motor, and means for preventing the rotation of either train when disconnected from the motor.

2. A multirate meter comprising two counters, a meter-motor, clutches on the driving-shaft of the counters impelled toward engaging relation to the motor, a plurality of electromagnets, and a shifting device actuated thereby engaging either clutch when disengaged from the motor but disengaged when connected with the motor.

3. A multirate meter comprising a plurality of dial-trains, a clutch on a shaft of each train in driving relation thereto, a plurality of electromagnets and means actuated thereby for operating the clutches, a cam moved by the magnets in operating the clutches, an arm carrying a contact bearing on the cam, and a stationary contact cooperating therewith, said contacts being arranged to open the circuit of the magnets after they have operated the clutches.

4. In a multirate meter, an electromagnetic device for changing the manner of recording, comprising electromagnets, a pivoted armature rocked thereby, a cam-surface moving with the armature, and contacts governed by the cam-surface controlling the circuit of said electromagnets.

5. In a multirate meter, an electromagnetic device for changing the manner of recording comprising an electromagnet, a cam shifted thereby, an arm bearing on the cam-surface, and means whereby the movement of the arm when the cam is shifted opens the circuit of the magnet.

6. In a multirate meter, an electromagnetic device for changing the manner of recording comprising an electromagnet, a pivoted cam shifted thereby, a pivoted arm carrying a contact, a spring pressing the arm against the cam-surface, and means whereby the movement of the arm when the cam is shifted opens the circuit of the magnet.

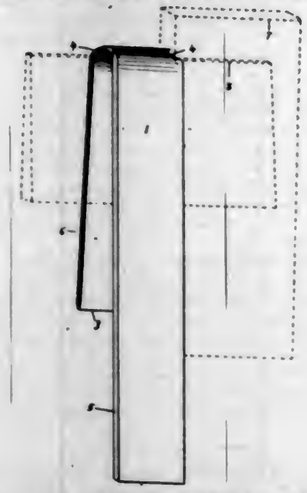
7. In a multirate meter, an electromagnetic device for changing the manner of recording comprising two electromagnets, a pivoted cam rocked thereby, arms carrying contacts bearing on said cam, and means whereby the movement of the arms when the cam is shifted opens the circuit of the magnet which caused the movement and closes a connection to the other magnet.

8. A multirate meter comprising a meter-motor, a plurality of dial-trains, clutching mechanism, a plurality of electromagnets and means actuated thereby for operating the clutching mechanism to connect the dials alternately with the meter-motor, a cam rocked by the magnets in operating the clutching mechanism, and means whereby the movement of said cam opens the circuit of the magnets which caused the movement and closes a connection to the other magnets.

9. In a multirate meter, an electromagnetic device for changing the manner of recording comprising an electromagnet, a cam shifted thereby, an arm bearing on the cam-surface, means whereby the movement of the arm when the cam is shifted opens the circuit of the magnet which caused the movement, and means for holding the cam in the position to which it is shifted.

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**755,758. CLAPBOARD-MARKING GAGE.** CHARLES W. FOUST, Los Angeles, Cal. Filed Dec. 7, 1903. Serial No. 184,013. (No model.)



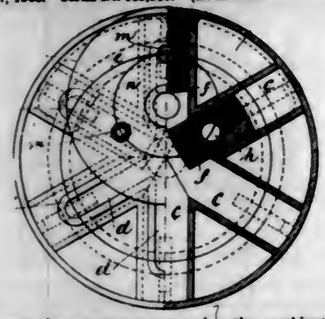
*Claim.*—1. A gage for marking siding, one end of the said gage bent in a curve which forms two prongs or blades, with the edges of the gage hollow-ground, concave, just opposite the bent portion of the gage, for the purpose to permit one of the blades to assume a natural position against the edge of the corner board or casing.

2. A gage for marking siding, one end of the said gage bent in a curve which forms two prongs or blades, one of the blades longer than the other, with the edges of the blades beveled in such a manner as to make the shorter blade narrower than the longer blade.

3. A gage for marking siding, one end of the said gage bent to form two prongs or blades, the edges of the blades beveled in such a manner as to make one of the blades narrower than the other blade, with the edges of the gage concave opposite the bent portion of the gage.

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**755,759. ROTARY ENGINE.** FRANS A. FRANKEN, Lund, Sweden, assignor of one-half to Pontus Briand Fahlbeck, Lund, Sweden. Filed Dec. 17, 1902. Serial No. 185,519. (No model.)



*Claim.*—1. In a rotary steam-engine, the combination with a plurality of cylinders crossing each other in a point common to all of them, of a piston in each cylinder, means to control the movement of each piston in its cylinder and past the common point and means to supply steam to the cylinders, substantially as described.

2. In a rotary steam-engine, the combination with a plurality of cylinders arranged at equal distances from each other and crossing each other in a point common to all of them, of a piston in each cylinder moved from end to end thereof and past the point common to all of them, a single rotating element connected to each piston to control their relative movements and means to supply steam successively to the cylinders, substantially as described.

3. In a rotary engine, the combination with a plurality of cylinders arranged at equal angular distances apart and crossing each other in a point common to all of them; of a piston in each cylinder, a crank-disk, pins therein at equal angular distances apart, each pin connected to a piston, means to admit steam to each end of each cylinder, and means to reverse the engine, substantially as described.

4. In a rotary engine, the combination with a plurality of cylinders arranged at equal angular distances apart and crossing each other in a point common to all of the cylinders; of a piston in each cylinder, a crank-disk, pins on said crank-disk arranged at equal angular distances apart, the circle passing through the centers of said pins having a diameter equal to half the stroke of the pistons and means to admit steam to the cylinders, substantially as described.

5. In a rotary engine, the combination with a plurality of cylinders arranged at equal angular distances apart and a casing for said cylinders, each cylinder provided with a longitudinal slot and crossing each other at a common point, of an end plate for the casing having a recess and coöperating with the cylinders to close the slot therein, a crank-disk in said recess also coöperating with the cylinders to close their slots, crank-pins on the crank, each connected to a piston and passing through the slot in a cylinder, a packing around each pin in the slots, and means to admit steam to the cylinders, substantially as described.

6. In a rotary engine, the combination with a plurality of longitudinally-slotted cylinders crossing each other in a point common to all of them and mounted to rotate; of a casing, a piston in each cylinder, an end plate for the casing having a recess therein, a crank-disk in said recess, both said disk and plate coöperating with the cylinders to close their slots, pins in the crank-disk, each of which passes through a slot and enters a piston, an elongated plate surrounding each pin in each slot and means to admit steam to the cylinders, substantially as described.

7. In a rotary engine, a plurality of cylinders crossing each other in a point common to all of them and arranged to rotate, a ring shrunk around the ends of the cylinders to form their heads, a piston in each cylinder, a rotating element connected to each piston and means to admit steam to the cylinders, substantially as described.

8. In a rotary engine, a wheel, cylinders thereon crossing each other in a point common to all of them, steam-passages between the ends of the cylinders and a slideway formed on the wheel, means to supply steam and a ring between said means and slideway, a piston in each cylinder and means to control the relative movement of the pistons, substantially as described.

9. In a rotary engine, a wheel having cylinders formed thereon, a slideway formed on the wheel and passages connecting said slideway and the ends of the cylinders, a steam-supply, a distributing-ring rotatable on the slideway and having a slot on its under side, an arc in said slot to control the exhaust and means to move said arc, substantially as described.

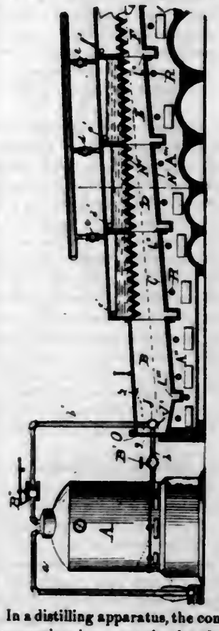
10. In a rotary engine, a casing, a wheel mounted therein and having cylinders formed thereon, said cylinders crossing each other at a point common to all of them, each of said cylinders having a longitudinal slot extending to about half a piston length of each end, a piston in each cylinder, a bearing-surface formed around each slot, an end plate for the casing and a crank-disk coöperating with the bearing-surfaces to close the slots, crank-pins in the disk, one of which is connected to each piston and passes through the slot of the cylinder, a sleeve having lateral play between each crank-pin and piston, a packing-sleeve surrounding each pin and having an elongated flange guided in the slot, said flange having bearing on the end plate and disk during its movement from end to end of the slot, substantially as described.

11. In a rotary engine, the combination with a wheel having a steam-chamber and a plurality of cylinders formed thereon crossing each other at a point common to all of them, of a hollow shaft on which said wheel is mounted, and valve-controlled passages between the steam-chamber and cylinder ends, substantially as described.

12. In a rotary engine, the combination with a wheel having a central steam-chamber and a plurality of cylinders formed thereon crossing each other at a point common to all of them, of a hollow shaft to supply steam to the chamber and on which said wheel is mounted, a piston in each cylinder, means to control the relative movement of the pistons and independent valve mechanism at each end of each piston to control the admission of steam from the chamber to the cylinders, substantially as described.

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**755,760. APPARATUS FOR DISTILLING PETROLEUM.** LOUIS GATEMANN, Washington, D. C. Filed June 11, 1903. Serial No. 161,082. (No model.)



*Claim.*—1. In a distilling apparatus, the combination of a liquid-heating means; a vaporizer in communication therewith; a condenser communicating therewith; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

2. In a distilling apparatus, the combination of a liquid-heating means, wherein the material may be subjected to pressure; a vaporizer in communication therewith; a condenser; means favoring the radiation of heat from the top walls of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

3. In a distilling apparatus, the combination of a vaporising-chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

4. In a distilling apparatus, the combination of a liquid-heating means; a vaporizer in communication therewith; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

5. In a distilling apparatus, the combination of a liquid-heating means, wherein the material may be subjected to pressure; a vaporizer in communication therewith; a condenser connecting therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

6. In a distilling apparatus, the combination of a liquid-heating means; a vaporising-chamber in communication therewith; means for delivering the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser communicating therewith; means for favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

7. In a distilling apparatus, the combination of a liquid-heating means wherein the material may be subjected to pressure; a vaporising-chamber in communication therewith; means for delivering the material to be distilled, with an exposure of large surface area of

the same, within said chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

8. In a distilling apparatus, the combination of a vaporizing-chamber; means for delivering the material to be distilled, with an exposure of large surface area, within said chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

9. In a distilling apparatus, the combination of a heating means adapted to superheat liquid and deliver it under pressure within a vaporizing-compartment; a condenser, consisting of a number of sections, in communication therewith; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate from the several sections.

10. In a distilling apparatus, the combination of a liquid-heating means; a vaporizer in communication therewith; a condenser consisting of a number of sections; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate from the several sections.

11. In a distilling apparatus, the combination of a vaporizing-compartment; a condenser consisting of a number of sections, communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate from the several sections.

12. In a distilling apparatus, the combination of a vaporizing-chamber; means for delivering the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser, consisting of a number of sections, communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls, and means for drawing off fractions of the condensate from the several sections.

13. In a distilling apparatus, the combination of liquid-heating means; a vaporizing-chamber in communication therewith; means for delivering the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser, consisting of a number of sections, communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate from the several sections.

14. In a distilling apparatus, the combination of a liquid-heating means, wherein the material may be subjected to pressure; a vaporizer in communication therewith; means for delivering the material to be distilled, with an exposure of large surface area of the same, within said vaporizer; a condenser, consisting of a number of sections, communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top to the bottom walls; and means for drawing off fractions of the condensate from the several sections.

15. In a still provided with means whereby the residue may be continuously removed, the combination of a vaporizing-chamber; means for feeding said chamber continuously; a condenser communicating therewith; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

16. In a still provided with means whereby the residue may be continuously removed, the combination of a liquid-heating means; means for feeding said heating means continuously; a vaporizer in communication therewith; a condenser communicating therewith; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

17. In a still provided with means whereby the residue may be continuously removed, the combination of a liquid-heating means, wherein the material may be subjected to pressure; means for feeding said heating means continuously; a vaporizer in communication therewith; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

18. In a still provided with means whereby the residue may be continuously removed, the combination of a vaporizing-chamber; means for feeding said chamber continuously; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

19. In a still provided with means whereby the residue may be continuously removed, the combination of a liquid-heating means; means for feeding said heating means continuously; a vaporizer in communication therewith; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

20. In a still provided with means whereby the residue may be continuously removed, the combination of a liquid-heating means, wherein the material may be subjected to pressure; means for feeding said heating means continuously; a vaporizer in communication therewith, a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

21. In a still provided with means whereby the residue may be continuously removed, the combination of a vaporizing-chamber; means for continuously delivering the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls only of said chamber; and means for drawing off fractions of the condensate along the course of said condenser.

22. In a still provided with means whereby the residue may be continuously removed, the combination of a liquid-heating means; a vaporizing-chamber in communication therewith; means for continuously deliveriog the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

23. In a still provided with means whereby the residue may be continuously removed, the combination of a liquid-heating means, wherein the material may be subjected to pressure; a vaporizing-chamber in communication therewith; means for continuously delivering the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls only of said condenser; and means for drawing off fractions of the condensate along the course of said condenser.

24. In a still provided with means whereby the residue may be continuously removed, the combination of a vaporizing-chamber; means for continuously delivering the material to be distilled, with an exposure of large surface area of the same, within said chamber; a condenser communicating therewith; means favoring the radiation of heat from the top walls of said condenser; means for intercepting the condensed vapor flowing from the top walls to the bottom walls; and means for drawing off fractions of the condensate along the course of said condenser.

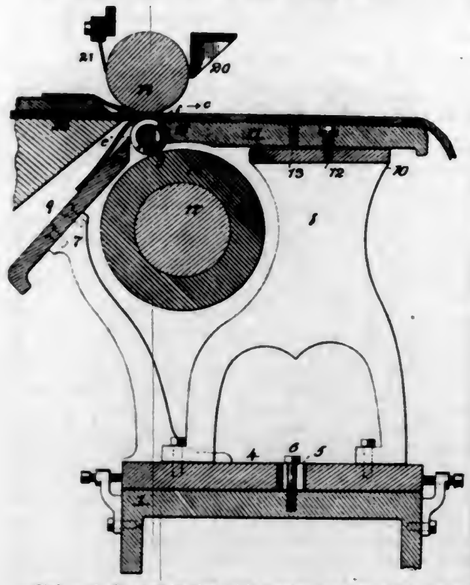
25. In a distilling apparatus, the combination of a liquid-heater, wherein the liquid to be distilled is subjected to a temperature above the temperature of volatilization of the constituents to be separated; a vaporizer connected with the heater; a condenser, relatively shallow, connected with the vaporizer, said condenser provided with a radiating-surface adapted to withdraw heat from the top of the condenser; and eduction-ports located along the course of said condenser for the purpose set forth.

26. In a distilling apparatus, the combination of a liquid-heater wherein the liquid to be distilled is subjected to pressure and to a temperature above the temperature of volatilization of the constituents to be separated; a vaporizer connected with the heater; a condenser, relatively shallow, connected with the vaporizer, said condenser provided with a radiating-surface adapted to withdraw heat from the top of the condenser; and eduction-ports located along the course of said condenser for the purpose set forth.

27. In a distilling apparatus, the combination of a liquid-heater, wherein the liquid to be distilled is subjected to a temperature above the temperature of volatilization of the constituents to be separated; a vaporizer connected with the heater; a condenser, relatively shallow, connected with the vaporizer, said condenser provided with a radiating-surface adapted to withdraw heat from the top of the condenser; drips for preventing the condensed vapor from running down the upright walls; and eduction-ports located along the course of said condenser for the purpose set forth.



## 755,761. ADJUSTING DEVICE FOR LEATHER-SPLITTING MACHINES. JOSEPH H. GAY and WILLIAM D. QUIGLEY, Newark, N. J. Filed June 26, 1903. Serial No. 163,259. (No model.)



*Claim.*—1. In combination with a rotary spring-roll, bars disposed on opposite sides of said roll and in contact with said roll and conjointly adjustable to move said roll laterally.

2. In combination with a rotary spring-roll, bars disposed on opposite sides of said roll and in contact with said roll, and supports carrying said bars; the said supports being conjointly adjustable to move said roll laterally.

3. In combination with a rotary spring-roll, bars disposed on opposite sides of said roll, and in contact with said roll, supports for said bars and a platform carrying said supports and adjustable transversely said roll.

4. In combination with a rotary spring-roll, a platform disposed below said roll and adjustable transversely said roll, supports on said platform, a bar carried by one of said supports in front of said roll and a bar carried by the other support in rear of said roll; the said bars having their edges bearing against said roll.

5. In combination with a rotary spring-roll, a platform disposed below said roll and adjustable transversely said roll, supports on said platform, a horizontal bar carried by one of said supports in front of said roll and an inclined bar carried by the other of said supports in rear of said roll; the said bars having their edges bearing against said roll.

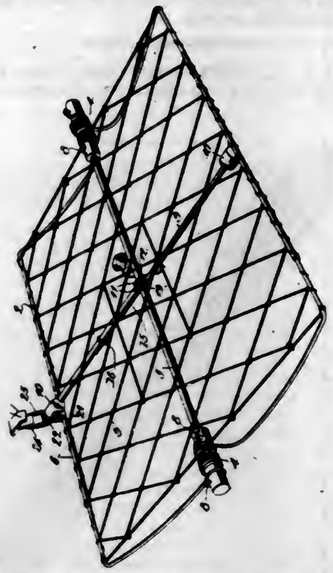
6. In combination with a gage-roll, a spring-roll and a driving-roll for said spring-roll arranged below the same, two bars disposed respectively on opposite sides of said spring-roll and in contact therewith and above said driving-roll, and means for conjointly adjusting said bars to move said spring-roll laterally.

7. In combination with a rotary spring-roll, a bar disposed on the front side of said roll and having a concave edge, an inclined bar disposed on the rear side of said roll and having a beveled edge, the said edges being in contact with said roll, and means for conjointly adjusting said bars to move said roll laterally.

## 755,762. BIRD-TRAP. CYRUS W. GILLIS, Andalusia, Ala. Filed Sept. 23, 1902. Serial No. 124,580. (No model.)

*Claim.*—1. A trap comprising two hinged sides, and a trigger composed of two pivoted members, one of the members being provided with an adjustable device for engaging the other member, to limit the pivotal movement, substantially as described.

2. A trap, comprising two spring-actuated sides, hinged together, and a trigger, composed of two members, pivotally connected, one of the members being extended inward beyond the pivot, and the other member being provided with an adjustable device for engaging the extended portion, substantially as described.



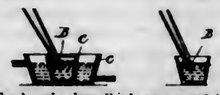
3. A trap, comprising two sides hinged together, and a trigger composed of two members pivoted together, one of said members being provided with an adjustable slide arranged to engage the other member, substantially as described.

4. A trap composed of two spring-actuated sides hinged together, means for setting the trap, and a catch mounted on one of the sides and provided with a plurality of engaging portions arranged at different points and adapted to engage the other side of the trap to lock the same, substantially as described.

5. A trap comprising two spring-actuated sides hinged together, means for setting the trap, a loop extending from one side, a catch connected with such side and arranged within the loop and provided with means for engaging the other side of the trap, and means for connecting the catch and the loop, substantially as described.

6. A trap comprising two spring-actuated sides, means for setting the trap, and a catch consisting of a single piece of material doubled to form an eye for connecting it to the trap, and having sides of different lengths, the terminals of the sides being bent to form inner and outer hooks, substantially as described.

## 755,763. PROCESS OF TEMPERING OR HARDENING CAST-IRON. WILLIAM GILMOUR and ALEXANDER LINDSAY, Montreal, Canada, assignors of one-half to Charles Augustus Myers and Herbert Henry Bradfield, Morrisburg, Canada. Filed Nov. 8, 1902. Serial No. 130,598. (No specimens.)



*Claim.*—1. The herein-described process of hardening or tempering cast-iron which consists in heating the metal; then dipping it in a bath consisting of a practically anhydrous acid of high heat conducting and absorbing quality in which is dissolved a heavy metal as and for the purpose specified.

2. The herein-described process of hardening or tempering cast-iron which consists in heating the metal; then dipping it in a bath consisting of a practically anhydrous acid of high heat conducting and absorbing quality in which is dissolved a heavy metal combined with a non-metallic substance as and for the purpose specified.

3. The herein-described process of hardening or tempering cast-iron which consists in heating the metal; then dipping it in a bath consisting of sulfuric acid of a specific gravity of between 1.8 and 1.9 or thereabout, and red arsenic as and for the purpose specified.

4. The herein-described process of hardening or tempering cast-iron which consists in heating of metal; then dipping it in a bath consisting of sulfuric acid of a specific gravity of between 1.8 and 1.9 or thereabout and red arsenic, the proportions being approximately one gallon of the former to three-quarters of a pound of the latter as and for the purpose specified.

## 755,764. RAIL-JOINT COUPLING. JOHN W. HAFER, Bellefonte, Pa. Filed Jan. 9, 1904. Serial No. 188,348. (No model.)



*Claim.*—1. The combination with a rail-section, of coupling members disposed on opposite sides of the web thereof, a pair of spaced spring elements designed to receive the rails between them, and coupling members provided on the inner faces of said elements for coupling engagement with the members on the rail.

2. The combination with a rail-section, of coupling members disposed on opposite sides of the web thereof, a pair of spaced spring-plates designed to receive the rail between them, means for connecting the plates, and coupling members provided on the inner faces of the plates for coupling engagement with the members on the rail.

3. The combination with a rail-section, of coupling members disposed on opposite sides of the web thereof, said members having outwardly-opening lateral recesses producing a coupling-head, and a pair of spaced spring-plates designed to receive the rail between them, said plates having their inner faces laterally recessed to receive the coupling-head and forming inwardly-extending jaws for engagement with the recesses in the members on the rail.

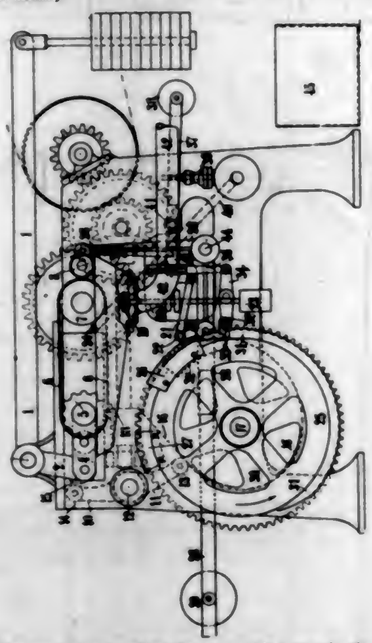
4. The combination with a rail-section, of coupling members disposed on opposite sides of the web thereof and having outwardly-opening lateral recesses producing a coupling-head, said head being provided with end sockets, a pair of spaced spring-plates designed to receive the rail between them, said plates having their inner faces laterally recessed to receive the coupling-head and forming inwardly-extending jaws for engagement with the recesses in the members on the rail, and fish-plates disposed between the spring-plates to lie upon the opposite sides of the web and having their ends seated in the sockets of the coupling members.

5. The combination with a rail-section, of coupling members disposed on opposite sides thereof and provided with coupling-heads, a pair of spaced spring elements designed to receive the rail between them, said elements having recesses for the reception of the head and jaws for engagement with the latter, and means for connecting the elements.

6. The combination with a rail-section, of a pair of spring elements designed to receive the rail between them, cooperating laterally-disposed coupling members carried by the rail and elements respectively, and means for connecting the elements.

7. The combination with a rail-section, of a pair of spring elements designed to receive the rails between them, fish-plates disposed between the elements to seat upon the opposite sides of the rail-web, cooperating laterally-disposed coupling members carried by the rail and elements respectively, the rail member being provided with sockets for the reception of the ends of the fish-plates, and means for connecting the elements.

## 755,765. MACHINE FOR MERCERIZING YARN. PAUL HAHN, Niederlahnstein, Germany. Filed Nov. 25, 1902. Serial No. 132,832. (No model.)



*Claim.*—1. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a pair of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward the first cylinder, an inlet-valve in said pipe, means operated by one of the cam-disks for causing said second cylinder to approach said first cylinder, and means operated by the cam of the other cam-disk for opening said inlet-valve.

2. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a pair of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward the first cylinder, an inlet-valve in said pipe, means operated by the cam of one of the cam-disks for causing said second cylinder to approach said first cylinder, means for removing said second cylinder from said first cylinder, means operated by the cam of the other cam-disk for opening said inlet-valve, and means for shutting said inlet-valve.

3. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward the first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, an inlet-valve in said pipe, and means operated by the cams of said cam-disks for causing said second cylinder to approach said first cylinder for opening said lye-inlet valve and for opening said water-inlet valve

4. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward the first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, an inlet-valve in said pipe, means operated by the cams of said cam-disks for causing said second cylinder to approach said first cylinder, for opening said lye-inlet valve, for opening said water-inlet valve and for opening said outlet-valve.



5. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward the first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, an inlet-valve in said pipe, an outlet-valve in said tank, means operated by the cams of the said cam-disks for causing said second cylinder to approach said first cylinder, for opening said lye-inlet valve, for opening said water-inlet valve and for opening said outlet-valve.

6. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward the first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, an inlet-valve in said pipe, an outlet-valve in said tank, means operated by the cams of the said cam-disks for causing said second cylinder to approach said first cylinder, for opening said lye-inlet valve, for opening said water-inlet valve and for opening said outlet-valve, and means for removing said second cylinder from said first cylinder, for shutting said lye-inlet valve, for shutting said water-inlet valve, and for shutting said outlet-valve.

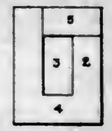
7. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward said first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, an inlet-valve in said pipe, an outlet-valve in said tank, a wringing-cylinder movable toward said first cylinder and means operated by the cams of the said cam-disks for causing said second cylinder to approach said first cylinder, for opening said lye-inlet valve, for pressing said wringing-cylinder toward said first cylinder, for opening said water-inlet valve and for opening said outlet-valve.

8. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a lye-conducting pipe in connection with said tank and having openings toward said first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, an inlet-valve in said pipe, an outlet-valve in said tank, a wringing-cylinder movable toward said first cylinder, means operated by the cams of the said cam-disks for causing said second cylinder to approach said first cylinder, for opening said lye-inlet valve, for pressing said wringing-cylinder against said first cylinder, for opening said water-inlet valve and for opening said outlet-valve, and means for removing said second cylinder from said first cylinder, for shutting said lye-inlet valve, for removing said wringing-cylinder from said first cylinder, for shutting said water-inlet valve and for shutting said outlet-valve.

9. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a gliding wringing-cylinder movable toward said first cylinder, a lye-conducting pipe in connection with said tank and having openings toward said first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank and having openings toward said first cylinder, an inlet-valve in said pipe, an outlet-valve in said tank, a number of lever mechanisms connected with said second cylinder, said wringing-cylinder, said lye-inlet valve, said water-inlet valve and said outlet-valve, and rollers on said lever mechanisms, said rollers being positioned in the rotation planes of the cam-disks and capable of being operated by the cams during the rotation of the disks.

10. In a machine for mercerizing yarn in the form of skeins, the combination of a rotatable shaft, a number of rigid cam-disks on said shaft, a tank, a cylinder rotatably mounted in fixed bearings in said tank, a second cylinder rotatably mounted in bearings gliding in said tank, a wringing-cylinder movable toward said first cylinder, a lye-conducting pipe in connection with said tank and having openings toward said first cylinder, an inlet-valve in said pipe, a water-conducting pipe in connection with said tank, and having openings toward said first cylinder, an inlet-valve in said pipe, an outlet-valve in said tank, a number of lever mechanisms connected with said second cylinder, said wringing-cylinder, said lye-inlet valve, said water-inlet valve and said outlet-valve, rollers on said lever mechanisms, said rollers being positioned in the rotation planes of the said cam-disks and capable of being operated by the cams during the rotation of said disks, and a number of counterweights connected with said second cylinder, said wringing-cylinder, said lye-inlet valve, said water-inlet valve and said outlet-valve.

## 755,766. TRANSFORMER. WALTER A. HALL, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Sept. 20, 1902. Serial No. 125,214. (No model.)




*Claim.*—1. A transformer-core consisting of four bundles of iron laminæ arranged radially to abut each other at the center of the core, each bundle constituting a magnetic circuit, two of the bundles of laminæ directly abutting each other, the second two bundles abutting the opposite sides of the joint between the directly-abutting laminæ, the legs of the second two bundles of laminæ being of less width than the legs of the directly-abutting bundles of laminæ, in order to make the center of the core cruciform in cross-section.

2. A transformer-core consisting of oppositely-disposed bundles of iron laminæ constructed and arranged radially to fill the center of the core with a mass of laminated iron polygonal in cross-section to form cooling-spaces in the periphery of the center of the core.

3. A transformer-core consisting of a plurality of bundles of iron laminæ arranged radially and closely abutting each other at the center to make the center of the core a solid mass of laminated iron, the construction and arrangement of the bundles contributing to form a core having a periphery with reëntrant angles, whereby cooling-spaces are provided between the core and the coils thereon.

4. A transformer-core consisting of a plurality of bundles of iron laminæ arranged radially to abut each other at the center, the width of the legs of some bundles being less than that of the legs of the other bundles, whereby cooling-spaces of large cross-section and short length are formed between the center of the core and the coils thereon.

5. A transformer-core consisting of a plurality of U-shaped bundles of iron laminæ assembled in radial planes, the legs of certain bundles being smaller in cross-section than the legs of other bundles in order to provide the center of the core with an irregular periphery.

6. A transformer-core consisting of two bundles of iron laminæ abutting each other in the same plane and having the space between the legs equal to the width of a leg, and two bundles of iron laminæ in the same plane with each other abutting the first two bundles of laminæ on opposite sides of their joint and having the same space between the legs as the first two bundles, but the width of the legs one-half that of the first two bundles.

7. A transformer-core consisting of two bundles of iron laminæ abutting each other, and two bundles of laminæ abutting the opposite sides of the joint between the first two bundles, the second two bundles being of such thickness that they do not extend the full combined width of the first two abutting bundles.

8. A transformer-core consisting of two bundles of iron laminæ abutting each other, and two bundles of iron laminæ abutting the opposite side of the joint between the first two bundles, the second two bundles being of such thickness that they do not extend the full combined width of the first two abutting bundles, and the width of the second two bundles being less than that of either of the first two bundles, whereby the four bundles form a substantially symmetrical figure in cross-section.

9. A transformer-core consisting of a plurality of compressed bundles of U-shaped laminæ retained in compression and arranged radially to abut each other to form a polygonal figure in cross-section through the center of the core.

10. A transformer-core consisting of a plurality of bundles of iron laminæ arranged radially to abut each other at the center of the core, all the laminæ in each bundle being substantially duplicated or coextensive and pressed together, whereby the center of the core consists of a maximum amount of laminated iron.

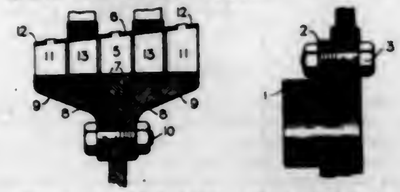
11. A transformer-core of substantially the shell-type design, consisting of a plurality of bundles of iron lamiæ abutting each other at the center of the core, the lamiæ in each bundle being pressed closely together in order to obtain a maximum effective cross-section of iron in a given space.

12. A transformer having a coil made in two concentric portions, the inner one polygonal, and the outer one square with rounded corners, whereby ventilating-spaces are left between said portions.

13. A transformer-core composed of two U-shaped branches lying in the same plane, and presenting a given length of magnetic circuit, and two U-shaped branches lying in a plane at right angles thereto, and presenting a shorter magnetic circuit.

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755,767. BUCKET-WHEEL FOR STEAM-TURBINES. BRAGG H. HAMILTON and WILLIAM R. VER PLANCK, Lynn, Mass., assignors to the General Electric Company, a Corporation of New York. Filed Sept. 28, 1903. Serial No. 174,905. (No model.)



*Claim.*—1. In a steam-turbine, a bucket-wheel having a web provided with integral peripheral buckets, and one or more rings secured to said web and containing buckets.

2. In a steam-turbine, a bucket-wheel having a web provided with integral buckets, and a bucket-ring secured thereto, said web and ring having abutting shoulders.

3. In a steam-turbine, a bucket-wheel having a web provided with integral buckets and having a shoulder on each side, and bucket-rings secured to said web and provided with shoulders abutting the shoulders of the web.

4. The combination with a hub having a flange, of an annular web of boiler-plate secured thereto and having buckets cut in its periphery, and segmental forged rings secured on each side of said web and having buckets cut in their edges.

5. In a turbine, the combination of a wheel-web having integral peripheral buckets, shoulders on said web, buckets secured to the sides of the web and engaging with the shoulders, and intermediate buckets located between the buckets formed integral with the web and those which are secured to the sides of the web.

6. In a turbine, the combination of a wheel-web having integral peripheral buckets, shoulders formed on opposite sides of the web, intermediate buckets situated on each side of the peripheral buckets and in proximity thereto, and rings attached to the web and engaging the shoulders, which rings are provided with integral buckets that deliver motive fluid to and receive it from the intermediate buckets.

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755,768. COIN-COLLECTING BOX OR RECEPTACLE. JACOB C. HANSEN-ELLEHAMMER, Copenhagen, Denmark. Filed July 9, 1903. Serial No. 164,912. (No model.)

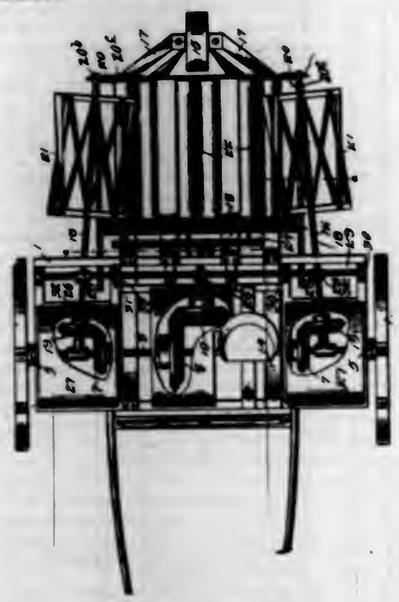


*Claim.*—In a safety device for coin-collecting boxes or receptacles, the combination with the box proper having a coin-receiving slot, of a safety device comprising a fixed plate having a back wall *a* and end walls or wings *b*, the upper end of said back wall being slit at intervals and parts thereof bent outwardly and upwardly, a movable plate *c* pivotally secured to the end walls and being substantially E-shaped in general outline and having a notch in its upper edge, and a spindle rigidly secured to said plate *c* and finding bearings in registering orifice in the end walls, substantially as and for the purpose set forth.

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755,769. POTATO-BUG MACHINE. MARTIN HARMON, Bloomington, Ill. Filed Mar. 18, 1903. Serial No. 148,041. (No model.)

*Claim.*—A bug-destroying machine having a front frame provided with an axle-shaft and supporting-wheels and gears 6, 7, thereon, a rear frame having intergeared crushing-rollers, certain of said rollers having driving sprocket-wheels, a longitudinal shaft 8, having its bearings in the front frame, provided at its front end with a gear 10 engaging the gear 6 and having at its rear end a sprocket-wheel 11, an endless sprocket-chain connecting said sprocket-wheel and the driving sprocket-wheels of the crushing-rollers, beaters above the crushing-rollers having the front ends of their shafts journaled in bearings on the axle-shaft, and provided with gears 19 engaging the gears 7, and bell-crank levers, carried by the rear frame and having bearings for the rear ends of the beater-shafts, substantially as described.



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755,770. TRACTION-ENGINE WHEEL. AMOS HARROLD, Newark, Ohio. Filed Nov. 11, 1903. Serial No. 180,690. (No model.)



*Claim.*—1. In a wheel of the class described, a wide-tread tire and a narrow-tread tire of greater diameter than the diameter of the wide-tread tire, and the narrow-tread tire formed in sections, and the sections located upon the circumference of the wide-tread tire and secured thereto, substantially as and for the purpose specified.

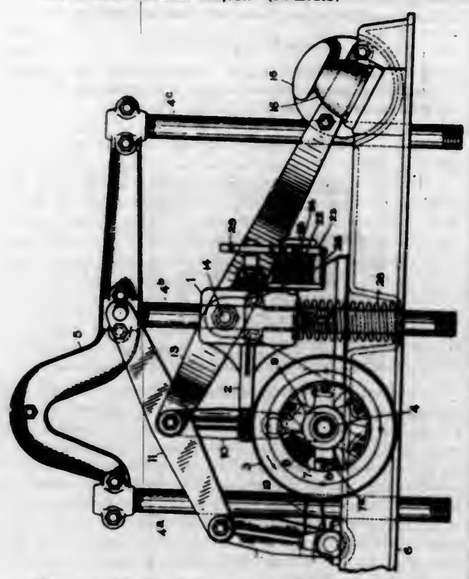
2. In a wheel of the class described wide-tread tires spaced from each other, narrow-tread tire-sections located upon the circumference of the wide-tread tires and over the space between said wide-tread tires and the narrow-tread tire-sections secured to the wide-tread tires, substantially as and for the purpose specified.

3. A wheel for traction-engines, provided with two tread-faces or tires of different diameters, the lesser diameter constituting a wide tread, and the greater diameter a narrow tread, and said narrow tread located in the center of the wide tread and adapted to carry the weight upon a hard surface, and the wide tread adapted to carry the weight upon a soft surface, and the wide and narrow treads provided with antifriction-ribs, substantially as and for the purpose set forth.

4. A wheel for traction-engines provided with two faces or tires of different diameters, the lesser diameter constituting a wide tread, and the greater diameter a narrow tread, the narrow tread located in the center of the wide tread, and the narrow tread provided with antifriction-ribs, substantially as set forth.



755,771. ELECTRIC SWITCH OR CIRCUIT-BREAKER. EDWARD M. HEWLETT, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 20, 1900. Renewed May 7, 1902. Serial No. 106,340. (No model.)



*Claim.*—1. An electric switch or circuit-breaker comprising an electric motor, a movable switch member operated thereby, a clutch to connect or disconnect the motor, a circuit-breaker for the motor-circuit operated after determinate ranges of motor movement, and a circuit-controller for closing the motor-circuit at any position of rest.

2. An electric switch or circuit-breaker comprising an electric motor, a movable switch member operated thereby to close the switch, a cut-out for the motor-circuit operated when the switch is closed, a switch-opening spring strained when the switch is in closed position, connections for releasing the same by a further movement of the motor, and means for closing the motor-circuit independently of the cut-out.

3. An electric switch or circuit-breaker comprising an electric motor, a movable terminal, a crank-shaft connected to the movable terminal, a clutch between the motor and crank-shaft set by drag of the crank-shaft relatively to the motor, and a spring strained by the motor and acting on the crank-shaft whereby the spring is released and the switch quickly opened when the point of application of the spring is shifted off center with relation to the crank-shaft.

4. An electric switch or circuit-breaker comprising a motor governable from a point distant from the switch, a movable switch member controlled thereby, automatic devices operated by the motor for arresting it at a determinate position before full closure of the switch and during full closure, and means for quickly opening it.

5. An electric switch comprising a control-circuit, a motor thrown into operation thereby, fixed circuit-terminals, reciprocating movable terminals operated by the motor to close the circuit, a clutch to connect and disconnect the motor, and a quick-acting agency to open the terminals operating independently of the motor but governed thereby.

6. An electric switch or circuit-breaker comprising an electric motor, a movable terminal, a clutch between the motor and the movable switch-terminal to connect or disconnect them, a spring strained coördinately with a closing movement of the terminal, and connections for giving the clutch a forward movement relative to the motor on opening the switch, thereby permitting the spring to quickly open the circuit.

7. A high-potential switch or circuit-breaker, comprising an electric motor, a crank driven thereby, a movable switch-contact, a clutch between the crank and the movable switch contact or contacts, a counterbalance acting on the crank in the opening movement of the switch, and means for releasing the clutch to open the switch.

8. A high-potential switch or circuit-breaker, comprising fixed circuit-terminals, reciprocating movable contacts to close or open the circuit, means for storing energy on closing the switch to effect its opening movement, an electric motor geared to a crank-shaft to close the switch, and a slip connection permitting the stored energy to open the switch when the crank passes a definite position.

9. The combination with an alternating-current circuit, of an electric switch, a control-circuit therefor, connections for operating the switch-contacts to shift them into close relation, and means for quickly shifting them into contact at a definite instant.

10. The combination with an alternating-current circuit, of a switch, means for approximating the switch-contacts and arresting them when in close relation, and means for quickly effecting their engagement at a definite instant.

11. The combination with an alternating-current circuit, of a switch, means for approximating and arresting its contacts, and apparatus for establishing contact at the desired instant by shifting them from such position of approximation.

12. The combination with an alternating-current circuit, of a switch, operating devices therefor, a control-circuit including such devices, a contact in said circuit for energizing the control-circuit and approximating the switch-contacts, and a synchronizing contact for effecting their engagement after such a position of approximation, thereby permitting a rapid closure when necessary.

13. An electric switch or circuit-breaker comprising an electric motor, a movable terminal, a crank-shaft connected with the movable switch-terminal, a clutch between the motor and crank-shaft locked relatively thereto by a small angular drag of the crank-shaft, and a spring strained by the motor and acting on the crank-shaft whereby the spring is released and the switch quickly opened when the point of application of the spring is shifted off center with relation to the crank-shaft.

14. An electric switch or circuit-breaker having a movable member, a motor to operate the same, a clutch between the motor and the movable member adapted to engage or release at any angular position throughout its revolution, a spring strained when the switch is closed, and control devices for releasing the clutch and freeing the movable member from the motor.

15. An electric switch or circuit-breaker comprising a motor, a movable switch member operated thereby, a clutch to connect or disconnect it instantly at any point, a spring strained by the motor, means for automatically checking the motor after the spring has been set, and means for releasing the clutch when the motor starts again.

16. An electric switch or circuit-breaker comprising separable contacts to make and break the circuit, a spring, a motor for straining the spring coincidently with the closing movement of the switch, and means for releasing the spring and cutting in the motor to open the circuit.

17. An electric switch or circuit-breaker comprising separable contacts to make and break the circuit, a spring, a motor, means for straining the spring to store up motor energy, said spring controlling the switch movement, and means for freeing the spring and opening the circuit immediately upon the restarting of the motor.

18. An electric switch or circuit-breaker having a movable member, a motor to operate the same, a ratchet-clutch between the motor and the movable member, a spring strained by the motor in affecting one switch operation, and means for opening the clutch and permitting the spring to operate the switch.

19. An electric switch or circuit-breaker having a movable member, a motor to operate the same, a ratchet-clutch between the movable member and the motor, a crank and link between one of the clutch parts and the movable element of the switch, a spring strained by the motor, and means for shifting the crank off center and releasing the spring.

20. An electric switch provided with a movable contact, a pivoted support therefor, motive mechanism for shifting the contact, and connections between said motive mechanism and the support for giving the latter a right-line motion.

21. An electric switch provided with a movable contact, a pivoted support therefor, motive mechanism for shifting the contact, a rock-arm actuated by the motor and connected to the support, and link connections between the motor, the frame, and the rock-arm to effect a right-line motion of the support.

22. An electric switch provided with a movable contact, a rod carrying the same, a rotary motor for operating the rod, and parallel-motion connections between the motor and rod for reciprocating the latter in a right line.

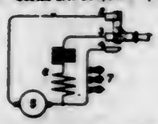
23. An electric switch provided with a movable contact, a rock-arm from one end of which the contact is supported, a motor-crank connected to the center of the rock-arm, a pivoted connection between the center of the rock-arm and a stationary point on the

frame, said connection being of the same length as the two branches of the rock-arm, and means for permitting a lateral motion of the free end of the rock-arm, whereby the movable contact is reciprocated in a right line.

24. The combination with an electric switch, of a motor-driven shaft for operating the same, an electrically-controlled clutch between the shaft and switch, and means for opening the clutch after a determined range of shaft movement.

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755,772. SWITCH. EDWARD M. HEWLETT, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Aug. 14, 1903. Serial No. 169,443. (No model.)



*Claim.*—1. Means for closing the field-circuit of a generator through a resistance-shunt, comprising a snap-switch, and an auxiliary shunt-terminal on which said switch closes just before opening the armature-circuit.

2. Means for closing the field-circuit of a generator through a resistance-shunt, comprising a snap-switch blade, a handle therefor forming an auxiliary switch-blade, and an auxiliary shunt-terminal on which said auxiliary blade closes just before the main blade opens.

3. Means for closing the field-circuit of a generator through a resistance-shunt, comprising a main switch-blade, a handle therefor independently pivoted at the same point and serving as an auxiliary switch-blade, a spring connection between the two blades, and an auxiliary shunt-terminal on which the auxiliary blade closes before the main blade opens.

4. In a switch, the combination with two blades both pivoted at the same point, of a spring holding them normally at a given angle, a clip with which one blade engages, and an auxiliary clip with which the other blade can be engaged before the first blade opens.

5. In a switch, the combination with a main blade, of an auxiliary blade pivoted at the same point, a handle on the auxiliary blade, a main clip, an auxiliary clip with which said blades respectively cooperate, and a spring holding said blades normally at an angle less than the angle between said clips, whereby the auxiliary blade can be closed before the main blade opens but the latter cannot be closed until after the auxiliary blade has opened.

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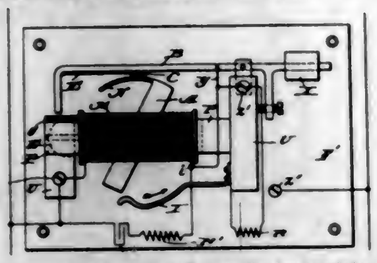
755,773. FIREARM. EMANUEL S. HOSER, Kansas City, Mo. Filed June 17, 1903. Serial No. 161,737. (No model.)



*Claim.*—A revolver, the barrel of which is formed into a pointed and cutting blade, the edge of which is directed downwardly, the handle or grip portion of the revolver being pivoted and adapted to swing in a vertical plane and to be secured in the usual or in a horizontal position, substantially as shown and described.

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755,774. ELECTRIC CLOCK. FRANK HOLDEN, London, England, assignor to General Electric Company, a Corporation of New York. Filed Apr. 16, 1900. Serial No. 13,126. (No model.)



*Claim.*—1. An electrical winding mechanism consisting of an electromagnetic winding-motor, a resistance in series with the magnet-winding of the motor, a switch closed by the armature of the motor during the unwinding period and connecting the magnet-winding in series with the resistance and across the supply-mains, and another switch arranged to short-circuit the series resistance, the latter switch being closed by attraction of the magnetic parts of the switch due to the closure through these parts of a portion of the lines of force of the magnetic field of the motor, created by the electric current passing through the magnet-winding of the motor on closure of the first switch.

2. An electrical winding mechanism consisting of an electromagnetic winding-motor and a switch closed by the armature thereof during the unwinding period and connecting the magnet-winding across the supply-mains, thus creating the magnetic field of the motor, and magnetic parts actuated by the field thus established to reinforce the contact engagement, thereby improving the electrical contact between switch-terminals.

3. The combination with a clock, of an electrical winding mechanism consisting of an electromagnetic winding motor, a resistance in series with the magnet-winding of the motor, a switch closed by the armature of the motor during the unwinding period and connecting the magnet-winding in series with the resistance across the supply-mains, and another switch arranged to short-circuit the series resistance, the latter switch being closed by attraction of the magnetic parts of the switch due to the closure through these parts of a portion of the lines of force of the magnetic field of the motor, created by the electric current passing through the magnet-winding of the motor on closure of the first switch.

4. The combination with a clock, of an electrical winding mechanism consisting of an electromagnetic winding-motor and a switch closed by the armature thereof during the unwinding period and connecting the magnet-winding across the supply-mains, thus creating the magnetic field, and magnetic parts actuated by a part of the lines of force of said field to reinforce the contact engagement, thereby improving the electrical contact between switch-terminals.

5. In combination, a clock mechanism and a rewinding-motor and switches comprising a magnet-core P, exciting-winding M, armature A connected to the shaft T of the clock mechanism to which is also attached the mainspring S; contact-spring I, wing N, contact C carried by the magnetic arm B, counterweight X, and the resistance R short-circuited by the closure of the contact C on wing N as described and shown.

6. In combination, a clock mechanism and a rewinding-motor and switches comprising a magnet-core P, exciting-winding M, armature A connected to the shaft T of the clock mechanism to which is also attached the mainspring S; or its equivalent, contact-spring I, wing N, contact C carried by the magnetic arm B, counterweight X and the resistance R short-circuited by the closure of the contact C or wing N as described and shown.

7. A motor-wound clock-train, comprising an electromagnetic winding device, a switch operated after a determinate period of operation of the clock, an electromagnetic switch controlled thereby for throwing the electromagnetic winding device into operation, and means for opening said switch and holding it in the open position after a determinate range of winding movement.



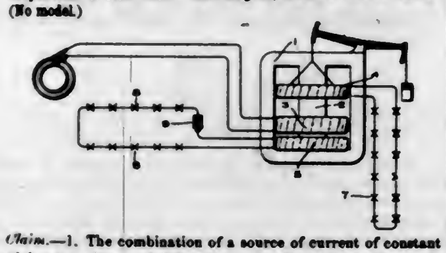
8. The combination of a wheel-train, a magnetically-operated winding device, a switch controlled by a determinate range of unwinding for cutting into circuit the winding device, an auxiliary switch controlled thereby for short-circuiting the preliminary switch, said preliminary switch being adjusted to open during the short-circuiting period, and means for causing a snap-break of the short-circuiting switch after a determinate range of the winding movement.

9. The combination of a clock-train, a magnetically-operated winding device, a switch closed by the unwinding, a circuit containing said switch and the winding-magnet, a resistance in said circuit and an auxiliary switch operated on closure of the circuit for short-circuiting the resistance, and means for quickly breaking contact at said switch after a determinate range of unwinding movement.

10. The combination of a clock-train, of an electromagnetic winding device therefor, a switch closed by a definite range of unwinding, a normally open auxiliary switch closed automatically when the first switch is closed, and means whereby the operation of the device opens both switches.

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755,775. SYSTEM OF ELECTRICAL DISTRIBUTION. LEWIS L. HOLLADAY, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Aug. 21, 1902. Serial No. 120,487. (No model.)



*Claim.*—1. The combination of a source of current of constant potential, a transformer fed thereby, a plurality of secondary coils on said transformer, a circuit taking lagging current fed from one of said secondaries, and a consumption-circuit taking leading current fed from another of said secondaries.

2. The combination of two consumption-circuits, one taking leading current and the other taking lagging current, a source of current of constant potential, and an inductive connection between said circuits and said source of current.

3. The combination of a core, a primary coil thereon, a secondary coil on said core and movable relatively to the primary coil, another secondary coil on said core and in fixed relation to said primary coil, and separate circuits fed respectively from said secondary coils.

4. The combination of a source of current of constant potential, two series circuits, means for supplying one of said circuits with a variable electromotive force derived inductively from said source, means for supplying the other circuit with a substantially constant electromotive force derived inductively from said source, and means for maintaining a substantially constant current in the last-mentioned circuit.

5. The combination of a source of current of constant potential, a transformer fed thereby and including relatively movable coils, a circuit taking lagging current fed from one of said coils, and a circuit taking leading current fed from another of said coils.

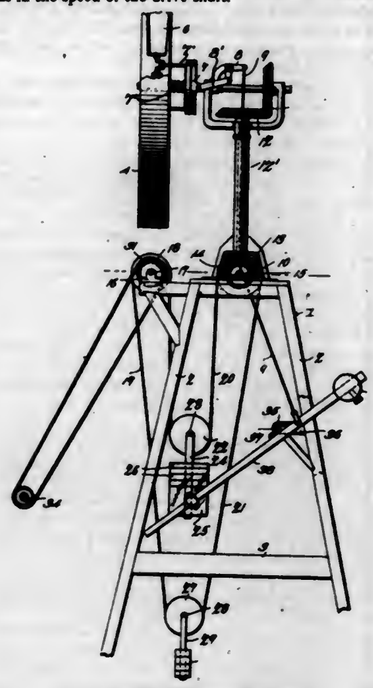
6. The combination of circuits, one taking leading current and the other taking lagging current, a source of current-supply, and a variable inductive connection between one of said circuits and said source of current-supply.

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755,776. SPEED-GOVERNOR. LOUIS K. HOWE, Sinecton, S. D. Filed May 8, 1903. Serial No. 156,261. (No model.)

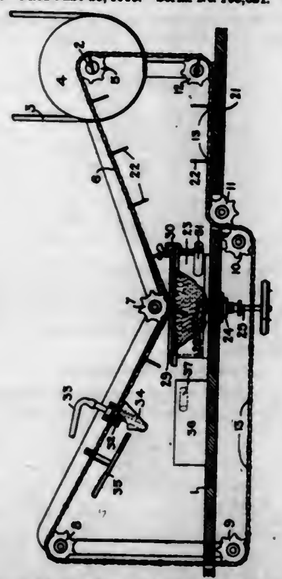
*Claim.*—1. The combination with a wind-wheel having pivoted blades, of a drive-shaft operable thereby, a driven shaft, a flexible weighted belt operatively connecting said shafts, a pivoted lever operatively and constantly connected with the belt for movement therewith throughout the operation of the device, and operative connections between the lever and blades for throwing the latter into and out of the wind owing to variations in the speed of the drive-shaft.

2. The combination with a wind-wheel having pivoted blades, of a drive-shaft operable thereby, a driven shaft, a belt connecting said shafts and hanging below the same to form an upper and a lower loop, a weighted pulley suspended upon the belt in each of the loops, a pivoted lever operatively connected with one of the weighted pulleys, and operative connections between the lever and blades for moving the latter into and out of the wind owing to variations in the speed of the drive-shaft.



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755,777. TUBE-COATING MACHINE. JOHN W. HOWELL, Newark, N. J., assignor to General Electric Company, a Corporation of New York. Filed June 25, 1903. Serial No. 163,021. (No model.)



*Claim.*—1. A tube-coating machine comprising means for successively dipping the tubes in a coating compound, and means for cleaning the outside of the tubes after being withdrawn from said compound.

2. A tube-coating machine comprising a belt for carrying the tubes, a tank containing the material with which the tubes are to be coated and into which the tubes dip, and means for removing the coating of the material from the exterior of the tubes.

3. A tube-coating machine comprising, in combination, a belt for carrying the tubes and a tank containing the material with which the tubes are to be coated arranged so that the tubes dip into the tank for a determinate distance, and a washing device for removing the material from the exterior of the tubes.

4. A coating-machine comprising a belt, holders carried thereby for the articles to be coated, and a plate in proximity to the belt having its face inclined thereto and arranged so that the articles held in said holders abut against the inclined face.

5. A tube-coating machine comprising a belt carrying clips in which the tubes are held, means for insuring each tube being held in the same relative position, a tank containing material with which the tubes are to be coated arranged so that the tubes dip into it, and means for removing the coating from the exterior of the tubes.

6. A tube-coating machine comprising a belt carrying clips in which the tubes are held, a tank containing material with which the tubes are to be coated arranged so that the tubes dip into it, means for effecting a uniform depth of immersion, and a washing device for removing the coating from the exterior of the tubes.

7. A tube-coating machine comprising a belt carrying clips in which the tubes are held, a tank into which the tubes dip, and a plate in proximity to the belt having its face inclined thereto and arranged so that the ends of the tubes held by the clips abut against the inclined face.

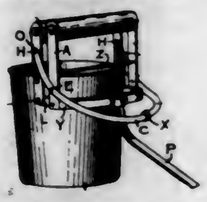
8. In a tube-coating machine, the combination of a belt, means carried thereby for holding the tubes, a plate having an inclined face arranged so that the ends of the tubes held by the clips ride on the inclined face, a tank containing the material for the coating, and means for removing the material from the exterior of the tubes.

9. In a tube-coating machine, the combination of a belt, means carried thereby for holding the tubes, a plate having its face inclined to and crossing the path of the ends of the tubes, a tank containing the material for the coating, and a washing device arranged so that the tubes come before it after leaving the tank.

10. In a tube-coating machine, the combination of a belt, clips carried thereby for holding the tubes, means for insuring each tube being held in the clips in the same position, a tank containing the material for the coating, a wheel on which the belt bears situated directly over the tank, and means for removing the coating from the exterior of the tubes.

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**755,778. MOP-WRINGER. JAMES A. HOYT, Scotia, N. Y. Filed May 25, 1903. Serial No. 158,762. (No model.)**




*Claim.*—A mop-wringer comprising a frame provided with arms L, uprights A, support-bar Z, and brace P, levers O, pivoted to arms L, levers C, pivoted to uprights A, and slidingly connected with the levers O, and rollers journaled in the uprights and the levers O, substantially as set forth.

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**755,779. ELASTIC-TREAD HORSESHOE. HERBERT R. IRWIN, Galesburg, Ill. Filed Oct. 28, 1903. Serial No. 178,327. (No model.)**



*Claim.*—1. In an elastic-tread horseshoe, a channeled metallic base with perforations therethrough whereby it may be nailed to the animal's hoof, an elastic tread having woven wire embedded therein surrounding a rib inserted therethrough and means for securing said tread in the channeled base, substantially as described.

2. In an elastic-tread horseshoe, a channeled metallic base with perforations therethrough whereby it may be nailed to the animal's hoof, an elastic tread inserted in the said channel and having a strip of stiffening material inserted therein, the toe end of said elastic tread being held in place by means of inwardly-extending channel-lips 5 adapted to pierce the elastic tread and to be pressed down upon the stiffening material, substantially as described.

3. In an elastic-tread horseshoe, a channeled metallic base with perforations therethrough whereby it may be nailed to the animal's hoof, an elastic tread inserted in the said channel and having a flat rib inserted therethrough, the ends of the said rib being adapted to lie under overhanging heel portions of the metallic base, substantially as described.

4. In an elastic-tread horseshoe, a channeled metallic base with perforations therethrough whereby it may be nailed to the animal's hoof, an elastic tread inserted in the said channel and having a flat rib inserted therethrough, the ends of the said rib terminating in tongues 11 adapted to enter holes in the metallic base, substantially as described.

5. In an elastic-tread horseshoe, a channeled metallic base with perforations therethrough whereby it may be nailed to the animal's hoof, an elastic tread inserted in the said channel and having a flat rib inserted therethrough provided with a tongue 7 adapted to enter a hole in the channel side 2 at the toe of the metallic base, substantially as described.

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**755,780. WINDOW SUPPORT AND LOCK. GILBERT H. KNOWLTON, Boone, Iowa. Filed June 1, 1903. Serial No. 159,515. (No model.)**




*Claim.*—1. A clamp for a window-sash lock made of a single piece of metal plate and one end portion wide and curved and having pointed projections for fixing rubber cushions thereto, rubber cushions fastened on the convex face of said wide and curved portion and an extension doubled and perforated at its end as shown and described for the purposes stated

2. A blank for making an eccentric clamp for a window-lock consisting of a plate 14 having a plurality of V-shaped incisions and a narrow extension 15 as shown and described for the purposes stated.

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**755,781. OVERALLS. HOWARD S. LANIER, Danville, Va. Filed May 21, 1902. Serial No. 108,305. (No model.)**




*Claim.*—1. As an article of manufacture, a pair of overalls having the lower portion of each leg provided with a reinforcing-hem, formed of folds of the material of the leg and turned on the outer side of the leg portion, certain folds being permanently united by a row of stitches not passing through the leg portion and the entire hem being further secured by stitches passing through the folds of the hem and the leg portion whereby if one set of stitches should rot or break the other set will hold the hem in position, substantially as described.

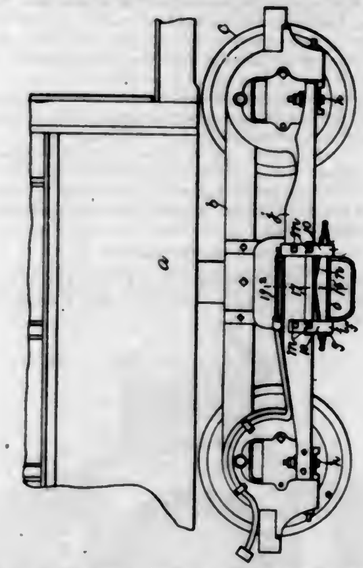
2. As an article of manufacture, a pair of overalls having the lower portion of each leg provided with a reinforcing-hem, formed of folds of the material of the leg portion and turned on the outside of the leg portion, the outermost fold showing the outer face of the material, certain folds of the hem being permanently united by a row of stitches adjacent to the lower edge of the hem, which do not pass through the leg portion, and the hem being further secured by a row of stitches adjacent to the upper edge of the hem which pass through the hem and the leg portion, substantially as described.

3. A pair of overalls having the lower portion of each leg provided with a reinforcing-hem, formed of folds of the material of the leg portion, said folds lying entirely on the outside of the leg portion, and the folds being so arranged that the outermost fold shows the outer face of the material, a row of stitches passing through said hem and leg portion and visible on the inner and outer sides of the leg portion and another row of stitches uniting the said folds and visible on the outer side only of the leg portion, substantially as described.



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**755,782. ELECTRICAL CONTACT DEVICE. JOHN LENDALL, Boston, Mass. Filed Oct. 8, 1903. Serial No. 176,195. (No model.)**




*Claim.*—1. The combination with a car-truck and a shoe-beam carried thereby, of stirrups or hangers secured to said shoe-beam, a contact-shoe interposed between said stirrups and provided with arms having flanges normally resting on said stirrups and provided with channels or pockets, and a leaf-spring secured to said shoe-beam and engaging the channeled flanges of said shoe, substantially as described.

2. The combination with a car-truck and a shoe-beam carried thereby, of a contact-shoe, stirrups or hangers secured to said shoe-beam and normally supporting said contact-shoe, and a flexible conductor secured to one of said stirrups or hangers, substantially as described.

3. The combination with a car-truck, of a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor, a support for said shoe when disengaged from said conductor, said shoe being disconnected from said support and when unrestrained capable of bodily movement vertically and laterally with relation to said support, and a spring connected with said shoe to maintain it in engagement with said support when said shoe is disengaged from said conductor and to restrain said shoe from bodily movement laterally when engaged with or disengaged from said conductor, substantially as described.

4. The combination with a car-truck, of a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor, means to support said shoe when disengaged from said conductor and to lock the same against longitudinal movement, and a spring connected with said shoe to maintain it in engagement with said supporting means when the said shoe is disengaged from said conductor and to restrain said shoe from bodily movement laterally when engaged with or disengaged from said conductor.

5. The combination with a car-truck, of a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor, means to lock said shoe from longitudinal movement when disengaged from said conductor and yet permit of bodily movement of said shoe vertically and when unrestrained laterally, and yielding means connected with said shoe for restraining it from bodily lateral movement when engaged with or disengaged from said conductor, substantially as described.

6. The combination with a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor and having a bodily and pivotal movement in a substantially vertical direction, means connected with said shoe to maintain it in engagement with said conductor with a yielding pressure and to restrain said shoe from bodily movement laterally, and means to restrain said shoe from longitudinal movement when disengaged from said conductor, substantially as described.

7. The combination with a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor and having a bodily and pivotal movement in a substantially vertical direction, a spring connected with said shoe to maintain it in engagement with said conductor with a yielding pressure and to restrain it from bodily movement laterally, and stirrups or hangers for supporting said shoe between them when the latter is disengaged from said conductor, substantially as described.

8. The combination with a contact-shoe adapted to engage a third rail or conductor and capable of being moved bodily in a substantially vertical direction, a substantially flat spring engaging the opposite ends of said shoe to maintain it in engagement with said conductor with a yielding pressure, and stirrups or hangers to support said shoe when disengaged from said conductor, substantially as described.

9. The combination with a contact-shoe comprising a substantially flat bar *e* provided with upturned arms *f* having longitudinally-grooved flanges *g*, of a leaf-spring fitted into the grooved flanges of said shoe to maintain the said shoe in engagement with a third rail or conductor with a yielding pressure, and stirrups or hangers to engage said flanges and support said shoe when disengaged from said conductor, substantially as described.

10. The combination with a car-truck, of a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor, a support for said shoe to sustain it when disengaged from said rail or conductor and to restrain said shoe from longitudinal movement and yet permit a tilting movement in a substantially vertical plane, and a spring connected with said shoe to restrain it from bodily movement laterally when disengaged from said rail or conductor and to permit said shoe to tilt laterally when in engagement with said rail or conductor, substantially as described.

11. The combination with a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor and having a bodily and pivotal movement in a substantially vertical direction, stationary stirrups or hangers to support said shoe and to lock it against longitudinal movement when said shoe is disengaged from said conductor, and a spring connected with said shoe to hold it in yielding engagement with said conductor and to restrain said shoe from bodily movement laterally, substantially as described.

12. The combination with a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor and having a bodily and pivotal movement in a substantially vertical direction, and stationary means to engage the said shoe above its contacting face and support the said shoe when disengaged from its conductor, the said shoe being moved upward from said supporting means by its engagement with said conductor, and yielding means connected with said shoe to restrain it from bodily movement laterally when disengaged from said conductor, substantially as described.

13. The combination with a contact-shoe having a substantially flat face to make a sliding contact with the upper surface of a third rail or conductor and provided with substantially vertical arms having substantially horizontal flanges, stationary supports or hangers upon which said flanges rest when the shoe is disengaged from said conductor and with which one of the vertical arms of said shoe engages when the shoe is in engagement with said conductor, and yielding means to resist the upward movement of the contact-shoe and

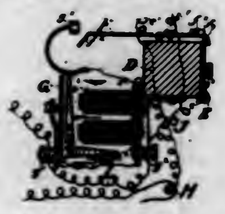
to normally force the flanges of said shoe downward into engagement with the stationary support, substantially as described.

14. The combination with a car-truck, of stirrups or hangers secured thereto, a contact-shoe having a substantially flat face adapted to make a sliding contact with a third rail or conductor and interposed between said hangers, said shoe being separate from said hangers and capable of bodily movement vertically and when unrestrained laterally with relation to said hangers, and a spring connected with said shoe to maintain it in engagement with said hangers when the said shoe is disengaged from said third rail and to restrain said shoe from lateral movement bodily both when said shoe is disengaged from said rail and when engaged therewith, substantially as described.

15. The combination with a contact-shoe adapted to make a sliding contact with a third rail or conductor and consisting of a bar having upturned arms provided with flanges substantially parallel with said bar, of stirrups or hangers separated from each other and each provided with substantially parallel arms connected by a substantially horizontal bar, upon which the flanges of the shoe rest when disengaged from its said conductor, and a spring connected with said flanges to restrain said shoe from bodily movement laterally when engaged with or disengaged from said conductor, substantially as described.

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**755,788. ELECTRIC FIRE-ALARM.** ARGUS LUECKEY, St. Louis, Mo. Filed Dec. 10, 1902. Serial No. 134,713. (No model.)



*Claim.*—1. An electric alarm system, comprising circuits and a source of electric energy therefor, a series of annunciator-sections representing a series of rooms, an electric magnet G, a foundation-strip D on which said electromagnet is mounted, an armature for said electromagnet, a hammer $g^3$ on said armature, a lever F pivoted on one of said annunciator-sections, and adapted to be tilted by the hammer $g^3$, a door E, pivoted to said section and held in normal position by the lever F, a switch-rod H, a switch-loop $l'$ adjacent thereto, said switch-rod H and switch-loop $l'$ being in the path of said door E, an electric bell, and circuit connections so arranged that when the electric magnet G is energized the door E is caused to be released to fall on the switch thus closing a circuit through said bell, substantially as shown and described.

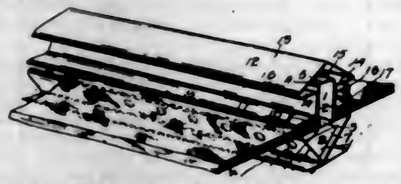
2. An automatic electric alarm system, comprising circuits and a source of electric energy therefor, a series of annunciator-sections representing a series of rooms by number, an electromagnet G, a foundation-strip D on which said electromagnet is mounted, an armature for said electromagnet, a hammer $g^3$ on said armature, a lever F pivoted on said foundation-strip and adapted to be tilted by said hammer, a door E hinged to a section and held in normal position by the lever F, a switch-rod H, a switch-loop $l'$ adjacent thereto, said switch-rod H and switch-loop $l'$ being in the path of said door E, an electric bell, a thermostat for each annunciator-section, and circuit connections such that when a thermostat is operated its corresponding electromagnet G is energized to cause the release of the door E which falling on the switch short-circuits said electromagnet G and closes a circuit through said electric bell, substantially as shown and described.

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**755,784. VENTILATING SASH-BAR.** FRANK LYSTER, Philadelphia, Pa. Filed June 29, 1903. Serial No. 163,556. (No model.)

*Claim.*—1. A ventilating sash-bar having a hollow web, provided with openings at its outer side, supporting-shoulders extending outwardly from opposite sides of the base of the web, converging apertured brace-walls extending obliquely from the outer sides of the shoulders, and gutter-flanges extending outwardly from the said brace-walls, substantially as described.

2. A ventilating sash-bar, having a hollow web provided with openings at its outer side, supporting-shoulders extending outwardly from opposite sides of the base of the web, and converging apertured brace-walls extending obliquely from the outer sides of the shoulders and forming a chamber which communicates with the interior of the hollow web



3. A ventilating sash-bar, having a hollow web, open at its inner side and provided with ventilating-openings at its outer side, and a cap to engage and cover the projecting portion of said web, said cap having a head extending laterally beyond the sides of the web and provided on its inner side with ventilating-openings.

4. In combination with a ventilating sash-bar, having supporting-shoulders and a hollow apertured web, a cap having side walls to engage the outer sides of the web, and a lateral head to extend beyond opposite sides of the web and cover the outer side thereof, said head forming a chamber which communicates with the interior of the hollow web through the apertures of the latter, said head having ventilating-openings, substantially as described.

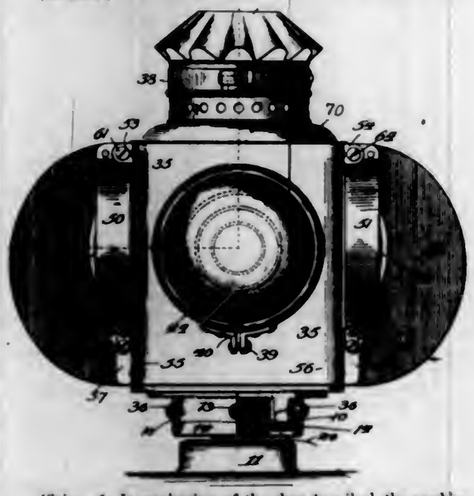
5. In combination with a sash-bar having supporting-shoulders and a hollow apertured ventilating-web, a cap having a laterally-widened head to cover the outer side of the web and formed with a ventilating-chamber which communicates with the interior thereof, side walls to engage those of the web, and outwardly-extending flanges to bear on the glass and cover the joints between the latter and the web.

6. A ventilating sash-bar having an apertured hollow web, a chamber below the web and having apertured walls, and an apertured core-bar in and removable from said chamber.

7. A ventilating sash-bar having an apertured hollow web, a chamber below the web, extending laterally from opposite sides of the base thereof and having downwardly-converging apertured side walls, and an angular, hollow apertured core-bar in and removable from the said chamber.

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**755,785. COMBINED SWITCH LAMP AND TARGET.** GEORGE L. MANSFIELD, Chicago, Ill. Filed Oct. 13, 1903. Serial No. 176,912. (No model.)



*Claim.*—1. In mechanism of the class described, the combination of a lantern having two lenses ninety degrees from each other, one lens being colored to indicate "safety" and the other lens being colored to indicate "danger," a shield approximately parallel to the axis of the "safety" colored lens adapted to shut off all view of said "safety-lens" from a point in front of said "danger-lens," the outside of said lens-shield and the lantern toward the point in front of the "danger-lens" being colored to indicate "danger."

2. In mechanism of the class described, the combination of a lantern having a lens and a target-wing rigidly secured to and extending from the outside of said lantern at the same height as the lens and in a vertical plane perpendicular to the plane of the face of said lens.



3. In mechanism of the class described, the combination of a lantern having a lens and a target-wing secured to and extending from the outside of said lantern in approximately the central vertical plane of the lens perpendicular to the face of said lens.

4. In mechanism of the class described, the combination of a lantern having a lens and a target-wing rigidly secured to and extending from the outside of said lantern at the same height as the lens and in a vertical plane perpendicular to the plane of the face of said lens, the lens being colored to indicate one condition of the track as "safety" and the target-wing being colored to indicate the other condition of the track as "danger."

5. In mechanism of the class described, the combination of a lantern having a lens and a target-wing secured to said lantern in approximately the central vertical plane perpendicular to the face of said lens, the lens being colored to indicate one condition of the track as "safety" and the target-wing being colored to indicate the other condition of the track as "danger."

6. In mechanism of the class described, the combination of a lantern having four lenses ninety degrees from each other, two oppositely-disposed lenses being colored to indicate "safety" and the other two lenses being colored to indicate "danger" and target-wings to indicate "danger" extending from opposite sides of the lantern in a plane perpendicular to the faces of the lenses indicating "safety."

7. In mechanism of the class described, the combination of a lantern having four lenses ninety degrees from each other, two oppositely-disposed lenses being colored to indicate "safety" and the remaining two being colored to indicate "danger," target-wings to indicate "danger" extending from the opposite sides of the lantern in a plane perpendicular to the faces of the lenses indicating "safety" and circular or conical shields inclosing the lenses indicating "safety," the outer faces of said circular or conical shields being colored to indicate "danger."

8. In mechanism of the general class described, in combination with a switch-stand having a switch-mast extending from the top thereof, a lantern-base adapted to be detachably secured to said switch-mast and to have the lantern-body detachably secured to it.

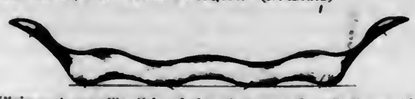
9. In mechanism of the general class described, in combination with a switch-stand having a switch-mast extending through the top thereof, of a lantern-base adapted to fit over said switch-mast, means located within the lantern adapted to secure said base to said switch-mast and mechanism for attaching the lantern-body to said lantern-base.

10. In mechanism of the general class described, in combination with a switch-stand having a switch-mast extending from the top thereof, of a lantern-base adapted to be secured to said switch-mast, there being perforations in said base through which air is adapted to pass, and means for detachably securing the lantern-body to said lantern-base.

11. As an article of manufacture, a lantern-base having a hole in its center adapted to fit over a switch-mast, other holes in it to permit the entrance of air to the lantern, and lugs extending upward from its outer edge adapted to have the body of the lantern secured thereto.

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**755,786. METALLIC DISH.** WILLIAM L. MARTIN, Middletown, Conn., assignor to the Silver City Plate Company of Meriden, Conn. Filed Dec. 10, 1903. Serial No. 184,656. (No model.)



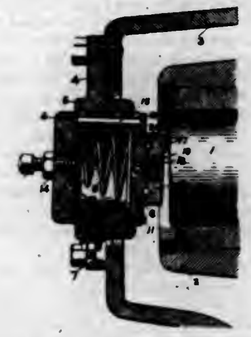
*Claim.*—A metallic dish of the character described provided with a groove in the bottom thereof formed by integral depressed portions of said bottom, and said groove having separated relatively deep and shallow portions, said deep portions being rounded longitudinally and transversely and constituting supporting-feet for the dish.

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**755,787. END-PLAY DEVICE FOR ROTARY MACHINES.** DAVID MILLER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Aug. 20, 1903. Serial No. 170,119. (No model.)

*Claim.*—1. In an end-play device, the combination with an oblique thrust-plate, of a disk rotatably mounted thereon and having a boss.

2. In an end-play device, the combination with an oblique thrust-plate, of a disk rotatably mounted thereon and having a boss, and a ball-bearing between said disk and plate.



3. In an end-play device, the combination with an oblique thrust-plate, of a disk rotatably mounted thereon and having a boss, a pivot-bolt passing centrally through said parts, and a ball-bearing between said disk and the head of said bolt.

4. In an end-play device, the combination with a movable thrust-plate, carrying a rotatable element, of means for retarding the movements of said plate.

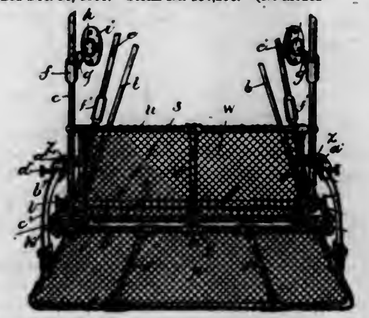
5. In an end-play device, the combination with a pivoted thrust-plate carrying a rotatable element, of a dash-pot for retarding the movements of said plate.

6. In an end-play device, the combination with a thrust-plate carrying a rotatable element and pivoted on a diametrical line, of a dash-pot connected to said plate at a point between the pivots.

7. In an end-play device, the combination with a thrust-plate carrying a rotatable element and pivoted on a diametrical line, of a lever, a piston attached thereto, a stationary cooperating cylinder, and connections between said lever and the edge of the plate.

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**755,788. CAR-FENDER.** ALBERT E. MCLEAN, Toronto, Canada. Filed Dec. 30, 1903. Serial No. 187,238. (No model.)



*Claim.*—1. In a car-fender, the combination of the fender-supporting arms adjustable relatively to the road-bed, fender-adjusting stays to adjust the fender-supporting arms and hold them in their adjusted position and a fender-platform carried by the fender-supporting arms.

2. In a car-fender, the combination of the fender-supporting arms adjustable relatively to the road-bed, fender-adjusting stays connected to the fender-supporting arms to adjust them and hold them in their adjusted position, a fender-platform rotatably connected to the fender-supporting arms, and adjustable locking members connected to the platform and to the fender-supporting arms to hold the fender at any predetermined inclination to the road-bed.

3. In a car-fender, the combination of the fender-supporting arms adjustable relatively to the road-bed, fender-adjusting stays connected to the fender-supporting arms to adjust them and hold them in their adjusted position, a fender-platform rotatably connected to the fender-supporting arms adjustable locking members for the fender-platform and the fender-supporting arms to hold the fender-platform at any predetermined inclination to the road-bed and a fender-back connected to the fender-supporting arms.

4. In a car-fender the combination of the fender-supporting

stays consisting of horizontal arms to be connected to the car-truck or truck-frame, and vertical arms to extend parallel with the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them relatively to the road-bed and rigidly hold them in their adjusted position a fender-platform connected to the fender-supporting arms and bracing members loosely mounted upon the vertical arms and arranged to be connected to the car-body.

5. In a car-fender the combination of the fender-supporting stays consisting of horizontal arms to be connected to the car-truck or truck-frame, and vertical arms to extend parallel with the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them relatively to the road-bed and rigidly hold them in their adjusted position a fender-platform rotatably connected to the fender-supporting arms and adjustable, locking members for the fender-platform and the vertical arms of the fender-supporting stays to hold the fender-platform at any predetermined angle to the road-bed.

6. In a car-fender the combination of the fender-supporting stays consisting of horizontal arms to be connected to the car-truck or truck-frame, and vertical arms to extend parallel with the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them relatively to the road-bed and rigidly hold them in their adjusted position a fender-platform rotatably connected to the fender-supporting arms and adjustable locking members for the fender-platform and the vertical arms of the fender-supporting stays to hold the fender-platform at any predetermined angle to the road-bed, and bracing members loosely mounted upon the vertical arms and arranged to be connected to the car-body.

7. In a car-fender the combination of the fender-supporting stays consisting of horizontal arms to be connected to the car-truck or truck-frame, and vertical arms to extend parallel with the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them relatively to the road-bed and rigidly hold them in their adjusted position a fender-platform rotatably connected to the fender-supporting arms and adjustable locking members for the fender-platform and the vertical arms of the fender-supporting stays to hold the fender-platform at any predetermined angle to the road-bed, bracing members loosely mounted upon the vertical arms and arranged to be connected to the car-body, such bracing members consisting of collars loosely encircling the vertical arms, rearwardly-extending arms for the collars fitted with balls and socket-plates inclosing the balls arranged to be connected to the car-body.

8. In a car-fender the combination of the fender-supporting stays consisting of horizontal arms to be connected to the car-truck or truck-frame and vertical arms to extend parallel to the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them and hold them relatively to the road-bed, a fender-platform having a shaft rotatably mounted in the bearings, adjustable locking members for the fender-platform and the vertical arms of the fender-supporting stays to hold the fender-platform at any predetermined inclination to the road-bed, a fender-back connected to the fender-supporting stays, and bracing members consisting of collars loosely encircling the vertical arms of the fender-supporting stays, rearwardly-extending arms therefor fitted with balls and socket-plates for the balls to be connected to the car-body.

9. In a car-fender the combination of the fender-supporting stays consisting of horizontal arms to be connected to the car-truck or truck-frame and vertical arms to extend parallel with the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them relatively to the road-bed and hold them in their adjusted position, a cross-stay for the fender-supporting stays having bearing members, a fender-platform having a shaft rotatably mounted in the bearings, a locking member adjustably connected to the vertical arms of the fender-supporting stays and fender-adjusting arms connected to the fender-platform and adjustably held by the locking members.

10. In a car-fender the combination of the fender-supporting stays consisting of horizontal arms to be connected to the car-truck or truck-frame and vertical arms to extend parallel with the car-front, fender-adjusting stays connected to the fender-supporting stays to adjust them relatively to the road-bed and hold them in their adjusted position, a cross-stay for the fender-supporting stays having bearing members, a fender-platform having a shaft rotatably mounted in the bearings, a locking member adjustably connected to the vertical arms of the fender-supporting stays and fender-adjusting arms connected to the fender-platform and adjustably held by the locking members, a fender-back connected to the vertical arms of the fender-supporting stays, guide-collars loosely embracing the vertical arms having rearwardly-extending arms fitted with balls and socket-plates for the balls to be connected to the car-body.

## 755,789. CAN-OPENER. ROBERT P. HORTON, St. Thomas, N. D.
Filed June 9, 1903. Serial No. 160,730. (No model.)



*Claim.*—1. The herein-described can-opener comprising a suitable base member, standards erected upon said base member and converging toward each other, a housing connected to the upper ends of said standards, a reciprocating shaft operatively mounted in said housing and carrying at its lower end a plurality of radiating knives, a limiting-bar 15 passing through an orifice in the upper end of said reciprocating shaft and adapted to limit the upward movement thereof, a spring surrounding said shaft between said bar and the bottom of said housing, and a horizontally-disposed lever adapted to force said shaft downward when so desired, all combined as specified and for the purpose set forth.

2. A can-opener comprising a base member, standards connected thereto, a housing connected to the upper end of said standards, said housing having registering longitudinal slots therein, a reciprocating shaft operatively mounted in said housing, the lower end of said shaft being sharpened, a bar passing through said shaft near its upper end, the ends of said bar entering said registering slots whereby the upward movement of said shaft will be limited, a collar surrounding said shaft at its lower end and carrying a plurality of radiating knives, means adapted to hold said shaft normally elevated, and additional means pivotally secured to one of said standards adapted to force said shaft downward when so desired, all substantially as specified and for the purpose set forth.

3. In a can-opener, the combination with suitable cutting-knives and a controlling-shaft therefor, of a base member 2 having inwardly-converging brackets 23 rigidly secured thereto whereby said base member will operate on different-sized cans, said brackets 23 having ribs or corrugations on their under side adapted to prevent said base member from casually slipping, substantially as set forth.

4. The combination with a can-opener having a controlling-shaft, of a collar 9 secured to the lower end thereof, a plurality of radiating arms carried by said collar, each arm being provided with a dovetailed groove or recess in its lower end, knives 8 adapted to enter said grooves, and means to removably secure said knives in said grooves, substantially as specified and for the purpose set forth.

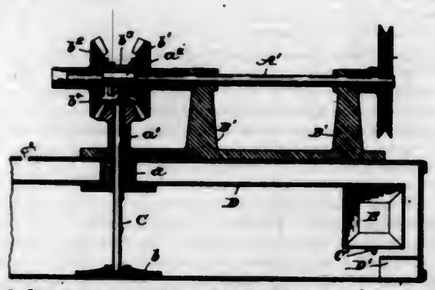
## 755,790. WATER-MOTOR. ORLANDO S. HOYER, Philadelphia, Pa.
Filed Jan. 3, 1903. Serial No. 138,234. (No model.)

*Claim.*—1. In a water-motor, the combination with a suitable casing and a vertical shaft journaled therein, of a disk mounted on said shaft, a supporting-ring, and a plurality of rectangular buckets having flat bottoms and flaring sides and ends secured between the disk and supporting-ring, whereby the water is caused to strike the flat bottoms of said buckets, and, being deflected outwardly against the flaring sides and ends, imparts increased power to the motor.

2. In a water-motor, the combination of a suitable casing and a vertical shaft journaled therein, of a disk mounted on said shaft, a supporting-ring located beneath said disk, a plurality of rectangular buckets having flat bottoms and flaring sides and ends and secured between said disk and supporting-ring, and a deflecting-plate

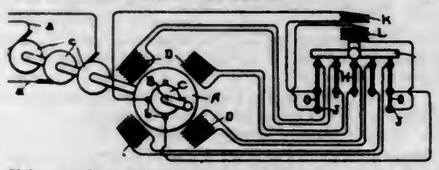


arranged in the casing in such position, adjacent to the discharge-port, that the water falling from the buckets will be directed to said discharge-port.



3. In a water-motor, the combination of a casing B, a suitable inlet-port, an outlet-port directly under the inlet, and a deflecting-plate D' secured to the bottom of the casing at the discharge-port and extending upwardly and rearwardly therefrom, of a disk mounted on a vertical shaft, a supporting-ring, and a plurality of rectangular buckets having flat bottoms and flaring sides and ends, and secured between said disk and supporting-ring, whereby the water is caused to strike the flat bottoms of said buckets, and, being deflected outwardly against the flaring sides and ends, imparts increased power to the motor.

## 755,791. MEANS FOR CLOSING FIELD-CIRCUITS OF ROTARY CONVERTERS. WILLIAM B. POTTER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York.
Filed Sept. 17, 1903. Serial No. 173,512. (No model.)



*Claim.*—1. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, and a polarized electromagnetic device adapted to operate said switch.

2. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, a polarized electromagnetic device adapted to operate said switch, and means for impressing on said device a voltage proportional to the potential across the commutator-brushes of said converter.

3. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, and means responsive to the polarity and potential of the commutator-brushes adapted to operate said switch.

4. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, a polarized magnet-armature adapted to trip said switch, and an electromagnet adapted to retract said magnet-armature.

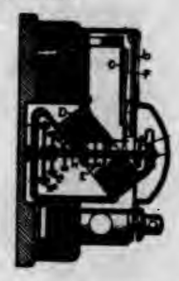
5. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, a polarized magnet-armature adapted to operate said switch, and an electromagnet energized by a current proportional to the potential of the commutator-brushes and adapted to retract said polarized armature.

6. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, a magnet-winding connected to the commutator-brushes of said converter, and a polarized armature adapted to be retracted by said magnet-winding and to trip said switch.

7. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, a polarized magnet-armature held in engagement with said switch by a spring, means for adjusting the tension of said spring, and an electromagnet energized by current proportional to the potential of the commutator-brushes and adapted to retract said polarized armature against the tension of said spring.

8. In combination, a rotary converter, a switch adapted to connect the field of said converter to its armature, a polarized magnet-armature adapted to trip said switch, an electromagnet adapted to retract said polarized armature, a high-resistance winding on said electromagnet in shunt to the commutator-brushes when said switch is open and open-circuited when said switch is closed, and a low-resistance winding on said electromagnet in series with said high-resistance winding and with the field when said switch is open and closed respectively.

## 755,792. INERTIA-DAMPER FOR ELECTRIC MEASURING INSTRUMENTS. WILLIAM H. PRATT, Lynn, Mass., assignor to General Electric Company, a Corporation of New York.
Filed Mar. 14, 1902. Serial No. 98,237. (No model.)



*Claim.*—1. In an indicating instrument, the combination with an arbor and a pointer, of means loosely mounted on said arbor for preventing the vibration of the pointer, substantially as and for the purpose specified.

2. An electric measuring instrument provided with a vibratory pointer and a damper consisting of a part having inertia and movable independently of the indicating element of said instrument, said part being frictionally connected with the indicating element.

3. In an electric measuring instrument, the combination with the vibratory indicating element, of a damper comprising a weighted part counterbalanced with reference to and mounted on the axis of said element, and movable independently of said element and having frictional connection therewith.

4. In an electric measuring instrument, the combination with the vibratory indicating element, of a weighted part counterbalanced with reference to the axis of said element, said part being freely movable around said axis independently of the indicating element, and having frictional connection with said element.

5. In an electric measuring instrument, the combination with a vibratory indicating element, of a damper comprising a weighted part counterbalanced with reference to the axis of said spindle, and having a frictional connection with said spindle so as to be movable independently thereof.

6. In an electric measuring instrument, the combination with a rotatable tubular spindle, of a weighted collar having a frictional connection therewith.

7. In an electric measuring instrument, the combination with a spindle, of a collar loosely mounted thereon, and weighted arms on said collar counterbalanced around the axis of said spindle.

8. In an electric measuring instrument, the combination with a tubular spindle, of a collar loosely mounted thereon, weighted arms on said collar, an inner spindle, and weighted arms on said inner spindle.

9. In an electric measuring instrument, the combination with two concentric independent spindles, of weights concentric with said spindles and secured to one of them.

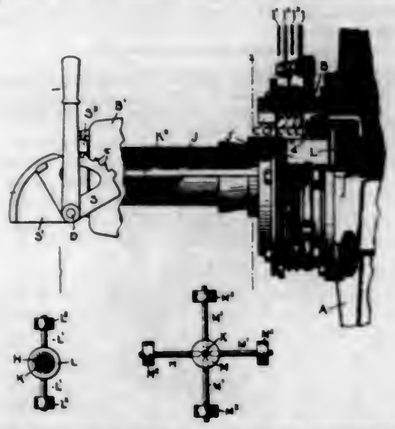
10. In an electric measuring instrument, the combination with two concentric independent spindles one of which is freely rotatable on the other, of weights concentric with said spindles, some of said weights being secured to one spindle and the rest loosely mounted on the other.

11. In an electric measuring instrument, the combination with a tubular spindle having a pivot at one end and an internal collar at the other, of an inner spindle having a bearing in said pivot and collar and extending beyond the end of the tubular spindle, a collar loose on the tubular spindle, a collar fast on the extended portion of the inner spindle, and arms on each collar carrying adjustable weights.

## 755,793. STARTING DEVICE FOR INDUCTION-MOTORS. HENRY G. REIST and ARTHUR W. HEINEMAN, Schenectady, N. Y., assignors to General Electric Company, a Corporation of New York.
Filed June 27, 1902. Serial No. 113,480. (No model.)

*Claim.*—1. In a motor-starting device, a starting-switch comprising contacts carried by the rotatable member of the motor, a

relatively movable contact adapted to engage said contacts, and means for moving said relatively movable contact in a step-by-step manner.



2. In a motor-starting device, a starting-switch comprising contacts carried by the rotatable member of the motor, a relatively movable contact adapted to engage said contacts, and a ratchet-and-pawl mechanism for moving said relatively movable contact in a step-by-step manner.

3. In a motor-starting device, a starting-switch having contacts carried by the rotatable member of the motor, a relatively movable contact adapted to engage said contacts, and means for moving said relatively movable contact in a step-by-step manner, said means comprising a member having ratchet-teeth formed thereon, a member carrying a pawl which is adapted to coact with said ratchet-teeth, and means whereby each movement of the pawl-carrying member will cause the movable contact to be moved through a portion only of its full range of movement.

4. In a motor-starting device, a starting-switch having contacts carried by the rotatable member of the motor, a relatively movable contact adapted to engage said contacts, and means for moving said relatively movable contact in a step-by-step manner longitudinally of the shaft of the rotatable member, said means comprising a member having ratchet-teeth formed thereon, a member carrying a pawl which is adapted to coact with said ratchet-teeth, means whereby each movement of the pawl-carrying member will cause the switch to be moved through a portion only of its full range of movement, and means for retaining the toothed member in any position into which it may have been moved by the pawl-carrying member.

5. In a motor-starting device, a starting-switch having relatively fixed contacts mounted in line, a relatively movable contact adapted to engage said fixed contacts, means for moving said movable contact in a step-by-step manner over said fixed contacts, said means comprising a member having ratchet-teeth formed thereon, a member carrying a pawl which is adapted to coact with said ratchet-teeth, and means whereby each movement of the said pawl-carrying member to its limiting position in one direction will cause the switch to be moved through a portion only of its full range of movement.

6. In a motor-starting device, a starting-switch having relatively fixed contacts mounted in line, a relatively movable contact adapted to engage said fixed contact, means for moving said movable contact in a step-by-step manner over said fixed contacts, said means comprising a member having ratchet-teeth formed thereon, a member carrying a pawl which is adapted to coact with said ratchet-teeth, means whereby each movement of the said pawl-carrying means to its limiting position in one direction will cause the switch to be moved through a portion only of its full range of movement, and means whereby a movement of the said pawl-carrying means to its limiting position in the reverse direction will cause the switch to be moved back to its initial position.

7. In a motor-starting device, a starting-switch, operating mechanism for said switch comprising a pivoted sector having ratchet-teeth formed thereon, a pivoted lever-arm carrying a pawl which is adapted to coact with said teeth when the said pivoted arm is in certain operative positions, a fixed sector mounted parallel to and of slightly greater radius than said pivoted sector and against the periphery of which the pawl operates, thereby preventing said pawl from engaging with the said ratchet-teeth when the pivoted arm is moved into certain other operative positions, and means for limiting the movements of said lever-arm.

8. In a motor-starting device, a starting-switch, operating mechanism for said switch comprising a movable toothed sector operatively connected with the movable member of said switch, a pivoted arm carrying a pawl which is adapted to coact with the teeth of said sector when the said arm is in certain operative positions, means for preventing said pawl from engaging with said teeth when the pivoted arm is in certain other operative positions, and means for maintaining the movable member of said switch in any one of its operative positions after it has been moved into said position by the said ratchet-and-pawl mechanism, said means comprising teeth carried by said pivoted sector and a plunger carried by said fixed sector for engaging with said teeth.

9. In a motor-starting device, a starting-switch, operating mechanism for said switch comprising a movable toothed sector operatively connected with the movable member of said switch, a pivoted arm carrying a pawl which is adapted to coact with the teeth of said sector when the said arm is in certain operative positions, a fixed sector mounted parallel to and of slightly greater radius than said pivoted sector and against the periphery of which said pawl operates to prevent the latter from engaging with said teeth when the pivoted arm is in certain other operative positions, and means for maintaining the movable member of said switch in any one of its operative positions after it has been moved into said position.

10. In a motor-starting device, a starting-switch, means for operating said switch, said operating means comprising a pivoted sector operatively connected with the movable member of said switch, ratchet-teeth carried by said sector, a lever-arm pivoted concentrically with said sector, a pawl carried by said arm and adapted to coact with said ratchet-teeth in certain positions of said arm, means for preventing said pawl from engaging with said ratchet-teeth when said arm is moved into certain other positions, said means comprising a fixed sector mounted parallel to and of slightly greater radius than said pivoted sector and against the periphery of which said pawl operates, and means for maintaining said switch in certain operative positions, said means comprising teeth carried by said pivoted sector and a plunger carried by said fixed sector for engaging with said teeth.

11. The combination in a switch, of a series of contact-blocks mounted in line and having contact-faces on opposite sides thereof, and a movable brush comprising two opposing sections mounted on a common support and arranged to engage the said contact-faces.

12. The combination in a switch, of a series of contact-blocks mounted in line and having contact-faces on opposite sides thereof, a movable brush comprising two opposing sections mounted on a common support and arranged to engage the said contact-faces, and adjusting means for regulating the pressure of the brushes on the said contact-faces.

13. The combination in a switch, of a series of contact-blocks mounted in line and having contact-faces on opposite sides thereof, a movable brush comprising two opposing sections mounted on a common support and arranged to engage the said contact-faces, and means for giving said movable brush an intermittent forward movement over said contact-blocks.

14. The combination in a switch, of a series of contact-blocks mounted in line and having contact-faces on opposite sides thereof and a movable brush comprising two opposing sections formed of laminated conducting-strips adjustably mounted on a common support and arranged to engage said contact-faces.

15. The combination in a switch, of a series of contact-blocks mounted in line and having contact-faces on opposite sides thereof, a brush comprising two opposing sections mounted on a common support and arranged to engage the said contact-blocks with a clamping action, the ends of said brush-sections resting against the contact-faces whereby the pressure of one brush-section against one contact-face counteracts the pressure of the opposing brush-section against the opposite contact-face.

16. In a motor, the combination of a plurality of contact-blocks mounted so as to project from one end of the rotatable member and adapted to be electrically connected to the sections of a starting resistance, with a plurality of contact-brushes mounted so as to engage said blocks, and means for moving said brushes in a step-by-step manner over said contact-blocks.

17. In a motor, the combination with a rotatable member, of a plurality of resistances, contact-blocks attached to one end of said rotatable member, projecting outwardly therefrom and electrically connected to said resistances, contact-brushes mounted so as to engage said contact-blocks, and means for moving said brushes in a step-by-step manner over said contact-blocks.



18. In a motor, the combination of a plurality of contact-blocks mounted on the end of the rotatable member of the motor and adapted to be electrically connected to a starting resistance, with a contact-brush so constructed and arranged that it will move over the contact-surfaces of said contact-blocks to successively engage the same, and means for moving said brush over said contact-blocks.

19. In a motor, a plurality of contact-blocks mounted in groups and projecting from one end of the rotatable member with the corresponding contact-faces of the blocks of a single group located in the same plane, the said contact-blocks being adapted to be electrically connected to the sections of a starting resistance, in combination with a plurality of contact-brushes mounted so as to engage the contact-faces of said blocks, and means for moving said brushes over said contact-faces.

20. In a motor, the combination with the rotatable member, of a plurality of resistances, contact-blocks attached to one end of said rotatable member, projecting outwardly therefrom and arranged in groups with the contacts of a single group mounted in line and electrically connected to certain of said resistances, contact-brushes each mounted so as to engage the contact-blocks of a single group, and means for moving said brushes over said contact-blocks.

21. In a motor-starting switch, the combination with the frame of the rotatable member, of a series of contact-blocks mounted on the said frame and projecting outwardly therefrom, said blocks having opposing contact-faces, a brush comprising opposing sections adapted to engage said opposing contact-faces, a brush-holding device mounted on the rotatable member, and means for moving said brush-holding device.

22. In a motor, the combination with the revolving member, of contact-blocks each having opposing contact-faces, said blocks being attached to one end of said revolving member projecting outwardly therefrom and adapted to be connected electrically to starting resistances, a brush comprising opposing sections so constructed and arranged as to engage the opposing contact-faces of said blocks, and means for moving said brush over said contact-blocks.

23. In a motor, the combination with the revolving member thereof, of a plurality of resistances carried by said revolving member, contact-blocks each having a pair of opposing contact-faces, said blocks being attached to said revolving member and electrically connected to said resistances, and a contact-brush slidably mounted on the shaft of the motor and adapted to engage the opposing contact-faces of said blocks.

24. In a motor, the combination with the revolving member, of contact-blocks each having opposing contact-faces, said contact-blocks being attached to said revolving member and adapted to be connected electrically to starting resistances, a contact-brush mounted upon the revolving member and adapted to engage the opposing contact-faces of the contact-blocks, and means for adjusting the pressure of said brush on said contact-blocks.

25. In a motor, the combination with the revolving member, of contact-blocks each having opposing contact-faces, said blocks being attached to one end of said revolving member and projecting outwardly therefrom, a contact-brush comprising two opposing sections mounted on a common support so as to engage the opposing contact-faces of said blocks, and means for adjusting the pressure of the opposing sections of said brush on said contact-blocks.

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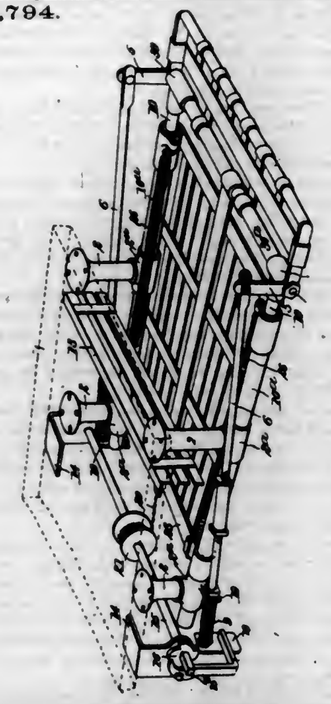
## 755,794. FENDER. CHARLES H. ROOT, Cleveland, Ohio. Filed Aug. 3, 1903. Serial No. 168,034. (No model.)

*Claim.*—1. The combination with a main rear sliding fender, and a spring to shoot the same forward, of a fore tripping-fender hinged at the front end of the main fender, a catch holding the main fender against movement, and connections, independent of the main fender, between the fore fender and the catch, acting when the fender is tripped to release the catch.

2. The combination with a main rear sliding fender, and a spring to shoot the same forward, of a tripping-fender hinged to the front of the main fender and having a projecting crank-arm, means including a catch to retract and hold the rear fender, and a rod connecting the catch and crank-arm, acting to release the catch when the fender is tripped.

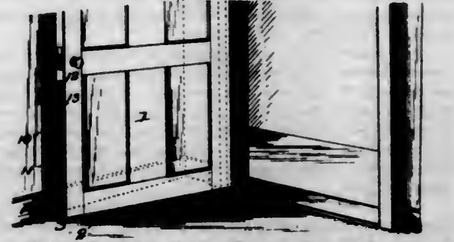
3. The combination with a main rear sliding fender and a spring to shoot the same forward, of a fore tripping-fender hinged to the front of the rear fender and having a projecting crank-arm, a rod connected to the crank-arm, a catch connected to the rod and holding the main fender against movement, and a stop for the rod, supported on the car-frame, and acting to hold the rod and tilt up the fore fender when the rear fender shoots forward.

755,794.



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## 755,795. DOOR-CHECK. DANIEL D. RYAN, Renault, Ill. Filed Jan. 5, 1904. Serial No. 187,802. (No model.)



*Claim.*—The herein-described door-check comprising the combination with the door, having a recessed opening in its lower edge, of a locking device adapted to cooperate with said recess, said locking device comprising the base member 2 and means to anchor it to the floor and also provided with a locking-spring 3 having its free end directed upward to engage the recess in the door and suitable means carried by the door adapted to disengage the end of the spring from said recess when it is desired to close the door but permitting said parts to be disposed in locked relationship to each other, substantially as specified and for the purpose set forth.

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## 755,796. FUSIBLE CUT-OUT. HOWARD R. SARGENT, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Mar. 14, 1900. Serial No. 8,647. (No model.)



*Claim.*—1. A fusible cut-out, which comprises a substantially air-tight casing, adapted to resist the pressure of the gases generated by the melting of the fuse, substantially the entire interior of which casing is a large free air-space, and a bare fusible conductor extending therethrough and secured in the walls thereof, so that the casing is permanently closed and the fused conductor will not be blown out of the casing.

2. A fusible cut-out, which comprises a substantially air-tight

casing adapted to resist the pressure of the gases generated by the melting of the fuse, substantially the entire interior of which casing is a large free air-space, and a bare fusible conductor extending therethrough, and secured in the walls thereof in such manner that it will not be blown out of the casing.

3. A fusible cut-out, which comprises a bare fusible conductor, and a permanently-closed casing therefor having a relatively large open interior air-space throughout its length and adapted to resist the forces released when the conductor fuses.

4. A fusible cut-out, which comprises a bare fusible conductor, and an air-tight casing therefor, the conductor, where it passes through the walls of the casing, being secured thereto so that it will not be blown out, the casing having a relatively large open interior air-space throughout its length, and being adapted to resist the forces released when the conductor fuses.

5. A fusible cut-out, which comprises a bare fusible conductor, and an air-tight casing having a relatively large, open, interior air-space through which the conductor extends, the casing being adapted to resist the forces released when the conductor fuses, and the ends of the conductor being secured in the walls of the casing so that they will not be blown out of the casing.

6. A fusible cut-out, which comprises the fusible conductor, and an air-tight casing having walls of insulating material and conducting metal, and having a relatively large open interior air-space throughout its length, through which the conductor extends, the casing being adapted to resist the forces released when the conductor fuses, and the ends of the conductor being secured so that they will not be blown out of the casing.

7. A fusible cut-out, which comprises the fusible conductor, a receptacle therefor, having a relatively large interior open space through which the conductor extends, metallic caps on the ends of the receptacle to close the same and secured in such manner that they will not be blown off when the conductor melts in the substantially air-tight casing thus formed, and a separate refractory strip which serves to support the conductor and prevent its engagement with the casing when the conductor expands.

8. A fusible cut-out, which comprises the fusible conductor, a receptacle therefor having a relatively large interior air-space, metallic caps on the ends of the receptacle to close the same and secured in such manner that they will not be blown off when the conductor melts in the substantially air-tight casing, and a separate strip of refractory material in the casing which serves to prevent the continuance of an arc.

9. A fusible cut-out, which comprises a fusible conductor, a receptacle therefor having a relatively large interior air-space throughout its length through which the conductor extends, metallic caps on the ends of the receptacle to close the same and secured in such manner that they will not be blown off when the conductor melts in the substantially air-tight casing, and a separate strip of refractory material which serves to support the conductor and prevent the continuance of arcs.

10. A fusible cut-out which comprises a hollow body or shell of fiber or its equivalent, metal caps for the ends of the hollow body, the edges of which are contracted about and shrunk into the shell to secure them in place, and a fusible conductor extending through the body.

11. A fusible cut-out which comprises a casing having perforations the edges of which are bent, and a fusible conductor supported on said edges.

12. A fusible cut-out, which comprises a substantially air-tight casing having perforations the edges of which are bent, and a fusible conductor supported thereon in such manner that it cannot be blown out of the casing.

13. A fusible cut-out, which comprises a substantially air-tight casing having perforations the edges of which are bent, a fusible conductor supported upon said bent edges, and a suitable solder around the end of the conductor in the cavity formed by the bent edges.

14. A fusible cut-out, which comprises a casing of fiber or its equivalent, having metal ends secured thereto, the metal ends having perforations the edges of which are bent inwardly, a fusible conductor supported on the bent edges, and a suitable solder around the ends of the conductor in the exterior cavity formed by the bent edges.

15. A fusible cut-out, which comprises a hollow casing having a large free air-space, a fusible conductor extending therethrough, and a refractory support for the conductor which extends from end to end of the casing.

16. A fusible cut-out, which comprises a hollow cylinder having a large free air-space, a fusible conductor extending therethrough, caps which close the ends of the cylinder and are secured thereto so that they will not be blown off when the conductor fuses, and a separate refractory support for the conductor which permits the latter to be substantially entirely exposed in the air-space within the casing.

17. A fusible cut-out, which comprises a fiber casing having inclosing metal portions secured thereto, a zigzag strip in the casing, and a fusible conductor supported by the strip and connected with the metal portions.

18. A fusible cut-out, which comprises a hollow body having metal caps over its ends, a zigzag strip in the casing, a fusible conductor supported by the strip and having its ends rigidly secured to the caps.

19. A fusible cut-out, which comprises a hollow casing, a single strip extending the entire length of the casing, bearing against the wall of the casing, and having perforated angular portions, and a fusible conductor extending through the perforations.

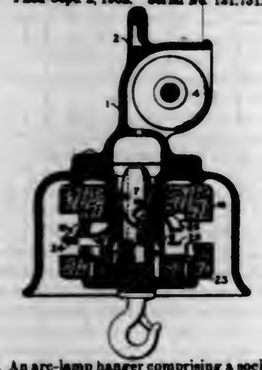
20. A fusible cut-out which comprises an air-tight casing having a large free air-space, and consisting of a hollow cylinder of insulating material and metal end portions secured thereto so as not to be blown off when the conductor fuses, and a fusible conductor in said casing having its ends permanently secured to the metal portions.

21. A fusible cut-out, which comprises an air-tight casing of refractory insulating material with metal portions, a perforated zigzag strip of refractory insulating material adapted to prevent the continuance of arcs, and a fusible conductor extending through the perforations and having its ends permanently secured to the metal portions of the casing.

22. A fusible cut-out, which comprises a hollow body of heat-conducting material having metal end caps and a large interior air-space, and a fusible conductor having its ends permanently secured in the metal ends and supported in said casing in such manner that it is substantially entirely exposed to the air-space, so that the heat generated in the conductor will be conveyed through the air-space to the heat-conducting casing.

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**755,797. ARC-LAMP HANGER.** HOWARD B. SARGENT, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 2, 1902. Serial No. 121,731. (No model.)



*Claim.*—1. An arc-lamp hanger comprising a socket and a freely-rotatable plug, and means for automatically alining the respective parts and engaging them when the plug passes up into the socket and for disengaging them by a slight upward movement of the plug.

2. An arc-lamp hanger comprising a socket containing a pin, and a freely-rotatable plug having a cam-shoulder and notches to engage with said pin, whereby the respective parts may be alined and the plug can be attached to and detached from the socket by successive upward movements.

3. The combination with a socket having a pin projecting radially into it, of a plug having a cam-shoulder adapted to engage with said pin and thereby aline the respective parts and hold the plug in engagement with the socket.

4. The combination with a socket having a pin projecting radially into it, of a plug having an oblique shoulder running down into a notch, then upwardly and downwardly into a second notch, and then up longitudinally of the plug, and a tongue extending over the first notch and having its under side running up to a notch and then downwardly and again upwardly, whereby said pin will be guided from notch to notch as its slides along the shoulder.

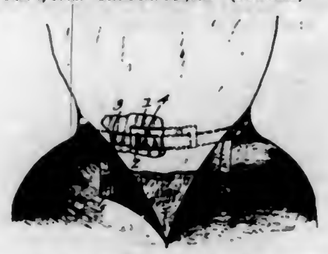
5. The combination with a pendant, of a pulley housed therein, a socket depending from said pendant and carrying a pin, a tabular plug entering said socket, a cord passing over said pulley and secured in said plug, and cam-shoulders and notches on the plug interoperating with the pin in the socket to successively engage and disengage the plug and socket when the cord is pulled.

6. In an arc-lamp hanger, the combination with a socket, of line-terminals carried thereby, means for automatically connecting said terminals when no lamp is attached to the socket, a freely-rotatable plug attached to the lamp and adapted to enter said socket, lamp-terminals carried by said plug, and means for automatically alining the respective parts and disconnecting the line-terminals and connecting them with the lamp-terminals when the plug is inserted in the socket.

7. In an arc-lamp hanger, the combination with a socket, of an annular block of insulation concentric therewith, line-terminals on said block, spring-arms normally connecting said terminals, a plug attached to the lamp and adapted to enter said socket, an annular block of insulation concentric with said plug, lamp-terminals on said last-named block, and spring-contacts connected with said lamp-terminals and making contact with the line-terminals when the plug is inserted in the socket.

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**755,798. SKIRT-SUPPORTER.** THEODORE N. SCHEBLER, Davenport, Iowa, assignor of one-half to Henry E. Balluff, Davenport, Iowa. Filed Feb. 7, 1902. Serial No. 142,380. (No model.)



*Claim.*—1. A device of the class described, comprising a supporting member provided with belt-receiving openings and having slots, headed studs movable in the slots, frictional engaging devices carried by the studs and a tension device carried by the stud and exerting pressure upon the disks.

2. A device of the class described, comprising a supporting member provided with means of attachment for a belt, movable devices adjustable on said member and frictionally engaging the same.

3. A device of the character described, comprising a supporting member, provided with guides, studs frictionally working in the guides and resilient tension devices carried by the studs.

4. In a device of the character described, the combination with a slotted plate, studs working in the slots and having heads bearing against one face of the plate, and resilient sleeves on the studs and bearing upon the face of the plate opposite to the head.

5. A device of the class described, comprising a belt-plate having transverse slots, headed studs movable in the slots, frictional engaging terminals on the studs and bearing against one side of the belt-plate and a resilient sleeve on each stud and bearing against the opposite side of the belt-plate.

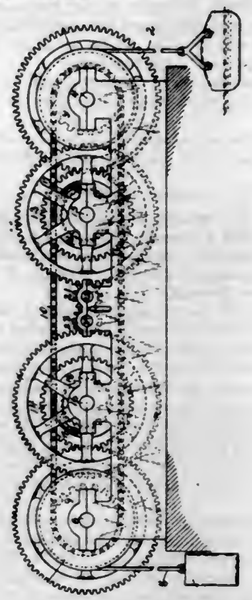
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**755,799. POWER-TRANSMITTING APPARATUS.** MAX L. SCHLUETER, Oakland, Cal. Filed Feb. 19, 1902. Serial No. 94,815. (No model.)

*Claim.*—1. The combination in an apparatus for transmitting power of a float adapted to rise and fall with a vertically-movable body of water; a drum with a cable wound thereon and connected with the float; a corresponding drum with a cable wound upon it in an opposite direction from the float-cable; a weight less than the weight of the float, suspended from said second cable; a sprocket upon each drum-shaft; an endless chain connecting the sprockets of the float and weight; a main shaft; and intermediate gearing whereby the float and weight act independently to transmit motion in one direction to the shaft.

2. The combination in an apparatus for transmitting power of a series of floats each adapted to rise and fall with a vertically-movable body of water, and separated from each other, independent drums with cables wound thereon and connected with the floats, corresponding drums with cables wound upon them in opposite directions from the float-cables, weights less than the weight of the floats, suspended from said second cables, sprockets upon each drum-shaft, endless chains connecting the sprockets of each float and its weight, a main shaft common to all the said devices, and intermediate gearing whereby each float and weight act independently to transmit motion in one direction to the shaft.





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**755,800. TRANSFORMER.** LOUIS M. SCHMIDT, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Sept. 19, 1902. Serial No. 124,070. (No model.)



*Claim.*—1. In combination, a core in the form of a cylindrical shell formed of laminations, the end portions of the shell being extended beyond the body of the transformer proper to form supporting-feet, and a winding surrounding said shell, except adjacent the supporting-feet, the terminals of said winding being brought out in the unwound space adjacent the feet.

2. A transformer having portions of its core extended beyond the body of the transformer to form supporting-feet, and a winding surrounding said core except adjacent the supporting-feet, the terminals of said winding being brought out in the unwound space adjacent the feet.

3. A transformer having an annular core, the primary and secondary being wound around the core and portions of the core being extended beyond the transformer to form supports.

4. A core comprising a body portion formed of annular-shaped laminations, and end portions having supporting extensions formed integrally with an annular portion corresponding to the laminations forming the body portion, and a winding surrounding both the body and end portion of the core.

5. In combination, a core in the form of an annulus and a bar formed of non-conducting material passing through the axis of the annulus, the bar being secured in fixed relation to the shell with its ends extending beyond the body of the core.

6. In a transformer, a core in the form of a hollow cylinder, a secondary wound about said core, a primary also wound about said core and separated from said secondary by a layer of insulation, the portion of the core at which the secondary terminals are brought out being left unwound.

7. In a transformer, a core in the form of a hollow cylinder, a secondary wound about said core, a shell of insulating material surrounding said secondary winding and inclosed core, and a primary wound about said insulating-shell, secondary, and core, the primary winding covering only a portion of the shell thus formed so that the secondary terminals will be separated from the primary winding by

a distance as great as the distance between the primary and the main portion of the secondary.

8. A transformer having an annular core, a winding on said core having terminals, and a bar of non-conducting material passing axially through said core, the said bar being provided with longitudinal grooves to receive said terminals.

9. In combination, a core, a support therefor, which engages the core, and a winding which covers the major portion of the core and support.

10. A transformer having a hollow core, a winding on said core, and a bar passing through said core and supporting the ends of said winding.

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**755,801. PROCESS OF MAKING ALPHA-OXYANTHRAQUINONE.** ROBERT R. SCHMIDT, Elberfeld, and PAUL TUST, Vohwinkel, Germany, assignors to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed Dec. 10, 1903. Serial No. 184,671. (No specimens.)

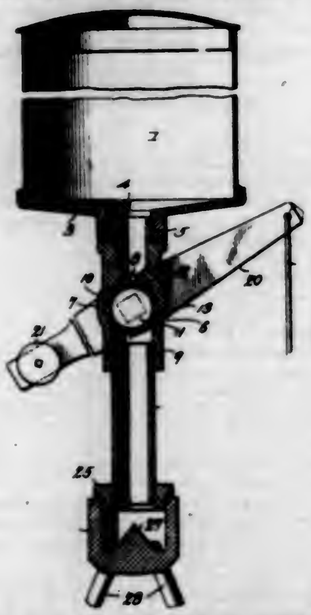
*Claim.*—1. The new process for producing alpha-hydroxyanthraquinone, which process consists in first heating an aqueous mixture containing anthraquinone-alpha-monosulfonic acid and an alkaline earth, and then isolating the resulting alpha-hydroxyanthraquinone from the reaction mass, substantially as hereinbefore described.

2. The new process for producing alpha-hydroxyanthraquinone, which process consists in first heating an aqueous mixture containing anthraquinone-alpha-monosulfonic acid and a mixture of alkaline earths, and then isolating the resulting alpha-hydroxyanthraquinone from the reaction mass, substantially as hereinbefore described.

3. The new process for producing alpha-hydroxyanthraquinone, which process consists in first heating a mixture of anthraquinone-alpha-monosulfonic acid with calcium hydroxid and water to about 190° centigrade, and then separating the resulting alpha-hydroxyanthraquinone from the reaction mass by acidulation with hydrochloric acid, substantially as hereinbefore described.

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**755,802. LUBRICATOR.** GOTTLIEB SCHNEIDER, Bluffton, Ind. Filed July 30, 1903. Serial No. 166,344. (No model.)



*Claim.*—1. In a lubricator, a reservoir, a measuring discharge-valve, a distributing-chamber and distributing-pipes extending downward from the bottom of said chamber and having their upper ends projecting above the bottom of said distributing-chamber to distances proportionate to the quantities of oil desired to pass through the several pipes.

2. In a lubricator, a reservoir, a measuring discharge-valve, a distributing-chamber and distributing-pipes adjustably secured in the bottom of said distributing-chamber so that their upper ends may project above the bottom of said distributing-chamber.

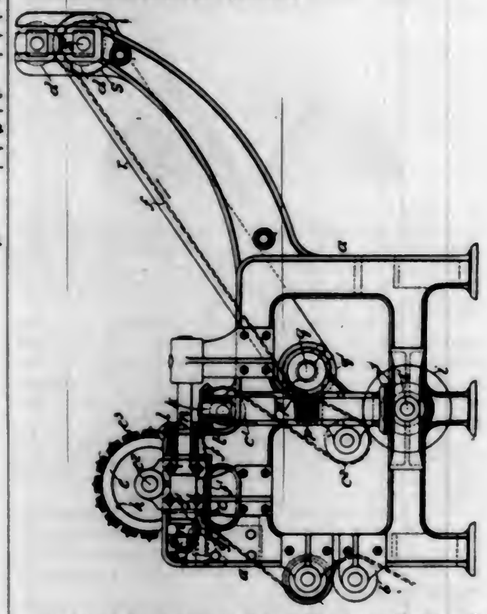
3. In a lubricator, a reservoir, a measuring discharge-valve, a distributing-chamber having a conical bottom and distributing-pipes extending outward and downward from the bottom of said chamber and having their upper ends projecting above the bottom of said distributing-chamber at the side wall thereof to distances proportionate to the quantities of oil desired to be distributed through the several pipes.

4. In a lubricator, the combination with a reservoir of a distributing-chamber, means for supplying lubricating material to said distributing-chamber in predetermined quantities, and distributing-pipes having their upper ends projecting unequally above the floor of said chamber.

5. In a lubricator, the combination with a reservoir of a distributing-chamber, a supply-pipe connecting said reservoir and distributing-chamber, means for controlling the supply of oil to said pipe, and pipes having their upper ends secured in the bottom of said chamber and projecting above said bottom to distances proportionate to the quantities of oil desired to pass through the several pipes.

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**755,808. MACHINE FOR TRIMMING THE SURFACE OF PILE CARPETS.** BENJAMIN S. SMITH, Paisley, Scotland. Filed July 28, 1903. Serial No. 167,347. (No model.)



*Claim.*—1. In a carpet-trimming machine the combination with a framing, of means for drawing through the fabric, a guide-bar and guide-rolls, a drum mounted over and between said guide-bar and one of said rolls, staples projecting from said drum, means for rotating said drum in the direction opposite to that of the rolls, blades having mower-knives mounted in proximity to said drum, one of said blades being stationary, and means for reciprocating the other blade, as described.

2. In a carpet-trimming machine the combination with a framing, of leading-in rolls, a guide-bar, guide-rolls, drawing-out rolls, a drum mounted in said framing, over and between said guide-bar and one of said guide-rolls, staples projecting from said drum, mower-blades mounted in front of said guide-bar, one of said blades being stationary and the other movable, a driving-shaft, a connection between said driving-shaft and said drum, and gearing actuated by said shaft to reciprocate the movable mower-blade, as described.

3. In a carpet-trimming machine in combination with a framing, leading-in rolls, a guide-bar, drawing-out rolls, a drum mounted in said framing, over and between said guide-bar and one of said guide-rolls, said drum comprising end disks and longitudinal laths, staples projecting from said longitudinal laths, mower-blades mounted in front of said guide-bar in proximity to said drum, one of said blades being stationary and the other blade movable, a driving-shaft, a connection between said driving-shaft and said drum, and gearing actuated by said shaft to reciprocate the movable blade as described.

4. In a carpet-trimming machine the combination with a framing *a*, of leading-in rolls *b b* carried by said framing, a guide-bar *c* over which the fabric to be operated on is led, a drum mounted in bearings on said framing, said drum comprising end disks *e* and longitudinal laths *e'*, staples *e²* having rounded ends projecting from said longitudinal laths *e'*, blades *g g'* formed with mower-knives placed horizontally in front of said guide-bar *c*, the blade *g* being movable and the blade *g'* being stationary, a shaft *i'* carried in said framing, a belt connection from said shaft *i'* rotating said drum, bevel-gearing actuated from said shaft transmitting motion to said blade *g*, and worm-gear transmitting motion to said rolls, substantially as described.

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**755,804. SCREW FOR METAL, WOOD, &c., AND MEANS FOR OPERATING SAME.** GEORGE C. SMITH, St. Kilda, near Melbourne, Victoria, Australia. Filed Mar. 20, 1903. Serial No. 98,173. (No model.)

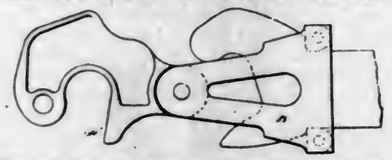


*Claim.*—1. A screw having a head provided with a conical gripping-surface of a given included angle for the purpose of preventing the driving or unscrewing of the screw except by a tool having a gripping-surface of the same given included angle.

2. A screw provided with a conical head of a given included angle not exceeding five degrees for the purpose of preventing the driving or unscrewing of the screw except by a tool having a complementary gripping-socket of the same given angle.

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**755,805. AUXILIARY CAR-COUPLING.** JOHN W. SMITH, Ottawa, Canada. Filed Jan. 4, 1904. Serial No. 187,649. (No model.)



*Claim.*—1. In an auxiliary coupler, the combination with a device adapted to engage a Master Car-Builders' coupler in the rear of its head and to project forward beyond the head, of a knuckle pivotally connected with the forwardly-projecting portion of said device and adapted to engage couplers of the Master Car-Builders' type.

2. The combination with a device adapted to engage the rear side of a coupler-head and project forward beyond the head, of a knuckle pivoted to swing horizontally upon the forwardly-projecting portion and adapted to engage couplers of the Master Car-Builders' type.

3. The combination with a member adapted to extend alongside the head of a Master Car-Builders' coupler and by an inturned fork to engage its rear side upon opposite sides of the draw-bar, of a knuckle pivoted to the forward end of said member and adapted to engage Master Car-Builders' couplers.

4. The combination with a member adapted to extend alongside the head of a Master Car-Builders' coupler and by an inturned fork to engage the rear side of the head, of a knuckle swinging upon a vertical pivot-bolt in the forward end of said member, a keeper adapted to pass over the lower ends of said bolt and of the fork branches, and means for holding the keeper in position.

5. The combination with the upper knuckle-supporting member provided with the boss and the inturned forked web, of the corresponding lower member having the boss and the apertures, the knuckle between the bosses and provided with the guard-arm, the pivot-bolt, and the nuts engaging the bolt and the fork branches, respectively.

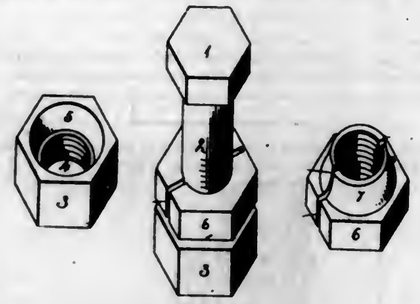
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**755,806. NUT-LOCK.** CHARLES F. SPERY, Rockford, Ill., assignor of two-thirds to Lewis A. Weyburn, Rockford, Ill. Filed Jan. 26, 1904. Serial No. 190,758. (No model.)

*Claim.*—A nut-lock comprising two internally-threaded sections

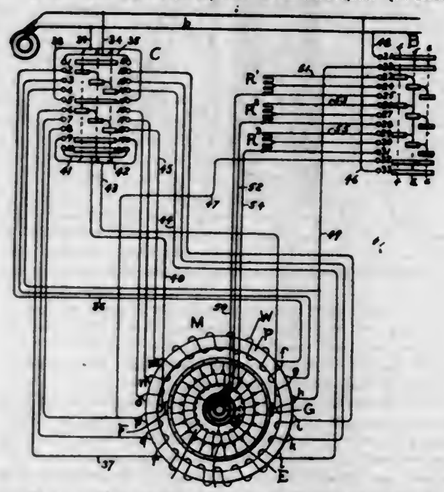


the one having a conical cavity, and the other a substantially conical projection, composed of oppositely-arranged eccentric portions separated by a longitudinal slot extending through the cone and one wall of the corresponding section, substantially as set forth.



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**755,807. BRAKING SYSTEM.** CHARLES P. STEINMETZ, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 23, 1903. Serial No. 174,268. (No model.)



*Claim.*—1. The method of converting a repulsion-motor into a braking-generator, which consists in converting said motor into an induction-machine, and operating the said machine with its primary winding connected to an alternating-current source at a speed above synchronous speed.

2. The method of converting a repulsion-motor into a braking-generator, which consists in locally closing the circuits of sections of the secondary winding of said motor, thereby forming an induction-machine, and operating the said machine with its primary winding connected to an alternating-current source at a speed above synchronous speed.

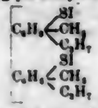
3. The method of converting a repulsion-motor into a braking-generator, which consists in locally closing the circuits of sections of the secondary winding of said motor, thereby forming an induction-machine, and operating the said machine with its primary winding connected to the source of supply for said motor at a speed above synchronous speed.

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**755,808. SULFO-IODIN COMPOUND OF HYDROCARBON.** FRANK T. F. STEPHENSON, Detroit, Mich. Filed June 22, 1903. Serial No. 162,566. (Specimens.)

*Claim.*—1. A new chemical compound, formed from an hydroxyl containing derivative of a hydrocarbon, by substituting the hydrogen of such hydrocarbon derivative by iodin and the oxygen by sulfur, being a very light brown powder, practically odorless, very slightly soluble in concentrated alkalies, and absolute alcohol, insoluble in water, and soluble in ether, chloroform, collodion and fixed oils.

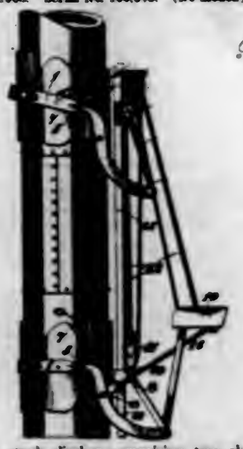
2. A chemical compound formed from the hydroxyl containing derivatives of benzin having probably the formula



being a very light brown powder, practically odorless, very slightly soluble in concentrated alkalies and absolute alcohol, insoluble in water, and soluble in ether, chloroform, collodion and fixed oils.

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755,809. **STACK-CLIMBER.** CHARLES STOCKSTILL, Coyle, Okla. Filed July 24, 1903. Serial No. 166,575. (No model.)



*Claim.*—1. A stack-climber comprising two clutches, a pole connected with one and sliding through the other, a scaffold connected with the latter clutch, and elevating means connecting the two clutches for raising the lowermost when the uppermost bites the stack.

2. A stack-climber comprising two clutches adapted when canted to bite the stack and each having canting-levers, a pole connected with the upper levers and sliding through the guide in the lower, a scaffold mounted on the lower levers and elevating means connecting the upper end of the pole with said guide.

3. A stack-climber comprising two clutches, each consisting of a band encircling the stack, levers pivoted to its ends, and a wear-plate connected with an intermediate pivot in the levers; elevating means connecting the lower ends of the upper levers with the intermediate pivot of the lower levers whereby the lower clutch may be raised when the upper clutch bites the stack; and means for lifting the lower ends of the upper levers whereby the upper clutch may be raised when the lower clutch bites the stack.

4. A stack-climber comprising two clutches, each consisting of a band encircling the stack, levers pivoted to its ends, and a wear-plate connected with an intermediate pivot in the levers; elevating means connecting the lower ends of the upper levers with the intermediate pivot of the lower levers whereby the lower clutch may be raised when the upper clutch bites the stack; means for lifting the lower ends of the upper levers whereby the upper clutch may be raised when the lower clutch bites the stack; and a scaffold mounted on supports from the lower ends of the lower levers and braced from their intermediate pivots.

5. A stack-climber comprising two clutches, levers in each whereby it is adapted to bite the stack, a scaffold-support from the lower ends of the lower levers, a pole sliding through a guide in the lower clutch and connected with the lower ends of the levers of the upper clutch, and a block and tackle connecting the upper end of the pole with said guide.

6. A stack-climber comprising two clutches, levers in each whereby it is adapted to bite the stack, a scaffold-support from the lower ends of the lower levers, a pole sliding through a guide in the lower clutch and hinged between its extremities, said pole being connected with the lower ends of the levers of the upper clutch, a block and tackle connecting the upper end of the pole with said guide, and a latch-rope leading from the scaffold over pulleys at the upper end of the pole and outward to the band of the upper clutch for the purpose set forth.

7. In a stack-climber, the combination with two clutches each comprising a band passing in rear of the stack, a movable section therein for the purpose set forth, a wear-plate in front of the stack, a pair of levers pivoted at their upper ends to the extremities of the band, and intermediate pivots in said levers connecting them with the wear-plates; of a guide attached to the intermediate pivot of the lower clutch, a pole sliding through this guide and passing between the upper levers, bars pivotally connecting the upper end of the pole with the lower ends of the upper levers, and elevating means connecting the upper end of the pole with said guide.

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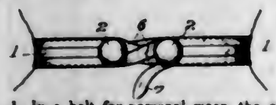
755,810. **ROAD-BED CONSTRUCTION FOR RAILWAYS.** WILLIAM H. SUTHARD, Lucas, Ohio. Filed Dec. 30, 1903. Serial No. 187,063. (No model.)



*Claim.*—The herein-described road-bed comprising the main or supporting beams 1 sustained in position by a suitable bed of concrete or the like, in combination with a plurality of staying members or cross-sections 3 having a depending flange or rib 4, said flange being adapted to fit into suitable recesses provided in a contiguous part of said supporting-beams and means cooperating with said staying members to secure the track-rails thereon and lock said staying members and supporting-beams in operative union, all combined substantially as specified and for the purpose set forth.

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755,811. **FASTENER FOR LADIES' BELTS.** HENRY H. TAYLOR, Bridgeport, Conn. Filed Dec. 17, 1903. Serial No. 185,516. (No model.)

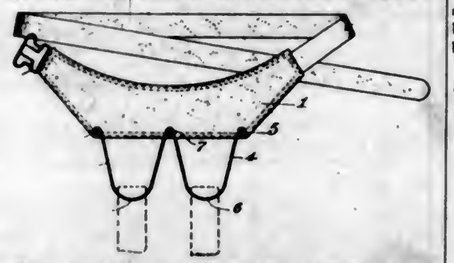


*Claim.*—1. In a belt for personal wear, the concavo-convex metallic heads having hook-shanks slotted at their free ends, and a fabric body portion having one end flexibly connected to the slot of one of the hook-shanks, while the slot of the other hook-shank is flexibly connected with said fabric body at a point remote from its other end, substantially as set forth.

2. In a belt for personal wear, the concavo-convex metallic heads provided with hook-shanks that are secured to the concave sides of said heads and extend backward and terminate in slotted enlargements, one of which slotted enlargements is flexibly attached to the fabric body of the belt at a point remote from one end of the latter, while the other slotted enlargement is flexibly attached to the other extremity of said belt, substantially as set forth.



755,812. **STOCKING-SUPPORTER.** THOMAS P. TAYLOR, Bridgeport, Conn. Filed Oct. 7, 1903. Serial No. 176,109. (No model.)



*Claim.*—A stocking-supporter, comprising an upper cloth section provided with means for attaching said section to the person of the wearer, and two similar resilient open wire frames having their free ends secured to the bottom of said section at the ends thereof, while their main portions depend from said section and form closed loops side by side capable of receiving and supporting the duplicate stocking-engaging members, substantially as set forth.

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755,818. **SEAT-SPRING FOR VEHICLES.** CHARLES L. THOMAS, Amsterdam, N. Y., assignor to W. S. Shuler and Thomas Spring Company, Amsterdam, N. Y., a Corporation of Maine. Filed Aug. 6, 1902. Serial No. 118,483. (No model.)



*Claim.*—1. In a seat-spring, in combination, a plurality of inwardly-extending spring-coils from which the seat is supported, a plurality of spring-arms extending downwardly from said coils, means for suspending said arms from the wagon-body, and means whereby said arms are connected to move substantially in unison.

2. In a seat-spring, in combination, inwardly-extending spring-coils from which the seat is supported, spring-arms outwardly extending therefrom and adapted to be suitably suspended from the wagon-body, and means for equalizing the strain upon each of said coils.

3. In combination, a one-piece seat-spring comprising coils 1, 1, bent arms 2, 2 upon which the seat is adapted to be supported, arms 6, 6, an integral cross-arm 7, and means for connecting said cross-arm to the wagon-body so as to be free to rock with reference thereto.

4. In a seat-spring, in combination, coils adapted to be connected to and support the front and rear edges of the seat, arms extending downwardly and outwardly from said coils, within the plane of said seat, a connection between said arms integral therewith, and means for detachably supporting said arms from the wagon-body.

5. A seat-spring comprising inwardly-extending coils 1, 1, bent arms 2, 2 adapted to be suitably secured to the seat, a continuous connection between said coils formed by the spring-arms 6, 6 and the cross-arm 7 freely supported in the bearing 8, a bar D to which said bearing is secured, and means to detachably support said bar from the wagon-body.

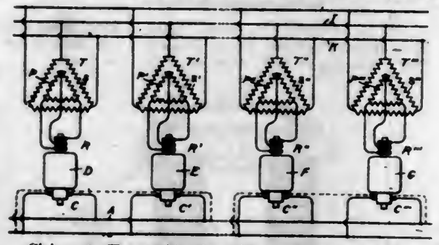
6. In a seat-spring, in combination, inwardly-extending coils adapted to be connected to and support the front and rear edges of the seat, a continuous connecting-piece between said coils, and means for detachably supporting said connecting-piece from the wagon-body such that it is free to rock with reference thereto.

7. In combination with a wagon seat and body, a spring located under each end of the seat, each of said springs comprising coils located within the plane of said seat and connected thereto adjacent the front and rear edges thereof, arms extending downwardly and outwardly from said coils within the plane of said seat, a continuous connecting-piece between said arms, and means for supporting said connecting-piece from the side of the wagon-body so that it is free to rock with reference thereto.

8. In combination, a seat, an integral seat-spring comprising bent arms 2, 2 rigidly secured to the front and rear edges of said seat, inwardly-extending coils, arms 6, 6, a cross-piece 7 connecting said arms, a bearing 8 freely supporting said cross-piece, a vehicle-body, and means for detachably supporting said bearing upon said body.

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755,814. **COUPLING ELECTRIC MOTORS.** DAVID P. THOMSON, Rugby, England, assignor to General Electric Company, a Corporation of New York. Filed Sept. 8, 1903. Serial No. 172,300. (No model.)



*Claim.*—1. The combination with supply-mains, of a plurality of dynamo-electric machines, each of said machines having a winding connected both to a commutator and to collector-rings and the said windings being arranged in groups with the windings of each group connected in series across said supply-mains, and equalizing-conductors connected to said collector-rings in such manner that they form paths for equalizing-currents only.

2. The combination with supply-mains, of a plurality of dynamo-electric machines, each of said machines having a winding connected both to a commutator and to collector-rings and the said windings being adapted to be connected through their commutators across said supply-mains either individually or in series groups, and equalizing-conductors connected to said collector-rings in such manner that they form paths for equalizing-currents only, whether said windings are connected individually or in series groups.

3. The combination with supply-mains, of a plurality of dynamo-electric machines, each of said machines having windings connected both to a commutator and to collector-rings, connections from said commutators to said mains, and equalizing-conductors inductively connected between said collector-rings.

4. The combination with supply-mains, of a plurality of groups of dynamo-electric machines, each of said machines having a winding connected both to a commutator and to collector-rings and the windings of each group adapted to be connected in series across said supply-mains through their commutators, and equalizing-conductors directly connected to the collector-rings of similar machines in said groups.

5. The combination with supply-mains, of a plurality of groups of dynamo-electric machines, each of said machines having a winding connected both to a commutator and to collector-rings and the windings of each group adapted to be connected in series across said supply-mains through their commutators, and equalizing-conductors directly connected to the collector-rings of one set of similar motors in said groups and inductively connected to another set of similar motors in said groups.

6. The combination with supply-mains, of a plurality of direct-current motors, each of said motors having a winding connected both to a commutator and to collector-rings, connections between said commutators and said supply-mains, and equalizing-conductors inductively connected between said collector-rings.

7. The combination with supply-mains, of a plurality of groups of dynamo-electric machines, each of said machines having a winding connected both to a commutator and to collector-rings, a transformer or transformers, and equalizing-conductors connected to the collector-rings of the several dynamo-electric machines and to the transformer-windings in such manner that the windings of the several machines in each single group will be inductively connected through the equalizing connections.

8. The combination with a number of groups of dynamo-electric machines, each machine having a winding connected to a commutator and the said windings being adapted to be connected in series or in parallel, of equalizing-conductors directly connected to corresponding fixed points in the windings of similar machines in the several groups.

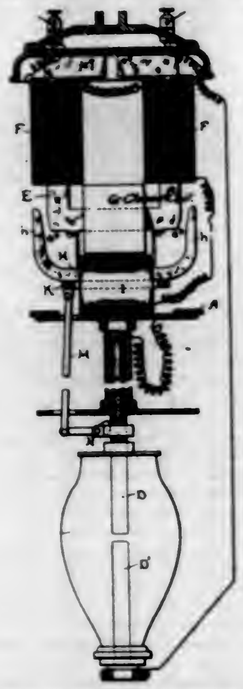
9. The combination with a plurality of dynamo-electric machines, of equalizing-conductors connected to corresponding fixed points in the windings of said machines, and an inductive connection between said equalizing-conductors.

10. The combination with a plurality of dynamo-electric machines, of a transformer, and equalizing-conductors connecting corresponding fixed points in the windings of the said machines through the windings of the said transformer.

11. The combination with a plurality of dynamo-electric machines, of a transformer having a plurality of windings, and equalizing conductors connecting each of the said transformer-windings to fixed points in the windings of one of said dynamo-electric machines.

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755,815. **ELECTRIC-ARC LAMP.** ELIHU THOMSON, Swampscott, Mass., assignor to General Electric Company, a Corporation of New York. Filed Aug. 19, 1901. Serial No. 72,471. (No model.)



*Claim.*—1. In an arc-lamp, means for opposing temporarily any change in line-current, means varying with said current for varying the arc, and means unconnected with the line for assisting the arc-varying means.

2. In an arc-lamp, a self-induction coil in series with the arc, means varying with the line-current for varying the arc, and means unconnected with the line for assisting the arc-varying means.

3. In an arc-lamp, means for temporarily opposing any change in line-current, a solenoid in series with the arc, an armature polarized by said solenoid and connected with the movable carbon, and means unconnected with the line for assisting the arc-varying means.

4. In an arc-lamp, means for temporarily opposing any change in the line-current, means for varying the arc in accord with the variation of the line-current, and a closed coil operating to assist said arc-varying means.

5. In an arc-lamp, the combination with the movable carbon, of an armature connected therewith, a magnetic core adjacent to said armature, means for varying the magnetic flux in said core in accord with the changes in line-current, and a closed coil or secondary for varying the amount of magnetism diverted from said core through said armature.

6. In an arc-lamp, the combination with a self-induction coil in series with the arc, of a polarized armature connected with the movable carbon, and a closed coil operating to assist the movements of said armature.

7. In an arc-lamp, the combination with a self-inductive coil in series with the arc, of a solenoid also in series with the arc, an armature movable in said solenoid and polarized thereby, a magnetic core adjacent to said armature and magnetized by said self-inductive coil, and a closed coil on said core.

8. In a arc-lamp, a core magnetized by the line-current, and means for varying the length of the arc comprising a closed coil responsive to changes in the magnetic flux in said core.

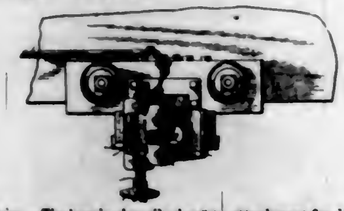
9. In an arc-lamp, a movable polarized armature for varying the length of the arc, a stationary solenoid for varying the magnetism of said armature in accord with the line-current variation, a core in the field of force of said armature, and means for polarizing said core.

10. In an arc-lamp, a movable polarized armature for varying the length of the arc, a stationary solenoid for varying the magnetism of said armature, a core adjacent to said armature, and a closed coil on said core.

11. In an arc-lamp, a movable polarized armature for varying the length of the arc, means for varying the magnetism of said armature in accord with the line-current, a magnetized core adjacent to said armature, means for varying the magnetic flux in said core in accord with the line-current, and means responsive to such variation for inducing free poles in a portion of said core adjacent to said armature.

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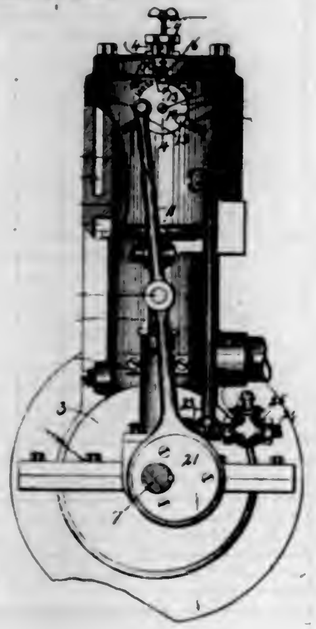
755,816. **SAFETY ATTACHMENT FOR CAR-COUPLINGS.** ERASTUS B. TRABNELL, Lakeland, Fla. Filed Aug. 31, 1903. Serial No. 171,393. (No model.)



*Claim.*—The herein-described safety attachment for draw-heads comprising the combination with a draw-head having a vertically-disposed aperture upon one side thereof, of a bolt adapted to fit said aperture and extend below the draw-head; a disk-like bracket rotatably mounted upon the lower end of said bolt and means to adjust the position of the bracket thereon, substantially as specified and for the purpose set forth.

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755,817. **ELECTRICAL IGNITING MECHANISM FOR EXPLOSIVE-ENGINES.** DANIEL M. TUTTLE, WILLIAM H. LINDLEY, and WILLIAM H. TUTTLE, Canastota, N. Y. Filed Oct. 27, 1902. Serial No. 128,964. (No model.)



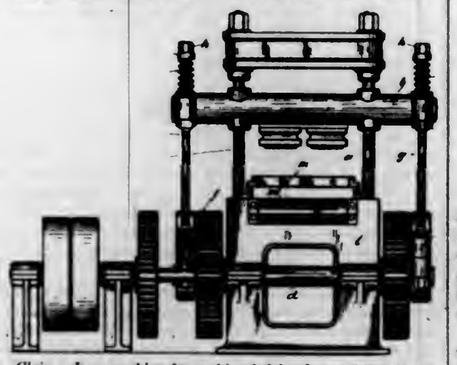


*Claim.*—1. An electric igniting mechanism for explosive-engines comprising an electrical igniting-circuit including sparking terminals therein, a rockable disk of insulating material, a segment of electric conducting material on the disk and connected in said circuit, a lever fulcrumed intermediate its ends and having oscillatory and endwise-reciprocatory movement, a brush carried by one arm of the lever around the face of the disk to contact intermittently with said segment, said brush being connected in the circuit and means actuated by the engine and operatively connected to the other arm of the lever for effecting its oscillatory and endwise-reciprocatory movements.

2. In combination with a gas-engine, of an explosion-cylinder and a crank-shaft, an electric igniting-circuit including sparking terminals in the explosion-chamber, a centrally-pivoted disk of insulating material adapted to be adjusted circumferentially, means for holding the disk in its adjusted position, a segment of electric conducting material on the disk and connected in said circuit, a sliding member movable lengthwise of the cylinder, a sleeve fulcrumed on the sliding member, an eccentric on the crank-shaft to which one arm of the lever is connected for imparting endwise-reciprocatory and oscillatory movement to the lever, a brush electrically connected in the circuit and bearing against the face of the disk to intermittently contact with said segment for closing the igniting-circuit.

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755,818. **BRICK-MAKING MACHINE.** JOHN H. VENABLES, Toronto, Canada, assignor to William J. McMurtry, Toronto, Ontario Canada. Filed Mar. 13, 1903. Serial No. 147,682. (No model.)



*Claim.*—In a machine for making bricks the combination of a main frame having a rigid table-surface, a main shaft journaled therein, eccentrics mounted on the main shaft, eccentric-straps encircling the eccentrics, guide-rods for the main frame, a reciprocating cross-head having compressing-plungers movable on the guide-rods, connecting-rods for the eccentric-straps extending through the cross-head and having supporting-shoulders to engage its under side, adjustable nuts fitted to the free ends of the connecting-rods, cushioning-springs encircling the connecting-rods and bearing against the cross-head and nuts, a plunger-guide stationarily connected to the main frame above the rigid table-surface, a movable mold-box arranged to be supported upon the rigid table-surface beneath the guide during the descent of the cross-head and plungers, and two conveyer-belts arranged to respectively deliver the movable mold-box with its contents to be compressed in front of the guide and carry it away therefrom when its contents have been pressed into shape.

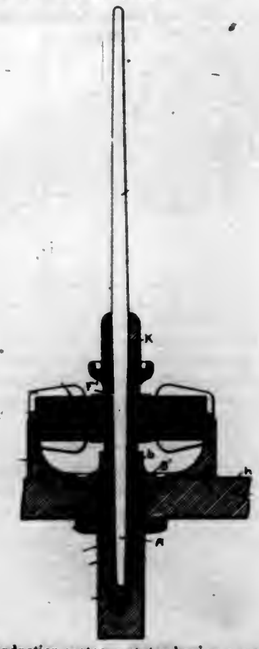
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755,819. **INDUCTION-MOTOR.** PENDLETON G. WATHOUGH, Jr., Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 2, 1902. Serial No. 121,715. (No model.)

*Claim.*—1. In an induction-motor, a stator having an annular core, coils of wire which have previously been formed into the desired shape and slipped on said core, and means forming part of the magnetic circuit of said stator for maintaining said coils in radial planes on said annular core.

2. In an induction-motor, a stator having a core composed of laminated punchings assembled to form an annular ring, formed coils of wire carried by said core, and means forming part of the magnetic circuit of said stator for maintaining said coils in radial planes.

3. In an induction-motor, a stator or primary member having a core comprising laminated punchings of such a shape that when assembled they form an annular ring, coils of wire which have been previously formed into the shape desired and slipped onto said core, and means forming part of the magnetic circuit of said stator for maintaining said coils in radial planes



4. In an induction-motor, a stator having a core comprising a main portion formed of laminated punchings assembled to form an annular ring, formed coils of wire placed on said main portion, and means for maintaining said coils in radial planes, said means comprising intermediate annular punchings of less diameter than those forming the main core portion and forming part of the magnetic circuit of said stator.

5. A stator for an induction-motor comprising a main core portion built up of laminated punchings which when assembled form an annular ring, coils of wire previously formed to fit said punchings and adapted to be placed thereon before the parts of the same are assembled, the inner sides of said formed coils projecting radially inward, and intermediate annular punchings having serrated edges, the serrations of which are adapted to receive the inwardly-projecting ends of said coils and hold the coils in position and form part of the magnetic circuit.

6. An induction-motor having an annular laminated field-core comprising a main portion made in halves, coils made in a former and slipped on said main core portion, and intermediate annular laminations adapted to hold said coils in position in radial planes and form part of the magnetic circuit.

7. An induction-motor having an armature or rotor, an annular laminated field-core comprising a main portion made in halves, coils made in a former and slipped on said main core portion, and intermediate annular laminations having serrated edges, said serrations being constructed to receive the inwardly-projecting sides of said coils so as to hold the same in place and form part of the magnetic circuit.

8. An induction-motor having an armature or rotor, an annular laminated field-core comprising a main portion made in halves, coils made in a former and slipped on said main portion, and intermediate annular punchings having serrated edges, said serrations being constructed to receive the inwardly-projecting sides of said coils so as to hold the same in place, the thickness of metal between the inner edges of each of said coils and the rotor being made as small as possible.

9. The combination with a spindle, of an induction-motor rotor attached thereto, an annular stator surrounding said rotor, said stator being so constructed of laminated punchings as to allow the threading on of formed coils, and means for fastening said coils in radial planes relative to said spindle.

10. An induction-motor having an annular core composed of

main and intermediate portions, the former being adapted to receive formed coils, and the latter to inclose the inner portion of said coils and complete the magnetic circuit.

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755,820. LAST. LOU WESTON, Brockton, Mass. Filed Oct. 17, 1903. Serial No. 177,294. (No model.)



*Claim.*—A divided hinged last, comprising a fore-part section and a heel-section, pivotally connected, the heel-section being provided with a slit communicating with the spindle-socket, in combination with a plate secured to the fore-part section, and extending into the slit in the heel-section in which said plate is movable, and is adapted to hold the sections expanded when the last is placed upon the jack-spindle and the plate is in engagement with the latter substantially as, and for the purpose set forth.

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755,821. FENCE-BUILDING MACHINE. JOHN R. WETHINGTON, Alvaretta, Okla. Filed Oct. 31, 1902. Serial No. 179,313. (No model.)



*Claim.*—The herein-described wire-twisting appliance comprising the body portion 1; a spool for wire properly mounted upon said body portion; parallel jaws 2 and 3 held separated from each other at their edges and their extreme outer ends, the separating member having a recessed portion to receive the stay-wire whereby the stay-wire may be wrapped around the main wires and said parts reliably united together, all combined substantially as specified and for the purpose set forth.

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755,822. TRAIN-CONTROL SYSTEM. GEORGE P. WHITTSETT, Washington, D. C., assignor to General Electric Company, a Corporation of New York. Filed Sept. 26, 1902. Serial No. 124,866. (No model.)

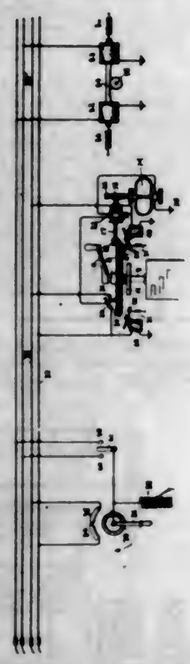
*Claim.*—1. A system of control for a train of electric-motor cars, comprising one or more standard car-controllers on each car, an electric motor geared to said controller, two motor-supplying train-wires, a switch adapted to connect said wires alternatively with the motor, and means for operating said switch at predetermined points in the rotation of the controller cylinder.

2. A system of control for a train of electric-motor cars, comprising one or more standard car-controllers on each car, an electric motor geared to said controller, two motor-supplying train-wires a switch adapted to connect said wires alternately with the motor means for operating said switch at predetermined points in the rotation of the controller-cylinder, electromagnetic locks for holding the controller-cylinder in predetermined positions, and means for returning the cylinder to the "off" position when unlocked.

3. In a train-control system, the combination with a standard car-controller, of an electric motor geared thereto, two motor-circuits, a switch for opening either circuit and at the same time closing the other circuit, and means rotating with the controller-cylinder for operating said switch to open and close said circuits alternately.

4. In a train-control system, the combination with a standard car-controller, of a motor geared thereto, two train-wires, connections between said train-wires and said motors, a switch for closing either of said connections and at the same time opening the other connection, and means rotating with the controller-cylinder for operating said switch to open one connection and close the other at a predetermined position of the controller-cylinder and for operating said switch to open the last-mentioned connection and close the first-mentioned connection at another predetermined position of said cylinder.

5. In a train-control system, the combination with a standard car-controller, of an electric motor geared thereto, two motor-circuits, a switch controlling both circuits, a wheel rotating with the controller-cylinder and provided with a cam-groove for operating said switch to open and close said circuits alternately, and an electromagnetic lock for the controller-cylinder in each motor-circuit, in shunt to the switch and the motor.



6. In a train-control system, the combination with a standard car-controller, of an electric motor geared thereto, two motor-circuits, a switch controlling both circuits, a wheel rotating with the controller-cylinder, and provided with a cam-groove for operating said switch to open and close said circuits alternately, an electromagnet in each motor-circuit in shunt to the switch and the motor, a pivoted detent operated by each electromagnet, and a lug on said wheel having one inclined side and one abrupt side to coöperate with said detents.

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755,823. SPRAYING DEVICE. RUSSELL B. WILLIAMSON, Clifton Springs, N. Y. Filed Sept. 19, 1903. Serial No. 173,810. (No model.)



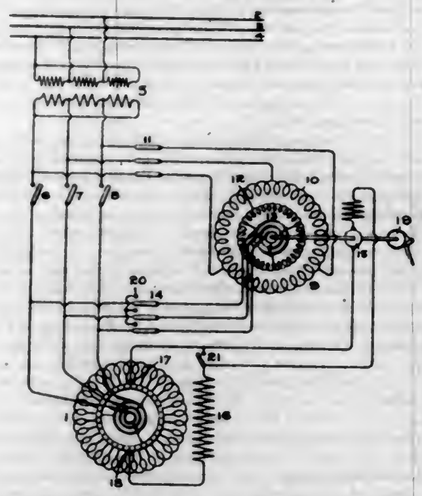
*Claim.*—1. The combination, with a reservoir and a tube leading therefrom, of a pump having its forward end provided with an orifice opposite the open end of said tube, and a depression extending laterally with respect to said orifice.

2. The combination, with a reservoir and a tube leading therefrom, of a pump having an oval orifice in its forward end near the open end of said tube, and a depression extending laterally upon each side of said orifice, for the purpose specified.

3. In a spraying device, the combination with an air-pump having a discharge-orifice in one end and an elongated transverse depression inclosing said orifice, a reservoir suspended below the discharge end of said air-pump and a tube leading from said reservoir to a point opposite said orifice.



755,824. MEANS FOR STARTING ALTERNATING-CURRENT DYNAMO-ELECTRIC MACHINES. JONATHAN E. WOODBRIDGE, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 11, 1901. Serial No. 74,907. (No model.)



*Claim.*—1. The combination of an alternating-current dynamo-electric machine, a frequency-changer for supplying current to said dynamo-electric machine for starting the same, a direct-current generator driven by the frequency-changer, and means for initially exciting the field of said dynamo-electric machine from said direct-current generator.

2. The combination of an alternating-current dynamo-electric machine, means for impressing upon said machine an electromotive force of gradually-increasing frequency, and means for exciting the field of said dynamo-electric machine by the resultant effect of two electromotive forces one of which decreases while the other increases.

3. The combination of an alternating-current dynamo-electric machine, a frequency-changer, a direct-current generator driven by the frequency-changer, means for restraining the tendency to rotation of the movable member of the frequency-changer, connections between said direct-current generator and the field of said dynamo-electric machine, and means for cutting the direct-current generator out of circuit.

4. The combination of a rotary converter, a frequency-changer for starting said rotary converter, and means for exciting the field of said rotary converter by the joint action of the rotary converter itself and a source of electromotive force which varies inversely with the variation of frequency of current supplied to the rotary converter.

5. The combination of a rotary converter, a frequency-changer, and a direct-current generator adapted to be connected in series with the field-circuit of the rotary converter.

6. The combination of a rotary converter provided with a shunt field, a source of variable electromotive force in series with said field, and means for cutting said source out of circuit.

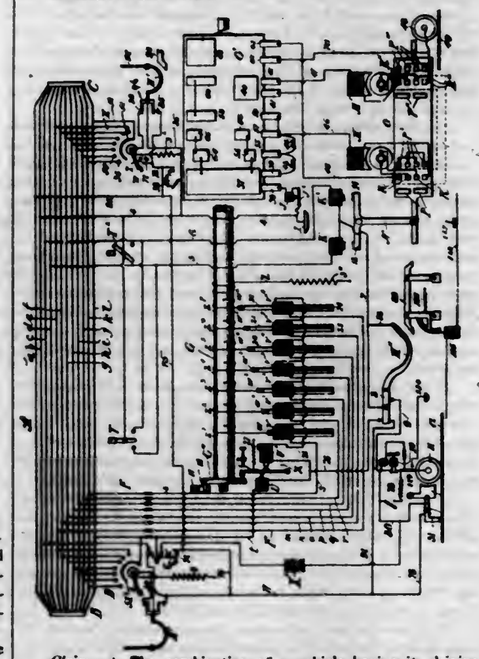
7. The combination of a rotary converter provided with a shunt field, an external source of direct current, and means for connecting the shunt field either directly across the brushes of the rotary converter or so as to include said source of direct current in series therewith.

8. The combination of a rotary converter, means for starting the rotary converter from the alternating-current side, and means for supplying current to the field of the rotary converter from the rotary converter itself both while it is coming up to speed and after it is in normal operation.

9. The combination of a rotary converter, a frequency-changer for supplying starting-current to the rotary converter, a direct-current generator driven by the frequency-changer, and connections whereby the field of the rotary converter is excited by the joint action of the rotary converter itself and said direct-current generator.

10. The combination with a rotary converter provided with a shunt field, of a source of variable electromotive force, and a circuit connecting said source in series with said shunt field.

755,825. RAILWAY-BRAKE APPARATUS. GRANVILLE T. WOODS and LYATES WOODS, New York, N. Y., assignors, by direct and mesne assignments, to Westinghouse Electric & Manufacturing Co., a Corporation of Pennsylvania. Filed Dec. 31, 1902. Serial No. 137,350. (No model.)



*Claim.*—1. The combination of a vehicle having its driving motor or motors located thereon, means adapted to change the direction of motion of said motor or motors, means adapted to control the delivery of energy to said motor or motors, brake apparatus upon said vehicle, and normally inert check apparatus operated independently of the energy-controller and adapted to cause a change in the condition of the energy-controlling device, for the purpose of stopping the delivery of energy to said motor or motors, and to cause said brake apparatus to act after the condition of said controlling device has been changed.

2. The combination of a vehicle having its driving motor or motors located thereon, means adapted to control the delivery of energy to said motor or motors, means adapted to change the direction of motion of said motor or motors, a speed-controller for said motor or motors, a device operated by hand and adapted to govern the action of said controller, brake apparatus upon said vehicle, and check apparatus operable independently of said hand device and adapted to change the condition of said speed-controller and thereafter to cause said brake apparatus to be brought into action.

3. The combination of a train of cars, driving-motors upon several of said cars, controller apparatus for said motors, such apparatus having a rapid retrograde movement, commuting-switch apparatus upon each equipped car and adapted to cause said controller apparatus to be energized, commuting-switch wires upon each car, means adapted to directly connect such wires of one car in series with similar wires on another car independently of the sequence or end relation of said cars, brake apparatus upon several of said cars, means adapted to connect the brake apparatus on one car to such apparatus on the other cars, and normally inert brake-applying apparatus operating independently of said controller apparatus and adapted to change the condition of the circuits to cause the flow of energy to said motors to cease and to cause the brake apparatus on all of the cars to act simultaneously after the condition of said circuits has been changed.

4. The combination of a train of cars, driving-motors upon several of the cars, controller apparatus for said motors, such apparatus having a rapid retrograde movement, commuting-switch apparatus upon each equipped car and adapted to cause said controller apparatus to be energized, commuting-switch wires upon each car,

means adapted to directly connect such wires of one car in series with similar wires on another car independently of the sequence or end relation of said cars, brake apparatus upon several of said cars, means adapted to connect the brake apparatus on one car to such apparatus on another car, normally inert brake-applying apparatus operated independently of said controller apparatus and adapted to change the condition of the circuits for the purpose of causing the flow of energy to said motors to cease and to cause the brake apparatus on all of the cars to act simultaneously after the condition of said circuits has been changed, and means whereby said check apparatus may be brought into action.

5. The combination of a train of cars, driving-motors upon several of the cars, controller apparatus for said motors, such apparatus having a rapid retrograde movement, commuting-switch apparatus upon each equipped car and adapted to cause said controller apparatus to be energized, commuting-switch wires upon each car, means adapted to directly connect such wires of one car in series with similar wires on another car independently of the sequence or end relation of said cars, brake apparatus upon several of said cars, means adapted to connect the brake apparatus on one car to such apparatus on another car, and normally inert brake-applying apparatus operated independently of said controller apparatus and adapted to change the condition of the circuits for the purpose of causing the flow of energy to said motors to cease and to cause the brake apparatus on all of the cars to act.

6. In an electrical train system, the combination of motors, circuits therefor, two sets of control-wires, one set for determining the direction of motion and one set for the regulation of speed, brake apparatus, and means operated independently of the condition of said motors and adapted to change the condition of the set of speed-wires and to cause the condition of said brake apparatus to change.

7. In an electrical train system, the combination of motors, circuits therefor, two sets of control-wires, one set for determining the direction of motion, and one set for the regulation of speed, motor-controllers, a commuting-switch adapted to govern said controllers, brake apparatus and means operated independently of said commuting-switch and adapted to change the condition of the speed-regulating wires and to cause said brakes to act.

8. In an electrical train system, the combination of motors, circuits therefor, two sets of control-wires one set for determining the direction of motion, and one set for the regulation of speed, motor-controllers, a commuting-switch adapted to govern said controllers, brake devices, apparatus operated independently of the motor-controlling apparatus and adapted to cause the condition of the speed-regulating wires to change and to cause the condition of said brake devices to change, and means whereby said apparatus may be brought into action.

9. In an electrically-equipped train, the combination of motors, circuits therefor, two sets of control-wires, one set for determining the direction of motion and one set for the regulation of speed, controllers for said motors, a commuting-switch adapted to govern said controllers, car-brake devices, apparatus operated independently of the motor-controlling apparatus and adapted to cause a change in the condition of said circuits and to cause the condition of said brake devices to change, and means located along the path of the train and adapted to bring said apparatus into action.

10. In a system of electrical propulsion, the combination of a pair of motors, a commuting-switch, a speed-controlling device and a direction-controlling device, said speed-controlling device being adapted to couple said motors in series and then in parallel, car-brake apparatus and means operated independently of said speed-controller and adapted to cause the condition of said speed-controller to change and to change the condition of said brake apparatus.

11. In a system of electrical propulsion, the combination of a motor-controlling apparatus having a series of wire coils and adapted to control said motor, the said coils of said apparatus having one set of their terminals permanently connected together and leading to one part of their supply-circuit, while the other set of their terminals are each in a normally open circuit, a manually-operable commuting-switch which is adapted to connect the latter terminals in sequence to the open-circuit terminals of their current-supply circuit, means located at said commuting-switch whereby if the manual control of the latter switch ceases while the current is on, the circuits will be automatically opened, car-brake apparatus, and means adapted to cause a change in the electrical condition of said controlling apparatus and to cause said brake apparatus to operate immediately after said change in the electrical condition of said controlling apparatus.

12. In a system of electrical car propulsion, the combination of propelling-motors, circuits therefor, controller apparatus adapted to change the connections of the motor-circuits, a hand-operable commuting-switch with circuit connections whereby the said controller apparatus may be governed, car-brake mechanism, storage apparatus adapted to accumulate energy received from the main or power circuit, a motor acting independently of said propelling-motors and adapted to influence the delivery of energy to said storage apparatus, manually-operable apparatus adapted to be caused to gradually deliver energy from said storage apparatus to said brake mechanism, and means located at said commuting-switch and adapted to automatically cause said brake mechanism to act if the motorman releases said commuting-switch while energy is being delivered to said propelling-motors.

13. The combination of a train of cars, propelling-motors upon several of said cars, controller apparatus upon each equipped car and adapted to change the connections of said motors, commuting-switch apparatus upon each equipped car and each such switch being adapted to govern all of said controller apparatus, commuting-switch wires upon each car, means adapted to directly connect such wires of one car in series with similar wires on another car independently of the sequence or end relation of said cars, brake apparatus upon several of said cars, means adapted to connect the brake apparatus on one car to such apparatus on another car, means whereby, when the motorman ceases to control the motion of the train, said brake apparatus will be automatically caused to act independently of the speed of the train and of the action of said propelling-motors.

14. A train of cars each equipped with a motor to drive it, a common controlling device for the motors, means which tend to hold said device out of the circuit, means acting independently of the said motors and without disturbing any of the controlling apparatus to check any tendency of the power-current to cause the motors to become abnormally heated, car-brake apparatus, and means adapted to operate independently of the motor-controlling device and to change the electrical condition of said motors and to influence the condition of said brake apparatus.

15. The combination of one or more commuting-switches each provided with a plurality of contacts, a plurality of motors, controller apparatus adapted to connect said motors in series and then in multiple, the said controller apparatus being provided with a set of fixed contacts and a plurality of movable contacts and adapted to have one section energized, to move said movable contacts one step when the commuting-switch makes connection with one of its contacts, car-brake apparatus, and means operated independently of said controller apparatus and adapted to change the electrical condition of said motors and to influence the condition of said brake apparatus.

16. In combination, a motor, a controller therefor comprising fixed contacts and movable contacts, a series of separately-actuated devices adapted to move said movable contacts step by step, in one direction, through a series of operative positions, a commuting-switch controlling the circuit connections which are adapted to successively operate said actuating devices to change the speed or work of said motor, car-brake apparatus, and means operable independently of said motor-controller and adapted to change the electrical condition of said motor and to change the condition of said brake apparatus.

17. In a system of electrical propulsion, the combination of a plurality of cars each having a driving-motor, motor-controller apparatus upon each such car, means adapted to electrically connect any given point of each controller apparatus with the corresponding point of each of the other of said controller apparatus, car-brake apparatus, and means operated independently of said motor-controller apparatus and adapted to cause a change in the electrical condition of the said controller apparatus and to change the condition of said brake apparatus.

18. In a system of electrical propulsion, the combination of a plurality of cars each having a driving-motor, motor-controlling apparatus upon each such car, means adapted to electrically connect the motor-controlling apparatus on one such car to such apparatus on another car so that a given point of one controller will be in electrical connection with the corresponding point of each of the other controllers, car-brake apparatus and means operated independently of said motor-controller apparatus and adapted to change the electrical condition of said motor-controlling apparatus and to change the condition of said car-brake apparatus.

19. In a system of electrical propulsion, the combination of a plurality of conductors, a plurality of motors, connected between said conductors, a motor-control apparatus in electrical communication with said conductors, means adapted to cause said control apparatus to change the relation of said motors from series to parallel, car-brake apparatus and means operated independently of said motor-control apparatus and adapted to change the electrical condition of said motors and to change the condition of said brake apparatus.



20. In a system of electrical propulsion, the combination of a plurality of electrical conductors, a plurality of motors connected between said conductors, motor-control apparatus in electrical communication with said conductors, and means adapted to cause said control apparatus to change the relation of said motors from series to parallel, means adapted to reverse said motors, car-brake apparatus and means operated independently of said control apparatus and adapted to change the electrical condition of said motors and to change the condition of said brake apparatus.

21. In a system of electrical propulsion, the combination of a plurality of cars each having a motor to drive it, a motor-speed controller upon each such car, a commuting-switch for each speed-controller, means adapted to so couple the said electrical apparatus on one car to such apparatus on an adjacent car that the manual operation of any one of said commuting-switches will cause all of said speed-controllers to simultaneously change the action of said motors, car-brake apparatus and means operated independently of said speed-controller and adapted to change the electrical condition of said motors and to change the condition of said brake apparatus.

22. The combination of a plurality of electrically-equipped cars, a motor-controlling device upon each such car, means adapted to electrically connect the motor-controlling device on the car to such device on another car, means adapted to cause all of said controlling devices to start simultaneously and move synchronously and with a step-by-step motion, car-brake apparatus and means operated independently of said motor-controlling device and adapted to change the electrical condition of the controller devices and to change the condition of said brake apparatus.

23. In an electrical system, the combination of plurality of cars, each having two commuting-switches thereon, a commuting-switch or operator's line on each such car and connected between the two said switches thereon, branches from said switch-lines and adapted to electrically connect the commuting-switches on one car with such devices on another car, car-brake apparatus and means operated independently of either of said commuting-switches and adapted to change the electrical condition of said switch-lines and to change the condition of said brake apparatus.

24. A plurality of cars, a plurality of driving-motors on such cars, a set of fixed contacts and a set of movable contacts for effecting changes in the circuits of the motors, means adapted to actuate said movable contacts, commuting-switches on the several cars and communicating with the contact-actuating means, car-brake apparatus, and means operable independently of either of said commuting-switches and adapted to change the electrical condition of said motors and to change the condition of said brake apparatus.

25. The combination of a plurality of motors, a controller apparatus therefor, a commuting-switch adapted to govern the controller, the said controller being so arranged and connected that it will automatically open the motor-circuit upon the failure of the line-current, car-brake apparatus, and means operated independently of said commuting-switch and adapted to change the electrical condition of said motors and to change the condition of said brake apparatus.

26. The combination of a circuit, two unlike circuit-controlling devices connected therein, one of said devices being adapted to control the other, and both having a constant tendency to automatically open said circuit, car-brake apparatus, and means operated independently of either of said controlling devices and adapted to change the electrical condition of said circuit and to change the condition of said brake apparatus.

27. The combination of a plurality of coils adapted to be successively energized, a commuting-switch adapted to deliver energy to said coils, car-brake apparatus, and means operated independently of said commuting-switch and adapted to cause the electrical condition of said coils to be changed and to cause the said brake apparatus to operate.

28. A car equipped with motors to drive it, a controller for said motors, motive mechanism adapted to operate said controller, a motor-armature in series with said mechanism and electromagnetic apparatus arranged along the path of said car and adapted to be brought into series relation with said armature by the movement of said car, for the purpose set forth.

29. The combination of two sets of control-wires, one set for determining the direction of motion and one set for regulating the speed, two unlike switch mechanisms communicating with said wires, one automatically retracted, to a definite position, and the other inert in its circuit-closing position, means adapted to operate the latter switch, car-brake apparatus and means operated independently of any of the speed-controlling apparatus and adapted to disturb the electrical condition of the speed-regulating wires and to cause a change in the condition of said brake apparatus.

30. In a system of electrical car propulsion, the combination of motors, circuits therefor, controller apparatus adapted to control the speed of said motors, a contact-shoe or contact-shoes adapted to connect said controller apparatus to the main or power circuit, car-brake mechanism, accumulative apparatus adapted to accumulate energy received from the main or power circuit, manually-operable graduating apparatus adapted to be caused to gradually deliver energy from said accumulative apparatus to said brake mechanism, and means operable independently of said graduating apparatus and of said speed-controller apparatus and adapted to cause a change in the electrical condition of said motor-circuits and to cause a supply of energy to be delivered to said brake apparatus.

31. In a system of electrical car propulsion, the combination of a driving-motor, circuits therefor, speed-controlling apparatus connected to the motor-circuits, a hand-switch adapted to govern said speed-controlling apparatus, means located at said hand-switch and adapted to cause said motor-circuits to be automatically opened and to cause said brake apparatus to act if the manual control of said hand-switch ceases while the motor is receiving operative current, motor-reversing mechanism connected to the motor-circuits, means adapted to control said reversing mechanism, car-brake apparatus, and means adapted to cause a change in the electrical condition of said motors independently of said means at the hand-switch and adapted to cause the condition of said brake apparatus to change.

32. The combination of one or more commuting-switches each provided with a plurality of contacts and circuits therefor, one or more motors and a controller therefor, a plurality of fixed contacts and a plurality of movable contacts being part of said controller, circuits connected to said controller, means adapted to move the movable contacts one step when the commuting-switch makes connection with one of its contacts, car-brake apparatus and means operated independently of said commuting-switch and adapted to cause a change in the electrical condition of said circuits and to cause a change in the condition of said brake apparatus.

33. The combination of a plurality of cars united to form a train, some of said cars being equipped with driving-motors, motor-speed-controlling apparatus upon each motor-equipped car, means on each motor-car whereby the motors may be reversed, coupling-head devices on each motor-car and connected with the speed-controlling apparatus and the motor-reversing means, the electrical coupling-head on one car being adapted to be connected to a coupling-head on another car, thereby the corresponding parts of all of the speed-controlling apparatus on the train may receive energy simultaneously by the movement of one switch and all of said motors may be reversed at another time by the movement of another switch, car-brake apparatus and means operated independently of said speed-controlling apparatus and adapted to cause a change in the electrical condition of said speed-controlling apparatus and to cause a change in the condition of said brake apparatus.

34. A train with cars each individually equipped with a pair of motors initially coupled together in series, speed-controller apparatus for such motors, the motors on each car being initially coupled in multiple series with respect to those on the other cars, means whereby said controller apparatus are caused to move synchronously and isochronously, thereby the connections of the several pairs of motors are simultaneously changed from series to multiple, car-brake apparatus, and means operated independently of said speed-controller and adapted to cause a change in the electrical condition of said controller apparatus and to change the condition of said brake apparatus, independently of the number of cars to be affected.

35. The combination of a plurality of cars, driving-motors and their circuits for a plurality of said cars, motor-controller apparatus and their circuits upon the motor-cars, a plurality of commuting-switches, one each for the ends of the motor-cars, said switches being so arranged and connected that any given movement of any one of the commuting-switch handles would electrically affect all of the driving-motors in the same manner, car-brake apparatus and means operated independently of either of said commuting-switches and adapted to cause a change in the electrical condition of the said circuits and to cause a change in the condition of said brake apparatus.

36. In a system of electrical propulsion, the combination of a pair of motors, a speed-controller for said motors and adapted to change the relation of said motors from series to parallel, a commuting-switch and circuits controlled thereby, means whereby said switch normally tends to stand at open circuit, car-brake apparatus, and means operated independently of said speed-controller and adapted to cause a change in the condition of said circuits and to cause a change in the condition of said brake apparatus.

37. In a train system, the combination of a plurality of motors to drive each electrically-equipped car, a speed-controller upon each such car to control said motors, two commuting-switches upon each car, each such switch being located at its appropriate end of the car and adapted to govern the speed-controller carried thereby and also the speed-controllers upon the other cars of the train, a motor-reversing device carried by each equipped car, each such device being adapted to reverse the several motors under its control, car-brake apparatus, and means operated independently of said speed-controller and adapted to cause a change in the electrical condition of said motors and to change the condition of said brake apparatus when the relation between track-rails and the car-wheels becomes abnormal.

38. In an electrically-equipped train system, the combination of motors to drive the train, a speed-controller upon each equipped car and adapted to change the connections of the car-motors from series to multiple and vice versa, two commuting-switches upon each equipped car, each such switch being adapted to cause the several speed-controllers to simultaneously adjust the motors under their control, a motor-reversing device on each equipped car, means upon each car whereby the several reversing devices may be controlled from any equipped car on the train, car-brake apparatus, means operated independently of said speed-controller and adapted to cause a change in the electrical condition of said motors and to cause a change in the condition of said brake apparatus when the relation between the track-rails and the car-wheels becomes abnormal, as when said wheels leave said track-rails.

39. A plurality of cars, a plurality of driving-motors for such cars, contact apparatus for controlling the speed of said motors, means adapted to actuate said contacts, a plurality of contacts for reversing said motors, means adapted to actuate the latter contacts, means adapted to connect the electrical apparatus on one car to such apparatus on another car, commuting-switches communicating with said speed-controlling contact apparatus, car-brake apparatus and means operated independently of either of said commuting-switches and adapted to cause a change in the electrical condition of said contact apparatus and to cause a change in the condition of said brake apparatus when the relation between the track-rails and the wheels of the car becomes abnormal, as when said wheels leave said rails.

40. A plurality of cars, driving-motors on some of the cars, circuits for the motors, a plurality of separately-actuated contacts for effecting changes in the motor-circuits, means adapted to operate said contacts, a commuting-switch connected therewith independently of the motor-circuits, car-brake apparatus, a check device operated independently of said commuting-switch and adapted to cause a change in the electrical condition of said motor-circuits and to cause a change in the condition of said brake apparatus and means extending through the train whereby said check device may be brought into action.

41. A train with a plurality of equipped cars, driving-motors and circuits therefor, on a plurality of said cars, a plurality of contacts for effecting changes in the motor-circuits, a plurality of contacts for reversing said motors, means adapted to control the former contacts, means adapted to govern the latter contacts, car-brake apparatus on each equipped car, and apparatus adapted to cause a change in the electrical condition of said motor-circuits and to cause a change in the condition of said brake apparatus when the normal relation between the track-rails and the wheels of one of said cars is changed, as when said wheels leave said track-rails.

42. A car equipped with motors to drive it, a controller for said motors, motive mechanism adapted to operate said controller, car-brake apparatus, electromagnetic apparatus arranged along the path of said car and brought into an operative position by the movement of said car and check apparatus operated independently of said controller and adapted to cause a change in the electrical condition of said motors and to cause said brake apparatus to act, said check apparatus being brought into action by the said electromagnetic apparatus.

43. In an electrical train system, the combination of motor equipments, direction-controlling contacts for each equipment, speed-determining contacts for each equipment, means adapted to determine the definite position of these speed-contacts, car-brake apparatus, and means operated independently of the speed-controlling apparatus and adapted to cause a change in the position and electrical condition of these latter contacts and to cause a change in the condition of said brake apparatus.

44. In an electrical train system, the combination of motor equipments, direction-controlling contacts for each equipment, speed-determining contacts for each equipment, independent means adapted to operate the speed-determining contacts, control-wires, apparatus at one or more points connected therewith for controlling the latter means simultaneously, car-brake apparatus, means operated independently of the speed-determining apparatus and adapted to cause a change in the position and in the electrical condition of said speed-determining contacts and to cause a change in the condition of said car-brake apparatus.

45. In an electrical train system, the combination of two or more cars, one or more of the cars being equipped with a motor or motors, a controller or controllers therefor, means for operating each controller, the car or cars so equipped being coupled to an additional car or cars each car being provided with speed-controlling wires, car-brake apparatus, mechanism independent of said controller or controllers and adapted to cause a change in the electrical condition of said motor or motors and to cause a change in the normal condition of said brake apparatus and means adapted to bring the said mechanism into operation.

46. In an electrical train system, the combination of two or more cars, one or more of the cars being equipped with a motor or motors, a controller or controllers therefor, means adapted to operate each controller, the car or cars so equipped and one or more additional cars being provided with speed-control wires, a commuting-switch connected with the speed-control wires, car-brake apparatus, mechanism operated independently of the controller apparatus and adapted to cause a change in the electrical condition of said motor or motors and to cause a change in the condition of said brake apparatus and electromagnetic means energized from a distant point and adapted to actuate said mechanism.

47. The combination of a plurality of motors or motor equipments, controllers adapted to vary the speed thereof, commuting-switches to govern said controllers, speed-control wires appropriately connected between said controllers and said commuting-switches, reversing apparatus for said motors, direction-determining wires connected to the latter apparatus, reversing-switches connected to the latter wires, car-brake apparatus, a check device operated independently of the controller apparatus and adapted to cause a change in the electrical condition of said controllers and to cause a change in the normal condition of said brake apparatus and means adapted to trip said check device to cause the said change of conditions, the latter means being actuated from a distant point.

48. The combination of sets of motors or motor equipments, controllers therefor, one or more commuting-switches, circuits whereby the latter switches govern said controllers, means adapted to actuate said controllers, automatic means adapted to prevent an abnormal current in said motors, car-brake apparatus, mechanism independent of said controllers and adapted to cause a change in the electrical condition of said motors and to cause a change in the normal condition of said brake apparatus, and means actuated from a distant point and adapted to bring said mechanism into use.

49. The combination of sets of motors or motor equipments, series-parallel controllers therefor, two sets of wires, one set for controlling the speed and one set for determining the direction of motion, commuting-switches connected to said speed-control wires and thus communicating with the controllers, motor-reversing devices connected to the direction-determining wires, means located at each commuting-switch whereby when said switch is released while power is being delivered to said motors, the electrical condition of said speed-control wires will be changed, car-brake apparatus, mechanism independent of said controllers and adapted to cause a change in the electrical condition of said motors and to cause a change in the condition of said brake apparatus after said electrical change has been made.

50. In combination, a controller comprising fixed contacts and movable contacts, a series of separately-actuated devices adapted to move said movable contacts step by step, in one direction only, through a series of operative positions, means adapted to return said movable contacts to their normal position, means adapted to successively actuate said actuating devices, motors controlled by said controller, car-brake apparatus, check apparatus independent of the controller apparatus and adapted to cause the operative condition of said motors to change and to cause the condition of said brake apparatus to change and means adapted to receive power from a distant point and thereby influence the action of said check apparatus.

51. In combination, a motor, controller apparatus therefor, a commuting-switch adapted to govern said controller apparatus, a reversing-switch for said motor, means constantly tending to restore the controller apparatus to its normal position independently of the retrograde movement of said commuting-switch, car-brake apparatus independent of the controller apparatus, and a check apparatus adapted to cause the operative condition of said motor to change and to cause said brake apparatus to act, and means adapted to receive power from a distant point and thereby influence the action of said check apparatus.

52. The combination of a motor, sectionally-actuated speed-controlling apparatus therefor, a commuting-switch adapted to successively control the sections of said apparatus, an independently-actuated device adapted to reverse said motor, an independent switch to control said reversing device, check apparatus independent of the controller apparatus and adapted to cause the operative condition of said motor to change and means adapted to receive power transmitted from a distant point and thereby cause said check apparatus to influence the said change.

53. In combination, a motor, a motor-controller comprising fixed contacts and movable contacts, a motor-reversing device, a plurality of commuting-switches, a commuting-switch line connected between the latter switches, a connection between said line and said controller whereby either of the commuting-switches will be enabled to cause said controller to move step by step; check apparatus independent of the controller apparatus and adapted to cause the operative condition of said motor to change and means adapted to receive power transmitted from a distant point and thereby influence the action of said check apparatus.

54. An electrically-equipped car having in combination, a motor, controlling apparatus therefor, a plurality of commuting-switches, one each for the respective ends of the car, a group of wires connected between said commuting-switches, a plurality of coupling-heads, one each for the respective ends of the car, the arrangement being such that a given wire will be connected to terminals, in the respective coupling-heads, which have the same relative position when the said two series of terminals are compared, check apparatus independent of the controller devices and adapted to cause the operative condition of said motor to be changed, and means adapted to receive power transmitted from a distant point and thereby influence the action of said check apparatus.

55. In an electrical system, a plurality of motors and motor-controller devices, each having its movable contacts carried by a suitable supporting apparatus, a plurality of separately-energizing coils operatively related to said supporting apparatus of each controller device, each of said coils, when energized, being adapted to cause the movable contacts to move through a portion only of the full length of their paths, a set of wires extending along the train and to which the said coils are connected, a commuting-switch adapted to supply current simultaneously to the corresponding coils of the several controller devices, a plurality of car-brake apparatus, check apparatus independent of the controller apparatus and adapted to cause the operative condition of said motors to change and to cause the condition of said brake apparatus to change, and means adapted to cause said check apparatus to act.

56. In a system of electrical propulsion, the combination of a driving-motor, circuits therefor, speed-controlling apparatus connected to the motor-circuits, a switch for governing said speed-controlling apparatus, motor-reversing mechanism connected to the motor-circuits and adapted to act only when the reversal of said motor is desired, a switch to govern the action of said reversing mechanism, car-brake apparatus, check apparatus independent of the controller apparatus and adapted to act, independently of the switch governing the speed-controlling apparatus, and cause the operative condition of said motor to change and to cause the condition of said brake apparatus to change, and means adapted to actuate said check apparatus.

57. The combination of a plurality of cars connected up to form a train, motors upon and adapted to drive some of said cars, a plurality of wires fixed upon each motor-car, some of said wires, or any given motor-car, having five terminals, the corresponding terminals of the latter wires being grouped together and thus forming sets, two of such sets ending in commuting-switch apparatus, another two of said sets ending in two coupling-head devices located at the respective ends of the car, the remaining set of said terminals ending in motor-controlling apparatus, a connection between the appropriate coupling-head device on one motor-car and a coupling-head device on another motor-car, whereby the corresponding coils of the motor-controlling apparatus on the several cars will be connected in multiple independently of the order or end relation of said cars, and thereby permitting the simultaneous control of all of the driving-motors by the manipulation of either commuting-switch, car-brake apparatus upon each motor-car, and means independent of the controller apparatus and adapted to cause a change in the operative condition of said wires and to cause a change in the condition of said car-brake apparatus, the latter change to take place after the former.



58. In a system of electrical propulsion, the combination of a plurality of cars, driving-motors and their circuits upon some of said cars, speed-controlling apparatus upon each motor-equipped car, fixed contacts and movable contacts being included in said speed-controlling apparatus, a commuting-switch adapted to govern all of the speed-controlling apparatus simultaneously, means, such as springs, relating to said movable contacts, whereby the latter contacts constantly tend to open the motor-circuits, means, such as a spring, located at said commuting-switch whereby all of said movable contacts will be caused to act automatically and open the motor-circuits upon failure of the motorman to control said commuting-switch while actuating-current is being delivered to said motors, check apparatus upon one or more motor-cars and adapted to cause a change in the operative condition of all of said motors and means adapted to cause said check apparatus to act.

59. In a system of electrical propulsion, the combination of a motor, a device for controlling the speed of said motor, the energizing-coils of said device having one set of their terminals permanently connected together to lead current from said coils while the other set of their terminals are in a normally open circuit a manually-operable switch which is adapted to connect the latter terminals in sequence to the open-circuit terminals of the current-supply circuit, said manually-operable switch being provided with means which constantly tends to cut out of circuit all of the coils of said device, car-brake apparatus, check apparatus independent of the controller apparatus and adapted to cause a change in the operative condition of said motor and to cause a change in the brake apparatus, and means adapted to actuate said check apparatus.

60. In a system of electrical propulsion, the combination of driving-motor and its circuits, speed or work controlling apparatus for said motor, a commuting-switch adapted to govern said controlling apparatus, motor-reversing mechanism connected to said motor-circuits, the said mechanism being inactive except during the reversal of said motor, car-brake apparatus, check apparatus independent of the speed-controlling apparatus and adapted to cause a change in the operative condition of said motor and to cause the condition of said brake apparatus to change, and means adapted to receive power from a distant point and to cause said check apparatus to act.

61. In a train system, a plurality of fixed contacts located upon each appropriate car and contained in the circuits of the driving-motor of such car, a plurality of movable contacts mounted upon each such car and carried by suitable supporting apparatus so as to be adapted to engage step by step with said fixed contacts to control the said motors, a plurality of separately-energized electrical coils upon each such cars and each of such coils being adapted to cause one step of a predetermined number of steps in the changes of connections between said fixed contacts and said movable contacts on each appropriate car, a system of wires extending through the train and to which said coils are operatively connected, a commuting-switch adapted to simultaneously supply current to the corresponding and appropriate coils upon the several cars, car-brake apparatus, check apparatus independent of the controller apparatus and adapted to cause the operative condition of all of said motors to change and to cause the condition of all of said brake apparatus to change and means whereby said check apparatus may be caused to operate.

62. A train of cars, driving-motors upon a plurality of cars, motor speed-controlling apparatus upon each motor-equipped car, means adapted to simultaneously govern the entire plurality of controllers, reversing devices upon each motor-equipped car and adapted to reverse the driving-motors, brake apparatus upon one or more of said cars and adapted to be actuated by energy which is first taken from the supply-circuit and then converted into a power suitable for the operation of said brake device, check apparatus independent of the controller apparatus and adapted to cause the operative condition of said motors to change and to cause the condition of said brake apparatus to change and means arranged along the line of way and adapted to cause said check apparatus to operate.

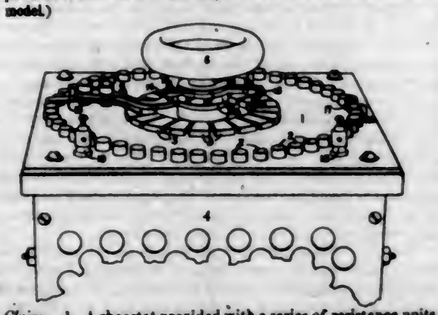
63. The combination of a plurality of electrically-equipped cars, driving-motors upon each such car, motor-controllers upon each such car, a commuting-switch adapted to govern said controllers and arranged upon one of such cars, circuits for said motors, circuits for said controllers car-brake apparatus independent of the motor-control apparatus and arranged upon some of said cars, check apparatus upon one or more of said cars and adapted to cause the operative condition of said motors to change, apparatus along the path of said cars and adapted to influence the action of said check apparatus and means upon one or more of said cars whereby energy is delivered to said apparatus along said path whereby check appa-

ratus may be operated on a car which is disconnected from but following the said equipped cars.

755,826. WELDING COMPOUND. ROBERT A. WOODSIDE, Boulder, Colo. Filed Dec. 15, 1903. Serial No. 185,312. (No specimens.)

*Claim.*—A welding compound consisting of borax from three per cent. to six and two-thirds per cent. by weight and silicon dioxid from ninety-seven per cent. to ninety-three and one-third per cent. by weight, the ingredients being in pulverized form and thoroughly intermingled.

755,827. RHEOSTAT. WILLIAM C. YATES and PAUL ZEMMER, Schenectady, N. Y., assignors to the General Electric Company, a Corporation of New York. Filed July 26, 1903. Serial No. 166,948. (No model.)



*Claim.*—1. A rheostat provided with a series of resistance units, a contact device for cutting them into circuit progressively, a handle for said device, and means operated by said handle for varying the resistance at intermediate points of the series by fractional parts of a unit without affecting said contact device.

2. A rheostat having a plurality of coarse resistance-steps, a plurality of finer steps, a handle, and means operated thereby for regulating the resistance on either set of steps at will at different points of adjustment.

3. A rheostat having a plurality of resistance units, a handle, and means operated thereby for regulating the resistance in circuit in relatively large steps until an amount approximating the desired amount has been obtained, and then in smaller steps for more exact regulation.

4. A rheostat having a variable resistance, a handle for cutting the resistance into or out of circuit in steps, and means operated by said handle for subdividing the steps at different points of the resistance into a number of smaller steps if desired.

5. A rheostat having two sets of resistances connected to two rows of studs arranged in concentric circles, and means for regulating the resistance of either set without affecting the resistance of the other set.

6. A rheostat having a plurality of resistances, an operating device, means operated by a movement of the device for regulating the resistance in circuit in steps, and means operated by a reverse movement for regulating the resistance in circuit in smaller steps.

7. A rheostat having a plurality of resistances, a rheostat-arm, means operated by a movement of said arm in one direction for regulating the resistance in circuit in steps, and means operated by a movement in the other direction for regulating the resistance in circuit first in small steps and then in larger steps.

8. A rheostat having a series of resistances arranged in steps, an operating device for cutting them into and out of circuit, means operated by a movement of the device in one direction for regulating the resistance in circuit in steps, and means operated by movement in the other direction for subdividing a step of the resistance into a number of smaller steps.

9. A rheostat having two concentric rows of studs, resistance connected between the studs of each row, a handle, a contact device operated thereby, and means whereby movement of the handle in one direction increases the resistance in large steps and in the other direction decreases the resistance in small steps.

10. A rheostat having two concentric rows of studs, resistance connected between the studs of one row, resistance of less value connected between the studs of the other row, a handle, means operated thereby for regulating the resistance in steps, and means for subdividing any step into a plurality of smaller steps.

11. A rheostat having resistances differing in value, an operating-handle for regulating the amount of resistance in circuit, and means whereby movement of the handle in one direction regulates the resistance of one value and movement in the other direction regulates the resistance of a different value.

12. A rheostat having two concentric rows of studs, two sets of resistances, one set connected to the studs of each row, a handle, and means operated thereby for regulating the resistance of either set without affecting the resistance of the other set.

13. In a rheostat, two concentric rows of studs to which the resistance is connected, two switch-arms bearing on the contacts, an operating-handle, and means whereby movement of the handle moves one arm to a predetermined position and then moves both arms simultaneously.

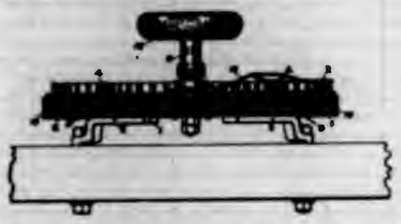
14. In a rheostat, two rows of studs to which the resistances are connected, a contact-arm cross-connecting the two rows, a contact-arm adapted to bear on the studs of one row, and means whereby one of said arms may be moved independently of the other.

15. In a rheostat, two rows of studs to which the resistances are connected, a contact-arm cross-connecting the two rows, a contact-arm adapted to bear on the studs of one row, and means for moving said contact-arms together or one independently of the other.

16. In a rheostat, a row of contact-studs, resistance connected between each stud and two other studs forming a closed circuit, two contacts, means for moving them over the studs in a fixed relation to each other, means whereby said movement regulates a resistance in series with said contacts in steps, and means whereby one of the contacts can be moved independently of the other.

17. In a rheostat, two parallel circuits through resistances, a variable resistance in series with the parallel circuits, and means for transferring resistance from one of said parallel circuits to the other at any step of the variable resistance.

755,828. RHEOSTAT. WILLIAM C. YATES, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Aug. 22, 1903. Serial No. 170,369. (No model.)



*Claim.*—1. In a rheostat, a base-plate having a groove therein, resistances zigzagged back and forth across said groove, a row of pins on each side of said groove to which the resistances are connected, and a filling of insulating material surrounding the resistances.

2. In a rheostat, a base-plate having a circular groove therein, resistances zigzagged back and forth across said groove, two concentric rows of studs connected to the resistances, a filling of insulating material surrounding the resistances, and a contact device cooperating with the studs.

3. In a rheostat, a base-plate having a groove therein, resistances zigzagged back and forth across the groove, two rows of studs connected to the resistances and staggered, a filling of cement surrounding the resistances, and a contact device cooperating with the studs.

4. In a rheostat, a base-plate having a groove therein, resistances in said groove, two rows of studs connected to the resistances and staggered, and a contact device cooperating with the studs.

5. In a rheostat, a base-plate having a circular groove, two concentric rows of studs mounted on the base-plate and extending into the groove, resistances in the groove connected to the studs and a contact device arranged to make and break contact with the studs of the two rows alternately.

6. A rheostat having two rows of studs, the studs of one row being opposite the intervals between the studs of the other row, resistances connected between the studs of the one row and those of the other, and a contact device cooperating with the studs of the two rows.

7. A rheostat comprising a base-plate, two rows of studs mounted thereon, resistance units secured to the studs, an insulating heat-absorbing substance embedding the resistance units and a contact device cooperating with the studs.

8. A rheostat comprising a base-plate having a groove therein, two rows of studs mounted on the base-plate, resistances zigzagged back and forth across said groove and connected to the studs of the two rows, and a contact device cooperating with the studs.

9. A rheostat comprising a base-plate having a groove therein, resistances zigzagged back and forth across said groove, two rows of studs connected to the resistances and staggered, and a contact device cooperating with the studs.

10. In a rheostat, a base-plate having two concentric rows of studs mounted thereon in staggered relation, coils of resistance-wire zigzagged back and forth between the studs of the two rows, and a contact device cooperating with the studs of the two rows.

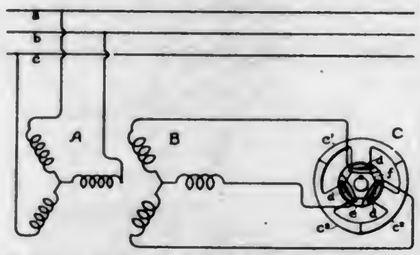
11. A rheostat comprising a base-plate having a groove in one side, two rows of studs mounted on the other side and extending into the groove, coils of resistance-wire zigzagged back and forth across said groove and connected to the studs, and a contact device cooperating with the studs.

12. A rheostat comprising a base-plate having a circular groove therein, two concentric rows of studs mounted on the base-plate and extending into the groove, coils of resistance-wire zigzagged back and forth across said groove and connected to the studs, a filling of insulating material in the groove, and a contact device cooperating with the studs.

13. A rheostat comprising a base-plate having a circular groove in one side, two concentric rows of studs mounted on the other side of the base-plate and extending into the groove, the studs of one row being opposite the intervals between the studs of the other, resistances zigzagged back and forth across said groove and connected to the studs, a filling of insulating material in the groove, and a contact device cooperating with the studs.



755,829. CONTROLLING INDUCTION-MOTORS. ARNALDO P. ZANI, Milan, Italy, assignor to General Electric Company, a Corporation of New York. Filed June 30, 1900. Serial No. 22,139. (No model.)




*Claim.*—1. Means for starting an induction-motor, consisting of a device, in circuit with the winding on the induced member of said motor, having a winding constituting a single path for the current induced in said motor-winding, said device comprising a coil or coils surrounding massive cores of magnetic material, and means for reducing the self-induction of said device as the speed of the motor increases.

2. Means for starting an induction-motor, consisting of a device, in circuit with the winding on the induced member of said motor, having a winding constituting a single path for the currents induced in said motor-winding, said device comprising a coil or coils surrounding massive cores of magnetic material, and means for increasing the reluctance of the magnetic circuit through said cores as the speed of the motor increases.

3. In a starting device for induction-motors, a core of magnetic material mounted on the shaft of said motor, a plurality of movable cores, means normally maintaining said movable cores in contact with one another and with the core on the shaft, and a winding surrounding said cores.

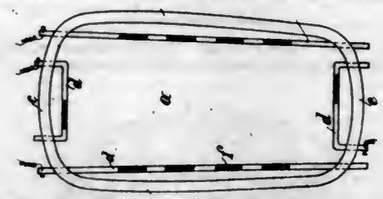
4. In a starting device for induction-motors, a core of magnetic material mounted on the shaft of said motor, a plurality of movable cores, means normally maintaining said movable cores in contact with one another and with the core on the shaft, means limiting the outward movement of said movable cores, and a winding surrounding the cores.

5. In combination with an induction-motor, a means for increasing the effective resistance of the secondary member at starting, consisting of a transformer in circuit with the winding of the secondary member, said transformer having a short-circuited secondary.

6. In combination with an induction-motor, means for increasing the effective resistance of the secondary member at starting, consisting of a transformer in circuit with the winding of the secondary member, and means controlled by the speed of the motor, for reducing the self-induction of said transformer.

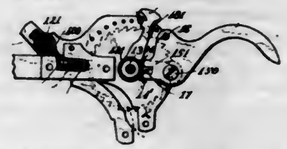
7. In combination with an induction-motor, means for increasing the effective resistance of the secondary member at starting, consisting of a transformer in circuit with the winding of the secondary member, and means for increasing the reluctance of the magnetic circuit of the transformer as the speed of the motor increases.

755,830. TUB FOR ELECTRIC BATHS. JOSEF ZWIERZI, Neu-Ulm, Germany. Filed Nov. 24, 1903. Serial No. 182,515. (No model.)



*Claim.*—An electric-bath tub with rods of conductive material on the sides for stringing up the electrodes, the rods carrying the electrodes provided at certain distance with isolation material, as hard rubber, &c., suitably fitted in recesses for the purpose of cutting off the different electrodes from the current by sliding on isolating parts substantially as and for the purpose set forth.

755,831. TYPE-WRITER LINE-SPACING MECHANISM. JESSE ALEXANDER, Brooklyn, N. Y., assignor of one-half to Arthur Letts, Los Angeles, Cal. Original application filed Aug. 2, 1902, Serial No. 118,065. Divided and this application filed Feb. 3, 1903. Serial No. 141,671. (No model.)



*Claim.*—1. In a type-writer, a line-spacing mechanism comprising a platen and a shaft therefor, a ratchet-wheel thereon, a plate pivotally mounted on said shaft, a forwardly-projecting operating-handle pivoted to said plate, a pawl carried by said handle adapted to engage the teeth of said ratchet, a pin carried by said plate, said handle resting against said pin in its normal position when the pawl is disengaged from and raised above the teeth of the ratchet.

2. In a type-writer, a line-spacing mechanism comprising a platen, and a shaft therefor, a ratchet-wheel thereon, a plate pivotally mounted on said shaft, a forwardly-projecting operating-handle pivoted to said plate, a pawl carried by said handle adapted to engage the teeth of said ratchet, a pin carried by said plate, said handle resting against said pin in its normal position when the pawl is disengaged from or raised above the teeth of the ratchet, and a stop-arm pivoted on said shaft, one of the moving parts coming in contact with said stop-arm at the latter end of the backward feeding rotation of the pawl and handle.

3. A line-spacing mechanism for a type-writer including a side plate, a platen-shaft revolubly mounted therein, a ratchet-wheel movable with said shaft, a plate pivotally mounted on said shaft, an operating-handle pivotally carried by said plate, a pawl-pin carried by said handle for engagement with said ratchet, a stop-pin carried by the side plate for supporting said pivoted plate and operating-handle and a stop-pin carried by said pivoted plate for holding the operating-handle in its normal position with the pawl-pin disengaged from the ratchet.

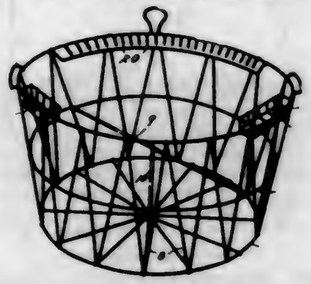
4. A line-spacing mechanism for a type-writer including a side plate, a platen-shaft revolubly mounted therein, a ratchet-wheel movable with said shaft, a plate pivotally mounted on said shaft, an operating-handle pivotally carried by said plate, a pawl-pin carried by said handle for engagement with said ratchet, a stop-pin carried by the side plate for supporting said pivoted plate and operating-handle and a stop-pin carried by said pivoted plate for holding the operating-handle in its normal position with the pawl-pin disengaged from the ratchet, and a spring for assisting in returning the pivoted plate and operating-handle to their normal positions when released.

5. A line-spacing mechanism for a type-writer including a side

plate, a platen-shaft revolubly mounted therein, a ratchet-wheel movable with said shaft, a plate pivotally mounted on said shaft, an operating-handle pivotally carried by said plate, a pawl-pin carried by said handle for engagement with said ratchet, a stop-pin carried by the side plate for supporting said pivoted plate and operating-handle and a stop-pin carried by said pivoted plate for holding the operating-handle in its normal position with the pawl-pin disengaged from the ratchet, a series of projections carried by the side plate, a stop-arm pivoted on said shaft adapted to engage with any one of said projections, said stop-arm standing in a position to the rear of the operating-handle to limit its feeding movement.

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755,832. DISH-WASHER. ULRICA C. ANDERSON, Bayard, Nebr. Filed June 22, 1903. Serial No. 162,566. (No model.)



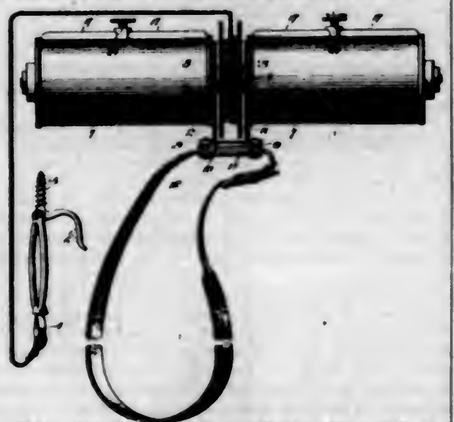
*Claim.*—1. A dish-washer comprising a plurality of vertically-spaced hoops, wires connecting the hoops, wires extending across the lowermost hoop, a rest-bar arranged diametrically across an upper hoop, and a post connecting the rest-bar with the wires extending across the lowermost hoop.

2. A dish-washer comprising a plurality of vertically-spaced hoops, wires connecting the hoops, wires extending across the lowermost hoop, a rest-bar connected diametrically across an upper hoop, a post connecting the rest-bar and the wires extending across the lowermost hoop, and a plate connected to and lying within the uppermost hoop, and having slots therethrough to receive knife-blades.

3. A dish-washer comprising a plurality of vertically-spaced hoops, wires connecting the hoops, wires extending across the lowermost hoop, a rest-bar connected diametrically across an upper hoop, open-work trays suspended from the uppermost hoop and a plate connected to and lying within the uppermost hoop and having slots therein to receive knife-blades, the slots being of a width to prevent passage of knife-blades therethrough.

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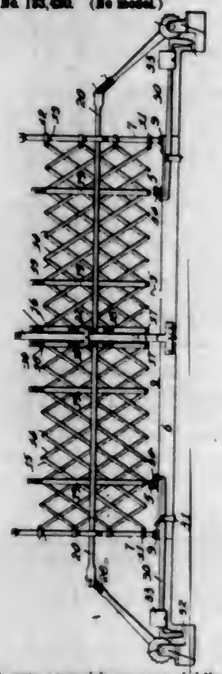
755,833. FIRE-ESCAPE. BRASTUS W. APPELMAN, Clermont, Iowa. Filed May 27, 1903. Serial No. 158,906. (No model.)



*Claim.*—In a fire-escape, the combination with a shaft, of a pair of cylinders mounted thereon, a drum fixed upon the shaft between the cylinders, a line wound upon the drum and adapted in unwinding to rotate the shaft, a pair of movable heads mounted upon the shaft one within each of the cylinders and operable by the rotation of the shaft to compress a fluid in the cylinders, means for attaching the described device to a person, an attaching device connected with the free end of the line, a pair of fluid-ducts one extending longitudinally of each of the cylinders and communicating therewith at opposite sides of the head, and means under constant control of the operator for regulating the passage of fluid through the ducts.

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755,834. AUTOMATIC GATE. JOHN ASHTON, St. Louis, Mo., assignor of one-half to Frank R. Clayton, St. Louis, Mo. Filed Dec. 1, 1903. Serial No. 183,490. (No model.)



*Claim.*—1. A gate comprising a post rigidly mounted; a lazy-tong gate attached to the post; a rock-shaft mounted near the post; a segmental gear upon the rock-shaft; an arm extending from the segmental gear; a connecting-rod attached to the gate and to the free end of said arm; a connecting-lever pivotally mounted near the post, a rack upon the long end of said connecting-lever in mesh with said gear; a weight upon the long end of said lever to counterbalance the gate; and vehicle-levers mounted in the vehicle-path and engaging the short end of said connecting-lever, so that as a vehicle approaches, it will engage the vehicle-levers, thereby opening the gate and holding it open until the vehicle passes through and onward, and so that said weight will close the gate after the vehicle has passed, substantially as specified.

2. A gate comprising a supporting-post; a lazy-tong gate attached to the post; vertical stiffening-slats at the free end of the gate; a retaining-post to engage said slats and hold the gate from swinging; a connecting-rod consisting of two pieces, one on each side of the gate connected to said stiffening-slats at the free end of the gate and slidingly connected to said supporting-post, so as to hold the gate from bending; vehicle-levers mounted in the vehicle-path; and a connection between the vehicle-levers and the connecting-rod, whereby the gate is opened by the approaching vehicle, substantially as specified.

3. A gate comprising a supporting-post; a lazy-tong gate attached to the post; vertical stiffening-slats at the free end of the gate; a retaining-post to engage said slats and hold the gate from swinging; a connecting-rod consisting of two pieces, one at each side of the gate connected to said stiffening-slats at the free end of the gate and slidingly connected to said supporting-post, so as to hold the gate from bending, vehicle-levers mounted in the vehicle-path, whereby the gate is opened by the approaching vehicle; and a counterbalancing-weight in position to close the gate after the vehicle has passed, substantially as specified.



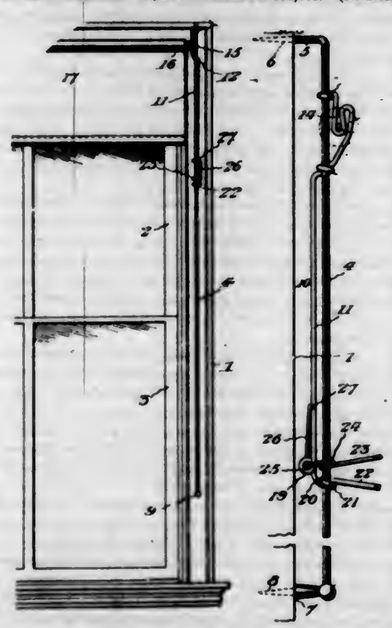
4. A gate comprising a post rigidly mounted beside a railroad-track, a lazy-tong gate attached to the post, a rock-shaft mounted near the post, a segmental gear upon the rock-shaft, an arm extending from the segmental gear, a connecting-rod attached to the gate and to the free end of said arm, a connecting-lever pivotally mounted near the post, a rack upon the long end of said connecting-lever in mesh with said gear, vehicle-levers connected at their outer ends to the track-rails, with their inner ends resting upon the short end of said connecting-lever, so that as the car approaches the gate, the car-wheels will engage the vehicle-levers and open the gate, substantially as specified.

5. A gate comprising a post rigidly mounted beside a railroad-track, a lazy-tong gate attached to the post, a rock-shaft mounted near the post, a segmental gear upon the rock-shaft, an arm extending from the segmental gear, a connecting-rod attached to the gate and to the free end of said arm, a connecting-lever pivotally mounted near the post, a rack upon the long end of said connecting-lever in mesh with said gear, vehicle-levers connected at their outer ends to the track-rails, with their inner ends resting upon the short end of said connecting-lever, so that as a car approaches the gate, the car-wheels will engage the vehicle-levers and open the gate, a weight upon the long end of said lever to counterbalance the gate, substantially as specified.

6. A gate comprising a post rigidly mounted beside a railroad-track, a lazy-tong gate attached to the post, a rock-shaft mounted near the post, a segmental gear upon the rock-shaft, an arm extending from the segmental gear, a connecting-rod attached to the gate and to the free end of said arm, a connecting-lever pivotally mounted near the post, a rack upon the long end of said connecting-lever in mesh with said gear, vehicle-levers connected at their outer ends to the track-rails, with their inner ends resting upon the short end of said connecting-lever, so that as a car approaches the gate, the car-wheels will engage the vehicle-levers and open the gate, and a means of counterbalancing the gate, substantially as specified.

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755,835. WINDOW-SHADE ADJUSTER. RUF ATOE, Independence, Kans. Filed Nov. 28, 1903. Serial No. 183,062. (No model.)



*Claim.*—1. In a window-shade adjuster, the combination with a shade-roller and shade, of guide-rods, and slides movably engaging the said guide-rods and having upper brackets to support the shade-roller, a lower upwardly-inclined clamping device, and a lower guide, the lower clamping device and guide each having outwardly-projecting finger-engaging means at reverse angles to each other.

2. In a window-shade adjuster, the combination with a shade-roller and shade, of guide devices, shade-slides having opposite extremities embracing the guide devices, the said slides having supporting means at their upper extremities to engage the shade-roller, and upwardly-inclined clamps partially embracing the guide devices and having inner upwardly-extending resilient arms bearing on the guide devices.

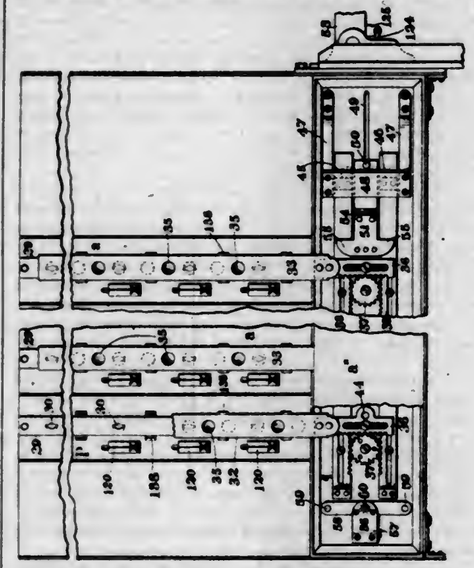
3. In a window-shade adjuster, the combination with a shade-roller and shade, of a guide-rod, slides movably mounted on the guide-rod and having upper terminal brackets forming a part thereof to support the shade-roller, lower resilient coiled clamping members standing at a downward inclination around the said devices, and lower guide-coils surrounding the guide devices and disposed at upward angles of inclination and continuing into rear bearing-arms which engage a portion of the slides.

4. In a window-shade-adjuster, the combination with a shade and its roller, of guide-rods, shade-slides having guide-coils at opposite extremities embracing the guide-rods, and brackets projecting above the upper coils, the lower portions of the slides having inwardly-extending eyes, and clamping devices having portions embracing the guide-rods, and members projecting through the eyes and terminating in upwardly-extending arms which bear on the rods.

5. A window-shade-adjusting means, adapted to be applied to opposite sides of a window-frame and consisting of a vertically-disposed guide-rod, a slide having coils at opposite extremities embracing the said rod and a bracket terminating in an eye also embracing the rod, the lower part of the slide having an inwardly-projecting eye, and a clamp having a coil embracing the guide-rod and a member projecting through the eye at the lower part of the slide, the said member continuing into an upwardly-extending arm which bears against the slide.

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755,836. VOTING-MACHINE. ARTHUR F. BARDWELL, Boston, Mass., assignor to Frederick Albert Bardwell, Boston, Mass. Original application filed Nov. 21, 1902, Serial No. 132,349. Divided and this application filed May 27, 1903. Serial No. 158,991. (No model.)



*Claim.*—1. In a voting-machine, the combination of a plurality of register-actuators; a plurality of independently-operable covers, each of which normally covers a plurality of said register-actuators; and means operable to shift any given cover.

2. In a voting-machine, the combination of a plurality of register-actuators; a plurality of independently-operable covers, each of which normally covers a plurality of said register-actuators; and means operable to shift any given cover and simultaneously to lock the other covers against operation.

3. In a voting-machine, the combination of a plurality of series of register-actuators; a plurality of covers, one for each of said series; and means operable to shift any one of said covers.

4. In a voting-machine, the combination of a plurality of series of register-actuators; a plurality of covers, one for each of said series; and means operable to shift any one of said covers and simultaneously to lock the others of said covers against operation.

5. In a voting-machine, the combination of a plurality of series of register-actuators; a plurality of covers which normally render said register-actuators inaccessible; and means whereby the operation of one of said covers to expose and render accessible a predetermined one of said series results in locking the other of said covers against actuation and thereby retains the other of said series in an inaccessible condition.

6. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators, access to which is obtained through said holes; a cover which normally covers said holes and thereby renders said register-actuators inaccessible to the voter; and means operable by the voter for so moving said cover as to render a plurality of said register-actuators accessible to the voter.

7. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators access to which is obtained through said holes; a cover-slide formed with apertures which are normally out of register with said holes, said slide thereby rendering the register-actuators normally inaccessible to the voter; and means under control of the voter for so moving said cover-slide as to bring said apertures and said holes into register with one another and thereby to render said register-actuators accessible to the voter.

8. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators access to which is obtained through said holes; a cover which normally covers said holes and thereby renders said register-actuators inaccessible to the voter; means designed and adapted to be freely operable by the voter for so moving said cover as to render a plurality of said register-actuators accessible to the voter; and means which automatically lock said moving means when said registers are made accessible to the voter.

9. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators, access to which is obtained through said holes; a cover which normally covers said holes and thereby renders said register-actuators inaccessible to the voter; means designed and adapted to be freely operable by the voter for so moving said cover as to render a plurality of said register-actuators accessible to the voter; means which automatically lock said moving means when said register-actuators are rendered accessible to the voter; and mechanism which releases and restores said moving means to their original position and thereby renders said register-actuators again inaccessible.

10. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators access to which is obtained through said holes; a cover which normally covers said holes and thereby renders said register-actuators inaccessible to the voter; means adapted and designed to be freely operable by the voter for so moving said cover as to render a plurality of said register-actuators accessible to the voter; devices which prevent the actuation of said moving means; and mechanism adapted and designed to be freely operable by the voter for releasing said devices.

11. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators access to which is obtained through said holes; a cover-slide formed with apertures which are normally out of register with said holes, said slide thereby rendering the register-actuators normally inaccessible to the voter; means under the control of the voter for so moving said cover-slide as to bring said apertures and said holes into register with one another and thereby to render said register-actuators accessible to himself; and means for locking said moving means after their operation by the voter.

12. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators, access to which is obtained through said holes; a cover-slide formed with apertures which are normally out of register with said holes, said slide thereby rendering the register-actuators normally inaccessible to the voter; mechanism under control of the voter for so moving said cover-slide as to bring said apertures and said holes into register with one another and thereby to render said register-actuators accessible to himself; means for locking said mechanism after its operation by the voter; and means for releasing and restoring said mechanism to its original position.

13. In a voting-machine, the combination of a casing formed with a plurality of holes; a plurality of register-actuators access to which is obtained through said holes; a cover-slide formed with apertures which are normally out of register with said holes, said slide thereby rendering the register-actuators normally inaccessible to the voter; mechanism under control of the voter for so moving said cover slide as to bring said apertures and said holes into register with one another and thereby to render said register-actuators accessible to himself; means for locking said mechanism in its initial position; and means for releasing said locking means to permit the operation of said mechanism.

14. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover mounted in said frame, which cover normally renders said actuators inaccessible to the voter; and mechanism designed and adapted to be freely operable by the voter for so moving said cover as to render a plurality of said actuators accessible to the voter.

15. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover mounted in said frame, which cover normally renders said actuators inaccessible to the voter; mechanism designed and adapted to be freely operable by the voter for so moving said cover as to render said actuators accessible to the voter; and means for locking said mechanism automatically when said registering-actuators are rendered accessible to the voter.

16. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover mounted in said frame, which cover normally renders said actuators inaccessible to the voter; mechanism for so moving said cover as to render said actuators accessible to the voter; means for locking said mechanism when said actuators are made accessible to the voter; and means for releasing said locking means and restoring said mechanism to its initial position.

17. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover mounted in said frame, which cover normally renders said actuators inaccessible to the voter; mechanism for so moving said cover as to render said actuators accessible to the voter; devices which prevent the actuation of said mechanism to render said actuators accessible to the voter; and means for releasing said devices, said means being designed and adapted to be freely operable by the voter.

18. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover-slide mounted in said frame and formed with holes, which cover-slide normally renders said actuators inaccessible to the voter; and mechanism for so moving said cover-slide as to render said actuators accessible to the voter through said holes.

19. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover-slide mounted in said frame and formed with holes, which cover-slide normally renders said actuators inaccessible to the voter; mechanism for so moving said cover-slide as to render said actuators accessible to the voter through said holes; and means for locking said mechanism after its operation by the voter.

20. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover-slide mounted in said frame and formed with holes, which cover-slide normally renders said actuators inaccessible to the voter; mechanism for so moving said cover-slide as to render said actuators accessible to the voter through said holes; means for locking said mechanism after its operation; and means for releasing and restoring said mechanism to its initial position.

21. The combination in a voting-machine of a machine-frame; a plurality of register-actuators mounted therein; a cover-slide mounted in said frame and formed with holes, which cover-slide normally renders said actuators inaccessible to the voter; mechanism for so moving said cover-slide as to render said actuators accessible to the voter through said holes; means for locking said mechanism in its initial position; and means for releasing said locking means to permit the operation of said mechanism.

22. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of covers, one for each of said series, which covers make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; and mechanism for so moving said covers as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series inaccessible to him.

23. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of cover-slides, one for each of said series, which cover-slides make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; and mechanism for so moving said cover-slides as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series thereof inaccessible to him.

24. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of covers, one for each of said series, which covers make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; mechanism for so moving said covers as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series inaccessible to him; and means for locking said mechanism after its operation.

25. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of covers, one for each of said series, which covers make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; mechanism for so moving said covers as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series thereof inaccessible to him; means for locking said mechanism after its operation; and means for releasing said mechanism and restoring it to its initial position.

26. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of covers, one for each of said series, which covers make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; mechanism for so moving said covers as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series thereof inaccessible to him; means for locking said mechanism in its initial position and means for releasing said locking means to permit the operation of said mechanism.

27. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of cover-slides, one for each of said series, which cover-slides make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; mechanism for so moving said cover-slides as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series thereof inaccessible to him; and means for locking said mechanism after its operation.

28. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of cover-slides, one for each of said series, which cover-slides make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; mechanism for so moving said cover-slides as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series thereof inaccessible to him; means for locking said mechanism after its operation; and means for releasing said mechanism and restoring it to its initial position.

29. The combination in a voting-machine of a machine-frame; a plurality of series of register-actuators mounted therein; a plurality of cover-slides, one for each of said series, which cover-slides make normally inaccessible to the voter the several series of register-actuators, each the series covered by it; mechanism for so moving said cover-slides as to make accessible at the will of the voter certain of said series of register-actuators and the remaining series thereof inaccessible to him; means for locking said mechanism in its initial position; and means for releasing said locking means to permit the operation of said mechanism.

30. The combination in a voting-machine of a casing formed with holes, and a plurality of series of register-actuators, access to which is obtained through said holes; with a cover for each of said series of register-actuators, said covers being formed with apertures normally out of register with said holes; and mechanism by which the voter is enabled to bring the apertures of certain of said covers into register with their adjacent holes and so to move the remaining covers that their apertures lie still farther out of register with their coöperating holes.

31. In a voting-machine, the combination with a casing formed with holes, and a plurality of series of register-actuators, access to which is obtained through said holes; of a cover-slide for each of said series of register-actuators, said cover-slides being formed with apertures normally out of register with said holes; and mechanism by which the voter is enabled to bring the apertures of certain of said cover-slides into register with their adjacent holes and so to move the remaining cover-slides that their apertures lie still farther out of register with their coöperating holes.

32. In a voting-machine, the combination with a casing formed with holes, and a plurality of series of register-actuators access to which is obtained through said holes; of a cover for each of said series of register-actuators, said covers being formed with apertures normally out of register with said holes; mechanism by which the voter is enabled to bring the apertures of certain of said covers into register with their coöperating holes and so to move the remaining covers that their apertures lie still farther out of register with their coöperating holes; and means for locking said mechanism after its operation.

33. In a voting-machine, the combination with a casing formed with holes, and a plurality of series of register-actuators access to which is obtained through said holes; of a cover for each of said series of register-actuators, said covers being formed with apertures normally out of register with said holes; mechanism by which the voter is enabled to bring the apertures of certain of said covers into register with their coöperating holes and so to move the remaining covers that their apertures lie still farther out of register with their coöperating holes; means by which said mechanism is locked after its operation; and means for releasing and restoring said mechanism to its initial position.

34. In a voting-machine, the combination with a casing formed with holes, and a plurality of series of register-actuators, access to which is obtained through said holes; of a cover for each of said series of register-actuators, said covers being formed with apertures normally out of register with said holes; mechanism by which the voter is enabled to bring the apertures of certain of said covers into register with their coöperating holes and so to move the remaining covers that their apertures lie still farther out of register with their coöperating holes; means for locking said mechanism in its initial position; and means for releasing said locking means to permit the operation of said mechanism.

35. In a voting-machine, the combination with a casing formed with holes, and a plurality of series of register-actuators access to which is obtained through said holes; of a cover-slide for each of said series of register-actuators, said cover-slides being formed with apertures normally out of register with said holes; mechanism by which the voter is enabled to bring the apertures of certain of said cover-slides into register with their coöperating holes and so to move the remaining cover-slides that their apertures lie still farther out of register with their coöperating holes; means by which said mechanism is locked after its operation; and means for releasing and restoring said mechanism to its initial position.

36. In a voting-machine, the combination with a casing formed with holes and a plurality of series of register-actuators access to which is obtained through said holes; of a cover-slide for each of said series of register-actuators, said cover-slides being formed with apertures normally out of register with said holes; mechanism by which the voter is enabled to bring the apertures of certain of said cover-slides into register with their coöperating holes and so to move the remaining cover-slides that their apertures lie still farther out of register with their coöperating holes; and means for locking said mechanism after its operation.

37. In a voting-machine, the combination with a casing formed with holes, and a plurality of series of register-actuators, access to which is obtained through said holes; of a cover-slide for each of said series of register-actuators, said cover-slides being formed with apertures normally out of register with said holes; mechanism by which the voter is enabled to bring the apertures of certain of said cover-slides into register with their coöperating holes and so to move the remaining cover-slides that their apertures lie still farther out of register with their coöperating holes; mechanism for locking said mechanism in its initial position; and means for releasing said locking mechanism.

38. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices, a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; and a device for actuating said rack-bars.

39. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; a device for actuating said rack-bars; and mechanism for locking said actuating device.

40. In a voting-machine, the combination with a plurality of register-actuators and cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; a device for actuating said rack-bars; means for locking said actuating device after its operation; and means for releasing and restoring said actuating device to its initial position.

41. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; a device for actuating said rack-bars; means for

locking said actuating device in its initial position; and means for releasing said actuating device to permit its operation.

42. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; and a device under control of the voter for actuating said rack-bars.

43. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; a device under control of the voter for actuating said rack-bars; and means beyond the control of the voter for locking said actuating device after its operation by the voter.

44. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; a device under control of the voter for actuating said rack-bars; means for locking said actuating device after its operation by the voter; and means under control of the voter for releasing and restoring said actuating device to its initial position as he passes from the machine.

45. In a voting-machine, the combination with a plurality of register-actuators and of cover devices therefor; of a rack-bar for each of said cover devices; a pinion for and meshing with each of said rack-bars; a pair of rack-bars common to and meshing with all said pinions; a device under control of the voter for actuating said rack-bars; means for locking said actuating device in its initial position; and means for releasing said locking means to permit the operation of said actuating device.

46. In a voting-machine, the combination with a plurality of register-actuators, a cover device therefor and means for actuating said cover device; of an exit-bar; a resetting mechanism operatively connected with said exit-bar and said actuating means to restore said cover device to its initial position; and means to lock said actuating means in their initial position.

47. In a voting-machine, the combination with a plurality of register-actuators, a cover device therefor and means for actuating said cover device; of an exit-bar; and a resetting mechanism operatively connected with said exit-bar and said actuating means to restore said cover device to its initial position.

48. In a voting-machine, the combination with a plurality of register-actuators, a cover device therefor, and means for actuating said cover device; of an entrance-bar; an exit-bar; a resetting mechanism operatively connected with said bars; and means to lock said actuating means, which locking means are released by the movement of the resetting mechanism caused by the operation of the entrance-bar.

49. In a voting-machine, the combination with a plurality of series of register-actuators, a cover device for each of said series, means for actuating said cover devices to render certain of said series accessible to the voter and the remainder of said series inaccessible to him, and means for locking said actuating means after their operation; of an exit-bar; and a resetting mechanism operated by said exit-bar to release and restore said actuating means to their initial position.

50. In a voting-machine, the combination of an entrance-bar; an exit-bar; a resetting mechanism operatively connected with each of said bars; a plurality of series of register-actuators; a cover for each of said series; means for actuating said covers to render accessible to the voter certain of said series and the remainder inaccessible to him; means for locking said actuating means in their initial position; and means for locking said actuating means after their operation by the voter.

51. In a voting-machine, the combination of a plurality of covers; actuating means therefor; a device which prevents the movement of said actuating means from their initial position; a resetting mechanism operatively connected with and driven by an entrance-bar to release said device to permit the movement of said actuating means from their initial position; said entrance-bar; means for automatically locking said actuating means after their operation by the voter; and an exit-bar operatively connected with said resetting mechanism and by the operation of which the said mechanism is moved to release said actuating means and to restore them to their initial position.

52. In a voting-machine, the combination of a plurality of vote-registering devices; actuators therefor; means which prevent the operation of said actuators; devices which cover said actuators and thereby render them inaccessible to the voter; an entrance-bar; a resetting mechanism moved by said entrance-bar to release said preventing means to permit the operation of said actuators; means under control of the voter for actuating said cover devices to uncover said actuators after said actuators have been released; means for locking said cover-device-actuating mechanism after its operation by the voter; and an exit-bar which is operatively connected with said resetting mechanism and by the operation of which said cover-device-actuating mechanism is released and restored to its initial position and said actuating mechanism and said preventing means are locked in their initial position.

53. In a voting-machine, the combination of a cover-slide mechanism; operating means therefor under control of the voter; means which lock said cover-slide mechanism after its actuation; an exit-bar operatively connected with a resetting mechanism; said resetting mechanism which, when moved by the operation of said exit-bar, releases said cover-slide mechanism and restores it to its original position; means for locking said cover-slide mechanism in its original position; and an entrance-bar which is connected with said resetting mechanism and by its operation causes the resetting mechanism to release the last-named locking means.

54. A voting-machine made up of a casing formed with holes; a plurality of vote-registering devices mounted within said casing; actuating mechanism for said devices; access to which is obtained through holes in said casing; cover devices for said holes by which access is denied initially to said actuating mechanism; and means by which said cover devices are operated to afford access to only a part of said actuating mechanism, the remainder of said actuating mechanism being rendered permanently inaccessible to the voter by said means.

55. A voting-machine made up of a casing formed with holes; a plurality of vote-registering devices mounted within said casing; actuating mechanism for said devices, access to which is obtained through holes in said casing; cover devices for said holes by which access is denied initially to said actuating mechanism; means by which said cover devices are operated to afford access to only a part of said actuating mechanism, the remainder of said actuating mechanism being rendered permanently inaccessible to the voter by said means; and a resetting mechanism.

56. A voting-machine made up of a casing formed with holes; a plurality of vote-registering devices mounted within said casing; actuating mechanism for said devices, access to which is obtained through said holes; cover devices for said holes by which access is denied initially to said actuating mechanism; means by which said cover devices are operated to afford access to only a part of said actuating mechanism; the remainder of said actuating mechanism being rendered permanently inaccessible to the voter by said means; means for locking said operating means in their initial position; and means for releasing said locking means.

57. In a voting-machine, the combination with a casing and a plurality of register-actuators mounted therein; of a cover-slide; and means which hold said slide off said casing to permit its free actuation.

58. In a voting-machine, a plurality of counting mechanism; a plurality of actuators therefor; means normally concealing said actuators; and operating means therefor both rendering some of said actuators accessible and rendering others of said actuators inaccessible.

59. The combination of a plurality of operating mechanisms, resetting mechanisms, and concealing mechanisms effective to conceal some of the operating mechanisms after one of the operating mechanisms is operated and until reset by the resetting means.

60. The combination of a plurality of series of concealed voting devices with a selecting mechanism by which the voter is enabled to select and expose certain of said series and simultaneously lock the others of said series against exposure.

61. The combination of a plurality of series of concealed voting devices with a selecting mechanism by which the voter is enabled to select and expose certain of said series and simultaneously lock the others of said series against exposure; and resetting means.

62. The combination of a plurality of series of concealed voting devices with a selecting mechanism by which the voter is enabled to select and expose certain of said series and simultaneously lock the others of said series against exposure; means for restoring said mechanism to its initial position and locking it therein; and a releasing device to permit its operation.

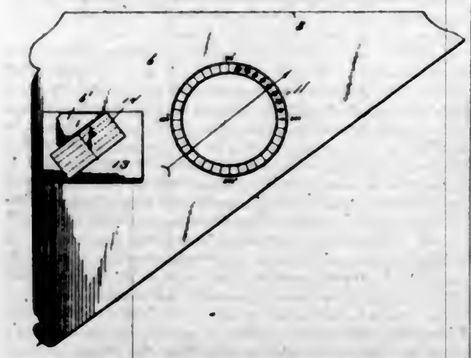
63. The combination of a plurality of series of concealed voting devices with a selecting mechanism by which to select and expose certain of said series for operation and simultaneously lock the remaining series against exposure; resetting means operated by an exit-bar; and said exit-bar.



64. The combination of a plurality of series of concealed voting devices with a selecting mechanism by which to select and expose for operation certain of said series and simultaneously lock the remaining series against exposure; resetting means operated by an exit-bar; said exit-bar; means for locking said mechanism in its initial position; means for releasing said locking means; and an entrance-bar by which to operate said releasing means.

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**755,837. EDUCATIONAL DEVICE.** ENOCH W. BARKER, Oakland, Cal. Filed Oct. 24, 1903. Serial No. 178,382. (No model.)



*Claim.*—1. A triangular writing-chart in which a portion of the edges are used to indicate the slants of strokes of written letters.

2. A writing-chart, having edges at an angle to each other, one edge being a hypotenuse with respect to the others and used as a guide to properly position the material to receive the written matter, a portion of the edges being used to indicate the slants of the strokes of written letters.

3. A writing-chart for application to a support having one edge for disposition in parallel relation to one edge of said support and another angular edge to serve as a guide in disposing the material to be written on, the said chart also having other edge structures to serve as guide means for indicating the slants of strokes of written letters.

4. A writing-chart having edge structures forming outlines of strokes of written letters.

5. A writing-chart having edges at angles and also provided with edge structures, a portion of the edges and said structures being used to indicate the slants of the strokes of written letters.

6. A right-angular triangular writing-chart whose hypotenuse is at an angle related to the slant of the strokes of written letters.

7. A writing-chart having an edge related to the angle of strokes of written letters and a corner indicating a stroke of a written letter.

8. A writing-chart having angular edges, a portion of the edges being used to designate the slants of strokes of written letters, and also provided with indicia thereon, a part of which is a small reproduction of the chart, for indicating the mode of application of the chart and the slants of the strokes of written letters.

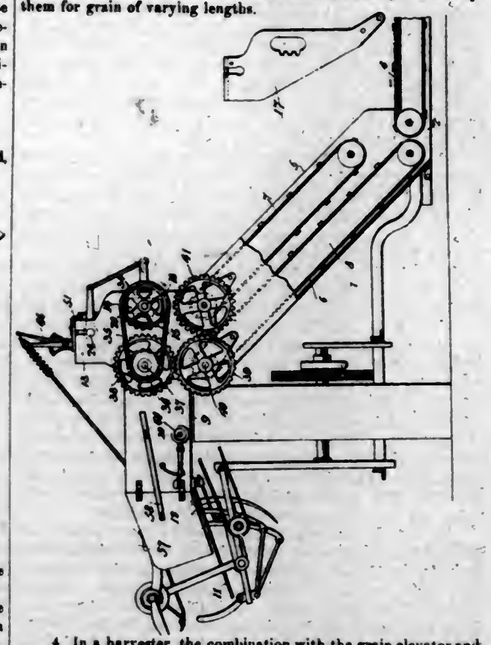
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**755,838. GRAIN-HARVESTER ELEVATOR.** GEORGE W. BEAM, Robinson, Ill. Filed Feb. 13, 1903. Serial No. 143,244. (No model.)

*Claim.*—1. In a harvester, the combination with the grain elevator and binding mechanism, of a device for transferring grain from the former to the latter, and means adapted to maintain both the receiving and delivery ends of the device in yieldable contact with the grain and permit it to yield under the influence of an increase of grain; whereby the device will automatically adjust itself to varying quantities of grain.

2. In a harvester, the combination with the grain elevator and binding mechanism, of an endless conveyer for transferring grain from the former to the latter, and means adapted to maintain both the receiving and delivery ends of the conveyer in yieldable contact with the grain and permit it to yield under the influence of an increase of grain; whereby the conveyer will automatically adjust itself to varying quantities of grain.

3. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of traveling devices for transferring grain from the former to the latter and wholly movable one from the other longitudinally of the grain, and means for maintaining the devices in their adjusted positions longitudinally of the grain to adapt them for grain of varying lengths.



4. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of endless traveling conveyers for transferring grain from the former to the latter and wholly movable one from the other longitudinally of the grain, and means for maintaining the conveyers in their adjusted positions longitudinally of the grain to adapt them for grain of varying lengths.

5. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of endless traveling conveyers for transferring grain from the former to the latter and wholly movable one from the other longitudinally of the grain, and a pawl-and-rack mechanism for maintaining the conveyers in their adjusted positions longitudinally of the grain to adapt them for grain of varying lengths.

6. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter, means adapted to maintain the receiving ends of the conveyers in yieldable contact with the grain and permit them to yield under the influence of an increase of grain, and means for independently and floatingly sustaining the delivery ends of the conveyers to permit them to bear unequally and yieldably upon the heads and butts of the grain; whereby the conveyers will automatically adjust themselves to varying quantities of grain and will deliver the grain in a straightened condition to the binding mechanism.

7. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, means acting on the shaft to maintain the receiving ends of the conveyers in yieldable contact with the grain and permit them to yield under the influence of an increase of grain, and means for independently and floatingly sustaining the delivery ends of the conveyers to permit them to bear unequally and yieldably upon the heads and butts of the grain; whereby the conveyers will automatically adjust themselves to varying quantities of grain and will deliver the grain in a straightened condition to the binding mechanism.

8. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of devices for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, means adapted to maintain the devices in contact with the grain and to yield under the influence of an increase of grain and means for maintaining the devices in their adjusted positions longitudinally of the grain; whereby the devices will automatically adjust themselves to varying quantities of grain and may be adjusted to grain of varying lengths.

9. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, means adapted to maintain the conveyers in contact with the grain and to yield under the influence of an increase of grain, and means for maintaining the conveyers in their adjusted positions longitudinally of the grain; whereby the conveyers will automatically adjust themselves to varying quantities of grain and may be adjusted to grain of varying lengths.

10. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, means adapted to maintain the conveyers in contact with the grain and to yield under the influence of an increase of grain, and a pawl-and-rack mechanism for maintaining the conveyers in their adjusted positions longitudinally of the grain; whereby the conveyers will automatically adjust themselves to varying quantities of grain, and may be adjusted to grain of varying lengths.

11. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of devices for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, means for sustaining the receiving ends of the devices and adapted to yield under the influence of an increase of grain, means for independently and floatingly sustaining the delivery ends of the devices, and means for maintaining the devices in their adjusted positions longitudinally of the grain; whereby the devices will automatically adjust themselves to varying quantities of grain, will deliver the grain in a straightened condition to the binding mechanism, and may be adjusted to grain of varying lengths.

12. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, means for sustaining the receiving ends of the conveyers and adapted to yield under the influence of an increase of grain, means for independently and floatingly sustaining the delivery ends of the conveyers, and means for maintaining the conveyers in their adjusted positions longitudinally of the grain; whereby the conveyers will automatically adjust themselves to varying quantities of grain, will deliver the grain in a straightened condition to the binding mechanism, and may be adjusted to grain of varying lengths.

13. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, a shaft common to both conveyers on which their receiving ends are mounted, means acting on the shaft to maintain the conveyers in contact with the grain and adapted to yield under the influence of an increase of grain, means for independently and floatingly sustaining the delivery ends of the conveyers, and means for maintaining the devices in their adjusted positions longitudinally of the grain.

14. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain; means adapted to maintain the receiving ends of the conveyers in contact with the grain and to yield under the influence of an increase of grain, means for independently and floatingly sustaining the delivery ends of the conveyers, and a pawl-and-rack mechanism for maintaining the conveyers in their adjusted positions longitudinally of the grain.

15. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, a shaft common to both conveyers on which their receiving ends are mounted, means acting on the shaft to maintain the conveyers in contact with the grain and adapted to yield under the influence of an increase of grain, means for independently and floatingly sustaining the delivery ends of the conveyers, and a pawl-and-rack mechanism for maintaining the conveyers in their adjusted positions longitudinally of the grain.

16. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter, a vertically movable shaft common to both conveyers on which their receiving ends are mounted, said shaft being movable upward automatically under the influence of an increase of grain, mechanism for driving the shaft, and means for independently and floatingly sustaining the delivery ends of the conveyers.

17. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, said shaft being movable upward automatically under the influence of an increase of grain, mechanism for driving the shaft, means for independently and floatingly sustaining the delivery ends of the conveyers, and means for maintaining the conveyers in their adjusted positions longitudinally of the grain.

18. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, mechanism for driving the shaft, means for exerting an upward pull on the shaft to adapt the conveyers to yield readily under the influence of an increased flow of grain and means for independently and floatingly sustaining the delivery ends of the conveyers.

19. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, mechanism for driving the shaft, means exerting an upward pull on the shaft to adapt the conveyers to yield readily under the influence of an increased flow of grain, means for independently and floatingly sustaining the delivery ends of the conveyers, and means for maintaining the conveyers in their adjusted positions longitudinally of the grain.

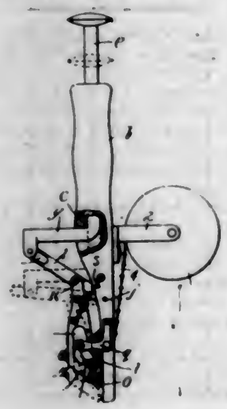
20. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter and movable one from the other longitudinally of the grain, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, mechanism for driving the shaft, means exerting an upward pull on the shaft to adapt the conveyers to yield readily under the influence of an increased flow of grain means for independently and floatingly sustaining the delivery ends of the conveyers, and a pawl-and-rack mechanism for maintaining the conveyers in their adjusted positions longitudinally of the grain.

21. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, mechanism for driving the shaft and exerting a downward pull on the same to maintain the conveyers in contact with the grain, said shaft being movable upward automatically under the influence of an increase of grain, and means for independently and floatingly sustaining the delivery ends of the conveyers.

22. In a harvester, the combination with the grain elevator and binding mechanism, of a pair of conveyers for transferring grain from the former to the latter, a vertically-movable shaft common to both conveyers on which their receiving ends are mounted, mechanism for driving the shaft and exerting a downward pull on the same to hold the conveyers yieldably in contact with the grain, means for exerting an upward pull on the shaft to adapt the conveyers to yield readily under the influence of an increased flow of grain, and means for independently and floatingly sustaining the delivery ends of the conveyers.

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755,839. **HAND-TACKER.** STANISLAS BEAUREGARD, Montreal, Canada, assignor to Joseph Adam, Montreal, Canada. Filed May 11, 1903. Serial No. 156,670. (No model.)





*Claim.*—1. A hand-tacker, comprising a handle, a plunger movable longitudinally of said handle and slidably connected thereto said plunger having a portion extending therefrom at right angles thereto, a device for supporting a coiled string of nails, a device for feeding the nails of the string and severing them therefrom, means pivotally connecting said nail feeding and severing device to the portion of said plunger extending at right angles thereto to move therewith, and means yieldingly retaining said device in position to engage the string of nails.

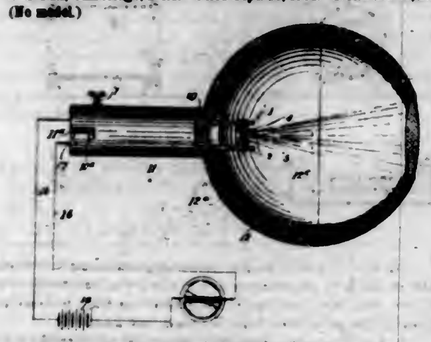
2. In a hand-tacker, the combination with a handle, of a plunger slidably supported upon said handle and consisting of a rod having a handle upon its upper end and its lower end bent to extend laterally, and a device for feeding the nails of a string and severing the nails therefrom, and a lever connecting the lateral portion of the rod to said device, substantially as described and for the purpose set forth.

3. In a hand-tacker, the combination with a handle, a plunger slidably supported upon said handle and consisting of a rod having a handle upon its upper end and its lower end bent at right angles, and a device for feeding the nails of a string and severing the nails therefrom, of a lever pivotally connected at one end to the main handle, and slidably and pivotally connected at its other end to the end of the portion of the rod bent at right angles, substantially as described and for the purpose set forth.

4. In a hand-tacker, the combination with a handle, a plunger slidably supported upon said handle and consisting of a rod having a handle upon its upper end and its lower end bent at right angles, of a lever having one end fulcrumed to the main handle at a point below the bent portion of said plunger, and its opposite end slotted such lever being furnished with a perforation, a pin carried by said transverse portion of the plunger and projecting through the slot in said lever, a device for feeding a string of nails and severing the nails therefrom, said device having its upper end perforated, a pin projecting through said perforation and through the perforation in said lever thus effecting a pivotal connection between said device and lever, and means yieldingly retaining said device normally away from the operating end of the tacker, substantially as described and for the purpose set forth.

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755,840. **DETECTOR FOR ELECTRICAL DISTURBANCES.** JAGADIS C. BOSE, Calcutta, India, assignor of one-half to Sara Chapman Bull, Cambridge, Mass. Filed Sept. 30, 1901. Serial No. 77,023. (No model.)



*Claim.*—1. In a coherer or detector of electrical disturbances, Hertzian waves, light-waves or other radiations, a sensitive substance having a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance), which is not straight but is either convex or concave to the axis of electromotive force and in which the return curve with a decreasing electromotive force when taken slowly, approximately coincides with the former curve.

2. In and for a coherer or detector of electrical disturbances, Hertzian waves, light-waves, or other radiations, galena as a sensitive substance.

3. A coherer or detector of electrical disturbances, Hertzian waves, light-waves or other radiations, comprising contacting pieces of sensitive substance having a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance), which is not straight but is either convex or concave to the axis of electromotive force and in which the return curve with a decreasing electromotive force when taken slowly, approximately coincides with the former curve, in combination with means for adjusting the force of contact between said contacting pieces.

4. A coherer or detector of electrical disturbances, Hertzian waves, light-waves, or other radiations, comprising contacting pieces of sensitive substance having a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance) which is not straight but is either convex or concave to the axis of electromotive force and in which the return curve with a decreasing electromotive force when taken slowly, approximately coincides with the former curve, pivoted conducting-arms carrying said contacting pieces, a spring tending to hold said contacts together, and a micrometer-screw for adjusting the force of contact of said contacting pieces, substantially as described.

5. A coherer or detector of electrical disturbances, Hertzian waves, light-waves, or other radiations, comprising a pair of contacts of sensitive substance having a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance), which is not straight but is either convex or concave to the axis of electromotive force and in which the return curve with decreasing electromotive force when taken slowly, approximately coincides with the former curve, pivoted conducting-arms carrying said contacts and insulated from each other except at the contacting point of said contacts, a spring tending to hold said contacts together, a micrometer-screw for adjusting the force of contact of said contacts, and means for insulating said arms from each other except at the contacting point of said contacting pieces and from external objects, substantially as described.

6. A coherer or detector of electrical disturbances, Hertzian waves, light-waves, or other radiations, comprising a pair of galena contacts, pivoted conducting-arms carrying said contacts and insulated from each other except at the contacting point of said contacts, a spring tending to hold said contacts together, a micrometer-screw for adjusting the force of contact of said contacts, and means for insulating said arms from each other except at the contacting point of said contacting pieces and from external objects, substantially as described.

7. In apparatus for receiving light-waves, contacting pieces of sensitive substance which will give a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance) which is not straight, but convex or concave to the axis of electromotive force and in which the return curve with a decreasing electromotive force when taken slowly, approximately coincides with the former curve, in combination with a chamber inclosing said contacting pieces, and a lens disposed to direct light-rays onto said contacting pieces, substantially as described.

8. In apparatus for receiving light-waves, contacting pieces of sensitive substance which will give a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance) which is not straight, but either convex or concave to the axis of electromotive force, and in which the return curve with a decreasing electromotive force, when taken slowly, approximately coincides with the former curve, said contacting pieces being in combination with conducting-arms carrying the same, said arms being pivoted together, a spring tending to hold said contacting pieces together, means for adjusting the force of said spring and therefore the force of contact of said contacting pieces, means for insulating said arms from each other except at the contacting point of said contacting pieces, and from external objects, a chamber into which said contacting pieces project, and a lens carried by said chamber, all substantially as described.

9. In apparatus for receiving light-waves, contacting pieces of sensitive substance which will give a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance) which is not straight, but either convex or concave to the axis of electromotive force and in which the return curve with a decreasing electromotive force, when taken slowly, approximately coincides with the former curve, said contacting pieces being in combination with conducting-arms carrying same, said arms being pivoted together, a spring tending to hold said contacting pieces together, means for adjusting the force of said spring and therefore the force of contact of said contacting pieces, means for insulating said arms from each other except at the contacting point of said contacting pieces, and from external objects, a chamber into which said contacting pieces project, and a water-lens carried by said chamber, all substantially as described.

10. In apparatus for receiving light-waves, contacting pieces of sensitive substance which will give a characteristic curve (giving the relation between an increasing impressed electromotive force and the resultant current passing through the sensitive substance) which is not straight, but either convex or concave to the axis of electromotive force and in which the return curve with a decreasing electromotive force, when taken slowly, approximately coincides with the former curve, said contacting pieces being in combination with conducting-arms carrying the same, said arms being pivoted together, a spring tending to hold said contacting pieces together, a micrometer-screw adapted to adjust the force of said spring and therefore the force of contact of said contacting pieces, an insulating-tube in which said arms and spring are fitted, means for insulating said arms from each other except at the point of contact of said contacting pieces, a metallic part such as 12 having an extension such as 11, a casing or chamber such as 12ª 12ᵇ, and a lens fitted in said chamber, all substantially as and for the purpose described.

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**755,841. SLISTER-HOOK.** THOMAS H. BRADY, New Britain, Conn. Filed Dec. 3, 1903. Serial No. 183,614. (No model.)



*Claim.*—1. In a device of the class specified the combination with the overlapping hook members pivotally secured together, and the locking projection on one member, of a ring pivotally supported on the other member and adapted to engage said locking projection, substantially as described.

2. In a device of the class specified the combination with the overlapping hook members pivotally secured together, and the locking projection on one member, of a ring pivotally supported on the other member, at a point above the locking projection, and adapted for engagement therewith, substantially as described.

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**755,842. APPARATUS FOR CASTING METALS IN VACUUM.** WALTER B. BURROW, Norfolk, Va. Filed July 2, 1902. Serial No. 114,094. (No model.)



*Claim.*—1. A vacuum-casting apparatus, the combination of a metallic outer drag, box or case, a flange or lip projecting outward forming a flared rim at the top of the said drag, a detachable cope, bonnet or top over and entirely inclosing the mold in its flask or box, the said outer cope or top fitting into a space on a sand filling around and between the inner mold-flask and the outer drag or box, and a metallic seal at the junction of the outer cope or top and the outer drag or box, of a lower melting-point than the said top part or cope and the lower part or drag, as described.

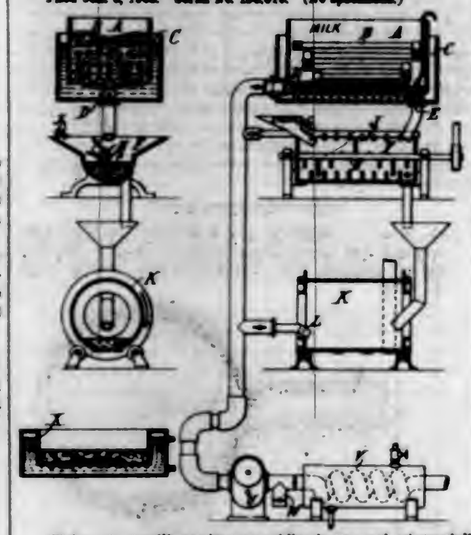
2. A vacuum casting apparatus, the combination of a flanged outer drag, box or case, a cope, bonnet or top, detachable from the main body or lower part or drag, the said outer cope and drag inclosing the mold, a metallic seal poured in while molten upon a sand filling between the outer drag or box and the outer cope or bonnet, forming a hermetically-sealed joint between the said outer cope and drag, and tubes or pipes passing through the outer cope, bonnet or top, placed vertically upward at right angles to the plane or level of the top of the cope or bonnet and extending downward into the inner flask and mold, and means for adjusting the lower ends of the said tubes to fit into the runner, riser or sink heads of the inclosed mold for the guidance of the metal therein, as described.

3. A vacuum casting apparatus, the combination of a flanged projecting flared-rim drag, box or case, a detachable cope, bonnet or top, a metallic seal at the junction of the said cope and drag, and tubes upon the said cope or top, extending vertically up and down, the lower ends of the said tubes fitting into the risers and runners of the inclosed mold and the upper ends acting as funnels for pouring the molten metal into the said mold, and refractory packed metallic plugs or stoppers, for closing and opening the funnel-tubes, and an outlet-pipe for removing the air and gases from the said mold and the outer cope and drag, as described.

4. A vacuum apparatus for casting metals, the combination of a flanged detachable interlocking cope and drag, a metallic seal around the junction thereof, and guide or funnel tubes for filling the mold with the molten metal, and removable plugs for closing the upper ends of the said tubes to regulate the degree of rarefaction in the apparatus, a water jacket or space around the flange of the outside drag or case and the lower part of the cope or bonnet and under the metallic seal to prevent its fusion, and a sand filling or subseal, between the said metallic seal and the water-space, substantially as described

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**755,843. MILK PRODUCT RESEMBLING BUTTER AND PROCESS OF MAKING SAME.** JOSEPH H. CAMPBELL, New York, N. Y. Filed Jan. 6, 1903. Serial No. 138,016. (No specimens.)




*Claim.*—1. A milk product resembling butter and substantially solid at ordinary temperatures and of about the consistency of butter and containing only fat, uncoagulated non-fatty milk solids in excess of the proportion found in cream, and water.

2. A milk product resembling butter and substantially solid at ordinary temperatures and of about the consistency of butter and containing only fat, uncoagulated non-fatty milk solids in excess of the proportion found in cream, and water, the whole being grained so as to have the same physical structure as butter.

3. A milk product resembling butter and substantially solid at ordinary temperatures and of about the consistency of butter, containing water, and approximately the same relative quantities of fat and non-fatty milk solids as in normal milk.

4. A milk product resembling butter substantially solid at ordinary temperatures and containing milk-fat approximately from seventeen to twenty-three per cent.; non-fatty milk solids approximately from forty-eight to sixty-four per cent.; and sufficient water to give it about the consistency of butter.

5. A milk product resembling butter and substantially solid at ordinary temperatures and of about the consistency of butter, containing unsterilized milk-fat, sterilized non-fatty milk solids, and water.

6. The process of making a food product, which consists in partially concentrating skim-milk by applying heat thereto so as to partially vaporize the same and exposing it at the same time to a blast of air in such volume as to carry off the heated vapor produced, and maintain the milk at a sterilizing temperature below the coagulating-point of albumen whereby the milk is concentrated so rapidly as to avoid souring and at such a low temperature as to preserve the soluble and peptogenic qualities of the proteids, mixing with the partially-concentrated skim-milk approximately the quantity of cream which was originally in the milk, and concentrating the mixture at a non-sterilizing temperature to about the consistency of butter whereby the mass is well inoculated with the flavor of the cream.



7. The process of making a food product, which consists in partially concentrating skim-milk by applying heat thereto so as to partially vaporize the same, and exposing it at the same time to a blast of air in such volume as to carry off the heated vapor produced and to maintain the milk at a temperature below that of the applied heat, whereby the milk may be concentrated rapidly and at a low temperature, mixing with the partially-concentrated skim-milk approximately the quantity of cream which was originally in the milk, and concentrating the mixture to about the consistency of butter.

8. The process of making a food product, which consists in partially concentrating skim-milk by applying heat thereto so as to partially vaporize the same, and exposing it at the same time to a blast of air in such volume as to carry off the heated vapor produced and to maintain the milk at a temperature below that of the applied heat, whereby the milk may be concentrated rapidly and at a low temperature, mixing with the partially-concentrated skim-milk approximately the quantity of cream which was originally in the milk, and concentrating the mixture at a non-sterilizing temperature to about the consistency of butter, whereby the mass is well inoculated with the flavor of the cream.

9. The process of making a milk product solid at ordinary temperatures and resembling butter which consists in partially concentrating skim-milk, adding cream, and concentrating the mixture to about the consistency of butter.

10. The process of making a milk product solid at ordinary temperatures and resembling butter which consists in partially concentrating skim-milk, adding approximately the quantity of cream originally in the milk, and concentrating the mixture to about the consistency of butter.

11. The process of making a milk product solid at ordinary temperatures and resembling butter which consists in partially concentrating skim-milk, adding approximately the quantity of cream originally in the milk, and concentrating the mixture to approximately from fifteen to twenty per cent. of the original volume of whole milk.

12. The process of making a milk product solid at ordinary temperatures and resembling butter which consists in partially concentrating skim-milk, adding cream, concentrating the mixture to about the consistency of butter, and graining the mass.

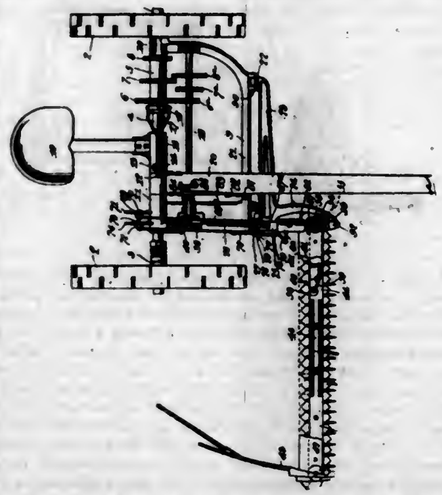
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**755,844. MOWING-MACHINE.** JOSEPH A. CARTER, McMechen, W. Va. Filed Oct. 15, 1903. Serial No. 177,179. (No model.)

*Claim.*—1. In a mowing-machine, the combination of a wheel-supported axle, a frame revolubly connected therewith, a counter-shaft upon said frame parallel to said axle, means for transmitting motion at various rates of speed from the axle to said counter-shaft, an adjustable frame hingedly connected along its rear edge with the main frame, cutting apparatus hingedly connected with and carried by said adjustable frame, and means for transmitting motion from the counter-shaft to the cutting apparatus.

2. In a mowing-machine, a wheel-supported axle, a frame revolubly connected with said axle and having a sleeve integral therewith, an auxiliary adjustable frame hingedly connected with the main frame and having a sleeve hingedly connected with the sleeve of the main frame, a supporting-shoe connected with the sleeve of the adjustable frame, endless cutting apparatus supported by said shoe, a shaft mounted vertically in the latter and connected operatively with the endless cutting mechanism, a shaft extending through the sleeves of the main frame and the adjustable frame and having a knuckle-joint in alinement with the hinge connection of said sleeves, miter-gearing connecting the front end of the shaft with the upper end of the vertical shaft supported on the shoe, a counter-shaft supported upon the main frame parallel to the axle, means for transmitting motion at variable speed from the axle to said counter-shaft, and miter-gearing connecting the latter with the rear end of the shaft.

3. In a mowing-machine, the combination of a main frame, rotary supporting means for said frame, an auxiliary adjustable frame hingedly connected along its rear edge with said main frame and having a forwardly-extending curved bar, a shoe hingedly supported by said auxiliary frame and curved bar, cutting apparatus supported by said shoe, and means for transmitting motion to the latter from the rotary supporting means of the main frame.



4. In a mowing-machine, the combination of a wheel-supported axle, a frame supported thereon, an auxiliary frame hingedly connected with the main frame, hingedly-connected sleeves upon the said main and auxiliary frames, a shaft extending through said sleeves and having a knuckle-joint in alinement with the hinge connection thereof, cutting apparatus supported by the auxiliary frame, means for connecting the rear end of the shaft with the source of power, means for connecting the front end of the shaft with the cutting apparatus to be driven, arms extending upwardly and downwardly from the sleeve of the auxiliary frame, a lever supported upon the main frame, rods extending from opposite sides of the fulcrum of said lever to the arms upon the sleeve of the auxiliary frame, said rods being pivotally connected with said arms and with the lever, and means for retaining the latter in adjusted position.

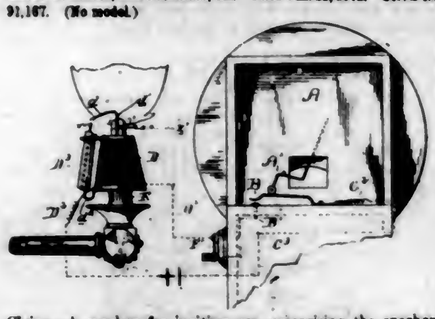
5. In a mowing-machine, the combination of a wheel-supported axle, a main frame supported thereon, an auxiliary frame hingedly connected along its rear edge with the main frame, cutting apparatus supported by said auxiliary frame, means for elevating the cutting apparatus to an approximately vertical position with relation to the hinged supporting-frame, and means for elevating the latter to swing the cutting apparatus to a rearward supported position upon the main frame.

6. In a mowing-machine, a wheel-supported axle, a main frame supported thereon, an auxiliary frame hingedly connected with the main frame, sleeves upon the main and auxiliary frames, hingedly connected, a collar revolubly supported upon the sleeve of the auxiliary frame, a shoe connected with said collar, cutting apparatus supported upon said shoe, and means for adjusting the collar to raise or lower the cutting apparatus.

7. In a mowing-machine, a wheel-supported axle, a main frame supported thereon, an auxiliary frame hingedly connected with the main frame, sleeves upon the main and auxiliary frames hingedly connected, a collar revolubly supported upon the sleeve of the auxiliary frame, a shoe connected with the said collar, cutting apparatus supported upon said shoe, an arm extending laterally from the collar, an arm pivotally connected to the main frame, a link connection between said arm and the arm extending from the collar supporting the cutting apparatus, and lever means for operating the arm pivoted to the frame to partially rotate the collar supporting the cutting apparatus.

8. In a machine of the class described, a revolubly-mounted collar having a laterally-extending arm, a shoe connected with said collar, cutting apparatus supported upon said shoe, a pair of arms pivotally connected with the main frame, one of said arms being provided with a flange supporting the other arm, a chain connecting the arm thus supported with the arm extending laterally from the revoluble collar, a hand-lever, means for retaining the latter at various points of adjustment, and connecting means between said lever and the pivoted flanged arm.

755,845. ELECTRIC TIME-SWITCH. FRANK W. CHERRY and HENRY F. RADER, San Francisco, Cal. Filed Jan. 26, 1903. Serial No. 91,167. (No model.)



*Claim.*—A sparker for igniting gas, comprising the sparker-points, a cooperating magnet and armature for contacting said points, electric circuits including the magnet, armature and sparking points, a circuit-closer in the magnetic circuit, including a spring-arm, a rocking hammer arranged above said arm and adapted to depress the same, a clockwork, a controller-wheel in said clockwork, said controller-wheel having on its periphery a plurality of equidistant deep notches and a plurality of equidistant shallow notches disposed intermediate said deep notches, a pivoted lever one end of which is adapted to engage with one of said notches, and connections between said lever and said rocking hammer whereby when the end of the lever is seated in one of the deep notches the hammer will remain stationary and when the end of the lever is lifted out of the deep notch and into one of the shallow notches the lever will be rocked to engage with the spring-arm and close the circuit through the magnet and actuate the sparking mechanism.

755,846. PIPE-WRENCH. KENTON CHICKERING, Oil City, Pa. Filed Jan. 21, 1904. Serial No. 189,995. (No model.)



*Claim.*—1. In a pipe-wrench, the combination with an operating-lever and jaws one of which is pivoted thereon and the other adapted to engage the end of the operating-lever, of a jaw-check mounted on and having yielding frictional engagement with the operating-lever and adapted to engage the jaw which is pivoted on the lever, substantially as and for the purposes specified.

2. In a pipe-wrench, the combination with an operating-lever and a wrench-jaw pivoted thereon, of a sliding jaw-check mounted on the operating-lever and adapted to engage the heel of the jaw which is pivoted on the lever, and a spring interposed between the sliding jaw-check and the operating-lever, substantially as and for the purposes specified.

3. In a pipe-wrench, the combination with an operating-lever and a wrench-jaw pivoted thereon, of a sliding jaw-check provided with flanges which straddle the operating-lever said flanges having elongated slots, pins for securing the sliding jaw-check to the operating-lever, and a spring interposed between the sliding jaw-check and the operating-lever, substantially as and for the purposes specified.

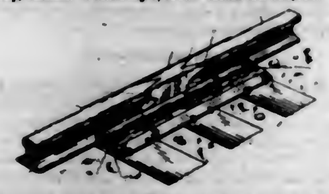
4. In a pipe-wrench, the combination with an operating-lever and a wrench-jaw pivoted thereon, said jaw provided with an extension heel-piece, of a sliding jaw-check mounted on the operating-lever in yielding frictional engagement therewith and adapted to engage the extension heel-piece of the pivoted jaw, substantially as and for the purposes specified.

755,847. ADJUSTABLE PIPE-SUPPORTING BRACKET. ALFRED CLARENCE, Fall River, Mass. Filed May 1, 1903. Serial No. 156,226. (No model.)



*Claim.*—The combination of a bracket-fastener, having a head at its outer end, with a pipe-supporting bracket which is formed, on its front side, with a pipe-support, and, on its rear side, with a lengthwise-extending guideway for said fastener, the guideway comprising a groove and inwardly-extending flanges partly covering said groove and overlapping the head of the fastener, a portion of the fastener passing between the inner edges of said flanges; the bracket being formed with a space to permit the entrance of the fastener-head into the said guideway, and the bracket having a transverse bridge-piece formed with an opening for a set-screw which passes through said opening into the guideway to engage the fastener-head therein; and a set-screw.

755,848. RAIL-JOINT. JONATHAN R. CLINE, London, Canada, assignor of two-thirds to Alexander McPhadon and Hugh McKelvey, Nakusp, Canada. Filed July 9, 1903. Serial No. 164,797. (No model.)



*Claim.*—1. In a rail-joint the combination of a chair; an independent coupling-piece having a rail-tread and beveled ends and securely held in the chair; rail ends shaped to fit the coupling-piece; and means for holding the rail ends in the chair with freedom to move endwise, substantially as described.

2. In a rail-joint the combination of a chair; an independent coupling-piece having a rail-tread and V-shaped forked ends and securely held in the chair; rail ends shaped to fit the coupling-piece; and means for holding the rail ends in the chair with freedom to move endwise, substantially as described.

3. In a rail-joint the combination of a chair having at one side a flange shaped to fit the side of a rail, and at the other side formed with a vertical shoulder; a coupling-piece having a rail-tread and beveled ends and secured to the flange of the chair; rail ends shaped to fit the coupling-piece and also fitting against the side flange of the chair; a key adapted to engage and fit over the bases of the rail ends and coupling-piece and abutting against the shoulder on the chair; and bolts securing the key to the rail-base, substantially as described.

4. In a rail-joint the combination of a coupling-piece having a rail-tread and beveled ends; rail ends shaped to fit the coupling-piece; a chair having a flange at one side, the central part of the flange and coupling being shaped to engage one another to resist end motion of the coupling and the outer parts of the flange being shaped to fit against the sides of the rail ends; a key adapted to engage the chair, the rail end, and coupling-piece, to press them into contact with one another; and detachable means connecting the key with the chair, substantially as described.

5. In a rail-joint the combination of a coupling-piece having a rail-tread and V-shaped forked ends; rail ends shaped to fit the coupling-piece; a chair having a flange at one side, the central part of the flange and coupling being shaped to engage one another to resist end motion of the coupling and the outer parts of the flange being shaped to fit against the sides of the rail ends; a key adapted to engage the chair, the rail end, and coupling-piece, to press them into contact with one another; and detachable means connecting the key with the chair, substantially as described.

6. In a rail-joint the combination of a coupling-piece having a rail-tread and beveled ends; rail ends shaped to fit the coupling-piece; a chair having a flange at one side, the central part of the flange and coupling being shaped to engage one another to resist end motion of the coupling and the outer parts of the flange being shaped to fit against the sides of the rail ends; a key adapted to engage the chair, the rail end, and coupling-piece to press them into contact with one another; detachable means connecting the key with the chair; and a bolt connecting the coupling-piece with the flange of the chair, substantially as described.

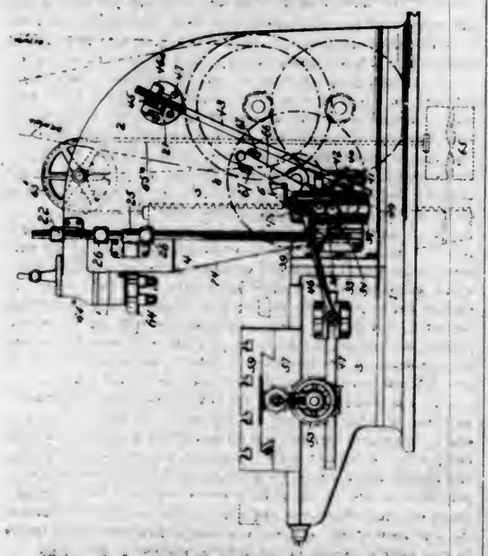
7. In a rail-joint the combination of a coupling-piece having beveled ends and flanged base; rail ends shaped to fit the ends of the coupling-piece; and a chair adapted to engage the base of the rail and coupling-piece to hold the latter in line with the former, substantially as described.

8. In a rail-joint the combination of a coupling-piece having V-shaped forked ends and flanged base; rail ends shaped to fit the ends of the coupling-piece; and a chair adapted to engage the base of the rail and coupling-piece to hold the latter in line with the former, substantially as described.

9. In a rail-joint the combination of a coupling-piece having V-shaped forked ends and flanged base provided with central parallel portions to engage the web of a rail end; rail ends shaped to fit the ends of the coupling-piece with their webs in engagement with the said parallel portions; and a chair adapted to engage the base of the rail and coupling-piece to hold the latter in line with the former, substantially as described.



755,849. VERTICAL SHAPER. LESLIE H. COLBURN, Franklin Pa. Filed July 29, 1902. Serial No. 117,349. (No model.)



*Claim.*—1. In a vertical shaper, the combination with a ram, a bracket thereon, a vertically-movable rod mounted adjacent to the ram, and a pair of stops adjustably secured to the rod and adapted to be alternately engaged by the bracket on the ram, of a rocker having two shoulders, a foot-piece on the end of the rod having lugs each engaging a shoulder on the rocker, and belt-shifting and table feeding devices connected to said rocker.

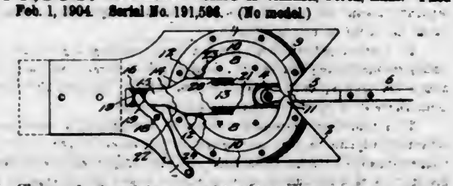
2. In a vertical shaper, the combination with a vertically-movable ram, a bracket carried thereby, a rod mounted adjacent to the ram, and a pair of stops on said rod, the said stops adapted to be alternately engaged by the bracket, of a rocker mounted on the frame of the machine and provided with two shoulders one facing up and the other down, a foot-piece carried by the rod and provided with two lugs one of which rests over the upwardly-facing shoulder of the rocker and the other below the downwardly-facing shoulder of the rocker, whereby they are caused by the reciprocating movement of the rod to alternately engage said shoulders and rock the rocker, and belt-shifting and table feeding devices connected to said rocker.

3. In a shaping-machine, the combination with a ram, gearing for operating the same and two pairs of fast and loose pulleys, of a belt-shifting arm for each pair of pulleys, a sliding cam-plate engaging both arms, a rod connected to said plate and provided at its outer end with teeth, a rocker, a rod connected to said rocker and provided with teeth, and a pinion engaging the teeth of both rods whereby when the rocker is rocked both belt-shifting arms will be moved.

4. In a shaping-machine, the combination with a ram, gearing for operating the same and two pairs of fast and loose pulleys, of a belt-shifting arm for each pair of pulleys, a sliding plate having a cam-groove engaged by both belt-shifting arms, a rod engaging the sliding plate and provided at its outer end with rack-teeth, a rocker, a rod connected at one end to said rocker and provided at its other end with rack-teeth, a pinion engaging the teeth of both rods and means for actuating the rocker.

5. The combination with a ram carrying a cutting-tool and a bracket, of a longitudinally-movable rod adjacent to the ram, stops adjustably secured on said rod and adapted to be alternately engaged by the bracket, a foot-piece secured to the end of said rod and provided with two lugs, a bracket having a bearing to receive said foot-piece, a rocker pivoted to said bracket and having shoulders engaged by the lugs on the foot-piece, and belt-shifting and table feeding devices connected to and actuated by said rocker.

755,850. COUPLING. JOSEPH L. CRELLIN, Perth, Kans. Filed Feb. 1, 1904. Serial No. 191,566. (No model.)



*Claim.*—1. A coupler comprising sliding hooks, and a plunger movable between portions of the hooks and adapted to force the points of the hooks toward each other.

2. A coupler comprising sliding hooks, and a plunger arranged to be operated by a coupling-pin and interposed between portions of the hooks, said plunger being adapted to force the points of the hooks toward each other.

3. A coupler comprising oppositely-arranged sliding hooks, and a plunger operating between portions of the hooks, and adapted to force the points of the hooks toward each other and also to lock the hooks in such position.

4. A coupler comprising a draw-head, oppositely-arranged curved hooks slidingly mounted therein, and a plunger operating between the hooks at one end and adapted to force the other ends toward each other and lock the hooks in such position.

5. A coupler comprising a draw-head provided with an annular groove, curved hooks arranged to slide in said groove, and a wedge-shaped plunger movable between the hooks at one end and adapted to force the opposite ends of the hooks toward each other and lock the same.

6. A coupler comprising a draw-head provided with an annular groove, and a throat intersecting said groove, oppositely-arranged curved hooks slidingly mounted in said groove, and a wedge-shaped plunger operating on the hooks at one end and adapted to force the opposite ends of the hooks toward each other across the throat of the draw-head.

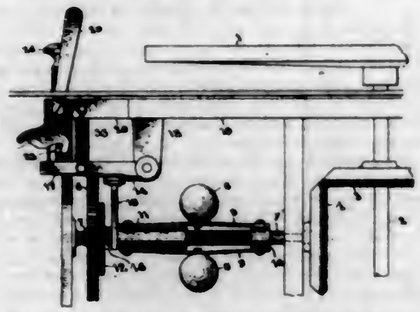
7. A coupler comprising a draw-head provided with an annular groove, and an entrance-throat intersecting said groove, segmental hooks slidingly mounted in said groove, a plunger, operating between said hooks at one end and adapted to force the opposite ends thereof toward each other and across the entrance-throat, and means for limiting the sliding movement of said hooks.

8. A coupler comprising a draw-head provided with an annular groove, segmental hooks slidingly mounted in said groove, a wedge-shaped plunger operating between portions of the hooks and adapted to force the ends of the hooks toward each other, means for limiting the movements of the plunger in opposite directions, and means for limiting the movements of the sliding hooks.

9. A coupler comprising a draw-head, segmental hooks slidingly mounted in the draw-head, a plunger operating between the hooks to force the extremities thereof toward each other, an uncoupling-lever operatively associated with said plunger, a foot-controlled elbow-lever arranged at a distance from the uncoupling-lever, and a connecting-rod interposed between said levers and arranged in such manner as to lock both of said levers when the coupling-hooks are closed or brought together.

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**755,851. COMBINED REGULATOR AND BRAKE FOR TALKING-MACHINES.** WILBUR H. DENNISON, Camden, N. J., assignor to Victor Talking Machine Company, a Corporation of New Jersey. Filed Jan. 21, 1903. Serial No. 139,884. (No model.)



*Claim.*—1. A combined regulator and brake, comprising, a governor, variable means for regulating the speed of the governor, and separate means for moving the parts of said regulating means to cause the same to act as a brake.

2. A combined regulator and brake, comprising, a governor, variable means for regulating the speed of the governor, and separate means for moving said variable means and for limiting the movement thereof to cause the same to act as a brake.

3. A combined regulator and brake, comprising, a governor, a rotatably-adjustable part for regulating the speed of the governor, connections between said rotatable part and the governor, and means for moving said adjustable part to stop or retard the rotation of the governor.

4. A combined regulator and brake, comprising, a governor, a screw for regulating the speed of the governor, connections between said screw and governor, and means for moving said screw longitudinally to stop or retard the rotation of said governor.

5. A combined regulator and brake, comprising, a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor including frictional contacts, and means for moving said screw longitudinally to increase the pressure between said contacts to stop or retard the rotation of the governor.

6. A combined regulator and brake, comprising, a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, and means supporting said screw for moving the same longitudinally to stop or retard the rotation of said governor.

7. A combined regulator and brake, comprising, a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, a slidable sleeve within which said screw is mounted, and means for moving said sleeve longitudinally to stop or retard the rotation of said governor.

8. A combined regulator and brake, comprising, a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, a slidable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, and means for limiting the movement of said slidable sleeve within said fixed sleeve to stop or retard the rotation of said governor.

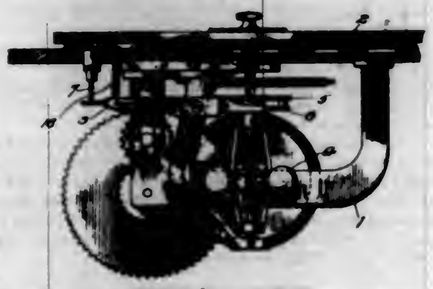
9. A combined regulator and brake, comprising a governor, an adjusting-screw for regulating the speed of the governor, a slidable sleeve within which said screw is mounted, connections between said screw and governor including frictional contacts and means for moving said sleeve longitudinally to increase the pressure between said contacts.

10. A combined regulator and brake comprising a governor, an adjusting-screw for regulating the speed of the governor, a slidable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, an arm adapted to rest against the end of said fixed sleeve and said screw, connections between said arm and said governor including frictional contacts, means for forcing said arm toward said fixed sleeve and a cam-lever for moving said slidable sleeve longitudinally.

11. A combined regulator and brake comprising a governor, an adjusting-screw for regulating the speed of the governor, a slidable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, having a longitudinal slot therein, a pin carried by said slidable sleeve and adapted to work in said slot a pivoted arm adapted to rest against the end of said fixed sleeve and the end of said screw, connections between said governor and said arm including frictional contacts, means for forcing said arm toward said fixed sleeve, and a cam-lever contacting with said pin for moving said slidable sleeve longitudinally.

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**755,852. MULTISPEED DEVICE FOR TALKING-MACHINE MOTORS.** WILBUR H. DENNISON, Camden, N. J., assignor to Victor Talking Machine Company, a Corporation of New Jersey. Filed July 25, 1903. Serial No. 166,268. (No model.)



*Claim.*—1. A multispeed-regulator for talking-machines, comprising a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, a slidable rotatable sleeve within which said screw is mounted, an inclined guide for said rotatable sleeve and for limiting the movement of said sleeve to give different speeds having definite relations to each other.

2. A multispeed-regulator for talking-machines, comprising a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, a slidable rotatable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, said sleeves being provided with a projection and corresponding recess for limiting the movement of said movable sleeve in relation to said fixed sleeve to give different speeds having definite relations to each other.

3. A multispeed-regulator for talking-machines, comprising a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, a slidable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, means for moving said slidable sleeve, a projection carried by said slidable sleeve, said fixed sleeve having an inclined portion, said inclined portion being provided with stops for limiting the movement of said projection to definite distances thereover to give different speeds having definite relations to each other.

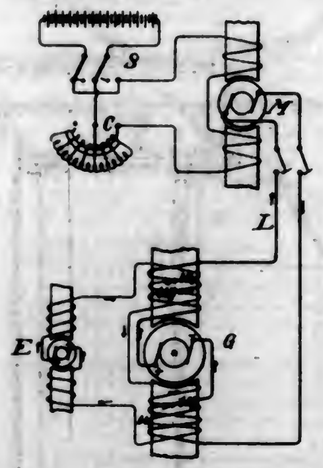
4. A multispeed-regulator for talking-machines, comprising a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and the governor, a slidable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, a lever for moving said slidable sleeve radially, a projection carried by said slidable sleeve, said fixed sleeve having a recess with an inclined rear wall within which is a socket for limiting the movement of said projection to definite distances on said incline to give different speeds having definite relations to each other.

5. A multispeed-regulator for talking-machines, comprising a governor, an adjusting-screw for regulating the speed of the governor, connections between said screw and governor, a slidable sleeve within which said screw is mounted, a fixed sleeve for holding said slidable sleeve, said fixed sleeve having a spring portion adapted to hold said slidable sleeve frictionally in position, and means for limiting the movement of said slidable sleeve within said fixed sleeve to give different speeds having definite relations to each other.



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**755,853. ELECTRIC-POWER-TRANSMISSION SYSTEM.** MAX DIRI, Vienna, Austria-Hungary, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Filed May 28, 1902. Serial No. 109,209. (No model.)




*Claim.*—1. In a system of electrical power transmission, the combination of a motor, a series generator in circuit with said motor, a separately-excited field-winding on said generator wound in opposition to the series winding thereon, and means whereby the field-winding of said motor may be separately and adjustably excited, substantially as described.

2. In a system of electrical power transmission, the combination of a series generator, a separately-excited field-winding on said generator wound in opposition to the series field-winding thereon, a motor having its armature included in series with said series field-winding on said generator, and means for controlling the current through the field-winding of said motor, substantially as described.

3. In a system of electrical power transmission, the combination of a series generator, a separately-excited field-winding on said generator wound in opposition to the series field-winding thereon, a motor having its armature included in series with said series field-winding on said generator, means for adjusting a current through the field-winding of said motor, and means for reversing said current, substantially as described.

4. In a system of electrical power transmission, the combination of a series generator, a separately-excited field-winding on said generator wound in opposition to the series field-winding thereon, a motor having its armature included in series with said series field-winding on said generator, and having a separately-excited field-winding, substantially as described.

5. In a system of electrical power transmission, the combination of a series generator, a separately-excited field-winding on said generator wound in opposition to the series field-winding thereon, a motor having its armature included in series with said series field-winding on said generator and having a separately-excited field-winding, means for adjusting the current through said motor field-winding, and means for reversing said current, substantially as described.

6. In a system of electrical power transmission, the combination with a generator having field-poles constantly magnetized in one direction, and a self-excited field-winding wound to oppose said direction, of a motor in electrical connection therewith, and means whereby said motor may be separately excited, substantially as described.

7. In a system of electrical power transmission, the combination with a generator having field-poles constantly magnetized in one direction and a self-excited field-winding wound to oppose said direction, of a plurality of motors in electrical connection therewith, said motors being separately excited and controlled in common, substantially as described.

8. In a system of electrical power transmission, the combination with a generator having field-poles constantly magnetized in one direction and a self-excited field-winding wound to oppose said direction, of a motor in electrical connection therewith, means whereby said motor may be separately excited, means whereby the exciting-current may be reversed, and means whereby said current may be adjusted, substantially as described.

9. In a system of electrical transmission, the combination of a generator having a separately-excited field-winding and an oppositely-wound series winding through which the main current may flow, a motor having an armature included in series with said series winding on said generator, and a separate adjustable exciting means for said motor whereby the operative condition of said motor may be varied thereby to vary the main current flowing through said series winding on said generator, whereby the electromotive force of said generator may be varied to control the operation of said motor, substantially as described.

10. In a system of electrical power transmission, the combination of a plurality of motors, an independent series generator in circuit with each motor, a separately-excited field-winding on each of said generators wound in opposition to the series winding thereon, and means whereby the field-windings of said motors may be separately and adjustably excited in common, substantially as described.

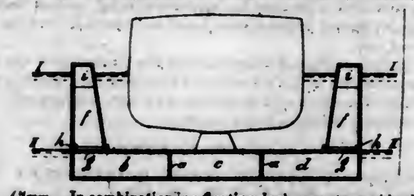
11. In a system of electrical power transmission, the combination of a plurality of motors, means whereby the field-windings of said motors may be separately excited in common, an independent series generator in circuit with each motor, an additional field-winding on each of said generators wound in opposition to the series winding thereon, and external means whereby said additional field-windings may be excited in common, substantially as described.

12. In a system of electrical power transmission, the combination of a plurality of motors, means whereby said motors may be excited in common from an external source, a plurality of series generators in circuits with said motors, an additional field-winding on each of said generators wound in opposition to the series winding thereon, and external means whereby said additional field-windings may be excited in common, substantially as described.

13. In a system of electrical power transmission, the combination with a plurality of motors excited in common from a separate source, of a plurality of series generators in connection therewith, said generators being excited in common from a separate source in opposition to the excitation caused by the series windings thereon, substantially as described.

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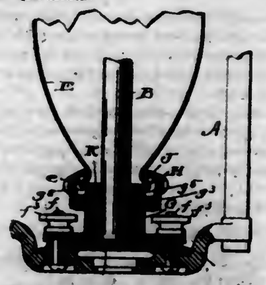
**755,854. FLOATING DOCK.** HANS H. J. DIEDERICHSEN, Hamburg, Germany. Filed Apr. 13, 1901. Serial No. 56,751. (No model.)




*Claim.*—In combination in a floating dock, a pontoon, side chambers, air-chambers in the pontoon, and other air-chambers in the upper part of the side chambers, and a water-compartment from which the water may be pumped, substantially as described.

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**755,855. GLOBE-HOLDER FOR ARC-LAMPS.** SAMUEL R. DOANE, Cleveland, Ohio, assignor to the Foster's Bulb and Bottle Company, Foster's, Ohio, a Corporation of Ohio. Filed June 24, 1903. Serial No. 163,843. (No model.)




*Claim.*—1. The combination of a globe flaring outwardly at its end and a separable head engaging the inner surface of such flared

part of the globe, and means for forcing the globe into intimate contact with the head while leaving the extreme end of the globe out of contact, substantially as described.

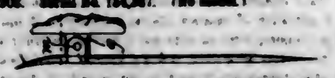
2. In an arc-lamp, the combination of a globe having a flaring end, a holder extending into such flaring end and having an elastic washer surrounding the carbon and engaging the side surface of said flaring end, and means for pressing the globe into intimate contact with such washer, substantially as described.

3. In an arc-lamp, the combination with a globe having a flaring end, of a holder for the lower carbon and the globe, said holder having a boss surrounding the carbon, a nut screwing onto the holder, a spring on the inner side of said nut adapted to force the globe toward the boss, there being an annular space between the boss and nut into which the flaring end of the globe freely projects, substantially as described.

4. In an arc-lamp, the combination of a lower-carbon holder, a nut screw-threaded to the outer surface thereof, an annular boss rising from the upper surface of the holder around the carbon and some distance within the nut, an elastic washer surmounting said boss, the upper end of the nut extending inward, and a coiled spring within the nut adapted to be pressed thereby against a globe-flange and press it against the washer, there being free space between the boss and nut and between the spring and carbon holder into which the extreme end of said globe may project, substantially as described.

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**755,856. SCARF-PIN.** GEORGE W. DOVER, Cranston, R. I. Filed Dec. 9, 1902. Serial No. 134,267. (No model.)



*Claim.*—1. In a scarf-pin the combination with a pin-stem provided with upturned lateral ears, of a head, a lug upon the head provided with a flat extremity resting against the base of the cup formed by the upturned ears, and means for securing rigidly the lug and ears together.

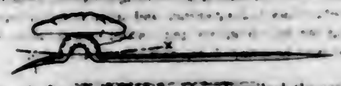
2. In a scarf-pin the combination with a pin-stem provided with upturned lateral ears, of a head, a lug upon the head provided with a flat extremity permanently resting against the base of the cup formed by the upturned ears, and a securing-pin traversing the lug and ears.

3. In a scarf-pin the combination with a pin-stem provided with upturned ears of a thickness approximately the diameter of the pin-stem, of a head, a lug upon the head resting fixedly against the base of the cup formed by the upturned ears, and means for securing the lug and ears.

4. In a scarf-pin, the combination with a pin-stem provided with upturned lateral ears, of a head, a lug upon the head contacting with the base of a cup formed by the upturned ears, and means for rigidly securing the lug and ears together.

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**755,857. SCARF-PIN.** GEORGE W. DOVER, Cranston, R. I. Filed Dec. 9, 1902. Serial No. 134,268. (No model.)



*Claim.*—1. In an article of the class described, the combination with the head of a cup upon the head having curved side walls, and a pin-stem provided intermediate its extremities with a crooked portion, said crooked portion being held to the cup by the compression of the walls.

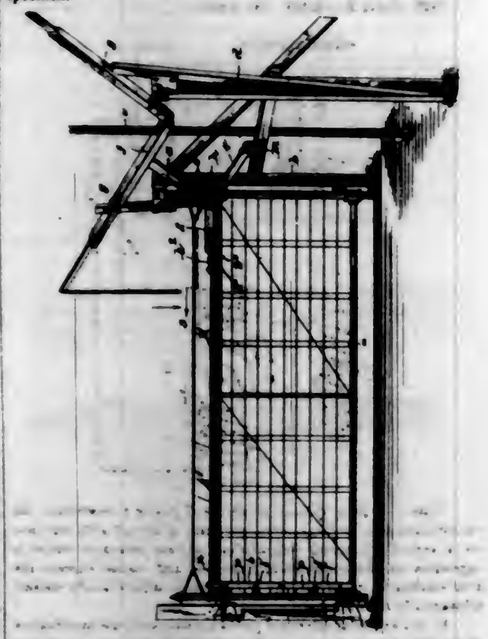
2. In an article of the class described, the combination with the head of a cup upon the head having concave side walls, a pin-stem provided at its extremity with a spur, and having a curved portion adjacent the spur, said curved portion being held in the cup by compression of the walls.

3. In an article of the class described, the combination with the head of a cup upon the head having concave side walls, a pin-stem, a spur upon one extremity of the stem, a looped portion adjacent the spur, said looped portion being laterally engaged by the compression of the walls, and the edge of the cup contacting with the pin-stem at points on either side of the loop.

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**755,858. GATE.** MICHAEL H. DUNLAP, Homer, Ill. Filed Oct. 27, 1903. Serial No. 178,670. (No model.)

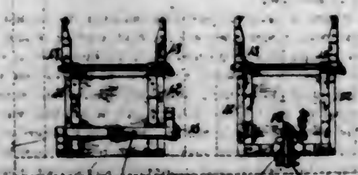
*Claim.*—1. In a gate, the combination of the slide-bearings, the slide-rod having movement in such bearings, a slide-rod attachment having a lateral stop-lug abutting at its forward end against one of said slide-bearings, a spring in connection with said slide-rod attachment and in rear of said lug, pivoted bolt-levers connected to said slide-rod, longitudinally-movable latch-bolts, a triple toggle-arm device connected to the lateral lug of said slide-rod attachment, and a reed-lever connected to said triple-arm device, substantially as specified.



2. In a gate, the combination of the slide-bearings, the straight slide-rod having movement in such bearings, and provided with a lateral stop-lug abutting forwardly against one of said slide-bearings, a spring for pressing said slide-rod forwardly and located in rear of said lug, pivoted bolt-levers connected to said slide-rod, longitudinally-movable latch-bolts, a triple toggle-arm device connected to said lateral lug, and a reed-lever connected to said triple-arm device, substantially as specified.

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**755,859. CLOSURE FOR GRAIN-RECEPTACLES.** ALBERT L. BLISS, Parlin, N. J. Filed Jan. 15, 1903. Serial No. 139,326. (No model.)



*Claim.*—1. In a closure for grain-receptacles comprising a door adapted to be moved vertically and having ears attached to its opposed upper ends, and slack chains secured at their ends and adapted to pass through the ears on the door when the door is moved vertically, said chains acting to support one end of the door when the door is swung to an approximately horizontal position by the binding and tightening of the chains due thereto.

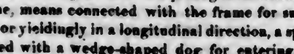
2. In a closure for grain-receptacles, comprising a door adapted to be moved vertically and having ears attached to its opposed upper ends, slack chains secured at their ends and arranged to pass through the ears on the door, counterweights secured to the door, said chains acting to support the upper end of the door when the door is swung to an approximately horizontal position by the binding and tightening of the chains due thereto, and means for securing the door in its approximately horizontal position.

3. In a closure for grain-receptacles, comprising a main door, smaller doors arranged in the main door, ears on the opposed upper ends of the doors, slack chains secured at their ends and arranged to pass through the ears when the door is moved vertically, said chains acting as a pivot when the door is swung to an approximately horizontal position, and supporting the door when it is swung by the tightening of the chain, and means for supporting the free end of the door in its approximately horizontal position.

4. In a closure for grain-receptacles, a main door, smaller doors arranged in said main door, the smaller doors each being provided with a pivoted bar arranged to rotate parallel with said smaller door and to engage clips attached to said main door when said smaller door is closed, and a cam device situated in the center of said pivoted bar, and adapted to lock said pivoted bar against rotation.

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**755,860. WASHBOARD.** JOSEPH A. PAULSNER, Williamsville, Mo. Filed July 9, 1903. Serial No. 164,527. (No model.)



*Claim.*—1. In a washboard, the combination with side strips, of a working face therebetween, a roller journaled between the strips and in alinement with the working face, and a spring-pressed bar adjacent the roller and movable longitudinally of the board.

2. In a washboard, the combination with side strips; of a working face therebetween, a roller journaled between the strips and in alinement with the working face, a cross-strip detachably secured to one of the side strips and the adjacent roller, and a spring-pressed slide-bar movable longitudinally of the board guided by said strip.

3. In a washboard, the combination with side strips; of a working face secured therebetween, a longitudinally-corrugated roller journaled between the side strips and in alinement with the working face, a cross-strip hinged to one of the side strips, a slide-bar adjacent the cross-strip and adapted to be guided thereby, and springs for imparting a motion to the slide-bar longitudinally of the board.

4. In a washboard, the combination with side strips, a working face secured therebetween at one edge, and a closure connecting the rear edges of the side strips; of a longitudinally-corrugated roller journaled between the side strips and in alinement with the working face, a cross-strip hinged to one of the side strips and in alinement with the roller and working face, a slide-bar mounted between said strip and the rear closure, and springs for exerting a motion to the slide-bar longitudinally of the board.

5. In a washboard, the combination with side strips, of a working face secured therebetween, a corrugated roller journaled between the side strips, a cross-strip above the roller and hinged to one of the side strips, a slide-bar adjacent the cross-strip, rods attached at one end to the slide-bar, and coil-springs, connected to the opposite ends of the rods and the bottom of the washboard.

6. In a washboard, the combination with side strips, a working face secured therebetween at one edge, and a closure connecting the rear edges of the side strips, of a longitudinally-corrugated roller journaled between the side strips, a slide-bar mounted between said strips and rear closure, rods attached at one end to the slide-bar, and guides on the side strips for the rods and coil-springs connecting the opposite ends of the rods and the bottom of the washboard.

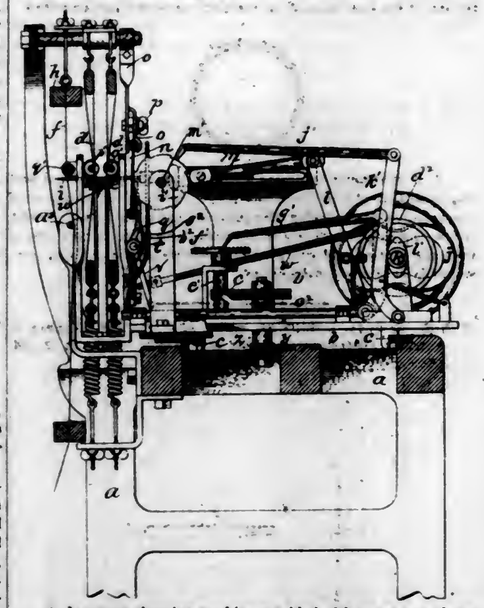
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**755,861. WARP-DRAWING MACHINE.** MILLARD F. FIELD, Boston, Mass., assignor to John Clarke, trustee, Boston, Mass. Filed Mar. 26, 1898. Serial No. 675,100. (No model.)

*Claim.*—1. A warp-drawing machine comprising in its construction a supporting-frame, means connected with the frame for supporting the reed loosely or yieldingly in a longitudinal direction, and a spring bearing against the reed to frictionally hold it in any place to which it may be moved within the limits of its loose bearings.

2. A warp-drawing machine comprising in its construction a supporting-frame, means connected with the frame for supporting the reed loosely or yieldingly in a longitudinal direction, a spring-pressed lever provided with a wedge-shaped dog for entering between the splits of the reed to spread the same, and a spring bearing against the reed to frictionally hold it in any position to which it may be moved by the action of the dog thereon.

3. A warp-drawing machine comprising in its construction a supporting-frame, means connected with the frame for supporting the reed loosely or yieldingly in a longitudinal direction, combined with a reed-dent opener or spreader, and means acting upon the reed to frictionally hold it in the position longitudinally to which it may be moved by the reed-dent opener.



4. In a warp-drawing machine provided with two or more loom-harnesses and their contained warp-thread eyes, a flipper which engages the heddles of the harnesses successively and upon both sides, and is supported in proximity thereto with the length of the flipper and its support parallel to the plane of the heddles and the line of eyes supported thereby, and mechanism to intermittently move the flipper into contact with the heddles.

5. In a warp-drawing machine, a two-membered flipper to engage successively the respective heddles upon opposite sides thereof simultaneously and thus control the position thereof and the eyes supported thereby, means for actuating the flipper, and independent means to separate the heddles and present them successively to the action of the flipper.

6. A warp-drawing machine comprising in its construction a flipper to engage and control the position of the heddles, said flipper being arranged between the harnesses, and means for operating the flipper intermittingly to alternately engage the successive heddles of the harnesses, combined with means for spreading the heddles and presenting them successively to the action of the flipper.

7. A warp-drawing machine comprising in its construction a flipper consisting of a plate having points or projections, with sloping sides and a narrow slot between the points which is adapted to engage and hold the harness-eye supports during the passage of the drawing-in needle through the eye.

8. A warp-drawing machine comprising in its construction a flipper provided with points adapted to pass between the heddles, and having a slot between its said points to receive the cords of the harness-eye supports, one in advance of the other, to hold the eye in the line of movement of the drawing-in hook, combined with the hook and means for operating it.

9. In a warp-drawing machine, a normally contracted extensible spreader connected singly and consecutively with the harness-eye supports, means for acting upon the spreader to extend the same and space and position the harness-eyes, in combination with a screw which acts directly upon the warp-threads to select and separate them independently of other mechanism, independent intermittently-operating means cooperating with the harness spreader and spacer to insure the desired position of the harness-eyes, and a reciprocating hook to pass through the adjusted harness-eyes and draw in a warp-thread.

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**755,862. MARTINGALE-RING.** JOHN FISHER, St. Paul, Minn., assignor of one-half to Reynolds Manufacturing Company, West Toledo, Ohio. Filed Sept. 4, 1903. Serial No. 171,957. (No model.)

*Claim.*—1. A martingale-ring made of celluloid or similar material, said ring consisting of a bar bent into proper form and the

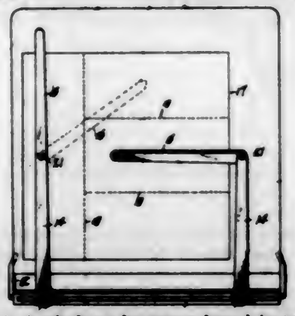
ends thereof connected, said ring being also provided at its opposite sides with reinforcing-strips which are set thereinto across the connection of the ends thereof, substantially as shown and described.



2. A martingale-ring made of celluloid or similar material, said ring consisting of a bar bent into proper form and the ends thereof connected, said ring being also provided at its opposite sides with reinforcing-strips which are set thereinto across the connection of the ends thereof, and which extend entirely around the ring, substantially as shown and described.

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**755,868. PRINTING-PRESS GRIP-FINGER. HERMAN D. FLEMMER, Coudersport, Pa. Filed Aug. 26, 1902. Serial No. 121,103. (No model.)**



*Claim.*—1. A grip-finger for presses formed by two members of substantially equal length movably united, and means carried by said members independent of the connecting means for holding said parts at any desired angle in relation to each other.

2. A grip-finger for presses formed by two members of substantially equal length pivotally connected, and means carried by the adjacent faces of the members adapted to interengage with each other for holding said members at any desired angle in relation to each other.

3. A grip-finger for presses formed by a plurality of parts, each of said parts being recessed at one end, means for holding the recessed faces together, and means carried by the adjacent faces of the recessed portions, independent of the connecting means, and adapted to coact with each other, for holding the parts at an angle in relation to each other.

4. A grip-finger for printing-presses comprising a base member and a terminal member of substantially equal length, said base member being adjustably connected by one end to the platen and provided with a transverse recess in its free end, said terminal member being also provided with a reversely-disposed transverse recess in one end engaging the recess in said base member, a pivot centrally uniting said members through said recesses, a plurality of concentrically-disposed spaced cavities in the adjacent faces of said recessed ends, and means for clamping said recessed ends together.

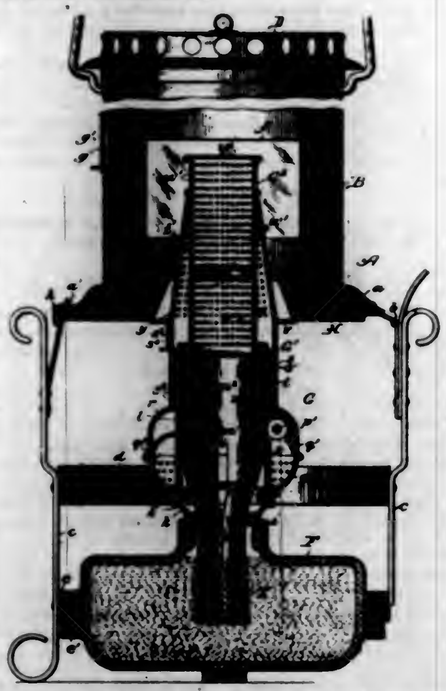
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**755,864. OIL-STOVE. ELLSWORTH R. FLORA, Chicago, Ill., assignor to Thomas J. Lovett, Chicago, Ill. Filed Oct. 9, 1902. Serial No. 126,468. (No model.)**

*Claim.*—1. In an oil-burning heater, the combination with a wick and wick-tube, of inner and outer perforated heat-conducting burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber into the lower end of which the wick projects above the wick-tube.

2. In an oil-stove, the combination of a wick-tube presenting a central draft-passage, a wick in the wick-tube, inner and outer perforated heat-conducting burner-tubes closed at their upper ends and extending above the wick-tube, forming an air and gas mixing chamber into the lower end of which the wick extends, and a stove-casing inclosing the heat-generating part of the burner, substantially as set forth.

3. In an oil-burner, the combination with a wick and with a wick-tube presenting a central draft-passage, of a perforated outer heat-conducting burner-tube around the wick-tube, a perforated inner heat-conducting burner-tube extending from said central draft-passage beyond the upper end of said outer burner-tube, the inner and outer perforated burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber into the lower end of which the wick extends.



4. In an oil-burner, the combination with a wick, and with a wick-tube presenting a central draft-passage, of a perforated outer heat-conducting burner-tube around the wick-tube, a perforated inner heat-conducting burner-tube extending from said central draft-passage beyond the upper end of said outer burner-tube, the inner and outer perforated burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber into the lower end of which the wick extends, and a diaphragm in the inner burner-tube between the lower and upper ends of the mixing-chamber.

5. In an oil-burner, the combination with a wick, and with a wick-tube presenting a central draft-passage, of a perforated outer heat-conducting burner-tube forming a draft-passage around the wick-tube, and a hood about the outer burner-tube forming an outer draft-passage, the perforated inner heat-conducting burner-tube extending from said central draft-passage beyond the upper end of said outer burner-tube, and the inner and outer perforated burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber into the lower end of which the wick extends.

6. In an oil-burner, the combination with a wick, and with a wick-tube presenting a central draft-passage, of a perforated outer heat-conducting burner-tube around the wick-tube, a perforated inner heat-conducting burner-tube closed at the top and extending from said central draft-passage beyond the upper end of said outer burner-tube, the inner and outer perforated burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber, a hood about the outer burner-tube forming an outer contracted draft-passage between the upper and lower ends of said mixing-chamber and a diaphragm in the inner burner-tube in approximately the plane of the top of said hood, substantially as set forth.

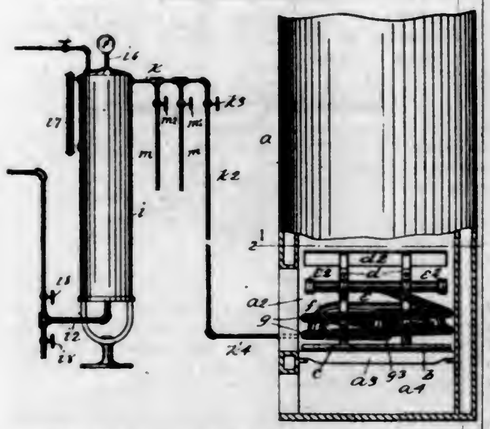
7. In an oil-burner, the combination with a wick, and with a wick-tube presenting a central draft-passage, of a perforated outer heat-conducting burner-tube around the wick-tube, a perforated inner heat-conducting burner-tube extending from said central draft-passage beyond the upper end of said outer burner-tube, the inner and outer perforated burner-tubes forming between them a gradually-contracted air and gas mixing chamber, a hood about the outer burner-tube forming an outer contracted draft-passage between the upper and lower ends of said mixing-chamber, and a diaphragm in the inner burner-tube in approximately the plane of the top of said hood, substantially as set forth.

8. In an oil-burner, the combination with a wick and wick-tube, of inner and outer perforated heat-conducting burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber into which the wick projects above the wick-tube, the wall of the mixing-chamber at one side having an igniting-opening, and a door for said igniting-opening, substantially as described.

9. In an oil-stove, the combination of a frame, an oil-font in the base of the frame, a burner upon the said font having a wick-tube presenting a central draft-passage, inner and outer perforated heat-conducting burner-tubes closed at their upper ends and forming between them an air and gas mixing chamber into which the wick projects above the wick-tube, a stove-casing upon the frame surrounding the heat-generating part of the burner, and a diaphragm at the lower end of said casing presenting a narrow draft-opening around said outer burner-tube between the upper and lower ends of said mixing-chamber, substantially as set forth.

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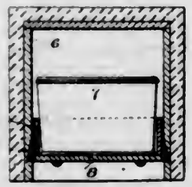
**755,865. OIL-BURNING APPARATUS. EDWIN FRASER and EDWARD J. HOYT, New York, N. Y. Filed Jan. 7, 1903. Serial No. 138,109. (No model.)**



*Claim.*—In an apparatus of the class described, a burner comprising suitable supports, a tube secured in the top portion of said supports and provided with perforations or openings in the bottom thereof, another tube secured in said supports beneath the first-named tube and provided with perforations or openings in the top thereof which correspond with and are larger than those in the first-named tube, said last-named tube being also provided with downwardly-directed openings, a pipe-coil inclosing said supports and said tubes and connected at its upper end with the first-named tube, and an oil-feed pipe connected with the lower end of said coil, said supports being also provided at their upper ends with baffle-plates, and said feed-pipe with a branch discharge-pipe adapted to discharge oil beneath said coil, substantially as shown and described.

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**755,866. GRAVE-VAULT. JOSEPH W. FREEMAN, Manchester Ohio. Filed Dec. 30, 1903. Serial No. 187,197. (No model.)**

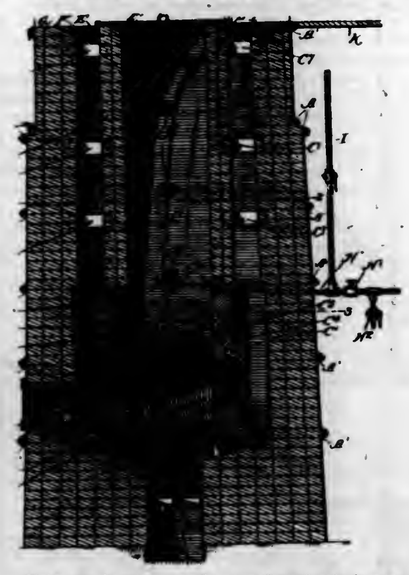


*Claim.*—1. A portable grave-vault comprising a box having a coating of plastic material on the outside and an opening in the bottom, and a casket-supporting platform in the vault above the bottom thereof.

2. A portable grave-vault having an opening in the bottom and notches on the inside, in combination with a casket-supporting platform therein having spring-arms extending into said notches to support the platform.

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**755,867. METALLURGICAL APPARATUS. GEORGE W. GESNER, New York, N.Y., assignor to Harleston Corbett Gesner, Brooklyn, N.Y. Filed Dec. 13, 1899. Serial No. 740,153. (No model.)**



*Claim.*—1. In apparatus for manufacturing hydrogen alloy, a furnace A, a large flue leading therefrom, an upright retort mounted concentrically in such flue, and a coil of pipe D embedded in the material of such retort, with provisions for passing steam through such coil into the retort all combined and arranged substantially as herein specified.

2. In apparatus for the manufacture of scale alloy, or analogous use, the combination of the upright retort C a surrounding flue and an adjacent furnace arranged to discharge its products of combustion through such flue, a pipe-coil D partially exposed within firebrick to the heat of such flue, with the open end of such pipe discharging into such retort, a connection for introducing fluid to the other end of such pipe, a chamber $B^3$ arranged low so that the material will descend by gravity from the retort into such chamber, provisions for opening and closing such chamber, and the grate $B^4$ of refractory material separating such chamber from the retort and the tight floor B of refractory material separating such chamber from the furnace, arranged to allow the descent of fine material only, all arranged for joint operation substantially as herein specified.

3. In a metallurgical apparatus, the combination with a vertical retort, an inclosing wall and means for heating the same comprising the furnace A, a capacious flue leading upward therefrom, a thick exterior wall around such flue, and tiles $C^7$ in such flue placed at intervals to serve as distance-pieces to maintain the positions of the retort and the inclosing wall, of a pipe-coil discharging into said retort and subject to the same heating means, and a valve-controlled source of hydrogen-supply connecting with said pipe-coil, substantially as herein specified.

4. In apparatus for the production of a hydrogen alloy the combination with a heating-furnace A and a capacious ascending flue therefrom, of the upright retort C with removable cover E', series of poke-holes $C^9$ in the sides of the retort, grate $B^4$ in the lower portion of the retort, the chamber $B^3$ below such grate and a removable plug J and luted door $A^4$ controlling the access to such chamber, all arranged to serve substantially as herein specified.

5. In apparatus for the production of a hydrogen alloy, the combination with a heating-furnace A and a capacious ascending flue therefrom, of the upright retort C mounted in such flue with a removable cover E', the pipe-coil D also within such flue, the valve-

controlled pipes I and H connected at one end with such coil and bringing naphtha and steam respectively and discharging from the other end into the retort, series of poke-holes $C^9$ in the sides of the retort, grate $B^4$ in the lower portion of the retort, the chamber $B^2$ below such grate and a removable plug J and luted door $A^4$ controlling the access to such chamber, all arranged to serve substantially as herein specified.

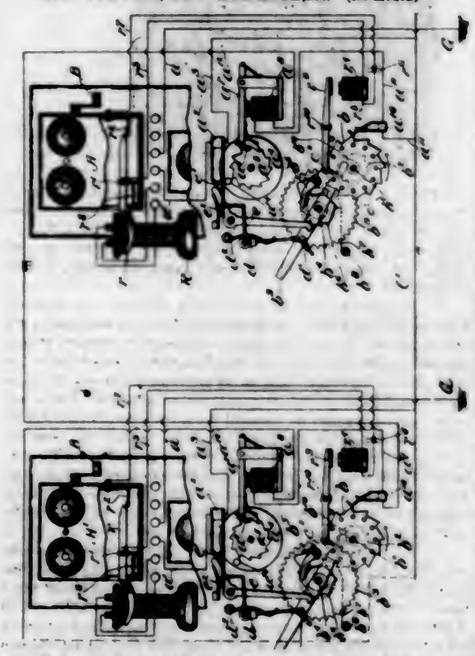
6. In a metallurgical apparatus, the combination with a vertical retort and means for heating the same, of a pipe-coil embracing a portion of said retort and embedded in the material thereof, a pipe for bringing steam and a separate pipe for bringing naphtha, arranged to pass the mixture through said coil into the retort and provisions for controlling such flow, combined and arranged to serve substantially as herein specified.

7. In a metallurgical apparatus, the combination with a heated retort having its lower portion of compound construction comprising a flooring B at the base, an exterior part $C^7$ and an interior part $C^8$ and means for heating said retort, of the chamber $B^2$ below such retort, a pipe-coil D embraced in such compound sectional portion and the part D' forming an extension of such pipe arranged to discharge from such coil into such chamber, substantially as herein specified.

8. In a metallurgical apparatus, the combination with a vertical retort and means for heating the same, of a pipe-coil protected by refractory material and a terminal portion D' composed of a combination of graphite and clay and discharging into the retort, the said coil being heated by the same heating means, substantially as herein specified.

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**755,868. TELEPHONE SYSTEM.** ROBERT HAMILTON, Hilton, Mass. Filed Feb. 7, 1903. Serial No. 142,293. (No model.)



*Claim.*—1. In a telephone system, a telephone-circuit; a receiver; a movable holder for the receiver; means for controlling said circuit comprising a rotatable wheel; a stop-engaging member adjustably connected with the wheel; a movable stop normally occupying an operative position in the path of said member, and means controlled by the receiver-holder for operating the stop.

2. In a telephone system, a telephone-circuit; a receiver; a movable holder for the receiver; means for controlling said circuit comprising a rotatable wheel; a stop-engaging member adjustably connected with the wheel; a movable stop normally occupying an operative position in the path of said member; and means controlled by the receiver-holder for shifting the stop out of and then back into the path of said member when the receiver-holder is moved in one direction.

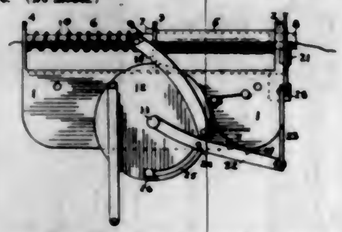
3. In a telephone system, a telephone-circuit; a receiver; a movable holder for the receiver; means for controlling said circuit comprising a rotatable wheel; a stop-engaging member adjustably connected with the wheel; a movable stop normally occupying an operative position in the path of said member; an armature by which said stop is carried, a magnet for operating the armature; a circuit in which said magnet is arranged, and a switch in said circuit controlled and operated by the receiver-holder.

4. In a telephone system, a telephone-circuit; a receiver; a movable holder for the receiver; means for controlling said circuit comprising a rotatable wheel; a stop-engaging member adjustably connected with the wheel; a movable stop normally occupying an operative position in the path of said member; an armature by which said stop is carried; a magnet for operating the armature; a circuit in which said magnet is arranged, and a switch in said circuit adapted to be closed by the holder when the receiver is replaced thereon.

5. In a telephone system, a telephone-circuit; a receiver; a movable holder for the receiver; means for controlling said circuit comprising a rotatable wheel; a stop-engaging member adjustably connected with the wheel; a movable stop normally occupying an operative position in the path of said member; an armature by which said stop is carried; a magnet for operating the armature; a circuit in which said magnet is arranged, and a switch in said circuit adapted to be momentarily closed by the holder when the latter is depressed by the weight of the receiver.

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**755,869. STRING-CUTTER.** GEORGE R. HANNAH and JESSE C RODEHAVER, San Francisco, Cal. Filed Dec. 13, 1902. Serial No. 135,138. (No model.)



*Claim.*—1. In a string-cutter, a reciprocatory member, a cutter, and means for imparting movement to the reciprocatory member, and operating the cutter only when the member is in its retracted position, said means including a disk having a pivotal connection with said reciprocatory member and cutter.

2. In a string-cutter, a reciprocatory member, a cutter at a distance in advance of said member, a disk having a pivotal connection with said reciprocatory member and cutter, and means for operating the disk.

3. In a string-cutter, a support, a cutter, a plunger upon the support, a disk operatively associated with the plunger and cutter for simultaneously operating them, and a treadle connected with the disk.

4. In a string-cutter, a support, a guideway upon the support, a cutter at the forward end of the support, a plunger in the guideway, an oscillatory disk on the side of the support, connecting means between the disk and plunger, a connection between the disk and cutter, and means associated with the connecting means for the disk and cutter, for operating the latter when the disk is oscillated.

5. In a string-cutter, a support, a guideway upon the support, a cutter at the forward end of the support, a plunger in the guideway, an oscillatory disk on the side of the support, connecting means between the disk and plunger, a connection between the disk and cutter, and a treadle operatively associated with the connecting means for the disk and cutter, for operating the latter when the disk is oscillated.

6. In a string-cutter, a tube, a reciprocatory member therein, a gripper carried by said reciprocatory member and provided with oppositely-arranged inclined spring-jaws, the front ends of which approach each other and engage with the string and prevent its movement except in one direction, said reciprocatory member and gripper being entirely inclosed by said tube and a cutter at a distance from said gripper when the member is in its retracted position, substantially as described.

7. In a string-cutter, a reciprocatory member, the front end of which is provided with a gripper having a screw-threaded connection therewith, said gripper being arranged to engage with the string and preventing its movement except in one direction, and a cutter at a distance in front of said means when the member is in its retracted position, substantially as described.

8. In a string-cutter, a hollow reciprocatory member, a gripper having a screw-threaded portion removably secured in the forward end thereof, and a cutter at a distance in front of said gripper when the member is in its retracted position, substantially as described.

9. In a string-cutter, a hollow plunger, a hollow tubular support having a continuous uninterrupted inner surface for forming a guideway for the plunger, means for reciprocating the plunger through said support, and a cutter at a distance from the forward end of the plunger when in its retracted position, substantially as described.

10. In a string-cutter, a tubular guideway, a hollow reciprocatory plunger slidably mounted therein and inclosed thereby, a cutter at the forward end of the tube, and means for moving the forward end of the plunger through said tube and away from said cutter, substantially as described.

11. In a string-cutter, a tube, a spring-actuated plunger therein and inclosed thereby, the forward end of which is provided with a gripper, a cutter at the forward end of the tube, and means for withdrawing the gripper to a distance from the cutter, substantially as described.

12. In a string-cutter, a tube, a hollow rod projecting into the rear end thereof, a hollow plunger in the tube, the rear end of which fits upon the rod, a spring on the rod in engagement with the plunger, a cutter at the forward end of the tube, and means for reciprocating the plunger to withdraw its forward end to the rear of the cutter, substantially as described.

13. In a string-cutter, a support provided with three standards, a tube mounted upon two of said standards and a hollow rod secured to the other standard with its forward end projecting into the rear end of the tube, a hollow plunger in the tube, the rear end of which fits upon the rod, a spring on the rod between the rear standard and the rear end of the plunger, a cutter at the forward end of the tube, and means for simultaneously withdrawing the plunger and operating the cutter, substantially as described.

14. In a string-cutter, a support, a tubular guideway mounted thereon having a cutter at its forward end, a reciprocatory plunger in the tube and surrounded thereby, a disk on the support connected with the plunger and the cutter, and means for oscillating the disk, substantially as described.

15. In a string-cutter, a support, a tube mounted thereon having a cutter at its forward end, a spring-impelled hollow plunger in the tube, an oscillatory disk on the side of the support, a link connected with the disk and with the rear end of the plunger, and a lever mounted at the center of the disk at one end and connected with the cutter at the other, and means for engaging with the intermediate portion of the lever for operating the cutter when the disk is oscillated, substantially as described.

16. In a string-cutter, a support, a cutter, a hollow plunger movable toward and from the cutter, an oscillatory disk on the support and provided with a segmental slot, a link connected with the disk and with the rear end of the plunger, a lever mounted at the center of the disk at one end and connected with the cutter at the other, and a pin on the intermediate portion for engaging with one end of the slot and actuating the cutter by the time the plunger reaches the limit of its rearward movement, substantially as described.

17. In a string-cutter, a support, a cutter, a hollow spring-impelled plunger, the rear end of which is provided with a bent arm, an oscillatory disk, a link connected therewith and with the bent portion of the arm, a spring-pressed lever, a connection from the free end thereof to the cutter, and means on the disk for engaging with the intermediate portion of the lever to actuate the cutter, substantially as described.

18. In a string-cutter, a support, a cutter, a spring-impelled plunger, an oscillatory disk connected with the plunger and with the cutter for simultaneously operating them, and a treadle operatively connected with the disk, substantially as described.

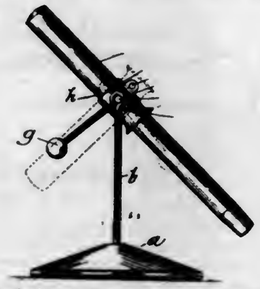
19. In a string-cutter, a support, a cutter thereon comprising a stationary and a pivoted blade, a guide for holding said blades against each other when in operative relation to each other, and a member movable toward and from the cutter, said member being at its farthest point from the cutter when the cutter is operating, substantially as described.

20. In a string-cutter, a support, a cutter thereon comprising a stationary and a pivoted blade, a guide at the free end of the pivoted blade for holding it against the stationary blade, and a reciprocatory member movable toward and from said cutter, substantially as described.

21. In a string-cutter, a support, a tube thereon, a cutter at the forward end of the tube comprising a stationary and a pivoted blade, a guide at the free end of the pivoted blade for holding it against the stationary blade the stationary blade being flush with the end of the tube and provided with a perforated lug, a screw through the lug, and a reciprocatory member movable toward and from the cutter, substantially as described.

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**755,870. DEVICE FOR SUPPORTING FOUNTAIN-PENS.** DANIEL H. HAYWOOD, New York, N. Y. Filed Feb. 3, 1904. Serial No. 191,780. (No model.)



*Claim.*—1. A device of the character described comprising a suitable support, and a tubular cap pivoted to said support and adapted to receive a pen, said cap arranged to swing freely to bring its ends above and below the horizontal.

2. In a device of the character described, the combination with a suitable support, of a tubular cap pivoted on the support and adapted to receive a pen, said cap being overbalanced as to weight on one side of the pivotal connection and free to swing to bring its ends above and below the horizontal.

3. In a device of the character described, the combination with a suitable support, of a pen-receiver pivoted thereto and overbalanced as to weight in one direction, said receiver arranged to receive and hold a fountain-pen, and, when so engaged, to be overbalanced by said pen in the opposite direction.

4. In a device of the character described, the combination with a suitable support, of a pen-receiver pivoted thereto, and a counterbalance-weight secured to said receiver, and movable with it.

5. In a device of the character described, the combination with a suitable support, of a tubular receiver pivoted thereto at a point nearer its receiving end than the end opposite thereto.

6. In a device of the character described, the combination with a suitable support, of a pen-receiver pivoted thereto at such a point as to be normally caused by gravity to assume an oblique position with its receiving end pointing in an upward direction, said receiver adapted and arranged to receive and hold a fountain-pen, and, when so engaged, to be overbalanced by said pen and then moved to and maintained by gravity in a position pointing downward.

7. In a device of the character described, the combination with a suitable support, of a pen-receiver pivoted thereto with its center of gravity on one side of said pivotal connection, said receiver adapted to receive and hold a fountain-pen, the center of gravity of the combined pen and holder at such times shifting to the opposite side of said pivotal connection.

8. In a device of the character described, the combination with a suitable support, of a pen-receiver pivoted thereto and overbalanced as to weight on one side of said pivotal connection, and a stop limiting the movement of said pen-receiver.

9. In a device of the character described, the combination with a suitable support, of a pen-receiver pivoted thereto and overbalanced as to weight on one side of said pivotal connection, and stops limiting the movement of said pen-receiver in either direction.

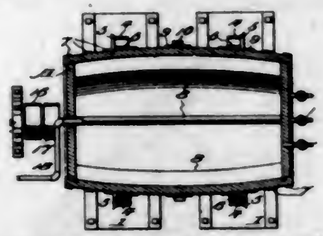
10. In a device of the character described, the combination with a suitable support, of a tubular pen-receiver pivoted thereto, the axis of said pivotal connection being at right angles to the longitudinal axis of the tubular receiver but in substantially the same plane, said tubular receiver overbalanced as to weight on one side of said pivotal connection.

11. In a device of the character described, the combination with a suitable support, of a tubular pen-receiver pivoted thereto, the axis of said pivotal connection being at right angles to the longitudinal axis of the tubular receiver but in substantially the same plane, and a counterbalance-weight secured to said receiver and movable with it.

12. In a device of the character described, the combination with a suitable support, of a tubular pen-receiver pivoted thereto, the axis of said pivotal connection being at right angles to the longitudinal axis of the tubular receiver but in substantially the same plane, said tubular receiver overbalanced as to weight on one side of said pivotal connection, and a stop for limiting the movement of the tubular receiver.

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755,871. APPARATUS FOR TREATING ORE. THOMAS A. HELM, Salt Lake City, Utah. Filed Feb. 26, 1903. Serial No. 145,063. (No model.)

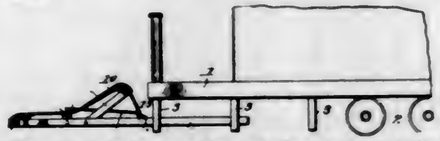


*Claim.*—1. An apparatus for treating pulverized auriferous ores, comprising a rotatable cylindrical tank, radially-depending blades in the tank extending the length thereof, a circular brace-frame disposed between the inner ends of the radial blades, an air-pipe leading into the tank, faucets to draw off a liquid from the tank, and means to rotate the tank.

2. An apparatus for treating pulverized auriferous ores, comprising a cylindrical rotatable tank, radially-depending blades in the tank extending the length thereof, and provided with perforations, a circular brace-frame disposed between the inner ends of the radial blades, an air-pipe leading into the tank, faucets to draw off a liquid from the tank, and means to rotate the tank.

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755,872. CAR-FENDER. JAMES T. HEROS and JOHN J. CROWLEY, New Bedford, Mass. Filed Jan. 6, 1904. Serial No. 187,942. (No model.)



*Claim.*—1. A fender comprising a platform having a portion thereof movable and adapted to be elevated, and means carried by said portion for maintaining it in an elevated position.

2. A fender comprising a platform having a portion thereof movable and adapted to be elevated above the other portion, and also having means operating thereon for holding it in either an elevated or a lowered position.

3. A fender comprising a frame, a member pivotally connected with the frame, a platform connecting the frame and the pivoted member, and means for holding the pivoted member elevated to raise one end of the platform.

4. The combination with the platform of a car, of a fender slidably mounted beneath the platform and adapted to be projected beyond the end thereof, or retracted beneath the same, and having a platform, one end of which is capable of being raised above the other end, and means for maintaining such end in a raised position.

5. A fender comprising a platform having a portion thereof movable with relation to the other portion and adapted to be raised thereabove, and said platform constituting means for normally holding the movable portion lowered, and means on the movable portion for maintaining it in an elevated position.

6. A fender comprising a frame having a platform, one end of the platform being movable relatively to the frame and capable of being elevated thereabove, means including the platform for normally holding the platform lowered, and means operating on the movable portion of the platform for maintaining it in an elevated position.

7. The combination with the platform of a car, of a fender slidably mounted beneath the platform, said fender comprising a frame having a platform, a member pivoted to the frame and supporting one end of the platform, and means operating on the pivoted member and the platform for holding it elevated.

8. A fender comprising a frame, a rib pivoted to the frame, and resilient strips connecting the end of the frame and the pivoted rib and constituting a platform for the fender.

9. A fender comprising a frame, a bowed member pivoted to the frame, means carried by the bowed member for holding it elevated above the frame, and a resilient platform connecting the front of the frame and the bowed member, and constituting means for normally holding the bowed member lowered.

10. A fender comprising a frame, a guide-rod extending longitudinally thereof, a rib pivoted to the frame, a strut pivoted to the rib and having a roller adapted to engage with the guide-rod, a lever connected to the strut for operating the same to raise the rib, and a resilient platform connecting the rib and one end of the frame.

11. The combination with a car having hangers depending from the platform thereof, of a fender-frame slidably mounted upon the hangers and capable of being projected beyond the end of the platform or retracted beneath the same, said frame having transverse stays, a guide-rod extending longitudinally of the frame, a bowed rib pivoted to the frame, a plurality of resilient strips secured at their opposite ends to the front of the frame and the bowed rib, and also connected with one of the stays and constituting a platform for the fender, a strut pivoted to the rib and having a grooved roller in engagement with the guide-rod, and a lever pivoted to the strut and having a stop, substantially as specified.

12. A fender comprising a frame having a curved front and straight sides, a bowed rib pivoted to the sides, a platform connecting the curved front of the frame and the bowed rib, and means carried by the rib for holding it elevated.

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755,873. ENGINE-CYLINDER. CHARLES F. HEINRICHS and JOEL C. BARKER, Poplarbluff, Mo. Filed Oct. 1, 1903. Serial No. 175,388. (No model.)



*Claim.*—1. In combination, a split cylinder-shell, a removable lining, both the shell and the lining having ports, and longitudinally-disposed packing members between the shell and the lining on opposite sides of the ports, substantially as specified.

2. In combination, a split cylinder-shell, a detachable lining, both the shell and the lining having steam-ports, and ribs formed integral with the shell at points on opposite sides of the steam-ports, said ribs being pressed firmly into engagement with the outer surface of the lining, substantially as specified.

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755,874. DUST-COLLECTOR. DENIS F. HOGAN, St. Louis, Mo. Filed Aug. 21, 1903. Serial No. 170,239. (No model.)

*Claim.*—1. In a dust-collector, the combination of an inner housing having exits at the top and bottom thereof, screens controlling both of said exits, and a screened housing inclosing said inner housing, substantially as set forth.

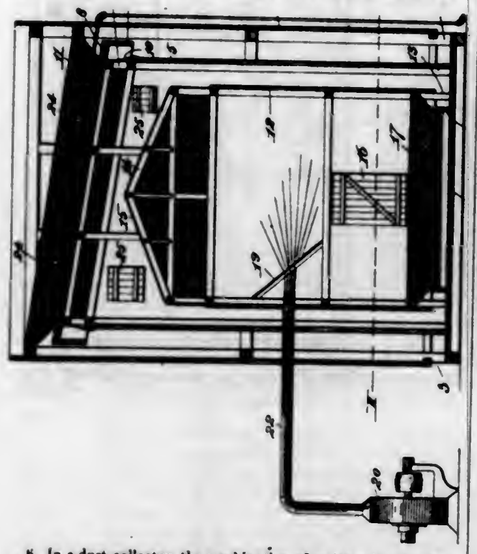
2. In a dust-collector, the combination of an inner housing having exits at the top and bottom thereof, screens controlling both of said exits, a dust-distributing screen in said inner housing, and a screened housing inclosing said inner housing, substantially as set forth.

3. In a dust-collector, the combination of an inner housing having exits at the top and bottom thereof, screens controlling both of said exits, a housing inclosing said inner housing and having an exit-opening at the top thereof, a screen controlling last-mentioned exit-opening, and a roof surmounting said inclosing housing, substantially as set forth.

4. In a dust-collector, the combination of an inner housing having exits at the top and bottom thereof, screens controlling said exits, a housing inclosing said inner housing and having an exit-opening at the top thereof, a screen controlling the last-mentioned exit-opening, a roof surmounting said inclosing housing, and a rim depending from said roof and inclosing the screen of said inclosing housing, substantially as set forth.



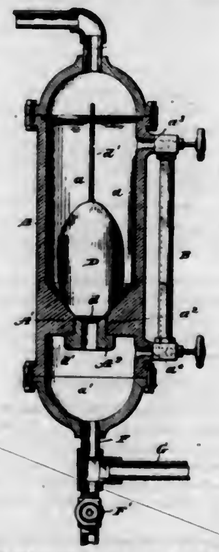
5. In a dust-collector, the combination of an inner housing having exits at the top and bottom thereof, screens controlling said exits, an outer housing, an intermediate housing between said inner housing and outer housing having an exit-opening at the top thereof, a screen controlling the exit-opening from said intermediate housing, a roof surmounting said intermediate housing, and a screen extending from said roof to said outer housing, substantially as set forth.



6. In a dust-collector, the combination of an inner housing having exits at the top and bottom thereof, screens controlling said exits, an outer housing, an intermediate housing between said inner housing and outer housing having a screened exit-opening at the upper end thereof, a roof surmounting said intermediate housing, a screen extending from said roof to said outer housing, and means for conducting water into the collector and spraying it onto said last-named screen, substantially as set forth.

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755,875. WATER-COLUMN FOR STEAM-BOILERS. GEORGE H. HOLLAND, Springfield, Ill. Filed May 4, 1903. Serial No. 155,569. (No model.)



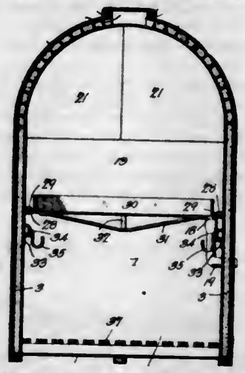
*Claim.*—1. In an apparatus of the class described, the combination of a receptacle having intercommunicating chambers separated by a diaphragm, means for supplying steam from a boiler to said receptacle, means for supplying water from the same boiler to said receptacle, a water-glass intercommunicating with said chambers, means for intercepting communication through the diaphragm separating said chambers, and means for discharging the contents of said receptacle, as set forth.

2. In an apparatus of the class described, the combination of a receptacle having an intermediate diaphragm provided with an upper concave surface, a central valve-seat in said diaphragm, a centrally-guided float seating on said valve-seat, a water-glass intercommunicating with said receptacle on both sides of said diaphragm, means for supplying steam from a boiler to said receptacle on one side of said diaphragm, means for supplying water from the same boiler to said receptacle on the other side of said diaphragm, and means for discharging the contents of said receptacle, as set forth.

3. In an apparatus of the class described, the combination of a cylinder, a diaphragm intermediate to said cylinder, a valve-seat in said diaphragm, a centrally-guided float seating on said seat, a water-glass communicating with said cylinder above and below said diaphragm, a steam-pipe communicating with said cylinder on one side of said diaphragm, an outlet-pipe communicating with said cylinder on the other side of said diaphragm, a valve in said outlet-pipe, and a water-supply pipe communicating with said outlet-pipe between said valve and said cylinder, as set forth.

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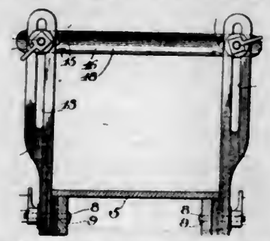
755,876. REFRIGERATOR. JOSIAH F. HORN, Hazleton, Pa. Filed May 25, 1903. Serial No. 158,701. (No model.)



*Claim.*—A refrigerator comprising end walls, side walls and a top, the side walls and top being continuous and composed of inner and outer sheets spaced for the reception of the filling material, a spacing-web disposed between the inner and outer sheets for sustaining them in their spaced condition said top being provided with an opening formed in its outer sheet for the introduction of the filling material, and a removable cover normally closing said opening

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755,877. STANCHION AND STRIP FOR LOADING LUMBER, POLES, &c., UPON FLAT-CARS. HENRY D. HUNT, Edenfield, Fla. Filed Oct. 12, 1903. Serial No. 176,809. (No model.)



*Claim.*—1. The combination with a car-body, of a pair of stanchions provided with longitudinal slots or openings secured to the opposite sides thereof, a vertically-adjustable slotted bar connecting said stanchions, and a bolt engaging the slots in the stanchions and connecting-bar for securing the latter in adjusted position.

2. The combination with a car-body, of a pair of stanchions pivotally secured to the opposite sides of the car, a vertically-adjust-

able bar connecting said stanchions, means for securing the connecting-bar in adjusted position and means for clamping the stanchions in a vertical position on said car-body.

3. The combination with a car-body, of a pair of stanchions secured to the opposite sides thereof, a vertically and longitudinally adjustable bar connecting said stanchions, and means for securing the bar in adjusted positions, said bar and stanchions being provided with interlocking faces.

4. The combination with a car-body, of a pair of ribbed stanchions secured to the opposite sides thereof, a vertically-adjustable bar connecting the stanchions, said bar being provided with teeth or notches adapted to engage the ribs on the stanchions and means for securing the connecting-bar in adjusted position.

5. The combination with a car-body, of a pair of slotted stanchions secured to the opposite sides thereof, said stanchions being provided with parallel longitudinal ribs, an adjustable slotted bar having teeth or notches formed therein adapted to engage said ribs, and bolts passing through the slots in the stanchions and connecting-bar for securing the latter in adjusted position.

6. The combination with a car-body, of a pair of stanchions secured to the opposite sides thereof and adjustable longitudinally of said car-body, a vertically and longitudinally adjustable bar connecting said stanchions and means for securing said bar in the adjusted positions.

7. The combination with a car-body, of a pair of slotted stanchions having ribbed faces secured to the opposite sides of the car-body, a vertically-adjustable slotted bar connecting said stanchions, teeth or notches formed in said bar and adapted to engage the ribs on the stanchions, threaded bolts passing through the slots in the stanchions and connecting-bar and clamping-nuts engaging the threaded end of the bolts, said nuts being provided with extensions or handles.

8. The combination with a car-body, of a pair of ribbed stanchions secured to the opposite sides thereof, a vertically and longitudinally adjustable ribbed bar connecting said stanchions, teeth or notches formed in the ribbed face of the connecting-bar and adapted to engage the ribs on the stanchions, means for clamping the connecting-bar in adjusting positions and spacing-blocks interposed between the stanchions and the sides of the car-body.

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755,878. CARRIER FOR PNEUMATIC TUBES. DANIEL H. JACKMAN, Maywood, Ill. Filed Nov. 9, 1903. Serial No. 180,389. (No model.)



*Claim.*—1. A cash-carrier for pneumatic tubes comprising a pair of telescoped relatively rotatable cylindrical shells each having a generally rectangular opening formed therein with continuous and uninterrupted margins united by integral oblique marginal portions at the corners, substantially as described.

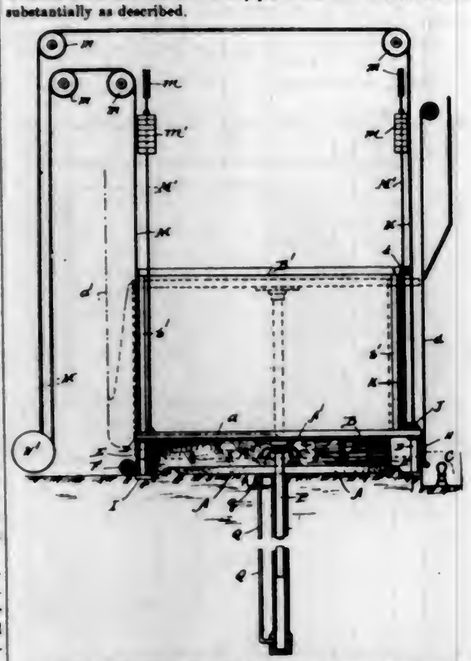
2. A cash-carrier for pneumatic tubes comprising a pair of telescoped relatively rotatable cylindrical shells each having a generally rectangular opening formed therein characterized by straight continuous longitudinal and transverse margins united at the corners by oblique marginal portions constituting reinforcements of the metal of the shell at such points, substantially as described.

3. A cash-carrier for pneumatic tubes comprising a pair of telescoped relatively rotatable cylindrical shells each having a generally rectangular opening formed therein characterized by straight continuous longitudinal and transverse margins united at the corners by concave curved marginal portions constituting reinforcements of the metal of the shell at such points, and a stop-pin inserted in and projecting from the inner shell behind one of said longitudinal margins and cooperating with the curved end portions of the longitudinal margins of the outer shell, substantially as described.

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755,879. COMBINED STAGE AND CIRCUS-RING. JOHN J. JACOBS, Chicago, Ill. Filed Apr. 25, 1903. Serial No. 154,271. (No model.)

*Claim.*—1. In a combined stage and circus-ring, a stage, means to raise the stage, a circus-ring underneath the stage, a vertical pipe extending downward from about the center of the ring, a vertical piston-rod secured to the under side of the stage, such piston-rod provided with a piston-head in the vertical pipe, and a conduit from the lower end of the vertical pipe, with a valve in such conduit: substantially as described.



2. In a combined stage and circus-ring, a stage, means to raise the stage, a circus-ring underneath the stage, a vertical pipe extending downward from about the center of the ring, a vertical piston-rod secured to the under side of the stage, such piston-rod provided with a piston-head in the vertical pipe, a conduit from the lower end of the vertical pipe, a valve in such conduit, canvas curtains, secured, respectively, to the sides and back of the stage to extend downward from the stage, and spring-rollers adjacent to the floor of the circus-ring, around which rollers the canvas curtains extend; substantially as described.

3. In a combined stage and circus-ring, a stage, means to raise the stage, a circus-ring underneath the stage, a vertical pipe extending downward from about the center of the ring, a vertical piston-rod secured to the under side of the stage, such piston-rod provided with a piston-head in the vertical pipe, a conduit from the lower end of the vertical pipe, a valve in such conduit, and a curtain arranged relative to the stage to descend in front of the stage nearly to the level of the circus-ring; substantially as described.

4. In a combined stage and circus-ring, a stage, a gridiron above the stage and supported thereby, means to raise the stage and gridiron, a circus-ring underneath the stage, a vertical pipe extending downward from about the center of the ring, a vertical piston-rod secured to the under side of the stage, such piston-rod provided with a piston-head in the vertical pipe, a conduit communicating with the lower end of the vertical pipe, a valve in such conduit; substantially as described.

5. In a combined stage and circus-ring, the combination of a stage, a circus-ring underneath the stage, means to support the stage above the ring, means to raise and lower the stage, means to prevent the rapid descent of the stage, and a curtain in front of the stage; substantially as described.

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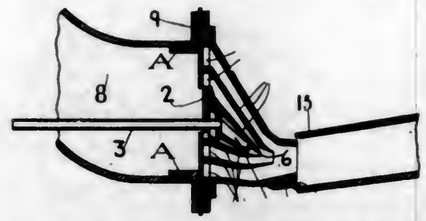
755,880. OIL-BURNER. AUGUST JOHNSON, San Francisco, Cal. Filed Jan. 24, 1903. Serial No. 140,373. (No model.)

*Claim.*—1. The combination in an oil-burner of a fuel-feed pipe a distributing-plate over which the oil passes, and from the outer edge of which it is discharged, a plurality of inclosing air-supply passages, and gates by which the admission of air through said passages is controlled.

2. An oil-burner consisting of a centrally-disposed oil-distributing passage converging to a narrow discharge-slit at the front and having the lower edge turned upward and formed with notches or



channels, a pipe through which oil is delivered to the rear end of said passage, a plurality of air-inlet passages surrounding the oil-inlet and concentric therewith, said passages converging and discharging successively outside of the oil-discharge, gates by which said passages are controlled and successively opened or closed, and an air-trunk connecting with the rear or inlet ends of said passages.




3. An oil-burner consisting of a centrally-disposed oil-distributer convergent from the rear and forming a narrow horizontal slit at the front with the lower edge upturned and serrated, a pipe through which oil is delivered into the rear end of said distributer, air-passages located above and below the distributer converging so as to inclose its mouth and project slightly beyond, other similar convergent air-passages inclosing the first named and projecting slightly beyond their discharge-mouths, an air-trunk delivering air into the rear of all of said passages, vertically-slidable gates controlling said passages and adapted to open them successively, and mechanism by which the gates are actuated.

4. An oil-burner consisting of a distributer convergent from the rear to the front and terminating in a narrow horizontal serrated slit, a pipe by which oil is delivered to the rear end thereof, concentric convergent air-passages surrounding the distributer, and discharging around and in advance of its discharge-mouth, a trunk by which air is delivered to the rear of said passages, vertically-slidable gates, mechanism by which said gates are moved to successively open the air-passage directly below the oil-distributer and the air-passage above and in the same manner to successively open the exterior surrounding air-passages.

5. An oil-burner consisting of a convergent oil-distributer having a narrow horizontal discharge-slit at the front, concentric surrounding converging air-passages and means for supplying air to the rear, vertically-slidable gates and mechanism consisting of fulcrumed levers and connecting-links, said levers being united to move in unison and to open the air-passages so that air is first admitted through the first passage contiguous with the bottom of the oil-distributer, then the air-passage contiguous with the top of the distributer and the other air-passages successively.

6. The combination with a burner and fuel-feeding means, of a box-like structure into which the mixed products are received said structure having its bottom extending at one end to form a flange which supports and is fitted to the discharge end of the burner, and said burner and the box-like structure being separated from each other at their upper portions to form an air-passage.

7. The combination with a burner and fuel-feeding means, of a box fitted to the discharge end of the burner and provided with a bottom flange or extension by which it is secured to the burner, and a raised rib or lip at the base of said flange or extension.

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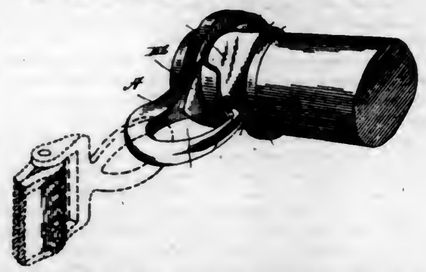
755,881. SKIRT OR GARMENT SUPPORTER. WALTER G. JOHNSON, Warren, Mass. Filed Dec. 21, 1903. Serial No. 185,914. (No model.)



*Claim.*—In a garment-supporter, a plate having a series of holes at its upper edge for the reception of securing means, the end edges of said plate having corresponding slots dividing the said plate into a body and head, a member interlocking therewith, comprising a plate having holes at its upper edge for the reception of the securing means, the opposite edge of said plate being recessed centrally to produce tongues at each end in such relation as to fit in the slots of the opposite member.

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755,882. WHIFFLETREE-HOOK. CHARLES R. JONES, Windsor, Mo. Filed Jan. 4, 1904. Serial No. 187,749. (No model.)



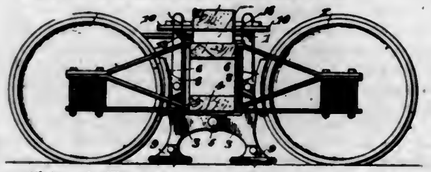
*Claim.*—1. A whiffletree-hook comprising a metallic sleeve adapted for attachment to the end of a swingletree and having flanges upon its circumference, a hook having an apertured end fitted over said sleeve and retained in place thereon by means of an integral lug upon the sleeve, the free end of said hook adapted to engage a flange upon the sleeve to hold the same in a locked relation, as set forth.

2. A whiffletree-hook comprising a metallic sleeve adapted for attachment to the end of a swingletree, provided with two flanges spaced apart, and an integral lug, a hook having an apertured end adapted to be fitted over said sleeve and retained thereon by said lug being bent over the edge of the apertured end of the hook, one of said flanges having an angled or bent end adapted to receive the point of said hook, as set forth.

3. A whiffletree-hook comprising a metallic sleeve, adapted for attachment to the end of a swingletree, flanges integral with said sleeve and spaced apart, and an integral lug projecting from the circumference of the sleeve, combined with a hook having an apertured end, a recess therein adapted to receive said lug, one of said flanges adapted to prevent the inner throw of the hook, and said lug designed to be bent over the apertured end of the hook to retain the same upon the sleeve, one of said flanges having a portion thereof bent at an angle to receive the free end of said hook, as set forth.

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755,883. CAR-BRAKE. HUGH JONES, Edwardsdale, Pa. Filed Sept. 1, 1903. Serial No. 171,567. (No model.)



*Claim.*—1. The combination with a truck, of an upright lever located between the truck-frame and the adjacent wheel and extending from the top to the bottom of the truck, and provided between its ends with an arm fulcrumed on the truck, and brake-shoes mounted on the lever above and below the arm and arranged to engage the wheel and the track respectively, substantially as described.

2. In a brake, the combination with a truck, of a brake-lever fulcrumed beneath a truck and provided above and below the fulcrum-point with brake-shoes fixed to it, one of the brake-shoes being arranged to engage the wheel and the other the track, substantially as described.

3. In a brake, the combination with a truck, of a pair of upright brake-levers interposed between the wheel and the truck-frame and extending beneath the latter and fulcrumed thereon and provided above and below the fulcrum-point with shoes arranged to engage the wheels and the track simultaneously, substantially as described.

4. In a brake, the combination with a truck, of a pair of upright brake-levers interposed between the truck-frame and the wheels and extending from the top to the bottom of the former and provided with arms fulcrumed beneath the truck-frame said levers being provided at their lower ends with track-engaging shoes and having wheel-engaging shoes located above the arms, and means connected with the levers for simultaneously operating the same to carry the brake-shoes of both levers into engagement with the wheels and the track, substantially as described.

5. In a brake, the combination with a truck, of brake-levers

provided with shoes, a cam-lever provided with opposite slots, means connected with the brake-levers and provided with portions operating in the slots of the cam-lever, and means for operating the cam-lever for positively carrying the shoes into and out of engagement, substantially as described.

6. In a brake, the combination with a truck, of brake-levers located at opposite sides of the truck, a connecting-bar between the levers, and means for guiding and actuating the connecting-bar, substantially as described.

7. In a brake, the combination with a truck, of brake-levers located at opposite sides of the truck, guides receiving the brake-levers, a connecting-bar detachably engaging the levers, and means for guiding and actuating the bar, substantially as described.

8. In a brake, the combination with a truck, of upright levers located at opposite sides of the truck and extending to the top thereof and provided with brake-shoes, horizontal guides extending from the top of the truck and provided with slots receiving the upper ends of the levers, said levers being extended above the guides, a transverse bar supported by the guides and having slotted ends engaging the upper ends of the levers, and means for operating the transverse bar, substantially as described.

9. In a brake, the combination with a truck, of side and intermediate guides carried by the truck, upright brake-levers arranged in the guides at the sides of the truck, a transverse connecting-bar engaging the intermediate guide and the upper portions of the brake-levers, and means for actuating the transverse connecting-bar, substantially as described.

10. In a brake, the combination with a truck, of side and intermediate guides carried by the truck and extending in opposite directions from the top thereof, upright brake-levers arranged in pairs at opposite sides of the truck and having their upper arms operating in the side guides, transverse connecting-bars detachably engaging the upper arms of the brake-levers and provided with means for operating in the intermediate guides, and means for actuating the connecting-bars, substantially as described.

11. In a brake, the combination with a truck, of intermediate guides carried by the truck, brake-levers located at opposite sides of the truck, transverse bars connecting the brake-levers, a cam-lever having opposite cam-slots, and means carried by the transverse bars for engaging the intermediate guides and the slots of the cam-lever, substantially as described.

12. In a brake, the combination with a truck, of brake-levers, a transverse bar connecting the brake-levers, a guide, a lever having a cam-slot, and means carried by the transverse bar for engaging the slot of the cam-lever, substantially as described.

13. In a brake, the combination with a truck, of brake-levers, a cam-lever provided with opposite cam-slots, means connected with the levers for engaging the slots, and a coiled spring connected with the lever for holding the brake-shoes normally out of engagement, substantially as described.

14. In a brake, the combination of a truck, a cam-lever, a brake-lever operated by the cam-lever, a sleeve interlocked with a fixed portion of the truck and having a cylindrical portion to receive the cam-lever and provided also with an angular portion, a spring connected with the angular portion and with the cam-lever, and a fastening device passing through the sleeve and securing the same to the truck, substantially as described.

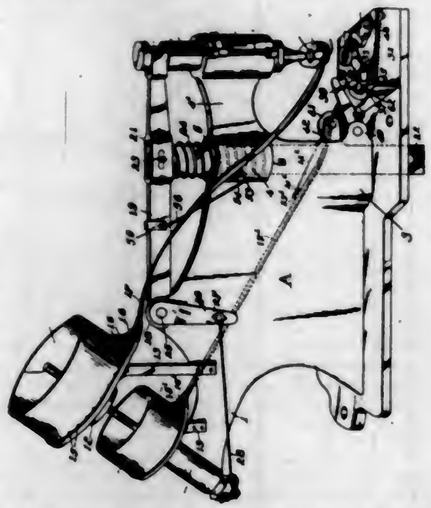
15. In a brake, the combination with a truck, a lever, a fulcruming device interlocked with the truck and having a portion receiving said lever, said fulcruming device being also provided with an angular portion, a spring connected with the angular portion and with the lever, means for operating the latter, and means for connecting the same with the brake-shoes to be actuated, substantially as described.

16. In a brake, the combination with a truck provided with a transverse top bar or bolster, of intermediate and side guides secured to and extending from opposite sides of the top bar or bolster and provided with slots or openings, upright brake-levers having upper arms arranged in the slots or openings of the side guides, transverse connecting-bars having recesses receiving the upper arms of the brake-levers, a cam-lever having opposite slots, means carried by the transverse connecting-bars for engaging the intermediate guides and the slots of the cam-lever, and means for operating the latter, substantially as described.

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755,884. **MACHINE FOR ATTACHING BUTTONS.** Herman Kenwood, Baltimore, Md., assignor to the Alma Button Company of Baltimore City, Maryland, a Corporation. Filed Apr. 17, 1903. Serial No. 153,072. (No model.)

*Claim.*—1. In a button-setting machine, the combination with a lever, of a plunger operated thereby, a die engaged by the plunger, the die comprising a plurality of perforate members rigidly disposed with relation to each other, means for supplying the die with a fastener, a receiver for the correlative portion of the fastener, and means for moving the receiver into and out of alinement with the die.



2. In a button-setting machine, the combination with a lever, of a plunger operated thereby, a die located in the path of movement of the plunger, the die comprising a plurality of apertured members rigidly disposed with relation to one another, means for supplying a fastener to one of the apertured members, the plunger engaging and moving the die and means for returning the die to normal position to receive a fastener.

3. In a button-setting machine, the combination with a lever and a pull-bar pivotally secured thereto, of a plunger operated by the lever, a bell-crank located beneath the plunger, a tongue engaging one arm of the bell-crank, and means on the pull-bar engaging the tongue to move the bell-crank.

4. In a button-setting machine, the combination with a plunger and lever for operating the plunger, of a pull-bar for operating the lever, a roller carried by the pull-bar, a bell-crank located beneath the plunger, a movable tongue secured adjacent to and engaging the bell-crank and itself engaged by the roller and means for returning the bell-crank to normal position.

5. In a button-setting machine, the combination with a box, of a reciprocating plunger provided with a reduced end received in the box, rods mounted exteriorly of the box, a die carried by one of the rods, the die consisting of a plurality of open members spaced apart from and rigidly disposed with relation to each other, means for discharging a fastener onto one of the members, the die located in alinement with the path of travel of the plunger, the reduced end of the plunger projecting through the other of said members to engage the fastener and depress the die and means for raising the die to its normal position.

6. In a button-setting machine, the combination with a chute, a disk-valve pivotally mounted therein and a link connected therewith, of a bell-crank lever located adjacent the discharge end of the chute, an arm engaged by the bell-crank lever, a shaft on which the arm is mounted, means connected with the shaft for moving it in one direction, the link connected with the shaft and means for operating the bell-crank lever.

7. In a button-setting machine, the combination with a chute, and a feed-controlling member, of a shaft connected with the feed-controlling member, a movable member, an arm carried by the shaft and engaged by the movable member, means for actuating the shaft in one direction, the movable member normally preventing such actuation of the shaft and means for operating the movable member.

8. In a button-setting machine, the combination with a chute and a feed-controlling member, of a shaft connected with the feed-controlling member, means connected to the shaft for automatically actuating the shaft in one direction, an arm on the shaft, a movable member engaged by the arm, the movable member normally preventing the automatic actuation of the shaft in one direction and means for actuating the movable member.

9. In a button-setting machine, the combination with a chute and a feed-controlling member, of a shaft connected with the member, a spring connected with the shaft for automatically rotating it in one direction, an arm on the shaft, a bell-crank lever engaged by the arm and normally preventing the automatic movement of the shaft in one direction and means for moving the bell-crank lever.

10. In a button-setting machine, the combination with a chute and a feed-controlling member, of a shaft connected with the feed-controlling member, means for actuating the shaft in one direction, an arm carried by the shaft, a bell-crank lever engaged by the arm, means connected with the bell-crank lever for preventing the movement of the shaft and means for overcoming the bell-crank-connected means.

11. In a button-setting machine, the combination with an operating-lever, a pull-bar and a plunger, of a lever provided with a recess, a chute for conveying a portion of a fastening directly to the recess in the lever, the lever normally lying adjacent to the chute, means for normally retaining the recessed arm adjacent the chute and means for moving the recess into alinement with the plunger.

12. In a button-setting machine, the combination with an anvil-block, of a lever provided with a recess, a chute for conveying a fastening directly thereto, means for normally retaining the recess in position adjacent the chute, an operating-lever, a plunger connected therewith, means for moving the lever to bring the recess into alinement with the plunger and a stop against which the lever is pressed for limiting the movement of the recessed lever in one direction.

13. In a button-setting machine, the combination with a plunger and means for operating the same, of an anvil-block, a lever pivotally mounted with respect to the anvil-block, means for feeding a fastener thereto, means for feeding a fastener in position to be directly engaged by the plunger, a shaft suitably journaled on the anvil-block, a feed-controller in the means for feeding the fastener in position to be engaged by the plunger, means connecting the feed-controller and shaft, and means carried by the shaft and engaged by the lever for operating the feed-controller.

14. In a button-setting machine, the combination with an operating-lever, means for actuating the same and a plunger operated by the lever, of a second lever located beneath the plunger, a chute for conveying a portion of a fastener thereto, a feed-controller located in the chute, a suitably-journaled shaft, means extending between the shaft and feed-controller, means connected with the shaft and normally tending to actuate the same in one direction, an arm carried on the shaft and engaging the second lever, and means for actuating the second lever and the plunger.

15. In a button-setting machine, the combination with a chute and a feed-controller, of a lever, the chute conveying a fastener thereto, means connected with the lever for normally retaining it at one limit of its movement, a shaft connected with the feed-controller, means secured to the shaft for actuating it in one direction, an arm carried by the shaft and engaging the lever for normally preventing the movement of the shaft in one direction, and means for operating the lever.

16. In a button-setting machine, the combination with an operating-lever and a pull-rod secured thereto, of a projection mounted on the pull-rod, a pivoted member engaged by the projection, an anvil-block provided with a recess therein, a lever mounted on the anvil-block, one arm of the lever receiving and carrying a fastener, the remaining arm engaged by the pivoted member, and a plunger with which the fastener-carrying arm is normally out of alinement, the pivoted member forced against the adjacent arm of the lever to force the fastener-carrying arm into alinement with the plunger.

17. In a button-setting machine, the combination with a plunger, of a lever located beneath the plunger, the lever provided with a recess for receiving a fastener, and normally out of alinement with the plunger, means for feeding a fastener to the recess in the lever, means for moving the recessed end of the lever into alinement with the plunger, the recessed lever constituting an anvil to receive the stroke of the plunger and retain the fastener during the fastening operation.

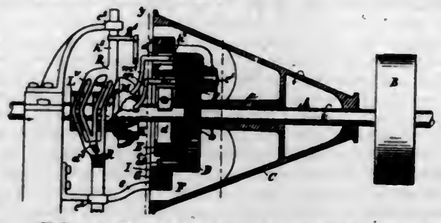
18. In a button-setting machine, the combination with a plunger, of a lever located beneath the plunger, means for conveying a fastener to the lever, the lever normally lying out of alinement with the plunger, means for moving the lever into alinement with the plunger, the lever constituting an anvil to receive the stroke of the plunger and retain the fastener during the fastening operation.

19. In a button-setting machine, the combination with a plunger and means for operating the same, of an anvil-block located beneath the plunger, an oscillating anvil pivotally secured to the anvil-block, means for feeding a fastening member to the anvil, means for normally retaining and automatically returning the anvil to a position out of alinement with the plunger, and means operated simultaneously with the plunger for moving the anvil into alinement therewith.



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755,885. **REVERSIBLE PULLEY MECHANISM.** William H. Kessler, Passaic, N. J. Filed Nov. 1, 1902. Renewed Sept. 8, 1903. Serial No. 172,261. (No model.)



*Claim.*—1. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft and placed within the flange of the internal gear, means for expanding the said split ring to clutch the inside of the said flange to rotate the internal gear with the shaft, and a split ring fast to the internal gear and revoluble therewith, of a continuous ring outside of and concentric with said split ring, means for expanding said split ring to clutch the inside of the continuous ring, gears carried by the continuous ring and interposed between the internal gear and the pinion which is fast to the pulley and within the same, a non-revoluble split ring outside of the continuous ring and means for contracting the non-revoluble split ring to clutch the outer surface of the continuous ring, the whole coördinated for joint use and operation, as described.

2. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft and placed within the flange of the internal gear, and devices for expanding the said split ring to clutch the inside of the said flange, of a cam for actuating said devices, a split ring fast to the internal gear and revoluble therewith, a continuous ring outside of and concentric with said split ring, devices for expanding said split ring, a cam for actuating said devices, gears carried by the continuous ring and interposed between the internal gear and the pinion which is fast to the pulley and within the same, a non-revoluble split ring outside of the continuous ring, and means for contracting the non-revoluble split ring to clutch the outer surface of the continuous ring, all as and for the purpose herein set forth.

3. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft and placed within the flange of the internal gear and devices for expanding the said split ring to clutch the inside of said flange, of a cam slidable upon the shaft to operate said devices, a split ring fast to the internal gear and revoluble therewith, a continuous ring outside of and concentric with said split ring, devices for expanding said split ring, a cam slidable upon the shaft for operating said devices, mechanism for operating said cam synchronously with the cam just hereinbefore mentioned, gears carried by the continuous ring and interposed between the internal gear and the pinion which is fast to the pulley within the same, a non-revoluble split ring outside of the continuous ring and means for contracting said non-revoluble split ring upon the outside of the continuous ring, all substantially as and for the purpose specified.

4. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft, placed within the flange of the internal gear and having in one of the surfaces of its split, a semicylindric seat, a semicylindric bolt placed in said seat, and an arm provided to said bolt to turn the same to spread the split and expand the said split ring to clutch the inside of said flange, of a cam slidable upon the shaft to actuate the arm of the said bolt, a split ring fast to the internal gear and revoluble therewith, a continuous ring outside of and concentric with said split ring, devices for expanding said split ring, a cam slidable upon the shaft for operating said devices, mechanism for operating said devices synchronously with the axial movement of the bolt in the

split of the split ring which is within the flange of the internal gear, gears carried by the continuous ring and interposed between the internal gear and the pinion which is fast to the pulley within the same, a non-revoluble split ring outside of the continuous ring, and means for contracting said non-revoluble split ring against the outside of the continuous ring, all substantially as and for the purpose set forth.

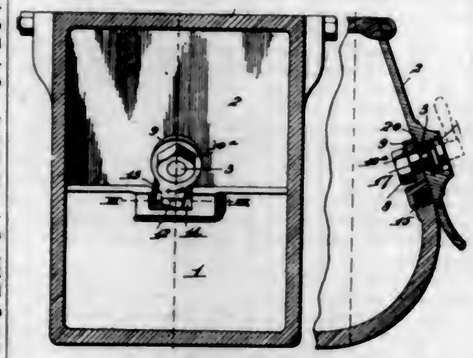
5. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft and placed within the flange of the internal gear, means for expanding the said split ring to clutch the inside of said flange to rotate the internal gear with the shaft, a split ring fast to the internal gear, revoluble therewith and having a semicylindric seat in one side of its split, a continuous ring outside of and concentric with said split ring, and a semicylindric bolt placed in the seat of the said split ring and having an arm whereby it may be turned to spread the split of said ring to clutch the inside of the continuous ring, of a cam slidable on the shaft for actuating said arm, gears carried by the continuous ring and interposed between the internal gear and the pinion which is fast to the pulley within the same, a non-revoluble split ring outside of the continuous ring, and means for contracting the non-revoluble split ring to clutch the outer surface of the continuous ring, all substantially as and for the purpose herein set forth.

6. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft placed within the flange of the internal gear, devices for expanding the said split ring to clutch the inside of said flange and a cam slidable upon the shaft to operate said devices, of a split ring fast to the internal gear and revoluble therewith, a continuous ring outside of and concentric with said split ring, devices for expanding said split ring, a cam slidable upon the shaft for operating said devices, mechanism for operating said cam synchronously with the cam just hereinbefore mentioned, gears carried by the continuous ring and interposed between the internal gear and the pinion which is fast to the pulley within the same, a non-revoluble split ring placed outside of the continuous ring and having outwardly-turned lugs at opposite sides of its split, a clamp having a semicylindric seat and placed over said lugs, a semicylindric bolt placed in said seat and having an arm by which it may be axially turned, and means for actuating said arm to thus operate the bolt to contract said non-revoluble split ring upon the outside of the continuous ring, all substantially as and for the purpose set forth.

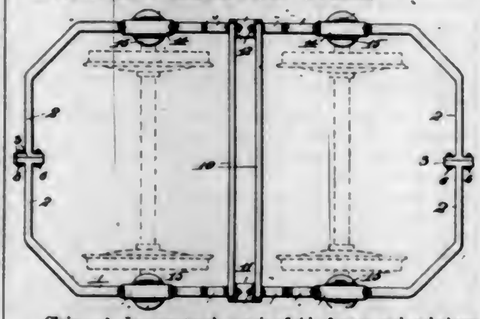
7. The combination with a revoluble shaft, a hollow pulley loose thereon, a pinion fast to the pulley within the same, a flanged internal gear loose on the shaft, a split ring fast to the shaft placed within the flange of the internal gear, and having in one of the surfaces of its split a semicylindric seat, a semicylindric bolt placed in said seat; and an arm provided to said bolt to turn the same to spread the said split, of a split ring fast to the internal gear and having in one of the surfaces of its split a semicylindric seat, a semicylindric bolt placed in said seat, and having an arm whereby it may be turned to spread the said split, a continuous ring outside of and concentric with said split ring, gears carried by said continuous ring and interposed between the internal gear and the pinion which is fast to the pulley within the same, a non-revoluble split ring placed outside of the continuous ring and having outwardly-turned lugs, at opposite sides of the split, a clamp having a semicylindric seat and connecting said lugs, a semicylindric bolt placed in said seat and having an arm whereby it may be turned to contract upon the continuous ring to clutch the same, and synchronously-operated cams for operating the arms of the respective bolts, substantially as and for the purpose set forth.

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755,886.



755,887. CAR-TRUCK. FRANK G. KOEHLER, St. Louis, Mo. Filed Oct. 5, 1903. Serial No. 175,719. (No model.)



*Claim.*—1. In a car-truck, a pair of side frames, and end pieces integral with said side frames; which end pieces are joined on a line through the longitudinal center of the truck, substantially as specified.

2. In a car-truck, a pair of side frames, end pieces integral with said side frames, plates integral with the meeting ends of said end pieces, and means whereby said plates are united, substantially as specified.

3. In a car-truck a pair of side frames, end pieces integral with said side frames, means whereby the meeting ends of said end pieces are united, and a transom rigidly secured at its ends to said side frames, substantially as specified.

4. In a car-truck, a pair of side frames, end pieces integral with said side frames, means whereby the meeting ends of said end pieces are united, and pedestals integral with said side frames, substantially as specified.

5. In a car-truck, a pair of side frames, end pieces integral with said side frames, means whereby the meeting ends of said end pieces are united, pedestals integral with said side frames, and a transom secured at its ends to the centers of the side frames, substantially as specified.

6. In a car-truck, a pair of side frames, end pieces integral with said side frames, means whereby the meeting ends of said end pieces are united, pedestals integral with said side frames, and struts rigidly secured beneath the pedestals, substantially as specified.

7. In a car-truck, a pair of side frames, end pieces integral with said side frames, means whereby the ends of said end pieces are united, pedestals integral with said side frames, struts rigidly secured beneath the pedestals, and a transom secured at its ends to the side frames, substantially as specified.

8. In a car-truck, a pair of side frames, end pieces integral with said side frames, means whereby the meeting ends of said end pieces are united, transom-supports extending upwardly from the centers of said side frames, and a transom having its ends rigidly secured to said transom-supports, substantially as specified.

9. In a car-truck, a pair of mating side frames, end pieces integral with said side frames, means whereby the meeting ends of said end pieces are united, pedestals integral with said side frames, struts rigidly secured beneath said pedestals, transom-supports integral extending upwardly from the centers of the side frames, and a transom having its ends rigidly secured to said transom-supports, substantially as specified.

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755,886. FASTENER FOR CAR-AXLE BOXES. FRANK G. KOEHLER, St. Louis, Mo. Filed June 15, 1903. Serial No. 161,461. (No model.)

*Claim.*—1. The combination with the axle-box having the front wall at its top provided with a notch one of the walls of which is beveled on both sides to provide an inclined nose, of the cover, and a spring-pressed catch carried by the cover and beveled on both sides to provide an inclined nose adapted for engagement with the inclined nose on the box.

2. The combination with the axle-box having the front wall provided with an inclined nose, the cover, a bolt mounted to rotate in the cover having a non-circular portion; a catch having an offset and a downwardly-turned inclined nose; and a coil-spring connected to the bolt and the cover.



som having its ends rigidly secured to said transom-supports, substantially as specified.

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755,888. CORSET. BERTHA KULL, Avalon, Pa. Filed Nov. 9, 1903. Serial No. 180,310. (No model.)



*Claim.*—1. In corsets, a rigid breast-plate provided with rigid integral pockets adapted to support the breasts of the wearer, a support for the back of the wearer and connections between said plate and said support for the back.

2. In corsets, a rigid breast-plate provided with rigid integral pockets adapted to support the breasts of the wearer, a rigid upwardly-extending member attached to said breast-plate and means for maintaining said plate in position on the body of the wearer.

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755,889. ELECTRIC RAIL-BOND. JAMS LANDSING, Brooklyn, N. Y. Filed Apr. 26, 1900. Serial No. 14,346. (No model.)



*Claim.*—1. In an electric rail-bond having several looped connecting elements and in combination with the ends of two adjacent rails, the improvement, which consists in the loops of the separate elements being bent out of the general direction of the elements, being also located outside of each other or unnested, and being arranged at progressively-varying distances from the ends of the bond so as to extend in a substantially oblique line relatively to one side of the bond, the intermediate loops being, with respect to the length of the bond, located each between two loops, substantially as set forth.

2. An electric rail-bond comprising several connecting elements, each of which extends longitudinally in a general direction parallel with the others and all of which are in substantial contact, but the end portions of each of which elements are out of alinement, and each of which has a loop between said end portions, said loops being severally spaced and arranged to form a series, each loop thereof occurring at a different point along the element with respect to the loop on the next adjacent element, and means for attaching said rail-bond to the rail ends, substantially as set forth.

3. An electric rail-bond consisting of several connecting elements and means for attaching them to the rail ends, the said elements being provided with differently-spaced loops at points between the ends of the elements, and said loops all being located on corresponding sides of the elements, that is to say, on corresponding sides of corresponding end portions of the elements, and being placed side by side and outside each other in a series extending obliquely across the bond, substantially as set forth.

4. An electric rail-bond which consists of several connecting elements and means for attaching them to the rail ends, the elements being provided with loops bent out of the general direction of the elements and located also outside of each other or unnested, the said loops being further arranged at progressively-varying distances from the ends of the bond so as to extend in a substantially oblique line relatively to one side of the bond, the intermediate ones of the said loops, each, with respect to the length of the bond, being located directly between two loops, and in contact, in the endwise direction of the bond, with the loops between which they are located, substantially as set forth.

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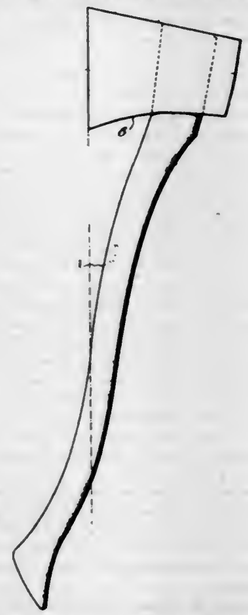
755,890. ELECTRIC SIGNALING DEVICE. THOMAS C. LAMEY, Toledo, and CHARLES S. LONGENECKER, Delta, Ohio. Filed Nov. 24, 1902. Serial No. 132,543. (No model.)



*Claim.*—In a semaphore-signal, a signal-box mounted upon a standard and provided with openings, a lamp-containing case movable vertically within the box and provided with openings adapted to register with the openings therein, a pair of signal-lamps arranged in the case, elongated contact-strips secured within the signal-box, contact-fingers carried by the lamp-case adapted to press upon the contact-strips and lead current to the lamps within the case, a normally closed main circuit connected with the contact-strips leading current through one of the lamps and a relay, and a branch circuit connecting with the contact-strips and leading current through the other lamp, said branch circuit being closed by the action of the relay when the main circuit is interrupted, substantially as described.

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755,891. AX. JOHN E. LEATHERS, Fitzwilliam Depot, N. H. Filed Nov. 13, 1903. Serial No. 181,067. (No model.)

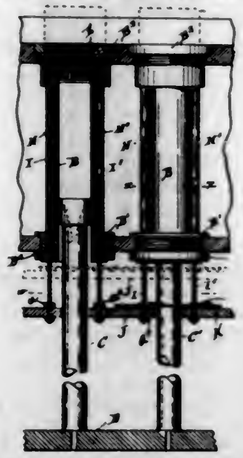


*Claim.*—1. In an ax, a blade in which the head is disposed approximately at a right angle to the outer edge of the blade and provided with an eye arranged in a plane substantially parallel with that of the head, the cutting edge of the blade being at an acute angle to the outer edge of the blade and the axial line of the eye, and a helve having one end extending through the eye, the general planes of the helve and of the cutting edge of the blade intersecting in advance of the handle end of said helve.

2. In an ax, a blade portion in which the opposite sides are gradually concaved from edge to edge, the thickness at the outer edge being greater than at the inner or handle edge.

3. In an ax, a bit portion in which the opposite sides are gradually concaved from edge to edge.

755,892. CANDLE-MOLDING MACHINE. SETH H. LEAVENWORTH, Cincinnati, Ohio, assignor to Homan & Company, Cincinnati, Ohio, a Firm. Filed Oct. 22, 1903. Serial No. 178,077. (No model.)



*Claim.*—1. In a machine for forming taper-base candles a mold formed of half-sleeves, the opposite ends of said sleeves being fulcrumed, and means for swinging said half-sleeves on their fulcrums, whereby the swinging end of one half-sleeve engages and disengages the fulcrumed end of its coöperating sleeve, substantially as specified.

2. In a machine for forming taper-base candles a mold formed of half-sleeves, the opposite ends of said sleeves being fulcrumed and means for swinging said half-sleeves on their fulcrum, whereby the swinging end of one half-sleeve engages and disengages the fulcrumed end of its coöperating sleeve, the said sleeve being formed with interlocking ends, substantially as specified.

3. In a machine for forming taper-base candles a stationary mold for the uniform body-section thereof, a mold for the taper base consisting of half-sleeves, the opposite ends of said sleeves being fulcrumed and means for swinging said half-sleeves on their fulcrum, whereby the swinging end of one half-sleeve engages and disengages the fulcrumed end of its coöperating sleeve, substantially as specified.

4. In a machine for forming taper-base candles a mold formed of half-sleeves, an actuating-rod fixed to the opposite end of each half-sleeve and means for racking the said rods in opposite directions whereby the swinging end of one half-sleeve engages and disengages the fulcrumed end of its coöperating sleeve, substantially as specified.

5. In a machine for forming taper-base candles a mold formed of half-sleeves, an actuating-rod fixed to the opposite ends of each half-sleeve, a rocking arm fixed to the other end of each actuating-rod and a lever fulcrumed to the ends of the rocking arms whereby the swinging end of one half-sleeve engages and disengages the fulcrumed end of its coöperating sleeve, substantially as specified.

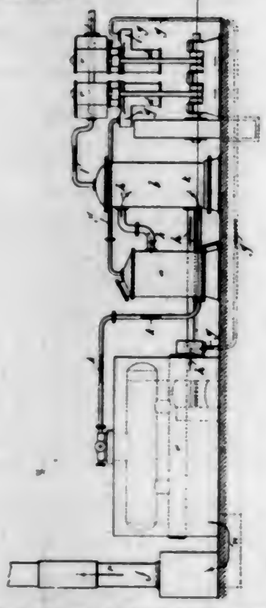
6. In a machine for forming taper-base candles, a stationary solid mold for the uniform section, and a superimposed detachable mold for the non-uniform candle-section, the detachable mold consisting of half-sleeves, axial rods upon which said sleeves are supported, means for turning said rods rotatively, for bringing together and separating said sleeves, means for raising and lowering said half-sleeves, and means for expressing the candle from the mold, substantially as described.

7. In a machine for forming taper-base candles, a receiving-tray, a stationary mold having an enlarged end dependent therefrom, a detachable mold seated in said enlarged end and registering with the stationary mold, means for raising the detachable mold above the floor of the tray, and for lowering it into the enlarged end of the stationary mold, the said detachable mold being formed of half-sleeves, a fulcrumed actuating-rod fixed to one end of each half-sleeve adapted to engage and disengage the swinging end of each half sleeve with the fulcrumed end of its coöperating sleeve, when the detachable mold is in raised position, means for turning said actuating-rods, and means for expressing the candle from the mold, substantially as specified.

8. In a machine for forming taper-base candles, a receiving-tray, a stationary mold thereunder, having an enlarged upper end, a removable mold for the taper base fitted into the enlarged end of the stationary mold and registering therewith, the said removable mold being formed of half-sleeves, mounted on axial rods, fixed to the half-sleeves and a cross-head in which said rods are journaled for rotative movement, and means for holding said rods to the cross-head for longitudinal movement, arms fixed to the bottom of said rods and a common actuating-lever pivoted to said arm for rotating the rods to open and close the said half-sleeves when in raised position, substantially as described.

9. In a machine for forming taper-base candles a stationary mold, a vertically-removable mold registering therewith, formed of half-sleeves, actuating-rods attached to said sleeves for opening and closing the same, and for raising and lowering the molds, a cross-head, a spring connection between said cross-head and the ends of said actuating-rods, arms for rocking said actuating-rods, through which arms said rods pass, the arms being adapted to rock said rods but to permit vertical movement of the rods relative to the arms for the purposes described.

755,893. SYSTEM OF ECONOMICAL PRODUCTION OF SUPERHEATED STEAM. ANDRÉ LECLERC, Paris, France, assignor to Société Anonyme pour la Production et l'Emploi de la Vapeur Surchauffée, Châlon-sur-Saône, France. Filed Jan. 2, 1902. Serial No. 88,239. (No model.)



*Claim.*—In combination with a boiler, a superheater to receive the steam therefrom, a gas-producer connected with the superheater to supply hot reducing-gases thereto to heat the steam, motor means, a connection between the same and the superheater to be supplied with steam therefrom, air-measuring means including a cylinder with its piston operated by the motor means and connections between the same and the gas-producer and boiler respectively, substantially as described.

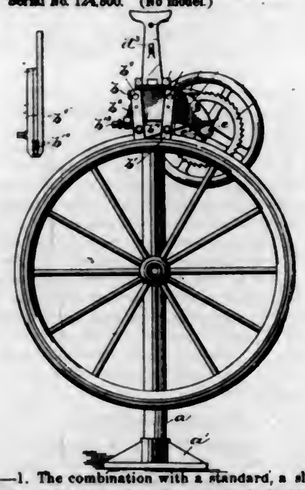
755,894. HAME AND TRACE CONNECTOR. OGDEN P. LETCHWORTH, Buffalo, N. Y., assignor to the United Hame Company, Buffalo, N. Y. Filed Aug. 19, 1899. Serial No. 727,736. (No model.)

*Claim.*—In a hame and trace connector, the combination with a hame having a staple, of a yoke having a body portion, separated vertical ears extending forwardly from the sides of said body portion, and horizontal arms projecting rearwardly from the upper and lower ends of said body portion, a bolt connecting said yoke-arms and adapted to pass through a loop at the front end of the trace, a clip consisting of a flat doubled piece having an eye and parallel end portions extending between and pivoted to said separated vertical ears of the yoke, a metallic strap bent to form upright eyes at its front and rear ends, said front eye loosely encircling the cross-bar of the hame-staple, and a link engaging loosely in the adjacent eyes of said strap and said clip, substantially as set forth.





755,895. MACHINE FOR EQUIPPING VEHICLE-WHEELS WITH RUBBER TIRES. GEORGE E. LINN, Springfield, Ohio. Filed Sept. 25, 1902. Serial No. 124,800. (No model.)



*Claim.*—1. The combination with a standard, a sliding wheel-support thereon, a frame fixed on the upper end of said support, two band-holding devices mounted on said frame extending downwardly into the wheel-channel, and a forwardly-extending projection at the top of said frame above said band-holding devices, of a tire-clamp consisting of two jaws having arms pivoted to said projection and a tightening device for same, said arms and jaws normally extending upwardly and resting on top of said frame but adapted to be turned downwardly with said arms between said band-holding devices and said jaws below said devices to clamp the tire while said band-holding devices remain in normal position, substantially as specified.

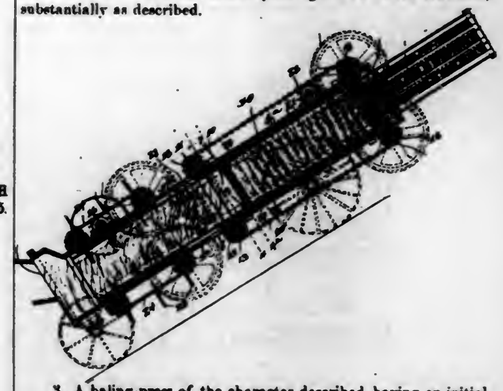
2. The combination with a frame, of band-holding devices, and a tension device mounted on said frame, said tension device consisting in part of a shaft and a sleeve on said shaft, said shaft being flattened on one side and said sleeve having a transverse slot cut in one end thereof adapted to register with the flattened side of said shaft to receive the retaining-bands, and means to turn and hold said shaft, substantially as specified.

3. The combination with a frame and tire-clamp, of a lever consisting of a single bar having a U-shaped portion with a hook end to engage one flange of the wheel-channel, and a lug pivoted to said bar near the bend forming said U-shaped portion, said lug having a flat portion to engage the wheel-felly, to turn the wheel for the purpose of bringing the ends of the tire together in the wheel-channel.

755,896. CONTINUOUS BALING-PRESS. DAVID H. LIPTICUM, Pittsburg, Kans. Filed July 2, 1903. Serial No. 164,051. (No model.)

*Claim.*—1. In a baling-press having a continuous-operating chamber to which the material is fed and in which it is compressed and the bale tied, the combination with a feeding mechanism for delivering the material to the compressing mechanism and a compressing mechanism comprising followers and endless carriers arranged parallel to the chamber and having means for engaging the followers to move them lengthwise of the chamber whereby to compress the bale, substantially as described.

2. In a baling-press of the character described, the combination with the feeding mechanism adapted to move the straw through the initial portion of the chamber, endless carriers arranged in line with the feeding mechanism, and followers adapted to be moved thereby through an intermediate portion of the chamber, and a terminal portion in which the bale is tied, the tied bale affording the abutment or resistance to the compressing action of the followers, substantially as described.



3. A baling-press of the character described, having an initial portion or mouthpiece to receive the material, a feeding mechanism arranged adjacent thereto, means projecting within the chamber for restraining the loose material, endless carriers having means also projected within the chamber to engage a follower, and followers adapted to be inserted laterally through the wall of the chamber and to be carried lengthwise thereof to compress the bale and a terminal portion of said chamber wherein the bale is tied, substantially as described.

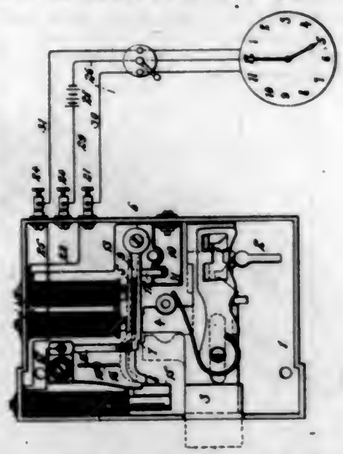
4. In a baling-press of the class described, a continuous-operating chamber having arranged adjacent to the initial portion thereof a feed mechanism for carrying the loose material therethrough, means for restraining the loose material arranged inwardly of the feed-chamber, endless carriers arranged in line with the feed mechanism and having means projecting into the operating-chamber for engaging the followers therein, followers adapted to be inserted laterally into said chamber and means connected with the carrier for separating the material within the chamber to permit the insertion of the follower, substantially as described.

5. A baling-press of the class described having a continuous-operating chamber, feeding mechanism and compressing mechanism arranged adjacent to said chamber and in line with each other, said chamber having a mouth portion adapted for connection with and to receive material from a separator or similar straw-producing machine and a terminal portion in which the bale is tied, substantially as described.

6. In a baling-press of the class described, the combination with a continuous-operating chamber having a feeding mechanism and a compressing mechanism having endless chains provided with feeding means carried thereby and endless chains provided with lugs for effecting the compression of the bale, and means for driving said feeding and compressing chains continuously, said chamber having lateral openings for the insertion of follower-blocks, and means intermediate the feeding and compressing mechanisms for separating the material to permit the insertion of the followers, substantially as described.

7. In a baling-press of the class described, the combination with the operating-chamber of a receiving-spout leading thereto, endless feed-belts having pivoted teeth projected into the chamber and adapted to be made rigid while passing through said chamber, dogs or fingers mounted in the side walls of said chamber and projected therein to restrain the material, endless carrying-chains provided with lugs protruding within the chamber, a lateral opening in the side wall of the chamber to permit the insertion of a follower, followers adapted for insertion within the chamber and to be engaged by the lugs on the carrying-chains, fingers pivotally connected with the carrying-chains but adapted to become rigid therewith for the purpose of separating the material prior to the insertion of the follower, and suitable gearing for driving the several operative mechanisms in due order and relation, whereby material fed to the machine through the receiving-spout is carried through the initial portion of said chamber separated for the insertion of the follower, compressed by the movement of said follower into a bale, and tied in the terminal portion of said chamber, all substantially as and for the purpose described.

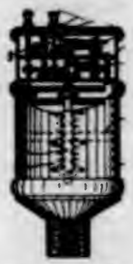
755,897. ELECTRIC LOCK. FRANK LOMBARDI, Brooklyn, N. Y. Filed Dec. 19, 1903. Serial No. 185,775. (No model.)



*Claim.*—1. In a lock of the character herein specified, a bolt and a catch arranged to engage said bolt, in combination with an electromagnet adapted to actuate said catch and cause it to release the bolt, means for holding the catch out of engagement with the bolt, and electrical means for releasing the catch-holding means, substantially as shown and described.

2. In a lock, the combination with a bolt, of a catch arranged to engage said bolt and hold it in its locked position, electrical means for moving the catch out of engagement with the bolt, a spring-actuated part arranged to engage the catch for holding it out of engagement with the bolt, and independent electrical means for moving the said spring-actuated part to release the said catch, substantially as set forth.

755,898. LUBRICATOR. HEINRICH LUDENDORFF, Berlin, Germany. Filed Mar. 24, 1903. Serial No. 149,375. (No model.)



*Claim.*—1. Lubricator comprising in combination a vessel adapted to contain a lubricant and having an outlet, a casing adjacent to said vessel, a piston in said vessel, wheel-gearing in said casing adapted to advance said piston and displace the lubricant through the outlet of said vessel a movable weighted body in gear with said wheel-gearing, and an adjustable stop having inclined surfaces and adapted according to its position to limit the stroke of said weighted body, substantially as set forth.

2. Lubricator comprising in combination a vessel adapted to contain a lubricant and having an outlet, a casing adjacent to said vessel, a piston in said vessel, wheel-gearing in said casing adapted to advance said piston and displace the lubricant through the outlet of said vessel a movable weighted body in gear with said wheel-gearing, and an adjustable stop having inclined surfaces and adapted according to its position to limit the stroke of said weighted body, an index connected to said stop, and a scale over which said index moves substantially as set forth.

755,899. ELECTRIC-RAILWAY SYSTEM. TIMOTHY MAHONEY, San Francisco, Cal. Filed Apr. 30, 1903. Serial No. 153,394. (No model.)

*Claim.*—1. The combination with a motor-car or like movable body, of a sectional surface trolley-rail, a plurality of connected magnets carried by the car and presenting their poles in a line substantially coextensive with the distance between the car-trucks, successive magnets being of opposite polarity, and a switch disposed relative to each section and in the vertical plane of the magnets, the distance between the switches being substantially equal to the length of the line of magnets on the car and each switch consisting of a box disposed between a main rail and a section of the trolley-rail and a metallic bar within said box, lying loose on the bottom thereof and insulated therefrom and having such length and width that it substantially fills the box horizontally, plates secured in the walls of the box and lying horizontally in the same plane and insulated therefrom and from each other, said bar adapted to be lifted by the magnets to bridge the space between said plates, and connections between one of the plates and the feed-wire and between the other plate and a section of the trolley-rail.



2. The combination with a motor-car, of a section surface trolley-rail, a series of cooperating magnets on the car, successive magnets in the series being of opposite polarity, said magnets extending a substantial part of the car length, a switch disposed relative to each section of the trolley-rail and in the vertical plane of and out of physical contact with the magnets, the distance between the successive switches being substantially equal to the length of the line of magnets on the car and each switch consisting of a box disposed between a main rail and a section of the trolley-rail and a metallic bar within said box, lying loose on the bottom thereof and insulated therefrom and having such length and width that it substantially fills the box horizontally, plates secured in the walls of the box and lying horizontally in the same plane and insulated therefrom and from each other, said bar adapted to be lifted by the magnets to bridge the space between said plates, and connections between one of the plates and the feed-wire and between the other plate and a section of the trolley-rail.

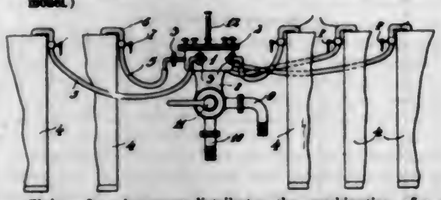
755,900. DISPLAY DEVICE. WILLIAM R. MAIN, Chicago, Ill. Filed Sept. 21, 1903. Serial No. 173,962. (No model.)



*Claim.*—1. A display device for cloth comprising a bed-piece and double display-frames hinged to and fitting over the front and back of said bed-piece, each of said display-frames comprising a transparent plate upon which a clothed figure is shown, the background and the figure except the clothes being opaque, and the portions illustrating the clothes being transparent and having the outlines of the garments drawn thereon, each of said frames illustrating a different garment.

2. A frame consisting of a glass on one side and a bed-piece on the other side between which a sample of cloth may be pressed, the glass showing in outline the figure of a man, and the portion of the figure corresponding to a garment being transparent but provided with opaque outlines representing the trimming of the garment, whereby on compressing the sample between the glass and the bed-piece the appearance of a man clothed with a garment of the cloth will be shown.

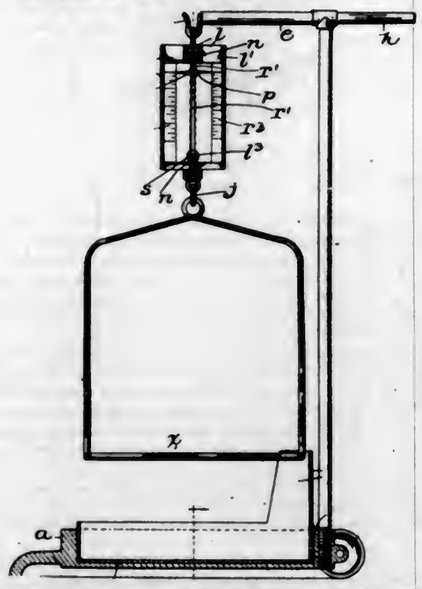
755,901. BEER-WORT-DISTRIBUTER. ROMAN MALLY, Vienna, Austria-Hungary. Filed July 31, 1903. Serial No. 167,714. (No model.)



*Claim.*—In a beerwort-distributer, the combination of a distributing-receptacle, a hermetically-closed cover for said receptacle, hose connections with said receptacle, hose leading from said connections, discharge-nozzles at the ends of said hose, valves in said nozzles, a supply-pipe connecting with said vessel, a water-supply pipe and a beerwort-supply pipe connecting with said first-named pipe, and a three-way valve whereby the latter pipes may be alternately opened and closed.



755,902. MEASURING DEVICE. WARD B. MARTIN, Geneva, Ohio, assignor, by mesne assignments, to W. B. Martin. Filed Aug. 7, 1902. Serial No. 118,793. (No model.)



*Claim.*—1. A measuring device comprising a vertically-arranged coiled spring; a vertically-shiftable member attached to the lower end of the spring and provided, at one side, with an upwardly-extending vertically-arranged stem, which vertically-shiftable member is provided with means for suspending the load to be measured; a relatively stationary member attached to the upper end of the spring and provided with a vertically-arranged slideway; a slide engaging the said slideway and provided, centrally between its side edges, with a vertically-arranged slot, and having two vertically-arranged scales upon its outer side or face at opposite sides, respectively, of the said slot, which scales differ in the spacing of the graduations thereof; means for securing the slide in the desired adjustment, and a sleeve mounted upon and secured to the aforesaid stem and provided with a lug engaging the aforesaid slot, and an indicator attached to the said lug and having two pointers arranged to cooperate with the different scales, respectively.

2. A measuring device comprising a vertically-arranged coiled spring; a vertically-shiftable member attached to the lower end of the spring and provided with a vertically-arranged stem and having means for suspending the load to be measured; a relatively stationary member attached to the upper end of the spring and having a face-forming portion which is provided, centrally between its side edges, with a vertically-arranged slot, and has two vertically-arranged scales at opposite sides respectively of the said slot, which scales differ in the spacing of the graduations thereof; a sleeve mounted upon and secured to the aforesaid stem and provided with a lug engaging the aforesaid slot, and an indicator attached to the said lug and having two pointers arranged to cooperate with the different scales, respectively.

3. A measuring device comprising a vertically-arranged coiled spring; a vertically-arranged member attached to and movable with the distention of the spring; means for suspending the load to be measured from the spring; a relatively stationary member attached to the upper end of the spring and provided with a face-forming portion which is provided with a vertically-arranged slot and has a vertically-arranged scale or series of graduations; a sleeve embracing and adjustable endwise of the aforesaid stem; means for securing the said sleeve in the desired adjustment, and an indicator borne by the sleeve and arranged to cooperate with the aforesaid scale.

4. A measuring device comprising a vertically-arranged coiled spring; a vertically-shiftable member attached to the lower end of the spring and provided, at one side, with an upwardly-extending vertically-arranged stem and having means for suspending the load to be measured; a relatively stationary member attached to the upper end of the spring and provided with a vertically-arranged slideway; a slide engaging the slideway and provided with a vertically-arranged slot and correspondingly vertically arranged scale or series of graduations upon its outer side or face; means for securing the slide in the desired adjustment, and a sleeve mounted upon and secured to the aforesaid stem and provided with a member which projects into and engages the aforesaid slot, and an indicator attached to the said slot-engaging sleeve member and arranged to cooperate with the aforesaid scale.

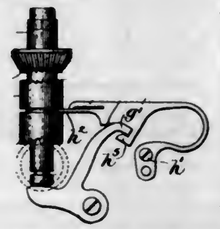
5. A measuring device comprising a vertically-arranged coiled spring; a vertically-shiftable member attached to the lower end of the spring and provided, at one side, with an upwardly-extending vertically-arranged stem, which vertically-shiftable member is provided with means for suspending the load to be measured; a relatively stationary member attached to the upper end of the spring and provided with a vertically-arranged slideway; a slide engaging the said slideway and provided, centrally between its side edges, with a vertically-arranged slot, and having two vertically-arranged scales upon its outer side or face at opposite sides, respectively, of the said slot, which scales differ in the spacing of the graduations thereof; means for securing the slide in the desired adjustment, and a sleeve mounted upon and secured to the aforesaid stem and provided with a lug engaging the aforesaid slot, and an indicator attached to the said lug and having two pointers arranged to cooperate with the different scales, respectively.

6. A measuring device comprising a vertically-arranged coiled spring; a vertically-arranged stem attached to, and movable with the distention of, the spring; means for suspending the load to be measured from the spring; a relatively stationary member attached to the upper end of the spring and provided with a vertically-arranged slideway; a correspondingly vertically arranged slide engaging the said slideway and provided with a vertically-arranged slot and having a vertically-arranged scale or series of graduations upon its outer side or face; means for securing the slide in the desired adjustment; a sleeve embracing and adjustable endwise of the aforesaid stem; means for securing the said sleeve in the desired adjustment, and an indicator borne by the sleeve and arranged to cooperate with the aforesaid scale.

7. A measuring device comprising a truck having a standard and wheels at the standard-bearing side of the truck, which standard is provided, at its upper end, with a laterally-projecting arm; a drip-pan borne by the truck a suitable distance below the said arm; a spring-balance suspended from the said arm and arranged over and a suitable distance above the drip-pan, and means for suspending the load to be measured over the chamber of the drip-pan from the spring of the spring-balance, substantially as and for the purpose set forth.

8. A measuring device comprising a truck having a standard and wheels at the standard-bearing side of the truck, which standard is provided, at its upper end, with a laterally-projecting arm; a drip-pan borne by the truck a suitable distance below the said arm; a spring-balance suspended from the arm and arranged over and a suitable distance above the drip-pan, and a rack arranged to discharge liquid received thereon and dripping therefrom into the chamber of the drip-pan and provided with a bail suspended from the spring of the spring-balance, and the drip-pan having a portion or member which extends upwardly between the rack and the standard and extends around the adjacent portion of the rack, substantially as and for the purpose set forth.

755,903. STEM-WINDING WATCH. WILLIAM M. MATHESON, Waltham, Mass., assignor to United States Watch Company, Waltham, Mass., a Corporation of New Jersey. Filed Sept. 26, 1903. Serial No. 174,693. (No model.)



*Claim.*—1. In a stem winding and setting mechanism, in combination, winding mechanism; setting mechanism; a rotatable and endwise-movable arbor; a clutch on the arbor for engaging the wind-

ing and setting mechanisms; a lever operated by endwise movement of the arbor; a spring-pressed arm operated by said lever; a supplemental spring controlled by said spring-arm and in engagement with said clutch, and an abutment at one side of the supplemental spring to reinforce the latter when the clutch is moved in one direction and to leave it free when the clutch is moved in the other direction.

2. In a stem winding and setting mechanism, in combination, winding mechanism; setting mechanism; a rotatable and endwise-movable arbor; a clutch on the arbor for engaging the winding and setting mechanisms; a lever operated by endwise movement of the arbor; a spring-pressed arm operated by said lever, a supplemental spring controlled by said spring-arm and in engagement with said clutch, and an abutment at one side of the supplemental spring to reinforce the supplemental spring when the clutch engages the setting mechanism.

3. In a stem winding and setting mechanism, in combination, winding mechanism; setting mechanism; a rotatable and endwise-movable arbor; a clutch on the arbor for engaging the winding and setting mechanisms; a lever operated by endwise movement of the arbor; a spring-arm operated by said lever, said arm being provided at its free end with a supplemental spring in engagement with said clutch and with an abutment at one side of the supplemental spring to reinforce the supplemental spring when the clutch engages the setting mechanism.

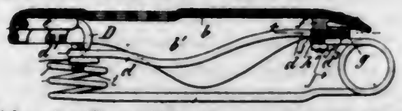
4. In a stem winding and setting mechanism, in combination, winding mechanism; setting mechanism; a rotatable and endwise-movable arbor; a clutch on the arbor for engaging the winding and setting mechanisms; a lever operated by endwise movement of the arbor; a spring-pressed arm operated by said lever to shift the clutch endwise on the arbor, and means to automatically lock this spring-arm when the clutch is in engagement with the hand-setting mechanism and to automatically free it when the lever is operated to shift the clutch out of engagement with the hand-setting mechanism.

5. In a stem winding and setting mechanism, in combination, winding mechanism; setting mechanism; a rotatable and endwise-movable arbor; a clutch on the arbor for engaging the winding and setting mechanisms; a hooked lever operated by endwise movement of the arbor; and a spring-pressed arm operated by said lever to shift the clutch endwise on the arbor, said arm being provided with a hook cooperating with the hook on the lever to hold the arm and clutch in position when the latter is in engagement with the setting mechanism.

6. In a stem winding and setting mechanism, in combination, winding mechanism; setting mechanism; a rotatable and endwise-movable arbor; a clutch on the arbor for engaging the winding and setting mechanisms; a hooked lever operated by endwise movement of the arbor; and a spring-arm operated by said lever, said arm fastened at one end to the frame of the mechanism and engaging the clutch at its free end, said free end being provided with an abutment for reinforcing that end when the arm is moved in one direction, and with a hook cooperating with the hooked lever to hold the arm and clutch in position when the latter is in engagement with the setting mechanism.

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**755,904. SADDLE. FREDERICK MEISIGER, New York, N. Y.** Filed Sept. 17, 1903. Serial No. 173,503. (No model.)



*Claim.*—A saddle provided with a grooved bearing having a threaded post, a stay-spring having a perforated cross-piece, a tension-screw for adjustably connecting said spring with the bearing, a bottom-spring having an eye that embraces the post, and a nut that connects the bottom spring to the post, substantially as specified.

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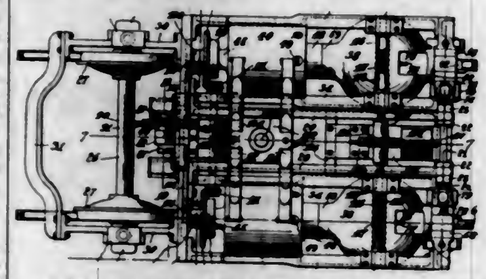
**755,905. ELECTRIC-TRACTION SYSTEM FOR RAILWAYS. AUGUST MEUSCHEL, Montreal, Canada.** Filed May 4, 1903. Serial No. 155,455. (No model.)

*Claim.*—1. A vehicle mounted on spheres, and means carried by said vehicle for rotating said spheres.

2. The combination of a vehicle, a spherical driver mounted on said vehicle, and means for rotating said driver.

3. The combination of a vehicle-frame, a spherical driver, means for rotating said spherical driver about an axis at right angles to its longitudinal motion and also parallel to its longitudinal motion.

4. In combination, a vehicle-frame, a spherical driver, and means for rotating said driver about two independent axes.



5. In combination, a vehicle-frame, a spherical segment mounted to rotate about a longitudinal axis thereon, and a complementary segment mounted to rotate about a transverse axis on said first segment.

6. In combination, a frame, one or more wheels supporting one end of said frame, one or more spherical drivers supporting the opposite end of said frame, and means for rotating said drivers.

7. In combination, a frame, one or more wheels supporting one end of said frame, one or more spherical drivers supporting the opposite end of said frame, and means for rotating said drivers about two independent axes.

8. In combination, a frame, one or more spherical drivers supporting part of the weight of said frame, means for adjusting said driver or drivers about a longitudinal axis, and means for rotating said driver or drivers about an angularly-variable transverse axis.

9. In combination, a frame, a pair of wheels supporting one end thereof, a pair of spherical drivers supporting the other end, and means for rotating said spherical drivers about two independent axes.

10. In combination, a frame, a pair of spherical drivers mounted thereon and supporting a part of the weight thereof, and flanged wheels also mounted on said frame and adapted to roll on a railway-track.

11. In combination, a frame, one or more spherical drivers mounted on said frame, means for rotating said spherical drivers about two independent axes, wheels also mounted on said frame and adapted to support the weight thereof, means for depressing said spherical drivers to take the weight of said frame, and means for raising said spherical drivers to remove the weight therefrom.

12. In combination, a frame, flanged wheels supporting the same and adapted to guide it on a railway-track, a spherical driver mounted on said frame between a pair of said wheels on the same rail, means for depressing said driver to take the weight of said frame, and means for raising said driver clear of the track.

13. In combination, a frame, flanged wheels supporting the same and adapted to guide it on a railway-track, a spherical driver mounted on said frame between a pair of said wheels on the same rail, means for depressing said driver to take the weight of said frame, means for raising said driver clear of the track, and means carried by said frame for rotating said driver about two independent axes.

14. In combination, a frame, a spherical segment journaled on a longitudinal axis thereon, means for rotating said segment about its axis, a complementary driving-segment mounted to turn about its axis of symmetry on said first segment, and means for independently rotating said driving-segment in all positions of said first segment.

15. In combination, a frame, a spherical segment having trunnions journaled longitudinally in said frame, one of said trunnions being tubular, a driving-shaft mounted to turn independently in said tubular trunnion, a complementary driving-segment mounted to turn about a transverse axis on said first segment, gearing within said segments connecting the end of said driving-shaft with said driving-segment to turn the latter, and means for angularly adjusting said first segment.

16. In combination, a vehicle-frame, a motor mounted thereon arranged to run at a constant speed, a driver connected with said motor and rotated thereby, and means for varying the effective circumference of said driver.

17. In combination, a vehicle-frame, a pair of independently-rotatable drivers on opposite sides thereof, independent motors actuating the respective drivers, and means for interconnecting the respective drivers.

18. In combination, a vehicle-frame, a spherical driver, means for rotating said driver about a longitudinal axis, means for rotating said driver about a transverse axis, and means for rotating said driver about an eccentric axis with respect to said frame, whereby the same is raised and lowered with respect to said frame.



19. In combination, a vehicle-frame, a spherical segment mounted thereon to turn about a longitudinal axis passing through its center, a spherical driving-segment journaled on said first segment to rotate on a transverse central axis, means independent of said driver for supporting said frame, and means for raising and lowering said driver with respect to said frame, whereby it is raised from and depressed upon the roadway.

20. In combination, a vehicle-frame, a spherical segment mounted thereon to turn about a longitudinal axis passing through its center, a spherical driving-segment journaled on said first segment to rotate on a transverse central axis, means independently of said driver for supporting said frame, and means for rotating said driver about a transverse eccentric axis with respect to said frame, whereby the same is raised from and depressed upon the roadway.

21. In combination, a frame, a spherical driver, and means for rotating said driver.

22. In combination, a frame, a spherical driver, a motor adapted to rotate said driver about a transverse axis, and means for angularly adjusting said driver about a longitudinal axis.

23. In combination, a frame, a spherical driver, a motor adapted to rotate said driver about a transverse axis, means for angularly adjusting said driver about a longitudinal axis, and means for raising said driver from and depressing it upon the roadway.

24. In combination, a frame, a spherical driver, means for rotating said driver about an axis transverse to the direction of motion, and means for adjusting the axis of rotation of said driver in a transverse direction, whereby the effective circumference of said driver is varied.

25. In combination, a frame, wheels adapted to support said frame, vertically-adjustable drivers mounted on said frame, means for rotating said drivers, and means for adjusting said drivers vertically to raise them from and depress them upon the roadway.

26. In combination, a frame, wheels on which said frame is adapted to run, a supplemental frame journaled on said main frame, one or more drivers carried by said supplemental frame, means for rotating said drivers, and means for oscillating said supplemental frame, whereby to raise and depress said drivers.

27. In combination, a frame, wheels adapted to support said frame, vertically-adjustable spherical drivers mounted on said frame, means for rotating said spherical drivers, and means for adjusting said spherical drivers vertically to raise them from and depress them upon the roadway.

28. In combination, a frame, wheels on which said frame is adapted to run, a supplemental frame journaled on said main frame, one or more spherical drivers carried by said supplemental frame, means for rotating said spherical drivers, and means for oscillating said supplemental frame, whereby to raise and depress said spherical drivers.

29. In combination, a frame, wheels on which said frame runs, a supplemental frame journaled on said main frame, a pair of drivers carried thereby, and means for oscillating said supplemental frame.

30. In combination, a main frame, wheels on which the same is adapted to run, a supplemental frame journaled at one end of said main frame, means for raising and depressing the opposite end of said supplemental frame with respect to said main frame, and one or more drivers mounted on said supplemental frame.

31. In combination, a main frame, wheels on which the same is adapted to run, a supplemental frame journaled at one end of said main frame, means for raising and depressing the opposite end of said supplemental frame with respect to said main frame, and a pair of drivers journaled on opposite sides of said supplemental frame.

32. In combination, a main frame, wheels on which the same is adapted to run, a supplemental frame journaled at one end of said main frame, means for raising and depressing the opposite end of said supplemental frame with respect to said main frame, a pair of drivers journaled on opposite sides of said supplemental frame, and a motor mounted on said supplemental frame adapted to actuate said drivers.

33. In combination, a main frame, wheels on which the same is adapted to run, a supplemental frame journaled at one end of said main frame, means for raising and depressing the opposite end of said supplemental frame with respect to said main frame, a pair of drivers journaled on opposite sides of said supplemental frame, and a pair of independent motors mounted at opposite sides of the supplemental frame and actuating the respective drivers.

34. In combination, a main frame, wheels on which the same is adapted to run, a supplemental frame journaled at one end of said main frame, means for raising and depressing the opposite end of said supplemental frame with respect to said main frame, a pair of drivers journaled on opposite sides of said supplemental frame, a pair of independent motors mounted at opposite sides of the supplemental frame and actuating the respective drivers, and clutch connections between the shafts of the respective motors.

35. In combination, a main frame, mounted to run on wheels, a supplemental frame journaled on said main frame at one end, drivers carried by said supplemental frame, a shaft carrying an eccentric mounted at the opposite end of said main frame, means for rotating said shaft, and an eccentric-link pivoted on the free end of said supplemental frame and embracing said eccentric.

36. In combination, a main frame mounted to run on wheels, a supplemental frame journaled on said main frame at one end, drivers carried by said supplemental frame, a shaft carrying an eccentric mounted at the opposite end of said main frame, means for rotating said shaft, an eccentric-link pivoted on the free end of said supplemental frame and embracing said eccentric, journal-springs interposed between said main frame and the wheels thereof at the same end of said truck, and brake-shoes carried by the free end of said supplemental frame.

37. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, and means for disconnectibly interconnecting the two motor-shafts.

38. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, a transverse shaft, and disconnectible clutches connecting said transverse shaft with the respective motor-shafts.

39. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, a transverse shaft, a starting-motor mounted on said transverse shaft, and means for disengageably connecting either motor-shaft with said transverse shaft.

40. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, a transverse shaft, a pair of clutch halves mounted on the respective motor-shafts, a pair of loose clutch halves revolving on said motor-shafts and geared to the opposite ends of said transverse shaft, and means for pressing either loose clutch half into engagement with the other half.

41. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, a transverse shaft, a pair of clutch halves mounted on the respective motor-shafts, a pair of loose clutch halves revolving on said motor-shafts and geared to the opposite ends of said transverse shaft, means for pressing either loose clutch half into engagement with the other half, and a starting-motor actuating said transverse shaft.

42. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, a transverse shaft, a pair of clutch halves mounted on the respective motor-shafts, a pair of loose clutch halves revolving on said motor-shafts and geared to the opposite ends of said transverse shaft, a pair of levers fulcrumed on the frame and pressing at one end against said loose clutch halves, whereby to cause them to engage with the fixed clutch halves, and solenoids connected with the opposite ends of said levers.

43. In combination, a frame, a pair of drivers on opposite sides thereof, a pair of motors in longitudinal alinement with the respective drivers and operatively connected with them, said motors having longitudinal shafts, a transverse shaft, a pair of clutch halves mounted on the respective motor-shafts, a pair of loose clutch halves revolving on said motor-shafts and geared to the opposite ends of said transverse shaft, a pair of levers fulcrumed on the frame and pressing at one end against said loose clutch halves, whereby to cause them to engage with the fixed clutch halves, solenoids connected with the opposite ends of said levers, and a starting-motor operatively connected with said transverse shaft.

44. In combination, a frame, a spherical driver adapted to be adjusted about a longitudinal axis and to rotate about a transverse axis, means for adjusting said driver, and a fixed-speed alternating-current motor operatively connected to rotate said driver.

45. In combination, a frame, a pair of spherical drivers mounted

thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, and a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers.

46. In combination, a frame, a pair of spherical drivers mounted thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers, and means for temporarily interconnecting the shafts of said motors.

47. In combination, a frame, a pair of spherical drivers mounted thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers, a transverse shaft, and means for temporarily connecting said shaft with either of the respective motor-shafts.

48. In combination, a frame, a pair of spherical drivers mounted thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers, a transverse shaft, fixed clutch halves mounted on the respective motor-shafts, loose clutch halves revolving thereon and geared to said transverse shaft, and means for engaging either loose clutch half with its corresponding fixed clutch half.

49. In combination, a frame, a pair of spherical drivers mounted thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers, a transverse shaft, fixed clutch halves mounted on the respective motor-shafts, loose clutch halves revolving thereon and geared to said transverse shaft, a pair of levers journaled on the frame and pressing at one end against said loose clutch halves to cause them to engage with said fixed clutch halves, and solenoids connected with the opposite ends of the respective levers to actuate the same.

50. In combination, a frame, a pair of spherical drivers mounted thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers, a transverse shaft, fixed clutch halves mounted on the respective motor-shafts, loose clutch halves revolving thereon and geared to said transverse shaft, a pair of levers journaled on the frame and pressing at one end against said loose clutch halves to cause them to engage with said fixed clutch halves, solenoids connected with the opposite ends of the respective levers to actuate the same, and a self-starting motor operatively connected with said transverse shaft.

51. In combination, a frame, a pair of spherical drivers mounted thereon, means for adjusting said drivers about their longitudinal axes, means for rotating said drivers about transverse axes, a pair of alternating-current motors adapted to rotate at a substantially fixed speed and operatively connected with said drivers, a transverse shaft, fixed clutch halves mounted on the respective motor-shafts, loose clutch halves revolving thereon and geared to said transverse shaft, a pair of levers journaled on the frame and pressing at one end against said loose clutch halves to cause them to engage with said fixed clutch halves, solenoids connected with the opposite ends of the respective levers to actuate the same, a self-starting motor operatively connected with said transverse shaft, and means for raising and depressing said drivers.

52. In combination, a frame, a spherical driver comprising an upper segment mounted to turn about its longitudinal diametrical axis, a lower driving-segment mounted to turn about a transverse axis on said upper segment, worm-teeth formed on the face of said upper segment, a transverse worm-shaft, and means for rotating said worm-shaft to adjust said driver angularly.

53. In combination, a frame, a spherical segment mounted to rotate on trunnions about a longitudinal axis passing through its center, an axle centrally mounted on said segment transverse to its longitudinal axis, a complementary driving-segment rotatively mounted on said axle, worm-teeth formed on said upper segment, a transverse worm-shaft carrying a worm engaging with said teeth, and means for rotating said worm-shaft in either direction.

54. In combination, a frame, a pair of spherical segments mounted to rotate on trunnions about their longitudinal axes, transverse axle-pins centrally mounted on the respective segments, a pair of complementary segments rotatively mounted on the respective axle-pins, gear-teeth formed on the surface of said first-named segments, a driving-shaft, and means for rotating it in either direction, and gearing connecting said shaft with the gear-teeth on said drivers, and adapted to simultaneously rotate them in opposite directions.

55. In combination, a frame, a pair of upper spherical segments having trunnions journaled on said frame, whereby they may rotate on longitudinal diametrical axes, transverse axle-pins centrally mounted on said upper segments, a pair of complementary spherical driving-segments journaled on the respective axle-pins, means for rotating said driving-segments, worm-teeth formed in the periphery of said upper segments, a transverse worm-shaft having oppositely-twisted worms thereon engaging with the worm-teeth on the respective segments, and means for rotating said worm-shaft in either direction.

56. In combination, a main frame, a supplemental frame journaled at one end on said main frame, a pair of independent drivers mounted on opposite sides of said supplemental frame, a pair of motors actuating the respective drivers and also mounted on the supplemental frame, a starting-motor mounted on said supplemental frame between the other motors and detachably connected with each motor-shaft, and means for oscillating said supplemental frame about its pivot on the main frame.

57. In combination, a main frame resting on wheels at one end thereof, a supplemental frame pivotally connected with the opposite end of said main frame and on which the latter rests, a pair of drivers mounted on said supplemental frame, a pair of wheels journaled on said supplemental frame and adapted to take the weight of the latter when the drivers are raised, motors mounted on said oscillating frame and adapted to actuate said drivers, and means for oscillating said supplemental frame about its pivot to raise and lower said drivers.

58. In combination, a main frame, a pair of flanged wheels journaled at one end thereof to support the same, a supplemental frame pivotally connected with said main frame and on which the latter rests, a pair of spherical drivers mounted on said supplemental frame within the pivot thereof, a pair of flanged guide-wheels mounted on said supplemental frame outside of said drivers and adapted to receive the weight when said drivers are raised, a pair of motors mounted on said supplemental frame and actuating the respective spherical drivers, a starting-motor mounted on said supplemental frame and detachably connected with the shafts of the respective driving-motors, a speed-regulating motor mounted on said supplemental frame, gearing connecting said speed-regulating motor with the respective drivers to rotate them about their longitudinal axes, and raising and lowering means for said supplemental frame connecting it at its free end with said main frame.

59. In combination, a main frame, flanged wheels journaled at one end thereof, a supplemental frame pivotally connected with the opposite end and supporting the weight thereof, a pair of spherical drivers trunnioned on their longitudinal axes on said supplemental frame and within the pivot thereof, a pair of flanged guide-wheels outside said spherical drivers, longitudinal driving-shafts passing concentrically through a trunnion of each of the respective drivers and adapted to actuate the same, motors mounted on said supplemental frame and on said driving-shafts, a transverse shaft mounted on said supplemental frame and detachably connected with the respective driving-shafts, a starting-motor mounted on said transverse shaft, a transverse shaft geared to the respective drivers to adjust them about their longitudinal axes, a speed-regulating motor adapted to turn said transverse shaft in either direction, a link connected with the free end of said supplemental frame, and means mounted on said main frame for raising and lowering said link.

60. In combination, a main frame comprising a pair of central longitudinal beams, a traverse-beam to which they are secured at one end, bracket-arms secured to the opposite side of said traverse-beams, wheels journaled on said bracket-arms, and a pivot-pin connecting the opposite ends of said longitudinal beams, in conjunction with a supplemental frame comprising two pairs of longitudinal beams at opposite sides of said first-named longitudinal beams respectively, and two traverse-beams connecting all four longitudinal beams at opposite ends; journal-boxes mounted on said supplemental frame, on which said pivot-pin rests, a motor-case mounted between each pair of longitudinal beams and on which the latter rest, a pair of longitudinal motor-shafts, motors within said cases actuating said shafts, and a driver journaled between each pair of longitudinal beams and geared to the respective shafts and supporting said motor-cases.

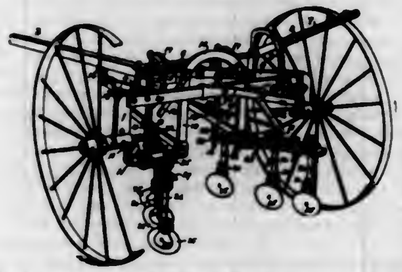
61. In combination, a main shaft comprising a pair of centrally-disposed longitudinal beams, a pivot-pin connecting them at one end, a traverse-beam to which their opposite ends are secured, a pair of longitudinal brackets secured to the opposite side of said traverse-beam, and a pair of flanged gear-wheels resiliently journaled on said brackets, in conjunction with a supplemental frame comprising two pairs of longitudinal beams below and on opposite sides of said first-named longitudinal beams, a traverse connecting them at one end and having journal-boxes in which said pivot-pin rests, and a traverse connecting them at their opposite ends; an eccentric-shaft mounted transversely on said first-named traverse, an eccentric-sheave carried by said shaft, an eccentric-link engaging said sheave and pivotally mounted on the traverse of the supplemental frame at the free end thereof, a pair of motor-cases fixed between the longitudinal beams at each side of the supplemental frame, each motor-case having a bearing-plate, a pair of spherical segments having diametrically-placed trunnions one of which is journaled in the rear traverse of the supplemental frame and the other of which is tubular and journaled in said bearing-plate, longitudinal driving-shafts journaled at one end in said motor-cases and at the other end in said tubular trunnions and passing within said spherical segments, bevel-pinions mounted on said driving-shafts within said segments, motors mounted in said cases and actuating said driving-shafts, a pair of complementary spherical driving-segments mounted to rotate on the respective first-named segments about a central transverse axis, a pair of bevel-gears carried by the respective driving-segments and gearing with said bevel-pinions, flanged guide-wheels mounted outside of the drivers and adapted to receive the weight when said drivers are raised, and a bolster-block resiliently mounted on said first-named longitudinal beams and adapted to support a car-body.

62. In combination, a vehicle-frame, a motor mounted thereon and arranged to run at a constant speed, a driver connected with said motor and rotated thereby, and means for continuously varying the effective circumference of said driver.

63. In combination, a vehicle-frame, a motor mounted thereon and arranged to run at a constant speed, a driver connected with said motor and rotated thereby, and means for continuously varying the effective circumference of said driver said means being limited to a fixed maximum rate of movement.



## 755,906. CULTIVATOR. ELI MILLER, Canton, Ohio. Filed Apr. 1, 1903. Serial No. 150,545. (No model.)



*Claim.*—1. The combination of a cultivator-carriage, a shovel-frame pivotally attached at its forward end to the carriage in the middle line by a universal joint, and spring-supports on each side suspending the frame from the carriage, the springs acting to resist the elevation and depression respectively of the frame.

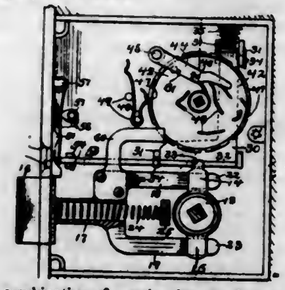
2. The combination of a cultivator-carriage, a shovel-frame pivotally attached at its forward end to the carriage in the middle line by a universal joint, and spring-supports on each side suspending the frame from the carriage, the springs acting to resist the depression of the frame.

3. In a cultivator, a bracket having a vertically-curved concave face, a similarly-curved shovel attached on the curved face, and an adjustable brace on the bracket fitting against the upper edge of the shovel.

4. In a cultivator, a bracket having a horizontally-straight and vertically-curved concave face, and a similarly-shaped shovel formed in outline as a cylindric section, centrally attached thereon, the convex side of the shovel joining the concave face of the bracket.

## 755,907. LOCK. JAMES B. MILLER, Kent, Ohio. Filed Dec. 4, 1903. Serial No. 183,815. (No model.)

*Claim.*—1. The combination of a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and extending between the arms on the respective spindles and provided with lugs on its inner end, a tumbler having one end arranged to engage with the end of the arm carried by the outer spindle, a spring arranged between the other end of said tumbler and the wall of said casing so as to normally hold the said tumbler in engagement with said arm, a lever operatively connected with said tumbler, a combination-disk for operating said lever and means for rotating said combination-disk substantially as described and for the purpose set forth.



2. The combination of a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and provided with arms arranged to straddle said spindles and extending between the arms carried by the respective spindles, the arms on said bolt being provided with lugs which extend into the path of the arms carried by said spindles, a tumbler provided with a flange at one end arranged to engage with the arm on the outer spindle and a flange on its other end for forming a seat for a spring, a spring, a combination-disk and a lever arranged to be operated by said combination-disk so as to lift the said tumbler out of engagement with said arm on the outer spindle, all arranged substantially as described and for the purpose set forth.

3. A combination-lock comprising, a casing, a bolt, means for operating said bolt, a tumbler arranged to prevent the operation of said bolt, a lever for operating said tumbler, a combination-disk for operating said lever and an arm secured to said bolt and arranged to come in contact with said combination-disk so as to rotate the same for the purpose set forth.

4. A combination-lock comprising, a casing, a bolt, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, a combination-disk for operating said means, and an arm secured on said bolt and arranged to come in contact with said combination-disk and cause a rotation of said disk each time the bolt is operated, for the purpose set forth.

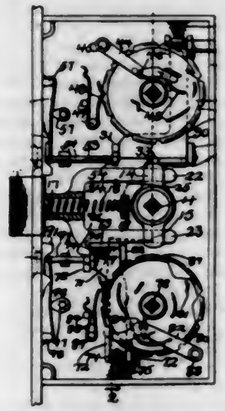
5. The combination of a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and provided with lugs arranged to be engaged by the arms on the respective spindles, a tumbler arranged to engage with the arm on the outer spindle, a lever arranged to operate said tumbler, a combination-disk arranged to operate said lever, a cam-faced block arranged in said casing and provided with a lug which projects through an opening in said casing, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and having its other end arranged to extend under the said tumbler when in its operative position and a spring arranged to hold the end of said bar against the cam-face of said block.

## 755,908. LOCK. JAMES B. MILLER, Kent, Ohio. Filed Dec. 4, 1903. Serial No. 183,816. (No model.)

*Claim.*—1. A combination-lock comprising a casing, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, a combination-disk arranged to operate said means, means for forming a dead-bolt, a second combination-disk arranged to operate said means for forming the dead-bolt and means for preventing the operation of said first-mentioned means so that the lock can be operated from either side without working the combination, substantially as described and for the purpose set forth.

2. A combination-lock comprising a casing, inner and outer bolt-operating spindles, arms mounted on the respective spindles, a bolt mounted in said casing and arranged to be engaged by the arms on the said spindles, a tumbler arranged above the said bolt for locking the arm on the outer spindle, a combination-disk, a lever arranged to be operated by said combination-disk so as to lift the said tumbler, a tumbler arranged below the said bolt and adapted to engage a lug formed on the said bolt, a combination-disk, and a lever arranged to be operated by said combination-disk so as to draw the said tumbler out of engagement with the said lug, substantially as described and for the purpose set forth.

3. A combination-lock comprising, a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and provided with lugs arranged to be engaged by the arms on the respective spindles, a tumbler arranged to engage with the arm on the outer spindle, a lever arranged to operate said tumbler, a combination-disk arranged to operate said lever, a cam-faced block arranged in said casing and provided with a lug arranged to project through an opening in said casing, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and having its other end arranged to extend under the said tumbler when in its operative position, a spring arranged to hold the end of said bar against the cam-face of said block, a projection formed on said bolt, a tumbler arranged to engage with said projection, a lever for withdrawing the said tumbler from engagement with said projection, a combination-disk for operating said lever, a cam-faced block arranged in said casing and provided with a lug arranged to project through an opening in said casing, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and having its other end arranged to come into engagement with the last-mentioned tumbler when in its operative position, and a spring arranged to hold the end of said bar against the cam-face of said block, substantially as described and for the purpose set forth.



4. A combination-lock comprising a casing, a bolt, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, a combination-disk arranged to operate said means, means for forming a dead-bolt, a second combination-disk arranged to operate said means for forming dead-bolt and means for holding both of the said first-mentioned means in their inoperative positions.

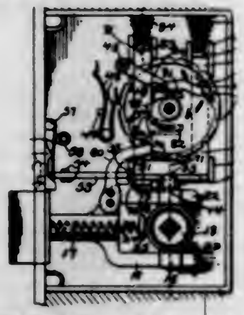
5. A combination-lock comprising a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and extending between the arms on the respective spindles and provided with lugs on its inner end, a tumbler arranged to receive the end of the arm carried by the outer spindle, said tumbler having a flange formed on its upper end, a coil-spring arranged between said flange and the top wall of said casing, a combination-disk provided with a series of ridges, a lever for operating said tumbler and provided with a pin arranged to come into contact with the ridges on said combination-disk, an opening formed in said casing, a cam-faced block having a lug projecting in said opening, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and its other end arranged to extend in under the said tumbler and a spring for holding the end of said bar in contact with the cam-face of said block, substantially as described and for the purpose set forth.

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**755,909. LOCK. JAMES B. MILLER, Kent, Ohio. Filed Dec. 4, 1903. Serial No. 183,817. (No model.)**

*Claim.*—1. A combination-lock comprising, a casing, a bolt, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, means for preventing the movement of said bolt, combination mechanism arranged to operate both said means from the outer side of the lock and means independent of said combination mechanism for operating both of said first-mentioned means from the inner side of the lock.

2. A combination-lock comprising, a casing, a bolt, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, means for preventing movement of said bolt, combination mechanism arranged to operate both said means from the outer side of the lock, means independent of said combination mechanism for operating both of said first-mentioned means and means for locking both said first-mentioned means so that they cannot be operated by the combination mechanism.



3. A combination-lock comprising, a casing, a bolt, inner and outer bolt-operating spindles, a tumbler arranged to prevent movement of said bolt, a tumbler arranged to prevent movement of said outer spindle, a combination-disk arranged to lift the last-mentioned tumbler and means for operatively connecting said tumblers so that the upward movement of the last-mentioned tumbler will lift the first-mentioned tumbler.

4. A combination-lock comprising, a casing, a bolt having a lug formed thereon, inner and outer bolt-operating spindles, a tumbler arranged to prevent the operation of said outer bolt-spindle, a tumbler arranged to engage with the lug on said bolt and provided with a flange arranged to engage with the first-mentioned tumbler, a lever arranged to lift said first-mentioned tumbler and combination mechanism for operating said lever.

5. A combination-lock comprising, a casing, a bolt, having a lug formed thereon, inner and outer bolt-operating spindles, a tumbler arranged to prevent the operating of said outer bolt-spindle, a tumbler arranged to engage with the lug on said bolt and provided with a flange arranged to engage with the first-mentioned tumbler, a lever arranged to lift said first-mentioned tumbler, combination mechanism for operating said lever and means for locking said first-mentioned tumbler in its inoperative position.

6. A combination-lock comprising, a casing, a bolt having a lug formed thereon, inner and outer bolt-spindles, arms arranged on the respective spindles for operating said bolt, a tumbler arranged to engage with an arm on said outer spindle, a tumbler arranged to engage with the lug on said bolt and provided with a flange arranged to engage with the first-mentioned tumbler, a lever arranged to lift the first-mentioned tumbler, a combination-disk arranged to operate said lever, means for operating said disk from the outer side of the lock, a cam arranged to lift said tumbler which engages with the lug on the said bolt and means for operating said cam from the inner side of the lock.

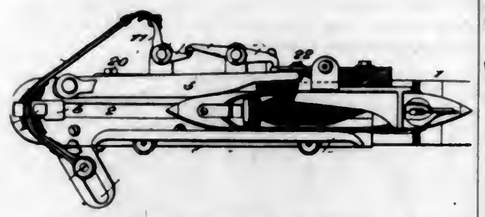
7. A combination-lock comprising, a casing, a bolt, inner and outer bolt-operating spindles, arms arranged on the respective spindles, a tumbler arranged to engage with the arm on the outer spindle, a tumbler arranged to engage with said bolt and provided with a flange arranged to engage with the first-mentioned tumbler, a lever arranged to lift the first-mentioned tumbler, a combination-disk arranged to operate said lever, means for operating said disk from the outer side of the lock, two arms formed on said tumbler which engages with said bolt, a cam arranged between said arms and means for operating said cam from the inner side of the lock, so as to bring the said cam in contact with the upper arm or lower arm, substantially as described and for the purpose set forth.

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**755,910. SHUTTLE-LOCK FOR LOOMS. FRANCIS A. MILLS, Lawrence, Mass., assignor of one-half to Grosvenor B. Emmons, Methuen, Mass. Filed Feb. 10, 1903. Serial No. 142,707. (No model.)**

*Claim.*—1. In a loom and in combination, a shuttle box and binder and a picker and picker-stick, means for causing a shuttle-binder to lock the shuttle consisting of an impact-strap and levers one having connection with and actuated by the impact-strap, another lever having a bearing upon the shuttle-binder, the impact-strap lever and the binder-lever having a connection to cause compound pressure upon the shuttle-binder and the binder upon the shuttle.





2. In a loom and in combination, a shuttle-box, a picker and picker-stick, a binder for the shuttle, and an impact strap or band having one end connected to the lay, a lever having a long and a short arm the former connected to the other end of the impact-strap, a second lever having a long arm connected to a short arm of the strap-lever and having a short-arm connection with the free end of the shuttle-binder, whereby to cause a compound pressure upon the shuttle.

3. In a loom and in combination, a shuttle-box a binder and an impact-strap, and a picker and picker-stick, lever members, one lever having connection with and actuated by the impact-strap, another lever having a bearing upon the free end of the shuttle-binder, the impact-strap lever and the binder-lever having a connection to cause compound pressure upon the shuttle-binder and means for adjusting the binder-lever in its bearing relation to the free end of the binder.

4. In a loom and in combination a shuttle-box, a binder and an impact-strap, and a picker and picker-stick, lever members, one lever having connection with and actuated by the impact-strap, another lever having a bearing upon the free end of the shuttle-binder, the impact-strap lever and the binder-lever having a connection to cause compound pressure upon the shuttle-binder, a plate on which said levers are fulcrumed pivoted at one end to the lay, the other end of said plate having a slot, and bolt passing through said slot for adjusting and fastening the slotted end of said plate to set the end of the binder-lever in proper relation thereto.

5. In a loom and in combination, a shuttle-box, a picker and picker-stick, and a binder, an impact strap or band having one end connected to the lay, a lever connected to the other end of the strap, a lever connected to the strap-connected lever and having connection with the free end of the shuttle-binder and means for compensating for the wear of the picker consisting of a bracket having a slotted support, a nutted post fastened in said slot, and to which the other end of the strap is fastened.

6. In a loom and in combination with the shuttle-binder and a picker and picker-stick, a strap to receive the impact of the picker, lever members pivoted on the lay one of said members connected to the strap, the other having no connection at its ends, but arranged to transmit the pressure caused by the impact upon the strap to the binder, and an adjusting device movable on the lay for connecting the other end of the strap, whereby to take up the wear caused in the picker by the shuttle-point.

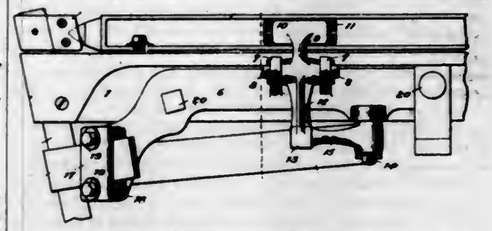
7. In a loom and in combination, a shuttle-binder, and a picker and picker-stick, a strap to receive the impact of the picker, a pair of levers one of which is the binder-pressing lever and the other connected to the strap and overhangs the free end of the binder-lever, and an adjusting device movable on the lay, connecting the other end of the strap, whereby to regulate the pressure of the binder-lever for locking the shuttle at the desired point.

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**755,911. SHUTTLE-LOCK FOR LOOMS. FRANCIS A. MILLS, Lawrence, Mass., assignor of one-half to Grosvenor B. Emmons, Methuen, Mass. Filed Sept. 26, 1903. Serial No. 174,805. (No model.)**

*Claim.*—1. In a loom and in combination, the lay, the shuttle-box thereon, the picker and the picker-stick, a strap to receive the impact of the shuttle upon the picker-stick arranged at the under side of the lay, crossing the path of the picker-stick and connected to the lay, and means connecting the other end of the strap at the under side of the lay constituting lever connections for imparting contacting pressure directly upon the shuttle to stop and to lock it at the end of its flight.

2. In a loom and in combination, the lay, the shuttle-box thereon, the picker and picker-stick, a strap to receive the impact of the shuttle upon the picker, arranged at the under side of the lay crossing the path of the picker-stick and connected to the lay, and lever members on the lay one of said members of bell-crank form pivoted at the under side of the lay, having one arm connected to the strap, the other lever member pivoted in vertical position on the lay having free connection with the other arm of the bell-crank lever.



3. In a loom and in combination, the lay, the shuttle-box thereon, the picker and picker-stick, a strap to receive the impact of the shuttle upon the picker, arranged at the under side of the lay passing around the picker-stick and having one end connected to the lay, and lever members connected to the other end of the strap and arranged to transmit the force of the impact on the strap to the shuttle to stop and to lock it.

4. In a loom and in combination, the lay, the shuttle-box thereon, the picker and picker-stick, a strap to receive the impact of the shuttle upon the picker arranged at the under side of the lay, lever members pivoted on the lay one of which is connected to the free end of the strap, the other end of the strap crossing the path of the picker-stick and connected to the lay, the other lever member terminating in a pressure-hand in an opening in the side of the shuttle-box and in line with its inner wall for engagement with the side of the shuttle to stop and to lock it.

5. In a loom a shuttle-box having a side opening, a lever vertically pivoted on the lay, its upper end formed with a pressure-hand normally maintained with its acting face in line with the inner wall of the box and adapted to be forced with an impact pressure against the incoming shuttle, the lower end of said lever hanging free beneath the lay, a bell-crank lever pivoted at the under side of the lay, one arm standing in line with the lay at right angles to and in contact with the hanging lever-arm, the other bell-crank-lever arm extending transversely of the lay, and an impact-strap fastened to this transverse arm and passing around the picker-stick is fastened to the lay, for operation as stated.

6. In a loom, the lay, a shuttle-box thereon, a picker and picker-stick, lever members on the lay, one standing vertical at the side, pivoted mediately of its length, its upper arm terminating in a pressure-hand within an opening in the side of the shuttle-box, the lower arm of said lever extending below the lay, a horizontal lever pivoted to the under side of the lay having an arm standing in line with the lay in free engagement with the hanging end of the vertical lever, the other arm of the said lever crossing the lay and a strap connected to this end of the lever, passing around the picker-stick and having its end fastened to the lay, whereby the force of the impact of the shuttle is caused to be transmitted to the pressure-hand to force it in direct contact with the side of the shuttle to lock it and prevent rebound.

7. In a loom and in combination with the lay, the picker-stick, the shuttle-box having an opening in its side wall, lever members consisting of a pair of coacting levers, one standing vertically and loosely pivoted to rock at the side of the lay, provided with a pressure-hand standing in the shuttle-box opening with its acting face normally in line with the inner wall of the box, the lower end of said lever terminating in a face-bearing below the lay, the second lever loosely pivoted to rock horizontally at the under side of the lay, having one arm terminating in a face-bearing in contact with the lower face-bearing of the vertical lever, and the other arm extending across the picker-stick bunter at the inner end of the lay-slot, the meeting ends of the levers and the strap-lever being longer than the shuttle-pressing end of the vertical lever, and a strap beneath the lay connecting the transverse lever-arm, passing around the picker-stick and fastened to the lay.

8. In a loom and in combination, a lay, a shuttle-box thereon, the picker-stick, a plate fastened to the lay, a lever pivoted to rock vertically on said plate, a bell-crank lever pivoted to rock horizontally on said plate beneath the lay, arms of the levers meeting in contact beneath the lay, a strap connected to an arm of the bell-crank lever and crossing the path of the picker-stick a clamp whereby the strap is fastened by a clamp to said plate, whereby the im-

pact of the shuttle upon the picker and the picker-stick upon the strap is transmitted to the vertical lever to drive its upper end against the shuttle to lock it.

9. In combination in a loom, the lay, the shuttle-box, the picker and picker-stick, a strap to receive the impact of the shuttle upon the picker, arranged at the under side of the lay and passing around the picker-stick, a clamp for connecting the strap to the lay consisting of a seat standing oblique on the lay, a plate across the end of the strap and a bolt passing through each end of the plate and engaging the seat, to bind the strap thereon, and means on the lay connected to the other end of the strap for transmitting the force of the impact thereon to stop and to lock the shuttle.

10. In a loom, the lay, the shuttle-box thereon, the picker and picker-stick, a strap to receive the impact of the shuttle upon the picker arranged at the under side of the lay, passing around the picker-stick and having one end connected to the lay, and means on the lay connected to the other end of the strap at the under side of the lay for transmitting the force of the impact thereon to stop and to lock the shuttle.

11. In a loom, the lay, the shuttle-box, the picker and the picker-stick, a strap connected to a lever device and passing around the picker-stick to receive the impact of the incoming shuttle upon the picker and picker-stick, means for adjusting and clamping the strap consisting of a seat-clamp standing obliquely from the lay, a plate crossing the end of the strap and a bolt passing through each end of the plate and engaging the seat-bracket to permit the adjustment and clamping of the strap to stop the shuttle at a desired position in the shuttle-box and for the purpose stated.

12. In a loom and in combination, the lay, the shuttle-box thereon, a picker and picker-stick, an impact-strap, an adjustable plate on the lay, an oblique seat on the plate, a clamp securing one end of the impact-strap upon the seat, lever members pivotally mounted in bearings on the plate and to one of which the other end of the impact-strap is attached whereby all the shuttle-locking parts are carried by said plate.

13. In a loom and in combination, the lay, the shuttle-box thereon, a picker and picker-stick, an impact-strap beneath the lay, a clamping device on the lay to fasten and permit the adjustment of the strap, a lever mounted horizontally beneath the lay having one arm connecting the other end of the strap, and means connecting another arm of said lever for transmitting the locking action of the impact-strap to lock the shuttle.

14. In combination, the lay, the shuttle-box thereon, a picker and picker-stick and a buuter to limit the inward throw of the latter, a lever pivoted on the under side of the lay crossing the buster and terminating at the opposite side of the picker-stick slot, an impact-strap beneath the lay connected to the end of the lever, extending along one side of the picker-stick slot, crossing it and adjustably connected to the lay, and means connected to said lever and actuated by it for checking and locking the shuttle.

15. In a loom and in combination, the lay, the shuttle-box thereon, the picker and picker-stick, a strap to receive the impact of the shuttle upon the picker and picker-stick arranged at the under side of the lay, and connected to the lay, means connecting the other end of the strap at the under side of the lay and constituting lever connections at one side of the box for imparting contacting pressure directly upon the shuttle to stop and lock it, a shuttle-binder at the other side of the box, and the protection-finger pressing the binder inward, for operation as described.

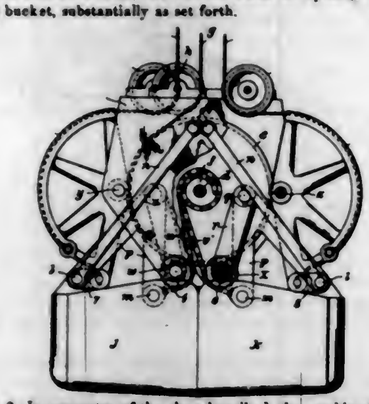
16. In a loom and in combination, the lay, the shuttle-box thereon, the picker and picker-stick, a shuttle, a spring-pressed binder and means for pressing the shuttle against the spring-pressed binder, whereby the shuttle is frictionally locked under the yielding function of the spring-pressed binder.

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**755,912. CLAM-SHELL BUCKET.** WILL K. MOORE, Cleveland, Ohio. Filed Oct. 7, 1903. Serial No. 176,071. (No model.)

*Claim.*—1. In apparatus of the class described, the combination with a bucket comprising two oppositely-disposed scoops, of a frame having power-transmission mechanism mounted therein, swinging arms depending from said frame and supporting the outer ends of said scoops, lever-arms rotatably supported at their lower ends near the bottom of said frame, suitable suppoiting-arms of said scoops hinged respectively to the upper ends of said lever-arms, and suitable means for opening and closing said bucket, substantially as set forth.

2. In apparatus of the class described, the combination with a bucket comprising two oppositely-disposed scoops, of a frame having power-transmission mechanism mounted therein, swinging arms depending from said frame and supporting the outer ends of said scoops, bifurcated lever-arms rotatably supported at their lower ends near the bottom of said frame, suitable supporting-arms of said scoops hinged respectively to the upper ends and between the branches of said bifurcated arms, and suitable means for opening and closing said bucket, substantially as set forth.



3. In apparatus of the class described, the combination with a bucket comprising a pair of scoops adapted to form a single receptacle, of a frame having power-transmimion mechanism mounted therein, swinging arms depending from said frame and supporting the outer ends of said scoops, lever-arms rotatably supported at their lower ends near the bottom of said frame, elbow-levers hinged respectively at their vertices to the upper ends of said lever-arms and having their branches secured to said scoops near the outer and inner ends of the latter respectively, and suitable means for opening and closing said bucket, substantially as set forth.

4. In apparatus of the class described, the combination with a bucket comprising a pair of scoops adapted to form a single receptacle, of a frame having power-transmimion mechanism mounted therein, swinging arms depending from said frame and supporting the outer ends of said scoops, a pair of transverse shafts secured in the lower end of said frame, a pair of hubs having double projecting arms and rotatably secured upon each of said shafts, suitable supporting-arms of said scoops hinged between the double arms of said hubs respectively and adapted to abut against the said hubs when said bucket is closed, and suitable means for opening and closing said bucket, substantially as set forth.

5. In apparatus of the class described, the combination with a bucket comprising a pair of oppositely-disposed scoops, and a frame provided with suitable swinging arms for suspending the outer ends of said scoops therefrom, of lever-arms journaled at their lower ends near the bottom of said frame, supporting-arms of said scoops hinged respectively to the upper ends of said lever-arms, a power-wheel mounted in said frame provided with means for rotating it, chain-wheels upon the hub of said power-wheel, chains secured at their upper ends to said chain-wheels adapted to wrap thereon and having their lower ends secured respectively to the upper and inner portions of said scoops, suitable guide-wheels for said chains, and means for opening said bucket, substantially as set forth.

6. In apparatus of the class described, the combination with a bucket comprising a pair of oppositely-disposed scoops, of a frame having a power-wheel mounted therein provided with suitable means for closing said bucket, swinging arms depending from said frame and supporting the outer ends of said scoops, lever-arms journaled at their lower ends near the bottom of said frame, supporting-arms of said scoops hinged respectively to the upper ends of said lever-arms, segmental wheels mounted one in each end of said frame and means for rotating them, and operative connections between the lower ends of said segmental wheels and the outer ends of the respective scoops, substantially as set forth.

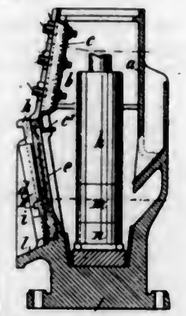
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**755,913. MORTAR-BOX FOR STAMP-MILLS.** DONALD B. MORISON, Hartlepool, England. Filed July 6, 1901. Serial No. 67,326. (No model.)

*Claim.*—1. A mortar-box having a two-part removable front, comprising a lower screen-section of usual design, and a stiffened sheet-metal section detachably supported by the box-frame inside the plane of the screen, each section being independently removable, substantially as set forth.

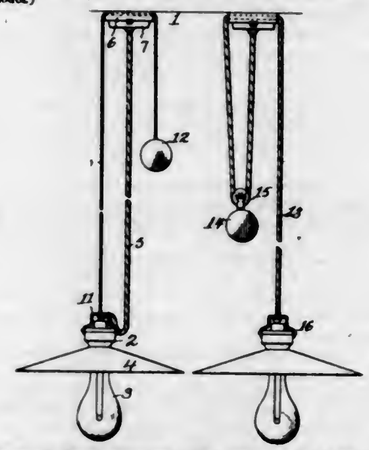


2. A mortar-box having a two-part removable front, comprising a lower screen-section of usual design and a stiffened sheet-metal section centrally dished, said sections independently removable, substantially as set forth.



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**755,914. MEANS FOR ADJUSTING LAMPS.** WALTER G. MORSE, Waterbury, Conn. Filed Nov. 7, 1903. Serial No. 180,277. (No model.)



*Claim.*—1. In combination with a rosette and a lamp, a flexible conductor intermediate said rosette and lamp, a base-piece appurtenant to the rosette and provided with an aperture, a flexible connection attached to said lamp and passing through the aperture, and a weight for holding said flexible connection and lamp in various positions of adjustment.

2. In combination with a rosette including a base, an opening formed in the substance of the base, a flexible conductor intermediate the rosette and lamp, a flexible connection attached to the lamp at one end and passing through the opening in the base, and a counterbalance operatively arranged upon the flexible connection.

3. In combination with a rosette having a base and an opening appurtenant thereto, a flexible connection passing through the opening and adapted to slide therein, a lamp-socket and a conductor intermediate the base and lamp-socket, a clip removably secured to said lamp-socket and provided with an aperture to receive the flexible connection, and means for securing said clip to the socket.

4. In combination with a rosette and a lamp, a flexible conductor intermediate said rosette and lamp, and forming a conductor, an adjusting-block operatively arranged with reference to the rosette and having an aperture arranged to exert a frictional grasp upon the flexible conductor, the flexible conductor passing through said aperture, and a counterbalance-weight for holding said flexible connection and lamp in various positions of adjustment.

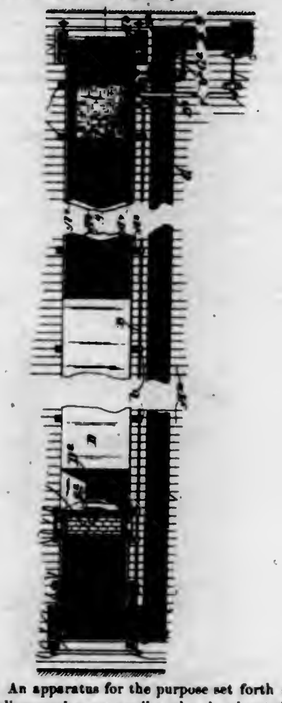
5. In combination with a rosette and lamp, a flexible conductor intermediate said rosette and lamp, an adjusting-block operatively arranged with reference to the rosette and provided with an aperture arranged to exert a frictional grasp upon a flexible connection, a flexible connection attached to the lamp and passing through said aperture, and a weight for holding said flexible connection and lamp in various positions of adjustment.

6. In combination with a rosette having connections for line-wires on either side thereof, a lamp, a conductor intermediate the rosette and lamp, an aperture formed appurtenant to the base of the rosette and arranged parallel with the line of the conductors for the rosette and between them, said aperture arranged to exert a frictional grasp upon the flexible conductor, the flexible conductor arranged to slide through the aperture, and a weight for holding said flexible conductor and lamp in various positions of adjustment.

7. In combination with a rosette having connections on opposite sides thereof for line-wires, a base-piece operatively arranged with reference to the rosette and having an aperture arranged to exert a frictional grasp upon a flexible connection, said aperture arranged in a line parallel with the line-wires and between them, a conductor intermediate the rosette and lamp, a flexible connection passing through the aperture of the base and connected with the lamp, and a weight for holding said flexible connection and lamp in various positions of adjustment.

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**755,915. APPARATUS FOR MAKING CHIP-SOAP OR THE LIKE.** WILLIAM M. MORSE, Chicago, Ill., assignor of two-thirds to Lewis R. Speare and Edward R. Speare, Boston, Mass. Filed Apr. 10, 1903. Serial No. 152,013. (No model.)



*Claim.*—1. An apparatus for the purpose set forth comprising an endless traveling carrier, a spreading-chamber located thereover, into which is delivered the plastic material, a spreading-slot in the wall of said chamber which extends transversely above and across the carrier and having unyielding upper and lower walls whereby the slot is of unvarying width, and through which slot the plastic material is passed to spread or form it in a thin layer upon the belt of a thickness equal to the desired thickness of the finished product, means for drying said layer on the carrier, and means for thereafter breaking the layer into parts.

2. In an apparatus for the purpose set forth, an endless traveling carrier, a spreading-chamber located thereover into which the plastic material is delivered upon said carrier, said chamber being provided in its wall with a spreading-slot which extends transversely above and across the carrier and the lower side of which is defined by said carrier, and means whereby the carrier beneath said slot is supported unyieldingly, thereby maintaining the slot of an unvarying width regardless of the consistency of the plastic material which is passed therethrough.

3. In an apparatus for the purpose set forth, an endless traveling carrier, a spreading-chamber located thereover into which the

plastic material is delivered upon said carrier, said chamber being provided in its wall with a spreading-slot which extends transversely across, and the lower wall of which is formed by, the carrier, and a support for the carrier beneath the spreading-slot.

4. In an apparatus for the purpose set forth, an endless traveling carrier, a spreading-chamber located thereover into which the plastic material is delivered upon said carrier, said chamber being provided in its wall with a spreading-slot which extends transversely across, and the lower wall of which is formed by, the carrier, a gage for determining the width of said spreading-slot, and means whereby the carrier beneath said slot is supported unyieldingly, thereby maintaining the slot of an unvarying width regardless of the consistency of the plastic material.

5. An apparatus for the purpose set forth comprising an endless traveling carrier, a spreading-chamber located thereover into which the plastic material is delivered upon the carrier, said chamber being provided in its wall with a spreading-slot which is located transversely across said carrier, and the lower wall of which is defined by said carrier, means whereby the carrier beneath said slot is supported unyieldingly, thereby maintaining the slot of an unvarying width, means for drying said layer on the carrier, and means for dividing the dried layer into parts.

6. An apparatus for the purpose set forth comprising a traveling carrier, means for spreading the plastic material on said carrier in a layer, means for drying said layer, and a rotary cutter located over said carrier for dividing the layer into parts, said cutter being provided with an annular series of teeth and the carrier with a series of recesses or sockets which coact with said teeth to rotate said cutter.

7. An apparatus for the purpose set forth comprising a traveling carrier, means for spreading the plastic material on the carrier in a layer, a chamber inclosing said carrier in advance of said spreading means, means for forcing air through said chamber for drying the layer on said carrier, and a rotary cutter located in advance of said chamber and provided with peripheral blades which divide the layer in a plurality of parts.

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**755,916. SAWING-MACHINE.** THEODORE C. MCCORMICK, Patterson, Mo. Filed Dec. 11, 1903. Serial No. 184,807. (No model.)

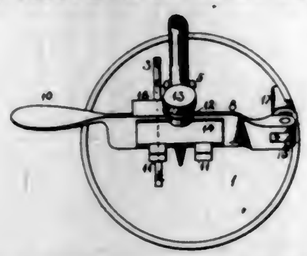


*Claim.*—1. In a sawing-machine, the combination with a frame having two spaced end battens, of a saw-guide pivoted to the frame and projecting between the end battens of the frame, a reciprocating saw-carrying stock movable in the guide and having a handle for operating it, a ratchet mechanism carried by the frame and an elastic connection interposed between the ratchet mechanism and the saw-guide.

2. In a sawing-machine, a base-frame having a pair of spaced end battens, a pivoted, transversely-swinging saw-guide carried by the frame and guided between the end battens, a reciprocating saw-stock movable in the saw-guide, a rotatable, winding-shaft on the frame, a ratchet carried by the shaft, a pawl for the ratchet, a spring connected to the shaft, and a cord connected to the spring and to the saw-guide.

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**755,917. PENCIL-SHARPENER.** EDWARD L. MCDIVITT, Belvidere, Ill. Filed Dec. 15, 1903. Serial No. 185,224. (No model.)



*Claim.*—1. A pencil-sharpener comprising a receptacle-base, an incline supported by the base, a pencil-holder, a pencil-support, and a knife having a swinging movement over the holder, and guided by the incline.

2. A pencil-sharpener comprising a receptacle-base, an incline supported by the base, a pencil-holder, an adjustable pencil-support, and a knife having a swinging movement over the holder and guided by the incline.

3. A pencil-sharpener comprising a receptacle-base, an incline supported by the base, a pencil-holder, an adjustable pencil-support, an arm having a swinging and pivotal movement, and a knife supported by the arm.

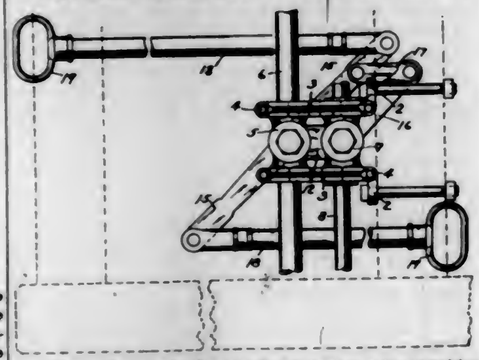
4. A pencil-sharpener comprising a receptacle-base, an incline supported by the base, a pencil-holder, an arm having a swinging movement over the holder and guided by the incline, and an adjustable knife carried by the arm.

5. A pencil-sharpener comprising a receptacle-base, an incline supported by the base, a pencil-holder, an arm having a swinging and pivotal movement, a knife carried by the arm, a shank having a pivotal connection with the arm and a screw-thread connection with the base.

6. A pencil-sharpener comprising a receptacle-base, an incline supported by the base, a pencil-holder, an arm having a pivotal connection with the base and guided by the incline, two projections extending from the lower edge of the arm, a knife supported by the projections and made movable in the lengthwise direction of the arm, and a screw for clamping the knife in engagement with the projections.

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**755,918. OPERATING DEVICE FOR TRAIN-PIPE COCKS.** NICHOLAS P. NIEDERLANDER, St. Louis, Mo., assignor to Westinghouse Automatic Air & Steam Coupler Company, East St. Louis, Ill., a Corporation of Illinois. Filed Aug. 4, 1903. Serial No. 168,192. (No model.)



*Claim.*—1. A device for operating train-pipe cocks, comprising a hanger suspended beneath the timbers of the car-frame, a rock-shaft supported by said hanger for operating the cock-key, a lever mounted on the lower end of the rock-shaft, and an operating-rod extending from said lever to the side of the car.



2. A device for operating train-pipe cocks, comprising a bracket secured to the car-frame and supporting the cock-casing, a hanger suspended from the bracket, a rock-shaft supported in the hanger and connected to the cock, a lever mounted on the rock-shaft, and means extending from the side of the car for operating said lever.

3. A device for operating angle-cocks, comprising a bracket secured to the car-frame, a clamp fastened to the bracket and holding the cock-casing, a hanger suspended from the bracket, a rock-shaft supported in the hanger and having a squared socket for engaging the cock-key, a lever mounted on the rock-shaft, and an operating-rod extending to the side of the car.

4. A device for operating train-pipe cocks, comprising a bracket secured to the car-frame and supporting the cock-casing, a hanger suspended from the bracket, a vertical rock-shaft supported in the hanger and connected to the cock-key, and means operated from the side of the car for actuating said rock-shaft.

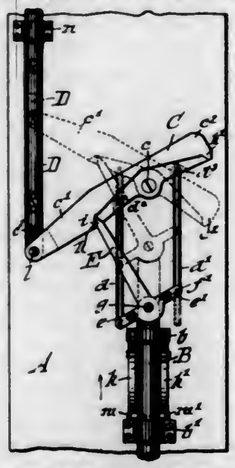
5. A device for operating train-pipe cocks, comprising a bracket secured to the car-frame, a clamping device carried by the bracket and engaging the cock-casing, a hanger suspended from the bracket, a vertical rock-shaft supported in the hanger and having a squared socket for engaging the cock-key, and means operated from the side of the car for actuating the rock-shaft.

6. A device for operating train-pipe cocks, comprising a bracket secured to the car-frame for supporting the cock-casing, a hanger having a horizontal bearing-plate and arms suspended from the bracket, a vertical rock-shaft supported in said bearing-plate and provided with a means for operating the cock-key, and mechanism extending from the lower end of the rock-shaft to the side of the car for actuating the rock-shaft.

7. The combination with a bracket secured to the car-frame and supporting a plurality of train-pipe cocks, of a hanger suspended from the bracket, a vertical rock-shaft for each cock-key supported in the hanger, a lever mounted on each shaft, a detachable link connecting said levers, and an operating-rod extending from one of the levers to the side of the car.

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**755,919. MECHANICAL MOVEMENT.** GLENN H. NILES, New York, N. Y. Filed Sept. 4, 1903. Serial No. 171,964. (No model.)



*Claim.*—1. A mechanical movement, consisting of a driving member, a lever, a shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with said lever, and means for shifting said connecting-rod alternately into engagement with opposite arms of said lever, substantially as set forth.

2. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with said lever, and means controlled by said lever for shifting said connecting-rod alternately into engagement with opposite arms of said lever, substantially as set forth.

3. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with the lever, shift-arms connected with said connecting-rod, and means operatively connecting the arms of said lever with said shift-arms, substantially as set forth.

4. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with the lever, shift-arms connected with said connecting-rod and extending at opposite sides of the same, and links slidably connecting the arms of said lever each with the corresponding shift-arm, substantially as set forth.

5. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with the lever, shift-arms connected with said connecting-rod and extending at opposite sides of the same, and links pivoted to the arms of said lever and slidably connected each with the corresponding shift-arm, substantially as set forth.

6. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with the lever, shift-arms connected with said connecting-rod and extending at opposite sides of the same, and links slidably connecting said shift-arms each with the corresponding lever-arm at points equidistant from the pivot of the connecting-rod and the pivot of the lever respectively, substantially as set forth.

7. A mechanical movement, consisting of a driving member, a lever, a shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with the lever, means for shifting said connecting-rod alternately into engagement with opposite arms of said lever, and means for limiting the shifting movement of said connecting-rod, substantially as set forth.

8. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, a driven member connected with the lever, means controlled by said lever for shifting said connecting-rod alternately into engagement with opposite arms of said lever, and stops projecting from said lever into the path of said connecting-rod, substantially as set forth.

9. A mechanical movement, consisting of a driving member, a lever, a shiftable connecting-rod pivoted to said driving member and located between the same and the lever, means for shifting said connecting-rod, a driven member connected with the lever, and means retarding said lever in excess of the operative resistance of said shifting means, substantially as set forth.

10. A mechanical movement, consisting of a driving member, a lever, a laterally-shiftable connecting-rod pivoted to said driving member and located between the same and the lever, means controlled by the lever for shifting said connecting-rod, a driven member connected with the lever, means retarding said lever in excess of the operative resistance of said shifting means, and means also in excess of said operative resistance connected with the driving member for returning the same and operating thereby said shifting means, substantially as set forth.

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**755,920. SHELL-HEAD-FEEDING APPARATUS.** FRANKLIN W. OLIN, Alton, Ill. Filed Feb. 24, 1903. Serial No. 144,647. (No model.)

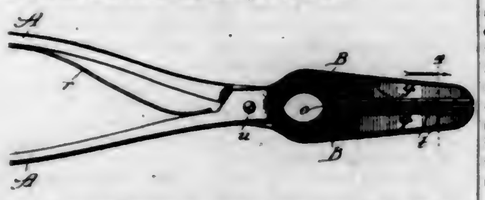


*Claim.*—In a shell-head-feeding apparatus, the combination of a trough having a longitudinal rib extending upwardly from the bottom thereof on which the shell-heads ride, and a cut-off having upper and lower blades working in slots formed in the top and bottom of the trough, and means for imparting movement to the arm; the upper blade being so disposed as to bear against the heads on the shell-heads as they pass thereunder, substantially as set forth.

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**755,921. SURGICAL INSTRUMENT FOR HEMORRHOIDS.** JOHN W. O'NEILL, Chicago, Ill. Filed July 21, 1903. Serial No. 166,443. (No model.)

*Claim.*—1. The combination in a surgical instrument of pivoted members comprising compression-handles and serrated clamping-jaws, said jaws being provided at intervals with slots in their upper faces at right angles to the planes of the clamping-surfaces for the introduction of sutures, substantially as described.




2. The combination in a surgical instrument of pivoted members comprising compression-handles and clamping-jaws, each of said jaws being provided at intervals with slots in its upper face at right angles to the plane of the clamping-surface for the introduction of sutures, and each having an offset above the clamping-surface, whereby when the jaws are in clamping engagement a median longitudinal channel is formed to prevent lateral displacement of the cauterizing-point, substantially as described.

3. The combination in a surgical instrument of pivoted members, each comprising a handle A and jaw B, a spring operating to hold the handles and jaws normally apart and a catch for locking the members in clamping position, said jaws B being provided at intervals with slots in their upper faces at right angles to the planes of the clamping-surfaces for the introduction of sutures, substantially as described.

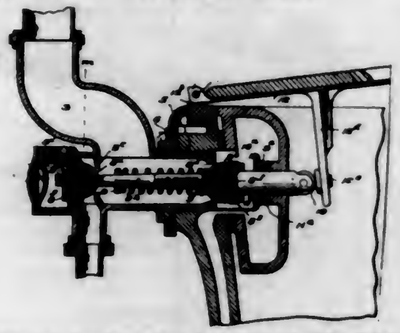
4. The combination in a surgical instrument of pivoted members, each comprising a handle A and jaw B, a spring operating to hold the handles and jaws normally apart, and a catch for locking the members in clamping position, said jaws being provided at intervals with slots in their upper faces at right angles to the planes of the clamping-surfaces for the introduction of sutures, and, when in clamping engagement with a median longitudinal channel along the same face, substantially as described.

5. The combination in a surgical instrument of pivoted members comprising compression-handles and clamping-jaws, each of said jaws having a flange *q* along its upper face adjacent to its clamping-face provided at intervals with transverse slots, whereby provision is made for the introduction of sutures, and whereby a median longitudinal channel is formed, when the parts are in clamping engagement, to prevent lateral displacement of the cauterizing-point, substantially as described.

6. The combination in a surgical instrument of pivoted members comprising compression-handles and clamping-jaws, each of said jaws having a flange *q* along its upper face adjacent to the serrations, provided at intervals with transverse slots and having its top beveled inward as shown at *n*, whereby provision is made for the introduction of sutures, and whereby a flaring median longitudinal channel is formed when the parts are in clamping engagement, to prevent lateral displacement of the cauterizing-point, substantially as described.

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**755,922. WATER-CLOSET. WILLIAM H. OSBORN, Louisville, Ky. Filed July 29, 1899. Serial No. 725,508. (No model.)**



*Claim.*—1. In a water-closet, having a bowl of the siphon-jet type, the combination with said bowl of a detachable distributing-chamber sealed to the inner wall of the bowl over the inlet-opening, and a communication between said distributing-chamber and the siphon-conduit, substantially as specified.

2. In a water-closet, having a bowl, of the siphon-jet type, the combination with said bowl of a hollow distributing-chamber secured on its inner rear wall and sealed thereto by an interposed gasket; an inlet-opening in the rear wall of said distributing-chamber, adapted to register with the inlet-opening of the bowl; an opening in the front wall of the said distributing-chamber, in alinement with the aforesaid inlet-opening and adapted to receive a packed valve-rod; a double-acting, automatic flushing-valve; ports in the bottom edge of said distributing-chamber, and ports in the lateral edges of the same, said ports being of such minitude as to project the water issuing therefrom around the edge of the bowl, and also to force a portion of the water from the supply-chamber into the siphon-conduit, substantially as specified.

3. In a water-closet, having a double-acting automatic flushing-valve, in said flushing-valve, the following combination: a cylindrical valve-shell, having one end flared to form a valve-seat and externally and suitably threaded to be screwed into the supply-opening of the bowl, the opposite end chambered so as to accommodate and form the body of a water-cushion chamber and externally threaded to receive a cap, and at the inner end of the water-cushion chamber an integral supply-port and valve-seat; a packed and threaded valve-rod disposed and operating axially in aforesaid valve-shell; a stationary valve on and adjacent to the packed end of said valve-rod, and an adjustable valve on the end of said valve-rod adjacent to the water-cushion chamber; and a spiral spring on said valve-rod operating between said valves, substantially as and for the purposes specified.

4. In a water-closet, having a bowl and a hinged seat, the combination of an annular rim covering the upper edge of the bowl, having an integral distributing-chamber, and hinge-lugs for the seat-hinge integral with said rim, substantially as specified.

5. In a water-closet, having a bowl and a hinged seat, the combination of a distributing-chamber with an integral flushing-rim, said distributing-chamber secured to the inner wall of the bowl over the supply-opening, a packed valve-rod protruding into the bowl from said distributing-chamber, a pendant or lever integral with the hinge-lugs of said hinged seat and so disposed that its lower end is in proximity with said valve-rod, and an adjustable wear-plate on the lower end of said pendant or lever so disposed as to press upon and work against an antifriction-roller in the exposed end of said valve-rod, substantially as specified.

6. The combination in a water-closet, of a bowl, a detachable flushing-rim and integral distributing-chamber, an automatic flushing-valve with stem protruding from said distributing-chamber, integral hinge-lugs on said flushing-rim, a hinged seat, and a pendant or lever integral with the hinge-lugs of said hinged seat and so disposed as to depend into the bowl into proximity with the said protruding valve-stem, substantially as specified.

7. In a water-closet, the following combination: a bowl with a threaded supply-nipple; a siphon-jet conduit in said bowl; a rim of curved cross-section covering the upper edge of the bowl; a distributing-chamber sealed to the inside of the rear wall of the bowl and communicating with the siphon-jet conduit, and with the supply-opening in the bowl; a double-acting combined flushing-valve and water-cushion; hinge-lugs integral with the above-mentioned rim; a seat hinge-plate having integral hinge-lugs and valve-operating pendant; and an adjustable and reversible wear-plate on the lower end of said operating-pendant, substantially as specified.

8. The combination, of a closet-bowl, a water-supply nipple applied thereto, a flushing-rim secured to the bowl and having a supply-chamber provided in its back wall with an inlet-opening in communication with said water-supply nipple and having integral extensions with discharge ports or openings in their extremities, and a downward extension with discharge ports or openings in its bottom, said supply-chamber being of extended lateral area and depth as relates to the inlet-opening, and a gasket interposed between said bowl and chamber, substantially as set forth.

9. The combination with a bowl, and a supply-nipple thereto, of a flushing-rim secured to the bowl and having a supply-chamber provided on its back wall with an inlet-opening, and a gasket interposed between the rear wall of the chamber to be clamped in place between said bowl and said rear wall of said supply-chamber, substantially as described.

10. The combination with a bowl, and a supply-nipple thereto, of a flushing-rim secured to the bowl and having a supply-chamber provided on its back wall with an inlet-opening, a gasket interposed between the rear wall of the chamber to be clamped in place between said bowl and said rear wall of said supply-chamber, and a gasket interposed between the upper surface of said bowl and said flushing-rim, substantially as specified.

11. The combination of the closet-bowl having the water-supply nipple and the conduit or passage 19 with the port 20 at the bottom of the bowl; the flushing-rim adapted to be secured to the bowl and having the supply-chamber 13 communicating with the supply-nipple of the bowl; the valve-shell 1, communicating with the said supply-nipple and having the valve-seats $8^x$, $8^4$, the supply pipe or opening 2, and the flushing-nozzle 3; the valve-stem 8 in said valve-shell and having the valves $8^c$, $8^b$, for the purpose set forth, and means to operate said valve-stem, substantially as described.

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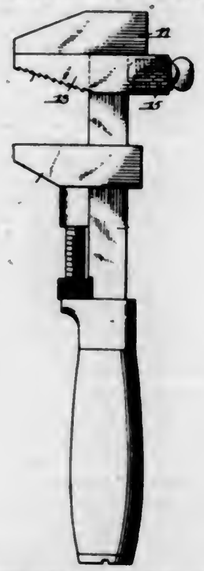
**755,923. LATCH. THOMAS O'SHAUGHNESSY, San Jose, Cal. Filed July 29, 1903. Serial No. 167,481. (No model.)**



*Claim.*—In a device of the class described, a casing having a base-plate attached to a door-frame, said casing having spaced side members and a downwardly-curved upper edge, a latch member pivotally mounted between the walls of the casing and comprising a heel member having a concentrically-curved upper edge, an outer arm and a trip-arm disposed between said heel and outer member and separated therefrom by recesses, and a spring secured to the base-plate, bearing against the concentrically-curved heel member and adapted to engage the recess between the latter and the trip-arm of the latch member, in combination with a pin secured to and extending from a door adapted to slidingly engage the upper edge of the casing and to engage between the trip and the outer member of the latch.

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**755,924. WRENCH ATTACHMENT. THOMAS O'SHAUGHNESSY, San Jose, Cal. Filed Dec. 14, 1903. Serial No. 185,163. (No model.)**



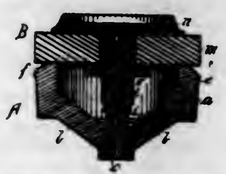

*Claim.*—1. A pipe-wrench attachment for a nut-wrench comprising a serrated jaw having spaced arms for embracing the stock of a wrench with their extremities correspondingly threaded, and a screw-threaded member for engaging both of said arms in the rear of the stock.

2. A pipe-wrench attachment for a nut-wrench, comprising a serrated jaw having spaced arms for embracing the stock of a wrench with their extremities correspondingly threaded and a screw-threaded member for engaging both of said arms and bearing against the rear of the stock.

3. A pipe-wrench attachment for a nut-wrench comprising a serrated jaw having spaced arms for embracing the stock of a wrench with their extremities correspondingly threaded internally, and a screw-threaded member for engaging both of said arms and operating between them and bearing against the rear of the stock.

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**755,925. VALVE AND VALVE-SEAT. SIMEON R. PALMER, Terre Haute, Ind. Filed Sept. 12, 1903. Serial No. 173,020. (No model.)**




*Claim.*—The combination, in a valve and valve-seat, of a shell *a* provided with a single annular bearing-surface *g*, pendent ribs *b* and stud *c*, said ribs and stud being below the shell *a*, and the grooved guide-stem *i* mounted upon the stud *c* and adapted to fit into the pendent valve-stem *t* with the rubber valve *m* adapted to seat itself upon the single annular bearing-surface *g*, the spring-plate *n* adapted to rest upon the rubber valve *m* and to support in its concaved upper face the spring *s*, the hollow valve-stem *f* pendent from the spring-plate *n* and threaded upon its outer side for the purpose of supporting the threaded nut or clamp *o*, the internally-threaded nut or clamp *o* adapted to screw upon the threads of the valve-stem *f* and to clamp the rubber valve *m* against the spring-plate *n*, and the spiral spring *s* adapted to bear upon the spring-plate *n* and hold the valve in normal position, all substantially as described and for the purpose set forth.

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**755,926. TABULATING ATTACHMENT FOR TYPE-WRITERS OR ANALOGOUS MACHINES. GEORGE L. PALMER, Washington, D. C. Filed Nov. 9, 1903. Serial No. 180,408. (No model.)**



*Claim.*—1. In a type-writing and analogous machine consisting of a frame, a movable carriage carrying a scale, a shifting rail and a digital scale attached to the shifting rail and in juxtaposition to the scale of the movable carriage.

2. In a type-writing and analogous machines consisting of a frame, a movable carriage carrying a scale, a shifting mechanism for said carriage, a digital scale attached to said shifting mechanism and in juxtaposition to the scale of the movable carriage.

3. An attachment for type-writing and analogous machines provided with a movable carriage carrying a scale and a shifting mechanism therefor, consisting of a digital scale or indicator having means for fastening it to the shifting mechanism and in juxtaposition to the scale.

4. In a type-writing and analogous machines consisting of a frame, a movable carriage carrying a scale, a shifting rail provided with an indicator-stand having a digital scale attached thereto, said digital scale being in juxtaposition to the scale of the movable carriage, substantially as set forth.

5. In a type-writing or analogous machines consisting of a frame, a movable carriage carrying a scale, a shifting rail provided with an indicator-stand and pointer, a digital scale attached to said stand and in juxtaposition to the scale of the movable carriage and having its decimal-point corresponding to the pointer of the indicator-stand, substantially as set forth.

6. In a type-writing or analogous machines consisting of a frame, a movable carriage carrying a scale, and clips supported on said scale, a shifting rail provided with an indicator-stand, and a digital scale attached to said indicator-stand and in juxtaposition to the scale of the movable carriage, substantially as set forth.

7. An attachment for type-writing and analogous machines having a movable carriage carrying a scale, and a shifting rail, consist-

ing of a digital scale having means for securing it to the shifting rail and in juxtaposition to the scale of the movable carriage.

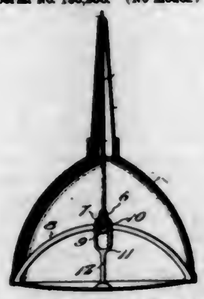
8. An attachment for type-writing and analogous machines provided with a movable carriage carrying a scale, a shifting rail and indicator-stand, consisting of a digital scale having means for detachably connecting it to the indicator-stand and in juxtaposition to the scale of the movable carriage.

9. An attachment for type-writing and analogous machines having a movable carriage carrying a scale, a shifting rail and indicator-stand, consisting of a digital scale having spring attachments for detachably connecting it to the end of the indicator-stand and in juxtaposition to the scale of the movable carriage, substantially as set forth.

10. In a type-writing and analogous machines consisting of a frame, a movable carriage carrying a scale, a shifting rail provided with an indicator-stand having fastening grooves at its end near the said carriage-scale, a digital scale having spring attachments detachably fitting in said grooves and holding said digital scale in juxtaposition to the scale of the movable carriage, substantially as set forth.

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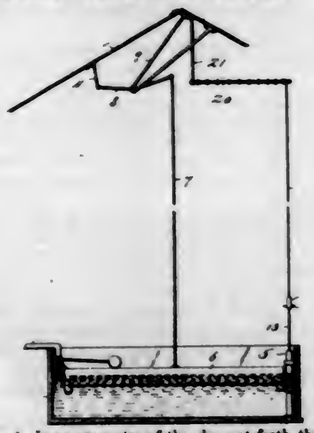
**755,927. OIL-CAN. FRANK B. PARKER, Robinson, Kans. Filed Nov. 7, 1903. Serial No. 180,250. (No model.)**



*Claim.*—The combination with an oil-can having a diaphragm at one end and an outlet-tube at the other end; of an arch-frame within the can and secured at its ends to opposite edges of the diaphragm, a revoluble pin journaled within the frame, a crank at one end thereof, a gear at the other end, a plunger pivoted to the crank and slidably mounted within, and normally projecting from, the outlet-tube, an arm secured to the center of the diaphragm, a frame integral with said arm and extending to opposite sides of the gear, and a rack integral with the frame and meshing with the gear.

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**755,928. HEAT-REGULATOR. JOHN PETERSON, Caldwell, N. Y. Filed Sept. 2, 1903. Serial No. 171,675. (No model.)**

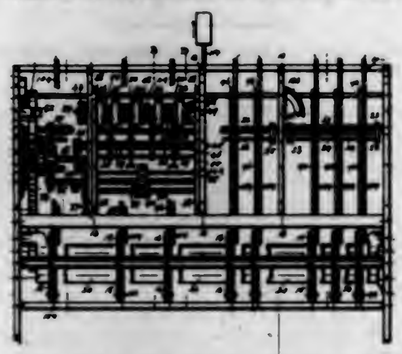


*Claim.*—1. In an apparatus of the class set forth, the combination with a heat-regulator, of a tank provided with liquid-supply and outlet means, a float in the tank directly connected to the heat-regulator, and thermostatic devices controlling the operation of the outlet means.

2. In an apparatus of the class set forth, the combination with a heat-regulator, of a tank having a valved liquid-supply provided with a float and an outlet-opening, a large float loosely disposed in the tank and directly connected to the heat-regulator, the rising-and-falling movements of the large float respectively opening the valve of the liquid-supply through the throat of the latter and permitting said float to close the valve, and a thermostatically-controlled valve cooperating with the said outlet-opening.

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**755,929. CASH-REGISTER. STEPHEN H. POCOCK, Hamilton, Canada. Filed Dec. 31, 1902. Serial No. 137,333. (No model.)**



*Claim.*—1. In a cash-register, the combination with a movable adding-frame and adding mechanism carried thereby, of means for moving said adding-frame, means for operating the moving means aforesaid to bring it to a predetermined position, and means thereupon acting to give the adding-frame-operating means a quick or snap action to move the adding-frame.

2. In a cash-register, the combination with a movable adding-frame and adding mechanism carried thereby, of means for moving the adding-frame, means for operating the moving means aforesaid upon the manipulation of a key to bring the moving means to a predetermined position, means for thereupon disengaging the operating means from the moving means, and independent mechanism thereupon acting to give the adding-frame-moving means a quick or snap action independently of the previous operation of said adding-frame-moving means.

3. In a cash-register, the combination with a movable adding-frame, of adding mechanism carried thereby, means for moving the adding-frame, a cam cooperating with the adding-frame-moving means and having depressions, means for turning said cam to operate the adding-frame-moving means to bring it to a predetermined position, means for thereupon disengaging the operating means from the cam, and a spring-actuated member thereupon passing into the depression in the cam and adapted to give the cam and the adding-frame-moving means a quick or snap action to cause the adding-frame-moving means to actuate the adding-frame.

4. In a cash-register, the combination with a movable adding-frame, and adding mechanism carried thereby, of a rotary cam having a depression, an adding-frame-operating rotary cam having a depression, a member on the adding-frame adapted at a predetermined time to pass into the depression, means to thereupon cause the movement of the adding-frame, an operating-cam having a depression, said cam coacting with the cam first named, key-operated means for operating the last-named cam, means for disengaging said key-operated means from the cam at a predetermined time, and a spring-actuated member adapted to enter the depression in the operating-cam and thereupon to impart to said cam and to the adding-frame-moving cam a quick or snap action to cause the member on the adding-frame to pass into the depression on the adding-frame-moving cam and thereupon cause a quick or snap action of the adding-frame.

5. In a cash-register, the combination with a movable adding-frame, of adding mechanism carried thereby, means for operating the adding mechanism from which said adding mechanism becomes disengaged on the shifting of the adding-frame, means operated by the action of the keys to operate the adding-mechanism-actuating means, means for moving the adding-frame to cause the disengagement aforesaid, means operated by the movement of the keys to set said adding-frame-moving means, independent means thereupon acting adapted to give a quick or snap movement to the adding-frame-actuating means to move the adding-frame and disengage the adding mechanism from the mechanism operating said adding mechanism.



6. In a cash-register, the combination with a movable adding-frame, of adding mechanism carried thereby, of key-operated means adapted to engage and actuate the adding mechanism, said adding mechanism being disengageable from said operating means on the movement of the frame, a pinion, a rack operated from the keys for turning said pinion, means operated from the pinion to move the adding-frame and which is set by the movement of the rack, means to thereupon throw the rack out of mesh with the pinion, and independent means adapted to thereupon impart a further and snap action to the pinion, to cause the adding-frame mechanism to quickly move the adding-frame.

7. In a cash-register, the combination with a movable adding-frame, of adding mechanism carried by the frame, means for operating adding mechanism which is actuated from the keys and from which said adding mechanism is disengaged on the movement of the frame, a rack actuated by the keys, a pinion turned by the rack, a cam turned by the pinion, means set by the pinion adapted to actuate the adding-frame, means for disengaging the rack from the pinion, and a spring-actuated member adapted to thereupon cooperate with the cam to impart to it a quick or snap action to cause a snap action of the adding-frame-operating means and consequent disengagement of the adding mechanism from the actuating mechanism.

8. In a cash-registering machine, a horizontal transfer-shaft, journaled in the machine, an adding-device frame loosely journaled on the shaft, transferring-levers with arms journaled in the frame and spring-impelled trips pivoted in the frame and connected with said levers to retain the said transferring-levers, substantially as set forth.

9. In a cash-registering machine, a slidable drawer, a bracket secured to the drawer, a spring-trip pivotally connected to the bracket, a lever pivotally connected to the machine, a drawer-bolt pivotally connected to the said lever and means to raise said bolt to release the drawer at the depression of a key, substantially as set forth.

10. In a cash-registering machine, a vertical slidable rod, with upper end extension, a lever pivotally connected to the machine and capable of being raised by said extension, a vertical indicating tablet-rod with tablet, a secondary lever fulcrumed to the machine and pivotally connected to said tablet-rod by means of a slot, a rod pivotally connecting said levers and a key for raising the tablet-rod, substantially as set forth.

11. In a cash-registering machine, bent levers with oblique flanges pivotally connected to the machine, a horizontal rest-bar connecting said levers, vertical sliding rods, pins on the sliding rods to rest on the rest-bars, a key-coupler journaled to the machine, spring-plungers on said coupler to engage the oblique flanges, and pull-springs connected to the lower part of said levers and to the machine and means to operate said rest-bar by the depression of a key, substantially as set forth.

12. In a cash-registering machine, a bell secured to the machine, a bell-hammer fulcrumed to the machine, a key-coupler, a trip fulcrumed to the coupler, a spring connected to the trip and to the coupler to allow engagement of the trip and the hammer and a spring connected to the hammer and to the machine, a key to trip the hammer, substantially as set forth.

13. In a cash-registering machine, a drawer, provided with a bracket secured to the rear part thereof, a lip pivotally connected to the bracket, a spring in the drawer to raise the forward end of the lip, a set-screw through the rear end of the bracket to engage with and adjust the lip, a slidable rod on the machine in proximity to the lip and means for raising said rod to release the drawer, substantially as set forth.

14. In a cash-register, the combination with a movable adding-frame, of adding mechanism carried thereby, transfer mechanism for effecting the transfers on the adding mechanism, key-operated means for operating the adding mechanism from which the adding mechanism is adapted to become disengaged, independent and independently-movable members one of which cooperates with the transfer mechanism and the other adapted to accomplish movement of the adding means, key-operated means adapted to engage and operate one of said members and thereafter adapted to engage and operate the other of said members, and means for causing the aforesaid action of the key-operated means.

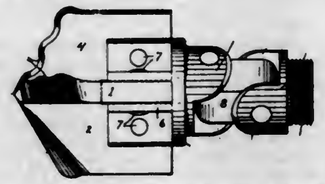
15. In a cash-register, the combination with a movable adding-frame, of adding mechanism carried thereby, means for moving the frame, actuating mechanism for the adding mechanism, from which the adding mechanism is disengaged on movement of the adding-frame, a double rack operated by the keys, independent and independently-operated pinions, one of said pinions coacting with the adding-frame-operating means, transfer mechanism for effecting the transfers on the adding mechanism, said transfer mechanism being operated by the other pinion, and means for causing the rack to first engage with one of the pinions and operate it and thereafter to disengage with said pinion and mesh with the other pinion and operate said other pinion.

16. In a cash-register, the combination with adding mechanism, of means for shifting said adding mechanism, transfer mechanism, means, independent of the means for shifting the adding mechanism, for operating the transfer mechanism, a key-operated bar adapted to operate the said independent means independently of each other at different times, means for guiding the bar, and independent spring-actuated plungers cooperating with the bar to cause the lateral shifting thereof from one side of the guide to the other side thereof.

17. In a cash-register, the combination with adding mechanism, of means for shifting said adding mechanism, a pinion for operating said shifting means, transfer mechanism, a pinion for operating said transfer mechanism, a key-operated double rack, a shiftable roller, a guide for accomplishing the lateral shifting of the rack to cause it to first engage one pinion and then to disengage from said pinion and engage the other pinion, and opposing spring-actuated plungers coacting with the rack to cause it to shift laterally.

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**755,930. CUTTER-HEAD FOR FLUE-CLEANERS. JOHN P. PRENTICE, Barberton, Ohio, assignor to the Stirling Company, Jersey City, N. J., a Corporation of New Jersey. Filed Feb. 24, 1902. Serial No. 95,311. (No model.)**



*Claim.*—1. A tube-cleaning tool having a body provided with a plurality of forwardly-projecting radially-disposed plates which meet or intersect at the longitudinal center of the tool, said plates having substantially parallel side edges and having their forward edges sloping backwardly from their points of intersection and formed as cutting edges which extend from their points of intersection to their side edges, the cutting edges of said plates being sinuous or waved on one side of the longitudinal axis and being straight on the opposite side of said axis, said body being provided at its rear end with a connection for a universal joint.

2. A tube-cleaning tool having a body provided with a plurality of forwardly-projecting radially-disposed blades or bits which meet or intersect at the longitudinal center of the tool, said blades having cutting edges on their forward ends extending from the longitudinal center of the tool and projecting beyond the side edges of said blades, said body being provided at its rear end with a connection for a universal joint.

3. A tube-cleaning tool comprising a body and two forwardly-projecting blades or bits secured to said body at their rear ends, each of said blades being provided with a slot from one end thereof for a portion of its length, said blades fitting each other in intersecting planes and being provided with cutting edges at their forward ends extending from their points of intersection to their side edges, said body being provided at its rear end with a connection for a universal joint.

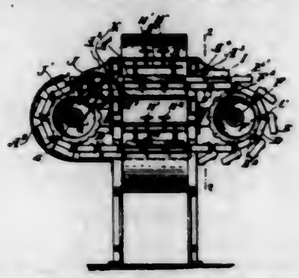
4. A tube-cleaning tool comprising a body having four radial slots, and two broad flat blades or bits each of which is provided with a slot from one end thereof for a portion of its length, said blades fitting each other in intersecting planes and seated at their rear ends in the radial slots of the body and having their forward ends formed as cutting edges extending from their points of intersection to their side edges, said body being provided at its rear end with a connection for a universal joint.

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**755,931. MACHINE FOR DISINTEGRATING FIBROUS PLANTS. MANUEL PRIETO, Mexico, Mexico. Filed Oct. 7, 1901. Serial No. 77,836. (No model.)**

*Claim.*—1. In a machine for treating fibrous plants, means for holding and carrying forward such plants or portions thereof, means

for beating and scraping one half, provisions for temporarily relaxing the grip of the holding and carrying means, and for automatically shifting the leaf endwise during such periods, provisions for again tightening the grip of the same holding and carrying means while keeping the leaf extended practically straight, and means, arranged on the opposite sides of the holding and carrying means, for beating and scraping the remainder of the leaf, all combined and arranged to serve substantially as herein specified.



2. In a machine for treating fibrous plants, two revolving drums with beaters arranged at different levels on opposite sides of the carrying-chain and a single endless carrying-chain D and clamps E pivoted to the latter arranged to hold and carry the leaves and present the ends respectively to each beater in combination with each other and with the lifter $A^7$, pulling-wheel J and stationary holder $A^8$ arranged adjacent to the chain adapted for seizing the untreated portion of the leaf and shifting it laterally in the chain substantially as herein specified.

3. In a machine for treating fibrous plants, two revolving drums with beaters arranged at different levels on opposite sides of the carrying-chain and a single endless carrying-chain D and clamps E pivoted to the latter arranged to hold and carry the leaves and present the ends respectively to each beater, in combination with each other and with the lifter $A^7$, pulling-wheel J and stationary holder $A^8$ arranged adjacent to the chain adapted for seizing the untreated portion of the leaf and shifting it laterally in the chain, and also with the mashing-wheel K mounted in such holder arranged to press the leaf on such wheel J, all substantially as herein specified.

4. In a machine for treating fibrous plants, two revolving drums with beaters arranged at different levels on opposite sides of the machine, and a single endless carrying-chain and clamps E pivoted thereto arranged to hold and carry the leaves and present the ends respectively to each, in combination with each other and with the lifter $A^7$, pulling-wheel J and stationary holder $A^8$, arranged adjacent to the chain, adapted for seizing the untreated portion of the leaf and shifting it laterally in the chain, all substantially as herein specified.

5. In a machine for treating fibrous plants, two revolving drums with beaters arranged at different levels on opposite sides of the machine, and a single carrying-chain and clamps E pivoted thereto arranged to hold and carry the leaves and present the ends respectively to each, in combination with each other and with the lifter $A^7$ pulling-wheel J, stationary holder $A^8$ arranged adjacent thereto adapted for seizing the untreated portion of the leaf and shifting it laterally in the chain, and with the mashing-wheel K mounted in such holder pressing the leaf on such wheel J, all arranged to serve substantially as herein specified.

6. The combination with two sets of beating or scraping means, and an endless traveling leaf-carrier in the form of a chain which travels around chain-wheels, of devices distinct from said chain for grasping the untreated ends of leaves and pulling them endwise, said devices including the wheel K, and the wheel J mounted on separate shafts parallel with and adjacent to the shaft of a chain-wheel and belted to the latter shaft and the holder $A^8$, the two sets of beating or scraping means being arranged to act one set on the leaves while traveling to the left and the other set on them while traveling to the right, substantially as described.

7. The combination with an endless traveling leaf-carrier moving in a vertical plane, of a drum or beater having its axis in the same horizontal plane as the upper member of said carrier, and a second drum having its axis in the same horizontal plane as the lower member and on the opposite side of said carrier, substantially as described.

8. The combination with an endless traveling leaf-carrier in the form of a chain moving in a vertical plane around chain-wheels, of a drum or beater having its axis in the same horizontal plane as the upper member of said carrier, devices distinct from said chain for grasping the untreated ends of leaves and pulling them endwise, said devices comprising a wheel mounted on a shaft parallel with and adjacent to the shaft of a chain-wheel and belted to the latter shaft, and a second drum arranged on the opposite side of said chain and having its axis in the same horizontal plane as the lower member of said carrier, substantially as described.

9. The combination with the endless traveling leaf-carrier composed of clamps, and two sets of beating or scraping means, of the platens for holding the several clamps closed while they are respectively passing each set of beating or scraping means, and a concave $A^5$ for keeping them from opening in their intermediate position, substantially as described.

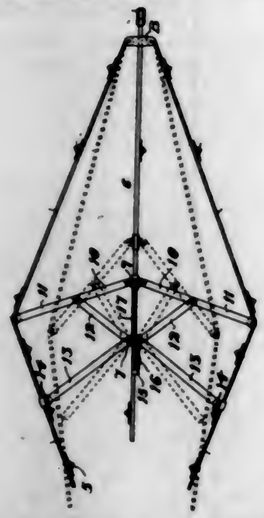
10. The combination of two drums or beaters, an endless leaf-carrier provided with clamps, two platens for holding the clamps closed while passing said drums or beaters, devices for moving the leaves endwise in their carrier intermediate said platens, and a concave $A^5$ also intermediate said platens, substantially as described.

11. The combination of two drums or beaters, an endless leaf-carrier provided with clamps, two platens for holding the clamps closed while passing said drums or beaters, devices for moving the leaves endwise in their carrier intermediate said platens, and pins for temporarily holding open said clamps by contact therewith before they pass the first drum or beater, substantially as described.

12. The combination of two drums or beaters, an endless leaf-carrier provided with clamps, two platens for holding the clamps closed while passing said drums or beaters, devices for moving the leaves endwise in their carrier intermediate said platens, a concave also intermediate said platens, and pins for temporarily holding open said clamps by contact therewith before they pass the first drum or beater, substantially as described.

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**755,932. CULTIVATOR. MARCELLUS PRUYN, Florin, Cal., assignor of one-half to R. M. Jones, Florin, Cal. Filed Dec. 18, 1903. Serial No. 185,647. (No model.)**



*Claim.*—1. The combination in a machine of the character described of tooth-carrying bars having the front ends contiguous to each other and divergent toward the rear, other tooth-carrying bars pivoted to the rear ends of the front bars, said second bars converging from the joint toward the rear, and means including a transverse link connection with the joint between the meeting ends of the front and rear bar whereby the meeting ends of the two sections may be separated or drawn toward each other.

2. The combination in a machine of the character described of tooth-carrying bars having the front ends pivoted contiguous to each other, and to a draft mechanism, said draft diverging toward the rear, other tooth-carrying bars hinged to the rear ends of the divergent bars and convergent from the hinge-joint to the rear transverse links approximately in the plane of the joint between the meeting ends of the front and rear bars and pivotally connected; and centrally-disposed slidable and stationary blocks connected with the links whereby the meeting ends of the two sets of bars may be separated or drawn toward each other, and the rear ends of the convergent bars maintained at a proper distance apart.

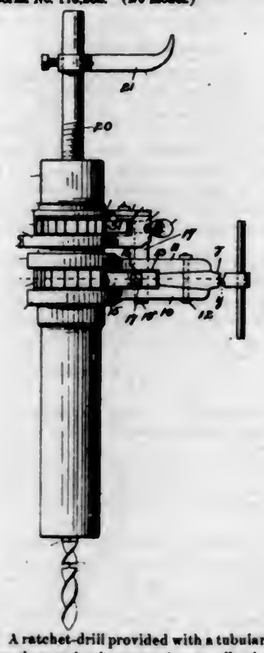
3. The combination in a machine of the character described of tooth-bars having the front ends pivoted contiguous to each other and to a draft mechanism, said bars diverging from their pivot-points toward the rear and having teeth near the front end only whereby clods and coarse material are allowed to pass into the central portion, other bars hinged to the rear ends of the divergent bars, said second bars converging from the hinges to the rear end and carrying teeth by which the pulverized earth is thrown outwardly toward the plant-rows and the clods are carried toward the center and mechanism disposed in substantially the transverse plane of the meeting ends of the front and rear bars and including links connecting with said meeting ends and stationary and slidable blocks whereby the width of the jointed frame may be increased or diminished.

4. The combination in a machine of the character described of tooth-carrying bars having the front ends hinged contiguous to each other and a draft mechanism divergent from the hinge-points rearwardly, other tooth-carrying bars hinged to the rear ends of the first-named bars and convergent from the hinges to the rear ends, a centrally-disposed bar extending from the front toward the rear, a segmentally-toothed rack fixed near the rear end of the central bar, a lever and pawl movable with relation to said rack, a slide movable upon the central bar and a rod connecting the lever with said slide, links pivoted to the slide and other links pivoted at the uniting joints of the toothed bars, and also to the first-named links, other links connecting the joints between the two sets of links above named with a stationary point upon the central bar and links connecting this stationary point with the rearmost tooth-bars whereby the junction of the front and rear tooth-bars may be expanded or contracted.

5. The combination in a machine of the character described, of tooth-carrying bars having the front ends hinged contiguous to each other and divergent rearwardly from said joint, other tooth-carrying bars hinged to and convergent rearwardly from the rear of said first-named bars, means including links disposed in substantially the transverse plane of the meeting ends of the front and rear bars for expanding or contracting the width of the cultivator, and connections whereby the rear tooth-bars are automatically adjusted in unison with said expansion or contraction.

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**755,933. RATCHET-DRILL. THOMAS I. PYBURN, Dunlap, Tenn., assignor of one-half to Clinton K. Watkins, Dunlap, Tenn. Filed Sept. 15, 1903. Serial No. 173,282. (No model.)**



*Claim.*—1. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut thereon having a ratchet, a collar loosely embracing said stock and provided with a gage-plate on its edge, means for adjusting said gage-plate, a pawl on said collar, a lever provided with means designed to contact with the gage-plate and limit the backward movement of said lever and contact with the pawl on the collar and cause said pawl to engage the ratchet of the feed-nut and feed the drill-stock on the forward movement of said lever, substantially as described.

2. A ratchet-drill provided with a tubular stock, means for operating said stock, a feed-screw, a feed-nut thereon having a ratchet, and a collar loosely embracing the upper portion of the tubular stock and provided with a pawl adapted to engage with the ratchet of the feed-nut, a gage-plate on the edge of said collar, and a lever provided with a post, said post designed to contact with the gage-plate and limit the backward movement of the lever and contact with the pawl on the feed-nut and feed the drill-stock and drill on the forward movement of said lever, substantially as described.

3. A ratchet-drill provided with a tubular stock, a lever provided with means for operating said stock and a post, a feed-screw, a feed-nut thereon having a ratchet and a collar loosely embracing the upper portion of the tubular stock, a pawl carried by said collar, adapted to be engaged by the post of the lever and thrown into engagement with the ratchet of the feed-nut, substantially as described.

4. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut thereon, a collar loosely embracing the said tubular stock and provided with a curved gage-plate on its periphery, means for adjusting said gage-plate, and a lever limited in its movement in one direction by the gage-plate, and adapted to operate the tubular stock and feed-screw when operated in the opposite direction, substantially as described.

5. A ratchet-drill provided with a tubular stock, a feed-screw a feed-nut thereon provided with a ratchet, a collar loosely surrounding said feed-nut, a pawl loosely pivoted on said collar, and a lever provided with means for operating the tubular stock, and with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate the feed-screw, substantially as described

6. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut provided with a ratchet, a collar loosely surrounding said feed-nut having a projection provided with a slot, a pawl loosely pivoted in said slot, means for throwing the pawl out of alinement with the ratchet of the feed-nut, and a lever provided with means for operating the tubular stock, and with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate the feed-screw, substantially as described.

7. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut provided with a ratchet, an annular collar loosely embracing the tubular stock having a projection with a slot, a plate mounted on top of said projection and provided with a collar embracing the feed-nut, a pawl loosely pivoted in the slot of the projection, and a lever provided with means for operating the tubular stock and with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate the feed-screw, substantially as described.

8. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut provided with a ratchet, an annular collar loosely embracing the upper end of the tubular stock and provided with a slot, a pawl loosely pivoted diagonally in said slot, and a lever provided with means for operating the tubular stock and also with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate the feed-screw, substantially as described.

9. A ratchet-drill provided with a tubular stock, a ratchet thereon, a lever provided with annular collars loosely embracing said stock on opposite sides of the ratchet, a recess in said lever, a pawl one end mounted in said recess and the opposite end engaging the said ratchet, a feed-screw, a feed-nut thereon provided with a ratchet, and a collar loosely embracing the top of the tubular stock, a pawl loosely pivoted in said collar adapted to engage the ratchet of the feed-nut and means for operating the tubular stock and collar simultaneously, substantially as described.

10. A ratchet-drill provided with a stock, a feed-screw, a feed-nut having a ratchet, a collar loosely surrounding said feed-nut, a pawl loosely pivoted on said collar, means for throwing said pawl into engagement with said ratchet and operating the feed-nut, and means for operating the said stock and drill, substantially as described.

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**755,934. DETONATOR. JOSEPH G. RAQUETT, Cleveland, Ohio, assignor of one-half to George M. Potter, Cleveland, Ohio. Filed Feb. 17, 1904. Serial No. 194,075. (No model.)**

*Claim.*—1. In a device of the class described, a magazine for

explosives, an exploding-chamber, a feeding device separating the magazine and the exploding-chamber, said device being mounted to oscillate on an axis and being provided with a recess and a pocket in its peripheral surface, a plunger mounted to reciprocate in the exploding-chamber in a line at substantially a right angle to the axis of the feeding device, said plunger extending outside the chamber, a tooth projecting from the plunger and engaging with the recess to oscillate the feeding device as the plunger reciprocates, whereby the pocket in the feeding device is caused to alternately receive and discharge the explosives, and an anvil with which the plunger contacts to explode the explosives.



2. In a device of the class described, a magazine for explosives, an exploding-chamber, an oscillating feeding device having a recess and a pocket, an exploding-plunger projecting without the lower end of said chamber, a shoulder intermediate the length of said plunger, an anvil projecting into the said chamber in position to cooperate with the said shoulder to explode the explosives, a tooth projecting from the upper part of the said plunger, said tooth extending into the recess in the feeding device whereby as the plunger reciprocates, the feeding device will be oscillated to bring the pocket therein alternately into communication with the magazine and the explosion-chamber.

3. In a device of the class described, a magazine for explosives, said magazine having a slot or space along its side to permit the escape of gases in case the explosives in the magazine should become ignited, an exploding-chamber, an oscillating feeding device separating the magazine and the exploding-chamber, said device having a pocket for the explosives, a plunger mounted to move longitudinally in the explosion-chamber, said plunger protruding from said chamber for the purpose specified, a tooth on said plunger for engaging the feeding device to oscillate the same, an anvil projecting into the explosion-chamber and coöperating with the plunger to cause the explosive that is in the chamber to be exploded when the plunger is forced inwardly, and a spring surrounding the protruding portion of the plunger to force the same outwardly after the explosion.

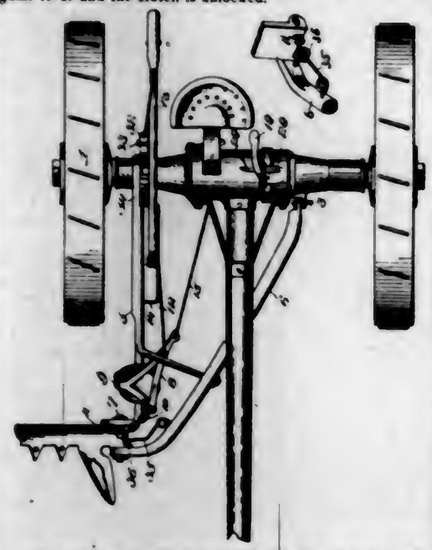
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**755,935. CLUTCH MECHANISM FOR MOWING-MACHINES. WALTER P. REED, Camden, S. C. Filed Aug. 30, 1902. Serial No. 121,610. (No model.)**

*Claim.*—1. In a mowing-machine, the combination with the axle of the same, of a clutch upon the axle, said clutch having a loose section and a longitudinally-adjustable section, connections between the loose section and finger-bar, and a lever connected with the longitudinally-adjustable section for operating the same.

2. In a mowing-machine, a clutch having a loose section and a longitudinally-adjustable section, connections between the loose section and finger-bar, whereby as the clutch members are engaged the bar is elevated by the motion of the machine, and means for automatically releasing the clutch after the finger-bar has been elevated.

3. In a mowing-machine, a clutch, a lever for operating the same, a finger-bar, arms supporting the finger-bar, connections between the loose member of the clutch and finger-bar, comprising a lug upon said member of the clutch, a main bearing, an angular lever pivotally connected to the main bearing, and connections between said angular lever and one of the clutch members whereby when the bar has reached the limit of its movement the lug contacts with the angular lever and the clutch is unlocked.



4. In a mowing-machine, a main bearing, an axle, a clutch, composed of a loose and a longitudinally-adjustable member, said clutch supported upon the axle, means for operating the clutch, a lug connected to the loose member of the clutch, a finger-bar, a rod supported in eyes upon the axle-bearing, connections between said rod and the longitudinally-adjustable member, a pin on said rod, an angular lever pivotally connected to the axle-bearing, connections between the angular lever and rod, and connections between the loose member and finger-bar.

5. In a mowing-machine, a finger-bar, arms supporting the finger-bar, a depressible spring upon one of the arms, said spring having a hooked end, a lug on the finger-bar adapted to contact with the hooked end and limit the movement of the finger-bar beyond the perpendicular, said spring adapted to be depressed and lock the bar in its elevated position.

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**755,936. TABLE-TENNIS. JAMES H. RICAU, New Orleans, La. Filed July 9, 1903. Serial No. 164,829. (No model.)**

*Claim.*—1. In a tennis-game apparatus, in combination with a support providing a playing-surface, of a net and means to hold the same in a vertical plane extending across such surface, the said net being provided with diamond-shaped openings of a size to permit the passage therethrough of the playing-ball, and a receptacle arranged to hold the ball held above the upper edge of the net, said receptacle being arranged to receive the ball served from either side of the net.

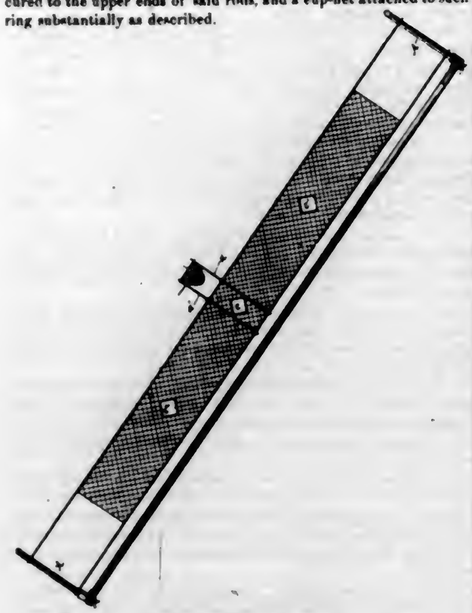
2. The combination in a tennis-game apparatus, of a support forming a playing-surface, with a net, means for supporting the net to divide the playing-surface into fields, the said net being provided with openings of a size to permit the passage therethrough of the playing-ball, a receptacle, and means for holding said receptacle above the upper edge of the net with its mouth open in a horizontal plane so that it may receive the ball served from either side of said net.

3. The combination in a tennis-game apparatus, of a support providing a playing-field, with a net, means for holding the net suspended in a vertical plane extending across said field, rods secured adjacent the center of the net to hold the same expanded, the said rods projecting above the upper edge of the net, and a receptacle for the ball suspended between the upper projecting ends of said rods.

4. The combination in a tennis-game apparatus, of a support providing a playing-field, with a net, means for holding the net suspended in a vertical plane extending across said field, the said net being provided with openings of a size to permit the passage therethrough of the playing-ball, rods secured to the net adjacent its center and projecting above the upper edge thereof, and a receptacle for the ball suspended between the upper projecting ends of said rods.

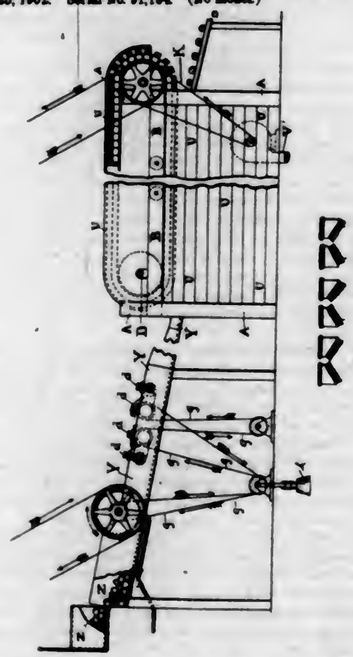


5. In a tennis-game apparatus, a net provided with diamond-shaped openings of a size to permit the passage therethrough of the playing-ball, means for holding the net suspended in a vertical plane, rods secured to the upper and lower edges of the net adjacent its center and projecting above the upper edge of the same, a ring secured to the upper ends of said rods, and a cup-net attached to such ring substantially as described.



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**755,937. FRUIT CLEANER AND GRADER. EARL H. RICHARDSON, North Ontario, and FRANK J. KIMBALL, Los Angeles, Cal. Filed Jan. 25, 1902. Serial No. 91,184. (No model.)**



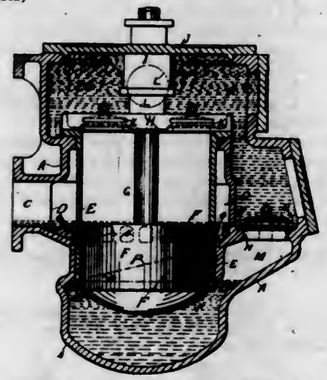
*Claim.*—1. The fruit brushing and cleaning machine, consisting of the combination of a pair of driving-shafts, one of which is carried in stationary bearings fixed to the upper part of the framing of the machine, the belts or bands of angularly-situated brushes, inclined in opposite directions and downward over a flat non-traveling brush, the driving shaft and pulleys whereof one pulley of each pair of pulleys is keyed to its driving-shaft, and the corresponding pulley of the other pair of pulleys is carried loosely upon the other driving-shaft, and arranged so that the traveling brushes and one of the driving-shafts may be moved upward angularly so as to separate the traveling brushes from the flat stationary brushes; the flat stationary brushes; the adjustable bearings for tightening the belts of brushes, the mechanism for grading the fruit consisting of adjustable grading-rollers inclined transversely with the hopper, and in opposite directions of inclination, spaces at the ends and beneath each grading-roller, and provided with inclined partitions in the feed-hopper for directing the graded fruit into the feed-ducts of the brushing mechanism, the feed-ducts, all substantially as hereinbefore described.

2. In a fruit brushing and cleaning machine the traveling brushes and pulleys arranged in pairs, with traveling brushes inclined to each other and downward over a flat non-traveling brush, substantially as hereinbefore described.

3. In a feed-hopper of a fruit brushing and cleaning machine the adjustable inclined grading-rollers with a space beneath them through which the smaller fruit passes while the larger fruit travels along the grading-rollers, and having in connection with each roller an inclined partition, said inclined partition leading or directing the graded fruit into the divisions or ducts of the feed-hopper connected with the brushing-machine, substantially as hereinbefore described.

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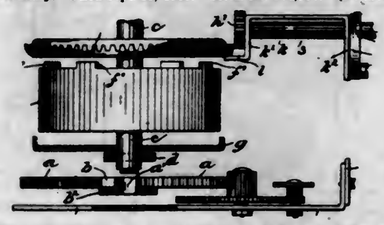
**755,938. AIR-PUMP FOR STEAM-ENGINES. ROBERT RICHARDSON, Glasgow, Scotland. Filed Aug. 11, 1902. Serial No. 119,291. (No model.)**



*Claim.*—A double-acting vertical air-pump comprising a combined piston and plunger F, a casing A having an opening L, a cylindrical liner E fitted in said casing and having orifices *e* connecting the inside of the liner with an annular passage D without the liner, a cover H on said liner, valves K on said cover connecting the interior of the liner with the casing A, a pocket M forming an extension of said casing and valves N connecting said pocket with the upper end of the casing substantially as and for the purpose set forth.

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**755,939. SPRING-MOTOR. FRIEDRICH A. RICHTER, Rudolstadt, Germany. Filed Sept. 25, 1903. Serial No. 174,537. (No model.)**



*Claim.*—1. In a spring-motor, the combination of the spring-barrel, a winding-wheel removably applied thereto, a suitably-mounted driving-shaft provided with a pinion, and means engaging the winding-wheel for holding the pinion against movement transverse

to its own axis, whereby the engagement of the pinion with the winding-wheel is assured, for substantially the purposes set forth.

2. In a spring-motor, the combination of the barrel, a toothed winding-wheel applied removably to the barrel, a suitably-supported arm provided with bearings, a winding-shaft journaled in said bearings and provided with a pinion in mesh with the teeth of the winding-wheel, and a finger or keeper projecting from said arm for holding the removable winding-wheel and pinion upon the barrel, for substantially the purposes set forth.

3. In a spring-motor, the combination of the barrel, a winding-wheel applied removably to the same, a bottom plate having an arm provided with bearings, a winding-shaft journaled in said bearings and provided with a pinion engaging with the teeth of the winding-wheel, and a finger or keeper projecting from said arm and engaging under the winding-wheel to hold the same in engagement with the pinion, for substantially the purposes set forth.

4. In a spring-motor, the combination with the winding-shaft, of a relatively shiftable ratchet-wheel on the winding-shaft mounted to turn with the winding-shaft, a pawl for the ratchet-wheel, and a guard device for the same, for preventing movement of the said ratchet-wheel, for substantially the purposes set forth.

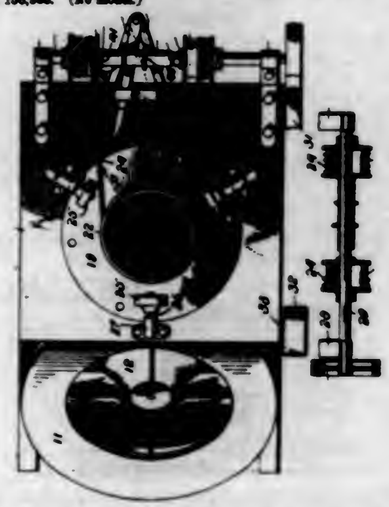
5. In a spring-motor, the combination of the barrel, the winding-wheel applied thereto, a suitably-journaled winding-shaft provided with a pinion meshing with the teeth of the winding-wheel, said shaft being longitudinally shiftable in the bearings, a ratchet-wheel applied to rotate with the winding-shaft and permitting longitudinal movement of the winding-shaft within it, a pawl for the ratchet, and a guard device for holding the ratchet in position, for substantially the purposes set forth.

6. In a spring-motor, the combination of the barrel, the winding-wheel applied thereto, a suitably-journaled winding-shaft provided with a pinion meshing with the teeth of the winding-wheel, said shaft being longitudinally shiftable in the bearings, a ratchet-wheel applied to rotate with the winding-shaft and permitting longitudinal movement of the winding-shaft within it, a pawl for the ratchet, and a guard device for holding the ratchet in position, said guard device and pawl being mounted to move together, and the guard device being provided with an enlarged opening, for substantially the purposes set forth.

7. In a spring-motor, the combination of the spring-barrel, a winding-wheel removably applied thereto, a suitably-mounted shaft provided with a pinion, means for supporting the shaft, and means connected with said supporting means and engaging the winding-wheel and holding the pinion against movement transverse to its own axis, whereby the engagement of the pinion with the winding-wheel is assured, substantially as and for the purposes set forth.

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**755,940. PNEUMATIC STACKER.** ANDERSON P. ROBERTS and WILLIAM M. ROBERTS, Columbia, Tenn. Filed Jan. 13, 1903. Serial No. 138,863. (No model.)



*Claim.*—1. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction, a reversing mechanism carried by the drive-shaft, and a direct connection between the driving mechanism and the tube for oscillating the latter.

2. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction, and a direct connection between the drive-shaft and the tube for oscillating the latter.

3. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction, a reversing mechanism mounted upon the drive-shaft, a direct connection between the reversing mechanism and the tube for reversing the movement of the latter, and another direct connection between the driving mechanism and the tube for oscillating the latter.

4. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction and carrying a reversing mechanism, and a direct connection between the reversing mechanism and the tube for reversing the movement of the latter.

5. A stacker provided with an oscillatory tube, a drive-shaft rotating continuously in one direction, a direct connection between the tube for oscillating the latter, and means for reversing the movement of the tube.

6. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction, and a direct flexible connection between the shaft and the tube for oscillating the latter.

7. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction, a flexible connection between the drive-shaft and the tube for oscillating the latter, and means for automatically reversing the movement of the tube.

8. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction, a direct flexible connection between the drive-shaft and the tube for oscillating the latter, and another direct connection between the driving mechanism and the tube for reversing the movement of the tube.

9. A stacker provided with an oscillatory tube, a drive-shaft rotating continuously in one direction and carrying a reversing mechanism and driving members, and a direct connection between the driving members and the tube for oscillating the latter.

10. A stacker provided with an oscillatory tube, a drive-shaft rotating continuously in one direction and carrying a reversing mechanism and driving members, a direct connection between the driving members and the tube for oscillating the latter, and means for automatically actuating the reversing mechanism.

11. A stacker provided with an oscillatory tube, a drive-shaft rotating continuously in one direction and carrying a reversing mechanism and driving members, and a direct flexible connection between the driving members and the tube for oscillating the latter.

12. A stacker provided with an oscillatory tube, a drive-shaft carrying driving members, an automatically-arranged reversing mechanism disposed between the said members and communicating with said tube by a direct connection, and a direct flexible connection between the driving members and the tube for oscillating the latter.

13. A stacker provided with an oscillatory tube, a drive-shaft carrying reversing mechanism and driving members, said reversing mechanism being in direct communication with the tube and placed under tension during the oscillation of the latter, and a direct connection between the driving members and the tube for oscillating the latter.

14. A stacker provided with an oscillatory tube, a drive-shaft rotating continuously in one direction and carrying a reversing mechanism and driving members, a direct flexible connection between the driving members and the tube for oscillating the latter, and means carried by the tube for actuating the reversing mechanism.

15. A stacker provided with an oscillatory tube, a drive-shaft carrying a reversing mechanism and driving members, a direct connection between the driving members and the tube for oscillating the latter, and another direct connection between the driving mechanism and the tube for reversing the movement thereof.

16. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction and carrying driving members, a reversing mechanism mounted upon the shaft between said driving members and adapted to alternately engage said members, and a direct connection between the reversing mechanism and the tube for reversing the movement of the latter.

17. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction and carrying driving members, a direct connection between the driving members and the tube for oscillating the latter, a reversing mechanism mounted upon said shaft between the said driving members and adapted to alternately engage said members, and a direct connection between the reversing mechanism and the tube for reversing the movement of the latter.

18. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single drive-shaft rotating continuously in one direction and carrying driving members, a reversing mechanism mounted upon said shaft and automatically actuated, and a direct flexible connection between the driving members and the tube for oscillating the latter.

19. A stacker provided with an oscillatory tube, a driving mechanism consisting of a shaft and driving members carried thereon, a reversing mechanism mounted upon said shaft between said driving members and adapted to alternately engage said members, and a direct connection between the reversing mechanism and the tube for reversing the movement of the latter.

20. A stacker provided with an oscillatory tube, a drive-shaft having direct connection with the tube for oscillating the latter, and means for automatically reversing the movement of the tube.

21. A stacker provided with an oscillatory tube, a drive-shaft, a reversing mechanism mounted on the shaft and having direct communication with the tube, and a direct flexible connection between the shaft and the tube for oscillating the latter, said flexible connection in its operation being wound upon its said connecting members in opposite planes.

22. A stacker provided with an oscillatory tube, a drive-shaft, driving members mounted upon the shaft, means for clutching the driving members alternately to the shaft, and a single means connected with both driving members and to the tube for movement by the driving members to oscillate the tube.

23. A stacker provided with an oscillatory tube, a drive-shaft, winding-drums mounted loosely upon the shaft and having clutch members, a cable arranged with the tube and attached to the winding-drums to be wound thereon alternately, and a clutch-sleeve splined on the shaft and adapted to engage with the said clutch members of the drums interchangeably.

24. A stacker provided with an oscillatory tube having a drum, a drive-shaft having winding-drums mounted loosely thereon, a flexible connection wound upon the drum of the stacker-tube and attached at its ends to the winding-drums, and means for clutching the winding-drums alternately to the shaft.

25. A stacker provided with an oscillatory tube, a drive-shaft, a direct flexible connection between the shaft and tube, and means actuated by movement of the tube for reversing the direction of movement of the flexible connection.

26. A stacker provided with an oscillatory tube, a drive-shaft, a direct flexible connection between the shaft and the tube, and means for automatically reversing the direction of movement of the flexible connection for oscillating the tube.

27. A stacker provided with an oscillatory tube, a drive-shaft, winding-drums mounted loosely upon the shaft, a cable engaged with the stacker-tube and attached to the winding-drums, and means actuated by movement of the stacker-tube for clutching the winding-drums alternately to the shaft.

28. A stacker provided with an oscillatory tube, a revolving support for the tube, a drive-shaft carrying a reversing mechanism and driving members, said reversing mechanism having direct connection with the tube-support and actuated thereby, and a direct connection between the said driving members and the tube for oscillating the latter.

29. A stacker provided with an oscillatory tube, a revolving support for the tube, said support having projections depending from its under surface, a drive-shaft carrying a reversing mechanism and driving members, said reversing mechanism having direct connection with the tube-support and actuated by the said projections, and a direct flexible connection between the driving members and the tube for oscillating the latter.

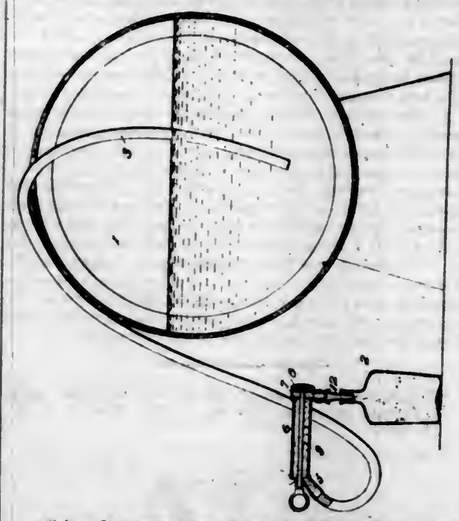
30. A stacker provided with an oscillatory tube, a drive-shaft carrying winding-drums loosely mounted thereon, and a sectional flexible connection between the winding-drums and the tube for oscillating the latter.

31. A stacker provided with an oscillatory tube, a driving mechanism consisting of a single shaft having driving members loosely mounted thereon, a two-part connection between the tube and the driving members for oscillating the tube, and means actuated by the movement of the stacker-tube for reversing the direction of movement thereof.





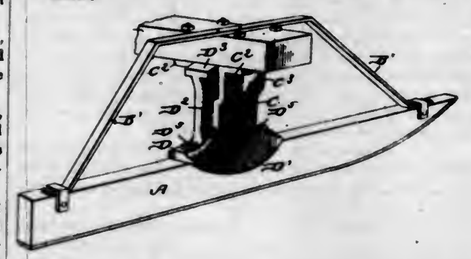
**755,941. SIPHON.** HENRY P. ROBERTS, New York, N. Y. Filed Jan. 7, 1904. Serial No. 188,121. (No model.)



*Claim.*—In a pump adapted to be used in connection with siphons, the combination with a cylinder closed at each end by a head, a piston in the cylinder, the cylinder being provided at one end with an enlarged portion, the length of the enlarged portion being greater than the thickness of the piston, an outlet-opening located in the enlarged portion of the cylinder a distance away from the adjacent head of the cylinder as great as the thickness of the piston, an inlet-opening near the other end of the cylinder, an operating-rod for the piston passing through the head of the cylinder adjacent to the inlet-opening, the construction being such that when the piston is operated to start the siphon, it will move from the inlet-opening past the outlet-opening and into the enlarged portion of the cylinder.

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**755,942. BOB-SLEIGH ATTACHMENT.** ABRAHAM ROGSTAD, Mount Morris, Wis. Filed Aug. 1, 1903. Serial No. 167,904. (No model.)



*Claim.*—1. The combination with a sleigh-runner, of a casting fitting on said runner, standards rising from said casting, a curved, integral cross-piece connecting the tops of the standards, a beam resting on said cross-piece, a second casting fitting between the standards and rocking on the first-mentioned casting, and arms extending upwardly from the second casting on each side of and flush with the central portion of the cross-piece, said arms being secured to the beam.

2. The combination with a sleigh-runner, of a casting having a body portion resting on said runner, and having flanges fitting over the sides of the runner, standards rising from the body portion, a cross-piece having a curved upper surface, a transverse beam rocking thereon, and upper casting rocking on the body portion of the first-mentioned casting, and arms extending upwardly from the upper casting, said arms being connected to the beam.

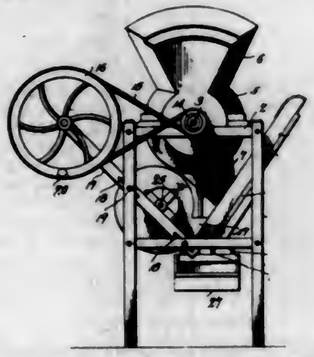
3. An attachment of the kind described comprising a casting having a body portion, standards adjacent each end of said body portion, said standards having grooves formed on their inner sides, a cross-piece connecting the tops of the standards and having per-

forations in alinement with the grooves of the standards, a casting having a core adapted to rock on the body portion, of the first-mentioned casting between the standards and having channel-ways adapted to register with the grooves in the standards, arms extending upwardly from said core, upon each side of the cross-piece, the top of the arms being substantially in the plane of the cross-piece and rods fitting in the grooves of the standards and channel-ways of the core, and extending upward through and above the cross-piece.

4. The combination with a sleigh-runner and a transverse beam vertically perforated, a casting having a body portion resting on the runner and flanges fitting over the runner, standards adjacent each end of the casting, the inner sides of said standards being grooved, a cross-piece having a curved upper surface and perforations alining with the grooves of the standards, the said beam resting on the cross-piece and the perforations of the beam alining with those of the cross-piece, a casting having a core centrally reduced and rocking on the body of the first-mentioned casting intermediate the standards, arms rising from said core and extending upward on the sides of the cross-piece, said arms being attached to the beam, and rods resting in the grooves of the standards, and extending upward through the cross-piece into the perforations of the beam.

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**755,943. THRESHING AND SEPARATING MACHINE. JAMES R. SANDERS, Dalton, Ga. Filed May 15, 1903. Serial No. 157,302. (No model.)**



*Claim.*—1. In a threshing and separating machine, a threshing-surface made up of a cylinder and concave having corresponding smooth surfaces, said concave extending half-way around the lower part of the cylinder, and a plurality of metallic strips mounted and suitably spaced upon the smooth exterior surface of the cylinder and upon the corresponding smooth interior surface of the concave, said strips being provided with struck-up teeth disposed at right angles to the axis of the cylinder, the teeth upon the cylinder and those upon the concave being disposed intercurrently.

2. In a machine of the class described, a sieve having an open discharge end, a return-spout mounted upon the under side of the sieve and connected with the open discharge end thereof, and a bendable lip at the receiving end of said return-spout.

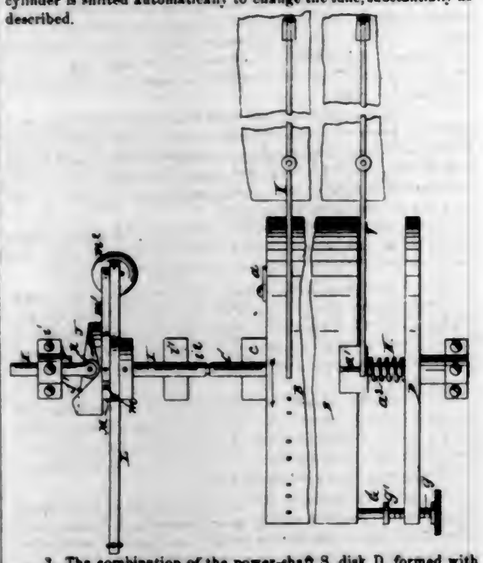
3. In a machine of the class described, a discharge-chute comprising a bottom board forming an inclined plane, side flanges upon the latter, a curved hood connecting said side flanges and extended above the inclined plane to form a discharge-opening, and a bendable strip disposed below said discharge-opening.

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**755,944. PNEUMATIC MUSICAL APPARATUS. FRANK SCHIPPER, New York, N. Y., assignor to American Bell and Chime Company, New York, N. Y. Filed May 8, 1903. Serial No. 156,200. (No model.)**

*Claim.*—1. In combination with a shaft, a music-cylinder, mounted upon said shaft which latter is movable longitudinally, an auxiliary shaft abutting against the end of the shaft supporting the music-cylinder, a cam upon said auxiliary shaft, a stationary abutment engaging said cam, and means for pressing the cam against said stationary abutment whereby the music-cylinder is moved automatically to change the tunes, substantially in the manner and for the purpose set forth.

2. The combination of a shaft, the music-cylinder, mounted upon said shaft which latter is movable longitudinally, an auxiliary shaft, in line with said first-named shaft, a cam mounted rigidly on said auxiliary shaft, a stationary abutment for engaging said cam, a ratchet-wheel rigidly secured to said auxiliary shaft, a lever fulcrumed on said auxiliary shaft, and carrying a pawl for actuating said ratchet, a pneumatic apparatus, a stop on the cylinder, and a rod connecting said lever with said pneumatic apparatus, the latter being controlled by said stop on the music-cylinder, whereby said cylinder is shifted automatically to change the tune, substantially as described.



3. The combination of the power-shaft S, disk D, formed with the axial recess, the sliding shaft C, carrying the drum A, and music-cylinder B, the spring H, the auxiliary shaft I, carrying the cam J, and ratchet M, the stationary abutment K, pneumatics, a trip on the music-cylinder, and the lever L, fulcrumed on said auxiliary shaft I, and connected with said pneumatics for actuating said lever by means of said trip on the music-cylinder, substantially as set forth.

4. The combination of the power-shaft S, the disk D, shaft C, carrying the drum A, and music-cylinder B, the coupling-pin G, connecting the said disk and drum A, said pin being formed with a screw-thread *g*, and stop *g'*, substantially as set forth.

5. The combination with the power-shaft S, the disk D, coupling-pin G, drum A, music-cylinder B, and the stop *a'*, made adjustable peripherally for the purpose described.

6. The combination of the power-shaft S, disk D, coupling-pin G, drum A, music-cylinder B, shaft C, spring H, cam-shaft I, abutment K, with the lever L, pneumatic mechanism, together with the trip-lever V, valve U, and duct *t*, for admitting air to said pneumatic mechanism by which the said lever L, is operated, substantially in the manner described.

7. The combination with the music-cylinder-shifting mechanism, pneumatics for operating the same, of a cut-off device to prevent the admission of air to the pneumatics when desired, substantially in the manner set forth.

8. In combination with a music-cylinder, and mechanism for operating the same, pneumatics, a trip-lever provided with a valve for controlling the admission of air to the said pneumatics, by which the shifting mechanism is operated, said valve being adjustable upon the lever for the purpose of compensating for variations in the thickness of the music-cylinder, substantially as described.

9. The combination with the pneumatics, the valve-lever and the drum, of a stop upon the drum and made adjustable upon the periphery thereof to coöperate with said lever, as and for the purpose specified.

10. The combination with the pneumatics, the trip-lever and valve, of the flexible tubing interposed between the pneumatics and the valve, and a cut-off device for compressing said flexible tubing to exclude the air from the pneumatics, as set forth.

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**755,945. SOAP AND METHOD OF MAKING SAME. GEORGE A. SCHMIDT, Chicago, Ill. Filed Jan. 15, 1904. Serial No. 189,167. (No specimens.)**



*Claim.*—1. The herein-described method of preparing medicated soap which consists in mixing calcined granulated porous gritty material with liquefied medicaments, subjecting such mixtures to the action of air under pressure in a sealed vessel, subsequently drying said gritty material, and mixing same with soap in liquid state.

2. The herein-described method of preparing medicated soap which consists in mixing calcined granulated porous gritty material with liquefied medicaments, subjecting such mixture to the action of air under pressure in a sealed vessel, subsequently drying said gritty material and mixing same with soap in liquid state.

3. The herein-described method of preparing medicated soap which consists in mixing calcined granulated porous gritty material with liquefied medicaments subjecting such mixture to the action of air under pressure in a sealed vessel, subsequently drying said gritty material, coating sheets of suitable material with soap in liquid form, and covering said coated surface with said medicated gritty material before said soap has coagulated.

4. The herein-described method of preparing medicated soap which consists in mixing calcined granulated porous gritty material with liquefied medicaments, subjecting such mixture to the action of air under pressure in a sealed vessel, subsequently drying said gritty material, coating sheets of suitable material with soap in liquid form, and covering the coated surface with said medicated gritty material before said soap has coagulated.

5. As a new article of manufacture, medicated toilet soap consisting of soap having mixed therewith granulated porous gritty material previously medicated, said gritty material being adapted to retain the medicaments out of the sphere of chemical action of the soap.

6. As a new article of manufacture, sheets of suitable material coated with soap, and having the coated surface covered with previously-medicated granulated porous gritty material.

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**755,946. GRAMOPHONE ATTACHMENT FOR MUSIC-BOXES. JACOB L. SCHUREMAN, Jr., Chicago, Ill. Filed Mar. 17, 1902. Serial No. 98,617. (No model.)**



*Claim.*—1. The combination of a music box, a driving mechanism therefor, a disk driven by said driving mechanism, a shaft upon which said disk is mounted, a bracket carrying a gramophone record, means for driving said gramophone record from said disk, and sound reproducing mechanism mounted adjacent to said record, substantially as described.

2. The combination with a music box provided with a horizontal revolving disk driven by a motor in the box, of a bracket arm surrounding said disk, a gear wheel fixed upon said disk and gear wheel supported by said bracket arm driving a revolving horizontal table, and a swinging arm carrying a sound box, in co-operation with a record placed upon said revolving table, substantially as described.

3. The combination with a box containing a motor, of an extensible arm attached to the side of the box carrying pivoted thereto an adjustable arm bearing a reproducer, a detachable bracket carrying gearing to mesh with the mechanism of the motor and supporting a revolving table for operating a gramophone record.

4. In a music box attachment, the combination of a bracket attachable to the spindle of the disk of a music box, supporting a disk and carrying gear wheels, and a rotating table above the disk, said gears being moved by the disk, by which the rotation of the disk rotates said table above the same, substantially as described.

5. The combination of a receptacle containing a motor and revolving disk, of a detachable arm secured to the receptacle bearing an adjustable arm which carries a reproducer, and a detachable bracket provided with gear wheels and adapted to embrace said revolving disk and revolve a gramophone record through the agency of said gear wheels, substantially as described.

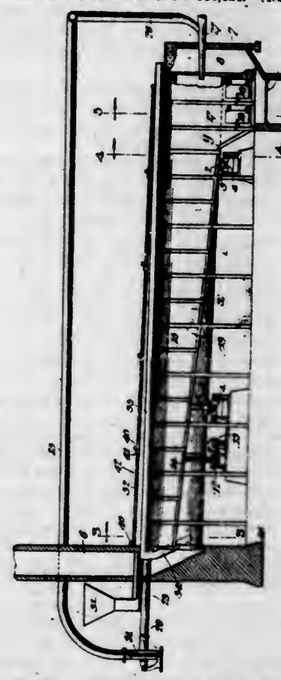
6. The combination with a motor and a revolving disk driven thereby, of a gear wheel fixed upon said revolving disk, a bracket arm carrying said disk and bearing above the center thereof a revolving table, gear wheels engaging the first named gear and attached to the table for rotating the latter, a rigid arm carrying a pivoted lever and the end of the pivoted lever provided with a sound reproducing device for gramophones, substantially as described.

7. The combination with a music box provided with a horizontal revolving disk driven by a motor in the box, of a bracket arm supporting said disk, a gear wheel fixed upon said disk and gear wheels supported by said bracket arm driving a revolving horizontal table, and a swinging arm carrying a sound box, in co-operation with a record placed upon said revolving table, substantially as described.

8. The combination of a music box having a driving mechanism, and a spindle for supporting the note sheet, a carrier adapted for detachable connection with said spindle, a record holder mounted to rotate upon said carrier, and a driving connection mounted upon said carrier to transmit movement from the driving mechanism of the music box to the said record holder.

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**755,947. CEMENT-FURNACE. JACKSON SHENEMAN, Bronson, Mich. Filed Jan. 5, 1904. Serial No. 187,821. (No model.)**



*Claim.*—1. The combination with an internally-heated revoluble kiln, of drying-troughs arranged above the kiln, and separated therefrom by an air-space, said troughs being heated by radiation from the kiln, and means for conveying the material to be dried lengthwise of said troughs.

2. The combination with an internally-heated revoluble kiln, of a pair of conveying-troughs arranged above the kiln, and separated therefrom by an air-space, said troughs being subjected to the action of the heat radiating from the kiln, said troughs forming a continuous passage in the direction of the discharge end of said kiln and thence back again to the entrance end thereof.

3. The combination with a revoluble kiln, of a pair of conveying-troughs arranged above the kiln and subjected to the action of heat radiating therefrom, a connected portion of one of the troughs passing through the main escape-flue of the kiln.

4. The combination with a revoluble kiln having an escape-flue,

of a conveying device arranged above the kiln and subjected to the action of heat radiating therefrom, the entrance end of said conveying device extending through the escape-flue.

5. The combination with a kiln having an escape-flue, of a drying device disposed above and heated by radiation from the kiln, the preliminary portion of the drying device extending through the flue and being subjected to the action of the products of combustion passing through said flue.

6. The combination with a revoluble kiln, of a curved casing, a pair of drying-troughs arranged on convergent lines above the kiln and forming a part of the casing, said troughs being disposed respectively at different angles on the curved surface of the casing and disposed in convergent lines, the troughs being so disposed that both shall be subjected to the action of heat for their entire length, and arranged at their communicating ends in different horizontal planes, and conveyers disposed in said troughs.

7. The combination with a kiln, of a pair of troughs, a feed-hopper at the end of one trough, and a discharge-spout at the end of the opposite trough, the connections between the hopper and trough and between the spout and trough extending through the main flue or stack of the kiln.

8. The combination with a kiln, of a jacket forming a cover for the upper portion of said kiln, and a drying-trough forming a part of the jacket.

9. The combination with a rotary kiln, of a substantially semi-circular jacket forming a cover for the upper portion of the kiln, said jacket being opened at one end for the admission of air, and a drying-trough forming a part of the jacket.

10. The combination with a rotary kiln, of a jacket opened near one end for the admission of air, a drying-trough forming a part of the jacket, and an escape-flue leading from said jacket through the main flue of the kiln.

11. The combination with a rotary kiln, of a jacket covering the upper portion of the kiln and having rearwardly-extending flanges at its lower edges to form an inclosed air-space, and a drying-trough forming a part of the jacket.

12. The combination with a rotary kiln, of a clinker-pit, a jacket partly encircling the kiln and in communication with the clinker-pit, said jacket being provided with air entrance and discharge openings, and a drying-trough forming a part of the jacket

13. The combination with a rotary kiln, of a clinker-pit, a jacket partly surrounding the kiln and in communication with one end of the clinker-pit, a drying-trough forming a part of the jacket, an air-discharge flue leading from the opposite end of the jacket, and inward-extending flanges arranged at the lower edges of the jacket for a portion only of the length of the latter.

14. The combination with a rotary kiln, of a clinker-pit, a jacket extending around the front end of the kiln and in communication with said pit, and a drying-trough forming a part of the jacket.

15. The combination with a rotary kiln, of a clinker-pit, a movable gate or closure for cutting off communication between the kiln and pit, a jacket extending partly around the kiln and communicating with the clinker-pit, and a fan for causing the flow of a current of air to said jacket.

16. The combination with a rotary kiln, of a clinker-pit, a gate or closure for shutting off communication between the kiln and pit, a jacket partly surrounding the kiln and having side doors for access to the pit, and a fan for causing the flow of a current of air through the jacket.

17. The combination with a rotary kiln, of a clinker-pit, a gate or closure for shutting off communication between the kiln and pit, a jacket partly surrounding the kiln, said jacket having air-entrance openings to the rear of the clinker-pit, and a fan for causing the low of a current of air through the jacket.

18. The combination with a kiln, of a clinker-pit, a jacket partly surrounding the kiln and in communication with said clinker-pit, and a drying-trough forming a part of the jacket.

19. The combination with a rotary kiln, of a substantially semi-circular jacket formed of a pair of spaced plates, a drying-trough forming a part of the jacket, and a lining of non-conducting material, said jacket having air entrance and escape openings.

20. The combination with a kiln, of a casing arranged around the upper portion of the kiln and forming an air-jacket, and a drying-trough forming a part of the casing.

21. The combination with a rotary kiln, of a casing covering the upper portion of the kiln, a drying-trough forming a part of said casing, and a trough feeder extending through the main flue or stack of the kiln.

22. The combination with a kiln, of an injector for the feeding of finely-divided fuel, a jacket partly surrounding the kiln, a discharge-tube leading from the jacket to the injector, and a fan connected in the tube and serving to force the air under pressure to said injector.

23. The combination with a kiln, of an injector for forcing finely-divided fuel into the kiln, and a jacket partly surrounding the kiln, a discharge-tube leading from the jacket through the main flue of the kiln, a fan connected to the tube, and a second tube leading from the discharge side of the fan to the injector.

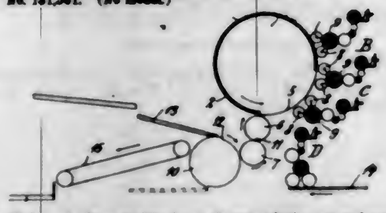
24. The combination with a kiln, of an air-jacket partly surrounding the kiln, an escape-flue leading from the jacket, and a fan connected to the escape-flue and serving to cause the passage of a current of air through the jacket and as a means for forcing said air under pressure to a point of consumption.

25. The combination with a battery of kilns, of a separate air-jacket partly surrounding each kiln, an escape-flue leading from each jacket, a tube connected to the several escape-flues, a fan connected to the tube, a fuel-injector at the front end of each kiln, and a tube leading from the fan and connected to each of said fuel-injectors.

26. The combination with a plurality of kilns, of fuel-injectors arranged one at the front end of each kiln, a jacket partly surrounding each of the kilns, a valved escape-pipe leading from each of the jackets, a tube to which all of the pipes are connected, a fan connected to said pipe, and a tube leading from said fan to all of the fuel-injectors.

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**755,948. MULTICOLOR AND TEXT PRINTING PRESS.** DAVID B. H. STENERSEN, Christiania, Norway. Filed Nov. 15, 1902. Serial No. 131,561. (No model.)



*Claim.*—1. In a multicolor and text printing press, in combination, a plurality of color-forms, a black ink or text form, an impression-cylinder, a color collecting and printing cylinder and means for bringing the text-form and the color collecting and printing cylinder into contact with the impression-cylinder at different points during the same revolution thereof.

2. In a multicolor and text printing press, in combination, a form-cylinder adapted to receive a plurality of color, an impression-cylinder, mechanism for collecting the colors from said forms in superposed position and transferring them to the impression-cylinder, a text-form and means for bringing said text-form and the color-transferring mechanism into contact with the impression-cylinder at different points in the same revolution of the impression-cylinder.

3. In a multicolor and text printing press, in combination, a plurality of color-forms, an impression-cylinder having its impression-surface extending about a portion only of its periphery and of greater radius than the rest thereof, means for transferring the colors from said forms to the impression-cylinder, a flat text-form, and means for reciprocating it to contact with the impression-surface and to return beneath the part thereof having the smaller radius.

4. In a multicolor and text printing press, in combination, an impression-cylinder, a plurality of color-forms, a collecting and printing cylinder receiving color from all of said color-forms, a flat or bed plate containing the black or text matter and means for bringing said color-printing cylinder and the text-plate into contact with the impression-cylinder at different points in the same revolution thereof.

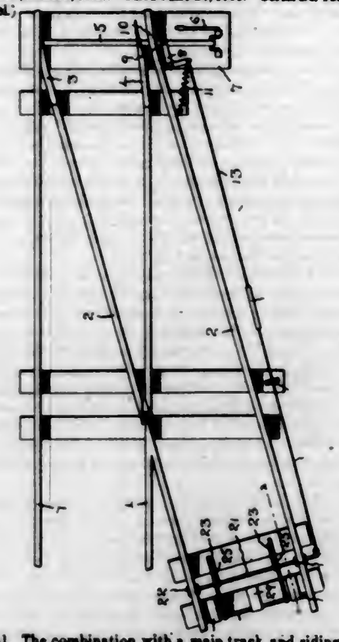
5. In a multicolor-printing machine, in combination, a color-form cylinder having its periphery divided into equal spaces one greater in number than the number of different color-forms which it is intended to receive, an impression-cylinder, a collecting and transfer mechanism and means for causing the same to contact successively with all the color-forms and then to contact with the impression-cylinder while the blank space upon the form-cylinder is passing.

6. In a multicolor-printing machine, in combination, a form-cylinder having its periphery divided into a plurality of forms and a blank space equal in extent to one of the forms, an impression-cylinder, a collecting-roller adapted to receive ink from all of said forms, a transfer and printing cylinder and means for contacting such transfer and printing cylinder with the collecting-roller while the latter is opposite the blank space of the form-cylinder and for then contacting it with the impression-cylinder.



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**755,949. MEANS FOR HOLDING CARS ON SIDINGS.** HORATIO SHELLER, Ashton, Nebr. Filed June 27, 1903. Serial No. 163,422. (No model.)



*Claim.*—1. The combination with a main track and siding having switch-rails operative to connect and disconnect the siding in relation to the main track, of car-holding means disposed in operative relation to the rails of the siding, shifting means for the switch-rails, and a connecting means interposed between the said shifting means and the car-holding means and consisting of two rod-sections, an elongated casing to which one rod is terminally connected, the extremity of the remaining rod movably projecting into the casing, and a spring in the casing engaged by the extremity of the rod projecting into said casing.

2. The combination with a main track and siding having switch-rails cooperating therewith, of means for moving the switch-rails, and car-holding means including elongated bars having hooked terminals disposed in operative relation to the rails of the siding and connected to the means for moving the switch-rails, the said bars being adapted to be thrown above the plane of the track-bed.

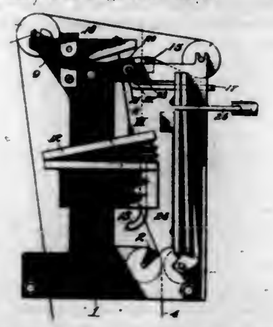
3. The combination with a main track and siding having switch-rails operative to connect and disconnect the siding in relation to the main track, of car-holding means disposed in operative relation to the rails of the siding, shifting means for the switch-rails, and connecting devices interposed between the said shifting means and the car-holding means and consisting of rod-sections, and a support having a spring therein, the one rod-section being terminally secured to the support and the extremity of the other rod-section movable in said support.

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**755,950. AUTOMATIC NOTE-SHEET GUIDE MECHANISM.** JAMES D. SMITH, Kansas City, Mo., assignor to Fred W. Wood, Jackson county, Mo. Filed Nov. 7, 1903. Serial No. 180,161. (No model.)

*Claim.*—1. In a device of the character described, a note-sheet, a tracker-bar and roller over which the note-sheet travels, and means to shift the note-sheet laterally with respect to the tracker-bar by causing said roller to press against the note-sheet at one side or the other of its longitudinal center.

2. In a device of the character described, a note-sheet, a tracker-bar and roller over which the note-sheet travels, and pneumatic-actuated means to shift the note-sheet laterally with respect to the tracker-bar by causing said roller to press against the note-sheet at one side or the other of its longitudinal center.



3. In a device of the character described, means provided with openings, a note-sheet traveling over said means and normally covering said openings, a tilting roller over which the note-sheet passes, and means for automatically tilting said roller so as to shift the note-sheet laterally to its original position whenever it swerves and uncovers one or the other of said openings.

4. In a device of the character described, the combination of a suitable framework, a roller, means mounted on said framework and provided with openings, and adjustable to vary the distance between said openings, a note-sheet to engage the roller and also engage and operate transversely of said means, and normally cover the openings thereof, and pneumatic-actuated means connected to said openings for tilting said roller so as to shift the note-sheet laterally to its original position whenever it swerves and uncovers one or the other of said openings.

5. In a device of the character described, a note-sheet, means provided with openings closed by the note-sheet as long as the latter runs true, a tilting roller over which said sheet also passes, and connections whereby the exposure of one or the other of said openings by the note-sheet shall cause the roller to tilt and restore the sheet to its original relation with said openings.

6. In a device of the character described, the combination of a note-sheet, and a roller, with means for pressing either end of said roller against the note-sheet, means provided with openings normally closed by the note-sheet traveling over said means, and means for connecting one of said openings to the roller-pressing means.

7. In a device of the character described, the combination of a roller with a movable supporting-bearing therefor, means provided with openings, a note-sheet engaging said means and normally closing said openings, means for moving the bearing at one end or the other of the roller, and pneumatic means for connecting one of said openings to said bearing-moving means.

8. In a device of the character described, the combination with means provided with openings, and a note-sheet normally closing said openings, of a tilting roller over which the note-sheet must pass, and pneumatic devices controlled by lateral motion of the note-sheet for tilting said roller.

9. In a device of the character described, the combination of a suitable framework, a tracker-bar therein, tracker-blocks having openings, and also mounted in the framework and adjustable to vary the distance between their openings, a roller mounted in the framework, a note-sheet traveling over said roller and over said tracker-bar and tracker-blocks and normally covering said openings, and pneumatic-actuated means connected to said openings for tilting said roller so as to shift the note-sheet laterally to its original position whenever it swerves and uncovers one or the other of said openings.

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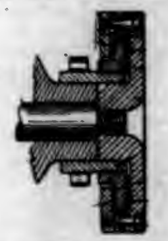
**755,951. PROCESS OF TREATING ORES.** JOSEPH SMITH, San Francisco, Cal. Filed July 17, 1903. Serial No. 166,006. (No specimens.)

*Claim.*—In the cyanid treatment of ores, the method of rendering insoluble in the cyanid solution, ferrous oxid contained in a mass of moist crushed ore, which method consists in applying heat to said mass in the presence of air, previous to its treatment by the cyanid solution

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**755,952. FRICTION DEVICE FOR IMPULSE-MOTORS.** WALTER J. B. SMITH, Providence, R. I. Filed Jan. 9, 1903. Serial No. 138,307. (No model.)

*Claim.*—1. An explosion-motor having a crank-shaft, a bearing therefor, a friction-plate mounted on said shaft, a second friction-plate carried by said former plate, and a sprocket-wheel mounted on said bearing and having a disk fitting between said friction-plates.



2. An explosion-motor having a crank-shaft, a bearing therefor, a friction-plate secured to said shaft, a second friction-plate carried by said former plate and having an annular opening, a sprocket-wheel mounted on said bearing, and a collar secured upon said sprocket and extending through said annular opening, said collar having a disk fitting between said friction-plates.

3. An explosion-motor having a crank-shaft, a bearing therefor, a friction-plate having a hub mounted on said shaft, a second friction-plate carried thereby, a sprocket-wheel mounted on said bearing and having a hub fitting over the hub of said friction-plate and a disk carried by said sprocket-wheel and fitting between said friction-plates.

4. An explosion-motor having a crank-shaft, a bearing therefor, a friction-plate secured to said shaft, a second friction-plate carried by said former plate and having an annular opening, a sprocket-wheel mounted on said bearing and having a hub projecting through the opening of said friction-plate, and a disk fitting between said friction-plates and having a hub mounted on the hub of said sprocket.

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755,953. **FRICTION-COUPLING.** WILLIAM H. SMITH, Pawtucket, R. I. Filed June 6, 1903. Serial No. 160,352. (No model.)



*Claim.*—1. A friction-coupling consisting of a rotary power-transmitting member composed of two sections having opposite friction-faces and also having concentric circular projections extending toward but not meeting each other, a second power-transmitting member supported by said sections and rotatably mounted on said projections between said friction-faces, and devices pressing the two said sections toward each other and clamping the said second member between the said friction-faces, the said second member having friction-faces engaging those on the said sections.

2. A friction-coupling consisting of a rotary power-transmitting member composed of two sections having opposite friction-faces and also having concentric circular projections extending toward but not meeting each other, a second power-transmitting member supported by said sections and rotatably mounted on said projections between said friction-faces, and springs pressing the two said sections toward each other and clamping the said second member between the said friction-faces, the said second member having friction-faces engaging those on the said sections.

3. A friction-coupling consisting of a rotary power-transmitting member composed of two sections having opposite friction-faces and also having concentric circular projections extending toward but not meeting each other, a second power-transmitting member supported by said sections and rotatably mounted on said projections between said friction-faces, springs pressing the two said sections toward each other and clamping the said second member between the said friction-faces, the said second member having friction-faces engaging those on the said sections, and devices for varying the tension of said springs.

4. A friction-coupling consisting of the combination of two disks having opposite friction-faces contiguous to their peripheries, a gear-ring rotatably mounted on the peripheries of said disks, said gear-ring having an integral flange extending inwardly between said disks, said flange having friction-faces engaging with those on said disks, said gear-ring also having gear-teeth on its periphery, springs pressing the two said disks toward each other and clamping the said flange therebetween, devices for varying the tension of said springs, and mechanism independent of said devices for causing said disks to interlock with each other.

5. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a central circular boss integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a lug projecting radially from said boss and seating in a notch in the said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom and received between said disks, and springs pressing the said second disk toward the first-named disk and clamping the said flange between the two said disks.

6. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a central circular boss integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a lug projecting radially from said boss and seating in a notch in the said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom and received between said disks, springs pressing the said second disk toward the first-named disk and clamping the said flange between the two said disks, and means for varying the tension of said springs.

7. In a friction-coupling, the combination of a friction-disk having a circular boss concentric and integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a lug projecting radially from said boss and seating in a notch in said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom and received between said disks, and springs pressing the said second disk toward the first-named disk and clamping the said flange between the two said disks.

8. In a friction-coupling, the combination of a friction-disk having a circular boss concentric and integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a lug projecting radially from said boss and seating in a notch in said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom and received between said disks, springs pressing the said second disk toward the first-named disk and clamping the said flange between the two said disks, and means for varying the tension of said springs.

9. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a circular boss concentric and integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a pin inserted in the first-named disk and projecting flush with said boss alongside thereof, said pin seating in a notch in the said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom, said flange being received between the outer portions of said disks, said disks having circular shoulders fitting partly over the edge of said flange, flat bowed springs having their ends resting on the exposed side of said second disk, and screw-bolts passing through the centers of said springs and loosely through said second disk and having threaded engagement with said first-named disk.

10. A friction-coupling consisting of a rotary power-transmitting member composed of two sections having opposite friction-faces and also having concentric circular projections extending toward but not meeting each other, a second power-transmitting member supported by said sections and rotatably mounted on said projections between said friction-faces, springs pressing the two said sections toward each other and clamping the said second member between the said friction-faces, the said second member having friction-faces engaging those on the said sections, and devices for varying the tension of said springs, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said engaging friction-faces will slip on each other under a predetermined excess of load.

11. A friction-coupling consisting of the combination of two disks having opposite friction-faces contiguous to their peripheries, a gear-ring rotatably mounted on the peripheries of said disks, said gear-ring having an integral flange extending inwardly between said disks, said flange having friction-faces engaging with those on said disks, said gear-ring also having gear-teeth on its periphery, springs pressing the two said disks toward each other and clamping the said flange therebetween, devices for varying the tension of said springs, and mechanism independent of said devices for causing said disks to interlock with each other, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said engaging friction-faces will slip on each other under a predetermined excess of load.

12. A friction-coupling consisting of the combination of two disks having opposite friction-faces, a power-transmitting ring rotatably mounted between said disks and having friction-faces engaging with those on said disks, springs pressing the two said disks toward each other and clamping the said ring therebetween, devices for varying the tension of said springs, mechanism independent of said devices for causing said disks to interlock with each other so as to rotate together, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said engaging friction-faces will slip on each other under a predetermined excess of load.

13. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a central circular boss integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a lug projecting radially from said boss and seating in a notch in the said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and projecting inwardly therefrom and received between said disks, springs pressing the said second disk toward the first-named disk and clamping the said flange between the two said disks, and means for varying the tension of said springs, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said disks and the said gear-ring will slip relatively to each other under a predetermined excess of load.

14. In a friction-coupling, the combination of a friction-disk having a circular boss concentric and integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a lug projecting radially from said boss and seating on a notch in said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom and received between said disks, springs pressing the said second disk toward the first-named disk and clamping the said flange between the two said disks, and means for varying the tension of said springs, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said disks and the said gear-ring will slip relatively to each other under a predetermined excess of load.

15. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a circular boss concentric and integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a pin inserted in the first-named disk and projecting flush with said boss alongside thereof, said pin seating in a notch in the said second disk, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom, said flange being received between the outer portions of said disks, said disks having circular shoulders fitting partly over the edge of said flange, flat bowed springs having their ends resting on the exposed side of said second disk, and screw-bolts passing through the centers of said springs and loosely through said second disk and having threaded engagement with said first-named disk, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said disks and the said gear-ring will slip relatively to each other under a predetermined excess of load.

16. In a friction-coupling, the combination of a friction-disk having a circular boss concentric and integral therewith, a second friction-disk mounted to slide longitudinally on said boss, a gear-ring rotatably mounted on the peripheries of the said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom, said flange being received between the outer portions of said disks, said disks having circular shoulders fitting partly over the edge of said flange, flat bowed springs having their ends resting on the exposed side of said second disk, screw-bolts passing through the centers of said springs and loosely through said second disk and having threaded engagement with said first-named disk, and means in addition to said bolts for causing said disks to interlock with each other so as to rotate together, whereby said bolts are relieved of all shearing strain.

17. In a friction-coupling, the combination of two disks having opposite friction-faces, a power-transmitting ring rotatably mounted between said disks and having friction-faces engaging with those on said disks, springs pressing the two said disks toward each other and clamping the said ring therebetween, devices for varying the tension of said springs, and mechanism independent of said devices for causing said disks to interlock with each other so as to rotate together.

18. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a circular boss concentric and integral therewith, a second friction-disk mounted on and to slide longitudinally on said boss, a gear-ring rotatably mounted on the peripheries of said disks, said gear-ring having teeth on its periphery, and said gear-ring also having a friction-flange integral therewith and extending inwardly therefrom, said flange being received between the outer portions of said disks, said disks having circular shoulders fitting partly over the edge of said flange, said gear-ring being supported by said disks, flat bowed springs having their ends resting on the exposed side of said second disk, and screw-bolts passing through the centers of said springs and loosely through said second disk and having threaded engagement with said first-named disk.

19. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a circular boss concentric and integral therewith, a second friction-disk mounted on and to slide longitudinally on said boss, a power-transmitting ring rotatably mounted on the peripheries of said disks, said ring having a friction-flange integral therewith and extending inwardly therefrom, said flange being received between the outer portions of said disks, said ring being supported by said disks, springs pressing the two said disks toward each other and clamping the said flange therebetween, and devices for varying the tension of said springs.

20. A friction-coupling consisting of the combination of two disks having opposite friction-faces contiguous to their peripheries, a power-transmitting ring rotatably mounted on the peripheries of said disks, said ring having an integral flange extending inwardly between said disks, said flange having friction-faces engaging with those on said disks, said disks having circular shoulders fitting partly over the edge of said flange, said ring being supported by said disks, springs pressing the two said disks toward each other and clamping the said flange therebetween, and devices for varying the tension of said springs.

21. A friction-coupling consisting of the combination of a rotary shaft, a friction-disk mounted on and keyed to said shaft, said disk having a circular boss concentric and integral therewith, a second friction-disk mounted on and to slide longitudinally on said boss, a power-transmitting ring rotatably mounted on the peripheries of said disks, said ring having a friction-flange integral therewith and extending inwardly therefrom, said flange being received between the outer portions of said disks, said ring being supported by said disks, springs pressing the two said disks toward each other and clamping the said flange therebetween, devices for varying the tension of said springs, and mechanism independent of said devices for causing said disks to interlock with each other, the tension of said springs always being such that the said coupling is rigid under ordinary load but that the said disks and the said ring will slip relatively to each other under a predetermined excess of load.

22. A friction-coupling consisting of the combination of two disks having opposite friction-faces contiguous to their peripheries, a power-transmitting ring rotatably mounted on the peripheries of said disks, said ring having an integral flange extending inwardly between said disks, said flange having friction-faces engaging with those on said disks, said disks having circular shoulders fitting partly over the edge of said flange, said ring being supported by said disks, springs pressing the two said disks toward each other and clamping the said flange therebetween, devices for varying the tension of said springs, and mechanism independent of said devices for causing said disks to interlock with each other, the tension of said springs always being such that the said coupling is rigid under or-

dinary load but that the said engaging friction-faces will slip on each other under a predetermined excess of load

## 755,954. ELECTRIC LAMP AND SOCKET. ALBERT N. SODEN Trenton, N. J. Filed Dec. 10, 1902. Serial No. 134,686. (No model.)

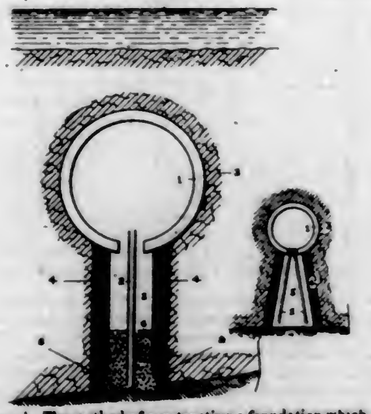


*Claim.*—1. An incandescent electric lamp comprising a vacuum-chamber having inner and outer spaced walls, a plurality of filaments of different lengths disposed concentrically within the chamber, and means for connecting the filaments individually with a source of electricity.

2. An incandescent electric lamp comprising a vacuum-chamber having inner and outer spaced walls, a plurality of filaments of different illuminating power disposed concentrically within the chamber, a pair of contacts for each filament, one contact of each pair being adapted for connection of a feed-wire thereto and the remaining contacts being connected respectively with the terminals of the corresponding filament and means for completing the circuit between the contacts.

3. The combination with an incandescent electric lamp comprising a vacuum-chamber having inner and outer spaced walls, a plurality of filaments of different illuminating power disposed concentrically within the chamber, a threaded plug projecting from the upper portion of the lamp, a number of contacts mounted upon the upper face of the plug, one end of each filament being connected to one of said contacts and the remaining ends of the filaments being connected with the plug, of a threaded socket adapted to receive the plug, said sockets containing a number of contacts adapted to engage the contacts upon the plug to complete the circuit, each of said contacts having a feed-wire connected thereto, a second feed-wire being connected to the socket and means for connecting the circuit to any or all of the contacts.

## 755,955. METHOD OF CONSTRUCTING FOUNDATIONS, TUNNELS, &c. CHARLES SOOYSMITH, New York, N. Y. Filed June 1, 1903. Serial No. 159,504. (No model.)



*Claim.*—1. The method of constructing a foundation which consists in sinking a pipe, circulating a vehicle of cold in the pipe, freezing the material about the pipe, thawing a portion of the frozen material nearest the pipe, withdrawing the pipe, excavating a part of the frozen material, and building a structure in the excavated space, substantially as described.

2. The method of constructing a foundation which consists in sinking a pipe, freezing the material about the pipe, withdrawing the pipe, excavating a portion of the frozen material, enlarging the excavation at the bottom and filling in the excavation with solid material, substantially as described.

3. The method of constructing a foundation which consists in sinking a pipe, freezing the surrounding material, excavating a portion of the latter, filling the pipe and excavation with solid material, substantially as described.

4. The method of constructing a foundation which consists in sinking a pipe, freezing the surrounding material, withdrawing the pipe, excavating a portion of the frozen material, and filling the excavation with solid material, substantially as described.

5. The method of constructing foundations which consists in sinking a pipe, freezing the surrounding material, thawing a portion of the frozen material, withdrawing the pipe, excavating a portion of the frozen material, and filling the excavation with solid material, substantially as described.

6. The method of constructing a foundation which consists in sinking a pipe, freezing the surrounding material, thawing a portion of the frozen material, withdrawing the pipe, excavating a portion of the frozen material, enlarging the excavation at the bottom and filling the excavation with solid material, substantially as described.

7. The method of constructing foundations consisting in freezing the soil, excavating a portion of the frozen soil, enlarging the excavation at the bottom, and filling the excavation with solid material, substantially as described.

8. The method of constructing foundations consisting in sinking a plurality of pipes, freezing the material about them, excavating the material between them, and filling the excavation with solid material, substantially as described.

9. The method of constructing foundations consisting in sinking a plurality of pipes, freezing the material about them, withdrawing the pipes, excavating a portion of the frozen material, and filling the excavation with solid material, substantially as described.

10. The method of constructing foundations consisting in sinking a plurality of pipes, freezing the material about them, excavating the material between them, enlarging the bottom of the excavation, and filling the excavation with solid material, substantially as described.

11. The method of providing a foundation for an existing structure consisting in sinking a pipe through an opening in the bottom of the structure to be supported, freezing the ground about the pipe, excavating a portion of the frozen material, filling the excavation with solid material, substantially as described.

12. The method of providing a foundation for an existing structure consisting in sinking a pipe through an opening in the bottom of the structure to be supported, freezing the material about the pipe, excavating a portion of the frozen material, enlarging the excavation at the bottom, and erecting a foundation in the excavation substantially as described.

13. The method of constructing foundations consisting in freezing the ground beneath the structure to be supported, excavating a portion of the frozen material, enlarging the excavation at the bottom, and erecting a foundation in the excavation, substantially as described.

14. The method of providing the foundations for an existing structure which consists in freezing the ground beneath said structure, excavating a portion of the frozen material, and erecting a foundation in the excavation, substantially as described.

15. The method of providing a foundation for an existing structure consisting in sinking a plurality of pipes through openings in the bottom of the structure to be supported, freezing the materia about the pipes, excavating the frozen material between the pipes and erecting a foundation in the excavation, substantially as described.

16. The method of providing a foundation for an existing structure consisting in sinking a plurality of pipes through openings in the bottom of the structure to be supported, freezing the material about the pipes, excavating the frozen material between the pipes, withdrawing the pipes, and erecting a foundation in the excavation substantially as described.

17. The method of constructing foundations consisting in sinking a plurality of pipes through openings in the bottom of the structure to be supported, freezing the material about the pipes, withdrawing the pipes, excavating the frozen material between the pipes and filling in a foundation in the excavation, substantially as described.

18. The method of constructing foundations consisting in sinking a plurality of pipes through openings in the bottom of the structure to be supported, freezing the material about the pipes excavating a portion of the frozen material, enlarging the excavation at the bottom, and filling in a foundation in the excavation, substantially as described.

19. The method of constructing a foundation which consists in sinking a pipe, freezing the surrounding material, withdrawing the pipe, and filling the space so left with solid material, substantially as described.

20. The method of constructing a foundation consisting in freezing the ground, excavating a portion of the frozen material on increasing radii downward, and erecting a structure in said excavation, substantially as described.

21. The method of constructing a foundation which consists in sinking a pipe, freezing the surrounding material, withdrawing the pipe, excavating a portion of the frozen material and erecting a foundation in the excavation, substantially as described.

22. The method of constructing tunnels which consists in constructing a portion of the tunnel, freezing the ground beneath the same, excavating a portion of the frozen material and building a foundation in the excavation, substantially as described.

23. The method of constructing a tunnel which consists in constructing a portion of the tunnel, sinking a pipe from within the same, freezing the surrounding material, excavating a portion of the frozen material, and building a foundation in the excavation, substantially as described.

24. The method of constructing a tunnel which consists in constructing a portion of the tunnel, sinking a pipe from within the same, freezing the surrounding material, withdrawing the pipe, excavating a portion of the frozen material and erecting a foundation in the excavation, substantially as described.

25. The method of providing a foundation for a tunnel which consists in sinking a plurality of pipes from within the tunnel, freezing the ground about the pipes, excavating a part of the frozen ground, and building a foundation in the excavation, substantially as described.

26. The method of constructing a foundation for tunnels which consists in sinking one or more pipes from within the tunnel, freezing the surrounding material, excavating a portion of the frozen material on increasing radii downward, and building a foundation in the excavation, substantially as described.

27. The method of constructing a foundation for tunnels which consists in freezing the material beneath the tunnel, excavating on increasing radii downward, and building a foundation in the excavation, substantially as described.

28. The method of constructing a foundation for tunnels which consists in freezing the material beneath the tunnel, excavating a portion of the frozen material, enlarging the excavation at the bottom, building the foundation in the excavation, substantially as described.

29. The method of providing a foundation for an existing structure which consists in sinking a pipe beneath the structure, and filling the pipe with solid material, substantially as described.

30. The method of providing a foundation for an existing structure which consists in sinking a pipe beneath the structure, inserting solid material in the pipe and removing the pipe, substantially as described.



## 755,956. METHOD OF CONSTRUCTING TUNNELS, SHAFTS, OR OTHER EXCAVATIONS. CHARLES SOOYSMITH, New York, N. Y. Filed Feb. 1, 1904. Serial No. 191,443. (No model.)

*Claim.*—1. The method of tunneling which consists in constructing a freezing-chamber in the material to be excavated, freezing the surrounding material, advancing a shield in rear of the freezing-chamber, and completing the tunnel-lining, substantially as described.

2. The method of tonneling which consists in progressively freezing, excavating, advancing a shield, and constructing the tunnel, substantially as described.

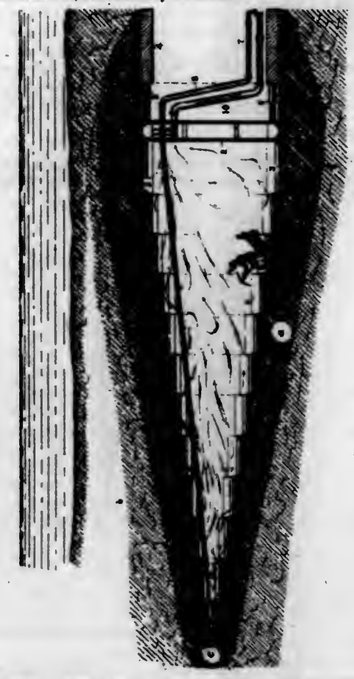
3. The method of tunneling which consists in first freezing the ground; second, advancing a shield through the frozen material; third, completing the tunnel, substantially as described.

4. The method of excavating which consists in constructing a freezing-chamber in the material to be excavated, freezing the material, and advancing a shield, substantially as described.

5. The method of excavating which consists in progressively freezing the material to be excavated, and advancing a shield, substantially as described.

6. The method of excavating which consists in alternately freezing and excavating on increasing radii, and advancing a shield through the material.

7. The method of excavating which consists in making an excavation, progressively freezing the interior surface thereof, excavating from the rear, and advancing a protective obstruction of the tunnel at its mouth, the freezing being continued where the frozen earth is removed, substantially as described.



8. The method of excavating which consists in making an excavation, then progressively freezing the interior surface thereof, excavating a portion of the frozen material, and advancing a shield, substantially as described.

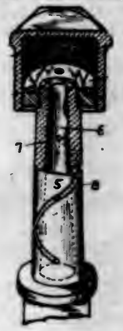
9. The method of excavating a tunnel which consists in progressively freezing and excavating the ground and advancing a protective obstruction at the mouth of the tunnel, substantially as described.

10. The method of freezing the ground which consists in introducing a freezing medium under pressure into a closed chamber in the material to be excavated, substantially as described.

11. The method of excavating which consists in constructing a closed chamber in the material to be excavated, introducing therein a freezing medium under pressure, and excavating the frozen material, substantially as described.

12. The method of erecting a subterranean structure which consists in constructing a closed chamber in the ground, introducing therein a freezing medium under pressure, excavating the frozen material, and constructing the structure, substantially as described.

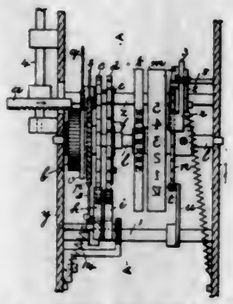
## 755,957. AXLE-LUBRICATOR. CHRISTOPHER J. STENE, Ashby, Minn. Filed Sept. 4, 1903. Serial No. 171,904. (No model.)



*Claim.*—The combination with a spindle having a longitudinal central passage and perforations leading from the outer face of the spindle to the passage, said spindle being exteriorly threaded at its outer end, of a cylindrical hub-retaining nut screwed onto the end of the spindle and having exterior threads, and a lubricant-reservoir screwed onto the nut and communicating with the passage in the spindle, said reservoir having a stud fitted in the passage of the spindle with a tightness sufficient to prevent flow of lubricant from the reservoir into the passage under normal conditions and to permit of such flow when the lubricant in the reservoir is under pressure.

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**755,958. WORKMAN'S TIME-RECORDER.** JAMES J. STOCKALL, Jr., London, England. Filed Nov. 18, 1902. Serial No. 131,340. (No model.)

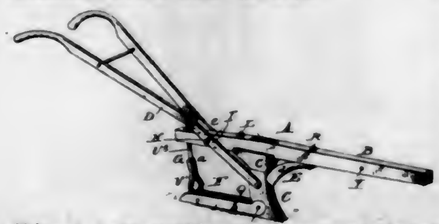


*Claim.*—1. In a workman's time-recorder, the combination with the spindle, means for revolving the same, type-wheels mounted on said spindle and escapement-controlling wheels carried by said spindle, of a locking-wheel for one of said type-wheels, a locking-lever and a feed-lever engaging said locking-wheel, a cam carried by said spindle and adapted to operate said feed-lever and a second cam in the rear of the first cam and adapted to operate said locking-lever, substantially as described.

2. In combination in a workman's time-recorder a cog-wheel driven by the clockwork of the apparatus and together with two snail-cams and a V-notched controlling escapement-wheel mounted loosely upon a common spindle, a pin fixed in such controlling escapement-wheel, an escapement-wheel fixed to the before-mentioned spindle and furnished with a slot through which the aforesaid pin projects, a spring fixed to the aforesaid escapement-wheel and engaging with the aforesaid pin, a controlling-escapement in conjunction with the controlling escapement-wheel, an escapement in conjunction with the escapement-wheel, a type-wheel (for printing the minutes) fixed to the aforesaid spindle, a type-wheel (for printing the hours) with a feed-wheel attached loosely and journaled upon the said spindle, a spring-urged rocking spindle suitably pivoted and provided with a lever in engagement with one of the aforesaid snail-cams, and with a feed-lever provided with a spring-pawl and a locking projection, a stop to limit the upward movement of the feed-lever, a further spring-urged rocking spindle suitably pivoted and provided with a lever in engagement with the other aforesaid snail-cam, a locking-lever also attached to said rocking spindle, and provided with a projection for engaging the spaces between the teeth of the aforesaid locking-wheel, substantially as and for the purposes described.

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**755,959. PLOW.** STONEWALL W. J. STONE, Hannah, S. C. Filed Oct. 21, 1902. Serial No. 128,141. (No model.)



*Claim.*—1. A plow comprising a plow-beam, a standard detachably secured thereto and being slotted as described, handles detachably secured to said beam and standard, a bar F having a forked forward end embracing the lower end of the standard and extending rearwardly from the standard, said bar comprising the wooden central portion S' and the metal side pieces S² bolted together as described a bolt passing through said forked end and the standard to detachably secure the said bar and standard together, and a connection between the rear end of said bar and rear end of the plow-beam, a loop secured at one end to the bar, a rod having one end secured to the loop and the other end being threaded and screwing within a threaded socket in the plow-beam.

2. A plow comprising a plow-beam, a standard detachably secured thereto and being slotted as described, handles detachably secured to said standard and beam, a bar F detachably secured at one end to the standard, said bar comprising the wooden central portion S' and the metal side pieces S² bolted together as described a connection between the rear end of the said bar and the rear end of the beam, and a brace E having one end passing within the slot of the standard and provided with an eye alining with openings in said standard, a bolt passing through the alined openings, and a bolt passing through an opening in the other end of the brace and an opening in the plow-beam.

3. A plow comprising a plow-beam, a standard having a recess C⁹ in its upper face in which said plow-beam is fitted, and also having the flanges C⁸ bolts detachably securing the standard to the beam, said standard being slotted as described, a brace having one end extending into the slot of the standard, handles bolted intermediate their ends to the plow-beam, a bolt passing through alined perforations in the lower end of the handles, the standard and the said brace, a bar F detachably bolted at one end to the lower end of the standard, said bar comprising the wooden central portion and the metal side pieces all bolted together, a loop secured at one end to the bar, a rod having one end secured to the loop and its other end being threaded and screwing within a threaded socket in the plow-beam, all arranged as and for the purpose specified.

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**755,960. CARPET-STRETCHER.** ERNEST J. STRADER, Decatur, Ill. Filed Nov. 22, 1902. Serial No. 132,436. (No model.)

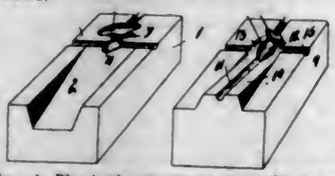


*Claim.*—1. In a carpet-stretcher, a carrier-block having a plurality of grooves in its under surface transverse of its path of movement, and provided with gripping-strips on the flat portions alternating with said grooves, substantially as described.

2. In a carpet-stretcher, a carrier-block having a groove in its under surface transverse of its path of movement, and provided with gripping-strips on the portions alternating with said groove, substantially as described.

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**755,961. DIES FOR JOINING INTERSECTING WIRES.** ORANGE S. STURTEVANT, Adrian, Mich. Filed Dec. 18, 1903. Serial No. 185,641. (No model.)



*Claim.*—1. Dies having transverse registering grooves for the reception of the cross-wires, one of said dies having an inclined way, a depression at the terminal of said incline and curved concavities, the other of said dies having an inclined plane with a longitudinal channel, curved concavities leading from the base of said incline, a depression between said curved concavities and a diagonal concavity communicating with the terminals of said curved concavities and interposed between them.

2. Dies having transverse registering grooves for the reception of the cross-wires, one of said dies having a central depression and curved concavities crossing the line of one of said grooves, the other of said dies having parallel concavities, a depression between said concavities and a diagonal concavity crossing the line of one of said grooves and communicating with the terminals of said parallel concavities.



**755,962. ADVERTISING-CARD.** WILLIAM T. SULLIVAN and MICHAEL J. SULLIVAN, Cincinnati, Ohio, assignors to the Sullivan Printing Works Company, Cincinnati, Ohio, a Corporation. Filed Oct. 22, 1903. Serial No. 178,100. (No model.)

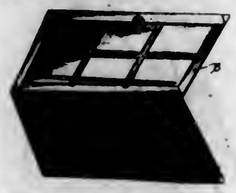



*Claim.*—1. In combination with an advertising-card provided with slits, a detachable folded card containing color-blocks on an inner face of the fold and provided with corners adapted to engage with the slits of said advertising-card, substantially as described.

2. An advertising-card containing a figure in drawing, in combination with a folded polygonal card having color-blocks imprinted on an inner face of the fold, slits in the advertising-card adapted to receive two opposite corners of the folded card, substantially as described.

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**755,963. ADVERTISING-CARD.** WILLIAM T. SULLIVAN and MICHAEL J. SULLIVAN, Cincinnati, Ohio, assignors to the Sullivan Printing Works Company, Cincinnati, Ohio, a Corporation. Filed Oct. 22, 1903. Serial No. 178,101. (No model.)

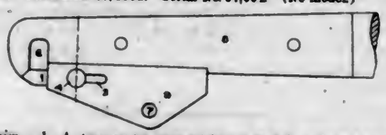


*Claim.*—1. A folded card having color-blocks imprinted on one of its inner faces, and on one of its outer faces imprinted lines, representing a box, substantially as described.

2. A card folded in the middle substantially rhomboidal in shape when folded, imprinted color-blocks on one of its inner faces, imprinted lines on one of the outer faces, representing a box-lid with a marginal molding, substantially as described.

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**755,964. VEHICLE-POLE TIP.** ALBERT V. SWANSON, Minot, N. D. Filed Mar. 10, 1902. Serial No. 97,664. (No model.)

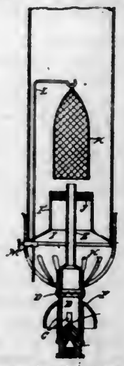


*Claim.*—1. A tongue-tip comprising a metal socket provided with a recess in one end, a spring-actuated bolt slidable in a groove in said socket and normally held by its spring in position closing said recess, a plug closing the rear end of said groove, said plug being removable to allow the removal of the spring and bolt through the rear end of the groove, and actuating-handles extending outwardly from the opposite sides of said bolt.

2. A tongue-tip comprising a metal socket provided with a recess in its closed end, a spring-actuated bolt slidable in said socket to close said recess, and a wing projecting downwardly from said socket sufficiently to rest upon and hold the end of the tongue out of contact with the ground, said wing being formed with a transverse opening below said bolt.

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**755,965. ACETYLENE-GAS BURNER.** HENRY SYMONDS, Long Beach, Cal., assignor to Libbie F. Kistler, Los Angeles, Cal. Filed Feb. 16, 1903. Serial No. 143,702. (No model.)



*Claim.*—1. A gas-burner having the following: a mixing-chamber; a slender burner-tube having thin walls and a non-constricted outlet affixed to the top of said mixing-chamber and constituting the outlet thereof; a screen in said mixing-chamber; means to supply air and gas to said chamber; means to concentrate air around said burner-tube.

2. In a gas-burner an imperforate air-concentrating hood having a draft-channel therethrough surrounding the burner-tube near the outlet thereof, said draft-channel being intermediate said hood and tube; a screen in the top of said hood surrounding said burner-tube.

3. In an acetylene-gas burner a mixing-chamber having a screen therein extending across the chamber and a slender burner-tube of less diameter than the mixing-chamber and having thin walls and a non-constricted outlet affixed to and forming the outlet of said chamber; an air-concentrating hood surrounding a portion of the upper part of the burner-tube and having a portion of the upper walls thereof parallel with the walls of the burner-tube.

4. A gas-burner comprising a Bunsen pillar having a slender burner-tube having thin walls and a non-constricted outlet affixed to the top of the mixing-chamber thereof and forming the outlet thereof; and a screen extending transversely said mixing-chamber; and an air-concentrating hood surrounding a portion of the upper part of the burner-tube.

5. A gas-burner comprising a Bunsen pillar having a slender burner-tube with thin walls and a non-constricted outlet affixed to the top of the mixing-chamber thereof forming the outlet thereof; and a screen extending transversely said mixing-chamber; and an air-concentrating casing having a draft-channel therethrough surrounding a portion of the upper part of the burner-tube, said draft-channel being intermediate said casing and tube and having a screen therein.

6. In an acetylene-gas burner means to keep the burner-tube cool comprising an imperforate casing having a draft-channel therethrough the top of which surrounds the burner-tube near the top thereof and is adapted to concentrate the air around said tube, said draft-channel being intermediate said casing and tube and having a screen therein.

7. In an acetylene-gas burner the combination of a burner-tube having thin walls and a non-constricted outlet with an air-concentrating hood surrounding said burner-tube, said concentrating-hood having the upper portion of the walls thereof parallel with the walls of said burner-tube.

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**755,966. COMBINED SCOOP AND WEIGHING APPARATUS.** JOHN L. TAYLOR, Ottawa, Canada, assignor of one-half to George Arthur Johnston, Ottawa, Ontario, Canada. Filed June 5, 1903. Serial No. 160,242. (No model.)



*Claim.*—1. A weighing apparatus comprising a receptacle, a forked rod fixed thereto, a handle, a pin carried thereby on which the forked ends of said rod are pivoted, a second rod also pivoted

on said pin and having pivotal connection with the rear of said receptacle, a spring having one end fixed to the handle and its other end connected to the rod which is pivoted to the receptacle, an indicator, and means for actuating the same as pressure is applied to the receptacle, as set forth.

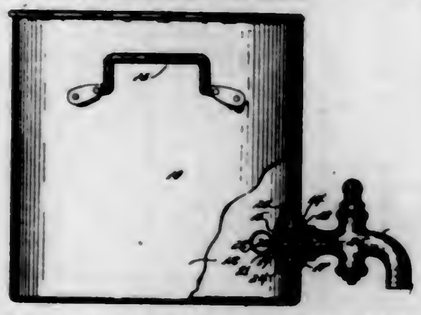
2. A weighing apparatus comprising a hollow handle, a pin mounted therein, a scoop, a forked rod, one end of which is fixed to the scoop and its forked ends pivotally mounted upon said pin, a second rod, one end of which is pivoted on said pin and having a forked end, the arms of which are pivotally connected to the rear end of the scoop, a rod connecting the arms of said rod which are pivoted to the scoop, a spring fixed at one end to the handle and the other end to said rod which is pivoted to the scoop, an indicator, and means for actuating the same as pressure is applied to the scoop, as set forth.

3. A weighing apparatus comprising a hollow handle, a pin mounted within the same, a scoop, a rod fastened to the rear end of the scoop and having forked ends which are pivotally mounted upon said pin, a second rod pivotally connecting the scoop with said pin, a spring fixed at one end to the handle and connected to said rod having pivotal connection with the scoop, a cylinder mounted in the handle and having a spiral groove, a lug carried by the rod to which the spring is connected and positioned in said spiral groove, and an indicating-pointer actuated by said cylinder, as set forth.

4. A weighing apparatus comprising a hollow handle, a pin mounted therein, a scoop, a rod fixed at one end to the scoop and having forked arms which are pivoted on said pin, a second rod which is pivotally mounted on said pin and having forked ends which are pivoted to the rear end of the scoop, a rod connecting said forked ends which are pivoted to the scoop, a spring fixed at one end to the handle and fastened at its other end to said rod, a spirally-grooved cylinder journaled in suitable bearings in the handle, and a projection, a rod pivotally connected to the scoop extending into said spiral groove, an indicating-pointer mounted on the pintle of said cylinder and adapted to register over the surface of a dial on the handle, as set forth.

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**755,967. COOKING UTENSIL. ALBERT H. THIELE, New York, N. Y., assignor to Stransky & Co., New York, N. Y., a Firm. Filed Sept. 21, 1903. Serial No. 173,921. (No model.)**



*Claim.*—1. A cooking utensil comprising a vessel; a discharge-outlet therefor; an arch-shaped strainer to cover such opening; and a bent wire loosely carried by said strainer, and comprising a handle upon one side thereof and a pair of spring-legs upon the other side thereof organized to enter the discharge-outlet and frictionally hold the strainer in place.

2. A cooking utensil comprising a vessel, a cock carried thereby and adapted to draw the contents from the vessel, a strainer to cover the entrance of such cock, and means to fasten the same in place comprising a body loosely carried by the strainer and comprising a handle upon one side thereof and a pair of spring-legs upon the other side thereof organized to enter the inner end of the cock and hold the strainer against the side of the vessel by frictional contact with the interior of the cock.

3. As an article of manufacture the combination with a strainer; of a fastening-body carried thereby and supported intermediate of its ends by walls of an opening through the strainer and having a spring portion on one side of the strainer and a spring contact portion upon the other side thereof.

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**755,968. CORSET. JULIA H. THOMPSON, Plainfield, N. J. Filed May 12, 1903. Serial No. 156,790. (No model.)**

*Claim.*—1. A corset, composed of a plurality of sections, a plurality of straps, each strap being secured at one end to a section of the corset, a plurality of secondary straps, each of such straps being also connected to a section of the corset, such secondary straps being provided with apertures in which the primary straps lie, apertures in the corset through which to pass such primary and secondary straps, and means for fastening the free ends of the several straps, substantially as shown and described.

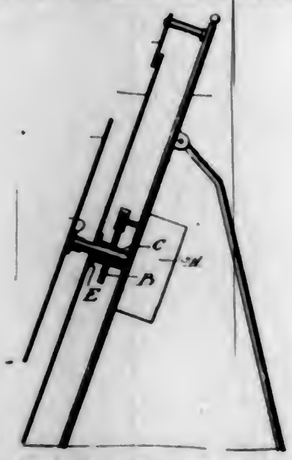


2. A corset composed of a plurality of sections, sets of straps secured to said sections, and means for connecting together the straps secured to the same corset-section so that one strap will slide upon the other, substantially as shown and described.

3. A corset composed of a plurality of sections, sets of straps secured to said sections, means for connecting together the straps secured to the same corset-section so that one strap will slide upon the other and means for fastening the free ends of the straps, substantially as shown and described.

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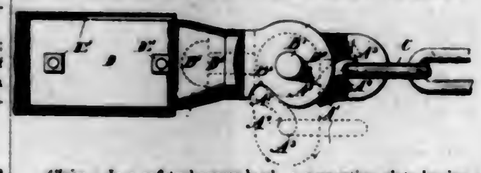
**755,969. CLOCK-DIAL. SAMUEL P. THEAMER, New Haven, Conn. Filed Nov. 17, 1900. Serial No. 36,614. (No model.)**



*Claim.*—An advertising-clock having a stationary main shaft, a driving-gear loosely mounted thereon, a graduated dial removably carried by said driving-gear, a stationary disk removably carried by said stationary shaft and in front of said graduated dial the said main shaft being carried by a frame having a plurality of legs the upper ends of two of the legs of said frame being connected by a cross-piece, a third leg pivotally carried by the frame, a stationary pointer carried by said cross-piece and projecting down and in front of the graduated portion of said dial and adapted therewith to indicate rotation of said dial.

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**755,970. WHIFFLETREE-HOOK. EDWARD R. WELLS, Asheville, N. C. Filed Oct. 2, 1902. Serial No. 125,626. (No model.)**



*Claim.*—In a safety harness-hook, a supporting-plate having a recess at one side thereof, a hook pivoted upon said plate and having its free end adjacent to the periphery of the plate and a point constructed and arranged to engage said plate when the passage of the hook is in alinement with the recess in the plate, and a curved lip upon the free end of the hook between the point and bend thereof extending laterally toward the opposite inwardly-curved wall to provide an abutment and a socket for a link at the bend therein when the passage of the hook is in alinement with said plate-recess.

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**755,971. TANK. JOHN W. WALLACE, Brooklyn, N. Y. Filed Sept. 11, 1902. Serial No. 122,937. (No model.)**



*Claim.*—1. A pressure-tank comprising a main body of metal, a metal bottom elevated in said body and formed with an angle or bend 8, an inner flange 5 integral with and depending from said angle or bend, an outer flange 6 spaced from and integral with said inner flange and rising from the lower edge thereof so that the lowest point of its upper edge is on a level with the said angle or bend, and an integral body of brazing metal, or solder, interposed between the surfaces of the main body and the adjacent surfaces of the said flanges, said body of brazing metal or solder rising to a level with the said angle 8, substantially as described.

2. In a pressure-tank, a main body of metal, a metal bottom elevated in said body and formed with an angle or bend 8, an outwardly-flaring inner flange 5 integral with and depending from said angle or bend, an outer flange 6 spaced from and integral with said inner flange and rising from the lower edge thereof so that the lowest point of its upper edge is on a level with the said angle or bend, and an integral body of brazing metal, or solder, interposed between the surfaces of the main body and the adjacent surfaces of the said flanges, the body of brazing metal or solder forming a flush seat 12 between the apex of said angle or bend 8 and the inner surface of the body of the tank which seat is wider or thicker than the brazing metal or solder beneath it, substantially as described.

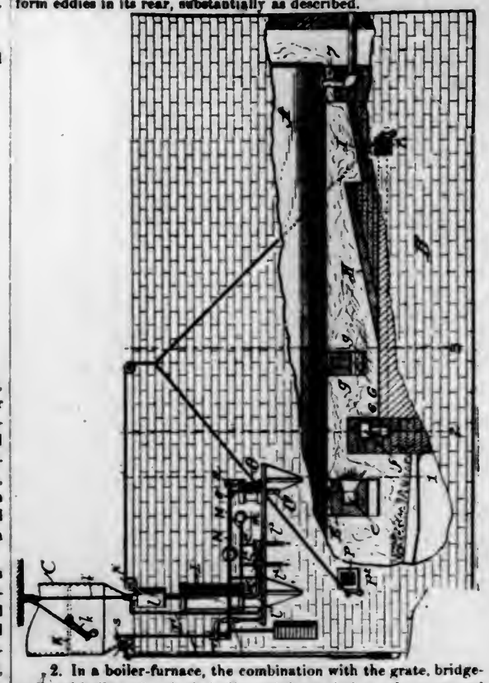
3. A pressure-tank comprising a main body of metal, a metal bottom elevated in said body and formed with an angle or bend 8, an inner flange integral with and depending from said angle or bend, an outer flange 6 spaced from and integral with said inner flange and rising from the lower edge thereof so that the lowest point of its upper edge is on a level with the said angle or bend, an integral body of brazing metal, or solder, interposed between the surfaces of the main body and the adjacent surfaces of the said flanges and forming a seat 12 between the main body and the apex of the said angle or bend and a lining 9 for the body of the tank, substantially as described.

4. A pressure-tank comprising a main body of metal, a metal bottom elevated in said body and formed with an angle or bend 8, an outwardly-flaring inner flange 5 integral with and depending from said angle or bend, an outer flange 6 spaced from and integral with said inner flange and rising from the lower edge thereof so that the lowest point of its upper edge is on a level with the said angle or bend, an integral body of brazing metal, or solder, interposed between the surfaces of the main body and the adjacent surfaces of the said flanges, the body of brazing metal or solder forming a flush seat 12 between the apex of said angle or bend 8 and the inner surface of the body-tank which seat is wider or thicker than the brazing metal or solder beneath it and a lining for said tank, substantially as described.

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**755,972. STEAM-BOILER FURNACE. LOUIS G. M. WEST, Baltimore, Md. Filed July 9, 1903. Serial No. 164,872. (No model.)**

*Claim.*—1. In a boiler-furnace, and in combination, a grate, a bridge-wall in rear of the grate, having air-flues discharging rearward, a baffle-arch located above the grate in front of said wall, with a passage-way for the products of combustion above and below said arch, and also with a passage-way for said products between it and the bridge-wall, also with air-flues discharging rearward, a second baffle-arch in rear of the bridge-wall and separated therefrom, said second arch having passage-ways for the products of combustion above and below, whereby the products of combustion, after passing over the bridge-wall are divided, receive a supply of air and pass partly over and partly under the second arch and form eddies in its rear, substantially as described.



2. In a boiler-furnace, the combination with the grate, bridge-wall and boiler, of a single baffle-arch located above the grate and spaced from the boiler to provide a flame and gas space above and below the same, said arch having an air-flue and rearwardly-discharging exit-passages, a second arch in rear of the bridge-wall and also spaced from said boiler, and an inclined floor sloping upwardly from said rear arch toward the rear of the boiler, substantially as described.

3. In a boiler-furnace, the combination with the grate, bridge-wall and boiler, of a single baffle-arch located above the grate and spaced from the boiler to provide a flame and gas space above and below the same, said arch having an air-flue and rearwardly-discharging exit-passages, a second arch in rear of the bridge-wall and also spaced from said boiler, and an inclined floor sloping upwardly from said rear arch toward the rear of the boiler and with a pocket in rear of said inclined floor, substantially as described.

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**755,973. VENTILATOR. ROBERT S. WEST, Talladega, Ala., assignor of one-half to E. B. Wren, Talladega, Ala. Filed May 21, 1902. Serial No. 108,358. (No model.)**

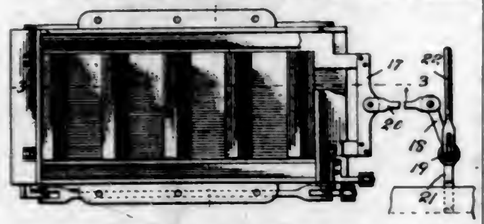


*Claim.*—In a ventilator, the combination with a pair of boxing-sections having their adjacent ends telescoped, of a wall extending across the inner end of the inner section and having openings, a damper slidably mounted on the wall, an outstanding flange secured to and surrounding said inner end and having portions that extend inwardly over the damper and secure the same in place, other portions of said flange being offset and located in the path of movement of the damper to limit its movement, a screen-wall extending across the outer end of the outer section, an outstanding flange at-

tached to said outer end and surrounding the same, said screen-wall having its edges confined between the flange and section, and a hood attached to the inner portion of the flange and covering the screen-wall.

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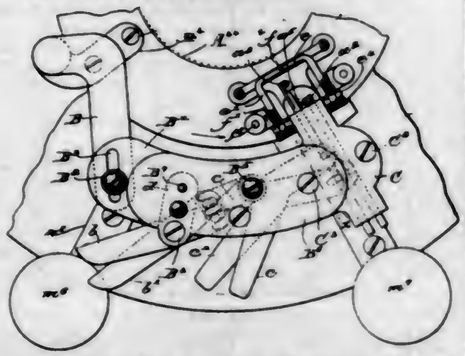
**755,974. ASH-PAN FOR LOCOMOTIVES.** JAMES S. WHISENHUNT, Epley, Miss. Filed Oct. 21, 1903. Serial No. 177,934. (No model.)




*Claim.*—An ash-pan of the class set forth, comprising sides, a bottom having transversely-extending slots therein and opposite end dampers, means for operating the said dampers, guides extending inwardly from the opposite sides of the pan and having their lower base sides above the bottom, the upper sides of the guides being inclined inwardly to provide release-surfaces for ashes or other products of combustion that may fall thereon, and sliding means disposed on the bottom and having transversely-arranged inverted-V-shaped tubular bars open at their lower sides and held in close relation to the bottom of the pan, the said bars being materially spaced apart from each other to have their lower edges act as scraping means on the bottom and also projected above the lower or base sides of the guides, the opposite ends of the bars being open and terminating at a distance from the inner edges of the guides, the said guides having their upper surfaces inclined toward the open ends of the bars, and mechanism for operating the said slide means.

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**755,975. THREAD-PRESENTING MECHANISM FOR KNITTING-MACHINES.** CHARLES H. WHITCHER, Ipswich, Mass. Filed Jan. 6, 1902. Serial No. 88,536. (No model.)



*Claim.*—1. In a thread-presenting mechanism, a plurality of independently-movable thread-guides, means to guide the same, and a pair of levers for each of said thread-guides, operative connections between the levers of each pair to cause one lever to be moved by the other to put the thread-guide connected therewith either into its operative or inoperative position and positive means for moving each one of the levers of each pair.

2. In an independently-movable thread-presenting mechanism, a plurality of thread-guides, means to guide the same, and a pair of levers for each of said thread-guides, operative connections between the levers of each pair to cause one lever to be moved by the other to put the thread-guide which is connected therewith either into its operative or inoperative position, a plurality of actuators, means to control the position of said actuators singly, that each may act in turn upon each of its own series of levers to put the thread-guide into its operative or inoperative position as desired.

3. In a thread-presenting mechanism for knitting-machines, a thread-guide, means to guide the same, a lever connected to the thread-guide to move said thread-guide into its inoperative position, a second lever connected to the first-mentioned lever for moving the thread-guide into its operative position, means for acting upon said first-mentioned lever to move the thread-guide into inoperative position, such movement of said first-mentioned lever causing the second lever to be moved into position that it may be directly actuated when it is again desired to put the thread-guide into operative position.

4. In an apparatus for presenting thread to knitting-machine needles, a pair of levers, means to connect said levers, and a thread-guide engaged directly by one of said levers, and independent means to actuate each of said levers, each lever when turned in one direction moving the other lever in the opposite direction to put it in position to be acted on by its actuating means.

5. In a thread-presenting mechanism, a rest to sustain the thread near the line of action of the needles, a thread-parting device cooperating with said rest, a thread-guide, means to move said thread-guide to and from the line of needles to put the guide into its operative or inoperative position to cause the thread carried by it to be knit or not knit, and devices controlled by the movement of the thread-guide to move the parting device for the thread carried by said guide away from the thread-rest when the thread-guide is moving into its operative position toward the needles and to effect the movement of the parting device toward said rest to clamp the thread carried by the guide when said guide is moving into its inoperative position away from the line of needles.

6. In a thread-presenting mechanism, a rest to sustain the thread near the line of action of the needles, a plurality of thread-parting devices cooperating with the opposite faces of said rest, a series of thread-guides, and devices to actuate either of said thread-guides and put the same into its operative or inoperative position, and devices controlled by the movement of said thread-guide to move its parting device away from the thread-rest when said thread-guide is coming into its operative position and to effect the movement of the parting device toward said rest when the thread-guide is moving into its inoperative position.

7. In a knitting-machine, a series of thread-guides, and a series of longitudinally-flexible spiral springs through which the thread going to the thread-guide is conducted on its way from the bobbins to the thread-guides, said spring preventing injury to the thread.

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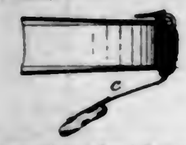
**755,976. PROCESS OF PRINTING ON INFLATABLE ARTICLES.** EMORY C. WHITE, Montclair, N. J. Filed Apr. 29, 1903. Serial No. 154,847. (No specimens.)

*Claim.*—1. The process of printing on the elastic distendible envelops of inflatable articles, consisting in first materially stretching the envelop to substantially the same dimensions as it will have when the article is inflated, and then printing thereon, whereby the imprint will return to substantially the same dimensions and form when the article is inflated as said imprint had at the instant of printing.

2. The process of printing on inflatable articles, consisting in stretching the elastic envelop of the article to substantially the same tension and dimensions as it will have in the condition of use by inflating said envelop with a gas, and printing on the inflated envelop, substantially as described.

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**755,977. DETACHABLE SHOULDER-REST FOR VIOLINS OR OTHER INSTRUMENTS.** JAMES H. WHITE, Boston, Mass., assignor to Adolph J. Ostlinger, Boston, Mass. Filed July 23, 1903. Serial No. 166,712. (No model.)




*Claim.*—1. In an attachment for violins or similar instruments of the character specified, the combination with a chin-rest and means for clamping or otherwise attaching the same to an instrument, of a plate adapted to be interposed between said attaching means of the chin-rest and the adjacent side edge of the instrument to which it is attached, and a shoulder-rest the arm of which is secured to said plate.

2. In an attachment for violins or similar instruments of the character specified, the combination with a chin-rest and means for clamping or otherwise attaching the same to an instrument, of a plate adapted to have placement between said attaching means of the chin-rest and the adjacent side edge of the instrument to which it is attached, a shoulder-rest, and means whereby the same may be detachably secured to said plate.

3. An attachment for violins or similar instruments of the character specified having a chin-rest provided with a clamping rod or rods or other means of retention whereby said chin-rest may be secured to the instrument, said attachment comprising a plate adapted to be interposed between the attaching means of the chin-rest and the adjacent side edge of the instrument to which it is attached, and a shoulder-rest having a bent end making connection with said plate.

4. An attachment for violins or similar instruments of the character specified having a chin-rest povided with a clamping rod or rods or other means of retention to an instrument, said attachment comprising a socket-forming plate adapted to be interposed between the clamping rod or rods of the chin-rest and the adjacent side edge of the instrument to which it is attached, and a shoulder-rest having a bent end, which end is adapted to be detachably combined with said plate by entering the socket or sockets thereof.

5. An attachment for violins or similar instruments of the character specified having a chin-rest provided with a clamping rod or rods whereby said chin-rest may be attached to an instrument, said attachment comprising a plate adapted to be interposed between the clamping rod or rods of said chin-rest and the adjacent side edge of the instrument, said plate having a main and a struck-up portion or portions, and a shoulder-rest the bent end of which is adapted to combine with said plate by being thrust into the socket or sockets formed between its main and struck-up portion or portions, substantially as described.

6. In an attachment for violins or similar instruments of the character specified, the combination with a chin-rest, of means for clamping or otherwise attaching the same to an instrument, said means for attachment being so disposed as to leave a space or socket interposed between the same and the adjacent edge of the instrument to which said chin-rest is attached, a shoulder-rest having a bent end, and means for detachably holding said bent end of the shoulder-rest within said space or socket.

7. An attachment for violins or similar instruments of the character specified having a chin-rest provided with a clamping rod or rods or other means of retention to said instrument, said attachment comprising a plate adapted to be interposed between the attaching means of the chin-rest and the adjacent side edge of the instrument, said plate being made in two sections, and a shoulder-rest having a bent end, which end of the shoulder-rest combines with sections of the interposed plate substantially as described.

8. An attachment for violins or similar instruments of the character specified having a chin-rest provided with clamping-rods, or like means of retention to said instrument, said attachment comprising a plate adapted to be interposed between the clamping-rods of said chin-rest and the adjacent side edge of the instrument, said plate comprising two sections, which separately can be placed back of the respective clamping-rods of the chin-rest when portions of the said sections will lap by one another between said rods, and which interlapping portions of the sections are each provided with a raised portion coming in line with one another when the two parts of the plate are properly combined, and a shoulder-rest having a bent end, which bent end of the shoulder-rest is adapted to combine with said plate by being thrust between the raised portions of its interlapping parts and the main portions thereof.

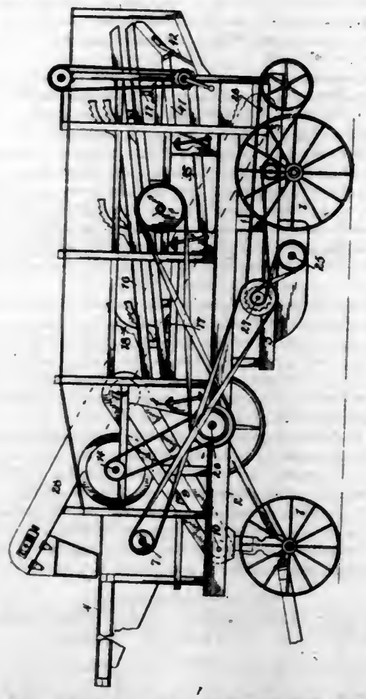
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**755,978. GRAIN-SEPARATOR.** JAMES K. WHITE and GEORGE W. PYLE, Mansfield, Ohio. Filed July 10, 1902. Serial No. 115,072. (No model.)

*Claim.*—1. In a grain-separator, the combination; of a grain-pan, a chaffer pivotally connected thereto, supports for these parts, a double-crank shaft, connections between one of the cranks thereof and said parts; a shoe, connections between said shoe and the other crank, and connections between the latter and another moving part of the separator which—with the shoe—counterbalances the grain-pan and chaffer.

2. In a grain-separator, the combination; of a grain-pan, a chaffer pivotally connected thereto, supports for these parts, a double-crank shaft, connections between one of the cranks thereof and said pan; a shoe, a return-pan, supports for these parts, and connections between each of them and the other crank, as and for the purpose set forth.

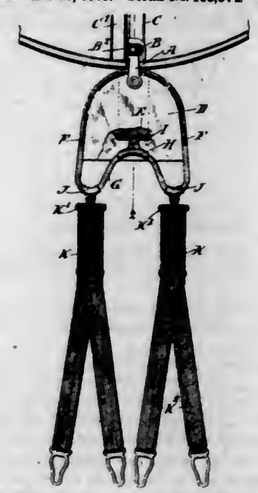
3. In a grain-separator, the combination; of a grain-pan, a chaffer connected thereto, a double-crank shaft, one pitman-rod connecting one of the cranks thereof with the pan; a return-pan above the chaffer, another pitman-rod connecting the return-pan with the other crank, and connections between the latter and a moving part of the separator which—with the return-pan—counterbalances the grain-pan and chaffer.



4. In a grain-separator, the combination including the straw-shaker, the driving mechanism, and a double-crank shaft; of a return-pan standing next under the shaker, a grain-pan, a chaffer attached thereto and standing next under the return-pan, a shoe next under the chaffer, and one pitman-rod between the grain-pan and chaffer and one crank, and two pitman-rods between the return-pan and shoe and the other crank, whereby said pairs of parts counterbalance each other.

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**755,979. HOSE-SUPPORTER.** ALBERT M. WILSON, Cherokee, Iowa. Filed June 10, 1903. Serial No. 160,874. (No model.)




*Claim.*—1. A hose-supporter provided with a cord, fixed at the ends and formed into separated loops, a supporting-guide for the portion between the loops to run in, and strap-guides for the hose-straps, running freely in the loops, as set forth.

2. A hose-supporter provided with a cord, a carrier for the ends of the cord, a supporting-guide for the middle of the cord to run in and located relative to the ends of the cord, to form the latter into depending loops between the supporting-guide and the fixed ends, and strap-guides running freely in the said loops and carrying the hose-straps, as set forth.

3. A hose-supporter comprising a hook for attachment to a corset, a supporting-strap mounted to swing on the said hook and carrying a swiveled guide, and a cord running in the said guide and carrying running-guides for the hose-straps, as set forth.

4. A hose-supporter comprising a hook for attachment to a corset, a carrier swiveled on the said hook, a cord fastened at its ends to the said carrier, a supporting-guide swiveled in the carrier and arranged for the middle of the cord to run in, the said guide being arranged relative to the fixed cord ends, to form depending loops between the supporting-guide and the fixed ends, and strap-guides running loose on the said loops, for supporting the hose-straps, as set forth.

5. A hose-supporter carrying a hook, for attachment to a corset, a shield and tape swiveled on the said hook, a cord having its ends secured to the shield on opposite sides of the free end of the tape, a supporting-guide hung on the free end of the tape and engaging the middle portion of the cord, to form depending loops thereof, a strap-guide hung in each loop, and a hose-strap pivotally connected with each strap-guide, as set forth.

6. A hose-supporter carrying a hook, for attachment to a corset, a shield and tape swiveled on the said hook, the tape extending between the front and rear members of the shield, a cord having its ends secured to the shield on opposite sides of the free end of the tape, a supporting-guide hung on the free end of the tape and engaging the middle portion of the cord, to form depending loops thereof, a strap-guide hung in each loop, and a hose-strap pivotally connected with each strap-guide, as set forth.

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755,980. SHOE-POLISHER. JAMES H. WILSON, Lowell, Mass. Filed June 15, 1903. Serial No. 161,632. (No model.)



*Claim.*—1. In a polisher, the combination of a suitable handle, two loops rigidly secured thereto at the ends thereof, one of said loops having a roller provided with means for stretching and holding stretched a strip attached to the other of said loops.

2. In a polisher, the combination of a suitable handle, two loops secured thereto at the ends thereof, one of said loops having a rigid bar for the attachment of a polishing-strip and the other of said loops having a roller provided with means for engaging said strip and with an arm by which to turn said roller to stretch said strip, said arm having a catch, to engage a stationary part of said last-named loop to prevent a reverse movement of said roller.

3. In a polisher, the combination of a suitable handle, two loops secured thereto at the ends thereof, one of said loops having a rigid bar for the attachment of a polishing-strip and the other of said loops having a roller provided with teeth for engaging said strip and with an arm by which to turn said roller to stretch said strip, said arm having a catch, to engage a stationary part of said last-named loop to prevent a reverse movement of said roller.

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755,981. FEED-WATER HEATER. LEVI WISNER and ISAIAH WISNER, Redman, Mich. Filed Apr. 15, 1903. Serial No. 152,786. (No model.)

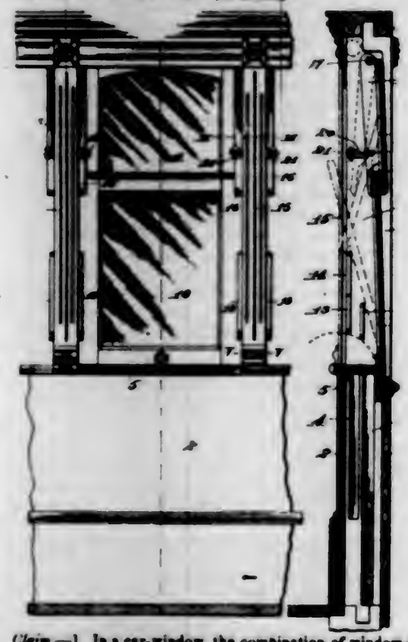
*Claim.*—In a device of the class described, the combination with a boiler, of an approximately rectangular tank or casing arranged at one side of the boiler, and having a concaved bottom conforming to the configuration of and fitted directly against the boiler, the bottom and the outer walls of the tank or casing being extended downward to provide an exteriorly-arranged, narrow scale-catching trap or pocket, inlet and outlet pipes connected with the tank or casing at the upper portion thereof, whereby water may be supplied to and withdrawn from the tank or casing without disturbing or agitating the contents of the pocket or trap, a blow-off cock arranged at the bottom of the pocket for discharging the contents thereof, a heating-coil arranged within the upper portion of the tank or casing, and steam inlet and outlet pipes connected with the coil, substantially as described.

755,981.



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755,982. STREET-CAR WINDOW. HUBERT WITTE, St. Louis, Mo., assignor to St. Louis Car Company, St. Louis, Mo. Filed Sept. 14, 1903. Serial No. 173,073. (No model.)

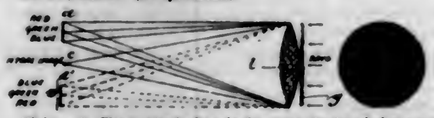


*Claim.*—1. In a car-window, the combination of window-posts, lower and upper sashes, swinging arms pivoted to said posts to bear against said upper sash, and having tongues to engage said lower sash, and means for holding said swinging arms in engagement with said sashes, substantially as set forth.

2. In a car-window, the combination of window-posts, lower and upper sashes, swinging arms pivoted to said posts for engagement with said sashes, slotted fingers carried by said arms, and set-screws passing through said fingers and seated in said posts to hold said swinging arms in engagement with said sashes, substantially as set forth.

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755,983. COLOR PHOTOGRAPH AND PROCESS OF MAKING SAME. ROBERT W. WOOD, Madison, Wis. Filed Feb. 14, 1899. Serial No. 705,499. (No specimens.)



*Claim.*—1. The method of producing a multicolored photograph which consists in photographing parts of an object having a given color, through a diffraction-grating adapted to produce the same color, substantially as described.



2. The method of producing a multicolored photograph which consists in superposing and registering monochrome photographs, each of a different color, and each of which is a photograph of similarly-colored parts of a multicolored object through a diffraction-grating adapted to produce the same color, substantially as described.

3. The method of producing a multicolored photograph which consists of photographing an object through screens of different colors, and through a diffraction-grating adapted to produce colors corresponding to those of the screens, substantially as described.

4. The method of producing a multicolored photograph which consists in photographing an object through screens of different colors and through diffraction-gratings associated therewith, each adapted to produce a color corresponding to the color of the screen used therewith, and preparing a composite positive from the results of such photographic acts, substantially as set forth.

5. The method of producing a multicolored photograph which consists in successively photographing a multicolored object upon a sensitive element through a series of different-colored screens and through a diffraction-grating associated with each of said screens, the color adapted to be produced by each diffraction-grating corresponding with the color of its associated screen, substantially as set forth.

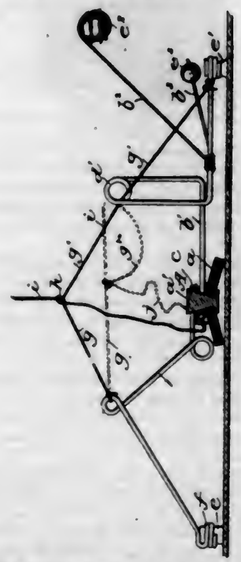
6. As an article of manufacture, a photograph consisting of a surface having areas of diffraction-rulings of different spacings, each spacing of diffraction-ruling being adapted to produce a different color, substantially as set forth.

7. As an article of manufacture, a photograph consisting of a surface having areas of superimposed diffraction-rulings of different spacings, each spacing of diffraction-ruling being adapted to produce a different color, substantially as set forth.

8. The method of producing a positive photograph, which consists in first taking separate negatives of the object to be photographed, through red, green and blue screens, from these negatives producing positives on glass, covering these positives with a sensitizing solution, photographing upon each positive a diffraction-grating adapted to give its appropriate color, exposing a sensitized plate in succession under these positives, and finally developing this plate, substantially as described.

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755,984. TOY. IRA D. WORCESTER, Pittsburg, Pa. Filed Aug. 31, 1903. Serial No. 171,433. (No model.)



*Claim.*—1. A toy comprising a suction device composed of a disk of yielding material with a knob of hard material extending through a hole in the center thereof, a flexible wire coiled around said knob and extending outward therefrom to form a vibrating arm, and a tapper of hard material attached to said arm, for the purpose specified.

2. A toy comprising a suction device, a flexible wire attached thereto and extending outward therefrom to form a vibrating arm, and a tapper of hard material attached to said arm, for the purpose specified.

3. A toy comprising a suction device, a flexible arm of hard material attached thereto, and a tapper of hard material attached to said arm, for the purpose specified.

4. A toy comprising a suction device, an arm of hard material attached thereto, and means for operating said arm, for the purpose specified.

5. A toy comprising a suction device composed of a disk of yielding material with a knob of hard material extending through a hole in the center thereof, and an arm of hard material attached to said knob and bearing a tapper of hard material on its outer end, for the purpose specified.

6. A toy comprising a suction device, and a tapper of hard material supported therefrom by a flexible arm of hard material, said arm being of sufficient rigidity to support said tapper in other than a suspended or hanging position relative to said suction device.

7. A toy comprising a suction device, and a tapper of hard material supported therefrom by an arm of hard material of sufficient rigidity to support said tapper in any position with reference to said suction device.

8. A toy comprising a suction device, a flexible wire arm attached thereto, said arm supporting a tapper of hard material and being provided with an extension or loop for supporting an operating-string in a position farther from the surface to which the device is attached than is the point of attachment of said arm to said suction device, for the purpose specified.

9. A toy comprising a suction device, a tapper of hard material supported therefrom by an arm of hard material, a string for operating said arm, and a support for said operating-string at a point farther from the surface to which the device is attached than the point of attachment of said arm to said suction device, for the purpose specified.

10. A toy comprising a suction device, and a plurality of arms attached thereto, each arm carrying a tapper of hard material.

11. A toy comprising a suction device, a plurality of flexible arms attached thereto, and tappers of hard material attached to said arms.

12. A toy comprising a suction device, an arm attached thereto, and a plurality of tappers flexibly connected with said arm.

13. A toy comprising a suction device, and a flexible arm attached thereto, said arm having a plurality of branches each bearing a tapper.

14. A toy comprising a suction device, a plurality of tappers supported therefrom, and means for simultaneously operating said tappers for the purpose specified.

15. A toy comprising a suction device, arms connected therewith, and said arms supporting a plurality of tappers normally at different distances from the surface to which said device is attached.

16. A toy comprising a suction device and a plurality of tappers supported therefrom by means of arms of different degrees of flexibility.

17. A toy comprising a suction device, an arm of hard material attached thereto and supporting a tapper of hard material, said arm also supporting a relatively heavy body in such a position that it may freely vibrate, for the purpose specified.

18. A toy comprising a suction device, a flexible arm attached thereto, a tapper carried by said arm, and said arm being connected with a freely-vibrating arm carrying a heavy body.

19. A toy comprising a suction device, a plurality of tappers connected therewith by means of flexible arms, and one of said tappers being so situated that it may vibrate freely when the toy is operated.

20. A toy comprising a suction device, a metallic spring connected therewith, and a tapper connected with said spring.

21. A toy comprising a suction device, a spring made of hard material connected therewith, and a tapper connected with said spring.

22. A toy comprising a suction device, a tapper of hard material, and a metallic connection therebetween.

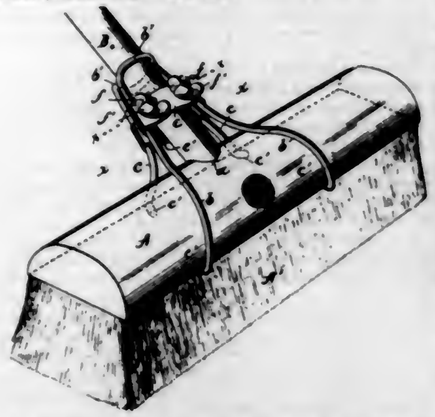
23. A toy comprising a suction device, a metallic spring connected therewith, and a tapper adapted to be held by said spring in pressing contact with the surface to which the device is attached.

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755,985. BRUSH. STEFAN ZACHER, New York, N. Y., assignor to Richard Schimek, New York, N. Y. Filed Aug. 21, 1903. Serial No. 170,268. (No model.)

*Claim.*—1. The combination with a brush consisting of a head having a socket and a handle fitting into said socket, of a brace con-

sisting of two U-shaped arms applied to the opposite sides of the handle and provided at their extremities with hooks which engage respectively with the outer and inner edges of the brush-head and a clamp adapted to clamp the two arms against the opposite sides of the handle, substantially as described.



2. The combination with a brush-head having a socket, and a handle fitting into said socket, of two U-shaped arms each being bridged by a plate intermediate of its extremities and the bend, the extremities of each arm having hooks adapted to engage the head of the brush and the bend of each arm being turned at right angles to form a seat for the handle of the brush, and bolts and nuts adapted to secure the two bridging-plates together and clamp the arms against the opposite sides of the handle.

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755,986. BURIAL-VAULT. EDWIN T. ALLEN, Detroit, Mich. Filed June 13, 1903. Serial No. 161,260. (No model.)



*Claim.*—1. In a burial-vault, in combination with side and end pieces, provided with inturned bottom flanges, and with means for securing the several pieces together, a foundation-slab built underneath the bottom and projecting therethrough, substantially as described.

2. In a burial-vault, a bottom slab therefor provided with openings and a grouting below the said bottom projecting into said openings, substantially as described.

3. In a burial-vault, the combination of slabs of artificial stone, a metal mesh incorporated in each slab, a tie-iron inserted in the slab external to the mesh, said tie-irons provided with lugs extending through the metal mesh and arranged to overlap a corresponding lug on a plate embedded in an adjacent slab, substantially as described.

4. In a burial-vault, in combination with side and end pieces locked together and provided with an inturned flange along the bottom, a bottom slab resting on said flanges and grouting of cement arranged across underneath the bottom and engaging through openings in the bottom, the openings being filled by the cement, substantially as described.

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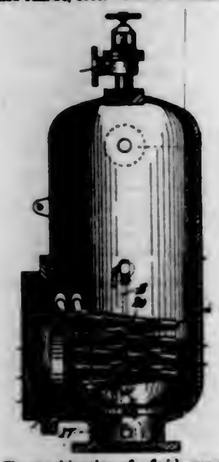
755,987. SPRING BED-BOTTOM. SAMUEL H. ANDERSON, Vandergrift, Pa. Filed Dec. 3, 1903. Serial No. 133,736. (No model.)

*Claim.*—A spring bed-bottom comprising a main frame made in sections, braced transverse bars connecting the opposite sides of said sections with each other, links pivotally connecting the adjacent ends of the side sections of the main frame, conical springs mounted upon said sections and supported at their lower ends upon said transverse bars, guy-wires engaging said springs at the upper ends thereof, said wires crossing each other at regular intervals apart and at right angles, and lighter frames, carried independently of each other, one upon each section of the main frame, said lighter frames being mounted at the upper ends of the springs, and carrying the guy-wires for the springs of one section of the bed independently of the guy-wires for the springs of the other section, whereby the under sides of the two sections of the main frame may be folded into flat engagement with each other with the springs and lighter frames on the exposed or outer sides thereof.



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755,988. VAPOR-GENERATOR. JAMES ANDREWS, Cathcart, Scotland. Filed Jan. 21, 1903. Serial No. 139,963. (No model.)



*Claim.*—1. The combination of a fluid-receptacle, two pipe-coils arranged therein the one within the other, the said coils communicating with each other at one end, and an injector at the other end of the coils and having its injecting-passage in communication with one of said coils and its suction-passage communicating with the other coil.

2. The combination of a fluid-receptacle, means constituting a continuous or endless passage in the said receptacle, means for enforcing a continuous fluid movement through said endless passage, and a partition inclosing the said means forming the endless passage, said partition being spaced from the sides of the receptacle, for the purpose specified.

3. The combination of a fluid-receptacle, means constituting a continuous or endless passage in the said receptacle, means for enforcing a continuous fluid movement through said endless passage, and means for automatically drawing off the excess fluid from the said endless passage.

4. The combination of a fluid-receptacle, means constituting a continuous or endless passage in the said receptacle, means for enforcing a continuous fluid movement through said endless passage, and means for automatically drawing off the excess fluid from the said endless passage, said means for automatically drawing off the excess fluid comprising a tank communicating with the endless passage and a ball-cock commanding an outlet from said tank.

5. The combination with a shell or drum, of a coil of pipe therein, the ends of the coil passing to openings in the shell, and an injector having its base fastened to the shell with its injection and suction passages respectively in communication with said openings.

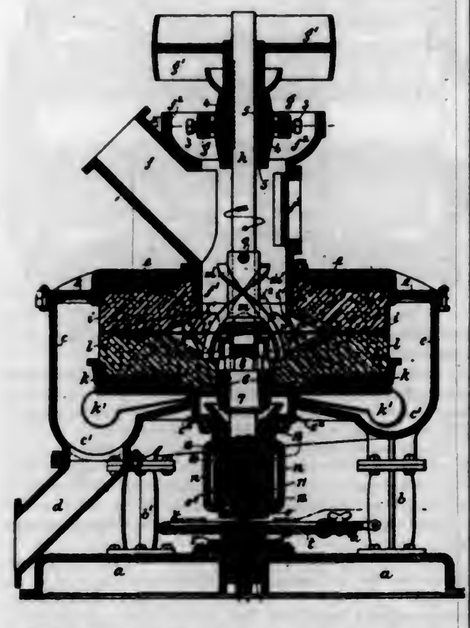
6. The combination of a shell, two coils arranged therein, said coils being in communication with each other at one end and having their other ends passed into communication with openings in the shell, and an injector having its base fastened to the shell and having its injecting and suction passages respectively in communication with said openings.

7. The combination of a fluid-receptacle, means constituting a continuous or endless passage in said receptacle for enforcing a continuous fluid movement through said endless passage, a partition inclosing the said means forming the endless passage, said partition being spaced from the sides of the receptacle for the purpose specified, and means for automatically drawing off the excess fluid from said endless passage.

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755,989. WOOD-PULP GRINDER. JAMES H. BAKER, GEORGE F. SHEVLIN, and FREDERICK H. BAKER, Saratoga Springs, N. Y., assignors to Baker and Shevlin Company, Saratoga Springs, N. Y., a Corporation of New York. Filed July 16, 1903. Serial No. 165,732. (No model.)



*Claim.*—1. The combination with a circular hopper, a cover therefor and stationary stone carried thereby, of a circular platform, a revoluble stone carried thereby, a shaft to which the platform is secured, a step at the lower end of the shaft, devices upon which the said step rests, a step-block having an integral screw-stem, a step-sleeve connected to the step-block and surrounding the shaft and step, an interiorly-threaded flanged sleeve secured to said step, a hand-wheel connected to said sleeve, and a plate connected to the bed of the machine and receiving said flanged sleeve, and a clamp for connecting the hand-wheel to a fixed point.

2. The combination in a wood-pulp grinder with a base and legsupports, of a circular horizontally-placed hopper having a curved annular trough inclined in opposite directions toward a discharge-throat, a circular, horizontally-placed cover or top having an open center, a fixed or stationary stone connected to the under side of said cover and also having an open center, a circular horizontally-placed platform, a vertical shaft, a horizontally-placed revoluble stone connected to said platform, devices for feeding the stock or residuum to the center of the stones for their operation, and devices for supporting the revoluble stone and adjusting the surfaces of the stones with reference to one another.

3. The combination in a wood-pulp grinder, of a circular horizontally-placed hopper having a curved annular trough inclined in opposite directions toward a discharge-throat, a circular horizontally-placed cover or top having an open center, a fixed or stationary stone connected to the under side of said cover and also having an open center, a circular horizontally-placed platform, a vertical shaft, a horizontally-placed revoluble stone connected to said platform, said circular platform having a flanged periphery and beater-wings on the under side of the platform curved in plan and tapering in elevation and moving through the curved annular trough of the hopper for bringing the material contained therein to the discharge-aperture, devices for feeding the stock or residuum to the center of the stones for their operation, and devices for supporting the revoluble stone and adjusting the surfaces of the stones with reference to one another.

4. The combination in a wood-pulp grinder with a base and legsupports, of a circular horizontally-placed hopper having a curved annular trough inclined in opposite directions toward a discharge-throat, a circular horizontally-placed cover or top having an open center, a fixed or stationary stone connected to the under side of said cover and also having an open center, a circular horizontally-placed platform, a vertical shaft, a horizontally-placed revoluble stone connected to said platform, said fixed and stationary stones having their inner adjacent corners beveled or cut away and the opposite juxtaposed faces of said stones provided with taper channels and their flat juxtaposed surfaces roughened.

5. The combination in a wood-pulp grinder, with a base and legsupports, of a circular horizontally-placed hopper having a curved annular trough inclined in opposite directions toward a discharge-throat, a circular horizontally-placed cover or top having an open center, a fixed or stationary stone connected to the under side of said cover and also having an open center, a circular horizontally-placed platform, a vertical shaft, a horizontally-placed revoluble stone connected to said platform, a conical worm structure surrounding the driving-shaft within the hollow centers of the respective stones and acting to pull down the stock and to force the same out laterally.

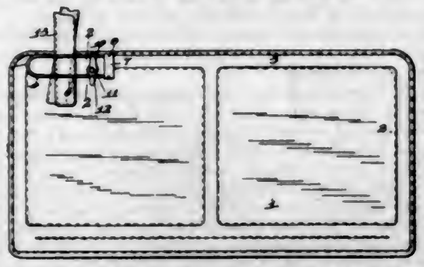
6. The combination in a wood-pulp grinder with a base and legsupports, of a circular horizontally-placed hopper having a curved annular trough inclined in opposite directions toward a discharge-throat, a circular horizontally-placed cover or top having an open center, a fixed or stationary stone connected to the under side of said cover and also having an open center, a circular horizontally-placed platform, a vertical shaft, a horizontally-placed revoluble stone connected to said platform, the said fixed and stationary stones having their inner adjacent corners beveled or cut away and the opposite juxtaposed faces of said stones provided with taper channels and their flat juxtaposed surfaces roughened, and a conical worm device comprising a sleeve, a hollow curved base and spiral surface blades surrounding the driving-shaft and located in the hollow centers of the stones and acting to pull down the material being treated and force the same out laterally into the channels and between the surfaces of the stones.

7. In a wood-pulp grinder, the combination with a circular hopper horizontally placed, of a circular cover also horizontally placed, a stationary stone connected to the under surface of said cover, said cover and stone each having an open center, a structure forming an inlet for the material to be treated and comprising an inclined throat, a circular base fitting the open centers of the cover and stone, a dishing top and a removable hand-hole cover, a vertically-placed central power-shaft, a bearing therefor in the said dishing top, a circular revoluble platform connected to said shaft, a revoluble stone horizontally placed carried by said platform, and a suitable bearing for the lower end of said shaft.

8. In a wood-pulp grinder, the combination with a circular hopper horizontally placed, of a circular cover also horizontally placed, a stationary stone connected to the under surface of said cover, said cover and stone each having an open center, a structure forming an inlet for the material to be treated and comprising an inclined throat, a circular base fitting the open centers of the cover and stone, a dishing top and a removable hand-hole cover, a vertically-placed central power-shaft, a bearing therefor in the said dishing top, a circular revoluble platform connected to said shaft, a revoluble stone horizontally placed carried by said platform, a suitable step-bearing for the lower end of said shaft, adjustable revoluble devices for raising and lowering the shaft, the circular platform and the revoluble stone to adjust the juxtaposed surfaces of the two stones, and means for clamping the parts as desired.

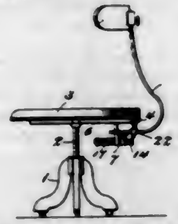
9. In a wood-pulp grinder, the combination with a horizontally-placed stationary stone having an open center, a circular revoluble platform and horizontally-placed revoluble stone carried thereby having a partial open center, a taper enlargement upon said shaft, a taper hub to said platform fitting said taper enlargement, a screw-threaded part to the shaft adjacent to the taper enlargement, and a nut upon the shaft for holding the hub of the platform securely in position, and a conical worm structure with spirally-arranged surface blades upon said shaft and having a hollow base fitting over the said screw-threaded portion and nut resting upon the revoluble stone.

**755,990. REIN-HOLDER.** PHALAURIS K. BARCLAY, St. Louis, Mo. Filed Aug. 26, 1903. Serial No. 170,883. (No model.)



*Claim.*—A rein-holder, comprising a U-shaped spring-metal clamping-wire 4, the same being provided with a recess 5 and offset 6, a curved piece 7 and a clamp composed of members 9 and 10, the member 10 being secured to the wire 4 by means of a rivet 12, substantially as specified.

**755,991. TYPE-WRITER'S CHAIR, PIANO-STOOL, &c.** HARRY W. BOLERS, Port Washington, Wis. Filed Sept. 10, 1903. Serial No. 172,673. (No model.)



*Claim.*—1. The combination, in an adjustment for the backs of chairs, of a base-plate adapted to be secured to a chair-bottom, and provided with a rigid depending open frame forming a seat, a rocker loosely hung at one side of the depending open frame and overlapping and extending therethrough, back-standard-supporting means carried by the rocker, and a tension device for yieldingly forcing said rocker against the seat of the depending open frame.

2. The combination in an adjustment for the backs of chairs, of a base-plate having securing means and a perforated stirrup, a rocker having back-standard-engaging means and pivotally connected to the base-plate and having an arm perforated and overlapping the stirrup, and an adjustable spring-tension device having its adjusting-rod located in the perforations of the stirrup and arm.

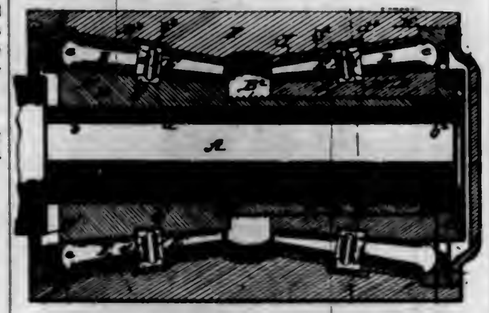
3. The combination in an adjustment for the backs of chairs, of a base-plate, a stirrup depending therefrom and lugs also depending therefrom at one side of the stirrup, a rocker-bar having lugs pivotally connected to those of the base and provided with standard-engaging means, a rocker-arm extending from said bar and through and seated against the stirrup, a tension-rod extending through the perforations in the bar and stirrup, a spring bearing against the bar and a nut at the opposite end of the rod.

4. The combination in an adjustment for the backs of chairs, of a base-plate, a stirrup of substantially U shape having a central seat and perforated lugs in rear of the stirrup, a cross-pin connecting the lugs, a rocker-bar, lugs extending therefrom and connected loosely to the cross-pin, bored hubs, a rocker-arm extending from the rocker-bar, perforated in line with a perforation in the stirrup extending through the latter and seated thereon, and a spring-tension device the adjusting-rod of which is located in said perforations.

5. The combination in a chair with the back rods 20, the connecting-plate 25 at the upper ends thereof, and the bolt 26, extending outward from the plate 25, of the back 21, in front of the rods, the cover-plate 29 secured thereto over the rods and having the slot 27, receiving the bolt 26 and the hand-wheel 28 on outer end of the bolt.

**755,992. ROLLER-BEARING.** ROBERT F. BOWER, Lima, Ohio. Filed Aug. 20, 1903. Serial No. 170,144. (No model.)

*Claim.*—1. The improvement in roller-bearings herein described comprising the inner cone-section having a key, and formed with a main portion having an outer tapered bearing-surface and an annular groove in the same about midway its ends, a threaded tubular extension from the smaller end of said main portion, the outer cone-section screwed upon said threaded tubular extension and having the tapered bearing-surface and the annular groove in the same about midway its ends, the shell having tapered bearing-surfaces opposite those of the cone-sections and provided midway between the ends thereof with annular grooves opposite those in the cone-sections and provided in the ends of said shell with threaded sockets for the end rings, the end rings screwed in said sockets and having the rounded grooves for the ends of the rollers, and the rollers bearing between the tapered bearing-surfaces of the cones and shell, said rollers being tapered from their larger toward their smaller ends, having the larger ends rounded and operating in the grooves of the end rings and having at their middles the projecting flanges to operate in the grooves of the bearing-surfaces, and provided with the annular grooves on opposite sides of said flanges substantially as and for the purposes set forth.



2. In a roller-bearing a roller provided between its ends with a projecting annular flange and having annular grooves on opposite sides of said flange as set forth.

3. In a roller-bearing the herein-described roller tapered from one end to the other and provided at its middle with a projecting flange and on opposite sides thereof with annular grooves substantially as set forth.

4. The combination in a roller-bearing of the shell having the tapered bearing-surfaces, the cone-sections having the tapered bearing-surfaces opposing those of the shell, annular grooves being provided in the bearing-surfaces for the flanges of the rollers, and the rollers having flanges operating in said grooves substantially as set forth.

5. A roller-bearing comprising the shell having bearing-surfaces, the cone-sections screwed together and having bearing-surfaces opposing those of the shell, said bearing-surfaces having annular grooves, and the rollers between said bearing-surfaces, and having annular flanges and grooves alongside the same substantially as set forth.

6. The combination of the shell having screw-threads at its inner and outer ends for the end rings and provided with the tapered bearing-surfaces having the annular grooves, the cone-sections having the tapered bearing-surfaces opposite those of the shell and provided in said surfaces with the annular grooves opposite those of the shell, the rollers having flanges operating in said grooves and the end rings screwing into the shell substantially as set forth.

7. In a roller-bearing the combination of the shell, the cone-sections one of which is screwed upon the other, the jam-nut, and the rollers operating between the cone-sections and shell and having annular flanges and grooves alongside the same substantially as set forth.

8. The combination of the shell the cones, the end rings connected with the shell and having curved grooves for the ends of the rollers, and the rollers having their ends rounded and operating at the outer edges of said end in the curved grooves of the end rings, the inner edges of said ends of the rollers being unobstructed substantially as set forth.

9. The herein-described improvement in roller-bearings comprising the shell having the tapered bearing-surfaces, the cones having tapered bearing-surfaces opposing those of the shell, and the tapered rollers operating between the bearing-surfaces of the cones and shell and provided between their ends with projecting flanges substantially as set forth.

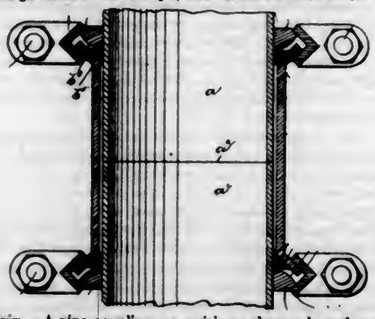
10. The combination of the opposing bearing-surfaces having annular grooves and the rollers between said surfaces and having annular flanges operating in said grooves and also provided with annular grooves alongside the said flanges substantially as set forth.



**755,993. PROCESS OF DYEING WOOD.** JOACHIM BREWER, Gainfarn, Austria-Hungary. Filed Sept. 19, 1903. Serial No. 173,885. (No specimens.)

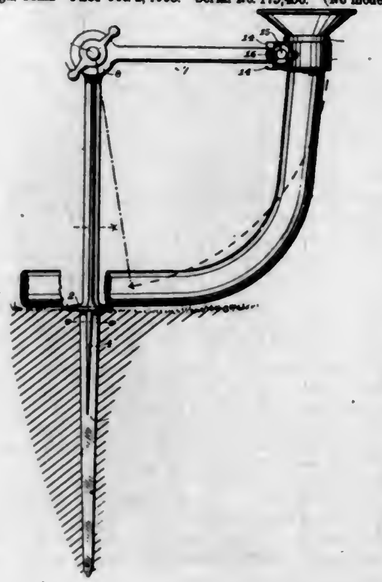
*Claim.*—The herein-described process for preparing wood to increase the receptivity thereof for coloring-matters, consisting in steaming the wood to open the fibers thereof, then forcing sulfuric acid of 10° to 20° Baumé into the wood to parchmentize the open fibers, then neutralizing the sulfuric acid, and then dyeing the wood.

**755,994. PIPE-COUPLING.** HENRY BROOKE, Springfield, Ohio, assignor of seven-twelfths to Henry C. Pauly and James D. Boyd, Springfield, Ohio. Filed July 6, 1903. Serial No. 164,436. (No model.)



*Claim.*—A pipe-coupling, comprising a sleeve adapted to receive the ends of the pipes and provided at its extremities with outwardly-flaring flanges having similarly-inclined outer and inner faces, compression-rings loosely mounted on the pipe at each end of the sleeve, their outer sides being inclined reversely to the outer surface of the corresponding flange, and their inner sides being correspondingly inclined to the inner face of the corresponding flange, packing-rings located in the spaces between the pipes, sleeve and compression-rings, and coupling-rings located at each end of the sleeve, each ring being composed of two separate halves or sections, provided at their meeting ends, on opposite sides of the pipe, with tightening-bolts connecting said members to move them uniformly toward each other, said members having V-shaped bearing-faces on their inner face which bear against the external inclines of the corresponding compression-ring and flange, said bearing-faces consisting of transverse ribs located midway between the center and ends of each member, substantially as described.

**755,995. HOSE-NOZZLE HOLDER.** CHARLES F. BROWN, Chattanooga, Tenn. Filed Oct. 2, 1903. Serial No. 175,450. (No model.)

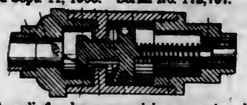


*Claim.*—1. In a hose-nozzle holder, a stand having a foot, a ground-piece and a disk with beveled teeth on one side of its face all cast integral, in combination with an adjustable arm provided at its free end with means for supporting a hose-nozzle and having a serrated disk at its pivotal end, the teeth of said disk being adapted to slide by the teeth on the disk of the stationary piece, said two disks being held operatively together by means of a bolt and spring, substantially as described.

2. In a hose-nozzle holder, a stand having a foot, a ground-piece, and a disk with beveled teeth on one of its faces, all cast integral, an arm having a disk at one end, said disk being provided with beveled teeth on one of its faces to mesh into the teeth on the disk of said stand, the teeth of one disk sliding by those of the other when in operation, and having on its free end a clamping means for supporting a nozzle, a spiral spring to keep the said two serrated disks together, and means for increasing the pressure on said spring, substantially as described.

3. In a hose-nozzle holder, a stand provided with a foot-piece, said stand having a disk with beveled teeth on one of its faces, an adjustable arm provided on its free end with means for supporting a hose-nozzle and a disk with beveled teeth at its pivotal end, said disk contacting with the disk of said stand and so arranged that the teeth of one disk will slide by those of the other, and means for holding said two disks operatively together.

**755,996. RELIEF-VALVE.** SAMUEL O. BRUNE, Mine Centre, Canada. Filed Sept. 11, 1903. Serial No. 172,767. (No model.)



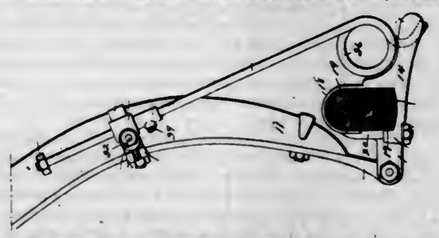
*Claim.*—1. A relief-valve comprising a casing having a partition, a valve-stem slidably fitted in the partition, valve-heads of different area on the stem and on opposite sides of the partition, one of said heads being solid and the other head having drain-ports, and a spring impelling the valve-stem to hold the solid valve-head off its seat.

2. A relief-valve comprising a casing having a partition, and an opening for the drainage of water, a slidable valve-stem having two heads, one of which is solid and the other has drain-ports, and a spring acting to normally unseat the solid valve-head.

3. A relief-valve comprising a casing having a partition, a slidable double valve having heads of different area connected by an intermediate shank, one of said valve-heads being provided with a groove and with disalined ports, and a spring for moving said valve in one direction.

4. A relief-valve comprising a casing having a bridge or partition, a double valve having heads of different diameter connected by an intermediate grooved shank, a stem depending from said valve, and a spring acting against the valve, said casing being provided with a head which has drain-ports and is attached adjustably to a shell of the casing for regulating the tension of the spring.

**755,997. THILL-SUPPORT.** EDWARD L. BUCKINGHAM, Brookings, S. D., assignor of one-half to Jesse M. Keith and H. D. Hall, Des Moines, Iowa. Filed Dec. 7, 1903. Serial No. 184,001. (No model.)



*Claim.*—1. In a thill-support, a supporting-clip comprising a base, an arm or strap integral with said base and arranged to embrace an axle, an arm on said base, a resilient rod mounted on said latter arm, a thill-clip embracing said rod and means for limiting the movement of the thill-clip relative to said rod.

2. In a thill-support, an axle-clip, a thill-clip, a slide-bearing pivoted on the thill-clip, and a resilient rod mounted on the axle-clip and extending through said slide-bearing.

3. In a thill-support, an axle-clip, a thill-clip, a slide-bearing

pivoted on the thill-clip, and a resilient rod formed with a hook engaging the axle-clip, a coil or coils adjacent said hook and a body portion extending through said slide-bearing, together with means for adjusting the movement of the slide-bearing relative to said rod.

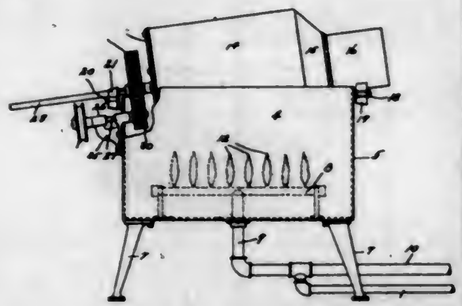
4. In a thill-support, a thill-clip, comprising a base, threaded studs on said base, a strap on said base arranged for engagement with one of said threaded studs, means for attaching said strap to said stud, a bearing on the other of said studs and a rod connected to an axle and extending through said bearing.

5. In a thill-support, an axle-clip, a strap on said axle-clip, a fork on said axle-clip, and means for fixing one end of said strap in said fork.

6. In a thill-support, a thill-clip, a stud on said thill-clip, a forked strap on said clip, embracing said stud, means for fixing said forked strap to said stud, and a bearing mounted on said clip.

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**755,998. TEMPERING AND COLORING APPARATUS.** EDGAR CHAMBERS, Meriden, Conn. Filed July 6, 1903. Serial No. 164,268. (No model.)



*Claim.*—1. The combination with a furnace, of a pair of sheaves at each end of the furnace; a barrel having a mouth surrounded by walls adapted to rest upon a pair of said sheaves; a handle extending from the end of the barrel opposite the mouth to rest upon the other pair of sheaves and adapted for the manual lifting of the barrel from the furnace; a cog-wheel fast upon the handle near the barrel and between it and the point of engagement with the sheaves; a pair of pinions inside of the furnace and below the sheaves and adapted to mesh with such cog-wheel inside of the furnace; and means to drive one of said pinions.

2. In a tempering apparatus the combination with a furnace embodying a box having ends and sides, of a barrel having side walls, a bottom and neck-walls; antifriction-rolls on one end of the box to support the barrel-neck; a shaft extending from the bottom of the barrel and adapted to afford a handle whereby to remove the barrel from the furnace; a pair of antifriction-rolls upon the other end of the box to support the barrel-shaft; a pair of pinions and shafts therefor upon the inside of the end of the box below the barrel-shaft-supporting rolls; a cog-wheel upon said barrel-shaft to mesh with said pinions; and means to drive one of said pinions.

3. The combination with a heating-chamber, of a source of heat; walls surrounding the same to confine the heat; bearings carried by the walls to support the container; a handle on the chamber whereby the same may be removed by hand from the furnace; an engaging surface upon the chamber near the handle; and driving means inside the walls and adapted to engage the engaging surface on the container to rotate the same.

4. The combination with a heating-chamber, of a furnace embodying a source of heat and surrounding walls; bearings carried by the walls of the furnace to support the chamber at one side; a handle on the chamber; an engaging surface upon the chamber adjacent to the handle; and driving means for the chamber inside the furnace and adapted to engage the engaging surface on the chamber upon the same side it receives support from the bearings and in a position to permit the ready removal of the chamber from the furnace by hand.

5. The combination with a work-receptacle, of a furnace embodying a source of heat and surrounding walls; a journal at each end of the receptacle; a bearing at each end of the furnace organized to support one of the journals by engagement with the lower side thereof and open above its upper side to permit removal in an upward direction; an engaging surface upon the receptacle; and driving means for the receptacle within the furnace adapted to engage the engaging surface on the receptacle upon the same side it receives support from the bearings.

6. The combination with a work-receptacle, of a furnace; a journal at each end of the receptacle; a bearing at each end of the furnace organized to support one of the journals by engagement with the lower side thereof and open above its upper side to permit upward removal; a gear-wheel upon the receptacle; a pair of gear-wheels within the furnace adapted to engage the gear-wheel on the receptacle upon the same side it receives support from the bearings, and means to actuate one of said latter gear-wheels.

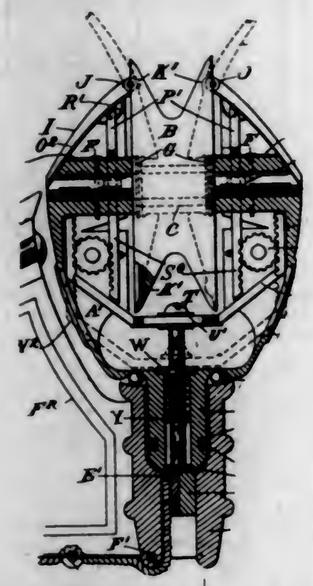
7. The combination with a furnace, of a work-receptacle; a shaft extending from one end thereof; bearings at each end of the furnace organized respectively to support the receptacle and the shaft by engagement with the lower sides thereof, and open above the upper sides to permit upward removal; a cog-wheel carried by the shaft; an idle pinion in mesh with said cog-wheel; and a live pinion in mesh with the cog-wheel, said pinions being below the center of said cog-wheel.

8. In a tempering apparatus the combination with a furnace, of a work-receptacle having a reduced neck and a mouth; a bottom opposite such mouth; a shaft extending from the bottom; an antifriction-bearing at one end of the furnace to support said neck by engagement with the lower side thereof and open at its upper side to permit upward removal; an antifriction-bearing at the other end of the furnace to support the shaft by engagement with the lower side thereof and open thereabove to permit upward removal; a cog-wheel fast upon the shaft at a point between the bottom of the receptacle and the bearing; a bracket upon the furnace; a shaft supported thereby; a pinion fast upon the shaft and adapted to engage the cog-wheel at a point below the receptacle-shaft; a bracket supported by the furnace; an idle pinion carried thereby to engage the opposite side of said cog-wheel; also at a point below the receptacle-shaft; and means to drive the pinion-shaft.

9. The combination with a receptacle for articles to receive heat treatment, of a furnace embodying bearings for the receptacle; a gear-wheel carried by the receptacle adjacent to one end thereof; a shaft upon such end affording a handle for a workman beyond the gear-wheel and contiguous to the receptacle; a driving gear-wheel to mate with the gear-wheel on the receptacle inside the furnace and adapted to engage the same upon the same side the receptacle receives support from the bearings and in a position to permit the ready removal of the receptacle from the furnace by hand.

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**755,999. ELECTRIC-TROLLEY HEAD.** JOHN T. CHERRY, Plymouth, and EDWARD H. CLIVE, Devonport, England. Filed Nov. 3, 1902. Serial No. 130,116. (No model.)





*Claim.*—1. In a device of the class described, a trolley-head provided with a vertically-movable member, a trolley-wheel mounted therein, vertically-movable spring-operated members mounted therein and comprising separate side parts, wire-finders pivoted to the top of the head at the opposite sides of the trolley-wheel and adapted to swing in a vertical plane transversely of said wheel said wire-finders and said vertical movable members being in operative connection, and means for depressing said vertical movable member and thereby raising said wire-finders, substantially as shown and described.

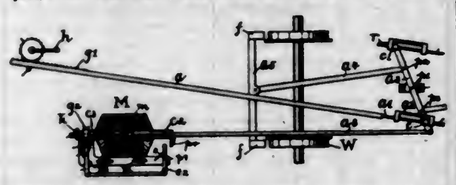
2. In a device of the class described a holder provided with a central vertical opening larger at the top than at the bottom, a fork-frame composed of vertically-arranged side members and provided with a bottom member adapted to enter said holder and to turn therein, a spring-supported shaft mounted in said holder and passing upwardly through the bottom member, a cord connected with the lower end of said shaft, a trolley-wheel mounted between the said side members of the fork-frame, wire-finders hinged to the tops of the side members and adapted to swing vertically transversely of the wheel, and devices in operative connection with said shaft and with said wire-finders, whereby the depression of the shaft will raise said finders, substantially as shown and described.

3. A trolley device comprising a support having a vertical opening, a vertically-movable non-rotatable and spring-supported shaft mounted therein, a rotatable member mounted in said support and comprising separate sides between which a trolley-wheel is mounted, wire-finders hinged to the said sides at the top thereof and transversely of said wheel, and devices in operative connection with said shaft and said wire-finders whereby the depression of said shaft will operate or raise the wire-finders, substantially as shown and described.

4. In a device of the class described, a vertically-movable spring-supported and non-rotatable shaft, a rotatable member mounted thereon and comprising side members between which a trolley-wheel is mounted, wire-finders pivoted to the side members at the top thereof, a transverse member secured to said shaft and provided with upwardly-directed side portions having teeth, vertically-movable bars or members connected with the wire-finders and provided with teeth and gear-cylinders mounted between the separate toothed members, substantially as shown and described.

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**756,000. BRAKE FOR VEHICLES.** WILLIAM H. COOLEY, Brockport, N. Y. Filed Dec. 9, 1902. Serial No. 134,585. (No model.)



*Claim.*—1. In an electric braking system, in combination with the magnet for applying the brakes, means whereby the increased slack resulting from wear of the parts is taken up, as it occurs from time to time, by the adjustment of a member not subjected to any mechanical strain by the braking apparatus during the process of such adjustment.

2. In an electric braking system, in combination with the magnet for applying the brakes, means whereby the increased slack resulting from wear of the parts is taken up, as it occurs from time to time, by the adjustment of a member constituting a part of the magnetic path of such magnet, such member inoperative in the magnetic path of such magnet during the time of such readjustment or movement thereof.

3. In an electric braking system, in combination with the magnet for applying the brakes, means whereby the increased slack resulting from wear of the parts is taken up, as it occurs from time to time, by the adjustment of a member not subjected to any mechanical strain by the braking apparatus during the process of such readjustment, and means whereby a corresponding readjustment is effected between the handle for applying the brakes by hand and the mechanism between such handle and the brakes proper.

4. In an electric braking system, in combination with the magnet for applying the brakes, means whereby the increased slack resulting from wear of the parts is taken up, as it occurs from time to time, by the adjustment of a member constituting a part of the magnetic path of such magnet, such member inoperative in the magnetic path of such magnet during the time of such readjustment or movement thereof, and means whereby a corresponding readjustment is effected between the handle for applying the brakes by hand and the mechanism between such handle and the brakes proper.

5. In an electric brake and located in the path of the magnet for applying the brakes, a movable or sliding member arranged to cut down the air-gap at the initial point of movement of the armature and until the armature contacts therewith and arranged also to yield at the advance of the armature in closing another branch of the same magnetic path.

6. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means for securing, independently of wear of the parts, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

7. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means for securing, independently of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

8. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

9. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means under the control of such handle for securing, independently of wear of the parts, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

10. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means under the control of such handle for securing, independently of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

11. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means under the control of such handle for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

12. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

13. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing, independently of wear of the parts, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

14. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings, and means for securing, independently of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

15. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

16. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle, for

securing a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

17. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing, independently of wear of the parts, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

18. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing, independently of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

19. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

20. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means for securing, independently of wear of the parts, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

21. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means for securing, independently of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

22. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

23. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means under the control of such handle for securing, independently of wear of the parts, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

24. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means under the control of such handle for securing, independently of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

25. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means under the control of such handle for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a braking effort predetermined and different for each differently-operative position of such handle but always practically uniform for each one of such positions.

26. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means for securing, independently of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

27. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

28. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means under the control of such handle for securing, independently of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

29. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle and means under the control of such handle for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

30. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

31. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing, independently of wear of the parts, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

32. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing, independently of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

33. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

34. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing a supply of electric energy to such windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

35. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing, independently of wear of the parts, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

36. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing, independently of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.



37. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle for controlling the potential of the current delivered to such exciting-windings and means under the control of such handle for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

38. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means for securing, independently of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

39. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

40. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means under the control of such handle for securing, independently of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

41. In combination with the exciting-windings of a magnetic braking system and an electric supply-circuit therefor, an operating-handle arranged to apply a braking effort by hand-operated mechanism and means under the control of such handle for securing, independently of wear of the parts and of fluctuations in the voltage of the supply-circuit, a supply of electric energy to such exciting-windings predetermined and different in amount for each differently-operative position of such handle but always practically uniform for each one of such positions.

42. In combination with the magnet of an electric braking system and an electric supply-circuit therefor, means for securing each one of a series of different braking efforts at a correspondingly different, but for the same braking effort always practically the same, air-gap in the magnetic path of such magnet.

43. In combination with the magnet of an electric braking system and an electric supply-circuit therefor, means for securing, independently of wear of the parts, each one of a series of different braking efforts at a correspondingly different, but for the same braking effort always practically the same, air-gap in the magnetic path of such magnet.

44. In combination with the magnet of an electric braking system and an electric supply-circuit therefor, means for securing, independently of fluctuations in the voltage of such supply-circuit, each one of a series of different braking efforts at a correspondingly different, but for the same braking effort always practically the same, air-gap in the magnetic path of such magnet.

45. In combination with the magnet of an electric braking system and an electric supply-circuit therefor, means for securing, independently of wear of the parts and of fluctuations in the voltage of such supply-circuit, each one of a series of different braking efforts at a correspondingly different, but for the same braking effort always practically the same, air-gap in the magnetic path of such magnet.

46. In combination with the magnet of an electric braking system and an electric supply-circuit therefor, means operable on a constant voltage of such supply-circuit to secure each one of a series of different braking efforts at a correspondingly different, but for the same braking effort always practically the same, air-gap in the magnetic path of such magnet.

47. In combination with the magnet of an electric braking system and an electric supply-circuit therefor, means operable on a constant voltage of such supply-circuit to secure, independently of wear of the parts, each one of a series of different braking efforts at a correspondingly different, but for the same braking effort always practically the same, air-gap in the magnetic path of such magnet.

48. In combination with the magnet of an electric braking system, an operating-handle therefor, and means for securing for each differently-operative position of such handle a correspondingly different, but for the same position of such handle always practically the same, air-gap in the magnetic path of such magnet.

49. In combination with the magnet of an electric braking system, an operating-handle therefor, and means for securing, independently of wear of the parts, for each differently-operative position of such handle a correspondingly different, but for the same position of such handle always practically the same, air-gap in the magnetic path of such magnet.

50. In an electric braking system and in combination with an electric supply-circuit therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means for securing each one of a series of different braking efforts at correspondingly different, but for the same braking effort always practically the same, relative positions of such magnetic elements.

51. In an electric braking system and in combination with an electric supply-circuit therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means for securing, independently of wear of the parts, each one of a series of different braking efforts at correspondingly different, but for the same braking effort always practically the same, relative positions of such magnetic elements.

52. In an electric braking system and in combination with an electric supply-circuit therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means for securing, independently of fluctuations in the voltage of such supply-circuit, each one of a series of different braking efforts at correspondingly different, but for the same braking effort always practically the same, relative positions of such magnetic elements.

53. In an electric braking system and in combination with an electric supply-circuit therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means for securing, independently of wear of the parts and of fluctuations in the voltage of such supply-circuit, each one of a series of different braking efforts at correspondingly different, but for the same braking effort always practically the same, relative positions of such magnetic elements.

54. In an electric braking system and in combination with an electric supply-circuit therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means operable on a constant voltage of such supply-circuit, to secure each one of a series of different braking efforts at correspondingly different, but for the same braking effort always practically the same, relative positions of such magnetic elements.

55. In an electric braking system and in combination with an electric supply-circuit therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means operable on a constant voltage of such supply-circuit, to secure, independently of wear of the parts, each one of a series of different braking efforts at correspondingly different, but for the same braking effort always practically the same, relative positions of such magnetic elements.

56. In an electric braking system in combination with an operating-handle therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means for securing for each differently-operative position of such operating-handle correspondingly different, but for the same position of such handle always practically the same, relative positions of such magnetic elements.

57. In an electric braking system in combination with an operating-handle therefor, magnetic elements therein arranged to move relatively toward each other in applying the brakes, and means for securing, independently of wear of the parts, for each differently-operative position of such operating-handle correspondingly different, but for the same position of such handle always practically the same, relative positions of such magnetic elements.

58. In combination with the magnet of an electric braking system, an operating-handle therefor arranged also to apply a braking effort through hand-operated mechanism, and means for securing for each differently-operative position of such handle a correspondingly different, but for the same position of such handle always practically the same, air-gap in the magnetic path of such magnet.

59. In combination with the magnet of an electric braking system, an operating-handle therefor arranged also to apply a braking effort through hand-operated mechanism, and means for securing, independently of wear of the parts, for each differently-operative position of such handle a correspondingly different, but for the same position of such handle always practically the same, air-gap in the magnetic path of such magnet.

60. In an electric braking system in combination with an oper-

ating-handle therefor arranged also to apply a braking effort through hand-operated mechanism, magnetic elements therein, arranged to move relatively toward each other in applying the brakes, and means for securing for each differently-operative position of such operating-handle correspondingly different, but for the same position of such handle always practically the same, relative positions of such magnetic elements.

61. In an electric braking system in combination with an operating-handle therefor arranged also to apply a braking effort through hand-operated mechanism, magnetic elements therein, arranged to move relatively toward each other in applying the brakes, and means for securing, independently of wear of the parts, for each differently-operative position of such operating-handle correspondingly different, but for the same position of such handle always practically the same, relative positions of such magnetic elements.

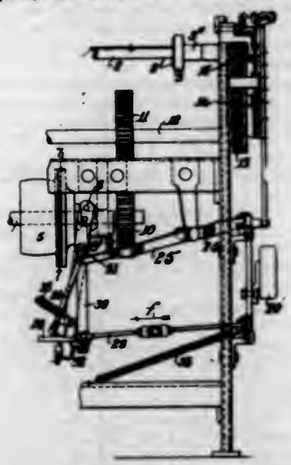
62. In an electric braking system, means for taking up the slack, as it occurs from time to time from the wear of the parts, comprising an adjustable and normally stationary magnetic member toward which a coöperating magnetic member is arranged to move in applying the brakes and means for moving such adjustable and normally stationary member from time to time to compensate for such slack.

63. In combination with the two coöperating elements of a magnet arranged to move relatively toward each other in shortening the magnetic circuit of such magnet, a slidable extension for a first one of such elements arranged to shorten the magnetic path between such elements when in their initial positions farthest apart and arranged to slide, relatively to such first element, under pressure exerted thereon by such second element as such elements approach each other in closing still further the magnetic circuit between them.

64. In combination with the two coöperating elements of a magnet arranged to move relatively toward each other in shortening the magnetic circuit of such magnet, a slidable extension for a first one of such elements arranged to shorten the magnetic path between such elements when in their initial positions farthest apart and arranged to slide, relatively to such first element, under pressure exerted thereon by such second element as such elements approach each other in closing still further the magnetic circuit between them and adjustable means for varying as desired, the maximum distance which such extension may project beyond such first element toward such second element and thereby also inversely the distance between such extension and such second element.

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**756,001. STOP-MOTION FOR WINDING-MACHINES.** THOMAS COOPER, Kidderminster, England, assignor to Crompton and Knowles Loom Works, Worcester, Mass., a Corporation of Massachusetts. Filed Sept. 26, 1903. Serial No. 174,639. (No model.)



*Claim.*—1. In a winding-machine, the combination of the driving-pulley, a cup-spindle, driving connections between the driving-pulley and cup-spindle, a clutch, means for moving said clutch to operatively engage and disengage the driving-pulley and said driving connections, a stop-lever, connections between the stop-lever and said means for affecting the disengagement of the clutch from the driving-pulley, and devices carried by the stop-lever for positively arresting the motion of the cup-spindle as the clutch is disengaged from the driving-pulley.

2. In a winding-machine, the combination of the driving-pulley, a cup-spindle, driving connections between the driving-pulley and cup-spindle, a clutch, means for moving said clutch to operatively engage and disengage the driving-pulley and said driving connections, a stop-lever, connections between the stop-lever and said means for affecting the disengagement of the clutch from the driving-pulley, devices carried by the stop-lever for positively arresting the motion of the cup-spindle as the clutch is disengaged from the driving-pulley, an endless chain carrying a stud, means for moving said chain, and devices adapted to be actuated by said stud for moving the stop-lever.

3. In a winding-machine, the combination of a cup-spindle, means for driving the same, a clutch, a stop-lever, connections between said stop-lever and clutch for releasing the clutch from the driving means, a toothed driver mounted on the cup-spindle, a chain carrying a stud and driven from the said toothed driver, devices actuated by said stud for moving the stop-lever and thereby releasing the clutch, and means carried by the stop-lever for engaging the toothed driver to thereby stop the cup-spindle in a predetermined position of its revolution.

4. In a winding-machine, the combination of a cup-spindle and means for positively operating the same, a stopping mechanism for stopping the cup-spindle, a stop-lever for actuating the stopping mechanism, a chain carrying a stud, means to move said chain, devices connected to the stop-lever and adapted to be actuated by the said stud to move the stop-lever when a predetermined quantity of yarn has been wound to thereby actuate the stopping mechanism, and hand-operated means carried by the stop-lever for disconnecting the stop-lever from said devices to permit the restarting of the winding-machine.

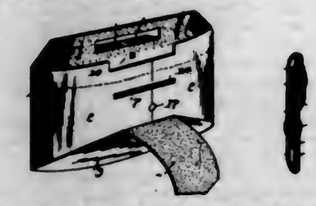
5. In a winding-machine, the combination of a cup-spindle, means for driving the same including a clutch, a stop-lever, connections between the stop-lever and clutch for releasing the clutch, a single-toothed driver mounted on the cup-spindle, a star-wheel actuated by the single-toothed driver, a chain-wheel operatively connected to the star-wheel and carrying a chain, a stud on said chain, devices connected to the stop-lever adapted to be actuated by said stud for moving the stop-lever, said stop-lever being provided with a stop-arm which on movement of the stop-lever to release the clutch engages the single-toothed driver.

6. In a winding-machine, the combination of a driving-shaft, a cup-spindle, means including a clutch for driving the cup-spindle from the driving-shaft, a clutch-lever for moving said clutch, a secondary lever carried by the clutch-lever, a knee-block lever, a connecting-rod attached at one end to the knee-block lever and at the opposite end to the secondary lever, a catch provided on said secondary lever which catch is adapted to snap into engagement with the clutch-lever, a releaser carried by the clutch-lever and mechanism for moving the releaser in one direction automatically for stopping the machine, and in the opposite direction by hand as a preliminary to starting the machine.

7. In a winding-machine, the combination of a driving-shaft, a cup-spindle, means including a clutch for driving the cup-spindle from the driving-shaft, a clutch-lever, a secondary lever mounted on the clutch-lever and provided with a catch for connecting the two levers, a stop-lever, means for moving the stop-lever when a predetermined quantity of yarn has been wound, mechanism movable by the stop-lever for releasing the catch connecting the clutch and secondary levers, and means to thereupon move the clutch-lever to throw the clutch into inoperative position.

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**756,002. ENVELOP.** JOSEPH H. DALZELL, Pittsburg, Pa. Filed Oct. 6, 1903. Serial No. 176,912. (No model.)

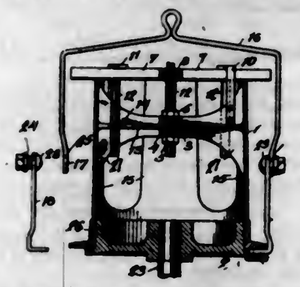


*Claim.*—An envelop comprising a body portion and end flaps carried thereby and being provided at their meeting edges with cut-out portions forming a continuous slot the upper inner corners of said flaps being cut away, a rear sealing-flap folded upon said end sealing-flaps, a main sealing-flap provided with an auxiliary flap cut therefrom whereby an opening is provided, said main sealing-flap and upper portion of the end flaps being folded upon the portions of the end flaps lying below the same, the opening in said main sealing-flap and the cut-away portion at the upper edge of the upper flap being in alinement with a slot formed in the meeting edges of the end sealing-flaps, a tongue carried by said rear sealing-flap and projecting through the slots of said main and end sealing-flaps, said main sealing-flap being sealed to the end flaps and said auxiliary flap being sealed to said tongue at its point of passage into the interior of the envelop.



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**756,003. WIRE-DRAWING APPARATUS.** WILLIAM D. DE LAMATER, Elizabeth, N. J., and JAMES A. MACDONALD, Flushing, N. Y., assignors to Waclark Wire Company, New York, N. Y., a Corporation of New Jersey. Filed Sept. 11, 1903. Serial No. 172,735. (No model.)



*Claim.*—1. In wire-drawing apparatus, a driving-shaft, a drum having peripheral recesses mounted thereon, a reel having a continuous winding-rim removably engaging said drum and having driving-lugs engaging said recesses, an axial stud mounted on said reel, hooked retainers on said reel, a reel-head having arms releasably engaging said retainers and having a stud-hole to be engaged by said stud, guides on said head, detachable trunnion-bars having trunnions thereon engaging trunnion-sockets in said reel and a yoke to engage said trunnions to invert said reel.

2. In wire-drawing apparatus, a driving-drum, a reel removably engaging said drum to be rotated thereby, a stud mounted on said reel, hooked retainers on said reel, a reel-head having arms engaging said retainers and having a stud-hole to be engaged by said stud and means to invert said reel.

3. In wire-drawing apparatus, driving means, a reel removably engaging said means to be rotated thereby and having trunnion-sockets, a reel-head releasably secured to said reel, detachable trunnion-bars to engage said sockets and having trunnions thereon and a yoke to engage said trunnions to invert said reel.

4. In wire-drawing apparatus, driving means, a reel removably engaging said means to be rotated thereby, a reel-head releasably secured to said reel and means to invert said reel to remove wire therefrom.

5. In wire-drawing apparatus, driving means, a reel removably engaging said driving means to be rotated thereby and a reel-head having a greater diameter than the winding-rim of said reel releasably secured to said reel to retain wire thereon.

6. In wire-drawing apparatus, driving means, a reel removably engaging said driving means to be rotated thereby, said reel having trunnion-sockets and detachable trunnion-bars having trunnions thereon to engage said sockets to invert said reel to remove wire therefrom.

7. In wire-drawing apparatus, driving means, a reel removably engaging said driving means to be rotated thereby, said reel having a continuous winding-rim, a reel-head releasably secured to said reel and means to invert said reel to remove wire therefrom.

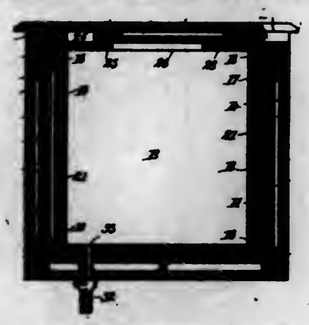
8. In wire-drawing apparatus, driving means, a reel removably engaging said means to be rotated thereby, said reel having a continuous winding-rim and means to invert said reel to remove wire therefrom.

9. In wire-drawing apparatus, driving means, a reel having a continuous winding-rim, removably engaging said means to be rotated thereby, and means to remove said reel from said driving means to remove the wire.

10. In wire-drawing apparatus, driving means and a reel having a continuous winding-rim removably engaging said means to be rotated thereby, said reel being invertible to remove wire therefrom.

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**756,004. REFRIGERATOR.** JOHN M. DORRIS, New York, N. Y. Filed Mar. 5, 1903. Serial No. 146,355. (No model.)



*Claim.*—1. A refrigerator, consisting of an outer box-section, an inner box-section smaller than the outer section and arranged therein with its bottom spaced from the bottom of the outer section, the upper edges of the inner section being flush with the upper edges of the outer section, filled partitions in the spaces between the sides and ends of the sections, said partitions extending from the bottom of the outer section to the tops of said sections, and forming two chambers, the outer end of which is closed at top and bottom and the inner one closed at top and opening at the bottom into the space between the bottoms of said sections, open-ended tubes extending through the upper portion of the outer box-section and through the partitions, said tubes being apertured in the portions in the outer chamber, an outlet-pipe leading from the bottom of each section, the pipe from the inner section extending into the pipe of the outer section, a top formed of two members having between them an air-space which communicates with the outer air, the inner member of the top being apertured and the outer member recessed, and a sliding cover in the recess of the outer member of the top, as set forth.

2. A refrigerator, comprising an outer box-section, an inner box-section smaller than the outer section and arranged therein with its bottom spaced from the bottom of the said outer section, the upper end of the inner section being flush with the upper end of the outer section, filled partitions in the spaces between the sides and ends of the sections, said partitions extending from the bottom of the outer section to the tops of said sections, and forming two chambers, the outer one of which is closed at top and bottom and the inner one closed at top and opening at the bottom into the space between the bottoms of the sections, open-ended tubes extending through the upper portion of the outer section and through the partitions, said tubes being apertured in the portion in the outer chamber, and a cover for the said box-sections, said cover being formed of two members and spacing-strips forming an air-space between the members, one of the spacing-strips being provided with openings leading into the air-space, as set forth.

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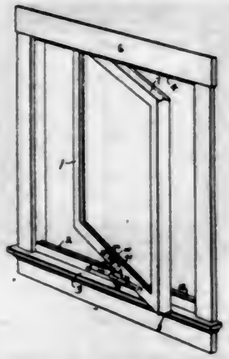
**756,005. SUSPENSORY BANDAGE.** EDWIN R. DRAKE, De Land, Fla. Filed July 7, 1903. Serial No. 164,504. (No model.)



*Claim.*—1. The improved suspensory bandage comprising a body-band, a scrotal bag provided with a ring arranged on the inner side, and the leg-band composed of two broad inelastic end pieces detachably secured to said body-band and the narrower central elastic portion formed of two independent and separate elastic pieces, the same passing through the aforesaid ring and adapted for reversal to change the wear side, as shown and described.

2. In a suspensory bandage, the improved leg-band composed of the central elastic portion formed of two independent elastic tapes, and two broad inelastic end pieces, the latter being folded laterally inward and thus tapered at their inner ends and overlapping one of the tapes, the other tape being lapped and secured upon such folded edges, as shown and described.

**756,006. WINDOW.** HARRY R. ESSIG, Canton, Ohio, assignor to the Essig Pivot Window Company, Pittsburg, Pa., a Corporation. Filed Nov. 19, 1903. Serial No. 181,767. (No model.)



*Claim.*—1. In a window, a sill-plate, an inclined socket in and guide-posts on the sill-plate, a wedge-block adapted to operate endwise in the socket, an intermediate plate bearing on the block and having apertures adapted to receive the guide-posts, a vertically-movable sash pivoted on the intermediate plate, and sockets in the sash adapted to receive the guide-posts when the sash is lowered.

2. In a window, a sill-plate, an inclined socket in and guide-posts on the sill-plate, a wedge-block adapted to operate endwise in the socket, an intermediate plate bearing on the block and having apertures adapted to receive the guide-posts, and a sash pivoted on the intermediate plate.

3. In a window, a sill, an inclined socket in the sill, a rotatable cog-pinion in the socket, a wedge-block bearing in the socket and having an inclined rack meshing with the pinion, and a vertically-movable sash on the wedge-block.

4. In a window, a sill, an inclined socket in the sill, a rotatable cog-pinion in the socket, a wedge-block in the socket having a rack meshing with the pinion, and a vertically-movable sash on the wedge-block.

5. In a window, a sill, an inclined socket in the sill, a wedge-block adapted to operate endwise in the socket and having a recess in its upper side, rollers in the recess, and a vertically-movable sash on the rollers.

6. In a window, a sill, an inclined socket in the sill, a wedge-block adapted to operate endwise in the socket, and a vertically-movable sash on the wedge-block.

7. In a window, a sill, an inclined socket in the sill, a shaft journaled in the sill having a cog-pinion thereon in the socket, a wedge-block in the socket having a rack meshing with the pinion, a lug on the sill, an elastic operating-arm on the shaft adapted to be sprung to pass the lug, and a vertically-movable sash on the wedge-block.

8. In a window, a sill-plate, an inclined socket in and guide-posts on the sill-plate, a wedge-block adapted to operate endwise in the socket, an intermediate plate bearing on the block and having apertures adapted to receive the guide-posts, a sash pivoted on the intermediate plate, there being a bolt in the sash and apertures in the intermediate plate adapted to receive the bolt at various points in the rotation of the sash.

9. In a window, a non-rotatable pivot-plate having apertures therein around the pivot-point, a sash pivoted on the plate, a latch pivoted on the sash and adapted to enter the several apertures, there being an inclined groove in the latch, and a lever pivoted on the sash having an eccentric-pin adapted to operate in the latch-groove.

10. In combination, a window-frame, a sash-strip, a vertically-movable sash pivoted in the frame below and to the sash-strip above, a longitudinal dovetail groove in the sash-strip and a spring-sustained wedge-strip in the groove closing against the frame and adapted to close the mouth of the groove when the sash is lowered.

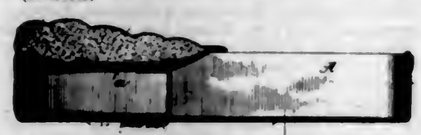
11. In combination, a window-frame, a sash-strip, a vertically-movable sash pivoted in the frame below and to the sash-strip above, longitudinal grooves in the sash-strip and spring-sustained filling-strips in the groove closing against the frame, there being guide-pins in the frame and apertures in the filling-strips adapted to receive the pins.

12. In combination, a window-frame, a sash-strip, a vertically-movable sash pivoted in the frame below and to the sash above, longitudinal grooves in the ends of the sash-strip, spring-sustained filling-strips in the grooves closing against the frame, vertical plates resting on the sash and extending between the filling-strips, and sockets in the frame adapted to receive the vertical plates.

13. In combination, a window-frame, a sash-strip, a vertically-movable sash pivoted in the frame below and to the sash above, guide-pins in the frame, and sockets in the sash-strip adapted to receive the guide-pins.

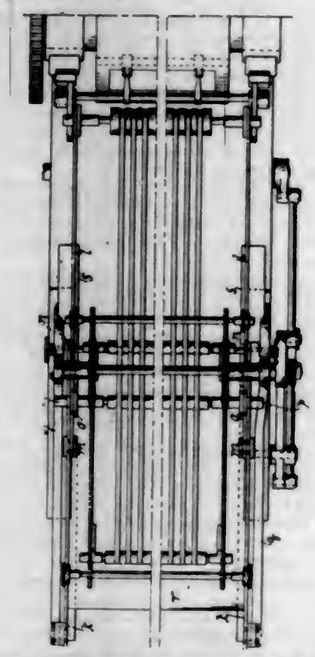
14. In combination a window-sash strip, a longitudinal groove in the sash-strip, and a spring-sustained wedge-strip in the grooves adapted to close the mouth thereof.

**756,007. CUSHION FOR DOUCHE-PANS.** HARRIET R. FELTHOUSEN, Jersey City, N. J. Filed Aug. 3, 1903. Serial No. 168,785. (No model.)



*Claim.*—A cushion for douche-pans, having a padded body portion, a flap united to said body portion and depending therefrom, a strap E fastened to the side portions of the flap, another strap F having a permanent connection with the flap at one end, and a detachable connection at its other end, and a longitudinal strap attached to the middle portion of the flap and to the strap G.

**756,008. DELIVERY-TRACK FOR PRINTING-PRESSES.** GEORGE P. FISHER, New London, Conn. Filed July 14, 1903. Serial No. 165,485. (No model.)



*Claim.*—1. A track comprising sections one of which is movably connected to the other and provided with a projection, and a support for the projection.

2. A track comprising sections one of which has a lip movably engaging the other section, said first-named section being provided with a projection made to travel along a support.

3. A track comprising sections one of which is movable, a gear for moving said last-named section, and a projection and bracket made to support such movable section, the latter having a lip made to pass or engage under the other section.

4. A track-section and a bracket, combined with a second section movable with respect to the first and provided with a lip made to movably engage the first-named section and a projection made to travel along the bracket.

5. A printing-press having a frame with an extension and a delivery-table shiftable along the extension, said extension being free to allow access past the same and past the table when supported on such extension to underlying parts.



**756,009. FISH-HOOK.** MARTIN FLEGLE, Minneapolis, Minn. Filed Aug. 17, 1903. Serial No. 169,834. (No model.)

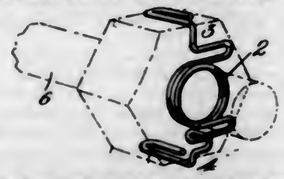


*Claim.*—1. The combination with a fish-hook, of a weight in which its shank opposite its point is embedded, said weight having lateral wing-like extensions, substantially as set forth.

2. The combination with a fish-hook, of a weight in which its shank opposite its point is embedded, said weight having lateral wing-like extensions the surfaces of which are bright, substantially as set forth.

3. The combination with a fish-hook, of a weight in which its shank opposite its point is embedded, said weight having lateral wing-like extensions, and having its under surface convex and corrugated lengthwise, substantially as set forth.

**756,010. NUT-LOCK.** ADDISON C. FLETCHER, New York, N. Y. Filed Oct. 6, 1903. Serial No. 175,990. (No model.)



*Claim.*—1. A nut-lock including a coiled bolt-gripping body, a terminal coil of which has a substantially L-shaped projection the outer branch of which is arranged to engage the outer face of a nut and the inner branch of which has a spring portion independent of the coiled bolt-gripping body, said spring portion serving to secure lateral resiliency of said projection.

2. A nut-lock including a coiled bolt-gripping body, a terminal coil of which has a substantially L-shaped nut-locking projection the outer branch of which is arranged to engage the outer face of a nut and the inner branch of which is doubled upon itself to present a spring portion.

3. A nut-lock including a coiled bolt-gripping body, the terminal coils of which have nut-locking projections of substantially L form, the outer branches of said projections being of approximately U shape and serving to engage the side faces of a nut, the inner branch of one of the projections being of sinuous or serpentine form.

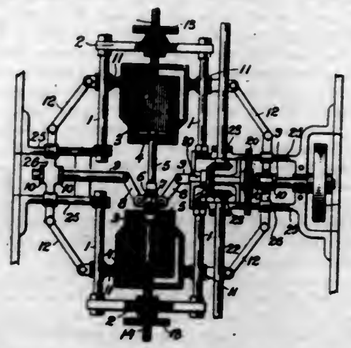
4. A nut-lock including a coiled bolt-gripping body having lateral and substantially L-shaped nut-locking projections, the outer branch of each of which is arranged to engage the outer face of a nut and the inner branches of which have spring portions to secure lateral resiliency and a gripping action of the working portions of the branches against said nut-faces.

5. A nut-lock including a coiled bolt-gripping body, a terminal coil of which has a substantially L-shaped projection, the outer branch of which constitutes the working portion thereof and is shaped to present a plurality of nut-engaging portions, and the inner branch thereof having a spring portion independent of the coiled bolt-gripping body to secure lateral resiliency of the projection.

**756,011. GASOLENE-MOTOR.** JAMES L. FITZ GERALD, Newport, R. I. Filed June 1, 1903. Serial No. 159,447. (No model.)

*Claim.*—1. In a gas or other explosive motor, a pair of cylinders whose members are adjustable toward or away from each other to shorten or lengthen the stroke of the piston, in combination with a crank-shaft and means for lengthening or shortening the throw of the crank.

2. In a gas or other explosive engine, explosion-cylinders, pistons therein having piston-rods, a common crank-shaft, means for adjusting the cylinders toward or away from each other to regulate the length of the stroke of the piston, and means for lengthening or shortening the throw of the crank in correspondence with the adjustment of the cylinders.



3. In a gas or other explosive motor, cylinders arranged so as to be adjusted toward or away from each other, pistons in the cylinders, which pistons operate on a common crank-shaft provided with means for lengthening or shortening the throw of the crank correspondingly with the adjustment of the cylinders.

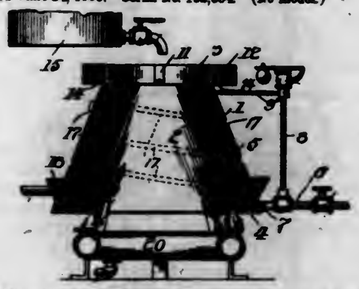
4. In a gas or other explosive motor, explosion-cylinders that are adjustable in relation to each other, pistons in said cylinders, a common crank-shaft to which the pistons apply their power, means for lengthening or shortening the throw of the crank, and means for adjusting the cylinders toward or away from each other consisting essentially of screw-rods on the cylinders and devices engaging said rods.

5. In a gas or other explosive motor, cylinders arranged to be adjusted toward or away from each other, in combination with pistons having rods provided with a transverse slotted yoke, and a crank-shaft whose pin slides in said yoke, said shaft consisting of sections whereby the throw of the crank is lengthened or shortened correspondingly with the adjustment of the cylinders.

6. In a gas or other explosive motor, cylinders arranged to be adjusted toward or away from each other, pistons in said cylinders having piston-rods provided with a slotted yoke, a sectional crank-shaft whose pin slides in said yoke, which shaft is lengthened or shortened to control the throw of the crank in correspondence with the adjustment of the cylinders, cross-heads attached to the ends of the crank-shaft and links connecting said cross-heads with the cylinders.

7. In a gas or other explosive motor, the combination of the adjustable cylinders, pistons therein having rods connected together by a slotted transverse yoke, a crank-shaft consisting of interpivoted sections and having a pin that slides in said yoke, transverse bars attached to the ends of the crank-shaft, and pivoted links connecting the ends of said bars to the cylinders, so that as the cylinders are adjusted the throw of the crank will be likewise regulated.

**756,012. PASTEURIZER.** WILLIAM T. FOGAL, Emsworth, Pa. Filed June 24, 1903. Serial No. 162,234. (No model.)



*Claim.*—1. In a device of the character described, a double-walled casing of substantially frustated cone shape provided on its exterior with a spiral groove or way, an annular trough carried by the casing near its base to receive the liquid carried thereto by the spiral groove or way, said trough provided with an outlet, a water-supply pipe in communication with the space between the walls of

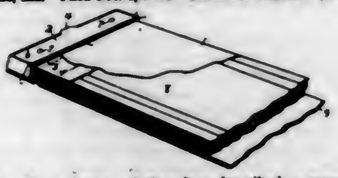
the casing, a gage connected to said water-supply pipe to indicate the water-level in the space between the casing-walls, a safety-valve carried by said gage, an annular liquid-receiving receptacle supported on the top of the casing and provided with apertures through which the liquid is fed to the exterior wall of the casing, and a heater disposed underneath the casing to heat the water in the space between the walls of the casing, as and for the purpose described.

2. In a pasteurizer, the combination with a heater embodying a burner, of a double-wall casing supported above the burner and provided on its exterior with a spiral way or groove, a water-supply pipe communicating with the space between the walls of the casing, an indicating-gage connected to the water-supply pipe, an annular trough carried by the casing near its base, and provided with an outlet, said trough receiving the liquid from the spiral way or groove, and an annular liquid-receiving receptacle supported on top of the casing and provided with circumferentially-arranged openings through which the liquid is fed to the spiral way or groove in the exterior of the casing, substantially as described.

3. In a pasteurizer, the combination with a heater, of a double-wall casing of substantially frustated cone shape provided with a spiral groove or way in its exterior wall, a trough carried by the casing near its lower end and provided with an outlet, a water-supply pipe communicating with the space between the walls, an indicating-gage connected to the water-supply pipe, a safety-valve on said gage, a pipe communicating with said valve and with the space between the walls to carry off the steam generated in said space, and a liquid-receiving receptacle on top of the casing into which liquid is fed, said receptacle having openings in its base through which the liquid is fed to the exterior of the casing, substantially as described.

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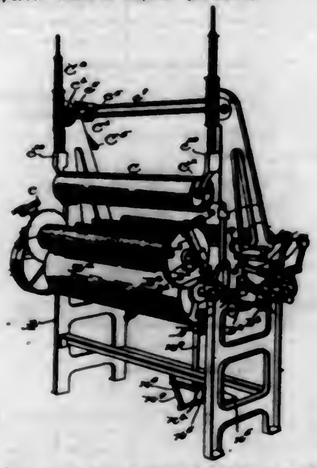
**756,018. PAPER-PAD HOLDER. KALMAN FRANKLIN, Fort Wayne, Ind. Filed Feb. 1, 1904. Serial No. 191,405. (No model.)**



*Claim.*—In a device of the class described, a case; a clasp mounted in the case and having a downturned shoulder adapted to engage the pad when inserted in the case; and one or more studs projecting from the under face of said clasp, and being adapted to engage suitable perforations in said pad.

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**756,014. MACHINE FOR WINDING YARN. LYMAN O. GOODWIN, North Andover, Mass., assignor to Davis & Furber Machine Company, North Andover, Mass., a Corporation of Massachusetts. Filed July 18, 1903. Serial No. 116,372. (No model.)**



*Claim.*—1. A winding-machine comprising a spool to receive the yarn, a drum to rotate the spool, bearings to sustain the journals of the spool, and movable guideways sustaining said bearings said guideways being pivotally mounted to swing the bearings carrying the spool from over the drum whereby the wound spool may be moved from its winding position and be sustained while the operator severs the threads prior to the removal of the spool from the machine.

2. A winding-machine comprising a spool to receive the yarn, bearings to sustain the journals of the spool, a drum to rotate the spool, and movable guideways pivotally mounted to turn about the longitudinal axis of the drum prior to removing a wound spool.

3. A winding-machine comprising a spool to receive the yarn, bearings to sustain the journals of the spool, a drum to rotate the spool, and movable guideways pivotally mounted to turn about the longitudinal axis of the drum prior to removing a wound spool, and means to lock said guideways in their operative position for winding the spool.

4. In a winding-machine, a spool, movable guideways, freely-slidable bearings thereon having slots to embrace the journals of the spool, and rests on which said journals may be placed preparatory to inserting the journals of the spool into the slots of the bearing in order that winding may be commenced

5. In a winding-machine, a drum, a spool to be rotated thereby, and swinging means to position and aid in maintaining the journals of said spool to one side of their winding position and parallel to the longitudinal axis of said drum while the operator wraps the free end of the yarn about the body of the spool.

6. In a winding-machine, a drum, swinging bearing guideways, bearings sustained by said guideways, and shaped to receive and position the journals of an empty spool parallel to the longitudinal axis of said drum preparatory to wrapping the free ends of the yarn about said spool, and means to lock said guideways in operative position when the spool has been placed in winding position with relation to the drum.

7. A winding-machine comprising a drum, a compression-roller, a spool, means to sustain said spool between the drum and compression-roller, said compression-roller having chambered ends, bearings located within the chambered ends of said compression-roller for the journals thereof, and means to raise and lower said bearings.

8. A winding-machine comprising a drum, a compression-roller, a spool, means to sustain said spool between the drum and compression-roller, said compression-roller having chambered ends, bearings located within the chambered ends of said compression-roller for the journals thereof, means to raise and lower said bearings, and means to insure the locking of said bearings and maintain said roller in its inoperative position while changing a filled spool.

9. In a winding-machine, a drum, a compression-roller, means for sustaining a spool between the drum and compression-roller, said compression-roller having chambered ends within which the journals of said roller are contained, parallel slide-rods provided at their lower ends with offset bearings entering the chambers at the ends of said compression-roller, said roller and its bearing being free to enter the space between the spool-heads, thus enabling the compression-roller to contact with all the yarn being wound upon the body of the spool.

10. In a winding-machine, a drum, a compression-roller, means for sustaining a spool between the drum and compression-roller, said compression-roller having chambered ends within which the journals of said roller are contained, parallel slide-rods provided at their lower ends with offset bearings entering the chambers at the ends of said compression-roller, said roller and its bearing being free to enter the space between the spool-heads, thus enabling the compression-roller to contact with all the yarn being wound upon the body of the spool, bearings for said slide-rods, and means to guide the bearings sustaining said compression-roller that the compression-roller may move toward and from the surface of the drum.

11. In a winding-machine, a spool, means to rotate it, a thread-guide having at one end a screw-thread, adjusting-nuts on said thread, a sleeve disposed between said nuts and adjustable as to its position through the adjustment of said nuts, means connected with said sleeve to slide said thread-guide in any adjustment of the nuts and devices for rotatably adjusting the guide.

12. In a winding-machine, a rotatably-adjustable thread-guide, a shaft having a cam, connections between said shaft and guide, and means to adjust said connections without stopping the machine, whereby said cam may actuate said traverse-guide for any desired extent.

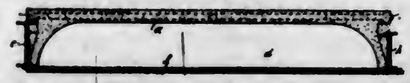
13. In a winding-machine, a drum, a spool to receive the yarn to be wound, swing-supports for said spool to enable the latter to be moved into position above or to one side of said drum, a compression-roller having journals at its ends, boxes to receive said journals, and means to guide the boxes as the compression-roller is moved toward and from the axis of rotation of the drum, and means to move said boxes and compression-roller whenever desired independently of the movement derived from increasing yarn on the spool being wound.

14. In a winding-machine, the combination of a drum, a plain-surfaced compression-roller, a spool, movable bearings for said spool, guideways upon which said bearings slide, said guideways being pivotally mounted to swing the spool to position between the drum and compression-roller, or from such position, said bearings being provided with sustaining means for the spool when swung from between the drum and compression-roller.



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**756,015. MANUFACTURED PLATE FOR CEILING CONSTRUCTIONS. WILHELM GUTBIER, Charlottenburg, Germany. Filed Apr. 11 1903. Serial No. 152,194. (No model.)**



*Claim.*—1. In a combined floor and ceiling construction, the combination with the beams or girders, of tiles supported by the girders and each having an upper slab portion forming a floor-surface, the ends of the slab portion overlapping the tops of the girders, and means formed on the contiguous edges of the slab portions to lock the tiles together.

2. In a combined floor and ceiling construction, the combination with the beams, of tiles supported by the beams and each having an upper slab portion forming a floor-surface, the ends of the slab portion overlapping the tops of the girders, means formed on the contiguous edges to lock the tiles together, and ribs extending from the lower face of the slab portion and having their edges flush with the under face of the beams.

3. In a combined floor and ceiling construction, the combination with the I-beams, of tiles composed of penetrable plastic material supported by the beams and each having an upper slab portion forming a floor-surface, the ends of the slab portion overlapping the tops of the girders and having their contiguous edges interlocked, ribs extending from the lower face of the slab portion, projections formed on the ends of the tiles and adapted to engage the lower flange of the beams and having their lower edges rabbeted to correspond with the thickness of said lower flange, whereby the edges of the ribs are flush with the under face of the beams.

4. In a combined floor and ceiling construction, the combination with the I-beams, of tiles composed of penetrable plastic material, and each having an upper slab portion, the ends of which overlap the top of the beams to form a floor-surface, ribs projecting from the lower face of the slab portion, projections formed on the ends of the tiles terminated short of the upper surface thereof and having a rabbet formed in their lower edges, the projections extending between the upper and lower flanges of the beams with the rabbets engaging the lower flange, whereby the edges of the rabbets are flush with the under face of the beams, and a plastering-base secured to the edges of the ribs, substantially as specified.

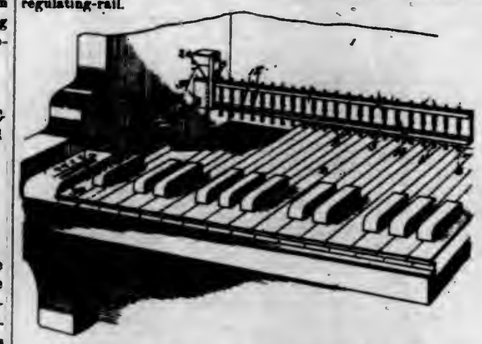
5. In a combined floor and ceiling construction, the combination with the I-beams, of tiles composed of penetrable plastic material and each having an upper slab portion forming a floor-surface, tenon-and-mortise connections on the contiguous edges of the slab portion, projections on the ends of the tile terminated short of the upper and lower surfaces thereof and adapted to extend between the upper and lower flanges of the beams, whereby the ends of the slab portion will overlap the upper surface of the beams and the lower surface of the tiles will lie flush with the under face of the beams, substantially as specified.

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**756,016. TOUCH-REGULATING ATTACHMENT FOR PIANOS. LAMBDEN HARRIS and WILLIAM H. KENDALL, Waco, Tex. Filed Mar. 12, 1903. Serial No. 147,532. (No model.)**

*Claim.*—1. A piano attachment of the class described comprising a vertically-movable horizontal regulating-rail having guides rigid therewith, a plurality of independently-yieldable sliding pressure-pins working in the guides and corresponding in number and position to the keys of the instrument, a spring associated with each pressure-pin and arranged to be compressed by the downward adjustment of the rail, and an operating device having means for raising and lowering the rail.

2. A piano attachment of the class described comprising a vertically-movable regulating-rail extending the full length of the keyboard above the latter and consisting of a framework having rigidly-connected upper and lower rail-bars provided with a series of vertically-alined guide-openings therein, a plurality of independently-yieldable sliding pressure-pins working in said guide-openings of the rail-bars and corresponding in number and position to the keys of the instrument, a spring associated with each pressure-pin and arranged to be compressed by the downward adjustment of the rail, and an operating device having means for raising and lowering the regulating-rail.

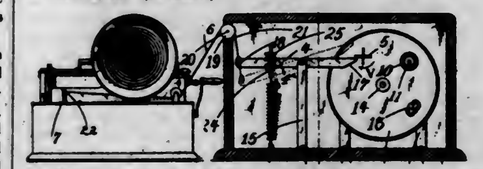


3. A piano attachment of the class described comprising a pressure member arranged over the keyboard and bearing a plurality of independently-yieldable regulating elements arranged to contact with the keys, and an operating device including a pair of pivotally-supported synchronously-movable adjusting-levers having loosely-interlocked inner ends and provided at their outer ends with pull-rod connections with the end of the pressure member, a vertically-swinging actuating-lever pivotally hung beneath the keyboard and having an engaging end or element operating beneath and against the loosely-interlocked ends of the adjusting-levers, a stationary nut, a screw-setting member working through said nut and coöperating with said actuating-lever and a readjusting-spring arranged to exert its tension against one of the adjusting-levers

4. In a piano attachment of the class described, the combination with a vertically-movable and spring-elevated rail bearing members coasting with the keys, of the case having a slotted cheek-block member provided with an indicating-scale, a carrier-rod bearing a pointer movable in the slot of the cheek-block member and playing over the scale, and a pivotally-supported bell-crank lever having its separate arms connected respectively with the rod and said rail, the elevating-spring for the rail serving to retract the pointer to its non-indicating position, substantially as described.

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**756,017. TIME-CONTROLLING MECHANISM FOR PHONOGRAPHS. JOHN R. HETT, Berlin, Canada. Filed Jan. 29 1903. Serial No. 141,062. (No model.)**



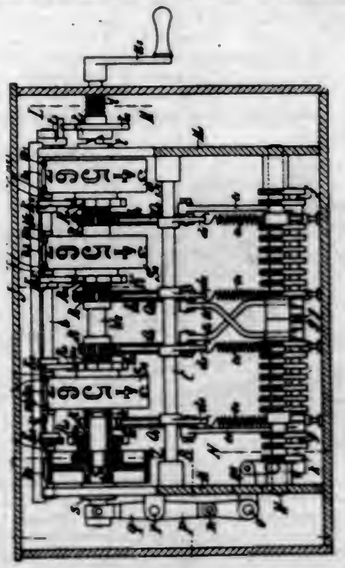
*Claim.*—In a device of the character described, a casing, a motor therein having a suitable trip, a lever having one end actuated by the trip, a post to which the lever is pivoted, a lug formed on the lever, a hook having a shank extending through the lug of the lever, a spring attached to the hook and to an eye in the bottom of the casing, a pulley mounted in a recess of the wall of the casing, a flexible connection run over the pulley, a graphophone-casing, a pulley therein over which the flexible connection is run and a starting-lever to which the flexible connection is attached.

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**756,018. CASH-INDICATOR. GUSTAV HILLER, Zittau, Germany. Filed May 5, 1902. Serial No. 105,883. (No model.)**

*Claim.*—1. In a cash-indicator of the class described, the combination with indicator-wheels for the units and tens of the different denominations, of two groups of actuating-keys, one for the units and one for the tens and means for shifting these groups from

the units and tens wheels of one denomination to the like wheels of another denomination, substantially as shown and described.



2. In a cash-indicator of the class described, the combination with a shaft, of indicator-wheels for the units and tens of the different denominations of money, revolubly mounted upon a shaft, means for preventing side movement of the indicator-wheels as the shaft is reciprocated, two groups of actuating-keys one for the units and one for the tens and means for bringing these groups of keys into and out of operative connection with the units or tens wheels of one or the other denomination, as the shaft is reciprocated, substantially as shown and described.

3. In a cash-indicator of the class described, the combination with indicator-wheels adapted to indicate different monetary denominations, of stationary stops securing said indicator-wheels against side movement, driving-gears for said indicator-wheels, two groups of keys, one for the units and one for the tens adapted to operate the driving-gears of the indicator-wheels of either monetary denomination at will, couplings for throwing the driving-gears and indicator-wheels into or out of gear one with the other and means for actuating the couplings, substantially as shown and described.

4. In a cash-indicator of the class described, the combination with the indicator-wheels, of a shaft carrying such wheels upon which they can freely turn, driving gear-wheels loosely mounted upon the shaft, adjustable couplings between the driving-wheels and indicator-wheels, means for axially displacing the shaft in both directions, for shifting the driving gear-wheels, and groups of keys for operating the driving gear-wheels, substantially as shown and described.

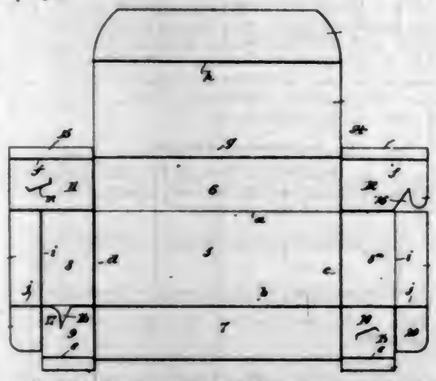
5. In a cash-indicator, the combination with the indicator-wheels, of an axially-movable shaft, upon which the indicator-wheels are loosely mounted, stationary stops on both sides of the indicator-wheels, driving-wheels loosely mounted upon the shaft, adjustable couplings between the indicator and driving wheels, a shifting key, and means for transmitting its movement to the shaft, substantially as shown and described.

6. In a cash-indicator, the combination with indicator-wheels, of an axially-movable shaft, upon which the indicator-wheels are loosely mounted, stationary stops on both sides of the indicator-wheels, driving-wheels loosely mounted upon the shaft, adjustable couplings between the indicator and driving wheels, a spring forcing the shaft into one extreme position, and mechanism for forcing the shaft against the spring tension into the other position, substantially as shown and described.

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**756,019. FOLDING BOX. MORRIS HIRSCH, New York, N. Y. Filed Sept. 26, 1903. Serial No. 174,582. (No model.)**

*Claim.*—1. A box-blank comprising a body portion, side folds, end folds, side flaps at the ends of the side folds, each side flap being of less width than the side fold so that the side edge of the flap is out of line with the corresponding edge of the side fold, and arms projecting beyond the end edges of the end folds; said side flaps and side folds being bendable at right angles to each other for the side edges of the flaps to lie below the edges of the folds, and the arms being fitted in the notched angles or corners formed by the side folds and flaps.



2. A box-blank comprising a body portion, side and end folds, side flaps on the ends of the side folds, each side flap being of less width than the side fold, and each side flap being provided at its side edge with a flange which is bendable at an angle to the flap, and arms projecting beyond the ends of the end folds and bendable at an angle thereto, said arms being adapted to fit in notches produced between the side folds and the flanges on the side flaps.

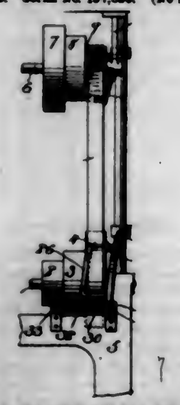
3. A box having a body portion, side and end folds, side flaps provided with flanges arranged with respect to the side folds to produce notches at the corners of the box, narrow flaps on said folds, and arms extending inwardly from the end folds and fitting in said notches; said arms being movable to two positions, in one of which the arms confine the folds and side flaps in assembled conditions while permitting the narrow flaps to be lifted or opened, and in the other position of the arms they are fitted wholly inside of the box for locking the several parts in their closed conditions.

4. A foldable box having side and end folds, side flaps provided with flanges bendable on lines below the edges of the side folds, and arms on the end folds, said arms being adjustable into engagement with the side folds and the flanges of the side flaps.

5. A box-blank having a body, side and end folds, side flaps provided with flanges bendable on scored lines which lie at one side of the edges of the side folds, and end flaps on the end folds, said end flaps being extended beyond the end folds and forming arms adapted to lock the parts in their assembled condition.

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**756,020. BELT-SHIFTER. HANS J. HOSER, Princess Bay, N. Y. Filed May 14, 1903. Serial No. 157,089. (No model.)**



*Claim.*—1. The combination with two stepped cone-pulleys and their belt, of a rock-shaft, two belt-shifting arms fixed thereto one adjacent to each pulley, one of the arms being fitted to shift the belt positively in one direction and the other arm being fitted to yieldingly shift the belt when rocked in the same direction.

2. The combination with two stepped cone-pulleys and their belt, of a belt-shifting arm adjacent to each pulley and independent means carried by each of the arms for permitting the belt to be positively shifted when the arm is moved in one direction and yieldingly shifted when the arm is moved in the other direction.

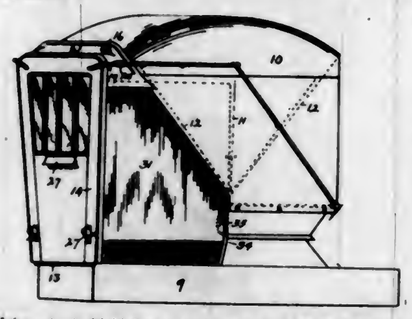
3. The combination with two stepped cone-pulleys and their belt, of a rock-shaft, two belt-shifting arms fixed thereto, one adjacent to each pulley, and independent means carried by the arm for permitting the belt to be positively shifted when the arm is moved in one direction and yieldingly shifted when the arm is moved in the other direction.

4. The combination with two stepped cone-pulleys and their belt, of a belt-shifting arm adjacent to each pulley and independent means carried by each arm for permitting the belt to be positively shifted downwardly and yieldingly shifted upwardly on the pulley comprising a spring-actuated belt-retaining piece hinged to the said arm.



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**756,021. STORM-SHIELD FOR VEHICLES. MATHEW R. HULL, Connersville, Ind., assignor to the Rex Buggy Company, Connersville, Ind., a Corporation of Indiana. Filed Oct. 12, 1903. Serial No. 177,679. (No model.)**



*Claim.*—1. A shield-frame having vertical brace members, a yoke connected adjustably with said brace members and constituting an adjustable supporting device, and clamping means to force the said yoke and shield-frame in the direction of each other.

2. A storm-shield attachment for vehicles comprising a frame detachably secured to the dash or front of the vehicle-body, a padded board at the top of the shield to contact with the front bow of the vehicle-top, and means for closely joining said board and top.

3. A storm-shield for vehicles comprising a substantially vertical frame, a wide board secured to the top of said frame obliquely thereto having a padded outer side and hooks to connect the shield to the vehicle-top, said hooks having turnbuckles.

4. A storm-shield for vehicles comprising a main frame, means for securing it at the bottom to the dash or vehicle-body, a board hinged to the top of the main frame so as to be adjustable in its angular relation thereto the outer side of said board being padded, a vehicle-top, a hooked rod on each side of the shield secured to the main frame and adapted to be secured by means of the hook with the posts supporting the top braces of the vehicle-top, said rods each having turnbuckles.

5. A storm-shield for vehicles comprising a main frame, said frame having an observation-aperture, laterally-sliding glass-holding frames in said aperture and elastic runs or slides for said frames elastically supported and held against said frame.

6. In a storm-shield for top-vehicles, a main frame having its top secured to the vehicle-top and having its bottom disposed in front of the dash or vehicle-body, auxiliary legs removably and adjustably secured to the main frame above the dash and having their lower ends resting upon the front sill of the body and means for clamping the dash between the main frame and the said legs.

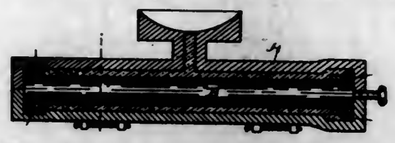
7. In a storm-shield for top-vehicles, a main frame having its top secured to the vehicle-top and having its bottom disposed in front of the dash or vehicle-body, auxiliary legs removably secured to the main frame above the dash having their lower ends resting upon the front sill of the body, spring-bars extending from the legs laterally around the dash and bent at right angles and passing through the main frame, and cam-levers to clamp the main frame and legs to the dash or body-front.

8. A storm-shield attachment for vehicles comprising an approximately vertical frame adapted for detachable connection to the dashboard of a vehicle, means for detachably connecting said frame to the front bow of the vehicle, and spring-actuated side curtains mounted perpendicularly in said frame extensible rearwardly therefrom and provided at their free ends with curtain-sticks having spring-joints near their lower ends and means for detachable engagement with side members of a vehicle-top.

9. A storm-shield attachment for vehicles comprising a main frame adapted for detachable connection to the dashboard of a vehicle, means for detachably connecting said frame with the front bow of the vehicle, and spring-actuated side curtains mounted perpendicularly in said frame extensible rearwardly therefrom and provided at their free ends with curtain-sticks and hooks secured to said sticks for detachable engagement with side members of a vehicle-top said hooks having finger-holds or handles for convenient movement.

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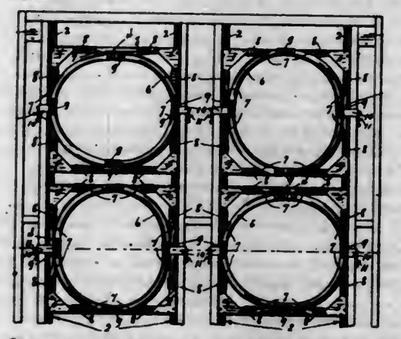
**756,022. MANUFACTURE OF CAST GLASS PIPES. CHARLES H. JENKINS, Somerville, Mass., assignor to Charles D. Jenkins, Winchester, Mass. Filed Mar. 5, 1903. Serial No. 146,258. (No model.)**



*Claim.*—The process of making glass pipes with screw-threaded ends adapted to fit one another, said process consisting in casting the glass upon an externally-threaded shell at one end and within an internally-threaded shell at the other end, annealing the glass while the shells are in place at said ends, and subsequently unscrewing said shells, as set forth.

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**756,023. HAT-RACK. CHARLES W. JOHNSON and JOHN K. OLAISON, Minneapolis, Minn. Filed Oct. 23, 1903. Serial No. 178,193. (No model.)**



*Claim.*—1. In a hat rack or crate, the combination with a base-support having longitudinal supporting-guides, of independently-removable hat-holders having rectangular bases adapting them to be slid upon and set in different angular positions with respect to said supporting-guides, substantially as described.

2. The combination with a rectangular base-support having the grooved longitudinal supporting-bars 2, of a plurality of independently-removable hat-holders having rectangular bases fitting the grooves of said supporting-bars 2, in either of two angular positions, and adapted to be slid in different relative positions, substantially as described.

3. A hat-holder comprising a rectangular base, a rim-engaging ring adapted to be sprung, and bowed standards, said standards being attached to said ring at their intermediate portions and having their ends adjustably secured to said rectangular base, whereby the said ring may be bent to the outline of a hat-rim, by adjustments of the said standards, substantially as described.

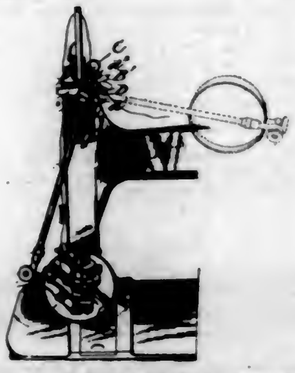
4. A hat-holder comprising a supporting-base, a rim-engaging ring and devices connecting the said base and rim-engaging ring, the said devices being adjustable to vary the curvature of said ring from a horizontal plane, substantially as described.

5. In a hat rack or crate, the combination with a base-support adapted to support a plurality of hat-holders in the same horizontal

plane of a plurality of annular hat-holders having bases resting on said base-support, and adapted to be variably spaced and to be adjusted rotatively in the same horizontal plane, substantially as described.

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**756,024. MAGNIFYING ATTACHMENT FOR SEWING-MACHINES.** SALLIE JONES, Glasgow, Ky. Filed Dec. 16, 1902. Serial No. 135,382. (No model.)



*Claim.*—1. The magnifying attachment for sewing-machines comprising the clamp having an adjustable member whereby it is adapted to be removably attached to the head of a machine and adjusted higher or lower thereon, an extensible bar or arm, and a universal joint connecting said bar with the aforesaid clamp, whereby the bar may be swung in any direction, a universal joint attached to the outer end of said extensible bar or arm, and a lens or magnifying-glass secured to such universal joint, whereby it may be adjusted with and also independently of the bar, higher or lower or laterally and turned on its axis, as shown and described.

2. In a sewing-machine attachment the combination with a clamp adapted to be secured to the head of a machine, of a shackle pivotally secured to said clamp, a rod pivotally secured to said shackle and internally threaded at its lower end, an extension screw-plug fitting in the said lower end, a pin pivotally secured in the lower end of said extension-plug, a stud pivotally secured in one end of said pin and having one end internally threaded, a ring inclosing a lens and provided with a threaded projection or extension, said extension fitting in the internally-threaded end of the stud, whereby the said lens may be universally adjusted to focus a needle held in the head of the machine.

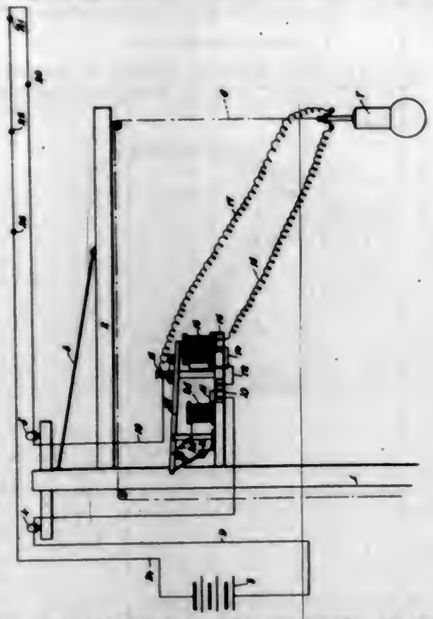
3. In an attachment for sewing-machines, a clamp comprising an angled member, notches or teeth on one side thereof, a sliding member provided at or near one end with an opening adapted to loosely fit over said angled member, a bent pawl or tooth projecting from the outer face of said sliding member, a set-screw threaded through said sliding member at or near it free end, whereby when said set-screw is screwed against the head of the machine, the bent pawl or tooth will be tilted into engagement with a notch on the angled member, and securely fasten the clamp in place, a rod or arm pivotally secured to said clamp, a universal joint secured to the lower end of said rod, and a lens or magnifying-glass secured to said universal joint.

4. In an attachment for sewing-machines the combination with a clamp adapted to be adjustably secured to the head of a machine, of a shackle adjustably secured to said clamp, a rod or arm adjustably secured to said shackle and internally threaded at its lower end, a tapering threaded extension-plug fitting the internally-threaded end of said rod, a threaded sleeve fitted on said extension-plug, a pin adjustably secured in the lower end of said extension-plug, a stud adjustably secured in one end of said pin and internally threaded at one end, a split ring inclosing a lens, threaded extensions projecting from the ends of said split ring and fitting in the internally-threaded end of said stud, whereby the lens will be securely held in its frame and whereby the said lens may be adjusted to focus a needle in the head of the machine and also folded up against the arm of the machine when not in use.

5. In an attachment for sewing-machines the combination with an adjustable clamp adapted to be secured to the head of a machine, one member of said clamp being provided with a series of holes for the passage of the thread, a shackle adjustably secured to said clamp, a rod or arm pivotally secured to said shackle and internally threaded at its lower end, a tapered extension-plug fitting said internally-threaded lower end, and having its lower reduced end shouldered on opposite sides, a headed pin passing through an opening in said reduced portion and held thereto by a nut, the said pin provided with a transverse opening through its head having shoulders on its opposite sides, a shouldered stud passing through the opening in said pin and held thereto by a nut, and having its shouldered end internally threaded, a split ring or frame inclosing a lens, and provided with threaded extensions projecting from its ends, said threaded projections fitting and screwing into the internally-threaded end of said stud, all substantially as shown and described.

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**756,025. ELECTRIC-LIGHT-CIRCUIT PROTECTOR.** STANLEY KALBACH, Wildwood, N. J. Filed May 13, 1903. Serial No. 156,883. (No model.)



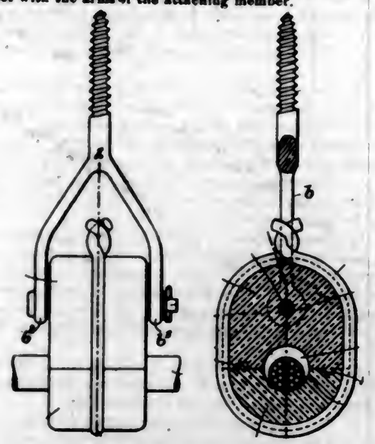
*Claim.*—The combination with an electric circuit, and a plurality of arc-lamps in series in the circuit, of a protector for each lamp and its source of supply, a support for each lamp and protector, said protector being located between the support and the lamp and independent of the lamp and connected with the lamp by electrodes, said protector comprising an electromagnet with which one of the circuit-wires is connected, a pivoted armature for the magnet, a binding-post with which the other circuit-wire is connected, said post being provided with a contact extending into the path of the armature, one of said electrodes being connected with the lamp and magnet and the other with the lamp and binding-post, and a resistance connected with the armature and with the circuit-wire with which the magnet is connected, the resistance being proportioned to shunt enough current through the magnet to operate it when the lamp-circuit is complete.

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**756,026. INSULATOR.** WILLIAM S. KIMBLEY and STEWART S. BELL, Reading, Mass. Filed Aug. 10, 1903. Serial No. 168,871. (No model.)

*Claim.*—1. An insulator comprising a sectional insulating-body having a main opening formed between the sections, and a secondary opening formed in one of the sections, a supporting device having an inner part extending through the secondary opening, and a forked outer part having a shank adapted for connection with an adjacent support, and a binder encircling the body and located out of contact with the said forked part.

2. An insulator comprising a supporting member or bracket having means for attachment to a support, and arms provided with bolt-receiving eyes, a sectional insulating-body located between said arms and having a conductor-receiving opening, and a bolt-receiving opening located above and substantially parallel with the conductor-receiving opening, a bolt engaged with the arms of the attaching member and passing through the said bolt-receiving opening, and a binder encircling the body and located between and out of contact with the arms of the attaching member.



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**756,027. BUTTONER.** ELMER B. KLEINSMITH, New York, N. Y. Filed Nov. 26, 1903. Serial No. 182,960. (No model.)

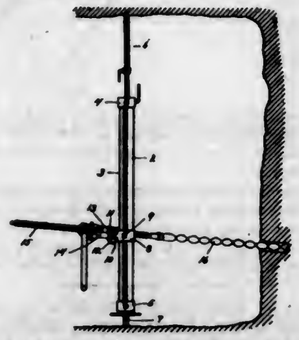


*Claim.*—1. A buttoner comprising a head adapted to embrace a button, and a flexible leader consisting of a cord and a cover adapted to gather over the joint between said cord and head.

2. A buttoner comprising a head adapted to embrace a button, a point adapted for threading through a buttonhole and a flexible leader connecting the two consisting of a cord and a cover longer than the cord whereby fullness is provided in the cover for gathering ahead of the buttonhole through which it is being threaded.

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**756,028. COAL AND ROCK DRILLING MACHINE.** LOUIS K. KOOWTS, Allegheny, Pa., assignor to Martin Hardscog Manufacturing Company, Limited, Allegheny, Pa. Filed Sept. 29, 1902. Serial No. 125,140. (No model.)



*Claim.*—1. Supporting means for drilling mechanism comprising a vertically-reversible support, and drilling-mechanism-sustaining means thereon having upwardly and downwardly disposed hook-shaped supporting-points.

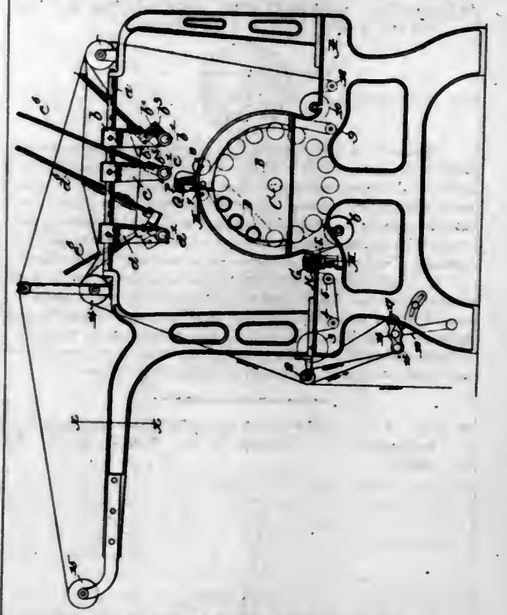
2. Supporting means for drilling mechanism comprising a vertically-reversible post having separated uprights, and disconnected drilling-mechanism-sustaining devices—one on each post-upright, each of said devices having reversely-disposed sustaining-points.



3. Supporting means for drilling mechanism comprising a vertically-reversible post having separated uprights, and disconnected drilling-mechanism-sustaining devices vertically adjustable on the post-uprights, each of said devices having reversely-disposed sustaining-points.

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**756,029. NAPPING-MACHINE.** MAXIM LA FOUNTAIN, Jr., Lawrence, Mass., assignor to Davis & Furber Machine Company, North Andover, Mass. Filed Nov. 17, 1902. Serial No. 131,615. (No model.)



*Claim.*—1 In a napping-machine, napping means to raise a nap on one side of a web, and means to thereafter turn over the web being napped that the opposite side thereof may be napped by the same napping means, whereby the web running through the machine may be delivered with both sides napped.

2. In a napping-machine, means to raise a nap on one side of a web, and means to turn a part of the web between its ends after the napping of one side thereof, to present the other side of the web to the same napping means that it may be napped, the napping of both sides of the web being carried on simultaneously at different points in the length of the web, whereby both sides of the web may be delivered napped.

3. In a napping-machine, napping means, and means to turn the web over or upside down on an axis longitudinal of the web whereby both sides of the web may be subjected to the action of the napping means.

4. In a napping-machine, napping means, a plurality of pairs of stretching-rollers, and means for turning over the web while the same is being fed through the napping-machine, that different portions of the same napping means may act upon the web at different points of its length to thereby nap both sides of the web simultaneously.

5. In a napping-machine, a napping-cylinder, pairs of stretching-rollers located in front of and above said napping-cylinder, means to hold the longitudinal axes of said rollers out of parallelism, and means to turn the web over during its passage through the machine that both sides thereof may be napped.

6. In a napping-machine, napping means presenting napping-surfaces of greater length than twice the width of the web to be napped, means to feed the web to be acted upon by the napping-surfaces, and means to effect the contact of both sides of the web with the napping-surfaces during a single passage of the web through the machine.

7. In a napping-machine, napping means presenting napping-surfaces of greater length than twice the width of the web to be napped, means to feed the web to be acted upon by the napping-surfaces, and means to effect the contact of both sides of the web for a

plurality of times with the napping-surfaces during a single passage of the web through the machine, whereby both sides of the web may be napped simultaneously.

8. In a napping-machine, the combination of napping means, guides for directing one surface of the web to the action of the napping means, means for thereafter turning the web over about an axis longitudinal of the web, and means for then directing the web to the napping means that the other surface thereof may be napped.

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**756,030. SUBMARINE BOAT.** SIMON LAKE, Bridgeport, Conn. Filed Feb. 15, 1902. Serial No. 94,308. (No model.)

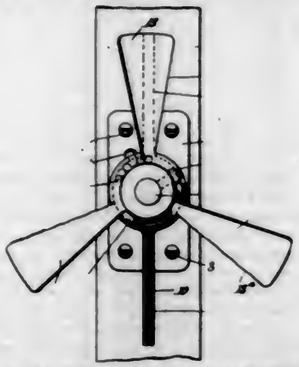


*Claim.*—1. A hull construction for submarine boats comprising series of transverse frames each in the form of a regular closed figure of continuous circumferential curvature, and disposed with a substantially uniform series of larger intermediate frames in cylindrical arrangement and series of smaller frames of gradually-diminishing sizes in upwardly-inclined conical arrangement adjoining the opposite end members of said cylindrically-arranged series of intermediate frames.

2. A hull construction for submarine boats comprising series of circular transverse frames, disposed with a substantially uniform series of larger intermediate frames in cylindrical arrangement and series of smaller frames of gradually-diminishing sizes in upwardly-inclined conical arrangement adjoining the opposite end members of said cylindrically-arranged series of intermediate frames.

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**756,031. SELF-CLEARING PROPELLER.** CHARLES H. LEE, Southampton, N. Y. Filed Sept. 10, 1903. Serial No. 122,750. (No model.)



*Claim.*—1. The combination of a rib or fin having a corrugated crushing-face, and a propeller having its blades provided with corrugated crushing-faces adapted to sweep past the face of the rib or fin.

2. The combination of a propeller, and a rib or fin adjacent to the path of the propeller, said rib or fin having a crushing-face in opposing relation to the propeller.

3. The combination of a propeller, and a rib or fin adjacent to the path of the propeller, said propeller having a crushing or tearing face in cooperative relation to the fin or rib.

4. The combination with a shaft, and a propeller, of a sleeve inclosing said shaft, and a series or group of spaced ribs close to the path and forward of the propeller, said ribs extending along the sleeve toward the propeller.

5. The combination with a stern-post, and a propeller, of a stationary group of ribs located forward of the propeller.

6. The combination with a stern-post, and a propeller, of a group or series of stationary ribs extending from the stern-post toward the propeller, and disposed in close relation to the path of the propeller-blades.

7. The combination of a propeller and clearing fins or ribs, said fins and the blades of the propeller being provided with active crushing faces or edges adapted to tear or crush obstructing matter.

8. The combination with a stern-post, and a sleeve, of a series or group of clearer-ribs extending from the stern-post and along the sleeve, and a propeller having a hub fitted to said sleeve and with its blades arranged to sweep close to the ends or active faces of the ribs.

9. The combination of a sleeve, a clearer-rib arranged longitudinally of the sleeve and extending outwardly therefrom, the rear end of said rib having an active crushing edge or face, and a propeller mounted in said sleeve to be maintained thereby in predetermined relation to the active face or edge of said rib, the blades of said propeller being adapted to sweep close to said crushing-face of the rib.

10. The combination of a sleeve, a propeller having its hub mounted in said sleeve to be restrained from endwise movement therein, and clearer ribs or fins projecting outwardly from the sleeve and disposed longitudinally thereof, each rib being provided with a crushing-face which is adjacent to the path of the propeller-blades.

11. The combination of a series of clearer fins or ribs, and a propeller having its blades spaced apart for a distance more or less than the space between said fins or ribs.

12. The combination of a plate having a rearwardly-extending and recessed sleeve, a series of fins extending outwardly from and longitudinally along the sleeve, a propeller-hub provided with a shoulder and fitted in the sleeve, antifriction-bearings between the propeller-hub and the sleeve, and a group of blades carried by said hub and arranged to sweep close to the active edges of the fins or ribs.

13. The combination with a stern-post, and a propeller, of a sleeve, and a clearer rib or fin extending from the stern-post, along the sleeve and close to the path of the propeller.

14. The combination of a propeller, and a rib or fin adjacent to the path of the propeller, one of said parts having a crushing or tearing face.

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**756,032. FENCE-POST.** CHARLES H. LEWIS and CHARLES BOOK, Harpster, Ohio. Filed Oct. 26, 1903. Serial No. 178,533. (No model.)



*Claim.*—1. A post comprising a main upright or member, a brace extended downward therefrom, an arched bar connected to said upright and brace, and anchoring-disks on the lower ends of the bar members.

2. A post comprising a main upright having an outwardly-opening slot at its lower end, a brace extended downward and outward therefrom and having an outwardly-opening slot at its lower end, an arched bar having its upper portion secured in said slots, and anchoring-disks secured to the lower ends of the bar members.

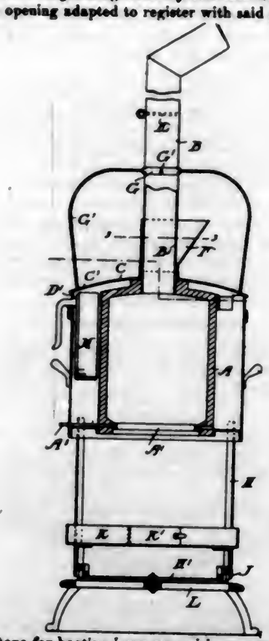
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**756,033. STOVE FOR HEATING IRONS, &c.** ALEXANDER V. MAHLAMEL, Melbourne, Victoria, Australia. Filed May 14, 1903. Serial No. 157,602. (No model.)

*Claim.*—1. A stove for heating irons comprising a central metal chamber, an outer concentric wall the top edge of which is provided with gaps or recesses, and a swiveled cover adapted to close said gaps or recesses and provided with an opening adapted to register with the latter.

2. A stove for heating irons comprising a central chamber, an outer concentric wall the top edge of which is provided with gaps or recesses, a strengthening-band adjacent said recesses, and a cover having an opening adapted to register with said gaps or recesses.



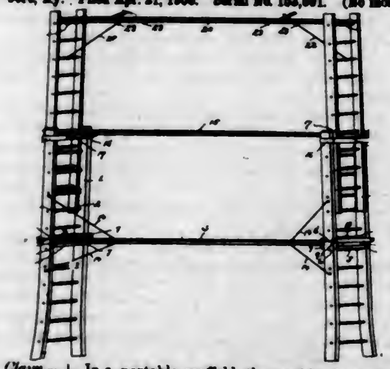


3. A stove for heating irons comprising a central chamber, an outer concentric wall the top edge of which is provided with gaps or recesses, a chimney leading from said central chamber and provided with an opening and a hopper swiveled on said chimney in juxtaposition to said opening.

4. A stove for heating irons comprising a central chamber, an outer concentric wall the top edge of which is provided with gaps or recesses, bars arranged to support said chamber and walls, bars uniting said supporting-bars and serving as bearings, rollers mounted in said bearings, and a stand to which said latter bars are pivotally connected.

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**756,034. PORTABLE SCAFFOLD.** AUGUSTUS G. MAXEY, Owensboro, Ky. Filed Apr. 21, 1903. Serial No. 153,091. (No model.)



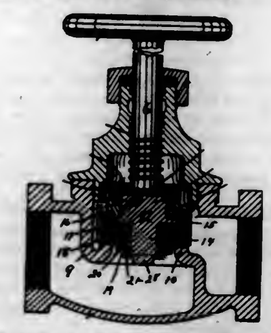
*Claim.*—1. In a portable scaffold, the combination, of the extension-ladders forming the uprights of the scaffold, boards or platforms removably connected to the extension-ladders, the connection comprising blocks separated by longitudinal pieces between which the ends of the boards lie, extensions of said blocks bearing against one edge of the side pieces of the extension-ladders, bars secured to said blocks, and a cross-bar secured on the ends of the bars by nuts for clamping the parts to the ladder.

2. In a portable scaffold, a connection for the platform or board comprising blocks separated by longitudinal pieces between which the end of the board lies, a U-shaped bar secured to one of the blocks and projecting beyond the opposite sides of the ladder, a cross-bar secured to the ends of the bar by nuts, and a U-shaped key passing through the blocks and end of the board.

3. In a portable scaffold, the combination, of the extension-ladders forming the uprights of the scaffold, a lower platform or board connected to the ladder by a socket comprising blocks separated by pieces between which the end of the board lies, said blocks having extensions bearing against one end of the ladder, bars projecting from one of the blocks beyond the opposite side of the ladder, a cross-bar on the ends of the bar, and nuts for clamping the parts to the ladder; together with the intermediate platform secured to the ladder by a band upon which said platform rests, and an upper platform having transverse battens abutting against opposite sides of the rungs, and braces for the upper and lower platforms, as shown and described.

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**756,035. VALVE.** WILLIAM A. MILLER, Elizabeth, N. J. Filed Dec. 2, 1902. Serial No. 133,564. (No model.)



*Claim.*—1. In a valve, the combination of a core having opposite threaded ends and an intermediate annular flange, a packing-ring lying against one side of said flange, a retaining-nut screwed on the adjacent end of the core, and a packing-ring holder screwed upon the opposite threaded end of the core and being recessed to receive the said annular flange and packing-ring.

2. In a valve, the combination of a recessed packing-ring holder having a threaded central aperture, and a core having a rear end adapted to screw into said aperture, an annular flange adapted to lie upon the bottom of the said recess and a forward end adapted to receive a packing-ring, and means for turning.

3. In a valve, the combination with a packing-ring holder recessed at its forward end and having a central threaded aperture, of a core having an exteriorly-threaded rear end adapted to screw in said aperture and an annular flange adapted to lie in said recess, means for oppositely turning said parts each with respect to the other, a packing-ring, and a valve-stem.

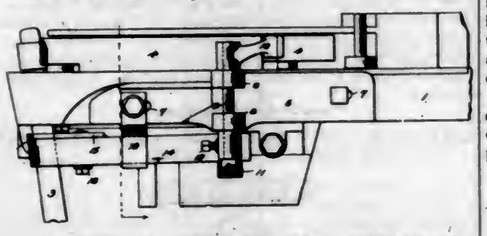
4. In a valve, the combination with a central core having an exteriorly-threaded rear end, a packing-ring-carrying forward end and an intermediate annular flange, of a packing-ring holder screwed on said threaded rear end of the core and being recessed at its front end to receive the said annular flange and having at its rear end a flaring recess, a coupling-cap adapted to be screwed upon the extremity of said rear end of the core and having a tapered forward end adapted to enter the recess of the adjacent end of the packing-ring holder, and a valve-stem and a packing-ring.

5. In a valve, the combination of a casing containing a valve-seat, a valve-stem movable in the casing toward and from the valve-seat and having its inner or lower end flanged, and a valve proper comprising a coupling-cap surrounding the said stem above its flange and having a depending, interiorly-threaded, tapered flange, a core disposed below the flanged end of the stem and having exteriorly-threaded ends and an intermediate annular flange the rear end receiving the said coupling-cap and the forward one having a wrench-receiving extremity, a sleeve interposed upon said core between the coupling-cap and the annular flange and being recessed at its end to receive said flange, and extend therebeyond, an annular contact-washer or packing-ring upon the forward end of the core and lying in said recess against the annular flange, and a retaining-nut upon the forward end of the core outside said washer or ring.

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**756,036. SHUTTLE-LOCK FOR LOOMS.** FRANCIS A. MILLS, Lawrence, Mass., assignor of one-half to Grosvenor B. Simmons, Methuen, Mass. Filed Sept. 15, 1903. Serial No. 173,278. (No model.)

*Claim.*—1. In a loom, a picker and picker-stick, the lay, a shuttle-box, having a shuttle-binder, a horizontal slidable connection arm or bar arranged on the lay having a bunter on one end, crossing the path of the picker-stick, a lever device on a lever of which the other end of said connection arm or bar is loosely mounted whereby the bunter connection receives and imparts the force of the impact of the shuttle to the lever device and the lever device to the shuttle-binder and the binder upon the shuttle.



2. A shuttle-box, a picker-stick, a binder, a binder-lever and a shaft upon which it is mounted, a lever on the lower end of said shaft, an arm connected to said lever terminating in a bunter and movable by engagement with the picker-stick, and means to adjust the length of the arm, thereby to render effective the locking pressure of the binder upon the shuttle at any point of its travel in the box.

3. A shuttle-box, a shuttle-binder, a binder-lever, a picker and picker-stick, a horizontal slidable connection-arm supported beneath the lay, its outer end terminating in an adjustable bunter and movable by engagement with the picker-stick, and a lever device loosely connected with the inner end of said slidable arm transmitting the full force of the impact of the shuttle upon the binder to lock the shuttle and prevent rebound.

4. In a loom, a lay, a shuttle-box, a binder, a binder-lever, a picker-stick, a shaft on the lay, a binder-lever on the upper end of the shaft and a lever on its lower end, an arm having one end connected to and supported on the lower lever, a hanger on the lay supporting the other end of the arm, the outer or free end of the arm terminating in a bunter and movable with said lever under the impact of the shuttle, for the purpose stated.

5. In a loom and in combination with a shuttle-binder, picker, picker-stick and lever device, a slidable connection-arm movable longitudinally beneath the lay, means connecting its inner end with a lever of said lever device and its outer end terminating in a bunter crossing the path of the picker-stick for the purpose stated.

6. In a loom and in combination with the lay, the shuttle-binder, a picker and picker-stick, a plate on the lay having lugs, a shaft vertically mounted therein, the binder-lever on the upper end of the shaft, the lower end of the shaft extending below the lay, and a slidable arm or bar loosely connected with this end of the shaft adapted to receive the impact of the picker or picker-stick to rock the shaft.

7. In a loom and in combination with the lay, the shuttle-binder, a picker or picker-stick, a shaft vertically mounted on the lay, the binder-lever on the upper end of the shaft, a lever on the lower end of the shaft extending beneath the lay and having a pin on its inner end an arm fitted loosely on the pin and seated on its lever, and terminating in a laterally-projecting bunter for receiving the impact of the picker or picker-stick.

8. A loom-lay, a shuttle-box thereon, a binder and a binder-lever, a picker-stick, a horizontal slidable connection-arm beneath the lay having a bunter and movable by engagement with the picker-stick, a lever connecting the slidable connection-arm beneath the lay, a rock-shaft connecting the lower lever and the binder-lever, impact of the shuttle on the picker acting through the slidable bunter connection-arm to move said lever and thereby through the transmitting means to deliver the full force of the impact upon the binder.

9. In a loom, the lay, a shuttle-box thereon, a picker-stick and a shuttle-binder, a horizontal connection-arm slidably arranged beneath the lay at one side of the path of the picker-stick, its front end having a bunter crossing the path of the picker-stick, a lever device including the binder-lever on the rear side of the lay having a lever connection with the inner end of the slidable arm and operated by the latter.

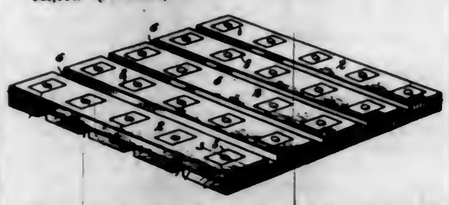
10. In a loom, the lay, a shuttle-box thereon, a picker and picker-stick and a shuttle-binder, lever members constituting the shuttle-locking device, a plate carrying the lever members, means for adjusting said plate to set the impact locking-lever in proper relation to the free end of the binder, and a slidable impact connection-arm connected to the lever device, the other end of said slidable arm terminating in an adjustable bunter crossing the path of the picker-stick.

11. In a loom, the lay, a shuttle-box thereon, a picker and picker-stick, and a shuttle-binder, a shuttle-locking device formed of a vertical shaft, a binder-lever thereon, and a lever on the shaft beneath the lay, an adjustable supporting-plate for the lever locking device, a slidable impact connection-arm loosely pivoted on the under lever, and an adjustable bunter on the impact end of the slidable connection-arm, the several adjustments cooperating to render effective the functions of the bunter and of the binder.

12. In a loom, and in combination, the lay, a shuttle-box, a shuttle-binder, a picker and picker-stick, and a lever locking device consisting of a shaft having a lever at each end and a slidable impact-bar loosely mounted on one of said levers.

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**756,037. PRESS-RACK.** ABRAM MORRISON, Philadelphia, Pa., and ALBERT MOSLOSS, New York, N. Y. Filed Mar. 21, 1903. Serial No. 148,880. (No model.)



*Claim.*—1. A press-rack, comprising a flat plate of metal provided with rows of holes disposed in two directions crossing each other, and slats mounted upon said plate and disposed in two directions crossing each other, each slat being disposed between two consecutive rows of holes.

2. A press-rack, comprising a plate of metal, slats mounted upon both faces thereof, and fastening members connecting said slats and said plate together, said fastening members being disposed comparatively near the edges of said plate so that no fastening member appears adjacent to the center thereof.

3. A press-rack, comprising a plate of metal provided with a plurality of slats mounted upon each face thereof and spaced apart, the slats upon one of said faces forming an angle with the slats upon the other face thereof.

4. A press-rack, comprising a plate of metal provided with holes so disposed as to form rows in two directions, and a plurality of slats mounted upon said plate and spaced apart, said slats being disposed intermediate of said holes, and extending in two directions.

5. A press-rack, comprising a plate of metal, slats mounted thereon and spaced apart, rivets passing through said slats and said plate, and bearing-caps engaging said slats and said rivets.

6. A press-rack, comprising a plate of metal, slats mounted thereon and spaced apart, said slats being disposed in two directions forming an angle with each other, rivets passing through said slats and said plate, longitudinal bearing-caps engaging said slats and said rivets, said bearing-caps being provided with claws and disposed crosswise of the general length of said slats with which they are severally in engagement.

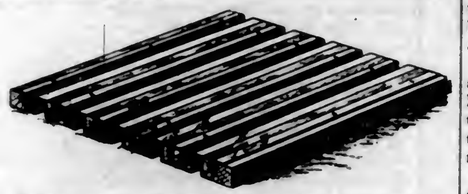
7. A press-rack comprising a flat plate of metal, a plurality of longitudinal slats mounted upon each face thereof and spaced apart, said slats being disposed in two directions forming angles with each other, rivets passing through said plate and said slats, and longitudinal bearing-caps connected with said rivets and engaging said slats, said longitudinal bearing-caps extending crosswise of the general length of said slats.

8. A press-rack, comprising a plate of metal, a plurality of slats mounted thereon, and rivets engaging said slats and said plate, said rivets being disposed comparatively near the edge of said plate thereby leaving a space not provided with rivets in the center of said plate.

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**756,038. PRESS-RACK.** ABRAM MORRISON, Philadelphia, Pa., and ALBERT MOSLOSS, New York, N. Y. Filed Mar. 21, 1903. Serial No. 148,881. (No model.)

*Claim.*—1. A press-rack, comprising a sheet of metal provided with corrugations, and slats fitting into divers arbitrarily-selected groups of said corrugations and disposed immediately adjacent to each other, said slats and said corrugations together virtually forming solid blocks spaced apart.



2. A press-rack, comprising a sheet of metal, provided with corrugations, and slats disposed upon both sides of said sheet of metal, and fitting into said corrugations.

3. A press-rack, comprising a sheet of metal bent sinuously back and forth upon itself so as to form corrugations, and wooden slats fitting into said corrugations from opposite sides of said sheet of metal, said slats being substantially in the same plane with each other.

4. A press-rack, comprising a plate of sheet metal bent sinuously back and forth upon itself so as to form corrugations, wooden slats inserted into said corrugations from opposite sides thereof and flush with the exposed surfaces of said corrugations, thereby virtually forming solid blocks connected by said sheet of metal.

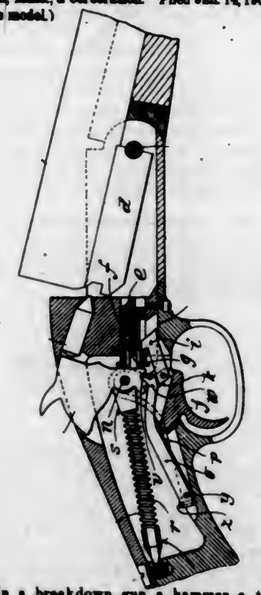
5. A press-rack, comprising a sheet of metal provided with corrugations, and slats fitting into divers of said corrugations so as to fill the same completely.

6. A press-rack, comprising a sheet of metal provided with corrugations, slats fitting into divers of said corrugations so as to completely fill the same, and detachable fastenings connecting said sheet of metal and said slats together.

7. A press-rack, comprising a sheet of metal bent sinuously back and forth upon itself so as to form corrugations, and wooden slats fitting into said corrugations from opposite sides of said sheet of metal.

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**756,039. BREECH-LOADING FIREARM.** OSCAR F. MOSBERG, Chicopee Falls, Mass., assignor to J. Stevens Arms & Tool Company, Chicopee Falls, Mass., a Corporation. Filed Jan. 14, 1903. Serial No. 139,048. (No model.)



*Claim.*—1. In a breakdown gun, a hammer, a trigger and a locking-bolt for the barrel, and suitable connections between the trigger and the hammer and the trigger and the bolt, whereby when the hammer is inoperative the trigger may operate the bolt.

2. The combination in a breech-loading firearm, of a trigger, a breech-locking mechanism and a hammer, and suitable connections between the trigger and the hammer and the trigger and the breech-locking mechanism whereby successive movements of the trigger may release the hammer and operate the locking mechanism.

3. In a breakdown gun, a firing mechanism including a trigger a locking-bolt to secure the barrel in firing position, and suitable connections between the trigger and locking-bolt to operate the latter by the movement of the trigger, together with means operated by the hammer, whereby when the latter is raised, the bolt-operating devices are rendered inoperative.

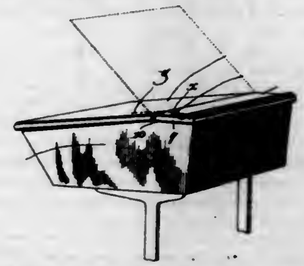
4. In a firearm of the breakdown type, a hammer, a trigger, and a locking-bolt for the barrel; a sear to engage the hammer to hold it in cocked position, a hook actuated by the trigger to engage the locking-bolt to retract it, and means to effect the tripping of the sear by the movement of said hook, without imparting movement to the locking-bolt.

5. In a firearm of the breakdown type, a hammer, a trigger, and a locking-bolt connected to the trigger to secure the barrel in firing position; a sear to engage the hammer to hold it in cocked position, and means operated by the hammer during its cocking movement to move said sear into the path of movement of said locking-bolt, whereby the initial movement of the latter will trip the sear, said hook being movable more or less without engaging the bolt.

6. In a firearm, a hammer, a mainspring for the latter consisting of a coiled spring, a post encircled by the latter, a shoe on one end of the post against which one end of the spring bears, a socketed piece in which the other end of the post slides, and on which the other end of the spring bears, said socketed piece having a beveled edge on which it may swing in the plane of the movement of the hammer, said shoe having a bearing on the hammer.

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**756,040. DESK-COVER.** KATHERINE R. MOULTON, Lynn, Mass. Filed Sept. 11, 1903. Serial No. 172,736. (No model.)



*Claim.*—1. A desk-cover adapted to be removably applied to and to serve as a protecting-cover for the regular top of a desk, said cover comprising two parts hinged together, and means to detachably secure one of said parts to the top of the desk, said part covering the back side of the desk-top and the other part covering the front portion of the desk-top and being free to be raised therefrom.

2. A desk-cover to be removably applied to and to serve as a protecting-cover for the regular top of a desk, said cover being made of two pieces of cardboard hinged together, one of said pieces adapted to rest flatly on and cover the back side of the desk-top, and the other piece adapted to rest flatly on and be supported throughout its entire surface by the front portion of the desk-top, and means to detachably secure it to the first-named part of the desk.

3. A desk-cover having a washable surface and comprising two parts hinged together, one part adapted to cover the slanting portion of the desk-top and being free to be raised therefrom and the other part adapted to cover the horizontal portion of the desk-top, and means to detachably secure said latter part to the desk.

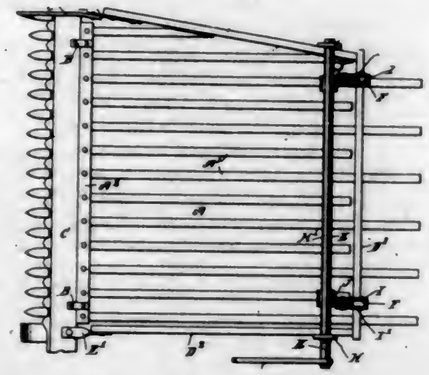
4. A desk-cover having a washable surface and comprising two parts hinged together, one part adapted to cover the slanting portion of the desk-top and being free to be raised therefrom, and the other part adapted to cover the horizontal portion of the desk and having an aperture coinciding with the usual ink-well, and means to detachably secure said latter part to the desk.

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**756,041. WINDROWER.** HENRY M. MUELLER, LUDWIG A. MUELLER, and JOHN A. MUELLER, White Lake, S. D. Filed June 23, 1903. Serial No. 162,750. (No model.)

*Claim.*—1. A bunching attachment for mowing-machines, comprising a slatted platform having longitudinal slats of unequal length and adapted to be fastened to the mowing-machine, and a box-like structure arranged over the platform and having sides and a rear end, the said rear end being at the rear of the shorter slats of the platform and extending over the longer slats and forming a gate for

discharging the bunched material accumulating on the platform within the box-like structure, as set forth.



2. A bunching attachment for mowing-machines, comprising a slatted platform having longitudinal slats of unequal length and adapted to be fastened to the mowing-machine, a box-like structure arranged over the platform and having sides and a rear end, the box-like structure being secured to the mowing-machine independently of the platform, and the said rear end being at the rear of the shorter slats of the platform and extending over the longer slats and forming a gate for discharging the bunched material accumulating on the platform within the box-like structure, and means under the control of the operator of the mowing-machine for swinging the gate rearward and upward above the sides of the box-like structure, as set forth.

3. A bunching attachment for mowing-machines, comprising a slatted platform adapted to be fastened to the mowing-machine, a box-like structure arranged over the platform and having sides and a rear end, the box-like structure being secured to the mowing-machine independently of the platform, and the said rear end forming a gate for discharging the bunched material accumulating on the platform within the box-like structure, and means under the control of the operator of the mowing-machine for swinging the gate rearward and upward above the sides of the box-like structure, the said means comprising links connected with hinged members on the said end, arms pivotally connected with the said links, and a shaft having a handle and carrying the said arms, as set forth.

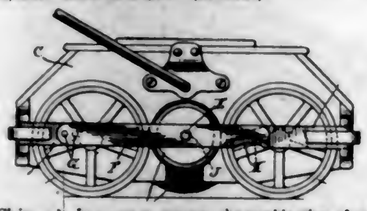
4. A bunching attachment for mowing-machines, comprising a slatted platform adapted to be fastened to the mowing-machine, a box-like structure arranged over the platform and having sides and a rear end, the box-like structure being secured to the mowing-machine independently of the platform, and the said rear end forming a gate for discharging the bunched material accumulating on the platform within the box-like structure, means under the control of the operator of the mowing-machine for swinging the gate rearward and upward above the sides of the box-like structure, the said means comprising links connected with hinged members on the said end, arms pivotally connected with the said links, and a shaft having a handle and carrying the said arms, and a locking device for the said means comprising extensions on the said arms, and pins engaged by the extensions and secured on the said links.

5. A bunching attachment for mowing-machines, comprising a slatted platform, a box-like structure arranged over the platform and comprising sides and an outwardly-swinging and bodily-movable end, and means for operating said end, as set forth.

6. A bunching attachment for mowing-machines, comprising a slatted platform, a box-like structure arranged over the platform and comprising sides and a rear end having forwardly and upwardly inclined pivoted members, an operating-lever, and a connection between the lever and the pivoted members of the said end, as set forth.

7. A bunching attachment for mowing-machines, provided with a gate having hinged members, links pivotally connected with the said hinged members, a shaft having arms pivotally connected with the said links, a handle on the said shaft and under the control of the operator for turning the said shaft, extensions on the said arms, and pins on the said links and adapted to be engaged by the said extensions, as set forth.

**756,042. CARPET-SWEEPER.** EVERETT C. MURDICK, Marion, Ind., assignor to Philip Matter and Benjamin F. Burk, copartners doing business as National Sweeper Company, Marion, Ind. Filed June 29, 1903. Serial No. 163,497. (No model.)



*Claim.*—1. In a carpet-sweeper, the combination of a case with an end band, a brush with an end socket and a flat spring-piece lying along the end band, carrying a pin to be received into such socket, said spring-piece being free at one end.

2. In a carpet-sweeper, the combination of a case with an end band, a brush with an end socket and a flat spring-piece lying along the end band and carrying a pin to be received in said socket, said spring-piece being wider than the band at some point.

**756,043. SKIRT-GAGE.** MARRIS M. MCGOWAN alias MOUT M. MCGOWAN, Grand Rapids, Mich., assignor of one-half to Edward Colquhoun, Grand Rapids, Mich. Filed June 19, 1903. Serial No. 162,285. (No model.)



*Claim.*—In a dress-maker's skirt-gage, the combination of a base adapted to slide on a floor, a standard projecting upward therefrom, a collar adjustable on the standard, a forwardly-projecting stud on the collar, and a spring-clip consisting of a flexible strip of metal folded around the stud at the middle, and rigidly secured thereto, and also having opposing flexible arms, having opposing concave portions to oppositely engage a crayon and adjustably hold the same.

**756,044. VEHICLE-HUB CASING.** GEORGE A. MCKEEL, Jackson, Mich., assignor to George A. McKeel & Co., Ltd. Filed Aug. 7, 1903. Serial No. 168,585. (No model.)



*Claim.*—1. In a vehicle-hub, a casing comprising a tapered metal body portion having an outstanding spoke-engaging flange provided with an annular marginal bead, and fillets pressed in the metal body to brace the juncture between the flange and the body portion.

2. In a vehicle-hub, a casing comprising a metal body portion having an outstanding spoke-engaging flange provided with an annular bead, and fillets bracing the juncture between the flange and body portion.

3. In a vehicle-hub, a casing comprising a metal body portion having an outstanding spoke-engaging flange provided with an annular marginal bead, fillets bracing the juncture between the flange and body portion, and a bead located at the end of the body portion opposite the flanged end thereof.

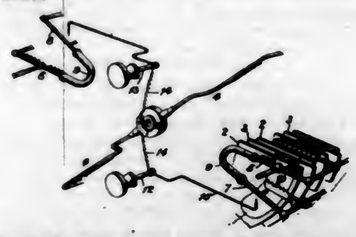
4. In a vehicle-hub, a casing including a body portion having an outstanding spoke-engaging flange, and fillets bracing the juncture between the flange and body portion.

5. In a vehicle-hub, a casing comprising a tapered sheet-metal body portion having an outstanding spoke-engaging flange at its larger end provided with an annular marginal bead, an inturned bead at the contracted end of the body portion, and fillets bracing the juncture between the flange and body portion.

6. In a vehicle-hub, a casing including a tapered sheet-metal body portion having an outstanding spoke-engaging flange, and fillets pressed in the metal body to brace the juncture between the flange and body portion.



**756,045. SHUNT-CONTROLLER FOR ELECTRIC MACHINES.** NELS O. NELSON, Chicago, Ill. Filed July 13, 1903. Serial No. 165,264. (No model.)



*Claim.*—1. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars, and means for forming a shunt-circuit between the said inductor-bars, substantially as set forth.

2. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars and connected at their inner ends to said collecting-bars by curved insulating connections, and means for forming a shunt-circuit between said induction-bars, substantially as set forth.

3. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars, a pair of metal fingers individual to said inductor-bars and adjustable to and from the same, and an electrical connection between the rear ends of said fingers, substantially as set forth.

4. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars and connecting at their inner ends to said collecting-bars by curved insulating connections, a pair of metal fingers individual to said inductor-bars and adjustable to and from the same, and an electrical connection between the rear ends of said fingers, substantially as set forth.

5. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars and connected at their inner ends to said collecting-bars, a pair of metal fingers individual to said inductor-bars and adjustable to and from the same in a circular path, and an electrical connection between the pivotal ends of said fingers, substantially as set forth.

6. In an electrical generator of the character herein described, the combination with its field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars and connected at their inner ends to said collecting-bars by curved insulating connections, a pair of metal fingers individual to said inductor-bars and adjustable to and from the same in a circular path, and an electrical connection between the pivotal ends of said fingers, substantially as set forth.

7. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars and connected at their inner ends to said collecting-bars, a pair of metal fingers individual to said inductor-bars and adjustable to and from the same in a circular path, individual shafts carrying said fingers, operating knobs or handles on the outer ends of said shafts, and an electrical connection between the pivotal ends of said fingers, substantially as set forth.

8. In an electrical generator of the character herein described, the combination with the field-plates and collecting bars or combs, of a pair of inductor-bars arranged in adjacent relation to the collecting-bars and connected at their inner ends to said collecting-bars by curved insulating connections, a pair of metal fingers individual to said inductor-bars and adjustable to and from the same in a circular path, individual shafts carrying said fingers, operating knobs or handles on the outer ends of said shafts, and an electrical connection between the pivotal ends of said fingers, substantially as set forth.

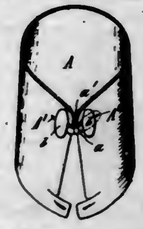
**756,046. SEWER-TRAP.** FREDERICK GEYERS, Pittsburg, Pa. Filed Dec. 16, 1903. Serial No. 185,392. (No model.)



*Claim.*—1. In a sewer-trap, a pipe-section, a ring arranged in the interior thereof, screws passing through the wall of the pipe-section into said ring and a flap-valve hinged to said ring, adapted to open under pressure in one direction and close under pressure in the opposite direction.

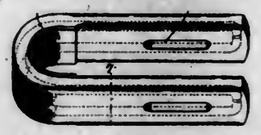
2. In combination with a pipe-section, a ring arranged therein, a flexible washer arranged between said ring and said pipe-section, a flap-valve hinged to said ring, and screws passing through the walls of the pipe-section and through said gasket and into the said ring.

**756,047. CUFF-BUTTON.** JOSEF PRICHAR, New York, N. Y. Filed July 9, 1903. Serial No. 164,781. (No model.)



*Claim.*—A cuff-button composed of a V-shaped perforated yoke adapted to embrace the edge of a cuff, a stem rotatably mounted in the yoke, a head secured to the outer end of the stem, and an elongated shoe secured to the inner end of the stem, substantially as specified.

**756,048. LUG-STRAP FOR LOOM PICKER-STICKS.** LUTHER PILLING, Danielson, Conn. Filed July 27, 1903. Serial No. 167,118. (No model.)



*Claim.*—1. A lug-strap for loom picker-sticks, consisting of an elongated U-shaped, metallic skeleton body having open sides, a non-metallic filling inserted in the open sides and extending around the back of the body, and an inclosing case binding body and filling together.

2. A lug-strap for loom picker-sticks, consisting of one or more metallic rods bent to form an elongated U-shaped skeleton body having open sides, a non-metallic filling inserted in the open sides and extending around the back of the body, and in which the contiguous parts of the body are embedded, and an inclosing case binding body and filling together.

3. A lug-strap for loom picker-sticks, consisting of an elongated U-shaped, metallic skeleton body having open sides, a compressed, non-metallic filling inserted in the open sides and extending around the back of the body, and an inclosing case enveloping the body and filling.

4. A lug-strap for loom picker-sticks, consisting of an elongated, U-shaped, metallic skeleton body having open sides, a non-metallic filling inserted in the open sides and extending around the back of the body, said filling being apertured near the front ends thereof, and a case enveloping the body and filling and apertured to register with the apertures in the filling.

5. A lug-strap for loom picker-sticks, consisting of an elongated U-shaped metallic body having open sides and back, a non-metallic filling inserted in such open portion of the body, and means to bind the body and filling firmly together.

6. A lug-strap for loom picker-sticks, consisting of an elongated U-shaped metallic body having open sides and back, a compressed non-metallic filling inserted in such open portion of the body and partly embedding the contiguous portions of the latter, and means to bind the body and filling firmly together.

7. A lug-strap for loom picker-sticks, consisting of an elongated U-shaped metallic skeleton body presenting open sides and back, a filling of compressed fibrous material inserted in such open portions of the body and in which contiguous edges of the latter are partly embedded, and an inclosing casing binding the body and filling together.

8. A lug-strap for loom picker-sticks, comprising a skeleton body consisting of two U-shaped metallic rods having their extremities bent substantially at right angles to the sides, the main portions of the rods being in parallel planes with their bent ends turned toward each other, a non-metallic filling inserted between the rods and extending around the sides and back of the body, and an inclosing case enveloping and binding the body and filling firmly together.

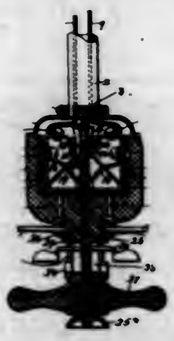
9. A lug-strap for loom picker-sticks, comprising a metallic wire skeleton body of elongated U shape having open sides and back, a U-shaped filling of compressed fibrous material inserted in the said open portion of the body, and a case wrapped around the body and filling and binding the same firmly together.

10. A lug-strap for loom picker-sticks, consisting of an elongated U-shaped, metallic skeleton body having open sides, a non-metallic filling inserted in the open sides and extending around the back of the body, and an inclosing case binding body and filling together, the sides of the body being corrugated on their inner and outer faces to engage and hold the case from movement longitudinally of said body.

11. A lug-strap for loom picker-sticks, consisting of an elongated loop of non-metallic material, and a metallic skeleton body embedded therein and having open portions in its sides filled by said non-metallic material.

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**756,049. SWITCH FOR INCANDESCENT ELECTRIC LAMPS.** CONRAD M. PITZL, Meriden, Conn. Filed Nov. 23, 1903. Serial No. 182,254. (No model.)



*Claim.*—1. In a switch for incandescent electric lamps, the combination with a distributer-case, of a receiving-cup made of insulating material located therein, contact means located within the case, a switch-block located in the case in position to operate the said contact means so as to close the circuit through the lamps, an operating-rod carrying the switch-block at its upper end and extending downwardly through the case, and means for manually raising and lowering the said rod, whereby the switch-block is brought into and carried out of play.

2. In a switch for incandescent electric lamps, the combination with a distributer-case, of an insulating receiving-cup located therein, a pair of upper contact-plates having contact-arms, a pair of lower contact-plates having contact-springs arranged in proximity to the said contact-arms, a switch-block located between the said springs and arms and operable for forcing them into contact, a vertically-movable operating-rod having the switch-block mounted at its upper end and extending downwardly through the said case, and a finger-piece and a push-button carried by the said rod for drawing it downward and moving it upward.

3. In a switch for incandescent electric lamps, the combination with a distributer-case, of an insulating receiving-cup located therein and formed in its side walls with vertical slots, contact means located in the said cup, a switch-block located in the said cup and provided at its ends with guide-ribs entering the said slots, a vertically-movable operating-rod carrying the switch-block at its upper end, and means for manually operating the said rod, whereby it is caused to coact with the said contact means to break and close the circuit through the same.

4. In a switch for incandescent electric lamps, the combination with a distributer-case, of an insulating receiving-cup located therein, contact means located in the said cup, a switch-block coacting with the said contact means, a vertically-movable operating-rod carrying the said switch-block and extending downwardly through the case, a fixed handle connected with the case and having the said operating-rod extended downward through it, a movable handle or finger-piece connected with the rod at a point above the fixed handle, and a push-button located at the lower end of the said rod and below the said fixed handle.

5. In a switch for incandescent electric lamps, the combination with a distributer-case provided with a depending externally-threaded vertically-slotted stem, of an insulating receiving-cup located in the said case, contact means located within the said cup, a switch-block coacting with the said contact means, an operating-rod carrying the said block and extending downwardly through the said case and the stem thereof, a fixed handle applied to the said stem and having the said operating-rod extended downward through it, a movable handle or finger-piece applied to the rod at a point above the said fixed handle and passing through the slot in the said stem, a shade-ring collar applied to the stem, and a binding-nut also applied to the stem and holding the shade-ring collar in place.

6. In a switch for hanging incandescent electric lamps, the combination with a tube through which the feed-wires pass, a distributer-case, a cap therefor having the lower end of the tube entered into it, an insulating receiving-cup located within the case, a pair of lower and a pair of upper contact-plates located within the said cup and secured thereto, a switch-block coacting with the said plates, a vertically-movable operating-rod carrying the said switch-block and extending downwardly through the case, a fixed handle for the case, and means for manually operating the said rod.

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**756,050. COUPLING FOR INCANDESCENT ELECTRIC HANGING OR SUSPENSION LAMPS.** CONRAD M. PITZL, Meriden, Conn. Filed Nov. 23, 1903. Serial No. 182,255. (No model.)



*Claim.*—1. In a coupler for hanging incandescent-lamp fixtures, the combination with an inverted-cup-like shell, of an inverted insulating-cup located therein, contact-springs located opposite each other in the said cup, feed-wires leading to the said springs through the upper ends of the shell and cup, a service-tube, a shallow cup located at the upper end thereof and adapted to be removably attached to the lower end of the said shell, an insulating-head located within the shallow cup and formed with an upright arm, contact-plates located on the opposite sides of the said arm and provided with spring-fingers which coact with the lower ends of the contact-springs in the insulating-cup, feed-wires connected with the said plates and leading downward through the said head into the said tube, and fastening means for connecting the shell and shallow cup.

2. In a coupler for hanging incandescent-lamp fixtures, the combination with the shell, of an insulating-cup located therein, a shallow cup, a service-tube depending therefrom, an insulating-head located in the shallow cup and formed with a hollow tube entering the said service-tube, and contact means respectively carried by the insulating cup and head and brought into contact when the shallow cup is connected with the said shell.

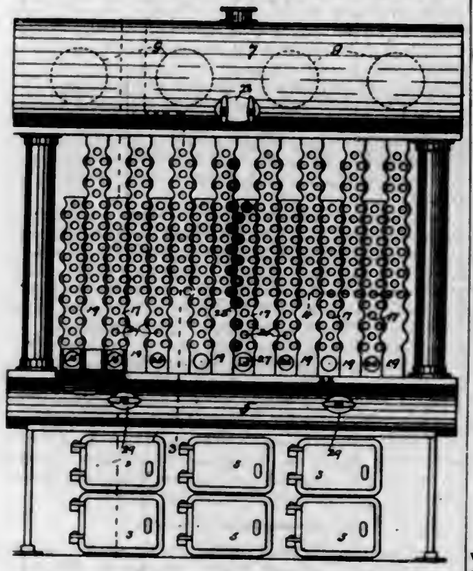
3. In a coupler for hanging incandescent-lamp fixtures, the combination with an inverted-cup-like shell, of an inverted insulating-cup located therein, a shallow cup adapted to be applied to the lower end of the shell, a service-tube depending from the shallow cup, an insulating-head located in the shallow cup, contact means respectively attached to the said inverted cup and head, brought into contact when the shell and shallow cup are combined, feed-wires leading into the top of the shell, and a canopy applied to the shell and deflecting the heat from the said wires.

4. In a coupler for hanging incandescent-lamp fixtures, the combination with a shell, of an insulating-cup located therein, a shallow cup adapted to be applied to the open end of the shell, an insulating-head located in the shallow cup and provided with an upright arm, contact-springs secured to the inverted insulating-cup and to the opposite faces of the arm of the said insulating-head and arranged to make contact when the shallow cup is combined with the shell, feed-wires leading to the contact-springs and feed-wires leading from the contact-plates attached to the said arm down through the said head.



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**756,051. STEAM-GENERATOR.** MICHAEL H. PLUNKETT, Baltimore, Md. Filed July 18, 1903. Serial No. 166,110. (No model.)



*Claim.*—1. A steam-generator provided with a furnace-chamber, a front mud-drum, an upper transverse front steam-drum, vertical columns directly connecting the mud-drum and steam-drum at each end and serving as supports for the steam-drum, front headers resting on the mud-drum and discharging into the steam-drum, rear headers closed at top and bottom and free to move under expansion and contraction, upwardly-inclined large pipes connecting the mud-drum with the rear headers and upwardly-inclined water-tubes connecting the rear headers with the front headers, substantially as described.

2. A steam-generator provided with a furnace-chamber, a front mud-drum, an upper transverse front steam-drum, vertical columns directly connecting the mud-drum and steam-drum at each end and serving as supports for the steam-drum, front headers resting upon the mud-drum and free to move under expansion and contraction at their lower ends, rear headers, upwardly-inclined large pipes connecting the mud-drum with the rear headers and upwardly-inclined water-tubes connecting the rear headers with the front headers, substantially as described.

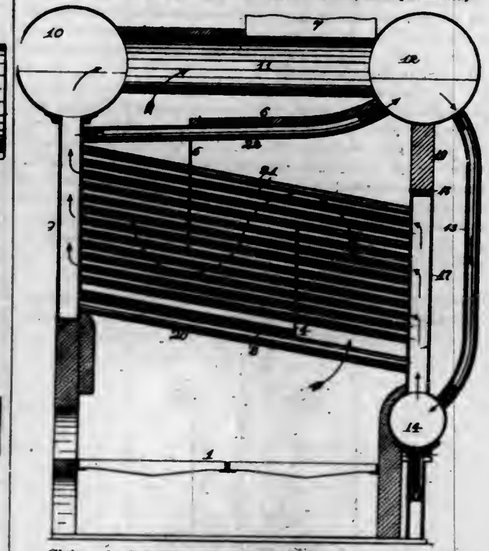
3. A steam-generator, provided with a furnace-chamber and upper transverse front and rear steam-drums, in combination with a series of headers placed side by side and forming a wall of the furnace-chamber, each alternate header communicating at its upper end with a steam-drum, and the intermediate headers being closed at their upper and lower ends and connections between the intermediate headers and the drum at the opposite end of the generator, substantially as described.

4. A steam-generator, comprising a furnace-chamber, transverse upper front and rear steam-drums and transverse lower mud-drums, in combination with a series of vertical headers forming a wall of the furnace-chamber, each alternate header being connected at its upper end to a steam-drum and disconnected at its lower end, the intermediate headers being closed at both their upper and lower ends and connections between the intermediate headers and the drum at the opposite end of the generator, substantially as described.

5. A steam-generator, comprising an upper steam-drum, a lower mud-drum, and a series of vertical headers in the plane of and between said drums forming a wall of said chamber, means for conveying water from the steam-drum direct to the mud-drum, a series of headers forming the opposite wall of the chamber, pipes communicating between the mud-drum and said opposite headers, water-tubes communicating between said opposite headers and alternate headers of the first-mentioned series, and connections between said alternate headers and the steam-drum, substantially as described.

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**756,052. STEAM-GENERATOR.** MICHAEL H. PLUNKETT, Baltimore, Md. Filed Sept. 11, 1903. Serial No. 172,763. (No model.)



*Claim.*—1. A steam-generator, comprising front and rear transverse steam-drums in communication with each other, front headers closed at their lower ends and connected at their upper ends with the front dram, water-tubes inclined upwardly toward and discharging into the front headers, rear headers, water-tubes connecting the front headers near their upper ends directly with the rear steam-drum, and connections through the rear headers between the rear steam-drum and the first-named water-tubes, substantially as described.

2. A steam-generator comprising front and rear transverse steam-drums in communication with each other, front headers closed at their lower ends and communicating at their upper ends with the front steam-drum, rear headers communicating with the rear steam-drum, water-tubes inclined upwardly toward the front and discharging from the rear into the front headers, and water-tubes connecting the front headers at their upper ends directly with the rear steam drum, substantially as described.

3. A steam-generator, comprising front and rear transverse steam-drums in communication with each other, front headers closed at their lower ends and communicating at their upper ends with the front steam-drum, rear headers communicating with the rear steam-drum, ordinary water-tubes upwardly and forwardly inclined and directly connecting the rear and front headers, and extra-sized water-tubes below and parallel with the ordinary water-tubes, also directly connecting the two sets of headers, substantially as described.

4. A steam-generator, comprising front and rear transverse steam-drums in communication with each other, front headers closed at their lower ends and communicating at their upper ends with the front steam-drum, rear headers communicating with the rear steam-drum, water-tubes of ordinary size inclined forwardly and upwardly and connecting the rear and front headers, and water-tubes connecting the front headers near their upper ends with the rear steam-drum, substantially as described.

5. A steam-generator comprising front and rear transverse steam-drums communicating with each other, front headers communicating at their upper ends with the front steam-drum, rear headers, connections between the rear steam-drum and the lower ends of the rear headers, and forwardly and upwardly inclined water-tubes directly connecting the rear and front headers, substantially as described.

6. A steam-generator comprising front and rear transverse steam-drums communicating with each other, front headers connected directly with the front drum at their upper ends, rear headers, a transverse mud-drum connected to the lower ends of the rear headers, curved pipes outside the furnace-walls connecting the rear steam-drum with the mud-drum, water-tubes connecting the rear and front headers, and water-tubes directly connecting the front headers near their upper ends with the rear steam-drum, substantially as described.

7. A steam-generator comprising a front steam-drum, front headers connected at their upper ends with and supporting said drum, rear headers supported on rollers, straight water-tubes connecting the front and rear headers, a rear steam-drum supported on rollers on top of the rear headers, pipes connecting the front and rear drums, and connections between the rear drum and the rear headers, substantially as described.

8. A steam-generator, comprising front and rear steam-drums, pipes connecting said drums, front headers connected directly with the front drum at their upper ends, a mud-drum supported on rollers, rear headers communicating at their lower ends with the mud-drum, straight water-tubes connecting the rear and front headers, curved pipes connecting the front headers directly with the rear steam-drum, rollers on top of the rear headers supporting the rear steam-drum, and curved pipes outside of the furnace-walls connecting the rear steam-drum with the mud-drum, substantially as described.

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**756,053. VALVED-PIPE COUPLING.** MATTHEW T. OSGLEY, Newark, N. J. Filed Feb. 24, 1902. Serial No. 96,329. (No model.)



*Claim.*—1. The combination of two pipe ends provided with cooperating male and female coupling members, respectively, and having normally closed inwardly-opening valves adjacent to said coupling members and being adapted to both contain fluid under pressure, and valve-releasing means in each coupling member adapted upon connection of the pipe ends, to be each engaged simultaneously by the other coupling member, whereby the two valves are opened at equal pace, said valve-releasing means being entirely inclosed and protected by the coupling members when disconnected.

2. In a pipe-coupling, the combination of two tubular coupling members adapted to be telescopically pushed together, each of said members having an interior slide forming a permanent part thereof, and each member providing a fixed interior portion adapted to engage the said slide on the other member when coupling is effected and move the same.

3. The combination with a pipe end, of a coupling member and an outwardly-closing valve back from said coupling member, means within said coupling member for opening said valve inwardly, said means being a permanent feature of the coupling members, a cooperating coupling member, and means therein for engaging the said valve-operating means on the first-mentioned coupling member, said second valve-operating means being also a permanent feature of the last-mentioned coupling member.

4. The combination with pipe ends and valves therein, of tubular coupling members rigidly attached one to each pipe end and adapted to be pushed telescopically together, slides in said coupling members adapted to engage said valves, and interior fixed stops or rests on the coupling members adapted to independently engage said slides, said slides and stops being wholly inclosed by the coupling member when disconnected.

5. The combination with a pipe, of a tubular valve-section bolted to the end thereof and having an outwardly-converging conical valve-seat, a sliding valve for said seat and a spring to seat said valve, a tubular push coupling member bolted to the said valve-section, and a slide therein abutting against the said valve and adapted to be engaged and operated by a coöperating coupling member.

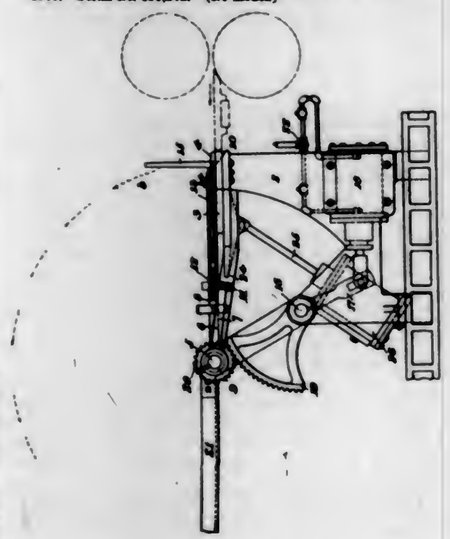
6. The herein-described pipe-coupling, comprising a tubular male member slotted at its end and having an interior valve-operating slide, a tubular female member adapted to telescopically receive said male member and having interiorly a fixed transverse pin and valve-operating slide, and a valved pipe connected to each coupling member.

7. The combination with meeting pipe ends, each provided with an inwardly-opening valve, of tubular male and female coupling members connected one to each pipe end and adapted to telescopically connect with each other, the male member being slotted at its extremity and the female member having an interior fixed transverse pin adapted to enter said slot, and slides in said coupling members adapted to be pushed oppositely apart and open the pipe-valves upon connection of the coupling members.

8. The combination with two pipe ends and valves, of tubular coupling members rigidly attached thereto and adapted to be pushed telescopically together, an interior transverse pin in one of said coupling members, a valve-operating slide in the other coupling member and adapted to be engaged by said pin as the coupling is effected, and a second slide in the coupling member having said transverse pin and adapted to be engaged and operated by the end of the other member as coupling is effected, substantially as set forth.

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**756,054. DOUBLING APPARATUS.** JARED M. B. REED, Tug River, W. Va., and JOSEPH H. GILL, Newcastle, Pa. Filed Jan. 16 1903. Serial No. 139,572. (No model.)





*Claim.*—1. In doubling apparatus, a pair of jaws, mechanism for swinging the jaws as a whole, one of the jaws being arranged to swing toward and from the other at an angle to the movement of the jaws as a whole, and mechanism for turning the movable jaws; substantially as described.

2. In doubling apparatus, a pair of jaws one of which is pivoted in bearings mounted upon the other, mechanism for swinging the jaws as a whole, and mechanism for rocking the movable jaw in a plane at an angle to the movement of the jaws as a whole; substantially as described.

3. In doubling apparatus, a pair of jaws, mechanism for swinging the jaws as a whole, a rock-shaft to which one of the jaws is secured, the other jaw loosely surrounding the said shaft, and mechanism for rocking one of the jaws at an angle to the movement of the jaws as a whole, at the ends of said movement; substantially as described.

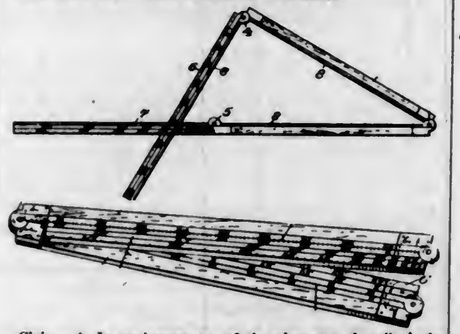
4. In doubling apparatus a receiving-doubler having projections, doubler-jaws below the projections, movable doubler-jaws arranged to swing down and clamp the sheet upon the lower jaws, and means for swinging the jaws as a whole to double the sheet; substantially as described.

5. A table, a doubling apparatus coacting therewith and arranged to double a sheet, and a squeezing device arranged to be forced upwardly to squeeze the doubled sheet against the lower face under the table; substantially as described.

6. A table, tongs having gripping-jaws, mechanism for swinging the jaws as a whole to double a metal sheet, and a squeezer arranged to squeeze the doubled sheet upwardly below the table; substantially as described.

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**756,055. PROTRACTOR-RULE.** LOUIS B. REGNER, Blairsville, Pa. Filed Apr. 6, 1903. Serial No. 151,392. (No model.)

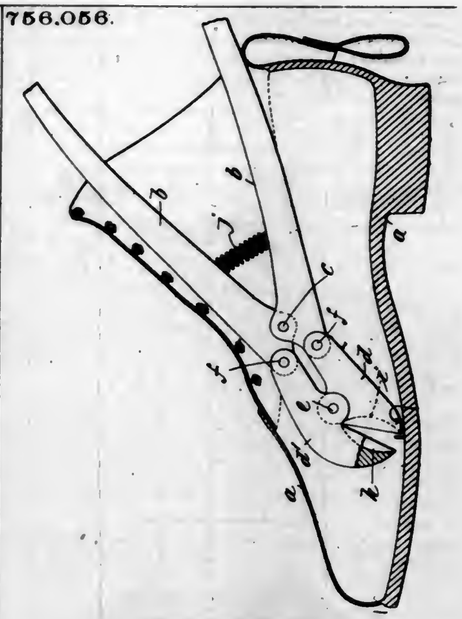


*Claim.*—1. In an instrument of the character described, the combination of a plurality of pivotally-mounted sections, linear graduations thereon and double lines of graduations indicating angles, the device being adapted to be set by means of said graduations to indicate by direct reading the angle and the proportional length of the sine, cosine, tangent and cotangent of said angle for a given radius.

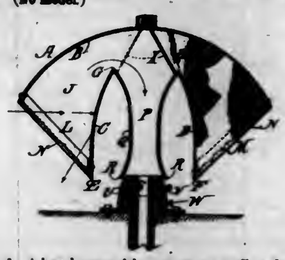
2. In an instrument of the character described the combination of a plurality of pivotally-mounted sections having on both sides thereof linear graduations and double lines of graduations, the device being adapted to be set by means of said graduations to indicate by direct reading of one side the angle and proportional length of the sine and cosine and by direct reading of the other side the angle and proportional length of the tangent and cotangent of of said angle for a given radius.

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**756,056.**



**756,057. HOOD OR INJECTOR FOR CAR-VENTILATORS.** HORACE B. ROWLAND, Philadelphia, Pa. Filed Mar. 19, 1903. Serial No. 148,653. (No model.)



*Claim.*—1. A hood comprising an upper wall and a convex baffle-plate beneath said wall and extending above and below the plane of the lower edge thereof.

2. A hood, comprising a passage, an upper wall covering said passage and having its outer edge extended below the mouth thereof and a convex baffle-plate beneath said wall, connected with said passage and extending above and below the plane of the outer edge of said wall.

3. A hood comprising a substantially vertical passage, an upper wall covering said passage and having its outer edges extended below the mouth thereof, convex baffle-plates beneath said wall, connected with said passage and extending above and below the plane of the outer edge of said wall, side walls connecting said upper walls and said baffle-plates forming opposite openings into said passage and means for closing either of said openings.

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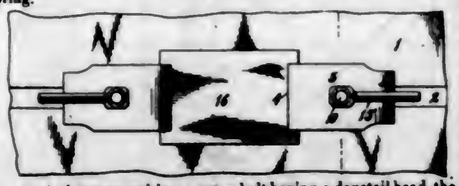
**756,058. CLAMP FOR ROUTING-MACHINES.** VERNON ROYLE, Paterson, N. J. Filed Apr. 10, 1903. Serial No. 151,948. (No model.)

*Claim.*—1. A clamp comprising a screw-bolt having an elongated dovetailed head, a clamping-jaw surrounding the stem of the bolt, a spring supported on the bolt and forming the sole support for the jaw when the latter is in its non-clamping position and a nut for forcing the jaw against the tension of the spring.

2. A clamp comprising a screw-bolt having a dovetail head, a clamping-jaw surrounding the stem of the bolt and having a tail-piece turned downwardly into the plane of the dovetail head, a spring forming a support for the jaw and a nut for forcing the jaw against the tension of the spring.

3. A clamp comprising a screw-bolt having a dovetailed head

a clamping-jaw surrounding the stem of the bolt and having a tail-piece turned downwardly and shouldered to form a guide and fulcrum for the jaw, a spring supported on the bolt forming a support for the jaw and a nut for forcing the jaw against the tension of the spring.

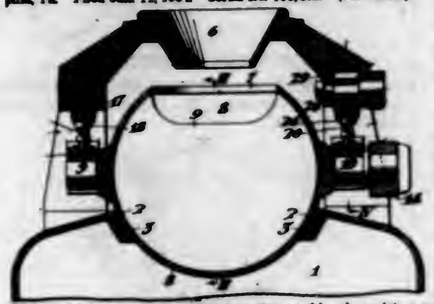


4. A clamp comprising a screw-bolt having a dovetail head, the stem of the bolt being enlarged in proximity to the head, a clamping-jaw surrounding the stem of the bolt, a spring seated on the said enlarged portion of the stem of the bolt and spaced from the head of the bolt, and forming a support for the jaw, and a nut for forcing the jaw against the tension of the spring.

5. A clamp comprising a screw-bolt having an elongated dovetail head, a spring seated on the stem of the bolt and spaced from the head, a broad flat clamping-jaw surrounding the stem of the bolt and supported on the spring, the said jaw being provided with a shouldered tailpiece turned down into the plane of the bolt-head and a tail-nut engaged with the stem of the bolt for operating the jaw.

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**756,059. GAS-RETORT CHARGER.** JOHN SALTAR, Jr., Philadelphia, Pa. Filed Jan. 11, 1904. Serial No. 188,472. (No model.)



*Claim.*—1. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel constructed to oscillate to deliver fuel to the retort; and, means arranged to vary the pressure upon said vessel to alternately seal the retort-mouth and permit the movement of said vessel, substantially as set forth.

2. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel constructed to oscillate to deliver fuel to the retort; and, adjustable means to vary the pressure of said vessel upon said seat, to alternately seal the retort-mouth and permit movement of said vessel, substantially as set forth.

3. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel constructed to oscillate to deliver fuel to the retort; and, means to vary the pressure of said vessel upon the retort-mouth, comprising an adjustable screw, substantially as set forth.

4. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel, arranged to deliver the fuel charge to the retort; and, means to press said vessel to seal the retort-mouth; comprising an eccentric in operative relation with a trunnion on said vessel, substantially as set forth.

5. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel arranged to be oscillated upon trunnions alined upon opposite sides thereof; slide-bearing boxes for the respective trunnions; housings mounted upon the retort to receive said boxes; means connecting one of said housings with its respective box, arranged to maintain said box in adjusted position; a shaft mounted to oscillate in the other of said housings; an eccentric upon said shaft; and, means connecting said eccentric with the other of said boxes, whereby said vessel may be clamped upon said seat, substantially as set forth.

6. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel arranged to be oscillated upon trunnions alined upon opposite sides thereof; slide-bearing boxes for the respective trunnions; housings mounted upon the retort to receive said boxes; a set-screw entered in one of said housings, arranged to maintain one of said boxes in adjusted position; a shaft mounted to oscillate in the other of said housings; an eccentric upon said shaft; a strap for said eccentric; a set-screw carried by said strap in adjustable connection with the other of said boxes; and, means to oscillate said shaft, whereby said vessel may be clamped upon said seat, substantially as set forth.

7. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel provided with a fuel-opening, and arranged to be oscillated upon trunnions alined upon opposite sides thereof; slide-bearing boxes for the respective trunnions; housings upon the retort to receive said boxes; a hopper supported by said housings, arranged to register with said vessel-opening; a set-screw entered in one of said housings, arranged to maintain one of said boxes in adjusted position; a shaft mounted to oscillate in the other of said housings; an eccentric upon said shaft; a strap for said eccentric; a set-screw carried by said strap in adjustable connection with the other of said boxes; and, means to oscillate said shaft, whereby said vessel may be clamped upon said seat, substantially as set forth.

8. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel entered in the mouth of said retort and provided with trunnions alined upon its opposite sides; a gyratory support for one of said trunnions; a support for the other of said trunnions arranged to permit it to oscillate; and means to shift said second support to clamp the vessel upon said seat, substantially as set forth.

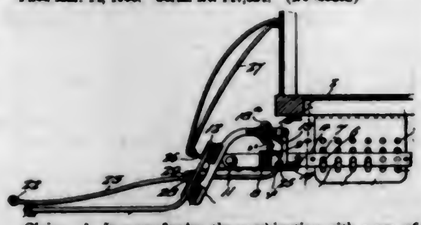
9. In a gas-retort charger, the combination with a charging vessel arranged to be oscillated upon trunnions alined upon its opposite sides; of a fulcrum for one of said trunnions; and, means operatively connecting with the other of said trunnions, to clamp said vessel toward the retort to seal the mouth of the latter, substantially as set forth.

10. In a gas-retort charger, the combination with a retort having a mouth provided with a seat; of a charging vessel constructed to oscillate and arranged to form a tight joint on said seat both in in the position for receiving the fuel charge and in the position for emptying the same into the retort, substantially as set forth.

11. In a gas-retort charger, the combination with a retort having a mouth surrounded by a seat; of a charging vessel entered in the mouth of said retort and provided with trunnions on its opposite sides, and having an internal stiffening web or rib, substantially as set forth.

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**756,060. CAR-FENDER.** FRANK A. SCHAAF, Cleveland, Ohio. Filed Mar. 14, 1903. Serial No. 147,831. (No model.)



*Claim.*—1. In a car-fender, the combination with a car, of arms carried thereby, a fender mounted upon the arms, an ear, a catch mounted upon the fender to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

2. In a car fender, the combination with a car, of arms carried thereby, a fender mounted upon the arms, an ear, a spring-retained catch mounted upon the fender to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

3. In a car-fender, the combination with a car, of arms adjustably mounted thereon, a fender mounted upon the arms, an ear, a catch mounted upon the fender to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

4. In a car-fender, the combination with a car, of arms mounted thereon, a fender mounted upon the arms, an ear, a catch adjustably mounted upon the fender to retain the same elevated, and means to automatically trip the catch to release the fender.

5. In a car-fender, the combination with a guard, and parallel



arms extending therefrom and having recesses in one edge thereof; of parallel plates having apertures therein, and pins detachably arranged within the apertures and adapted to support the arms and engage a recess therein.

6. In a car-fender, the combination with a car, of plates mounted thereon, arms carried by the plates, a fender mounted on the arms, an ear, a catch carried by the fender to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

7. In a car-fender, the combination with a car, of plates secured thereto, arms adjustably mounted upon the plates, a fender mounted upon the arms, an ear, a catch carried by the fender to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

8. In a car-fender, the combination with a car, of plates provided with apertures and secured thereto, arms, pins adapted to enter the apertures to engage the arms to adjustably mount the arms upon the plates, a fender mounted upon the arms, an ear, a catch carried by the fender to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

9. In a car-fender, the combination with a car, of arms mounted thereon, a beam connecting the arms, a slotted plate mounted upon the beam, links connected to said plate and arms, a fender mounted upon the arms, an ear carried by the beam, a catch carried by the fender to engage the ear to retain the fender elevated and means to automatically trip the catch to release the fender.

10. In a car-fender, the combination with a car, of arms mounted thereon, means connecting the arms, an ear mounted on the said means, a lip mounted on the means below the ear, a fender mounted upon the arms, a catch carried by the fender to engage the ear to retain the fender elevated, and means adapted to rest upon the lip to automatically trip the catch to release the fender.

11. In a car-fender, the combination with a car, of arms carried thereby, a fender mounted upon the arms, an ear, a casting secured to the fender and provided with a slotted segment, a link adjustably connected to the segment, a latch carried by the link to engage the ear to retain the fender elevated, and means to automatically trip the catch to release the fender.

12. In a car-fender, the combination with a car, of arms mounted therson, a fender mounted on the arms, an ear, a catch carried by the fender to engage the ear to retain the fender elevated, means for automatically releasing the fender, and spring means carried by the arms to force the fender when released into contact with the roadway.

13. In a car-fender, the combination with a car, of arms mounted thereon, a fender mounted upon the arms, a guard hinged to the fender, an ear, a catch carried by the fender to engage the ear to normally retain the fender elevated, and means to automatically release the fender.

14. In a car-fender, the combination with a car, of arms mounted thereon, a beam connecting the arms, a fender mounted upon the arms, an ear carried by the beam, a lip carried by the beam, a catch carried by the fender to engage the ear to normally retain the fender elevated, and an operating-bar terminating in a loop, said loop fitting in the lip to trip the catch when the guard comes in contact with an object to release the fender.

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**756,061. HOT-WATER COOLER.** JAMES S. SCOTT, Brantford, Canada, assignor of one-third to William John Aitkens, Brantford, Ontario, Canada. Filed July 31, 1903. Serial No. 167,681. (No model.)



*Claim.*—1. A hot-water cooler comprising a mixing-chamber, a water-supply chamber connected with the hot-water supply and provided with a trap discharging the water into the said mixing-chamber, an air-supply chamber connected with an air-supply and located below and separated from the said mixing-chamber by a perforated partition, and a spraying-chamber connected with the mixing-chamber and having a perforated top plate for dividing or spraying the water and air, as set forth.

2. A hot-water cooler comprising a mixing-chamber, a water-supply chamber connected with the hot-water supply and provided with a trap discharging the water into the said mixing-chamber, an air-supply chamber connected with an air-supply and located below and separated from the said mixing-chamber by a perforated partition, a spraying-chamber connected with the mixing-chamber and having a perforated top plate for dividing or spraying the water and air, and an outlet-chamber, into which passes the sprayed air and water, the outlet having a discharge, as set forth.

3. A hot-water cooler comprising a casing having a transverse partition extending from the outer end of the casing to within a short distance of the inner end thereof, perforated plates on opposite sides of the said partition, extending from the inner end thereof outwardly, the one to form a mixing-chamber and an air-chamber and the other to form a spraying-chamber, a discharge-chamber within the said casing, and a water-inlet chamber connected with a water-supply, for discharging the water into the said mixing-chamber, as set forth.

4. A hot-water cooler comprising a casing having a transverse partition extending from the outer end of the casing to within a short distance of the inner end thereof, perforated plates on opposite sides of the said partition, extending from the inner end thereof outwardly, the one to form a mixing-chamber and an air-chamber and the other to form a spraying-chamber, a discharge-chamber within the said casing, a water-inlet chamber connected with a water-supply, for discharging the water into the said mixing-chamber, and a trap between the said water-inlet chamber and the mixing-chamber, the trap being formed by plates, curved in opposite directions and spaced apart, as set forth.

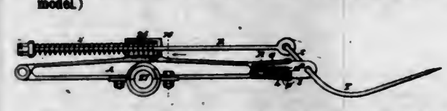
5. In a hot-water cooler, a casing inclosing a mixing-chamber, an air-inlet chamber, a spraying-chamber, and an outlet-chamber, the spraying-chamber being an extension of the mixing-chamber, the mixing-chamber being separated from the air-inlet chamber by a perforated partition and the spraying-chamber being separated from the outlet-chamber by a similar partition, means for simultaneously forcing a current of air and water together into said mixing-chamber to mix the two together, and thence when mixed, forcing the same on through the intervening perforated wall into the spraying-chamber, and an outlet for said spraying-chamber.

6. In a hot-water cooler, a casing inclosing a mixing-chamber, a water-inlet chamber leading into said mixing-chamber, a spraying-chamber forming a continuation of said mixing-chamber, an air-inlet chamber leading into the mixing-chamber between said water-inlet chamber and said spraying-chamber, means for forcing the water into said mixing-chamber and thence into said spraying-chamber, means for forcing air into the mixing-chamber simultaneously with the water to mix the two and thence, when thus mixed, through said spraying-chamber onward into said outlet-chamber, and an outlet for said last-named chamber.

7. A hot-water cooler comprising a casing having a transverse partition extending from the outer end of the casing to within a short distance of the inner end thereof, perforated plates on opposite sides of the said partition, the upper one of which plates extends outwardly and upwardly, and the lower one of which extends outwardly and downwardly, the upper plate forming, with the casing, a mixing-chamber at its top side, and forming with the central plate an air-inlet chamber at its under side, the lower one of said plates forming, with the casing, a spraying-chamber at its under side, and with the central plate, an outlet-chamber at its upper side.

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**756,062. FORK-HEAD FOR HAY-TEDDERS.** WILLIAM W. SHAW, Hoosick Falls, N. Y., assignor of one-half to Watson M. Holmes, Hoosick Falls, N. Y. Filed Jan. 16, 1903. Serial No. 139,273. (No model.)



*Claim.*—1. The combination in a hay-tedder of a fork-arm having a socket-head, two separable fork-holding cheek-pieces having shanks to fit said socket, a fork journaled in bearings in the cheek-pieces, a retracting-rod and an actuating-spring connected therewith, all combined and arranged to operate substantially as described.

2. The combination in a hay-tedder of a fork-arm having a tapering socket-head, two separate fork-holding cheek-pieces having shanks to fit said socket, a fork journaled in bearings in the cheek-pieces, a retracting-rod and an actuating-spring connected therewith, combined and arranged to operate substantially as described.

3. The combination in a hay-tedder of a fork-arm having a socket-head, two separate fork-holding cheek-pieces having shanks to fit said socket, an opening into said socket at its base to render

the extremities of the shanks accessible, a fork journaled in bearings in the cheek-pieces, a retracting-rod and an actuating-spring connected therewith, all combined and arranged to operate substantially in the manner described and for the purposes set forth.

4. The combination in a hay-tedder of a fork-arm having a socket-head, two separable fork-holding cheek-pieces having shanks to fit said socket, a fork journaled in bearings in the cheek-pieces, a retracting-rod, an actuating-spring connected therewith, and means intermediate the rod and spring for controlling its tension, all combined and arranged to operate substantially as described.

5. A hay-tedder arm having a socket-head, two separate fork-holding cheek-pieces, each having a closed eye-bearing for the reception of a fork-tine and having shanks to fit said socket, means for confining the shanks within the socket, and means connected with the socket and shanks to prevent the shanks rotating within the socket, substantially as specified.

6. The combination in a hay-tedder of a fork-arm having a tapering socket-head, two separate fork-holding cheek-pieces having shanks to fit said socket, a fork journaled in bearings in the cheek-pieces, a retracting-rod, an actuating-spring connected therewith and means intermediate the rod and spring for controlling its tension, combined and arranged to operate substantially as described.

7. The combination in a hay-tedder of a fork-arm having a socket-head, two separate fork-holding cheek-pieces having shanks to fit said socket, an opening into said socket at its base to render the extremities of the shanks accessible, a fork journaled in the bearings in the cheek-pieces, a retracting-rod, an actuating-spring connected therewith, and means intermediate the rod and spring for controlling its tension, combined and arranged to operate substantially in the manner described and for the purposes specified.

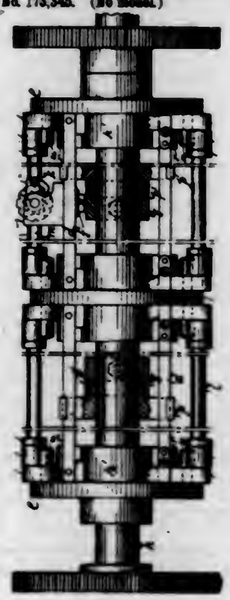
8. The combination with a hay-tedder fork-arm, of the slotted spring-socket, retracting-rod, spring and means intermediate the rod and spring for holding the assembled parts in operative connection, substantially as specified.

9. The combination with the hay-tedder fork-arm, of the slotted spring-socket, retracting-rod and nut, and spring, arranged to operate substantially as specified.

10. As an improved adjunct to a hay-tedder fork-arm, a spiral spring-socket of a caliber adapted to receive the end of a spiral spring, having one end open for the insertion endwise of the spring and the opposite end closed to form an abutment-seat for the end of the spring, the wall of the socket and its closed end being slotted for the passage of the rod, whereby on withdrawing the end of the spring from the socket the rod may be lifted out of the same through said slot, substantially as specified.

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**756,063. NUMBERING-MACHINE.** EDWARD P. SHELDON, Brooklyn, N. Y., assignor to Philip Hano, New York, N. Y. Filed Sept. 15, 1903. Serial No. 173,345. (No model.)



*Claim.*—1. A cylinder having a shaft and heads, number-wheel-carrying rails having bracket portions with feet or supporting parts adapted to sit on the shaft, an adjustable supporting-block for the rails, and screws for securing the bracket portions to the cylinder-heads.

2. A cylinder having a shaft and heads, number-wheel-carrying rails having bracket portions with feet or supporting parts adapted to sit on the shaft, an adjustable supporting-block for the rails, and screws for securing the bracket portions to the cylinder-heads, said bracket portions having segmental slots to allow adjustment about the shaft when the screws are loosened.

3. A cylinder having a shaft and heads, number-wheel-carrying rails having bracket portions with feet or supporting parts adapted to sit on the shaft, an adjustable supporting-block for the rails, and screws for securing the bracket portions to the cylinder-heads, said bracket portions having segmental slots to allow adjustment about the shaft when the screws are loosened and said cylinder-heads having a series of holes or taps for allowing the screws to be applied in different positions.

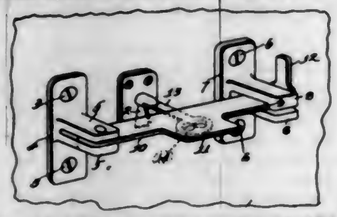
4. A cylinder comprising a shaft and heads, rails provided with foot and bracket portions, numbering-wheels on the rails, spring-pressed actuating-rails for the wheels mounted in the brackets, blocks for removably holding the rails with their brackets to the cylinder-shaft, and screws for removably securing the brackets to the cylinder-heads, said brackets being slotted for the passage of the screws and to allow adjustability of the brackets when the screws are loosened.

5. A cylinder having a shaft, supporting-rails having brackets secured to the cylinder and feet made to rest on the shaft, blocks for engaging the rails, a clamp for securing the blocks to the shaft, numbering-wheels on the rails, and an actuating-rail for the number-wheels movably mounted in the bracket.

6. The combination with a cylinder comprising a shaft and heads, of rails having feet made to rest on the shaft and brackets having screw-and-slot connections with the heads, a number-wheel-actuating rail mounted to move eccentrically in the bracket, a supporting-block for the rails, and a clamping-cone seated about the shaft and adapted to adjustably secure the blocks to the shaft.

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**756,064. KEY-HOLDER.** CHARLES T. SHERMAN, St. Louis, Mo. Filed Aug. 28, 1903. Serial No. 171,115. (No model.)



*Claim.*—A key-holder comprising brackets 4 and 7 having bifurcated arms 5 and 8, a shoulder 9 formed on one of the arms 8, and a spring-lever one end of which is pivoted between the arms 5 and the other end of which is adapted to be engaged with and disengaged from the shoulder 9 of the arm 8, substantially as specified.

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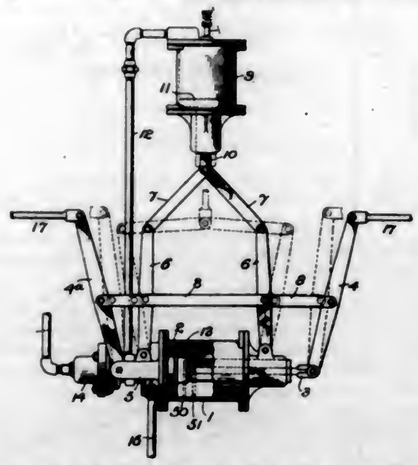
**756,065. COMPOUND AIR-BRAKE MECHANISM.** EDWARD G. SHORTT, Carthage, N. Y., assignor to International Air Brake Company, Jersey City, N. J., a Corporation of New Jersey. Filed July 1, 1902. Serial No. 113,904. (No model.)

*Claim.*—1. In a fluid-pressure brake mechanism including a brake-cylinder and its piston, automatically-operating means for effecting a maximum braking pressure by a short travel of the piston and a diminution of braking pressure by further travel of the same.

2. In a fluid-pressure brake mechanism including a brake-cylinder and its piston, automatically-operating means independent of the brake-cylinder for effecting a preliminary braking action, and means for effecting a maximum braking pressure by a short travel of the brake-piston and a reduction in braking pressure by a further travel of the same.

3. In a fluid-pressure brake mechanism, the combination with a brake-cylinder and its piston, of a supplementary cylinder and its piston, means for delivering air-pressure to both cylinders, a lever mechanism actuated by the pressure in the supplementary cylinder for effecting a preliminary braking, which pressure is reduced to permit the restoration of the leverage to a normal position in order that the expansion of the initial pressure introduced against the brake-piston may cause a further travel of the same to relieve the braking pressure enough to prevent sliding the wheels.





4. In a fluid-pressure brake mechanism, including a brake-cylinder and its piston, an auxiliary cylinder containing a piston, in combination with a system of levers whereby pressure introduced from the train-pipe into the auxiliary cylinder affords a preliminary braking action which is gradually reduced in proportion to the variation in the speed of the train, and means for introducing train-pipe pressure into the auxiliary cylinder and auxiliary-reservoir pressure into the brake-cylinder in order that the latter pressure may impart an initial movement to the piston and give a maximum braking pressure and when expanded a secondary movement of additional travel to give a reduced braking pressure.

5. In a fluid-pressure brake mechanism including a brake-cylinder and its piston, an auxiliary cylinder having a piston, means for introducing train-pipe pressure into said auxiliary cylinder, means for introducing auxiliary-reservoir pressure into the brake-cylinder, said auxiliary cylinder being for the purpose of effecting a preliminary and temporary braking action concurrently with the initial movement of the brake-cylinder piston under the impulse of reservoir-pressure, which latter pressure expands when the auxiliary-cylinder action ceases and drives the brake-cylinder piston further on in its stroke with reduced force for accomplishing a reduction of braking pressure.

6. In a fluid-pressure brake mechanism, the combination of a brake-cylinder and its piston, an auxiliary cylinder and its piston, a triple valve, a connection between the triple valve and the auxiliary cylinder for delivering train-pipe air to the latter, suitable means for delivering auxiliary-reservoir air to the brake-cylinder, and a leverage actuated by the pressure in the auxiliary cylinder to take up the slack of the brake-rigging and make a preliminary application of the shoes, means for terminating this action on said levers, in order that the volume of pressure in the brake-cylinder which causes an initial movement of extreme braking action to the piston may impart thereto a secondary movement of diminished brake action.

7. In a fluid-pressure brake mechanism, the combination with a brake-cylinder, auxiliary reservoir, train-pipe and triple valve, of a supplemental cylinder and its piston, means for delivering train-pipe pressure to the supplemental cylinder and reservoir-pressure to the brake-cylinder, leverage mechanism actuated by the pressure in the supplemental cylinder for taking up slack and effecting a preliminary braking, means for releasing said pressure to permit restoration of the leverage to its normal position, all the parts being combined and operating so that a maximum braking pressure may be effected by a short travel of the brake-piston and a diminution of braking pressure by a further travel of the same incident upon the expansion of the initial pressure against the brake-piston.

8. In a fluid-pressure brake mechanism, the combination with the essential elements of a brake system, of a supplementary cylinder and its piston, means for delivering train-pipe pressure to said cylinder consisting of a pipe leading from the triple valve to the cylinder, a leverage mechanism actuated by the pressure in the supplementary cylinder for taking up slack and effecting a preliminary braking, means for releasing said pressure to permit the restoration of the leverage to its normal position, all the parts being combined and operating so that a maximum braking pressure may be effected by a short travel of the brake-piston and a diminution of braking pressure by a further travel of the same incident upon the expansion of the initial pressure against the brake-piston.

9. In a fluid-pressure brake mechanism, the combination with the essential elements of a brake system, of a supplementary cylinder and its piston, means for delivering train-pipe pressure to the supplementary cylinder, consisting of a pipe leading from the triple valve to said cylinder, a valve device in said pipe that permits air to pass to the cylinder and prevents it from returning, means arranged in connection with said valve device to allow escape to atmosphere of any surplus of air, leverage mechanism actuated by the pressure in the supplementary cylinder for taking up slack and effecting a preliminary braking, means for releasing said pressure to permit the restoration of the leverage to its normal position, all the parts being combined and operating so that a maximum braking pressure may be effected by a short travel of the brake-piston and a diminution of braking pressure by a further travel of the same incident upon the expansion of the initial pressure against the brake-piston.

10. In a fluid-pressure brake mechanism, the combination with the essential elements of a brake system, of a supplementary cylinder and its piston, a valve-provided pipe leading from the triple valve to the supplementary cylinder for carrying train-pipe air to said cylinder, a leverage mechanism actuated by pressure in the supplementary cylinder for effecting a preliminary braking, means for allowing the release of this pressure from the supplemental cylinder, all the parts being arranged and operating so that the maximum braking pressure may be effected by a short travel of the brake-piston and a large diminution of braking pressure by further travel of the same to prevent sliding of the wheels.

11. In a fluid-pressure brake mechanism, the combination with the essential elements of a brake system including a brake-cylinder and its piston, of a supplementary cylinder and its piston, means for delivering air-pressure to both the supplementary and the brake cylinders, a leverage mechanism actuated by the pressure in the supplementary cylinder for effecting a preliminary braking, means for reducing said pressure to permit the restoration of the leverage to a normal position, said means consisting of a diaphragm-operated valve, and vacuum-producing means operated by the movement of the train to control the action of said valve automatically, all the parts being combined and operating so that the expansion of the initial pressure introduced against the brake position may cause a further travel of the same to relieve the braking pressure and to prevent sliding of the wheels.

12. In a fluid-pressure brake mechanism including a brake-piston and its cylinder, automatically-operating means independent of the brake-cylinder for effecting a preliminary braking action, said means consisting essentially of an independent cylinder and its piston, and means for effecting a maximum braking pressure by a short travel of the brake-piston and a reduction in braking pressure by a further travel of the same.

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**756,066. SAFETY-LOCK FOR GAS-FIXTURES.** EDMUND H. SHUTE, Chicago, Ill. Filed Nov. 26, 1903. Serial No. 182,949. (No model.)

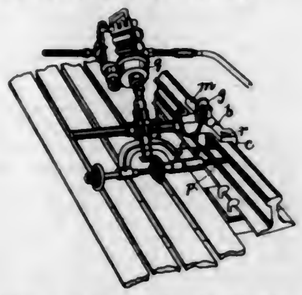


*Claim.*—The combination with the body of a gas-cock, having a circumferential annular flange thereon at one end, said flange having two opposite notches therein, and a plug-like key having a flattened thumb-piece on one end adjacent to the annular flange, of a locking device for the key, comprising a bracket-plate, laterally-projected arms thereon, pivoted near their ends oppositely on the key near the thumb-piece, a toe on a transverse edge of the bracket-plate, adapted to enter either notch in the annular flange, a spring-box projected laterally from the bracket-plate and oppositely from the arms, and a spring held by one end in said box and pressing at its opposite end upon a side of the thumb-piece, so as to hold the toe in the notch and prevent rotation of the key.

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**756,067. CLAMPING DEVICE.** RICHARD G. SIDGEL, Somerville, Mass., assignor of one-half to William R. Butterfield, Somerville, Mass. Filed May 22, 1903. Serial No. 158,338. (No model.)

*Claim.*—1. A clamping mechanism of the class described, consisting of a stationary member comprising a bar provided with a slot and having jaws provided with fingers extended substantially parallel to said bar, a movable member comprising a jaw and a shank provided with a slot and extended through the slot in the stationary member, said latter slot having an inclined wall and said shank having an inclined face cooperating with the inclined wall of said slot, and a wedge-shaped key extended through the slot in the shank of said movable member, substantially as described.



2. A clamping mechanism of the class described, consisting of a stationary member adapted to engage the tread of a rail and provided with a jaw constructed to engage the web of said rail, of a movable member comprising a jaw constructed to engage the web of the rail on the opposite side and a shank extended substantially at right angles with said jaw and engaging the stationary member, and a wedge coacting with the stationary and movable members on the side of the rail opposite to that with which the jaw of said stationary member is engaged to move said movable member and place its jaw in fixed engagement with said rail, substantially as described.

3. A clamping mechanism of the class described, consisting of a stationary member provided with a jaw constructed to engage the web of a rail, and having a slot provided with an inclined wall, of a movable member comprising a jaw constructed to engage the web of the rail on the opposite side and having a shank extended through the slot in the stationary member and provided with a slot and with an inclined face adapted to engage the inclined wall of the slot in said stationary member, and a wedge extended through the slot in the shank of said movable member and engaging said stationary member, substantially as described.

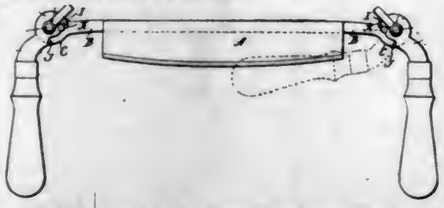
4. A clamping mechanism of the class described, comprising a stationary member consisting of a bar *b* having extended from one side of it the jaws *c* provided with fingers extended substantially parallel to the said bar, and a lug or ear extended from the opposite side of said bar and provided with a slot having an inclined rear wall, a movable member comprising a bent finger and a shank or bar extended through the slot in the lug or ear of said stationary member and having an inclined face, and means for moving the shank on the movable member through the slot on the bar to move the jaw on said movable member toward the jaws on the stationary member, substantially as described.

5. A clamping mechanism of the class described, comprising a stationary member consisting of a bar *b* having extended from one side of it the jaws *c* provided with fingers extended substantially parallel to the said bar, and a lug or ear extended from the opposite side of said bar and provided with a slot having an inclined rear wall, a movable member comprising a bent finger and a shank or bar extended through the slot in the lug or ear of said stationary member and provided with an inclined rear face cooperating with the inclined wall of said slot, said shank having in it a slot, and a wedge-shaped key extended through the slot in said shank, substantially as and for the purpose specified.

## 756,068. DRAW-KNIFE. CHARLES B. SIMMONS, Bristol, Conn. Filed Dec. 22, 1903. Serial No. 186,170. (No model.)

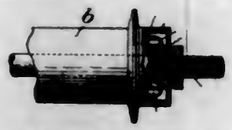
*Claim.*—1. In a draw-knife, the combination with a draw-knife blade having shanks terminating in disks carrying studs, of handles having slotted ends for engagement with said disks on which they are transversely movable, means for clamping the ends to said disks, and a notch in said handle end adapted to engage with the pin in said disks, substantially as described.

2. In a draw-knife, the combination with the blade thereof, having shanks terminating in disks and each having a pin mounted therein, of handles having ends united through pin-and-slot connection with said disks so as to be transversely movable thereon, said disks each cut away segmentally to form notches, and shoulders to engage with said pin, and means for clamping the handle ends to the disks, substantially as described.



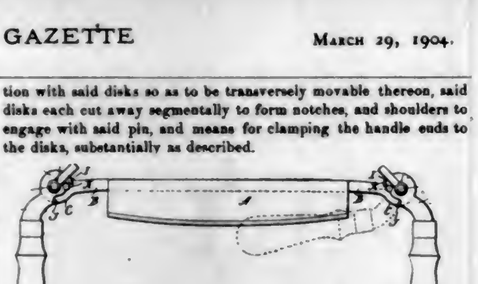
3. In a draw-knife, the combination with the blade thereof having shanks and disks at the ends thereof, of handles having ends formed to correspond in form to the disks at the ends of the blade, slots in said handle ends through which studs extend into engagement with the said shank-disks, portions of the circumference of said handle ends cut out to form notches and shoulders for engagement with a pin mounted in said shank-disks, and means for clamping the handle ends to the shank-disks, substantially as described.

## 756,069. BALL-BEARING SPACER. ALBA P. SMITH, Jr., Brockton, Mass. Filed June 5, 1902. Serial No. 110,277. (No model.)



*Claim.*—In a ball-bearing, the combination with a ball race or cup, and a bearing-cone, of antifriction-balls in the space between said cup and cone, and a spacer comprising an annular support having studs projecting from one side thereof, between the said balls, and conical rollers mounted on said studs, the inclination of the rollers being opposite to that of the bearing-cone, and substantially equal to the latter in degree.

## 756,070. NOTE-SHEET FEED MECHANISM FOR MUSICAL-INSTRUMENT PLAYERS. JAMES D. SMITH, Kansas City, Mo., assignor to Fred W. Wood, Jackson county, Mo. Filed Dec. 17, 1902. Serial No. 136,653. (No model.)

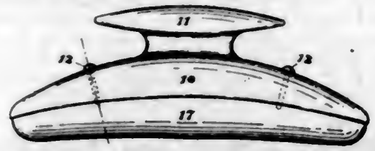


*Claim.*—1. In a device of the character described, the combination of a feed-roller, a companion roller normally out of contact therewith, and pneumatic devices for holding the companion roller in contact with the first-named roller at times.

2. In a device of the character described, the combination of a feed-roller, pneumatics, and a roller carried by said pneumatics, and adapted to engage the first-named roller when the air is exhausted from said pneumatics.

## 756,071. FINGER-NAIL POLISHER. LESLIE J. SMITH, Newark, N. J. Filed Oct. 3, 1903. Serial No. 175,816. (No model.)

*Claim.*—1. The improved nail-polisher herein described, comprising the curved body having a handle and having a depending flange extending around its lower edges, a metal plate separable from said body and adapted to lie within the recess formed by said depending flange and perforated at its edges to receive threads, a pad sewed to said plate, a nail-polishing sheet stretched over said pad and adapted to enter between said plate and body and means for separably connecting said plate and body and clamping the edges of said polishing-sheet between said plate and body.



2. The improved nail-polisher, comprising the body 10, having the handle and curved under face, the edges of said body having a depending flange extending therearound, a plate adapted to lie within the said flange and conform to the under side of said body, said plate having perforated edges and a pad sewed to the same, and an elastic sheet of rubber separably stretched over said pad and having its edges project up over the edges of said plate and means for separably fastening said plate pad and rubber sheet to the said flanged body, substantially as set forth.

3. The improved nail-polisher comprising a body having a handle at the top and curved under side, a pad conforming to the curved under side, said pad having a plate at the top and conforming to the said curved under side, a polishing sheet of rubber stretched over and separably secured to said pad and entered at its edges between the plate and body, means for separably holding said plate to said body, and means for separably holding the said sheet to said pad and the edges thereof between said plate and body, substantially as set forth.

4. The improved nail-polisher, comprising the body 10, the edges of said body having a depending flange extending therearound, a plate adapted to lie within the said flange, said plate having perforated edges and a pad sewed to the same, and an elastic sheet of rubber separably stretched over said pad and having its edges project up over the edges of said plate and means for separably fastening said plate, pad and rubber sheet to the said flanged body, substantially as set forth.

5. The improved nail-polisher, comprising a body having a handle at the upper side and having a curved under side with a depending flange around its edges, a plate separable from said body and having layers of felt or textile fabric fastened thereto to form a pad, said pad being curved in conformity with the curvature of the body, a polishing-sheet separable from the pad and stretched at its opposite edges over said pad, the edges of said sheet being separably fastened to said pad by other means than the body and extending between the body and the top of the pad-plate, and means for separably joining the body pad-plate and clamping the polishing-sheet between, substantially as set forth.

## 756,072. WATCH-PROTECTOR. MAX SONNENFELD, New York, N. Y. Filed July 22, 1903. Serial No. 166,591. (No model.)



*Claim.*—1. In a watch-protector, a chain having an enlargement at each of its ends, a ring smaller than either of said enlargements held within the watch-pocket, the portion of the chain between said enlargements freely passing through said ring, a safety-pin, and a link connection between the safety-pin and ring.

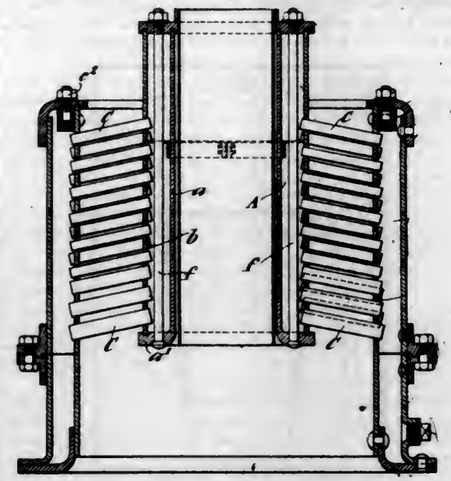
2. In a watch-protector, a chain having an enlargement spaced from its inner end, a ring smaller than said enlargement, held within the watch-pocket, the chain freely passing through said ring, a safety-pin, and a link connection between the safety-pin and ring.

3. A watch-protector, comprising a ring provided with friction-rollers, the ring being held within the watch-pocket near the mouth thereof, a safety-pin secured within the pocket to the outer side thereof, and a link connecting said ring and safety-pin, the chain of a watch being adapted to pass loosely through said ring.

4. In a watch-protector, a chain having enlargements at its end portions, the chain being provided also with a swivel at the end of one enlargement, a ring loosely mounted on the chain, of less diameter than the diameter of either of the enlargements on the chain, friction-rollers mounted on the said ring, a device for anchoring the ring to a pocket, and a connection between the anchoring device and the ring, as set forth.



## 756,073. STEAM-GENERATOR. SIDNEY STRAKER, London, England. Filed Aug. 3, 1903. Serial No. 167,954. (No model.)



*Claim.*—1. A steam-generator having an inner annular water-chamber and a surrounding outer water-chamber, tubes connecting said chambers, the outer chamber being formed by a tube-plate and an outer shell, said outer shell having a detachable ring-section; substantially as described.

2. A steam-generator comprising an outer and an inner water-chamber each constituted by a tube-plate and a shell, the inner shell being detachably connected with the inner tube-plate and a ring-section of the outer shell being detachably connected with the other part thereof and with the outer tube-plate; substantially as described.

3. A steam-generator comprising an outer and an inner water-chamber connected by tubes in which the outer chamber is constituted by a tube-plate and an outer shell in two ring-sections detachably connected with each other, the lower section being also riveted to the tube-plate, and the upper section provided with a flanged portion detachably connected with the tube-plate; substantially as described.

4. In steam-generators of the kind herein described, an outer water-chamber formed between an outer tube-plate and an outer shell constructed in two ring-sections bolted together to form a water-tight joint, the water-chamber being closed at the bottom by riveted joints and at the top by a packed joint formed between the edge of the tube-plate and an annular groove on an inwardly-projecting flange of the outer shell and held together by studs screwed into a ring riveted round the tube-plate; substantially as described.

5. A steam-generator comprising an outer and an inner water-chamber each constituted by a tube-plate and a shell, the inner shell being detachably connected with the inner tube-plate, and a ring-section of the outer shell being detachably connected with the other part thereof and with the outer tube-plate without the use of bolts extending longitudinally through the outer water-chamber; substantially as described.

## 756,074. GARMENT-HOLDER. MAURICE M. STRAUSS, Chicago, Ill. Filed July 13, 1903. Serial No. 165,250. (No model.)

*Claim.*—1. A garment-holder, comprising an upper section formed with expanded shoulder portions *a* and *a'* and having wires $a^2$ and $a^3$ leading downwardly therefrom and rigid therewith and a lower section formed of side wires *b'* and bottom wire $b^2$, the side wires of the lower section being extensibly connected to the side wires of the upper section.

2. A garment-holder, comprising an upper section adapted to set within the shoulder portions of a coat and a lower section adjustably connected to said upper section, said lower section being provided at its top with a cross-bar adjustable therewith with respect to said upper section.

3. A garment-holder, comprising an upper section adapted to set within the shoulder portions of a coat and having downwardly-extending side wires and a lower section adjustably connected to the side wires of said upper section and having a cross-wire carried at its top and adjustable therewith toward and from the upper section.

4. A garment-holder formed of an upper section having its upper portion adapted to set within the shoulder portions of a coat and a lower section extensibly connected to said upper section, said lower section being formed of side wires, a bottom wire and a top cross-bar, all of which are adjustable to and from said upper section.



5. A garment-holder comprising an upper section formed of wire and having side wires provided with hooks at their ends and a lower section formed of wire, said lower section being provided at its top with a cross-bar and having eyes or hooks through which the side wires of the upper section extend.

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**756,075. BODY-HANGER FOR VEHICLES. HENRY C. SWAN, Cleveland, Ohio. Filed Nov. 23, 1903. Serial No. 182,233. (No model.)**



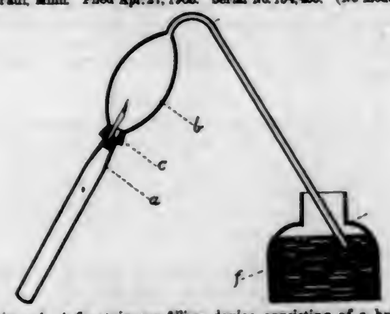
*Claim.*—1. A body-hanger comprising a bar having a flange provided with three recesses or weakened portions on its lower face, said recesses being in line with each other and adapted for punching; substantially as described.

2. A body-hanger having a lateral flange with three recesses or weakened portions in line thereon and shoulders between the recesses to fit on the spring; substantially as described.

3. A body-hanger having a flange provided with three recesses or weakened portions arranged to be in alinement with the spring-body, at least one of the weakened portions being punched to receive a clip-leg; substantially as described.

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**756,076. FOUNTAIN-PEN-FILLING DEVICE. HUSTON TAYLOR, St. Paul, Minn. Filed Apr. 27, 1903. Serial No. 154,423. (No model.)**



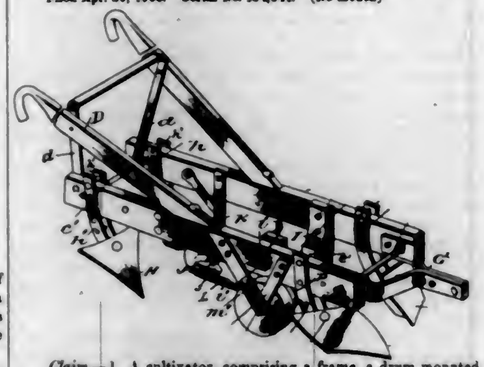
*Claim.*—1. A fountain-pen-filling device consisting of a bulb-syringe having one nipple-orifice adapted to engage the nib end of a fountain-penholder, and having another orifice in the bulb, a tube securely connected therewith and which tube is adapted to be inserted in the neck of an ordinary ink-bottle, substantially as described.

2. As a new article of manufacture, a fountain-pen-filling device consisting of a bulb-syringe having two open orifices, one of which is a nipple adapted to embrace and engage the nib end of a fountain-penholder, the other end being an open tube forming a part of the bulb-syringe and a prolongation thereof, which tube is open at the loose end and is adapted to be inserted in the open neck of an ordinary ink-bottle, substantially as described.

3. In a fountain-pen-filling device, the combination of a bulb-syringe having a nipple-orifice adapted to engage the nib end of a fountain-penholder, and an open tube having one end thereof securely connected with another orifice in the bulb-syringe, the other end of the tube being adapted to be inserted in the neck of an ordinary ink-bottle, substantially as described.

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**756,077. CULTIVATOR. THOMAS E. THOMPSON, Ethel, Miss. Filed Apr. 29, 1903. Serial No. 154,841. (No model.)**



*Claim.*—1. A cultivator, comprising a frame, a drum mounted in said frame, and having radially-extending recesses therein, elongated blades having reduced inner ends resting in said recesses and transversely-arranged bolts passing through the reduced portion of the blades, and nuts on said bolts within said radial recesses.

2. A cultivator, comprising a frame, a drum mounted in said frame, and having elongated radially-extending recesses therein and enlarged recesses communicating therewith, elongated blades resting in said radial recesses, transversely-arranged bolts passing through the drum and the blades and terminating in said enlarged recess, and nuts on said bolts within said enlarged recess.

3. A cultivator, comprising a frame, a drum mounted in said frame, and having recesses therein and each recess provided with a radial wall, blades within said recesses and resting against said radial walls and bolts passing transversely through said drum and blades.

4. A cultivator, comprising a frame, a drum mounted therein and having enlarged recesses therein, and each recess having a radial wall, the said drum having small recesses adjacent the large recesses and having a wall parallel the radial wall thereof and bolts passing through the parallel walls of the small and large recess and the said blades.

5. A cultivator comprising an elongated frame, a longitudinally-extending drum carried thereby and having elongated recesses therein, and each recess having a radial wall, and adjacent each end of said wall is a longitudinally-extending small recess, blades resting against said vertical wall and having their ends resting in said small recess, and bolts holding said blades in the recess against the radial wall.

6. A cultivator comprising a frame, a drum mounted therein and having blade-receiving recesses therein and each recess having a radial wall, a small recess adjacent each blade-receiving recess, and having a wall parallel the radial wall thereof, bolts passing through the parallel wall of the small and blade-receiving openings and through the blades and nuts on said bolts within the blade-receiving openings.

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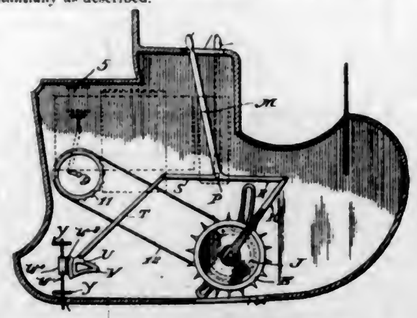
**756,078. STEAM-SLEIGH. JOSEPH R. TIBBITS, Delmar, N. Y. Filed Oct. 31, 1903. Serial No. 179,309. (No model.)**

*Claim.*—1. The combination with a sleigh, of power means, and propelling means, the latter employing on opposite sides of the sleigh, a rotatable spur-wheel and a brake-acting pin, the said spur-wheel and brake-acting pin being operatively connected, whereby, through a suitable lever, both spur-wheels or both pins, or one pin and one spur-wheel, may be adjusted to engaging position, substantially as described.

2. The combination with a sleigh of a propelling spur-wheel



and a brake-acting pin, power means for operating the spur-wheels, sprocket-wheels and a drive-chain, whereby power is transmitted, a lever operatively connected with the said spur-wheel and pin through connecting-arms, and suitable guides for the said spur-wheel and pin, substantially as described.



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**756,079. PROCESS OF BRAZING CAST-IRON. JOSEPH R. TICHON, New Bedford, Mass., assignor to Theodore E. Parker, New Bedford, Mass., and Henry F. Strout and J. Colby Bassett, Boston, Mass., trustees. Filed Oct. 3, 1903. Serial No. 175,601. (No specimens.)**

*Claim.*—1. The herein-described process of brazing metals, comprising applying boro-boracic acid, and spelter thereto in connection with fusing heat.

2. The herein-described process of brazing metals which includes coating the surfaces of the parts to be joined with a plastic paste of boro-boracic acid and metallic filings, heating the parts, and pouring spelter on the joint.

3. The herein-described process of brazing metals which includes coating the surfaces of the parts to be joined with a suitable paste having metallic filings, heating the parts, and pouring on the joint spelter and boro-boracic acid.

4. The herein-described process of brazing metals, which includes coating the surfaces to be joined with a paste consisting of metallic filings and boro-boracic acid, and heating the parts and the paste.

5. The herein-described process of brazing metals, which includes coating the surfaces of the parts to be joined with a paste containing boro-boracic acid, heating the said parts, putting spelter on the joint, heating the parts to a higher temperature, and placing on the joint dry boro-boracic acid.

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**756,080. BRAZING COMPOUND. JOSEPH R. TICHON, New Bedford, Mass., assignor to Theodore E. Parker, New Bedford, Mass., and Henry F. Strout and J. Colby Bassett, Boston, Mass., trustees. Filed Oct. 3, 1903. Serial No. 175,601½. (No specimens.)**

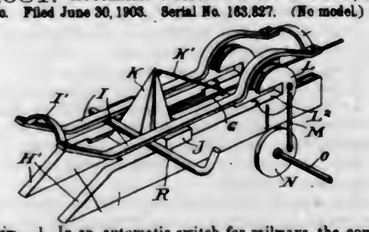
*Claim.*—1. A brazing compound containing boro-boracic acid.

2. A brazing compound containing boro-boracic acid and particles of metal.

3. A flux comprising boro-boracic acid.

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**756,081. AUTOMATIC SWITCH. SAMUEL C. TUSSING, Leipsic, Ohio. Filed June 30, 1903. Serial No. 163,827. (No model.)**



*Claim.*—1. In an automatic switch for railways, the combination of the stationary rails and movable rails, with a tie-rod connecting the movable rails together, a spring for holding the rails in their normal position, an actuating mechanism, a horizontally-sliding element carried by the actuated mechanism and connected to the tie-rod for moving the switch-rail, a bar carried by the locomotive for moving the sliding bar, wheels carried by the actuating mechanism adapted to be revolved by the forward movement of the bar, depressible strips arranged parallel with the stationary and switch rails, and means connected with the wheels in the actuating mechanism for depressing said strips, and a spring for returning the wheels in the actuating mechanism to their normal position, as and for the purpose specified.

2. In an automatic switch for railways, the combination of stationary rails and movable switch-rails with a tie-rod connecting the movable rails together, and adapted to actuate the same, a spring normally holding the switch open, a bar carried by the locomotive, actuating mechanism arranged alongside of the track adapted to be actuated by the bar from the locomotive, said actuating mechanism connected with the tie-rod so as to close the switch, depressible strips arranged upon the inside of the stationary and movable rails, means for connecting the strip upon the movable rail with the strip upon the stationary rail when the switch is closed, and means extending from the actuating mechanism for primarily depressing said strips, the strips thereafter adapted to be held downward by the flange of the car-wheel, said strips being so connected to the actuating mechanism that the switch will be held closed as long as the strips are depressed, and springs for returning the mechanism to its normal position when the train has run from off the strips, as and for the purpose specified.

3. In an automatic railway-switch, stationary main rails, movable switch-rails, a tie-rod connecting the switch-rails together and adapted to move the same, a spring normally holding the switch open, an upright signal-post, two disks journaled loosely upon said signal-post, each of said disks provided with a slot formed concentric with the post, a crank-arm connected to the tie-rod and extending from the signal-post, said crank-arm extending upward through the slots in the disk, one link connected to each disk eccentrically, two actuating mechanisms located alongside of the track upon opposite sides of the signal-post, one link connected to the other actuating mechanism, a horizontal sliding trip-bar carried by the actuating mechanism, guides for said trip-bar, an actuating-bar carried by the locomotive adapted to slide the trip-bar forward, the link extending from the disks upon the signal-post connected to said trip-bar so as to revolve said disks and thereby close the switch when the trip-bar is forced forward, wheels carried by the actuating mechanism adapted to be partially revolved by the forward movement of the actuating-bar carried by the locomotive, depressible strips arranged upon the inside of the rails, mechanism extending from the wheels in the actuating mechanism to said strips, adapted to primarily depress the same, said strips thereafter being held downward by the flange of the car-wheel and preventing the opening of the switch and the return of the parts to their normal position until the strips are allowed to rise, and springs for returning the parts to their normal position, as specified.

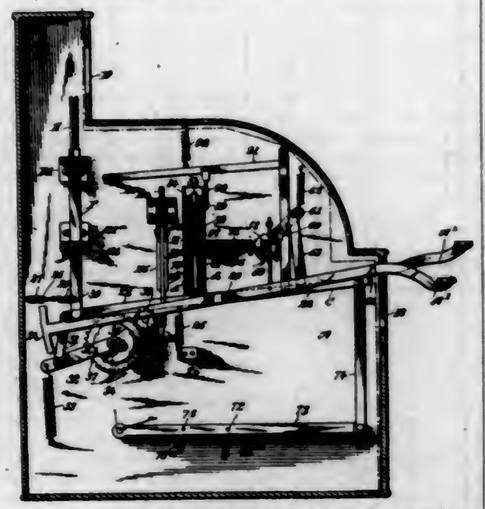
4. In combination with stationary rails, movable switch-rails with an actuating mechanism adapted to move the movable switch-rails, said actuating mechanism consisting of side pieces H beveled at their rear ends, guide-strips arranged and supported at a distance above the side pieces and being bent upward at their rear ends, a cross-piece adapted to slide between the side pieces and the guide-strips, a pyramidical trip carried by the cross-piece, a bar extending from said cross-piece to the tie-bar for actuating the same, wheels partially embedded and journaled in the forward end of the side pieces, said wheels being provided with slots adapted to receive the ends of the cross-piece, springs for normally holding the wheels in position to receive the cross-piece upon the forward movement of the same, the guide-strips being curved upward and over the wheels at a distance from the same, an actuating-bar carried by the locomotive adapted to enter the space between the side pieces and the guide-strips and force the cross-piece and trip forward into the trip-wheels, said actuating-bar then adapted to pass upward and over the slots and thereby press the trip downward so as to revolve the wheels one-quarter of a revolution, the actuating-bar then adapted to pass outward from the forward end of the actuating mechanism, depressible strips adapted to be primarily depressed by the turning of the wheels, and thereafter held depressed by the flange of the car-wheels, thereby holding the switch closed and preventing the return of the parts to their normal position until the train has passed off of these depressible strips, as and for the purpose specified.

5. In an automatic railway-switch, the combination of stationary rails, movable switch-rails, actuating mechanism, a bar carried by the locomotive, and springs for returning the parts to their normal position with depressible strips arranged inside and parallel with the stationary and movable rails, said strips being pivoted to the rails by several links so that they will be depressed throughout their length by any longitudinal movement imparted to the strips, means extending from said strips to the actuating mechanism for primarily

depressing the strips, said strips thereafter adapted to be held downward by the flange of the car-wheel so as to prevent the opening of the switch and the return of the parts to their normal position, the opposing ends of the strip upon the movable rail and the strips upon the stationary rail being coiled so as to interlock one with the other when the switch is closed, as and for the purpose specified.

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**756,082. CASH-REGISTER. JOHANN C. VAHJEN, New York, N. Y., assignor to John H. Vahjen, Brooklyn, N. Y. Filed Feb. 5, 1903. Serial No. 141,994. (No model.)**



*Claim.*—1. In a cash-register, a printing mechanism comprising key-levers, a support above the same, a key-operated bar pivoted at one end upon the support, a slide, a support therefor, a printing-segment pivoted in the slide, a rocking connection between the key-bar and the segment, a frame depressed by the key-levers, and a depressing connection between said frame and the slide carrying the printing-segment.

2. In a cash-register, a printing mechanism comprising a support, a key-operated bar pivoted upon the support, key-levers, a sliding and graduated connection between the key-levers and key-operated bar, a slide raised and lowered by the movement of the key-levers, and a printing-segment pivoted in the slide, rocked by the movement of the key-bar.

3. In a cash-register, a printing mechanism comprising a support, a key-operated bar pivoted at one end upon the support, key-levers, rods attached to the key-levers and passed through the key-operated bar, collars carried by the rods above the key-operated bar, which collars are graduated as to distance from the key-operated bar, a slide, a spring-controlled printing-sector pivoted in the slide, a rocking connection between the sector and key-operated bar, and means for raising and lowering the sliding support for the sector.

4. In a cash-register, a support, a frame mounted to slide in the support, a printing pendulum-sector mounted to rock in the frame, a key-lever and connections between the key-lever and sector, the frame being so timed that the machine in its action first locates the type on the pendulum-sector with reference to the surface to be printed upon and then carries the frame and the sector supported thereby to and from the material upon which the impression is to be made, as described.

5. In a cash-register, key-levers, pivotal supports therefor, an actuating-frame controlled by the movement of the key-levers, a fixed support, a key-bar pivoted at one end to the fixed support, connections between the said key-levers and key-bar, whereby to operate the latter by the movement of the former, a printing-sector, a sliding support in which the said sector is mounted, a rocking connection between the key-bar and the sector, a tension device adapted to hold the sector in normal position, a spring-controlled lever, and link connections between the said actuating-frame and the sliding support for the sector, whereby the said sector is raised and lowered also through the movement of the key-levers, as described.

6. In a cash-register, a printing-sector, a slide in which the said sector is mounted, a spring-controlled platen located beneath the type-section of the sector, an inking-ribbon having guided support between the said sector and platen, and tapes between which the said inking-ribbon passes, as and for the purpose specified.

7. In a cash-register, a printing-sector, a slide in which the said sector is mounted, a spring-controlled platen located beneath the type-section of the sector, an inking-ribbon having guided support between the said sector and platen, tapes between which the said inking-ribbon passes, independent feed devices for the said tapes, and a cutting device adapted to operate upon one of the tapes, as set forth.

8. In a cash-register, the combination with a series of key-levers, a fixed support, a key-bar pivoted at one end to the said support, rods pivoted to the key-levers and extending loosely through the key-bar, collars carried by the said rods and graduated with respect to the upper surface of the key-bar, a printing-sector, a slide in which the said sector is pivotally mounted, a rocking connection between the said sector and the said key-bar, an actuating-frame operated by the said key-levers, a spring-controlled lever, a support therefor, a connection between the said spring-controlled lever and the said slide for the sector, and a link connection between the actuating-frame and the said spring-controlled lever, which link has lost motion with respect to the spring-controlled lever, of a spring-controlled platen located beneath the type-section of the printing-sector, an inking-ribbon, supports therefor and guides for the said inking-ribbon, holding it horizontally between the said platen and the printing-surface of the said printing-sector, upper and lower tapes, one passed above and the other below the said inking-ribbon, independent feed devices for the said tapes, a knife adapted to operate upon the lower tape, a spring-controlled support for the knife, and connections, substantially as described, between the said actuating-frame, the feed devices for the tapes and the said knife, whereby the latter-named parts are operated as described, by the movement of the key-levers, as set forth.

9. In a cash-register, the combination with a series of key-levers, a support above the key-levers, a pivoted spring-controlled frame beneath the key-levers and depressed by a corresponding movement of the key-levers, a key-bar pivoted at one end of the said support, a slide, a support upon which the slide has guided movement, a printing-sector, spring-controlled in one direction, pivoted in said slide, a rocking connection between the key-bar and sector, a connection between said actuating-frame and the slide, whereby the raising and lowering of the same is timed, and connections between the key-bar and the key-levers, of a yielding platen beneath the printing-surface of the sector, an inking-ribbon, and top and bottom tapes having guided movement between the sector and platen, feed mechanism for the tapes, operated by the said actuating-frame, and a cutting mechanism for the lower tape, likewise operated by said actuating-frame, as specified.

10. In a cash-register, a series of key-levers, a tension-controlled frame pivoted beneath the key-levers and adapted to be operated in one direction by the action of the key-levers, a check-tape, a support therefor, a feed mechanism for the check-tape, operated by the movement of the said pivoted frame, a knife-carrier movable to and from the said check-tape, a spring-cushion for the knife-carrier, adapted to normally force the same in direction of the check-tape, a locking device for the knife-carrier, a trip for the locking device, and actuating communication between the knife-carrier and the trip for the locking device, as set forth.

11. In a cash-register, a series of key-levers, a tension-controlled frame pivoted beneath the key-levers, adapted to be operated in one direction by the action of the key-levers, a check-tape, a support therefor, a feed mechanism for the check-tape, operated by the movement of the said pivoted frame, a knife-carrier movable to and from the said check-tape, a spring-cushion for the knife-carrier, adapted to normally force the same in direction of the check-tape, a pivoted locking device for the knife-carrier, a lever pivoted below the locking device, a pull connection between the knife-carrier and said lever, a trip for the locking device carried by the said lever, and a connection between the free end of the lever and the pivoted frame, as specified.

12. In a cash-register, key-levers, a tension-controlled pivoted frame beneath said key-levers and operated thereby, a check-tape, a recording-tape, means for feeding both tapes by the action of the pivoted frame, an inking-ribbon between the tapes, a printing mechanism operated by the key-levers and pivoted frame, adapted for simultaneous impression on both tapes, and a cutting mechanism for one tape, actuated by the said pivoted frame, as specified.

13. In a cash-register, the combination with key-levers, a tension-controlled pivoted frame beneath said key-levers and operated thereby, a check-tape, a recording-tape, means for independently feeding both tapes by the action of the pivoted frame, an inking-ribbon between the tapes, and a printing mechanism operated by the key-levers and pivoted frame, adapted for simultaneous impression on both tapes, of a cutting mechanism for the check-tape, consisting of a fixed cylinder, a spring within the cylinder, a plunger operating in said cylinder, a knife at the upper end of the plunger, a projection from the plunger and a headed rod loosely passed through the projection, a weighted lock-lever adapted for engagement with the projection of the plunger, an operating-lever pivoted below the lock-lever, a connection between the said headed rod and operating-lever, a trip for the lock-lever carried by the operating-lever, and a connection between the operating-lever and said pivoted frame, as described.

14. In a cash-register, key-levers, a spring-controlled pivoted frame operated in one direction by the said key-levers, a printing mechanism operated from the said key-levers, an inking-ribbon in the path of the printing mechanism, spools and guides for the inking-ribbon, a recording-tape engaging with the guides for the inking-ribbon and with the upper surface of said ribbon, a table, a check-tape, a spool therefor, which check-tape passes over the said table and beneath and in engagement with the said inking-ribbon, means substantially as described, for feeding both tapes at different periods by the movement of the key-levers and pivoted frame, a knife operating to and from the check-tape to cut the same in given lengths, a locking device for the said knife, and a releasing device for the locking device, the locking device being automatically operated, and connections between the releasing device and the knife and the said pivoted frame, all combined for operation substantially in the manner described.

15. In a cash-register, a series of key-levers and a locking mechanism for all of the key-levers except the one operated, consisting of a main stationary plate having slots through which the key-levers pass, and forward and rear sliding plates of less vertical width than the main plate and provided with slots corresponding in number to those in the main plate through which the key-levers pass, which slots extend through their lower edges and form tongues between them, sundry of the tongues of the sliding plates between the slots therein being arranged to normally overlap the slots in the main plate, said tongues being also so arranged that when corresponding slots in the sliding plates are in registry with a given slot in the main plate all the other slots in the main plate will be obstructed by the tongues of the sliding plates, the tongues at one side of the center of each sliding plate being straight at their bottom edges while the tongues at the opposite side of the center have one or both of their lower corners inclined, as set forth.

16. In a cash-register, a series of key-levers and a locking mechanism for all of the key-levers except the one operated, consisting of a main stationary plate having slots through which the key-levers pass, and forward and rear sliding plates of less width than the said main plate and provided with slots corresponding in number to those in the main plate through which the key-levers pass, which slots extend through their lower edges and form tongues between them, sundry of the tongues of the sliding plates between the slots therein being arranged to normally overlap the slots in the main plate, said tongues being also so arranged that when corresponding slots in the sliding plates are in registry with a given slot in the main plate all the other slots in the main plate will be obstructed by the tongues of the sliding plates, the tongues at one side of the center of each sliding plate being straight at their bottom edges while the tongues at the opposite side of the center have one or both of their lower corners inclined, and tension centering devices for the said sliding plates, substantially as described.

17. In a cash-register, a series of key-levers and a locking mechanism for all of the key-levers except the one operated, consisting of a main stationary plate having slots through which the key-levers pass and forward and rear sliding plates having end movement on the main plate, which sliding plates are provided with slots corresponding in number to those in the main plate through which the key-levers pass, said slots in the sliding plates extending through their lower edges thus forming tongues, the sliding plates being narrower than the main plate, each sliding plate having the tongues between its slots straight at their lower ends at one side of the center and beveled at their lower edges at the opposite side of the center, said sliding plates being also so arranged on the main plate that the beveled tongues on the sliding plates are at opposite ends of the main plate, and tension-controlled centering devices which normally hold the beveled tongues of the sliding plates in obstructing position over sundry of the slots in the main plate, the two sliding plates having independent movement, as specified.

18. In a cash-register, upper and lower guide-bars having corresponding openings therein, a slide mounted on one of the guide-bars, having openings corresponding in number and location to those in the guide-bars, and tablet-bars adapted for movement in the openings in the guide-bars and slide, said tablet-bars having lower recesses the upper and lower walls of which are straight, while the upper walls of the upper recesses are straight and their lower walls are inclined downward, as set forth.

19. In a cash-register, upper and lower guide-bars having corresponding openings therein, a spring-controlled slide mounted upon the lower guide-bar, having openings corresponding in number and location to those in its supporting guide-bar, which openings in the slide normally extend beyond the end walls of the openings in the guide-bar supporting the slide, tablet-bars passed through the openings in the guide-bars and slide, being provided with lower rectangular recesses and upper recesses having straight upper and inclined lower walls, as set forth.

20. In a cash-register, the combination with upper and lower guide-bars having corresponding rectangular openings made therein, a spring-controlled sliding plate mounted upon the lower guide-bar and having rectangular openings corresponding in number and position to those in the guide-bars, opposing walls of the openings in the sliding plate being normally held to extend beyond similar walls in the guide-bar carrying the plate, and key-levers extending beneath the lower guide-bar, of tablet-bars rectangular in cross-section, mounted to freely slide in the openings in the two guide-bars and the sliding plate, which tablet-bars normally rest upon the key-levers and are provided with lower angular recesses in one side and upper recesses in the same side, which upper recesses have straight upper walls and lower inclined walls, substantially as described.

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**756,083. CASH-REGISTER. JOHANN C. VAHJEN, New York, N. Y., assignor to John H. Vahjen, Brooklyn, N. Y. Filed Apr. 28, 1903. Serial No. 154,641. (No model.)**



*Claim.*—1. A self-contained printing attachment to cash-registers, consisting of a key-operated bar adapted to be pivoted to a support, a slide adjacent to the pivoted end of the bar, independent of the support for the bar and arranged to operate with transverse relation thereto, an oscillating printing-sector mounted in the slide, a rocking connection between the key-operated bar and sector, and key operated means for raising and lowering the slide.

2. A self-contained printing attachment to cash-registers, consisting of a key-operated bar adapted to be pivoted to a support, a slide operating at an angle to the pivotal end of the bar and independent of the bar and its support, an oscillating printing-sector mounted in the slide, a rocking connection between the upper portion of the sector and pivot portion of the bar, and key-operated means for raising and lowering the slide, having timed action with relation to the means employed for rocking the sector, as described.

3. A self-contained printing attachment to cash-registers, consisting of a key-operated bar adapted to be pivoted to a support at

one end and provided with rods loosely passed therethrough and adapted for connection with the key-levers of the machine, stops limiting the downward movement of the rods and acting upon the said key-operated bar, a slide, an oscillating printing-sector pivoted in the slide, a rocking connection between the key-operated bar and the printing-sector, and an attachment to the slide for raising and lowering the same and carrying the printing-sector to and from an impression position, the rocking action of the sector being timed with reference to the end movement of the sector to print, as described.

4. A self-contained printing attachment to cash-registers, consisting of a key-operated bar adapted to be pivoted to a support at one end and provided with rods loosely passed therethrough and adapted for connection with the key-levers of the machine, stops limiting the downward movement of the rods and adapted to engage with the said key-operated bar, a slide, an oscillating printing-sector pivoted in the slide, a rocking connection between the key-operated bar and the printing-sector, an attachment to the slide for raising and lowering the same and carrying the printing-sector to and from the impression position, which attachment includes a spring-controlled lever having link connection with the slide, and an operating-bar adapted to be operated upon by the key-lever of the machine, having sliding pivotal connection with the spring-controlled lever, as specified.

5. In a cash-register, a series of key-levers, a pivoted frame operated by the manipulation of each key-lever, which frame extends beneath the key-levers, a slide mounted upon the casing of the machine, a key-operated bar in graduated connection with the key-levers, which connection consists of rods pivoted to the key-levers, passing loosely through the bar and adjustable stops on the rods above the bar, a sector, having type at its wider end, mounted to rock in the said slide, and means controlled by the key-levers, for raising and lowering the said slide and for rocking the sector, as described.

6. In a cash-reigster, a series of key-levers, a pivoted frame operated by the manipulation of each key-lever, a slide mounted upon the casing of the machine, a key-operated bar in graduated connection with the key-levers, a sector having type at its wider end mounted to rock in the said slide, a spring-controlled lever, a link connection between the said lever and the said slide, and a bar connected with the said pivoted frame, and slotted to receive a pin extending from the said spring-controlled lever, all arranged for operation as described.

7. A self-contained printing attachment to cash-registers, consisting of a pivoted frame adapted to be located beneath the key-levers of the machine and to be operated by the manipulation of each key-lever, a slide mounted upon the casing of the machine, a key-operated bar pivoted at one end, which key-operated bar is in graduated connection with each of the key-levers, said connection consisting of rods pivotally attached to the key-levers and passed loosely through the key-operated bar, and graduated stops adjustably located at the upper ends of the rods above the said key-operated bar, a sector having type at its wider end, mounted to rock in the said slide, a rocking connection between the said sector at its upper portion and the key-operated bar, link and lever connections between the said pivoted frame and the said slide, a table located below the sector, an inking-ribbon extending above the said table, guides for the inking-ribbon located one at each side of the sector, supports for the ribbon, tapes passed above and below the said inking-ribbon, roller-supports for both ends of one of the said tapes, a reel-support for one end of the other tape, and a cutting mechanism for the tape supported at one end only, as set forth.

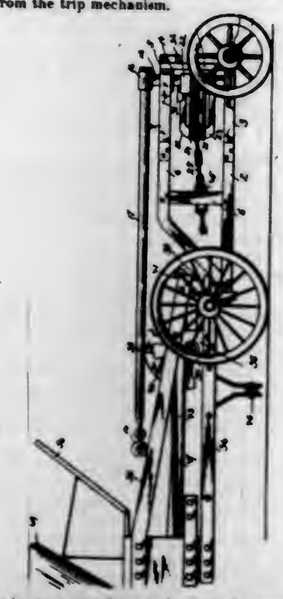
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**756,084. HORSE-POWER FOR BALING-PRESSES.** JOSEPH M. VALENTINE and EDWARD VALENTINE, Lincoln, Ill., assignors of one-half to Nathan R. Landauer, Lincoln, Ill. Filed May 6, 1903. Serial No. 155,919. (No model.)

*Claim.*—1. In a horse-power, the combination, of a power-shaft to which the sweep is connected, a segment loosely mounted on the shaft and having the chain attached to one end thereof, a bar fixed to the shaft, trip mechanism carried by the segment and with which the bar is adapted to engage, and means for operating said trip mechanism.

2. In a horse-power, the combination, of a power-shaft to which the sweep is connected, a segmental eccentric loosely mounted on the shaft and having the chain attached to the outer end thereof, a bar fixed to the shaft, trip mechanism carried by the segment and with which the bar is adapted to engage, and means for operating said trip mechanism.

3. In a horse-power, the combination, of a power-shaft to which the sweep is connected, a segment loosely mounted on the shaft and to which the chain is attached, trip mechanism carried by said segment, means for operating said trip mechanism, and a cross-bar fixed to the shaft and the ends thereof adapted to be engaged by and disengaged from the trip mechanism.



4. In a horse-power, the combination, of a power-shaft to which the sweep is connected, a cross-bar fixed to said shaft, a segment loosely mounted on the shaft and having the chain attached thereto, a crank mounted in the eccentric and adapted to be moved so that the connecting portion thereof will engage the ends of the cross-bar, and means for moving said crank to disengage the cross-bar.

5. In a horse-power, the combination, of the power-shaft to which the sweep is connected, a cross-bar on said shaft, a segment loosely mounted on the shaft and having the chain attached thereto, a crank mounted in the eccentric and adapted to be moved so that the connecting portion thereof will engage the ends of the cross-bar, and a cam-plate on the supporting-frame of the horse-power for moving said crank out of engagement with the cross-bar.

6. In a horse-power, the combination, of the power-shaft to which the sweep is connected, a cross-bar on said shaft, a segment loosely mounted on the shaft and to which the chain is attached, a crank mounted in the eccentric and adapted to be moved so that the connecting portion thereof will engage the ends of the cross-bar, rollers at the ends of the connecting portion of the crank and disposed beyond the sides of the eccentric, and a cam-plate on the supporting-frame on which said rollers ride to move the crank out of engagement with the cross-bar.

7. In a horse-power, the combination, of the power-shaft to which the sweep is connected, a cross-bar fixed to said shaft, a segment loosely mounted on the shaft and comprising arms carrying a grooved rim to which the chain is attached, the said arms being spaced apart, a crank mounted between the arms and carrying a roller with which the ends of the cross-bar are adapted to engage, rollers at the ends of the connecting portion of the crank, and a cam-plate on the supporting-frame and upon which the rollers ride to disengage the crank from the cross-bar.

8. In a horse-power for baling-presses, the combination with the supporting-frame comprising an axle, vertical standards connected by a cross-bar at their upper ends, and upper and lower longitudinal beams braced to the axle and upper cross-bar, of a vertical power-shaft supported in said frame, a segmental lever loosely mounted thereon and having its arms spaced apart, a cross-bar fixed to the shaft between the arms of the segment and adapted to rotate between said arms, a crank pivoted between a pair of the arms of the segmental lever, a stop on said lever adapted to limit the movement of the crank in one direction or when it is engaged by the cross-bar, and means on the supporting-frame for moving the crank out of engagement with the cross-bar.



9. In a horse-power for baling-presses, the combination with the supporting-frame comprising an axle, vertical standards connected by a cross-bar at their upper ends, and upper and lower longitudinal beams braced to the axle and upper cross-bar, of a vertical power-shaft supported in said frame, a segmental lever loosely mounted thereon and having its arms spaced apart, a cross-bar fixed to the shaft between the arms of the segmental lever and adapted to rotate between said arms, a crank pivoted between a pair of the arms of the segmental lever, a stop on said lever adapted to limit the movement of the crank in one direction or when it is engaged by the cross-bar, rollers at the ends of the connecting portion of the crank and beyond the sides of the lever, and cam-plates on the supporting-frame upon which said rollers ride to move the crank out of engagement with the cross-bar.

10. In a horse-power for baling-presses, the combination with the supporting-frame comprising an axle, vertical standards connected by a cross-bar at their upper ends, and upper and lower longitudinal beams braced to the axle and upper cross-bar, of a vertical power-shaft supported in said frame, a segmental lever loosely mounted thereon and having its arms spaced apart, a cross-bar fixed to the shaft between the arms of the segmental lever and adapted to rotate between said arms, a crank pivoted between a pair of the arms of the segmental lever, a stop on said lever adapted to limit the movement of the crank in one direction or when it is engaged by the cross-bar, and cam-plates on the supporting-frame adapted to move the crank out of engagement with the cross-bar; together with a chain attached to the segmental lever, and means adapted to move the lever in one direction or opposite to the movement imparted by the cross-bar.

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**756,085. WINDOW-SCREEN.** MELVIN G. VAN AUKEN and JAY J. MILLER, Battlecreek, Mich. Filed June 27, 1903. Serial No. 163,306. (No model.)



*Claim.*—1. A window-screen consisting of a sheet of wire-netting, metallic strips bent around the upper and lower edges of said sheet and lying in contact with the opposite faces thereof, metallic strips bent around the two side edges of said sheet and lying in contact with the opposite faces thereof, and connecting devices extending through said sheet and through both wings or branches of said strips, the looped portions of the side strips having their upper and lower ends open, being located beyond the ends of the top and bottom strips and the side edges of said sheet, and forming guide-rod passages.

2. A window-screen consisting of a body including a sheet of open-work material and having elongated slots along one of the sides thereof, and metallic strips bent around the side edges of said body, one of said strips being connected to said body, with provision for lateral movement, by connecting devices which pass through the two leaves of said strip and through said slots.

3. A window-screen consisting of a sheet of wire-netting, metallic strips bent around and secured to the upper and lower edges thereof, each provided with an elongated slot at one end, a connecting-strip between said metallic strips lying along one of the side edges of said sheet and having an elongated slot therein between the slots in said metallic strips, and metallic strips bent around the two side edges of said sheet, the looped portions of the latter strips having their upper and lower ends open, being located beyond the ends of the top and bottom strips and the side edges of said sheet, and one of the same being connected to the body of the screen, with provision for lateral movement, by connecting devices which pass through the two leaves of said strip and through said slots.

4. The combination with a pair of vertically-disposed guide-rods mounted in the opening of a window-frame, of a window-screen mounted to slide on said rods, the said screen comprising a body of open-work material, metallic strips embracing and connected to the side edges of said body, the looped portions of said strips having their upper and lower ends open, being located beyond the side edges of said body and embracing said rods, and one of said strips being rigidly secured to said body and the other being connected thereto with provision for lateral movement, and a spring connected with said body, located between the two parts of the rigidly-connected strip, and bearing against the adjacent guide-rod, as and for the purpose set forth.

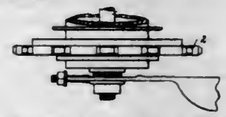
5. The combination with a window-frame having sockets in the sill thereof, and a window-screen, of a pair of guide-rods on which said screen is mounted to slide, whose lower ends are adapted to fit within said sockets, and movable thimbles for the upper ends of said rods having lateral passages therein, as and for the purpose set forth.

6. The combination with a window-frame having sockets in the sill thereof, and a window-screen, of a pair of guide-rods on which said screen is mounted to slide, whose lower ends are adapted to fit within said sockets, and pivotally-mounted laterally-swinging thimbles for the upper ends of said rods, the said thimbles cooperating with the window-frame when in one position, for retaining said rods in place, as and for the purpose set forth.

7. The combination with a window-frame having sockets in the sill thereof, and a window-screen, of a pair of guide-rods on which said screen is mounted to slide, whose lower ends are adapted to fit within said sockets, thimbles for the upper ends of said rods having side openings or passages therein, the said thimbles being movable away from the side walls of the opening in the window-frame to expose said passages and being movable toward said side walls to cover said passages, and means for retaining said thimbles in the latter position, as and for the purpose set forth.

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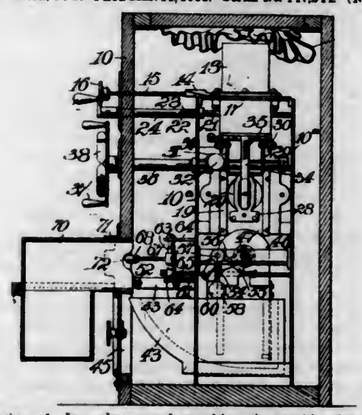
**756,086. INDEPENDENTLY-ROTATING WHEEL.** JOHANN J. WEILER, Mörchingen, Germany. Filed Nov. 7, 1902. Serial No. 130,401. (No model.)



*Claim.*—In a free-wheel cycle-driving mechanism the combination with a pawl-actuated driving-wheel and a freely-rotatable pawl-bearing sprocket-wheel at one side and a freely-rotatable pawl-guiding disk at the other side of the driving-wheel, of an annular rim, surrounding the driving-wheel and disk and attached to one surface of the said sprocket-wheel and a protecting-cover disk rigidly secured on the wheel-hub and registering with the said rim, so as to incase and protect the driving mechanism, substantially as described.

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**756,087. PHOTOGRAPH-MACHINE.** PIERRE V. W. WELSH, New York, N. Y. Filed Mar. 11, 1903. Serial No. 147,244. (No model.)



*Claim.*—1. In a photograph-machine, the combination with the photograph-plate holder, of a developing-tank arranged beneath the

plate-holder, a receiver arranged beneath the plate-holder and held in the developing-tank, said receiver being constructed to swing upward out of the said tank, a fixing-tank at one side of the developing-tank and an ejector arranged to push a plate from the receiver into the fixing-tank when the said receiver is swung upward from the developing-tank.

2. A machine of the kind described, comprising a plate-feed, a holder to receive a plate, means for guiding the plate from the feed to the holder, a developing-tank beneath the holder, a receiver hanging normally in the developing-tank and arranged to swing upward out of the tank, a fixing-tank at one side of the developing-tank, and means for ejecting a plate from the receiver when the latter is swung upward from the developing-tank and discharging the said plate into the fixing-tank.

3. In a photograph-machine, the combination with the swinging receiver constructed to permit the passage of a photograph-plate through it, of a spring on the receiver, a boss carried by the spring and extending into the path of a plate as it goes through the receiver, and a stop-pin extending into the path of the boss so that when the receiver is swung upward the pin will engage the boss and remove it from its normal position.

4. In a photograph-machine, the combination with a swinging receiver constructed to permit the passage of a photograph-plate through it, of a striking-arm swinging to engage a plate in the receiver, and means by which the movement of the receiver causes the arm to act.

5. In a photograph-machine, the combination with a receiver arranged to permit the passage of a photograph-plate through it, of a striking-arm swinging adjacent to the receiver so as to engage a plate and eject it from the receiver.

6. In a photograph-machine, the combination with a bath, of a swinging receiver adapted to carry a photograph-plate into and out of the bath, and a swinging striking-arm arranged to engage the plate when it is removed from the bath and eject it from the receiver.

7. In a photograph-machine, the combination with a bath, of a receiver to carry the plate into and out of the bath, and a swinging striking-arm arranged to engage the plate when it is lifted from the bath and remove it from the receiver.

8. In a photograph-machine, the combination with a bath, of a receiver arranged to carry a photograph-plate into and out of the bath, a striking-arm to engage the plate when it is lifted from the bath and remove it from the receiver, and means for actuating the striking-arm, said means being controlled by the mechanism which operates the receiver so that the striking-arm will act at the right moment in the movement of the receiver.

9. In a photograph-machine, the combination with a bath, of the receiver arranged to carry a photograph-plate into and out of the bath, a swinging spring-actuated striking-arm arranged to engage and eject a plate carried by the receiver, means for actuating the receiver, and an operative connection between the receiver-actuating means and the striking-arm whereby the movement of the former releases the latter.

10. In a photograph-machine, the combination with the vertically-swinging receiver arranged to carry a photograph-plate into and out of a bath, of a rotating shaft carrying the receiver, a spring-pressed striking-arm arranged to engage a plate in the receiver and eject said plate, and a cam and lever mechanism for moving the said striking-arm against the tension of its spring and for releasing the arm.

11. In a photograph-machine, the combination with the swinging receiver arranged to carry a photograph-plate into and out of a bath, a rotating shaft carrying the said receiver, a spring-pressed striking-arm to engage a plate in the receiver, and means as the weighted pawl, the crank mechanism actuated thereby and the cam on the rotating shaft, to engage the pawl, for moving the striking-arm against its spring and for releasing the said arm.

12. In a photograph-machine, the combination with a developing-bath and a fixing-bath, of a swinging receiver adapted to carry a photograph-plate into and out of the developing-bath, and a swinging ejector arranged to throw a plate from the receiver as the latter leaves the developing-bath and carry the said plate into the fixing-bath.

13. In a photograph-machine, the combination with the developing-bath inside the machine and the fixing-bath outside the machine, of a receiver to carry a photograph-plate into and out of the developing-bath, an ejector to throw the plate from the receiver, and guiding means to carry the ejected plate into the fixing-bath.

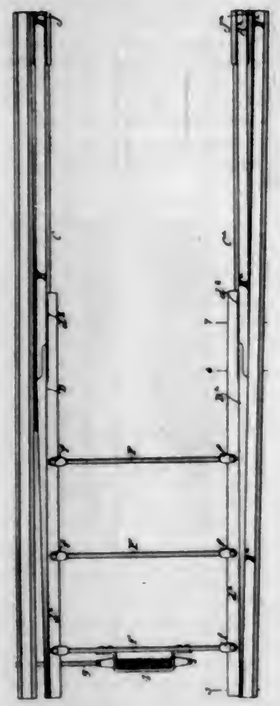
14. In a photograph-machine, the combination with the internal developing-tank, of the external fixing bath or tank arranged on one side of the machine, a guide-chute leading from within the machine through the wall thereof and into the fixing-tank, and ejecting means for discharging photograph-plates from the developing-tank through the chute into the fixing-tank.

15. In a photograph-machine, the combination with the internal developing-tank, and means for discharging a plate from the tank, of a fixing-tank detachably secured to one side of the machine, and a chute connecting the fixing-tank with the interior of the machine, the said chute being arranged to receive the plates discharged from the developing-tank and guide them into the fixing-tank.

16. In a photograph-machine, the combination with the internal developing-tank, and means for discharging a photograph-plate therefrom, of a guide-chute extending through the wall of the machine and projecting laterally therefrom, the said chute being arranged to receive the plates discharged from the developing-tank, and a fixing-tank detachably secured to the guide-chute and arranged to receive the plates from the chute.

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**756,088. RAILWAY-SWITCH.** WILLIAM WHARTON, Jr., Philadelphia, and VICTOR ANDRÉE, Ridley Park, Pa., assignors to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Dec. 30, 1903. Serial No. 187,136. (No model.)



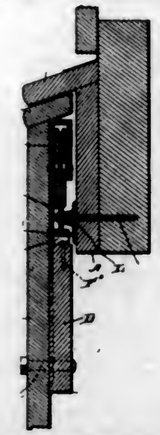
*Claim.*—1. The combination in a railway-switch, of a switch-rail made in two sections, and a reinforcing bar or plate secured to the web of the point-section and to the web of the body-section, substantially as described.

2. The combination in a railway-switch, of the body-section of a switch-rail, a point-section having a prolongation beyond the joint extending longitudinally along the web of the body-section, a reinforcing bar or plate on the opposite side of the body-section and extending beyond the joint along the side of the point-section, and means for securing the several parts together, substantially as described.

3. The combination in a railway-switch, of the body portion of a switch-rail, a point-section having a prolongation extending beyond the joint along the web of the body-section, a reinforcing bar or plate on the opposite side of the body-section and extending beyond the joint along the side of the point-section and increased in thickness at the joint, and means for securing the several parts together, substantially as described.



**756,089. BARN-DOOR HANGER.** WALTER S. WILSON, Conneaut Lake, Pa. Filed Mar. 19, 1902. Serial No. 99,008. (No model.)



*Claim.*—In a device of the character described, a hanger-strap having diverging strips at one end and a housing formed at its opposite end, a wheel journaled in the housing, a cleat having recesses on its inner surface approximately the shape of the diverging strips of the hanger-strap, bolts run through the cleat and sheathing of the door whereby the hanger is secured to a door, a guide having an eye formed intermediately its length and provided with apertures near its ends, said guide adapted to seat on the top edge of the cleat and secured to the cleat by means of nails and to the hanger by a bolt run through the eye and hanger, and a suitable track secured to the wall.

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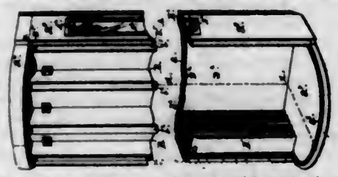
**756,090. CARRIAGE-CURTAIN FASTENING.** JAMES M. YANKIE, Washington Court-House, Ohio. Filed Oct. 16, 1903. Serial No. 177,335. (No model.)



*Claim.*—A device for fastening curtains comprising in combination with a curtain, a flexible apertured disk, a segment, a disk-holding member made of a piece of metal which is semicylindrical in cross-section, the outer edge of said member having integral spurs K' which contact with the outer circumference of said disk and pass through said curtain and clenched thereto, the inner edge of said member having spurs engaging said flexible disk adjacent to the marginal edge of the aperture in the disk, combined with a flexible button and support therefor, said button being slightly larger in diameter than the disk and over which said disk is adapted to be passed, as set forth.

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**756,091. TELEPHONE-CABINET.** WILLIAM B. ALTICK, Lancaster, Pa. Filed May 16, 1902. Serial No. 107,585. (No model.)



*Claim.*—1. In a cabinet, a casing comprising a back wall-plate, a top plate and a bottom plate, side boards secured to the back plate and extending from the top to the bottom plate, packing-strips along the front edges of the side boards, an extensible wall comprising movable posts and foldable wings adapted to close the forward portion of the casing between the top and bottom plates, and means on said casing for admitting light thereto, substantially as described

2. In a cabinet, a casing comprising a wall-plate with top and bottom plates projecting in parallel planes from the upper and lower ends thereof but perpendicular therewith, and side boards secured to said top and bottom plates and to said wall-plate, said side boards closing the rearward portions of the sides of said casing, with transparent plates in said top plate and one of said side boards, and an extensible wall made in one section but composed of movable posts and foldable wings adapted to close or open the forward portion of said casing between said top and bottom plates, substantially as described and for the purpose hereinbefore set forth.

3. In a cabinet, a casing comprising a back wall-plate, a top plate and a bottom plate projecting from the said wall-plate, side boards secured to the wall-plate and extending from the top to the bottom plate, said top plate and side boards having openings, transparent plates seated in the openings, and an extensible wall having one end secured to one of the side boards and comprising movable posts and hinged wings adapted to close the forward portion of the casing, substantially as described.

4. In a cabinet, a casing, an extensible wall comprising movable posts and hinged wings adapted to close the casing, and a lining covering the interior of said wall, substantially as described.

5. In a cabinet, a casing comprising a back plate, a top plate, a bottom plate and an extensible wall composed of movable posts and hinged wings, a cushioning-packing covering the back of the said back plate, and a cushioning-packing covering the bottom of the said bottom plate, substantially as described.

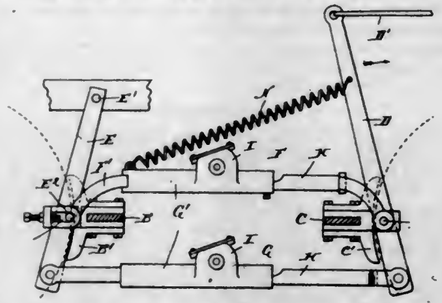
6. In a cabinet, a casing comprising a back wall-plate, a top plate and a bottom plate projecting from said wall-plate, said plates having semicircular forward ends and provided with a groove and a guideway, side boards secured to the wall-plate and extending from the top to the bottom plate, an extensible wall composed of movable posts and hinged wings adapted to close and open the forward portion of the casing, and vertical rollers engaging in said groove and way for supporting and guiding said wall, substantially as described.

7. In a cabinet, a casing, a closure for said casing comprising movable posts and hinged wings, swiveled rollers for supporting the closure, and rollers for guiding the closure, substantially as described.

8. In a cabinet, a casing having a back plate provided with parallel top and bottom plates, said plates having rearward straight sides and semicircular forward ends, side-closing boards secured to the said straight sides, said top plate provided with a horizontally-disposed roller-way and said bottom plate having a corresponding roller-groove, an extensible wall composed of movable posts each having a pair of vertically-journaled rollers at its upper end engaging in said way and a swiveled roller on its lower end engaging in the groove, pairs of wings hinged together and having their inner edges hinged to the posts, a lining covering said posts and wings rigidly secured to the forward end post and to the rear end post, said lining extending back of said rear post and secured to the back plate, transparent plates secured in the top plate and one of the side boards, and means for moving the extensible wall to open and close the forward portion of the casing, substantially as described.

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**756,092. BRAKE-ADJUSTER.** FRANKLIN E. BEATTY, Mount Airy, Pa., assignor of one-half to D. Dawson Yeakel, Chestnut Hill, Pa. Filed June 30, 1903. Serial No. 163,819. (No model.)



*Claim.*—1. In a brake-adjuster, the combination of brake-beams, brake-shoes attached thereto with an operating-lever pivoted intermediate of its two ends to one brake-beam, and operating connection connected to the upper end of said lever, a second lever pivoted at its upper end to the car, said second lever being pivoted intermediate of its two ends to the other brake-beam, a telescoping

connection consisting of a barrel and plunger therein, a clutch carried by the barrel and operating upon the plunger so as to allow the same to be withdrawn but preventing its return, the plunger being pivoted to the brake-beam to which the operating-lever is connected, a connection between the barrel of said hanger and the other brake-beam, said connection being provided with a slot, a pin carried by the brake-beam extending through the slot, a spring secured to the barrel of the telescopic connection at one end, and to the operating-lever at the other end, a second telescoping connection consisting of a barrel and plunger fitting therein, a clutch carried by the barrel and operating upon the plunger so as to allow the withdrawal of the same but preventing its return, said plunger being pivoted to the lower end of the operating-lever and the barrel being pivoted to the lower end of the other lever, as and for the purpose specified.

2. In a brake-adjuster, two brake-beams, brake-shoes carried by said brake-beams, an operating-lever adapted to be operated from its upper end, said operating-lever being pivoted intermediate of its two ends to one brake-beam, a second lever pivoted at its upper end to the car-body and pivoted intermediate of its two ends to the other brake-beam, a telescopic connection connecting the lower ends of each of the levers, said telescopic connection consisting of two parts operating one in the other, means for allowing the separation of the two parts but preventing their return, a second telescopic connection extending between the two brake-beams, said connection consisting of two parts operating one in the other, means for allowing the separation of the two parts but preventing their return, one of the parts being pivoted to one brake-beam, the other part being provided with a slot, a pin secured to the other brake-beam extending in the slot, and means for regulating the movement of the pin within the slot, and a spring connected at one end to the second telescopic connection and at the other end to the operating-lever, as and for the purpose specified.

3. In a brake-adjuster, the combination of a car-body, wheels, brake-beams and brake-shoes with an operating-lever pivoted intermediate of its two ends to one brake-beam, a second lever pivoted at its upper end to the car-body, and pivoted intermediate of its two ends to the other brake-beam, a connection extending between the lower ends of the two levers, a connection extending between the two brake-beams, said last-named connection being slotted so as to regulate the distance of the shoes from the wheels when the brake is off, adjustable means for varying the distance, and means whereby the connections will be lengthened as the brake-shoes and wheels are worn away so as to keep a predetermined distance between the same, as specified.

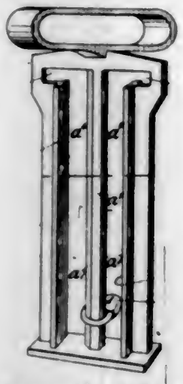
4. In a brake-adjuster, the combination in a car-body, wheels, brake-beams and brake-shoes with an operating-lever pivoted intermediate of its two ends to one brake-beam, a second lever pivoted to the car-body at its upper end and pivoted intermediate of its two ends to the other brake-beam, a telescopic connection consisting of a barrel and plunger fitting therein, the plunger being pivoted to the lower end of the operating-lever, and the barrel being pivoted to the lower end of the other lever, a friction-clutch carried by the barrel adapted to operate upon the plunger so as to allow the withdrawal of the same but preventing its return, a second telescopic connection consisting of a barrel and plunger, a clutch carried by the barrel operating upon the plunger to allow the withdrawal of the same but preventing its return, the plunger being pivoted to one brake-beam, the barrel being provided with a slot, a pin connected to the other brake-beam extending into the slot, a set-screw limiting the movement of the pin within the slot, and a spring connected at one end to the barrel of the last-named telescopic connection and at the other end to the operating-lever above its connection with the brake-beam, as specified.

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**756,093. FILE OR CARRIER FOR MINERS' PICK-BLADES OR LIKE TOOLS. JOHN BESTON and JAMES WARDALL, Hucknall, Torkard, England. Filed Apr. 20, 1903. Serial No. 153,533. (No model.)**

*Claim.*—1. A file or carrier for miners' pick-blades (and other like tools) consisting of a body provided at one end with a handle and at the other end with a base-plate, the said body being formed with tenons or dovetails down and into which the pick-blades (having the usual recess) are adapted to slide and engage, and means for locking the said blades in place, substantially as described.

2. A file or carrier for miners' pick-blades (and other like tools) consisting of a body terminating at its upper end in a handle and at its lower end in a base-plate and formed with vertical bars (a central and two outer ones) having slots or apertures between them, the inner face of the outer bars being formed with tenons into which the pick-blade having a recess is adapted to engage while the base of said blade rests against the central bar, a gap at the upper end of each of the slots or apertures to permit the introduction of the blades, and a padlock for locking the blades in place, substantially as described.

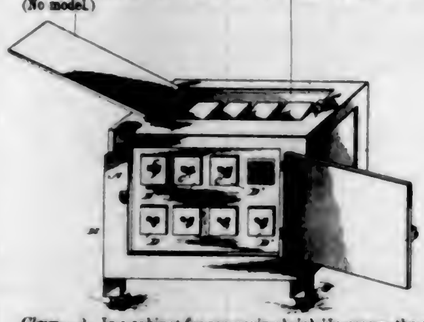


3. A file of the character described, comprising a central bar and a side bar arranged on each side of said central bar, whereby two separate rows of picks may be held by said file, one being arranged between each of said side bars and said central bar.

4. A file of the character described, comprising a central bar and a side bar arranged on each side of said central bar, whereby two separate rows of picks may be held by said file, one being arranged between each of said side bars and said central bar; and means for locking the picks in position.

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**756,094. CABINET FOR BRICK ICE-CREAM. WALTER R. BROWN, Carrollton, Mo. Filed July 31, 1902. Serial No. 117,900. (No model.)**



*Claim.*—1. In a cabinet for preserving brick ice-cream, the combination of a shell having tubes or tunnels extending horizontally through it in parallel series said tubes or tunnels connecting rigidly with the front and rear walls of the shell and forming an immovable part thereof and said tubes having their front ends opening through the front wall of the shell, and said tubes separated from each other on all sides to allow a refrigerating material to inclose the same, and removable trays fitting the tubes or tunnels and having front walls forming closures for the open ends of the tubes.

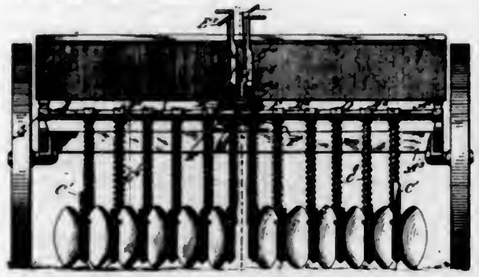
2. An improved cabinet for preserving brick ice-cream consisting of a shell having vertical, parallel walls and a bottom, and having an open top, tubes extending horizontally through the shell from front to rear thereof and having open ends exposed through the front wall, said tubes parallel and separated from each other to form surrounding spaces for refrigerating material; trays fitting the tubes and having enlarged front plates to engage the front wall of the shell and form a closure for the open ends of the tubes; and an exterior box or case having a top door which, when closed, forms a closure for the open top of the shell, and a side door affording access to the trays and open ends of the tubes.

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**756,095. GRAIN-DRILL. ROBERT D. BROWNING, Orange, Va. Filed May 28, 1903. Serial No. 159,097. (No model.)**

*Claim.*—1. The combination with separate shaft-sections, of heads secured on the adjacent ends of said sections, stands having bearings for said heads, a rack-segment on one of said stands, a handle-lever on the head journaled in the stand provided with the rack-segment, a pawl on said lever for engaging such rack-segment, a rack-segment in connection with said handle-lever, and a handle-lever on the other head and provided with a pawl for engagement with the said latter rack-segment.





2. The combination of two shaft-sections in alinement, an independent support for the inner end of each shaft-section, independent rocking means at the adjacent ends of said shaft-sections, devices for locking the rocking means of the first section in any desired position, devices for locking the rocking means of the second shaft-section to those for rocking the first shaft-section, and means at the adjacent ends of the shaft-sections to prevent said sections from pulling in a direction from each other.

3. The combination of the shaft-sections means for rocking one of said sections, devices for locking said means in any desired adjustment, means for rocking the other shaft-section, devices for locking said rocking means to the rocking means of the first shaft-section, and means at the adjacent ends of the shaft-sections to hold said sections against movement in a direction from each other.

4. In a drill, a controlling-bar rotatably mounted on the frame of the drill, said bar being divided into sections each capable of independent movement and provided at their meeting ends each with a rigidly-secured head one of said heads having a recess in its end and the other having a journal projection taking into said recess, an angle bearing-plate for each of said heads, said angle-plates having upright extensions with bores into which said heads are received, an operating-lever for each head, said levers being adjacent each other between said upright extensions, one of said extensions having its upper edge provided with a rack, the lever adjacent said extension having a pawl on its outer side adapted to engage said rack the same lever carrying on its inner side a rack, a pawl on the inner side of the other lever adjacent said latter rack and adapted to engage the same, said levers being provided at their upper ends with handles, and adjacent each handle, a handle-lever for the convenient operation of each of said pawls.

5. In a drill, a controlling-bar rotatably mounted in the frame of the drill, said bar being divided into sections, each capable of independent movement and provided with means for journaled engagement with each other at their meeting ends, bearings on the drill for said sections at their meeting ends, an operating-lever for each section, adjacent its bearing, a latch on each lever, a rack on the bearing adjacent one of the levers for engagement by the latch of the lever, a rack on said lever, for engagement by the latch of the other lever, as specified and for the purpose set forth.

6. In a drill, a controlling-bar rotatably mounted on the frame of the drill, said bar being divided into sections, each capable of independent movement, rigidly-secured heads at the meeting ends of said sections, a bearing-plate for each of said heads, said plates having upright extensions with bores into which said heads are received, an operating-lever for each head, means for locking one of said levers in adjustable engagement with the drill, and means for locking the adjacent lever into adjustable engagement with said first-named lever, said levers being located between said upright extensions and thereby held, together with their respective heads, against movement in a direction from each other.

7. The combination with a drill having disks, or groups of disks, of a controlling-bar for said disks, said bar being divided into a number of sections one for each disk or group of disks to be controlled, independent support for said sections at their meeting ends said sections being each adapted for independent movement, means for locking one section of said divided bar in adjustable engagement with the drill, and means for locking the adjacent section of said divided bar into adjustable engagement with said first-named bar as set forth.

8. In a drill a controlling-bar rotatably mounted on the frame of the drill said bar being divided into sections capable of independent movement, adjacent operating-levers at the meeting ends of the shaft-sections means on the inner face of one of said levers to be engaged by means on the inner face of the other lever to lock the two levers into engagement with each other, and means for holding said levers against lateral movement in a direction from each other.

9. The combination in a drill, of controlling shaft-sections in alinement, independent supports for the inner adjacent ends of said sections, means for rocking one of said sections, means for rocking the other shaft-section, and detent means for securing said shaft-sections in different adjustments.

10. The combination in a drill, of the drill-frame, controlling shaft-sections in alinement, heads at the inner adjacent ends of said shaft-sections, independent bearings on the frame for the said heads, levers connected with the heads and detent devices substantially as set forth.

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**756,096. HAND-TRUCK. EDGAR J. BRYAN, Riverside, Cal., assignor of one-half to Albert W. Miller, Riverside, Cal. Filed June 9, 1903. Serial No. 160,690. (No model.)**



*Claim.*—1. The combination with a truck, of clamping members movable transversely of the truck to clamp and release the load, and operating mechanism positively actuated by the foot to move the clamping members in each direction, and arranged to lock the clamping members in their open position and to permit them to swing freely therefrom when released, substantially as described.

2. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, and means for enabling the clamping members to be positively moved in each direction by the foot, and arranged to lock the clamping members in their open position, substantially as described.

3. The combination with a truck, of clamping members movable inward and ontward to clamp and release the load and having load-engaging portions lying beyond the truck, and means for enabling the clamping members to be positively moved in each direction by the foot, and arranged to lock the clamping members in their open position, substantially as described.

4. The combination with a truck, of angular clamping members pivotally connected with the truck and movable inward and outward to clamp and release the load, and means for enabling the clamping members to be positively moved in each direction by the foot, and arranged to lock the clamping members in their open position, substantially as described.

5. The combination with a truck, of angular clamping members pivotally connected with the truck and movable inward and outward to clamp and release the load and provided with load-engaging portions lying beyond the truck, and means for enabling the clamping members to be positively moved in each direction by the foot, said

means forming a lock for holding the clamping members in their open position, substantially as described.

6. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, and operating mechanism adapted to lock the clamping members in their open position and embodying a foot-piece in operative relation with the clamping members for enabling the same to be positively moved in one direction by the foot, and a foot-lever for enabling the clamping members to be positively moved in the opposite direction by the foot, substantially as described.

7. The combination with a truck, of clamping members movable inward and outward to clamp and release the load and provided with load-engaging portions lying beyond the truck, and operating mechanism forming a lock for holding the clamping members in their open position and embodying a foot-piece in operative relation with the clamping members for enabling the same to be positively moved in one direction by the foot, and a foot-lever for enabling the clamping members to be positively moved in the opposite direction by the foot, substantially as described.

8. The combination with a truck, of angular clamping members pivotally connected with the truck and movable inward and outward to clamp and release the load and provided with load-engaging portions lying beyond the truck, and operating mechanism forming a lock for holding the clamping members in their open position and embodying a foot-piece in operative relation with the clamping members for enabling the same to be positively moved in one direction by the foot, and a foot-lever for enabling the clamping members to be positively moved in the opposite direction by the foot, substantially as described.

9. The combination with a truck, of pivoted clamping members movable inward and outward to engage and release the load and having load-engaging portions lying beyond the truck, bars disposed transversely of the truck and connected with each other and with the clamping members, and arranged to lock the clamping members in their open position, and operating mechanism connected with the bars to open and close the clamping members, substantially as described.

10. The combination with a truck, of clamping members movable transversely of the truck to clamp and release the load, transversely-disposed bars connected with each other and with the clamping members, and arranged to lock the latter in their open position, and means for operating the bars to open and close the clamping members, substantially as described.

11. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars disposed substantially transversely of the truck and connected with the clamping members and with each other, and arranged to lock said clamping members in their open position, and means for enabling the bars to be positively actuated in each direction by the foot to effect the opening and closing of the clamping members, substantially as described.

12. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars connected with the clamping members and with each other and movable in opposite directions to open and close the clamping members, and arranged to lock the latter in their open position, and means for enabling the bars to be positively moved in both directions by the foot, substantially as described.

13. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars disposed transversely of the truck and connected with each other and with the clamping members and movable in opposite directions to open and close the latter, said bars being arranged to lock the clamping members in their open position, a foot-piece for enabling the bars to be positively moved in one direction by the foot, and a foot-lever for enabling the bars to be positively moved in the opposite direction by the foot, substantially as described.

14. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars connected with each other and with the clamping members and movable in opposite directions to open and close the clamping members, and arranged to lock the latter in their open position, and operating mechanism for enabling the bars to be positively actuated by the foot in both the opening and closing movements of the clamping members, substantially as described.

15. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars pivotally connected with the clamping members and with each other and movable in opposite directions to carry the pivots thereof into and out of substantial alinement for opening and closing the clamping members and for locking the same in an open position, and means for operating the bars, substantially as described.

16. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars connected with the clamping members and movable in opposite directions to open and close the same and for locking the clamping members in an open position, and means for operating the bars and for carrying the same into and out of their locked relation, substantially as described.

17. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, bars connecting with the clamping members and arranged at an angle to each other when the clamping members are in engagement with the load, said bars being adapted to lock the clamping members in their open position, and means for operating the bars for swinging the same from such position to a position with their pivots in substantial alinement to lock the clamping-bars in an open position, substantially as described.

18. The combination with a truck, of clamping members movable inward and outward to clamp and release the load and provided with load-engaging portions lying beyond the truck, bars connected with the clamping members and movable in opposite directions to open and close the same and for locking the clamping members in an open position, and means for operating the bars to carry the same into and out of their locked relation, substantially as described.

19. The combination with a truck, of angular clamping members pivotally connected with the truck and arranged to swing inward and outward to clamp and release the load and provided with load-engaging portions lying beyond the truck, bars connected with the clamping members and with each other and movable in opposite directions to open and close the clamping members and for locking the same in an open position, and means for operating the bars for carrying the same into and out of a locked relation, substantially as described.

20. The combination with a truck, of pivoted clamping members, bars pivotally connected with each other and with the clamping members, one of the bars being extended inward beyond the other and provided with a foot-piece adapted to be engaged by the foot to move the bars in one direction, and means for moving the bars in the opposite direction, substantially as described.

21. The combination with a truck, of clamping members movable inward and outward to engage and release the load, bars connected with the clamping members and with each other, the inner end of one bar being extended beyond the other and provided with a foot-piece arranged to be engaged by the foot to move the bars in one direction, and a foot-lever for moving the bars in the opposite direction, substantially as described.

22. The combination with a truck, of clamping members movable inward and outward to engage and release the load, and bars connected with the clamping members and with each other, the inner end of one of the bars being extended beyond the other and provided with a foot-piece arranged to be engaged by the foot, substantially as described.

23. The combination with a truck, of pivoted clamping members, transverse bars pivoted at their outer ends to the members and similarly connected at their inner ends and arranged to swing in opposite directions to carry the pivots into and out of substantial alinement, to lock the clamping members in their open position and to release them therefrom, a movably-mounted fulcrum, and an operating-lever mounted on the fulcrum and connected with the bars, substantially as described.

24. The combination with a truck, of clamping members movable inward and outward to engage and release the load, approximately transverse bars connected with the clamping members and arranged to swing in opposite directions to open and close the same, said bars being adapted to lock the clamping members in their open position, a fulcrum-link pivoted at its outer end to the truck and arranged at an angle to the frame thereof, and a foot-lever fulcrumed between its ends on the link and connected at its inner end with the bars, substantially as described.

25. The combination with a truck, of clamping members movable inward and outward to clamp and release the load, approximately transverse bars pivotally connected with the clamping members and with each other and arranged to swing in opposite directions to carry the pivots thereof into and out of substantial alinement, one of the bars being provided with an extension arranged to engage the other bar, and a foot-lever connected with the bars, substantially as described.

26. The combination with a truck, of clamping members composed of outer engaging portions or jaws, transverse arms extending inward from the same, and longitudinal arms arranged at the inner ends of the transverse arms and pivotally connected with the truck, approximately transverse bars connected with the clamping members and with each other and movable in opposite directions to open and close the members, and arranged to lock the latter in their open position, and means for operating the bars, substantially as described.



## 756,097. NET FOR HOLDING LIVE FISH. WILLIAM B. BURROUGHS, Baltimore, Md. Filed June 23, 1903. Serial No. 162,707. (No model.)



*Claim.*—1. A device of the character described, comprising a net open at one end, suitable stretching devices, a funnel-shaped portion secured to the open end of the net and provided with weights, substantially as and for the purpose set forth.

2. A device of the character described, comprising a net open at one end, suitable stretching devices, a funnel-shaped portion entering the open end of the net and open at its bottom, weights attached to the funnel portion for the purpose set forth, and securing means for the whole device, substantially as described.

3. A device of the character described, comprising a net open at one end, an expanding or stretching ring at each end of said net, a funnel portion open at its lower end and entering the open end of the net, weights attached to the funnel portion for the purpose set forth, and securing means for the whole device, substantially as described.

4. A device of the character described, comprising a collapsible net open at one end, and having a stretching or expanding ring at each end, a cone of flexible material entering the open end of the net and having weights secured to its bottom end for the purpose set forth, and securing means for the net.

5. A device of the character described, comprising a net closed at one end, suitable stretching devices, a receiving portion open at its lower end and entering the open end of the net, said receiving portion being of collapsible material and provided with weights for the purpose set forth.

## 756,098. CORN HUSKER AND SHREDDER. GEORGE F. CONNER, Port Huron, Mich. Filed Feb. 17, 1902. Serial No. 94,553. (No model.)

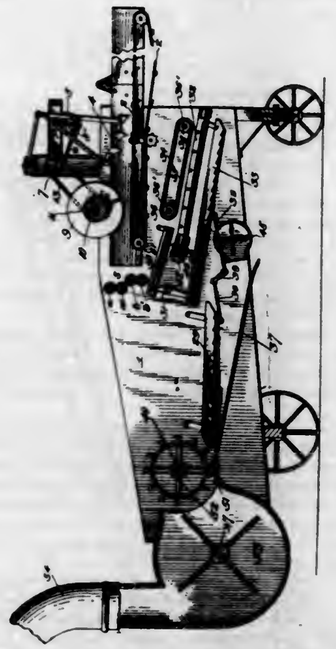
*Claim.*—1. A plurality of pairs of snapping-rolls mounted in different planes, one pair of rolls being out of alinement with another pair, the axes of said rolls lying transverse to the line of action of the feeder in planes parallel to the line of action of the feeder.

2. In a machine of the character described, the combination with a feeder; of two pairs of snapping-rolls disposed in different vertical planes each pair in a single vertical plane and arranged at right angles to the feeder.

3. In a machine of the character described, the combination with a feeder; of two pairs of snapping-rolls, one pair being located substantially in the plane of delivery of the feeder to act upon the lower layer of stalks, and the other pair being located above the plane of the feeder to act upon the upper layer of stalks, substantially as described.

4. A plurality of pairs of snapping-rolls mounted in different vertical planes, one pair of rolls above and out of alinement with another pair.

5. A plurality of pairs of snapping-rolls mounted in different vertical planes, one pair of rolls above and out of alinement with another pair, each pair comprising two rolls rotative in opposite directions, one roll of each pair being movably mounted, and feeding devices having the range of the plurality of pairs of snapping-rolls collectively.



6. In combination, a feeder, and a battery of pairs of cofeeding snapping-rolls mounted in different vertical planes, each pair in a single plane in front or rear of the plane of another pair and at right angles to the feeder, one pair being adapted to direct or deflect a portion of the material toward another pair.

7. In a machine of the character described, the combination with a feeder; of a plurality of pairs of snapping-rolls cooperating therewith, said pairs of rolls being located in different vertical and horizontal planes with one pair closer to the feeder than the other pair.

8. In a machine of the character described, the combination with a feeder; of a battery or series of sets or pairs of snapping-rolls located in different vertical and horizontal planes, the lower set or pair being closer to the feeder.

9. In a machine of the character described, the combination with a feeder; of a battery of snapping-rolls disposed at right angles to said feeder and arranged in pairs disposed in different vertical and horizontal planes, each roll having a fixed or stationary end and a movable end, the movable ends being arranged alternately at opposite ends of the rolls, and gearing between the fixed end of the roll of one pair and the fixed end of the roll of the other pair.

10. In a machine of the character described, the combination with a feeder; of snapping-rolls arranged at right angles to the feeder in sets or pairs, said sets or pairs being located one below the plane of the other, each roll having a fixed or stationary end and a movable end, the same being located alternately at opposite ends of the rolls throughout the series, gearing between the upper rolls of each pair, gearing between the lower rolls of each pair, the gearing connecting the fixed ends of the rolls, and means for driving each pair of rolls.

11. In a machine of the character described, the combination with a feeder, of two pairs of snapping-rolls, one pair being located substantially in the plane of the feeder to act upon the lower layer of stalks, and the other pair being located above the plane of the feeder to act upon the upper layer of stalks, the lower pair being disposed in a vertical plane in advance of the plane of the upper pair and closer to the feeder, substantially as described.

12. In a machine of the character described, a battery or series of sets or pairs of snapping-rolls, each roll having a stationary bearing and a movable bearing, the movable bearings being arranged alternately at opposite ends of the rolls, and gearing between the

fixed end of the roll of one pair and the fixed end of the roll of the other pair.

13. In a machine of the character described, battery or series of sets or pairs of snapping-rolls, each roll having a stationary box or bearing and a movable box or bearing, the same being located alternately at opposite ends of the rolls throughout the series, gearing between the upper rolls of each pair, gearing between the lower rolls of each pair, the gearing connecting the fixed ends of the rolls, and means for driving each pair of rolls.

14. A plurality of pairs of snapping-rolls out of vertical alinement with each other, located in different horizontal planes, the axes of said rolls being transverse to the line of action of the feeder.

15. In a machine of the character described, the combination with a feeder, of a plurality of pairs of snapping-rolls, whose axes are transverse to the line of action of the feeder, the pairs being located in different horizontal planes and out of vertical alinement.

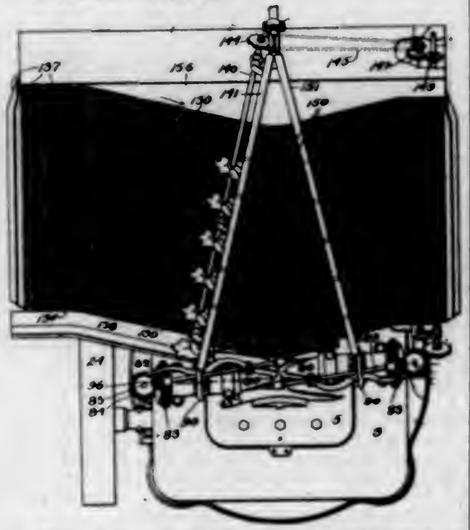
16. In a machine of the character described, a feeder, in combination with a series of sets of snapping-rolls disposed at right angles to the feeder in different vertical and horizontal planes, one set being thus arranged in position to deflect or direct a portion of the material to be acted upon to the other set.

17. The combination with a feeder, of a battery of snapping-rolls arranged vertically in pairs at the delivery end of the feeder, said pairs being located in different horizontal planes, and one pair being disposed out of alinement with the other pair and closer to the feeder.

18. The combination with a feeder, of a plurality of pairs of snapping-rolls extending transversely to the line of delivery of said feeder, said pairs being arranged in different horizontal planes to operate respectively upon stalks of different superposed layers and conjointly upon isolated stalks or stalks of an intermediate layer, one roll of one pair acting as a feeder to direct the said isolated stalks or stalks of the intermediate layer to the other pair or pairs, substantially as described.

19. In a machine of the character described, the combination of a feeder, snapping-rolls at the delivery end of the feeder, husking-rolls beneath the feeder, an oscillating ear-turning device extending between the two sets of rolls, a husk-carrier below the husking-rolls and ear-turning device, a shredder, a carrier and separator arranged between the first-named carrier and shredder, operating mechanism, an operative connection between the ear-turner and underlying carrier, and an operative connection between the two carriers, substantially as described.

## 756,099. MACHINE FOR COMPRESSING FIBROUS MATERIALS. JAMES T. COWLEY, Boston, Mass. Filed Apr. 27, 1903. Serial No. 154,429. (No model.)




*Claim.*—1. In a machine for compressing fibrous materials, in combination a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; and means for rotating the jack.

2. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; and means for positively rotating said jack.

3. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate, and means for rotating and yieldingly supporting said jack.

4. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; a wheel fast on the jack; and means for transmitting motion to said wheel.

5. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; a gear fast on the jack; and a driving-gear meshing with the gear on the jack.

6. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed plate; a gear fast on the jack; and a broad-faced driving-gear meshing with the gear on the jack.

7. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; means for rotating the jack, and means for stopping the rotation of the jack when the body of compressed material has reached a predetermined size.

8. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; means for rotating the jack; and automatic means for stopping the machine when the body of compressed material has reached a predetermined size.

9. In a machine for compressing fibrous materials, in combination, a rotatable jack; a shaft for rotating said jack; means connecting the shaft and jack; a power-driven wheel on said shaft; a clutch for connecting the power-driven wheel with the shaft; and automatic means controlled by the jack for operating the clutch to disconnect the power-driven wheel from the shaft when the bale has grown to a predetermined size.

10. In a machine for compressing fibrous materials, in combination, a rotatable jack; a shaft for rotating said jack; means connecting the shaft and jack; a power-driven wheel on the shaft; and adjustable automatic means controlled by the jack for operating the clutch to disconnect the power-driven wheel from the shaft when the bale has grown to a size predetermined by the adjustment of said means.

11. In a machine for compressing fibrous materials, in combination, a rotatable jack; a shaft for rotating said jack; means connecting the shaft and jack; a power-driven wheel on said shaft; a clutch for connecting the power-driven wheel with the shaft; a lever, means for connecting the lever with the movable member of the clutch; a spring for actuating the lever; a movable abutment for engaging the lever and opposing the spring; means for holding the abutment in the path of the lever, and means controlled by the jack for moving the abutment out of the path of the lever when the bale has grown to a predetermined size.

12. In a machine for compressing fibrous materials, in combination, a rotatable jack; a shaft for rotating said jack; means connecting the shaft and jack; a power-driven wheel on said shaft; a clutch for connecting the power-driven wheel with said shaft; a rock-shaft; means connecting the rock-shaft with the movable member of the clutch; a lever loosely pivoted on said rock-shaft; an arm fast on the rock-shaft projecting into the path of said lever; a spring for actuating said lever; a movable abutment for engaging the lever and opposing the spring; means for holding the abutment in the path of the lever; and means controlled by the jack for moving the abutment out of the path of the lever when the bale has grown to a predetermined size.

13. In a machine for compressing fibrous materials, in combination, a driving-shaft; fiber-feeding mechanism; and a train of change-speed gearing for actuating said mechanism, said gearing comprising two power-transmitting parts connected by friction so as to permit the fiber-feed mechanism to stop independently of said driving-shaft.

14. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with one or more slots; a rotatable jack cooperating with the fixed head-plate; a gear fast to the movable member of the jack; a driving-gear engaging the gear on the jack; a flanged gear engaging the gear on the jack; a shaft on which the flanged gear is mounted; means fastening said flanged gear to its shaft with provision for movement of said gear lengthwise of the shaft; a conical roll in the slot or slots of the fixed head-plate and power-transmitting means connecting the shaft and conical roll.

15. In a machine for compressing fibrous materials, in combination, a fixed head-plate, provided with a pair of slots; a rotatable jack cooperating with the fixed head-plate; a gear fast to the movable member of the jack; a jack-driving gear engaging the gear on the jack; a pair of flanged gears engaging the gear on the jack; a pair of shafts on which the flanged gears are mounted; means fastening each flanged gear to its respective shaft with provision for movement of the gear longitudinally of the shaft; a conical roll in each slot of the fixed head-plate, and power-transmitting means connecting each shaft with one of the rolls.

16. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with a slot; a rotatable jack cooperating with the fixed head-plate; a gear fast to the movable member of the jack; a jack-driving gear engaging the gear on the jack; a flanged gear engaging the gear on the jack; a shaft on which the flanged gear is mounted; means fastening said flanged gear to its shaft with provision for movement of said gear with the gear on the jack lengthwise of the shaft, an endless feed-apron adapted to supply fibers to the slot in the head-plate; and actuating mechanism for the apron driven by said shaft.

17. In a machine for compressing fibrous materials, in combination, a fixed head-plate provided with a slot; a rotatable jack cooperating with the fixed head-plate; a gear fast to the movable member of the jack, a jack-driving gear engaging the gear on the jack; a flanged driven gear engaging the gear on the jack; a shaft on which the flanged gear is mounted; means for fastening said flanged gear to its shaft with provision for movement of said gear with the gear on the jack lengthwise of the shaft; an endless feed-apron for supplying fibers to the head-plate slot; and change-speed-actuating mechanism for the apron driven by said shaft.

18. In a machine for compressing fibrous materials, in combination a fixed head-plate provided with a slot; a rotatable jack cooperating with the fixed head-plate; a gear fast to the movable member of the jack, a jack-driving gear engaging the gear on the jack, a flanged driven gear engaging the gear on the jack; a shaft on which the flanged gear is mounted; means fastening the flanged gear to its shaft with provision for movement of said gear with the gear on the jack lengthwise of its shaft; a conical roll in the slot of the head-plate; means connecting the conical roll with the shaft; an endless apron for supplying fibers to the slot in the head-plate; an actuating mechanism for said apron driven by said shaft.

19. A machine for compressing fibrous materials, comprising a fixed head-plate provided with a pair of slots; a rotatable jack cooperating with the fixed head-plate; a gear fast to the movable member of the jack; a power-driven gear engaging the gear on the jack; a pair of flanged gears driven by the gear on the jack; a pair of shafts on each of which one of the flanged gears is mounted; means fastening each flanged gear to its shaft with provision for movement lengthwise of its shaft; a conical roll cooperating with each slot of the head-plate; means connecting each conical roll with one of the shafts; a pair of endless aprons each supplying fiber to one of the slots of the head-plate; and actuating mechanism connecting each apron with one of said shafts.

20. In a machine for compressing fibrous materials, in combination, a slotted head-plate; a rake; means for simultaneously reciprocating the rake longitudinally and transversely of its axis to move the fibers toward the slot of the head-plate.

21. In a machine for compressing fibrous materials, in combination, a slotted head-plate; a rake; a reciprocating member connected with one end of the rake; a rotating member connected with the other end of the rake, and means for actuating said members.

22. In a machine for compressing fibrous materials, in combination, a slotted head-plate; a rake; a lever connected with one end of the rake; means for actuating the lever; a rotating member connected with the other end of the rake; and means for actuating the rotating member.

23. In a machine for compressing fibrous materials, in combination, a slotted head-plate; a rake; a lever connected with one end of the rake; a cam for actuating the lever; a rotating member connected with the other end of the rake; and means for actuating the cam and rotating member.

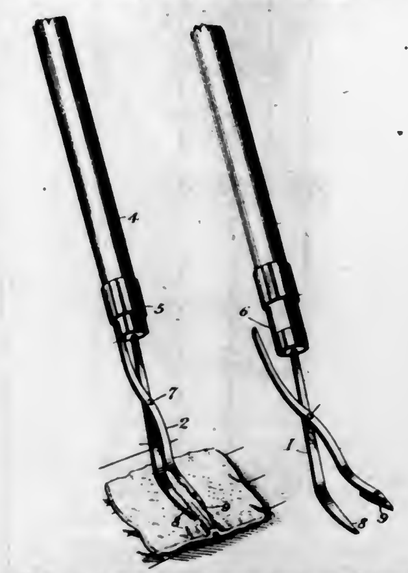
24. In a machine for compressing fibrous materials, in combination, a slotted head-plate; a rake; a lever connected with one end of the rake; a cam for actuating the lever; a crank-pin connected with the other end of the rake; and means for actuating the cam and crank-pin.

25. In a machine for compressing fibrous materials, in combination, a slotted head-plate; a rake; a lever connected with one end of the rake; a cam for actuating the lever; a crank-pin carried by the cam and connected with the other end of the rake; and means for actuating the cam.

26. In a machine for compressing fibrous materials, in combination, a fixed slotted head-plate; a jack comprising a fixed cylinder; a hollow cylindrical member closed at its upper end surrounding and telescoping with the fixed cylinder, a conduit communicating with the fixed cylinder; and means for rotating the movable member.



## 756,100. MOP-HOLDER. GEORGE H. CRUMB, Bloomfield, Mo. Filed Mar. 30, 1903. Serial No. 150,238. (No model.)




*Claim.*—1. A mop-holder, having a handle, relatively movable jaw-carrying members, one of which is attached to the handle, the jaw-carrying members being disposed obliquely to the length of the handle, and having respectively fixed and movable mop-cloth-engaging jaws, which are extended longitudinally of the holder.

2. A mop-holder, having a handle, relatively movable jaw-carrying members, one of which is attached to the handle, said jaw-carrying members having jaws respectively fixed and movable thereon which are extended longitudinally of the members.

## 756,101. SAFETY BLOCK-SWITCH FOR RAILWAYS. CORBIN E. DAVIS, St. Louis, Mo. Filed June 8, 1903. Serial No. 160,661. (No model.)

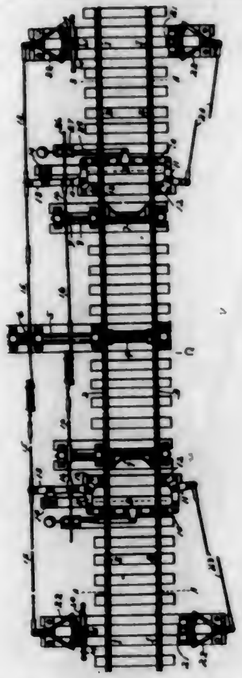
*Claim.*—1. In a block-switch for railways, the combination of switch-rails located at an end of the block, mechanism connected to said switch-rails, and means connected to said switch mechanism located intermediate of the ends of said block to be actuated by a train passing thereover to move said switch-rails into open position, substantially as set forth.

2. In a block-switch for railways, the combination of switch-rails located at an end of the block, mechanism connected to said switch-rails, and means connected to said switch mechanism located in proximity to the end of said block to be engaged by a train passing thereover to move said switch-rails into closed position, substantially as set forth.

3. In a block-switch for railways, the combination of a block-sectional track, switch-rails located at the ends of said block-section, mechanism for operating said switch-rails, and a trip-lever located centrally of said block-section and connected to said switch-rail-operating mechanism; said trip-lever being arranged to be engaged by a train passing thereover to move said switch-rails at each end of the block-section into open position, substantially as set forth.

4. In a block-switch for railways, the combination of a block-sectional track, switch-rails located at the ends of said block-section, mechanism for operating said switch-rails, a trip-lever connected to said switch-operating mechanism centrally of said block-section, trip-

levers located adjacent to the ends of said block-section and connected to said switch-rail-operating mechanism; said trip-levers being arranged to be engaged by a train passing thereover to move said switch-rails into open and closed positions, substantially as set forth



5. A railway-block provided with switch-rails at each end thereof; mechanism connecting said switch-rails whereby they may be jointly opened and closed; devices arranged connecting said switch mechanism and stationed in close proximity to the track-rails of the "block" in such manner as to be actuated by the flanges of the wheels of a train running over a trip-lever in the center of said "block," and thereby operate said switches in the manner substantially as and for the purpose specified.

6. A railway-track provided with switch-rails at two stations, or portions thereof, placed in such manner as when operated, to open and close the main track, and located so as to form a "block" of the track between them, and mechanism placed in conjunction with said "block" whereby said switches may be open and closed by the action of the flanges of the wheels of a train upon said "block" in the manner substantially as and for the purpose specified.

7. A railway-track provided with switch-rails placed in such manner as when operated, to open and close the main track, and located at two portions of the track so as to form a block between said two switches; train-signals arranged adjacent the main track a distance beyond each said switch from said "block" actuating mechanism placed jointly, connecting said switches and signals; and devices adapted to be actuated by the flanges of the wheels of a train, arranged in close proximity to the rails of said block and operatively connected with said switch and signal actuating mechanism, in such manner as when actuated, to operate said switches and signals in the manner substantially as and for the purpose specified.

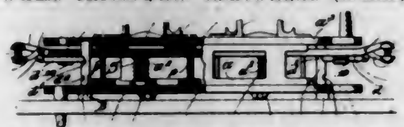
8. In the herein-described railway-block switch mechanism, rotatable color and lamp signals, stationed adjacent the main track a distance either way from the railway-block established by means of the switches; arms adapted to have torpedoes fixed thereto, arranged to be operated jointly with said signals in such manner as to bring a torpedo at each signal-junction to rest upon the track-rail when the danger-signal is set, substantially as and for the purpose specified.

9. The combination in a railway-track constructed with switches at two stations or portions of the track, as set forth, of the trip-lever arranged in close proximity to the track-rails about central between the switches; the secondary trip-levers arranged in close proximity to said rails, one between each switch and said central trip-lever, and the mechanism arranged jointly connecting said trip-levers and switches, in the manner substantially as and for the purpose specified.

10. In the herein-described switch mechanism, in combination with the central trip-lever, its shaft and crank-arm, the secondary trip-levers, their shafts and crank-arms, the levers, the rods connecting said levers and trip-lever crank-arms, the bell-crank levers connecting said levers, and the switch-rails; the train-signals arranged adjacent the main track either way from the block between said switches, and the connecting mechanism whereby said signals are adapted to be operated jointly with the switches, substantially as set forth

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**756,102. MOLDING-MACHINE. ROYAL E. DAVIS, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 4, 1903. Serial No. 183,751. (No model.)**



*Claim.*—1. In a molding-machine, a stripper-plate, means to support it, fixed guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier slidable on the guides toward and from the stripper-plate, means to automatically lock the pattern-carrier from movement, and manually-operated devices to release the locking means, said locking means and the releasing devices being mounted to move with the pattern-carrier.

2. In a molding-machine, a stripper-plate, means to support it, fixed guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier slidable on the guides toward and from the stripper-plate, and manually-released locking means bodily movable with the pattern-carrier to lock the same in operative or in retracted position.

3. In a molding-machine, a stripper-plate, means to support it, fixed guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier slidable on the guides toward and from the stripper-plate, springs to move the pattern-carrier into operative position, and means manually operated at both ends of the pattern-carrier and bodily movable therewith to lock it in operative or in retracted position.

4. In a molding-machine, a stripper-plate, means to support it, guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier movable on the guides toward and from the stripper-plate, springs to move the pattern-carrier into operative position, and a combined handle and locking means at each end of the pattern-carrier to retain the latter in operative or retracted position.

5. In a molding-machine, a stripper-plate, means to support it, guides rigidly mounted on said means at right angles to the stripper-plate, a pattern-carrier movable on the guides toward and from the stripper-plate, a compressible handle at each end of the pattern-carrier, and means to lock the latter in operative position, compression of the handles operating to unlock the pattern-carrier and permit it to be retracted to draw the pattern.

6. In a molding-machine, two parallel, connected plates one constituting a flat back and the other a stripper-plate, a pattern-carrier movable toward and from the latter and located between it and the flat back, means to guide the pattern-carrier and manually-released means at opposite ends of and bodily movable with the pattern-carrier to automatically lock the pattern-carrier in operative or in retracted position.

7. In a molding-machine, a reversible frame, a stripper-plate and a flat back forming opposite sides thereof, a pattern-carrier movable between them and toward and from the stripper-plate, guides on the frame for the pattern-carrier, positioning-springs for the latter, means to automically lock the pattern-carrier in operative or retracted position, and manually-operated releasing devices for the locking means, said devices serving also as handles to retract the pattern-carrier and draw the pattern.

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**756,103. FOUNTAIN-BRUSH. HENRY A. DOTEN, Burlington, Vt. Filed July 11, 1903. Serial No. 165,132. (No model.)**

*Claim.*—1. A fountain-brush attachment for receptacles comprising a tubular extension, bristles extending therefrom and a flexible nipple inclosed by the bristles and having a slit in its outer end adapted to form an outlet from the receptacle to which the attachment may be secured.



2. A fountain-brush attachment for receptacles comprising a tubular extension, bristles extending therefrom, a flexible nipple inclosed by the bristles and having a free outer end provided with a normally closed slit adapted to form an outlet from the receptacle to which the attachment may be secured.



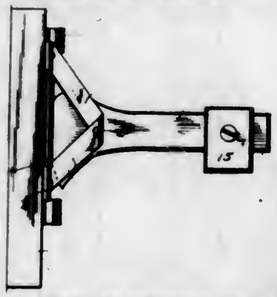
3. A fountain-brush attachment for receptacles comprising a tubular extension, a holder secured therein, bristles within the extension and inclosing the holder, and a flexible nipple within and extending from the holder, said nipple having a slit in one end thereof adapted to form an outlet from the receptacle to which the attachment may be secured.

4. A fountain-brush attachment comprising a tubular extension, a holder secured therein, bristles extending from the extension and inclosing the holder, a flexible nipple within the holder and projecting therefrom, said nipple being inclosed by the bristles and having a normally closed slit in its projecting end adapted to form an outlet from the receptacle to which the attachment may be secured.

5. The combination with a receptacle, of a tubular extension thereon, a tubular holder secured within the extension, bristles secured within the extension and inclosing the holder, and a flexible nipple within and projecting from the holder, said nipple being inclosed by the bristles and having a normally closed slit in its projecting end adapted to form an outlet from the receptacle.

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**756,104. ROPE-CLAMP. FRANK L. DOTY, Calliope, Iowa. Filed Aug. 17, 1903. Serial No. 169,776. (No model.)**



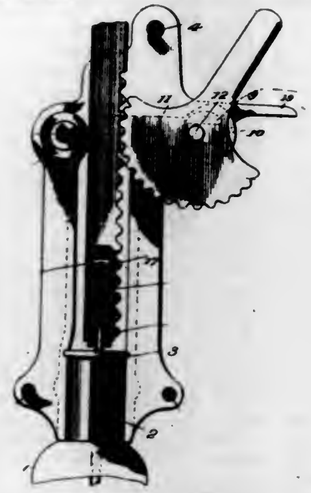
*Claim.*—In a rope-clamp, the combination with a guide-frame having a channel portion, guide-loops at each end of the same, attaching-ears upon each side of said channel portion and arms projecting from said ears, of a clamping-lever pivoted between said arms and having a grooved cam-shaped clamping-jaw at one end and an adjustable weight upon its opposite end, substantially as described.

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**756,105. PUMP-HEAD. HENRY M. BITTER, Marion, Pa. Filed Oct. 8, 1903. Serial No. 176,300. (No model.)**

*Claim.*—1. In a pump of the character described, and in combination with the pump-rod, the rack-bar connected therewith and the toothed segment for coöperating with the rack-bar, bearings rotatably mounted, an eccentric connection between the toothed segment and said bearings, an operating-handle applied to a bearing, and means for limiting the throw of said handle in each direction, to definitely hold the toothed segment either in or out of engagement with the rack-bar, substantially as specified.

2. In a pump of the character described, and in combination with the pump-rod, the rack-bar connected therewith, and the toothed segment for cooperating with the rack-bar, a rotary bearing flanged at its inner end and having a projection at its outer end, an eccentric connection between the toothed segment and bearing, and an operating-handle applied to the projecting end portion of the bearing to effect turning thereof about its axis to throw the toothed segment either into or out of engagement with the rack-bar, substantially as described.



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**756,106. TEMPORARY BINDER. MARCUS P. EXLINE, Dallas Tex. Filed July 6, 1903. Serial No. 164,414. (No model.)**



*Claim.*—1. A temporary binder, comprising a cover, a strip secured transversely thereof, locking means carried thereby, clamping members formed integral with said strip near each end thereof, said members extending toward the center of said strip, and locking means carried by said clamping members approximately opposite the locking means carried by said strip.

2. A temporary binder comprising a suitable back cover, a strip secured thereto having end portions turned upwardly and backwardly so as to be parallel with the back cover of the binder and inwardly-projecting detents carried by said overhanging portions for engaging sheets to be placed in the holder.

3. A temporary binder comprising a back cover, strips riveted thereto, the free ends of said strips being bent upwardly and then folded parallel to the back cover, detents upon said pieces extending toward each other, bound sheets arranged to engage the said pieces and formed with recesses for engaging the said detents when sprung into place beneath the free ends of the said pieces.

4. A temporary binder comprising a cover, a spring-strip secured thereto and provided with overhanging end portions facing the cover in a parallel plane, and inwardly-projecting locking means carried by the overhanging end portions for holding materials placed beneath them.

5. In a temporary binder, the combination with a cover of a spring-strip secured thereto and formed with locking projections extending therefrom, end portions folded back upon the said strip the free ends of said portions overhanging the cover and locking-detents carried by said overhanging portions and coöperating with the locking-detents upon the body of the strip.

6. In a temporary binder the combination of a strip of material extending transversely of and fixed to the back cover of the binder and overhanging spring-clamps formed integral with the ends of said strip and lying parallel with the back cover.

7. A temporary binder, comprising a cover, a transverse member secured thereto, said transverse member provided with parallel clamping means formed integral therewith near each end thereof, locking means assembled with said clamping means and said clamping means extending toward the center of said transverse member.

**756,107. DISK-SCRAPER.** WILLIAM FETZER, Middletown, Ohio. Filed Apr. 10, 1903. Serial No. 152,023. (No model.)



*Claim.*—1. A disk-scraper comprising a scraper-plate, a rotatably-mounted sleeve carrying the same, a movably-mounted support supporting the sleeve, and means extending through said sleeve for limiting the same in its movement.

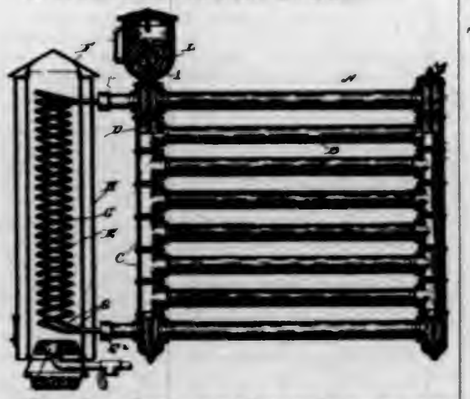
2. In a disk-scraper, the combination with a standard, of a sleeve surrounding the same and formed with a slot, retaining means engaging said standard and extending through said slot, and a scraper-plate carried by said sleeve, substantially as described.

3. In a disk-scraper, the combination with a standard, a sleeve surrounding a portion of said standard and formed with slots in its walls, a pin extending through said standard and through said slot, and a scraper-plate carried by said sleeve, substantially as described.

4. In a disk-scraper, the combination with a suitable support, of a plate carried thereby, a sleeve projecting laterally from said plate, a standard surrounding said sleeve, cushioning means carried by said plate engaging said standard, and a scraper-plate carried by the standard, substantially as described.

5. In a disk-scraper, the combination with a support, of a plate carried thereby, a pivotally-mounted standard, a bar extending transversely through said standard, a bolt carried by said bar, an eye on said plate slidably surrounding said bolt, a spring interposed between said eye and bar, and scraping means carried by said standard, substantially as described.

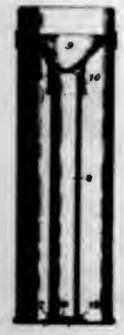
**756,108. GAS-HEATER.** FRANK G. FRENER, Philadelphia, Pa. Filed Oct. 27, 1902. Serial No. 128,885. (No model.)



*Claim.*—In a radiator, a series of horizontal pipes, couplings to which the ends of the pipes are attached, said couplings fitting one above the other, extension-pipes secured to the couplings in line with the upper and lower pipes of the radiator, caps threaded on the extensions and having threaded apertures, circulation-pipes threaded in the caps, an expansion-chamber on the upper end of the series of couplings with which the extensions communicate, and binding-bolts extending from the expansion-chamber to the lower end of the couplings, substantially as described.

**756,109. RAIN-GAGE.** JULIEN P. FRIES, Baltimore, Md. Filed Nov. 6, 1903. Serial No. 180,055. (No model.)

*Claim.*—1. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering-ring projecting inwardly from its bottom and having inclined inner sides, of an interior measuring-tube adapted to be centered and held in said ring, substantially as described.



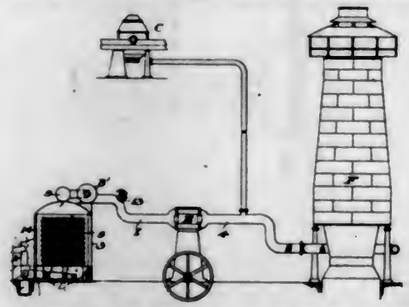
2. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering and strengthening ring stamped in the metal of the bottom, of an interior measuring-tube adapted to be centered and held within said ring, substantially as described.

3. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering and strengthening ring in its bottom, of a short sleeve or ring adapted to be centered and to rest in said ring, a bottom secured in said sleeve above its lower edge, and a measuring-tube secured in the upper portion of said sleeve, substantially as described.

4. In a rain-gage, the combination of a measuring-tube comprising a short sleeve or ring forming the base thereof, a bottom secured in the sleeve at about its mid-height, and a cylindrical body resting and secured in the upper portion of said sleeve above the bottom, substantially as described.

5. In a rain-gage, the combination with an outer overflow-cylinder provided with a centering-ring projecting inwardly from its bottom, of an interior measuring-tube seated on its bottom in said ring, a funnel-shaped receiver fitted into the upper end of the overflow-cylinder, and a sleeve projecting downward from the receiver around the top of the measuring-tube and centering it at its upper end, substantially as described.

**756,110. METHOD OF EXTRACTING MOISTURE FROM AIR FOR BLAST-FURNACES AND CONVERTERS.** JAMES GAYLEY, New York, N. Y. Filed Nov. 13, 1903. Serial No. 181,075. (No model.)



*Claim.*—1. The method of feeding the air-blast to blast-furnaces or converters, which consists in cooling the air artificially, thereby causing its moisture to be reduced to a small percentage, feeding the dried air to a blowing-engine by initial pressure of relatively small degree sufficient to overcome in whole or in part the friction of the air-current in the apparatus, increasing its pressure at the blowing-engine to a degree above that to which it was initially subjected and feeding the dried air therefrom under compression into the furnace or converter, and maintaining it under compression from the time it leaves the blowing-engine until it enters the furnace or converter; substantially as described.

2. The method of feeding the air-blast to blast-furnaces or converters, which consists in cooling the air artificially, thereby causing its moisture to be reduced to a small percentage, feeding the dried air to the blowing-engine by means of an auxiliary blower, increasing its pressure at said blowing-engine to a degree above that which it was compressed by the auxiliary blower and delivering it from the blowing-engine into the furnace or converter, and maintaining it under compression from the time it leaves the blowing-engine until it enters the furnace or converter; substantially as described.



**756,111. CORSET.** SOLOMON S. GAYLORD, Newark, N. J. Filed June 16, 1903. Serial No. 161,752. (No model.)



*Claim.*—1. A corset comprising a lower abdominal portion and an upper portion, the said upper portion extending only to the upper edge of the lower abdominal portion at the rear but extending downwardly below the upper edge of the said abdominal portion at the front.

2. A corset provided with a lower abdominal supporting portion extending from the rear fastenings of the corset to the front fastenings thereof, an upper bust-inclosing portion secured at its lower edge at the rear to the upper edge of the abdominal supporting portion, the said bust-inclosing portion having a downwardly-extending projection at the front overlapping the front portion of the abdominal supporting portion.

3. A corset comprising a lower abdominal supporting portion extending from the rear fastening of the corset unbrokenly to the front, an upper bust-inclosing portion extending unbrokenly from the rear of the corset to the front, the upper edge of the abdominal portion being connected with the lower edge of the bust portion at the rear while the front of the bust portion extends downwardly over the front of the lower portion.

4. A corset comprising an upper bust-inclosing portion and a lower abdominal supporting portion, both portions extending unbrokenly from the front fastening of the corset to the rear fastening thereof and a front downwardly-extending portion formed upon the bust-inclosing portion, the said portion being curved downwardly toward the sides of the corset to the front and not interfering with the relative adjustment of the parts.

**756,112. CLOTHES-DRAINER.** MOURNIN N. HALL and LEVI D. MOELER, McPherson, Kans. Filed June 17, 1903. Serial No. 161,942. (No model.)



*Claim.*—1. The combination with a holding-receptacle, of a drainer-receptacle, engaging means disposed adjacent one end of the drainer-receptacle, other engaging means comprising a U-shaped engaging member disposed upon the opposite end portion of the drainer-receptacle, and a cam-lever pivoted to the U-shaped engaging member aforesaid for cooperation therewith to positively lock the drainer-receptacle to the holding-receptacle.

2. The combination with a holding-receptacle, of a drainer-receptacle, engaging means disposed adjacent one end of the drainer-receptacle, engaging means disposed adjacent the opposite end of the drainer-receptacle, and lock means cooperating with the latter-mentioned engaging means for positively securing the same in engagement with the holding-receptacle.

3. In a drainer for clothes, the combination with a holding-receptacle having bead thereon, a drainer-receptacle of conical form disposed upon the said boiler and provided with openings, a series of hooks disposed adjacent one end of the said receptacle and adapted for engagement with the bead upon one side of the holding-receptacle, a U-shaped engaging member disposed upon the opposite end portion of the receptacle and adapted to engage the bead upon the opposite side of the holding-receptacle, and an eccentric cam adapted to cooperate with the U-shaped member to positively lock the drainer-receptacle in position upon the holding-receptacle.

**756,113. DOUBLE-ACTING FORCE-PUMP.** EDGAR J. HANNAH, Greencastle, Mo. Filed July 19, 1902. Serial No. 116,184. (No model.)



*Claim.*—1. In a pump of the kind described, the combination with the suction and discharge pipes, of the cylinder and head for connecting the same to said pipes, the hollow piston arranged in the cylinder, said piston being divided by a partition, which terminates in a threaded collar at each end, the upper and lower ends of the piston having reversely-arranged open and closed portions, the tubes fitting in the threaded collars, each tube having a valve arranged therein, a ring-valve arranged upon each tube, a seat for each ring-valve, said seats being arranged in the cylinder, adjacent the opposite ends, stop-pins carried by the seats, for limiting the upward movements of the ring-valves, the openings in the ring-seats being greater than the exterior diameter of the tubes which work therethrough, whereby water will pass freely around the tubes, through the seats and pass the ring-valve.

2. In a pump of the kind described, a reversible hollow piston, having a dividing-partition terminating in a threaded collar at each end, each end of the piston having a curved opening on one side of the collar, the opposite side of the piston end being closed, said open and closed portions being reversely arranged at the opposite ends, substantially as described.

3. In a pump of the character described employing a single cylinder and having end castings, the combination therewith of means located within the said cylinder and end castings adapted in operation to force substantially a continuous flow, the said means consisting of fixed valve-seats at the ends of the cylinder, valves in said seats, a plunger constructed with upper and lower openings forming separate passage-ways therethrough a tube leading from the said upper opening in the plunger, extended loosely, but water-tight, through the said upper-valve, a similar tube leading from the lower opening in the plunger and extended loosely, but water-tight, through the said lower valve, a valve supported by and closing the upper end of the lower tube and a valve closing the upper end of the upper tube, substantially as described.

4. The combination in a pump of the character described, a single cylinder, castings secured to the upper and lower ends of the cylinder, valve-seats at both ends of the cylinder held in place be-

tween the ends thereof, and the inner shoulders on the end castings, vertically-moving valves on the said fixed seats, each having an opening therethrough, a plunger within the said cylinder with means to work it and having upper and lower connected tubes, one tube being extended and working freely through the opening in the valve at the upper end of the cylinder, and the other tube extended down and working freely through the opening in the valve at the lower end of the cylinder, one of the said tubes being adapted to form a closed passage to the cylinder above the plunger from below the lower fixed valve-seat, and the other tube being adapted to form a closed passage from the cylinder below the plunger to the end casting and above the upper fixed valve-seat, a valve supported by and closing the upper end of the said lower tube, and a valve closing the upper end of the said upper tube, substantially as described.

5. In a pump of the character described, the combination with a single cylinder having castings on the ends thereof, valves closing the upper and lower ends of the cylinder, a plunger within the cylinder having separate passage-ways through it, upper and lower tubes fixed to and moving with the plunger, adapted to form closed passage-ways from both sides thereof to and beyond the said upper and lower valves closing the cylinder ends, and valves supported by and closing the upper ends of both the said tubes, substantially as described.

6. The combination in a pump of the character described, of a single cylinder having castings on the ends thereof, and means within the said cylinder adapted, in operation, to force a substantially continuous flow, the said means consisting of a plunger having fixed thereto separate closed water-passages leading from far sides thereof to opposite ends of the pump, fixed valve-seats at the cylinder ends through which the said closed water-passages are adapted to extend, valves in said seats and valves supported by and closing the upper ends of both the said water-passages, substantially as described.

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**756,114. ATTACHMENT FOR MOWING-MACHINES.** CHARLES HERMAN, Institute, Wis. Filed Oct. 13, 1903. Serial No. 176,920. (No model.)

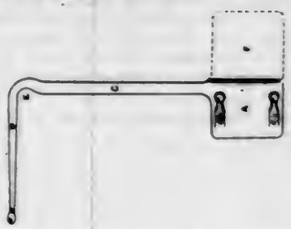


*Claim.*—1. In a device of the class described, the combination with a shoe having a downwardly and forwardly sloping recess and a rearwardly-extending, downwardly-sloping heel-plate which cooperates with the bottom of the recess to form an intermediate hump or raised portion, of a bracket member having upper and lower, slightly-diverging edges and a rounded front end contacting with the inner end of the recess, the edges of the bracket member forming extended bearing-surfaces adapted to contact with the upper and lower sloping walls of the recess, and a pivotal connecting-pin.

2. In a device of the class described, a bracket member adapted for connection with a finger of a cutting apparatus, said bracket member having a forwardly-extending arm with a rounded end and divergent upper and lower surfaces, in combination with a shoe having a recess, the inner end of which forms a bearing for the rounded end of the arm, and a pivotal connecting-pin whereby the rounded point of the arm is retained in such contact.

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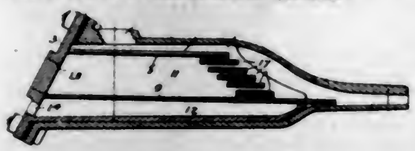
**756,115. COMBINED BOOK-MARKER AND LEAF-HOLDER.** CARL L. HRAUDA, Crouch End, England. Filed July 18, 1903. Serial No. 116,073. (No model.)



*Claim.*—A combined book-mark and leaf-holder, composed of a flat strip of elastic metal C having one end bent over to form a clip A having parallel walls or sides, springs B B beneath the clip and the lateral extension D, located in substantially the same plane as the part C and adapted to hold the leaves of a book substantially as described.

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**756,116. OIL MIXER AND BURNER.** WILLIAM S. KENGLA, Tucson, Ariz., assignor of one-half to William H. Barnes, Tucson, Ariz. Filed Dec. 29, 1902. Serial No. 137,089. (No model.)



*Claim.*—1. In a mixer and burner, the combination with a shell having a nozzle at one end, of partitions dividing said shell and forming an air-passage and an oil-passage communicating with the nozzle, and a series of short-stepped platforms projecting beyond the outlet end of the oil-passage.

2. In a mixer and burner, the combination with a shell having a nozzle at one end, of a partition in the shell and cooperating with the nozzle and shell to form a steam-passage and a contracted outlet therefor, another partition spaced from the first and cooperating therewith to form an air-passage and cooperating with the shell to form an oil-passage, and a series of platforms in the air-passage and projecting beyond the end of the oil-passage.

3. In a mixer and burner, the combination with a shell tapering to a nozzle, of partitions in said shell, the lower partition projecting farther than the upper, and the shell made with an oil-inlet to the space above the upper partition, an air-inlet to the intermediate space, and a steam-inlet to the space below the lower partition.

4. In a mixer and burner, the combination with a shell tapering to a nozzle, of partitions dividing the nozzle into an upper oil passage, a lower steam-passage, and an air-passage between them, and a series of platforms or tables across the air-passage over which the oil must fall.

5. In a mixer and burner, the combination with a shell tapering to a flat wide nozzle, of a partition dividing the shell into an oil-passage and an air-passage below the same, a series of platforms in the outlet end of the air-passage over which the oil falls and between which the air passes to mix therewith before entering the nozzle, said platforms projecting beyond the outlet end of the oil-passage.

6. In a mixer and burner, the combination with an outer shell, an inner shell therein divided into oil, air, and steam passages, a series of stepped oil-platforms in the air-passage and projecting beyond the outlet end of the oil-passage and inclined ports or inlets into all of said passages.

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**756,117. ELECTRIC-LAMP SUPPORT FOR CONVERTIBLE SIGNAL-LANTERNS.** LOUIS H. W. KERBER, Chicago, Ill., assignor to the Adams and Westlake Company, of Illinois. Filed May 13, 1903. Serial No. 156,912. (No model.)



*Claim.*—1. The combination, with a convertible signal lamp or lantern having a central tube for the escape of products of combustion when an oil-lamp is used, of a removable electric-lamp support held by and within said tube, and having an electric cut-out, substantially as set forth.

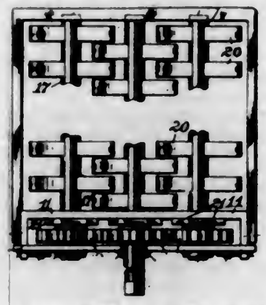
2. The combination, in a convertible signal lamp or lantern having a fixed open-topped central draft-tube and an attached liftable cap, of a support having mounted thereon an electric-lamp socket and removably held by and within said open-topped central draft-tube, and conductors provided with an electric cut-out, said conductors being attached to said support and to the lamp-socket, substantially as set forth.

3. The combination, in a convertible signal lamp or lantern having a fixed open-topped central draft-tube and an attached liftable cap, of a support having mounted thereon an electric-lamp socket and removably held by and within said open-topped central draft-tube, a non-conducting material attached to said support, binding-posts within the compass of said support and secured thereto and insulated by said non-conducting material, a fusible conductor between said binding-posts, and conducting-wires attached to said posts and to the lamp-sockets, substantially as set forth.



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**756,118. GRATE.** GEORGE G. KNIFFIN, Bayonne, N. J., assignor to Boynton Furnace Company, New York, N. Y., a Corporation of New York. Filed Sept. 1, 1903. Serial No. 171,472. (No model.)



*Claim.*—1. A grate comprising a frame, grate-bars supported therein, means for permanently supporting the grate-bars, and individual means for supporting one end of each grate-bar when the permanent supporting means at said end is removed.

2. A grate comprising a supporting-frame, revolving grate-bars supported in the frame, means for permanently supporting the ends of the grate-bars, and means for individually supporting one end of each grate-bar when the permanent supporting means on that end is removed.

3. A grate comprising a set of revolving grate-bars, a frame for supporting the grate-bars, a yoke removably attached to the frame and forming one end thereof, the said yoke forming a permanent supporting means for one end of each of the grate-bars, and individual supporting devices arranged to carry said end of each grate-bar when the aforesaid yoke is removed.

4. The combination of the main frame, the revolving grate-bars therein, the cross-bar near one end of the grate-bars, the removable yoke forming one end of the frame and adapted to permanently support one end of each grate-bar, and individual hangers carried by the cross-bar and adapted to engage and support the free ends of the grate-bars independently of the yoke.

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**756,119. ELECTRIC RESISTANCE.** HANS VON KRAMER, Bath, England. Filed Sept. 1, 1903. Serial No. 171,505. (No model.)



*Claim.*—1. An electric resistance comprising a body formed of a mixture of conducting and non-conducting and binding materials, a central core of sand therein, a mantle of non-conducting and binding materials surrounding the body and conducting-terminals embedded in the body, as described.

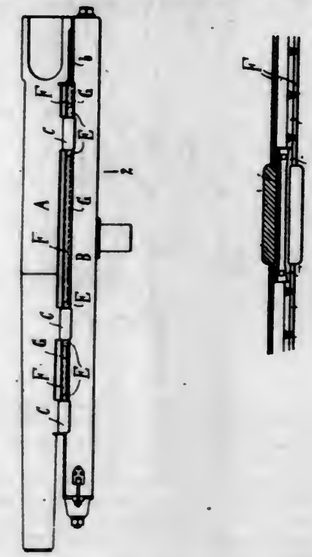
2. An electric resistance comprising a body formed of a mixture of conducting and non-conducting and binding materials, a central core of sand therein, a mantle of non-conducting and binding materials surrounding the body layers of highly-conductive material internally concave at the ends of the body, and terminals embedded in such layers, as described.

3. An electric resistance comprising a body formed of a mixture of conducting and non-conducting and binding materials, a central core of sand therein, a mantle of non-conducting and binding materials surrounding the body, layers of highly-conductive material internally concave at the ends of the body, carbon plugs in the layers and contact-poles embedded in the carbon plugs, as described.

4. An electric resistance comprising a body formed of a mixture of conducting and non-conducting and binding materials, a central core of sand therein, a mantle of non-conducting and binding materials surrounding the body, terminals of highly-conductive material at the ends of the body, sheet-mica surrounding the mantle, and insulating-caps of non-conductive and binding materials covering the ends and holding the mica in place, as described.

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**756,120. RECOIL-GUN WITH SPECIAL DEVICES FOR PROTECTING THE SLIDE-TRACKS FROM DUST.** OTTO LAUBER, Essen-on-the-Ruhr, Germany, assignor to Friedr. Krupp, Essen-on-the-Ruhr, Germany. Filed July 28, 1902. Serial No. 117,347. (No model.)



*Claim.*—1. In a gun with barrel recoil, the combination of the slide-track, the gun-barrel mounted on the track through the medium of guide-claws, sheaths covering portions of the track not covered by the claws, and packings or plates of felt or the like introduced between the sheaths and the track.

2. In a gun with barrel recoil, the combination of the slide-track, the gun-barrel mounted on the track through the medium of guide-claws, sheaths covering portions of the track not covered by the claws, and packings or plates of felt or the like introduced between the sheaths and the track, secured to and moving with the sheaths.

3. In a gun with barrel recoil, the combination of the slide-track, the gun-barrel mounted on the track through the medium of guide-claws, sheaths enveloping portions of the track not covered by the claws, and packings or plates of felt or the like introduced between the sheaths and the track, secured to the sheaths between the inner faces of their under sides, and the under sides of the track, so that they partake of movements of the gun-barrel.

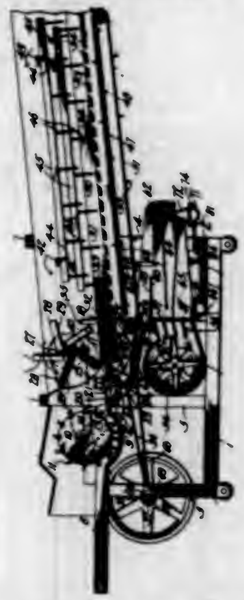
4. The combination with the cradle formed with a slide-track, a barrel, and guide-claws secured to the barrel, and embracing the slide-track, of linings for the guide-claws having heads extending outside thereof, and sheaths secured to said linings.

5. In a field-gun with recoiling barrel, the combination of a tubular cradle, having a closed cross-section, ribs arranged on the outer surface of the cradle, slides attached to the gun, and engaging the said ribs, and protecting-strips arranged between the slides and covering the ribs.

6. In a gun with barrel recoil, a cradle consisting of a circumferentially-closed hollow body containing the recoil-check and recuperating means, a track on said cradle adapted to guide the gun-barrel in its recoil and running-out movement and mounted on the outside of said hollow body, a gun-barrel provided with means engaging said track, and plates of felt or the like attached to the gun-barrel, for the purpose of protecting the track from dust.

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**756,121. GRAIN-SEPARATOR.** JOHN R. LAZARUS, Shoenersville, Pa. Filed Feb. 6, 1903. Serial No. 142,173. (No model.)



*Claim.*—1. In a grain-separator, a separating-grate disposed in rear of the threshing-cylinder and comprising a casting having upwardly and rearwardly extending wedge-shaped ribs, and prongs extending rearwardly from said ribs.

2. In a grain-separator, a separating-grate disposed in rear of the threshing-cylinder and comprising a casting provided on its upper side with a plurality of wedge-shaped ribs, and rearwardly-extending prongs of wrought-iron cast into and extending rearwardly from said ribs.

3. In a grain-separator, a separating-rake comprising a rake-head, rearwardly-extending prongs and arms attached to the ends of the rake-head and extending forwardly, pivotal supporting means for the front ends of said arms, and a deflecting-board secured to the under side of the rake-head.

4. In a grain-separator, a separating-grate disposed in rear of the cylinder and supported upon the rear edge of the concave, a separating-rake having forwardly-extending, pivotally-supported arms, the head of said rake extending below the rear ends of the fingers of the grate, a deflecting-board depending from the rake-head, a deflecting-board disposed below the separating-grate, and means for imparting to the separating-rake a vertical vibratory motion.

5. In a grain-separator, the separating-rake having forwardly-extending pivotally-supported arms provided with downward extensions, spaced apart, in combination with a rock-shaft disposed below said arms, castings mounted securely upon said rock-shaft and having laterally-extending pins engaging the downward extensions of the rake-supporting arms, a straw-shaker supported by hangers, means for reciprocating said straw-shaker, cranks extending radially from the rock-shaft below the rake-supporting arms, and link connections between said cranks and the hangers of the straw-shaker.

6. In a grain-separator, a longitudinally-reciprocating shoe, in combination with transversely-reciprocating spouts, and supporting means for said spouts comprising elastic straps crossing each other and connected at the point of intersection, L-shaped castings at the lower ends of said straps connected with the frames of the trough, and U-shaped supporting-yokes having laterally-extending flanges secured to the sides of the machine and supporting the upper ends of the flexible straps at a suitable distance from the sides of the shoe.

7. In a grain-separator, the combination with a longitudinally-reciprocating shoe, of transversely-reciprocating spouts and flexible supporting means, spaced at their upper ends from the sides of the shoe and connected at their lower ends with the frames of the spouts.

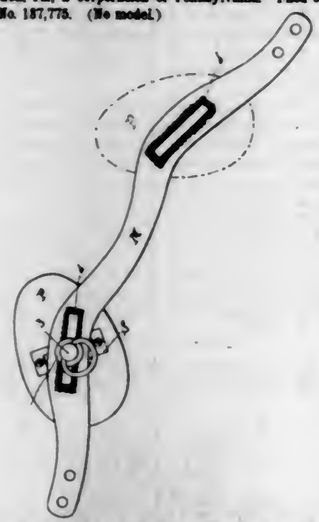
8. In a grain-separator, the combination with a longitudinally-reciprocating spout, of spouts flexibly connected with and carried by the side of the machine, and means for transmitting from the shoe to said spouts a transversely-reciprocating motion.

9. In a grain-separator, a longitudinally-reciprocating shoe, a grain-spout and a tailings-spout flexibly connected with and carried by the side of the machine, a rocker having vertical trunnions whereby it is mounted in the frame of the machine, and radially-extending slotted arms and castings connected respectively with the spouts and with the under side of the shoe and loosely engaging the slots in the arms of the hopper.

10. In a grain-separator, a longitudinally-reciprocating shoe, a grain-spout and a tailings-spout flexibly connected with and carried by the side of the machine, a rocker having means whereby it is mounted in the frame of the machine and provided with radially-extending arms provided with slots at their outer ends, said slots terminating in narrow slits, said arms being also provided with transverse-threaded perforations, bolts mounted in said perforations whereby the slotted ends of the arms may be compressed, and castings connected respectively with the spouts and with the under side of the shoe and loosely engaging the slots in the arms of the rocker.

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**756,122. FASTENING DEVICE FOR TRUSS-PADS.** JOHN R. LEE, Conshohocken, Pa., assignor to J. Elwood Lee Company, Conshohocken, Pa., a Corporation of Pennsylvania. Filed Jan. 5, 1904. Serial No. 187,775. (No model.)



*Claim.*—1. A truss having a recessed pad, a nut adjustable longitudinally in the recess, a slotted plate for the pad, a disk having a roughened upper face and adjustable longitudinally in the slot, and means to prevent its rotation therein, in combination with a strip having a similar disk and a screw passing through said disk and threaded into the nut, substantially as described.

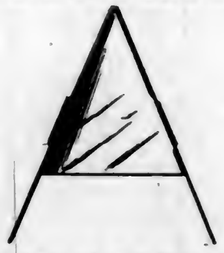
2. A truss having a recessed pad, a nut adjustable longitudinally in the recess, a slotted plate for the pad, a disk having a roughened upper face and adjustable longitudinally in the slot, and means to prevent its rotation therein, in combination with a slotted strip, a disk adjustable longitudinally in the slot, means to prevent its rotation therein and a clamping-screw for fastening said strip, disks and pad together, substantially as described.

3. A truss having a recessed pad, a nut adapted to be adjusted longitudinally in the recess without rotation, and a slotted plate for the pad, in combination with a disk having rectangular studs fitting said slotted plate, a strip, a disk therefor and a screw passing through said disks and threaded into the nut, substantially as described.



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**756,123. PLANT-PROTECTOR.** MARCELLUS B. LEWIS, Enterprise, Miss. Filed Feb. 19, 1903. Serial No. 144,106. (No model.)



*Claim.*—1. As an improved article of manufacture, a plant-protector, comprising a substantially cone-shaped hood, and a substantially V-shaped, spring-actuated anchoring-support, passed through the meeting ends of the hood for holding the same together, said supporting means being extended along both sides of the hood and below the lower edge thereof.

2. As an improved article of manufacture, a plant-protector, comprising a substantially cone-shaped hood constructed from a semicircular piece of material having apertures formed in its meeting edges, and a substantially V-shaped, spring-actuated support extended along the sides of the hood and passed through the apertures for retaining the semicircular piece of material in a conical shape, and also for supporting the hood, substantially as described.

3. As an improved article of manufacture, a plant-protector comprising a hood constructed from a semicircular piece of material and bent into the shape of a cone, a substantially V-shaped spring-actuated anchoring-support passed through the said hood, said support being extended below the hood and provided with a bent portion for positively locking the hood on the same above the top of the ground so as to leave a space between the lower edge of the hood and the ground, substantially as described.

4. A plant-protector comprising a sheet of material folded in the shape of a cone, apertures formed upon said sheet adapted to coact with one another, and a supporting-anchor passing through said apertures, said anchor having a bent portion for engaging one set of the apertures of the hood and retaining said hood in a positive position upon said anchor, substantially as described.

5. A plant-protector comprising a hood having a series of apertures formed thereon, a spring-supporting anchor conforming to the shape of said hood and passing through said apertures, and a bent portion formed upon said anchor for positively retaining the hood in a fixed position thereon, substantially as described.

6. A device of the character described comprising an apertured conical hood, said apertures formed oppositely upon the said hood when the same is in a folded position, a spring V-shaped supporting-anchor passing through said apertures, and a bent portion formed upon said support and adapted to engage one set of the apertures for retaining the said hood in a locked position upon the same, substantially as described.

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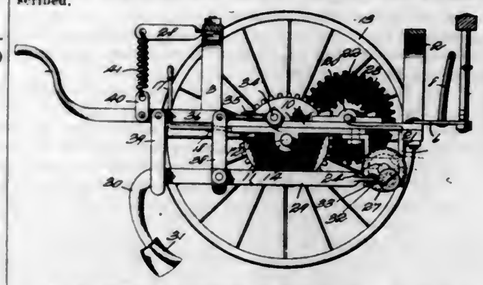
**756,124. METHOD OF PRODUCING PIT-COAL OR COKE BRIQUETS.** JOHANN LIEB, Cologne, Germany. Filed Aug. 6, 1903. Serial No. 168,448. (No specimens.)

*Claim.*—The process of producing briquets of fuel consisting in mixing a small quantity of resin or equivalent agglutinant with fine coal; then moistening the mixture with water to the consistency of a mass suitable for molding; then shaping the briquets and finally subjecting them to such heat as will greatly soften the resin, vaporize the water and cause the steam thus produced to carry the particles of resin into every part of the briquet substantially as set forth.

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**756,125. WEEDING-MACHINE.** WILLIAM D. LLOYD, Fiskville, Tex., assignor of one-half to R. L. Steck, Austin, Tex. Filed June 18, 1903. Serial No. 162,118. (No model.)

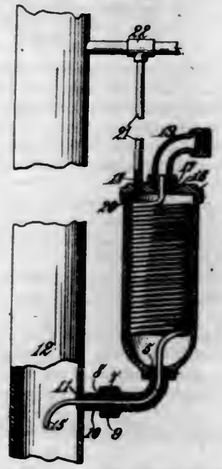
*Claim.*—1. In a machine of the class described, the combination of a lever mounted for vertical and horizontal angular movement, with a crank, an implement having a beam connected to the crank for angular movement, links pivotally connected to the lever and the beam whereby the latter is adapted for reciprocatory rotary movement, and a guide element independent of the links to keep the beam and lever in alinement with each other, substantially as described.



2. In a weeder of the class described, the combination of a crank-shaft, an implement having a beam connected to the crank of said shaft for lateral movement, a lever adapted for lateral and horizontal angular movement, a link pivotally connected to said lever and said beam, a drive-shaft, a gear loosely mounted thereon, a clutch splined on the drive-shaft and adapted to be engaged and disengaged with the gear, a lever to shift the clutch, a counter-shaft having gears, one of which engages the first-mentioned gear, and a gear on the crank-shaft engaged with one of the gears on the counter-shaft, substantially as described.

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**756,126. VAPORIZING DEVICE FOR LUBRICANTS.** WILLIAM P. MAINGAULT and JOHN C. GRAHAM, Memphis, Tenn. Filed May 23, 1903. Serial No. 158,534. (No model.)



*Claim.*—1. The combination with a steam-supply pipe, of a vertical vessel communicating at its opposite ends with said steam-pipe, a spirally-coiled pipe arranged within said vessel, and means for feeding lubricant to the upper end of said coil, the lower end of the coil discharging by gravity into said steam-supply pipe, substantially as described.

2. The combination with a steam-supply pipe, a vessel connected at its opposite ends to said supply-pipe, a spirally-coiled pipe arranged within said vessel, the convolutions of said coil being disposed against the interior of the vessel, and means for feeding lubricant to one end of said coil, the other end of the coil draining into the steam-supply pipe, substantially as described.

3. In combination with a steam-supply pipe, of a vessel arranged in proximity to said pipe, pipe connections leading from said steam-supply pipe to one end of said vessel, pipe connections leading from the other end of the vessel to the steam-supply pipe, a pipe-coil disposed within said vessel, and means for feeding lubricant to one end of said coil, the other end of the coil being of less diameter than and passing through the pipe connections connecting one end of the vessel to the supply-pipe, substantially as described.

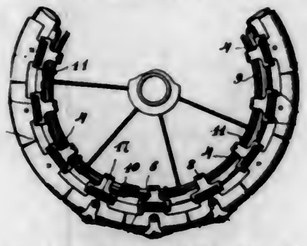
4. The combination with a steam-supply pipe, of a closed vessel arranged in proximity thereto, pipe connections leading from the

steam-supply pipe into one end of said vessel, pipe connections leading from the other end of said vessel into the steam-supply pipe, a pipe-coil disposed in said vessel, means for supplying lubricant to one end of said coil, the other end of the coil being of less diameter than and passing through the steam-discharge-pipe connections into the steam-supply pipe, the discharge end of said coil being bent in the direction in which the steam passes through the steam-supply pipe, substantially as described.

5. The combination with a steam-supply pipe, of a vessel arranged in proximity thereto and consisting of a cylindrical metallic shell contracted at one end and provided at its other end with a threaded cap or cover, pipe connections leading from the steam-supply pipe through said cap or cover into the interior of the vessel, pipe connections leading from the contracted end of the vessel back into the supply-pipe, a coiled pipe disposed within said vessel and extending at one end through said cap or cover, and a lubricant-supply pipe connected to said end of the coil, the other end of said coil being of less diameter than and passing through the pipe connections connecting the lower end of the vessel to the steam-supply pipe, substantially as described.

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**756,127. ARMOR FOR VEHICLE-TIRES.** MAJOR MILLER, Clyman, Wis. Filed Jan. 4, 1904. Serial No. 187,701. (No model.)



*Claim.*—1. A tire-armor comprising a series of shields, connectors pivotally attached to said shields, and retaining-rings connecting said connectors, substantially as described.

2. A tire-armor comprising a series of abutting shields, connectors pivotally attached to said shields, retaining-rings connecting said connectors, and means for adjusting said retaining-rings, substantially as described.

3. A tire-armor comprising a series of shields, connectors pivotally attached to said shields, retaining-wires uniting said connectors on each side of the tire, and means for connecting said retaining-wires, substantially as described.

4. A tire-armor comprising a series of abutting shields, connectors pivotally attached to said shields, retaining-wires uniting said connectors on each side of the tire, and links for connecting said retaining-wires, substantially as described.

5. A tire-armor comprising a continuous series of counterpart shields having reduced portions formed with eyes, yokes or connectors having bifurcated ends pivotally connected to the said eyes and having openings in their opposite ends, and retaining-wires passed through said openings in said yokes or connectors, substantially as described.

6. A tire-armor comprising a continuous series of counterpart abutting shields having reduced portions formed with eyes, yokes or connectors having bifurcated ends pivotally connected to the said eyes and having openings in their opposite ends, adjustable retaining-wires passed through said openings in said yokes or connectors, and links connecting said retaining-wires, substantially as described.

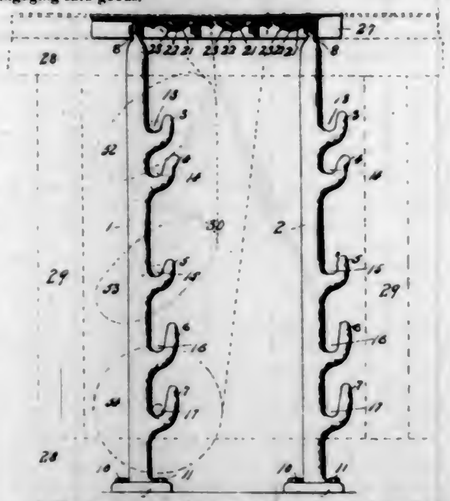
7. The combination with a vehicle-wheel of a series of loosely-connected plates, means for securing said series of plates upon said wheel, and calks detachably secured to said plates, substantially as described.

8. The combination with a tire-armor comprising a series of abutting shields, of calks removably secured to said shields, substantially as described.

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**756,128. MEANS FOR STORING, DISPLAYING, AND MEASURING GOODS.** ROY C. MILLER, Norfolk, Va., assignor of one-half to Martin V. Hammock, Jacksondale, Va., Godfrey L. Smith, Newport News, Va., and Leslie L. Davis, Portsmouth, Va. Filed Feb. 27, 1903. Serial No. 146,356. (No model.)

*Claim.*—1. The combination of a counter forming a casing, supports arranged within said casing, journals bearing in said supports and forming the mounting for boards, reels of goods on said boards, means for winding and unwinding the reels of goods, and a top mounted on the counter and having slits for the passage of the goods, and guide-rollers and yielding guides adjacent to said slits engaging said goods.



2. The combination of a counter forming a casing, uprights arranged in said casing, rolls of goods mounted in said uprights, a top arranged on the counter and having slits for the passage of the goods, and guide-rollers and yielding guides adjacent to said slits.

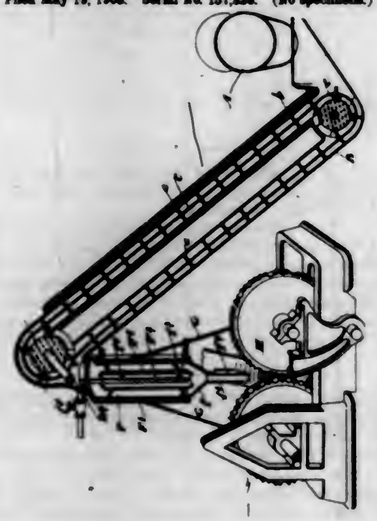
3. The combination of a series of vertical supports, adjustable arbors mounted in said supports, bolts of goods carried by said arbors, a top formed with passages for the goods, and a traveling platform on said top.

4. The combination of a counter, rails mounted thereon and formed with tracks, a platform having the rollers traveling on said tracks, a top resting on the counter and having slits, supports below the top, and bolts of goods mounted in said supports and having their free ends passing through said slits.

5. The combination of the counter forming a storing-casing supports arranged therein and having bearings, arbors or journals mounted in said bearings, boards connected to said arbors, rolls of goods on said boards, the top formed with the slits and the devices for retaining the goods in the slits and a platform traveling on the top portion.

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**756,129. METHOD OF TREATING PEAT IMMEDIATELY PRIOR TO COMPRESSION.** WILLIAM A. MILNE, Brown's Corners, Canada. Filed May 19, 1903. Serial No. 157,826. (No specimens.)





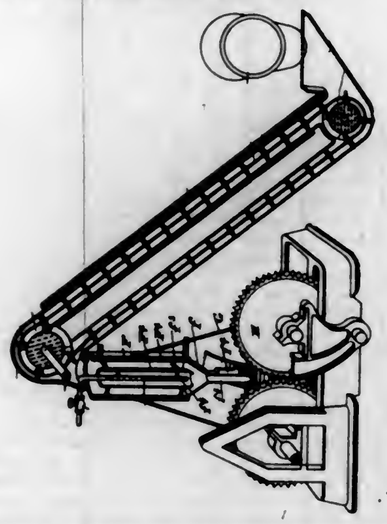
*Claim.*—1. The method of treating peat immediately prior to compressing consisting in passing pulverized peat through a heated zone and during such passage introducing moisture into the stream of pulverized peat and then compressing the peat, as and for the purpose specified.

2. The method of treating peat immediately prior to compressing consisting in passing the pulverized peat through a heated zone and during such passage introducing jets of steam into the stream of pulverized peat and then compressing the peat as and for purpose specified.

3. The method of treating peat immediately prior to compressing consisting in passing the pulverized peat through a heated zone, dividing such peat during the passage into an inner and encompassing outer stream, introducing into the inner stream moisture and finally compressing the peat as and for the purpose specified.

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**756,130. TEMPERATURE AND MOISTURE REGULATING APPARATUS.** WILLIAM A. MILNE, Brown's Corners, Canada. Filed May 19, 1903. Serial No. 157,827. (No model.)



*Claim.*—1. In a temperature and moisture regulating apparatus for peat prior to compressing, the combination with the drier and compressor, of a conveyer extending from drier to compressor, and heating means inclosing the conveyer throughout its length for keeping the heat in the peat until it reaches the compressor as and for the purpose specified.

2. In a temperature and moisture regulating apparatus for peat prior to compressing, the combination with the drier and compressor, of an endless conveyer extending from drier to compressor, and heating means inclosing the conveyer throughout its length for keeping the heat in the peat until it reaches the compressor as and for the purpose specified.

3. In a temperature and moisture regulating apparatus for peat prior to compressing, the combination with the drier and compressor, of a double tubular conveyer provided with a hopper at the bottom, an endless conveyer extending down to the bottom of the hopper and up to the top of the conveyer, and a heating-jacket surrounding the portion of the endless conveyer by which the peat is carried as and for the purpose specified.

4. The combination with the drier and compressor, and a hopper extending underneath the drier, a conveyer extending upwardly from the hopper and inclosed by a suitable jacket and having a discharge-orifice at the upper end, of a hopper extending downwardly from the discharge-orifice to the compressing-point of the compressor and provided with a suitable heating-jacket as and for the purpose specified.

5. The combination with the conveyer and compressor, of a hopper provided with a suitable heating-jacket and a tapered lower end and spout extending into proximity with the point of compressing as and for the purpose specified.

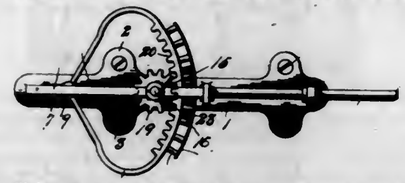
6. The combination with the conveyer and compressor, of a hopper provided with a suitable heating-jacket and a tapered lower end and spout extending into proximity with the point of compressing, a central tube located in the hopper and supports for the same as and for the purpose specified.

7. The combination with the conveyer and compressor, of a hopper provided with a suitable heating-jacket and a tapered lower end and spout extending into proximity with the point of compressing, a central tube located in the hopper and supports for the same, and a perforated steam-pipe extending down centrally in the central tube as and for the purpose specified.

8. The combination with the conveyer and compressor, of a hopper provided with a suitable heating-jacket and a tapered lower end and spout extending into proximity with the point of compressing, and a perforated steam-pipe extending down into the center of the hopper as and for the purpose specified.

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**756,131. MECHANICAL MOVEMENT.** OLIVER A. MORROW, Whitehall, Ill. Filed June 2, 1903. Serial No. 159,757. (No model.)

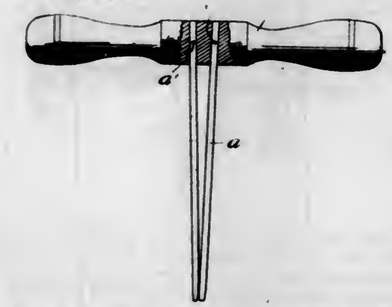


*Claim.*—1. In a mechanical movement, the combination of a frame, a shaft, an elongated pinion, a yoke having a horizontal and vertical movement with reference to the frame, the connection between the yoke and the frame consisting of a hinge having a vertical bifurcated portion connected to the frame and a horizontal bifurcated portion connected to said yoke, a rack carried by the yoke on its inner face for engaging the said elongated pinion, a series of pins carried by the yoke on its outer face, a driving-pinion engaging said pins, a shaft carrying said pinion, and means in the frame for limiting the horizontal and vertical movement of said yoke.

2. In a mechanical movement, the combination of a frame, a shaft mounted in said frame, an elongated pinion on said shaft, a yoke having a vertical and horizontal movement with reference to the frame, the connection between the yoke and the frame consisting of a hinge having a vertical bifurcated portion connected to the frame and a horizontal bifurcated portion connected to said yoke, a post in the frame for limiting the movement of the yoke, an upper and lower lug in the frame for limiting the vertical movement of the yoke, a rack carried by the yoke to engage the pinion, a series of pins carried by said yoke, a driving-pinion and a driving-shaft carrying said driving-pinion, meshing with the pins on said yoke.

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**756,132. CARPET-WINDER.** ALVIN W. MUMMON and ARTHUR S. DORNBLASER, Hagerstown, Md. Filed Apr. 7, 1903. Serial No. 151,513. (No model.)



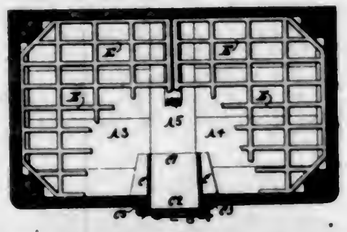
*Claim.*—1. An implement for tightening rolls of fabric consisting of a handle for turning and spring-bars extending at an angle toward each other therefrom, with their outer ends bearing against each other, substantially as set forth.

2. An implement for winding rolls of carpet, &c., comprising a turning-handle having adjacent perforations, and transverse clamping-jaws mounted in said perforations and inclined toward each other, whereby their outer ends will be sprung apart by the insertion of the web of the fabric and said fabric thus clamped between said jaws, substantially as set forth.

3. An implement for winding rolls of carpet, &c., comprising a handle having transverse perforations near its center which extend through said handle at an angle, spring-bars mounted in said perforations to bear against each other at their outer ends, said outer ends being tapered outwardly on the adjacent faces, substantially as set forth.

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**756,133. BUNKER, BIN, OR THE LIKE.** WILLIAM D. NAPIER, Paisley, Scotland. Filed July 24, 1903. Serial No. 166,907. (No model.)



*Claim.*—1. A bunker or bin, having a port or opening in the bunker, arranged close to the floor thereof, and a four-sided stationary discharge-fitting or hood-piece in the said opening, extending into the bunker, and having its vertical sides extending from its top downwardly to its bottom, substantially as described.

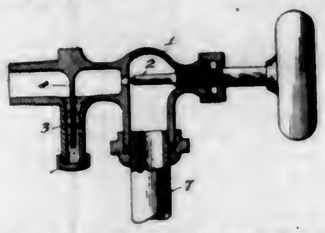
2. In combination, a bunker or bin, a floor therein composed of sloping side parts and a central flat portion, a port or opening in the bunker arranged close to and opposite the flat portion, a four-sided stationary discharge-fitting or hood-piece fitted to the said opening and projecting through it into the bunker, a door fitted to the hood-piece, and jointing material in the door.

3. In combination, a bunker or bin, a floor therein composed of sloping side parts, and a central flat portion, a grating fitted across the bunker above the sloping parts, a port or opening in the bunker, arranged close to and opposite the flat portion of the floor, a discharge-fitting or hood-piece fitted to the said opening and projecting through it into the bunker, a door fitted to the hood-piece, substantially as herein set forth.

4. A discharge-fitting for bunkers, comprising a stationary four-sided funnel portion, an opening at each end of said fitting, the top of said fitting slanting downwardly toward the interior of the bunker, and the vertical sides being adapted to extend with the top into the bunker, said sides comprising, with the top and bottom, a funnel portion closed except at opposite ends, substantially as described.

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**756,134. GLASS WATER-GAGE FOR STEAM-BOILERS.** GEORGE S. NEELEY, St. Louis, Mo. Filed July 27, 1903. Serial No. 167,132. (No model.)



*Claim.*—1. A glass water-gage for steam-boilers, having the glass tube in a vertical position, and a device upon the exterior of the boiler and adjacent the upper end of the glass tube for preventing contact of the hot steam with the said tube, substantially as described.

2. The improved glass-water-gage fitting, comprising a vertical glass tube a valve-casing, a valve, a stuffing-box, and a trap located essentially upon the exterior of the boiler and connected to said casing and adapted to prevent the continuous passage of hot steam to the glass tube, substantially as described.

3. The improved glass-water-gage fitting, comprising a valve-casing, a valve, a stuffing-box, and a trap connected to said casing and adapted to prevent the continuous passage of hot steam to the glass tube, said trap having a depending partition and a detachable cap at the lower end of said trap, substantially as described.

**756,135. MAIL-BAG FOR RAILWAY SERVICE.** PRYOR L. NEIL, Boise, Idaho. Filed June 13, 1902. Serial No. 111,563. (No model.)



*Claim.*—1. In a mail-bag, the combination with the pouch of a socket, B, attached at the bottom thereof, a stiffening and wear lining for the socket, and a D-shaped ring in such socket, the latter being of lesser length than the width of the ring, so that such ring is movable endwise, substantially as described.

2. In a mail-bag, the combination with the pouch of a socket, B, attached at the bottom thereof, a stiffening and wear lining for the socket, and a D-shaped ring, C, in said socket, the latter being of lesser length than the width of the ring, so that such ring is movable endwise, and the said ring, C, having a thickened portion *c'* for the purpose specified, substantially as described.

3. In a mail-bag the combination of a pouch having a straight-fold bottom, the socket, B, attached to such bottom, a stiffening and wear lining for such socket, and a D-shaped ring in such socket, the latter being of lesser length than the width of the ring, so that such ring is movable endwise, substantially as described.

4. The combination with the mouth of the pouch of an encircling fastening therefor consisting of a plurality of flat, curved metal links, $d^8$ $d^9$ $d^9$, each made in one piece, bent together and provided with a socket, $d^{10}$ at one end, in which are inserted the vertical bars, $d^{11}$, of the contiguous link, the folded plate, $d^7$, fastened to the pouch and provided with a socket, $d^{12}$, holding the link $d^8$, a staple, $d^3$, hasp $d^4$ and tongue $d^5$, substantially as described.

5. A mail-bag consisting of a pouch having a straight-fold bottom, a socket, B, attached to such bottom, a stiffening and wear lining for such socket, a D-shaped ring in said socket, the latter being of lesser length than the width of the ring, so that the ring is movable endwise, and an encircling fastener for the mouth of the pouch consisting of a plurality of flat, curved metal links, $d^8$ $d^9$ $d^9$, each made in one piece, bent together and provided with a socket, $d^{10}$, at one end in which are inserted the vertical bars, $d^{11}$, of the contiguous link, the folded plate, $d^7$, fastened to the pouch and provided with a socket, $d^{12}$, holding the link $d^8$, a staple, $d^3$, hasp $d^4$ and tongue $d^5$, substantially as described.

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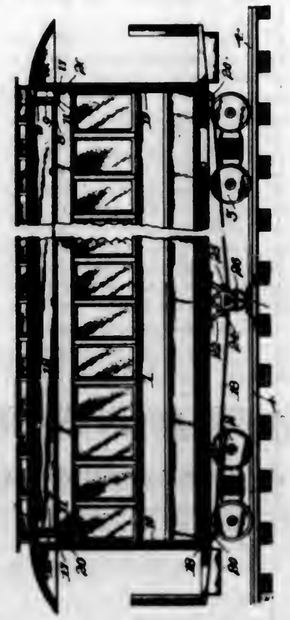
**756,136. STREET-INDICATING MECHANISM FOR VEHICLES.** ROSS L. NICHOLS, Cincinnati, Ohio. Filed May 19, 1903. Serial No. 157,749. (No model.)

*Claim.*—1. The combination of a vehicle, a plurality of indicating means carried thereby, a band for operating said indicating means, drums with which the ends of the band are connected, and means supported independently of the vehicle for actuating said drums.

2. The combination of a vehicle, a plurality of indicating means carried thereby, a band for operating the indicating means, drums to which the ends of the band are connected, gears upon the respective drums, a gear for operating the other gears, and a rack supported independently of the vehicle for actuating the operating-gear.

3. The combination of a vehicle, indicating means within the same located near the top at the opposite ends thereof, a band extending along the top of the vehicle, down the opposite ends, and under the vehicle, said band serving to operate the indicating means simultaneously, drums to which the ends of said band are connected, under the vehicle, and means supported independently of the vehicle for operating said drums.

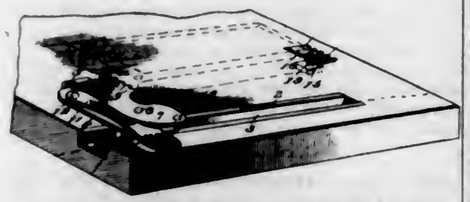




4. In street-indicating mechanism for vehicles, cabinets located at opposite ends of the vehicle, rolls journaled in said cabinets, a continuous belt connecting said rolls and having the street designations thereon, sprockets secured on the journals of said rolls, a sprocket-chain connecting said sprockets, a pulley on one of said journals, drums journaled in a frame secured to the under side of said vehicle, gears secured on the journals of said drums, a belt running over the pulleys on the journals of the rolls and having its ends connected to said drums, a gear also journaled in said frame and engaging said other gear-wheels, and a rack mounted independently of the vehicle arranged to engage said last-mentioned gear for the purpose of operating the street-indicating mechanism, substantially as described.

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**756,137. WORK-BENCH CLAMP.** JOSEPH PEHO, Oswego, N. Y. Filed Sept. 4, 1903. Serial No. 171,979. (No model.)



*Claim.*—1. A support having a guide or a slide way, in combination with a clamp extending into and normally free to move along said way and carrying and provided with a swinging movable gripping member, and a member-actuating and locking-lever means carried by and movable with said clamp to advance said gripping member to gripping position and simultaneously lock the clamp in the way.

2. A support having a guide or slide way, in combination with a clamp normally free to move along said way and comprising a base overlapping and having a portion extending into said way and an independently-movable gripping member carried by said base and having a portion in said way, and means independently mounted on and carried by said base to advance said member to gripping position and to lock the same in said position.

3. In combination with a work-bench having a depressed track, of a bench-clamp comprising a base-plate overlying the track and having a block depending in the track, a gripping-plate pivoted to the base-plate and having a stud depending in the track, and means to move the gripping-plate to bind the stud and block against opposite walls of the track.

4. In combination with a work-bench having a depressed track, of a bench-clamp comprising a base-plate overlying and having a block depending in the track, a gripping-plate pivoted to the base-plate and having a stud depending in the track and a handle to move the gripping plate to bind the stud and block against opposite walls of the track.

5. In combination with a work-bench having a depressed track, of a clamp having a block depending in the track, a gripping-plate having a stud depending in the track, means to move the gripping-plate to bind the stud and block against opposite walls of the track, and means carried by the block operative to impinge one wall of the track.

6. In combination with a work-bench having a depressed track, of a clamp having a block depending in the track, a gripping-plate having a stud depending in the track, means to move the gripping-plate to bind the stud and block against opposite walls of the track, and an eccentric disk carried by the block and movable to impinge one wall of the track.

7. In combination with a support having a depressed track, of a base-plate overlying said track and having a block depending in the track, a gripping-plate pivoted to the base-plate and having a stud depending in the track, said gripping-plate being formed with a series of gripping-teeth, and means to advance the gripping-teeth and simultaneously bind the block and stud against the walls of the track.

8. In combination with a support having a depressed track, of a clamp arranged for coöperation with said track and comprising a base-plate overlying the track and having a block depending in the track, said base-plate having an inturned lip at one end, a gripping-plate having a series of gripping-teeth, said gripping-plate being pivoted to the base-plate with its upper end slidably held beneath the lip thereof, a stud depending from the gripping-plate and within the track, and an eccentrically-mounted handle operative to advance the gripping-teeth and bind the block and stud against the walls of the track.

9. The combination with a support having a depressed track, of a bench-clamp having a rectangular block depending in the track, said block being angularly disposed with relation to the plane of the track to cause its diagonal edges to rest in proximity to the opposite walls of the track, a gripping-plate having a stud depending in the track, and means to bind the stud and diagonal edges of the block against the walls of the track.

10. The combination with a support having a depressed track, of a bench-clamp having a rectangular block depending in the track, said block being angularly disposed with relation to the plane of the track to cause its diagonal edges to rest in proximity to the opposite walls of the track, a gripping-plate having a stud depending in the track, and a handle operative to bind the stud and diagonal edges of the block against the walls of the track.

11. A bench-clamp comprising a base-plate, a gripping-plate formed with gripping-teeth and pivoted to the base-plate, said base-plate being formed with an inturned lip beneath which the gripping-plate is slidably held, a handle for forcing the gripping-plate forward, and means to secure the clamp in fixed position in the operation of the handle.

12. A support having a guide or slide way, in combination with a clamp overlying and normally movable along and removable from said way and comprising a base, a movable gripping member carried thereby, and means comprising an independently-mounted cam locking-lever to advance said member to gripping position and simultaneously lock the clamp in said way.

13. A support having a slide or guide way, in combination with a base-plate movable along the same, a swinging gripping member mounted on and normally movable independently of said base-plate, means to lock the base-plate in said way, and an independently-mounted movable handle for advancing the gripping member on the base-plate and for locking the base-plate in said way.

14. A clamp comprising a base-plate, a swinging gripping member arranged thereon and pivoted thereto, a cam lever or handle pivoted to said base-plate for advancing said member to and locking the same in gripping position and base-plate-locking means actuated by the movement of said handle.

15. A support having a guideway in combination with a clamp overlying said way and normally free to move along the same and provided with a movable gripping member mounted on the same, and an independently-mounted cam-lever to engage said member and

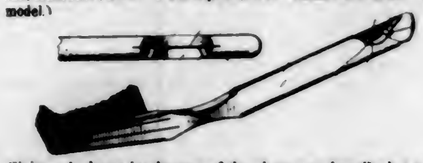
carried by and movable with said clamp to advance said member to gripping position and simultaneously lock said clamp in said way.

16. A removable bench-clamp comprising a base-plate, a gripping-plate fulcrumed thereto and swinging thereon, a cam handle or lever fulcrumed to and swinging on said base-plate to engage the rear edge of said gripping-plate and force the same to and lock the same in gripping position.

17. A removable bench-clamp comprising a base-plate, a transversely-swinging gripping member fulcrumed to said plate, a cam handle or lever fulcrumed on said plate at the rear of said member to engage the edge thereof and move the same to and lock the same in gripping position, and means to secure the clamp in fixed position on the bench.

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**756,138. TOOTH-BRUSH ATTACHMENT. ARNOLD A. PETERSEN, Muscatine, Iowa. Filed Sept. 24, 1903. Serial No. 174,508. (No model.)**



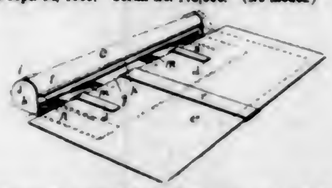
*Claim.*—1. In an implement of the character described, a supporting member having a transverse recess with an intermediate lateral recess extending therefrom into the body of the supporting member, and a relatively thin plate-like member supported in said lateral recess and extending across said transverse recess, substantially as specified.

2. In an implement of the character described, a supporting member having a transverse recess with an intermediate lateral recess extending therefrom into the body of the supporting member, and a relatively thin plate-like member having spaced radial clefts, whereby tongue-like portions are released, said plate-like member being supported in said lateral recess with said tongue-like portions in engagement with the walls of the transverse recess, substantially as specified.

3. In an implement of the character described, a supporting member having a transverse recess with spaced lateral cavities and with an intermediate recess extending from said transverse recess longitudinally of the supporting member, and a relatively thin plate-like member adapted for engagement with said longitudinal recess and extending across said transverse recess and provided with lateral tongue-like projections engaging said spaced lateral recesses, substantially as specified.

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**756,139. MANIFOLDING DEVICE. JOHN H. PETROSKEY, Detroit, Mich., assignor to Henry H. Norrington, West Bay City, Mich. Filed Sept. 14, 1903. Serial No. 173,060. (No model.)**



*Claim.*—1. In a manifolding device a base provided with yielding brackets and a cylinder eccentrically mounted in said brackets, said cylinder provided with a longitudinal opening, and means to close said opening when the cylinder is in normal position.

2. In a manifolding device a base provided with spring-metal brackets, and a spring-metal cylinder eccentrically mounted in said brackets, said cylinder constructed with a longitudinal opening whereby the cylinder may be swung down therebetween into normal position and out of normal position, and means to close said opening, when the cylinder is in normal position.

3. A manifolding device provided with brackets, a spring-metal cylinder provided with a longitudinal opening having a pivotal eccentric engagement with the brackets, said cylinder constructed with open ends, the ends thereof being closed by the brackets when the cylinder is in normal position, and means to close said opening when the cylinder is in normal position.

4. In a manifolding device the combination of a base provided with brackets and with spring-arms, a swinging cylinder eccentrically mounted in said brackets provided with a longitudinal opening, said cylinder contacted with the spring-arms when in normal position whereby said opening will be closed.

5. In a manifolding device a base provided with clamping-arms and with spring-arms and with brackets, a swinging cylinder eccentrically mounted in said brackets provided with a longitudinal opening, said cylinder contacting with the spring-arms when in normal position to close said opening.

6. In a manifolding device a base provided with clamping-arms and with spring-arms and with brackets, a swinging cylinder eccentrically mounted in said brackets provided with a longitudinal opening, said cylinder contacting with the spring-arms when in normal position to close said opening, said cylinder also provided with an elongated opening on the rear side thereof and with a cutting edge.

7. In a manifolding device a base provided with clamping-arms and with spring-arms and with brackets, a spring-cylinder eccentrically mounted in said brackets provided with a longitudinal opening, said cylinder contacting with the spring-arms when in normal position to close said opening, said base recessed on its rear edge between the spring-arms for the purpose described.

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**756,140. HOSE-LINING. WILLIAM R. REID and WILLIAM H. LAU, Detroit, Mich. Filed July 15, 1903. Serial No. 165,656. (No model.)**



*Claim.*—1. A hose-lining formed of a single strip of resilient material wound to form a series of overlapping helices, each helix being provided with an offset portion to thereby present a practically smooth and continuous surface for contact with the inner wall of the hose.

2. A hose-lining formed of a single strip of resilient material having an offset portion and wound to form a series of continuous overlapping helices to thereby present an expansible and flexible tube for contact with the inner wall of the hose.

3. A hose-lining formed of a single strip of metal wound to form a series of expansible helices each having an enlarged and reduced portion, the enlarged portion of one helix overlapping the reduced portion of the other to thereby present a practically smooth and continuous surface for contact with the inner wall of the hose

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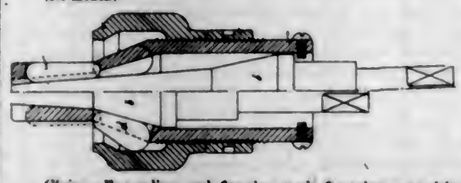
**756,141. PROCESS OF MAKING TURNBUCKLES. WILLIAM H. REHNER, Sebring, Ohio. Filed Aug. 3, 1903. Serial No. 168,086. (No model.)**



*Claim.*—The process of reinforcing tubular stock, which comprises the insertion of a solid metallic plug within the bore of said stock, heating to a welding heat the plug and that portion of the stock immediately surrounding the same, clamping said stock between dies formed with recesses and then piercing and expanding said plug radially to force it and the portion of the stock which surrounds it into said recesses, substantially as described.

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**756,142. EXPANDING AND SPREADING TOOL. AUGUST RESCHKE, Kiel, Germany. Filed Aug. 15, 1903. Serial No. 169,636. (No model.)**



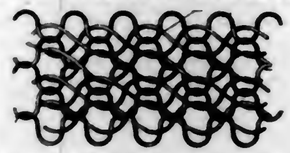
*Claim.*—Expanding and flanging tools for tubes comprising a double-tapered mandrel in combination with a set of the expanding-rollers *c* and with a set of flanging-rollers *d*, the former adapted to be acted upon by the cone of less taper and the latter to be acted upon by the truncated cone of stronger taper said rollers being lodged in cavities of the casing their axes being inclined not to intersect



with the axis of the tool, and comprising a screw cap or nut *e* and an adjusting-ring *f* adapted to be screwed upon the outer threaded surface of the casing, substantially as described and for the purpose set forth.

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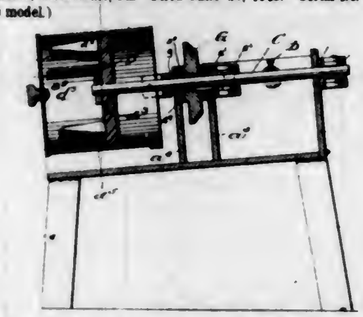
**756,143. WOVEN-WIRE MATTRESS. WALTER J. RENNINGTON, Toronto, Canada. Filed May 8, 1903. Serial No. 156,290. (No model.)**



*Claim.*—In a woven fabric, the combination with a pair of coiled wires A extending parallel with each other and having their coils interlocked, and a third wire B of greater pitch than and running in the same direction as the wires A, said wire B being threaded first through a coil of one of the wires A and then through a coil of the other wire A the points of connection between said wire B and each wire A being alternate in respect to the coils of said wire.

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**756,144. MIXING AND KNEADING MACHINE. LEWIS A. ROBERTS, Carbondale, Pa. Filed June 27, 1903. Serial No. 163,390. (No model.)**



*Claim.*—1. In a machine such as described, the combination with the frame of the receptacle for the dough, the piston-rod and kneader-head, a drive-shaft, connections between the drive-shaft and piston-rod for reciprocating said rod and head, a mutilated pinion carried by said drive-shaft, a mutilated gear-wheel with which said pinion meshes, and means for connecting said gear-wheel and receptacle together, whereby when said drive-shaft is operated the piston-rod will be reciprocated and the receptacle intermittently rotated; substantially as described.

2. In a machine such as described, the combination of the cranked drive-shaft, the pitman connected thereto, the piston-rod and head, the arm adjustably secured to the piston-rod, and connected to the pitman, whereby the position of the head may be varied; substantially as described.

3. In a machine such as described, the combination of the frame set at an inclination, the receptacle for the dough, the reciprocatory piston and means for rotating said receptacle; substantially as described.

4. In a machine such as described, the combination with the frame, of the substantially horizontal dough-receptacle, the rotary driving mechanism, a support for the open end of the receptacle in operative connection with said driving mechanism, and a movable journal at the rear end of the receptacle upon which the receptacle is supported and turns; substantially as described.

5. In a machine such as described, the combination with the frame, of the dough-receptacle journaled to rotate on a substantially horizontal axis, formed with a recess in the bottom, the rotary driving mechanism, a support for the open end of the receptacle in operative connection with said driving mechanism, a bar hinged to one side of the frame, provided centrally with a lug or pin, adapted to enter the recess in the bottom of the receptacle, upon which pin the receptacle is supported and turns; substantially as described.

6. In a machine such as described, the combination of the drive-shaft, the pinion thereon, the large gear-wheel with which the pinion meshes, the hub of said gear-wheel, the cross-arms secured to said hub, the receptacle and means for locking said cross-arms and receptacle together; substantially as described.

7. In a dough-kneading machine, the combination with the receptacle journaled to rotate on an inclined axis and means for rotating the receptacle, of a reciprocatory kneader-head working longitudinally in the receptacle and means for reciprocating the same; substantially as described.

8. In a dough-kneading machine, the combination with the receptacle journaled to rotate on an inclined axis and a driving mechanism with which said receptacle is removably connected, of a kneader-head working in the receptacle, a driving mechanism therefor and means for adjusting the position of the head with respect to its driving mechanism whereby it may be adjusted to work different distances within the receptacle; substantially as described.

9. In a dough-kneading machine, the combination with the receptacle journaled to rotate in a substantially horizontal axis, the piston-rod and kneader-head working horizontally on said receptacle, a drive-shaft, the pitman connected to said drive-shaft and piston-rod, the pinion on the drive-shaft, the gear-wheel on the piston-rod meshing with said pinion; substantially as and for the purpose set forth.

10. In a dough-kneading machine, the combination with the receptacle journaled to rotate on an inclined axis, the piston-rod and kneader-head working horizontally in said receptacle, a drive-shaft, the pitman connected to said shaft and piston-rod, the mutilated pinion on the drive-shaft, the mutilated gear-wheel on the piston-rod with which the pinion meshes; substantially as and for the purpose set forth.

11. In a dough-kneading machine, the combination with the receptacle journaled to rotate on an inclined axis, a driving mechanism therefor and means for removably connecting said receptacle with said driving mechanism, of a reciprocatory rod located in the axial line of said receptacle, a kneader-head on the rod within the receptacle, bearings in which the rod reciprocates and a driving connection coöperating with the rod between its bearings; substantially as described.

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**756,145. NUT-LOCK. THEODORE L. RUSSELL, Emlenton, Pa. Filed Dec. 6, 1902. Serial No. 134,220. (No model.)**



*Claim.*—The combination with the abutting ends of railway-rails, angle-plates applied thereto, and bolts having nuts on their outer ends passing through the rails and plates, of a locking-plate having its outer portion inclined on its upper face and flat on its lower face adapting it to rest firmly on cross-ties, the outer edge being provided with openings, and having its inner portion formed on its lower face with an indentation tapering from its inner edge outward and of a size and shape to receive the base-flanges of the rails and the lower flange of the angle-bars, and having its upper face plane to bear against the sides of the nuts, the outer edges of the base-flanges and of the lower portions of the angle-bars bearing against an abutment forming the outer face of the indentation, and openings through the plates adjacent to the abutments for the reception of spikes, substantially as described.

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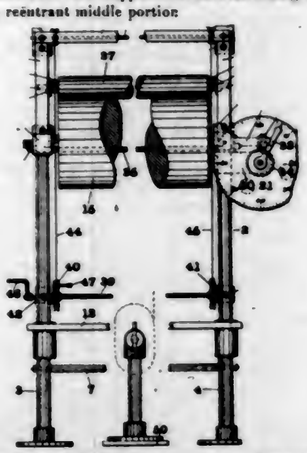
**756,146. CLOTH MEASURING AND EXAMINING MACHINE. PETER P. SCHRANEK, St. Louis, Mo., assignor of one-half to Louis F. Korach, St. Louis, Mo. Filed Nov. 30, 1903. Serial No. 183,173. (No model.)**

*Claim.*—1. A cloth measuring and examining machine comprising a frame, measuring mechanism mounted therein, and a curved spreader having a reëntrant middle portion and arranged to spread the goods to be operated on as it enters the measuring mechanism.

2. A cloth measuring and examining machine comprising a frame, measuring mechanism mounted therein, a bolt-support angularly adjustable with respect to said measuring mechanism, and a curved spreader between said bolt-support and said measuring mechanism.

3. A cloth measuring and examining machine comprising a frame, measuring mechanism therein, a bolt-support angularly adjustable with respect to said measuring mechanism, and a spreader

arranged between said bolt-support and said measuring mechanism and having a reëntrant middle portion.



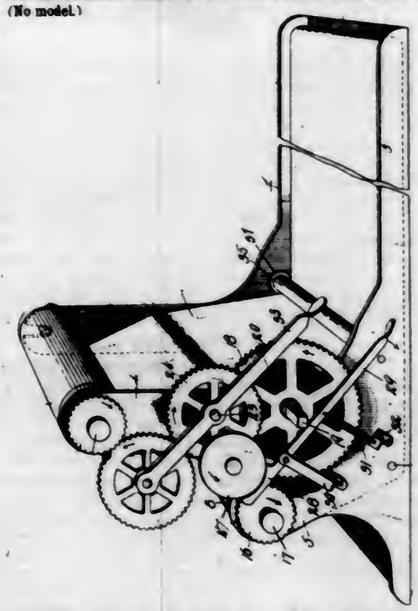
4. A cloth measuring and examining machine comprising a frame, a table extending forwardly therefrom, measuring mechanism mounted in said frame above said table and a rearwardly-extending spreader having a reëntrant middle portion and arranged to spread the goods to be operated on.

5. A cloth measuring and examining machine comprising a frame, a table extending forwardly therefrom, measuring mechanism mounted in said frame above said table, a bolt-support angularly adjustable with respect to said measuring mechanism, and a curved spreader arranged to spread the goods to be operated on as it is unreeled from said bolt-support.

6. A bolt-support for a cloth measuring and examining machine comprising uprights, bearings on said uprights, one of said bearings being slotted, and the other of said bearings having a journal-block revolubly mounted therein and provided with a recess, and a plate provided with a stud at one end adapted to engage said recess and a journal on the other end adapted to engage said slotted bearing.

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**756,147. STENOGRAPHER'S NOTE-BOOK AND COPY-HOLDER.** EARL SEXTON, New York, N. Y. Filed Oct. 10, 1902. Serial No. 126,751. (No model.)



*Claim.*—1. In a device of the class described, the combination with a frame having a horizontal and a vertical portion, of a platen sustained by the horizontal portion, elevated guides mounted in the vertical portion, a receiving-roller and a distributing-roller journaled in the frame, a web or strip of paper extended over the platen and the guides and connected with said rollers, and mechanism under control of the operator for automatically actuating the rollers to feed the paper in either direction.

2. In a device of the class described, the combination with a frame having a horizontal and a vertical portion, of a platen sustained by the horizontal portion, elevated guides mounted in the vertical portion, a receiving-roller and a distributing-roller journaled in the frame and each connected with a gear, a web or strip of paper extended over the platen and the guides and connected with said rollers, a shiftable gear adapted to be moved into engagement with either of the roller-gears at will to feed the paper in either direction, and means under control of the operator for automatically and positively driving the shiftable gear.

3. In a device of the class described, the combination with a frame having a horizontal and a vertical portion, of a platen sustained by the horizontal portion, elevated guides mounted in the vertical portion, a receiving-roller journaled in the upper end of the vertical portion, a distributing-roller journaled in rear of the platen, a web or strip of paper connected with the distributing-roller, extending over the platen and guides and connected with the receiving-roller, gears operatively connected one with each of said rollers, a shiftable gear operable for engagement with either of the roller-gears for actuating them to feed the paper in either direction, and means under control of the operator for automatically and positively driving the shiftable gear.

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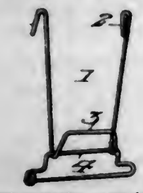
**756,148. WIRE TWISTER AND SPLICER.** LESLIE W. SIMPSON, Betteravia, Cal. Filed Dec. 21, 1903. Serial No. 186,083. (No model.)



*Claim.*—A wire twister and splicer, comprising a handle-lever, having a bearing open on one side, a twisting-head revoluble in said bearing, having a centrally-disposed opening extending from end to end thereof, a slot coextensive in length therewith extending from said opening to the periphery of the twisting-head, the latter being further provided at one end with a notch extending from said central opening to its periphery, means to lock the twisting-head to the lever-handle, and a cap on the twisting-head to close the notch thereof, said cap having a notch to engage a wire and center the same in the twisting-head.

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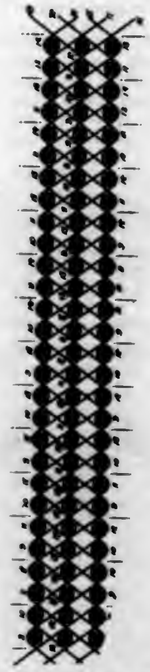
**756,149. SKIRT-HOLDER.** FANNIE G. SPEAR and ROYAL O. SPEAR, Quincy, Ill. Filed July 27, 1903. Serial No. 167,218. (No model.)



*Claim.*—A garment-supporter comprising two members, one of which is provided with upwardly-extending arms each having a hook on its upper ends, and an outwardly-inclined loop having its bends perpendicular to the lower extremities of the arms, the other member of said supporter being composed of a safety-pin having a loop formed on its upper bar which is constructed of the same configuration as that on the arms with the exception that it is of a greater width than the same to permit of its opposite sides extending beyond the bends of the loop on said arms, whereby the two loops of the two members are readily assembled together, and the loop of the pin also permitting of a lateral movement of the loop of the arms therein, substantially as specified.



**756,150. WOVEN FABRIC.** WILLIAM M. STEVENSON, Indian Orchard, Mass. Filed Feb. 10, 1902. Serial No. 93,322. (No specimens.)

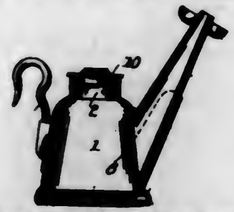


*Claim.*—1. A woven fabric in which sets of weft-threads are combined with sets of binding warp-threads comprising as many threads as there are weft-threads in a set, said warp-threads being shedded so as to form the weft-threads into face and intermediate plies, each weft-thread in each ply being contained in its own shed of warp-threads and the weft-threads of the different plies being disposed one above another, each warp-thread binding first a weft-thread of one face-ply and then a weft-thread of the other face-ply and crossing another warp-thread between each face-ply and an intermediate ply, substantially as specified.

2. A woven fabric in which sets of weft-threads are combined with sets of binding warp-threads comprising as many threads as there are weft-threads in a set, said warp-threads being shedded so as to form the weft-threads into face and intermediate plies, each weft-thread in each ply being contained in its own shed of warp-threads and the weft-threads of the different plies being disposed one above another, each warp-thread binding first a weft-thread of one face-ply and then a weft-thread of the other face-ply and crossing another warp-thread between each face-ply and an intermediate ply, and also between weft-threads of said intermediate ply, substantially as specified.

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**756,151. MINER'S LAMP.** JOHN ASTON, Monongahela, Pa. Filed Jan. 2, 1904. Serial No. 187,419. (No model.)

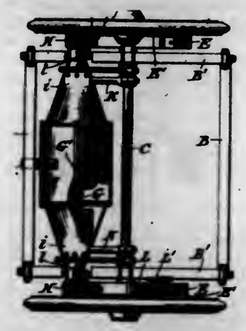


*Claim.*—1. A miner's lamp consisting of a body the base of which is formed with an outwardly-bulged flange, the inner termination of which lies in a plane transverse to the flange, and a bottom supported against downward movement by said flange and against upward movement by frictional contact of its periphery with the interior of the flange.

2. A miner's lamp consisting of a body having a spout, a guard secured to the spout and body and extending partly the length of the former and partially surrounding the same, and a spreader of ring-like cup-shape form received over and secured to the spout.

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**756,152. MOTOR-VEHICLE.** HENRY S. BALDWIN, Lynn, Mass., assignor, by mesne assignments, to Morton Trust Company, trustee, a Corporation of New York. Original application filed June 22, 1899, Serial No. 721,504. Divided and this application filed Dec. 8, 1903. Serial No. 184,254. (No model.)



*Claim.*—1. In a motor-vehicle, the combination with a driving-wheel, an axle, a motor, means interconnected with the spring system to support the motor in a rotarily-yielding manner about the axle and a driving-pinion connected with the motor, of a driving-gear and brake-drum applied to said wheel in the same plane, and a brake embracing said drum, substantially as shown and described.

2. In a motor-vehicle, the combination with the driving-wheel of a gear-plate secured to said wheel and having integral therewith a driven gear and a brake-drum, said brake-drum being within and in the same plane with said driven gear, substantially as shown and described.

3. In a motor-vehicle, the combination with the driving-wheel, of a gear-plate secured to said wheel and having integral therewith a relatively large driven gear and a relatively small brake-drum, substantially as shown and described.

4. In a motor-vehicle, the combination with the driving-wheels, axle and the frame of the truck, said frame being interconnected with the spring system and rotarily yielding about the axis of the wheels as a center, of a brake-drum applied to one of the wheels, and a brake embracing said drum, substantially as shown and described.

5. In a motor-vehicle, the combination with the driving-wheels, axle and the frame of the truck, said frame being interconnected with the spring system and rotarily yielding about the axis of the wheels as a center, of a brake-drum applied to one of the wheels, and a brake embracing said drum and anchored at one side of the axle, substantially as shown and described.

6. In a motor-vehicle, the combination with the driving-wheel of a gear-plate secured to said wheel and having integral therewith an internal driven gear and a brake-drum within and in the same plane with said internal driven gear, and an external brake-band for said brake-drum, substantially as shown and described.

7. In a motor-vehicle, the combination with the driving-wheels, axle and the frame of the truck, said frame being interconnected with the spring system and rotarily yielding about the axis of the wheels as a center, of a brake-drum applied to one of the wheels, and a brake embracing said drum and anchored to the rotarily-yielding frame, substantially as shown and described.

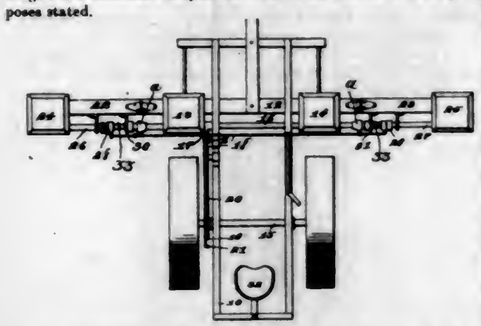
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**756,153. AUTOMATIC CORN-PLANTER AND MARKER.** GASTON S. BOYD, Russell, Iowa, assignor of one-third to Herbert S. Boyd, Russell, Iowa. Filed July 26, 1902. Serial No. 117,010. (No model.)

*Claim.*—1. In a corn-planter, a rock-shaft having extensions detachably connected with its ends by universal joints, a cam fixed to the shaft, clutches for operating the shaft extensions with the rock-shaft, seedbox-supports hinged to the sides of the carriage-frame and seedboxes fixed on the ends of the supports, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a corn-planter, a rock-shaft having extensions connected

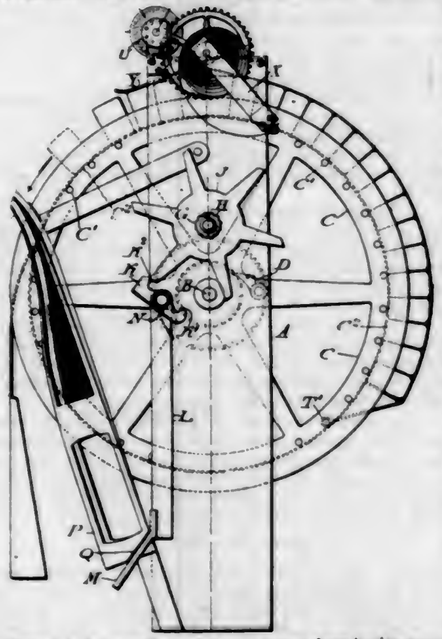
with its ends by universal joints, a cam fixed to the shaft, clutches for connecting the shaft extensions with the rock-shaft, seedbox-supports hinged to the sides of the carriage-frame and seedboxes fixed on the ends of the supports, and means for normally retaining the rock-shaft in position to project the fixed cam rearward, arranged and combined to operate in the manner set forth for the purposes stated.



3. An attachment for corn-planters comprising a rock-shaft, a fixed cam at its central portion and extensions connected by universal joints, clutches for operating the extensions with the rock-shaft, levers for operating the clutches, a sprocket-wheel mounted on the carriage-frame, a sprocket-wheel on the rotatable carriage-axle, a chain on said sprocket-wheel having fingers projecting from links to engage the fixed cam on the rock-shaft, seedbox-supports hinged to the sides of the carriage-frame, seedboxes on the ends of the hinged supports, and means for normally retaining the rock-shaft to extend the fixed cam thereon rearward, arranged and combined to operate in the manner set forth for the purposes stated.

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**756,154. VENDING-MACHINE.** ROSS BRITTON, Clifton, Pa., assignor to Frank H. Fleer & Company, Philadelphia, Pa., a Corporation of Delaware. Filed Oct. 17, 1903. Serial No. 177,411. (No model.)



*Claim.*—1. In a vending-machine, a rotary drum having cross-rods on the periphery thereof, in combination with an object-holding strap on said periphery, the same being movably connected at one end with one of said cross-rods and set out therefrom.

2. In a vending-machine, a rotary drum having cross-rods on the periphery thereof, a band on portions of the lengths of said rods, an object-holding strap connected at one end with one of said rods and being set out from the same, and a spring-controlled reel to which the other end of the strap is attached.

3. In a vending-machine, a rotary drum having cross-rods on the periphery thereof, a band on portions of the lengths of said rods, an object-holding strap connected at one end with one of said rods and being set out from the same, a spring-controlled reel to which the other end of the strap is attached, and a device for detaining said drum at intervals.

4. In a vending-machine, a rotary drum, an object-holding strap thereon, a reel, means for winding said strap on said reel, and a resilient brake extending over the periphery of said drum in advance of said strap.

5. In a vending-machine, a drum having cross-rods at the peripheral portion thereof, and an object-support sustained on said rods, in combination with an encircling object-retainer connected with one of said rods.

6. In a vending-machine, an object-holding drum, an object-retaining device over the periphery of said drum, and a brake over said drum in advance of the terminal of the retaining action of said device.

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**756,155. GAS-BURNER.** HENRY BRYANT, Arkansas Pass, Tex. Filed Dec. 18, 1896. Renewed Aug. 11, 1903. Serial No. 169,080. (No model.)



*Claim.*—1. In an acetylene-gas burner having a body B with arms D bearing tubes with small externally-truncated conical tips with round outlets in their ends at a distance apart, formed so as to leave a surface at the extreme end of the tip between the orifice and the outer tapering walls, arranged to deliver jets of gas which will gather envelops of air about them and strike together at an angle of near ninety degrees for burning.

2. A burner for acetylene gas, having two branches set at an angle to each other with externally-truncated conical points, formed so as to leave a surface at the extreme point between the orifice and the outer tapering walls, arranged to throw jets of gas together for burning at a distance from said points, and draw a current of air converging to the end of each cone, to prevent deposit of carbon on the tips.

3. In a burner the combination of two burner-tips, having externally-truncated conical ends, formed so as to leave a surface at the extreme end of the tip between the orifice and the outer tapering walls, arranged obliquely upward and each having an exceedingly-small orifice opening from its apex, the tips being directed toward each other whereby the jet of gas emitted from each tip impinges upon the other jet at a considerable distance above the tips to form the luminous flame out of contact with said tips and little surface is formed at the tips to heat the gas as it emerges and receive deposits of carbon.

4. In a burner the combination of two burner-tips having externally-truncated conical ends, provided with small apertures opening through the apexes of said conical ends, formed so as to leave a surface at the extreme end of the tip between the orifice and the outer tapering walls, arranged obliquely upward and directed toward each other, whereby all of the jet of gas emitted from each tip impinges upon the other jet at a considerable distance above the tips to form the luminous flame out of contact with said tips and prevent carbon deposit, and a clearance-space is formed between the orifices of the burner-tips and extending to some distance below them.

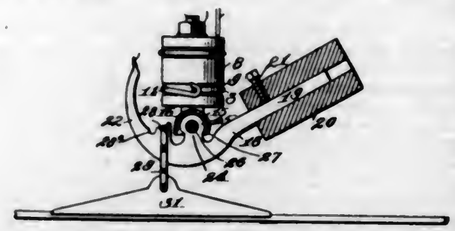
5. An acetylene-gas burner having a body with arms bearing tubes with small externally-truncated conical tips with round outlets in their ends, set a distance apart, formed so as to leave a surface at the extreme end of the tip between the orifice and the outer tapering walls, and arranged to deliver jets of gas which will gather envelops of air about them and strike together at an angle of near ninety degrees for burning, substantially as set forth

6. In a burner the combination of two burner-tips having externally-truncated conical ends provided with small apertures opening through the apexes of said conical ends, formed so as to leave a surface at the extreme point between the orifice and the outer tapering walls, arranged obliquely upward and directed toward each other whereby all the jet of gas emitted from each tip impinges upon the other jet at a considerable distance above the tips to form the luminous flame out of contact with said tips and prevent carbon deposit, and a clearance-space is formed between the orifices of the burner-tips and extending some distance below them.



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**756,156. SIGNAL APPARATUS FOR TROLLEY-RAILWAYS.** ALMO L. CHEATHAM, Louisville, Ky., assignor of three-fourths to Robert V. Cheatham, Louisville, Ky. Filed Aug. 8, 1903. Serial No. 168,793. (No model.)



*Claim.*—1. In a signaling apparatus for trolley-railways, the combination with a conductor arranged alongside the track, and a signal electrically connected with said conductor intermediate the ungrounded ends of the latter and also connected with earth, of a tilting hanger supported above the trolley-wire, means for suspending the trolley-wire from one end of said hanger, a contact arranged in the path of the free end of the hanger and electrically connected with said conductor, and means for raising the free end of the hanger into engagement with said contact when the trolley-wire is lifted by the trolley and thus complete the circuit from the trolley-wire to the signal.

2. In a signaling apparatus for trolley-railways, the combination with an ungrounded conductor arranged alongside the track, and a signal electrically connected with said conductor intermediate the ends of the latter and also connected with earth, of a tilting hanger supported above the trolley-wire, means for suspending the trolley-wire from one end of the hanger and in electrical contact therewith, a contact arranged in the path of the free end of the hanger and electrically connected with said conductor, and a weight arranged on the other end of said hanger for raising the contact end of the hanger into engagement with said contact when the trolley-wire is lifted by the trolley and thus complete the circuit from the trolley-wire to the signal.

3. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, of a tilting hanger pivotally connected with said insulator, means for connecting said hanger to the trolley-wire, means for suspending the trolley-wire from said hanger, a contact arranged in the path of movement of the free end of the hanger, a signaling apparatus in circuit with said contact, and means for moving the hanger into electrical engagement with said contact when the trolley-wire is raised, for the purpose specified.

4. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, of a tilting hanger pivotally connected with said insulator, means for suspending the trolley-wire from the free end of said hanger and electrically connecting it therewith, a contact arranged in the path of movement of said free end of the hanger, a signaling apparatus in circuit with said contact, and means for moving said free end of the hanger into engagement with said contact when the trolley-wire is raised, for the purpose specified.

5. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, of a bolt passing through the insulator and provided at its lower end with a hollow head, a tilting hanger pivoted within said hollow head, means for suspending the trolley-wire from the free end of said hanger and electrically connecting it therewith, a contact arranged in the path of movement of said free end of the hanger, a signaling apparatus in circuit with said contact, and means for moving the free end of the hanger into electrical engagement with said contact when the trolley-wire is raised, for the purpose specified.

6. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, of a bolt passing through the insulator and provided at its lower end with a hollow head, a tilting hanger pivoted within said head, means for suspending the trolley-wire from the free end of the hanger and electrically connecting it therewith, a contact arranged in the path of movement of said free end of the hanger, a signaling apparatus in circuit with said contact, means for moving the free end of the hanger into engagement with the contact when the trolley-wire is raised, and a shoulder formed on said head for limiting the movement of the hanger in one direction, for the purpose specified.

7. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, a split ring encircling said insulator, a signaling apparatus electrically connected with said split ring, of a tilting hanger pivotally connected with said insulator, means for suspending the trolley-wire from the free end of said hanger and electrically connecting it therewith, and means for moving the free end of the hanger into engagement with said split ring when the trolley-wire is raised, for the purpose specified.

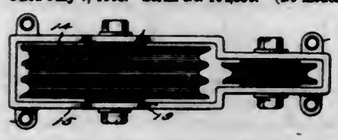
8. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, of a metallic plate fixed to the trolley-wire, a tilting hanger pivotally connected with said insulator, a metallic link connecting said plate to the free end of said hanger, a contact arranged in the path of movement of the free end of the hanger, a signaling apparatus in circuit with said contact, and means for moving the free end of the hanger into engagement with said contact when the trolley-wire is raised, for the purpose specified.

9. In a signaling apparatus for trolley-railways, the combination with an insulator supported above the trolley-wire, of a plate fixed to the trolley-wire, a tilting hanger pivotally connected with said insulator, a metallic link connected at one end of said plate and adjustably connected at its other end with the free end of said hanger, a signaling apparatus in circuit with said contact, and means for moving the free end of the hanger into engagement with said contact when the trolley-wire is raised, for the purpose specified.

10. In a signaling apparatus for trolley-railways, the combination with a cylindrical insulator supported above the trolley-wire, of a bolt passing vertically through said insulator and provided at its lower end with a hollow head, a tilting hanger pivoted within said hollow head, a metallic link for suspending the trolley-wire from the free end of said hanger and electrically connecting it therewith, a split ring arranged within the groove formed in the periphery of the insulator, a signaling apparatus in circuit with said split ring, and means for moving the free end of the hanger into engagement with said split ring when the trolley-wire is raised, for the purpose specified.

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**756,157. DROP-CURTAIN BLOCK.** LEVI J. COUCH, Springfield Mass. Filed July 7, 1903. Serial No. 164,550. (No model.)

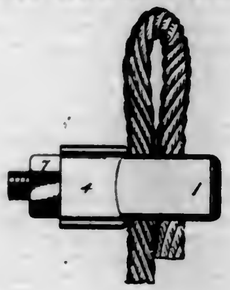


*Claim.*—1. A drop-curtain-supporting block having a frame surrounding a large sheave with a plural number of rope-grooves and a small sheave with a single rope-groove that is back of and in line with the large sheave, substantially as specified.

2. A drop-curtain-supporting block consisting of a frame, a grooved sheave with a central opening, a lubricating-cylinder located in the middle of the opening, flanged bushings located in the opening outside of the lubricating material and a pivot extending through the cylinder, the bushings and the sides of the frame, substantially as specified.

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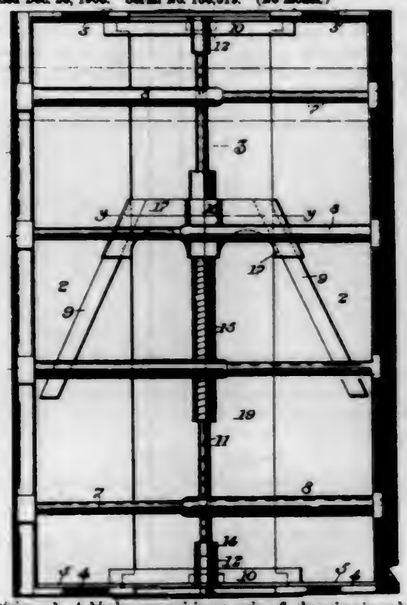
**756,158. WIRE-ROPE CLAMP.** LEVI J. COUCH, Springfield, Mass. Filed July 7, 1903. Serial No. 164,551. (No model.)



*Claim.*—A wire-rope clamp consisting of a hook having parallel limbs of unequal length, the longer limb being threaded for a portion of its length, a block having a clamping portion adapted to pass into and out of the opening between the hook-limbs and an offset portion with a smooth perforation that fits the threaded limb of the hook, the said block being movable longitudinally on the threaded portion of the hook for moving the clamping portion into and out of the opening between the limbs of the hook and being rotatable upon the threaded limb when the clamping portion is drawn back from the opening between the limbs of the hook, and a nut turning on the threaded limb of the hook outside of the block and adapted to force the block toward the opening in the hook, substantially as specified.

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**756,159. BINDER.** JOSEPH O. DECKERT, Philadelphia, Pa., assignor to William Mann Company, a Corporation of Pennsylvania. Filed Dec. 26, 1903. Serial No. 186,619. (No model.)



*Claim.*—1. A binder comprising a pair of clamping-jaws held against longitudinal movement, means for moving said jaws to and from each other, bridge portions within and bearing upon said jaws and guides on said jaws adapted to sliding movement on said bridge portions.

2. A binder comprising a pair of clamping-jaws held against longitudinal movement, means for moving said jaws to and from each other, bridge portions within and between said jaws, guides on said jaws adapted to sliding movement on said bridge portions and supports bearing upon said jaws whether in their open or closed positions.

3. A binder comprising a pair of clamping-jaws held against longitudinal movement and having base portions, means for moving said jaws to and from each other, bridge portions within and extending between said jaws and bearing against said base portions and guides on said base portions also bearing against said bridge portions whereby said bridge portions are adapted to retain said clamping-jaws in suitable relation to each other during their movement.

4. A binder comprising a pair of clamping-jaws held against longitudinal movement and having flat base portions, means for moving said jaws transversely to and from each other, bridge portions within and extending between said jaws and bearing against said base portions and guides on said jaws also bearing against said bridge portions, whereby said bridge portions are adapted to retain said clamping-jaws in plane relation to each other during their transverse movement.

5. A binder comprising a pair of clamping-jaws having base portions, a longitudinal rod, a traveler on said rod, said traveler and said base portions being provided, the one with angular ribs and the other with angular grooves adapted to engage with said ribs, bridge portions in which said rod is rotatably mounted, said bridge portions being within and extending between said clamping-jaws and guides on said clamping-jaws adapted to sliding movement on said bridge portions and to prevent the relative longitudinal movement of said clamping-jaws while permitting their transverse movement.

6. A binder comprising a pair of clamping-jaws having base portions, angularly-disposed ribs on said base portions, a longitudinal rod, a traveler on said rod having angular grooves adapted to engage with said ribs, bridge portions in which said rod is rotatably mounted, said bridge portions being within and extending between said clamping-jaws and guides on said clamping-jaws adapted to sliding movement on said bridge portions and to prevent the relative longitudinal movement of said clamping-jaws while permitting their transverse movement.

7. A binder comprising a pair of clamping-jaws, means for moving such jaws transversely to and from each other, bridge portions within and extending between said jaws, guides on said jaws adapted to sliding movement on said bridge portions whereby said bridge portions are adapted to retain said clamping-jaws in plane relation to each other during their transverse movement and additional sliding means in said jaws for maintaining such plane relation.

8. A binder comprising a pair of clamping-jaws having flat base portions, means for moving said jaws transversely to and from each other, bridge portions within and extending between said jaws, guides on said jaws adapted to sliding movement on said bridge portions and a substantially flat plate adapted to cover the space between said jaws.

9. A binder comprising a pair of clamping-jaws, means for moving said jaws transversely to and from each other, bridge portions within and extending between said jaws, guides on said jaws adapted to sliding movement on said bridge portions and a plate secured to said bridge portions and covering the space between said jaws.

10. A binder comprising a pair of clamping-jaws, guides on said jaws, bridge portions within and extending between said jaws on which said guides have sliding movement, a rod extending between said jaws and rotatable therein, a screw on said rod, a traveler on said screw and cooperating devices on said traveler and said clamping-jaws whereby said jaws may be transversely moved.

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**756,160. VALVE MECHANISM FOR EXPLOSIVE-ENGINES.** ARTON EVENSEN, Chicago, Ill., assignor of one-half to Charles R. Hannan, Council Bluffs, Iowa. Filed Mar. 11, 1901. Serial No. 50,616. (No model.)



*Claim.*—1. In an explosive-engine, a valve-gear for the engine-cylinder comprising a casing having a hollow seat, a plug having oscillatory motion on said seat and a rocker-arm secured to one end of said plug, and means acting on the outer end of said arm for giving oscillatory movement thereto embracing a pawl which is alternately engaged and tripped by said arm, said arm having a heel which strikes and moves the pawl to release the same from the arm.

2. An explosive-engine comprising a cylinder having longitudinal movement, a piston in the cylinder, a valve which moves with said cylinder, and means for actuating the valve embracing tappets on the machine-frame which are brought into action alternately by said cylinder movement.

3. An explosive-engine comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, a valve-gear for said cylinder comprising a seat moving with said cylinder and a plug in said seat, a rocker-arm attached to said plug, and tappets on the machine-frame, said rocker-arm being brought into alternate engagement with said tappets by said cylinder movement.

4. An explosive-engine comprising a cylinder having longitudinal motion, a piston in the cylinder, a valve which moves with said cylinder, and means for actuating the valve embracing tappets and a pawl on the machine-frame, and a moving part connected with the closure and which is brought into successive engagement with said tappets and pawl by said cylinder movement.

5. An explosive-engine comprising a cylinder having longitudinal motion, a piston in the cylinder, a valve-gear for said cylinder comprising a seat moving with said cylinder and a plug engaging said seat, a rocker-arm connected with said plug and tappets and a pawl on the machine-frame, said rocker-arm being brought into alternate engagement with said tappets and said pawl by said cylinder movement.

6. An explosive-engine, comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, a valve for said cylinder moving therewith, coacting means on the valve and engine-frame adapted to be brought into engagement by said cylinder movement, whereby said valve is alternately opened and closed, and governing means acting to shift the position of said means on the frame.

7. An explosive-engine comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, a valve for said cylinder moving therewith, means for actuating the valve embracing tappets, and a pawl on the machine-frame and a part connected with the moving part of the valve which is brought into engagement with said tappets and pawl by the said cylinder motion, and governing means acting to vary the position of said tappets and pawl.

8. An explosive-engine comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, a rod parallel to said cylinder, tappets and pawl on said rod, a valve for said cylinder moving therewith and provided with a part which is brought into engagement with said tappets and pawl by the cylinder motion, and means acting to shift the rod longitudinally.

9. An explosive-engine comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, a valve for said cylinder moving therewith, a main shaft, a cam on said main shaft, a rod, and operative connection between said cam and said rod acting to impart longitudinal, reciprocating movement to said rod, and tappets and a pawl on said rod adapted to actuate said valve.

10. An explosive-engine comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, a valve for said cylinder moving therewith, a main shaft, a cam on said shaft, a rock-shaft, a rocker-arm extending from said rock-shaft and engaging said cam, a second rocker-arm extending from said rock-shaft, a rod connected at one end to said second rocker-arm whereby said cam imparts an intermittent, reciprocatory, longitudinal movement to said rod, tappets and a pawl on said rod, and a rock-arm secured to said valve and adapted for engagement with said tappets and pawl.

11. An explosive-engine, comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, tappets, a pawl, a valve for said cylinder moving therewith and provided with a part adapted for engagement with said tappets and pawl, a main shaft, a cam on said shaft, a rod having connection with said cam and carrying said tappets and pawl, said cam acting to impart reciprocatory, longitudinal movement to said rod, and means constructed to automatically vary the angular relation of said cam and shaft.

12. An explosive-engine, comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, tappets and a pawl on the machine-frame, a valve for said cylinder moving therewith provided with a part adapted for engagement with said tappets and pawl; a fly-wheel, a cam having operative connection with said tappets to vary their positions relative to the cylinder-stroke a lever connected with said fly-wheel, and a weight on said lever having operative connection with the cam and operating by centrifugal force to vary the position of said cam with respect to the fly-wheel.

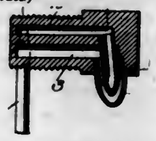
13. An explosive-engine, comprising a cylinder having reciprocating, longitudinal movement, a piston in the cylinder, a rod having intermittent reciprocating, longitudinal movement parallel to said cylinder, tappets and a pawl on said rod and a valve for said cylinder embracing a part which is adapted to be brought into operative engagement with said tappets and pawl by the relative movements of said cylinder and rod, one of said tappets being formed to hold said valve in one position during a portion of the piston-stroke.

14. An explosive-engine comprising two cylinders having reciprocating movement, pistons in the cylinders, a rod having reciprocating, longitudinal movement parallel to said cylinders, tappets and a pawl on said rod and valves for said cylinders provided each with parts adapted to be brought into engagement with said tappets and pawl by the relative movements of said rod and cylinder, one of said tappets being adapted to hold said valve in a fixed position during a portion of the stroke of each cylinder, and the tappets and pawl on said rod operating the valve of one cylinder during the period of rest of the valve of the other cylinder.

15. An explosive-engine comprising a cylinder having reciprocatory, longitudinal movement, a piston in the cylinder, tappets and a pawl, a valve for said cylinder moving therewith, and provided with a part which is adapted to be brought into engagement with said tappets and pawl, a cam on the engine-shaft provided with a concentric groove having an outward deflection therein, a rock-shaft having rocker-arms, a roller journaled on one of said arms engaging said cam-groove, and operative connections between the other of said rocker-arms and said tappets and pawl.

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**756,161. ATOMIZER.** JOHN P. FARMER, Portland, Oreg., assignor to A. F. Flegel, Portland, Oreg. Filed July 24 1903. Serial No. 166,866. (No model.)



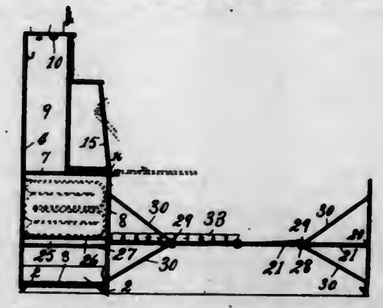
*Claim.*—1. In an atomizer, a pair of concentrically-disposed nozzles, a block to which said nozzles are secured, liquid and fluid passages formed in the block, a partition dividing said passages from each other, and means for securing the inner of said nozzles to the partition.

2. In an atomizer, the combination with a block having independent fluid and liquid passages, a partition separating said passages, an inner liquid-nozzle secured to the partition and communicating with the liquid-passage, and an outer atomizing-nozzle surrounding the first and communicating with the fluid-passage.

3. In an atomizer, a block having independent air and liquid passages, a partition dividing the passages and provided with a threaded opening, a liquid-nozzle having a threaded portion adapted to said opening, and a second atomizing-nozzle partly surrounding the first and having threads adapted to a threaded opening formed in said block.

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**756,162. FOLDING OR CABINET BED.** HERMAN FASCHIAN, San Francisco, Cal., assignor of one-half to Peter Roppen, San Francisco, Cal. Filed Aug. 12, 1903. Serial No. 169,174. (No model.)



*Claim.*—1. In an article of the character described, the combination of a cabinet having a compartment for the bedstead proper, a mattress-compartment above the first compartment, and a lowermost compartment, the bedstead folding horizontal into the first compartment and having an end which forms a panel or false front closing all of said compartments, substantially as described.

2. In an article of the character described, the combination of a cabinet having folded therein a bedstead comprising four side sections jointed together by roller-joints, transverse spreader-bars having U-shaped ends lying over said side sections, and longitudinal brace-bars, substantially as described.

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**756,163. SPOOL-HOLDER FOR SEWING-MACHINES.** ADELOS GORTON, Philadelphia, Pa. Filed Aug. 21, 1902. Serial No. 120,494. (No model.)



*Claim.*—1. An individual spool-holder comprising a substantially level base adapted to seat the end of a spool and to leave the aperture through said spool free and unobstructed, a plurality of

pins rising peripherally from said base and adapted to inclose said spool and retain it rotatably on said base and means for engaging said holder with a table or like support whereby the thread may be drawn from said spool in any direction.

2. An individual spool-holder comprising a substantially level base adapted to seat the end of a spool and to leave the aperture through said spool free and unobstructed, a plurality of pins integral with and rising peripherally from said base and adapted to inclose said spool and retain it rotatably on said base and means for engaging said holder with a table or like support whereby the thread may be drawn from said spool in any direction.

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**756,164. LOOM-SHUTTLE.** BRUNO GROSSLAUB and PAUL GROSSLAUB, Hainichen, Germany. Filed Aug. 19, 1901. Serial No. 72,524. (No model.)



*Claim.*—1. In a loom-shuttle, the combination with a shell, of oppositely-arranged thread-hooks projecting therefrom, spring-actuated sleeves slidably mounted on and covering the said hooks, levers connecting the spring-actuated sleeves and means to limit the outward movement of the said sleeves.

2. In a loom-shuttle, the combination with a hollow shell, of brackets mounted therein, thread-hooks secured to the brackets and projecting beyond the ends of the shuttle-shell, spring-actuated sleeves slidably mounted upon the thread-hooks, and having annular flanges thereon, and levers connecting the said sleeves.

3. In a loom-shuttle, the combination with a hollow shell having a platform therein, of brackets mounted on the said platform, thread-hooks secured to the brackets and projecting beyond the ends of the shuttle, sleeves slidably mounted on the said hooks and having annular flanges thereon, coil-springs on the shanks of the needle-hooks, the ends of said springs being lodged against the brackets and the annular flanges on the sleeves respectively and levers connecting the said sleeves.

4. In a loom-shuttle, the combination with a hollow shell, of brackets having apertures formed therein, adjustable thread-hooks seated in the said brackets, sleeves movably mounted on said hooks, springs around the shanks of said thread-hooks and bearing against said brackets, and means to hold the said hooks in adjusted position.

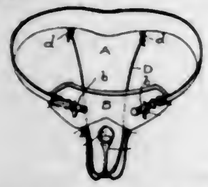
5. In a loom-shuttle, the combination with a hollow shell, of brackets having apertures formed therein, adjustable thread-hooks seated in the said apertures, set-screws to hold the hooks in adjusted position, spring-actuated sleeves having recessed outer ends, slidably mounted on the thread-hooks, means on said sleeves forming an abutment for the springs thereof and stops for the outward movement of the sleeves and levers connecting the flanges of said sleeves.

6. In a loom-shuttle, the combination with a hollow shell having a platform therein, of apertured brackets on said platform, thread-hooks adjustably seated within the brackets, and projecting beyond the ends of the shuttle, sleeves slidably mounted thereon and having annular flanges and recessed outer ends, expansive spiral springs on the shanks of the needle-hooks, the ends of the said springs being lodged against the annular flanges on the sleeves and the brackets, and levers connecting the said sleeves.

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**756,165. UTERINE SUPPORTER.** JAMES T. HALL, Chicago, Ill. Filed Aug. 12, 1899. Serial No. 727,030. (No model.)

*Claim.*—1. A uterine supporter comprising a belt, made of soft flexible material cut to fit closely to the body the middle portion to fit the small of the back, and over and behind the hips and two oppositely-curved tapering ends to fit over and behind the hips and follow the lower walls of the abdomen, a pad having a stiffening-section, two pivots placed upon opposite sides of the center of the said stiffening-section and connected to the ends of the flexible belt, a pessary and elastic cords extending from each side of the middle of the belt, at the back thereof and to the end of the pessary-stem, and from the pessary-stem to opposite sides of the middle line of the pad, substantially as described.

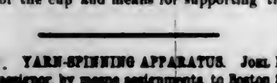


2. A uterine supporter comprising a belt of soft flexible material, to fit closely to the body, and curved to fit over and around the hips, a pad comprising a semirigid leather section having slots therein and two buckle-straps having one end passing through one of the slots and the other end held upon the opposite sides thereof, pivots connecting the said section and ends of the buckle-straps, the said buckles being adapted to receive the ends of the belt, elastic cords secured to the belt and to the pad, and a pessary adapted to be supported by the elastic cords substantially as described.

3. A pessary of the class described comprising a stem, a cup on one end thereof set obliquely with the stem and provided with apertures in the bottom, the lateral side being longer than the front and rear walls and curved inwardly forming lateral tension-surfaces on each side of the cup, and a rounded bead extending outwardly on the margin of the cup and means for supporting the pessary in position.

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**756,166. YARN-SPINNING APPARATUS.** JOEL HAYDEN, Scituate, R. I., assignor, by mesne assignments, to Boston Spinning Ring Company, Portland, Me., a Corporation of Maine. Filed Jan. 14, 1903. Serial No. 138,978. (No model.)



*Claim.*—1. A ring-supporting base-plate adapted for attachment to a ring-rail; an integral spinning-ring; clips extending upward from the plate to the ring and clamping the latter by means of its lower flange; and ears secured to the base-plate and extending through the clips, there being sufficient difference between the height and width of the ears and the height and width of the clips to allow limited vertical and horizontal or edgewise movement.

2. A ring-supporting base-plate adapted for attachment to a ring-rail; an integral spinning-ring; ears secured to and extending up from the base-plate; and the clips or clamps *h* extending through said ears and provided at their upper ends with the outwardly-extending portions *k* and the inwardly-extending lips *m*, adapted to clamp and hold the ring by its lower flange, for the purpose set forth.

3. A ring-supporting base-plate adapted for attachment to a ring-rail; an integral spinning-ring; ears secured to and extending up from the base-plate; and the clips or clamps *h* extending through said ears and provided at their upper ends with the outwardly-extending portions *k* and the inwardly-extending lips *m* provided with the concentrically-curved inner edges *n s* adapted to clamp and hold the ring by its lower flange, for the purpose set forth.

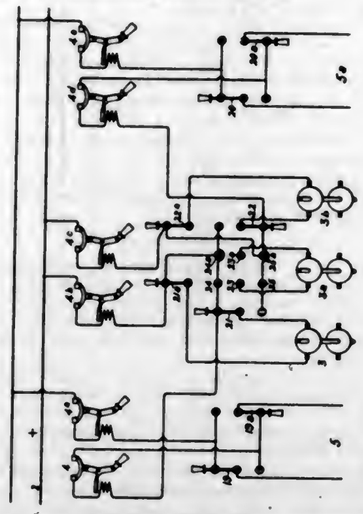
4. A ring-supporting base-plate adapted for attachment to a ring-rail; substantially staple-shaped ears extending up from said ring-rail; an integral spinning-ring; and spring clips or clamps comprising two upwardly-extending members formed at their upper ends with double lips adapted to clamp and hold rigidly by its lower flange the ring, said clips extending through the corresponding ears, substantially as and for the purpose set forth.

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**756,167. CONTROLLING ELECTRIC BOOSTERS.** EDWARD M. HEWLETT, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Original application filed Aug. 31, 1900, Serial No. 28,662. Divided and this application filed Oct. 20, 1902. Serial No. 127,984. (No model.)

*Claim.*—1. In a system of electrical distribution, the combination of a main source of current, a plurality of boosters, a plurality of feeders with which the boosters may be connected, an auxiliary booster, and transfer-switches for connecting the auxiliary booster on any feeder when its booster becomes damaged.



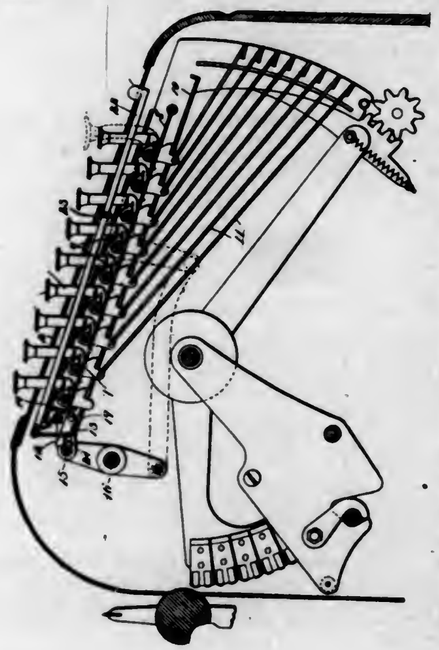


2. In a system of electrical distribution, the combination of a main source of current, a plurality of boosters, a plurality of feeders with which the boosters may be connected, and switch connections for transferring any booster to any feeder.

3. In a system of electrical distribution, the combination of a main source of current, a plurality of boosters, a plurality of feeders with which the boosters may be connected, an auxiliary booster, and removable switches and corresponding sockets for transferring the connections from the auxiliary booster to any feeder when the latter's booster is damaged.

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**756,168. CALCULATING-MACHINE.** ALBERT C. JACKSON, Harriman, Tenn., assignor to American Arithmometer Company, St. Louis, Mo., a Corporation. Filed Aug. 24, 1903. Serial No. 170,642. (No model.)



*Claim.*—1. In a calculating-machine, the combination with a plurality of series of keys, of a longitudinally-movable locking-strip for each series, an independent pawl for engaging each locking-strip, means for simultaneously moving all of the pawls to releasing position, and an independent releasing device for each pawl.

2. In a calculating-machine, the combination with a plurality of series of keys, of a locking-strip for each series, a pivoted pawl for each of the strips, means for engaging the series of pawls to simultaneously release the same, an auxiliary key-lever for each series of keys, a finger-key carried by each lever and projecting through the keyboard, and a pendent hook member disposed at the opposite end of each lever for loosely engaging a pawl whereby either a single or the plural releasing means may be independently actuated, substantially as specified.

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**756,169. AERIAL APPARATUS.** JOHN KAISER, Seneca Falls, N. Y. Filed May 26, 1902. Serial No. 109,022. (No model.)



*Claim.*—1. A lifting device for aerial apparatus comprising a support, a rotary screw, and a sliding block connected to the apparatus and movable lengthwise of the screw independently thereof, a movable threaded jaw carried by the block and a rotary drum carried by the block and connected to the jaw for forcing said jaw into and out of engagement with the screw.

2. The combination with a support and an aerial apparatus mounted thereon, of a rotary screw, a sliding block movable lengthwise of the screw and connected to the apparatus for actuating the same, movable threaded jaws carried by the block, and a drum also carried by the block and eccentrically connected to the jaws for simultaneously forcing the jaws into or out of engagement with the screw.

3. The combination with an aerial apparatus and a support carrying a rotary screw and parallel ways, of a sliding block guided on the ways and connected to the apparatus for transmitting motion thereto, a clamping-jaw mounted on the block and movable into and out of engagement with the screw, and a second jaw mounted on the former jaw and also movable into and out of engagement with the screw, and means flexibly connected to the block and to the jaws for simultaneously forcing said jaws into or out of engagement with the screw.

4. The combination with an aerial apparatus and a support carrying a rotary screw and parallel ways, of a sliding block guided on the ways and connected to the apparatus for the purpose described, clamping-jaws carried by the block, a drum eccentrically pivoted to one of the jaws, and a ring encircling the drum and connected to the other jaw, and means for rotating the drum.

5. The combination with an aerial apparatus and a support carrying a rotary screw and parallel ways, of a sliding block guided on the ways and connected to the apparatus for the purpose described, clamping-jaws carried by the block, a drum eccentrically pivoted to one of the jaws, and a ring encircling the drum and connected to the other jaw and to the sliding block, and a handpiece secured to the drum for actuating the same.

6. The combination with a support and an aerial apparatus mounted thereon, of a rotary screw, a sliding block movable lengthwise of the screw and connected to the apparatus for actuating the same, movable threaded jaws carried by the block, and a drum also carried by the block and eccentrically connected to the jaws for simultaneously forcing the jaws into or out of engagement with the screw, and a handpiece adjustably secured to the drum for rocking the same.

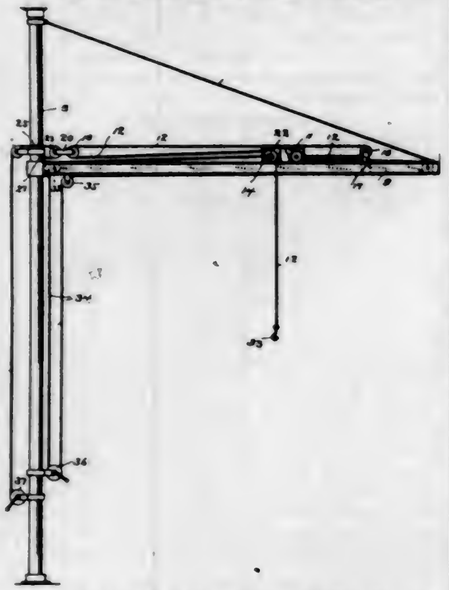
7. The combination with a support and an aerial apparatus mounted thereon, of a rotary screw, a sliding block movable lengthwise of the screw and connected to the apparatus for actuating the same, movable threaded jaws carried by the block, and a drum having a plurality of apertures arranged at varying distances from its center either of which is adapted to receive a pin secured to one of the jaws, said drum being eccentrically connected to the other jaw.

8. A lifting device for aerial apparatus comprising a support, a rotary screw, a sliding block connected to the apparatus and movable lengthwise of the screw independently thereof, said block being provided with upright ways, a jaw mounted in the ways and pro-

vided with guides, a second jaw movably mounted in said guides, a rocking drum eccentrically connected to said jaws for moving the same into or out of engagement with the screw, and a handpiece for actuating said drum.

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**756,170. CONVEYER SYSTEM.** DANIEL A. KEATING, Bridgeport, Conn., assignor of one-half to Clarence D. S. Miller, Bridgeport, Conn. Filed Dec. 12, 1903. Serial No. 184,889. (No model.)



*Claim.*—1. In a system of the character described the combination with a car having a pulley, a pulley 16 on a fixture and a sliding block having a pulley at each end, of a rope connected to the car and extending over pulley 16, then backward past the car and over the pulley at the forward end of the sliding block and then forward and downward over the pulley on the car, the free end thereof being adapted to receive a weight, and an operating-rope connected to a fixture and extending over the pulley at the rear end of the sliding block whereby the car may be moved in either direction, rope 12 passing freely over pulley 16 and the pulley at the forward end of the sliding block but remaining stationary relative to the pulley on the car and the weight remaining stationary.

2. In a system of the character described the combination with a car having a pulley, a pulley 16 on a fixture, a sliding block having a pulley at each end and a pulley 28 on a fixture, of a rope connected to the car and extending over pulley 16, then backward past the car and over the pulley at the forward end of the sliding block and then forward and downward over the pulley on the car, the free end thereof being adapted to receive a weight, and an operating-rope connected to a fixture and extending over the pulley at the rear end of the sliding block and over pulley 28, said rope acting when pulled to move the sliding block and the car in one direction and when released to permit said parts to be moved in the opposite direction.

3. In a system of the character described the combination with a car having pulleys, pulleys 16 on a fixture and sliding blocks carrying pulleys at both ends, of ropes 12 and 13 connected to the car and extending over pulleys 16, then backward past the car and over the pulleys at the forward ends of the sliding blocks and then forward and downward over the pulleys on the car, their free ends being adapted for the attachment of a bucket and operating-ropes connected to a fixture and extending over the pulleys at the rear ends of the sliding blocks, substantially as shown, for the purpose specified.

4. In a system of the character described the combination with a car having pulleys, pulleys 16 on a fixture, sliding blocks carrying pulleys at both ends, and pulleys 28 on a fixture, of ropes 12 and 13 which are connected to the car, extend over pulleys 16, then backward past the car and over the pulleys at the forward ends of the sliding blocks and then forward and downward over pulleys 22, their free ends being adapted to receive a bucket and operating-ropes 25 and 26 connected to a fixture and extending over the pulleys at the rear ends of the sliding blocks and over pulleys 28, substantially as shown, for the purpose specified.

5. In a system of the character described the combination with a car having pulleys, pulleys 16 on a fixture and sliding blocks carrying pulleys at both ends, of ropes 12 and 13 connected to the car and extending over pulleys 16, then backward past the car and over the pulleys at the forward ends of the sliding blocks and then downward over the pulleys on the car, a self-closing bucket attached to said ropes below the car and operating-ropes connected to a fixture and extending over the pulleys at the rear ends of the sliding blocks, said operating-ropes acting together to raise and lower the bucket and one of said ropes acting as a closing-rope when pulled, the other rope being held stationary.

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**756,171. PROCESS OF MAKING INDOXYL AND DERIVATIVES.** RUDOLF KNIETSCH, PAUL SEIDEL, and GEORG W. MEISER, Ludwigshafen-on-the-Rhine, Bavaria, Germany, assignors to the Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Bavaria. Filed Sept. 9, 1902. Serial No. 122,701. (No specimens.)

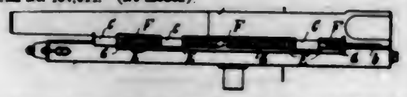
*Claim.*—1. The process of making indoxyl and derivatives thereof by treating a phenyl-glycin body with an alkali oxid.

2. The process of making indoxyl and derivatives thereof by heating a phenyl-glycin body with an alkali oxid in the presence of a suitable diluent.

3. The process of making indoxyl and derivatives thereof by heating a phenyl-glycin body with sodium oxid.

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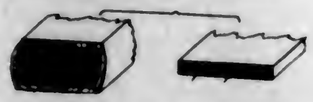
**756,172. RECOIL-GUN WITH SPECIAL DEVICES FOR PROTECTING THE SLIDE-TRACKS FROM DUST.** OTTO LAUBER, Holsterhausen-Essen-on-the-Ruhr, Germany, assignor to Fried. Krupp, Essen-on-the-Ruhr, Germany. Original application filed July 26, 1902, Serial No. 117,347. Divided and this application filed Dec. 29, 1902. Serial No. 137,011. (No model.)



*Claim.*—In a gun with barrel-recoil, the combination of the cradle formed with a slide-track, the gun-barrel mounted on said slide-track through the medium of guide-claws, sheathing enveloping the edges of the slide-track, between the guide-claws, and packings or plates of felt or the like, secured to the sides of the cradle, between the edges of the sheaths and the cradle, so that in recoil and running-out movements of the barrel the guide-claws and the sheaths slide over said packings or plates of felt or the like.

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**756,173. PRESERVED WOOD AND PROCESS OF PREPARING SAME.** IRA P. LISBE, Cleveland, Ohio, assignor to the Grasselli Chemical Company, Cleveland, Ohio, a Corporation of Ohio. Filed June 7, 1902. Serial No. 110,623. (No specimens.)



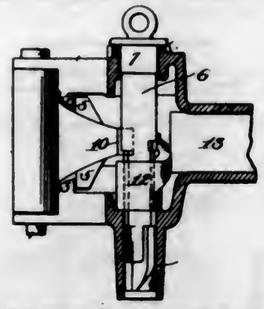
*Claim.*—1. The herein-described process for treating wood, consisting in effecting its thorough impregnation with zinc chlorid and thereafter subjecting the wood to the action of a soluble silicate, preferably sodium silicate, whereby a layer or superficial crust of zinc silicate is formed in the exterior portions of the wood, substantially as set forth.

2. The process substantially as herein described, for preserving railroad-ties and the like, which consists in effecting the thorough impregnation of the wood with a zinc-chlorid solution by means both of vacuum and high pressure, and then subjecting said wood to a solution of a soluble silicate, preferably sodium silicate, under pressure whereby zinc silicate is precipitated in the pores of the wood to a moderate depth.

3. The product of the herein-described process, comprising wood, such as railroad-ties, thoroughly impregnated substantially throughout its interior with zinc chlorid, and its exterior portions permeated with a protective layer of zinc silicate, substantially as set forth.



**756,174. CAR-COUPLING.** JAMES MEEHAN, Covington, Ky., assignor to Ross-Meehan Foundry Company, Chattanooga, Tenn., a Corporation of Tennessee. Filed Aug. 6, 1903. Serial No. 168,525. (No model.)



*Claim.*—1. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle, movable into position to release the knuckle, having a stop, and means operable by the knuckle as it is opened for bringing said stop into position to engage the draw-head, to thereby prevent the accidental dropping of said locking-pin.

2. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle, having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion when the locking-pin is in its effective position, said polygonal portion being movable out of said polygonal seat to release the knuckle, and means actuated by the knuckle as it is opened for causing the locking-pin to turn and move said polygonal portion out of register with said polygonal seat.

3. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion when the locking-pin is in its effective position, said polygonal portion being movable out of said seat to release the knuckle, and a sleeve non-rotatively connected with the locking-pin, having a projection, the knuckle being provided with a cam to engage said projection to thereby rotate the pin and move the polygonal portion out of register with the polygonal seat.

4. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion when the locking-pin is in its effective position, said polygonal portion being movable out of said seat to release the knuckle, and a sleeve having a polygonal hole, the locking-pin having a correspondingly-shaped portion to fit said hole, and said sleeve being provided with a projection, the knuckle having means for operating the projection as said knuckle is opened, to move said first-mentioned polygonal portion out of registration with its seat.

5. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion when the locking-pin is in its effective position, the said locking-pin having a shoulder to engage the knuckle to hold the same locked, and also having a releasing-notch situated below said shoulder, said polygonal portion being movable out of said polygonal seat to carry said shoulder out of engagement with the knuckle to thereby free the same, and means actuated by the knuckle as it is opened for causing the locking-pin to turn and move said polygonal portion out of register with its seat.

6. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle having a movement to release the knuckle and having a straight groove and an inclined groove merging into the straight groove, a lug upon the draw-head to enter said grooves, the lug as it enters the inclined groove on the elevation of the locking-pin causing the rotation of the latter, and means actuated by the locking-pin as it rotates for positively swinging the knuckle open.

7. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion when the locking-pin is in its effective position, said polygonal portion being movable out of said polygonal seat to release the knuckle, means for causing the rotation of the locking-pin when the knuckle is released, and means actuated by said locking-pin for positively opening the knuckle.

8. In a car-coupling, a draw-head, a knuckle carried thereby, a locking-pin for the knuckle having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion when the locking-pin is in its effective position, said polygonal portion being movable out of said polygonal seat to release the knuckle, and a sleeve non-rotatively connected with the locking-pin, having a projection, the knuckle being provided with a cam-face to be traversed by the projection as the locking-pin rotates, to thereby positively open the knuckle.

9. In a car-coupling, a draw-head, a knuckle carried thereby, having a flanged web on its inner side, the flange of the web having a cam-surface, a locking-pin for the knuckle, having a polygonal portion, the draw-head having a polygonal seat to receive said polygonal portion after the locking-pin is in its effective position, and said polygonal portion being movable out of said polygonal seat to release the knuckle, means for causing the rotation of the locking-pin after the knuckle is released, and a sleeve non-rotatively connected with the locking-pin, having a projection to engage said cam-surface to positively open the knuckle.

10. In a car-coupling, a locking-pin having a polygonal head, a pair of shoulders below the head, the faces of which diverge outwardly with respect to each other, and a notch below said locking-shoulders.

11. In a car-coupling, a locking-pin having a polygonal head, a locking-shoulder below the head, a notch below the shoulder, and straight and inclined grooves merging into each other, below said notch.

12. In a car-coupling, a draw-head, a knuckle carried thereby, the top and bottom of the draw-head having interior gibs, and the upper and lower sides of the rear or inner branch of the knuckle having cooperating gibs located behind those of the draw-head when the knuckle is closed, said rear branch having an angular nose at its free end, and a locking-pin having a correspondingly-angular notch to receive said nose and hold the knuckle in its closed position, and the outer end of said rear or inner branch, when the knuckle is closed and locked, abutting against the adjacent surface of the draw-head.

13. In a car-coupling, a draw-head, the draw-head having a locking-pin opening and a shoulder around said opening, a knuckle carried by the draw-head, a locking-pin for the knuckle entering said opening, the pin having a polygonal portion, and the opening having a corresponding polygonal portion to receive that on the locking-pin when the latter is in its effective position, said polygonal portion of the pin being movable out of the polygonal portion of the opening to release the knuckle, and said polygonal locking-pin having above its polygonal portion a cap to rest on said shoulder, and a lug upon the draw-head, the locking-pin having straight and inclined grooves merging into each other and adapted to successively receive said lug as the locking-pin is elevated.

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**756,175. POCKET-SCALE.** AUGUST F. MEISSELBACH and WILLIAM MEISSELBACH, Jr., Newark, N. J. Filed Feb. 10, 1904. Serial No. 192,862. (No model.)



*Claim.*—1. In a spring-balance, the combination, with the head having the threaded shank *g* for the attachment of the spring, and

the annular seat *i* at the base of the shank, of the shell *b* fitted to the seat, the top of the shell and the head having an annular engagement for securing the shell to the head without solder, and the annular seat *i* being adapted to support the shell when forming the annular engagement of the shell and head.

2. In a spring-balance, the combination, with the head having the threaded shank *g* for the attachment of the spring, and the annular seat *i* at the base of the shank with annular recess in the head at the base of the seat, of the shell *b* having its end burred outwardly and fitted to the recess, and the head having a flange *j* surrounding the recess for engagement with the burred end of the shell.

3. In a spring-balance, the combination, with the head having the threaded shank *g* for the attachment of the spring, and the annular seat *i* at the base of the shank with annular recess in the head at the base of the seat, of the shell *b* having its end burred outwardly and fitted to the recess, and the head having a flange *j* surrounding the recess, and locked over the burred end of the shell, as and for the purpose set forth.

4. In a spring-balance, the combination, with the head having spring attached thereto and shell surrounding the spring, of the draft-block *f* attached to the free end of the spring and provided with raised cylindrical seat having spaced depressions *a* as set forth, and the scale-tube *e* fitted over the spring and secured to such seat by similarly-spaced studs *o* forced from the tube into such depressions.

5. In a spring-balance, the combination, with the head having spring attached thereto and shell surrounding the spring, of the draft-block *f* attached to the free end of the spring and provided with raised cylindrical seat having scale-tube secured thereon, the draft-block having a central bore, and a hook-carrier swiveled in such bore, as and for the purpose set forth.

6. In a spring-balance, the combination, with the head having spring attached thereto and shell surrounding the spring, of the draft-block *f* attached to the free end of the spring and provided with raised cylindrical seat having scale-tube secured thereon, the draft-block having a central bore, with countersunk seat at its inner end, and a looped hook-carrier, having the stem of the loop extended through the bore and the two ends of the stem bent outwardly upon the countersunk seat, whereby the carrier is swiveled in the draft-block

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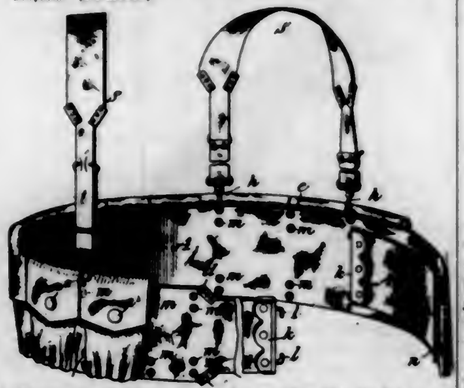
**756,176. PROTECTIVE SHEATH OR ENVELOP FOR STORAGE-BATTERY PLATES.** ACHILLE MEYGRET, Paris, France. Original application filed June 29, 1903, Serial No. 163,633. Divided and this application filed July 27, 1903. Serial No. 167,244. (No model.)

*Claim.*—1. A coating or sheath for retaining the active material on the plate of a storage battery, said coating or sheath consisting of a mixture of castor-oil, essence of turpentine, and nitrates of cellulose, substantially as described.

2. A bath for covering the plates of storage batteries and forming a coating or sheath for retaining the active material on the plate, said bath consisting of a solution of castor-oil, essence of turpentine, and nitrates of cellulose, substantially as described.

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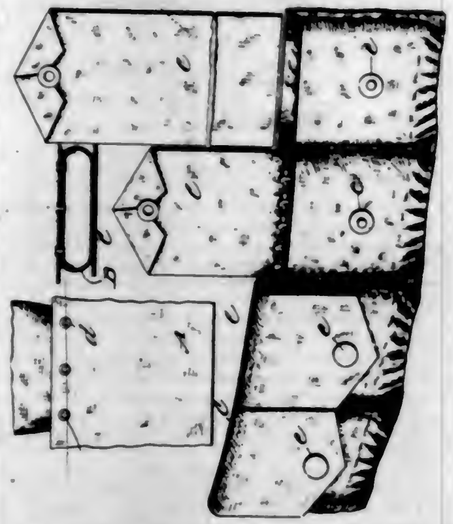
**756,177. SEAMLESS WOVEN CARTRIDGE-BELT.** AMOS MILLS, Washington, D. C. Original application filed Aug. 12, 1903, Serial No. 169,213. Divided and this application filed Oct. 14, 1903. Serial No. 177,064. (No model.)



*Claim.*—A multiply woven-fabric cartridge-belt having a selvaged wide body A with cartridge-pockets thereon and integral therewith, narrowed ends, fastening devices secured to the narrowed ends and consisting each of the hooks *l* and retaining-clips *k*, and eyelets *m* to be engaged by said hooks, located in pairs in the body of the belt in the intervals between successive pockets, as and for the purposes hereinbefore set forth.

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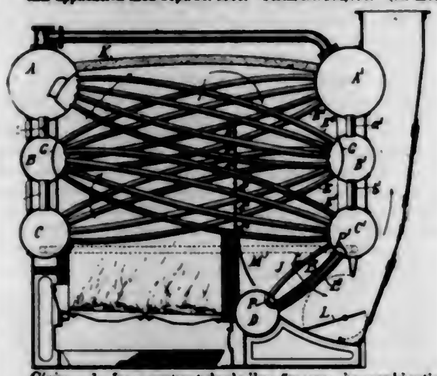
**756,178. CARTRIDGE-BELT.** AMOS MILLS, Washington, D. C. Filed Jan. 2, 1904. Serial No. 187,596. (No model.)



*Claim.*—A woven cartridge-belt having cartridge-receiving pockets, and covers therefor, of greater width than the pockets to which they are applied, attached to the back wall of their pockets, and prolonged below their point of attachment as loose strips of similar width, which extend substantially to the bottom of their respective pockets, as and for the purposes hereinbefore set forth.

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**756,179. WATER-TUBE BOILER.** JIRO MIYABARA, Tokio, Japan. Original application filed Aug. 3, 1901, Serial No. 70,723. Divided and this application filed Sept. 26, 1903. Serial No. 174,738. (No model.)



*Claim.*—1. In a water-tube-boiler furnace, in combination a water-tube compartment, opposite walls of which present series of superposed horizontal drums, a fuel-compartment beneath the same, an exit to the flue also beneath the same and a partition whereby the heated gases are directed from said fuel-compartment upward adjacent to the furnace-wall presenting one series of drums and thence downward adjacent to the furnace-wall presenting the other series of drums.

2. In a water-tube-boiler furnace, in combination, a water-tube compartment, opposite walls of which present series of superposed horizontal drums, a fuel-compartment beneath the same, an exit to the flue also beneath the same, the opposite walls of which present



drums and a partition whereby the heated gases are directed from said fuel-compartment upward adjacent to the wall presenting one series of drums and thence downward adjacent to the wall presenting the other series of drums, and thence between the drums in the walls of said exit to the flue.

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**756,180. ROOFING.** JAMES H. MUNRO, Newark, N. J., assignor of one-half to John Milton Van Orden, Newark, N. J. Filed Jan. 29, 1904. Serial No. 191,157. (No model.)



*Claim.*—1. A covering for roofs or the like composed of a plurality of slates or the like constituting a lining, and a separate covering composed of relatively small members of slate or similar material laid in the same plane with each other upon the said lining.

2. A covering for roofs or the like composed of a plurality of slates or the like constituting a lining, and a separate covering composed of relatively small members of slate or similar material laid in the same plane with each other upon the said lining, and a layer of elastic cement intervening between said lining and covering to secure the same together.

3. A covering for roofs or the like comprising a lining of slate, a bedding thereon of elastic cement and a covering of relatively small members of slate capable of independent expansion or other movement under wind strains and the like.

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**756,181. INSULATOR.** LOUIS MCCARTHY, Boston, Mass. Filed Feb. 11, 1904. Serial No. 193,046. (No model.)

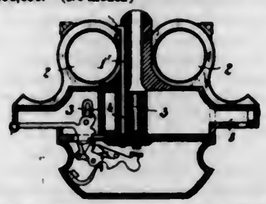


*Claim.*—1. An insulator comprising oppositely-placed metallic portions, an intermediate connecting-piece of insulating material secured to said metallic portions, and a mass of molded insulating composition covering said connecting-piece and molded over and upon said metallic portions, said molded compositions having one or more skirts formed therein, for the purpose and substantially as set forth.

2. An insulator comprising oppositely-placed metallic portions, one of said portions having a metallic flange or skirt projecting therefrom, an intermediate connecting-piece of insulating material secured to said metallic portions, and a mass of molded insulating composition covering said connecting-piece, and molded over the body of one of said metallic portions and up to and against the said skirt on the other metallic portion, substantially as set forth.

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**756,182. COMBINED KNUCKLE-DUSTER AND REVOLVER.** EUGEN NOVÁK, Szabadka, Austria-Hungary, assignor of one-half to Eugen Horváth, Budapest, Austria-Hungary. Filed Jan. 6, 1903. Serial No. 138,059. (No model.)



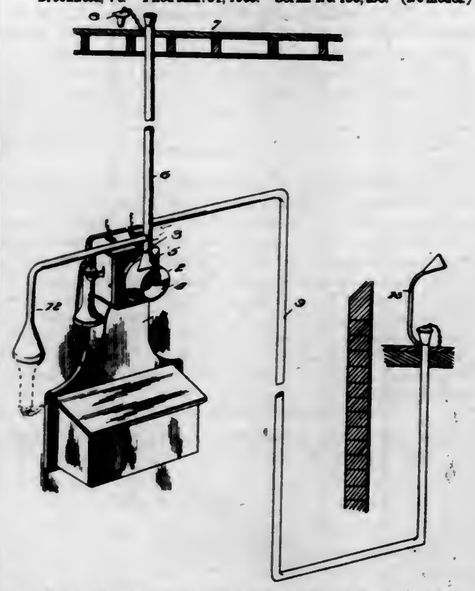
*Claim.*—1. A combined revolver and knuckle-duster, comprising a body portion made to fit the hand, rings on the front thereof, a barrel arranged between said rings, a cylinder having its axis arranged parallel to the axis of the barrel and operating means for said cylinder, said rings and barrel forming the striking part of the duster, substantially as described.

2. A combined revolver and knuckle-duster, comprising a barrel, rings on opposite sides thereof, a palm portion on the opposite side of said rings and barrel, a portion extending laterally from said palm portion, a trigger in said lateral portion, said trigger being operated by the thumb and revolver mechanism in the said portions, substantially as described.

3. In a combined revolver and knuckle-duster, a barrel, rings on opposite sides thereof, a palm portion in rear of said rings and barrel, a thumb portion extending laterally from said palm portion and a portion 8 opposite to the thumb portion and also extending laterally from the palm portion, and a whistle formed in said portion 8.

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**756,183. TELEPHONE CALL ATTACHMENT.** JASON J. NYE, Brookfield, Vt. Filed Mar. 31, 1903. Serial No. 150,438. (No model.)



*Claim.*—In combination with a telephone, a flaring bonnet fitted over the bell thereof and having an opening in its outer end, a flaring connection applied to a side of the bonnet, a tube coupled to said flaring connection, and a second tube branching from the main tube and leading to a different point, substantially as and for the purpose specified.

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**756,184. FASTENER SOCKET MEMBER.** WILLIAM S. RICHARDSON, Boston, Mass., assignor to Ball & Socket Manufacturing Company, Cheshire, Conn., and Boston, Mass., a Corporation of Connecticut. Filed May 11, 1901. Serial No. 59,734. (No model.)



*Claim.*—1. The socket-piece herein described and from which a socket member is formed in the act of setting it to material, the same having a yielding socket-entrance, a yielding tubular enlargement slitted substantially its entire length above the socket-entrance, the portion of which adjacent to the socket-entrance forms a complete part of the ball-holding chamber of the socket-piece, and a portion of which beyond said part of said ball-holding chamber is adapted to be formed into a head or flange in the act of setting the socket-piece and a preformed slitted flange extending outward from the socket-entrance.

2. A socket-piece have a yielding socket-entrance of a diameter less than that of the ball member, a yielding tubular enlargement within said socket-entrance, having a chamber of a size to receive the ball before the socket-piece is set and permit the closing

of the socket-entrance about the neck of the ball and also having a portion adapted to be formed into a fastening-flange in the act of setting, and a preformed, slitted flange surrounding the socket-entrance and having a wall or shoulder between its outer edge and the socket-entrance.

3. A socket member of a fastener having a yielding socket-entrance, an enlarged, yielding closed tubular section having arms extending from the socket-entrance and so formed in the socket-piece, a preformed, slitted flange surrounding the socket-entrance, and a fastening-flange formed by the end and a portion of the tubular section or side and comprising outwardly-folded arms extending from the end and the side of the socket member.

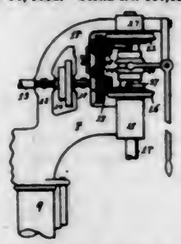
4. The combination with an unset socket-piece composed of a tubular section closed at one end and having a yielding restricted opening at the other end and a preformed flange extending outward from said opening, of independent means embracing the closed end of said tubular section for causing a sharp corner or shoulder to be formed in such end of said section in the development of a folded fastening-flange.

5. The combination of a socket member having a preformed flange surrounding a resilient socket-entrance, a yielding tubular section of a larger diameter than the socket-entrance extending from the socket-entrance and formed in the socket-piece, and a flange having a hole of about the diameter of the tubular section and the edge of which flange about said hole maintains the tubular shape of the section below it and forms a sharp edge or shoulder over which the fastening-flange of the socket member is formed by extensions of its sides.

6. The combination of a socket member having a preformed flange surrounding a yielding socket-entrance, and a yielding tubular section within said socket-entrance and of a diameter greater than that of the socket-entrance and formed in the socket-piece, with material having a hole formed therein of substantially the size of the tubular section, and a fastening-flange formed in setting the socket member and comprising arms of the sides of the tubular section folded outward over the surface of the material outside said hole and whereby the shape of that portion of the socket member, which is within the material is not changed in shape during the setting action and a close fit between the said section and the material thus permitted.

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**756,185. FRICTION-CLUTCH.** SHERMAN C. SCHAUER, Cincinnati, Ohio. Filed July 30, 1902. Serial No. 117,656. (No model.)

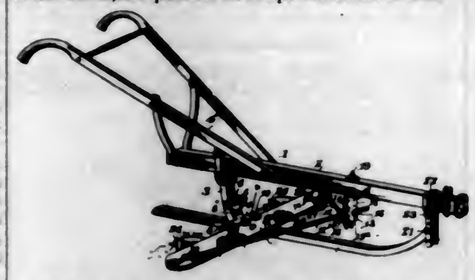


*Claim.*—The combination with a bevel-gear formed with a counterbored recess in its face, a rotative spindle movable axially therethrough, a sleeve splined on the spindle and formed with a circular concentric flange, said flange being rotatively seated in said recess and formed with a peripheral seat, a stop secured on the flange and projecting within the seat, a pin journaled through the edge of the flange near the stop and formed with a notch in its side within the recess, of an open friction-ring mounted loosely in the seat with its opposite ends in thrusting engagement respectively with the stop and with one side of the notch in the pin, an arm secured on the pin outside the flange, an adjusting-screw in the extremity of the arm, a collar movable on the sleeve, a spline secured therein and movable in a seat formed on the sleeve, said spline terminating beyond the collar in the form of a wedge, and lever mechanism arranged to move the collar with the wedge portion of the spline in engagement with the adjusting-screw, whereby the arm and pin are actuated to expand the ring into frictional engagement with the wall of the recess in the gear, substantially as described and for the purpose specified.

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**756,186. COTTON-CHOPPER AND WEEDER.** JOHN H. STEWART, Navasota, Tex. Filed Dec. 31, 1902. Serial No. 137,348. (No model.)

*Claim.*—1. In an implement of the character described, the combination with a stock including a beam and standard, of a gang-bar secured at the lower end of the standard and provided with a gang of blades, and adjustable means including a plurality of spaced devices for securing the gang-bar to the lower end of the standard in different angular positions with respect to the line of draft.



2. In an implement of the character described, the combination with a stock including a beam and standard, of a horizontal toe-piece at the lower end of the standard, a gang-bar provided with a gang of blades, and means including a plurality of spaced devices for adjustably securing the gang-bar to the toe-piece in various angular positions with respect to the line of draft.

3. In an implement of the character described, the combination with a stock including a beam and standard, of a horizontal toe-piece carried at the lower end of the standard and having a series of bolt-openings, of a gang-bar disposed across the line of draft and imposed against the under side of the toe-piece, a gang of blades depending from the gang-bar, and bolts passed through the gang-bar and through certain of the openings in the toe-piece.

4. In an implement of the character described, the combination with a stock including a beam and standard, of a gang-bar carried at the lower end of the standard and provided with a gang of blades, and a runner disposed below the gang-bar to maintain the proper position of the latter.

5. In an implement of the character described, the combination with a stock including a beam and standard, of a gang-bar carried thereby at the lower end of the standard and provided with a gang of blades, and a runner secured to the beam in advance of the gang-bar and extended under and in rear of said gang-bar to sustain the latter.

6. In an implement of the character described, the combination with a stock including a beam and standard, of a gang-bar secured at the lower end of the standard and provided with a gang of blades, a runner disposed below the beam and extended under the gang-bar, and means for securing the runner to the beam and gang-bar respectively.

7. In an implement of the character described, the combination with a stock including a beam and standard, of a toe-piece secured at the lower end of the standard, a gang-bar secured to the toe-piece and disposed across the line of draft, a gang of blades depending from the gang-bar, and a runner disposed in the line of draft and connected to the gang-bar and beam respectively.

8. In an implement of the character described, the combination with a stock including a beam and standard, of a toe-piece mounted at the lower end of the standard, a gang-bar disposed across the line of draft, a runner located below the beam and extended under the gang-bar, a bolt passed through the toe-piece, gang-bar and runner to secure said parts in a rigid organization, and means for attaching the front end of the runner to the beam.

9. In an implement of the character described, the combination with a stock including a beam and standard, of a gang-bar disposed across the line of draft and located at the lower end of the standard, a drop-bracket and a runner-bracket carried by the beam, braces extending from the opposite ends of the gang-bar to the drop-bracket, and a runner secured at its front end to the runner-bracket and extended rearwardly under the gang-bar.

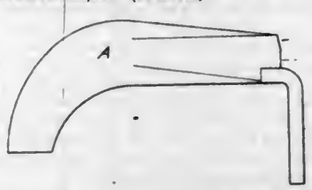
10. In an implement of the character described, the combination with a stock including a beam and standard, of a horizontal toe-piece secured to the lower end of the standard, a gang-bar secured to the toe-piece and disposed across the line of draft, a gang of blades carried by the bar, a drop-bracket and a runner-bracket depending from the beam in advance of the gang-bar, diagonal braces secured to the opposite ends of the gang-bar and to the drop-bracket respectively, a runner having an upturned front end secured to the runner-bracket, and means for rigidly securing the runner to the gang-bar.

11. In an implement of the character described, the combination with a stock, of a gang-bar carried by the stock and provided with a gang of blades arranged in pairs, the blades of each pair having their rear ends deflected toward each other, and a runner secured to the stock and extended below the gang-bar to maintain the latter in proper position.

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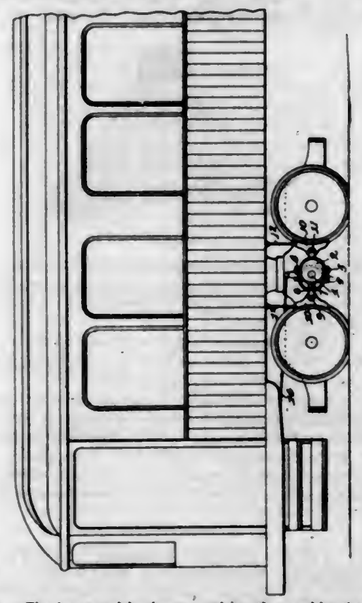
**756,187. SAW-SET.** OLIVER R. STICKLER, Olympia, Wash., assignor of one-half to George H. Funk, Olympia, Wash. Filed June 16 1903. Serial No. 161,651. (No model.)



*Claim.*—A saw-set comprising an elongated body portion provided at one end with a handle and having its opposite end flattened to form an anvil, the upper portion of which is beveled for its entire width, and a pair of prongs secured to the opposite lower corners of the anvil and being curved outwardly therefrom and then downwardly in planes approximately parallel therewith, said curved portions of the prongs being adapted to engage the saw-teeth at opposite points adjacent their bases whereby the points of the teeth will be arranged opposite the beveled portion of the anvil.

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**756,188. BRAKE.** FREDERICK STOLTENBURG, St. Louis, Mo., assignor of one-fourth to Conrad Meyer, St. Louis, Mo. Filed Oct. 12, 1903. Serial No. 176,638. (No model.)



*Claim.*—The improved brake, comprising the combination with two alined wheels, of a shaft mounted between said wheels, two eccentrics oppositely mounted on said shaft, oppositely-directed rods having one end connected to said eccentrics, brake-shoes alined with each other and with said alined wheels and attached to the outer ends of said eccentric-rods, and means for rocking said shaft, to simultaneously force apart said brake-shoes and apply them to the opposite alined treads of the wheels.

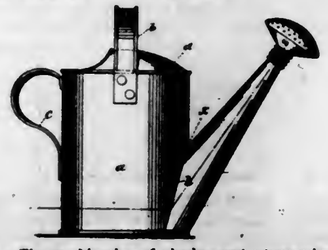
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**756,189. ARTIFICIAL FUEL AND PROCESS OF PRODUCING SAME.** WILLIAM B. THOMAS, Towns, Ga. Filed Sept. 5, 1903. Serial No. 172,160. (No specimens.)

*Claim.*—The process of producing an artificial fuel from the residuum known as "rosin-batting," which consists in pulverizing the rosin-batting, then mixing it with some less inflammable but combustible material, as some woody refuse or fiber, then heating and molding in any desired order.

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**756,190. WATERING-POT.** JOHN TRACEY, Brooklyn, N. Y., assignor to Elizabeth Cochrane Seaman, New York, N. Y. Filed July 26, 1902. Serial No. 117,075. (No model.)



*Claim.*—The combination of a body *a* and a tapered spout *c*, the base of the spout being joined to the bottom of the body, and also joined to the body along an arch extending between the points *i j*, the plane *x x* of the said arch being inclined with respect to the wall of the body.

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**756,191. FURNACE FOR BURNING DIRT.** ALBERT P. WARREN, Adairville, Ky., assignor of one-half to Guy E. Fort, Adairville, Ky. Filed Oct. 28, 1903. Serial No. 178,890. (No model.)



*Claim.*—1. In a furnace of the type described, the combination with a grate, of a receptacle disposed above the same and having a perforated bottom, and a deflector pivotally sustained between the receptacle and grate.

2. In a furnace of the type described, the combination with a grate, of a receptacle disposed above the same and having a perforated bottom, and a perforated deflector pivotally sustained between the receptacle and grate, the walls of said deflector in cross-section being arranged to diverge downwardly.

3. In a furnace of the type described having a perforated top, the combination with a grate, of a receptacle disposed above the perforated top and having a perforated bottom, one of said parts being movable for bringing the perforations into and out of register, and a deflector situated between the receptacle and grate.

4. In a furnace of the type described having a perforated top, the combination with a grate, of a receptacle disposed above the perforated top and having a perforated bottom, said receptacle being movable for bringing the perforations into and out of register, and a deflector situated between the receptacle and grate.

5. In a furnace of the type described having a perforated top and an upstanding flange surrounding the latter, the combination with a grate, of a deflector situated between the perforated top and grate, and a perforated member coöperating with the top to regulate the size of its perforations.

6. In a furnace of the type described having a perforated top and an upstanding flange surrounding the latter, the combination with a grate, of a deflector situated between the perforated top and grate, and a movable perforated member coöperating with the top to regulate the size of its perforations.

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**756,192. GARTER-CLIP.** JAMES D. WOODS, Toronto, Canada. Filed Jan. 19, 1903. Serial No. 139,670. (No model.)

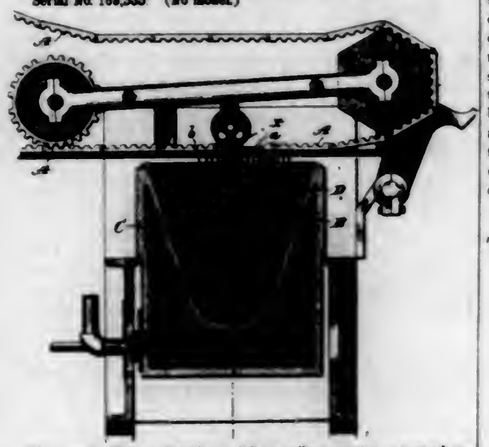
*Claim.*—In combination a main rectangular frame or loop, a

supplemental loop having diverging arms, said arms being pivotally connected to the main loop near the top thereof, said supplemental loop having a contracted neck and a rounded end, the bottom cross-bar of the main loop passing across the center of said rounded end, substantially as described.



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**756,193. MATCH-MAKING MACHINE.** JACOB P. WRIGHT, New Haven, Conn., assignor to the Diamond Match Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 26, 1899. Renewed Aug. 13, 1903. Serial No. 169,535. (No model.)



*Claim.*—1. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a roll to adjust the splints in the carrier having a series of circumferential ribs with inclined, splint-end-engaging sides projecting into the spaces between the rows of splints, so as to move over into line with the respective rows any splint ends which may be out of line with such rows, substantially as and for the purpose described.

2. In combination with a movable splint-carrier, adapted to receive and hold splints in a series of rows, a roll having a series of splint-end-engaging circumferential ribs or ridges with inclined sides projecting into the spaces between the rows of splints, and means for rotating the roll, substantially as and for the purpose described.

3. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, splint-evening means comprising for each row oppositely-inclined, inwardly-converging surfaces adapted and situated to engaged misplaced splints of the row, substantially as and for the purpose described.

4. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a splint-evener having a plurality of sets of oppositely-inclined inwardly-converging surfaces, each set being adapted and situated to engage misplaced splints of a row, substantially as and for the purpose described.

5. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a splint-evener comprising a roll having oppositely-inclined surfaces adapted and situated to engage misplaced splints of a row, substantially as and for the purpose described.

6. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a splint-evener comprising a roll having a series of ribs with inclined sides, the ribs being situated so as to enter the spaces between the ends of splints of adjacent rows, substantially as and for the purpose described.

7. In combination with a splint-carrier, adapted to engage limited portions of splints, a splint-evening device having a series of ribs or ridges, each having oppositely-inclined, inwardly-diverging surfaces adapted and situated to engage the ends of misplaced splints substantially as and for the purpose described.

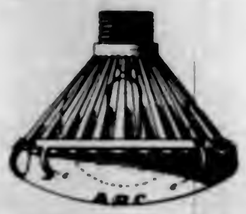
8. In combination with a splint-carrier adapted to receive and hold splints in rows, a splint-evener having for each row, inwardly-converging surfaces inclined toward opposite sides of the path of travel of the splints of a row, substantially as and for the purpose described.

9. In combination with a movable splint-carrier, adapted to receive and hold the splints in a series of rows, a splint-evener consisting of a rotating roll having grooves with inclined sides into which the splints on the carrier project, such grooves being so situated, with reference to the carrier, that their inclined sides will engage and straighten any misplaced splints having their ends standing to one side or the other of the lines of their respective rows, and, as the splints pass over the roll, the lower portions of the grooves will engage and push up into place any splints whose lower ends are standing below the level of such lower portions of the grooves before the movement of the carrier brings the splints to the roll, substantially as and for the purpose described.

10. In combination with a movable splint-carrier, adapted to receive and hold the splints in a series of rows, a composition-vat containing composition to be applied to the ends of the splints as the carrier moves along, a roll rotating in the vat and adapted to take composition therefrom and apply it to the splint ends, having a series of grooves, one for each row of splints, with oppositely-inclined sides, so situated, that the ends of the splints carried by the carrier to and past the roll, will project down into the grooves thereof and be in contact with the lower portions of the grooves, as the splints are brought over the axis of the roll, and any splints extending with their ends below a certain level, before they reach the roll, will be engaged and pushed up by the roll as the carrier brings them to and over the latter, substantially as and for the purpose described.

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**756,194. REFLECTOR.** RICHARD L. ZALINSKI, New York, N. Y. Filed Jan. 6, 1904. Serial No. 187,982. (No model.)



*Claim.*—1. A reflector comprising a partly-translucent reflector and a separate glass bowl frosted on the inside and smooth on the outside, detachably secured over the lower end of said reflector, substantially as set forth.

2. A partly-translucent prismatic reflector having a glass bowl frosted on the inside and smooth on the outside, attached on its lower end, substantially as set forth.

3. A partly-translucent reflector for incandescent lights having a partly-translucent bowl removably attached to its lower end, said bowl being provided with sign-letters, substantially as set forth.

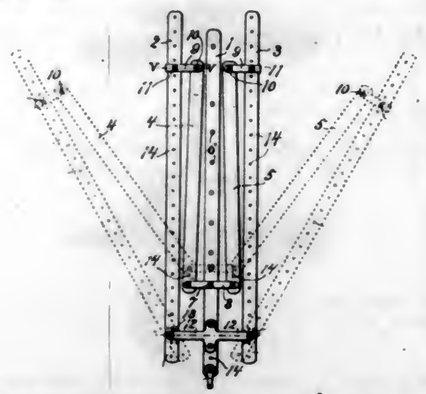
4. A partly-translucent reflector for incandescent lamps the lower end of which is closed by a bowl-shaped surface which is frosted on the inside and smooth on the outside, substantially as set forth.

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**756,195. ADJUSTABLE A-HARROW.** EDGAR H. CHENEY, Oceanside, Cal. Filed Nov. 22, 1901. Serial No. 83,230. (No model.)

*Claim.*—1. A harrow comprising a draw-bar, tooth-carrying side bars, ties pivotally connected to the side bars and adjustably and pivotally connected with the draw-bar, and arms pivotally connecting the side bars with the draw-bar, and spacing apart said side bars and draw-bar far enough to admit the ties between their respective side bars and the draw-bar.

2. A harrow comprising a perforated draw-bar, side bars pivotally connected with the draw-bar and furnished with teeth; said side bars being parallel with the draw-bar and spaced apart therefrom and movable into angularity with the draw-bar, arms carried by said side bars; ties pivoted to the arms, respectively; a perforated connecting device pivotally connecting the inner ends of the ties together and extending across the draw-bar; and a pin inserted through the perforations of the connecting device and draw-bar, the space between a side bar and the draw-bar being at least the width of a tie.



3. A harrow comprising a draw-bar provided at its front end with laterally-extending arms; side bars pivoted to said arms and furnished on both sides of said pivot with teeth; said side bars being parallel with the draw-bar and movable into angularity with the draw-bar, ties pivotally connected with said side bars respectively and slidingly connected with the draw-bar; and means for fixedly connecting said ties with the draw-bar, there being a space between each side bar and the draw-bar equal at least to the width of a tie.

4. A harrow comprising a draw-bar, side bars parallel thereto and provided with teeth and pivotally connected with said draw-bar; ties pivotally connected with said side bars and pivotally and slidingly connected with the draw-bar and furnished with teeth at their inner ends; and means for fixedly connecting the ties with the draw-bar, there being a space between each side bar and the draw-bar equal at least to the width of a tie.

5. In a harrow the combination of a draw-bar, a bracket at one end of the draw-bar, arms extending from the bracket laterally of the draw-bar, a pair of side bars pivoted to said arms and parallel with the draw-bar, teeth on the side bars, a connecting device slidably mounted on said draw-bar, ties pivoted to the connecting device and to the side bars, there being a space between each side bar and the draw-bar equal at least to the width of the tie, said ties and side bars being movable into angularity with the draw-bar, and means for locking said connecting device to the draw-bar when the ties and side bars are substantially parallel with the draw-bar.

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**756,196. WRENCH.** CHRISTOPHER HERON, Galena, Ill. Filed July 15, 1903. Serial No. 165,597. (No model.)



*Claim.*—1. A wrench comprising a bar, a fixed jaw on said bar, a jaw freely movable on the bar, a flat spring secured at one end and passing through the movable jaw adjacent to one face of the bar, and a cam-lever pivotally supported by the movable jaw and engaging the opposite face of the bar.

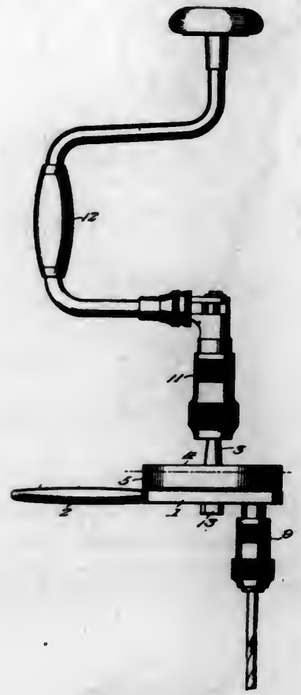
2. A wrench, comprising a bar having a toothed or serrated surface and a fixed jaw at one end of said bar, a spring fixed at one end and extending along the edge of the bar opposite the serrated face, a movable jaw mounted on the bar and embracing the spring, and a toothed segmental cam-lever hinged to the movable jaw in position to engage the toothed or rough edge of the bar.

3. A wrench, comprising a serrated bar having a fixed jaw at one end and a shank at the other end, a movable jaw mounted on the bar, a cam-lever pivoted to the movable jaw and adapted to engage the serrations of the bar, a spring passing between the bar and movable jaw and a handle secured on the shank and embracing the rear end of the spring,

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**756,197. TOOL ATTACHMENT.** ALBERT JARVIS and WILLIAM H. LANE, Berkley, Va. Filed Feb. 7, 1903. Serial No. 142,369. (No model.)

*Claim.*—The combination with a block having a handle at one end thereof, of a shaft, having an aperture, journaled therein and adapted to be connected to the socket of a brace, a cap having a depending central sleeve integral therewith, said sleeve having apertures in alinement and being adapted to embrace the shaft, a key passing through the apertures in the sleeve and shaft, teeth upon the inner surface of the side of the cap thereof, said cap bearing upon the block, a shaft journaled within the block near the outer end thereof, a gear upon one end of the shaft and arranged under and eccentric to said cap, said gear being adapted to mesh with the teeth in the cap, and a socket secured to and revolnble with the shaft of said eccentric gear.



# DESIGNS.

**36,858. STATUETTE.** LOUIS V. AROMSON, Newark, N. J. Filed Feb. 23, 1904. Serial No. 194,959. Term of patent 3½ years.



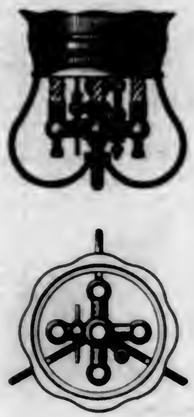
*Claim.*—The ornamental design for a statuette, as shown.

36,859. MOUNTING FOR METAL DISHES. STEPHEN H. LEAVENWORTH, Cincinnati, Ohio, assignor to the Kenton Silver Plate Company, Cincinnati, Ohio, a Corporation. Filed Feb. 10, 1904. Serial No. 193,016. Term of patent 3½ years.



*Claim.*—The ornamental design for a mounting for metal dishes as shown.

36,860. BASE FOR GAS-LAMPS. ALFRED H. HUMPHREY, Kalamazoo, Mich. Filed Dec. 9, 1901. Serial No. 85,252. Term of patent 7 years.



*Claim.*—The ornamental design for a base for gas-lamps substantially as shown.

36,861. GAS-LAMP. ALFRED H. HUMPHREY, Kalamazoo, Mich. Filed Dec. 17, 1901. Serial No. 86,316. Term of patent 7 years.

36,861.



*Claim.*—The ornamental design for a gas-lamp substantially as shown.

36,862. GRAVE MARKER OR HEAD-PIECE. WILSON BROOKS, Chicago, Ill. Filed Jan. 26, 1904. Serial No. 191,063. Term of patent 14 years.



*Claim.*—The ornamental design for a grave marker or headpiece as shown.

36,863. BRAID. JOSEPH LEVI, New York, N. Y. Filed Feb. 23, 1904. Serial No. 194,961. Term of patent 3½ years.



*Claim.*—The ornamental design for braid, substantially as herein shown.

# TRADE-MARKS

## REGISTERED MARCH 29, 1904.

42,288. LEATHER BOOTS AND SHOES. THE ALTER & MCCAFFREY CO., Cincinnati, Ohio. Filed Dec. 18, 1903.



An outline border and section-lined background with the representation of an oxford shoe at the left and a high-cut shoe at right and within the border. Used since November 1, 1903.

42,289. FUR GARMENTS, MUFFS, FUR SCARFS, AND FUR TRIMMINGS. KOHN & BAER, New York, N. Y. Filed Feb. 19, 1904.

ERMINIVER

The word "ERMINIVER." Used since February 12, 1904.

42,290. LININGS. BURTON BROS. & CO., New York, N. Y. Filed Jan. 28, 1904.



The representation of a red strip having white delineations thereon in the form of L-shaped or angular bars, the strip being applied to or produced on an end of the board around which the goods are to be rolled. Used since January 1, 1903.

42,291. CERTAIN NAMED PENCILS AND CRAYONS. GUSTAV SCHWANHÄUSSER, Nuremberg, Germany. Filed Feb. 18, 1904.

OTHELLO

The word "OTHELLO." Used since January 1, 1898.

42,292. PLAYING-CARDS. HEREDAD PUIGDENGOLAS, Barcelona, Spain. Filed Mar. 7, 1904.



The design of an eagle in profile with the wings extended in the act of flying. Used since October, 1899.

42,293. PLAYING-CARDS. HEREDAD PUIGDENGOLAS, Barcelona, Spain. Filed Mar. 7, 1904.



The design of a cock's head in profile and surrounded by a circular border. Used since October, 1899.

42,294. CERTAIN NAMED VETERINARY MEDICINES. STEPHEN M. FREE, Oklahoma, Okla. Filed Feb. 9, 1904.

PINKINE

The word "PINKINE." Used since January 1, 1904.

42,295. REMEDY FOR CUTANEOUS DISEASES. F. HOFFMANN-LA ROCHE & CO., Basle, Switzerland. Filed Feb. 9, 1904.

THIGENOL

The word "THIGENOL." Used since November 1, 1901.

42,296. REMEDY FOR DYSPEPSIA, INDIGESTION, AND OTHER STOMACH TROUBLES. THE TARRANT COMPANY, New York, N. Y. Filed Feb. 17, 1904.



The representation of two figures arranged side by side, comprised of two semicircles placed with their concave sides opposite each other and with their extremities separated and terminating in short lateral straight lines. Used since January 13, 1904.

42,297. LOTIONS, CREAMS, COSMETICS, AND PASTES. ALBERT F. WOOD, Detroit, Mich. Filed Apr. 13, 1903.

SATIN

The word "SATIN." Used since July, 1885.

42,298. MEDICINAL TONIC. LEO DREYFUS, New York, N. Y. Filed Nov. 14, 1903.

Ferronoids

The word "FERRONOIDS." Used since January 1, 1902.

42,299. HOP-ALE. WHEATLEY & BATES, LIMITED, Sheffield, England. Filed Sept. 3, 1903.



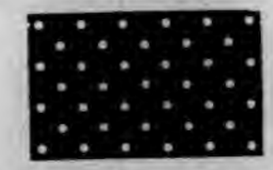

An oval-shaped figure upon which is shown the representation of a red beacon, and the word "BEACON," in large block letters, around the head of the beacon device. There is also shown a couple of flags crossed under the beacon device. Used since July, 1903.

42,300. TEA. THE DOLAN MERCANTILE COMPANY, Atchison, Kans. Filed Feb. 15, 1904.




The word "ELK," combined with the representation of an elk-head. Used since November 1, 1903.

42,301. CANNED VEGETABLES AND CANNED FRUITS. THE ACME TEA CO., Philadelphia, Pa. Filed Sept. 16, 1903.



The representation of a field having polka-dots of a color contrasting with the color of the field arranged thereon. Used since January, 1896.

42,302. DRIED FRUITS. PATTERSON & CROSS, Chicago, Ill. Filed Sept. 4, 1903.

HONOR

The word "HONOR." Used since July 1, 1901.

42,303. PREDIGESTED BEEF. H. K. MULFORD CO., Philadelphia, Pa. Filed Feb. 15, 1904.

CARNOS

The word "CARNOS." Used since January 25, 1904.

42,304. LARD AND LARD COMPOUNDS. THE CUDAHY PACKING COMPANY, Chicago, Ill., and South Omaha, Nebr. Filed Mar. 4, 1904.

42,304.

INFANTE

The word "INFANTE." Used since March 1, 1902.

42,305. WHITE AND RED LEAD. UNITED LEAD COMPANY, New York, N. Y. Filed Mar. 2, 1904.




The letters "U L C," arranged in an elliptical figure consisting of segments of circles. Used since January 1, 1904.

42,306. PAINTS AND COLORS. KÖHN & PELLENZ, Camps, Germany. Filed Mar. 3, 1904.

Stadolin

The word "STADOLIN." Used since August 17, 1903.

42,307. REFINED ASPHALTS FOR CERTAIN NAMED PURPOSES. THE BARBER ASPHALT PAVING COMPANY, Philadelphia, Pa. Filed Feb 20, 1904.

TITEKOTE

The word "TITEKOTE." Used since June 1, 1903.

42,308. TENSRIVE-LACE CONSTRUCTORS. CHARLES SANDER, Philadelphia, Pa. Filed Mar. 1, 1904.

Palma

The word "PALMA." Used since June, 1903.

42,309. PIPE COUPLINGS OR UNIONS. FRANKLIN WILLIAMS, New York, N. Y. Filed Jan. 18, 1904.

TUX EDA

The word "TUXEDA." Used since April 15, 1903.

42,310. SAWING MACHINERY. AMERICAN WOOD WORKING MACHINERY COMPANY, Williamsport, Pa., and New York, N. Y. Filed Feb. 2, 1904.



The representation of an American eagle mounted on a globe representing the world, the latter being surrounded by a steel band with upturned teeth representing a band-saw blade, and through the surface of the globe is a projecting cutter-head, the whole being mounted on the center of a gear-wheel, upon which are the initials and abbreviation "A. W. W. M. Co." Used since January 1, 1904.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# LABELS

## REGISTERED MARCH 29, 1904.

10,889.—*Title:* "ENGLISH MAY FLOWER LOTION." (For Toilet Preparation.) MAE MFG. CO., New York, N. Y. Filed March 7, 1904.

10,890.—*Title:* "ANTI-URIC." (For Medicine.) THE ANTI-URIC CO., Peoria, Ill. Filed March 5, 1904.

10,891.—*Title:* "URIC-ARTHRIN." (For Medicine.) URIC-ARTHRIN MFG. CO., Peoria, Ill. Filed March 5, 1904.

10,892.—*Title:* "HEATH'S TELULAH HEADACHE CAPSULES." (For Headache-Capsules.) THE KAMPS & SACKSTEDER DRUG CO., Appleton, Wis. Filed February 4, 1904.

10,893.—*Title:* "JUST-AS-SURE." (For Medicine.) LEWIS G. DENTON, Schenectady, N. Y. Filed March 2, 1904.

10,894.—*Title:* "FLOR FINA CIGARS." (For Cigars.) THE CENTRAL LITHOGRAPH CO., Cleveland, Ohio. Filed February 27, 1904.

10,895.—*Title:* "PUROS CIGAR." (For Cigars.) THE CENTRAL LITHOGRAPH CO., Cleveland, Ohio. Filed February 29, 1904.

10,896.—*Title:* "FLOR FINA CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH CO., Cleveland, Ohio. Filed February 29, 1904.

10,897.—*Title:* "EXQUISITOS CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH COMPANY, Cleveland, Ohio. Filed February 29, 1904.

10,898.—*Title:* "CUBAN GOLD." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed March 5, 1904.

10,899.—*Title:* "GRAINO." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed March 5, 1904.

10,900.—*Title:* "THE WHISTLER." (For Cigars.) P. A. GERKE, Toledo, Ohio. Filed March 3, 1904.

10,901.—*Title:* "NEWTON." (For Cigars.) JOSE ANTONIO POSADA, Havana, Cuba. Filed March 4, 1904.

10,902.—*Title:* "GILT EDGE CEREAL." (For Cereal Coffee.) GILT EDGE CEREAL CO., Marcellus, Mich. Filed March 4, 1904.

10,903.—*Title:* "RED ROSE." (For Tea.) JENNIE WHITEHOUSE, New York, N. Y. Filed February 6, 1904.

10,904.—*Title:* "SCHUSTER'S MALT AND HOP TONIC." (For Malt and Hop Tonics.) ADOLPH WILMANNS, Milwaukee, Wis. Filed March 7, 1904.

10,905.—*Title:* "STAAK'S SWEET CLOVER CHOCOLATES." (For Candy.) FRANK STAAK, Jr., Carroll, Iowa. Filed March 3, 1904.

10,906.—*Title:* "BUTTERS." (For Crackers.) WILLIAM H. FAXON, Buffalo, N. Y. Filed March 3, 1904.

10,907.—*Title:* "BEECH-NUT SLICED BEEF." (For Sliced Beef.) BEECH-NUT PACKING COMPANY, Canajoharie, N. Y. Filed March 2, 1904.

10,908.—*Title:* "BEECH-NUT SLICED BACON." (For Sliced Bacon.) BEECH-NUT PACKING COMPANY, Canajoharie, N. Y. Filed March 2, 1904.

10,909.—*Title:* "YALE." (For Apparel.) CHAS. A. MASTERS & CO., Boston, Mass. Filed February 29, 1904.

# PRINTS

## REGISTERED MARCH 29, 1904.

941.—*Title:* "'THIS IS THE BEST' TOPSY HOSIERY." (For Hosiery.) ELY-WALKER DRY GOODS COMPANY, St. Louis, Mo. Filed March 3, 1904.

942.—*Title:* "BLUE RIBBON SHOES." (For Shoes.) THE BROWN SHOE CO., St. Louis, Mo. Filed March 4, 1904.

943.—*Title:* "THE QUEEN." (For Candy.) CHARLES A. ROACH, St. Paul, Minn. Filed February 25, 1904.

944.—*Title:* "DOLLAR BRAND." (For Coffee.) U. S. COFFEE, TEA & SPICE CO., Denver, Colo. Filed March 7, 1904.

945.—*Title:* "BACRITINE." (For Medicine.) ALTINE CHEMICAL CO., San Francisco, Cal. Filed February 8, 1904.

946.—*Title:* "TAYLOR'S CLINICAL TUBES." (For Clinical Thermometers.) TAYLOR BROS. CO., Rochester, N. Y. Filed February 24, 1904.

947.—*Title:* "IT STANDS AT THE HEAD." (For Sewing-Machines.) THE GRAY LITHOGRAPH CO., New York, N. Y. Filed March 5, 1904.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE STRUBLE.

*Decided February 2, 1904.*

INTERFERENCE—REQUEST FOR SUSPENSION UNDER RULE 128—CONSIDERATION OF NEW REFERENCES—PRACTICE.

Where an Examiner requests a suspension of the interference under Rule 128 for the purpose of considering the pertinency of a new reference and the interference is transmitted to him for that purpose, the Examiner should set a day for hearing upon a question of patentability, and after the hearing if he is of the opinion that the claims are not patentable in view of the references a decision should be rendered dissolving the interference upon that ground and limit of appeal set. If no appeal is taken and the decision becomes final, the application should be then considered *ex parte* and the claims corresponding to the counts of the issue should be rejected.

ON petition.

ELECTRIC SIGNALING.

*Mr. Darwin S. Wolcott* and *Mr. George E. Cruse* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner holding the above-entitled application to be abandoned.

The records show that claims 1, 2, and 3 of this application were involved in interference with the claims of another application. This interference was declared June 3, 1902, and was numbered 21,859.

On October 9, 1902, the Examiner wrote the following letter to the Examiner of Interferences:

It is requested that the interference of *Winsor* v. *Struble*, No. 21,859, be suspended under the provisions of Rule 128 for the purpose of considering the pertinency of a new reference, to wit, the patent to Orcutt, 664,819, Dec. 25, 1900.

The Examiner of Interferences thereupon suspended the interference and transmitted the files to the Primary Examiner.

On October 15, 1902, the Examiner rejected claims 1, 2, and 3 on the patent to Orcutt, and in the same letter he set November 5, 1902, for a "hearing on this rejection."

On October 22, 1902, the Primary Examiner notified the parties that at the hearing set for November 5, 1902, the—

Patent No. 168,059, Spang, Sept. 21, 1875, Elec. sig., railway, sectional rail, will be introduced and considered in connection with the patentability of said claims.

On November 5, 1902, the Examiner rendered a decision dissolving the interference on the ground that "the issues were met by the references cited against them." No limit of appeal was set, for the reason, as stated in the decision, that each counsel waived his right of appeal.

No further action was taken by any tribunal of this Office, except that the Examiner of Interferences noted the fact on the record that the interference was dissolved.

The applicant did not amend the application or make other action until more than a year after the date of the decision of the Examiner dissolving the interference. He states that he expected an action to be taken by the Examiner when the files came before him for *ex parte* consideration.

The Examiner erred in practice in his action of October 15 in rejecting the claims and then setting a day for a "hearing on this rejection." When the interference was transmitted, he should have set a day for hearing upon the question of patentability.

After the hearing if he was then of the opinion that the claims were not patentable in view of the references he should have rendered a decision dissolving the interference upon that ground.

After the interference was finally dissolved each of the applications should have been considered *ex parte* and the claims corresponding to the counts of the issue should have been rejected.

Such an action was never taken in this case. As this application was in condition for action by the Examiner after the interference was dissolved and as no such action was given, it follows that the application is not abandoned. It still awaits a formal rejection by the Examiner.

The petition is granted.

### PARKIN AND PARKIN v. RIOTTE.

*Decided February 12, 1904.*

1. INTERFERENCE—MOTION TO REMAND TO THE PRIMARY EXAMINER—PATENTABILITY OF THE ISSUE IN ANOTHER INTERFERENCE.

Where the Examiner under the provisions of Rule 128 requested that the interference be remanded to him for consideration in connection with a newly-discovered reference, *Held* that this is no ground to remand another interference to him without his request, since the subject-matter of the interference is presumably different.

2. SAME—SAME—PATENTABILITY—APPLICANT AGAINST PATENTEE.

Where an applicant in interference with a patentee asks that the case be transmitted to the Examiner to consider whether the claims are patentable, *Held* that to refuse his request is no hardship, since he may avoid a continuation of the interference by following the provisions of Rule 125.

APPEAL on motion.

CHANGE AND REVERSING GEAR.

Application of Joseph W. and Harry W. Parkin.

Patent granted Carl C. Riotte February 17, 1903, No. 721,093.

*Mr. Rudolph M. Hunter* for Parkin and Parkin.

*Messrs. Knight Bros.* and *Mr. Walter Allen* for Riotte.

ALLEN, *Commissioner:*

This is an appeal by Parkin and Parkin from a decision of the Examiner of Interferences denying their motion to remand the interference to the Primary Examiner pending the determination of the patentability to them of the counts of this issue.

The showing upon which the motion is based is set forth in the affidavit of Hunter, as follows:

On June 9, 1903, this application was also placed in interference with the application of one F. J. Ball, and subsequently thereto and before any depositions had been taken, the said interference was suspended and the files thereof transmitted to the Primary Examiner for the purpose of determining the pertinency of a newly-discovered reference, said reference being French patent 306,009, filed December 5, 1900, and patented March 6, 1901.

The said French patent is believed to fully disclose the issues of the interference with Riotte, as well as those in the interference with Ball, and if it should be determined that the issues of the said interference with Ball are not patentable to Parkin and Parkin in view of the said patent, the same would in the opinion of counsel, apply with equal force to the claims involved in the interference with Riotte. Parkin and Parkin have this day filed affidavits which it is believed overcome the date of the said French patent, but until that question is determined it is believed that this interference should not be proceeded with.

This former interference with Ball, referred to, is No. 22,750. An inspection of the record of that interference shows that the Primary Examiner under the provisions of Rule 128 requested that the interference be remanded to him that he might determine the pertinency of the French patent referred to as affecting the patentability of the claims in that interference.

The fact that two interferences have been declared between different parties and upon different counts is *prima facie* evidence that the subject-matter covered by these interferences is different, and this is further strengthened by the fact that the Primary Examiner asked merely for jurisdiction to determine the pertinency of the French patent with regard to the issues in interference No. 22,750. He having failed to ask jurisdiction for that purpose in this case, the presumption is that that reference does not affect the patentability of the counts in this interference.

A further inspection of the former interference shows that upon November 27, 1903, the interference was dissolved, so that the very reason urged by the appellant for granting this motion has now no force and effect. It is further noted that Parkin and Parkin will be subjected to no hardship if this motion is not transmitted. If it is their opinion that these claims are not patentable to them, they can take any one of the steps mentioned in Rule 125 for the determination of an interference.

For these reasons the decision of the Examiner of Interferences is affirmed.

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### KLETZKER AND GOESEL *v.* DODSON.

*Decided February 13, 1904.*

1. MOTION TO EXTEND LIMIT OF APPEAL—VERIFIED SHOWING REQUIRED.

Where a motion is made to extend the limit of appeal and it is not supported by a verified showing of the reasons for delay, *Held* that it will be dismissed.

2. SAME—RULES MUST BE STRICTLY COMPLIED WITH.

The right of appeal does not stand upon the same footing as the right to a hearing and decision in the first instance, and ordinarily the rules must be strictly complied with to have a decision reviewed by an appellate tribunal.

3. LIMIT OF APPEAL—STAY—PETITION TO COMMISSIONER.

The filing of a petition that the Commissioner exercise his supervisory authority to dissolve the interference will not stay the limit of appeal from a decision as to priority of invention.

4. SAME—DATE OF DECISION CONTROLS.

Where an action is required to be taken within a certain time after a decision, *Held* that the date of the decision and not the date of the receipt of notice governs.

5. SAME—EXTENSION NOT GRANTED WHERE USELESS—PARTICULAR CIRCUMSTANCES CONSIDERED.

Where the case of the defeated party is supported only by the testimony of one of the joint inventors, it is clear that he cannot prevail on appeal. *Held*, therefore, that to extend the limit of appeal would serve no useful purpose, would result in expense and delay, and would be unjust to the opposing party.

ON motion.

MECHANISM FOR MAKING TYPES.

Application of Albert J. Kletzker and John G. Goesel filed June 19, 1897, No. 641,722. Application of Darien W. Dodson filed July 22, 1896, No. 600,151.

*Mr. J. G. Goesel* for Kletzker and Goesel.

*Mr. Francis H. Richards* and *Mr. C. A. Weed* for Dodson.

ALLEN, *Commissioner:*

This is a motion by Kletzker and Goesel to extend the limit of appeal from the decision of the Examiner of Interferences awarding priority against them to include an appeal filed by them on December 11, 1903.

This question arose in *Blackman* v. *Alexander*, (105 O. G., 2059,) where it was held that when the appellant filed an appeal outside the limit set by the Examiner—

the appellant may then make a motion supported by a showing of good reasons for the limit of appeal to be so extended as to include the appeal filed.

The showing required to support such a motion is of necessity a verified one. In *Garrison* v. *Hübner* (54 O. G., 1889) it was held:

When, however, the limit of appeal has expired and the Examiner of Interferences has lost jurisdiction, a motion should be made before the Commissioner for permission to file a motion to dissolve the interference, which motion should be accompanied by an *affidavit* stating the facts relied upon, *both in excuse* of delay and in justification of the granting of the motion at a later date than that specified in Rule 114.

Attention is called also to *Osborn* v. *Hotsapillar*, (94 O. G., 583.)

As the present motion is not accompanied by affidavits showing why appeal was not taken to the Examiners-in-Chief within the limit of appeal originally set, it has no standing and must be dismissed from further consideration.

The merits of the motion, however, have been examined, and it is found that the interference was originally declared February 6, 1901, and that numerous motions have been made therein. The case, however, proceeded to final hearing, and upon October 29, 1903, a decision of priority of invention was awarded by the Examiner of Interferences in favor of Dodson, and the unsuccessful party was given until November 18, 1903, within which to file an appeal to the Examiners-in-Chief.





The appellants understood the necessity of taking this course, for on November 16, two days prior to the day on which their limit of appeal expired, they filed a petition for the exercise of supervisory power to dissolve the interference. Accompanying the petition was a request that the proceedings in interference be suspended. On December 1 the appellants' petition to dissolve the interference and to suspend proceedings was denied. Not until ten days thereafter, on December 11, 1903, did they file their appeal, and it was not until the 24th of December that they petitioned for an extension of the limit of appeal.

It is obvious that the appellants in taking this course and filing their petition only two days before the expiration of the limit of appeal did not obtain a stay of proceedings, for Rule 123 provides in part that—

the filing of motions will not operate as a stay of proceedings in any case.

Even assuming that their petition would act as a stay of proceedings, since it was filed only two days prior to the limit of appeal, the appellants would have had to take their appeal to the Examiners-in-Chief within two days after the decision of December 1, 1903, denying their motion. It was held in *Whipple* v. *Sharp* (98 O. G., 225) that where an action is required to be taken within a certain time after a decision the date of the decision and not the date of the receipt of notice of the decision governs. This would have required this appeal to have been received in this Office as early as December 3, but it was not filed until the 11th.

In the decision of *Blackman* v. *Alexander*, previously referred to, it was said:

It may be said here that the limit of appeal fixed by the Office will not ordinarily be extended to include an appeal filed too late. It is only under very unusual and exceptional circumstances that such an extension will be granted. (*Briggs* v. *Conley*, 104 O. G., 1119.) The right of appeal does not stand upon the same footing as the right to a hearing and decision in the first instance. After a party has obtained a full and careful decision by one tribunal upon the merits of his case he must ordinarily comply strictly with the rules in order to have that decision reviewed by an appellate tribunal.

It was said in *Briggs* v. *Conley*, referred to in the above decision:

There must be some stability to decisions of this Office which have become final. The successful party is entitled to rely upon such decisions, and it would not be just to him to reopen a case after such a long delay as has occurred in this case, except under very unusual circumstances.

It is not to be presumed that the decision of the Examiner of Interferences is wrong, and since the defeated party failed to take his appeal within the limit set he is not now entitled to have that decision reviewed by another tribunal.

There is one further circumstance to be noted in this case. The decision of the Examiner of Interferences awarded priority of invention to Dodson for the reason that these appellants took no testimony in support of the dates set up in their preliminary statement other than the testimony of one of the joint inventors. It is well settled that even the testimony of both joint inventors without corroboration is not sufficient to prove their case against a party who was the first to file his application in this Office. (*Garrels* v. *Freeman*, 103 O. G., 1683, C. A. D. C.)

To extend the limit of appeal in this case, where it is clear upon the face of the record that the appellants cannot prevail upon appeal, would be an injustice to their opponent, as it would entail merely expense and delay in the prosecution of his case.

The motion is dismissed.

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### EX PARTE GILMER.

*Decided February 16, 1904.*

1. REOPENING AN APPLICATION AFTER APPEAL TO THE EXAMINERS-IN-CHIEF—RULE 142.

Upon petition to the Commissioner the application may be reopened upon a satisfactory showing after decision by the Examiners-in-Chief.

2. SAME—NO NEW EXAMINATION NECESSARY—REPORT OF EXAMINER ACCEPTED.

Where in preparing a reissue application the original claims of the patent were not included through inadvertence, *Held* they may, upon a satisfactory showing, be inserted after decision by the Examiners-in-Chief if no new examination is rendered necessary.

ON petition.

APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF WOOD.

*Messrs. Offield, Towle & Linthicum* for the applicant.

ALLEN, *Commissioner:*

This is a petition under Rule 142 to reopen the above case for the purpose of adding three new claims to the application.

It appears that the claims of this reissue application were finally rejected by the Primary Examiner on August 4, 1903, and upon appeal to the Examiners-in-Chief his decision was reversed and the claims held to be allowable.

From the affidavit of Graves in support of the petition it appears that in preparing this reissue application it was his intention to include the specific claims of the patent therein, but that by inadvertence this was not done.

This petition is merely to insert in the case these claims of the patent which were inadvertently omitted from this reissue application. It is stated in the affidavit that no references were cited by the Examiner against the claims appealed that he did not cite in the original application, in which he held that these claims now desired to be inserted were allowable. It is therefore presumed that their entry would entail no further search, particularly as the Examiner recommends that the petition be granted.

For the reasons given the petition is granted.

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### EX PARTE ELLIOTT.

*Decided February 20, 1904.*

DRAWINGS—UNNECESSARY FIGURE—ILLUSTRATION OF PRIOR ART.

Where an applicant showed in one figure of his drawings what he considered the prior art, *Held* that the figure and the description of it should be canceled.

ON petition.

INCANDESCENT ELECTRIC LAMP.

*Mr. Wallace A. Bartlett* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner requiring the cancellation of Figure 5 of the drawings and the description thereof in the

specification upon the ground that the figure shows and the description describes merely an old and well-known construction.

The application relates to the manufacture of incandescent-light bulbs in which the conducting-wires for the filament are located between the inner and outer glass tubes which are inserted through the neck of the bulb. The outer tube is flared and cemented to the neck, while the inner ends of the glass tubes surrounding the conducting-wires are welded together. This leaves the inner glass tube connected directly with the interior of the bulb, which is exhausted by connecting this tube to a vacuum-pump.

This construction broadly is acknowledged to be old by the applicant. In welding together the inner ends of the two glass tubes it is stated to have been the former practice to cause the surfaces to meet at an acute angle, as shown in Fig. 5.

In this figure he has shown the old method and in the other figures on the same sheet of drawings his alleged invention. As noted, the Examiner has required that Fig. 5 be canceled from the drawings, taking the position that this case falls within the principles of the decision in *ex parte Wadsworth*, (92 O. G., 1798.)

The Examiner's action is in accordance with the practice stated in this decision, and the petition is accordingly denied.

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## EX PARTE FRASCH.

*Decided March 22, 1904.*

1. DIVISION—REJECTION—APPEAL TO EXAMINERS-IN-CHIEF.

A requirement for division of an application is to be regarded as a rejection and is appealable to the Examiners-in-Chief in the first instance.

2. SAME—APPEAL TO EXAMINERS-IN-CHIEF—STEINMETZ v. ALLEN.

The decision *Steinmetz* v. *Allen* has announced no new principle controlling the determination of the question whether inventions are independent and should be divided, but has merely announced that the question is appealable to the Examiners-in-Chief in the first instance.

3. SAME—RELATED AND DEPENDENT INVENTIONS—VALIDITY OF CLAIMS NOT INVOLVED.

In determining whether or not division should be required the question to be decided is not whether the claims would be sustained as valid if granted in one patent, but is whether the inventions claimed are related and dependent.

4. SAME—INDEPENDENT INVENTIONS—PATENT VALID—DISCRETION OF PATENT OFFICE.

The courts sustain patents covering two or more independent inventions; but it does not follow that this Office must permit independent inventions to be claimed in one patent. The question of division is a matter left largely to the discretion of the Patent Office.

ON petition.

MEANS FOR REMOVING INCRUSTATION OF CALCIUM SULFATE FROM BRINE-HEATING SURFACES.

*Mr. Charles J. Hedrick* for the petitioner.

ALLEN, *Commissioner:*

This is a petition that an appeal heretofore taken in the above-entitled case be forwarded to the Examiners-in-Chief for determination.

The appeal was taken from a requirement by the Primary Examiner for division between claims to the process and claims to the apparatus, and under the practice which has always prevailed in this Office the Examiner refused to forward the appeal. The applicant was notified that his remedy was by petition to the Commissioner, under Rule 145, and not by appeal to the Examiners-in-Chief, and he thereupon filed such petition, and after full consideration the Examiner's requirement for division was sustained and the petition was denied. (98 O. G., 1967.) An appeal was taken from that decision to the court of appeals, and the appeal was dismissed by the court on the ground that the decision was not appealable. (100 O. G., 1977.) The applicant then filed a petition in the Supreme Court for a mandamus directing the court of appeals to hear and determine the appeal, and that petition was dismissed. (109 O. G., 554.)

The applicant bases his present petition that his appeal be forwarded to the Examiners-in-Chief upon the decision of the Supreme Court in *U. S., ex rel. Steinmetz*, v. *Allen*, (109 O. G., 549.) It appears from that decision that a requirement for division is to be regarded as a rejection of the application and is appealable to the Examiners-in-Chief and that the applicant is entitled to demand that his appeal be forwarded, notwithstanding the fact that the Commissioner has reviewed the Examiner's decision and affirmed it upon the petition of the applicant. The appeal in the present case will therefore be forwarded to the Examiners-in-Chief, with a statement by the Primary Examiner of the reasons for his requirement for division.

The Supreme Court has said that Rule 41 is invalid in so far as it requires division in all cases between process and apparatus, the reason being that it leaves no room for the exercise of discretion in view of the circumstances of the particular case. It is said that process and apparatus may be completely independent in some cases and may be related and dependent in others and that therefore it is proper to require division in some cases and not proper in others. It is a matter calling for the exercise of discretion in each case. There is nothing in the decisions of the Supreme Court indicating that the provisions of the first paragraph of Rule 41 are invalid, requiring division between independent inventions, but, on the contrary, those provisions are approved. That paragraph is as follows:

> Two or more independent inventions cannot be claimed in one application; but where several distinct inventions are dependent upon each other and mutually contribute to produce a single result they may be claimed in one application.

The Court has announced no new principle controlling the determination of the question whether the inventions are independent and should be divided, and therefore the above-quoted section of the rule may be applied as heretofore. No new considerations enter into the question of division; but the Examiner's ruling that the inventions are independent is subject to review in the first instance by the Examiners-in-Chief instead of by the Commissioner.

The Court has pointed out that the question of division does not relate to the *merits*, if that term has the meaning heretofore given it in the Patent Office, and it appears, therefore, that the question to be determined by the Examiner and the Examiners-in-Chief is not whether the claims would be sustained as valid if granted in one patent, but whether the inventions are related and dependent.

In their desire to secure to the inventor the reward for a meritorious invention the courts will sustain a patent notwithstanding irregularity in the proceedings and informalities in the grant; but it does not follow that they approve such irregularity and informalities and that subsequent patents are to exhibit them. They sustain patents covering two or more independent inventions; but it does not follow that this Office must permit independent inventions to be claimed in one patent. The Supreme Court has expressly ruled in *U. S., ex rel. Steinmetz*, v. *Allen*, *supra*, that the question of division is a matter of discretion to be left largely to the Patent Office, for it says:

> * * * discretion can be exercised, and when exercised we may say in passing, except in cases of clear abuse, the courts will not review it.

The petition is granted.





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## DECISIONS OF THE U. S. COURTS.

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### Court of Appeals of the District of Columbia.

### IN RE FREEMAN.

*Decided February 2, 1904.*

1. DESIGNS—ANTICIPATION—HOSE-SUPPORTER.

*Held* that the appellant's design for a hose-supporter is lacking in patentable novelty in view of his own prior patent and also in view of patents granted to others upon devices differing from the appellant's only in mechanical details.

2. SAME—PATENTABILITY—DIFFERENCES IN DETAILS—SUBSTANTIAL DIFFERENCES NECESSARY.

The change or omission or addition of a few minor details would not justify the multiplication of design patents even though the designs may readily be distinguished from each other by one or more features. Substantial differences are required to render one device patentable over another as a design.

3. SAME—SAME—TESTED BY ORNAMENT—MECHANICAL DIFFERENCES IMMATERIAL.

The novelty of a design must be judged by the test of ornament, and while the final merit of ornamentation may depend upon the harmonious blending of small details mechanical differences which may make a vast difference in the operativeness of the devices may make no appreciable difference between the devices as designs.

4. SAME—SAME—MECHANICAL AND DESIGN INVENTIONS DISTINGUISHED.

The test of patentable novelty in the case of mechanical inventions and in the case of designs is different, owing to the different nature of the two things. Detail is of little consequence in designs, and it may be all important in mechanical inventions.

5. SAME—DRAWING OF DESIGN—DESCRIPTION UNNECESSARY AND CONFUSING.

A picture of the design serves to convey a greatly more adequate idea of the design than any verbal description could possibly do, and in the presence of the picture a superadded verbal description is generally useless and oftentimes confusing.

6. SAME—SAME—SAME—DESCRIPTION OMITTED.

The ruling that the descriptive material in the specification of design cases should be reduced to a minimum or omitted *Held* to be the dictate of reason, common sense, and common experience.

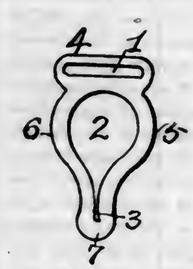
*Mr. John P. Croasdale* and *Mr. C. D. Ehret* for the appellant.

*Mr. John M. Cait*, *Mr. C. C. Billings*, and *Mr. J. H. Griffin* for the Commissioner of Patents.

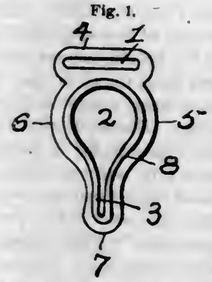
MORRIS, *J.:*

This is an appeal from the refusal of the Commissioner of Patents to issue Letters Patent of the United States for a certain design for a hose-supporter. The application was rejected upon reference to two previous patents, one, No. 468,074, issued on February 2, 1892, to one D. H. Warner, for a stocking-supporter; and one, No. 499,773, issued on June 20, 1903, to one Geo. E. Adams, for a garment-supporter. No reference seems to be made in the record to a patent design No. 35,752, issued on February 18, 1902, for a hose-supporter, to the present applicant himself, upon an application filed by him on the same day with the present application, October 15, 1901, for a device almost similar in every respect, and which appears in a supplemental record filed by agreement of counsel, and which contains also the patents to Warner and Adams, as well as the patent to the applicant. The devices of these several patents, and that of the present application, are here grouped.

Fig. 1.




Applicant's design.




Applicant's design in patent of February 18, 1902.



The Adam's device.



The Warner.

The applicant in his specification describes his alleged invention as follows:

> The design comprises a general inverted-pear-shaped configuration. The middle portion is bounded by the sides 5 and 6, which lie in arcs of the same circle. The lower extension is narrower and terminates in the semicircular end 7. The upper extension has a horizontal top margin 4, which margin joins the marginal sides 5 and 6 in curved lines. The intersection of the outer margin of the upper extension with the arc-shaped sides 5 and 6 of the middle portion form sharp angular indentations in the general outer configuration to the design. In the upper extension of the configuration is the horizontal slot 1. In the middle portion is the circular opening 2, the margin of which is concentric with the marginal sides 5 and 6, except as to the lower part, which extends downwardly in the narrow slit 3.

Commenting on this description, the Commissioner, in his opinion in the case, says:

> This descriptive language illustrates, in connection with the drawing of this case, the utter futility of attempting by words to describe the appearance of an object which may be perceived immediately upon inspection of a picture thereof. In designs the appearance is the new thing which is to be secured by a patent. Words do not explain, but rather confuse, when added to the disclosure of the drawing. For this reason such descriptive material should be reduced to a minimum, or, better still, entirely eliminated from design-patent specifications. There can be no place in a design-patent specification for such descriptions as are intended to differentiate between material and immaterial elements, the test of which is the effect produced upon the eye of the beholder.

And this comment is made the basis of one of the assignments of error.

As already stated, the appellant's application was rejected as having been anticipated in the patents to Warner and Adams; and it was also held that whatever changes it showed from the devices in these two patents, were due rather to the demands of mechanical utility than to the purpose of ornamentation, which is to be the test for the determination of the patentability of design devices.

The tribunals of the Patent Office concurred in the rejection of the application on the same grounds. From the Commissioner's decision the present appeal has been prosecuted.

1. We are somewhat at a loss to understand why the Commissioner's comment on the alleged inutility of the appellant's description of his device in his specifications, while a picture of the device was contained in the record before him, should have been made the ground of an assignment of error. Undoubtedly, in the matter of application for a patent for a design, a picture of the design serves to convey a greatly more adequate idea of the design than any verbal description could possibly do; and in the presence of the picture, a superadded verbal description is generally useless and oftentimes confusing. This is all that the Commissioner said, or apparently intended to say; and, as it is the dictate of reason, common sense, and common experience, we fail to find any error in it. Of course, it is very different in the matter of applications for mechanical patents, where the pictures, or the drawings, as the nearest approaches to pictures are there called, are often unintelligible without the aid of verbal description.

But it is claimed on behalf of the applicant, that the Commissioner, by the use of the language employed by him, showed that in deciding the case he wholly ignored the specifications. No such conclusion can properly be drawn from the Commissioner's comment. There is nothing in the record to show that the Commissioner has not fully and carefully considered the whole case upon its merits.

2. We do not understand why the appellant's application was not rejected on his own patent of February 18, 1902. The application, which resulted in that patent, and the present application, it is true, were filed on the same day, October 15, 1901; and it is to be presumed that both applications proceeded in due order in the Patent Office. One application was permitted to go to patent, before the other application came up before the Examiner for final consideration. But this final consideration was had on April 28, 1902; the decision by the Board of Examiners-in-Chief was rendered on May 5, 1902; and the decision of the Commissioner of Patents on May 21, 1903—all after the issuance of the patent to the appellant on February 18, 1902, for substantially the same identical device and design. It is true that there are some differences apparently between the device of the patent of February 18, 1902, and the device of the present application, which, if they were mechanical devices, might well serve to differentiate and distinguish them in respect of their patentable novelty. A minute cog-wheel, almost undistinguishable by the naked eye, might make a vast difference in the operativeness of a mechanical device, while details of that nature could not possibly make any appreciable difference between devices for designs. As has been well stated by the present Commissioner of Patents in another case, the novelty of a design device must be tested by the test of ornament. Now, while the final merit of ornamentation may depend upon the harmonious blending of numerous small details, and all such details are important in the production of the harmonious whole, yet it is very evident that, in such matters, differing therein from mechanical contrivances, the change or omission or addition of a few minor details would not justify the multiplication of design patents, even though one design might readily be distinguished from another by some one or more features.

We find no substantial difference, no distinguishing patentable difference, between the design of the appellant's patent of February 18, 1902, and the design of the present application; and as he should not have two patents for the same design, it is clear to us that the present application was properly rejected.

3. Even apart from the effect of the applicant's patent of February 18, 1902, we think that his present application was properly rejected on reference to the patents to Warner in 1892 and Adams in 1893. The applicant's device and the devices of Warner and Adams, it is true, are not identical. They differ slightly in appearance; but they do not differ substantially: and we are very firmly of opinion that substantial difference is required to render two several devices patentable as designs. As we have already intimated, the difference between patentable novelties in mechanical matters and patentable novelties in matters of design, results from the different nature of the two things. Detail is of little consequence in the latter: it may be all important in the former.

Without further argument it must suffice to say that we fully concur in the conclusion reached by the Commissioner of Patents and the other tribunals of the Patent Office; and we think that the decision of the Commissioner refusing a patent to the applicant should be, and it is hereby affirmed.

The clerk of the court will certify this opinion, and the proceedings of the court in the premises, to the Commissioner of Patents according to law. Affirmed.



Patents Nos. 756,198 to 756,806.

THE

# OFFICIAL GAZETTE

OF THE

# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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| China | | | San Salvador | | |
| Costa Rica | | | Scotland | 3 | |
| Cuba | | | South Africa | | |
| Denmark | | | Spain | | |
| Ecuador | | | Sweden | | |
| England | 13 | | Switzerland | 1 | |
| France | 5 | | Transvaal, South Africa | 1 | |
| Germany | 16 | 1 | Turkey | | |
| India | | | Victoria | 1 | |
| Ireland | | 1 | Western Australia | | |
| Italy | 1 | 1 | | | |
| Japan | | | Total to citizens of foreign countries | 54 | 4 |
| Java | | | | | |
| Mexico | 2 | | | | |

## Attorneys.

(ORDER No. 1,583.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., March 29, 1904.*

Pursuant to the provisions of section 487 of the Revised Statutes, and with the approval of the Secretary of the Interior, Edward A. Smith, of Denver, Colo., registry number 5,359, is hereby disbarred from practice before the United States Patent Office for gross misconduct.

F. I. ALLEN,
*Commissioner.*

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., March 31, 1904.*

This Office has been advised by the Secretary of the Interior of the disbarment, on February 26, 1904, of Louis M. Gross, of Knoxville, Tenn., from practice before the Department or any Bureau thereof.

C. M. IRELAN,
*Chief Clerk.*

## Withdrawal of Applications from Issue Files.

After the notice of allowance of an application is given, the case will not be withdrawn from issue on account of any mistake or change of purpose of the applicant or of his attorney, nor for the purpose of enabling the inventor to procure a foreign patent, nor in any other case, without the approval of the Commissioner.

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business March 29, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 329 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Mar. 16 | Mar. 16 | 155 |
| 331 | I. Tillage, etc., and Fences | Mar. 3 | Mar. 11 | 150 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Mar. 1 | Mar. 16 | 253 |
| 173 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Mar. 1 | Mar. 16 | 179 |
| 159 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography. | Mar. 1 | Mar. 14 | 108 |
| 152 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Mar. 1 | Mar. 5 | 228 |
| 148 | XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Mar. 1 | Mar. 1 | 280 |
| 232 | IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc. | Mar. 1 | Mar. 1 | 398 |
| 137 | VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus. | Mar. 1 | Feb. 27 | 379 |
| 324 | XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements. | Mar. 1 | Feb. 24 | 316 |
| 308 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Mar. 1 | Jan. 20 | 508 |
| 308 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Feb. 29 | Mar. 15 | 278 |
| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Feb. 29 | Mar. 15 | 290 |
| 344 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Feb. 29 | Mar. 14 | 225 |
| 333 | X. Carriages and Wagons | Feb. 29 | Mar. 10 | 218 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Feb. 29 | Mar. 9 | 272 |
| 327 | XVIII Steam-Engineering, etc. | Feb. 29 | Mar. 4 | 181 |
| 318 | VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc. | Feb. 29 | Mar. 2 | 149 |
| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Feb. 29 | Mar. 1 | 254 |
| 315 | XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers. | Feb. 29 | Feb. 27 | 299 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Feb. 29 | Feb. 26 | 257 |
| 312 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Feb. 29 | Feb. 24 | 401 |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Feb. 29 | Feb. 23 | 374 |
| 329 | XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc. | Feb. 29 | Feb. 18 | 305 |
| 142 | IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution | Feb. 29 | Feb. 15 | 405 |
| 112 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Feb. 29 | Jan. 21 | 393 |
| | *Between one and two months.* | | | |
| 138 | II. Farm Products, etc., Lubricators, Presses, etc. | Feb. 20 | Feb. 16 | 302 |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Feb. 25 | Feb. 26 | 255 |
| 109 | XVI. Telegraphy and Telephony | Feb. 25 | Feb. 11 | 298 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Feb. 21 | Jan. 25 | 330 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Feb. 18 | Jan. 6 | 434 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Feb. 11 | Feb. 15 | 408 |
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Feb. 8 | Feb. 23 | 241 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Feb. 5 | Jan. 30 | 306 |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Feb. 2 | Jan. 15 | 537 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Jan. 30 | Jan. 11 | 280 |
| | *Between two and three months.* | | | |
| 362 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Jan. 28 | Jan. 25 | 582 |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Jan. 16 | Dec. 2 | 475 |

Total number of applications awaiting action.....11,552

| | | | |
|---|---|---|---|
| *Under one month.* | | | |
| *Designs | Mar. 11 | Mar. 21 | 44 |
| †Trade-Marks | Mar. 11 | Mar. 28 | 55 |
| ‡Labels and Prints | Mar. 29 | Mar. 29 | .... |

### Attorneys' Use of Assignment Records.

It has been brought to my attention that certain attorneys and other persons have made use of the assignment records to obtain the addresses of persons having applications pending before this Office, in order to send them letters and circulars offering to secure foreign patents or to transact other business which it may be presumed the attorneys of record in such applications are competent and willing to do. Such use of the assignment records is not a proper or legitimate use. These records are not open to the public for any such purpose.

It is hereby ordered that any attorney or other person who is known to make such use of the assignment records of this Office will be denied access thereto.

### Access to Pending Applications.

RULE 18. Before any attorney, original or associate, will be allowed to inspect papers or take action of any kind, his power of attorney must be filed. But general powers given by a principal to an associate cannot be considered. In each application the written authorization must be filed. A power of attorney purporting to have been given to a firm or copartnership will not be recognized, either in favor of the firm or of any of its members, unless all its members shall be named in such power of attorney.

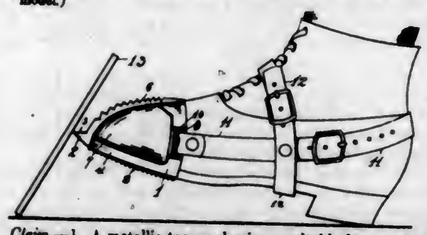
### Foreign Patents.

RULE 29. The receipt of Letters Patent from a foreign government will not prevent the inventor from obtaining a patent in the United States, unless *the application on which the foreign patent was granted was filed more than twelve months prior to the filing of the application in this country, in which case no patent shall be granted in this country.*

# PATENTS

## GRANTED APRIL 5, 1904.

**756,198. LUMBER-SORTER'S TOE-CAP.** ROBERT P. ADAMS, Jamestown, N. Y., assignor to Irene McAllister and Warren Ross, Jamestown, N. Y. Filed Feb. 14, 1903. Serial No. 143,341. (No model.)

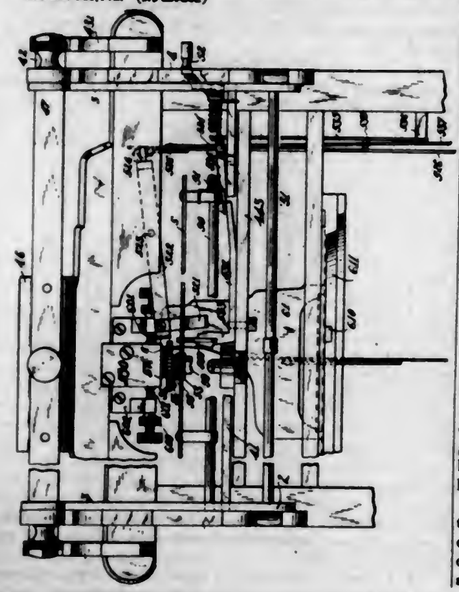


*Claim.*—1. A metallic toe-cap having a suitable form to fit the toe of a boot or shoe, means for securing said cap to the foot, and a strong sharp-pointed prong extending out straight from the toe of said cap to engage lumber, substantially as and for the purpose specified.

2. A metallic cap having a suitable form to fit the toe of a boot or shoe, means for securing said cap on the foot, a raised rib extending up the toe of the cap, serrations on said raised rib for engaging the lumber.

3. A cap having a suitable form to fit the toe of a boot or shoe, a wedge-shaped spur 2 on the toe of said cap, a raised curved rib 5 extending up the front of said cap from said spur, serrations 6 on said rib for engaging lumber, and suitable means for securing said cap on the foot.

**756,199. TYPE-WRITER CARRIAGE-FEEDING MECHANISM.** JESSE ALEXANDER, Brooklyn, N. Y., assignor of one-half to Arthur Letts, Los Angeles, Cal. Original application filed Aug. 2, 1902, Serial No. 118,085. Divided and this application filed Feb. 3, 1903. Serial No. 141,672. (No model.)



*Claim.*—1. In a type-writing machine, a carriage mechanism including a platen, a carriage therefor, means for controlling the longitudinal movement of said platen and carriage consisting of a toothed rack carried by said carriage, a gear-wheel in engagement with said rack, a ratchet-wheel mounted with said gear-wheel, a dog for engagement with said ratchet-wheel, said dog being carried by a vertical pivoted arm and a horizontal universal bar pivoted to said arm at the top and adapted to operate said dog.

2. In a type-writing machine, a carriage mechanism including a platen, a carriage therefor, means for controlling the longitudinal movement of said platen and carriage consisting of a toothed rack carried by said carriage, a gear-wheel in engagement with said rack, a ratchet-wheel mounted with said gear-wheel, a pawl carried by said ratchet-wheel and engaging with a portion of said gear-wheel, a dog for engagement with said ratchet-wheel, said dog being carried by a pivoted arm, a universal bar pivoted to said arm and adapted to operate said dog, a spring pressing against said arm and an adjusting-screw therefor mounted in a stationary part of the machine at the rear.

3. In a type-writing machine, a carriage mechanism including a platen, a carriage therefor, means for controlling the longitudinal movement of said platen and carriage consisting of a toothed rack carried by said carriage, a gear-wheel in engagement with said rack, a ratchet-wheel mounted with said gear-wheel, a pawl carried by said ratchet-wheel and adapted to engage with a portion of said gear-wheel, a dog for engagement with said ratchet-wheel, said dog being carried by a pivoted arm and comprising a rigid tooth and a spring-pressed pivoted tooth normally held in line with the rigid tooth by the tension of the carriage.

4. In a type-writing machine, a carriage mechanism consisting of a platen, a carriage therefor, means for moving said platen from right to left, means for limiting said movement and means for moving said carriage from left to right step by step consisting of a rack carried by said carriage, a pivoted pawl having its axis parallel to the rack and adapted to engage said rack, a pivoted lever carrying said pawl and a key-bar for controlling the same, and a spring for engaging said pawl so that it may yield slightly when released by the key-bar.

5. In a type-writing machine, a carriage mechanism consisting of a platen, a carriage therefor, means for moving said carriage longitudinally, a ratchet-wheel for limiting said movements, a rack carried by the said carriage and controlled by said ratchet-wheel and independent means for disengaging said rack and wheel consisting of a lever pivotally mounted in a horizontal plane for lifting said rack and causing a frictional resistance to the subsequent longitudinal movement of the rack.

6. In a type-writer machine, a carriage mechanism consisting of a platen, a carriage therefor, means for moving said carriage longitudinally, a ratchet-wheel for limiting said movements, a rack carried by the said carriage and controlled by said ratchet-wheel and means for disengaging said rack and wheel consisting of a lever pivotally mounted in a horizontal plane for slidably engaging and lifting said rack, a key-bar and an arm projecting upward therefrom and connected directly to said lever.

7. A carriage-feeding mechanism for a type-writer including a longitudinally-movable rack, a lever pivoted to the frame of the machine on a horizontal axis, a spring-pressed pawl pivoted to one end of said lever on an axis parallel to the rack and adapted to engage the teeth of said rack, a key-bar for operating said lever, a link connecting the same, and a spring for normally holding said lever so that said pawl is disengaged from the teeth of said rack.

8. In a carriage-feeding mechanism for a type-writer, a longitudinally-movable rack, a yieldingly mounted and pivoted pawl for engagement therewith, a key-bar pivoted near the rear of the machine, an intermediate bar pivoted toward the front of the machine, a link connected to the end of said intermediate bar for operating

said pawl, and a projection from one of said bars against which the other bar rests, whereby on the depression of the key-bar said pawl may be operated.

9. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting the movement of said rack, a lever pivoted to the stationary frame of the machine having a cam-faced extension for lifting said rack and causing a drag, and key-operated means for moving said lever whereby said rack may be withdrawn from engagement with the escapement mechanism.

10. In a feeding mechanism for atype-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting the movement of said rack, a lever having a cam-faced extension for lifting said rack, a vertical pivot for said lever, a pivoted key-bar, an upwardly-extending arm therefrom having a slot engaging with one end of said lever whereby on the depression of the key-bar the rack will be disengaged from the escapement mechanism.

11. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting the movement of said rack, a lever having a cam-faced extension for lifting said rack, a pivoted key-bar, an upwardly-extending arm therefrom engaging with one end of said lever whereby on the depression of the key-bar the rack will be disengaged from the escapement mechanism, a pawl normally out of engagement with said rack and adapted to engage therewith, a key-bar for operating said pawl said key-bar being pivoted to the first-mentioned key-bar.

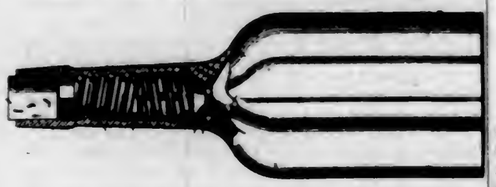
12. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting the movement of said rack, a lever having a cam-faced extension for lifting said rack, a pivoted key-bar, an upwardly-extending arm therefrom engaging with one end of said lever whereby on the depression of the key-bar the rack will be disengaged from the escapement mechanism, a pawl normally out of engagement with said rack and adapted to engage therewith, a key-bar for operating said pawl said key-bar being pivoted to the first-mentioned key-bar, and an intermediate bar pivoted toward the front of the machine and extending backward adapted to be engaged by the second key-bar for operating said pawl.

13. In a carriage-feeding mechanism for a type-writer, a rack, an escapement mechanism comprising a rotatable gear, a ratchet mounted concentrically therewith, a second ratchet movable with said gear, a pawl pivoted to said first ratchet and engaging with the second ratchet, and a spring passing through a recess in the first ratchet for holding said pawl lightly in engagement with the teeth of said second ratchet.

14. In a carriage-feeding mechanism for a type-writer, a rack, an escapement mechanism comprising a rotatable gear, a ratchet mounted concentrically therewith, a second ratchet secured to and movable with said gear, a pawl pivoted to said first ratchet and engaging with the second ratchet, and a spring for holding said pawl lightly in engagement with the teeth of said second ratchet, and an escapement-dog adapted to engage with said first ratchet said dog having a rigid tooth and a pivoted and spring-pressed tooth, the tension of the springs operating said pawl and said tooth being relatively such that the said pawl will yield more readily than the tooth.

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**756,200. NON-REFILLABLE BOTTLE. JEFFERSON BAILEY, Auburn, R. I. Filed July 11, 1903. Serial No. 165,166. (No model.)**



*Claim.*—A bottle having a neck provided with an internally threaded portion, a smooth-walled valve-chamber located below the threaded portion and terminating in an annular shoulder having a conical valve-seat therein, and a threaded valve adapted to be screwed through the threaded portion of the neck into the valve-chamber, said valve having vertical movement in the chamber and provided with a cone-shaped lower end to coact with the conical valve-seat, said valve also having one or more grooves arranged in a straight line through each of its threads, and reversely-beveled lugs projecting from the upper surface of said valve, substantially as specified.

**756,201. GARMENT-FASTENER. CAESAR R. BARNIER, New York, N. Y. Filed Aug. 12, 1903. Serial No. 169,402. (No model.)**



*Claim.*—1. In a garment-fastener a hook-plate having a hook above it with the neck of the hook between the hook and plate of a mail-shaped outline partially cut from said plate and raised standing at an angle to the surface of the plate, substantially as herein shown and described.

2. In a garment-fastener a spring-metal loop-plate with a slit cut in it, the metal simply being severed and a hole at each end of said slit, one hole being larger than the other, all for the purpose as herein shown and described.

3. In a garment-fastener having a hook-plate, a hook raised above the plate and of a mail-shaped outline with a neck formed at the back standing edgewise across the plate at an angle to the surface of the plate and hook and between the plate and hook, substantially as herein shown and described.

4. In a hook-and-loop garment-fastener having a hook-plate provided with a hook, a neck between the hook and the hook-plate lying at an incline to the surface of the plate and hook and a spring-metal loop-plate provided with two holes and a slit between them which may separate on the incline of the neck of the hook, substantially as herein shown and described.

5. In a hook-and-loop garment-fastener a loop consisting of a spring-metal plate with a depressed edge having small holes punched out in it for securing the plate to a garment, a hole for the hook of a hook-plate to enter, and a smaller hole to encircle the neck of said hook and a slit between the two holes to separate on the incline of the neck of said hook when forced over it, all as herein shown and described.

6. In a hook-and-loop garment-fastener, a hook-plate with a depressed edge having small holes punched out in it, a mail-shaped hook partially cut from and raised above the surface of the plate, remaining connected at the neck, which is formed at an angle to the surface of the plate and hook, and a spring-metal loop-plate having two holes with a slit between them which may engage with said hook, substantially as herein shown and described.

7. In a hook-and-loop garment-fastener a double-hook plate and a double-loop plate, the hook-plate having two hooks, one right and one left, with an inclined neck to each hook, lying in opposite directions, the loop-plate having corresponding eyes and slits which may engage with said hooks substantially as herein shown and described.

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**756,202. RADIATOR. ROY BARRETT, Palmyra, N.Y. Filed Dec. 4, 1903. Serial No. 183,736. (No model.)**



*Claim.*—1. A radiator consisting of a main inclosing drum, and heads covering the ends of the drum, the drum having perforated floors or end plates, a series of minor drums within the main drum and connected with the end plates, the drums all being oval in cross-section and being one within another and all coaxial and the smoke and air passages being one within another and alternately arranged.

2. A radiator consisting of a main inclosing drum, and heads for the ends of the drum, the drum having perforated end plates, a series of minor drums within the main drum and all coaxial, the minor drums being oval in cross-section with the major axis of each crossing the minor axis of the adjacent drum, and a central tube within the inner drum.

3. A radiator consisting of a main inclosing drum, and heads for the ends of the drum, said drum having perforated end plates, a series of minor drums within the main drum and connected with the end plates, the drums being oval in cross-section and differing in size and all coaxial, the air-passages being alternated with the smoke-passages, the heads for the drums having peripheral cavities communicating with perforations in the end plates of the drum, and passages for smoke through the drums.

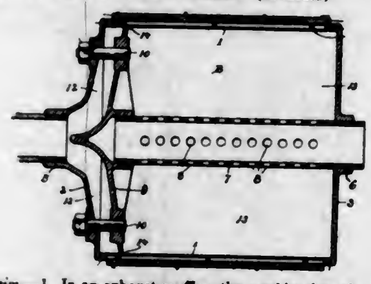
4. A radiator consisting of a series of drums one within another, heads covering the drums and formed with reduced terminals for piping, the drums being oval in cross-section and alternately arranged and constituting passages for air and for smoke through the radiator, the air-passages being alternated with the smoke-passages, and a central tube for smoke within the inner drum.

5. A radiator consisting of a series of drums one within another, heads covering the drums and formed with reduced terminals or collars, the drums constituting passages for air and for smoke through the radiator, the air-passages being alternated with the smoke-passages, and a central tube for smoke within the inner drum, the heads for the drums having cavities constituting passages for air into and out of the interiors of the air-drums.

6. A radiator consisting of a series of drums one within another, heads covering the drums and formed with reduced terminals for piping, the drums constituting alternated passages for air and smoke through the radiator, and a central tube for smoke, the heads for the drums having cavities at their sides opening into alternate drums, and partitions dividing the cavities from the interiors of the heads.

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**756,203. MUFFLER. OLIVER R. BARTHEL, Detroit, Mich. Filed Nov. 14, 1903. Serial No. 181,129. (No model.)**



*Claim.*—1. In an exhaust-muffler, the combination of a casing having an inlet-opening, a conical deflector opposing the inlet-opening and a tubular exhaust member forming means for securing the deflector in place and provided with openings in its side and an open outer end for the escape of the exhaust.

2. In an exhaust-muffler, the combination of a casing consisting of a body portion and opposing heads engaging said body provided with an inlet-opening, a conical deflector within the casing adjacent to the inlet-opening and opposing the same and means for securing the heads to the body and for holding the deflector in place consisting of a tubular exhaust member opening through one of said heads and provided with openings in its sides.

3. In an exhaust-muffler, the combination with a casing having an inlet and an exhaust passage, of a deflector within the casing provided with a conical side adjacent to the inlet and dividing the space within the casing into a relatively small and a large chamber with a restricted passage between its outer edge and the wall of the casing connecting said chambers.

4. In an exhaust-muffler, the combination with a casing provided with an inlet at one end and an outlet at its opposite end, of a member supported within the casing near the inlet end thereof with a narrow passage between its outer edge and the wall of the casing and dividing the casing into two chambers of unequal capacity.

5. In an exhaust-muffler, the combination with a casing provided with an inlet at one end and an outlet at its opposite end, of a conical deflector supported within the casing adjacent to the inlet with its apex in the axis of the inlet-opening and with a narrow passage between its outer edge and the wall of the casing.

6. In a muffler, the combination of a casing consisting of a body portion and opposing heads having an inlet-opening, a conical deflector supported within said casing adjacent to the head having the inlet-opening with a restricted passage between its edge and the wall of the body, and a tubular exhaust member having openings in its sides between the deflector and the other head and opening through said head.

7. In a muffler, the combination of a casing provided with an inlet-opening, a conical deflector supported within said casing with a narrow passage between its edge and the wall of the casing and opposing the inlet-opening, a tubular exhaust member provided with openings in its sides and having an open end extending through the casing and engaged and closed by the deflector at its opposite end.

8. In a muffler, the combination of a casing consisting of a body portion and heads engaging said body, one of which heads is provided with an inlet-opening, a conical deflector opposing the inlet-opening and secured to the head provided with said opening, a tubular exhaust member provided with openings in its side and secured at one end to the deflector and at its opposite end to the head opposing that to which the deflector is secured to secure the heads to the body.

9. In a muffler, the combination of a casing consisting of a body portion and opposing heads, one of which is provided with an inlet-opening, a conical deflector supported within the casing adjacent to the head having the inlet-opening with a narrow passage between its edge and the wall of the casing, an exhaust-tube having openings in its side secured at its inner end to the deflector and at its open outer end within an opening in the head of the casing, and bolts to hold the heads in engagement with the body and support the deflector.

10. In an exhaust-muffler, the combination with a cylindrical casing having an inlet and an exhaust opening, of a covering of non-combustible material for said casing, and turns of wire interposed between the casing and covering to form an air-space.

11. In an exhaust-muffler, the combination of a cylindrical casing consisting of a body portion formed of sheet metal and heads to engage the body provided with an inlet and an exhaust opening, a sheet of non-combustible material wrapped around said body, and wire bands interposed between the sheet and body to strengthen the body and form an air-space.

12. In an exhaust-muffler, the combination of a cylindrical body portion, a head to receive one end of the body and provided with an axial inlet-opening, a head to receive the opposite end of said body and provided with an axial screw-threaded opening, a circular deflector supported within the casing with a narrow passage between its edge and the wall of the body and formed with a conical side opposing the inlet and with a screw-threaded socket at its opposite side, an open-ended tubular exhaust member screw-threaded at its opposite ends to engage the socket on the deflector and the screw-threaded opening in the head and having openings in its side, and bolts secured at their inner ends to the deflector and extending through the head having the inlet to hold the heads and deflector in place.

13. In an exhaust-muffler, the combination of a casing consisting of a body portion and heads engaging the ends of said body, one of which heads is provided with an inlet-opening, and a tubular exhaust member provided with openings in its side attached at one end to the head having the inlet and secured to and opening through the opposite head at its opposite end to secure the heads to the body.

14. In an exhaust-muffler, the combination of a casing consisting of a body portion and heads engaging the ends of said body, one of which heads is provided with an inlet-opening, means in the casing adjacent to the inlet-opening and in the path of the incoming exhaust for dividing and spreading said exhaust, and a tubular exhaust member having openings in its side, supporting said means and opening through the casing-head.

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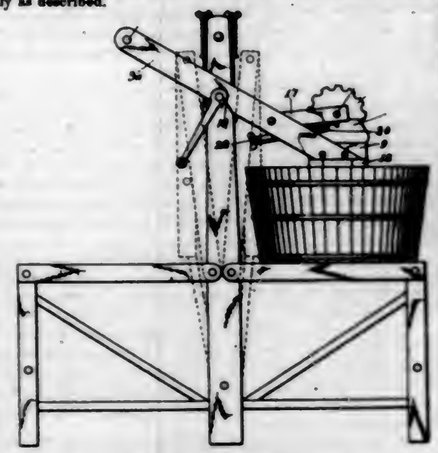
**756,204. WASHING-MACHINE. ROSS C. BERKMAN, Independence, Kans. Filed Sept. 3, 1903. Serial No. 172,264. (No model.)**

*Claim.*—1. In a washing-machine of the character described, of a pair of extended arms, a support mounted in the outer end of said arms, a bed portion secured to the opposite end thereof, pivotal arms mounted to the extended arms, a fluted roller carried by said pivotal arms, blocks 9 secured to the bed portion, roller-carrying supports mounted to said blocks, substantially as described.

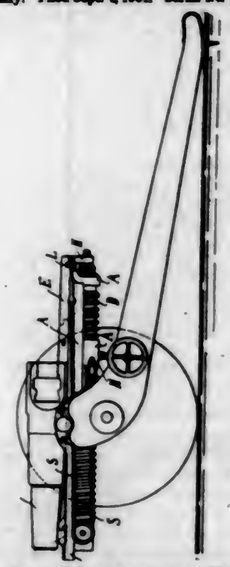
2. In a washing-machine of the character described of extended arms, pivotal arms mounted to the extended arms a roller carried by the pivotal arms, an adjustable bed portion secured to the extended arms adapted to be longitudinally adjusted, substantially as described.

3. In a washing-machine of the character described, of a pair of extended arms, a supporting-roller secured to the outer end of said arms, a bed portion secured to the opposite end, pivotal arms secured to said extended arms, a roller carried by said pivotal arms, a pair of blocks mounted on said bed portion, a series of rollers mounted to said blocks in close proximity to the fluted roller, tension-springs engaging the pivotal arms and the extended arms, substantially as described.

4. In a washing-machine, the combination of a pair of extended arms, a support carried by said arms at one end and an adjustable bed portion secured to the opposite end, supporting-blocks secured to the bed portion, roller-carrying supports mounted on said supporting-blocks, pivotal arms secured to the extended arms, a fluted roller carried by said pivotal arms and adapted to correspondingly engage a tier of rollers mounted in the roller-carrying supports, and means for producing an adjustment of the bed portion, substantially as described.



**756,205. RECOIL-CARRIAGE FOR ORDNANCE.** OTTO BUSSER, Essen-on-the-Ruhr, Germany, assignor to Fried. Krupp, Essen-on-the-Ruhr, Germany. Filed Sept. 4, 1901. Serial No. 74,308. (No model.)



*Claim.*—1. In wheeled gun-carriages in which the barrel recoils on a cradle, the combination with the cradle and a barrel, of a separate slide sliding on the cradle, and interlocking means on the slide and barrel located at points on the exterior of the barrel leaving the main exterior surface of the latter free, and moving into and out of locking relation by a slight longitudinal movement of the barrel, and readily-releasable means for preventing the slight unlocking, longitudinal movement of the barrel on the slide.

2. In wheeled gun-carriages in which the barrel recoils on a cradle, the combination with the cradle and the barrel, of a separate slide sliding on the cradle, means on the lower part of the barrel, and means on the upper part of the slide cooperating with the means on the barrel to hold the said barrel and slide together.

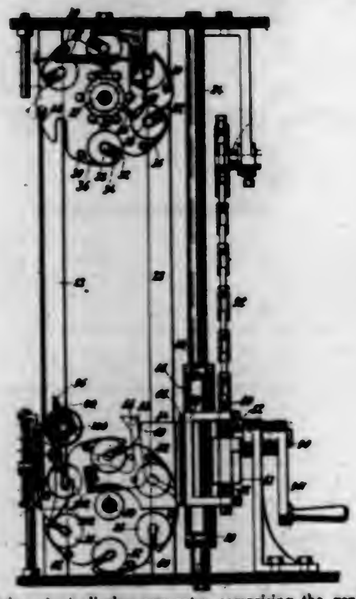
3. In wheeled gun-carriages in which the barrel recoils on a cradle, the combination with the cradle and the barrel of a separate slide sliding on the cradle and locking means permitting the barrel to be readily connected to and detached from the slide, said locking means comprising engaging lugs on the lower side of the barrel and the upper side of the slide.

4. In wheeled gun-carriages, the combination with a cradle, of a slide-track in which the barrel recoils, the length of the slide-track exceeding that of the barrel and extending a substantial distance in the rear of the barrel, a separate slide sliding on the cradle and locking means permitting the barrel to be readily connected to and detached from the slide, said locking means being effective only between the upper part of the slide and the lower part of the barrel.

5. In wheeled gun-carriages, the combination with a cradle, of a slide-track in which the barrel recoils the length of the slide-track exceeding that of the barrel and extending a substantial distance in the rear of the barrel, a separate slide sliding on the cradle, locking means permitting the barrel to be readily connected to and detached from the slide, the slide in its firing or transport position covering the entire slide-track, thus protecting the slide-track against injury.

6. In wheeled gun-carriages in which the barrel recoils on a cradle, the combination with the cradle and the barrel, of a separate slide sliding on the cradle and provided with undercut recesses, the barrel having projections entering the recesses in the slide, and a wedge passing through portions of the barrel, and the cradle for the purpose of establishing an easily-detachable connection between the barrel and the slide, substantially as specified.

**756,206. ADVERTISING NOVELTY.** WILLIAM H. BUSSER, Brooklyn, N. Y. Filed Aug. 11, 1903. Serial No. 169,094. (No model.)



*Claim.*—1. A display apparatus comprising the general supporting-frame, a group of spring-rollers with curtains thereon at opposite ends of said frame, and carriers for said rollers, said curtains being held at one end by said rollers and at the other end by said carriers, combined with a traveler adapted to be moved intermediate said groups of rollers, means carried by said traveler for automatically engaging the shaft of a roller of one of said groups when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means carried by said traveler for automatically engaging the shaft of a roller of the other of said groups when said traveler is at the other end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, and means for actuating said carriers to successively position said curtains to be taken one after another by the traveler mechanism when the traveler reaches the ends of its path; substantially as set forth.



2. A display apparatus comprising the general supporting-frame, a group of spring-rollers with curtains thereon at opposite ends of said frame, and carriers for said rollers, said curtains being held at one end by said rollers and at the other end by said carriers, combined with a traveler adapted to be moved intermediate said groups of rollers, means carried by said traveler for automatically engaging the shaft of a roller of one of said groups when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means carried by said traveler for automatically engaging the shaft of a roller of the other of said groups when said traveler is at the other end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means for actuating said carriers to successively position said rollers to be taken one after another by the traveler mechanism when said traveler reaches said group, a driving-shaft provided with means whereby it may be driven, the continuous sprocket-chain connected with said shaft and carrying a pin, and the frame carried by said traveler and having the slots for the engagement and movement of said pin, whereby the rotary motion of said shaft is caused to impart a reciprocating movement to said traveler; substantially as set forth.

3. A display apparatus comprising the general supporting-frame, a group of spring-rollers with curtains thereon at the end of said frame, and a carrier for said rollers, said curtains being held at one end by said rollers and at the other end by said carrier, combined with a traveler adapted to be moved toward and from said group, means carried by said traveler for automatically engaging the shaft of one roller of said group when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, and means for actuating said carrier to successively position said rollers to be taken one after another by the traveler mechanism when said traveler reaches said group; said traveler comprising a front bar extending across the apparatus in position to conceal the spring curtain-roller carried by it, substantially as set forth.

4. A display apparatus comprising the general supporting-frame, a group of spring-rollers with curtains thereon at the end of said frame, and a carrier for said rollers, said curtains being held at one end by said rollers and at the other end by said carrier, combined with a traveler adapted to be moved toward and from said group, means carried by said traveler for automatically engaging the shaft of one roller of said group when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means for actuating said carrier to successively position said rollers to be taken one after another by the traveler mechanism when said traveler reaches said group, a driving-shaft provided with means whereby it may be driven, the continuous sprocket-chain connected with said shaft and carrying a pin, and the frame carried by said traveler and having the slots for the engagement and movement of said pin, whereby the rotary motion of said shaft is caused to impart a reciprocating movement to said traveler; substantially as set forth.

5. A display apparatus comprising a general supporting-frame, a rotary roller-carrier at the end thereof and comprising the shaft and slotted disks thereon, and the group of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer ends of said curtains being secured to said carrier adjacent to the slots holding the said rollers, combined with a traveler adapted to be moved toward and from said group, means carried by said traveler for automatically engaging the shaft of one roller of said group when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means for actuating said carrier to successively position said rollers to be taken one after another by the traveler mechanism when the traveler reaches the ends of its path; substantially as set forth.

6. A display apparatus comprising a general supporting-frame, a rotary roller-carrier at the end thereof and comprising the shaft, the slotted disks thereon and the series of rods extending from one to the other of said disks adjacent to the slots therein, and the group of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer ends of said curtains being secured on said rods, combined with a traveler adapted to be moved toward and from said group, means carried by said traveler for automatically engaging the shaft of one roller of said group when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means for actuating said carrier to successively position said rollers to be taken one after another by the traveler mechanism when said traveler reaches said group; said traveler comprising a front bar extending across the apparatus in position to conceal the spring curtain-roller carried by it, substantially as set forth.

7. A display apparatus comprising a general supporting-frame, a rotary roller-carrier at the end thereof and comprising the shaft and slotted disks thereon, and the group of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer ends of said curtains being secured to said carrier adjacent to the slots holding the said rollers, combined with a traveler adapted to be moved toward and from said group, clutch-hooks carried by said traveler for automatically engaging the shaft of one roller of said group for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, and the pawl carried by said traveler for engaging said carrier and effecting an intermittent rotation of the same to position said rollers for said clutch-hooks; substantially as set forth.

8. A display apparatus comprising a general supporting-frame, a rotary roller-carrier at the end thereof and comprising the shaft and slotted disks thereon, and the group of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer ends of said curtains being secured to said carrier adjacent to the slots holding the said rollers, combined with a traveler adapted to be moved toward and from said group, clutch-hooks carried by said traveler for automatically engaging the shaft of one roller of said group for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, a spring-dog for holding said carrier at the end of each of its movements, and a pawl carried by said traveler in position to, when the traveler is reaching the said group, trip said dog and rotate said carrier to move another of said rollers into position for said hooks; substantially as set forth.

9. A display apparatus comprising a general supporting-frame, rotary roller-carriers at the ends thereof and each comprising the shaft and slotted disks thereon, and the groups of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer ends of said curtains being secured to said carriers adjacent to the slots holding the rollers, combined with a traveler adapted to be moved intermediate said groups of rollers, means carried by said traveler for automatically engaging the shaft of a roller of one of said groups when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, means carried by said traveler for automatically engaging the shaft of a roller of the other of said groups when said traveler is at the other end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, and means for actuating said carriers to successively position said curtains to be taken one after another by the traveler mechanism when the traveler reaches the ends of its path; said traveler comprising a front bar extending across the apparatus in position to conceal the spring curtain-rollers carried by it, substantially as set forth.

10. A display apparatus comprising a general supporting-frame, rotary roller-carriers at the ends thereof and each comprising the shaft and slotted disks thereon, and the groups of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer ends of said curtains being secured to said carriers adjacent to the slots holding the rollers, combined with a traveler adapted to be moved intermediate said groups of rollers, clutch-hooks carried by said traveler for automatically engaging the shaft of a roller of one of said groups when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, clutch-hooks carried by said traveler for automatically engaging the shaft of a roller of the other of said groups when said traveler is at the other end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, and pawls carried by said traveler for engaging and rotating said carriers to position said rollers for said hooks; substantially as set forth.

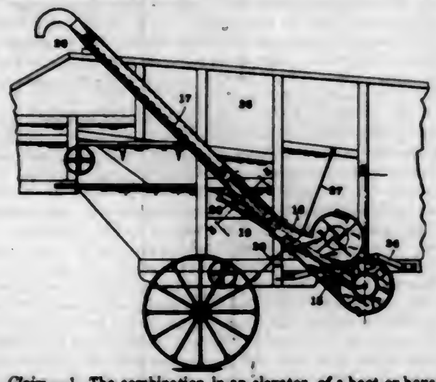
11. A display apparatus comprising a general supporting-frame, rotary roller-carriers at the ends thereof and each comprising the shaft and slotted disks thereon, and the groups of spring-rollers with display-curtains thereon removably mounted in the slots of said disks, the outer end of said curtains being secured to said carriers adja-

cent to the slots holding the rollers, combined with a traveler adapted to be moved intermediate said groups of rollers, clutch-hooks carried by said traveler for automatically engaging the shaft of a roller of one of said groups when said traveler is at one end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, clutch-hooks carried by said traveler for automatically engaging the shaft of a roller of the other of said groups when said traveler is at the other end of its path for withdrawing said roller and thereby unwinding the curtain therefrom when said traveler recedes from said group, dogs for holding said carriers at the end of each of their movements, and pawls carried by said traveler in position to, when the traveler is reaching the ends of its path, trip said dogs and rotate said carriers to position the rollers in succession for said hooks; substantially as set forth.

12. A display apparatus comprising a general supporting-frame, and a traveler adapted to be moved intermediate the ends of said frame, combined with a spring-roller with a display-curtain thereon carried by said traveler, means rigidly securing the outer end of said curtain at one end of said frame, a second spring-roller with a display-curtain thereon carried by said traveler, and means for rigidly securing the outer end of this second curtain at the other end of said frame, whereby said traveler while in motion is adapted to effect the unrolling of one of said curtains and permit the winding up of the other curtain upon its roller, said traveler comprising a front bar extending across the apparatus in front of the two spring-rollers carried by the traveler; substantially as set forth.

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**756,207. OVERFLOW-VENT DEVICE FOR ELEVATORS.** CHESTER BRADFORD, Indianapolis, Ind. Filed Nov. 14, 1902. Serial No. 131,431. (No model.)

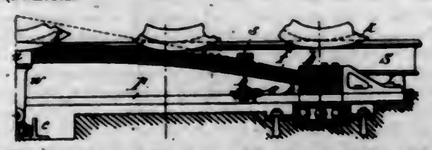


*Claim.*—1. The combination, in an elevator, of a boot or housing having appropriate material throwing or elevating devices and a material-inlet, a material-delivery tube leading upwardly therefrom at an angle, a vent-opening in said material-delivery tube at a point above the level of the material-inlet, and a conductor leading from the vent-opening back into the material-inlet.

2. In an elevator, a main-material-elevating pipe having a vent, and a return-conductor arranged to receive material from said vent and conduct it back to the main material-supply.

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**756,208. WEIGHING DEVICE.** WILHELM BÜHLER, Degerloch, near Stuttgart, Germany. Filed Apr. 23, 1903. Serial No. 154,001. (No model.)



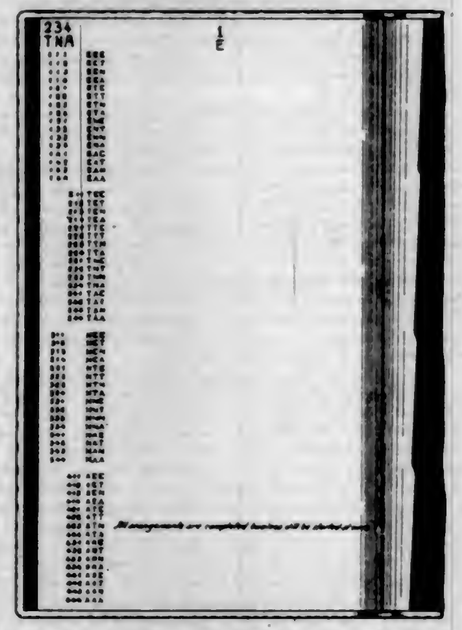
*Claim.*—1. In a weighing device of the character indicated for railway-cars, the combination of railway-rails, springs *f*; plates *p*, adjacent to the rails, upon which said springs are mounted; means for throwing said springs into and out of position for engagement by the flanges of the wheels of said railway-cars, a mercury-cylinder, a piston in said cylinder, means for connecting said piston with said springs, to be operated thereby, a vertical pipe in connection with said mercury-cylinder, and means for indicating the height to which the mercury is raised in said cylinder, substantially as described.

2. In a weighing device of the character set forth, the combination with the rails provided with cut-away inner portions, of springs adapted to be brought into close proximity with said rails and be engaged by the flanges of passing wheels, and means whereby the amount of depression of said springs may be indicated.

3. In a weighing device for railway-cars, the combination with springs adapted to be thrown into position to be engaged by the flanges of railway-car wheels, plates supporting said springs, brackets secured to said plates, a plate secured between the track-rails provided with slots, pins in said brackets adapted to engage said slots and levers pivoted to said last-named plate adapted to move said brackets in lateral directions, substantially as described.

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**756,209. CODE-INDEX.** CHARLES G. BUREK, Brooklyn, N. Y., assignor of twenty-one thirtieths to John G. A. Whittemore, Boston, Mass. Filed Mar. 26, 1903. Serial No. 149,436. (No model.)



*Claim.*—1. In a code-index for signal combinations, the said index having divisions, the said signal combinations consisting of the permutations of the combinations and repetitions of signals formed by the elemental signals of the Morse code and the permutations of the said elemental signals adapted to indicate the said divisions, meanings associated with the said signal combinations located in the said divisions whereby the signals will themselves indicate the relative position of their associated meanings in the index.

2. In a code-index for signal combinations, the said index being divided into divisions and subdivisions, the said signal combinations consisting of the permutations of the combinations and repetitions of signals formed by the elemental signals of the Morse code and the permutations of the said elemental signals, a part of the signals of each of the combinations indicating the location of the division and the remainder of the signals of the said combinations indicating the subdivision, meanings associated with each of the signal combinations and located in the said subdivisions, whereby the signals will in themselves indicate the exact location of their associated meanings in the said index.

3. In a code-index for signal combinations, the said index being divided into parts and the parts being divided into divisions and subdivisions, the said signal combinations consisting of the permutations of the combinations and repetitions of signals formed by the elemental signals of the Morse code and the permutations of the said elemental signals arranged in sequence, meanings associated with each of the said signal combinations and located in each of the said subdivisions, the first signal of each combination indicating the part of the index in which the associated meaning is located, the remainder of the said signals indicating the division and subdivision in which the said associated meaning is located, whereby the signals will in themselves indicate the location of their associated meanings in the said index.



4. In a code-index for signal combinations, the said index being divided into parts and the parts being divided into divisions and subdivisions, the said signal-combinations consisting of the permutations of the combinations and repetitions of signals formed by the elemental signals of the Morse code and the permutations of the said elemental signals, all the signal combinations having the same beginning signal being located in the same part of the index, each division having the same numbered subdivisions, the numbers of the subdivisions constituting the last signals of the signal combinations, the remaining numbers of the signal combinations indicating the relative positions of the divisions of the parts of the index, phrases located in each of the subdivisions of the index, whereby phrases may be telegraphically transmitted by indicating their location in the index.

5. In a code-index for signal combinations consisting of a code-book divided into four parts, the parts being divided into divisions and subdivisions, the said signal combinations consisting of the permutations of the combinations and repetitions of signals formed of elemental signals of Morse code and the permutations of the said elemental signals and represented by numerals, the first numeral of the combinations indicating the parts of the index, the remaining numerals of the combinations except the last three indicating the divisions of the parts of the index, the last three numerals of the said combinations indicating the subdivisions, meanings associated with each of the said signal combinations and located in each of the said subdivisions, whereby the signals will in themselves indicate the location of their associated meanings in the said index.

6. In a code-index for signal combinations consisting of a code-book divided into four parts, the said signal combinations consisting of the permutations of the combinations and repetitions of the four signals formed by the elemental signals of the Morse code and the permutations of the said elemental signals and arranged in sequence, the said four signals being represented by numerals, the first numeral of each of the signal combinations indicating the parts of the said book, the remaining numerals of the combinations except the last three indicating the pages of the said book, the last three of the numerals of the said combinations indicating the lines of the said pages, meanings associated with each of the said signal combinations and located in the said lines, whereby the signals will in themselves indicate the location of the associated meaning.

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**756,210. ROTARY ENGINE.** THOMAS P. BUTLER, Wantagh, N. Y. Filed July 23, 1903. Serial No. 166,736. (No model.)

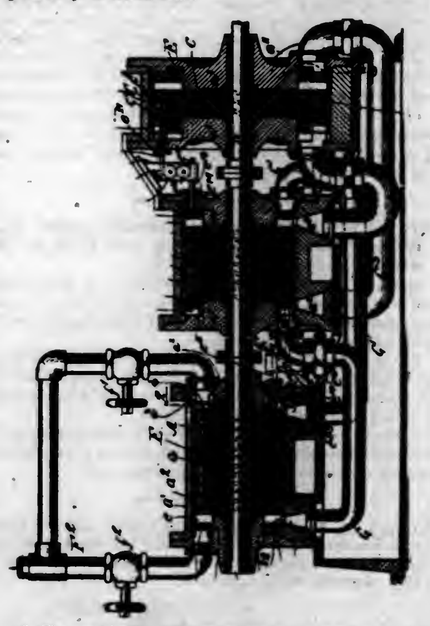
*Claim.*—1. The combination with an internally-circular casing of a rotary piston, comprising a shell, a body or shaft, rib-coils extending spirally between said body or shaft and shell, and abutments extending across the space between adjacent rib-coils, some from the interior of the shell and some from the piston-body, and constructed so as to provide a passage running sinuously toward and from the axis of the body or shaft.

2. The combination with an internally-circular casing of a rotary piston, comprising a body or shaft, rib-coils extending spirally around said body or shaft, and abutments extending across the space between adjacent rib-coils, and arranged in two sets, having reversely-curved arc-shaped opposite surfaces, so disposed as to produce a continuous passage, extending sinuously toward and from the axis of the body or shaft.

3. The combination with an internally-circular casing of a rotary piston, comprising a body or shaft, rib-coils extending spirally around said body or shaft, abutments extending across the space between adjacent rib-coils, and severally having reverse, arc-shaped surfaces, meeting to form ridges, and the ridges of opposite abutments being arranged out of line, so as to form a continuous passage, and extending sinuously toward and from the axis of the body or shaft.

4. The combination with an internally-circular casing, of a rotary piston, comprising a body or shaft, rib-coils extending spirally around said body or shaft, and two sets of abutments arranged one set outward of the other, and extending across the space between adjacent rib-coils, the several abutments being made separately, and fitted to slideways in the rib-coils.

5. The combination with an internally-circular casing, of a rotary piston, comprising a body or shaft, rib-coils extending spirally around said body or shaft, and two sets of abutments arranged one set outward of the other, and extending across the space between adjacent rib-coils, and each formed with two arc-shaped surfaces, meeting to form a ridge, and provided with guide-pieces, for engaging slideways in the rib-coils.



6. The combination with an internally-circular casing, of a rotary piston, comprising a body or shaft, rib-coils extending spirally around said body or shaft, abutments extending across the space between adjacent rib-coils, and outward of said body or shaft, and exhaust-passages at the ends of the spaces between adjacent rib-coils, having a turn or deflection different from the main course of said space, so that the reaction of escaping motive fluid may be utilized, to contribute to the desired rotation of the piston.

7. The combination with an internally-circular casing, and a rotary piston adapted to receive a motive fluid at either end, means for conducting motive fluid to either end of the cylinder, and a valve arranged between the casing and piston for opening and closing the proper ports of the piston for causing its rotation in the desired direction.

8. The combination with an internally-circular casing, and a rotary piston adapted to receive a motive fluid at either end, means for conducting motive fluid to either end of the cylinder, and a valve, operated by the inflowing motive fluid, to open and close the proper ports of the piston for causing its rotation in the desired direction.

9. The combination with an internally-circular casing, and a rotary piston adapted to receive a motive fluid at either end, means for conducting motive fluid to either end of the cylinder, and a valve fitting within a cylinder and surrounding the circumference and ends of the piston, and movable lengthwise of the cylinder, and piston to open and close the proper ports of the piston, to secure the rotation of the piston in the desired direction.

10. The combination with an internally-circular casing, and a rotary piston adapted to receive a motive fluid at either end, means for conducting motive fluid to either end of the cylinder, and a valve fitting within a cylinder and surrounding the circumference and ends of the piston, and movable under the influence of the motive fluid, lengthwise of the cylinder and piston, to open and close the proper ports of the piston, to secure the rotation of the piston in the desired direction.

11. The combination of a plurality of cylinders, a corresponding number of rotary pistons, connections between the cylinders so that exhaust motive fluid from either end of one cylinder may pass into one end of another cylinder, and a valve between the first-mentioned cylinder and its piston, for reversing its inlet and outlet.

12. The combination of a plurality of cylinders, a corresponding number of rotary pistons, connections between the cylinders, so that exhaust motive fluid from either end of one cylinder may pass into one end of another cylinder, and a valve, operated by the in-

flowing motive fluid, in the first-mentioned cylinder, for reversing its inlet and outlet.

13. The combination of a plurality of cylinders, a corresponding number of rotary pistons, connections between the cylinders, so that exhaust motive fluid from either end of one cylinder may pass into one end of another cylinder, and a valve between the cylinder and piston of each engine, which discharges into the cylinder of another engine, said valves being for the purpose of reversing the pistons, and connections between said valves in the different cylinders.

14. The combination of a plurality of cylinders, and a corresponding number of rotary pistons, comprising spiral rib-coils, running in reverse directions upon different pistons, to minimize end thrust upon the piston-shaft.

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**756,211. PRECIPITATING METALS FROM SOLUTIONS.** CHAS. BUTTERS, Berkeley, Cal. Filed Oct. 3, 1902. Serial No. 125,750. (No model.)

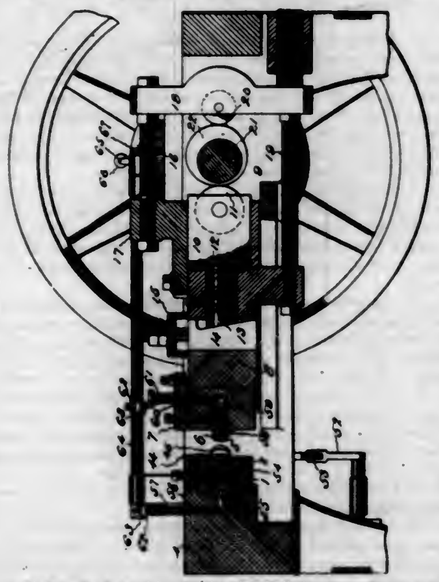
*Claim.*—1. The improvement in the process of precipitating metals from solutions, chiefly cyanid solutions, which consists in employing cathodes having surfaces of tin and a high-density electric current, substantially as described.

2. The improvement in the process of precipitating metals from solutions which consists in employing cathodes having surfaces of tin in combination with anodes of lead peroxid and a high-density electric current, substantially as described.

3. The improvement in the process of the electrolytic separation of metals from solutions which consists in using a cathode having smooth surfaces of tin, substantially as described.

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**756,212. MACHINE FOR FORMING BALLS.** ANDREW C. CAMPBELL, Waterbury, Conn., assignor to the E. J. Manville Machine Company, Waterbury, Conn., a Corporation of Connecticut. Filed May 9, 1903. Serial No. 156,347. (No model.)



*Claim.*—1. A machine for forming balls having a frame, a cutter, a holder, means for moving the holder and cutter toward each other and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them into line with a die fixed with relation to the frame and a die movable with relation to the frame, means for reciprocating the movable die and causing that die to first hold, then dwell, and afterward compress into spherical form the cut piece, and means for drawing the holder and cutter apart from between the dies while the movable die dwells, substantially as specified.

2. A machine for forming balls having a frame, a wire-feed mechanism, a cutter, a holder, means for moving the holder and cutter toward each other and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them into line with a die fixed with relation to the frame and a die movable with relation to the frame, means for reciprocating the movable die and causing that die to first hold, then dwell, and afterward compress into spherical form the cut piece, and means for drawing the holder and cutter apart from between the dies while the movable die dwells, substantially as specified.

3. A machine for forming balls having a frame, a wire-feed mechanism, a stop for limiting the amount of wire fed, a cutter, a holder, means for moving the holder and cutter toward each other and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them into line with a die fixed with relation to the frame and a die movable with relation to the frame, means for reciprocating the movable die and causing that die to first hold, then dwell, and afterward compress into spherical form the cut piece, and means for drawing the holder and cutter apart from between the dies while the movable die dwells, substantially as specified.

4. A machine for forming balls having a frame, a die with a semispherical recess fixed with relation to the frame, a gate movable with relation to the frame, a die with a semispherical recess carried by the gate, a block movable in a recess in the gate, springs tending to thrust the block rearwardly from the gate, a cam adapted to force the block and gate forwardly as they are held apart by the springs, then force the block forwardly independently of the gate and afterward force the block and gate forwardly as one piece, a cutter, a holder, means for moving the cutter and holder together and causing a piece to be cut and carried between them in line with the dies, and means for drawing the holder and cutter apart from between the dies while the movable die dwells, substantially as specified.

5. A machine for forming balls having a frame, a die with a semispherical recess fixed with relation to the frame, a gate movable with relation to the frame, a die with a semispherical recess carried by the gate, a block movable in a recess in the gate, a roll with a portion projecting from the rear edge of the block, springs tending to thrust the block rearwardly from the gate, a cam adapted to engage the roll and thrust the block and gate forwardly as separated by the springs, then force the block forwardly independently of the gate and afterward force the block and gate forwardly as one piece, a cutter for cutting off the blanks, a holder, means for moving the holder and cutter toward each other and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them into line with a die fixed with relation to the frame and a die movable with relation to the frame, means for reciprocating the movable die and causing that die to first hold, then dwell, and afterward compress into spherical form the cut piece, and means for drawing the holder and cutter apart from between the dies while the movable die dwells, substantially as specified.

6. A machine for forming balls having a frame, a die with a semispherical recess fixed with relation to the frame, a gate movable with relation to the frame, a die with a semispherical recess carried by the gate, a block movable in a recess in the gate, a roll with a portion projecting from the rear edge of the block, springs tending to thrust the block rearwardly from the gate, a cross-head connected with the gate, a roll with a portion projecting forwardly from the cross-head, a cam adapted to engage the front roll and thrust the block and gate forwardly as separated by the springs, then force the block forwardly independently of the gate and afterward force the block and gate forwardly as one piece and adapted to engage the rear roll and force the cross-head backwardly, a cutter, a holder, means for moving the cutter and holder toward each other and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them into line with the dies, and means for moving the cutter and holder apart from between the dies while the movable die dwells, substantially as specified.

7. A machine for forming balls having a frame, a die with a semispherical recess fixed with relation to the frame, a gate movable with relation to the frame, a die with a semispherical recess carried by the gate, a block movable in a recess in the gate, springs tending to thrust the block rearwardly from the gate, an adjustable stud carried by the gate in front of the block, a cam adapted to force the block and gate forwardly as they are held apart by the springs, then force the block forwardly independently of the gate and afterward force the block and gate forwardly as one piece, a cutter, a holder, means for moving the cutter and holder toward each and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them in line with the dies, and means for drawing the holder and cutter apart from between the dies while the movable die dwells, substantially as specified.

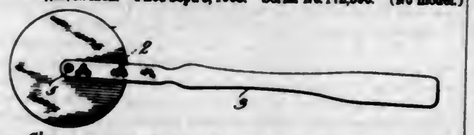
8. A machine for forming balls having a frame, a wire-feed mechanism, a stop for limiting the amount of wire fed, a die with a semispherical recess fixed with relation to the frame, a gate movable with relation to the frame, a die with a semispherical recess carried by the gate, a block movable in a recess in the gate, springs tending to thrust the block rearwardly from the gate, a cam adapted to force the block and the gate forwardly as separated by the springs, then force the block forwardly independently of the gate and afterward force the block and gate forwardly as one piece, a cutter for cutting off blanks, a holder, means for moving the cutter and holder toward each other and against opposite sides of the piece to be cut, means for moving the cutter and holder together and causing a piece to be cut and carried between them in line with the dies, and means for drawing the cutter and holder apart from between the dies while the movable die dwells, substantially as specified.

9. A machine for forming balls having a frame, a fixed die, a movable die, mechanism for moving the latter die forwardly, causing it to dwell, moving it still farther forwardly and then moving it backwardly, a cutter adapted to cut a length of wire, a holder adapted to cooperate with the cutter for holding the cut piece, and mechanisms for moving the cutter and the holder together with the cut piece between them into line with the dies and moving the cutter and holder from each other while the movable die dwells during its forward movement, substantially as specified.

10. A machine for forming balls having a frame, a wire-feed mechanism, a stop for limiting the amount of wire fed, a fixed die, a movable die, mechanism for moving the latter die forwardly, causing it to dwell, moving it to still farther forwardly and then moving it backwardly, a cutter adapted to cut a length of wire, a holder adapted to cooperate with the cutter, and mechanisms for moving the cutter and the holder together with the cut piece between them into line with dies and moving the cutter and holder from each other while the movable die dwells during its forward movement, substantially as specified.

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**756,213. SURGICAL KNIFE.** SMITH A. CONNELL, Sr., East Las Vegas, N. Mex., assignor of one-half to Smith A. Connell, Jr., East Las Vegas, N. Mex. Filed Sept. 8, 1903. Serial No. 172,390. (No model.)



*Claim.*—1. A surgical knife comprising a handle and a blade rigidly mounted in said handle and having a cutting edge which forms a continuous curve from one side of the handle to the other and is adapted to cut when pressed in any direction.

2. A surgical knife comprising a handle and a blade rigidly and detachably mounted in said handle, said blade having a cutting edge which is formed in a continuous curve and is adapted to cut when pressed in any direction.

3. A surgical knife comprising a substantially circular blade having a notch in the periphery thereof, a separable handle having a slot to receive said blade and a projection to engage said notch, and means for securing said blade in said slot.

4. A surgical knife comprising a substantially circular blade having a notch in the periphery and an opening in the center, a handle having a slotted end for the reception of said blade, a projection at the base of the slot to engage said notch, and a screw mounted in the slotted end of the handle and adapted to engage the opening in the blade.

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**756,214. PROCESS OF UTILIZING WASTE PRODUCTS FROM THE MANUFACTURE OF PAPER.** WILLIAM H. CONNELL, Massena, N. Y. Filed Feb. 18, 1903. Serial No. 143,887. (No specimens.)

*Claim.*—1. The herein-described process of reducing to pulp the waste product known as screenings, which consists in subjecting the screenings to a crushing and drawing action, and then to a grinding or rubbing action, for the purposes set forth.

2. The herein-described process of reducing to pulp the waste product known as screenings, which consists in subjecting the screenings to a plurality of crushing and drawing actions, then to a grinding or rubbing action, for the purposes set forth.

3. The herein-described process of reducing to pulp the waste product known as screenings, which consists in preliminarily crushing and drawing the screenings, crushing and drawing them again, and finally grinding or rubbing the screenings to further reduce them to the desired size, for the purposes set forth.

4. The herein-described process of reducing to pulp the waste product known as screenings, which consists in preliminarily crushing and drawing the screenings, crushing and drawing them again, crushing and drawing them a third time, thoroughly stirring the crushed screenings in a liquid, grinding or rubbing the screenings, stirring them again in the liquid, and again grinding or rubbing them, substantially as and for the purposes set forth.



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**756,215. WOVEN INTERLINING FOR SKIRTS.** GEORGE S. COX, Pitawatertown, Pa., assignor to himself, and Walter S. Cox, trading as George S. Cox and Brother, Philadelphia, Pa. Filed June 29, 1903. Serial No. 163,489. (No specimens.)



*Claim.*—1. As a new article of manufacture, a woven interlining fabric having the weft extending in curved lines.

2. As a new article of manufacture, a woven interlining fabric whose weft-threads are curved in a direction substantially parallel with the direction in which the fabric is cut to form an interlining.

3. As a new article of manufacture, a woven interlining fabric having a warp of any suitable material, and a weft of stiff material, as horsehair, the warp extending in straight lines and the weft in curved lines.

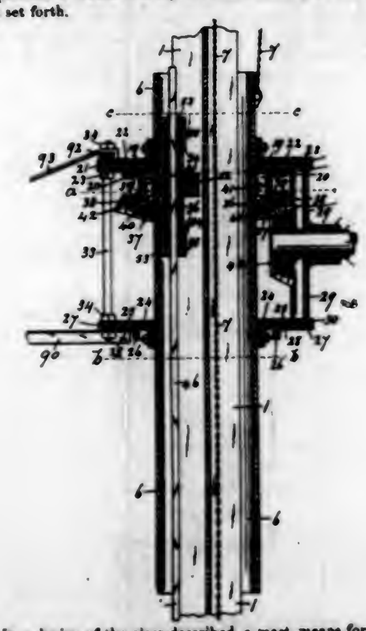
4. As a new article of manufacture, a woven interlining fabric having a warp of pliable material and alternate sections of pliable and stiff weft, the weft of both sections lying in parallel curved lines.

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**756,216. AIR-MOTOR OR WINDMILL.** ALPHONSUS M. CREHIGAN, London township, county of Middlesex, Canada. Filed Nov. 3, 1902. Serial No. 130,008. (No model.)

*Claim.*—1. In a device of the class described, a mast, a sleeve vertically adjustable on said mast, gearing mounted on said sleeve and a wind-wheel mounted on said gearing, in combination with a counterbalance-weight, a chain connecting said counterbalance-weight with said vertically-adjustable sleeve, and an antifriction-

pulley secured to said mast near its upper end over which said chain extends, and means for raising and lowering and holding said sleeve at the position to which it is adjusted, substantially as and for the purpose set forth.



2. In a device of the class described, a mast, means for rigidly holding said mast in an upright position, a sleeve vertically adjustable on said mast, gearing mounted on said sleeve, and a wind-wheel mounted on said gearing, in combination with a counterbalance-weight, a chain connecting said counterbalance-weight with said vertically-adjustable sleeve, an antifriction-pulley secured to said mast over which said chain extends, and means for raising, lowering and holding said sleeve at the position to which it is adjusted, substantially as and for the purpose set forth.

3. In a device of the class described, a mast, a sleeve vertically adjustable on said mast, gearing mounted on said sleeve, a wind-wheel mounted on said gearing, a counterbalance-weight, a chain connecting said counterbalance-weight with said vertically-adjustable sleeve, and an antifriction-pulley secured to said mast near its upper end over which said chain extends, in combination with shafts 11 and 12, a gear-wheel and drum on the shaft 11 and a gear pinion and crank on the shaft 12, a chain connecting said drum with said counterbalance-weight, a dog pivoted on said mast and engaging with said gear-wheel, and means for supporting said shafts, substantially as and for the purpose set forth.

4. In a device of the class described, a mast, a sleeve vertically adjustable on said mast, gearing operated by the wind mounted on said sleeve, a counterbalance-weight, a chain connecting said counterbalance-weight with said vertically-adjustable sleeve, and an antifriction-pulley secured to said mast near its upper end over which said chain extends, in combination with a brake-rod secured to said mast and extending through said sleeve, a brake pivotally secured to and extending through an opening in said sleeve and engaging with said brake-rod, and means for adjusting said brake, substantially as and for the purpose set forth.

5. In a device of the class described, a mast, a sleeve vertically adjustable on said mast, gearing operated by the wind mounted on said sleeve, a brake-rod secured to said mast and extending through said sleeve, and a brake pivotally mounted on and extending through an opening in the side of said sleeve and engaging with said brake-rod, in combination with a vertically-adjustable slide connected to said brake, a band 108 adjustable around said sleeve, with which band said slide engages, a rod 111 connected at one end to said band, means for guiding and holding said rod in a vertical position, a pivotal vane-arm connected at one end to said rod 111, a bracket for supporting said vane-arm, and a vane secured to the outer end of said vane-arm, substantially as and for the purpose set forth.

6. In a device of the class described, a mast, a sleeve vertically adjustable on said mast, and means for adjusting and holding said sleeve at the position to which it may be adjusted, upper and lower collars 19 and 24 rigidly secured to said sleeve and provided with external rim-flanges, upper and lower annular rings 21 and 27 provided with internal rim-flanges and supported by said collars, and antifriction ball-bearings interposed between said upper sleeve and said upper collar, in combination with a vane-arm secured to said lower annular ring, a vane secured to the outer end of said arm, a standard secured to said annular rings, a shaft journaled in said standard, and a wind-wheel keyed on and rotating with said shaft, substantially as and for the purpose set forth.

7. In a device of the class described, a mast, a sleeve vertically adjustable on said mast, and means for holding said sleeve at the position to which it may be adjusted, upper and lower collars 19 and 24, rigidly secured to said sleeve and provided with external rim-flanges, upper and lower annular rings 21 and 27 provided with internal rim-flanges, and supported by said collars, antifriction ball-bearings interposed between said upper annular ring and said upper collar, and an annular toothed flange 26 on the under side of said lower collar, in combination with a vane-arm 90 pivotally secured to said lower annular ring, a vane secured to the outer end of said vane-arm, a bar 92 pivotally secured to the upper annular ring 21, diagonal braces extending from said pivotal vane-arm 90 to said pivotal bar 92, a dog pivotally secured to said lower annular ring and adapted to engage with the teeth of the annular toothed flange 26 on the lower collar 24, a rod 95 pivotally secured at one end to said pivotal vane-arm 90 and its other end extending through and adapted to be adjusted back and forth in said dog, a nut on said rod for holding it in engagement with said dog, a clasp secured to said lower annular ring for guiding and holding said rod thereon, and a coil-spring 98 interposed between said clasp and said dog, substantially as and for the purpose set forth.

8. In a device of the class described, a mast, a sleeve encircling said mast, and a beveled and internal gear-wheel supported on and revolving around said sleeve, in combination with a gear-pinion provided with a spindle, and one side of which gear-pinion extends through an opening 56 in said sleeve and engages with said internal gear-wheel, a vertical operating-shaft extending through and secured to said spindle and journaled in bearings secured to said mast, and bearings 55 secured to the inside of the sleeve, in which said spindle is supported, substantially as and for the purpose set forth.

9. In a device of the class described, a mast, a sleeve encircling said mast, a flanged collar 36 rigidly secured to said sleeve, an annular flanged ring 38 supported by said collar 36, antifriction bearing-balls 40 interposed between said ring and said collar, and a beveled and internal gear-wheel encircling said sleeve and supported by said ring, in combination with a gear-pinion, provided with a spindle, one side of which gear-pinion extends through an opening 56 in said sleeve, and engages with said internal gear-wheel, a vertical operating-shaft extending through and secured to said spindle, and journaled in bearings secured to said mast, and bearings 55 secured to the inside of said sleeve, in which said spindle is supported, substantially as and for the purpose set forth.

10. In a device of the class described, a mast, a sleeve encircling said mast, upper and lower collars 19 and 24 rigidly secured to said sleeve, upper and lower annular rings 21 and 27 supported by said collars, a standard 29 supported by said annular rings 21 and 27, a shaft 43 journaled in said standard, and a beveled gear-pinion secured to one end and a wind-wheel to the other end of said shaft, in combination with a beveled and internal gear-wheel supported on and revolving around said sleeve, and engaging with said beveled gear-pinion, a gear-pinion provided with a spindle, one side of which gear-pinion extends through an opening 56 in the side of said sleeve and engages with said internal gear-wheel, a vertical operating-shaft extending through and secured to said spindle, and journaled in bearings secured to said mast, and bearings 55 secured to the inside of said sleeve in which said spindle is supported, substantially as and for the purpose set forth.

11. In a device of the class described, a wind-wheel having radial arms 60 provided with cranks 61 on their inner ends, fan-blades 64 secured to said radial arms and having a greater area on one side of said arms than the other, rings 59 and 62 in which said arms are pivotally supported, a hub 57, braces 58 for supporting said ring 59, and connecting it with said hub, and a shaft 43 on which said hub is keyed, in combination with a ring 63 engaging with the cranks 61 on said radial arms, a lever 67 pivotally secured on a cross-bar 68, a bell-crank lever 69 pivotally secured on a cross-bar 71, one arm, *k*, of which is pivotally secured to said ring 63 and the other arm, *i*, to the lever 67, a collar 65 adjustable on a sleeve 44, with which collar the lower end of said lever 67 engages, a loose band 77 on the sleeve 6, a lever 73 fulcrumed on the standard 29, coupling-links for connecting said lever to said adjustable collar 65 and said loose band 77, a vertically-adjustable hooked bar engaging with said loose band, a clasp for guiding said hooked bar as it is vertically adjusted, a rod 82 connected to said loose band 77 and extending through holes in annular rings supported on a sleeve 6, a transverse pin 83 secured in said rod 82, a coil-spring 84 interposed between one of said annular rings and said transverse pin, a rope secured to said hooked bar, and a weight secured to said rope, substantially as and for the purpose set forth.



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**756,217. AUTOMATICALLY COUPLING OR UNCOUPLING RAILWAY CARRIAGES, WAGONS, OR SIMILAR VEHICLES.** JOHN DARLING, Rutherglen, Scotland, assignor to Darling's Patent Automatic Coupling, Limited, Glasgow, Scotland. Filed Oct. 16, 1903. Serial No. 177,326. (No model.)



*Claim.*—The arrangement and combination of parts for automatic coupling of railway-vehicles and the locking of the same consisting of jaws so formed as to accommodate a coupling-link which is mounted in its rear and the entrance therein of its opposite coupling-link, also a catch which drops by gravity into a position to lock the coupling-pin against coupling, which is operated by the movement of a cross-bar of square formation brought into action by a pin formed on a cross-bar and actuated by the handles which are mounted on each side of the wagons, substantially as and for the purposes hereinbefore described and illustrated on the accompanying sheet of drawings.

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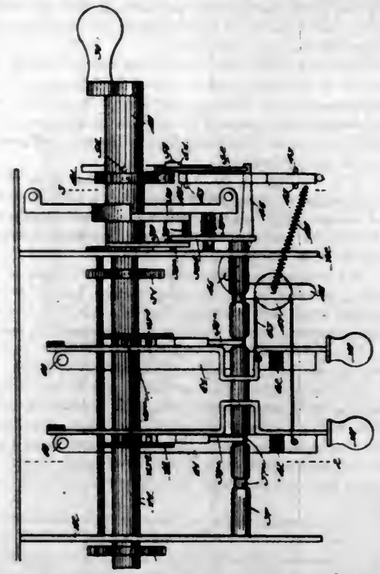
**756,218. CASH-REGISTER.** WILLIAM P. DAVEY, Elmira, N. Y., assignor to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Sept. 17, 1903. Serial No. 173,535. (No model.)

*Claim.*—1. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, and means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions.

2. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock requiring the combined positioning of all of said elements.

3. In a cash-register, the combination with a series of setting elements adjustable into various positions, of an operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock requiring the combined positioning of all of said elements.

4. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for controlling said lock by the joint cooperation of said setting elements.



5. In a cash-register, the combination with a series of setting elements, of an operating member, a lock for locking said member at the end of each operation thereof, and means for releasing said lock when said elements simultaneously occupy certain predetermined positions.

6. In a cash-register, the combination with a series of setting elements adjustable into various positions, of an operating member, a lock for locking said member at the end of each operation thereof, and means for releasing said lock when said elements simultaneously occupy certain predetermined positions.

7. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, and means for locking said operating member at the end of each operation thereof until said setting elements have all been returned to normal position.

8. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, a locking mechanism for locking said member at the end of each operation thereof, and means for releasing said locking mechanism by the combined positioning of said setting elements.

9. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member at the end of each operation thereof, and means controlled by the combined predetermined relative positioning of said setting elements for releasing said locking mechanism.

10. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member at the end of each operation thereof, and means for releasing said lock operated by said elements upon their combined returning to normal position.

11. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, locking mechanism for locking said member at the end of each operation thereof, and means for rendering said locking mechanism inoperative when said elements are in normal position.

12. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, locking mechanism for locking said member at the end of each operation thereof, means for rendering said locking mechanism inoperative when said elements are in normal position, and means for holding said locking mechanism in inoperative position.

13. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, locking mechanism for said member, means for rendering said locking mechanism inoperative when said elements are in normal position, means for holding said locking mechanism in inoperative position, and means actuated by said operating member to release said holding means.

14. In a cash-register, the combination with a plurality of setting-levers, of an operating member, a lock for said member, and a releasing mechanism for said lock partially operated by the movement of any one of said levers, and completely operated by the movement of the remaining lever or levers.

15. In a cash-register, the combination with a series of setting elements, of an operating member; a lock for said member; and a releasing mechanism for said lock, including a controlling mechanism therefor partially operated by any one of said elements and completely operated to release said lock by the combined movement of all of said setting elements.

16. In a cash-register, the combination with a series of adjustable setting elements, of an operating member; a lock for said member; and an operating-cord for controlling said lock arranged to be drawn taut by the combined movement of said setting elements into normal position, for the purpose described.

17. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member after each operation thereof when said levers have been displaced from normal position, and an operating-cord connected with said locking means and arranged to be drawn taut by the combined positioning of said levers to normal position.

18. In a cash-register, the combination with an operating member, a locking mechanism therefor, means for releasing said locking mechanism having a certain amount of free movement independent of the locking mechanism, and a series of setting elements arranged by their conjoint operation to give said releasing means a movement in excess of said free movement and thereby actuate the locking mechanism.

19. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, and means for locking said shaft at the end of each operation thereof until all of said setting-levers have been returned to normal position.

20. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, a lock for locking said shaft at the end of each operation thereof, and a releasing mechanism for said lock actuated by the joint coöperation of all of said setting-levers when said levers are returned to normal position.

21. In a cash-register, the combination with a series of setting-levers, an operating-shaft formed with a locking projection, a locking-bar arranged to engage said projection, a lever for retracting said locking-bar, swinging levers moved by said setting-levers when the latter are brought to normal position, an operating-cord extending between said swinging levers and said retracting-lever, a latch for said locking-bar, and means carried by said operating member for actuating said latch.

22. In a cash-register, the combination with a series of adjustable setting elements and a register, of a register-operating member, and means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions.

23. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock requiring the combined positioning of all of said elements.

24. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, and means for releasing said lock by the joint coöperation of said setting elements.

25. In a cash-register, the combination with a series of adjustable setting elements and a register, of a register-operating member, means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions, and means for latching said locking means in inoperative position.

26. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock requiring the combined positioning of all of said elements, and means for latching said lock into inoperative position.

27. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock by the joint coöperation of said setting elements, and means for latching said lock in inoperative position.

28. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member until all of said elements have been moved into certain predetermined relative positions, and means independent of said elements and disconnected from said operating member for latching said locking means in inoperative position.

29. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock requiring the combined positioning of all of said elements, and means independent of said lock-controlling means and disconnected from said operating mechanism for latching said lock in inoperative position.

30. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock by the joint coöperation of said setting elements, and means independent of said controlling means and disconnected from said operating mechanism for latching said lock in inoperative position.

31. In a cash-register, the combination with a series of adjustable setting elements, of an operating member, means for locking said member until all of said elements have been moved into certain predetermined relative positions, means for latching said locking means in inoperative position, and means actuated by said operating member to release said latching means.

32. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock requiring the combined positioning of all of said elements, means for latching said lock in inoperative position, and means actuated by said operating mechanism to release said latching means.

33. In a cash-register, the combination with a series of setting elements, of an operating mechanism, a lock for said mechanism, means for controlling said lock by the joint coöperation of said setting elements, means for latching said lock in inoperative position, and means actuated by said operating mechanism to release said latching means.

34. In a cash-register, the combination with a series of adjustable setting elements and a register, of a register-operating member, means for locking said member at the end of each operation thereof until all of said elements have been moved into certain predetermined relative positions, means for latching said locking means in inoperative position, and means actuated by said operating member for actuating said latch.

35. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock requiring the combined positioning of all of said elements, means for latching said lock in inoperative position, and means actuated by said operating member to release said latching means.

36. In a cash-register, the combination with a series of setting elements and a register, of a register-operating mechanism, a lock for locking said mechanism at the end of each operation thereof, means for releasing said lock by the joint coöperation of said setting elements, means for latching said lock in inoperative position, and means actuated by said operating mechanism for releasing said latching means.

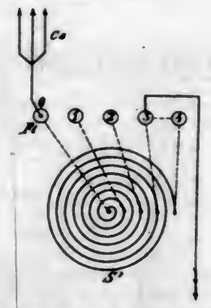
37. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, means for locking said shaft until all of said setting-levers have been returned to normal position, means for latching said locking means in inoperative position, and means connected with said operating-shaft for releasing said latching means.

38. In a cash-register, the combination with a series of setting-levers, of a register, oscillatory register-actuating devices, an operating-shaft, connections between said shaft and said register-actuating devices for operating the latter, a lock for locking said shaft at the end of each operation thereof, a releasing mechanism for said lock actuated by the joint coöperation of all of said setting-levers when said levers are returned to normal position, means for latching said lock in inoperative position, and means connected with said operating-shaft for releasing said latching means.

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**756,219. WIRELESS-TELEGRAPH RECEIVING SYSTEM.** Boudoin Doumerc, Paris, France. Filed Aug. 14, 1903. Serial No. 169,822. (No model.)

*Claim.*—1. In a wireless-telegraph receiving system, an oscillation-transformer whose primary and secondary windings consist of flat spirals, superposed one on the other, and means for making electrical connection with various parts of each spiral whereby the number of effective turns is varied.



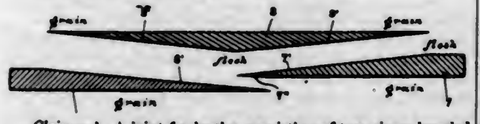

2. In a wireless-telegraph receiving system, an oscillation-transformer whose primary and secondary windings consist of parallel flat spirals.

3. In a wireless-telegraph receiving system, an aerial conductor, a flat spiral connected in series therewith, a second flat spiral inductively associated with the first-mentioned spiral and a receiver connected with the second spiral.

4. In a wireless-telegraph receiving system, an aerial conductor, a flat spiral connected in series therewith, a second flat spiral parallel to the first, and a receiver connected with the second spiral.

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**756,220. BELT-JOINT.** John W. Elston, Indianapolis, Ind. Filed Apr. 8, 1903. Serial No. 151,597. (No model.)




*Claim.*—1. A joint for leather consisting of two pieces beveled in opposite directions, and a separate lapping-piece beveled from its middle in opposite directions and attached to the bevel-surfaces of the overlapping pieces.

2. A joint consisting of a piece 6 having a beveled face 6', a piece 7 having a bevel-surface 7' and an oppositely-beveled surface 7", and a connecting lap-piece 8 having oppositely-beveled surfaces 8', 8'.

3. A joint for leather consisting of a piece 6 beveled from flesh to grain to form a surface 6', a second piece 7 beveled in the opposite direction from flesh to grain, and a lap-piece beveled from a medial line in opposite directions from flesh to grain, and attached to the beveled faces of the pieces 6 and 7.

4. A joint for leather consisting of a piece 6 having a beveled face 6' from flesh to grain; a piece 7 having a beveled face 7' from flesh to grain and a second beveled face 7" from grain to flesh; and a lap-piece 8 beveled from a medial line in opposite directions from flesh to grain.

5. A joint for leather consisting of two pieces beveled in opposite directions, and a separate lapping-piece beveled from its middle in opposite directions from flesh to grain, and attached to the beveled surfaces of the said two pieces.

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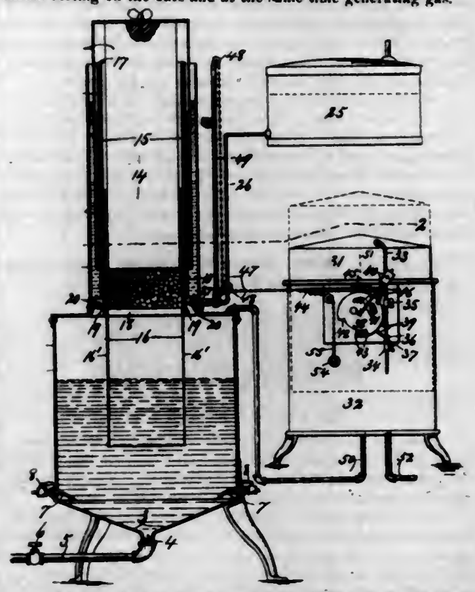
**756,221. ACETYLENE-GAS GENERATOR.** Martin J. Erk, Binghamton, N. Y. Filed Mar. 6, 1903. Serial No. 146,446. (No model.)

*Claim.*—1. An acetylene-gas generator comprising a shell adapted to receive the water and gas, a superimposed carbid-holder having bottom grate-bars and a water-feed pipe having nipples alined with the upper faces of the grate-bars for discharging jets of water against the lower surface of the carbid adjacent to and along and upon the upper faces of the grate-bars for decomposing the carbid which rests upon the grate-bars and thereby augmenting the feed of the carbid to the grate.

2. An acetylene-gas generator comprising a water-shell having a water and gas chamber, a carbid-supporting grate above said chamber, and a vertically-movable section extending above and below the grate and forming the side supporting-walls for the carbid.



3. An acetylene-gas generator comprising a water and gas holder, a superimposed carbid-holder having a bottom composed of grate-bars, and a water-supply conduit having discharge-openings alined with the upper faces of the grate-bars for cutting away the carbid resting on the bars and at the same time generating gas.




4. An acetylene-gas generator comprising a water and gas holder, a superimposed carbid-holder having a bottom composed of grate-bars, and a water-supply conduit having discharge-openings alined with the upper faces of the grate-bars for cutting away the carbid resting on the bars and at the same time generating gas, a water-jacket surrounding the carbid-holder, and a follower movable in the carbid-holder and water-jacket.

5. In an acetylene-gas generator, a shell having a subchamber for the water and gas, a superimposed carbid-holder comprising an outer section having a grate bottom and an inner section movable vertically relatively to the grate and having its side walls in contact with the carbid, means for discharging jets of water across the upper surface of the grate and against the adjacent surface of the carbid, a valved water-supply pipe in combination with a gas-receiver having a movable bell and connections between the movable bell and valve whereby the raising and lowering of the bell operates to open and close the valve.

6. In an acetylene-gas generator, a shell having a subchamber for the water and gas, a superimposed carbid-holder having a grate bottom, a head composed of outer and inner water-pipes each having a series of nipples discharging against the lower surface of the carbid adjacent to the grate, the nipples of the inner pipe projecting through the walls of the outer pipe and alternating with the nipples of said outer pipe, and means for shutting off the supply of water to one of the pipes.

7. A water-supply head for acetylene-gas generators consisting of two pipes one within the other, each pipe having a series of nipples for discharging jets of water against the carbid, the nipples of the inner pipe projecting through the walls of the outer pipe and means to cut off the water-supply of one of the pipes.

8. An acetylene-gas generator, comprising a shell having a water and gas chamber and an inverted conical bottom provided with an opening in its apex, a carbid-holder consisting of outer and inner hollow sections, one being provided with a grate bottom, and the other movable endwise relatively to the grate, water-pipes discharging against the upper surface of said conical bottom wall toward its central opening, and means for discharging water against the carbid.

9. A carbid-holder comprising horizontal grate-bars for supporting the bottom of the body of carbid and a vertically-movable shell open at the top and bottom and movable through the grate for supporting the sides of the carbid.

10. In an acetylene-gas generator, a carbid-holder comprising outer and inner shells, the outer shell being open at the top and provided with a grate at the bottom and the inner shell being movable

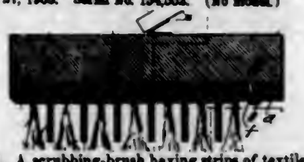
lengthwise of the outer shell and through the grate to support the sides of the carbid and to move downwardly therewith as the carbid is dissolved, said inner shell being open at the top and bottom.

11. An acetylene-gas generator comprising a shell having a holder and gas-receiving chamber at the bottom, and a superimposed carbid-holder consisting of outer and inner tubular sections, the outer section being open at the top and provided with a grate-bar and the inner section being open at the top and bottom and movable through the grate and into the water and gas chamber.

12. An acetylene-gas generator comprising a shell having a water and gas chamber, a superimposed shell having a water jacket or chamber, a follower movable in the water-jacket, a carbid-holder consisting of outer and inner tubular sections, the outer section being suspended within said superimposed shell and provided with a grate bottom, and the inner section being movable vertically through said bottom, said follower having a central body projecting through the carbid-holder.

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**756,222. BRUSH.** WILLIAM W. EVANS, Salt Lake City, Utah. Filed Apr. 27, 1903. Serial No. 154,552. (No model.)



*Claim.*—1. A scrubbing-brush having strips of textile material, and strips of elastic material, of less height than the textile strips alternating with said textile strips, and disposed with their lower edges above those of the textile strips.

2. A scrubbing-brush comprising a head having side, depending flanges, provided with ledges, and also having end abutments, spacing-strips arranged between the abutments, and resting, at their ends, on the ledges, alternate strips of elastic material and textile material held by the spacing-pieces; the elastic strips being of a less height than the textile strips, and resting with their lower edges above those of the textile strips, and means for holding the spacing-strips against the strips of elastic material and textile material.

3. A scrubbing-brush comprising a head having side, depending flanges, provided with ledges, and also having end abutments, spacing-strips arranged between the abutments, and resting, at their ends, on the ledges; alternate strips of elastic material and textile material held by the spacing-pieces; the elastic strips being of a less height than the textile strips, and resting with their lower edges above those of the textile strips, and a wedge-shaped key connected to the head, and adjustable between one end abutment and the adjacent spacing-piece.

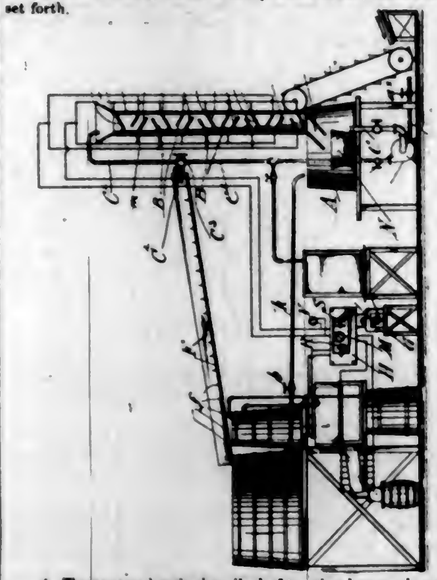
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**756,223. PROCESS OF TREATING LOW-GRADE ORES AND TAILINGS BY ELECTROLYSIS.** ERNST FAWKS, Philadelphia, Pa. Filed May 2, 1903. Serial No. 154,393. (No specimens.)

*Claim.*—1. The process herein described of treating low-grade ores and tailings by electrolysis for regaining the precious metals contained in the same, which consists in grinding the ore or tailings, then mixing the same with a suitable quantity of water and a suitable electrolyte so as to form a pulp, passing said pulp by gravity between a series of pairs of inclined anode and cathode plates arranged tower fashion one below the other, and removing from time to time the precious metal deposited on said cathode-plates, substantially as set forth.

2. The process herein described of treating low-grade ores and tailings by electrolysis, which consists in subjecting a pulp of ore or tailings, water and a suitable electrolyte to an electrolytic action by passing the same by gravity between alternately-inclined pairs of anode and cathode plates arranged in a tower one below the other so as to deposit the precious metals on the cathode-plates, subjecting the partially-extracted pulp to an oxidizing action, and then to a leaching action, and finally to a second electrolytic action for removing the remaining traces of precious metal, substantially as set forth.

3. The process herein described of treating low-grade ores and tailings by electrolysis, which consists in subjecting a pulp of ore or tailings, water and a suitable electrolyte to an electrolytic action by passing the same between a plurality of pairs of inclined anode and cathode plates arranged in a tower one below the other for depositing the precious metals thereon, subjecting the partially-extracted pulp to an oxidizing action, then to a leaching action for some time, and then to a successive electrolytic, oxidizing and leaching action, until the precious metals have been almost completely dissociated, dissolved and gone into solution, then subjecting the same to defecation, heating the defecated liquor, and finally subjecting the liquor to an electrolytic action, substantially as set forth.



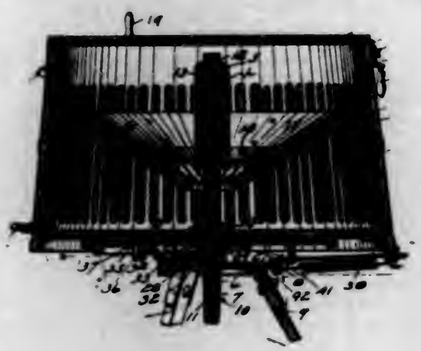
4. The process herein described of treating low-grade ores and tailings by electrolysis, which consists in subjecting a pulp of ore or tailings, water and a suitable electrolyte to an electrolytic action by passing the same between a plurality of pairs of alternately-inclined anode and cathode plates arranged in a tower one below the other for depositing the precious metals thereon, subjecting the partially-extracted pulp to an oxidizing action, then to a leaching action for some time, then to a successive electrolytic, oxidizing and leaching action, until the precious metals have been almost completely dissociated, dissolved and gone into solution, then subjecting the same to defecation, heating the defecated liquor, and finally subjecting the liquor to an electrolytic action, substantially as set forth.

5. The process herein described of treating low-grade ores and tailings by electrolysis, which consists in repeatedly passing a mixture of ground ore or tailings, water and a suitable electrolyte between a series of pairs of alternately-inclined anode and cathode plates arranged tower fashion one below the other, substantially as set forth.

6. The process herein described of treating low-grade ores and tailings by electrolysis, which consists in passing a mixture of ground ore or tailings, water and a suitable electrolyte between a series of pairs of alternately-inclined anode and cathode plates arranged tower fashion one below the other in an oxidizing atmosphere at a pressure equal to the height of the tower, substantially as set forth.

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**756,224. WASHING-MACHINE.** WILBERT C. FAWKS, Minneapolis, Minn. Filed Nov. 17, 1903. Serial No. 181,472. (No model.)





*Claim.*—1. In a washing-machine, the combination, with an oscillating tub and a rubber-head provided therein and arranged to oscillate in a direction opposite to the movement of said tub and to slide vertically on its support and adjust itself to the position of the clothes, said rubber-head being in the form of an inverted cone with its outer edge near the wall of said tub and comprising a centrally-arranged member provided with a series of holes, and bars secured intermediate to their ends at intervals on said member and radiating outwardly and upwardly therefrom, and means for closing the openings between said bars.

2. In a washing-machine, the combination, with a rotating reciprocating tub, of a rubber-head provided therein and having a corresponding movement in the opposite direction, said rubber-head being in the form of an inverted cone, with its outer edge near the wall of said tub and comprising a centrally-arranged casting having a series of perforations, a series of bars radiating outwardly from said casting and an imperforate plate connecting said bars and extending from said casting to the outer edge of said head.

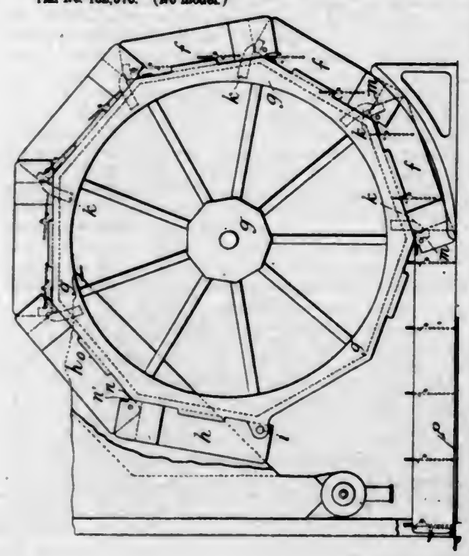
3. In a washing-machine, the combination, with a rotating reciprocating tub provided with a hollow centrally-arranged standard, a shaft arranged within said standard, a sleeve secured to the upper end of said shaft and inclosing said standard, and having longitudinal guiding-flanges, a rubber-head having slots to receive said flanges and adapted to slide vertically on said sleeve and rotate therewith, means supporting the lower end of said shaft and a mechanism interposed between said shaft and tub whereby when said tub is moved in one direction said shaft and rubber-head will be moved a corresponding distance in the other direction.

4. In a washing-machine, the combination, with a tub having a rotary reciprocating movement, of a shaft centrally arranged therein, a rubber-head connected with said shaft, a pinion secured on said shaft below said tub, a quadrant pivoted independently of said tub near said pinion and having its teeth in engagement therewith, an arm provided on said quadrant and having a longitudinal slot and a pin provided on the under side of said tub and adapted to enter said slot, for the purpose specified.

5. In a washing-machine, the combination, with a rotating reciprocating tub, of a shaft centrally arranged therein and projecting below the same, a casting having suitable legs wherein said shaft is supported, a rubber-head provided within said tub and connected with said shaft, a pinion secured on said shaft below said tub, a quadrant having its teeth in engagement with said pinion and pivoted on said casting, and provided with a slotted arm located within the circumference of the tub and a pin provided on the under side of said tub and adapted to enter said slot.

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**756,225. GAS-RETORT CHARGER AND DISCHARGER.** WALTER W. FIDDES, Bristol, England, assignor of one-half to James George Willcox Aldridge, Westminster, England. Filed Nov. 24, 1902. Serial No. 132,670. (No model.)



*Claim.*—1. A discharging-charger for drawing and charging gas-retorts, consisting of the two side plates, distance-pieces between the two side plates near their tops, and division-plates pivoted between the two side plates and free to swing forward toward the front of the charger, and a bed-plate on which the parts rest.

2. A discharging-charger for drawing and charging gas-retorts, consisting of the two side plates, distance-pieces between the two side plates near their tops, and division-plates hinged upon a lower rear distance-piece and adapted to bear at their tops on the adjacent upper forward distance-piece, and a bed-plate on which the parts rest.

3. A discharging-charger for drawing and charging gas-retorts, consisting of the parallel side plates, distance-pieces between the two side plates near their tops, division-plates pivoted between the two side plates and free to swing forward toward the forward end of the charger, and parallel horizontal plates projecting forward from the forward push-plate, and a bed-plate on which the parts rest.

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**756,226. RAIL-JOINT.** OBIAS L. FISHER, Whitepine, and WILLIAM W. HOLSTON, Morristown, Tenn. Filed Aug. 6, 1903. Serial No. 168,515. (No model.)

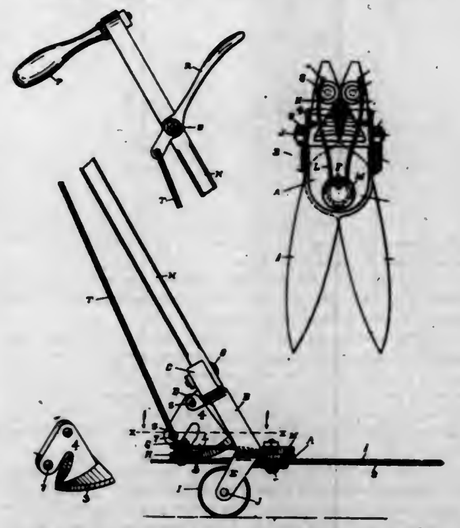


*Claim.*—1. A rail-joint comprising adjacent rail ends cut away longitudinally to provide corresponding extensions, matching tongues and grooves extending longitudinally upon the meeting faces of the said extensions, adjacent end portions of the extensions aforesaid having angular ends adapted to be received by corresponding angular recesses disposed upon the said rail ends whereby lateral play is prevented.

2. A rail-joint substantially as described, comprising rail ends cut away longitudinally on a vertical line for a short distance to provide corresponding extensions, matching tongues and grooves disposed longitudinally of the meeting faces of the said extensions, the extreme end portions of the extensions being cut away on an acute angle and received in angular recesses provided upon the opposite end portions of the rails to maintain the rigidity of the joint.

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**756,227. LAWN-SHEARS.** CHARLES H. FISK, Richmond, Ind., assignor to the Firm of Fisk & Jay. Filed June 22, 1903. Serial No. 162,490. (No model.)



*Claim.*—1. In combination with a main casting carrying an upward and rearward extending handle, a ground-roller, and a pair of reciprocating blades crossing each other near their centers and pivoted to the under side of the main casting by a king-bolt, of a stud extending up from the rear of each of the blades, a roller mounted on each of said studs, a spring secured by a plate around said king-

bolt and engaging said studs to hold the rear ends of said blades together, a swinging wedge-cam mounted in hangers to said main casting, a rod extending up from said cam to a lever pivoted to the handle whereby said lever may be operated to cause said cam to engage said rollers and spread the rear ends of said blades apart, all substantially as shown and described and for the purposes set forth.

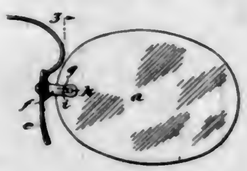
2. In combination with a main casting having a relatively long handle, a pair of cutting-blades having rearwardly-extending portions pivotally mounted on the under side of said casting, a roller mounted on the upper surface of each of said rear portions of the blades, a swinging cam having a substantially horizontal portion dapted to spread the rear portions of the blades apart, a spring for normally holding the rear portion of said blades together, and a rod connected to said cam and to a lever near the upper end of the handle for operating said cam to close the forward portions of the blades, all substantially as described.

3. In combination with lawn-shears having a main casting, a ground-roller, and a relatively long handle, of the actuating-cam consisting of a triangular substantially horizontal portion, an upwardly-extending hanger portion, and a downwardly-extending operating portion, means for mounting the cam to the main casting, means for operating the cam from near the top of the handle, a pair of reciprocating cutting-blades pivotally mounted to the under side of said main casting having forwardly-extending cutting portions and rearwardly-extending portions, studs secured to the said rear portions of the blades, and rollers mounted on said studs, all substantially as set forth and shown.

4. A lawn-shearing mechanism, the combination, of a basic casting having a horizontal portion, a pair of reciprocating cutting-blades pivotally mounted to the under side of said horizontal portion having forwardly-extending cutting portions and rearwardly-extending portions, studs secured in the rear portions, rollers mounted on said studs, hangers extending down from said horizontal portions with an axle uniting their lower portions having a ground-roller mounted therein between said hangers, arms extending up from said horizontal portion terminating in a socket portion, a handle secured to said socket portion, a pair of hangers extending rearward from said socket portion, an actuating-cam mounted between said hangers, said cam having a triangular portion adapted to form a wedge between said rollers on the rear of the blades, and a connecting-rod extending from said cam to a lever near the upper end of said handle, substantially as shown and described.

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**756,228. EYEGLASSES.** IVAN FOX, Lansdowne, Pa. Filed July 30, 1903. Serial No. 167,550. (No model.)



*Claim.*—1. As an article of manufacture, a post or standard for eye glasses provided with a strap, the said strap having a leg which is curvilinear in transverse section.

2. As an article of manufacture, a post or standard for eye glass frames provided with a strap, the said strap having a leg which is concavo-convex in transverse section.

3. The combination of an eye glass lens having a perforation located at a distance from its end and having a groove formed in its surface and extending from said perforation to its edge, with a strap having a projection extending longitudinally thereof, the said projection being adapted to engage the said groove, and a securing device passing through the said perforation and through the said strap to secure the latter to the lens.

4. The combination of an eye glass lens having a depression in the surface thereof, with a strap having a projection adapted to engage said depression, and a securing device passing through the lens at a point removed from its edge, the said device also passing through the said strap to secure it to the lens.

5. The combination of an eye glass lens having a depression in the surface thereof, with a strap which is adapted to fit into and engage the sides of said depression, and a securing device passed through the lens at a point removed from its edge, the said device also passing through the said strap to secure it to the lens.

**756,229. WINDOW-CLEANER.** JOHANNES C. G. PETIT, New York, N. Y. Filed Dec. 5, 1902. Serial No. 133,996. (No model.)



*Claim.*—1. A window-cleaner forming a permanent fixture of the window, said cleaner comprising a cross-head, means connected with it for holding the same normally at one side of the window, a wiper pivotally held on the cross-head with its free edge extending toward the window, arms extending rearwardly from the wiper, compression-springs between said cross-head and said arms to hold the wiper normally out of engagement with the window, and operating means adapted to engage and pull upon the outer ends of said arms against the action of said compression-spring, whereby a pull upon said operating means first operates to overcome the force of said compression-springs, and brings the wiper into contact with the window-pane, and then carries the wiper and cross-head downward against the action of the supporting means to be returned by the same when the operating means is released.

2. A window-cleaner forming a permanent fixture of the window, said cleaner comprising a cross-head, supporting means for holding the same normally at the top of the window, a wiper pivotally held on the cross-head having one edge free and extending downwardly and forwardly toward the window, arms extending rearwardly from the wiper over the top of said cross-head, operating means attached to said arms and adapted to move the same toward the cross-head to bring the wiper into engagement with the window, and compression-springs between said arms and the cross-head to gently resist the action of the operating means upon the wiper, whereby when said means are released, the supporting means moves the cleaner to its normal position, and the compression-spring moves the wiper out of contact with the window.

3. A window-cleaner forming a permanent fixture of the window and comprising a wiper, a cross-head in which the wiper is hinged, a spring having purchase on the cross-head and bearing against the wiper to normally hold the latter out of contact with the window-pane, and means under the control of the operator and connected with the wiper, to first move the wiper into contact with the window-pane and to then draw the wiper over the surface of the window-pane, as set forth.

4. A window-cleaner forming a permanent fixture of the window and comprising a wiper, a cross-head in which the wiper is hinged, a spring having purchase on the cross-head and bearing against the wiper to normally hold the latter out of contact with the window-pane, means under the control of the operator and connected with the wiper, to first move the wiper into contact with the window-pane and to then draw the wiper over the surface of the window-pane, and a return-spring device connected with the said cross-head, to return the latter and the wiper to a normal position on the release of said means by the operator, as set forth.

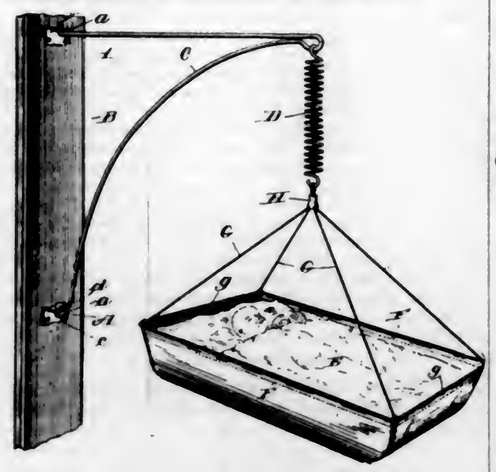
5. A window-cleaner forming a permanent fixture of the window, said cleaner comprising a cross-head, a wiper pivoted thereto, a spring connected with said cross-head for supporting the same normally at the top side of the window, operating means for moving the cleaner downwardly over the window against the action of said supporting-spring, a second spring between the supporting-spring and the operating means and forming a yielding link or connection between the two, said second spring being weaker than the supporting-spring and means for utilizing the yielding of said second spring to move the wiper into engagement with the window when the operating means predominates and to move it out of engagement therewith when the operating mechanism is released.

6. A window-cleaner forming a permanent fixture of the window, said cleaner comprising a cross-head, means connected with said cross-head for holding the same normally at one side of the window, a wiper pivotally held on the cross-head and having a free edge extending downwardly and forwardly toward the window, arms extending rearwardly from the wiper over said cross-head, compression-springs between said cross-head and said arms to hold the wiper normally inclined downwardly and inwardly out of engagement with the window, and operating means adapted to engage and pull upon the outer ends of said arms against the action of said compression-springs to move the cross-head and the free edge of the wiper toward the window, whereby a pull upon said operating means first operates to overcome the force of said compression-springs and brings the wiper into contact with the window-pane, and then carries the wiper and cross-head downward against the action of the supporting means to be returned by the same when the operating means is released.



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**756,230. CRADLE.** FRANK M. GODDARD, Davenport, Iowa. Filed Mar. 5, 1902. Serial No. 96,864. (No model.)




*Claim.*—1. The combination of a yielding pivoted crane having a beam and brace made of one continuous piece, a cradle, bails supporting said cradle and formed with loops mediate their ends, a coil contraction-spring, secured to said pivoted crane, over the lower hooked end of said spring the loops of said bails are caught, and a sleeve through which said loops pass.

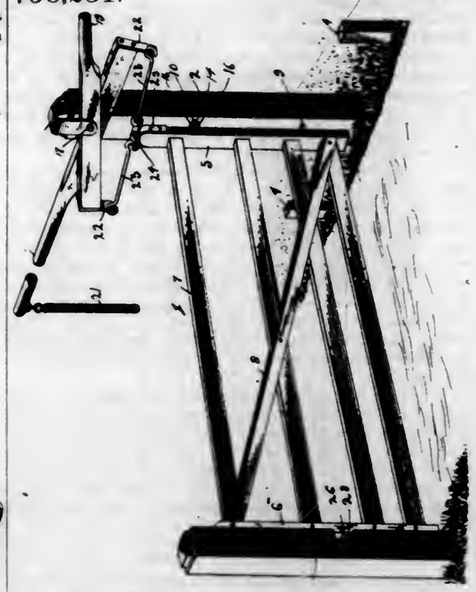
2. The combination of a yielding pivoted crane having a beam and brace made of one continuous piece, a longitudinally-tiltable cradle, bails supporting said cradle and formed with loops mediate their ends, a coil contraction-spring, secured to said pivoted crane, over the lower hooked end of said spring the loops of said bails are caught, and a sleeve through which said loops pass.

3. The combination of a yielding pivoted crane having a beam and brace made of one continuous piece, a cradle having a single folding-hinge at each end adapted to fold the same in a longitudinal plane mediate its longitudinal sides, bails supporting said cradle and formed with loops mediate their ends, a coil contraction-spring, secured to said pivoted crane, over the lower hooked end of said spring the loops of said bails are caught, and a sleeve through which said loops pass.

4. The combination of a yielding pivoted crane having a beam and brace made of one continuous piece, a longitudinally-tiltable cradle having a single folding-hinge at each end adapted to fold the same in a longitudinal plane mediate its longitudinal sides, bails supporting said cradle and formed with loops mediate their ends, a coil contraction-spring, secured to said pivoted crane, over the lower hooked end of said spring the loops of said bails are caught, and a sleeve through which said loops pass.

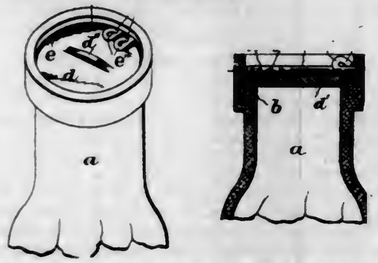
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**756,231.**



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**756,232. SEALING DEVICE.** WILLIAM E. HEATH, Baltimore, Md., assignor to Standard Bottle-Cap Corporation, Wilmington, Del., a Corporation of Delaware. Filed Dec. 17, 1901. Renewed Sept. 14, 1903. Serial No. 173,190. (No model.)




*Claim.*—1. In a sealing device, a receptacle having an annular sealing-shoulder within its mouth formed with the inclined top face and elevated inner annular edge, and a locking-shoulder above said sealing-shoulder, in combination with a sealing-disk and a retainer bearing up against said locking-shoulder and forcing and holding the sealing-disk down on said inclined floor and edge of said sealing-shoulder, substantially as described.

2. A bottle having a sealing-shoulder and a locking-shoulder above said sealing-shoulder, in combination with a sealing device seated on said sealing-shoulder, and a separate split spring-retaining ring seated on said device and expanded beneath said locking-shoulder and having a free end bent inwardly on the face of the sealing device and doubled back and over to form a finger-hold within the circle of said ring and below the plane of the top edge of the bottle-mouth, substantially as described.

3. In combination, in a sealing device, a large-mouth bottle or jar having an annular sealing-shoulder within its mouth and a locking-shoulder above the sealing-shoulder, a sealing-plug comprising a compressible or sealing medium disk adapted to seat on said sealing-shoulder, a split expansive retainer-ring resting on the top face of the plug and fitting under said locking-shoulder to hold said disk compressed, the free ends of said ring separated and extended inwardly along the top face of said plug to form normally separated finger-holds projecting upwardly within the circle of the ring, substantially as described.

4. In a sealing device, in combination, a receptacle having an annular sealing-seat within its mouth and a locking-shoulder above

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**756,231. GATE.** CHARLES T. HARRIS, Annex, Va. Filed Apr. 27, 1903. Serial No. 154,530. (No model.)

*Claim.*—The combination with a hinge-post, of a gate hinged or pivoted to said post to swing horizontally and tilt vertically and laterally or transversely in the direction in which it swings, a cap upon the hinging-stile of said gate provided with a pivot, a plate 24 mounted loosely to rock vertically and to swing horizontally upon said pivot, an angular bracket-plate secured to the top of the hinge-post and having a depending portion, reversely-projecting levers extending between the post and said pivot portion and pivoted to said pivot portion, angular bracket-plates upon the inner ends of the levers, said bracket-plates having downwardly-bent portions, and links connecting the ends of the plate 24 with said downwardly-bent portions of the angular bracket-plates, substantially as described.

said seat, a compressible sealing-disk on said seat, and an expanding spring-retainer ring under said shoulder and seated on said disk and having its separated ends formed into two separated handles or finger-pieces at points within the circle of the ring projecting above the plane of said circle and located below the top edge of the receptacle-mouth, whereby the ring can be released from the locking-shoulder by pressing said handles together and can then be lifted from the receptacle by said handles while holding the ring contracted, substantially as described.

5. A sealing device comprising a sealing plug or closure and an expanding spring-retainer having its two ends normally sprung apart and both provided with adjacent normally separated finger-holds arranged substantially radial of and within the outer circumference of the retainer, said retainer normally resting from end to end flat on said plug and expanded under a locking-shoulder to hold the plug maintaining the seal, said finger-holds so arranged that they can be pressed toward each other while the retainer is on the plug and thereby contract the retainer and release the same from locking position whereby the retainer can be lifted and removed while held contracted through the medium of the finger-holds, substantially as described.

6. In a sealing device, the combination of a closure, and an expanding split-ring retainer having its two separated ends provided with adjacent normally separated finger-holds, within the outer circumference of the ring and projecting above but not below the plane of the ring, said finger-holds so arranged that on being pressed toward each other, the ring will contract and said holds will form handles by which the ring can be lifted from the closure while held thus contracted, substantially as described.

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**756,233. SEALING DEVICE.** WILLIAM R. HEATH, Baltimore, Md., assignor to the Standard Bottle-Cap Corporation, Wilmington, Del., a Corporation of Delaware. Filed Apr. 12, 1902. Renewed Sept. 14, 1903. Serial No. 173,191. (No model.)



*Claim.*—1. The sealing device consisting of the imperforate flexible disk and the top facing-sheet formed of the two halves united by the central bridge-piece, the two halves secured on the disk, with their inner edges together and the bridge-piece doubled upwardly to form a central tab, whereby the disk is formed with the flat top surface and the central tab, substantially as described.

2. The sealing device consisting of the flexible imperforate disk and the flexible facing secured thereto, the facing formed of the two sections united by the central bridge-piece and provided with the reinforce-strip secured to the under face of the bridge-piece, said sections of the facing cemented to and completely covering the disk, the bridge-piece doubled up and forming a central tab or finger-hold, substantially as described.

3. The sealing device consisting of the imperforate disk formed with a diametrical weakened fold-line and the flexible facing-sheet cemented to and completely covering the top face of the disk, said sheet formed of the two half-circles connected by the central narrow bridge-piece, the half-circles having their meeting edges above and parallel with said fold-line of the disk, said bridge-piece doubled up to form a central finger-hold or tab, substantially as described.

4. A bottle having a sealing-seat and a locking-shoulder above the seat, in combination with a compressible sealing-plug adapted to rest on said seat, and the split spring-retainer ring adapted to rest on the plug and under the locking-shoulder, said ring formed of sheet metal with the wide face to rest on the plug, the flat ends of the ring being bent up to form the finger-holds, the ends of the ring being notched so that the outer edges of the finger-holds are located a distance within the circle of the outer edge of the ring, substantially as described.

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**756,234. MILK-JAR CAP.** WILLIAM R. HEATH, Baltimore, Md., assignor to the Standard Bottle-Cap Corporation, Wilmington, Del., a Corporation of Delaware. Filed Sept. 15, 1903. Serial No. 173,207. (No model.)

*Claim.*—1. A sealing-cap comprising a stiff cardboard disk having an intermediate portion cut out and removed to form an opening and a readily-torn thin paper sheet sealing and closing said opening.



2. A milk-jar cap comprising the cardboard disk having a finger-opening and readily-covered means normally sealing and closing said opening.

3. A milk-jar cap comprising the stiff disk with the central portion cut out and removed to form a finger-opening and a sheet of easily-torn approximately impervious paper secured to the disk and closing said opening, whereby the cap can be removed by forcing the finger through the sheet and opening.

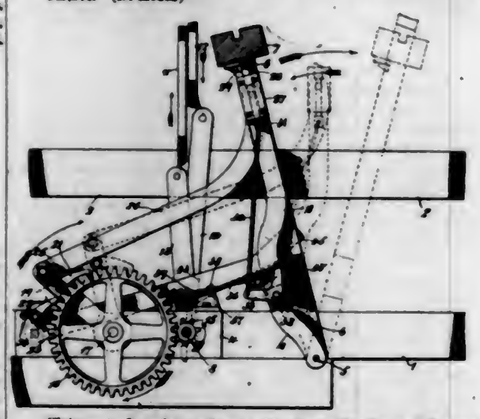
4. A sealing-cap consisting of a cardboard disk having an opening formed therethrough and a thin sheet of paper secured to the disk and bridging and closing said opening for the purpose substantially as described.

5. A sealing-cap comprising a stiff disk of paper fabric having the central finger-opening cut therethrough and a sheet of readily-torn paper material closing said opening and located intermediate the top and bottom faces of the disk.

6. A milk-jar sealing-cap comprising a stiff disk formed by several plies of paper material having the central finger-opening cut therethrough and a sheet of paper closing said opening and secured between two plies of said disk.

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**756,235. HEDDLE-MOVEMENT FOR HAND-OPERATED LOOMS.** ADAM S. HORLACHER, Indianapolis, Ind. Filed Feb. 26, 1903. Serial No. 145,906. (No model.)



*Claim.*—1. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a trip-lever, a heddle-shaft gear, means connecting said trip-lever and said heddle-shaft gear whereby said heddle-shaft gear is operated to impart motion to said heddle-shaft and means for automatically releasing said trip-lever when the required motion is imparted to said heddle-shaft.

2. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a swinging trip-lever, a heddle-shaft gear, means connecting said heddle-shaft gear and said trip-lever whereby said heddle-shaft gear is operated to impart one-half of one revolution to said heddle-shaft and means for automatically releasing said trip-lever at each half-revolution of said heddle-shaft.

3. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a swinging trip-lever, a heddle-shaft gear, means connecting said heddle-shaft gear and said trip-lever whereby said heddle-shaft gear is operated to impart one half-revolution to said heddle-operating shaft, a heddle-shaft stop, and means for automatically releasing said trip-lever at each one-half revolution of said heddle-operating shaft.

4. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a swinging trip-lever, a heddle-shaft gear, means connecting said heddle-shaft gear and said trip-lever whereby said heddle-shaft gear is operated to impart one half-revolution at a time to said heddle-operating shaft, means for locking said heddle-operating shaft at each half-revolution of same, and means for automatically releasing said trip-lever at each one-half revolution of said heddle-operating shaft.



5. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a swinging trip-lever, a gear-pinion on said heddle-operating shaft, its drive-wheel, a pawl, a pawl-carrying arm, means connecting said pawl-carrying arm and said trip-lever whereby said pawl is operated to drive said driving-gear to impart one half-revolution to said heddle-operating shaft for each full stroke or swing of said trip-lever, and means for automatically releasing said trip-lever at the required portion of its stroke.

6. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a swinging trip-lever, a gear-pinion on said heddle-operating shaft, its drive-wheel, a pawl, a pawl-carrying swinging arm, means connecting said pawl-carrying arm and said trip-lever whereby said pawl is operated to rotate said driving-gear to impart one half-revolution to said heddle-operating shaft for each fixed stroke or swing of said trip-lever, means for locking said shaft at the end of each half-revolution of the latter, means for automatically releasing said trip-lever at the end of its fixed swing and for releasing said heddle-operating shaft at the beginning of the stroke or swing of said trip-lever.

7. In a loom, the combination with the heddles and the heddle-operating shaft thereof, of a swinging trip-lever, a gear-pinion on said heddle-operating shaft, its driving-wheel arranged to rotate in one direction only, a pawl, a pawl-carrying swinging arm, means connecting said pawl-carrying arm and said trip-lever whereby said pawl is operated to drive said driving-gear to impart one half-revolution to said heddle-operating shaft for each fixed stroke or swing of said trip-lever, means for automatically tripping or releasing said trip-lever at the end of the stroke of the same and means for automatically unlocking said heddle-shaft.

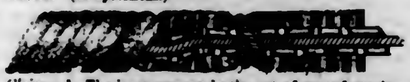
8. In a loom, the combination with a loom-beater, heddles, and a revoluble heddle-shaft, of a trip-lever, mechanism connecting said trip-lever to said beater to swing simultaneously therewith, a heddle-shaft gear, means connecting said heddle-shaft gear and said trip-lever whereby said gear is rotated to impart a one-half rotation to said heddle-shaft, means for automatically locking said heddle-shaft at the end of each of its half-revolutions and means for automatically releasing or disengaging said trip-lever and said beater.

9. In a loom, the combination with a loom-beater, heddles and a revoluble heddle-shaft, of a trip-lever, a latch, a latch-catch carried by said beater, a latch-trip whereby said trip-lever is released at a desired portion of the swing of said beater, mechanism for rotating said heddle-shaft and means connecting said heddle-shaft gearing and said trip-lever whereby a one-half revolution is imparted to said heddle-shaft.

10. In a loom, the combination with a loom-beater, heddles, and a revoluble heddle-shaft, of a trip-lever, a latch carried by said lever, a latch-catch carried by said beater, a latch-trip mechanism, means connected to said trip lever whereby a one-half revolution is imparted to said heddle-shaft, a stop on said heddle-shaft, a stop-lever, means connected to said stop-lever whereby, when the said beater is moved or swung into position to engage said trip-lever, said beater operates to disengage said stop-lever to permit the rotation of said heddle-shaft during the reverse movement or swing of said beater.

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**756,236. ART OF MANUFACTURING WEFT FOR RUGS.** ADAM S. HORLACHER, Indianapolis, Ind. Filed May 6, 1903. Serial No. 155,852. (No specimens.)



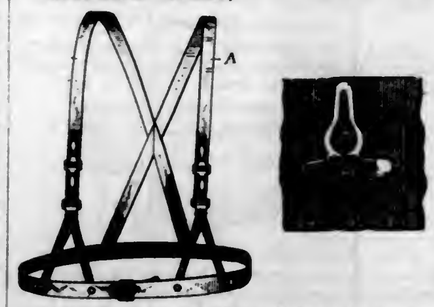
*Claim.*—1. The improvement in the art of manufacturing weft for rugs or other analogous fabric, which consists in first cutting a carpet into strips of suitable width, raveling the edges of the same to leave the original warp in the center of the strip for a binder or bond, and then finally twisting such strip to cause the projecting edges to radiate from the center.

2. The improvement in the art of manufacturing weft for rugs or other analogous fabric, which consists in first cutting a carpet into strips of the required width, then raveling the edges of said strips and applying a string or binder to said strip to extend longitudinally thereof, and finally twisting said strip and binder together to form a single piece.

3. The improvement in the art of manufacturing weft for rugs or other analogous fabric, which consists in first cutting a carpet into strips then applying a string or binder to said strip to extend longitudinally thereof, lapping or splicing the ends of said carpet-strips and twisting the said binder and splices thus formed to form a continuous piece.

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**756,237. GARMENT-SUPPORTER.** WILLIAM S. HUNKINS, Merriam Park, Minn. Filed Dec. 28, 1901. Renewed Nov. 21, 1903. Serial No. 182,900. (No model.)




*Claim.*—1. As an article of manufacture, a garment-supporter comprising shoulder-straps, a band attached to the ends thereof, means of connection on the outside of said band adjacent to the ends of said shoulder-straps, and a loop adapted to coact therewith said loop being adapted to be attached to the nether garment, and a hook constituting a belt-retainer formed integrally with said loop.

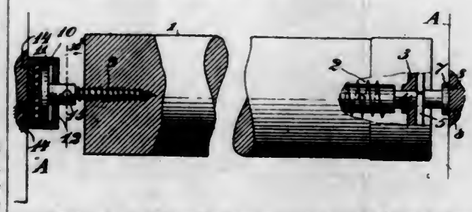
2. As an article of manufacture, a garment-supporter comprising shoulder-straps, a band permanently attached to the ends thereof, means of connection on the outside of said band adjacent to the ends of said shoulder-straps, and a loop adapted to coact therewith said loop being adapted to be attached to the nether garment, and a hook constituting a belt-retainer formed integral with said loop.

3. As an article of manufacture, a garment-supporter comprising shoulder-straps, a band permanently attached to the ends thereof, outwardly-projecting studs comprising means of connection on the outside of said band at the ends of said shoulder-straps whereby vertical strains are directly taken up by said straps without buckling the belt, and a series of loops adapted to coact therewith, said loops being adapted to be detachably attached to a nether garment.

4. A garment-supporter comprising a band adapted to the waist of a wearer, suspender-straps for extending over the shoulders of the wearer and connected to the band in the front and in the rear, outwardly-projecting studs at each junction with said suspender-straps constituting one set of fastening devices whereby downward strains on said studs are taken directly by said straps and lateral displacement of said studs is prevented by said band and a companion set of fastening devices comprising loops adapted to be secured to a nether garment having slots, the opening in each of said loops being broader at the bottom than at the top, the width of the narrow portion of said slots being sufficiently greater than the diameter of the shank of said stud to receive the fabric of a garment between said stud and loop.

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**756,238. SHADE-ROLLER.** BESSIE F. JACKSON, New York, N. Y. Filed June 17, 1903. Serial No. 161,807. (No model.)




*Claim.*—1. A shade-roller, having a journal which screws into its end and is provided with a disk-like head, a box which incloses said head and is provided exteriorly with projections to enter the wood of the window-casing, and balls in the box upon which the head on the spindle bears.

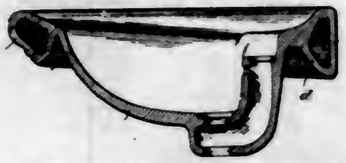
2. A shade-roller, having at one end a screw-journal provided with a disk-like head, a box which incloses said head and has exteriorly-disposed projections to enter the wood of the window-casing, balls in said box for the head of the journal to bear on, and a spindle, at the opposite end of the roller from said journal, said spindle having an enlargement at its end provided with a plurality of spurs to enter the wood of the window-casing.

3. A shade-roller, provided at its end with a screw-journal 9, having a disk-like head 10, a circular box 11, inclosing said head,

said box having a closing-cover 12 with an aperture for the passage of the journal, and spurs 14, and balls 13 incarcerated between the outer end of the box and the head 10 of the journal, substantially as set forth.

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**756,239. LAVATORY-BASIN.** JOHN P. KELLY, Trenton, N. J., assignor to Thomas Maddock's Sons Company, a Corporation of New Jersey. Filed Jan. 4, 1904. Serial No. 187,692. (No model.)



*Claim.*—1. In a porcelain or like lavatory-basin that is formed complete of plastic material and afterward baked or fired, the combination of a bowl, an integral ledge or table-like slab projecting outward from the upper edge of the bowl, a flange or curtain extending around and depending from the edge of the slab, and a connection extending inward from the flange and united to the slab outside of the circumference of the bowl.

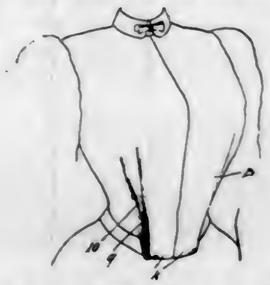
2. In a porcelain or like lavatory-basin that is formed complete of plastic material and afterward baked or fired, the combination of a bowl, an integral ledge or table-like slab projecting outward from the upper edge of the bowl, and a flange or curtain running around and depending from the edge of the slab, said flange being extended inward and united to the under side of the slab outside of the circumference of the bowl.

3. In a porcelain or like lavatory-basin, the combination of a bowl, a ledge or table-like slab projecting outward therefrom, a flange or curtain extending around and depending from the slab, a connection extending inward from the flange and united to the slab outside of the circumference of the bowl, an oblong opening in said connection, a bolt with an oblong head passed through said connection, and a supporting-leg for the basin screwed on the bolt.

4. In a porcelain or like lavatory-basin that is formed complete of plastic material and afterward baked or fired, the combination of a bowl, an integral ledge or table-like slab projecting outward from the upper edge of the bowl, a flange or curtain extending around and depending from the edge of the slab, a connection extending inward from the flange and united to the slab outside of the circumference of the bowl forming an inclosed space *i*, and an orifice *h* in the connection forming a vent to the space *i* during the baking.

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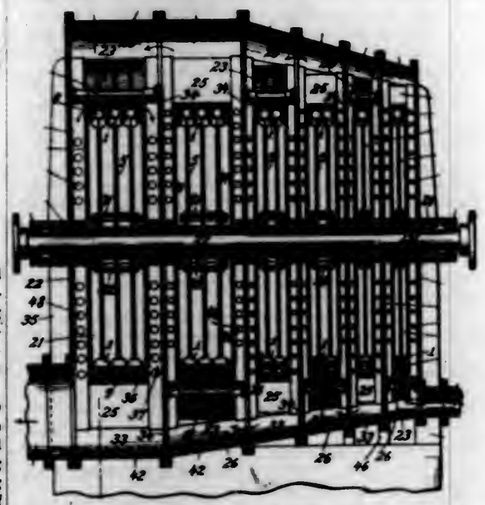
**756,240. SHIRT-WAIST.** JEAN A. KENNEDY, Detroit, Mich. Filed Apr. 11, 1903. Serial No. 152,113. (No model.)



*Claim.*—1. In a shirt-waist, a single piece for the back extending across the back between the arms and narrowing toward the waist, a side piece extending under the arm to the back in front of the arm up to the high point of the shoulder and thence to the middle front, also extending down the back to the waist and around the waist to the front, the rear part of the side piece being secured to a skirt-piece over the hip and the front part being adapted to be folded in plaits, substantially as described.

2. In a shirt-waist, the combination of a wedge-shaped single piece for the back, side pieces fitting closely over the bust, skirt-pieces each of which engages the bottom edge of the back and partially along the bottom edge of a side piece the part of the side piece in front of the skirt being arranged for plaiting, substantially as described.

**756,241. COMPOUND STEAM-TURBINE.** CHARLES V. KERR, Rutherford, N. J. Filed Feb. 24, 1903. Serial No. 144,799. (No model.)



*Claim.*—1. In a compound steam-turbine, the combination of a series of steam-cylinders for the several stages of expansion; a set of rotary disks within each cylinder, the disks in the successive cylinders progressively increasing in number from the high-pressure stage to the low-pressure stage of expansion; a row of buckets on the periphery of each disk; and a set of stationary nozzles opposite each row of buckets and extending into said cylinders.

2. In a compound steam-turbine, the combination of a series of steam-cylinders for the several stages of expansion; a set of rotary disks within each cylinder, the disks in the successive cylinders progressively increasing in number from the high-pressure stage to the low-pressure stage of expansion; a row of buckets on the periphery of each disk; a set of stationary nozzles opposite each row of buckets and extending into said cylinders, the end walls of said cylinders forming the end walls of contiguous cylinders; a steam-chest for each cylinder and communicating therewith through said nozzles; a shaft extending through all the cylinders; and exhaust-ports formed in the end walls of said cylinders and passages both for respectively forming steam communication between any cylinder and the next succeeding steam-chest.

3. In a compound steam-turbine, the combination of a series of steam-cylinders for the several stages of expansion; a set of rotary disks within each cylinder, the disks in the successive cylinders progressively increasing in number from the high-pressure stage to the low-pressure stage of expansion; a row of buckets on the periphery of each disk; a set of stationary nozzles opposite each row of buckets and extending into said cylinders, the end walls of said cylinders forming the end walls of contiguous cylinders; a steam-chest for each cylinder and communicating therewith through said nozzles; a shaft extending through all the cylinders; and exhaust-ports formed in the end walls of said cylinders and passages both for respectively forming steam communication between any cylinder and the next succeeding steam-chest, said steam-chests being in detachable sections, and said passages being respectively located between the ends of said sections.

4. In a compound steam-turbine, the combination of a series of adjoining cylinders belonging to the several stages of expansion and containing steam at different pressures; cylinder-walls which are common to adjoining cylinders, a rotating shaft extending through all the cylinders; axial openings in said cylinder-walls slightly larger than said shaft; annular grooves on the interior face of said axial openings; and a fluid packing contained in said grooves consisting of a mixture of steam or water and oil in varying proportions.

5. In a compound steam-turbine, the combination of a series of adjoining cylinders; arc-shaped steam-chests in detachable sections partly inclosing said cylinders; stationary nozzles supported by said steam-chests and projecting into said cylinders; a rotating shaft extending through all the cylinders; a set of disks mounted on said shaft within each cylinder, the number of disks in the set progressively increasing from the high-pressure to the low-pressure cylinders; a succession of buckets on the rim of each disk, the working face of each bucket being formed of two intersecting surfaces of revolution and a dividing-wedge traversing each bucket in the plane of the supporting-disk, the contour of said dividing-wedge being determined by the intersection of said surfaces of revolution, said nozzles being disposed approximately tangential to said disks and opposite to the working face of said buckets.



6. In a compound steam-turbine, the combination of a series of cylinders containing steam of different and successively-decreasing pressures; rotating disks within each cylinder, the disks in the successive cylinders progressively increasing in number from the high-pressure to the low-pressure stages of expansion; buckets on the rim of each disk, said buckets being so shaped and placed as to divide a jet of steam and deflect it in two divergent streams; arc-shaped steam-chests formed in detachable sections partly inclosing said cylinders; a set of stationary nozzles for each disk supported by said steam-chests, said nozzles having throats terminating in a diverging mouth.

7. In a compound steam-turbine, the combination of a series of steam-cylinders for the several stages of expansion; a set of rotary disks within each cylinder, the disks in the successive cylinders progressively increasing in number from the high-pressure stage to the low-pressure stage of expansion; a row of buckets on the periphery of each disk; a set of stationary nozzles opposite each row of buckets and extending into said cylinders; and valves for separately and individually controlling said nozzles.

8. In a compound steam-turbine, the combination of a series of steam-tight cylinders, for successively containing steam of lower and lower pressures for the several stages of expansion of said steam; a wall between every two cylinders; arc-shaped steam-chests; a shaft passing through said cylinders, which are successively wider and wider in the longitudinal direction of said shaft; disks fixed to said shaft and located in said cylinders in groups, the number of disks in said groups progressively increasing in the successively wider and wider cylinders; a row of buckets fastened on the rim of each disk; nozzles for delivering steam to said buckets and communicating between said chests and said cylinders; a separate valve for each nozzle, and handles for the valves extending to the outside of said chests.

9. In a compound steam-turbine, the combination of a series of cylinders containing steam of successively-decreasing pressures; a shaft passing through all the cylinders; rotating disks within each cylinder mounted on said shaft, the number of disks in each cylinder progressively increasing for the lower stages of expansion; a succession of buckets on the rim of each disk; arc-shaped steam-chests partly encircling each of said cylinders; stationary nozzles for delivering steam to said buckets by communicating between said chests and said cylinders; and dividing-walls between the cylinders formed of plates spaced apart by radially-diverging webs.

10. In a compound steam-turbine, the combination of a series of cylinders belonging to the several stages of expansion; a rotating shaft extending through all the cylinders; a set of disks within each cylinder secured to said shaft; a series of stationary nozzles; buckets adapted to receive jets of steam from said nozzles; dovetails projecting from one side of said buckets; similar dovetails in the edge of each of said disks arranged to engage the first-named dovetails and means for bringing the two sets of dovetails into close and firm contact, thereby securing said buckets to said disks.

11. In a compound steam-turbine, the combination of a series of cylinders for the several stages of expansion; a shaft passing through all the cylinders; a set of rotating disks within each cylinder mounted on said shaft; a succession of buckets on the rim of each disk; arc-shaped steam-chests formed in detachable sections and partly inclosing each of said cylinders; stationary nozzles opposite each rotating disk, said nozzles being supported by said steam-chests and projecting into said cylinders; and a valve for each nozzle, the stem of said valve extending to the outside of said steam-chest.

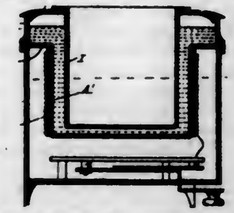
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**756,242. ELECTRIC HEATER.** ROBERT KUHN, Detroit, Mich., assignor to United Electric Heating Co., Detroit, Mich., a Corporation of Michigan. Filed Oct. 7, 1902. Serial No. 126,253. (No model.)

*Claim.*—1. In an electric heater the combination with a receptacle for the material to be heated, of a heating-coil wrapped around the receptacle, and an outer closed casing surrounding but spaced from the coil.

2. In an electric heater, the combination with a cylindrical receptacle for the material to be heated, an insulated wrapping for said receptacle, a heating-coil of naked wire wound upon said wrapping and a surrounding air-tight casing inclosing said coil.

3. In an electric heater, the combination with a receptacle, a surrounding water-jacket therefor having a body portion of but slightly greater diameter than said receptacle, an upper portion of greater diameter forming a storage-receptacle, and a heating-coil wound around said lower portion.



4. In an electric heater, the combination with a receptacle, a surrounding water-jacket having a lower heating portion of but slightly greater diameter than said receptacle and an upper portion of increased diameter, a heating-coil wound around said lower portion and a casing surrounding said lower coil and forming a support upon which the upper part of said receptacle rests.

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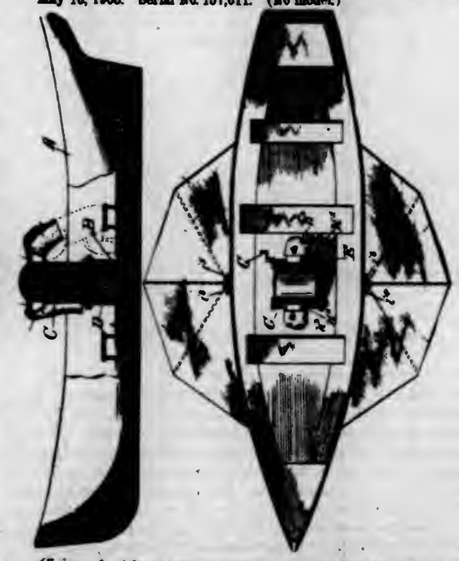
**756,243. BRUSH.** EDWARD A. LAITNER, Detroit, Mich. Filed May 12, 1903. Serial No. 156,735. (No model.)



*Claim.*—A brush for bolting-machines comprising a back, a plurality of rounded projections on the upper face thereof, said face being provided with a circuitous groove therein opening to a series of separated upwardly-tapering bristle-receiving apertures extending through said back, bunches of bristles in said apertures, and a retaining-wire following the course of the groove in the back and seated in said groove below the plane of the upper face of said back, intermediate portions of said wire depending into the bristle-receiving apertures and through the tufts therein whereby said tufts are forcibly drawn into engagement with the walls of their tapering apertures and held in said apertures.

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**756,244. GLASS-BOTTOM BOAT.** LOUIS LARSON, Muskegon, Mich., assignor of one-half to Henry J. Woods, Muskegon, Mich. Filed May 18, 1903. Serial No. 157,611. (No model.)



*Claim.*—1. A boat having its bottom provided with a glass plate, an inclosure over said plate, and a mirror at the top of the inclosure.

2. A boat having its bottom provided with a glass plate, a vertically-extensible inclosure arranged over said plate, and a reflecting-mirror mounted in the top of said inclosure.

3. A boat having its bottom provided with a glass plate, an inclosure arranged over said plate, a reflecting-mirror in the top of the inclosure adapted to be arranged at an angle of substantially forty-five degrees, and a cloth hood adapted to cover the head of said observer while looking into said mirror.

4. A boat having its bottom provided with a glass plate, an inclosure arranged over said plate, a reflecting-mirror mounted in the top of said inclosure, said inclosure having an extension opposite said mirror, the extension being provided with a couple of openings for the eyes, and a flexible covering secured to said extension and adapted to exclude the light while looking through said openings.

5. A boat having its bottom provided with a glass plate, a vertically-extensible inclosure arranged over said plate, a crank and power-transmitting connections for raising and lowering the upper part of said inclosure, and a couple of reflecting-mirrors arranged in the top of said inclosure.

6. A boat having it sides provided with laterally-extending wings adapted to shade the water at each side of the boat, and having also an inclosure arranged over a glass plate in its bottom.

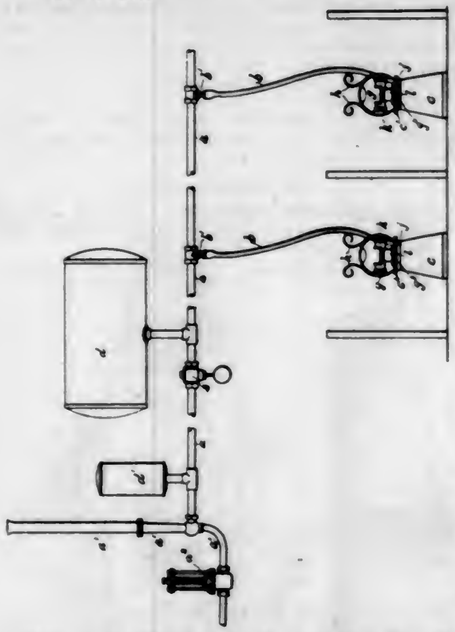
7. A boat having its sides provided with folding wings adapted when extended to shade the water at each side of the boat, and having also an inclosure arranged over a glass plate in its bottom.

8. A boat provided with an incandescent electric lamp adapted to be suspended in the water below the boat, and having also an inclosure arranged over a glass plate in its bottom.

9. A boat provided with inclosed and adjustable reflecting-mirrors, and having also an inclosure arranged over a glass plate in its bottom.

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**756,245. MILKING APPARATUS.** WILLIAM H. LAWRENCE and ROBERT KENNEDY, Glasgow, Scotland. Filed June 11, 1903. Serial No. 111,220. (No model.)



*Claim.*—1. In milking apparatus, the combination with a milk-receptacle, of a pulsating apparatus mounted upon the cover of the milk-receptacle and communicating therewith, a vacuum-regulating device in communication with the milk-receptacle, a suction-producing apparatus in communication with the vacuum device, a pressure-reducing valve in communication with the suction-producing apparatus for maintaining constant pressure therein, a vacuum-reservoir in connection between the suction-producing apparatus and the vacuum-regulating device, a vacuum-reservoir in connection between the vacuum-regulating device and the pulsating apparatus, an inspection device in communication through the pulsating apparatus with the milk-receptacle, and teat-cups in communication with the inspection device.

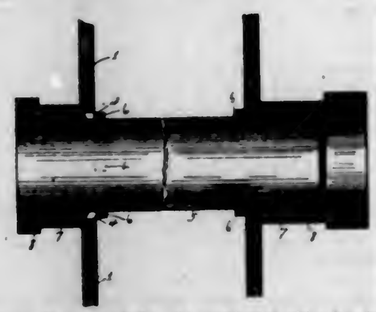
2. In milking apparatus of the kind set forth, the combination with a pulsating apparatus comprising a cylinder having two pairs of ports and a piston adapted to reciprocate in the said cylinder having a recess in its lower face arranged to make connection first between one of the pairs of ports and then between the other as the piston reciprocates, of an inspection device in connection with one of the ports of one pair and a milk-receptacle in connection with the other port of the same pair, teat-cups in connection with the inspection device, of an inlet-valve in connection with one of the ports of the other pair and the inspection device in connection with the other port of the said other pair, said piston having on its under side a shallow longitudinal groove communicating with the port leading to the milk-receptacle and the port leading to the inspection device, so that when the connection by means of the recess in the piston is established between the air-inlet valve and the inspection device, the shallow groove will communicate with the milk-receptacle and the inspection device.

3. For use in milking apparatus a teat-cup comprising an outer flexible sleeve, a removable sleeve of similar material fitted on said outer sleeve and having an inner conical downwardly-projecting portion adapted to embrace the teat and permit of independent collapse of the outer sleeve, and a discharge-nozzle on the opposite end of the outer sleeve constructed to prevent the cow's teat from blocking the discharge-outlet substantially as described.

4. Vacuum-regulating apparatus for use in milking-machines comprising in combination with a suction-producer and a milk-receptacle a valve-chest *c* having two passages *c'* and *c²* communicating with the suction-producer and milk-receptacle respectively, a portion of this valve-chamber being in the form of a cylinder having two diameters, a hollow cut-off valve *c³* fitted in said valve-chamber likewise having two diameters, an air-admission valve *c⁴* carried in the center of the valve *c³* whose area is so proportioned relatively to the smaller diameter of the valve *c³* that it does not move until the vacuum thereupon exceeds that required to move the valve *c⁴*, orifices *c⁵* being provided in the latter at the junction of its two diameters as and for the purpose set forth.

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**756,246. FLUE CONSTRUCTION FOR BOILERS.** THOMAS A. LEE, Troy, N. Y. Filed Nov. 28, 1903. Serial No. 182,971. (No model.)



*Claim.*—1. In a steam-boiler, the combination with a flue-sheet provided with a flue-aperture; of a flue having a screw-threaded end projected through said aperture and having offsets abutting upon the inner side of the flue-sheet; and a nut screwed upon the projecting end of the flue into engagement with the flue-sheet around said aperture.

2. In a steam-boiler, the combination with a flue-sheet provided with a flue-aperture and with notches offset from said aperture; of a flue having a screw-threaded end projecting through said aperture and exteriorly-projecting lugs adapted to pass through said notches respectively, and by partial rotation of the flue to be brought into position to abut upon the inner side of the flue-sheet; and a nut screwed upon the projecting end of the flue into engagement with the outer side of the flue-sheet.

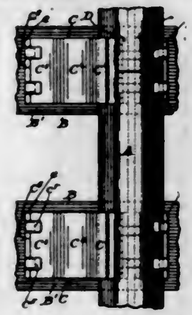
3. In a steam-boiler, the combination with the front flue-sheet provided with a flue-aperture and with notches offset therefrom; and the rear flue-sheet provided with a flue-aperture in line with the flue-aperture in the front flue-sheet; of a flue having its opposite ends screw-threaded and extended through the respective flue-apertures in the front and rear flue-sheets, and having near each end exteriorly-projecting lugs adapted to be passed through the notches in the front flue-sheet, said lugs on the rear end of the flue being adapted to abut upon the inner side of the rear flue-sheet, and the lugs on the front end being adapted by partial rotation of the flue to abut upon the inner side of the front flue-sheet, and nuts screwed upon the respective ends of the flue into engagement with the outer sides of the respective flue-sheets.

4. In a steam-boiler, the combination with a flue-sheet provided with a flue-aperture, and a countersink surrounding said aperture; of a flue having a screw-threaded end projected through said aperture and having offsets abutting upon the inner side of the flue-sheet; and a nut screwed upon the projecting end of the flue having a beveled inner end adapted to fit said countersink.

5. In a steam-boiler, the combination with a flue-sheet provided with a flue-aperture, and a flue having a screw-threaded end projected through said aperture; of a nut screwed upon said projecting end of the flue into engagement with the outer side of the flue-sheet, said nut having an interiorly-projecting flange whereby its aperture is reduced to approximately the size of the interior of the flue.

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**756,247. DEVICE FOR PREVENTING RAILS OF RAILWAY-TRACKS FROM SPREADING.** JOSHUA D. LEGER, Hancock, N. Y., assignor of one-half to Marcus A. Bennett and Melvin R. Millins, East Nassau, N. Y. Filed Dec. 14, 1903. Serial No. 185,107. (No model.)



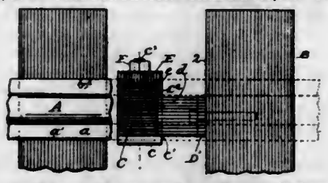
*Claim.*—1. In device for preventing rails of railway-tracks from spreading, the combination with a railway-rail of a rail-brace provided with a head for bearing against a side of the tread portion of a rail and a side of the vertical web adjoining said tread portion, and having a horizontal flat-foot end portion connected with the said head end, by an inclined body portion with the lower side of said foot end portion on a plane with the lower side of the base portion of the rail, and a brace-tie plate interposed between both the base of the rail and the foot end of the brace, and devices for securing the rail and foot end of the brace and said brace-tie to an outer end portion of a tie.

2. In a device for preventing rails of railway-tracks from spreading, the combination with a tie a braced tie-plate provided at each end with upward-extended flanges and with openings for passage of spikes, and a rail having a base portion which may be secured to said tie, of a brace-support secured to the off outer side of the web of the rail with its foot end on the upper side of the base of the same and extended up toward the lower side of the tread of the rail with an opening between the latter and said brace-support, and a rail-brace provided with a head portion, an inclined body portion and a foot portion, the head portion having bearing against an outer portion of the tread portion of the rail and the lower side of the same and against the web portion and on the upper end of the said brace portion, and the foot portion having bearing on the brace-tie in a line on a plane with the lower side of the base of the rail and means for securing said rail, foot end of the rail-brace and the said brace-tie to the tie on which said rail, brace and brace-tie are mounted.

3. In a device for preventing rails of a railway-track from spreading, a rail-brace made of rolled steel and having a head portion, an inclined body portion, and a foot portion all integral, the head portion provided with a projection and recesses for bearing against the tread portion of a rail at both a lateral side and a lower side of the same and for bearing on the upper end of a brace-support, the said inclined body portion gradually thickened from its ends to the middle of length thereof for counteracting tendency to springing and buckling, and the foot portion having its lower side on a plane with the lower side of the base of a rail, said rail-brace may be applied to and with end notches for receiving shapes for securing the foot end of said brace to an outer end portion of a tie to which the rail may be secured.

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**756,248. MEANS FOR PREVENTING RAILS OF RAILWAY-TRACKS FROM CREEPING.** JOSHUA D. LEGER, Hancock, N. Y., assignor of one-half to Marcus A. Bennett and Melvin R. Millins, East Nassau, N. Y. Filed Dec. 14, 1903. Serial No. 185,108. (No model.)

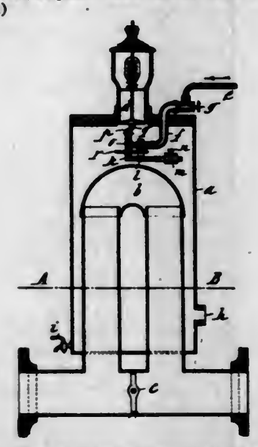


*Claim.*—1. In means for preventing railway rails from creeping on their ties by action of the wheels of locomotives, a device consisting of a main base-clamping plate for application to the under side of the base of a rail and provided with an angular flange for receiving an edge margin, an off-side clamping-plate for clamping the opposite edge margin of the rail, means for holding said off-side clamping-plate and the grooved angular flange of the main base-clamping plate drawn toward each other so as to tightly clamp the opposite edges of the base of the rail, and an angular brace suitably connected with said main base-clamping plate for bearing against the side of a tie.

2. In a means for preventing railway-rails from being moved on the ties supporting said rail, the combination with a railway-rail and a tie supporting the same, of the main base-clamping plate having with one end a grooved angular flange and at the opposite end a stem adapted to receive an off-side grooved clamping-plate and means for crowding the latter plate toward the grooved angular flange of said main base-clamping plate, of an angular brace suitably connected with the latter plate and supported from the same, with the downturned portion of said brace bearing against the side of the tie, and a means connected with said tie and operating to support the said downturned portion of said brace.

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**756,249. CARBURETER FOR HYDROCARBON-MOTORS.** EMILE LENGLEN, Mons, Belgium. Filed June 12, 1903. Serial No. 111,387. (No model.)



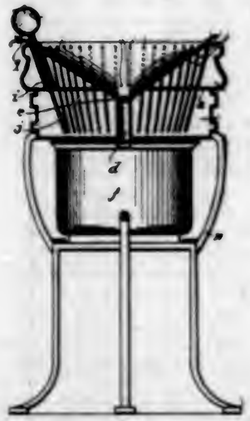
*Claim.*—1. In combination in a carbureter, an outer casing *a*, an air-valve, a combustible-fluid valve operated thereby, said valves controlling the supply of air and fluid into the upper part of said casing, a U-shaped pipe extending upwardly into said casing, said pipe being connected with the exhaust-gas pipe of the motor, and a valve in said exhaust-gas pipe between the limbs of the U-shaped pipe, substantially as described.

2. In combination with the air-valve, a supply-pipe *f* for the combustible fluid, and an oscillating elbow-lever *k* arranged to be operated by the air-valve, the one arm of said lever carrying an adjustable weight, the other arm of said lever being in the path of movement of the air-valve and provided with the combustible-fluid

valve, said valve consisting of a disk of leather or other suitable material against which the combustible fluid strikes and becomes pulverized, substantially as described.

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**756,250. WASHBOWL OR SPITTOON.** LUITER F. LEICHNER, Charlottenburg, Germany. Filed Sept. 20, 1901. Serial No. 75,920. (No model.)



*Claim.*—1. In a device of the class described, the combination of a washbasin, provided with a central drain-opening, and a series of holes in the lower part of said basin surrounding the central drain-opening, an air-tight chamber surrounding the basin, provided with a filling-opening; and a valve adapted to close the filling-opening, holding the water within the chamber when closed and allowing the water in the chamber to pass out of said chamber into the basin, through the series of holes, when opened.

2. In a device of the class described, the combination with a water-chamber, of a washbasin provided with a central opening, a series of holes in the lower part of the basin, surrounding the opening, a series of openings near the upper edge of the basin; and independent pipes depending into the water-chamber for delivering water through the series of openings.

3. In a device of the class described, the combination of a washbasin, two chambers disposed beneath the same; said washbasin having communication with one of the chambers to deliver fluid to the upper part thereof, and communication with the other chamber to deliver fluid to the lower part thereof.

4. In a device of the class described, the combination of the washbasin provided with a series of openings in the upper part thereof and a series of openings in the lower part, two water-chambers disposed beneath said basin, one of said chambers communicating with the basin through the holes in the lower part, a series of tubes forming the communication between the other chamber and the basin, a drain-tube depending from the basin through the chambers, and means for forcing water from both chambers to the basin.

5. In a dental spittoon, the combination with a portable stand, of a receiving-basin at the top of the stand provided with a central outlet, a removable trap mounted in said outlet, a waste-receptacle carried by the stand and located beneath said outlet, a water-chamber on said stand surrounding the receiving-basin and above the waste-receptacle, said receptacle being provided with a plurality of water-supply openings arranged around its upper portion and a bulb for forcing the water from the water-chamber through the openings surrounding the upper portion of the receiving-basin.

6. In a dental spittoon the combination with the portable stand, a receiving-basin supported on the stand and provided with an outlet, a waste-receptacle carried by the stand and located beneath the outlet, a water-chamber carried by the stand and surrounding the basin, and located above the receiving-receptacle and an air-pressure device for forcing the water from the water-chamber into the basin.

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**756,251. WIRE-JOINT.** JOHN F. LESLIE, South Bend, Ind. Filed June 29, 1903. Serial No. 162,481. (No model.)

*Claim.*—1. A joint composed of two sections, one of said sections having its end reduced and formed with a shoulder and lateral extensions, said reduced end being bent around the other section with its extensions contiguous to the periphery of the other section and its extremity engaged in the shoulder.

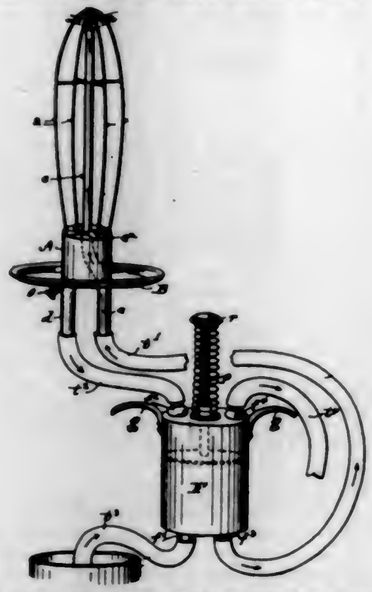


2. A joint of the class described, composed of two sections, one of said sections having its end reduced by forging and formed with lateral longitudinally-disposed extensions and a shoulder at the base of said reduced end, the inner side of the reduced end being flat and engaging with the periphery of the other section, and the outer edge of the extremity of said reduced end being engaged with the shoulder, substantially as specified.

3. A joint composed of two sections, one of said sections having its end reduced in the direction of its length by forging and formed with longitudinal lateral extensions, and a shoulder at the base of said reduced end to provide a flat gripping-surface on one side which is bent around the other section, the other and outer side of said reduced end maintaining its transverse curvilinear between the lateral extensions, whereby a gradually-increasing bulge is formed on the outside of the joint.

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**756,252. VAGINAL SYRINGE.** WILLIAM S. LOCKE, Cincinnati, Ohio. Filed Apr. 4, 1903. Serial No. 151,047. (No model.)



*Claim.*—1. An apparatus for vaginal treatment, embodying a suitably-formed base, perforated for the injection and exhaustion of fluids through the same, in combination with an open cage-like distending structure conforming in general contour to the forms and dimensions of the vaginal cavity, a discharge-tube within said structure and a cup-shaped deflector within the cage in the projected axis of the nozzle for diverting the course of the fluid and converting said fluid into spray.

2. In an apparatus for vaginal treatment the combination of a suitably-formed base, a wire distending structure concentric with the projected axis of the base and conforming substantially in general contour to the forms and dimensions of the vaginal cavity, a discharge-nozzle positioned centrally in the cage and extending from the base thereof to a point near the apex, and a deflector attached to the cage in the projected axis of the nozzle for diverting the projected stream of fluid and converting it into spray

3. In an apparatus for vaginal treatment the combination of a suitably-formed base, the injection and discharge tubes, and a cup-shaped deflector disposed in the projected axis of the discharge-tube for diverting the course of the fluid-discharge and converting said fluid into spray.

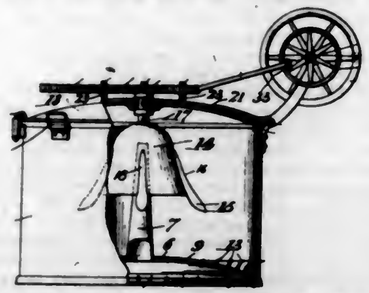
4. In an apparatus for vaginal treatment, a combination of a cylindrical base, a wire distending structure, carried by and concentric with the projected axis of the cylinder, a discharge-nozzle carried through said cylinder and terminating near the apex of the distending structure, a deflector or spreader attached to the wire structure in the projected axis of the nozzle, a spring-seated air-valve upon the cylindrical base and a discharge-tube leading from said base, substantially as and for the purpose set forth.

5. In an apparatus for vaginal treatment a combination of a cylindrical base, a wire distending structure, carried by and concentric with the projected axis of the cylinder, a discharge-nozzle carried through said cylinder and terminating near the apex of the distending structure, a deflector or spreader attached to the wire structure in the projected axis of the nozzle, and a discharge-tube leading from said base, substantially as and for the purpose set forth.



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**756,253. WASHING-MACHINE.** WILLIAM C. LOTT, Chicago, Ill. Filed Sept. 19, 1903. Serial No. 173,862. (No model.)



*Claim.*—1. In a device of the class described, the combination with a tank or boiler, of a steam-condensing member situated therein and comprising a dome-shaped base and a vertical open-ended tube, a clothes-agitating device disposed over the upper end of the tube, and means for operating the same.

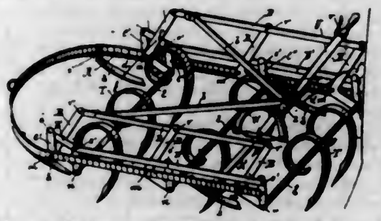
2. In a device of the class described, the combination with a tank or boiler, of a steam-condensing member situated therein and comprising a dome-shaped base and a vertical open-ended tube, ribs or projections associated with the upper face of the base, a clothes-agitating device disposed over the upper end of the tube, clothes-engaging fingers associated therewith, and means for operating the agitator.

3. In a device of the class described, the combination with a tank or boiler, of a steam-condensing member situated therein and comprising a dome-shaped base and a vertical open-ended tube, ribs or projections associated with the upper face of the base, a clothes-agitating device disposed over the upper end of the tube, clothes-engaging fingers associated therewith and extended to form ribs or projections upon the face of the agitator, and means for operating the latter.

4. In a device of the class described, the combination with a tank or boiler, of a steam-condensing member situated therein and comprising a dome-shaped base and a vertical open-ended tube, an upwardly and outwardly extending peripheral flange carried by the base, ribs or projections associated with the upper face of the latter and the inner face of the flange, a clothes-agitating device disposed over the upper end of the tube, clothes-engaging fingers associated therewith, and means for operating the agitator.

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**756,254. HARROW.** HENRY M. LOVE, Utica, N. Y. Filed July 19, 1899. Serial No. 724,357. (No model.)



*Claim.*—1. In a harrow, the combination of a draft-frame, tooth bars, bell-crank levers fulcrumed to the draft-frame and having corresponding arms coupled to and carrying the tooth-bars, means pivotally joining the corresponding opposite arms of the bell-crank levers, a lever connected with the bell-crank levers for simultaneously swinging them to simultaneously raise and lower the tooth-bars, and means for locking the lever, bell-crank levers and tooth-bars in the desired positions, substantially as described

2. In a harrow, in combination, a draft-frame, bell-crank levers fulcrumed to the draft-frame, tooth-bars pivotally attached to corresponding arms of the bell-crank levers, a bar pivotally attached to the corresponding opposite arms of said bell-crank levers, a lever connected with said bar for swinging the bell-crank levers simultaneously and provided with locking means, a standard rigid with the draft-frame, posts fixed to the tooth-bars and parallel with said standard, a bar connecting the free ends of the posts, a link pivotally connecting the standard and an adjacent post, substantially as described.

3. In a harrow, in combination, a draft-frame, vertically-swinging levers fulcrumed to the draft-frame and arranged in corresponding series along opposite sides thereof, vertically-movable tooth-bars, each tooth-bar carried by a pair of said levers, a set-lever mounted on said frame and provided with locking means, and connections from said set-lever to said vertically-swinging levers to raise and lower the same and the tooth-bars simultaneously, means connecting the tooth-bars and holding them from turning in the plane of their upward and downward motion, substantially as described.

4. In a harrow, in combination, a frame to which the draft is applied, a series of vertically-movable transverse tooth-bars, series of vertically-swinging levers connecting said tooth-bars to said frame, and manually-operated actuating and controlling mechanisms connected with said levers for swinging the same simultaneously to raise and lower the tooth-bars and hold the same in the desired adjustment, connecting means holding the tooth-bars from axial movement in their rise and fall, substantially as described.

5. In a harrow, in combination, a main frame, a series of vertically-movable tooth-bars provided with curved harrow-teeth, series of vertically-swinging levers connecting the tooth-bars with the frame and carrying the tooth-bars vertically, means connecting the tooth-bars, said means comprising posts attached to the tooth-bars and connected pivotally with a fixed standard on the draft-frame and said standard, whereby the tooth-bars are held from changing the angle of the teeth, and a set-lever and locking means connected with said levers to swing them vertically and hold the same and the tooth-bars in the desired vertical position, substantially as described.

6. In a harrow, in combination, a main frame to which the draft is applied, a vertically-movable tooth-frame comprising tooth-bars carrying teeth, verticaliy-swinging levers connecting the tooth-bars and the main frame, a set-lever connected with said levers for swinging the same vertically to raise and lower the tooth-bars, independent connecting means between the tooth-bars and the main frame, whereby axial turning of the tooth-bars is prevented, and locking means to hold the tooth-bars at the desired vertical position, substantially as described.

7. In a harrow, in combination, a horizontally-disposed draft-frame, vertically-movable transverse tooth-bars connected together to form a tooth-frame parallel with the draft-frame, vertically-swinging levers connecting said frames and provided with extended ends, a set-lever connected with said extended ends to simultaneously swing said levers to raise and lower the tooth-frame, and locking means to hold said tooth-frame in the desired vertical position, substantially as described.

8. In combination, a draft-frame comprising side bars extending in the line of draft and having cross connections, vertically-movable transverse tooth-bars connected together to form a tooth-frame, bell-crank levers fulcrumed to the draft-frame side bars and having corresponding arms pivotally joined to the tooth-frame to raise and lower the same, a set-lever mounted on one of said cross connections and having locking mechanism, and connections from said lever to the corresponding opposite arms of said levers to rock the same, substantially as described.

9. In a harrow, in combination, a draft-frame, a series of vertically-movable tooth-bars, each tooth-bar having a post rigid therewith, a standard rigid with the frame, a bar connecting said tooth-bar posts, a vertically-swinging link pivotally joining said standard and an adjacent post, vertically-swinging levers connecting the tooth-bars with the draft-frame, and means for swinging said levers to raise and lower the tooth-bars, substantially as described.

10. In a harrow, in combination, a draft-frame, a vertically-movable tooth-bar, a pair of vertically-swinging levers fulcrumed to said frame and pivotally coupled to said tooth-bar to raise and lower the same, a post rigid with said tooth-bar, a standard vertically rigid

with the draft-frame and parallel with the post, a vertically-swinging link pivotally joined to said post, and means to swing said levers to raise and lower the tooth-bar and lock the same in the desired positions, substantially as described.

11. In combination, in a harrow, a draft-frame having side bars parallel with the line of draft, series of bell-crank levers arranged along said side bars and fulcrumed thereto at their angles and each having a laterally-extending arm and an upwardly-extending arm, transverse tooth-bars loosely mounted in the laterally-extending arms of opposite levers respectively, means holding the tooth-bars against independent turning as the levers swing, a set-lever provided with a lock, bars pivotally connecting the upwardly-extending arms of the levers, and connections from said set-lever to said bars to swing said bell-crank levers, simultaneously, substantially as described.

12. In a harrow, in combination, a draft-frame, series of vertically-swinging levers fulcrumed thereto, series of tooth-bars loosely mounted in said levers and moved vertically thereby, means to swing said levers simultaneously and lock them with the tooth-bars held at the desired elevation, a standard rigid with the frame, posts rigid with the tooth-bars, a bar connecting said posts, a link pivotally connecting said standard and an adjacent post and between its pivotal points equal in length to the distance between the fulcrum of each lever and its point of connection with a tooth-bar, the plane of the length of said link being maintained parallel with the said portions of each lever, substantially as described.

13. In a harrow, the combination, of a draft-frame, vertically-swinging levers fulcrumed to the frame and arranged in pairs, the levers of each pair arranged on opposite sides of the frame, transverse tooth-bars, each pair of levers carrying a tooth-bar loosely coupled to the ends thereof, means to simultaneously swing the levers vertically to lift and depress the tooth-bars and lock them in the desired vertical position, each tooth-bar having upright end posts rigid therewith, bars connecting the posts at corresponding ends of the tooth-bars, standards rigid with the frame sides, and vertically-swinging links pivotally joining said standards and the adjacent posts, said links being parallel with and above the portions of the adjacent levers carrying a tooth-bar, substantially as described

14. In combination, a draft-frame, vertically-swinging ground-supports coupled thereto, vertically-movable tooth-bars connected to form a tooth-frame, vertically-swinging levers carrying said tooth-frame and fulcrumed to said draft-frame, means for simultaneously swinging said levers to raise and lower the tooth-frame, and connections from said vertically-moving elements to said ground-supports to elevate the same when the tooth-bars are moved down and to depress the same when the tooth-bars are moved up, substantially as described.

15. In a harrow, in combination, a draft-frame, vertically-swinging ground-supports fulcrumed to the draft-frame, vertically-swinging levers fulcrumed to the draft-frame, tooth-bars carried by said levers, said levers having upwardly-extending arms, connecting-rods from the ground-supports to adjacent upwardly-extending arms, and means provided with a lock and connected with said upwardly-extending arms to simultaneously swing the levers, substantially as described.

16. In a harrow, in combination, a draft-frame, a tooth-frame having tooth-bars and teeth, lever-lifting connections between the draft-frame and tooth-frame and through which the tooth-frame receives its draft, and operating means, comprising a post on the tooth-bar and a standard on the draft-frame, with pivotal connections between the same, whereby the tooth-frame can be moved vertically without varying the angle of the teeth, substantially as described.

17. In combination, in a curved spring-tooth harrow, a vertically-movable tooth-frame comprising tooth-bars provided with teeth, means rigidly securing the tooth-bars from revolving, a draft-frame, and lifting devices, through which the tooth-frame receives its draft, whereby the tooth-frame can be raised and lowered from the draft-frame, substantially as described.

18. In a harrow, in combination, a draft-frame, a vertically-movable tooth-frame carrying teeth, said tooth-frame comprising tooth-bars and means rigidly securing the same from revolving, swinging connections between said frames pivotally joined to the tooth-frame and through which the tooth-frame receives its draft, and a lever-lifting device provided with a lock, whereby the tooth-frame can be raised and lowered from the draft-frame to regulate the working depth of the teeth or raise the same entirely from working position, substantially as described.

19. In a harrow, in combination, a draft-frame comprising parallel side bars, a vertically-movable tooth-frame provided with teeth and comprising tooth-bars and connections rigidly connecting the tooth-bars against axial turning in the adjustment of the tooth-frame, lifting-levers joining said frames, and through which the tooth-frame receives its draft and operating means, substantially as described.

20. In a harrow, in combination, a draft-frame, a vertically-movable tooth-frame provided with teeth, connections between the tooth-bars holding the teeth at a constant angle of work-swinging supports between and pivotally joined to said frames, and through which the tooth-frame receives its draft, and means for raising and lowering the tooth-frame and holding the same at the desired adjustment with respect to the draft-frame, substantially as described.

21. In a harrow, in combination, a draft-frame, a vertically-movable tooth-frame carrying teeth, tooth-bars, connections between the tooth-bars holding them against revolving in change of their level, levers fulcrumed to the draft-frame and pivotally joined to the tooth-frame, and through which the tooth-frame receives its draft, and operating mechanism coupled to raise and lower the tooth-frame, substantially as described.

22. In combination, in a harrow, a vertically-movable tooth-frame carrying teeth, a draft-frame, lifting devices through which the tooth-frame receives its draft, ground-supports pivotally connected with said lifting devices, operative connections between said parts to adjust and secure the same in position relatively to each other, substantially as described.

23. In a harrow, a draft-frame, tooth-bars provided with teeth and pivotally connected to the draft-frame, a lever with locking means operatively connected to the tooth-bars to secure the latter above and below the draft-frame, operative means holding the tooth-bars against axial turning, pivotally-mounted ground-supports, connected operative means between the ground-supports and the moving members to adjust the ground-supports in relation to the tooth-bars, in combination, substantially as set forth.

24. In a harrow, in combination, a horizontally-disposed draft-frame, vertically-movable transverse tooth-bars connected together to form a tooth-frame parallel with the draft-frame, levers connecting the frames, a set-lever and locking means operative to hold the frames in desired vertical position relative to each other, means holding the tooth-bars against axial turning, ground-supports pivotally mounted and operative connections between the elevating-lever and the ground-supports to elevate or depress the latter as the tooth-bar frame is depressed or elevated relatively to the draft-frame, substantially as described.

25. In a harrow, a draft-frame, tooth-bars adapted to be raised or depressed above or below the draft-frame, pivotal connections between the draft-frame and the tooth-bars, a set-lever and lock whereby the tooth-bars may be secured vertically as desired, pivotally-supported ground-supports operative connections between the same and the set-lever, in combination, substantially as described.

26. In a harrow, a draft-frame, tooth-bars provided with teeth, levers pivotally connecting the draft-frame and the tooth-bars, locking means and a set-lever operatively connected to the levers to lift the draft-frame above the work-line of the teeth, means holding the tooth-bars against independent turning as they are raised or lowered, in combination, substantially as described.

27. In a harrow, a draft-frame, tooth-bars provided with teeth, levers pivotally connecting the draft-frame and the tooth-bars and supporting the draft-frame above the work-line of the teeth, locking means and a set-lever connected with said levers to adjust and hold the draft-frame and the tooth-bars relative to each other, means holding the tooth-bars against independent turning as they are raised or lowered, ground-supports pivotally attached to the draft-frame, pivotal connections between the same and the operative parts to adjust the ground-supports to coact with the tooth-bars to regulate the depth of cut of the teeth, in combination, substantially as described.

28. In a harrow, a draft-frame, tooth-bars provided with teeth, and provided with connections to hold the teeth at a constant angle of work, levers pivotally connecting the draft-frame and the tooth-bars and supporting the latter on the draft-frame, locking means and a set-lever whereby the tooth-bars may be secured above or below the draft-frame and operate as an integral structure and whereby the draft-frame may be adjusted in cooperation with the tooth-bars to regulate the depth of cut of the teeth, in combination, substantially as described.

29. In a harrow, a draft-frame, tooth-bars provided with teeth, levers pivotally supporting the tooth-bars on the draft-frame, locking means and a set-lever to secure the tooth-bars relatively to the plane of the draft-frame, ground-supports pivotally mounted and pivotally connected to the set-lever, in combination, substantially as set forth.

30. In a harrow, in combination, a rigid draft-frame, a tooth-frame, pivotally-mounted levers operatively connecting the frames, pivotally-mounted ground-supports in pivotal operative connection with the levers, operative means connected with the levers to adjust the relative position of the tooth-frame and the draft-frame and the ground-supports, substantially as described.

31. In a harrow, the combination of a tooth-frame carrying teeth rigidly fixed thereon, a draft-frame, parallel levers provided with supporting ends pivotally connected with the draft-frame and pivotally supporting the tooth-frame, connections between the levers, and means for locking the levers, substantially as shown.

32. In a harrow, the combination of a tooth-frame carrying teeth rigidly secured thereon, a draft-frame, parallel members pivotally connecting the frames parallel to each other, pivotal connections between such members and a set-lever, a set-lever and lock operative to secure the frames in fixed relation, substantially as shown.



## 756,255. HARROW. HENRY M. LOVE, Utica, N. Y. Filed July 18, 1900. Serial No. 24,018. (No model.)



*Claim.*—1. In a harrow, in combination, a draft-frame adapted to be coupled with the draft, a tooth-frame arranged approximately parallel with and above the draft-frame and provided with teeth, lifting-levers pivotally joined to and connecting said draft and tooth frames and constituting draft connections from the draft-frame to the tooth-frame, and means for simultaneously operating and locking said levers, substantially as described.

2. In a harrow a tooth-bar frame, tooth-bars fixedly attached thereto, teeth attached to the tooth-bars, a draft-frame, arms pivotally attached to the draft-frame supporting the tooth-bar frame in a plane parallel to the draft-frame pivotally connected at their upper ends by connecting-rods, a notched segment fixedly attached to one of the tooth-bars, a lever pivotally attached to one of the tooth-bars provided with a dog for engaging the notched segment, guy-rods connecting the lever with the connecting-rods, in combination, substantially as set forth.

3. In a harrow, a draft-frame, a tooth-bar frame, provided with teeth, parallel arms pivotally attached to the tooth-bar frame supporting the same pivotally on the draft-frame, the said arms extending beyond the plane of the draft-frame, wheels pivotally attached to the ends of the arms, means for supporting the tooth-bar frame at variable distance from the draft-frame in combination, substantially as set forth.

4. In a harrow a draft-frame, a tooth-bar frame having teeth, the said draft-frame and tooth-bar frame held in parallel planes by arms pivotally attached, parallel to each other, to the said draft-frame and tooth-bar frame, the said arms extending above the plane of the tooth-bar frame, a lever pivotally attached to the tooth-bar frame, locking means therefor, rods and guys pivotally connecting the upper extremities of the arms with the lever, the points of such connection being on a plane parallel to the plane of the draft-frame and the tooth-bar frame combined, substantially as described.

5. In a harrow, a draft-frame, tooth-bars with teeth fixedly attached thereto, side bars fixedly connecting the tooth-bars, arms parallel to each other pivotally connecting the draft-frame and tooth-bar frame in parallel planes, the said arms extending below the plane of the draft-frame and provided with ground-wheels, a lever pivotally attached to the tooth-bar frame, connecting-rods pivotally connecting the lever and the upper extremities of the arms, the said lever and the upper portions of the said arms being adjusted in planes parallel to each other and transverse of the harrow, in combination, substantially as set forth.

6. In a harrow, in combination, a draft-frame, a vertically-movable tooth-frame provided with teeth, series of levers pivotally joined to the draft-frame and at intermediate points in their lengths pivotally joined to the tooth-frame, the ends of said levers extended, a hand-lever mounted on the tooth-frame and operatively connected with said ends of said levers, and locking means, substantially as described.

7. In a harrow, in combination, a lower horizontal frame, an upper vertically-movable horizontal frame carrying teeth, and means comprising lifting-levers, and a hand-lever mounted on the tooth-frame for raising and lowering the upper frame and locking the same rigidly and fixedly at the desired elevation with respect to the lower frame, substantially as described.

8. In a harrow, in combination, a lower frame, a vertically-movable upper frame provided with teeth, supporting connections between said frames provided with ground-supports, and operating means arranged to depress said ground-supports as the upper frame is raised and to raise said ground-supports as said upper frame is lowered, substantially as described.

9. In combination, in a harrow, a draft-frame, a vertically-movable tooth-frame arranged above and parallel with said draft-frame and comprising side bars and tooth-bars rigid therewith and provided with teeth, a hand-lever mounted on said tooth-frame and provided with locking means, and series of vertically-disposed levers pivoted to said draft-frame and extended upwardly and pivoted to the tooth-frame and operatively connected with said hand-lever and adapted to be swung thereby on the draft-frame to raise and lower said tooth-frame, substantially as described.

10. In a harrow, in combination, a draft-frame, a vertically-movable tooth-frame provided with teeth, series of lifting-levers between their ends pivotally joined to said draft-frame, corresponding ends of said levers provided with ground-supports and the corresponding opposite portions of said levers pivotally joined to said tooth-frame, and operating and locking means for said levers arranged to simultaneously swing the levers to raise and lower said tooth-frame, substantially as described.

11. In a harrow, in combination, a draft-frame adapted to have the draft coupled therewith, a vertically-movable tooth-frame parallel with the draft-frame and carrying teeth, a hand-lever mounted on the tooth-frame and provided with locking means, and lifting-levers fulcrumed to the draft-frame and pivotally joined to said tooth-frame to raise and lower the same and having upwardly-projected ends all operatively connected with said lever, substantially as described.

12. In combination, in a harrow, a draft-frame, a vertically-movable tooth-frame provided with teeth, vertically-swinging lifting-levers pivotally connecting said frames and determining the vertical position of the tooth-frame with respect to the draft-frame, said levers having extended ends provided with ground-supports moving vertically simultaneously with but in an opposite direction to the vertical movement of said tooth-frame, and an operating-lever connected with all of said lifting-levers, substantially as described.

13. In a harrow, the combination of a rigid tooth-frame carrying teeth rigidly fixed thereon, a draft-frame, parallel levers provided with supporting ends pivotally attached to the draft-frame and pivotally supporting the tooth-frame, connections between the levers, and means for locking the levers, substantially as shown.

14. In a harrow, the combination of a tooth-frame carrying teeth rigidly secured thereon, a draft-frame, parallel members pivotally connecting the frames parallel to each other, pivotal connections between such members and a set-lever, a set-lever and lock operative to secure the frames in fixed relation, substantially as shown.

15. In a harrow, the combination of a tooth-frame carrying teeth, a draft-frame, lever connections between the two and extending down and forward from their attachment to the draft-frame, ground-supports connected with such ends of the levers, operative connections for actuating the levers in unison, locking means for securing the frames and ground-supports rigidly in a given position, substantially as shown.

16. In a harrow, the combination of a draft-frame, a tooth-frame carrying teeth, ground-supports, arms pivotally connecting the frames and the supports, pivotal connections between the arms and a set-lever, and a set-lever simultaneously to adjust the relative position of the frames and the supports and to secure the same in place, substantially as set forth.

17. In a harrow, the combination of a draft-frame, a tooth-frame carrying teeth and located above the draft-frame, ground-supports, means coöperating to adjust and maintain the relative positions of the parts and to maintain the line of draft substantially direct from front to rear, substantially as shown.

18. In a harrow, the combination of a draft-frame, a tooth-frame carrying teeth, ground-supports, lever connections between the frames and the ground-supports, locking means connected with the lever connections, and coöperating therewith to hold the parts of the harrow in fixed position, the frames being parallel, to operate as an integral structure, substantially as shown.

19. In a harrow, in combination, a tooth-frame carrying teeth and supported above the draft-frame, a draft-frame, lifting devices for raising the tooth-frame above the draft-frame and supporting it

thereon in a fixed position parallel thereto and at a desired distance therefrom, substantially as shown.

20. In a harrow, in combination, a horizontal draft-frame, a horizontal tooth-frame carrying teeth, levers connecting the two frames and extended to ground-supports, ground-supports, means for locking the levers, whereby the frames and the ground-supports are held in operation in fixed planes as adjusted, substantially as shown.

21. In a harrow, in combination, a tooth-carrying frame, teeth, a draft-frame, levers pivotally mounted on the tooth-frame and pivotally connected to the draft-frame, a set-lever operatively connected with the said levers to elevate and secure the draft-frame relatively to the tooth-points, substantially as shown.

22. In a harrow, in combination, a tooth-carrying frame, a draft-frame, ground-supports, levers pivotally mounted on the tooth-frame and pivotally attached to the draft-frame and terminated with the ground-supports, a set-lever operatively connected to the said levers to adjust and secure in place the draft-frame and the ground-supports in relation to the harrow-teeth, substantially as shown.

23. In a harrow, a draft-frame, ground-supports pivoted thereto, an independent tooth-frame carrying teeth and located above the draft-frame, lever connections between the draft-frame and the tooth-frame and connected with the ground-supports to give the teeth the desired depth of cut, the harrow being carried on the ground-supports, and to hold the teeth in the desired position, in combination, substantially as shown.

24. In a harrow, a draft-frame, a tooth-frame carrying teeth, levers connecting the frames and being extended to carry ground-supports, ground-supports, operative connections between the levers and adjusting and locking means, adjusting and locking means to elevate the draft-frame and the ground-supports above the soil when the harrow-teeth are at work, in combination, substantially as shown.

25. In a harrow, a draft-frame, a tooth-carrying frame located above the draft-frame, ground-supports, pivotal connections between the frames and the ground-supports, lever connections and a block adapted to operate the pivotal connections and to hold the frames in fixed planes relative to that of the ground-supports, in combination, substantially as shown.

26. In a harrow, a draft-frame, a tooth-frame with teeth, levers bearing ground-supports and pivoted to the frames and adapted to shift the line of the draft relatively to the teeth and the ground-supports, in combination, substantially as described.

27. In a harrow, in combination, a rigid draft-frame, a rigid tooth-frame provided with teeth located in a plane parallel to that of the draft-frame, ground-supports pivotally depending from the draft-frame, connecting-levers and locking means for adjusting and securing the tooth-frame in a plane substantially parallel to the planes of the draft-frame and the ground-supports, substantially as described.

28. In a harrow, the combination of a draft-frame, a tooth-frame provided with teeth, levers pivotally connecting the frames and projecting downwardly to ground-supports, lever connection with locking means for shifting the planes of the frames and of the ground-supports, substantially as described.

29. In a harrow, in combination, a draft-frame, a tooth-frame with teeth, means for raising and lowering the tooth-frame comprising levers provided with locking means and carrying ground-supports and by which the tooth-frame may be elevated or depressed as the ground-supports are depressed or elevated, substantially as described.

30. In a harrow, in combination, a rigid draft-frame, a rigid tooth-frame, pivotally-mounted levers operatively connecting the frames, pivotally-mounted ground-supports in pivotal operative connections with the levers, operative means connected with the levers to adjust the relative position of the tooth-frame and the draft-frame and the ground-supports, substantially as described.

31. In a harrow, in combination, a rigid draft-frame, a rigid tooth-frame, pivotally-mounted levers operatively connecting the frames, operative means connected with the levers to adjust the relative position of the tooth-frame and the draft-frame, substantially as described.

32. In a harrow, in combination, a frame to which the draft is applied, a series of vertically-movable transverse tooth-bars, series of vertically-swinging levers connecting said tooth-bars to said frame, and manually-operated actuating and controlling mechanisms connected with said levers for swinging the same simultaneously to raise and lower the tooth-bars and hold the same in the desired adjustment, connecting means holding the tooth-bars from axial movement in their rise and fall, substantially as described.

33. In a harrow, in combination, a draft-frame, vertically-swinging levers fulcrumed to the draft-frame and arranged in corresponding series along opposite sides thereof, vertically-movable tooth-bars, each tooth-bar carried by a pair of said levers, a set-lever mounted on said frame and provided with locking means and connections from said set-lever to said vertically-swinging levers to raise and lower the same and the tooth-bars simultaneously, means connecting the tooth-bars and holding them from turning in the plane of their upward and downward motion, substantially as described.

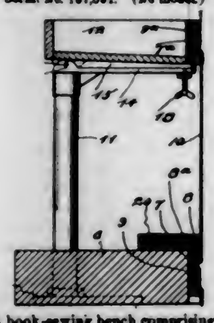
34. In a harrow, in combination, a horizontally-disposed draft-frame, vertically-movable transverse tooth-bars connected together to form a tooth-frame parallel with the draft-frame, vertically-swinging levers connecting said frames and provided with extended ends, a set-lever connected with said extended ends to simultaneously swing said levers to raise and lower the tooth-frame, and locking means to hold said tooth-frame in the desired vertical position, substantially as described.

35. In combination, a draft-frame comprising side bars extending in the line of draft and having cross connections, vertically-movable transverse tooth-bars connected together to form a tooth-frame, levers fulcrumed to the draft-frame side bars and having corresponding arms pivotally joined to the tooth-frame to raise and lower the same, a set-lever mounted on one of said cross connections and having locking mechanism, and connections from said levers to rock the same, substantially as described.

36. In combination, a draft-frame vertically-swinging ground-supports, vertically-movable tooth-bars connected to form a tooth-frame, vertically-swinging levers carrying said tooth-frame and fulcrumed to said draft-frame, means for simultaneously swinging said levers to raise and lower the tooth-frame, and connections from said vertically-moving elements to said ground-supports to elevate the same when the tooth-bars are lowered, substantially as described.

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**756,256. BOOK-SEWING BENCH.** ROSS J. MACGREGOR, Cleveland, Ohio, administratrix of Henry S. MacGregor, deceased. Filed Jan. 2, 1904. Serial No. 187,591. (No model.)



*Claim.*—1. A book-sewing bench comprising a table, standards thereon set back from the front edge thereof, a cross-bar supported on the standards and projecting forwardly over the front of the table, and fastenings for cords or tapes at the front edge of said table and bar.

2. A book-sewing bench comprising a table and a cross-bar supported above the same, castings having channels, in the front edges of the table and bar, and wedge-blocks fitting the channels and constructed to fasten cords or tapes therein.

3. A book-sewing bench comprising a table, standards thereon, a cross-bar hinged to the top of the standards, cord-fastenings at the front of the table and bar, and means to turn the cross-bar on its hinges.

4. A book-sewing bench comprising a table, standards thereon, set back from the front edge thereof and having forwardly-projecting arms at the top, a vertically-adjustable cross-bar supported on the arms, and cord-fastening devices on the table and cross-bar.

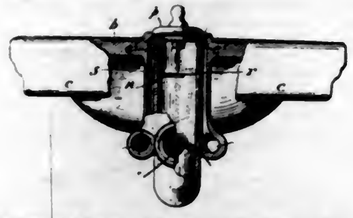
5. The combination with a table, of standards thereon having forwardly-projecting arms at the top, a cross-bar hinged to the top of the standards, adjusting-screws between the arms and the bar, and cord-fastening devices on the table and bar.

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**756,257. LAVATORY-BASIN.** HARRY S. MADDOCK and JOHN F. KELLY, Trenton, N. J., assignors to Thomas Maddock's Sons Company a Corporation of New Jersey. Filed Jan. 4, 1904. Serial No. 187,682. (No model.)

*Claim.*—1. In a porcelain lavatory-basin, the combination of a sealing-trap, an overflow leading from the bottom of the bowl to the trap, a discharge-opening leading from the bottom of the bowl directly into the trap, a water-supply passage at the top of the bowl, a water inlet or inlets leading to said supply-passage, and a vent leading from the supply-passage to the overflow, all of said passages, inlets, openings and vents being formed integrally with the basin out of the material of which it is composed.





2. In a porcelain lavatory-basin, the combination of a sealing-trap, a pipe extending vertically at one side of the bowl above the trap, a partition dividing the pipe into two parts, one of which communicates directly with the trap and indirectly with the bowl and forms the overflow from the bowl, and the other of which communicates directly with both trap and bowl, an opening at the top of the pipe having a removable cover through which access may be had to both parts of the pipe and to the trap through either part of the pipe, a water-supply passage exterior to and at the top of the pipe, a vent leading from the supply-passage to the overflow, and a water inlet or inlets extending along the pipe to the supply-passage, the trap and all of said pipes, inlets and passages being formed integrally with the basin out of the material of which it is composed.

3. In a porcelain lavatory-basin composed of a bowl and an integral ledge or table-like slab, the combination of a sealing-trap, a pipe extending vertically at one side of the bowl above the trap, a partition dividing the pipe into two parts, one of which communicates directly with the trap and indirectly with the bowl and forms the overflow from the bowl, and the other of which communicates directly with both trap and bowl, an opening in the ledge at the top of the pipe having a removable cover through which access may be had to both parts of the pipe and to the trap through either part of the pipe, a water-supply passage in the ledge exterior to and at the top of the pipe, a vent leading from the supply-passage to the overflow, and hot and cold water inlets extending upward along the pipe to the supply-passage, the trap and all of said pipes, inlets and passages being formed integrally with the bowl and ledge out of the material of which the basin is composed.

4. In a lavatory-basin, the combination of a sealing-trap, a pipe extending vertically above the trap, a partition dividing the pipe into two parts, one of which forms the overflow from the bowl, and in the bottom of the other of which is formed an opening for discharging the bowl directly into the trap, a valve for the bowl-discharge opening, a stem for the valve sliding in a guideway in the pipe-partition, and a lateral projection from the stem to which the valve is pivotally connected, whereby the valve may be lifted from and suspended above the discharge-opening by turning the stem in its guide until the lateral projection overhangs the partition.

5. In a porcelain lavatory-basin, the combination of a rearwardly-opening trap integral therewith, an inlet water-pipe adjacent to the trap, and a jet-opening leading from the inlet-pipe downwardly into the downtake of the trap.

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**756,258. MANIFOLDING DEVICE.** ISAAC H. MALLIN, Chicago, Ill. Filed June 13, 1901. Serial No. 64,380. (No model.)

*Claim.*—1. A manifolding device comprising in combination an ink-sheet and a backing-sheet secured together at one end by parallel lines of stitching transversely through both of said sheets, substantially as described.

2. A manifolding device comprising in combination a backing-sheet, a double-faced ink-sheet, a binding-strip, said backing-sheet, ink-sheet and binding-strip being secured together by two or more transverse rows of stitching, substantially as described.

3. A manifolding device comprising in combination a backing-sheet, a double-faced ink-sheet, longitudinal guide-strips secured against the edges of said ink-sheet, said sheets being secured together by two or more parallel rows of removable stitching at one end thereof, substantially as described.

4. A manifolding device comprising in combination a backing-sheet, a double-faced ink-sheet of substantially the same area, longitudinal guide-strips mounted upon said ink-sheet next the edges thereof, said backing-sheet and ink-sheet being secured together by parallel rows of stitching at one end and a single row of stitching at the opposite end thereof, substantially as described.



5. A manifolding device comprising in combination a backing-sheet, a double-faced ink-sheet of substantially the same area, a binding-strip embracing one end and overlapping the surface of both of said sheets, longitudinal guide-strips secured next the edges of said ink-sheet, said ink-sheet and backing-sheet being secured together at one end by parallel lines of stitching passing through the binding-strip and at their opposite end by a single line of stitching passing through the ink-sheet and backing-sheet, substantially as described.

6. A manifolding device comprising in combination a double-faced ink-sheet, a backing-sheet of substantially the same area as said ink-sheet, a binding-strip and stitching securing said strip and sheets together, and an uninked strip extending across said ink-sheet at a point between the ink-sheet and the binding-strip, substantially as described.

7. A manifolding device comprising in combination a backing-sheet, a double-faced ink-sheet of substantially the same area, a binding-strip embracing the end and overlapping the surface of both of said sheets, one or more lines of said stitching joining said strip and sheets together and a plain uninked strip secured to said ink-sheet on each side thereof next the binding-strip, substantially as described.

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**756,259. MACARONI-PRESS.** JOHN F. MALONE and SAMUEL DAVIDSON, Buffalo, N. Y. Filed June 27, 1903. Serial No. 163,355. (No model.)

*Claim.*—1. The combination of a supporting-frame, a pressing-cylinder and pressure mechanism secured together, and means for pivotally adjusting said cylinder and pressing mechanism about a horizontal axis, whereby said cylinder and pressing mechanism can be adjusted for operation at various angles to the horizon, substantially as set forth.

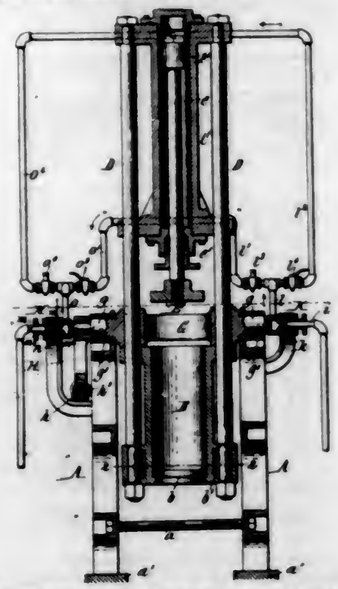
2. The combination of a supporting-frame, a pressing-cylinder and a pressure-cylinder secured together in line with each other, and means for pivotally adjusting said cylinders about a horizontal axis, whereby said cylinders can be adjusted for operation at various angles to the horizon, substantially as set forth.

3. The combination of a supporting-frame, a support capable of pivotal adjustment on said frame about a horizontal axis, and a pressing-cylinder and pressure-cylinder secured to said support and adjustable therewith about the horizontal axis thereof, substantially as set forth.

4. The combination of a supporting-frame, a pivoted support mounted thereon, a pressing-cylinder and a pressure-cylinder mounted on said pivoted support, pipe-trunnions arranged in line with the pivot-line of said pivoted support, and pipes connecting said trunnions with said pressure-cylinder, substantially as set forth.

5. The combination of a supporting-frame, a support capable of pivotal adjustment on said frame about a horizontal axis, a pressing-cylinder and pressure mechanism secured to said support and

adjustable therewith, and adjusting mechanism connecting said support with said frame, substantially as set forth.



6. The combination of a supporting-frame, a pivoted support mounted thereon, a pressing-cylinder and a pressure mechanism mounted on said pivoted support, a gear-segment on said pivoted support, and an actuating-gear mounted on said supporting-frame substantially as set forth.

7. The combination of a supporting-frame, a support capable of pivotal adjustment on said frame about a horizontal axis, and a pressing-cylinder and pressure-cylinder mounted on said pivoted support and capable of adjustment thereon in the direction of the axes of said cylinders and at right angles to the pivotal axis of said support, substantially as set forth.

8. The combination of a supporting-frame, a support capable of pivotal adjustment thereon, a pressing-cylinder and a pressure-cylinder mounted on said support, and rods connecting said cylinders parallel with the axes thereof and adjustable in said support in the direction of their length, substantially as set forth.

9. The combination of a supporting-frame, a support having trunnions by which it is pivoted on said frame, and a pressing-cylinder and pressure-cylinder secured to said pivoted support and arranged on opposite sides thereof, substantially as set forth.

10. The combination of a supporting-frame, a pivoted support mounted thereon, a pressing-cylinder and a pressure-cylinder mounted on said pivoted support, a stationary pressure-pipe and a stationary exhaust-pipe arranged on opposite sides of said frame, pipe-trunnions connected with said stationary pipes, and pipes connecting said trunnions with said pressure-cylinder, substantially as set forth.

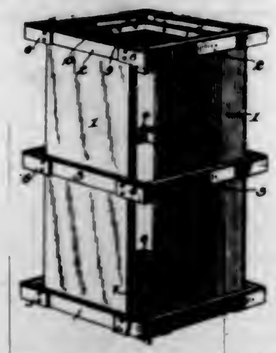
11. The combination of a supporting-frame, a support adjustable thereon about a horizontal axis, a pressing-cylinder mounted on said support and provided with a jacket, and a flexible supply-pipe connected with said jacket, substantially as set forth.

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**756,260. SHIPPING-CRATE.** GEORGE MILLER, Holstein, and WILLIAM BUTLER, Shelby, Mich. Filed Sept. 16, 1903. Serial No. 173,633. (No model.)

*Claim.*—1. The combination of a shipping-crate provided with ventilating-openings and having a smooth interior extending the entire length of the sides of the crate, the latter being also provided on its exterior at the said openings with projecting guards, and a removable filler conforming to the configuration of and fitting snugly within the crate and covering the ventilating-openings thereof, said filler being adapted to be detached, whereby the crate may be used either as a ventilated crate or a solid crate, substantially as described.

2. The combination of a polygonal shipping-crate having imperforate sides spaced apart to form intervening longitudinal ventilating corner-openings, said crate being provided with cross-bars arranged on the exterior of and projecting beyond the sides and connected at the corner-openings and forming exterior projecting guards, and a removable imperforate filler conforming to the configuration of the crate and fitting snugly against the sides thereof and covering the corner-openings and projecting into the same, said filler being adapted to be detached, whereby the crate may be used either as a ventilated crate or a solid crate, substantially as described.



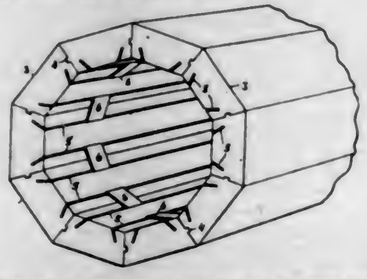
3. A polygonal shipping-crate presenting a smooth interior to enable it to receive a filler, and comprising imperforate sides consisting of sheets of veneer spaced apart at the corners of the crate to provide ventilating-openings, exterior rectangular frames secured to the outer faces of the sides and bridging the spaces between the sheets of veneer and holding the same in position, said frames having projecting angular portions at the corners of the crate, and heads arranged within and closing the top and bottom of the crate, substantially as described.

4. A polygonal crate comprising sides consisting of imperforate sheets of veneer spaced apart at the corners to provide ventilating-openings, exterior frames secured to the outer faces of the sides and bridging the ventilating-openings and having interlocked joints thereat, angular metallic guard-plates secured to the said frames and covering the said joints, and heads arranged within and closing the ends of the crate, substantially as described.

5. In a shipping-crate, the combination of longitudinal side members, and intermediate cross-bars secured to the outer faces of the side members and projecting at the opposite longitudinal edges thereof to form angular guards, the adjacent ends of the corresponding cross-pieces having interlocking joints, angular guard-plates embracing and covering the joints and secured to the respective cross-bars, the adjacent longitudinal edges of the side members being separated by longitudinal inner spaces, a removable open-ended tubular filler of scored material fitting snugly within the crate and covering the edge openings, heads fitted within the ends of the crate and capable of being forced inwardly, and cleats secured to the inner faces of the side members and bearing against the outer faces of the heads to prevent upward displacement thereof, substantially as described.

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**756,261. STAVE-COLUMN.** JOHN S. MILLER, Fort Wayne, Ind., assignor of one-third to James M. Henry, Fort Wayne, Ind. Filed Aug. 6, 1903. Serial No. 168,490. (No model.)



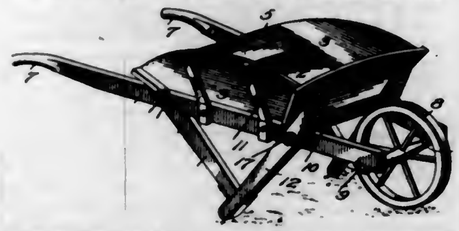
*Claim.*—1. In combination with a series of staves arranged in a circle to form a column, kerfs made in the inner sides of each of said staves adjacent to and ranging parallel with the sides thereof, and the metallic spring-clamps having jaws adapted to fit respectively in the adjacent kerfs of the abutting staves and press said staves together.

2. In a stave-column, a series of staves arranged in a circle; kerfs made in the inner sides of said staves adjacent to and ranging parallel with the sides thereof, the said kerfs slanting outward toward the sides of said staves; and the metallic spring-clamps having jaws adapted to fit respectively in one kerf of one stave and in the adjacent kerf of the abutting stave, the ends of said jaws being held, by reason of the spring of the clamp, against the sides of the corresponding kerfs nearest the abutting sides of the staves and thereby pressing said staves together.



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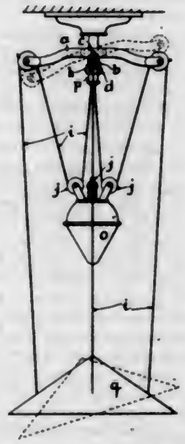
**756,262. WHEELBARROW.** THOMAS J. MONTGOMERY, Youngstown, Ohio. Filed Mar. 12, 1903. Serial No. 147,484. (No model.)



*Claim.*—In a wheelbarrow, the combination with a body and handle and wheel bars with a wheel mounted between the front ends thereof, of leg elements depending from the said body and bars and comprising depending rearwardly-inclined legs and forwardly and downwardly inclined leg-braces, said legs and braces having mortises in the inner sides thereof, in which the said bars fit, and tie-rods extending across under the body and through the legs and braces and the bars.

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**756,268. LAMP-SUSPENDER.** ARTHUR S. MOORE, Notting Hill, London, England. Filed May 12, 1903. Serial No. 156,852. (No model.)

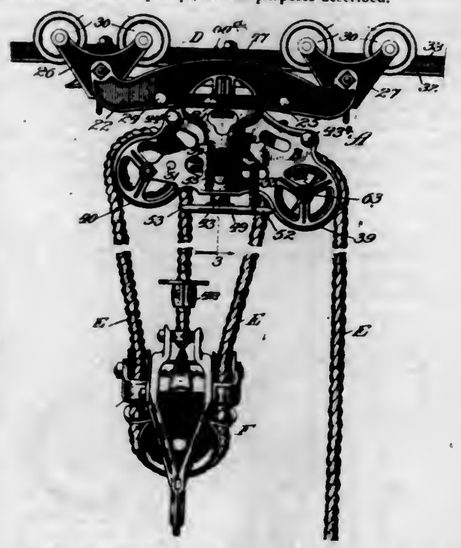


*Claim.*—In means for suspending lamp-shades whereby the angle thereof may be varied, arms pivoted at their centers to a suitable support, pulleys carried by said arms near the ends thereof, a counterweight, pulleys carried by said counterweight corresponding in number to the pulleys aforesaid, suspension-cords passing over and under said pulleys and attached to the lamp-shade and to a suitable part of the device, all in combination, substantially as described and illustrated herein.

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**756,264. TRAVELING CARRIER.** DAVID M. MOTHERWELL, Chicago, Ill., assignor to the Whitman & Barnes Manufacturing Co., Akron, Ohio, a Corporation of Ohio. Filed June 27, 1903. Serial No. 163,448. (No model.)

*Claim.*—1. In a traveling carrier, a trolley adapted to move along an overhead horizontal track, an overhead horizontal track having flanges on the sides and a central arched web, trip-stops adapted to be raised within it to permit said trolley to pass or to be lowered therefrom to arrest said trolley, and means for raising and lowering said trip-stops, for the purposes described.



2. In a traveling carrier, an overhead horizontal track and a trolley adapted to travel thereon, a trip-stop adapted to operate said trolley, slots in said track having bolts therein adapted to support the trip-stop and permit it to be alternately raised and lowered, and guide-fingers secured to said stop and fitting into said slots whereby said trip-stop is secured against horizontal movement, for the purposes described.

3. The combination with an elevated horizontal track and a trolley suspended from and traveling upon said track, of a succession of trip-stops having inclined ends and lateral recesses adapted to spread and engage detents; detents on said trolley, vertical fingers adapted to hold said stops in the same horizontal plane, and means for alternately raising and lowering said stops in and out of the path of said detents, for the purposes described.

4. In a traveling carrier adapted to move along a horizontal track and having a reversible frame attached thereto provided with a pulley and a pivotally-mounted dog adapted to grasp a rope or cord passed over said pulley, a plunger having annular flanges adapted to thrust said dog alternately in and out of engagement with said rope or cord, a track, means for propelling said carrier thereon, stop-trips and detents adapted to arrest said carrier and operate said plunger to release said rope and means for disengaging said detents and causing said dog to engage the rope.

5. In a traveling carrier, a pulley mounted therein, a supporting-rope about said pulley adapted to elevate and lower loads secured thereto, a dog pivoted to press or clutch said rope against said pulley to support the load, a plunger having flanges above and below said dog, and means for alternately raising said plunger to draw said dog away to release said rope and for lowering it to force said dog to press said rope against said pulley and support the load.

6. In a traveling carrier, the combination of means for raising and lowering a load attached to a rope or cable, a pulley adapted to support said rope or cable, a separately-pivoted dog adapted to compress or clutch said rope against the pulley and support the load, and means for adjusting the pulley to revolve nearer or farther from said dog.

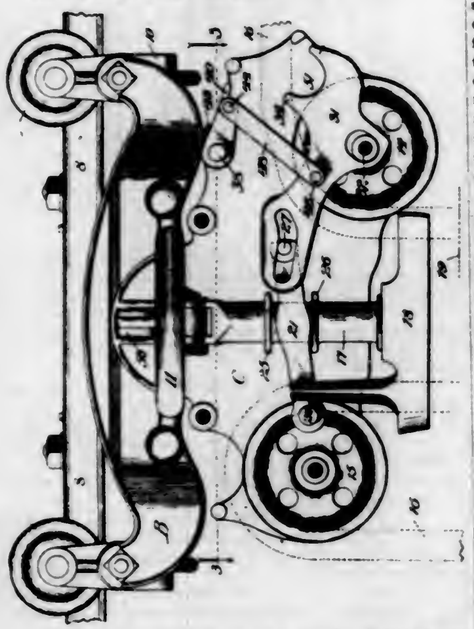
7. In a traveling carrier, in combination with a dog and pulley attached thereto and means for operating the dog alternately to clutch and to release a rope or cord, a rope or cord adapted to support a load beneath the carrier, a bushing adapted to be inserted in the axis of said pulley, said bushing having an axial orifice disposed off the center thereof, and means for turning and securing said bushing in the axis of said pulley and of attaching it to said carrier whereby said pulley is adjustable to revolve relatively nearer or farther from said dog and operate upon ropes or cords of different sizes.

8. In a traveling carrier, the combination of a pulley mounted thereon, a bushing inserted in the axis of said pulley and having a square axial orifice disposed off the center, a bolt consisting of a head, two quadrilateral necks and a shank, an opening in the carrier adapted to fit the neck nearest the head and an opening on the opposite side adapted to receive the end of the shank, the orifice in said bushing being adapted to receive said shank and the neck farthest from said head whereby the axis of rotation may be shifted to any one of four different directions from the median of said bolt.

9. In a traveling carrier, the combination of a pulley mounted in the frame thereof, of the bushing 61, having an axial opening disposed off the center adapted to receive the shank and neck 65 of bolt 63, inserted through the frame B, the bolt 63 consisting of the necks 65 and 66, the shank and head 62, and means for turning and securing said bushing and bolt, for the purposes described.

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**756,265. AUTOMATIC CLUTCH FOR CARRIERS.** DAVID M. MOTHERWELL, Chicago, Ill., assignor to the Whitman & Barnes Manufacturing Co., Akron, Ohio, a Corporation of Ohio. Filed Dec. 14, 1903. Serial No. 185,168. (No model.)



*Claim.*—1. In an automatic clutch for traveling carriers, in combination with a carrier, a hoisting-pulley and draft-rope passing thereover, a pair of levers each pivoted intermediate of the ends on opposite sides of said pulley to said carrier beneath the rope and having their forward ends connected by cross-pieces adapted to embrace the under side of a rope, a swinging plate pivoted to the carrier above said cross-pieces having an edge adapted to embrace the upper side of the rope, link connections between the lower side of said plate and points on the opposite ends of said levers and means for alternately operating said levers to lock and unlock said rope and carrier.

2. The combination in a traveling carrier having a hoisting-pulley and draft-rope passing thereover adapted to raise and lower loads, of a pair of levers having their forward ends connected by concave cross-pieces beneath said rope, each of said levers being pivoted intermediate of its ends to the carrier on opposite sides of said pulley, a swinging plate pivoted to the carrier above said cross-pieces and rope, and means for simultaneously lifting the forward ends of said levers and lowering the swinging plate to curve and lock said rope between said cross-pieces and plate, and means for tripping the lock to release said rope, for the purposes described.

3. In a carrier in combination with a hoisting-pulley and draft-rope adapted to run thereover, a pair of levers having U-shaped forward ends, the points or protuberances of said ends connected by two concave cross-pieces beneath said rope, said levers being pivoted intermediate of the ends to opposite sides of said carrier, a swinging plate pivoted to the carrier above said rope and lever ends, and provided with a concave bottom edge adapted to curve and lock said rope between said cross-pieces and bottom edge, a pair of links each loosely secured to the lower side of said plate and to a point on said levers intermediate of the fulcrum and operative end thereof, and means for alternately operating said lever to lock and unlock said rope and carrier, for the purposes described.

4. In a carrier having a hoisting-pulley and draft-rope adapted to run thereover, a pair of levers secured to said carrier supporting on their forward ends concave cross-pieces beneath said rope, a swinging plate secured to said carrier having a crenulated or concave tooth adapted to embrace said rope above said cross-pieces, means for operating said plate and levers simultaneously to clutch and lock said rope and carrier together between said tooth and cross-pieces and thereafter to unlock them, and means for adjusting said tooth in said plate to operate nearer or farther from said cross-pieces, for the purposes described.

5. In combination with a carrier adapted to travel along an overhead track and having a depending frame secured thereto, a pulley pivoted to said frame and a draft-rope passing thereover, a gripping device consisting of a pair of under jaws pivoted on either side of said pulley to the axis thereof beneath said rope and having concave forward ends, a pair of concave cross-pieces connecting the forward ends of said jaws, an upper jaw pivoted in said frame above the rope having a crenulated lower end, a pair of links loosely secured to said jaw near its lower end on either side of said upper jaw near its lower end and to said lower jaws near their rear ends, means for alternately rocking the said lower jaws about the axis of said pulley as a fulcrum to curve and firmly hold said rope between said jaws during the progress of said carrier and to release said rope to permit it to pass freely over said pulley, for the purposes described.

6. In combination with a carrier adapted to travel on an overhead track and having a frame secured beneath it, a pulley journaled to the lower portion of said frame and having a draft-rope passed thereover, and means for securing loads to said draft-rope, a clamp-stop secured about said rope, a plunger in alinement with said clamp-stop, an operating-lever loosely secured in the middle by collars about said plunger having one end pivoted to said frame and the other slidably secured to the rear end of a pair of gripping-jaws pivoted about the axis of said pulley and having concave teeth adapted to rise beneath said rope, an upper jaw pivoted to the frame above said lower jaw, a link connecting the lower end of said upper jaw with the operating end of said lower jaw, means for drawing said rope over the pulley whereby said clamp-stop contacts with said plunger causing it to rise and operate said jaws to bend and firmly lock the rope, and means for dropping said plunger to trip said lock, for the purposes described.

7. In combination with a carrier adapted to travel along an elevated track, a pulley secured to said carrier, and a draft-rope passing thereover, a gripping device comprising a pair of levers pivoted on either side of said pulley to the axis thereof beneath the rope and having cross-pieces or lower jaws connecting their ends, an upper jaw pivoted to the carrier above the rope, links connecting said upper jaws and said levers, and means for tilting said levers whereby said upper and lower jaws are alternately locked and unlocked about said rope.

8. In combination with a traveling carrier, a pulley secured thereto, and a draft-rope passing thereover, a gripping device comprising a pair of levers secured to the carrier and fulcrumed about the axis of said pulley beneath said rope, said levers being connected at their forward ends by a cross-piece or lower gripping-jaw, an upper gripping-jaw secured to the carrier above the rope and adapted to swing toward said lower jaws, and means for alternately tilting said jaws together to grasp the rope and apart to free it, whereby said rope and carrier are alternately locked and unlocked for the purposes described.

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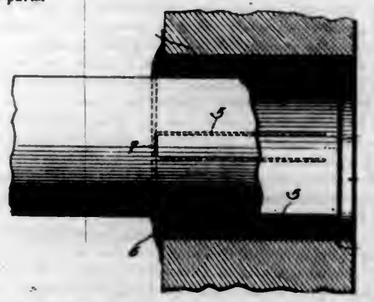
**756,266. STOVEPIPE-FASTENER.** CHARLES T. MCCLARIN, Williamsport, Pa. Filed June 18, 1903. Serial No. 162,103. (No model.)

*Claim.*—1. As a new article of manufacture, a cap-plate of the type described having a plurality of engaging fingers attached thereto, a number of said fingers being outwardly curved longitudinally and adapted to bear at their free ends upon a pipe and between their ends upon the walls of the pipe-receiving opening and the remainder oppositely curved for reverse engagement with said parts when assembled, the free ends of the fingers terminating short of the end of the pipe.

2. As a new article of manufacture, a cap-plate of the type described having a plurality of engaging fingers attached thereto, a



number of said fingers being outwardly curved longitudinally and adapted to bear at their free ends upon a pipe and between their ends upon the walls of the pipe-receiving opening and the remainder oppositely curved for reverse engagement with said parts when assembled, the free ends of the fingers terminating short of the end of the pipe and having sharpened tips for engagement with the respective parts.



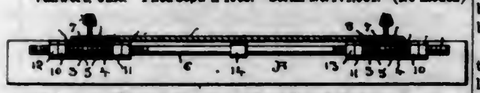
3. As a new article of manufacture, a cap-plate of the type described having a plurality of U-shaped wire members disposed with their crown portions toward and attached to the plate and forming engaging fingers disposed in pairs, one finger of each pair being outwardly curved longitudinally and adapted to bear at its free end upon a pipe and between its ends upon the wall of the pipe-receiving opening and the other oppositely curved for reverse engagement with said parts when assembled, the free ends of the fingers terminating short of the end of the pipe.

4. As a new article of manufacture a cap-plate of the type described having a plurality of engaging fingers pivotally connected therewith, a number of said fingers being outwardly curved longitudinally and adapted to bear at their free ends upon a pipe and between their ends upon the walls of the pipe-receiving opening and the remainder oppositely curved for reverse engagement with said parts when assembled, the free ends of the fingers terminating short of the end of the pipe.

5. As a new article of manufacture a cap-plate of the type described having a plurality of integral tongues and a plurality of U-shaped wire members forming engaging fingers and pivotally connected with the plate by bending said tongues one over the crown portion of each member, a number of said fingers being outwardly curved longitudinally and adapted to bear at their free ends upon a pipe and between their ends upon the wall of the pipe-receiving opening and the remainder oppositely curved for reverse engagement with said parts when assembled, the free ends of the fingers terminating short of the end of the pipe.

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**756,267. RAILROAD-TRACK SECURER.** JOSHUA D. MCGILL, Vanwert, Ohio. Filed Sept. 4, 1903. Serial No. 171,961. (No model.)



*Claim.*—1. The combination with rails, of chair-sections embracing the base-flanges of said rails and having depending portions under the base-flanges of the rails formed with alined passages therethrough, the inner opposing edges of the chair-sections below the base-flanges of the rails being in close contact, a tie-rod having its opposite extremities fully screw-threaded at distances inwardly from the ends of the rod and also provided with a central claw-hold, and locking and jam nuts arranged in pairs on the screw-threaded extremities of the rod and bearing against portions of the outer and inner edges of the respective chairs.

2. The combination with rails, of chair-sections embracing the base-flanges of said rails and depending below the latter, the said chair-sections having their inner opposing edges in contact, the inner edge of one section and the outer edge of the companion section having central bosses, passages being formed through the bosses and the depending portions of the sections in line therewith, a tie-rod having screw-threaded extremities inserted through the passages in the chair-sections and also provided with a central claw-hold, and locking and jam nuts arranged in pairs on the opposite screw-threaded extremities of the rod, the locking-nuts of each pair bearing against the said bosses, the said bosses facilitating the application of the nuts in tight relation to the chair-sections.

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**756,268. CAR-COUPLING.** ALLAN I. MCGREGOR, Duluth, Minn. Filed Sept. 14, 1903. Serial No. 173,051. (No model.)

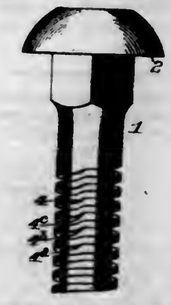


*Claim.*—1. In a car-coupling the combination of a draw-head provided on its upper face with rearwardly-inclined lugs positioned abreast of each other and spaced apart to form a passage between them, and further provided, with forwardly-inclined lugs positioned abreast of each other in rear of the first said lugs and spaced apart therefrom and a coupling-link comprising a plural number of members flexibly connected together and provided at its free terminals with cross-heads, substantially as described.

2. In a car-coupling, the combination of a draw-head provided on its upper face with rearwardly-inclined lugs positioned abreast of each other and spaced apart to form a passage between them, and further provided upon such upper surface with forwardly-inclined lugs positioned abreast of each other in rear of the first said lugs and spaced apart therefrom and from each other, and a link comprising a plural number of members flexibly connected together and provided at its terminals with cross-heads and with means for lifting said link out of said draw-head, substantially as described.

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**756,269. NUT-LOCK.** JOSEPH P. MCMAHON, Rochester, N. Y., assignor of one-half to John F. Fromin, Rochester, N. Y. Filed Jan. 5, 1903. Serial No. 137,856. (No model.)



*Claim.*—1. The combination with a member provided with a continuous thread having portions offset in the direction of its lead, of a cooperating member having threads thereon deeper than those on the other member and capable of being distorted by the offset portions in the cooperating thread.

2. The combination with a member provided with a continuous thread having a plurality of offset portions, of a cooperating member having the thread of greater depth than that of the other member adapted to be distorted by one or more of said offset portions.

3. The combination with a member provided with an external thread which has plain convolutions at its extremity and above the latter is provided with a plurality of offset portions, of a nut provided with a thread of greater depth than that of the externally-threaded member and adapted to cooperate therewith and to engage the offset portions and to be distorted thereby.

4. The combination with a bolt member provided with an external thread having offset portions therein extending in the direction of its lead, of a nut adapted to engage the bolt having an internal thread cut deeper than the one on the bolt.

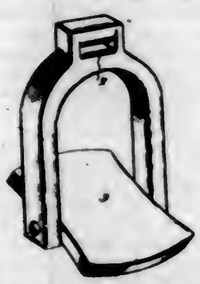
5. In a nut-lock the combination with a bolt having a thread which extends around it in plain convolutions at its extremity and above the latter is provided with a plurality of offset portions, said portions being graduated, of a nut having the thread adapted to engage the thread on the bolt and to be distorted thereby.

6. The combination with a bolt 1 having a thread provided with offset portions 4 therein adjacent to each other in separate convolutions being arranged out of alinement, of a nut 3 having the thread 5 therein formed deeper than the thread on the bolt.

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**756,270. STIRRUP.** GEORGE R. MCVEY, Spratts, Va., assignor, by direct and mesne assignments, of three-fourths to John Adam Groseclose, Marion, Va. Filed Apr. 20, 1901. Serial No. 56,785. (No model.)

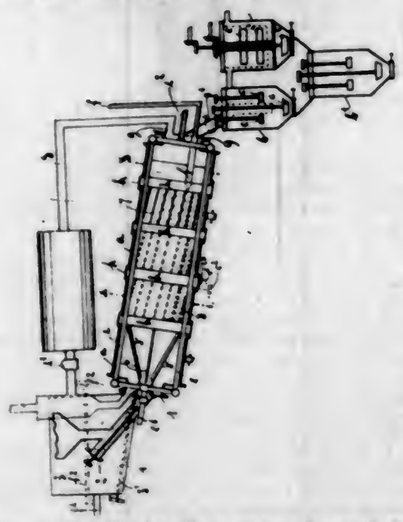
*Claim.*—1. A stirrup comprising a hanger of the usual form provided in the top with a strap-guide and having depending arms of approximately rectangular cross-section to present continuous unbroken surfaces on their inner faces, and a foot-piece pivotally mounted at the bottom of the hangers and consisting of a solid plate extending an equal distance from the pivot-bolt on either side thereof and having sides formed concave to limit the range of pivotal movement of the foot-piece by contact with the depending arms of the hanger.



2. A stirrup comprising a hanger of the usual form having in the top thereof a strap-guide and having depending arms each provided on its outer face near the lower end with a socket, a pivot-bolt passing through the arms of the hangers and being held against rotation with its head set in the socket in one of the hanger-arms, a nut set in the socket in the other arm, and a foot-piece pivotally mounted on the bolt and having its sides formed concave to constitute stops to limit the pivotal movement of the foot-piece by contact with the arms of the hanger.

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**756,271. APPARATUS FOR TREATING SOLIDS, SUCH AS ORES, LIQUIDS, OR GASES.** PAUL HAHN, New York, N. Y. Filed Apr. 18, 1901. Serial No. 56,378. (No model.)



*Claim.*—1. In combination with an apparatus for treating liquids and solids, a settling-tank, an inclined bottom on said tank and means to run sludge from said tank, back to the apparatus.

2. In combination with a revolving cylinder, means for passing liquid through the same, means to separate solids from the product leaving the cylinder and automatically returning the same to the cylinder.

3. The combination with a rotary apparatus, of a funnel located within one end thereof and rotatable therewith, means for feeding solid material to be treated, into the rotary apparatus through said funnel, and means for introducing fluid into said rotary apparatus.

4. In combination with a revolving cylinder, a funnel in the same near one end thereof, means for feeding solids into the funnel from the end of the cylinder and means to conduct liquor from said end.

5. The combination of a funnel-shaped pipe reaching into an apparatus, means for feeding solids into the same and means on said funnel, such as suitable ribs to insure the forward passage of the solids.

6. In combination with a revolving cylinder sets of parallel partitions and open spaces between said sets.

7. In combination with a revolving cylinder, means for passing a liquid and a solid into the same and perforated partitions arranged in such position as to effect a forward movement of the solid independently of the position in which the cylinder is disposed.

8. In combination with a revolving cylinder, perforated partitions arranged at an angle to the longitudinal and transverse axes of the cylinder, so as to effect a forward movement of solid material.

9. In combination with a revolving cylinder, perforated plates arranged diagonally with respect to the longitudinal axis of the cylinder in separate sets.

10. In combination with a revolving cylinder, a liquor-pipe and a gas-pipe communicating with one end of the cylinder and a discharge for solids at the same end thereof.

11. In combination with a revolving cylinder longitudinal bars carrying cleaning devices, such as spikes in the interior thereof.

12. In combination with a revolving cylinder surfaces in the interior and longitudinal bars carrying cleaning devices moving on said surfaces.

13. The combination of a revolving cylinder, perforated partitions dividing the cylinder into compartments and devices for cleaning the surfaces in each compartment.

14. The combination of a revolving cylinder divided into compartments in the interior and a bar carrying cleaning devices in each compartment.

15. In combination with a rotary apparatus boat surfaces in the interior and a loose bar carrying cleaning devices moving on said surfaces.

16. The combination of a revolving cylinder, parallel partitions and devices between the latter to clean the surfaces.

17. The combination of a revolving cylinder, longitudinal parallel perforated surfaces and means to keep said surfaces clean.

18. The combination of a revolving cylinder parallel surfaces in the interior and loose rods carrying cleaning devices between said surfaces.

19. The combination of an apparatus, means to pass a solid and a liquid through the same and means to circulate gaseous fluid through the apparatus and a temperature-adjuster the same fluid circulating several times.

20. The combination of an apparatus, means to pass a solid and a liquid through the same, means to circulate liquid through the apparatus and a temperature-adjuster.

21. The combination of a rotary apparatus, perforated surfaces and projections on said surfaces, which act as lifters.

22. In combination with a rotary apparatus means to separate material according to specific gravity.

23. In combination with a rotary apparatus, means to conduct liquid and solid through the same, means to separate solids from the liquid at each end means to return the liquid.

24. In combination with a rotary apparatus, means to pass solid and liquid through the same, means to pass gaseous fluid through the same and means to separate solid from the liquid at each end of the apparatus.

25. The combination of a series of apparatus, means to pass solid and liquid successively through the same and means to separate heavy material from the lighter material as the mixture passes from one apparatus to the other.

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**756,272. AMMUNITION-HOIST.** SAXTON W. A. HOBLE, Westminster, England, assignor to Sir W. G. Armstrong, Whitworth and Company, Limited, Newcastle-upon-Tyne, England. Filed Sept. 24, 1903. Serial No. 174,471. (No model.)

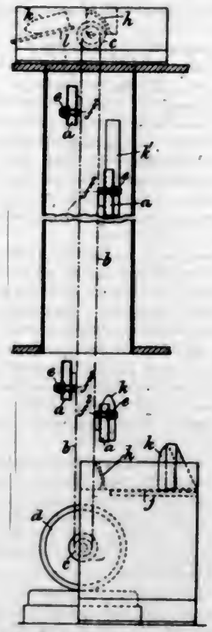
*Claim.*—1. In an ammunition-hoist, the combination of an endless chain, pulleys around which the chain passes, a semicylindrical tray parallel to the chain and carried by it, a catch pivoted to the tray, and means for turning the catch about its pivot.

2. In an ammunition-hoist, the combination of an endless chain, pulleys around which the chain passes, a tray carried by the chain, a catch pivoted to the tray, a bolt engaging with the catch, a lug on the bolt, and a cam in the path of the lug.

3. In an ammunition-hoist, the combination of an endless chain, pulleys around which the chain passes, a semicylindrical tray parallel to the chain and carried by it, a catch pivoted to the tray, means for turning the catch about its pivot, and a table tangential to the upper pulley.



4. In an ammunition-hoist, the combination of an endless chain, pulleys around which the chain passes, a tray carried by the chain, a catch pivoted to the tray, a bolt engaging with the catch, a lug on the bolt, a cam in the path of the lug, and a table tangential to the upper pulley.



5. In an ammunition-hoist, the combination of an endless chain, pulleys around which the chain passes, a semicylindrical tray parallel to the chain and carried by it, a catch pivoted to the tray, means for turning the catch about its pivot, a table tangential to the upper pulley, and a second table near the bottom of the chain.

6. In an ammunition-hoist, the combination of an endless chain, pulleys around which the chain passes, a tray carried by the chain, a catch pivoted to the tray, a bolt engaging with the catch, a lug on the bolt, a cam in the path of the lug, a table tangential to the upper pulley, and a second table near the bottom of the chain.

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**756,273. CREAM-SEPARATOR.** WILLIAM T. OGLESBY, Keokuk, Iowa. Filed July 20, 1903. Serial No. 166,353. (No model.)

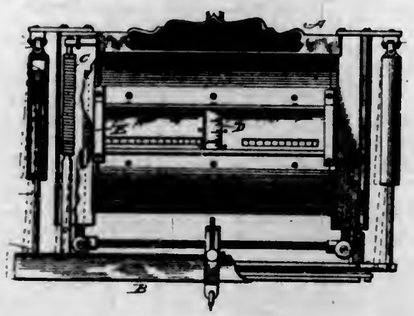


*Claim.*—1. The combination with a receptacle adapted to hold water and having an inclined bottom, a can adapted to contain milk supported centrally in said receptacle and having an inclined bottom extending to one side of the receptacle the adjacent sides of the can being also extended to the same side of the receptacle, the said side forming at this point a portion of the side wall of the can and being vertically slotted between the extending sides of the can, a faucet arranged in said side portion of the receptacle, adapted to discharge the contents of the can, a cover for said can, braces connecting the upper portions of the receptacle and can, and means for drawing off the contents of the receptacle.

2. The combination with a cylindrical water-can having a forwardly-inclined bottom and a discharge-spigot adjacent said bottom, a milk-can arranged in said water-can and having an inclined bottom parallel to the bottom of the water-can, said bottom being extended on the forward side to the front side of the water-can and the sides of the milk-can adjacent the extended bottom being also extended to the front side of the water-can, said side of the water-can being slotted, a glass panel in said slot, a faucet arranged below the panel and adapted to discharge the contents of the milk-can, braces adjacent the top of the milk-can said braces extending from the sides of one can to the other, a conical top fitting over the milk-can and notched ears depending from said top and adapted to engage the braces.

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**756,274. SPRING-BALANCE SCALE.** ORANGE O. OKIAS, Dayton, Ohio. Filed June 27, 1902. Renewed Feb. 18, 1904. Serial No. 194,298. (No model.)



*Claim.*—1. In a spring-balance scale, the combination of a vertically-movable runner for supporting the load and springs supporting said runner, said springs and runner being suspended to swing freely to a limited extent in any direction, of a governor controlling the vertical movements of the runner, embodying a pneumatic dash-pot cylinder, a plunger therein and a connecting-rod, said cylinder and connecting-rod being jointed one to a fixed support and the other to the runner to swing in any direction in unison with the runner to maintain an angular position approximately corresponding to the angular position of the springs; substantially as described.

2. In a spring-balance scale, the combination with the suspended counterbalancing-springs and runner suspended from said springs to have a limited swing in any direction, of a pneumatic dash-pot cylinder suspended to swing in any direction, a plunger in said cylinder, a plunger-rod rigidly connected with said plunger and jointed to the runner by a joint permitting it to swing in any direction whereby the axes of the cylinder and rod will be maintained in alinement; substantially as described.

3. In a spring-balance scale, the combination with the runner and its counterbalancing-springs suspended at their upper ends, from a fixed support, of the pneumatic dash-pot cylinder, plunger working therein and plunger-rod rigidly connected with the plunger, said rod and cylinder being arranged parallel with the springs and jointed the one to the fixed support and the other to the runner at points corresponding to the points of attachment of the springs, whereby the parallelism of the springs and dash-pot controller will be maintained regardless of the extension and lateral swing of the springs; substantially as described.

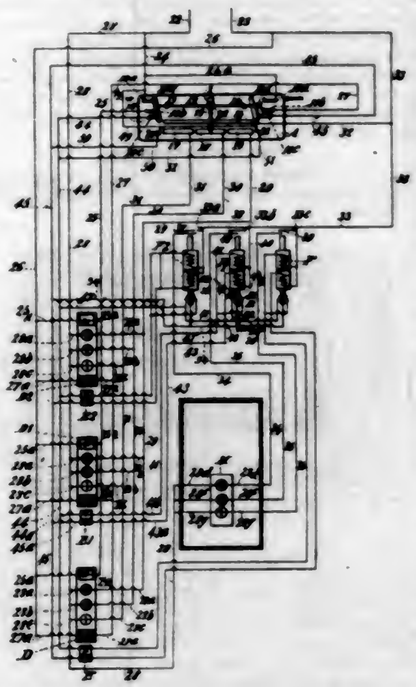
4. In a spring-balance scale, the combination of a vertically-movable runner for supporting the load and springs supporting said runner, of a governor controlling the vertical movements of the runner, embodying a pneumatic dash-pot cylinder, a plunger therein and a connecting-rod, said cylinder and connecting-rod being jointed one to a fixed support and the other to the runner to swing in any direction so as to maintain an angular position approximately corresponding to the angular position of the springs.

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**756,275. ELECTRIC SIGNALING DEVICE FOR ELEVATORS.** FRED S. PAYNE, Boston, Mass. Filed Aug. 11, 1903. Serial No. 169,138. (No model.)

*Claim.*—1. An electric signaling device for elevators, consisting of a plurality of electric switches operated by a movable brush; signals upon each floor of the building, operated by certain of said switches and indicating at all times the direction in which the elevator-car is moving, or will next move; push-buttons upon each floor; magnets electrically connected with said push-buttons; switches, operated by said push-buttons and magnets; signals within the eleva-

tor-car; all being electrically connected as hereinbefore described and for the purposes set forth.



2. An electric signaling device for elevators, consisting of a plurality of electric switches operated by a movable brush; signals upon each floor of the building, operated by certain of said switches, and indicating at all times the position of the elevator-car within the elevator-shaft; push-buttons upon each floor; magnets operated by said push-buttons; switches operated by said push-buttons and magnets; signals within the elevator-car; all being electrically connected, as hereinbefore described and for the purposes set forth.

3. An electric signaling device for elevators, consisting of a plurality of electric switches operated by a movable brush; signals upon each floor of the building, operated by certain of said switches, and indicating at all times the direction in which the elevator-car is moving or about to move, and its position within the elevator-shaft; push-buttons upon each floor; magnets electrically connected with said push-buttons; switches operated by said push-buttons and magnets; signals within the elevator-car; all being electrically connected as hereinbefore described and for the purposes set forth.

4. An electric signaling device for elevators, consisting of a plurality of electric switches operated by a movable brush; signals upon each floor of the building, electrically connected with and operated by certain of said switches, and indicating at all times the direction in which the elevator-car is moving or will next move; push-buttons upon each floor; magnets electrically connected with said push-buttons; switches operated by said push-buttons and magnets; and signals within the elevator-car, electrically connected with the last-mentioned switches, and operated by said push-buttons, magnets and switches.

5. An electric signaling device for elevators, consisting of a plurality of electric switches operated by a movable brush; signals upon each floor of the building, electrically connected with and operated by certain of said switches, and indicating at all times the position of the elevator-car within the elevator-shaft; push-buttons upon each floor; magnets electrically connected with said push-buttons; switches operated by said hush-buttons and magnets; and signals within the elevator-car, electrically connected with the last-mentioned switches, and operated by said push-buttons, magnets and switches.

6. An electric signaling device for elevators, consisting of a plurality of electric switches operated by a movable brush; signals upon each floor of the building, electrically connected with and operated by certain of said switches, and indicating at all times the direction in which the elevator-car is moving, or will next move, and its position; push-buttons upon each floor; magnets electrically connected with said push-buttons; switches operated by said push-buttons and magnets; signals within the elevator-car electrically connected with the last-mentioned switches and operated by said push-buttons, magnets and switches.

7. An electric signaling apparatus for elevators, comprising a plurality of electric switches operated by a traveling nut, and means for operating the nut; a plurality of signals upon each floor of the building, operated through certain of said switches, and indicating at all times the direction in which the elevator-car is moving or will next move; push-buttons upon each floor; magnets corresponding to and electrically connected with, said push-buttons; electric switches operated by said push-buttons and magnets; a plurality of signals within the elevator-car, electrically connected with said last-mentioned switches and operated by the push-buttons, magnets and switches aforesaid.

8. An electric signaling apparatus for elevators, comprising a plurality of electric switches operated by a traveling nut, and means for operating the nut; a plurality of signals upon each floor of the building, operated through certain of said switches, and indicating at all times the position of the elevator within the elevator-shaft; push-buttons upon each floor; magnets corresponding to and electrically connected with, said push-buttons; electric switches operated by said push-buttons and magnets; a plurality of signals within the elevator-car, electrically connected with said last-mentioned switches and operated by the push-buttons, magnets and switches aforesaid.

9. An electric signaling apparatus for elevators, comprising a plurality of electric switches operated by a traveling nut, and means for operating the nut; a plurality of signals, upon each floor of the building, operated through certain of said switches and adapted to indicate the direction in which the elevator-car is moving, or will next move, and at all times its position; push-buttons upon each floor; magnets corresponding to, and electrically connected with, said push-buttons; electric switches operated by said push-buttons and magnets; a plurality of signals within the elevator-car, electrically connected with said last-mentioned switches, and operated by the push-buttons, magnets and switches aforesaid.

10. An electric signaling device for elevators comprising a plurality of electric switches operated by the movement of a traveling nut and means for operating the nut; a signal-box upon each floor of the building; means within each signal-box electrically connected with and operated by certain of said switches for the purpose of indicating the direction in which the elevator-car is proceeding, or about to proceed, and at all times its position within the elevator-shaft; push-buttons upon each floor of the building; electromagnets corresponding to and electrically connected with said push-buttons; electric switches operated by said push-buttons and magnets; a signal-box within the elevator-car and means within said elevator signal-box electrically connected with said last-mentioned switches and operated by said push-buttons, magnets and switches

11. An electric signaling device for elevators comprising a plurality of electric switches operated by a brush attached to a traveling nut and means for operating said nut; a signal-box upon each floor of the building and electrically connected with and operated by certain of said switches; means within said signal-boxes for indicating the direction in which the elevator-car is proceeding, or about to proceed, and at all times its position within the elevator-shaft; a plurality of push-buttons upon each floor; electromagnets corresponding to and electrically connected with said push-buttons; electric switches operated by said magnets and electrically connected with a signal-box within the elevator-car; means within the last-mentioned signal-box for indicating the floor upon which the push-button pressed is located.

12. An electric signaling device for elevators comprising a plurality of electric switches operated by a brush attached to a traveling nut and means for operating said nut; a signal-box upon each floor of the building and electrically connected with and operated by certain of said switches; means within said signal-boxes for indicating the direction in which the elevator-car is proceeding, or about to proceed, and at all times its position within the elevator-shaft; a plurality of push-buttons upon each floor; electromagnets corresponding to and electrically connected with said push-buttons; electric switches operated by said magnets and electrically connected with a signal-box within the elevator-car; means within the last-mentioned signal-box for indicating the floor upon which the push-button pressed is located; means for short-circuiting said push-buttons and causing the continuance of the signal within the signal-box in the elevator-car until the arrival of said car at the terminal toward which it is proceeding or is about to proceed.



13. In an electric signaling device for elevators, the combination of a traveling nut and means for operating the same; a brush attached to said nut; a plurality of electric switches operated by said brush and traveling nut; a signal-box upon each floor of the building electrically connected with certain of said switches; means within said signal-boxes and operated by certain of said switches for indicating the direction in which the elevator-car is moving, or is about to move, and at all times its position within the elevator-shaft; a plurality of push-buttons upon each floor; the circuit through one push-button being operative only when the elevator-car is stationary at either terminal or ascending; the circuit through the other push-button being operative only when the elevator-car is stationary at either terminal or descending; electromagnets electrically connected with and corresponding to said push-buttons; each magnet having a plurality of windings, and a movable armature; means for actuating said armature; electric switches operated by the movement of said armatures; a signal-box within the elevator-car and electrically connected with said last-mentioned switches; means within the elevator signal-box and operated by said switches, magnets and push-buttons for indicating the floor upon which the push-button pressed is located; means for short-circuiting said push-buttons and for continuing the signal in said last-mentioned signal-box until the arrival of the elevator-car at the terminal toward which it is proceeding, or is about to proceed.

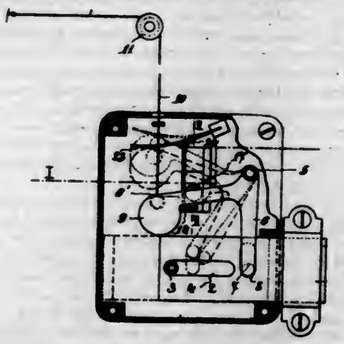
14. In an electric signaling device for elevators, the combination of a traveling nut and means for operating the same; a brush attached to said nut; a plurality of electric switches operated by said brush and nut; a signal-box and a plurality of signals upon each floor of the building electrically connected with certain of said switches; means within said signal-boxes and operated by certain of said switches for indicating the direction in which the elevator-car is moving, or will next move; means for causing said signals to be continuous until the arrival of the elevator-car at the terminal toward which it is moving, or will next move; means for automatically discontinuing said signals upon the arrival of the car at the terminal toward which it was moving, or about to move when the signal was given; other means within the signal-boxes and operated by certain other of said switches for indicating at all times the position of said car; a plurality of push-buttons upon each floor; electromagnets, corresponding to and electrically connected with said push-buttons; each magnet having a plurality of windings and a movable armature; means for actuating said armature; means for causing the circuit through one push-button upon each floor and one winding upon each magnet to be operative only when the elevator-car is stationary at either terminal or is ascending; other means for causing the circuit through the other push-button upon each floor and the other winding upon each magnet to be operative only when the elevator-car is stationary at either terminal, or is descending; electric switches operated by the movement of said armatures; a signal-box within the elevator-car; and a plurality of signals within said last-mentioned signal-box electrically connected with said last-mentioned switches; means within said elevator signal-box and operated by said switches, magnets, and push-buttons for indicating the floor upon which the push-button pressed is located; means for short-circuiting said push-buttons and for insuring the continuance of the signal within the elevator signal-box until the arrival of the elevator-car at the terminal toward which it is proceeding, or is about to proceed.

15. In an electric signaling device for elevators, the combination of a traveling nut and means for operating the same; a brush attached to said nut; a plurality of electric switches operated by said brush and nut; a signal-box upon each floor of the building electrically connected with certain of said switches; means within said signal-boxes operated by means of certain of the switches connected therewith for indicating when the elevator-car is ascending, or that its next trip will be upward; means within said signal-boxes operated by certain of the switches connected therewith for indicating when said car is descending; means for causing said signals to be continuous until the arrival of said car at the terminal opposite to that from which it had started, or at which it was standing when the signal was given; means for automatically discontinuing said signals upon the arrival of said car at the terminal toward which it was moving when said signal was given, or toward which it next moved after said signal was given; means within each signal-box and operated by certain of the switches connected therewith for indicating at all times the position of the elevator-car; a signal-box within the elevator-car and means upon each floor of the building and connected with said elevator signal-box for signaling the elevator-car only when the car is stationary at either terminal or has started to make an ascent or is ascending; other means upon each floor and connected with said elevator signal-box for signaling, the elevator-car only when it is stationary at either terminal, or has started to make a descent or is descending; means for continuing the signal within the elevator signal-box until the arrival of the elevator-car at the terminal toward which it has started or is moving when said signal is given.

16. In an electric signaling device for elevators, the combination of a traveling nut and means for operating the same; an electric brush attached to said nut; a plurality of electric switches operated by said brush; a plurality of electric switches operated by the traveling nut; said last-mentioned switches being so connected that when the circuit through one set of switches is made, the circuit through the other set will be broken; a signal-box upon each floor of the building; means within said signal-boxes and in circuit with and operated by said connected switches for indicating the direction in which the elevator-car is moving, or will next move; other means within said signal-boxes in circuit with and actuated by the switches operated by the electric brush for indicating at all times the position of the elevator-car within the elevator-shaft; a plurality of push-buttons upon each floor; electromagnets corresponding to the various floors and in circuit with said push-buttons; each magnet having a plurality of windings and a movable armature; one winding of each magnet being in circuit with one of the push-buttons upon the floor corresponding to the magnet, the other winding being in circuit with the other push-button; electric switches corresponding to said magnets and operated by the armatures of the same when said magnets are energized; a signal-box within the elevator-car and in circuit with the switches operated by the magnets; means within said last-mentioned signal-box and operated by said push-buttons, magnets and switches for indicating the floor upon which the push-button pressed is located; means for short-circuiting each push-button after the circuit through the same has been made and for continuing the signal in the elevator signal-box until the arrival of the elevator-car at the terminal opposite to that at which the car is standing, or last stood.

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**756,276. LOCK. GASPAR VON PECHY, Torna, Austria-Hungary.** Filed Aug. 22, 1903. Serial No. 170,449. (No model.)



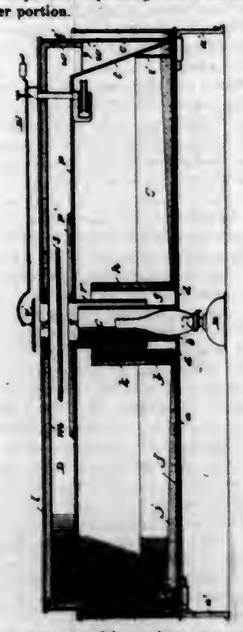
*Claim.*—Improved lock to be opened and closed from a distance comprising in combination with the usual lock-case and staple-plate, a latch guided by a roller projecting through a horizontal slot of the latch, an angle-lever pivoted in the lock-case, a horizontal stud projecting from the end of the vertical arm of the lever and engaging with a vertical slot of the latch, a weight at the end of the other arm of the angle-lever, a cord attached to the same end of said lever guided over rollers to the place from which the door is to be opened, a knee-joint arm projecting from the inner surface of the weighted arm of the angle-lever, a casing in the lock-case above the latch, a spoon-shaped bucket pivoted in said casing, a loose ball in said bucket, an opening in the front wall of said casing, an arm of the knee-joint projecting from the angle-lever reaching behind the bucket and a blade-spring above said casing to press the angle-lever when it is lifted, substantially as described and shown and for the purpose set forth.

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**756,277. INCUBATOR. EDGAR W. PHILO, Salem, N. Y., assignor to C. L. Philo, Salem, N. Y.** Filed July 11, 1903. Serial No. 165,184. (No model.)

*Claim.*—1. An incubator comprising a base, and a cover re-

movably arranged on the base and having a hollow, upper portion provided with an inlet and an outlet for heated air, and also having a hollow, marginal portion depending from and communicating with the hollow upper portion.



2. An incubator comprising a base, an egg-holder thereon, a hollow cover removably arranged on the base, over the egg-holder, and having an inlet and an outlet for heated air, and a thermostat carried by and removable with the cover, and having a damper controlling the outlet for heated air.

3. An incubator comprising a base having an opening, and an upwardly-extending tube surrounding the same, and also having a series of openings disposed around the tube, an egg-holder arranged on the base, and having a central opening receiving the tube of the base, and an upwardly-extending wall surrounding said opening and the tube of the base, and a hollow cover arranged on the base, and having a depending portion surrounding the egg-holder, and also having an inlet and an outlet for heated air; the inlet being disposed above the tube of the base.

4. An incubator comprising a base having an opening, and an upwardly-extending tube surrounding said opening, and also having a series of openings disposed around the tube, a circular egg-holder arranged on the base, and having a central opening receiving the tube of the base, and an upwardly-extending wall surrounding said opening and the tube of the base, suitable soft material arranged in the egg-holder, on the bottom thereof, and sloped toward the center, and a hollow cover arranged on the base, and having a depending portion surrounding the egg-holder, and also having an inlet and an outlet for heated air; the outlet being disposed above the tube of the base.

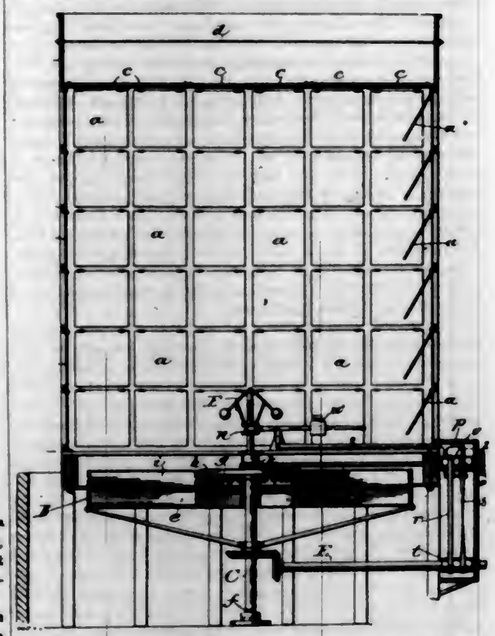
5. An incubator comprising a base having an opening, and an upwardly-extending tube surrounding said opening, and also having a series of openings disposed around the tube, a circular egg-holder arranged on the base, and having a central opening receiving the tube of the base, and an upwardly-extending wall surrounding said opening and the tube of the base, a hollow cover removably arranged on the base, and having a depending portion surrounding the egg-holder, and also having an inlet for heated air, disposed above the tube of the base, and an outlet disposed above the inlet, and also having one or more outlets in its outer portion, and a thermostat carried by the cover, and having a damper controlling the first-mentioned outlet thereof.

6. An incubator comprising a base, a cover removably arranged on the base, and having a hollow, upper portion provided with an inlet and an outlet for heated air, and also having a hollow, marginal portion depending from and communicating with the hollow upper portion, and a conduit extending through the base, for supplying the upper portion and the depending portion of the cover with heated air.

7. An incubator comprising a base, a hollow cover removably arranged on the base, and having a depending, marginal portion, and also having an inlet and an outlet for heated air, and a thermostat carried by and removable with the cover, and having a damper controlling the outlet for heated air.

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**756,278. WIND-MOTOR. DEMOSTHENES PERRIGNON, Washington, D. C. Filed Dec. 26, 1903. Serial No. 186,636. (No model.)**



*Claim.*—1. A wind-motor, comprising a wind-wheel, and an edifice receiving the wind and transmitting it to the wheel, said edifice being provided with inwardly-opening self-closing hanging flap doors or valves around its periphery; substantially as described.

2. A wind-motor, comprising a wind-wheel, and an edifice receiving the wind and transmitting it to the wheel, said edifice being provided with inwardly-opening flap doors or valves around its periphery, and having outwardly-opening relief doors or valves in its top; substantially as described.

3. A wind-motor, comprising an upright shaft carrying a wind-wheel and mounted upon a solid foundation, and an edifice surmounting the wheel and serving as a chamber for the wind and supplying it to the wheel, valved wind-inlet openings into said edifice above the wheel and a wind-outlet below the wheel; substantially as described.

4. A wind-motor, comprising a wind-wheel having a series of inclined blades with intervening openings, an edifice receiving the wind and transmitting it to the wheel, a series of vanes immediately adjacent to the wind-wheel for governing the direction taken by the wind in passing from the edifice through the wheel-openings, and means for changing the adjustment of the vanes to regulate the speed of the wheel or to stop it; substantially as described.

5. A wind-motor, comprising a wind-wheel having a series of inclined blades with intervening openings, an edifice receiving the wind and transmitting it to the wheel, a series of vanes immediately adjacent to the wheel for governing the direction taken by the wind in passing from the edifice through the wheel-openings, means for changing the adjustment of the vanes, and a governor for automatically regulating said change of adjustment; substantially as described.

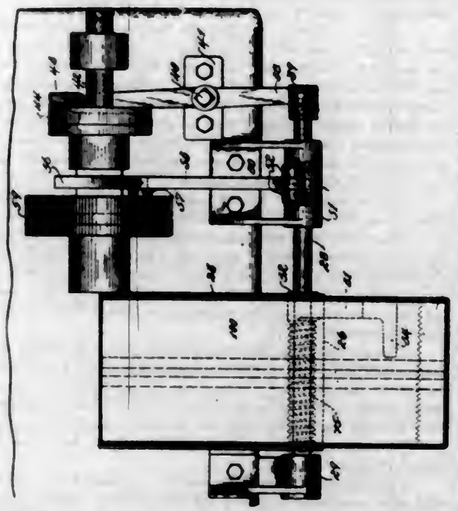
6. A wind-motor, comprising a wind-wheel mounted upon a vertical shaft to rotate in a horizontal plane, a horizontal series of vanes corresponding to the wheel and above the same, and a superjacent wind-receiving edifice, the said edifice being supported from the foundation independently of the wheel and wheel-shaft; substantially as described.

7. In a wind-motor of the kind described, a wind receiving and transmitting edifice, having a series of inwardly-opening flap doors or valves round about its periphery, a series of outwardly-opening flap doors or valves in its top, and a parapet surrounding the top and protecting the top doors or valves from the wind; substantially as described.

8. A wind-motor, comprising a wind-wheel having a series of inclined blades with intervening openings, an edifice receiving the wind and transmitting it to the wheel, vanes immediately adjacent to the wheel for determining the direction taken by the wind in passing through the wheel-openings, and a centrifugal governor for shifting said vanes; substantially as described.

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**756,279. PAPER-BAG-FEEDING APPARATUS. WILLIS PIPPERT, Rumford Falls, Me., assignor to Continental Paper Bag Company, Rumford Falls, Me., a Corporation of Maine. Filed Sept. 30, 1903. Serial No. 175,130. (No model.)**



*Claim.*—1. In an apparatus for feeding paper bags which when folded present a lengthwise seam on one side, the combination of a tray to hold the bags and having a floor coming short of one end; an arm; means to reciprocate the arm transversely of the line of such seam and to oscillate the arm upon a plane parallel with the line of such seam, and a finger on said arm adapted upon its excursion of reciprocation to engage said seam of one of the bags adjacent to its bottom when such bag is in the tray with its bottom overhanging the floor thereof, upon the excursion of oscillation to separate the engaged end of such bag from the pile, upon the return excursion of reciprocation to release the bag, and upon the return excursion of oscillation to assume its normal position.

2. In apparatus for feeding paper bags one at a time from a pile of such bags, the combination with means to support the pile except an one end, of a finger to engage the lowermost bag adjacent to its unsupported end; a reciprocatory rock-shaft; an arm fast thereon to carry the finger; means to reciprocate the shaft to engage the finger with the bag, and means to rock the shaft to bend the engaged end of the bag from the pile.

3. In apparatus for feeding paper bags one at a time from a pile of such bags to a printing-press, the combination with means to support the pile except at one end, of a finger to engage the lowermost bag adjacent to its unsupported end; a reciprocatory rock-shaft; an arm fast thereon to carry the finger; means controlled by the press to reciprocate the shaft to engage the finger with the bag, and means controlled by the press to rock the shaft to bend the engaged end of the bag from the pile; substantially as described.

4. In apparatus for feeding paper bags one at a time from a pile of such bags to a printing-press having capacity to receive a bag at certain intervals, the combination with means to support the pile except at one end, of means to grasp the seam of the lowermost bag at its unsupported end; a reciprocatory rock-shaft; an arm fast thereon to carry the grasping means; means controlled by the press to reciprocate the shaft to cause said means to grasp the bags, and means controlled by the press to rock the shaft at intervals timed by its capacity for feed to bend the grasped bag from the pile of bags.

5. In apparatus for feeding paper bags one of such bags from each of several piles of bags at each feed to a printing-press having capacity to receive such a series of bags at certain intervals, the combination with means to support a number of piles of bags and to expose and leave unsupported the end of the lowermost bag in each pile, of means to grasp the seam of the lowermost bag of each pile at its unsupported end; a reciprocatory rock-shaft; arms fast thereon to carry the grasping means; means controlled by the press to reciprocate the shaft to cause said means to grasp the bags, and means controlled by the press to rock the shaft at intervals timed by its capacity for feed to bend the grasped bags from the piles of bags.

6. In apparatus for feeding paper bags one of such bags from each of several piles of bags at each feed to a printing-press having capacity to receive such a series of bags at certain intervals, the combination with means to support a number of piles of bags and to expose and leave unsupported the end of the lowermost bag in each pile, of fingers to engage the seams of the lowermost bags adjacent to the unsupported ends, a reciprocatory rock-shaft by which such fingers are carried to move said fingers to engage such seams, means to reciprocate the shaft, and means to rock the shaft and fingers and bend the engaged bags whereby such ends are moved from their positions in the piles, and the other portions of the engaged bags retain their original positions therein.

7. In apparatus for feeding paper bags one at a time from a pile of such bags, the combination with means to support the pile except at one end, of a finger to engage the seam of the lowermost bag adjacent to its unsupported end; a reciprocatory rock-shaft; an arm fast thereon to carry the finger; means to reciprocate the shaft to engage the finger with the seam of such bag, and means to rock the shaft to shift the finger and bend the end of the bag engaged by its seam from the pile.

8. In apparatus for feeding paper-bags one at a time from a pile of such bags to a printing-press, the combination with means to support the pile except at one end, of a finger to engage the lowermost bag adjacent to its unsupported end; a reciprocatory rock-shaft; an arm fast thereon to carry the finger; means controlled by the press to reciprocate the shaft to engage the finger with the bag, and means controlled by the press to rock the shaft to bend the engaged end of the bag from the pile and shift the same forwardly.

9. In apparatus for feeding paper-bags one at a time from a pile of such bags to a printing-press having a gripper to receive a bag at certain intervals, the combination with means to support the pile except at one end, of means to grasp the seam of the lowermost bag at its unsupported end; a reciprocatory rock-shaft; an arm fast thereon to carry the grasping means; means controlled by the press to reciprocate the shaft to cause said means to grasp the bag; and means controlled by the press to rock the shaft at intervals timed by its capacity for feed to bend the grasped bag from the pile of bags and shift the same forwardly into the grasp of the gripper.

10. In an apparatus to feed from a pile of paper-bags, which when folded, present a seam open at one side, the combination of a support for a pile of the bags, a finger to engage the seam of the bag overhanging the support, a rock-shaft to carry the finger, means to reciprocate the shaft to cause the finger to engage the seams, means to rock the shaft to cause the fingers to bend the overhanging portion of the bag away from the other bags in the pile and into position to be grasped by mechanism to be fed thereby, and to permit the supported portion of the engaged bag to remain substantially unmoved.

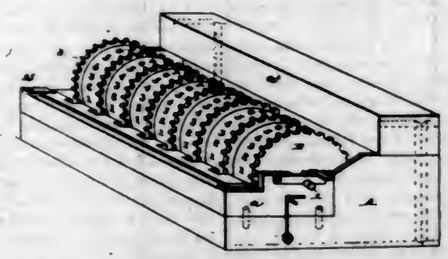
11. In apparatus to feed paper-bags to a printing-press having means to seize the same at predetermined intervals, the combination with a support for a pile of bags, of an engaging finger, means to shift the said finger transversely of the bag resting upon and overhanging the support to cause the same to engage the seam of such bags, and means controlled in timing with the seizing means to transversely shift said finger to shift the engaged portion of the bag into position to be seized by the seizing means.

12. In apparatus to feed paper-bags to a printing-press having means to seize the fed bags at predetermined intervals, the combination of means to hold a number of bags, and a reciprocatory and oscillatory finger controlled by the printing-press to seize the lowermost bag adjacent to one of its ends and bend the engaged bag, whereby such end will move from its position in the holder, the rest of the bag retain its original position therein and the engaged end shift into the reach of the seizing means, means to reciprocate the finger and to cause it to seize the bag, and means to subsequently oscillate the finger to cause it to bend the bag.

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**756,280. ADDING-MACHINE. CORWIN H. PLATT, Cleveland, Ohio. Filed Feb. 6, 1903. Serial No. 142,194. (No model.)**

*Claim.*—1. In adding-machines, the combination of the herein-described improvement, comprising a series of hand-wheels B provided with finger-spurs *b*, bands carrying total-figures 26, compound cams D, central holes for shaft 1, shaft 1, index-plate C carrying index-figures, recesses 21 and 28, with section *a* provided with stop or finger table, locks 16 and 25, retainers 15, recess-journals for shaft 1, engaging pins for hooks 17 for the purpose shown and set forth.

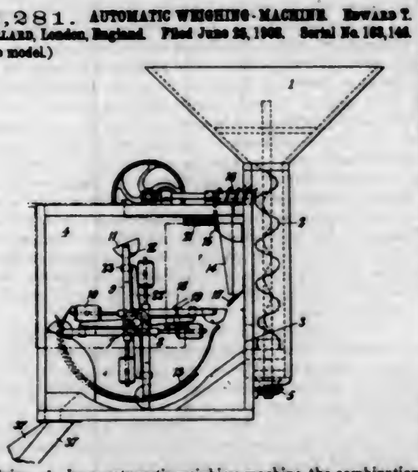


2. In adding-machines, the combination of the herein-described improvement, comprising a series of levers 2 carrying knurls 8, screws 9, ratchets 3 and ratchet-screws, spring 5 with connecting-pins, holes 24, bearing-blocks, screws 29, springs 11, screws 10 with arms, span 18, brakes 13 rollers 14, screws 27 and 12, with section A carrying back *a'* and hooks 17 all as set forth and shown.

3. In adding-machines, the combination of the herein-described improvement, comprising a series of hand-wheels B provided with finger-spurs *b*, bands carrying total-figures 26, compound cams D, central holes for shaft 1, shaft 1, index-plate C carrying index-figures, recesses 21 and 28, section *a* provided with stop or finger table, locks 16 and 25, retainers 15, recess-journals for shaft 1, engaging pins for hooks 17, with a series of levers 2 carrying knurls 8 screws 9, ratchets 3 and ratchet-screws, springs 5 with connecting-pins, holes 24, bearing-blocks, screws 29, springs 11, screws 10 with arms, span 18, brakes 13 rollers 14, screws 27 and 12, section A back *a'*, hooks 17 all substantially as set forth.

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**756,281. AUTOMATIC WEIGHING-MACHINE. EDWARD T. POLLARD, London, England. Filed June 26, 1903. Serial No. 163,146. (No model.)**



*Claim.*—1. In an automatic weighing-machine, the combination of a horizontal shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop on the beam, means for feeding material into the path of the scoop, and means for delivering a sprinkling-feed into the scoop when in the weighing position.

2. In an automatic weighing-machine, the combination of a horizontal shaft, means for intermittently rotating it, bearings carried by the shaft, a scale-beam supported in the bearings and revolving with the shaft, a scoop on the beam, means for feeding material into the path of the scoop, and means for delivering a sprinkling-feed into the scoop when in the weighing position.

3. In an automatic weighing-machine, the combination of a shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop pivoted to the beam, guides engaging and tipping the scoop, means for feeding material into the path of the scoop, and means for delivering a sprinkling-feed into the scoop when in the weighing position.

4. In an automatic weighing-machine, the combination of a shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop on the beam, a screw for feeding material into the path of the scoop, means for continuously rotating the screw, and means for delivering a sprinkling-feed into the scoop when in the weighing position.

5. In an automatic weighing-machine, the combination of a horizontal shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop on the beam, means for feeding material into the path of the scoop, a pivoted funnel delivering a sprinkling-feed into the scoop when in the weighing position, means for feeding material to the funnel, and means for deflecting the funnel when the right weight is reached.

6. In an automatic weighing-machine, the combination of a shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop on the beam, means for feeding material into the path of the scoop, a pivoted funnel delivering a sprinkling-feed into the scoop when in the weighing position, means for feeding material to the funnel, an armature on the funnel, an electromagnet adapted to attract the armature, a source of current in circuit with the magnet, and means carried by the beam for closing the circuit when the beam balances.

7. In an automatic weighing-machine, the combination of a shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop on the beam, means for feeding material into the path of the scoop, a pivoted funnel delivering a sprinkling-feed into the scoop when in the weighing position, a screw feeding material to the funnel, means for continuously rotating this screw, and means for deflecting the funnel when the right weight is reached.

8. In an automatic weighing-machine, the combination of a horizontal shaft, means for intermittently rotating it, a scale-beam carried by the shaft and revolving with it, a scoop pivoted to the beam, means for feeding material into the path of the scoop, means for delivering a sprinkling-feed into the scoop when in the weighing position, a delivery-chute, and guides engaging the scoop and discharging it over the chute.

9. In an automatic weighing-machine, the combination of a casing having an adjustable opening, a shaft carried by the casing, means for intermittently rotating the shaft, a scale-beam carried by the shaft and revolving with it, a scoop on the beam, means for feeding material to the opening in the casing, and means for delivering a sprinkling-feed into the scoop when in the weighing position.

10. In an automatic weighing-machine, the combination of a constantly-rotating main shaft, a crank-pin carried by the shaft, a rod connected to the pin, a second shaft, a notched disk fast on this shaft and an arm loose upon it and rocked by the rod, a pawl carried by the arm and adapted to turn the disk, means for holding the pawl out of engagement with the disk every alternate forward movement of the pawl, a scale-beam carried by this second shaft and revolving with it, a scoop on the beam, means for feeding material into the path of the scoop, and means for delivering a sprinkling-feed into the scoop when in the weighing position.

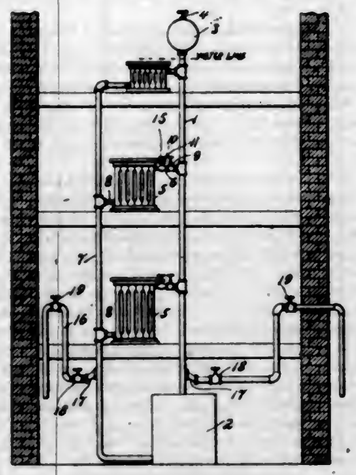
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**756,282. HOT-WATER HEATING SYSTEM. GEORGE L. RAPKIN, Greenville, Pa. Filed Feb. 26, 1903. Serial No. 145,209. (No model.)**

*Claim.*—1. A hot-water heating system comprising a boiler, riser and return pipes, a radiator connected to the return-pipe and having a connection with the riser-pipe, said connection having a chamber 10 rising therefrom and provided with an air-valve 15, and a float check-valve in said connection, to close communication between the radiator and riser-pipe and to rise in the chamber 10 during normal conditions.

2. A hot-water heating system having riser and return pipes, a plurality of radiators disposed at different elevations and connected thereto, the connection between each lower radiator and the riser-pipe including a valve to close against back pressure, a manually-operated valve to admit air, and a manually-operated valve to establish and cut off communication between the riser-pipe and radiator, and means to drain the riser and return pipes.

3. A hot-water heating system having riser and return pipes, a plurality of radiators disposed at different elevations and connected thereto, the connection between each lower radiator and the riser-pipe including a valve to close against back pressure, a manually-operated valve to admit air, and a manually-operated valve to establish and cut off communication between the riser-pipe and radiator, and means to drain the riser and return pipes independently of each other.



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**756,283. JAR-CLOSURE. GEORGE T. REED, Baltimore, Md., assignor of one-half to Horace Slingluff, Baltimore, Md. Filed June 13, 1903. Serial No. 161,346. (No model.)**

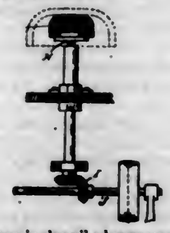


*Claim.*—1. A jar-closure comprising a wood-pulp thimble flanged at its top, having its outer side wall parallel with its axis, its inner side wall screw-threaded and tapered and closed at its bottom, and a thimble of sheet metal having its outer side wall tapered and formed with a screw-thread engaging the screw-thread of the wood-pulp thimble, whereby the thimble of sheet metal serves to expand the pulp thimble, to maintain its seal with the jar and to withdraw the sealing-thimble from the jar.

2. A jar-closure comprising a wood-pulp thimble flanged at its top, having its outer side wall parallel with its axis, its inner side wall screw-threaded, and tapered and closed at its bottom, and a thimble of sheet metal having its outer side wall tapered, formed with a screw-thread engaging the screw-thread of the wood-pulp thimble, and its top formed with finger-holds by cutting out portions and bending them to contact with the surface.

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**756,284. PROCESS OF MANUFACTURING GLASSWARE. SOLON O. RICHARDSON, Jr., Toledo, Ohio, assignor to the Libbey Glass Company, Toledo, Ohio, a Corporation of Ohio. Filed Feb. 1, 1904. Serial No. 191,502. (No specimens.)**



*Claim.*—1. The herein-described process of making blanks for cut glassware which consists in first shaping the blank, second in subjecting the blank to an acid-bath, to cut the interior surface, third in rinsing the blank, and fourth in polishing the interior of the blank.

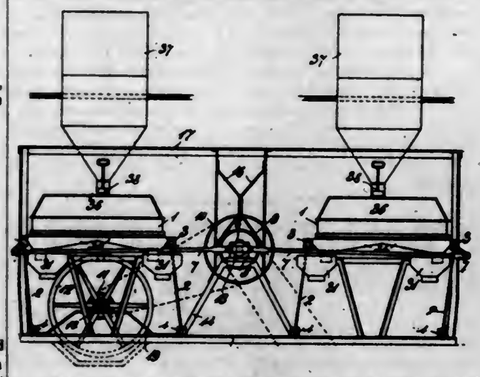
2. The herein-described process of manufacturing blanks for cut-glass articles consisting in shaping the blank and simultaneously producing the whole or part of a design on the exterior surface in the rough, then in treating the interior of the blank to an acid-bath to cut the rough surface formed by the plunger then in rinsing the blank to free it from the acid, and then in polishing the interior of the blank.

3. The herein-described process for manufacturing blanks for cut-glass articles, consisting in first pressing the blank to shape and simultaneously producing a whole or part of the design on the exterior in the rough, and then in treating the blank to a bath of hydrofluoric acid, then in polishing the interior of the blank.

4. The herein-described process of manufacturing glassware consisting in shaping the blank with the design in whole or in part applied to the exterior thereof, by pressing the same, next in annealing the blank, next in treating the interior of the blank to a bath of hydrofluoric acid, next in washing the blank to free it from the acid and then polishing the interior of the blank, and then completing the article by cutting the finished design on the exterior.

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**756,285. MACHINERY FOR SEPARATING IMPURITIES FROM GRANULAR OR LIKE SUBSTANCES. JOSEF H. ROSKERY, Maastricht, Netherlands. Filed Apr. 10, 1903. Serial No. 152,080. (No model.)**



*Claim.*—1. In apparatus for the separation of foreign bodies from granular substances, a casing, means for imparting motion to said casing, a perforated floor in said casing, a triple division of the interior of said casing, a middle set of triangles within the central division of a height equal to that of the divisions and two side sets of triangles of a height lower than that of the divisions, means for the access of material to the interior of the casing, and means for the delivery of the assorted contents therefrom.

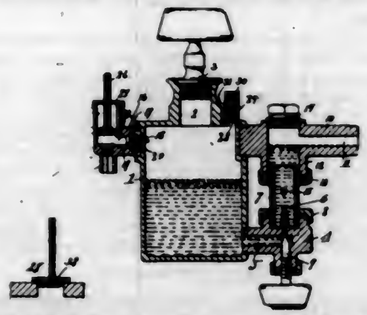
2. In apparatus for the separation of foreign bodies from and sorting of granular substances, a rectangular casing means for imparting reciprocating motion to said casing, a perforated bottom to said casing doubly inclined at the sides at the half thereof nearest to the entrance for the materials, and flat for the remaining half, a threefold division of the interior into the spaces 20, 21, 20 by partitions of the same height as the casing, the system of triangles 29 of the same height as the partitions and adapted to separate lighter impurities, the system of triangles 28 of less height than the partitions and adapted to separate impurities of greater specific gravity, the auxiliary triangles 39, the winding passages 22, 23, 24, 25 within the casing, means for the supply of material, and outlets for the several separated materials, substantially as set forth.

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**756,286. PRESSURE SIGHT-FEED LUBRICATOR. DONALD H. ROGERS, Detroit, Mich., assignor to the Automatic Pressure Feed Lubricator Company, Los Angeles, Cal. Filed Dec. 30, 1901. Serial No. 87,716. (No model.)**

*Claim.*—1. In a lubricator, the combination of an oil-cup, a sight-feed glass, an oil-discharge arm communicating therewith and with a source of steam-pressure, means for maintaining air-pressure within the oil-cup, a relief-valve connected with the oil-cup to prevent excess pressure therein and a small continuously-open vent communicating with the air-space for allowing the air under pressure to escape from the oil-cup when at rest.

2. In a lubricator, the combination of an oil-cup having an oil-discharge port and a sight-feed glass communicating with said port and with a source of steam-pressure, an air-pump communicating with said oil-cup and adapted to force air into the same, a relief-valve adapted to prevent the accumulation of excess pressure within the oil-cup and an air-vent through said valve to relieve the oil-cup of its contained pressure when the engine is not in operation.



3. In a lubricator, a reservoir having a feed-outlet for the lubricant, a conduit adapted to connect said reservoir with a source of elastic fluid under pressure, a relief-valve in communication with the reservoir for preventing excess pressure therein, and a time-vent for the escape of elastic fluid from the reservoir to the outer air.

4. In a lubricator, a reservoir having a feed-outlet for the lubricant, a sight-feed glass connected therewith and with the part to be lubricated, a conduit adapted to connect said reservoir with a source of elastic fluid under pressure, a relief-valve in communication with the reservoir for preventing excess pressure therein, and a time-vent for the escape of elastic fluid from the reservoir to the outer air.

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**756,287. PENCIL-SHARPENER.** FRANK M. ROBINSON, Allentown, Pa. Filed Dec. 8, 1903. Serial No. 184,331. (No model.)



*Claim.*—1. In a pencil-sharpener, a frame, a driving-disk mounted therein, rollers pivotally mounted at one end in said disk, a supporting-disk rotatably mounted upon said frame for pivotally mounting the opposite ends of the rollers, and means for rotating said driving-disk.

2. In a pencil-sharpener, a frame, a driving-disk mounted therein, rollers pivotally mounted at one end in said disk, a supporting-disk rotatably mounted upon said frame for pivotally mounting the opposite ends of the rollers, means for rotating said driving-disk, gears upon said rollers, and a fixed internal gear spaced from the frame parallel to the driving-disk for engaging said roller-gears.

3. In a pencil-sharpener, a frame, a driving-disk mounted therein, rollers pivotally mounted at one end in said disk, a rotatable supporting-disk for pivotally mounting the opposite ends of the rollers, means for rotating said driving-disk, gears upon said rollers, an internal gear engaging said roller-gears, and a pencil-holder carried by the frame to provide a bearing for the supporting-disk.

4. In a pencil-sharpener, a standard, a frame comprising front and back plates connected together, a driving-disk pivotally supported in the back plate, a supporting-disk pivotally supported upon the front plate, and rollers having their pintles mounted in said disks and disposed with their operating-faces at an angle to each other.

5. In a pencil-sharpener, a standard, a frame comprising front and back plates connected together, a driving-disk pivotally supported in the back plate, a supporting-disk pivotally supported upon the front plate, rollers having their pintles mounted on said disks and disposed with their operating-faces at an angle to each other, an internal gear-plate rigidly supported from the back plate, and gears carried by each of said rollers to engage the internal gear-plate.

6. In a pencil-sharpener, a standard, a frame comprising front and back plates connected together, a driving-disk pivotally supported in the back plate, a supporting-disk pivotally supported upon the front plate, rollers having their pintles mounted in said disks and disposed with their operating-faces at an angle to each other, an internal gear-plate rigidly supported from the back plate, gears carried by each of said rollers to engage the internal gear-plate, and a pencil-holder projected from the front plate and extended beyond the inner face thereof to form a bearing for the supporting-disk.

7. In a pencil-sharpener, a standard, a frame comprising front and back plates connected together, a driving-disk pivotally supported in the back plate, a supporting-disk pivotally supported upon the frame, rollers having their pintles mounted in said disks and disposed with their operating-faces at an angle to each other, an internal gear-plate rigidly supported from the back plate, gears carried by each of said rollers to engage the internal gear-plate, a pencil-holder projected from the front plate and extended beyond the inner face thereof to form a bearing for the supporting-disk, a pinion upon the shaft of the driving-disk, and a driving-gear pivotally mounted upon an upright to mesh with said pinion.

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**756,288. FLEXIBLE SLIDING PANEL OR FRONT FOR ARTICLES OF FURNITURE OR OTHER PURPOSES.** HERMANN ROSCUDER, Milwaukee, Wis. Filed Jan. 12, 1904. Serial No. 188,745. (No model.)



*Claim.*—1. The above-described sliding panel composed of two wood-veneer plates forming the outer walls of the panel, a number of slats or strips of suitable form and material, arranged parallel with each other transversely between the wall-plates at suitable intervals, and a center plate or plates of suitable material, held in position by the slats or strips; all suitably connected and so arranged as to form a number of air-spaces between the center plate or plates and the outer walls of the panel, substantially as shown and described.

2. An improved flexible sliding panel or front, composed of an inner and an outer wall, each wall consisting of a number of layers of wood veneer of desired thickness, with reversed grain, glued together with a waterproof cementing composition and forming practically one homogeneous plate of wood; a center or middle wall formed by one continuous or several separate plates, consisting of one or more ply wood veneer or other suitable material; and a number of slats or strips of suitable material, provided laterally between the inner and outer wall at suitable intervals, parallel with each other; the several component parts being suitably connected by means of rivets or otherwise, so as to form a number of air-spaces between the center or middle wall and the inner and outer walls of the panel or front, substantially as shown and described.

3. An improved sliding panel or front, flexible in one direction, longitudinally, and stiff in the transverse direction, laterally, composed of a number of wood-veneer plates, each consisting of two or more ply wood veneer, the grain of alternate layers being reversed and all the layers glued together with a waterproof cementing composition under heat and pressure whereby they form practically one homogeneous plate of wood, impervious to moisture and atmospheric influences; each plate being flexible in the direction of the grain of the minority number of layers but stiff and of great resistance in the direction of the grain of the majority number of layers contained in the wood-veneer plate; and a number of slats or strips of suitable form and material; all suitably connected and so arranged as to produce a panel or front with air-spaces between its outer walls, adapted to slide in grooves provided in the articles for which it is intended, and owing to its flexibility in the longitudinal direction, parallel with the grooves, accommodating itself to the variations in the curvature of the said grooves, substantially as shown and described.

4. An improved flexible panel or front composed of two wood-veneer plates forming the outer walls of the panel or front, each plate consisting of two or more ply wood veneer, the grain of the alternate layers being reversed and all the layers united by a waterproof cementing composition; one continuous plate or a number of separate plates forming the middle or center wall of the panel or front and consisting of one or more ply wood veneer or other suitable material; and a number of slats or strips of suitable material, placed parallel with each other at suitable intervals, between the outer walls of the panel or front, holding the center or middle wall in position, and extending lengthwise in the direction of the grain of the majority number of layers contained in the wood-veneer plates; the several component parts being suitably held together to form a panel or front with air-spaces between its outer walls and exceedingly flexible longitudinally, in the direction in which the panel or front is to slide, parallel to the grooves supporting it, and stiff in the transverse direction, rectangular to the grooves; substantially as shown and described.

5. An improved flexible panel for passenger-cars with movable side sections, composed of two wood-veneer plates forming the inner and outer walls of the panel, a number of slats or strips, of suitable material and form, provided transversely between the said wood-veneer plates at suitable intervals, and one or more plates of suitable material provided between the said slats or strips and held in position by them between the said inner and outer walls, forming a middle or center panel-wall and producing a number of air-spaces within the said panel; the several component parts being suitably connected to form a movable panel, flexible longitudinally and stiff laterally, substantially as shown and described.

6. An improved flexible sliding panel for movable side sections in convertible passenger-cars, composed of a number of wood-veneer plates each of which consists of two or more layers of wood veneer, the alternate layers being preferably laid with the grain reversed, and all the layers secured together by a waterproof cementing composition, whereby they form practically one homogeneous plate of wood, impervious to moisture and atmospheric influences; these wood-veneer plates forming the outer and the middle or center walls of the panel; a number of slats or strips, of metal or wood, arranged parallel with each other at suitable intervals, transversely between the wood-veneer plates, separating the center or middle wall from the outer walls of the panel and forming a number of air-spaces within the said panel; all suitably connected and held together; and a window-sill provided with a recess, secured to the upper portion of the panel, the bottom rail of the window-sash resting against the window-sill and upon the said recess, when the window is closed, thereby affording a snug joint of the window and panel; substantially as shown and described.

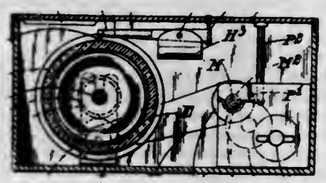
7. An improved flexible sliding panel or front, composed of two wood-veneer plates forming the outer walls of the panel or front, each wood-veneer plate consisting of two or more ply wood veneer, the grain of the alternate layers being reversed and all the layers united by a waterproof cementing composition whereby they form practically one homogeneous plate of wood, impervious to moisture and atmospheric influences, exceedingly flexible in the direction of the grain of the minority number of layers and stiff in the direction of the grain of the majority number of layers; and a middle or center wall formed by one continuous or a number of separate plates, of one or more ply wood veneer or other suitable material, separated from the outer wall-plates and held in position by means of a number of parallel slats or strips of suitable material, provided transversely between the middle or center wall and the outer walls of the panel, at suitable intervals, producing a number of air-spaces within the said panel and greatly strengthening and stiffening the panel or front laterally and causing it to conform readily to the varying conformation of the grooves in which it slides, without in the least affecting its flexibility in the longitudinal direction; each of the said strips or slats being provided with a number of perforations, reamed on one or both sides of the slats or strips; substantially as and for the purposes stated.

8. An improved flexible sliding panel or front, composed of two outer wall-plates, consisting each of two or more ply wood veneer, one or more center or middle wall-plates, of suitable material, and a number of strips or slats, arranged parallel with each other at suitable intervals, laterally between the center or middle wall plate or plates and the outer wall-plates, forming a number of air-spaces between the center or middle and the outer wall-plates, the several component parts being suitably held together, preferably by means of bolts or rivets passing through the wall-plates and reamed perforations of the slats or strips, and producing a sliding panel or front with the requisite lateral stiffness and longitudinal flexibility to accommodate itself to the variations in the curvature of the grooves in which it slides.

9. In a flexible sliding panel or front a number of slats or strips of suitable form and material, suitably provided with a number of reamed perforations each; the said slats or strips being placed parallel with each other at suitable intervals between the outer walls of the panel or front and one or more plates forming a center or middle panel-wall, so arranged as to form a number of air-spaces between the said panel-walls; all the component parts being suitably held together by means of rivets or bolts, to form a sliding panel or front of lateral stiffness and longitudinal flexibility; the heads of the rivets or bolts being preferably set flush with the inner or middle veneer layer *i* of the outer wood-veneer panel-wall *a* and covered by the outer veneer layer *h*, to produce a smooth outer surface of the wood-veneer plate *a*, substantially as shown and described.

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**756,289. GRAPHOPHONE, PHONOGRAPH, OR THE LIKE.** WALTER C. RUSER, London, England, assignor to The Talkophone Syndicate, Limited, Westminster, England. Filed Jan. 15, 1904. Serial No. 189,159. (No model.)



*Claim.*—1. A graphophone comprising a box, a record mounted within the box, a lid to the box adapted to act as a diaphragm, a stylus-carrying arm pivoted to said lid and disposed so that when the lid is closed the stylus rests in an operative position upon the record and means for rotating the record.

2. A graphophone comprising a box, a record mounted within the box, a lid to the box adapted to act as a diaphragm, a stylus-carrying arm pivoted to said lid and disposed so that when the lid is closed the stylus rests upon the record, a weight pivoted to said arm and means for rotating the record.

3. A graphophone comprising a box, slotted bearings within said box, a spindle mounted in said bearings, record-supporting disks upon the spindle, a record, a lid to the box adapted to act as a diaphragm, a stylus-carrying arm pivoted to said lid and disposed so that when the lid is closed the stylus rests in an operative position upon the record, and means for rotating the record-carrying spindle.

4. A graphophone comprising a box, slotted bearings within said box, a spindle mounted in said bearings, record-supporting disks upon the spindle, a record, a lid to the box adapted to act as a diaphragm, a stylus-carrying arm pivoted to said lid and disposed so that when the lid is closed the stylus rests in an operative position upon the record, a stop to automatically determine the starting position of the stylus-arm, and means for rotating the record-carrying spindle.

5. A graphophone comprising a box, slotted bearings within said box, a spindle mounted in said bearings, record-supporting disks upon the spindle, a record, a lid to the box adapted to act as a diaphragm, a stylus-carrying arm pivoted to said lid and disposed so that when the lid is closed the stylus rests in an operative position upon the record, a stop to automatically determine the starting position of the stylus-arm, a retaining-catch to hold the arm out of engagement with the record, a motor within the box, operative connections between the motor and the record-carrying spindle and means whereby the motor is automatically started and stopped by the closing and opening of the lid.

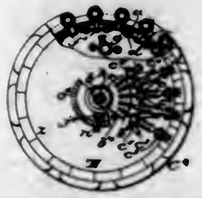
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**756,290. WHEEL.** ROBERT C. SAYER, Bristol, England. Filed Sept. 15, 1902. Serial No. 123,547. (No model.)

*Claim.*—1. A hub, a periphery of overlapping plates, a tire with an expansible and contractible circumferential periphery, links forming spokes connecting the plates to the hub, means for adjusting the links and thus the diameter of the periphery.

2. A hub, a periphery of overlapping plates, a tire with an expansible and contractible circumferential periphery, links forming spokes connecting the plates to the hub, means for adjusting the links and thus the diameter of the periphery, cranks for rotating the

wheel, a screw-spindle, nuts, levers and sliding keys in combination with the cranks for adjusting the spokes by means of collars sliding on the axle and providing a free-wheel arrangement substantially as described.



3. A hub, a periphery of plates, a tire, a spindle, nuts and axle, in combination with a crank for rotating the spindle, collars or keys adapted to be connected or disconnected from the spindle or axle and provide a free wheel.

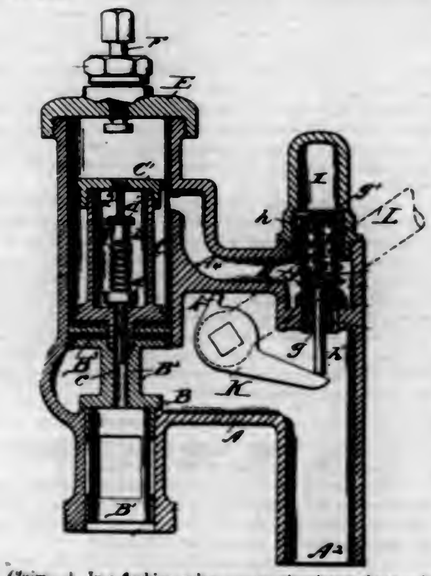
4. A hub, a periphery of overlapping plates, a tire with an expansible and contractible circumferential periphery, links forming spokes connecting the plates to the hub, means for adjusting the links and thus the diameter of the periphery, cranks for rotating the wheel, a piston and cylinder supplied with fluid under pressure or exhausted for varying the diameter of the periphery by operating on the links, substantially as described.

5. A hub, a periphery of overlapping plates, a tire with an expansible and contractible circumferential periphery, links forming spokes connecting the plates to the hub, means for adjusting the links and thus the diameter of the periphery, links formed as cylinder and piston for varying the diameter of the periphery, a tubular piston-rod for conveying fluid-pressure to the cylinders, a hollow axle containing passages and ports for the conveyance of the fluid under pressure to the passages in the piston-rods, substantially as described.

6. A hub, a periphery of overlapping plates, a tire with an expansible and contractible circumferential periphery, links forming spokes connecting the plates to the hub, means for adjusting the links and thus the diameter of the periphery, and means for strengthening the links by attaching one end of intermediate or alternate links to alternate links of the wheel by hinges fixed to the links, the other end of the hinges being fixed to hinged collars sliding on the next link substantially as described.

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**756,291. AUTOMATIC FLUSHING-VALVE. FREDERICK A. SCHOSSOW, Detroit, Mich. Filed Aug. 31, 1903. Serial No. 171,337. (No model.)**



*Claim.*—1. In a flushing-valve, a water-chamber, a piston-valve controlling the source of supply provided with a channel for the passage of water through the piston-valve into the water-chamber, automatically-operated valves controlling said channel alternately governing the flush and refill, and a suitable manually-operated releasing-valve to liberate the water from above the piston, substantially as described.

2. In a flushing-valve, a valve controlling the source of supply, a water-chamber, a piston connected with the valve controlling the source of supply and traveling in the water-chamber, a chamber mounted on the piston and reciprocating therewith, a channel for the passage of water through the valve and piston into the chamber reciprocating with the piston and through it into the water-chamber in which it travels, automatically-operated valves located within the reciprocating chamber controlling the passage of water through the same and a suitable manually-operated releasing-valve to liberate the water from above the piston, substantially as described.

3. In a flushing-valve, a valve controlling the source of supply, a water-chamber, a piston traveling in said water-chamber and connected with the valve controlling the source of supply, a chamber reciprocating with the piston and connected thereto by a channel leading through the valve and piston into and through the reciprocating chamber, valves located within the reciprocating chamber to control the passage of water through the same, said valves provided with a stem capable of projecting outside of the reciprocating chamber, and means for operating said valves by the stem coming in contact with the same as the chamber reciprocates, substantially as described.

4. In a flushing-valve, a water-chamber, a piston traveling within the water-chamber connected with a valve controlling the source of supply, a chamber reciprocating with the piston and connected thereto by a channel leading through the valve and piston into and through the reciprocating chamber, valves governing the passage of water into and through said chamber, a projecting valve-stem by which one of said valves is forced off and the other to its seat as the chamber in reciprocating brings the stem in contact with the means for tripping the same, and the adjustable means for controlling and tripping the valves, substantially as described.

5. In a flushing-valve, a water-chamber, a piston traveling in said chamber connected with a valve controlling the source of supply, a chamber reciprocating with the piston and connected therewith, a channel leading through the valve and piston and into and through said reciprocating chamber, weighted valves governing the passage of water into and through said chamber, a projecting valve-stem for controlling said valves by means outside of but acting in conjunction with the reciprocating chamber, one of said valves being adjustable on said stem, and a stop to operate said valve-stem when the stem is brought in contact with the same by the reciprocation of the chamber, substantially as described.

6. In a flushing-valve, a water-chamber, a piston traveling in said chamber connected with a valve controlling the source of supply, a chamber reciprocating with the piston and connected therewith, a channel leading through the valve and piston and into and through said reciprocating chamber, weighted valves governing the passage of water into and through said chamber, a projecting valve-stem for controlling the valves by means outside of but acting in conjunction with the reciprocating chamber, one of said valves being adjustable on said stem, and an adjustable stop to operate said valve-stem when the stem is brought in contact with the same by the reciprocation of the chamber, substantially as described.

7. In a flushing-valve, a release-valve provided with a water-chamber, a piston located within said chamber and means for lifting the piston whereby the release-valve may be operated, substantially as described.

8. In a flushing-valve, a water-chamber, a piston-valve controlling the source of supply, a release-valve provided with a water-chamber, a piston located within said chamber having a projecting stem, and means for engaging said stem to operate the valve, substantially as described.

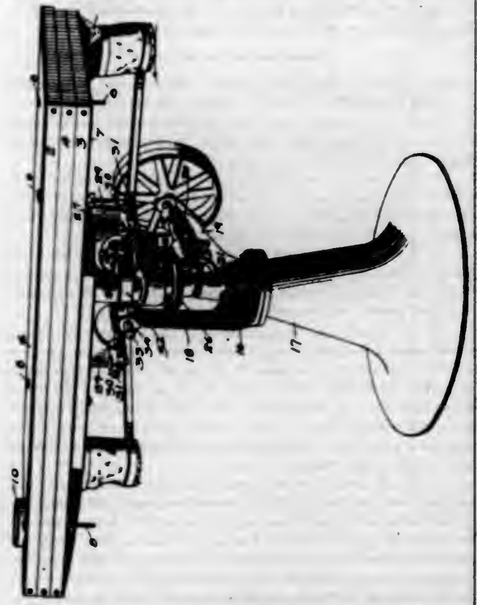
9. In a flushing-valve, a water-chamber, a piston traveling in said water-chamber governing the valve controlling the source of supply, a releasing-valve controlling the discharge of water from the water-chamber, a water-chamber connected therewith, a piston located within said water-chamber and provided with stems projecting down through the valve and up through the water-chamber, means to force the releasing-valve to its seat, and means for lifting the piston-rod and the releasing-valve controlled thereby, substantially as described.

10. In a flushing-valve, a water-chamber, a piston traveling in said water-chamber governing the valve controlling the source of supply, an automatic-closing releasing-valve governing the discharge of water from the water-chamber, a by-pass leading from the water-chamber to the releasing-valve, a water-chamber mounted on the releasing-valve, a piston located within said chamber having a stem projecting down and out through the valve, means for regulating the passage of water into and from said chamber, means for forcing the valve to its seat, and means for lifting the valve-stem whereby the releasing-valve is operated, substantially as described.

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**756,292. GYRATING SIFTER. JOSEPH M. SCHUTZ, Minneapolis, Minn., assignor to the Schutz-O'Neill Company, Minneapolis, Minn., a Corporation of Minnesota. Filed Sept. 8, 1899. Serial No. 729,816. (No model.)**



*Claim.*—1. In a gyrating sifter, the sieve-box in combination with the base, the rotary mechanism in said base engaging said sieve-box to operate the same and the rigid slide having oppositely-arranged connections with said box and base and limiting the movement of said box to gyration, substantially as described.

2. In a gyrating machine, the combination of the gyrating plate or member with power actuating means for driving said plate, suitable bearings movable with said plate and substantially parallel thereto, suitable base-bearings thereon substantially parallel to said plate and at right angles to aforesaid bearings, and a slide operating in said bearings and thereby supporting said plate and limiting the movement thereof to gyration, substantially as described.

3. The combination, in the gyrating machine, of the gyrating member carrying bearings substantially parallel to the plane thereof, a suitable base having bearings at right angles to the bearings upon said member, a slide member having parts held in the bearings of said member and base and tying said member upon said base and limiting the movement thereof to gyration and means for driving said gyrating member, substantially as described.

4. The combination in a gyrating machine of the gyrating member carrying bearings substantially parallel to the plane thereof, a suitable base having bearings at right angles to the bearings upon said member, a slide member having parts held in the bearings of said member and base, tying said member upon said base and limiting the movement thereof to gyration and rotary means substantially perpendicular to said member for gyrating the same, substantially as described.

5. The combination, in a gyrating machine, of the gyrating member with the crank-shaft for operating it, and base-bearings, upon said member and base, at right angles to one another and a slide interposed between said base and member and having arms slidably held in said bearings and limiting the movement of said member to gyration, substantially as described.

6. The combination, in a gyrating machine, of the gyrating plate, with the crank-shaft substantially perpendicular thereto, a base or fixed part, bearings arranged respectively upon said fixed part and plate, at right angles to one another, and the rigid arms slidably held in said bearings and permitting the gyration only of said plate by said crank-shaft, substantially as described.

7. In a machine of the class described, the combination, with the base, of a crank-shaft, suitable means for rotating the same, a bed-plate carried upon the crank-pin, and the four horizontally-sliding parts interposed between said bed-plate and the base of the machine in a plane perpendicular to said crank-pin and supporting said plate, substantially as described.

8. In a machine of the class described, the combination, with the base, of a crank-shaft, and means for driving the same, the bed-plate carried upon the crank of said crank-shaft to gyrate in a plane substantially perpendicular to said crank-shaft, and the sliding cross having two of its arms engaged with said bed-plate and two engaged with said base, substantially as described.

9. The combination, in a machine of the class described, of the base, with the vertical crank-shaft, the bed-plate mounted upon the crank of said shaft as a center, and the sliding cross having two of its arms held in bearings upon said base and the other two held in bearings upon said bed-plate, and a counterbalance upon said crank-shaft, substantially as described.

10. In a gyrating sifter, the combination, with the base, of the crank-shaft, the bed-plate having the crank of said shaft as its center, the four-way cross slidable in bearings upon said base and in bearings upon said bed-plate to prevent the rotation of said bed-plate while permitting the gyration of said bed-plate by said crank, and the sieves arranged upon said bed-plate, substantially as described.

11. In a gyrating machine, the combination of the gyrating member provided with the bearing perpendicular thereto and also provided with bearings parallel to said member and base, a crank-shaft mounted therein and having its crank-pin journaled in the first-mentioned bearing and preventing the tilting of said member with respect to the base, a slide held in the parallel bearings of said member and slidably movable upon said base in a direction perpendicular to its bearings upon said member, substantially as described.

12. The combination in a gyrating machine, of the horizontally-gyrating member with the vertical base, the vertical crank-shaft provided in said base for operating said member and the horizontal non-rotative slide interposed between said base and member and limiting the movement of said member to gyration, substantially as described.

13. The combination in a gyrating machine, of the gyrating plate, with the base, the rotating mechanism in said base for operating said plate, and the rigid slidable means consisting of an oscillating cross interposed between said plate and said base, angularly operative and limiting the movement of said plate to gyration, substantially as described.

14. The combination, in a gyrating machine, of the gyrating plate, with the machine-base, the rotating mechanism provided in said base to operate said plate, and positively-operating means consisting of a sliding cross moving in bearings on said base and plate interposed between said base and plate and limiting the operation of said plate, by said rotating mechanism, to gyration, and said means also tying said plate and base together, substantially as described.

15. The combination with a supporting base or frame, and a superposed gyrating body, of an intermediate slide supporting the latter on the former, and guides therefor extending in directions at right angles to each other on the gyrator and base, substantially as set forth.

16. The combination with a supporting base or frame, and a superposed gyrating body, of centrally-located means for gyrating the body, guides arranged at right angles to each other, and a slide operated therein by the gyrating body for controlling the movements of such body, substantially as set forth.

17. The combination with a supporting base or frame, and a superposed gyrating body, the former having guides on its upper surface and the latter having guides at its under surface at right angles to the guides on the base, of an intermediate slide engaging said guides, for the purpose set forth.

18. The combination with a gyrating body having guides at its under surface, and a slide engaging said guides and supported on other guides extending at right angles to the former guides, substantially as set forth.

19. The combination of a gyrating body having guides at its under surface, with underlying independent guides extending at right angles thereto in a parallel plane, and an intermediate slide operated by the gyrating body and operatively engaging such guides, substantially as set forth.

20. In a gyrator, a supporting base or frame, a gyratory body and means for gyrating it, a slide intermediate the base and gyratory body and supporting the latter on the former, and straight-line guides on said base and body engaged by said slide, the guides on the base extending at angles to those on said body, substantially as set forth.

21. In a gyrator, a supporting base or frame, a gyratory body and means for gyrating it, parallel guides extending on the base, parallel guides provided on the bottom of the gyrating body and extending at angles to the former guides, and intermediate connected sliding devices engaging both of said sets of guides and adapted to be actuated by the gyratory body, for the purpose set forth.

22. In a gyrating machine, the combination of the body with the base, bearings upon said body and base, parallel therewith and at right angles to one another, a member engaged with said bearings, preventing the rotation of said body upon its axis, and a rotary device engaged with said body and causing the gyration thereof, substantially as described.

23. The combination in a gyrating machine of the body to be gyrated, with a suitable base, bearings upon said body and base, parallel therewith and at right angles to one another, a member engaged with said bearings, preventing the rotation of said body upon its axis and confining its movement to gyration, a driving-shaft, a crank thereon engaged with said body, and a counter weight or balance upon said shaft, substantially as described.

24. In a gyrating machine, the combination of the body to be gyrated with a suitable support or base therefor, bearings provided upon said body and base, parallel therewith and at right angles to one another, a connecting mechanism engaged with said bearings, securing said body upon said support, preventing the rotation of said body upon said support and permitting only gyratory motion thereof, and a body-driving means located centrally of the body, substantially as described.

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**756,293. COLLAR. FRANK P. SHARP, New Iberia, La. Filed July 22, 1903. Serial No. 166,616. (No model.)**

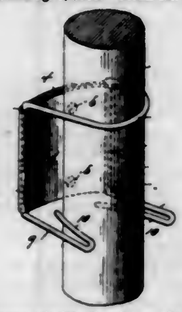



*Claim.*—1. A collar provided with the usual buttonholes, and with a slotted flap and an additional buttonhole located near the top of the collar, substantially as described.

2. A collar provided with the usual buttonholes, a flap of linen sewed on the inside of the collar, said flap being provided with a buttonhole, and an additional buttonhole in the collar adapted to register with the buttonhole in the flap, substantially as described.

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**756,294. BROOM-HOLDER. WILLIAM T. SPILLANE, Redlake Falls, Minn. Filed Aug. 6, 1903. Serial No. 168,502. (No model.)**



*Claim.*—1. A broom-holder having a plate, and holding means secured in the plate and consisting of a single piece of wire bent to form a retaining-loop at one end and a pair of separated gripping-arms at the opposite end, the loop projecting over the arms.

2. A broom-holder having a supporting-plate formed with vertical channels, and holding means provided with a retaining-loop at one end and a pair of separated gripping-arms at the opposite ends, the said loop and arms being connected by side members inserted through the channels of the plate.

3. A broom-holder having a supporting-plate with its ends bent inwardly to form vertical marginal channels, and a holding means having side members inserted through said channels and provided with a loop at one end and a pair of separated gripping-arms at the opposite end, the loop projecting over the arms.

4. A broom-holder composed of a strand of wire bent upon itself to provide a loop having side members the lower free ends of which are formed to provide gripping-arms extending at an angle to said members, the upper end of the loop being bent at an angle to the side members into a plane above and substantially parallel to the gripping-arms, and a plate to which said wire is secured.

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**756,295. ARTIFICIAL STONE. VIRGE STROUD, Bonham, Tex. Filed Nov. 20, 1903. Serial No. 182,016. (No specimens.)**

*Claim.*—1. A composition of matter for the manufacture of bricks or other building material, consisting of sand, lime, carbonate of soda, caustic potash, and flowers of sulfur.

2. The composition of matter for the manufacture of bricks, or the like, consisting of sand, ninety-three per cent., lime seven per cent., and carbonate of soda and water in proportion of eight pounds of soda to one hundred gallons of water.

3. The herein-described method of making artificial bricks, or the like, which consists in mixing together sand, lime and a solution of carbonate of soda, then subjecting the mixture, after being shaped, to steam, treated with caustic potash and flowers of sulfur.

4. The herein-described method of making artificial bricks, which consists in mixing ninety-three parts of sand and seven parts of lime, then adding a solution of carbonate of soda and water in proportion of eight pounds of the soda to one hundred gallons of water, then forming the mixture into bricks or the like, then subjecting the article to the action of steam for ten hours more or less, the steam being previously brought into contact with a mixture of caustic potash and flowers of sulfur.

5. The herein-described method of making artificial bricks, which consists in mixing ninety-three parts of sand and seven parts of lime, then adding a solution of carbonate of soda and water in proportion of eight pounds of the soda to one hundred gallons of water, then forming the mixture into bricks or the like, then subjecting the article to the action of steam for ten hours more or less, the steam being previously subjected to nine pounds of caustic potash and eight pounds of flowers of sulfur.

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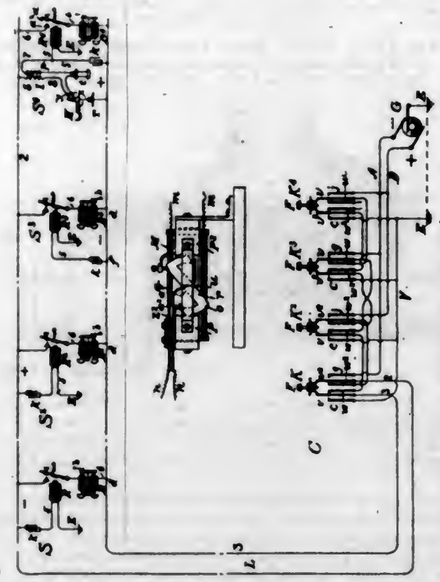
**756,296. SELECTIVE SIGNALING FOR POLYSTATION TELEPHONE-CIRCUITS. DERBETT STRYKER, Washington, D. C., assignor to American Telephone and Telegraph Company, a Corporation of New York. Filed Apr. 30, 1903. Serial No. 155,017. (No model.)**

*Claim.*—1. A selective signaling apparatus for the substations of a polystation telephone-line or main circuit, comprising the conductors of said main circuit; a normally incomplete or open bridge between said main conductors; an earth branch from one of them; a polarized bell in said bridge constructed or adjusted to respond to current pulsations of definite sign only, when said bridge is closed; and a relay controlling the continuity of said bridge connected in said earth branch, and responsive by the steady and constant attraction of its armature to current pulsations in said earth branch and the main conductor to which the same is attached; substantially as set forth.

2. In a selective signaling apparatus for the substations of a polystation telephone-line circuit, the combination of the two main conductors of said circuit; a normally open or incomplete bridge between said conductors; and a polarized bell connected thereto and adjusted or biased to be responsive to current pulsations of definite sign or direction; with an earth branch containing a condenser, extending from one of said main conductors; and a relay controlling said normally open bridge also included in said earth branch, and adapted to attract and maintain the attraction of its armature in response to the presence of current pulsations in said main conductor and earth branch; substantially as described.

3. The combination of a main metallic telephone-circuit extending between a central station and a plurality of substations; a normally discontinuous or open bridge between the conductors of said circuit at each of two of said substations; an electromagnetic bell in each bridge organized to be responsive to and actuated by intermittent or pulsatory currents, of plus and minus sign respectively; a branch to earth from one of the conductors of said main circuit at each of the said two substations, and a condenser included therein; and a relay or electromagnetic switch also contained in each of the said earth branches, and adapted to control the continuity of the associated normally open bridge; whereby either of the said two bells may be selectively operated from the central station; substantially as described.





4. The combination in a system of selective signaling, of a main metallic telephone-circuit extending between a central station and four substations; a branch including a condenser exteoding at each of two of said substations from one, and at each of the remaining two substations from the other of the main conductors of said main circuit, to earth; a slow-acting relay or electromagnetic switch in each of the said earth branches; a normally incomplete bridge between the two conductors of said main circuit at each substation, each such bridge having its continuity controlled by the associated earth-branch relay at the same station; and a polarized electromagnetic bell connected in said bridge at each station, and biased or adjusted to respond to intermittent or pulsatory currents of definite direction, the two bells associated through their relays with each main conductor being oppositely adjusted or polarized, and made thereby respectively responsive to currents of different or opposed direction traversing the said metallic circuit; substantially as described.

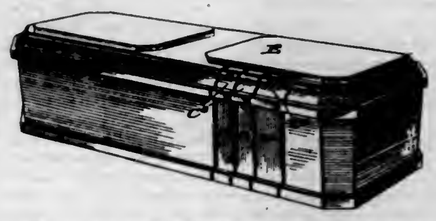
5. A system of selective signaling, comprising a main metallic telephone-circuit extending from a central station to four substations; an earth branch at each substation containing a switching-relay and a condenser, two of the said branches being associated with one, and two with the other of the main conductors of said metallic circuit; a normally open bridge between the said main conductors at each substation, each such bridge controlled by and adapted to be closed by the action of the associated switching-relay; a polarized bell for each substation connected in the said bridge thereof, each bell being biased or adjusted to respond to intermittent or pulsatory currents of definite direction, and each two bells whose relays are associated with the same main conductor being biased or adjusted oppositely, and thereby made respectively responsive to current impulses of opposed direction alternatively transmitted over the said conductor; and means as indicated at the central station, for transmitting an intermittent current or series of current impulses of either direction over either main conductor, to operate the relays in the earth branches thereof, and the bell associated with one of said relays; substantially as described.

6. The combination in a selective signaling system, of a metallic or double-conductor main telephone-circuit extending between a central station and four substations; an earth branch of said circuit at each substation, two of the said branches being associated with one, and two with the other of the main conductors of said metallic circuit; a condenser, and a slow-acting switching-relay connected in each substation earth branch; a normally incomplete or discontinuous bridge between the said two main conductors at each substation controlled by the said switching-relay and adapted to be closed by the action thereof; a polarized bell connected in each such substation-bridge, two of said bells being biased or adjusted for responsiveness to intermittent or pulsatory currents of one direction, and the other two for like currents of opposite direction in said metallic circuit; and means as indicated at the central station for impressing upon either main conductor intermittent currents of either direction, and for simultaneously attaching a ground connection to the other main conductor; whereby the bridges controlled by both relays associated with either main conductor be completed, and the bell in a predetermined one of the said bridges may be operated; substantially as set forth.

7. The combination in a selective signaling system, of a metallic or double-conductor main telephone-circuit extending between a central station and four substations; an earth branch of said circuit at each substation, two of the said branches being associated with one, and two with the other of the main conductors of said circuit; a condenser, and a slow-acting switching-relay connected in each substation earth branch; a normally open or discontinuous bridge between the said two main conductors at each substation leading through the switch-contacts of the associated switching-relay at said substation, and thus having its continuity controlled by said relay; a polarized bell connected in each such substation-bridge, two of said bells being biased or adjusted for responsiveness to intermittent or pulsatory currents of one direction and the other two for like currents of opposite direction in said metallic circuit; a source of signaling-current at the central station having one pole grounded, and adapted to deliver intermittent currents of either direction to either of two terminal conductors; and a signaling-key at said central station for each substation-bell, adapted when operated to connect the appropriate main conductor with the appropriate terminal conductor of said source, and to connect the other main-circuit conductor directly to earth; whereby the bridge at the desired substation may be closed by intermittent currents of either direction traversing the appropriate main conductor and substation earth branch, and the bell contained in said bridge operated by like currents of appropriate direction traversing the metallic circuit closed through said bridge; substantially as set forth.

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**756,297. EXTENSION-CASKET. JOSEPH A. TABOR and JAMES L. MURPHY, Scranton, Miss. Filed July 20, 1903. Serial No. 166,368. (No model.)**



*Claim.*—1. A casket comprising foot and head portions, a boxing fitting in the foot portion and extending into the head portion and a removable section adapted to fit between the foot and head portions.

2. A casket comprising head and foot portions, a plurality of side, bottom and top panels and means for detachably securing said panels together between the head and foot portions.

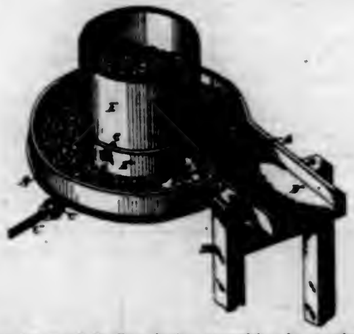
3. A sectional casket comprising foot and head portions the sides of said portions being longitudinally grooved, bars fitting in said grooves and connecting the two portions and side panels having transverse grooves, said panels being adapted to fit between the said portions over the bars.

4. A casket comprising foot and head portions adapted to fit together and form a complete casket, or to be spaced apart the sides of said portions being longitudinally grooved, bars secured in the grooves of one portion and sliding in the grooves of the other portion, and removable sections fitting between said portions when spaced apart, said sections comprising side panels grooved to fit over said bars.

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**756,298. FEEDING MECHANISM FOR GRANULAR MATERIAL. GEORGE H. TENCH, Hazleton, Pa., assignor, by mesne assignments, to the Aero Pulverizer Company, Jersey City, N. J., a Corporation of New Jersey. Filed Dec. 11, 1897. Serial No. 661,485. (No model.)**

*Claim.*—1. An improved feeding device comprising in combination, a rotatable table mounted in a horizontal plane, a neck through which the material is fed, a regulating-sleeve moving longitudinally with respect to said neck, and a stationary shear extending vertically between the table and neck and inwardly within the space inclosed by the sleeve and arranged out of line with the diameter of the table.



2. An improved feeding device comprising in combination, a rotatable table mounted in a horizontal plane, a neck through which the material is fed, a regulating-sleeve moving longitudinally with respect to said neck, and a stationary shear extending vertically between the table and neck and inwardly within the space inclosed by the sleeve, and arranged out of line with the diameter of the table, said sleeve being slotted and the shear working in said slot.

3. The combination in feeding mechanism for granular material, of a rotatable table mounted in a horizontal plane, means for moving said table, a neck through which the material is fed, a regulating-sleeve movable longitudinally with respect to said neck, a discharge-chute, and a stationary shear extending vertically between the table and the neck and inwardly within the space inclosed by the sleeve and arranged out of line with the diameter of the table, said shear being connected to one side of the discharge chute.

4. The combination in feeding mechanism for granular material, of a rotatable table mounted in a horizontal plane, means for moving the same, a neck through which the material is fed, a regulating-sleeve movable longitudinally with respect to said neck, a discharge-chute, and a stationary shear extending vertically between the table and neck and inwardly within the space inclosed by the sleeve and arranged out of line with the diameter of the table, said shear serving to divert the material from the table to said discharge-chute and being adjustable longitudinally in line with one side of the same.

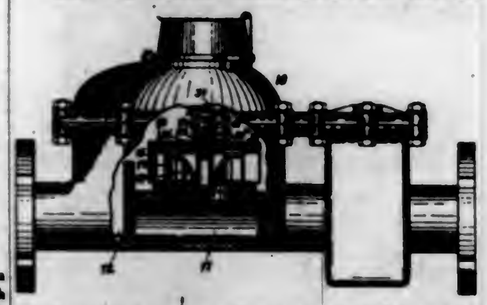
5. The combination in apparatus for feeding granular material, of a rotatable table mounted in a horizontal plane, means for moving said table, a neck through which the material is fed, a regulating-sleeve movable longitudinally with respect to said neck, an annular flange adjacent to the outer edge of the table, a discharge-chute, and a stationary shear extending vertically between the table and neck and inwardly within the space inclosed by the sleeve and arranged out of line with the diameter of the table, said shear being connected to one side of the discharge-chute, while the annular flange is connected to the other side of said chute and is thereby supported clear of the rotating table.

6. The combination in apparatus for feeding granular material, of a rotatable table mounted in a horizontal plane, means for moving the same, a centrally-situated feeding-neck, a regulatable sleeve movable longitudinally with respect to said neck, an annular flange partially inclosing the surface of the table, a discharge-chute leading from the table and having one side connected to the annular flange, and a stationary shear forming a continuation of the other side of the discharge-chute, said shear extending vertically between the table and the neck and inwardly within the space inclosed by the table and arranged out of line with the diameter of the table.

7. The combination in a feeding device for granular material, of the rotatable table mounted in a horizontal plane, a spindle for said table, a step-bearing for the same, said spindle extending up through the table, an annular rack carried by the under side of the table, a pinion engaging therewith whereby said table may be rotated, a neck through which the material is fed, an annular rim or flange adapted to confine the material to the table, a discharge-chute, a regulating-sleeve longitudinally movable with respect to said neck, a stationary shear extending vertically between the table and the neck, and inwardly within the space inclosed by the table and arranged out of line with the diameter of the table, said shear being connected to one wall of the discharge-chute while the opposite wall of said chute is connected to the annular rim or flange, and a support for the table whereby the surface of the latter will be maintained in the same plane as the surface of the discharge-chute.

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**756,299. METER.** JAMES A. TILDEN, Hydepark, Mass., assignor to Hersey Manufacturing Company, South Boston, Mass., a Corporation of Maine. Filed Dec. 4, 1903. Serial No. 183,746. (No model.)



*Claim.*—1. A meter comprising a casing, a spindle mounted in the casing and provided with a depression at its extremity, a measuring device movable about the spindle, and a laterally-movable ball situated within the depression and coacting with the measuring device.

2. A meter comprising a casing, a spindle mounted in the casing and provided with a depression at its extremity, a measuring device movable about the spindle, and a laterally-movable ball situated within the depression and coacting with the measuring device and being limited in its movement by a wall of the depression.

3. A meter comprising a casing, a spindle mounted in the casing and provided with a depression at its extremity, a measuring device movable about the spindle, and a ball situated within the depression and coacting with the measuring device and being limited in its movement by an element of the depression-wall below the upper edge.

4. A meter comprising a casing, a spindle mounted in the casing, a thrust-bearing, a rotatable measuring device, and an integral member interposed between the measuring device and both the spindle and thrust-bearing and rotatable independently of these elements.

5. A meter comprising a casing, a spindle mounted in the casing, a thrust-bearing, a rotatable measuring device and a bushing interposed between the measuring device and spindle and being provided with a flange extending between the measuring device and thrust-bearing.

6. A meter comprising a casing, a spindle mounted in the casing and provided with an enlargement at its extremity, a measuring device movable about the spindle upon one side of the enlargement and supported upon the opposite side thereof, and independently-movable members interposed between the measuring device and both the spindle and enlargement.

7. A meter comprising a casing, a spindle mounted in the casing, a removable head for the spindle, a measuring device movable about the spindle upon one side of the head and supported upon the opposite side thereof, and a bushing interposed between the measuring device and spindle and being provided with a flange extending between the measuring device and head.

8. The combination with a casing, of a substantially vertical spindle mounted in the casing, a rotatable wheel surrounding the spindle, a head threaded to the upper end of the spindle, a hollow cap secured to the wheel, and a ball within the cap cooperating therewith and with the head.

9. The combination with a casing, of a substantially vertical spindle mounted in the casing, a rotatable wheel surrounding the spindle, a head threaded to the upper end of the spindle and provided with a flange serving as a thrust-bearing for the wheel, a hollow cap secured to the wheel and surrounding the head, and a ball within the cap cooperating therewith and with the head.

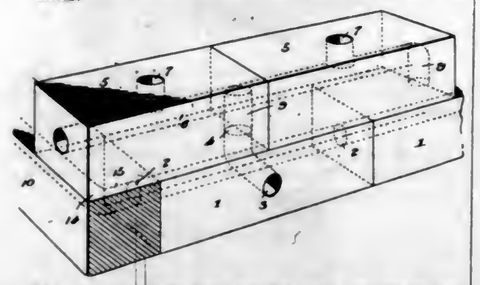
10. The combination with a casing, of a substantially vertical spindle mounted in the casing, a rotatable wheel surrounding the spindle, a head threaded to the upper end of the spindle and having a depression, a hollow cap provided with openings in its side walls secured to the wheel, and a laterally-movable ball within the cap cooperating therewith and with the depression and being limited in its movements by a wall thereof.

11. The combination with a casing, of a substantially vertical spindle mounted in the casing, a rotatable wheel surrounding the spindle, a head threaded to the upper end of the spindle and provided with a flange, a hollow cap secured to the wheel, a ball within the cap cooperating therewith and with the head, and a bushing interposed between the spindle and wheel and having a flange extending between the wheel and head.



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**756,300. VENTILATING BUILDING-BLOCK.** ROBERT L. UNDERWOOD, Portoria, Ohio. Filed Dec. 3, 1903. Serial No. 183,556. (No model.)



*Claim.*—1. A building-block provided with a longitudinal passage entirely encompassed by the material thereof, and a vertical passage communicating therewith and extending for a portion only of the height of said block, and a lateral passage.

2. A building-block having therein a longitudinal passage entirely therethrough and a vertical passage extending for a portion only of the height of the block, and a lateral passage communicating therewith, and extending for a portion only of the width of the block.

3. A building-block provided with a longitudinal passage entirely therethrough, a central vertical passage extending for a portion only of the height of the block, and a half-passage at the ends.

4. A building-block provided with a longitudinal passage entirely therethrough, a vertical end passage extending therefrom through one face of the block and an independent passage extending vertically therefrom at the center to the opposite face of the block.

5. A building-block provided with a longitudinal passage entirely therethrough and a lateral passage communicating therewith at a distance from the end of the block and half-passages at the ends extending for a portion only of the height of the block.

6. A building-block provided with a longitudinal passage entirely encompassed by the material thereof, a vertical passage communicating therewith and extending for a portion only of the height of the block, and a lateral passage, one face of the said block being provided with corrugations extending at an angle to each other.

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**756,301. TAG OR LABEL HOLDER.** JAMES M. WAID, Unionedale, Ind. Filed June 19, 1903. Serial No. 162,232. (No model.)



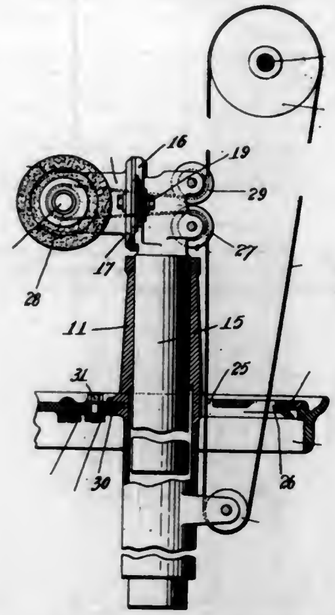
*Claim.*—1. As a new article of manufacture, a tag-holder comprising an open metal frame constructed with spaced side and end members, supporting spaced transparent diaphragms adapted to retain a card or placard between them said frame being provided with an aperture in one of its edges through which to insert the diaphragms and cards, the latter being secured in place by compressing the metal of the frame, substantially as specified.

2. As a new article of manufacture, a tag-holder comprising an open metal frame constructed with spaced side and end members, supporting spaced transparent diaphragms adapted to retain a card or placard between them, and provided with registering apertures through the frame members and diaphragms to receive the attaching cord or wire, substantially as specified.

3. As a new article of manufacture, a tag-holder comprising an open metal frame constructed with spaced side and end members, supporting spaced transparent diaphragms adapted to retain a card or placard between them, and provided with registering apertures through the frame members, diaphragms and the card held between them for the reception of the attaching cord or wire, substantially as specified.

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**756,302. GRINDING-MACHINE.** OAKLEY S. WALKER, Worcester, Mass. Filed Aug. 24, 1903. Serial No. 170,616. (No model.)



*Claim.*—1. In a grinding-machine, the combination of a grinding-arbor mounted so that it may tip or swing from horizontal position, means for clamping the grinding-arbor in its adjusted positions, and a driving-belt having a loop, the length of which extends at right angles to the grinding-arbor, whereby the belt will be twisted when the grinding-arbor is tipped from horizontal position.

2. In a grinding-machine, the combination of a grinding-standard, a bearing-piece, a grinding-arbor journaled therein, means for clamping the bearing-piece to the standard with the grinding-arbor tipped or turned from horizontal position, and a driving-belt looped around the grinding-arbor, the length of the loop extending at right angles to the grinding-arbor, whereby the belt will be twisted when the arbor is tipped.

3. In a grinding-machine, the combination of a machine-frame, a support vertically adjustable in the machine-frame, a bearing-piece pivoted on the support, a grinding-arbor journaled in the bearing-piece, means for fastening the bearing-piece to hold the grinding-arbor in tipped or tilted positions, and a driving-belt having a horizontal loop passed around the grinding-arbor and extending at right angles therefrom, the loop of the driving-belt being raised or lowered when the grinding-arbor is moved to different elevations, and the loop of the driving-belt being twisted when the grinding-arbor is tipped or tilted.

4. In a grinding-machine, the combination of a machine-frame, a vertically-adjustable support pivoted in the machine-frame, a bearing-piece pivoted on the support, a grinding-arbor journaled in the bearing-piece, means for clamping the bearing-piece to hold the grinding-arbor in tipped or tilted positions, a driving-belt having one leg extending down substantially in line with the axis of the support, and guide-pulleys around which the driving-belt passes to form a loop around the grinding-arbor, the said loop being raised or lowered when the grinding-arbor is moved to different positions, which is swung horizontally when the support is turned, and which loop is twisted when the grinding-arbor is tilted.

5. In a grinding-machine, the combination of a grinding-arbor, a driving-belt and means for supporting the grinding-arbor so that

the loop in the driving-belt will be shifted when the grinding-arbor is raised or lowered so that said loop will be given a partial turn when the grinding-arbor is tipped from its horizontal position and so that the loop in the driving-belt will be swung to one side when the grinding-arbor is turned in a horizontal plane.

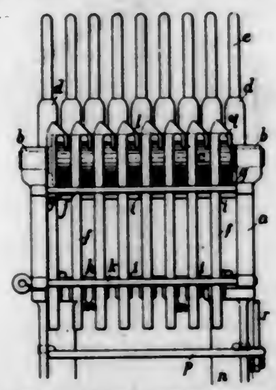
6. In a grinding-machine, the combination of a grinding-arbor, a driving-belt having its driving side substantially vertical with a horizontal loop extending therefrom to drive the grinding-arbor, and means for supporting the grinding-arbor whereby the loop will be shifted when the grinding-arbor is raised or lowered, the loop will be twisted when the grinding-arbor is tipped from horizontal position, and the loop will be swung when the grinding-arbor is turned in a horizontal plane.

7. In a grinding-machine, the combination of a base or table, a plate or disk mounted therein, clamping-pieces engaging a groove in the plate, and nuts for tightening the clamping-pieces.

8. In a grinding-machine, the combination of a base-plate or table, a disk mounted therein, clamping-pieces for said disk with their inner ends engaging a groove in the plate, with their outer ends resting on the table, a set-screw for each clamp-piece to hold the same in proper relation, and a tightening-bolt and cross-piece for each clamp-piece.

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**756,303. STOP-MOTION DEVICE.** ERNEST W. WARDWELL, Providence, R. I., assignor to Universal Winding Company, Portland, Me., a Corporation of Maine. Filed Oct. 13, 1902. Serial No. 127,167. (No model.)



*Claim.*—1. The combination with the frame *a* having ledges *g* and *h*, of drop-bars *f f* sliding in guideways in the ledges, a rod *j* fixedly supported at the front of the ledge *g*, a second rod *k* supported at the front of the ledge *h* and mounted to secure the drop-bars in either operative or non-operative position, substantially as and for the purpose described.

2. The combination with the frame *a* having ledges *g* and *h*, of drop-bars *f f* sliding in guideways in the ledges, a rod *j* fixedly supported at the front of the ledge *g*, a second rod *k* supported at the front of the ledge *h* to secure the drop-bars in either operative or non-operative position, and removable to permit the bars to be shifted into either operative or non-operative position, and projections on the bars to engage the ledges and limit the movement of the bars, substantially as and for the purpose described.

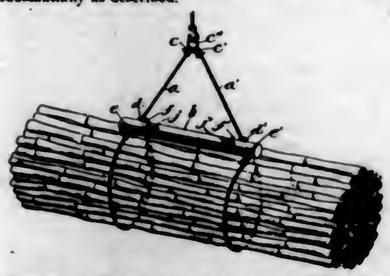
3. The combination in a stop-motion device with a horizontal guide-roll, vertical guide-rolls, spindles extending above the latter on which said guide-rolls rotate, a bracket supporting the rolls and having ledges with guide-slots, a plurality of drop-bars engaging the slots and means actuated directly by the gravity of the bars to effect the stopping of the machine.

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**756,304. SLING.** FRANK L. WEBSTER, Waialua, Hawaii. Filed Aug. 4, 1903. Serial No. 168,198. (No model.)

*Claim.*—1. A sling for loading crops or the like, consisting of two ropes connected together at one end, a spreader having staples near its ends through which said ropes pass, and means for quickly connecting or disconnecting the free ends of said ropes to the ends of the spreader, substantially as described.

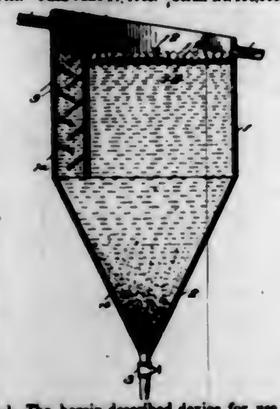
2. In a sling of the kind described, a spreader made of tubing *b*, having a staple *d*, a notched opening *h*, cut near its end, a bolt inside of said spreader its handle *f* projecting through a slot *j*, and a spring *g* for keeping said bolt normally over said notched opening, substantially as described.



3. A sling of the kind described in combination with a bundling-rack in two parts *k* and *k'*, for the purpose and substantially as described.

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**756,305. ORE-CONCENTRATOR.** CALVIN G. WELLER, Idaho Springs, Colo. Filed June 17, 1903. Serial No. 161,908. (No model.)



*Claim.*—1. The herein-described device for use in connection with concentrating ore, the same consisting of a hollow body provided with a tapered lower portion having a valved outlet and having an inlet and an outlet at opposite sides, the outlet being at a lower level than the inlet and having the upper portion of the inlet side vertical and the lower portion inwardly inclined, a partition arranged a short distance from and parallel with the vertical portion of the said inlet side, oppositely-inclined plates projected into the space formed between said partition and the vertical portion of the inlet side of the body and alternately disposed and having their inner ends overlapped, and a fine-meshed screen arranged near the upper end of the body just below the plane of the outlet, and a knocker-frame applied to said screen for receiving a light blow when it is required to jar the screen to dislodge material therefrom, substantially as set forth.

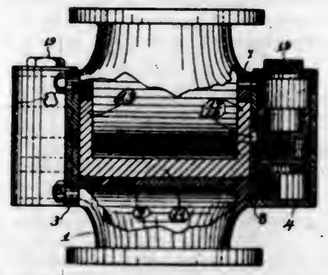
2. The herein-described device for use in connection with concentrating ore, the same consisting of a hollow body provided with a tapered lower portion having a valved outlet and having an inlet and an outlet at opposite sides, the outlet being at a lower level than the inlet, a partition arranged a short distance from the side of the body having the inlet, plates projected into the space formed between said partition and the adjacent side of the body and alternately disposed and having their inner ends overlapped, a fine-meshed screen arranged near the upper end of the body just below the plane of the outlet, crossed strips applied to the screen, and a pin projected up from the strips at the point of crossing to receive the blow when it is required to jar the screen, substantially as and for the purpose set forth.

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**756,306. BACK-PRESSURE VALVE.** HENRY J. WESSMAN, Duluth, Minn. Filed Sept. 4, 1903. Serial No. 171,877. (No model.)

*Claim.*—1. In a back-pressure valve, the combination of a casing comprising a central chamber, open at each end, having a grating formed therein, and side chambers communicating with said central chamber through suitable ports, pistons inclosed in said side chambers, cradle-valves mounted in said central chamber and adapted to govern the ports through said grating and provided with means for engaging said pistons, substantially as described.



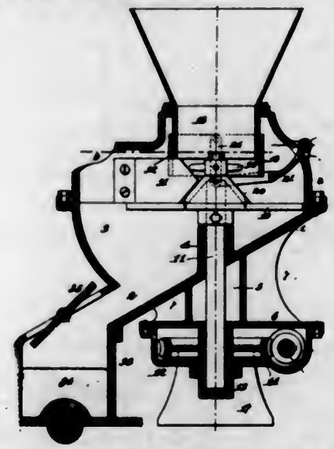


2. In a back-pressure valve, the combination with a casing having a cradle-valve chamber open at the top and bottom and a piston-chamber formed therein communicating with each other by means of ports and having a grating formed within and horizontally dividing said cradle-valve chamber, of a piston within said piston-chamber, a cradle-valve within said cradle-valve chamber adapted to govern the ports in said grating and provided with means adapted to engage said piston, substantially as described.

3. In a back-pressure valve, the combination with a casing containing a chamber open at the top and bottom and divided by a partition having ports formed therein, and a closed chamber communicating with the first said chamber through ports formed in their walls, of a piston positioned within said closed chamber, a valve positioned within the first said chamber and adapted to govern the ports in said partition and provided with means adapted to engage the piston in said closed chamber, substantially as described.

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**756,307. APPARATUS FOR FEEDING MATERIAL.** WILLIAM M. WHEILDON, Boston, Mass., assignor to Aero-Pulverizer Company, Jersey City, N. J., a Corporation of New Jersey. Filed June 26, 1900. Serial No. 21,636. (No model.)



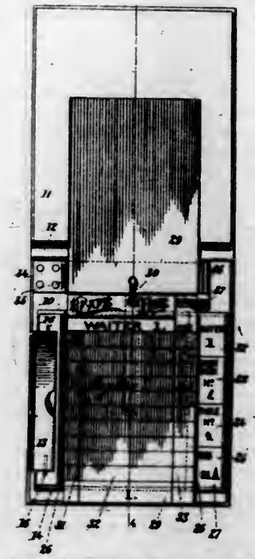
*Claim.*—1. An improved feeding device, comprising in combination a rotatable table mounted in a horizontal plane, a neck through which the material is fed, a regulating-sleeve moving longitudinally with respect to said neck, a stationary shear extending vertically between the table and neck and inwardly within the space inclosed by the sleeve and arranged out of line with the diameter of the table, and means for manually shifting the position of said sleeve, substantially as set forth.

2. An improved feeding device, comprising in combination a rotatable table mounted in a horizontal plane, a neck through which the material is fed, a regulating-sleeve moving longitudinally with respect to said neck and mounted exteriorly thereof, a stationary shear extending vertically between the table and neck and inwardly within the space inclosed by the sleeve and arranged out of line with the diameter of the table, and means for manually shifting the position of said sleeve, substantially as set forth.

3. In an improved feeding device, the combination of a rotatable table mounted in a horizontal plane, a stationary shear with respect to which the table rotates, a neck through which the material is fed, a regulating-sleeve surrounding the neck and movable longitudinally with respect to the same, the sleeve being provided with shallow parallel vertical ribs for engagement with said neck, and means for adjusting said sleeve vertically, substantially as set forth.

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**756,308. MANIFOLDING SALES-BOOK.** LENWOOD G. WHITNEY, New York, N. Y. Filed Aug. 11, 1903. Serial No. 169,062. (No model.)

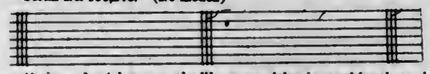


*Claim.*—1. A manifold sales-book comprising the pad 14 composed of leaves 15 secured together at one edge and each folded inwardly upon itself along the weakened line 19 to form checks 17, 18 which are provided with corresponding spaces along their outer edges, and the carbon-sheets 26, 27 of different widths and one upon the other and secured at the stub edge of and upon said pad, the sheet 26 being adapted to lie upon the checks 17 and to extend only out to the spaces provided at the outer edge portion of said checks, and the sheet 27 being adapted to lie between said checks 17, 18 and to extend outwardly over the spaces at the outer edge portion of said check 18, said leaves each having a weakened line 21 adjacent to its stub end and said checks being detachable along said weakened lines 19, 21, combined with a series of original checks for use in connection with said pad and each of which is of suitable width to lie upon said carbon-sheet 26 when written upon without covering the space at the outer edge portion of check 17; substantially as set forth.

2. A manifold sales-book comprising the pad 14 composed of leaves 15 secured together at one edge and each folded inwardly upon itself along the weakened line 19 to form checks 17, 18, and the carbon-sheets 26, 27, one upon the other and secured at the stub edge of and upon said pad, one of said sheets being adapted to lie upon the check 17 and the other between the checks 17, 18, said leaves each having a weakened line 21 adjacent to its stub end and said checks being detachable along said weakened lines 19, 21, combined with a series of original checks 29, means for loosely holding said checks 29 together at their upper ends adjacent to the upper end of said pad and permitting said checks 29, one at a time as used, to be moved over upon said carbon-sheet 26; substantially as set forth.

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**756,309. REINFORCED BEAMS, &c., AND GRILLAGE THEREFOR.** WILLIAM H. WIGHT, New York, N. Y. Filed Mar. 30, 1903. Serial No. 150,270. (No model.)



*Claim.*—1. A beam or the like comprising in combination a body of concrete and a reinforcing-grillage embedded therein at the por

tion subjected to the principal tensile strains, said grillage being composed of flexible longitudinal strands or wires (as distinguished from stout rigid rods or bars), and spacing or connecting means at comparatively long intervals maintaining the relative positions of said longitudinal strands.

2. A beam or the like comprising in combination a body of concrete and a reinforcing-grillage embedded therein at the portion subjected to the principal tensile strains, said grillage being composed of flexible longitudinal strands or wires (as distinguished from stout rigid rods or bars) and spacing or connecting means at comparatively long intervals maintaining the relative positions of said longitudinal strands, a number of said longitudinal strands being arranged in a substantially horizontal plane extending longitudinally of the beam.

3. A beam or the like comprising in combination a body of concrete and a reinforcing-grillage embedded therein at the portion subjected to the principal tensile strains, said grillage being composed of flexible longitudinal strands or wires (as distinguished from stout rigid rods or bars), and spacing or connecting means at comparatively long intervals maintaining the relative positions of said longitudinal strands, a number of said longitudinal strands at the central portion of the grillage lying in a substantially horizontal plane extending longitudinally of the beam and the longitudinal strands at the sides of the grillage lying in vertical planes extending longitudinally adjacent to the sides of the beam.

4. A beam or the like comprising in combination a body of concrete and a reinforcing-grillage embedded therein at the portion subjected to the principal tensile strains, said grillage being composed of fine flexible wires (as distinguished from stout rigid rods or bars), each of said longitudinal wires being separately enveloped by the concrete, and spacing-strands interwoven transversely across said longitudinal wires at comparatively long intervals to maintain the relative positions of said longitudinal wires.

5. A beam or the like comprising in combination a body of concrete, a number of reinforcing-wires extending longitudinally of the beam and each separately enveloped by the concrete, and spacing-strands each comprising at least three wires interwoven close together transversely across said reinforcing-wires to maintain the relative positions of said wires, said strands being arranged at comparatively long intervals so as to minimize the number of transverse lines of weakness in the concrete.

6. A ready-made, flat, portable grillage for the reinforcing of concrete beams and the like, formed in a continuous strip or sheet and composed of flexible longitudinal strands or wires (as distinguished from stout rigid rods or bars), and spacing or connecting means arranged at comparatively long intervals to maintain the relative positions of said longitudinal strands and adapted to permit handling and transportation of said grillage without deformation.

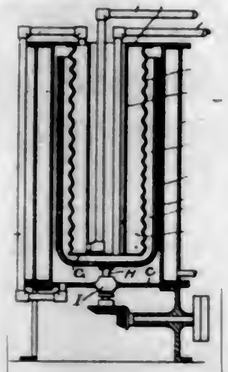
7. A ready-made, flat, portable grillage for the reinforcing of concrete beams and the like, formed in a continuous strip or sheet and composed of fine, flexible, longitudinal wires (as distinguished from stout rigid bars or rods), said wires being spaced at comparatively short intervals from each other sufficient to permit the complete envelopment of each wire separately by the concrete, and spacing-strands interwoven transversely across said longitudinal wires at comparatively long intervals to maintain the relative positions of the longitudinal wires, said transverse strands being adapted to permit handling and transportation of said grillage without deformation.

8. A grillage for the reinforcing of concrete beams and the like, comprising in combination longitudinal wires spaced at comparatively short intervals from each other sufficient to permit the complete envelopment of each wire separately by the concrete, and spacing-strands each comprising at least three wires interwoven close together transversely across said longitudinal wires to maintain the relative positions thereof, said strands being arranged at comparatively long intervals so as to minimize the number of transverse lines of weakness in the concrete.

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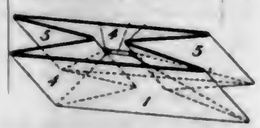
**756,310. APPARATUS FOR HEATING OR STERILIZING LIQUIDS.** JOSEPH WILLMANN, Chicago, Ill. Filed July 16, 1903. Serial No. 165,885. (No model.)

*Claim.*—An apparatus of the kind specified comprising an annular heating-drum, an annular chamber of less height and diameter than said drum concentric therewith and projecting into one end of the cylindrical chamber in the center of said drum, a shaft entering said cylindrical chamber at its other end, a bell carried thereby of less diameter than said drum and greater diameter than said annular chamber and projecting into the space between said drum and said annular chamber to divide said space into inner and outer annular spaces communicating with each other at one end, a feed-pipe entering said annular chamber at one end, a pipe establishing communication between said annular chamber at its other end and the opposite end of the outermost of said annular spaces, and an exhaust-pipe leading from the corresponding end of the innermost of said annular chambers, substantially as described.



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**756,311. COLLAPSIBLE PAPER BOX.** FREDERICK R. ADAMS, San Francisco, Cal. Filed Aug. 20, 1902. Serial No. 120,378. (No model.)

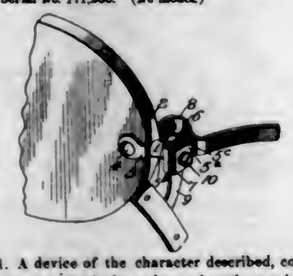


*Claim.*—1. A box comprising rectangular sides in combination with a bottom secured to said sides and folding along creases extending obliquely from the corners of the bottom toward the middle portion of the bottom and also folding downward or outward from a central longitudinal crease and upward or inward from terminal longitudinal creases in line with the central crease, said bottom being provided with means for preventing said central and terminal creases spreading into each other, substantially as described.

2. A collapsible box comprising a portion folded on two creases in line with each other, and outward or downward from one crease and upward or inward from the other crease, said portion having a cut between and separating the two creases to prevent one crease spreading into the other, substantially as described.

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**756,312. EYEGLASSES.** LEO F. ADT, Troy, N. Y. Filed Aug. 29, 1903. Serial No. 171,280. (No model.)



*Claim.*—1. A device of the character described, comprising a portion adapted to be attached to a lens, a box thereon having seats therein adapted to receive the ends of the spring and guard arms, and a partition in said box between said seats.

2. A device of the character described, comprising a body portion adapted to be attached to the lens, a box formed of sheet material and attached thereto having seats formed therein to receive the attaching portions of the spring and guard, and having a partition between said seats, and a screw for clamping said attaching portions within said box.

3. A device of the character described, comprising a body portion adapted to be attached to a lens, and a compressible box carried thereby, having seats formed therein to receive the ends of the spring and guard arms, a partition formed in said box between said seats, and a clamping-screw having a portion adapted to bear upon a portion of said box to clamp said attaching ends therein.

4. In a device of the character described, the combination with a body portion adapted to be attached to a lens, of a box formed of an integral piece and secured thereto having seats formed therein to receive the attaching ends of the spring and guards, a partition formed integrally with said box between said seats upon opposite sides of which said attaching ends are adapted to bear, and a screw for clamping said ends within said box.

5. In a device of the character described, the combination with the shank or body portion having devices thereon to engage a lens, of a box formed integrally of flat material having its ends bent or folded in opposite directions to form seats arranged upon opposite sides of an intervening portion to receive the attaching ends of the spring and guards, and a screw passing through apertures in said box and said spring and guard ends, and having a portion adapted to bear upon a portion of said box to compress it and clamp said attaching ends therein.

6. The combination with the shank or body portion of a stud or post and lens-attaching devices carried thereby, of a box formed of a blank of sheet material having oppositely-disposed portions thereon adapted to be folded upon opposite sides of an intervening portion thereof to form seats arranged at opposite sides of a partition to receive the attaching ends of the spring and guard, the box thus formed being secured to the shank or body portion of the post or stud, and perforated to receive a clamping-screw.

7. In eyeglasses, a device of the character described, comprising a shank or body portion carrying lens-attaching devices, and a box having a portion thereof attached to said shank, and resilient or yielding portions formed integrally therewith and arranged to provide seats to receive the attaching portions of the spring or guard, an intervening partition being provided against which said attaching portions are adapted to bear, said box being perforated to receive a fastening-screw for compressing said yielding portions on said attaching portions.

8. A device of the character described, comprising a shank or body portion to which the lenses of an eyeglass are adapted to be attached, and a box having a portion thereof attached to said shank and a relatively yieldable portion so arranged as to form a seat between it and said attached portion to receive the attaching ends of the spring and guards, and having its free end located at one side thereof to permit a yielding action between said yieldable and attached portions, the box thus formed being apertured to receive a fastening-screw adapted to produce a compression between said portions.

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**756,313. FENCE-BARB.** JOHN H. AKIN, Ames, Iowa. Filed Oct. 8, 1903. Serial No. 176,261. (No model.)



*Claim.*—1. In fence construction, the combination with the main and stay wires, of substantially U-shaped members 3 arranged in pairs, said members being entered to engage said wires from opposite directions, said members, when so placed, being interlocked, and one prong of one of said members being above the main wire and the other prong thereof passing below the main wire on the opposite side of the stay-wire, the other member 3 being oppositely located upon said wires, whereby when the free ends of said wire are twisted together the main and stay wires will be bound tightly together and a barb formed upon both sides of the fence, substantially as shown and described.

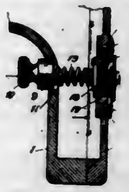
2. In fence construction, the combination with the main and stay wires, of a pair of U-shaped members each disposed in a plane oblique to the plane of the main wire and adapted to receive the intersecting parts of the main and stay wires, said interposed members interlocking each other and said intersecting parts, the outwardly-projecting ends thereof being twisted together to form protecting-barbs as and for the purpose set forth.

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**756,314. TENSION AND THREAD CONTROLLING MECHANISM FOR SEWING-MACHINES.** WILLIAM M ANNEKMAN, New Haven, Conn., assignor to Edwin J. Toof, New Haven, Conn. Filed June 9, 1900. Serial No. 19,690. (No model.)



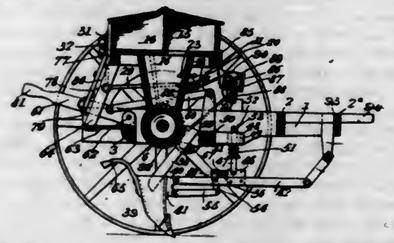
*Claim.*—1. In a sewing-machine, the combination, with the arm or frame thereof, of a tension device comprising in part a movable plate or disk, a spindle extending through said frame with one end engaging said movable plate or disk of the tension device at one side of the frame, and its other end provided with an adjusting-nut located in position to be engaged from the opposite side of the frame, means for normally holding said tension plate or disk in operative position, and an adjusting-plate supported upon the inner wall of the frame opposite the said tension-disk and engaging with the spindle to prevent rotary movement of the same, for the purpose set forth.



2. In a sewing-machine, the combination, with the arm or frame thereof, of a tension device comprising in part a movable plate or disk, a spindle extending through said frame with one end engaging said movable plate or disk of the tension device at one side of the frame, and its other end provided with an adjusting-nut located in position to be engaged from the opposite side of the frame, means for normally holding said tension plate or disk in operative position, an adjusting-plate supported upon the inner wall of the frame opposite the said tension-disk and engaging with the spindle to prevent turning or rotary movement of the same, and a slack-thread-controlling spring seated within an opening in the wall of the frame with one end adapted for engaging with the thread and its opposite end having connection with said adjusting-plate, for the purpose set forth.

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**756,315. GRAIN-DRILL.** EUGENE C. BAIN, East Radford, Va., assignor of one-fifth to Wm. J. Wall, Christiansburg, Va. Filed Sept. 9, 1903. Serial No. 172,522. (No model.)



*Claim.*—1. In a machine of the class described, a hopper longitudinally divided into several compartments, a feed-drum, conveyers connecting the latter with the compartments of the hopper, cut-off slides in said conveyers, a pair of rock-shafts provided at opposite ends thereof with forwardly-extending cranks having laterally-extending handles, arms extending from said rock-shafts and connected operatively with the cut-off slides in the conveyers, the slides of the conveyers leading from one compartment being connected with the arms of one rock-shaft and the slides of the conveyers leading from the other compartment being connected with the arms of the other rock-shaft, and means for operating said rock-shafts.

2. In a machine of the class described, a hopper, longitudinally divided into several compartments, a feed-drum, conveyers connecting the latter with the compartments of the hopper, cut-off slides in said conveyers, a pair of rock-shafts provided at opposite ends thereof with forwardly-extending cranks having laterally-extending handles, arms extending from said rock-shafts and connected operatively with the cut-off slides in the conveyers, the slides of the conveyers leading from one compartment being connected with the arms of one rock-shaft, and the slides of the conveyers leading from the other compartment being connected with the arms of the other rock-shaft, guideways upon the rear side of the hopper-box having indicating-gages on the faces thereof, slides movable in said guideways, pointers upon said slides, means for securing said slides at various adjustments, and pivotal connections between said slides and the arms extending from the cranks at the ends of the rock-shafts.

3. In a machine of the class described, a supporting-frame, an axle journaled therein, a feed-drum mounted upon the axle, spindles

at the ends of said axle, wheels journaled upon said spindles and having recesses in the inner sides of the hubs thereof, spring-actuated pins mounted slidably upon the ends of the axle adjacent to the wheels and having heads at their inner ends, spring-plates connected with and spaced from the sides of the machine, said plates having openings surrounding the axle and including the headed ends of the spring-actuated pins, a pair of curved levers mounted adjacent to each other, the one slightly in advance of and capable of overlapping the other, flexible connecting means between the upper ends of said levers and the free ends of the spring-plates, and means for spacing the lower ends of the levers apart to thereby exercise strain in an inward direction upon the free ends of the spring-plates, thereby withdrawing the spring-actuated pins from engagement with the wheels.

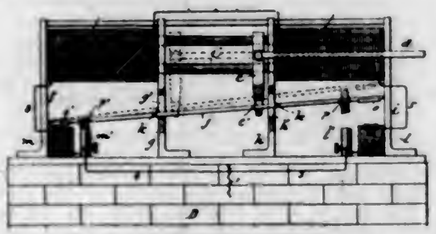
4. In a machine of the class described, an axle, wheels mounted loosely upon said axle, means for operatively connecting the wheels with the axle, spring-plates operatively engaging the wheel-engaging means, a pair of levers fulcrumed adjacent to each other, the one slightly in advance of and capable of overlapping the other, flexible connecting means between the upper ends of said levers and the free ends of the spring-plates, and lever means adapted to force the lower ends of said levers apart, one of said levers being provided with a lever-receiving notch and with a handle.

5. In a machine of the class described, a rock-shaft having downwardly-extending arms, drill-tubes provided on their front sides with pairs of forwardly-projecting lugs, bars connecting the upper lugs with the arms of the rock-shaft, blocks spacing the said arms, a rock-shaft having forwardly-extending slotted arms, links connected with the spaced blocks and extending through the said slotted arms, springs mounted upon said links to bear downwardly against the connecting-blocks, levers mounted pivotally between the bars in rear of the connecting-blocks, pins extending rearwardly from said blocks through perforations in said levers, springs coiled upon said pins and pressing against said levers, and links connecting the lower ends of said levers with the lower lugs of the drill-tubes.

6. In a machine of the class described, a rotary feed-drum, a rock-shaft having depending arms, drill-tube-carrying bars connected with said arms, a rock-shaft having a plurality of slotted arms, links extending from the drill-tube-carrying arms to said slotted arms, and transverse securing-pins at the upper ends of said links, springs coiled upon the latter below the slotted arms, a crank extending from the rock-shaft having the slotted arms, a lever fulcrumed in rear of the feed-drum, a link connecting said lever with the crank extending from the rock-shaft, supporting-wheels mounted upon the axle carrying the feed-drum, spring-actuated clutch means mounted upon said axle to engage the supporting means, spring-plates engaging said clutch means and adapted to withdraw said clutch means from operative connection with the wheels when said spring-plates are under tension, a pair of levers fulcrumed adjacent to each other, the one slightly in advance of and adapted to overlap the other, said levers being spaced apart at their lower ends by the hand-lever having a link connection with the arm extending from the drill-tube-adjusting rock-shaft, one of said levers having a notch near its lower end for the reception of said hand lever and a handle whereby it may be manipulated to disengage said notch, and flexible connections between the upper ends of said levers and the spring-plates governing the clutch mechanism, whereby said spring-plates shall be held under tension when the lower ends of the pair of levers are separated by the interposition of the hand-lever.

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**756,316. ELECTROMAGNETIC RAILWAY-SWITCH. ROLLIN A. BALDWIN, South Norwalk, Conn., assignor to Baldwin and Rowland Switch Company, a Corporation of New York. Filed Dec. 18, 1902. Renewed July 24, 1903. Serial No. 166,912. (No model.)**



*Claim.*—1. In a railway-switch, the combination of two electromagnets for throwing the switch in opposite directions, two cut-outs, two electromagnets for the respective cut-outs, said magnets being in circuit with the respective switch-throwing magnets and an armature common to said switch-throwing magnets and cooperating with the other magnets to control said cut-outs, substantially as described.

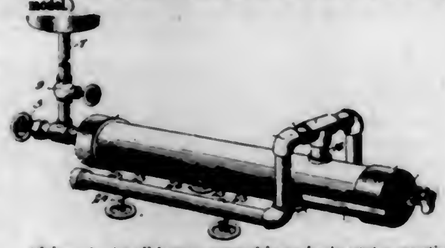
2. In a railway-switch, the combination of two electromagnets for throwing the switch in opposite directions, an armature common to both magnets, a tilting bar having a movable pivot located on said armature and electric contacts in circuit with each magnet and adapted to be closed and opened alternately by the tilting of said bar, substantially as described.

3. In a railway-switch, the combination of two electromagnets for throwing the switch in opposite directions, an armature common to both magnets, a tilting bar having a movable pivot located on said armature and electric contacts in circuit with each magnet and adapted to be closed and opened alternately by the tilting of said bar, and electromagnets in circuit with the first-mentioned magnet and the contacts respectively and adapted to hold said bar in one position when the center of gravity thereof would tend to tilt it to the opposite position.

4. In a railway-switch, the combination of two electromagnets for throwing the switch in opposite directions, an armature common to both magnets, a cross-head carried by said armature, a bar having a sliding pivotal engagement with said cross-head whereby it may be caused to tilt first in one direction and then the other by the shifting of the pivot and circuit-closers for the respective magnets operated by the tilting bar, substantially as described.

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**756,317. HYDROCARBON-BURNER. CHARLES H. BARTON, HENRY R. HENRICHSEN, JULIUS S. COMBS, and CRAFFER L. MATTHEWS, Houston, Tex. Filed Jan. 23, 1902. Serial No. 90,948. (No model.)**

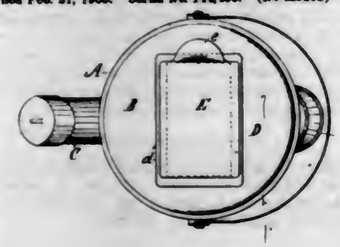


*Claim.*—1. An oil-burner, comprising a horizontal generating-chamber, a fuel-injector piercing one end of the chamber, a gas-pipe piercing the top of the chamber with its lower open end projected across the range of the injector to form a deflector and terminated short of a predetermined fuel-level, and burners connected to the gas-pipe and in operative relation with the generating-chamber.

2. In an oil-burner, the combination of a tubular generator, an oil-injector piercing one end thereof, a removable closure-cap for the opposite end of the generator, a yoke pivoted to said opposite end portion of the generator and capable of embracing the cap, a set-screw piercing the outer free end of the yoke and adapted to bear against the cap to hold the same in place, burner-pipes lying at opposite sides of the generator and in parallelism therewith, each pipe being provided at its upper side with tapered burner-openings, needle-valves transversely piercing the pipes and having their points working in the respective burner-openings, a nipple piercing the top of the generator near the forward end thereof, laterally-projected pipes connected to the nipple, and pendent pipes between the outer ends of the lateral pipes and the forward ends of the respective burner-pipes.

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**756,318. MILK-PAIL. EDWARD J. BARTON, Wewoka, Ind. Ter. Filed Feb. 21, 1903. Serial No. 144,409. (No model.)**

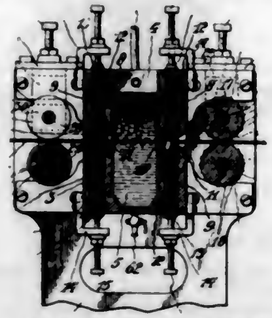




*Claim.*—The combination with the pail-body of a removable cover having secured thereto a rectangular hopper, with parallel side walls having outwardly-turned flanges *d*, a strainer at the bottom thereof, and a sliding lid at the top thereof, having flanges *d'* embracing the flanges *d*, substantially as described.

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**756,319. STIFFENER-BATH. PHILIAS BELLE, Montreal, Canada. Filed Nov. 2, 1903. Serial No. 179,648. (No model.)**



*Claim.*—1. In a machine for coating counter-stiffener blanks, a tank for liquid cement having an opening in its wall below the surface of the cement, yielding wipers closing said opening to the passage of cement, but permitting the passage of cemented blanks, and a pair of rolls located abreast the opening to draw cemented blanks successively from the tank.

2. In an apparatus of the class described, a tank adapted to contain liquid cement and having an opening therein below the surface of the cement, and a pair of rolls located abreast said opening to draw blanks from the tank, said rolls being relatively shaped to contact only at intervals throughout their length.

3. In apparatus of the class described, in combination, a bath, means for passing stiffeners therethrough, and rolls adapted to receive said stiffeners, said rolls having concave faces disposed in staggered relation with respect to each other.

4. In apparatus of the class described, in combination, a bath, means for passing stiffeners through said bath, and rolls adapted to receive said stiffeners therebetween, said rolls consisting of a plurality of concave rollers the faces whereof are disposed out of alinement.

5. In a machine for coating stiffener-blanks, a tank for containing liquid cement and having openings in its opposite walls, a pair of rolls abreast one of said openings to feed blanks successively to the tank, and a pair of rolls abreast the other opening to draw the cemented blanks from the tank.

6. In a machine for coating stiffener-blanks, a tank for containing liquid cement and having openings in its opposite walls, and a pair of adjustable rolls abreast each opening.

7. In a machine for coating stiffener-blanks, a tank for containing liquid cement and having opposite openings therein, wipers normally closing said openings, but permitting the passage of blanks, a pair of rolls to feed the blanks into the cement-tank, and a pair of rolls to draw the cemented blanks from the tank.

8. In apparatus of the class described, in combination, a vessel containing a bath and having recesses in the wall thereof, and an opening intersecting said recesses, wipers carried in said recesses and disposed on opposite sides of said opening, said wipers having backs movably mounted in said recesses.

9. In an apparatus of the class described, in combination, a vessel containing a bath and having recesses in the wall thereof, and alined openings intersecting said recesses, wipers disposed in said recesses on opposite sides of the openings, said wipers being movably mounted in the recesses, and means for moving the backs to adjust the positions of the wipers.

10. In an apparatus of the class described, in combination, a vessel having openings through the wall thereof and containing a bath, means for checking the flow of said bath through said openings, rolls disposed opposite to said openings and adapted to advance stiffeners therethrough to pass through said bath, a main gear-wheel mounted between said rollers, means for driving the same, and pinions adapted to actuate said rolls and mesh with said main gear-wheel.

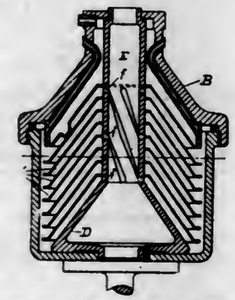
11. In an apparatus of the class described, in combination, a bath, means for passing stiffeners therethrough, and means for directing a current of air upon said stiffeners after passing through the bath.

12. In an apparatus of the class described, in combination, a vessel containing a bath and having openings in the wall thereof, means for passing stiffeners through said openings, and a blower beyond said vessel adapted to direct a current of air upon said stiffeners.

13. In an apparatus of the class described, in combination, a vessel containing a bath and having openings through the wall thereof, rolls opposite said openings and adapted to pass stiffeners therethrough, means for driving the rolls, a blower adapted to direct an air-current upon said stiffeners beyond said vessel, and means for driving said blower continuously with said rolls.

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**756,320. CENTRIFUGAL CREAM-SEPARATOR. JOHN J. BERRIGAN, Orange, N. J., assignor to The De Laval Separator Company, a Corporation of New Jersey. Filed Aug. 15, 1903. Serial No. 169,563. (No model.)**



*Claim.*—1. In a centrifugal liquid-separator, the combination with a division contrivance consisting of a series of superposed conical division-plates, of an orificed inlet and distributing device extending vertically and in a spiral path through and intersecting said plates and opening into the space between adjacent plates.

2. In a centrifugal liquid-separator, the combination with a division contrivance consisting of a series of superposed conical division-plates, of a plurality of orificed inlet and distributing devices extending vertically and in a spiral path through and intersecting said plate and opening into the space between adjacent plates.

3. In a centrifugal liquid-separator, the combination with a division contrivance consisting of a series of superposed conical division-plates, and a central feed-tube, of an orificed inlet and distributing device extending vertically and in a spiral path around said central feed-tube, and opening into the space between adjacent plates.

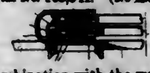
4. In a centrifugal liquid-separator, the combination with a division contrivance consisting of a series of superposed conical division-plates, and a central feed-tube, of a plurality of orificed inlet and distributing devices extending vertically and in a spiral path around said central feed-tube and opening into the space between adjacent plates.

5. In a centrifugal liquid-separator, the combination with a division contrivance consisting of a series of superposed conical division-plates and a central feed-tube, of an orificed flange projecting from and extending spirally around said central feed-tube and opening into the space between adjacent plates

6. In a centrifugal liquid-separator, the combination with a division contrivance consisting of a series of superposed conical division-plates and a central feed-tube, of a plurality of orificed flanges projecting from and extending spirally around said central feed-tube and opening into the space between adjacent plates.

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**756,321. ELEVATOR-DOOR. HARRY BETHER, Berwyn, Ill. Filed June 29, 1903. Serial No. 163,541. (No model.)**



*Claim.*—1. The combination with the wall of an inclosure having a doorway therein, of two tracks secured to the wall, two doors, hangers upon, and supporting each of said doors, running upon the respective tracks, a rack-bar secured to the wall, a second rack-bar secured to one of the doors, and a pinion upon the other door between and in mesh with the two rack-bars.

2. The combination with the wall of an inclosure having a door-

way therein, a track, a series of brackets extending from said track to the wall and supporting the track from the inside, a second track, a second series of brackets extending upward from the outside of said track and thence across to the wall, supporting said track from the outside, two doors, one upon each of said tracks, the hangers of said doors running between said tracks and underneath the brackets of said second track, and mechanism above the tracks for synchronizing the movements of said two doors.

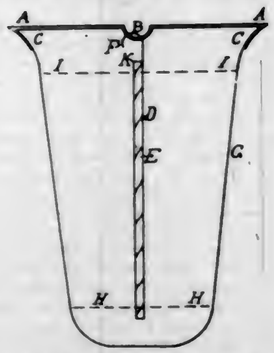
3. The combination with the wall of an inclosure having a doorway therein, of a track secured to the wall from the inside, a second track secured to the wall from the outside, a door running upon said first track, a rack-bar adjacent to said first track, a pinion on said first door, engaging with said rack-bar, a second door, hangers thereon, the pulleys of which run upon said second track, projecting arms upon said hangers, extending toward the wall, and a rack-bar supported by said arms in mesh with said pinion.

4. The combination with the wall of an inclosure, of two doors, hangers containing rollers for said doors, tracks adapted to carry said rollers, a rack-bar secured to the wall, a rack-bar secured to one of the doors, and a pinion secured to the other door and in mesh with both racks, the weight of the doors being carried by the hanger-rollers and the pinion serving to cause one door to move faster than the other.

5. The combination with the wall of an inclosure, having a doorway therein, of two doors, hangers for said doors, containing rollers, door-supporting tracks adapted to carry the rollers of said hangers and support the weight of the doors, racks upon the respective doors, and gearing interposed between said racks adapted to cause one door to move faster than the other.

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**756,322. SANCTUARY-TAPER.** John H. Bourne, Yorkville, Ind. Filed Sept. 29, 1902. Serial No. 125,333. (No model.)




*Claim.*—1. In a sanctuary-taper the combination of a wire-wound wick, a loop in the wire at the end of said wick, a globe or oil-bowl, a support extending across the top of said globe for attaching said wick-loop, substantially as described.

2. In a sanctuary-taper the combination of a globe or oil-bowl, a cotton wick, a helical wire embracing said wick, a hook at the end of said helical wire, a metallic rod or wire extending across the top of globe or oil-bowl for suspending said wick.

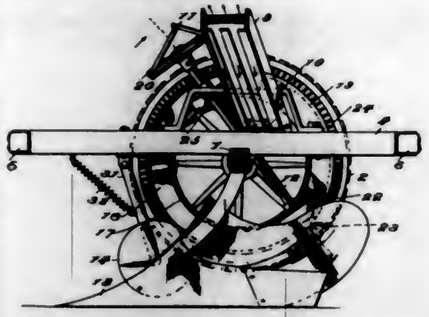
3. In a sanctuary-taper the combination of a globe or oil-bowl, a helical wire embracing said wick, a hook at one end of said helical wire, a metallic rod or wire extending across the top of the globe or oil-bowl, and having a depression in center of said wire or rod to support said wick by means of said hook.

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**756,323. ROAD-GRADER.** Hugh L. Beall, Clarendon, Tex. Filed July 6, 1903. Serial No. 164,454. (No model.)

*Claim.*—1. In a road-grading machine, the combination of means for loosening the earth and effecting a lateral discharge thereof, an earth-lifting wheel arranged to receive the earth from the said earth-loosener, a packer for compressing the earth into the receiving-space of the earth-lifting wheel, and means for loosening and effecting a discharge of the earth from the earth-lifting wheel at a predetermined point in its rotation, substantially as described.

2. In a road-grading machine, the combination of means for loosening the earth and effecting a lateral discharge thereof, an earth-lifting wheel arranged to receive the earth from the said earth-loosener, a packer for compressing the earth into the receiving-space of the earth-lifting wheel, an elevator, and means for effecting a discharge of the earth from the earth-lifting wheel so as to be taken up by the elevator for conveyance to the required point of discharge, substantially as set forth.



3. In a road-grading machine, the combination of means for loosening the earth and effecting a lateral discharge thereof, an earth-lifting wheel arranged to receive the earth from the said earth-loosener, a packer for compressing the earth into the receiving-space of the earth-lifting wheel, means for effecting a discharge of the earth from the earth-lifting wheel at the required point in its rotation, and a guard for closing the open side of the earth-receiving space of said wheel between the packer and earth-discharging device, substantially as set forth.

4. In combination, means for loosening and effecting a lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, and a packer of tapering form arranged to compress the earth within the receiving-space of the wheel, substantially as set forth.

5. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a packer arranged to compress the earth within the receiving-space, and means for loosening and raking the earth from the space at the required point of discharge, the same consisting of a wheel having arms or spurs to enter the earth-receiving space of the wheel, substantially as described.

6. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a shaft connected with the earth-lifting wheel so as to receive motion therefrom, and a packer and a rake secured to opposite end portions of the shaft and arranged to operate upon the earth in the receiving-space of said wheel, substantially as and for the purpose specified.

7. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a shaft connected with the earth-lifting wheel so as to receive motion therefrom, a packer and a rake secured to opposite end portions of the shaft and arranged to operate upon the earth in the receiving-space of said wheel, and an elevator arranged to receive the earth as discharged from the lifting-wheel by means of the rake, substantially as described.

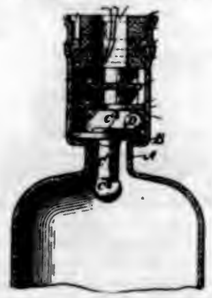
8. In combination, means for loosening and effecting lateral discharge of earth, an earth-lifting wheel having an annular space open on the side facing the earth-loosener so as to receive the earth, a shaft connected with the earth-lifting wheel so as to receive motion therefrom, a packer and a rake secured to opposite end portions of the shaft and arranged to operate upon the earth in the receiving-space of said wheel, and a guard for closing the open side of the earth-receiving space between the packer and rake, substantially as described.

9. In a machine of the character described, the combination of a plow, a disk arranged to cooperate with the moldboard of the plow, an earth-lifting wheel having an annular space open on the side facing the plow so as to receive the earth therefrom, a packer for compressing the earth in the receiving-space of the earth-lifting wheel, an elevator arranged to receive the earth at a predetermined point in the rotation of the lifting-wheel, a wheel having arms to enter the receiving-space of the lifting-wheel to effect a discharge of the earth therefrom, and a guard for closing the open side of the earth-receiving space at a point between the packer and earth-discharging wheel, substantially as specified.



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**756,324. NON-REFILLABLE BOTTLE.** Herman Breunig, New York, N. Y. Filed Aug. 25, 1903. Serial No. 170,692. (No model.)

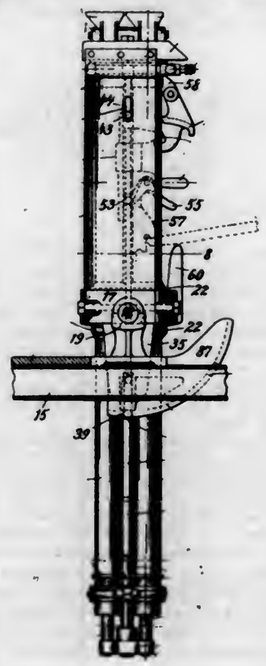


*Claim.*—1. A non-refillable bottle comprising a neck, a shoulder thereon, a valve-disk adapted to rest upon the said shoulder when in a horizontal position, a centrally-depending arm on said disk, a weight on the end of said arm, a ball adapted to be superimposed on said disk, a diaphragm above said disk, a central raised portion on said disk and an extension of the neck inclosing said ball, disk and diaphragm; the space between the raised portion of the disk and the diaphragm being less than the diameter of the ball.

2. A non-refillable bottle comprising a neck, a shoulder thereon, a valve-disk adapted to rest upon the said shoulder when in a horizontal position, a centrally-depending arm on said disk, a weight on the end of said arm, a ball adapted to be superimposed on said disk, a diaphragm above said disk, a central raised portion on said disk and an extension of the neck inclosing said ball, disk, and diaphragm, an opening in said diaphragm and a second diaphragm within the said inclosing extension imperforate and of lesser diameter than the first.

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**756,325. ROD-CASTING MACHINE.** Charles F. Brooker, Ansonia, Conn., assignor to the Coe Brass Manufacturing Company, Torrington, Conn., a Corporation. Filed Aug. 10, 1903. Serial No. 168,885. (No model.)




*Claim.*—1. A rod-casting machine, comprising a tube mounted upon a horizontal axis and arranged to be moved in the arc of a circle, a stop-rod located in the lower end of said tube, and means for reciprocating said rod into and out of said tube and for moving it out of the axis of said tube when external to the tube.

2. A rod-casting machine, comprising a series of spaced tubes collectively mounted upon a horizontal axis and arranged to be moved in the arc of a circle, a stop-rod located in the lower end of each tube, means for simultaneously reciprocating said rods into and out of said tubes and for moving said rods out of the axes of said tubes when external to the tubes.

3. A rod-casting machine, comprising a tube mounted upon a horizontal axis, a removable hopper at the upper end of said tube, a stop-rod normally located in the lower end of said tube, means for reciprocating said rod into and out of said tube, and for moving said rod when external to the tube out of the axis of said tube.

4. A rod-casting machine, comprising a tube mounted upon a horizontal axis, a casing surrounding said tube, means for cooling said tube, a stop-rod movable within and out of the lower end of said tube, means for effecting reciprocation of said rod, and means for rotating said rod around the axis of the moving means to move said rod out of the axis of said tube.

5. A rod-casting machine comprising a tube normally open at both ends mounted upon a horizontal axis and arranged to be moved in the arc of a circle, means for fixing said tube in certain defined positions relative to the vertical, means for closing the lower end of the tube, means for locking said closing means, and means for creating bodily movement of the closing means within the tube along the tube.

6. A rod-casting machine, comprising a tube mounted upon a horizontal axis, means for closing the lower end of the tube, means for locking said closing means, means for moving the molded rods formed in the tube partly out of the tube, and means for depressing and rotating said closing means to open the bottom of the tube.

7. A rod-casting machine, comprising a tube mounted upon a horizontal axis, means for closing the bottom of the tube, means for locking said closing means, means for elevating said closing means within the tube, means for locking said parts in said second position, and means for depressing and rotating said closing means to open the bottom of the tube.

8. A rod-casting machine, comprising a tube, a stop-rod in the bottom of the tube, a vertical rod for reciprocating said stop-rod, a sleeve on the upper end of said vertical rod, a latch between said sleeve and said vertical rod, means for moving said sleeve, and a locking device for holding said sleeve and vertical rod in two defined positions.

9. A rod-casting machine, comprising a tube, a stop-rod in the bottom of the tube, a vertical rod for reciprocating said stop-rod, a sleeve on the upper end of said vertical rod, a latch between said sleeve and said vertical rod, means for moving said sleeve, a locking device for holding said sleeve and vertical rod in two defined positions, and means for releasing and rotating said vertical rod.

10. In a rod-casting machine, the combination of a plurality of spaced tubes, means for securing said tubes together, trunnions projecting horizontally from the central securing means, bearings for said trunnions, a slotted arc-shaped plate depending from one of said bearings, a reciprocating pin adapted to coact with said slots in said plate, and means for reciprocating said pin.

11. In a rod-casting machine, the combination of a plurality of spaced tubes, a tubular bearing situated between the tubes and at the bottom thereof, a vertical rod extending through said bearing, a sleeve connected to said rod and situated over said tubular bearing, antifriction-balls situated between the top of said bearing and the interior of said sleeve, a spider on the end of said rod, stop-rods projecting upward from said spider and adapted to enter the bottom of said tubes, and means for reciprocating and rotating said rod.

12. In a rod-casting machine, the combination of a tube open at both ends, a stop-rod adapted to enter and close the bottom of the tube, means for locking said stop-rod in such closed position, means for reciprocating said stop-rod into and out of said tube, and means for collectively mounting said parts upon a horizontal axis and for moving them in an arc of a circle.

13. In a rod-casting machine, the combination of a tube open at both ends, a stop-rod adapted to enter the bottom of the tube, means for reciprocating said stop-rod into and out of said tube, and for rotating and moving it out of the axis of the tube.

14. In a rod-casting machine, the combination of a plurality of tubes provided with spacing-flanges, a grooved ring at the top of the tubes, a ring provided with trunnions situated at approximately the center of said tubes and a binding-ring at the bottom of the

tubes, a casing surrounding said tubes, together with means for discharging a cooling spray around said tubes within said casing.

15. A rod-casting machine embodying in its construction, one or more tubes normally open at both ends, together with means for closing the end of said tube or tubes and for pushing the cast rods from within outward.

16. A rod-casting machine embodying in its construction, one or more tubes normally open at both ends, and mounted upon a horizontal axis, together with means for closing the end of said tube or tubes and pushing the cast rods within the tube or tubes from within outward.

17. In a rod-casting machine, the combination of a tube normally open at both ends, a reciprocating stop-rod having approximately the diameter of said tube and located in the lower end of said tube, means for reciprocating said stop-rod, and means for defining the position of said stop-rod in said tube.

18. In a rod-casting machine, the combination of a tube, a ring surrounding the top of the tube, a pivoted hook depending from said ring, a reciprocating stop-rod, a rod for reciprocating said stop-rod, a reciprocating sleeve on the top of said reciprocating rod, said rod having a slot adapted to engage a pin projecting from the interior of said sleeve, a hook on said sleeve adapted to engage with the pivoted hook, and means for reciprocating said rod and sleeve and for rotating said rod and sleeve.

19. In a rod-casting machine, the combination of a tube of uniform interior diameter throughout its length and open at both ends, a reciprocating stop-rod corresponding in diameter with the tube and located in the lower end of the tube, means for reciprocating such stop-rod into and out of said tube, and means for defining the position of said stop-rod in the tube.

20. In a rod-casting machine, the combination of a tube open at both ends, a hopper through which the material to be cast is fed into the tube located at the top of the tube, a stop-rod situated at the lower end of the tube and normally out of the tube, together with means for bringing such stop-rod into the bottom of the tube and for reciprocating it within the tube.

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**756,326. COIN-HOLDER.** DANIEL J. CABLE, Pittsburg, Pa., assignor of one-half to Henry Braun, Allegheny, Pa. Filed May 27, 1903. Serial No. 159,035. (No model.)



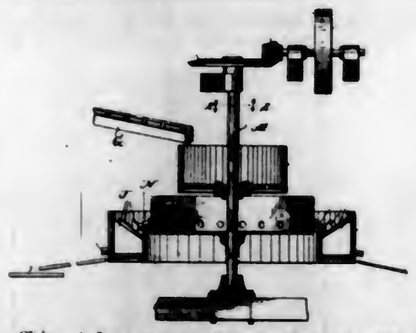
*Claim.*—1. A coin-holder consisting of a rectangular body of fibrous material folded in a tubular shape with its opposite edges overlapping, the length of the said body being greater than the column of coins to be held therein, and a flexible stiffener exteuding lengthwise of the body interlocked with the overlapping edges and having its opposite ends clamped over the upper and lower ends of the said overlapping edges and adapted to be folded over with the foldable end portions of the body, as set forth.

2. A coin-holder consisting of a rectangular body of fibrous material folded in a tubular shape with its opposite edges overlapping, a metal reinforcing-strip which extends the full length of the body with a portion thereof exposed internally of the same and interlocked with the overlapping edges, for the purposes specified.

3. A coin-holder consisting of a piece of stiff fibrous material bent into a tubular shape and of a length greater than the column of coins to be held therein and having its opposite edges overlapping, a flexible and smooth metal strip threaded lengthwise into the overlapping edges of the body with its ends clamped over the upper and lower ends of the said overlapping edges, as set forth.

4. As a new article, a coin-holder comprising a tubular body of a semirigid material capable of being torn or ruptured by hand and of a length greater than the column of coins to be held therein whereby the ends of said body are inwardly foldable, the opposite edges of said body overlapping, and a flexible metallic strip having a smooth surface extending lengthwise on the inner face of the tubular body having portions interlocked with the overlapping edges thereof and its ends clamped over the upper and lower ends of the overlapped edges, all being arranged substantially as shown and for the purposes described.

**756,327. APPARATUS FOR DISTRIBUTING ORE-PULP TO CONCENTRATING-TABLES.** WILLIAM CARNEW, Butte, Mont. Filed Oct. 9, 1901. Serial No. 78,066. (No model.)

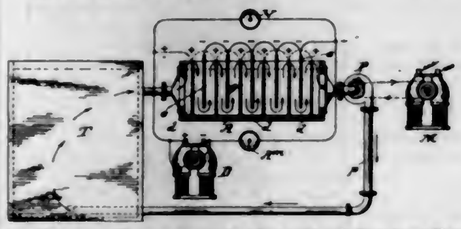


*Claim.*—1. In an apparatus of the class described, a supply-pipe a rotary mixer-box having perforations in its bottom, a distributer-chamber having a plurality of openings equally spaced around its periphery, a series of tubes projecting diagonally downward from said openings with respect to the plane of rotation, a series of boxes having partitions diagonally disposed with respect to said plane and interposed in the direction of said tubes, the edges of said partitions being substantially perpendicular to said tubes, and outlet-pipes for said receptacles.

2. In an apparatus of the class described, a supply-pipe, a rotary mixer-box having perforations in its bottom, a rotary distributer-box arranged below and having a larger diameter than the mixer-box, and having a plurality of discharge-pipes, extending diagonally outward with respect to the plane of rotation, and an annular chamber arranged below and having a larger diameter than said distributer-box, and having a plurality of comparatively thin radial partitions, the upper edges of said partitions extending in a diagonal direction with respect to said plane of rotation and substantially at right angles to the pipes from the distributer-box, and a plurality of pipes extending from said annular chambers, as and for the purpose set forth.

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**756,328. RECOVERY OF GOLD AND SILVER FROM CYANID SOLUTIONS.** SAMUEL B. CHRISTY, Berkeley, Cal. Filed May 20, 1901. Serial No. 60,979. (No specimens.)



*Claim.*—1. The process of removing gold and silver from dilute cyanid solutions which consists in forcing said solution to circulate from a storage-tank through a suitable electrochemical cell and back again repeatedly, so that said solution is brought into intimate contact with anodes and cathodes in rapid alternation and at such a speed that fresh gold and silver bearing solution is brought into intimate contact with the cathodes as fast as the gold and silver are precipitated there and the evolution of hydrogen at the cathodes substantially ceases.

2. The process of removing gold and silver from dilute cyanid solutions which consists in forcing said solutions to circulate from a suitable storage-tank, through a suitable electrochemical cell and back again repeatedly, at a speed of not less than one foot per minute, so that said solution is brought into intimate contact with anodes and cathodes in repeated and rapid alternation.

3. The process of removing gold and silver from dilute cyanid solutions which consists in forcing said solution to circulate repeatedly through a suitable electrochemical cell containing pervious electrodes, so as to be brought into intimate contact with pervious anodes and pervious cathodes in repeated alternation at such a speed as shall bring fresh gold and silver bearing solution to the cathodes as fast as the gold and silver are precipitated there, and the evolution of hydrogen at the cathodes substantially ceases.

4. The process of removing gold and silver from dilute cyanid solutions which consists in forcing said solution to circulate repeatedly, through a suitable electrochemical cell containing pervious anodes and pervious cathodes through which said solution is forced to flow between them at a speed of not less than one foot per minute, and in such a manner as to be brought into intimate contact with said pervious anodes and pervious cathodes in rapid alternation.

5. The process of concentrating the gold and silver already precipitated on primary cathodes large in area, upon secondary cathodes small in area, which consists in making said primary cathodes, secondary anodes in a suitable electrochemical cell in which the secondary cathodes of smaller area are contained, and causing a cyanid solution to circulate through such a cell so as to be brought into intimate contact with such secondary anodes and secondary cathodes in rapid and repeated alternation, while it is circulating at such a speed as to bring fresh gold and silver to said secondary cathodes as fast as the gold and silver are precipitated there and so that the evolution of hydrogen at said secondary cathodes substantially ceases, and until the gold and silver distributed on the secondary anodes is concentrated on the small area of the secondary cathodes.

6. The process of concentrating the gold and silver already precipitated on cathodes large in area upon secondary cathodes small in area, which consists in making said original cathodes secondary anodes in a suitable electrochemical cell in which said secondary cathodes are also contained, and causing a cyanid solution to circulate through such cell at a speed of not less than one foot per minute so as to be brought into intimate contact with anodes and cathodes in repeated and rapid alternation till the gold and silver originally distributed on the large secondary anode area is concentrated on the smaller area of the secondary cathodes.

7. The process of recovering gold and silver from large volumes of dilute cyanid solutions, which consists: first, in forcing said solution to circulate rapidly and repeatedly through a suitable electrochemical cell containing primary cathodes of sufficient area placed in alternation with suitable anodes, so that said solution is brought into intimate contact with said anodes and cathodes in rapid alternation until its gold and silver content has been sufficiently deposited upon said primary cathodes of large area; second, in forcing a small volume of a cyanid solution to circulate rapidly and repeatedly through an electrochemical cell containing the primary cathodes from the first-named solution, which primary cathodes are now made secondary anodes in alternation with suitable secondary cathodes of smaller area, so that said last-named solution is brought into intimate contact with said secondary anodes and cathodes in rapid alternation, till the gold and silver deposited upon the said original cathodes is concentrated upon said secondary cathodes of smaller area.

8. The process of recovering gold and silver from dilute cyanid solutions which consists in forcing said solution to circulate rapidly and repeatedly through a suitable electrochemical cell containing pervious anodes and pervious cathodes whose surfaces have been covered by a layer of pervious or spongy metal so arranged as to increase the cathode-surface, through which the solution is forced to circulate in such a manner as to be brought into repeated contact with anodes and cathodes in rapid alternation during the passage of a suitable electric current.

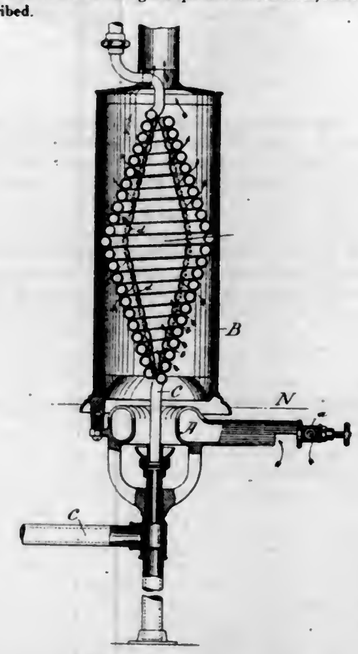
9. The process of removing gold and silver from dilute cyanid solutions which consists in forcing said solution to circulate from a storage-tank through a suitable electrochemical cell containing zinc anodes in the form of fine grains or shavings coated with a pervious cathode coating of an electronegative metal, and back again rapidly and repeatedly, so as to be brought into intimate contact with said zinc anodes and electronegative-metal cathodes in rapid alternation.

10. The process of removing residual zinc from the gold and silver already precipitated on zinc grains or shavings, which consists in forcing a suitable solution of an electronegative metal to circulate rapidly and repeatedly through a suitable electrochemical cell containing said pervious precipitate, so as to be brought into intimate contact in rapid alternation with such residual zinc acting as anode and such electronegative metal acting as cathode until such residual zinc has been sufficiently extracted.

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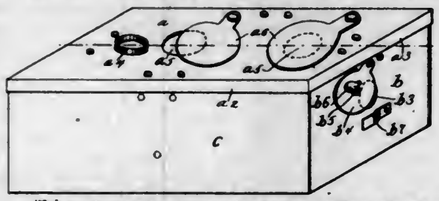
**756,329. HEAT-TRANSMITTING DEVICE.** WILLIAM C. CLARKE, New York, N. Y., assignor to Gilbert & Barker Manufacturing Company, Springfield, Mass., a Corporation of Massachusetts. Filed Jan. 30, 1903. Serial No. 141,066. (No model.)

*Claim.*—In a heat-transmitting device, the combination with a vertical cylindrical flue, of substantially uniform diameter throughout its length, for the passage of a heating medium, of a coil for a fluid to be heated located therein and having its greatest length vertically, said coil having its convolution of greatest diameter located centrally of its vertical length and directly engaging the inner face of the flue, the convolutions above and below said central convolution decreasing gradually in diameter and being separated slightly one from another, leaving the space within the flue entirely unobstructed and a continuous spacing-wire interwoven between the convolutions of the coil from one end of the same to the other to hold said convolutions from closing the spaces between them, substantially as described.



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**756,330. CAMP-STOVE.** LOUIS J. CLERGY and HENRY MORROW, Belt, Mont. Filed Mar. 25, 1903. Serial No. 149,440. (No model.)



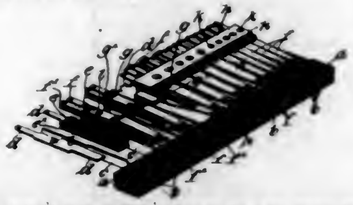
*Claim.*—A camp-stove comprising a top portion and ends and sides, the ends and sides being hinged to the top portion and being adapted to fold inwardly, said ends and sides being provided with engaging members which operate when said ends and sides are in an upright position, said ends and sides being also provided with interior supports, and a partition adapted to rest on said supports, the top portion being also provided with openings and one of the ends with an opening above said partition and one of the sides with an opening below said partition, substantially as shown and described.

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**756,331. SPRING-JACK FOR TELEPHONE-SWITCHBOARDS.** MERRITT S. CONNER, Chicago, Ill. Filed Jan. 5, 1903. Serial No. 137,840. (No model.)

*Claim.*—1. A strip of spring-jacks comprising an insulating front strip *a* having plug-holes therein, test-thimbles held in said holes and having rearwardly-extending tongues disposed edgewise in parallel vertical planes, a horizontal stiffening-web carried by each tongue and projecting laterally therefrom toward the neighboring tongue, switch-springs and their insulating-strips supported by said webs,

insulating-pieces *g g'* interposed between the edges of the switch-springs and the sides of the said tongues, said switch-springs, insulating strips and pieces completely filling the spaces between the tongues at the rear body portion of the strip of jacks, binding-strips extending across the row of spring-jacks thus formed, and screws holding the several parts together.

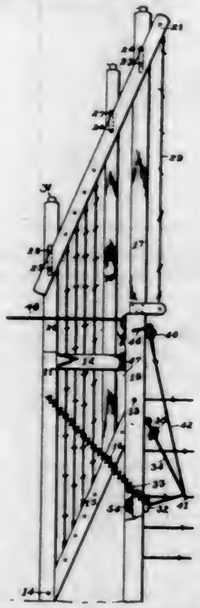


2. A strip of spring-jacks comprising the front supporting-strip *a* having plug-holes therein, test-thimbles *b* held in said holes and having rearwardly-extending tongues *c*, an angular stiffening-web *d* carried by and forming a part of each tongue, switch-springs with suitable insulating parts supported by said stiffening-webs, and means for binding the parts together, substantially as described.

3. A strip of spring-jacks comprising a supporting-strip *a* having holes therein, thimbles *b* mounted in said holes having rearwardly-extending tongues *c*, switch-springs and their insulating parts mounted upon and supported entirely by said tongues and otherwise independent of the strip *a*, the rear body portion of the strip being built up of the tongues and springs and their insulating parts into a solid continuous structure and means for binding the parts together.

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**756,332. FARM-GATE. FRANK M. CONROY, Fonda, Iowa. Filed Nov. 2, 1903. Serial No. 179,496. (No model.)**



*Claim.*—1. In a gate, a series of bars pivotally mounted near the rear ends, means pivotally and slidingly mounted at the front end of said gate for maintaining in position said bars, wires extending longitudinally of the gate and attached at one end to said pivotal and sliding means, and means for maintaining said pivotally and slidingly mounted means relative to the bars of the gate, for the purposes stated.

2. A pivotally-mounted gate, bars and wires extending longitudinally of said gate, a weight at the upper rear end of the uppermost of said bars and behind its pivotal point of attachment, posts mounted on each side of the gate, a spring attached to each of said posts and to each end of said weight for drawing the weight upwardly and rearwardly, a locking mechanism pivotally mounted between said posts and designed to engage the upper portion of one of said bars, means for releasing said locking mechanism from each side of the gate and for starting the gate upwardly and rearwardly, and means for closing the gate, for the purposes stated.

3. In a gate, a series of pivotally-mounted bars, a weight at the rear end of the uppermost of said bars and behind its pivotal point of attachment, springs attached to each end of said weight and to points adjacent to the side of said gate for swinging the gate from a closed to an open position and for maintaining it in that position until released, springing means for breaking the fall of the gate as it moves from an open to a closed position, and means for operating the gate on each side thereof.

4. In a gate, a series of pivotally-mounted bars, a weight at the rear end of the uppermost of said bars and behind its pivotal point of attachment, springs attached to each end of said weight and to points adjacent to the side of said gate for swinging the gate from a closed to an open position and for maintaining it in that position until released, and springing means for stopping the upward rearward movement of the gate as it is moved from a closed to an open position, and means for operating the gate on each side thereof.

5. A pivotally-mounted gate, means for locking the gate in a closed position, ropes attached to said means for releasing the locking mechanism and for swinging the gate upwardly and rearwardly on its pivot, means for limiting the upward movement of the gate and means attached to the rear end of the gate for swinging it from an open to a closed position, and springing means for breaking the fall of the gate as it moves from an open to a closed position.

6. Posts mounted a slight distance apart, a gate pivotally mounted at its rear end between said posts, posts mounted on each side of the front end of the gate when it is in a closed position, wires attached to the inside of each of said posts and bent inwardly toward each other, a slight distance above the ground-surface designed to guide the gate between said posts and to break the fall of it as it swings from an open to a closed position and to prevent it from horizontal movement when in a closed position.

7. In a gate, pivotally-mounted bars, wires extending longitudinally of said gate and forming a part of it, braces pivotally and adjustably mounted on said bars and connected with said wires, and means for adjusting the braces longitudinally of the bars for keeping the wires taut.

8. In a gate the combination of pivotally-mounted bars, a pivotally-mounted latch mounted between two of said bars and designed to engage a notch in one of them to hold the gate in a closed position, ropes attached to said latch for swinging it upwardly on its pivot into engagement with the uppermost of said bars for swinging the bars on their pivots upwardly and rearwardly, springs connected with the rear end of the uppermost of said bars and back of its pivotal point of attachment for drawing the gate to an open position and maintaining it in that position.

9. In a gate, the combination of pivotally-mounted bars, a pivotally-mounted latch mounted between two of said bars and designed to engage a notch in one of them to hold the gate in a closed position, ropes attached to said latch for swinging it upwardly on its pivot for swinging the bars on their pivots upwardly and rearwardly, springs connected with the rear end of the uppermost of said bars and back of its pivotal point of attachment for drawing the gate to an open position and maintaining it in that position, and means for limiting the upward movement of the gate.

10. In a gate, the combination of pivotally-mounted bars, braces connecting the free ends of said bars, a pivotally-mounted latch mounted between two of said bars and designed to engage a notch in one of them to hold the gate in a closed position, ropes attached to said latch for swinging it upwardly on its pivot for swinging the bars on their pivots upwardly and rearwardly, springs connected with the rear end of the uppermost of said bars and back of its pivotal point of attachment for drawing the gate to an open position and maintaining it in that position, a weight mounted at the extreme rear end of the uppermost of said bars for counterbalancing the weight of the gate to a certain exteot, and springing means for limiting the upward and rearward movement of the gate.

11. In a gate, the combination of pivotally-mounted bars, braces connecting the upper ends of said bars, a pivotally-mounted latch mounted between two of said bars and designed to engage a notch in one of them to hold the gate in a closed position, ropes attached to said latch for swinging it upwardly on its pivot for swinging the bars on their pivots upwardly and rearwardly, springs connected with the rear end of the uppermost of said bars and back of its pivotal point of attachment for drawing the gate to an open position and maintaining it in that position, a weight mounted at the extreme rear end of the uppermost of said bars for counterbalancing the weight of the gate to a certain extent, and springing means for limiting the upward and rearward movement of the gate, means for swinging the gate from an open to a closed position, and springing means for limiting the downward and forward movement of the gate.

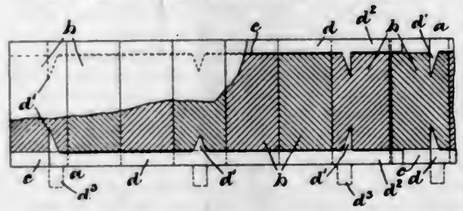
12. In a gate, the combination of pivotally-mounted bars, braces connecting the free ends of said bars, a pivotally-mounted latch mounted between two of said bars and designed to engage a notch in one of them to hold the gate in a closed position, ropes attached to said latch for swinging it upwardly on its pivot for swinging the bars on their pivots upwardly and rearwardly, springs connected with the rear end of the uppermost of said bars and back of its pivotal point of attachment for drawing the gate to an open position and maintaining it in that position, means for limiting the downward forward movement of the gate, and means for swinging the gate from an open to a closed position.

13. In a gate, pivotally-mounted bars, wires extending longitudinally of said bars and between them, braces adjustably mounted on said bars and connected with said wires, for the purposes stated.

14. In a gate, pivotally-mounted bars, wires extending longitudinally of said bars, braces pivotally and adjustably attached to said bars and connected with said wires, and means for adjusting the braces longitudinally of the bars for maintaining the wires in a taut position.

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**756,333. PAVING-BLOCK. FRANCIS R. COOPER, Waterloo, England. Filed Dec. 1, 1903. Serial No. 183,358. (No model.)**



*Claim.*—1. The herein-described wood paving-block, consisting of a plurality of wood slabs *b* of the full width and depth of the block, having a deep narrow groove *c* along each side, and a staple *d* of thin flat metal, with spikes *d'*, lying within each of said grooves, and driven into the slabs; substantially as set forth.

2. The herein-described wood paving-blocks, consisting of a plurality of wood slabs *b* of the full width and depth of the block, having a deep narrow groove *c* along each side; and a staple *d* of thin flat metal with spikes *d'*, lying within each of said grooves, and with an end extension $d^3$, projecting beyond the end of one end slab *b*, and adapted to fit in the groove *c* of the adjacent end slab; substantially as set forth.

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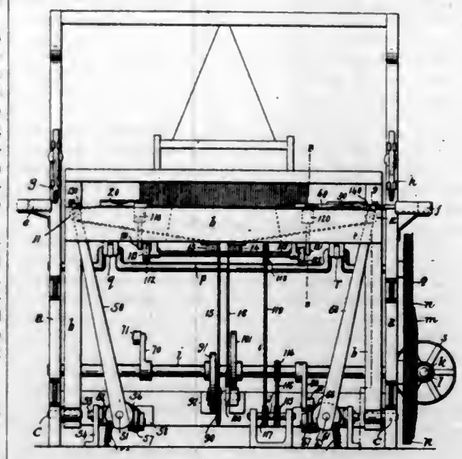
**756,334. LOOM. GEORGE S. COX, Fitzwatertown, Pa., assignor to himself and Walter S. Cox, trading as George S. Cox and Brother, Philadelphia, Pa. Filed July 10, 1903. Serial No. 164,966. (No model.)**

*Claim.*—1. In a loom, the combination, with shuttle-boxes on each side of the loom and a shuttle, of a shuttle-driver on each side of the loom adapted to move said shuttle out of one box across the shed into the other box, and means to impart to each shuttle-box, with its contained shuttle, a movement in the direction in which the shuttle is thrown, substantially as described.

2. In a loom, the combination, with a shuttle having jaws at each end adapted to engage the weft and pull it across the loom, of a selector at each side of the loom adapted to pick a strand of weft and present it to the adjacent jaws, a shuttle-driver adapted to throw said shuttle across the loom, means to arrest the travel of the shuttle so thrown, and means independent of the shuttle-driver to impart to said shuttle a short additional movement in the direction in which it has been thrown by the shuttle-driver, substantially as described.

3. In a loom, the combination, with a shuttle, of a shuttle-driver at each side of the loom adapted to throw said shuttle across the loom a distance slightly less than its complete throw, and a device on each side of the loom adapted, after said incomplete throw of the shuttle, to complete its throw, substantially as described.

4. In a loom, the combination, with a shuttle adapted to be thrown crosswise of the loom, of a shuttle-driver at one side of the loom adapted to engage and move said shuttle positively for a portion only of its throw and thence by momentum across the shed to the other side of the loom, means to actuate said shuttle-driver, and means to impart to said shuttle an additional movement in the direction in which it has been thrown by the shuttle-driver, substantially as described.



5. In a loom, the combination with a shuttle adapted to be thrown crosswise of the loom, of a shuttle-driver at one side of the loom adapted to engage and move said shuttle positively for a portion only of its throw and thence by momentum across the shed to the other side of the loom, means to actuate said shuttle-driver, a shuttle-box into which said shuttle is adapted to be thrown, and means to impart to said shuttle-box, with its contained shuttle, a movement in the direction in which the shuttle has been thown, substantially as described.

6. In a loom, the combination, with a shuttle having jaws at each end adapted to engage the weft and pull it across the loom, a receptacle for the strands of weft at each side of the loom, a selector adjacent to each receptacle, a shuttle-box at each side of the loom, means to throw the shuttle from one box to the other, means to move each box in the direction in which the shuttle has been thrown, means to open the inner jaws of the shuttle during the said movement of the shuttle-box, and means to close the outer jaws of said shuttle upon the weft selected by the selector.

7. In a loom, the combination, with a shuttle having a pair of jaws at each end adapted to engage the weft and pull it across the loom, a shuttle-box at each side of the loom, means to throw said shuttle from one box to the other, means to move said shuttle-boxes, and means at each side of the loom to open each pair of jaws to release the thrown pick of weft and clamp a new pick, substantially as described.

8. In a loom, the combination, with the lay, of a shuttle, a picker-stick adapted to operate the shuttle, a stud upon which the picker-stick is pivoted, a drum on said stud secured to said picker-stick, a treadle, a strap connecting the treadle and drum, and means for operating said treadle, a device to stop said shuttle before it has completed its traverse across the loom, and means independent of the picker-stick to complete the traverse of the shuttle, substantially as described.

9. In a loom, the combination, with the lay, of a shuttle, a picker-stick on each side of the loom adapted to engage and throw said shuttle, a treadle to operate each picker-stick, and an arm to operate each treadle, said arms being arranged to actuate said treadle alternately, a device to stop said shuttle before it has completed its traverse across the loom, and means independent of the picker-stick to complete the traverse of the shuttle, substantially as described.

10. In a loom, the combination with movable shuttle-boxes at each side of the loom, said shuttle-boxes being secured together, two treadles, means for operating said treadles alternately, and a connection from each treadle to the shuttle-boxes, substantially as described.

11. In a loom, the combination, with a shuttle-box at each side of the loom and a connection between them, two treadles, cams adapted to actuate said treadles alternately, flexible connections from one treadle to one shuttle-box and from the other treadle to the other

shuttle-box, and pulleys over which said flexible connections extend, substantially as described.

12. In a loom, the combination, with the pivoted lay, of a shuttle-having jaws, a jaw-opener adapted, when in operative position, to open said jaws, a shaft turning in bearings in the lay, means on said shaft connected with said jaw-opener so as to move the same into and out of operative position, a counter-shaft whose axis is coincident with the axis on which the lay is pivoted, a driving-shaft, a driving connection from the driving-shaft to the counter-shaft, and a driving connection from the counter-shaft to the jaw-opener-operating shaft, substantially as described.

13. In a loom, the combination, with a shuttle-box, a spring in said shuttle-box, a shuttle adapted to be thrown into said box, means on the shuttle adapted, when the shuttle is thrown into said box, to engage said spring, thereby holding the shuttle in said box, and means to move said shuttle-box in the direction in which the shuttle has been thrown, substantially as described.

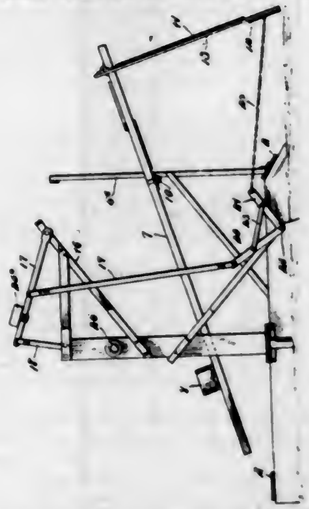
14. In a loom, the combination, with a shuttle-box open at one side, a shuttle having a fixed jaw and a movable jaw at each end adapted to be thrown into said shuttle-box, a cam on the movable jaw extending without the box, means to move said shuttle-box with its contained shuttle, and a jaw-opener in the path of movement of one of said cams during the movement of said shuttle-box, substantially as described.

15. In a loom, the combination, with a shuttle-box, a shuttle having jaws at each end, means to throw said shuttle into and out of said shuttle-box, means to move said shuttle-box, with its contained shuttle, in the direction in which the shuttle has been thrown, a jaw-opener adapted to open the inner pair of jaws to release the pick of weft carried thereby during the said movement of the shuttle-box, a second jaw-opener adapted to open the outer pair of jaws to permit them to clamp the next pick of weft, and means to withdraw the first-named jaw-opener out of operative position during the throw of the shuttle in the opposite direction, substantially as described.

16. In a loom, the combination, with shuttle-boxes, a connection between said shuttle-boxes, a shuttle having jaws at each end, means to throw said shuttle from one box to the other, means to move said shuttle-boxes, a jaw-opener adjacent to each box adapted to open the jaws holding the thrown pick of weft, means to cause said jaw-opener to be moved into operative position during the movement of the boxes in one direction and out of operative position during the movement of the jaws in the opposite direction, and a second jaw-opener adjacent to each box adapted to open the outer pair of jaws to permit them to clamp the next pick of weft, substantially as described.

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**756,335. CURRENT-MOTOR. FELIX H. CRAGO, Billings, Mont. Filed Oct. 28, 1903. Serial No. 178,909. (No model.)**



*Claim.*—1. In a current-motor, a supporting-frame, a rocking frame pivotally connected with said supporting-frame, a paddle-carrying frame pivotally connected with one end of the rocking frame, a counterbalance supported upon the latter at the opposite side of its fulcrum, a bell-crank lever, connecting means between one arm of the latter and the machinery to be driven, and flexible means connecting the other arm of the bell-crank lever with the paddle-carrying frame.

2. In a device of the class described, a float, a supporting-frame mounted thereon, a rocking frame pivotally connected with said supporting-frame, a paddle-carrying frame pivotally connected with said rocking frame, a bell-crank lever, flexible connecting means between one arm of said bell-crank lever and the paddle-carrying frame, an operating-lever, a weight adjustable upon the latter, and a link connecting said operating-lever with the other arm of the bell-crank lever.

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**756,336. DENTAL HANDPIECE. LUTER H. CRAWFORD, Dallas, Tex. Filed June 15, 1903. Serial No. 161,419. (No model.)**



*Claim.*—1. In a dental handpiece, the combination, with rigid casing, a nozzle which is flexibly connected therewith, and thus adapted to be flexed laterally, a rotatable driving-shaft, and devices arranged in the nozzle for holding an abrading-tool, of the flexible shaft interposed between and operatively connecting said devices and the driving-shaft, all arranged to cooperate substantially as described.

2. In a dental handpiece, the combination with a nozzle and rotatable rigid shaft and devices for holding an abrading-tool, of a flexible shaft which permits lateral flexure of the abrading-tool and means for operatively connecting such shaft with the tool-holding devices and a bushing connected therewith and adapted to slide on the rigid shaft with which it is rotatably connected substantially as described.

3. In a dental handpiece the combination with a nozzle, a rotatable rigid shaft having a polygonal portion extending beyond its upper bearing of a slidable bushing conforming to such polygonal portion of the shaft, a flexible shaft connected with said bushing, devices for gripping the abrading-tool and means for operatively connecting the flexible shaft with said devices substantially as described.

4. In a dental handpiece the combination with a hinged nozzle and devices contained therein for holding an abrading-tool and a rigid rotatable shaft having a polygonal extension, of a flexible shaft and a bushing adapted to slide on the said polygonal portion of the shaft and means for operatively connecting the flexible shaft with the tool-holding devices substantially as shown and described.



5. In a dental handpiece the combination with a body-case, a nozzle hinged to the body-case and adapted to be turned at an angle thereto and a rigid rotatable shaft arranged centrally in the body-case, of devices for holding an abrading-tool, and a flexible shaft connected with said devices, and means for connecting the same with the flexible shaft whereby it is caused to rotate therewith at whatever angle the abrading-tool may be adjusted substantially as described.

6. In a dental handpiece the combination with the body-case having a fixed bushing and shaft-bearing, and a rigid rotatable shaft having a polygonal extension adjacent to said bearing, a nozzle hinged to the body-case, devices arranged in the latter for gripping the abrading-tool, a bushing arranged slidably and rotatably within the fixed bushing and engaging the polygonal portion of the shaft, and a flexible rotatable device connecting the gripping devices and the slidable bushing substantially as shown and described.

7. In a dental handpiece the combination with the body-case the hinged nozzle devices arranged therein for gripping the abrading-tool and a rotatable shaft having a polygonal extension, of a bushing fitting said extension and adapted to rotate therewith and slide thereon, a flexible shaft interposed between said bushing and the tool-gripping devices and operatively connected thereto, and a screw interposed between and connecting the bushing and said flexible shaft substantially as shown and described.

8. In a dental handpiece the combination with the body-case, and nozzle, a rigid rotatable shaft and devices for gripping the abrading-tool, of a flexible shaft, and a device connecting the same rotatably with the rigid shaft, the said flexible shaft having a screw connection with said device and the gripping devices substantially as and for the purpose specified.

9. The combination with a nozzle, the body-case and rotatable shaft of tool-gripping devices arranged within the nozzle, a rotatable device interposed between said devices and the shaft and having a screw connection with each, and a brake adapted to bear upon the outer member of the tool-gripping devices, for the purpose of locking the same and preventing rotation as and for the purpose specified.

10. In a dental handpiece, the combination with the body-case, a rotatable shaft and nozzle attached to the body-case and tool-gripping devices arranged in said nozzle and comprising a chuck, a surrounding thimble and a screw, of rotatable devices connecting said screw with the shaft, and a brake member arranged in the nozzle and adapted to be pressed inward for engagement with the thimble substantially as shown and described.

11. In a dental handpiece the combination with the body-case and rotatable shaft, a conical nozzle and tool-gripping devices arranged in the latter and comprising a chuck, a conical thimble surrounding the same and threaded internally, a screw entering said thimble and adapted to bear upon the chuck, a thimble-cup arranged in rear of the thimble and screwing into the nozzle, the aforesaid screw which enters the thimble being adjustable relative to said thimble-cup, means for connecting the screw with the shaft whereby it may be rotated in either direction for gripping the abrading-tool or releasing the same, and a friction-brake arranged in the nozzle and adapted to bear upon the aforesaid thimble in the manner described.

12. In a dental handpiece the combination with the body-case and conical nozzle and a rotatable shaft having an internal shoulder as described, of two gripping devices arranged within the nozzle and comprising a chuck, a conical thimble surrounding the same and having a circumferential rib adapted to engage the said shoulder of the nozzle, a thimble-cup in the form of an annular screw-nut which enters the base of the said nozzle and is in contact with the base of the conical thimble, and means for operatively connecting the aforesaid devices with the shaft substantially as shown and described.

13. In a dental handpiece the combination with a body-case, a nozzle, a rigid rotatable shaft and devices for gripping the abrading-tool which are arranged within the nozzle, means for connecting said devices with the shaft, said means including a flexible shaft, and a flexible inclosing guard and holder for said flexible shaft and arranged within but adapted to be drawn out of the case when flexed substantially as shown and described.

14. In a dental handpiece the combination with the body-case, a nozzle hinged thereto and adapted to be set at various angles, tool-gripping devices arranged within the nozzle and a rotatable shaft, of means for operatively connecting said devices with the shaft, the same comprising a flexible shaft, and a flexible guard and inclosure for said shaft, the said guard being adapted to be flexed and hold the shaft and allow rotation of the same at any angle at which the nozzle may be set substantially as described.

15. In a dental handpiece the combination with the body-case, a rotatable shaft and a nozzle hinged to the body-case and adapted to be turned laterally, of tool-holding devices arranged within the nozzle, means for connecting said devices with the shaft, the same including a flexible shaft, and a guard-holder for said flexible shaft, the same being composed of wedge-shaped sections which are hinged together substantially as shown and described.

16. In a dental handpiece the combination with the body-case, a nozzle hinged thereto and a rotatable shaft, of tool-gripping devices arranged in the nozzle and means for operatively connecting said devices with the shaft in the manner that allows longitudinal adjustment while preserving rotation, said means including a flexible shaft, and a guard and holder for said flexible shaft, the same comprising a series of wedge-shaped sections surrounding the said flexible shaft and hinged together at the outer extremity of their thickest portions, the lines of division between the said sections being radial to the pivot or hinge of the nozzle when the latter is adjusted at an angle substantially as described.

17. In a dental handpiece the combination of the body-case, a rigid rotatable shaft having front and rear bearings and a polygonal portion between said bearings, a nozzle hinged to the body-case, tool-holding devices arranged within the same, a flexible shaft connected with said devices and a bushing connected with the flexible shaft and adapted to slide upon and rotate with the polygonal portion of the shaft, and the flexible guard and holder for the flexible shaft the same being composed of a series of wedge-shaped sections inclosing the flexible shaft and hinged together and connected at its respective ends with the nozzle and the slidable bushing substantially as described.

18. The combination with the body-case and rotatable shaft, a nozzle hinged to the body-case and tool-gripping devices arranged therein and means connecting said devices with the shaft for rotation in the manner described and devices connected with the nozzle and extending backward along the body-case, and a gripping device substantially as described whereby the nozzle may be held locked rigidly in any lateral adjustment substantially as specified.

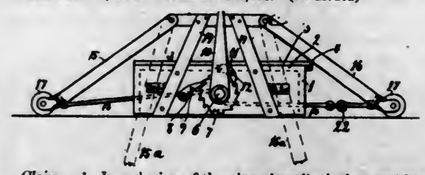
19. The combination with the body-case and rotatable shaft, a nozzle hinged to the body-case, tool-gripping devices arranged within the nozzle and means connecting said devices with the shaft whereby rotation of the said devices may be produced at any angle at which the nozzle may be set, of bars pivotally connected with the nozzle and extending rearward along the body-case, and a rotatable sleeve having an inner cam-surface for engaging said bars and clamping the same for holding the nozzle fixed in any desired adjustment, substantially as described.

20. The combination with the body-case and a rotatable shaft, a nozzle hinged to the body-case and tool-holding devices arranged therein and operatively connected with the shaft, of bars connected with the nozzle and extending along the body-case, the latter being provided with lengthwise grooves to receive the same, and a rotatable sleeve having inner interior cam-surfaces for engaging the said bars, substantially as shown and described.

21. The combination with a body-case and rotatable shaft, a nozzle hinged to the body-case, tool-holding devices arranged in the nozzle and means for operatively connecting them with the said shaft, of a pair of bars hinged to the nozzle on opposite sides, and a second set of bars pivoted to the first-named ones and extending inward in longitudinal grooves formed in the body-case, and a rotatable sleeve having interior cam-surfaces for locking the bars and holding the nozzle in any required adjustment substantially as shown and described.

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**756,337. BARREL-HOLDER. MICHAEL DERRIG, Mapleton, N. D. Filed Sept. 17, 1903. Serial No. 173,631. (No model.)**



*Claim.*—1. In a device of the class described, the combination of a platform with a low frame supporting it, a horizontal shaft journaled about centrally in the frame, U-shaped legs pivoted with their upper ends near the corners of the platform and having their lower ends provided with casters and adapted to spread to an incline po-

sition upon the floor, cables or chains connecting the lower parts of the legs with the shaft, so as to close the legs to a vertical position by the turning of the shaft, and suitable means for turning and for holding the shaft with more or less of the cables wound thereon and the platform and its frame at different elevations.

2. In a device of the class described, the combination of a platform with a low frame supporting it, a horizontal shaft journaled about centrally in the frame, U-shaped legs pivoted with their upper ends near the corners of the platform and having their lower ends provided with casters and adapted to spread to an incline position upon the floor, cables or chains connecting the lower parts of the legs with the shaft, so as to close the legs to a vertical position by the turning of the shaft, and suitable means for turning and for holding the shaft with more or less of the cables wound thereon and the platform and its frame at different elevations, one of said legs being readily detachable from the device, for the purpose set forth.

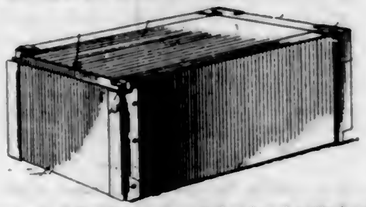
3. In a device of the class described, the combination of a platform with a low frame supporting it, a horizontal shaft journaled about centrally in the frame, U-shaped legs pivoted near the corners of the platform and having their lower ends provided with casters, cables or chains connecting the lower parts of the legs with the shaft, so that the legs may be closed from an outwardly-spread to a vertical position by the turning of the shaft, and suitable means for turning and for holding the shaft with more or less of the cables wound thereon and the platform and its frame at different elevations, and a metallic pan covering the platform and having along one edge a groove lower than the pan and open at one end so as to gather and conduct to a certain point any liquid spilt on the platform.

4. In a device of the class described, the combination of a platform with a low frame supporting it, a horizontal shaft journaled in the frame, U-shaped legs pivoted near the corners of the platform and having their lower ends provided with casters, cables or chains connecting the lower parts of the legs with the shaft, so as to close the legs to a vertical position by the turning of the shaft, and suitable means for turning and for holding the shaft with more or less of the cables wound thereon and the platform and its frame at different elevations, and the keepers 24 to steady the legs.

5. In a device of the class described, the combination of a main frame and platform secured upon the same, frame-arms projecting from the main frame above the platform at two opposite sides of same, two pairs of legs having casters at their lower ends and their upper ends pivotally connected with the said frame-arms above the platform so as to spread with their lower ends one pair from the other, a cable extending from each pair of legs in under the platform, a shaft journaled in the main frame and serving as a drum to wind the cables upon and thereby close the legs inward from a spread to a more or less upright position, a ratchet-wheel secured on the shaft, a pawl or dog pivoted on the frame and engaging the wheel, and a hand-lever pivotally placed on the shaft and carrying an operating pawl or dog engaging the said wheel.

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**756,338. KNOCKDOWN BOX. HENRY A. DOTEN, Burlington, Vt., assignor of one-half to Clinton A. Hanks, Bristol, Vt. Filed Mar 24, 1903. Serial No. 149,341. (No model.)**



*Claim.*—1. A knockdown box of the class described, comprising a top, a bottom and side walls, having coengaging tongues and grooves, whereby the top and bottom are adapted to be moved endwise to engage them with or disengage them from the sides; end pieces, one forming a stop for the top and the other forming a stop for the bottom, said end pieces having grooves 15, and right-angular metallic corner-pieces, each secured to one of the side walls and provided with an inturned flange 14 engaging the groove of the contiguous end piece, the end pieces when disengaged by the top and bottom, being slidable between the ends of the side walls and the corner-pieces, and being engaged at their ends and on their outer sides by the corner-pieces, substantially as described.

2. A knockdown box of the class described, comprising a top, a bottom and side walls, having coengaging tongues and grooves, whereby the top and bottom are adapted to be moved endwise to engage them with or disengage them from the sides; end pieces, one forming a stop for the top and the other forming a stop for the bottom, said end pieces having grooves 15, and right-angular metallic corner-pieces, each secured to one of the side walls and provided with an inturned flange 14 engaging the groove of the contiguous end piece, the end pieces when disengaged by the top and bottom being slidable between the ends of the side walls and the corner-piece, and being engaged at their ends and on their outer sides by the corner-pieces, the latter being provided each with a tongue 13, bent upon the upper edge of one of the side walls and clearing the contiguous end piece, substantially as described.

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**756,339. COMPOSITE DRILL. WILLIAM R. DOWS, Reading, Pa. Filed Nov. 14, 1903. Serial No. 181,350. (No model.)**



*Claim.*—1. A twist-drill, having a cutting end portion and a body portion, one of said portions having a threaded tapered extension and the other having a corresponding axial recess to receive the same, said extension having its sides cut away to jointly form parts of the spiral grooves of the drill.

2. A twist-drill having a cutting end portion separably secured to a body portion by means of an extension on one of said portions having a screw-threaded engagement with an axial recess therefor in the other portion, the sides of said extension and of said recessed portion being cut away to jointly form part of the spiral grooves of the drill.

3. A twist-drill having a cutting end portion separably secured to a body portion by means of an extension on one of said portions having a screw-threaded engagement with an axial recess therefor in the other portion, the sides of said extension and of said recessed portion being cut away to jointly form part of the spiral grooves of the drill and the end of said extension being solidly bottomed in said recess.

4. A twist-drill, having a cutting end portion and a body portion, one of said portions having a screw-threaded tapered extension and reinforcing collar-segments, and the other of said portions having a threaded axial recess which corresponds to and receives said extension and also having collar-segments of reduced diameter which are inclosed by said reinforcing collar-segments, and said tapered extension having its sides cut away to jointly form parts of the spiral grooves of the drill.

5. A twist-drill having a cutting end portion separably secured to a body portion by means of an extension on one of said portions engaging an axial recess therefor in the other portion, the sides of said extension being cut away to form part of the spiral grooves of the drill and a stop-pin and shoulder being provided on the abutting portions.

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**756,340. RECORDING AND ADDING MACHINE. GEORGE W. DUDLEY and ARTHUR L. DUDLEY, Staunton, Va., assignors to the Numerograph Manufacturing Company, Charleston, W. Va., a Corporation of West Virginia. Filed Sept. 24, 1901. Serial No. 76,321. (No model.)**

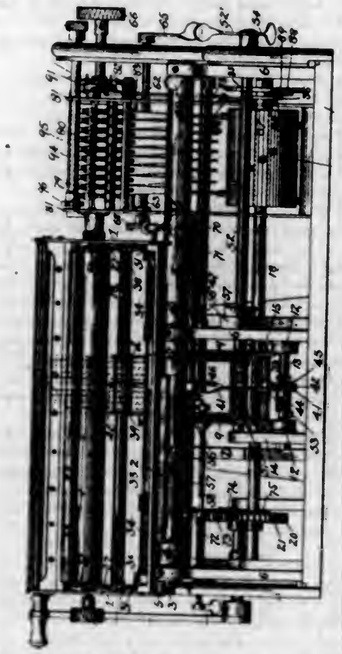
*Claim.*—1. In combination with keys and adding-disks, carrying mechanism including carrying-pawls, setting-up means connected with the adding-disks including selectors one for each order of digits operated from the keys, detent means for said setting-up means and means for throwing out of operation simultaneously the carrying-pawls and the detent means, substantially as described.

2. In combination with the adding-disks, setting-up mechanism therefor, carrying mechanism including carrying-pawls, detent means for the setting-up mechanism, a master-wheel connected with the setting-up mechanism and with the detent means, means for throwing the carrying-pawls out of operation and a connection between the said throwing-out means and the master-wheel whereby when the carrying-pawls are out of operation the detent means will also be out of operation, substantially as described.

3. In combination, the adding-disks, carrying mechanism therefor, setting-up means for the adding-disks including a master-wheel and a lever for operating the same, a connection from the master-wheel to the carrrying mechanism, detent means for the setting-up mechanism, a connection thereto from the master-wheel, means for throwing the carrying-pawls out of operation, said means being connected with the master-wheel, substantially as described.

4. In combination, the adding-disks, setting-up mechanism therefor, detent means for the setting-up mechanism, carrying mechanism including carrying-pawls, means for throwing the pawls and detent means out of operation for the resetting action and the lock for preventing operation of the setting-up mechanism while the detent means and carrying-pawls are out of operation, substantially as described.





5. In combination, adding-disks, setting-up means therefor including a master-wheel, detent means connected with the master-wheel, carrying-pawls, means for throwing said pawls out of operation and turning the master-wheel to throw the detent means out, the keys, the key-lock and means for operating the key-lock from the master-wheel, substantially as described.

6. In combination with the adding-disks, setting-up mechanism including a selector for each order of units, carrying mechanism, detent means for the carrying mechanism normally ineffective thereagainst when the setting-up mechanism is operated and means for throwing said detent means into action when the carrying operation is to be performed, substantially as described.

7. In combination with the adding-disks, setting-up mechanism including a selector for each order of units, detent means normally ineffective against the carrying mechanism and means for throwing said detent means into operation when the resetting of the adding-disks is to be performed, substantially as described.

8. In combination, the adding-disks, the carrying-trains therefor, the detent means for the carrying-trains normally ineffective thereupon, the pin-drum for operating the carrying-train, means for operating the drum step by step in one direction and a cam also operated by said means having connection with the detent means, substantially as described.

9. In combination with the adding-disks, a correcting device including a shifting pinion independent of the setting-up means and hand-operated means for operating the same, substantially as described.

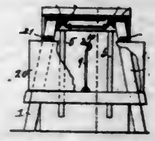
10. In combination in a correcting device for the adding mechanism, a shifting pinion independent of the setting-up means, means for shifting and manipulating the same and a scale to indicate the position of the pinion in relation to the adding-disks, substantially as described.

11. In combination with the adding-disks, setting-up means including shifting selectors, an indicator associated with the said selectors and with the adding-disks to show the order selected, substantially as described.

12. In combination with the adding-disks, setting-up means including shifting selectors, an indicator to show the order selected and a correcting device, substantially as described.

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**756,341. GAME AND AMUSEMENT APPARATUS. ARTHUR DUFFY, Troy, N. Y. Filed May 20, 1903. Serial No. 158,008. (No model.)**



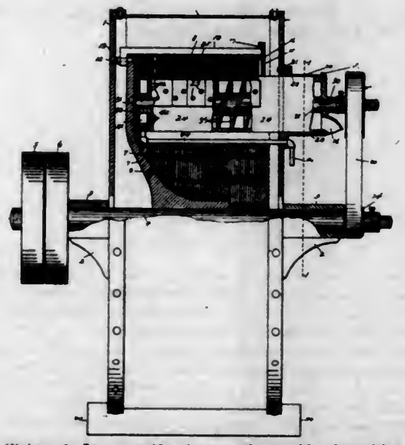
*Claim.*—1. An amusement apparatus comprising in combination a horse provided with transverse notches in its top; and a slide-board adapted to be supported at one end on said horse with its other end resting upon the floor, having on its under side ribs extending longitudinally along the middle of the board adapted to occupy said notches in the top of the horse, when the board is balanced or rocked on the horse as a seesaw; and a detachable connection between the horse and horse-supported end of said board, substantially as described.

2. An amusement apparatus comprising in combination a horse provided with transverse notches in its top; and a slide-board adapted to be supported at one end on said horse with its other end resting upon the floor and provided on its reverse side with game apparatus adapted for use when the board is detached from the horse and supported in a horizontal position, consisting in part of ribs extending longitudinally of the board along its middle adapted to reinforce the board and to occupy the notches in the top of the horse when the board is used as a seesaw; and a detachable connection between the horse and horse-supported end of said board, substantially as described.

3. In an amusement apparatus, in combination a horse provided with transverse notches in its top; a slide-board having on its reverse side longitudinal reinforcing-ribs extending approximately from one end past the middle of the board adapted to enter said notches when the board is used either as a slide-board or as a seesaw; and a detachable positive hook connection between one end of the board and the horse whereby one end of the board is supported on said horse with said ribs seated in said notches, and the other end of the board adapted to rest upon the floor.

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**756,342. CENTRIFUGAL SCREEN. CHARLES E. DULIN, Glens Falls, N. Y., assignor to the Union Bag & Paper Company, Sandy Hill, N. Y., a Corporation. Filed June 19, 1903. Serial No. 162,156. (No model.)**



*Claim.*—1. In a centrifugal screen, the combination with a side perforated drum rotatable upon a horizontal axis; and means for supporting and rotating the same; of means for projecting the material to be screened against one side of the drum and upon its inner surface; a stationary stripper within the drum just in advance of the projected material for removing the screenings from the perforated wall of the drum; a horizontally-disposed trough beneath the stripper extending without the drum; means for conveying the screenings along the trough without the drum; and a receiver for the screened material, substantially as described.

2. In a centrifugal screen, the combination with a side perfo-

rated drum rotatable upon a horizontal axis; and means for supporting and rotating the same; of means for projecting the material to be screened against one side of the drum and upon its inner surface; a stationary trough exteriorly supported in a horizontal position and projecting into the drum just beneath its upper side; means for stripping the screenings from the inner surface of the drum just above the trough whereby they drop into the trough; and means for injecting water into the inner end of the trough to carry the screenings along the trough out of the drum; and a receiver for the screened material, substantially as described.

3. In a centrifugal screen, the combination with a side perforated rotatable drum; and means projecting interiorly of the drum for supporting and rotating the same; of means for projecting under pressure the material to be screened against one side of the drum and upon its inner surface; means for projecting water against the inner surface of the drum on one side of the projected material to be screened whereby the material can be diluted; and a receiver for the screened material and water inclosing the drum, substantially as described.

4. In a centrifugal screen, the combination with a side perforated drum rotatable upon a horizontal axis; means projecting interiorly for supporting the drum and means for positively rotating the same; of a stationary supply-tube projecting into the drum with its axial line practically parallel with the axis of the drum, and provided along that side which faces away from the axis of the drum, with a supply port or ports; and a drum-inclosing case extending entirely around the drum, substantially as described.

5. In a centrifugal screen, the combination with a side perforated shell rotatable upon a horizontal axis open at one end; and means for supporting and rotating the same; of an inwardly-projecting flange at its open end; exteriorly-supported stripping and conveying mechanism projected through the open end into the shell whereby the stripping mechanism is adapted to act upon the inner surface of the screen; and a supply-tube exteriorly supported and projected through the open end into the shell, substantially as described.

6. In a centrifugal screen, the combination with a side perforated rotatable drum; and means for supporting and rotating the same; of a supply-tube projected into the drum and containing a slot or opening on one side; a sleeve rotatable on said tube and provided with a similar slot or opening adapted to register with the opening in the supply-tube; and means for securing the sleeve in an adjusted position on said tube whereby the size of the side opening can be varied as desired, substantially as described.

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**756,343. BOTTLE-CLOSURE. Otto Rick, Baltimore, Md. Filed Aug. 21, 1902. Serial No. 120,596. (No model.)**



*Claim.*—1. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device therefor, said retaining device comprising a body portion arranged to bear upon the upper face of the disk, and an arm formed integrally with the disk, said arm being bent back over the body portion and extending a slight distance beyond the periphery of the body portion, whereby the end of the arm may be forced into a groove or channel in the bottle-neck, while the bent or curved portion of the arm adjacent to the body will likewise pass into the groove, substantially as described.

2. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device therefor, said retaining device comprising a body portion adapted and arranged to bear upon the upper face of the disk, and arms connected to opposite sides of said body portion, said arms being bent back over the body portion with their free ends projecting slightly beyond the face of the body portion, substantially as and for the purpose described.

3. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device therefor, said retaining device comprising a body portion adapted and arranged to bear upon the upper face of the disk, and arms formed integrally with the body portion upon opposite sides thereof, said arms being bent back over the body portion forming loops thereover, and the ends of said arms projecting slightly beyond the periphery of the body portion, substantially as described.

4. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device therefor, said retaining device comprising a body portion having arms formed integrally therewith upon opposite sides of said body, the arms being out of line with each other and bent back over the body portion forming loops thereover, substantially as described.

5. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device therefor, said retaining device comprising a body portion having arms formed integrally therewith upon opposite sides of said body, the arms being out of line with each other and bent back over the body portion forming loops thereover, the free ends of the arms extending slightly beyond the periphery of the body portion, substantially as described.

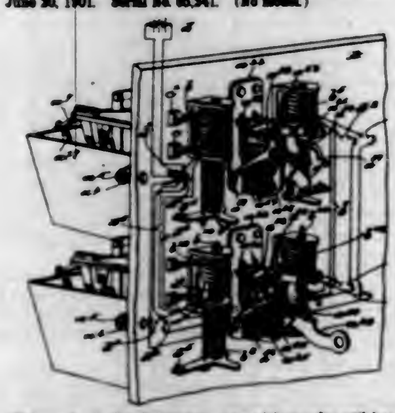
6. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device thereof, said retaining device comprising a body portion having arms formed integrally therewith upon opposite sides of the body portion, the arms being bent back over the body portion past each other, the ends of the arms being curved, substantially as described.

7. In a closure for bottles and the like, the combination of a sealing-disk; and a retaining device therefor, said retaining device comprising a body portion formed with a slight concavity and having arms integrally formed therewith upon opposite sides of the body portion, said arms being bent back over the body portion and forming loops thereover, substantially as described.

8. A retaining device for bottle-closures, comprising a body portion, the said body portion being slightly concave, and arms formed integrally with said body portion upon opposite sides thereof, said arms being out of line with each other and bent back over the body portion, forming loops thereover, the free ends of the arms being curved, substantially as described.

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**756,344. CIRCUIT-BREAKER. Leonard L. Elden, Boston, Mass., assignor of one-half to Sears B. Condit, Jr., Somerville, Mass. Filed June 20, 1901. Serial No. 65,341. (No model.)**



*Claim.*—1. A circuit-breaker, comprising make-and-break contacts, an operating member therefor, a coil in each circuit of said circuit-breaker, one coil on each side thereof, armatures actuated by said coils, and two sets of tripping mechanism for said operating member, said sets of tripping mechanism being automatically operated respectively by said respective armatures.

2. A circuit-breaker, comprising make-and-break contacts, an operating member therefor, a plurality of coils, one in each circuit of said circuit-breaker, an armature actuated by each coil, and independent sets of tripping mechanisms one for each armature automatically operated thereby for opening the circuit-breaker.

3. A circuit-breaker, comprising make-and-break contacts, operating means for opening and closing said contacts, a plurality of coils, one in each circuit combination connected with said circuit-breaker, a plurality of independently-operable armatures, one actuated by each coil, and tripping mechanism automatically operated thereby for opening the circuit-breaker.

4. A circuit-breaker, having separable cooperative contacts, and means for moving one of them, said means including a longitudinally-movable rod, an operating-lever for moving said rod lengthwise in one direction to close a circuit, and quick-acting mechanism for moving the rod lengthwise in an opposite direction to break the circuit, said mechanism including a lever capable of springing freely outward in one direction to permit the opening movement of said rod and moving past a dead-center in an opposite direction, to hold the rod locked in closed position, and means for lifting said lever past said dead-center to permit the quick opening of the breaker.



5. A circuit-breaker, having separable cooperative contacts, and means for moving one of them, said means including a longitudinally-movable rod, an operating-lever for moving said rod lengthwise in one direction to close a circuit, and quick-acting mechanism for moving the rod lengthwise in an opposite direction to break the circuit, said mechanism including means tending forcibly to move the rod quickly toward open position, a lever capable of springing freely outward in one direction to permit the opening movement of said rod and moving past a dead-center in an opposite direction to hold the rod locked in closed position, and automatic means for lifting said lever past said dead-center to permit the quick opening of the breaker.

6. A circuit-breaker, having separable cooperative contacts, and means for moving one of them, said means including a rod, an operating-lever for moving said rod to close the circuit, and quick-acting mechanism for moving the rod to break the circuit, said mechanism including a lever capable of springing freely outward in one direction and moving past a dead-center in an opposite direction, and adjustable means for lifting said lever past said dead-center to permit the quick opening of the breaker.

7. A circuit-breaker, comprising a base, an insulator-bar, cooperating make-and-break contacts carried by said base and bar, guides for the bar, a lever pivotally connected to said bar for moving the same toward and from said base, a reciprocating member for actuating said lever, means maintaining said member under normal tendency to move for breaking said contacts, an operating-handle for moving said member in opposition thereto, a pivoted lever connected to said member arranged to swing past a dead-center for holding said member in position for closing the circuit-breaker, and means for moving said lever in an opposite direction for permitting the instantaneous opening of the breaker.

8. A circuit-breaker, comprising a base, an insulator-bar, cooperating make-and-break contacts carried by said base and bar, guides for the bar, a lever pivotally connected to said bar for moving the same toward and from said base, a reciprocating member for actuating said lever, means maintaining said member under normal tendency to move for breaking said contacts, an operating-handle for moving said member in opposition thereto, a toggle pivoted at one end to said member and at its other end to a stationary part, the movement of said toggle past the dead-center in one direction permitting the instantaneous opening of the breaker, and the movement of said toggle past the dead-center in an opposite direction serving to retain the breaker closed.

9. A circuit-breaker, comprising a base, an insulator-bar, cooperating make-and-break contacts carried by said base and bar, guides for the bar, a lever pivotally connected to said bar for moving the same toward and from said base, a reciprocating member for actuating said lever, means maintaining said member under normal tendency to move for breaking said contacts, an operating-handle for moving said member in opposition thereto, a toggle pivoted at one end to said member, and at its other end to a stationary part, the movement of said toggle past the dead-center in one direction permitting the instantaneous opening of the breaker, and the movement of said toggle past the dead-center in an opposite direction serving to retain the breaker closed, and means for automatically moving said toggle.

10. A circuit-breaker, comprising make-and-break contacts, a movable member for actuating the same, a lever pivoted to said member and movable in opposite directions past the dead-center for locking said member in one position, or permitting its movement to an opposite position, an eccentric surface for limiting the movement of said lever in said locking position, an arm for raising said surface to swing said lever past the dead-center, a solenoid actuated by the current governed by the breaker, and an armature moved by said solenoid in the path of and to actuate said arm.

11. A circuit-breaker, comprising make-and-break contacts, a movable member for actuating the same, a lever pivoted to said member and movable in opposite directions past the dead-center for locking said member in one position, or permitting its movement to an opposite position, an eccentric surface for limiting the movement of said lever in said locking position, an arm for raising said surface to swing said lever past the dead-center, a solenoid actuated by the current governed by the breaker, and an armature moved by said solenoid in the path of and to actuate said arm, and means for regulating the position of said eccentric surface.

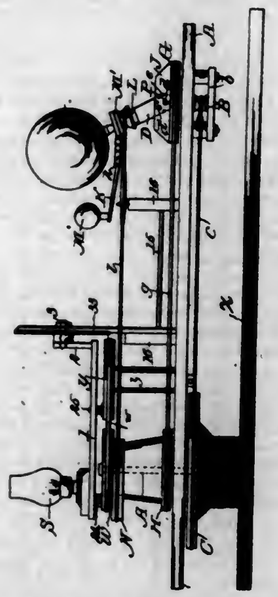
12. A circuit-breaker, comprising make-and-break contacts, a movable member for actuating the same, a lever pivoted to said member and movable in opposite directions past the dead-center for locking said member in one position, or permitting its movement to an opposite position, an eccentric surface for limiting the movement of said lever in said locking position and means for moving said surface to swing said lever past the dead-center.

13. A circuit-breaker, comprising make-and-break contacts, a movable member for actuating the same, a lever pivoted to said member and movable in opposite directions past the dead-center for locking said member in one position, or permitting its movement to an opposite position, an eccentric surface for limiting the movement of said lever in said locking position and means for regulating the position of said eccentric surface.

14. A circuit-breaker, comprising make-and-break contacts, a movable member for actuating the same, a lever pivoted to said member and movable in opposite directions past the dead-center for locking said member in one position, or permitting its movement to an opposite position, an eccentric surface for limiting the movement of said lever in said locking position, and automatic means for moving said surface to swing said lever past the dead-center.

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**756,345. TELLURIAN. Theodorick P. Epes, Blackstone, Va. Filed Oct. 24, 1902. Serial No. 128,541. (No model.)**



*Claim.*—1. In a tellurian, the combination with the fixed axis, an earth-globe revoluble around the same, and means to rotate the globe on an inclined axis and to maintain the parallelism thereof, of a sun device mounted eccentric to the axis, the eccentricity being equal to one-half the variation in distance of the earth-globe, in its orbit, from said fixed axis.

2. In a tellurian, the combination with an earth-globe having an inclined axis, revoluble in an elliptical orbit produced by the inclination of the axis, and means to maintain the parallelism of its axis, of a sun-lamp and means to direct a pencil of light from the lamp to the center of the earth-globe during the whole of its revolution.

3. In a tellurian, the combination with a sun-lamp and an earth-globe having an inclined axis, and means to revolve the latter around the former in an elliptical orbit produced by the inclination of the axis, of a disk maintained between the lamp and globe, having an aperture through which the light of the lamp is directed toward the center of the globe during the whole of its revolution.

4. In a tellurian, the combination with a sun-lamp and earth-

globe, and means to produce their relative motions, of a pencil-tube supported between the lamp and globe, through which the light shines on the globe during said motions, and a removable disk on the tube, having an aperture through which the light shines on the globe, to illustrate solar phenomena.

5. In a tellurian, the combination with a sun-lamp and earth-globe, and means to produce their relative motions, of a disk between the lamp and globe having a slot through which the light shines on the globe.

6. In a tellurian, the combination with a sun-lamp, and an earth-globe having an inclined axis, and means to revolve the globe around the lamp and maintain the parallelism of said axis, of a disk between the lamp and globe, having a slot in line with the axis of the globe, and means to maintain the alinement of said slot and axis during the whole revolution.

7. In a tellurian, the combination with a central axle and an arm turning thereon, of earth and moon globes carried by the arm, driving connections between the axle and the globes, producing representative motions thereof, a wheel fast on the axle, a sun-lamp eccentric thereon, another wheel carried by the arm and having driving connection with said wheel, an arm connected eccentrically to said wheels and guided thereby, and a light-controlling device carried by said arm between the lamp and the globes.

8. In a tellurian, the combination with a central axle and a supporting-arm turning thereon, of an earth-globe, a guide-wheel journaled on the arm and driven by the movement thereof, to maintain the parallelism of the axis of the earth-globe, a flexible shaft on which the earth-globe is mounted, having driving connections with the axle, and a journal-box for the shaft, supported on the guide-wheel and adjustable thereon to vary the inclination of the shaft.

9. In a tellurian, the combination with the earth-globe and a flexible shaft on which it is mounted, of an adjustable journal-box for the shaft, having a spindle projecting therefrom, a pulley on the spindle having a moon-globe-supporting arm projecting therefrom, and means to drive the shaft and the pulley.

10. In a tellurian, the combination with an earth-globe and a flexible shaft on which it is mounted, of a carrier-box for the shaft having a longitudinally-projecting spindle slightly askew, a pulley on the spindle, having a moon-globe-supporting arm, said box being adjustable on its longitudinal axle to vary the inclination of the spindle and arm, and means to drive the shaft and pulley.

11. In a tellurian, the combination with the main supporting-arm turning on a central axis, the rotating guide-wheel carried thereby, and the earth-globe, of a flexible shaft for said globe extending through the center of the wheel, a journal-box for said shaft mounted on the wheel, and means to drive the shaft and wheel by the turn of the arm.

12. The combination with the central axis and the main supporting-arm turning thereon, the rotatable guide-wheel on the arm, and an earth-globe, of a flexible shaft for said globe extending through the center of the wheel, an adjustably-inclined journal-box for said shaft, mounted on the wheel, a spindle projecting angularly from the journal-box, said box having adjustment to vary the direction of projection of the spindle, a pulley on the spindle, a moon-globe-supporting arm extending from the pulley, and means to drive the wheel, the shaft and the pulley by the turn of the main arm.

13. In a tellurian, the combination with the central axle, the arm turning thereon, the earth-globe and its bent flexible shaft, the guide-wheel journaled on the arm, and the box supported on the wheel and carrying the shaft at an inclination, of the moon-pulley rotatably supported on the box eccentric to the guide-wheel, and a driving-wheel on the central axle, for said pulley, having equal eccentricity.

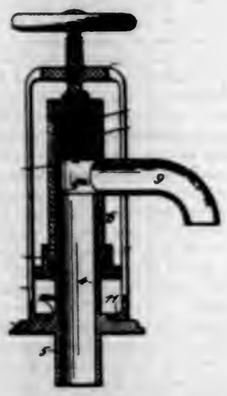
14. In a tellurian, the combination with the journal-box for the shaft of the earth-globe, of the tubular spindle projecting angularly from the box, through which the shaft extends, the moon-pulley on the spindle, and the moon-globe-supporting arm projecting from the pulley.

15. In a tellurian, the combination with the guide-wheel G, for maintaining the parallelism of the earth's axis, of the driving-wheel H at the center of the earth's revolution, said driving-wheel having two peripheral driving-faces of different diameters.

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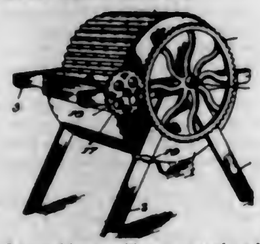
**756,346. FAUCET.** MICHAEL FARRELL, Chicago, Ill. Filed June 20, 1903. Serial No. 162,305. (No model.)

*Claim.*—A faucet comprising a pipe having a valve-seat at its end, a tube slidable on the pipe and having a discharge-spout and a valve, a threaded collar on the pipe, a ring screwed on the collar, standards extending upwardly from the ring, and a screw valve-stem supported in the standards for operating the valve, substantially as described.



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**756,347. WASHING-MACHINE.** SCOTT M. FARWELL, Hanover, Ill., assignor of one-half to S. B. Jeffers, Lone Wolf, Okla. Filed Feb. 14, 1903. Serial No. 143,433. (No model.)



*Claim.*—1. In a washing-machine; a reservoir and support therefor; a cylindrical washing-chamber proper, rotatably mounted in said reservoir, said chamber having a corrugated periphery, each corrugation having a plurality of air-carrying cup-like members 14 and also having an air-releasing aperture to cooperate with each cup-shaped member as and for the purpose set forth.

2. In a washing-machine a reservoir and support therefor; a rotatable hollow cylindrical washing-chamber mounted in said reservoir and having a corrugated peripheral face; air-carrying cup-like members formed by being struck from the metal forming said face, each air-carrying cup being provided adjacent thereto with the air-releasing aperture, said air-carrying cups being so located that they will carry down into the water in the reservoir a quantity of air and release the same through said aperture when said cup members are at their lowest point, substantially as specified and for the purpose set forth.

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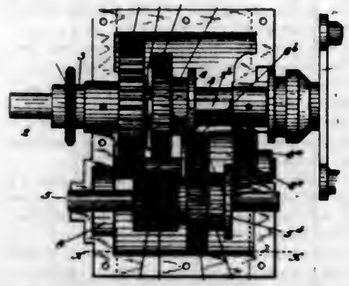
**756,348. PICK FOR MUSICAL INSTRUMENTS.** JOHN A. FORNEY, Reading, Pa. Filed Jan. 22, 1904. Serial No. 190,131. (No model.)



*Claim.*—A pick comprising an annular band, adapted to be placed on the end of a finger, split transversely on its upper side and having an outwardly-projecting portion on its lower side, for the purpose set forth, and a substantially semicircular loop, projecting from the front side of the band, having its ends attached to the upper and lower sides thereof, and provided on its front side with an abrupt projection forming a picking-point, substantially as described.



**756,349. TRANSMISSION-GEAR.** LEE A. FRAYER, Columbus, Ohio, assignor, by mesne assignments, to the Oscar Lear Automobile Company, Columbus, Ohio, a Corporation of Ohio. Filed Aug. 17, 1903. Serial No. 169,751. (No model.)



*Claim.*—1. In a transmission-gearing, the combination of a driving-shaft, a power-transmitting gear loose thereon, a sliding clutch-sleeve on said shaft and rotating therewith to engage said gear, said sliding clutch-sleeve also having a gear, a second shaft containing sliding gears $5^a$ and $5^b$ and means for shifting said sleeve and the sliding gears simultaneously in opposite directions.

2. In a transmission-gearing the combination of a driving-shaft, a power-transmitting gear loose thereon, a sliding clutch-sleeve on said shaft to engage said gear, said sliding clutch-sleeve rotating with said shaft, and also having a gear, a second shaft, sliding gears $5^a$ and $5^b$ thereon, and a yoke engaging said sliding sleeve and the gears $5^a$ and $5^b$ for shifting said sleeves and the gears simultaneously in opposite directions.

3. In a transmission-gearing, the combination of a driving-shaft, a power-transmitting gear loose thereon, a sliding clutch-sleeve on said shaft to engage said gear, said sliding clutch-sleeve rotating with said shaft, and also having a gear, a second shaft containing sliding gears $5^a$ and $5^b$, means for shifting said sleeve and the gears $5^a$ and $5^b$ simultaneously in opposite directions, a third shaft containing sliding gears $6^a$ and $6^b$ said last-named gears being connected with the gears $5^a$ and $5^b$ on the second-named shaft to be slidable simultaneously therewith.

4. In a transmission-gearing, the combination of a driving-shaft, a power-transmitting gear $3^a$ turning loose thereon, a sliding clutch-sleeve on said shaft to engage said gear, said sliding clutch-sleeve rotating with said shaft and also having a gear $4^a$, a second shaft, sliding gears $5^a$ and $5^b$ thereon to engage the gears $3^a$ and $4^a$ respectively, means for shifting said sleeve and the gears $5^a$ and $5^b$ simultaneously in opposite directions, a third shaft containing sliding gears $6^a$ and $6^b$, the gear $6^a$ being adapted to be brought temporarily into engagement with the gear $4^a$ and the gear $6^b$ being continuously engaged with the gear $5^b$.

5. In a transmission-gearing, the combination of a driving-shaft, a power-transmitting gear $3^a$ loose thereon, a sliding clutch-sleeve having a gear $4^a$ on said shaft and rotating therewith, a second shaft containing sliding gears $5^a$ and $5^b$, the gear $5^a$ adapted to mesh with the gear $3^a$, and the gear $5^b$ adapted to mesh with the gear $4^a$, and means for simultaneously shifting in opposite directions the gear $5^a$ out of mesh with the power-transmitting gear $3^a$ and the clutch-sleeve into engagement with said gear and for shifting the gear $5^a$ into mesh with the gear $3^a$ and the gear $5^b$ into mesh with the gear $4^a$.

6. In a transmission-gearing, the combination of a driving-shaft, a power-transmitting gear $3^a$ loose thereon, a sliding clutch-sleeve having a gear $4^a$ on said shaft and rotating therewith, a second shaft containing sliding gears $5^a$ and $5^b$, the gear $5^a$ adapted to mesh with the gear $3^a$ and the gear $5^b$ adapted to mesh with the gear $4^a$, means for simultaneously shifting the gear $5^a$ out of mesh with the power-transmitting gear $3^a$ and the clutch-sleeve into engagement with said gear and for shifting the gear $5^a$ into mesh with the gear $3^a$ and the gear $5^b$ into mesh with the gear $4^a$, and a third shaft containing sliding gears $6^a$ and $6^b$, the gear $6^b$ meshing with the gear $5^b$ and the gear $6^a$ adapted to mesh with the gear $4^a$ both said gears $6^a$ and $6^b$ being connected with the gear $5^a$ on the second-named shaft and slidable therewith.

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**756,350. HOSE-MENDER.** FRANK A. GARBUTT, Los Angeles, Cal. Filed Oct. 26, 1901. Serial No. 80,131. (No model.)

*Claim.*—1. A hose-mender comprising outer hose-engaging means adapted to cover the end portions of the hose, and inner hose-engaging means adapted to engage with and grip the end portions of the hose, one of such hose-engaging means being a unitary member and having oppositely-tapering frusto-conical faces, and the other hose-engaging means consisting of two members having frusto-conical faces of less taper than the aforesaid faces of the other member and tapering in the same direction as said faces.



2. In a hose-mender three separate and unitary hollow smooth-walled shell-like members one of which comprises a double frusto-conical shell, and the others are each in the form of a frusto-conical shell of less taper, with the larger ends thereof respectively adjacent an enlarged portion of the first-named member.

3. In a hose-mender, three separate and unitary, hollow, shell-like members, two of which are frusto-conical and each of a less length than half the length of the other member and said other member tapers in opposite directions, the taper of the exterior member being greater toward each end than the coacting interior member, whereby the hose is under greater compression at a distance from its end than it is at the end, and said compression rapidly increasing as the members are moved longitudinally relatively to each other in trying to separate the ends of the hose.

4. In a hose-mender, three separate and unitary, smooth-walled hollow shell-like members, the outer one of which has its greatest diameter at the center and tapers toward each end and the inner members each tapers from one end to the other, the larger ends being located within the larger diameter of the outer member and abutting against each other, whereby the ends of the hose will be automatically held between the inner members and the outer member.

5. In a hose-mender, three separate and smooth-walled hollow shell-like members, the outer one of which has its greatest diameter at the center and tapers toward each end and the inner members each tapers from one end to the other, the larger ends of said inner members being flanged and located within the larger diameter of the outer member said flanges abutting against each other whereby the ends of the hose may be automatically held between said inner members and the outer member and in engagement with said flanges.

6. In a hose-mender, three hollow, smooth-walled shell-like members, the outer one of which overlaps the inner members and is in the form of a double frusto-conical shell, and the inner members are each in the form of a frusto-conical shell, with a less taper toward the smaller end than the taper of the outer member, the larger ends of said inner members, being flanged and abutting against each other at the middle of the outer member

7. A hose-mender comprising two frusto-conical inner members, and a unitary double and frusto-conical outer member adapted to cover and grip the end portions of the hose between the inner and outer members.

8. In a hose-mender, three separate and unitary, smooth-walled hollow shell-like members, the outer one of which has its greatest diameter at the center and tapers toward each end and the inner members each tapering from one end to the other, the larger ends being located within the larger diameter of the outer member, whereby the ends of the hose will be automatically held between the inner members and the outer member.

9. In a hose-mender, three separate and unitary, hollow, shell-like members, two of which are frusto-conical and each of a less length than half the length of the other member, and said other member tapers in opposite directions, the taper of the exterior member being greater toward each end than the coacting interior member, whereby the hose is under greater compression at a distance from its end than it is at the end, and said compression rapidly increasing as the members are moved longitudinally relatively to each other in trying to separate the ends of the hose.

10. In a hose-mender, three separate and unitary, smooth-walled hollow shell-like members, the outer one of which has its greatest diameter at the center and tapers toward each end and the inner members each tapers from one end to the other, the larger ends being located within the larger diameter of the outer member and abutting against each other, whereby the ends of the hose will be automatically held between the inner members and the outer member.

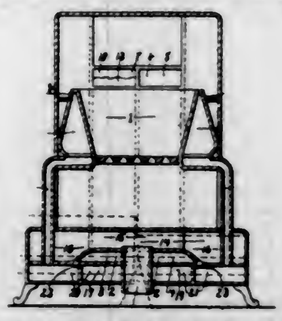
11. In a hose-mender, three separate and smooth-walled hollow shell-like members, the outer one of which has its greatest diameter at the center and tapers toward each end and the inner members each tapers from one end to the other, the larger ends of said inner

members being flanged and located within the larger diameter of the outer member, said flanges abutting against each other, whereby the ends of the hose may be automatically held between said inner members and the outer member and in engagement with said flanges.

12. In a hose-mender, three hollow, smooth-walled shell-like members, the outer one of which overlaps the inner members and is in the form of a double frusto-conical shell, and the inner members are each in the form of a frusto-conical shell, with a less taper toward the smaller end than the taper of the outer member, the larger ends of said inner members, being flanged and abutting against each other at the middle of the outer member.

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**756,351. HEATING APPARATUS.** CHARLES GARLICK, Geneva N. Y. Filed July 6, 1903. Serial No. 164,377. (No model.)



*Claim.*—1. A heater comprising a combustion-chamber, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber having portions thereof arranged above and other portions extending downwardly and disposed at the side of the heating-chamber, and means for conducting the air to and from the fresh-air chamber, substantially as and for the purpose specified.

2. A heater comprising a combustion-chamber, a heating-chamber beneath the combustion-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber below the combustion-chamber having its intermediate portion arranged above the heating-chamber and its side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said heating-chamber, and means for conducting the air to and from the fresh-air chamber, substantially as and for the purpose set forth.

3. A heater comprising a combustion-chamber, a heating-chamber, substantially upright passages, one communicating with said chambers for conducting the products of combustion to the heating-chamber, and the other opening from the heating-chamber for conducting the products of combustion therefrom, a fresh-air chamber adjacent to the heating-chamber, and passages arranged at opposite sides of the former passages and communicating with the fresh-air chamber for conducting the air therefrom, substantially as and for the purpose specified.

4. A heater comprising a combustion-chamber, a heating-chamber formed with two compartments having corresponding ends separated and their other ends connected together, substantially upright passages, one having its upper end opening from the combustion-chamber and its lower end discharging into one of said separated ends of the compartments, and the other passage having its lower end opening from the other of said separated ends of the compartments, a fresh-air chamber below the combustion-chamber having its intermediate portion arranged above the heating-chamber and its opposite side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said heating-chamber, and passages arranged at opposite sides of the former passages and communicating with the side portions of the fresh-air chamber for conducting the air therefrom, substantially as and for the purpose set forth.

5. A heater comprising a combustion-chamber, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber having portions thereof arranged above and at the side of the heating-chamber, a foul-air chamber beneath the heating-chamber and the portion of the fresh-air chamber at the side of the heating-chamber, and means for conducting the air to and from the fresh-air and foul-air chambers, substantially as and for the purpose specified.

6. A heater comprising a combustion-chamber, a heating-chamber beneath the combustion-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, a fresh-air chamber below the combustion-chamber having its intermediate portion arranged above the heating-chamber and its side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said heating-chamber, a foul-air chamber having its intermediate portion arranged beneath the heating-chamber and its opposite side portions extended laterally beyond the sides of the heating-chamber and beneath the side portions of the fresh-air chamber, and means for conducting the air to and from the fresh-air and foul-air chambers, substantially as and for the purpose set forth.

7. A heater comprising a combustion-chamber, a heating-chamber adjacent to the combustion-chamber having an exit communicating with said combustion-chamber, a second heating-chamber, means for conducting the heated gases from the combustion-chamber to the second heating-chamber, a fresh-air chamber adjacent to the second heating-chamber, means for conducting the air to and from the fresh-air chamber, a foul-air chamber adjacent to the second heating-chamber, and means for conducting the air from the foul-air chamber to the first heating-chamber, substantially as and for the purpose described.

8. A heater comprising a combustion-chamber, a heating-chamber adjacent to the combustion-chamber having an exit communicating with said combustion-chamber, a second heating-chamber, means for conducting the heated gases from the combustion-chamber to the second heating-chamber, a fresh-air chamber having its intermediate portion arranged above the second heating-chamber and its side portions extended laterally beyond the sides of the heating-chamber and downwardly at opposite sides of said second heating-chamber, means for conducting the air to and from the fresh-air chamber, a foul-air chamber having its intermediate portion arranged beneath the second heating-chamber and its opposite side portions extended laterally beyond the sides of the second heating-chamber and beneath the side portions of the fresh-air chamber, and means for conducting the air from the side portions of the foul-air chamber to the first heating-chamber, substantially as and for the purpose specified.

9. A heater comprising a combustion-chamber, a heating-chamber at the side of the combustion-chamber, means for conducting the air to the combustion-chamber from the heating-chamber, a second heating-chamber, means for conducting the heated products from the combustion-chamber to the second heating-chamber, a fresh-air chamber above the second heating-chamber, and means for conducting the air to and from the fresh-air chamber, substantially as and for the purpose set forth.

10. A heater comprising a combustion-chamber, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, and fresh and foul air chambers inclosing the heating-chamber above, below and on opposite sides thereof, substantially as described.

11. A heater comprising a combustion-chamber, a fresh-air chamber arranged below the same, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, and a foul-air chamber including two divided compartments, one division of each compartment being arranged directly below the heating-chamber and having an inlet-opening in one end of the same and the other divisions of said compartments being arranged to one side of the heating-chamber and provided with exit-passages, substantially as described.

12. A heater comprising a combustion-chamber, a fresh-air chamber arranged below the same, a heating-chamber, means for conducting the heated gases from the combustion-chamber to the heating-chamber, and a foul-air chamber including two divided compartments, one division of each compartment being arranged directly below the heating-chamber and having an inlet-opening in one end of the same and the other divisions of said compartments being arranged to one side of the heating-chamber and provided with exit-passages leading to the combustion-chamber, substantially as described.

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**756,352. COMPUTING-SCALE.** WILLIAM GERHARDT, Brunswick, Mo. Filed Apr. 13, 1901. Serial No. 56,759. (No model.)

*Claim.*—1. In a computing-scale, the combination with the scale-beam and the weight-poise movable thereon, of a track supported above the scale-beam, a slide movable upon said track and having an operative connection with said weight-poise and formed with a rack, a cylindrical casing mounted above said slide and provided with a computing-dial, a gear mounted in said casing, a bifurcated lever straddling the said casing and having its legs secured to the shaft of said gear and provided with a handle and with figures coacting with the figures upon said dial, and a gear mounted in the casing and meshing with the first-mentioned gear and with the rack, substantially as described.





2. In a computing-scale, the combination with the scale-beam and the weight-poise movable thereon, of a main dial, an auxiliary dial sliding thereon and normally concealed from view, an indicator movable upon said dial and carrying figures upon one edge thereof coacting with the main dial, a swinging plate carried by said lever and provided with figures adapted to coact with the figures of the auxiliary dial, and an operative connection between said indicator and said weight-poise whereby the movement of one effects the movement of the other, substantially as described.

3. In a computing-scale, the combination with the scale-beam and the weight-poise movable thereon, of a track or way supported above the scale, a slide movable upon said track or way and having a bifurcated arm attached thereto and engaging said weight-poise, and a rack, a cylindrical casing provided with a computing-dial, a gear mounted in said casing, a lever secured to the shaft of said gear, crossing said dial-face, and provided with a handle, and with figures coacting with the figures upon said dial, and a gear mounted in the casing and meshing with the first-mentioned gear, and with the rack, substantially as described.

4. In a computing-scale, the combination with the scale-beam and the weight-poise movable thereon, of a main dial, an auxiliary dial sliding therein and normally concealed from view, an indicator movable upon said dial and carrying figures upon one edge thereof coacting with the main dial, a swinging plate carried by said lever and provided with figures adapted to coact with the figures of the auxiliary dial, a gear mounted on the shaft of said indicator-lever, and sliding bar adjacent said scale-beam carrying a rack and an arm engaging said weight-poise, and a gear between said first-named gear and the rack, substantially as described.

5. In a computing-scale, the combination with the scale-beam, and the weight-poise movable thereon, provided with a lug, a track or way adjacent said scale-beam, a slide movable upon said track or way, having a rack, and a bifurcated arm with antifriction devices on the bifurcations, engaging the lug on said weight-poise, a cylindrical casing provided with a main computing-dial, an auxiliary computing-dial normally concealed by said main dial, a bifurcated lever straddling said casing, pivoted thereto and having figures along one edge thereof coacting with those in the main dial, a slidable plate on said lever carrying figures adapted to coact with those on said auxiliary dial, and a handle, a gear-wheel pivoted to the shaft of said lever and another gear-wheel meshing with said gear-wheel and the rack on said slide, substantially as described.

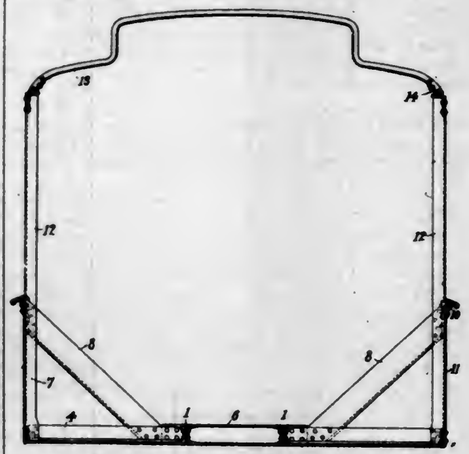
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**756,353. RAILWAY-CAR FRAME.** GEORGE GIBB, New York, N. Y. Filed Sept. 21, 1903. Serial No. 173,966. (No model.)

*Claim.*—1. In a railway-car frame, the combination with a plurality of side trusses, of a floor or bed frame having a plurality of cross-bearing trusses each composed of a horizontal member and a vertical member at each end thereof, said cross-trusses being supported by the lower parts of the side trusses, with the said vertical members extending upward and adjacent to the upper parts of the side trusses, as set forth.

2. In a railway-car frame, the combination with a plurality of side trusses, of a floor or bed frame having a plurality of cross-bearing trusses each composed of a horizontal member, a vertical member at each end, and compression members intermediate the horizontal and vertical members, said cross-trusses being supported by the lower part of the side trusses, with the vertical and compression members extending above the floor of the car, as set forth.

3. In a railway-car, a floor or bed frame comprising, in combination, one or more longitudinal sills, and a plurality of cross-bearing trusses each composed of a horizontal member having a vertical member and a compression member at each end extending above the bottom of the car, as set forth.



4. In a railway-car frame, a cross-bearing truss composed of a horizontal member having at each end a vertical member and a compression member, as set forth.

5. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of side trusses, cross-bearing trusses carried by the side trusses and having means to prevent distortion of the latter, and a floor carried by the cross-bearing trusses, of a light housing to inclose the body, consisting of a roof-frame, and supports therefor carried by the body, as set forth.

6. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of side trusses, cross-bearing trusses supported by the lower parts of the side trusses, and a floor carried by the cross-bearing trusses, of a light housing to inclose the body, consisting of a roof-frame, and supports therefor carried by the body, as set forth.

7. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of deep side trusses located below the windows, a floor, supports for the floor carried by the side trusses, and means to prevent distortion of the side trusses, of a light housing to inclose the body, consisting of a roof-frame, and supports therefor carried by the body, as set forth.

8. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of deep side trusses located below the windows, having upper members with outwardly-turned flanges constituting belt-rails underneath the windows of the car, and a floor supported by the lower parts of the side trusses, of a light housing to inclose the body, consisting of a roof-frame, and a plurality of supports therefor carried by the body, as set forth.

9. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of deep side trusses located below the windows, having lower members, and upper members constituting belt-rails underneath the windows of the car, cross-bearing trusses supported by the lower members of the side trusses, and a floor supported by the cross-bearing trusses, of a light housing to inclose the body, consisting of a roof-frame, and supports therefor carried by the body, as set forth.

10. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of deep side trusses located below the windows, having lower members, a floor carried by the lower members of the side trusses, and a housing to inclose the body, consisting of a roof-frame, and supports therefor supported by the lower members of the side trusses, as set forth.

11. In a passenger-car, the combination with a steel body-frame constructed to supply the necessary strength and rigidity of the car, composed of side trusses located below the windows, consisting of

upper members having outwardly-turned flanges constituting belt-rails underneath the windows of the car, lower members and intermediate bracings, and a floor supported by the lower members, of a light housing to inclose the body, consisting of a roof-frame, and supports therefor carried by the body, as set forth.

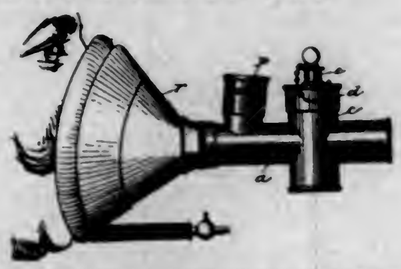
12. In a passenger-car frame, a steel side frame comprising in combination a plate girder or truss constituting the outer sheathing of the car, an upper member for the girder having a flange turned outwardly to constitute the belt-rail underneath the windows of the car, a lower member having an inwardly-turned flange to support the floor of the car, and a plurality of roof-supports, as set forth.

13. In a railway-car frame, the combination with side trusses each having an inwardly-extending flange at or near its lower part, and an upper member having an outwardly-extending flange, of a plurality of roof-supports carried by the lower member and extending therefrom to the roof unbroken, as set forth.

14. In a railway-car, a frame comprising, in combination, a pair of side trusses each composed of a lower member having an inwardly-extending flange, an upper member having an outwardly-extending flange, and an intermediate bracing; a floor or bed frame composed of one or more longitudinal sills, and a plurality of cross-bearing trusses each consisting of a horizontal member, and a vertical and a compression member at each end thereof, said cross-trusses being supported on the inwardly-extending flanges of the side trusses; a plurality of roof-supports carried by the lower member of the side trusses and extending unbroken therefrom to the roof; and a roof-frame carried by said supports, as set forth.

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**756,354. INHALER. SYDNEY O. GOLDAN, New York, N. Y. Filed Nov. 28, 1903. Serial No. 182,997. (No model.)**



*Claim.*—1. An inhaler comprising an open-ended tubular section, an anesthetic-receiving chamber communicating with said section intermediate the ends thereof, inhalation-valves in the tubular section anterior and posterior respectively to said anesthetic-receiving chamber, and an exhalation-valve between said chamber and the delivery end of the tubular section.

2. An inhaler comprising an open-ended tubular section, a face-piece on one end thereof, an anesthetic-receiving chamber extending transversely of said tubular section intermediate the ends thereof, inwardly-opening check-valves closing said tubular section anterior and posterior respectively to said chamber, and an outwardly-opening check-valve between the chamber and the face-piece.

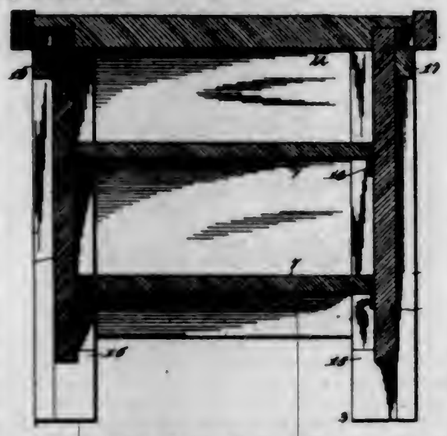
3. An inhaler comprising an open-ended tubular section, an anesthetic-receiving chamber extending transversely of said tubular section intermediate the ends thereof, said receiving-chamber having a removable cap at its upper end said cap being provided with an orifice closed by a removable plug, inhalation-valves in the tubular section anterior and posterior respectively to said chamber, and an exhalation-valve in said section between said chamber and the delivery end of the tubular section.

4. An inhaler comprising an open-ended tubular section *a*, a transverse anesthetic-receiving chamber *c* having a removable cap *d* provided with an orifice closed by a plug *e*, inhalation-valves *f*, *f* closing said section *a* anterior and posterior to said chamber *c*, and an exhalation-valve *m* mounted in a rim *k* provided with a perforated cap *p*, said valve *m* being located on the section *a* between chamber *c* and the delivery end of said section *a*.

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**756,355. SECTIONAL OR KNOCKDOWN KITCHEN-SAFE. VIRGIL T. GRAHL, King, N. C. Filed Sept. 25, 1903. Serial No. 174,612. (No model.)**

*Claim.*—1. A device of the class described comprising front and rear sections and the sides having matched interlocking overlapped portions formed by longitudinal tongues and grooves, and horizontal pieces for interlocking matched parts, whereby the overlapped portions are held against vertical movement on each other, substantially as described.



2. A device of the class described comprising front and rear sections having corner-posts provided with longitudinal tongues and grooves, said corner-posts being also provided with transverse notches or recesses, sides overlapping the corner-posts and provided with longitudinal tongues and grooves, and transverse locking-strips mounted on the sides and fitting in the notches or recesses, whereby the sides and corner-posts are held against longitudinal movement on each other, substantially as described.

3. A device of the class described comprising front and rear sections having corner-posts provided with vertical tongues and grooves, said corner-posts being also provided at their lower ends with sockets, sides overlapping the corner-posts and having corresponding tongues and grooves, the lower ends of the sides being fitted in the said sockets, and means for holding the tongues and grooves of the sides and corner-posts in engagement with each other, substantially as described.

4. A device of the class described comprising front and rear sections having corner-posts provided with tongues and grooves and having upper transverse recesses, sides having tongues and grooves to fit those of the corner-posts, locking-bars mounted on the sides and engaging the transverse recesses, and supports arranged at the lower ends of the corner-posts and provided with sockets to receive the lower ends of the sides, substantially as described.

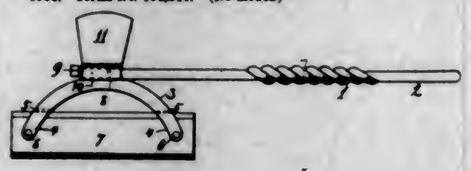
5. A device of the class described comprising corner-posts and sides interlocked with each other, the corner-posts being provided with transverse recesses and the sides having transverse locking-bars engaging the recesses, and supports receiving and engaging the lower ends of the sides, substantially as described.

6. A device of the class described comprising front and rear sections having corner-posts provided with upright grooves and tongues, said corner-posts being also provided at their edges with recesses and having similar recesses at their inner faces, sides having tongues and grooves to fit those of the corner-posts and provided with projecting portions to engage the inner recesses, and locking-bars mounted on the sides and engaging the recesses at the edges of the corner-posts, substantially as described.

7. A device of the class described comprising front and rear sections having corner-posts, sides interlocked with the corner-posts, shelves holding the sides in such engagement, supports engaging the lower terminals of the sides, and a top having a depending brace engaging the upper terminals of the sides, substantially as described.

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**756,356. MEAT-TENDERER. CHARLES D. GUSE, Amery, Wis., assignor of one-half to Louis Soderberg, Prairie, Wis. Filed June 5, 1903. Serial No. 160,216. (No model.)**



*Claim.*—As an improved article of manufacture, a meat-tenderer comprising, in combination, a substantially straight handle, a segmentally-curved heavy plate secured at its middle to the front end of the handle to serve as a head-piece, a series of parallel blades secured in slits in the downward-curved edges of the plate or head-piece, so as to obviate suction between the plate and the meat operated on.

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**756,357. PNEUMATIC HAMMER. ELIAS GUNNELL, Chicago, Ill., assignor of one-half to W. I. Babcock, Chicago, Ill. Filed Dec. 17, 1900. Serial No. 40,078. (No model.)**



*Claim.*—1. In a pneumatic hammer, the combination, with the cylinder and the throttle valve controlling the admission of the motive fluid thereto, of a hinged grasping handle co-operating with said valve to open the same when the tool is held up to its work by pressure applied to said handle.

2. In a pneumatic hammer, the combination, with the cylinder and the throttle valve controlling the admission of the motive fluid thereto, of a grasping handle hinged at one end to one side of the tool at its rear end and co-operating at its opposite free end with the throttle valve at the opposite side of the tool to open said valve when the tool is held up to its work by pressure applied to said handle.

3. In a pneumatic hammer, the combination, with the cylinder or body of the tool provided at one side of its rear end with an outwardly projecting arm or handle-support, and at its opposite side with a casting containing a throttle valve chamber, a throttle valve located in said chamber and controlling the admission of the motive fluid to the cylinder, and a grasping handle hinged at one end to the arm or handle-support and co-operating at its opposite free end with the throttle valve to open the same when the tool is held up to its work by pressure applied to said handle.

4. In a pneumatic hammer, the combination, with the cylinder and the throttle valve controlling the admission of the motive fluid thereto, of a hinged grasping handle co-operating with said valve to open the same when the tool is held up to its work by pressure applied to said handle, and means for regulating the extent of such opening of the valve by said handle.

5. In a pneumatic hammer, the combination, with the cylinder and the throttle valve controlling the admission of the motive fluid thereto, of a hinged grasping handle co-operating with said valve to open the same when the tool is held up to its work by pressure applied to said handle, and an adjustable stop or contact device interposed between the handle and cylinder or fixed part thereof to limit the movement of the handle in opening the valve.

6. In a pneumatic hammer, the combination, with the cylinder and the throttle valve controlling the admission of the motive fluid thereto, of a grasping handle hinged at one end to the rear end of the cylinder or body of the tool at one side thereof, and co-operating at its opposite free end with the throttle valve on the opposite side of the tool to open the same by pressure applied to the handle, and an adjustable stop or contact piece interposed between the free end of the handle and the cylinder or fixed part thereof to limit the movement of the free end of the handle in opening the valve.

7. In a pneumatic hammer, the combination, with the cylinder and the throttle valve controlling the admission of the motive fluid thereto, of a grasping handle hinged at one end to the rear end of the cylinder or body of the tool at one side thereof, and co-operating at its opposite free end with the throttle valve on the opposite side of the cylinder to open the same by pressure applied to the handle, and an adjustable nut interposed between the free end of the handle and the cylinder or fixed part thereof to limit the movement of the handle in opening the valve.

8. In a pneumatic hammer, the combination of the cylinder provided upon one side of its rear end with the arm or handle-support E and upon the opposite side thereof with the casting D containing the throttle valve chamber, the valve S located in said chamber and controlling the admission of the motive fluid to the cylinder, the grasping handle F hinged at one end to the arm E and co-operating at its opposite free end with the valve S to open the same when the tool is held up to its work by pressure applied to said handle.

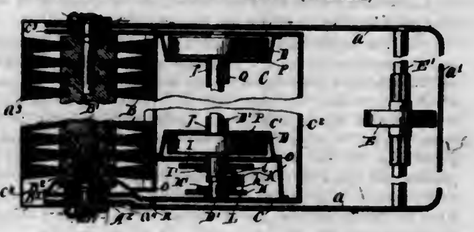
9. In a pneumatic hammer, the combination of the cylinder provided upon one side of its rear end with the projecting arm or handle-support E, and upon the opposite side thereof with the casting D containing the throttle valve chamber, the throttle valve S located in said chamber and controlling the admission of the motive fluid to the cylinder, and the grasping handle F hinged at one end to the arm E and provided with a shoulder or contact surface *b'* co-operating with the like shoulder or contact surface *a'* upon the arm E, and co-operating at its opposite free end with the throttle-valve S to open the same.

10. In a pneumatic hammer, the combination of the cylinder provided upon one side of its rear end with the projecting arm or handle-support E and upon the opposite side thereof with the casting D containing the throttle valve chamber, the valve S in said chamber controlling the admission of the motive fluid to the cylinder, and the grasping handle F hinged at its upper end to the arm E and provided at its lower end with the pin or rod X co-operating with the valve S.

11. In a pneumatic hammer, the combination of the cylinder provided upon one side of its rear end with the projecting arm or handle-support E and upon the opposite side thereof with the casting D containing the throttle valve chamber, the valve S in said chamber controlling the admission of the motive fluid to the cylinder, the grasping handle F hinged at one end to the arm E and provided at its opposite end with the pin or rod X co-operating with the valve S, and the tubular regulating nut screwed into the free end of the handle F and provided with the flange Z interposed between said handle and the casting D.

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**756,358. CARPET-SWEEPER. JOHN F. HARDY, Chicago, Ill. Filed Dec. 29, 1899. Serial No. 742,017. (No model.)**



*Claim.*—1. The combination with a casing and a brush journaled in the casing, of a driving-wheel, a support for the driving-wheel pivoted to the casing in line with the axis of the brush, and a spring attached to said casing which tends to project the wheel from the casing.

2. The combination with a casing, a brush journaled therein, a sweepings-pan pivoted at one end to the casing in line with the axis of the brush and adapted to be supported at its other end on the floor by a part which extends below the casing and yielding connections between said sweepings-pan and the casing.

3. The combination with a casing and a brush journaled therein, of a sweepings-pan pivoted at one end to the casing in line with the axis of the brush, a wheel supporting the other end of the pan, and a spring attached to the casing which tends to project the wheel from the casing.

4. The combination with a casing and a brush journaled therein, of a sweepings-pan pivoted at one end to the casing, a driving-wheel

supporting the other end of the pan, and operative connections between the driving-wheel and brush.

5. The combination with a casing and a brush journaled therein, of a sweepings-pan pivoted at one end to the casing in line with the axis of the brush, a driving-wheel supporting the other end of the said pan, and operative connections between said driving-wheel and brush.

6. The combination with the casing, a brush journaled therein and an operating-handle, of a sweepings-pan which is pivoted at its front end to the casing in line with the axis of the brush and is supported at its rear end upon the floor by a part which extends below the casing and operative connections between said pan and the handle of said sweeper comprising a part on the handle which holds the pan elevated in one position of the handle and which is moved out of the path of the cooperating part of the pan in another position to permit the pan to be dumped.

7. The combination with a casing, a brush journaled therein and an operating-handle, of a sweepings-pan pivoted at its forward end to the casing in line with the axis of the brush, a gate pivoted to and closing the rear end of the pan, and operative connections between the said gate and said handle.

8. The combination with a casing, a brush journaled therein and an operating-handle, of a sweepings-pan pivoted at its forward end to the casing in line with the axis of the brush, a driving-wheel supporting the rear end of the pan, operative connections between the driving-wheel and the brush, a gate pivoted to and closing the rear end of the pan and operative connections between said gate and the handle.

9. The combination with a casing, a brush journaled therein, and an operating-handle, of a pan pivoted at one end to the casing and adapted to be supported at its other end from the floor by a part which extends below the casing, a crank on the end of said handle, a gate pivoted to and closing the rear end of the pan, and a part rigid with said gate adapted for engagement by said crank.

10. The combination with the casing, an operating-handle, and a brush journaled in said casing, of a sweepings-pan pivoted at its forward end to the casing and supported at its rear end upon the floor by a part which extends below the casing, and operative connections between the operating-handle and the pan permitting the pan to be dumped by manipulation of the handle, said connections being adapted to form a lock to prevent the sweeper tilting forwardly from a substantially horizontal position when the handle is substantially vertical, and the sweeper is lifted from the floor thereby.

11. The combination with a casing, a brush journaled therein, and an operating-handle, of a sweepings-pan pivoted at one end to the casing and adapted to be supported at its other end on the floor by a part which extends below the casing, a crank on the end of the handle, and a cooperating stop on the pan, said parts being so arranged that when the handle is moved past the perpendicular toward the front end of the casing, it will permit the rear end of the pan to be depressed into its dumping position, and when occupying another position will prevent the pan from dumping.

12. The combination with a casing, a brush journaled therein, and an operating-handle, of a sweepings-pan pivoted to the casing and adapted to be supported at its rear end from the floor by a part which extends below the casing, a gate pivoted to and closing the rear end of the pan, a crank on said handle which, when the handle is moved past the perpendicular toward the front end of the casing permits the rear end of the pan to be depressed into its dumping position, and opens the gate, and a stop on the pan adapted to engage the crank to prevent the pan dropping to its dumping position when the handle occupies a perpendicular or substantially perpendicular position.

13. The combination with a casing, a brush journaled therein, and an operating-handle, of a sweepings-pan pivoted at one end to the casing in line with the axis of the brush and adapted to be supported at its other end upon the floor by a part which extends below the casing, a crank on the handle, a cooperating stop on the pan, said parts being so constructed that when the handle is moved past the perpendicular toward the front end of the sweeper, it permits the rear end of the pan to be depressed into its dumping position, and when occupying another position prevents such depression, a gate pivoted to and closing the rear end of the pan, and a part rigid with said pan adapted for actuation by said crank.

14. The combination with a casing, a brush journaled therein, and an operating-handle, of a sweepings-pan pivoted at one end to the casing, a crank on the handle, and a stop on the rear end of the pan, which is located over the crank when the handle is in its vertical position, and which engages the crank when the sweeper is lifted by the handle, to hold said sweeper in a substantially horizontal position.

15. The combination with a casing, a brush in the forward end thereof, of two laterally-separated driving-wheels near the longitudinal center of said casing, a support for said wheels, yielding connections between said support and the casing, operative connections between said driving-wheels and the brush, and a supporting-wheel located centrally of the casing in the rear end thereof.

16. The combination with a casing, a brush in the forward end thereof, laterally-separated driving-wheels located between the ends of the casing, a support therefor which is yieldingly connected with the casing in a manner to oscillate about a center coincident with the axis of the brush, operative connections between said driving-wheels and brush, and a supporting-wheel located centrally between the sides of the casing at the rear end thereof.

17. The combination with a casing and a brush therein, of a driving-wheel, a support therefor which is connected with the casing, a driving-shaft connected with the wheel and connections between said brush and driving-shaft, a gear-pinion on the brush which rotates therewith, two driving gear-wheels which rotate loosely on said driving-shaft, means for alternately locking said driving gear-wheels to the driving-shaft, an idle gear-wheel which meshes with said brush-pinion and with one of the driving gear-wheels, and an idle pinion which meshes with said idle gear-wheel and the other of said driving gear-wheels.

18. The combination with a casing and a brush in the front end thereof, of a driving-wheel mounted in a frame which is pivoted to the casing in line with the brush-axis, a driving-shaft connected with said wheel, two driving gear-wheels which rotate loosely on said shaft, externally-facing ratchet-wheels connected with said driving gear-wheels, a pawl rotating with said shaft and adapted for alternate engagement with said ratchet-wheels, a gear-pinion on the brush-shaft, an idle gear-wheel meshing with said gear-pinion and one of the driving gear-wheels, and an idle pinion meshing with said idle gear-wheel and the other of said driving gear-wheels.

19. The combination with a casing, a brush therein, a driving-wheel, a support therefor connected with the casing, a shaft connected with said wheel, two driving gear-wheels which rotate loosely on said shaft and provided with oppositely-facing ratchet-wheels, an arm rigid with said shaft which carries on its outer end a pivoted pawl adapted for alternate engagement with said ratchet-wheels, connections between said driving gear-wheels and the brush, and bearing-lugs on said pawl adapted for engagement with said arm to prevent the pawl from twisting thereon.

20. The combination with a casing the rear end of which is made rigid and the front end of which is made flexible, and a brush which is journaled in the forward end of the rigid part of the casing, of bushings in the casing-walls in which the ends of the brush-shaft are journaled, outwardly-projecting studs on said bushings, strips attached to the side walls of the casing and connected with the rear margin of the flexible front wall to hold the same in place, the attaching-strips and the rear margins of the flexible material being perforated for the passage of the studs of said bushings therethrough, and washers on the outer ends of said studs outside of said strip and riveted to said studs.

21. The combination with a casing the rear end of which is made rigid and the brush end of which is made flexible, and a brush journaled in the brush end of the rigid part of the casing, of detachable bushings in the casing in which the ends of the brush-shaft are journaled, outwardly-projecting studs on said bushings, strips attached to the side walls of the casing which overlie said bushings, and are connected with the rear margin of the flexible end, and to hold the same in place, said attaching-strips being perforated for the passage of the studs of said bushings therethrough, washers riveted on the outer end of said studs outside of said strips, and yielding projections on the casing in front of said studs, which project laterally outside of the planes of the studs.

22. The combination with a casing the rear end of which is made rigid and the brush end of which is made flexible of a strip attached to the side wall of the casing and engaging the rear margin of said flexible brush end to fasten the same to the rigid part of the casing, a detachable bushing secured in a suitable opening in the side wall of the casing and provided with a bearing-aperture within which the brush-shaft is journaled, said bushing being provided with a laterally-projecting stud and the strip being apertured for the passage of the stud therethrough, a washer on the outer end of said stud which is riveted to the stud, a hem on the rear margin of the flexible-brush end of the casing in advance of said stud, and a cord inserted into said hem.



23. The combination with a casing and a brush therein, of a sleeve driven into one end of the brush-core, and internally screw-threaded, a stub-shaft which has screw-threaded engagement at one end with said sleeve, a removable bushing in the side wall of the casing with which the other end of said shaft has bearing, means for securing said bushing in place, a sweepings-pan in the casing, one side wall of which is pivoted to an inward extension in said bushing, and a gear-pinion rigid on the shaft, said bushing being of such size that when removed from the wall of the casing and said side wall of the pan the shaft and attached pinion may be removed through the openings in the casing and pan-walls.

24. The combination with a casing and a brush in the front end thereof, of a sweepings-pan which is pivoted at its forward end to the casing in line with the axis of the brush, driving-wheels supporting the rear end of the pan and projecting downwardly through openings in the bottom of the pan, a driving-shaft extending between said wheels, operative connections between said wheels and the brush, shields on the inner walls of the pan covering said driving-wheels, and centrally apertured for the passage of the driving-shaft therethrough, bosses on said shields surrounding said shaft, and a tube surrounding said shaft and attached at its opposite ends to said bosses.

25. The combination with a casing and a brush in the forward end thereof, of a sweepings-pan pivoted at its forward end to the casing, driving-wheels supporting the rear end of the pan, operative connections between the driving-wheels and the brush, and a tie-rod extending between the lower margins of the side walls of the casing and extending through slots in the side walls of the pan.

26. The combination with a casing and a brush journaled therein, of a sweepings-pan pivoted at one end on the axis of the brush, driving-wheels supporting the other end of the pan and projecting through the bottom wall thereof, operative connections between said driving-wheel and said brush comprising laterally-separated driving gear-wheels on the driving-shaft, a gear-pinion on the brush-shaft, an idle gear-wheel which meshes with said gear-pinion on the brush-shaft and with one of the driving gear-wheels, an idle gear-pinion which meshes with the other driving gear-wheel and with said idle gear-wheel, means for alternately locking said driving gear-wheels to the shaft, and a casing on the inner wall of the sweepings-pan which covers the said train of gears and extends between said brush and the side wall of the pan, said casing being recessed in its part engaged by the brush-core to form a socket in which the end of the brush-core rests.

27. The combination with a casing and a brush in the forward end thereof, of a sweepings-pan pivoted at its forward end to the casing, driving-wheels supporting the rear end of said sweepings-pan, operative connections between said driving-wheels and the brush, and a leaf-spring which is attached at its rear end to the sweeper-casing and bears at its forward end against the rear portion of the sweepings-pan.

28. The combination with a casing and an operating-handle, of a sweepings-pan pivoted at one end in the casing, a crank on the handle, a horizontal stop on the rear end of the pan which engages the end of the crank when the pan falls below its normal position, and a lateral stop also on the pan adapted at this time to engage with the rear side of the crank.

29. The combination with a casing, of a sweepings-pan pivoted at its forward end in the casing and supported at its other end independently of the casing by means permitting vertical movement thereof, means permitting the depression of the rear end of the pan to dump the same, a stop-arm on the rear end of the pan, and a stop stationary with the casing adapted for engagement by the stop-arm to limit the depression of the pan.

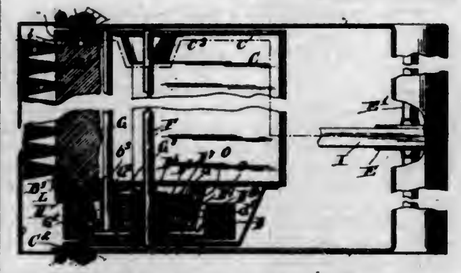
30. The combination with a casing and an operating-handle, of a sweepings-pan pivoted at the forward end in the casing, a gate closing the rear end of the pan, a crank on the handle adapted to engage the gate to open the same, means permitting depression of the rear end of the pan to dump the same and a stop-arm on the pan adapted to engage the crank to limit the depression of the pan.

31. The combination with a casing, and an operating-handle, of a sweepings-pan pivoted at its forward end in the casing, means permitting the depression of the rear end of the pan to dump the same, a crank on the handle, a stop on the rear end of the pan which engages the crank to hold the pan and casing substantially horizontal when the handle is substantially vertical and the sweeper is carried thereby, and a stop on the pan adapted to engage a stop stationary with the casing to limit the depression.

32. The combination with the casing of a carpet-sweeper, the front end of which is made of flexible material, of a cushioning device which projects beyond the plane of the casing-wall comprising a cord and a hem in the margin of said flexible material in which said cord is contained and which holds the cord in place.

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**756,359. CARPET-SWEEPER.** JOHN F. HARDY, Chicago, Ill. Filed Feb. 8, 1900. Serial No. 4,441. (No model.)



*Claim.*—1. The combination with a casing and a rotative brush therein, of a transverse shaft connected with and supported in the casing, a driving-wheel on said shaft, laterally-separated rotative gear-wheels on said shaft, disks on the adjacent faces of the wheels and rigid therewith, annular gripping-flanges rotating with the driving-wheel and surrounding the disks, ball-races in the peripheries of said disks, balls in said races adapted for engagement by the gripping-flanges and connections between said gear-wheels and the rotative brush.

2. The combination with a casing and a rotative brush therein, of a transverse shaft connected with and supported in the casing, a driving-wheel rotative on said shaft provided with an inwardly-extending hub, a gear-wheel rotating on said hub, a second gear-wheel laterally inside of the hub rotating on said shaft, means for locking one of said gear-wheels to the driving-wheel when the driving-wheel is rotating in one direction, and for locking the other gear-wheel to rotate with said driving-wheel when said driving-wheel rotates in the opposite direction, and operative connections between said gear-wheels and the rotative brush.

3. The combination with a casing, a rotative brush therein, a transverse shaft connected with and supported in said casing, a driving-wheel on said shaft provided with an inwardly-extending hub, a gear-wheel mounted to rotate on the driving-wheel hub, a second gear-wheel laterally inside of said hub which rotates on the shaft, a pinion on the brush-shaft which meshes with said second gear-wheel, a transverse shaft in front of said driving-wheel shaft, an idle pinion which rotates on said shaft and which meshes with the first gear-wheel, an idle gear-wheel rotating with the idle pinion and meshing with the brush-pinion, and means for locking said first gear-wheel to rotate with the driving-wheel when the sweeper is being moved in one direction, and for locking the second gear-wheel to rotate with the driving-wheel when the sweeper is being moved in the opposite direction.

4. The combination with a casing, a rotative brush therein and a pinion on the brush, of transverse shaft connected with and supported in the casing, a driving-wheel rotatively mounted on said shaft provided with an inwardly-extending hub, a gear-wheel loosely mounted on said hub, a second gear-wheel rotatively mounted on said shaft laterally inside the hub and meshing with the brush-pinion, disks on the proximate faces of said gear-wheels and rotating therewith, two annular gripping-flanges connected with the driving-wheel and surrounding said disks, said disks being provided in their peripheries with ball-races, balls in said races adapted for engagement by said gripping-flanges, a second transverse shaft in front of the driving-wheel shaft, an idle pinion rotating on said shaft and meshing with the first-mentioned gear-wheel, and an idle gear-wheel rotating with the idle pinion and meshing with the brush-pinion.

5. The combination with a casing, a rotative brush therein, and a sweepings-pan in rear of said brush, of a shaft extending transversely across and rigidly attached at its ends to the side walls of the pan, a driving-wheel rotative on said shaft provided with an inwardly-extending hub, a gear-wheel rotative on said hub, a second gear-wheel rotative on the shaft laterally inside the hub, annular gripping-flanges rotating with the hub, disks on the proximate faces of said gear-wheels surrounded by said gripping-flanges and provided in their peripheries with ball-races, balls in said races adapted for engagement by said gripping-flanges, and operative connections between the said gear-wheels and brush-shaft.

6. The combination with a casing and a rotative brush and

driving-wheel therein, of a sweepings-pan located within the casing, said pan being made of less width than the casing and located at one side thereof, and pivoted at its forward end to the casing in advance of the driving-wheel and supported at its rear end directly upon the floor, said driving-wheel being located between the pan and casing-wall, and operative connections between the driving-wheel and brush-shaft.

7. The combination with a casing and a rotative brush and driving-wheel therein, of a sweepings-pan within the casing, pivoted at one end to the casing-wall in advance of the driving-wheel and supported at its other end directly upon the floor, said pan being located on one side of the casing, and said driving-wheel being located between the pan and the side wall of the casing and provided with a wide rim having the spokes thereof located on one side of the rim, and driving connections between said driving-wheel and brush, which are located within the space surrounded by said driving-wheel rim.

8. The combination with a casing, and a rotative brush therein, of a pan in the rear of the casing which is made narrower than the casing, an arm on the pan projecting laterally therefrom, said arm and the opposite wall of the pan being pivoted to the casing in line with the axis of the brush.

9. The combination with a casing and a brush in one end thereof, of a sweepings-pan in the casing in rear of the brush said pan being made narrower than the casing and located at one side thereof, a driving-wheel between said sweepings-pan and one wall of the casing, driving connections between the wheel and said brush, and an arm on the pan projecting laterally outside of said driving-wheel and pivoted at its forward end to the casing-wall in line with the axis of the brush, the opposite wall of the pan being pivoted in line with the axis of the brush.

10. The combination with a casing and a rotative brush in the forward end thereof, of a sweepings-pan within the casing in rear of said brush, said brush being rotatively mounted at one end on a pintle which projects through the side wall of the casing, a shaft on the other end of the brush having bearing in the opposite wall of the sweepings-pan, and an arm on the pan projecting laterally outside thereof and pivoted at its forward end to the casing in line with the axis of the brush.

11. A carpet-sweeper having a casing, the main portion of which is rigid and the brush end of which is made flexible, hems in the rear margin of said flexible brush end which overlie the top and side walls of the casing, attaching-strips inserted in the side hems, and fastened to the side walls of the casing, said attaching-strips being provided at their upper ends with bent-over portions which overlie the upper wall of the casing, and a third attaching-strip in the hem overlying the upper wall of the casing and attached to the upper wall of the casing.

12. A carpet-sweeper comprising a casing, a rotative brush in the front end thereof, a sweepings-pan in the casing in rear of brush and pivoted to the casing, a driving-wheel designed for contact with the floor and rotatively mounted in one side of the pan driving mechanism connecting said wheel with the brush, a wheel journaled on the other side of the pan and a third wheel supporting the rear end of the casing and located between the sides thereof.

13. A carpet-sweeper comprising a casing, a rotative brush in the front end thereof, a sweepings-pan in the casing pivoted in line with the axis of the brush, a driving-wheel mounted on the sweepings-pan at one side of the casing, driving mechanism connecting the driving-wheel and brush, a supporting-wheel mounted on the opposite side of the pan, a spring on the casing bearing yieldingly against the pan when downward pressure is exerted on the casing, and a supporting-wheel at the rear of the casing located between the sides thereof and yieldingly connected with the casing.

14. The combination with a casing and a rotative brush therein, of a wheel located between the ends of the casing on a support, connected with the casing in a manner to oscillate about an axis coincident with the brush-axis, a spring on the casing bearing yieldingly against said support when downward pressure is exerted on the casing, and a shoe stationary with the wheel and adapted to cooperate therewith to support the sweeper.

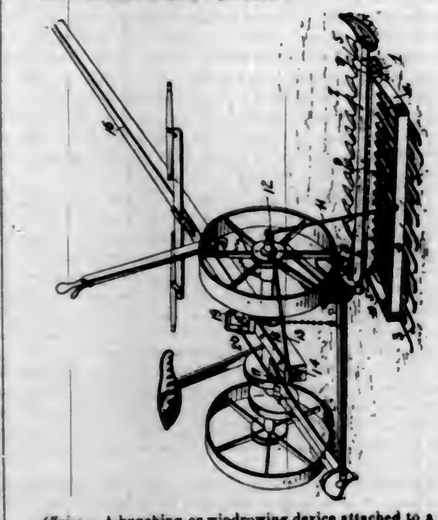
15. The combination with a casing and a rotary brush therein, of two laterally-separated wheels located between the ends of the casing on a support, connected with the casing in a manner to oscillate about an axis coincident with the brush-axis, one of said wheels being larger than the other, a spring on the casing bearing against said support when downward pressure is exerted on the casing, and a shoe stationary with and adjacent to the smaller wheel, and having a part which is curved concentric with the axis of the larger wheel.

16. The combination with a casing and a rotative brush therein, of a sweepings-pan in said casing which is pivoted in line with the axis of the brush, two laterally-separated wheels supporting the rear end of the pan, one of which is made larger than the other, and constituting the driving-wheel, driving connections between said driving-wheel and the brush, and a shoe connected with the pan adjacent to the smaller wheel, and having a part which is curved concentric with the axis of the larger wheel.

17. The combination with the casing and a rotative brush therein, of a sweepings-pan pivoted at one end to the casing, and supported at its other end from the floor, a gate closing the rear end of the pan, which is provided with a movable partition extending almost to the top wall of the casing, and a stationary partition depending from the top wall of the casing and overlapping said movable partition.

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**756,360. MOWING-MACHINE ATTACHMENT. HARFORD F. HARBAR and WILLIAM S. FLINT, Pendleton, Oreg. Filed Aug. 21, 1903. Serial No. 170,288. (No model.)**



*Claim.*—A bunching or windrowing device attached to a mowing-machine, consisting of a perforated plate 1, secured under the sickle-bar of the machine; rods, their front ends hinged in said perforations, their rear ends adapted to trail on the ground; a bunching-box having its front side hinged to said plate and its rear side resting on the rear ends of said rods and adapted to catch the hay cut by the machine; a plate secured to the rear end of the tongue of the machine; a foot-lever hinged to the front end of said plate; a U-shaped lever hinged to the rear end of said plate, one end of said U-shaped lever connected to said foot-lever by a rod, its other end to the rear wall of said bunching-box by a rod, said last-mentioned parts so arranged that when the foot-lever is pressed back, the rear part of said bunching-box, is raised, substantially as shown and described and for the purposes set forth.

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**756,361. CURTAIN-FIXTURE. GEORGE B. HATTER, Brooklyn, N. Y., assignor of one-half to George Rahaner, Brooklyn, N. Y. Filed Mar. 24, 1903. Serial No. 149,310. (No model.)**

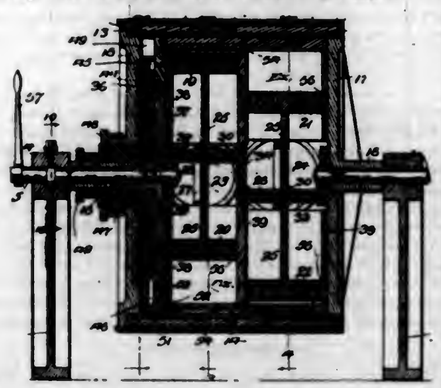


*Claim.*—1. In a curtain-fixture of the kind described, comprising the horizontal rods, the pole-brackets arranged thereon and the shade-brackets also arranged upon the rods, said shade-brackets comprising the body portion whose lower ends are curved and provided with sockets, each bracket also having sockets arranged intermediate its ends, and means for securing the said pole and shade brackets upon the rods, substantially as shown and described.

2. In a device of the kind described, rods adapted to be arranged in horizontal alinement, shade-brackets slidably arranged on said rods, the lower portion of each of said brackets being curved outwardly, bosses arranged on the inner sides of said brackets, a boss being formed adjacent the lower end of each bracket and a boss midway the ends of each bracket, the said bosses being below the rods first mentioned, the bosses of one of said brackets having circular recesses formed therein and the bosses of the opposite bracket having rectangular recesses formed therein, the recess in the lower boss of the last-mentioned bracket being arranged at an angle to the recess formed in the boss midway the ends of the said bracket.

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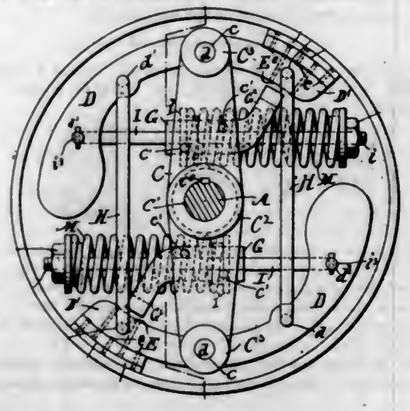
**756,362. ROTARY ENGINE. ROSS HASELRIGG, Cottagegrove, Oreg. Filed Jan. 14, 1904. Serial No. 189,010. (No model.)**



*Claim.*—The herein-described rotary engine comprising a suitable support; shaft-sections 5 and 6 operatively connected together by a compound crank; a suitable casing rotatably mounted upon said shaft-sections; reciprocating pistons operatively connected to said cranks; means to hold the shaft-sections against rotation whereby when the pistons are reciprocated the force thereof will be directed to the rotation of the casing to drive the belting or other power-communicating device connected thereto, and a port member 36 held stationary by the exhaust and feed pipes whereby the contiguous parts of the casing will be left free to rotate, said port member having the exhaust and feeding grooves or recesses 45 and 46, respectively, and suitable ports leading into the feeding-recess and into successive communication with the pistons and additional ports conveying the exhaust-steam from the initially-actuated pistons to the auxiliary pistons adjacent thereto and suitable exhaust-ports for the final exhaust, all substantially as specified and for the purpose set forth.

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**756,363. SPEED-GOVERNOR. JOHN G. HELPERS, Donnellson, Ill. Filed May 18, 1903. Serial No. 157,512. (No model.)**





*Claim.*—1. The combination with a revoluble shaft, and a pulley loosely and revolubly mounted on said shaft, of a transverse bar rigidly fastened by its middle on said shaft within the rim of said pulley, levers pivoted on the ends of said bar within the rim of the said pulley, friction-shoes carried by said levers and normally engaging the inner surface of the rim of said pulley, rods mounted within said pulley-rim, and engaging said levers, springs on said rods and by their resilience normally holding said shoes in contact with said rim, and means together with which said mechanism is enabled to actuate said shaft and also to sever the operative connection between said shaft and said pulley when a predetermined rate of speed has been attained.

2. The combination with a revoluble shaft, and a pulley loosely and revolubly mounted thereon, of a transverse bar rigidly fastened by its middle on said shaft within the rim of said pulley, levers pivoted on the ends of said bar, friction-shoes carried by said levers and working on the inside surface of said pulley-rim, brackets having right-angular extensions, also fastened on said bar, rods engaging said levers and passing through said extensions, springs on said rods, and by their resilience, normally holding said shoes in engagement with said pulley-rim, to actuate said shaft, and said mechanism also arranged so that when a predetermined rate of speed has been attained the operative connection between said shoes and said rim will be severed.

3. The combination with a revoluble shaft, and a pulley loosely and revolubly mounted thereon, of a transverse bar rigidly fastened on said shaft, within the rim of said pulley, levers pivoted on the ends of said bar, friction-shoes carried by said levers, and working on the inside of the rim of said pulley, brackets having right-angle extensions rigidly fastened on said bar, rods engaging said levers and passing through said extensions, nuts on the free ends of said rods, springs on said rods between said nuts and said extensions of said brackets, and by their resilience normally holding said shoes in contact with said pulley-rim, and driving said shaft and so arranged that when a predetermined rate of speed has been attained, the operative connection between said shaft and said pulley will be severed.

4. The combination with a revoluble shaft, and a pulley loosely and revolubly mounted thereon, of a transverse bar rigidly fastened by its middle upon said shaft within the rim of said pulley, levers pivoted upon the ends of said bar, friction-shoes carried by said levers and working on the inside surface of the rim of said pulley, brackets having right-angle extensions rigidly fastened on said bar, rods engaging said levers and passing through said extensions, nuts on the free ends of said rods, springs on said rods between said nuts and said extensions, and washers on said rods limiting their motion, and all said mechanism arranged so that said springs will by their resilience normally hold said shoes in engagement with said pulley-rim, enable said pulley to actuate said shaft, and at the same time so arranged as to sever the operative connection between said shoes and said rim when a predetermined rate of speed has been attained.

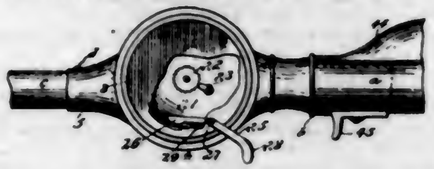
5. The combination with a revoluble shaft, and a pulley loosely and revolubly mounted thereon, of a transverse bar rigidly fastened by its middle on said shaft within the rim of said pulley, levers pivoted on the ends of said bar, so that the distance from the pivot to one end will be shorter than the distance to the other end, friction-shoes carried by the short ends of said levers, and working on the inside surface of the rim of said wheel, brackets having right-angular extensions fastened on said bar, rods engaging said levers and passing through said extensions, nuts on the free ends of said rods, springs on said rods between said nuts and said extensions and washers on said rods limiting their motion, and all said mechanism arranged so that by means of the said nuts the springs may be adjusted to such tension that the said shoes will be held normally in contact with said rim, but only enable the said pulley by their engagement to drive the said shaft until it has attained a predetermined rate of speed, and that when said shaft exceeds such speed, the centrifugal force acting on the longer ends of said levers will draw the shoes away from said rim, and so sever the connection between said pulley and shaft, and allow the shaft to resume normal speed and the mechanism to assume normal position.

6. The combination with a revoluble shaft and a pulley loosely and revolubly mounted thereon, of a transverse bar rigidly mounted on said shaft, levers pivoted on said shaft, friction-shoes carried by said levers and working on the inside surface of the rim of said pulley, brackets having right-angle extensions rigidly fastened to said bar, rods engaging said levers and passing through said extensions, springs on said rods, and nuts and washers on said rod, and connecting-rods having right-angular extensions at each end extending between said levers, and pivotally engaging said levers with such

extensions, so that said levers move together through the same angle, when turned on their pivotal connection with the said bar and all said mechanism so arranged that said pulley actuates said shaft and also that when a predetermined rate of speed has been attained, the operative connection between said shaft and said pulley will be severed.

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**756,364. FISHING-REEL.** LOUIS M. HERRANCE, Poughkeepsie, N. Y. Filed Apr. 11, 1903. Serial No. 152,185. (No model.)



*Claim.*—1. Apparatus of the class described comprising a frame having sides 2, 3, provided respectively with a threaded opening 6 and an opening 7, a threaded cap 8 to close the opening 6, a cap 11, secured detachably to the side 3 and closing the opening 7, bearings in said caps, a reel journaled in said bearings and removable from the frame through the opening 6, a brake device for the reel carried by the cap 8, a gear on the reel, adjacent the cap 11, a shiftable element carried by the last-mentioned cap, and a gear mounted in the said shiftable element, movable by the latter into and out of engagement with the reel-gear, and having a crank by which it may be rotated to revolve the reel.

2. A reel having a pinion, in combination with a movable element having a gear to engage and disengage the pinion, means to operate said gear, and a brake device to operate the movable element, and effective when the pinion is disengaged from the reel-gear, substantially as described.

3. A reel having a pinion, in combination with a movable element, having a gear to engage and disengage the pinion, means to operate said gear, a brake device to operate the movable element, and effective when the pinion is disengaged from the gear, and a spring to counteract the brake device to normally render the latter ineffective and keep the gear in engagement with the reel-pinion.

4. A reel having a pinion, in combination with a movable element having a gear to engage and disengage the pinion, means to operate the gear, a spring to normally engage the gear with the pinion, and a brake device movable with said movable element into operative position when the gear is disengaged from the pinion.

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**756,365. GAS-METER.** ROSS J. HOFFMAN, Bradford, Pa. Filed July 17, 1903. Serial No. 165,906. (No model.)

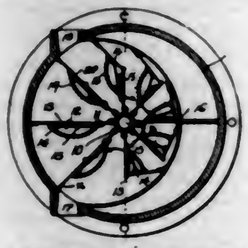


*Claim.*—1. In combination in a meter-registering mechanism, a shifting cone for driving the said registering mechanism and means for shifting the said cone by variations of pressure within the meter, substantially as described.

2. In combination with a meter, a cone for transmitting motion therefrom to the registering mechanism, a piston acted on by pressure within the meter and a connection between the said piston and the cone for shifting the same, substantially as described.

3. In combination with a meter having a rotary spindle, registering mechanism, a shifting cone on the spindle for transmitting motion to the registering mechanism, a piston connected with the said cone moved in one direction by the pressure within the meter and in the opposite direction by a spring, substantially as described.

**756,366. METER.** ROSS J. HOFFMAN, Bradford, Pa. Filed July 22, 1903. Serial No. 166,622. (No model.)



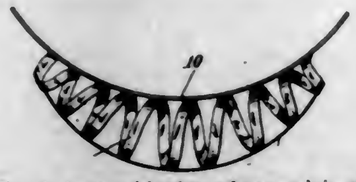
*Claim.*—1. In combination in a gas-meter, a casing, a measuring-wheel having blades composed of sections rigidly fixed to the wheel-hub and extending radially and other sections pivoted to the rigid sections, said casing having within it a portion eccentric to the center of the wheel for folding the said pivoted sections and means for causing the blades to assume an extended or straight condition, substantially as described.

2. In combination, a casing, a wheel therein having blades composed of sections rigidly fixed to the wheel-hub and extending radially and other sections pivoted to the rigid sections, means for stopping the folding sections of the blades against folding movement in one direction in relation to the fixed sections, the said blades being arranged to work upon a surface eccentric to the center of the wheel and a spring carried by each blade for making the same assume an extended or straight condition, substantially as described.

3. In combination, a casing, a wheel therein having folding blades, which are arranged to move over a portion of the casing eccentric to the center of the wheel, springs extending between the folding and rigid portions of the blades and a curved guide between said portions for controlling the springs, substantially as described.

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**756,367. COMB.** CHARLES H. HOWE, Leominster, Mass. Filed Sept. 11, 1903. Serial No. 172,743. (No model.)



*Claim.*—1. As an article of manufacture, a hair-supporting comb comprising a toothed body portion and a frame located entirely at one side of the body portion, and comprising coils which are united tangentially to the convex surface of the comb-body, and a binding-strip which connects the free edges of the coils.

2. As an article of manufacture, a hair-supporting comb comprising a curved toothed body portion, a strip coiled to form a helix tapering at both ends, the successive convolutions thereof being secured to the convex face of the body portion, whereby the helix will project entirely from one side of the body portion, and a binding-strip connecting the free sides of the convolutions.

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**756,368. TUBULAR OR HOLLOW BODY.** JULIAN A. HURDLE, New York, N. Y. Filed June 15, 1903. Serial No. 161,629. (No model.)



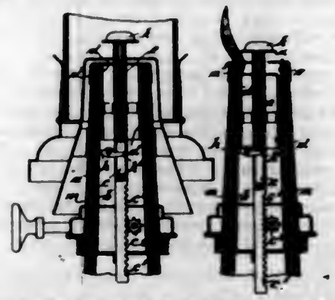
*Claim.*—1. As a new article of manufacture for mechanical devices, a body formed of a series of perforated disks or plates, some of which have the perforations thereof arranged slightly out of register with each other, and secured together so as to form a body having an opening of any desired irregular shape through its entire length.

2. As a new article of manufacture for mechanical devices, a body formed by a series of perforated disks or plates, laminated and secured together and having the perforations thereof arranged slightly out of register in such relation as to form a spiral opening through its entire length.



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**756,369. BLUE-BURNER.** HERMANN HURWITZ and ADOLF SCHAPIRO, Berlin, Germany. Filed June 10, 1903. Serial No. 160,841. (No model.)

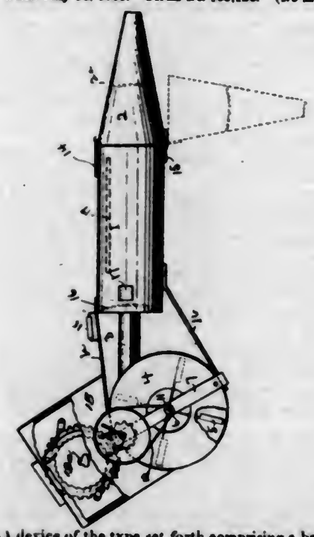


*Claim.*—1. In a blue-burner for liquid fuel, the combination of an outer and inner wick-tube, with a burner-cap, a cylinder sliding in the inner wick-tube, means for lowering the cylinder and means for raising the burner-cap before the cylinder has perfectly entered into the inner wick-tube, and one handle for simultaneously actuating both means, substantially as described and for the purpose set forth.

2. In a blue-burner for liquid fuel, the combination of an outer and inner wick-tube, with a cylinder sliding in the inner wick-tube, a burner-cap, means for lowering the cylinder, a double-armed lever, one arm of which is situated so as to be pressed down by the downward movement of the cylinder, the other arm of this lever being situated underneath the burner-cap, so as to raise the same during the downward movement of the cylinder, substantially as described and for the purpose set forth.

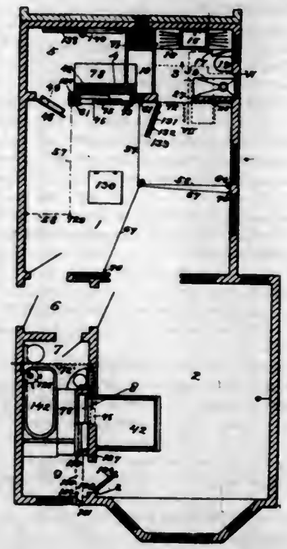
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**756,370. RODENT-KILLING MACHINE.** GEORGE R. JACK, Lockeford, Cal. Filed July 11, 1903. Serial No. 165,130. (No model.)



*Claim.*—A device of the type set forth comprising a barrel provided with a nose, a drum, a pair of supporting-arms secured to said barrel and drum respectively, a casing attached to the top of the drum, a standard secured to the side of the drum, a fan in said drum having its shaft projecting through said standard, a pulley on the end of said shaft, a shaft journaled in the upper end of said standard, a driving-pulley on said shaft, a belt passing over both of said pulleys, a handle on said last-named shaft, means arranged in said casing for imparting movement to said driving-pulley, and an air-pipe leading from said drum to said barrel.

**756,371. APARTMENT-HOUSE.** WILLARD C. JAMES, Cucamonga, Cal. Filed Mar. 16, 1903. Serial No. 147,932. (No model.)



*Claim.*—1. In an apartment-house, a suite or double apartment, one room of which has one side occupied by a plurality of compartments, comprising a bath-room, and a bed-compartment projecting into the bath-room, and the other room has one side occupied by a plurality of compartments comprising a kitchen-compartment, a closet-compartment, and a bed-compartment projecting into one of said compartments.

2. In an apartment-house, a suite or double apartment, one room of which has one side occupied by a plurality of compartments, comprising a bath-room compartment, a closet-compartment and a bed-compartment projecting into one of the other compartments, and the other room has one side occupied by a plurality of compartments, comprising a kitchen-compartment, a closet-compartment, and a bed-compartment projecting into one of said compartments.

3. An apartment-house, comprising a plurality of suites or double apartments, one room of each suite having one side occupied by a set of compartments, comprising a bath-room and a bed-compartment, and the other room of each suite having one side occupied by a set of compartments, comprising a kitchen-compartment and a bed-compartment, similar sets of compartments being arranged in proximity and back to back in adjacent suites.

4. In an apartment-house, a plurality of suites, having arranged in juxtaposition and back to back, similar sets of compartments, comprising a kitchen-compartment provided with a gas-stove, and a folding-bed compartment adjacent to the kitchen-compartment and provided with gas-heating means.

5. In an apartment-house, a plurality of suites having, arranged in proximity and back to back, similar sets of compartments, comprising a bath-compartment and a bed-compartment, both provided with heating means, and gas-supply connections common to both of the heating means.

6. In an apartment construction, a room having a compartment formed at the side thereof, with a closet at the back of said compartment having perforate shelves, the wall or room-casing back of said closet being provided with a flue connected to the lower and upper parts of said closet.

7. In an apartment construction, a room having a kitchen-compartment formed at one side thereof with a vertical recess formed in one side of the wall of said compartment, a swinging door, between said room and compartment, a gas-stove hung on said swinging door and projecting into said recess when the door is closed, and ventilating means above said recess.

8. In an apartment construction, the combination of the room-casing having a ventilating-opening in its top, a swinging gas-stove and a flue arranged to direct the hot air from said stove to said opening, while allowing the swinging movement of the stove.

9. In an apartment construction, the combination of the room-casing having a ventilating-opening in its top, a stove, a swinging

support for said stove, and a flue connected to said swinging support and movable beneath the ventilating-opening so as to maintain its communication therewith.

10. In an apartment construction, the combination of a stove, a ventilating-flue, and a hood slidably connected to said flue and extending over the stove.

11. In an apartment construction, the combination of a stove, a swinging support therefor, a hood mounted to slide vertically on said support and extending over the stove, a flue communicating with said hood and attached to said support, and a room-casing having in its top an opening extending over the path of movement of the flue to receive the discharge therefrom in all positions of the flue.

12. In a kitchen-apartment construction, the combination of the sink, the inclined tray arranged to drain into the sink, and a swinging shelf arranged below said tray and adapted to swing forward under the edge thereof.

13. In a kitchen-apartment construction, the combination of the sink, the inclined tray arranged to drain into the sink, and a swinging shelf arranged below said tray and adapted to swing forward under the edge thereof, said shelf having a closed front serving as a screen when the shelf is closed.

14. In a kitchen-apartment construction, the combination of the swinging shelf having a closed front and an open-topped box beneath said shelf and closed by said shelf when the latter is closed.

15. A room provided with a lateral compartment of less height than the room, and with a ventilating-space above said compartment, an opening being provided from said compartment into said space, a ventilator over said opening, and means for controlling said ventilator.

16. A room or compartment having a ventilating-opening in its top, a hinged flap over said opening, a pulley over said flap, and a cord attached to the flap and passing up over said pulley and down through a slot in said flap.

17. In an apartment construction, the combination of a wall-casing having a recess, a vertical roller pivoted in said recess and having a curtain wound thereon, and a cover for said recess connected with said roller.

18. In an apartment construction, a room having a compartment at one side, a door for said compartment provided with a recess and with a vertically-swinging panel for closing said recess, and a spring device for operating said panel to close same.

19. The combination with the hinged support and the gas-stove carried thereby, of gas-pipe connections to said stove comprising a swivel-coupling formed as a tubular hinge in line with the hinge-axis of the said support.

20. The combination with the hinged support, and the gas-stove carried thereby, of the gas-pipe connections to the stove comprising a swivel-coupling formed of two concentric tubular members, a screw-collar engaging one of said members and a packing means pressed by said screw-collar against the other member.

21. In an apartment construction the combination with two adjoining apartments and a hinged door-leaf between said apartments, of a gas-stove carried by said hinged door-leaf, and gas connections to said stove comprising a tubular hinge in line with the axis of the door.

22. The combination with the wall-casing having a recess, of a folding and sliding bed-frame mounted to fold into said recess and to be capable of being turned down and drawn out from said recess.

23. The combination with the wall-casing having a recess, of a folding and sliding bed-frame, trunnions whereby said bed-frame is pivotally supported in said recess, and connections between said trunnions and bed-frame, whereby the latter may be drawn out when in lowered position.

24. The combination of the wall-casing having a recess, trunnions on said casing in said recess, and a bed-frame having slots engaging said trunnions.

25. The combination of the wall-casing having a recess, trunnions on said casing in said recess, a bed-frame having slots, and rollers engaging said slots and journaled on said trunnions.

26. A house construction comprising a folding-bed compartment, an adjoining compartment, with an intervening wall having its upper part projecting into the bed-compartment and its lower part projecting into the adjoining compartment and an intermediate ledge, and a folding and sliding bed frame pivotally and slidably mounted in said recess so as to slide back under said ledge and fold into the bed-compartment.

27. A house construction comprising a folding-bed compartment, and adjoining closet and bed compartment, with an intervening wall-casing having a horizontal ledge, the upper end of said wall being relatively advanced into the folding-bed compartment, a folding bed pivotally and slidably mounted in said folding-bed compartment so as to slide under said ledge and fold into its compartment, and a bed hinged in the closet-compartment and adapted, when lowered, to rest on said ledge.

28. A house construction comprising a hinged bed, and a fixed ledge arranged parallel to the sides of the bed, and adapted to act as a lateral extension of the bed when down.

29. A house construction comprising a hinged bed, and a fixed ledge arranged parallel to the sides of the bed and adapted to support one side of the bed when the latter is lowered and to constitute a lateral extension of the bed.

30. A house construction comprising a bath-compartment, an adjoining apartment having a folding-bed compartment projecting into the bath-compartment, the wall between said compartments having its lower part offset into the bath-compartment to form a horizontal ledge, a folding bed arranged to slide under said ledge and fold into said folding-bed compartment and a bath-tub in the bath-compartment arranged adjacent to the said ledge.

31. In an apartment construction, a floor, a wall-casing having a recess, and a folding bed pivotally and slidably mounted in said recess and provided with roller means engaging said floor when the bed is lowered.

32. In an apartment construction, a floor, a wall-casing having a recess, and a folding-bed frame pivotally and slidably mounted in said recess and provided with a mantelpiece acting also as a bed-support, and roller means in the edge of said mantelpiece.

33. In an apartment construction, a floor, a wall-casing having a recess, and a folding bed pivotally and slidably mounted in said recess and provided with roller means engaging said floor when the bed is lowered, a mantelpiece on said bed acting as a bed-support, and carrying said rollers and provided with moldings simulating the appearance of said roller means.

34. In an apartment construction, a wall-casing having a recess, a heater mounted in fixed position near said recess, and a folding bed pivotally mounted in said recess and a fixed fireplace cooperating with said heater and exposed when the bed is raised.

35. In an apartment construction, a wall-casing having a recess, a gas-heater mounted in fixed position near said recess, and a folding bed pivotally mounted in said recess and a fixed fireplace cooperating with said heater and exposed when the bed is raised.

36. In an apartment construction, a wall-casing having a recess, a heater fixed near said recess, trunnions on the wall-casing in said recess, one of said trunnions being hollow, a bed-frame pivotally mounted on said trunnions and a fixed fireplace, adapted to cooperate with the heater and exposed when the bed is raised, and flue means leading from said fireplace through said hollow trunnion.

37. In an apartment construction, a wall-casing having a recess, a bed-frame pivotally mounted in said recess, and a headboard movably supported in said recess, so as to advance and act as a closure for the recess when the bed is lowered.

38. In an apartment construction a wall-casing having a recess, a bed-frame pivoted therein, a headboard in said recess and a movable support for said headboard adapted and arranged to allow forward movement of the headboard when the bed is lowered.

39. In an apartment construction a wall-casing having a recess, a folding bed pivoted in said recess, a headboard movably mounted in said recess, so as to move forward to act as a closure for the recess when the bed is lowered, and adapted to be engaged by the bed when the latter is raised, to cause the headboard to be moved back in the recess.

40. In an apartment construction, a wall-casing having a recess, a folding bed pivoted in said recess, a headboard in said recess, and parallel-motion links pivoted to the casing and to the headboard and supporting the latter so as to enable its forward-and-back movement.

41. An inclosure, a wall dividing the inclosure into two apartments and furnished with a passage communicating between the apartments, a strip hinged to the wall at one side of said passage, a body connected to said strip by a horizontal pivot and forming a closure for said passage, a horizontally-slidable bolt adapted to form a releasable pivotal connection between the body and the wall at the other side of the passage in line with the aforesaid horizontal pivot, and means for holding the body in a substantially horizontal position.

42. An inclosure, a wall dividing between two apartments in said inclosure and furnished with a passage communicating between the apartments, a strip hinged to the wall at one side of said passage, a body pivoted to said strip by a horizontal pivot and forming a closure for the passage, means on the body engaging with the strip when the body is in vertical position to support the body against lateral strain, means for pivotally connecting the body to the wall at the other side of the passage and means for holding the body in substantially horizontal position.



43. An inclosure, a wall dividing between two apartments in said inclosure and furnished with a passage communicating between the apartment, a strip hinged to the wall at one side of said passage, a body pivoted to said strip by a horizontal pivot and forming a closure for the passage, means on the body engaging the strip when the body is in vertical position to support the body against lateral strain, means for pivotally connecting the body to the wall at the other side of the passage and a leg hinged to the body to support one end thereof when the body is in substantially horizontal position.

44. An inclosure, a wall dividing between two apartments in said inclosure and furnished with a passage communicating between the apartments, a strip hinged to the wall at one side of said passage, a body pivoted to said strip by a horizontal pivot and forming a closure for the passage, means for holding the door in substantially horizontal position on its said pivot, and means for locking said body to said strip when in a vertical position.

45. An inclosure, a wall dividing between two apartments in said inclosure and furnished with a passage communicating between the apartments, a strip hinged to the wall at one side of said passage, a body pivoted to said strip by a horizontal pivot and forming a closure for the passage, and a leg hinged to said body to support one end when the body is in a substantially horizontal position.

46. An apartment-suite comprising two communicating apartments, a series of compartments occupying one side of one of the apartments and constituting respectively a kitchen-compartment, a folding-bed compartment, and a bed and closet compartment, a series of compartments occupying one side of the other apartment and comprising a bath-compartment, a folding-bed compartment and a bed and closet compartment, the folding-bed compartment projecting into adjacent compartments, folding beds pivotally mounted in said folding-bed compartment, beds pivotally mounted in the bed and closet compartments, heaters arranged in folding-bed compartments, gas-stove and heating means in the kitchen and bath compartments adjoining the folding-bed compartments and gas connections common to said heating and stove devices.

47. An apartment construction comprising a wall-casing having a recess, a folding bed mounted in said recess, and ventilating connections to the lower and upper parts of said recess.

48. An apartment construction comprising a wall-casing having a recess, a folding bed mounted in said recess, ventilating connections to the lower and upper parts of said recess, and valve means for said ventilating connections.

49. In an apartment construction a wall-casing having a recess, ventilating connections to the lower and upper part of said recess, a folding bed pivoted in said recess, and rack means on said bed adapted to extend in the recess when the bed is raised to provide for support and ventilation of bedclothing.

50. In an apartment-house construction, a wall-casing, forming two apartments with sets of compartments occupying one side of each apartment, one set of compartments comprising a kitchen, folding-bed and closet and bed compartments, and the other set comprising bath, folding-bed and closet and bed compartments, a sink and adjacent inclined tray in the kitchet-compartment, a swinging shelf under said tray, a gas-stove and a swinging support therefor, constituting a door-leaf between the kitchen-compartment and the adjacent apartment, a folding bed pivotally and slidably mounted in the folding-bed compartments, a movable headboard mounted in the bed-compartment to move forward and close the same when the bed is lowered, a bed hinged to the wall-casing in one of the closet and bed compartments, the wall-casing between the folding-bed compartment and the adjoining compartment being a horizontal ledge to serve in one case as a support for said hinged bed, and in the other case as a seat adjacent to the bath-tub, a bed formed as a door for the other closet and bed compartment, and adjusted to swing vertically on a door, and horizontally to serve as a bed, partition means consisting of spring-rollers and curtains winding thereon and pivotally connected together, and the wall-casing having recess means to receive the partition means when not in use, and means for supporting the curtain means in extended position from the wall-casing.

51. An apartment-house construction, comprising a plurality of rooms or compartments having an open space above them, and draft passage-ways communicating through such open space, from side to side of the house.

52. In an apartment-house, a draft-passage means communicating from side to side of the house, and rooms or compartments opening upwardly into said draft-passage means.

53. In an apartment-house, a plurality of suites of rooms, an intervening hall, compartments with open spaces above them being provided in each suite, and draft-passage means leading over the hall and through the side walls of the house, to establish draft connection from side to side of the house over said compartments, and ventilating connections leading from said compartments to the open spaces above same.

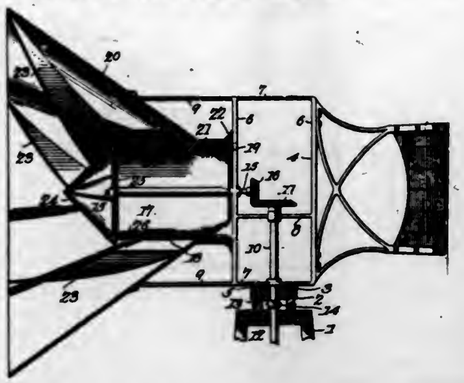
54. In an apartment construction, a wall having an opening therethrough, a bed pivoted in the opening, and a closer for the opening, operated by the movement of the bed to close the opening when the bed is lowered.

55. In an apartment construction, a wall having an opening therein, a closer for the opening, and a bed pivoted in the opening and adapted to displace the closer when the bed is raised to close the opening.

56. A compartment having in one wall an offset receptacle, a bed pivoted therein, and a bed pivoted to another wall and adapted to move into and out of position above the offset of said receptacle.

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**756,372. WINDMILL. JAMES D. JOHNSON, Cloverdale, Va. Filed Sept. 29, 1903. Serial No. 175,069. (No model.)**



*Claim.*—1. The combination with a wind-wheel, of a collecting bell or member surrounding the wheel and having inwardly-converging walls terminating adjacent to the rear end of the latter, and webs or blades situated within the bell for imparting an initial vortex motion to the wind.

2. The combination with a wind-wheel, of a collecting bell or member having inwardly-converging walls surrounding the wheel for directing the wind thereto, and webs or blades disposed upon the inclined walls of the bell for imparting an initial vortex motion to the wind.

3. The combination with a wind-wheel, of an outwardly-opening conical collecting-bell surrounding the same for directing the wind thereto, and webs or blades disposed upon the inclined walls of the bell for imparting an initial vortex motion to the wind, said blades being curved in the plane of the direction of travel of the wheel.

4. The combination with a wind-wheel, of a collecting bell or member surrounding the same and having inwardly-converging walls for directing the wind thereto, webs or blades disposed upon the inclined walls of the bell for imparting an initial vortex motion to the wind, and a conical shield constantly disposed in front of the wind-wheel with its apex outward.

5. The combination with a horizontal wind-wheel having longitudinally-disposed blades curved transversely and provided at their inner ends each with a volute portion, of a collecting bell or member surrounding the wheel for directing the wind thereto and having lateral wind-inlet openings for delivering the wind transversely to the blades, and webs or blades situated within the bell for imparting an initial vortex motion to the wind.

6. The combination with a wind-wheel, of a wind-collecting bell surrounding the same and having wind-inlet openings, and a rotary cut-off automatically operable for regulating the size of said openings.

7. The combination with a wind-wheel, of a wind-collecting bell surrounding the same and having wind-inlet openings, webs or blades

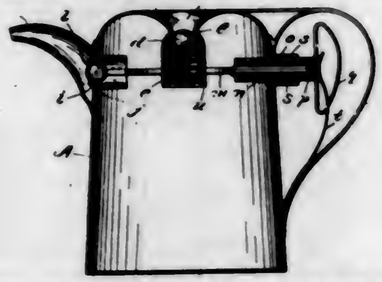
leading to the openings for imparting a vortex motion to the wind, and a rotating cut-off automatically operable for regulating the size of the openings.

8. The combination with a wind-wheel, of a wind-collecting bell surrounding the same and having lateral wind-inlet openings leading to the wheel, a rotary barrel-like member surrounding the wheel and having parallel spaced slats or plates, and means for automatically rotating the member for causing the slats to open or close the wind-inlet openings.

9. The combination with a wind-wheel, of a wind-collecting bell surrounding the same, webs or blades associated with the bell for imparting an initial vortex motion to the wind, said blades being provided at their inner ends with flanges spaced to form wind-inlet openings leading to the wheel, a rotary barrel-like member surrounding the wheel and having parallel spaced slats or plates, and means for automatically rotating the member to move the slats or plates into or out of register with the flanges for opening or closing the wind-inlet openings.

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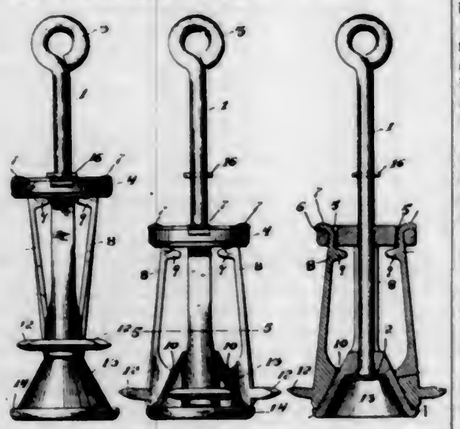
**756,373. VENT APPARATUS FOR OIL OR OTHER CANS.** WILLIAM JOYCE, New York, N. Y. Original application filed Feb. 9, 1903, Serial No. 142,619. Divided and this application filed May 13, 1903. Serial No. 156,906. (No model.)



*Claim.*—The combination with the can having the spout and the handle on opposite sides in the same vertical plane, and valve controlling the escape-passage through the spout, of the tubular slideway in the wall of the can opposite the spout, plugged tubular stem of the valve, and the vents in said tubular stem, said stem extending through the slideway-handle on said stem adapted to be grasped both sides of the stem together with the can-handle to open the valve and also open the vent by the pull of the hand gripping the handle and the bow-spring attached at one end to the handle in the angle between said handle and the side of the can and bearing at the other end against the valve-stem.

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**756,374. LAND-ANCHOR.** CHARLES W. JUSTUS, Lima, Ohio, assignor of one-half to Albert Bearoth, Bluffton, Ohio. Filed Dec. 21, 1903. Serial No. 186,076. (No model.)



*Claim.*—1. In a device of the character described, the combination with a centrally-disposed operating-rod, of a disk or head slidably mounted on said rod, expansible members carried by said head, means whereby said members are given an initial expansive movement to hold the anchor in place, means for further expanding said members to firmly anchor the device and means for limiting said expansion, substantially as described.

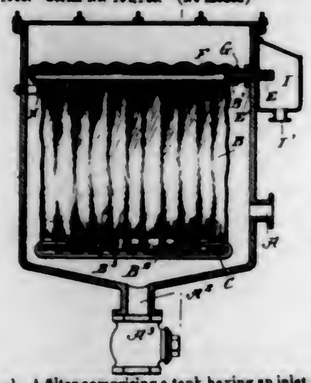
2. In a device of the character described, the combination with a centrally-disposed operating-rod, a disk or head slidably mounted on said rod, arms pivotally mounted at their upper ends in said disk or head, blades formed on the lower end of said arms, an expanding-cone slidably mounted on the lower end of said rod to expand said arms and blades, substantially as described.

3. In a device of the character described, the combination with a centrally-disposed operating-rod, a disk or head slidably mounted on said rod, arms pivotally mounted at their upper ends in said disk or head, blades formed on the lower end of said arms, an expanding-cone slidably mounted on the lower end of said rod to expand said arms and blades, an annular flange formed on said cone to engage the lower ends of said arms, thereby limiting the expansion of and relieving the strain on said arms, substantially as described.

4. In a device of the character described, the combination with a centrally-disposed operating-rod, a disk or head slidably mounted on said rod, arms pivotally mounted at their upper ends in said disk or head, blades formed on the lower end of said arms, an expanding-cone slidably mounted on the lower end of said rod to expand said arms and blades, lugs formed on the upper end of said arms, and a stop-pin arranged in said rod whereby an initial expansive movement may be given to said arms and blades, and means for limiting the expansion of and relieving the strain on said arms, substantially as described.

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**756,375. FILTER.** WILLIAM KATBOL, Vallsburg, N. J. Filed July 3, 1903. Serial No. 164,140. (No model.)



*Claim.*—1. A filter comprising a tank having an inlet and an outlet, a filter-bag within said tank, said bag having a lateral sleeve at the top, and a discharge-pipe connected with said outlet and extending within the bag along the top thereof and through the said sleeve.

2. A filter comprising a tank having an inlet and an outlet, a filter-bag located within said tank and provided with a lateral sleeve at the top, a discharge-pipe connected with said outlet and extending within the bag along the top thereof and through the said sleeve, and a support for that end of the discharge-pipe which is farthest from the outlet.

3. A filter comprising a tank having an inlet and an outlet, a filter-bag located within said tank and provided with a sleeve in line with one of its edges, and a discharge-pipe connected with said outlet and extending within the bag along the said edge thereof and through the said sleeve.

4. A filter-bag of approximately rectangular shape, provided with a lateral sleeve extending beyond one of its corners.

5. A filter-bag of approximately rectangular shape, provided at one of its corners with a sleeve in line with and extending beyond one of its edges.

6. A filter-bag having a corner with a sleeve projecting in line with and beyond one of the edges which meet at said corner.

7. A filter-bag provided with a horizontal top edge and a horizontal sleeve projecting laterally in line with and beyond said top edge.

8. A filter-bag having a transverse sheath and a bow set therein, said bow being of less width than the bag, so as to contract the latter into folds.



9. A filter-bag combined with a transverse contracting device for forming the bag into folds.

10. A filter-bag combined with means for supporting it at the top and a transverse contracting device located at the bottom of the bag to assist in holding it in a vertical position.

11. A filter-bag provided with an outlet at the top and a discharge-pipe extending through said outlet and secured thereto, the length of said pipe being smaller than the width of the bag, so as to contract the latter into folds.

12. A filter-bag combined with means for supporting it at the top and devices for contracting the bag at the top and bottom.

13. A filter-bag having an outlet, a discharge-pipe extending through said outlet and a spring-pressed extension having a sliding connection with said discharge-pipe and adapted to press the latter against a seat.

14. A filter-bag having an outlet, combined with a tank in which said bag is set, a discharge-pipe extending through the outlet of the bag to the outlet of the tank and provided with a shoulder, a compressible gasket between said shoulder and the tank, and a spring-pressed extension arranged at the other end of the discharge-pipe and adapted to press against a stationary part of the tank.

15. A filter-bag provided with an outlet, combined with a tank in which said bag is set, a discharge-pipe which extends through the outlet of the bag to the outlet of the tank, said discharge-pipe being provided with a shoulder, a compressible gasket between said shoulder and the tank, an extension fitted to slide on the other end of the discharge-pipe, and a spring contained within said extension and adapted to press the same against a stationary part of the tank.

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**756,376. FOUNTAIN-PEN.** FRANK M. KEORNER, Philadelphia, Pa. Filed May 14, 1903. Serial No. 157,122. (No model.)



*Claim.*—1. A feed for fountain-pens consisting of a tube having a central longitudinal bore closed at one end, said tube being provided near one end with an induction slit or interstice and near its opposite end with an eduction-slit, both slits being in communication with the longitudinal bore.

2. A feed for fountain-pens consisting of a tube closed at its outer extremity and having a longitudinal induction slit or interstice through the tube-wall near one end and a longitudinal eduction-slit through the tube-wall at the opposite side and near the opposite end.

3. A feed for fountain-pens consisting of a tube closed at its outer extremity and having an induction slit or interstice near one end, and an eduction-slit near its opposite end, the induction and eduction slits being located at opposite sides of the longitudinal bore of the tube.

4. A feed for fountain-pens consisting of a tube closed at its outer extremity and having a longitudinal induction slit or interstice near one end and a longitudinal eduction-slit near its opposite end, said induction and eduction slits extending from near the ends of the tube toward each other and located at opposite sides of the bore of the tube.

5. A feed for fountain-pens, consisting of a tube closed at its outer extremity and having an induction slit or interstice near one end, and an eduction-slit near its opposite end, said slits extending from near the ends of the tube lengthwise thereof and arranged at opposite sides of the bore of the tube, the induction-slit communicating with the barrel or well of the pen through the side of the tube.

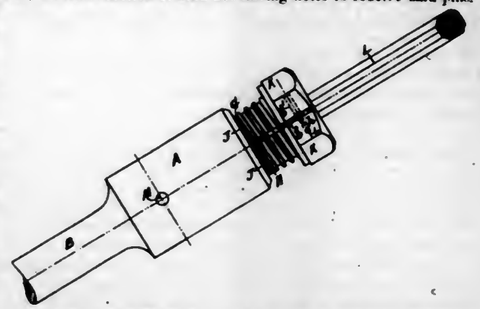
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**756,377. CHUCK FOR ROCK-DRILLING MACHINES.** WALTER R. KIMBER, Johannesburg, Transvaal. Filed Aug. 18, 1903. Serial No. 169,329. (No model.)

*Claim.*—1. In a rock-drill chuck, a body having an internally-threaded, longitudinally-tapered hole and a correspondingly-tapered, externally-threaded split nut, the sections of the nut being independent and separated, and means independent of the stock of said nut for holding the sections thereof in assembled relation.

2. In a rock-drill chuck, a body having an internally-threaded, longitudinally-tapered hole and a correspondingly-tapered, externally-threaded split nut, the sections of the nut being independent and separated, pins connected rigidly with one section of the nut, the other section of the nut having holes to receive said pins.

3. In a rock-drill chuck, a body having an internally-threaded, longitudinally-tapered hole and a correspondingly-tapered, externally-threaded split nut, the sections of the nut being independent and separated, and a plurality of pins tapped into one section of the nut, the other section of said nut having holes to receive said pins.

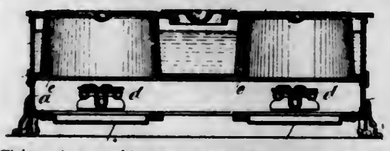


4. In a rock-drill chuck, a body having an internally-threaded, longitudinally-tapered hole, and a correspondingly-tapered, externally-threaded split nut, the sections of the nut being independent and separated, and means independent of the stock of said nut for holding the sections thereof in assembled relation, said body having means to prevent turning thereof, on rotation of the nut.

5. In a rock-drill chuck, in combination, the body A, the longitudinally-tapered hole C and the internal screw-thread D formed therein, the recess E beyond the threaded taper hole C and the transverse hole M formed through the body A and passing through the recess E, and the inner recess F in the body A beyond the recess E, the halves G H of the split nut tapered longitudinally to correspond to the hole C in the body A and the external screw-thread J formed around the halves G H of the longitudinally-tapered split nut, the nut or head K formed on the outer extremity of the halves G H of the split nut to provide means for rotating the same, the screws or pins A arranged between the parallel plane faces at either side of the drill-shank L said screws or pins A being fixed in the inner parallel plane face of one half of the nut and projecting into coincident holes in the other half to connect the halves of the nut and to cause the external screw-thread J to register with the internal screw-thread D in the body, the grooves formed in the inner parallel plane faces to accommodate the shank of the drill in such a way that when the shank is in position between the halves G H of the nut they are maintained apart or prevented meeting along the parallel plane faces at the sides of said grooves, and the drill-shank projected between the halves G H of the split nut into the inner recess F to engage the chuck-body, at the bottom of said recess F, substantially as described.

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**756,378. COOK-STOVE.** JOHANN J. KOCH and JOSEPH HÜMBELI, Wohlen, Switzerland; said Hümbeli assignor to said Koch. Filed July 2, 1903. Serial No. 164,042. (No model.)



*Claim.*—1. A cooking-stove, comprising a water-chamber provided with an open-ended passage for the reception of cooking utensils and with an opening in its top for the reception of like utensils to be heated by the water-bath or steam, and a support for said chamber; in combination with covers for said passage and opening and a fluid-fuel burner below the passage, for the purpose set forth.

2. A cooking-stove comprising a base open at top and bottom, a water-chamber supported by said base so as to form a continuation thereof and provided with an open-ended passage for the reception of cooking utensils and with an opening in its top for the reception of like utensils to be heated by the water-bath or steam; in combination with covers for said passage and opening and a fluid-fuel burner below the passage, for the purpose set forth.

3. A cooking-stove comprising a water-chamber provided with open-ended passages for the reception of cooking utensils and with an opening in its top between said passages for the reception of a vessel to be heated by the water-bath or steam and a support for said chamber; in combination with covers for said opening and passages and a fluid-fuel burner below each passage, for the purpose set forth.

4. A cooking-stove comprising a base open at top and bottom, a water-chamber supported by said base and provided with open-ended upwardly-tapering passages for the reception of cooking utensils, with an opening in its top between said passages for the reception of a vessel to be heated by the water-bath or steam and with a draw-off cock near its bottom; in combination with covers for said opening and passages and a fluid-fuel burner below each of said passages, for the purpose set forth.

5. A cooking-stove comprising a base open at top and bottom, a water-chamber removably seated on said base and provided with open-ended passages for the reception of cooking utensils and with an opening in its top between said passages for the reception of a vessel to be heated by the water-bath or steam; in combination with covers for said opening and passages and a fluid-fuel burner below each passage, for the purpose set forth.

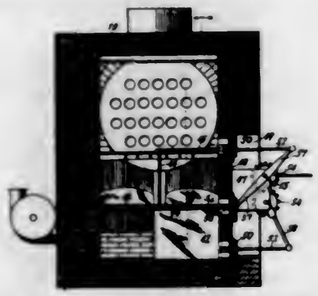
6. A cooking-stove comprising a base open at top and bottom, a water-chamber supported by said base and provided with open-ended passages for the reception of cooking utensils and with an opening in its top between said passages for the reception of a vessel to be heated by the water-bath or steam; in combination with covers for said opening and passages, a fluid-fuel burner below each passage, and a removable drip-pan below each burner of substantially the same diameter as the wider end of said passages.

7. A cooking-stove comprising a base open at top and bottom, a seat encompassing the upper edge of said base, a flange encompassing said seat a water-chamber seating on said seat and fitting into the flange thereof, said water-chamber provided with open-ended passages for the reception of cooking utensils and with an opening in its top for the reception of like utensils to be heated by the water-bath or steam; in combination with covers for said passage and opening and a fluid-fuel burner below the passage, for the purpose set forth.

8. In cook-stoves, the combination of a frame, a flanged upper edge on said frame, burners secured in said frame and drip-pans below said burners, a water-receptacle with tubular chambers adapted to be removably fitted to said frame edge, a cover-plate on said water-receptacle, a smaller cover-plate in said cover-plate, a faucet in said water-receptacle, and a plurality of concentric, partly-overlapping rings to cover the said tubular chambers, all substantially as and for the purpose set forth.

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**756,379. SMOKE-CONSUMING FURNACE.** PAUL J. KRAMPICH, Des Moines, Iowa. Filed Feb. 20, 1903. Serial No. 144,245. (No model.)



*Claim.*—1. In a furnace, a fireplace and a combustion-chamber, a vertical wall dividing the fireplace and combustion-chamber longitudinally, a horizontal wall on each side of the vertical wall dividing the combustion-chamber into upper and lower passage-ways, a chamber communicating with all of said passage-ways, a stationary partition in the latter chamber in line with the partition between the upper passage-ways, a horizontal draft-plate above the stationary partition in the latter chamber, a horizontal draft-plate below it, a vertical draft-plate below the lower horizontal draft-plate controlling the lower passage-ways, and draft-plate-operating mechanism connected to each of the draft-plates jointly moving the upper horizontal and the lower vertical draft-plates in one direction and the lower horizontal draft-plate in an opposite direction.

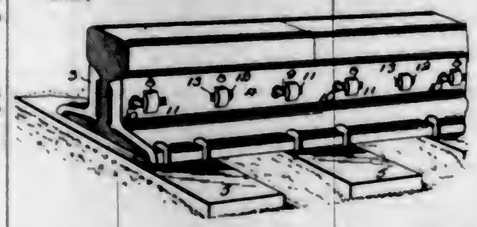
2. In a furnace, a fireplace and a combustion-chamber, a vertical wall dividing the fireplace and combustion-chamber longitudinally, a horizontal wall on each side of the vertical wall dividing the combustion-chamber into upper and lower passage-ways, a chamber communicating with all of said passage-ways, a stationary partition in the latter chamber in line with the partition between the upper passage-ways, a horizontal draft-plate above the stationary partition in the latter chamber, a horizontal draft-plate below it, a vertical draft-plate below the lower horizontal draft-plate controlling the lower passage-ways and draft-plate-operating mechanism comprising two meshed pinions, a lever attached between its ends to one of the pinions, rods attached to the ends of said lever and connected to the upper and lower horizontal draft-plates, a lever attached to the other pinion and a rod connecting the latter lever to the vertical draft-plate.

3. The combination with a furnace, having two independent fireplaces, of two independent combustion-chambers beneath the boiler, a chamber in the rear of the boiler communicating with said combustion-chambers, and two independent draft passage-ways communicating with the said chamber and discharging beneath the fireplaces, of a vertical partition 44 dividing the chamber into two parts directly in the rear of the combustion-chambers, a slide 45 mounted on tracks 45ª and 46, a slide 42 mounted on the tracks 39 and 43, a slide 41 mounted on the tracks 38 and 40, rods 51 pivoted to each slide, pinions 54 in mesh with each other, a lever 57 connected with one of the pinions and having its ends pivoted to the rods 51 of the slides 45 and 42, and an arm 58 connected with the other pinion and pivoted to the rod 51 of the slide 41, substantially as and for the purposes stated.

4. In a device of the class described, the combination of two pinions in mesh with each other, a lever connected with one of the pinions, rods attached to the ends of the lever, an arm connected with the other pinion, a rod attached to said arm, a draft-regulating plate pivoted to each rod and slidingly mounted, a slotted plate through which the said rods pass, a plate for each rod, having an opening therein through which the rod is passed, and guides for holding the latter plates against the slotted plate, substantially as and for the purposes stated.

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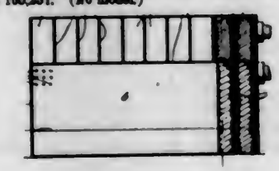
**756,380. SPLICE-BAR FOR LOCK RAIL-JOINTS.** RICHARD LANE, McKeesport, Pa. Filed Jan. 15, 1904. Serial No. 189,223. (No model.)



*Claim.*—The herein-described rail-joint comprising the combination with the meeting ends of the track-rails, of fish-plates fitting on either side thereof, one of said fish-plates being provided with a plurality of threaded apertures and the other plate having a corresponding plurality of openings, substantially of the character specified, in combination with a locking-bolt having a threaded terminal upon one end and a main and auxiliary head-section upon the other end, said auxiliary head-section having tapered faces to fit corresponding seats in the openings in the fish-plate whereby when the bolts are entered in their threaded seats in one fish-plate and turned home therein the tapered faces of the auxiliary head may be caused to enter into the correspondingly-shaped slots contiguous to the opening into which the auxiliary head has been entered and suitable means to lock the movable fish-plate in an adjusted position and thereby secure the bolts against rotation until the movable fish-plate has been returned to its initial position, all combined substantially as specified and for the purpose set forth.

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**756,381. CARBURETER.** ROBERT S. LAWRENCE, Boston, Mass., assignor to Madison M. Makeever, Boston, Mass. Filed July 13, 1903. Serial No. 165,231. (No model.)





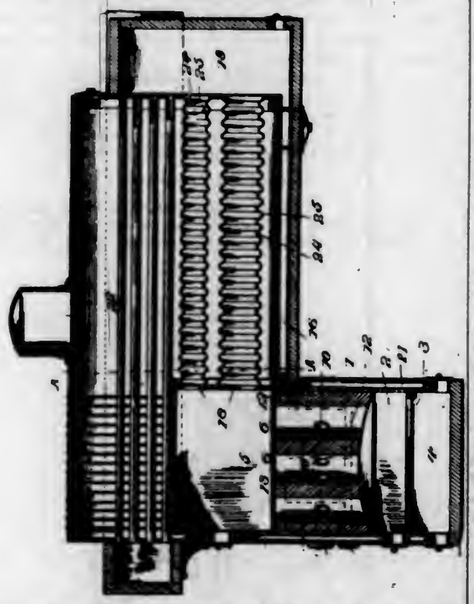
*Claim.*—1. In a device of the class described, a casing having two chambers each divided into a plurality of compartments, wicks in rope form, made of hemp, crash, asbestos and wood fiber, in the compartments of one chamber, other wicks also in rope form and made of wood fiber and asbestos in the compartments of the other chamber, means to admit hydrocarbon oil to the compartment of the first chamber, a gas-inlet to said chamber, and a gas-outlet from the second chamber, the last compartment of the series in the first chamber having communication with the first compartment of the series of the second chamber.

2. In a device of the class described, a casing divided by a partition into two chambers each having a sinuous passage, said partition having openings forming a communication between said passages, a packing made of hemp, crash, asbestos, and wood fiber filling the passage in one chamber, a packing of wood fiber and asbestos filling the other chamber, means to admit hydrocarbon oil to the first chamber, a gas-inlet to said chamber, and a gas-outlet from the second chamber.

3. In a device of the class described, a receptacle provided with a horizontal partition forming an upper and lower chamber, partitions dividing each chamber into compartments which are connected together successively, wicks in rope form made of hemp, crash, asbestos and wood fiber in the compartments of the lower chamber, and of wood fiber and asbestos in the upper chamber, means to admit hydrocarbon oil in the compartments of the lower chamber, the last compartment of the series of the lower chamber communicating with the first compartment in the series in the upper chamber, and means to admit gas to the lower chamber and discharge it from the upper chamber.

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**756,382. BOILER-FURNACE.** JAMES F. LESTER, Atlanta, Ga., assignor to himself and Cuyler Smith, trustees, New York, N. Y. Filed May 1, 1903. Serial No. 155,205. (No model.)



*Claim.*—1. The combination with a furnace composed of a fire-box, a preliminary combustion-chamber, a block having flues interposed between the fire-box and the preliminary combustion-chamber, and being further provided with flues which communicate with the atmosphere, a boiler, a commingling-chamber, a space being formed under the boiler which communicates with the commingling-chamber and the flues in the block which communicate with the atmosphere, substantially as described.

2. The combination with a furnace composed of a fire-box, a preliminary combustion-chamber, a block having flues interposed between the fire-box and the preliminary combustion-chamber, a boiler having variable size flues, a commingling-chamber, the flues communicating with the preliminary combustion-chamber and the commingling-chamber, a space being formed under the boiler which communicates with the commingling-chamber, means for supplying heated air to said space, and a series of flues in the boiler which communicate with the commingling-chamber and an exit, substantially as described.

3. The combination with a furnace composed of means into which the products of combustion enter and expand, air-flues in said means for introducing air to the products of combustion, said means also being provided with combustion-flues, a boiler, a flue or flues in the boiler, a commingling-chamber, the flues of the boiler communicating with the commingling-chamber and a space formed under the boiler which communicates at one end with the commingling-chamber and at its opposite end with the combustion flue or flues, substantially as described.

4. The combination with a furnace, a boiler having flues larger at the bottom than at the top, a commingling-chamber, the flues of the boiler communicating with said commingling-chamber, a flue or flues which communicate at one end with the atmosphere and are located within the influence of the fire of the furnace, a space being formed below the boiler which communicates at one end with the commingling-chamber and at its opposite end with the flue or flues, substantially as described.

5. The combination with a furnace, a block therein, a series of combustion-flues in the block through which the products of combustion pass, intermediate pockets within the block, flues communicating with the atmosphere to supply the pockets with air, flues communicating with the pockets and the combustion-flues, a preliminary combustion-chamber, the series of flues in the block communicating with the said combustion-chamber, a commingling-chamber, a boiler, flues in the boiler which have internal projections, said flues communicating with the preliminary combustion-chamber, and the commingling-chamber, and an exit-flue, substantially as described.

6. The combination with a furnace, having a fire-box and a preliminary combustion-chamber, a commingling-chamber, a boiler whose flues communicate with the preliminary combustion-chamber and the commingling-chamber, a space being formed under the boiler, and means for introducing heated air to said space, the latter communicating with the commingling-chamber, substantially as described.

7. The combination with a furnace, having a fire-box and a preliminary combustion-chamber, a commingling-chamber, a boiler having a series of variable size flues, the latter communicating with the preliminary combustion-chamber and the commingling-chamber, a series of projections in said flues, a space being formed under the boiler and communicating with the commingling-chamber, and means for supplying said space with heated air, substantially as described.

8. The combination with a furnace, having a fire-box and a preliminary combustion-chamber, a commingling-chamber, a boiler having variable size flues which communicate with the preliminary combustion-chamber and the commingling-chamber, a space being formed under said boiler and communicating with the commingling-chamber, means for supplying said space with heated air, a second set of tubes in the boiler, and an exit-flue adjacent the boiler, the second set of tubes communicating with the commingling-chamber and the exit-flue, substantially as described.

9. The combination with a furnace having a fire-box and a preliminary combustion-chamber, a block intermediate the fire-box and preliminary combustion-chamber, a series of combustion-flues formed in the block, a series of pockets in the block, air-flues communicating with the pockets and the combustion-flues, and means for introducing air to the pockets and thence to the flues by means of the air-flues, substantially as described.

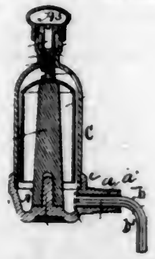
10. The combination with a furnace composed of a combustion-chamber, a commingling-chamber, a boiler intermediate the combustion-chamber and the commingling-chamber, flues in said boiler which communicate with the combustion-chamber and the commingling-chamber, a space formed adjacent the boiler, said space communicating with the commingling-chamber, and combustion-flues formed adjacent the combustion-chamber and communicating with the atmosphere and the space adjacent the boiler, substantially as described.

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**756,383. VALVE FOR RADIATORS.** FRED W. LEUTEMEIER, Chicago, Ill. Filed Feb. 9, 1903. Serial No. 142,641. (No model.)

*Claim.*—1. In an air-valve for radiators, the combination of a valve base or cup having a chamber with a lateral passage leading therefrom and through the wall of the base or cup, and a drainage or draw-off stem entered into the lateral passage, the stem having a solid body and bent to furnish a horizontal portion and a depending vertical portion, the horizontal portion of the stem when in the

passage having a clearance between it and the wall of the lateral passage, leaving the solid body of the stem to act on its exterior as a drainer and prevent clogging of the passage, substantially as described.

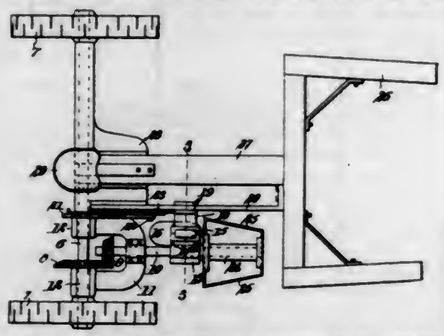


2. In an air-valve for radiators, the combination of a valve base or cup having a lateral nipple for attachment of the valve with a passage through the nipple, in communication with the chamber of the base or cup, and a drainage or draw-off stem entered into the passage of the nipple, the stem having a solid body and bent to furnish a horizontal and a depending vertical portion, the horizontal portion of the stem when in the passage of the nipple having a clearance between it and the wall of the nipple, leaving the solid body of the stem to act on its exterior as a drainer to prevent clogging of the passage, substantially as described.

3. In an air-valve for radiators, the combination of a valve base or cup having a chamber with a lateral passage leading therefrom through the wall of the base or cup, and a drainage or draw-off stem entered into the lateral passage, the stem having a solid body with grooves in its exterior face and bent to furnish a horizontal portion and a depending vertical portion, the horizontal portion of the stem when in the lateral passage having a clearance between it and the wall of the lateral passage, leaving the solid body of the stem to act on its exterior as a drainer and prevent clogging of the passage, substantially as described.

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**756,384. ROTARY PLANT-CHOPPER.** WILLIAM E. LEWIS, Owosso, Mich. Filed June 18, 1903. Serial No. 162,073. (No model.)



*Claim.*—1. The combination with a driving-axle, of a support hinged thereto, a shaft, driven by the axle, the inner end of which is held in bearings on the support, a knife on the outer end of the shaft, and a support traveling on the ground for the outer end of the shaft.

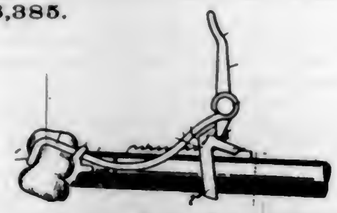
2. The combination with a frame, a driving-axle thereon, and a shaft geared at an angle to the axle, of a support for the inner end of the shaft, hinged to the axle, cutters on the outer end of the shaft, a vertically-movable support for the shaft on the ground adjacent the cutters, said shaft being adjustable with respect to the support and a guide on the frame for the vertical movement of said support

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**756,385. MOP OR BRUSH HOLDER.** JOHN C. LOOK, Tudor, Cal. Filed Sept. 8, 1902. Serial No. 122,573. (No model.)

*Claim.*—In a mop and brush holder, a handle provided with a clamp-head and with a ratchet, a pawl adjustably connected with the ratchet, said pawl having an annular yoke surrounding the handle and a guide extending along the ratchet, a lever pivoted to the pawl on the side of the handle on which the guide and ratchet are located, and a clamp device pivoted to the lever.

**756,385.**



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**756,386. WASHBOARD ATTACHMENT.** NATHANIEL LYKE, Jamestown, N. Y. Filed Sept. 5, 1903. Serial No. 172,148. (No model.)

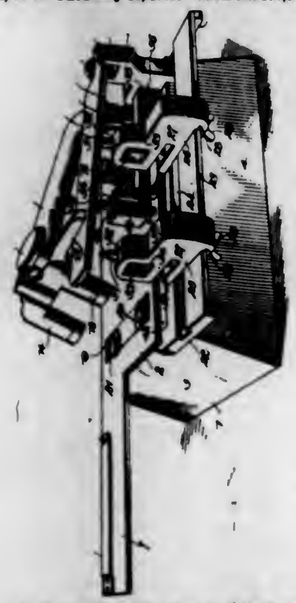


*Claim.*—1. A washboard attachment comprising a triangular plate extending rearwardly of the board with its lower side disposed at a slight angle to the longitudinal plane thereof, whereby when the board is resting upon the bottom of the tub the upper rear sides of the plates will engage the interior of the tub and prevent upward movement of the board, and when the board is elevated the lower side will engage the tub and provide suspension means for the board, substantially as described.

2. A washboard attachment comprising a triangular plate having two of its side edges bent at right angles to the body of the plate and adapted to be rigidly attached to the board by the remaining edge, with one of said bent edges disposed at a slight incline to the longitudinal plane of the board, substantially as described.

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**756,387. COMBINED TICKET STAMP AND PUNCH.** ANTHONY S. MARTIN, Malden, N. C., assignor of one-half to John W. Blackwelder, Malden, N. C. Filed May 12, 1903. Serial No. 156,832. (No model.)



*Claim.*—1. In a device of the class described, the combination with a base, of a vertically-movable stamping-head, a plurality of



punches adjustable independently in a plane parallel with the surface of the base, and operative connections between the stamping-head and punches for simultaneously operating the latter when the former is actuated.

2. In a device of the class described, the combination with a base, of a vertically-movable stamping-head, a plurality of punches adjustable independently in a plane parallel with the surface of the base, a vertically-depressible plate overlying the punches, and an arm associated with the stamping-head and acting upon the plate to simultaneously operate the punches when the head is actuated.

3. In a device of the class described, the combination with a base having an extended portion provided with a blade, of a vertically-movable stamping-head sustained above the base, a plurality of independently-adjustable punches, and operative connections between the stamping-head and punches for simultaneously operating the latter when the former is actuated.

4. In a device of the class described, the combination with a base, of a movable arm associated with the base and carrying a stamping-head, a guide-plate associated with the base and spaced therefrom, a pair of independently-adjustable punches mounted upon the guide-plate, a sliding member carrying a punch, and means operable by the movement of the stamping-arm for simultaneously operating the punches.

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**756,388. MEANS FOR CONVERTING RECIPROCATORY INTO ROTARY MOTION.** WILLIAM B. MAY, Denver, Colo. Filed Apr. 9, 1903. Serial No. 151,784. (No model.)



*Claim.*—1. Means for converting reciprocatory into rotary motion comprising a reciprocatory part and a rotary part, one of said parts being provided with parallel spiral threads and the other part with a projection to fit between said threads and with other projections spaced from the edge of the first-named projection and also adapted to fit between the threads, thus forming a raceway, and balls adapted to travel said raceway, substantially as described.

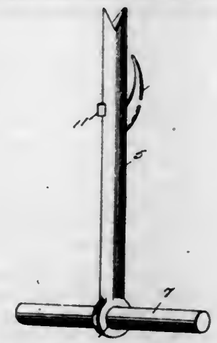
2. A device of the character described, comprising cooperating parts, one of said parts being provided with double spiral threads, and the other with a diagonal projection entering between the threads and other projections disposed in alinement with and spaced from the ends of the first-named projection and also extending between the threads, thereby forming an elongated channel or raceway and balls adapted to travel said raceway.

3. In a device of the character described, the combination with a spirally-threaded shaft, of a nut provided with means coacting with said thread to form a raceway, balls adapted to travel in said raceway, said nut also being provided with ratchet-teeth, a double pawl adapted to engage said ratchet-teeth, and a presser-spring adapted to be adjusted to throw one member of the pawl into and the other out of action and to transfer spring-pressure to the acting member, substantially as described.

4. In a device of the character described, the combination with a spirally-threaded shank, and a nut thereon provided with means coacting with said spiral thread to form a raceway, and having ratchet-teeth, balls traveling in said raceway, a double pawl adapted to engage with said ratchet-teeth and provided with reversely-extending recesses having inclined walls, and a spring having resilient ends arranged in different planes and adapted to be adjusted to move one end into engagement with one pawl-recess and the other out of engagement with the other pawl-recess, and vice versa, to project one or the other of the members of the pawl and to exert a locking and spring-pressure action on the acting member.

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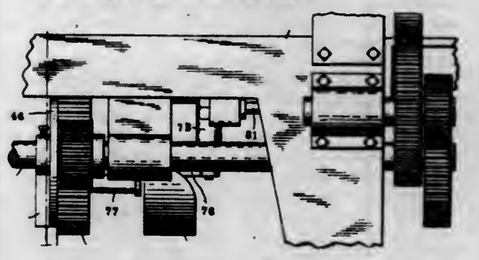
**756,389. WIRE-STRETCHER.** JOHN W. MONTGOMERY, Nimrod, Tex. Filed June 10, 1903. Serial No. 160,813. (No model.)



*Claim.*—A wire stretching and cutting tool consisting of a bar having a handle at one end and having adjacent to its opposite end a finger rising in arched shape from the bar and extending longitudinally of the latter in the direction of the end of the bar opposite to the handle, and a cutting edge projecting from the bar at a point diametrically opposite to the base of the finger, said cutting edge extending longitudinally of the bar.

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**756,390. CLUTCH.** CHARLES R. MOON, Muncie, Ind. Filed July 13, 1903. Serial No. 165,347. (No model.)



*Claim.*—1. The combination, with an automatic machine, of a shaft for driving the work-supplying mechanism, a clutch mounted on said shaft, and means connecting said clutch with the operating devices of the machine, said operating devices being arranged to control said means whereby the clutch is held disengaged during the performing of the operation, and operated to be reëngaged when the machine is empty, substantially as set forth.

2. The combination of a shaft, a continuously-driven gear loosely mounted thereon, a clutch member arranged alongside said gear and rigidly mounted on said shaft, a clutch-arm carrying a finger adapted to engage with an annular groove in said gear, whereby said shaft is normally propelled, a cam also on said shaft, and devices controlled by said cam adapted to be projected into the path of the clutch-arm, whereby the clutch is disengaged and the shaft permitted to remain at rest.

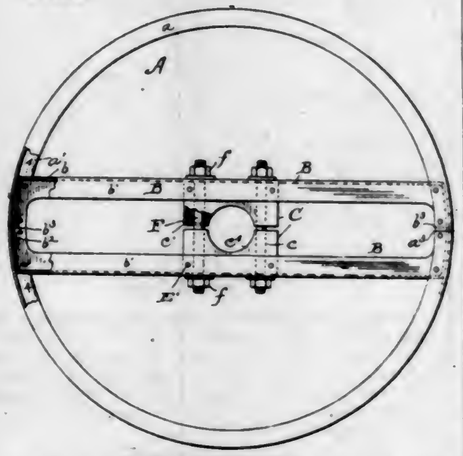
3. The combination of a shaft, a two-part clutch mounted thereon,

one member being loosely and the other fixedly mounted, engaging means whereby the two members can be clutched together, means for projecting a bar into the path of the clutching device, means governed by the operating devices of the machine for causing these parts to remain in engagement during the time the work is being performed, and means operated by the same shaft for withdrawing said bar from the path of the clutching device at the proper time.

4. The combination of a shaft, gear loosely mounted thereon and forming one member of a clutch, a second clutch member rigidly mounted on said shaft, a cam also rigidly mounted on said shaft, a slide mounted on the frame adjacent to said cam and adapted to be operated thereby, an operating-head, a spindle on which said operating-head is mounted, connections between said slide and said spindle, a bar adapted to be projected into the path of the clutch-arm, impelling means normally tending to cause such engagement, and connections between said bar and the slide whereby the said bar is normally held out of engagement with the clutch-arm and against the force of said impelling means.

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**756,391. PULLEY.** ARTHUR L. MOORE and ROBERT DEMING, Cleveland, Ohio, assignors to the Cleveland Pulley Company, Cleveland, Ohio, a Corporation of Ohio. Filed Dec. 26, 1901. Serial No. 87,189. (No model.)



*Claim.*—1. In a split pulley, the combination of a rim, spoke-bars composed of a pair of channel members arranged parallel with the split diameter of the pulley, the channels facing said diameter, and center-blocks carried by said members within their channels, substantially as described.

2. In a split pulley, the combination of a rim having inwardly projecting peripheral flanges, a pair of channel-shaped metal spoke-bars contacting with said flanges and secured to them, said spoke-bars having their channels facing the split diameter of the pulley, whereby the bases of said channels are some distance back from said diameter and thereby form two braces across the rim, said channels having ends engaging the inner surface of said rim and secured to the rim, substantially as described.

3. In a sheet-metal split pulley, the combination of a metal rim having inwardly-projecting edge flanges, a pair of channel-shaped spoke-bars facing the split diameter of the pulley, the flanges of the spoke-bars being riveted to the flanges of the rim, and center-blocks riveted to the flanges of the spoke-bars, substantially as described.

4. In a sheet-metal split pulley, the combination of a rim having inwardly-projecting peripheral flanges, a pair of channel-shaped spoke-bars contacting with said flanges, said spoke-bars having their channels facing the split diameter of the pulley whereby the base of said channels is some distance back from said diameter, said channels having ends engaging the inner surface of said rim, and rivets securing the flanges of the spoke-bars to the flanges of the rim and the ends of the spoke-bars to the face of the rim, substantially as described.

5. In a sheet-metal split pulley, the combination of a metal rim, channel-shaped spoke-bars with the channels facing each other, and center-blocks carried by the spoke-bars and held in place by the channels thereof, said center-blocks being made of sheet metal bent into U shape in cross-section, substantially as described.

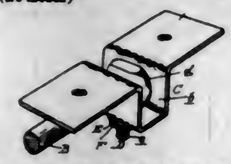
6. A sheet-metal split pulley composed of a separable rim, a pair of channel-shaped spoke-bars carried thereby, the channels facing each other, sheet-metal center-blocks occupying said channels and consisting of plates bent into a series of U's and secured to the side flanges of the channels and the base thereof, and clamping-bolts for holding the pulley together, which bolts pass through the center-blocks and lie between parallel plates thereof, substantially as described.

7. In a sheet-metal split pulley, the combination of a rim having inwardly-projecting peripheral flanges, a pair of channel-shaped spoke-bars contacting with said flanges and secured to them, said spoke-bars having their channels facing the split diameter of the pulley, and metal center-blocks formed in U shape occupying the channel of the spoke-bars and secured to them, substantially as described.

8. In a pulley, the combination of a rim having inwardly-projecting edge flanges and an internal intermediate flange formed by a doubled-in portion of the metal of the face of the rim, spoke-bars secured to the edge flanges and the intermediate flange, and center-blocks carried by the spoke-bars, substantially as described.

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**756,392. WHEEL GUARD OR FENDER.** DAVID MCCAUSLAND, Detroit, Mich., assignor to Briscoe Manufacturing Company, Detroit, Mich., a Corporation of Michigan. Filed Oct. 5, 1903. Serial No. 175,869. (No model.)



*Claim.*—1. In a wheel guard or fender the combination with a shank or supporting-arm and the guard of a bifurcated bearing formed on the under side of said guard and adapted to receive said shank and a clamping-screw engaging said shank intermediate the furcations of said bearing.

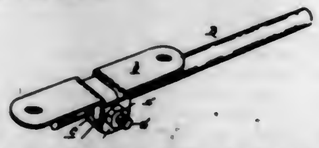
2. In a wheel guard or fender the combination with a shank and the guard of a bifurcated bracket depending from said guard and having alined apertures in the furcations thereof for the passage of said shank, an eyebolt sleeved on said shank intermediate the furcations of said bracket, and extending outward, and a nut engaging said bolt and bearing upon said bracket adapted to clamp said shank therein.

3. The combination with a wheel guard or fender and the securing arm or shank therefor, of a bracket projecting from said fender comprising securing-flanges and a U-shaped portion having alined apertures in the opposite sides thereof through which said shank is adapted to pass, an eyebolt sleeved on said shank between the sides of the U and having its threaded portion extending through an aperture in the bottom of the U and a clamping-nut engaging the threaded portion of said bolt.

4. In a wheel guard or fender the combination with a shank or supporting-arm and the guard of a bifurcated bearing formed on the under side of said guard adapted to receive said shank, and means for clamping said shank intermediate said bearing.

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**756,393. WHEEL GUARD OR FENDER.** DAVID MCCAUSLAND, Detroit, Mich., assignor to Briscoe Manufacturing Company, Detroit, Mich., a Corporation of Michigan. Filed Dec. 1, 1903. Serial No. 183,409. (No model.)



*Claim.*—1. The combination with a wheel guard or fender and a supporting-shank therefor of a bifurcated bearing upon the under side of said guard, adapted to receive said shank a clamping member engaging said shank intermediate the furcations of said bearing and extending laterally outward therefrom, and means for clamping or loosening said member from the outer end thereof.

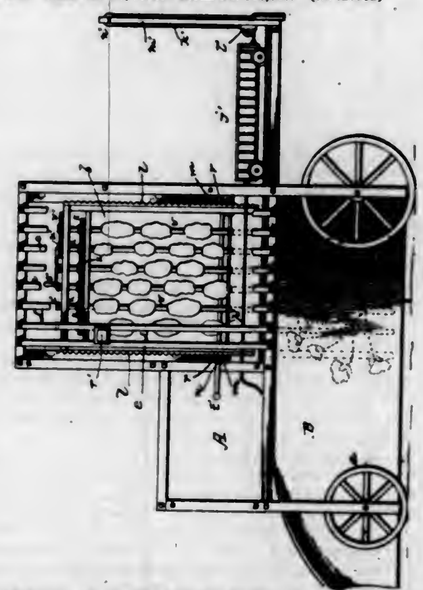
2. The combination with a wheel guard or fender and a supporting-shank therefor of a bifurcated bearing on the under side of said guard, an eyebolt sleeved on said shank intermediate the furcations of said bearing, and extending laterally outward therefrom, and a clamping-nut having a threaded engagement with the outer end of said bolt and drawing against the edges of said bifurcated bearing.

3. The combination with a wheel guard or fender and a supporting-shank therefor, of a bifurcated bearing on the under side of said guard with which said shank engages, an eyebolt sleeved on said shank intermediate the furcations of said bearing, and extending laterally outward therefrom, a clip-plate engaging the outer end of said bolt and embracing the edges of said bearing, and a clamping-nut having a threaded engagement with the outer end of said bolt.

4. The combination with a wheel guard or fender, and a supporting-shank therefor, of a bifurcated bearing formed of a sheet-metal stamping having a downturned U-shaped portion, the sides of which are apertured in alinement for the passage of said shank, an eyebolt sleeved on said shank intermediate the sides of the U and extending laterally outward therefrom, a clip-plate engaging the outer end of said eyebolt and embracing said sides of the U and a clamping-nut having a threaded engagement with said eyebolt.

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**756,394. COTTON-PICKER.** JAMES T. MCDONALD, Little Rock, Ark. Filed Oct. 27, 1903. Serial No. 178,679. (No model.)



*Claim.*—1. In a cotton-picking machine provided with transporting-wheels and fixed frame mounted thereon, of the vertically-sliding frame, the expansible spindles arranged in said frame and provided with the pinions, and means substantially as described for revolving said spindles.

2. In a machine of the character described, the vertical collapsible spindles for gathering retaining and releasing the cotton wound thereon by means substantially as described, and provided with intermeshing pinions grouped together, and the vertically-movable frame, as set forth.

3. In a machine of the character described, a vertically-movable frame and expansible spindles therefor, said spindles operating simultaneously with one another by means of intermeshing pinions, said spindles with their pinions grouped to the proper distances apart to insure contact with the bolls of cotton, whereby each boll is stripped at the same time, substantially as described.

4. In a machine of the character described, the combination with the inclosing frame having slatted sides, of the vertically-movable frame provided with the toothed bars, the pinions engaging said bars, the transverse bars having vertical movement in the spaces between the slatted sides of the inclosing frame, the spindles provided with the pinions, the crank-handle, operating these spindles and the horizontal rods connecting the lower end of the movable frame and forming a stop for the transverse bars, all substantially as described.

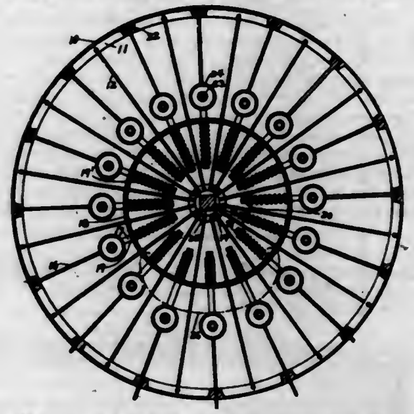
5. In a cotton-picking machine, the combination therewith of collapsible spindles comprising two members separated at the lower end and joined at their upper end to a tubular portion, said members having the inverted-V-shaped notch and a stem, provided with a cone-shaped knob engaging said notch, and the spring for forcing the members toward one another.

6. In a cotton-picking machine of the character herein described, the same comprising the main transporting-frame and inclosing frame mounted thereon, having the vertical grooved guide-strips, pinions, beveled gear-wheels, the horizontal shafts journaled in brackets, and a crank-handle for operating these gear-wheels, said frame provided with the top plate and side strips, and openings between said strips, the vertically-sliding frame, comprising the corner-uprights having the vertical toothed bars, and at the upper end a top plate and a lower plate arranged below the same, leaving a space between said plates, each of which being provided with vertical perforations, horizontal supporting-rods at the lower end connecting these uprights and the collapsible spindles provided with pinions engaging one another, the large and small pinions, the latter having the crank-handle, the receptacle traveling back and forth upon the main and extended rear frame and the side boards arranged beneath the main frame for straddling and gathering the cotton prior to the picking of the same by the spindles, substantially as described.

7. In a cotton-picking machine, a group of collapsible spindles, said spindle comprising a split lower portion, having a closing-finger for the extreme end, an inverted-V-shaped space and a tubular upper end, a stem arranged within the vertical space between the two members, having at its lower end a cone-shaped knob engaging the inner faces of the inverted-V-shaped opening, said stem extending through the upper tubular end of the spindle and provided with a button and coiled spring, and a spring secured to the spindle near its upper portion for forcing the two members inward when released by the knob, all substantially as described.

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**756,395. TRACTION-WHEEL.** JAMES P. MCEWING, Drayton, Canada. Filed May 8, 1903. Serial No. 156,269. (No model.)



*Claim.*—1. In a traction-wheel, the combination with a wheel having slots in the felly thereon, cleats slidably disposed within the slot and adapted for movement radially of the wheel, means for holding the cleats yieldably retracted and guide-wheels upon the cleats, of an axle having a spindle to receive the wheel, guides upon the axle and rods slidably disposed in the guides, sleeves upon the upper ends of the rods and secured thereto, and lying within the guides, other sleeves slidably disposed upon the lower ends of the rods, and lying within the guides, a cam secured to the sleeves, springs disposed upon the rods and lying between the sleeves to hold the second-named sleeves at the lowermost limit of their motion and to hold the cam yieldably in the paths of the guide-wheels, a cross-bar connecting the upper ends of the rods and having a threaded perforation therethrough, a socket between the guides, a threaded rod swiveled in the socket and lying within the threaded perforation, and means for operating the threaded rod to move the cross-bar and the rods, to vary the tension of the spring.

2. In a traction-wheel, the combination with a wheel having slots in the felly thereof, cleats slidably disposed within the slot and adapted for movement radially of the wheel, means for holding the cleats yieldably retracted and guide-wheels upon the cleats, of an

axle having a spindle to receive the wheel, guides upon the axle, rods slidably disposed in the guides, sleeves upon the upper ends of the rods and secured thereto, and lying within the guides, other sleeves slidably disposed upon the lower ends of the rods, and lying within the guides, a cam secured to the sleeves, springs disposed upon the rods and lying between the sleeves to hold the second-named sleeves at the lowermost limit of their motion and to hold the cam yieldably in the paths of the guide-wheels and means for varying the tension of the springs.

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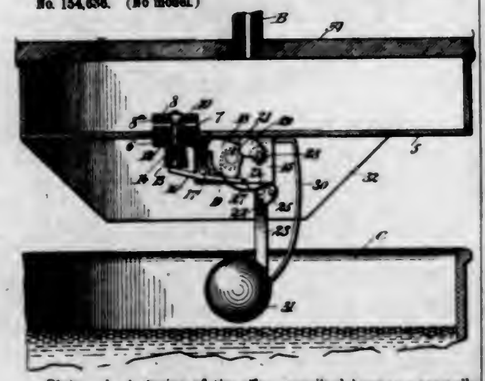
**756,896. OVERALLS.** WILLIS C. MCLAURY, Harpersfield, N.Y. Filed Jan. 5, 1904. Serial No. 187,807. (No model.)



*Claim.*—As an improved article of manufacture, a pair of overalls, open along the outer marginal edges of the leg portions thereof and provided with fasteners whereby the edges may be held together, a sectional body-band at the top of the overalls, means for fastening said band-sections together, a strap K connecting the middle portions of said body-band sections, a ring R secured to one of said band-sections, straps Q and Q', one of said straps Q being fastened to the overalls passing through said ring and through loops upon said band-sections, the other strap Q' fastened to said ring and adapted to be held to said band-sections, and means for adjustably holding the ends of said straps Q and Q' together, as set forth.

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**756,897. DRAIN-PIPE ATTACHMENT FOR REFRIGERATORS.** MARTHA MCNAMARA, New York, N. Y. Filed Apr. 28, 1903. Serial No. 154,636. (No model.)



*Claim.*—1. A device of the class described having a normally closed drip-valve, means controllable by the insertion of a drip-pan for opening the valve and locking the same in its opened position, and means for releasing said valve-locking devices, said releasing means being actuated by accumulation of water in the drip-pan and by the withdrawal thereof.

2. A device of the class described, having a normally closed drip-valve, means controllable by the movement of the drip-pan in one direction for opening said valve and locking the same in an open position, one member of the valve opening and locking means being yieldable to the movement of the drip-pan in an opposite direction, and means for releasing the valve-locking devices, said releasing means being actuated by the accumulation of water in the drip-pan.

3. In a device of the class described, the combination of a valve, a locking means therefor, means operated by the movement of a drip-pan for opening the valve and locking the same in its opened position, and a float-actuated releasing device for closing said valve.

4. In a device of the class described, the combination of a normally closed valve, means controllable by the movement of a drip-pan for opening said valve and for locking the valve in its opened position, and a float-controlled releasing device disposed to actuate the valve-locking means and permit said valve to be closed.

5. In a device of the class described, the combination of a normally closed valve, a locking-cam, a lever connection between the valve and said cam, a trip device controllable by the movement of a drip-pan for actuating the cam, and a float-controlled locking-detent in operative relation to said locking-cam.

6. In a device of the class described, the combination of a valve, a lever for moving said valve in one direction, a pivoted member arranged to act against said lever, a trip device controllable by the movement of a drip-pan for turning the pivoted member, a locking-dog in operative relation to said pivoted member, and a float for controlling said dog.

7. In a device of the class described, the combination of a spring-pressed valve, a lever acting against said valve, a locking-cam acting on said lever, a spring-actuated trip device movable in one direction by the insertion of a drip-pan and connected operatively with said cam, and a float-controlled dog in operative relation to the cam.

8. In a device of the class described, the combination of a valve, a two-part trip having one member controllable by the insertion of the drip-pan and disposed for movement in one direction independently of the other member, a locking device operatively related to said valve, and a float for releasing said locking device.

9. In a device of the class described, the combination of a tank arranged to receive water from a refrigerator drain-pipe, an outlet from said tank, a valve controlling said outlet, means for locking said valve in an open position, means operated by the movement of a drip-pan to open said valve, and a float-controlled device for releasing the locking mechanism and closing said valve.

10. The combination of a tank attached to a refrigerator and arranged to receive drip-water therefrom, a normally closed drip-valve connected to said tank, and means controllable by the insertion and withdrawal of a drip-pan below said tank and valve for opening, locking and closing the valve.

11. The combination of a normally closed valve, a lever tending to open the valve, locking devices controllable by the movement of a drip-pan for holding the valve in an open position, and float-controlled releasing devices coöperating with said locking devices.

12. The combination of a valve, a lever acting on said valve, a locking-cam riding on said lever, a yieldable trip for turning said cam and moving said lever, and a float-controlled dog coöperating with said cam and withdrawable therefrom by the elevation of a float to a predetermined point.

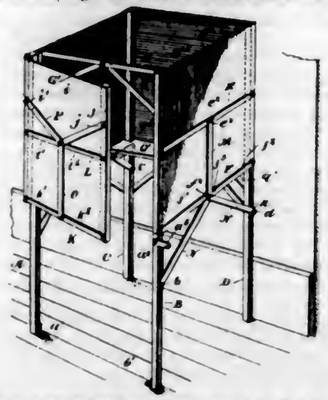
13. The combination of a valve, a shouldered cam for locking said valve, a two-part trip having its members yieldably connected, one member being fast with the cam and the other member lying in the path of a drip-pan, a dog disposed for engagement with the cam, and means for actuating the dog.

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**756,898. ELECTION-BOOTH.** GEORGE W. NAYLOR, Sr., Catskill, N. Y., and JOSEPH DORAN, Jersey City, N. J. Filed May 25, 1903. Serial No. 158,584. (No model.)

*Claim.*—1. In an election-booth, the combination with the corner-uprights, a flexible covering for the upper portion of the booth and a suitable door, of relatively upper and lower horizontal cross-braces both pivotally connecting the uprights at points intermediate of their height, the cross-braces each comprising pivotally-joined members adapting the braces for folding parallel with the uprights, and means for detachably retaining said braces in a horizontal position.

2. In an election-booth, the combination with the corner-uprights, a flexible covering for the upper portion of the booth and a suitable door, of a plurality of horizontal cross-braces pivotally connecting the uprights at points intermediate of their height, the cross-braces comprising pivotally-joined members adapting the braces for folding parallel with the uprights, and provision mutually connecting the braces for insuring a simultaneous movement thereof.



3. In an election-booth, the combination with the corner-uprights, a flexible covering for the upper portion of the booth, and a suitable door, of a plurality of horizontal cross-braces pivotally connecting the uprights at points intermediate of their height, the cross-braces comprising pivotally-joined members adapting the braces for folding parallel with the uprights, provision mutually connecting the braces for insuring a simultaneous movement thereof, and means for detachably retaining said braces in a horizontal position.

4. In an election-booth, the combination with the collapsible booth-frame and a flexible covering for the upper portion of the same, of a door permanently hung at the front of said frame and comprising members adapted to be contracted relative to each other and lie parallel with the collapsed parts of the booth-frame.

5. In an election-booth, the combination with the collapsible booth-frame, and a flexible covering for the upper portion of the same, of a door permanently hung at the front of said frame, and comprising vertical bars, a flexible section secured thereto and means connecting the bars for permitting them to fold closely parallel with each other and with the collapsible parts of the booth-frame.

6. In an election-booth, the combination with the main frame embodying corner-uprights, a flexible covering for the upper portion of the frame, and folding horizontal cross-braces pivotally connecting the uprights at a point intermediate of their height, of a door permanently hung on the main frame and comprising bars, a flexible covering, and folding horizontal cross-braces pivotally connecting the bars and located in a horizontal plane contiguous to that of the braces of the main frame.

7. In an election-booth, the combination with the main frame embodying corner-uprights, a flexible covering for the upper portion of the frame, horizontal cross-braces pivotally connecting the uprights at a point intermediate of their height, the cross-braces comprising pivotally-joined members adapting the braces for folding parallel with the uprights, of a door permanently hung on the main frame and comprising bars, folding horizontal braces pivotally connecting the same and located in a horizontal plane contiguous with that of the braces of the main frame, a flexible covering for the door, and means for retaining both the braces of the main frame and door in an extended position.

8. In an election-booth, the combination with a main frame, comprising uprights, folding cross-braces pivotally connecting the same, and a flexible covering for the upper portion of the frame, of a door hung on said frame, and embodying vertical bars, lower and intermediately-located folding cross-braces, a batten connecting said door-braces, link provision operatively connected with said latter provision and adapted to detachably engage a projection on one of the uprights.

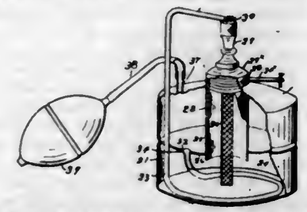
9. In an election-booth, the combination with folding main and door frames, of flexible coverings for the upper portion of the main frame, and for the door-frame, brackets at the rear of the main frame adapted to fold parallel therewith, a removable board for said brackets, and provision for detachably retaining said board in a suspended position closely parallel with the parts of the main frame, when the latter is folded.

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**756,899. FLASH-LIGHT APPARATUS.** CHARLES H. NICHOLS, St. Louis, Mo. Filed July 28, 1903. Serial No. 167,269. (No model.)



*Claim.*—1. A flash-lamp comprising a reservoir and a burner, a fluid-secreting and blast tube having air-inlet and fluid-discharge ends, and a portion of said tube intermediate said ends extending within the reservoir and provided with a fluid-induction opening, the discharging end of said tube extending upwardly and disposed transversely to the burner, an air-receiver with which the air-inlet opening of said tube is connected, and a pneumatic blast device connected with the air-receiver.



2. A flash-lamp comprising a reservoir having a chamber for the ignitible fluid, and a separate chamber for air, a diaphragm separating one of said chambers from the other, a burner and a fluid-secreting and blast tube having air-inlet and fluid-discharging ends, said air-inlet opening being connected with the air-chamber, and a portion of said tube intermediate said ends extending within the reservoir and provided with a fluid-induction opening and the discharging end of said tube extending upwardly and disposed transversely to the flame of the burner, and means for supplying air under pressure to said air-chamber.

3. A flash-lamp comprising a reservoir having a chamber for the ignitible fluid, and a separate chamber for air, a diaphragm extending transversely to the reservoir separating one chamber from the other and having an opening therein, a tube or cylinder having its lower end extending through the top of said reservoir and through said diaphragm, and a burner at its upper end, a fluid-secreting and blast tube having air-inlet and fluid-discharging ends, and the inlet end of said tube extending within the chamber for the ignitible fluid, connected with the opening in the diaphragm, said portion of the tube within said chamber having a fluid-induction opening, the discharging end of said tube extending upwardly and disposed transversely to the flame of the burner, and a pneumatic blast device connected with the top of said reservoir.

4. In a flash-light apparatus, the combination with the flash-pan, an upright shield having an opening therein, a flame-guiding tube arranged opposite said opening, a flame-deflector at the outer end of said tube and a support for the outer end of said flame-deflector.

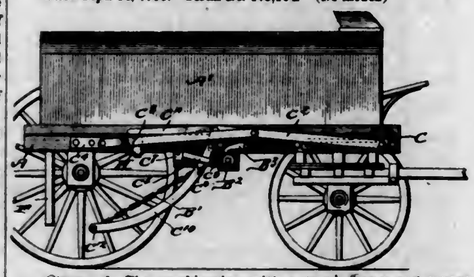
5. In a flash-light apparatus, a flash-pan, an upright shield having an opening therein, a flame-guiding tube arranged above the plane of the pan, opposite said opening, a flame-deflecting plate on the outer end of said tube, inclined outwardly and downwardly, and a support for the outer end of said plate extending to the said pan.

6. In a flash-light apparatus, an upright shield having an opening therein, a flash-lamp and a support for said lamp on the said shield, a blast-tube extending from the lamp in the direction of said opening and a support for said tube connected with said shield.

7. In a flash-lamp, a reservoir, a blast-tube having an air-inlet and fluid-discharging ends, and a portion of said tube extending within the reservoir, provided with a non-corrosive fluid-induction opening.

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**756,400. DUMPING-WAGON.** AUGUST F. OTTO, Philadelphia, Pa. Filed Sept. 14, 1903. Serial No. 173,164. (No model.)



*Claim.*—1. The combination with a truck-frame and wagon-body, of a drum carried by said frame, guide-plates secured to the sides of the frame, offset arms carried by said plates, rollers jour-

nailed between said arms and plates, parallel curved bars pivoted at their upper ends to the wagon-body and adapted to move vertically between the arms and the plates and bear on said rollers, a shaft parallel to the drum and connecting the curved bars, means for drawing the shaft to the drum when the latter is rotated, and means for rotating the drum.

2. The combination with a truck-frame and wagon-body, of a longitudinally-slotted and flanged guide-plate secured to the side of the truck-frame, a roller adapted to travel therein and having a stem projecting through the slot, a bar pivoted at its forward end to the stem of the roller, a bar pivoted at its rear end on the side of the truck and at its forward end to the first-mentioned bar, a curved bar pivoted at its upper end to the wagon-body and to the first-mentioned bar, means for imparting vertical movement to the curved bar, and means carried by the frame for guiding said curved bar.

3. The combination with a wagon-body and truck-frame, of a curved bar pivoted at its upper end to said wagon-body, a guide-plate arranged on the truck-frame, a roller carried by said plate adapted to guide the curved bar, means carried by the truck-frame adapted to lift said curved bar, a bar pivoted at its rear end to the upper end of the curved bar, a roller carried at the forward end of the pivoted bar, a guide-plate adapted to receive said roller and permit horizontal travel of the roller on said plate, a bar pivoted to the truck in the rear of the curved bar and to the roller-carrying bar in advance of the curved bar, and means carried by the truck-frame and wagon-body adapted to steady the latter when elevated by the curved bar.

## 756,401. NON-CONDUCTING HANDLE. Clarence M. Perkins, St. Louis, Mo. Filed Nov. 17, 1902. Serial No. 131,691. (No model.)



*Claim.*—1. A non-conducting handle comprising a handle proper and a base portion, said base portion comprising a flange and an inwardly-extending thimble, bolts for connecting the handle and base portions, heat-insulating material intervening between the bolt and the thimble and a button on said bolt between the handle proper and the base portion.

2. A heat-insulating handle consisting of a handle proper having a nut fixed therein, a hollow base and a bolt swiveled in said hollow base and arranged to cooperate with said nut, and a button of insulating material between said handle proper and said base, said button fitting over a polygonal section of said bolt whereby it is adapted to turn the same, substantially as described.

3. A non-conducting handle consisting of a handle proper having a nut fixed therein, a hollow base consisting of a metal shell flanged at one end and adapted to be mounted at its other end upon the body of the vessel, a thimble inside of said shell and fixed to its end flange, and a bolt extending through said thimble and having a threaded nut working on its end, a sleeve of insulating material intervening between said thimble and the head and body of the bolt, and a button of insulating material mounted on said bolt and lying between the base and the end of the handle proper, substantially as described.

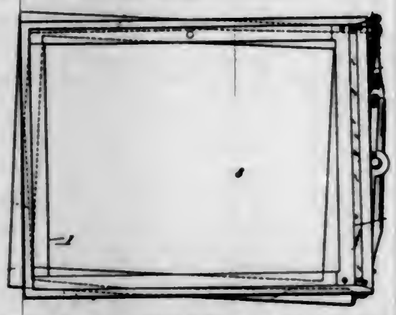
4. The combination with a pot or vessel, of a heat-insulating handle consisting of a handle proper having nuts fixed therein, hollow base portions mounted upon the body of said vessel and having their outer ends flanged, insulated bolts swiveled in said bases and arranged to cooperate with said nuts, and a button of insulating material between each end of the handle proper and the adjacent base portion, each of said buttons having a hole fitting over a polygonal section of the corresponding bolt whereby it is adapted to turn the same, substantially as described.

5. A non-conducting handle comprising a handle proper, a base portion provided with an inner shoulder, a bolt having one end engaging the shoulder and the other connected to the handle proper, heat-insulating means between the bolt and the base portion, and a flat button of heat-insulating material lying between the base portion and the end of the handle proper.

6. A non-conducting handle comprising a handle proper and a hollow base portion, said base portion being provided with an inner shoulder, a headed bolt having its head engaged with the shoulder and its opposite end secured to the handle, and a button of heat-insulating material mounted upon the bolt between the handle proper and the base portion and adapted to manipulate the bolt.

7. A non-conducting handle comprising a handle proper, a base portion provided with an internal bore and an inner shoulder, a bolt having one end engaged with the shoulder and the other end connected to the end of the handle proper, a button of heat-insulating material surrounding the bolt and lying between the end of the handle and base portion, and heat-insulating material between the bolt and the shoulder and the inner wall of the bore.

## 756,402. APPARATUS FOR CARRYING AND CHANGING PHOTOGRAPHIC PLATES. William A. Peters, Johnstown, Pa., assignor of two-fifths to Edward L. Cook, Johnstown, Pa. Filed Jan. 16, 1904. Serial No. 189,261. (No model.)



*Claim.*—1. In apparatus of the character specified, a plate-magazine, and a plate-discharging mechanism mounted on said magazine and movable relatively thereto, said plate-discharging mechanism and said magazine each having a chamber therein and said chambers being of the same contour and adapted to register when said magazine and said discharging mechanism are in position for a plate to pass from the magazine into the discharging mechanism.

2. In apparatus of the character specified, a plate-magazine and plate-discharging mechanism mounted on said magazine for bodily movement relative to said magazine, both the magazine and the discharging mechanism having a chamber of rectangular contour and of the same size.

3. In apparatus of the character specified, a plate-magazine and plate-discharging mechanism at the bottom of said magazine, said said discharging mechanism having a chamber of sufficient length and breadth to receive a plate and of a depth slightly less than the thickness of a plate, and the walls of the magazine being undercut at the bottom to permit lateral movement of a plate with the plate-discharging mechanism.

4. In apparatus of the character specified, a magazine, plate-discharging mechanism pivotally mounted at the bottom of the magazine, and interengaging channels and flanges provided on the magazine and the discharging mechanism to prevent the entrance of light between said magazine and said discharging mechanism.

5. In apparatus of the character specified, a plate-magazine, a discharger disposed beneath said magazine and pivotally mounted at one side thereof, one of said structures being provided on the exterior with suitable channels, and the other structure being provided with flanges entering said channels, said flanges being of such width as to permit a limited swinging movement of the discharging mechanism relative to the magazine without withdrawal of the flanges from the channels.

6. In apparatus of the character specified, a plate-magazine, a plate-discharger disposed beneath said magazine for limited oscillatory movement, and a light-excluding strip of suitable material disposed in said magazine and projecting downward into said discharger.

7. In apparatus of the character specified, a plate-magazine, plate-discharging mechanism movable bodily relative to said magazine, and a latch for positively securing said discharging mechanism in position to discharge a single plate from the apparatus.



8. In apparatus of the character specified, a magazine, plate-discharging mechanism movable bodily relative to said magazine, and an automatic latch carried by said magazine and adapted to lock said discharging mechanism positively in position to discharge a single plate from the magazine.

9. In apparatus of the character specified, a magazine, plate-discharging mechanism movable bodily relative to said magazine, a latch to hold said plate-discharging mechanism positively in discharging position, and registering mechanism connected with said latch and actuated by the movements of said latch.

10. In apparatus of the character specified, a plate-magazine, means for discharging plates from said magazine, a plate-holder to receive a plate as discharged from the magazine, and an exposure-index mounted on said plate-holder and thrown into inoperative position when the plate-holder is brought into position to receive a plate.

11. In apparatus of the character specified, a magazine, plate-discharging mechanism, a slide provided in said discharging mechanism, a plate-holder adapted to receive plates from said discharging mechanism, a slide in said plate-holder, a catch to secure said plate-holder slide against accidental withdrawal, and means provided on said catch and operative when said catch is released to engage with the slide of the discharging mechanism and lock said slide for movement with the plate-holder slide.

12. In apparatus of the character specified, plate-discharging mechanism, a plate-holder adapted to receive plates from said discharging mechanism, a plate-holder slide, a discharger-slide, means for locking said slides for movement together, and means for limiting the outward movement of the plate-holder slide, said means being susceptible of disengagement from said slide.

13. In apparatus of the character specified, plate-discharging mechanism, a plate-holder to receive plates from said discharging mechanism, a slide in said plate-holder, a sliding strip arranged for limited sliding movement in said plate-holder, and devices carried by said slide which engage automatically with said sliding strip to keep said slide normally connected therewith, said devices being disengageable from said sliding strip.

14. In apparatus of the character specified, a plate-magazine, plate-discharging mechanism movable bodily relative to said magazine, said magazine and said discharging mechanism having chambers adapted to be brought into registration, a latch to hold said discharging mechanism with its chamber out of registration with the chamber of the magazine, and means for automatically returning said discharging mechanism into its normal position with the chamber therein in registration with the chamber of the magazine as soon as said latch is released.

15. In apparatus of the character specified, a plate-magazine having a plate-chamber therein, plate-discharging mechanism pivotally mounted on said magazine and having a chamber normally in registration with the chamber of the magazine, means for limiting the pivotal movement of said plate-discharging mechanism, and an automatic latch to hold said plate-discharging mechanism out of normal position.

## 756,403. SNAP-FASTENER. Albert R. Plowman, New York, N. Y., assignor to Scovill Manufacturing Company, Waterbury, Conn., a Corporation of Connecticut. Filed Oct. 3, 1903. Serial No. 175,632. (No model.)



*Claim.*—1. A snap-fastener socket member, comprising a flange having thread-holes and intermediate long and wide openings, and a central wall deflected from the flange and having its edge turned back, said wall and edge provided with slits extending into the said openings.

2. A snap-fastener socket member, comprising a flange having a beaded rim, thread-holes and long and wide openings between said thread-holes, and a centrally-arranged wall rising from said flange and having a reëntrant edge and provided with opposite slits extending entirely through the reëntrant edge and the wall and into the said openings.

3. A "sew-on" snap-fastener socket member, composed of the flange 1 having the beaded rim 2, thread-holes 3, and long and wide openings 7, and the wall 4 rising centrally from the flange and having the turned-in edge 5, and the slits 6 extending clear through the wall and its edge into the said openings.

## 756,404. METHOD OF MAKING HOLLOW METAL ARTICLES. Eugen Polte, Magdeburg-Sudenburg, Germany. Filed Aug. 20, 1902. Serial No. 120,400. (No model.)



*Claim.*—1. The method of making hollow metal articles, which consists in rolling a disk of metal spirally from the center toward the periphery while maintaining its flatness, and then forming it into the desired shape.

2. The method of making hollow metal articles, which consists in cupping the central portion of a metal plate to form the bottom of the article, rolling the outer portion of the plate spirally from the center toward the periphery while maintaining its shape, and then forming it into the desired shape.

3. The method of making hollow metal articles, which consists in forming an annular groove about the central portion of a metal plate, cupping the plate to form the bottom of the article, rolling the outer portion of the plate by rolling spirally from the center toward the periphery, and then forming into the desired shape.

4. The method of making hollow metal articles, which consists in rolling an annular groove about the central portion of a metal plate, cupping the plate over an area conforming substantially to the space within the annular groove to form the bottom of the article, rolling the outer portion of the plate spirally from the center toward the periphery, and then forming into the desired shape.

5. The method of making hollow metal articles, which consists in forming in a metal plate a central depression, rolling an annular groove concentric to the depression, cupping the portion embraced by the annular groove to form the bottom of the article, rolling the outer portion of the plate spirally from the center toward the periphery, and then forming into the desired shape.

6. The method of making hollow metal articles, which consists in rolling a metal plate spirally from the center toward the periphery, forming into the desired shape, and then finishing by rolling the bottom of the article.

7. The method of making hollow metal articles, which consists in cupping the central portion of the metal plate to form the bottom of the article, rolling the outer portion of the plate spirally from the center toward the periphery, forming into the desired shape, and finishing by rolling the bottom thereof.

8. The method of making hollow metal articles, which consists in forming by pressure an annular groove about the central portion of a metal plate, cupping the portion embraced by the annular groove to form the bottom of the article, rolling the outer portion of the plate spirally from the center toward the periphery, forming into the desired shape, and finishing by rolling the bottom thereof.

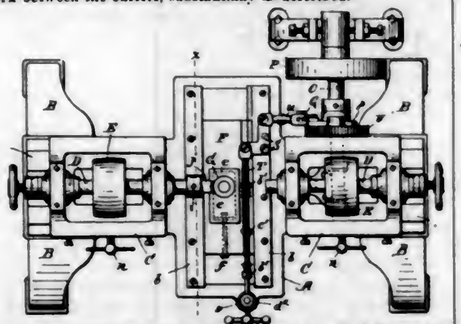
9. The method of making hollow metal articles, which consists in forming in a metal plate a central depression, rolling an annular groove concentric to the depression, cupping the portion embraced within the annular groove to form the bottom of the article, rolling the outer portion of the plate spirally from the center toward the periphery, forming into the desired shape, and finishing by rolling the bottom thereof.

## 756,405. MILLING-MACHINE. William Portnoy, Avondale Ohio. Filed Dec. 24, 1900. Serial No. 40,928. (No model.)

*Claim.*—1. In a milling-machine of the character described, the combination of an automatically-operated work-carrying table, means for reciprocating said table back and forth between a pair of revolvable cutters, a work-carrying spindle journaled in said table, and means for automatically indexing and locking said work-carrying spindle at the end of the stroke of the table and holding the same locked until it reaches the opposite end of its stroke, substantially as described.

2. In a milling-machine of the character described, the combination of oppositely-set revolving cutters, a work-carrying table hav-

ing a path of travel between and at right angles to said cutters, a work-carrying spindle journaled in said table, a removable dial on said spindle, dogs on opposite sides of the spindle for turning the same, and a lock for said dial and spindle during the passage of the work between the cutters, substantially as described.

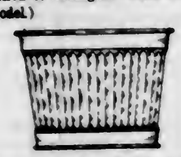


3. In a milling-machine of the character described, the combination of oppositely-set revolving cutters, a work-carrying table having a path of travel between and at right angles to said cutters, a work-carrying spindle journaled in said table, a removable dial on said table, dogs on opposite sides of the spindle for turning the same, a lock for said dial and spindle during the passage of the work between the cutters, and means for vertically adjusting said dial and dogs, substantially as described.

4. In a milling-machine of the character described, the combination of the work-carrying table F, the spindle G journaled therein, the chuck M feathered in said spindle, the stem K for operating said chuck, the screw-collar I for adjusting said spindle vertically, the latch F' carried by the work-carrying table, the slotted removable dial D' secured to the lower end of said spindle, pins p' for disengaging the latch from the dial, and the adjustable dogs I engaging pins on the under side of the dial for turning the same, substantially as described.

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**756,406. PAIL. Charles Puddefoot and Benjamin Briscoe, Detroit, Mich., assignors to Briscoe Manufacturing Company, Detroit, Mich., a Corporation of Michigan. Filed Nov. 14, 1903. Serial No. 181,170. (No model.)**



*Claim.*—1. A vessel provided with a flaring annular wall formed from sheet metal, having plain zones at opposite ends and an intermediate corrugated zone crimped to contract the diameter of the circumscribing circle.

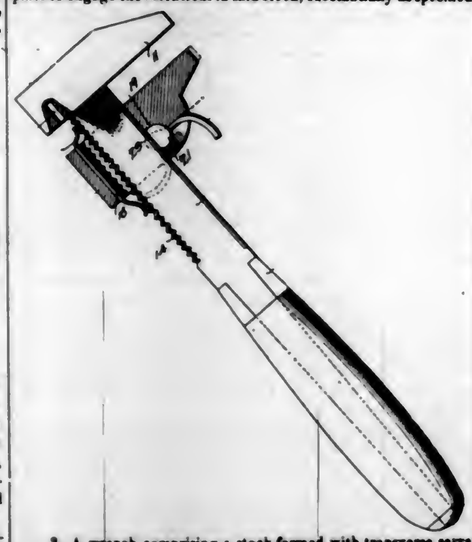
2. A vessel provided with a flaring wall formed from sheet metal having plain zones at opposite ends and an intermediate corrugated zone crimped to progressively contract the diameter of the circumscribing circle so as to maintain substantially the same circumferential length of contour as before the crimping.

3. A vessel provided with a flaring annular wall formed from sheet metal having plain zones at opposite ends and an intermediate corrugated zone with rounded ends to the corrugations merging into the plain zones the diameter of the circumscribing circle for each portion of the corrugated zone being contracted to maintain the length of the wavy line substantially equal to the circumference of the uncorrugated blank.

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**756,407. WRENCH. Austin H. Rankin and Charles Abrams, Madison, Ill. Filed Apr. 25, 1903. Serial No. 154,326. (No model.)**

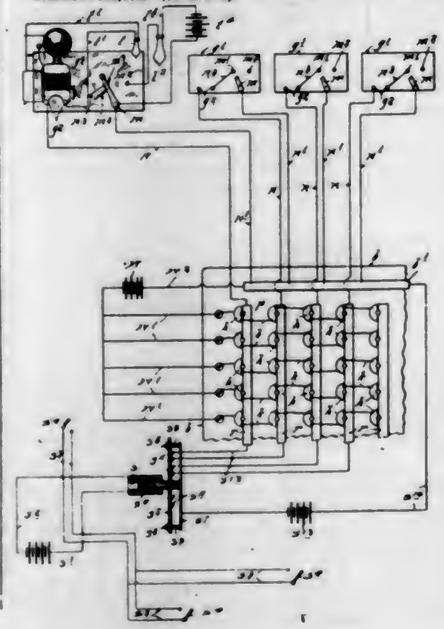
*Claim.*—1. A wrench comprising a stock having transverse spaced serrations and with a stationary jaw member at one end and a grip-handle at the other end, an opposing jaw member slidably disposed upon said stock, a plate having serrations corresponding to the serrations on said stock and detachably supported in said opposing jaw member, a spring supported between said plate and jaw member and having extended ends bent into engagement with said stock and operating to maintain the serrated plate carried by said opposing jaw member out of action, and means for moving said opposing jaw member transversely of said stock to cause said serrated plate to engage the serrations in said stock, substantially as specified.



2. A wrench comprising a stock formed with transverse serrations in one side and having a stationary jaw member at one end with a recess adjacent to the serrated side of said stock, an opposing jaw member slidably disposed upon said stock and having internal serrations corresponding to said stock-serrations, a spring operating to yieldably maintain said opposing jaw member with its serrations out of engagement with the serrations on said stock and extending in advance of said opposing jaw and adapted to enter said recess when said opposing jaw is closed against said stationary jaw, and means for forcibly moving said opposing jaw member transversely of said stock, substantially as specified.

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**756,408. Call or Alarm Device for Hotels or Other Buildings. Harvey Reed, Minneapolis, Minn., assignor of one-third to William M. Stone, Minneapolis, Minn. Filed Sept. 4, 1902. Serial No. 122,062. (No model.)**



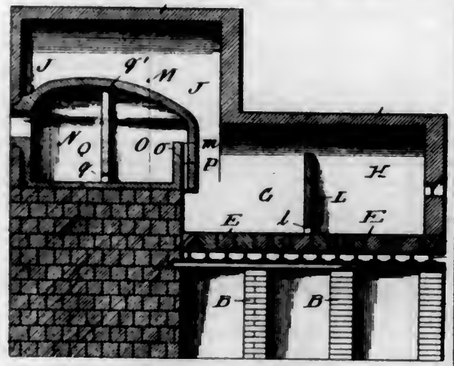


*Claim.*—1. A guest-call comprising a bell and a lamp in the guest's room, an electric circuit including said bell and lamp, whereby they may be simultaneously thrown into action, said circuit extending from the guest's room to a calling-station, a switch located in the guest's room and normally closing the said bell-circuit, a second electric lamp also located in the guest's room, an electric circuit including said second lamp which latter circuit is normally opened and is adapted to be closed by a movement of said switch required to open the bell-circuit, and means independent of said switch for opening and closing the said bell-circuit, substantially as described.

2. A fire-alarm or general-call device comprising a solenoid, and a controlling-circuit involving one or more switches, an armature or needle subject to said solenoid, a plurality of contact-fingers a contact-bar engageable with all of said fingers, under the direct action of said solenoid and armature, electric bells located in different rooms, and circuit connections including said bells, said contact-fingers and said contact-bar, whereby all of said bells may be simultaneously thrown into action, substantially as described.

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**756,409. Glass-Furnace. Solon O. Richardson, Jr., Toledo, Ohio. Filed Feb. 16, 1903. Serial No. 143,565. (No model.)**



*Claim.*—1. The combination with a furnace of the class described provided with a receiving-chamber comprising a planing-tank and a working chamber in communication with each other and in communication with a heating medium, of a closed pot comprising a melting-chamber and a planing-chamber in communication with each other, said pot being also provided with a feed-opening leading from outside of the furnace into the melting-chamber, and with a discharge-opening leading from the planing-chamber of said pot to the working chamber of said furnace.

2. In a glass-furnace, provided with a heating-chamber and a working chamber, said working chamber being provided with a working opening, the combination with a bench arranged so that the upper surface thereof shall be substantially on a plane above the plane of the bottom of said working opening, and a continuously-operating melting-pot mounted upon said bench and within said heating-chamber, said pot being provided with a feed-opening leading outside of said heating-chamber, and with a discharge-opening communicating with said working chamber.

3. The combination with a glass-melting furnace provided with a receiving-chamber and with means communicating with the interior of said receiving-chamber for maintaining the metal in a sufficiently fluid condition therein, of a closed melting-pot provided with a partition whereby said pot is divided into a melting-chamber and a planing-chamber, said pot being provided with a feed-opening leading into said melting-chamber and with a dam for maintaining the metal in said pot at a desired height, and a discharge-opening for the passage of the metal over said dam and out of said pot into said receiving-chamber, said partition being provided with a passage-way between said melting and planing chambers.

4. The combination with a glass-furnace provided with a receiving-chamber, of a closed melting-pot having a partition whereby said melting-pot is divided into a melting-chamber and a planing-chamber, said partition being provided with an opening communicating with both of said chambers, a feed-opening leading into said melting-chamber, a dam for maintaining the metal at a desired height in the planing-chamber, said pot being provided with an inclosed passage-way arranged to convey the overflow from the planing-chamber into said receiving-chamber, and means, in communication with the interior of said receiving-chamber, for maintaining the metal therein in a sufficiently fluid condition.

5. In a glass-furnace, a plurality of oppositely-disposed, continuously-operating, closed melting-pots arranged to discharge into a common runway, said pots being provided with feed-openings for continuously charging the same from a point outside the heating-chamber of said furnace, means arranged externally of said pots for melting the contents thereof, and a working chamber arranged to receive the metal from said runway.

6. In a furnace provided with a heating-chamber, and a highly-heated receiving-chamber, a closed melting-pot located in said heating-chamber and mounted above the metal-line in said receiving-chamber, said pot being provided with a feed-opening communicating with the interior thereof, and with a discharge-opening leading therefrom into said receiving-chamber.

7. In a furnace provided with a heating-chamber, and a highly-heated receiving-chamber, a closed melting-pot located in said heating-chamber and mounted above the metal-line in said receiving-chamber, said pot being provided with a feed-opening communicating with the interior thereof, and with a closed passage-way leading therefrom into said receiving-chamber.

8. The combination with a furnace provided with a heating-chamber and a working chamber in free communication therewith, of a closed melting-pot mounted in said heating-chamber and above the metal-line in said receiving-chamber, said melting-pot being provided with a feed-opening and with a discharge-opening for the passage of metal from the interior of said pot into said receiving-chamber, and means for reducing the solid contents of said melting-pot and for maintaining a high temperature in said receiving-chamber.

9. In a glass-furnace provided with a heating-chamber and a working chamber, a closed melting-pot located in said heating-chamber and provided with a partition whereby it is divided into a melting-chamber and a planing-chamber, said partition having an opening whereby communication is provided between said chambers, said pot being also provided with a feed-opening communicating with said melting-chamber and with a discharge-opening leading from the planing-chamber and communicating with the working chamber of the furnace, and means in communication with the interior of said working chamber for maintaining the metal in a sufficiently fluid condition in said working chamber.

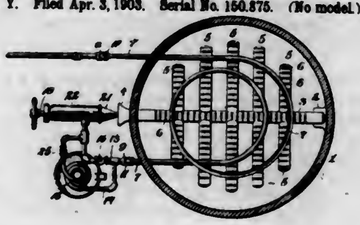
10. In a furnace of the class described, provided with a working chamber comprising a planing-tank, a closed melting-pot comprising a melting-chamber and a planing-chamber in communication with each other, said pot being also provided with a feed-opening leading from the outside of the furnace into the melting-chamber, and with a discharge-opening leading from said pot to said planing-tank, and means in communication with the interior of said planing-tank for maintaining the metal in a sufficiently fluid condition in said tank.

11. The combination with a glass-furnace comprising a working chamber, of a plurality of closed melting-pots provided with feed-openings for charging the same from a point outside of said furnace, means arranged externally of said pots for reducing the contents thereof, means for conveying the resultant metal to the working chamber, and means for maintaining the metal in a sufficiently fluid condition in said chamber.

12. The combination with a glass-furnace provided with a working chamber, of a closed pot, means arranged externally of said pot for reducing the contents thereof, means for conveying the resultant metal to said working chamber, and means communicating with the interior of the working chamber, for maintaining the metal in said working chamber in a fluid condition at less than a reducing heat.

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**756,410. Oil Vaporizer and Burner. Granville S. Rider, Elmhurst, N. Y., assignor of one-fourth to Leo Taussig, New York, N. Y. Filed Apr. 3, 1903. Serial No. 150,875. (No model.)**



*Claim.*—1. A burner having one or more orifices constituting a flaming part, a supply and vaporizing tube exposed to the heat of the flaming part and cleaning means composed of a plurality of connected parts movable relatively to each other and located within the supply and vaporizing tube.

2. A burner having one or more orifices constituting a flaming part, a supply and vaporizing tube exposed to the heat of the flaming part, and a cleaning-chain located within the supply and vaporizing tube.

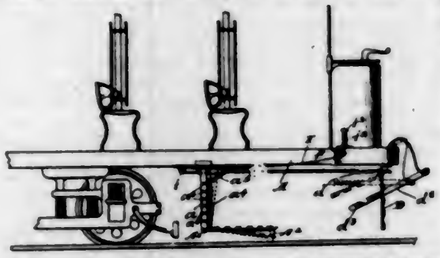
3. A burner having one or more orifices constituting a flaming part, a supply and vaporizing tube exposed to the heat of the flaming part, a cleaning-chain located within the supply and vaporizing tube, and removable closures for such tube, secured to the ends of such chain.

4. The combination of a casing forming a heating-chamber, a burner in such heating-chamber having one or more orifices constituting a flaming part, a supply and vaporizing tube exposed to the heat of such flaming part and extending out from the heating-chamber at its ends, cleaning means composed of a plurality of parts movable relatively to each other and located within the supply and vaporizing tube, and removable closures for such tube located outside of the heating-chamber and secured to the cleaning means.

5. The combination of a casing forming a heating-chamber, a burner in such heating-chamber having one or more orifices constituting a flaming part, a supply and vaporizing tube exposed to the heat of such flaming part and extending out from the heating-chamber at its end, a cleaning-chain located within the supply and vaporizing tube, and removable closures for such tube located outside of the heating-chamber and secured to the ends of such chain.

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**756,411. CAR-FENDER.** ALBERT G. ROBERTS, Peterborough, Canada. Filed Aug. 17, 1903. Serial No. 169,786. (No model.)



*Claim.*—1. In a fender for cars, the combination with the body of the car, a platform pivotally supported beneath the floor of the car, an arm extending upwardly into proximity with the floor of the car, means for engaging and locking the said arm in its normal position, means for automatically relieving the said arm, located at the front of the car operated by coming in contact with an obstruction in the track of the car, a connection extending from said means back to the locking means and means for bringing the fender back to its normal position as and for the purpose specified.

2. In a fender for cars the combination with the body of the car, of a platform pivotally supported beneath the floor of the car, a spring-buffer secured to the front of the car connecting locking mechanism located between the buffer and the platform for releasing the platform upon the depression of the said buffer and means for bringing the fender back to its normal position as and for the purpose specified.

3. In a fender for cars the combination with the body of the car, a platform pivotally supported beneath the floor of the car, an arm extending upwardly from said platform in proximity to the car-floor, a bolt held in suitable guideways designed to normally extend in front of the said arm, a bell-crank pivotally secured beneath the floor of the car, one arm of which is connected to the said bolt, a rod connecting the other arm to the said buffer and means for bringing the fender back to its normal position as and for the purpose specified.

4. In a fender for cars the combination with the floor of the car, a platform pivotally supported beneath the floor of the car, a downwardly-extending gate pivotally supported intermediate of its length in suitable brackets supported from the floor of the car, an arm extending upwardly from the said platform in proximity with the floor of the car, locking means for the said arm engaging therewith and a connection from the upper end of said gate to the locking means, said connection being drawn positively forward by the backward swing of the gate and means for bringing the fender back to its normal position as and for the purpose specified.

5. In a fender for cars the combination with the body of the car, a platform pivotally supported beneath the floor of the car provided with an upwardly-extending arm, a bell-crank pivotally supported beneath the floor of the car, for controlling the upwardly-extending arm, a downwardly-extending gate or arm pivotally connected intermediate of its length in proximity to the front of the car, a connecting-rod connecting one arm of the bell-crank to the top of the gate and means for bringing the fender back to its normal position as and for the purpose specified.

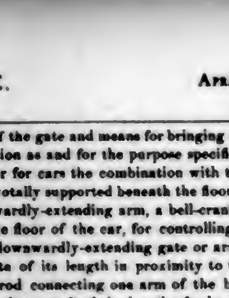
6. In a fender for cars the combination with the platform pivotally supported at its rear end beneath the floor of the car, of a spring-buffer composed of a series of downwardly-extending arms located in front of the car, a depending arm or gate pivotally supported intermediate of its length beneath the floor of the car, a pin extending outwardly from the side of the said gate, a slotted connecting-link secured at one end to the said spring-buffer through the slot of which said pin is designed to pass and means for bringing the fender back to its normal position as and for the purpose specified.

7. In a fender for cars, the combination with the platform pivotally secured at its inner end between suitable hangers secured to the floor of the car and provided with an upwardly-extending arm, a buffer located to the front of the car, locking mechanism located between the said buffer and the upwardly-extending arm of the fender, a cord extending up through suitable guideways through the floor of the car provided with a knot at its free end and a series of bars located between the supporting-hangers of the fender as and for the purpose specified.

8. In combination with a car a platform pivoted below the same, a spring-buffer at the front of the car, a gate pivotally supported and depending at the front end of the car, a connection between the gate and the platform and a connection between the spring-buffer and the gate, the latter connection serving to operate the gate and through it the platform and the said gate being capable of operation independent of the buffer, substantially as described.

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**756,412. SUPPORT FOR INCANDESCENT ELECTRIC LAMPS.** ADOLPHE ROSAIN and JEAN D'AYGUESVIVES, Paris, France. Filed Oct. 10, 1902. Serial No. 126,769. (No model.)



*Claim.*—1. A support for incandescent electric lamps comprising a casing, an upper portion of insulating material, contact-plates on said upper portion, screw-threaded rods engaging with said plates and extending through said portion, a lower portion of insulating material, contact-plates on said lower portion, a fusible wire connecting said rods and the lower contact-plates, a support for said wire and a lamp-socket electrically connected to said contact-plates, substantially as described.

2. In a support for incandescent electric lamps the combination with a casing, an inverted socket of insulating material in the upper end of said casing, contact-plates on the outer end of said socket, screw-threaded rods passing through the same, a ring of insulating material in the lower part of said casing and contact-plates secured thereto, of a vertically-extending strip of insulating material in said casing, metal projections thereon adapted to engage with said contact-plates and said rods and a lamp-socket electrically connected to said contact-plates, substantially as described.

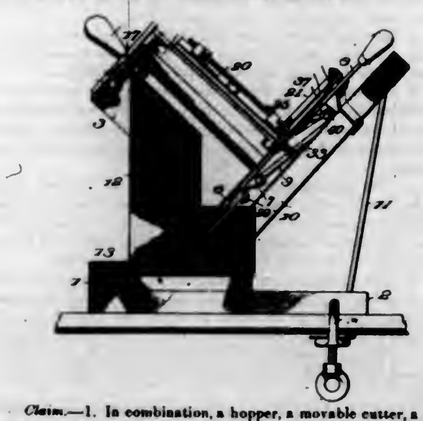
3. In a support for incandescent electric lamps the combination with a casing, an inverted socket of insulating material in the upper part of said casing, contact-plates on the outer end of said socket, rods passing through the same, a ring of insulating material in the lower part of said casing and contact-plates secured thereto, of a strip of insulating material in said casing, upper and lower metal projections on the opposite sides of said strip adapted to engage said rods and the lower contact-plates, a fusible connection for said metal projections, a lamp-socket secured to said casing and wires connecting said lower contact-plates with said socket, substantially as described.

4. In a support for incandescent electric lamps, the combination with the casing, upper and lower contact-plates secured therein, a fusible wire connecting said upper and lower contact-plates, a support for said fusible wire, a plurality of wires each respectively secured to the lower contact-plates, the said wires passing through a ring of insulating material in the lower part of said casing, a plurality of lamp-sockets secured to this lower part, the terminals of each of these sockets being respectively connected to the ends of two wires, positive and negative, secured to the lower contact-plates, so that the terminals of sockets are thus connected in parallel with respect to each other, substantially as described.



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**756,413. BREAD-SLICER.** GUSTAF ROOT, Tilly Foster, N. Y. Filed Sept. 1, 1903. Serial No. 171,538. (No model.)



*Claim.*—1. In combination, a hopper, a movable cutter, a pressure-plate, and a yielding connection between the pressure-plate and cutter to admit of a continued movement of the cutter after the pressure-plate has been arrested by contact with the material to be sliced, substantially as described.

2. In combination, a hopper, a movable cutter, a pressure-plate, and a curved spring serving to connect the pressure-plate with the cutter, substantially as set forth.

3. In combination, a hopper, a movable cutter, a pressure-plate, an arm adjustably connected with the cutter, and a spring connecting said arm with the pressure-plate, substantially as set forth.

4. In combination, means for supporting the material to be sliced, a rotary cutter having a circular series of radial slots, a lever having the rotary cutter journaled thereto, a curved rack-bar, a shaft journaled to said lever, a toothed pinion carried by the shaft and engaging the slots in the rotary cutter, gearing between said shaft and rack-bar, and a ratchet-clutch mounted upon said shaft and arranged to insure rotation of the cutter when advanced and to prevent rotary movement being imparted to said cutter when returning to a normal position, substantially as specified.

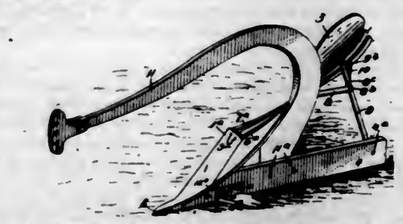
5. In combination, means for supporting the material to be sliced, a lever having a portion intermediate of its ends widened and tapered in thickness to a feather-edge, a cutter journaled to the lever opposite the widened portion and having the tapered edge of the latter bearing against the outer side thereof, and means for imparting rotary motion to the cutter on the downstroke of the lever, said means including a part confined between the rotary cutter and a portion of the lever, substantially as described.

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**756,414. PLOW.** LAWRENCE SACK, Farwell, Nebr. Filed Sept. 3, 1903. Serial No. 171,622. (No model.)

*Claim.*—1. In a plow, the combination with a moldboard, the share and the landside, of an auxiliary moldboard extension, consisting of a plurality of bars curved in the plane of the curvature of the moldboard-body member and disposed at the outer edge of the said moldboard-body, said bars being pivotally secured at their front end to the share, and means for supporting the rear sections of the said bars, said means being connected with the moldboard-body and the landside, as set forth.

2. In a plow, the combination with share, a moldboard and a landside mounted substantially as shown; a plurality of bars curved on the longitudinal curvature of the moldboard and disposed in the plane of the outer edge of the said moldboard, said bars being pivotally connected to the plowshare, a brace member connecting one end of one of the said curved bars with the landside, and a second brace member connected to the first brace member and the other curved bar, as set forth.



3. In a plow, the combination with the landside, the moldboard and the share; of the auxiliary bar 6 pivotally joined to the plowshare, the brace member 9 connected to the bar 6 and the landside, the auxiliary bar 7, the brace-bar 8 secured to the member 9 and the rear of the moldboard, and a member 10 connected to the bar 9 and the auxiliary bar 7, substantially as shown.

4. A plow, comprising in combination with a plowshare, the moldboard and the landside having a cut-away portion, of an auxiliary cutter-knife having a plurality of cutting edges projected at right angles to the landside, said knife having a vertical portion adapted to fit said cut-away portion of the landside, with its front face flush with the corresponding face of the landside, said vertical portion having an elongated aperture, a bolt passing through said aperture and the landside to adjustably hold said knife in position, as specified.

5. A plow, comprising in combination with a plowshare, the moldboard and the landside, having a vertical cut-away portion, of an auxiliary cutter-knife having a plurality of cutting edges projected at right angles to the landside, said knife also having an integrally-formed vertical portion adapted to fit said cut-away portion of the landside with its front face flush with the corresponding face of the landside, said vertical portion having an elongated aperture, a bolt passing through said aperture and the landside to form a fulcrum for said vertical portion, said vertical portion also having an elongated aperture, a bolt passing through said elongated aperture and the landside so that the said vertical portion and the said knife portion may be set at different angles to the horizontal plane, as specified.

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**756,415. INSECT-CATCHER.** JACOB SAMUELS, Chicago, Ill., assignor of one-third Joseph A. Pitts, Kenosha, Wis. Filed Aug. 19, 1903. Serial No. 170,011. (No model.)



*Claim.*—1. An insect-catcher comprising a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness, said sheet material being coated with an adhesive substance.

2. An insect-catcher comprising a piece of sheet metal, a portion of which is adapted to be extended in the direction of its thickness, said sheet metal being coated with an adhesive substance.

3. An insect-catcher comprising a piece of sheet material, a portion of which is cut on lines forming overlapping arcs of concentric circles, said sheet material being coated with an adhesive substance.

4. An insect-catcher comprising a piece of sheet metal, a portion of which is cut on lines forming overlapping arcs of concentric circles, said sheet metal being coated with an adhesive substance.

5. In an insect-catcher, in combination, a piece of sheet material,

a portion of which is adapted to be extended in the direction of its thickness; a coating of an adhesive substance on said sheet; and a holder for said sheet.

6. In an insect-catcher, in combination, a holder; a piece of sheet material secured at its edges to said holder, a portion of which sheet is adapted to be extended in the direction of its thickness; and a coating of an adhesive substance upon said sheet.

7. In a insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a coating of an adhesive substance on said sheet; and means for suspending said sheet.

8. In an insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a coating of an adhesive substance on said sheet; a holder for said sheet; and means for suspending said sheet with its holder.

9. In an insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a tray for containing said sheet, said sheet being coated with an adhesive substance upon a portion of its surface adjacent to said tray; and means for supporting said coated surface out of contact with said tray.

10. In an insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a tray for containing said sheet, said sheet being coated with an adhesive substance upon a portion of its surface adjacent to said tray; and means on said tray for supporting said coated surface out of contact with said tray.

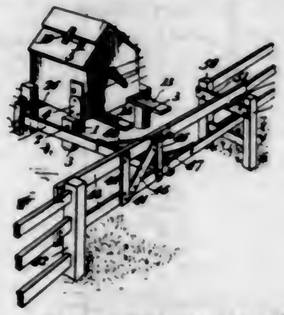
11. In an insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a tray for containing said sheet, said sheet being coated with an adhesive substance upon a portion of its surface adjacent to said tray; and projections on said tray for supporting said coated surface out of contact with said tray.

12. In an insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a coating of an adhesive substance on said sheet; and a tray for containing said sheet, which tray comprises a bottom plate and side strips, said bottom plate being provided with a central, integral, projecting portion.

13. In an insect-catcher, in combination, a piece of sheet material, a portion of which is adapted to be extended in the direction of its thickness; a holder for said sheet; and a coating of an adhesive substance on said holder.

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**756,416. SALT-BOX FOR ANIMALS. Andrew F. W. Schaddee, Fontanelle, Iowa. Filed Sept. 30, 1903. Serial No. 175,222. (No model.)**



*Claim.*—1. A salt-box for animals comprising a tilting receptacle in which salt is normally concealed, a swinging gate, and connections between said gate and receptacle whereby movement of said gate toward the receptacle will tilt the receptacle and expose the salt contained therein.

2. A salt-box for animals comprising a tilting receptacle in which salt is normally concealed, a movable gate disposed in front of the receptacle, means to keep said gate normally advanced from said receptacle, and connections between said gate, and receptacle whereby the movement of the gate toward the receptacle will tilt the receptacle and expose the salt concealed therein.

3. The combination with a receptacle having salt concealed therein of opening mechanism comprising a swinging gate disposed in front of said receptacle and a plunger attached to said gate and operatively connected with said receptacle to expose the salt contained therein when the gate is pressed toward the receptacle.

4. The combination with a receptacle having salt concealed therein, of a swinging gate disposed in front of said receptacle, a plunger pivotally connected with said gate, and a crank-shaft rocked by said plunger to open said receptacle and expose the salt contained therein.

5. The combination with a receptacle having salt concealed therein, of a movable gate disposed in front of said receptacle, a plunger pivotally connected with said gate, a spring arranged between said plunger and said gate to keep the gate normally advanced, and mechanism disposed between the end of the plunger and the receptacle to open the receptacle and expose the salt contained therein when the gate is pressed toward the receptacle.

6. The combination with a casing, of a sliding drawer arranged within said casing and mechanism comprising a member pivoted in front of said casing to advance the sliding drawer when said member is pressed toward the casing.

7. The combination with a casing, of tracks extending from the front thereof, a sliding drawer within the casing and movable along said tracks, and mechanism operable by an animal to advance the drawer upon the tracks.

8. The combination with a tilting casing, of a drawer within the casing and freely slidable therein and mechanism operable by an animal to tilt the casing and project the drawer therefrom.

9. The combination with a tilting casing, of a drawer freely slidable therein, a crank-shaft having an arm disposed beneath one end of the casing, and mechanism operable by an animal to turn the crank-shaft and tilt the casing to cause the projection of the drawer therefrom.

10. The combination with a tilting casing of a drawer freely slidable therein and a carrier also slidable therein, the drawer being normally retracted and the carrier advanced, and connections between said drawer and said carrier whereby the advance of the one will always be associated with the retraction of the other.

11. The combination of a casing having an opening in the front, of a carrier having one end normally protruded through said opening, means operable by an animal to expose the salt contained in the casing, and means to retract the carrier as the salt is exposed.

12. The combination with a salt-box for animals, of a retractable member normally projecting from the box to support food for animals.

13. The combination with a salt-box for animals of means for supporting food for animals in front of the salt-box and means operable by the approach of an animal to the box, to retract said supporting means.

14. The combination with a tilting casing, of a salt-box slidable therein, a guide-bar arranged obliquely in said casing and having its lower end disposed at the front of the casing, a carrier arranged for travel on said guide-bar and having one end normally protruded beyond the casing-wall, connections between said carrier and said drawer whereby the advance of the drawer will retract the carrier, and means for tilting said casing to advance the drawer.

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**756,417. FEED-WATER HEATER. Edward H. Schwartz, Chicago, Ill. Filed Aug. 3, 1903. Serial No. 168,087. (No model.)**

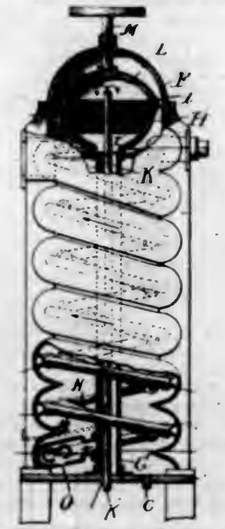
*Claim.*—1. In a water-heater, a casing provided interiorly with an upwardly-extending spiral corrugation, a water-coil disposed within said casing, and means for injecting a heating medium within said casing and for giving to said heating medium a spiral movement as it rises within said casing, substantially as described.

2. In a water-heater, the combination with a casing provided on its interior with a deep spiral corrugation extending upwardly within said casing, of a water-coil arranged adjacent to said corrugation, means for passing a current of water through said coil, and means for injecting a heating medium within said casing and around said coil, and for giving to said heating medium a spiral or gyrating motion as it rises within said casing.

3. In a water-heater, the combination with a casing, of a feed-water pipe extending lengthwise of said casing and discharging into a filter, a second water-pipe leading from said filter in a reverse direction within said casing, a coil connecting with said second water-pipe and extending upwardly within said casing, means for supplying a heating medium to the interior of said casing and around said coil, and means for giving an upwardly-gyrating movement to said heating medium.

4. In a water-heater, the combination with a base-plate, of an upright casing mounted thereon and provided with a deep interior and upwardly-extending spiral corrugation, a cap arranged to close the top of said casing, a feed-water pipe extending upwardly within said casing, a filter mounted adjacent to the upper end of said feed-water pipe, a second water-pipe extending downwardly from said filter but in communication with said first pipe through said filter, a coil extending upwardly within said casing and connecting adjacent to its lower end with said last-named water-pipe, means for injecting a heating medium within said casing and around said coil, and means for closing said filter against the entrance of said heating medium.





5. In a water-heater, the combination with the base-plate A, of the casing D, E, the cap F, the water-pipe G, the filter-chamber H, and cap L, the water-pipe K, the threaded stem M, and coils, M, N, the casing D, E being provided with the inlet-port P and outlet-port Q for the passage of a heating medium, and with the outlet-port R for the escape of the feed-water, substantially as described.

6. In a water-heater, a casing formed on its interior with an upwardly-extending spiral groove, water-containing means disposed within said casing, and means for supplying a heating medium to the interior of said casing, substantially as described.

7. In a water-heater, the combination with a casing, of means for supplying a heating medium tangentially to the interior of said casing, so as to give the same a spiral travel upwardly through said casing, and water-containing means disposed within said casing and exposed to the action of said heating medium.

8. In a water-heater, the combination with a casing provided with an upwardly-extending spiral groove, of a water-conduit disposed within said casing, and means for supplying a heating medium tangentially to said casing, so as to cause the same to travel spirally around said water-conduit and along said spiral groove.

9. In a water-heater, the combination with a casing of a water-coil disposed within said casing, and means arranged to conduct a heating medium tangentially to the interior of said casing and for conducting the same tangentially out of said casing in such a manner as to cause the same to travel spirally through said casing, substantially as described.

10. In a water-heater, the combination of a casing, a water-pipe extending longitudinally into said casing, a second pipe inclosing said first-named pipe and in communication with the interior thereof, a shell or casting connecting with said last-named water-pipe, a coil extending around said last-named water-pipe and within said casing and connecting with said casting, and means for supplying a heating medium to the interior of said casing.

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**756,418. ROPE-HOLDING DEVICE. Arthur M. Seyster, Hiawatha, Kans. Filed Sept. 24, 1903. Serial No. 174,392. (No model.)**

*Claim.*—1. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body and adapted to receive therein the rope, the body being provided with a supporting device located in alinement with the recesses, and locking means for preventing disengagement of the rope from the lower recess.

2. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body and adapted to receive therein the rope, a supporting-shoulder on the body above the lower recess but in the same edge of the body, a supporting device located in alinement with the two recesses above the upper recess, and means for locking the rope against movement outwardly in the lower recess.



3. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body and adapted to receive the rope therein, a supporting device located in alinement with the two recesses and above the upper recess, and a projection on one side of the body between the two recesses and disposed in a position to prevent movement of rope out of the lower recess.

4. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body and adapted to receive therein the rope, a supporting device located in alinement with the recesses and above the upper recess, and a projection on one side of the body between the recesses and disposed in a position to prevent movement outward of the rope in the lower recess, the said projection extending toward the edge of the body in which is located the upper recess to a point in which it will embrace the side of the rope opposite the body when the rope is disposed in said recesses.

5. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body and adapted to receive the rope therein, a supporting device located in alinement with the recesses and above the upper recess, a rope-supporting shoulder on the edge in which is located the lower recess and disposed opposite the upper recess, and a curved projection on one side of the body between the two recesses, the curvature and disposition of said projection being such that the projection will embrace the rope and prevent its movement in one direction outwardly in the lower recess or in a direction at right angles to the said direction.

6. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body and adapted to receive the rope therein, a supporting device located in alinement with the recesses, a projection on one side of the body between the two recesses and disposed on the side of the body in which is located the lower recess, the body being provided below the lower recess and upon the side opposite the said projection with means for retaining the rope in the lower recess.

7. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body, the upper recess having a seat to receive the rope, a seat opposite the upper recess and above the lower one to receive the rope, a hook-shaped projection on one side of the body between the two recesses, the end of said projection extending beyond a line connecting the centers of the two recesses, the body being provided with a securing-hole disposed in alinement with the two recesses and above the upper recess.

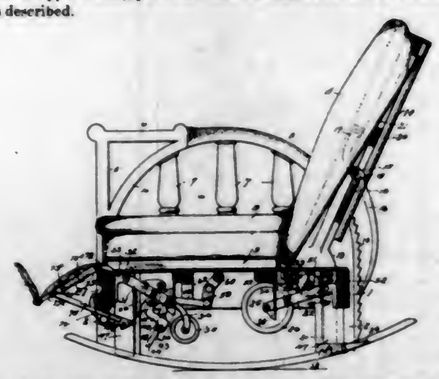
8. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body, a projection on one side of the body between said recesses, a third recess disposed in the side of the body opposite the side having said projection and disposed in alinement with and below the said two recesses, and a supporting device located above and in alinement with the said three recesses.

9. A rope-holding hook comprising a body having two recesses disposed one above the other in opposite edges of the body, a projection on one side of the body between said recesses adapted to embrace the rope and disposed on the side of the rope adjacent the mouth of the lower recess, and a curved finger on the side of the body opposite the said projection and disposed below the lower recess and adapted to embrace that portion of the rope lying in said lower recess, and a supporting device disposed above and in alinement with the said recesses.

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**756,419. CONVERTIBLE CHAIR. Lockert N. Shoemaker, Greenfield, Ohio. Filed July 3, 1902. Serial No. 114,193. (No model.)**

*Claim.*—1. In a convertible chair, the combination, with a rocking-chair, of wheel-supports provided with supporting-wheels, said wheel-supports being located under the chair-seat and being constructed and arranged to fold up out of the way under the seat or be lowered to support the chair on their supporting-wheels, the front wheel-supports being provided with a folding foot-rest, substantially as described.



2. In a convertible chair, the combination, with a rocking-chair, of vertically-adjustable auxiliary legs constructed and arranged, when lowered, to give stability and support to the chair, and when raised to permit the chair to be used as a rocking-chair, and wheel-supports provided with supporting-wheels, said wheel-supports being located under the chair-seat and being constructed and arranged to fold up out of the way under the seat or be lowered to support the chair on their supporting-wheels, substantially as described.

3. In a convertible chair, the combination, with a rocking-chair provided with a hinged back adjustable to different angular relations with the chair-seat, and an adjustable folding foot-rest, of vertically-adjustable auxiliary legs constructed and arranged when lowered to give stability and support to the chair, and when raised to permit the chair to be used as a rocking-chair, and wheel-supports provided with supporting-wheels, said wheel-supports being located under the chair-seat and being constructed and arranged to fold up out of the way under the seat or be lowered to support the chair on their supporting-wheels, the front wheel-support being provided with a folding foot-rest, substantially as described.

4. In a convertible chair, the combination, with a rocking-chair, of vertically-adjustable auxiliary legs arranged in pairs at the front and back of the chair, means for locking said legs in their raised or lowered positions, said legs being constructed and arranged to give stability and support to the chair when lowered, and to permit the chair to rock when raised, wheel-supports provided with supporting-wheels, said wheel-supports being pivoted to the chair so as to fold up out of the way or be lowered to support the chair on their supporting-wheels, and means for securing said seat-supports in either their raised or lowered positions, substantially as described.

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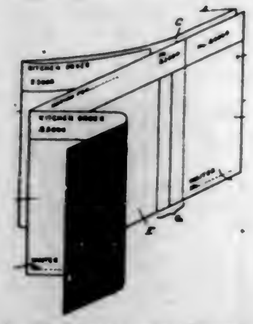
**756,420. AUTOMATIC FLY-BRUSH FOR SCREEN-DOORS.** CLINTON H. SHOEMAKER, Forest City, Iowa. Filed Sept. 18, 1903. Serial No. 173,744. (No model.)



*Claim.*—An automatic fly-brush and door-closer comprising a rotatable brush mounted in a vertical position and a second rotatable brush mounted in a horizontal position at the top portion of a doorway, a sheave fixed on the end of each brush, a pulley swiveled to the door-casing between the two sheaves, a direction-pulley attached to the casing at the upper end of the vertically-extended brush, a direction-pulley attached to the casing under the sheave on the horizontal brush, a cord fixed to the top of a hinged screen-door and extended over the sheave on the horizontal brush, then over the directing-pulley under said sheave, then over the swiveled pulley and over the sheave on the vertical positioned brush and from thence downward over the direction-pulley at the top of the said brush and a weight attached to the free end of the cord, arranged and combined to operate in the manner set forth.

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**756,421. BLANK-BOOK.** FRANK W. SIMES, Detroit, Mich. Filed Feb. 8, 1904. Serial No. 192,685. (No model.)

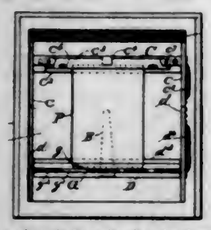


*Claim.*—1. In a blank-book a series of leaves each having two lines of transverse perforations, and folded back upon itself upon the line of the outer line of perforations, the flap or infolded portion being of such size as to leave exposed beside the edge of the flap a strip of the section between the perforations for the purpose described.

2. In a blank-book, a series of leaves each having two lines of transverse perforations, dividing the leaves into a stub, a main sheet, and a flap, the flap being folded upon the main sheet, and being of lesser width, whereby there is exposed a strip of the main sheet beside the edge of the flap for the purpose described.

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**756,422. PLATE-HOLDER.** JAMES H. SMITH, Chicago, and AUGUSTUS BROWN, Elgin, Ill., assignors to Jas. H. Smith & Co., Chicago, Ill., a Corporation of Illinois. Filed June 26, 1903. Serial No. 163,364. (No model.)



*Claim.*—1. In a plate-holder having horizontal plate-bars, an adjustable outer rabbet on either of said bars, said rabbet having recesses in its ends, a lug to hold said rabbet in place, and stop-pins in the bar to engage said recesses for the purpose stated.

2. In a plate-holder having vertically-movable plate-bars, the combination with either of said bars of means to stop the same at a given point and to exert a slight pressure against the plate on said bars as described.

3. In a plate-holder an upper and a lower movable plate-bar, a spring attached to either of said bars and having its outer end curved to slightly press against the plate in said bars, substantially as herein described.

4. In a plate-holder having a fixed back provided with recesses and an upper and lower plate-centering bar, a leaf-spring attached to the lower bar and a projection on the back of said spring adapted to engage said recesses in the back of the plate-holder.

5. In a plate-holder having horizontal plate-bars provided with notches in the front rabbet of one of said bars, a horizontally-adjustable spring on said bar adapted to engage said notches and to prevent lateral movement of the sensitized plate as herein set forth.

6. In a plate having horizontal plate-bars, a plate on the lower bar having notches in its upper edge and a longitudinal groove in its front side, a strip movable in said groove, and a spring on said strip having a bent end adapted to engage said notches and prevent lateral movement of the sensitized plate.

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**756,423. RAIL-JOINT.** JOHN W. SMITH, Shirley, W. Va. Filed Oct. 22, 1903. Serial No. 178,150. (No model.)

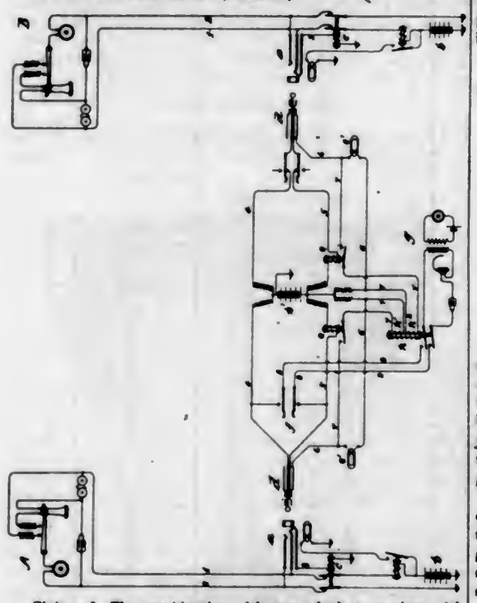


*Claim.*—In a device of the class described, the combination with fish-plates designed to be located at opposite sides of the rails and provided with registering perforations, one of the fish-plates being also provided with exterior nut-receiving recesses, a locking-bar fitted against the other plate and provided with polygonal openings, bolts passing through the perforations of the fish-plates and provided with nuts arranged in the recesses of one of the fish-plates, whereby the said nuts are held against rotation, said bolts having their heads engaging the other fish-plate and arranged in the openings of the locking-bar, whereby the bolts are held against rotation, and fastening devices passing through perforations of the heads of the bolts and locking the bar in engagement with the same, substantially as described.



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**756,424. SECRECY SYSTEM FOR TELEPHONE-SWITCHBOARDS.** ERWIN H. SNYDER, Prospect, Ill., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed Dec. 14, 1901. Serial No. 85,861. (No model.)



*Claim.*—1. The combination with two telephone-stations with their telephone instruments, and line conductors adapted to unite them in circuit for conversation, of a telephone-switch at each station controlling the line-circuit, a third telephone adapted to be brought into the circuit to communicate with the telephone at one of the stations, electromagnetic switch mechanism controlling the connection of said third telephone with the circuit, and means controlled through the joint agency of the said telephone-switches at the other stations for operating said electromagnetic switch mechanism.

2. The combination with two telephone-lines extending from substations to a central office, and switching apparatus at the central office for uniting the lines, of a source of current connected with the united lines, a telephone-switch at the substation of each line, controlling the flow of current therein, an operator's telephone at the central office, a switch controlling the connection of said telephone with the circuit, and means controlled jointly by the telephone-switches at the two substations, for operating said switch, the operator's telephone being thereby automatically disconnected when the telephones are in use at both stations.

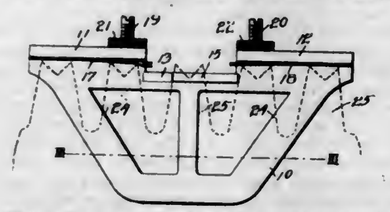
3. The combination with a calling and a called line and central-office switching apparatus for uniting them in circuit, of a source of current in the circuit of the united lines, a telephone-switch at the substation of the called line, controlling the flow of current therein, a relay in the path of current so controlled, an operator's telephone, and a switch controlled by said relay, controlling the connection of the operator's telephone with the circuit, said switch being responsive to said relay at all times during a connection, whereby said telephone is automatically connected or disconnected according to the position of the telephone-switch at the called station.

4. The combination with two telephone-lines extending from substations to a central office, of switching apparatus at the central office for uniting the lines in a circuit, a telephone-switch at each substation controlling the line-circuit, a source of current in a bridge of the circuit, relays, one in the path of current to each substation, an operator's telephone, an electromagnetic switch controlling the connection of said telephone with the circuit, differential magnet-windings for said switch, and local circuits including said windings, controlled respectively by said relays.

5. The combination with telephone-lines extending from substations to spring-jack terminals at a central-office switchboard, each line having a switch controlling the circuit, closed in the use of the substation-telephone, of a pair of plugs and their plug-circuit for uniting any two lines, an operator's telephone, a listening-key adapted to connect said telephone with the plug-circuit, two magnet-windings $h'$ $h^2$, means controlled by the telephone-switches at the substations of the lines which are united by the plug-circuit for energizing said magnet-windings respectively, and blocking mechanism controlled by the simultaneous excitation of both of said windings, for rendering the listening-key ineffective to connect the operator's telephone in circuit, whereby the operator is prevented from listening in while the two subscribers are in conversation.

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**756,425. RAKER SAW-GAGE.** WILLIAM STEPHENS, Montesano, Wash. Filed July 14, 1902. Serial No. 115,500. (No model.)



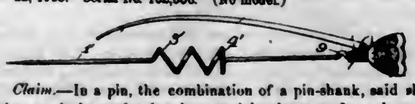
*Claim.*—1. A saw-tool comprising a supporting-frame having spaced yieldable plates extending laterally therefrom and stationary at their outer ends and movable at their inner opposing ends, a stationary gage-plate detachably connected to said supporting-frame between said spaced plates and out of alinement with them and adjusting-screws engaging threaded openings in said frame and adapted to depress the movable ends of said spaced plates relative to said gage-plate, substantially as described.

2. A saw-tool comprising a supporting-frame having spaced ribs extending therefrom, yieldable plates connected by their outer ends to the outer ends of said ribs and movable by their inner ends, a gage-plate detachably connected to said supporting-frame between said spaced plates and out of alinement therewith, and adjusting-screws engaging threaded openings in said ribs and adapted to depress the movable ends of said spaced plates toward said gage-plate, substantially as described.

3. A saw-tool comprising a supporting-frame having spaced yieldable plates rigidly connected thereto by their outer ends and movable at their inner ends, means for adjusting the movable ends of said plates, and a transverse notch extending from the movable end of one of said plates, substantially as described.

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**756,426. HAIR-PIN.** HENRY STIER, Allegheny, Pa. Filed June 22, 1903. Serial No. 162,558. (No model.)

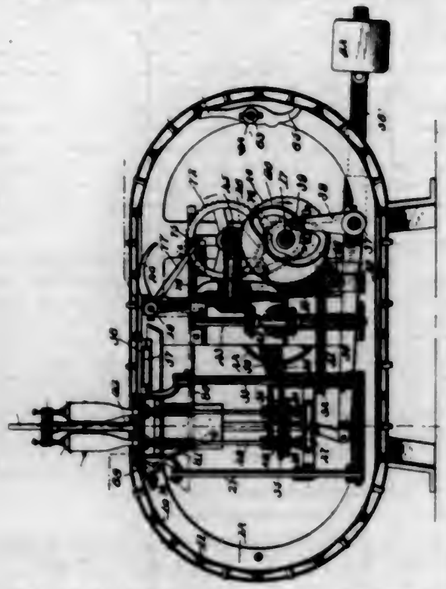


*Claim.*—In a pin, the combination of a pin-shank, said shank having a spiral terminating in a semicircular part formed at right

angles to said shank near its head and an ornamental, spring-pressed keeper rotatably mounted on said shank near its head, substantially as described.

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**756,427. BOTTLE-WASHING MACHINE.** FRANK C. H. STRASBURGER, Chicago, Ill. Filed July 9, 1903. Serial No. 164,814. (No model.)



*Claim.*—1. In a bottle-washing machine, the combination of a crate for holding a number of bottles inverted, washing mechanism, a carrier adapted to receive and carry the crate of bottles into washing position, a rock-shaft, a lever on said rock-shaft and connected with the washing mechanism, a cam-shaft and means for operating it, a pair of grooved cams on said shaft for raising and lowering the washing mechanism, one of said cams being constructed for use when the machine is washing pint bottles and the other being constructed for use when the machine is washing quart bottles, an adjustable arm mounted on the rock-shaft between said cams, and a roller carried by and projecting laterally from both sides of said arm to engage either of said cams.

2. In a bottle-washing machine, the combination of a crate for holding a number of bottles inverted, washing mechanism, a carrier adapted to receive and carry a crate of bottles into washing position above the washing mechanism, a frame, a clamping device for each bottle carried by the frame consisting of a spring-pressed spindle with a forked end, and means for moving the frame to cause the forked end of the clamping devices to engage and hold the bottle during the washing operation.

3. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and a spring-pressed locking-dog adapted to permit the carrier to move thereover but constructed to engage and lock the carrier against backward movement after the bottles have reached washing position.

4. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and independent devices located on opposite sides of the washing position to lock the carrier against any forward or backward movement during the washing operation.

5. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and an escapement device to regulate the movement of the carrier and prevent a forward movement thereof during the washing operation.

6. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and an escapement device comprising a hooked pallet to engage and regulate the forward movement of the carrier.

7. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, and an escapement device comprising a hooked pallet to engage and regulate the forward movement of the carrier to carry the bottles into washing position and a locking-pallet to prevent forward movement of the carrier during the washing operation.

8. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, an escapement device comprising a hooked pallet to engage and regulate the forward movement of the carrier, and a cam-operated lever to operate said escapement device.

9. In a bottle-washing machine, the combination of a carrier for receiving and carrying the bottles into position to be washed, washing mechanism, an escapement device comprising a hooked pallet to engage and regulate the forward movement of the carrier and a locking-pallet to engage and prevent forward movement of the carrier during the washing operation, and a spring-pressed locking-dog to engage and prevent backward movement of the carrier during the washing operation.

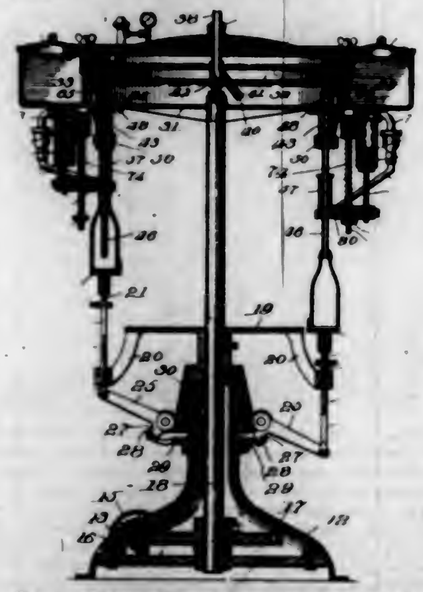
10. In a bottle-washing machine, the combination of washing mechanism, a carrier for receiving and carrying the bottles into position to be washed, means for intermittently operating said carrier, and means for tripping said operating means to prevent movement of the carrier.

11. In a bottle-washing machine, the combination of washing mechanism, a carrier for receiving and carrying the bottles into position to be washed, means for intermittently operating said carrier, an arm associated with said operating means, and a device for engaging said arm to trip the operating means and prevent the movement of the carrier.

12. In a bottle-washing machine, the combination of washing mechanism, a carrier for receiving and carrying the bottles into position to be washed, means for intermittently operating said carrier, an arm, a revolving wheel, a bolt carried by said wheel, and means for throwing said bolt into position to engage the arm to trip the operating means and prevent movement of the carrier.

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**756,428. BOTTLE-FILLING MACHINE.** FRANK C. H. STRASBURGER, Chicago, Ill. Filed Oct. 20, 1903. Serial No. 177,726. (No model.)



*Claim.*—1. A bottle-filling machine comprising a tank having a liquid-receptacle and a syrup-receptacle, a filling-valve connected with the liquid-receptacle, a syrup-charger connected with the syrup-receptacle, and a head adapted to be engaged and operated by the bottle to successively operate said charger and open the filling-valve.

2. A bottle-filling machine comprising a tank having a liquid-receptacle and a syrup-receptacle, a liquid-valve connected with the liquid-receptacle, a syrup-charger connected with the syrup-receptacle, a filling-tube forming part of the syrup-charger, and a head slidably arranged on the filling-tube and connected with said piston and adapted to be engaged and operated by the bottle.



3. A bottle-filling machine comprising a tank having a liquid-receptacle and a syrup-receptacle, a liquid-valve connected with the liquid-receptacle, a syrup-charger connected with the syrup-receptacle, a filling-tube connected with the liquid-valve, a piston forming part of the syrup-charger, and a head slidably arranged on the filling-tube and connected with said piston and adapted to be engaged and operated by the bottle.

4. A bottle-filling machine comprising a tank having a liquid-receptacle and a syrup-receptacle, a liquid-valve connected with the liquid-receptacle, a syrup-charger connected with the syrup-receptacle and comprising a piston, a filling-tube connected to the liquid-valve, and a head adapted to be engaged and operated by the bottle and connected with said piston and provided with a sleeve operating on the filling-tube to open the liquid-valve after the charger has been operated.

5. A bottle-filling machine comprising a liquid-receptacle and a syrup-receptacle, a liquid-valve connected to the liquid-receptacle, a syrup-charger connected to the syrup-receptacle, a filling-tube connected to the liquid-valve, a head adapted to be engaged and operated by the bottle to operate the syrup-charger and open the liquid-valve, said head provided with a passage around the filling-tube to discharge into the bottle, and a hose connection between the syrup-charger and said passage.

6. A bottle-filling machine comprising a liquid-receptacle and a syrup-receptacle, a liquid-valve in the bottom of the liquid-receptacle, a filling-tube depending from said valve, a charger comprising a cylinder depending from the syrup-receptacle and containing a charge-chamber, a valved connection between said charge-chamber and the syrup-receptacle, a piston operating in said chamber, a head slidably arranged on the filling-tube and connected with said piston and adapted to be engaged and operated by the bottle, a hose connection between the charge-chamber and said head, said head provided with a passage connected with said hose to discharge into the bottle and an independent passage to permit the escape of air from the bottle.

7. A bottle-filling machine comprising a liquid-receptacle and a syrup-receptacle, a liquid-valve in the bottom of the liquid-receptacle, a filling-tube depending from said valve and adapted to enter the bottle, a syrup-charger connected to the syrup-receptacle and comprising a piston, a guide-rod, a spring-pressed head on said guide-rod connected to said piston and slidable on said filling-tube, a passage in said head to discharge into the bottle and a passage to permit the escape of air from the bottle, and a hose connected to the charger and said discharge-passage.

8. A bottle-filling machine comprising a liquid-receptacle, a liquid-valve connected to said receptacle and comprising a body depending therefrom, a filling-tube connected to said body, an air-valve in the receptacle, an air-passage in the body communicating with said air-valve, a stem in said passage and adapted to unseat the air-valve, a collar on the filling-tube connected to the liquid-valve and provided with an air-passage to communicate with the passage in said body, a head slidable on the filling-tube and provided with an air-passage to communicate with the passage in the collar, said head adapted to be engaged and operated by the bottle to engage and operate the collar and thereby cause the stem to unseat the air-valve and the liquid-valve to open.

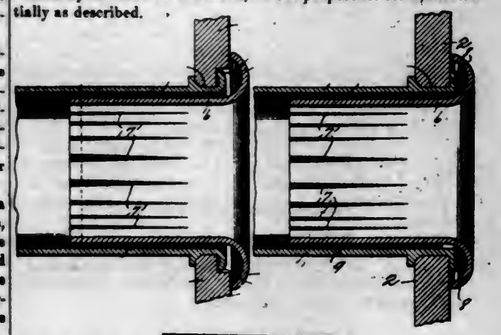
9. A bottle-filling machine comprising a liquid-receptacle, a liquid-valve connected to said receptacle, a filling-tube connected to said liquid-valve, a collar connected to the liquid-valve and movable on the filling-tube, an air-valve in the liquid-receptacle, a syrup-receptacle, a syrup-charger connected to the syrup-receptacle, a head, an air-valve in the liquid-receptacle, passages to connect said air-valve with the bottle, said head adapted to be engaged and operated by the bottle to first operate the syrup-charger, then open the air-valve and then open the liquid-valve.

10. A bottle-filling machine comprising a tank divided into a central liquid-receptacle and a series of separate syrup-receptacles surrounding the liquid-receptacle, a syrup-charger connected to each of the syrup-receptacles, a filling-valve in the liquid-receptacle opposite each syrup-charger, a filling-tube connected to each liquid-valve, and a head for operating each syrup-charger and opening the liquid-valve opposite thereto, said head adapted to be engaged and operated by the bottle.

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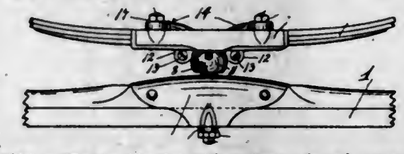
**756,429. BOILER-TUBE JOINT.** FREDERICK STRATTNER, Salisbury, Md. Filed Mar. 19, 1903. Serial No. 148,623. (No model.)

*Claim.*—In combination with a boiler-sheet having an opening, and a boiler-tube having one end disposed in said opening, a thimble in said end of the boiler-tube having exteriorly and longitudinally disposed ribs forming spaces between the boiler-tube and the thimble, the latter being further provided at its outer end with an outturned flange forming an annular chamber between it and the end of the boiler-tube, the said chamber communicating with the spaces formed by the ribs of the thimble, for the purpose set forth, substantially as described.



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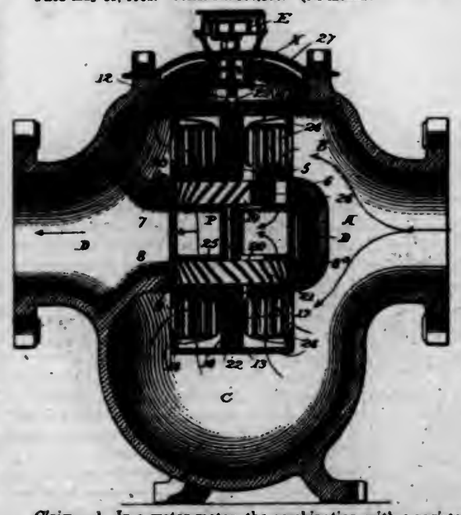
**756,430. FRONT-AXLE COUPLING.** FRANK A. THOMAS and LEVI F. THOMPSON, Rockford, Minn. Filed Oct. 11, 1902. Serial No. 126,857. (No model.)



*Claim.*—The combination with a front axle and coöperating body-support and a reach of a vehicle, of the center bearing 4 provided with the spherical ball 8 and rigidly secured to said axle, the two-part bearing 9 10 having the divided socket 11 and rigidly secured to said body-support and to the forward end of said reach, said socket 11 receiving said ball 8, and the supplemental crank 22 swiveled to said reach and pivoted to the lower portion of said axle, substantially as described.

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**756,431. WATER-METER.** JOHN THOMSON, Brooklyn, N. Y. Filed May 13, 1902. Serial No. 107,133. (No model.)



*Claim.*—1. In a water-meter, the combination with a register, and a main casing having upper and lower receiving-chambers and an intermediate discharge-chamber, of a cylinder mounted in the walls of the intermediate chamber, bearing-heads mounted in the

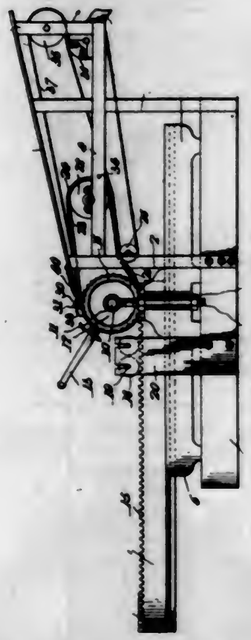
ends of said cylinder and having inwardly-extending hubs, a spindle supported in the hubs, and two disks mounted on said spindle, the disks having helical blades, one of left-hand and the other of right-hand pitch, portions of the cylinder being cut away near its center to form egress-ports, and the upper and lower portions of the cylinder being provided with slots, the arrangement and construction being such that the water from the upper and lower receiving-chambers is delivered to the disks and discharged into the intermediate chamber between the disks, substantially as described.

2. The combination with the chambers B and C, of the cylinder and its heads with revolving disks mounted in the cylinder, the said heads and also the upper and lower portions of the cylinder extending beyond the disks being provided with slots whose form, area and disposal are practically identical, compared one end with the other, substantially as and for the purpose described.

3. The combination with the cylinder and its bearing-heads of the right and left hand pitch helical disks and their spindle, the said disks having sealed compartments of such capacity as to render the revolving structure nearly buoyant, substantially as and for the purpose set forth.

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**756,482. PRINTING-PRESS.** WILLIAM O. TOOP, Crab Orchard, Nebr., assignor of one-half to Ben Cole, Lincoln, Nebr. Filed Oct. 20, 1903. Serial No. 177,815. (No model.)



*Claim.*—1. The combination in a printing-press, of a type-bed, a rotary impression-cylinder, a sheet of material arranged for movement with said impression-cylinder over the type-bed and between said cylinder and said type-bed, and paper-gripping members at the forward margin of said sheet.

2. The combination in a printing-press, of a traveling type-bed, a rotary impression-cylinder, a sheet of material arranged for travel between said cylinder and said type-bed with said cylinder, and paper-gripping devices at the forward margin of said sheet.

3. The combination in a printing-press, of a reciprocating type-bed, a rotary impression-cylinder disposed adjacent to the path of said type-bed, a sheet of material arranged for travel between said cylinder and said type-bed with said cylinder, and automatic paper-gripping devices at the forward margin of said sheet.

4. The combination in a printing-press, of a type-bed, a rotary impression-cylinder, a sheet of elastic material arranged for travel between said cylinder and said bed with said cylinder, and paper-gripping devices at the forward margin of said sheet.

5. The combination in a printing-press, of a type-bed, a rotary impression-cylinder, a sheet of elastic material arranged for travel between said cylinder and said type-bed with said cylinder, a batten at the forward margin of said sheet, and a plurality of paper-grippers arranged at the forward margin of said sheet for coöperation with said batten.

6. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said impression-cylinder and said idle roll, a sheet of elastic material attached to said belts throughout the greater portion of their length, gripper-fingers provided at the forward edge of said sheet of elastic material, and means for rotating said impression-cylinder.

7. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said impression-cylinder and said idle roll, a sheet of elastic material attached to said belts throughout the greater portion of their length, a batten at the forward edge of said sheet, a gripper-shaft attached to said belts in advance of said batten, gripper-fingers on said shaft, means for normally holding said gripper-fingers in engagement with said batten, means for lifting said gripper-fingers out of engagement with said batten, and means for rotating said impression-cylinder.

8. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said idle roll and said impression-cylinder, a batten attached to said belts and arranged transversely thereof, a gripper-shaft mounted on said belts in advance of said batten, gripper-fingers on said shaft, means for holding said fingers normally in contact with said batten, an arm attached to said shaft, and stationary members in the path of said arm adapted to contact therewith to rock said gripper-shaft and lift said gripper-fingers out of contact with said batten.

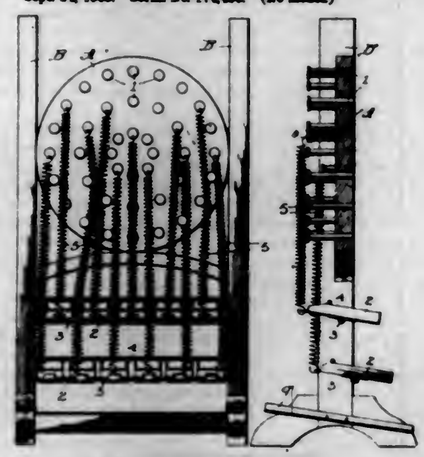
9. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said impression-cylinder and said idle roll, a batten attached to said belts and arranged transversely thereof, a pawl supported over each of said belts and adapted to engage said batten and limit its movement in backward direction when the direction of rotation of said impression-cylinder is reversed.

10. The combination in a printing-press of a rotary impression-cylinder, an idle roll, endless belts traveling over said idle roll and said impression-cylinder, a sheet of elastic material attached to said belts throughout a greater portion of their length, tape-carrying rolls, two sets of tapes, one set traveling over one of said tape-carrying rolls and said impression-cylinder and the other set traveling over the tape-carrying rolls and lying beneath and adjacent to the first set of tapes.

11. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said idle roll and said impression-cylinder, a tape-carrying roll, tapes traveling over said tape-carrying roll and said impression-cylinder and lying outside of said idle roll, a pair of tape-carrying rolls beneath said set of tapes, and a second set of tapes traveling over said tape-carrying rolls and adjacent to the first-mentioned set of tapes.

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**756,483. TARGET.** GEORGE L. TOWNSEND, Raleigh, N. C. Filed Sept. 24, 1903. Serial No. 174,498. (No model.)



*Claim.*—1. In a target, a series of subtargets movable upon the impact of the bullet, a series of trays adapted to discharge their contents when moved, and connections between said trays and their respective subtargets whereby the trays are caused to discharge their contents by the movement of the subtargets, substantially as described.

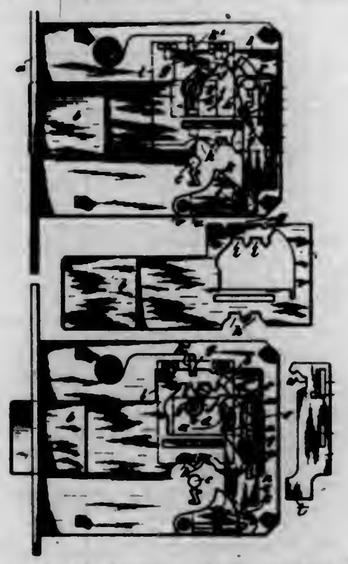
2. In a target, a series of subtargets movable upon the impact of the bullet, a series of trays adapted to discharge their contents when moved, and connections between said trays and their respective subtargets whereby the trays are caused to discharge their contents by the movement of the subtargets, the connections between the trays and subtargets being removable and capable of being shifted from one subtarget to another, substantially as described.

3. In a target, a series of subtargets movable upon the impact of the bullet, a series of trays adapted to discharge their contents when moved, and elastic connections between said trays and their respective subtargets whereby the trays are caused to discharge their contents by the movement of the subtargets, said connections between the trays and subtargets being removable and capable of being shifted from one subtarget to another, substantially as described.

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**756,484. LOCK.** PAUL TROPP, Berlin, Germany. Filed Sept. 20, 1902. Serial No. 124,143. (No model.)



*Claim.*—1. In a lock having two keyholes and a bolt adapted to be operated by two different keys, a shield to cover one of the keyholes, an actuator therefor movable with and also relatively to the bolt, and a latch to coöperate with said actuator and retain it in either of two positions, complete projection of the bolt by either key moving said actuator into position to be acted upon by the master-key only, final movement of the latter acting first to cause the latch to release the actuator and then to move the latter relatively to the bolt, to thereby move the shield into position to close its keyhole.

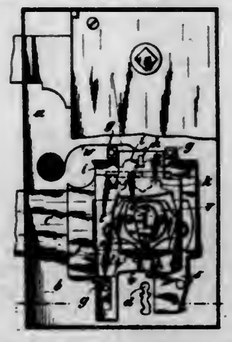
2. In a lock having two keyholes and a bolt adapted to be operated by two different keys, a key-hub operable by the master-key, a shield to cover the other keyhole, an actuator operatively connected therewith and movable bodily with and relatively to said bolt, a pin on said actuator, a latch having a plurality of locking-notches to be entered by said pin, and a spring to normally govern the latch, complete projection of the bolt by either key moving the actuator into position to be engaged by the key-hub, subsequent movement of the latter by the master-key causing the latch first to release the actuator and then moving the actuator relatively to the bolt to position the shield in front of its keyhole and close the latter.

3. In a lock having two keyholes and a bolt adapted to be operated by two different keys, a shield to cover one of the keyholes, an actuator therefor movable bodily with the bolt and also slidably connected therewith to be moved at right angles thereto, a latch pivotally mounted on said actuator and adapted lock it from movement relatively to the bolt, and a key-hub operative by the master-key, additional movement of said key-hub by the master-key after complete projection of the bolt effecting release of the actuator from the latch and movement of said actuator at right angles to the bolt to cause the shield to close the keyhole adjacent thereto and render it inaccessible to its key.

4. In a lock having two keyholes and a bolt adapted to be operated by two different keys, a shield to cover one of the keyholes, a key-hub operative by the master-key, an extension on the bolt provided with two sets of notches, to coöperate respectively with the key-hub and a key inserted in the keyhole having a shield, whereby by a double revolution of either key the bolt is fully projected, and means carried by said bolt extension to operate the shield, complete projection of the bolt bringing said means into position to be actuated by the key-hub by an additional movement thereof, without moving the bolt itself, such actuation of said means causing the shield to close or block its keyhole.

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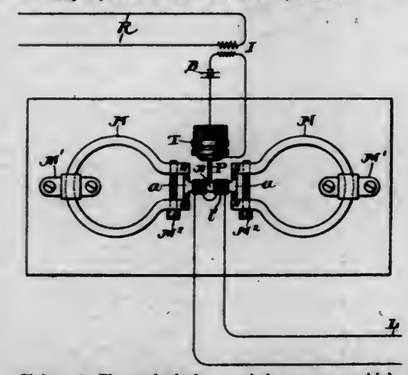
**756,485. LOCK.** PAUL TROPP, Berlin, Germany. Filed Sept. 20, 1902. Serial No. 124,144. (No model.)



*Claim.*—In a lock, a face-plate having a keyhole, a bolt operable by a key and having an extension provided with a shield and a plurality of notches, a permanently-mounted key-hub to coöperate with the latter, and a tumbler movable by the key and key-hub, key-induced projection of the bolt causing the shield to stop further rotation of the key and positioning the rearmost notch to coöperate with the key-hub, subsequent rotation of the latter completing the projection of the bolt and causing the shield to cover the keyhole, a double revolution of the key-hub in reverse direction causing it to engage the notches successively and thereby fully retract the bolt.

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**756,486. TELEPHONY.** JOHN TROWBRIDGE, Cambridge, Mass. Filed May 18, 1903. Serial No. 157,560. (No model.)



*Claim.*—1. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, and causing qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulatio...

2. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding mag-

netic undulations within a supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, establishing and maintaining a symmetrical relation between the forces of the supplemental field and the electrically-induced magnetism respectively, and transforming the resultant magnetic product undulations into qualitatively corresponding mechanical vibrations.

3. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, equilibrating the torsional effects of the resultant magnetic product undulations and causing thereby qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations.

4. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations and producing by means of the said product undulations rectilinear mechanical vibrations quantitatively proportionate to the resultant magnetic products and qualitatively corresponding to the original electrical undulations.

5. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, and causing qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations, and causing qualitatively corresponding electrical undulations by means of said mechanical vibrations.

6. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, equilibrating the torsional effects of the resultant magnetic product undulations and causing thereby qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations, and causing qualitatively corresponding electrical undulations by means of said mechanical vibrations.

7. The method of transmitting telephonic messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental magnetic field, and producing by means of the said resultant magnetic product undulations rectilinear mechanical vibrations, quantitatively proportionate and qualitatively corresponding to the resultant magnetic product undulations and causing qualitatively corresponding electrical undulations therewith.

8. The method of transmitting telephonic messages, which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations in a normally symmetrically balanced supplemental magnetic field, and thereby causing magnetic undulatory product effects, equilibrating the torsional tendencies of the magnetic product undulations or disturbances, and transforming the resultant of the said magnetic product undulations into qualitatively corresponding mechanical vibrations.

9. The method of transmitting telephonic messages, which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations in a normally symmetrically balanced supplemental magnetic field, and thereby causing magnetic undulatory product effects, equilibrating the torsional tendencies of the magnetic product undulations or disturbances, and transforming the resultant of the said magnetic product undulations into qualitatively corresponding rectilinear mechanical vibrations.

10. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental substantially constant magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, and causing qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations.

11. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a substantially constant supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, establishing and maintaining a symmetrical relation between the forces of the supplemental field and the electrically-induced magnetism respectively and transforming the resultantmagnetic product undulations into qualitatively corresponding mechanical vibrations.

12. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a substantially constant supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, equilibrating the torsional effects of the resultant magnetic product undulations and causing thereby qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations.

13. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a substantially constant supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations and producing by means of the said product undulations rectilinear mechanical vibrations quantitatively proportionate to the resultant magnetic products and qualitatively corresponding to the original electrical undulations.

14. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a substantially constant supplemental magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, and causing qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations, and causing qualitatively corresponding electrical undulations by means of said mechanical vibrations.

15. The method of transmitting messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental substantially constant magnetic field, producing thereby qualitatively corresponding resultant magnetic product undulations, equilibrating the torsional effects of the resultant magnetic product undulations and causing thereby qualitatively corresponding mechanical vibrations quantitatively proportionate to the resultant magnetic product undulations, thereby quantitatively enhancing the mechanical result while preserving therein the characteristic quality of the original electrical undulations, and causing qualitatively corresponding electrical undulations by means of said mechanical vibrations.

16. The method of transmitting telephonic messages which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations within a supplemental substantially constant magnetic field, and producing by means of the said resultant magnetic product undulations rectilinear mechanical vibrations quantitatively proportionate and qualitatively corresponding to the resultant magnetic product undulations, and causing qualitatively corresponding electrical undulations therewith.

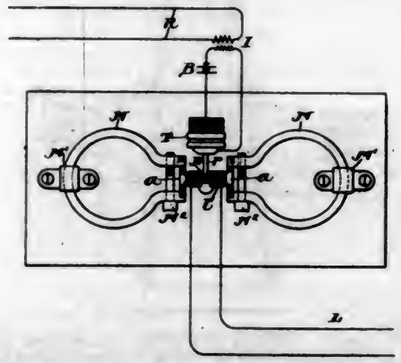
17. The method of transmitting telephonic messages, which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations in a normally symmetrically balanced substantially constant supplemental magnetic field, and causing magnetic undulatory product effects, equilibrating the torsional tendencies of the magnetic product undulations or disturbances, and transforming the resultant of the said magnetic product undulations into qualitatively corresponding rectilinear mechanical vibrations.

18. The method of transmitting telephonic messages, which consists in transforming electrical undulations into qualitatively corresponding magnetic undulations in a normally symmetrically balanced substantially constant supplemental magnetic field, and causing magnetic undulatory product effects, equilibrating the torsional tendencies of the magnetic product undulations or disturbances, and transforming the resultant of the said magnetic product undulations into qualitatively corresponding rectilinear mechanical vibrations.

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**756,487. TELEPHONE.** JOHN TROWBRIDGE, Cambridge, Mass. Filed May 18, 1903. Serial No. 157,861. (No model.)

*Claim.*—1. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a position of balance therein, a telephonic transmitter, and connections arranged with relation to the reciprocal effects of the coil and magnetic field to impart mechanical vibrations perpendicularly to the receiving member of the transmitter.




2. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a position of balance therein, a telephonic transmitter outside the balanced field, and connections arranged with relation to the reciprocal effects of the coil and magnetic field to impart mechanical vibrations perpendicularly to the receiving member of the transmitter.

3. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a position of balance therein, a telephone-transmitter, and connections arranged with relation to the reciprocal effects of the coil and magnetic field to impart mechanical vibrations to the receiving member of the transmitter in a straight line.

4. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a position of balance therein wound so that the mechanical vibrations due to the reciprocal magnetic effects of the coil and field are rectilinear, a telephonic transmitter, and connections to impart thereto the said rectilinear mechanical vibrations.

5. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a neutral location in the field, a telephonic transmitter, and connections arranged with relation to the reciprocal effects of the coil and magnetic field to impart mechanical vibrations perpendicularly to the receiving member of the transmitter.

6. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a neutral location in the field wound so that the mechanical vibrations due to the reciprocal magnetic effects of the coil and field are rectilinear, a telephonic transmitter, and connections to impart thereto the said rectilinear mechanical vibrations.

7. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a position of balance therein, a telephonic transmitter, and a stem rigidly connecting the armature-coil with the receiving member of the transmitter.

8. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a neutral location in the field, a telephonic transmitter and a stem rigidly connecting the armature-coil with the receiving member of the transmitter.

9. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil in a position of balance therein, a transmitter, a stem fixed to the transmitter's receiving member and to the armature-coil, the coil, stem and transmitter arranged with relation to the reciprocal magnetic effects of the coil and field to impart rectilinear mechanical vibrations to the receiving member of the transmitter.

10. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil therein, a telephonic transmitter, a mounting for the armature secured to the transmitter at one side and on a support at the other side.

11. In an instrument for repeating electrical undulations, the combination of a magnetic field, an armature-coil therein, a telephone-transmitter at one side of the armature, a diaphragm at the other, and a mounting for the armature secured at one end to the transmitter and at the other to the diaphragm.

12. In an instrument for repeating electrical undulations, the combination of a pair of horseshoe-magnets arranged with their similar poles in diagonal opposition, an armature-coil in neutral location in the field of the said magnets, a transmitter, connections between the transmitter and armature-coil, the coil wound with relation to the field to impart rectilinear vibrations to the transmitter.

13. In an instrument for repeating electrical undulations, the combination of a pair of horseshoe-magnets arranged with their similar poles in diagonal opposition, an armature-coil in neutral location in the field of the said magnets, a transmitter on one side of the coil and a support on the other, and a stem holding the armature, and connected with the transmitter and the support.

14. In an instrument for repeating electrical undulations, the combination of a pair of horseshoe-magnets arranged with their similar poles in diagonal opposition, an armature-coil in neutral location in the field of the said magnets, a transmitter on one side of the coil and a diaphragm on the other and a stem holding the armature, secured to the transmitter and to the diaphragm.

15. In a telephone system, two telephone-lines, a pair of relay instruments whereof the principal parts are a microphonic transmitter, an armature-coil connected to the transmitter, and a magnetic field surrounding the armature-coil, each of the two telephone-lines branched to include the armature-coil of one relay in one branch and the transmitter of that relay in the other branch inductively.

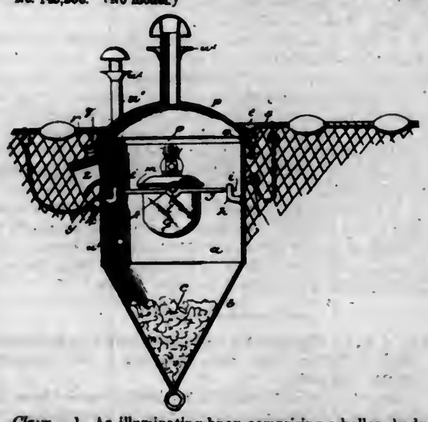
16. In a telephone system, in combination, a battery-circuit, a battery therein; two induction-coils, each having its primary arranged in said circuit, two transmitters in said circuit, two magnetic fields one for each transmitter; two armature-coils one in each field and each controlling the transmitter of its respective field; two telephone-circuits each including one of said armature-coils and also the secondary of one of the induction-coils.

17. In a telephone system, in combination, a battery-circuit; a battery therein; two induction-coils each having its primary arranged in said circuit; two transmitters in said circuit; two magnetic fields one for each transmitter; two normally balanced armature-coils one in each field and each of said coils arranged to control one of the transmitters and two telephone-circuits each including one of said armature-coils and also the secondary of one of the induction-coils.

18. In a telephone system in combination, a battery-circuit; a battery therein; two induction-coils each having its primary arranged in said circuit; two transmitters in said circuit; two magnetic fields one for each transmitter; two normally balanced armatures, one in each field each of said armatures being provided with an armature-coil and arranged to control one of the transmitters, and two telephone-circuits each including one of said armature-coils and also the secondary of one of the induction-coils.

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**756,488. ILLUMINATING-BUOY FOR FISHING PURPOSES.** WILLIAM L. UHLENHART, Portland, Oreg. Filed Feb. 26, 1903. Serial No. 145,238. (No model.)



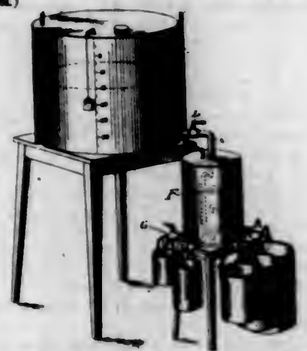
*Claim.*—1. An illuminating-buoy comprising a hollow body; a cover removably secured to the rim thereof; ventilating-pipes entering the interior, means for fending the water splashing against the open ends of such pipes; a lamp, a support therefor; a window-opening in the body below the water-surface, and a lens in such opening adapted to deflect the rays of light into the depths of the water, substantially as described.

2. An illuminating-buoy, comprising a hollow body; a cover removably secured to the rim thereof; ventilating-pipes entering the interior; means for fending the water splashing against the open ends of such pipes; a lamp, a support therefor; a window-opening in the body below the water-surface, a lens in such opening adapted to deflect the rays of light into the depths of the water, and an exterior hood over the lens-window adapted to confine the rays of light, substantially as described.

3. An illuminating-buoy comprising a hollow body, a cover removably secured to the rim thereof, ventilating-pipes *u*, *u'*, hoods covering the open ends of such pipes, projecting collars below such open ends of the pipes for fending the water splashing against the same, a lamp, a support therefor, window-openings on the front and the two sides of the body, below the water-surface, lenses in such openings adapted to deflect the rays of light into the depths of the water, and exterior hoods over the lens-windows, adapted to confine the rays of light, substantially as described.

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**756,439. SIPHON-GAGED LIQUID-MEASURER. WARREN F. VROOMAN, North Madison, Ohio. Filed Mar. 1, 1902. Serial No. 96,307. (No model.)**



*Claim.*—1. In a siphon-gaged liquid-measurer, the combination with a liquid-measuring vessel, provided with a receiving-pipe and an air-vent pipe; of a main perpendicular pipe positioned outside of said measuring vessel, and a series of horizontally-arranged pipes, attached to said main perpendicular pipe, leading to the interior of said measuring vessel and provided with downwardly-turned intake ends and positioned at the center of the measuring vessel.

2. In a siphon-gaged liquid-measurer, the combination with a suitable reservoir provided with a suitable float and indicator, and a liquid-measuring vessel provided with a receiving-pipe and an air-vent pipe; of a series of siphons suitably attached to said measuring vessel and having their intake ends turned down and positioned at the center of the measuring vessel.

3. A liquid-measuring vessel, consisting of a measuring vessel provided with a receiving-pipe and an air-vent pipe, a series of siphons suitably attached to said measuring vessel and having their intake ends turned down and positioned at the center of the measuring vessel, the intake ends of said siphons relatively distanced below each other and also relatively distanced below the interior top of said measuring vessel so as to allow known quantities of liquid to flow through each siphon, and stop-faucets connected to the outer ends of said siphons.

4. A liquid-measuring vessel, consisting of a measuring vessel provided with a receiving-pipe and an air-vent pipe, a series of siphons attached thereto and having their intake ends turned downward and positioned at the center of the measuring vessel, and stop-faucets connected to the outer ends of said siphons.

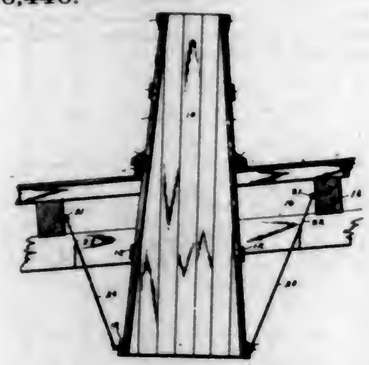
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**756,440. SMOKE-STACK FOR LOCOMOTIVE-ENGINE HOUSES. HENRY A. WALDEN, Boone, Iowa. Filed Aug. 6, 1903. Serial No. 168,430. (No model.)**

*Claim.*—1. In a smoke-stack for locomotive-engine houses, the combination of a body portion tapered from its lower extremity to its upper extremity and oblong in cross-section at its lower extremity, said body portion comprising flat sides and ends, and bands passing around said body portion and secured thereto.

2. A smoke-stack for locomotive-engine houses, tapered from its lower extremity to its upper extremity and oblong in cross-section at its lower extremity, and comprising flat sides and ends.

**756,440.**



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**756,441. MASSAGE APPARATUS. ARTHUR WARD, Philadelphia, Pa., assignor to the Electric Thermo-Vibrá Co., Philadelphia, Pa., a Corporation of New Jersey. Filed July 20, 1903. Serial No. 166,347. (No model.)**



*Claim.*—1. In an apparatus of the class described, the combination with a motor, of a flexible connection connected to said motor and arranged to be reciprocated thereby, means carried by the end of the flexible connection for attaching the latter to the hand of the operator, whereby a vibratory movement is imparted to the hand, and an adjustable resistance arranged between the flexible connection and hand-holding device for regulating the length of the stroke and the impact of the blow, substantially as described.

2. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, and means for reciprocating said cylinder, for the purpose specified.

3. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means universally connected to the end of the piston-rod for attaching thereto the hand of the operator, and means for reciprocating said cylinder, for the purpose specified.

4. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means universally and rotatively connected to the end of the piston-rod for attaching thereto the hand of the operator, and means for reciprocating said cylinder, for the purpose specified.

5. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, means for reciprocating said cylinder, and means for altering the stroke of the piston at will, for the purpose specified.

6. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, means for reciprocating said cylinder, and means for admitting air to and discharging it from the opposite ends of the cylinder, for the purpose specified.

7. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, means for reciprocating said cylinder, means for admitting air to and discharging it from the opposite ends of the cylinder, and means for regulating the quantity of air so admitted and discharged, for the purpose specified.

8. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, elongated tapered ports being formed circumferentially in the opposite end portions of the cylinder, means for covering and uncovering said ports to any desired extent, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, and means for reciprocating said cylinder, for the purpose specified.

9. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, elongated tapered ports being formed circumferentially in the opposite end portions of the cylinder, slotted collars rotatively arranged on the ends of the cylinder for covering and uncovering said ports to any desired extent, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, and means for reciprocating said cylinder, for the purpose specified.

10. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, elongated tapered ports being formed circumferentially in the opposite end portions of the cylinder, slotted collars rotatively arranged on the ends of the cylinder for covering and uncovering said ports to any desired extent, a bar connecting said collars to cause them to move in unison, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, and means for reciprocating said cylinder, for the purpose specified.

11. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs disposed in the cylinder on each side of the piston, a universal joint on the end of the piston-rod comprising two half-sections rigidly secured together and provided with spherical sockets at the opposite ends, a ball fixed on one end of the piston-rod and rotatively fitted in one of said sockets, a ball rotatively fitted in the other socket, a plate, a screw passing through said plate and into said ball, means carried by the plate for attaching the latter to the hand of the operator, and means for reciprocating the cylinder, for the purpose specified.

12. In an apparatus of the class described, a plate, clips bent up from the opposite ends of the plate in parallelism therewith, bands removably confined between the clips and plate and constructed to pass around the hand and fingers of the operator, and means for imparting a reciprocating movement to said plate, for the purpose specified.

13. In an apparatus of the class described, a bowed plate, clips bent up from the opposite ends of the plate in parallelism therewith, bands removably confined between the clips and plate and constructed to pass around the hand and fingers of the operator, and means for imparting a reciprocating movement to said plate, for the purpose specified.

14. In an apparatus of the class described, a plate bowed intermediate its ends and provided with lateral extensions at one of its ends, clips struck up from the sides of said extensions and bent over said extensions in parallelism with the latter, said clips overlapping one another at their ends, clips formed on the other end of the plate and bent over the latter into parallelism therewith, a clip struck up from the plate between the two last-named clips and bent in an opposite direction thereto, bands removably confined between said plate and clips and constructed to pass around the hand and fingers of the operator, and means for imparting a reciprocatory movement to said plate, for the purpose specified.

15. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, a rotatable shaft, a head fixed on said shaft and provided with an eccentric wrist-pin, a sleeve rotatively mounted on said wrist-pin, and a flexible shaft connected at one end with said sleeve and at the other end with the end of the cylinder, for the purpose specified.

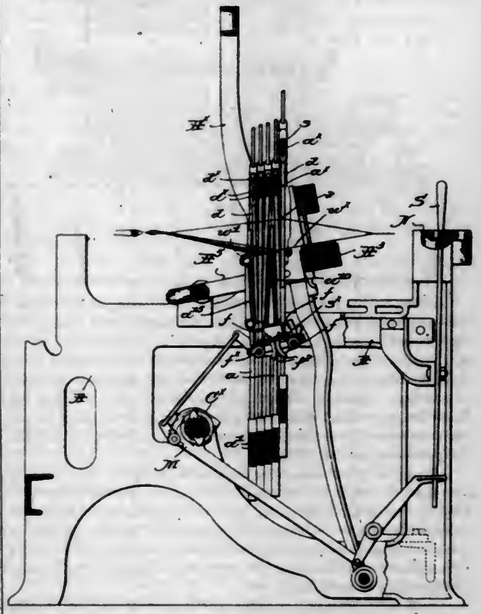
16. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, a cup-shaped head attached to the end of the cylinder, a rotary shaft, a head fixed on said shaft, an eccentric wrist-pin on said head, a rotatable sleeve on the wrist-pin, a cup-shaped head fixed on said sleeve, and a coiled spring fixed at its opposite ends in said cup-shaped head, for the purpose specified.

17. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, a vertical support, an electric motor arranged on the upper end of said support, a head fixed on the end of the motor-shaft, an eccentric wrist-pin on said head, a sleeve on the wrist-pin, and a flexible shaft connecting said sleeve to the end of the cylinder, for the purpose specified.

18. In an apparatus of the character described, the combination of a cylinder, a piston arranged centrally therein, coiled springs arranged in the cylinder on each side of the piston, means connected to the end of the piston-rod for attaching thereto the hand of the operator, a vertical support, a flexible tube mounted on the upper end of said support, an electric motor mounted on the upper end of said flexible tube, a head fixed on the end of the motor-shaft, an eccentric wrist-pin on said head, a sleeve on the wrist-pin, and a flexible shaft connecting said sleeve to the end of the cylinder, substantially as described.

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**756,442. WARP STOP-MOTION FOR LOOMS. CHARLES H. WARREN, Atlanta, Ga., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Sept. 5, 1903. Serial No. 172,121. (No model.)**



*Claim.*—1. In a loom, a series of warp-stop-motion-controlling detectors, a vertically-reciprocating support from which they are suspended and relatively to which they have a limited longitudinal movement, each detector having a warp-eye located below the support, a vibrating feeler to engage the lower end of a released detector, and a plurality of separators intermediate the warp-eyes and the feeler and projecting between the detectors to divide the same at their lower ends into small groups or sections and prevent their lateral displacement out of range of the feeler.

2. In a loom, a series of warp-stop-motion-controlling detectors, a vertically-reciprocating support from which they are suspended and relatively to which they have a limited longitudinal movement, a vibrating feeler to engage the lower end of a released detector, a pivotally-mounted warp-rest, and a plurality of separators secured thereto and projecting between the detectors near their lower ends to divide them into groups or sections, and means to normally maintain the warp-rest and separators in operative position.

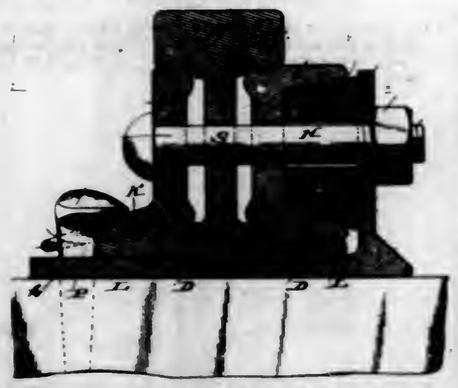
3. In a loom, a series of warp-stop-motion-controlling detectors, a vertically-reciprocating support from which they are suspended and relatively to which they have a limited longitudinal movement, a vibrating feeler to engage the lower end of a released detector, a

pivotally-mounted, transverse rod located below the warp, a plurality of separating-pins mounted on and adapted to extend between the detectors near their lower ends to separate them into groups or sections, the free ends of the pins being downcurved, and a downhold to be engaged by such downcurved ends to normally retain the pins in separating position

4. In a loom, a series of longitudinally-slotted warp-stop-motion-controlling detectors, serving also as heddles, a support extended through the slots and by which the detectors are suspended, separators mounted on said support and interspersed between the detectors to separate the same at their upper ends and prevent improper lateral movement thereat, a vibrating feeler to engage a released detector, and a plurality of stationary separators projecting between the detectors near their lower ends and dividing the same into small groups or sections to prevent their lateral displacement.

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**756,443. RAIL-JOINT.** GEORGE A. WEBER, New York, N. Y., assignor to Weber Railway Joint Manufacturing Company, New York, N. Y., a Corporation of West Virginia. Filed Dec. 26, 1903. Serial No. 186,838. (No model.)



*Claim.*—1. A rail-joint, comprising the meeting ends of rails, a rail-supporting base-plate, and means for maintaining said rails in surface and alinement, comprising in part, an angle-iron having an upright extending along the webs of the rails, and a base or flange overlapping the edges of the bases of the rails, in contradistinction to a flange extending around and underneath the rail-bases, said flange being provided with spiking-apertures in the overlapping portion, and spikes for holding said angle-iron in position, for substantially the purposes set forth.

2. A rail-joint, comprising the meeting ends of rails, a shoe-angle, channel and angle irons and packing material, with bolts for holding the parts of the joint together, said angle-iron being provided with a flange or base portion projecting beyond the edges of the bases of the rails and provided with spiking-apertures therein, with spikes for maintaining the angle-iron in position, for substantially the purposes set forth.

3. A rail-joint, comprising the meeting ends of rails, a rail-chair, fish-plates and packing material, and bolts for securing the parts of the joint together, one of said fish-plates being provided with spiking-apertures, and spikes for holding said plate in position, for substantially the purposes set forth.

4. A rail-joint, comprising the meeting ends of rails, a rail-chair comprising a base and an upright, fish-plates, and bolts for securing the parts of the joint together, one of said fish-plates being provided with spiking-apertures adapted to cooperate with spiking-apertures in the base of the angle-chair, and spikes passing through said cooperating apertures, for substantially the purposes set forth.

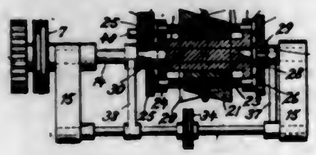
5. A rail-joint, comprising the meeting ends of rails, a rail-chair having a base and a strengthening portion of double thickness, plates for holding the rails in surface and alinement, one of said plates being provided with spiking-apertures, and spikes for said apertures, for substantially the purposes set forth.

6. A rail-joint, comprising the meeting ends of rails, a rail-chair having a base and an upright portion of double thickness with an outwardly-turned portion extending therefrom, plates for maintaining the rails in surface and alinement, one of said plates being provided with spiking-apertures, and spikes for said apertures, for substantially the purposes set forth.

7. A girder-rail joint, comprising the meeting ends of rails, a rail-chair having a base and an upright, plates for holding the rails in surface and alinement, two rows of bolts for holding the parts of the joint together, one of said plates being provided with spiking-apertures, and spikes for said apertures, for substantially the purposes set forth.

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**756,444. ELECTRIC ELEVATOR.** HAROLD B. WELLMAN, New York, N. Y., assignor of one-third to Edward S. Isham, New York, N. Y. Filed June 30, 1903. Serial No. 163,799. (No model.)



*Claim.*—1. In an elevator, the combination with an endless rope, of a sectional expansible sheave, together with means for moving such sections of the sheave as at the time are not subjected to the strain of the rope.

2. In an elevator, the combination with an endless rope, of a sheave of variable diameter, said sheave formed of a series of coacting members, together with means for moving such of said members as at the time are not subjected to the bearing strain of the rope.

3. In an elevator, the combination with an endless rope, of a sheave of variable diameter, said sheave consisting of a hub member, two series of conical members, means for moving oppositely-disposed members of each series toward or from each other, and means under the control of the operator of the elevator for determining the direction and degree of movement of said conical members relative to each other.

4. In an elevator, the combination with an endless rope, of a sheave of variable diameter, said sheave consisting of a hub member, two series of conical members, threaded shafts for moving said conical members, gears on the opposite ends of said shafts, sleeves carrying racks, and means for throwing one or the other of said racked sleeves into engagement with the gears on the ends of the shafts.

5. In an elevator, the combination of a driven shaft, a sheave of fixed diameter on said shaft, a sectional sheave of variable diameter on said shaft, an endless rope carried over said sheaves, together with means for moving such sections of the sheave of variable diameter as at the time are not under strain from the rope.

6. In an elevator, the combination of a driven shaft, a sheave of variable diameter on said shaft, said sheave comprising two series of oppositely-disposed members whose external surfaces are inclined toward each other, threaded shafts for moving said members, gears on opposite ends of said shafts, two rack-sleeves loosely mounted on said driven shaft and normally adapted to rotate in unison with the shaft, pins projecting from said sleeves, pivotally-mounted detents, together with means for throwing said detents into engagement with one or the other of said pins on said sleeves.

7. In an elevator, a sheave of variable diameter, comprising two series of oppositely-disposed conical members, arranged around a central hub, threaded shafts for actuating said members, gears on the ends of said shafts, together with means for successively producing a relative movement between pairs of said conical members.

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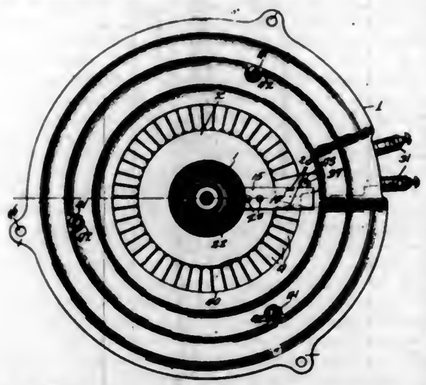
**756,445. RHEOSTAT.** HENRY J. WIEGAND, Milwaukee, Wis., assignor to the Cutler-Hammer Manufacturing Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed June 1, 1903. Serial No. 159,605. (No model.)

*Claim.*—1. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged in said depression and held in position by lugs or projections formed on said plates and entering holes in said base.

2. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact plates or terminals arranged within said depression, and a filling arranged within said depression and holding said contact-plates in position.

3. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression, and a filling holding said contact-plates in position, said base having the wall of said depression undercut for retaining said filling in place.





4. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression, and a filling holding said contact-plates in position, said base being provided with anchor-holes into which said filling extends to retain the same in place, substantially as described.

5. In a device of the character described, the combination of a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression, and a filling holding said contact-plates in position, said base having the wall of said depression undercut and the bottom of the depression provided with anchor-holes for retaining the filling in place.

6. In a device of the character described, the combination with a suitable base provided with a suitable projection, of contact-plates having lugs which enter recesses in said projection for securing the inner ends in position, and a filling holding the outer ends of said contact-plates in place.

7. In a device of the character described, the combination of a suitable base having a suitable projection, contact-plates having lugs which enter suitable recesses in said projection to retain their inner ends in position, and lugs at their outer ends for immovably holding said plates in place.

8. In a device of the character described, the combination with a suitable base having a suitable projection, of contact-plates which have suitable lugs which enter recesses in said projection to hold the inner ends of said plates in position, downwardly-extending lugs at their outer ends which enter recesses formed to receive the same in the base, and a filling retaining said downwardly-extending lugs in their recesses.

9. In a device of the character described, the combination with a suitable base, of a plurality of contact-plates controlling sections of resistance, lugs formed on the inner ends of said plates, which enter recesses in said base, downwardly-extending lugs formed on said plates, which also enter recesses in said base, and a filling which covers the sections of said resistance and holds the downwardly-extending lugs in place.

10. In a device of the character described, the combination with a contact-arm having notches or recesses at its outer end, of a plurality of contacts, a shoe which engages said contacts and is provided with lugs operating in said notches or recesses, and a flat spring fastened to said contact-arm having its free end bearing upon said shoe for normally keeping said shoe in engagement with said contact plates.

11. In a device of the character described, the combination with a suitable base, of a binding post or screw arranged at the edge thereof, and comprising a plate extending beneath said base, and a bolt passing through said base and holding said plate in position.

12. In a device of the character described, the combination with a suitable base, of a resistance, a binding post or screw arranged at the edge of said base, and comprising a plate having a portion thereof extending beneath said base, a screw passing through said base and fastening said plate in position, and a conductor connecting said screw with said resistance, said screw connecting said conductor with said binding-post.

13. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of terminal or contact plates arranged in said depression and each comprising a straight piece of material having its outer end turned back to form a loop.

14. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of terminal or contact plates arranged in said depression and each comprising a straight piece of material having its outer end turned back to form a loop, and having lugs formed thereon for holding the plate in position.

15. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression and each comprising a straight piece of material having its outer portion turned back to form a loop, resistance-coils arranged within said depression and connected with said loops, and a filling arranged within said depression for holding said resistance-coils and contact-plates in position.

16. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression and a filling arranged within said depression, said contact-plates being cut away at their outer ends to expose a greater portion of the face to the filling.

17. The combination with a suitable base, of radial contact-plates arranged thereon and having lugs at their inner and outer ends to hold said plates in position.

18. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils lying upon the bottom of said recess and a filling covering said resistance-coils and the outer ends of said contact-plates.

19. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils lying upon the bottom of said recess, and a filling to hold said resistance-coils and said plates in position.

20. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils lying upon the bottom of said recess, the outer ends of said plates being turned back to form loops which engage said resistance-coils.

21. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils within said recess, said plates having lugs at their inner ends which enter holes in said projection and lugs at their outer ends which enter holes in the bottom of said recess for holding said plates in position.

22. In a device of the character described, the combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates arranged in said recess and having lugs which enter recesses in said projection for securing the inner ends of said plates in position and their outer ends turned back to form loops, resistances arranged in said annular recess and engaging said loops and a filler for holding said resistances and the outer ends of said plates in position.

23. In a device of the character described, the combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates arranged in said recess and having lugs which enter suitable holes in said projection to retain their inner ends in position and lugs at their outer ends for immovably holding said plates in place, said plates having their outer ends turned back to form loops, resistance-coils arranged in said recess and engaging said loops and a suitable filling.

24. In a device of the character described, the combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates arranged in said recess and having lugs which enter suitable holes in said projection to retain their inner ends in position and lugs at their outer ends for immovably holding said plates in place, said plates having their outer ends turned back to form loops, resistance-coils arranged in said recess and engaging said loops, and a filling covering said resistance-coils and a portion of said plates, said base having the inner side of the peripheral rim undercut and the bottom of the annular recess provided with anchor-holes for retaining the filler in place.

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**756,446. WINDING-INDICATOR FOR CLOCKS.** HUGH WILL, Ava, Ill. Filed Jan. 5, 1904. Serial No. 187,839. (No model.)

*Claim.*—1. In an indicator, the combination with a clock mechanism and a housing therefor, of an indicator, an arm adapted to

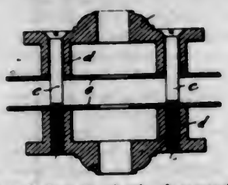
support said indicator, said arm being bent up to form the inverted-U-shaped member 15, a bracket having a tubular shaft adapted to receive one end of said arm, a trip-lever having a loop at its upper end and means to move said trip-lever and release the signal, as and for the purpose set forth.



2. As an article of manufacture, the herein-described signaling apparatus, comprising a signal proper 7, an arm having a bent-up portion 15, a bracket to support said arm, a trip-lever having a loop at its upper end adapted to receive said arm and also having a contact-point whereby when pressure is brought to bear upon said point said lever will be operated to release said signal, substantially as and for the purpose set forth.

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**756,447. DOOR-HANDLE SHIELD.** THEODOR VON WESSEL, Hamburg, Germany. Filed Feb. 26, 1901. Serial No. 48,964. (No model.)



*Claim.*—A door-lock casing having inner casing-plates spaced apart, outer shield-plates, said inner casing-plates and shield-plates being provided with registering openings, sets of tubular spacers secured to the shield-plates and bearing against the inner casing-plates in register with said openings, one of said sets of spacers being internally threaded, bolts extending through said inner plates, one of the shield-plates and the other set of spacers, having their heads disposed on the outer side of one shield-plate and having their threaded shanks entering the said threaded spacers on the other shield-plate, and screw-plugs closing the outer ends of the bores of the threaded spacers, substantially as described.

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**756,448. ANIMAL-CLEANING MACHINE.** WILLIAM WOERTZEL, Estelline, S. D. Filed Sept. 16, 1903. Serial No. 173,473. (No model.)

*Claim.*—1. In a rotary currying-machine, the combination with a rotary brush or comb having a suitable driving mechanism, and a handle member carried thereby of a coöperating cleaning-comb 22, a supporting-standard 23 therefor, said standard terminating at one end in a semicircular branch 25, a semicircular member 26 hinged thereto and adapted to coöperate therewith to removably clamp said standard to said handle member, and means to lock said branches together, as set forth.

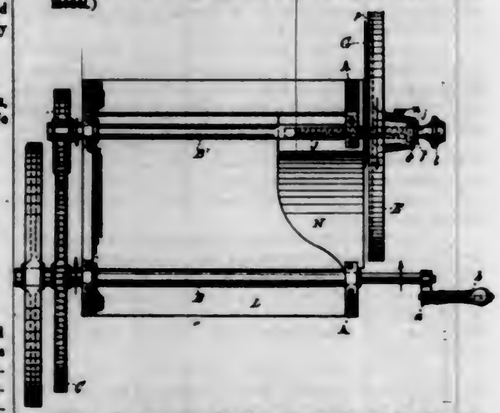
2. The herein-described currying-machine, comprising the combination with a combined rotary brush and cleaning-comb therefor, driving mechanism for said brush, and a handle member carried upon a part of said driving mechanism, of a standard 23 having a recess at its upper end and in which said cleaning-comb is pivotally secured, and means at the lower end of said standard to removably secure the same to said handle member, substantially as set forth.

**756,448.**



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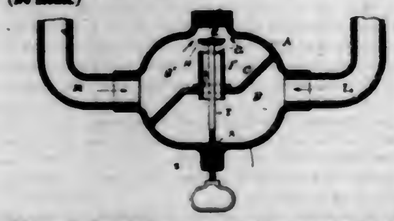
**756,449. MEAT-SLICING MACHINE.** JOSEPH L. WORRELL, Philadelphia, Pa. Filed Aug. 31, 1903. Serial No. 170,577. (No model.)



*Claim.*—In a machine for slicing meats, the combination of a shaft, an arm carrying a knife, and secured to the end of the driving-shaft by a hub, said hub having a keyway, a feed-adjusting disk having a sleeve closed at the outer end fitting over said hub, and having a set-screw engaging said keyway, and an adjusting-screw threaded into the end of said shaft, and provided with collars engaging either side of the end wall of said sleeve.

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**756,450. FLUID-MIXER.** EUGENE H. YORKE, Portland, Me. Filed Sept. 24, 1902. Renewed Nov. 30, 1903. Serial No. 181,031. (No model.)



*Claim.*—1. In a fluid-mixer, a suitable casing divided into two chambers by a partition, an opening in the top to receive a suitable burner, a pipe vertically mounted in the web and positioned directly beneath the burner-opening, a flat valve adapted to seat on the upper end of said pipe and means for supplying gas to one chamber and air under pressure to the other, whereby in their passage to the burner, the gas is spread out in a thin sheet and the air thoroughly mixed therewith.

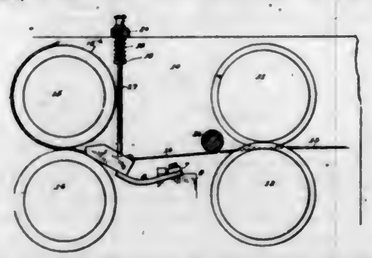
2. In a fluid-mixer, a suitable casing divided into two chambers by a partition, an opening in the top to receive a suitable burner, a port in said partition positioned directly beneath the burner-opening, a valve adapted to close said port and when open to cause the gas to spread out across the throat of the burner-opening and means for supplying gas to one chamber and air under pressure to the other, whereby in their passage to the burner the gas is spread out in a thin sheet and the air thoroughly mixed therewith.

3. In a fluid-mixer, a suitable casing divided into two chambers by a partition, an opening in the top to receive a suitable burner, a port in said partition positioned directly beneath the burner-opening, a valve to close said port and when open to cause the gas to spread out across the throat of the burner-opening, in combination with air and gas supply pipes concentrically arranged, a coupling for said air and gas pipes divided into two chambers, the gas-pipe entering one chamber and the air-pipe the other, and pipes leading from said chambers to the gas and air chambers respectively in the mixer and means for supplying gas to one chamber and air under pressure to the other.



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**756,451. FOLDER FOR CLOTH STRIPS.** ABRAHAM L. ADAMS, Bridgeport, Conn. Filed July 29, 1901. Serial No. 70,025. (No model.)



*Claim.*—1. The combination, in a device of the character described, of a folder having one or more holes therethrough to receive and fold strips of cloth, a support for said folder and a tension device to maintain said folder in its normal position.

2. A device, for folding strips of cloth, consisting of a folder having one or more holes transversely therethrough, transverse channel-ways, a plate secured to the under side of said folder to close the mouth of said channel-ways, for the purpose set forth.

3. The combination, with a folder adapted to fold strips of cloth preparatory to their being formed into spools, of ironing-rolls through which the strips pass after leaving the folder, one of said rolls having a roughened or slightly-corrugated surface the other being smooth, said rolls set out of contact with each other, said strips adapted to follow around and bear directly against the surface of said roughened roll so as to prevent any after strain, due to the spooling of said strips, interfering with the passage of said strips through the ironing-rolls, for the purpose set forth.

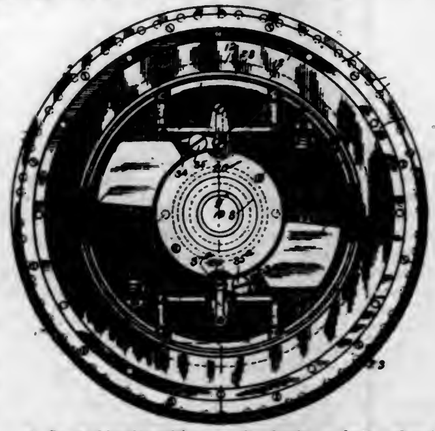
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**756,452. AUTOMATICALLY-GOVERNED DRIVING-WHEEL.** VINCENT G. APPLE, Dayton, Ohio. Filed Nov. 9, 1903. Serial No. 180,462. (No model.)

*Claim.*—1. In combination with an engine-casing having an outwardly-projecting hub, a shaft extending through said hub, and a fly-wheel mounted on the shaft beyond said hub, of a driving-wheel mounted for rotation on the exterior of the engine-hub, and governed clutch devices adapted and arranged to connect said driving-wheel with the engine fly-wheel.

2. In combination with an engine-casing having an outwardly-projecting hub, a shaft extending through said hub, and a fly-wheel provided with a recess in its rear face, mounted on the shaft beyond the hub, of a driving-wheel mounted for rotation upon the exterior of the hub, and a governor-clutch carried by the driving-wheel arranged within the fly-wheel recess and adapted to coact with the fly-wheel to connect the driving-wheel with the engine fly-wheel.

3. The combination with an engine having a shaft, a fly-wheel mounted on said shaft, and a bearing-hub for the shaft adjacent the fly-wheel, of a driving-wheel mounted for rotation on the said hub, and governor-clutch devices carried by the driving-wheel adapted and arranged to coact with the engine fly-wheel to connect the driving-wheel with said fly-wheel for rotation therewith.

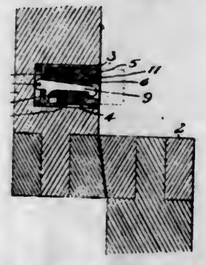


4. In combination with an engine having a shaft, a fly-wheel mounted on said shaft and provided with a recess in its face, and a bearing for the shaft adjacent the fly-wheel, of a driving-wheel, comprising an imperforate disk mounted for rotation on the exterior of the shaft-bearing and arranged to overlie the recess in the fly-wheel to form therewith a substantially closed chamber, and governor-clutch devices carried by the driving-wheel arranged to coact with the fly-wheel to afford connection between the said fly-wheel and said driving-wheel.

5. In combination, a constantly-rotating driven wheel, having a recess in one face, a driving-wheel comprising an imperforate disk loosely mounted coaxially therewith and arranged to overlie the recess to form therewith a substantially closed chamber, friction-shoes, as 27, arranged and adapted for frictional contact with the interior face of the recess, pins, as 30, carrying said shoes, guides, as 29, for said pins, carried by the driving-wheel disk, and centrifugal governor devices carried by the disk and operatively connected with said pins 30.

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**756,453. SASH-BOLT.** AUGUST ARENS and HERBERT L. TREAT, New Britain, Conn., assignors to P. & F. Corbin, New Britain, Conn., a Corporation of Connecticut. Filed Dec. 23, 1903. Serial No. 186,295. (No model.)



*Claim.*—1. A window-stop comprising a shell, a movable bolt carried thereby, a longitudinal passage extending through said bolt, means for causing said bolt to be normally projected outward, a latch carried by the shell and projecting into said longitudinal passage and arranged to automatically engage said bolt when the same is pushed into the shell and means to limit the outward excursion of said bolt relatively to said shell.

2. A window-stop comprising a shell, a movable bolt carried thereby, a longitudinal passage through said bolt, a spring for causing said bolt to be normally projected outwardly, a latch carried by said shell and projecting into said longitudinal passage, and arranged to automatically engage the bolt when the latter is pushed into the shell said spring coacting with said latch and means to limit the outward excursion of said bolt relatively to said shell.

**736,454. AWNING.** WILLIAM ASTRUP, Cleveland, Ohio. Filed Aug. 2, 1902. Serial No. 118,065. (No model.)



*Claim.*—1. The combination with the casing formed with a pair of extensions, a plug fitted in one of said extensions, and the awning-roller, of a worm-gear secured to said roller, a worm meshing with said gear and having its ends extending through said plug and the other extension, a supporting means engaging the projecting ends of said worm, and means for operating said worm.

2. The combination with the housing provided at its lower end with oppositely-arranged cylindrical extensions, of a removable plug secured in the outer end of one of the said extensions, a worm arranged in the said housing, said worm having its ends projecting through the said housing, an awning-roller having one of its ends journaled in the said housing above the said worm, a worm-gear secured to the said awning-roller and meshing with the said worm brackets in which the ends of the said worm are journaled, a sprocket wheel mounted on one end of the said worm, and means for rotating the said sprocket-wheel.

3. The combination with the casing formed with an opening and the bracket formed with an opening alining therewith, of a roller, a worm-gear mounted thereon and being arranged in said casing, a worm arranged in said casing and meshing with said gear and having one end projecting through the opening thereof, and through said bracket, a wheel arranged in said bracket on the end of said worm, and means connected to said wheel for operating the same.

**736,455. HIP-FORM AND STOCKING-SUPPORTER.** GERTRUDE BEELER, San Antonio, Tex. Filed July 17, 1903. Serial No. 165,982. (No model.)



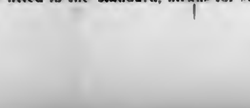
*Claim.*—1. A hip-form open at its front, and made up of gores each of which has a straight front edge and a curved rear edge, stays arranged at the seams between the gores, other stays arranged at the front, vertical edges of the form, and means detachably connecting said front edges; the said form having a straight upper edge *a* and a curved lower edge *b* whereby it is gradually reduced in height from its back to its front, vertical edges.

2. A hip-form open at its front, and made up of gores each of which has a straight front edge and a curved rear edge, stays arranged at the seams between the gores, other stays arranged at the front, vertical edges of the form, reinforcing-strips *c* intersecting the first-mentioned stays, and means detachably connecting the front edges; the said form having a straight upper edge *a* and a curved lower edge *b*, whereby it is gradually reduced in height from its back to its front, vertical edges.

3. The combination of a hip-form, and stocking-supporting members connected to and suspended from the front of the form, and respectively comprising a strip having means for engaging and holding a stocking, and strips sufficiently long to be crossed back of the knee, and provided with means whereby they may be connected in front of the leg.

4. The combination of a hip-form, and stocking-supporting members connected to and suspended from the front of the form, and respectively comprising an upper, non-elastic strip, a short strip, of elastic material, having means for engaging and holding a stocking, strips *a* of elastic material, connected to the non-elastic strip; said strips *a* being sufficiently long to be crossed back of the knee, and being provided with means whereby they may be connected in front of the knee, and a cross-strip, of elastic material, connected to and adjustable on the long elastic strips.

**736,456. EYEGLASSES.** WALLACE L. BENIS, Brockton, Mass. Filed Dec. 19, 1903. Serial No. 185,838. (No model.)



*Claim.*—1. As a new article of manufacture, a pair of eyeglasses having in combination a pair of lenses; a pair of studs located directly behind, and projecting to the rear of the inner faces of said lenses at their inner ends; a nose-spring having a curved central section slightly inclined to a plane at right angles to the planes of the front and rear faces of the lenses, and provided at each end with a nearly-circular bend or loop occupying a plane at a right angle to the plane of the face of said lens and directly in the rear of the inner portion of the rear face of said lens, and with a shank-section projecting downward from the terminal end of said loop parallel to the rear face of said lens, and secured in a socket in said stud.

2. A pair of eyeglasses having in combination a pair of lenses; a pair of studs; and a nose-spring having a curved central section occupying a plane inclined to a right angle from the rear faces of said lenses, and provided at each end with a nearly-circular bend or loop occupying a plane at a right angle to the rear face of said lens, and with a shank-section projecting downward from the terminal end of said loop parallel to the rear face of said lens, and secured in the socket of said stud, said studs and the loops on said spring being so constructed and arranged that said loops shall be wholly at the rear of, and directly behind the inner ends of said lenses.

**736,457. SUPPOSITORY-MOLDING MACHINE.** FRANK R. BENT, Hartford, Conn. Filed May 15, 1903. Serial No. 157,311. (No model.)

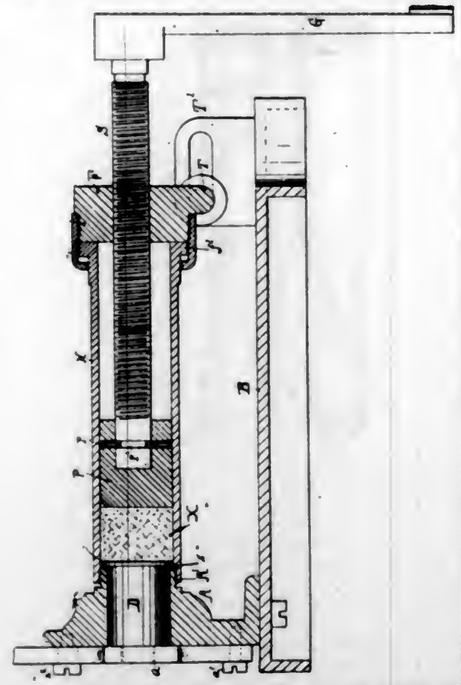
*Claim.*—1. A suppository-molding machine, having a feed-cylinder, piston and standard, with a separate molding-die and a gate, the die being free to move longitudinally independently of the cylinder to bear against the gate by the pressure within the cylinder, substantially as described.

2. A suppository-molding machine, having a feed-cylinder and piston with a standard, a separate molding-die fitted in the standard, and a gate carried by the standard, the die being free to move longitudinally independently of the cylinder to bear against the gate by the pressure within the cylinder, substantially as described.

3. A suppository-molding machine, having a feed-cylinder and piston with a standard having a projecting part, to which the cylinder may be attached, a separate molding-die fitted in the standard and projecting part, and a gate carried by the standard, the die being free to move longitudinally independently of the cylinder to bear against the gate by the pressure within the cylinder, substantially as described.

4. A suppository-molding machine, having a standard, a separate molding-die fitted in the standard, means for supplying material to be molded to the die on one side of the standard, and a gate carried by the other side of the standard, the die being free to move longitudinally independently of the cylinder to be forced against the gate by the pressure of the material, substantially as described.





5. A suppository-molding machine, having a feed-cylinder and piston with a standard having a threaded projecting part to which the end of the feed-cylinder may be screwed, a separate molding-die movable longitudinally independently of the cylinder and fitted in the standard within said projecting part and a gate on the outer side of the standard against which the die can bear, substantially as described.

6. A suppository-molding machine, having a feed-cylinder and piston with a standard, a separate cylindrical molding-die movable longitudinally independently of the cylinder, flanged at its inner end and fitted in the standard, means to prevent the die from rotating and a gate on the outer side of the standard against which the die can bear.

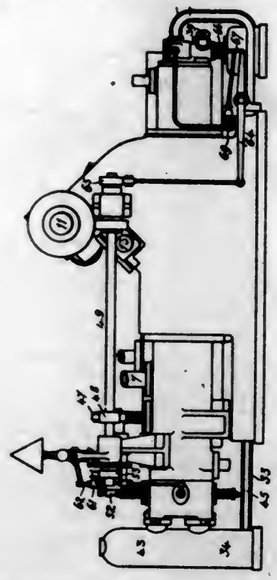
**736,458. GAS-ENGINE.** HENRY C. BERGMANN, Annan, Scotland. Filed Mar. 4, 1902. Serial No. 96,726. (No model.)

*Claim.*—1. The combination of a piston of a compound engine, a crank-shaft and crank, a link-motion connected with said piston and said crank and adapted to cause rapid motion of the piston on its outward stroke, stagnation at outer end of stroke and a slow return movement, substantially as and for the purpose set forth.

2. The combination of a high-pressure cylinder and a low-pressure cylinder of a compound gas-engine, a piston for each of said cylinders, a crank-shaft and cranks, connections between each of said pistons and their respective cranks such connections including a link-motion adapted to cause each piston to travel most rapidly near the middle portion of its outward stroke, substantially as and for the purpose set forth.

3. The combination of a piston of a compound gas-engine, a crank-shaft and cranks, a suitably-mounted bell-crank lever, a link mounted between the pin of said crank and one end of bell-crank lever, a second link mounted between the other end of the bell-crank lever and a suitable point on the rod of said piston, substantially as and for the purpose set forth.

4. The combination of a piston of a compound gas-engine, a crank-shaft and cranks, a suitably-mounted bell-crank lever, a link mounted between the pin of the said crank and one end of the bell-crank lever, a second link mounted between the other end of the bell-crank lever and a suitable point on the rod of said piston, the length of the arms of the bell-crank lever and the length of the said first-mentioned link as well as the distance between the center on which the bell-crank lever rocks and the crank-shaft center being all equal to the diameter of the crank circle, substantially as and for the purpose set forth.



5. The combination of a high-pressure and low-pressure cylinder having a passage connecting the two, the pistons, crank-shafts and cranks, a link-motion connected between each of said pistons and their respective cranks and adapted to cause each of said pistons to travel through a greater distance than twice the diameter of the crank-pin circle during each revolution, substantially as set forth.

6. The combination of a high-pressure cylinder and a low-pressure cylinder of a compound gas-engine, a piston for each of said cylinders, a crank-shaft and cranks, connections between each of said pistons and their respective cranks such connections including a link-motion adapted to cause rapid motion of the piston on its outward stroke and a slow return stroke, and a valveless passage between the high and low pressure cylinders, substantially as and for the purpose set forth.

7. The combination of a high-pressure cylinder and a low-pressure cylinder of a compound gas-engine, a piston for each of said cylinders, a crank-shaft and cranks, connections between each of said pistons and their respective cranks such connections including a link-motion comprising a bell-crank lever suitably mounted with its arms projecting in the direction of the working stroke of the piston, a link mounted between the crank-pin and one end of the said bell-crank lever, a second link mounted between a point on the piston-rod and the other end of said bell-crank lever, the length of the arms of the bell-crank lever and the length of the said first-mentioned link as well as the distance between the center on which the bell-crank lever rocks and the crank-shaft center being all equal to the diameter of the crank circle, substantially as and for the purpose set forth.

8. The combination of a high-pressure cylinder and a low-pressure cylinder of a gas-engine, and a valveless passage between said cylinders and provided with an exhaust to the outer air and serving to both exhaust from high-pressure to low-pressure cylinder and from both cylinders to the atmosphere, substantially as and for the purpose set forth.

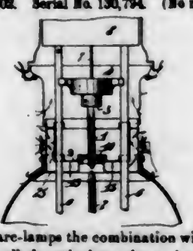
9. The combination of a high-pressure cylinder and a low-pressure cylinder of a compound engine, a piston for each of said cylinders, a crank-shaft and cranks, a crank motion connected between each of said pistons and their respective cranks and adapted to cause rapid motion of the piston on its outward stroke, stagnation at the outer end of the stroke and a slow return movement, whereby the low-pressure piston practically completes its stroke before the high-pressure piston returns, substantially as set forth.

**756,459. STEM WINDING AND SETTING WATCH.** ALFRED BLANC, New York, N. Y., assignor to Adolphe Schwob, New York, N. Y. Filed Aug. 14, 1903. Serial No. 169,490. (No model.)



*Claim.*—In a watch, the combination, with a winding-gear, a setting-gear and a stem, of a pivoted yoke having a gear on its pivot, a gear on each end of the yoke and in mesh with said gear, a winding-pinion having an axial bore and a gear portion, the stem having a sliding engagement with the pinion but arranged to rotate the pinion, said gear portion meshing with the gear on the yoke-pivot, a pivoted three-arm lever having one arm extending into the bore of the pinion in engagement with the end of the stem, a pin on the yoke arranged to engage a second arm on the lever, a spring bearing on the yoke and tending to retain it with its gears meshing with the winding-gear, and a spring bearing on the third arm of the lever and arranged to rock the same when the stem is withdrawn and thereby rock the yoke against the force of said spring and bring the setting-gears into engagement, substantially as set forth.

**756,460. ELECTRIC-ARC LAMP.** ANDRÉ BLONDEL, Paris, France. Filed Nov. 10, 1902. Serial No. 130,794. (No model.)



*Claim.*—1. In arc-lamps the combination with a horizontal partition, of a double-walled vertical annular casing through which the vapors are drawn by natural draft, and in which they condense before their escape from the lamp, suitable openings being provided for the ventilation of the interior of the lamp and the cooling of the inner wall of the annular casing substantially as described.

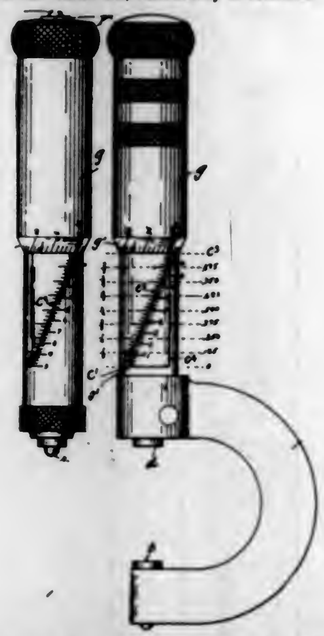
2. In combination in an arc-lamp with a horizontal partition above the arc a double-walled annular casing through which the vapors generated are forced to pass before escaping from the lamp, perforations in the lower and upper parts of said casing for said vapors, and tubular lateral passages through the wall of the casing to admit fresh air, substantially as described.

**756,461. MICROMETER-CALIPERS.** HYACINTHE O. BORDUAS, Haverhill, Mass., assignor of one-half to Theodore L. Provost, Haverhill, Mass. Filed Jan. 2, 1904. Serial No. 187,443. (No model.)

*Claim.*—1. A measuring instrument of the character described, comprising a sleeve, a measuring-thimble having a threaded connection therewith, and having circular graduations registering with said sleeve fractional parts of the unit of one character, said sleeve having a compensating line with which said thimble registers fractional parts of the unit of a different character, substantially as described.

2. A measuring instrument of the character described, comprising a sleeve, a measuring-thimble having a threaded connection therewith and having circular graduations registering with said sleeve fractional parts of the unit of one character, said sleeve having a helical compensating line with which said thimble registers fractional parts of the unit of a different character, substantially as described.

3. A measuring instrument of the class described, comprising a sleeve having an elemental line, and a helical line on its surface, a measuring-thimble having a threaded connection with said sleeve, said thimble having a graduated dial which registers decimal fractions of the unit with said elemental line, and common fractions of the unit with said helical line, substantially as described.



4. A measuring instrument of the character described comprising a sleeve having an elemental line and a helical line, extending longitudinally from the same point a distance representing the unit, a measuring-thimble having a threaded connection with said sleeve and having a regular series of circular graduations registering decimal parts of the unit with said elemental line, and common fractional parts thereof with said helical line, substantially as described.

5. In a micrometer, a sleeve having a helical line thereon, a thimble having a threaded connection with said sleeve having a circular dial divided into equal spaces by graduation-lines, rotation of the thimble with relation to the sleeve for any one of said spaces indicating longitudinal movement of the thimble .001 of an inch, one of said graduation-lines registering with said helical line, each time the thimble is rotated with relation thereto, longitudinal movement of the thimble a common fraction of the unit, substantially as described.

6. A measuring instrument of the class described, comprising the sleeve having a helical line thereon extending longitudinally thereof a distance representing the unit, and circularly thereof eight thirty-firsts of the circumference, a thimble telescoping with said sleeve and having a dial on its telescoping end divided into thirty-one equal parts by graduation-lines, and a screw-thread connection between said sleeve and thimble having thirty-two and eight thirty-first threads to the unit, for the purpose set forth.

7. In a micrometer measuring instrument having a sleeve, a spindle threaded therein, a thimble telescoping with said member and mounted on the outer end of said spindle, a ratchet-wheel on the outer end of said thimble arranged axially thereof, a clamping-disk on said wheel, a screw passing through said disk and wheel and threaded in said spindle, a ring encircling said wheel and swiveled between said disk and thimble, and a spring-actuated pawl borne by said ring on its inner periphery and engaging the teeth of said wheel, substantially as described.

8. An inside micrometer-caliper comprising a sleeve, a spindle threaded therein, a thimble rigidly mounted on the outer end of said spindle, a ratchet-wheel axially arranged on the outer end of said thimble, and having peripherally-arranged teeth, a clamping-disk on the outer side of said wheel, a screw passing through said disk and wheel, and threaded in said spindle, said screw having a rounded head to provide a work-engaging portion, a ring swiveled between said disk and thimble, and a spring-actuated pawl on the inner periphery of said ring engaging the teeth of said wheel, substantially as described.



**756,462. DISPLAY-RACK FOR RIBBONS, &c.** JOSEPH M. BOSTWICK, Janesville, Wis. Filed July 29, 1903. Serial No. 167,460. (No model.)



*Claim.*—1. In a display-rack, a plurality of angle-bars, the blades of which are alternately provided with perforations and slots, end members connecting the bars, and rods terminally engaging the end members and resting in the angles of the bars.

2. In a display-rack, end members, intermediately-bent article-supporting bars interposed between the end members and abutting thereagainst, means for connecting the end members and bars, a peripheral flange on each end member, and a parallel stop spaced away from the flange, said flange and stop bearing against the article-supporting bars to prevent an independent movement thereof.

3. In a display-rack, a spindle and a rotating carrier on the spindle comprising a top and bottom disk, article-supporting angle-irons interposed between the disks and terminally abutting against opposite faces thereof, a flange on each disk for engagement with the edges of the angle-irons, a stop carried by each disk and bearing against the angle of the iron, and rods connecting the disks and the angle-irons together.

4. In a display-rack, a plurality of angle-bars having article-supporting means, end members connecting the bars, and rods terminally engaging the end members and resting in the angles of the bars.

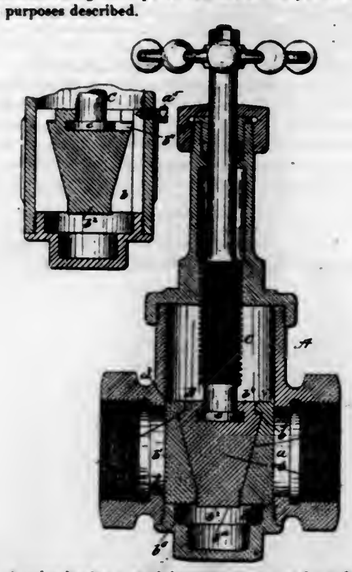
5. In a display-rack, a plurality of article-supporting bars, end members connecting the bars, an outer flange carried by each end member and bearing against the edges of the bars, and parallel stops on the end members spaced to receive the bars.

6. In a display-rack, end members, independently-bent article-supporting bars interposed between the end members and abutting thereagainst, a peripheral flange on each end member, and a parallel stop spaced away from the flange, said flange and stop bearing against the article-supporting bars to prevent an independent movement thereof, and longitudinal rods connecting the end members and disposed in the bend of the bars to hold them in contact with the stop.

7. In a display-rack, end members, article-supporting bars terminally engaged by the end members, oppositely-disposed flanges on the respective end members, and bearing against the outer portions of the bars and stops on the end members providing seats for the bars.

**756,463. BLOW-OFF VALVE.** CHARLES R. BOSWORTH, Somerville, Mass., assignor to Star Brass Manufacturing Company, Boston, Mass., a Corporation of Massachusetts. Filed May 7, 1903. Serial No. 156,992. (No model.)

*Claim.*—1. A valve having a straightaway passage and a valvular passage extending crosswise of the same, a cylindrical gate contained therein adapted when in one position to entirely close said straightaway passage, and when in another position to be entirely drawn up away from the straightaway passage, said gate comprising an exterior section having an axial opening therethrough conical throughout nearly its entire length, and cylindrical at each end, and an interior section of substantially the length of said exterior section and conforming in shape to the internal shape thereof, as and for the purposes described.



2. A valve having a straightaway passage and a valvular passage extending crosswise of the same, a cylindrical gate contained therein adapted when in one position to entirely close said straightaway passage, and when in another position to be entirely drawn away from the same, said gate comprising exterior sections and a cone-shaped interior section having a short cylindrical extension at each end thereof, said interior section being of substantially the length of the exterior section and adapted to bear against substantially the entire length thereof and cause it to positively close said straightaway passage, as and for the purposes set forth.

3. A valve having a straightaway passage and a valvular passage extending crosswise the same, a cylindrical valve or gate contained therein adapted when in one position to entirely close said straightaway passage and when in another position to be entirely drawn away from the same, the said gate comprising exterior sections and an interior section having a cone-shaped body to bear against the exterior sections and essentially relied upon to press them out laterally, a shoulder to raise the same, and cylindrical portions to prevent their displacement at each end thereof, substantially as described.

4. A valve having a straightaway passage and a cylindrical valvular passage extending crosswise the same, a cylindrical valve or gate contained therein adapted when in one position to entirely close said straightaway passage, and when in another position to be drawn entirely away from the same, the said round gate comprising exterior sections $b$ and $b'$, and an interior section $b^3$ combining therewith and cut away to allow vertical play between it and said exterior sections, and provided with cylindrical sections adapted to fit respectively within the cylindrical upper and lower portions of said exterior sections, substantially as described.

5. A valve having a straightaway passage and a cylindrical valvular passage extending crosswise the same, a cylindrical valve or gate contained therein adapted when in one position to entirely close said straightaway passage, and when in another position to be drawn entirely away from the same, the said gate comprising exterior sections and an interior section, the sections being so combined that a conical body formed by the interior section will bear downward against a correspondingly-conical inside surface of the combined exterior sections, when the gate is closed, and an annular shoulder formed by said interior section will bear up against an annular inside edge formed by the said combined exterior sections when the gate is opened, said interior section having two cylindrical sections, one above and one below said conical body, adapted to engage the corresponding inner walls of said exterior sections, the relation of the parts being such that when the gate is opened the interior section will be lifted along its cone-shaped body from bearing upon the said inside conical surface of the combined sections before contacting with the inside annular edges thereof, substantially as and for the purposes set forth.

6. In a blow-off valve of the kind described, having a cylindrical passage and a cylindrical chamber at right angles thereto, a valve adapted to slide in said chamber, means for sliding said valve, said valve comprising exterior sections and an interior section, said exterior sections forming when in place an annular ring, the interior surface of said ring being composed of three surfaces, straight cylindrical surfaces at the interior ends of said ring and a conical surface situated between said cylindrical surfaces, said surfaces being adapted to engage corresponding surfaces on an interior section or conical plug, whereby the exterior sections will be prevented from getting out of parallel position and thereby injuring the cylindrical chamber.

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**756,464. GARMENT-SUPPORTER. MARY H. BOYCE, Grand Haven, Mich. Filed Feb. 6, 1904. Serial No. 192,312. (No model.)**



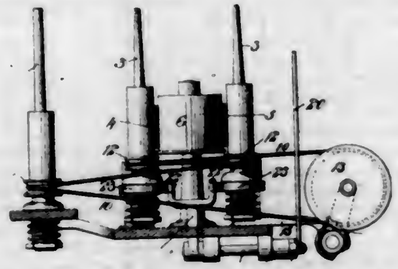
*Claim.*—1. In a garment-supporter, the combination of a supporting-strap; a stud member B secured to said strap by a flexible tape B"; a supporting-loop member having a broad base for attachment to the hose or garment and provided with a keyhole engaging slot to engage said stud; and a retainer-loop B' secured to said supporting-strap and provided with a keyhole-slot adapted to engage said stud and retain the supporting-loop in place, substantially as specified.

2. In a garment-supporter, the combination of a supporting-strap; a stud member B secured to said strap by a flexible tape B"; a supporting-loop member having a broad base for attachment to the hose or garment; and a retainer-loop B' secured to said supporting-strap and provided with a keyhole-slot adapted to engage said stud and retain the supporting-loop in place, for the purpose specified.

3. In a garment-supporter, the combination of a stud member; a supporting-loop with a broad attaching-base for securing to the garment; and a retainer-loop having a keyhole-slot therein, adapted to engage said stud member outside the supporting-loop, as specified.

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**756,465. SPINDLE-DRIVING MECHANISM. EDWARD R. BRADLEY, Stonington, Conn., assignor to the Atwood-Morrison Company, Stonington, Conn., a Corporation of New Jersey. Filed Jan. 21, 1904. Serial No. 189,964. (No model.)**



*Claim.*—1. A spindle-driving mechanism comprising two delivery-spindles, a belt for driving them, a receiving-spindle and a band connecting the receiving and delivery spindles arranged to normally hold the delivery-spindles in engagement with their driving-belt.

2. A spindle-driving mechanism comprising two delivery-spindles, a belt for driving them, a receiving-spindle, a band connecting the receiving and delivery spindles arranged to normally hold the delivery-spindles in engagement with their driving-belt and a thread-stop-motion device fitted, when brought into action, to move the delivery-spindles away from their driving-belt.

3. A spindle-driving mechanism comprising two delivery-spindles, a belt for driving them, a receiving-spindle, a band connecting the receiving and delivery spindles and a spring-actuated idler-pulley engaging the band for yieldingly holding the delivery-spindles under tension in engagement with their driving-belt.

4. A spindle-driving mechanism comprising two delivery-spindles, a belt for driving them, a receiving-spindle, a band connecting the receiving and delivery spindles, a spring-actuated idler-pulley engaging the band for yieldingly holding the delivery-spindles in engagement with their driving-belt and a thread-stop-motion-controlled device for moving the delivery-spindles out of engagement with their driving-belt.

5. A spindle-driving mechanism comprising two delivery-spindles, a belt for driving them, a receiving-spindle, a band connecting the receiving and delivery spindles for normally holding the delivery-spindles in engagement with their driving-belt and a thread-stop-motion-controlled device for moving the delivery-spindles out of engagement with their driving-belt comprising cams carried by the spindles and a rocking arm fitted to engage the cams for forcing the spindles apart.

6. A spindle-driving mechanism comprising two delivery-spindles, a belt for driving them, a receiving-spindle, a band connecting the spindles and normally holding the delivery-spindles in engagement with their driving-belt and a thread-stop-motion-controlled device for disengaging the delivery-spindles from the belt comprising cams carried by the spindles, a rock-shaft, an arm thereon fitted to engage the cams for forcing the spindles apart and a second arm fitted to be engaged with the thread tension.

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**756,466. STORAGE AND DISPLAY RECEPTACLE. CHARLES A. BREWER, Chicago, Ill. Filed Jan. 11, 1904. Serial No. 188,583. (No model.)**



*Claim.*—1. A receptacle of the character described comprising a box-body, a cover hinged to the front wall of the box, and a plate adapted to receive a sign mounted on the free margin of the cover, substantially as described.

2. A receptacle of the character described comprising a box-body, a cover hinged to the front wall of the box, and an upright plate adapted to receive a sign removably mounted on and longitudinally of the free margin of the cover, substantially as described.

3. A receptacle of the character described comprising a box-body, a cover hinged to the front wall of the box, a guard-plate mounted on the free margin of the cover, and a catch on the rear wall of the box-body engaging the free margin of said cover behind said guard-plate, substantially as described.

4. A receptacle of the character described comprising a rectangular box-body having a low front wall and a high rear wall, a cover hinged to said front wall, an upright guard-plate removably mounted on and longitudinally of the free margin of the cover, and a spring-catch on the rear wall adapted to snap over the free margin of the cover behind said guard-plate, substantially as described.

5. A receptacle of the character described, comprising a rectangular box-body having opposite upright walls of unequal heights, an inclined cover having a transparent panel hinged to the lower of said walls, and means on the inner surface of the box-body serving to support the contents of the receptacle in an inclined position directly below the transparent panel of the cover, substantially as described.



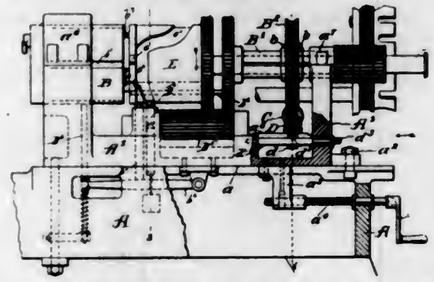
6. A receptacle of the character described comprising a rectangular box-body the longitudinal walls whereof are of unequal heights, an inclined cover having a transparent panel hinged to the lower of said walls, and a ledge on the inner face of the higher wall serving to support the contents of the receptacle in an inclined position directly below and substantially parallel with the transparent panel of the cover, substantially as described.

7. A receptacle of the character described comprising a rectangular box-body, a rectangular cover-frame hinged to one wall of said box-body, said cover-frame having fixed panel settings or supports on three sides thereof and a removable panel setting or support on the fourth side thereof, and a transparent panel removably mounted in said fixed and removable settings of the cover-frame, substantially as described.

8. The herein-described storage and display receptacle comprising the sheet-metal rectangular box-body having a low front wall and a high rear wall, the sheet-metal cover hinged to said front wall and having a glass panel mounted therein, the flat sheet-metal guard-plate removably mounted on and longitudinally of the upper free margin of said cover, the spring-catch engaging said cover behind said guard-plate, and the ledge formed on and longitudinally of the inner face of the rear wall of the box-body, substantially as described.

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**756,467. TURRET MECHANISM FOR AUTOMATIC LATHES. JOHN P. BROPHY, Cleveland, Ohio, assignor to the Cleveland Machine Screw Company, Cleveland, Ohio, a Corporation of Ohio. Filed Aug. 20, 1902. Serial No. 120,346. (No model.)**



*Claim.*—1. In an automatic lathe, the combination of the main frame, a secondary frame movable longitudinally upon the main frame, a turret and mechanism mounted upon said secondary frame for rotating and reciprocating said turret, a driving-shaft bearing slidable on said secondary frame, means for fixing the latter upon said main frame, means for fixing said bearing relatively to said secondary frame, a driving-shaft in such bearing and journaled in stationary bearings in the main frame, and means connecting such shaft with said mechanism, said rotating mechanism including a gear adjustably slidable on the turret-shaft.

2. In an automatic lathe, the combination of a main frame, a secondary frame movable upon such main frame, a turret-spindle upon such secondary frame, a movable bearing upon the latter, a driving-spindle in such bearing and journaled in stationary bearings in the main frame, a gear adjustably secured upon such turret-shaft, and a worm upon such driving-shaft engaging such turret-shaft gear.

3. In an automatic lathe, the combination of a main frame, a secondary frame movable longitudinally upon said main frame, a turret-spindle journaled in said secondary frame, means for securing said frames relatively to each other, a driving-gear rotatively secured to but longitudinally movable upon said spindle, a transverse bearing having sliding connection with said secondary frame, a driving-spindle journaled in said bearing, a gear meshing with said driving-gear and mounted upon said spindle, and means for securing said bearing upon said frame.

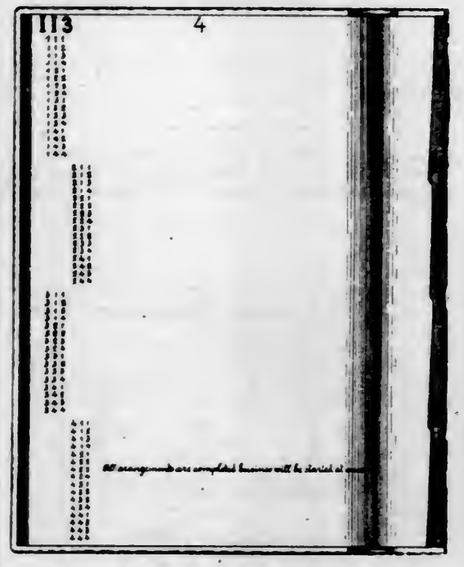
4. In an automatic lathe, the combination of a turret mounted so as to be capable of reciprocation, a cam connected with said turret, a post fixed relatively to the direction of turret reciprocation for engaging said cam and means for periodically disengaging said post from said cam whereby reciprocation may be periodically prevented.

5. In an automatic lathe, the combination of a turret mounted so as to be capable of reciprocation, a cam connected with said turret, a post fixed relatively to the direction of turret reciprocation for engaging said cam and movable out of the path of the latter, means for so moving said post, and a cam and driving means therefor for periodically effecting such movement of the post, whereby reciprocation of the turret may be periodically prevented.

6. In an automatic lathe, the combination of a turret mounted so as to be capable of reciprocation, a cam connected with said turret, a post fixed relatively to the direction of turret reciprocation for engaging said cam and movable into and out of the path of the latter, an oscillatory lever connected with said post and adapted to move it out of the cam-path, and a cam and driving means therefor, adapted to periodically engage and actuate said lever.

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**756,468. CODE-INDEX. CHARLES G. BURKE, Brooklyn, N. Y., assignor of seven-tenths to John Q. A. Whittemore, Boston, Mass. Filed May 26, 1902. Renewed Aug. 4, 1903. Serial No. 168,247. (No model.)**



*Claim.*—1. In a signal-code, an index for signals having a plurality of divisions and subdivisions arranged in accordance to the order and length of the elemental parts of the said signals.

2. In a signal-code, an index for signals having a plurality of divisions indicated by the different lengths of the elemental signals, a plurality of subdivisions arranged in accordance to the length and order of the elemental parts of the said signals.

3. In a signal-code, an index for signals having as many divisions as there are varying lengths and orders of the elemental parts of the said signals.

4. In a signal-code, an index for signals having as many divisions as there are varying lengths and orders of elemental signals of the said signals, the said divisions being arranged in the order of increasing length of the said elemental signals and the sequence of changes in varying lengths of the different elemental signals of each complete signal.

5. In a signal-code, an index for signals having as many grand divisions as there are elemental signals and having as many subdivisions as there are changes in order of the elemental signals.

6. In a signal-code, an index for signals having divisions and subdivisions, the divisions being designated by single elemental signals of the said signals, and the subdivisions being designated by the changes in order of the single elemental signals of the said signals.

7. In a signal-code, an index for signals having a plurality of grand divisions and subdivisions, each grand division containing signals having their first elemental signals of the same length and each of the subdivisions having as many signals as there are orders of a part of the elemental signals of the said signals.

8. In a signal-code, an index for signals having a plurality of grand divisions and subdivisions, each grand division being indicated by the first elemental signal of the said signals and each of the subdivisions being indicated by the orders of the remaining of the said signals.

9. In a signal-code, an index for signals having a plurality of grand divisions and subdivisions each grand division containing all

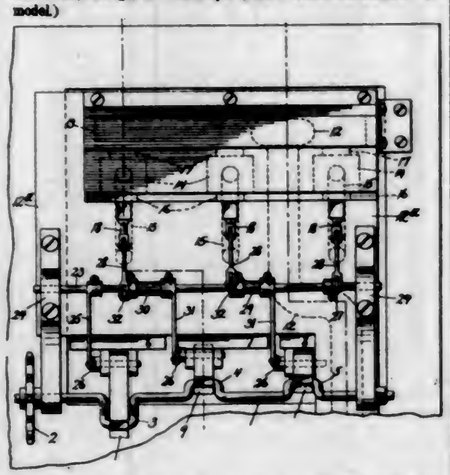
the signals having their first elemental signals of the same length and each of the subdivisions as many signals as there are orders in the varying lengths of the last three elemental signals of the said signal, and each grand division having as many subdivisions as there are orders in the remaining elemental signals of the complete signal.

10. In a signal-code, a book divided into four parts containing signals which have their first elemental signals of the same length and which correspond in length according to the number of the part in which the said signals are located, each page of the parts of the book having the signals indicated by the last three elemental signals and which pages are indicated by the remaining elemental signals whereby the exact location of the page of the book is indicated by the signal.

11. In a signal-code, a book for containing the said signals, the said book having as many parts as there are varying lengths in the elemental signals, each part being designated by the different elemental signals, the pages of the said parts being designated by the orders and lengths of the remaining elemental signals with the exception of the last three elemental signals, the line of the pages being designated by the orders and lengths of the last three elemental signals.

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**756,469. PNEUMATIC MOTOR FOR AUTOMATIC MUSICAL INSTRUMENTS.** CHARLES S. BURTON, Oakpark, Ill., assignor to Melville Clark, Chicago, Ill. Filed Apr. 1, 1903. Serial No. 150,503. (No model.)



*Claim.*—A pneumatic motor comprising a crank-shaft having a plurality of cranks at intervals of less than one hundred and eighty degrees apart about its axis; a like plurality of pneumatics having their moving walls connected with the cranks respectively; valves which control the pneumatics respectively; a rock-shaft parallel with the crank-shaft having a lever-arm connected with the moving wall of the pneumatic at one end of the group, and a second lever-arm operatively connected with the valve for controlling the pneumatic at the other end, and sleeves mounted on the rock-shaft having each two lever-arms connected respectively with a preceding pneumatic and the valve of a succeeding pneumatic.

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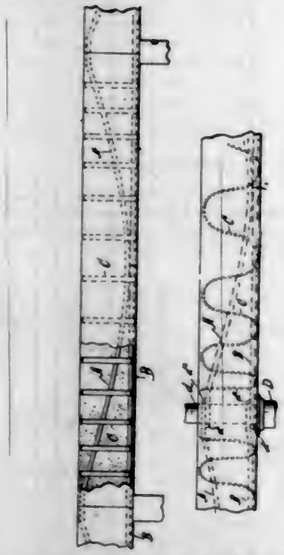
**756,470. MEMORANDUM-HOLDER FOR TELEPHONES.** ORIN G. BYERS, Baltimore, Md. Filed Apr. 17, 1903. Serial No. 153,345. (No model.)



*Claim.*—A memorandum-holder comprising a base-board whose top surface near one end is provided with recesses arranged at opposite sides of said board and equally distant from said end; a plate hinged to said base-board at the end farthest from said recesses and provided on its bottom near its free end with recesses which confront and register with the recesses in the top surface of the base-board; coiled springs each having one end seated in one of the recesses in the base-board and their other ends taking in one of the confronting recesses in the hinged plate and adapted to keep the free end of said plate elevated from said base-board, and a rigid clip-plate having a flange which takes beneath the base-board and which extends upwardly in front of and closes the space between the base-board and the free end of the hinged plate, said clip-plate also having a downwardly-curved upper end which engages the top surface of the hinged plate and forms a stop to prevent the springs from becoming dislodged from the recesses and also serves to clip the memorandum-sheets to hold the same in place on the hinged plate.

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**756,471. CONSTRUCTION OF JOISTS, GIRDERS, OR THE LIKE.** JAMES D. CAREY, Cleveland, Ohio. Filed Nov. 11, 1903. Serial No. 180,731. (No model.)



*Claim.*—1. In a combined cement and metallic structure, the combination with a chord member of a suspension member bent downwardly from each supporting portion of the structure to a point longitudinally central of the chord member meeting the chord member at said point, and vertically-disposed stirrup members supporting the chord member, and means integral with the said members adapted to positively engage the chord member to hold the stirrup members in fixed position, substantially as described.

2. In a combined beton and metallic structure, the combination with a chord member, of a curved suspension member which meets the first-named member at a point longitudinally central thereof, stirrup members secured to and supporting the chord member, and means formed integral with the stirrup members adapted to positively engage the chord member so as to retain said stirrup members in position.

3. In a combined cement and metallic structure, a chord member, a stirrup member supporting the same at one side thereof, and means formed integral with the stirrup member adapted to positively engage the chord member and retain the stirrup member in position, substantially as set forth.

4. In structures comprising combined cement and metal, the combination with a chord member, of a suspension member bent downwardly and meeting the chord member at a point longitudinally central thereof, a stirrup member supporting the chord member, and means formed integral with the stirrup member to retain the stirrup member in position, substantially as described.

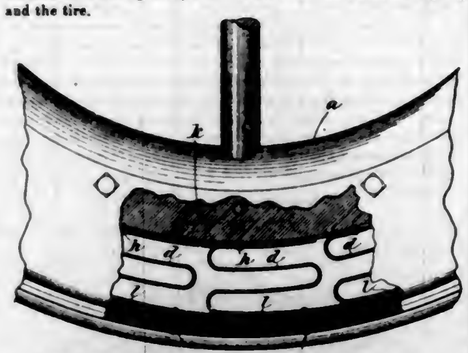
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**756,472. WHEEL.** JAMES CARPENTER, Brooklyn, N. Y. Filed Sept. 19, 1903. Serial No. 173,774. (No model.)

*Claim.*—1. In a wheel-rim, the combination of springs interposed between the felly and the tire, each spring comprising a strip of resilient material bent into a zigzag form and having three loops, one end of which is against the felly and the other end extended so as to rest freely between the outer end of the next spring and the tire.



2. In a wheel-rim, the combination of a band secured around the felly, a plurality of springs secured to the band, each spring comprising a zigzag-shaped strip of resilient material with its outer end extended and resting freely between the outer end of the next spring and the tire.

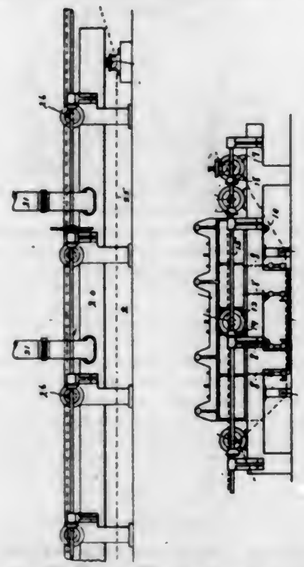


3. In a wheel-rim, the combination of a band secured around the felly, a plurality of springs secured to the band, each spring comprising a zigzag-shaped strip of resilient material having three loops and with its outer end extended so as to rest freely between the outer end of the adjacent spring and the tire.

4. In a wheel-rim, the combination of a tire with projections or notches therein, a plurality of springs between said tire and the felly, each spring comprising a zigzag-shaped strip of resilient material having its outer end extended and engaging one of the notches or projections and resting upon the outer end of an adjacent spring.

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**756,473. MANUFACTURE OF SHEET-IRON.** WALTER CLASPER, McKeesport, Pa. Filed Jan. 24, 1903. Serial No. 140,331. (No model.)

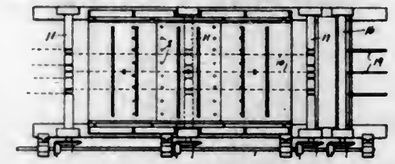


*Claim.*—1. The process of making blued sheet iron or steel, which consists in annealing the sheets, and subsequently raising the sheets separately to a low cherry-red heat by passing them singly and processionally and at the same rate of speed with both faces exposed through a furnace having a mild diffused heat therein, and then insuring the proper blued surface by exposing them to slow air-blast cooling.

2. The process of making blued sheet iron or steel, which consists in annealing the sheets in bulk, subsequently raising the sheets separately to a low cherry-red heat by passing them singly and processionally at the same rate of speed with both faces exposed through a furnace having a mild diffused heat, and then slowly cooling the same by passing them singly and processionally with both faces exposed over an air-blast.

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**756,474. APPARATUS FOR THE MANUFACTURE OF SHEET-IRON.** WALTER CLASPER, McKeesport, Pa. Filed Jan. 24, 1903. Serial No. 140,332. (No model.)



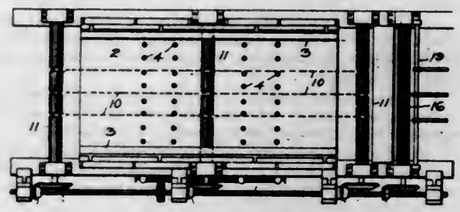
*Claim.*—1. In apparatus for making blued sheet-iron, the combination of a heating-chamber, means for maintaining a uniform heat in said chamber, air-blast apparatus adjacent to said chamber, and mechanism for carrying the sheets in single procession through said heating-chamber and to and past said air-blast mechanism.

2. Apparatus for making blued sheet-iron comprising heating apparatus, a cooling-box adjacent thereto, a series of air-vents in the upper face of said cooling-box, and mechanism for conveying the sheets through said heating apparatus and over said cooling-box.

3. Apparatus for making blued sheet-iron comprising a heating-chamber, a cooling-box adjacent thereto, a series of air-vents at intervals through the top of said box, adjustable slides for said vents, and mechanism for carrying the sheets through said heating-chamber and over said cooling-box.

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**756,475. FURNACE.** WALTER CLASPER, McKeesport, Pa. Original application filed Jan. 24, 1903, Serial No. 140,332. Divided and this application filed Nov. 7, 1903. Serial No. 180,216. (No model.)



*Claim.*—1. In a heating-furnace, the combination of an inclosed heating-chamber, and a series of gas-burners projecting from the bottom thereof and arranged in a plurality of rows and evenly distributed within said chamber to produce a uniform heat therein.

2. In a heating-furnace, the combination of an inclosed heating-chamber, a series of gas-burners projecting from the bottom thereof and arranged in a plurality of rows and evenly distributed within said chamber to produce a uniform heat therein, and means for carrying the articles processionally through said chamber and over said burners.

3. In a heating-furnace, the combination of an inclosed heating-chamber, a series of gas-burners projecting from the bottom thereof and arranged in a plurality of rows and evenly distributed within said chamber to produce a uniform heat therein, and a series of power-driven chains extending through said furnace and underneath the same.

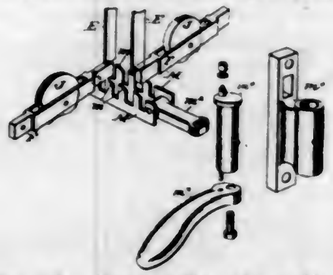
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**756,476. DRILLING-TOOL JOINT.** HENRY J. CONNOLLY and WELLS D. MONTGOMERY, Salem, W. Va. Filed Feb. 26, 1902. Serial No. 95,763. (No model.)



*Claim.*—A drilling-tool joint consisting of a box provided with an internally-threaded socket, a drill-rod provided with a straight or reduced shank, said shank being blank for a portion of its length and threaded at its end, to engage said screw-threaded socket, a sleeve to occupy said blank space on drill-rod, to provide a perfect joint when the parts are assembled.

**756,477. LINOTYPE-MACHINE.** JOHN M. COONEY, Racine, Wis., assignor to Mergenthaler Linotype Company, a Corporation of New York. Filed Nov. 11, 1903. Serial No. 180,756. (No model.)



*Claim.*—1. In a linotype-machine and in combination with a series of cam-yokes, an adjustable mechanism mounted in the machine for the purpose of sustaining said yokes in inoperative positions.

2. In a linotype-machine and in combination with a series of escapements, the bars for actuating the same, cam-yokes for actuating the bars, and an adjustable mechanism to sustain the series of yokes.

3. In a linotype-machine, a series of keyboard cam-yokes, in combination with a movable underlying bar to sustain the series of yokes in inoperative position, and means for adjusting said bar.

4. In a linotype-machine, a series of keyboard cam-yokes and a movable bar underlying said yokes and adapted to lift them in unison.

5. In a linotype-machine and in combination with a series of cam-yokes, an underlying, longitudinal, movable bar or plate, having a series of inclined surfaces to act beneath the respective yokes.

6. In a linotype-machine, the two series of cam-yokes arranged on opposite sides of the median line, in combination with the two underlying supporting bars or plates and means for operating the same.

7. In a linotype-machine, the combination of a series of cam-yokes, a plate M to sustain the same in inoperative positions, an operating-handle, and connections communicating motion from said handle to the plate.

8. In a linotype-machine and in combination with the cam-yokes, the two plates M, the actuating-bar $m^3$, and a vertical shaft connected to said bar and provided with an operating device.

9. In a linotype-machine and in combination with a series of escapement operating-rods, means forming a permanent part of the machine, adapted to lock the rods in an elevated position.

**756,478. PAPER BOX.** FRANK B. DAVIDSON, Brooklyn, N. Y., assignor to Howe and Davidson Company, a Corporation of New Jersey. Filed Mar. 1, 1901. Serial No. 49,442. (No model.)



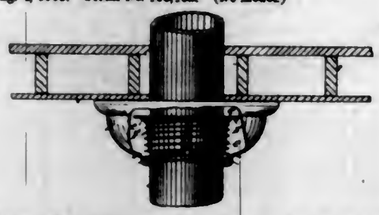
*Claim.*—1. As a new article of manufacture, a knockdown box, each corner of which comprises a double inner lock composed of two flaps, one having a hooked locking-head which is passed from the outside through a side slit adjacent to each corner so that the hooked head will be located in the box and will resist internal pressure, and the other flap engaging within the box behind an ear cut from that side of the box carrying the first-named flap and adjacent to each corner so that external pressure tends to move such parts into further engagement, substantially as and for the purposes set forth.

2. A blank for a knockdown box having at each corner a flap with a hooked locking-head, an angular slit adjacent to the corner with which said head is adapted to engage, a second flap, and an ear cut from that side of the box carrying the first-named flap and extending in the direction of the corner and behind which the second flap engages, substantially as and for the purposes set forth.

3. A blank for a knockdown box having at each corner a flap with a hooked locking-head, a slit adjacent to the corner with which the flap is adapted to engage, a second flap, and a U-shaped slit forming an ear which extends in a direction toward the corner, and behind which the second flap engages, said second flap being provided at its end with a projection of approximately the same width as said ear and which is adapted to enter the U-shaped slit and to have interlocking connection at its side edges with the ends of said U-shaped slit.

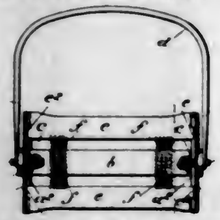
4. A blank for a knockdown box adapted to form a bottom, side and end walls, the ends of said side and end walls at each corner of the box being provided one with a flap provided with a hooked locking-head and the other with a slit with which the flap is adapted to engage, a second flap, and a U-shaped slit forming an ear which extends toward the corner, and behind which the second flap engages, said flaps being formed by means of an indirect cut which in its inner part is oblique and at its outer part is perpendicular to the side of the blank which it intersects.

**756,479. CEILING-PLATE.** JULIUS R. DROSINSKI, Erie, Pa. Filed Aug. 4, 1903. Serial No. 168,182. (No model.)



*Claim.*—The combination of a ceiling-plate having in its central portion a cup-shaped recess, a collar adapted to be secured to a pipe within the upper portion of said recess, and a retracting-spring inclosed within said recess, connecting the lower part of the plate with the collar in the upper part thereof, substantially as and for the purpose set forth.

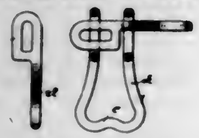
**756,480. EXERCISING DEVICE.** WALLACE R. DUNBAR, Everett, Mass. Filed July 10, 1903. Serial No. 164,964. (No model.)



*Claim.*—1. A device of the class described, comprising end members having grooves in their inner faces, a central block to which said end members are secured, laterally-movable blocks at the opposite sides of the central block and provided with lugs or projections which fit in the grooves of the end members, and springs placed between the laterally-movable blocks and the central block, substantially as shown and described.

2. A device of the class described, comprising end members having grooves in their inner faces, a central block to which said end members are secured, laterally-movable blocks at the opposite sides of the central block and provided with lugs or projections which fit in the grooves of the end members, and springs placed between the laterally-movable blocks and the central block, and the bail detachably connected centrally with the outer sides of the end members, substantially as shown and described.

**756,481. CHAIN.** JEAN DUPUIS, Montpellier, France. Filed May 25, 1903. Serial No. 158,719. (No model.)



*Claim.*—1. A chain composed of links detachably connected together, each link having widened portion, and double parallel closed portions at the end farthest from said widened portion, with the loops of one link engaged with the widened portion of the next adjacent.

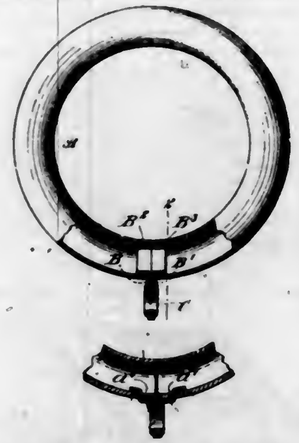
2. A chain composed of links, each link having double parallel portions at the end opposite the widened portion, the links having lateral projecting feet, and arresting-rings with lateral projections, as and for the purpose specified.

3. A chain composed of links detachably connected together, the links having lateral projections or feet near one end, and a lateral projection near the opposite end, and arresting-rings having lateral projections secured to the said lateral projections of the links, as set forth.

4. A link formed with widened portion at one end, and double parallel portions at the other end, an arresting-ring engaging said parallel portions and with laterally-projecting feet near the widened end for attachment to a bucket, as and for the purpose specified.



**756,482. CURTAIN-RING.** WILLIAM DUBEY, Brooklyn, N. Y. Filed Feb. 19, 1904. Serial No. 194,314. (No model.)



*Claim.*—1. A curtain-ring comprising an annular tube, strips or plates located at the junction of the ends of said tube and provided with projections extending within said tube, and a connecting member which holds together the outer portions of said strips.

2. A curtain-ring comprising an annular tube, strips located at the junction of the ends of said tube and provided with projections extending in opposite directions within said tube, and a connecting member secured to the outer portions of said strips.

3. A curtain-ring comprising an annular tube, strips located at the junction of the ends of said tube and provided with projections located within the tube, and an eyelet connecting the outer portions of said strips.

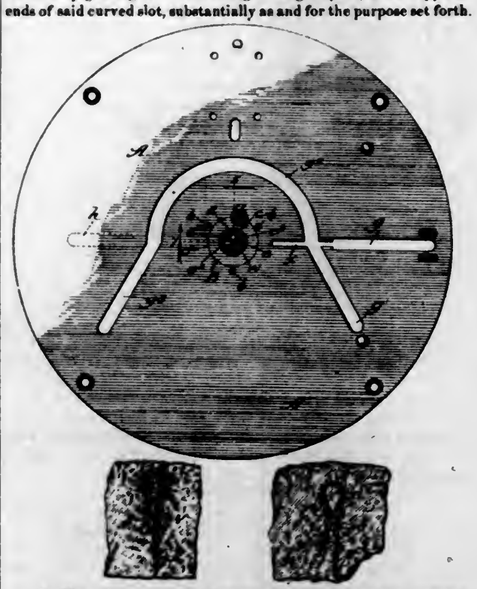
4. A curtain-ring comprising an annular tube, strips located at the junction of the ends of said tube and provided with projections extending within the tube along the inner surface thereof, and a member connecting the outer portions of said strips.

5. A curtain-ring comprising an annular tube, strips located at the junction of the ends of said tube and provided with projections located within the tube and extending in opposite directions along the inner surface thereof, and an eyelet connecting the outer portions of said strips.

**756,483. ATTACHMENT FOR BUTTONHOLE-SEWING MACHINES.** LOUIS ECKER, Chicago, Ill., assignor to H. Ecker & Sons, Chicago, Ill., a Firm. Filed Aug. 4, 1902. Renewed Mar. 2, 1904. Serial No. 196,240. (No model.)

*Claim.*—1. The attachment for a buttonhole-sewing machine, comprising the button-carrying plate provided with the curved clamp-guiding slot, the guide-slot extending from one end of said curved slot and having a cutter-slot extension, and clamp-guiding slots extending divergently from the opposite ends of said curved slot, substantially as and for the purpose set forth.

2. The attachment for a buttonhole-sewing machine, comprising, in combination, the button having an elongated needle-opening in its head and provided in said head with a cord-orifice adjacent to said needle-opening and nearer to the inner than to the outer end thereof, and the bed-plate carrying centrally said button and provided with the curved clamp-guiding slot, the guide-slot extending from one end of said curved slot and having a cutter-slot extension, and clamp-guiding slots extending divergently from the opposite ends of said curved slot, substantially as and for the purpose set forth.



3. The attachment for a buttonhole-sewing machine, comprising, in combination, the button having an elongated needle-opening in its head and provided in said head with a cord-orifice having a cord-groove extending from it into said needle-opening nearer to the inner than to the outer end thereof, and the bed-plate carrying centrally said button and provided with the curved clamp-guiding slot, the guide-slot extending from one end of said curved slot and having a cutter-slot extension, and clamp-guiding slots extending divergently from the opposite ends of said curved slot, substantially as and for the purpose set forth.

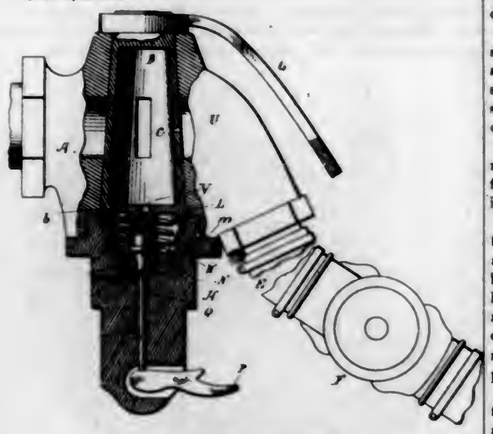
4. The attachment for a buttonhole-sewing machine, comprising, in combination, the button having an elongated needle-opening in its head and provided in said head with a cord-orifice having a cord-groove terminating at one side in a cord-deflecting nose, and extending from said orifice into the needle-opening nearer to its inner end than to its outer end, and the bed-plate carrying centrally said button and provided with the curved clamp-guiding slot, the guide-slot extending from the end of said curved slot and having a cutter-slot extension, and clamp-guiding slots extending divergently from the opposite ends of said curved slot, substantially as and for the purpose set forth.

**756,484. AIR-PIPE-COUPLING PRESSURE-RELIEF VALVE.** DAVID W. ELLIOTT and JOHN B. RUBY, Newcastle, Pa. Filed Dec. 1, 1903. Serial No. 183,341. (No model.)

*Claim.*—1. In an air-pipe-coupling pressure-relief valve, the combination with an angle-cock, having a hollow plug-valve provided with an additional or relief port arranged to communicate with the coupling-hose when said plug is turned to close the train-pipe, a relief-valve embodied in said angle-cock, said hollow plug-valve having a second relief-port admitting air from said plug and hose above said relief-valve, said angle-cock having a duct below said relief-valve open to the atmosphere, and hand-operated means for raising said relief-valve whereby said hose and plug may be discharged.

2. In an air-pipe-coupling pressure-relief valve, the combination with an angle-cock having a hollow plug-valve provided with an additional or relief port arranged to communicate with the coupling-hose when said plug is turned to close the train-pipe, a relief-valve embodied in said angle-cock, a spring arranged to hold said relief-valve yieldingly to its seat, said hollow plug-valve having a second relief-port admitting air from said plug and hose above said relief-valve, said angle-cock having a duct below said relief-valve open to the atmosphere, and hand-operated means for raising said relief-valve whereby said hose and plug may be discharged.

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dividual stirrer-arm or through the column itself; substantially as described.

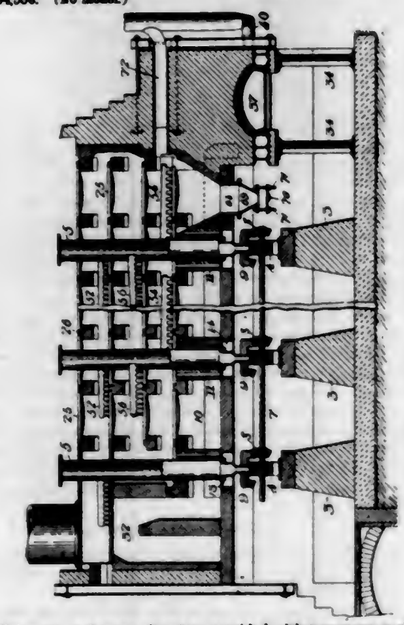
5. In a roasting-furnace, a rotatory column provided with a stirrer-arm having a series of plow-points along its forward edge and a second series of plow-points along its rear edge, the second series being opposite the intervals between the members of the first series and of gradually-decreasing size from the inner toward the outer end of the arm; substantially as described.

6. In a roasting-furnace, a rotatory column provided with a stirrer-arm having a series of plow-points or teeth presenting angular fronts to the material stirred, said teeth decreasing in size from the inner toward the outer end of the arm; substantially as described.

7. A furnace provided with a combustion-chamber, a heating-flue into which the products of combustion pass from said chamber, a roasting or desulfurizing chamber consisting of a plurality of hearths one above the other, said hearths being located above the heating-flue and provided with stirrer and conveyer mechanism, and an uptake and downtake chamber into which the heating-flue discharges, said uptake and downtake chamber being located at the rear of the lower hearths and extending up to the level of the upper hearth, substantially as described.

8. A furnace provided with a combustion-chamber, a heating-flue into which the products of combustion pass from said chamber, a roasting or desulfurizing chamber consisting of a plurality of hearths one above the other, said hearths being located above the heating-flue and provided with stirrer and conveyer mechanism, and an uptake and downtake chamber into which the heating-flue discharges, said uptake and downtake chamber being located at the rear of the lower hearths and extending up to the level of the upper hearth, and air-heating flues extending along the bottom of the heating-flue and opening into said uptake and downtake chamber; substantially as described.

756,485. ROASTING OR DESULFURIZING FURNACE. FREDERIC J. FALDING, New York, N. Y. Filed June 14, 1901. Serial No. 64,556. (No model.)



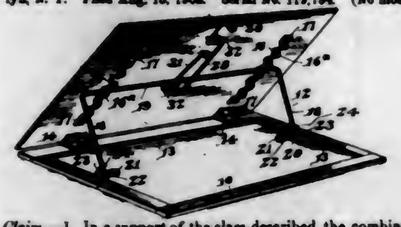
*Claim.*—1. A furnace-chamber, provided with transverse arches spaced apart along the length of the chamber and independent of each other, each having its individual buckstaves and tie-rods, and intervening brickwork occupying the spaces between the arches and completing the furnace side walls; substantially as described.

2. A roasting-furnace provided with a rotatory hollow column having hollow stirrer-arms, means for creating a flow of a cooling medium through said column and arms, and means for controlling independently the flow through the column and through the several stirrer-arms; substantially as described.

3. A roasting-furnace provided with a rotatory hollow column having hollow stirrer-arms, a pneumatic fan for inducing a flow of air through said column and arms and means for controlling independently the flow of air through the column and through the several stirrer-arms; substantially as described.

4. A roasting-furnace, provided with a rotatory hollow column having hollow stirrer-arms, a pneumatic fan for occasioning a flow of air through said column and arms, individual pipes leading to said arms and valves for controlling the amount of flow through any in-

756,486. ADJUSTABLE SUPPORT. ANDREW FLEMING, Brooklyn, N. Y. Filed Aug. 15, 1902. Serial No. 119,734. (No model.)



*Claim.*—1. In a support of the class described, the combination with a base comprising a rectangular open frame, of a supporting-platform pivoted to the frame, a rack-bar secured to the rear face of the platform, a pair of stationary pivot-pins located upon the opposing inner edges of the base-frame, a holding device comprising a pair of side arms journaled upon the pins and connected by a cross-bar that engages the rack, said holding device fitting within the base-frame, and coiled springs surrounding and supported by the stationary pivot-pins, said springs having offset arms that bear against the arms of the holding device to maintain the cross-bar in engagement with the rack.

2. In a support of the class described, the combination with relatively movable members, one of which is provided with a shoulder, of a holding device mounted upon the other member and arranged to engage the shoulder, and actuating means separate from the holding device and mounted upon the member having the shoulder, said means being movable into and out of engagement with the holding device to move the same out of engagement with the shoulder.

3. In a support of the class described, the combination with members hinged together, one of which is provided with a shoulder, of a holding device pivoted upon the other member and arranged to engage the shoulder, and an actuating device separate from the holding device and pivoted to the member having the shoulder, said actuating device being movable into engagement with the holding device to move the latter out of engagement with the shoulder.

4. In a support of the class described, the combination with relatively movable members, one of which is provided with a rack, of a holding device pivotally mounted upon the other member and engaging the rack, and a slide-bar journaled at its ends upon the member having the rack and movable into a position to engage the holding device and maintain it out of engagement with the rack, said slide-bar being movable upon the holding device.



5. In a support of the class described, the combination with relatively movable members, of a holding device movably mounted on one of the members for securing said members against relative movement in one direction, and a slide-bar journaled upon one of the members and mounted to swing into engagement with the holding device to move the same to an inoperative position, said holding device being slidable upon the bar.

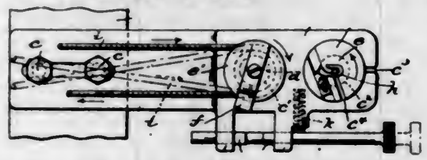
6. In a support of the class described, the combination with relatively swinging members, one of which has a plurality of shoulders, of a holding device hinged to the other member and movable into engagement with the shoulders to hold the members against relative movement in one direction, and a slide-bar journaled upon one of the members and arranged to swing into engagement with the holding device to move the same into inoperative position with relation to the shoulders, said holding device being slidable on the bar.

7. In a support of the class described, the combination with relatively movable members, of a holding device arranged to hold the members against movement, and means for moving the holding device, said means comprising a single wire one portion of which is offset to form a slide-bar, said wire being journaled at the opposite ends of the offset portion to one of the members, one end constituting a handle, the other end being bent within the offset portion and secured out of alinement with the journals thereof.

8. In a support of the class described, the combination with relatively movable members, of a rack carried by one member, a holding device carried by the other member and movable into engagement with the rack, a slide-bar mounted upon one of the members and arranged to move the holding device out of engagement with the rack, and an offset finger secured to the slide-bar and constituting a latch to hold the members together.

9. In a support of the class described, the combination with relatively swinging members hinged together, of a holding device for maintaining the members in angular relation, means secured to one of the members for moving the holding device to an inoperative position to permit the swinging of the members, said means including a handle portion that projects from the free edge of one member and is arranged to engage over the corresponding edge of the other member to fasten said members together.

756,487. TWISTING-HEAD FOR THREAD-DRESSING MACHINES. GEORGE A. FREDENBURGH, Pawtucket, R. I. Filed Oct. 3, 1903. Serial No. 175,693. (No model.)



*Claim.*—1. In a twisting-head for a thread-dressing machine, having a whirl-shaft driven by power thereon, the combination of a fixed bracket provided with a slotted opening in its front portion and two integral side extensions; a stud-shaft mounted in said bracket and having an integral annular flange at one end and a spur-gear rigid at its opposite end thereof, and said stud-shaft, its flange and gear provided with a radial slotted opening arranged to meet in alinement with the slotted opening in said bracket; thread-guides fixed upon the flange and gear of said stud-shaft, to direct the thread to and from the slotted opening in the same; a second stud-shaft mounted in said bracket and having an integral grooved whirl at one end and a spur-gear rigid at its opposite end thereof to engage the gear of the first-mentioned stud-shaft; a band or cord connection from the whirl of second-mentioned stud-shaft to the whirl-shaft of the machine; an arm fixed upon the whirl of second-mentioned stud-shaft; a slide-rod mounted in the extensions of said bracket and having a rigid arm arranged to swing into the path of the arm of the whirl of second-mentioned stud-shaft; and means to hold said slide-rod in the position desired upon said bracket, substantially as set forth.

2. In a twisting-head for a thread-dressing machine, having a whirl-shaft driven by power thereon, the combination of a fixed bracket provided with a slot in its front portion and two integral side extensions; a stud-shaft mounted in said bracket and provided with a radial slot; a gear rigid upon said stud-shaft and provided with a radial slot; a thread-guide fixed upon said stud-shaft and said gear; a second stud-shaft mounted in said bracket and having an integral whirl provided with a groove; a gear rigid upon said second-mentioned stud-shaft to engage the first said gear; a projecting arm fixed upon the whirl of said second-mentioned stud-shaft; a band or cord connection from the whirl of second-mentioned stud-shaft to the whirl-shaft of the machine; a slide-rod mounted in said bracket, and carrying a rigid projecting arm which has freedom of movement between the extensions thereof, and so arranged that the said rod may be moved to swing its arm in the path of either rotative direction of the first-mentioned arm, whereby the slotted openings of the said parts are brought in alinement with each other, substantially as shown and for the purpose specified.

756,488. EYEGLASSES. FRANCIS X. GARTLAND, Philadelphia, Pa. Filed Jan. 7, 1903. Serial No. 138,174. (No model.)



*Claim.*—1. In eyeglasses, frames and lenses therein, posts on the frames having receptacles at their tops formed of top, side, and bottom walls, and open ends, and the top wall having at its center an outward swell which is of greater height than the sides and open ends of the receptacle.

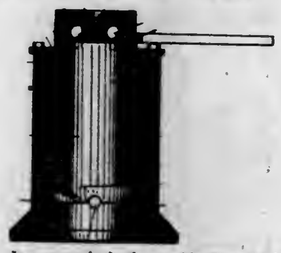
2. In eyeglasses, frames and posts thereto attached, an open-ended receptacle on each post, a spherical swell in the top of the receptacle, a spring having spherical swells at its ends which are adapted to enter under the swells in the receptacles, guards having a swell at one end which is adapted to enter under the swell of the spring, and means to force the aforesaid swells to each other and confine them within the receptacle.

3. In eyeglasses, frames having posts with receptacles for a spring and guards, the top wall of the receptacle having an outward spherical swell, a spring and guards having swells which are adapted to interlock with each other and with the receptacle swell, and locking-plates having springs with spherical swells adapted to enter the receptacles under the swells aforesaid and force all of the aforesaid swells to each other for confinement of the parts aforesaid within the receptacle.

4. In eyeglasses, frames having posts with receptacles for a spring and guards, the top wall of the receptacle having an outward spherical bulge, a spring and guards having spherical bulges which are adapted to interlock with each other and with the receptacle bulge, and a locking-plate adapted to enter the receptacle and having spherically-bulged resilient means whereby the bulges aforesaid are forced to each other for confinement of the parts aforesaid within the receptacle.

5. In eyeglasses, posts joined to the frames at one end, and at their opposite or outer end to a receptacle formed by a plate having an outward spherical swell or bulge at its center which forms the top wall, the side and bottom walls being formed by rectangular bends which leave open ends for the insertion of the spring and guards, the bottom of the receptacle then being secured to the post's top.

756,489. SCREW LIFTING-JACK. MARION L. GASKILL, Columbus, Ohio, assignor of one-half to Jeremiah S. Cloud, Columbus, Ohio. Filed Oct. 14, 1903. Serial No. 177,017. (No model.)



*Claim.*—1. In a screw-jack, the combination of a jack body or receptacle, a flexible thread of flat tape-like form attached thereto, and a spindle to support the load having a projection to engage said thread.

2. In a screw-jack, the combination of a jack body or receptacle, a removable thread of flat tape-like form attached thereto, and a spindle to support the load having a projection to engage said thread.

3. In a screw-jack, the combination of a jack body or receptacle, a thread attached thereto consisting of a coiled flexible tape hav-

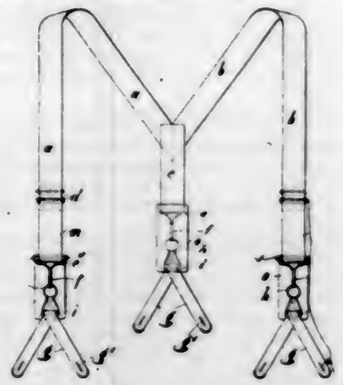
ing a longitudinal corrugation, and a load-supporting spindle having a projection to engage said thread.

4. In a screw-jack, the combination of a jack body or receptacle, a flexible thread therein, a load-supporting spindle having a projection to engage said thread said projection being provided with antifriction-rollers.

5. In a screw-jack, the combination of a jack body or receptacle, a flexible thread therein, a load-supporting spindle 3, a projection $3^b$ on the lower portion of said spindle to engage said thread, a ratchet 5 secured on the upper portion of said spindle, a pawl-containing lever for operating said ratchet, a keeper-ring 7 for said lever, a load-supporting cap supported on the spindle on antifriction-bearings above the ratchet, said ratchet and spindle being rotatable independently of the cap.

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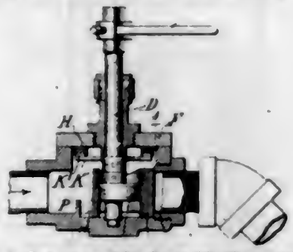
**756,490. SUSPENDERS.** AUREL GIESEN, Krefeld, Germany. Filed Jan. 3, 1903. Serial No. 137,717. (No model.)



*Claim.*—In suspenders a pair of unelastic shoulder-bands *a*, *b* held together at the rear by an unelastic connecting-piece *c*, clamping-buckles *d* at the front ends of said shoulder-bands to form adjustable loops *m*, sliding hooks *e f* connected to said loops *m* and the connecting-piece *c*, respectively, in combination with coupling-pieces *h i* hung by their upper ring-shaped parts *h* in the hook parts *f* of said sliding hooks, elastic buttoning-straps *g*, *g* passed through the lower triangular parts *i* of said coupling-pieces *h*, *i* so as to allow self-adjustment of these buttoning-straps, protecting-pieces *o* placed behind the hooks *e f* and the coupling-pieces *h*, *i*, so as to protect the linen from coming in contact with said metal hooks and coupling-pieces, the whole as described and illustrated and for the purpose set forth.

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**756,491. STEAM-VALVE FOR TRAIN-PIPES.** EDWARD R. GOLD, New York, N. Y. Filed Sept. 8, 1903. Serial No. 172,280. (No model.)



*Claim.*—1. In a steam-valve in combination, a rotatable operating-stem substantially fixed against longitudinal movement, a pair of interengaging members one fixed and the other rotatable with the operating movement of said stem, said members being yieldingly held in engagement so as to hold the valve fixed in the position to which it is moved under ordinary conditions, and to yield to permit the movement of the valve by hand.

2. In a steam-valve in combination, a rotatable operating-stem substantially fixed against longitudinal movement, a non-rotatable member having a beveled tooth, a member rotatable with said stem and having teeth engaging the tooth of said fixed member, and one of said members being pressed against the other with a yielding pressure so as to permit a nice adjustment of the opening and to hold the valve fixed in position under ordinary conditions, but to permit its movement by hand.

3. In a steam-valve in combination, a valve-casing, a valve proper therein, a rotatable operating-stem, said valve proper being moved in a direction transverse to said stem, and means within said casing for holding said valve impositively locked in position closely adjacent to its closed position.

4. In a steam-valve in combination, a valve-casing, a valve proper therein, a rotatable operating-stem, said valve proper being moved in a direction transverse to said stem, and means within said casing for holding said valve impositively locked in its wide-open position.

5. In a steam-valve in combination, a valve-casing carrying a toothed member H, an operating-stem carrying a spring member K with teeth engaging the teeth of said member H and pressed thereagainst with a spring-pressure, said teeth being beveled so that said valve is held fixed under ordinary conditions, but is movable by hand

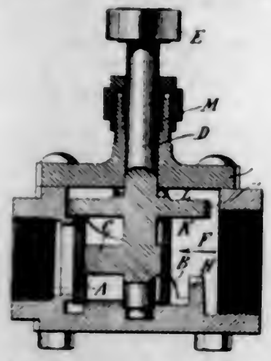
6. In an end train-pipe valve in combination, a valve-casing having connections at opposite ends for the train-pipe, a valve proper movable in the axial line of the train-pipe, a seat at one end of the casing against which the valve proper may rest and close the train-pipe at such end, the movement of the valve proper toward the opposite end of the casing being limited to prevent closing the train-pipe at said opposite end.

7. In an end train-pipe valve in combination, a valve-casing having connections at opposite ends for the train-pipe, a valve proper movable in the axial line of the train-pipe, a seat at one end of the casing against which the valve proper may rest and close the train-pipe at such end, and a stop in said casing for limiting the movement of the valve proper toward the opposite end of the casing.

8. In an end train-pipe valve in combination, a valve-casing having connections at opposite ends for the train-pipe, a valve proper movable in the axial line of the train-pipe, a seat at one end of the casing against which the valve proper may rest and close the train-pipe at such end, the movement of the valve proper toward the opposite end of the casing being limited to prevent closing the train-pipe at said opposite end, and means for permitting a nice adjustment and locking said valve in various positions to which it may be moved.

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**756,492. STEAM-VALVE FOR TRAIN-PIPES.** EDWARD R. GOLD, New York, N. Y. Filed Nov. 23, 1903. Serial No. 182,426. (No model.)



*Claim.*—1. In a steam-valve, an impositive lock comprising a pair of members, one within the valve-casing and another extending into said casing to engage the first and accessible from outside of the casing.

2. In a steam-valve, an impositive lock comprising a pair of members, one carried by said operating-stem within the valve-casing and another carried in a socket attached to said casing from the outside.

3. In a steam-valve, an impositive lock comprising a pair of members, one carried by said operating-stem within the valve-casing and another extending into said casing to engage the first, a socket carrying the latter member, and a spring within said socket bearing against such member, said socket being attached to said casing from the outside.

4. In a steam-valve, an impositive lock comprising a pair of members, one carried by said operating-stem within the valve-casing and another consisting of a bolt O extending into the casing and engaging the first-mentioned member, a socket Q carrying said bolt, a spring in said socket pressing said bolt forward, and a cap R on the outer end of said socket.

5. In a steam-valve, in combination, a rotatable operating-stem D, a valve proper A, and an impositive lock including a member held against upward movement and engaging the top of said valve proper to prevent upward movement of the latter.

6. In a steam-valve, a valve-stem D having an eccentric C, and a locking member K formed integrally with said stem.

7. In a steam-valve, in combination, a casing F having an integral valve-seat at one end, a cover J having a stuffing-box M formed integrally therewith, a valve-stem D carrying a locking member K, and a socket Q carrying a cooperating locking member O.



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**756,493. HYDROCARBON-BURNER.** JOHN GRAHAM, Philadelphia, Pa. Filed Nov. 26, 1898. Serial No. 697,504. (No model.)



*Claim.*—1. In a hydrocarbon-burner, the combination of a hollow member, a burner-cap surmounting the same, a vaporizing-drum suspended within the hollow member, a vertically-disposed heat-conducting member projecting through the vaporizing-drum and burner-cap, an oil-supply tube delivering to the vaporizing-drum and a vapor-discharge pipe leading from the vaporizing-drum to the lower portion of the hollow member and discharging upwardly therein as means for delivering the vapor from the drum mixed with air to the burner-cap.

2. In a hydrocarbon-burner, the combination of a hollow member, a burner-gauze surmounting the same, a vaporizing-drum suspended within the hollow member, a heat-conducting member connected with the vaporizing-drum and projecting through the burner-gauze, and regulatable means for delivering the vapor from the vaporizing-drum to the lower part of the hollow member, substantially as described.

3. In a hydrocarbon-burner, the combination of a hollow member, a burner-gauze surmounting the same, a vaporizing-drum suspended within the hollow member, a heat-conducting member connected with the vaporizing-drum and projecting through the burner-gauze, regulatable means for delivering the vapor from the vaporizing-drum to the lower part of the hollow member, adjustable air-intake means in the lower part of said hollow member and means for conducting the vapor mixed with air to the burner-gauze.

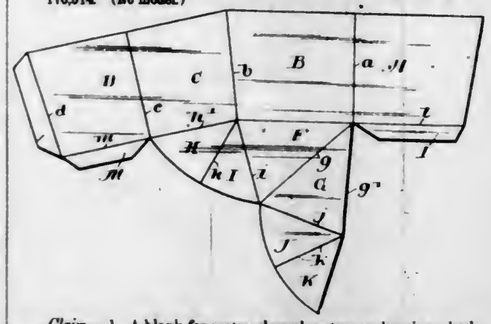
4. In a hydrocarbon-burner, the combination of a mixing-chamber, a superheating-chamber, a vaporizing-chamber within the superheating-chamber, a tube leading from the vaporizing-chamber and discharging into the mixing-chamber, and a heating-tube provided with a burner-tip and extending through the vaporizing-chamber and communicating with the mixing-chamber, substantially as described.

5. In a hydrocarbon-burner, the combination of a mixing-chamber, a superheating-chamber, a vaporizing-chamber within the superheating-chamber, a tube leading from the vaporizing-chamber and discharging into the mixing-chamber, a heating-tube provided with a burner-tip and extending through the vaporizing-chamber and communicating with the mixing-chamber, and means within the superheating-chamber for the initial heating of the vaporizing-chamber, substantially as described.

6. In a hydrocarbon-burner, the combination of a mixing-chamber, a superheating-chamber having communication therewith, the vaporizing-chamber within the superheating-chamber, a burner-gauze surmounting the superheating-chamber, a tube leading from the vaporizing-chamber and discharging into the mixing-chamber, a heating-tube provided with a burner-tip and extending through the vaporizing-chamber and burner-gauze and communicating with the mixing-chamber, and mannally-operative means for closing communication between the mixing-chamber and the superheating-chamber and opening communication between the mixing-chamber and the heat-tube and vice versa.

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**756,494. SECTOR-SHAPED CARTON.** JOEL C. GRAHAM, Marseilles, Ill., assignor to Howe and Davidson Company, East Orange, N. J., a Corporation of New Jersey. Filed Aug. 24, 1903. Serial No. 170,514. (No model.)

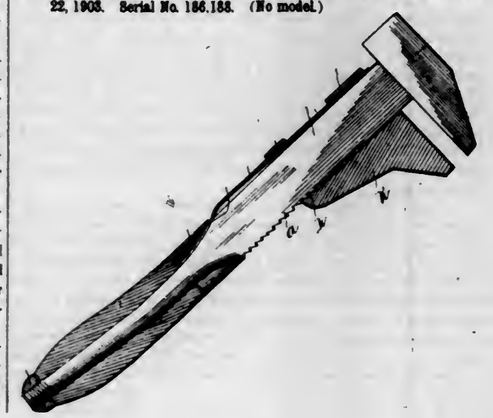


*Claim.*—1. A blank for sector-shaped cartons embracing a body portion which is divided transversely by score-lines into four main sections adapted to form the radial walls and arc walls of the carton and is provided on two of said sections with a flap for forming the bottom of the carton consisting of two triangular sections, shaped to conform to the bottom of the carton and two pairs of gusset-sections forming extensions of the two triangular bottom-sections adapted to be folded inwardly inside of the bottom-sections; the said blank also having pasting-flaps for joining one of the bottom-sections to one of the body-sections and for joining one of the gusset-sections to one of said body-sections.

2. A sector-shaped carton comprising two radial walls and two arc walls, which walls are joined to form a tubular body, a bottom-wall embracing two triangular bottom-sections which are joined to each other and to the radial walls of the tubular body, and two triangular pairs of folding gusset-sections, each pair of which is attached at one edge to one of the bottom-sections, and at its other edge to one of the arc walls of the tubular body.

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**756,495. WRENCH.** ALMON B. GREEN, Lyons, Ohio. Filed Dec. 22, 1903. Serial No. 186,188. (No model.)

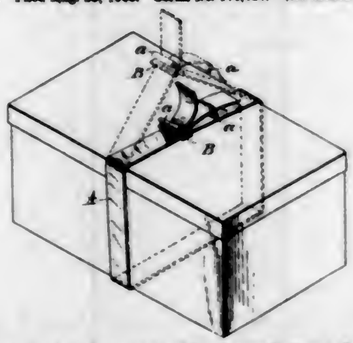


*Claim.*—1. A sliding-jaw wrench comprising a fixed jaw with shank having serrations upon its edge, a sliding jaw mounted upon said shank portion and having teeth for engagement with said serrations, a straight spring unattached to said shank portion, a collar frictionally holding one end of said spring over a shoulder on the rear edge of the shank of the fixed jaw, means for holding said collar against the spring, the latter adapted to normally hold the sliding jaw in an adjusted position, as set forth.

2. A sliding-jaw wrench comprising, in combination with the shank portion of the fixed jaw having serrations thereon, a sliding jaw mounted upon said shank portion and having teeth for engagement with said serrations, a flat spring unattached to the shank portion, a collar fitted over said shank portion, and adapted to frictionally hold said spring against a beveled shoulder upon the rear edge of the shank portion of the fixed jaw, a handle bearing against said collar, and a threaded nut adapted to force the handle and collar against said spring, as set forth.

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**756,496. FASTENER.** CHARLES G. HARGER, Jr., Rochester, N. Y. Filed Aug. 25, 1903. Serial No. 170,727. (No model.)



*Claim.*—1. As an improved article of manufacture, a fastening comprising, a slide having a single opening, a flexible member extending slidingly through said opening and provided at the outer side of the slide with a clamping projection or stop, and a second flexible member adapted to pass through said slide-opening in the same direction as the other member and be clamped to the upper side of the slide by said projection or stop; a pull on the clamping or locking member serving to release the clamped member and run it through the slide.

2. As an improved article of manufacture, a fastening comprising, a looped or folded strand and a slide having a single opening through which the members of the strand project in the same direction and in which they are held slidingly face to face; one strand member being provided at the outer side of the slide with a stop or projection adapted to engage the outer face of the slide and the other strand member and lock said member to said outer face against inward movement through the slide, when the loop portion of the strand tightly encircles an object, and an outward pull on said locking member serving to release the clamped end of the strand.

3. As an improved article of manufacture, a fastening comprising, a looped or folded strand, and a flat slide having a single opening through which the members of the strand project in the same direction and in which they are held slidingly face to face; one strand member being provided at the outer side of the slide with an integral stop or projection adapted to engage the outer face of the slide and the other strand member and lock said member to said outer face against inner movement through the slide when the looped portion of the strand tightly encircles an object, and an outward pull on the locking member serving to release the clamped member of the strand.

4. As an improved article of manufacture, a fastener comprising, a looped flat strand, provided with transverse tucks near its ends and a slide in the form of a flat oblong loop encircling the strand members slidingly between the looped and tucked portions thereof and holding the said members slidingly together, the tuck on one strand member being constructed to engage the outer face of the slide and the adjacent portion of the other strand member and lock said portion against sliding inwardly through the slide when the loop portion of the strand tightly encircles an object, and an outward pull on the said locking member serving to release the clamped end of the strand.

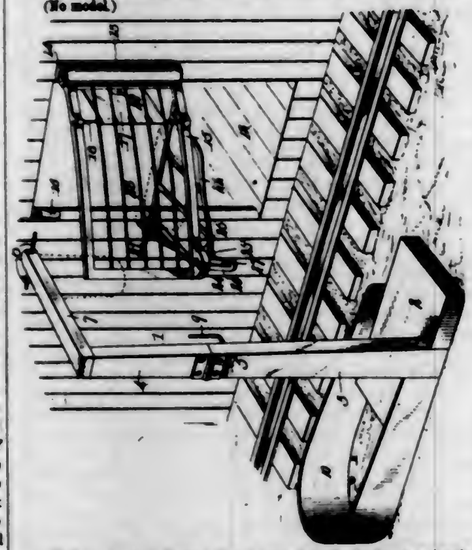
**756,497. PIVOTAL RUNNING-GEAR.** WILLIAM P. HENRY, Central City, Ky. Filed Dec. 4, 1902. Serial No. 133,890. (No model.)



*Claim.*—In a pivotal running-gear coupling, the combination of a front axle, a bolster secured thereon, a fifth-wheel supported upon and attached to the said bolster, a cap fixed on top of the fifth-wheel, a rigid plate having a pivotal connection below the fifth-wheel with the said bolster and above the fifth-wheel with said cap whereby the vibration of the body of the vehicle with respect to the axle is taken up by the said plate, the said plate being provided with a slot 12 and said fifth-wheel passing through the said slot, a rod projecting from the free end of the said plate, a sleeve movably retained on the rod, bars having ends secured to the sleeve on opposite sides and diverging rearwardly, a rear axle, and attachments joining the said bars and the rear axle substantially as described.

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**756,498. MAIL-BAG CATCHER.** WILLIAM A. HORRALL, Indianapolis, Ind., assignor of one-half to Charles M. Hammond and John B. Pasquier, Indianapolis, Ind. Filed Jan. 14, 1904. Serial No. 189,023. (No model.)



*Claim.*—1. In a device of the class described, the combination with a car and its doorway, of a bag-catching member pivoted adjacent to the latter to swing in a horizontal plane, a slotted guide-plate connected with the member, and a locking device engaging the guide-plate for securing the latter against movement.

2. In a device of the class described, the combination with a car and its doorway, of a bag-catching member pivoted adjacent to the latter to swing in a horizontal plane, a pivoted bag-delivering member adapted to swing to a position beneath the catching member, and a latching device carried by one of the parts for engagement with the other.

3. In a device of the class described, the combination with a car and its doorway, of a bag-catching member pivoted adjacent to the latter to swing in a horizontal plane, a vertically-swinging bag-delivering member pivoted beneath the catching member, a latching member carried by one of the parts for engaging the other, and an abutment sustained adjacent to the railway for operating the latching-lever.

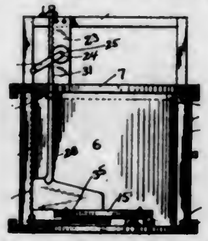
4. In a device of the class described, the combination with a car and its doorway, of a bag-catching member pivoted adjacent to the latter to swing in a horizontal plane, means for limiting the outward movement of said member, a vertically-swinging bag-delivering member pivoted beneath the catching member, a latching-lever carried by one of the parts for engaging the other, and an abutment sustained adjacent to the railway for operating the latching-lever.

5. In a device of the class described, the combination with a standard comprising a pair of pivoted sections, of a bag-supporting arm carried by the upper section, said section being adapted to fold backward upon the lower section, and means for locking the sections in operative position.



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**756,499. CHEESE-CUTTER.** LOW HUBBOTER, Oostburg, Wis. Filed Sept. 14, 1903. Serial No. 173,127. (No model.)



*Claim.*—A cheese-cutter comprising a casing having uprights at diametrically opposite points thereof, a beam connecting the uprights at their upper ends, a top for the casing secured to the uprights below the beam and having an opening therethrough, an upright mounted upon the top adjacent to the opening and attached at its upper end to the beam, a gear-wheel rotatably mounted upon the last-named upright and having a crank attached thereto, a knife slidably engaged at its rear edge with one of the first-named uprights, a rack-bar connected to the knife and extending upwardly through the opening in the top of the casing and with its rack in engagement with the gear, a turn-table rotatably mounted below the knife and having a depending concentric crown-rack, a lever pivoted beneath and coaxially with the turn-table, a pawl mounted upon the lever below the turn-table for engagement of the rack to rotate the turn-table when the lever is moved in one direction, and means disposed below the turn-table to hold it against movement in the other direction.

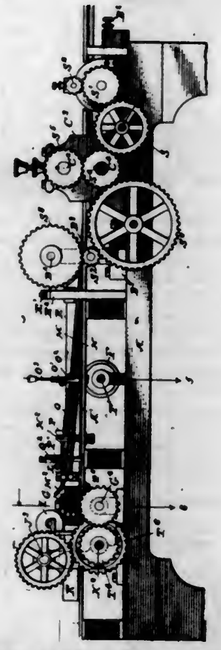
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**756,500. TUBE-MAKING MACHINE.** HORACE INMAN, Amsterdam, N. Y. Filed Apr. 16, 1900. Serial No. 13,023. (No model.)

*Claim.*—1. In a machine for forming open rectangular tubes, the combination with pasting, creasing and feeding devices, of a rectangular former composed of three parts, the central portion having openings forming bearings, friction-rollers composed of two corresponding disks the adjacent faces of which are grooved and are provided with bearings, and balls interposed between said bearings and the bearings in the central portion of the former, substantially as described.

2. In a machine for forming open rectangular tubes, the combination with pasting, creasing and feeding devices, of a rectangular former having a central portion provided with openings forming bearings, rollers comprising two corresponding parts having grooved adjacent faces the outer edges of which are cut away and having bearings, and balls arranged between the bearings in the rollers and in the former, substantially as described.

3. In a machine for forming rectangular tubes, the combination with a rectangular former, of adjustable standards, two sets of wires mounted therein and extending longitudinally along the sides of the former, a straddle-piece, an adjustable support thereon, a wire supported therein extending across the top of the former, a second straddle-piece, and plate-folders adjustably mounted on the same above the former, substantially as described.

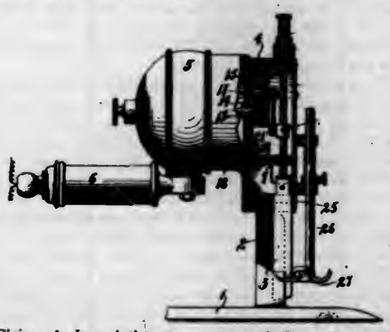


4. In a machine for forming rectangular tubes, the combination with a rectangular former, of wires extending longitudinally along the sides of the former, a wire extending over and across the upper surface of the former, an adjustable screw-guide arranged over the former, and supports for the wires and guide, substantially as described.

5. In a machine for forming rectangular tubes, the combination with a rectangular former, of side feed-rollers engaging the same, the rollers comprising alternate disks of rubber and metal, substantially as described.

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**756,501. CLOTH-CUTTER.** SOLOMON R. JACOBS, New York, N. Y. Filed Oct. 14, 1903. Serial No. 177,034. (No model.)



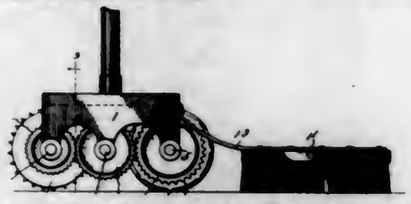
*Claim.*—1. In a cloth-cutter, a motor-shaft, a spur-gear thereon, a disk having an internal gear meshing with the said spur-gear, a knife-carrying rod mounted to reciprocate longitudinally, and a link connecting the rod and disk.

2. In a cloth-cutter, a motor-casing, a closed gear-casing, a motor-shaft, a gear thereon within the gear-casing, a disk mounted in the gear-casing and geared to the motor-shaft gear, a vertically-re-

ciprocating knife-carrying rod extended through the gear-casing, upper and lower bearings for the rod and a link connecting the disk to the rod at a point between the bearings.

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**756,502. MECHANISM FOR REMOVING ICE FROM ELECTRIC CONDUCTORS.** BENJAMIN J. JEWETT, Brooklyn, N. Y., assignor of one-half to Frederick H. Bartlett, Brooklyn, N. Y. Filed Oct. 29, 1903. Serial No. 178,987. (No model.)



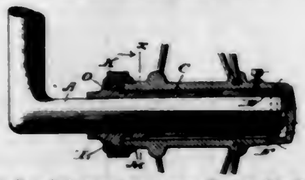
*Claim.*—1. A rail-cleaner consisting of a frame supporting a rotatory cutter, a driving-wheel, driving mechanism connecting the driving-wheel with the cutter whereby rotation of the former rotates the latter, and a brush attached to the frame and trailing behind the cutter, substantially as specified.

2. A rail-cleaner consisting of a frame supporting a rotatory cutter with spirally-arranged blades, a spiked driving-wheel in front of the cutter, gears connecting the driving-wheel shaft with the cutter-shaft, and a brush attached to the frame and trailing behind the cutter, substantially as specified.

3. A rail-cleaner consisting of a frame supporting a rotatory cutter, a driving-wheel in front of the cutter, gears connecting the driving-wheel shaft with the cutter-shaft, a brush back of the cutter and springs connecting the brush with the frame, substantially as specified.

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**756,503. HUB FOR VEHICLE-WHEELS.** OMAR E. JOHNSTON, Bellevue, Ohio. Filed Feb. 25, 1904. Serial No. 196,151. (No model.)



*Claim.*—1. In a hub structure proper, the combination with a hub closed at one end, a skein insertible in the hub from the other end, a spindle insertible in the skein, a removable device acting to keep the spindle from withdrawing from the skein, a means to unite the hub and skein after the skein with the spindle therein is inserted in the hub.

2. In a hub structure, the combination with a hub proper closed at the outer end and open at the inner, the skein insertible therein, means to interlock the skein and hub rotatively, the spindle insertible from its outer end and into the skein, a removable device carried by the spindle and adapted to prevent its withdrawal from the skein, said device being also insertible in the hub, and means which connect the hub and spindle together.

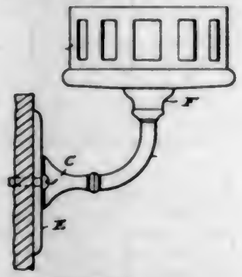
3. In a hub structure, the combination with a hub proper closed at one end, open and screw-threaded at the other, a skein insertible in the hub and having a nut adapted to engage with the threaded part of the hub, a spindle insertible from its end into the skein, and a removable pin carried by the spindle, insertible in the hub and adapted to prevent the spindle from withdrawing from the skein.

4. In a hub structure, the combination with a hub proper closed at one end, open and screw-threaded at the other, a skein insertible in the hub and rotatively interlocked therewith, a nut on the skein to engage with the hub, and a gasket between the skein and hub, a spindle insertible in this skein, a washer and a linchpin carried by the spindle, the pin acting to keep the spindle from withdrawing from the skein and the closed end of the hub to keep the spindle from thrusting through the hub.

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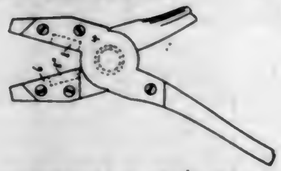
**756,504. BRACKET-SUPPORTED RECEPTACLE.** HENRY P. KEIL, Bronxville, N. Y. Filed July 3, 1903. Serial No. 164,235. (No model.)

*Claim.*—As a new article of manufacture a receptacle drawn out of wrought metal all in one piece, having at the lower part thereof a centrally-disposed and upwardly-extending stem in combination with a false bottom consisting of a yielding metal disk smaller in diameter than the interior of the receptacle and constructed and arranged to be centrally supported by said stem without touching the bottom or interior side faces of the said receptacle, and a bracket adapted to support the receptacle.



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**756,505. PLIERS.** HENRY F. KELLEHER, Utica, N. Y., assignor to Utica Drop Forge & Tool Company, Utica, N. Y. Filed Aug. 22, 1903. Serial No. 170,694. (No model.)



*Claim.*—1. The combination in a pliers of the parts each constituting a jaw and handle cut out or halved together at the joint and a strengthening joint-piece spanning the cut-out in the part and secured at each side of said cut-out to the jaw and handle respectively, substantially as set forth.

2. The combination in a pliers of the two parts each consisting of a jaw and handle cut out or halved together at the joint, and a joint-piece spanning the cut-out in the part and secured at each side thereof to the jaw and handle parts, respectively, and providing a cutting edge formed on the jaw end of the joint-piece, substantially as set forth.

3. The combination in a pliers of the two crossing parts each consisting of a jaw and handle cut out or halved together at the joint and a removable joint-piece spanning the cut-out and secured at each side thereof to the jaw and handle, respectively, and serving to secure the parts together against sidewise displacement, substantially as set forth.

4. The combination in a pliers of the two parts crossing and halved together at the joint, one of said parts being recessed or cut out to a greater extent than the other, and a supplemental strengthening-piece spanning the recess or cut-out of the part which is more cut out or recessed and secured at each end and inclosing the other part at the joint, substantially as set forth.

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**756,506. ARTIFICIAL TOOTH-CROWN.** WILLIAM H. KIDDER, Providence, R. I. Filed Nov. 20, 1903. Serial No. 181,945. (No model.)

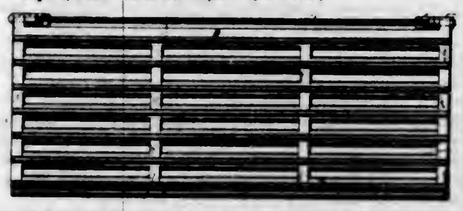


*Claim.*—1. In combination with an artificial tooth-crown having an opening extending therethrough and enlarged at its ends, a retaining-post having an integral collar intermediate its ends, said post having one of its ends threaded, said collar seating in one of said opening ends, and means for engagement with said threads whereby said collar may be drawn inwardly to firmly engage said crown.

2. In combination with an artificial tooth-crown having an opening therein, a retaining-post extending through said opening and having a collar intermediate its ends to engage one end of said crown, and means to engage one end of said post and the opposite end of said crown to draw said collar into firm engagement with said crown



**756,507. STAIR-MAT.** CARL KNOPF, New York, N. Y. Filed Sept. 8, 1903. Serial No. 172,991. (No model.)



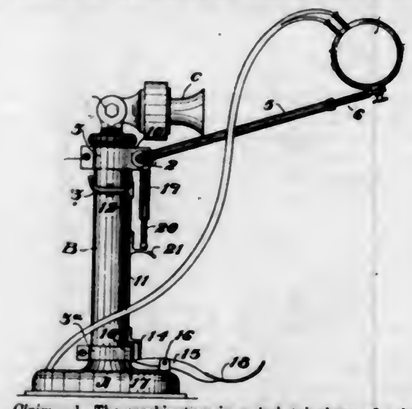
*Claim.*—1. In a stair-mat, the combination of the metal slat A extending the length of the mat and having the edge B, additional metal slats extending lengthwise of the mat and parallel with said slat A, the cross-pieces H formed integrally with said slats and reinforcing them at the ends and at intermediate intervals, all said slats being grooved lengthwise and said cross-pieces transversely, the said grooves extending the entire length of said mat, and the rubber strips C secured in the said grooves and equaling the mat in length, substantially as described.

2. In a stair-mat, the combination of the metal slat A extending the length of the mat and having the edge B, additional metal slats extending lengthwise of the mat and parallel with said slat A, the cross-pieces H formed integrally with said slats and reinforcing them at the ends and at intermediate intervals, all said slats being grooved lengthwise and said cross-pieces transversely, the said grooves extending the entire length of said mat, means for pivotally securing the mat upon a step, the said slat A being arranged with the said edge B at the edge of the step, and the rubber strips C secured in the said grooves and equaling the mat in length, substantially as described.

3. In a stair-mat, the combination of the front and rear metal slats A having the edges B and shoulders *a*, intermediate metal slats extending lengthwise of the mat and parallel with the said slats A, the cross-pieces H formed integrally with the said slats and reinforcing them at the ends and at intermediate intervals, all said slats being grooved lengthwise and said cross-pieces transversely, the said grooves extending the entire length of said mat, the rubber strips C secured in the said grooves and equaling the mat in length, the frame K engaging the shoulders *a* of said slats A and supporting the mat, and means for pivotally securing said frame upon a step, substantially as described.

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**756,508. TELEPHONE ATTACHMENT.** GABOR KÖNIGSTEIN, San Francisco, Cal., assignor of one-half to Joseph Silverman, San Francisco, Cal. Filed Sept. 8, 1903. Serial No. 172,266. (No model.)



*Claim.*—1. The combination in a desk-telephone of a base, a standard arising therefrom, a transmitter adjustably hinged to the top of the standard, a horizontally-disposed sleeve, an arm turnable and adapted to be fixed therein, an extension of said arm at right angles with the first portion, parallel with the axis of the transmitter, an extensible rod movable with relation to said arm, an elastic clasp carried by said arm and a receiver supported in said clasp.

2. The combination with the vertical post of a hand or desk telephone having a transmitter adjustably hinged to the upper end, of a receiver, a holder, an adjustable arm supporting the holder, a clasp, a means for securing it upon the post and a sleeve horizontally disposed and fixed to the clasp and forming a support for the receiver-arm.

3. The combination with a hand or desk telephone and the vertical post or standard thereof, of a transmitter and a receiver, both adjustably hinged to the top of the standard, clasps removably fixed to the top and bottom of the standard having enlargements with vertical slots therein, a vertically-slidable bar guided by said slots, said bar having a forked arm projecting and engaging the receiver-hook which is mounted upon the standard, a lever fulcrumed at the lower end of the standard and engaging the arm at the bottom of the slidable bar, and a spring-pressed rod whereby the slide and connected parts are normally retained in a depressed position.

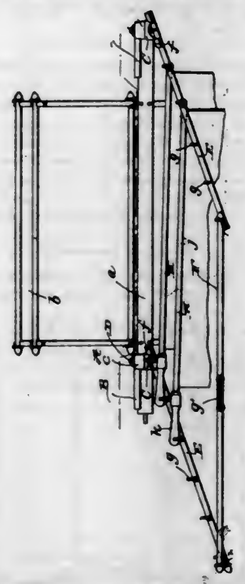
4. The combination with a hand or desk telephone, and the standard thereof of a transmitter adjustably hinged to the top of the standard, a receiver and an adjustable arm upon which the receiver is carried, clasps removably fixed at top and bottom of the standard having enlargements with guiding-slots, a vertically-slidable bar movable in said slots, said bar having a forked arm engaging the receiver-hook of the telephone, an arm projecting about midway of its length and a spring-pressed bar resting upon said arm, a lever fulcrumed so as to engage the lower end of the vertically-slidable bar and a latch whereby the bar may be maintained in its raised position and the apparatus in condition for use.

5. The combination with a telephone-base and the vertical standard, transmitter and circuit-controlling arm thereof, of an adjustable support for the receiver, a spring-pressed slide and connection for opening or closing the circuit, and clamps detachably fixed to the standard and carrying guides in which the slide is movable.

6. The combination with a telephone-base having a vertical standard, transmitter and circuit-controlling arm or switch, of clasps detachably fixed to the standard, guides carried by the clasps, a spring-pressed bar slidable in the guides, connections from said bar to the circuit-controller, a post supported from the lower clasp and a lever fulcrumed on said post with its inner end engaging the slidable bar.

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**756,509. NEWSPAPER-RACK.** FRANK X. KRABACH, Fort Wayne, Ind. Filed Mar. 24, 1903. Serial No. 149,304. (No model.)



*Claim.*—1. In a newspaper-rack, the combination of a suitable support, normally depending, outwardly and inwardly swinging arms connected with the support, and normally disposed at acute angles to a line extending through their points of connection, and means carried by said arms for supporting newspapers or the like.

2. In a newspaper-rack, the combination of a suitable support, normally depending, outwardly and inwardly swinging arms connected with the support, and normally disposed at acute angles to a line extending through their points of connection; said arms having pro-

jections arranged at intervals of their length, and paper-supporting bars removably arranged against the arms and on the projections thereof.

3. In a newspaper-rack, the combination of a suitable support, normally depending, outwardly and inwardly swinging arms connected with the support, and normally disposed at acute angles to a line extending through their points of connection; said arms having projections arranged at intervals of their length, and paper-supporting bars removably arranged against the arms and on the projections of one arm, and having eyes receiving the projections of the other arm.

4. In a newspaper-rack, the combination of a body, parallel arms disposed obliquely to the body, vertical pivots connecting the arms to the body, means for supporting newspapers, carried by and extending between said arms, and coiled springs surrounding the vertical pivots, and connected at one end to the body and at their opposite ends to the arms.

5. In a newspaper-rack, the combination of a body, normally depending, outwardly and inwardly swinging arms connected with the body, and normally disposed at acute angles to a line extending through their points of connection, and bars carried by and extending between said arms.

6. In a newspaper-rack, the combination of a body, normally depending, outwardly and inwardly swinging arms connected with the body, and normally disposed at acute angles to a line extending through their points of connection; said arms having projections at intervals of their length, and paper-supporting bars removably arranged against the arms and on the projections of one arm, and having eyes receiving the projections of the other arms.

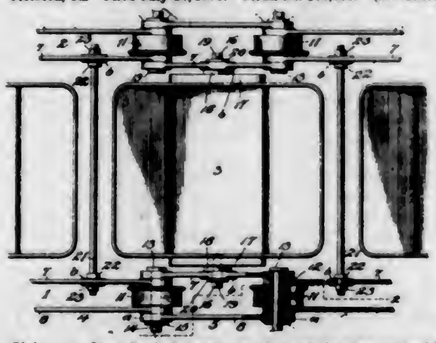
7. In a newspaper-rack, the combination of a body, normally depending, outwardly and inwardly, horizontally movable arms, vertical pivots connecting the arms to the body; the said arms being normally disposed at acute angles to a line extending through their points of connection, and paper-supporting bars carried by and extending between the arms.

8. In a newspaper-rack, the combination of a body, normally depending, outwardly and inwardly, horizontally movable arms, vertical pivots connecting the arms to the body; the said arms being normally disposed at acute angles to a line extending through their points of connection, a stop on the body for limiting the outward movement of the arms, a spring for assisting in the inward movement of the arms, and paper-supporting bars carried by and extending between the arms.

9. In a newspaper-rack, the combination of a body, fixtures secured on the body, and having sockets *c*, provided with stops *d*, trunnions journaled on the sockets *c*, and having shoulders *e*, arranged to engage the stops *d*, bolts pivotally connecting the trunnions and the sockets, coiled springs surrounding the trunnions, within the sockets, and connected at one end to the trunnions and at their other ends to the sockets, normally depending, outwardly and inwardly movable arms connected to the trunnions, and normally disposed at acute angles to a line extending through their points of connection, and paper-supporting bars carried by and extending between the arms.

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**756,510. BUCKET CONVEYER.** AUGUSTUS L. LE GRAND, West Pittston, Pa. Filed July 27, 1903. Serial No. 167,208. (No model.)



*Claim.*—1. In a bucket conveyer, the combination with side chains, of intermediate conveyer-buckets suspended from the middle portions of certain of the links, and chain-connectors extending between certain other links at points intermediate of the ends thereof.

2. In a bucket conveyer, the combination with side chains, of conveyer-buckets suspended from alternate links at points intermediate of the ends thereof, and chain-connectors extending between the middle portions of the other links of the chains.

3. In a bucket conveyer, the combination with side chains, comprising links and link-connectors connecting the ends of the links, of travelers carried by the link-connectors, buckets pivotally supported by alternate links, and chain-connectors located intermediate of the buckets.

4. In a bucket conveyer, the combination with side chains comprising links, of chain-connectors and link-connectors in alternating arrangement, each alternate chain-connector including a conveyer-bucket, and a traveler carried by each link-connector, the link-connectors being located at the ends of the links and the chain-connectors at points intermediate of the ends of said links.

5. In a bucket conveyer, the combination with side chains, of link-connectors located at the ends of the links, travelers mounted on the link-connectors, conveyer-buckets suspended from the middle portions of alternate links and constituting chain-connectors, and other chain-connectors in the form of rods extending between the middle portions of the other links of the chains and located intermediate of the buckets.

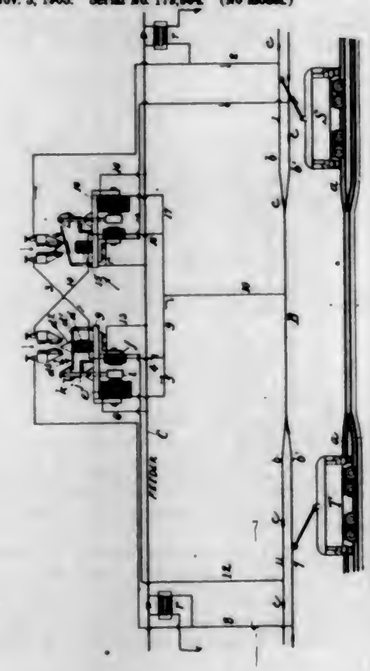
6. In a bucket conveyer, the combination with side chains having links made up of paired link-plates, of link-connectors connecting contiguous ends of the links, travelers mounted upon the connectors between the link-plates, conveyer-buckets pivotally supported from the inner plates of alternate links, and chain-connecting rods extending between the inner plates of the other links.

7. In a bucket conveyer, the combination with side chains having links composed of paired plates, link-connectors connecting the links at their contiguous ends, travelers mounted on the link-connectors, conveyer-buckets having trunnions extended through the inner link-plates only of alternate links, and chain-connecting rods connected to the inner plates only of the other links, all of the link-plates of the chains being reinforced at the wear-points.

8. In a bucket conveyer, the combination with side chains having links composed of paired plates, link-connectors connecting the links at their contiguous ends, travelers mounted on the link-connectors, conveyer-buckets having trunnions extended through the inner link-plates only of alternate links, and chain-connecting rods connected to the inner plates only of the other links, all of the link-plates being reinforced or thickened at their ends and the inner plates being additionally reinforced or thickened at their middle portions.

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**756,511. ELECTRIC RAILWAY.** THOMAS D. LOVELL, Beverly, Mass., assignor of one-half to Joseph F. Flanagan, Boston, Mass. Filed Nov. 3, 1903. Serial No. 179,664. (No model.)





*Claim.*—1. In an electric railway, the combination of a sectional conductor supplying current to the cars or trains, normally closed branch conductors supplying current to the sections of the sectional conductor, two electromagnets in said branch conductors, one adapted when energized to open the circuit of a different branch, and the other adapted to lock said circuit open.

2. In an electric railway, the combination of a sectional conductor supplying current to the cars or trains, normally closed branch conductors supplying current to the sections of the sectional conductor, two electromagnets in said branch conductors, one adapted when energized to open the circuit of a different branch, and the other adapted to lock said circuit open, and other branch conductors including an electromagnet adapted to release said locked circuit, substantially as described.

3. In an electric railway, the combination of a track-block, a trolley-wire extending along the same and having an insulated section at each end of the block, branch conductors supplying current to the insulated section respectively, a circuit-controller in one branch controlling the circuit of the other, and another branch conductor supplying the trolley-wire between the two insulated sections and including a locking-magnet adapted to lock said circuit-controller, substantially as described.

4. In an electric railway, the combination of a single track divided into blocks and having turnouts at each end, a trolley-wire extending along the track and having corresponding turnouts, said trolley-wire having an insulated section on each turnout, branch conductors supplying current respectively to each insulated section, the branch conductor leading to a section at one end of the block including a circuit-breaking electromagnet adapted to open the circuit of a branch leading to a section at the other end of the block and two other branch conductors leading respectively to the other insulated sections at the opposite ends of the block and including a circuit-closing electromagnet adapted to close the circuit previously opened by a circuit-breaker, substantially as described.

5. In an electric railway, a track and trolley-wire divided into blocks, a circuit-breaking electromagnet energized by a car going in one direction and adapted to open the circuit of a car going in the opposite direction, in combination with two electromagnets, one adapted to lock the said circuit open and the other adapted to release said lock, the locking-magnet being stronger than the releasing-magnet and means whereby a second car following the first into a block before the first leaves it, will energize the locking-magnet while the releasing-magnet is energized by the first car, for the purpose set forth.

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**756,512. FIRE-ESCAPE.** EDWIN T. MARSH, Rochester, N. Y. Filed June 11, 1903. Serial No. 161,024. (No model.)



*Claim.*—1. In a fire-escape, the combination of a stationary and a movable hollow standard, hollow rounds, tubes rigid with each standard and forming communication between the same and the rounds, said rounds having the ends thereof pivoted to corresponding tubes, and means for supplying the structure with a cooling fluid.

2. In a fire-escape, the combination of a stationary and a movable hollow standard, hollow rounds pivotally secured to and communicating therewith, and means for supplying the structure with a cooling medium on carrying the movable standard to a determinate position, and for cutting off such supply on restoring said standard to its original position.

3. In a fire-escape, a pair of tubular standards movably connected so that one may be folded against the other, tubular rounds connected to and forming passages with the said standards, and means automatically controlled by the movement of one of the rounds whereby a passage-way is opened into the standards and rounds for permitting a cooling medium to pass into the latter.

4. In a fire-escape, the combination of a stationary and a movable hollow standard, hollow rounds, tubes rigid with each standard, and forming communication between the same and the rounds, said rounds having the ends thereof pivoted to corresponding tubes, and means for supplying the structure with a cooling medium on carrying the movable standard to a determinate position, and for cutting off such supply on restoring said standard to its original position.

5. In a fire-escape, the combination of a stationary and a movable hollow standard, hollow rounds, tubes rigid with each standard, and forming communication between the same and the rounds, said rounds having the ends thereof pivoted to corresponding ones of the tubes, and means controlled by one of the rounds for supplying the structure with a cooling medium, on carrying the movable structure to a determinate position, and for cutting off such supply on restoring said standard to its original position.

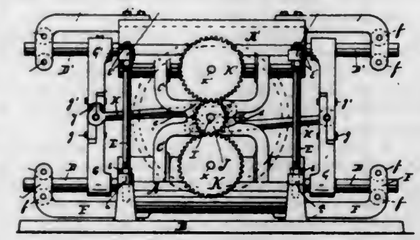
6. In a fire-escape, the combination of a stationary and a movable hollow standard, connecting hollow rounds having pivotal relation with the standards, and also communicating therewith, whereby a cooling medium may be provided throughout the structure, a reservoir at the bottom of one of the standards, having a valve-seat and a valve, and means for holding said valve to its seat in one position of the movable standard, and for unseating the same on carrying said standard to another position.

7. In a fire-escape, the combination of a pair of ladder-standards, rounds pivotally connected to said standards whereby they may be folded one upon the other, said rounds and standards being hollow and provided with communicating openings, means for introducing a fluid into the rounds and standards, and an alarm device at the top of one of the standards operative by the rising fluid.

8. The combination of a pair of hollow standards and a plurality of connecting rounds pivotally secured thereto, the pivotal connections each comprising a tube projecting from the standards into the rounds and provided with perforations, and means for securing the tubes to the standards and rounds.

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**756,513. MULTIPLE MOTOR.** HERMAN W. MARTIN, Ilion, N. Y. Filed Mar. 2, 1903. Serial No. 145,729. (No model.)



*Claim.*—1. In a motor, a combination of the series of cylinders adjustably secured to each other, one being integral with the base and the others provided with independent adjustable connections therewith, each provided with piston heads and rods in cooperative attachment to a main shaft, substantially as described.

2. In a motor, cylinders provided with integral housings, integral lugs thereon, means for connecting the cylinders and their housings by bolts through the housings and by bolts connecting the integral lugs, pistons and piston-rods, piston-rod arms uniting the several piston-rods, crank-arms connecting the piston-rod arms with a main shaft, in combination, substantially as described.

3. In a motor, a series of cylinders provided with integral housings, means connecting the cylinders adjustably by connections between the housings, a main shaft, pistons and piston-rods, operative means for connecting the several piston-rods with the main shaft, in combination, substantially as described.

4. In a motor, cylinders, pistons and piston-rods, arms connecting the piston-rods, arms provided with wheels supporting the outer ends of the piston-rods, operative connections between the piston-rods and the main shaft, in combination, substantially as described.

5. In a motor, a series of cylinders provided with pistons and piston-rods and rigid arms bearing antifriction-supports for the outer ends of the piston-rods in their operation, castings integral with the cylinders by which the same may be adjusted and rigidly united, operative connections between the several piston-rods and a main shaft, gears connected with the main shaft for operating the valves, in combination, substantially as described.

6. In a motor, a series of cylinders provided with pistons and piston-rods and arms supporting the outer ends of the piston-rods in the axis of the cylinder, castings integral with the cylinders by which the same may be united in proper position, operative connections between the several piston-rods and a main shaft, bolts connecting the cylinders whereby the same may be secured in adjustment, gears connected with the main shaft for operating the valves, in combination, substantially as described.

7. In a motor, a series of cylinders, adjustable connections between the same and with the base whereby they are united in fixed

adjustment, supports connected with the cylinders for carrying the outer ends of the piston-rods, operative connections between the piston-rods and a main shaft comprising rigid arms secured to the piston-rods and to each other and crank-arms connected with said arms and a main shaft, a main shaft, in combination, substantially as described.

8. In a motor, a cylinder, housings integral therewith supporting a main shaft, a main shaft, pistons and piston-rods, operative connection between the pistons and the shaft, a casing inclosing the operative parts whereby the oil-supply for the operating parts may be continuously dispersed thereon, and within the casing, the said casing comprising an upper and a lower part the former slipping within the latter and supported on a corrugation in the latter, in combination, substantially as described.

9. In a motor, a series of cylinders, integral housings and lugs thereon, bolts securing the cylinders by the housings and the lugs, pistons and piston-rods, operative connections between the piston-rods and a shaft, a shaft supported in the housings, a casing inclosing the operative parts of the motor whereby the same may be operated in a continuous supply of oil, the said casing comprising an upper and a lower part the former being supported in the latter upon a corrugated rim provided in the latter, in combination, substantially as described.

10. A motor having a plurality of cylinders with pistons and piston-rods therein, a shaft having two cranks to which all the piston-rods are connected, crank-arms and piston-rod arms providing connection between the piston-rods and the cranks, the piston-rod arms having common bearings on their adjacent crank-arms, in combination, substantially as described.

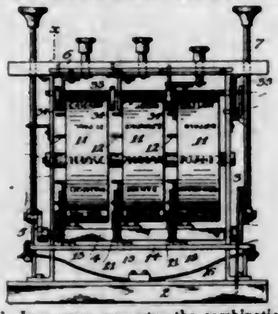
11. A motor having a plurality of cylinders with pistons and piston-rods therein, a shaft having two cranks to which all the piston-rods are connected, crank-arms and piston-rod arms providing connection between the piston-rods and the cranks, the piston-rod arms having a common bearing on the adjacent crank-arms and being rigidly secured to the piston-rods, a series of gears on the shaft whereby the valves of the engine are operated, in combination, substantially as described.

12. A motor provided with cylinders, pistons and piston-rods, a main shaft provided with two cranks, piston-rod arms rigidly connecting the piston-rods and having a united bearing on a crank-arm, a crank-arm extending from such bearing to one of the cranks, and duplicated for the other crank, in combination, substantially as described.

13. A motor provided with cylinders, pistons and piston-rods, a main shaft provided with two cranks, piston-rod arms rigidly adjustably mounted on the piston-rods and at the other end journaled in a crank-arm, a crank-arm extending from such bearing one to each of the cranks, arms mounted on the cylinders provided with antifriction-supports for the outer ends of the piston-rods, in combination, substantially as described.

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**756,514. GAME APPARATUS. GEORGE W. MAXWELL, San Francisco, Cal. Filed Oct. 7, 1903. Serial No. 176,169. (No model.)**



*Claim.*—1. In a game apparatus, the combination with rotary disks and with locking-keys for locking one or more of such disks while permitting the rest to rotate, of a straight leaf bearing upon the stems of all such keys, and a follower-bar having a waved edge and adapted to be set up against said leaf, whereby it is formed into a plurality of spring frictional contacts.

2. In a game apparatus, the combination with separately-rotatable disks carrying separated symbols or characters, a driving-key for rotating said disks, means for locking one or more of said disks, while permitting the remainder to rotate, and means operated by the driving-key after a predetermined number of operations, for unlocking the locked disks, and so placing all the disks in position for another operation.

3. In a game apparatus, the combination with separately-rotatable disks mounted upon a common shaft, and having sidewise-projecting pins, of a push-rod having a crank, a shaft on the crank center, means carried by said shaft for agitating said disks, a spring-pressed pivoted frame, dogs on said frame initially locking said disks, and a cam on said frame in the path of said crank, whereby, in the revolution of said crank, the said frame is depressed, the said dogs removed from contact with said pins, and the means on said shaft caused to operate the said disks, substantially as set forth.

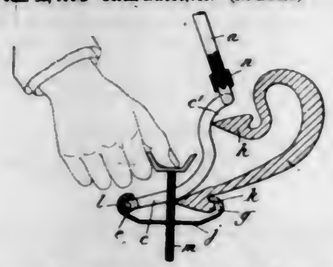
4. In a game apparatus, the combination with separately-rotatable disks mounted upon a common shaft and having sidewise-projecting pins, of a push-rod having a crank, a shaft on the crank center, means carried by said shaft for rotating said disks, a spring-pressed pivoted frame, carrying means for initially locking said disks, means for depressing said frame and causing the said shaft to operate the disks, locking-keys adapted to engage and separately lock the respective disks, and means for automatically disengaging said locking-keys from said disks.

5. In a game apparatus, the combination with separately-rotatable disks, of a shaft carrying means for operating the same, a push-rod connected to said shaft, locking-keys having means for engaging independently with the respective disks, a shaft carrying a series of cams, and operated by the movement of said push-rod, so that, at a predetermined time, the said cams will unlock all of said disks.

6. In a game apparatus, the combination with separately-rotatable disks, each carrying information adapted to be combined upon all or some of them, of means for rotating said disks independently, means for stopping one or more of the disks, while allowing the remainder to be rotated, and means for restoring the stopped disks to a normal position in readiness for another operation.

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**756,515. LEVER FOR MANIPULATING THE COVERS OF PNEUMATIC TIRES. EDOUARD MICHELIN, Clermont-Ferrand, France. Filed Jan. 12, 1904. Serial No. 188,715. (No model.)**



*Claim.*—1. A lever device for manipulating the covers of pneumatic tires for the insertion or removal either of safety-bolts or of the valve-nipples of the pneumatic tube which lever is composed of a forked part with a straight part or handle the limbs of the forked part being bent into S shape in order to present a concave part adapted to receive the free edge of the cover and a convex part adapted to press upon the fixed edge of the cover during the said operation, while the ends of the limbs are adapted to bear upon the inner surface of the rim, substantially as described.

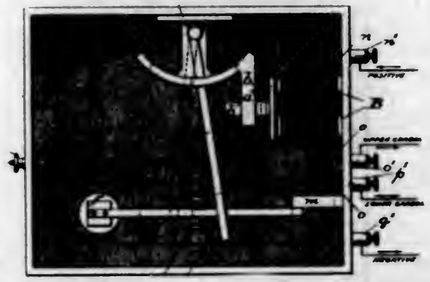
2. A lever device for manipulating the covers of pneumatic tires for the insertion or removal either of safety-bolts or of the valve-nipples of the pneumatic tube, which lever is composed of a forked part with a straight part or handle the limbs of the forked part being bent into S shape in order to present a concave part adapted to receive the free edge of the cover and a convex part adapted to press upon the fixed edge of the cover during the said operation, the ends of the limbs being provided with rollers that are adapted to bear against the inner surface of the rim, and being also bent toward each other so as to be situated at right angles to the periphery of the rim, substantially as described.

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**756,516. AUTOMATIC ELECTRIC CUT-OUT. GUY MILBURN, Baltimore, Md. Filed Mar. 31, 1903. Serial No. 150,368. (No model.)**

*Claim.*—1. In an electric-lighting system the combination of a normal circuit through a lamp including an electromagnet, *h*; a shunt-circuit around the lamp and also around said magnet and including a shunt-bar held by said magnet in a position to keep the shunt-circuit open while the normal circuit is closed; means for rocking said bar to close the shunt-circuit when said magnet is deënergized by the opening of the normal circuit, and means whereby when the current is cut off the shunt-bar will be automatically set to open the shunt-circuit and the normal circuit reëstablished.



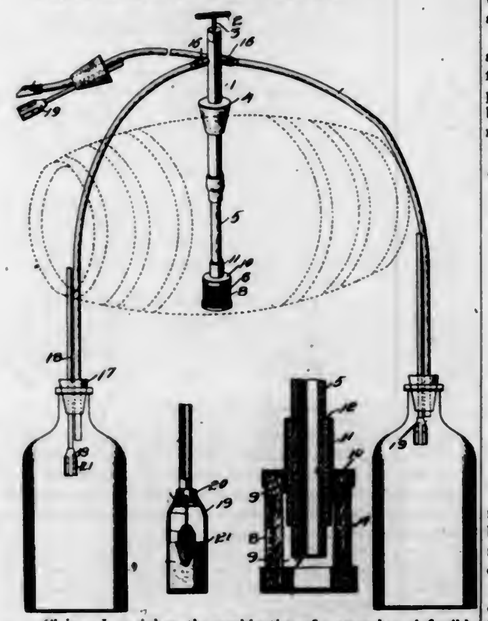


2. In an electric-lighting system, the combination of a normal circuit through the lamp, including two electromagnets; a rocking shunt-bar arranged to be held by one of said magnets in an inoperative position; a shunt-circuit around the lamp; means for rocking said bar to establish the shunt-circuit when said magnet is deënergized; and an oscillating arm arranged to be actuated by the other magnet and provided with means whereby it will also hold said shunt-bar in an inoperative position.

3. An automatic cut-out, comprising two electromagnets; a normal circuit in which said magnets are included; a shunt-circuit consisting of a contact-plate, *m*, connected with the normal circuit, a wire, *r*, also connected with the normal circuit; a post, *g*, connected to the wire, *r*; a rocking shunt-bar mounted on said post and arranged to contact with the plate, *m* to establish the shunt-circuit, and normally held out of contact therewith by one of said electromagnets; and an oscillating arm arranged to sweep over said shunt-bar to hold the same out of contact with the plate, *m*, and actuated by the other magnet to release the shunt-bar.

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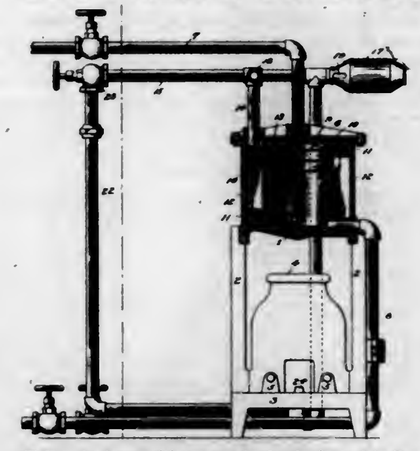
**756,517. SIPHON. CAMILLUS MILLER, Sunflower, Pa. Filed Aug. 21, 1902. Serial No. 120,547. (No model.)**



*Claim.*—In a siphon, the combination of a pump-barrel, flexible discharge-tubes connected therewith, a flexible inlet-tube at the lower end of the pump-barrel, a strainer mounted at the lower end of said inlet-tube and consisting of an annular chamber a cap covering said chamber having an interior annular flange, and a reducing-tube interposed between said flange and the flexible inlet-tube, substantially as set forth.

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**756,518. GAS-RETORT. CLARENCE H. MONTGOMERIE y AGRAMONTE, Mexico, Mexico. Filed Aug. 5, 1903. Serial No. 168,298. (No model.)**



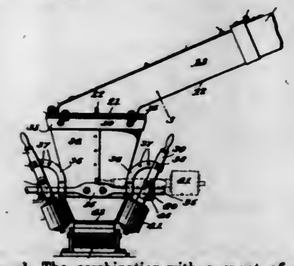
*Claim.*—1. A vaporizing-retort having horizontal baffle-plates located therein, an oil-supply pipe leading through the top of said retort and passing through said baffle-plates, a gasifying-chamber surrounding said retort, the wall of said retort forming the inner wall of the gasifying-chamber, said gasifying-chamber having vertical baffle-plates located therein, said retort having an outlet located above the horizontal baffle-plates and leading into said gasifying-chamber.

2. A vaporizing-retort having horizontal baffle-plates located therein, said retort having a concaved bottom, an oil-supply pipe leading through the top of said retort and passing through said baffle-plates and terminating above the center of the bottom of said retort, a gasifying-chamber surrounding said retort and being provided with suitable baffle-plates, said retort having an outlet located above said baffle-plates and leading into said gasifying-chamber.

3. A vaporizing-retort having horizontal baffle-plates and a suitable oil-inlet, and an outlet located above the baffle-plates, a gasifying-chamber surrounding said retort and having vertical baffle-plates, the wall of the retort forming the inner wall of said chamber, said retort and said chamber being located upon a bottom common to both.

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**756,519. TRANSFER-SPOUT FOR GRAIN, ORE, OR THE LIKE. PETER O. OLSON, South Chicago, Ill. Filed Dec. 17, 1903. Serial No. 185,559. (No model.)**



*Claim.*—1. The combination with a spout, of a discharging-nozzle rotatably secured thereto and communicating therewith, a bar secured horizontally on the nozzle, a lever fulcrumed on said bar near each of its ends, and a roller journaled on the lower portion of each of said levers, substantially as described.

2. The combination with a hinged and counterbalanced spout, of a discharging-nozzle rotatably secured thereto and communicating therewith, a conveyer-guide mounted on the lower portion of the nozzle and comprising two levers fulcrumed at a distance apart, a roller journaled on the lower portion of each lever, and means to adjust the inclination of the levers, substantially as described.

3. The combination with a spout, of a discharging-nozzle rotatably secured thereto and communicating therewith, a conveyer-guide mounted on the lower portion of the nozzle and consisting of two levers fulcrumed at a distance apart, a roller journaled on the lower portion of each of the levers, and means to adjust the position of the levers as well as to regulate their inclination, substantially as described.

4. The combination with a spout, of a discharging-nozzle rotatably secured thereto and communicating therewith, a bar secured horizontally on the nozzle, a curved arm adjustably secured on the bar near each of its ends, a clip adjustably secured on said bar near each of its arms, a lever fulcrumed on each of said clips, a roller journaled on the lower portion of each of the levers, and means to adjustably connect the levers to the curved arms, substantially as described.

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**756,520. HAMMOCK.** ISAAC R. PALMER, Middletown, Conn. Filed Jan. 28, 1904. Serial No. 190,945. (No model.)



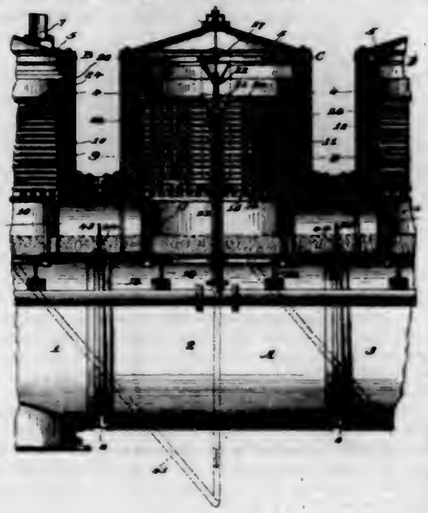
*Claim.*—1. The combination with a hammock-body provided with suspension-loops at its end, of suspension-cords secured to the outer ends of the loops at the edges of the body, said cords leading back and forth between the outer ends of the said loops and the hammock-body, for taking strain off the loops when the hammock is in use.

2. The combination with a hammock-body provided with suspension-loops at its end, of suspension-cords secured to the outer ends of the loops at the edges of the body, said cords leading back and forth between the outer ends of the loops and the hammock-body at different points on the hammock-body for distributing the strain and taking a portion of the same off the suspension-loops.

3. The combination with a hammock-body provided with suspension-loops at its end, of suspension-cords comprising a plurality of parts leading to the outer ends of the loops at the edges of the body, said suspension-cords having a plurality of parts extended between the outer ends of said loops and the hammock-body for distributing the strain and taking a portion of the strain off the said loops.

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**756,521. VAPOR-ABSORBER.** JOHN PATTEN, New York, N. Y. Filed July 9, 1901. Serial No. 67,665. (No model.)



*Claim.*—1. In an absorber the combination with water supply and exhaust pipes of a plurality of cooling-coils arranged in a vertical series, each coil comprising two series of circular sections arranged one above the other, the terminals of the coils being within the same and superposed.

2. In an absorber the combination with water supply and exhaust pipes of a cooling-coil comprising two series of circular sections arranged one above the other, the terminals of said coil being within the same, and T-fittings upon said terminals for connecting the latter to said pipes.

3. In an absorber the combination with supply and exhaust pipes of a plurality of cooling-coils arranged in a vertical series, each coil comprising two series of circular sections arranged one above the other, the terminals of each coil being within the same, and T-fittings upon said terminals, said fittings being arranged one upon the other and forming continuations of the supply and exhaust pipes.

4. The combination with a casing having vapor inlet and outlet openings and a series of vapor-absorbers within the casing, each comprising a cooling surface and means for passing an absorbing fluid over said surface, of a receptacle for the absorbing fluid within the casing and common to said absorbers, and means for directing the vapor over the cooling-surfaces.

5. The combination with a casing having inlet and outlet openings for vapor and a series of vapor-absorbers within the casing, each comprising a cooling-surface arranged in the path of the vapor and means for passing absorbing fluid over said surface, of a receptacle having compartments arranged to receive the fluid from the several absorbers, means for permitting a limited flow of fluid between said compartments, and means for conveying the fluid from each compartment to the next absorber in the series.

6. The combination with a casing having inlet and outlet openings for vapor and a series of vapor-absorbers within the casing, each comprising a cooling-surface arranged in the path of the vapor and means for passing absorbing fluid over said surface, of a receptacle having compartments arranged to receive the fluid from the several absorbers respectively, partitions between said compartments having openings through which a limited flow of fluid may take place, and means for conveying the fluid from each compartment to the next absorber in the series.

7. The combination with a casing comprising a trunk having a series of domes and vapor inlet and outlet openings, of cooling-coils within each dome, means for passing absorbing liquid over said coils, tanks surrounding said coils, passage-ways connecting the lower ends of said tanks, and means for conveying the liquid from each tank to the next absorber in the series.

8. The combination with a casing comprising a trunk having a series of domes and vapor inlet and outlet openings, of cooling-coils within each dome, means for passing absorbing liquid over said coils, tanks surrounding said coils, passage-ways connecting the lower ends of said tanks, partitions adapted to retard the flow of liquid through the passage-ways, and means for conveying the liquid from each tank to the next absorber in the series.

9. The combination with a casing having a series of domes and a vapor-inlet, of a series of absorbers within said domes, and tanks within said domes and surrounding said absorbers, said tanks being connected at their lower ends, and said casing having an outlet communicating with said series of tanks.

10. In a vapor-absorbing apparatus, a casing having a series of domes, tanks within said domes, and absorbers within said tanks, said tanks being connected at their lower ends and open at their upper ends, said casing having a vapor inlet and outlets through passages between the domes and tanks to direct the vapor to the absorbers.

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**756,522. LETTER-COPYING MACHINE.** WALTER R. PECK, New York, N. Y. Filed Feb. 2, 1903. Serial No. 141,434. (No model.)

*Claim.*—1. In a letter-copying machine, the combination of a heated surface with means for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described

2. In a letter-copying machine, the combination of an electrically-heated surface with means for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

3. In a letter-copying machine, the combination of a heated roller with means for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.



4. In a letter-copying machine, the combination of an electrically-heated roller with means for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.




5. In a letter-copying machine, the combination of a heated roller with a dampened absorbent band for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

6. In a letter-copying machine, the combination of a heated roller with a dampened cloth for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

7. In a letter-copying machine, the combination of an electrically-heated roller with a dampened absorbent band for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

8. In a letter-copying machine, the combination of an electrically-heated roller with a dampened cloth for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

9. In a letter-copying machine, the combination of a heated surface with a movable absorbent dampened band for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described

10. In a letter-copying machine, the combination of an electrically-heated surface with a movable absorbent dampened band for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

11. In a letter-copying machine, the combination of a heated roller with a movable dampened absorbent band for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

12. In a letter-copying machine, the combination of a heated roller with a movable dampened cloth for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

13. In a letter-copying machine, the combination of an electrically-heated roller with a movable dampened absorbent band for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

14. In a letter-copying machine, the combination of an electrically-heated roller with a movable dampened cloth for wetting the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

15. In a letter-copying machine, the combination of a heated roller with a dampened absorbent band movable around said roller which band dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

16. In a letter-copying machine, the combination of a heated roller with a dampened cloth movable around said roller which cloth dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

17. In a letter-copying machine, the combination of an electrically-heated roller with a dampened absorbent band movable around said roller which band dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

18. In a letter-copying machine, the combination of an electrically-heated roller with a dampened cloth movable around said roller which cloth dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

19. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir and a movable absorbent band which carries water from a water-supply in said reservoir to the copying-paper upon which the letter or other subject-matter is to be copied substantially as shown and described.

20. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir and a movable cloth which carries water from a water-supply in said reservoir to the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

21. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir and a movable absorbent band which carries water from a water-supply in said reservoir to the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

22. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir and a movable cloth which carries water from a water-supply in said reservoir to the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

23. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable absorbent band in contact with said wick and carrying water from said wetted wick to the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

24. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable cloth in contact with said wick and carrying water from said wetted wick to the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

25. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable absorbent band in contact with said wick and carrying water from said wetted wick to the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

26. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable cloth in contact with said wick and carrying water from said wetted wick to the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

27. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir and an absorbent band revoluble around said roller and dampened from a water-supply in said reservoir, which band dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

28. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir and a cloth revoluble around said roller and dampened from a water-supply in said reservoir, which cloth dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

29. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir and an absorbent band revoluble around said roller and dampened from a water-supply in said reservoir, which band dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

30. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir and a cloth revoluble around said roller and dampened from a water-supply in said reservoir, which cloth dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as described.

31. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir and a movable absorbent band which is wetted from said reservoir and which passes directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

32. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir and a movable cloth which is wetted from said reservoir and which passes directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

33. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir and a movable absorbent band which is wetted from said reservoir and which passes directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

34. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir and a movable cloth which is wetted from said reservoir and which passes directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

35. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable absorbent band revolving in contact with said wetted wick and passing directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

36. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable cloth revolving in contact with said wetted wick and passing directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

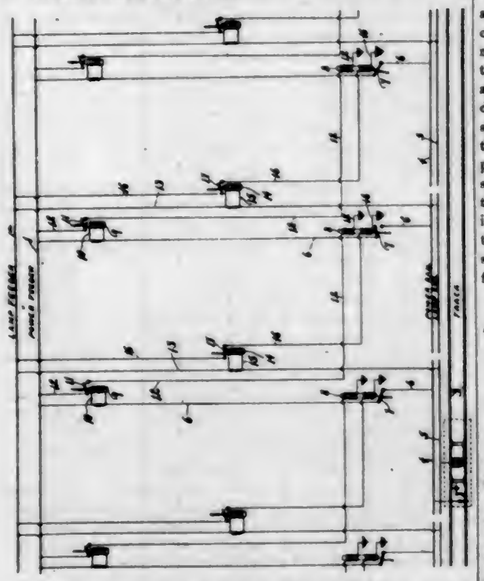
37. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable absorbent band in contact with said wetted wick and passing directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

38. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and a movable cloth in contact with said wetted wick and passing directly between the heated roller and the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

39. In a letter-copying machine, the combination of a means for wetting copying-paper upon which a letter or other subject-matter is to be copied, an electrically-heated roller, and a swivel-joint for connecting an electric conductor to an electrical resistance-coil within said roller, substantially as shown and described.

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**756,523. AUTOMATIC POWER CUT-OUT FOR ELECTRIC RAILWAYS. HARRY F. PIEPER, New York, N. Y. Filed Jan. 5, 1904. Serial No. 187,301. (No model.)**




*Claim.*—1. A track, a series of electric-power rails and a series of electric-lamp rails, dividing the track into blocks, and devices controlled by the completion of the lamp-circuit in one block for automatically cutting out the power in a preceding block.

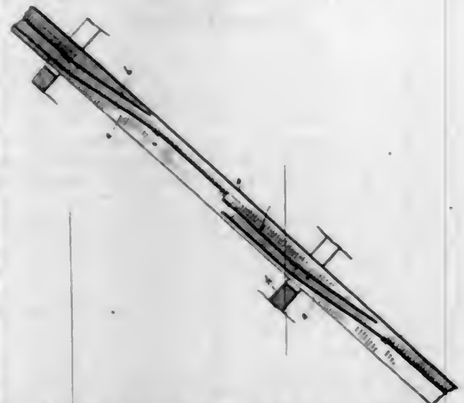
2. A track, a series of electric-power rails, and a series of electric-lamp rails, dividing the track into blocks, and devices controlled by the completion of the power-circuit or lamp-circuit in one block for automatically cutting out the electric power in a preceding block.

3. A track, a series of electric-lamp rails, and a series of electric-power rails, dividing the track into blocks, a power-cut-out electromagnet in each block, an electromagnet in each block energized by the completion of the lamp-circuit in that block for energizing the power-cut-out magnet of a preceding block to cut out the power in said preceding block.

4. A track, a series of electric-lamp rails, and a series of electric-power rails, dividing the track into blocks, a power-cut-out electromagnet in each block, an electromagnet energized by the completion of the power-circuit, an electromagnet energized by the completion of the lamp-circuit for energizing the power-cut-out electromagnet of a preceding block to cut out the power in said preceding block when the lamp or power circuit is completed in a succeeding block.

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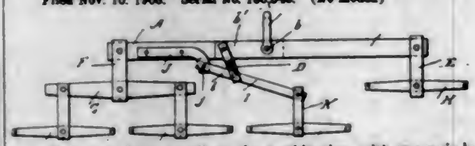
**756,524. DOOR FOR ELEVATOR-WELLS. JOSEPH RASKIN, New York, N. Y. Filed May 26, 1903. Serial No. 158,780. (No model.)**



*Claim.*—In a device of the type set forth, the combination with a series of pairs of vertically-slidable doors arranged one above the other the doors of each pair adapted to counterbalance, means connecting the doors of each pair of the series for simultaneously actuating the same, rotatable means supporting the actuating means, and pairs of tracks arranged to be engaged by the upper and lower doors of an upper pair and a lower pair of the series of doors respectively, the pair for the upper door comprising two tracks having their upper portions parallel, said tracks having an angular set-off portion, and one of the tracks being extended downwardly from the set-off portion thereof substantially vertically to a point adjacent the inner track of the lower pair, and the lower pair of tracks being similarly constructed and arranged, and having the upper vertical portion of the inner one lying adjacent and to one side of the said lower extended portion of the upper track, substantially as and for the purpose set forth.

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**756,525. DRAFT-EQUALIZER. LOUIS A. REEP, Hardy, Iowa. Filed Nov. 10, 1903. Serial No. 180,548. (No model.)**



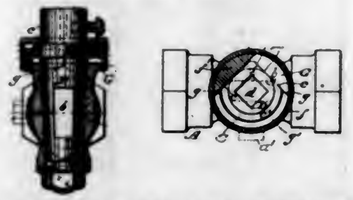
*Claim.*—1. In an equalizer, the combination, with two main levers pivoted together, one of the said levers having a short arm which overlaps the other said lever, and a draft attachment for the load connected to the two said main levers at their point of pivotal connection with each other; of draft connections attached to the outer ends of the said main levers, a link pivoted to the short arm of one main lever, an auxiliary lever pivoted to the said link and having a short arm which is pivotally supported from the other said main lever, and a draft connection attached to the free end portion of the said auxiliary lever.

2. In an equalizer, the combination, with two main levers pivoted together, one of the said levers having a short arm which overlaps the other said lever; of draft connections attached to the outer ends of the said main levers, a link pivoted to the short arm of one main lever, a bracket secured to the other said main lever, an auxiliary lever pivoted to the said link and arranged at an acute angle to the said main lever to which the said link is connected and projecting across the pivot connecting the two said main levers, said auxiliary lever having also a short arm which is pivoted to the said bracket, and a draft connection attached to the free end portion of the said auxiliary lever.



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**756,526. STOP-COCK. SIMON REISER, Cleveland, Ohio. Filed Jan. 13, 1904. Serial No. 188,818. (No model.)**



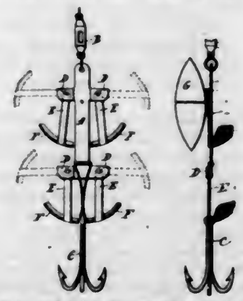
*Claim.*—1. In a right-and-left stop-cock, the combination of a cock-body having the usual through-passage and plug-aperture and a flange at its top, a plug having the usual through-port and a flange C, near its upper end, that is semisquare and semicylindrical in shape, a cylindrical extension above said flange, a loose cap apertured to fit snugly upon said extension and resting upon the flange C of the plug, a depending flange on the cap inclosing the flange C and also the flange on the top of the cock-body, and a tangentially-faced lug in the cap adapted to bear against one of the flat sides c of the flange C on the plug, substantially as set forth.

2. In a right-and-left stop-cock, the combination of a cock-body having the usual through-passage and plug-aperture and a flange at its top provided with stops *g*, a plug having the usual through-port and a flange C, near its upper end, that is semisquare and semicylindrical in shape, a cylindrical extension above said flange, a loose cap apertured to fit snugly upon said extension and resting upon the flange C of the plug, a depending flange on the cap inclosing the flange C and also the flange on the top of the cock-body, a tangentially-faced lug in the cap adapted to bear against one of the flat sides of the flange C on the plug, and means whereby the movement of the cap is limited by the stop-lugs on the top of the cock-body, substantially as set forth.

3. In a right-and-left stop-cock, the combination of a cock-body having the usual through-passage and plug-aperture and a flange at its top provided with stops *g*, a plug having the usual through-port and a flange C, near its upper end, that is semisquare and semicylindrical in shape, a cylindrical extension above said flange, with a loose cap apertured to fit snugly upon said extension and resting upon the flange C of the plug, a depending flange on the cap inclosing the flange C and also the flange on the top of the cock-body, and a tangentially-faced lug in the cap adapted to engage one of the flat sides of the flange C on the plug and also the stops *g* on the cock-body, substantially as set forth.

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**756,527. ARTIFICIAL BAIT. HARRY ST. CLAIR REYNOLDS, New Haven, Conn. Filed Feb. 5, 1904. Serial No. 192,109. (No model.)**



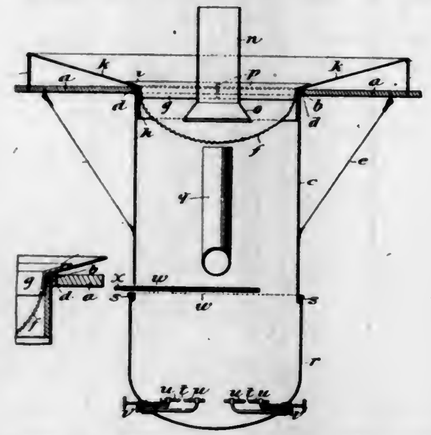
*Claim.*—1. An artificial bait comprising a body, legs pivoted thereto said legs provided at their outer ends with bowed feet, substantially as described.

2. An artificial bait comprising a body, legs pivoted thereto said legs provided at their outer ends with downwardly-extending bowed feet, substantially as described.

3. An artificial bait comprising a body, with sockets projecting outward on opposite sides thereof, legs pivotally connected with said sockets, said legs terminating in downwardly-extending bowed feet, substantially as described.

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**756,528. APPARATUS FOR PRODUCING ARTIFICIAL FOUNTAINS WITHOUT WATER. CLARENCE H. ROEDEL, Philadelphia, Pa., assignor to Edwin J. Jeitles, Philadelphia, Pa. Filed Aug. 18, 1903. Serial No. 169,903. (No model.)**



*Claim.*—1. An apparatus for producing an artificial fountain without water, comprising a receptacle adapted to hold a number of balls, an open-ended pipe located above said receptacle, and means located exteriorly of the said receptacle for forcing the said balls through the said pipe.

2. An apparatus for producing an artificial fountain without water, comprising a perforated receptacle adapted to hold a number of balls, a pipe located above said receptacle and having a funnel-shaped mouth opening over the bottom of said receptacle, and means for forcing the said balls upwardly through the said pipe.

3. An apparatus for producing an artificial fountain without water, comprising a wire sieve receptacle of semi-circular contour in transverse section, and which is adapted to receive and hold a number of balls, a pipe located above said receptacle, and means for directing a current of air through the said sieve and through the said pipe to convey the balls located in said sieve upwardly through the said pipe.

4. An apparatus for producing a fountain without water, comprising a wire sieve receptacle of semi-circular contour in transverse section, and which is adapted to receive and hold a number of balls, a pipe located above said receptacle, means for directing a current of air through the said sieve and through the said pipe to convey the balls located in said sieve upwardly through the said pipe, and a device for receiving the said balls as they descend and directing them back into the said receptacle.

5. In an apparatus for producing an artificial fountain without water, in combination, a cylinder, a wire sieve semi-circular in transverse section located in, and supported upon the upper end of, said cylinder, a pipe located above the said receptacle, and means for directing a blast of air through the said pipe.

6. In an apparatus for producing an artificial fountain without water, in combination, a cylinder, a receptacle, having a large number of adjacent openings through its walls, supported upon the upper end of said cylinder, a pipe located above the said receptacle and having an inverted funnel-shaped lower end over the bottom of said receptacle, and means for directing a blast of air through said pipe.

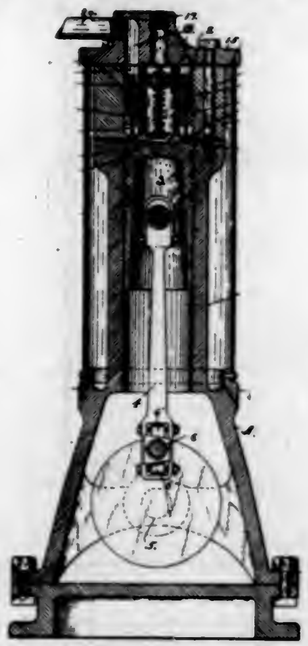
7. In an apparatus for producing an artificial fountain without water, in combination, a cylinder, a reflector secured to the lower end of said cylinder, electric lights located in said reflector, a wire screen or sieve receptacle located in the upper end of said cylinder, and a vertically arranged pipe having a funnel-shaped lower end situated above the bottom of said wire screen, and means for directing a blast of air upwardly through the said sieve, to the said pipe.

8. An apparatus for producing an artificial fountain without water comprising means for holding a number of balls, a directing device located above said means, and means located exteriorly of

said means and opposite to the said directing device for forcing said balls through the said device.

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**756,529. GAS-COMPRESSOR FOR ICE-MACHINES.** SAMUEL S. ROSE, Amador City, Cal. Filed Mar. 12, 1903. Serial No. 97,839. (No model.)



*Claim.*—1. The combination in a gas-compressor for refrigerating-machines, of a vertically-disposed cylinder, a piston, a valve-casing containing intake and outlet valves seating on the upper end of said cylinder, a removable ring surrounding and supported on the base of said cylinder, a cylindrical casing 21 secured to said ring and inclosing and out of contact with the cylinder and valve-casing, a head or cap having inlet and outlet ports resting on said valve-casing and provided with an annular groove on its under side to receive the upper end of said casing 21, and means for locking the said several parts rigidly together.

2. The combination in a gas-compressor, of a cylinder open at each end, a piston, a valve-casing comprising a cylindrical longitudinally-perforated block with integrally-formed valve-seats and intake or outlet valves located in the perforations, said valve-casing block seating over one end of said cylinder, a removable cylindrical casing concentric with and separated from and inclosing said cylinder and valve-casing block and of a length substantially that of the combined length of said cylinder and block, a cap seating over said valve-casing block and cylindrical casing and closing the annular space inclosed by said cylindrical casing, said cap having ports registering with the perforations in the valve-casing block, and bolts passing through said cap and valve-casing block into the cylinder-walls to unite said parts substantially as described.

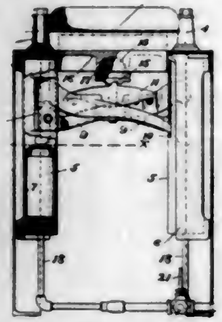
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**756,530. LETTER-PRESS.** WALTER A. ROSENBAUM, New York, N. Y. Filed May 22, 1903. Serial No. 158,331. (No model.)

*Claim.*—1. In a power letter-press, a stand, a bearing-plate, a movable platen, a cylinder and piston adapted to operate under fluid-pressure, means for transmitting power from said piston to said platen and a bearing means flexibly supported so as to yield in every direction and so as to bear directly against said platens, substantially as described.

2. In a power letter-press, a stand a bearing-plate, and a platen in combination with a pressure-knob arranged within a socket on said platen and an elastic cushion on said knob for supporting the edge of said socket, substantially as described.

3. In a power letter-press, a stand, a bearing-plate, and a platen in combination with a flexibly-mounted pressure-knob entering a socket in said platen, and an elastic cushion surrounding said knob for supporting the edge of said socket, substantially as described.



4. In a power letter-press, two cylinders and pistons adapted to operate under fluid-pressure, two separately-fulcrumed pressure-levers respectively bearing upon said two pistons, an equalizing-lever carried by said pressure-levers, compression means for a letter-book and means for transmitting pressure from the equalizing-lever to the compression means, substantially as described.

5. In a power letter-press, two cylinders and pistons adapted to operate under fluid-pressure two separately-fulcrumed pressure-levers bearing respectively upon said two pistons, compression means for a letter-book, and means for transmitting the pressure from said pressure-levers to said compression means, substantially as described.

6. In a power letter-press, two pressure-levers, means for applying the power to one end of each, a number of bearing-sockets on each lever and equalizer-bars, the ends of which are adapted to find support in said sockets, substantially as described.

7. In a power letter-press, two pressure-levers, an equalizing-lever supported by said pressure-levers at its two ends, a pressure-knob having a pin passing through an aperture in the middle of said equalizing-lever, and a platen supported by said pressure-lever, substantially as described.

8. In a power letter-press, two pressure-levers, an equalizer carried thereby and pressure-knob flexibly supported in the middle of said equalizing-bar, a platen having a socket fitting over said knob and a flexible cushion on said knob under the edge of said socket, substantially as described.

9. In a hydraulic letter-press, a stand, a stationary compression member, two pressure-cylinders, a piston in each cylinder, a movable platen connected to said pistons and two securing-bolts passing through the ends of said compression member and securing both the pressure-cylinders and the compression member to said stand, substantially as described.

10. In a hydraulic letter-press, and in combination with the fixed compression member and platen thereof, two pressure-cylinders, a fulcrum beside each, said fulcrums being placed on opposite sides of said cylinders, a plunger in each cylinder and two transmission-levers each of which has a bearing on one of said fulcrums at one end while its other end is supported by one of said plungers, substantially as described.

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**756,531. SPRING-KNOTTING MACHINE.** JOHN H. ROSS, San Francisco, Cal., assignor to American Steel & Wire Company, San Francisco, Cal., a Corporation. Filed Sept. 16, 1903. Serial No. 173,429. (No model.)

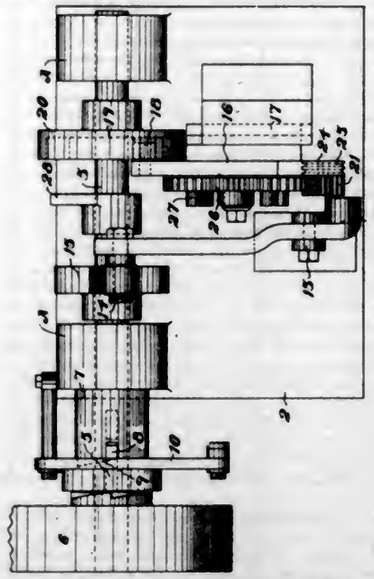
*Claim.*—1. In a knotting-machine the combination of means for gripping two sections of wire, means including a reciprocating part for bending one section transverse to the other, means carried by said reciprocating part for wrapping said transversely-bent portion around the other section, and means for giving said several operating means a coördinate movement.

2. In a knotting-machine, the combination of means for gripping two substantially parallel sections of wire, means for bending one section transverse to the other, wrapping means including a slotted rotatable jaw member carried by said bending means, and means for giving said several gripping, bending and wrapping means a coördinate movement.

3. In a knotting-machine, the combination of wire-grippers, a relatively disposed reciprocating carriage, a rotatable jaw member on and movable with said carriage, and means for giving said grippers, carriage and jaw member a coördinate movement.



4. In a knotting-machine, the combination with wire-gripping means of a slotted pinion, a reciprocating carrier therefor and means for operating said carrier and pinion coördinately.



5. In a knotting-machine the combination of a wire-gripping means adapted to receive parallel sections of wire, a rotatable wrapping member, a carriage reciprocable at right angles to the length of the wire held by said grip means on which said wrapping member is mounted, and means for reciprocating said carriage and rotating said wrapping member coördinately.

6. In a knotting-machine, the combination with wire-gripping means, of a slotted pinion movable in a plane with and transverse to the gripped wire, and means for operating said pinion.

7. In a knotting-machine, the combination of a reciprocating carriage, a slotted rotatable jaw on said carriage, means for operating said carriage and jaw, and means for holding two sections of wire which are to be united in the path of said jaw.

8. In a knotting-machine, the combination of a reciprocating carriage, a slotted rotatable jaw thereon, means for giving said carriage and jaw a coördinate movement and means for holding conjoinable sections of wire in the path of said jaw.

9. In a knotting-machine, the combination with a reciprocating carriage, a slotted rotatable jaw thereon, means for reciprocating said carriage and means for rotating said jaw intermittently and means for holding conjoinable sections of wire in the path of said jaw.

10. In a knotting-machine, the combination with wire-holding means of a reciprocating carriage, an intermittently-rotatable slotted jaw thereon, and means for operating said carriage and jaw coördinately.

11. In a knotting-machine, the combination of a support, a drive-shaft journaled therein, wire-gripping means, a reciprocating carriage, a rotatable slotted jaw on said carriage and means for operating said gripping means, carriage and jaw coördinately during each revolution of said shaft.

12. In a knotting-machine, the combination of a support, a drive-shaft, a vise having a fixed member and a movable member operatable by said shaft, a carriage reciprocable in a plane approximate to said vise, connections of said carriage with the drive-shaft for effecting such reciprocation, a slotted rotatable jaw member carried by said carriage and means for rotating said jaw member.

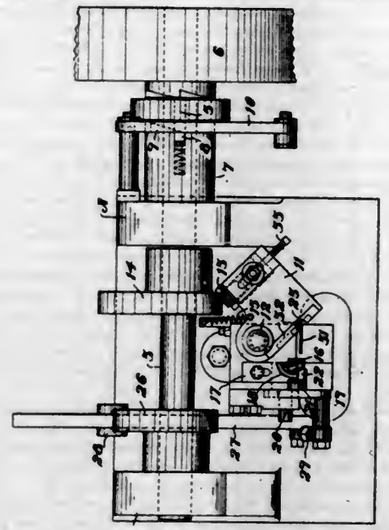
13. In a knotting-machine, the combination of a support a vise operatable by said shaft, a reciprocating carriage, operative connections between the shaft and carriage, a slotted pinion mounted on said carriage, a gear upon the carriage meshing with said pinion, and means for rotating the said gear intermittently and correlative with the operations of the vise and carriage.

14. In a knotting-machine, the combination with wire-gripping means, a reciprocating carriage and a slotted rotatable jaw member, of a guide 31 supported on the carriage and interposable in the slot in said jaw, and means for operating the jaw and carriage.

15. In a knotting-machine the combination with a suitable support of a rotatable longitudinally-slotted jaw member journaled in said support, said support having an opening with which the slot in said jaw member is adapted to register to admit a wire centrally of the jaw, means for rotating the latter, said jaw member having wire-engaging means at one end, the opposite end of the jaw having a conical recess and a guide member disposed approximate to said recessed end and adjustable in the line of the axis of the jaw.

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**756,532. SPRING-DOWEL-FORMING MACHINE.** JOHN H. ROSS, San Francisco, Cal., assignor to American Steel & Wire Company, San Francisco, Cal., a Corporation. Filed Sept. 25, 1903. Serial No. 174,602. (No model.)



*Claim.*—1. In a spring-dowel-forming machine, the combination of spring-supporting means including a fixed part and an adjustment part having a curved working surface conformable to the arc of the spring-section to be engaged, means for bending the end of the spring-wire substantially at right angles to the axis of the spring, means for bending the portion so bent at right angles upon itself, and means for giving said several bending means a coördinate movement.

2. In a machine for forming dowels on coil furniture-springs and the like, the combination of segmental spring-holding members, one of said members having a surface corresponding to the radius substantially of said segment, means coöperating with said surface for bending the spring end substantially at right angles to the axis of the spring, and means having a coördinate movement with said bending means for again bending the spring end outward parallel with the axis of the spring, said bending means including a pivoted part 21 having a projection 25 substantially as described.

3. In a machine of the class described, the combination of spring-supporting members, a horizontally-movable former member coöperating with said supporting members to bend and clamp the spring, and a vertically-movable former member, and means for giving the latter member a movement coördinate with the horizontal former, said means including an intermittently-rotatable shaft and connections between said shaft and the several formers.

4. In a machine of the class described, the combination of a bed-plate or equivalent support, a projection on said support having a convexed edge and a straight edge, a guide coöperating with said convexed edge to hold the spring, a former member coöperating with the straight edge to bend and clamp the spring, and a former operating at right angles to the plane of the bed-plate, and means for operating said formers.

5. In a machine of the class described, the combination of a rigid part having a straight edge and a convexed surface conformable to the arc of the spring end to be bent, a part adjustable relative to said convexed surface and coacting therewith to hold the spring, a horizontally-movable member, a member movable at right angles to the plane of said horizontal member, and means for giving said members a coördinate movement.

6. In a machine of the class described, the combination of a support, an intermittently-rotatable shaft, horizontal and vertical former members operatable by said shaft, and means for supporting a coil-spring relative to said formers.

7. In a machine of the class described, the combination of coil-spring-holding means, a horizontal former, a vertical former, an intermittently-rotatable shaft, cams on said shaft, and means engaged by said cams for giving said formers a coördinate movement.

8. In a machine of the class described, the combination of a support, a shaft journaled therein, a former member oscillating in a horizontal plane, a second former member oscillating in a vertical plane, a coil-spring support relative to said former member, and means operatable by the shaft engaging said former members to give them a coördinate movement.

9. In a machine of the class described, the combination of a bed-plate or like support, an oscillating horizontal former member having a removable face-plate, means for varying the oscillation of said former, an oscillating vertical former member, spring-holding means on the bed-plate relative to said former members, and a guide or stop engaging the end of the spring to regulate the length of the dowel.

10. In a machine of the class described, the combination with coil-spring-supporting means including a part having a convex surface and a surface substantially at right angles to said convex surface, of means whereby a section of the spring is bent substantially at right angles to the axis of the spring, and an oscillating former member engaging the said bent portion to bend it again at right angles upon itself, and means for effecting said oscillation.

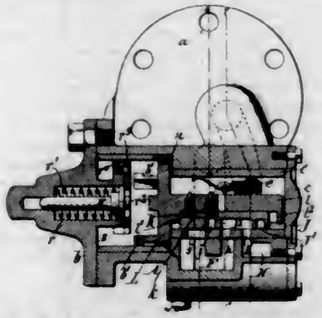
11. In a machine of the class described, the combination of coil-spring-supporting means including adjustable curved guides, a former member coöperating with said guides to bend and clamp the spring end, and an oscillating former member engaging the spring adjacent to said clamp members, and means for giving said member an oscillatory movement through an arc of approximately ninety degrees.

12. In a machine of the class described, the combination of a coil-spring-supporting means, a horizontal oscillating former, a vertical oscillating former, stop means for regulating the length of the dowel, and means for operating said formers coördinately, said operating means including an intermittently-rotatable shaft.

13. In a machine of the class described, the combination of a bed-plate or equivalent support, a pivoted horizontal former, a pivoted vertical former, spring-supporting means upon said bed-plate relative to said formers, a drive-shaft, means intermediate of said shaft and formers whereby the formers are given a coördinate movement, and means for rotating the shaft intermittently.

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**756,533. AIR-BRAKE MECHANISM.** JOHN R. SCHRADER, Buffalo, N. Y. Filed Nov. 18, 1902. Serial No. 131,839. (No model.)



*Claim.*—1. In a brake mechanism, the combination of a valve-chamber, a cylinder connected at its inner end with the valve-chamber, a valve arranged in said chamber, a piston arranged in the cylinder and connected on its rear side with the valve, guide-lugs arranged on the front side of the piston and engaging with the bore of the cylinder, a head closing the outer end of the cylinder and having a socket projecting inwardly therefrom, a graduating stem arranged in the socket and adapted to be engaged by the piston, a spring arranged in the socket and engaging with said stem for resisting the outward movement thereof, a stop applied to the inner end of the socket for limiting the inward movement of said stem, and steadying-lugs arranged on the inner end of the socket opposite the spaces between the guide-lugs on the piston and engaging with the bore of the cylinder, substantially as set forth.

2. In a brake mechanism, the combination of a main-valve chamber having connections with a supply-pipe, an auxiliary reservoir and a brake-cylinder, a supplemental-valve chamber having connections with said supply-pipe, the main-valve chamber and brake-cylinder connection, a main valve for controlling the connection between the main-valve chamber and the brake-cylinder and supplemental chamber, and an emergency-valve for controlling the connections between said supplemental chamber and the supply-pipe and brake-cylinder and consisting of two connected piston-sections moving in the supplemental chamber, one of said sections being acted upon by pressure from said main chamber while the other section is arranged to open and close the connections between said supplemental chamber and the supply-pipe and brake-cylinder, substantially as set forth.

3. In a brake mechanism, the combination of a main-valve chamber having connections with a supply-pipe, an auxiliary reservoir and a brake-cylinder, a supplemental-valve chamber connected at one end by an emergency-passage with the main-valve chamber and at its opposite end by separate ports with the supply-pipe and brake-cylinder connection, a main valve for controlling the connections between said main chamber and said supplemental chamber and brake-cylinder, and an emergency-valve for controlling the connections between the supplemental-valve chamber and the supply-pipe and brake-cylinder and consisting of two connected piston-sections moving in said supplemental chamber, one of said sections being arranged to open and close said ports while the other section is arranged between the emergency-passage and said ports and adapted to be acted upon by pressure from the main-valve chamber, substantially as set forth.

4. In a brake mechanism, the combination of a main-valve chamber having connections with a supply-pipe, an auxiliary reservoir and a brake-cylinder, a supplemental-valve chamber connected at one end by an emergency-passage with the main-valve chamber and at its opposite end by separate ports with the supply-pipe and brake-cylinder connection, a main valve for controlling the connections between the main chamber and the supplemental chamber and brake-cylinder, an emergency-valve for controlling the connections between the supplemental-valve chamber and the supply-pipe and brake-cylinder and consisting of two connected piston-sections moving in the supplemental-valve chamber, one of said sections being arranged to open and close said ports while the other section is arranged between the emergency-passage and said ports and adapted to be acted upon by pressure from the main-valve chamber for opening this valve, and a spring for closing the emergency-valve, substantially as set forth.

5. In a brake mechanism, the combination of a main-valve chamber having connections with a supply-pipe, an auxiliary reservoir and a brake-cylinder, a supplemental-valve chamber connected at one end by an emergency-passage with the main-valve chamber and at its opposite end by separate ports with the supply-pipe and brake-cylinder connection, a main valve for controlling the connections between the main chamber and the supplemental chamber and brake-cylinder, an emergency-valve for controlling the connections between the supplemental chamber and the supply-pipe and brake-cylinder and consisting of two connected piston-sections moving in said supplemental chamber, one of said sections being arranged to open and close said ports while the other section is arranged between the emergency-passage and said ports and adapted to be acted upon by pressure from the main-valve chamber, and a stem arranged on one end of the emergency-valve and projecting through the adjacent head of its chamber, substantially as set forth.

6. In a brake mechanism, the combination of a main-valve chamber having connections with a supply-pipe, an auxiliary reservoir and a brake-cylinder, a supplemental-valve chamber connected at one end by an emergency feed-passage with the main-valve chamber and by emergency exhaust-ports with an exhaust-passage and at its opposite end by separate ports with the supply-pipe and brake-cylinder connection, a main valve for controlling the connections between the main chamber and the supplemental chamber and brake-cylinder and between said exhaust ports and passage, and an emergency-valve for controlling the connections between the supplemental valve-chamber and the supply-pipe and brake-cylinder and consisting of two connected piston-sections moving in the supplemental-valve chamber, one of said sections being arranged to open and close said ports while the other section is arranged between the emergency feed and exhaust passages and said ports and adapted to be acted upon by pressure from the main-valve chamber, substantially as set forth.

7. In a brake mechanism, the combination of a body having a main-valve chamber, a passage for connecting the cylinder with a supply-pipe, a coupling-plate arranged on one side of said chamber and cylinder, reservoir and brake passages extending from said chamber to the face of said plate, and a supplemental-valve chamber arranged on the opposite side of the main-valve chamber and having connections with the main-valve chamber and the supply-pipe and brake-passage, a main valve arranged in the main chamber for controlling the connection of said chamber with the brake-passage and with the supplemental chamber, and an emergency-valve arranged in the supplemental chamber for controlling the connection between the supply-pipe and the brake-passage, substantially as set forth.

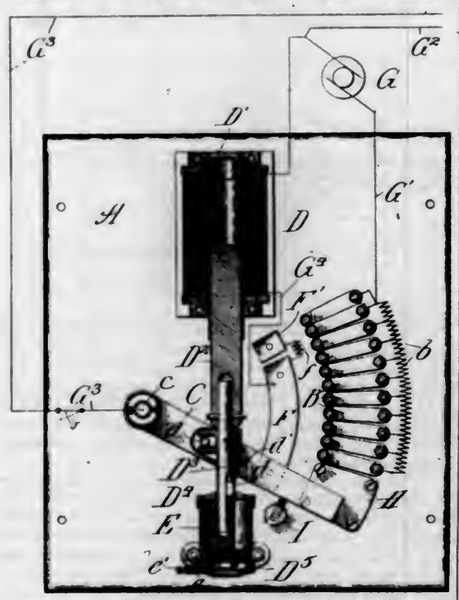
8. In a brake mechanism, the combination of a body having a horizontal main-valve chamber, a horizontal cylinder connected with said valve-chamber, a supply-passage for connecting the cylinder with a train-pipe, a coupling-plate arranged vertically on the rear side of said chamber and cylinder, reservoir and brake passages extending from said chamber to the face of said plate, a supplemental-valve chamber arranged vertically in front of the main-valve chamber, an emergency-passage connecting the upper end of the supplemental chamber with the main chamber, ports connecting the lower end of the supplemental chamber with the supply-passage and the brake-passage, a main valve controlling the connection between the main chamber and the brake-passage and emergency-passage, a piston arranged in said cylinder and connected with the main valve, an emergency-valve arranged in the supplemental chamber and consisting of two connected piston-sections, the upper section being arranged below the emergency-passage while the lower section is adapted to open and close said ports, and a spring for normally holding the emergency-valve in its elevated position, substantially as set forth.

9. In a brake mechanism, the combination of a triple-valve casing, a reducing-valve casing formed integrally with the triple-valve casing and connected at one end with the brake-passage of said triple casing, and a reducing-valve arranged in said reducing-casing, substantially as set forth.

10. In a brake mechanism, the combination of a reducing-valve casing provided with a relief-opening, and a reducing-valve which controls said opening and uncovers the same when subjected to the brake applying air-pressure, said opening gradually widening in the direction in which the valve is moved under air-pressure for uncovering the opening and permitting the air to vent into the atmosphere, substantially as set forth.

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**756,534. CIRCUIT-CONTROLLER.** JACOB L. SCHUREMAN, Jr. Chicago, Ill. Filed Jan. 11, 1904. Serial No. 188,522. (No model.)




*Claim.*—1. The combination of a motor, a switch-controlling magnet, a rheostat connected with the motor-circuit, a switch coacting therewith, a switch-restraining device opposing the magnet, and lost-motion connection between the switch and said device, whereby quick movement of the switch at the instant of closing the motor-circuit is effected.

2. The combination of a switch-controlling magnet, a rheostat connected with an electric circuit, a switch coacting therewith and actuated by said magnet, and a switch-restraining device comprising a vacuum-cylinder and a piston therein having lost-motion connection with said switch, for the purpose set forth.

3. The combination of a switch-controlling magnet having a movable core-section, a rheostat connected with an electric circuit, a switch coacting therewith and connected with said core-section, and a switch-restraining device comprising a cylinder and a piston therein having a stem in alinement with said core-section and having lost-motion connection therewith.

4. The combination of a magnet having a movable core-section, a stem connected with one end of said core-section, a pivoted switch connected with said stem, a cylinder beneath the switch, a piston within said cylinder provided with an upwardly-extending stem having lost-motion connection with said first-named stem, and a rheostat connected with an electric circuit and coacting with said switch.

5. The combination of a motor, a switch-controlling magnet, an electric circuit having a conductor connected with said motor and said magnet and a conductor leading to a switch, a switch connected with said last-named conductor and actuated by said magnet, a rheostat coacting with said switch and connected with said motor, a rheostat coacting with said switch and connected with said magnet, the first-named rheostat operating to cut out resistance and the second-named rheostat operating to cut in resistance during one movement of said switch, and a restraining device for said switch opposing the action of said magnet and having lost-motion connection with the switch, for the purpose set forth.

6. The combination of a motor, an electric circuit having a conductor connected with said motor, a magnet connected with said motor, a switch supported on a pivot connected with another conductor of said electric circuit, a rheostat over which the free end of said switch may be moved and which has its upper end connected with said motor, a second rheostat between said first-named rheostat and the pivot of said switch, a magnet connected with the lower portion of said second-named rheostat and provided with a depending movable core-section connected with said switch, and a restraining device comprising a cylinder and a piston therein having a stem having lost-motion connection with said core-section.

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**756,535. CLASP.** MARTIN L. SENDERLING, Jersey City, N. J. Filed Feb. 3, 1904. Serial No. 191,795. (No model.)



*Claim.*—1. A clasp comprising a strip of metal bent to form two spring-jaws and an ear struck from one of the jaws and folded back upon the same to form a rear extension thereof for use in opening the jaws.

2. A clasp comprising a strip of metal bent to form two spring-jaws, an ear struck from one of the jaws and folded back upon the same to form a rear extension thereof for use in opening the jaws and a paper-cutting blade forming a front extension of one of the jaws.

3. A clasp comprising a strip of metal bent to form two spring-jaws and ears struck from the jaws and folded back upon the same to form rear extensions thereof for use in opening the jaws.

4. A clasp comprising a strip of metal bent to form two spring-jaws, ears struck from the jaws and folded back upon the same to form rear extensions thereof for use in opening the jaws, and a paper-cutting blade forming a front extension of one of the jaws.

5. A clasp comprising a single strip of metal bent to form two spring-jaws and ears struck therefrom forming rear extensions thereof, one of said ears being folded back upon the jaw.

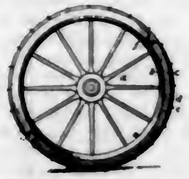
6. A clasp comprising a single strip of metal bent to form two spring-jaws, ears struck therefrom forming rear extensions thereof, one of said ears being folded back upon its jaw, and a paper-cutting blade forming an extension of one of the jaws.

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**756,536. SAFETY-TIRE.** ABSALOM F. SHERWOOD, Peekskill, N. Y. Filed Mar. 23, 1903. Serial No. 149,221. (No model.)

*Claim.*—1. The combination in a supplementary tire for soft tires, of a metallic tire in two or more sections, lugs at the ends of the sections for securing the sections together, lugs projected down-

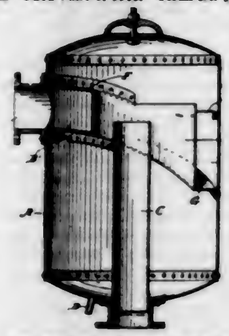
ward from the sides of the sections for attachment to clamps under the fellies, the sections crescent-shaped in cross-section, removable calks in the thick part of the sections, and soft-rubber washers between the joints of the sections.



2. The combination in a supplementary tire for soft tires, of a metallic tire in two or more sections, lugs at the ends of the sections for securing the sections together, lugs projected downward from the sides of the sections for attachment to clamps under the fellies, the sections crescent-shaped in cross-section, and removable calks in the thick part of the sections.

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**756,537. STEAM-SEPARATOR.** FRANK A. SIMONDS, Grand Rapids, Mich. Filed June 3, 1903. Serial No. 160,489. (No model.)



*Claim.*—1. In a steam-separator, the combination of a case having an inlet-opening, a separating-chamber extending from the inlet-opening and having an open end to discharge water, and an open upper side to discharge steam, and an exit-pipe in the case.

2. In a steam-separator, a case having an inlet-opening, a spiral and downwardly-inclined separating-chamber having an open lower end to discharge water, and an open upper side to discharge steam, and an exit-pipe in the case and having its open end above the bottom of the end opening of the separating-chamber.

3. In a steam-separator, the combination of a case having a lateral inlet-opening, a separating-chamber extending spirally downward from the inlet-opening and open at its upper side throughout a part of its length, and also open at its lower end, and an exit-pipe in the axis of the case and having its open end near the top of the case.

4. In a steam-separator, a case having a lateral inlet-opening, a separating-chamber extending spirally downward from the inlet-opening, said chamber being reduced horizontally and enlarged vertically toward its inner end, and also being open at the top throughout a portion of its length at the inner end, and an exit-pipe in the axis of the case, and having its open end near the top of the same.

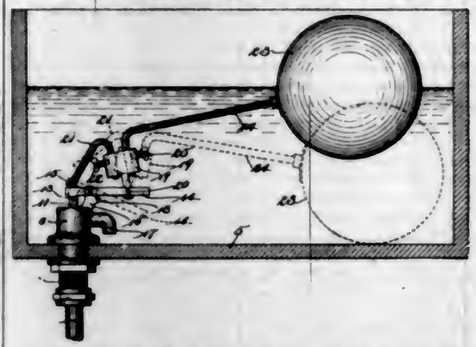
5. In a steam-separator, a cylindrical case closed at the ends and having a lateral opening near the top, a separating-chamber extending from said opening and having its outer wall formed by the case, and an inner wall to said chamber arranged eccentric to the axis of the case, a bottom to said chamber extending spirally downward from beneath said opening, and a top to said chamber extending from above said opening above a portion only of said chamber, and an exit-pipe in the axis of the case.

6. In a steam-separator, the combination of a cylindrical case closed at the ends and having a lateral inlet-opening near the top, a tapered, spiral, and downwardly-inclined plate attached to the case, a vertical wall extending upward from the inner edge of said plate and eccentric to the axis of the case, and an exit-pipe in the axis of the case and having its open end opposite said wall.

7. In a steam-separator, the combination of a cylindrical case closed at the ends and having a lateral inlet-opening near the top, a tapered, spiral, and downwardly-inclined plate attached to the case at its outer edge and below the said opening, a corresponding plate above said opening and of less length than the first-named plate, a vertical wall connecting said plates and extending the full length of the lower plate, and having a horizontal upper edge extending beyond the upper plate, and an exit-pipe in the axis of the case and having its open end opposite said wall.

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**756,538. BALL-COCK FOR TANKS.** FRANKLIN C. SMITH, New Bedford, Mass. Filed June 20, 1903. Serial No. 162,360. (No model.)

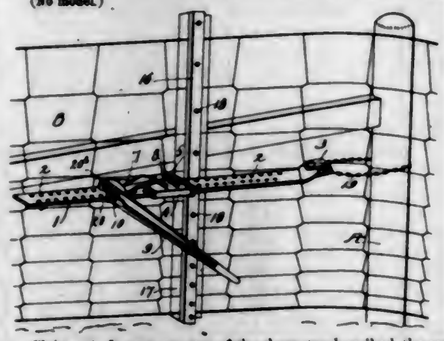


*Claim.*—1. A ball-cock for tanks comprising in its construction an inlet-pipe, a valve-lever pivoted thereto, a valve connected to said lever at one side of the pivot thereof, a rocking holder pivoted to said lever at the opposite side of said pivot from that to which said valve is connected, an arm fast to said rocking holder and constructed to abut against said lever, and means to adjust said arm with relation to said lever.

2. A ball-cock for tanks comprising in its construction a valve-lever, a pivot therefor, a rocking holder pivoted to said valve-lever, a float fast to said rocking holder, an arm fast to said rocking holder, constructed to abut against said valve-lever, and means to adjust said arm with relation to said valve-lever.

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**756,539. STRETCHER.** PETER SOMMER, PETER W. SOMMER, and JOSEPH W. SOMMER, Peoria, Ill. Filed Jan. 27, 1903. Serial No. 140,819. (No model.)



*Claim.*—1. In an apparatus of the character described, the combination of a perforated draw-bar, a clamping part slidable relative to the fixed position of the bar and in juxtaposition thereto, a member slidable on the bar having portions for engaging and guiding the clamp in its movement, a lever having multiple movable fulcrum-points, means cooperating with the fulcrum-points of lever and perforations in the bar, and connections between the lever and slidable member, substantially as specified

2. In a fence-stretching apparatus, the combination of a draw-bar with perforations lying in angles oblique to each other, a two-part clamp, a sleeve slidable on the bar with a hooked-shaped end engaging the clamp, a lever having semicircular notches and straddling the bar, pins to engage the notches of the lever and perforations in the bar when coincident, and a reach from the sleeve engaged by the lever, substantially as described.

3. In a fence-stretcher, the combination with an anchor-post, of a draw-bar connected to the post and provided with two rows of perforations lying oblique to each other, a clamping device arranged transverse to the length of the bar, a sleeve slidable on the bar having means engaging the clamping device, a lever having bifurcated extensions to straddle the bar and a pair of notches in the side of said extensions, a reach pivotally secured to the sleeve and engaging the lever, and a pair of pins alternately cooperating with the notches in the lever and perforations of the bar when the notches and perforations are brought coincident, substantially as described.



4. In a fence-stretcher the combination with an anchor-post, of a draw-bar connected to the post and provided with two rows of perforations lying oblique to each other, a clamping device arranged transverse to the length of the bar, a sleeve slidable on the bar having means engaging the clamping device, a lever having extensions straddling the bar and provided with depressions on the matching faces of the extensions and a pair of notches in their sides, reaches pivotally secured to the sleeve and having studs adapted to alternately engage the depressions in the extensions of the lever, and pins cooperating with the notches in the lever and perforations in the bar, substantially as described.

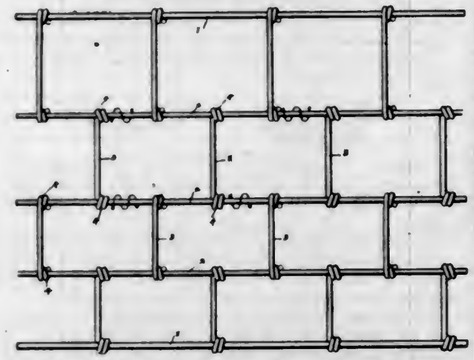
5. Stretching mechanism, comprising a draw-bar carrying a clevis on one end, a two-part clamping device carried in juxtaposition to the bar, a sleeve slidably arranged on the bar having means engaging the clamp, a hand-lever fulcrumed on the bar having multiple fulcrum-points, and means having a fixed connection with the sleeve and duplicate engaging points with the lever for advancing the clamping part in advance of the sleeve when applying power to the lever, substantially as described.

6. A stretching apparatus, consisting of a fixed draw-bar, a vertically disposed and movable clamping part, a member slidable on the bar having a hooked portion engaging the clamping part, a reach pivoted to the slidable member in line with the clamping part, a lever straddling the bar, movable center pins for said lever whereby its points of fulcrum may be intermittently changed, said lever where it straddles the bar engaging the reach, substantially as specified.

7. A stretching apparatus, comprising a perforated draw-bar, a transversely-disposed clamping-body, a slidable member on the bar having means for engaging the clamping-body, a lever having a slotted forward portion adapted to straddle the draw-bar and provided with depressions 15, oppositely-disposed reaches 7 pivotally attached to the slidable member and having means for alternately engaging the depressions 15 of the lever, and pins forming fulcrum-points for the lever on the bar and movable on oblique lines for advancing the lever on the bar and locking the lever in adjusted positions, substantially as described.

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**756,540. WIRE FENCING.** JOSEPH W. SOMMER, Peoria, Ill. Filed Aug. 28, 1903. Serial No. 171,106. (No model.)

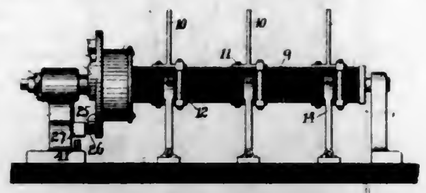


*Claim.*—The herein-described wire fencing, comprising a series of parallel strand-wires and a plurality of short sectional stay-wires connected with adjacent strands in break-joint fashion, the ends of succeeding stay-sections coiled around coinciding strands in the same direction, while the coils of the opposite ends of such stay-sections with adjoining strands are in an opposite direction but uniformly in the same direction with all the coils on such adjoining strands, substantially as specified.

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**756,541. ELECTRIC SWITCH.** PETER SORENSEN, Brooklyn, N. Y. Filed Nov. 23, 1900. Serial No. 37,424. (No model.)

*Claim.*—1. In an automatic quick-action power-driven switch, the combination with rotary contact-arms and cooperating fixed contacts of a disk having thereon staggered projections provided with oblique engaging faces, a detent-pin in the path of said projections and adapted to be forced out thereof by said oblique faces, and means for temporarily holding the pin against displacement by said projections.



2. In an automatic switch, the combination with rotary contact-arms, of a spring for rotating them, a disk rotating with said arms and provided with projections arranged in concentric circles, a detent-lever carrying a pin for engagement with said projections, a catch for holding said pin in such engagement, tripping-levers for releasing said catch, and a time mechanism for operating said levers.

3. A rotary switch comprising in combination a rotary shaft carrying radially-projecting contact-arms, contact-jaws in the path of said arms and with which engagement is simultaneously made, a spring connected to said shaft, a step-by-step disk connected to said spring and shaft, a detent cooperating with said disk, a catch controlling said detent, tripping-levers for throwing said catch, and a time mechanism for operating said levers substantially as set forth.

4. In an automatic quick-action switch, the combination with a rotary contact-carrying shaft and a driving-spring therefor, of a stop-disk rotating with said shaft and provided with stops or lugs arranged in concentric circles, a detent-lever adapted to engage alternately with the stops in said circles, a catch for holding the detent in position of engagement and means for releasing said catch to permit the detent to reverse its position and allow rotation of the disk one step.

5. In an automatic switch, the combination with a rotary contact-bearing shaft and a driving power therefor, of a stop-carrying disk rotating with said shaft and having the stops arranged in concentric circles as described, a detent-lever engaging with said stops by surfaces of engagement adapted to force the detent out of locking position, a catch for holding the detent in locking position, means for holding the catch in position to cause the detent to lie in either of the said concentric circles, and tripping devices for releasing said catch in either of its positions.

6. In an automatic switch, the combination with the rotary contact-bearing shaft and its driving power, of a disk having thereon staggered projections provided with inclined engaging faces, a detent in the path of said projections and adapted to be forced out of said path by the engaging face, a catch for temporarily holding the detent against displacement and means for freeing the catch, as and for the purpose described.

7. In an automatic switch, the combination of a power-actuated rotary switch device, a detent-lever, stops carried by the rotary structure of the switch and adapted to engage and reverse the position of said lever, a catch for locking said lever in either of its positions, two tripping-levers for releasing said catch in its two positions respectively, and a time mechanism having independently-adjustable actuating-pins for operating on said levers at predetermined times.

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**756,542. SPINNER.** HENRY F. STIMPS, Chicago, Ill. Filed Apr. 13, 1903. Serial No. 152,378. (No model.)

*Claim.*—1. The combination with the flier and the bobbin of a spinning-machine, of a longitudinally-reciprocating non-rotating shaft, a bearing in which said shaft is slidable, and a brake comprising a member fixed to said shaft, and a member connected directly with said bobbin.

2. The combination with the flier and the bobbin of a spinning-machine, of a longitudinally-reciprocating non-rotating shaft, a fixed bearing in which said shaft is slidable, and a brake comprising an outer member located between said outer member and the bobbin and fixed to said shaft, and an inner member provided with a projecting button detachably connected directly with said bobbin.

3. The combination with the flier and the bobbin of a spinning-machine, of a longitudinally-reciprocating non-rotating shaft, a fixed bearing in which said shaft is slidable, and a brake comprising a

casing fixed to said shaft and provided at one side with an annular channel, an inner member, and a connection between said inner member and the bobbin moving in said annular channel.



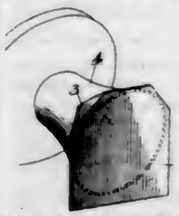
4. The combination with the flier and the bobbin of a spinning-machine, of a longitudinally-reciprocating non-rotating shaft, and a brake comprising a casing fixed to said shaft and provided at one side with an annular channel, and an inner member connected with said bobbin and having an adjustable shoe bearing on the inner surface of said casing.

5. The combination with the flier and the bobbin of a spinning-machine, of a longitudinally-reciprocating non-rotating shaft, and a brake comprising a casing fixed to said shaft, and an inner member comprising a journal-arm having connection with said bobbin, and an adjustable spring-held brake-shoe contacting with the inner surface of said casing.

6. The combination of a flier having at one end a hollow stub-shaft, a stationary bearing for said stub-shaft, a non-rotating reciprocable hollow shaft extending through said stub-shaft, reciprocating means connected with the rear end of said second-named shaft, a shaft extending through said second-named shaft, a bobbin journaled on the front portion of said third-named shaft, a friction member fixed to the front end of said second-named shaft, and a coacting friction member detachably connected with said bobbin, for the purpose set forth.

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**756,543. SANITARY ATTACHMENT FOR TELEPHONES.** HUGH L. THOMPSON, Waterbury, Conn. Filed Dec. 26, 1903. Serial No. 186,676. (No model.)



*Claim.*—1. A sanitary attachment for telephones, comprising a sheet provided with bending lines to permit the sheet to be bent to form hooks by which it may be attached directly to the telephone-mouthpiece.

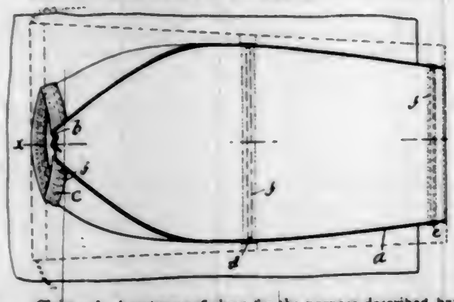
2. A sanitary attachment for telephones, comprising a sheet having diagonal lines of weakness across its corners to permit the corners to be bent into hooks for attaching the sheet temporarily directly to the telephone-mouthpiece.

3. A sheet of antiseptic, germicidal, or disinfecting material for attachment to the mouthpiece of a telephone, provided with integral hooks for hooking it temporarily on the telephone-mouthpiece.

4. Sanitary attachments for telephones, comprising a pile of separable sheets bound in book form, each sheet provided with lines of weakness to permit of its detachment from the book, and also provided with diagonal lines of weakness for forming integral hooks to suspend it over the telephone-mouthpiece.

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**756,544. SURGICAL OR OBSTETRICAL SHEET.** WILLIAM W. TOWNSEND, Rutland, Vt., assignor, by direct and mesne assignments, of three-fourths to William H. Knowlton, Melrose, Mass. Filed May 11, 1903. Serial No. 156,568. (No model.)



*Claim.*—1. A waterproof sheet for the purpose described, having a series of flexible, non-elastic metal rods connected thereto and extending across the same to support the edge portion of said sheet in various positions, substantially as described.

2. A waterproof sheet for the purpose described, having one end wider than the other, securing means at the wide end, and a series of flexible, non-elastic supports connected to the sheet, substantially as described.

3. A waterproof sheet, having a series of flexible, non-elastic supports secured thereto and extending transversely thereof, said supports acting to hold the edge portions of said sheet in various positions, to form a trough-shaped receptacle, substantially as and for the purpose described.

4. A waterproof sheet of elongated form having a series of flexible, non-elastic supports secured thereto and extending transversely thereof, said supports acting to hold the longer edge portions of said sheet in various positions to form a trough-shaped receptacle, substantially as and for the purpose described.

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**756,545. SIDE-COMB.** OTTO VALLENDAR, Charlottenburg, Germany, assignor to Max G. Cohn, New York, N. Y. Filed Nov. 13, 1902. Renewed Feb. 2, 1904. Serial No. 191,757. (No model.)



*Claim.*—1. A comb, comprising a curved resilient back, having teeth connected thereto and extending therefrom normally at an angle to one another, the points of said teeth being closer together than their inner ends of connection with the back.

2. A comb, comprising a curved resilient back having teeth connected to and extending rearwardly from the back at an angle thereto, the teeth normally at an angle to one another, a part of their rear ends being beneath and overlapped by the back.

3. A comb, comprising a curved resilient back and a row of teeth connected to the back and extending therefrom in a curved plane corresponding to the surface of a section of a cone, the general direction of the teeth pointing toward the apex of the cone.

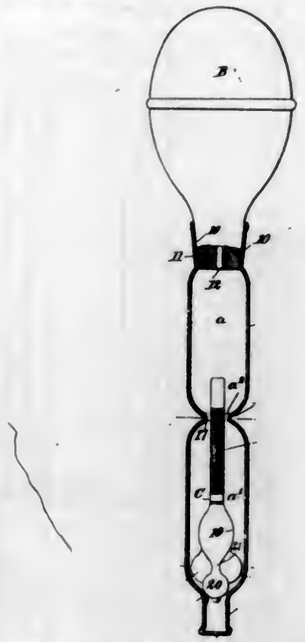
4. A side-comb consisting of a back of elastic material of curved cross-section and of curved longitudinal section, and of a row of teeth the upper end of which is fixed to the inner side of the back at an acute angle and directed so that their points touch each other, and separate when the elastic back of the comb is straightened, substantially as described and shown and for the purpose set forth.

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**756,546. COMBINED HYDROMETER AND SYRINGE.** ROBERT VAN BENTHUYSEN, Newark, N. J. Filed June 29, 1903. Serial No. 163,509. (No model.)



*Claim.*—1. The herein-described instrument, consisting of a syringe-tube provided with a compression-bulb at its upper end and having a nozzle at its lower end, which nozzle has a bottom opening, the said syringe-tube having an interiorly-reduced diameter between its ends, and a hydrometer adapted to have its lower end normally seated in the said syringe-tube above the nozzle end of the tube, the reading-section of the hydrometer being adapted to pass through the contracted portion within the syringe-tube, whereby the hydrometer is held in a vertical position and is preserved against undue lateral play to facilitate the reading of the scales on the hydrometer, as and for the purpose described.



2. The herein-described instrument, comprising a syringe having a transparent barrel, a guide within the barrel of the syringe, a hydrometer movable in said barrel, the reading-section of which hydrometer passes loosely within and through the said guide, whereby to substantially center the hydrometer and prevent the reading-section from engaging with the side walls of the barrel, and wings adjacent to the bulb of the hydrometer, extending from opposite sides thereof, which wings serve to prevent the hydrometer from being given rotary movement in the said barrel by the action of liquid contained therein, as specified.

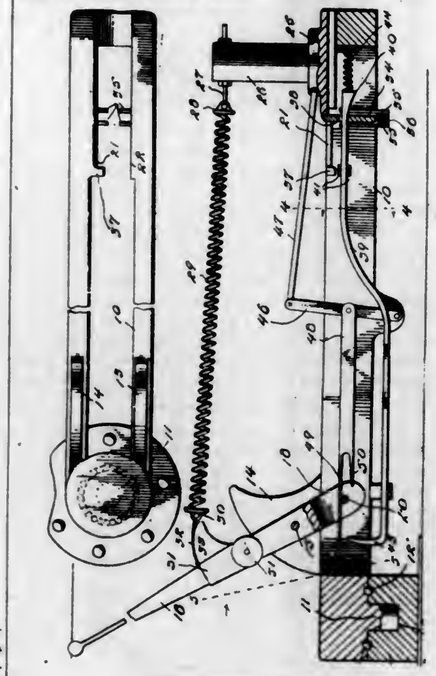
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**756,547. TROLLEY-POLE.** EDWIN A. WAKEFIELD and GEORGE W. MORSE, Mechanic Falls, Me. Filed Dec. 18, 1903. Serial No. 185,703. (No model.)

*Claim.*—1. The combination with a pivoted trolley-pole, of a slidable carriage, springs connected with the pole and carriage and adapted to hold the pole yieldably in raised position and to move it above its normally active position, means for holding the carriage against sliding movement and means operable by movement of the pole above its normally active position and connected with the holding means and adapted to move the latter from its active position.

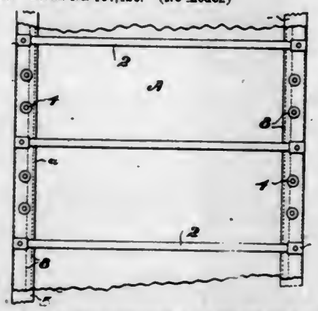
2. The combination with a base, of a trolley-pole pivoted thereto and extending below its pivotal point, a carriage mounted in the base and slidable toward and away from the trolley-pole, springs connected with the carriage and trolley-pole and adapted to move them toward each other, a latch for holding the carriage against movement, a trip-bar connected with the latch and adapted to move the latter out of its operative position, said trip-bar being disposed for engagement and operation by the lower end of the trolley-pole when the upper end thereof rises above its normally active position, and means in the path of forward movement of the lower end of the trolley-pole for returning the carriage to its normal position.

3. The combination with a base having upwardly-directed ears, of a trolley-pole pivoted between said ears and extending above and below its pivot, a carriage mounted in the base and slidable toward and away from the trolley-pole, a sleeve mounted upon the trolley-pole and slidable longitudinally thereof, springs connected between the sleeve and carriage, rollers mounted in the sleeve, said ears having curved rear faces eccentric to the pivot of the trolley-pole and approaching the latter downwardly, means for holding the carriage against sliding movement toward the trolley-pole, means in the path of movement of the lower end of the trolley-pole for disengaging said holding means, means for holding the holding means yieldably in active position, and means in the path of opposite movement of the lower end of the trolley-arm for returning the carriage into engagement with its holding means.



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**756,548. DRAPER.** JOHN C. WHITE, Marysville, Cal. Filed July 27, 1903. Serial No. 167,126. (No model.)



*Claim.*—1. A draper consisting of an endless strip of fabric with a plurality of continuous longitudinal folds at each side, said folded portions having a plurality of continuous longitudinal stitchings uniting them to the body of the fabric.

2. A draper consisting of an endless strip of fabric with a plurality of continuous longitudinal lateral folds disposed upon its outer surface, and a plurality of continuous longitudinal stitchings uniting said folds to the body of the fabric.

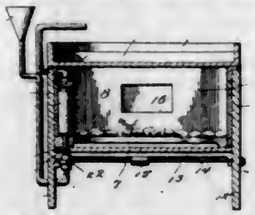
3. A draper consisting of an endless length of fabric, leather or like reinforce strips or belts secured to the inner side and along the edges of the fabric, and a plurality of strips or layers of fabric ap-

proximately coincident in width with said leather strips or belts upon the upper surface of the draper fabric and along the edges thereof and secured thereto by a plurality of longitudinal stitchings.

4. A draper consisting of an endless length of fabric having a plurality of continuous folds on each side, said folds united to the body of fabric by an interposed adhesive hardening material.

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**756,549. SAP-EVAPORATOR. Samuel Wierenga, Watseka, Ill. Filed Dec. 23, 1903. Serial No. 186,396. (No model.)**

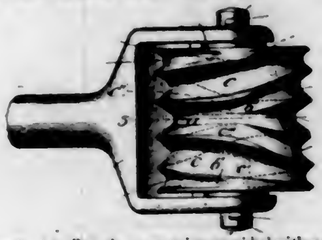


*Claim.*—1. An evaporator comprising a furnace, an evaporating-pan disposed thereon, a sap-conducting pipe connected at one end with a sap-receiving vessel and passing upwardly through the bottom of the furnace, an enlarged pipe removably connected with the first-named pipe and disposed vertically within the furnace, and a third pipe removably connected with the upper end of the enlarged pipe and having its free end directed into the evaporating-pan.

2. An evaporator comprising a furnace, an evaporating-pan removably disposed thereon, and a sap-conducting pipe connected at one end with a sap-receiving vessel and passing vertically through the furnace and having its remaining end directed into the evaporating-pan, the portion of the pipe within the furnace being enlarged.

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**756,550. TROLLEY. Charles M. Wilson, St. Louis, Mo. Filed Feb. 13, 1904. Serial No. 194,257. (No model.)**



*Claim.*—1. A trolley, the same being provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove; substantially as described.

2. A trolley, the same being provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove at diametrically opposite points; substantially as described.

3. A trolley, the same being provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove at diametrically opposite points, said double helical ways also starting at points diametrically opposite; substantially as described.

4. A trolley, the same being provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove at diametrically opposite points, the pitch of said ways on one side of said main groove being the reverse of that of said ways on the other side of said main groove; substantially as described.

5. The combination with a trolley harp or fork, of a trolley provided with a main trolley-wire groove and double helical ways on each side of and entering said main trolley-wire groove; substantially as described.

6. The combination with a trolley harp or fork, of a trolley provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove at diametrically opposite points; substantially as described.

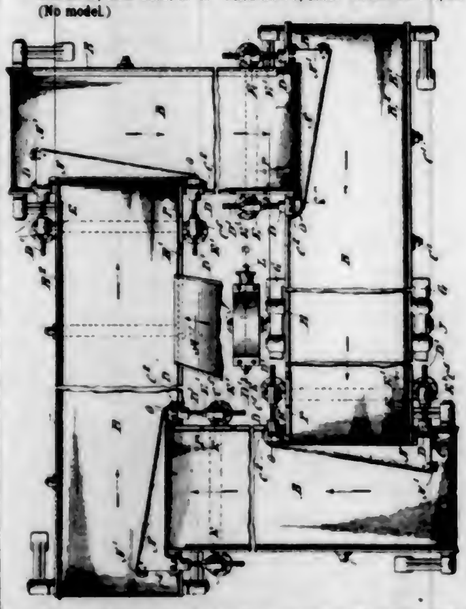
7. The combination with a trolley harp or fork, of a trolley provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove at diametrically opposite points, said ways also starting at points diametrically opposite; substantially as described.

8. The combination with a trolley harp or fork, of a trolley provided with a main trolley-wire groove and double helical ways on each side of and entering said main groove at diametrically opposite points, the pitch of said ways on one side of said main groove being the reverse of that of said ways on the other side of said main groove; substantially as described.

9. The combination with a trolley harp or fork, of a spindle, cotter-pins holding said spindle in place, and a trolley mounted on said spindle and provided with a main trolley-wire groove and two or more helical ways on each side of and entering said main groove; substantially as described.

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**756,551. TERMINAL FOR PARCEL-CONVEYERS. Lawrence Abraham, New York, N. Y. Filed Nov. 5, 1903. Serial No. 179,893. (No model.)**



*Claim.*—1. In a parcel-conveying apparatus a terminal for receiving parcels, the said terminal comprising an endless movable track for causing the parcels to circulate over and over again in the same circuit until they are removed.

2. In a parcel-conveying apparatus a terminal for receiving parcels, the said terminal consisting of a series of conveyers, one arranged to deliver the parcels to the next, the said conveyers forming an endless chain or complete circuit.

3. A parcel-terminal comprising a series of movable conveyers forming a complete circuit for the parcels, the delivery end of each conveyer overlapping the receiving portion of the next conveyer.

4. A parcel-terminal comprising a series of conveyers inclined lengthwise and each having its upper delivery end arranged to overlap the receiving portion of the next conveyer, the said conveyers forming a complete circuit.

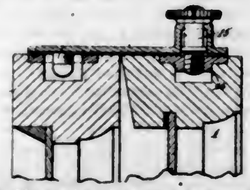
5. A parcel-terminal comprising four conveyers disposed in rectangular arrangement and each adapted to receive parcels at one end from one of the adjacent conveyers and to deliver parcels at the other end to the other adjacent conveyer, so that the parcels are caused to circulate in a continuous path.

6. In a parcel-conveying apparatus the combination with two conveyers arranged at an angle to each other, and one of them having its delivery end at a higher level than the receiving portion of the other conveyer, of an inclined guide extending from said delivery end to the surface of the conveyer below, that edge of said guide which extends lengthwise to the lower conveyer, being inclined away from the direction in which the lower conveyer moves, so as to be divergent from said direction.

7. In a parcel-conveying apparatus the combination with two conveyers arranged at an angle to each other, of a guide disposed at the delivery end of one conveyer and having its free edge inclined away from the direction in which the other conveyer moves so as to be divergent from said direction.



**756,552. WINDOW-SASH. Robert Adams, London, England. Original application filed Apr. 14, 1898, Serial No. 677,612. Divided and this application filed Jan. 16, 1899. Serial No. 702,285. (No model.)**

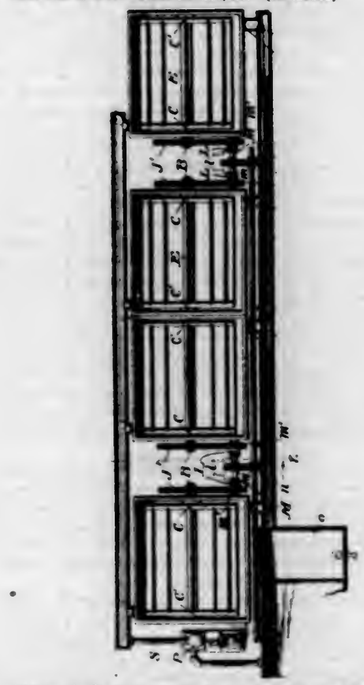


*Claim.*—1. The combination with a horizontally-swinging pivoted sash, and a vertically-sliding sash arranged to be moved into a position beside the pivoted sash, of a link detachably pivoted at one end to the top rail of one of the sashes, and a thumb-screw connected to the other end of said link for engaging a part of the top rail of the other sash, substantially as described.

2. The combination with a horizontally-swinging pivoted sash, and a vertically-sliding sash arranged to be moved into a position beside the pivoted sash, of a rigid arm pivoted at one end to the top rail of one of the sashes and a pin or stud carried by the other end of said arm for engaging a hole or recess in the top rail of the other sash, substantially as and for the purpose described.

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**756,553. TANNING-WHEEL. Bona Allen, Jr., Buford, Ga. Filed Jan. 2, 1903. Serial No. 137,520. (No model.)**



*Claim.*—1. In an apparatus for tanning, the combination with a vat, of a horizontal shaft rotatable therein, vertically-disposed end plates on said shaft, grooves in said plates, detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

2. In an apparatus for tanning, the combination with a vat, of a tanning-wheel rotatably mounted therein, comprising a centrally-disposed shaft, end plates on said shaft, grooves formed on the inner face of said end plates and extending inwardly from the periphery thereof, slatted detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

3. In an apparatus for tanning, the combination of a vat, a horizontal shaft rotatable therein, vertically-disposed end plates on said shaft, grooves in said plates, slatted detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

4. In an apparatus for tanning, the combination with a vat, of a tanning-wheel rotatably mounted therein, comprising a horizontally-mounted shaft, vertically-disposed end plates on said shaft, grooves formed on the inner faces of said end plates and extending inwardly from the periphery thereof, detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

5. In an apparatus for tanning, the combination with a vat, of a horizontal shaft rotatable therein, vertically-disposed end plates on said shaft, grooves cut in said end plates in planes out of the radial line with the shaft, detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

6. In an apparatus for tanning, the combination with a vat, of a horizontal shaft rotatable therein, a tanning-wheel secured to said shaft, comprising an elongated longitudinally-bored hub provided with vertically-disposed end plates, grooves cut in said hub and disposed longitudinally thereof, grooves cut in said end plates adjacent said hub-grooves, detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

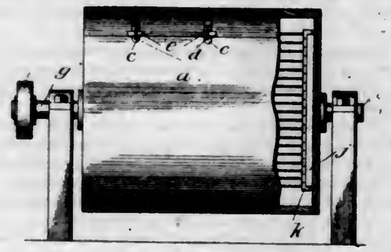
7. In an apparatus for tanning, the combination with a vat, of a horizontal shaft rotatable therein, a tanning-wheel secured to said shaft, comprising an elongated longitudinally-bored hub provided with vertically-disposed end plates, longitudinal grooves cut in said hub and disposed angularly to the radial lines of said hub, corresponding angularly-disposed grooves cut in said end plates adjacent said hub-grooves, detachable hide-supporting frames slidably mounted in said grooves, and means for securing said frames in said grooves.

8. In an apparatus for tanning, the combination with a plurality of vats and tanning-wheels rotatably mounted therein, of means for interchanging the liquor of any two vats, comprising a trough having communicating passages with the bottoms of each of said vats, a second trough having communicating passages with the tops of each of said vats, suitable valves in said communicating passages, a storing-tank connected to said lower trough, a second storing-tank connected to said upper trough, a valve-controlled communicating passage between said tanks, and pumping means for transferring the liquor from said second storing-tank to said upper trough.

9. In an apparatus for tanning, the combination with a plurality of vats arranged in series of two, and means for transferring the liquor of one vat to another, comprising storing-tanks, suitable troughs connecting said storing-tanks with the tops and bottoms of each of said vats; of horizontally-disposed shafts rotatable in each of said vats, tanning-wheels mounted on said shafts; and means for rotating said tanning-wheels conjointly or independently.

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**756,554. TANNING-DRUM. Bona Allen, Jr., Buford, Ga. Filed Sept. 8, 1903. Serial No. 172,388. (No model.)**



*Claim.*—1. In a tanning-drum, the combination of the drum proper, guides secured thereto, and hide-carrying frames adapted to be slipped in, one above the other between said guides, forming a column of frames superposed above each other, substantially as described.

2. In a tanning-drum, the combination of the body of the drum, provided with a hinged door, guides secured at each end of said drum, and hide-carrying frames adapted to be slipped down between said guides, and held in position by said guides and the periphery of said drum, substantially as described.

3. In a tanning-drum, the combination of the body of the drum, provided with a hinged door, and the ends thereof provided with guides arranged parallel to each other, of hide-carrying frames

adapted to be slipped in between said guides, said frames being provided at their ends with spacing means, substantially as described.

4. In a tanning-drum, the combination of the body of the drum, provided with a hinged door, the ends of the drum provided with parallel guides, means for fastening said hinged door in a closed position, with removable frames adapted to be slipped down between said guides and held in position by the periphery of the drum, each of said frames being provided with spacing means at its ends, and means for supporting and revolving said drum, substantially as described.

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756,555. **CABINET.** WILLIAM B. ALTICK, Lancaster, Pa. Filed Apr. 4, 1903. Serial No. 151,051. (No model.)



*Claim.*—1. A cabinet, comprising a rigid body portion, and two curved doors mounted to move in curved guides on the body portion so as to permit opening or closing the cabinet, said guides overlapping each other in essentially concentric arrangement at the rear of the cabinet and running into each other at the front of the cabinet, so that the doors meet at the front to close the cabinet, and fold one inside of the other at the rear of the cabinet.

2. A cabinet, comprising a top, a bottom and back rigidly connected together to form the body of the cabinet, and two curved doors mounted to move toward and from each other in curved guides, for the purpose specified, said guides overlapping each other in essentially concentric arrangement at the back of the cabinet and running into each other at the front of the cabinet.

3. A cabinet, comprising a back, side walls projected forward therefrom, a top and bottom fastened to the back and top of the side walls, two arc-shaped doors mounted to move from a rearward position between the side walls outward into engagement with each other at the front of the cabinet, and a vertical panel extending between the top and bottom of the cabinet and forward of the folded position of the doors.

4. A cabinet, comprising a body having two curved guides, said guides running into each other at the front side of the cabinet and overlapping at the back, and two curved doors arranged to slide in said guides and to meet in front of said cabinet, to close the same.

5. A cabinet, comprising a body having curved guides overlapping at the back of the cabinet, and two curved doors arranged to move in said guides and capable of meeting at the front of the cabinet, to close the same.

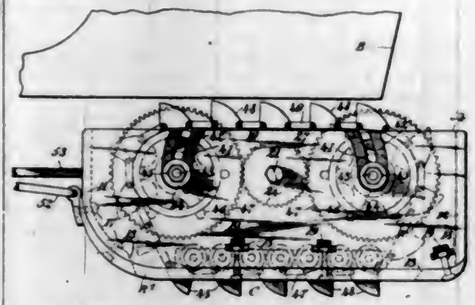
6. A cabinet, comprising a back, sides, and top and bottom sections, the top and bottom sections being extended out forwardly beyond the front edges of the side sections, and two curved doors mounted in curved guideways in the top and bottom sections and movable forwardly to close the cabinet, the guides meeting at the front and overlapping at the rear so as to permit the doors to be overlapped when in folded position.

7. A telephone-cabinet, comprising a back, sides, and top and bottom sections, the sides having transparent plates therein and the top and bottom sections being extended forwardly beyond the front edges of the sides, and said top and bottom sections having guides in their inner or adjacent faces, such guides meeting at the front and extending backward and overlapping at the rear for the purpose specified, curved doors mounted in the guides, and a vertical panel mounted in the rear of the cabinet just forward of the guides, said panel being adapted to support a telephone apparatus.

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756,556. **RUNNER ATTACHMENT FOR AUTOMOBILES.** WALTER H. ANDERSON, New York, N. Y. Filed Aug. 13, 1903. Serial No. 169,346. (No model.)

*Claim.*—1. In vehicles, a driving-axle, a chambered runner into which an end of the driving-axle extends, the said runner being open at its bottom and provided with a shoe having a corresponding opening, a bracket-arm attached to the inner face of the runner, a support for the axle with which the bracket-arm has rotary connection, an endless propelling-chain located in the chamber of the runner, lugs extending from the chain and adapted at the lower stretch of the chain to extend below the bottom of the shoe, rotary supports for the said chain, and a gear connection between the said chain-supports and the end of the axle within the chamber of the runner, as described.



2. In vehicles, a driving-axle, a chambered runner into which an end of the driving-axle extends, the said runner being open at its bottom and provided with a shoe having a corresponding opening, a bracket-arm attached to the inner face of the runner, a support for the axle with which the bracket-arm has rotary connection, an endless propelling-chain located in the chamber of the runner, lugs extending from the chain and adapted at the lower stretch of the chain to extend below the bottom of the shoe, rotary supports for the said chain, a gear connection between the said chain-supports and end of the axle within the chamber of the runner, bearing-rollers located in the chamber of the runner, engaging with the upper face of the lower stretch of the said chain, and a ball-bearing for the end of the said axle located within the said runner, as described.

3. In a runner for automobiles, a casing having an opening in its bottom, a shoe at the bottom of the casing, detachably connected therewith and having an opening therein corresponding to that in the bottom of the casing, sprocket-wheels mounted to revolve within the casing, an endless chain passed over the said sprocket-wheels, lugs extending from the chain, the lugs on the lower stretch of the chain being adapted to extend below the under face of the shoe, a driving device for the said sprocket-wheels, bearing-rollers arranged for engagement with the upper face of the lower stretch of the said chain, and a bracket-arm extending from the said casing, having its inner end formed in a jaw, a plate mounted to turn in the jaw, and a clamping-block carried by the plate, for the purpose set forth.

4. In a runner for automobiles, a casing having an opening in its bottom, a sprocket-wheel mounted at each end of the casing, an endless chain passing around the sprocket-wheels and provided with spurs, bearing-rollers in the lower part of the casing, and a shoe having an opening corresponding to the opening in the bottom of the casing and secured to the casing, said shoe serving to hold the bearing-rollers in the casing, as described.

5. In a runner for automobiles, the combination with the driving-axle of the automobile, of a casing having an opening in its bottom and mounted to rock on the axle, sprocket-wheels mounted in the casing, an endless chain passing around the sprocket-wheels and provided with spurs projecting out through the bottom of the casing, a gear-wheel carried by each sprocket-wheel, and a gear mounted on the axle within the casing and meshing with the gear-wheels of the sprocket-wheels, as described.

6. In a runner for automobiles, the combination with the driving-axle of the automobile, of a casing having an opening in its bottom and into which the end of the axle projects, a pinion on the axle within the casing and engaging a bearing on the outer wall of the casing, a sprocket-wheel near each end of the casing, an endless chain passing around the sprocket-wheels with its spurs projecting through the bottom of the casing, and a gear-wheel on each sprocket-wheel, said gear-wheels meshing with the pinion of the axle, as described.

7. In a runner for automobiles, the combination with the driving-axle of an automobile, of a casing having an opening in its bottom and into which the end of the axle loosely projects, a bracket-arm projecting from the casing and having its end loosely connected with the axle, a pinion on the axle within the casing and engaging a bearing on the outer wall of the casing, a sprocket-wheel mounted in the casing near each end thereof, an endless chain passing around the sprocket-wheels and provided with spurs projecting out through the bottom of the casing, and a gear-wheel on each sprocket-wheel and meshing with the pinion of the axle, as described.

8. In a runner for automobiles, the combination with the driving-axle of the automobile, of a casing having an opening in its bottom and loosely mounted on the axle with the end of the axle projecting into the same, a wheel mounted on the axle within the casing and having its hub engaging a roller bearing in the outer wall of the casing, an endless propelling-chain mounted in the casing and provided with spurs projecting through the bottom opening of the casing, and means for operating the endless chain from the wheel on the axle, as described.

9. In a runner for automobiles, the combination with the axle of the automobile, a casing having an opening in its bottom and into which the end of the axle loosely projects, an endless chain in the casing and provided with spurs projecting out through the bottom opening of the casing and means for operating the chain from the axle, of a bracket-arm projecting from the casing and having a jaw at its end, one member of the jaw having a hinged section, a plate mounted to turn in the jaw and through which a bearing for the axle passes, a clamping-block fitting the plate, and engaging the bearing of the axle, and means for securing the block in position, as described.

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756,557. **GLASS-REHEATING FURNACE.** JOHN I. ARBOGAST, CHARLES V. ARBOGAST, FRANCIS J. ARBOGAST, PHILIP R. ARBOGAST, and FREDERICK L. ARBOGAST, Pittsburg, Pa. Filed July 7, 1903. Serial No. 164,579. (No model.)



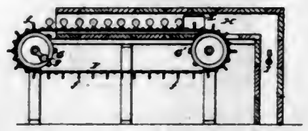
*Claim.*—1. In a furnace for reheating glass articles or blanks, the combination with a vertical heating chamber or flue and means for heating the same, of an endless carrier arranged to travel in said flue and having pivoted blank-supporting plates, substantially as described.

2. In a furnace for reheating glass blanks, the combination with a vertical heating-chamber of an endless chain carrier, pivoted blank-supporting plates carried by said chain and a tripper adapted to tilt said plates substantially as described.

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756,558. **METHOD OF MANUFACTURING GLASSWARE.** JOHN I. ARBOGAST, CHARLES V. ARBOGAST, FRANCIS J. ARBOGAST, FREDERICK L. ARBOGAST, and PHILIP R. ARBOGAST, Pittsburg, Pa. Filed July 16, 1903. Serial No. 165,845. (No model.)

*Claim.*—1. The method of manufacturing glassware, consisting in pressing blanks, then allowing the same to become cold without annealing, then gradually reheating them and finally blowing them to completed form.



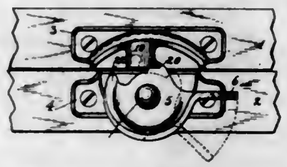
2. The method of manufacturing glassware, consisting in pressing blanks of suitable form, allowing the same to become cold and then without annealing heating a number of them gradually and simultaneously and finally finishing them severally.

3. The method of manufacturing glassware consisting in pressing blanks of suitable form, allowing the same to become cold without annealing, then reheating a number of them gradually and simultaneously then successively blowing them to completed form.

4. The method of manufacturing glassware consisting in pressing blanks of suitable form, allowing the same to become cold without annealing, reheating a number of the blanks simultaneously, blowing them successively to form articles from a part of the mass of glass contained in the blanks and then cracking off the completed article from the rest of the blank.

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756,559. **SASH-FASTENER.** AUGUST ARENS, New Britain, Conn., assignor to P. & F. Corbin, New Britain, Conn., a Corporation of Connecticut. Filed Oct. 10, 1903. Serial No. 176,465. (Model.)



*Claim.*—1. A sash-fastener including a keeper having an inclined portion, a rotary member having a cam-lip cooperating with one part of said keeper, automatic setting means, and an automatic locking projection in the plane of the base of said rotary member cooperating with the inclined portion of said keeper, said setting means being operated by separating the sash members, so that the said locking projection will cooperate with the inclined portion of the keeper when the sash members are brought together.

2. A sash-fastener including a keeper having an upper cam, a rotary member, a setting-point for cooperating with the upper cam, and a locking projection operated by said setting-point when the sashes are separated and also when the sashes are brought together.

3. A sash-fastener comprising a keeper having an upper cam, a locking member, a setting-point for cooperating with the upper cam, a locking projection operated by said setting-point when the sashes are separated and also when the sashes are brought together, and a spring for actuating said locking member to assist in throwing the locking projection into its operative position.

4. A sash-fastener comprising a keeper having an inclined portion, an upper cam, a lower cam and a lower edge, a locking member, a setting-point and a locking projection carried by said member, said setting-point being adapted to coact with the upper cam or the lower cam, said locking projection being adapted to cooperate with the inclined portion or the lower edge of said keeper, and means for supplementing the action of said setting-point to throw the locking member into operation.

5. A sash-fastener including a keeper having an inclined upper cam portion, a rotary locking disk-like member, a setting-point and a locking projection carried by said member and substantially in the plane of the base thereof, there being a clearance-space between the locking projection and the setting-point to provide a passage-way for the keeper-hook when the parts are operated, said setting-point and locking projection being adapted to cooperate with the keeper for the purpose specified.

6. A sash-fastener comprising a keeper having a hook with an inclined portion, upper and lower cam-surfaces, and a lower edge meeting the inclined portion in a point at one side of the center and a locking device adapted to cooperate with the above-mentioned portions of said keeper for manually or for automatically locking the parts.

**756,560. SHIELD FOR SHOES. CORNELIUS N. AUSTIN, Cadyville, N. Y. Filed Oct. 31, 1903. Serial No. 179,347. (No model.)**



*Claim.*—1. In a device of the character described, the combination with a shield; of side plates hinged thereto, sole-engaging devices upon the side plates, and means for securing the plates to a shoe.

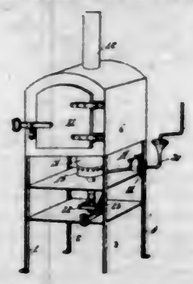
2. In a device of the character described, the combination with a shield having sole-engaging spurs thereon; of side plates hinged to the sides of the shield, sole-engaging devices extending therefrom, and means for securing the side plates to a shoe.

3. In a device of the character described, the combination with a shield having sole-engaging spurs thereon; of hinged side plates adjustably connected to the sides of the shield, sole-engaging devices upon the side plates, and means for securing the side plates to a shoe.

4. In a device of the character described, the combination with a shield having a corrugated working face; of spurs upon the shield, hinged side plates adjustably connected to the sides of the shield, and means for securing the side plates to a shoe.

5. In a device of the character described, the combination with a shield having a corrugated working face; of spurs upon the shield, hinged side plates adjustably connected to the sides of the shield, adjustable clamping-plates upon the side plates, and straps connecting the side plates.

**756,561. POTTERY-KILN. EBENEZER S. BACON, Detroit, Mich. Filed Nov. 16, 1903. Serial No. 181,262. (No model.)**



*Claim.*—1. In a pottery-kiln, in combination with an external shell lined with refractory material, a muffle located within the chamber of the shell made of refractory material in two parts, a base part and a dome, said base part being provided with an upwardly-projecting tongue-terminated flange, and the said dome being a single monolithic structure provided with a groove around its bottom edge to engage the tongue and having its walls extended at one side through an opening in the walls of the external shell to engage against the inner wall of a door hinged to said outer shell, substantially as described.

2. In a pottery-kiln, in combination with an external shell lined with refractory material, a muffle-base supported above the floor of said external shell on struts and provided with an upwardly-extending flange, a monolithic dome resting on said flange and spaced from the lining of said shell, a hanging pipe located under said dome and leading through the walls of the shell, a fuel-burner consisting of an annular receptacle the outer walls of which engage closely within the hanging pipe, an air-inlet central to the bottom of said receptacle, air-inlets through the wall of said annular receptacle, and means for adjusting the receptacle vertically with respect to the pipe, substantially as described.

3. In a pottery-kiln, in combination with a muffle, an annular fuel-receptacle thereunder, a pipe hanging from the floor of the outer shell of the kiln and sleeving over said fuel-receptacle and adapted to coact therewith to form an extensible combustion-chamber, means for adjusting the fuel-receptacle with reference to the hanging pipe, means for admitting air from below centrally into said fuel-receptacle, a water-column at a distance from said receptacle, means for feeding oil through the water in said column into said fuel-receptacle, substantially as described.

4. In a pottery-kiln, in combination with an external shell, a muffle located within said shell and spaced therefrom, a pipe hanging from the wall of the external shell and leading through an opening into the bottom thereof, a fuel-receptacle sleeved within said pipe and provided with an air-inlet through the bottom thereof and with air-inlets through the side walls and with a fuel-chamber surrounding the inlet through the bottom, and means for adjusting the fuel-chamber with respect to the hanging pipe and thereby varying the combustion-chamber and regulating the combustion, substantially as described.

**756,562. UMBRELLA-GEAT. CHALKLEY B. BALDWIN, Philadelphia, Pa., assignor to Samuel W. Evans, Jr., trading as S. W. Evans & Son, Philadelphia, Pa. Filed June 7, 1902. Serial No. 110,574. (No model.)**



*Claim.*—1. A trough-shaped geat having its sides turned inward their entire length forming outwardly-extending portions doubled on each other and pierced for a pivot and inwardly-extending clip portions.

2. A trough-shaped geat having its sides turned inward their entire length forming outwardly-extending portions doubled on each other and pierced for a pivot and inwardly-extending clip portions, the doubled edges of said outwardly-extending portions being curved.

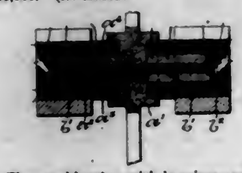
**756,563. CHAIN-LINK. WARREN J. BALL and RICHARD COLE, Salem, Ohio; said Ball assignor to said Cole. Filed Apr. 27, 1903. Serial No. 154,442. (No model.)**



*Claim.*—1. In a chain-link, an open body portion, provided with flanges located substantially at right angles to each other, a lip extended from the side of the body portion, a pivoted portion provided with a recess, adapted to receive the lip, and the body and pivoted portions bent to produce a closed link, substantially as set forth.

2. The combination of an open body portion, having curved ends, one of the curved ends provided with flanges located substantially at right angles to each other and one of the flanges provided with a recess at its end, a portion or part pivoted to the body portion, and its free end curved and adapted to fit against the right-angled flanges of the body portion, a flange located upon the inner face of the pivoted portion, and adapted to fit the recess in the flange of the body portion, substantially as set forth.

**756,564. BEARING. JOHN W. BANFORD, Pascoag, R. I., assignor of one-half to James H. Smith, Pascoag, R. I. Filed June 27, 1903. Serial No. 163,365. (No model.)**



*Claim.*—1. The combination with bearings supporting a shaft, of a shaft having a hole extending lengthwise through it in which is a wick, the wick, a hub on the shaft provided with recesses to form seats for the inner ends of the bearings, and means for supplying oil to the wick, as described.

2. The combination with bearings having oil holes and chambers and supporting the ends of a shaft, of a shaft provided with a wick extending lengthwise through a hole in the shaft, the wick, and a central hub provided with recesses to form seats for the inner ends of the bearings, as described.

3. The combination with the pulley *a* having the hub *a'* provided with the grooves $a^6$ $a^6$, the shaft $a^2$ with the central hole $a^5$ ending in the outwardly-flaring openings $a^4$ $a^4$, and the wick $a^3$ in the hole $a^5$, of the bearings *b b*, each having the hole *b'*, the oil-well $b^2$, the oil-hole $b^3$ and the transverse groove $b^4$, and the fork-shaped arm *c* having the half-round open-top boxes *c' c'* with holes for the split pins $c^3$ $c^3$, all for the purpose as described.



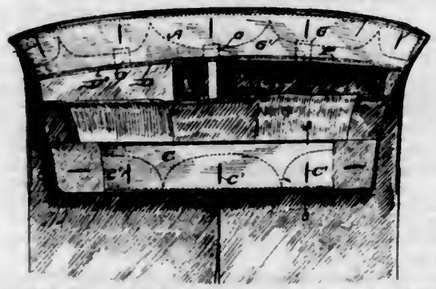
**756,565. WRENCH. THOMAS H. BARRY, Empire, Oreg. Filed June 27, 1903. Serial No. 163,344. (No model.)**



*Claim.*—1. The combination with a handle-lever having a fixed jaw at one end, and a shank at the opposite end that is reduced in width affording a shoulder, of a jaw mounted to slide upon the handle-lever, a rack-bar extended from the slidable jaw and having teeth on one edge near its free end, a handle-block apertured to receive the shank and abutting against the shoulder thereon, means for securing the handle-block upon the shank, said block having a longitudinal chamber therein which receives the toothed portion of the rack-bar, a resilient arm attached by one end upon the outer side of the handle-block and projecting above the rack-teeth, a toothed dog on the free end of the resilient arm adapted to mesh with the teeth on the rack-bar, and means for manual release of the dog therefrom.

2. The combination with a handle-lever having a fixed jaw on one end, and a shank on the opposite end thereof reduced in width, affording a shoulder, of a slidable jaw mounted upon the handle-lever and having its free end projected therefrom farther than the fixed jaw, a rack-bar extended from the slidable jaw and having teeth on one edge near its free end, said teeth having parallel sides, a handle-block longitudinally apertured to receive the shank of the lever and abutting upon the shoulder thereon, the handle-block and shank having a plurality of perforations, screws engaging said perforations, the block having a longitudinal chamber parallel with the aperture therein, said chamber at one end receiving the toothed end of the rack-bar, an expansible spring in the chamber, pressing upon the end of the rack-bar, and a locking device comprising a curved resilient arm secured by one end on the end of the handle-block, a laterally-projected dog at the other end of the arm, said dog having teeth and projecting through an opening in the handle-block for engagement of its teeth with the rack-bar teeth, and a catch-lip on the resilient arm adjacent to the dog.

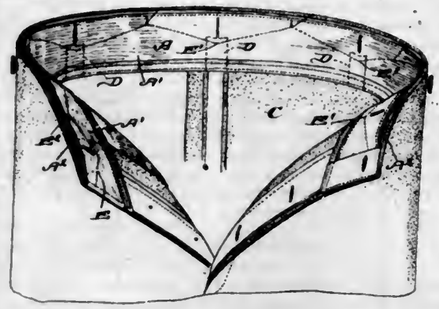
**756,566. WAISTBAND. HARRY BERWALD, New York, N. Y. Filed June 30, 1903. Serial No. 163,754. (No model.)**



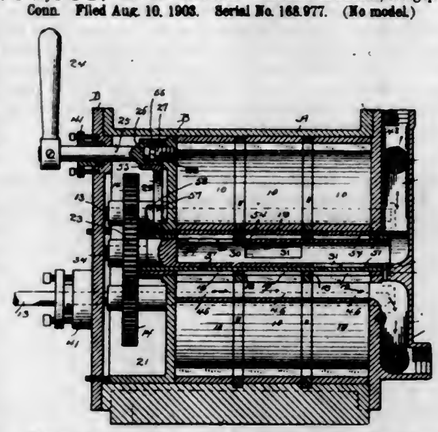
*Claim.*—A waistband consisting of a piece of material folded lengthwise to form a longitudinal plait, and pieces of elastic material arranged at intervals along the same, one edge of the folded piece of material being adapted to be secured to a garment and the other edge being doubled upon the other and provided with buttonholes, the edge of the doubled portion being extended below the buttonholes, and one end of each elastic piece secured within the inner fold of the plait and the other end terminating at a point below its respective buttonhole and being secured to said doubled portion above the outer fold of the plait.

**756,567. WAISTBAND. HARRY BERWALD, New York, N. Y. Filed Aug. 22, 1903. Serial No. 170,426. (No model.)**

*Claim.*—A waistband comprising a band proper of soft material and a piece of canvas attached at its upper edge to the upper edge of the back of the band proper, said band proper being formed from a single strip of material folded longitudinally a number of times upon itself and providing the buttonhole-strip, the back strip and intermediate folded portion, the back strip being adapted to be attached to the pants at the top and bottom edges, and the elastic strips secured at their lower ends to the lower edge of the back strip and at their upper ends to the buttonhole-strip at a point below the buttonhole, substantially as described.



**756,568. ROTARY ENGINE. HEZEKIAH A. BERSON, Bridgeport, Conn. Filed Aug. 10, 1903. Serial No. 168,977. (No model.)**



*Claim.*—1. In an engine of the character described the combination with rotating pistons and rotating valves provided with ports equidistant spirally, of fixed sleeves inclosing the valves and having ports in line with each other and oscillatory sleeves which inclose the fixed sleeves and are provided with ports adapted to register with the ports in the fixed sleeves whereby the passage of steam to the pistons is controlled.

2. In an engine of the character described the combination with rotary pistons, rotary valves and oscillatory sleeves, of means for oscillating said sleeves, for the purpose set forth, and fixed sleeves lying intermediate the oscillatory sleeves and the valves, said valves, fixed sleeves and oscillatory sleeves being provided with ports for the passage of steam.

3. In an engine of the character described the combination with rotary pistons, rotary valves and oscillatory sleeves having arms 57 extending therefrom, of a rock-shaft carrying a controlling-lever and arms 29, links connecting said arms 29 and 57 whereby the sleeves may be oscillated, and fixed sleeves lying intermediate the valves and the oscillatory sleeves, said oscillatory sleeves, fixed sleeves and valves being provided with ports for the passage of steam.

4. In an engine of the character described the combination with rotary pistons, rotary valves, and oscillatory sleeves having arms 57 extending therefrom, of a rock-shaft carrying a controlling-lever and having a hub, 26, a hub 55 carried by hub 26 and having arms 29, extending therefrom, a fixed stud on which hub 26 is mounted to rotate and which is provided with a groove and a set-screw passing through the hubs and engaging the groove.

5. In a rotary engine the combination with rotary pistons, rotary valves open at the ends to take steam and oscillatory sleeves, of fixed sleeves intermediate the oscillatory sleeves and the valves, said valves and oscillatory and fixed sleeves having steam-ports and means for supplying steam to the open ends of the valves.

6. In a rotary engine the combination with a casing comprising a central casting, end castings and an end plate, of rotary pistons having shafts extending through one of the end castings, one of which is the power-shaft, gear-wheels by which said shafts are connected, rotary valves having stems extending through one of the end castings and carrying gear-wheels meshing with one of the other gear-wheels, oscillatory sleeves and fixed sleeves lying between the valves and the oscillatory sleeves, said valves and fixed and oscillatory sleeves being provided with ports for the passage of steam.

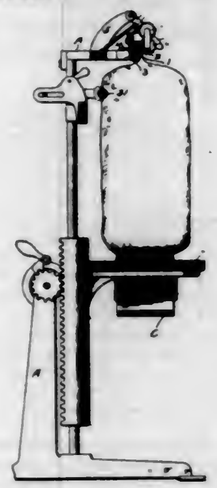
7. In a rotary engine the combination with a casing comprising two end castings and an end plate, rotary pistons and valves in the casing and having shafts or stems projecting through one of the castings and geared together, of oscillatory sleeves, controlling mechanism therefor and fixed sleeves lying intermediate the valves and the oscillatory sleeves, said valves being open at their ends to take steam and said valves, fixed sleeves and oscillatory sleeves being provided with ports for the passage of steam.

8. In an engine of the character described the combination with a casing comprising two end castings and an end plate, rotary pistons and rotary valves in the casing and having shafts or stems projecting through one end casting and geared together, of oscillatory sleeves which extend through one of the end castings, a controlling-lever and intermediate connections for oscillating the sleeves and fixed sleeves inclosing the valves on which the oscillatory sleeves are mounted.

9. In an engine of the character described the combination with a plurality of independent castings each having piston, valve and exhaust chambers and ports leading from the valve-chambers to the piston-chambers and from the valve-chambers to the exhaust-chambers, of rotary pistons in the piston-chambers and in the valve-chambers rotary valves, oscillatory sleeves and fixed sleeves intermediate the valves and the oscillatory sleeves.

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**756,569. FILLED-BAG-SEWING MACHINE.** JOHN BIGELOW, Minneapolis, Minn. Original application filed May 22, 1900, Serial No. 17,552. Divided and this application filed Feb. 19, 1903. Serial No. 144,095. (No model.)



*Claim.*—1. In a filled-bag-sewing machine, the combination with stitch-forming mechanism, of an automatic folder for forming a fold in the top of the bag, and means for feeding the folded bag-top to the stitch-forming mechanism.

2. In a filled-bag-sewing machine, the combination with stitch-forming mechanism, of a revoluble folder for forming a fold in the top of the bag, and means for feeding the folded bag-top to the stitch-forming mechanism.

3. In a filled-bag-sewing machine, the combination, with stitch-forming mechanism, of a folder for forming a fold in the top of the bag, and means for moving said folder and thereby feeding the bag-top from said folder to the stitch-forming mechanism.

4. In a filled-bag-sewing machine, the combination, with stitch-forming mechanism, of a folder for forming a fold in the top of the bag, and means for reciprocating said folder and thereby feeding the folded bag-top from said folder to the stitch-forming mechanism.

5. In a filled-bag-sewing machine, the combination, with stitch forming mechanism, of a folder provided with a serrated edge, and means for reciprocating said folder.

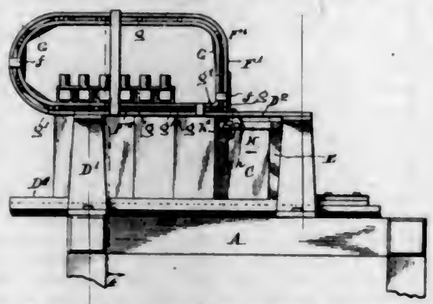
6. In a filled-bag-sewing machine, the combination, with stitch-forming mechanism, of a folder, means for holding a folded bag-mouth against said folder, and means for feeding the folded bag-mouth from said folder to the stitch-forming mechanism.

7. The combination, with the reciprocating folder, of the fold-holders arranged to hold folded material upon said folder and a stitch-forming mechanism to which the folded material is fed by said folders.

8. The combination, with a revoluble folder of a clip 13 arranged upon said folder, a stitch-forming mechanism and means for feeding folded material from said folder to said stitch-forming mechanism.

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**756,570. FLAP-FOLDER FOR CARTON-MACHINES.** HARRY BITNER, Berwyn, Ill., assignor to Isaac Piser and Charles G. Livingston, Chicago, Ill. Filed Dec. 26, 1903. Serial No. 186,697. (No model.)



*Claim.*—1. In a device of the class described, the combination with mechanism for shifting the cartons sidewise, of a plurality of blocks, and mechanism for swinging the blocks down upon the cartons about axes stationary with respect thereto.

2. In a device of the class described, the combination with suitable means for shifting the cartons sidewise, of a plurality of blocks adapted to fold one side flap thereof, mechanism for shifting the blocks sidewise at the same speed with the carton, and mechanism for swinging the blocks down upon the carton while moving at the same speed therewith.

3. In a device of the class described, the combination with mechanism for shifting the cartons sidewise, of a plurality of blocks adapted to fold one side flap thereof, means for supporting the blocks in a vertical position adjacent to the cartons, and mechanism for shifting the blocks sidewise at the same speed with the carton, and for simultaneously swinging them into a horizontal position.

4. In a device of the class described, the combination with mechanism for shifting the cartons sidewise, of a plurality of blocks adapted to fold one side flap thereof, means for supporting the blocks in a vertical position adjacent to the cartons, and means of engagement with the lower edge of the blocks for shifting the lower edge of the block sidewise, thereby causing the block to swing into a horizontal position upon the carton without longitudinal movement with respect thereto.

5. In a device of the class described, the combination with means for shifting the cartons sidewise, of a vertical and a horizontal guideway, means of connection between the ends of the same, suitable blocks adapted to run through the guideways, and means for successively engaging the lower edges of the blocks as they pass down the vertical guideway to move the same forward at the same speed with the cartons.

6. In a device of the class described, the combination with means for shifting the cartons sidewise, of a horizontal guideway above the path of the carton when shifted sidewise, a vertical guideway joining said horizontal guideway at one end thereof, means of connection between the other ends of the guideways, of a plurality of blocks adapted to engage with the tops of the cartons, and running in the said guideways, and means actuated by the carton-propelling mechanism for engaging with the lower edges of said blocks at the lower end of the vertical guideway, and forcing the same into the horizontal guideway at the same speed with the carton.

7. In a device of the class described, the combination with a suitable plunger adapted to move the cartons sidewise, of an endless guideway, having a horizontal portion over the path of the cartons when shifted by said plunger, and a vertical portion adjacent to said cartons before they are moved by said plunger, a plurality of blocks running through said endless guideway, and a projecting arm on said plunger adapted to engage with the lower edge of each successive block at the lower end of the vertical guideway.

8. In a device of the class described, the combination with a plunger adapted to shift the cartons sidewise, of an endless guideway having a horizontal portion over the path of said cartons when shifted sidewise, and a vertical portion adjacent to said cartons before they are shifted by said plunger, of a plurality of blocks having suitable pins projecting through said guideway, a projecting arm upon the plunger, and a suitable trigger upon the arm adapted to engage with the lower pin upon each successive block in the vertical guideway when moved in one direction, and to pass under the same when returning.

9. In a machine for folding and pasting the end flaps of cartons, a last-fold device comprising a series of blocks adapted to be brought down upon the top of a carton, means for bringing these blocks in succession into a position substantially parallel with the last unfolded flap, means for advancing the carton to bring said flap against the block, means for thereafter swinging the block about an axis coinciding substantially with the desired bend in the last flap, to bring the flap and block down upon the top of the carton, and means for advancing the carton and block together and pressing the block upon the carton to set the glue.

10. In a machine for folding and pasting the end flaps of cartons, a last-fold device comprising a series of blocks adapted to be brought down upon the top of a carton, means for bringing these blocks in succession into a position substantially parallel with the last unfolded flap, means for advancing the carton to bring said flap against the block, means for thereafter advancing the carton and block together and simultaneously swinging the block about an axis coinciding substantially with the desired bend in the last flap until the block rests upon the top of the carton, and means for pressing the block thereon to set the glue.

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**756,571. BLACK DYE AND PROCESS OF MAKING SAME.** RENÉ BOHN, Mannheim, Germany, assignor to Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden. Filed Feb. 6, 1903. Serial No. 142,211. (No specimens.)

*Claim.*—1. The manufacture of coloring-matter by treating the hereinbefore-defined naphthazarin intermediate product with a thiosulfate in presence of mineral acid.

2. The manufacture of coloring-matter by treating the hereinbefore-defined naphthazarin intermediate product with a thiosulfate in presence of sulfuric acid.

3. The new coloring-matter such as can be obtained from the naphthazarin intermediate product, which dissolves in water yielding a violet solution, whose solution in dilute caustic soda is green, becoming blue on exposure to air, whose solution in concentrated sulfuric acid is red violet, which dyes unmordanted wool violet, which shades become green black when treated on the fiber with potassium bichromate and acetic acid.

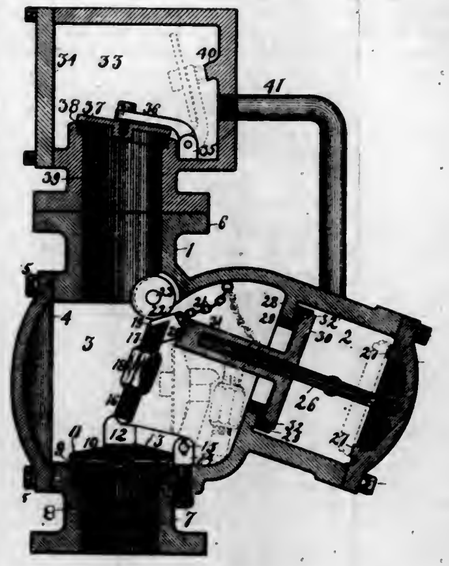
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**756,572. INDUCTION-VALVE.** PERCY R. BOSWORTH, Akron, Ohio. Filed Feb. 11, 1903. Serial No. 142,832. (No model.)

*Claim.*—1. The combination in a device for use in connection with a dry-pipe system, provided with an inlet water-port, means to close said water-port, an extensive lock to press against said means, a roller mounted in the casing of said valve to encounter the opposite end of said lock, a chain connected with said lock capable of sustaining said lock when free from contact with said roller, a pressure-actuated plunger to retain said lock normally in position, substantially as shown and described.

2. The combination in an induction device for use in connection with a dry-pipe system, having an inlet-port therein, means to close said inlet-port, a lock to bear against said means, a roller to bear against the opposite end of said lock, a plunger provided with a stem adapted to bear against said lock and retain it in position to be actuated by the pressure of air in the pipe system, and a guide to steady the motion of said plunger, substantially as shown and described.

3. The combination in a device of the class designated, of an inlet-port for the entrance of water, a valve to close said inlet-port, a lock adapted to press on the head of said valve and having at its other end an inclined portion, an antifriction device suitably arranged to receive the inclined portion of said lock, an air-controlled plunger provided with a stem arranged to be actuated by the pressure of air in the pipe system and capable of movement to cause it to jam the stem thereof against said lock to cause said lock to press against and rest on said valve, substantially as shown and described.



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**756,573. CAN-CLOSURE.** HENRY S. BREWINGTON, Baltimore, Md., assignor of one-half to Ralph Robinson, Baltimore, Md. Filed Dec. 17, 1903. Serial No. 185,543. (No model.)



*Claim.*—1. The combination with a receptacle having an annular top rim, the inner edge of which terminates in an upwardly or outwardly projecting annular flange which forms the mouth of the receptacle and between which flange and the outer edge a groove is formed, of a top or closure the main portion of which is fitted to the flange and the outer edge of which is in the form of a circular flange the extreme edge of which is inturned and embraces the outer surface of the flange some distance beneath the extreme outer edge of the latter, whereby the flange is embraced both inside and outside.

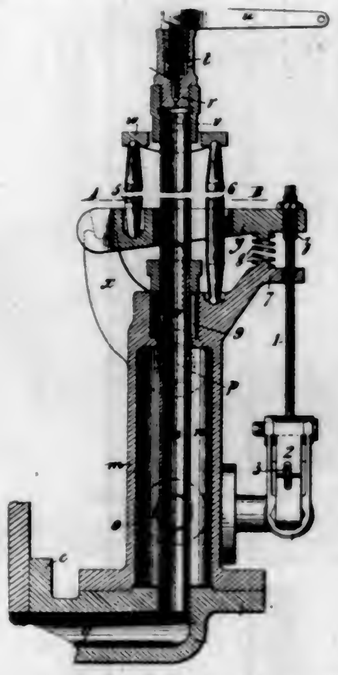
2. The combination with a receptacle having an annular top rim, the inner edge of which terminates in an upwardly or outwardly projecting annular flange which forms the mouth of the receptacle and between which flange and the outer edge a groove is formed, of a top or closure the main portion of which is fitted to the flange and the outer edge of which is in the form of a circular flange the extreme edge of which is inturned and embraces the outer surface of the flange some distance beneath the extreme outer edge of the latter, whereby the flange is embraced both inside and outside, and a gasket adapted to be held between the extreme edge of the bead and the bottom of the groove.

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**756,574. FEED-WATER REGULATOR.** ROBERT G. BROOKE, Macclesfield, England. Filed Sept. 21, 1903. Serial No. 174,093. (No model.)

*Claim.*—1. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a body adapted to expand and contract on increase and decrease of tem-

perature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said body, means for cooling water so coming directly into contact with said body, and means adapted to enable the expansion and contraction of the substance of said body due to its heating and cooling by said steam and water to effect the opening and closing of said valve necessary for the required regulation or control.



2. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a body adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said body, means for cooling water so coming directly into contact with said body, and multiplying-gear adapted to enable the expansion and contraction of the substance of said body due to its heating and cooling by said steam and water to effect the operation of said valve necessary for the required regulation or control.

3. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a rod adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said rod, and multiplying-gear adapted to enable the expansion and contraction of the substance of said rod due to its heating and cooling by said steam and water to effect the operation of said valve necessary for the required regulation or control, said gear comprising a lever pivotally connected to said rod at or near one end of said rod, a fixture at or near the other end of said rod, a second lever, means for enabling said second lever to operate said valve, and two rods of which one is arranged between and adapted to act upon said fixture and the first-mentioned lever while the other is arranged between and adapted to act upon the first-mentioned lever and said second lever.

4. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a hollow rod or tube adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to pass into said hollow rod or tube, means for cooling water so passing into said hollow rod or tube, means adapted to enable the expansion and contraction of the substance of said hollow rod or tube due to its heating and cooling by said steam and water to effect the opening and closing of said valve necessary for the required regulation or control.

5. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a hollow rod or tube adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to pass into said hollow rod or tube, a chamber adapted to enable cool water to be passed through it and to cause such water during its passage therethrough to cool water passing into said hollow rod or tube as aforesaid, and means adapted to enable the expansion and contraction of the substance of said hollow rod or tube due to its heating and cooling by said steam and water from said boiler to effect the opening and closing of said valve necessary for the required regulation or control.

6. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve; a body adapted to expand and contract on increase and decrease of temperature; means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said body, said means comprising two inlets from said boiler and a valve adapted to allow water or steam to pass from said boiler to said body through the upper of said inlets but to prevent it from returning therethrough; means for cooling water so coming into contact with said body; and means adapted to enable the expansion and contraction of said body due to its heating and cooling by said steam and water to effect the opening and closing of said valve necessary for the required regulation or control.

7. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a body adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said body, means for cooling water so coming into contact with said body, mechanism adapted to enable the expansion and contraction of said body due to its heating and cooling by said steam and water to effect the sudden opening and closing of said valve necessary for starting and stopping an injector for the purpose of the required regulation or control.

8. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a body adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said body, means for cooling water so coming into contact with said body, and mechanism comprising a tumbler and means for enabling said tumbler to be moved to opposite sides of a dead position by the expansion and contraction of said body due to its heating and cooling by said steam and water and on being so moved to effect the sudden opening and closing of said valve necessary for starting and stopping an injector for the purpose of the required regulation or control.

9. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a body adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to come into contact with said body, means for cooling water so coming into contact with said body, and mechanism adapted to enable the expansion and contraction of said body due to its heating and cooling by said steam and water to effect the sudden opening and closing of said valve necessary for starting and stopping an injector for the purpose of the required regulation or control, said mechanism comprising multiplying-gear connected to said body, a rod connected to said multiplying-gear, a pair of tappets loose on said rod, means for pressing said tappets toward each other, a valve-rod, a pair of abutments on said valve-rod, a tumbler adapted to move about a horizontal axis, and arms which are secured to said tumbler and of which one is adapted to engage with said pair of tappets and to move said tumbler through its dead position and of which the other is adapted to engage with said pair of abutments and thereby to operate said valve.

10. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve; a hollow rod or tube adapted to expand and contract on increase and decrease of temperature; a casing surrounding said hollow rod or tube and adapted to be passed through by feed-water; a casting in which the lower end of said hollow rod or tube is secured and which forms an inlet for feed-water in communication with the interior of said casing, an outlet for feed-water, three chambers of which one the inlet-chamber is in communication with said inlet and another the outlet-chamber is in communication with said outlet, and an inlet for steam and water from said boiler to the interior of said hollow rod or tube; a hand-valve, said hand-valve and aforesaid valve being adapted to control the passage of feed-water from said inlet-chamber to said outlet-chamber; and means adapted to enable the expansion and contraction of said hollow rod or tube due to its heating and cooling by said steam and water from said boiler to effect the opening and closing of said valve necessary for the required regulation or control.

11. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, a hollow rod or tube adapted to expand and contract on increase and decrease of temperature, means for allowing water or steam from said boiler according to the position of the water-level in said boiler to pass into said hollow rod or tube, means for cooling water so passing into said hollow rod or tube, a valve at the upper end of said hollow rod or tube by means of which air may be allowed to escape therefrom, and means adapted to enable the expansion and contraction of the substance of said hollow rod or tube due to its heating and cooling by said steam and water to effect the opening and closing of said valve necessary for the required regulation or control.

12. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, an upwardly-extending hollow rod or tube open at its lower end and closed at its upper end, a passage connected at its one end to the lower end of said hollow rod or tube and adapted to be connected at its other end to said boiler, a casing surrounding said hollow rod or tube and provided with an inlet and an outlet for cooling water, and means adapted to enable the expansion and contraction of the substance of said hollow rod or tube due to its heating and cooling by steam and water arriving from said boiler through said passage to effect the opening and closing of said valve necessary for the required regulation or control.

13. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve, an upwardly-extending hollow rod or tube open at its lower end and closed at its upper end, a passage connected at its one end to the lower end of said hollow rod or tube and adapted to be connected at its other end to said boiler, a casing surrounding said hollow rod or tube and provided with an inlet and an outlet for cooling water, and multiplying-gear adapted to enable the expansion and contraction of the substance of said rod due to its heating and cooling by steam and water arriving from said boiler through said passage to effect the operation of said valve necessary for the required regulation or control, said gear comprising a lever pivotally connected to said rod at or near one end of said rod, a fixture at or near the other end of said rod, a second lever, means for enabling said second lever to operate said valve, and two rods of which one is arranged between and adapted to act upon said fixture and the first-mentioned lever while the other is arranged between and adapted to act upon the first-mentioned lever and said second lever.

14. Apparatus for automatically regulating or controlling the supply of feed-water to a boiler, comprising a valve; a hollow rod or tube adapted to expand and contract on increase and decrease of temperature; a casing surrounding said hollow rod or tube and adapted to be passed through by feed-water; a casting in which the lower end of said hollow rod or tube is secured and which forms an inlet for feed-water in communication with the interior of said casing, four chambers of which one the inlet-chamber is in communication with said inlet and another the outlet-chamber is in communication with said outlet, and an inlet for steam and water from said boiler to the interior of said hollow rod or tube; a hand-valve, said hand-valve and aforesaid valve being adapted to control the passage of feed-water from said inlet-chamber to said outlet-chamber; a valve adapted automatically to prevent the passage of water from said outlet-chamber to said inlet-chamber; and means adapted to enable the expansion and contraction of said hollow rod or tube due to its heating and cooling by said steam and water from said boiler to effect the opening and closing of said valve necessary for the required regulation or control.

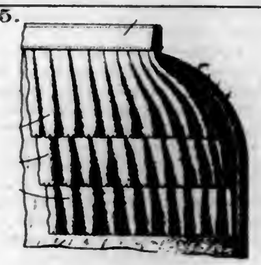
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**756,575. PAD. MINNIE R. BUCKLEY, St. Louis, Mo. Filed Apr. 17, 1903. Serial No. 153,063. (No model.)**

*Claim.*—A pad comprising an inner and upper ruffle, and outer ruffles each of which is of slightly greater length than its adjacent inner ruffle, said ruffles being of soft and yielding material, whereby said pad readily yields into the desired shape and the free edge of each shorter ruffle is concealed and blended by its adjacent next longer ruffle; substantially as described.

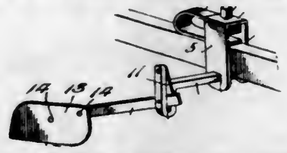


**756,575.**



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**756,576. CULTIVATOR ATTACHMENT. EDMOND N. CAMP, Moreland, Ga. Filed July 3, 1903. Serial No. 164,162. (No model.)**



*Claim.*—1. A fender attachment for a plow, consisting of a clip having an upper tension-spring, and openings in the lower extremities thereof, a support adjustably mounted in the said openings and arranged at an angle to the clip, the said support having an outer fulcrum-seat, and a fender-plate having a shank pivotally mounted in the said seat and arranged at an angle to the said support, the support holding the fender-plate and its shank outwardly a distance from the clip.

2. A fender attachment of the class set forth, consisting of a clip having an adjustable spring held in the upper portion thereof, a supporting-bar adjustably carried in the lower extremities of the clip and projecting laterally therefrom, the bar having a fulcrum-seat at its outer terminal, a holding-latch depending in the said seat, and a fender-plate having a shank pivotally mounted in the seat below the latch.

3. In a fender attachment, the combination with a beam, of a clip fitted thereover and having a spring in the upper portion thereof bearing upon the beam, and openings in the lower extremities of the same, a transversely-extending supporting-bar adjustably held in the said openings against the under edge of the beam and provided with an outer fulcrum-seat, a pivoted latch depending into the said seat, and a fender-plate having a shank pivotally held in the lower part of the seat and free to move in an upward direction.

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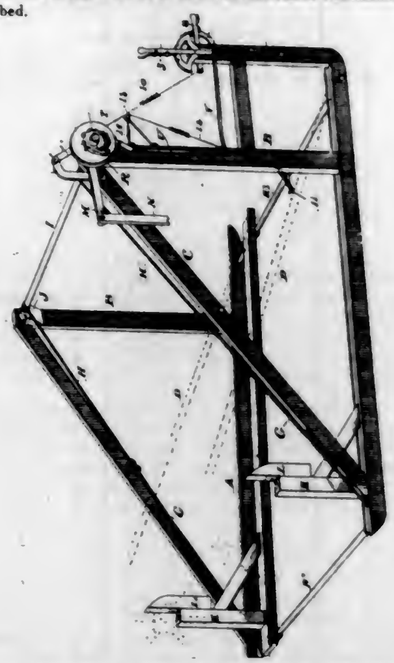
**756,577. PORTABLE GRAIN-DUMP. JOSEPH E. CAMP, Washington, Ill. Filed Jan. 26, 1903. Serial No. 140,610. (No model.)**

*Claim.*—1. In a grain-dump of the character described, a support for the wagon to be delivered of its load, a support for the rear end of such support, means for preventing backward movement of the wagon when on its support, winding means above the support and wagon, means attached to the forward end of the support and adapted to be wound aronnd the said winding means for raising the support and wagon, driving means for the said winding means consisting of a ratchet-wheel mounted on the said winding means a power-driven pawl for engaging such ratchet-wheel, means for preventing an unwinding movement of the winding means when the wagon is being elevated, automatic means for stopping the winding mechanism when the wagon has reached its desired height and means also for releasing the winding means and lowering the wagon to the ground substantially as set forth.

2. In a grain-dump, the frame A, B, C, the supporting-beams D pivoted thereto, the winding-shaft I on the frame, the cables H attached to the beams D, the ratchet-wheel P on the shaft, the arm M at the side of the shaft adapted for an up-and-down motion, the pawl O on said arm for engaging the ratchet-wheel P, the lever 11 on the frame A, B, C against which the support is adapted to strike in the raising movement thereof, flexible connection between the lever 11 and pawl O, for the purposes explained, the friction-drum Q secured to the said shaft I, the friction-band R and lever U for holding said drum, ratchet-wheel T also on the shaft I and the pawl S on the drum for engaging the ratchet all for the purposes set forth.

3. In a grain-dump of the character described, the frame A, B, C arranged substantially as described and for the purposes explained,

the beams D D forming supports for the vehicle, the rock-shaft E at the rear end of the said frame and beams D D for forming a pivot for such beams, the upright posts K K on the beams, the latches L hinged thereto to occupy a vertical position by gravity the same adapted to be carried to a horizontal position by the wheel-hubs of the vehicle in passing upon the beams D D and then to assume the vertical position behind said hubs to prevent the vehicle from moving rearward when raised at its forward end by the upward movement of the beams in an upward movement thereof, the shaft I at the top of the frame A, B, C, means adapted to be wound thereon by the revolution of such shaft such means attached to the forward end of the beams, and means for imparting movement to the shaft to wind such means thereon to raise the said beams substantially as described.



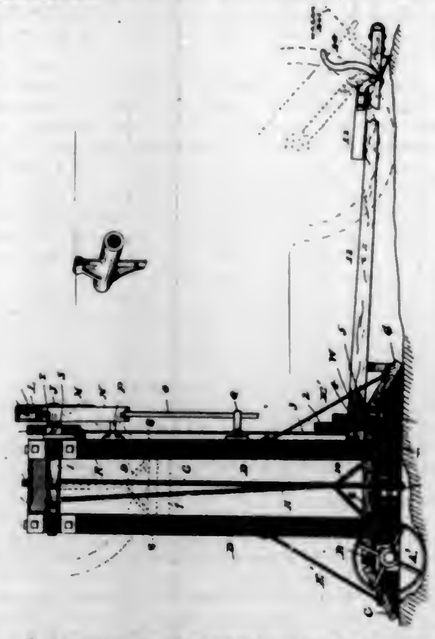
4. In a grain-dump, a support for the wagon, the same adapted for a rising-and-falling movement at one end, means for raising and lowering it for dumping the wagon carried thereon and automatic locking devices for preventing movement of the wagon during the dumping operation which consists of stationary supports rigidly mounted on the wagon-support to move therewith and a hinged member on said supports and normally occupying a vertical position and adapted to be thrown to a horizontal position by contact of the front wheel-hubs therewith above the points of pivotal support said hubs passing over the member in moving the wagon upon the support, said member returning automatically by gravity to an upright position after the hubs have passed over to form a lock to bar backward movement of the wagon when raised to the dumping position substantially as set forth.

5. In a grain-dump a tilting platform D for supporting and carrying the wagon to be dumped, means thereon for locking the wagon, a shaft I journaled above the platform and constituting a winding-drum, cables H attached thereto and to the forward ends of the platform D to raise the latter by the revolution of the said shaft I, a pawl and ratchet O and P respectively for imparting motion to the shaft, a reciprocating lever M to which the pawl is attached for turning said shaft, a lever 11 pivoted in the path of the platform D for contact of the latter thereagainst in its upward movement, a connection 12 between the said lever and the pawl O for disengaging the pawl from the ratchet to interrupt the raising of the platform and means for sustaining the platform in its raised position until released at the will of the operator to lower the wagon substantially as described.

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**756,578. PORTABLE GRAIN-DUMP.** JOSEPH E. CAMP, Washington, Ill. Filed May 4, 1903. Serial No. 155,516. (No model.)

*Claim.*—1. A grain-dump comprising a platform adapted to rest on the ground while in use, carrying-wheels for said platform by which it is made portable, a draft device for transporting purposes, a vertically-movable platform carried by the first platform and means for raising and lowering the same for the purposes herein set forth and described.



2. A portable grain-dump comprising a platform for supporting the front wheels only of a wagon to be dumped, said platform resting upon the ground a second platform upon the first the same being adapted to rise and fall for carrying the said wheels of the wagon, cables attached to the platform a winding-drum for the cables and means for operating the drum to lift the platform for the purposes set forth and described.

3. A portable grain-dump comprising a platform B adapted to rest on the ground, carrying-wheels A′ for the same, a tongue 12 attached to said platform by which it may be transported and an elevating-platform 6 for raising the front end of a wagon to be delivered of its load, and a locking device on the tongue 12 by which the rear of the wagon is prevented from moving while in the dumping position.

4. A portable grain-dump comprising the platform B, carrying wheels A′ therefor, the tongue 12 attached thereto, the frame D, E on each end of the platform, a platform 6 between the frames and adapted to rise and fall, a cable G attached at one end to one end of the platform 6, the pulley F at the top of one of the frames, the pulley H below the pulley F and the pulley H′ arranged as shown over which the cable is adapted to run, winding means for said cable G, and a cable 11 attached at one end to the opposite end of the platform 6 and at its other end to the said winding means all being arranged substantially as set forth and described.

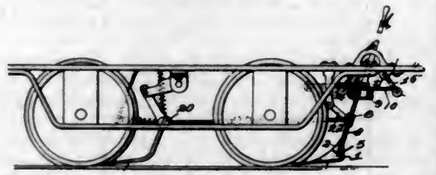
5. A portable grain-dump consisting of the platform B, wheels A′ for carrying the same, the tongue 12, the locking-arm 14 thereon for the purposes described, the frames D, E at each end of the platform, the vertically-movable platform 6 the cables G and 11 for raising the same, the shaft and winding-dram J and I respectively, the ratchet-wheels K, L on said shaft J, the pawl-arm R adjacent to the former, the pawl S for operating said wheel K, the wheel M loose on said shaft J adjacent to the wheel L, the pawl U on said wheel M for engaging the wheel L, the hand-brake N for said wheel M arranged substantially as described, the pitman 3 for operating the arm R and power device for operating the said pitman all substantially as described and shown.

6. In a portable grain-dump, the platform B, wheels A′ for carrying the same, the tongue 12, the locking-arm 14 on the tongue, the frame D, E at each end of the platfrom, the vertically-movable platform 6, the cables G and 11 for raising the platform, the shaft J and winding-drum I, the ratchet-wheels K, L on shaft J, the pawl-arm R adjacent to the wheel K, the pawl S for operating said wheel K, the wheel M carried on said shaft J but loose thereon, the pawl U on said wheel M for engaging the wheel L, the hand-brake N for said wheel M, the lever O for the same, the pitman 3 attached at one end to the arm R, wheel 2 to which the opposite end of the pitman is connected, pinion 4 engaging and driving the wheel 2 for operating the pitman all substantially as described and shown.

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**756,579. EMERGENCY-BRAKE.** GEORGE E. CARNES, St. Louis, Mo. Filed Mar. 23, 1903. Serial No. 149,228. (No model.)



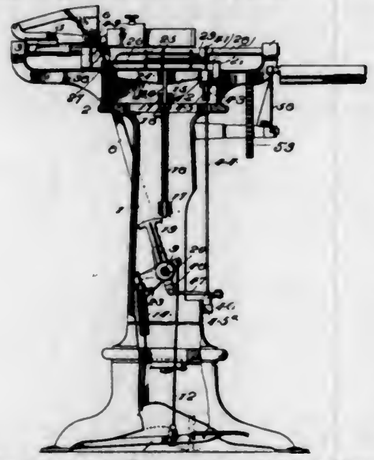
*Claim.*—1. In an emergency-brake, a brake-shoe provided with a curved face 5, V-shaped recesses 2, an elongated face 7, and a rib 6, substantially as specified.

2. In an emergency-brake, a brake-shoe provided with a curved face 5, a rib 6, an elongated face 7, V-shaped recesses 2, a stirrup 4, an adjustable slack block 9 and a hanger 10, substantially as specified.

3. An emergency-brake, consisting of a brake-shoe having a curved face 5, V-shaped recesses 2, rib 6, split stirrup 4, clamp 8 for said split stirrup, an adjustable block 9, hanger 10 and link 15, substantially as specified.

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**756,580. LABEL-AFFIXING MACHINE.** PATRICK F. CASSIDY and NEIL F. DOHERTY, Boston, Mass., assignors to Boston Bottle Wiring and Labeling Company, Boston, Mass., a Corporation of Maine. Filed Apr. 9, 1903. Serial No. 151,830. (No model.)



*Claim.*—1. In a label-affixing machine, a label bed or hopper, paste-transferring means designed to engage the labels at one end of the pile thereof, means for actuating said transferring means to apply paste to the topmost label throughout the length thereof, hopper gage-pins movable downwardly through the label-bed as the paste-transferring means travels in engagement with the labels, and means for raising said hopper gage-pins to their normal position at the completion of the application of the paste to a label, as set forth.

2. In a label-affixing machine, the combination with the label-bed, of the hopper-pins, the paste-transferrer movable back and forth over the label-bed, the return movement of such transferrer being on a plane lower than its forward movement, means for lowering the hopper-pins simultaneously with the lowering of the transferrer, and means for applying the paste to a label in the return movement of the transferrer while the hopper-pins are lowered, as set forth.

3. In a label-affixing machine, the combination with the label-bed, of the hopper-pins, the paste-transferrer movable back and forth over the label-bed, the return movement of such transferrer being on a plane lower than its forward movement, means for lowering the hopper-pins simultaneously with the lowering of the transferrer, means for engaging and holding the pile of labels when the hopper-pins are so lowered, and means for applying paste to the labels in the return movement of the transferrer, as set forth.

4. The combination with the spring-held frame, and means for normally preventing the lowering thereof, of a paste-transferrer movable back and forth over such frame, means for removing said former means by the time the transferrer is moved in one direction, the weight of the transferrer serving to lower said frame when released of said holding means, and hopper-pins carried by said frame, paste being applied to the label by the transferrer when the hopper-pins are so lowered, as set forth.

5. The combination with the spring-held frame, and means for normally preventing the lowering thereof, of a paste-transferrer movable back and forth over such frame, means for removing said former means by the time the transferrer is moved in one direction, the weight of the transferrer serving to lower said frame when released of said holding means, hopper-pins carried by said frame, paste being applied to the label by the transferrer when the hopper-pins are so lowered, and means for automatically removing the transferrer from such frame upon the completion of the return movement thereof, as set forth.

6. The combination with the depressible frame, and the hopper-pins movable therewith, of the label bed-plate having openings for such pins, seats for said bed-plate independent of the frame, means for applying paste to the labels, and means for allowing said frame and pins to move downwardly during the application of the paste, as set forth.

7. The combination with the depressible frame, and the hopper-pins movable therewith, of the label bed-plate having openings for such pins, seats for said bed-plate independent of the frame, the paste-receptacle movable over said frame in opposite directions, means for holding the frame during one of such movements of the paste-receptacle, and means for releasing such holding means, the weight of the receptacle serving to effect the lowering of the frame and hopper-pins, as set forth.

8. The combination with the depressible frame, of the plate mounted thereon having a series of upwardly-projecting pins, a label bed-plate mounted independently of the frame having a series of openings to accommodate said pins, the paste-transferrer movable back and forth over such frame and bed-plate, means for holding said frame elevated when the paste-receptacle is moved in one direction, the weight of such receptacle effecting the lowering of such frame and pin-plate at the completion of such movement, paste being applied to the labels in the return movement of the receptacle, while the frame and pins are lowered, and means for returning the frame and pin-plate to their normal positions at the completion of the return movement of the paste-transferrer, as set forth.

9. The combination with the housing, of the depressible frame mounted therein carrying track-rails, a plate on said frame having hopper-pins, a label bed-plate mounted on the housing independently of the frame, the paste-receptacle having wheels movable on said rails, means for moving such receptacle forward and backward over such frame, means for holding said frame elevated during such forward movement, the weight of the receptacle at the completion of such movement serving to depress the frame and hopper-pins, a paste-transferring roller carried by said receptacle, means for actuating the same in the return movement of the receptacle, and inclined tracks on the housing with which said wheels are designed to engage at the completion of the return movement of the receptacle, substantially as set forth.

10. The combination with the label bed-plate, the hopper gage-pins, and the movable frame supporting the latter, of the rack-bar carried by such frame, the paste-receptacle having a distributing-roller and a ratchet-wheel, means for moving said receptacle and roller forward and rearward over said hopper bed-plate, the return movement of such receptacle being on a plane lower than its forward movement, means for lowering the hopper gage-pins upon the completion of the forward movement of the paste-receptacle and means for simultaneously raising said rack-bar relatively to the frame so as to be engaged by said ratchet-wheel in the return movement of the receptacle, as set forth.

11. The combination with the housing having a slot in one wall, and the depressible frame carrying the hopper gage-pins, of the label bed-plate through which said pins are projected, the rack-bar having diagonal slots, screws passed through said slots for securing the rack-bar to the frame, a pin projecting laterally from said rack-

bar into said slot of the housing, the paste-transferrer roller therefor having a ratchet-wheel for engaging said rack-bar when the transferrer is moved in one direction, and means for moving such transferrer forward and backward, said frame and hopper gage-pins being lowered and the rack-bar being moved therewith but raised relatively thereto to effect such engagement of the ratchet-wheel in the return movement of the transferrer, as set forth.

12. The combination with the label-bed having a raised support for a portion of the pile of labels, of the paste-transferrer movable over such bed above the labels, and designed to be lowered into engagement with the labels at the raised portion thereof, upon the completion of its movement in one direction, and means for effecting the application of the paste to the topmost label during the return movement of the transferrer, as set forth.

13. The combination with the label-bed having a raised support at one end of a pile of labels, and parallel track-rails at the sides of such bed, of the paste-transferrer movable over such rails to the raised end of the label pile, such rails and the paste-transferrer being lowered when the latter is at such end, and means for actuating the paste-transferrer in its return movement over the labels, as set forth.

14. The combination with the label-bed having a raised support for the front end of a pile of labels, and parallel track-rails at the sides of such label-bed, of the paste-receptacle having a paste-transferring roller, means for moving such receptacle forward and back over such rails, means for holding the rail sand receptacle raised during the forward movement of the latter, such receptacle and rails being lowered at the completion of such latter movement, said roller thereupon engaging the top of the pile of labels, means for rotating such roller in the return movement of the receptacle, and means for elevating the receptacle at the completion of such return movement, as set forth.

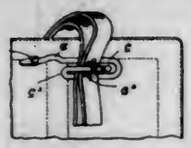
15. The combination with the label-bed having a depressible frame and hopper gage-pins carried by such frame, of a label-holding device, comprising a rod, having a hooked end, mounted in said frame, and a paste-transferrer, said frame, gage-pins and holding device being lowered to allow the transferrer and holding device to engage the labels, as set forth.

16. The combination with the depressible frame, and the independently-mounted label bed-plate, of the hooked rod carried by said frame and extended above said bed-plate, a second rod having a telescopic connection with said hooked rod, and means for partially rotating said second rod when said frame is depressed, as set forth.

17. The combination with the stand and the housing, of the spring-controlled shaft mounted in the former, a carriage movable over the housing, means connecting such carriage to said shaft, a foot-treadle also connected to said shaft, a shoulder on the latter, a dog loose on said shaft having a lug designed to be engaged by said shoulder, means for normally holding such lug in such engagement, the frame having a depending rod beneath which such dog is movable, a plate carried by such frame having hopper gage-pins, a label bed-plate mounted on the housing having openings to accommodate such pins, track-rails carried by such frame, a paste-receptacle connected to said carriage and having a paste-transferring roller, wheels carried by the latter movable on said track-rails, said dog preventing the lowering of said frame in the forward movement of the receptacle, such frame being so lowered by the weight of the latter at the completion of such forward movement, means for rotating said roller during the return movement of the paste-receptacle, inclined tracks on the housing with which said wheels are designed to engage at the completion of the return movement of the receptacle, and a spring for returning the frame to its normal position, as set forth.

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**756,581. REIN-HOLDER.** CHARLES E. CHAMBERLIN, Detroit, Mich., assignor to Joseph H. Smith & Co., Detroit, Mich., a Corporation of Michigan. Filed Apr. 21, 1903. Serial No. 153,594. (No model.)



*Claim.*—1. A rein-holder comprising two members connected together at one end, and a third member connected at one end to the opposite end of one of the first-named members and intermediate the same, the other end of said third member being free and disposed toward the juncture of said first two mentioned members.

2. A rein-holder comprising two members connected together at one end, and a third member connected at one end to the opposite end of one of the first-named members and intermediate the same, the other end of said third member being free and projecting outwardly beyond the plane of the two first-mentioned members and disposed toward the juncture of said first two mentioned members.

3. In a rein-holder, the combination of a dashboard provided with an inner cross-brace and covering, a rod bent to form an inverted U, a clamp attached to one end of the rod and engaging said cross-brace beneath said covering, a bend in the other leg of the U positioned to engage the covering over the brace, said leg being extended beyond the bend to form a prong lying between the two legs of the U.

4. In a rein-holder the combination of a dashboard provided with an inner brace, a rod bent so as to form three members, and having a sharp bend in one of the outer members for fitting over the inner brace of the dashboard, a jaw associated with said part adapted to fit beneath said brace, and the inner face of the dashboard, and tightening means between said part and jaw.

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**756,582. VALVE.** MANLEY J. CHAPLIN, Seattle, Wash., assignor to the Automatic Valve Company, Seattle, Wash. Filed Nov. 22, 1902. Serial No. 132,268. (No model.)



*Claim.*—The combination with the sleeve-socket having its inner end reduced in diameter the outer end thereof being formed with an annular seat, of a spring-pressed valve hinged to the reduced inner end of said sleeve, the enlarged portion of said sleeve being formed with longitudinal slots terminating in transverse oblique shoulders, the inner face of said valve being formed with an inclined annular ridge, a gasket encircling said ridge and being adapted to normally engage the inner end of said socket, and a cylindrical hollow key provided with studs to engage said slots and shoulders, the inner end of said key being adapted to engage the ridge of said valve, a collar mounted on said key and a packing-ring abutting against said collar and being adapted to be received in the annular seat of said socket.

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**756,583. GAS-BURNER.** THOMAS R. CHARLTON, Cleveland, Ohio. Filed Jan. 11, 1904. Serial No. 188,599. (No model.)



*Claim.*—1. In a gas-burner valve, the combination with a casing having a gas-orifice, of a needle slidable lengthwise therein, and a tapered tube yieldingly supported by, and slidable with, the needle, between the point of the needle and the orifice.

2. In a gas-burner valve, the combination with a bored casing having a gas-orifice at the end of the bore, of a needle for the orifice, slidable in the bore, and a tapered tube the point of which works between the point of the needle and the orifice, said tube being carried on the needle and having a limited movement with respect thereto.

3. In a gas-burner valve, the combination with the casing having the gas-orifice, of the needle-valve for the orifice, slidable in the casing, the tube slidably mounted on the needle and having a tapered end between the point of the needle and the orifice, and the spring and stop between the tube and the needle.



**756,584. NON-REFILLABLE BOTTLE.** CHARLES D. CHASE, San Francisco, Cal., and EDMUND P. DOLE, Honolulu, Hawaii. Filed June 11, 1903. Serial No. 161,010. (No model.)



*Claim.*—1. In combination with a bottle having a chamber at and below the lower terminus of the neck-orifice and of a diameter greater than the same and with a partition or floor between the enlarged chamber and the interior space of the bottle and provided with an axial orifice or passage; a tube open at both ends and provided with peripheral openings or passages and seated at each end within the orifice in the neck and the axial passage of the floor or partition respectively; a reciprocating valve located within the tube and having peripheral passages adapted to register with the like passages in the tube and having one end closed; a valve-seat at or near the bottom of the tube to support the valve; means for limiting the movement of the valve away from its seat, and means within the neck of the bottle to guard the valve against fraudulent manipulation, substantially as hereinbefore set forth.

2. In a bottle such as described, and having an enlarged chamber at the terminus of the orifice in the neck, and a partition or floor with an axial passage therein between the enlarged chamber and the interior space of the bottle; a valve tube or receptacle sealed liquid-tight at its lower end within the axial passage of the floor or partition and extending to and within the lower extremity of the orifice or passage in the neck of the bottle, and having peripheral openings or passages extending above the plane of the floor; a reciprocating valve mounted upon a seat within the containing-tube and having one end closed and peripheral passages or openings; a wire cage located within the neck of the bottle and above the valve-containing tube, and a spring-bar located within the wire cage and having its free ends extending through the cage and seated in a groove or recesses in the neck of the bottle, substantially as and for the purpose set forth.

3. In a bottle such as described, and provided with the chamber G, tube I, and valve O, the tube I provided at or near its lower end with an internal seat for the valve, and means for limiting the movement of the valve away from its seat, substantially as hereinbefore set forth.

4. In a bottle such as described, and provided with the annular groove or recesses B within the neck and provided with devices between the neck and breast for controlling the flow of liquid from or into the bottle, the two-part wire cage and the U-shaped device C, substantially as and for the purposes set forth.

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**756,585. KEY.** JAMES P. CLARK, Newark, N. J., assignor to the R. Neumann Hardware Company, a Corporation of New Jersey. Filed Nov. 12, 1903. Serial No. 180,818. (No model.)



*Claim.*—1. The improved key having a tubular body and bit formed of one piece of sheet metal, said bit comprising bit extensions one of which is longer than and is bent double over the extremity of the other to reinforce the same, substantially as set forth.

2. The improved key having a body of sheet metal with a short and long bit extension at the longitudinal edges thereof, the said body being bent into tubular form and the short and long bit extensions being bent to lie face to face, the long extension being bent over and around the projecting extremity of the short extension.

3. The improved key, consisting of a tubular body having a bow secured at one end and at the opposite end having bit extensions lying face to face, the said extensions being bent double at the projecting extremity of the bit, substantially as set forth.

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**756,586. BOTTLE-CLOSURE.** BURLEY CLEMENS, Moundsville, W. Va. Filed Sept. 12, 1903. Serial No. 172,896. (No model.)



*Claim.*—A bottle-closure, comprising a spring-body adapted to embrace the neck of the bottle and having an inwardly-extending shoulder at its upper end, said shoulder lying over the end of the bottle-neck, a spout projecting upward from the inner edge of said shoulder, a cover for the spout, and means for releasably holding the cover closed.

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**756,587. HEATING-STOVE.** JUDSON COCKRELL, Fargo, N. D. Filed June 16, 1903. Serial No. 161,676. (No model.)



*Claim.*—1. In a heater and ventilator, the combination with the combustion-chamber of a stove, of a shell or jacket surrounding the combustion-chamber forming a hot-air space between the same and provided with cold-air inlets near its lower portion, a hot-air flue extending upwardly from said hot-air space, a vertical partition within said hot-air flue, dividing the hot-air space surrounding the combustion-chamber into two separate compartments, and branch flues extending from the hot-air flue of its upper portion on each side of its partition.

2. In a heater and ventilator, the combination with the combustion-chamber and fire-box of a stove, of upper and lower shells or jackets surrounding the same and forming hot-air spaces or compartments inclosing the combustion-chamber and fire-box, a hot-air flue extending from the base of the stove upwardly forming a section of the aforesaid hot-air spaces, a vertical partition within said hot-air flue dividing said hot-air spaces into separate and independent chambers, cold-air inlets at or near the lower portion of the upper and lower jackets or shells, branch flues extending from the upper portion of the hot-air flue, and means for controlling and regulating the amount of heat carried to each part of the house independently of every other part.

3. In a heater and ventilator, the combination with the combustion-chamber of a stove, of upper and lower shells or jackets secured to the body of said chamber on each side and surrounding the same at its rear forming hot-air spaces, a hot-air flue extending from the body of the stove and forming a portion of the hot-air spaces, a vertical partition within said flue forming two independ-

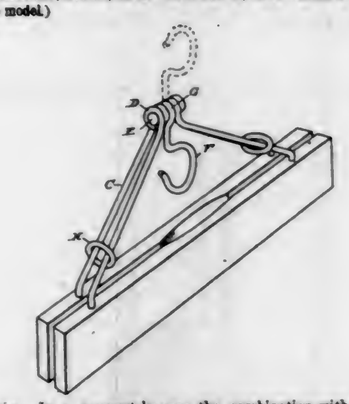
ent hot-air spaces on each side of the stove, the upper and lower jackets being provided with cold-air inlets at or near their lower portions, and branch flues extending from the upper portion of the hot-air flue.

4. In a heater and ventilator, the combination with the combustion-chamber and fire-box of a stove, of upper and lower shells or jackets surrounding the same and forming hot-air spaces or compartments inclosing the combustion-chamber and fire-box, the upper jacket being secured to the combustion-chamber at each side of its front and the lower jacket extending completely around the fire-box, the upper jacket provided with cold-air inlets at or near its lower portion on each side, and the lower jacket provided with a cold-air inlet at its center, a hot-air flue extending upwardly from the hot-air spaces and forming a part thereof, and a vertical dividing-partition extending within said flue extending from the base of the stove upwardly to branch pipes at the upper end of the flue.

5. In a heater and ventilator, the combination with the combustion-chamber of a stove, of a shell or jacket surrounding said combustion-chamber, and forming a hot-air space between the same and provided with cold-air inlets, a partition dividing said hot-air space into separate compartments, and flues extending from each compartment.

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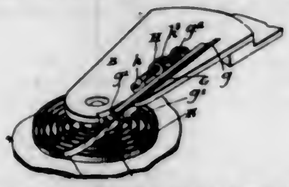
**756,588. GARMENT-HANGER.** JAMES D. COSEY and WILLIAM H. OLMSTEAD, Detroit, Mich. Filed Feb. 10, 1903. Serial No. 142,755. (No model.)



*Claim.*—In a garment-hanger, the combination with complementary clamping members, of supporting-arms for and connected thereto, loops at the upper ends of the arms arranged in axial alinement, a supporting-hook provided with a loop forming one of the series of arm-loops, and a pivot engaging said series of loops.

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**756,589. WATCH-REGULATOR.** WILLIAM W. COBOURN, Toronto, Canada. Filed Mar. 31, 1903. Serial No. 150,405. (No model.)



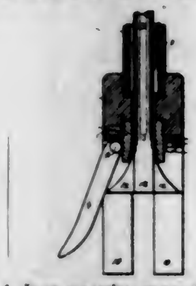
*Claim.*—1. In a regulator for watches, clocks and the like, the combination with the hair-spring formed with a set inward bend, the straight portion extending over the body of the spring, and the balance-bridge, of a groove in said balance-bridge parallel with the straight portion of said spring, a bar adjustably mounted in said groove, curb-pins depending from said bar and means mounted on said balance-bridge for adjusting said bar, substantially as described.

2. In a regulator for watches, clocks and the like, the combination with the hair-spring formed with a set inward bend and the straight portion extending over the body of the spring, the balance-bridge having a threaded spindle secured thereto and an annularly-grooved nut mounted on said spindle of a groove in said balance-bridge parallel with the straight portion of said spring, a bar sliding in said groove, curb-pins depending from said bar and a tongue extending from said bar and engaging the groove in said nut, substantially as described.

3. In a regulator for watches, clocks and the like, a central pivot-pin, a hair-spring suitably fastened at the inner end to the said pin and having a straight set portion, a pair of blocks having straight flat inner faces adapted to abut the straight set portion on each side, and a bar arranged in alinement with the straight set portion and held in suitable guideways and carrying the said blocks, whereby the position of such blocks is adjusted longitudinally parallel with the straight portion of the spring without disturbing the alinement thereof, as specified.

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**756,590. EXPANSIVE REAMER.** ROBERT CORNELIUS, Orrville, Ohio, assignor of one-half to Bert Cope, Orrville, Ohio. Filed Dec. 18, 1903. Serial No. 185,673. (No model.)

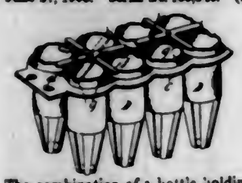


*Claim.*—1. In an expansive reamer, the combination of a driving-head provided with a handle, and a screw-threaded aperture, a coupling-collar connected to said head, a pipe provided with a flange, said flange located in the coupling-collar, a rod located through the pipe and screw-threaded at one end, a coupling-head connected to the pipe, a coupling-thimble connected to the coupling-head, and guides connected to the coupling-thimble, said guides spaced from each other, a collar located between the coupling-head and the inner ends of the cutter-guides, cutters pivotally connected between the collar and the inner ends of the cutter-guides, and flanges formed upon the rod, said flanges located in the spaces between the guides all arranged, substantially as and for the purpose specified.

2. In a reamer of the class described, a tube and a driving-head connected to said tube, a rod located through the tube and movable longitudinally therein, a coupling-head secured to the opposite end of the tube from that to which the driving-head is attached, a thimble connected to the coupling-head, said thimble provided with cutter-guides, said cutter-guides spaced from each other, a collar located between the coupler-head and the inner ends of the cutter-guides, and cutters pivotally attached between the collar and the inner ends of the cutter-guides and flanges connected to the longitudinally-movable rod, said flanges located in the spaces between the cutter-guides and between the cutters, substantially as and for the purpose specified

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**756,591. BOTTLE HOLDING AND CARRYING DEVICE.** ANTHONY F. CRAMER, Detroit, Mich., assignor to Fritz Goebel, Detroit, Mich. Filed June 27, 1903. Serial No. 163,346. (No model.)



*Claim.*—1. The combination of a bottle-holding carrier, a bottle-carrying pocket on said carrier, a rotatable bottle-retainer adapted to be swung across the mouth of said pocket, and means for actuating said retainer, substantially as described.

2. The combination of a bottle-holding carrier, a bottle-carrying pocket on said carrier, a rotatable bottle-retainer adapted to be swung across the mouth of said pocket, means for actuating said retainer across the mouth of said pocket, and means for returning said retainer to its original position, substantially as described.

3. In bottle-holding devices adapted to convey bottles, the combination of a foraminous band, metal pockets fixed upon said band, a retainer for holding the bottles in said pockets arranged to move



across the open mouth of said receptacles by rotating upon an axis adjacent thereto and means for actuating said retainer, substantially as described.

4. In a bottle-washing device, the combination of a carrier, bottle-holding pockets arranged fixedly upon said carrier in sets of four each, bottle-retaining devices consisting of four arms arranged substantially at right angles to each other and arranged to swing upon a central pivot or hub, means connected therewith for engaging fixed portions of the mechanism whereby said crosses are swung into the operative position to cover the mouths of said receptacles and whereby they are swung out of the way to uncover the mouths of said receptacles, substantially as described.

5. In a bottle-washing device, the combination of a carrier, bottle-holding pockets arranged fixedly upon said carrier in sets of four each, bottle-retaining devices consisting of four arms arranged substantially at right angles to each other and arranged to swing upon a central pivot or hub, means connected therewith for engaging fixed portions of the mechanism whereby said crosses are swung into the operative position to cover the mouths of said receptacles and whereby they are swung out of the way to uncover the mouths of said receptacles, means to prevent the accidental swinging of said arms to cover or uncover said bottle-holding receptacles, except at predetermined points, substantially as described.

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**756,592. SELF-THREADING SHUTTLE.** JEAN B. DAUDELIN, Fall River, Mass. Filed Nov. 11, 1903. Serial No. 180,763. (No model.)



*Claim.*—1. The combination with a shuttle having a delivery-eye, said eye having a portion of the shuttle-body remaining across its outer end, a bushing located in said delivery-eye, threading-passages permitting the thread to be drawn into the delivery-eye and bushing, said threading-passage in the bushing being behind that portion of the shuttle-body across the mouth of the eye to prevent the escape of the thread therefrom.

2. The combination in a shuttle having a delivery-eye, of a shoulder on the shuttle-body disposed across said eye to prevent the escape of the thread therefrom, a threading-passage permitting the thread to be drawn into the delivery-eye, said passage entering said eye below the plane of said shoulder.

3. The combination of a shuttle having a delivery-eye, said eye being partially closed at its mouth by a portion of the shuttle-body and a threading-passage entering said threading-eye behind said closure.

4. The combination with a shuttle having a delivery-eye and a threading-passage leading thereto said delivery-eye emerging partially behind a shoulder on the shuttle-body, and a bushing in said delivery-eye having a slit behind said shoulder to prevent the escape of the thread from the bushing.

5. The combination with a shuttle having a delivery-eye, a shoulder on the shuttle-body, said delivery-eye emerging partially behind said shoulder and a threading-passage below the plane of said shoulder permitting the thread to be drawn into the delivery-eye.

6. The combination of a shuttle having a delivery-eye, disposed at an angle to the surface of the shuttle, said eye being only partially cut through at said surface to leave a shoulder on the shuttle-body and a threading-passage entering said threading-eye behind said shoulder.

7. The combination with a shuttle-body having a delivery-eye of a cleared portion whose surface is lower than that of the surrounding shuttle-body and protected thereby from contact, a threading-passage permitting the thread to be drawn into the delivery-eye, said threading-passage intersecting said shuttle at said cleared surface.

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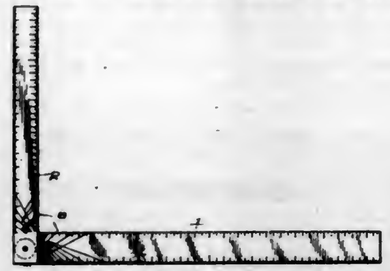
**756,593. PROCESS OF PRODUCING BRIQUETS.** JOHN M. DAVIDSON, Beaumont, Tex. Filed Mar. 20, 1903. Serial No. 148,770. (No model.)

*Claim.*—1. The process of producing briquets consisting in mixing pulverized charcoal with pitch of a high melting-point and adding a neutralizing alkali while the materials are maintained at a high temperature.

2. The process of producing briquets consisting in the production of charcoal by distilling pine-wood and producing tar from the same distillation after which pitch of a high melting-point is distilled from said tar, then pulverizing the charcoal and mixing it with the pitch thus obtained and adding slaked lime and mixing the mass at a temperature of 250° to 300° Fahrenheit, and then molding the material into blocks.

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**756,594. HIP-ROOF-FRAMING SQUARE.** WILLIAM J. DAVIS, Washington, D. C. Filed Jan. 4, 1904. Serial No. 187,645. (No model.)



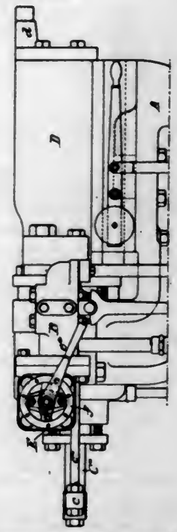
*Claim.*—1. In a device of the kind described, the combination of a blade provided with a socket, having a central perforation through its bottom, a tongue provided with a pivot adapted to engage said socket, and having a perforation registering with that in the socket, a pivot-screw through the perforation whereby the parts are retained in position and indicia marked on said blade whereby the angular relation of the members may be determined, substantially as set forth.

2. In a device of the kind described, the combination of a blade provided with a socket having a central perforation through its bottom, a tongue provided with a pivot adapted to rotate in said socket and having a perforation registering with that in the socket, a set-screw adapted to engage said perforation whereby the parts are retained in position, indicia marked upon the blade, and means for retaining said socket at any desired angle, substantially as described.

3. In a device of the kind described, the combination of a blade provided with a socket, a tongue provided with a pivot, a screw whereby said parts are held in operative relation, an annular groove formed in said pivot and set-screws adapted to engage said groove and lock the parts at a desired angle indicated by indicia on said blade.

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**756,595. HYDRAULIC MACHINE AND VALVE THEREFOR.** WILLIAM H. DERRYBERRY, Chambersburg, Pa. Filed Nov. 23, 1901. Serial No. 83,459. (No model.)



*Claim.*—1. The combination in a hydraulic machine, of three cylinders, plungers therefor, a valve-chest having independent passages leading from it to each cylinder and also being provided with a drip-passage, a valve having a single port and a contour shaped to open any one, two or three of the ports to pressure, said valve

being provided with a recess communicating with the drip and with the passage or passages cut off from pressure, substantially as described.

2. The combination in a hydraulic machine, of the three cylinders, plungers therein, a valve-chest, an independent passage leading from each cylinder to the valve-chest, a central drip-passage in the valve-chest, a valve in the form of a segment and having a single port, the valve being so shaped as to open any one, two or three of the ports to pressure, and a recess in the face of the valve communicating with the drip and with the passage cut off from pressure, substantially as described.

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**756,596. DRESS OR CORSET SPRING. ELIZABETH M. DWALE, Oakland, Cal. Filed July 8, 1902. Serial No. 114,812. (No model.)**



*Claim.*—1. In a device of the kind described, a severable wire braid and centrally-punched mountings inclosing the opposite ends of the sections, the free ends of the mountings having a flange forming an interlocking means for the contiguous sections.

2. The combination, in a device of the kind described, of a wire braid, an apertured mounting therefor, and an inserted eye swiveling within the mounting's aperture; substantially as set forth.

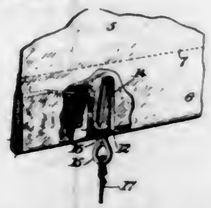
3. In a device of the kind described, the combination with a wire braid, and a mounting therefor comprising a plate having flanges arranged to engage the braid and an outwardly-extended portion having a retaining-aperture, of a link passing through said aperture and adapted to connect sections of said braid together; substantially as set forth.

4. In a device of the kind described, a severable wire braid and apertured mountings therefor, combined with swiveling eyes inserted in the mounting's apertures, and one or more links joining one section of braid to another through the eyes in said mountings; substantially as set forth.

5. A tubular wire braid composed of sections flexibly joined together at their sides and inclosing a core of desired shape; substantially as and for the purpose set forth.

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**756,597. ATTACHMENT FOR WINDOW-SHADES. GEORGE F. DICKINSON, Jr., Morristown, N. J. Filed Oct. 16, 1903. Serial No. 177,274. (No model.)**



*Claim.*—1. The combination with a curtain-shade or the like having a fold formed at one end thereof, a stiffening-strip passing through said fold, said fold having an aperture formed in the material, and a cord-suspending device passing through said aperture in the fold of the curtain and designed to extend around and engage the stiffening-strip, said device comprising a relatively long loop member formed with a plurality of converging arms, a hook portion formed at one end of each arm, and a relatively small eye-loop formed on said member opposite the hook, the eye-loop being designed to have a longitudinal flexible member secured thereto.

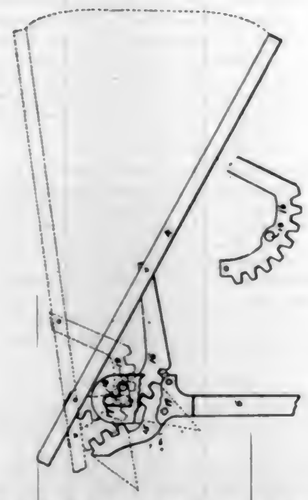
2. A device of the class described comprising a relatively long looped member having an eye-loop formed at one end thereof, an arm extending from said eye-loop, and a hook formed at the termination of the arm, said hook being provided with a portion extending backward toward said eye-loop, said device being designed to extend around and engage the stiffening-strip of a curtain.

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**756,598. MINE-CURTAIN RAISER. CHARLES J. DIEBOLD, Cleveland, Ohio. Filed Sept. 30, 1903. Serial No. 175,120. (No model.)**

*Claim.*—1. In combination, a suspended curtain, arms having their near ends attached to the curtain's lower edge, racks adjacent to the curtain, pinion-segments on the arms meshing with the rack, and means for operating the arms to raise and lower the curtain.

2. In combination, a suspended curtain, arms having their near ends attached to the curtain's lower edge, racks adjacent to the curtain, and pinion-segments on the arms adapted to rock on the racks.

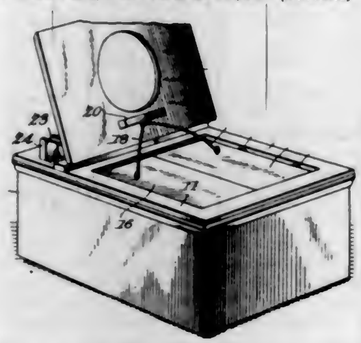


3. In combination, a suspended curtain, arms having their near ends attached to the curtain's lower edge, compound racks adjacent to the curtain, and pinion-segments on the arms adapted to rock on the racks.

4. In combination, a rack, a pinion-segment adapted to rock on the rack, plates on the rack extending alongside the pinion-segment, a transverse pin on the pinion-segment, and slots in the plates adapted to receive the pin in its movements.

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**756,599. CLOSET-SEAT. LA FAYETTE G. DOBBS, Watertown, S. D. Filed Oct. 6, 1903. Serial No. 175,939. (No model.)**



*Claim.*—1. In a device of the class described, a supporting-casing, an apertured seat member hinged to swing from one side of said casing, doors forming a closure to said casing and hinged to swing below said seat member, connecting means between said seat and doors adapted on the elevation of said seat to close said doors and on the depression of said seat into operative position to open said doors, and a counterweight connected to yieldably maintain said seat member in open position, substantially as described.

2. In a device of the character described, a supporting-casing, an apertured seat member hinged to swing from one side of said casing, doors forming a closure to said casing and hinged to swing below said seat member, connecting means between said seat and doors whereby the elevation of said seat will close said doors and the depression of said seat into operative position will open said doors, flexible straps connected at spaced points to said seat member in advance of its hinges, carrier members disposed in the rear of said hinges and elevated above them and providing guide means for said straps, a bail connected by its ends to the free ends of said straps, and a weight carried by said bail, substantially as described.



**756,600. BELT CONVEYER. JAMES M. DODGE, Philadelphia, Pa. Filed Nov. 18, 1902. Serial No. 131,870. (No model.)**



*Claim.*—1. The combination of an endless conveying-belt, and means for supplying a film of air to support said belt, substantially as described.

2. The combination of a conveying-belt, an air-box under the belt and communicating with the under side of the belt, so that a film of air will support the belt in its travel, substantially as described.

3. The combination of an endless carrying-belt having a carrying and return run, and an air-box under each run of the belt and perforated, substantially as described.

4. The combination of an endless conveying-belt, a box having two air-chambers separated by a perforated partition, and a perforated partition covering the upper chamber, one run of the belt being above the upper chamber and the other run within the upper chamber directly above the perforated partition, substantially as described.

5. The combination of an endless conveying-belt, an air-box under the belt and communicating with the under side thereof, so that a film of air will support the belt in its travel, the belt being narrower than the box to form clearance-passages, substantially as described.

6. The combination of a conveyer-belt, an air-box under the belt communicating with the under side thereof, so that a film of air will support the belt in its travel, the belt being narrower than the box so as to form clearance-passages therefor, and deflectors above the clearance-passages, substantially as described.

7. The combination of a conveyer-belt, an air-box under the belt communicating with the under side thereof, so as to support the belt in its travel, the belt being narrower than the box so as to form clearance-passages therefor, and deflectors above the clearance-passages, said deflectors being arranged at an angle so as to direct the air over the upper surface of the belt, substantially as and for the purpose set forth.

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**756,601. BOTTLE-STOPPER. WILLARD D. DORRANCE, Washington, D. C. Filed July 24, 1903. Serial No. 166,872. (No model.)**

*Claim.*—1. As an article of manufacture, a bottle-stopper comprising a disk having a three-ply center and single ply from the three-ply center to the edge.

2. As an article of manufacture, a bottle-stopper comprising a disk, having a center composed of superimposed layers which extend diametrically across the disk.

3. As an article of manufacture, a bottle-stopper comprising a disk, the central portion of which is overlapped, whereby to reinforce and strengthen the stopper through the center.



4. As an article of manufacture, a bottle-stopper cut in the form of a disk from a blank having a plait-like fold through the center, whereby the stopper comprises a plurality of members having superimposed centers.

5. As an article of manufacture a bottle-stopper composed of flexible material having parallel bends diametrically across at or near the center, whereby a central flap is formed which normally rests flat on the disk and which may be utilized as a handle to grasp the stopper and which reinforces and supports the stopper when in its normal position.

6. As an article of manufacture, a bottle-stopper, cut in the form of a disk and having two parallel bends, from which bends the ends of the disk extend in opposite directions whereby a central flap is formed which has a toggle-joint action in the operation of applying the stopper to the bottle.

7. As an article of manufacture, a bottle-stopper in the form of a disk folded at the center and offset in one member adjacent to one of the folds whereby to bring the opposite ends into or substantially into the same plane, and to afford a support for the inner edge of the offset portion.

8. A closure for bottles, &c., comprising a disk a part of the upper side of which terminates in a chord or finger-engaging edge within the periphery of the disk.

9. A closure for bottles, &c., comprising a disk a part of the upper and lower sides of which each terminate in a chord.

10. A closure for bottles, &c., comprising a disk having a finger-engaging portion at the upper side and lying against the disk with its edge disposed within the periphery of the disk.

11. A closure for bottles, &c., comprising a disk having finger-engaging portions at opposite sides lying against the disk with their edges disposed within the periphery of the disk.

12. A closure for bottles, &c., comprising a disk having a superimposed fold lying against the disk and terminating in a chord.

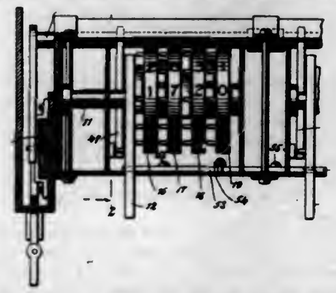
13. A closure for bottles, &c., comprising a disk having folds at opposite sides lying against the disk and each terminating in a chord.

14. A closure for bottles, &c., comprising a disk the material of which is folded in opposite directions forming folded edges and layers beyond said edges.

15. A closure for bottles, &c., comprising a disk the material of which is folded in opposite directions above and below an intermediate part or layer and so that the folded edges will be within the periphery of the disk.

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**756,602. BALLOTING-MACHINE. WILLIAM M. DOUGHERTY, St. Joseph, Mo. Filed June 4, 1902. Serial No. 110,161. (No model.)**



*Claim.*—1. In a balloting-machine, the combination with the numbering devices, of arms mounted to swing respectively to operate the numbering devices, a rock-shaft, arms fixed to the rock-shaft and respectively in connection with the first-named arms, and spring-dogs for the purpose specified, said dogs being normally restrained by the second-named arms.

2. In a balloting-machine, the combination with the numbering devices, of arms mounted to swing respectively to operate the numbering devices, a rock-shaft, arms fixed to the rock-shaft and

respectively juxtaposed to the first-named arms, a pin carried by each of the first-named arms and respectively engaged with the second-named arms, and spring-dogs adapted to engage the pins and normally restrained by the second-named arms.

3. In a balloting-machine, the combination with the numbering devices, of swinging arms respectively to operate them, spring-dogs acting against the arms to lock them, a second series of swinging arms serving normally to restrain the dogs, and a connection between the members of said second series of arms to cause them to move in unison.

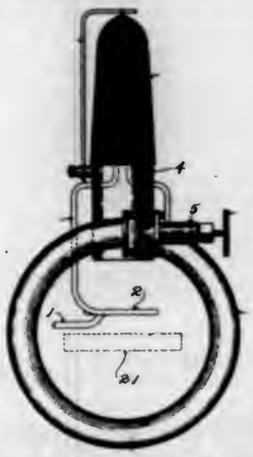
4. In a balloting-machine, the combination with the recording means, of movable members respectively to operate them, spring-dogs acting against said movable members to lock them, a second series of movable members serving normally to restrain the dogs, the second series of movable members being arranged in the path of the first series of movable members, for the purpose specified, and a connection between the members of the said second series of movable members.

5. In a balloting-machine, the combination with the counting or numbering means, of movable members respectively to operate them, dogs coacting with said movable members to lock them, a second series of movable members serving normally to restrain the dogs, the second series of movable members being arranged in the path of the first series of movable members, and a connection between the members of the said second series of movable members.

6. In a balloting-machine, the combination with the counting or numbering means, of a movable member to operate it, a dog coacting with the movable member to lock it, and a second movable member in the path of the first movable member and serving normally to restrain the dog.

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**756,603. VAPOR-BURNER.** FRED F. DOW, Fredericton, Canada. Filed Feb. 4, 1901. Serial No. 46,889. (No model.)



*Claim.*—1. The improved lamp or burner comprising the combination with the main burner having a valve and a central baffle-disk having the pilot-burner perforations, of the injection-valve, the mixing-pipe discharging by one end thereof into the burner and having the injection-valve arranged to discharge into its open outer end, and the supply-pipe extending up through the top of the burner into the flame therefrom and connecting with the injection-valve, substantially as described.

2. The improved lamp or burner comprising the combination with the main burner having the central pilot-burner and the valve controlling the flow through the main part of said burner, of the injection-valve, the mixing-pipe discharging by one end thereof into the said main burner and having the injection-valve arranged to discharge into its open outer end, and the supply-pipe extending up through the top of the burner into the flame therefrom and connecting with the injection-valve, substantially as described.

3. The improved lamp or burner comprising the combination with the main burner having the pilot-burner and the valve controlling the flow through the main part of said burner, of the injection-valve, the mixing-pipe discharging by one end thereof into the said main burner and having the injection-valve arranged to discharge into its open end, and the supply-pipe extending above the top of the burner into the flame therefrom and connecting with the injection-valve, and also provided with the starting-coil, substantially as described.

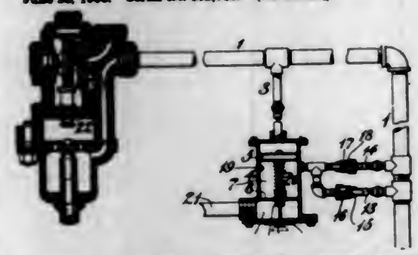
4. The improved lamp or burner comprising the combination with the main burner having the pilot-burner and the valve controlling the flow through the main part of said burner, of the injection-valve, the mixing-pipe discharging by one end thereof into the said main burner and having the injection-valve arranged to discharge into its open outer end, and the supply-pipe provided with the starting-coil and extending into the interior of the burner into contact with the gaseous contents thereof, and also extending through the top of the said main burner and above the latter within the flame therefrom and connecting with the injection-valve, substantially as described.

5. The improved hydrocarbon lamp or burner, comprising the combination with a body containing a gas-chamber and provided at the top of said gas-chamber with a main burner, and also provided with a pilot-burner consisting of a series of groups of minute perforations, each group appreciably removed from the other groups, of a mixing-tube communicating with the said gas-chamber, an injection-valve discharging into said mixing-tube, and a gas-generator located above the top of the gas-chamber and over the said pilot-burner and communicating with the said injection-valve, substantially as described.

6. The improved burner provided with the gas-chamber, main and pilot burner outlets, a valve controlling the flow through the main-burner outlets, an injection-valve, a continuously-curved mixing-pipe discharging by one end thereof into the said main burner and having the injection-valve arranged to discharge into its open end, a vapor-generating pipe extending above the top of the burner into the flame therefrom and connecting with the injection-valve, and a starting-coil connected with said vapor-generating pipe, substantially as described.

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**756,604. AIR-BRAKE.** DENNIS DUNN, Mahanoy City, Pa., assignor of one-half to James H. Prosser, Mahanoy City, Pa. Filed June 22, 1903. Serial No. 162,710. (No model.)



*Claim.*—1. An auxiliary air-brake device comprising a cylinder a piston in said cylinder, a valve controlling the exhaust from the brake-cylinder connected to said piston, pipes connecting each end of said cylinder with the train-pipe and a valve in one of said pipes adapted to be seated by excess pressure in said cylinder, whereby exhaust from the brake-cylinder is controlled by variation in train-pipe pressure.

2. An auxiliary air-brake device comprising a cylinder, a piston in said cylinder, a chamber adjacent said cylinder, a pipe leading from the brake exhaust-port of the triple valve to said chamber, a valve controlling the exit from said chamber connected to said piston, a pipe connecting the end of said cylinder nearer said valve with the train-pipe, a valve in said pipe adapted to be seated by excess pressure in said cylinder and a normally unobstructed pipe connecting the other end of said cylinder with the train-pipe, whereby exhaust from the brake-cylinder is controlled by variations in train-pipe pressure.

3. In an air-brake system, an auxiliary cylinder on a car connected to train-pipe at both sides of its piston, one of such connections being valved and means connected with said piston for operting a brake-cylinder exhaust-valve.

4. In an air-brake system, an auxiliary cylinder on a car, a piston in said cylinder, a rod connecting said piston with a brake-cylinder exhaust-valve, a valved train-pipe connection with said cylinder at the side of said piston nearer said valve and a free train-pipe connection with said cylinder at the other side of said piston, whereby said exhaust-valve is operated by variations of train-pipe pressure.

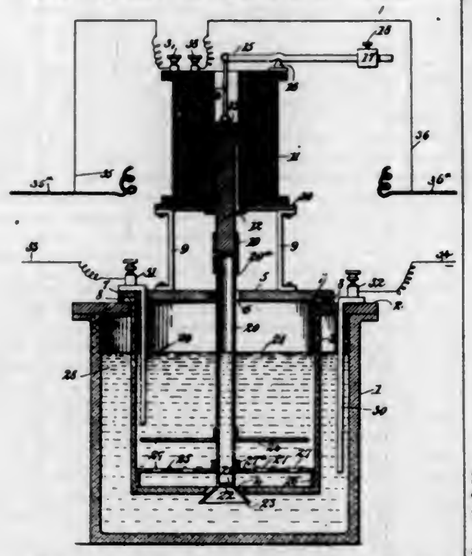


5. An auxiliary air-brake device comprising a cylinder, a piston in said cylinder operatively connected to a brake-cylinder exhaust-valve, a branch pipe connecting said cylinder at the side of said piston nearer said valve to the train-pipe, a valve in said branch pipe seated by pressure in said cylinder and a free branch pipe connecting said cylinder at the other side of said piston with the train-pipe, whereby said exhaust-valve is operated by variations of train-pipe pressure.

6. An auxiliary air-brake device comprising a cylinder, a piston in said cylinder operatively connected to a brake-cylinder exhaust-valve, a branch pipe connecting said cylinder at the side of said piston nearer said valve to the train-pipe, a valve in said branch pipe seated by pressure in said cylinder, a free branch pipe connecting said cylinder at the other side of said piston with the train-pipe, whereby said exhaust-valve is operated by variations of train-pipe pressure and a valved relief-pipe also connecting the side of said cylinder nearer said exhaust-valve with the train-pipe.

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**756,605. CURRENT-REGULATOR.** EMIL DYSTERUD, Monterey, Mexico. Filed June 9, 1903. Serial No. 160,704. (No model.)



*Claim.*—1. A current-regulator, comprising a plurality of vessels connected together by an opening and free to contain a conducting liquid, a portion of which is disposed within said opening, and electrically-operated mechanism controllable by variations in the current, for governing the capacity of said opening.

2. A current-regulator, comprising outer and inner vessels, the inner vessel being provided with an opening, current-operated mechanism for governing the capacity of said opening, and electrodes disposed in said outer and inner vessels respectively.

3. A current-regulator, comprising an outer containing vessel, an inner vessel depending into said outer vessel and provided with an opening, a movable member for partially obstructing said opening, magnetic mechanism controllable by variations in the strength of the current for actuating said movable member, electrodes connected with said outer and inner vessels respectively, and means for energizing said electrodes and said magnetic mechanism.

4. A current-regulator, comprising an outer containing vessel, a smaller vessel mounted within said outer vessel and provided with an opening, a movable valve for closing said opening, magnetic mechanism for actuating said movable valve, electrodes mounted within said inner and outer vessels respectively, and electric connections between said electrodes and the field of the machine to be regulated.

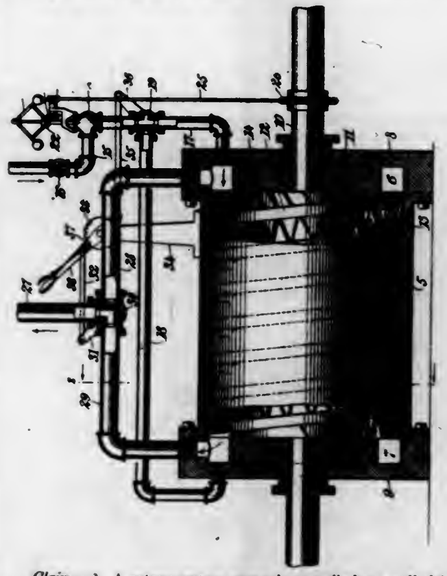
5. In a current-regulator, the combination of a plurality of vessels connected together by an opening and free to contain a conducting liquid, a valve for partially closing said opening, and dash-pot mechanism for preventing abrupt movements of said valve.

6. In a current-regulator, the combination of electrolytic vessels connected together by an opening, a member for partially closing said opening, magnetic mechanism controllable by the current for actuating said member, and means, controllable at will, for governing the sensitiveness of said magnetic member.

7. In a current-regulator, the combination of a pair of vessels communicating with each other by means of an opening, a valve for partially closing said opening, magnetic mechanism provided with an armature for actuating said valve, a lever connected with said armature, and a slidable weight mounted upon said lever and adjustable relatively thereto, for the purpose of governing the sensitiveness of said armature.

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**756,606. ROTARY MOTOR.** THOMAS EASTMOORE, Jacksonville, Fla., assignor of one-half to Mathew M. Freed, Jacksonville, Fla. Filed Aug. 21, 1903. Serial No. 170,283. (No model.)



*Claim.*—1. A rotary motor comprising a cylinder, a cylindrical piston arranged therein, a spirally-disposed rib on the outer surface of said piston, and spring yielding plates arranged in the space between the coils of said rib.

2. A rotary motor comprising a cylinder, a cylindrical piston arranged therein, a spirally-disposed rib on said piston, and spring yielding plates arranged alternately at reverse angles between the coils of the rib.

3. A rotary motor comprising a cylinder having annular inlet and exhaust chambers formed in its heads, a rotary piston arranged in the cylinder, yielding plates on the piston, an inlet-pipe having branches communicating with said chambers, means for directing the motive agent through either one of said branches, an exhaust-pipe having branches leading into said chambers, and means for regulating the exhaust.

4. A rotary motor comprising a cylinder, a cylindrical piston arranged therein, spring yielding plates on the piston, the heads of said cylinder being provided with annular chambers, motive-agent-supply pipes leading into said chambers, exhaust-pipes leading from said chambers, a valve for controlling the inlet, a valve for controlling the exhaust, and means for simultaneously reversing or operating said valves.

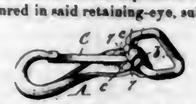
5. A rotary motor comprising a cylinder, a cylindrical piston arranged therein and having a spirally-disposed rib, spring yielding plates arranged in the space between the coils of the rib, the said plates being arranged alternately at reverse angles, and a plurality of spring yielding plates at the ends of the cylinder, the said plates being arranged in parallelism and at an angle with relation to the axis of the piston.

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**756,607. SNAP-HOOK.** REUBEN C. ELDRIDGE, Niagara Falls, Canada. Filed Nov. 7, 1903. Serial No. 180,147. (No model.)

*Claim.*—1. A snap-hook comprising a body formed of a single piece and having a hook-bill and a retaining-eye for an attaching-loop, said retaining-eye having an internal depression, a spring-tongue

having a bent end seated in said depression in the eye, and an attaching-loop secured in said retaining-eye, substantially as set forth.



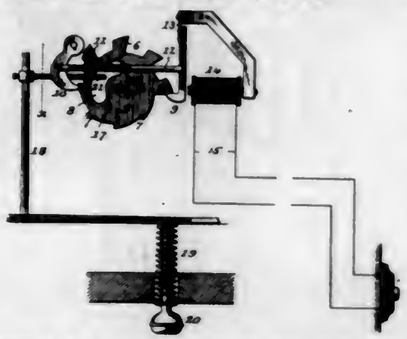
2. A snap-hook comprising a body formed of a single piece and having a hook-bill and a retaining-eye for an attaching-loop, said retaining-eye having an internal depression and an external strengthening-rib, a spring-tongue having a bent end seated in said depression in the eye, and an attaching-loop secured in said retaining-eye, substantially as set forth.

3. A snap-hook comprising a body formed of a single piece and having a hook-bill and a retaining-eye for an attaching-loop, said retaining-eye having an internal depression, a spring-tongue having a bent end seated in said depression in the eye, said body having separated lugs adjacent to said eye between which said spring-tongue is confined, and an attaching-loop secured in said retaining-eye, substantially as set forth.

4. A snap-hook comprising a body formed of a single piece and having a hook-bill and a retaining-eye for an attaching-loop, said retaining-eye having an internal depression, a spring-tongue having a bent end seated in said depression in the eye with its inner face substantially flush with the inner face of the side portions of the eye, and an attaching-loop movably secured in said retaining-eye and engaging in the bent portion of said spring-tongue, substantially as set forth.

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**756,608. ANNUNCIATOR.** Franklin H. Elwell, Chicago, Ill. Filed July 9, 1902. Serial No. 114,849. (No model.)



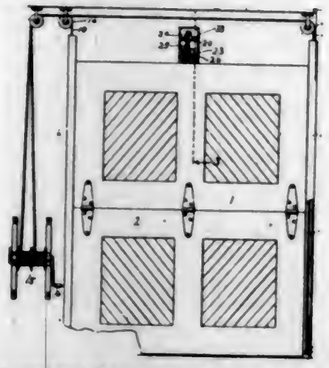
*Claim.*—1. In an annunciator of the character herein described, the combination of a dial, an oscillating pointer arranged in front of same, a shaft carrying said pointer, a disk carried by said shaft, opposed series of detents on the periphery of such disk, a pair of opposed pallets or pawls pivoted separately at opposite sides of the carrying-shaft aforesaid and adapted to have engagement with said detents, an elastic connection imposing simultaneous movement on said pallets, and means for imparting oscillation to said pallets, the same comprising an electromagnet, a battery-circuit and a circuit-closer, substantially as set forth.

2. In an annunciator of the character herein described, the combination of a dial, an oscillating pointer arranged in front of same, a shaft carrying said pointer, a disk carried by said shaft, opposed series of detents on the periphery of such disk, a pair of opposed pallets or pawls pivoted at their upper ends and adapted to have engagement with said detents, a connection imposing simultaneous movement on said pallets, the same consisting of two sections or bars and a closed coil-spring connecting the same, and means for imparting oscillation to said pallets the same comprising an electromaguet, a battery-circuit and a push-button, substantially as set forth.

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**756,609. WAREHOUSE-DOOR.** John Erwood, Chicago, Ill. Filed Jan. 30, 1903. Serial No. 141,139. (No model.)

*Claim.*—1. A warehouse-door and means for operating it, comprising two door-sections horizontally hinged together; guide-channels at the vertical edges of the door-opening; channels leading from said vertical channels respectively a substantial distance below the top of the door-opening, and extending off obliquely upward therefrom in parallel vertical planes transverse to the plane of the door-opening, each door-section having a substantial distance below its upper edge, guide-studs taking into the channels respectively, and means for lifting the door by engagement therewith near the bottom of the lower section.



2. A warehouse-door and means for operating the same, comprising two door-sections hinged together in horizontal line; vertical guide-channels at the opposite edges of the door-opening; oblique channels leading from said vertical channels extending off upward therefrom in parallel vertical planes transverse to the plane of the door-opening, and horizontal channels leading from the upper ends of said oblique channels respectively, each door-section having at a substantial distance below its upper edge guide-studs taking into the guide-channels respectively, and means for lifting the door by engagement therewith near the bottom of the lower section.

3. A warehouse-door and means for operating the same, comprising two door-sections hinged together at a horizontal line; parallel guide-channels in the opposite vertical edges of the door-opening; oblique channels leading off upward from said vertical channels respectively, at a short distance below the top of the door; guide-studs projecting from the lateral edges of both door-sections at a distance below the upper edges thereof, respectively, equal to the distance below the top of the door at which the oblique channels lead off from the vertical channels, and means for lifting the door arranged to engage the same near the bottom of the lower section.

4. A warehouse-door and means for operating the same, comprising two door-sections hinged together at a horizontal line; guide-studs projecting from the lateral edges of both sections at a short distance below their upper edges respectively; vertical channels into which said guide-studs take at the lateral edges of the door-opening; oblique channels leading off upward from said vertical channels adapted to be entered and followed by said studs; guide-studs at the lower end of the opposite lateral edges of the lower section taking into said vertical guide-channels, said last-mentioned studs being less in one dimension than the first-mentioned guide-studs, the vertical guide-channel being reduced to the dimension of said bottom studs, commencing immediately above the point at which the oblique channels lead off from the vertical channels, whereby the first-mentioned studs cannot follow the vertical channel beyond such point, and means for engaging the door to lift it.

5. A warehouse-door and means for operating it, comprising two door-sections hinged together at a horizontal line; vertical guide-channels at the vertical edges of the door-opening, and oblique channels leading off upward therefrom near the upper ends of the vertical channels, both door-sections having guide-studs taking into said guide-channels and adapted to travel both in the vertical and oblique portions thereof; studs projecting from the lateral edges of the lower section at the lower end thereof into said vertical guide-channels, said last-mentioned studs being longer than the first-mentioned guide-studs, the vertical channels having grooves at the bottom, into which said longer studs protrude, said grooves commencing in said vertical channels below the point of divergence therefrom of the oblique channels, and extending up past that point, whereby the lower end of the lower door-section is guided vertically past said oblique channels when the door is lifted.

6. A warehouse-door and means for operating it, comprising a plurality of door-sections horizontally hinged together, and thereby adapted to fold; means for elevating the door and for deflecting it laterally at the upper part, to carry it overhead; a latching device at the top of the doorway in position to engage the bottom of the door when the same is elevated, and means overhanging the bottom of the door when thus elevated and latched, for releasing the latch by further elevating the bottom of the door.

7. In combination with a warehouse-door, a latching device for automatically engaging the same when elevated, and a device for releasing the latch, adapted to be operated for such release by lifting the door beyond latching position.

8. In combination with a warehouse-door, a latching device for holding the same elevated, comprising a latching-wheel having a plurality of latching-arms; a ratchet-disk connected with such wheel for rotation, having two ratchet-teeth for each latching-arm of the wheel; means for operating the rotating latching-wheel in steps corresponding to the ratchet-teeth, the angular movement of the latching-wheel caused by each step being sufficient to take it into or out of latching position, whereby it alternates between latching and releasing position at the successive steps of its rotation.

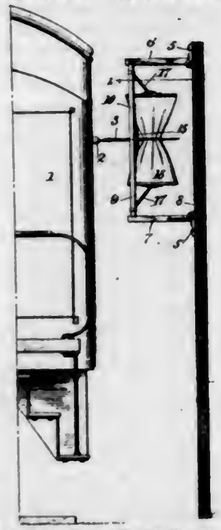
9. In combination with a warehouse-door, means for latching the door in open position, consisting of a latching-wheel having a plurality of latching-arms, and arranged to rotate to bring said latching-arms successively into latching position and carry them out of the same, the angular interval between said arms being such that at an intermediate point between their respective latching positions they are out of latching position; mechanism operated by the door moving beyond latching position for actuating the latching-wheel step by step, the length of each step being the angular distance from latching to unlatching position, whereby such movement of the door, when latched, unlatches it, and when unlatched, latches it.

10. In combination with a warehouse-door, means for latching and unlatching it, comprising a latching-wheel having a plurality of latching-arms whose angular separation successively is twice the angular movement from latching to unlatching position; a ratchet connected with such latching-wheel for rotation, and a pawl for engaging the same, the ratchet having two teeth for each latching-arm of the wheel; a second wheel and means by which it rotates the latching-wheel; a clutch for actuating the second wheel with step-by-step movement, and an operating-arm of such clutch, extending in the path of the door when the latter is moved past latching position, each step movement of such clutch-wheel being adapted to rotate the latching-wheel one ratchet-tooth's distance, whereby each movement of the door beyond latching position against the clutch-arm rotates the latching-wheel one step from latching to unlatching, or from unlatching to latching position, as the case may be.



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**756,610. MAIL-SACK HOLDER.** William M. Falen, Wakefield, Kans. Filed Feb. 6, 1904. Serial No. 192,331. (No model.)



*Claim.*—1. In a device for holding mail-sacks, a support, a pair of arms extending therefrom, a holder supported by said arms, and a joint in said holder.

2. In a device for holding mail-sacks, a support, a pair of arms extending therefrom, a holder supported by said arms, and a joint in said holder; said joint comprising a hinge having two parts readily separable from each other.

3. In a device for holding mail-sacks, a support, a pair of arms thereon, a two-part holder supported by said arms, means for temporarily holding the two parts of said holder in alinement, and means for preventing entire separation of the parts of said holder.

4. In a device for holding mail-sacks, a support, a pair of arms extending therefrom, a holder supported by said arms, and a joint in said holder; said arms having crossed grooves adapted to hold the ends of said holder.

5. In a device for holding mail-sacks, a support, a pair of arms extending therefrom, a holder supported by said arms, and a joint in said holder, said arms being pivoted to said support, and means for swinging one of said arms against said support when said holder is removed.

6. In a device for holding mail-sacks, a support, a pair of arms extending therefrom, a holder supported by said arms, and a joint in said holder; said arms being pivoted to said support, and a spring connecting one of said arms to said support.

7. A holding element for mail-sacks and the like, comprising two bars, a part of a hinge upon each bar, said hinge parts coacting with each other and separable from each other, and a flexible connection from one of said bars to the other.

8. A holding element for mail-sacks and the like, comprising two bars, a part of a hinge upon each bar, said hinge parts coacting with each other and separable from each other, and a flexible connection from one of said bars to the other; said hinge parts and said connection being fixed to the same side of said bars.

9. A holding element for mail-sacks and the like, comprising two bars adapted to abut together at their ends, a transverse rod upon one of said bars, and a bearing for said rod extending part way around said rod and attached to the other bar.

10. A holding element for mail-sacks and the like, comprising two bars adapted to abut together at their ends, a transverse rod upon one of said bars, a bearing for said rod extending part way around said rod and attached to the other bar, and a flexible connection between the two bars.

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**756,611. BANK CHECK, DRAFT, &c.** David D. Field, Stockbridge, Mass. Filed May 4, 1903. Serial No. 155,497. (No model.)



*Claim.*—1. A bank check, draft, or similar document having two stubs defined by two weakened lines, one line being weaker than the other.

2. A bank check, draft, or similar document having two stubs arranged one outside of the other at one edge of the document, the intermediate stub being bounded by two lines of perforations of different strength, the said intermediate stub having an adhesive substance on one face.

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**756,612. DELIVERY OR SHIPPING RECEPTACLE.** Henry C. Finley, Chicago, Ill. Filed Oct. 31, 1901. Serial No. 80,603. (No model.)



*Claim.*—1. A one-piece shipping-receptacle of waterproofed paper or the like comprising in combination a bottom, integral slotted side walls and end walls and a bail having integral projections thereon adapted to be removably engaged in apertures in said side walls and the ends thereof hooked together beneath the bottom.

2. In a device of the class described the combination with a bottom, of integral slotted side walls and end walls, reinforcing means about the top thereof, a cover integral with one of said side walls, a downturned flange thereon, adapted to engage over the opposite side wall, and a detachable bail having integral inturned projections thereon adapted to be removably engaged through suitable apertures in said flange and side wall beneath the reinforcing means and having its ends connected beneath said bottom.

3. In a device of the class described a receptacle comprising in combination the integral bottom, side and end walls, a cover integral with one of the side walls, a downwardly-turned flange thereon adapted to engage over the opposite side wall, a reinforcing-band at the top of the receptacle and a removable bail having inwardly-turned hooks intermediate its ends adapted to engage the side walls and the free edge of the cover under said band, the ends of said bail engaging beneath the receptacle.

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**756,613. SHIPPING-PACKAGE. HENRY C. FINLEY, Chicago, Ill. Filed Dec. 9, 1901. Serial No. 85,236. (No model.)**



*Claim.*—1. A receptacle having a resilient one-piece side wall, a bottom provided with a downwardly-turned flange adapted to fit closely within the side wall, stays extending longitudinally of said side wall and rigidly secured thereto having the lower ends thereof turned inwardly and upwardly against said bottom, a plurality of hoops, staples engaging through the lower hoop, wall stay and flange adapted to hold them in close contact, a metallic cover and an inturned flange thereon adapted to engage in the upper hoop and rigidly hold the cover thereon.

2. A receptacle having a one-piece tapered body portion of light resilient material, metallic stays extending longitudinally thereof and rigidly stapled thereto, bands extending around said receptacle and also stapled thereto, one of said bands being near the top and another near the bottom thereof, a bottom provided with a downwardly-turned flange fitting closely in the lower end of said receptacle, the ends of said stays being bent upwardly over the lower margin of the bottom and over said flange, said stays, bottom and bottom band being rigidly stapled together and a metallic head fitting in the top of said receptacle provided with a peripheral flange adapted to be crimped over into engagement with the top band, the edges of said flange being engaged in the side of the band and acting to hold the cover in closed position.

3. A receptacle having a one-piece tapered body portion of light resilient material, metallic stays extending longitudinally thereof and rigidly stapled thereto, bands extending around said receptacle and also stapled thereto, one of said bands being near the top and another near the bottom thereof, a bottom provided with a downwardly-turned flange fitting closely in the lower end of said receptacle, the ends of said stays being bent upwardly over the lower margin of the bottom and over said flange, said stays, bottom and bottom band being rigidly stapled together, a metallic head fitting in the top of said receptacle provided with a peripheral flange adapted to be crimped over and laterally inserted into engagement with the top band and a bail stapled at its ends through the top flange and stays, side wall, and an inner stay

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**756,614. CAMERA. WILLIAM F. FOLMER, New York, N. Y., assignor to Folmer & Schwing Manufacturing Company, of New York. Filed Aug. 20, 1903. Serial No. 170,148. (No model.)**

*Claim.*—1. In stereoscopic cameras, stereoscopic photographic lenses, an intercepting-reflector, and a focusing device above the reflector, having lenses stereoscopically arranged for imparting a duplicate reflected image, as described.

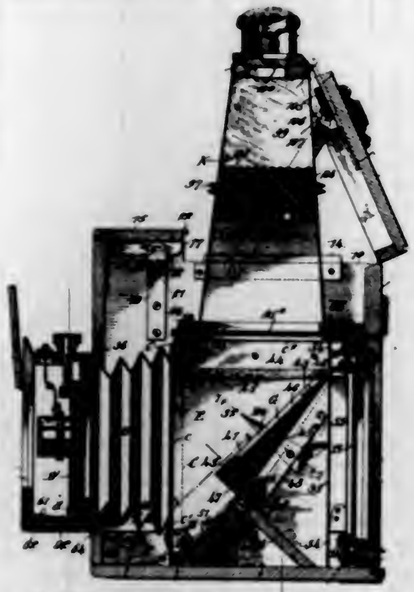
2. In stereoscopic cameras, a stereoscopic focusing device and coacting stereoscopic photographic lenses, one at an angle to the cone of light of the other, as described.

3. In stereoscopic cameras, a stereoscopic focusing device and coacting stereoscopic photographic lenses, one at an angle to the cone of light of the other, and interposed mirrors arranged for movement to and from the focusing device, as set forth.

4. In stereoscopic cameras, stereoscopic photographic lenses, and a coacting stereoscopic focusing device, the line of vision whereof intersects the cone of light of the photographic lenses, as described.

5. In cameras, a focusing-hood having stereoscopic view-lenses.

6. In cameras, a focusing-chamber, a focusing-mirror mounted for action in said chamber, and graduated channels in the walls of the chamber and in the path of the movement of the mirror.



7. In cameras, a focusing-chamber, a focusing-mirror mounted for action in said chamber, having graduated channels in its side walls, extending in the front of and to the rear of the mirror when the latter is in focusing position and diminishing in direction of the path of the mirror when moving out of focusing position, which channels serve to overcome suction relative to the mirror in its initial movement from focusing position, permitting a rapid movement at such time but retarding the movement of the mirror as it passes the cone of light from the lenses of the camera, as described.

8. In cameras, a focusing-chamber, a focusing-mirror mounted for action in said chamber, the chamber having an air-passage for the escape of air when the mirror initially ascends, which air-passage extends beyond the back of the mirror when in its lower position, terminating short of the seat of the mirror when in its full upper position, as described.

9. In cameras, a focusing-chamber, a focusing-mirror mounted for action in the said chamber, said chamber having a tapering air-passage in a wall for the escape of air when the mirror initially ascends, the wider portion of which air-passage extends beyond the back of the mirror when in its lower position, the contracted portion of the passage terminating short of the seat of the mirror when in its full upper position, as set forth.

10. In cameras, stereoscopic photographic lenses, and a focusing-hood having stereoscopic view-lenses, which hood is in predetermined relation to the photographic lenses, and focusing-reflectors interposed between the focusing-hood and the projecting cone of light from the photographic lenses, as set forth.

11. In a stereoscopic camera, stereoscopic photographic lenses, and a stereoscopic focusing-hood adjustable to and from the cone of light of the stereoscopic photographic lenses, as described.

12. In a stereoscopic camera, a focusing-hood arranged relative to the photographic lenses of the camera, for the purpose described.

13. A stereoscopic focusing-hood for stereoscopic cameras.

14. A focusing-hood for cameras, stereoscopic lenses therefor, and a divisional partition between the lenses.

15. In stereoscopic cameras, a collapsible focusing-hood, stereoscopic lenses for the said hood, and a divisional partition between the lenses.

16. In stereoscopic cameras, a focusing-hood, self-contained and provided with a bellows-section intermediate of its ends, stereoscopic view-lenses at the upper portion of the hood, as described.

17. In cameras, a collapsible focusing-hood, means for detachably connecting the hood to the camera, the said hood having a bellows-section between its ends, and tensional devices adjacent to the said bellows-section and located within the hood, serving to hold the said hood rigid when in focusing position, as described.

18. In cameras, a camera-box, a cover for the same, a focusing-hood, stereoscopic lenses fitted thereto, means for detachably connecting the focusing-hood to the camera-box and for pivotally connecting it to the said cover, and tension devices within the focusing-hood, arranged in direction of the length of the hood, as described.

19. In stereoscopic cameras, a camera-box, a hinged cover therefor, a focusing-hood having a bellows construction, means for attaching the hood to a camera-box, the said hood being provided with stereoscopic view-lenses at its upper portion and a partition between the said lenses, and an adjusting connection between the cover and the said focusing-hood, as set forth.

20. In a camera, a focusing-chamber divided into two compartments, a focusing-mirror for each compartment, and a common support for both mirrors, as described.

21. In a stereoscopic camera, a focusing-chamber divided into two compartments, a shaft extending through the compartments, and focusing-mirrors having spring-controlled connection with the said shaft, the two mirrors being simultaneously operated upward or downward by the action of the said shaft.

22. In a stereoscopic camera, independent focusing-mirrors, and a means for simultaneously operating both of said mirrors from the exterior of the camera-box, as described.

23. In a stereoscopic camera, independent mirrors, a spring-controlled support common to both of the mirrors, keepers extending from the said mirrors, latches, a support on which the said latches are pivoted, tension devices for the latches, and portions of which latches are adapted for engagement with the said keepers on the mirror, and a shifting device operated from the outside of the camera-box and in operative connection with both of the latches, as described.

24. In stereoscopic cameras, a stereoscopic focusing device, and stereoscopic photographic lenses having permanent coacting relation to the focusing device.

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**756,615. FOLDING SAFETY-RAZOR. ALFRED FORNANDER, New York, N. Y. Filed Sept. 15, 1903. Serial No. 173,241. (No model.)**



*Claim.*—1. In a folding razor, the combination of a sheath, a tongue pivoted to the sheath at one end thereof, and a blade-mounting pivoted to the outer end of the tongue and adapted to be swung from one side to the other of the latter, the pivotal axes of the joints between the tongue and the sheath and between the tongue and the blade-mounting being substantially parallel.

2. In a folding razor, the combination of a sheath, a tongue pivoted to the sheath at one end thereof, a blade-mounting pivoted to the outer end of the tongue and adapted to be swung from one side to the other of the latter, and means for holding the parts in their adjusting positions, the pivotal axes of the joints between the tongue and sheath and between the tongue and blade-mounting being substantially parallel.

3. In a folding razor, the combination of a sheath, a pair of tongue-forming links pivoted to the sheath at one end thereof and foldable thereinto, and a blade-mounting pivoted between the tongue-forming links at the outer end of the tongue and adapted to be swung from one side to the other of the latter and into the space between the links, the pivotal axes of the joint between the tongue and the sheath and between the tongue and the blade-mounting being substantially parallel.

4. In a folding razor, the combination of a sheath, a pair of tongue-forming links pivoted to the sheath at one end thereof and foldable thereinto, a blade-mounting pivoted between the tongue-forming links at the outer end of the tongue and adapted to be swung from one side to the other of the latter and into the space between the links, and means for holding the parts in their adjusted positions, the pivotal axes of the joints between the tongue and the sheath and between the tongue and the blade-mounting being substantially parallel.

5. In a folding razor, the combination of a sheath, a pair of tongue-forming links pivoted to the sheath at one end thereof and foldable thereinto, a blade-mounting pivoted between the tongue-forming links at the outer end of the tongue and adapted to be swung from one side to the other of the latter and into the space between the links, and detent devices for holding the parts in their adjusted positions, the pivotal axes of the joints between the tongue and the sheath and between the tongue and the blade-mounting being substantially parallel.

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**756,616. WINDMILL. ALFRED FORNANDER, New York, N. Y., assignor of one-half to Anthony Schulte, New York, N. Y. Filed Sept. 15, 1903. Serial No. 173,242. (No model.)**



*Claim.*—1. In a windmill, the combination with a standard; of a shaft carried thereby; an arm; a universal joint uniting the standard and the arm; a shaft in the arm; a wind-wheel thereon; and a universal coupling between said shafts.

2. In a windmill, the combination with a standard; of a shaft carried thereby; an arm; a universal joint uniting the standard and the arm; a shaft in the arm; a wind-wheel thereon; a universal coupling between said shafts; and a blade carried by and below the arm and having its face in a plane transverse to the line in which the wind will act on the wheel with the greatest efficiency.

3. In a windmill, the combination with a standard, of an arm having a universal connection therewith; a pair of shafts within the arm; a wind-wheel having sails upon each of said shafts; said sails on the respective wheels having reverse slant; a pair of shafts within the standard; gearing connecting the respective shafts; and a shaft driven thereby.

4. In a windmill, the combination with a standard; of an arm having a universal connection therewith; a pair of shafts within the arm; a wind-wheel upon each shaft and organized for reverse rotation by the wind; a pair of shafts within the standard; gearing connecting the respective shafts; and a driving-shaft controlled thereby.

5. In a windmill, the combination with a wind-wheel; of an arm to carry the same and movable upon a vertical axis and a horizontal axis; a vane to turn the arm on its vertical axis to hold the same in the wind and carried by the arm and located upon the windward side of the wheel; and a vane carried by the arm upon the windward side of the wheel to turn the same on its horizontal axis to adjust the sail area presented to the wind.

6. The combination in a windmill of a standard; a driving-shaft; a bevel gear-wheel thereon; a housing therefor; a connecting-shaft supported by the standard and entering the housing and stepped in the bottom thereof; an arm connected to the standard by a universal joint; a wind-wheel carried thereby and embodying sails set at an angle to its plane of rotation; a shaft therefor geared to the connecting-shaft by a universal train of gear; a second wind-wheel having sails set at an angle opposite to that at which the sails of the first wheel are set; a tubular shaft carrying the same and surrounding the shaft of the other wheel; a tubular connecting-shaft in the standard surrounding the first-mentioned connecting-shaft and geared

by a universal train of gear to the shaft of the second-mentioned wind-wheel; a bearing in the housing for the tubular connecting-shaft; bearings in such tubular connecting-shaft for the other connecting-shaft; and a bevel-gear on each of said connecting-shafts in gear with that on the driving-shaft.

7. The combination in a windmill of a standard; a driving-shaft; a bevel gear-wheel thereon; a housing therefor; a connecting-shaft supported by the standard and entering the housing and stepped in the bottom thereof; an arm connected to the standard by a pair of joints having respectively a horizontal and a vertical axis; a wind-wheel carried thereby and embodying sails set at an angle to its plane of rotation; a shaft therefor geared to the connecting-shaft by a universal train of gear; a second wind-wheel having sails set at an angle opposite to that at which the sails of the first wheel are set; a tubular shaft carrying the same and surrounding the shaft of the other wheel; a tubular connecting-shaft in the standard surrounding the first-mentioned connecting-shaft and geared by a universal train of gear to the shaft of the second-mentioned wind-wheel; a bearing on the housing for the tubular connecting-shaft; bearings in such tubular connecting-shaft for the other connecting-shaft; a bevel-gear on each of said connecting-shafts in gear with that on the driving-shaft; a vane carried by the arm between the wheel and the joint to turn the arm on its vertical axis to hold the wheels in the wind; and a vane transverse thereto carried by the arm to turn the arm on its horizontal axis to automatically control the sail area presented to the wind.

8. A windmill having in combination a wheel provided with sails to receive a current of air; an arm pivoted upon a horizontal axis to carry the wheel; shafting to be driven thereby; a lifting-vane connected to the wheel to shift the same to vary the sail area presented to the current of air; and a connection in the shafting to permit such shifting of the wheel, comprising a train of gear-wheels one of which has the line of its axis coincident with the line of said horizontal axis.

9. A windmill having in combination a standard; one member of a gear-housing carried thereby; a shaft carried by the standard; a bevel-gear on the shaft and in the housing; a wind-wheel; a shaft on which the wheel is fast; an arm carrying the same; the other member of the housing carrying said arm and pivoted by a horizontal axis to the first member of the housing; a bevel-gear on said wheel-shaft; a bevel-wheel having its axis on the line of said horizontal axis and in mesh with said former bevel-gears; and wind-controlled means to turn the arm on its axis.

10. A windmill having in combination a support; a transversely-disposed shaft; a pair of bevel-gears on said shaft one of which is loose; a pair of shafts carried by the support and one within the other; a pair of bevel-gears on the respective shafts and at one side of the transverse shaft and in mesh therewith; a pair of oppositely-rotatable wind-wheels; shafts one within the other on which the wheels are fast; bevel-gears on the respective shafts and in mesh respectively with the bevel-gears on the transverse shaft and both at the same side thereof; and means to turn the wind-wheels on the axis of the transverse shaft.

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**756,617. TRACK-OILING DEVICE. ARTHUR M. FRAZEE, Hebron, Ohio. Filed Aug. 8, 1903. Serial No. 168,815. (No model.)**



*Claim.*—1. In an apparatus of the character described, the combination of an oil-tank having means for connection with a source of fluid-pressure, a cylinder in communication with the oil-tank and having a piston for actuation by the oil entering the cylinder, and a discharge-nozzle connected with the piston to be raised and lowered thereby.

2. In an apparatus of the character described, the combination of a cylinder, a piston therein, a tubular piston-rod piercing the cylinder with its outer end provided with a discharge-nozzle, and an oil-tank in communication with the cylinder and having means for connection with a source of pressure to force the oil from the tank to the cylinder and into the tubular piston-rod.

3. In an apparatus of the character described, the combination with an oil-tank, of a cylinder, a piston therein, a tubular piston-rod piercing the cylinder with its outer end provided with a discharge-nozzle, that portion of the piston-rod which is within the cylinder having inlet-ports that are normally closed, said piston-rod being movable with the piston to uncover the ports thereof, and means to admit pressure to the oil-tank to force oil into the cylinder and the piston-rod.

4. In an apparatus of the character described, the combination with an oil-tank having means for admitting pressure thereto, of a cylinder having a chamber therein with an open end, a tubular piston-rod having one end piercing the cylinder and provided with a discharge-nozzle, an intermediate portion of the rod having ports and fitting within the chamber of the cylinder with the walls of the chamber normally closing the ports, and a piston connected to the rod and movable therewith to clear the ports of the walls of the chamber and admit oil to the piston-rod.

5. In an apparatus of the character described, the combination of a cylinder having a contracted chamber in one end thereof which is open at its inner end, a tubular piston-rod having one closed end portion working in the chamber and provided with a port normally closed by the walls of the chamber and movable through the open end of the chamber to open the port, the opposite end of the rod being provided with a discharge-nozzle and piercing the cylinder, a piston carried by the rod, a spring bearing against the piston to normally hold the rod within the chamber, and means for admitting oil under pressure into the cylinder and at the opposite side of the piston.

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**756,618. SHEET-PILING. LUTHER P. FRIENDLY, Chicago, Ill. Filed Sept. 26, 1903. Serial No. 174,748. (No model.)**

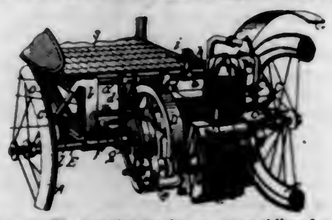


*Claim.*—1. In sheet-piling, a series of I-beam sections joined edgewise, the face sides of the cross-flange abutting, and means for locking all the sections together against displacement when assembled in a wall structure.

2. In sheet-piling, a wall structure composed of I-beams joined together edgewise, and angle clamping-irons rigidly mounted on alternate sections and overlapping the flanged edges of the joining sections.

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**756,619. AUTOMOBILE. LEONARD R. GAYLOR, Newton Center, Mass. Filed Jan. 13, 1904. Serial No. 188,834. (No model.)**



*Claim.*—1. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, forwardly-extending arms rigidly connected with said frame and a muffler or similar part of the mechanism supported on said arms in front of the driven axle.

2. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, forwardly-extending arms rigidly connected with said frame a muffler or similar part of the mechanism supported on said arms and springs engaging at one end with said arms and at their other ends with the body of the vehicle.

3. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, forwardly-extending arms rigidly connected with said frame and resilient or spring bars connected at one end to said arms and at their other ends to the body of the vehicle.

4. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, forwardly-extending arms rigidly connected with said frame, resilient or spring bars connected at one end to said arms and at their other ends to the body of the vehicle and spiral springs interposed between said arms and the rear part of the body of the vehicle.



5. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, forwardly-extending arms rigidly connected with said frame, a muffler or similar part of the mechanism supported on said arms in front of the driven axle, resilient or spring bars connected at one end to said arms and at their other ends to the body of the vehicle, and spiral springs interposed between said arms and the rear of the body of the vehicle.

6. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, said frame being partly supported by two brackets, one at each end, said brackets embodying a horizontal member and a vertical member, and elastic bars or springs connected at one end with said horizontal members and at their other ends with the body of the vehicle.

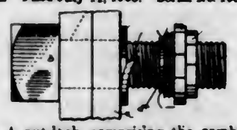
7. The combination in an automobile of a motor located in rear of the driven axle and carried by a frame supported on said axle, said frame being partly supported by two brackets, one at each end, said brackets embodying a horizontal member and a vertical member, elastic bars or springs connected at one end with said horizontal members and at their other ends with the body of the vehicle, and other springs interposed between the body of the vehicle and said horizontal members.

8. The combination in an automobile of a motor and coacting parts entirely disconnected from the body of the vehicle, a driven axle connected with said body by elastic push bars or rods, whereby the vehicle is propelled and cushioned, and additional springs interposed between the driven axle and the body of the vehicle.

9. The combination in an automobile of a motor and coacting parts entirely disconnected from the body of the vehicle, a driven axle connected with said body by elastic push bars or rods, whereby the vehicle is propelled and cushioned, and spiral springs interposed between the body of the vehicle and the driven axle.

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**756,620. NUT-LOCK. WILLIAM GHIGLIERI, Stockton, Cal., assignor to Universal Nut-Lock Company, Stockton, Cal., a Corporation of California. Filed July 11, 1903. Serial No. 165,126. (No model.)**



*Claim.*—1. A nut-lock comprising the combination of a bolt having the usual threaded portion outward thereof, the washer *c* encircling the bolt and suitably attached to one of the parts to be held together, the spring *c'* as a component part of such washer, the nut composed of the head *d*, threaded neck $d^2$ with teeth $d^3$ at its foot and shoulder $d^4$, adapted to impinge upon the washer *c* independently of the spring *c'* and the auxiliary nut *d'* adapted to engage with the spring *c'*, said nut *d'* screwing over the threaded portion $d^2$.

2. A nut-lock comprising the combination with the bolt of a washer attached to the parts to be held together, having a spring as a component part thereof, a nut screwing down upon the threaded part of the bolt, such nut composed of a head, a threaded neck having teeth at its foot and a shoulder, extending beyond the teeth such teeth adapted to engage with the spring of the washer, and an auxiliary nut screwing upon the threaded neck of the nut and adapted to move axially independent thereof and bearing against the entire washer.

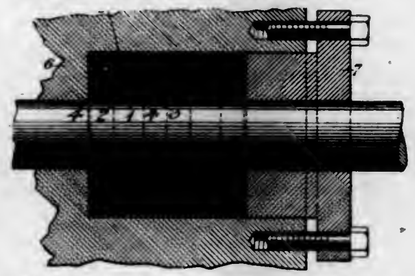
3. A nut-lock comprising the combination with a bolt having a threaded portion extending outward therefrom, and a washer attached to one of the parts to be held together, provided with a spring thereon, a nut having teeth upon its face, said spring adapted to engage in the teeth of said nut, and a means movable on the nut for throwing said spring out of engagement with the teeth, substantially as described.

4. A nut-lock comprising the combination with a bolt having the usual threaded portion, and the parts adapted to be locked together, the nut having teeth upon its face, a means for engagement with said teeth and a means mounted on said nut and adapted to be moved inwardly to throw said first-named means out of engagement with the said teeth.

5. In combination with a bolt and the parts to be locked together, a nut-lock comprising a nut mounted on said bolt provided with teeth upon its face, a spring member carried by one of the parts to be locked, adapted to engage the teeth of said nut, and an auxiliary nut movable on the first-named nut adapted to throw said spring out of engagement with the teeth of the nut, substantially as described.

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**756,621. ROD-PACKING. HOWARD W. GOODALL, Philadelphia, Pa., assignor to Mulconroy Company, a Corporation of New Jersey. Filed July 17, 1903. Serial No. 165,933. (No model.)**



*Claim.*—1. A packing comprising a wedge-shaped strip composed of alternate plies of textile material and rubber vulcanized together and presenting the ends of its plies to abrasion with a strip of rubber firmly adhered to the diagonal side of said wedge and means for holding said strip firmly in position.

2. A packing comprising a wedge-shaped strip composed of alternate plies of textile material and rubber vulcanized together and presenting the ends of its plies to abrasion, a strip of rubber firmly adhered to the diagonal side of said wedge, a second wedge of like form and material movable on said strip and cushions on each side of said wedges.

3. A packing comprising a plurality of wedge-shaped portions and a plurality of separate cushions at each side of said wedges.

4. A packing comprising a pair of similarly-shaped wedges adjacent and movable on each other and a plurality of separate cushions at each side of said wedges.

5. A packing comprising a wedge-shaped strip of rubber or like fabric presenting the ends of its plies to abrasion, a strip of rubber firmly adhered to the diagonal side of said wedge, a second wedge of like form and material movable on said strip and a plurality of separate cushions on each side of said wedges.

6. A packing comprising a plurality of wedge-shaped portions, a plurality of separate cushions at each side of said wedges and a strip of ductile material interposed between said cushions.

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**756,622. TILE FOR WALL-FINISH. WILLIS K. GORE, Chicago, Ill. Filed May 10, 1902. Serial No. 106,752. (No model.)**



*Claim.*—1. A glazed tile provided with thin marginal flanges having longitudinal corrugations therein said flanges being formed complemental with the adjacent flanges of adjacent tiles and adapted to afford attachment on a wall.

2. A tile comprising a face portion, laterally-directed flanges thereon having longitudinal corrugations therein and provided with transverse notches forming a plurality of integral tongues or projections.

3. As an article of manufacture, a sheet of metal glazed on one side and having rearwardly-directed thin notched flanges adapted to permit engagement thereof between the bricks of a wall or the like.

4. As an article of manufacture, a sheet of metal glazed on one side and having rearwardly-directed thin corrugated notched flanges adapted to permit engagement thereof upon a wall or the like.

5. A sheet-metal tile provided with peripheral rearwardly-directed longitudinally-corrugated flanges having serrated edges.

6. A sheet-metal glazed tile having lateral and terminal notched flanges corrugated longitudinally thereof, the corrugations on oppo-

site flanges being so disposed as to register with the next adjacent upper and lower tile when placed to coincide with the bricks in a wall.

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**756,623. FIRE-ESCAPE. CHARLES L. GRAVES, Minneapolis, Minn., assignor of one-half to A. C. Maguire, Milbank, S. D. Filed Aug. 3, 1903. Serial No. 167,992. (No model.)**



*Claim.*—1. A fire-escape, comprising a cylindrical member, a cable coiled about said member and having suitable guides, bars provided on each side of said member, a lever device arranged to draw said bars into engagement with said cable to increase the friction between it and said member, and a seat or saddle suspended below said member.

2. The combination, with a suitable frame, of a drum mounted therein, a cable provided on said drum, a fixed cylindrical member provided above said drum and having spirally-arranged grooves in its periphery forming guides for said cable, and means for pressing said cable against the surface of said member to increase the friction between them, substantially as described.

3. The combination, with a frame and a cable wound thereon, of a cylindrical member around which said cable is coiled, guides for said cable, bars provided upon each side of said cylindrical member, and a handle device pivoted on one of said bars and arranged to engage the other to draw them together against said cable, for the purpose specified.

4. A portable fire-escape, comprising bars, a drum mounted therein, a cable provided on said drum, a cylindrical member fixed between the upper ends of said bars and having spirally-arranged grooves to receive said cable, and a hand-operated device arranged to press the upper ends of said bars against said cable, for the purpose specified.

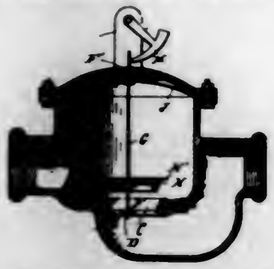
5. The combination, with a frame, of a drum mounted therein, a cable wound upon said drum, a member fixed above said drum and provided at its ends only with spirally-arranged guiding-grooves to receive said cable, and a seat or saddle suspended from the lower portion of said frame, substantially as described.

6. The combination, with a frame and a saddle suspended thereon, of a drum mounted in said frame, a cable wound upon said drum, a spring-arm having a pin adapted to enter holes in the head of said drum, a member fixed above said drum and around which said cable is coiled, and means within control of the operator for increasing the friction between said cable and member, for the purpose specified.

7. The combination, with a drum and its shaft, of bars loosely mounted on said shaft, means adjustably connecting the lower ends of said bars, a cylinder fixed above said drum, a cable wound upon said drum and coiled about said cylinder, and a handle device carried by one of said bars and arranged to engage the other to force them into contact with said cable, substantially as described.

8. The combination, with a suitable frame, of a cylindrical member mounted therein, a cable coiled about said member, a saddle suspended below said frame, means arranged to be pressed into engagement with said cable to increase the friction between it and said member, and a vertically-oscillating lever device within control of the operator arranged to engage said pressing means.

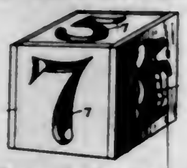
**756,624. SHUT-OFF VALVE. LEON GOEHWEIN, Akron, Ohio. Filed May 16, 1903. Serial No. 157,361. (No model.)**



*Claim.*—A cut-off device, consisting of the casing having the inlet, outlet and intermediate valve-seat, said seat being flared and formed with a guide, the vertical valve-stem guided in the top of the casing and in the guide of the valve-seat, the flexible diaphragm secured in the casing and connected near the upper end of the valve-stem, the conical valve secured near the lower end of the valve-stem, the cap-plate adjacent to the valve, the standard rising from the top of the casing and the pivoted lever having the catch for engaging the upper end of the stem for holding the valve closed.

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**756,625. TOY BLOCK. HANNAH B. HARTWIG, Milwaukee, Wis. Filed Sept. 10, 1903. Serial No. 172,540. (No model.)**



*Claim.*—1. A hollow toy block having in one or more of its walls openings extending entirely therethrough, said openings being shaped to form instructive figures.

2. A hollow toy block having in one or more of its walls figured openings extending entirely therethrough and a filling within the block having one or more distinctive colors showing through the figured opening or openings.

3. A hollow toy or block having in one or more of its walls figured openings extending entirely therethrough, and a removable filling within the block having one or more distinctive colors showing through the figured opening or openings.

4. A hollow toy block having in one or more of its walls figured openings entirely therethrough a filling within the block having thereon suitable pictures showing through the figured openings.

5. A hollow toy block having in one or more of its walls openings extending entirely therethrough, said block being colored on its interior whereby the coloring shows through the figured openings of the walls thereof.

6. A hollow toy block having in one or more of its walls openings extending entirely therethrough, said walls each having on its interior a distinctive coloring whereby such colorings are made to appear through the figured openings.

7. A hollow toy block having in its walls figured openings extending entirely therethrough, and a filling-block within the hollow block having a colored surface showing through the figured openings of the hollow block.

8. A hollow toy block having in its walls figured openings extending entirely therethrough and a filling-block within the hollow block having a distinctive coloring on each face showing through the figured openings, said filling-block being removable from the hollow block.

9. A hollow toy block having in its walls figured openings extending entirely therethrough and a filling-block within the hollow block having a distinctive color on each face showing through the figured openings, one of the walls of the hollow block being removable whereby the position of the filling-block may be changed to alter the colors showing through the several figured openings.

10. A hollow toy block having in its walls figured openings extending entirely therethrough and a filling-block within the hollow block having pictures on its faces adapted to show through the figured openings.



11. A hollow toy block having figured openings in its walls extending entirely therethrough, and means for showing a coloring through said figured openings, the coloring showing through the figured openings being capable of being changed.

12. A hollow toy block having in its walls figured openings extending entirely therethrough, a filling-block within the hollow block having coloring on its walls showing through the figured openings of the hollow block, and a sounding device, contained within the filling-block.

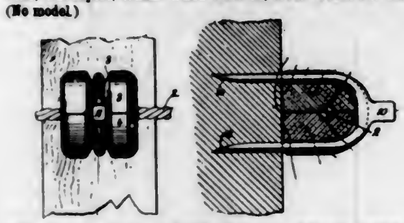
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**756,626. METHOD OF PRESERVING FISH. FRANK HASELL, Augres, Mich. Filed Aug. 6, 1903. Serial No. 168,530. (No specimens.)**

*Claim.*—The herein-described method of preserving fish, the same consisting of placing the fish in brine, then draining the same, and subsequently subjecting the fish to steam arising from a compound composed of vinegar, spices, soda and sugar in about the proportions specified, and, finally, packing the fish in vessels, covering the same with the said compound and hermetically sealing the packages, substantially as specified.

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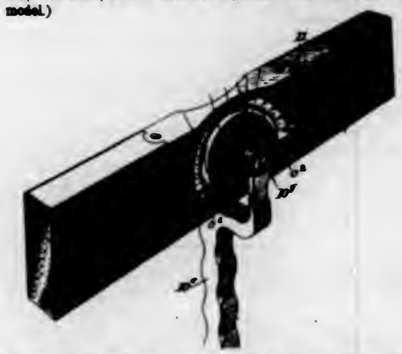
**756,627. INSULATOR. JOHN A. HARRON and ALBERT F. LAMBERT, Davenport, Wash. Filed June 14, 1902. Serial No. 111,598. (No model.)**



*Claim.*—As an article of manufacture, an insulator, comprising a dielectric body made in halves, each half being provided with a channel of semicylindrical shape for engaging a wire, each half being further provided with a flat surface constituting a footing for engaging a post, and with a groove of such conformity that when said halves are placed in juxtaposition said grooves together constitute one continuous groove of substantially U shape, and a staple of substantially U shape for straddling said halves and engaging said post.

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**756,628. LEVEL, PLUMB, AND INCLINOMETER. JOHN HAPPLE, Cleveland, N. Y. Filed Oct. 23, 1903. Serial No. 178,242. (No model.)**



*Claim.*—1. In a device of the character described, the combination with an elongated stock having parallel edges, and a lateral arched opening therein, of an arched reflector-plate secured in the opening, an arched spirit-tube held positioned in the opening concentric with the reflector-plate, said tube being nearly filled with spirits or the like, an arched scale-plate having graduations and reading from zero at the top of the arch to the lower ends of the scale-plate, and means for securing the scale-plate between the spirit-tube and the reflector-plate.

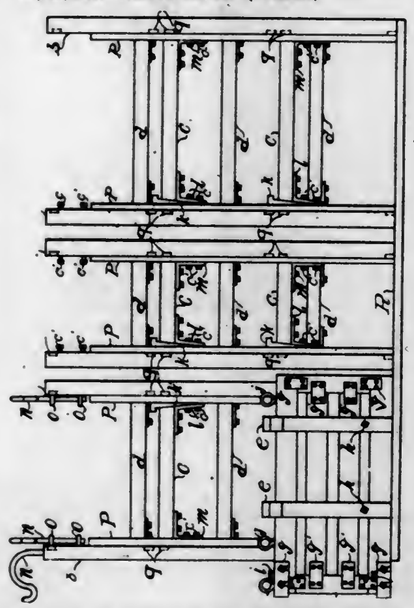
2. In a device of the character described, the combination with an elongated stock having parallel sides and parallel edges, and also having a central arched opening transversely therein, an arched reflector-plate conforming with the arch of the opening and secured therein, and an arched spirit-tube having alined straight members extended toward each other at the bottom of the arched portion, said tube and its members being nearly filled with spirits or the like, securing means for the tube wherein the straight members are embedded, and an arched scale-plate graduated on each side thereof, and reading on each side from zero at the top of the scale on each side of the plate to lower ends thereof, said graduations gradually increasing in distance apart from zero toward the lower ends of the scale-plate, and means for securing the scale-plate in the space between the spirit-tube and the reflector-plate.

3. In a device of the character described, the combination with an elongated stock having parallel sides and parallel edges, and a central arched opening therein, of an arched spirit-tube having straight alined members at its ends and nearly filled with spirits or the like, an arched reflector-plate in the opening contacting with its arched wall, a filling-block in the space bounded by the spirit-tube, means for securing the spirit-tube concentric within the opening and around the filling-block, two opposite clamping-plates held on the filling-block and bearing at their edges upon the arched tube, an arched scale-plate having foot-flanges on its ends and secured in the opening between the arched spirit-tube and the reflector-plate, said scale-plate having a series of graduations on each side thereof that are numerically defined and increase in value from zero at the crown of the arched plate to the feet thereon, and a bubble formed by confined air in the tube indicating on the scale at either side and in either direction of inclination.

4. In a device of the character described, the combination with an elongated stock, and an indicating device thereon comprising an arched spirit-tube held in a central opening in the stock, and a graduated scale-plate in the opening at the outer edge of the tube, of a forked post pivoted upon the stock at the radial center of the spirit-tube and scale-plate.

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**756,629. DEVICE FOR ERECTING BUILDINGS OUT OF PLASTIC MATERIAL. WILLIAM HARRISON, Grand Rapids, Mich. Filed May 25, 1903. Serial No. 158,732. (No model.)**



*Claim.*—1. In combination with an upright frame a plurality of outside posts, a plurality of inside posts, braces detachably connected to the said posts, chimney-posts connected together, mold-plates for constructing the outside walls, mold-plates for constructing the inside walls, and suitable mold-plates for constructing the cement chimney, all substantially as described.

2. In combination with a series of removable upright posts in position to determine the form of the inner surface of the outer cement wall to be around such upright posts, detachable and vertically-adjustable girths connected to said posts, a mold outside of the said upright posts and in contact therewith, and suitable means for mov-

ing the said molds upwardly as the wall rises, said posts and girths adapted to be removed from the completed cement structure.

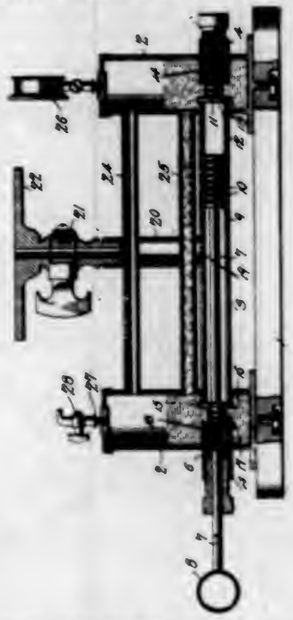
3. A frame or structure for erecting cement buildings consisting of a plurality of removable upright posts set to determine the form of the outer walls of the cement building, a plurality of removable posts placed within the outer line of posts to determine the position and number of the cement partitions of the completed structure, inner and outer detachable and vertically-adjustable girths connected with said posts in combination with suitable means for forming the outer cement walls and the inner cement partitions.

4. A means for building a house of plastic material consisting of a removable frame composed of upright posts placed in position to determine the size and shape of the house to be built, detachable and vertically-adjustable girths connected with said posts, means supported and guided by the said frame for making the cement wall of the building, said frame removable from the said building when the walls are completed.

5. A means for building a house of plastic material, consisting of a removable frame composed of upright posts placed in position to determine the size and shape of the house to be built, removable partitions for said frame formed of upright posts, inner and outer detachable and vertically-adjustable girths connected with said posts, means supported and guided by said frame for making the cement walls of the building, said frame and partitions removable from the said building when its walls and their partitions are completed.

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**756,630. AIR-PUMP. JUSTUS S. HEMENWAY, River Falls, Wis. Filed June 12, 1903. Serial No. 161,246. (No model.)**



*Claim.*—1. The combination in an air-pump, of an open-ended cylinder having an inlet-opening intermediate of its ends, oil-receptacles within which the ends of said cylinder are located, a pipe connecting said oil-receptacles, valves within said oil-receptacles to keep the ends of said cylinder normally closed, and a piston mounted for reciprocation within said cylinder.

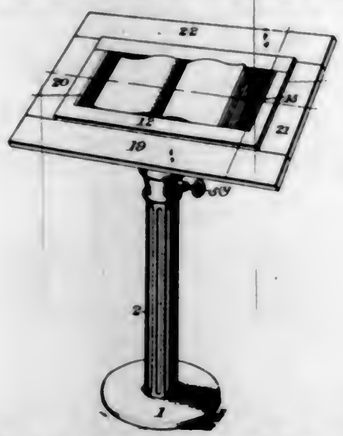
2. The combination in an air-pump, of a cylinder having open ends and provided with an inlet-opening intermediate of its ends, oil-receptacles within which the ends of said cylinder are located, a pipe connecting said oil-receptacles near the bottom, a second pipe connecting said oil-receptacles near the top, valves within said oil-receptacles to keep the ends of said cylinder normally closed, and a piston mounted for reciprocation within the cylinder.

3. The combination in an air-pump, of a cylinder having open ends and an inlet-opening intermediate of its ends, oil-receptacles within which the ends of the cylinder are located, tubular members fitted in the sides of said oil-receptacles opposite the ends of the piston, plugs closing the outer ends of said tubular members, springs seated in said tubular members, valve-disks, having stems encircled by said springs, held normally in contact with the ends of said cylinder, and a piston mounted for reciprocation within said cylinder.

4. The combination in an air-pump of a horizontally-disposed, open-ended cylinder having intermediate of its ends an air-inlet opening, vertical oil-receptacles within which the ends of said cylinder are located, valves keeping the ends of said cylinder normally closed, a piston mounted for reciprocation within said cylinder, pipes disposed parallel with said cylinder and connecting said oil-receptacles near the bottom and near the top thereof, caps on said receptacles, and pressure-measuring means associated with one of said receptacles.

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**756,631. BOOK STAND OR SUPPORT. CHARLES HERBERT, Philadelphia, Pa. Filed Dec. 22, 1903. Serial No. 186,148. (No model.)**



*Claim.*—1. A book-support comprising a suitably-supported well consisting of a flat bottom and rectangular sides, the opposite sides of said well being adjustably spaced apart.

2. A book-support comprising a suitably-supported well in two parts each having a bottom and three sides and means for maintaining such parts in adjustable relation to each other.

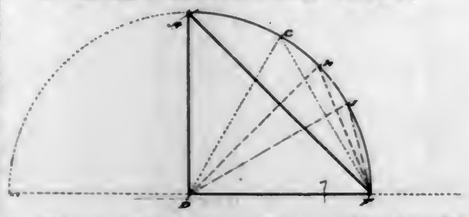
3. A book-support comprising a suitably-supported well consisting of a flat bottom and expansible sides, the opposite sides of said well being adjustably spaced, in combination with means for adjusting the angle of inclination of said well either in its contracted or expanded position.

4. A book-support comprising a pedestal, a suitably-supported well consisting of a flat bottom and expansible sides, the opposite sides of said well being adjustably spaced, in combination with means for adjusting the height of said well above said pedestal in either its contracted or expanded position.

5. A book-support comprising a suitably-supported well, having substantially rectangular sides, and leaves each having hinged connection with one of said sides, a plurality of said leaves being of greater length than the sides to which they are respectively attached, whereby said leaves are adapted when raised to form a continuous frame around said well.

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**756,632. PROTRACTOR-TAPE. GEORGE I. HERRICK, Wheaton, Ill. Filed Aug. 31, 1903. Serial No. 171,406. (No model.)**



*Claim.*—1. A flexible protractor-tape comprising three divisions, one of said divisions being graduated to a scale of chords and numbered to show the angles which such chords subtend at the center of a given circle, the other two divisions being each equal in length to the radius of the circle to the scale of whose chords said first-named division is graduated, the said graduated division being contiguous to one end of the tape, substantially as described.

2. A flexible tape comprising three divisions, two being adapted to serve as the base and leg of a triangle, and the third being adapted to serve as the third side, being gradnated into angles to a scale of chords and numbered to show the angles which such chords subtend at the center of a given circle which circle has a radius equal to one of said first-named divisions, whereby angles may be read direct from said graduated division, the latter division being contiguous to one end of the tape, substantially as and for the purpose set forth.

3. A flexible tape made in one piece throughout its entire length, comprising three divisions, two of said divisions being equal in length and ungraduated, the third division being graduated to a scale of chords and numbered to show the angles which such chords subtend at the center of a given circle, whereby angles may be read directly thereon, the said graduated division being contiguous to one end of the tape, substantially as described.

4. A flexible tape made in one piece throughout its entire length, comprising three divisions, two of said divisions being equal in length, each being equivalent to a radius of a given circle, and ungraduated, the third division being graduated to a scale of chords and numbered to show the angles which such chords subtend at the center of a given circle and longer than the said ungraduated divisions, whereby angles may be read directly from the graduated division, the latter division being contiguous to one end of the tape, substantially as described.

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**756,633. SURVEYOR'S PIN. GEORGE I. HERRICK, Wheaton, Ill. Filed Aug. 31, 1903. Serial No. 171,407. (No model.)**



*Claim.*—1. In a device of the type set forth, the combination of a pin provided with a longitudinal slot, a holder for a tape loosely mounted thereon, the said holder consisting of a collar and a slidable clamp member mounted therein, and an adjustable supporting means for said holder provided with a means for engaging the said slot, as and for the purpose set out.

2. A surveyor's pin comprising in combination with the pin, a tape-holder consisting of a collar and a slidable clamp member mounted therein, and a means for supporting the holder in different positions, substantially as described.

3. A device of the character described comprising a pin provided with a vertical slot along the length thereof, a holder for a tape mounted for rotation thereon consisting of a collar and a clamp member mounted therein, said collar being vertically adjustable upon the pin and adapted to support the holder on said pin, and means carried by said collar engaging the slot of said pin, substantially as and for the purpose set forth.

4. A device of the character described comprising a pin, a holder for a tape mounted thereon, said holder comprising a collar surrounding said pin provided with outwardly-extended curved portions, a clamp member slidable therein, means for adjusting the clamp member, and means for vertically adjusting the holder upon the pin, substantially as described.

5. In combination with a pin having a vertical slot therein, a vertically-movable collar having means engaging said slot, and a tape-holding means mounted on the pin and supported by said collar, the said holder consisting of a collar and a clamping member, substantially as set forth.

6. In combination with a pin provided with a vertical slot, an adjustable collar, means carried by the collar engaging in the said slot to secure the collar in adjusted position, and a tape-holding means comprising a collar loosely mounted on the pin and supported by said first-named collar, outwardly-extending curved portions formed integral with said collar having a space therebetween, a slidable clamp member provided with a curved portion slidably supported between said portions and a screw member carried in said collar engaging the clamp member adapted to adjust the same, substantially as and for the purpose described.

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**756,634. TAPE-HOLDER. GEORGE I. HERRICK, Wheaton, Ill. Filed Sept. 1, 1903. Serial No. 171,521. (No model.)**



*Claim.*—1. A tape-holder comprising a separable casing, one portion thereof provided with teeth upon the interior thereof, means for winding a tape, rotatable means engaging said means and the said teeth, and means for rotating the same, substantially as described.

2. A holder for a tape comprising a two-part casing, one of said parts having one face cut away, a hollow hub mounted in said part adapted to receive the tape, having an outwardly-extending plate formed integral therewith, a gear-wheel mounted on said hub, and a gear-wheel engaging said last-named wheel having removable means thereon for actuating the same, substantially as and for the purpose set forth.

3. A device of the character described comprising a casing having one portion thereof provided with teeth on the interior thereof, rotatable means for supporting a tape carried in said casing, means adapted to rotate therewith, and means engaging the last-named means and the teeth of the casing adapted to actuate and move with the same, substantially as described.

4. A tape-holder comprising two portions forming a tape-receiving chamber therebetween, one of said parts having teeth extending around the interior wall thereof, a tape-receiving hub mounted in said part and extending into the said chamber, a gear-wheel carried thereby, having a recess in one face thereof, a second gear-wheel engaging said wheel and the teeth of the casing provided with a recess therein, and removable means adapted to be inserted in said recesses to actuate the said gears and hub, substantially as described.

5. In a device of the type set forth comprising in combination with a casing, a hollow hub mounted therein, an apertured plate formed integral therewith, one of said apertures connecting with the hollow interior of the hub, means for closing said aperture, and means engaging said plate adapted to rotate said hub to wind a tape thereon, substantially as described.

6. In combination with a casing having its front face cut away, a rotatable plate forming a portion of said face forming a slot between the same and the cut-away portion of the casing, a hub supporting said plate, a gear-wheel carried thereby secured to said plate, a gear-wheel adapted to actuate the same, and a removable handle adapted to actuate either of said gears for different speeds of rotation of the hub, substantially as described.

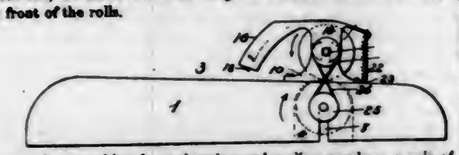
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**756,635. MACHINE FOR MOISTENING AND SEALING ENVELOPS. ABRAM HESS, Lebanon, Pa. Filed Feb. 9, 1904. Serial No. 192,838. (No model.)**

*Claim.*—1. In a machine for moistening and sealing envelops, a pair of rolls, and a tank supported to swing in the arc of a circle in front of the rolls.

2. In a machine for moistening and sealing envelops, a pair of rolls, one of which is fixed, the other movable from and toward the fixed roll, and a tank supported to swing in front of the rolls.

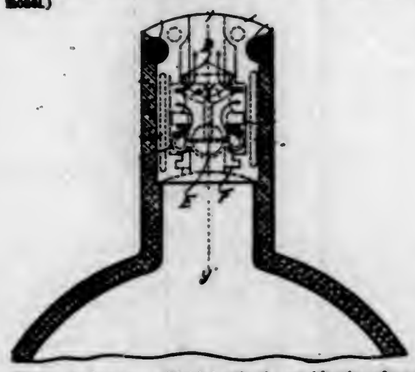
3. In a machine for moistening and sealing envelops, a pair of rolls, one of which is fixed, the other movable from and toward the fixed roll, an elastic belt connecting the rolls, and a movable trough in front of the rolls.



4. In a machine for moistening and sealing envelops, a pair of rolls, and a tank provided with lugs engaging the shaft of one of the rolls and arranged to swing in front of the rolls.

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**756,636. NON-REFILLABLE BOTTLE.** CHARLES B. HIBBARD, Grand Rapids, Mich. Filed June 25, 1903. Serial No. 163,102. (No model.)



*Claim.*—1. In a non-refillable bottle, the combination of a valve-seat, a valve adapted to fit said seat, said valve having a plurality of wings, and a follower above said valve, said follower having a plurality of wings adapted to cover and protect the wings of said valve.

2. In combination with the neck of a bottle, a valve-seat, a valve adapted to fit said seat, said valve having lateral wings, a follower having wings adapted to cover and protect the wings of said valve, said follower being arranged above said valve and having a hollowed-out interior, and lateral passages communicating with said hollowed-out interior.

3. In combination with the neck of a bottle, a valve-seat, a valve adapted to fit said seat, said valve having wings, a follower above said valve, said follower having wings adapted to cover and protect the wings of said valve, and a ball located between said valve and said follower.

4. In combination with the neck of a bottle, a stopper having two semicylindrical shells, a valve-seat carried by the stopper, a valve composed of light, thin metal engaging with the valve-seat, a follower placed above the valve, a ball between the follower and the valve, fluid-passages for the escape of the fluid in the bottle and air-passages for the passage of air into the bottle.

5. In combination with the neck of a bottle, a cylindrical shell, a valve-seat carried by the said shell, a valve composed of a thin plate provided with wings, one on either side, a follower placed above the valve, suitable fluid-passages, and crooked air-passages, substantially as described.

6. In combination with the neck of a bottle, a stopper composed of two semicylindrical parts, a groove at the lower end thereof for the reception of the valve-seat, a valve-seat secured in said groove, a valve provided with extending wings or buckets, said valve engaging with the valve-seat, a follower placed above the valve, fluid-passages between the follower and the outer shell of the stopper, crooked air-passages on the outer surface of the said follower and extending and protecting wings on the said follower.

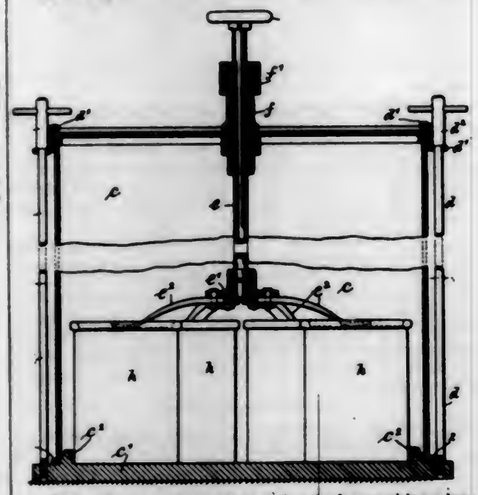
7. In combination with the neck of a bottle, a stopper having chambers therein, a valve-seat in said stopper, a valve adapted to fit said seat, said valve having wings, and a follower above said valve, said follower having wings extending into the chambers of said stopper and covering and protecting the wings of said valve.

8. As a new article of manufacture, a valve having a body portion, and S-shaped wings connected with said body portion.

9. As a new article of manufacture, a valve having a cup-shaped body portion adapted to receive a ball, and S-shaped wings connected with said body portion.

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**756,637. APPARATUS FOR CANNING FOOD.** CHARLES C. HOVEY, Bainbridge, N. Y. Filed Dec. 10, 1903. Serial No. 184,547. (No model.)



*Claim.*—1. An apparatus for canning food, comprising a base, an air-pump structure secured thereto, a bottom plate, a vacuum-cylinder adapted to rest thereon, a pipe from the air-pump and a pipe from the vacuum-cylinder, a separable coupling connecting the said pipes, a packing-gland structure connected centrally to the top of the vacuum-cylinder, a rod movable vertically and axially of the vacuum-cylinder through the said packing-gland, a disk at the inner and lower end of the said rod and radially-placed fingers, and means for connecting the same to the said disk, said fingers adapted at their free ends to exert a pressure upon the covers of the cans placed within the vacuum-cylinder and from which the air is to be exhausted.

2. An apparatus for canning food, comprising a base, an air-pump structure secured thereto, a bottom plate, a vacuum-cylinder adapted to rest thereon, a pipe from the air-pump and a pipe from the vacuum-cylinder, a separable coupling connecting the said pipes, screw tie-rod devices adapted for connection with the bottom plate, clip-plates connected to the tie-rod devices and adapted to engage the upper edge of the vacuum-cylinder so that when tension is applied the cylinder will be firmly held against the bottom plate, a packing-gland structure connected centrally to the top of the vacuum-cylinder, a rod movable vertically and axially of the vacuum-cylinder through the said packing-gland, a disk at the inner and lower end of the said rod, and radially-placed fingers and means for connecting the same to the said disk, said fingers adapted at their free ends to exert a pressure upon the covers of the cans placed within the vacuum-cylinder and from which the air is to be exhausted.

3. In an apparatus for canning food, the combination with a base, of a bottom plate secured thereto, an inclined rim of annular form as a part of said bottom plate, a packing-ring lying upon the bottom plate and surrounding the inclined rim, a vacuum-cylinder adapted at its lower edge to be guided to position by the inclined rim and to set upon the packing-ring, and screw tie-rod devices connecting at their lower ends with said bottom plate, and clip-plate devices coacting therewith at their upper ends and adapted to engage the upper edge of the vacuum-cylinder for holding the same firmly in position and against the packing-ring as a seat.

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**756,638. CAN.** CHARLES B. HOWELL and ADAM C. DE YOE, Campbell Hall, N. Y. Filed Aug. 26, 1903. Serial No. 170,731. (No model.)

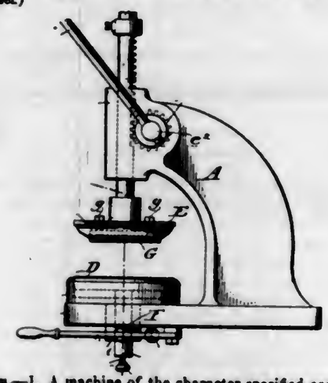
*Claim.*—1. A can having a body, a breast provided at its lower end with an outwardly-pressed portion forming a recess between the body and the said breast, a handle, and an ear for holding the handle, the ear having an integral flange at its upper end secured to the outer face of the breast, a bearing for the journal of the handle, and an inwardly-extending hook at the lower end of the ear hooking onto the lower end of the breast and extending into the recess between the breast and body of the can and engaging said breast and body, as set forth.



2. A can having a body, a breast provided at its lower end with an outwardly-pressed portion, to form a recess between the body and breast, a handle-ear having a hook member at its lower end engaging said recess between the body and breast, and secured to the body and breast, and a handle journaled in the ear, as set forth.

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**756,639. MACHINE FOR MAKING PIES.** JOSEPH C. HUTCHISON, Philadelphia, Pa. Filed Nov. 9, 1903. Serial No. 180,322. (No model.)



*Claim.*—1. A machine of the character specified, comprising a rim-die, a movable plate-holder, and a plunger adapted to coact with the rim-die and plate-holder to mold and rim a pie-crust, substantially as specified.

2. A machine of the character specified, comprising a rim-die, a plate-holder located and guided with the same, a plunger adapted to coact with the above-mentioned parts to form a crust and a stripper adapted to release the crust from the plunger, substantially as specified.

3. A machine of the character specified, comprising a rim-die, a plate-holder, a plunger, a stripper guided upon said plunger and an ejector guided within the plate-holder, substantially as specified.

4. A machine of the character specified, comprising a rim-die, a plate-holder, means for operating the plate-holder, a plunger and means for operating the plunger, substantially as specified.

5. A machine of the character specified, comprising a rim-die, a plate-holder, a spring for raising the plate-holder, a latch for holding the plate-holder in a depressed position and a plunger adapted to coact with the rim-die and plate-holder to form a crust, substantially as specified.

6. A machine of the character specified, comprising a rim-die, a plate-holder, a spring for raising the plate-holder, a latch adapted to engage and to be disengaged from the plate-holder, a plunger, a stripper guided within the plunger, spring means for operating said stripper and an ejector guided within the plate-holder, substantially as specified.

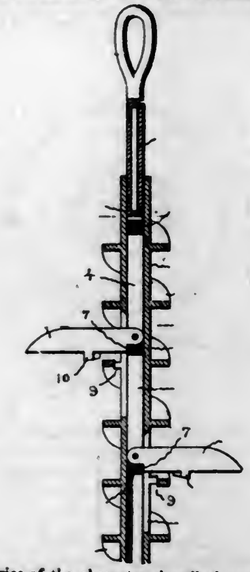
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**756,640. ANCHOR.** CHARLEY R. IRONS, Lima, Ohio. Filed Aug. 6, 1903. Serial No. 168,481. (No model.)

*Claim.*—1. A device of the character described, comprising a post provided with flanges, a plunger provided with slots, wings mounted within the slots to be projected from or drawn within the casing, shoulders upon the wings to engage the lower walls of the slots, and means for retaining the plunger in position to retain the wings within the casing.



2. A device of the character described, comprising a hollow post provided with spirally-arranged flanges and slots, a plunger mounted therein to have a reciprocating movement and provided with slots to register with the first-mentioned slots when the plunger is moved downward and wings mounted in the slots in the plunger to be projected when the plunger is moved upward and drawn within the post when the plunger is moved downward.



3. A device of the character described, comprising a hollow post provided with spirally-arranged flanges and slots, said flanges being provided with cut-out portions adjacent the slots, a plunger mounted therein, wings carried by the plunger and adapted to be projected from or drawn within the post and lugs upon the wings to occupy the recesses when the wings are drawn within the casing.

4. A device of the character described, comprising a hollow post provided with slots and spirally-arranged flanges, said flanges being provided with cut-out portions adjacent the slots, a plunger mounted within the post and provided with slots, wings mounted within the plunger's slots to be projected from or drawn within the post, lugs upon the wings to occupy said cut-out portions when the wings are drawn within the casing, and shoulders upon the wings to engage the walls of the plunger's slots to prevent the wings dropping beyond a horizontal position.

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**756,641. FIRE-ESCAPE.** JAMES B. IRVINE, Covington, Ky. Filed Jan. 3, 1902. Serial No. 88,293. (No model.)

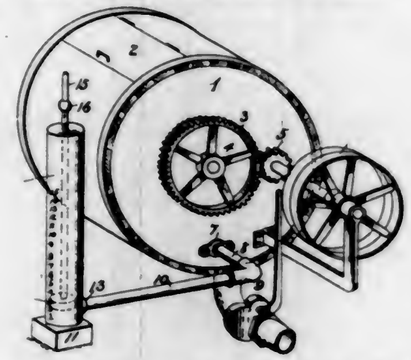


*Claim.*—A fire-escape consisting of a plate having in it a series of holes one below the other and beveled upon their edges and a

lug projecting forward from one end thereof, a flat plate pivoted upon the lug to be adapted to be brought to a position parallel to the plate, in combination with a rope passing in through one and out through the next hole of the series, substantially as shown and described.

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**756,642. LAUNDRY-TUB WATER-INDICATOR.** CHRISTIAN JENSEN, Philadelphia, Pa., assignor of one-half to Burt O. Miller, Sunbury, Pa. Filed Sept. 10, 1903. Serial No. 172,902. (No model.)



*Claim.*—1. The combination of a laundry-tub 1; neck-coupling 7, secured near the bottom of said tub; pipe 8, secured to said neck-coupling, and extending outwardly; elbow-coupling 9, secured to the outer end of said pipe; tube 12, set up vertically some distance from said laundry-tub, and having on its outer face, numerals; neck-coupling 13, secured to said tube near its bottom; a pipe 10 of any length, connecting said elbow 9, and said neck-coupling 13; a float 14, resting on the water on the inside of said tube; a bar 15, having numerals on its face, and secured to said float and extending upwardly through an opening in the head of said tube, the numerals on the bar and tube corresponding to indicate the depth of water in the tube and inside cylinder, and a ball 16, secured on the upper end of said bar, substantially as shown and described and for the purposes set forth.

2. The combination of a laundry-tub; a neck-coupling secured to a pipe leading therefrom; a pipe secured to said neck-coupling, and extending outwardly; an elbow-coupling secured to the outer end of said pipe; a tube, set up vertically some distance from said laundry-tub, and having on its outer face, numerals; a neck-coupling secured to said tube near its bottom; a pipe of any length connecting said elbow, and said neck-coupling; a float resting on the water on the inside of said tube; a bar having numerals on its face, and secured to said float and extending upwardly through an opening in the head of said tube, the numerals on the bar and tube corresponding to indicate the depth of water in the tube and inside cylinder, and a ball secured on the upper end of said bar, substantially as shown and described and for the purposes set forth.

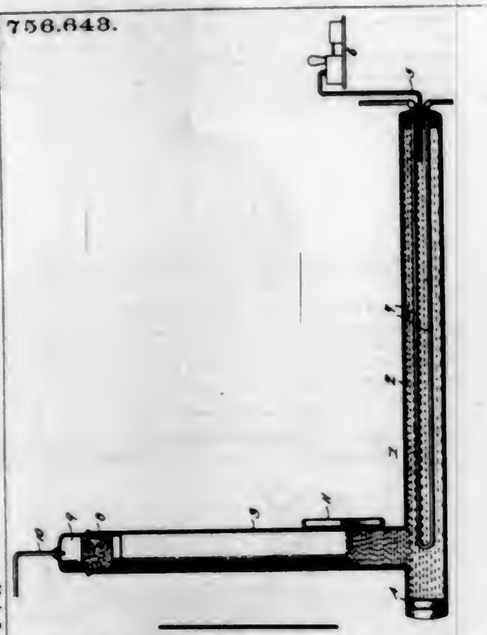
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**756,643. AIR COOLER AND FILTER.** JOHN JUSTER, St. Joseph, Mo. Filed June 22, 1903. Serial No. 162,662. (No model.)

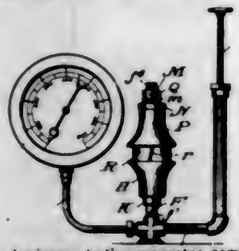
*Claim.*—1. The combination with a vertically-disposed cylinder, of a horizontally-disposed liquid-containing cylinder in open communication with the lower end thereof, a conduit situated within the horizontal cylinder for circulating a temperature-regulating medium therethrough, an air-conduit also communicating with said cylinder for delivering air through the contained liquid to the vertical cylinder, a movable cap for closing the upper end of the latter, a dry filter situated in and carried by the cap, and means for forcing the air through the liquid and dry filter.

2. The combination with a vertically-disposed cylinder, of a horizontally-disposed liquid-containing cylinder in open communication with the lower end thereof, a conduit situated within the horizontal cylinder for circulating a temperature-regulating medium therethrough, an air-conduit also communicating with said cylinder for delivering air through the contained liquid to the vertical cylinder, a removable cap for closing the upper end of the latter, a dry filter situated in and carried by the cap, means for forcing the air through the liquid and dry filter, and a removable closure for one end of the horizontal cylinder.

**756,643.**



**756,644. HYDRAULIC PRESSURE-TESTING APPARATUS.** ARTHUR E. JOHNSON, Baltimore, Md. Filed Aug. 7, 1903. Serial No. 168,678. (No model.)



*Claim.*—1. A pressure-testing apparatus, comprising a source of fluid-pressure, a perforated block connected thereto, an elastic diaphragm inclosing a portion of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart on said block and provided with faces to abut against the ends of the specimen being tested, substantially as described.

2. A pressure-testing apparatus, comprising a source of fluid-pressure, a perforated block connected thereto, an elastic diaphragm inclosing a portion of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart upon said block and provided with faces to abut against the ends of the specimen being tested, and a gage also connected to the source of fluid-pressure for indicating the pressure applied to the interior of said diaphragm, substantially as described.

3. A pressure-testing apparatus, comprising a source of fluid-pressure, a perforated block connected thereto and tapered toward both ends, an elastic diaphragm clamped over and extending between said tapered portions of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart on said block and provided with faces to abut against the ends of the specimen being tested, substantially as described.

4. A pressure-testing apparatus, comprising a source of fluid-pressure, a perforated block connected thereto and tapered toward both ends, an elastic diaphragm clamped over and extending between said tapered portions of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart on said block and provided with faces to abut against the ends of the specimen being tested, with a gage also connected to the source of fluid-pressure for indicating the pressure applied to the interior of said diaphragm, substantially as described.



5. A pressure-testing apparatus, comprising a fluid-pressure cylinder with piston and piston-rod, a perforated block connected thereto, an elastic diaphragm inclosing a portion of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart on said block and provided with faces to abut against the ends of the specimen being tested, substantially as described.

6. A pressure-testing apparatus, comprising a fluid-pressure cylinder with piston and piston-rod, a perforated block connected thereto, an elastic diaphragm inclosing a portion of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart upon said block and provided with faces to abut against the ends of the specimen being tested, with a gage also connected to the source of fluid-pressure for indicating the pressure applied to the interior of said diaphragm, substantially as described.

7. In a pressure-testing apparatus, the combination with a source of fluid-pressure, of a perforated block connected thereto, and an elastic diaphragm inclosing a portion of said block and adapted to be distended by said pressure and non-yielding abutments, said abutments being adapted to fit against the substance which is being tested, substantially as described.

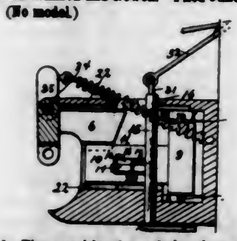
8. In a pressure-testing apparatus, the combination with a source of fluid-pressure, of a perforated block connected thereto, an elastic diaphragm inclosing a part of said block and adapted to be distended by said pressure, a gage connected to the source of fluid-pressure for indicating the pressure applied to the interior of said diaphragm and non-yielding abutments against which the substance undergoing the test is placed, substantially as described.

9. A pressure-testing apparatus, comprising a source of fluid-pressure, a perforated block connected thereto and tapered toward both ends, a rubber tube clamped over and extending between said tapered portions of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart on said block and provided with faces to abut against the ends of the specimen being tested, substantially as described.

10. A pressure-testing apparatus, comprising a source of fluid-pressure, a perforated block connected thereto and tapered toward both ends, a rubber clamped over and extending between said tapered portions of said block and adapted to be distended by said pressure, and rigid caps mounted over and spaced apart on said block and provided with faces to abut against the ends of the specimen being tested, with a gage also connected to the source of fluid-pressure for indicating the pressure applied to the interior of said diaphragm, substantially as described.

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**756,645. CAR-COUPLING.** WILLIAM H. JOHNSON, THOMAS A. SAVAGE, and ARTHUR T. NEWELL, Kansas City, Mo.; said Savage assignor to said Johnson and Newell. Filed June 16, 1903. Serial No. 161,695. (No model.)



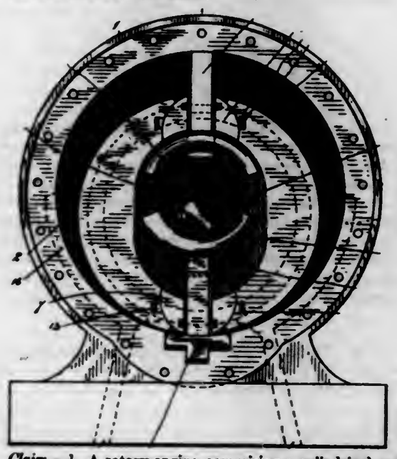
*Claim.*—1. The combination of the draw-head, having in its rear end, a pair of uncovered bearings 8, horizontal perforations 16 17, through the side walls of said draw-heads, a short distance in advance of said uncovered bearings; a horizontal slot 18, extending forward from one of the perforations 16, through the side wall; grooves 22, in the inner face of said walls, extending horizontally from said uncovered bearings 8, to the mouth of the draw-head; the lock-block 10, having its right edge 11, slightly underbeveled, and having in its upper face a depression 12, and leading from said depression, at right angles, an extension-depression 13; bearing-pins 23, secured in each edge, and rear end of said lock-block; a threaded bolt 23', working down through a threaded perforation in the upper wall of the draw-head and adapted to keep said bearing-pins from jumping out of the bearings; a bar 14, secured longitudinally over the center of said depression 12; a rod 15, journaled in the perforations 16 17, in the walls of said draw-head; an arm 19, secured in said rod, having a right-angle bend 20; said right-angle bend 20, working under said bar 14; said rod adapted to be operated by levers, and to cause the said right-angle bend 20, to elevate the front end of the lock-block; a weighted and pivoted swinging latch 25, pivoted in a longitudinal slot 24, in the lower wall of the draw-head, and adapted to turn and throw its lighter end up, and prop said lock-block up; a knuckle 2, pivoted in the front end of the said draw-head, and a locking-arm 6, having an upper bevel 7, secured to the inner face of said knuckle, and adapted to trip said swinging latch, and drop to the right side of said lock-block, and thus lock the knuckle 2, in a position across the mouth of the draw-head; a lever 35, secured to the lower end of the rod 34; a coil-spring 36, having one end secured to the free end of said lever and its other end to a pin 37, in the rear end of the draw-head, said lever and spring adapted to hold said knuckle 2, open, substantially as shown and described and for the purposes set forth.

2. In a car-coupler, substantially as described, uncovered bearings situated in the rear end of said draw-head; a lock-block having a longitudinal and right-angle depression in its upper face; a bar secured longitudinally over said depression; a rod pivoted crosswise in the walls of the draw-head, and having an arm extending downwardly, and bent at right angles under said bar; said rod adapted to be turned and thereby raise the front end of said lock-block; a bolt passing down through the upper wall of the draw-head and over the rear end of said lock-block and adapted to keep the bearing-pins from jumping out of their sockets; substantially as shown and described and for the purposes set forth.

3. In a coupler, substantially as described, a lock-block 10, hinged longitudinally in the draw-head, its front end adapted to be raised by a lever; a knuckle 2, pivoted in the front end of said draw-head, carrying an arm 6, adapted to drop behind said lock-block and lock said knuckle 2, across the mouth of the draw-head; a lever 35, rigidly secured to the lower end of the bolt 34, carrying said knuckle and locking-arm; a coil-spring 36, having one end secured to the free end of the lever 35, and its other end, to a pin in the rear end and lower face of the draw-head, said spring and lever adapted to hold said knuckle open, substantially as shown and described and for the purposes set forth.

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**756,646. ROTARY ENGINE.** CHARLES H. JOLLIFFE, St. Helens, and ALFRED COULTHARD, Workington, England. Filed Oct. 12, 1903. Serial No. 176,696. (No model.)



*Claim.*—1. A rotary engine comprising a cylindrical casing, a drum eccentrically mounted in said casing, rollers, the drums having recesses to receive said rollers, and pistons, the rollers being slotted to receive said pistons, the latter having segmental extensions, and a side wall of the casing having a concentric groove to receive said extensions.

2. A rotary engine comprising a cylindrical casing, a drum eccentrically mounted in said casing, rollers, the drum having recesses to receive said rollers and said recesses having slots, pistons, the rollers being slotted to receive said pistons, the latter having segmental extensions, and a side wall of the casing having a concentric groove to receive said extensions, and yieldable pieces set in the slots in the recesses and bearing against said rollers.

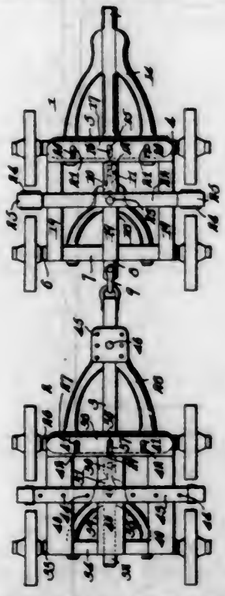
3. A rotary engine comprising a cylindrical casing, a drum eccentrically mounted therein, rollers, the drum having recesses to receive said rollers, pistons, the rollers being slotted to receive said pistons, the latter having segmental extensions, and a side wall of

the casing having concentric grooves one of which receives said extensions, and packing set in the other groove.

4. A rotary engine comprising a cylindrical casing, a drum eccentrically mounted in said casing, rollers, the drum having recesses to receive said rollers, pistons, the rollers being slotted to receive said pistons, the latter having segmental extensions, and a side wall of the casing having a concentric groove to receive said extensions, and a spring-controlled plate, the inner surface of the casing being slotted to receive said plate, and the latter engaging the periphery of the drum.

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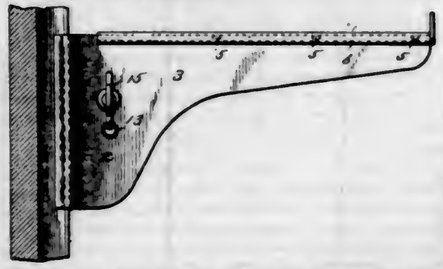
**756,647. EIGHT-WHEELED WAGON.** WILLIAM R. JOHN, Ellisville, Miss. Filed Jan. 4, 1904. Serial No. 187,690. (No model.)



*Claim.*—In a device of the class described, the combination with a primary and a secondary truck, each comprising front and rear axles, of main reach extending between and coupling said trucks, auxiliary reaches extending between and coupling the axles of the respective trucks, coupling connections between the main and auxiliary reaches, auxiliary bolsters overlying the axles of the respective trucks, bolster-frames sustained by said bolsters, a fixed king-bolt and auxiliary removable bolts carried by the front bolster of each truck and engaging slots provided in the overlying bolster-frame, and main bolsters sustained, respectively, by said frames.

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**756,648. BRACKET.** CHARLES F. KADE, Sheboygan, Wis., assignor to Arthur F. Winter, Sheboygan, Wis. Filed Oct. 10, 1903. Serial No. 176,556. (No model.)



*Claim.*—1. A bracket of the character described comprising oppositely-arranged spring-webs having their ends normally removed from each other, and an extension slidably mounted upon and adapted to bind the webs together.

2. A sheet-metal bracket comprising oppositely-arranged webs having their ends normally removed from each other, an extension-slide mounted upon and adapted to compress the outer ends of the webs, and means for holding the slide upon the webs.

3. A bracket comprising oppositely-arranged webs having their ends normally sprung apart, lugs integral with the webs, and an extension-slide on the webs and overlapping the lugs, said slide being adapted to bind the outer ends of the webs together.

4. A bracket formed of sheet metal and comprising oppositely-arranged similar webs having their ends normally sprung apart, lugs struck from each web, an extension-slide having inwardly-extending flanges adapted to overlap the webs and engage the lugs, said flanges serving to bind the outer ends of the webs together, and means for clamping the other ends of said webs upon a support.

5. A bracket formed of sheet metal and comprising oppositely-arranged similar webs having their ends normally sprung apart and each web having a threaded aperture therein, clamping means within the apertures, lugs struck from the webs adjacent their upper edges, an extension-slide having inwardly-extending flanges overlapping the webs and adapted to bind the outer ends thereof together, said flanges engaging the lugs, and a head on the extension-slide.

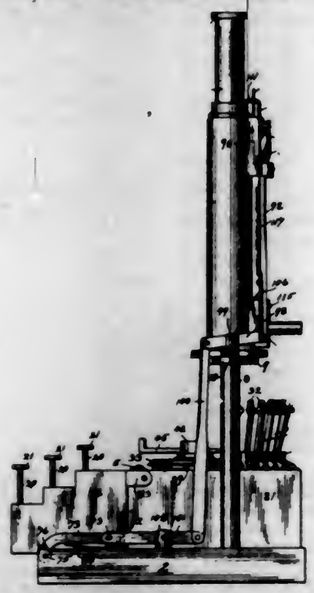
6. A bracket comprising spring-webs, an extension-slide adapted to bind the webs together, and slide-engaging devices projecting from the webs.

7. A bracket comprising spring-webs, an extension-slide thereon and adapted to bind the webs together, and lugs projecting from the webs and adapted to engage the slide.

8. A bracket comprising oppositely-arranged webs, an extension-slide having inwardly-extending flanges adapted to overlap the webs, slide-engaging devices upon the webs, and an end plate secured to the slide.

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**756,649. MACHINE FOR MARKING TRANSMITTER-FRONTS OR THE LIKE.** WILLIAM KAHLING, Chicago, Ill., assignor to Kellogg Switchboard & Supply Company, Chicago, Ill., a Corporation of Illinois. Filed May 1, 1903. Serial No. 155,120. (No model.)



*Claim.*—1. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism controlled from a keyboard for moving said type into operating position, and power mechanism for causing said type to make an impression in the article to be marked, said power mechanism consisting of a freely-reciprocable hammer and means operable independently of the type-positioning devices for returning the hammer after each stroke, substantially as described.

2. In a machine for forming characters in metallic or analogous articles, the combination with bars, type carried by said bars, a keyboard, mechanism between the keyboard and type-bars to move said type into operating position, and power mechanism to cause the type when brought into operating position to make an impression in the article to be marked, said power mechanism consisting of a freely-reciprocable hammer and means operable independently of the type-positioning devices for returning the hammer after each stroke, substantially as described.



3. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type-levers, type carried by said levers, a keyboard having keys thereon, key-lever mechanism extending between said keys and the type-levers whereby upon the operation of the keys the type carried by said type-levers will be brought into printing position, and power mechanism to operate upon said type to cause the same to make an impression in the article to be marked, said power mechanism consisting of a freely-reciprocable hammer and means operable independently of the type-positioning devices for returning the hammer after each stroke, substantially as described.

4. In a machine for forming characters in metallic or analogous articles, the combination with a feeding mechanism adapted to carry the article to be marked, of a plurality of type, a keyboard, mechanism controlled by the keyboard for successively bringing said type into printing position and for moving said article step by step into position to be marked, and power mechanism for causing said type to make an impression in the said article to be marked, said power mechanism consisting of a freely-reciprocable hammer and means operable independently of the type-positioning devices for returning the hammer after each stroke, substantially as described.

5. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism controlled from a keyboard for moving said type into operating position, and power mechanism also controlled by said keyboard to cause said type to make an impression in the article to be marked, said power mechanism consisting of a freely-reciprocable hammer and means operable independently of the type-positioning devices for returning the hammer after each stroke, substantially as described.

6. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism, for bringing said type into printing position, a freely-descendible drop-hammer to operate upon said type when in printing position to cause an impression in the article to be marked, and means for raising said hammer independently of the type-positioning devices, substantially as described.

7. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism controlled from a keyboard for moving said type into printing position, a freely-descendible drop-hammer also controlled from said keyboard to operate upon said type to make an impression in the article to be marked, and power means for raising said hammer after each working stroke, these means being operated by the descent of the hammer, substantially as described.

8. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism controlled from a keyboard for moving said type into printing position, a feeding mechanism controlled from the keyboard for moving said article into printing position, and a freely-descendible drop-hammer also controlled from the keyboard for causing said type to make an impression in the said article when brought into the printing position, and power means for raising said hammer after each stroke, these means being controlled by the movement of the hammer, substantially as described.

9. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, mechanism for bringing the said type into printing position, a freely-descendible drop-hammer to operate upon said type when brought into printing position to cause it to make an impression in the article to be marked, and means for automatically raising said hammer after the impression has been made, these means being operable and controllable independently of the type-position devices, substantially as described.

10. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism controlled from a keyboard for moving the type into operating position, a drop-hammer automatically released by the operation of the keyboard to cause said type to make an impression in the article to be marked when brought into printing position, and auxiliary means independent of the type-positioning devices and controlled by the drop of the hammer, to return said hammer to normal position after the blow has been delivered, substantially as described.

11. In a machine for forming characters in metallic or analogous articles, the combination with a plurality of type, of mechanism controlled from the keyboard for bringing said type into printing position, a drop-hammer to strike said type to cause it to make an impression in the article to be marked, and pneumatic means actuated by the descent of the hammer, for returning the hammer to normal position after the type has been struck, substantially as described.

12. In a machine of the class described, the combination with means for holding an article, of type mechanism, means to bring the type into operative position, and further means to cause said type to make an impression in the article to be marked, said means consisting of a freely-reciprocable hammer, and means for returning it independently of the type-operating devices, substantially as described.

13. In a machine of the class described, the combination with means for holding an article and means for feeding the article, of type and means to bring the same into operative position, a drop-hammer to strike said type to cause it to make an impression in the article, means for returning the drop-hammer after each stroke, and means connected directly to the feed mechanism for tripping said drop-hammer.

14. In a machine of the class described, the combination with means for holding an article, of type and means to bring the type into operative position, a drop-hammer to strike the type when in operative position, means for tripping the hammer, and independent automatic means for returning the hammer, this means being put into operation by the act of the hammer in descending.

15. In a machine of the class described, the combination with means for holding an article of type, and means to bring the type into operative position, and power mechanism for striking the type when in position, said power mechanism consisting of a guide-cylinder, a freely-reciprocable hammer in said cylinder, means whereby the impact-stroke of the hammer is controlled from the type-positioning devices, and independent power means for returning the hammer after each impact-stroke.

16. In a machine of the class described, the combination with means for holding an article, of type and means to bring the same into operative position, an air-cylinder, a hammer freely slidable therein, means connected to the type-positioning devices for controlling the working stroke of the hammer, and a valve mechanism controlled by the movements of the hammer for admitting the air to and exhausting the air from said cylinder.

17. In a machine of the class described, the combination with means for holding an article, of type and means to bring the same into operative position, an upright cylinder, a freely-descendible hammer therein, a pawl for holding up the hammer, means connected to the type-positioning devices for tripping this pawl, and means for returning the hammer after each stroke.

18. In a machine of the class described, the combination with means for holding an article, of type and means to bring the same into operative position, an air-cylinder, a slidable hammer working therein, means controlled from the type-positioning devices for releasing said hammer, a valve controlling the admission and emission of air, a valve-rod connected to said valve, and means whereby said valve-rod is shifted as the hammer reciprocates.

19. In a machine of the class described, the combination of a base, a bed supported above the base, key-levers extending rearwardly between the bed and base, keys attached to the front ends of these levers, type-carrying bars supported upon the upper side of the bed at the rear of the machine and connected to the rear ends of the key-levers, means for holding the article located on the bed between the keys and the type-bars, a power-hammer, and means for raising said hammer after each stroke, these means being controlled by the movement of the hammer, substantially as described.

20. In a machine of the class described, the combination of a base, a bed supported thereover, key-levers extending rearwardly between the bed and the base and carrying keys at their forward ends, type-carrying levers pivotally supported on the bed at the rear end of the same and adapted to swing forward and downward, means connecting these type-levers with the key-levers, a power-hammer, power means for raising said hammer after each stroke, these means being controlled by the movement of the hammer and article-holding means supported on the bed in front of the type-levers, substantially as described.

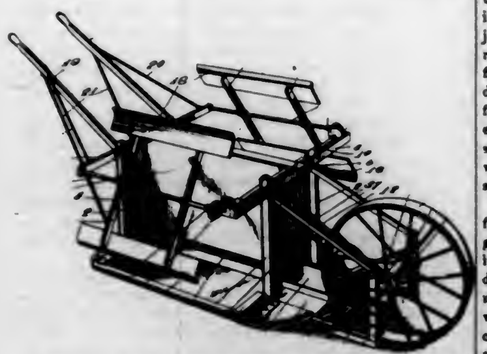
21. In a machine of the class described, the combination of a base, a bed supported thereover, type-levers supported on the upper side of the bed at its rear end, key-levers, provided at their forward ends with keys and extending rearward under the bed, means connecting these levers with the type-levers, article-holding means supported on the bed in front of the type-levers, article-feeding means located under the bed and connected to the article-holder, and means for operating this feed means from the key-levers, a power-hammer,

and power means for raising said hammer after each stroke, these means being controlled by the movement of the hammer, substantially as described.

22. In a machine of the class described, the combination of a frame, a series of key-levers carrying keys, type-carrying levers connected to said key-levers, an article-holding device and feed mechanism connected to said device and consisting essentially of a spring-actuated shaft, a pair of ratchet-wheels on said shaft, one wheel being secured to the shaft and one being loose thereon, means for resiliently connecting these ratchet-wheels together, a pawl device adapted to be shifted from one wheel to the other alternately, and means for shifting this pawl from the key-levers, a drop-hammer, means for raising said hammer, and means connected directly to the feed mechanism for tripping said drop-hammer, for the purposes set forth.

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**756,650. POTATO-BUG GATHERER AND DESTROYER.** FREDERICK KERNER, Worth, Mich. Filed Oct. 31, 1903. Serial No. 179,393. (No model.)



*Claim.*—1. In a device of the character described the combination of a wheeled frame provided with end portions, a central partition secured to and intermediate the ends of said end portions, beaters rotatably mounted upon said frame, a flanged bottom provided with a depressed portion formed upon said frame, rolls journaled transversely upon said frame and means for imparting motion to said rolls and beaters.

2. In a device of the character described the combination of a wheeled frame provided with a central partition, extending longitudinally of said frame, beaters rotatably mounted upon said frame and at each side of said partition, said beaters provided with concavo-convex blades, transverse crushing-rolls journaled upon said frame, a receptacle secured to the bottom of said frame provided with a trough, said trough provided with an opening discharging above said crushing-rolls and means for simultaneously imparting motion to said rolls and said beaters.

3. In an insect-destroyer the combination of an adjustable wheeled frame, a central partition arranged upon said frame terminating near the bottom thereof, a flanged receptacle extending laterally beyond said frame and provided with a central depressed portion, adjustable rolls secured transversely to said frame and below the discharge of said depressed portion of the receptacle and means carried by said frame for imparting motion to said rolls and beaters.

4. In an insect-destroyer the combination of a pair of beams secured in parallel position, uprights secured to said beams, partitions secured to said uprights, a central partition secured to the rear and forward uprights and terminating near the bottom of the frame, said bottom comprising a pair of flanged plates secured in horizontal position, a trough centrally secured to said plates, adjustable rolls secured upon said parallel bars and below the discharge end of said trough, rotary beaters provided with scooped blades mounted upon said frame and means carried by said frame for simultaneously actuating said rolls and beaters.

5. An insect-destroyer comprising a partitioned wheeled frame, a plurality of beaters carried thereby, a troughed bottom secured upon said frame and having a discharge-opening, a pair of adjustable rollers secured beneath the discharge-opening of said troughed bottom, an opening above said rollers, a removable cover mounted upon said frame above said opening, and means carried by said frame for actuating said rollers and beaters.

6. In an insect-destroyer the combination of a wheeled frame, a centrally-arranged partition formed upon said frame, beaters carried by said frame, a flanged bottom secured to said frame and provided with a centrally-depressed portion extending the length of said frame and provided with a discharge end, a platform secured to the forward end of said frame, brackets secured beneath said platform, a pair of adjustable rollers journaled upon said brackets, said platform having an opening formed therein, a cover for said opening and means for rotating said rolls and imparting motion to said beaters.

7. In a device of the character described the combination of a flanged depressed bottom, a centrally-arranged partition extending longitudinally of said frame and terminating near the bottom, rotary beaters journaled upon each side of the central partition, an adjustable wheel journaled upon said frame near the forward end thereof, a forward platform formed upon said frame, crushing-rolls secured transverse of said frame and beneath said platform, a cover partly inclosing said rolls and means carried by said wheel and assembled with said beaters and rolls for rotating the same.

8. In an insect-destroyer, the combination of a frame, projections extending forward of the said frame, vertical standards having apertures formed therein and secured to said extensions, an adjustable wheel journaled upon said standards, a pair of adjustable rolls carried by said extension between said wheel and frame, a flanged bottom secured upon said frame and having an opening for discharging above said rolls, a central partition secured upon said frame and terminating near the bottom thereof, rotary beaters upon either side of said partition said beaters provided with scooped blades secured in parallel position, and means secured to said adjustable wheel and connected with said beaters and rolls for actuating the same.

9. In a device of the character described the combination of a frame comprising transverse forward and rear end portions, a longitudinal central partition secured to said end portions and extending toward the bottom of said frame, said bottom provided with a depressed portion formed beneath the central partition, crushing means secured upon said frame in front of the said forward transverse portion, beaters carried by said frame upon each side of said central partition and means for imparting motion to said beaters and crushing means.

10. In a device of the character described the combination of a frame comprising parallel beams, a depressed bottom secured upon said beams, vertical uprights secured to said beams near the front and rear portion thereof, end portions secured to said uprights, a central partition secured to said end portions and extending part of the vertical length thereof, said partition portion terminating above the depressed portion of the bottom, beaters secured upon the frame at each side of said central partition, adjustable crushing means secured upon said frame in front of said forward end portion, standards secured to said frame having apertures formed therein, a shaft adjustably mounted within said apertures, a wheel keyed upon said shaft, and means assembled with said wheel and crushing means and beaters for imparting motion thereto.

11. In an insect-destroyer the combination of a wheeled frame, handles secured thereto, an adjustable wheel secured to the forward end of said frame, crushing-rolls secured to said frame near said adjustable wheel, a removable cover for said rolls, a central partition secured longitudinally of said frame and extending toward the bottom thereof, a trough formed beneath said central partition and connecting with either side of said frame, rotary beaters secured in parallel position upon said frame, said beaters provided with parallel scooped blades, a transverse driving-shaft secured upon said frame, gear means carried by said beaters, a sprocket-wheel carried by said transverse driving-shaft and the shaft to which the adjustable wheel is keyed, a pulley-wheel journaled upon said shaft carrying the adjustable wheel, a belt carried by said pulley-wheel and mounted upon the pulley member carried by one of said crushing-rolls and means for adjusting said crushing-rolls.

12. An insect-destroyer comprising a frame, a bottom portion secured to said frame having a central depressed portion, a beating mechanism carried by said frame, crushing means secured transversely of said frame, and means for imparting motion to said beating mechanism and said crushing means.

13. An insect-destroyer, comprising a frame, a bottom portion secured to said frame, a trough carried by said bottom portion, beating means carried by said frame, adjustable transverse crushing means carried by said frame near the forward end thereof, and means for actuating said beating mechanism and crushing means.

14. An insect-destroyer, comprising a wheeled frame, said frame provided with a centrally-troughed bottom, a centrally-arranged partition terminating above said troughed portion of said bottom, rotary beating mechanism mounted upon said frame, adjustable crushing means carried in a transverse position by said frame near the forward end thereof, and means for imparting motion to said beating means and crushing means.

15. An insect-destroyer, comprising a partitioned frame, a bottom portion secured to said frame having a central depression, a beating mechanism carried by said frame, adjustable transverse crushing means carried by said frame, and means for imparting motion to said beating mechanism and crushing means.

16. In combination with a frame, a partition carried thereby, a support for one end of said frame, a bottom portion secured to said frame, rotary transverse crushing means journaled upon said frame, a beating mechanism carried by said frame, and means for imparting motion to said beating mechanism and crushing means.

17. In combination with a frame, a bottom portion secured to said frame, a beating mechanism carried by said frame, rotary, adjustable, crushing means secured transversely of said frame, and means for imparting motion to said beating mechanism and crushing means.

18. In combination, a partitioned frame, a support therefor, a depressed bottom portion secured to said frame, a beating mechanism carried by said frame, rotary, adjustable, crushing means journaled transversely upon said frame near one end thereof, and means for imparting motion to said beating mechanism and crushing means.

19. An insect-destroyer, comprising a frame, a beating mechanism carried by said frame, transverse crushing means assembled with said frame, and means for imparting motion to said beating mechanism and crushing means.

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**756,651. RAIL CONNECTION FOR DRAWBRIDGES.** FRANCIS T. KELLY, Philadelphia, Pa. Filed Nov. 10, 1903. Serial No. 180,533. (No model.)



*Claim.*—1. In a device of the character described, the combination with the draw-rails and the bridge-rails, of a connecting-rail pivoted to said draw-rails, and means for swinging the connecting-rail into and out of engagement with the bridge-rails.

2. In a device of the character described, in combination with the draw-rails and bridge-rails, of a connecting-rail, shafts, a link connecting one of said shafts and said connecting-rail, and operating means connected to one of said shafts for rocking said shafts.

3. In a device of the character described, in combination with draw-rails and bridge-rails having boxes on the sides thereof, connecting-rails having an extension thereon, pivoted in the boxes of the draw-rails, shafts, disks secured centrally thereon, lever-arms on one of said shafts, links connecting said extension of the connecting-rails and said lever-arms, a rod connecting said disks, and means connected to one of said shafts for operating the same.

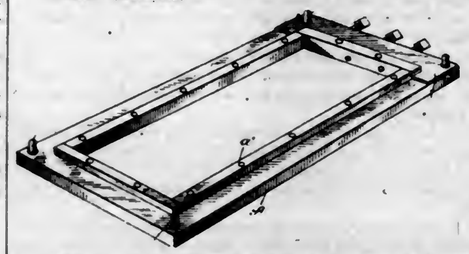
4. In combination with the draw-rails and bridge-rails, each having beveled ends, of a connecting-rail having correspondingly-beveled ends, said connecting-rail being pivoted to said draw-rails, and adapted to normally connect the same with the bridge-rails, substantially as described.

5. In a device of the character described, in combination with the rails of the draw and the bridge, pivoted means for normally connecting the rails, and means for swinging the pivoted means into and out of engagement with the rails.

6. In a device of the character described, in combination with the rails of the draw and the bridge, pivoted means for normally connecting the rails, means for swinging the pivoted means into and out of engagement with the rails, and means for guiding and holding said pivoted means in position.

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**756,652. MEANS FOR MAKING RUBBER TYPE.** BENJAMIN F. KERN and WALTER J. O. JOHNSON, Chicago, Ill.; said Johnson assignor to Harry S. Folger, Chicago, Ill. Filed Aug. 28, 1903. Serial No. 171,034. (No model.)



*Claim.*—1. In an apparatus for molding rubber type the combination with a chase having a raised rib extending around the inner margin of the same with its face in the plane of the type-faces, of a matrix-holding plate having a central recess of a width and length to receive said raised rib of the chase and adapted to contain plastic material, a rigid projection adjacent each margin of said recess, spacing-bars fitted within the recess, a projection on the outer side thereof adapted to bear against the projections on the matrix-holding plate and interfitting means on said chase and matrix-holding plate adapted to bring the same into register.

2. An apparatus for molding rubber type comprising a plate having a central recess to receive matrix material, a raised integral rib in proximity with and at each side and each end of the recess and extending parallel with the same, spacing-bars adapted to fit into the sides and ends of the recess and bearing with their outer margins above their centers against said ribs and a chase provided on its type side with a raised rib extending around its inner margin having outer dimensions complemental with the recess in the matrix-holding plate and having a width approximately equal to that of the bottom of the spacing-bars and interfitting means on said matrix-holding plate and chase adapted to bring the same into register.

3. In a device of the class described the combination with a recessed plate adapted to receive the matrix material, of one or more raised projections on the face thereof arranged near the sides and ends of the recess, said plate being reduced in thickness between said projections and the recess, spacing-bars fitting closely in the sides and ends of the recess and affording raised sides and end walls therefor and outwardly-projecting portions in the plane with their upper surfaces adapted to bear against the projections on the plate, a chase, a raised rib on the face thereof the height of which together with the thickness of the chase is approximately equal to the length of the type to be secured therein, said ribs fitting closely in the recess in said plate and having a width equal to the bottom portion of the spacing-bars and means acting to bring said chase and matrix-holding plate into register.

4. In a device of the class described the combination with a chase, of a raised rib around the inner margin thereof extending type-high on the chase, a recessed plate adapted to receive plastic material suitable for a matrix and into which the ribs of the chase fit closely, means acting to bring said plate and chase into register adapting the matrix to be formed by compression thereby, said rib affording a plane margin surrounding the matrix, space-bars having a width on the under side equal to the width of said ribs and adapted to be rigidly secured within said recess covering the plane margins of the matrix and a flange at the top of each spacing-bar adapted for positive bearing on said plate and holding said bars from displacement.

5. In a device of the class described the combination with a matrix-holding plate having a shallow recess therein adapted to con-

tain a matrix, of space-bars fitting closely in the sides and ends of the recess and affording raised side and end walls for the mold, means adapted to secure the space-bars to the matrix-holding plate and mutually engaging projections on said space-bars and plate acting to hold said space-bars from displacement.

6. The combination with a recessed matrix-holding plate, of a raised rib adjacent said recess and on each side and end thereof, space-bars adapted to fit in said recess, projections at the top of each space-bar adapted to bear against said ribs and to hold said bar from outward displacement whereby said space-bars afford rigid side and end walls above the matrix adapted to receive within the same material for type and said space-bars having flat transversely-grooved upper faces adapted in vulcanizing for engagement by the platen of the vulcanizing-press and acting to limit the compression of said material in the mold by contact with the space-bars.

7. In a device of the class described the combination with a recessed plate adapted to receive matrix material of a chase, an inner lining for the chase permanently attached thereto and affording a raised rib type-high on the face of the chase adapted to fit into said recess in the plate and afford a plane margin for the matrix and space-bars adapted to be secured on said matrix and parts thereon above the center thereof adapted to hold said bars from slipping under outward pressure.

8. In a device of the class described the combination with a chase, of an inner steel lining permanently secured thereto and having a flange extending outwardly over the face of the chase affording a raised flat rib surrounding the inner margin of the chase type-high.

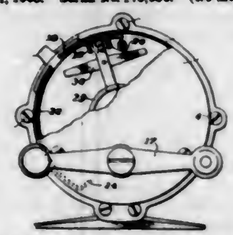
9. In a device of the class described the combination with a recessed plate adapted to receive a matrix, of a raised rib adjacent to the sides and ends thereof, a shoulder about the margin of said recess parallel with said ribs, a chase, a rib type-high on the face thereof adapted to fit closely between said shoulders and form a flat margin about said matrix, space-bars adapted to seat in said flat margin and provided with laterally-extending flanges adapted to contact with the ribs of said plate and means for rigidly securing said space-bars in position.

10. In a device of the class described a chase, an inner lining rigidly engaged thereon and affording a raised rib on the face of said chase, a matrix-holding plate having a recess therein adapted to fit closely about said ribs, a rib at the sides and ends of said recess and parallel therewith, the margin of said plate being lower at the inner side of said rib than at the outer side thereof, space-bars adapted to seat within said recess and provided with a lateral projection adapted to contact with the ribs on said plate, and means for bringing said chase and plate into register with each other.

11. A matrix-plate comprising a plate having a central shallow recess and a flat margin about said recess, said margin being lower at its inner edge than its outer edge and an upwardly-extending rib on said margin parallel with the sides and ends of the plate.

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**756,653. FISHING-REEL. HERMANN H. KIPPE, New York, N. Y. Filed Sept. 21, 1903. Serial No. 173,958. (No model.)**



*Claim.*—1. In a fishing-reel, the combination with the spool having its spindle formed with a square portion, of a ratchet-wheel fixed on said spindle, a pawl normally engaging said ratchet-wheel, a pinion slidably mounted on said spindle and having a square aperture to receive the squared portion thereof, means engaging said pinion for operating the same, and simultaneously actuating said pinion and pawl.

2. In combination with the spool and spindle thereof having a squared portion, a fixed ratchet-wheel carried by said spindle, means for rotating said spindle including a pinion adapted to engage the squared portion of said shaft, and a rounded portion to one side thereof, a pawl normally engaging said ratchet-wheel, and means for moving said pawl away from its wheel simultaneously with the moving of said pinion onto the squared portion of the spindle.

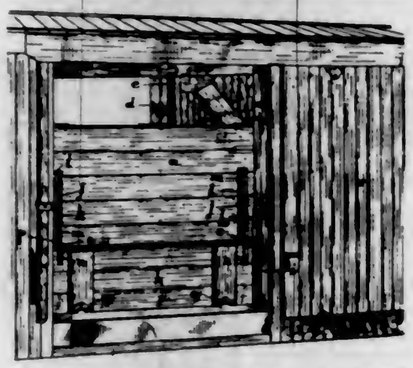
3. In a fishing-reel, a spool having its spindle extended, means for rotating said spool including a member adapted to be alternately fixed and loosely mounted on the spindle thereof, a lever in which said member is mounted, a ratchet-wheel fixed on said spindle, a pawl, and a member cooperating with said pawl and lever for actuating the said lever and pawl simultaneously.

4. In combination with the spool and the spindle thereof having a squared portion, a pinion slidably mounted on said spindle and normally engaging the squared portion thereof, means for moving said pinion, a large pinion meshing with the first-named pinion, means for preventing backward movement of said spindle, and means for throwing said last-named means into operation simultaneously with the moving of the first-named pinion from the squared portion of the spindle.

5. In combination with the spool and the spindle thereof, a pinion slidably mounted on said spindle, means for engaging the pinion with and disengaging it from the spindle, a large pinion meshing with the first-named pinion, means for actuating said last-named pinion, a ratchet-wheel fixed on said spindle, a spring-pressed pawl normally engaging said wheel, an operating-strip having one of its ends engaging said pawl, the other end of said strip having its edge beveled, and fingers secured to the gear-case and projecting on opposite sides of said lever, substantially as described.

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**756,654. GRAIN-CAR DOOR. JOSEPH G. KING, Port Arthur, Canada. Filed Mar. 30, 1903. Serial No. 150,210. (No model.)**



*Claim.*—1. In a grain-car door, the combination with the door-frame having slides at the outer edge thereof, of a lower door-section introduced into the said slides, an upper door-section having a swinging and vertically-sliding movement and overlapping the upper portion of the lower door-section, and supported by suitable posts therebeneath, as and for the purpose specified.

2. In a grain-car door the combination with the door-frame having guides of a lower door-section suitably mounted to slide vertically in said guides, an upper door-section supported to have sliding and swinging movement and adapted when in closed position to overlap the upper edge of the lower door-section, and a sliding connection between the upper edge of the lower section and the upper section, substantially as described.

3. In a grain-car door the combination with the door-frame, of a lower door-section, an upper section mounted to have vertical sliding and swinging movemeot, said upper section overlapping the upper edge of the lower section, guides for the lower door-section, guides on the face of the upper section, and projections from the lower section having a sliding and swinging engagement with said guides, substantially as described.

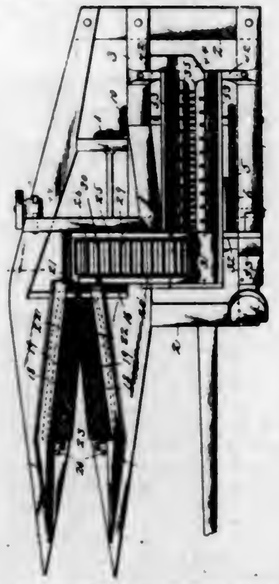
4. In a device of the class described, in combination, a car-body having a suitable doorway and upright posts at the sides thereof, an upper door slidably attached at its top corners to upright rods at the upper portion of the door-opening, supplemental posts designed to support the said upper door above the sill of the doorway, a lower door designed to overlap the lower end of the upper door on the outside, and suitable guides designed to hold the lower door securely against the upper door, as and for the purpose specified.

5. In a device of the class described, in combination, a car-body having a suitable doorway and upright posts at the sides thereof, an upper door slidably attached at its top corners to upright rods at the upper portion of the door-opening, supplemental posts designed to support the said upper door above the sill of the doorway, a lower door designed to overlap the lower end of the upper door on the outside, suitable guides designed to hold the lower door securely against the upper door, and means for securing the lower door when in its oped position, as and for the purpose specified.



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**756,655. CORN-HUSKING MACHINE. ALBERT F. KLAMPE, Allendorf, Iowa. Filed June 17, 1903. Serial No. 161,914. (No model.)**



*Claim.*—1. In a machine of the character described, the combination with a frame having gathering-prongs extending therefrom, and a traction-wheel; of stripping-rolls journaled upon the prongs and forming a V-shaped pass therebetween, tapered inner ends to the rolls having longitudinally-extending corrugations therein, and means for transmitting rotary motion to the rolls from a traction-wheel.

2. In a machine of the character described, the combination with a frame, and gathering-prongs extending from the frame and provided with recesses in their inner faces; of stripping-rolls journaled within the recesses and forming a V-shaped pass therebetween, said rolls having tapered portions contacting with each other and having longitudinally-extending corrugations therein, and means for imparting rotary motion to the rolls from the traction-wheel.

3. In a machine of the character described, the combination with a frame having a traction-wheel, and gathering-prongs extending from the frame and having recesses therein; of stripping-rolls journaled within the recesses and forming a V-shaped pass, said rolls having tapered inner ends provided with longitudinally-extending corrugations, inclined husking-rolls, a conveyer intermediate the inner ends of the stripping and husking rolls, and means for operating the rolls and conveyer from the traction-wheel.

4. The combination with a frame having a traction-wheel, and gathering-prongs extending from the frame and having recesses therein; of stripping-rolls journaled within the recesses and forming a V-shaped pass, the inner ends of said rolls being tapered and provided with longitudinally-extending corrugations, meshing gears revoluble with the rolls, a longitudinally-extending shaft, means for transmitting rotary motion from the traction-wheel to said shaft, a gear on the shaft meshing with one of the gears of the rolls, a conveyer, means for transmitting motion from the shaft to the conveyer, parallel inclined husking-rolls, meshing gears revoluble therewith, and means for transmitting rotary motion from the shaft to said gears.

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**756,656. COMMERCIAL PACKAGE FOR CIGARS. CHARLES P. KRATOVILLE, Riverhead, N.Y. Filed Nov. 21, 1902. Serial No. 133,345. (No model.)**

*Claim.*—1. In a cigar-package, a plurality of flexible retaining-tubes of suitable size, disposed radially and hinged to a common center, entrances for the cigars at the hinged end of said tubes, and exit-openings at the outer ends of said tubes for the withdrawal of the cigars, a central hinge acting upon the cut end of the included cigars as a means to compress and protect the filler by the natural tightening of the hinge, substantially as described.



2. As an article of manufacture, a substantially integral sheet of suitable material cut into a group of radially-connected body parts B, and pasted into tube form while end-hinged to the central part A, each tube having an open mouth at the hinged end, and an open mouth at the free end, for cigar-packing purposes, substantially as set forth.

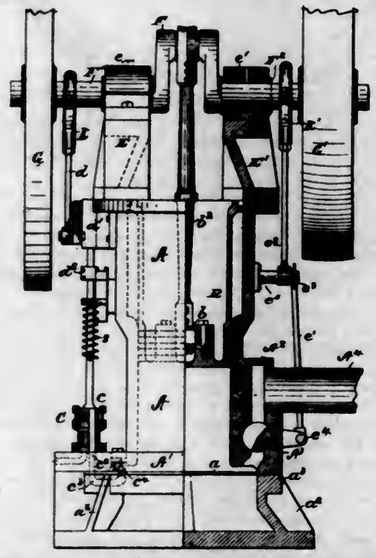
3. The combination of a plurality of end-hinged cigar-tubes integrally constructed from the flat sheet, and having radial arrangement about a common central hinge, both tube ends being open, with a patch of separate protecting material superimposed upon said center for the purpose of enwrapping and protecting the cut ends of the cigars when the group of tubes is filled and folded, substantially as specified.

4. In a cigar-package, a group of flexible receiving-tubes, end-hinged, and integrally constructed from a flat sheet, arranged radially about a common center each tube having two mouths, one inner relative to the hinge and one outer relative to the package, the said group having an attached ribbon string or binding means for the purpose of retaining the group in its folded position, substantially as set forth.

5. A cigar-package comprising a plurality of end-hinged receiving-tubes pasted and formed from the flat sheet of paper or other suitable material, a central hinge part connected with and substantially integral with said tubes, mouths at the inner ends of the tubes for entrance of the cigars, and mouths at the free ends of the tubes for the withdrawal of the same, a waterproof means placed centrally with reference to the cut ends of the included cigars, a cord or retaining means having one end connected to the group of tubes, all in the manner substantially as set forth and described.

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**756,657. STEAM-ENGINE. FRANK LANE, Carthage, and OLIVER E. OAKES, Joplin, Mo. Filed Apr. 11, 1902. Serial No. 102,367. (No model.)**



*Claim.*—1. A flasher-engine having a water-injection pump, means for positively withdrawing the plunger of the pump, means for disconnecting the said plunger, and resilient means for quickly advancing the plunger of the pump to inject the water substantially as described.

2. A flasher-engine having a vertical cylinder, a plunger working therein and a flash-plate at the bottom said cylinder being enlarged laterally at its lower end adjacent to the flash-plate to a

greater diameter than the plunger, and having its water and steam valves opening into said enlargement substantially as and for the purpose described.

3. In a steam-engine of the kind described the combination with the cylinder, its piston, and a highly-heated flash-surface; of a water-injection pump, a spring or its described equivalent for forcing down its plunger, and an eccentric on the main shaft with means for lifting the pump-plunger and releasing it with a quick drop substantially as and for the purpose described.

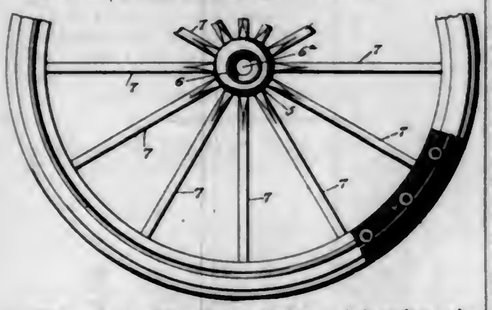
4. In a steam-engine of the kind described, the combination with the cylinder, its piston, and a highly-heated flash-surface; of a water-injection pump, a spring or its described equivalent for forcing down its plunger, an eccentric on the main shaft with means for lifting the pump-plunger and releasing it with a quick drop, and an adjustable stop for limiting the throw of said pump-plunger and consequently the amount of water injected substantially as described.

5. In a steam-engine of the kind described, the combination of the cylinder A having table extension A' with passage-ways $c'$ $c^2$, the pump mounted above the same, and the base having ring $a^3$ with passage-way $c^4$, the flash-plate interposed between the said ring and cylinder, and the valve $c^4$ substantially as and for the purpose described.

6. In a steam-engine of the kind described, the cylinder having a discharge-chamber $A^3$ formed at its lower end and communicating with the interior, the rocking valve $A^3$ arranged in the same and having crank $c^4$, an eccentric on the main shaft, a horizontal lever $c^5$, rod $c'$ connecting one end of the said lever to the crank of the discharge-valve, and rod $c^3$ connecting the other end of the lever to the eccentric.

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**756,658. VEHICLE-WHEEL.** LOUIS LAPOR, New York, N. Y. Filed Jan. 30, 1904. Serial No. 191,260. (No model.)



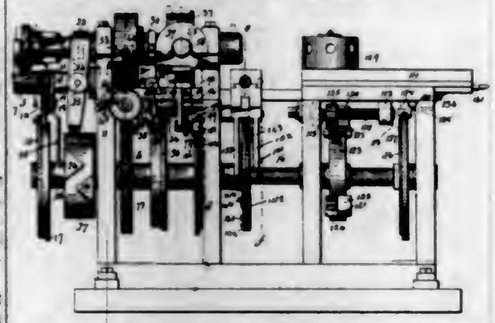
*Claim.*—1. A vehicle-wheel, embodying a hub, spokes, and a wheel-rim, said rim having recesses in its periphery, antifriction-wheels held to rotate in the recesses, and a three-part tire-clamping shoe adapted to clamp a rubber tire at its sides.

2. A vehicle-wheel, embodying a hub, spokes, and a wheel-rim, said rim having a plurality of spaced recesses in its peripheral face, a pair of oppositely-perforated boxes in each recess, an oppositely-journaled antifriction-wheel held to rotate between each pair of boxes by the engagement of the journals thereon in perforations in the boxes, a tire-clamping shoe formed in three sections that contact laterally, the central shoe-section having an annular channel on the inner side wherein the peripheries of the antifriction-wheel travel, a circular flange at the inner edge of each outer section of the clamping-shoe, said flanges lapping at the sides of the wheel-rim as guards, a radial flange projected from the outer edge of each outer shoe-section, said flanges each having an inwardly-projected rib, a rubber tire seated upon the shoe-sections and gripped by the ribs, and transverse screws engaging the shoe-sections, for clamping the ribs against and into the rubber tire.

3. A vehicle-wheel, comprising a hub, a series of spokes, and a wheel-rim held on the outer ends of the spokes, said rim having a series of spaced recesses formed in its peripheral surface, a pair of oppositely-perforated boxes bedded in each recess and spaced apart therein, an oppositely-journaled antifriction-wheel having an ovate-shaped periphery and engaging its journals in the pair of boxes, a three-part clamping-shoe comprising a core-ring and two similar side clamping-rings, the core-ring having an annular channel on its inner side wherein the ovate-shaped rims of the antifriction-wheels may be seated, a circular flange on the outer edge of each outer ring-section, said flanges being spaced from the wheel-rim and rounded on their edges, a U-shaped guard-ring occupying each space, a radial flange on each outer shoe-ring section, having a rib on its inner face, a rubber tire adapted to seat upon the shoe-ring sections and be gripped by the ribs, and screws adapted to clamp the shoe-ring sections upon the tire.

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**756,659. TURRET-LATHE.** JOSEPH P. LAVIGNE, Detroit, Mich. Filed Apr. 6, 1903. Serial No. 151,215. (No model.)



*Claim.*—1. In a lathe, the combination with the work-spindle thereof, of a driving-pulley therefor, a friction-disk located at a right angle to the said pulley and frictionally driven thereby, a main shaft carrying the means for driving and controlling the several instrumentalities of the lathe, connections between the said disk and shaft for driving the latter, and means controlled by the shaft for moving the said disk transversely with respect to the pulley for changing the speed of the shaft.

2. In a lathe, the combination with the work-spindle thereof, of a driving-pulley therefor, a friction-disk frictionally driven by the said pulley, a shaft carrying the means for driving and controlling the several instrumentalities of the lathe, connections between the said disk and shaft whereby the shaft is driven by the disk, and other connections between the shaft and disk whereby the disk is shifted for varying the speed of the shaft.

3. In a lathe, the combination with the work-spindle thereof, of a driving-pulley therefor, a friction-disk frictionally driven by the said pulley, a main shaft carrying the means for driving and controlling the several instrumentalities of the lathe, connections between the disk and shaft, whereby the shaft is driven by the disk, and connections between the shaft and disk, whereby the disk is shifted for varying the speed of the shaft, the said connections last mentioned including an arbor for the disk, a movable housing for the said arbor, a shaft carrying the said housing, a worm-pinion mounted on the said arbor, a worm-gear mounted on the shaft supporting the said housing, and means driven from the said main shaft for moving the housing on its supporting-shaft.

4. In a lathe, the combination with the work-spindle thereof, of a driving-pulley therefor, a friction-disk frictionally driven by the said pulley, a main shaft carrying the means for driving and controlling the several instrumentalities of the lathe, connections between the disk and shaft which is driven by the disk, the said connections including automatic speed-changing mechanism for driving the shaft fast and slow, and speed-changing connections between the shaft and disk for shifting the disk with respect to the pulley, whereby the speed at which the main shaft is driven is further modified by its own action.

5. In a lathe, the combination with the work-spindle thereof, of a driving-pulley therefor, a friction-disk frictionally driven by the main driving-pulley, a main shaft carrying the means for driving and controlling the several instrumentalities of the lathe, connections between the disk and shaft for driving the shaft, the said connections including speed-changing mechanism for driving the shaft fast and slow, and means for automatically cutting the said speed-changing mechanism into and out of operation including a clutch, a wheel mounted on the main shaft, and adjustable connection between the wheel and clutch for timing the operation thereof.

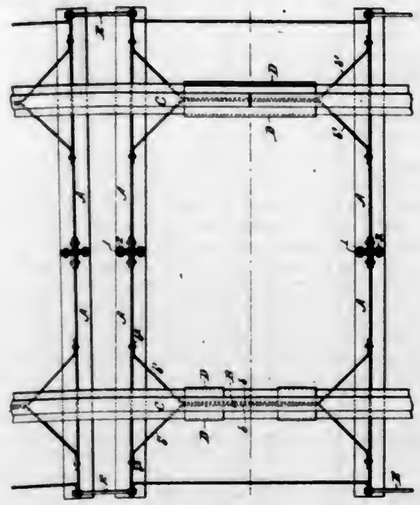
6. In a turret-lathe, the combination with a turret and a turret-slide, of a turret-worm connected with the slide, a main shaft carrying the means for driving and controlling the several instrumentalities of the lathe, and connections between the shaft and turret, including a turret-worm, a turret-worm shaft, gear-wheels, a rack-wheel on the main shaft, and racks carried by the said rack-wheel and coacting with the said gear-wheels for rotating the same in opposite directions for reversing the movement of the turret-worm shaft.



7. In a lathe, the combination with a turret, of a main shaft carrying the means for driving and controlling the several instrumentalities of the lathe, and connections between the shaft and turret, including a turret-worm, a turret-worm shaft, a pinion located on the said shaft, a gear-wheel meshed into by the said pinion, a gear-wheel rotating with the said gear-wheel, a gear-wheel located on the turret-worm shaft, a rack-wheel mounted on the main shaft, and adjustable segmental racks carried by the rack-wheel and coacting with the gear-wheel rotating with the gear-wheel, and the gear-wheel located on the turret-worm shaft, whereby, although the rack-wheel constantly revolves in one direction, the turret-worm is reversed.

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**756,660. COMBINED RAILWAY-TIE AND RAIL-FASTENING.** JOSEPH LEIGHTHAM, Reading, Pa., assignor of one-half to Jacob Nolde, Reading, Pa. Filed Nov. 27, 1903. Serial No. 182,706. (No model.)



*Claim.*—1. A double tie for railways comprising parallel ties united by double bridge-plates forming a rail-supporting sill between the united ties and having their oppositely-inclined ends rigidly secured to the webs of the respective ties.

2. A double tie for railways comprising parallel ties united by double bridge-plates forming a rail-supporting sill between the united ties and having their oppositely-inclined ends rigidly secured to the webs of the respective ties and fish-plates having depending portions rigidly secured to said uniting bridge-sill.

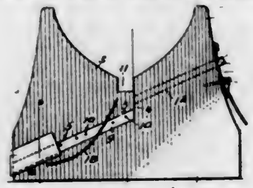
3. A double tie for railways comprising parallel ties united by double bridge-plates forming a rail-supporting sill between the united ties and having their oppositely-inclined ends rigidly secured to the webs of the respective ties and spacing-bars for connecting the extremities of the double tie with similar adjacent ties.

4. A railway-tie made up of separable sections each of which comprises two parallel half-ties united by bridge-plates forming rail-supporting sills between the ties, said sections being united midway between the rails.

5. A railway-tie made up of separable sections each of which comprises two parallel half-ties united by bridge-plates forming rail-supporting sills between the ties, said sections having an insulated connection midway between the rails.

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**756,661. BOAT-CHOCK.** IRVING A. LEMM, Victoria, Canada. Filed Dec. 11, 1903. Serial No. 184,805. (No model.)

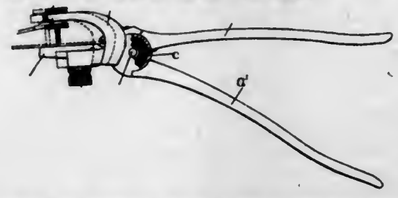


*Claim.*—1. In a chock or rest for a ship's boat; the construction of the same in two parts having the line of junction from the inboard side of the keel-recess in the chock, and extending therefrom to the outboard side of the chock, means for supporting the movable portion against lateral displacement, and means for securing the removable portion to the fixed portion of the chock and for releasing the same from the inboard side of the chock.

2. In a boat's chock; the construction of the same in two parts, the line of junction of which extends vertically downward a short distance from the inboard side of the boat's keel-recess and is thereafter sloped to the outboard side of the chock, a series of rollers between the sloping surfaces, a check comprising lateral engagements secured to one portion, and inwardly-turned edges designed to enter a groove in the other portion, means for securing the two parts together in their normal relation comprising a stem secured in the movable portion and projecting therefrom in a line parallel to the slope of the junction and designed to pass through a hole in the inboard and fixed portion of the chock, a notch toward the end of this stem where it projects through the inboard portion of the chock, and a latch designed to enter this notch, means for operating the latch to effect the release of the outboard portion, and means for flexibly connecting the movable portion to the fixed portion and limiting its extreme outward movement.

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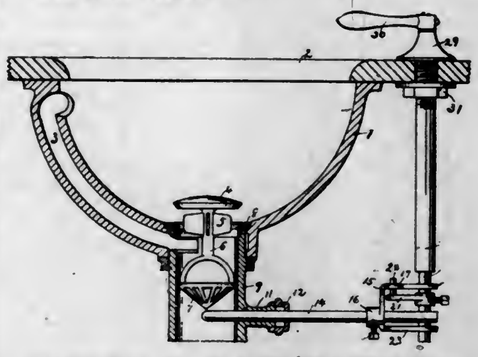
**756,662. SAW-SET.** JOSEPH B. LESTER, Norwich, Conn. Filed Aug. 15, 1903. Serial No. 169,628. (No model.)



*Claim.*—The improved saw-set herein described consisting of a pair of pivoted jaws the lower one of which is extended to form an extended saw-support, an open bow-shaped frame having lateral bowed portions, said frame embracing and slidably mounted on the said lower jaw independently of the upper jaw and having its upper overhanging free end portion extended above the extended portion of the lower jaw, said frame having its bow portion extended backward in proximity to the pivot of the jaws and having a lower forward extension parallel with the upper overhanging portion and having a flat bearing against the under face of the extension of the lower jaw, a screw mounted in the said overhanging end opposite the base of the extended support, and a screw out of vertical alinement with said screw and engaged in the extended lower horizontal portion of the frame and forward of the bow of said frame and in the extension of the lower jaw, all substantially as shown and described.

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**756,663. WASTE MECHANISM FOR WASHBASINS, BATHS, &c.** SAMUEL W. LEWIS, Brooklyn, N. Y. Filed Dec. 23, 1901. Serial No. 86,885. (No model.)



*Claim.*—1. In a mechanism for operating devices of the character specified, the combination with a waste-outlet passage and a valve or stopper for said outlet, of a substantially horizontal operating-rod adapted to open said stopper, a substantially vertical han-

dle-rod passing or crossing said operating-rod without interference, and means for imparting motion from said handle-rod to the operating-rod, whereby the apparatus can be installed for use without having to measure or cut either rod.

2. In a waste apparatus for a washbasin, bath, sink or the like the combination with an outlet-passage and a valve or stopper fo said outlet, of an operating-rod fitted with a yoke which is provided with a main slot parallel with said operating-rod, and transverse slots on both sides of said main slot and open to it, a rod adapted to rotate within said main slot, a crank and crank-pin attached to said rotating rod and adapted to cross said main slot and to engage either transverse slot, whereby said rotating rod and its crank can be turned in either direction or completely revolved to impart motion to the operating-rod.

3. In a mechanism for operating devices of the character specified, the combination of an operating-rod fitted with a yoke provided with a main slot parallel with said operating-rod, and a lateral slot, a rod passing through said main slot and adapted to rotate within it, a crank and a crank-pin attached to said rotating rod and adapted to engage said lateral slot and a guide-loop parallel with said main slot and surrounding said rotating rod, whereby rotation of the stationary rod will cause the crank-pin within the lateral slot to impart motion to the operating-rod and the guide-loop surrounding said rotating rod will prevent lateral displacement of the parts.

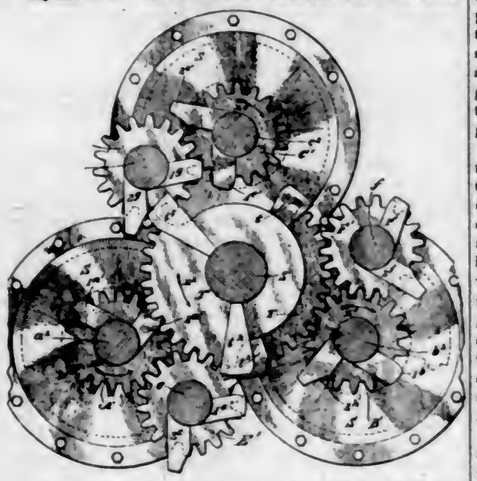
4. In a mechanism for operating devices of the character described, the combination of an operating-rod fitted with a yoke provided with a main slot and a lateral slot, a rod passing through said main slot and adapted to rotate and operate within it, a crank and crank-pin attached to said rotating rod and adapted to engage said lateral slot, said yoke being attached to the operating-rod by or at an offset, whereby the two rods will pass or cross without interference substantially as described.

5. For a washbasin, sink, bath or similar appliance, the combination of the waste-outlet plug 9, stopper 4, operating-rod 14 and yoke 17 18, handle-rod 24 adapted to operate within the loop 18 and provided with crank 21 and crank-pin 20 adapted to operate within the loop 17 and offset connection 13 between the operating-rod 14 and yoke 17 18, substantially as and for the purposes described.

6. In a waste device for a washbasin, bath, sink or like appliance, the combination with a waste-outlet passage and a stopper for said passage, of an operating-rod and mea' of communication between said rod and stopper, whereby the passage is opened by one motion of said rod and closed by the opposite motion, a handle-rod on one side of said operating-rod and passing it without interference, and means of conveying motion from the handle-rod to the operating-rod for the purpose and use described.

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**756,664. OSCILLATING-PISTON ENGINE. Frank H. Lindner, Bayonne, N. J. Filed Jan. 17, 1902. Serial No. 90,205. (No model.)**



*Claim.*—1. In an engine, a shaft to be rotated, a plurality of piston-chambers grouped about said shaft, oscillating pistons in the respective chambers, translating and commuting gearing between said pistons and shaft for converting the oscillating movements of the pistons into continuous rotary motion of the driven shaft in one direction, and mechanism controlling the admission and exhaust of the fluid, substantially as described.

2. In an engine, a shaft to be rotated, a plurality of piston-chambers grouped concentrically about said shaft, oscillating pistons in the respective chambers, translating and commuting gearing between said pistons and shaft for converting the movements of the pistons into continuous rotary motion of the shaft, and automatic mechanism controlling the admission of fluid successively to the said pistons and its exhaust, substantially as described.

3. In an engine, a shaft to be rotated, a plurality of piston-chambers grouped about said shaft, oscillating pistons in the respective chambers, translating and commuting gearing between said pistons and shaft for converting the movements of the pistons into continuous rotary motion of the shaft, and automatic valve mechanism controlling the admission of fluid successively to said pistons, its cut off for use expansively, and its exhaust, substantially as described.

4. In an engine, a shaft to be rotated, three piston-chambers grouped concentrically about said shaft, oscillating pistons in the respective chambers, translating and commuting gearing between said pistons and the driven shaft for converting the oscillatory movements of the pistons into continuous rotary motion of the shafts, and automatic valve mechanism controlling the admission of fluid successively to said pistons, its cut off for use expansively, and its exhaust, substantially as described.

5. In an engine, a shaft to be rotated, a plurality of piston-chambers grouped adjacent to said shaft, oscillating pistons in the respective chambers, translating and commuting gearing between the respective pistons and said shaft, and valve mechanism actuated by said shaft and controlling the admission of fluid to, and its exhaust from said chambers, substantially as described.

6. In an engine, a shaft to be rotated, pistons adapted to oscillate in suitable chambers and grouped adjacent to the said shaft, means for admiting a fluid under tension to the piston-chambers successively and exhausting it at proper times, and translating and commuting gearing between said pistons and shaft whereby the oscillating movements of the pistons is converted into continuous rotary motion of the shaft, substantially as described.

7. In an engine, a shaft to be rotated, pistons adapted to oscillate in chambers grouped about said shaft, the oscillating axes of the pistons being concentric and parallel with said shaft, automatic valve mechanism for admitting fluid to said pistons successively and for operating the exhaust therefrom, whereby the pistons shall be, at any given time, at different points in their strokes, and translating and commuting gearing between said pistons and shaft for converting the oscillating movements of the pistons into continuous rotary motion of the shaft, substantially as described.

8. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, a central shaft, mounted upon and passing through the said casing and a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the said pistons; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, substantially as described.

9. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears upon being adapted to engage with the duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing and a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts; the said auxiliary gear-wheels being adapted to engage with the said segmental gear while the pistons moves in a direction corresponding to the direction of the rotation of the said segmental gear and central shaft, substantially as described.

10. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts; the duplicate gears upon the auxiliary shafts being adapted to engage with the duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts; the said segmental gear also secured to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts; the said segmental gear being revolved by means of the said auxiliary gear-wheels mounted upon the auxiliary shaft while the piston moves in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, substantially as described.

11. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shaft of the said oscillating pistons, cam projections formed upon the said gear-wheels, a central shaft, mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the said shafts of the pistons, and cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, substantially as described.

12. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with the duplicate gears upon the aforesaid piston-shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels fastened to the said auxiliary shafts, and cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gears; the said auxiliary gear-wheels being adapted to engage with the said segmental gear while the pistons move in a direction corresponding to the direction of the rotation of the segmental gear and central shaft, substantially as described.

13. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons cam projections formed upon the said gear-wheels, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels, an auxiliary segmental gear also securely fastened to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts, and cam projections formed upon the said auxiliary segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gears; the aforesaid duplicate gears upon the piston-shafts being adapted to engage with the duplicate gears of the aforesaid auxiliary shafts and the aforesaid gear-wheels being adapted to engage with the aforesaid segmental gear to revolve the aforesaid central shaft when the pistons to which they are connected move in the direction opposite to the direction of the rotation of the said segmental gear and central shaft, and the auxiliary gear-wheels being adapted to engage with the said auxiliary segmental gear to revolve the central shaft while the pistons are moving in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, substantially as described.

14. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of said pistons; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, contacting arms having roller ends, secured to the said rotary valves and a cam-wheel mounted upon and rotating with the aforesaid central shaft and provided with cam projections which are adapted to engage with the roller ends of the said contacting arms to open and close the inlet and exhaust ports leading to and from the piston-chambers, substantially as described

15. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the shafts of said pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts; the said auxiliary gear-wheels being adapted to engage with the segmental gear while the piston moves in a direction corresponding to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, contacting arms having roller ends, secured to the said rotary valve, and a cam-wheel mounted upon and rotating with the aforesaid central shaft and provided with cam projections which are adapted to engage with the roller ends of the said contacting arms to open and close the inlet and exhaust ports leading to and from the piston-chambers, substantially as described.

16. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the auxiliary shafts; the duplicate gears upon the auxiliary shaft being adapted to engage with the duplicate gears upon the piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, an auxiliary segmental gear also secured to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the aforesaid piston-shafts while the pistons move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, and the said auxiliary segmental gear being revolved by means of the said auxiliary gear-wheels mounted upon the auxiliary shafts while the piston moves in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, contacting arms having roller ends secured to the said rotary valve and a cam-wheel mounted upon and rotating with the aforesaid central shaft and provided with cam projections which are adapted to engage with the roller ends of the said contacting arms to open and close the inlet and exhaust ports leading to and from the piston-chambers, substantially as described.

17. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, cam projections formed upon the said gear-wheels, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the said shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-cham-

bers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, contacting arms having roller ends secured to the said rotary valves, and a cam-wheel mounted upon and rotating with the aforesaid central shaft and provided with cam projections which are adapted to engage in the roller ends of the said contacting arms to open and close the inlet and exhaust ports leading to and from the piston-chambers, substantially as described.

18. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the oscillating pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with the duplicate gears upon the aforesaid piston-shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels fastened to the said auxiliary shafts, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gears; the said auxiliary gear-wheels being adapted to engage with the said segmental gear while the pistons move in a direction corresponding to the direction of the rotation of the segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, contact-arms having roller ends, secured to the said rotary valve, and a cam-wheel mounted upon and rotating with the aforesaid central shaft and provided with cam projections which are adapted to engage with the roller ends of the said contacting arms to open and close the inlet and exhaust ports leading to and from the piston-chambers, substantially as described.

19. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, cam projections formed upon the said gear-wheels, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear fastened to the said shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels, an auxiliary segmental gear also securely fastened to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the auxiliary shafts, cam projections formed upon the said auxiliary segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gear-wheels; the aforesaid duplicate gears upon the piston-shafts being adapted to engage with the duplicate gears of the aforesaid auxiliary shafts and the aforesaid gear-wheels upon the piston-shafts being adapted to engage with the aforesaid segmental gear to revolve the aforesaid central shaft when the pistons to which they are connected move in a direction opposite to the direction of the rotation of the segmental gear and central shaft, and the auxiliary gear-wheels being adapted to engage with the auxiliary segmental gear to revolve the central shaft while the pistons are moving in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, contacting arms having roller ends, secured to the said rotary valves, and a cam-wheel mounted upon and rotating with the aforesaid central shaft and provided with cam projections which are adapted to engage with the roller ends of the said contacting arms to open and close the inlet and exhaust ports leading to and from the piston-chambers, substantially as described.

20. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the said pistons; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports and suitable means for operating the said valves, substantially as described.

21. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the shafts of the said pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shaft; the said auxiliary gear-wheels being adapted to engage with a segmental gear while the piston moves in a direction corresponding to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, and suitable means for operating the said valves, substantially as described.

22. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary duplicate gears mounted upon the said auxiliary shafts; the duplicate gears upon the auxiliary shafts being adapted to engage with the duplicate gears upon the piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, and an auxiliary segmental gear also securely fastened to said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the aforesaid piston-shafts while the pistons move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, the said auxiliary segmental gear being revolved by means of the said auxiliary gear-wheels mounted upon the auxiliary shafts while the piston moves in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, and suitable means for operating the said valves, substantially as described.

23. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, cam projections formed upon the said gear-wheels, a central shaft mounted upon and passing through said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the said shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, and suitable means for operating the said valves, substantially as described.

24. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the oscillating pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears upon the auxiliary shafts being adapted to engage with the duplicate gears upon the aforesaid piston-shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shafts and adapted to engage with the aforesaid auxiliary gear-wheels fastened to the said auxiliary shafts, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear fastened to the said shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels, an auxiliary segmental gear also securely fastened to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the auxiliary shafts, cam projections formed upon the said auxiliary segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gear-wheels; the aforesaid duplicate gears upon the piston-shafts being adapted to engage with the duplicate gears of the aforesaid auxiliary shafts and the aforesaid gear-wheels upon the piston-shafts being adapted to engage with the aforesaid segmental gear to revolve the aforesaid central shaft when the pistons to which they are connected move in a direction opposite to the direction of the rotation of the segmental gear and central shaft, and the auxiliary gear-wheels being adapted to engage with the auxiliary segmental gear to revolve the central shaft while the pistons are moving in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, and suitable means for operating the said valves, substantially as described.

25. In an engine, a casing with piston-chambers having abutments formed therein and oscillating pistons, cam projections formed upon the said gear-wheels securely fastened to the shafts of the said oscillating pistons, and cam projections formed upon the said gear-wheels, duplicate gears securely fastened upon said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear fastened to the said shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections, formed upon the aforesaid gear-wheels, an auxiliary segmental gear also securely fastened to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the auxiliary shafts, cam projections formed upon the said auxiliary segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gear-wheels; the aforesaid duplicate gears upon the piston-shafts being adapted to engage with the duplicate gears of the aforesaid auxiliary shafts and the aforesaid gear-wheels upon the piston-shafts being adapted to engage with the aforesaid segmental gear to revolve the aforesaid central shaft when the pistons to which they are connected move in a direction opposite to the direction of the rotation of the segmental gear and central shaft, and the auxiliary gear-wheels being adapted to engage with the auxiliary segmental gear to revolve the central shaft while the pistons are moving in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, and suitable means for operating the said valves, substantially as described.

26. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the said pistons; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, suitable operating mechanism for opening and closing the ports at the proper time and suitable means for governing the admission of the expansible fluid to regulate the speed of the engine, substantially as described.

27. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shaft of the said oscillating pistons, duplicate gears securely fastened upon the shafts of the said pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts, the said duplicate gears being adapted to engage with duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts; the said auxiliary gear-wheels being adapted to engage with the segmental gear while the piston moves in a direction corresponding to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, suitable operating mechanism for opening and closing the ports at the proper time, and suitable means for governing the admission of the expansible fluid to regulate the speed of the engine, substantially as described.

28. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts; the duplicate gears upon the auxiliary shafts being adapted to engage with the duplicate gears upon the piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, an auxiliary segmental gear also secured to the central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the aforesaid piston-shafts, while the pistons move in the direction opposite to the direction of the rotation of the said segmental gear and central shaft, and the said auxiliary segmental gear being revolved by means of the said auxiliary gear-wheel mounted upon the auxiliary shaft while the piston moves in the direction corresponding to the direction of the rotation of the central shaft and segmental gear, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, suitable operating mechanism for opening and closing the ports at the proper time, and suitable means for governing the admission of the expansible fluid to regulate the speed of the engine, substantially as described.

29. In an engine, a casing and piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, cam projections formed upon the said gear-wheels, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the said shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of the expansible fluid through the said ports, suitable operating mechanism for opening and closing the ports at the proper time, and suitable means for governing the admission of the expansible fluid to regulate the speed of the engine, substantially as described.

30. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of said oscillating pistons, duplicate gears suitably fastened upon the shafts of the said oscillating pistons, auxiliary shafts mounted upon the casing, auxiliary duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with the duplicate gears upon the aforesaid piston-shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid auxiliary gear-wheels fastened to the auxiliary shafts, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gears; the said auxiliary gears being adapted to engage with the said segmental gear while the pistons move in a direction corresponding to the direction of the rotation of the said segmental gear and central shaft, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the ad-

mission and exhaust of the expansible fluid through the said ports, suitable operating mechanism for opening and closing the ports at the proper time, and suitable means for governing the admission of the expansible fluid to regulate the speed of the engine, substantially as described.

31. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, cam projections formed upon the said gear-wheels, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear fastened to the said shaft and adapted to engage the aforesaid gear-wheels mounted upon the shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels, an auxiliary segmental gear also securely fastened to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the auxiliary shafts, cam projections formed upon the said auxiliary segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gear-wheels; the aforesaid duplicate gears upon the piston-shafts being adapted to engage with the duplicate gears of the aforesaid auxiliary shafts and the aforesaid gear-wheels upon the piston-shafts being adapted to engage with the aforesaid segmental gear to revolve the aforesaid central shaft when the pistons to which they are connected move in a direction opposite to the direction of the rotation of the segmental gear and central shaft, and the auxiliary gear-wheels being adapted to engage in the auxiliary segmental gear to revolve the central shaft while the pistons are moving in a direction corresponding to the direction of the rotation of the said central shaft and segmental gears, inlet and exhaust ports formed in the aforesaid abutments in the piston-chambers, rotary valves mounted upon the casing and suitably connected to the said inlet and exhaust ports and adapted to control the admission and exhaust of expansible fluid through the said ports, suitable operating mechanism for opening and closing the ports at the proper time, and suitable means for governing the admission of the expansible fluid to regulate the speed of the engine, substantially as described.

32. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the said pistons; the said wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, and suitable packing for the said oscillating pistons, substantially as described.

33. In an engine, a casing with piston-chambers having abutments formed therein, an oscillating piston adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts and the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with the duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing, and a segmental gear secured to the said shaft and adapted to engage in the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts, the said auxiliary gear-wheels being adapted to engage with the said segmental gear while the piston moves in a direction corresponding to the direction of the rotation of the said segmental gear and central shaft, and suitable packing for said oscillating pistons, substantially as described.

34. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the oscillating pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts; the duplicate gears upon the auxiliary shafts being adapted to engage with the duplicate gears upon the said piston-shafts, a central shaft mounted upon and passing through the said casing, a segmental gear secured to the said shaft and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, an auxiliary segmental gear also secured to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts; the said segmental gear being revolved by means of the aforesaid segmental gear-wheels mounted upon the aforesaid piston-shafts while the piston moves in the direction opposite to the direction of the rotation of the said segmental gear and shaft, and the said auxiliary segmental gear being revolved by means of the said auxiliary gear-wheel mounted upon the auxiliary shaft while the piston moves in the direction corresponding to the direction of the rotation of the said central shaft and segmental gears, and suitable packing for the said oscillating pistons, substantially as described.

35. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, cam projections formed upon the said gear-wheels, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said central shaft and adapted to engage in the aforesaid gear-wheels mounted upon the said shafts of the pistons, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the aforesaid gear-wheels; the said gear-wheels being adapted to engage with the said segmental gear while the pistons to which they are attached move in a direction opposite to the direction of the rotation of the said segmental gear and central shaft, and suitable packing for the said oscillating pistons, substantially as described.

36. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the shafts of the said oscillating pistons, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears securely fastened upon the said auxiliary shafts; the said duplicate gears being adapted to engage with the duplicate gears upon the aforesaid piston-shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the casing, a segmental gear secured to the said shaft and adapted to engage in the aforesaid auxiliary gear-wheels and fastened to the said auxiliary shafts, cam projections formed upon the said segmental gear and adapted to engage with the cam projections formed upon the said auxiliary gears; the said auxiliary gear-wheels being adapted to engage with the said segmental gear while the pistons move in a direction corresponding to the direction of the rotation of the segmental gear and central shaft, and suitable packing for the said oscillating pistons, substantially as described.

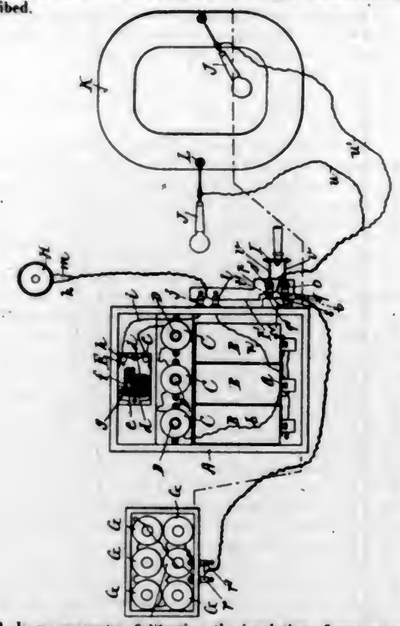
37. In an engine, a casing with piston-chambers having abutments formed therein, oscillating pistons adapted to oscillate within the said piston-chambers, gear-wheels securely fastened to the said oscillating pistons, cam projections formed upon the said gear-wheels, duplicate gears securely fastened upon the said shafts of the pistons, auxiliary shafts mounted upon the casing, auxiliary and duplicate gears mounted upon the said auxiliary shafts, cam projections formed upon the said auxiliary gears, a central shaft mounted upon and passing through the said casing, a segmental gear securely fastened to the said shafts and adapted to engage with the aforesaid gear-wheels mounted upon the shafts of the pistons, cam projections formed upon the said segmental gears and adapted to engage with the cam projections formed upon the aforesaid gear-wheels, an auxiliary segmental gear also securely fastened to the said central shaft and adapted to engage with the aforesaid auxiliary gear-wheels mounted upon the said auxiliary shafts, cam projections formed upon the said auxiliary segmental gears and adapted to engage with the cam projections formed upon the said auxiliary gears; the aforesaid duplicate gears upon the piston-shafts being adapted to engage with the duplicate gears of the aforesaid auxiliary shafts and the aforesaid gear-wheels being adapted to engage with the aforesaid segmental gear to revolve the central shaft when the pistons to which they are connected move in the direction opposite to the direction of the rotation of the said segmental gear and central shaft, and the auxiliary gear-wheels being adapted to engage with the said auxiliary segmental gear to revolve the central shaft while the pistons are moving in a direction corresponding to the direction of the rotation of the central shaft and segmental gears, and suitable packing for the said oscillating pistons, substantially as described.

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**756,665. APPARATUS FOR TESTING THE INSULATION OF THE COILS OF ELECTROMAGNETS. JAMES LIVESEY, Fall River, Mass., assignor to himself and Robert Healy, Fall River, Mass. Filed Feb. 1, 1904. Serial No. 191,617. (No model.)**



*Claim.*—1. In an apparatus for testing the insulation of magnet-coils, the combination of a means for generating electricity, and an electric buzzer arranged in the circuit, with a standard sounding-coil, and means for making electric connection at will, with the coil to be tested, and with the standard sounding-coil, substantially as described.



2. In an apparatus for testing the insulation of magnet-coils, the combination of a means for generating electricity, and an electric buzzer arranged in the circuit with a standard sounding-coil, a telephone-receiver, and means for making electric connection at will, with the coil to be tested, and with the standard sounding-coil, substantially as described.

3. In an apparatus for testing the insulation of magnet-coils, the combination of a galvanic battery, a resistance-coil, and an electric buzzer arranged in the circuit, with a standard sounding-coil, and means for making electric connection at will, with the coil to be tested, and with the standard sounding-coil, substantially as described.

4. In an apparatus for testing the insulation of magnet-coils, the combination of a galvanic battery, a resistance-coil surrounding a core-magnet, and an electric buzzer arranged in the circuit, with a standard sounding-coil, and means for making electric connection at will, with the coil to be tested, and with the standard sounding-coil, substantially as described.

5. In an apparatus for testing the insulation of magnet-coils, the combination of a means for generating electricity, and an electric buzzer arranged in the circuit, with a standard sounding-coil, electric connection with the coil to be tested, and with the standard sounding-coil, and a two-pole switch for changing the electric current from the one to the other at will, substantially as described.

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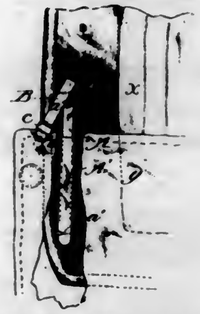
**756,666. VEST AND DRAWERS HOLDER. ALBERT LUSTIG, Corsicana, Tex. Filed Apr. 13, 1903. Serial No. 152,363. (No model.)**

*Claim.*—1. The improved device consisting of a bar having a shorter arm pivoted to one end of the same, the said arm being adapted to swing free and lie flat on the bar and provided with means for attaching it to a garment, substantially as shown and described.

2. The improved device for the purpose specified, consisting of a main bar having a slidable endwise extension, and a lateral arm provided with a clasp, substantially as shown and described.

3. The improved device for the purpose specified comprising a bar having parallel sides and a slidable endwise extension thereof comprising an elongated slotted part constructed of elastic sheet metal and applied to the main bar in the manner described, whereby it is held in any required adjustment by elastic pressure upon said bar, substantially as shown and described.

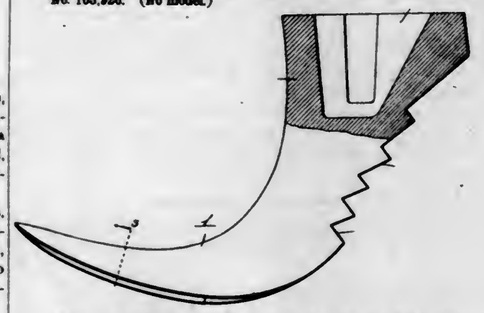
4. The improved device for the purposes specified, comprising a main bar having fixed horizontal pins attached at its respective ends and projecting in opposite directions, and a lateral arm attached to the upper end of the bar and provided with means for securing it to a garment, substantially as shown and described.



5. The improved device for the purpose specified, comprising the main bar having fixed horizontal pins at its upper and lower ends, the same projecting in opposite directions, and a lateral arm which is attached to the upper end of said bar and projecting on the side of the latter toward which the upper pin projects, said bar being provided with means for attaching it to a garment, substantially as shown and described.

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**756,667. LAST. CHARLES MACK, Butte, Mont., assignor of one-fourth to John A. Johnson, Butte, Mont. Filed July 1, 1903. Serial No. 163,926. (No model.)**



*Claim.*—A last, having a concave surface for the full extent of one side thereof and a convex surface for a portion of its opposite side, the remaining portion of the convex side named being formed with a plurality of grooves in successive arrangement and varying in size, each wall of each succeeding one of which projects beyond the corresponding wall of the groove next preceding it, whereby turn-shoes of different sizes may be repaired on a single last.

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**756,668. BUCKLE. EDWARD A. MAINGUET, Evangeline, La. Filed Aug. 25, 1903. Serial No. 170,755. (No model.)**



*Claim.*—1. In a buckle, a main frame, a finger pivotally mounted thereon and adapted to move parallel with the plane of the frame, for the purposes described.

2. In a buckle, a main frame, a finger pivotally mounted thereon and adapted to move parallel with the plane of the frame, and also adapted for limited movement in a plane perpendicular to the plane of the frame.

3. In a buckle, a main frame having a cross-piece, a stud secured thereto, a finger having one end fulcrumed to said stud and adapted to be swung parallel with the plane of the frame and in a plane perpendicular to the plane of the frame.

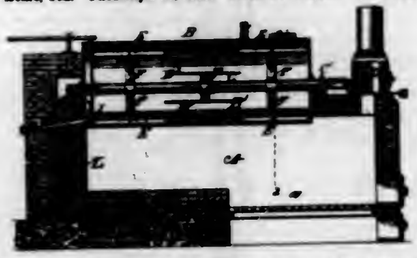
4. In a buckle, a main frame having a cross-piece, a stud secured thereto, a finger having an eye mounted upon said stud to freely turn parallel with the plane of the frame, for the purposes specified.

5. In a buckle, a main frame having a cross-piece, a stud se-

cured thereto, a finger having an eye mounted upon said stud to freely turn parallel with the plane of the frame, and adapted for a limited movement in a plane perpendicular to the plane of the frame.

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**756,669. CEMENT-PLASTER KETTLE. CHARLES H. MALONE, Acme, Tex. Filed Sept. 17, 1903. Serial No. 173,612. (No model.)**



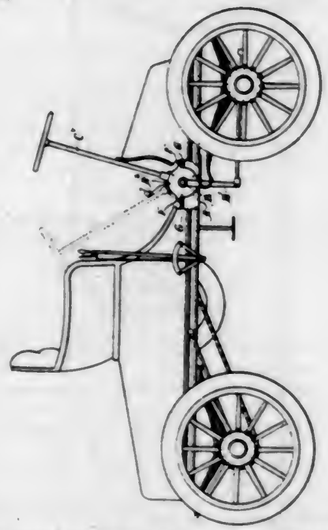
*Claim.*—1. An apparatus for cooking gypsum for converting the same into cement-plaster, comprising the furnace having a fire-box, the kettle proper having a lower half projecting within the fire-box and an upper half of greater diameter than the lower half, and resting upon the walls of the furnace, the hollow shaft extending through the kettle proper and receiving the products of combustion at one end, the stack to which said hollow shaft discharges at its other end, the yielding scrapers supported on the hollow shaft, the discharge-spout, and means for controlling the same, substantially as set forth.

2. The combination in an apparatus substantially as described, of the furnace, the kettle proper, having a lower half provided at its upper end with the outwardly-projecting flanges resting upon the furnace-wall and the upper section made larger than the lower section and provided at its lower edges with the inwardly-turned flanges resting upon and secured to the outwardly-turned flanges of the lower section, and the shaft operating within the kettle, substantially as set forth.

3. The combination in an apparatus substantially as described, of the shaft, the arms thereon, the scrapers provided with arms pivoted between their ends to the arms of the shaft, and the springs operating upon the inner ends of the scraper-arms, substantially as set forth.

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**756,670. STEERING-GEAR FOR AUTOMOBILES. WALTER I. MARR, Detroit, Mich. Filed July 27, 1903. Serial No. 167,070. (No model.)**



*Claim.*—1. In a steering mechanism, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing provided with bearings for said shaft and consisting of a fixed part and a part movable concentrically with the axis of the rock-shaft on the fixed part, a steering-rod extending through said movable portion of the casing and supported at one end to turn upon an axis coincident with the axis of said rock-shaft, and means inclosed by the casing for transmitting motion from the steering-rod to the rock-shaft.

2. In a steering mechanism, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing provided with bearings for said shaft and consisting of fixed face-plates and a ring rotatable thereon concentrically with the shaft, a rotatable steering-rod supported by said ring to turn therewith, and means for transmitting motion from said rod to said shaft.

3. In a steering-gear for automobiles, the combination of an inclosed casing, a rock-shaft adapted to actuate the steering mechanism pivoted in said casing, a part adapted to slide on said casing in a path concentric with said shaft, a rod pivoted on said part, gears within said casing connecting said rod and shaft whereby the motion of said rod shall actuate said shaft, and means for engaging said part with said casing at various angular positions of the latter.

4. In a steering-gear for automobiles, the combination of two face-plates provided with bearings for a shaft, and also provided with ways concentric with said bearings, a ring adapted to engage said ways and slide thereon and provided with a bearing for the steering-rod, and means for securing said face-plates together, with the ring between them, whereby an inclosed casing is formed.

5. In a steering-gear for automobiles, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing consisting of two opposing face-plates provided with bearings in their axes for the rock-shaft and spaced apart by a rotatable ring, a sleeve secured at one end to said ring, a steering-rod in said sleeve and supported at one end to rotate and to turn upon an axis coincident with the axis of the rock-shaft, and means inclosed by the casing for transmitting motion from the rod to the rock-shaft.

6. In a steering-gear for automobiles, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing composed of two opposing disk-like face-plates each provided with a bearing in its axis for the rock-shaft and with a peripheral groove and a ring to engage said groove and turn therein, bolts to secure the face-plates together with the ring between, a steering-rod extending through said ring and supported at its inner end to turn upon the shaft, and gears within the casing for transmitting motion from said rod to the shaft.

7. In a steering-gear for automobiles, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing consisting of two opposing fixed disk-like face-plates provided with bearings at their axes for the shaft and with peripheral grooves in their adjacent faces, a ring engaging said groove and provided with a series of openings, a socket on said ring, a sleeve in said socket, a rotatable steering-rod in said sleeve supported at its inner end upon the shaft to turn upon its own axis and upon the axis of the shaft, a sector secured to the shaft within the casing, a gear on the rod within the casing to engage the sector, and a latch on one of the face-plates to engage the openings in the ring and lock the ring against rotation.

8. In a steering mechanism, the combination with a rock-shaft and means for transmitting motion from said shaft to guide the vehicle-wheels, of a casing provided with bearings for said shaft, a sleeve on said shaft within the casing having a transverse bearing, a steering-rod pivotally supported at one end in said bearing free to turn upon an axis coincident with that of the rock-shaft and means inclosed within said casing for transmitting motion from said steering-rod to the rock-shaft.

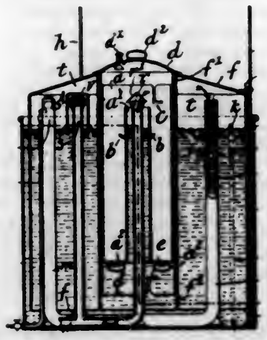
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**756,671. ACETYLENE-GENERATING APPARATUS. JOHN J. MATTHEWS, Maldon, Victoria, Australia. Filed Nov. 3, 1903. Serial No. 179,705. (No model.)**

*Claim.*—1. In an acetylene-generator apparatus, the combination with a water-tank having an overflow, of two U-shaped tubes, one of said tubes being adapted to deliver gas from the generating-chamber into the bell, and the other of said tubes being adapted to be filled with purifying material and deliver gas from the bell to the gas-service pipe, a floating gas-bell and, jointed within the same, a gas-generator casing and an annular carbid-chamber having water-inlet pipes inserted within said casing from below, substantially as described.

2. In an acetylene-generator apparatus, the combination with a gas-generating device and an annular gas-bell surrounding the same, of a water-tank having a U-shaped tube fastened to the bottom thereof, the limbs of which tube rise higher than the sides of the tank and are constructed for delivering cooled gas from the generating device to the gas-bell and having a valve to prevent the return of the gas, and another U-shaped tube also secured to the bottom of the tank, the limbs of which project higher than the sides of the tank and constructed to contain purifying material, and a gas-service pipe connected with said second-named U-shaped pipe, said tank also having a drainage-pipe, substantially as described.

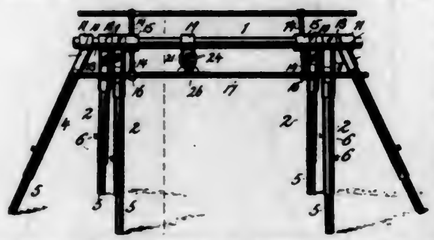




3. In an acetylene-generating apparatus, the combination of a tank, a gas-bell floating in said tank, a removable generator-casing constructed to fit into the center of said bell, a valve in the top of said generator-casing, a spring normally holding said valve closed, a U-shaped pipe for delivering gas from said generating-chamber into said bell, said pipe extending above the top of the tank and being provided with a valve to prevent the return of the gas, a second U-shaped pipe fastened to the bottom of the tank and constructed to be filled with purifying material, and a service-pipe connected to said second-named U-shaped pipe, substantially as described.

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**756,672. SUPPORT FOR HAMMOCKS. GEORGE R. MEINWIESER, Batavia, N. Y. Filed June 6, 1903. Serial No. 160,612. (No model.)**



*Claim.*—1. The within support for hammocks comprising the horizontal bar, the legs of each of which is provided at one end with a T-coupling sleeved to the horizontal bar so as to be independently adjustable thereon, means for securing the same to the horizontal bar, and the end brace-legs provided each with a T-coupling standing at an angle to the said legs and sleeved to the horizontal bar, substantially as described.

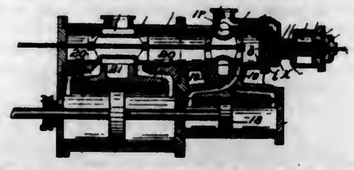
2. The within support for hammocks comprising the horizontal bar, the legs each formed of telescoping sections, the T-couplings, one for each leg, sleeved to the horizontal bar and formed with sockets to receive the ends of the telescoping legs, and the end brace-legs each formed of telescoping sections and provided with T-couplings standing at an angle to the length of said legs and sleeved to the horizontal bar, substantially as described

3. The within support for hammocks comprising the horizontal bar, the legs each formed with T-couplings sleeved to the horizontal bar, means for securing the couplings to the bar at various adjustments, the end brace-legs provided with T-couplings standing at an angle to the length of said legs and sleeved to the horizontal bar, and the canopy-frame composed of collars sleeved to the horizontal bar and provided with laterally-extending arms carrying rods at their outer ends parallel with the horizontal bar, substantially as described.

4. In a support for hammocks, the legs carrying the horizontal bar, and the canopy-support consisting of collars sleeved to the horizontal bar and provided with laterally-extending arms, and rods fitting loosely in the outer ends of said arms so as to be adjustable lengthwise therein, substantially as described.

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**756,673. COMPOUND ENGINE. CARL J. MELLIN, Richmond, Va. Filed June 14, 1902. Serial No. 111,692. (No model.)**

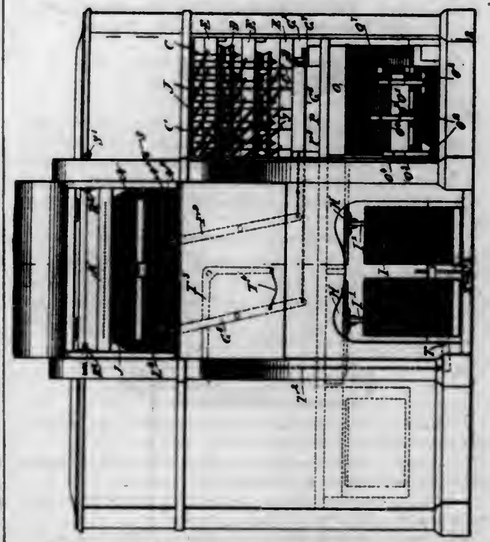


*Claim.*—1. In a compound or multiple-expansion engine, the combination with the high and low pressure cylinders, receiver between said cylinders, live-steam inlet to said receiver and a reducing-valve therein normally open to live steam and automatically controlling said inlet, of an auxiliary or reinforcing impelling part of said reducing-valve, and a subsidiary fluid-pressure inlet to said part subject to the control of the operator, to increase the opening of the reducing-valve and the admission to the receiver thereby, at the will of the operator.

2. In a compound or multiple-expansion engine, the combination with the high and low pressure cylinders, receiver between said cylinders, live-steam inlet to said receiver and a reducing-valve therein normally open to live steam and automatically controlling said inlet, of an auxiliary or reinforcing impelling part of said reducing-valve and a subsidiary fluid-pressure inlet to said part subject to the control of the operator by a three-way cock in the cab, to increase the opening of the reducing-valve and the admission to the receiver thereby, at the will of the operator.

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**756,674. AUTOMATIC PIANO-PLAYER. HERMANN MEYER, New York, N. Y. Filed May 29, 1903. Serial No. 159,294. (No model.)**



*Claim.*—1. A self-playing attachment for musical instruments, provided with a valve-chest having a suction-chamber, a diaphragm-chamber, a diaphragm between the said suction-chamber and the diaphragm-chamber, a pneumatic-chamber having connection with a pneumatic and by a valve-seat with the atmosphere and by a port with the said suction-chamber, valves for the said seats, a valve-stem extending to the outside of the valve-chest, and on which the said valves are permanently fixed and nuts screwing on the valve-stem and fixed to opposite faces of the diaphragm, as set forth.

2. A self-playing attachment for musical instruments, provided with a plurality of valves, adapted to be alternately seated on their valve-seats, a valve-stem on which the said valves are permanently secured, a diaphragm, and a connection between the diaphragm and the valve-stem, to allow adjusting of the latter in the direction of

its length, to adjust the diaphragm relative to the said valves, as set forth.

3. A self-playing attachment for musical instruments, provided with a plurality of valves, adapted to be alternately seated on their valve-seats, a valve-stem on which the said valves are permanently secured, a diaphragm, and a connection between the diaphragm and the valve stem, to allow adjusting of the latter in the direction of its length, to adjust the diaphragm relative to the said valves, the said connection consisting of nuts secured to opposite sides of the diaphragm, and in which nuts screws a threaded portion of the valve-stem, as set forth.

4. A self-playing attachment provided with a casing, valve-chests secured in the rear of the casing one above the other, each valve-chest having a plurality of valve mechanisms, and each valve mechanism consisting of a horizontal valve-stem mounted to slide at one end in the valve-chest, a diaphragm on which the other end of the valve-stem is adjustably secured, and two valves permanently secured on the said stem and spaced apart, as set forth.

5. A self-playing attachment for musical instruments provided with strikers for engaging the keys of the instrument, means for actuating the strikers, and a valve mechanism for controlling the said striker-actuating means, the valve mechanism being provided with diaphragms, valves and valve-stems permanently carrying the valves and adjustably connected with the diaphragms for adjusting the said diaphragms relative to the said valves and from the outside of the instrument, to regulate the said striker-actuating means at the time the attachment is in position on the instrument, as set forth.

6. A self-playing attachment for musical instruments, provided with key-strikers, pneumatics connected with the said key-strikers, for actuating the same, a valve-chest for the said pneumatics, having a diaphragm, valves, and a valve-stem permanently carrying the valves and adjustably connected with the diaphragm, the valve-stem extending to the outside of the valve-chest, to allow adjustment of the valves relative to the diaphragm at the time the attachment is in position on the musical instrument, as set forth.

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**756,675. SELF-LUBRICATING AXLE.** PHILIP MEYER, Bardonia, N. Y. Filed Mar. 10, 1903. Serial No. 147,060. (No model.)



*Claim.*—An axle, the bearing-surface having circular cavities therein arranged in rows extending longitudinally thereof, said cavities being zigzagged one with another, and a groove in said bearing-surface of less depth than said cavities extending longitudinally thereof between said cavities and connecting them, substantially as described.

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**756,676. WAVE-RESPONSIVE DEVICE.** FREDERICK W. MIDDLEY, Philadelphia, Pa., assignor, by direct and mesne assignments, to International Wireless Telegraph Company, a Corporation of New Jersey, and Marie V. Gehring, Philadelphia, Pa. Filed Nov. 10, 1902. Serial No. 130,638. (No model.)



*Claim.*—1. A wave-responsive device comprising an oxidized-silver member in contact with a member of silver.

2. A wave-responsive device comprising an oxidized-silver member in engagement with a non-oxidized-silver member.

3. A wave-responsive device comprising an oxidized-silver member in contact with a burnished-silver member.

4. A wave-responsive device comprising an oxidized-silver member in contact over a relatively small area with a burnished-silver member.

5. A wave-responsive device comprising a silver plug having a burnished contact-face, an oxidized-silver plug in contact with said burnished face over a relatively small area, means for adjusting the pressure of contact between said plugs, and an envelop inclosing said plugs.

6. A wave-responsive device, comprising an oxidized-silver pug in engagement with a non-oxidized-silver mass.

7. A wave-responsive device, comprising an oxidized-silver mass in engagement with a burnished-silver surface.

8. A wave-responsive device, comprising an oxidized-silver mass having a rounded end, and a burnished conducting-plate engaged thereby.

9. A wave-responsive device, comprising an oxidized-silver mass engaging by a rounded end with a non-oxidized-silvered surface.

10. A wave-responsive device comprising an oxidized-silver member in contact with a member of silver and means for adjusting the pressure of the contact.

11. A wave-responsive device comprising an oxidized-silver member, a member of silver making contact therewith and a spring for increasing the pressure of the contact.

12. A wave-responsive device comprising an oxidized-silver member, a member of silver making contact therewith and an adjustable spring for regulating the pressure of the contact.

13. A wave-responsive device comprising an oxidized-silver member in contact with a non-oxidized-silver member and means for adjusting the pressure of the contact.

14. A wave-responsive device comprising an oxidized-silver member in contact with a burnished-silver member and means for adjusting the pressure of the contact.

15. A wave-responsive device comprising an oxidized-silver member in contact over a relatively small area with a burnished-silver member and means for adjusting the pressure of the contact.

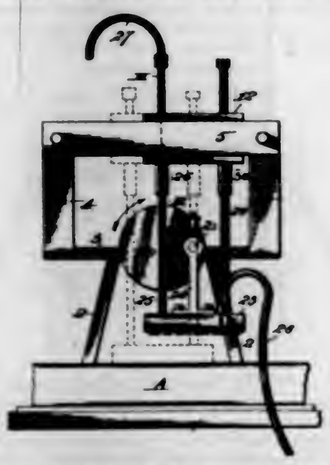
16. A wave-responsive device comprising a silver plug, an oxidized-silver plug in contact therewith and a spring for increasing the pressure of said contact.

17. A wave-responsive device comprising a silver plug in contact with a non-oxidized-silver mass and means for adjusting the pressure of said contact.

18. A wave-responsive device comprising an oxidized-silver mass in contact with a burnished-silver surface and means for adjusting the pressure of the contact.

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**756,677. BRICK-STAMPING MACHINE.** FRANK W. MILES, St. Louis, Mo., assignor to Hydraulic Press Brick Company, St. Louis, Mo., a Corporation. Filed Dec. 21, 1903. Serial No. 185,968. (No model.)



*Claim.*—1. In a machine of the character described, the combination of a table, a reciprocatory chambered die located above said table, a reciprocatory carriage, guiding means carried by said die operating through said carriage, and means for reciprocating said die, substantially as set forth.

2. In a machine of the character described, the combination of a table, a reciprocatory chambered die located above said table, a reciprocatory carriage, guiding means carried by said die operating through said carriage, means for reciprocating said die, and means for conducting heating medium to said die, substantially as set forth.

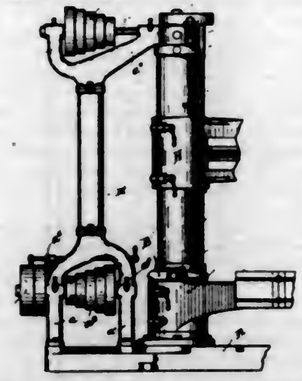
3. In a machine of the character described, the combination of a table, a reciprocatory chambered die surmounting said table, means for reciprocating said die, a reciprocatory carriage, a heating-medium-conducting pipe carried by said die, and operating loosely through said carriage, and a guide carried by said die and operating loosely through said carriage, substantially as set forth.

4. In a machine of the character described, the combination of a table, a frame surmounting said table, track-rails supported by said frame, a reciprocatory carriage traveling in engagement with said track-rails, a reciprocatory die, means for imparting reciprocation to said die, heating-medium-conducting pipe carried by said die and operating loosely through said carriage, and a guide carried by said die and operating loosely through said carriage, substantially as set forth.



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**756,678. DRILL.** ANTON MILL, Cincinnati, Ohio, assignor of one-half to Christian Roos, Cincinnati, Ohio. Filed Sept. 8, 1902. Serial No. 122,472. (No model.)



*Claim.*—In a radial drill, a base, a vertical supporting-column and a vertical tubular work-column thereon, a vertical sleeve journaled on said work-column, a radial arm on said sleeve, an arm laterally extended from the top of the supporting-column, a collar on the end of said arm encircling said work-column, a driving-shaft journaled horizontally within said arm of the supporting-column, and extending into the tubular work-column, and means operated by said shaft for actuating the drill-operating parts, and for raising and lowering said arm, substantially as specified.

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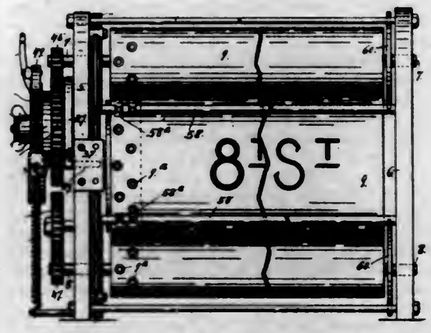
**756,679. WRENCH.** EDWARD C. MILLER, Allegheny, Pa. Filed July 11, 1903. Serial No. 165,109. (No model.)



*Claim.*—In combination with a shank having a fixed jaw, a movable jaw mounted on said shank and being provided to one side thereof with a longitudinal bore of uniform diameter throughout its length, the outer face of said movable jaw having an opening at a point above the lower edge thereof which communicates with said bore, a handle secured to said shank and being provided with a projection, a screw having its lower end journaled in the projection of said handle and its upper end telescoping in the bore of said movable jaw, the upper end snugly engaging the interior of the bore of the jaw, a thumb-nut carried by said screw, and a spring-pressed dog pivoted in the opening of said movable jaw and engaging the screw, substantially as described.

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**756,680. STATION-INDICATOR.** HARRY G. MILLER, Denver, Colo., assignor to John F. Lapp, Denver, Colo. Filed Jan. 16, 1903. Serial No. 139,357. (No model.)




*Claim.*—1. In a station-indicator, the combination with a suitable frame, of two rollers journaled therein, a curtain containing the names of the streets or stations, said curtain being connected with the rollers and arranged to be wound from one to the other, a gear on each roller, an operating-gear interposed between the two roller-gears, an eccentric upon which the operating-gear is mounted, means for automatically locking the eccentric in either of two positions of adjustment, an auxiliary gear interposed between the operating-gear and the gear of one of the rollers, the arrangement being such that as the eccentric is given a partial rotation, the operating-gear is shifted to engagement with one of the roller-gears or the auxiliary gear, and suitable means for imparting an intermittent movement to the operating-gear, whereby the curtain is wound from one roller to the other, substantially as described.

2. The combination with a suitable frame, of separated rollers journaled in said frame, an operating-gear, an eccentric mounted on the frame and on which the operating-gear is mounted, for shifting the position of the latter, the eccentric being provided with a spring-actuated pin having a conical point adapted to enter recesses formed in the frame, the recesses being arranged to receive the pin whenever the eccentric is in either of two positions of adjustment necessary for the operation of the rollers, a suitable gear connection between the operating-gear and the two rollers whereby the curtain may be wound from the one roller to the other at will, and suitable means for imparting an intermittent movement to the operating-gear.

3. The combination with a suitable frame, of separated rollers journaled therein, a curtain for the names of stations or streets, said curtain being connected with the rollers, an operating-gear, an eccentric mounted on the frame and on which the operating-gear is mounted for shifting the position of the latter, spring-actuated means for locking the eccentric in the desired position of adjustment, a connection between said gear and the rollers whereby the curtain may be wound from either roller to the other by the operation of the gear, a ratchet-wheel fast on the gear, a ring mounted on the hub of the gear and provided with a segment, a spring-actuated pawl mounted on said segment and arranged to engage the teeth of the ratchet-wheel, an operating-arm connected with the ring, and a spring connected with the segment for returning the ratchet to its normal position after each partial rotation of the gear, and a locking-dog mounted on the frame and engaging the ratchet-wheel.

4. The combination with a frame, separated rollers, and a curtain containing the names of the streets or stations, an operating-gear, and an adjusting-eccentric upon which the gear is mounted, a connection between the gear and the rollers for operating the same, whereby the curtain may be wound from either roller to the other, a disk fast on each roller, pivoted, spring-actuated arms provided with friction-blocks normally engaging the disks, and means actuated by the adjusting-eccentric whereby the said arms are alternately operated to disengage their friction-blocks from the disks.

5. The combination with a frame, of separated rollers mounted thereon, a curtain connected with the rollers in operative relation, an operating-gear, an adjusting-eccentric in which the gear is journaled, an operating connection between the operating-gear and the

rollers whereby the curtain may be wound alternately from the one roller to the other, suitable devices for controlling the rollers whereby the curtain is held taut as it is drawn from one roller to the other, the said devices being arranged to normally act on both rollers, and means operated by the adjusting-eccentric for rendering the controlling device of one roller inoperative while the curtain is wound from the other roller.

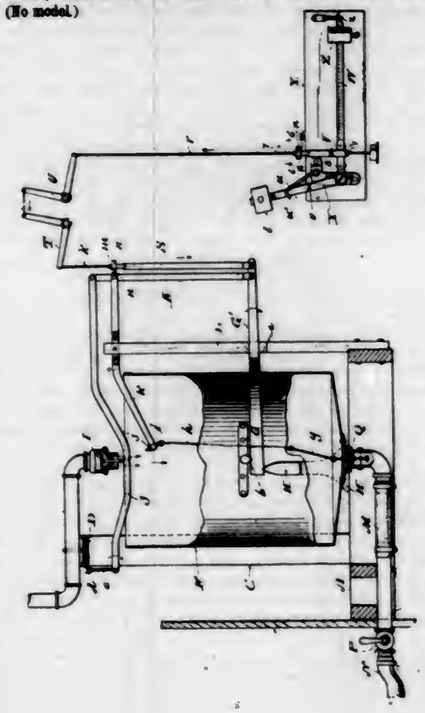
6. The combination with a suitable frame, of rollers journaled therein, a curtain connected with the rollers, an operating-gear, an adjusting-eccentric upon which the gear is journaled, the gear having a flange, a suitable operative connection between the gear and the rollers, a pivoted frame in which the flange of the gear fits, disks mounted on the rollers, pivoted spring-actuated arms carrying friction-blocks normally engaging the disks, and a stud mounted on the pivoted frame for engaging said arms to hold the friction-blocks alternately away from the disks to harmonize with the change in the movement of the rollers, incident to the adjustment of the eccentric.

7. The combination with a suitable frame, of rollers journaled therein, a curtain connected therewith, an operating-gear, an adjusting-eccentric upon which the gear is mounted, a suitable operative connection between the gear and the rollers, a pivoted frame open to receive a flange formed on the operating-gear, in which frame the said flange fits, a stud formed on the pivoted frame, a disk mounted on each roller, and pivoted spring-held arms carrying friction-blocks normally engaging the disks of the rollers, the arrangement being such that as the operated gear is shifted by the movement of the eccentric, the stud of the pivoted frame engages one of the pivoted arms and disengages its friction-block from the disk.

8. The combination with a frame, of rollers journaled therein, a curtain for the names of streets or stations, the curtain being provided with eyelets and arranged to be alternately drawn from one roller and wound on the other, gearing for actuating the rollers, an operating-arm connected with said gearing, a wheel having studs formed on its periphery and arranged to engage the eyelets of the curtain, the said wheel being provided with notches formed at regular intervals, a spring-actuated pin normally engaging one of said notches, a lever for withdrawing the said pin from its engaging notch and arranged to be actuated for this purpose by the gear-operating arm, substantially as described.

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**756,681. WEIGHING APPARATUS.** FREDERICK W. MOLDENHAUER, Oconomowoc, Wis. Filed Feb. 8, 1904. Serial No. 192,631. (No model.)



*Claim.*—1. A spanner poised on suitable supports, a receptacle poised on the spanner, a tank discharge-pipe having outlet into the receptacle, a self-seating valve controlling the pipe outlet, a similar valve controlling the outlet of said receptacle, a weighing-scale, means in conjunction with the spanner, valves and scale for automatic unseating of the respective valves according as there is preponderance of weight on said scale or in the receptacle; and means for automatically locking the aforesaid scale when the preponderance of weight is in said receptacle.

2. A spanner poised on suitable supports, a receptacle poised on the spanner, a tank discharge-pipe having outlet into the receptacle, a self-seating valve controlling the pipe outlet, an unseating-lever for the valve, a similar valve controlling an outlet of said receptacle, an unseating-lever in connection with the latter valve, a link connecting the valve-levers and a shank of said spanner, one valve being seated when the other is unseated; a weighing-scale having connection with the spanner-shank, and means for automatically locking the scale when there is preponderance of weight in the aforesaid receptacle.

3. A spanner poised on suitable supports, a receptacle poised on the spanner, a tank discharge-pipe having outlet into the receptacle, a self-seating valve controlling the pipe outlet, an unseating-lever for the valve, a similar valve controlling an outlet of said receptacle, an unseating-lever in connection with the latter valve, a link connecting the valve-levers and a shank of said spanner, one valve being seated when the other is unseated; a tilting scale-beam having a counterweighted angle-arm, a yoke with which the scale-beam is engaged, link-and-lever mechanism connecting the yoke and spanner-shank, a pivotal latch engageable with a notched edge of the scale-beam arm, a lug on said arm engageable with an end hook of the latch, and a weight adjustable on said scale-beam.

4. A spanner poised on suitable supports, a receptacle poised on the spanner, a tank discharge-pipe having outlet into the receptacle, a self-seating valve controlling the pipe outlet, an unseating-lever for the valve, a similar valve controlling an outlet of said receptacle, an unseating-lever in connection with the latter valve, a link connecting the valve-levers and a shank of said spanner, one valve being seated when the other is unseated; a tilting scale-beam having a counterweighted angle-arm, a yoke with which the scale-beam is engaged, a weight-hanger suspended from the yoke, a sliding weight on said scale-beam, link-and-lever mechanism connecting said yoke and spanner-shank, means for limiting tilt of the aforesaid scale-beam in either direction, and means for automatically locking the aforesaid scale-beam in one direction of its tilt.

5. A spanner poised on suitable supports, a receptacle poised on the spanner, a partly-flexible pipe in connection with a bottom outlet of the receptacle and coupled to a delivery-spout, a tank discharge-pipe having outlet into said receptacle, a self-seating valve controlling the pipe outlet, a similar valve controlling the receptacle-outlet, a weighing-scale, means in conjunction with the spanner, valves and scale for automatically unseating the respective valves accordingly as there is preponderance of weight on said scale or in the receptacle; and means for automatically locking the aforesaid scale when the preponderance of weight is in said receptacle.

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**756,682. ARTIFICIAL FUEL.** MARK MOSCOVITS and CAROLINE MOSCOVITS, Great Falls, Mont. Filed Sept. 26, 1903. Serial No. 174,822. (No specimens.)

*Claim.*—1. A fire-kindler consisting of paraffin, sulfur, bran, and alcohol united or formed into a mass.

2. A fire-kindler consisting of one pound of paraffin, one pound of sulfur, two pounds of bran, and twenty-five drops of alcohol compressed into suitable form for the purpose specified.

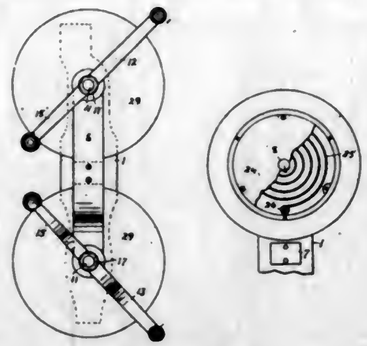
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**756,683. TENSION-REEL FOR CABLES.** JACOB A. MOSER, Berne, Ind., assignor of one-half to Peter J. Baumgartner, Berne, Ind. Filed July 10, 1903. Serial No. 164,978. (No model.)

*Claim.*—1. In a device of the class specified, a pair of horizontal shafts in substantial vertical alinement loosely mounted in an upright supporting-bracket; sprocket-wheels fixed upon said shafts at or near the inner end thereof; winding-drums loosely mounted upon said shafts, having an operating-crank upon their outer face, and having a helical spring therein with one end secured to the drum and the other end fixed to the shaft, substantially as described.

2. In an apparatus of the class specified an upright supporting-bracket; a pair of horizontal shafts loosely mounted therein in vertical alinement; sprocket-wheels fixed upon said shafts at or near their inner end; winding-drums provided with a spring-chamber and a removable head, and loosely mounted on the said shafts; helical or coiled springs arranged in said chamber, having their outer end secured to the drum and the other end to the shaft; and a crank or operating handle fixed upon the outer head of the said drums respectively.





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**756,684. FLASHING.** JAMES H. MUNRO, Newark, N. J., assignor of one-half to John Milton Van Orden, Newark, N. J. Filed Oct. 30, 1903. Serial No. 179,230. (No model.)



*Claim.*—1. The combination with a roof and an adjoining wall of a substantially horizontal slate member upon said roof, an upright slate member cemented thereto; and a slate member secured to said wall and overlapping said upright member and cooperating therewith, substantially in the manner and for the purpose set forth.

2. The combination with a roof or the like, and an adjoining wall or similar building portion, of a horizontal slate, an upright slate cemented thereto and both secured to said roof, a slate cemented to said wall and another slate cemented to said wall-slate and extending downward therefrom over said upright slate; and a flexible member having one end cemented to said overlapping slate and having the other end carried around over the top of said upright slate and down beneath the joint between said upright and horizontal slates and having a normally slack portion to permit play between said upright and overlapping slates, substantially as described.

3. A flashing or device for like purposes, comprising a plurality of upright members secured one to an upright wall and another to an adjacent roof or the like, said members overlapping each other and being movable relatively to one another, and a separate, flexible member of waterproof material bridging the joint between said members, substantially as described.

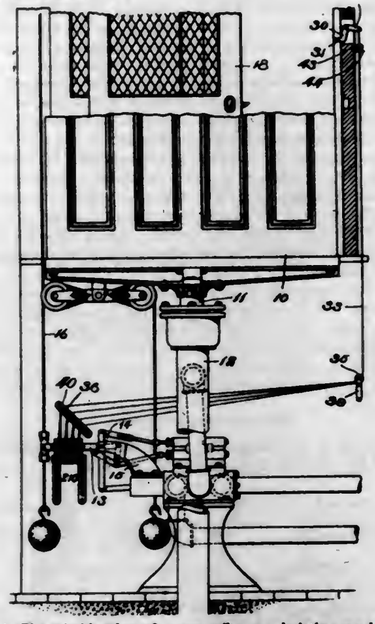
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**756,685. ELEVATOR SAFETY APPLIANCE.** SAMUEL H. MCCARROLL, Providence, R. I., assignor, by mesne assignments, to the American Equipment Company, Providence, R. I., a Corporation of Maine. Filed Jan. 24, 1903. Serial No. 140,342. (No model.)

*Claim.*—1. The combination of a controller, a series of doors, a series of independent latches, and independent connections between said latches and said doors whereby upon opening any one of said doors its corresponding latch is moved to operative position to engage said controller.

2. The combination of a controller, a series of doors, a series of independently-movable latches, a casing adapted to contain said latches, and independent connections between said latches and said doors respectively.

3. The combination of a controller, car-hoisting mechanism, a member operated by the controller for governing the hoisting mechanism, a latch adapted to engage said member and movable in a line perpendicular to the plane of movement of said member, said latch having a notch in its end with bevel edges on either side thereof, whereby when the latch is in operative position the said mechanism-governing member when moved toward neutral position retracts or pushes back the latch until the said member registers with the notch in the latch.



4. The combination of a controller, car-hoisting mechanism, a member operated by the controller for governing the hoisting mechanism, a locking mechanism to engage said member and including a latch movable in a line perpendicular to the plane of movement of said member, said latch having a notch in its end with bevel edges on either side thereof, a series of doors, and operative means between said doors and said locking mechanism.

5. The combination of a controller, a door, a valve, an oscillatory valve-lever connected to the controller, a latch adapted to engage the oscillatory valve-lever and movable in a line perpendicular to the plane of movement of said oscillatory valve-lever, said latch having a notch in its end with bevel edges on either side thereof, whereby when the latch is in operative position the oscillatory valve-lever when moved toward neutral position retracts or pushes back the latch until the said lever registers with the notch in the latch.

6. The combination of a door, a controller, a valve, an oscillatory valve-lever connected to the controller, a latch movable in a line perpendicular to the plane of movement of said oscillatory valve-lever, means for yieldingly moving the latch to engage the said oscillatory valve-lever, and means for retracting the latch when the door is closed, said means including a flexible line extending from the latch to the door.

7. The combination of a controller, a series of doors, a valve, an oscillatory valve-lever connected to the controller, a locking mechanism to engage said oscillatory valve-lever and including a latch having a notch in its end with bevel edges on either side thereof, and connections between said doors and said locking mechanism.

8. The combination of a controller, a valve, a valve-lever connected to the controller, a series of doors, a gang-lock having a series of independent latches, and independent connections between said latches and the said doors whereby upon opening any one of said doors its corresponding latch is moved to operative position to engage the valve-lever.

9. The combination of a controller, car-hoisting mechanism, a member operated by the controller for governing the hoisting mechanism, a series of doors, a series of latches adapted to engage said member, and independent connections between said latches and said doors.

10. The combination of a controller, car-hoisting mechanism, a member operated by the controller for governing the hoisting mechanism, a series of doors, a series of latches adapted to engage said member, each of said latches having a notch in its end with bevel edges on either side thereof, and independent connections between said latches and said doors.

11. The combination of a controller, car-hoisting mechanism, a member connected to and governing the hoisting mechanism, said member being connected to and operated by the controller, locking mechanism to engage said member, a series of doors, and independent connections between said locking mechanism and said doors.

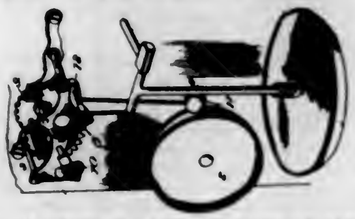
12. The combination of a car-hoisting mechanism, a controller, a member adapted to be operated by said controller for governing said hoisting mechanism, a series of doors, a series of independently-movable latches, a casing adapted to contain said latches, and independent connections between said latches and said doors respectively.

13. The combination of a car-hoisting mechanism, a controller, a member adapted to be operated by said controller for governing the car-hoisting mechanism, a casing containing a series of yieldingly-actuated latches, a series of doors, and a flexible connection between each latch and one of the doors, for withdrawing said latch when the door is closed, whereby upon the opening of each door its latch is moved yieldingly into operative position independently of the other latches.

14. The combination of a car-hoisting mechanism, a controller, an oscillatory member adapted to be operated by said controller for governing said hoisting mechanism, a plurality of latches movable in lines perpendicular to the plane of movement of the said member and adapted to engage said members independently of each other, a series of doors, and independent connections between said doors and said latches.

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**756,686. FIRE-ALARM. FRANK MCFADDEN, Vanatta, Ohio. Filed Apr. 16, 1903. Serial No. 152,966. (No model.)**



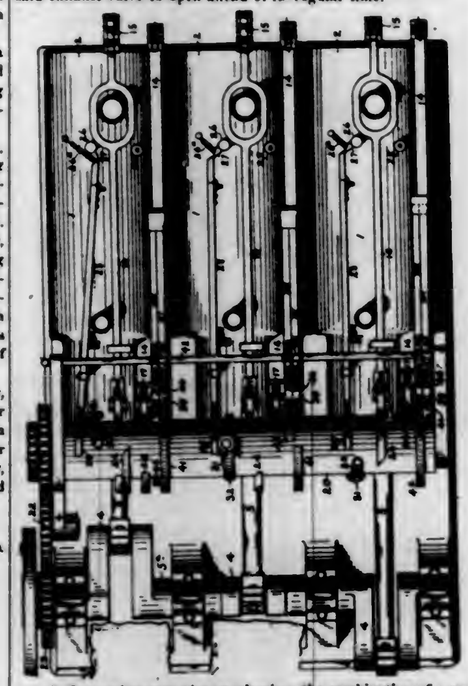
*Claim.*—In combination, a pan or cup, a diaphragm closing the open side thereof and provided at a central point with a threaded extension, an alarm mechanism comprising an escape-wheel, a gong, a hammer for sounding an alarm upon said gong and connected with the pallet-lever of the alarm mechanism, and a detent having screw-thread connection with the extension of said diaphragm and adapted to extend across the path of the teeth of said escape-wheel to hold the alarm mechanism in restraint under normal conditions, substantially as set forth.

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**756,687. REVERSIBLE EXPLOSIVE-ENGINE. JOSEPH A. MCGEE, Big Spring, Ind. Filed Oct. 25, 1902. Serial No. 128,704. (No model.)**

*Claim.*—1. In a valve-reversing mechanism, the combination of a revoluble cam-carrying shaft, a double set of oppositely shaped and positioned valve-operating cams fixedly mounted thereon and rotatable therewith, valves, push-bars operating the valves and bearing against and operated by one set of said cams when the engine is running in a forward direction, and bearing against and operated by the other set of cams when the engine is running in reverse direction, one set of said cams having oblique rear ends each sloping toward its adjacent oppositely-arranged mate or reversing-cam to automatically shift its push-bar from one cam to the other on the reversal of the cam-shaft.

2. In a valve-reversing mechanism, the combination of a revoluble cam-carrying shaft, a double set of oppositely shaped and positioned valve-operating cams fixedly mounted thereon and rotatable therewith, valves, push-bars operating the valves and bearing against and operated by one set of said cams when the engine is running in a forward direction and bearing against and operated by the other set of cams when the engine is running in reverse direction, auxiliary bars or extensions connected with the push-bar which operates the exhaust-valve said extensions being at one side of the normal contacting portion of said push-bar, and means for moving the extensions in advance of the normal length of the push-bar so as to contact with cams on said shaft auxiliary to the one that normally actuates the push-bar controlling said exhaust-valve, thereby causing said exhaust-valve to open ahead of its regular time.



3. In a valve-operating mechanism, the combination of a revoluble cam-carrying shaft, a double set of oppositely shaped and positioned valve-operating cams fixedly mounted thereon and rotatable therewith, valves, push-bars operating the valves and bearing against and operated by one set of said cams when the engine is running in a forward direction and bearing against and operated by the other set of cams when the engine is running in a reverse direction and means auxiliary to the push-bar operating the exhaust-valve, operated by independent cams, for opening the exhaust-valve ahead of its regular time.

4. In a valve-reversing mechanism, the combination of a revoluble cam-carrying shaft, a double set of oppositely shaped and positioned valve-operating cams fixedly mounted thereon and rotatable therewith, valves, push-bars operating the valves and bearing against and operated by one set of said cams when the engine is running in a forward direction and bearing against and operated by the other set of cams when the engine is running in reverse direction, auxiliary bars or extensions connected with the push-bar which operates the exhaust-valve, said extensions being at one side of the normal contacting portion of said push-bar and said extensions having vertical projections, and means for moving the extensions in advance of the normal length of the push-bar so as to contact with cams on said shaft auxiliary to the one that normally actuates the push-bar controlling said exhaust-valve thereby causing said exhaust-valve to open ahead of its regular time, said means consisting of a shaft passing transversely of said extensions and having a projection from said shaft to contact with the said vertical projection from said extension, and means for rocking said transverse shaft and for locking said extension to the push-bar when the former is in its extended position.

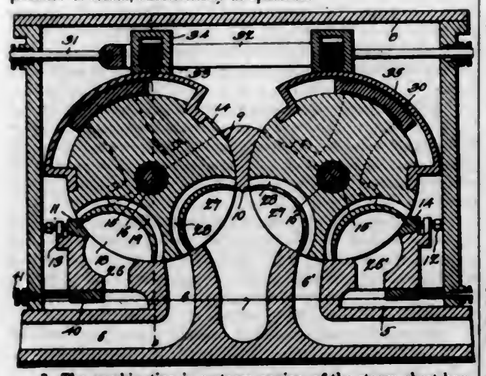
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**756,688. STEAM-VALVE. JOSEPH L. MCJUNKIN, Birmingham, Ala. Filed Aug. 28, 1902. Serial No. 121,370. (No model.)**

*Claim.*—1. The combination with a cylinder having steam and exhaust ports, of rotary valves seated over said ports, a plurality of steam-ports formed in each valve for the admission of steam to the cylinder-port, and main and auxiliary escape-ports formed in each of the valves and so disposed that on the movement of the valves said ports will act to place the exhaust-port in communication with one of the cylinder-ports.



2. The combination with a valve-seat having ports leading therefrom, of a rotary valve adapted to said seat and having ports or passages, a bushing carried by the rotary valve, a spindle extending through said bushing, and an arcuate plate disposed above the valve and serving to protect a portion of the periphery thereof from the pressure of steam, substantially as specified.

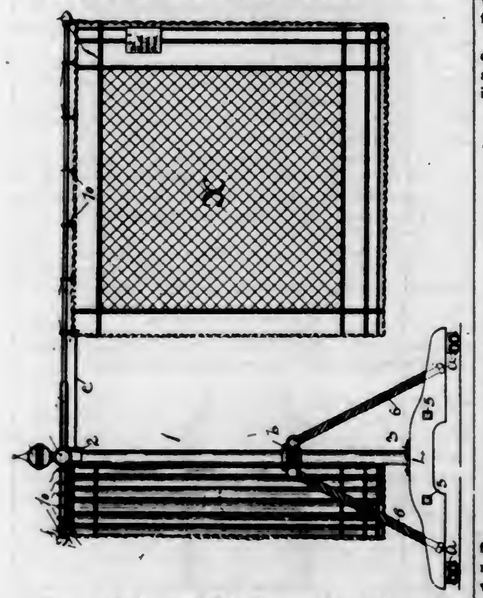


3. The combination in a steam-engine, of the steam-chest having curved valve-seats, steam inlet and exhaust ports terminating at the valve-seat, a pair of rotary valves adapted to said valve-seats and each provided with a plurality of steam and a plurality of exhaust ports, spindles mounted in the chest and carrying said roller-valves, and protecting-plates secured in position above and protecting a portion of the periphery of said valve from the pressure of steam within the chest.

4. The combination of the cylinder-casting having curved recesses forming valve-seats, steam and exhaust ports terminating at said valve-seats, a pair of rotary valves having ports for controlling the flow of steam, protecting-plates covering a portion of the periphery of each valve, curved yoke-bars extending over said plates and connected with the valve, slotted blocks carried by said bars, and a valve-stem having an operative connection with said slotted blocks to effect the simultaneous operation of said valves.

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**756,689. DISPLAY-RACK. WILLIAM J. MCNAB, Omaha, Nebr. Filed July 1, 1903. Serial No. 163,866. (No model.)**



*Claim.*—A display-stand of the character described, comprising two supporting-legs, posts extending upward from each supporting-leg, perforated horizontally-disposed supporting-tube held by the aforesaid posts, a sleeve horizontally secured within each of the perforations within said supporting-tube, a display-rod held within each of said sleeves, and means secured to each display-rod upon opposite sides to receive a suitable sample, all arranged substantially as and for the purpose set forth.

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**756,690. LACING-STRING FASTENER. DAVID C. HOWELS, Rockwell City, Iowa, assignor of one-half to J. F. Lavender, Rockwell City, Iowa. Filed Dec. 22, 1903. Serial No. 186,240. (No model.)**



*Claim.*—1. In a lacing-string fastener, the combination of a metal disk having a central aperture and a tongue at its circumference, a tubular rivet in said aperture and an open-ended tube on the rivet, as and for the purposes stated

2. A lacing-string fastener consisting of a metal disk having a central aperture and two integral tongues at its circumference, a tubular eyelet extended through said aperture, an open-ended metal tube on the eyelet and its lower end enlarged and the three parts jointly fixed to the edge of an article of clothing in the manner shown and described for the purposes stated.

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**756,691. HAIR-PIN. LOUISA OSBIT, South Wimbledon, England. Filed Jan. 2, 1904. Serial No. 187,431. (No model.)**



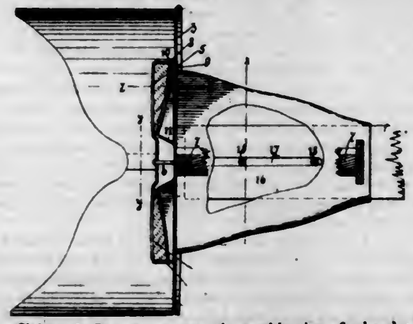
*Claim.*—1. A hair-pin having at the termini of its branches lateral enlargements extending in a plane parallel to the plane of the legs and located above the central axial line of the wire substantially as and for the purpose described.

2. A hair-pin having at the termini of its branches points located above the central axial line and lateral enlargements made widest at the upper side above the axial line substantially as and for the purpose described.

3. A hair-pin having at the termini of its branches points located above the central axial line, lateral enlargements made widest at the top and a runner-like shoe-surface on the under side extending up to the point substantially as and for the purpose described.

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**756,692. STEREOSCOPE. CHARLES L. PAPPENHAGEN, Meadville, Pa., assignor to B. L. Singley, Meadville, Pa. Filed Nov. 10, 1903. Serial No. 180,525. (No model.)**



*Claim.*—1. In a stereoscope, the combination of a hood, a lens-frame joined to said hood at the upper and side portions of its surrounding edge, a lower shaft-plate joined to the hood by a transverse seam at the lower portion of its surrounding edge; an extension on the lens-frame forming an upper shaft-plate joined to the lower shaft-plate by means of a lock-seam so as to form a socket for the shaft and a septum attached to the shaft and to the lens-frame.

2. In a stereoscope, the combination of a hood, a lens-frame joined to said hood at the upper and side portions of its surrounding edge, a lower shaft-plate joined to the hood by a transverse seam at the lower portion of its surrounding edge, and an extension on the lens-frame forming an upper shaft-plate joined to the lower shaft-plate by means of a lock-seam so as to form a socket for the shaft.

3. In a stereoscope, a lens-frame having a single pocket adapted to receive the lenses, and a member adapted to be secured in the said pocket to hold the lenses in position.

4. In a stereoscope, a lens-frame having a recessed portion extending rearwardly adapted to receive the lenses, and a spring-plate adapted to be secured in said recessed portion to hold the lenses in position.

5. In a stereoscope, the combination of a hood, composed of a single piece of metal and adapted to interlock at its forward edge with the periphery of the lens-frame, a shaft adapted to removably engage with a shaft-socket formed by two plates joined at their margins by an interlocking seam, one of said plates being joined to the hood by a U-shaped hook adapted to receive a bent-back flanged portion of the hood, the other plate being integral with the lens-frame and at right angles to it, the said lens-frame having a single pocket adapted to receive the lenses and a spring-plate adapted to be removably secured in said pocket and adapted to conform to the angles of the lenses and to hold them securely in position.

6. In a stereoscope, a lens-frame having a single pocket adapted to receive the lenses and extending rearwardly, said pocket having in its walls a plurality of openings, a spring-plate conforming to the angles of the lenses adapted to spring into the said pocket and to hold the lenses in position and having extending spurs adapted to engage in the openings in the wall of the pocket to secure the said plate.

7. In a stereoscope, a lens-frame having a single pocket extending rearwardly adapted to receive the lenses, a spring-plate conforming to the angles of the lenses adapted to spring into the said pocket and to hold the lenses in position, and lugs in the walls of said pocket adapted to secure the spring-plate.

8. In a stereoscope, a lens-frame having a single pocket extending rearwardly adapted to receive the lenses, a spring-plate conforming to the angles of the lenses adapted to spring into the said pocket and to hold the lenses in position and a plurality of lugs integral with the walls of the pocket and adapted to secure the spring-plate in position.

9. In a stereoscope, a lens-frame having a recessed portion extending rearwardly adapted to receive the lenses, a spring-plate conforming to the angles of the lenses having a forwardly-extending bridge in its central portion and adapted to engage in said recess and to hold the lenses in position.

10. In a stereoscope, a lens-frame having a recessed portion extending rearwardly adapted to receive the lenses, a spring-plate conforming to the angles of the lenses and having a forwardly-extending bridge in its central portion, said spring-plate being adapted to engage in said recess and to hold the lenses against displacement and means adapted to secure the spring-plate in position.

11. In a stereoscope, a lens-frame having a single pocket adapted to receive the lenses and extending rearwardly, a spring-plate conforming to the angles of the lenses and having a forwardly-extending bridge in its center portion, said spring-plate being adapted to spring into the said pocket and to hold the lenses in position.

12. In a stereoscope, the combination of a hood, composed of a single piece of metal and adapted to interlock at its forward edge with the periphery of the lens-frame, two shaft-plates forming a socket joined at their margins by an interlocking seam, one of said plates being joined to the hood by a U-shaped hook adapted to receive a bent-back flanged portion of the hood, the other plate being integral with the lens-frame, and at right angles to it, the said lens-frame being adapted to receive the lenses, and a spring-plate adapted to hold said lenses in position.

13. In a stereoscope, the combination of a hood, composed of a single piece of metal and adapted to interlock at its forward edge with the periphery of the lens-frame, two shaft-plates forming a socket joined at their margins by an interlocking seam, one of said plates being joined to the hood by a U-shaped hook adapted to receive a bent-back flanged portion of the hood, the other plate being integral with the lens-frame and at right angles to it, the said lens-frame having a single pocket adapted to receive the lenses, and a spring-plate adapted to be removably secured in said pocket and adapted to conform to the angles of the lenses, and to hold them securely in position.

14. A stereoscope, comprising in part: a shaft, a lens-frame having a horizontal integral portion extending at right angles, and a shaft-plate secured to the hood, said integral portion and the shaft-plate being adapted to form a socket for the shaft.

15. In a stereoscope, the combination of a hood, a lens-frame joined to the said hood at the upper and side portions of its surrounding edge, a lower shaft-plate joined to the hood by a transverse seam at the lower portion of its surrounding edge, an extension on the lens-frame forming an upper shaft-plate joined to the lower shaft-plate by means of a lock-seam so as to form a socket for the shaft, and a septum attached to the shaft and to the lens-frame.

16. In a stereoscope, a lens-frame having a rearwardly-extending recess adapted to receive the lenses and a spring-plate adapted to hold said lenses firmly in position, said spring-plate having projecting spurs adapted to engage with openings in the side of the recessed portion of the lens-frame to secure the spring-plate in position.

17. In a stereoscope, a lens-frame having a rearwardly-extending recess adapted to receive the lenses, a spring-plate having a forwardly-extending bridge in its center portion and adapted to hold said lenses firmly in position, said spring-plate having projecting spurs adapted to engage with the openings in the side of the recessed portion of the lens-frame to secure the spring-plate.

18. In a stereoscope, a socket, a shaft, a slotted portion of said shaft adapted to extend into the said socket, binding screws for securing the shaft in the socket and which when loosened will allow the shaft to be withdrawn from the socket.

19. In a stereoscope, the combination of a hood, a lens-frame, a shaft adapted to engage in a socket formed by two plates, one of which is secured to the hood and the other of which is integral with the lens-frame.

20. In a stereoscope, the combination of a hood, a lens-frame, a shaft having a portion thereof slotted and adapted to engage in a socket formed by two plates, one of which is secured to the hood and the other of which is integral with the lens-frame.

21. In a stereoscope, the combination of a septum, two plates adapted to form a socket, means adapted to bind the said septum to the plate, and a shaft adapted to engage in the socket formed by the two plates, said shaft having a slot in the portion contained in the socket adapted to allow it to freely pass the said binding means.

22. In a stereoscope, a lens-frame having an integral portion projecting at right angles to form a plate, a second plate rigidly connected with this projecting portion of the lens-frame, the two forming a socket, a shaft adapted to engage in said socket, and a hood rigidly connected with said plate and lens-frame.

23. A stereoscope comprising in part, a shaft and a lens-frame having a horizontal integral portion extending at right angles and adapted to embrace said shaft.

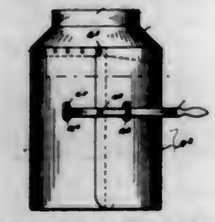
24. In a stereoscope, a shaft, a socket adapted to receive said shaft, a hood, a lower plate rigidly attached to said hood, a lens-frame having a horizontal integral portion extending at right angles to form an upper plate, said plates forming a socket and being joined at their marginal edges by interlocking flanges.

25. In a stereoscope, a socket formed by an upper plate integral with the lens-frame and a lower plate rigidly attached to the hood, said plates being fastened at their marginal edges by interlocking flanges and a shaft having a portion within said socket slotted to permit of its free removal.

26. A stereoscope comprising in part a shaft, adapted to engage in a socket formed by two plates connected at their marginal edges and having a portion contained in said socket slotted.

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**756,693. BAG-HOLDER. RICHARD V. PARR, Craigsville, Va. Filed Aug. 13, 1903. Serial No. 169,383. (No model.)**



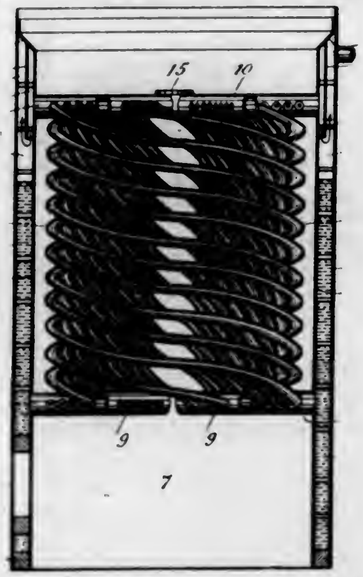
*Claim.*—1. A bag-holder comprising an integral receiving top or hopper, a fixed section secured rigidly to and depending from one side of said top, a hinged section pivoted on the other side of said top with its edges overlapping the edges of the fixed section when parallel therewith, and a lever pivoted at one end to one section and connected by a link to the other section, whereby said pivoted section may be operated to contract and expand the mouth of the device, substantially as set forth.

2. A bag-holder comprising a top formed with a neck for attachment to the machine and with a lower flange straight on one side and tapered on the other, the fixed section mounted on the straight side of said flange a pivoted section on the other side and a lever pivoted at one end to one section and connected by a link with the other section, substantially set forth.

3. The combination in a bag-holder of a top A provided with the neck $a$ and the flange around its lower edge having a tapered side $a'$, the fixed section A' secured to one side of said flange, the pivoted section $A^2$ mounted on the other side on the pivot and brace-rod $a^2$, the bifurcated lever $A^3$ pivoted to one section and the links $A^4$ connected at one end to the branches of said lever and at the other end to the other section, all substantially set forth.

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**756,694. STEAM-GENERATOR. HERBERT R. PENNEY, Minneapolis, Minn., assignor to Nott Fire Engine Company, Minneapolis, Minn., a Corporation. Filed Dec. 21, 1903. Serial No. 185,924. (No model.)**




*Claim.*—1. In a steam-generator, the combination with concentric shells providing annular water and steam spaces, of tube-sections comprising lower and upper headers in communication respectively with said water and steam spaces, and a series of coils connecting the lower with the upper headers, substantially as set forth.

2. In a steam-generator, the combination with concentric shells providing annular water and steam spaces, of tube-sections comprising lower and upper radially-arranged headers in communication respectively with said water and steam spaces, and a series of coils connecting the lower with the upper headers, substantially as set forth.

3. In a steam-generator, the combination with concentric shells providing annular water and steam spaces, of tube-sections comprising lower and upper headers in communication respectively with said water and steam spaces and a series of coils extending spirally around the axis of the shells and connecting the lower with the upper headers, substantially as set forth.

4. In a steam-generator, the combination with concentric shells providing annular water and steam spaces, of tube-sections comprising lower and upper radially-arranged headers in communication respectively with said water and steam spaces, and a series of coils extending spirally around the axis of the shells and connecting the lower with the upper headers, substantially as set forth.

5. In a steam-generator, the combination with concentric shells providing annular water and steam spaces, of tube-sections comprising lower and upper headers in communication respectively with said water and steam spaces, and a series of coils extending spirally around the axis of the shells and trending in substantially equidistant courses and connecting the lower with the upper headers, substantially as set forth.

6. In a steam-generator, the combination with concentric shells providing annular water and steam spaces, of tube-sections comprising lower and upper headers in communication respectively with said water and steam spaces, and a series of coils connecting the lower with the upper headers, and a pendent partition dividing the upper portion of the steam-space into outer and inner annular chambers that are closed at the top and sides and open at the bottom, substantially as set forth.

7. In a steam-generator, a group of tube-sections comprising series of lower and upper radially-disposed headers and series of coils arranged in close radial order connecting pairs of the headers and extending on substantially equidistant spiral planes around a common vertical axis and providing spiral passage-ways intermediate the courses of the series of coils of adjacent tube-sections, means for supplying the lower headers with water, and means for conducting steam from the upper headers, substantially as set forth.

8. In a steam-generator, a group of tube-sections comprising series of lower and upper radially-disposed headers and series of coils connected to pairs of the headers in close radial arrangement and extending spirally in concentric courses around a common vertical axis on substantially equidistant spiral planes thereby providing spiral passage-ways intermediate the courses of the series of coils of adjacent tube-sections, means for supplying the lower headers with water, and means for conducting steam from the upper headers, substantially as set forth.

9. In a steam-generator, a group of tube-sections comprising series of lower and upper radially-disposed headers having their adjacent ends closed and disconnected and series of coils arranged in close radial order connecting pairs of the headers and extending on substantially equidistant spiral planes around a common vertical axis and providing spiral passage-ways intermediate the courses of the series of coils of adjacent tube-sections, means for supplying the lower headers with water, and means for conducting steam from the upper headers, substantially as set forth.

10. In a steam-generator, a group of tube-sections comprising series of lower and upper radially-disposed headers and spiral tubes connecting them, each tube-section consisting of a lower and an upper header and a series of coils connected to them in close radial arrangement and extending in spiral courses on a common spiral plane, and the tube-sections of the group being disposed concentrically about a common vertical axis, whereby passage-ways in spiral courses around the common axis are produced intermediate the coils of adjacent tube-sections, means for supplying the lower headers with water, and means for conducting steam from the upper headers, substantially as set forth.

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**756,695. LIQUID-DISTRIBUTER. WILLIAM PETERSON, Sheboygan, Wis. Filed Aug. 10, 1903. Serial No. 168,879. (No model.)**

*Claim.*—1. A liquid-distributer consisting of a rotatory cylindrical reservoir comprising an outer perforated shell, an inner shell provided with openings into the space between both shells, and partly-spiral conduits within the inner shell in communication with its openings, the inlets of these conduits being terminals of the spiral portions of same and faced in opposite directions at opposite ends of the reservoir.

2. A liquid-distributer consisting of a rotatory cylindrical reservoir comprising an outer perforated shell, an inner shell provided with openings into space between both shells, and partly-spiral conduits within the inner shell in communication with its openings, the inlets of these conduits being terminals of the spiral portions of same and faced in opposite directions at opposite ends of the reservoir; and valves arranged for adjustment to regulate the area of the conduit-inlets.

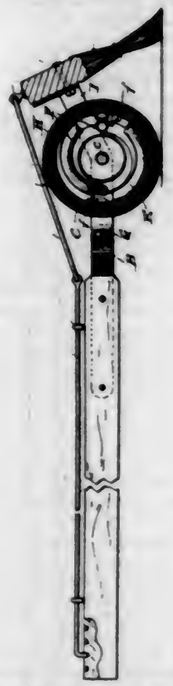
3. A liquid-distributer consisting of a rotatory cylindrical automatic-feed reservoir, and a pad of absorbent material encompassing the reservoir to constitute a spreader for the liquid discharged therefrom.

4. A liquid-distributer consisting of a rotatory cylindrical automatic-feed reservoir combined with a brush adjustable to various angles.

5. A liquid-distributer consisting of a rotatory cylindrical automatic-feed reservoir combined with a brush adjustable to compensate for length and wear of its tufts.

6. A liquid-distributer consisting of a rotatory cylindrical au-

tomatic-feed reservoir combined with a brush adjustable to various angles and otherwise adjustable to compensate for length and wear of its tufts.



7. A liquid-distributer consisting of a cylindrical automatic-feed reservoir, a handle and arms constituting a bail provided with pintles that serve as bearings for the reservoir, holders loose on said pintles, a brush connected to the holders, a rod adjustable on the handle, and a link connecting the brush and rod.

8. A liquid-distributer consisting of a rotatory cylindrical automatic-feed reservoir combined with a wrapping of absorbent material, and a brush, said material and brush constituting spreaders for the liquid discharged from the reservoir.

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**756,696. APPARATUS FOR FEEDING GAS-RETORTS.** ADOLF PFEIFFER, Hedelfingen, Germany. Filed Feb. 24, 1903. Serial No. 144,815. (No model.)



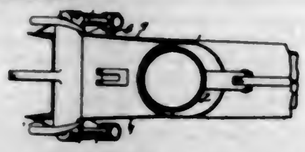
*Claim.*—The combination with two parallel revolubly-mounted feed-tubes provided with discharge-openings, and means for rotating the tubes in opposite direction to bring their openings into filling and discharging position, of two revolubly-mounted valves, suspended between the upper sides of the tubes in register with their openings, whereby the valves will lie close together when the tubes are filled but will separate and overlie the closed sides of the tubes when they are discharging their contents, substantially as described.

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**756,697. CLEANER FOR DISK DRILLS.** OCTAVE A. POIRIER, Gladstone, Minn. Filed Sept. 15, 1903. Serial No. 173,243. (No model.)

*Claim.*—1. In a double-disk drill, the combination, with a boot and the disks mounted thereon, of pivoted levers, cleaners carried by said levers and arranged to bear respectively upon the corresponding surfaces of said disks, and a spring device arranged to yieldingly hold said cleaners against said surfaces and allow one cleaner to be moved away from its disk-surface without increasing the pressure of the other cleaner upon its disk-surface.

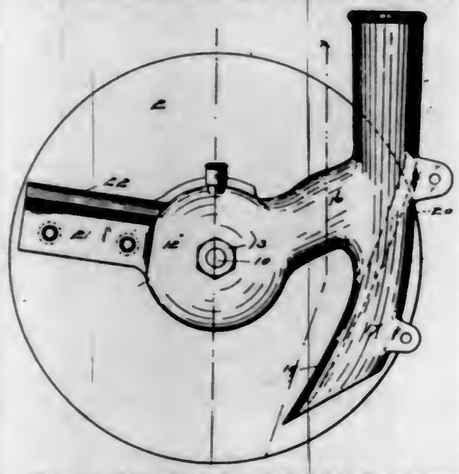
2. In a double-disk drill, the combination, with a boot and the disks mounted thereon, of pivoted levers, cleaner-plates carried by said levers and arranged to bear respectively upon the outer surfaces of said disks, and means yieldingly connecting said levers and permitting movement of either cleaner-plate away from its disk-surface without affecting the pressure of the other cleaner-plate upon its disk-surface.



3. In a double-disk drill, the combination, with a boot and the disks mounted thereon, of pivoted levers, cleaners carried by said levers and arranged to bear respectively upon the outer surfaces of said disks, and a spring device loosely coiled around the spout portion of said boot and having its ends connected to said levers, for the purpose specified.

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**756,698. BEARING FOR DISK DRILLS.** OCTAVE A. POIRIER, Gladstone, Minn. Filed Sept. 15, 1903. Serial No. 173,281. (No model.)



*Claim.*—1. The combination, with a drill-disk, of a cap secured thereon and having a fixed cone, a movable cone interposed between said fixed cone and said disk, a ball-runway, and balls arranged in said runway between said cones.

2. The combination, with a drill-disk having a central opening, of a cap arranged thereover, a fixed and movable cone, the latter having an extension provided with a socket projecting through said opening, and balls interposed between said cones.

3. The combination, with a drill-disk having a central opening, of a cap secured thereover, a movable cone having an extension provided with a socket projecting through said hole, a threaded stud provided on the other side of said cone, a cap having a threaded hole to receive said stud, a lock-nut for said stud, and bearing-balls interposed between said cones.

4. The combination with a drill-disk, of a cap fitting the convex surface thereof, fixed and movable cones, a runway secured to said disk, and bearing-balls arranged in said runway between said cones.

5. A bearing for a single-disk drill comprising a ball-runway secured to the surface of the disk, a movable cone adjustably arranged in said runway, a boot provided with a cap covering said cone and runway, a fixed cone provided on said cap, and bearing-balls interposed between said cones.

6. The combination, with a drill-disk having a central opening, of a cap having a ball-runway secured over said opening, a movable cone arranged in said cap and having an extension provided with a squared socket projecting through said opening, a threaded stud provided on the other side of said cone, a boot having a cap covering said cone and runway, a fixed cone carried by said cap and having a threaded hole to receive said stud, a lock-nut provided on said stud, and bearing-balls arranged in said runway between said cones.

7. The combination, with a drill-disk, of a boot having a depending extension, and cleaner edges provided on said extension and arranged to bear upon the surface of said disk.

8. The combination, with a drill-disk, of a boot having oppositely-inclined cleaner edges substantially in line with each other.

9. The combination, with a drill-disk, of a boot having a longitudinally-arranged cleaning edge adapted to bear upon the surface of said disk.

10. The combination, with a disk drill and its bearing, of a cap concealing said bearing, a drill-boot, and an outwardly-curved wall connecting said boot and cap, for the purpose specified.

11. The combination, with a drill-boot and an integral cap thereon, a drill-disk, a ball-bearing therefor interposed between said disk and cap and covered by the latter, substantially as described.

12. The combination, with a drill-boot and a cap formed integral therewith, of a drill-disk, a ball-bearing therefor interposed between said disk and cap and concealed by the latter, and cleaning edges provided on said boot and arranged to clean the up and down sides of said disk.

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**756,699. ATTACHMENT FOR DISK DRILLS.** OCTAVE A. POIRIER, Gladstone, Minn. Filed Sept. 16, 1903. Serial No. 173,377. (No model.)



*Claim.*—1. The combination, with a drill-boot and the disks mounted thereon, of a drag-bar connected to said boot, a draft-rod, a member mounted thereon and having a socket to receive the forward end of said drag-bar, and a wedge-shaped member interposed between said forward end and said socket, for the purpose specified.

2. In a disk drill, the combination, with a draft-rod and a member mounted thereon, of a drag-bar secured to said member, and wedge-shaped means for tilting said drag-bar laterally, for the purpose specified.

3. In a disk drill, the combination, with a draft-rod and a member mounted thereon and provided with recesses gradually decreasing in depth from one side to another, of a draft-rod secured to said member, and disks decreasing in thickness from one side toward the other fitting within said recesses between said member and said drag-bar.

4. In a disk drill, the combination, with a draft-rod and an oscillating member mounted thereon provided with a recess gradually decreasing in depth from one side toward the other and having a lug, of a drag-bar secured to said member, a disk thicker on one edge than on the other and adapted to fit into said recess between it and said drag-bar and having a series of peripheral notches to receive said lug.

5. The combination, with a draft-rod and a member mounted thereon provided with a recess that is deeper on one side than on the other, a drag-bar, a disk having a thicker edge on one side than on the other and adapted to fit said recess and between it and said bar, and a bolt passing through said drag-bar and fitting loosely in holes provided in said disk and said member, substantially as described.

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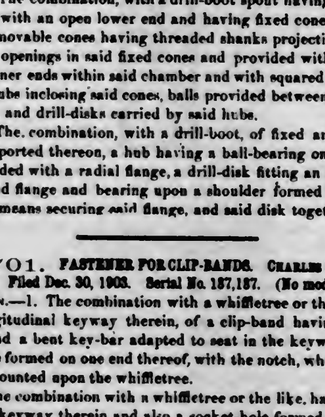
**756,700. BEARING FOR DISK DRILLS.** OCTAVE A. POIRIER, Gladstone, Minn. Filed Jan. 19, 1904. Serial No. 189,694. (No model.)

*Claim.*—1. The combination, with a drill-boot, of fixed and movable cones supported thereon, a hub having a ball-bearing on said cones, a drill-disk, and means covering said bearing and between which and said hub said drill-disk is secured.

2. The combination, with a drill-boot, of fixed and movable cones, a flanged hub having a ball-bearing on said cones, a drill-disk, and means covering said bearing and between which and said flange said drill-disk is secured.

3. The combination, with a drill-boot, of fixed and movable cones thereon, a hub having a ball-bearing on said cones, a sand-band, a drill-disk, and a cap covering said cones.

4. The combination, with a drill-boot spout provided with a chamber having a fixed cone in its side wall, of a movable cone having a shank mounted in the wall of said chamber and adjustable toward and from said fixed cone, a hub inclosing said cones and having a runway, balls for said runway, a drill-disk, and a cap covering said cones and hub.



5. The combination, with a drill-boot having fixed cones on its opposite sides, of movable cones supported on said boot and adjustable toward and from said fixed cones, hubs having ball-runways inclosing said cones, balls provided in said runways, and drill-disks mounted on said hubs.

6. The combination, with a drill-boot having a fixed cone, of a movable cone having a threaded shank fitting within a threaded opening in said fixed cone and provided with an adjusting-nut at its inner end, a hub inclosing said cones and movable independently thereof, balls provided between said cones and hub, and a drill-disk mounted on said hub.

7. The combination, with a drill-boot spout having a chamber provided with a fixed cone in its side wall, of a movable cone provided at its inner end with a threaded shank fitting a corresponding opening in the wall of said boot and adjustable toward or from said fixed cone, a hub inclosing said cones, balls provided between said hub and said cones, a drill-disk mounted on said hub, and means for covering said hub and cones.

8. The combination, with a drill-boot spout having fixed cones, of movable cones having threaded shanks projecting through openings in said fixed cones and provided with lock-nuts at their inner ends, hubs inclosing said cones and having ball-runways, balls provided between said hubs and said cones, and drill-disks mounted on said hubs.

9. The combination, with a drill-boot spout provided with a chamber having fixed cones in its side walls, of movable cones having shanks projecting into said chamber and adjustable toward or from said fixed cones, hubs inclosing said cones, balls provided between said hubs and said cones, and drill-disks mounted on said hubs.

10. The combination, with a drill-boot spout having a chamber provided with an open lower end and having fixed cones in its side walls, of movable cones having threaded shanks projecting through threaded openings in said fixed cones and provided with lock-nuts at their inner ends within said chamber and with squared outer ends, flanged hubs inclosing said cones, balls provided between said cones and hubs, and drill-disks carried by said hubs.

11. The combination, with a drill-boot, of fixed and movable cones supported thereon, a hub having a ball-bearing on said cones and provided with a radial flange, a drill-disk fitting an annular recess in said flange and bearing upon a shoulder formed by said recess, and means securing said flange, and said disk together.

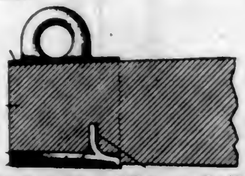
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**756,701. FASTENER FOR CLIP-BANDS.** CHARLES L. POPE, Ely, Nev. Filed Dec. 30, 1903. Serial No. 187,187. (No model.)

*Claim.*—1. The combination with a whiffletree or the like, having a longitudinal keyway therein, of a clip-band having a notch therein and a bent key-bar adapted to seat in the keyway and engage a toe formed on one end thereof, with the notch, when the clip-band is mounted upon the whiffletree.

2. The combination with a whiffletree or the like, having a longitudinal keyway therein and also a socket-hole formed in the bottom of the keyway, of a clip-band having a notch therein, that may register with the keyway when the clip-band is mounted on the whiffletree, and a bent resilient key-bar, having a dowel-pin thereon

that engages the socket-hole when the key-bar is seated in the keyway, and a toe formed on the end of the key-bar, which will enter the notch in the end of the clip-band when said clip-band is driven upon the whiffletree.



3. The combination with a whiffletree or the like, having a longitudinal keyway formed therein, and also a socket-hole formed in the bottom of the keyway, of a clip-band having an eye projected at the side and a notch formed in the edge at each end, said notches registering with the keyway when the band is mounted upon the whiffletree, and a key-bar formed of resilient metal, and bent into arch form so as to render it convex on one side and concave on the opposite side, a dowel-pin formed on the convex side of the key-bar, adapted to be bedded in the socket-hole when the key-bar is seated in the keyway, and a toe formed on each end of the key-bar and projecting toward the concave side thereof, said toes entering and filling the notches in the ends of the clip-band when said band is forced completely upon the whiffletree.

4. A clip-band fastening of the character described, consisting of a rectangular-bodied key-bar, slightly arched to render it convex on one side, and concave on the opposite side, said key-bar having an integral dowel-pin projected from its convex side between the ends thereof, and a toe bent toward the concave side at each end of the key-bar.

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**756,702. HYDROMETER-GUARD.** ALBERT B. PORTER, Evanston, Ill. Filed Sept. 29, 1902. Serial No. 125,210. (No model.)



*Claim.*—1. The combination with a hydrometer comprising a bulbous middle portion and reduced extremities, of annular stops through which the extremities are adapted to play but with which the bulbous portion may come in contact to limit the movement of the hydrometer, substantially as described.

2. The combination with a hydrometer and its containing vessel, of a wire extending longitudinally within the containing vessel and secured against movement with respect to said vessel, and a stop on said wire limiting the movement of the hydrometer within the vessel, substantially as described.

3. The combination with a hydrometer and its containing vessel, of a wire extending longitudinally within the containing vessel, of a stop on said wire beneath the hydrometer for preventing its contact with the bottom of the vessel and a stop on said wire above the hydrometer to prevent it from leaving the vessel, substantially as described.

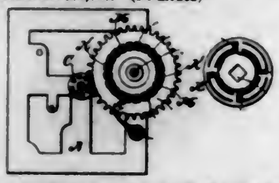
4. The combination with a hydrometer and its containing vessel, of a wire guard extending longitudinally within the vessel and secured against movement with relation thereto, of loops on said wire through which the extremities of the hydrometer are adapted to freely vibrate but with which the bulbous portion of the hydrometer may contact to limit its movement in either direction, substantially as described.

5. In a device of the character described, the combination with a hydrometer having a bulbous portion, of a wire guard comprising a longitudinal wire *c*, means for securing the wire to an inclosing vessel, and stops $c^3$ and $c^4$ on the wire between which the bulbous portion of the hydrometer may play freely within the vessel, substantially as described.

6. The combination with a hydrometer A, having a bulbous middle portion and reduced end portions $a'$ and $a^3$, of the containing vessel B for the hydrometer, and a wire guard C provided in said vessel and extending longitudinally within the same, said guard being provided with the guard-loops $c^3$ and $c^4$ encircling the extremities of the hydrometer and serving as stops for the bulbous body of the latter, substantially as described.

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**756,703. WINDING MECHANISM FOR CLOCKS.** WILSON R. PORTER, New Haven, Conn., assignor to the New Haven Clock Company, New Haven, Conn., a Corporation of Connecticut. Filed Jan. 16, 1904. Serial No. 189,239. (No model.)

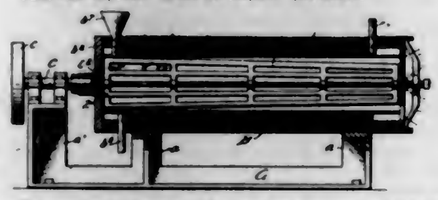


*Claim.*—1. In a clock or similar article the combination with a gear having a series of cut-out portions; of a spring; a winding-arbor to which one end of said spring is connected; and a plate mounted on said arbor to rotate therewith and having a plurality of lips bent out of the plane of said plate to engage said cut-out portions in said gear, substantially as described.

2. In a clock or similar article, the combination with a gear having a series of cut-out portions; of a spring; a winding-arbor to which one end of said spring is connected; a plate mounted on said arbor to rotate therewith and having a plurality of lips bent out of the plane of said plate to engage said cut-out portions in said gear; and means for holding said plate substantially in contact with said gear, substantially as described.

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**756,704. ICE-CREAM FREEZER.** JULIUS PRADE, Waco, Tex. Filed June 29, 1903. Serial No. 163,496. (No model.)



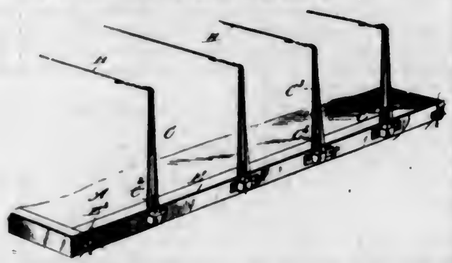
*Claim.*—1. An ice-cream freezer of the character described, comprising a base, a cylinder fixedly supported thereon in a horizontal plane, said cylinder having a fixedly-held head at one end and a detachable head at the other end, the latter having a radial slot forming a cream-discharge at its bottom, a freezing-chamber within the cylinder, a series of refrigerant circulating-coils surrounding said chamber, an inlet for the said coils at the discharge end of the cylinder and a discharge therefor at the entrant end of the cylinder, an insulating-jacket in the cylinder surrounding the refrigerant circulating-coils, a stirrer-frame extending lengthwise within the freezing-chamber and detachably mounted therein, a drive-shaft coupled with said frame for rotating it, and a cream-inlet at the entrant end of the cylinder.

2. An ice-cream freezer of the character described, the combination with a supporting-frame; of a cylinder fixedly mounted thereon in a horizontal plane, said cylinder having a permanent head at the entrant end centrally apertured and provided with an annular socket on the inside surrounding said aperture, a detachable head for the discharge end, means for clamping said head to the cylinder, said head having a radial slot forming a cream-discharge in line with the freezing-space within the cylinder, an insulating-jacket inside the cylinder, an annular shell inside of the said jacket, a refrigerant circulating-coil within the said shell having a suitable inlet and outlet, a shaft mounted in the supporting-frame and projected through the aperture in the fixed cylinder-head and having a fixedly-connected disk adapted to seat in the annular socket in the said head, said disk having a central bearing-socket and inwardly-projecting fingers, a detachably-held plate having centrally-bearing sockets on its inner face; clamp devices for securing said head-plate, a stirrer-frame mounted in the freezing-chamber of the cylinder, said frame comprising longitudinally-extending scraping-blades and end and intermediate cross-bars joining the said blades, the said longitudinal blades being spiral-twisted toward the discharge end of the cylinder, the end bars having studs to engage the aforesaid sockets, one of said bars being engaged by the projecting fingers on the shaft-carried disk, all being arranged substantially as and for the purposes described.

3. The improved freezer herein described, comprising in combination with the supporting-base having the upright legs provided with concave beds to receive a cylinder, and an end extension provided with an upright leg having bearings for a drive-shaft, the drive-shaft journaled in said bearings, the cylinder mounted in the concave beds of the frame-legs, and having at one end a fixed head provided with an opening for the drive-shaft, said cylinder having an outer and inner shell, the refrigerating-coil between said shells, the insulating-chamber surrounding the outer shell, the stirrer within the inner shell and engaged at one end with the drive-shaft, the removable head having a bearing for the other ends of the stirrer, and clamping devices for securing said removable head, substantially as set forth.

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**756,705. CAR-STAKE.** JOHN R. POCKETT, Richmond, Va. Filed Aug. 12, 1903. Serial No. 169,215. (No model.)



*Claim.*—1. The combination of the car-platform, the cuffs at the sides thereof for stakes, the stakes fitting in said cuffs and having vertically-elongated slots, the locking-rod passing through the said slots, and provided at its ends with depending shanks and with offsets at the juncture of said shanks with the body of the rod, the sockets for said shanks, and the clamping-screws for securing the shanks in any desired adjustment in said sockets, substantially as set forth.

2. The combination of the car-platform, the cuffs at the sides thereof, the stakes fitting in said cuffs and provided with openings for a locking-rod, and a locking-rod passing through said openings in the several stakes and secured substantially as set forth.

3. The combination of the car-platform, the stakes at the side of the platform, and the locking-rod common to and engaging directly with all the stakes at the same side of the platform, substantially as set forth.

4. The combination of the platform, a series of cuffs a series of stakes ranging along the side of the platform and movable longitudinally into and out of their respective cuffs, and a locking-rod by which to secure the stakes of the series in their cuffs, substantially as set forth.

5. The combination of the car-platform, a series of stakes at the side thereof, and a locking-rod by which to secure said stakes to the car both in the position of said stakes for use and when adjusted out of such position, substantially as set forth.

6. The improved stake attachment for cars, comprising the stakes having openings for a locking-rod, a locking-rod to pass through said openings, and means for securing the ends of the locking-rod, substantially as set forth.

7. The combination of the platform, the stakes having openings for a locking-rod, the locking-rod passing through such openings of the several stakes, and clamping devices for securing the ends of the locking-rod, substantially as set forth.

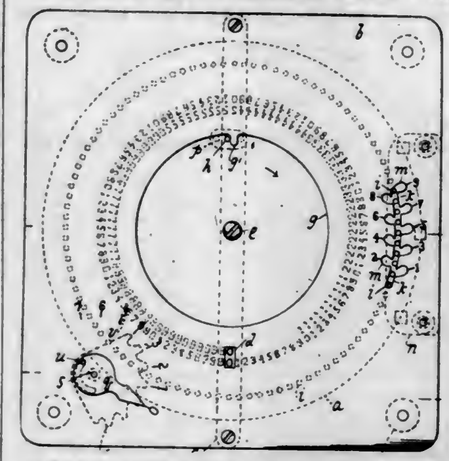
8. The combination of the car-platform, a series of stakes at the side thereof, and a locking-rod extending in the direction of length of the car and along which the stakes may be moved to any desired point upon the car, substantially as set forth.

9. The combination of a car-platform, the stakes therefor, and the locking-rod for said stakes extending in the direction of length of the car, and securing the several stakes of a series in connection with the car, substantially as set forth.

10. The combination of a car-platform, a series of stakes ranging along one side of the platform, and the locking-rod securing the stakes in connection with the car, said rod being common to said stakes and extending in the direction of length of the car, substantially as set forth.

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**756,706. ADDING-MACHINE.** WILLIAM P. QUESTELL, New York, N. Y. Filed Dec. 22, 1903. Serial No. 186,212. (No model.)



*Claim.*—1. An adding-machine, comprising a number-disk having a plurality of openings, a plate over the disk and having a slot and guides leading to the slot to facilitate access to the openings.

2. An adding-machine, comprising a number-disk having openings between its periphery and axis, a plate over the disk having a slot and guides leading to the slot to facilitate access to the openings.

3. An adding-machine, comprising a number-disk having openings between its periphery and axis, a plate over the disk and having segment-shaped slot and guides leading to the slot to facilitate access to the openings.

4. A number-disk with holes or catches and a frame or support with a slot and guides, said guides having enlargements for ready entrance or insertion of a stylus or the like.

5. An adding-machine comprising a number-disk having a plurality of openings between its periphery and axis, a plate over the disk and having a segment-shaped slot provided with branches to permit of acces to the openings.

6. An adding-machine, comprising a number-disk having openings between its periphery and axis, a plate over the disk and having a slot provided with branches extending in opposite directions to permit of access to the openings.

7. An adding-machine comprising a perforated number-disk, guides leading to the perforation and a frame or support.

8. An adding-machine comprising a perforated number-disk having channels for guiding a stylus or the like to the holes and a frame or support having a slot corresponding to the perforations.

9. An adding-machine, comprising a number-disk having openings between its periphery and axis, a plate over the disk and having a slot provided with branches extending in opposite directions and the said plate being provided with an inwardly-projecting finger made to act as a stop.

10. An adding-machine, comprising a number-disk, a plurality of guides between its periphery and axis and having openings, a frame having a slot with a series of branches leading into opposite directions therefrom, and means carried by the frame for supporting the disk.

11. A number-disk combined with a counter comprising a gear, a hand, a shoulder-screw and friction means, said screw being made to connect the hand and gear and to hold the friction under tension.

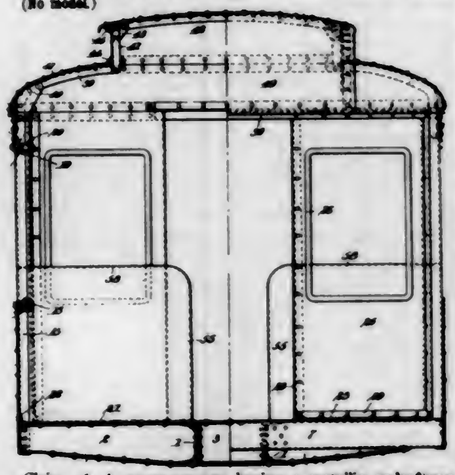
12. A number-disk combined with a gear actuated thereby, a hand, and a pivot and pin for connecting the hand and gear to make them move in unison.

13. An adding-machine, comprising a frame having a slot, a rotary number-disk supported below the frame, said disk being provided with a plurality of guides annularly arranged and having openings, a counter being provided with a segment and means carried by the disk for engagement with the segment for actuating the counter.

14. An adding-machine, comprising a suitable support including a plate having a slot with branches, a rotary number-disk carried thereby, said disk being provided with a series of recesses having holes for receiving a stylus, and means connected with the support for limiting the depth of insertion of the stylus.

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**756,707. PASSENGER-CAR.** FREDERICK H. RAFLET, New York, N. Y., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Nov. 24, 1903. Serial No. 182,334. (No model.)



*Claim.*—1. A passenger-car, having a metallic underframe, metal side posts secured to said underframe, metal side plates or sheets also secured to the underframe and to the side posts, and having top edges forming window-sills, metal fascia having lower edges forming lintels of the windows, rafters secured to the fascia, and roof-sheets also secured to the fascia.

2. A passenger-car body, comprising a metallic underframe, side posts secured to the underframe, and metallic side sheets secured to the underframe and to the side posts and having their upper edges beaded longitudinally and provided with window-sills.

3. A passenger-car body, comprising a metallic underframe, side posts secured to the underframe, and metallic side sheets secured to the underframe and to the side posts and having their upper edges beaded longitudinally and provided with window-sills, combined with inner angles riveted to said sills.

4. A passenger-car body, comprising a metallic underframe, side posts secured to the underframe, and metallic side sheets secured to the underframe and to the side posts and having their upper edges beaded longitudinally and provided with window-sills, combined with inner angles riveted to said sills, and brackets connecting said angles and posts.

5. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, and metal fascia-sheets secured to the side posts and each provided with a longitudinal bead above the windows.

6. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, and metal fascia-sheets secured to the side posts, each provided with a longitudinal bead above the windows, and having their lower ends turned in to form lintels.

7. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, and metal fascia-sheets secured to the side posts and each provided with a longitudinal bead above the windows, and having their lower ends turned in to form lintels, and having interior angles riveted thereto.

8. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, metal fascia-sheets secured to the side posts and each provided with a longitudinal bead above the windows, and having their lower ends turned in to form lintels, and having interior angles riveted thereto, and brackets connecting the said angles and the posts.

9. A passenger-car, having metallic fascia provided with offsets at the top, combined with roof-sheets secured to said offsets.

10. A passenger-car, having end platforms, comprising metallic end sills extending about the front and opposite sides of the platforms and riveted directly to the sides of the car on the inner sides thereof.

11. A car-vestibule, comprising vertically-arranged angles, metal sheets secured thereto, and angles at top and bottom to which said vertical angles and sheets are secured.

12. A metal car, having a metallic end adapted to receive sliding double doors, and metal pockets into which said doors may be slid, said pockets comprising the ends of the car and parallel metal sheets secured to the floor and to angles above.

13. A metal car, having deck-sills and deck-plates made of angles, the vertical members of which are cut away in the platform-roof and their horizontal flanges riveted together, combined with an end carline to which they are also secured.

14. A metal car, having seat-backs composed of flanged metal plates secured to the floor and sides of the car.

15. A metal car, having transversely-arranged flanged metal plates erected vertically between adjacent seats, at or near the center of the car, and secured to the sides and the floor, and serving also as gussets or braces.

16. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts and provided with window-sills, and metallic fascia-sheets secured to the side posts and provided with lintels.

17. A passenger-car, having a metallic underframe, metallic side posts secured thereto, metallic side sheets secured to the underframe and posts, beaded longitudinally and provided with window-sills, and metallic fascia-sheets also secured to the side posts, beaded longitudinally and provided with lintels.

18. A car-frame, comprising a metallic underframe, side posts secured thereto, metal side sheets riveted to the side posts, rafters secured to the upper ends of said posts and extending upwardly and inwardly, deck-posts secured to the inner ends of said rafters upon each side of the frame, and carlines riveted directly to and extending between the oppositely-arranged deck-posts.

19. A car-frame, comprising a metallic underframe, side posts secured thereto, metal side sheets riveted to the side posts, rafters extending upwardly and inwardly from said side posts, the said rafters being reinforced by gusset-plates, deck-posts secured to the inner ends of said rafters and extending vertically therefrom, carlines riveted directly to and connecting the oppositely-arranged deck-posts, and gusset-plates interposed between the said carlines and the deck-posts.

20. A passenger-car, having a metallic underframe, side posts secured thereto, metallic side sheets secured to the underframe and posts, metal fascia-sheets secured to the side posts, and rafters secured to and supported upon the said side posts and fascia-plates combined with roof-sheets.

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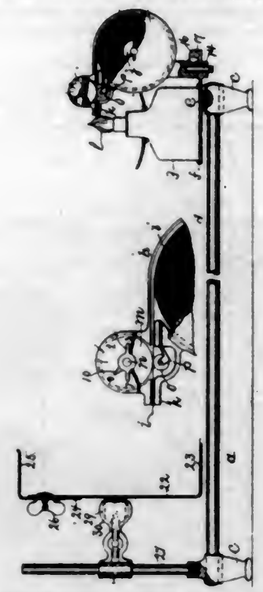
**756,708. PHOTOGRAPHIC APPARATUS.** EUGENE J. RAY, Winchester, Mass. Filed Sept. 30, 1903. Serial No. 175,151. (No model.)

*Claim.*—1. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a feed mechanism for said strip carried by said carrier, a graduated dial, a pointer movable with said feed mechanism and cooperating with said dial, a support upon which said carrier is pivotally mounted, and means to move said carrier on its pivot, substantially as described.

2. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a manually-operated feed mechanism cooperating with said strip, a graduated dial, and a pointer or index cooperating with said dial and movable with said feed mechanism, substantially as described.

3. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material provided with a drum upon which said strip or ribbon is wound, and with a nozzle through which said strip is fed, a manually-operated feed mechanism carried by said carrier and an indicating device movable with said feed mechanism, substantially as described.





4. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a feed mechanism carried by said carrier and cooperating with said strip, and a support upon which said carrier is movably mounted, substantially as described.

5. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a feed mechanism carried by said carrier and cooperating with said strip, a support upon which said carrier is movably mounted, and means to automatically move said carrier on its support, substantially as described.

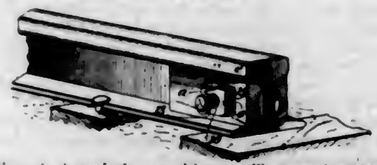
6. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a support upon which said carrier is movably mounted, and means to automatically move said carrier on its support, substantially as described.

7. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a manually-operated feed mechanism carried by said carrier, and an indicating device movable with said feed mechanism, substantially as described.

8. In a photographic apparatus of the class described, in combination, a carrier for a strip or ribbon of illuminating material, a lamp to ignite said strip, a feed mechanism to move said strip into the flame of said lamp, and means to move said carrier and withdraw the strip from the flame after it is ignited, substantially as described.

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**756,709. NUT-LOCK.** JOHN F. RIEMAN, Goshen, Ind. Filed June 30, 1903. Serial No. 163,722. (No model.)



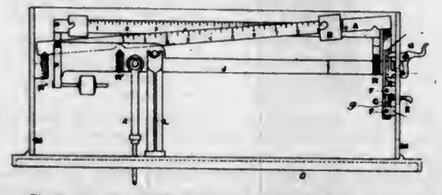
*Claim.*—1. A nut-lock, comprising a resilient metal rod bent to form a straight member, a laterally-curved member joined to one end of the straight member, and a tenon member projected from the remaining end of the curved member, the straight member and tenon being at right angles to one another and disposed in the same plane.

2. A nut-lock, comprising a resilient metal rod bent intermediate of its ends to form right-angled members, a laterally-curved member projected from the end of one of the said members, and a tenon member projecting from the end of the curved member toward the member from which the curved member is projected.

3. The combination with a nut having grooved sides and a bolt transversely perforated in its threaded body, of a nut-lock, comprising a wire rod bent between its ends at a right angle, providing a straight locking member to engage with one of the grooves in the nut, the wire rod being again bent laterally and downwardly in curved form, and finally bent to project the remaining end portion of the wire as a tenon toward the straight locking member in the same plane therewith, the tenon member engaging within the perforation in the bolt-body when the nut-lock is applied for holding a nut that is screwed on the bolt-body.

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**756,710. INGREDIENT-SCALE.** ROBERT W. ROMIG, Pittsburg Pa., assignor to the E. & T. Fairbanks & Company, St. Johnsbury Vt., a Corporation of Vermont. Filed Nov. 18, 1903. Serial No. 181,712. (No model.)



*Claim.*—1. In a weighing-scale, a suitable framework a main beam, and supplemental beams adapted when in use to be supported on the main beam, means for raising each supplemental beam from the main beam, and transferring its support at the rear to a stationary part of the machine-frame; substantially as described.

2. In a weighing-scale, a suitable framework a main beam having supports thereon, ingredient-beams engaging said supports, a supplemental stationary support on the framework, arranged beneath a cooperating portion of the ingredient-beams, said supplemental support and cooperating portion being arranged to engage, when the ingredient-beam is elevated from the main beam; substantially as described.

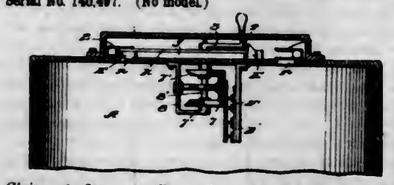
3. The ingredient-beam having the notches, the main beam having cross-bars engaging certain of said notches, and a third stationary cross-bar arranged in a plane below the plane of the other cross-bars, and beneath the notch on the rear of the ingredient-beam; substantially as described.

4. In a scale of the character described, the vertical bars C, having the slots, guiding-pins extending through said slots, thumb-pieces on said bars, extensions D, and pivoted catches adapted to engage the extensions D; substantially as described.

5. In a weighing-scale of the character described the main beam and the ingredient-beams having cooperating knife-edge supports and notches, a stationary support in a plane below the plane of the supports on the main beam, each ingredient-beam on its rear edge being notched to engage said support, when lifted from its supports on the main beam; substantially as described.

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**756,711. ELECTRIC CONTROLLER FOR ALTERNATING CURRENTS.** ROBERT P. RUKENBROD, Turtlecreek, Pa. Filed Jan. 26, 1903. Serial No. 140,497. (No model.)



*Claim.*—1. In a controller, resistance-terminals and conductors an arm having contacts for the terminals and conductors, a reversing-switch comprising arms and contacts, pivoted ends for certain of the arms, said ends being alternately in line with and at right angles to the arms and means engaging the ends for moving the arms, as and for the purpose described.

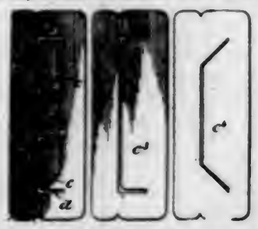
2. In a controller, resistance-terminals and conductors, an arm having contacts for the terminals and conductors, a reversing-switch comprising arms and contacts, pivoted ends for certain of the arms, said ends alternately lying in line with and at right angles to the

arms, a crank-handle and a camming projection on the handle co-operating with the ends of the arms, as and for the purpose described.

3. In a controller, a casing, ribs on the top of the casing, arms slidable on the ribs, said casing having openings in its top, pivoted ends for certain of the arms, said ends alternately lying in line with and at right angles to the arms, contacts for the arms, suitable conductors for the current and means for sliding the arms on the ribs as for the purpose described.

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**756,712. ENVELOP-CLASP.** ALBERT DE SAINT CHAMAS, Chicago Ill. Filed July 10, 1903. Serial No. 164,964. (No model.)

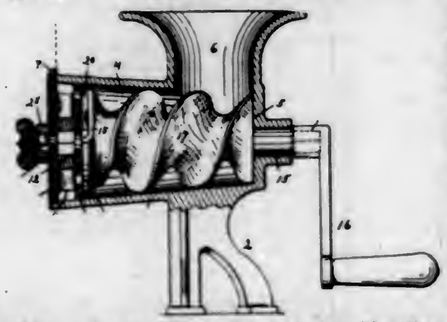


*Claim.*—1. A clasp comprising a body portion in the form of a plate and adapted to be folded upon itself, a tongue portion cut from said body portion in such manner that a U-shaped slot is formed between the tongue and the material of the body portion, said tongue being adapted to have its free end lie adjacent to and parallel with the fold of the body portion, and a second fold formed in the plate at the opposite edge portions from the first-mentioned fold, substantially as set forth.

2. A clasp comprising a body portion having the lower edge thereof folded back upon the main portion, the opposite edge portion of the plate being also adapted to be folded back upon the main portion of the plate, and a tongue stamped from the material of said plate, a slot being formed between the plate and the tongue, substantially as set forth.

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**756,713. MEAT-CHOPPER.** JOHN A. SANDER, Newark, N. J. Filed Dec. 11, 1902. Serial No. 134,743. (No model.)



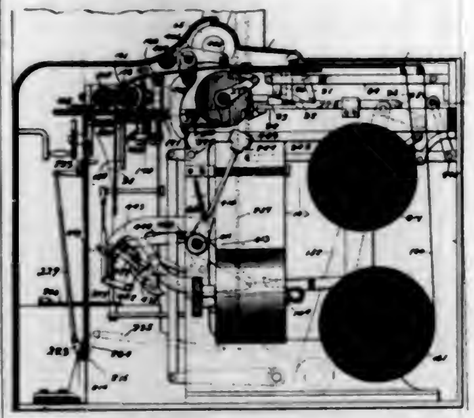
*Claim.*—1. In a meat-chopper, the combination with a tubular body portion having a feed-screw therein, and two circular perforated plates stationed transversely in said body portion in front of said screw and being substantially parallel and at a distance apart, of a cutter between said plates having radial arms each transversely concavo-convex in cross-section and forming cutting-knives at the opposite edges which point in the same directions and are adapted to cut simultaneously one against each of said plates, and a shaft for rotating said feed-screw and cutter.

2. In a meat-chopper, the combination with a perforated plate, and a feed-screw terminating adjacent to said plate of a knife-plate fixed flatwise upon the end of said screw, and having at the extreme end of the groove of said screw a marginal portion turned outward from the end of the screw at an angle to the main portion of the plate, said turned margin forming at its side a continuation of the compression-wall of the screw and at its edge a knife-edge to lie against the perforated plate and hold the main portion of the plate away therefrom.

3. In a meat-chopper, the combination with a perforated plate, and a feed-screw having a double thread and terminating adjacent to said plate, of a knife-plate fixed flatwise upon the entire portion of the end of the said screw, the opposite margins of said plate being at the edges of the rear walls of the grooves of the screw bent outward away therefrom and forming at their edges knife-edges adapted to engage the perforated plate and hold the body of the knife-plate away.

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**756,714. MACHINE FOR REGISTERING MAIL-MATTER.** DETALMO DI BRASSA SAVORGNAN, Rome, Italy, assignor to CORA A. S. di BRASSA SAVORGNAN, Rome, Italy. Filed Sept. 28, 1896. Serial No. 607,156. (No model.)



*Claim.*—1. A machine for registering mail-matter, comprising a casing adapted to receive the mail-matter, a printing device in said casing for printing upon the mail-matter, means for carrying a receipt-strip in said casing, printing devices for printing on said receipt-strip, means for operating the printing devices simultaneously, a cutter for severing a receipt from the body of the receipt-strip, and a binder operated by the cutter, substantially as specified.

2. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter and having a door-closed opening, a printing device in the casing for printing upon the mail-matter, means for moving a receipt-strip across the door-closed opening of the casing, means for clamping the receipt-strip, means for delivering a receipt to the outer side of the machine, and means to prevent such delivery before the door shall have been closed, substantially as specified.

3. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, a printing device in the casing for printing upon the mail-matter, means for moving a receipt-strip in the casing, a printing device for printing on said receipt-strip, means for simultaneously operating the two printing devices, a cutter for severing a receipt from the body of the strip, and means coacting with the cutter for binding together a series of severed receipts, substantially as specified.

4. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, a printing device in the casing for printing upon the mail-matter, means for moving a receipt-strip in the casing, a printing device for printing on said receipt-strip, means for simultaneously operating said printing devices, a cutter operated by a movement of the mechanism for operating the printing devices, the said cutter operating to sever a receipt from the body of the strip, and means for operating said cutter without moving the first-named operating mechanism, substantially as specified.

5. A machine for registering mail-matter, comprising a casing having a door-closed opening at its top and adapted to receive mail-matter, a printing device for printing upon the mail-matter, means for moving a receipt-strip in the casing across the opening in its top, a printing device for printing on said receipt-strip, means for simultaneously operating the two printing devices, a table beneath the door-closed opening and over which the receipt-strip passes, and means for moving said table for clamping the receipt-strip in the casing, substantially as specified.

6. In a letter-registering machine, the combination with printing devices, and means for moving receipt-strips over the same, of a main shaft in the casing, a pair of spindles journaled in the casing, a carbon-ribbon having its ends attached to said spindles, ratchet-wheels on said spindles, a vertically-movable rod operated by the main shaft, dogs on said rod for engaging with the ratchet-wheels, and oppositely-extended arms pivoted to the rod and adapted to engage with the ribbon winding upon the spindles, whereby the dog connections with the ratchets may be shifted to reverse the movement of the spindles, substantially as specified.



7. In a letter-registering machine, a device for moving a carbon-ribbon, comprising spindles mounted to rotate in the casing, a ratchet-wheel on each spindle, a rod operated vertically by means of a main shaft in the casing, dogs carried by said rod to alternately engage the ratchet-wheels, a lever pivoted to said rod and having depending fingers at its lower end, a cam mounted to rock on the rod and adapted for engagement with said fingers to move the lever, a pinion on the shaft of said cam, a segment-lever engaging with said pinion, and diverging arms carried by said segment portion and adapted for engagement with a ribbon winding upon the spindles substantially as specified.

8. A letter-registering machine, comprising a casing, a main shaft in said casing, a printing device in the casing, means for moving a receipt-strip over said printing device, and comprising feed-rollers, a roller mounted in the casing and having a longitudinal channel or groove and a spiral channel or groove communicating at its ends with the longitudinal channel or groove, a switch in said groove, a carriage operated from the main shaft and having a pin for engaging in said channels or grooves, a cutter operated by a movement of the carriage and connections between said grooved rollers and the feed-rollers, for operating said feed-rollers, substantially as specified.

9. A machine for registering mail-matter, comprising a casing, printing devices in said casing, feed-rollers for moving a receipt-strip over the printing devices, a roller in the casing provided with a longitudinal channel or groove and a spiral channel or groove communicating at its ends with the longitudinal channel or groove, a switch at one end of said spiral channel or groove, a connection between said grooved rollers and the feed-rollers, a reciprocating carriage in the casing having a pin for engagement in the channels or grooves of the roller, means for causing the movement of said carriage, and a cutter for severing a receipt from the body of a strip, the said cutter being operated by a movement of the carriage, substantially as specified.

10. A machine for registering mail-matter, comprising a casing, printing devices in said casing, means for moving a receipt-strip over said printing devices, a cutter for severing a receipt from the body of the receipt-strips, a roller mounted in the casing and having a longitudinal groove on its under side and a coil-groove communicating at its ends with the longitudinal groove, a reciprocating carriage having a pin for engagement in said grooves, a toothed wheel mounted on the carriage, an arm operated by said toothed wheel and adapted to engage with a part for operating the cutter, and a dog mounted in the casing and adapted to rotate said toothed wheel upon the return movement of the carriage, substantially as specified.

11. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, a printing device in said casing, for printing on the mail-matter, means for moving receipt-strips in said casing, means for moving a receipt-strip transversely to the first-named receipt-strips, a printing device for printing on said receipt-strips, means for clamping the strip while printing, means for operating both of the printing devices simultaneously, a swinging cutter for the first-named receipt-strips, a swinging cutter for the last-named receipt-strip, and means for operating both cutters independently, substantially as specified.

12. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, spring-fingers for centering the mail-matter, a printing device in said casing for printing upon the mail-matter, means for moving receipt-strips in said casing, one strip transversely to another, independently-operated horizontally-swinging cutters for severing the receipts from the strips, a printing device for printing on the receipt-strips, means for simultaneously operating said printing devices, and means for simultaneously setting said printing devices, substantially as specified.

13. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, a printing device in the casing for printing on the mail-matter, means for moving a receipt-strip in the casing, a printing device for printing on said receipt-strip, means for operating the two printing devices, a cutter for the receipt-strips, means for operating the same, a swinging door in the casing having a notched portion at its upper end adapted to receive the shanks of clips upon which the severed receipts are to be forced, disks mounted on said door and provided with notches, means for rotating said disks, the segment-plates on said disks, and the eccentric plates on said disks, substantially as specified.

14. A machine for registering mail-matter, comprising a casing, printing devices in said casing for printing on mail-matter deposited, feed-rollers for moving a receipt-strip in the casing, printing devices for printing on said receipt-strip, a cutter for severing a receipt from the body of the strip, a tubular shaft on which one of the feed-rollers is mounted, a shaft arranged in said tubular shaft and having a clutch engagement therewith, a gear on said inner shaft, means for rotating said gear, a pinion on the tubular shaft, a gear-wheel meshing with said pinion, swinging blocks on said gear-wheel, a swinging door on the casing, a curved lever pivoted to the under side of said swinging door, a pin on the lower end of said lever engaging in a cam-slot formed in a supporting-frame, and a hook on said lever, for engaging with the swinging blocks on the gear-wheel, substantially as specified.

15. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, printing devices in the casing for printing on the mail-matter, means for moving a receipt-strip through said casing, a printing device for printing on the receipt-strip, feed-rollers for moving said receipt-strip, a tubular shaft on which one of said feed-rollers is mounted, a shaft extended through the tubular shaft and having a clutch connection therewith, means for rotating said shaft, a pinion on the tubular shaft, a gear-wheel meshing with said pinion, a swinging door, a lever carried by said door, for imparting a rotary movement to the gear-wheel, a cutter for severing a receipt, and means carried by the swinging door, for operating said cutters, substantially as specified.

16. A machine for registering mail-matter, comprising a casing, a mail-receiving chute in said casing, centering devices in the chute, a sliding door for the lower end of said mail-receiving chute, a printing device movable into the chute, and means for moving the sliding door, substantially as specified.

17. A machine for registering mail-matter, comprising a casing, a letter-receiving chute therein, a sliding door for the lower end of said chute, means for operating the same, centering devices consisting of swinging resilient plates in the chute, and means for swinging said plates, substantially as specified.

18. A machine for registering mail-matter, comprising a casing, a letter-receiving chute therein, tappet-plates pivotally movable in openings in the rear wall of said chute a type-carriage movable relatively to the chute, plungers on said carriage adapted for engagement with the tappet-plates, a printing device in the carriage for printing upon a receipt-strip, a hammer for operating in connection with said tappet-plates, a shaft on which said hammer is mounted, a lever on said shaft, a main shaft, a lever extended from said main shaft, a push-rod pivoted to said lever and adapted to engage with the lever on the first-named shaft, a locking device for said lever on the first-named shaft, and means, comprising a rod carried by the lever on the main shaft, for releasing said locking device, substantially as specified.

19. A machine for registering mail-matter, comprising a casing adapted to receive mail-matter, a consecutive-numbering device in the casing for printing on the mail-matter, means for moving a receipt-strip through the casing, a consecutive-numbering device for printing on said receipt-strip, means for simultaneously operating the two numbering devices, means for setting the first-named numbering device, means for setting the last-named numbering device, printing devices arranged near the first-named numbering device, printing devices arranged near the last-named numbering devices, and means for setting all of said printing devices, substantially as specified.

20. A registering-machine for mail-matter, comprising a casing, a chute in said casing for receiving mail-matter, a carriage movable in a frame near the said chute, a series of endless type-bands mounted on said carriage, printing-type attached to said bands, and yielding blocks carrying sprocket-wheels with which said band engage, substantially as specified.

21. A printing device, comprising an endless band of flexible material having sprocket-teeth on its inner edge, type mounted on said band, a carriage, a sprocket-wheel on said carriage with which the band engages, a block adapted to yield longitudinally of the carriage, and a sprocket-wheel on said block with which the band engages, substantially as specified.

22. A printing device, comprising a carriage movable in a frame, a series of endless rubber bands, each having sprocket-teeth in its inner edge, sprocket-wheels mounted in the carriage with which said bands engage, pinions mounted on the shafts of certain of the sprocket-wheels, gear-wheels engaging the said pinions, ratchet-wheels on certain of said gear-wheels, each ratchet-wheel being provided with ten teeth, disks secured to certain of said gear-wheels, each disk being

provided with a single tooth, and pawls for operating said gear-wheels on the movement of the carriage, substantially as specified.

23. A printing device, comprising a carriage movable in a frame, a series of endless rubber belts mounted in said carriage, another set of endless rubber belts mounted in said carriage, means for rotating the first set of endless belts, means for operating the last-named set of endless belts, and removable printing-type carried by the belts, substantially as specified.

24. An endless type-band, consisting of rubber, and type carried by said band, each type having a shank portion and a shoe portion to engage in openings in the belt, substantially as specified.

25. A printing device, comprising a carriage, star-shaped sprocket-wheels mounted in one end of said carriage, star-shaped sprocket-wheels mounted in the opposite end of the carriage and adapted to move longitudinally of the carriage, endless type-bands engaging around the sprocket-wheels, and a justifier carried by the carriage for aliming the last-named star-shaped wheels, substantially as specified.

26. A printing device, comprising a carriage, sprocket-wheels mounted therein, blocks mounted on the forward end of said carriage, sprocket-wheels carried by said blocks, stems extended from the blocks and movable through the blocks longitudinally of the carriage, springs for moving said blocks in one direction, a frame for engaging with the free ends of the pins for justifying or aliming the movable sprocket-wheels, and endless type-bands carried by the sprocket-wheels, substantially as specified.

27. A printing device, comprising a carriage, sprocket-wheels mounted in one end of said carriage, blocks mounted in the opposite end of said carriage, sprocket-wheels mounted on said blocks, stems extended rearward from said blocks, springs for moving the blocks forward, a rectangular frame movable in the carriage, for engagement with said stems, and endless type-bands mounted on the sprocket-wheels, substantially as specified.

28. A printing device, comprising a carriage, a frame in which said carriage is movable, sprocket-wheels carried by said carriage, endless type-bands mounted on the sprocket-wheels, removable metal type on the bands, a pinion mounted on a sprocket-wheel, gear-wheels meshing with said pinion, drums or flanges on said gear-wheels provided with consecutive numbers, ratchet-wheels on the gear-wheels, the said ratchet-wheels having a number of teeth equaling the number of type carried by the type-band, rods movable vertically with relation to the carriage, and dogs carried by said rods, for engaging the ratchet-wheels on the gear-wheels, substantially as specified.

29. In a machine for registering mail-matter, a casing, a letter-receiving chute therein, a printing device comprising a carriage movable into said letter-chute, endless type-bands carried by said carriage, a frame in which the carriage is movable, a main shaft in the casing, and connections between said main shaft and the carriage, whereby the carriage may be moved in both directions, substantially as specified.

30. In a machine for registering mail-matter, a casing, a letter-chute in said casing, a carriage movable in said casing, endless type-bands carried by the carriage, means for setting the type-bands, a frame in which the carriage is movable, means for moving said carriage, an inking device for the type, consisting of levers pivoted in the frame, downwardly-extended arms pivoted at the free ends of said levers, an inking-roller carried by these arms, and means for moving said inking-roller toward and from the type during a movement of the carriage, substantially as specified.

31. A machine for registering mail-matter, comprising a casing, a letter-receiving chute therein, a carriage movable into said chute, endless type-bands mounted on said carriage, an inking device operated by the movement of the carriage, a main shaft in the casing, depending swinging arms having connection with the carriage, levers extended upward from the main shaft, and yielding connections between said levers and the depending swinging arms, substantially as specified.

32. In a machine for registering mail-matter, a casing, means for moving a receipt-strip in said casing, a printing device for printing on said strip, and comprising a number of rotary disks, a platen extended lengthwise of the printing device, a rock-shaft on which said platen is mounted, a downwardly-extended arm on said rock-shaft, a pivoted hammer for striking said arm to cause a movement of the platen, and a spring for causing the striking movement of the hammer, substantially as specified.

33. A consecutive-numbering device, comprising a number of rotary disks having a ten-toothed ratchet-wheel on one side and a single-toothed plate on the opposite side, the plate of one disk being arranged against the ratchet-wheel of another disk, a yoke mounted to swing on the shaft upon which the disks are mounted, pawls carried by said yoke and adapted to engage with the ratchet-wheels, a push-bar for operating said yoke, and a lever operated from the main shaft of the machine, for operating said push-bar, substantially as specified.

34. In a machine for registering mail-matter, a casing, means for moving a receipt-strip in said casing, a consecutive-numbering device in the casing for printing on said strip, and comprising a number of rotary disks having ratchet-wheels, pawls for engaging the said ratchet-wheels, a lateral projection from one pawl engaging upon the upper side of the next pawl, a yoke on which said pawls are mounted, a push-bar mounted to move longitudinally, a pin on said push-bar adapted to engage a downward projection from the yoke, a lever operated from the main shaft in the machine, and lateral projections on the opposite ends of the push-bar adapted to be engaged by the said lever, substantially as specified.

35. In a machine for registering mail-matter, a casing, a printing device in said casing for printing upon mail-matter therein, means for moving a receipt-strip in the casing, a printing device for printing on said strip, means for simultaneously operating the two printing devices, a discharge-guideway for receipts, discharging-rollers, one of which is movable toward and from said discharge-guideway, fingers movable across said guideway, and a plate movable in the opposite side of said guideway, substantially as specified.

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**756,715. BOTTLE-SEAL.** EDWARD D. SCHMITT, Baltimore, Md., assignor, by direct and mesne assignments, to Hallock A. Penrose, Baltimore, Md., and Louis R. Schram, New York, N. Y. Filed Oct. 2, 1903. Serial No. 175,522. (No model.)



*Claim.*—1. A bottle-seal comprising a securing member formed with a circumferential rim or flange upturned and substantially semicircular in cross-section, and means for affording engagement with a suitable tool for removing the seal.

2. A bottle-seal comprising a metallic securing member having an integral circumferential rim or flange, said rim or flange being upturned and substantially semicircular in cross-section, a sealing member carried by the securing member, and means for affording engagement with a suitable tool for removing the seal.

3. A bottle-seal comprising a securing member having an upturned circumferential rim or flange and a yielding portion adapted to be engaged by a suitable tool for unsealing purposes, and a sealing member carried by the securing member.

4. In a bottle-seal, the combination with a bottle having a sealing-seat in the neck thereof and a wall inclining upwardly and inwardly from said seat, a securing member provided with an upturned rim or flange in engagement with said wall, and a sealing member held in engagement with the sealing-seat by the securing member, substantially as described.

5. In a bottle-seal, the combination with a bottle having a sealing-seat in the neck thereof, and a wall above said seat inclining slightly inwardly and upwardly, a metallic securing member formed with an integral circumferential upturned rim or flange adapted to impinge against said wall in the bottle-neck, a sealing member held in contact with the sealing-seat by the securing member, and means for affording engagement with a suitable tool for removing the seal, substantially as described.

6. In a bottle-seal, the combination with a bottle having a sealing-seat in the neck thereof, and a wall above said seat inclining slightly inwardly and upwardly, a metallic securing member formed with an integral circumferential elastic rim or flange adapted to impinge against said wall, a sealing member held in contact with the sealing-seat by the securing member, substantially as described.

7. In a bottle-seal, the combination with a bottle having a sealing-seat in the neck thereof, and a wall, above said seat inclining slightly inwardly and upwardly, a metallic securing member formed with an integral circumferential elastic rim or flange adapted to impinge against said wall, a sealing member held in contact with the sealing-seat by the securing member, and means for affording engagement with a suitable tool for removing the seal.

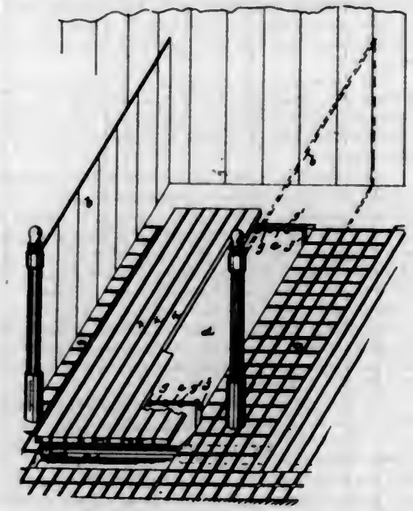


8. In a bottle-seal, the combination with a bottle having a sealing-seat in the neck thereof, and a wall above said seat inclining slightly inwardly and upwardly, a metallic securing member formed with an integral circumferential rim or flange adapted to impinge against the wall in the bottle neck and a yielding portion adapted to be engaged by a suitable tool for unsealing purposes, substantially as described.

9. In a bottle-seal, the combination with a bottle having a sealing-seat in the neck thereof and a wall thereabove and overhanging said seat and terminating therein, a securing member provided with an upturned rim or flange engaging said wall, and a sealing member held in engagement with the sealing-seat by the securing member, substantially as described.

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**756,716. HORSE-STALL.** JOSEPH F. SCHMIDT, Newark, N. J. Filed June 14, 1902. Serial No. 111,595. (No model.)



*Claim.*—1. The combination with the stall having recessed flooring, of a series of transverse pivotal slat-holders having slat-bearings eccentric to the pivots of the holders, and slats arranged in said holders, substantially as set forth.

2. The combination with a series of slats, of pivotal slat-holders having transverse bars eccentric to the pivots thereof, substantially as set forth.

3. The combination with the flooring, of a series of slats, and eccentrically-pivoted slat-holders adapted to be turned to raise the said slats from the flooring, substantially as set forth.

4. The combination with the stall-flooring having a gutter formed therein, near the rear of the stall, of a series of slats adapted when lowered to the flooring to cover the said gutter, and means for elevating said slats comprising transverse bars *c*, and pivoted arms *f*, substantially as set forth.

5. The combination with the flooring, of pivotal slat-holders consisting of pivots, arms extending from said pivots and transverse bars *c*, the said transverse bars having series of lugs adapted to hold the slats apart, substantially as set forth.

6. The combination with the slats having the transverse grooves or holes therein, which open out through the contracted openings at the bottom of the slat, of transverse bars adapted to enter through said contracted openings and turn therein to positions across the said contracted openings to hold the slats in locked relation, substantially as set forth.

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**756,717. HOSE-DRIER.** HARRY J. SCHOOLS, Lebanon, Pa. Filed July 27, 1903. Serial No. 167,131. (No model.)

*Claim.*—1. A hose-drier consisting of a receptacle having frames therein to which the sides and bottom are secured, and provided with lugs on its vertical sides, and detachable transverse supports for hose engaging said lugs; in combination with means for supplying a drying medium to the hose.

2. A hose-drier consisting of a receptacle composed of tongue-and-grooved boards and having open ends, frames within the receptacle and to which the sides and bottom are secured, and transverse detachable supports arranged one above the other and provided with seats for the hose; in combination with means at one end of the drier for supplying a drying medium to the hose.



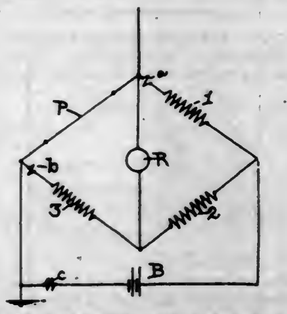
3. A hose-drier consisting of a rectangular receptacle of a height and width to form a bunk, having sides, bottom and top, the latter provided with hinges, metallic frames within the receptacle and to which said sides and bottom are secured, and means for supporting sections of hose out of contact with each other; in combination with means for supplying a drying medium to the hose.

4. A hose-drier consisting of a tongue-and-grooved rectangular receptacle, frames within the receptacle and to which the sides and bottom are secured, detachable transverse supports engaging said frames, and clamping members on the end supports separate from the walls of the receptacle; in combination with means for supplying a drying medium to the hose.

5. In a hose-drier, means for supporting hose, means for supplying a drying medium, and an air-distributer in one end of the hose for closing said end and directing the air to the outer surface of the hose.

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**756,718. WIRELESS SIGNALING SYSTEM.** HARRY SHOEMAKER, Philadelphia, Pa., assignor, by direct and mesne assignments, to International Wireless Telegraph Company, a Corporation of New Jersey, and Marie V. Gehring, Philadelphia, Pa. Filed Aug. 9, 1902. Serial No. 119,031. (No model.)




*Claim.*—1. In a wireless-telegraph receiver, the combination with a receiving-circuit, of a Wheatstone bridge containing in one arm a conductor adapted to be heated by the received energy, choking-coils in the arms of said bridge adjacent to said first-mentioned arm and a recording instrument controlled by said conductor.

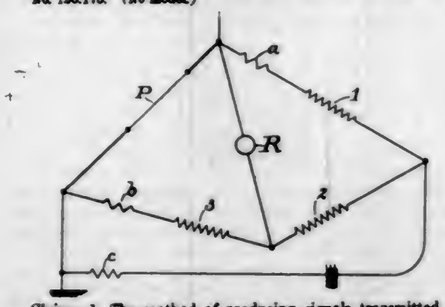
2. In a receiver of a wireless signaling system, the combination of a Wheatstone bridge containing in one arm a conductor having a large temperature coefficient, means for changing the temperature of such conductor in accordance with the energy received, choking-coils in the arms of said bridge adjacent to said first-mentioned arm, a source of energy controlled by such conductor and a recording device responsive to the changes in the current from said source of energy.

3. In a wireless-telegraph receiver, the combination with a receiving-circuit, of a Wheatstone bridge containing in one arm a conductor adapted to be heated by the received energy, means for preventing the received energy from passing to earth around said conductor, and a recording instrument controlled by said conductor.

4. In a receiver of a wireless-telegraph system, the combination of a Wheatstone bridge containing in one arm a conductor having a large temperature coefficient, means for changing the temperature of said conductor in accordance with the energy received, means for preventing the received energy from passing to earth around said conductor, a source of energy, and a recording device responsive to changes in the current from said source of energy

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**756,719. SIGNALING SYSTEM.** HARRY SHOEMAKER, Philadelphia, Pa., assignor, by direct and mesne assignments, to International Wireless Telegraph Company, a Corporation of New Jersey, and Marie V. Gehring, Philadelphia, Pa. Filed Aug. 19, 1902. Serial No. 120,175. (No model.)

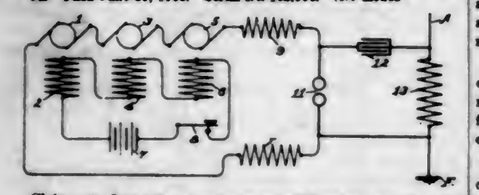



*Claim.*—1. The method of producing signals transmitted by electroradiant energy, which consists in transforming such radiant energy into the energy of electric currents, diverting said currents through one arm of a Wheatstone bridge, impeding the passage of such currents through the other arms of said bridge, transforming such energy of electric currents into the energy of heat, thereby unbalancing said bridge, and controlling a translating device in virtue of such heat energy.

2. The method of transmitting intelligence which consists in producing electroradiant energy, modifying such energy by and in accordance with the signal to be sent, converting such radiant energy into the energy of electric currents at the receiving-station, modifying the resistance of one arm of a Wheatstone bridge in virtue of heat produced by such energy of the electric currents, impeding the passage of such currents through the other arms of said bridge, and producing a signal by such resistance change.

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**756,720. WIRELESS SIGNALING SYSTEM.** HARRY SHOEMAKER, Philadelphia, Pa., assignor to Marie V. Gehring, Philadelphia, Pa. Filed June 25, 1903. Serial No. 162,998. (No model.)




*Claim.*—1. In a transmitter, a source of direct current, a freely-oscillating circuit supplied thereby, large inductance-coils between the said source of direct current and said freely-oscillating circuit, and means for impressing the energy of the oscillating circuit upon a radiating circuit or conductor.

2. In a transmitter, a source of high-potential direct current, a freely-oscillating circuit supplied thereby, large inductance-coils between the said source of current and said freely-oscillating circuit, means for controlling the direct current by and in accordance with the signal to be sent, and means for impressing the energy derived from the freely-oscillating circuit upon the natural media.

3. In a transmitter, a source of high-potential direct current, a freely-oscillating circuit supplied thereby, large inductance-coils between said source of current and said freely-oscillating circuit, means for impressing the energy of the oscillating circuit upon a radiating circuit and a key for said source of direct current.

4. In a transmitter, a source of high-potential direct current, a freely-oscillating circuit supplied thereby, large inductance-coils between said source of current and said freely-oscillating circuit, means for impressing the energy of the oscillating circuit upon a radiating circuit and a key with contacts in oil for said source of direct current.

5. In a transmitter, a direct-current circuit, a plurality of banks of storage batteries, means for charging said banks of batteries in parallel and for discharging them in series, means for impressing the energy of said batteries upon a freely-oscillating circuit and means for impressing the energy of said freely-oscillating circuit upon a radiating circuit.

6. In a transmitter, a freely-oscillating circuit containing an inductance-coil, a radiating conductor connected to the terminals of said coil, and means for charging a plurality of banks of storage batteries in parallel and for connecting them in series with said freely-oscillating circuit.

7. In a transmitter, a plurality of banks of storage batteries, contacts for each bank of batteries, two conducting-bars carrying switch-blades, means for rotating said bars so as to connect said banks of batteries in parallel for charging or in series for discharging, means for impressing the energy of said batteries when in series upon a freely-oscillating circuit and means for impressing the energy of said freely-oscillating circuit upon a radiating conductor.

8. In a transmitter, a radiating conductor, a freely-oscillating circuit connected therewith, a key with contacts in oil, large inductance-coils between said key and said oscillating circuit, and a source of direct current adapted to be impressed upon said oscillating circuit by said key.

9. In a transmitter, a radiating conductor, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries and a key with contacts in oil for connecting said batteries with the freely-oscillating circuit.

10. In a transmitter, a radiating conductor, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries, a key with contacts in oil for connecting said banks of batteries with the freely-oscillating circuit and large inductance-coils between said key and said oscillating circuit.

11. In a transmitter, a radiating conductor, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries, means for charging said banks of batteries in parallel and for discharging them in series and a key with contacts in oil for connecting said banks of batteries with the freely-oscillating circuit.

12. In a transmitter, a radiating conductor, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries, means for charging said banks of batteries in parallel and for discharging them in series, a key with contacts in oil for connecting said banks of batteries with the freely-oscillating circuit and large inductance-coils between said key and said freely-oscillating circuit.

13. In a transmitter, a radiating circuit, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries, a rotary frame carrying one set of switch-blades for connecting said batteries in parallel with a direct-current circuit and also carrying a second set of switch-blades for connecting said batteries in series and means for impressing the energy of said batteries when connected in series upon said freely-oscillating circuits.

14. In a transmitter, a radiating circuit, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries, means for connecting said batteries in parallel for charging, means for connecting said batteries in series for discharging and means for connecting said batteries when in series with said oscillating circuit.

15. In a transmitter, a radiating circuit, a freely-oscillating circuit connected therewith, a plurality of banks of storage batteries, means for connecting said batteries in parallel for charging, means for connecting said batteries in series for discharging, large inductance-coils between said batteries and said freely-oscillating circuit and a key for connecting said batteries when in series with said oscillating circuit.

16. In a transmitter, a circuit containing a spark-gap, a condenser and a coil, a radiating conductor connected to said coil, a source of direct current, and large inductance-coils connected between said source of direct current and said spark-gap.



17. In a transmitter, a circuit containing a spark-gap, a condenser and a coil, a radiating conductor connected to said coil, a source of high-potential direct current and large inductance-coils connected between said source of high-potential direct current and said spark-gap.

18. In a transmitter, a circuit containing a spark-gap, a condenser and a coil, a radiating conductor connected to said coil, a source of direct current, large inductance-coils connected between said source and said spark-gap and a key connected between said inductance-coils and said source.

19. In a transmitter, a circuit containing a spark-gap, a condenser and a coil, a radiating conductor connected to said coil, a source of high-potential direct current, large inductance-coils connected between said source and said spark-gap and a key connected between said inductance-coil and said source.

20. In a transmitter, a circuit containing a spark-gap, a condenser and a coil, a radiating conductor connected to said coil, a source of direct current, large inductance-coils connected between said source and said spark-gap and a key with contacts in oil connected between said inductance-coils and said source.

21. In a transmitter, a circuit containing a spark-gap, a condenser and a coil, a radiating conductor connected to said coil, a source of high-potential direct current, large inductance-coils connected between said source and said spark-gap and a key with contacts in oil connected between said inductance-coils and said source.

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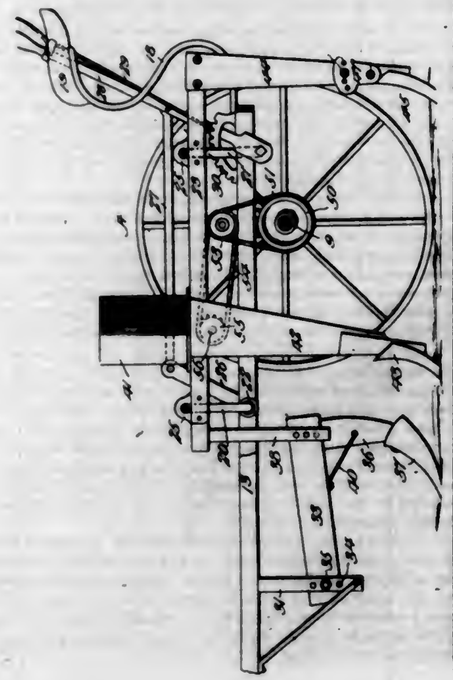
**756,721. HEATER.** JACOB SILVERBERG, Pittsburg, Pa. Filed Nov. 20, 1903. Serial No. 181,949. (No model.)



*Claim.*—In a heater of the type described, a corrugated cylindrical burner provided with perforations and having a covering of non-combustible material, an annular depending flange carried by said burner at its upper end forming a deflector, and a supply-pipe communicating with the burner.

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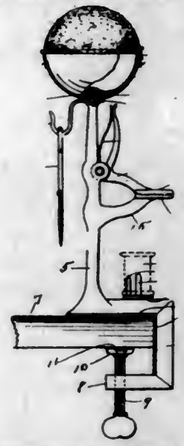
**756,722. CORN OR COTTON PLANTER.** GIDEON B. SIMMONS and JOHN R. WHORTON, Dallas, Tex. Filed Sept. 4, 1903. Serial No. 171,997. (No model.)



*Claim.*—In a planter of the character described, the combination of a lower stationary frame, crank-axles journaled in the frame, an upper vertically-movable frame pivotally mounted on the bails of the axles, a plow secured to and depending from the forward end of the movable frame, a plow secured to and depending from the rear end of the movable frame, a seed-hopper on the movable frame intermediate the plows, a seed-spout depending therefrom, a lever-arm on the journal of the forward axle, a lever on the journal of the rear axle, a pitman connecting the lever-arm and the lever, and means to hold the lever in a set position, substantially as described

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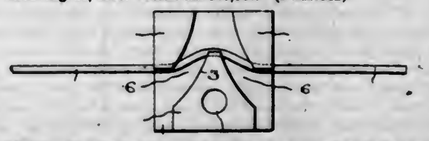
**756,723. WORK-HOLDING DEVICE.** CARL F. SKOOG, Chicago, Ill. Filed Nov. 30, 1903. Serial No. 183,063. (No model.)




*Claim.*—As an improved article of manufacture, a combination sewing device consisting of a supporting-standard having means at its lower end to secure it to a table, and provided at its upper end with a reduced screw-threaded portion, a washer located around the reduced portion of the standard and having a depending hook, and a box secured on the reduced portion of the standard, substantially as described.

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**756,724. INSULATOR.** JOHN C. SNODGRASS, Steubenville, Ohio. Filed Aug. 26, 1903. Serial No. 170,847. (No model.)




*Claim.*—An insulator formed in a single piece of insulating material and comprising a flat block, an extension at one edge of the block and having a substantially V-shaped inner end extending across the center of the block, the apex of said extension being grooved and said extension having an aperture which extends transversely through the block for the reception of insulator-securing means, and oppositely-disposed similar shoulders integral with the block at the corners thereof adjacent the apex of the extension, said shoulders overlapping said apex and having grooves in their inner ends, the grooves in said ends and in the apex being out of alinement but in the same plane.

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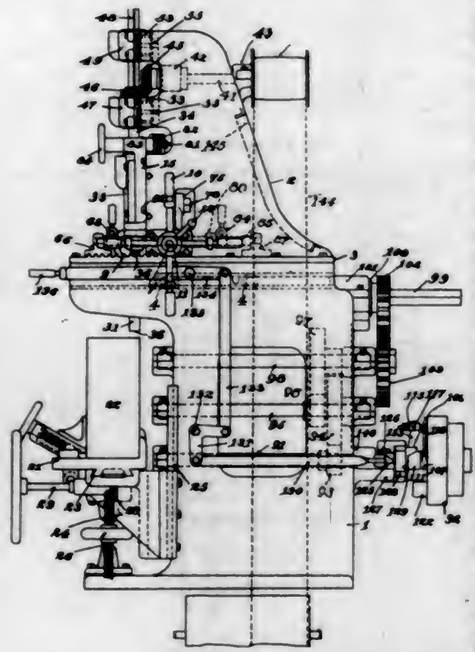
**756,725. HOLLOW-CHISEL MORTISING-MACHINE.** HARRY B. SPENCER, Norwood, Ohio, assignor to J. A. Fay & Egan Company, Cincinnati, Ohio, a Corporation of West Virginia. Filed Dec. 4, 1903. Serial No. 183,603. (No model.)

*Claim.*—1. In a hollow-chisel mortising-machine, the combination of a hollow-chisel ram, an auger-spindle rotatable thereon, and elliptical gearing for reciprocating said hollow-chisel ram.

2. In a hollow-chisel mortising-machine, the combination of a ram supporting a hollow chisel and auger rotatable in the hollow chisel, elliptical gearing for reciprocating the ram, and a horizontally and vertically movable work-supporting table.

3. In a hollow-chisel mortising-machine, the combination of a

ram supporting a hollow chisel and auger rotatable in the hollow chisel, elliptical gearing for reciprocating the ram, and means for instantly stopping said reciprocation.



4. The combination, in a hollow-chisel mortising-machine, of a frame, a carriage on the frame, a reciprocating hollow-chisel ram mounted on the carriage and arranged for supporting a hollow chisel, an auger-spindle rotatably mounted on the ram and arranged for supporting an auger in said hollow chisel, a shaft, means between said shaft and the hollow-chisel ram for causing reciprocation of said ram, a driving-shaft, and elliptical gearing between said driving-shaft and said first-named shaft for alternately rotating the latter at different speeds.

5. In a hollow-chisel mortising-machine, the combination of a frame, a carriage movable thereon, a reciprocating hollow-chisel ram mounted on the carriage arranged for having a hollow chisel attached thereto, a rotatable auger-spindle journaled in the ram and arranged for having an auger rotatable in the hollow chisel attached thereto, a shaft and connections on said carriage for reciprocating said ram, a pair of elliptical gears for rotating said shaft, said shaft having a splined sliding connection with one of said elliptical gears.

6. In a hollow-chisel mortising-machine, the combination of the frame, a carriage movable thereon, hollow-chisel ram reciprocating on the carriage, a bearing on said ram, an auger-spindle journaled in said bearing, said spindle having an extension projecting beyond the ram, bearings on said carriage for said extension, bolts taking through each of said last-named bearings and stepped between said bearings and carriage, and other bolts clamping said last-named bearing to the carriage, constructed and arranged for alining said last-named bearings with said hollow-chisel ram-bearing.

7. In a hollow-chisel mortising-machine, the combination of a hollow-chisel ram and auger-spindle journaled thereon, a hollow chisel secured to said ram and an auger in said chisel secured to said spindle, means for reciprocating said ram, elliptical gearing for driving said latter means, a driving-shaft for said elliptical gearing, a rotative agency loosely journaled thereabout, a collar taking about said driving-shaft, a friction-clamp having connection with said driving-shaft for causing the clamp and driving-shaft to rotate together, said clamp operated by said collar to clamp said rotative agency for causing rotation of said driving-shaft, a rigid part having a friction-face and said collar having a friction-face engaging therewith, constructed and arranged for starting and instantly stopping the reciprocation of the ram, substantially as described.

8. In a hollow-chisel mortising-machine, the combination with a frame, a carriage movable thereon, a hollow-chisel ram on the carriage, an auger-spindle rotating thereon, means for reciprocating said ram, elliptical gearing for driving said latter means, a driving-shaft, a rotative agency for rotating said driving-shaft, a friction-clamp therefor, a collar for said shaft, a connection between said friction-clamp and said collar, said collar having a friction face and a part rigid with relation to the frame having a friction-face arranged to be engaged by said friction-face on the collar, and means for shifting said collar for causing engagement either between said friction-clamp and rotating agency for rotating the driving-shaft or engagement between said collar and said named part having the friction-face rigid with relation to the frame for stopping the shaft, substantially as described.

9. In a hollow-chisel mortising-machine, the combination of the frame, movable carriage, hollow-chisel ram having rotating auger-spindle thereon, means for reciprocating said ram, elliptical gearing for driving said latter means, a driving-shaft for said elliptical gearing, a pulley loosely mounted on said driving-shaft and having an inner flange, a pair of clamping-plates secured to said shaft, a yoke having connection with one of said plates, said connection projecting loosely past the other of said plates, a lever pivoted on said yoke and having a nose between its pivot and said last-named plate, a collar having connection with said lever for shifting the same, said collar having connection with said shaft for permitting longitudinal movement thereon and causing rotation therewith, said collar having a friction-face and a part rigid with relation to the frame having a friction-face arranged to be engaged by said latter friction-face, and means for shifting the collar for starting and stopping the reciprocation of the hollow-chisel ram, substantially as described.

10. In a hollow-chisel mortising-machine, the combination of the frame, movable carriage, hollow-chisel ram having rotating auger-spindle thereon, a driving-shaft, a pulley loosely mounted on said driving-shaft and having an inner flange, a pair of clamping-plates secured to said shaft, a yoke having connection with one of said plates, said connection projecting loosely past the other of said plates, a lever pivoted on said yoke and having a nose between its pivot and said last-named plate, a collar having connection with said lever for shifting the same, said collar having connection with said shaft for permitting longitudinal movement thereon and causing rotation therewith, said collar having a friction-face and a part rigid with relation to the frame having a friction-face arranged to be engaged by said latter friction-face, and means for shifting the collar, an intermediate shaft, means between said intermediate shaft and hollow-chisel ram for reciprocating said ram, and elliptical gearing between said intermediate shaft and said driving-shaft

11. In a hollow-chisel mortising-machine, the combination of the frame, a movable carriage, reciprocating hollow-chisel ram, auger-spindle journaled on said ram, a crank-shaft, a cross-head, a threaded rod connecting said ram and cross-head for shifting said ram, a pitman between said cross-head and crank of the crank-shaft, a driving-shaft, a pair of elliptical gears between said driving-shaft and crank-shaft, and a slidable connection between one of said elliptical gears and said crank-shaft constructed for rotating said shaft substantially as described.

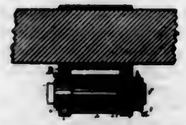
12. In a hollow-chisel mortising-machine, the combination of a hollow-chisel ram, an auger-spindle rotatable thereon, a shaft for the auger-spindle at right angles to the latter, bevel-gearing forming driving connection between said shaft and spindle, a pulley on said shaft, means for reciprocating the hollow-chisel ram, a shaft in a plane below said latter means and in vertical plane with the machine, a pulley thereon, and constructed and arranged for passing a belt directly between said named pulleys, substantially as described.

13. In a hollow-chisel mortising-machine, the combination of the frame, carriage, hollow-chisel ram, auger-spindle rotatable on the latter, a shaft for the auger-spindle at right angles to the latter, bevel-gearing forming driving connection between said shaft and spindle, a pulley on said shaft, driving means located outside the machine-frame imparting alternately varying speeds for reciprocating the hollow-chisel ram, a shaft in a plane below said latter means and in vertical plane with the machine, a pulley thereon, and constructed and arranged for passing a belt directly between said named pulleys, substantially as described.

14. In a hollow-chisel mortising-machine, the combination with the frame, carriage, hollow-chisel ram and auger-spindle on the latter, of elliptical gearing located outside the machine-frame imparting alternately varying speeds for reciprocating the hollow-chisel ram, a pulley for the auger-spindle, a second pulley, and constructed and arranged for permitting a belt to be passed between said pulleys and through the carriage.



**756,726. THILL-COUPLING.** JOHN A. STEELE, Minneapolis, Minn. Filed Nov. 19, 1902. Serial No. 132,010. (No model.)



*Claim.*—A thill-coupling, comprising a clip formed with a pair of spaced-apart ears one of said ears being formed with a threaded opening, a shaft-iron occupying the entire space between the said ears, a coupling-bolt provided with a threaded end, a tapered portion formed on the said bolt, an intervening portion formed between the said tapered portion and threaded end, said intervening portion being of lesser diameter than either the said tapered portion or the threaded end, and adapted to fit into the threaded opening when the coupling-bolt is used to take up the wear and a nut on the threaded end of the said bolt, substantially as described.

**756,727. COMBINATION STOVE-LID AND COOKING-UTENSIL LIFTER.** GEORGE W. STENGEL, Amelia, Va. Filed July 26, 1903. Serial No. 167,031. (No model.)



*Claim.*—1. In a device of the character described comprising two members, each having one of its ends bent to provide a jaw, links hingedly connecting said members, means for normally projecting one jaw in advance of the other, and means carried by the links to limit the advance movement of said jaw.

2. A device of the character described, comprising two members, each having one of its ends bent to provide a jaw, links hingedly connecting said members, means for normally projecting one of the jaws in advance of the other, and projections on said links to engage the members to limit the advance movement of said jaw.

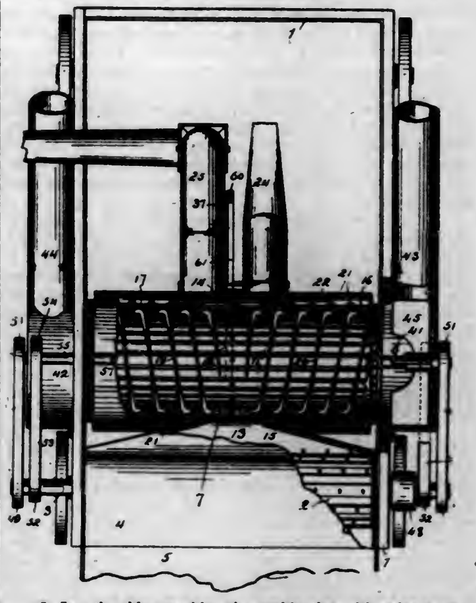
3. A device of the character described comprising two channeled members, each having one of its ends bent to provide a jaw, links situated in the channels to hingedly connect said members, a spring situated in the channels to normally retain one of the jaws in advance of the other, projections on said links to engage the members to limit the advance movement of said jaw.

4. A device of the character described comprising two channeled members, one of said members having one of its ends provided with a lip and laterally-projecting flanges adjacent said lip, each of said members having one of its ends bent to provide a jaw, links mounted in the channels to hingedly connect the members, a spring situated within the channel to normally retain one of the jaws in advance of the other, and projections on said link to engage the members to limit the advance movement of said jaw.

5. A device of the character described, comprising two members each provided with a jaw, one of said jaws being provided with a recess adapted to be closed by the heel of the other jaw, means for connecting said members, means for separating the jaws, and means carried by the first-mentioned means to limit the separation of the jaws.

**756,728. THRESHING-MACHINE.** WILLIAM G. STEWART, Excelsior Springs, Mo., assignor of one-half to Charles W. Bechtel, Kansas City, Mo. Filed June 26, 1903. Serial No. 163,160. (No model.)

*Claim.*—1. In a threshing-machine, the combination with an inner rotatable hollow drum provided with openings in its periphery for the passage of the chaff, of two hollow outer rotatable drums encircling the inner drum and having a space between their inner ends and provided each in its periphery with openings for the passage of grain, means for feeding the straw and grain through the said space and upon the outer periphery of the inner drum, means for dividing the straw, thus fed upon the inner drum, and forcing it oppositely between the inner drum and the two outer drums toward the two ends of the inner drum, and means for ejecting the chaff from the interior of the inner drum through the two ends thereof.



3. In a threshing-machine, the combination with an inner rotatable hollow drum provided with openings in its periphery for the passage of the chaff, of two hollow outer rotatable drums encircling the inner drum and having a space between their inner ends and provided each in its periphery with openings for the passage of grain, means for feeding the straw and grain through the said space and upon the outer periphery of the inner drum, the outer periphery of the inner drum being provided with two spiral flanges encircling the same, the said flanges being inclined in opposite directions, whereby the straw coming into contact with the said two flanges is divided and forced lengthwise upon the inner drum in opposite directions.

4. In a threshing-machine, the combination with an inner rotatable hollow drum provided with openings in its periphery for the passage of the chaff, of two hollow outer rotatable drums encircling the inner drum and having a space between their inner ends and provided each in its periphery with openings for the passage of grain, means for feeding the straw and grain through the said space and upon the outer periphery of the inner drum, the outer periphery of the inner drum being provided with two spiral flanges encircling the same, the said flanges being inclined in opposite directions, whereby the straw coming in contact with the said two flanges is divided and forced lengthwise upon the inner drum in opposite directions, and means for ejecting the chaff from the interior of the inner drum through the two ends thereof.

5. In a threshing-machine, the combination with an inner rotatable hollow drum provided in its periphery with openings for the passage of chaff, of two rotatable fans disposed one at each end of the drum for drawing the chaff from the interior through the two ends of the drum, two hollow rotatable outer drums encircling the inner drum and having a feed-space between their inner ends, means for feeding the straw and grain upon the outer periphery of the inner drum through said feed-space, and means for dividing the straw thus fed and forcing it lengthwise upon the inner drum in opposite directions, the outer drums each being provided with passages in its periphery for the passage of the grain separated from the straw.

6. In a threshing-machine, the combination with an inner hollow rotatable drum provided in its periphery with openings for the passage of chaff to the interior thereof, and provided with a series of teeth encircling its outer periphery, of means for discharging the chaff from the inner drum through both its ends, two hollow rota-

table outer drums encircling the inner drum and having a feed-space between them disposed opposite the said series of teeth, the said outer drums being each provided with openings in its periphery for the passage therethrough of grain, and means for forcing the straw fed into said feed-space upon the inner drum in opposite directions lengthwise of the inner drum and between the outer and the inner drums.

7. In a threshing-machine, the combination with an inner hollow rotatable drum provided in its periphery with openings for the passage of chaff to the interior of the drum, and provided with a series of teeth around its outer periphery, and having also on its outer periphery two oppositely-inclined spiral flanges encircling the drum and disposed one at each side of the said series of teeth, of means for discharging the chaff from the interior of the drum through both ends thereof, two hollow rotatable outer drums encircling the inner drum and provided with a feed-space between them disposed opposite the said teeth, and provided each with openings in its periphery for the passage of grain, and means for rotating the inner and outer drums.

8. In a threshing-machine, the combination with an inner hollow rotatable drum provided in its periphery with openings for the passage of chaff to the interior thereof, of two hollow rotatable outer drums encircling the inner drum and provided each with openings in its periphery for the passage therethrough of grain, the threshing-cylinder, means for conveying the threshed straw and grain from the threshing-cylinder upon the inner drum and into the inner ends of the outer drums, means for dividing the straw and grain thus fed and forcing it in opposite directions between the inner and outer drums toward the two ends of the inner drum, and means for discharging the chaff from the interior of the inner drum.

9. In a threshing-machine, the combination with the threshing-cylinder, of a hollow rotatable inner drum provided on its periphery with openings for the passage of chaff into the interior of the drum, two hollow rotatable outer drums provided each with openings in its periphery for the passage therethrough of grain, means for conveying the straw and grain from the threshing-cylinder to the outer periphery of the inner drum and between the said drum and the outer drums, means for dividing the straw and grain thus conveyed and forcing it in opposite directions from between the inner and the outer drums, and two rotatable fans disposed one at each end of the inner drum for drawing the chaff in two directions from the interior of the inner drum.

10. In a threshing-machine, the combination with the threshing-cylinder, of a hollow rotatable inner drum provided on its periphery with openings for the passage therethrough of the chaff, two hollow rotatable outer drums encircling the inner drum and having a space between their inner ends, means for conveying the threshed straw and grain from the threshing-cylinder to the outer periphery of the inner drum and between the same and the outer drums, means for dividing the straw thus conveyed and forcing it lengthwise in opposite directions along the inner drum, two discharge-pipes disposed one at each end of the inner cylinder for receiving the straw, means for forcing the discharged straw through the said pipes, and means for drawing the chaff from the interior of the inner drum.

11. In a threshing-machine, the combination with the threshing-cylinder, of a hollow rotatable inner drum provided with peripheral openings for the passage therethrough to the interior of the chaff, means for forcing the chaff therethrough and out from the ends of the drum, two hollow rotatable drums encircling the inner drum with a feed-space between their ends, means for conveying the straw and grain from the threshing-cylinder to said feed-space, means for dividing the same and forcing it in opposite directions between the inner and the outer drums, the outer drums being each provided with peripheral openings for the passage therethrough of the grain, and a casing encircling the outer drums for receiving the separated grain.

12. In a threshing-machine, the combination with the threshing-cylinder, of a hollow rotatable inner drum provided with peripheral openings for the passage to the interior of the drum of the chaff, means for withdrawing the chaff therefrom through both ends of the drum, two hollow rotatable drums encircling the inner drum and having a feed-space between them, means for conveying the straw and grain from the threshing-cylinder to said feed-space, each of the outer drums being provided with peripheral openings for the passage of grain, means for dividing the straw and grain thus fed and forcing it in opposite directions between the inner and the outer drums, two chambers each provided with a discharge-outlet, the said chambers being provided with inlets for receiving respectively the straw and chaff discharged from the drums, and means for ejecting the straw and chaff from the said chambers.

13. In a threshing-machine, the combination with an inner drum provided with peripheral openings for the passage to the interior of the chaff, of two outer drums encircling the inner drum and provided each with openings in its periphery for the passage therethrough of grain separated from the chaff and straw, means for drawing the chaff to the interior of the inner drum and discharging it through both ends of the drum, means for conveying the threshed straw and grain to the periphery of the inner drum and between the ends of the outer drums, means for dividing the straw and grain thus fed and forcing it in opposite directions between the inner and the outer drums, a casing encircling the outer drums for receiving the grain discharged therefrom, and means for rotating the said drums.

14. In a threshing-machine, the combination with an inner drum provided with peripheral openings for the passage of chaff to the interior of the drum, the drum being also provided with means for dividing the straw and grain and forcing it lengthwise along the drum in opposite directions, means for separating the grain from the straw during their passage along the drum, means for forcing the chaff to the interior of the drum and discharging it from both ends of the same, and means for rotating the drum.

15. In a threshing-machine, the combination with an inner rotatable drum provided with peripheral openings for the passage of chaff to the interior of the drum, of means for withdrawing the chaff therefrom and discharging it from both ends of the drum, two drums encircling the inner drum and having a space between their inner ends, means for feeding the straw and grain through said space upon the inner drum, means by which the straw and grain thus fed is divided and forced in opposite directions between the inner and the outer drums, the outer drums each being provided with peripheral openings for the passage therethrough of the grain, a casing encircling the outer drums for receiving the grain, and an elevating device connected with said casing for discharging the grain therefrom.

16. In a threshing-machine, the combination with an inner rotatable drum provided with peripheral openings for the passage of chaff, the drum being provided with two straw-engaging devices arranged spirally around the periphery of the drum, the inclination of the spirals being opposite, whereby the straw engaged thereby is forced in opposite directions upon the drum, of means for feeding the threshed straw and grain upon the drum between the said straw-engaging devices, and two outer rotatable drums encircling the inner drum and provided each with peripheral openings for the passage of the grain, and means for rotating the said drums.

17. In a threshing-machine, the combination with an inner drum provided with peripheral openings for the passage of chaff to the interior of the drum, of two outer drums encircling the inner drum, a space being provided between the inner and the outer drums and between the two outer drums into which the threshed grain and straw is fed, the outer drums being provided each with peripheral openings for the passage of grain separated from the straw, a casing encircling the outer drums for receiving the grain discharged therefrom, means for rotating the said drums, means for dividing the threshed grain and straw which is fed into the space between the drums and forcing it in opposite directions between the inner and the outer drums, means for discharging the chaff from the interior and through the two ends of the inner drum, two chambers provided with inlets for receiving the straw and chaff discharged from the ends of the drums, the said chambers being provided each with a discharge-outlet, means for discharging through the said outlets the chaff and straw from the said chambers, and means for rotating the inner and the outer drums.

18. In a threshing-machine, the combination with an inner drum provided with peripheral openings for the passage of chaff to the interior of the drum and having two peripheral oppositely-inclined spiral flanges leading respectively from near the middle toward the ends of the drum, of two outer drums encircling the inner drum and having a feed-space between the ends of the outer drums and between the said drums and the inner drum, each of the outer drums being provided with peripheral openings for the passage of grain separated from the straw, a casing encircling the outer drums for receiving the grain discharged from the said drums, means for rotating the inner and the outer drums, means for discharging the chaff from the interior of the inner drum through the ends thereof, two chambers provided with inlets disposed respectively so as to receive the straw and chaff discharged from the drums, the said chambers being provided each with a discharge-outlet and means for discharging through the said outlet the straw and chaff from the said chambers.

19. In a threshing-machine, the combination with a rotatable inner drum provided with peripheral openings for the passage of the chaff to the interior of the drum, of two outer rotatable drums encircling the inner drum with a feed-space between the ends of the outer drums and between the said drums and the inner drum, the said outer drums being each provided with peripheral openings for the passage of the grain separated from the straw, a casing encircling the said outer drums for receiving the grain discharged therefrom, two devices for conveying the grain from the said casing, and means for controlling the passage of the grain from the said casing to the said devices.

20. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of chaff to the interior of the body, a series of teeth arranged around and projecting from the periphery of the body, and two straw-engaging devices arranged spirally around the body and leading respectively in opposite directions from said teeth, the inclination of the spirals being in opposite directions.

21. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of the chaff to the interior thereof, a series of teeth arranged around and projecting from the periphery of the body, and two spiral flanges encircling the periphery of the body and leading respectively in opposite directions from said teeth, the inclination of the said spiral flanges being in opposite directions.

22. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of the chaff to the interior of the body, the body being provided with two fans disposed transversely within the same and near the ends thereof, the blades or wings of one fan being inclined oppositely to the blades or wings of the other fan.

23. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of the chaff to the interior of the body, the body being provided with two fans disposed transversely within the same and near the ends thereof, the blades of one fan being disposed oppositely to the blades of the other fan, and two straw-engaging devices arranged spirally around the body and leading respectively in opposite directions from near the middle toward the ends of the body, the flanges being oppositely inclined.

24. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of chaff to the interior of the body, the body being provided with two fans disposed transversely within and near the ends thereof, the blades of one fan being inclined oppositely to the blades of the other fan, and two spiral flanges encircling the periphery of the body in opposite directions from near the middle toward the ends thereof, the said flanges being oppositely inclined.

25. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of chaff to the interior of the body, the body being provided inside with two transverse fans disposed near the ends thereof, the blades of one fan being inclined oppositely to the blades of the other fan, a series of teeth arranged around and projecting from the periphery of the body, and two straw-engaging devices arranged spirally around the body and leading respectively in opposite directions from said teeth, the spirals being oppositely inclined.

26. A separating-drum for a threshing-machine comprising a tubular body having peripheral openings for the passage of chaff to the interior of the body, the body being provided with two fans disposed transversely within and near the ends thereof, the blades of one being inclined oppositely to the blades of the other fan, a series of teeth arranged around and projecting from the periphery of the body, and two flanges spirally encircling the body and leading respectively in opposite directions from said teeth, the flanges being oppositely inclined.

27. A separating-drum for a threshing-machine comprising two wheels which form the ends of the drum, the spokes of each wheel being inclined at an angle to a plane parallel to the ends of the wheel, thus forming fan-blades, the spokes of one wheel being inclined oppositely to the spokes of the other wheel, and a series of bars secured to and disposed longitudinally at suitable intervals around the peripheries of the said two wheels.

28. A separating-drum for a threshing-machine comprising two wheels which form the ends of the drum, the spokes of each wheel being inclined at an angle to a plane parallel to the ends of the wheel, thus forming fan-blades, the spokes of one wheel being inclined oppositely to the spokes of the other wheel, a series of bars secured to and disposed longitudinally at suitable intervals around the peripheries of the said two wheels, and two spiral flanges secured upon the outside of said bars, the said flanges being oppositely inclined and leading from near the middle of said bars toward the ends thereof.

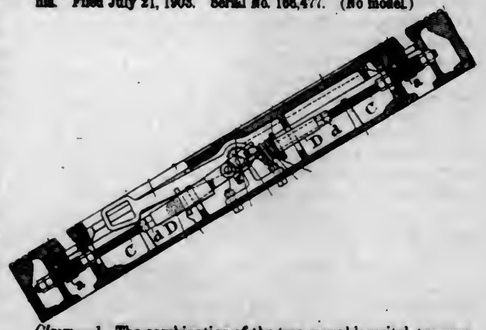
29. A separating-drum for a threshing-machine comprising two wheels which form the ends of the drum, the spokes of each wheel forming fan-blades and being inclined to a plane parallel with the ends of the wheel, the spokes of one wheel being inclined oppositely to the spokes of the other wheel, a series of longitudinal bars secured to and disposed at suitable intervals around the peripheries of the said two wheels, a ring between the said two wheels and to the peripheries of which the said bars are secured, a series of teeth arranged around the periphery of the said ring and projecting beyond the said bars, and two oppositely-inclined spiral flanges secured upon the outside of said bars, the said flanges leading respectively in opposite directions from the said teeth and toward the ends of the said bars.

30. In a threshing-machine, the combination with a rotatable threshing-cylinder, of a rotatable separating-drum provided with peripheral openings for the passage of chaff to the interior of the said drum, two outer drums encircling the said drum and provided each with peripheral openings for the passage of grain, a space being provided between the ends of the outer drums and between the said drums and the inner drum, a casing encircling the inner drum having open ends disposed respectively in the ends of the outer drums, means for conveying the straw and grain threshed by the threshing-cylinder into the said casing, means for dividing the straw and grain so conveyed into two parts, means for forcing the said two parts in opposite directions between the inner and the outer drums and toward the ends thereof, and means for rotating the said threshing-cylinder and the said drums at the proper speed.

31. In a threshing-machine, the combination with a rotatable threshing-cylinder, of a rotatable drum provided with peripheral openings for the passage of chaff to the interior thereof, and having a series of teeth disposed around the periphery of said drum, the drum being provided also with two oppositely-inclined spiral flanges encircling the same and leading respectively from the said teeth toward the ends of the drum, two outer drums encircling the inner drum and provided each with peripheral openings for the passage of grain, a space being provided between the ends of the outer drums and between the same and the inner drum, a casing encircling the inner drum and having open ends disposed respectively in the ends of the outer drums, means for conveying the straw and grain from the threshing-cylinder into said casing, and means for rotating the inner and outer drums and the threshing-cylinder at the proper speed.

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**756,729. SPRING-SWITCH.** HENRY C. STUFF, Johnstown, Pa., assignor to the Lorain Steel Company, a Corporation of Pennsylvania. Filed July 21, 1903. Serial No. 166,477. (No model.)




*Claim.*—1. The combination of the two movable switch tongues or points, a rod connecting the same, spring cones or bearings sleeved on said shaft, a spring between said cones or bearings, a yoke embracing said spring, and lever mechanism connected to said yoke and arranged parallel therewith.

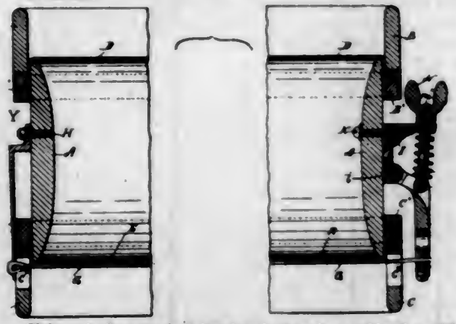
2. The combination of the two movable switch tongues or points, a rod connecting them, a spring seated on said rod and arranged to actuate the same to endwise movement in both directions, a yoke for acting upon said spring, a hand-lever movable in a parallel direction with said spring, and an intermediate connection between the said lever and the yoke arranged to form a lock for said rod and tongues.

3. The combination with the two track structures having each a movable point or tongues, and the box arranged transversely between the said structures, and secured thereto, said box having a slotted cover-plate, of the rod extending through the said box and forming a rigid connection between the points or tongues, the spring seated on said rod and arranged to actuate the same in both directions, a yoke for compressing said spring, a hand-lever accessible

through and working in the slot of said plate, and an intermediate operating connection between said yoke and the hand-lever, and arranged to form a lock for the rod.

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**756,730. SNARE-TIGHTENING DEVICE FOR DRUMS.** CHARLES A. STROMBERG, Chelsea, Mass. Filed July 30, 1903. Serial No. 166,312. (No model.)



*Claim.*—1. In a snare-tightening device, the combination with the shell of a drum, of a snare-holder secured to the upper portion of the shell and depending below the same, and a snare-clamp adjustably secured to the shell diametrically opposite to the holder and depending below the shell.

2. In a snare-tightening device, the combination with a drum consisting of a shell, a pair of hoops, the lower of which is provided with diametrically opposite openings, a plurality of snares extending through said openings and an upper, and a lower head secured to the shell by means of the hoops, of a snare-holder connected at its upper end to the shell and depending downwardly to partly extend across one of the openings in the lower of the loops, said holder adapted at its lower end to be connected to one end of the snares, and a snare-clamp adjustably secured to said shell diametrically opposite to the holder and depending below the shell and to a point opposite and removed from the other of said openings of the lower hoop, said snares adapted to have their other ends secured to the lower end of said snare-clamp.

3. In a snare-tightening device, the combination with the shell of a drum, of a snare-holder secured at its upper end to the shell and depending below the same, a bracket secured to said shell diametrically opposite to the holder, and an adjustable snare-clamp pivotally connected to said bracket.

4. In a snare-tightening device, the combination with the shell of a drum, of a snare-holder secured to the shell and depending below the same, a bracket secured to the shell at a point diametrically opposite to the holder and provided with an opening, a snare-clamp pivotally connected to said bracket and depending below the shell, a threaded rod secured at its lower end to the clamp and extending upwardly through said opening, a spring mounted upon the rod and interposed between the upper portion of the bracket and said clamp, and a nut mounted upon the screw-threaded portion of said rod.

5. In a snare-tightening device, the combination of the shell of a drum, of a snare-holder secured to the shell and depending below the same, a bracket secured to the shell at a point diametrically opposite to said holder, said bracket at its upper end provided with an extension having an opening, a clamp having its upper end pivotally connected to the lower end of said bracket, and adapted to extend below the shell and arranged a suitable distance therefrom, a rod connected at its lower end to the clamp and extending through said opening, a spring mounted on said rod, and an adjusting-nut carried by the rod.

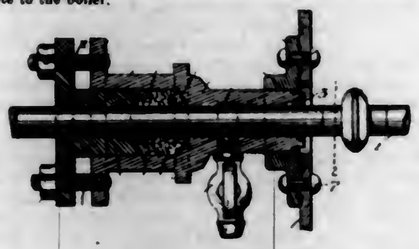
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**756,731. PACKING-GLAND FOR THROTTLE-STEMS.** JOHN D. STURTS, Youngwood, Pa. Filed Jan. 26, 1904. Serial No. 190,693. (No model.)

*Claim.*—1. In combination with the throttle-stem and the valve carried thereby, a gland-body recessed at its one end to receive the gland and having a valve-seat on its other end and formed with a steam-exhaust intermediate said recess and valve-seat.

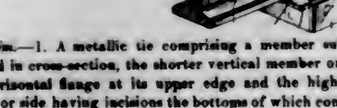
2. In combination with the throttle-stem and the valve carried thereby, a gland-body carrying an adjustable flange on its forward end for securement to the boiler, and a valve-seat on said end extending beyond said flange so as to project within the boiler.

3. In combination with the throttle-stem, and the valve carried thereby, a gland-body having its forward end reduced for a portion of its length and exteriorly threaded, the opposite end of said body being enlarged and apertured, a gland adjustably received in said apertured portion, a flanged plate having threads and received over said threaded end of the gland-body, and means for securing said plate to the boiler.



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**756,732. TOOL-HANDLE.** DEWITT TAPPAN, Rochester, N. Y. Filed Nov. 18, 1903. Serial No. 181,622. (No model.)



*Claim.*—1. In a tool-handle, the combination, with a handle having a cylindrical recess, and an internally-screw-threaded sleeve secured in the said recess and having a conical socket at its bottom; of an externally-screw-threaded sleeve which engages with the aforesaid sleeve and which has a conical end, and gripping-jaws arranged in the said sleeves between the said conical parts.

2. In a tool-handle, the combination, with a handle having a recess, an internally-screw-threaded sleeve secured in the said recess and provided with a conical bottom, and a revoluble cone provided with a conical socket in its face and pivoted in the conical bottom of the said recess; of an externally-screw-threaded sleeve which engages with the aforesaid sleeve and which has a conical end, and gripping-jaws arranged in the said sleeves between the said conical socket and conical end.

3. In a tool-handle, the combination, with a handle having a recess, an internally-screw-threaded sleeve secured in the said recess and having a conical socket at its bottom; of an externally-screw-threaded sleeve which engages with the aforesaid sleeve and which has a conical end, gripping-jaws arranged in the said sleeves between the said conical parts, and two spring-arms arranged at the sides of the said jaws and formed of a continuous piece of wire having its middle part arranged in a hole in one jaw and its ends inserted in a hole in the other jaw.

4. In a tool-handle, the combination, with a handle having a cylindrical recess and a conical end, of an internally-screw-threaded sleeve inserted in the said recess and provided with a beveled flange which incloses the said conical end of the handle, a screw which passes through the rear part of the handle and holds the said sleeve in position, an internal sleeve which engages with the aforesaid sleeve and which has a conical end, and gripping-jaws arranged in the said internal sleeve between the said conical end and the bottom of the aforesaid sleeve.

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**756,733. METALLIC RAILROAD-TIE.** FRANKLIN L. TEEL, Logan, Iowa. Filed Aug. 27, 1903. Serial No. 171,019. (No model.)



*Claim.*—1. A metallic tie comprising a member substantially L-shaped in cross-section, the shorter vertical member or side having a horizontal flange at its upper edge and the higher vertical member or side having incisions the bottoms of which come in alinement with the upper surface of the flange of said shorter member or side, and stop-shoulders upon said flange adapted to engage the sides of the rail, substantially as described.

2. A tie comprising two counterpart members substantially L-shaped in cross-section, the shorter side of each member having a horizontal flange along its upper edge and the higher side having seatings for the rails, the bottoms of said seatings being in alinement with the upper surface of said flange, stop-shoulders formed on said flanges in alinement with said seatings in the higher sides, and means for uniting said members with their higher sides contiguous so as to clamp and hold the rails, substantially as described.

3. A metallic tie comprising a rectangular box-like body or shell having closed ends and sides of unequal height, the shorter side having a horizontal flange along its upper edge and the higher side having rail-seatings formed therein, the bottoms of said seatings being in alinement with the upper surface of said flange, stop-shoulders formed on said flange in alinement with said seatings, in combination with railroad-rails and means for securing said rails in said seatings and between said stop-shoulders, substantially as described.

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**756,734. APPAREL-BELT.** JOHN A. TESSNER, Providence, R. I. Filed Jan. 5, 1903. Serial No. 137,969. (No model.)

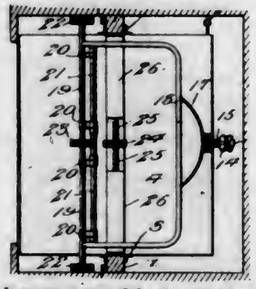


*Claim.*—1. In a lady's belt, the combination of the downwardly turned metallic band and the hinged downwardly-pointed clasping-plate, with the hook-lever adapted for engagement with the shirt-waist of the wearer, substantially as described.

2. In a lady's belt, the combination of the metallic band, with the hinged clasping-plate provided with the hook-lever adapted for engagement with the shirt-waist of the wearer, and the locking means for the lever, substantially as described.

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**756,735. ELEVATOR.** GUSTAV THALER, Brooklyn, N. Y. Filed Dec. 23, 1903. Serial No. 186,267. (No model.)



*Claim.*—1. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of clamping devices connected to the car, a laterally-movable shaft connected to the car, means thereon for transmitting motion to the shaft from the rails, and means operated automatically by the fall of the car for shifting the shaft into operative relation with the clamping devices and the rails.

2. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of laterally-movable clamping devices connected to the car, a laterally-movable shaft connected to the car, gears thereon adapted to engage the rails, and means operated automatically by the fall of the car for shifting the shaft into operative relation with the clamping devices and the gears into engagement with the rails.

3. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of clamping devices connected to the car, means for shifting the devices simultaneously in opposite directions, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem connected to the car, and means operated by the stem for shifting the shaft into operative relation with the clamping-device-operating mechanism and the gears into engagement with the rails.

4. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping devices mounted thereon, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem upon the car, and means operated by the stem for shifting the shaft into operative relation with the screw and the gears into engagement with the rails.

5. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping devices mounted thereon, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem upon the car, means operated by the stem for shifting the shaft into operative relation with the screw and the gears into engagement with the rails, and means for locking the shaft and gears in such position.

6. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping devices mounted upon and operated by the screw, a laterally-movable shaft connected to the car, a cable-engaging stem slidably mounted within the car, means for automatically sliding the stem within the car, and mechanism operated by the stem for shifting the shaft into operative relation with the guide-rails and screw.

7. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping-blocks mounted thereon, a gear upon the screw, a laterally-movable shaft connected to the car, gears thereon, and means operated by the fall of the car for automatically shifting the gears of the shaft into engagement with the guide-rails and the gear of the screw, respectively.

8. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping-blocks upon the screw, a gear secured to said screw, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem connected to the car, and means operated by said stem for shifting the gears on the shaft into engagement with the guide-rails and the gear of the screw, respectively.

9. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping-blocks upon the screw, a gear secured to said screw, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem connected to the car, means operated by said stem for shifting the gears on the shaft into engagement with the guide-rails and the gear of the screw, respectively, and means for locking said gears in engaging positions.

10. In an apparatus of the character described, the combination with guide-rails, and a car therebetween; of a screw connected to the car, clamping-blocks thereon, a gear revoluble with the screw, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem upon the car, means operated by said stem for moving the gears on the shaft into engagement with the rails and the gear on the screw, respectively, and a spring-pressed plunger for locking said gears in engagement.

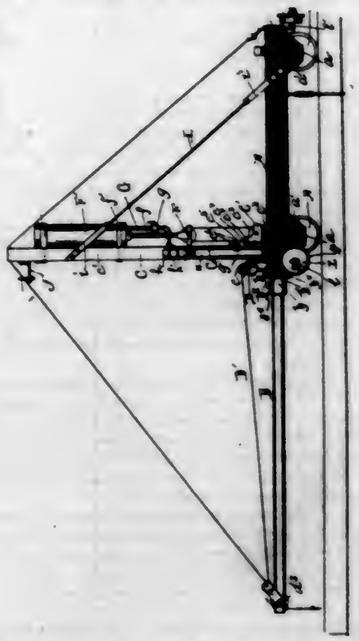
11. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, rail-clamping blocks mounted thereon, a gear upon the screw, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem within the car, a lever connected thereto and operated thereby, a bell-crank lever, a rigid connection between said bell-crank lever and the shaft and first-mentioned lever, respectively, and a spring-pressed locking-plunger adapted to engage the first-mentioned lever.

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**756,736. MACHINE FOR LOADING RAILS.** FRANK THOMPSON, Chicago, Ill., assignor to United Supply & Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 19, 1903. Serial No. 170,017. (No model.)

*Claim.*—1. In a rail-loading mechanism, the combination of a movable support, a boom pivotally mounted, an upright consisting of a fixed section and a movable section, a plate on the rear face of the fixed section, a sheave or pulley-wheel rotatably secured to said plate, a hinge-joint connecting the movable section of the upright with the plate, a hoisting-engine carried by said upright, and a pressure-supply pipe for the hoisting-engine, substantially as described.

2. In a rail-loading mechanism, the combination of a movable support, a boom pivotally mounted, an upright consisting of a fixed section and a movable section, a plate on the rear face of the fixed section, a sheave or pulley-wheel rotatably secured to said plate, a hinge-joint connecting the movable section of the upright with said plate, a hoisting-engine in cooperative relation to said upright, and a pressure-supply pipe for the hoisting-engine, substantially as described.



3. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a boom pivotally mounted, an upright consisting of a fixed section and a movable section, a hinge-joint connecting the two sections of the upright, supports for the movable section of the upright adapted to hold the same in fixed upright position and adapted to be unfastened from the upright to allow the same to be lowered, a hoisting-engine adapted to cooperate with the upright and boom, and a pressure-supply pipe for the hoisting-engine adapted to be connected successively with the train-pipes of the cars, substantially as described.

4. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a boom pivotally mounted to the front end of the flat-car or truck by means of a double pivotal joint, an upright or support consisting of a fixed section and a movable section, a plate on the rear face of the fixed section, a sheave or pulley-wheel rotatably secured to said plate, a hole or passage through the fixed section in line with the pulley-wheel, a sheave or pulley on the front side of the fixed section in line with the opening or passage, a pulley-wheel on the end of the boom, a hoisting-engine carried by the upright, a piston for the hoisting-engine, a pulley-wheel carried by the piston, and a cable adapted to pass around the pulley carried by the piston and through the sheaves on the fixed section of the upright and over the pulley-wheel on the end of the boom, substantially as described.

5. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a boom pivotally mounted, an upright consisting of a fixed section and a movable section, a plate on the rear face of the fixed section, a sheave or pulley-wheel rotatably secured to said plate, a hinge-joint connecting the movable section of the upright with said plate, a hoisting-engine carried by said upright and a pressure-supply pipe for the hoisting-engine adapted to be connected successively with the train-pipes of the cars, substantially as described.

6. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a boom pivotally mounted, an upright consisting of a fixed section and a movable section, a plate on the rear face of the fixed section, a sheave or pulley-wheel rotatably secured to said plate, a hinge-joint connecting the movable section of the upright with said plate, a hoisting-engine carried by said upright, a pressure-supply pipe for the hoisting-engine adapted to be connected successively with the train-pipes of the cars, and braces adapted to be secured to the upright and unfastened therefrom when the latter is lowered, substantially as described.

7. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a boom pivotally mounted to the front end of the flat-car or truck by means of a double pivotal joint, an upright or support consisting of a fixed section and a movable section, a plate on the rear face of the fixed section, a sheave or pulley-wheel rotatably secured to said plate, a hole or passage through the fixed section in line with the pulley-wheel, a sheave or pulley on the front side of the fixed section in line with the opening or passage, a pulley-wheel on the end of the boom, a hoisting-engine carried by the upright, a piston for the hoisting-engine, a pulley-wheel carried by the piston, a cable adapted to pass around the pulley carried by the piston and through the sheaves on the fixed section of the upright and over the pulley-wheel on the end of the boom, and a cable from the end of the boom to the top of the upright for connecting the boom and upright together and allowing the boom to counterbalance the upright when the same is lowered, substantially as described.

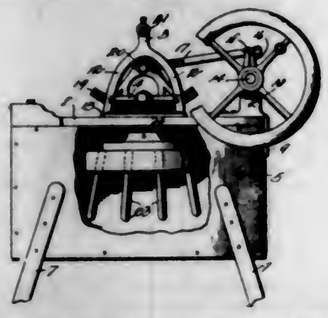
8. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a derrick on the truck, wheels upon which the truck is mounted, and auxiliary wheels mounted on the sides of the car or truck and adapted to travel along the top of the sides of a car and suspend the truck between the sides, substantially as described.

9. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a derrick on the truck, wheels upon which the truck is mounted, auxiliary wheels journaled on pivotally-mounted laterally-projecting journals, and journal-boxes allowing the journals to be swung therein to turn back the auxiliary wheels from their laterally-projected relation to lie in line with the car when not in use, substantially as described.

10. In a rail-loading mechanism, the combination of a flat-car or truck movable from car to car of a train, a derrick on the truck, wheels upon which the truck is mounted, auxiliary wheels journaled on pivotally-mounted laterally-projecting journals, springs on the journals for forcing the auxiliary wheels outwardly thereon, and journal-boxes allowing the journals to be swung therein to turn back the auxiliary wheels from their laterally-projected relation to lie in line with the car when not in use, substantially as described.

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**736,787. GEARING. WILLIAM THORNTON, Chattanooga, Tenn. Filed Nov. 2, 1901. Serial No. 80,573. (No model.)**



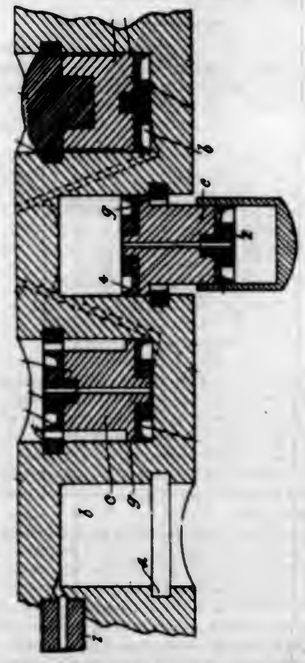
*Claim.*—1. In a gearing, a standard comprising a base-plate provided with a bearing, a yoke extending vertically from said base-plate and having an integral cross-bar projected from one side of the yoke at its lower portion parallel to the base-plate and provided with a central bearing in alinement with the bearing in the base-plate, and a vertical projection from the apex of the yoke provided with a horizontal bearing in a vertical plane parallel to the bearings in the base-plate and cross-bar.

2. In a gearing, a standard comprising a base-plate provided with a bearing, a yoke extending vertically from said base-plate and having an integral cross-bar projected from one side of the yoke at its lower portion parallel to the base-plate and provided with a central bearing in alinement with the bearing in the base-plate, a vertical projection from the apex of the yoke provided with a horizontal bearing in a vertical plane parallel to the bearings in the base-plate and cross-bar, a pinion disposed between said plate and cross-bar, a segmental gear pivoted upon the vertical projection from said yoke and meshing at its lower end with said pinion, a driving-shaft, a pitman connecting said driving-shaft to said segmental gear between its pivot and the teeth thereon.



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**756,738. HYDRAULIC PRESS FOR MINING PURPOSES. ALFRED J. TOWER, Chequerbent, near Bolton, JAMES TOWER, Jr., Westhoughton, near Bolton, and ELIAS RAVEN, Stockport, England. Filed May 2, 1903. Serial No. 156,259. (No model.)**



*Claim.*—1. A hydraulic press comprising a body having a series of cylinders, pistons operatively mounted in said cylinders, means for forcing fluid to operate said pistons, and pieces slidingly mounted in said cylinders and adapted to limit the outward movement of said pistons.

2. A hydraulic press comprising a body provided with cylinders, pistons working in said cylinders and formed of a plurality of members operating within and upon each other, means for forcing fluid to operate said pistons, and a stop-plate slidingly mounted within a groove in the walls of each cylinder and adapted to limit the outward movement of said pistons.

3. A hydraulic press comprising a body provided with oppositely-arranged cylinders, pistons mounted in said cylinders and pieces slidingly mounted in said cylinders and adapted to limit the outward movement of said pistons.

4. A hydraulic press comprising a body provided with cylinders, pistons arranged to operate in said cylinders, stop-plates formed in sections and slidingly mounted in said cylinders, and means for supplying fluid under pressure to said cylinders.

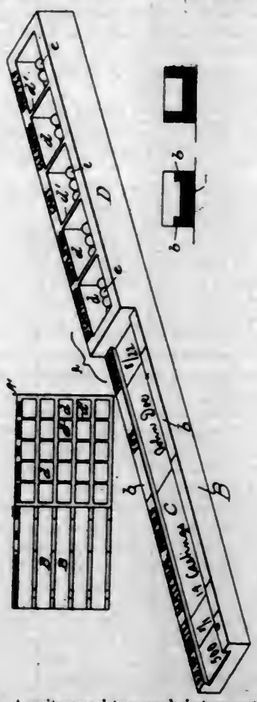
5. A hydraulic press comprising a body provided with cylinders, pistons mounted in said cylinders, said pistons having heads of increased size, means for supplying fluid under pressure to said pistons, and removable plates adapted to limit the movement of said pistons.

6. A hydraulic press comprising a body provided with cylinders, pistons mounted in said cylinders and formed of a plurality of members, a plate slidingly mounted in each cylinder and adapted to limit the outward movement of one member of said pistons, means for limiting the outward movement of the other members of said pistons, and means for supplying fluid under pressure to said cylinders.

7. A hydraulic press comprising a body provided with cylinders, triple pistons mounted in said cylinders, removable plates adapted to limit the movement of said pistons, and means for supplying fluid under pressure to said pistons.

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**756,739. UNIT-RECORD. DAVID TOWNSEND, Philadelphia, Pa. Filed Sept. 3, 1903. Serial No. 171,815. (No model.)**



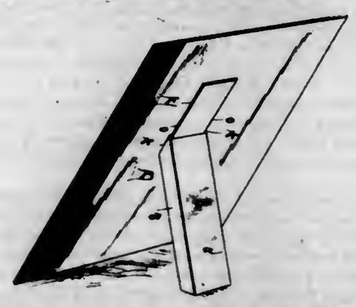
*Claim.*—1. A unit-record tray made in two sections, one section being flanged and having a detachable slip mounted therein, the other section made up of a series of compartments for the reception of balls or equivalent unit-records, substantially as described.

2. A unit-record tray made in two sections, one section arranged to receive a memorandum of the order, and the other made up of a series of compartments separated one from the other by partitions, said compartments being arranged to receive the unit-records in the form of balls or equivalent units, substantially as described.

3. The combination of a tray for keeping unit-records, said tray being made in two sections, one section having a space to receive the memorandum of an order, on which is the number, date received, material ordered, name of the party ordering the goods, when the goods are promised, and any other information, and the other section being made up of a series of compartments according to the number of departments in the manufacturing establishment, and balls or other units for keeping a unit-record of the progress of the work on the order, substantially as described.

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**756,740. EASEL-SUPPORT. EMANUEL J. TRUM, New York, N.Y. Filed Mar. 10, 1903. Serial No. 147,155. (No model.)**



*Claim.*—1. In easel-supports made of cardboard or like material and comprising a tag and a brace the sides of which have obliquely-formed upper ends that project beyond the front of the brace

and embrace the edges of the tag when the brace is extended, substantially as specified.

2. An easel-support made of cardboard or like material and comprising a tag and a foldable rectangular brace the sides of which have obliquely-formed upper ends that project beyond the front of the brace and embrace the edges of the tag when the brace is extended, substantially as specified.

3. An easel-support made in a single piece cut from a sheet of cardboard or like material and comprising a tag and an extensible brace the sides of which have obliquely-formed upper ends that project beyond the front of the brace and embrace the edges of the tag when the brace is extended, substantially as specified.

4. An easel-support made of cardboard or like material and comprising a tag and an extensible brace having an obliquely-formed foot and the sides of which have obliquely-formed upper ends that project beyond the front of the brace and embrace the edges of the tag when the brace is extended, substantially as specified.

5. An easel-support made of cardboard or like material and comprising an extensible; and adjustable brace and a tag connected therewith in combination with a display-card or other article having pockets in the back to receive the tag and connect the support with the card and adapt it to change the inclination thereof, substantially as specified.

6. An easel-support blank made of suitable material and comprising a tag and front, back, sides, and a gluing-flap, the blank being creased to adapt the sides front and gluing-flap to be folded and formed into a rectangular foldable brace and the brace to be swung out from the tag, substantially as specified.

7. A support for pictures and other objects consisting of an integral piece of pliable material comprising a rigid section adapted for securement to a picture or other object, and a hinged section depending from said rigid section having reinforcements along its edges arranged at right angles thereto and terminating at their upper edges in inclined ends adapted to contact with the rear surface of the picture or other object to which the rigid section is attached and to embrace the edges of the rigid section whereby the reinforcements are positively locked in their position at right angles to the hinged section, substantially as specified.

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**756,741. CANDY CUTTING AND SHAPING MACHINE. WEBB W. TURNBULL, Columbus, Ohio. Filed July 13, 1903. Serial No. 165,319. (No model.)**



*Claim.*—1. In a candy cutting and shaping machine, the combination with the supporting-framework, and a vertically-movable cutting member having a plurality of projecting cutting-blades, of an opposing swinging cutting member having a plurality of projecting cutting-blades and means for simultaneously swinging one of said cutting members and moving the other vertically.

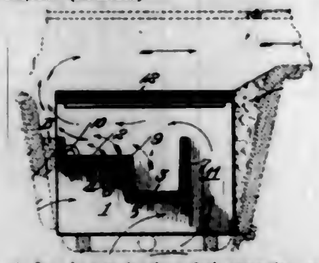
2. In a candy cutting and shaping machine, the combination with a supporting-framework, a vertically-movable cutting and shaping member mounted in said frame and having grooves formed vertically in its inner face and cutter-blade projections between said grooves, of a cutting member 14 mounted to swing in said frame and of a roller-segment form, the curved face of said cutting member 14 having grooves therein, curved cutting-blades projecting from between said grooves and means for simultaneously moving the member 5 vertically and swinging the member 14, substantially as specified.

3. In a candy cutting and shaping machine, the combination with a framework, a vertically-movable cutting member 5 mounted therein and having parallel vertical grooves on its inner face, cutting-blades projecting from between said grooves and racks on the opposite sides of said cutting member, of an opposing cutting member 14 having the form of a roller-segment provided with grooves on its grooved face and cutting-blades projecting from between said grooves, an operating-shaft, gear connections between said shaft and the racks of said cutting member 5 and gear connections between said cutting member 5 and member 14 whereby the rotation of said shaft results in a swinging movement of one of said cutting members and a vertical movement of the other, substantially as specified.

4. In a candy cutting and shaping machine, the combination with a framework, a vertically-moving cutter, an opposing swinging cutter, said cutters having opposing grooves and means for operating said cutters, of angular candy-ejectors fulcrumed beneath said vertically-movable cutter and having their upper arms normally retained in the grooves of said cutter and their lower arms adapted to contact with the supporting-base of the machine when said cutter is lowered, substantially as specified.

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**756,742. FUEL-OIL BURNER. WILLIAM H. VAN HOUE, St. Louis, Mo., assignor to American Fuel Oil Burner Manufacturing Company, St. Louis, Mo., a Corporation of Missouri. Filed Sept. 26, 1903. Serial No. 174,981. (No model.)**



*Claim.*—1. In a burner, heads, a fuel-supporting member between and supported by said heads and intermediate the upper and lower edges thereof, a cover over the upper face of said member and spaced therefrom to form a flame space and exit, said member extending only a portion of the width of the heads to provide communication between the flame-space and the space below said member, and the latter space serving as an air-supply chamber; substantially as described.

2. In a burner, heads, a fuel-supporting member between and supported by said heads and intermediate the upper and lower edges thereof, a cover over the upper face of said member and spaced therefrom to form a flame space and exit at one side of said burner, said member extending only a portion of the width of the heads to provide communication between the flame-space and the space below said member at the other side of said burner, and the latter space serving as an air-supply chamber which communicates with the space above the fuel-supporting member; substantially as described.

3. In a burner of the character indicated, heads, a substantially vertical wall at one edge of said heads and between them, said wall being of less height than said heads, a second substantially vertical wall intermediate said first-mentioned wall and the other edge of said heads and of less height than said heads, a third substantially vertical wall intermediate said first two mentioned vertical walls, and bottom walls respectively connecting the upper and lower portions of said third vertical wall with said other vertical walls; substantially as described.

4. In a burner of the character indicated, heads, a substantially vertical wall at one edge of said heads and between them, said wall being of less height than said heads, a second substantially vertical wall intermediate said first-mentioned wall and the other edge of said heads and of less height than said heads, a third substantially vertical wall intermediate said first two mentioned vertical walls, bottom walls respectively connecting the upper and lower portions of said third vertical wall with said other vertical walls, whereby upper and lower troughs are produced, and a rib intermediate said troughs; substantially as described.

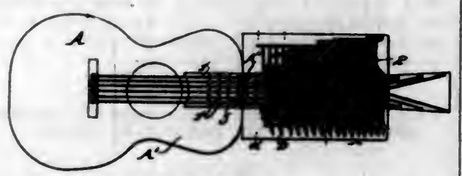
5. In a burner of the character indicated, a lower, open, fuel-receiving trough, a separate upper, substantially horizontal, open, fuel-receiving trough arranged out of both vertical and horizontal alinement with said lower trough, heads closing the ends of said troughs, said heads extending laterally beyond the lower trough, a wall connecting the adjacent sides of the respective troughs with each other, whereby said troughs extend oppositely from said wall and are connected thereby, an oil-supply for the upper trough, and a cover supported by the heads and extending over the troughs; substantially as described.

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**756,743. MUSICAL INSTRUMENT. GIOVANNI VERRECCHIO, Newark, N. J. Filed July 3, 1903. Serial No. 164,107. (No model.)**



*Claim.*—1. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; arms attached to the instrument and positioned transversely of the strings; string-contacting members attached to said levers; and key-levers having arms with concaved lower sides to embrace the arms arranged to operate said arms and the attached string-contacting members.



2. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; resilient arms attached to the instrument and positioned transversely of the strings; string-contacting members attached to said arms; and key-levers having arms with concaved lower sides to embrace the arms arranged to operate said arms and the attached string-contacting members.

3. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; arms attached to the instrument and positioned transversely of the strings; string-contacting members attached to said arms; and a key-lever having arms with concaved lower sides to embrace the arms arranged to operate a plurality of said arms and the attached string-contacting members.

4. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; arms attached to the instrument and positioned transversely of the strings; string-contacting members attached to said arms; and a plurality of key-levers having arms with concaved lower sides to embrace the arms, each of which levers is arranged to operate a plurality of said arms and the attached string-contacting members.

5. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; resilient arms attached to the instrument and positioned transversely of the strings; string-contacting members attached to said arms; and a key-lever having arms with concaved lower sides to embrace the arms arranged to operate a plurality of said arms and the attached string-contacting members.

6. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; resilient arms attached to the instrument and positioned transversely of the strings; string-contacting members attached to said arms; and a plurality of key-levers having arms with concaved lower sides to embrace the arms, each of which is arranged to operate a plurality of said arms and the attached string-contacting members.

7. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; arms attached to the instrument and positioned transversely of the strings, and having portions bent to lie parallel to said strings; string-contacting members attached to said arms; and key-levers having arms with concaved lower sides to embrace the arms arranged to operate said arms and the attached string-contacting members.

8. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; resilient arms attached to the instrument and positioned transversely of the strings and having portions bent to lie parallel to said strings; string-contacting members attached to said arms; and key-levers having arms with concaved lower sides to embrace the arms arranged to operate said arms and the attached string-contacting members.

9. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; arms attached to the instrument and positioned transversely of the strings, and having portions bent to lie parallel to said strings; string-contacting members attached to said arms; and a key-lever having arms with concaved lower sides to embrace the arms arranged to operate a plurality of said arms and the attached string-contacting members.

10. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; arms attached to the instrument and positioned transversely of the strings, and having portions bent to lie parallel to said strings; string-contacting members attached to said arms; and a plurality of key-levers having arms with concaved lower sides to embrace the arms, each of which key-levers is arranged to operate a plurality of said arms and the attached string-contacting members.

11. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; resilient arms attached to the instrument and positioned transversely of the strings, and having portions bent to lie parallel to said strings; string-contacting members attached to said arms; and a key-lever having arms with concaved lower sides to embrace the arms arranged to operate a plurality of said arms and the attached string-contacting members.

12. A musical instrument comprising a resonant body; a neck attached thereto; strings attached to the body and to the neck; resilient arms attached to the instrument and positioned transversely of the strings, and having portions bent to lie parallel to said strings; string-contacting members attached to said arms; and a plurality of key-levers having arms with concaved lower sides to embrace the arms, each of which levers is arranged to operate a plurality of said arms and the attached string-contacting members.

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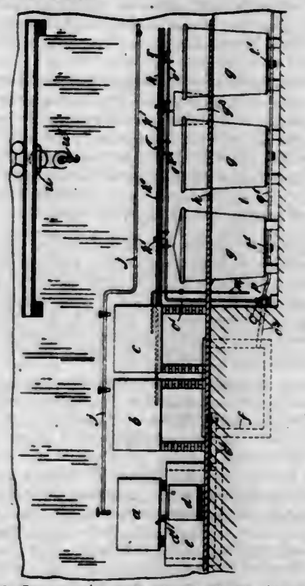
**756,744. BED-BOTTOM. THELESPHORE VIENS, Minneapolis, Minn. Filed Feb. 24, 1903. Serial No. 144,886. (No model.)**



*Claim.*—The combination with the frame embodying side and end rails, said end rails having centrally-arranged longitudinal grooves on their upper faces extending throughout their length, and woven springs having their ends resting on said grooved upper faces of the end rails, of securing clips or binders for engagement with the end rails, and each comprising a sheet of soft metal bent longitudinally intermediate its width to form two leaves, one of which underlaps the end of the spring, and the other of which overlaps the end of the spring, said leaves adapted to have a portion thereof throughout their length depressed into the groove of the end rail, and securing means passed through said leaves and into the end rail substantially as described.

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**756,745. APPARATUS FOR ELECTRICALLY BLEACHING MATERIALS. AUGUST A. VOGELAAR, Dresden, Germany, assignor to Charles Martin, Nottingham, England. Filed Sept. 21, 1901. Serial No. 76,108. (No model.)**



*Claim.*—1. In an apparatus for electrically bleaching cotton and other textile materials in large quantities, the combination of a vat or vats for containing the material in bulk, an electrolyzer, a tank for supplying said electrolyzer with brine solution, a measuring-tank for enabling the required quantities of bleach liquor to be drawn off,

tanks and pipes for supplying said vat or vats successively with caustic solution, bleaching liquor, and scouring solution, and an injector for circulating said liquors from the bottom of the vats directly into the top thereof, substantially as described.

2. In an apparatus for electrically bleaching cotton and other textile materials in large quantities the combination of a vat to hold the materials to be bleached in quantities of say a ton or upward, an electrolyzer for the production of bleaching liquor, a tank for the collection of such bleaching liquor and for insuring its strength being uniform throughout, a tank for holding caustic solution, a tank for holding acid solution, and means for transferring the contents of said three tanks separately to the vat to allow them to act on the materials resting all the while *in situ* therein, substantially as described.

3. In an apparatus for electrically bleaching cotton and other textile materials in large quantities, a bleaching-vat adapted to receive a large quantity of the material, means for supplying to said bleaching-vat cleansing and bleaching solutions causing thereby the complete bleaching of the large quantity of material without its removal from the said vat, a steam-injector inside said vat for circulating the solution, and a removable cover for closing the vat during such circulation.

4. In an apparatus for electrically bleaching cotton and other textile materials in bulk, the combination of a vat or vats for containing the material in bulk, an electrolyzer for producing the bleach liquor, and tanks for supplying caustic and scouring solutions to the vat or vats and salt solution to the electrolyzer, a movable false bottom on which said materials rest, and means for raising and lowering said false bottom with the material in bulk thereon, substantially as described.

5. In an apparatus for electrically bleaching cotton and other textile materials in bulk, the combination of a vat or vats for containing the material in bulk, an electrolyzer for producing the bleach liquor, and tanks for supplying caustic and scouring solutions to the vat or vats and salt solution to the electrolyzer, a measuring-tank for enabling the whole of the required quantity of liquor to be supplied to the vat at one operation, a movable false bottom on which the materials under treatment rest, and means for raising and lowering said false bottom with the material in bulk thereon, substantially as described.

6. In an apparatus for electrically bleaching cotton and other textile materials in large quantities the combination of a bleaching-vat adapted to receive a quantity of material weighing say from one to two tons, an electrolyzer, a measuring-tank to receive the liquor from the electrolyzer, and means for transferring said liquor from the measuring-tank to the vat causing thereby the complete bleaching of the whole of said material *in situ* without handling or removing from the vat.

7. In an apparatus for electrically bleaching cotton and other textile materials in large quantities the combination of a brine-tank, a storage-tank at a lower level, an electrolyzer at an intermediate level, a bleaching-vat, means for permitting the brine liquor to flow by gravity first into the electrolyzer and then into the tank, and means for transferring the liquor from the latter into the vat, causing thereby the complete bleaching of the whole of said material *in situ* without handling or removing from the vat.

8. In an apparatus for electrically bleaching cotton and other textile materials in large quantities the combination of a vat, an electrolyzer, a measuring-tank for receiving the liquors from the electrolyzer, means for supplying the vat with liquors, and means for circulating said liquors from the bottom to the top inside said vat, causing thereby the complete bleaching of the whole of said material *in situ* without handling or removing from the vat.

9. In an apparatus for electrically bleaching cotton and other textile materials in large quantities, the combination of a bleaching-vat, tanks of approximately the same capacity as said vat for holding the supplies of caustic and acid liquor, a brine-tank also of approximately the same capacity, all of said tanks being at a higher level than said vat, a measuring-tank at a lower level, an electrolyzer receiving liquor from the brine-tank and delivering it to the measuring-tank, and means for transferring the liquor from the latter tank to the vat, causing thereby the complete bleaching of the whole of said material *in situ* without handling or removing from the vat.

10. In an apparatus for electrically bleaching cotton and other textile materials in large quantities, a receptacle for a large quantity of the material, an electrolyzer, a tank for collecting the liquor from said electrolyzer before its admission to the said receptacle, and means for supplying to said vat successively, caustic liquor, electrolyzed liquor and a scouring solution, causing thereby the complete bleaching of the material without the handling or removal thereof from the bleaching-vat.

11. In an apparatus for electrically bleaching cotton and other textile materials in large quantities, a bleaching-receptacle adapted to receive a large quantity of the material, an electrolyzer, a measuring-tank for collecting the electrolyzed bleach liquor in the required quantity at a uniform strength, and means for transferring such liquor to the bleaching-receptacle thereby causing the complete bleaching of the material without the handling or removal thereof from the bleaching-vat.

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**756,746. BLOCK AND TACKLE. JOSEPH O. WALTON, Boston, Mass. Filed Aug. 12, 1903. Serial No. 169,231. (No model.)**




*Claim.*—1. A block and tackle comprising two blocks each having a series of radially-arranged sheaves, combined with a rope roved alternately through the sheaves of the oppositely-arranged blocks substantially as described.

2. A block and tackle comprising two metal blocks each formed in a single piece with radially-arranged sheaves and a central hub portion provided with a suspending-hook, and combined with a rope roved alternately through the sheaves of the oppositely-arranged blocks substantially as described.

3. A block and tackle comprising two metal blocks, each formed in a single piece with radially-arranged sheave-cells and sheaves, one of said blocks having a sheave-cell wider than the others and having a cross-bar across the top and provided with a cramping-sheave, combined with a rope roved alternately through the sheaves of the oppositely-arranged blocks and emerging above the cramping-sheave and between it and the cross-bar above it substantially as described.

4. A tackle-block made in one piece of metal with radial wings arranged in pairs, said wings being formed with outturned lips along their upper edges, and sheaves journaled between the wings of each pair substantially as described.

5. A tackle-block made in one piece of metal with radial wings united in pairs at their outer ends and formed with outturned lips along their upper edges, and sheaves journaled between the wings of each pair substantially as described.

6. A tackle-block made in one piece of metal with a central perforated hub and with radial wings united in pairs at their outer ends and formed with outturned lips along their upper edges, a suspending-hook arranged in the central hub and sheaves journaled between the wings of each pair substantially as described.



**756,747. SELF-LOCKING TACKLE-BLOCK. JOSEPH O. WALTON, Boston, Mass. Filed Aug. 12, 1903. Serial No. 169,232. (No model.)**



*Claim.*—1. A self-locking tackle-block comprising a frame, a cramping-pulley composed of a concentrically-grooved portion and an eccentrically-grooved cam portion extended laterally therefrom, and a guard arranged on the rear side of the block to throw the rope toward the free-running grooves substantially as described.

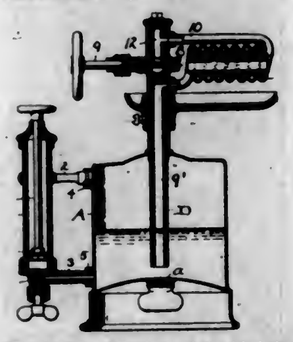
2. A self-locking tackle-block comprising a frame, a cramping-pulley, and a guard arranged on the rear side to throw the rope into released position substantially as described.

3. In a self-locking tackle-block, a frame having a cell to receive the cramping-pulley, said cell having a larger opening on the rear side at the top than it has at the bottom.

4. In a self-locking tackle-block, a frame having a cell to receive the cramping-pulley said cell having on its rear side an inclined guard substantially as described.

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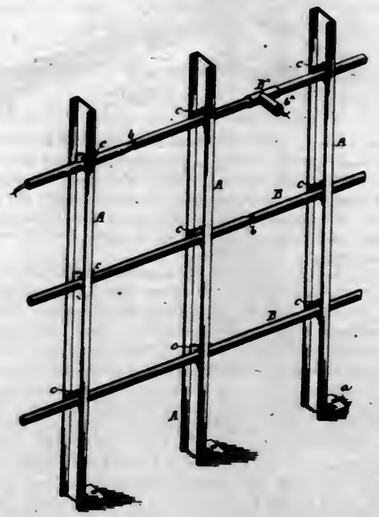
**756,748. VAPOR-TORCH. CHARLES F. WARNER, Cleveland, Ohio, assignor to Frank B. Many, Cleveland, Ohio. Filed Nov. 14, 1903. Serial No. 181,239. (No model.)**



*Claim.*—In a hydrocarbon-torch of the kind described, a receptacle for oil and a stand-pipe therein provided with separate passages at its top for oil and vapor, respectively, a generator-coil and a mixing-tube therein forming the burner of the torch, the said coil consisting of a spirally-wound tube supported from the top of said stand-pipe at right angles thereto above said receptacle and interposed between said oil and vapor passages, the inner end of said coil communicating with said oil-passage and the outer end with the said vapor-passage, whereby the hot vapors are delivered directly to the burner, a valve to control the flow of fuel to the said burner and a pump fixed upon said receptacle to keep up the pressure therein and a connection from the pump having a passage for air to the receptacle provided with a valve to prevent leakage of air back into the pump, substantially as described.

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**756,749. PARTITION FOR BUILDINGS, &c. DAVID H. WATTS, Jr., Philadelphia, Pa. Filed Mar. 20, 1902. Serial No. 99,225. (No model.)**



*Claim.*—1. The combination in a partition, of a series of vertically-arranged channel members having their webs perforated at intervals, with a series of horizontal tubular members extending through the perforations in the vertical members, and means for fastening the horizontal and vertical members together, the whole forming a rigid and self-sustaining structure, substantially as described.

2. The combination in a partition, of a series of vertically-arranged members perforated at intervals, a series of tubular transverse members passing through the perforations in the vertical members, and fastenings attaching each horizontal tube to a vertical member, substantially as described.

3. The combination of the vertical members made of channel-bars and perforated at intervals, with a series of tubular transverse members passing through the perforations of the channel members, and wedges securing the tubular members to the channel members, substantially as described.

4. The combination of the perforated vertical members, the transverse tubular members, with notched spring-keys securing the tubular members to the vertical members, substantially as described.

5. The combination of the perforated vertical members, a series of tubular members passing through the perforations of the vertical members and secured thereto, the tubular members being made in sections, the end of one section being reduced and forced into the end of the adjoining section, substantially as described.

6. The combination in a partition, of vertical members, tubular members, means for securing the tubular members to the vertical members, and one or more T-sections secured to the tubular members, with lathing and plaster, the said T-sections extending through the lathing, substantially as described.

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**756,750. FIFTH-WHEEL. HENRY H. WEAVER and JOSEPH R. WEAVER, Lancaster, Pa. Filed June 26, 1903. Serial No. 163,137. (No model.)**

*Claim.*—1. In a vehicle fifth-wheel, the combination with an axle, of a boxing comprising sections, both of which rest upon the axle, a bearing journaled in the boxing and located partially in each of the sections, and clips surrounding the sections and axle and securing the sections together and the boxing to the axle.

2. In a vehicle fifth-wheel, the combination with an axle, of cap-sections located thereon and having their inner ends spaced

apart, a boxing fitted between said ends and comprising sections, both of which bear upon the axle and having coacting cavities in their adjacent upright faces, a head-block, a shank threaded into the under side of the head-block and having a ball enlargement journaled in the cavities of the box, and clips surrounding the boxing-sections, the adjacent ends of the axle-cap sections and the axle.



3. In a venicle fifth-wheel, the combination with an axle, of a perch having a pivotal bearing located upon the upper portion of the axle, a bridle-plate attached to the under side of the axle and having a recess in its upper face, and a bridle attached to the perch and having its front end located in the recess, said end being provided with a depending pivot engaging the plate directly beneath and in line with the pivotal bearing.

4. In a vehicle fifth-wheel, the combination with an axle, of cap-sections located thereon and having their inner ends spaced apart, a boxing fitted on the axle between the cap-sections and comprising sections having a seat, a head-block, a ball carried by the head-block and journaled in the seat of the boxing, and means for securing the sections together and fastening the boxing to the axle.

5. In a vehicle fifth-wheel, the combination with an axle, of a perch having a ball-and-socket connection with the upper side of said axle, a bridle-plate attached to the under side of the axle, said plate having a recess in its upper face, and a downwardly-extending opening leading from the recess and in line with the ball-and-socket connection, a bridle having a pivoted connection at its rear end with the perch, and a depending pivot located at the front end of the bridle and engaged in the opening of the bridle-plate, said bridle having its front end seated in the recess of said plate.

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**756,751. WELL-BRAKE.** SAMUEL J. WALLACE, Goshen, N. Y., assignor of one-half to Walter F. Crane, Circleville, N. Y. Filed Aug. 21, 1901. Serial No. 72,817. (No model.)



*Claim.*—In a combination with a winding-drum having a brake-wheel and an adjacent ratchet-wheel, a lever pivoted at a point between its ends, having a laterally-extending arc-shaped flange for engagement with the brake-wheel and a recess to receive the ratchet-wheel, a pawl integral with said lever at a point between said recess and the handle of the lever, and a counterbalance integral with the end of the lever opposite to the handle.

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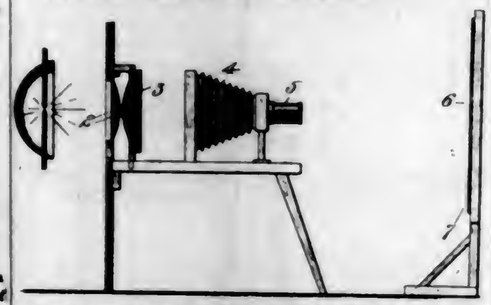
**756,752. CIGAR-BUTT FORMER.** CHARLES WESSELS, New York, N. Y. Filed Oct. 23, 1903. Serial No. 178,182. (No model.)



*Claim.*—1. A mold for shaping the butts of cigars, consisting of a plate having a plurality of rounded-off projections, each having a shallow tapering socket therein adapted to receive and mold the butts of cigars, substantially as set forth.

2. A mold for shaping the butts of cigars, consisting of a plate provided with a plurality of apertures, and tapering sockets extending at the under side of the plate from said apertures, substantially as set forth.

**756,753. METHOD OF MAKING PRINTING-SURFACES.** FREDERICK C. WHIPPEY, Cincinnati, Ohio, assignor to the Whippey Process & Engraving Co., Cincinnati, Ohio, a Corporation of Delaware. Filed Sept. 3, 1903. Serial No. 171,753. (No specimens.)

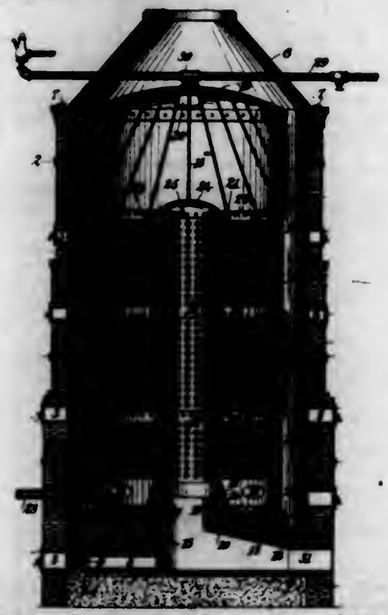


*Claim.*—1. The herein-described method of making printing-surfaces consisting in first making a negative with alternating opaque and transparent portions, transmitting rays of light through such negative and a focusing-lens onto a transferring-surface made up of sensitized emulsion, whereby the actinic rays act only upon a portion of such transferring-surface, then dissolving the remaining portion of such transferring-surface; substantially as described.

2. The method of making printing-surfaces consisting in first making a negative composed of alternate transparent and opaque portions, condensing rays of light onto and through said negative and through a photographic lens onto a sensitized transferring-surface, whereby alternate portions of such transferring-surface are exposed and unexposed, dissolving the unexposed portions of the transferring-surface, and finally treating the backing-plate on which the sensitized transferring-surface is coated to an acid-bath for the purpose of etching said backing-plate throughout the unexposed portions of the transferring-surface; substantially as described.

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**756,754. BOILER.** HARRY W. WHITE, Youngstown, Ohio. Filed July 7, 1903. Serial No. 164,542. (No model.)



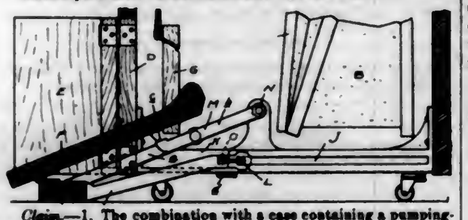
*Claim.*—1. In a boiler, the combination of inner and outer shells, and a head connecting said shells together, said head having a rotund portion free to rest upon a resisting-surface, thereby enabling the plate of the boiler to strengthen said head.

2. In a boiler, the combination of a fire-space, a boiler-shell located thereover, a passage-way leading to said fire-space for allowing the removal of ashes therefrom, and a casing surrounding said fire-space and said boiler-shell, said casing being provided with a doorway disposed in alinement with said passage-way for the purpose of rendering said passage-way accessible from the outside of said casing.



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**756,755. ADJUSTABLE PEDAL FOR MECHANICAL PIANO-PLAYERS.** AURA E. WHITEHEAD, Detroit, Mich., assignor to the Farrand Organ Company, Detroit, Mich., a Corporation of Michigan. Filed Sept. 8, 1903. Serial No. 172,403. (No model.)



*Claim.*—1. The combination with a case containing a pumping-bellows, of a pedal for actuating said bellows, and a fulcrum for said pedal adjustable into and out from said case.

2. The combination with a case, and a pumping-bellows, contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal adjustable into and out from said case, and means for locking said fulcrum in its outer position in rigid relation to said case.

3. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal, and a folding link connecting said fulcrum with a bearing fixed within the case, whereby said fulcrum may be adjusted from an operating position outside the case to a position where the pedal is retracted within the case.

4. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal adjustable into and out from said case, and means for supporting said fulcrum and pedal in the inner position of adjustment out of contact with the floor.

5. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum-bar for said pedal, folding links connected to opposite ends of said fulcrum-bar, and at their inner ends connected to bearings fixed within the case, said bearings being located to hold said fulcrum-bar outside the case in the extended position of said links, and to retract said bar, and the pedal within the case when said links are folded.

6. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal, a bearing within the case, a folding link connecting said fulcrum with said bearing, and adapted in its extended position to hold the fulcrum without the case, and in its folded position to retract it within the case, and a brace for said fulcrum in its outer position.

7. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said pumping-bellows, a fulcrum for said pedal, a fixed bearing within the case, a folding link connecting said fulcrum with said bearing, and adapted to hold said fulcrum without the case in the extended position of the link, and retract it within the case in the folded position of said link, and a brace connected to said fulcrum and having a transverse slidable connection within said case.

8. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said pumping-bellows, a bar extending across said case from front to rear, a fulcrum for said pedal, a folding link connecting said fulcrum with a pivotal bearing on said bar, a brace connected to said fulcrum and having its inner end slidably connected to said bar whereby when the said first link is folded the latter link will slide within the case.

9. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal, and an upwardly-breaking jointed link connecting said fulcrum with a bearing fixed within the case, and adapted when folded to retract said fulcrum within the case.

10. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, and a fulcrum for said pedal, a bearing within the case, a folding link connecting said fulcrum with said bearing, a brace connected to said fulcrum, and slidably connected within the case, and a bearing upon which the brace is adapted to ride in its inward movement to raise said fulcrum from contact with the floor.

11. The combination with a case and a pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal, a bar fixed within the case, a folding link connecting said fulcrum with said bar, a brace connected with said fulcrum, and slidably connected at its inner end within the case, a bearing on which said brace is adapted to ride in its inward movement, and an adjustable stop for limiting the outward movement of said link.

12. The combination with a case and pumping-bellows contained therein, of a pedal for actuating said bellows, a fulcrum for said pedal, a cross-bar K within the case, a folding link M connecting said fulcrum with a pivotal bearing on said cross-bar, the guide J extending longitudinally of said cross-bar, and the brace I connected to said fulcrum, and at its inner end slidingly engaging said guide J for the purpose described.

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**756,756. ROOF FOR BUILDINGS.** ORLIN J. WILDER and HENRY VANDERVEER, Grand Rapids Mich. Filed Aug. 24, 1903. Serial No. 170,661. (No model.)



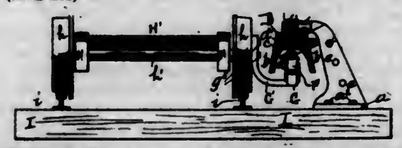
*Claim.*—1. In combination with the roof-boards of a building, burlaps spread immediately upon the boards and secured thereto, and a mortar of concrete, sand, and water spread immediately thereon, substantially as and for the purpose set forth.

2. In combination with the roof-boards of a building, sheet fabric spread over the boards, metallic strips placed over the fabric crosswise of the roof-boards, prongs curved from said strips, a narrower strip placed over this strip and curved leaving a space between its edges and this strip and all secured to the roof-boards, and concrete mortar spread over all, substantially as and for the purpose set forth.

3. In combination with the roof-boards of a building, metallic strips placed crosswise of the boards, prongs curved from the edges of said strips, curved strips placed longitudinally over said strips leaving an opening between the edges of the curved strips and the pronged strips and secured to the roof-boards, and concrete mortar spread over all, substantially as and for the purpose set forth.

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**756,757. THIRD-RAIL ELECTRIC-RAILWAY SYSTEM.** JOHN D. WILKINS, Chicago, Ill. Filed July 24, 1903. Serial No. 166,827. (No model.)



*Claim.*—1. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, and a rail or conductor suspended within the casing or conduit, substantially as described.

2. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, a rail or conductor suspended within the casing or conduit, and a tube mounted in the standards and receiving a feed-wire, substantially as described.

3. In an electric-railway system, the combination of supporting-standards, each standard having at its upper end a head, an overhanging casing or conduit carried by the standards and made of two companion sections or halves and attached to the heads of the standards, and a rail or conductor suspended within the casing or conduit, substantially as described.

4. In an electric-railway system, the combination of supporting-standards, each standard having at its upper end a head, an overhanging casing or conduit carried by the standards and made of two

companion sections or halves, each section or half consisting of a side wall or plate and a top flange, and the casing or conduit attached to the standards by its top flange, and a rail or conductor suspended within the casing or conduit, substantially as described.

5. In an electric-railway system, the combination of supporting-standards, each standard having at its upper end a head, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, each section or half consisting of a side wall or plate and a top flange, bolts passing through the flanges of the sections or halves and entering the ends of the standards, uniting the sections or halves of the casing or conduit to each other and to the standards, and a rail or conductor suspended within the casing or conduit, substantially as described.

6. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, insulating-blocks supported within the casing or conduit, and a rail or conductor suspended by the insulating-blocks within the casing or conduit, substantially as described.

7. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, insulating-blocks supported within the casing or conduit, a rail or conductor suspended by the insulating-blocks within the casing or conduit, and a tube mounted in the standards and receiving a feed-wire, substantially as described.

8. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, each section or half consisting of a side wall or plate and a top flange, bolts passing through the flanges of the two sections or halves and entering the ends of the standard uniting the sections or halves of the casing or conduit to each other and to the standard, insulating-blocks within the casing or conduit, a rail or conductor suspended by the insulating-blocks within the casing or conduit, and a tube mounted in the standards and receiving a feed-wire, substantially as described.

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**756,758. DISPLAY-STAND.** WESLEY G. WHAM, Spokane, Wash., assignor of one-half to Joshua M. Davis and John F. Saylor, Spokane, Wash. Filed May 5, 1903. Serial No. 156,776. (No model.)



*Claim.*—1. The improved display-stand hereinbefore described comprising the base portion having U-shaped spring-clasps, the revolving portion consisting of a base provided with rollers and a back E projected upward therefrom, and a central pivot-bolt which permanently connects the base and revolving portion, substantially as described.

2. The combination of the base portion having U-shaped clasps adapted for embracing the edge of a store-counter and a revolving top portion which is pivoted upon said base, substantially as described.

3. The improved display-stand comprising the revolving top portion having a back projected upward and located near one edge of the same, a base portion having devices for embracing the edge of the counter, and a central pivot by which the two portions are connected, substantially as described.

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**756,759. COMPOSITION OF MATTER AND PROCESS OF PRODUCING SAME.** HERMANN WOLF, Ludwigshafen-on-the-Rhine, Germany, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany, a Corporation of Baden. Filed Apr. 24, 1901. Serial No. 57,294. (No specimens.)

*Claim.*—1. The new article of manufacture which consists of a hydrosulfite salt enveloped by an inert gas.

2. The new article of manufacture which consists of an anhydrous hydrosulfite salt enveloped by an inert gas.

3. The new article of manufacture which consists of an anhydrous hydrosulfite salt enveloped by illuminating-gas which does not contain free oxygen.

4. The new article of manufacture which consists of anhydrous zinc-sodium hydrosulfite enveloped by illuminating-gas which does not contain free oxygen.

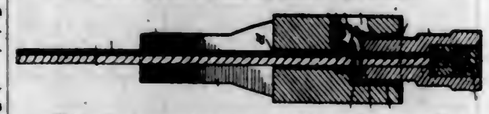
5. The process of obtaining a stable hydrosulfite body which consists in completely freeing a hydrosulfite body from water by pressing it and drying it *in vacuo* and surrounding the hydrosulfite body with an inert gas.

6. The process of obtaining a stable hydrosulfite body which consists in completely freeing a hydrosulfite body from water by pressing it and drying it *in vacuo* and surrounding the hydrosulfite body with illuminating-gas free from oxygen.

7. The process of obtaining a stable hydrosulfite body which consists in completely freeing zinc-sodium hydrosulfite from water by pressing it and drying it *in vacuo* and surrounding the zinc-sodium hydrosulfite body with illuminating-gas free from oxygen.

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**756,760. WIRE-ROPE CUTTER.** MARK T. WOLF, Washington, Pa. Filed Nov. 3, 1903. Serial No. 179,738. (No model.)



*Claim.*—1. A wire-rope cutter, comprising a heavy head-block adapted to slide on the rope to be cut, having a chamber in its lower portion extended laterally and through the lower end, and a cutter-blade pivoted in the lateral extension of the chamber, said blade being rocked into engagement with the rope by impinge on a stationary object.

2. A wire-rope cutter, comprising a heavy head-block having a central longitudinal perforation therein, slotted outwardly for insertion of the wire rope, a chamber in the lower end of the head-block, having a lateral slot extended therefrom, a cutter-blade pivoted by one end in said slot and having its opposite end tapered to produce a cutting edge thereon, and an arm extended at one side of the head-block at its upper end.

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**756,761. COMBINED TABLE AND DESK.** JAMES M. WOOD, Washington Court-House, Ohio. Filed Apr. 29, 1903. Serial No. 154,345. (No model.)



*Claim.*—1. A table comprising a top, a frame below the top, a swinging door at the front of the table, a desk, rollers carried by the inner end of said desk at the top and bottom, the top rollers being designed to engage with the table-top, while the lower rollers engage with the frame, rollers at the front of the frame with which the desk engages, and a swinging leg for the table.

2. A table, comprising a top, a back board, end boards, and a frame on which said boards are supported, a swinging door at the front of the table, a desk, rollers carried by the inner end of said desk at the top and bottom, the top rollers being designed to engage with the table-top, while the lower rollers engage with the end members of the frame, rollers arranged in the front member of the frame and with which the desk engages, and a swinging top for the desk.

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**756,762. VENTILATOR.** LOUIS M. WOOD, Topeka, Kans. Filed Apr. 21, 1903. Serial No. 104,091. (No model.)



*Claim.*—1. In an apparatus of the character described, the combination of a rotatable cowl provided with a main draft-passage extending entirely therethrough in a horizontal direction and having unobstructed open ends and a vertical downwardly-extending neck portion forming an air-passage communicating at its upper end with said main draft-passage, and a plurality of open-ended funnels arranged in the main draft-passage longitudinally thereof with the enlarged ends of the funnels adjacent to the inlet end of said passage, said funnels being disposed side by side and surrounded by the main draft-passage.

2. In an apparatus of the character described, the combination of a rotatable cowl provided with a main draft-passage extending entirely therethrough in a horizontal direction and having unobstructed open ends and a vertical downwardly-extending neck portion forming an air-passage communicating at its upper end with said main draft-passage, a plurality of open-ended funnels arranged in the main draft-passage longitudinally thereof with the enlarged ends of the funnels adjacent to the inlet end of said passage, said funnels being disposed side by side and surrounded by the main draft-passage, and an upwardly and inwardly inclined wall dividing the inlet end of the main draft-passage from the vertical air-passage, said wall embracing the lower portions of the funnels.

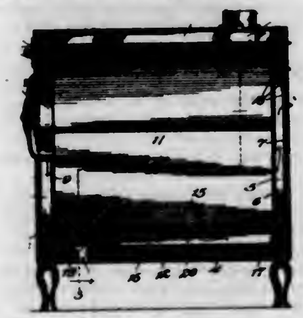
3. In an apparatus of the character described, the combination of a rotatable cowl provided with a main draft-passage extending entirely therethrough in a horizontal direction and a vertical downwardly-extending neck portion forming an air-passage communicating at its upper end with said main draft-passage, a funnel arranged in the main draft-passage longitudinally thereof with the enlarged end of the funnel adjacent to the inlet end of said passage, said funnel being surrounded by the main draft-passage, both said funnel and main draft-passage having unobstructed open ends, and an upwardly and inwardly inclined wall dividing the inlet end of the main draft-passage from the vertical air-passage, said wall embracing the lower portion of the funnel.

4. In an apparatus of the character described, the combination of a stationary air-shaft, a rotatable cowl therein, said cowl having a vertically-disposed neck registering with the upper end of the stationary air-shaft, and an antifriction-bearing for the cowl comprising a centrally-arranged base-plate in the neck portion thereof located somewhat above the lower end thereof, upwardly and inwardly inclined braces for said plate, a correspondingly-disposed bearing-plate also arranged within the neck of the cowl, similarly-arranged braces for said bearing-plate securing the same to the air-shaft, and balls between the base and bearing plates.



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**756,763. HEATER.** WILLIAM W. WOODS, Springfield, Mo. Filed Jan. 29, 1903. Serial No. 141,040. (No model.)



*Claim.*—1. A heater provided at its front with an upright flue extending from the top to the bottom of the heater and communicating at its upper portion with the exterior of the heater and at its lower portion with the interior of the fire-pot or combustion-chamber at the bottom thereof, a transverse flue extending from one side of the heater at a point between the top and bottom of the same across the bottom of the heater and upward at the opposite side of the same to the top thereof for causing the products of combustion to pass beneath the fire-pot or combustion-chamber, and an independent longitudinal flue extending along the bottom of the heater to the back thereof and having an upright portion thereat communicating with the exterior of the heater at the top thereof, substantially as described.

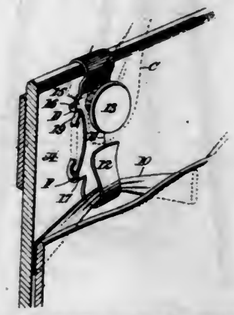
2. A heater provided at its front with an upright flue having an inlet-opening at the top and communicating at the bottom with the fire-pot or combustion-chamber for supplying heated air to support combustion, a longitudinal flue having an inlet at the bottom and extending beneath the fire-pot or combustion-chamber to the back of the heater and upward thereat and having an outlet at the top for the escape of hot air, and a flue arranged at right angles to the longitudinal flue and extending beneath the fire-pot or combustion-chamber from a point between the top and bottom of the heater at one side to the top of the opposite side, substantially as described.

3. A heater comprising an outer shell, an inner shell spaced from the outer shell to form a transverse flue and to provide front and rear upright flues, the front flue having an inlet at the top provided with an outlet at the bottom communicating with the interior of the heater and the rear flue being provided with an outlet at the top, and a partition arranged within the inner shell and forming a flue communicating at one end with the exterior of the heater and at the other end with the rear flue, substantially as described.

4. A heater comprising an outer shell provided at the ends with upright flues, one of the upright flues having an inlet at the top and communicating at the bottom with the interior of the heater and the other being provided at the top with an outlet, an inner shell forming a transverse flue, and a partition arranged within the inner shell and forming a bottom flue arranged between the combustion-chamber and the lower portion of the transverse flue, and having an inlet at one end and communicating at the other end with the upright flue having the outlet at the top, substantially as described.

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**756,764. GARMENT-SUPPORTER FOR MEN.** WILLIAM A. WRIGHT, New York, N. Y. Filed Sept. 25, 1903. Serial No. 174,574. (No model.)



*Claim.*—1. As an improved article of manufacture, a garment-supporter, comprising a body-plate provided with means for attachment to a garment, a suspender-button fixed to the body-plate and having its axis extending horizontally therefrom beyond one face, and a hook at the lower end of the body-plate, which extends upward in direction of the button and at the same side of the body-plate, as described.

2. A garment-supporter, consisting of a body member, a lower supporting member, consisting of a hook extending upward at the inner face of the body member, a button located at the inner face of the body member between its ends, keepers carried by the said body member at its front, and an attaching member pivoted to the forward portion of the body member of the supporter and adapted in locking position to engage with the aforesaid keepers, as described.

3. A garment-supporter, consisting of a body member, a lower supporting member consisting of a hook extending upwardly at the inner face of the body member, a guard member located at the upper end of the body member, which guard member is in the form of a hook extending downwardly at the front face of the body member, a button located at the inner face of the body member between its ends, keepers carried by the said body member at its front, and an attaching member pivoted to the forward portion of the body member of the supporter and adapted in locking position to engage with the aforesaid keepers, as described.

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**756,765. AUTOMATIC FEEDING DEVICE AND FIXTURES.** ZACHARIAH XEVERS, Santa Cruz, Cal. Filed Mar. 18, 1903. Serial No. 148,286. (No model.)

*Claim.*—1. In a device as described, a grain-receiving member having an opening in the bottom thereof, a plate adapted to be fastened over said opening said plate having a discharge-aperture, a gate having an aperture for controlling said discharge-aperture, a hood mounted upon said plate within the grain-receiving member, a swing-lever fulcrumed within said hood and passing downward through the aperture in said gate member for the purposes specified.

2. In a device as described, a grain-receiving member, having an opening in the bottom thereof, a plate adapted to be fastened

over said opening said plate having a discharge-aperture, a gate having an aperture for controlling said discharge-aperture, a hood mounted upon said plate within the grain-receiving member, a swing-lever fulcrumed within said hood and passing downward through the aperture in said gate member, an agitator mounted upon the swing-rod above the gate, for the purposes specified.



3. In a device as described, a grain-receiving member, having an opening in the bottom thereof, a plate adapted to be fastened over said opening said plate having a discharge-aperture, a gate having an aperture for controlling said discharge-aperture, a hood mounted upon said plate within the grain-receiving member, a swing-lever fulcrumed within said hood and passing downward through the aperture in said gate member, a regulator mounted upon said swing-rod below the gate for controlling the movement of the swing-rod substantially as shown and described.

4. In a device as described, a grain-receiving member having an opening in the bottom thereof, and plate adapted to be fastened over said opening said plate having a discharge-aperture, a gate having an aperture for controlling said discharge-aperture, a hood mounted upon said plate within the grain-receiving member, a swing-rod fulcrumed within said hood and passing downward through the aperture in said gate member, a regulator mounted upon said swing-rod below the gate for controlling the movement of the swing-rod, an agitator mounted upon said rod above the gate as shown and for the purposes described.

5. In a feeding device as described, a food-receiving hopper having a discharge-opening, gate devices for controlling said discharge-opening, said gate devices including a swing-rod, a regulator adjustably mounted upon said swing-rod as and for the purposes described.

6. In a feeding device as described, a food-receiving hopper having a discharge-opening, gate devices for controlling said discharge-opening, said gate devices including a swing-rod, a regulator adjustably mounted upon said swing-rod, said regulator including a projecting arm, adapted to engage the under side of the gate devices as the swing-rod moves from its vertical position for the purposes specified.

7. In a feeding device as described, a grain-holding receptacle having an opening in the bottom thereof, a plate adapted to be fastened over said opening, said plate having a discharge-opening and an elongated aperture, a hood over said aperture, a swing rod or lever fulcrumed within the hood and passing through said elongated aperture, a gate controlled by said swing-lever for closing the discharge-opening substantially as and for the purposes specified.

8. In a feeding device as described, a grain-holding receptacle having an opening in the bottom thereof, a plate adapted to be fastened over said opening, said plate having a discharge-opening and an elongated aperture, a hood over said aperture, a swing rod or lever fulcrumed within the hood and passing through said elongated aperture, a gate controlled by said swing-lever for closing the discharge-opening, an agitator mounted upon the swing-rod above the plate whereby the grain is prevented from bridging the discharge-opening, substantially as and for the purposes described.

9. In a feeding device as described, a grain-holding receptacle having an opening in the bottom thereof, a plate adapted to be fastened over said opening, said plate having a discharge-opening and an elongated aperture, a hood over said aperture, a swing rod or lever fulcrumed within the hood and passing through said elongated aperture, a gate controlled by said swing-lever for closing the discharge-opening, an agitator mounted within the hood upon the swing-rod said agitator projecting through the end walls of the hood and over the discharge-opening whereby the grain will be prevented from bridging the discharge-opening for the purposes described.

10. The combination with the grain-receiver having an opening therein, of the gate hold to normally close said opening, said gate having an aperture, said grain-receiver having a second opening therein, a closed hood mounted over said second opening, and within the grain-receiver, a rod or bar pendent through said second opening and said aperture in the gate, said rod being fulcrumed at its upper end within the hood, and carrying at its lower end a bait-receiver, a regulator adjustably mounted upon said rod or bar below the gate to regulate the swing of said bar, and an agitator mounted upon said bar within the grain-receiver all being so arranged that the swing movement of the bar will operate the gate and agitator to permit of the discharge of grain.

11. A discharge mechanism for feeding devices, comprising a base-plate having a discharge-opening therein, a hood mounted upon one side of said base-plate, a guideway fixedly secured upon the other side of said base-plate, a gate adapted to slide in said guideway, an agitator having an aperture and being mounted upon said hood, a rod or bar pendently mounted within the aforesaid hood, and projecting downward through the aperture in the agitator and base-plate, a regulator mounted upon said rod below the gate, a bait-holder secured to the lower end of said bar or rod, said bait-holder including a bait-receiving portion, all being arranged in a manner whereby the bar will receive a pendulum movement by the efforts of the fowl or animal to get the bait.

12. The discharge mechanism for feeding devices, comprising a base portion *g* having a discharge-opening $g^3$ therein, a hood H mounted upon the upper side of the said base portion, a guideway $4^a$ fixedly secured upon the under side of said base-plate *g*, a gate 4 adapted to slide in said guideway and close said discharge-opening $g^3$, an agitator 6 mounted upon said hood H, a rod or bar 5 pivotally secured within the hood H, and projecting downwardly through the apertures in the agitator 6 base-plate *g* and gate 4, said agitator being adapted for reciprocating motion in a horizontal plane, a regulator 10 mounted upon said rod 5 below the gate 4 and base-plate *g*, the bait-holder 7 secured to the lower end of said bar or rod 5, said bait-holder including a bait-receiving portion, all being arranged in a manner whereby the bar or rod will receive a pendent movement by the efforts of the fowl or animal desiring to be fed.

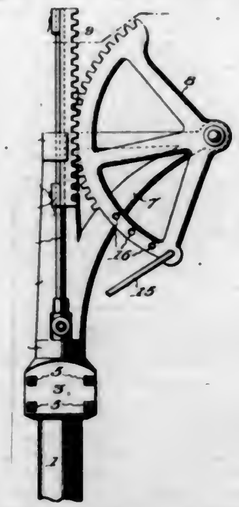
13. In a device of the character described, an apertured base-plate including an elongated aperture, a hood mounted upon the base-plate over the elongated aperture, a swing-rod fulcrumed within the hood and passing through the elongated aperture, in the base-plate, and a gate, controlled by the movement of the swing-rod, substantially as shown and described.

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**756,766. PUMPING-JACK.** ELSA A. YOCUM and JAMES A. SWIHART, Lima, Ohio. Filed June 19, 1903. Serial No. 162,291. (No model.)

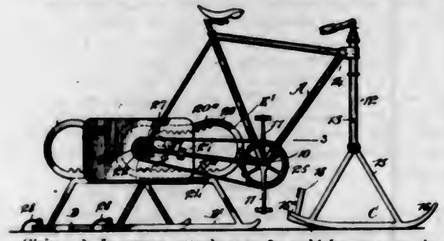
*Claim.* 1. The combination with a well-casing having a collar at its upper end; of blocks secured to the casing and below and abutting against the collar, a standard extending upward from one of the blocks, a bracket extending from the standard, a recessed ear at the upper end of the standard, and polish-rod-operating mechanism mounted upon the bracket and within the ear.

2. The combination with a well-casing; of a standard extending upward therefrom and detachably secured thereto, a bracket extending from the standard, a recessed ear arranged at the upper end of the standard, a rack having a longitudinally-extending groove in its inner face, a polish-rod within the groove and extending into the casing, clamping-blocks embracing the rod and secured to the rack, a segment pivoted to the bracket and meshing with the rack, the pivotal point of the segment being in alinement with the ear of the standard, and means adjustably connected to and adapted to reciprocate the segment.



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**756,767. RUNNER AND PROPELLING ATTACHMENT FOR BICYCLES OR OTHER VEHICLES.** JOHN H. YOUNGER, Virginia City, Mont. Filed Sept. 14, 1903. Serial No. 173,113. (No model.)



*Claim.*—1. In runner attachments for vehicles, runners, elongated propelling members attached to said runners, and mechanism coacting with said propelling members to alternately bring the runners one in advance of the other, each propelling member having a curved section, said sections being alternately engaged by said coacting mechanism to first elevate and then gradually lower each runner as it is carried forward, the length of a forward step being determined by the length of the elongated propelling members and the distance each runner is elevated, as a step is taken, being determined by the amount of curvature given to the curved sections of the propelling members.

2. In runner attachments for vehicles, runners, means for holding the runners in parallel independent relation, and coacting mechanism for the runners, adapted to move the runners alternately in advance of each other, said mechanism comprising a propelling member secured to each runner, and means for alternately engaging, first one side of a propelling member to simultaneously elevate the runner connected therewith, and move it forward and bring it in engagement with the ground again, said means then engaging the other propelling member to propel the opposite runner forward.

3. In runner attachments for vehicles, independent runners, guides for maintaining the runners in parallel position, a mangle-rack secured to each runner, a shaft independent of the mangle-racks and runners, a support for the said shaft, and segmental pinions carried by the said shaft, extending in opposite directions therefrom, each pinion being adapted for engagement with one of the said racks, as described.

4. In a runner attachment for vehicles, independent runners, guides maintaining the said runners in parallel position, a mangle-rack secured to the upper portion of each runner, each mangle-rack being provided with upper and lower interiorly-located teeth, the lower teeth being in a horizontal plane and the upper teeth having convexed arrangement, a shaft independent of the runners and the racks, a support for the shaft, and segmental pinions attached to the shaft and extending in opposite directions therefrom, the pinions operating independently on the respective racks, as described.

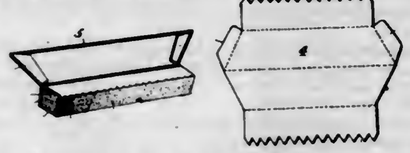
5. In a runner attachment for vehicles, independent runners, guides for maintaining the said runners in parallel position, a mangle-rack secured to the upper portion of each runner each mangle-rack being provided with upper and lower interiorly-located teeth, the lower teeth being in a horizontal plane and the upper teeth having convexed arrangement, a shaft independent of the runners and the racks, a support for the shaft, segmental pinions attached to the shaft and extending in opposite directions therefrom, the pinions operating independently on the respective racks, a driving mechanism for the said shaft, and stop-arms located at the rear of the runners, adapted to engage with the surface over which the runners travel and prevent rearward movement of the runners, as set forth.

6. A frame for a bicycle or a like machine, a pedal-shaft for the frame, a front fork or head pivotally connected with the frame, a handle-bar carried by the front fork or head, and a forward runner connected with the said front fork or head, having its ends upwardly curved and provided with a knife-edge on the tread-surface of its rear end, rear runners, guides for the said runners, maintaining them in independent and parallel position, a mangle-rack secured to each runner at its upper portion, a shaft journaled in the rear portion of the frame, segmental pinions secured to the shaft, extending in opposite directions therefrom, the pinions coacting one with each rack, and a driving connection between the pedal-shaft and the pinion-shaft, as described.

7. A frame for a bicycle or like machine, a front fork or head pivotally connected with the frame to turn thereon and to rock backwardly and forwardly, the upper end of said head extending above the pivot-point, a handle-bar connected with said head above its pivot-point, a runner secured to said fork at its lower end and having its ends upwardly curved and a knife-edge on the rear portion of the under side of said runner, adapted to be rocked into engagement with the surface upon which the machine is running.

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**756,768. WELT-CLEANER AND BLACKING-SPREADER.** CHARLES F. ZIEGLER, Bloomington, Ill. Filed June 20, 1903. Serial No. 162,416. (No model.)



*Claim.*—1. As an article of manufacture a device for the purpose described consisting of a metal body, forming a scraping-blade, and a fabric strip securely fastened to said body and projecting therefrom, the projecting portion of said strip having two converging sides, whereby a relatively narrow face is provided at the free edge thereof.

2. A device for the purpose described, consisting of a metal body provided at one side with a scraping-blade and at its opposite side with two jaws, and a fabric strip secured between said jaws and projecting beyond the metal body, said strip being substantially rectangular in cross-section and so arranged between the jaws that the projecting portion thereof decreases in thickness from the jaws to its free edge.

3. A device for the purpose described, consisting of a body formed from a sheet-metal blank bent upon itself to provide a scraper and two integral flaring jaws each provided at its free edge with a series of teeth or holding points, and a fabric strip arranged between said jaws and engaged by the teeth or holding projections of both jaws and projecting beyond said body.

4. A device for the purpose described, consisting of a fabric strip, and a metal holder partly surrounding and securely engaging said strip, said holder providing at one side of the strip a scraper which increases in width from said strip to its outer edge.

5. The herein-described welt-cleaner and blacking-spreader, consisting of a fabric strip substantially rectangular in cross-section, and a metal holder formed from a blank bent upon itself to provide two laterally-flaring jaws, which engage the strip at diagonally opposite points, and an intermediate scraper that projects from the holder and serves as a handle when the fabric strip is in use.

**756,769. SLIDING HANGER FOR DOORS, &c. JOSEPH C. ZUMWALT and FRANK STANTON, Clay Center, Nebr. Filed May 28, 1903. Serial No. 159,191. (No model.)**



*Claim.*—A hanger for doors and the like, comprising a tubular supporting-track having a longitudinal slot, caps fitted on the end of said track, bearing-brackets, trunnions integrally formed upon the caps and slidably and rotatably journaled in said brackets, whereby the track is rotatably supported to allow the door to be swung thereon and the caps are adjustable to release the track to allow the same to be taken down without removing either bracket, rollers arranged to run in said track and hangers projecting through said slot and carried by said rollers.

**756,770. BOTTLE-CLOSURE. EDUARD E. ADAMS, New York, N. Y. Filed Aug. 5, 1903. Serial No. 168,249. (No model.)**



*Claim.*—1. A closure for bottles and other receptacles, comprising a casing, a guard therefor, inlet and outlet ports in said casing, valves for said inlet and outlet ports, a flexible connection uniting said valves, and a counterpoise for one of said valves, substantially as specified.

2. A closure for bottles and other receptacles comprising a casing, a guard therefor, inlet and outlet ports arranged in said casing, valves for sealing said inlet and outlet ports, a member composed of flexible and rigid sections connecting said valves, a counterpoise, and a flexible member connecting said counterpoise with one of said valves, substantially as specified.

3. A closure for bottles and other receptacles comprising a casing, a guard therefor, inlet and outlet ports arranged in said casing, valves for sealing said ports, a member extending from one of said valves, a flexible section connecting said member with the other of said valves, an arm depending from the base of the casing provided with an eye at its free end, a counterpoise and a flexible member having one end secured to said counterpoise and its other end extending through the eye of the depending arm and secured to the valve located directly above said depending arm, substantially as specified.

4. A closure for bottles and other receptacles comprising a casing, a guard therefor, inlet and outlet ports arranged in said casing, a normally seated valve and a normally unseated valve adapted to seal said ports, a member uniting said valves, and a counterpoise connected to the normally seated valve, substantially as specified.

5. A closure for bottles and other receptacles comprising a casing, a guard therefor, inlet and outlet ports arranged in said casing, oppositely-opening valves for said ports arranged within said casing, a member connecting said valves consisting of a flexible and a rigid section, a counterpoise, and a flexible member connecting said counterpoise with one of said valves, substantially as specified.

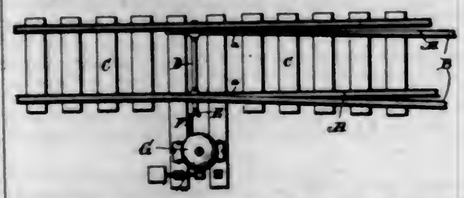
6. A closure for bottles and other receptacles comprising a casing, a guard therefor, inlet and outlet ports in said casing, a valve arranged within said casing below said outlet-port, and a valve arranged within said casing above the inlet-port, a connecting member uniting said valves comprising a rigid section secured to the inlet-valve, and a flexible section secured to the outlet-valve and to the end of said rigid section, a counterpoise, a flexible member connecting said counterpoise with said inlet-valve, and a guide for said flexible member, substantially as specified.

7. A closure adapted for securement within a bottle or other receptacle comprising a casing, a perforated top therefor, inlet and outlet ports in said casing, a valve hinged in said casing below the outlet-port, opening inwardly and held normally unseated, a stop for limiting the inward movement of said valve, a valve hinged in said casing over the inlet-port therein adapted to normally seal the same and to open in a direction opposite to that of the outlet-valve, an arm extending upwardly from the hinged end of said inlet-valve and adapted to limit the movement of said inlet-valve, a flexible member connecting the free end of the arm of inlet-valve with the outlet-valve, an arm depending from the base of the casing having an eye or loop at its free end, a counterpoise for said inlet-valve and a flexible member secured to said counterpoise and extending through said eye or loop and secured to the inlet-valve at a point opposite its hinged portion, substantially as specified.

8. A closure adapted for securement within a bottle or other receptacle comprising a casing, a top therefor having diagonal perforations therein, an outlet-port in the upper end of said casing, a valve hinged upon the under side of said end, held normally open, and adapted to seal said outlet-port, a stop to limit the inward movement of said valve, an inlet-port arranged in the bottom of the casing, a valve hinged upon the upper side thereof adapted to normally seal said inlet-port, an arm extending upwardly and inwardly from the hinged end of said valve, and adapted to limit the movement of said valve, a flexible connection having one end secured to said arm and its other end to the edge of the outlet-valve at a point opposite to its hinged portion, an arm depending from the bottom of the casing and extending inwardly, a loop or eye at the free end of said arm, a counterpoise for said inlet-valve, and a flexible member having one end secured to said counterpoise, and its other end extending through the eye or loop of the depending arm, and secured to the inlet-valve opposite to its hinged portion, substantially as specified.

9. A bottle or analogous receptacle, having a neck, a shoulder at the base thereof and an annular tapering recess intermediate its mouth and base, combined with a casing adapted for securement within said neck having a projecting edge at its top adapted to be expanded into the tapering recess of the neck, an outlet-port in the upper end of said casing, a guard therefor comprising a piece of wire fabric, and a top disposed above the same having inclined apertures therein, a normally open valve arranged upon the under side of said top adapted to seal said outlet-port, an inlet-port in the base of said casing, a valve adapted to normally seal said inlet-port, a member uniting said valves, and a buoyant counterpoise arranged without the casing below its base, and a flexible member connecting said buoyant counterpoise with said inlet-valve, substantially as specified.

**756,771. SWITCH CONNECTION. FRANK C. ANDERSON, Cincinnati, Ohio, assignor of one-half to American Valve and Motor Company, Cincinnati, Ohio, a Corporation of West Virginia. Filed July 20, 1903. Serial No. 166,385. (No model.)**



*Claim.*—1. In switch connections, the combination of a switch-stand, an operating-rod controlled by the mechanism of said switch-stand, a connecting-rod between and united to the switch-points, and a frangible connection uniting said operating-rod and connecting-rod, substantially as described.

2. In switch connections, the combination of a switch-stand, an operating-rod controlled by the mechanism of said switch-stand, a connecting-rod between and united to the switch-point, and an adjustable, frangible connection uniting said operating-rod and connecting-rod, said frangible connection having a plurality of pivotal connecting members, whereby when one is broken another may be employed substantially as described.

3. In switch connections, the combination of a switch-stand, an operating-rod controlled by the mechanism of said switch-stand, a connecting-rod between and united to the switch-points, and an adjustable frangible connection uniting said operating-rod and connecting-rod, said frangible connection having two divergent perforated lugs I and adapted to be inverted and secured upon the connecting-rod when either of said lugs is broken, substantially as described.

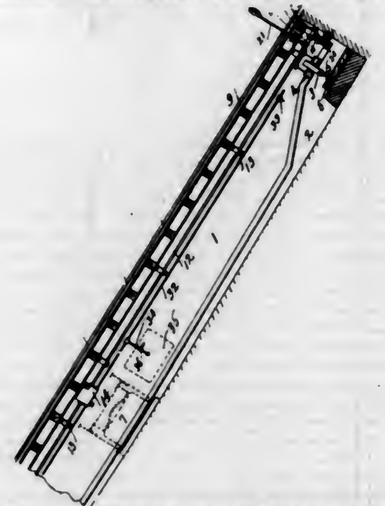
4. In switch connections, the combination of a switch-stand, an operating-rod controlled by the mechanism of said switch-stand, a connecting-rod between and united to the switch-points, and a frangible connection provided with a plurality of connecting-points, uniting said operating-rod and connecting-rods, substantially as described.

5. In switch connections, the combination of the main-track rails A, the branch rails B, the switch-points *a*, the connecting-rod D uniting the switch-points and having an exterior projection, the frangible connection E removably secured to the end of the rod D, the switch-stand G provided with operating mechanism, a throwing-arm E and a coupling-rod F, adjustably united to the frangible connection E, substantially as described.

6. The combination of the rod D, the switch-points *a* to which it is united near their ends, the frangible connection E bolted to the end of the rod D and provided with the divergent perforated lugs I, the coupling-rod F pivoted to one of the lugs I, the switch-stand G for operating the rod F and the operating-lever P for the switch-stand, substantially as described.



**756,772. POWER DEVICE FOR TRANSFER-TABLES. LAFAYETTE BATES, Mattoon, Ill., assignor of one-third to Charles Bates, Mattoon, Ill. Filed Nov. 2, 1903. Serial No. 179,465. (No model.)**



*Claim.*—1. In combination with a transfer-table, a motor supported thereby, a shaft directly connected with the motor and extending to opposite ends of said table, a fixed cog-rack, pinions intermeshing with said rack, and means for communicating power from the motor-shaft to said pinions.

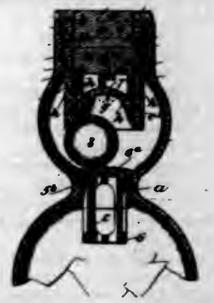
2. In combination, a turn-table, an air-motor supported thereby, a power-shaft connected with said motor, an air-pipe connected with said motor and adapted to be connected with an air-supply under pressure, and mechanism adapted to be intermittingly connected with said power-shaft and thereby propel said table.

3. In combination with a transfer-table, an air-motor supported thereby, means for supplying said motor with air under pressure, an auxiliary air-reservoir connected with said motor, a power-shaft, gearing whereby when said motor is in operation said table may be propelled, and mechanism for intermittingly connecting said gearing and motor.

4. In combination with a transfer-table, a motor supported thereby, a shaft connected with said motor, a fixed rack, pinions meshing with said rack, gearing on the motor-shaft adapted to actuate aforesaid pinions and means for shifting the gearing on the shaft and thereby control the direction of rotation of said table, substantially as and for the purposes set forth.

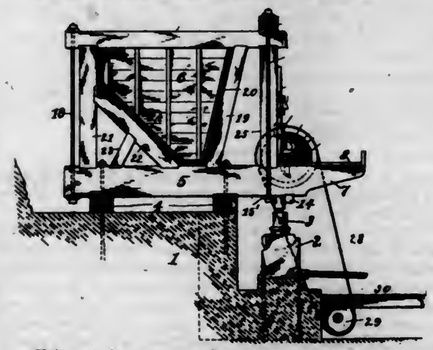
**756,773. NON-REFILLABLE BOTTLE. WILLIAM C. BRAI, Fernandina, Fla., assignor of one-half to John J. Rutishauser and Louis G. Hirth, Fernandina, Fla. Filed Aug. 25, 1903. Serial No. 170,708. (No model.)**

*Claim.*—1. A closure for bottles, comprising a hollow laterally-apertured valve seating on an opening in the bottle-neck, a hollow guard-cup having a dished bottom, a cylindrical side wall, and orifices in said wall near the bottom for the passage of liquid from the bottle through the orifices into and then through the guard-cup, a ball engaging the top of the valve and adapted to enter the dished bottom of the guard-cup when the bottle is inverted, and means for securing the guard-cup in the neck of the bottle.



2. A bottle and its closure, comprising the following construction, a bottle-body having a converged neck, an opening in the neck formed with a downwardly-converged seat, a plug-valve having a coniform head that may engage the valve-seat, and a hollow cylindrical body that is longitudinally apertured, the bottle-neck having a cylindrical upper portion and a spheral portion intervening the cylindrical top and the converged neck, an inwardly-extended annular flange formed in the cylindrical top of the bottle-neck near the spheral chamber, a lug formed on the inner surface of the cylindrical wall above the annular flange, a guard-cup having a cylindrical side wall, a radial top flange thereon and an inwardly-dished bottom wall, a plurality of orifices formed in the side wall of the cup and inclined inward and downward near the bottom wall, a ball in the spheral chamber, seating on the valve, a longitudinal groove in the side wall of the guard-cup, an intersecting circumferential groove at the top of the longitudinal groove, said grooves receiving the lug, and a cement filling between the guard-cup and the cylindrical wall of the bottle-neck.

**756,774. STAMP-MILL. MARTIN P. BOM, San Francisco, Cal. Filed May 27, 1903. Serial No. 158,909. (No model.)**



*Claim.*—1. In a stamp-mill, a beam anchored to sustain the counter-load of the working mechanism over the mortar at a point beyond the supporting wall or column.

2. A stamp-mill comprising in its construction a mortar, stamps with stems, guides for the stems, an operating-shaft, and a beam anchored to sustain said guides and the operating-shaft over the mortar at a point beyond the supporting wall or column.

3. A stamp-mill having a beam anchored at one end only, and having its other end projecting beyond the supporting wall or column, and overhanging the mortar, said overhanging end sustaining the counter-load of the working mechanism over said mortar.

4. A stamp-mill comprising in its construction a mortar, stamps with stems, guides for the stems, an operating-shaft, and a beam anchored at one end only, and having its other end projecting beyond

the supporting wall or column and overhanging the mortar, said end sustaining the guides and the operating-shaft over said mortar.

5. A stamp-mill having an overhang for supporting and guiding the moving parts of the mill above the level of the mortar, said overhang consisting of an extension of the ore-bin sill.

6. A stamp-mill comprising in its construction a mortar, stamps with stems, guides for the stems, a shaft for operating the stamps, and overhung extensions of the ore-bin sills supporting said operating-shaft and guides.

7. In a stamp-mill, an ore-bin having sills with overhung extensions supporting and guiding the moving parts of the mill located above the level of the mortar.

8. A stamp-mill comprising in its construction a mortar, stamps with stems, guides for the stems, a shaft for operating the stamps, an ore-bin, and sills for said bin having overhung extensions supporting the operating-shaft and the guides.

9. A stamp-mill comprising in its construction a mortar, stamps with stems, guides for the stems, a shaft for operating the stamps, an ore-bin, and sills for said bin having overhung extensions supporting the operating-shaft and the guides, said extensions carrying a platform at their outer ends.

10. A stamp-mill comprising in its construction a mortar, stamps, guides, operating-shaft, an ore-bin having sills with cantaliver extensions supporting the guides and operating-shaft located above the level of the mortar, tension members uniting said sill extensions with the top girders of the bin, and compression members between said girders and sills.

11. A stamp-mill comprising in its construction a mortar, stamps, guides, operating-shaft, an ore-bin having sills with cantaliver extensions supporting the guides and operating-shaft, top girders of said bin having end extensions, tension members uniting said end extensions with the cantaliver extensions of the sills, and compression members between the girders and sills.

12. In a stamp-mill, an ore-bin having sills with cantaliver extensions for supporting and guiding the moving parts located above the level of the mill-mortar, top girders for said bin, tension members uniting the cantaliver extensions of the sills with the top girders, and compression members between the sills and girders and forming the support for the front wall of the bin.

13. In a stamp-mill, an ore-bin having sills with cantaliver extensions for supporting and guiding the moving parts located above the level of the mill-mortar, top girders for said bin, tension members uniting the cantaliver extensions of the sills with the top girders, compression members between the sills and girders and forming the support for the front wall of the bin, and compression members between the rear ends of said sills and girders.

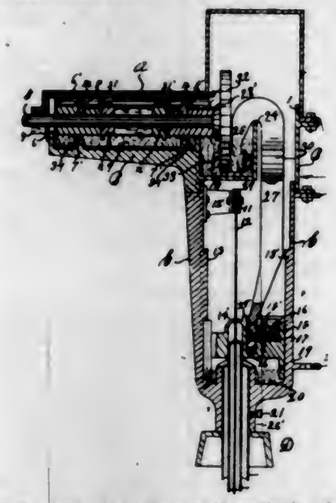
14. In a stamp-mill, an ore-bin having sills with cantaliver extensions for supporting and guiding the moving parts located above the level of the mill-mortar, top girders for said bin, tension members uniting the cantaliver extensions of the sills with the top girders, compression members between the sills and girders and forming the support for the front wall of the bin, compression members between the rear ends of said sills and girders, and tension members between said rear ends.

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**756,775. WINDMILL-PITMAN AND MEANS FOR ITS AUTOMATIC LUBRICATION.** WILLIAM P. BRETT, Decatur, Ill. Filed Feb. 13, 1902. Serial No. 93,910. (No model.)

*Claim.*—1. In combination, an incasement constituting the main frame or turn-table of the windmill, a vertically and substantially centrally-apertured pivotal anchorage portion arranged at the lower part of said incasement, an oil-receptacle adjacent to the top end of said anchorage portion, space for the operative mounting of reciprocating mechanism within the lower portion of said incasement, an oil-receptacle arranged at one side within said incasement above the operative range of said reciprocating mechanism, means, above said last-named receptacle, for the operative mounting of a rotatable member, and space at the side of said last-named receptacle within said incasement for the operative range of a pitman that is adapted to be operatively connected at one end to said member and at the other end to said reciprocating part.

2. In combination a vertically-elongated incasement constituting the main frame or turn-table of the windmill, a vertically-arranged and substantially centrally-apertured pivotal anchorage portion arranged at the lower part of said incasement, an oil-reservoir surrounding the upper end of said anchorage portion, a reciprocating part operatively mounted within the lower part of said incasement, an oil-receptacle arranged at one side within said incasement above the operative range of said reciprocating part, a rotatable shaft mounted above said receptacle, a wrist-pin anchored eccentrically to said shaft, and a pitman adapted to be operatively journaled on said wrist-pin near its upper end and extend downwardly past said receptacle and be operatively connected to said reciprocating part near its lower end.



3. In combination an incasement constituting the main frame or turn-table of the windmill, an opening through the bottom portion of said incasement, an oil-receptacle arranged within said incasement near the upper portion thereof, a rotatable member mounted mainly above and arranged to operate partially within said receptacle, a reciprocating part arranged to extend operatively through the opening in said bottom portion, a pitman adapted to be eccentrically pivoted near its upper end to said rotatable member and to extend downwardly past said oil-receptacle and impart reciprocating motion to said reciprocating part upon the rotation of said member, and means whereby the bearings of said rotatable member may be automatically lubricated with oil taken from said receptacle during the operation of the windmill.

4. In combination a vertically-elongated incasement constituting the main frame or turn-table of the windmill, and provided with a substantially vertical centrally-apertured pivot portion at the lower part of the incasement, an oil-reservoir within the incasement adjacent to said pivot portion, a rotatable shaft mounted horizontally at the upper portion of said incasement and projecting into the main or body part thereof, another oil-reservoir arranged within said incasement upon the side adjacent to and below said shaft, a crank made rigid with the part of said shaft that is directly above the reservoir, reciprocating power-transmitting mechanism operatively connected to said crank and adapted to extend operatively downwardly within said incasement past said reservoirs and through said centrally-apertured pivot portion, means whereby the bearings of said shaft, crank, and reciprocating mechanism within said incasement are automatically lubricated during the operation of the windmill, and means for automatically returning the surplus lubricant dripping from said bearings into reservoirs where it is available for repeated automatic use.

5. In combination a vertically-elongated incasement constituting the main frame or turntable of the windmill and provided with a substantially vertical centrally-apertured pivot portion at and projecting partially upwardly within the lower portion of the incasement, a rotatable shaft mounted mainly to one side at the upper portion of said incasement and projecting partially into the main or body part thereof, an oil-reservoir arranged within said incasement upon the side adjacent to and below said shaft, a crank made rigid with the part of said shaft that is directly above said reservoir, reciprocating power-transmitting mechanism operatively connected with said crank and adapted to extend operatively downwardly within said incasement past said reservoir and through said vertically-apertured pivot portion, and means whereby the operative bearings of said shaft, crank, and reciprocating mechanism are automatically lubricated during the operation of the windmill.

6. In windmills in combination a vertically-elongated incasement comprising three sections detachably secured together one



above the other, a vertically-apertured pivotal anchorage portion, an oil-receptacle adjacent to said portion and rigid guide-bars extending upwardly from said receptacle at the lower part of the lowermost of said sections, and crank and shaft oil-receptacles made integral with the intermediate of said sections.

7. In combination a vertically-elongated incasement constituting the main frame or turn-table of the windmill and provided at its lower part with a substantially vertically-apertured pivot portion, an oil-reservoir within said incasement adjacent to the upper part of said pivot portion, vertical guide-bars made rigid with and extending upwardly within said incasement from opposite sides of said oil-reservoir, a vertically-movable element adapted to a sliding engagement with said guide-bars and adapted to contact with the lubricant in said reservoir upon its reciprocation, a vertical aperture through said element vertically above the vertical aperture of said pivot portion, and a tubular shaft rigidly secured in the aperture of said element and adapted to reciprocate through the aperture of said pivot portion.

8. In windmills, in combination a rotatable member and a reciprocating part, mounted one above the other, a pitman eccentrically pivoted to said member near one end and pivotally connected to said reciprocating part near the other end, a laterally-extending part near the upper end of said pitman having a dependent portion and provided near the extremity of said portion with one of said pivot-bearings, and an oil-receptacle so mounted that said extremity is made to intermittently contact with the lubricant contained therein upon the rotation of said member.

9. In windmills, in combination a vertically-elongated incasement constituting the main frame or turn-table, a rotatable member and a reciprocating part operatively mounted within said incasement one above the other, a pitman eccentrically pivoted near one end to said member and pivotally connected, near the other end, in an oil-receptacle carried by said reciprocating part, a downward projection near the upper end of said pitman provided near its extremity with one of said pivot-bearings, and another oil-receptacle so mounted within said incasement that said downward projection is caused to intermittently contact with the lubricant contained therein upon the rotation of said member.

10. In windmills, in combination a vertically-elongated incasement constituting the main frame or turn-table and provided with an oil-receptacle arranged therein upon one side toward its upper portion and another within the bottom portion thereof, a reciprocating part having downwardly-projecting guide portions, and a rotatable member, mounted one above the other and mainly within said incasement, a pitman eccentrically pivoted to said member near one end and pivotally connected to said reciprocating part near the other end, and a downward projection near the upper end of said pitman provided near its extremity with one of said pivot-bearings, whereby said downwardly-projecting portions of said pitman and reciprocating part are adapted to intermittently contact with the lubricant in said receptacles upon the rotation of said member.

11. In windmills, in combination a vertically-elongated incasement constituting the main frame or turn-table and provided with oil-receptacles one arranged within upon one side toward the upper portion and another within the lower portion of said incasement, a reciprocating part, having downwardly-projecting guide portions, and a rotatable member, mounted one above the other and mainly within said incasement, a pitman eccentrically pivoted to said member near one end and near the other end pivoted within an oil-receptacle carried by said reciprocating part, and a downward projection near the upper end of said pitman provided near its extremity with one of said pivot-bearings, whereby the bearings of said member, pitman, and reciprocating part are adapted to be automatically lubricated during the operation of the windmill, and be protected from the destructive elements of the weather by said incasement.

12. In windmills, in combination a main frame or turn-table provided with a laterally-projecting part, spaced bearings united and made rigid with longitudinal side bars and adapted to be removably secured to said laterally-projecting part, a rotatable shaft journaled in said bearings, an oil-receptacle within said laterally-projecting part below said shaft, and collars arranged upon said shaft abutting against the adjacent ends of said bearings and adapted to rotate with their lower portion in contact with the lubricant in said receptacle whereby a quantity of said lubricant, upon the rotation of said shaft, is elevated and delivered into channels upon said bearings which lead to the shaft-journals therein, substantially as and for the purpose set forth.

13. In windmills, in combination spaced-bearings carried by the main frame or turn-table, rigid side bars made integral with and uniting said bearings, a rotatable shaft journaled in said bearings, collars secured upon said shaft and adapted to rotatably abut against the adjacent ends of said bearings, and means whereby said bearings are rigidly and detachably secured to said main frame or turn-table.

14. In windmills, in combination spaced bearings carried by the main frame or turn-table of the windmill, rigid side bars made integral with and uniting said bearings their points of union therewith being upon opposite sides and intermediate the end portions of the bearings, a rotatable shaft journaled in said bearings, collars upon said shaft abutting against the adjacent ends of the bearings, and means whereby said bearings are removably secured to said main frame.

15. In windmills, in combination spaced bearings carried within an incasement portion of the main frame or turn-table, rigid side bars made integral with and uniting said bearings, a rotatable shaft journaled in said bearings, and means within said incasement portion whereby the journals in said bearings are automatically lubricated upon the rotation of said shaft.

16. In windmills, in combination spaced bearings carried by the main frame or turn-table of the windmill, rigid side bars made integral with and uniting said bearings, a rotatable shaft journaled in said bearings, an oil-receptacle below said shaft, oil-elevating disk-surfaces carried by said shaft and arranged to rotate against the adjacent end surfaces of said bearings and contacting at their lower portion with the lubricant contained in said receptacle, and oil-conducting channels beginning with acute edge portions bearing against said disk-surfaces and leading to the portion of the shaft within said bearings.

17. The combination, in the main frame or turn-table of a windmill-head, of a vertically-elongated incasement adapted to inclose the reciprocating mechanism of the said head, a part made integral with the said incasement at its upper portion and adapted to carry a horizontally-arranged rotatable shaft, a vertically-apertured pivot portion constituting the lower part of the said incasement, and an oil-reservoir arranged upon one side within the said incasement and having its lower extremity above the upper part of the said pivot portion.

18. The combination, in the main frame or turn-table of a windmill-head, of a vertically-elongated incasement constituting a protecting-inclosure for the main power-transmitting elements of the reciprocating mechanism of the said head, a shaft-supporting part at the upper portion of the said incasement, a vertically-apertured pivot portion, an oil-storage reservoir so arranged that its bottom portion is below the upper limits of the apertured part of the said pivot portion, another oil-storage reservoir upon one side within the central portion of the said incasement, and a cross-head guide extending from near the bottom upwardly within the said incasement

19. In a windmill, in combination a vertically-elongated incasement constituting the main frame or turn-table of the windmill-head and a protecting-incasement for the wheel-shaft journals and the main power-transmitting elements of the reciprocating mechanism of the said head, a wheel-shaft-supporting part at the upper portion of the said incasement, a vertically-apertured pivot portion so arranged that the upper end of the said aperture opens into the said incasement, an oil-storage reservoir so arranged that its bottom portion is below the upper limits of the apertured part of the said pivot portion, and cross-head guideways extending from said reservoir upwardly within the said incasement.

20. In a windmill, in combination a vertically-elongated incasement constituting the main frame or turn-table of the windmill-head and a protecting-inclosure for the journal and sliding portions of the main power transmitting and lubricating devices carried by the said head, a shaft-supporting part constituting a portion of the upper structure of the said main frame, a vertically-apertured pivot portion made integral with the lower part of the said turn-table, and an oil-storage reservoir opening upwardly within and constituting an integral part of the central portion of the said incasement.

21. In windmills, in combination a vertically-elongated incasement constituting the main frame of the windmill-head, a vertical aperture through the bottom portion of said incasement, an oil-receptacle arranged within the incasement approximately midway between the bottom and top portions thereof, a rotatable shaft mounted above the level of said receptacle, a wrist-pin anchored eccentrically to said shaft, a reciprocating part extending operatively through said vertical aperture, and a pitman adapted to be operatively pivoted, to said wrist-pin, near its upper end and to extend downwardly within said incasement beyond said oil-receptacle and impart reciprocating motion to said reciprocating part upon the rotation of said shaft.

22. In windmills, in combination a rotatable member and a reciprocating part, mounted with said member above said part, an oil-

receptacle mainly below said member and above said reciprocating part, and a pitman pivoted near its lower end to said part and provided near its upper end with a downward projection, the extremity of which is eccentrically pivoted to said member and adapted to intermittently contact with the lubricant contained in said receptacle upon the rotation of said member.

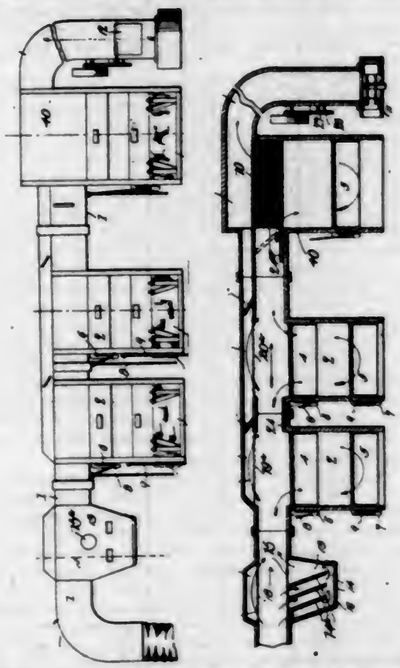
23. In windmills, in combination a rotatable member and a reciprocating part, mounted one above the other, a pitman eccentrically pivoted near one end to said member and pivotally connected to said part near the other end, a downward projection near the upper end of said pitman provided near its extremity with one of said pivot-bearings, and an oil-receptacle so mounted that said extremity is adapted to intermittently contact with the lubricant contained therein upon the rotation of said member.

24. In windmills, in combination a rotatable member and a reciprocating part mounted with said member above said part, a pitman eccentrically pivoted to said member near its upper end and pivotally connected near its lower end in an oil-receptacle which is mounted to move in connection with said part, a downward projection near the upper end of said pitman comprising near its extremity said upper pivot-bearing, and another oil-receptacle so mounted that said upper pivot-bearing is adapted to intermittently contact with the lubricant contained therein upon the rotation of said member.

25. In a windmill, in combination a main frame or turn-table, a rigid bracket constituting a part of the said turn-table, spaced bearings rigidly but detachably secured to the said bracket, and rigid side bars made integral with and uniting the said bearings.

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**756,776. SEED-COTTON DISTRIBUTER.** MONROE C. BROWN, Austin, Tex. Filed Mar. 7, 1903. Serial No. 146,749. (No model.)



*Claim.*—1. The combination in a seed-cotton distributer of a suction-tube, means for producing suction in said tube, and a cleaner for separating trash from the cotton passing through said tube, said cleaner comprising a box having converging sides disposed under said tube and opening thereinto, partitions in said box parallel to one of the converging sides thereof and terminating short of the bottom thereof, and a screen over the top of said box excluding the cotton therefrom and admitting trash thereinto.

2. The combination in a seed-cotton distributer, of a suction-tube, means for producing suction in said tube and a cleaning device comprising a box disposed under said tube and opening thereinto, a screen over said box, an air-chamber in the upper wall of said tube over said box, and a screen under said box in longitudinal alinement with the upper side of the air-tube.

3. The combination in a seed-cotton distributer, of a suction-tube, means for producing suction in said tube and a cleaning device comprising a box under said tube, and opening thereinto, a plurality of inclined partitions in said box terminating short of the bottom thereof, a screen over said box, an air-chamber in the upper wall of the suction-tube over said box, and a screen under said air-chamber, said screens being in longitudinal alinement with the lower and upper walls of the suction-tube.

4. The combination in a seed-cotton distributer, of a main suction-tube, a plurality of feeder-boxes disposed under said tube and opening thereinto, air-chambers disposed adjacent to the upper wall of the suction-tube above the boxes, screens disposed under said air-chambers in longitudinal alinement with the suction-tube, valves separating said air-chambers, a header-box disposed at the end of the main suction-tube, an arched screen in said header-box, forming a continuation of the suction-tube, a valve adjacent to the said screen, an air-space formed in the header-box above said screen and in direct communication at one end with the air-chambers above the feeder-boxes and at the other end with the main suction-tube, and a valve separating the air-space above the screen of said header-box from the air-chamber above the adjacent feeder-box.

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**756,777. ELECTRICAL ANNUNCIATOR.** ALBERT CARLISS, Chicago, Ill., assignor to the American Electric Telephone Company, Chicago, Ill., a Corporation of New Jersey. Filed Oct. 5, 1901. Serial No. 77,648. (No model.)



*Claim.*—1. An annunciator comprising an electromagnet, a swinging armature mounted in front of the forward end of said magnet, a weighted disk pivoted immediately in front of said armature, the axis of the armature being at right angles to the axis of the said disk, the armature being adapted to release the disk when the magnet is energized, a base-plate adapted to support the said magnet-armature and disk, and a front plate mounted on said base-plate in front of said disk and provided with an opening to expose a portion of the face of said disk.

2. In a combined drop and jack, the combination of an electromagnet, a swinging armature mounted in front of the forward end of said magnet, a weighted disk pivoted in front of said armature, the armature being adapted to release the disk when the magnet is energized, a front plate mounted in front of said disk and provided with an opening to expose a portion of the face of said disk, a spring-jack provided with a restoring-spring provided with a forward upturned end adapted to rise between the armature and disk and engage a projection on the back of the latter, and a base-plate adapted to support all of said parts.

3. An annunciator comprising an electromagnet, a swinging armature mounted in front of said magnet, a pivot-pin mounted in the core of said magnet and extending through an opening in said armature, a rotary disk mounted on said pin in front of said armature, the armature being adapted to release the disk when the magnet is energized, a base-plate supporting said parts, and a front plate mounted on said base-plate in front of said disk, said front plate being apertured to expose a portion of the face of said rotary disk.

4. An annunciator comprising an electromagnet, a pivot-pin mounted in the forward end of the core of said magnet, a swinging armature mounted in front of said magnet, a rotary disk mounted on said pin in front of said armature, the armature being adapted to release the disk and allow the latter to rotate when the magnet is energized, and a front plate arranged in front of said disk and provided with an aperture at each side of the axis or pivotal point of said disk.

5. An annunciator comprising an electromagnet, a swinging armature mounted in front of said magnet, a pivot-pin mounted in the core of said magnet and extending through an opening in said armature, a rotary disk mounted on said pin in front of said armature, the disk and magnet being axially alined, and a front plate mounted in front of said disk and provided with one or more apertures adapted to expose a portion of the face of the disk.

6. An annunciator comprising an electromagnet provided with a tubular shell, a vibratory armature mounted in front of said magnet and pivoted at its bottom to ears formed on the end of said shell, a pivot-pin mounted in the core of said magnet and extending through an opening in said armature, a weighted disk mounted for rotation upon said pin in front of said armature, the armature being adapted to release the disk when the magnet is energized, and a front plate provided with one or more apertures adapted to expose a portion of the face of said disk.

7. An annunciator comprising an electromagnet, a pivoted armature mounted in front of the forward end of said magnet, an apertured front plate, a pivot-pin connecting the core of said magnet with said front plate and extending through an opening in said armature, a rotary disk mounted on said pin between said armature and plate, and a base-plate upon which all said parts are supported.

8. An annunciator comprising an electromagnet, a pivoted armature mounted in front of the forward end of said magnet, a rotary disk mounted in front of said armature, an apertured front plate mounted in front of said disk, a pair of upwardly-projecting night-bell springs arranged between the disk and armature, a pin on the back of said disk adapted to move one of said springs into contact with the other, and a base-plate upon which all of said parts are supported.

9. In a combined drop and jack, the combination of an electromagnet, a swinging armature mounted in front of the forward end of said magnet, a weighted disk pivoted immediately in front of said armature, the axis about which said armature swings being at right angles to the axis of said disk, the armature being adapted to release the disk when the magnet is energized, a base-plate adapted to support the said magnet, armature and disk, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a front plate mounted on said base-plate in front of said disk and provided with an opening to expose a portion of the face of said disk.

10. In a combined drop and jack, the combination of an electromagnet, a swinging armature mounted in front of said magnet, a pivot-pin mounted in the core of said magnet and extending through an opening in said armature, a rotary disk mounted on said pin in front of said armature, the armature being adapted to release the disk when the magnet is energized, a base-plate supporting said parts, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a front plate mounted on said base-plate in front of said disk, said front plate being apertured to expose a portion of the face of said rotary disk.

11. In a combined drop and jack, the combination of an electromagnet, a pivot-pin mounted in the forward end of the core of said magnet, a swinging armature mounted in front of said magnet, a rotary disk mounted on said pin in front of said armature, the armature being adapted to release the disk when the magnet is energized, a jack arranged below the magnet and provided with means for automatically restoring the drop when the plug is thrust into the jack, and a front plate arranged in front of said disk and provided with an aperture at each side of the axis or pivotal point of said disk.

12. In a combined drop and jack, the combination of an electromagnet, a pivot-pin mounted in the forward end of the core of said magnet, a swinging armature mounted in front of said magnet, a rotary disk mounted on said pin in front of said armature, the armature being adapted to release the disk and allow the latter to rotate when the magnet is energized, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a front plate arranged in front of said disk and provided with an aperture at each side of the axis or pivotal point of said disk.

13. In a combined drop and jack, the combination of an electromagnet, a swinging armature mounted in front of said magnet, a pivot-pin mounted in the core of said magnet and extending through an opening in said armature, a rotary disk mounted on said pin in front of said armature, the disk and magnet being axially alined, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a front plate mounted in front of said disk and provided with one or more apertures adapted to expose a portion of the face of the disk.

14. In a combined drop and jack, the combination of an electromagnet provided with a tubular shell, a vibratory armature mounted in front of said magnet and pivoted at its bottom to ears formed on the end of said shell, a pivot-pin mounted in the core of said magnet and extending through an opening in said armature, a weighted disk mounted for rotation upon said pin in front of said armature, the armature being adapted to release the disk when the magnet is energized, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a front plate provided with one or more apertures adapted to expose a portion of the face of said disk.

15. In a combined drop and jack, the combination of an electromagnet, a pivoted armature mounted in front of the forward end of said magnet, an apertured front plate, a pivot-pin connecting the core of said magnet with said front plate and extending through an opening in said armature, a rotary disk mounted on said pin between said armature and plate, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a base-plate upon which all said parts are supported.

16. In a combined drop and jack, the combination of an electromagnet, a pivoted armature mounted in front of the forward end of said magnet, a rotary disk mounted in front of said armature, an apertured front plate mounted in front of said disk, a pair of upwardly-projecting night-bell springs arranged between the disk and armature, a pin on the back of said disk adapted to move one of said springs into contact with the other, a jack arranged below the magnet and provided with means for automatically restoring the drop when a plug is thrust into the jack, and a base-plate upon which all of said parts are supported.

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**756,778. SELF-FILLING FOUNTAIN-PEN.** ROY COUKLIN, Toledo, Ohio. Filed Mar. 4, 1904. Serial No. 196,562. (No model.)



*Claim.*—1. In a self-filling fountain-pen, the combination with a barrel having a slot, of an elastic ink-reservoir in said barrel, a presser-bar having a rib projecting through said slot, and rotatable means for forcing said rib lengthwise against one end of said slot.

2. In a self-filling fountain-pen, the combination with a barrel having a slot, of an elastic ink-reservoir in said barrel, a presser-bar having a rib projecting through said slot, and a rotatable locking member abutting against one end of said rib and operating to force said rib lengthwise against the opposite end of said slot.

3. In a self-filling fountain-pen, the combination with a barrel having a slot, of a flexible ink-reservoir in said barrel, a presser-bar having a rib projecting through said slot, a tubular locking member rotatable on said barrel, and means for effecting a longitudinal movement of said locking member when rotated to cause it to engage with one end of said rib.

4. In a self-filling fountain-pen, the combination with a barrel having a slot and provided with external screw-threads, of a flexible ink-reservoir in said barrel, a presser-bar having a rib projecting through said slot, and a tubular rib-locking member rotatable on said barrel and having internal screw-threads engaging with those on the barrel.

5. In a self-filling fountain-pen, the combination with a barrel having a slot and provided with external screw-threads, of a flexible ink-reservoir in said barrel, a presser-bar having a rib projecting through said slot, and provided with undercut ends, and a tubular rib-locking member rotatable on said barrel and having internal screw-threads engaging with those on the barrel.

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**756,779. PHOTOGRAPHIC LENS.** THOMAS R. DALLMEYER, Middlesex, England. Filed Dec. 18, 1899. Serial No. 740,776. (No model.)

*Claim.*—1. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front coverging and a rear diverging lens

2. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and a rear diverging lens, and means for varying the distance apart of these two lenses.

3. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and rear diverging lens, the system being such that parallel incident rays emerge parallel.

4. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and a rear diverging lens, and means for varying the distance apart of these two lenses, the system being such that parallel incident rays emerge parallel.

5. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and a rear diverging lens, the diameter

of the converging lens being greater than those of the diverging and photographic lenses.



6. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and a rear diverging lens, and means for varying the distance apart of these two lenses, the diameter of the converging lens being greater than those of the diverging and photographic lenses.

7. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and a rear diverging lens, the system being such that parallel incident rays emerge parallel, the diameter of the converging lens being greater than those of the diverging and photographic lenses.

8. The combination with an ordinary photographic lens complete in itself, of an enlarging system placed in front of it, and consisting of a front converging and a rear diverging lens, and means for varying the distance apart of these two lenses, the system being such that parallel incident rays emerge parallel, the diameter of the converging lens being greater than those of the diverging and photographic lenses.

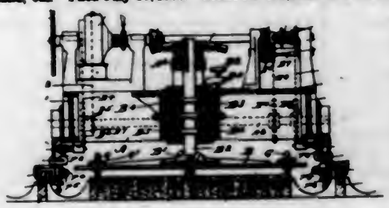
9. The combination with a photographic lens adapted to be focused as in the usual operation of a camera, of an adjustable enlarging system placed in front of it, and producing at will different degrees of magnification of the image.

10. An image-enlarging device consisting of a front converging lens, and a rear diverging lens mounted in a suitable tube or holder and adapted to be applied in front of the focusing-lens of an ordinary camera.

11. An image-enlarging device consisting of a front converging lens and a rear diverging lens mounted in a suitable holder, and adjustable, one with reference to the other, and adapted to be applied in front of the focusing-lens of an ordinary camera.

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**756,780. BOWLING-ALLEY DRESSER.** EDWARD F. DRESSER, Oakland, Cal. Filed July 23, 1903. Serial No. 166,758. (No model.)



*Claim.*—1. A bowling-alley dresser, consisting of a traveling carriage; traction-rails laid parallel with the line of the alley, and capable of vertical adjustment; a revolving head mounted upon a shaft, engaging a thrust-block capable of vertical adjustment, a motor mounted on said carriage and adapted to rotate said shaft; cutting-bits consisting of sections of tubes sharpened and extending at an angle through the revolving head, at varying distances from the center thereof; a counter-shaft geared to the said motor, and to the traction-wheels of the carriage; and suitable clutch mechanisms adapted to control the tractive travel of the carriage; temporary trucks capable of traveling transverse to the normal travel of the carriage, and consisting of levers pivoted to the carriage, and having rollers mounted thereon, and means for locking the levers together in operative position.

2. A bowling-alley dresser comprising a traveling carriage, a motor carried upon the carriage and adapted to drive the same, traction-rails laid parallel with the line of the alley, means for adjusting the same vertically, a revolving head leveled with the plane of the alley and carried by said carriage said head being geared with said motor and provided with dressing devices, and means for absorbing lateral deviation of said carriage.

3. A bowling-alley dresser comprising a traveling carriage, and a revolving dresser-head mounted thereon, both synchronously driven, clamps adapted to embrace the division-pieces of the alley, sockets mounted in said clamps and supporting rails, and means for adjusting said sockets vertically.

4. A bowling-alley dresser consisting of a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, traction-wheels for said carriage, means for adjusting the same vertically, and means for absorbing lateral deviation of said carriage.

5. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, clamps adapted to embrace the division-pieces of the alley, sockets mounted in said clamps and supporting rails, said sockets having depending shanks, adjusting-screws engaging said shanks, and laterally-disposed rollers mounted in resilient bearings and engaging said rails.

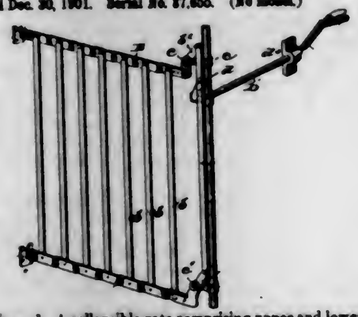
6. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, and temporary trucks arranged to travel transversely to the normal travel of the carriage.

7. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, levers pivoted to said carriage and extending transversely thereof, and carrying-wheels mounted in said levers.

8. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, levers pivoted to said carriage and extending transversely thereof, said levers having recesses, carrying-wheels mounted in said recesses, and means for locking the levers together in operative position.

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**756,781. AUTOMATIC GATE.** THOMAS I. DUFFY, Chicago, Ill. Filed Dec. 30, 1901. Serial No. 87,656. (No model.)



*Claim.*—1. A collapsible gate comprising upper and lower transverse members adapted to extend across the opening to be closed and having a series of equidistant bends, a series of connecting members pivotally secured to said transverse members between said bends, connected bell-cranks at the inner ends of said transverse members and a lever engaging the connection between said bell-cranks.

2. In a gate, an upper and a lower transverse bar having pivoted thereon vertical slats spaced an equal distance apart said transverse bars being bent and connected on opposite sides of said slats whereby when the gate is elevated said vertical slats and transverse bars are adapted to collapse laterally and to expand vertically upward.



3. In a device of the class described the combination with an upright having rigidly secured thereon outwardly-extending parallel arms, of bell-crank levers pivoted on said arms, undulated transverse members secured on said bell-cranks, a plurality of slats pivoted on said members between the undulations thereof, a connecting-rod pivotally engaging each bell-crank and a crank engaging said connecting-rod and acting to collapse the gate laterally and move said transverse members to a vertical position.

4. In a railway-gate the combination with a support of parallel pivot-arms rigidly secured thereon a bell-crank on each pivot, a transverse bar secured to each bell-crank, vertical slats connected at their opposite ends on opposite sides of said transverse bars offsets in said transverse bars between adjacent slats to permit said slats to lie together when the gate is open and spring-actuated means for locking the gate in its closed position and in its open position.

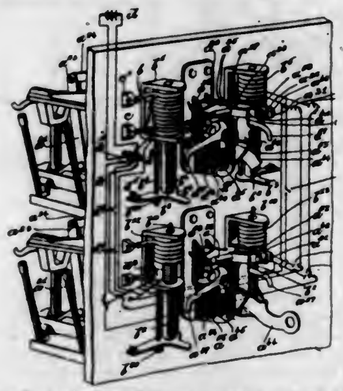
5. In a device of the class described the combination in a vertically-opening and laterally-collapsible gate, of means for actuating the gate comprising a shaft, a crank thereon adapted to engage a vertically-movable member, a bell-crank pivotally secured on each end of said vertically-movable member and rigidly secured upon the gate, a crank adapted to be manually engaged in operating the gate and a spring-actuated dog acting to hold the gate from movement when in its open or closed position.

6. In a device of the class described the combination with a permanent upright, of parallel pivot-arms rigidly secured thereon, a bell-crank pivotally secured on each of said arms, a vertically-movable member pivotally connected with said bell-cranks, an undulated transverse member rigidly secured on each of said bell-cranks and a plurality of slats pivotally connected with said undulated members each lying out of the plane of the other.

7. A collapsible gate comprising transverse members provided with a plurality of offsets, a plurality of vertical slats pivotally secured thereto between said offsets, means for operating the gate, said gate lying in the plane of the opening to be closed when in its closed position and lying in a plane at approximately right angles thereto when in its open position with the faces of said slats in contact with the faces of adjacent slats.

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**756,782. CIRCUIT-BREAKER.** LEONARD L. ELDEN, Dorchester, Mass., assignor of one-half to Sears B. Condit, Jr., Somerville, Mass. Original application filed June 20, 1901, Serial No. 65,241. Divided and this application filed Dec. 10, 1903. Serial No. 184,648. (No model.)



*Claim.*—1. A plurality of electric circuits, a circuit-breaker governing certain of said circuits, an actuator for said circuit-breaker, a solenoid in and operated by each circuit, said solenoids cooperating with said actuator to actuate the circuit-breaker, and connections responsive to the operation of one of said solenoids for automatically operating all of said solenoids.

2. A plurality of separate circuit-breakers, means for automatically tripping said respective breakers, mechanical connections between said several tripping mechanisms, whereby the automatic tripping of one operates the others, and auxiliary electrical connections responding to the automatic tripping of one of the breakers to trip the remaining circuit-breakers.

3. A circuit-breaker, comprising a plurality of circuit-wires, make-and-break contacts therefor, an operating member, a solenoid in each of the circuits which are liable to be affected by an abnormal current, each solenoid controlling means cooperating with the operating member to actuate the circuit-breaker, and an independent circuit having windings on said solenoids, said independent circuit being operated by the energizing of any solenoid to cooperate with said solenoids to insure the actuating of said operating member.

4. A circuit-breaker, comprising a plurality of circuit-wires, make-and-break contacts therefor, an operating member, a solenoid in each of the wires which are liable to be affected by an abnormal current, an independent circuit, rendered operative by the energizing of any one of said solenoids, a second circuit-breaker, the circuits of said two circuit-breakers being interrelated, and means operated by said independent circuit for operating said second circuit-breaker at the same time the other circuit-breaker is operated.

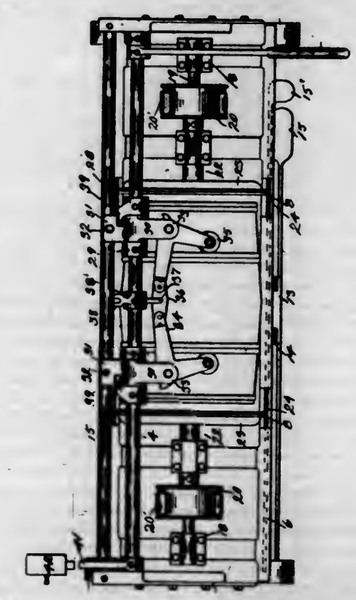
5. A circuit-breaker, comprising a plurality of circuit-wires, make-and-break contacts therefor, an operating member, a solenoid in each of the wires which are liable to be affected by an abnormal current, an independent circuit, rendered operative by the energizing of any one of said solenoids, a solenoid in said circuit, means operated thereby for actuating said operating member, a second circuit-breaker, the circuits of said two circuit-breakers being interrelated, and means operated by said independent circuit for operating said second circuit-breaker at the same time the other circuit-breaker is operated.

6. A plurality of separate circuit-breakers, an actuator for each circuit-breaker, a plurality of electric circuits governed by said circuit-breakers, a solenoid in and operated by each circuit, said solenoids cooperating with said actuators to actuate the circuit-breakers, and an independent circuit having windings on said solenoids, said independent circuit being operated by the energizing of any solenoid to cooperate with the other solenoids in tripping all the circuit-breakers.

7. A plurality of separate circuit-breakers, a plurality of electric circuits governed thereby, a solenoid in each of the circuits which are liable to be affected by an abnormal current, automatic tripping mechanism actuated by said solenoids for tripping said respective circuit-breakers, an independent circuit rendered operative by the tripping of any one of the circuit-breakers, and means operated by said independent circuit for operating the remaining circuit-breakers at the same time the last-mentioned circuit-breaker is operated.

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**756,783. MACHINE FOR TIGHTENING THE BILGE-HOOPS UPON BARRELS.** THOMAS FLANERY and NELS WHITEHILL, Minneapolis, Minn., assignors to Hennepin County Barrel Co., Minneapolis, Minn., a Corporation. Filed Aug. 31, 1903. Serial No. 171,351. (No model.)



*Claim.*—1. The combination, with a suitable frame, of chucks or heads between which the barrel is held and revolved, bell-cranks pivotally supported between said chucks, sheaves mounted on one arm

of said cranks and arranged to engage the edges of the bilge-hoops and roll thereon, a single operating-lever and a mechanism connecting said lever and the other arm of said bell-cranks and arranged to oscillate said cranks and move said sheaves toward or from the bilge-hoops when said lever is manipulated.

2. The combination, with a frame, of revolving barrel-engaging chucks mounted therein, a rock-shaft, yokes loosely mounted thereon, bell-cranks provided on said yokes and connected with said shaft, sheaves carried by said bell-cranks and arranged to engage the outer edges of the bilge-hoops, and means for oscillating said shaft and bell-cranks to press said sheaves against said hoops, substantially as described.

3. The combination, with a frame, of revolving barrel-head-engaging chucks mounted thereon, sheaves arranged to engage the edges of the bilge-hoops and roll in a plane substantially at right angles to the plane of said heads, oscillating members whereon said sheaves are mounted, a rock-shaft, a mechanism connecting said shaft and said oscillating members and arranged to move them toward or from the bilge-hoops when said shaft is rocked, and an operating-lever provided on said shaft.

4. The combination, with a frame, of revolving clamping-chucks mounted therein, bell-cranks pivotally supported between said chucks, sheaves carried by one arm of each bell-crank and revolving in a plane substantially at right angles to the plane of said chucks, and means connected with the other arms of said cranks for oscillating them to move said sheaves simultaneously and with uniform pressure into engagement with the bilge-hoops, substantially as described.

5. The combination, with a frame, of revolving barrel-clamping chucks mounted therein, bell-cranks pivotally supported between said chucks, sheaves carried by one arm of each bell-crank and revolving in a plane substantially at right angles to the plane of said chucks, means connected with the other arms of said cranks for oscillating them to move said sheaves simultaneously and with uniform pressure into engagement with the bilge-hoops, and means for lifting said bell-cranks, substantially as described.

6. In a machine of the class described, the combination, with a rock-shaft, of yokes loosely mounted thereon, bell-cranks pivoted on said yokes, sheaves provided on one arm of each crank and adapted to engage the bilge-hoops, means pivotally connecting the other arms of said cranks with said shaft, and means for rocking said shaft.

7. In a machine of the class described, the combination, with a rock-shaft, of yokes loosely mounted thereon and having forked rear ends, a fixed shaft straddled by said forked ends, adjustable stops provided on said forked ends and adapted to engage said fixed shaft, oscillating bell-cranks mounted on the forward ends of said yokes, sheaves carried thereby and arranged to engage the bilge-hoops, means for drawing said sheaves toward each other when said shaft is rocked, and arms secured on said rock-shaft and overhanging the forked ends of said yokes.

8. In a machine of the class described, the combination, with the oscillating yokes, of bell-cranks mounted thereon, a sheave carried by one arm of each bell-crank and arranged to engage the bilge-hoops, means pivotally connected with the other arms of said cranks for drawing said sheaves toward each other and tightening the said hoops, and means for oscillating said yokes, substantially as described.

9. The combination, with a rock-shaft, of yokes loosely mounted thereon, bell-cranks pivoted on said yokes, sheaves carried by said cranks and adapted to engage the outer edges of the bilge-hoops, means mounted on said rock-shaft and connected with said cranks for drawing said sheaves toward each other when said shaft is rocked in one direction, and means secured on said rock-shaft and engaging said yokes to tilt the same and raise said sheaves when said shaft is rocked in the other direction, substantially as described.

10. The combination, with a movable support, of bell-cranks pivoted thereon, sheaves carried by one arm of said cranks and adapted to engage the outer edges of the bilge-hoops, means connected with said cranks for drawing said sheaves toward each other when their support is moved in one direction, and means for tilting said cranks to raise said sheaves when their support is moved in the other direction.

11. The combination, with a rock-shaft, of pivoted bell-cranks supported by said shaft, sheaves carried by one arm of said cranks and adapted to engage the outer edges of the bilge-hoops, means connected with said cranks for drawing said sheaves toward each other when said shaft is rocked in one direction, and means for tilting said cranks on their support to raise said sheaves when said shaft is rocked in the other direction.

12. In a machine of the class described, the combination, with a rock-shaft, of yokes loosely mounted thereon, oscillating members pivoted on said yokes, sheaves provided on said members and adapted to engage the bilge-hoops, means pivotally connecting said members with said shaft, and means for rocking said shaft.

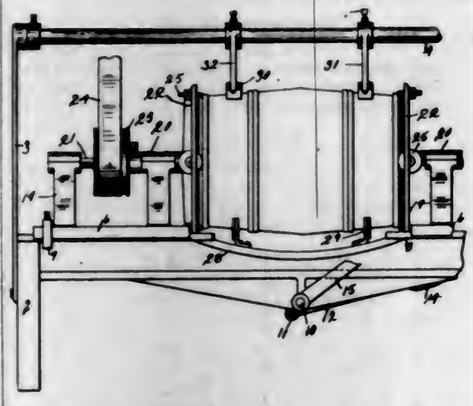
13. In a machine of the class described, the combination, with a rock-shaft, of yokes loosely mounted thereon and having forked rear ends, a fixed shaft straddled by said forked ends and arranged to limit the movement of said ends, oscillating members mounted on the forward ends of said yokes, sheaves carried thereby and arranged to engage the bilge-hoops, and means for oscillating said members to draw said sheaves toward each other when said shaft is rocked.

14. In a machine of the class described, the combination, with a suitable frame having a barrel-support, of chucks or heads between which the barrel is held and revolved, a movable support, bell-cranks pivoted thereon, sheaves carried by one arm of said cranks and adapted to engage the outer edges of the bilge-hoops, means connected with said cranks for drawing said sheaves toward each other when said support is moved in one direction and means for tilting said cranks to raise said sheaves when said support is moved in the other direction and said support being a sufficient distance above the barrel-rest to allow the barrels to be inserted on one side of the machine and removed on the other, substantially as described.

15. The combination, with a suitable frame, of chucks or heads between which the barrel is held and revolved, oscillating members pivotally supported between said chucks, sheaves mounted on said members and arranged to engage the edges of the bilge-hoops thereon and press said hoops simultaneously toward the center of the barrel, an operating-lever, and a mechanism connecting said lever and said members and arranged to oscillate said members and move said sheaves toward or from the bilge-hoops when said lever is manipulated.

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**756,784. MACHINE FOR TIGHTENING THE HEAD-HOOPS UPON BARRELS.** THOMAS FLANERY and NELS WHITEHILL, Minneapolis, Minn., assignors to Hennepin County Barrel Co., Minneapolis, Minn., a Corporation. Filed Aug. 31, 1903. Serial No. 171,362. (No model.)



*Claim.*—1. The combination, with a suitable frame, of a horizontal barrel-support therein, a rock-shaft located above the level of the barrel placed on said support to allow the barrel to be inserted on one side of the machine and removed on the other, arms secured on said shaft, gripper-plates pivotally supported by said arms and arranged to engage the upper surface of the barrel, means for rocking said shaft, and means for engaging the barrel-head hoops to tighten them on the barrel.

2. The combination, with a suitable frame, of a barrel-support therein, shafts provided near said support one of said shafts being fixed and the other arranged to rock in its bearings, arms loosely mounted on said fixed shaft, and similar arms secured on said rock-shaft, gripper-plates carried by said arms and arranged to engage the suface of a barrel, means for operating said rock-shaft, and means arranged to be moved into engagement with the barrel-head hoops and press and tighten them on the barrel.

3. The combination, with a frame, of a barrel-support, a rock-shaft mounted in said frame, arms loosely mounted on a suitable support, similar arms secured on said rock-shaft, gripper-plates carried by said arms and arranged to engage the surface of a barrel, a treadle mechanism connected with said rock-shaft and means arranged to be moved into engagement with the barrel-head hoops to press them toward each other and tighten them on the barrel.

4. The combination, with a suitable frame, of a horizontal barrel-support therein, a rock-shaft located a sufficient distance above said support to allow a barrel to be placed thereon from one side of the machine and removed on the other side, means for rocking said shaft, arms secured on said shaft, and gripper-plates having curved faces pivoted on said arms and adapted to engage the upper surface of the barrel.

5. The combination, with a suitable frame, of a barrel-support therein, a rock-shaft, arms mounted thereon, gripper-plates pivotally supported on said arms and arranged to engage the surface of the barrel, means for rocking said shaft, and means for engaging the barrel-head hoops to tighten them on the barrel, substantially as described.

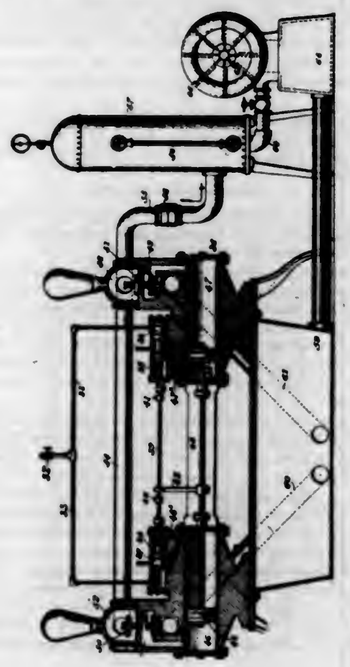
6. The combination, with a suitable frame, of a barrel-support therein, means for gripping the barrel, rails V-shaped in cross-section provided in said frame, sliding frames having grooves to fit said rails, heads carried by said sliding frames, sheaves mounted in said heads and adapted to engage the head-hoops of a barrel, and means for moving said sliding frames toward or from each other.

7. The combination, with a suitable frame, of a barrel-support therein, shafts provided above said support, one of said shafts being fixed and the other arranged to rock in its bearings, arms loosely mounted on said fixed shaft and secured on said rock-shaft, curved gripper-plates having toothed under surfaces pivotally supported on said arms and arranged to engage the surface of a barrel, a treadle connected with said rock-shaft, and means arranged to be moved into engagement with the barrel-head hoops to press them toward each other and tighten them on the barrel, substantially as described.

8. The combination, with a suitable frame provided with a horizontal barrel-support, of a horizontal rock-shaft located a sufficient distance above said support to allow the barrel to be inserted on one side of the machine and removed on the other, gripper-plates carried by said shaft, a treadle mechanism connected with said shaft for rocking the same, sliding heads or chucks having sheaves arranged to engage the head-hoops of the barrel, and a lever mechanism near said treadle for operating said chucks.

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**756,785. APPARATUS FOR PRODUCING MOTIVE POWER FROM LIQUID GAS.** GEORGE B. FRALEY, Philadelphia, Pa., assignor to Elizabeth S. Galbraith, Philadelphia, Pa. Filed Oct. 12, 1900. Serial No. 32,813. (No model.)



*Claim.*—1. The combination with a device for raising the temperature of a liquid gas, of a water-pump comprising cylinders, valve-chests cooperative with the respective cylinders, each having a single passage communicating with its cylinder at one end of the latter, said passages serving to alternately convey the gas into the cylinders and the exhaust therefrom, a valve in each chest for alternately controlling the supply to and exhaust from its appropriate cylinder, pistons in said cylinders, a connection between the pistons, means controlled by the pistons for operating said valves, connections between the device for raising the temperature of the liquid gas and the valve-chests for supplying such gas to the latter, water-receiving conduits connected with the cylinders at points opposite those at which said passages are connected thereto, whereby the water admitted into one end of the cylinders serves to prevent the gas in the opposite end thereof from freezing, and valve mechanism for controlling the supply to and discharge of water from said cylinders.

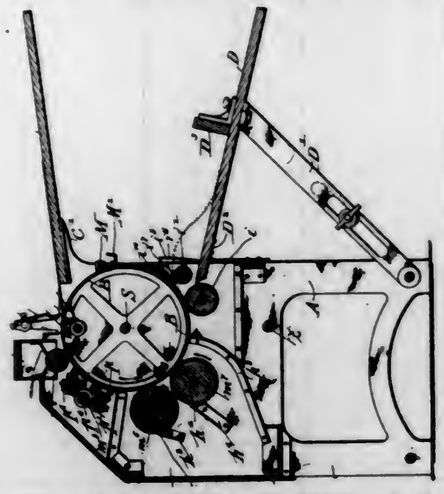
2. The combination with a device for raising the temperature of a liquid gas, of a water-pump comprising cylinders, valve-chests cooperative with the respective cylinders, each having a single passage communicating with its cylinder at one end of the latter, said passages serving to alternately convey the gas into the cylinders and the exhaust therefrom, a valve in each chest for alternately controlling the supply to and exhaust from its appropriate cylinder, pistons in said cylinders, a connection between the pistons, means controlled by the pistons for operating said valves, connections between the device for raising the temperature of the liquid gas and the valve-chests for supplying such gas to the latter, valve-chambers in communication with said cylinders at points opposite those at which said passages are connected thereto, whereby water can flow into said cylinders at the end thereof opposite that in which the gas is admitted to thereby prevent said gas from freezing, a discharge-pipe common to said valve-chambers, suction-pipes connected with said chambers, and water supply and discharge controlling valves in said chambers.

3. The combination with a device for raising the temperature of a liquid gas, of a water-pump comprising cylinders, valve-chests cooperative with the respective cylinders, each having a single passage communicating with its cylinder at one end of the latter, said passages serving to alternately convey the gas into the cylinders and the exhaust therefrom, a valve in each chest for alternately controlling the supply to and exhaust from its appropriate cylinder, pistons in said cylinders, a connection between the pistons, means controlled by the pistons for operating said valves, connections between the device for raising the temperature of the liquid gas and the valve-chests for supplying such gas to the latter, valve-chambers in communication with the respective cylinders at points opposite those at which said passages are connected thereto, whereby water passing from the chambers enters the cylinder in the ends thereof opposite that into which the gas is admitted to thereby prevent said gas from freezing, a discharge-pipe connected to said valve-chambers, a casing containing a motor adapted to be operated by the water passing through said discharge-pipe, a water-tank located to receive the water from the motor-casing, supply-pipes leading from said tank to the valve-chambers, and water supply and discharge controlling valves in said chambers.

4. The combination with a device for raising the temperature of a liquid gas, of a water-pump comprising cylinders, valve-chests cooperative with the respective cylinders, each having a single passage communicating with its cylinder at one end of the latter, said passages serving to alternately conduct the gas into the cylinders and the exhaust therefrom, a valve in each chest for alternately controlling the supply to and exhaust from its appropriate cylinder, pistons in said cylinder, a rod connecting the pistons, a second rod connecting said valves, having tappets, an arm upon the first rod for engaging said tappets to thereby operate said valves, connections between the device for raising the temperature of the liquid gas and the valve-chests for supplying such gas to the latter, water-receiving conduits connected with the cylinders at points opposite at which said passages are connected thereto, whereby the water admitted into one end of the cylinders serves to prevent the gas in the opposite end thereof from freezing, and valve mechanism for controlling the supply to and discharge of the water from said cylinders.

5. In an apparatus for producing motive power from liquid gas, a cylinder having a piston, means for directing a liquid gas into said cylinder at one side of the piston to operate the latter, and means for directing a fluid into the cylinder at the opposite side of the piston to prevent the liquid gas from freezing.

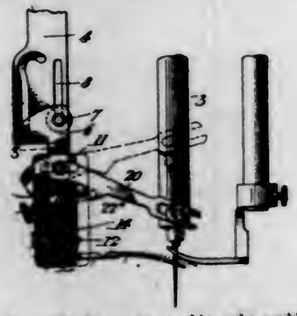
**756,786. BRONZING-MACHINE.** MAX FRITSCHE, Carlstadt, N. J., assignor to Joseph A. Kapp, New York, N. Y., and Louis Hengstler, Weehawken, N. J., composing the firm of Robert Mayer & Co., New York, N. Y. Filed Sept. 11, 1903. Serial No. 172,832. (No model.)



*Claim.*—1. In a bronzing-machine, the combination, with a sheet-carrying cylinder, provided with a sheet-gripping mechanism for engaging and releasing the front edge of the sheet, of a delivery-roll rotated in contact with the sheet-carrying cylinder, a second roll in proximity thereto, a delivery-table, oscillating and spring-actuated stripping-fingers, and means for moving the stripping-fingers in the path of the sheet as soon as the same passes the delivery-roll and is released by the gripping mechanism of the cylinder for delivering the sheet onto the second delivery-roll and delivery-table, substantially as set forth.

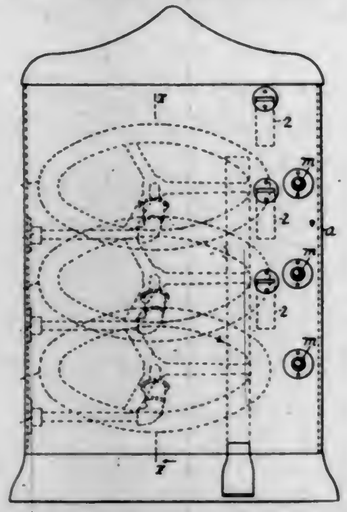
2. In a bronzing-machine, the combination, with a sheet-carrying cylinder and sheet-gripping mechanism thereon for engaging and releasing the front edge of the sheet, of a delivery-roll rotated in contact with the sheet-carrying cylinder, a second delivery-roll, a delivery-table, a rock-shaft, oscillating and spring-actuated stripping-fingers on said rock-shaft, arms carrying antifriction-rollers on said rock-shaft adapted to engage depressions in the end of the shaft of the sheet-carrying cylinder for delivering the sheet onto the second delivery-roll and delivery-table, substantially as set forth.

**756,787. RUFFLER FOR SEWING-MACHINES.** CHARLES F. GOROGRS, Wichita, Kans. Filed Mar. 13, 1903. Serial No. 147,066. (No model.)



*Claim.*—In a ruffler for sewing-machines, the combination with a shank having an upper member adapted for attachment to the machine and provided with a slot and groove in parallel relation, the groove being curved at its upper end, and a lower member pivoted in the slot and having a stud fitting within the groove, of a block slidably connected with the lower member of the shank, a ruffler-blade carried by the block, and a finger pivotally connected to the shank and operable by the needle-bar of the sewing-machine, said finger being operatively connected with and serving to reciprocate the block.

**756,788. VENDING-MACHINE.** JAMES G. HENDRICKSON, Bayonne, N. J., assignor of one-half to Archibald C. Furman, Bayonne, N. J. Filed May 26, 1903. Serial No. 158,861. (No model.)



*Claim.*—1. A vending-machine comprising superposed rotary carriers or wheels each having open pockets, a stationary under plate for each wheel and arranged to form bottoms for the pockets thereof, each bottom having a discharge for the pocket contents and means to deliver such contents clear of the other wheels and bottoms.

2. A vending-machine having a series of superposed carriers, the upper of said movable carriers adapted to discharge clear of the lower ones.

3. A vending-machine having a series of inclined superposed rotatable carriers and a discharge for the carriers.

4. A vending-machine having an inclined carrier, a bottom plate with a discharge for the carrier, and a guide for the discharge.

5. A vending-machine having a movable carrier arranged at an inclination whereby contraction or economizing of space is secured.

6. A vending-machine having a carrier with open pockets, and an under plate or stationary bottom for the pockets having an antifriction ridge or portion on which the pocket contents are moved by the carrier.

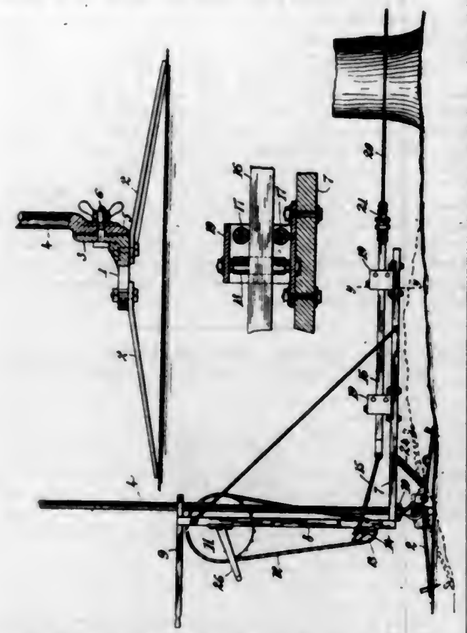
**756,789. SAWING-MACHINE.** EDWIN H. HOYT, Mosinee, Wis., assignor of one-half to Louis L. La Mere, Mosinee, Wis. Filed June 13, 1903. Serial No. 161,319. (No model.)

*Claim.*—1. A sawing-machine, comprising a standard, a base-board movable vertically on said standard, a frame extended upward from the base-board, a sprocket-wheel at the upper portion of the frame, a pinion at the lower portion of the frame and operated from the sprocket-wheel, a crank-shaft on which the pinion is mounted, a reciprocating bar carried by the base-board, a saw attached to the bar and a pitman connection between said bar and the crank of the crank-shaft.

2. A sawing-machine, comprising a standard, a base-plate on which the standard is adjustably mounted, a base-board mounted to swing on said standard, boxings on said base-board, horizontally-disposed rollers in said boxings, vertically-disposed rollers in said boxings, a reciprocating bar movable between the rollers, a saw attached to the bar and means for causing the movements of said bar.

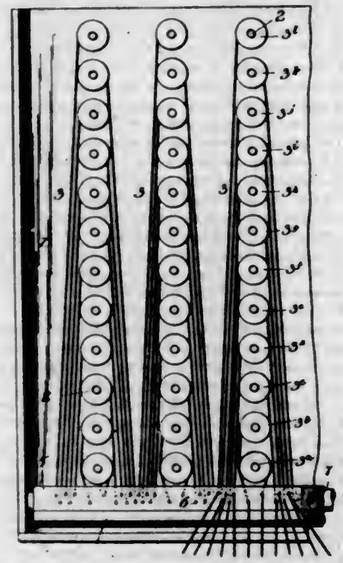
3. In a sawing-machine, a standard, a base-board movable vertically and to swing on said standard, a frame extended upward from the base-board, a handle-lever connected to the upper end of said frame and having swinging connection with the standard, a sprocket-wheel at the upper portion of the frame, a sprocket-pinion at the lower portion of the frame, a chain connection between the wheel and pinion, a reciprocating bar mounted on the base-board, a driving connection between said bar and the sprocket-pinion, and a spring for drawing the base-board in one direction.





4. In a sawing-machine, a base-plate, legs on which the base-plate is mounted, a clutch member on said base-plate, a standard, a clutch member on said standard for engaging with the first-named clutch member, a base-board mounted to swing on the standard, a reciprocating bar supported by said base-board, means for causing the movements of said bar, and a saw attached to the bar.

**756,790. SPOOL-RACK.** ADAM S. HORLACHER, Indianapolis, Ind. Original application filed Sept. 12, 1901, Serial No. 75,175. Divided and this application filed Sept. 22, 1902. Serial No. 124,442. (No model.)



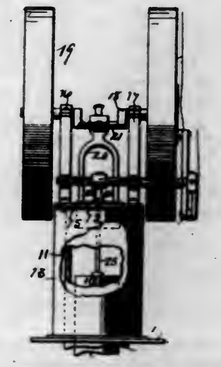
*Claim.*—1. A spool-rack adapted for use with looms, comprising a body, a series of spools mounted thereon, the alternate spools being adapted to unwind in one direction and the remaining spools being adapted to unwind in a reverse direction, the thread of each spool contacting with the spool immediately therebeneath, whereby said threads are adapted to effect a rewinding of the spools in the event of rupture of the threads, and a perforated conductor for guiding the threads of the respective spools in their passage to the loom.

2. A spool-rack adapted for use with looms, comprising a body, a plurality of spools rotatably mounted thereon, one alternate series of spools unwinding in one direction, and having the threads leading therefrom on the same side of the spools, and each thread thereof contacting with one of the adjacent spools of the other series, the alternate series of spools being adapted to unwind in a reverse direction and having the threads therefrom on the same sides of the spools, and contacting with one of the adjacent spools of the first-named series, and a guiding means for the threads of said spools.

3. A spool-rack adapted for use with looms comprising a body, spools rotatably mounted thereon, said spools being arranged in reversely-unwinding series, the spools of one series alternating with the spools of the other series, the thread from the spools of one series, each contacting with one spool of the other series, and a guiding means for the thread of said spools, substantially as and for the purpose set forth.

4. A spool-rack adapted for use with looms, comprising a body, spools rotatably mounted thereon in alinement with each other, said spools being arranged in a plurality of series, one alternate series having the threads thereof leading on opposite sides of the spools of the other alternate series, and a conductor formed with apertures to receive the threads from said spools, said apertures being arranged at points on both sides of said spools.

**756,791. GOVERNOR FOR HYDROPNEUMATIC ENGINES.** ERNEST A. HORNBOSTEL, Jr., Des Moines, Iowa. Filed Mar. 27, 1903. Serial No. 149,775. (No model.)



*Claim.*—1. In a hydropneumatic engine containing a reciprocating piston and also a reciprocating float, a rotatable crank-shaft, a balance-wheel on one end portion of the shaft, two levers fulcrumed to the balance-wheel to project in reverse ways relative to each other and the axis of the shaft, weights on the ends of the long arms of the levers, an evener pivotally connected with the hub of the balance-wheel to vibrate concentrically with the axis of the shaft, links connecting the ends of the evener with the short arms of the levers and means for normally retaining the weights on the ends of the long arms of the levers at the central portion of the wheel, a rock-shaft in parallel position with the crank-shaft, an arm extended from the end of the rock-shaft, a link pivotally connected with said arm and with one end of said evener, an arm at the center of the rock-shaft and a stem pivotally connected with said arm and with the float, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a hydropneumatic engine containing a reciprocating piston and also a reciprocating float, a governor comprising a wheel on the end of a rotatable shaft having a crank at its center, an evener pivotally connected with the hub of the wheel to rotate concentrically with the shaft upon which the wheel is mounted, two levers provided with weights on the ends of their long arms fulcrumed to the wheel, links connecting the short arms of the levers with the ends of the evener, springs connected with the wheel and the short arms of the levers, a rock-shaft in parallel position with the rotatable shaft, a yoke pivotally connected with the crank of

the rotatable shaft and a piston in a cylinder, an arm on the rock-shaft, a link connecting the said arm with one end of said evener and an arm at the center of the rock-shaft pivotally connected with the float by means of a stem, arranged and combined to operate in the manner set forth for the purposes stated.

3. A hydropneumatic engine comprising a cylinder, a piston in the cylinder, a rotatable crank-shaft, connected with the piston, a boiler connected with the cylinder, a float in the boiler, a balance-wheel on one end portion of the shaft, two levers fulcrumed to the balance-wheel to project in reverse ways relative to each other and the axis of the shaft, weights on the ends of the long arms of the levers, an evener pivotally connected with the hub of the wheel to vibrate concentrically with the axis of the shaft, links connecting the ends of the evener with the short arms of the levers and means for normally retaining the weights on the ends of the long arms of the levers at the central portion of the wheel, a rock-shaft in parallel position with the crank-shaft, an arm extended from the end of the rock-shaft, a link pivotally connected with said arm and with one end of said evener, an arm at the center of the rock-shaft and a stem pivotally connected with said arm and with the float, arranged and combined to operate in the manner set forth for the purposes stated.

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**756,792. HORSE-BOOT. JAMES D. KELLER, Detroit, Mich. Filed July 8, 1902. Serial No. 114,742. (No model.)**



*Claim.*—1. A horse-boot provided with a pad having a yieldable portion arranged to loosely engage the inner surface of the boot, the outer surface the boot adjacent the pad being continuous and uninterrupted.

2. A horse-boot provided with a pad of soft cushioning material having a yieldable extension arranged to detachably engage the inner surface of the boot, the outer surface thereof adjacent the pad being continuous and uninterrupted.

3. The combination with a horse-boot having spaced recesses upon its inner surface, of a detachable heel-piece therefor, and means for yieldably supporting the heel-piece at its ends in the recesses of the boot.

4. The combination with a horse-boot having spaced recesses upon its inner surface, of a soft cushioning heel-piece therefor, and yieldable extensions on the heel-piece adapted to rest in the recesses of the boot.

5. The combination with a horse-boot, having spaced recesses upon its inner surface, of a heel therefor, an elongated spring member secured to the heel and adapted to rest in the recesses of the boot, and means for retaining the spring member in engagement with the recesses of the boot.

6. The combination with a horse-boot having spaced recesses upon its inner surface, of a soft cushioning heel-piece therefor, an elongated spring member secured to the heel-piece and adapted to rest in the recesses of the boot, and means for retaining the spring member in engagement with the recesses of the boot.

7. The combination with a horse-boot having slots upon the inner surface thereof and a recess intermediate the slots, of a heel-piece for the boot having resilient extensions at its ends and a lug intermediate the extensions, said extensions and lugs being adapted to engage the slots and recess of the boot, to hold the heel-piece in place.

8. The combination with a horse-boot having slots upon the inner surface thereof and a recess intermediate the slots, of a detachable soft cushioning heel-piece for the boot having resilient extensions at its ends, and a lug intermediate the extensions, said extensions and lug adapted to engage the slots and recess in the boot to hold the heel-piece in place.

9. A horse-boot, provided with a slotted strip secured to the inner surface of its lower rear edge, said boot having recesses adjacent the slots in the strip, a heel-piece, and a complementary strip upon the heel-piece, the ends of said complementary strip passing through the openings in the first-mentioned strip and resting in the recesses of the boot, for forming a yieldable support for the pad.

10. In combination with a horse-boot, of a heel therefor, an elongated spring member secured intermediate its ends to the heel, said boot having recesses upon its inner surface arranged to be engaged by the free ends of the spring member to lock the heel in place and provide an automatically-adjustable heel-piece.

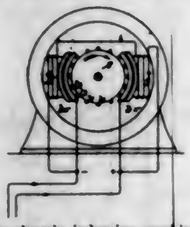
11. In combination with a horse-boot, of a heel therefor, an elongated spring member secured intermediate its ends to the heel, and a slotted strip secured to the inner surface of the boot, said boot being recessed adjacent the slots in the strip, and the free ends of the spring member being adapted to pass through the slots in the strip and engage the recesses in the boot to hold the heel in place.

12. The combination with a horse-boot, of a soft cushioning-heel therefor, an elongated spring member secured intermediate its ends to the heel, and a slotted strip secured to the inner surface of the boot, said boot being recessed adjacent the slots in the strip, the free ends of the spring member being adapted to pass through the slots in the strip and engage the recesses of the boot.

13. In combination with a horse-boot, of a soft cushioning-heel therefor, an elongated spring member secured intermediate its ends to the heel, and having a lug projecting outwardly from the center thereof, and a slotted strip secured to the boot and having an aperture intermediate its ends, said aperture and slots arranged to be engaged by the lug and free ends of the spring member on the heel, to hold the heel in place.

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**756,793. ELECTRICAL INDUCTION-MACHINE. HANS LIPPELT, New York, N. Y. Filed Jan. 13, 1903. Serial No. 138,902. (No model.)**



*Claim.*—1. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially rising tension and switching out conductors of sinking tension and so producing equal tension in the active conductors, substantially as described.

2. In a direct-current dynamo, the combination of a stationary armature with a plurality of magnetic poles, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

3. In a direct-current machine, the combination with the magnetic poles, of an armature; conductors arranged on the armature concentrically to the shaft and extending beyond the armature, two or more such conductors for the length of the arc occupied by each magnetic pole and one or more for the aggregate arc of each magnetic pole and the space between such pole and the next succeeding or preceding pole; collectors arranged concentrically to the shaft with intermediate spaces the collectors about the length of the poles spaced between the poles; the conductors and collectors arranged in sliding contact whereby it is made possible to switch out of the circuit a suitable number of conductors in their passage from one magnetic pole to the next succeeding opposite pole for the purpose of obtaining a more constant current, and to connect all conductors in parallel, or any desired number of conductors in series, substantially as and for the purpose specified.



4. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially maximum rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

5. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially rising tension and switching out conductors of sinking tension and so producing equal tension in the active conductors, and means for counteracting distortion of the magnetic field, substantially as described.

6. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the peripherp of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially rising tension and switching out conductors of sinking tension and so producing equal tension in the active conductors, and means for counteracting the reaction of the armature, substantially as described.

7. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially maximum rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

8. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles, means for exciting said poles with different strength and polarity, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially maximum rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

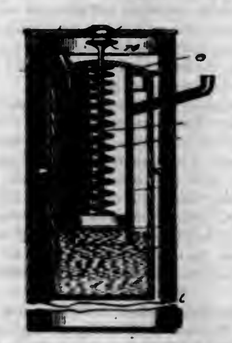
9. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles and auxiliary poles arranged with abnormal division, means for exciting said auxiliary poles with different strength and polarity, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially maximum rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

10. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles arranged at unequal distances, means for exciting said poles with different strength and polarity, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially maximum rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

11. In an electric induction-machine, the combination of an armature with a plurality of magnetic poles being arranged at unequal distances and auxiliary magnetic poles at unequal distances, means for exciting said poles with different strength and polarity, means for inducing relative motion between the armature and the poles, conductors arranged on said armature and of relatively small width compared to the periphery of the armature and extending one or several times under one or under a plurality of the magnetic poles, and their ends extending beyond the armature; collectors disposed relative to the ends of the conductors and constructed to vary the length and place of contact with one or more of the conductors and arranged at intervals concentric with the shaft, and collecting and carrying the current only from such conductors as are effectively vitalized, and said collectors causing said conductors to be arranged in parallel circuits and switching in conductors of substantially maximum rising tension and switching out conductors of sinking tension, and so producing equal tension in the active conductors, substantially as described.

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**756,794. VENT FOR STEAM-RADIATORS. WARREN W. LOWER, Keystone, W. Va. Filed July 27, 1903. Serial No. 167,207. (No model.)**

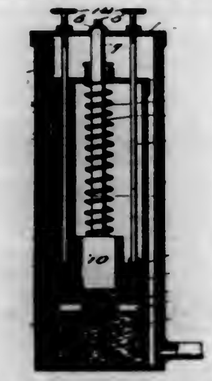


*Claim.*—1. In an automatic regulator for heating apparatus, a receptacle, a cap closing the upper end of said receptacle and provided with a vent-opening, a vessel supported within said receptacle and adapted to receive an expansible liquid, a cap closing the upper end of said vessel, a cylinder suspended within the vessel from the cap thereof and open at its lower end, an expansible liquid supplied

to the lower portion of the vessel, a piston arranged to work in said cylinder, and a valve connected with said piston and adapted to close upward against the cap of the receptacle and shut the said vent-opening, substantially as specified.

2. The herein-described regulator for the purposes set forth comprising a receptacle, a cap fitted to the upper end thereof and having a vent-opening, a vessel suspended within said receptacle, a cap closing the upper end of said vessel and provided with a cap-closed tubular extension, an expansible liquid supplied to the lower portion of said vessel, a cylinder suspended from the cap of the vessel and having the inner flange at its lower end forming a stop, a piston arranged to operate in said cylinder and having its stem working through an opening of the cap applied to the said vessel, a valve applied to the upper end of the piston-stem and adapted to close the aforementioned vent-opening, a spring surrounding the piston-stem and confined between the piston and the cap from which said cylinder is suspended, and a tube extended from the cylinder through the sides of said vessel and receptacle, substantially as set forth.

## 756,795. RADIATOR-VENT. WARREN W. LOWER, Keystone, W. Va. Filed Oct. 22, 1903. Serial No. 178,109. (No model.)



*Claim.*—1. In an air-vent for heating apparatus, the combination of an outer shell provided in its upper portion with a vent-opening, an inner shell containing in its lower portion a quantity of expansible liquid, a piston vertically movable within the inner shell, a packing surrounding the piston and confined between it and the walls of the inner shell, a valve for closing the vent-opening, and connected with the piston to move therewith, and means for compressing the packing more or less, substantially as set forth.

2. In a vent device for heating apparatus, the combination of an outer shell provided in its upper portion with a vent-opening, a second shell arranged within the outer shell and adapted to contain in its lower portion a quantity of liquid readily expansible under the influence of heat, a piston and annular packing therefor, means for supporting said piston and packing within the inner shell, a stem extended upward from the piston and provided with a valve for closing upward against the said vent-opening, a spring surrounding said stem and exerting a downward pressure upon the piston, and means for compressing the packing and operable at a point without the outer shell, substantially as set forth.

3. In a vent-device for heating apparatus, the combination of an outer shell provided at its upper end with a vent-opening, an inner shell adapted to receive a quantity of liquid readily expansible under the influence of heat, supporting means extended inward from the walls of the inner shell, a piston and annular packing sustained by said supporting means, a spring normally exerting a downward pressure upon the piston, a valve connected with said piston adapted to close upward against the aforementioned vent-opening, and a rod threaded into the head of the outer shell for holding the packing upon its support and adapted to compress the same, substantially as set forth.

4. In combination, an outer shell provided at its upper end with a vent-opening, an inner shell having an inner support, a piston, a packing surrounding the piston, upper and lower rings confining the packing, rods threaded into the head of the outer shell and exerting a downward pressure upon the topmost ring of the packing, a valve connected with the piston and adapted to close upward against the aforementioned vent-opening, a spring for normally exerting a downward pressure upon the piston, and an expansible medium confined in the lower portion of the inner shell below the piston and packing substantially as set forth.

## 756,796. HYDROCARBON-BURNER. BENJAMIN A. MOODY, West Roxbury, Mass., assignor to the B. A. Moody Hydro-Carbon Burner Company, Portland, Me., a Corporation. Filed Mar. 23, 1901. Renewed Oct. 7, 1903. Serial No. 176,154. (No model.)



*Claim.*—1. A hydrocarbon-burner consisting of a casing having steam and oil chambers with their discharge-passages converging into a single orifice, a sliding valve situated partly in said orifice and cooperating with the walls of said orifice to form two independent contracted outlets one for steam and the other for oil, a packing-chamber under said valve, and means extending entirely across the chamber and across the path of movement of the valve for applying pressure to a mass of packing in the chamber to press the same simultaneously against both sides of the chamber.

2. A hydrocarbon-burner consisting of a casing having steam and oil chambers with their discharge-passages converging into a single orifice, a sliding valve situated partly in said orifice and cooperating with the walls of said orifice to form two independent contracted outlets one for steam and the other for oil, a packing-chamber under said valve, and means for applying pressure to a mass of packing in the chamber to press the same upwardly against the valve across the entire width thereof.

3. A hydrocarbon-burner consisting of a casing having steam and oil chambers with their discharge-passages converging into a single orifice, a sliding valve situated partly in said orifice and cooperating with the walls of said orifice to form two independent contracted outlets one for steam and the other for oil, a packing-chamber under said valve, and means for applying pressure to a mass of packing in the chamber to press the same simultaneously against the sides of the chamber and the entire width of the under side of the valve.

4. A hydrocarbon-burner consisting of a casing having steam and oil chambers with their discharge-passages converging into a single orifice, a sliding valve situated partly in said orifice and cooperating with the walls of said orifice to form two independent contracted outlets one for steam and the other for oil, a packing-chamber under said valve, and a packing compressor or follower movable in the direction of movement of the valve toward and from the oil-outlet whereby the packing may be compressed and expanded crosswise of the casing.

5. A hydrocarbon-burner consisting of a casing having steam and oil chambers with their discharge-passages converging into a single orifice, a sliding valve situated partly in said orifice and cooperating with the walls of said orifice to form two independent contracted outlets one for steam and the other for oil, a packing-chamber under said valve, and a packing compressor or follower movable in the direction of movement of the valve toward and from the oil-outlet whereby the packing may be compressed and expanded crosswise of the casing, said follower having an inclined end arranged to press the packing against the valve.

6. A hydrocarbon-burner consisting of a casing having steam and oil chambers with their discharge-passages converging into a single orifice, a sliding valve situated partly in said orifice and cooperating with the walls of said orifice to form two independent contracted outlets one for steam and the other for oil, a packing-chamber under said valve having the forward portion of its lower surface inclined, and a packing compressor or follower movable in the direction of movement of the valve, and adapted to expand the packing crosswise of the casing.

## 756,797. LETTER-COPYING MACHINE. WALTER R. PECK, New York, N. Y. Original application filed Feb. 2, 1903, Serial No. 141,434. Divided and this application filed July 31, 1903. Serial No. 167,690. (No model.)

*Claim.*—1. In a letter-copying machine, the combination of a heated surface and a wetted absorbent covering for same, for dampening the copying-paper upon which a letter or other subject-matter is to be copied, substantially as shown and described.

2. In a letter-copying machine, the combination of an electrically-heated surface and a wetted absorbent covering for same, for dampening copying-paper upon which a letter or other subject-matter is to be copied, substantially as shown and described.





3. In a letter-copying machine, the combination of a heated roller and a wetted absorbent covering for same, for dampening copying-paper upon which a letter or other subject-matter is to be copied, substantially as shown and described.

4. In a letter-copying machine, the combination of an electrically-heated roller and a wetted absorbent covering for same, for dampening copying-paper upon which a letter or other subject-matter is to be copied, substantially as shown and described.

5. In a letter-copying machine, the combination of a heated surface and a wetted cloth covering for same, for dampening copying-paper upon which a letter or other subject-matter is to be copied, substantially as shown and described.

6. In a letter-copying machine, the combination of an electrically-heated surface and a wetted cloth covering for same, for dampening copying-paper upon which a letter or other subject-matter is to be copied, substantially as shown and described.

7. In a letter-copying machine, the combination of a water-supply reservoir and a heated surface having an absorbent covering which is wetted from a water-supply in said reservoir, substantially as shown and described.

8. In a letter-copying machine, the combination of a water-supply reservoir and an electrically-heated surface having an absorbent covering which is wetted from a water-supply in said reservoir, substantially as shown and described.

9. In a letter-copying machine, the combination of a heated roller and a dampened absorbent covering revolving with said roller which covering dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

10. In a letter-copying machine, the combination of a heated roller and a dampened cloth revolving with said roller which cloth dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

11. In a letter-copying machine, the combination of an electrically-heated roller and a dampened absorbent covering revolving with said roller which covering dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

12. In a letter-copying machine, the combination of an electrically-heated roller and a dampened cloth revolving with said roller which cloth dampens the copying-paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

13. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir, and an absorbent covering revolving with said roller which covering is wetted from a water-supply in said reservoir, substantially as shown and described.

14. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir, and an absorbent covering revolving with said roller which covering is wetted from a water-supply in said reservoir, substantially as shown and described.

15. In a letter-copying machine, the combination of a heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and an absorbent covering revolving with said roller and carrying water from said wetted wick to the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

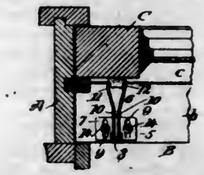
16. In a letter-copying machine, the combination of an electrically-heated roller, a water-supply reservoir, a wick which passes into a water-supply in said reservoir and an absorbent covering revolving with said roller and carrying water from said wetted wick to the paper upon which the letter or other subject-matter is to be copied, substantially as shown and described.

17. In a letter-copying machine, the combination of an electrically-heated roller, a wetted absorbent covering for same, an electrical resistance-coil within said roller, and a frictional-contact joint for connecting said resistance-coil to an electrical conductor, substantially as shown and described.

## 756,798. PROCESS OF MAKING PAVING-BRICK. THEODORE S. PIERCE, Detroit, Mich. Filed Feb. 8, 1904. Serial No. 192,696. (No specimens.)

*Claim.*—The herein-described process of making paving-brick, which consists in first mixing crushed slag and cement in about the proportions described, thence converting the same to a plastic condition by adding first a solution containing silicate of soda, sal-ammoniac and green vitriol dissolved in water in about the proportions described and thence adding a second solution containing hodrofluoric and muriatic acid diluted with water in about the proportions described, then molding the compound into brick, then air-drying the brick and finally curing the brick by subjecting it to the hot products from burning charcoal and simultaneously spraying it with the first-named solution.

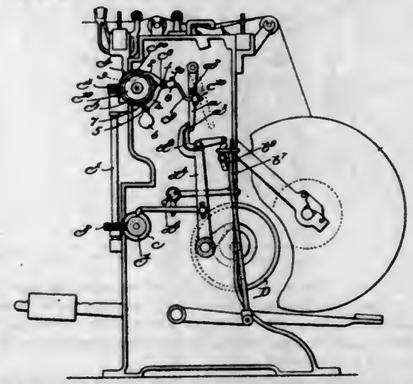
## 756,799. SASH-LOCK. CHARLES W. RANDALL, Lockport, N. Y. Filed Apr. 7, 1903. Serial No. 151,486. (No model.)



*Claim.*—1. A sash-lock comprising a base member having a lug, a swinging member bent from a single piece of metal to produce a yieldable head and the shanks, said shanks being fitted to opposite sides of the lug, a single pivot connecting the shanks and the lug for supporting the swinging member on the base member, and a frictional gripping-pad on the head of said swinging member.

2. A sash-lock consisting of a base member having an upstanding web and transverse slots, a swinging member formed by doubling a length of metal upon itself to produce parallel shanks and a head, said shanks engaging with opposite sides of the web on the base member and pivoted directly thereto, and a frictional holding-surface applied to the headed end of said swinging member.

## 756,800. CLOCK MECHANISM FOR WARPING-MACHINES. ALONZO H. REGARDS, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Feb. 6, 1904. Serial No. 192,281. (No model.)



*Claim.*—1. In a warping-machine, measuring mechanism, including a warper-clock having a scroll, a cooperating finger to engage the scroll at the top thereof, and a weight movable with the finger.

2. In a warping-machine, measuring mechanism, including a warper-clock having a scroll, a finger adapted to cooperate with the scroll at the top thereof, a support on which the finger is mounted to rock and also to move longitudinally of the scroll, and a weight movable with the finger to retain it in engagement with the scroll.

3. In a warping-machine, measuring mechanism, including a warper-clock having a scroll, a finger adapted to cooperate therewith at the top of the scroll, and a weight movable with the finger and located beneath the scroll, to prevent accidental disengagement of the finger and scroll.

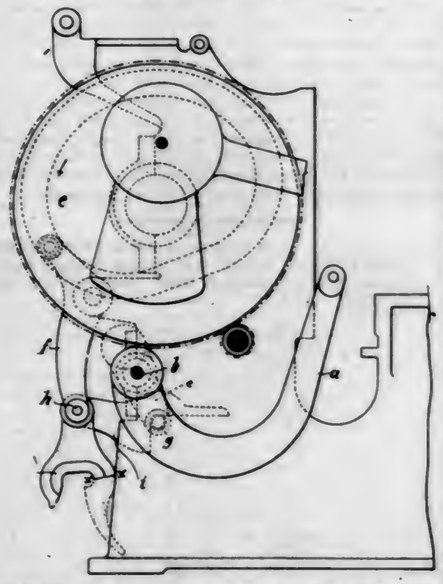
4. In a warping-machine, measuring mechanism, including a warper-clock having a scroll, a finger adapted to coöperate with the scroll at the top thereof, a support on which the finger is mounted to rock and also to move longitudinally of the scroll, a depending arm rigidly connected with the finger and extended under the scroll, a weight fulcrumed on the arm, and a lug normally held by the weight in position to prevent disengagement of the finger and scroll.

5. In a warping-machine, measuring mechanism, including a warper-clock having a scroll, a fixed support parallel to the axis of the clock, a hub mounted to rock and slide thereon and having a finger and a divergent arm, both rigidly connected with the hub, said finger extending above and having its tip in engagement with the scroll, the arm projecting beneath the latter, and a retaining device mounted on said arm to coöperate with the scroll and prevent disengagement of the finger and scroll.

6. In a warping-machine, measuring mechanism adapted to effect the operation of a stopping instrumentality when a predetermined length of warp has been wound, said mechanism including a warper-clock having a scroll, a coöperating finger adapted to engage the scroll at the top thereof, a fixed support on which said finger is mounted to rock and also to move longitudinally of the scroll, and a weighted retaining device bodily movable with the finger and adapted to coöperate with the scroll to prevent disengagement of the finger and scroll.

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**756,801. SAFETY DEVICE FOR PRESSES. WILHELM M. ROCKSTROH, Heidenau, near Dresden, Germany. Filed Feb. 25, 1901. Serial No. 48,690. (No model.)**



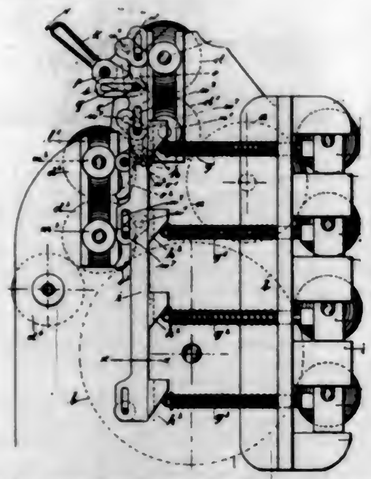
*Claim.*—1. The combination with the lever *a* and the operating-lever *f* and connections between said levers whereby the lever *a* may be operated as described, of a supplementary lever connected with the lever *f* and arranged to actuate the connections between the levers *a* and *f*, as specified.

2. The combination with the levers *a*, a crank connected therewith, and a stud carried by the crank, of a swinging lever *f*, the lever *d* carried by the lever *f* and adapted to engage with the stud on the crank, and a supplementary lever *i* carried by the lever *f* and also adapted to engage with the said stud in the manner and for the purpose specified.

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**756,802. PLATEN PRINTING-PRESS. WILHELM M. ROCKSTROH, Klein-Zschachwitz, near Pirna, Germany. Filed Dec. 3, 1901. Serial No. 84,574. (No model.)**

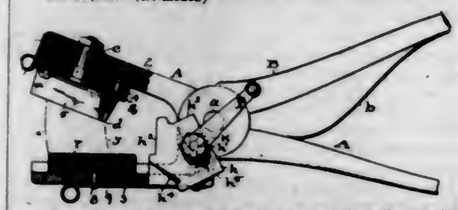
*Claim.*—1. In a platen printing-press, apparatus for simultaneously disengaging distributing and inking rollers comprising vertically-movable slide-bars which are mounted on opposite sides of the press, and which on the one hand are provided with inclined surfaces that act upon spring-bolts of inking-rollers and on the other hand are adapted so to operate rotatable parts formed as two-armed levers that the said parts engage with and raise the bearings of the distributing-rollers.



2. In a platen printing-press, the combination with inking-cylinders, distributing-rollers and inking-rollers and sliding bearings for said distributing and inking rollers, of spring-pressed rods carried by the inking-rollers, vertically-movable slide-pieces provided with inclined surfaces adapted to act upon the said rods when the slide-pieces are moved in one direction to move the bearings of the inking-rollers so that the latter will move out of contact with the inking-cylinders, levers adapted to engage with the bearings of the distributing-rollers, and connections between the slide-pieces and the said levers whereby the movement of the slide-pieces in one direction will effect separation of the distributing-rollers from the inking-cylinders.

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**756,803. TOOL FOR CUTTING BUTTONHOLES. CHRISTOPHER L. ROGERS, East Cleveland, Ohio, assignor, by mesne assignments, of one-half to Arthur Hill, Cleveland, Ohio. Filed June 22, 1903. Serial No. 162,663. (No model.)**



*Claim.*—1. A tool consisting of a pair of pivotally-associated members with jaws, one of said jaws having an eyelet through the same, and cutting mechanism on said jaws comprising a cutter-blade pivoted at its center and rotarily reversible on said pivot, said blade having an opening corresponding to said eyelet, and means to temporarily engage and hold said blade when reversed comprising a spring and notches engaged by said spring to lock said blade against rotation, substantially as described.

2. A cutter-blade for a buttonhole-tool having an eyelet at one end and a head on which said blade is secured provided with an opening corresponding to said eyelet, a pair of pivotally-connected members provided with jaws, and said cutter and head rotatably supported on one of said jaws, and a longitudinally-adjustable cutter-block on the other jaw, in combination with an adjustable gage mounted on one of said jaws, substantially as described.

3. A cutter-blade for a buttonhole-tool having an eyelet at one end and a head on which said blade is rigidly fixed provided with an opening corresponding to said eyelet, in combination with a pair of pivotally-connected members having jaws, and said cutter and head rotatably supported on one of said jaws and a longitudinally-adjustable cutter-block on the other jaw, substantially as described.

4. The tool substantially as described, having a blade to cut a slit for a buttonhole and a gage pivoted to rotate and provided with a plurality of edges of varying distance from the pivot thereof, said gage arranged to work opposite one edge of said blade, substantially as described.

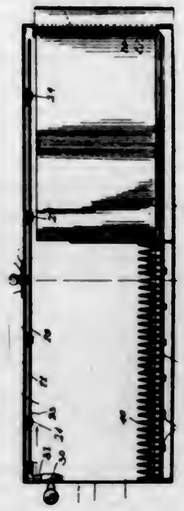
5. The tool provided with a cutting-blade and a cutting-block and a gage adapted to operate in conjunction with said parts, said gage pivoted to rotate on the tool off the pivot center thereof and having a series of straight edges different distances from its own pivot, substantially as described.

6. A tool for cutting buttonholes, comprising a pair of jaw members and means thereon to cut a hole, an adjustable gage to fix the depth of the hole from the edge of a garment and means to fix said gage said means comprising a lever and pivot-head for the gage having a projection engaged by the lever, substantially as described.



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**756,804. TOILET-PAPER HOLDER. ARTHUR E. SEXTON, Los Angeles, Cal., assignor to Single-Sheet Paper Company, Los Angeles, Cal., a Corporation of California. Filed Mar. 7, 1903. Serial No. 146,732. (No model.)**



*Claim.*—1. A holder for containing and dispensing interfolded sheets of paper, the slotted wall at the delivery end of the holder being roughened to increase the frictional resistance offered in the withdrawal of the sheets.

2. In a paper-holder, a slotted delivery-wall, and an auxiliary sheet of roughened material arranged on each side of the delivery-slot for frictional contact with the paper.

3. In a paper-holder having one wall provided with a delivery-slot and in which the material forming the wall is bent outwardly to increase the apparent thickness of the walls of the slot, a pair of auxiliary plates bent to partly embrace the walls of the slot, and auxiliary sheets of roughened material held in position within the holder for contact with the paper.

4. In a paper-holder, a slotted delivery-wall in which the material forming the wall is bent outwardly to increase the apparent thickness of the walls of the slot, a pair of auxiliary angular plates partly embracing the edges of the slot-walls and extending out beyond the same to further increase the thickness of the walls of the slot, and auxiliary sheets of roughened material held in place by said plates at points adjacent to the inner surface of the slotted wall on both sides of the slot.

5. The combination with a paper-holder for containing and dispensing sheets of paper arranged in a column and supported in a substantially vertical position on their lower edges, of a plurality of parallel longitudinally disposed and spaced strips arranged above the bottom of the holder and forming a support for the paper.

6. The combination in a paper-holder, of the containing-casing designed to receive a column of paper in which the sheets are arranged in substantially vertical position and supported on their lowermost edges, and a pair of narrow spaced strips extending lengthwise of the casing and arranged parallel with each other above the bottom of the holder and extending from end to end thereof to form a support for the column of paper.

7. The combination with a paper-holder, having a delivery-slot, of a helical forwarding-spring, a plurality of guiding-shoes secured at intervals to the coils of the spring, and a guiding means for said shoes.

8. The combination with a paper-holder having a delivery-slot, of a helical forwarding-spring, a pair of strips spaced from each other to form a paper-support, and a plurality of shoes secured at intervals to the coils of the spring and extending under the edges of the strips.

9. The combination in a paper-holder, of the hinged front and top walls each provided with a flange, and a longitudinally and laterally movable locking-strip carried by one wall and adapted to engage the flange of the opposite wall.

10. The combination in a paper-holder, of the hinged front and top walls each provided with a flange at its free edge, a longitudinally-movable locking-strip carried by one wall and provided with inclined slots, headed pins extending through said slots and serving when the strip is moved longitudinally to deflect the same laterally into engagement with the flange of the opposite wall.

11. The combination in a paper-holder having hinged front and top walls, of a longitudinally-movable locking-strip carried by one wall and adapted to engage the flange of the opposite wall, and means for locking said strip in position.

12. The combination in a paper-holder having hinged front and top walls each provided with a flange at its free edge, a longitudinally-movable locking-strip having inclined slots, headed pins carried by one of the walls and extending through said slots, an operating-knob arranged outside of the strip-carrying wall and operatively connected to said strip, and a lock having a bolt adjustable into and out of the path of movement of said locking-strip.

13. A holder for interfolded paper sheets, having a delivery-slot and a sheet-guiding device extending into and forming a reinforcement of the walls of the delivery-slot.

14. A holder for interfolded paper sheets, having a delivery-slot, and reinforcing means for the edges of the slot, and a sheet-retarding device supported by said reinforcing means, substantially as specified.

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**756,805. REMOVABLE PILE FOR FORMING CONCRETE PILING. FRANK SHUMAN, Philadelphia, Pa. Original application filed Jan. 13, 1903, Serial No. 138,921. Divided and this application filed Feb. 3, 1904. Serial No. 191,838. (No model.)**



*Claim.*—1. A removable pile having a detachable point with sections movable one in respect to another, whereby said point can be collapsed or contracted.

2. A removable pile having a detachable point with sections movable vertically one in respect to another or others, whereby the point can be collapsed or contracted.

3. A removable pile having a detachable point with independent sections, and connections leading to the interior of the pile, whereby these sections can be moved, one in respect to another, to collapse or contract the point.

4. A removable pile having a detachable point composed of independent and separable sections, and connections between each of these sections and the pile, said connections being of different lengths, whereby, as the pile is withdrawn, it will withdraw the sections of the point in succession.

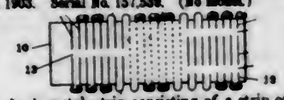
5. A removable pile having an enlarged and detachable point with sections movable one in respect to another, whereby said point can be collapsed or contracted.

6. A removable pile having an enlarged and detachable point with sections, movable vertically one in respect to another, or others, whereby the point can be collapsed or contracted.

7. A removable pile having an enlarged and detachable point with independent sections, and connections leading to the interior of the pile, whereby these sections can be moved, one in respect to another, to collapse or contract the point.

8. A removable pile having an enlarged and detachable point composed of independent and separable sections, and connections between each of these sections and the pile, said connections being of different lengths, whereby, as the pile is withdrawn, it will withdraw the sections of the point in succession.

## 756,806. MATCH-STRIP. CLEMENS A. STOLTE and HERMAN H. SMITH, Indianapolis, Ind.; said Stolte assignor to said Smith. Filed May 13, 1903. Serial No. 157,539. (No model.)




*Claim.*—1. A match-strip consisting of a strip of suitable material scalloped upon its opposite edges so as to form a plurality of alternately-arranged match-splint sections side by side, said sections being headed alternately on opposite sides of the strip.

2. A match-strip consisting of a strip of suitable material divided into a plurality of detachable splint-sections arranged side by side and headed alternately upon opposite edges of the strip.

# REISSUES.

## 12,210. SMOKE-STACK. PAUL DICKINSON, Winnetka, Ill. Filed Dec. 15, 1903. Serial No. 185,321. Original No. 722,288, dated March 10, 1903.



*Claim.*—1. In combination with a smoke-stack of the character described, an adjustable ventilator formed about the part of the stack which projects beyond the roof of the building provided therewith, and affording controllable communication of the interior of said building with the outer air about said stack, said ventilator having no communication with the interior of the stack, but having its outlet distinct from the stack-outlet, said projecting part of the stack forming the inner ventilator-wall, substantially as described.

2. In combination with a smoke-stack of the character described, a ventilator comprising the roof-plate, open about said stack, a ring rising about the stack from said roof-plate, a hood surrounding the stack above the roof-plate and having a depending flange, an intermediate sleeve supported to telescope with said rising and depending members, and means for raising and lowering said sleeve, substantially as described.

3. In combination with a smoke-stack of the character described, a ventilator comprising a roof-plate open about said stack, a ring about the stack rising from said roof-plate, a hood surrounding the stack above the roof-plate and having a depending flange, an intermediate sleeve telescoping with said rising and depending members, and a counterbalancing-weight connected with said sleeve to sustain it in any position to which it may be adjusted by raising and lowering said weight, substantially as described.

4. In combination with a smoke-stack of the character described, containing a telescoping lower section supported by a counterbalancing-weight having a chain connection with said section, a stop on said chain and a valve journaled in the stack above said section and having a crank and sliding-link connection with said chain, substantially as described.

5. In combination with a smoke-stack of the character described, containing a telescoping lower section, a hood on the lower end of said section having one or more yielding sides, substantially as and for the purpose set forth.

6. In combination with a smoke-stack of the character described, containing a telescoping lower section, a hood on the lower end of said section, having its side or sides in line with the track hinged to swing outwardly, substantially as and for the purpose set forth.

7. In combination with a smoke-stack of the character described, a hood on the lower end of the stack having one or more yielding sides, substantially as and for the purpose set forth.

## 12,211. PROCESS OF PREPARING RICE OR LIKE CEREAL FOOD PRODUCTS. JOHN W. JOHNSON and LEE LOCK, Upper Sandusky, Ohio. Filed Feb. 15, 1904. Serial No. 193,706. Original No. 749,564, dated Jan. 12, 1904.

*Claim.*—1. The process of preparing rice which consists in cooking the same until it is in nearly edible condition, then drying until it is in an approximately dry condition, and then swelling and parching the same by spreading it upon heated sand, substantially as set forth.

2. The process of preparing rice which consists in cooking the same by boiling it, then drying it until the moisture is nearly removed, and then swelling and parching it by spreading it upon a surface covered with sand heated to the requisite temperature, substantially as set forth.

3. The process of preparing a cereal which consists in cooking the same until it is in nearly edible condition, then drying until it is in an approximately dry condition, and then swelling and parching the same by spreading it upon heated sand, substantially as set forth.

# DESIGNS.

## 36,864. CLOCK-CASE. LOUIS V. ARONSON, Newark, N. J. Filed Feb. 23, 1904. Serial No. 194,958. Term of patent 3½ years.





36,864.



*Claim.*—The ornamental design for a clock-case, as shown.

## 36,865. CUT-GLASS VESSEL. WILLIAM C. ANDERSON, Lansing, Mich., assignor to American Cut Glass Co., Detroit, Mich., a Corporation of Illinois. Filed Feb. 23, 1904. Serial No. 194,962. Term of patent 7 years.



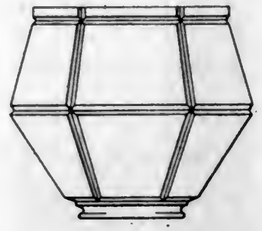
*Claim.*—The ornamental design for a cut-glass vessel, as shown.

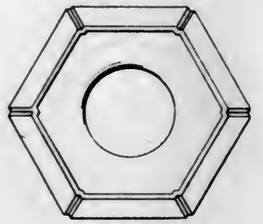
## 36,866. CUT-GLASS DISH. THOMAS SINGLETON, Bowling Green, Ohio, assignor to the Ohio Cut Glass Company. Filed July 13, 1903. Serial No. 165,408. Term of patent 7 years.



*Claim.*—The ornamental design for a cut-glass dish as herein shown.

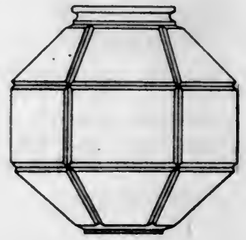
## 36,867. GLASS SHADE. MARSHALL W. GLEASON, New York, N. Y. Filed Feb. 24, 1904. Serial No. 195,114. Term of patent 3½ years.

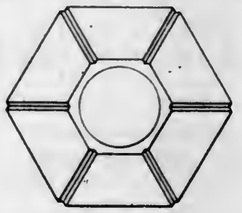




*Claim.*—The ornamental design for a glass shade, as shown.

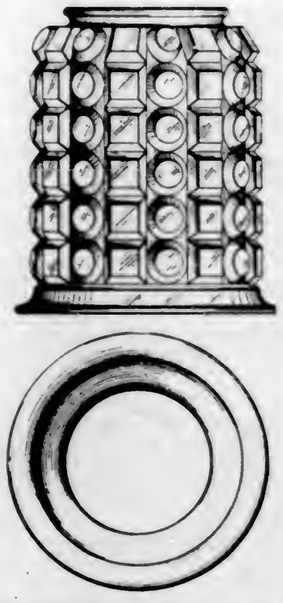
## 36,868. GLASS GLOBE. MARSHALL W. GLEASON, New York, N. Y. Filed Feb. 24, 1904. Serial No. 195,115. Term of patent 3½ years.





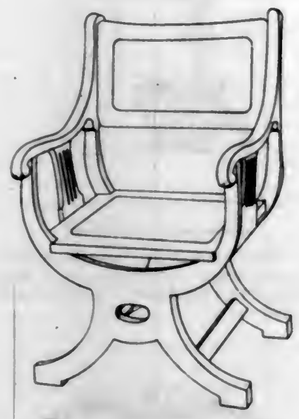
*Claim.*—The ornamental design for a glass globe, as shown.

36,869. GLOBE FOR GAS-LIGHTS. WILLIAM STANLEY MCLEWEE. Yardley, Pa. Filed Feb. 6, 1904. Serial No. 192,455. Term of patent 14 years.



*Claim.*—The ornamental design for a globe for gas-lights, as shown.

36,870. CHAIR. DAVID W. KENDALL, Grand Rapids, Mich. Filed Feb. 1, 1904. Serial No. 191,635. Term of patent 7 years.



*Claim.*—The ornamental design for a chair, as shown.

# TRADE-MARKS

## REGISTERED APRIL 5, 1904.

42,311. COTTON AND PARTLY-COTTON FABRICS. SMITH, HOGG & Co., New York, N. Y. Filed Feb. 23, 1904.

"Flanola"

The word "FLANOLA" inclosed in quotation-marks. Used since February 16, 1904.

42,312. PHOTOGRAPHIC PAPERS. FARBENFABRIKEN OF ELBERFELD Co., New York, N. Y. Filed Mar. 2, 1904.

ST. LUKAS

The words "ST. LUKAS." Used since July 1, 1903.

42,313. TABLE AND HOUSEHOLD LINENS AND OTHER LINEN FABRICS. IRELAND BROS., LIMITED, Belfast, Ireland. Filed Feb. 27, 1902.



An oval-shaped figure comprising a double oval surrounded by an outer oval formed of dots or broken lines within which is a wreath composed of two stalks of flax bearing leaves throughout their length and flowers and buds at or near their upper extremities, the lower ends of said stalks being crossed and the upper ends thereof being intertwined, a single bell-shaped blossom located at the intersection of the lower part of the stalks, and a conventional representation of a fleur-de-lis inclosed within and embordered by the wreath of flax-stalks. Used since February 1, 1900.

42,314. COTTON PIECE GOODS. GRINNELL WILLIS & Co., New York, N. Y. Filed Feb. 6, 1904.

42,314.



The representation of a banana-tree with bananas thereon, the tree standing on a ground showing tropical plants. Used since October 7, 1902.

42,315. CERTAIN NAMED UNDERWEAR. CONRADI & FRIEDEMANN, Limbach, near Chemnitz, Germany. Filed June 24, 1902




The words "IRON CROWN" and the representation of the historical iron crown of Lombardy. Used since February 15, 1902.

42,316. FUR COATS, JACKETS, ROBES, AND WRAPS. HABER'S EMPIRE FUR FACTORY, Milwaukee, Wis. Filed Feb. 8, 1904.

Wombaretta

The word-symbol "WOMBARETTA." Used since May, 1903.

42,317. CANNED VEGETABLES AND CANNED FRUITS. OTIS SHEPARD & Co., Pittsburg, Pa. Filed Jan. 30, 1904.

UNION CLUB

The words "UNION CLUB." Used since October 1, 1903.

42,318. CERTAIN NAMED MEATS. T. M. SINCLAIR & Co., LIMITED, Cedar Rapids, Iowa. Filed Mar. 4, 1904.

White Cross

The words "WHITE CROSS." Used since 1897

42,319. LARD. T. M. SINCLAIR & Co., LIMITED, Cedar Rapids, Iowa. Filed Mar. 4, 1904.

WHITE FROST

The words "WHITE FROST." Used since 1890.

42,320. OLIVE-OILS. MARCHESINI BROTHERS, New York, N. Y. Filed Feb. 26, 1904.




The words "LA DIVA" on a panel below the representation of a woman's head in profile, having a background of olive-leaves and double border-lines in broken circular shape. Used since September, 1901.

42,321. OLIVE-OILS. MARCHESINI BROTHERS, New York, N. Y. Filed Feb. 26, 1904.

DIANA



The word-symbol "DIANA" in conjunction with the representation of a figure of a woman mounted on horseback holding a horn in an outstretched hand and preceded by a pair of trumpeters. Used since September 1, 1903.

42,322. OLIVE-OILS. MARCHESINI BROTHERS, New York, N. Y. Filed Feb. 26, 1904.



The representation of St. Anthony supporting a child on one arm with an open book in the hand and a palm branch in the opposite hand, a halo about the head of each figure and a background consisting of a group of stars and a crescent, clouds below the same, and two sprays of crossed olive branches below the whole. Used since September 1, 1903.

42,323. OLIVE-OIL. FERRO SANGUINETTI & CIE., Genoa, Italy. Filed Aug. 4, 1903.

42,328.



The representation of a cannon being fired by a soldier standing in the rear. Alongside the cannon is a pile of balls. Used since 1885.

42,324. JUICE OF THE GRAPE-FRUIT. CALIFORNIA CITRUS PRODUCTS CO., National City, Cal. Filed June 13, 1903.




The word "MELADE" printed across the representation of a grape-fruit or pomelo with leaves attached thereto. Used since February 1, 1903.

42,325. COFFEE. G. ARENDS & Co., New York, N. Y. Filed Feb. 20, 1904.

LA GRANJA

The words "LA GRANJA." Used since December 16, 1903.

42,326. HERB TEA. RICHARD F. SHIMANOVSKY, Milwaukee, Wis. Filed Dec. 14, 1903.



The representation of a four-pointed star on a Greek cross, the letter "S," surrounded by a circle, in the center of the star and a border composed of concentric circles surrounding the cross, the inner circle having loops projecting inwardly into the spaces between the arms of the cross. Used since October, 1899.

42,327. TONIC OR REMEDY FOR FEVER AND AGUE. ESTORGE DRUG CO., New Iberia, La. Filed Mar. 7, 1904.

FEBRICURA

The word-symbol "FEBRICURA." Used since January 1, 1901.

42,328. LIQUID PROPRIETARY MEDICINES. PADY D. STRICKLAND, Waycross, Ga. Filed Feb. 26, 1904.



42,328.

CON-RHEU-NEU-IDE.

The hyphenated word "CON-RHEU-NEU-IDE." Used since February 18, 1904.

42,329. REMEDY FOR CERTAIN NAMED DISEASES. JULIA A. JAMES, Evergreen, Colo. Filed Nov. 11, 1903.



The representation of a group of mountain spurs associated with reversely-disposed branches tied together at their inner ends and having their outer ends extended into the space between two concentric circles, the inner one of which incloses the spurs. Used since October 26, 1903.

42,330. REMEDY FOR CERTAIN NAMED DISEASES. THE LE COMPTE AND GAYLE CO., Frankfort, Ky. Filed Feb. 12, 1904.

CHALGONIA

The word "CHALGONIA." Used since January 1, 1892.

42,331. REMEDY FOR DISEASES OF THE BLOOD AND SKIN. CHARLES R. CAMPBELL, New York, N. Y. Filed May 19, 1903.

PURA-CURA

The hyphenated word "PURA-CURA." Used since November 1902.

42,332. WITHDRAWN.

42,333. MEDICINES FOR REGULATING OR CONTROLLING THE FLOW OF BLOOD. THE ABBOTT ALKALOIDAL CO., Chicago, Ill. Filed Feb. 23, 1904.

SUPRA-NEPHRIN

The hyphenated word "SUPRA-NEPHRIN." Used since January 18, 1904.

42,334. MEDICINALLY-PREPARED TABLETS FOR CERTAIN NAMED DISEASES. GUY H. FULLER, Columbus, Ohio. Filed Mar. 7, 1904.

KU-BA-RA

The hyphenated word "KU-BA-RA." Used since January 1, 1901.

42,335. ANTISEPTIC OIL. L. M. WEBB & Co., Ewing, Ill. Filed Mar. 10, 1904.



The representation of the bust of Lewis M. Webb, one of the registrants. Used since November 1, 1903.

42,336. LINIMENT FOR EXTERNAL APPLICATION. LOUIS H. WRISTEN, Gail, Tex. Filed Feb. 5, 1904.

L H W

The letters "L H W," the letter "H" being projected above and below the letters "L" and "W" and said letters "L" and "W" being inclosed within triangular borders, each border having the adjacent side of the letter "H" forming a side of said border. Used since December 21, 1903.

42,337. LINIMENT. HUME & FREEMAN, Olney, Ill. Filed Jan. 15, 1904.

DR. W. T. HUME'S



WIRE CUT

The abbreviations and words "DR. W. T. HUME'S WIRE CUT," associated with the protrait of Dr. W. T. Hume, one of the registrants. Used since May 1, 1899.

42,338. CERTAIN NAMED TOILET PREPARATION. CHRISTIAN W. HEINEKEN, Jersey City, N. J. Filed Feb. 6, 1904.

KRINOGALON

The word "KRINOGALON." Used since June 1, 1896.

42,339. PREPARED COLORS FOR PRINTING AND PAINTING. LESTER D. GARDNER, New York, N. Y. Filed Feb. 23, 1904.

RADIUM

The word "RADIUM." Used since February 1, 1904.

42,340. CHEMICAL WELDING COMPOUND. THE CORTLAND WELDING COMPOUND CO., Cortland, N. Y. Filed Jan. 29, 1904.




The hyphenated word "BORAX-ETTE" and the representation of a chain having a ring at one end and a hook at its opposite end. Used since January 1, 1899.

42,341. PORTLAND CEMENT. VIRGINIA PORTLAND CEMENT CO., New York, N. Y. Filed Mar. 5, 1904.




The representation of an ornamental crenelated ring border inclosing a disk which is divided by two horizontal lines, with the words "OLD DOMINION" between said lines. Used since June 13, 1900.

42,342. SPRING-BEDS. THE NATIONAL WIRE MATTRESS CO., Waterbury, Conn. Filed Mar. 9, 1904.




The representation of an hour-glass surrounded by a scroll which bears the words "20TH CENTURY." Used since September, 1903.

42,343. COMBINED LARD-PRESS, FRUIT-PRESS, AND SAUSAGE-STUFFER. LANDERS, FRARY AND CLARK, New Britain, Conn. Filed Mar. 4, 1904.

UNIVERSAL

The word "UNIVERSAL." Used since February 20, 1904.

42,344. SODA-WATER FOUNTAINS. L. A. BECKER COMPANY, Chicago, Ill. Filed May 13, 1903.



The representation of a cross within a circular border comprising a shaded band having well-defined interior and exterior margins or edges. Used since January 1, 1902.

42,345. SODA-WATER FOUNTAINS. L. A. BECKER COMPANY, Chicago, Ill. Filed Mar. 11, 1904.

TWENTIETH CENTURY

The words "TWENTIETH CENTURY." Used since January 1, 1902.

42,346. VALVES AND SWING-JOINTS. LOUIS SCHUTTE, Philadelphia, Pa. Filed Nov. 24, 1902.

B O

The letters "B O." Used since April 1, 1902.

42,347. LEATHER BELTING. GRATON AND KNIGHT MANUFACTURING COMPANY, Worcester, Mass. Filed Mar. 5, 1903.




The representation of an oak twig having acorns thereon, with the letters "G K" above and the figures "1851" below said twig, which is inclosed with a border consisting of two circular lines, with the words "ROYAL WORCESTER" between them. Used since October 1, 1902.

42,348. MEDICINE FOR RHEUMATISM. CLARENCE HENRY PLATT, Brooklyn, N. Y. Filed Feb. 26, 1904.

3913

The numerals "3913." Used since 1892.

42,349. BUTTER. P. H. HOFHEIMER & COMPANY, Chicago, Ill. Filed Feb. 13, 1904.

EXTRA



The representation of a running newsboy offering extra papers for sale, associated with the word "EXTRA." Used since December 1, 1903

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# LABELS

## REGISTERED APRIL 5, 1904.

10,910.—*Title:* "ANTI WHALEBONE." (For Whips.) CHARLES H. CLARK, Westfield, Mass. Filed March 8, 1904.

10,911.—*Title:* "ZATAN." (For Toilet-Paper.) SCOTT PAPER Co., Philadelphia, Pa. Filed March 8, 1904.

10,912.—*Title:* "PURE SISAL TWINE." (For Twine.) INTERNATIONAL HARVESTER COMPANY OF AMERICA, Chicago, Ill. Filed February 1, 1904.

10,913.—*Title:* "ALL STONE." (For Wall-Plaster.) THE GARDEN CITY SAND COMPANY, Chicago, Ill. Filed March 9, 1904.

10,914.—*Title:* "PROTAZOTE." (For Medicine.) A. L. MUIRHEAD, Central City, Nebr. Filed March 3, 1904.

10,915.—*Title:* "KI-KI." (For Medicine.) EDWARD B. CLIFFORD, Homestead, Pa. Filed March 5, 1904.

10,916.—*Title:* "GRIPPURA (GERM DESTROYER)." (For Medicine.) ALEXANDER CRICHTON, Castleton, Canada. Filed March 10, 1904.

10,917.—*Title:* "HERMITS FRIEND RHEUMATIC REMEDY." (For Medicine.) G. CLINTON SMITH, Syracuse, N. Y. Filed March 11, 1904.

10,918.—*Title:* "DR. HICKOX'S MALARIAL CAPSULES." (For Medicine.) JAMES M. HICKOX, Two Harbors, Minn. Filed March 12, 1904.

10,919.—*Title:* "ELIXIR OF RADIUM." (For Medicine.) GUSTAVE P. GEHRING, Philadelphia, Pa. Filed March 11, 1904.

10,920.—*Title:* "ROACH REST." (For Roach-Powder.) THE H. C. FUELLER DRUG CO., Grafton, W. Va. Filed March 9, 1904.

10,921.—*Title:* "KOSCIUSZKO." (For Cigars.) JOHN SZYMANSKI, Milwaukee, Wis. Filed March 10, 1904.

10,922.—*Title:* "BU KO." (For Tea.) ABRAM LUBARSKY, New York, N. Y. Filed March 1, 1904.

10,923.—*Title:* "BOHEMIAN." (For Lager-Beer.) IROQUOIS BREWING COMPANY, Buffalo, N. Y. Filed March 14, 1904.

10,924.—*Title:* "THE BEER YOU LIKE." (For Lager-Beer.) NICHOLAS BIEVER, Jr., Milwaukee, Wis. Filed March 12, 1904.

10,925.—*Title:* "E. & S. BRAND OF PURE CALIFORNIA OLIVE OIL." (For Olive-Oil.) EKMAN-STOW CO., Oroville, Cal. Filed March 10, 1904.

10,926.—*Title:* "LAFAYETTE." (For Flour.) JAMES D. WARREN'S SONS, Buffalo, N. Y. Filed March 14, 1904.

10,927.—*Title:* "STRICKER'S PASTE." (For Paste.) WALTER E. KRIEL, trading as HENRY H. STRICKER & Co., Baltimore, Md. Filed December 31, 1903.

10,928.—*Title:* "RADIUM." (For Soap.) GERHARD & BOEHNING, Cincinnati, Ohio. Filed March 12, 1904.

# PRINTS

## REGISTERED APRIL 5, 1904.

948.—*Title:* "BASE BALL CARD GAME." (For a Game.) ALLEGHENY CARD CO., Allegheny, Pa. Filed March 8, 1904.

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# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### RUSSELL *v.* ASENCIO.

*Decided January 9, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION—ORIGINALITY.

*Held* upon a consideration of the evidence that Russell was the original and first inventor of the device in controversy, and therefore the decision must be in his favor.

2. SAME—SAME—SAME.

Where Asencio's assignee and principal witness claims that Asencio disclosed the invention to him, but it appears that he did not reduce it to practice or file an application until after he heard of Russell's work upon the same lines and until after Russell, with his financial assistance, had made and tested the device and, with his consent, had filed an application which was assigned to Asencio, *Held* that Russell must be regarded as the inventor.

3. SAME—BURDEN OF PROOF—FORFEITED APPLICATION—CHRISTENSEN *v.* NOYES DISTINGUISHED.

Where Asencio's assignee was the one who furnished the money for Russell's experiments and paid for Russell's application for patent, but refused to pay the final fee and let the application become forfeited and then induced Asencio to file an application for and secure a patent upon the same invention, while Russell's case was forfeited, *Held* that the burden of proof is upon Asencio to show that he was the first inventor. (*Christensen* v. *Noyes* distinguished.)

APPEAL from Examiners-in-Chief.

PULVERIZER.

Application of William M. Russell. Patent granted Thomas Asencio October 9, 1900, No. 659,200.

*Mr. T. F. Bourne* for Russell.

*Messrs. Brown & Seward* for Asencio.

ALLEN, *Commissioner:*

This is an appeal by Asencio from the decision of the Examiners-in-Chief awarding priority of invention to Russell upon the following issue:

An attachment for steam-boiler and other furnaces comprising a rotary motor and a rotary pulverizer and blower arranged to be actuated by the motor, the said motor, pulverizer and blower having a common shaft and being so correlated in capacity and operation that an attachment of a given capacity will furnish the necessary and uniform amount of fuel elements required for any particular furnace.

The relations of the parties to this interference are peculiar, both as shown by the Office records and as shown by the testimony.

The records show that Russell was the first to file an application and that one-half interest in that application was assigned to Asencio. His application was filed July 22, 1897, and it was allowed on October 20, 1898. It was forfeited April 20, 1899, for non-payment of the final fee and was renewed October 16, 1900. Asencio's application was filed April 27, 1900, during the forfeiture of Russell's application, and his patent was granted October 9, 1900, one week before Russell's case was renewed. In Russell's renewed application the claim of Asencio's patent was copied and the present interference resulted. In view of the fact that Asencio's patent was regularly issued during the forfeiture of Russell's application the burden of proof was held to be upon Russell in this proceeding, notwithstanding the earlier filing date of his original application. (74 MS. Dec., 9.) The authority for this was found in the decision of the court of appeals in *Christensen* v. *Noyes*, (90 O. G., 227.)

The testimony shows that the question to be decided is originality of invention rather than a mere question of priority. Each party claims the same thing as his reduction to practice, and the question is which of them suggested the structure which was made. The situation is peculiar, for although the question is originality the parties did not meet until after the invention was completed and reduced to practice, and it is admitted that Russell did not know anything about Asencio. Each party, however, knew a party named Navarro, and it is through him that it is claimed that the information as to the invention passed from one party to the other. The whole case centers around this man Navarro, and he is now supporting the claims of Asencio as the inventor.

The claims of the parties may be briefly stated as follows:

On behalf of Asencio it is said that in 1895 Navarro was interested in the subject of burning pulverized coal, being the owner of some patents, and he talked to his friend Asencio about it and explained the difficulties encountered in producing a satisfactory device for that purpose. (Asencio, Q. 3; Navarro, Q. 18.) Asencio was a commission merchant and does not claim to have been an expert in such matters and seems to have had very little practical knowledge or experience as to them. (X-Q. 81.) He had never seen a pulverizer (X-Q. 89) and derived his knowledge of the subject from drawings shown him by Navarro, (X-Q. 90,) although he is not an engineer and does not thoroughly understand mechanical drawings. (X-Q. 85.) He, however, thought the matter over and early in 1896 explained to Navarro that the difficulties could be overcome by dispensing with the

belting and gearing which had been used for running the pulverizers and instead placing the motor and pulverizer on one shaft. (Asencio, Q. 3; Navarro, Qs. 17-18.) Navarro then made a sketch of the proposed device, (Asencio Exhibit No. 3,) and Asencio said it embodied his ideas and approved it. (Asencio, Q. 5; Navarro, Q. 19.) Asencio after making this single suggestion to Navarro did not disclose the invention to any one else (Asencio, Q. 4) and did absolutely nothing in regard to it; or, as he expresses it, "I had nothing else to do about it. Because I left in his (Navarro's) hands everything." (Q. 6.) He did not take part in or see any subsequent experiments in regard to the invention. (X-Q. 142.) He was informed now and then by Navarro as to what was being done, (X-Q. 97,) and he left the question of applying for a patent entirely to Navarro. (X-Q. 99.)

Navarro says that he endeavored to secure a turbine or motor to be placed upon the shaft of a pulverizer and that in the spring of 1897 he hired Russell, the other party to this interference, as a workman to assist him in his experiments with pulverizers. (Qs. 82 and 92.) Through Russell he learned that he might secure the motor desired from one White in Jersey City, (X-Q. 170,) and he made arrangements with White to build it. White did build it in June, 1897, (Q. 6;) but it proved unsatisfactory. (X-Qs. 333-340.) The test of it was made in the fall of 1897, (Travis, Q. 4,) and in December, 1897, arrangements were made to secure a motor from the Curtis Steam Turbine Company. (Travis, Q. 4.) It was received about June, 1898, and was tested until October, 1900, (Travis, Q. 4,) and was found to be satisfactory. (Navarro, X-Q. 347.) Russell was present and assisted in making the machine at White's, in its subsequent tests, and in the tests of the Curtis motor; but on behalf of Asencio it is said that he was there merely in the capacity of a workman paid by Navarro.

On behalf of Russell it is said that in 1894 Russell went into the business of constructing and using devices for feeding pulverized fuel to furnaces. (Russell, Q. 244; Bixon, Q. 3.) At that time he was using one of his machines in which the pulverizer was run by a belt from the motor, and as there were objections to the use of a belt (Qs. 11-12) he conceived the idea late in 1894 or early in 1895 of placing the motor on the shaft of the pulverizer. (Q. 29.) He explained his invention to others in January, 1895, (Q. 31,) made a sketch of it in 1894, (Q. 123,) and made a model, commencing in 1896 and finishing in 1897. (RD. Q. 306.) He seems to be somewhat confused as to the date of the model. (Q. 152, X-Q. 305.) In January, 1895, Russell disclosed to Bixon the idea of running his pulverizer by a steam-turbine placed on the shaft (Bixon, Qs. 3-9) and showed him the "Exhibit 1894 Sketch." (Qs. 11-13.) Bixon also saw "Russell Exhibit Model" in the summer of 1897. (Qs. 36-37.) In January, 1897, Russell explained to Montanye his idea of placing a steam-turbine upon the shaft of the pulverizer, (Montanye, Q. 5,) and in 1897 Montanye saw the model. (Qs. 18-23.) White says that before June, 1897, Russell came to him and wished to get a steam-turbine to attach to the shaft of his pulverizer, (Qs. 4, 7, and 10,) and he went to see the machine Russell then had in operation. (Q. 5.) Subsequently Russell and Navarro came to him together and ordered a machine made, and his understanding was that Russell was to suggest the ideas and Navarro pay the bills. (Q. 8.) Russell claims that he suggested the construction of the White machine and that Navarro had nothing to do with it except as his financial backer.

Russell says he first met Navarro in 1897, (Q. 40,) and Navarro admits that he did not meet Russell until May, 1897. (X-Q. 150.) Russell claims that Navarro did not employ him as a mere workman, but went to him to buy an interest in his inventions, including the one here in controversy, and agreed to furnish the money to enable Russell to perfect and patent those inventions.

It is clear from the above statement that each party claims to have been in possession of the invention before there was any communication of any kind from one to the other. Asencio's claim is based entirely upon his own statement and that of Navarro. His only other witness, Travis, gives no testimony from which it can be concluded that the invention here in controversy was disclosed to him before he saw the White motor, and Russell admittedly had something to do with that machine. Russell, on the other hand, is corroborated as to his earlier disclosure by Bixon and Montanye. White's testimony also tends to support his claim.

The relations and conduct of Russell and Navarro are important in throwing light upon the disputed questions. Navarro was a man with money, admittedly in search of a successful device for feeding pulverized fuel, and owned at least one patent upon a device for that purpose. (Q. 18.) He saw something in the papers about the performance of Russell's device for feeding pulverized fuel and at once wrote to him (X-Q. 116) and went to see his device in operation. (X-Q. 119.) He negotiated with Russell for the purchase of a half interest in Russell's patents, and the contract was made. (X-Qs. 126-127.) It seems to have been understood, also, that Navarro was to have a half interest in other patents secured by Russell, (X-Q. 137,) for he admits that he paid the expenses of further experiments by Russell, in addition to what he is pleased to call Russell's salary, (X-Q. 143,) and paid for filing subsequent applications for patents. (X-Qs. 238, 242, and 248.) He admits that Russell was one of the best experts in the art of feeding pulverized fuel (X-Q. 149) and says that when Russell went to work after the sale of his patents no definite arrangement was made as to salary. (X-Q. 147.) The circumstances, even according to Navarro's statement, lead irresistibly to the conclusion that Russell was not employed as a mere workman and that he was to furnish the ideas and Navarro the money "for the common good." (X-Q. 143.) The presumption is strong that the device made by them working together was the invention of Russell, particularly as Navarro does not claim





to have contributed any ideas of his own, but only ideas previously suggested by others. If Navarro had the idea clearly in mind, it is strange that he could not have the device made before consulting Russell. Russell was not a manufacturer of such devices, but was a practical expert. It is significant that as soon as he consulted Russell he and Russell went to White to have the device made and wasted no time. Navarro claims to have had the invention more than a year before and was able financially to have the device made. Russell also claims to have had it, but was unable to have the device made until assisted by Navarro's money. When the device was made, the man who made it, White, understood that Russell furnished the ideas and Navarro the money.

Another thing which is significant is Navarro's conduct in reference to Russell's original application here involved. He consented to the filing of that application in July, 1897, and paid the expenses of it. (Q. 99, X-Q. 252.) He admits that Russell disclosed to him its subject-matter before filing the application and that he had Russell assign to Asencio to hold for him (Navarro) one-half interest in that application. (Q. 113.) He also admits that he knew that during the prosecution of that application Russell presented a claim similar to the present issue. (Q. 105.) He says he was surprised that Russell should claim to be the inventor of that, (X-Q. 287;) but he apparently made no protest to Russell. In fact, throughout all the transactions he never told Russell that he regarded Asencio as the inventor of the present subject-matter. (X-Q. 291.) The reason he gives for not telling Russell is "I was in doubt whether I was not the inventor, if there was any invention in it." (X-Q. 291.) This tends to discredit his testimony that Asencio clearly disclosed the invention to him in 1896.

When Russell's application was allowed, Navarro was asked to pay the final fee, and he refused to do so (Qs. 106-107) because the claims "were so measly and poor." (X-Q. 267.) It was clearly through his fault that the application was forfeited, and he supposed that it was abandoned. (X-Q. 284.) After letting that application forfeit he filed the application on behalf of Asencio and secured the patent here in controversy without saying anything to Russell about it. As soon as Russell discovered that fact by the issue of Asencio's patent he renewed his application without Navarro's assistance and secured this interference. Under the circumstances Navarro, who is the real party in interest and who was the representative of the nominal party, Asencio, should not be permitted to derive an advantage from the forfeiture of Russell's application. Before proofs were taken disclosing the relations of the parties the presumption was in favor of Asencio because of his patent, (*Christensen* v. *Noyes*, *supra*;) but that presumption does not hold good in view of the facts now admitted. On the contrary, the presumption is in favor of Russell, and it could be overcome only by satisfactory proof that he derived his ideas directly or indirectly from Asencio. The evidence on behalf of Asencio falls far short of showing this.

The decision of the Examiners-in-Chief awarding priority of invention to Russell is affirmed.

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## HALL *v.* WEBER.

*Decided February 12, 1904.*

INTERFERENCE—APPLICANT AGAINST PATENTEE—ISSUE UNPATENTABLE—PRIORITY NOT DECIDED.

Where in an interference between an applicant and a patentee it appears that the claims are not patentable to the applicant, *Held* that the question of priority of invention should not be decided; but the interference should be sent to the Primary Examiner to consider the question of dissolution.

ON PETITION.

INSULATED RAIL-JOINTS.

Patent granted George L. Hall September 2, 1902, No. 708,349. Applications of George A. Weber.

*Mr. Harry Van Ness Philip* for Hall.

*Messrs. Dickinson, Brown & Raegener* and *Messrs. Foster & Freeman* for Weber.

ALLEN, *Commissioner:*

This is a petition that the order of December 18, 1903, transmitting the above-entitled interference to the Primary Examiner for the consideration of matters called to my attention under Rule 126, be set aside and the Examiner of Interferences instructed that he should decide the question of priority of invention.

It appears that after testimony was taken the Examiner of Interferences called attention under Rule 126 to the fact that in his opinion counts 1 and 2 of the issue are not patentable to Weber and that Weber has no right to make the claim of count 3. He did this without deciding the question of priority, as is permitted in the rule. The order of December 18 was then made, remanding the case to the Primary Examiner for determination.

The only question for determination is whether under the circumstances of this case the Examiner of Interferences should have decided the question of priority of invention before referring the case under Rule 126. Hall is a patentee, and since this Office has no control over that patent the question of priority is a moot one unless Weber is otherwise entitled to a patent. If he is not entitled to a patent in any event, as stated by the Examiner of Interferences, there is no necessity to decide the question of priority of invention.

The contention on behalf of Weber that Hall is not an original inventor and that he secured his patent by fraud has not been overlooked, and it is understood that Weber would like a ruling upon that question after spending time and labor in attempting to establish it by his proofs. This Office, however, is not the place to secure such a ruling unless it becomes necessary in deciding to whom a patent shall issue. As above pointed out, it is not necessary to decide the question of originality of invention in this case, and to rule upon it would serve no useful purpose in so far as the work of this Office is concerned.

The petition is denied.

## EX PARTE RAYMOND.

*Decided February 13, 1904.*

1. ABANDONED APPLICATION—MISTAKE IN ATTORNEYS' RECORDS—DATE OF ACTION.

Where it appears that through a clerical error the attorneys' records indicated that the year allowed by law for action expired at a later date than the actual date and the error was not discovered until an amendment was filed supposedly within the year, but actually after that time, *Held* that the application is abandoned.

2. SAME—SAME—DELAY NOT UNAVOIDABLE.

Where the applicant postpones action until what he supposes is the latter part of the time allowed him and he then discovers that there was a mistake in his records and the time has already expired, *Held* that although the mistake may have been unavoidable the delay was not unavoidable, and the case is abandoned.

ON PETITION.

CENTRIFUGAL MILLS.

*Messrs. Raymond & Barnett* for the applicant.

ALLEN, *Commissioner:*

This is a petition for a ruling that the above-entitled application is not abandoned, notwithstanding a delay of more than one year in taking action in prosecution thereof.

In the affidavits filed it is said that through a clerical error in the attorneys' office their records indicated that the year allowed by law for action expired in this case on February 16, 1904, whereas the time in fact expired December 29, 1903. It is explained how the mistake arose, and it is urged that since all ordinary care was exercised it should be regarded as unavoidable. Considering the affidavits alone, the inference is that the attorneys could have acted upon the case sooner and would have done so if they had not been under the impression that they were not required to act at that time to save the case from abandonment. It would appear that they made no effort to act and had no intention of acting until they were induced to do so by what they regarded as the approach of the time limit. Conceding that their mistake as to the time limit was natural and unavoidable, there is no reasonable ground appearing from the affidavits for concluding that the delay was unavoidable. In so far as appears it was intentional, because it was assumed that the attorneys had a right to delay. Under the terms of the statute (sec. 4894, R. S.) delay beyond one year works an abandonment of the application unless it is shown to have been unavoidable.

It is noted that in the brief filed in support of this petition reference is made to facts tending to excuse the delay, such as the death of the inventor and proceedings leading to the appointment of an administratrix and the illness of the attorney; but those facts are not explained or referred to in the petition and supporting affidavits.

The petition is denied.

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## LIPE *v.* MILLER.

*Decided March 3, 1904.*

INTERFERENCE—DISSOLUTION—APPLICANT AGAINST PATENTEE.

Where an interference is declared between an applicant and a patentee and the applicant urges that the claim of the issue is not patentable to himself, *Held* that the Office will enter into no controversy with him, but will accept his admission and dissolve the interference.

ON REFERENCE.

SEWING-MACHINE.

Patent granted to Willard C. Lipe January 13, 1903, No. 718,263. Application of Andrew E. Miller.

*Messrs. Hey & Parsons* for Lipe.

*Messrs. Watson & Watson* and *Messrs. Foster, Freeman & Watson* for Miller.

ALLEN, *Commissioner:*

The Examiner of Interferences has called attention under Rule 126 to the fact that in his opinion Miller's claims corresponding to the issue are not patentable to him.

The taking of testimony in the interference is closed and the case is ready for final hearing upon the question of priority of invention. Miller took no testimony and filed a brief devoted principally to an effort to show that the claims of the issue are not patentable. In that brief it was said:

Are the issues patentable to Miller? Miller thinks not, and for that reason (and also because Lipe has not overcome Miller's filing date), Miller has taken no testimony.

In conclusion the brief submits:

That the issue is not patentable to Miller in view of the references cited herein.

It is to be noted that Lipe is a patentee and that the only question for determination is whether a patent shall issue to Miller. Since Miller contends that the patent should not issue to him, it is not apparent why the Office should enter into any controversy with him or waste time considering the matter. Without formulating or expressing any opinion of its own upon the merits of the question this Office is justified in accepting Miller's contention that he is not entitled to the claims and no longer insists upon the grant of a patent to himself including them.

The interference is dissolved, and Miller's application is remanded to the Primary Examiner for *ex parte* action.

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## EX PARTE MARKS.

*Decided March 4, 1904.*

1. FINAL REJECTION—OBJECTIONS TO DRAWING.

Where one of the figures of the drawing, showing an unimportant detail, was objected to in the same action in which the claims were rejected on references, *Held* that a subsequent amendment overcoming this objection and requesting a second action upon the claims places the case in condition for final rejection.

2. SAME—FORMAL OBJECTION—SUSPENSION OF ACTION.

Where the invention is understood and action upon the merits is given, *Held* that the presentation of an amendment overcoming some formal objection constitutes no reason for suspending further action upon the merits until the applicant is notified of the effect of the formal amendment.

ON PETITION.

UNDERTAKER'S COOLING-TABLE.

*Messrs. Higdon & Longan* for the applicant.

ALLEN, *Commissioner:*

This is a petition to set aside a final rejection as being improper and to direct the Examiner to enter and consider an amendment affecting the merits filed subsequent to such action.





In the first letter in the case the Examiner objected to one of the figures of the drawing, showing an unimportant detail, as being somewhat at variance with the structure shown by the other figures and then proceeded to reject the claims upon certain references which were fully explained. In answer to this letter the applicant filed an amendment on April 2, 1903, in which he amended the claims, but did not satisfactorily explain the seeming discrepancy as to the figure of the drawing above noted. On May 9, 1903, the Examiner rejected the claims on the references and for the reasons previously given in discussing them. He also called attention to the fact that the objection to this figure of the drawing had not been overcome. In answer to this the applicant filed an amendment on May 30, 1903, which convinced the Examiner that this figure of the drawing harmonized with the others. The applicant in the same amendment discussed the references, and stated: "We request a favorable action on the claims as amended." On June 23, 1903, the claims were again considered by the Examiner and finally rejected. On September 28, 1903, the applicant filed an amendment in which he sought to cancel the claims in the case, substituting a new claim therefor. This amendment not being accompanied by the verified showing why it was not earlier presented, as required by Rule 68, the Examiner refused to enter it upon October 9, 1903, and from his action this petition is taken.

The applicant's contention is that this final rejection was premature, as the Examiner should have first signified that he was satisfied with the accuracy of this figure of the drawing before finally rejecting the claims.

This position is not well taken, for the reason that if this figure did not correspond with the others it was a matter of form due to a draftsman's error. In the view taken by the Examiner he was right in requiring that this figure be satisfactorily explained to harmonize with the other figures or that it be corrected. This objection to the drawing was not one affecting the merits, for no claim was rejected on the ground that the structure covered by it was not shown in the drawings, but, on the contrary, each claim was rejected upon references which were fully explained. That the action was understood is apparent, for the applicant canceled one of his claims and amended the others in the light of these references and traversed the action of the Examiner only as to their pertinency.

This figure of the drawing was not necessary for a complete disclosure of the invention, which was readily understood without its aid. Under such circumstances the Examiner was right in proceeding under Rule 64, which states, in part:

Where the specification and claims are such that the invention may be readily understood, the examination of a complete application and the action thereon will be directed throughout to the merits; but in each letter the Examiner shall state or refer to all his objections.

His action in again considering the claims in the letter of June 23, 1903, in response to the plain request of the applicant in his amendment of June 1, 1903, to the effect that "We request a favorable action on the claims as amended," was clearly proper. That such action by the Examiner was unfavorable is no ground now to reopen the case and consider the claim in the amendment of September 28, 1903, which, however, is not accompanied by the verified showing why it was not earlier submitted.

In *ex parte Severy* (97 O. G., 2745) it was urged that an application should not be finally rejected before all formal matters were settled, such as in this case the objection to the drawing, but it was held:

All of the rules must be construed together, and when so construed the Examiner clearly has authority to finally reject the claims before all formal matters are settled, and such final rejection has as much force as if there were no controversy as to formal matters. It is merely necessary that the formal matters be disposed of before an appeal is forwarded. This subordination of formal defects to matters of merits is for the purpose of facilitating the prosecution of the case upon its merits and is believed to be founded upon good reason and to work to the interest of parties having business before the Office. The question of main interest is the merits, and the postponement of formal matters is for the purpose of preventing delay in reaching a conclusion upon that question. To permit the postponement of such matters to result in delays in settling questions of merits would be to defeat the very purpose for which the rule was adopted.

The action of the Examiner being in accordance with the rules and decisions, the petition is denied.

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## EX PARTE BAER.

*Decided March 5, 1904.*

DIVISION—BEAN-HARVESTING MACHINE—INDEPENDENT INVENTIONS.

*Held* that a cutter and gatherer, a bundle forming and discharging device, and a conveyer, each of which is used in a bean-harvesting machine, are independent inventions, and division was properly required between the claims covering the same.

ON PETITION.

BEAN-HARVESTING MACHINE.

*Mr. E. G. Siggers* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division in the above-entitled application.

The invention relates to a bean-harvesting machine. The Examiner states that in his opinion—

claims 1, 14, 21, 22 and 23 should be prosecuted in one application, claim 24 in another and claims 25 and 26 in a third.

Claims 1, 14, 21, 22, and 23 are for a cutter and gatherer, claim 24 covers a bundle forming and discharging device, and claims 25 and 26 cover a conveyer. Each of these devices is capable of general application in the art to which it belongs. In fact, the conveyer mechanism may not necessarily be used in a harvesting-machine. These three devices are regarded by inventors and manufacturers as separate subject-matters of invention, manufacture, and sale, and this fact has been recognized by this Office in its scheme of classification. The request for division was properly made. (*Ex parte Pelton*, 95 O. G., 633; *ex parte Lyons*, 101 O. G., 2078.)

The petition is denied.

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## EX PARTE EMERSON.

*Decided March 22, 1904.*

DIVISION—PETITION—APPEAL.

Petition from the Examiner's requirement for division of an application dismissed, since it is appealable in the first instance to the Examiners-in-Chief.

ON PETITION.

PRODUCTION OF SOUND-RECORDS.

*Messrs. Mauro, Cameron, Lewis & Massie* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division between certain claims of the above-entitled application.

Two of the three claims at present in the case cover an article, and the third covers an alleged process of making the article.

The Examiner has held:

The record as an article appears to constitute an alleged invention wholly distinct and aside from the particular way it is made and accordingly claims 1 and 2 are required again to be presented in an application separate and distinct from that in which claim 3 is presented.

Since this petition was taken the Supreme Court of the United States has held that the remedy for such an action as that taken by the Examiner in this case is by appeal to the Examiners-in-Chief. (*United States, ex rel. Steinmetz*, v. *Allen, Commissioner of Patents*, 109 O. G., 549.)

This petition is therefore dismissed.

## DECISIONS OF THE U. S. COURTS.

### Court of Appeals of the District of Columbia.

LIBERMAN *v.* WILLIAMS.

*Decided February 2, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION—LACK OF DILIGENCE.

*Held* that Liberman although first to conceive the invention was the last to reduce it to practice and did not exercise diligence in perfecting it, and that therefore the decision in favor of Williams as the first inventor is right.

2. SAME—SAME—SAME—WORK ON OTHER INVENTIONS.

Where Liberman did not reduce the invention to practice for nine months after his conception and during that time deliberately and intentionally put it aside while he worked upon other inventions in the same art, *Held* that he was lacking in diligence.

*Mr. John P. Croasdale* and *Mr. Cornelius D. Ehret* for the appellant.

*Mr. Chas. C. Gill* and *Mr. Wm. G. Henderson* for the appellee.

MORRIS, *J.:*

The controversy in the present case, which comes to us by an appeal from the decision of the Commissioner of Patents in an interference case in the Patent Office, is as to the question of priority of invention in an improved device for machines for the wrapping of cigars. The invention is described in this one count:

In combination with a supporting-shaft, a hollow roller loosely journaled thereon to permit of a movement transverse of the shaft, and a reciprocating rod supported by said shaft, provided at one extremity with an antifriction-wheel, and spring-actuated to engage with the inner periphery of the roller for exerting yielding pressure, substantially as described.

The Commissioner of Patents says of it and of the preceding art as follows, in his opinion:

The roller here referred to is that used in well-known cigar-wrapping machines. The roller presses the wrapper-leaf on a die which serves to cut it to the proper shape. Yielding rollers for this purpose were well known long before this invention, and spring-actuated antifriction-wheels for giving them the yielding support were old. The invention here was in placing the spring-actuated wheels inside of a hollow roller, instead of having them bear upon the tops or upon the ends.

The parties were both working upon the same invention at the same time. The appellant Liberman, who filed his application in the Patent Office on February 25, 1901, and who was the senior applicant, claimed in his preliminary statement to have conceived the invention on March 1, 1900; to have disclosed it to others on May 1, 1900; to have made a model of it on May 15, 1900; and to have reduced it to practice on December 15, 1900. The appellee Williams, who filed his application in the Patent Office on April 17, 1901, nearly two months after Liberman, and who was therefore the junior applicant, claimed in his preliminary statement to have conceived the invention on July 2, 1900, and then also to have disclosed it to others; and to have reduced the invention to practice on July 3, 1900.

As stated by the Commissioner in his opinion, the evidence fully sustains the claims of Williams in his preliminary statement, and they are virtually conceded by Liberman. If, at the same time, the claims of Liberman be conceded that he was the first to conceive the invention, but later than his rival in its reduction to practice, the controversy is reduced to the question of diligence on his part. All the tribunals of the Patent Office have held that he was wanting in diligence, and have therefore awarded judgment of priority of invention in favor of Williams. From the Commissioner's decision to that effect, Liberman has appealed.

We find no sufficient ground for a different conclusion from that reached by the Commissioner of Patents. It is conceded by the appellant that the appellee Williams conceived the invention and reduced it to practice within two days of July, July 2 and 3, of 1900. It is not very clear why the appellant Liberman might not have done the same thing. On the contrary, he would seem to have done nothing with this device, if he had the conception of it, until long after the reduction to practice by Williams. He states that, in August of 1900, he devised a solid roller with springs bearing on either end of the machine; and he applied for a patent for it in September. To this machine or device the roller of the present issue could easily have been applied; but it was not so applied. According to his own statement, he postponed the hollow roller of the present issue to the solid roller of the August and September device, because he feared that he could not get a patent for it until a patent to Williams then existing should have expired. In fact, his postponement of the hollow roller was, according to his own admission, deliberate and intentional, until he had a show to do something with his solid roller and other improvements. In such postponement he took the risk that other inventors might enter the field and nullify the effect of his earlier conception, if such earlier conception he had, by completing the invention and reducing it to practice. And this is what actually happened. His excuse for delay is insufficient in law to bar out an inventor who reduces the invention to practice before he does.

We think that the Commissioner of Patents was right in awarding judgment of priority of invention to the appellee Williams; and that his decision should be affirmed.

The clerk of the court will certify this opinion, and the proceedings in this court in the premises, to the Commissioner of Patents, according to law. Affirmed.





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| Patents | 621—No. 756,807 to No. 757,427, | inclusive. |
| Designs | 8—No. 36,871 to No. 36,878, | inclusive. |
| Trade-Marks | 40—No. 42,350 to No. 42,389, | inclusive. |
| Labels | 35—No. 10,929 to No. 10,963, | inclusive. |
| Prints | 11—No. 949 to No. 959, | inclusive. |
| Reissues | 1—No. 12,212. | |
| Total issue | 716 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 1 | .... | Nevada | .... | .... |
| Alaska Territory | .... | .... | New Hampshire | 1 | .... |
| Arizona Territory | 1 | .... | New Jersey | 26 | 1 |
| Arkansas | 3 | .... | New Mexico Ter'y | 1 | .... |
| California | 28 | .... | New York | 88 | 19 |
| Colorado | 8 | .... | North Carolina | 3 | .... |
| Connecticut | 20 | 9 | North Dakota | 2 | .... |
| Delaware | .... | .... | Ohio | 41 | 7 |
| District of Columbia | 9 | .... | Oklahoma Terri'y | .... | .... |
| Florida | 3 | .... | Oregon | 1 | 2 |
| Georgia | 3 | 1 | Pennsylvania | 47 | 4 |
| Hawaii Territory | 1 | .... | Porto Rico | .... | .... |
| Idaho | 1 | .... | Rhode Island | 2 | .... |
| Illinois | 72 | 2 | South Carolina | 2 | .... |
| Indian Territory | .... | .... | South Dakota | 2 | .... |
| Indiana | 17 | 2 | Tennessee | 2 | 2 |
| Iowa | 15 | 1 | Texas | 8 | 1 |
| Kansas | 5 | 2 | Utah | 1 | 1 |
| Kentucky | 6 | 2 | Vermont | 2 | .... |
| Louisiana | 3 | 1 | Virginia | 1 | .... |
| Maine | 4 | .... | Washington | 6 | 1 |
| Maryland | 5 | 1 | West Virginia | 8 | 1 |
| Massachusetts | 39 | 15 | Wisconsin | 17 | 2 |
| Michigan | 16 | 1 | Wyoming | 1 | .... |
| Minnesota | 21 | 1 | U. S. Army | .... | .... |
| Mississippi | 1 | .... | U. S. Navy | .... | .... |
| Missouri | 25 | .... | | | |
| Montana | 1 | .... | Total to citizens of the United States | 569 | 79 |
| Nebraska | 4 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Prints. | Countries. | Patents and Designs. | Trade Marks and Prints. |
|---|---|---|---|---|---|
| Argentina | .... | .... | Netherlands | .... | .... |
| Austria-Hungary | 3 | 1 | Newfoundland | .... | .... |
| Belgium | .... | .... | New South Wales | .... | .... |
| Brazil | .... | .... | New Zealand | 1 | .... |
| British West Indies | .... | .... | Norway | .... | .... |
| Canada | 5 | 1 | Queensland | .... | .... |
| Cape Colony | .... | .... | Roumania | .... | .... |
| Chile | .... | .... | Russia | .... | .... |
| China | .... | .... | San Salvador | .... | .... |
| Costa Rica | .... | .... | Scotland | .... | .... |
| Cuba | .... | .... | South Africa | .... | .... |
| Denmark | .... | .... | Spain | .... | .... |
| Ecuador | .... | .... | Sweden | 1 | .... |
| England | 16 | 3 | Switzerland | 2 | 2 |
| France | 11 | .... | Transvaal, South Africa | .... | .... |
| Germany | 20 | .... | Turkey | .... | .... |
| India | .... | .... | Victoria | 1 | .... |
| Ireland | .... | .... | Western Australia | .... | .... |
| Italy | .... | .... | | | |
| Japan | .... | .... | Total to citizens of foreign countries | 60 | 7 |
| Java | .... | .... | | | |
| Mexico | .... | .... | | | |

### Roster of Attorneys.

A "Roster of Attorneys," comprising an alphabetical list of such attorneys as had registered and were entitled to practice before the United States Patent Office January 20, 1904, is now ready for delivery. Price, 20 cents.

### Errors in Letters Patent.

RULE 170. * * * Mistakes not incurred through the fault of the Office, and not affording legal grounds for reissues, will not be corrected after the delivery of the Letters Patent to the patentee or his agent. * * *

### Withdrawal After Payment of Final Fee.

RULE 165. * * * When the final fee has been paid upon an application for Letters Patent, and the case has received its date and number, it will not be withdrawn or suspended from issue on account of any mistake or change of purpose of the applicant or his attorney, nor for the purpose of enabling the inventor to procure a foreign patent. * * *

### Patents to Assignees.

RULE 200. In every case where it is desired that the patent shall issue to an assignee, the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 26.) The date of the record is the date of the receipt of the assignment at the Office.

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business April 5, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Mar. 23 | Mar. 18 | 166 |
| 321 | I. Tillage, etc., and Fences | Mar. 9 | Mar. 17 | 198 |
| 148 | XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Mar. 8 | Mar. 10 | 274 |
| 137 | VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus. | Mar. 8 | Mar. 3 | 363 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Mar. 7 | Mar. 22 | 273 |
| 172 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Mar. 7 | Mar. 22 | 187 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Mar. 7 | Mar. 15 | 279 |
| 332 | X. Carriages and Wagons | Mar. 7 | Mar. 14 | 220 |
| 152 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Mar. 7 | Mar. 10 | 228 |
| 324 | XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements. | Mar. 7 | Mar. 8 | 292 |
| 232 | IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc. | Mar. 7 | Mar. 5 | 413 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Mar. 7 | Mar. 5 | 275 |
| 109 | XVI. Telegraphy and Telephony | Mar. 7 | Feb. 18 | 196 |
| 142 | IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution. | Mar. 7 | Feb. 15 | 406 |
| 308 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Mar. 7 | Jan. 28 | 489 |
| 308 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Mar. 5 | Mar. 22 | 266 |
| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Mar. 5 | Mar. 22 | 230 |
| 244 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Mar. 5 | Mar. 22 | 253 |
| 327 | XVIII. Steam-Engineering, etc | Mar. 5 | Mar. 9 | 198 |
| 290 | XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc. | Mar. 5 | Mar. 7 | 298 |
| 315 | XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers. | Mar. 5 | Mar. 5 | 295 |
| 319 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Mar. 5 | Mar. 2 | 428 |
| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Mar. 5 | Mar. 1 | 371 |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Mar. 5 | Feb. 28 | 382 |
| 113 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Mar. 5 | Feb. 1 | 406 |
| | *Between one and two months.* | | | |
| 318 | VI. Chemistry, Explosives, Fertilisers, Medicines, Sugar and Salt, Surgery, etc. | Mar. 4 | Mar. 16 | 149 |
| 126 | II. Farm Products, etc., Lubricators, Presses, etc. | Mar. 3 | Feb. 25 | 302 |

*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| 159 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and ||Photography. | Mar. 1 | Mar. 11 | 146 |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Mar. 1 | Mar. 4 | 244 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Feb. 25 | Feb. 1 | 339 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Feb. 19 | Feb. 19 | 419 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Feb. 19 | Jan. 6 | 436 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Feb. 12 | Jan. 22 | 310 |
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Feb. 8 | Feb. 23 | 287 |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Feb. 5 | Jan. 27 | 511 |
| | *Between two and three months.* | | | |
| 302 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Feb. 4 | Jan. 28 | 302 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Jan. 30 | Jan. 11 | 341 |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Jan. 16 | Dec. 10 | 510 |

Total number of applications awaiting action.....11,324

| | Under one month. | | | |
|---|---|---|---|---|
| *Designs | | Mar. 21 | Mar. 29 | 41 |
| †Trade-Marks | | Mar. 22 | Apr. 2 | 84 |
| ‡Labels and Prints | | Apr. 5 | Apr. 4 | 6 |

## Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1862, to June 30, 1897, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1861, with an appendix, July 1, 1861, to June 30, 1862. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1862, to June 30, 1863. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1863, to June 30, 1864. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1864, to June 30, 1865. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1865, to June 30, 1866. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1866, to June 30, 1867. One volume, 58 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1867, to June 30, 1868. One volume, 68 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1868, to June 30, 1869. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1869, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 96 pages. In paper covers, $1.50.

Vol. 11. Appendix No. 11, July 1, 1891, to June 30, 1892. One volume, 86 pages. In paper covers, $1.50.

Vol. 12. Appendix No. 12, July 1, 1892, to June 30, 1893. One volume, 80 pages. In paper covers, $1.50.

Vol. 13. Appendix No. 13, July 1, 1893, to June 30, 1894. One volume, 70pages. In paper covers, $1.50.

Vol. 14. Appendix No. 14, July 1, 1894, to June 30, 1895. One volume, 63 pages. In paper covers, $1.50.

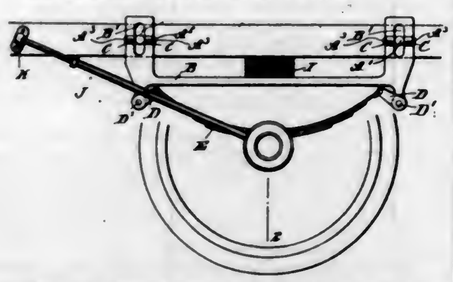
Vol. 15. Appendix No. 15, July 1, 1895, to June 30, 1896. One volume 82, pages. In paper covers, $1.50.

Vol. 16. Appendix No. 16, July 1, 1896, to June 30, 1897. One volume, 74 pages. In paper covers, $1.50.

# PATENTS

## GRANTED APRIL 12, 1904.

**756,807. VEHICLE. LAWRENCE ABRAHAM, Brooklyn, N. Y.**
Filed Jan. 29, 1904. Serial No. 191,119. (No model.)



*Claim.*—1. A means for suspending the bodies of vehicles, comprising a frame, a movable member adjacent to said frame, and a cushion mounted between the frame and said movable member.

2. A means for suspending the bodies of vehicles, comprising a frame, studs upon said frame, a movable member adjacent to said frame provided with slots to receive said studs, a spring having a yielding connection with said movable member and being further connected with the axle of the vehicle, and a cushion between said movable member and the frame.

3. A means for suspending the bodies of vehicles comprising a frame, studs on said frame, a movable member provided with slots to receive said studs, rollers mounted on said studs in engagement with the movable member, and a cushion between the movable member and the frame.

4. A means for suspending the bodies of vehicles, comprising a frame having a seat, a movable member connected with said frame and also provided with a seat, and a resilient device arranged between the seat of the frame and the seat of the movable member.

5. A means for suspending the bodies of vehicles comprising a frame, a movable member connected with said frame, a resilient device between said movable member and said frame, links pivotally connected with said movable member, and a spring connected with said links and the axle of the vehicle.

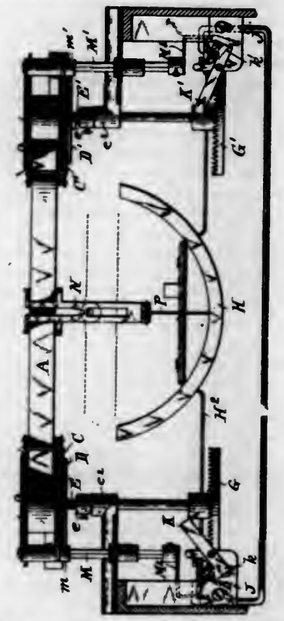
6. A means for suspending the bodies of vehicles comprising a frame, a member mounted adjacent thereto and movable vertically, means carried by the frame for guiding said member in its vertical movement, means for supporting said member, and a resilient device connecting said frame and member.

**756,808. TYPE-WRITING MACHINE, RIBBON-MOVEMENT. JAMES ALEXANDER, Brooklyn, N. Y., assignor of one-half to Arthur Letts, Los Angeles, Cal. Filed Aug. 2, 1902. Serial No. 118,064. (No model.)**

*Claim.*—1. A ribbon-reversing mechanism for type-writing machines comprising a horizontally-movable universal bar, a pawl-carrying beam united thereto, ribbon-spool-operating shafts, ratchet-wheels carried by said shafts, hinged pawls carried by said pawl-beam, and means controlled by the operation of the ribbon for automatically throwing one or the other of said pawls into engagement with its corresponding ratchet.

2. A ribbon-reversing mechanism for type-writing machines comprising a horizontally-movable universal bar, a pawl-carrying beam moved correspondingly thereby, ribbon-spool-operating shafts, ratchet-wheels carried by said shafts, hinged pawls carried by said pawl-beam, and means controlled by the operation of the ribbon for automatically throwing one or the other of said pawls into engagement with its corresponding ratchet.

3. A ribbon-reversing mechanism for type-writing machines comprising a horizontally-movable universal bar, a pawl-carrying beam united thereto, ribbon-spool-operating shafts, ratchet-wheels carried by said shafts, pawl-arms having hinged pawls carried by said pawl-beam, and means controlled by the operation of the ribbon for automatically throwing one or the other of said pawls into engagement with its corresponding ratchet.



4. A ribbon-actuating mechanism for type-writing machines comprising a vertical ribbon-spool-operating shaft, a ratchet-wheel carried thereby, a horizontally-reciprocating universal bar, a pawl-beam united thereto, a pawl carried thereby at each end adapted to engage with the teeth of said ratchet and a freely-removable rod connecting the pawls.

5. A ribbon-actuating mechanism for type-writing machines comprising a vertical ribbon-spool-operating shaft, a ratchet-wheel carried thereby, a horizontally-reciprocating universal bar, a pawl-beam united thereto, pawl-arms pivoted to said pawl-beam, and pawls carried thereby adapted to engage with the teeth of said ratchet and a freely-removable rod connecting the pawl-arms intermediate their pivots and their free ends.

6. A ribbon-operating mechanism for type-writing machines consisting of a horizontally-movable universal bar, a pair of ribbon-spools having vertical axes, ratchet-wheels corresponding thereto, a pawl-carrying beam carried by said bar and extending from side to side of the machine, a pawl-arm pivoted at each end of said pawl-beam and carrying pawls for engagement with said ratchet-wheels.

7. A ribbon-operating mechanism for type-writing machines consisting of a horizontally-movable universal bar, a pair of ribbon-spools, ratchet-wheels corresponding thereto, a pawl-carrying beam carried by said bar, a pawl-arm pivoted at each end of said pawl-beam and carrying pawls for engagement with said ratchet-wheels.

means for preventing the rearward movement of the operating ratchet-wheel and means controlled by one of said pawls for disengaging the preventing means when said pawl is disengaged.

8. In a ribbon mechanism for type-writing machines, a universal bar, a pawl-carrying beam operated by said universal bar, pivoted pawl-arms carried by said beam, ribbon-operating ratchet-wheels pivotally mounted, notched plates, catches pivoted to said plates adapted to prevent the rearward movement of a ratchet when it is being operated by a pawl, the end of a catch projecting by a notch in a plate and one end of a pawl-arm being adapted to coact therewith to release a catch when a pawl is disengaged.

9. In a ribbon mechanism for type-writing machines, a universal bar, a pawl-carrying beam operated by said universal bar, pivoted pawl-arms carried by said beam, ribbon-operating ratchet-wheels pivotally mounted, notched plates, one end of each of said pawl-arms resting in a notch of its corresponding plate so as to be held in position.

10. A ribbon-operating means comprising a pair of ratchets, means for operating the same, vertical shafts carrying said ratchets, the upper end of said shafts being square, ribbon-spools mounted on the square ends of said shafts, and means for automatically reversing the movement of said ribbon said means being operated by U-shaped frames, said frames being removably carried by the squared ends of vertical shafts.

11. A ribbon-operating means comprising a pair of ratchets, means for operating the same, vertical shafts carrying said ratchets, the upper end of said shafts being square, ribbon-spools removably mounted on the square ends of said shafts, and means for automatically reversing the movement of said ribbon said means being operated by U-shaped frames, said frames being removably carried by the squared ends of vertical shafts.

12. A ribbon-operating means for a type-writer including a pair of vertical ribbon-operating shafts, spools removably carried thereby, pawls for actuating said shafts, shifting arms for throwing one or the other of said pawls into operative position, vertical shafts for controlling said shifting arms, frames removably carried by the upper ends of said shafts having arms embracing their respective ribbon-spools and means controlled by the rotation of the ribbon-spools for operating the frames as the ribbon is unwound from one spool to the other.

13. A ribbon-operating mechanism for type-writing machines comprising, a univetsal bar, a pawl-beam carried thereby, pivoted pawls carried by said pawl-beam, vertical shafts, ratchet-wheels carried by said shafts and cooperating with said pawls, the upper end of said shafts being square, ribbon-spools removably carried thereby, and means for automatically reversing the ribbon-feed comprising pivot-frames independently of the spools but operated by the movement of the ribbon.

14. A ribbon-operating mechanism for type-writing machines comprising, a universal bar, a pawl-beam carried thereby, pivoted pawls carried by said pawl-beam, vertical shafts, ratchet-wheels carried by said shafts and cooperating with said pawls, the upper end of said shafts being square, ribbon-spools removably carried thereby, and means for automatically reversing the ribbon-feed comprising pivot-frames operated by the movement of the ribbon, said frames being removably mounted on vertical shafts.

15. A ribbon-operating mechanism for type-writing machines comprising, a universal bar, a pawl-beam carried thereby, pivoted pawls carried by said pawl-beam, vertical shafts, ratchet-wheels carried by said shafts and cooperating with said pawls, the upper end of said shafts being square, ribbon-spools removably carried thereby, and means for automatically reversing the ribbon-feed comprising pivot-frames operated by the movement of the ribbon, said frames being removably mounted on vertical shafts, and arms carried by the frame-carrying shaft to shift said pawls.

16. A ribbon-operating mechanism for type-writing machines comprising, a universal bar, a pawl-beam carried thereby, pivoted pawls carried by said pawl-beam, vertical shafts, ratchet-wheels carried by said shafts and cooperating with said pawls, ribbon-spools removably carried thereby, and means for automatically reversing the ribbon-feed comprising pivot-frames operated by the movement of the ribbon, said frames being removably mounted on vertical shafts.

17. A ribbon-operating mechanism for type-writing machines comprising, a universal bar, a pawl-beam carried thereby, pivoted pawls carried by said pawl-beam, vertical shafts, ratchet-wheels carried by said shafts and cooperating with said pawls, ribbon-spools removably carried thereby, means for automatically reversing the ribbon-feed comprising pivot-frames operated by the movement of the ribbon, and arms carried by the frame-carrying shaft to shift said pawls.

18. A ribbon-supporting construction comprising a vertical rotatable shaft, a supporting-disk carried thereby, a ribbon-spool carried by said shaft and supported by said disk, a stationary supporting-plate, a protecting-shell for said spool carried removably by said plate, means for reversing the movement of said ribbon-spool, said means being actuated by a pivoted frame, and a vertical shaft having a square end for removably carrying said frame.

19. A ribbon-supporting construction comprising a vertical rotatable shaft, a supporting-disk carried thereby, a ribbon-spool removably carried by a square end of said shaft and supported by said disk, a stationary supporting-plate, a protecting-shell for said spool carried removably by said plate, means for reversing the movement of said ribbon-spool, said means being actuated by a pivoted frame, and a vertical shaft having a square end for removably carrying said frame.

20. A ribbon-shifting mechanism comprising a vertically-movable ribbon-guide, a horizontally-movable universal bar, a pivoted arm guiding said bar at one end, a coiled spring pressing against said arm, a pivoted lever, a link for connecting said lever with said ribbon-guide said lever being directly operated by the movement of said universal bar.

21. A ribbon-shifting mechanism comprising a vertically-movable ribbon-guide, a horizontally-movable universal bar, a pivoted lever, a link for connecting said lever with said ribbon-guide said lever being directly operated by the movement of said universal bar, said ribbon-guide moving upward the same distance at all times so that the ribbon will be used on one line for one case of type and on another line for another case of type.

22. A ribbon-operating mechanism for type-writing machines comprising a horizontally-movable universal bar, a vertically-movable ribbon-guide, a pivoted lever operated by said bar, a link connecting said lever and guide, vertical ribbon-spool-carrying shafts, ratchet-wheels carried thereby, a beam carried by said universal bar, pawl-carrying arms pivoted thereto for engaging said ratchets.

23. A ribbon-operating mechanism for type-writing machines comprising a horizontally-movable universal bar, a vertically-movable ribbon-guide, a pivoted lever operated by said bar, a link connecting said lever and guide, vertical ribbon-spool-carrying shafts, ratchet-wheels carried thereby, a beam carried by said universal bar, pawl-carrying arms pivoted thereto for engaging said ratchets, and means operated by the movement of the ribbon for automatically shifting said pawl-arms.

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**756,809. SAFETY-PIN.** CHRISTIAN ANDERSEN, St. Louis, Mo., assignor to Lock Safety Pin Company, St. Louis, Mo., a Corporation of Missouri. Filed Jan. 30, 1903. Serial No. 141,097. (No model.)



*Claim.*—A safety-pin, comprising a fixed member, a movable member and a spring-coil, said movable member being provided with an eye adjacent to its point; a sheet-metal guard provided with a flaring mouth serving as a guide for the movable member, and a hook stamped from the sheet-metal guard and carried by said fixed member, adapted to be engaged into the eye formed in the movable member, substantially as specified.

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**756,810. SAFETY-PIN.** CHRISTIAN ANDERSEN, St. Louis, Mo., assignor to Lock Safety Pin Company, St. Louis, Mo., a Corporation of Missouri. Filed Nov. 9, 1903. Serial No. 180,403. (No model.)

*Claim.*—1. A safety-pin comprising a body portion, a piercing member or prong connected thereto, a sheath at one end of the body portion for receiving the point of said prong, the latter having an eye located adjacent to said point, and the body portion being extended along the wall of the sheath, and a flat locking-tongue composed of a piece independent of the body portion secured to the extension of such body portion within the sheath, and disposed in the plane of the line of draft to which the prong is subjected, substantially as set forth.



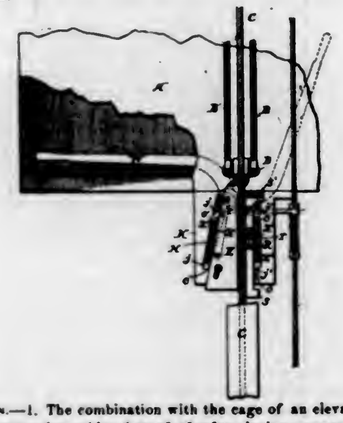
2. A safety-pin comprising a body portion, a piercing member or prong connected thereto, a sheath at one end of the body portion for receiving the point of said prong, the latter having an eye located adjacent to the point, and the body portion being extended along the wall of the sheath, and a locking-tongue formed about the extension of such body portion within the sheath, the latter having a suitable depression formed therein for the reception of the base of the tongue, substantially as set forth.



3. A safety-pin comprising a body portion, a piercing member or prong connected thereto, a sheath at one end of the body portion for receiving the point of said prong, the latter having an eye located adjacent to the point, and the body portion being extended along the wall of the sheath, and a locking-tongue composed of an independent piece of sheet metal secured to the extension of such body portion within the sheath, and disposed in the plane of the line of draft to which the prong is subjected, substantially as set forth.

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**756,811. SAFETY DEVICE FOR ELEVATORS.** MARY E. BALDWIN, Yonkers, N. Y., executrix of Cyrus W. Baldwin, deceased, assignor to the Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Sept. 27, 1900. Serial No. 31,276. (No model.)



*Claim.*—1. The combination with the cage of an elevator and with the suspension-cables thereof, of safety devices connected with said cables and means for supporting the cage upon the safety devices, and means for shifting the supports to bring the weight of the cage into action to operate the safety devices, substantially as described.

2. The combination with guides and wedges and the suspension-cables of an elevator, of a cage movable independently of the wedges, and means for shifting the connections to bring the cage into position to force the wedges against the guides, substantially as set forth.

3. The combination with the cage and guides and suspension-cables of an elevator, of wedges supported by the suspension-cables, bearings maintaining the wedges out of contact with the guides, and means for bringing the weight of the cage upon the wedges to force them against the guides, substantially as set forth.

4. The combination with the cage, guides and suspension-cables of an elevator, of wedges supported by the cables, means for holding the wedges normally out of contact with the guides, and means for bringing the weight of the cage to bear upon the wedges to force the same against the guides, substantially as set forth.

5. An elevator-cage provided with brackets having inclined faces, supporting-ropes, wedges connected to the supporting-ropes and having corresponding inclined faces, and movable supports between the wedges and the cage, substantially as set forth.

6. The combination with an elevator-cage and its supporting-ropes, of wedges connected to the supporting-ropes, movable bearings for the said wedges, brackets upon the cage having inclined faces corresponding to those of the wedges, and means within the cage for shifting said bearings, substantially as set forth.

7. The combination with the guides, supporting-ropes, and cage of an elevator, of wedges connected with the supporting-ropes, movable bearings for holding said wedges out of contact with the guides, safety-rope and connections arranged to shift said bearings, substantially as set forth.

8. The combination with the cage and guides of an elevator, of supporting-ropes, wedges connected thereto, brackets having inclined faces, rollers interposed between said faces and those of the wedges, and movable bearings for the wedges, substantially as set forth.

9. The combination with the cage, guides, supporting-ropes, and bearings connected to the cage, of wedges connected to the ropes and movable between the guides and bearings, and shoes R movably supported between the guides and bearings, substantially as set forth.

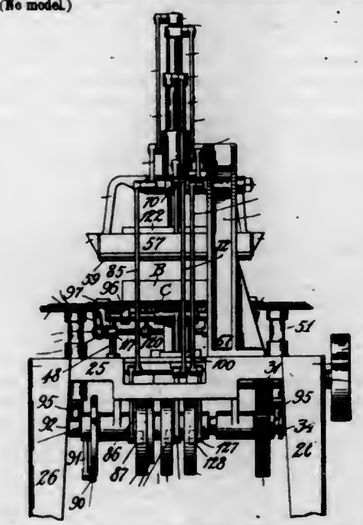
10. The combination of the cage, guides, supporting-ropes, wedges connected to the supporting-ropes, brackets having faces $x'$ $x^2$, movable connections between the wedges and the cage, shoes R, and rollers between the guides and faces $x'$, and between the wedges and faces $x^2$, substantially as set forth.

11. The combination with the cage, guides, and supporting-ropes of an elevator, of wedges connected with said ropes, a shaft supported by the cage and means for turning it within the cage, and pawls pivoted to the wedges, and bearing upon said shaft, substantially as specified.

12. The combination with the cage, guides, supporting-ropes and wedges connected with the supporting-ropes, of the guide-shoes F F, substantially as set forth.

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**756,812. MACHINE FOR COVERING PAPER BOXES.** JOSEPH BARDELLI, Springfield, Mass. Filed Apr. 13, 1903. Serial No. 152,459. (No model.)



*Claim.*—1. In a box-covering machine, the combination with a horizontal depressible support for sustaining both a covering-sheet and a box centrally disposed within the margins of such sheet, and on such sheet, and independent supports for the marginal portions of said sheet, of means for gumming the marginal portions of the sheet outlying beyond the box on said supports therefor, and means for folding opposite portions of the sheet against the box sides.

2. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, of depressible outlying end table-sections, a former adapted for movement downwardly against the central depressible table and away therefrom, and means for lifting, and permitting the lowering, of the end table-sections.

3. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, of depressible outlying end table-sections; of a former movable downwardly against the central depressible table and away therefrom, reciprocatory tuckers located below the level of the stationary side table-sections, and movable across and in planes adjacent the ends of the former on the corner portions of the covering-sheet which are

extended beyond the planes of the box ends, means for imparting their movements thereto, and means for lifting, and insuring the lowering of the said depressible end table-sections to a horizontal plane below the locations of said reciprocatory tuckers.

4. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, of depressible outlying end table-sections, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, reciprocatory inturning devices and means for imparting their movements inwardly and outwardly in a plane parallel with the top of the central depressible table, and means for operating the plunger.

5. In a box-covering machine, the combination with a central depressible table and a supporting-spring therefor, outlying opposite side stationary table-sections and depressible outlying end table-sections, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, and means for imparting the reciprocatory movements to the plunger.

6. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, depressible outlying end table-sections, vertically-guided posts on which such latter sections are supported, a cam and connections between same and said end table-sections, for elevating and lowering the same, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, and means for imparting the reciprocatory movements to the plunger.

7. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, and depressible outlying end table-sections, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, reciprocatory tucker-blades operative on the corner portions of the covering-sheet, slides on which said tucker-blades are horizontally carried, means for reciprocating said slides horizontally, and means for imparting the reciprocatory movements to the plunger.

8. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, and depressible outlying end table-sections, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, pairs of reciprocatory tucker-blades operative on the corner portions of the covering-sheet, slides on which pairs of said blades are carried, shafts 92 and 113, having meshing sectors, a cam, for imparting rocking movements to one of said shafts, connections between said shafts and the respective blade-carrying slides, and means for imparting the reciprocatory movements to the plunger.

9. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, of depressible outlying end table-sections, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, reciprocatory inturning devices supported to slide on, and in the planes of, the outlying table-sections, means for imparting their movements inwardly and outwardly in pairs at right angles to each other, and means for operating the plunger.

10. In a box-covering machine, the combination with a central depressible table and outlying opposite side stationary table-sections, and depressible outlying end table-sections, of a reciprocatory plunger movable downwardly against the central depressible table and away therefrom, a reciprocatory frame carrying gummer members movable toward and away from the said side and end table-sections, means for lifting and permitting the lowering of the end table-sections, reciprocatory inturning devices and means for imparting their movements inwardly and outwardly in a plane parallel with the top of the central depressible table, and means for operating the plunger, and means for operating the gummer-carrying frame.

11. In a box-covering machine, a main supporting-bed and an elevated support, comprising a central spring-supported depressible box-supporting table, outlying and adjacent stationary side table-sections, outlying and adjacent depressible end table-sections, a plunger 79 and means for reciprocating it, vertically-guided supports for the depressible end table-sections, and means for raising and lowering them, inturning horizontally-movable slides on the stationary and depressible side and end table-sections, tuckers movable across and adjacent the ends of the central depressible table, means for imparting reciprocatory movements to the tuckers and means for imparting approaching and separating movements to the inturning-slides, for the purposes substantially as set forth.

12. In a box-covering machine, a main supporting-bed and an elevated support, comprising a central spring-supported depressible box-supporting table, outlying and adjacent stationary side table-sections, outlying and adjacent depressible end table-sections, a reciprocatory gummer movable against and away from said outlying table-sections, a plunger 79, somewhat smaller than the dimensions of the box, and means for reciprocating it, vertically-guided supports for the depressible end table-sections, and means for raising and lowering them, inturning horizontally-movable slides on the stationary and depressible side and end table-sections, tuckers movable across and adjacent the ends of the central depressible table, means for imparting reciprocatory movements to the tuckers and means for imparting approaching and separating movements to the inturning-slides, and a second reciprocatory plunger arranged with the same axis of movement as the first-named plunger, and having somewhat greater transverse dimensions than said first plunger, for the purposes substantially as set forth.

13. In a box-covering machine, the combination with outlying table-sections normally arranged in a common horizontal plane at the opposite sides of an intermediate opening, the end pair of such sections being depressible, of slides movable parallel with the length of the stationary side table-sections, and supporting horizontal rods 97 98, at locations below said normal plane of said table-sections, pairs of tucker-blades carried substantially in parallelism on end portions of said rods, means for imparting back and forth horizontal motions to said slides, and means for raising the said end table-sections to said normal plane, and lowering the same to locations below said rods and tucker-blades.

14. In a box-covering machine, the combination with stationary side table-sections and depressible end table-sections having inturning-slides mounted thereon and having approaching and separating horizontal movements and having depending members 121, of rock-shafts having lever extensions engaging said depending members, and means for imparting rocking movements to said shafts.

15. In a box-covering machine, the combination with stationary side table-sections, and depressible end table-sections having inturning-slides mounted thereon for approaching and separating horizontal movements, of rock-shafts in rectangular arrangement, and bevel-gear-connected connections between said rock-shafts and said slides, and means for imparting rotational movements to one of said gear-connected rock-shafts.

16. In a box-covering machine, the combination with the stationary side table-sections, and end table-sections mounted for rising and lowering movements, and means for imparting such movements thereto, of end inturning-slides supported on and movable across said table-sections, and having depending members, rock-shafts in rectangular arrangement, gear-connected, and having slotted radial levers with which the depending members of the inturning-slides are engaged.

17. In a box-covering machine, the combination with the main bed having the slots therein, a central depressible table and outlying opposite side table-sections, elevated above the main bed, and depressible outlying end table-sections, also normally elevated above the main bed, of a former adapted for movement downwardly against the central depressible table and away therefrom, means for lifting and permitting the lowering of the end table-sections, the slides 99 and 100 having slotted bases and carrying the substantially parallel tucking-blades, at a level between the top of the bed, and said table-sections, shouldered bolts adjustably engaged with said slides, through the slotted bases thereof, and cam-actuated connections operatively engaged with said bolts.

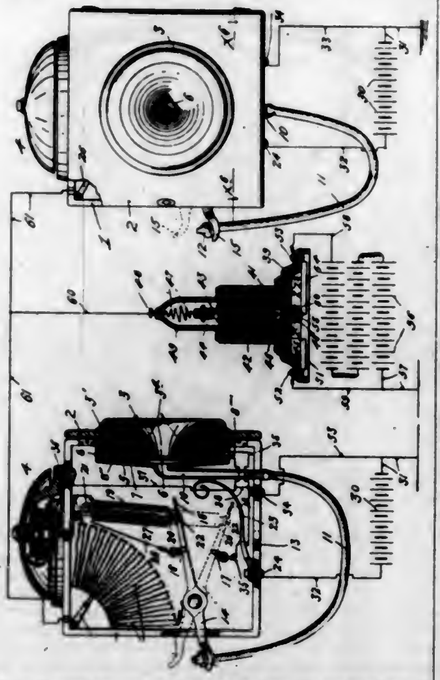
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**756,813. LONG-DISTANCE TELEPHONE SYSTEM.** MICHAEL BECK, Minneapolis, Minn. Filed Nov. 12, 1900. Serial No. 36,201. (No model.)

*Claim.*—1. In a telephone system, the combination with a pair of terminal instruments adapted to receive and transmit vocal sounds, of an intermediate instrument involving a source of electrical energy having circuit connections with the said three instruments, sources of electrical energy at the terminal instruments electrically connected therewith, and switch devices whereby the sources of electrical energy at the terminal instruments throw into action the source of electrical energy at the intermediate station, the arrangement being such that when the resistance is increased in the circuit of the one terminal instrument, the resistance in the circuit of the other terminal instrument will be decreased, and vice versa.



2. In a telephone instrument, the combination with a bell or call device and a transmitter and a receiver having a common diaphragm, of circuit connections from said bell and diaphragm to the main line, comprising a switch-lever movable to cut in and out said bell and diaphragm, in reverse order, an expansible bulb connected to said switch-lever, and a heating-coil within said bulb constituting a part of the electrical connections to said bell.

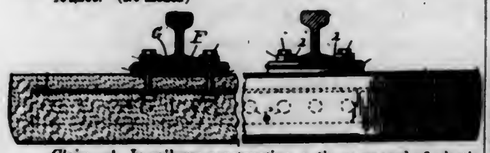


3. In a telephone system, the combination with terminal instruments involving each a bell, and a transmitter and a receiver having a common diaphragm, a local battery, circuit connections between said bell, diaphragm and battery, and a switch-lever for making and breaking said circuit connections, of an intermediate station comprising a local battery or source of energy with circuit connections to both terminal instruments, a movable contact-piece by means of which said latter circuit connection is normally broken, and a magnet operating on said contact-piece to close said circuits, which magnet is in circuit with said terminal instruments and is controlled by the switch-levers thereof.

4. In a telephone system, two telephone instruments and circuit connections therefor, each instrument involving a bell or call device, a switch, a transmitter and a receiver, said transmitter and receiver having a common diaphragm, and an automatic device actuated from the main line and operative, when thrown into action by a movement of the switch at the calling-station, to cut out the bell-circuit at the receiving-station, substantially as described.

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**756,814. RAILWAY CONSTRUCTION.** LOUIS BEEKER and MICHAEL J. BEEKER, Pittsburg, Pa. Filed July 6, 1903. Serial No. 164,269. (No model.)



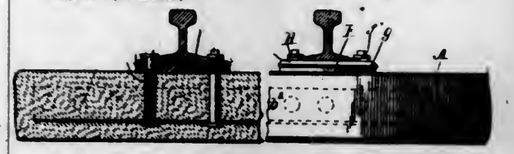
*Claim.*—1. In railway construction, a tie composed of plastic material, a metal plate embedded therein, layers of compressed elastic wood on the tie, flanged cap-plates on the said layers, rails on the cap-plates, bolts held in the tie by the metal plate, clips strung on the bolts and overlapping the rail-flanges, and means for holding the clips securely in place.

2. In railway construction, a tie composed of plastic material, a metal plate embedded therein, layers of compressed elastic wood on the tie, flanged cap-plates on said layers, rails on the cap-plates, bolts having heads beneath the metal plate, lead washers between the bolt-heads and the metal plate, and means on the bolts for fastening the rails securely in place.

3. In railway construction, a plastic material, a metal plate embedded therein, rail-securing bolts having their heads beneath the said plate, and a lead washer between the bolt-head and the plate.

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**756,815. RAILWAY CONSTRUCTION.** LOUIS BEEKER and MICHAEL J. BEEKER, Pittsburg, Pa. Filed July 6, 1903. Serial No. 164,270. (No model.)



*Claim.*—1. In railway construction, a plastic material, a soft-metal bushing therein, and a rail-securing bolt in said bushing.

2. In railway construction, a plastic material, a metal plate, and a soft-metal bushing embedded therein, the bushing having its lower portion with a larger cross-section, and a rail-securing bolt in said bushing.

3. In railway construction, a plastic material, an unthreaded soft-metal bushing secured therein, and a rail-securing bolt screwed into the bushing.

4. In railway construction, a plastic material, a metal plate and a soft-metal bushing embedded therein, metal-capped elastic bases on the plastic material, rails on the metal caps, shoulders on the caps against which the rail-flanges abut, and bolts screwed into the bushings for securely holding the clips in place.

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**756,816. RAILWAY CONSTRUCTION.** LOUIS BEEKER and MICHAEL J. BEEKER, Pittsburg, Pa. Filed July 6, 1903. Serial No. 164,271. (No model.)



*Claim.*—1. In railway construction, a plastic material, a metal plate embedded therein, bolts for securing the rails to the plastic material, nuts for the bolts, and cushions for the nuts.

2. In railway construction, a plastic material, a metal plate embedded therein, bolts for securing the rails to the plastic material, nuts for the bolts secured to the metal plate, and cushions between the plate and the nuts.

3. In railway construction, a plastic material, a metal plate embedded therein, bolts for securing the rails to the plastic material, nuts for the bolts, and a cushion between the nuts and the plastic material.

4. In railway construction, a plastic material, a metal plate embedded therein, bolts for securing the rails to the plastic material, nuts in the plastic material below the metal plate, cushions between the nuts and the plate and between the nuts and the plastic material.

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**756,817. RAILWAY CONSTRUCTION.** LOUIS BEEKER and MICHAEL J. BEEKER, Pittsburg, Pa. Filed July 6, 1903. Serial No. 164,272. (No model.)

*Claim.*—1. In railway construction, a plastic material, soft-metal sockets therein, rails, and spikes driven into the said sockets to secure the rails to the plastic material.

2. In railway construction, a plastic material, soft-metal sockets therein having exterior beads interlocking with the plastic material, and means in said sockets and in engagement with the rails to hold the latter in place on the plastic material.

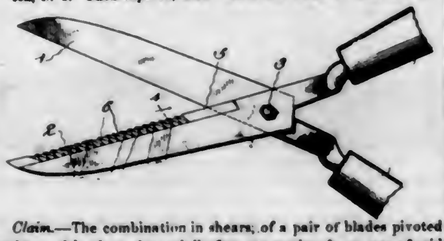
3. In railway construction, a plastic material, a metal plate embedded therein, a soft-metal socket having means engaging said plate to prevent its movement, and spikes in the sockets and in engagement with the rails to hold the latter in place on the plastic material.

4. In railway construction, a plastic material, compressed elastic wood on said material, metal cap-plates on said wood, rails on the cap-plates, soft-metal sockets in the plastic material, and spikes in the sockets and in engagement with the rails to hold the latter in place on the cap-plates.



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**756,818. CUTTING-SHEARS. George R. Benton, East Hampton, N. Y. Filed Sept. 30, 1903. Serial No. 175,200. (No model.)**



*Claim.*—The combination in shears, of a pair of blades pivoted together and having substantially flat cooperating faces, one of said blades having a smooth beveled cutting edge and the other having a beveled cutting edge provided throughout a portion of its length with forwardly-inclined sharp-pointed cutting-teeth, each tooth having its forward edge disposed substantially at right angles to the edge of the blade as whole.

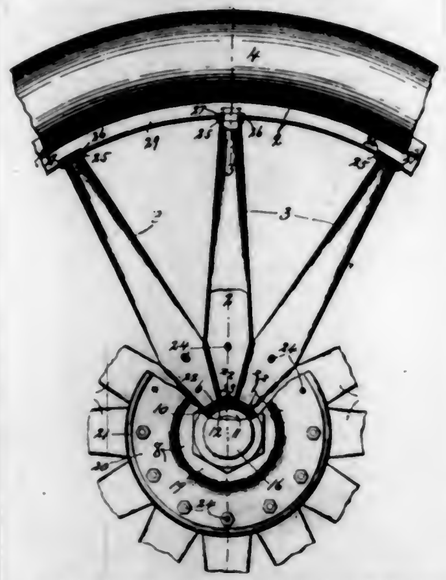
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**756,819. WHEEL. Charles H. Bigalky, Oneida, N. Y. Filed Dec. 4, 1902. Serial No. 133,900. (No model.)**

*Claim.*—1. In a wheel, the combination with separate concavo-convex sheet-metal hub-sections having their marginal edges turned over and formed into annular reinforcing-beads, spokes inserted between the sections, and means for clamping the hub-sections and spokes together.

2. In combination with the rim of a wheel, of opposite hub-sections having inclined walls, one of the sections being adjusted toward and from the other, tubular spokes inserted between the sections and provided with flaring side walls engaged by the inclined portions of the hub-sections, whereby the impinging of the inclined portions of the hub-sections against the flaring walls of the spokes operates to draw the spokes inwardly and means to adjust the movable section.

3. In combination with a rim of a wheel of a hub including a cylindrical sleeve and hollow sheet-metal sections surrounding the sleeve, one of the sections being movable toward and from the other, means to adjust and to hold the movable section, one of the sections having an inclined engaging portion for the spokes, and spokes inserted between the sections with the adjacent edges in contact, one of the side walls of the spokes flaring laterally and engaged by the inclined portion of the hub-section for drawing the spokes inwardly when the hub-sections are clamped in operative position.



4. In combination with the rim of a wheel, a cylindrical sheet metal sleeve having one end provided with a fixed annular abutment a cap closing the opposite end of the sleeve and also provided with an abutment, said cap being adjustable on the sleeve, separate sheet-metal hub-sections encircling the sleeve and engaging their respective abutments and tubular spokes inserted between the sections and having adjacent walls tapering inwardly and their side walls flared outwardly and engaged by the hub-sections, the adjacent tapering walls of the spokes being in contact with each other.

5. In combination with the rim of a wheel, a cylindrical sheet-metal sleeve having one end provided with a fixed annular abutment, a cap closing the opposite end of the sleeve and also provided with an abutment, said cap being adjustable on the sleeve, separate sheet-metal hub-sections encircling the sleeve and engaging their respective abutments and tubular spokes inserted between the sections and having adjacent walls tapering inwardly and their side walls flared outwardly and engaged by the hub-sections, the adjacent tapering walls of the spokes being in contact with each other, and clamping-bolts passed through the spokes and hub-sections for the purpose described.

6. In a wheel, the combination with a sheet-metal rim having spoke-openings elongated laterally, a sheet-metal hub forming an annular recess, tubular spokes having their inner ends inserted in the recess and expanded laterally and their outer ends inserted through the apertures in the rim and elongated laterally, said outer ends having shoulders engaging the inner and outer faces of the rim.

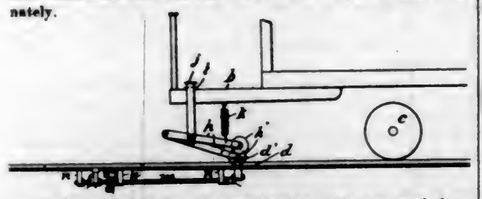
7. A sheet-metal tubular spoke for wheels, said spoke having a rectangular inner end two of its opposite walls tapering inwardly and having their inner extremities bent toward each other to form reinforcing-flanges, the two opposite walls flaring outwardly for the purpose described and the outer end of the spoke being elongated in the direction of flare of the inner end.

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**756,820. AUTOMATIC SWITCH-SHIFTER. Leon Blower, New York, N. Y. Filed Aug. 7, 1903. Serial No. 168,578. (No model.)**

*Claim.*—1. In a switch-shifter, the combination, with two tread-plates and a rock-shaft actuated thereby with connections to the switch-point for shifting the same, of a socket in the switch-point to receive a bolt, and two bolts actuated alternately by the rock-shaft to lock the switch-point in its open and closed positions.

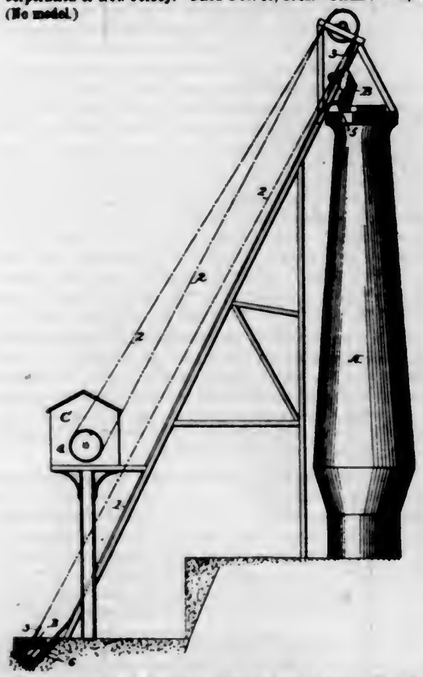
2. In a switch-shifter, the combination, with two tread-plates and a rock-shaft actuated thereby with connections to the switch-point for shifting the same, of two bell-cranks pivoted at opposite sides of the rock-shaft and provided with bolts to engage the switch-point in its open and closed positions, and an arm upon the rock-shaft connected with the said bell-cranks to operate them alternately.



3. In a switch-shifter, the combination, with two tread-plates and a rock-shaft actuated thereby, of a rack upon the switch-point, a toothed segment fitted loosely to the rock-shaft and engaging such rack, dogs secured upon the rock-shaft to oscillate the segment, two bell-cranks pivoted at opposite sides of the rock-shaft and provided with bolts to engage the switch-point in its open and closed positions, connections from the rock-shaft to such bell-cranks to actuate them alternately, and the dogs having play or lost motion in their connection with the toothed segment to permit the retraction of the bolts before the switch-point is shifted.

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**756,821. HOISTING EQUIPMENT. George W. Bollman, Pittsburg, Pa., assignor to Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Feb. 19, 1902. Serial No. 94,822. (No model.)**



*Claim.*—1. The combination with the double tracks of a lifting apparatus and with cars traveling thereon, of a cable connected to each car, means for driving the cable alternately in opposite directions, and upper and lower inclined track-sections, of lower grade diverging from the main tracks, substantially as set forth.

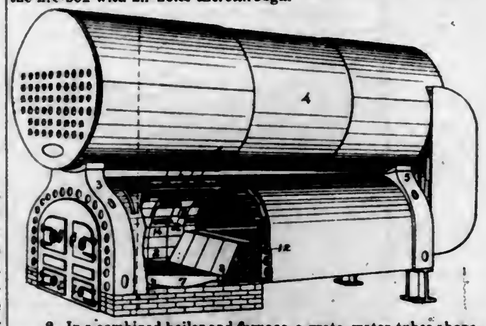
2. The combination in a hoist, of the double main tracks, upper inclined sections diverging at lower grade laterally from the main tracks, lower inclined sections diverging at lower grade in the opposite direction, cars running on the tracks and each connected near the rear with one end of a lifting-cable, and an engine driving the lifting-cable, substantially as set forth.

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**756,822. COMBINED BOILER AND FURNACE. William W. Bonnon, Dubuque, Iowa. Filed May 11, 1903. Serial No. 156,549 (No model.)**



*Claim.*—1. In a combined boiler and furnace, a grate, water-tubes above the grate, and fire-brick provided with projections and suspended from the water-tubes over the grate forming a lining for the fire-box with air-holes therethrough.



2. In a combined boiler and furnace, a grate, water-tubes above the grate, a lining for the fire-box attached to the under side of the tubes over the grate and said lining provided with openings therethrough to introduce air into the fire-box above the fuel.

3. In a combined boiler and furnace, a grate, water-tubes set over the grate, a lining for the fire-box secured beneath the water-tubes and over the grate, and projections secured to the inner side of the lining of the fire-box.

4. In a combined boiler and furnace, a grate, water-tubes set over the grate, a lining for the fire-box, projections on the inner surface of the lining, and means for introducing the air into the upper portion of the combustion-chamber.

5. In a combined boiler and furnace, a boiler provided with flues, a water-leg at each end of the boiler, water-tubes connected to both of the water-legs, a grate beneath the water-tubes, a lining covering the full length of the fire-box and secured beneath the water-tubes over the grate.

6. In a combined boiler and furnace, a boiler provided with flues, water-legs, water-tubes connected to the water-legs, a fire-box extending from the water-legs to the bridge-wall having a grate and fire-brick attached to the under side of the water-tubes over the grate and a combustion-chamber extending from the bridge-wall to the rear water-leg and provided with fire-brick over the water-tubes.

7. In a combined boiler and furnace, a boiler, fire-flues through the boiler, a water-leg at each end of the boiler, in combination with a furnace consisting of a grate, water-tubes set over the grate and connected with the water-legs, a lining set between the water-tubes and grate, and projections secured to the lining and extending into the combustion-chamber.

8. In a combined boiler and furnace, a boiler provided with fire-flues, water-legs, a grate, water-tubes set over the grate and connected to the water-legs, a lining for the combustion-chamber set between the water-tubes and grate, projections attached to the lining and means for introducing air into the combustion-chamber above the fuel.

9. In a combined boiler and furnace, a boiler provided with fire-flues, a water-leg at each end of the boiler, water-tubes connected to the water-legs and forming an arch over the furnace, a grate, fire-brick secured to and between the water-tubes forming a lining for the furnace over the grate and provided with openings through said lining, and projections attached to the fire-brick.

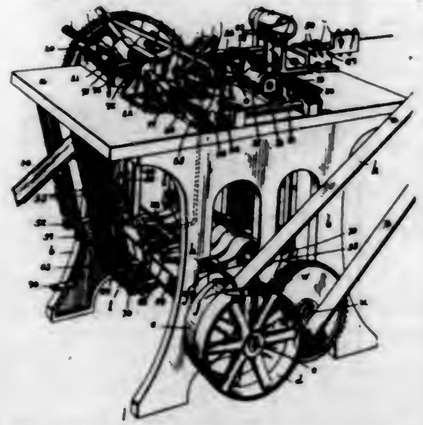
10. In a combined boiler and furnace, a boiler provided with fire-flues, a furnace having a covering formed of water-tubes and fire-brick beneath the tubes, water-legs opening into the boiler and connected together by the water-tubes which form a covering for the furnace, and a back connection providing fire communication between the furnace and the fire-flues of the boiler.

11. In a combined boiler and furnace, a boiler provided with fire-flues, a furnace provided with a grate, water-tubes with fire-brick beneath the water-tubes forming a covering for all the furnace, a water-leg at each end of the boiler connected together by the water-tubes of the furnace and means for introducing air into the furnace over the fuel.

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**756,823. WIRE-SPRING MACHINE. Charles R. Booth, Montpelier, Vt., assignor to United States Clothes Pin Company, Montpelier, Vt., a Corporation of Vermont. Filed Aug. 13, 1903. Serial No. 169,402. (No model.)**

*Claim.*—1. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide, means for applying friction to the guide from the carriage, means for imparting to the said carriage a reciprocatory motion, and means for operating the coiling device, as and for the purpose specified.



2. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide, adjustable means of applying friction to the guide from the carriage, means for imparting to the said carriage a reciprocatory motion, and means for operating the coiling device, as and for the purpose specified.

3. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide, a cam-shaft journaled in the standards, a cam thereon, a rocker-arm directly operated by said cam, a lever pivotally connected to the said rocker-arm, a second rocker-arm journaled in a suitable bearing on the table, and having pivotal connection with the upper end of the lever, a rod pivotally connected to the arm at one end and suitably connected to the carriage at the other end, and means for operating the coiling device, as and for the purpose specified.

4. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage having orifices therethrough and a threaded hole located therebetween, and traveling on a flattened guide-rail, friction-pins depending from a plate, having a thumb-screw, and extending through the said orifices to the surface of the guide-rail, means for imparting to the said carriage a reciprocatory motion, means for gripping the wire passing therethrough, and means for operating the coiling device, as and for the purpose specified.

5. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide-rail, and having a laterally-extending slot therethrough bridged by a fixed bar, a grip-bar slidably arranged in said slot and having an opening through one end thereof, and a raised portion at its other end with a pointed inner side, designed to move at intervals toward the bridge-bar, means for imparting to the carriage a reciprocatory motion, and means for operating the coiling device, as and for the purpose specified.

6. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide-rail, and having a laterally-extending slot therethrough bridged by a fixed bar, a grip-bar slidably arranged in said slot and having an opening through one end thereof, and a raised portion at its other end with a pointed inner side, designed to move at intervals toward the bridge-bar, a rod having a substantially wedge-shaped and hooked end inserted in said opening, means for imparting to the rod a reciprocatory motion, and means for operating the coiling device, as and for the purpose specified.

7. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide-rail, and having a laterally-extending slot therethrough bridged by a fixed bar, a grip-bar slidably arranged in said slot and having an opening through one end thereof, and a raised portion at its other end with a pointed inner side, designed to move at intervals toward the bridge-bar, a rod having a substantially wedge-shaped and hooked end inserted in said opening, adjustable means for regulating the length of the opening, means for imparting to the rod a reciprocatory motion, and means for operating the coiling device, as and for the purpose specified.

8. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide-rail, and having a laterally-extending slot therethrough bridged by a fixed bar, adjustable friction-pins extending through the said carriage to the guide-rail, a grip-bar slidably arranged in said slot and having an opening through one end thereof, and a raised portion at its other end with a pointed inner side, designed to move at intervals toward the bridge-bar, a rod having a substantially wedge-shaped and hooked end inserted in said opening, means for imparting to the rod a reciprocatory motion, and means for operating the coiling device, as and for the purpose specified.

9. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide-rail, and having a laterally-extending slot therethrough bridged by a fixed bar, a grip-bar slidably arranged in said slot and having an opening through one end thereof, and a raised portion at its other end with a pointed inner side, designed to move at intervals toward the bridge-bar, a rod having a substantially wedge-shaped and hooked end inserted in said opening, a rocker-arm journaled in a bearing on the table and having pivotal connection with the rod, a lever extending downwardly from the arm, means for operating the lever, and means for operating the coiling device, as and for the purpose specified.

10. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a feed-carriage traveling on a suitable guide-rail, and having a laterally-extending slot therethrough bridged by a fixed bar, a grip-bar slidably arranged in said slot and having an opening through one end thereof, and a raised portion at its other end with a pointed inner side, designed to move at intervals toward the bridge-bar, a rod having a substantially wedge-shaped and hooked end inserted in said opening, a rocker-arm journaled in a bearing on the table and having pivotal connection with the rod, a lever extending downwardly from the arm, a rocker-arm beneath the table pivotally connected to the lever and spring-held, a cam-shaft journaled in the standards, a cam, means for rotating said cam-shaft, and means for operating the coiling device, as and for the purpose specified.

11. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a gear-wheel, a pinion operated thereby for operating the coiling device, a shaft journaled in suitable bearings, and turning said wheel, a disk, a connecting-rod from the disk to the gear-wheel and reciprocally turning the latter, and means for rotating said disk, as and for the purpose specified.

12. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a gear-wheel, a shaft journaled in suitable bearings and turning said wheel, a pinion operated by said gear-wheel for operating the coiling device, a fixed collar encircling the outer end of the shaft and having an arm extending laterally, a driven shaft, and intervening means between said arm and said driven shaft for imparting to the former a reciprocatory motion, as and for the purpose specified.

13. In a machine of the class described, the combination with a table having a coiling device thereon and supported on suitable standards, of a gear-wheel, a shaft turning said wheel and journaled in said standards, a pinion operated by said gear-wheel for operating the coiling device, a fixed collar encircling the outer end of said shaft having an arm extending laterally and an elongated slot therethrough, a driven shaft, a disk fixedly secured on the same, and a connecting-rod between said disk and arm adjustably secured to the latter, as and for the purpose specified.

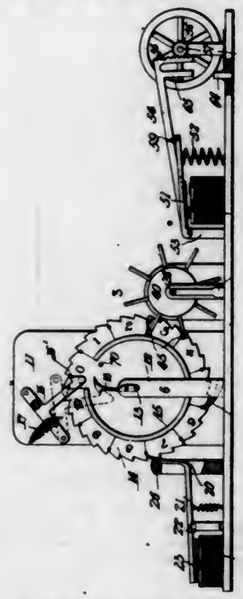
14. In a machine of the class described, in combination, a table supported on standards having suitable bearings, and having a die-case and dies slidably arranged therein, a driven cam-shaft journaled in said standards, a cam, a rocker-arm journaled thereabove having a suitable roller, a lever pivotally attached to said rocker-arm and projecting upwardly through the table, a shaft journaled in suitable bearings on the upper surface of the table, having a crank at one end thereof pivotally connected to the lever, an arm extending upwardly from the said shaft and having a projecting lower portion, and rods pivotally secured to said arms and attached to the dies, as and for the purpose specified.

15. In a machine of the class described, in combination, a table supported on standards having suitable bearings, and having a die-case and dies slidingly arranged therein, a driven cam-shaft journaled in said standards, a cam, a rocker-arm journaled thereabove and having a suitable roller, a lever pivotally attached to said rocker-arm and extending upwardly through the table, a rocker-arm journaled in suitable bearings on the upper surface of the table, and pivotally connected to said lever, a toggle-joint, having the toggles thereof attached to the said dies, and a connecting-rod from the upper rocker-arm to the joint, as and for the purpose specified.

16. In a machine of the class described, in combination, a table supported on standards, and having a shearing-knife journaled in suitable guides, a driven cam-shaft journaled in said standards, a cam, a rocker-arm journaled thereabove and having a suitable roller, a lever pivotally attached to said rocker-arm and extending upwardly through the table and connected to said shearing-knife, as and for the purpose specified.



**756,824. TELEPHONE SELECTING DEVICE. LAWRENCE R. BROCK, Celina, Ohio. Filed May 13, 1902. Serial No. 107,153. (No model.)**



*Claim.*—1. In a telephone selecting device, the combination with the main and local telephone-lines, of a step-by-step ratchet-disk and means for operating the same, an auxiliary disk operable by the ratchet-disk and having a plurality of contacts for alternately closing the circuit through the main line and through the local telephone-line to thereby insure the proper closing of the circuit after an incomplete rotative movement of said auxiliary disk.

2. In a telephone selecting device, the combination with a step-by-step ratchet-disk and means for operating the same, an auxiliary circuit-closing disk, and an adjustable means for transmitting a definite rotative movement to the auxiliary disk by a greater or less rotative movement of the ratchet-disk.

3. In a telephone selecting device, a step-by-step ratchet-disk and means for operating the same, of an auxiliary circuit-closing disk having radially-disposed arms, and projecting pins carried by the ratchet-disk for engagement with said arms.

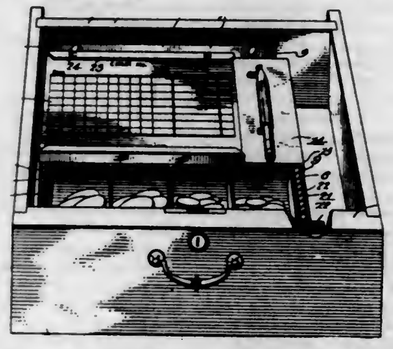
4. In a telephone selecting device, the combination with the main and local telephone-lines, of a ratchet-disk and means for operating the same, an auxiliary circuit-closing disk having a contact-spring connected in the main line, means for connecting the ratchet-disk and the circuit-closing disk to operate the latter, and a plurality of contact-blocks connected alternately in the main line and in the local telephone-line, said contact-blocks being disposed in the path of movement of the contact-spring carried by the disk.

5. In a telephone selecting device, the combination of the disk having an annular flange projecting from one face thereof and provided with an interrupted portion at the zero-mark of the disk, a switch for opening and closing the circuit between the main and the local telephone-lines, said switch having an arm movable across the path of said annular flange when the disk is in zero position, means for locking said switch in closed position, and means for automatically opening the switch on the return of the disk to zero position.

6. In a telephone selecting device, the combination of the main and local lines, of an annular series of contact-blocks connected alternately to the main and the local telephone-lines, a contact-spring carried by the disk and forming a terminal of the main line and means for rotating said disk to bring the contact-spring successively into contact with said blocks.

7. The combination with a selecting device, of a pair of electromagnets arranged in the local telephone-circuit controlled by the selecting device, an auxiliary normally open circuit including a call-bell and means for operating the same, a fixed post forming one terminal of said circuit, a pivoted arm having a finger forming the opposite terminal of said circuit, a segmental rack carried by said arm, a pinion intermeshing with the rack, a balance-wheel movable with the pinion, an armature arranged within the field of force of the electromagnets, and a spring connecting said armature to said pivoted arm.

**756,825. BARBER'S MEMORANDUM AND CASH-DRAWER. LEWIS A. BUCKLIN, Nashua, Iowa. Filed June 1, 1903. Serial No. 159,718. (No model.)**



*Claim.*—1. The combination with a longitudinally-extensible frame, of a till carried thereby, a closure slidably connected with the frame and operable for closing the till, and means for locking the closure in its closed position.

2. The combination with a casing, of a frame disposed therein and provided with a till, a closure slidably connected with the frame and operable for closing the till, said closure having an aperture, and means for locking the closure in its closed position comprising a pencil-holding member pivoted to the closure and a finger associated with the member and extending through the aperture for engagement with the wall of the till.

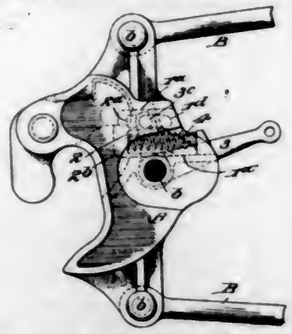
3. The combination with a casing, of a frame disposed therein and provided with outwardly-extending longitudinal flanges, a till carried by the frame, a closure-plate having downwardly and inwardly extending flanges slidably engaging the flanges on the frame, said plate being operable for normally closing the till, and means for locking the plate in its closed position.

4. The combination with a casing, of a frame disposed therein and provided with outwardly-extending longitudinal flanges, a till carried by the frame, a closure-plate having downwardly and inwardly extending flanges slidably engaging the flanges on the frame, said plate being operable for normally closing the till and provided with an aperture, and means for locking the plate in its closed position comprising a pivoted member provided with a finger extending through the aperture for engagement with the wall of the till.

**756,826. LOCK MECHANISM FOR VERTICAL-PLANE COUPLINGS. HARRY C. BURDOF, Chicago, Ill., assignor to the McConway & Torley Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Nov. 28, 1903. Serial No. 183,029. (No model.)**

*Claim.*—1. In a car-coupling, the combination with a coupler-head and its pivoted knuckle, of a horizontally-movable lock there-

for, and means whereby the unlocking movement of the knuckle tends to cause an outward movement of the lock across the path of the tail of the knuckle, substantially as and for the purposes specified



2. In a car-coupling, the combination with a coupler-head and its knuckle, of a sliding locking-block, a lever for actuating the locking-block, and means whereby an unlocking movement of the knuckle tends to cause a locking movement of the actuating-lever, substantially as and for the purposes specified.

3. In a car-coupling, the combination with a coupler-head and its pivoted knuckle, of a locking-block, and a pivoted lever for actuating the locking-block, said lever adapted to engage the locking-block back of the pivot of the knuckle and forward of its own pivot, the pivots and the point of engagement of the lever and locking-block forming an obtuse angle at the locking-block and in the plane of movement of the knuckle, substantially as and for the purposes specified.

4. In a car-coupling, the combination with a coupler-head and its pivoted knuckle, of a locking-block located within the head, a spring housed within the locking-block for projecting the locking-block, and a lever for retracting the locking-block, said lever pivoted on the coupler-head and provided with a pin adapted to enter a pin-hole in the locking-block, substantially as and for the purposes specified.

5. The combination with a coupler-head and its pivoted knuckle, of a sliding latch located within the head at one side of and parallel to the longitudinal axis of the head, and a lever for actuating the latch said lever having a member which engages the sliding latch at a point off the longitudinal axis of the sliding latch and in line with the pivot of the knuckle, substantially as and for the purposes specified.

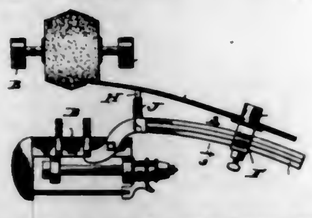
6. The combination with a coupler-head and its pivoted knuckle, of a sliding spring-pressed latch having a pin-opening on one side of the longitudinal axis of the latch, and a horizontally-movable bell-crank lever pivoted on the coupler-head and having a post or pin on one arm thereof which engages in the pin-hole of the sliding latch, substantially as and for the purposes specified.

7. The combination with a pivoted stem-coupler having a pivoted knuckle, of a sliding spring-pressed latch or lock arranged within the coupler-head on one side of the longitudinal axis thereof, and a bell-crank lever pivoted on the stem-pivot and having a member which engages the sliding-latch for actuating the same, substantially as and for the purposes specified.

8. In a car-coupling, the combination with a coupler-head and its pivoted knuckle, of a sliding locking-block having at its forward end a notch for the reception of the tail of the knuckle, and a pivoted lever for actuating the locking-block, said lever adapted to engage the locking-block back of the pivot of the knuckle and in line with the notch in the locking-block, the pivots of the knuckle and lever and the point of engagement of the lever and locking-block forming an obtuse angle at the locking-block and in the plane of movement of the knuckle, substantially as and for the purposes specified.

9. In a car-coupling, the combination with a coupler-head and its pivoted knuckle, of a sliding locking-block having a notch for the reception of the tail of the knuckle, a spring housed within the locking-block for projecting the locking-block, and a lever pivoted on the coupler-head for retracting the locking-block, said lever adapted to engage the locking-block in line with the notch therein, the pivots of the knuckle and lever and the point of engagement of the lever with the locking-block forming an obtuse angle at the locking-block and in the plane of movement of the knuckle, substantially as and for the purposes specified.

**756,827. GRINDER FOR HARROW-DISKS.** FRANKLIN P. BURKHARDT, Chicago, Ill., assignor to the Warder, Bushnell & Glessner Company, Chicago, Ill., a Corporation of Ohio. Filed Sept. 8, 1902. Serial No. 122,484. (No model.)



*Claim.*—1. In an apparatus for grinding harrow-disks, the combination with a frame, a grinding-tool mounted therein and means for operating said tool, of a support upon which the disk to be ground is loosely mounted for free rotation, and yielding means also mounted upon said frame arranged to bear against one side or face of the disk to be ground to yieldingly press the opposite side or face of said disk against the grinder-tool, as and for the purpose set forth

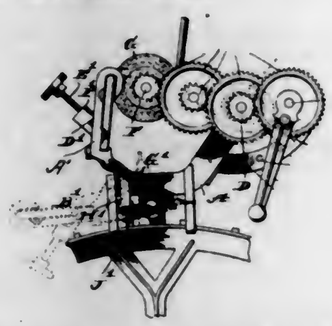
2. In an apparatus for grinding harrow-disks, the combination with a grinder-frame having an arm, a grinding-tool journaled in said frame, and means for rotating said tool, of a stud adjustably mounted upon said arm and forming a support upon which the disk to be ground is supported for free rotation, and an arm yieldingly mounted upon said frame and arranged to bear against the disk to be ground, whereby said disk is yieldingly pressed into engagement with the grinder-tool, as and for the purpose set forth.

3. In an apparatus for grinding harrow-disks, a grinding-tool, and means for operating the same, in combination with a fixed stud upon which the disk to be ground is loosely mounted to revolve, and means arranged to bear against the disk for yieldingly pressing the disk toward the grinding-tool, as and for the purpose set forth.

4. In an apparatus for grinding harrow-disks, a grinding-tool, and means for operating the same, in combination with means for rotatively supporting the disk to be ground, and means for yieldingly engaging the side or face of the disk to yieldingly press the opposite side or face of said disk toward the grinding-tool, as and for the purpose set forth.

5. In an apparatus of the class described, a frame, a stud mounted thereon and upon which the disk to be ground is mounted to rotate, an arm mounted on said frame, and means for pressing said arm yieldingly against the face or side of the disk, and a grinding-tool against which the opposite side or face of the disk bears, and means for rotating said grinding-tool, all combined and arranged as and for the purpose set forth.

**756,828. SICKLE-GRINDER.** FRANKLIN P. BURKHARDT, Chicago, Ill., assignor to the Warder, Bushnell & Glessner Company, Springfield, Ohio, and Chicago, Ill., a Corporation of Ohio. Filed Sept. 8, 1902. Serial No. 122,485. (No model.)



*Claim.*—1. In a sickle-grinder, a main frame, a grinder-frame pivotally mounted therein, a drive-shaft arranged out of line with the axis upon which the grinder-frame is pivoted, a cam mounted on the pivotal axis of the grinder-frame, a grinder mounted in said grinder-frame, gearing actuated by said drive-shaft for rotating said grinder, and gearing also actuated by said drive-shaft for rotating said cam, said cam arranged to engage said grinder-frame, whereby



vibratory movements are imparted to said frame, as and for the purpose set forth.

2. In a sickle-grinder, a main frame, a shaft mounted therein, a grinder-frame journaled upon said shaft, a cam mounted upon said shaft and arranged to engage said grinder-frame, and an independent drive-shaft, and gearing actuated by said drive-shaft for rotating said grinder, and detachable gearing also actuated by said drive-shaft for rotating said cam, as and for the purpose set forth.

3. In a sickle-grinder, a main frame, a grinder-frame pivotally mounted thereon and carrying a grinder, a drive-shaft journaled in said main frame and independent of the pivotal axis of said grinder-frame, gearing actuated by said drive-shaft for driving said grinder, a cam journaled upon the axis of pivotal mount of said grinder-frame and arranged to engage the latter, gearing intermediate said cam and drive-shaft for rotating the former, and means for vertically adjusting the position of the grinder-frame, as and for the purpose set forth.

4. In a sickle-grinder, a main frame provided with an extension, said extension having a series of holes therein, a grinder-frame pivotally supported upon said main frame and having an extension beyond its point of pivotal connection to said main frame, a pin adapted to be mounted in any one of the holes in the extension of said main frame and arranged to engage said grinder-frame extension to adjustably regulate the position of said grinder-frame, a grinder mounted in said grinder-frame, and gearing for rotating the same, as and for the purpose set forth.

5. In a sickle-grinder, a main frame, a shaft mounted therein, a grinder, a supporting-frame therefor, said grinder-frame being journaled to swing upon said shaft, a yoke carried by said grinder-frame, a cam mounted upon said pivot-shaft and arranged to engage said yoke, a drive-shaft journaled in said main frame, intermeshing gears respectively mounted upon said drive and pivot shafts, whereby said cam is driven from said drive-shaft, and a train of gearing actuated by said drive-shaft for rotating said grinder, as and for the purpose set forth.

6. In a sickle-grinder, a main frame, a shaft mounted therein, a grinder, a supporting-frame therefor, said supporting-frame mounted to rock or swing upon said shaft, said main frame provided with an extension beyond said shaft, a drive-shaft journaled in said extension, a cam mounted upon said pivot-shaft and arranged to engage said grinder-frame, gearing actuated by said drive-shaft for rotating said cam, and a train of gearing also actuated by said drive-shaft for rotating the grinder, and means for adjusting the position of said grinder-frame with reference to said pivot-shaft, as and for the purpose set forth.

7. In a machine of the class described, a grinder and means for operating the same, in combination with a work-holder comprising a holder-frame, a clamping device carried thereby, and a tension device operating to hold said frame pressed toward the grinder, and also, when sufficiently rocked, away from said grinder, as and for the purpose set forth.

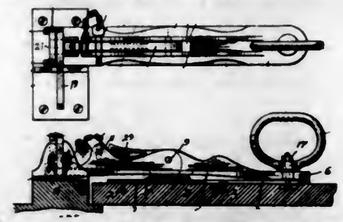
8. In a machine of the class described, a sickle-grinder and means for operating the same, in combination with a work-holder comprising a pivotally-mounted frame, means for yieldingly drawing said frame into position for the work to be engaged by the grinder, said means also operating to hold said frame away from the grinder when sufficiently rocked, and means for adjustably limiting the extent of movement of said frame toward the path of operation of the grinder: as and for the purpose set forth.

9. The combination with a frame, a grinder mounted therein, means for actuating the same, a pivoted work-holder, a spring respectively connected to said frame and holder and so relatively arranged that when said holder is rocked the point of connection of said spring thereto passes the dead-center line of pull of said spring, as and for the purpose set forth.

10. In a machine of the class described, a sickle-grinder and means for operating the same, in combination with a work-holder comprising a clamping set-screw, a frame through which said set-screw is tapped, said frame arranged to be swivelly supported to permit angular adjustment of said set-screw, as and for the purpose set forth.

11. In a sickle-grinder, a main frame, a grinder-frame pivotally mounted therein, a drive-shaft arranged out of line with the axis upon which the grinder-frame is pivoted, a cam mounted on the pivotal axis of the grinder-frame, a grinder mounted in said grinder-frame, gearing actuated by said drive-shaft for rotating said grinder, and independent gearing also actuated by said drive-shaft for rotating said cam, said cam arranged to engage said grinder-frame, whereby vibratory movements are imparted to said frame, as and for the purpose set forth.

**756,829. DOOR-FASTENING DEVICE.** CHARLES CADWALLADER, Ridgeville, Ind. Filed Apr. 24, 1903. Serial No. 154,157. (No model.)

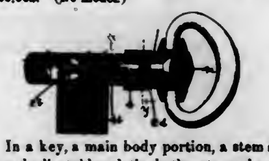


*Claim.*—1. A door-fastening device having, in combination, a plate secured to the door, a hasp over said plate and pivoted at its inner end thereto, flanges rising from said hasp with a slot through the hasp between said flanges, a cam-lever pivoted by and between said flanges with the cam thereof adapted to enter said slot, a pin adapted to be inserted through holes in said flanges to hold said cam-lever closed, an eyepiece on the end of said hasp with an opening therethrough, a plate secured to the door-jamb with a retainer projecting out therefrom, a bracket for supporting said retainer, and a handhold at the inner end of the device, all substantially as shown and described.

2. A door-fastening device having a plate secured horizontally on the face of a door near one edge thereof, a hasp pivoted at its inner end over said plate with a slot formed therethrough near the center thereof, a flange formed on each side of said slot rising from said hasp, a cam-lever pivoted between said flanges with the cam adapted to enter said slot and engage said plate, means for pivoting said cam-lever between said flanges, a retainer secured to the door-jamb for engaging said hasp, and a handhold extending out from the pivoted connection of the hasp with the plate, all substantially as shown and described.

3. A door-fastening device having, in combination, a plate secured to the door, a hasp pivoted to said plate, a handhold extending out from said pivotal connection, flanges rising from the face of said hasp with a slot through the hasp between said flanges, a cam-lever pivoted between and carried by said flanges, means for rocking said cam-lever to cause it to engage or disengage said plate, a plate secured to the door-jamb and opposite said plate on the door, a retainer projecting out from said plate on the door-jamb, and a bracket for supporting said retainer, all substantially as shown and described.

**756,830. ADJUSTABLE KEY.** CHARLES J. CALEY, New Britain, Conn., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn., a Corporation of Connecticut. Filed Jan. 19, 1904. Serial No. 189,662. (No model.)



*Claim.*—1. In a key, a main body portion, a stem slidably supported thereby, and adjustable relatively thereto, and means extending longitudinally through said stem for locking said parts against movement relatively to each other, said means being operative from the handle end of the key.

2. An adjustable key comprising a main body portion, a telescopic stem, a loop-like bow and a setting member having a head within said bow, substantially as described.

3. In a key, a main body portion, a telescopic stem slidably mounted therein, means for holding said parts against independent rotation, spring-jaws on one of said parts arranged to coact with the other part and means for operating said jaws for locking said parts against longitudinal movement.

4. In a key, a main body, a telescopic stem adjustably mounted therein, means for locking said parts against independent rotation, jaws on the inner end of said stem and manually-operated means for expanding said jaws and locking said parts against independent longitudinal movement in their various adjustments.

5. In a key, a shank adjustable as to length, said shank comprising a tubular body and a stem telescopically mounted therein, jaws at the inner end of said stem, a pin-wedge passing through said stem and arranged to operate said jaws and a handle for said pin wedge accessible at the outer end of said stem.

**756,831. CUT-OFF-OPERATING ENGINE AND VALVE MECHANISM.** PRETE B. CLARKE, New York, N. Y. Filed Jan. 4, 1901. Renewed Feb. 9, 1904. Serial No. 192,846. (No model.)



*Claim.*—In a device of the class described, the combination with a steam-cylinder, of a steam-chest provided with ports in communication with the cylinder, a valve disposed in said steam-chest, a piston in the cylinder, a piston-rod connected to said piston, a valve-stem connected to the valve, a guide-block carried by the piston-rod and provided with a slot extending transversely of the piston-rod, a floating lever having one end adjustably connected to the slotted block and pivotally connected to the valve-stem, and an adjustable valve-operating means connected to said floating lever and forming when adjusted to either position, a fixed fulcrum for said lever to thereby permit the closing of the valve by the movement of the piston and its rod.

**756,832. METHOD OF FORMING CAN-BODIES.** FRANCIS D. CLEVELAND, Winchester, Mass. Filed June 27, 1903. Serial No. 163,290. (No model.)

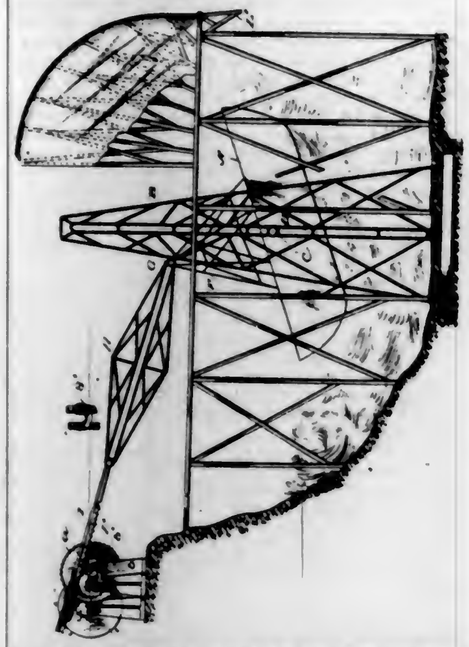


*Claim.*—1 The method of forming a can-body from a blank of sheet metal, which consists in bending said blank in a curvilinear form; fastening the two opposite ends together to form a ring; forming upon each end of said ring a flange projecting laterally therefrom; and then forming said ring into the desired final shape and dimensions by the application of pressure outwardly from the interior thereof.

2. The method of forming a can-body from a blank of sheet metal, which consists in bending said blank in a curvilinear form; fastening the opposite ends together to form a ring; forming upon each end of said ring a flange projecting laterally therefrom; and then forming said ring into the desired final shape and dimensions of a can-body by the application outwardly of pressure from the interior thereof until the metal composing said ring is elongated, so that the distance therearound is increased.

**756,833. WAVE-MOTOR.** MELVIN D. COMPTON, New York, N. Y. Filed May 14, 1903. Serial No. 157,146. (No model.)

*Claim.*—1. The combination of a float having a bodily vertical movement and an endwise vertical movement, means for converting such movements of the float into other forms of energy, and means for protecting the float from submergence or unusual violence of the waves, substantially as specified.



2. The combination of an oscillating float, means coacting with the float for converting its movements into other forms of energy, and means for protecting the float from submergence or unusual violence of the waves, substantially as specified.

3. The combination of a support, a float disposed relatively to said support and having a reciprocatory and a rocking movement, means coacting with the float for converting its movements into other forms of energy, and means for protecting the float from submergence or unusual violence of the waves, substantially as specified.

4. The combination of a support, a float having bodily vertical movement and an endwise vertical movement, means for converting such movements of the float into other forms of energy, and a shield or breakwater mounted on the support and adapted to protect the float from submergence or unusual violence of the waves, substantially as specified.

5. The combination of a support provided with ways, a float having pivotal bearings adapted to said ways, the arrangement being such that the float is free to rock and otherwise follow the rising and falling motion of the waves, means coacting with said float for converting its movements into other forms of energy, and a shield or breakwater mounted on the support and adapted to protect the float from submergence or unusual violence of the waves, substantially as specified.

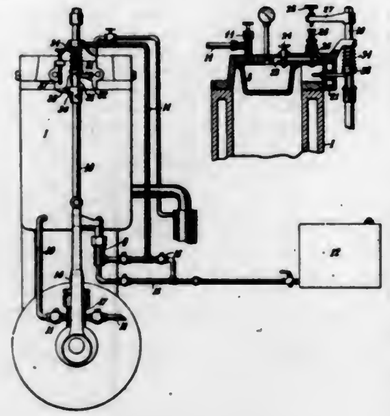
6. In an apparatus for utilizing wave or tidal power, the combination of an oscillating float, and a shield or breakwater adapted to protect the same from submergence or unusual violence of the water, substantially as specified.

7. The combination of a centrally-rocking float, a standard for said float, means for transforming the rocking motion of the float into rectilinear, a pair of oppositely-toothed rods engaging with corresponding ratchet-wheels, and intermediate gears for insuring a uniformly-directed circular motion, substantially as specified.

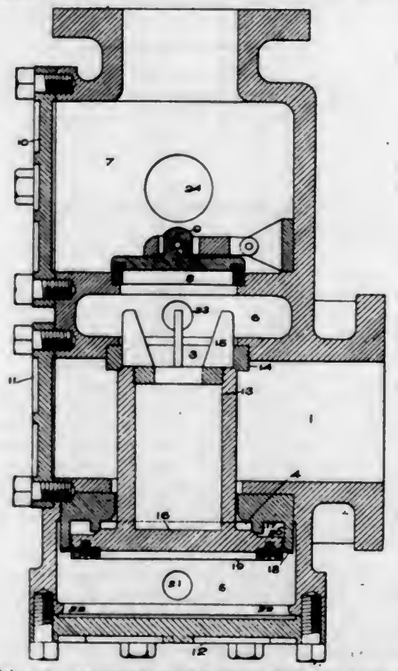
**756,834. VAPORIZER FOR EXPLOSIVE-ENGINES.** JULIAN F. DRUMMOND, New Haven, Conn. Filed Mar. 30, 1903. Serial No. 150,054. (No model.)

*Claim.*—In a hydrocarbon explosion-engine, the combination of an explosion-chamber, a piston working therein, a retort at one end of the explosion-chamber directly exposed to the products of the explosions, means for maintaining in the retort a supply of vaporized hydrocarbon considerably in excess of the amount required for a single charge, means for delivering to the explosion-chamber fuel for the charge from the maintained supply, a storage-reservoir having a valved connection with the retort, and an exhaust-pipe extending from the explosion-chamber and inclosing a portion of the storage-reservoir connection, whereby the hydrocarbon vapor passing to the reservoir will be subjected to the heat of the exhaust, as set forth.





**756,835. AUTOMATIC VALVE FOR FIRE-EXTINGUISHERS.** JOHN H. DERBY, Brookline, Mass., assignor to Eastern Fire Protection Company, a Corporation of Maine. Filed Feb. 12, 1903. Serial No. 143,013. (No model.)



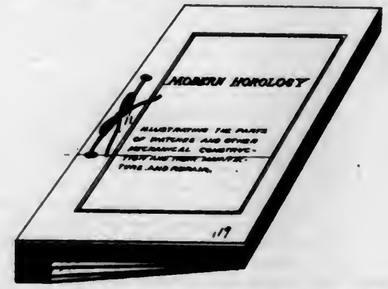
*Claim.*—1. An automatic valve for fire-extinguishers, having, in combination, a pipe system, an air-pressure chamber, a water-chamber located between the pipe system and the air-pressure chamber provided with a water-inlet and two oppositely-disposed valve-openings one of which comprises a water-outlet into the pipe system and the other of which communicates with the air-pressure chamber, and a valve member normally closing said opposite openings, the size of said valve member being not less at any portion thereof than its size at the outlet-opening, whereby no portion of the valve member is exposed to a pressure of water tending to close the valve, substantially as described.

2. An automatic valve for fire-extinguishers, having, in combination, an air-pressure chamber, a water-chamber provided with a water-inlet and two oppositely-disposed valve-openings which comprise a water-outlet and a connection with the air-pressure chamber, a valve member normally closing said opposite openings the size of the valve member being not less at any portion thereof than its size at the outlet-opening, a connection between the pipe system and the air-pressure chamber, and a check-valve in the pipe system between the water-outlet and the said connection with the air-pressure chamber, substantially as described.

3. An automatic valve for fire-extinguishers, having, in combination, an air-pressure chamber, an atmospheric chamber, a water-chamber provided with a water-inlet and oppositely-disposed openings into the air-pressure chamber and the atmospheric chamber, the latter opening comprising an outlet, a connection between the pipe system and the air-pressure chamber, a check-valve between the atmospheric chamber and the pipe system, and a valve member normally closing the said oppositely-disposed openings and preventing communication between the air-pressure chamber and the atmospheric chamber, the part of the valve member between the said openings being substantially cylindrical, one end of the cylindrical portion being closed, and the size of the valve member being not less at any point than its size at the outlet-opening, substantially as described.

4. An automatic valve for fire-extinguishers, having, in combination, a water-chamber provided with a water-inlet and two oppositely-disposed round valve-openings one of which comprises an outlet, and a valve member comprising a hollow cylindrical portion closing the outlet and extending through the other opening, and a plate secured to the cylinder and closing the latter opening, the size of the valve member being not less at any point than its size at the outlet-opening, substantially as described.

**756,836. INSTRUCTION-SHEET.** OMAR C. DE SELMS, Attica, Ind. Filed Nov. 10, 1903. Serial No. 180,513. (No model.)




*Claim.*—1. An instruction-sheet having a series of bodies physically illustrating a single composite whole arranged in a progressive order, worded information accompanying each of said bodies printed on the sheet and lines dividing the sheet into separate spaces for each body and description.

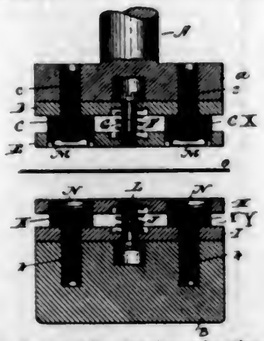
2. An instruction-sheet having a series of bodies physically illustrating a single composite whole arranged in a progressive order, worded information accompanying each of said bodies at the right-hand side thereof on said sheet, a printed line separating the column of bodies from the column of information and cross-lines separating each body and its description from those above and below.

3. An instruction-sheet divided by lines into three longitudinal sections or columns the middle and right-hand columns divided by transverse lines into sections, bodies secured in the sections of the middle column and information relative to each body printed in the horizontal section opposite it.

4. A plurality of instruction-sheets each having a series of bodies physically illustrating a single composite whole arranged in a progressive order, worded information accompanying each of said bodies and printed on said sheet, perforations through the left margins of the sheets, perforated spacing-strips laid between the perforated edges of the adjacent sheets and a bonding-cord passed through the perforations and having their ends removably secured together.

5. A plurality of instruction-sheets each having bodies secured thereto and descriptions of said bodies thereon, said sheets having marginal perforations, perforated spacing-strips between the sheets and a cord binding the parts together.

**756,837. ASSEMBLING, FORMING, AND SETTING MECHANISM.** WILLIAM P. DEVINE, Boston, Mass., assignor to the Consolidated Fastener Company, Portland, Me. Filed Nov. 18, 1900. Serial No. 36,725. (No model.)



*Claim.*—1. In assembling, forming and setting mechanism, the combination of the two spring-actuated stock-gripping perforated plates, with a plurality of fastener-setting dies, said plates normally projecting beyond the plane of the face of the dies, said plates and dies operating in opposition to each other, the plates being yieldable relatively to the dies.

2. In assembling, forming and setting mechanism, the combination of the two spring-actuated stock-gripping perforated plates, with a plurality of fastener-setting dies, said plates normally projecting beyond the plane of the face of the dies, said plates and dies operating in opposition to each other, the plates being yieldable relatively to the dies, means being provided for holding the plate against removal independently of the dies operating therewith.

3. In assembling, forming and setting mechanism, the combination of the spring gripping-plate E and the spring gripping-plate H, said plates having flat opposing surfaces, with the dies C C, K K, means being provided for holding the plates against removal independently of the dies operating therewith, whereby the normal relative positions of the dies and plate of the respective sides will be maintained when being removed.

4. In assembling, forming and setting mechanism, a die-holder having a yielding perforated gripping-plate, and a plurality of dies removably carried by said holder and adapted to be extended through said plate, said holder having means for maintaining the plate against removal independently of the dies, whereby the normal relative positions of the dies and plate will be maintained when being removed.

5. In assembling, forming and setting mechanism, the combination of duplicate opposing die-holders, each having a spring-actuated stock-gripping perforated plate, and complemental dies carried by the holders and adapted to operate through the perforations of the plates, means being provided for holding the plate against removal independently of the dies operating therewith, whereby the normal relative positions of the dies and plate of the respective sides will be maintained when being removed.

**756,838. HAIR-WAVER.** ALBERTUS DEEB, Newark, N. J. Filed May 12, 1903. Serial No. 156,731. (No model.)



*Claim.*—1. A hair-waver, comprising, a pair of side members and closing end members at the respective ends of said side members, all being integrally connected and arranged to provide an open space between said members, and a reinforcing means extending at an angle across said open space and having its ends integrally connected with said side members, substantially as and for the purposes set forth.

2. A hair-waver, comprising, a pair of side members and closing end members at the respective ends of said side members, all being integrally connected and arranged to provide an open space between said members, and a centrally-disposed cross-bar extending at an angle across said open space having its ends integrally connected with said side members, substantially as and for the purposes set forth.

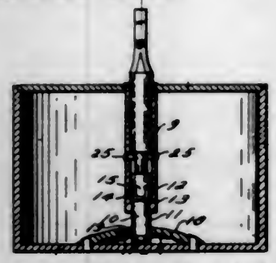
3. A hair-waver, comprising, a pair of side members and closing end members, a flexible band attached to one of said end members, a reëntrant angle at the other end member, all being integrally connected and arranged to provide an open space between said members, and a reinforcing means extending at an angle across said open space and having its ends integrally connected with said side members, substantially as and for the purposes set forth.

4. A hair-waver, comprising, a pair of side members and closing end members, a flexible band attached to one of said end members, a reëntrant angle at the other end member, all being integrally connected and arranged to provide an open space between said members, and a centrally-disposed cross-bar extending at an angle across said open space having its ends integrally connected with the said side members, substantially as and for the purposes set forth.

5. A hair-waver, comprising, a pair of side members 2 and 3, a closing end member 4 at the one end of the waver, and a reëntrant angle at the other end of the waver, all being integrally connected and arranged to provide a hair-waver having closed ends and formed with an open space between said closed ends and the side members over which the hair is arranged to provide a free circulation of air between the strands of hair to prevent heating or sweating, the said reëntrant angle extending into the said open space between the said side members, and adapted to receive a holding-band for retaining the hair in a flat body when rolled over the side members, substantially as and for the purposes set forth.

6. A hair-waver, comprising, a pair of side members 2 and 3, a closing end member 4 at the one end of the waver, and a reëntrant angle at the other end of the waver, all being integrally connected and arranged to provide an open space between said closed ends and the side members over which the hair is arranged to provide a hair-waver having closed ends and formed with a free circulation of air between the strands of hair to prevent heating or sweating, the said reëntrant angle extending into the said open space between the said side members, and a holding-band attached to the said closing end member 4, and a loop on said band adapted to be sprung into said reëntrant angle for retaining the hair in a flat body when rolled over said side members, substantially as and for the purposes set forth.

**756,839. LOCK.** JAY D. EDWARDS, Chicago, Ill., assignor to Edwards-Metzel Manufacturing Company, Chicago, Ill. Filed Sept. 2, 1903. Serial No. 171,502. (No model.)



*Claim.*—1. In a device of the class described, the combination of a receptacle open at one end; a cover fitting said open end; a tube rigidly secured to said cover, extending through same and into said receptacle; a cam-plate secured within the receptacle; a dog rotatably secured to the lower end of said tube; a key adapted to be inserted into said tube and to engage said dog for the purpose of rotating same; and a lug on the dog adapted to engage said cam-plate and through the rotation of said dog, lock said cover in position, substantially as described.

2. In a device of the class described, the combination of a hollow receptacle open at one end; a cover fitting said open end and having a tube extending through same and into said receptacle; a cam-plate secured to the bottom of said receptacle and having a downwardly-disposed spiral cam-surface; a dog rotatably secured to the lower end of said tube; and a lug on said dog adapted to engage said cam-surface and through rotation of said dog lock said cover in position, substantially as described.

3. In a device of the class described, the combination of a hollow receptacle open at one end; a cover fitting said open end and having a tube extending through same and into said receptacle; a cam-plate secured to the bottom of said receptacle and having a downwardly-disposed spiral cam-surface; a dog rotatably secured to the lower end of said tube; a lug on said dog adapted to engage said cam-surface and through rotation of said dog lock said cover



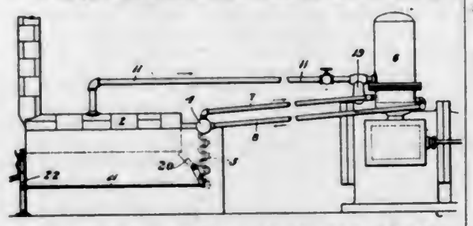
in position, and a stop on said cam-plate adapted to limit the rotation of said dog when in engagement with said cam-surface.

4. In a device of the class described, the combination of a hollow receptacle open at one end; a cover fitting said open end and having a tube extending through same and into said receptacle; a cam-plate secured to the bottom of said receptacle and having a downwardly-disposed spiral cam-surface; a dog rotatably secured to the lower end of said tube; and a lug on said dog adapted to engage said cam-surface and through rotation of said dog lock said cover in position, said cam-surface having therein a recess adapted to confine said lug when said dog is turned to its locking position and to resist the unlocking movement of said dog, substantially as described.

5. In a device of the class described, the combination of a hollow receptacle open at one end; a cover fitting said open end and having a tube extending through same and into said receptacle; a cam-plate secured to the bottom of said receptacle and having a downwardly-disposed spiral cam-surface; a dog rotatably secured to the lower end of said tube; and a lug on said dog adapted to engage said cam-surface and through rotation of said dog lock said cover in position; said cam-surface having therein a recess adapted to confine said lug when said dog is turned to its locking position and to resist the unlocking movement of said dog, one of the ends of said receptacle being of resilient material and serving as a spring for drawing said dog into said recess, substantially as described.

6. In a device of the class described, the combination of a receptacle open at one end; a cover fitting said open end; a tube extending through said cover and into said receptacle, and having an inner annular shoulder extending around the lower end of said tube; a dog extending through the lower end of said tube and having an enlarged head adapted to engage said shoulder and prevent said head from being drawn downwardly out of said tube; a key adapted to be inserted into said tube and to engage said head for the purpose of rotating same; a cam-plate secured to the bottom of said receptacle and having a downwardly-disposed spiral cam-surface; a dog rotatably secured to the lower end of said tube; and a lug on said dog adapted to engage said cam-surface and through rotation of said dog lock said cover in position, substantially as described.

**756,840. SUPERHEATING APPARATUS.** WILLIAM S. ELLIOTT, Pittsburg, Pa. Filed June 27, 1899. Serial No. 722,001. (No model.)



*Claim.*—1. In apparatus for superheating steam, the combination of a furnace, a main steam-generator therein, a consuming device provided with a superheating-chamber, and an auxiliary steam-generator provided with circulating-conductors extending into the path of the furnace-gases in their course to the main steam-generator, substantially as set forth.

2. The combination of a main steam-generator communicating with a consuming device, and an auxiliary steam-generator placed in the furnace-gases of the said main generator and in communication with a superheating device adapted to impart heat to the consuming device.

3. In apparatus for superheating steam, the combination of a furnace, a main steam-generator therein, a consuming device provided with a superheating-chamber, connections between the main steam-generator and the consuming device, an auxiliary steam-generator provided with circulating conductors extending into the path of the furnace-gases in their course to the main generator, and connections from the auxiliary steam-generator to the superheating-chamber of the consuming device, substantially as set forth.

4. In apparatus for superheating steam, the combination of a furnace, a main steam-generator therein, with connections to a steam-consuming device, and an auxiliary steam-generator placed in the path of the furnace-gases, and in communication with a superheating-chamber of the consuming device, substantially as set forth.

5. In apparatus for superheating steam the combination of a furnace, a main steam-generator with connections to a steam-consuming device, and an auxiliary steam-generator placed in the path of the furnace-gases, adapted to provide superheating-steam, and in communication with a superheating-chamber of the consuming device, substantially as set forth.

6. A main steam-generator in communication with a consuming device, an auxiliary steam-generator provided with tubes projecting into the path of the furnace-gases of the main steam-generator, a steam-pipe leading from the auxiliary steam-generator to a superheating-chamber, and a condensation-return pipe leading from the superheating-chamber back to the auxiliary steam-generator.

7. A main steam-generator in communication with a consuming device, an auxiliary steam-generator provided with tubes projecting into the path of the furnace-gases of the main steam generator, means for regulating the amount of gas circulating in contact with said tubes, a steam-pipe leading from the auxiliary steam-generator to a superheating-chamber, and a condensation-return pipe leading from the superheating-chamber back to the auxiliary steam-generator.

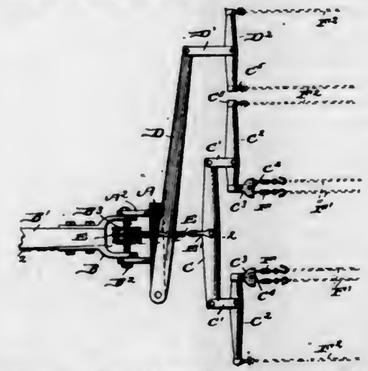
8. A main steam-generator communicating through a superheating device with a consuming device, an auxiliary steam-generator placed in the path of the furnace-gases of the said main steam-generator, a pipe leading from the auxiliary generator to the superheating device and a condensation-return pipe leading therefrom back to the auxiliary generator.

9. A main steam-generator communicating through a superheating device with a consuming device, an auxiliary steam-generator provided with tubes projecting into the path of the furnace-gases of the main steam-generator, means for regulating the amount of gas circulating in contact with said tubes, a pipe leading from the auxiliary generator to the superheating device and a condensation-return pipe leading therefrom back to the auxiliary generator.

10. A steam-generator, an auxiliary steam-generator in which steam is generated at a higher pressure than that generated in the main steam-generator, a superheating-chamber in immediate communication with a steam-consuming device, with means for varying the temperature of the steam in the auxiliary generator.

11. The combination with a furnace, a main steam-generator therein, and a consuming device connected with the main steam-generator and provided with a superheating-chamber; of an auxiliary steam-generator located in the path of the furnace-gases and connected with the superheating-chamber of the consuming device, whereby high-pressure superheating-steam is supplied thereto, substantially as set forth.

**756,841. DRAFT-EVENER.** CHARLES T. ELLISTON, Clinton, Mo. Filed Aug. 22, 1903. Serial No. 170,433. (No model.)



*Claim.*—1. A device of the kind described comprising in combination with a draft-beam having a clevis at its outer end, a pulley carried by said clevis, a doubletree having a forwardly-extending clevis pivotally secured at each end of the doubletree, a rearwardly-extending clevis pivoted intermediate the doubletree, whiffletrees, each pivotally secured to the forwardly-extending clevis at a point nearer the inner end of the whiffletree than the outer end, brackets carried on the inner ends of said whiffletrees, pulleys arranged horizontally in said brackets and a chain passing over the pulley carried by the beam-clevis and connected to the rearwardly-extending clevis of the doubletree.

2. An appliance of the kind described comprising a draft-beam, a pulley carried at its outer end, a bar having rearwardly-extending

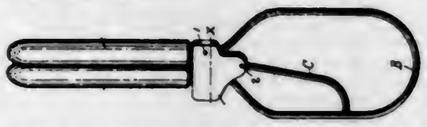
arms, said arms being pivotally connected to the draft-beam, a long bar pivoted to the first-mentioned bar and adapted to swing over and parallel to same, a whiffletree pivotally connected to the free end of the long bar, a doubletree, whiffletrees pivotally connected at one end to the long bar in alinement with the pulley and passed over the latter and connected at its opposite end to the doubletree.

3. The combination with a draft-beam, of a clevis on the outer end of the beam, a short bar, parallel perforated arms extending rearwardly from the central portion and one end portion of the bar, said arms fitting over the clevis, a bolt passing through the clevis and arms and pivoting the arms to the clevis, a pulley on said bolt, a long bar pivoted at one end to the end of the short bar opposite the arms, said long bar being adapted to rest above and over the short bar, a whiffletree, a link pivoted at one end to the free end of the long bar and at the opposite end to the whiffletree intermediate its ends, a doubletree, whiffletrees pivotally connected adjacent their inner ends to the ends of the doubletree, and a chain connected at one end to the long bar in alinement with the draft-beam, and carried over the pulley and connected at the opposite end to the double-tree.

4. In a device of the kind described, the combination with a draft-beam carrying a pulley at its outer end, of a doubletree, whiffletrees pivotally connected at points adjacent their inner ends to the ends of the doubletree, pulleys carried by the inner ends of the whiffletrees, a horizontal bar pivotally connected to and swinging transversely to the draft-beam, a chain attached at one end to the doubletree and at the opposite end to the swinging bar, said chain passing over the pulley carried by the beam, and a whiffletree pivotally connected to the free end of the swinging bar.

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**756,842. DEVICE FOR REMOVING WATER FROM THE HAIR.** FANNIE S. ERMONS, Richmond, Ind. Filed Jan. 19, 1904. Serial No. 189,690. (No model.)



*Claim.*—1. As a new article of manufacture, a hair-drier of the character described comprising in its structure a body, a spring-handle with its ends passing through said body and terminating therebeyond in a pair of identical fingers integral therewith, a lever pivoted in said body and projecting between the members of the handle and adapted to spread said fingers apart, a roller having a covering of rubber mounted on each of said fingers, and means for normally retaining said rollers in contact with each other.

2. As a new article of manufacture, a hair-drying device of the character described comprising in its structure a central body portion, a spring-handle and a pair of fingers formed of a single length of material with one of said finger portions permanently secured in said body and the other finger portion being free to move to and from the other finger portion and normally kept in contact with each other by the resiliency of the handle portion, a pair of rollers with a covering as rubber and one of each being revolubly mounted on each of said finger portions, and a lever operative between the members of the handle for spreading said rollers apart.

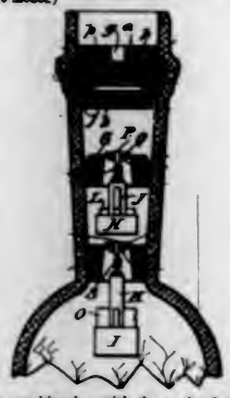
3. A hair-drying device consisting of a single length of heavy spring-wire doubled upon itself forming a handle and a pair of fingers, a body portion inclosing the ends of said fingers near their union with the handle portion, means for securing one of said fingers to said body, means for allowing the free finger to be moved to and from the fixed finger, a lever pivoted to said body for moving the free finger a limited distance from the fixed finger, a roller revolubly mounted on each of said fingers, and means for retaining said rollers on the fingers.

4. A hair-drying device having a body, a pair of fingers and a spring-handle adapted to normally retain said fingers in contact with each other, a lever for spreading said fingers apart against the torsional force of the spring-handle, a tube mounted around each of said fingers and of an inside diameter greater than the diameter of the fingers, bearings in each end of each of said tubes to contact with the fingers, a washer secured on the point of each finger to retain said tubes revolubly on the fingers, a rubber roller with closed outer ends and adapted to tightly surround said tubes and held in place therewith by the contractile force of the rubber, substantially as shown and described.

5. In a device of the character described, a body portion, a pair of revoluble rollers having a covering of rubber or the like, said rollers being mounted at one end whereby they are normally held in resilient contact, a handle, and a lever for spreading the rollers apart.

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**756,843. NON-REFILLABLE BOTTLE.** SAMUEL R. GEORGE and JOSEPH R. HOBBS, New York, N. Y. Filed July 18, 1903. Serial No. 166,142. (No model.)



*Claim.*—The combination with the neck of a bottle, of a fillet upon said neck, and a shoulder beneath said fillet, a two-part guard having tortuous passages therethrough, the lower part resting upon said shoulder and the upper part having recesses in its sides, locking-keys arranged in said recesses and adapted to enter the fillet on the neck, and elastic locking-pieces behind the keys for pressing them outward, for substantially the purposes set forth.

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**756,844. BRACKET-BLOCK FOR CONDUIT-MANHOLES.** GUY M. GEST, Cincinnati, Ohio. Filed Dec. 13, 1902. Serial No. 135,081. (No model.)



*Claim.*—1. A device for supporting cables in conduit-manholes, comprising a bracket-block designed to be built in the wall of the manhole and provided with a channel and a slot communicating with said channel, a bolt slidable on said block and provided with an elongated head designed to enter said channel through said slot and means on the other end of said bolt coacting with said head to independently secure the bolt at different positions on said block, and a bracket detachably connected to one end of said bolt, as set forth.

2. The combination of a bracket-block provided with a channel and a longitudinal slot communicating with said channel, a bolt slidable on said block and having means for independently securing it at different positions thereon comprising a head within said channel and a body in said slot and projecting outwardly therefrom, a nut screwing on said body and designed to contact with the wall of the block to bind the bolt, and a bracket provided with legs designed to take over said nut and bolt and provided with means whereby it will be prevented from turning thereon, as set forth.

3. The combination with a bracket-block provided with a channel and a longitudinal slot communicating with said channel, a bolt slidable on said block and having means for independently securing it at different positions thereon comprising a head within said channel and a body in said slot and projecting outwardly therefrom, a non-circular element on the projecting end of said bolt, a nut screwing on said end beyond said element to bind the bolt, and a bracket provided with two downwardly-extending lugs spaced apart and designed to take over said nut and straddle said non-circular element, as set forth.

4. The combination of a bracket-block provided with a channel and a longitudinal slot communicating with said channel, a bolt slidable on said block and having means for independently securing it at different positions thereon comprising a T-head within said channel and adapted to be inserted therein through said slot, and a body designed to project through the latter, a non-circular element



on the projecting end of said bolt, a nut screwing on said end beyond said element to bind the bolt, and a bracket provided at one end with a rib having a contact-face and with two spaced-apart lugs designed to straddle said non-circular element and to receive between them and the contact-face the said nut, as and for the purpose set forth.

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**756,845. AUTOMATIC STOP-VALVE.** ERNEST GOEBEDACH, Milwaukee, Wis. Filed Apr. 15, 1903. Serial No. 152,655. (No model.)



*Claim.*—1. An automatic stop-valve for pneumatic pressure systems for railroad-trains, comprising an air-chamber, a valve arranged therein, a connecting-hose and means operated by the breaking strain of the hose when the train parts for automatically operating said valve and causing different ports to open and close respectively, as and for the purpose set forth.

2. In an apparatus of the class described, an air-chamber, a valve arranged therein and operating to open and close said chamber to the source of pressure, and a hose-section connected to said valve, whereby a pull upon said section moves said valve to close the ports controlled thereby, as and for the purpose set forth.

3. In an apparatus of the class described, a piping system mounted upon adjacent cars of a train, hose-sections for connecting said piping systems together, a valve arranged to control the communication between said hose-sections and said piping systems, and means whereby said valves are operated to close said communication by the strain imposed upon said sections by the breaking of the train, as and for the purpose set forth.

4. In an apparatus of the class described, a piping system mounted upon adjacent cars of a train, hose-sections for connecting said piping systems together, a valve arranged to control the communication between said hose-sections and said piping systems, means whereby said valves are operated to close said communication by the strain imposed upon said sections by the breaking of the train, and means for simultaneously opening communication between said piping systems and a brake-cylinder, as and for the purpose set forth.

5. In an apparatus of the class described, a piping system adapted to be mounted upon two or more cars of a train, and including an air-chamber on each car, hose-sections for coupling the chambers upon proximate ends of adjacent cars, a valve arranged to control the communication of said chambers with said sections, and means whereby the strain exerted upon said sections by the parting of the train between said cars operates said valve to close said communications, as and for the purpose set forth.

6. In an apparatus of the class described, a piping system adapted to be mounted upon two or more cars of a train, and each including an air-chamber, hose connections between the air-chambers upon the proximate ends of adjacent cars, a brake-cylinder, a by-pass communicating between each of said cylinders and chambers, valves arranged within said chambers, and means operated by the strain imposed upon said hose-sections by the parting of the train for operating said valves to close communication between said cylinder and hose-sections and to open communication through said by-pass, as and for the purpose set forth.

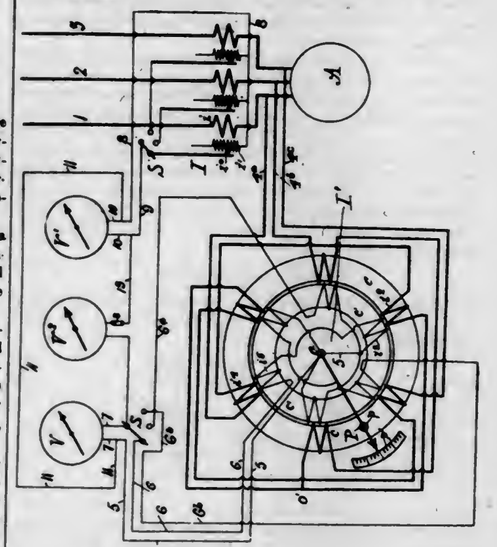
7. In an apparatus of the class described, the combination with a piping system upon each of two or more cars of a train, and a brake-cylinder, means for opening communication between said piping system and said brake-cylinder, and means for opening communication between the piping systems on adjacent cars, including hose-sections, and means actuated by the strain upon said hose-sections upon the breaking of the train between said cars for opening communication between the piping systems and brake-cylinders on each car, and means also operated by the strain imposed upon the hose-sections upon the breaking of the train between said cars for closing the communication between said piping systems and said hose-sections, as and for the purpose set forth.

8. In an apparatus of the class described, a valve box or casing having a central cylindrical sleeve forming a hub, ports in said sleeve or hub, and additional ports on one radial face of the box or casing, a valve having a radial flange, and ports cooperating with the ports of the valve-box, and a hose-section connected to said valve and arranged to operate the same, as and for the purpose set forth.

9. The combination with an air-chamber adapted to communicate with a source of pressure, a brake-cylinder, a by-pass arranged to open communication between said chamber and cylinder, a hose-section, a revoluble valve arranged within said casing for controlling said by-pass and said hose-section, and an elbow respectively connected to said valve and hose-section, as and for the purpose set forth.

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**756,846. ELECTROGONIOMETER.** ALEXANDRE GRAMMONT, Pont de Cherny, France. Filed July 10, 1902. Serial No. 115,094. (No model.)



*Claim.*—1. A power-factor-indicating apparatus for alternating-current circuits comprising a compounding-circuit, shunt connections to impress thereon an electromotive force having a determinate phase relation with the impressed electromotive force on the main circuit, series connections to impress thereon an electromotive force having a determinate phase relation with the current in the main circuit, means to determine the value of the resultant electromotive force in the compounding-circuit, and means to change the phase relations of the component electromotive forces in the compounding-circuit, whereby the resultant may be made a maximum or a minimum, together with mechanism to measure the angle of phase divergence, substantially as described.

2. A power-factor-indicating apparatus for alternating-current circuits comprising a compounding-circuit, shunt connections to impress thereon an electromotive force having a determinate phase relation with the impressed electromotive force on the main circuit, series connections to impress thereon an electromotive force having a determinate phase relation with the current in the main circuit, means to determine the value of the resultant electromotive force in the compounding-circuit, a phase-modifier adjustable to alter the phase relation of the component electromotive forces in the compounding-circuit, whereby their resultant may be raised or lowered in value, and means operable with the phase-modifier to indicate the angle of phase displacement, substantially as described.

3. A power-factor-indicating apparatus for alternating-current circuits comprising a local circuit connected on one side in shunt with the main circuit, and inductively connected on the other side with one of the mains, a potential-indicator and a phase-modifier in said local circuit, and a goniometer or angle-indicator operated by said phase-modifier, substantially as described.

4. A power-factor indicator for alternating-current circuits comprising a potential-indicator connected in shunt of the main circuit and also inductively in series therewith, a phase-modifier in circuit with and on one side of said potential-indicator, and means for determining a given angle of phase displacement, substantially as described.

5. In power-factor-indicating apparatus for alternating-current

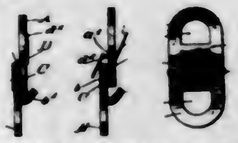
circuits, a voltmeter, a circuit therefor, means to impress on said circuit one electromotive force having a fixed phase relation with the initial electromotive force of the mains, and another electromotive force having a fixed phase relation with the current therein, a phase-modifier adapted to change the phase relations of the two electromotive forces, and an indicator to give the angle of such change, substantially as described.

6. A power-factor-indicating apparatus for alternating-current circuits comprising a local compounding-circuit, a source of electromotive force therefor in phase with the impressed electromotive force of the main circuit, a second source of electromotive force therefor in phase or in quadrature with the current in the said main circuit, an adjustable resistance adapted to equalize the potentials, a resultant-pressure indicator in the local circuit, and a phase-modifier therefor provided with means to measure its angles of phase displacement, substantially as described.

7. In a power-factor-indicating apparatus for alternating-current circuits, a local circuit with a voltmeter therein, a transformer connected on one side to said local circuit, with means to regulate the potential difference at its terminals, and on the other side across the main circuit, a second transformer having primary and secondary relatively adjustable, connected on one side with the local circuit and on the other side in series with the main circuit, means to displace the parts of the second transformer with regard to each other to dephase the secondary electromotive forces impressed on the local circuit, and an indicator to show the extent of such displacements, substantially as described.

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**756,847. FUSIBLE LINK.** FRANK GRAY, Chicago, Ill., assignor to J. J. Howden Company, Muskegon, Mich. Filed Mar. 15, 1902. Serial No. 98,333. (No model.)

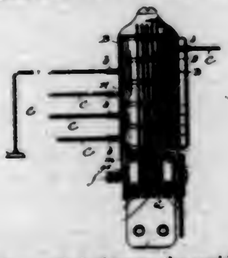


*Claim.*—1. A fusible link comprising a couple of lapping sections, one of said sections being provided with a lug or bent portion overhanging the end of the other section, the other section being provided with an opening, a sheet-metal bond having a transverse portion extending through said opening, and suitable solder or other fusible material for binding the parts together.

2. A fusible link comprising a couple of lapping sections, a transverse key lying between the two sections, one of said sections being provided with a projection overhanging the lapping end of the other section, the other section being provided with an opening, a relatively thin sheet-metal bond extending through said opening, and fusible material for binding the parts together.

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**756,848. MUSIC-LEAF TURNER.** FREDERICK GUTH, Lincoln, Ill. Filed Sept. 2, 1903. Serial No. 171,690. (No model.)



*Claim.*—1. In a music-leaf turner, the combination, of a series of leaf-turning rods spring-actuated in one direction, rods for holding and releasing the aforesaid rods, a tappet-wheel for tripping the releasing-rods successively one side of said tappet-wheel having ratchet-teeth, a shaft slidable in the tappet-wheel and spring-actuated in one direction, and a wheel on an end of said shaft having a pin engaging the ratchet-teeth.

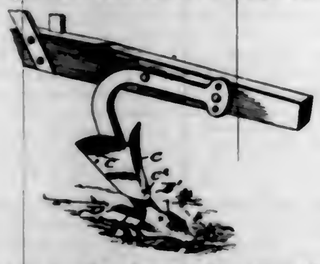
2. In a music-leaf turner, the combination, of a series of leaf-turning rods having hubs or rings, the latter provided with notches, springs inclosed in said hubs or rings and adapted to turn the rods in one direction, rods adapted to engage the notches in said hubs or rings to hold the latter against the action of the springs, a tappet-wheel for tripping the last-mentioned rods, ratchet-teeth at one end of said tappet-wheel, a shaft slidable in the latter and spring-actuated in one direction, and a wheel on an end of said shaft having a pin engaging the ratchet-teeth.

3. In a music-leaf turner, the combination, of a series of leaf-turning rods having hubs or rings, springs inclosed in said hubs or rings and adapted to turn the rods in one direction, rods adapted to engage notches in said hubs or rings to hold the latter against the action of the springs, a tappet-wheel for tripping the last-mentioned rods successively, ratchet-teeth on said tappet-wheel, a laterally-movable spring-actuated wheel having a pin adapted to engage the ratchet-teeth to turn the tappet-wheel, and an operating-cord passed over the periphery of the wheel.

4. In a music-leaf turner, the combination, of a vertical spindle, a series of leaf-turning rods loosely mounted thereon and having hubs or rings provided with notches, springs inclosed in said hubs or rings and adapted to turn the rods in one direction, disks fixed to the spindle between the hubs or rings and having notches with which the aforesaid notches in the hubs are adapted to aline when the leaf-turning rods are set, rods adapted to engage the notches in the hubs and disks, and a tappet-wheel for tripping the last-mentioned rods; together with means for operating the tappet-wheel.

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**756,849. PLOW-POINT.** GEORGE B. GWYNN, Americus, Ga. Filed Apr. 11, 1903. Serial No. 152,211. (No model.)

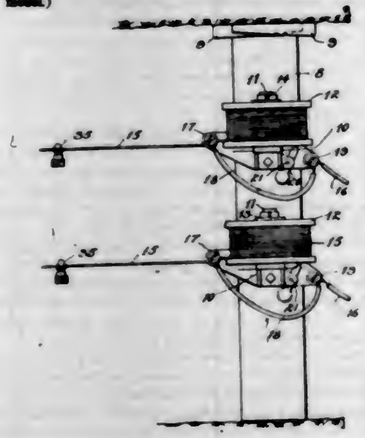


*Claim.*—1. In a plow, the combination with a point having a central body part widest in its forward portion and tapering to a rearwardly, upwardly extending stem, a moldboard adapted to be adjustably secured to the stem, and a rearwardly-extending runner secured to the under side of the stem.

2. In a plow, the combination with a point having an upwardly-extending apertured stem, a double-winged moldboard, a cross-piece on the under side of said board, a longitudinally-slotted plate secured at one end to the cross-piece and at the opposite end to the board, said plate having lateral, downwardly-extending flanges adapted to fit over said stem, and means for adjustably securing said plate to the stem.

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**756,850. ELECTRICAL-WIRE STATION.** WILLIAM R. HAMILTON, Columbus, Ohio. Filed June 18, 1903. Serial No. 162,102. (No model.)





*Claim.*—1. In an electrical-wire station, the combination of means for holding a supply of wire, means for paying out said wire, and means for temporarily clamping said wire adjacent to the holding means, said clamp being adapted for making electrical connection with auxiliary cables.

2. In an electrical-wire station, the combination of a bracket, a reel supported on said bracket, and a binding-post on said bracket for engaging the wire drawn off from said reel.

3. In combination, a bracket provided with one or more spindles, reels mounted on said spindles, electrical conductors wound on said reels, and a binding-post adjacent to said reels adapted to clamp said conductor and form an electrical connection between the same and an auxiliary conductor adapted to connect with a machine using an electrical current whereby the current is cut off from any wire remaining wound on the reels.

4. A portable electrical-wire station comprising one or more brackets adapted to be mounted on suitable supports, reels formed of insulating material, mounted on said brackets, electrical conductors wound on said reels, binding-posts adjacent to said reels adapted to engage said conductors and form an electrical connection between the same and other conductors whereby the current is cut off from any wire remaining wound on the reels.

5. In a device for holding a quantity of wire forming an electrical terminal, the combination of a suitably-mounted reel adapted to hold said wire, a binding-post adapted to engage said wire to clamp the same, a pawl pivotally mounted adjacent to said reel and adapted to engage the same to prevent unwinding when not desired.

6. In an electrical-wire station the combination of a bracket, a spool revolubly mounted on said bracket, electrical conductors wound on said spool and extending therefrom, a pawl mounted on said bracket and engaging said spool, an insulated binding-post engaging said wire from the spool, a second insulated binding-post, a conductor connecting between said posts and a conductor leading from said second post adapted to make electrical connection with a machine to be operated.

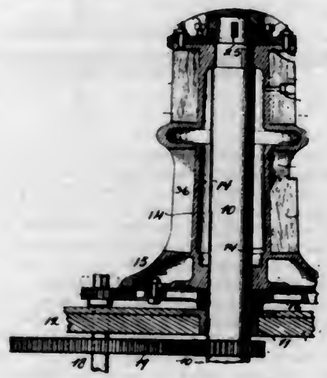
7. In an electrical-wire station for mines and the like, the combination of a post, a plurality of electrical-conductor reels formed of insulated material, means for mounting said reels on said posts, electrical conductors wound on said reels and extending therefrom, binding-posts adapted to insulate said conductors and clamp the same, and secondary conductors engaged by said posts and forming electrical connections with the first-named conductors.

8. In a portable electrical terminal station, the combination with a movable support comprising a post, brackets secured to said post, insulated reels revolubly mounted on said brackets, means for preventing said reels from turning when not desired, electrical conductors wound on said reels and extending therefrom, and means for forming connections between said conductors and auxiliary conductors.

9. In combination, a bracket, arms extending from said bracket, insulated reels pivotally mounted between said arms, pawls mounted on said bracket and engaging said reels, electrical conductors wound on said reels, binding-posts adapted to engage said conductors, a switchboard mounted on said bracket and insulated conductors connecting between said binding-post and said switchboard.

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**756,851. CAPSTAN.** GOTTLIEB HARTWEG, District of Highlands, Ky. Filed July 3, 1903. Serial No. 164,135. (No model.)



*Claim.*—1. In a capstan, the combination of an iron barrel, a capstan-head, a supporting-spindle and wooden whelps carried on the iron barrel arranged with spaces between them and projecting above the face of the barrel.

2. In a capstan, the combination of an iron barrel having vertical recesses in its side, a supporting-spindle and wooden whelps carried in the recesses of the iron barrel, which they fully occupy as to length and width, but not as to depth so as to project above the face of the barrel.

3. In a capstan, the combination of an iron barrel having a base and a top flange, both laterally projecting vertical ribs between them, a supporting-spindle and wooden whelps carried between these ribs.

4. In a capstan, the combination of a capstan-barrel, an operating-spindle, a capstan-head seated at the upper end of the same and a key passing horizontally through both, to hold them together.

5. In a capstan, the combination of a capstan-barrel, an operating-spindle on which it is mounted and which has a tapering upper end, a capstan-head having a tapering recess on its under side adapted to be occupied by the tapering end of the spindle and a key passing horizontally through head and spindle to hold them together.

6. In a capstan, the combination of a capstan-barrel, an operating-spindle on which it is mounted and which has a tapering upper end, a capstan-head having a tapering recess on its under side adapted to be occupied by the tapering end of the spindle, a key passing horizontally through head and spindle to hold them together and set-screws carried in the capstan-head and adapted to operate against the capstan-barrel for the purpose described.

7. In a capstan, the combination of a capstan-barrel a capstan-head, a spindle on which both are mounted and enlargements 32 on the upper side of the head which contain laterally open sockets.

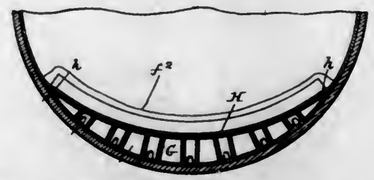
8. In a capstan, the combination of a capstan-barrel, a capstan-head having an imperforate, convex top, an operating-spindle on which both are mounted and a laterally-inserted key to hold the head to the spindle.

9. In a capstan, the combination of a capstan-barrel, a capstan-head, a spindle on which both are mounted and enlargements 32 on the upper side of the head which contain laterally open sockets, the height of these enlargements increasing toward the center of the head and forming a convex top.

10. In a capstan, the combination of a capstan-barrel, a capstan-head, an operating-spindle on which both are mounted, pins adapted to be inserted into and occupy simultaneously openings in this head and barrel, to connect both for joint rotation and accessible from the top and recesses in the head which the upper ends of these pins occupy to prevent them from projecting above said top.

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**756,852. BARREL-FILTER.** JOHN D. HAWKINS, Colorado Springs, and GEORGE E. GANNON, Colorado City, Colo. Filed Aug. 15, 1903. Serial No. 169,612. (No model.)



*Claim.*—1. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and means interposed between the floor and the lead lining for supporting the floor, substantially as described.

2. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and supporting-legs interposed between the floor and lining, substantially as described.

3. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and hollow supporting-legs interposed between the lining and the floor, substantially as described.

4. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and hollow supporting-legs interposed between the lining and the floor and having notches, substantially as described.

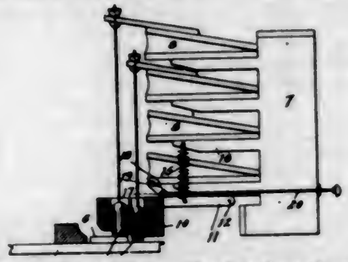
5. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel.

and hollow supporting lead legs having notches at their bottoms and burned to the lining and floor, substantially as described.

6. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor, and a filtering medium of perforated lead-cloth tacked to said floor, substantially as described.

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**756,853. GUARD FOR THE STRIKING DEVICES OF PIANO-PLAYERS.** FREDERICK W. HEDGELAND, Chicago, Ill. Filed June 22, 1903. Serial No. 162,852. (No model.)



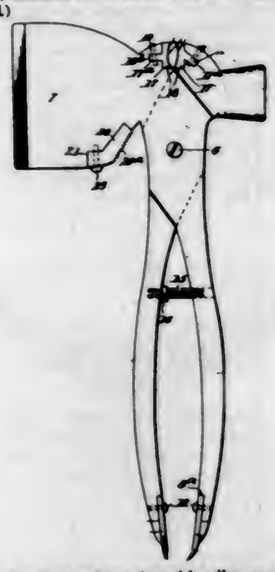
*Claim.*—1. The combination with a piano-player of a vertically-adjustable bar having perforations through which the fingers pass, means for supporting and means for adjusting said bar.

2. The combination with a piano-player of a vertically-adjustable bar having perforations through which the fingers pass, means for supporting and means for adjusting said bar, the latter operable from the front of the player.

3. The combination with a piano-player of a vertically-adjustable bar having perforations through which the fingers pass, and having two positions in one of which it acts as a guard and in the other of which it acts as a guide to the fingers, and means for supporting and adjusting said bar.

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**756,854. COMPOUND TOOL.** WARREN W. HELLS and RUDOLPH BROCKMAN, Hinsdale, Ill. Filed Jan. 22, 1904. Serial No. 190,182. (No model.)

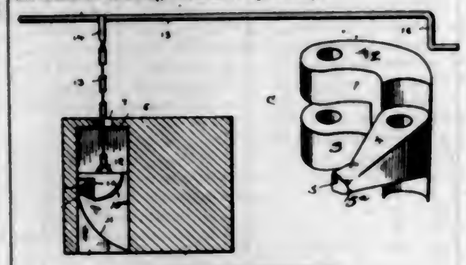


*Claim.*—A tool comprising pivoted handles, one of said handles having a hatchet-blade, and a block secured to the under side of said blade adjacent to the handles, and having a serrated face disposed at an angle to said handles, said block and handles forming adjustable wrench-jaws.

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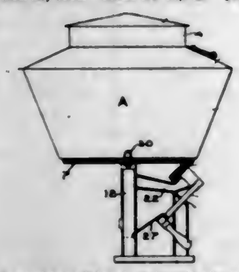
**756,855. CAR-COUPLING.** JOHN S. HENSON, Zanesfield, Ohio. Filed Dec. 31, 1902. Serial No. 137,234. (No model.)

*Claim.*—In a car-coupling, in combination; a draw-head having a vertical angular socket therein and a transverse opening in the front wall of the socket, a coupling-jaw pivoted to the draw-head and having a rearwardly-extending tapered arm the end of which projects through said opening, and a vertically-movable locking-pin fitting said socket, having a locking-shoulder behind which the end of the arm is locked, a cam-face in front of said shoulder to lift the pin automatically when the jaw is closed, and a cam-track below the shoulder to swing the arm to open the jaw.



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**756,856. WASHING-MACHINE.** JERRY O. HOFFER, Hampton, Minn. Filed Dec. 21, 1901. Serial No. 86,743. (No model.)

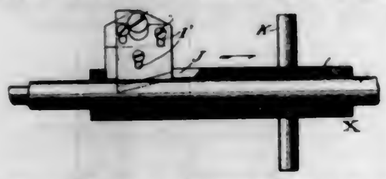


*Claim.*—1. A machine of the class described, comprising, in combination, a support, an arm pivotally mounted thereon so as to swing in a substantially vertical plane, a tub rotatably mounted upon the arm, an annular gear upon the tub, a bracket carried by the arm, and a gear rotatably mounted upon the bracket in a position to intermesh with the annular gear upon the tub to rotate the same.

2. A machine of the class described, comprising, in combination, a support, an arm pivotally mounted thereon so as to swing in a substantially vertical plane, a conical spider centrally and rotatably mounted upon the upper end of said arm and carrying an annular gear at its base, a tub having an upwardly-coned bottom secured to said conical spider, and means carried by said arm to engage said annular gear and thereby rotate the spider and tub.

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**756,857. ELECTRICIAN'S TOOL.** HERBERT H. HUTCHINGS, Chester, Pa. Filed June 19, 1903. Serial No. 162,205. (No model.)



*Claim.*—1. In a tool of the character described, a body, an opening formed longitudinally through the body of a size sufficient to fit a cable, an extension extending upward from the body, an adjustable knife pivoted at its upper end to the extension, the body being provided with a slot through which the knife extends when in its vertical or normal position, a stop formed with the extension for limiting the movement of the knife in one direction, and handles for operating the tool, as and for the purpose specified.

2. In a tool of the character described, a body, a longitudinal opening formed through the body in which the cable containing twin wires is adapted to fit, an extension extending upward from the body, a block pivoted to the extension, a knife adjustably secured to the block, the body being provided with a slot through

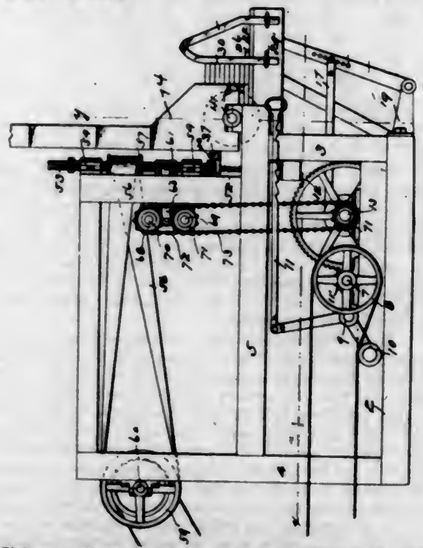


which the knife may extend to the interior of the body when said knife is in its normal position, and into the cable between the two insulated wires, a stop formed with the extension for limiting or holding the knife in a vertical position when operating, and handles secured to the body for manipulating the same, as and for the purpose specified.

3. In a tool of the character described, a longitudinally and horizontally divided body, the two halves of the body being hinged together, means for holding the two halves of the body temporarily together, each half of the body being provided upon its inside face with a longitudinal groove, which grooves, when the two halves are together, form a longitudinal opening adapted to fit a cable of twin wires, an extension extending upward from the upper half of the body, a block pivoted at its upper end to the upper end of the extension so as to swing longitudinally, a stop formed with the extension adapted to limit the movement of the block in one direction, the lower end of the block being bifurcated, a lug extending upward from the body adapted to enter between the prongs of the bifurcated portion when the block is in its normal position, an adjustable knife secured to the side of the block, the cutting edge of the knife being beveled and formed upon an incline, the upper portion of the body being provided with a slot through which the knife may extend to the interior of the body when in its operative position, said knife being in such a position as to cut through the outer covering of the cable between the two insulated wires, and handles secured to the body for manipulating the same, as specified.

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**756,858. MACHINE FOR MAKING WIRE-FENCE-REEL HEADS.** CHARLES JOHNSON, Minneapolis, Minn., assignor to Charles A. Smith, Minneapolis, Minn. Filed June 15, 1903. Serial No. 161,516. (No model.)



*Claim.*—1. The combination, with the trimming-saws, of a reciprocating feed device, revolving knives arranged to engage and bevel the boards, and chip-breakers having concave edges forming surfaces past which said knives revolve and resting upon the boards to prevent their ends from splintering by the action of the knives.

2. The combination, with the trimming-saws, of a feed device arranged to feed the lumber past the saws to trim the ends of the same, revolving knives arranged to bevel the ends of the trimmed boards, oscillating chip-breakers resting by gravity upon the boards and having curved surfaces past which said knives revolve, and arms provided on said chip-breakers and overhanging the boards, for the purpose specified.

3. The combination, with a suitable frame, of revolving knives or cutters mounted therein and laterally adjustable, a feed device arranged to feed lumber sidewise to said knives, and laterally-adjustable chip-breakers arranged to bear upon the ends of the boards and having curved edges past which said knives revolve, for the purpose specified.

4. The combination, with the trimming-saws, of a feed device arranged to feed lumber sidewise to the saws, revolving knives provided between said saws and arranged to engage and bevel the trimmed ends of the boards, a rock-shaft, chip-breakers secured thereon and resting by gravity upon the boards between the saws, and said chip-breakers having edges arranged to bear upon said ends near the knives, for the purpose specified.

5. The combination, with a suitable frame, of trimming-saws mounted therein, a hopper provided on said frame, a feed device operating in said hopper to advance the lumber sidewise to the saws, a revolving vertically-reciprocating auger arranged to engage the boards after they pass the saws, and the walls of said hopper being horizontally adjustable to permit the distance between them and said auger to be varied according to the width of the lumber.

6. The combination, with the trimming-saws, of a feed device arranged to feed the boards sidewise past said saws, means for engaging and beveling the trimmed ends of the boards, chip-breakers resting upon the ends of the boards and having curved surfaces past which said beveling means revolve, and gravity-pawls arranged to engage the upper and lower surfaces of the boards and prevent backward movement thereof.

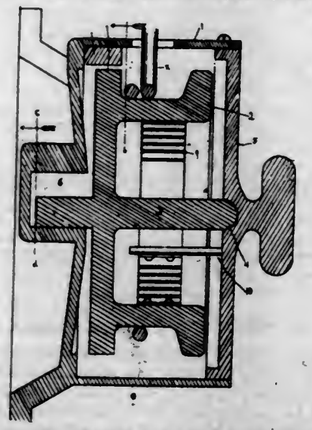
7. In a machine of the class described, the combination, with trimming-saws, of beveling means provided between said saws, an auger near said saws and arranged to centrally bore each board passing between the same, a feed device arranged to feed the boards sidewise to said saws, chip-breakers, fingers mounted thereon and forming the inner wall of the hopper, and said fingers being adjustable toward or from said auger whereby the distance between them can be varied according to the width of the lumber to be bored.

8. In a machine of the class described, the combination, with trimming-saws, of an auger near said saws arranged to centrally bore each board passing between the same, means for clamping the boards during the trimming operation, a hopper having its inner wall supported on said clamping means and adjustable toward or from said auger, according to width of the board to be bored, and a feed device operating in said hopper to feed lumber sidewise to said saws.

9. The combination, with the trimming-saws, of a feed device arranged to feed boards sidewise to said saws, edge-beveling knives provided between said saws, said knives and saws being laterally adjustable, a rock-shaft, and gravity chip-breakers laterally adjustable thereon and having edges adapted to bear upon the ends of the boards near said knives.

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**756,859. TROLLEY-CATCHER.** MONTGOMERY H. JOHNSON, Utica, N. Y. Filed July 15, 1903. Serial No. 165,568. (No model.)



*Claim.*—1. The combination in a trolley-catching device of a line-reel, vertically movable by a sudden draw on the line, a catch with which the reel comes into engagement when moved vertically, and a spring for turning the reel in winding up slack of the line, substantially as set forth.

2. The combination in a trolley-catching device of a casing, a vertically-movable line-reel mounted in the casing, adapted to be moved vertically by a sudden draw on the line, and a catch with which the reel comes into engagement when moving vertically, and a spring for turning the reel in winding up the slack of the line, substantially as set forth.

3. The combination in a trolley-catching device of a rotating and vertically-movable line-reel, having catch teeth or projections, a fixed tooth or part for securing the reel when moved vertically into engagement therewith, and a spring for rotating the reel to take up the slack of the line, substantially as set forth.

4. In a trolley-catching device, the combination of a vertically-movable reel to which one end of the trolley-line is attached, a catch or lock for securing the reel against rotation when moved vertically from its normal working position, and means for rotating the reel when in its normal working position, substantially as set forth.

5. In a trolley-catching device, the combination of an inclosed casing, having a suitable bearing therein, which is enlarged to permit a vertical movement, line-reel mounted in the casing in said bearing, catch for securing the reel against rotation into engagement with which the line-reel will come when moved vertically, and a spring for rotating the reel when out of engagement with the catch for taking up the slack of the trolley-line, substantially as set forth.

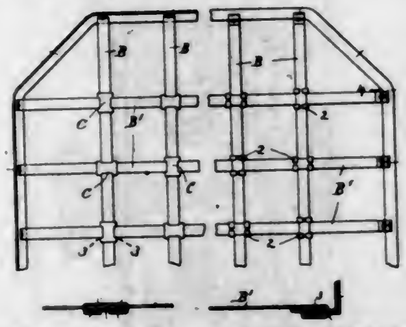
6. In a trolley-catching device, the combination of a rotary reel, having, also, a vertical movement of a catch for preventing the rotation of the reel in one direction when it is moved vertically into engagement therewith, and a spring for rotating the reel in the opposite direction, when not in engagement with said catch, substantially as set forth.

## 756,860. ILLUMINATED INDICATOR. EDWARD KAYE, Monaca, Pa. Filed July 14, 1903. Serial No. 165,472. (No model.)



*Claim.*—As a new article of manufacture, a pointer or indicator, consisting of a translucent glass shell, adapted to receive a lamp or lighting medium, and formed in the shape of two hands, respectively right and left, with the index-fingers extended and approximating at the points, substantially as described.

## 756,861. LATTICE-WORK STRUCTURE. RICHARDSON C. LAYTON, New York, N. Y., assignor to Empire Pipe Bending and Supply Company, New York, N. Y., a Corporation of New York. Filed Sept. 4, 1903. Serial No. 171,961. (No model.)



*Claim.*—1. A lattice-work structure comprising a frame, a plurality of intersecting bars having their ends looped around the frame, clips clenched about the overlapping portions of the ends, and clips located at the intersections of the bars and having bodies overlapping the underlying portions of the bars, and ears clenched over on the underlying portions, substantially as described.

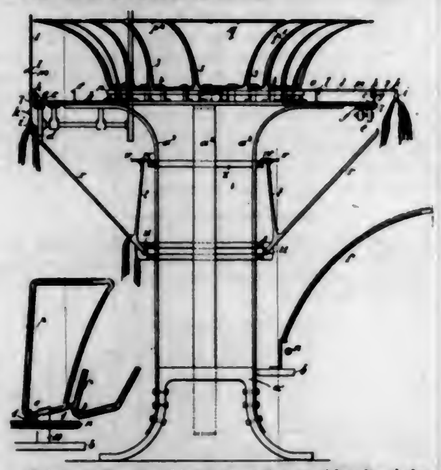
2. A lattice-work structure comprising a frame, a plurality of intersecting bars having their ends lapped over to form a double thickness and said ends looped around the frame to again overlap the bars, and fastenings at the intersections of the bars, substantially as described.

3. A lattice-work structure comprising a frame provided with suitably-spaced sockets, a plurality of intersecting bars having their ends lapped over and hooked through the slots, and clips located at the intersections and having bodies overlapping the overlying portions of the bars and ears clenched over on the underlying portions, substantially as described.

4. A lattice structure comprising a frame provided with suitably-spaced sockets and a plurality of intersecting bars having their ends lapped over to form a double thickness and the ends passed through said sockets and doubled over to overlap the bars, substantially as described.

5. A lattice structure comprising a frame provided with suitably-spaced sockets, a plurality of intersecting bars having their ends lapped over and hooked through said sockets and clips clenched about the lap, substantially as described.

## 756,862. APPARATUS FOR WEIGHING AND SORTING SKEINS OF YARN. ALFRED LEHNER, Zurich, Switzerland. Filed Apr. 11, 1903. Serial No. 152,264. (No model.)



*Claim.*—1. In a weighing and sorting machine for skeins of thread or yarn, the combination of levers serving as scales mounted upon a rotatable ring, weights arranged on the said levers so as to be movable along these levers, means for automatically shifting the said weights toward the fulcrum of the lever during the rotation of the levers, means for taking off and receiving the material from the levers, means for automatically reconducting the levers into their original position and means for automatically pushing back the weights into the initial position.

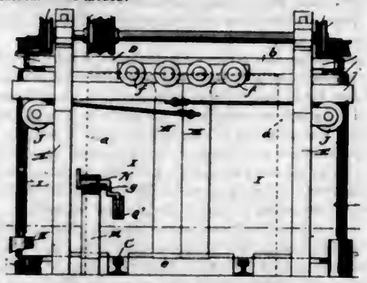
2. In a weighing and sorting machine for skeins of thread or yarn, the combination of levers serving as scales mounted upon a rotatable ring, weights arranged on the said levers so as to be movable along these levers, means for automatically shifting the said weights toward the fulcrum of the lever, guides for forcing the levers from their original position into such a position as to enable the suspended material to be taken off, means for taking off and receiving the material from the levers, means for automatically reconducting the levers into their original position and means for automatically pushing back the weights into their original position.

3. In a weighing and sorting machine for skeins of thread or yarn, the combination of levers serving as scales mounted upon a rotatable ring, weights arranged on the said lever so as to be movable along these levers, propellers forming a spiral track for successively shifting the weights toward the fulcrums of the levers, guides for forcing the levers from their original position into such a position as to enable the suspended material to be taken off, means for taking off and receiving the material from the levers, a guide for automatically reconducting the levers into their original position and a guide for pushing back the weights into their original position.

4. In a weighing and sorting machine for skeins of thread or yarn, the combination of levers serving as scales mounted upon a rotatable ring, weights arranged on said levers so as to be movable along these levers, means for automatically shifting the said weights toward the fulcrum of the lever during the rotation of the levers, means for taking off and receiving the material from the levers, means for automatically reconducting the levers into their original position, means for automatically pushing back the weights into the initial position and doffers having invariable stations, but pivotally mounted on the machine.



## 756,863. MINE-DOOR. ALBERT H. LEWIS, Uhrichsville, Ohio, assignor of three-fourths to Albert G. Quimby, James C. Shields, and Arthur R. Spear, Uhrichsville, Ohio. Filed June 30, 1903. Serial No. 162,372. (No model.)



*Claim.*—1. The combination of a railway-track, a frame having uprights disposed at opposite sides of the track, an overhead track-rail connected to the frame, and resting above the track, vertical drums carried by the frame, and arranged at opposite sides of the track, a door comprising sections H movable on the overhead rail, and flexible sections I, connected to the sections H, and also connected to and adapted to be wound on the drums, a rotary shaft mounted on the frame, connections between said shaft and the door-sections for opening the latter by the former, supports arranged alongside the track and at different distances from the door, a rock-shaft journaled in the support nearest the door, and having a crank, a rock-shaft journaled in the support remote from the door, and having a crank, and also having an arm, a shoe loosely connected to the cranks of the rock-shafts and disposed longitudinally above a rail of the track whereby it is adapted to be raised and moved longitudinally by a wheel passing between it and said rail, a connection between the arm of the rock-shaft and the rotary shaft, and means for moving the door-sections to a closed position subsequent to the passage of a car.

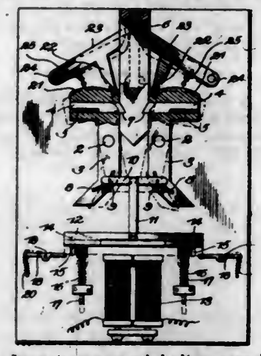
2. The combination of a vertical drum having a pulley, a door comprising a flexible portion connected to and adapted to be wound on the drum, vertically-movable levers fulcrumed at an intermediate point of their length, connections between the inner arms of said levers and the door, a weight L on the outer arm of one lever, a rotary shaft, connections between the rotary shaft and the levers for moving the latter by the former, a weight Z, and a cable connected to said weight, and passed over a sheave, and connected to and wound on the pulley of the drum.

3. The combination of a passage in a mine or the like having pockets in its side walls, a railway-track extending through said passage, a frame having uprights arranged in the pockets, an overhead track-rail connected to the frame, and resting above the track, vertical drums carried by the frame, and arranged in the pockets, a door comprising sections H movable on the overhead rail, and flexible sections I, connected to the sections H, and also connected to and adapted to be wound on the drums, a rotary shaft mounted on the frame, and having a drum, connections between said shaft and the door-sections for opening the latter by the former, a device arranged to be engaged and moved by a part of a car traveling on the track, a connection between said device and the drum on the rotary shaft for rotating the shaft by the device, and means for moving the door-sections to a closed position subsequent to the passage of a car.

4. The combination of a passage in a mine or the like having pockets in its side walls, a railway-track extending through said passage, a frame having uprights arranged in the pockets, an overhead track-rail connected to the frame, and resting above the track, vertical drums carried by the frame, and arranged in the pockets, a door comprising sections H movable on the overhead rail, and flexible sections I, connected to the sections H, and also connected to and adapted to be wound on the drums, a rotary shaft mounted on the frame, and having drums, connections between said shaft and the door-sections for opening the latter by the former, devices disposed at opposite sides of the door, and arranged to be engaged and moved by a part of a car traveling on the track, a connection between said devices and the drums on the rotary shaft for rotating the shaft by the devices, and means for moving the door-sections to a closed position subsequent to the passage of a car in either direction.

5. The combination of a railway-track, a vertical drum mounted at one side of the same, and having a pulley, a door movable, in a guideway, crosswise of the track, and comprising a flexible portion connected to and adapted to be wound on the drum, a rotary shaft having a pulley, vertically-movable levers fulcrumed at an intermediate point of their length, connections between the inner arms of said levers and the door, a weight on the outer arm of one lever, connections between the rotary shaft and the levers for moving the latter by the former, a weight, and a cable connected to said weight, and passed over a sheave, and connected to and wound on the pulley of the drum.

## 756,864. ELECTRIC LOCK. JAY LIVINGSTON, St. Louis, Mo. Filed May 22, 1903. Serial No. 158,260. (No model.)



*Claim.*—1. In an electromagnetic lock, a recessed bolt, a spring-catch for automatically engaging and locking the bolt, a lever carrying said catch, an electromagnet for operating the lever and withdrawing the catch, and means for holding the catch out of pawl-engaging position after the magnet has been deënergized.

2. In an electromagnetic lock, a recessed bolt, a catch for engaging said bolt, an electromagnet for withdrawing the catch, and means for automatically holding the catch out of pawl-engaging position after the magnet has been deënergized.

3. In an electromagnetic lock, a bolt, a bolt engaging and locking means, an electromagnet controlling the movement of said bolt engaging and locking means, and an automatic mechanism for holding said engaging and locking means out of pawl-engaging position when the magnet is deënergized.

4. In an electromagnetic lock, a recessed bolt, a catch for engaging and locking said bolt, a lever carrying said catch, an electromagnet for withdrawing the catch, and a spring-pressed lever adapted to enter between the side of the bolt and the catch when the latter is withdrawn to unlocking position.

5. In an electromagnetic lock, a slotted bolt, a catch member for engaging and locking the bolt, a lever carrying the catch, an electromagnet for operating the lever, and a lever having a finger adapted to enter between the bolt and the catch-carrier, said lever extending within the slotted portion of the bolt and being moved to carrier-releasing position on the upward movement of said bolt.

6. In an electromagnetic lock, the combination with a bolt having a pair of slots and a pair of catch-receiving recesses, of a pair of pivotally-mounted rock-levers, spring-pressed catches carried by said levers, pivotally-mounted finger-carrying levers for holding the rock-levers in unlocked position, said finger-carrying levers projecting within slotted portions of the bolt, an electromagnet, an armature carried thereby, and a bar secured to the armature and having operative engagement with cam-slots formed in the slotted levers.

7. In an electromagnetic lock, the combination with a slotted and a recessed bolt, of a pair of pivoted rock-levers, catches carried by said levers, springs for projecting the catches, pivotally-mounted finger-carrying levers having their upper ends entering the slotted portions of the bolt, the fingers of said levers being adapted to maintain the rock-levers in unlocked position, an electromagnet an armature arranged within the field of force of the magnet, and an operative connection between the armature and the rock-levers.

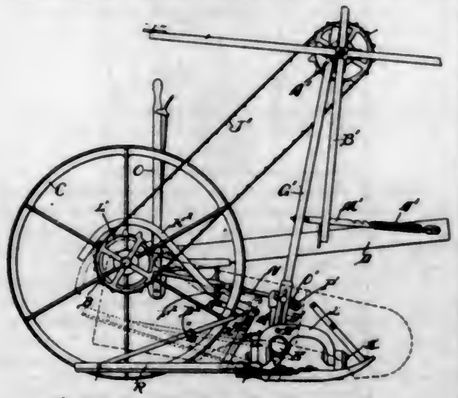
8. In an electromagnetic lock, the combination with a bolt, of catches adapted to engage the bolt, rock-levers carrying said catches and provided with cam-slots, an electromagnet, an armature arranged within the field of force of the magnet, means for guiding the armature, springs bearing against said armature and serving to maintain the same away from the poles of the magnet, a bar carried by the armature and having pins entering said cam-slots, and spring-actuated levers adapted to engage the armature and serving to move said armature from contact with the poles of the magnet when the latter is deënergized, substantially as specified.

9. The combination with a receptacle, having external metallic fittings, of an electromagnetic lock including an electromagnet and a source of electrical energy, the terminals of the circuit being formed by a pair of such spaced fittings, and an intervening circuit-breaking means disposed in the circuit and adjustable to operative or inoperative position from the exterior of said receptacle.

10. The combination with a trunk having external metallic fittings and casters, of an electromagnetic lock including an electromagnet and a source of electrical energy, the terminals of the circuit being formed by a plurality of such spaced fittings, metallic contacts spaced from each other to break the circuit, and a contact-plate carried by one of the casters and movable therewith to open and close the circuit through said contacts.

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**756,865. HARVESTER ATTACHMENT FOR MOWING-MACHINES.** JAMES MACPHAIL, Blue Island, Ill., assignor to McCormick Harvesting Machine Company, Chicago, Ill., a Corporation of Illinois. Filed May 20, 1901. Serial No. 61,046. (No model.)



*Claim.*—1. In a harvester attachment for mowing-machines, a cutter-bar, a yoke upon which said bar is carried, and means for rocking said yoke to tilt the cutter-bar, in combination with a reel-support pivotally mounted upon said yoke, a reel carried by said reel-support, drive-gearing for said reel, and means connected with said pivotally-mounted reel-support whereby the rocking movement of said yoke is permitted without deranging the drive-gearing for said reel, as and for the purpose set forth.

2. In a harvester attachment for mowing-machines, a cutter-bar, a yoke upon which said bar is mounted, and means for rocking said yoke to tilt the cutter-bar, in combination with a reel-support pivotally mounted upon said yoke and carrying a reel, gearing for driving said reel, and a spring connected to the reel-support, as and for the purpose set forth.

3. In an apparatus of the class described, a main frame and axle, a cutter, a tilting support therefor, a standard pivotally mounted on said support, a reel carried by said standard, gearing actuated by said axle for driving said reel, and means for imposing a yielding tension upon said standard, as and for the purpose set forth.

4. In an apparatus of the class described, a coupling-arm, a yoke sleeved upon said arm, a cutter-bar carried by said yoke, means for tilting said yoke about said coupling-arm, a standard pivotally supported upon said yoke, a reel carried by said standard, gearing for actuating said reel, and a spring arranged to exert its tension upon said standard, as and for the purpose set forth.

5. In an apparatus of the class described, a cutter-bar, a yoke supporting the same, means for rocking said yoke to vary the tilt of said cutter-bar, a standard pivotally connected to said yoke, a reel carried by said standard, means for driving said reel, and a spring tension imposed upon said standard, as and for the purpose set forth.

6. In an apparatus of the class described, a cutter-bar, a yoke supporting said bar, means for tilting said yoke, a standard pivotally connected to said yoke, a reel carried by said standard, means for actuating said reel, and a spring adjustably connected to said standard to impose a yielding tension thereon, as and for the purpose set forth.

7. In an apparatus of the class described, a main frame, a main axle and traction-wheel mounted thereon, a cutter-bar, a yoke upon which said cutter-bar is mounted, means for tilting said yoke, a standard pivotally supported upon said yoke, a reel-shaft and reel mounted on said standard, a sprocket-chain operating over a sprocket on said reel-shaft and extending rearwardly therefrom to a sprocket on said main axle, and a spring connected to said standard and extending forwardly therefrom and connected to the frame, as and for the purpose set forth.

8. In an apparatus of the class described, a yoke, a cutter-bar supported thereon, an arm connected with said yoke, means engaging said arm for rocking said yoke, a standard pivotally mounted upon said yoke and provided with a slotted ear, a projection carried by said arm arranged to operate in the slot in said ear, a reel-shaft journaled upon said standard, a reel mounted upon said shaft, gearing for driving said shaft, and a spring connected at one end to said standard and at the other end to the frame of the machine; all combined and arranged as and for the purpose set forth.

9. In an apparatus of the class described, a cutting mechanism, a receiving-platform pivotally supported upon the frame of said cutting mechanism, a lever connected to said platform to tilt the same relatively to said cutting mechanism, means for tilting said cutting mechanism, and means for correspondingly shifting the fulcrum of said lever, as and for the purpose set forth.

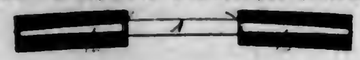
10. In an apparatus of the class described, a cutting mechanism, a supporting-frame therefor, means for tilting said supporting-frame to vary the angle of inclination of said cutting mechanism, a receiving-platform pivotally mounted upon said supporting-frame, a pivotally-mounted lever connected to said receiving-platform for tilting said receiving-platform, and means actuated coincidently with the tilting of said supporting-frame for shifting the fulcrum of said lever, as and for the purpose set forth.

11. In an apparatus of the class described, a cutting mechanism, a supporting-frame therefor, a rocking support for said frame, a rod for rocking said support, a receiving-platform pivotally mounted upon said supporting-frame, a pivoted lever connected to said platform, and connections between the pivot of said lever and said actuating-rod whereby when the latter is operated to tilt said cutting mechanism the fulcrum of said lever is correspondingly shifted, as and for the purpose set forth.

12. In an apparatus of the class described, a cutting mechanism, a supporting-frame therefor, a rod connected to said supporting-frame for tilting the same, a bracket connected to move with said rod, and carrying a pivot-stud, a lever fulcrumed upon said pivot-stud, a grain-receiving frame pivotally supported upon said cutter-mechanism-supporting frame, and a link pivotally connected at one end to said receiving-platform and at the other end to said lever, as and for the purpose set forth.

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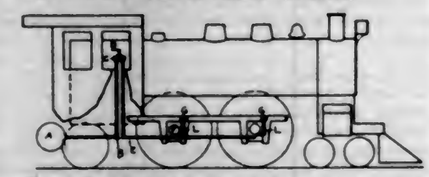
**756,866. BELT-CHAIN.** EMILIO MAGALDI, La Briche Saint Denis, France. Filed May 8, 1902. Serial No. 106,460. (No model.)



*Claim.*—In combination, an arched cross-piece having an enlarged central portion and reduced side portions having annular shoulders, washers abutting against said shoulders, washers secured at the outer ends of said cross-piece, and strips of flexible material clamped between said washers, substantially as described.

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**756,867. LUBRICATOR.** WALTER R. MALCOLM, Albany, N. Y. Filed Feb. 2, 1903. Serial No. 141,440. (No model.)



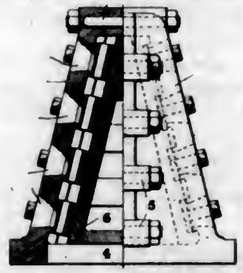
*Claim.*—The combination with an axle, of a bearing-plate provided with an oil-chamber, a perforated pipe arranged within said oil-chamber, an air-chamber, and tubular connections provided with a valve between said air-chamber and said perforated pipe, substantially as shown and described.

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**756,868. VALVE FOR BLOWING-ENGINES AND AIR-COMPRESSORS.** ALBERT K. MANSFIELD, Salem, Ohio. Filed Jan. 5, 1903. Serial No. 137,966. (No model.)



*Claim.*—1. The combination of an elongated elastic-metal valve-strip fixed at one end and free at the other, with a port bounded by a raised rib having a curved surface affording line-contact with the valve-strip, and a complemental stop or keeper substantially coincident with said valve-strip and fixed at both ends.



2. In a blower or compressor, the combination of an elongated elastic-metal valve-strip fixed at one end and free at the other, with a port bounded by a raised rib having a curved surface affording line-contact with said valve-strip.

3. In combination with an elastic-metal strip constituting a valve and its spring, the rounded contact-rib to produce approximate line-contact, and the keeper to restrict the movement of the valve.

4. In a valve for blowers and compressors, the combination of an elongated elastic-metal valve-strip fixed at one end and free at the other, a complemental stop or keeper substantially coincident therewith fixed at both ends, and fastening means common to both valve and stop at one end.

5. In a blower or compressor, a compartment provided with ports having valve-seats consisting of raised ribs having curved surfaces affording line-contact, in combination with elongated elastic-metal valve-strips covering the ports, stops substantially coincident with the valve-strips, fastening means common to a valve-strip and its complemental stop for attaching both fixedly at one end to the cage, and fastening means for the stop only, at the opposite end, whereby a line-contact with the valves and their seats is secured.

6. In a blower or compressor, a ported compartment, in combination with elongated elastic-metal valve-strips covering the ports, stops substantially coincident with the valve-strips, fastening means common to a valve-strip and its complemental stop for attaching both fixedly at one end to the cage, and fastening means for the stop only, at the opposite end.

7. A cage for a blower or compressor having a ported wall, and an extension of said wall beyond the limits of the cage, in combination with an elongated valve fixed at the outer end of said extension and covering the port in the wall.

8. A cage for a blower or compressor having ported walls, and an extension of said ported walls beyond the confines of the cage, in combination with elastic elongated valve-strips rigidly secured at the outer end of said extension and covering the ports in said walls.

9. A cage for blowers or compressors having ported converging walls, extensions of said ported converging walls continuing beyond the confines of the cage, in combination with elastic elongated valve-strips rigidly secured at the outer end of said extensions and covering the ports in the walls.

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**756,869. VALVE.** ALBERT K. MANSFIELD, Salem, Ohio. Filed July 6, 1903. Serial No. 164,273. (No model.)



*Claim.*—1. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate rigidly supported over the port at a distance from the wall, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a flexible shank projecting from the port-closing portion of the valve-plate, means for securing the extremity of the shank fixedly with relation to the wall, and a continuous thin rib projecting from the port-closing portion of the valve-plate and adapted to bear upon the wall around the port and having a convex edge bearing upon the wall.

2. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate rigidly supported over the port at a distance from the wall, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a flexible shank projecting from and having a width less than the port-closing portion of the valve-plate, and means for securing the extremity of the shank fixedly with relation to the wall.

3. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate rigidly supported over the port at a distance from the wall, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a flexible shank projecting from the port-closing portion of the valve-plate and bent back over itself and the guard-plate, and means for securing the extremity of the shank fixedly with relation to the wall.

4. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate rigidly supported at its opposite extremities over the port at a distance from the wall, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a flexible shank projecting from the port-closing portion of the valve-plate, and means for securing the extremity of the shank fixedly with relation to the wall.

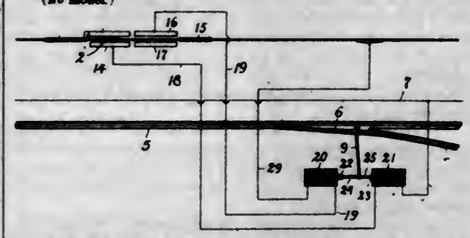
5. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate rigidly supported over the port at a distance from the wall, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a plurality of flexible shanks projecting from the port-closing portion of the valve-plate, and means for securing the extremity of the shanks fixedly with relation to the wall.

6. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate rigidly supported by one of its ends over the port at a distance from the wall, a wing projecting from the guard-plate at its opposite end and serving as a supplemental support for the guard-plate, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a flexible shank projecting from the port-closing portion of the valve-plate, and means for securing the extremity of the shank fixedly with relation to the wall.

7. In a valve, the combination, substantially as set forth, of a ported wall, a guard-plate disposed over the port at a distance from the wall, a flexible metallic valve-plate disposed between the wall and the guard-plate and adapted to cover the port, a flexible shank projecting from the port-closing portion of the valve-plate and bent back over itself and the guard-plate, and a screw engaging the shank and guard-plate and serving to secure them rigidly to each other and in relation to the ported wall.

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**756,870. ELECTRIC-RAILWAY SWITCH.** MELBOURNE A MARES, Jr., Brookline, Mass. Filed Feb. 4, 1903. Serial No. 141,823. (No model.)



*Claim.*—1. In an automatic switch, the combination of a switch-point, magnetically-operated devices controlling said switch-point, a trolley-wire, and two pairs of contact-bars supported by said wire; one bar of the first pair being in permanent circuit with said wire but the other normally insulated therefrom and connected with one of said magnetically-operated devices, the two bars of this pair being put into circuit by the passage of a trolley-wheel between and in contact with them; and both of the other pair of bars being permanently insulated from said wire, but one thereof being connected with the other of said magnetically-operated devices and the latter being wired to said trolley-wire; the first-named magnetically-operated device being in circuit with the track-return, substantially as described.

2. In an automatic switch, the combination with the trolley-wire of the insulating-block suspended therefrom, the contact-bars fixed to the under side of said block and having inclined inner faces constructed to receive a trolley-wheel between them, and the acute-angled plates fixed to said trolley-wire and having their vertical ends close to said block and bars, whereby the trolley-wheels of passing

cars are directed to and from their path between said bars, substantially as described.

3. In an automatic switch, the combination with the trolley-wire, of the insulating-block suspended therefrom, the contact-bars fixed to the under side of said block and having inclined inner faces constructed to receive a trolley-wheel between them, and the two acute-angled plates fixed to said trolley-wire with their vertical ends close to said block, and with one of said plates in permanent circuit with one of said contact-bars, substantially as described.

4. In an automatic switch, the combination of the trolley-wire, the insulating-block suspended therefrom, the two pairs of contact-bars fixed to the under face of said block, one bar of one of said pairs being in permanent circuit with the trolley-wire, means for guiding trolley-wheels to and from the space between said bars, a switch-point, two electrically-operated solenoids having their cores constructed to throw said switch, electric connections between one of said solenoids with the trolley-wire and with the pair of contact-bars not in circuit with the trolley-wire, and electric connections between the other of said solenoids and the track-return and also with that one of the contact-bars of the pair which is companion to the one in permanent circuit with the trolley-wire, substantially as described.

5. In an automatic switch, the combination with the switch-point having the vertical spindle rigid therewith, the lever-arm fixed to the lower end of said spindle, the solenoids having the cores movable therein, the rods projecting from said cores and terminally joined to the extremity of said lever-arm, a water-tight box inclosing said parts, and partitions in said box having openings through which said rods reciprocate and by which they are supported, substantially as described.

6. In an automatic switch, the combination with the track, switch-point, spindle, lever-arm and solenoids connected with said arm, of the T-shaped box fitted to said track and inclosing said arm and solenoids and having the water-tight covers, substantially as described.

7. In an automatic switch, the combination with the track, switch-point and lever-arm rigidly connected with said switch-point, of the T-shaped box divided by vertical partitions into four chambers one of which partitions is slotted to permit the passage of said lever-arm, solenoids located in the two chambers in the arms of the T, cores in said solenoids, rods rigid therewith and projecting through the remaining two of said partitions and joining said lever-arm, and stuffing-boxes for said rods in said partitions, substantially as described.

8. In an automatic switch, the combination with the track, switch-point, spindle and lever-arm, of the T-shaped box having the rabbets in its upper edges and another set below the first, three vertical partitions, two rising only to the level of the lower set of rabbets and the other partition slotted for the passage of said lever-arm, a plate secured water-tight to the lower rabbets below said track and having a stuffing-box and opening for said spindle, a plate secured water-tight upon the lower set of rabbets over said low partitions, covers fitted to the upper rabbets, and electrically-operated devices located in said box and connected with said lever-arm, substantially as described.

9. In an automatic switch, the combination with the switch-point, solenoids and cores for said solenoids constructed by their reciprocation to shift said switch, of stops for receiving the impact of said cores and thereby relieving the other parts of strain and shock, substantially as described.

10. In an automatic switch, the combination with the switch-point, spindle rigid therewith, and lever-arm projecting from said spindle, of two solenoids having cores connected with said arm, and stops for said cores comprising screw-plugs fitting within the rear ends of the solenoids, substantially as described.

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**756,871. SPECTACLES.** SIGOFREDO G. MARENUTTI, Los Angeles, Cal. Filed Mar. 4, 1899. Serial No. 707,787. (No model.)



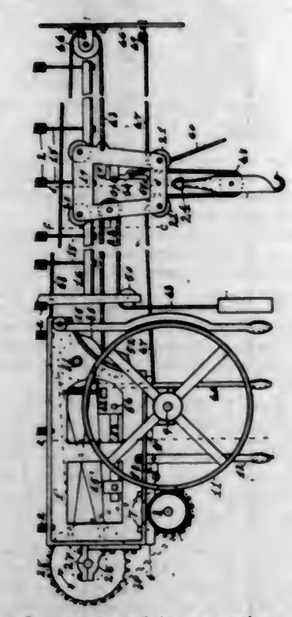
*Claim.*—1. In combination with the temples of a pair of spectacles, retainers, each provided with a slot extending from end to end thereof and opening laterally to the surface to permit lateral introduction and removal of the temple, the slot being of a form to cause the temple to bind therein when forced to its seat or bearing.

2. As a new article of manufacture, a retainer for spectacles, provided with a slot extending from its lateral surface inward toward its longitudinal axis, and of a form to receive and automatically bind a spectacle-temple when the latter is pressed into the slot.

3. In combination with a retainer having a slot extending in the direction of its length, a spectacle-temple normally of a shape different from that of said slot and introduced into the slot under pressure, whereby it is slightly distorted from its normal form and caused to bind and hold within the slot by reason of the friction incident to such distortion.

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**756,872. HOISTING AND CARRYING MACHINE.** JOHN MELCHER, Appleton, Wis. Filed Oct. 9, 1903. Serial No. 176,344. (No model.)



*Claim.*—1. In a rope-transmission car-running mechanism for canning and similar factories, a driven shaft, means for driving said shaft in either direction, a single-groove rope-pulley secured to said shaft, a track arranged substantially at right angles with said shaft, a car arranged to run upon said track, an idler-pulley mounted for revolution in a fixed position beyond said car, a rope having one end secured to one end of said car, thence extending to and over said idler-pulley and to and over the single-groove rope-pulley of said driven shaft, thence to and over an idler-pulley of said car, returning toward said single-groove rope-pulley and passing over the sheave of a fixed single sheave-block, and a weight secured to the end of the rope of sufficient amount for taking up any slack in said rope, substantially as described.

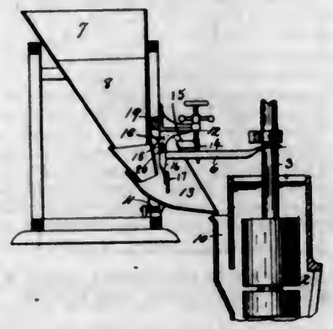
2. In a rope-transmission car-running mechanism for canning and similar factories, a driven shaft, a single-groove rope-pulley secured to said shaft, a track arranged substantially at right angles with said shaft, a car arranged to run upon said track, an idler-pulley mounted for revolution in a fixed position near the end of said track, a rope having one end secured to one end of said car, thence extending to and over said idler-pulley and to and over said single-groove rope-pulley and then to the opposite end of said car, in combination with a second grooved rope-pulley arranged to press said rope against the groove of the first-named rope-pulley, substantially as set forth.

3. The combination of a driven shaft suitably arranged for revolution, a friction-pulley thereon, a second shaft arranged for revolution parallel with the first-named shaft having a rope-winding spool thereon and a pulley adapted to be engaged frictionally with the first-named pulley, a lever arranged for engaging the friction-faces of said pulleys, a brake arranged for lowering any weight which a rope upon said spool may have raised, a track arranged substantially at right angles with said shafts, a car arranged to run upon said track, two sheave-pulleys arranged in the lower part of said car, a single sheave-block arranged below said car having a hook at its lower end, means for the engagement of said block with the car when the block is raised to a predetermined point, a rope having one end secured to a fixed part, thence extending to and over one of the sheave-pulleys of said car, thence descending to and around the pulley of said single sheave-block and up and over the second sheave of the car, thence extending to and being secured around the aforesaid spool, a car-running mechanism comprising a third shaft arranged to be revolved from the first-named shaft, and having secured thereon a pulley, a fourth shaft arranged for revolution having suitable pulleys and belts for its being revolved in either direction, a single-groove rope-pulley secured to said shaft, an idler-pulley mounted for revolution in a fixed position at a distance from said rope-pulley and beyond the aforesaid car, a rope secured to one end of said car, thence extending to and over said idler-pulley and to and over said single-groove pulley upon the aforesaid shaft and then to the opposite end of said car and over an idler-pulley therein, returning toward said single-groove rope-pulley and passing over a sheave in a fixed single sheave-block, and a weight secured to the end of said rope of sufficient amount for taking up any slack in said rope, a second single-groove rope-pulley arranged to press said rope against the groove of the first-named rope-pulley, and means operative by the workman for releasing said single sheave lifting-block from engagement with said car when the car has been run to the desired point, substantially as described.



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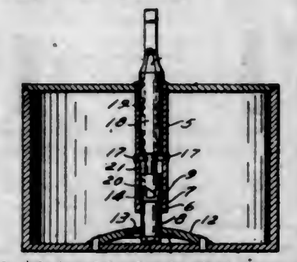
**756,873. STAMP-MILL.** WILLIAM A. MERRALLS, San Francisco, Cal. Filed Dec. 5, 1900. Serial No. 38,735. (No model.)



*Claim.*—A stamp-mill having a battery of vertical reciprocating stamps in alinement, individual intermittently-moving feeders therefor, and means for proportioning the extent of movement of each feeder to the excess of stroke of reciprocation, over and above a minimum stroke, of its corresponding stamp-stem, whereby each feeder is entirely controlled by the amount of ore between the corresponding shoe and die, substantially as described.

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**756,874. LOCK.** WILLIAM R. METSEL, Chicago, Ill., assignor to Edmonds-Metsel Manufacturing Company, Chicago, Ill. Filed Sept. 2, 1903. Serial No. 171,560. (No model.)



*Claim.*—In a device of the class described, the combination of a tubular keyway having a shoulder projecting into same; and a key having a substantially cylindrical shank fitting said keyway and having a longitudinal groove extending along the shank and having a transverse groove extending around the shank at right angles to the longitudinal groove, said grooves being of suitable size and suitably located to receive said shoulder and control the rotation of said key, substantially as described.

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**756,875. STAIR-CARPET ROD AND FASTENER.** CHRISTOPHER MICHAEL, Calumet, Mich., assignor of one-half to Walter Webb, Calumet, Mich. Filed July 20, 1903. Serial No. 166,362. (No model.)



*Claim.*—1. A fastener of the kind described comprising a metal plate formed of one piece of metal bent at a right angle to form a vertical and a horizontal member, one of said members being bent outwardly upon itself to form a loop portion, said loop being arranged adjacent to vertex of the angle, and means for securing the plate in position.

2. A stair-rod fastener comprising a strip of metal bent in the form of a right angle providing a vertical and horizontal member, the horizontal member having an integral spring-loop adjacent the vertex of the angle, the members of said loop being secured at their lower ends, substantially as described.

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**756,876. HOOK AND EYE.** ANNA G. MILLER, Muskegon, Mich. Filed Mar. 31, 1903. Serial No. 150,413. (No model.)



*Claim.*—1. As an article of manufacture, a hook and eye, means integral therewith for attaching and securing the hook and eye, the hook comprising a base, a guard, an S-shaped bend, formed of the material of which the hook is made, a tongue and an abutment formed on the tongue opposite the S-shaped bend, the abutment and bend inclosing an eye-rest, the tongue lying over the guard, the passage between the tongue and guard being out of alinement with the passage between the abutment and the S-shaped bend.

2. As an article of manufacture a hook and eye, means on each member and integral therewith for securing the members to the material, the hook comprising a base, a raised guard, an S-shaped bend and a tongue lying over the guard, the tongue and bend inclosing an eye-rest for the reception of the eye.

3. As an article of manufacture, a pair of engaging members, one member provided with claws projecting above the base portion of the member and then bent downwardly and prongs projecting downwardly below the base and then upwardly, the ends of the prongs received within the space inclosed by the claws which serve as guards for the ends of the prongs.

4. As an article of manufacture, a hook and eye, the base of the eye provided with upwardly-projecting claws, embracing claws and downwardly-projecting prongs.

5. As an article of manufacture, the combination with an eye, of a hook provided with a base, the material of which the hook is constructed being slightly elevated to form a guard connected to the base, an S-shaped bend extending downwardly from the guard, a tongue, the guard and tongue inclosing an eye-rest, the end of the tongue lying over the guard, the tongue provided with an abutment located opposite and approximately on a plane with the S-shaped bend.

6. As an article of manufacture, a hook comprising a base portion, an S-shaped bend formed by the material of which the hook is constructed, the S-shaped bend connected with the base and a tongue, the S-shaped bend and tongue inclosing an eye-rest which is located on a plane below that of the base portion, the tongue extending toward the base and over the S-shaped bend.

7. As an article of manufacture, a hook comprising an S-shaped bend with parallel members, a portion of the material of which the bend is formed constituting a base, and a tongue extending parallel with the parallel members of the S-shaped bend.

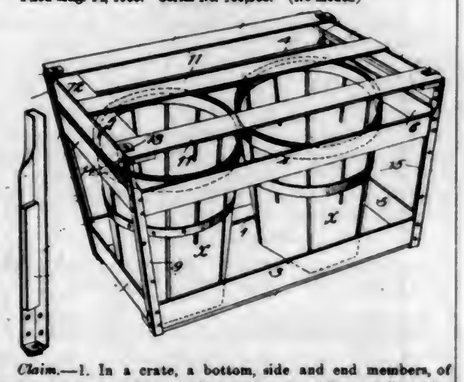
8. As an article of manufacture, a hook comprising an S-shaped bend having parallel members, a portion of which constitutes a base, an abutment located opposite the S-shaped bend and a tongue overlying the S-shaped bend and parallel with the parallel members of the S-shaped bend, the tongue and S-shaped bend inclosing an eye-rest.

9. As an article of manufacture, a hook comprising an S-shaped bend having parallel members, a deflected guard extending from one of the members of the S-shaped bend and terminating in a base, an abutment located opposite the S-shaped bend and a tongue overlying the S-shaped bend and parallel with the parallel members of the S-shaped bend, the abutment and S-shaped bend inclosing an eye-rest, the passage between the tongue and S-shaped bend being out of alinement with the entrance of the eye-rest.

10. As an article of manufacture, a hook comprising an S-shaped bend having upper, intermediate and lower members, a portion of the material of which the bend is formed constituting a base and a tongue extending over the upper member of the S-shaped bend.

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**756,877. SHIPPING-CRATE. FRANK O. MILLER, Holley, N. Y.** Filed Aug. 14, 1903. Serial No. 169,503. (No model.)



*Claim.*—1. In a crate, a bottom, side and end members, of which the ends are of greater height than the sides, metallic strips bent to form angle-bars, the webs of such angle-bars being secured to the side and end members of the crate, and the two angularly-related webs being bent into parallel relation at points above the top of the side members, thereby forming channel-bars for embracing the upper portions of the end members.

2. In a crate, a corner strip or member formed of a strip of metal bent into the form of an angle-bar for the greater portion of its length, the two webs at the upper end of said strip being bent to form a channel-bar, and an auxiliary bracing and spacing strip secured to said angle-bar.

3. In a crate, a bottom, spaced strips constituting side and end members, corner-braces formed of angle-bars, auxiliary spacing and bracing strips carried by the angle-bars at points between the strips which form the side and end members, the upper ends of the braces being bent to form channel-bars and serving to hold the upper portions of the end members.

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**756,878. SHOE-TOP FORM. IRVING A. MERRY, Brockton, Mass.** Filed Nov. 30, 1903. Serial No. 183,174. (No model.)



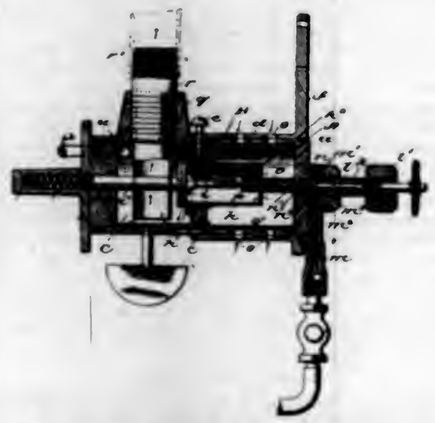
*Claim.*—1. A form for the top portion of shoe-uppers consisting of a filler-block, and a flexible body, the upper edge of which is attached to said filler-block, said body having free, substantially vertical edges to afford adjustability to the cross-sectional form and size thereof, and having an open bottom and a flexible lower edge, substantially as described.

2. A form for the top portion of shoe-uppers, consisting of a filler-block and a body the upper edge of which is folded about said block and attached thereto, said body provided with a recess at the rear adjacent the filler-block, for the purpose set forth.

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**756,879. CARBURETER FOR INTERNAL-COMBUSTION ENGINES. GEORGE MCCADDEN, St. Cloud, Minn.** Filed June 15, 1903. Serial No. 161,331. (No model.)

*Claim.*—1. A carbureter comprising a cylindrical shell *a* forming at one end an air-supply chamber A, having perforations in its walls and a sleeve fitting around it, an air-mixing chamber C in the opposite end having an opening *u* in its walls to receive priming-oil, a partition *c* between said chambers, a sleeve *h* secured within said partition to direct aspirated air, a check-valve pressing against one end of said sleeve, a nozzle to discharge fuel into the sleeve A a fuel-regulating valve *l* and a swiveled fuel connection *m*, substantially as described.

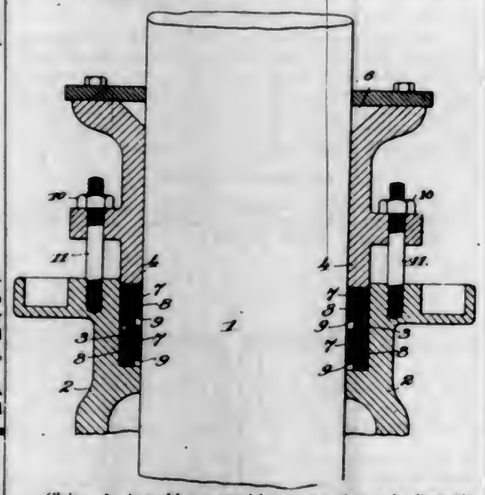


2. A carbureter comprising a shell having at one end an air-supply compartment A and at the other end an air-mixing compartment C provided with an outlet or nipple *r*, a sleeve *h* and a check-valve interposed between said compartments, a nozzle arranged to discharge fuel into said sleeve, the discharge-nipple *r* penetrating the mixing-chamber and having perforations transversely thereof to accommodate the stem of the check-valve, substantially as described.

3. The combination of a carbureter, a fuel-supply, and a priming device consisting of a U-shaped member whereof one end is provided with a bulb and the other end with a connection adapted for communication with the mixing-chamber of the carbureter, and whereof the lower end of the submerged part of said member is perforated and covered with gauze material, substantially as described.

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**756,880. PACKING FOR PLUNGERS. WALTER R. MCINTIRE, Boston, Mass.** Filed Sept. 3, 1903. Serial No. 171,738. (No model.)



*Claim.*—1. A packing comprising a cup-ring and adjustable means for maintaining the same in contact with the plunger, substantially as described.

2. A packing comprising a cup-ring and adjustable elastic means for maintaining the same in contact with the plunger, substantially as described.

3. A packing comprising a cup-ring and an elastic backing compressed against the outside of the cup-ring to maintain the same in contact with the plunger, substantially as described.



4. A packing comprising a leather cup-ring, a rubber supporting-ring, and means for compressing the supporting-ring against the outside of the cup-ring to maintain the same in contact with the plunger, substantially as described.

5. A packing for plungers, having, in combination, a cup-ring located in a stuffing-box through which the plunger passes, an elastic supporting-ring filling the space between the cylindrical part of the cup-ring and the walls of the stuffing-box, and a gland for compressing the elastic supporting-ring to adjust and maintain the pressure of the same against the cup-ring, substantially as described.

6. A packing comprising a plurality of alternate leather cup-rings and solid-rubber supporting-rings adapted to be located in a stuffing-box, and adjustable means for compressing the same, substantially as described.

7. A packing comprising a cup-ring, an elastic supporting-ring surrounding the same, and adjustable means for compressing the supporting-ring to adjust the pressure of the same against the cup-ring, substantially as described.

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**756,881. LENS. ULRICH NERRLICH, New York, N. Y., assignor to the Scientific Lens Co., New York, N. Y., a Corporation of New York.** Filed Feb. 9, 1904. Serial No. 192,744. (No model.)



*Claim.*—1. The combination with a lens, of means for changing the focal distance of the lens during the time of exposure.

2. The combination with a lens, of means for gradually changing the focal distance of the lens during the time of exposure.

3. The combination with a plurality of lenses, of means for changing the equivalent focal distance of the lenses during the time of exposure.

4. The combination with a plurality of lenses, of means for gradually changing the equivalent focal distance of the lenses, during the time of exposure.

5. The combination with a plurality of lenses, of means for changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure.

6. The combination with a plurality of lenses, of means for gradually changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure.

7. The combination with a plurality of lenses, of elastic or resilient means for changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure.

8. The combination with a plurality of lenses, of elastic or resilient means for gradually changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure.

9. The combination with a plurality of lenses, of means for changing the distance between the lenses during the time of exposure.

10. The combination with a plurality of lenses, of means for gradually changing the distance between the lenses during the time of exposure.

11. The combination with a lens system comprising a plurality of lenses or lens sets, of elastic or resilient means for changing the distance between the lenses during the time of exposure.

12. The combination with a lens system comprising a plurality of lenses or lens sets, of elastic or resilient means for gradually changing the distance between the lenses during the time of exposure.

13. The combination with a lens, of means for changing the focal distance of the lens during the time of exposure, and means for adjusting the amount of the change.

14. The combination with a lens, of means for gradually changing the focal distance of the lens during the time of exposure, and means for adjusting the amount of the change.

15. The combination with a plurality of lenses, of means for changing the equivalent focal distance of the lenses during the time of exposure, and means for adjusting the amount of the change.

16. The combination with a plurality of lenses, of means for gradually changing the equivalent focal distance of the lenses during the time of exposure, and means for adjusting the amount of the change.

17. The combination with a plurality of lenses, of means for gradually changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set, and means for adjusting the amount of the change.

18. The combination with a plurality of lenses, of means for changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure, and means for adjusting the amount of change.

19. The combination with a plurality of lenses, of means for gradually changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure, and means for adjusting the amount of the change.

20. The combination with a plurality of lenses, of elastic or resilient means for changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure, and means for adjusting the amount of the change.

21. The combination with a plurality of lenses, of elastic or resilient means for gradually changing the location of the focus of one lens or lens set relatively to the location of the focus of another lens or lens set during the time of exposure, and means for adjusting the amount of the change.

22. The combination with a plurality of lenses, of means for changing the distance between the lenses during the time of exposure, and means for adjusting the amount of change.

23. The combination with a plurality of lenses, of means for gradually changing the distance between the lenses during the time of exposure, and means for adjusting the amount of the change.

24. The combination with a plurality of lenses, of elastic or resilient means for changing the distance between the lenses during the time of exposure, and means for adjusting the amount of change.

25. The combination with a plurality of lenses, of elastic or resilient means for gradually changing the distance between the lenses during the time of exposure, and means for adjusting the amount of the change.

26. The combination with a plurality of lenses or lens sets, of a casing for each lens or lens set, one casing surrounding the other and capable of movement relatively thereto, of means for causing said movement, and means for adjusting the amount of said movement.

27. The combination with a plurality of lenses or lens sets, of a casing for each lens or lens set and telescoping each other, means for causing said movement during the time of exposure, and means for adjusting the amount of said movement.

28. The combination with a plurality of lenses or lens sets, of a casing for each lens or lens set and telescoping each other, means for causing a gradual movement of one of the casings during the time of exposure, and means for adjusting the amount of the movement.

29. The combination with a plurality of lenses or lens sets, of a casing for each lens or lens set, one casing telescoping the other and slidable therein, elastic or resilient means for causing said movement during the time of exposure, and means for adjusting the amount of said movement.

30. The combination with a plurality of lenses or lens sets, of a casing for each lens or lens set, one casing telescoping the other and movable therein, elastic or resilient means for causing gradually said movement during the time of exposure, and means for adjusting the amount of said movement.

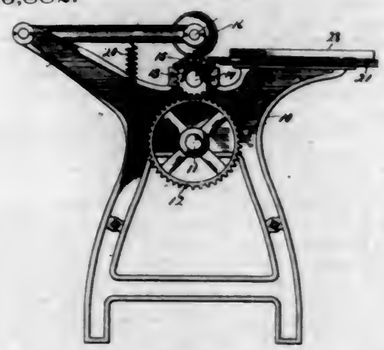
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**756,882. CREASING-MACHINE. CHARLES R. NELSON, Chicago, Ill.** Filed Aug. 14, 1903. Serial No. 169,497. (No model.)

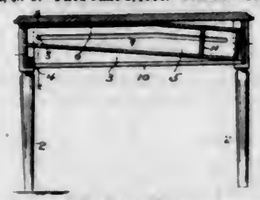
*Claim.*—1. In a creasing-machine, in combination, a pair of complementary intermeshing circumferentially-ribbed rolls, having the apexes of their ribs concaved and the apexes of the bottoms of the grooves between their ribs convexed.

2. In a creasing-machine, in combination, a frame, a roll journaled in the frame, a swinging frame, a roll journaled in the swinging frame and bearing upon the first-mentioned roll, the faces of said rolls being correspondingly circumferentially ribbed, the apexes of their ribs and the bottoms of the intervening grooves being concaved and means for rotating the rolls.

## 756,882.



## 756,883. COMBINED TABLE AND DESK. WILLIAM H. O'KEEFE, Lockport, N. Y. Filed June 2, 1903. Serial No. 159,766. (No model.)



*Claim.*—1. An article of manufacture comprising a table, a desk to slide under the top of the table and having a sloping top, and means for automatically raising the desk as it is pushed under the table-top and causing its sloping top to lie parallel with the under face of the table-top.

2. An article of manufacture comprising a table, a desk to slide under the top of the table and having a sloping top, means for raising the inner end of the desk when the desk is pushed under the table and causing said sloping top of the desk to lie parallel with the under face of the table-top, and an apron depending from the inner end of the desk to rest against the frame of the table.

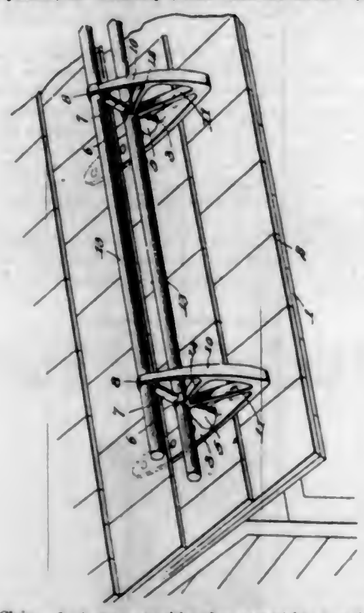
3. An article of manufacture, comprising a table having a fixed top, a desk-body, means for supporting said desk-body from the fixed top, one of said parts having elongated slots or grooves, each slot or groove having a portion at an obtuse angle to the remaining portion of the slot or groove, and pins projecting from the other part of the device and entering said slots or grooves for guiding the desk-body and limiting the movements thereof.

4. An article of manufacture, comprising a table, depending side aprons, pins projecting inwardly from said side aprons, a desk-body having a portion of its top inclined, said desk-body having elongated slots or grooves in its sides for the reception of said pins, a portion of each slot or groove being parallel with the inclined part of the desk-top and the remaining portion of each slot or groove being parallel with the other part of the desk-top.

5. An article of manufacture, comprising a table having depending side aprons, pins projecting inwardly from said aprons near their inner ends, a desk-body having a portion of its top inclined and having angular slots or grooves in its sides parallel with the desk-top, for the reception of said pins, an apron on the inner end of the desk-body normally supported against the inner end of the table by said pins, flanges on the side aprons for normally supporting the rear end of the desk-body, said pins and slots serving to guide and limit the movements of the desk-body and also to assist in supporting the same in both its open and closed positions.

6. An article of manufacture, comprising a table having a fixed top and depending aprons on three sides thereof, inwardly-projecting flanges on the parallel side aprons, a bar connecting the table-legs at the open side of the table, a desk-body fitting between the bar and table-top when the desk is extended and supported at its rear end on the flanges when the desk is closed under the table, said desk-body having slots or grooves, each having a part at an obtuse angle to the other part, pins projecting from the side aprons and entering said slots or grooves and a depending strip or apron on the inner end of the desk-body and forming the fourth apron and closing against said bar when the desk-body is pushed in.

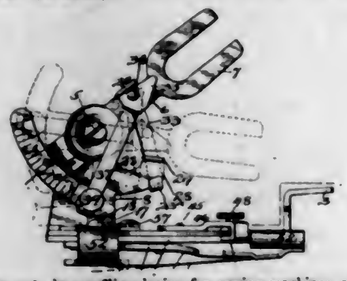
## 756,884. SNOW-GUARD FOR ROOFS. WILLIAM W. PARRY, Plymouth, Pa. Filed July 7, 1903. Serial No. 164,594. (No model.)



*Claim.*—1. A snow-guard bracket comprising a roof-engaging member having an arm extending at right angles therefrom, said arm being in the form of a truncated cone with the base thereof connected to the said member and terminating at its apex in a transversely-disposed pipe-socket, and a brace connecting with one end of the roof-engaging member and with the socket.

2. A snow-guard bracket comprising a roof-engaging member having an arm extending at right angles therefrom, said arm being in the form of a truncated cone with the base thereof connected with the said member and its apex terminating in a transversely-disposed pipe-socket, an arm connected with the socket and extending at right angles to the roof-engaging member, a pipe-socket carried by the outer end of the latter arm, and braces connecting respectively with the first-named arm and with the pipe-sockets.

## 756,885. RUFFLING ATTACHMENT FOR SEWING-MACHINES. WINSLOW R. PARSONS, Chicago, Ill. Filed Nov. 10, 1902. Serial No. 130,642. (No model.)



*Claim.*—1. In a ruffling device for sewing-machines, a needle-bar lever, a ruffling-blade lever, a pivot for said levers, and a ruffling-frame standard supporting said pivot in combination with ball-bearings interposed between said levers, and the supporting-standard, substantially as described.

2. In a ruffling device for sewing-machines, a needle-bar lever, a ruffling-blade lever, a pivot for said levers, and a ruffler-frame standard supporting said pivot in combination with a plate provided with a series of perforations interposed between said levers and the standard, and antifriction-balls seated in said series of perforations and bearing against said levers and standard, substantially as described.



3. In a ruffling device for sewing-machines, a ruffler-frame standard, a needle-bar lever and a ruffling-blade lever respectively arranged on opposite sides of said standard, a pivot common to both of said levers supported by said standard in combination with plates arranged upon each side of the standard next thereto and supported by said pivot, and provided with a series of perforations, the balls seated therein and against said levers and constituting antifriction-bearings therefor, substantially as described.

4. In a ruffling device for sewing-machines, a needle-bar lever and a ruffling-blade lever each provided with annular grooves, a pivot for said lever, a ruffling-frame standard supporting said pivot in combination with plates interposed between said levers and the standard, and provided with perforations at intervals, balls projecting into said perforations and the annular grooves in said levers and constituting ball-bearings for the levers, substantially as described.

5. In a ruffling device for sewing-machines, a ruffling-blade, means for operating the same, and a guide-plate therefor, in combination with a shifting-fulcrum for the ruffling-blade interposed between the guide-plate and said blade, substantially as described.

6. In a ruffling device for sewing-machines, a ruffling-blade, a ruffling-blade carrier and a ruffling-blade guide in combination with an antifriction-ball interposed between said carrier and guide and constituting an antifriction ball-bearing for the ruffling-blade, substantially as described.

7. In a ruffling device for sewing-machines, a ruffling-blade, means for operating said blade, and a guide-plate therefor provided with a longitudinal slot in combination with an antifriction-ball projecting in said slot and interposed between said guide-plate and the ruffling-blade, substantially as described.

8. In a ruffling device for sewing-machines, a ruffling-blade, means for operating said blade, and a guide-plate therefor provided with a longitudinal slot, a pin rigidly connected with the ruffling-blade, projecting into said slot and thereby serving to guide the movements of the blade in a straight line in combination with an antifriction-ball arranged between the ruffling-blade and said guide-plate and projecting in said slot, substantially as described.

9. In a ruffling device for sewing-machines, a ruffling-blade, a ruffling-blade lever, a needle-bar lever and means for operating the same, in combination with stops one of which is adjustable, a contact device and means to adjust said contact device to engage one of said stops to the exclusion of the other or to engage both of said stops, and to be disengaged from both of said stops, substantially as described.

10. In a ruffling device for sewing-machines, a ruffling-blade, a ruffling-blade lever, a needle-bar lever and means for operating the same, in combination with upper and lower stops, the upper one of which is adjustable, and a contact device and means to adjust said contact device to engage one of said stops to the exclusion of the other, or both of said stops, and to be disengaged from both stops, substantially as described.

11. In a ruffling device for sewing-machines, a ruffling-blade, a ruffling-blade lever, a needle-bar lever and means for operating the same, in combination with upper and lower stops, the upper one of which is adjustable, and a pivoted contact device adapted to be moved to engagement with the upper stop to the exclusion of the lower stop, or to engagement with both of said stops, and to be disengaged from contact with both of said stops, substantially as described.

12. In a ruffling device for sewing-machines, a ruffler-frame, a ruffling-blade, means for operating said blade, a presser-piece mounted on said frame and provided with a needle-hole, a sliding frame in combination with a presser-foot, and a separating-blade secured to said sliding frame and simultaneously adjustable with the presser-foot with reference to the needle-hole in the presser-piece, substantially as described.

13. In a ruffling device for sewing-machines, a ruffler-frame, a ruffling-blade, means for operating said blade, a presser-piece mounted on said frame and provided with a needle-hole, a sliding frame in combination with a presser-foot and a separating-blade secured to the sliding frame and simultaneously adjustable with reference to the needle-hole in the presser-piece and means for adjusting said presser-foot and separating-blade, substantially as described.

14. In a ruffling device for sewing-machines, a ruffler-frame, a ruffling-blade, means for operating said blade, a sliding frame, a presser-foot and separating-blade secured to said sliding frame in combination with an eccentric connection between the ruffling-frame and the sliding frame, for adjusting the latter and with it the presser-foot and separating-blade, substantially as described.

15. In a ruffling device for sewing-machines, a ruffler-frame, a ruffling-blade, means for operating said blade, a sliding frame provided with an eccentric bearing-surface, a presser-foot supported by the sliding frame, in combination with an eccentric pivoted to the ruffling-frame and engaging said bearing-surface and means for adjusting said eccentric and with it the sliding frame and presser-foot, substantially as described.

16. In a ruffling device for sewing-machines, a ruffler-frame, a ruffling-blade, means for operating said blade, and an eccentric pivoted thereto in combination with a presser-foot, a sliding frame, a bearing for said eccentric, whereby the presser-foot and sliding frame are adjusted upon the ruffling-frame, a gage upon the sliding frame, a lever secured to the eccentric and cooperating with said gage to indicate the degree of adjustment of the sliding frame, and means for locking said lever to the sliding frame in its various positions upon the gage, substantially as described.

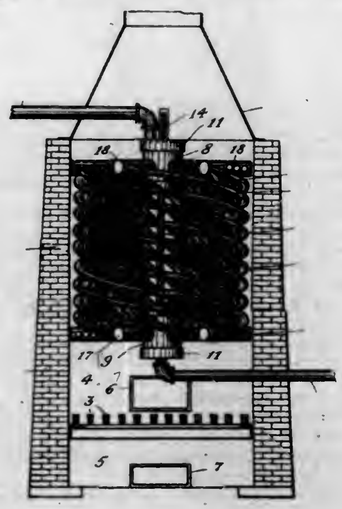
17. In a ruffling device for sewing-machines, a ruffler-frame, a ruffling-blade and means for operating said blade, in combination with a sliding frame provided with elongated slots toward opposite ends thereof, a set-screw passing through one of said slots into the ruffler-frame, and a pin in the ruffler-frame projecting through the other of said slots whereby the sliding frame is secured to and adjustable upon the ruffler-frame in a straight line, and a presser-foot and separating-blade secured to and simultaneously movable with the sliding frame, substantially as and for the purpose described.

18. In a ruffling device for sewing-machines, the ruffler-frame, a ruffling-blade and means for operating said blade, the needle-bar lever and the ruffling-blade lever pivoted thereto a contact device pivoted to the needle-bar lever, stops upon the ruffling-blade lever, means for adjusting one of said stops and the contact device with reference to the needle-bar lever and to each other, a presser-piece provided with a needle-hole mounted upon the ruffler-frame, in combination with a sliding frame, a presser-foot and a separating-blade secured thereto and means for simultaneously adjusting said presser-foot and separating-blade to each of the several various adjustments of the ruffling-blade, substantially as described.

19. In a ruffler, a ruffling-blade, a separating-blade and means for operating and adjusting said blades with reference to the needle-hole in combination with a presser-piece provided with a needle-hole, a presser-foot simultaneously adjustable with the separating-blade and having an elongated needle-hole providing a needle-passage in the presser-foot registering with the needle-hole in the presser-piece throughout the adjustment of the presser-foot, substantially as described.

20. In a ruffling device for sewing-machines, a ruffling-blade, and a carrier therefor in combination with a bayonet-joint connecting said blade and carrier, a perforation and an opposing pin adapted to fit, register with and project into said perforation and lock the bayonet-joint in a closed position, substantially as and for the purpose described.

## 756,886. WATER-HEATING APPARATUS. HERBERT E. PENNEY, Minneapolis, Minn., assignor to W. S. Nott Company, Minneapolis, Minn., a Corporation. Filed Oct. 1, 1903. Serial No. 175,285. (No model.)



*Claim.*—1. In a water-heating apparatus, the combination with a suitable housing, of a water-heater therein composed of lower and upper drums and a group of tube-sections connected thereto and comprising series of lower and upper radially-disposed headers and series of coils arranged in close radial order connecting pairs of the headers and extending on substantially equidistant spiral planes around a common vertical axis and providing spiral passage-ways intermediate the courses of the series of coils of adjacent tube-sections, and pipes connected to the drums for maintaining the circulation, substantially as set forth.

2. In a water-heating apparatus, the combination with a suitable housing, of a water-heater therein composed of lower and upper drums and a group of tube-sections connected thereto and comprising series of lower and upper radially-disposed headers and spiral tubes connecting them, each tube-section consisting of a lower and an upper header and a series of coils connected to them in close radial arrangement and extending in spiral courses on a common spiral plane, and the tube-sections of the group being disposed concentrically about a common vertical axis, whereby passage-ways in spiral courses around the common axis are produced intermediate the coils of adjacent tube-sections, and pipes connected to the drums for maintaining the circulation, substantially as set forth.

## 756,887. SOUNDING APPARATUS. JOHN PHILP, New York, N. Y.

Filed July 10, 1903. Serial No. 164,963. (No model.)



*Claim.*—1. In sounding apparatus, the combination of a float-anchor secured to a line attached to a reel, said reel, a sounding-weight attached to a line passing over a roller or other bearing upon the said anchor-float and secured to a reel, said reel, and means for operating said reels for the purpose and substantially in the manner described.

2. In sounding apparatus, the combination of a float-anchor secured to a line attached to a reel, said reel, a sounding-weight attached to a line passing over a roller or other bearing upon the said anchor-float and secured to a reel, said reel, means for operating said reels, and means for independently and automatically indicating the lengths of the float-anchor line and of the sounding-line played out, substantially as set forth.

3. In sounding apparatus, the combination with a reel and mechanism for operating the same, of a line attached to said reel at one extremity and to a float-anchor at the other extremity, said float consisting of an anchor-board to which is hinged a float and which is formed with a roller or bearing over which the sounding-line passes, said sounding-line attached to a sounding-weight at one extremity and to a reel at the other extremity, said reel and mechanism for operating the same, for the purpose set forth.

4. In sounding apparatus the combination of a reel and mechanism for operating the same, a line attached to said reel at one extremity and to a float-anchor at the other extremity, said float-anchor consisting of an anchor-board having a float hinged to its upper side above the center of gravity of said anchor-board and provided with a bearing over which the sounding-line passes, said sounding-line attached to a sounding-weight at one extremity and to a reel at the other, said reel and mechanism for operating the same, for the purpose and substantially in the manner set forth.

5. In sounding apparatus, the combination with an anchor-reel and mechanism for operating the same, of a line attached to said anchor-reel at one extremity and to a float-anchor at the other extremity, said float-anchor consisting of an anchor-board having a float hinged thereto and being provided with a roller or bearing over which the sounding-line passes, said sounding-line attached to a sounding-weight at one extremity and to a sounding-reel at the other extremity, said sounding-reel and mechanism for operating the same, and means for independently and automatically indicating the lengths of float-anchor line and of sounding-line played out, substantially as set forth.

6. In sounding apparatus, the combination of the sounding-line *a*, and weight A, anchor-board D, having the hinged float E, and sounding-line bearing *d*, independent reels for the said sounding-line *a*, and anchor-board line *c*, together with means for operating said reels for the purpose and substantially in the manner set forth.

7. In sounding apparatus, the combination of the sounding-line *a*, and weight A, anchor-board D, having the hinged float E, and sounding-line bearing *d*, independent reels for the said sounding-line *a*, and anchor-board line *c*, means for operating said reels, and means actuated through the medium of said reels for automatically indicating the length of line played out, from each of said reels, for the purpose set forth.

8. In sounding apparatus, the combination with the sounding line and weight and with the float-anchor and its line, of an independent reel for each of said lines, each of said reels being provided with winding-gear, and with a pinion which may be drawn in or out of engagement therewith, together with means for applying power to each reel through the medium of said gear and pinion, for the purpose set forth.

9. In sounding apparatus, the combination with the sounding weight and line, and with the float-anchor and its line, of an independent reel for each of said lines, each of said reels being provided with a winding-gear and with a pinion which may be thrown in or out of engagement with said winding-gear, means for applying power to each reel through the medium of its said independent gear and pinion, and means for automatically indicating the length of line played off from each reel, for the purpose set forth.

10. In sounding apparatus, the combination with the sounding weight and line, and with the float-anchor and its line, of an independent reel for each of said lines, gearing for operating each of said reels independently and means for braking each of said reels independently, for the purpose set forth.

11. In sounding apparatus, the combination of the sounding weight and line, and the float-anchor and its line, independent reels for each of said lines, said reels being supported so as to be independently rotatable on a common axis, means for operating and controlling said reels, and means for indicating automatically and simultaneously the length of line played off from each reel, for the purpose set forth.

12. In sounding apparatus, the combination of the sounding weight and line, the float-anchor and its line, independent reels for each of said lines, said reels being supported so as to be independently rotatable on a common axis, means for operating and controlling said reels, and means for indicating automatically and simultaneously upon adjoining concentric dials the length of line played off from each of said reels for the purpose set forth.

13. In sounding apparatus, the combination of the sounding weight and line, the float-anchor and its line, the reel C to which the float-anchor line is attached, formed with the pinion $c^3$, intermediate gearing connecting said pinion $c^3$ indirectly with the gear $p^3$, upon the hollow shaft P, said hollow shaft P, formed with the dial *p*, and pointer *p'*, the stationary dial R, the reel B, to which the sounding-line is attached, formed with the pinion $b^3$, intermediate gearing connecting said pinion $b^3$, indirectly with the gear *q'*, upon the inner shaft Q, said inner shaft Q, formed with the pointer *q*, and means for operating and controlling the said reels C and B, for the purpose set forth.

14. In sounding apparatus, the combination of the sounding-weight A, and line *a*, attached to the reel B, said reel B, rotatable upon the stationary axis H, and formed with the gear-wheel *b*, and pinion $b^3$, the float-anchor board D, provided with the hinged float E, and line-bearing *d*, over which the sounding-line *a*, passes, the float-anchor line *c*, attached to the reel C, said reel C, rotatable upon the stationary axis H, and formed with the gear-wheel *c'*, and pinion $c^3$, the power-shaft L, the movable pinions J and K, supported thereon, means for throwing said pinions into or out of engagement, respectively, with the gears *b* and *c'*, means for independently braking the reels B, C, the stationary dial R, the hollow shaft P, the dial *p*, pointer *p'*, and gear-wheel $p^3$, attached to said hollow shaft P, intermediate gears connecting said gear-wheel $p^3$, indirectly with the pinion $c^3$, on the reel C, the inner shaft Q, the pointer *q*, and gear-wheel *q'*, attached to said inner shaft Q, and intermediate gears connecting the said gear-wheel *q'*, indirectly with the pinion $b^3$, upon the reel B, for the purpose and substantially in the manner described.

15. In sounding apparatus, the combination with independently-rotatable reels carrying respectively a sounding-line and a float-anchor line substantially as set forth, of concentric dials arranged to indicate relatively the difference in the length of line played out from each reel through the medium of suitable gearing interposed between said reels and the pointers, whereby the depth of the sounding may be observed by comparison as herein described.



## 756,888. MANUFACTURE OF THREADS FOR INCANDESCENT MANTLES OR ILLUMINATING-BODIES. ACHILLE M. PLAISETTY, Paris, France.

Filed Mar. 14, 1902. Serial No. 98,273. (No model.)



*Claim.*—1. Process of manufacturing filaments destined for the manufacture of incandescent mantles consisting in incorporating the rare earths in solutions of cellulose and copper-ammonia compounds and then forcing the obtained mixture through small openings.

2. The process of manufacturing filaments for incandescent mantles, consisting in precipitating hydrated oxids out of solutions of compounds of the rare earths by the addition of an alkali, then incorporating these oxids in a solution of cellulose and copper ammonia, and finally forcing the obtained mixture through small openings, as and for the purpose set forth.

3. The process of producing filaments for use in the manufacture of incandescent mantles, consisting in precipitating hydrated oxids out of solutions of compounds of the rare earths by the addition to such solutions of ammonia, then incorporating the precipitated oxids intermittently in a solution of cellulose in copper ammonium, and finally forcing the obtained viscous compound through small openings to form the filaments, as and for the purpose set forth.

4. The process of producing filaments for use in the manufacture of incandescent mantles, consisting in precipitating hydrated oxids out of solutions of compounds of the rare earths by the addition to such solutions of ammonia, then incorporating the precipitated oxids intermittently in a solution of cellulose in copper ammonium, then forcing the obtained viscous compound through small openings to form the filaments, and finally coagulating the said filaments, as and for the purpose set forth.

5. The process of producing filaments for use in the manufacture of incandescent mantles, consisting in precipitating hydrated oxids out of solutions of compounds of the rare earths by the addition of ammonia, then intermittently incorporating these oxids in a solution of cellulose dissolved in copper ammonium, then forcing the viscous fluid thus obtained through small openings, and finally coagulating the resulting filaments in an alkaline bath, as and for the purpose set forth.

6. The process of producing filaments for use in the manufacture of incandescent mantles, consisting in precipitating hydrated oxids out of solutions of compounds of the rare earths by the addition of ammonia, then incorporating these oxids in a solution of cellulose dissolved in copper ammonium, then forcing the resulting viscous fluid through small openings to form the filaments, and finally coagulating the filaments in an alcohol-bath, as and for the purpose set forth.

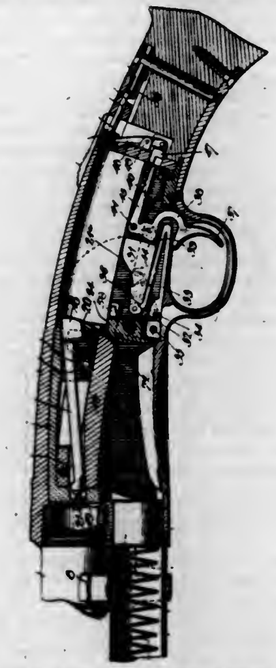
7. The process of producing filaments for use in the manufacture of incandescent mantles, consisting in precipitating hydrated oxids out of solutions of compounds of the rare earths by the addition of ammonia, then incorporating these oxids in a solution of cellulose dissolved in copper ammonium, then forcing the viscous fluid thus obtained through small openings to form the filaments, then subjecting the filaments thus produced to a coagulating-bath, then washing the coagulated filaments in a weak solution of ammonia, and finally drying the same, as and for the purpose set forth.

8. The process of producing filaments for use in the manufacture of incandescent mantles, consisting in dissolving cellulose in a solution of copper ammonia, then incorporating in said solution oxids of illuminating metals, and finally forcing the resulting viscous compound through small openings to form the filaments, as and for the purpose set forth.

9. As an article of manufacture, a material for making incandescent mantles comprising a plastic mass formed of an emulsion of the rare earths, in a solution of cellulose, ammonium and copper salts, as and for the purpose set forth.

## 756,889. MAGAZINE-FIREARM. WASHINGTON F. PLYMPTON, Clearfield, Pa., assignor of one-half to George F. Goss, Wallaceton, Pa.

Filed July 3, 1902. Serial No. 114,308. (No model.)



*Claim.*—1. In a firearm, a reciprocatory breech-block, a recoil-block pivotally mounted therein, a firing-pin slidably mounted in said breech-block and extending through said recoil-block, an extractor having a member disposed in the path of movement of the firing-pin, and a reciprocatory actuator for said recoil-block mounted in the breech block and adapted to engage the firing-pin to operate the extractor.

2. In a firearm, the combination with the tang-head, of a breech-block, a recoil-block pivotally mounted therein and normally abutting against the tang-head, a slidable firing-pin extending through the recoil-block, an extractor carried by the breech-block and having a member disposed in the path of movement of the firing-pin, a member for lifting the recoil-block out of engagement with the tang-head and adapted to engage the firing-pin, and thereby to cause the latter to actuate the extractor.

3. In a firearm, a reciprocatory breech-block, a recoil-block housed within said breech-block and pivoted near the forward end thereof, a tang-head having an butment with which the recoil-block engages, a reciprocatory recoil-block actuator housed within the breech-block which permits the engagement of said recoil-block with said abutment, and means for reciprocating the actuator to cause it on one movement to free the recoil-block from engagement

with the abutment and on the opposite movement to permit the recoil-block to be locked in engagement therewith.

4. In a firearm, a reciprocatory breech-block, a pivoted recoil-block carried thereby, a firing-pin extending through the recoil-block, a reciprocatory recoil-block actuator mounted in the breech-block and having a member to engage the firing-pin, an extractor having a member disposed in the path of movement of the firing-pin, and means for reciprocating the actuator to cause it to retract the firing-pin and thus actuate the extractor.

5. In a firearm, the combination with a breech-block and a pivoted extractor carried thereby, of a firing-pin having a shoulder disposed in the path of movement of the inner end of the extractor, a reciprocatory member carried by said breech-block and adapted to engage said firing-pin, and means for reciprocating said member to cause it to retract said firing-pin and thereby actuate said extractor.

6. In a firearm, the combination with the tang-head, of a breech-block disposed to slide thereon, a recoil-block carried by the breech-block and having its rear end normally locked against movement by coaction with a part of the tang-head, a recoil-block actuator slidably mounted in the breech-block, and mechanism, to reciprocate said recoil-block actuator to throw the recoil-block out of engagement with the abutment, and then to retract the breech-block.

7. In a firearm, a trigger carrying a safety-dog having its nose disposed in alinement with that of the trigger, a lever engaging the dog and having a normal tendency to hold the dog in engagement with the hammer thus to prevent operation of the trigger from releasing the hammer, a breech-block, and a recoil-block having a dog to engage the front end of the lever to hold it out of engagement with the dog when the breech-block is in locked position.

8. In a firearm, a trigger, a safety-dog carried thereby and having a normal tendency to engage the lip of the hammer, a breech-block, a recoil-block carried thereby, a lever having one end in engagement with the safety-dog, a spring-actuated lifting-dog in engagement with the other end of the lever and operating to hold the safety-dog out of engagement with the hammer when the breech-block is locked, and means for throwing the lifting-dog out of engagement with the lever, when the breech-block is retracted thus to lock the hammer against release by draft on the trigger.

9. In a firearm, a trigger, a safety-dog carried thereby and adapted normally to engage with the hammer, a lever having one end disposed to engage the dog to hold it in engagement with the hammer, a breech-block, a recoil-block carried thereby, a lifting-dog carried by the recoil-block and engaging the free end of the lever when the breech-block is locked thus to hold the lever out of engagement with the safety-dog, a recoil-block actuator, a locking-dog carried by the recoil-block and operating normally to hold the actuator against retraction, and means for raising the lifting-dog thus to depress the locking-dog to permit rearward movement of the recoil-block actuator.

10. In a firearm, a mainspring, a link pivotally connected at one end thereto and a hammer pivotally connected to the other end of the link.

11. In a fire-arm, a mainspring, a link pivotally connected at one end thereto, a hammer pivotally connected to the other end of the link, and a trigger having a loop to house the bend of the mainspring.

12. In a firearm, the combination with a trigger having a rearwardly-extending projection, a safety-dog carried by the trigger, a lever coacting with the safety-dog to hold the same in engagement with the hammer when the breech-block is retracted, means operating to hold the lever out of engagement with the safety-dog when the breech-block is in locked position, and safety means comprising a bolt and actuating mechanism therefor adapted to be moved into engagement with the arm of the trigger and with the rear end of the safety-dog, thus to lock the trigger and the breech-block against operation.

13. In a firearm, the combination with a reciprocatory breech-block carrying a pivoted recoil-block and means for locking and releasing the same, of a tang-head, a cartridge-carrier pivotally connected with the tang-head, a dog pivoted in the tail of the carrier and disposed in the path of movement of the recoil-block, and a spring engaging said dog slightly above the pivotal point to hold the dog normally upward and acting, when the dog is depressed, to raise the cartridge-carrier.

14. In a firearm, the combination with a breech-block provided on one side with a pin, of a pivoted recoil-block, a reciprocatory recoil-block actuator having a beveled face to engage the pin thereby to cause lifting of the recoil-block when the breech-block is retracted, and an action-bar for operating the said actuator.

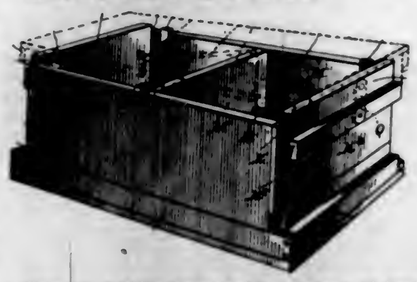
15. In a firearm, the combination with the receiver, and a cartridge-check carried thereby, of a breech-block, a recoil-block carried thereby, and a recoil-block actuator carrying a pivoted dog adapted on rearward movement of the breech-block to ride over the cartridge-check, and on return movement of the breech-block to force the check laterally and thus release the cartridge.

16. In a firearm, the combination with the hand-grip having an action-bar connected therewith, of a reciprocatory breech-block, a pivoted recoil-block carried thereby, a recoil-block actuator, and a breech-block slide connected with the actuator and having an articulated connection with the rear end of the action-bar.

17. In a firearm, the combination with the receiver provided in its side with a longitudinal groove, of a hand-grip carrying an action-bar working in the groove, a reciprocatory breech-block, a pivoted recoil-block carried thereby, a recoil-block actuator, and a breech-block slide cooperatively connected with the recoil-block actuator and having an articulated connection with the rear end of the action-bar.

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**756,890. FOLDING CRATE. WILLIAM POND, Liberty, Ill. Filed Jan. 13, 1904. Serial No. 188,875. (No model.)**



*Claim.*—1. A folding box comprising a bottom with longitudinal flanges or projections of different widths, a fixed partition intermediate said flanges midway the length of the bottom, hinged sides mounted upon said flanges, a hinged partition mounted upon the inner face of one of said sides and adapted to swing over said fixed partition, cleats secured to the inner faces of said hinged sides and projecting beyond the outer longitudinal edges thereof, hinged ends to said box having their opposite edges recessed at the free ends thereof, cleats fastened to the outer faces of said hinged ends, and a flanged cover adapted to rest upon said cleats upon the ends of the box and in the recessed portions on the edges of said hinged ends, as set forth.

2. A folding box comprising a bottom with longitudinal flanges or projections of different widths, a fixed partition intermediate said flanges midway the length of the bottom, hinged sides mounted upon said flanges, a hinged partition mounted upon the inner face of one of said sides and adapted to fold with its inner edge adjacent to said fixed partition, hinged ends to the box which are mounted upon flanges projecting beyond the longitudinal flanges of the bottom, the opposite edges of said ends being shouldered as at $K^2$ with their ends recessed adjacent to the free swinging ends of the box, cleats upon the outer faces of said ends, a cover having flanges which are adapted to rest upon said cleats, and fastening means for holding the top to the bottom and holding the parts as folded together, as set forth.

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**756,891. ROTATORY ELECTRIC TUBE-FURNACE. HENRY M POTTER, New Rochelle, N. Y., assignor to Geo. Westinghouse, Pittsburg, Pa. Filed Nov. 21, 1901. Serial No. 83,073. (No model.)**



*Claim.*—1. A rotary furnace having one or more transformers furnishing current to the same and adapted to rotate therewith.

2. A rotary furnace having one or more current-transformers for supplying current thereto, the furnace and the transformer or transformers being attached to a common support, and the said support being adapted to rotate.

3. A rotary furnace having one or more current-transformers connected thereto by suitable terminals, the furnace and the transformers being mounted upon a common support, the said support being provided with suitable terminals connected with the primary or primaries of the transformer or transformers, and being adapted



to rotate in combination with sliding or flexible connections cooperating with the said terminals.

4. A tubular electric furnace open at both ends and adapted to rotate during its operation about the axis of the tube or a parallel axis, means for maintaining said tube in any one of a selected number of positions with relation to the horizontal, and means for causing the rotation of the tube in any selected position.

5. A tubular electric furnace adapted to rotate about the axis of the tube, means for maintaining said tube in any one of a selected number of positions with relation to the horizontal, means for rotating the furnace in the selected position, the whole being supported in an adjustable cage, as set forth.

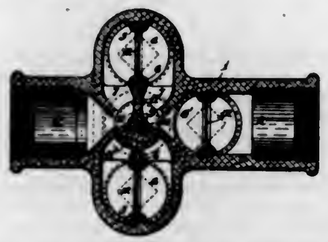
6. A tubular electric furnace mounted in a suitable frame, in combination with a cage outside the frame, and means for rotating the frame within the cage.

7. A tubular electric furnace mounted in a suitable frame, in combination with a cage outside the frame, means for rotating the frame within the cage, and means for adjusting the angle of the cage and the parts separated thereby.

8. A tubular electric furnace, a frame supporting the same, a cage surrounding the frame, means for rotating the frame within the cage, and means for suspending the cage in a variety of positions with respect to the horizontal.

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**756,892. STRAINER. JOHN C. GUINZ, New York, N. Y., assignor to Edward D. Meier, New York, N. Y. Filed June 3, 1903. Serial No. 159,916. (No model.)**



*Claim.*—1. In a strainer, a main passage or conduit provided with branch passages for the flow of fluid therethrough, straining-partitions across said branch passages and valve mechanism common to both branch passages for intercepting the flow from one of them.

2. In a strainer, a main conduit provided with branch passages for the flow of fluid therethrough, disposed on opposite sides thereof, straining apparatus in said branch passages and a single valve mechanism between said passages for intercepting the flow from one of them.

3. In a strainer, a main conduit and a valve-chamber intermediate the ends thereof, straining-chambers connected with said valve-chamber and adapted to constitute branch paths for the flow of fluid through the conduit, a valve in the valve-chamber whereby one of said strainer-chambers may be disconnected therefrom.

4. In a strainer, a conduit or passage for the flow of fluid, chambers adapted for alternate connection with the passage in the path of flow, removable straining-partitions contained in said chambers and a single valve mechanism for disconnecting one chamber from, and inserting the other into, the path of flow.

5. In a strainer, a main conduit or passage and straining-chambers adapted to form branch passages for the flow of fluid, straining apparatus contained in said chambers and removable covers for said chambers whereby the straining apparatus may be exposed, in combination with a valve mechanism common to the branch passages for disconnecting one of said chambers from the path of flow.

6. In a strainer, a passage for the flow of fluid, chambers on either side thereof, strainer-plates of greater surface width than the diameter of said chambers and contained therein, and single valve mechanism for directing the flow of fluid through one of said chambers and disconnecting the other chamber from the passage.

7. In a strainer, a main passage for the flow of fluid comprising a valve-chamber, straining-chambers provided with straining-partitions dividing them into compartments, a connection from each compartment to the valve-chamber and a valve in said valve-chamber for interposing either straining-partition in the path of flow and isolating the other therefrom.

8. In a strainer, a main passage for the flow of fluid comprising a valve-chamber, straining-chambers disposed transversely to said passage and provided with grooves, strainer-plates removably mounted in said grooves and dividing the chambers into compartments, a connection from each compartment to the valve-chamber and a valve for connecting the compartments of any chamber with the said passage on respectively opposite sides of the valve.

9. In a strainer for fluids, a single casing comprising straining-chambers and a main passage, walls for separating said chambers from the main passage, and partitions for dividing said chambers into compartments, a valve-seat formed by the inner edges of said partition and a valve-plug therein, adapted to connect the compartments of either chamber respectively with the main passage on opposite sides of the valve-seat.

10. In a strainer for fluids, a casing containing a main passage and a valve-chamber of substantially the same length as the diameter of said main passage, straining-chambers connected with said valve-chamber and of greater length than the diameter of said main passage and a valve-plug in said valve-chamber for disconnecting one of said straining-chambers therefrom.

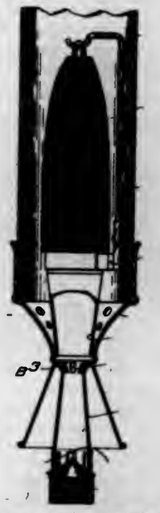
11. In a filter or strainer, the combination with a casing, of two filtering or straining devices arranged therein, said casing provided with an inlet and discharge, and a valve-plug fitted to said casing, arranged to connect one or other of the said devices with the said inlet and discharge, and at the same time to close the other said device from connection therewith.

12. In a filter or strainer, the combination with a casing, of two filtering or straining devices arranged therein, said casing provided with an inlet and discharge, and a valve-plug fitted to said casing, arranged to connect one or other of the said devices with the said inlet and discharge, and at the same time to close the other said device from connection therewith, said casing provided with means permitting access to either one or other of said filtering or straining devices, independently of the other.

13. A filter or strainer comprising a casing having therein a valve-seat, and two chambers arranged upon opposite sides thereof, and having inlet and discharge passages, and ports and passages leading from the valve-seat to the two said chambers, and to the said inlet and discharge of a valve-plug fitted to said valve-seat, and arranged in its different positions, to connect the passages leading to one or other of said chambers to the inlet and discharge, and at the same time close the passages to the other of said chambers; independent filtering or straining devices for the two said chambers, and means admitting access thereto, the one independently of the other.

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**756,893. GAS-BURNER FOR HEATING AND INCANDESCENT GAS-LIGHTING. VICTOR A. REITICH, New York, N. Y. Filed Dec. 2, 1903. Serial No. 183,533. (No model.)**



*Claim.*—1. In a gas-burner a lower mixing-tube having continuous upwardly and inwardly tapering walls; gas and air inlets near the lower end of said lower tapering mixing-tube; secondary air-inlets near the upper end of said lower mixing-tube; an upper mixing-tube having upwardly and outwardly tapering walls attached to the upper end of the lower mixing-tube, said lower tapering mixing-

tube extending a short distance into the lower end of the upper mixing-tube.

2. In a gas-burner, a lower mixing-tube having upwardly-converging walls; a nipple attached thereto provided with a gas-orifice extending into said lower mixing-tube; air-inlets near the upper and lower ends of said lower mixing-tube; an upper mixing-tube having upwardly-diverging walls attached to said lower mixing-tube at its upper end, the upper mixing-tube being of greater average diameter than the lower mixing-tube; and a tapering shell surrounding the lower mixing-tube and attached thereto above the upper air-inlets.

3. In a gas-burner a lower tapering mixing-tube having upwardly-tapering walls; gas and air inlets near the lower end of said lower mixing-tube; an outwardly-flaring portion near the upper end of said lower mixing-tube; air-inlets in said flaring portion; an upwardly and outwardly tapering mixing-tube attached to said lower mixing-tube near its flaring portion, said lower mixing-tube extending upwardly into the lower end of the upper tapering mixing-tube.

4. A gas-burner provided with means to permit a double expansion of the gas during its progress from its inlet to the ignition-point, said means comprising upper and lower tapering mixing-chambers; a gas-inlet in the lower mixing-chamber and two series of air-inlets, one of said series of air-inlets being near the lower end of the lower mixing-chamber, and the other of said series of air-inlets being near the lower end of the upper mixing-tube; and a downwardly-diverging shell attached above the upper series of air-inlets.

5. A gas-burner comprising lower and upper tapering sections joined at their smallest diameters; air-inlets at the lower end of the lower section; air-inlets at the meeting-point of said lower and upper sections; and a shell, one end of which is joined at the meeting-point of said upper and lower sections, said shell tapering downwardly and outwardly and surrounding the lower portion of the burner.

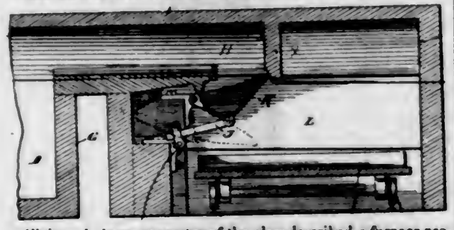
6. A gas-burner having two mixing-chambers meeting midway the height of the burner, the lower mixing-chamber tapering upwardly, and the upper mixing-chamber tapering downwardly; an air-inlet near the lower end of the lower mixing-chamber, and an air-inlet near the meeting-point of both said mixing-chambers; and an outer shell surrounding and inclosing the second air-inlet and extending downwardly to a point near the first air-inlet.

7. In a gas-burner, a lower upwardly-tapering portion; air-inlets near the lower end of said lower portion; air-inlets at the upper end of said inwardly-tapering portion; an upper outwardly-tapering portion joined to said lower portion near the upper air-inlets; a shell joined to said portions near their meeting-points, said shell extending downwardly and flaring outwardly and adapted to surround and inclose the lower portion.

8. A gas-burner comprising upper and lower mixing-tubes; two series of air-inlets in the lower mixing-tube and a shell surrounding the lower mixing-tube and attached to same above the upper air-inlets, its lower end being open to admit air.

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**756,894. FURNACE. SOLON O. RICHARDSON, Jr., Toledo, Ohio. Filed Mar. 23, 1903. Serial No. 150,008. (No model.)**



*Claim.*—1. In an apparatus of the class described, a furnace provided with a working chamber and a casting-chamber in free communication therewith, said casting-chamber being provided with an opening leading to its exterior, the upper part of said opening being arranged below the level of the metal-line in the working chamber, a movable carrier arranged to be moved into and out of said casting-chamber through said opening, molding means carried by said carrier, means for conveying fluid metal from said working chamber and into said molding means, said elements being so arranged and proportioned that the movable carrier and the molding means carried thereby will serve to effectively close the opening from the casting-chamber to its exterior while the carrier and molding means are in said chamber, so that the temperature of the casting-chamber may be kept at a sufficiently high temperature to maintain the fluidity of the glass as it flows from the working chamber into the molding means in the casting-chamber.

2. An apparatus of the class described, comprising the combination with a furnace provided with a casting-chamber, of means for maintaining glass in a fluid condition within said chamber, a casting-ladle mounted within said chamber, means for supplying metal to said ladle, and means for operating said ladle from the outside of said chamber, said means comprising a shaft, a gear carried by said shaft, a toothed link pivoted to said ladle and held in operative engagement with said gear-wheel, and means for rotating said shaft.

3. A device of the class described, comprising a closed casting-chamber, means for maintaining glass in a fluid condition within said chamber, a casting-ladle mounted within said chamber, means for operating said ladle from the outside of said chamber, said chamber being provided with an opening leading to its exterior, so arranged and proportioned that a casting-table may be inserted into and removed from said casting-chamber therethrough without sufficiently cooling said chamber to materially interfere with casting the metal therein.

4. A device of the class described, comprising a working chamber, a casting-chamber in free communication therewith, means for heating said casting-chamber, a casting-ladle pivotally suspended within said casting-chamber, means for operating said ladle from the outside of said casting-chamber, means for supplying metal to said ladle, and an opening so arranged and proportioned in one wall of the otherwise closed casting-chamber as to permit molds to be passed into and out of said chamber without so cooling the chamber as to interfere with the casting of the metal therein.

5. The combination with a glass-furnace, of a casting-chamber, means for sufficiently heating said casting-chamber for the purpose described, and a casting-table arranged to form a false bottom for the casting-chamber and to substantially close communication between the casting-chamber and its exterior.

6. The combination with a glass-furnace, of a casting-chamber, means for sufficiently heating said casting-chamber for the purpose described, a casting-table arranged to form a false bottom for the casting-chamber and to substantially close communication between the casting-chamber and the outer air, an auxiliary chamber arranged adjacent to and in communication with said casting-chamber, a block arranged adjacent to said casting-table and extending into said auxiliary chamber and adapted to follow the casting-table when the same is withdrawn from the casting-chamber, so that said block will form a false bottom to the casting-chamber and will substantially close communication between said chamber and the outer atmosphere when the casting-table is removed from said chamber.

7. A glass-furnace, comprising a tank for molten glass, means for keeping the glass fluid in said tank, a casting-chamber arranged adjacent to said tank and in free communication therewith above the metal-line, means for providing an air-space between said chamber and said tank, movable molding means within said casting-chamber, and a conduit arranged to conduct metal in a narrow stream from said tank, over said air-space, and into said molding means in said casting-chamber.

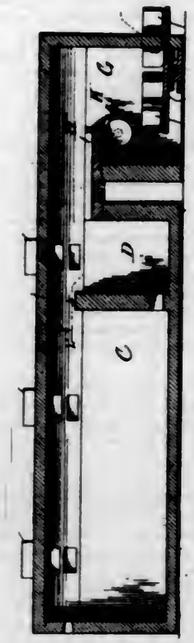
8. A glass-furnace, comprising a tank for molten glass, a casting-chamber arranged adjacent thereto and in such free communication therewith, above the metal-line, that the means for maintaining the glass in a molten condition in said tank may also be used to maintain the glass in a sufficiently molten condition in said casting-chamber, a conduit leading from said tank to said casting-chamber below the metal-line, and removable molding means arranged in said casting-chamber, below the discharge end of said conduit, so as to receive metal from said conduit, said molding means being also arranged so as to substantially close communication between the casting-chamber and the atmosphere.

9. The combination with a glass-furnace provided with a reducing-chamber and a closed casting-chamber in communication therewith, of a casting-ladle mounted in said casting-chamber and arranged to receive metal from the reducing-chamber and to pour the same in the casting-chamber, and also adapted to close communication between said chambers while said ladle is receiving metal.

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**756,895. PROCESS OF MANUFACTURING GLASS ARTICLES. SOLON O. RICHARDSON, Jr., Toledo, Ohio. Filed Dec. 19, 1903. Serial No. 186,804. (No specimens.)**

*Claim.*—1. The process of manufacturing glass articles which comprises casting fluid glass in the presence of a high temperature, whereby the metal is maintained in a sufficiently fluid condition, and pressing the glass into finished form at a lower temperature.



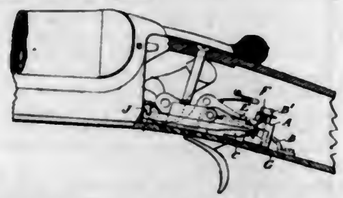
2. The process of manufacturing glass articles which comprises casting fluid glass into incomplete form, in the presence of a high temperature, whereby the metal is maintained in a sufficiently fluid condition, removing the glass to a lower temperature and then manipulating the glass to finished form.

3. The process of manufacturing glass articles, which comprises flowing fluid glass in separate and controllable quantities into a highly-heated zone in which the metal is maintained in a sufficiently fluid condition, removing the quantities of glass, thus separated, into a lower temperature, and then manipulating the same to finished form.

4. The process of continuously manufacturing glass articles which comprises continuously feeding the batch to a zone of reduction, reducing the batch, causing the resultant metal to flow to a refining zone, fining the metal, then casting the metal in controllable quantities in the presence of a high temperature, whereby the metal is maintained in a sufficiently fluid condition, removing the metal so cast to a lower temperature, and then manipulating the glass to the required form.

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**756,896. SINGLE-TRIGGER MECHANISM FOR DROP-DOWN GUNS. JOHN ROBERTSON, London, England. Filed July 24, 1903. Serial No. 166,887. (No model.)**

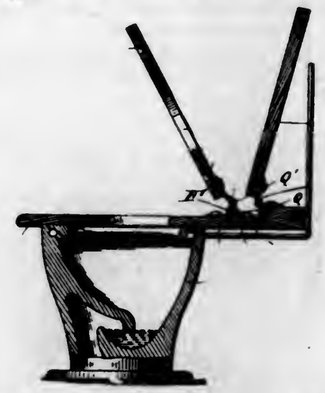


*Claim.*—1. In a double-barreled single-trigger gun, in combination, a single trigger, sears operated by said trigger in succession, for discharging the right and left barrels respectively, a member having a series of inclines, interposed between said trigger and the second sear, and a device operated by the trigger between the trigger and said inclines, for engagement with said inclines in succession, whereby the action of the trigger upon the second sear is delayed until the last incline has been engaged, thereby preventing the premature discharge of the second barrel, substantially as shown and described.

2. In a double-barreled single-trigger gun, in combination, a single trigger, sears operated by said trigger in succession, for discharging the right and left barrels respectively, a pivoted revoluble tumbler having a series of inclined serrations, and a tailpiece on the trigger engaging said inclined serrations in succession, the range of movement of said tailpiece being restricted by said serrations until the last one has been engaged, whereby the premature discharge of the second barrel is prevented, substantially as shown and described.

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**756,897. SEAT FOR WATER-CLOSETS. MIRIAN RUTLEDGE, Grand Forks, N. D. Filed Jan. 30, 1904. Serial No. 191,322. (No model.)**

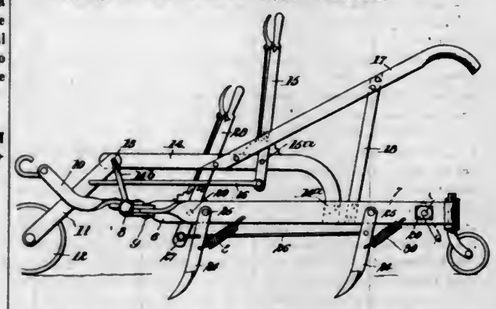


*Claim.*—1. In combination with a permanent hinged closet-seat, a detachable seat, a hinged member carried by said detachable seat and adapted to be slipped over the hinge of the permanent seat, and to rest upon the latter, as set forth.

2. In combination with a permanent closet-seat, a hinged member secured thereto terminating in a cylindrical roll, a board, a hinge-strap fastened thereto, a pin connecting said member and strap, a detachable seat, a strap secured thereto, a recessed member hinged to said strap on the detachable seat, and provided with a concaved recess designed to slip over the cylindrical roll of said hinged member fastened to the permanent seat, as set forth.

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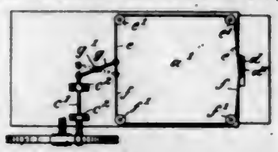
**756,898. CULTIVATOR. ALFRED L. SAMUELSON, Osseo, Wis. Filed Sept. 19, 1903. Serial No. 173,851. (No model.)**



*Claim.*—1. In a cultivator, the combination with a middle and side beams pivotally connected together at the front end, the middle beam having a sliding box at its rear end and the side beams having swiveling nuts at their rear ends, of a screw working through the box and the nuts, to vary the spread of the beam.

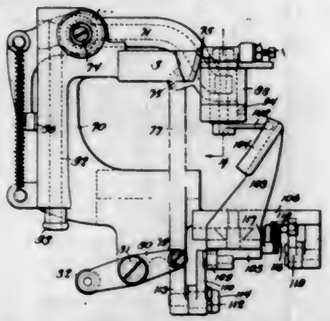
2. The combination with the front cross-bar, and the middle and side beams connected thereto, of the frame 14 extending lengthwise above the middle beam and joined at its rear end thereto, the arch supported on the cross-bar and connected to the front end of said frame, the gage-wheel arm pivoted to the front end of said frame, and the hand-lever pivoted on the frame and connected to said arm.

**756,899. VEHICLE-BRAKE. MARION A. SHAFER, New York, N. Y. Filed Jan. 28, 1904. Serial No. 191,989. (No model.)**



*Claim.*—The combination of a wheeled vehicle with a brake-lever, a pair of ropes secured thereto, a lever connected to the ropes, a laterally-movable slide connected to the lever, and a brake-shoe secured to the slide and adapted to be projected between the wheel-spokes, substantially as specified.

**756,900. ADHESIVE-SUPPLYING MECHANISM. ALFRED SHEDLOCK, Jersey City, N. J. Filed Sept. 10, 1902. Serial No. 122,778. (No model.)**



*Claim.*—1. The combination with a wrapper-applying means, of an adhesive-supplying device, and means for giving said adhesive-supplying device a movement lengthwise of the wrapper-applying means during the wrapping operation, substantially as described.

2. The combination with a wrapper-applying means, of an adhesive-supplying device, means for giving said adhesive-supplying device a movement lengthwise of the wrapper-applying means during the wrapping operation, and means for giving it a movement toward and away from the wrapper-applying means, whereby the adhesive is supplied at a plurality of separated points during the wrapping operation, substantially as described.

3. The combination with a cigar-header, of an adhesive-supplying device, and means for giving said device a movement lengthwise of the header during the wrapping operation, substantially as described.

4. The combination with a cigar-header, of an adhesive-supplying device, means for giving said device a movement lengthwise of the header during the wrapping operation, and means for giving it a movement toward and away from the header during the wrapping operation, substantially as described.

5. The combination with a cigar-header having a slot therein, of an adhesive-supplying nozzle, and means for moving the nozzle along the slot during the wrapping operation, substantially as described.

6. The combination with a cigar-header having a slot therein, of an adhesive-supplying nozzle, means for moving the nozzle along the slot during the wrapping operation and means for moving the nozzle toward and away from the slot during the wrapping operation, substantially as described.

7. The combination with a wrapper-applying means, of an adhesive-supplying nozzle, and means for moving the nozzle lengthwise of the applying means during the wrapping operation, substantially as described.

8. The combination with a wrapper-applying means, of an adhesive-supplying nozzle, means for moving the nozzle lengthwise of the applying means during the wrapping operation, and means for moving the nozzle toward and away from the applying means during the wrapping operation, substantially as described.

9. The combination with a wrapper-applying means, of an adhesive-supplying nozzle, a valve in the nozzle, means for moving the nozzle lengthwise of the applying means during the wrapping operation, and means for opening and closing the valve, substantially as described.

10. The combination with a wrapper-applying means, of an adhesive-supplying nozzle, a valve in the nozzle, means for moving the nozzle lengthwise of the applying means during the wrapping operation, means for moving the nozzle toward and away from the applying means during the wrapping operation, and means for opening and closing the valve, substantially as described.

11. The combination with a cigar-header, of an adhesive-supplying nozzle, a valve in the nozzle, means for moving the nozzle lengthwise of the header during the wrapping operation, and means for opening and closing the valve, substantially as described.

12. The combination with a cigar-header, of an adhesive-supplying nozzle, a valve in the nozzle, means for moving the nozzle lengthwise of the header during the wrapping operation, means for moving the nozzle toward and away from the header during the wrapping operation, and means for opening and closing the valve, substantially as described.

13. The combination with a cigar-header having a slot, of an adhesive-supplying nozzle, a valve in the nozzle, means for moving the nozzle along the slot in the header during the wrapping operation, and means for opening and closing the valve, substantially as described.

14. The combination with a cigar-header having a slot, of an adhesive-supplying nozzle, a valve in the nozzle, means for moving the nozzle along the slot in the header during the wrapping operation, means for moving the nozzle toward and away from the slot during the wrapping operation, and means for opening and closing the valve, substantially as described.

15. The combination with a wrapper-applying means, of a swinging arm, an adhesive-supplying nozzle mounted on said arm, and means for swinging the arm to cause the nozzle to move lengthwise of the applying means, substantially as described.

16. The combination with a wrapper-applying means, of a swinging arm, an adhesive-supplying nozzle pivoted on said arm, means for swinging the arm to cause the nozzle to move lengthwise of the applying means, and means for rocking the nozzle toward and away from the applying means, substantially as described.

17. The combination with a wrapper-applying means, of a swinging arm, an adhesive-supplying nozzle mounted on said arm, a valve for controlling the opening in said nozzle, means for swinging the arm to cause the nozzle to travel lengthwise of the wrapper-applying means, and means for operating the valve, substantially as described.

18. The combination with a wrapper-applying means, of a swinging arm, an adhesive-supplying nozzle pivoted on said arm, a valve for controlling the opening in said nozzle, means for swinging the arm to cause the nozzle to travel lengthwise of the wrapper-applying means, means for rocking the nozzle toward and away from the applying means, and means for operating the valve, substantially as described.

19. The combination with a cigar-header having a slot, of a swinging arm, an adhesive-supplying nozzle mounted on said arm, and means for swinging the arm to cause the nozzle to move along the slot in the header, substantially as described.

20. The combination with a cigar-header having a slot, of a swinging arm, an adhesive-supplying nozzle pivoted on said arm, means for swinging the arm to cause the nozzle to move along the slot in the header, and means for rocking the nozzle toward and away from the slot, substantially as described.

21. The combination with a cigar-header having a slot, of a swinging arm, an adhesive-supplying nozzle mounted on said arm, a valve for controlling the opening in said nozzle, means for swinging the arm to cause the nozzle to move along the slot in the header, and means for operating the valve, substantially as described.

22. The combination with a cigar-header having a slot, of a swinging arm, an adhesive-supplying nozzle pivoted on said arm, a valve for controlling the opening in said nozzle, means for swinging the arm to cause the nozzle to move along the slot, means for rocking the nozzle toward and away from the slot, and means for operating the valve, substantially as described.

23. The combination with a cigar-header, of a pivoted chamber, an adhesive-supplying nozzle in communication with said chamber, a valve in the nozzle, actuating means for the valve, said means operating after the nozzle has been closed to rock the chamber on its pivot toward the header, and means for rocking the chamber away from the header, substantially as described.

24. The combination with a slotted cigar-header, of a movable arm, a chamber pivoted on said arm, an adhesive-supplying nozzle in communication with the chamber, means for moving the arm to cause the nozzle to move along the slot in the header, a valve in the nozzle, actuating means for the valve, said means operating after the nozzle has been closed to rock the chamber on its pivot toward the header, and means for rocking the chamber away from the header, substantially as described.

25. The combination with a cigar-header, of a pivoted chamber, an adhesive-supplying nozzle in communication therewith, a valve in the nozzle, a rock-arm for operating the valve, a shaft to which said arm is connected, a slide for rocking said arm, and means for giving the slide a movement first to close the valve and then to rock the chamber toward the header, and means for returning the chamber, substantially as described.

26. The combination with a movable arm, of a slotted cigar-header, an adhesive-containing chamber pivoted on the arm, an adhesive-supplying nozzle communicating with the chamber, means for swinging the arm to cause the nozzle to travel along the slot in the header, a valve located in the nozzle, an arm for operating the valve, a shaft on which said arm is carried, an arm projecting from the shaft, a grooved slide with which said arm engages, means for moving the slide, said slide acting first to close the valve and then to rock the chamber on its pivot, and means for giving the chamber a backward movement as the slide returns, substantially as described.

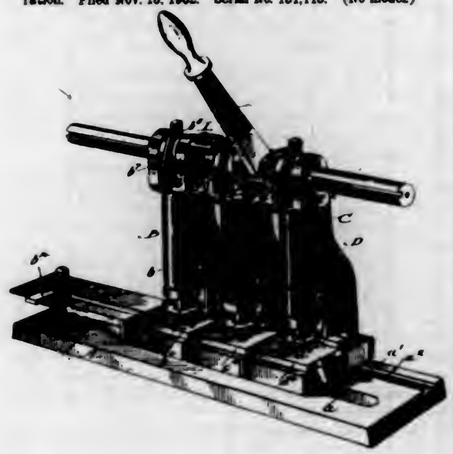


**756,901. TEMPORARY BINDER. GEORGE A. SHOEMAKER, Chicago, Ill., assignor to Baker-Vawter Company, Chicago, Ill., a Corporation. Filed Nov. 13, 1902. Serial No. 131,114. (No model.)**



*Claim.*—In combination with binder-covers, a binder-lock consisting of a tube secured to one of the covers, and closed as to its upper end, but slotted at such closed end; the said tube fitted with a spiral spring lying within its center, on top of which is placed a sliding plate which normally lies against said closed end; together with a corresponding and headed shaft, the lower end of which is flattened and flanged, and corresponds with said slotted closed end, with which it has engagement, substantially as described and for the purposes herein set forth.

**756,902. PUNCHING-MACHINE. GEORGE A. SHOEMAKER, Chicago, Ill., assignor to Baker-Vawter Company, Chicago, Ill., a Corporation. Filed Nov. 13, 1902. Serial No. 131,115. (No model.)**

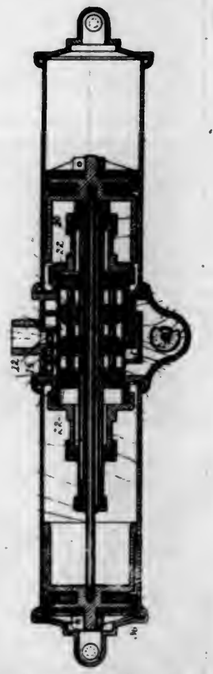


*Claim.*—1. The combination in a punching-machine, with a series of punches, fitted within suitable heads adjusted upon a common shaft, of a series of link-bearing eccentrics adjustably secured upon said shaft, both eccentrics and links having engagement with said punches, and means for effecting said adjustments, and means for actuating said eccentrics substantially as described and for the purposes herein set forth.

2. The combination in a punching-machine, with a series of spring-seated punches fitted within a like number of heads adjusted upon a common shaft, of a series of cams adjustably attached to said shaft and having engagement with said punches, and lifting-links secured to said cams and having engagement with said punches and means for effecting said adjustments and means for actuating said cams substantially as described.

3. A punching-machine consisting of a series of punches and heads for carrying the same adjusted upon a common shaft, together with a corresponding series of eccentrics adjustably connected with said shaft, a series of lifting-links fixed to said eccentrics and having engagement with said punches, and means for actuating said eccentrics.

**756,903. FLUID-PUMP. IRA H. SPENCER, Hartford, and JOHN W. SIMPSON, Waterbury, Conn. Filed Oct. 27, 1902. Serial No. 128,896. (No model.)**



*Claim.*—1. A valve-chest having inlet and exhaust chambers, a valve-shell located within the chest and having inlet and exhaust ports, a main valve located within said shell, a secondary valve extending through the main valve and through the valve-chest and having ports for the reception of fluid, a piston-rod extending through the secondary valve, a piston secured to each end of the rod, and a cylinder inclosing each of the pistons.

2. A valve-chest having inlet and exhaust chambers, a valve-shell located within the valve-chest, a main valve within said shell, a secondary valve extending through the main valve, a piston-rod extending through the secondary valve and cylinders secured to opposite sides of the valve-chest, the axes of the valve-chest, main and secondary valves, piston rod and cylinders being coincident, and a piston secured to each end of the piston-rod.

3. A valve-chest having inlet and outlet openings, a valve-case formed within the chest, a valve-shell located within the valve-case, a main valve located within the shell and having ports to register with the inlet and outlet chambers in the valve-case, a secondary valve extending through the main valve and having ports for the

reception of fluid, a piston-rod extending through the secondary valve, a cylinder secured to each side of the valve-casing, said valve-chest, valve casing and shell, main and secondary valves and piston rod and cylinder having their axes coincident, and a piston secured to each end of the piston-rod.

4. A valve-chest having inlet and outlet openings, a valve-case located centrally of the chest and having inlet and outlet chambers, a valve-shell located within the valve-case and forming one wall of the inlet and outlet chambers and with inlet and outlet ports communicating with said chambers, a main valve located centrally within the shell, a secondary valve extending centrally through the main valve and having chambers and ports for the reception of fluid, a piston-rod extending centrally through the secondary valve, a piston secured to each end of the piston-rod, a cylinder secured to each side of the valve-casing and inclosing the pistons, an air-chamber formed at each end of the cylinder, a main reservoir, and connections between the air-chambers and the main reservoir.

5. A valve-chest having annular projections, a valve-shell extending into each of said projections and having inlet and outlet ports, a main valve located within the valve-shell, a cap secured to each of said projections and having a neck, a secondary valve having a bearing in said necks and having ports for the reception of fluid, a piston-rod movable through the secondary valve, pistons secured to each end of the piston-rod, and cylinders secured to the valve-chest and inclosing each of the pistons.

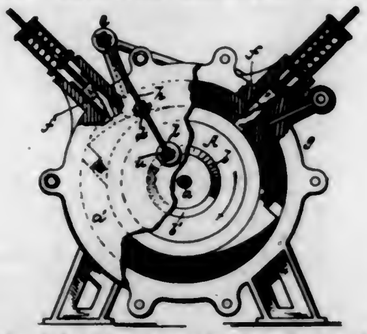
6. In a fluid-pump, in combination, a valve-chest having inlet and exhaust ports, cylinders secured to opposite sides of said chest, a main valve, a tubular secondary valve and a piston-rod all concentrically arranged one with respect to the other in said chest and cylinders, and pistons secured to each end of the piston-rod beyond the ends of said valves.

7. In a fluid-pump, in combination, a valve-chest having inlet and exhaust ports, cylinders secured to opposite sides of said chest, a main valve, located within the chest, a piston-rod concentrically arranged with respect to the main valve, pistons secured to each end of said rod, and a tubular secondary valve concentrically arranged with respect to the piston-rod and main valve and with its ends located in the path of movement of the pistons.

8. In a fluid-pump, in combination, a valve-chest having inlet and exhaust chambers, cylinders secured to the opposite sides of said chest, a main valve located within the chest, a tubular secondary valve projecting through the main valve, a piston-rod projecting through the secondary valve, and pistons secured to each end of the piston-rod beyond the ends of the secondary valve.

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**756,904. ROTARY ENGINE. FERDINAND STEPHAN, Hildesheim, Germany. Filed Nov. 7, 1903. Serial No. 180,213. (No model.)**



*Claim.*—1. In a rotary steam-engine, the combination with the casing, provided with the spring-actuated plates and inlets for the steam, of the cylindrical piston having the twin circular cams upon the face thereof, the notched blocks, engaging said cams and the springs for forcing the blocks against the face of the cams, substantially as described.

2. In a rotary steam-engine, the combination with the casing provided with the steam-inlets and spring-actuated plates, of the cylindrical piston provided upon its face with twin circular cams, the notched blocks engaging said cams, the springs, for forcing said blocks in contact with said cams, the set-screws, steam-valves and lever, said lever pivoted about its center to the support or post and pivoted at one end to the stem of the block and at the opposite end to the stem of the steam-valve, substantially as described.

3. In a rotary steam-engine, the combination with the casing provided with the upper hollow projections, spring-actuated plates, steam-inlets, steam-valves and hollow side projections, of the cylindrical piston provided upon its face with twin cams, the notched blocks engaging said cams and secured to the inner end of the stems; the outer end thereof being pivoted to the lever, the pressure-spring engaging said blocks and the set-screws, adapted to engage the notch in said blocks, as shown and described.

4. In a rotary steam-engine, the combination with the spring-actuated plates, hollow upper and side projections, of the piston having twin cams, the blocks, engaging said cams, and provided with the notch and spring, thumb-screws, pivoted lever and steam-valves, all as shown and described.

5. In a rotary steam-engine, the combination of the casing, spring-actuated plates, piston having the twin cams, the notched blocks, spring therefor, thumb-screws, steam-valves and pivoted lever, one end of which being pivoted to the stem of the steam-valve and the opposite end thereof pivoted to the outer end of the block-stem, all as shown and described.

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**756,905. BAROMETER. CHRISTIAN H. STOELTING, Chicago, Ill. Filed Aug. 15, 1903. Serial No. 169,602. (No model.)**



*Claim.*—1. A barometer consisting of a tube permanently fixed to a frame and closed at its upper end, and having engagement at its lower end with a cistern partially filled with mercury; a loose bag securely fixed over the mouth of the said cistern, an ivory point penetrating said loose bag, a graduated scale lying upon the face of said frame and opposite said tube, which ivory point and scale are permanently attached to a rod having sliding engagement with said frame, and means for actuating said rod.

2. A barometer consisting of a barometric tube and cistern permanently secured to a frame, a loose bag secured over the mouth of said cistern, a sliding rod fitted to said frame and carrying an ivory point which extends into the mouth of the said cistern and penetrates the said bag, a graduated scale permanently fixed upon said sliding rod and opposite the said tube, and means for actuating the said rod.

3. A barometer consisting of a barometric tube and cistern permanently secured to a frame, a loose bag secured to the mouth of said cistern a sliding rod lying on said frame parallel to said tube, an ivory point and a graduated scale fixed to said rod, and means for actuating said rod.

4. A barometer consisting of a barometric tube and cistern permanently affixed to a frame, a sliding rod parallel to said tube, and bearing an ivory point and graduated scale, a vernier having sliding engagement with said rod, and means for actuating said vernier and said sliding rod.

5. A barometer consisting of a barometric tube and cistern permanently affixed to a frame, a rod affixed to said frame parallel with said tube and having sliding engagement with said frame, an ivory point and a graduated scale affixed to said rod, means of actuating said rod, and a vernier having sliding engagement with said rod and graduated scale and means for actuating said vernier consisting of a rack affixed to the rear portion of said vernier and a coacting pinion buried within said frame, and having a headed arm projecting from the side of said frame.

6. In combination with a barometric tube and cistern permanently secured to a frame, a sliding rod affixed to said frame and parallel with said tube, an ivory point and graduated scale permanently affixed to said rod, and means of actuating said rod.

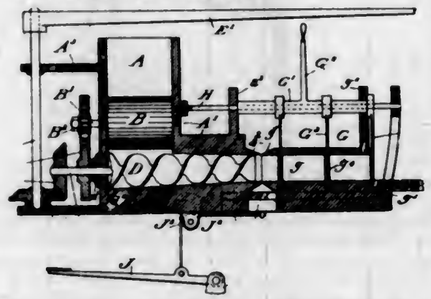
7. In a barometer, the combination with a permanently-fixed tube and cistern, of a loose bag secured over the mouth of said cistern, a movable ivory point penetrating said bag, a plunger fitted upon said ivory point, and means for driving said plunger and ivory point into said cistern and withdrawing them therefrom.

8. A barometer consisting of a barometric tube and cistern permanently affixed to a frame, a loose bag secured over the mouth of said cistern, a sliding rod fitted upon said frame, an ivory point permanently secured to said rod, a plunger secured at the mouth of said cistern to said ivory point, and means for actuating said sliding rod.

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**756,906. BRICK-MACHINE. HIRAM A. STOUFFER, Chatham, Ill., assignor of one-half to Laurence Evoy, Chatham, Ill. Filed May 13, 1903. Serial No. 156,882. (No model.)**

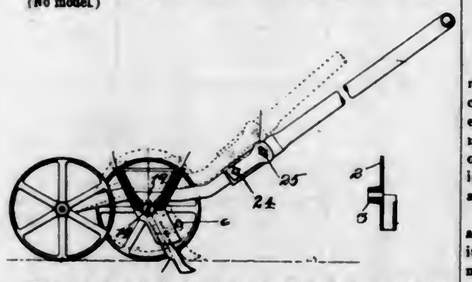


*Claim.*—1. In a brick-machine, the combination of a main structure having extensions, a sweep-shaft turning in bearings on said extensions, a sweep connected with said sweep-shaft, a worm having a forwardly-projecting shaft provided with a collar, a box in which the collar on the worm-shaft fits, a spur-wheel and a bevel-wheel on the worm-shaft, a bevel-wheel on the sweep-shaft meshing with the bevel-wheel on the worm-shaft, crushing-rolls having forwardly-extending shafts, cog-wheels on the crushing-roll shafts meshing with each other, one of said cog-wheels also meshing with the spur-wheel on the worm-shaft, a guide-rod secured to the main structure parallel to the axis of the worm, a slitted die-block slidable on the main structure and on said guide-rod, a pipe inclosing and slidable on said rod, a lever secured to said pipe, and knives secured to said pipe and working in the slits in said die-block, as set forth.

2. In a brick-machine, the combination of a main structure having an extension provided with chisel-edges, crushing-rolls and a worm turning in the main structure, a slitted die-block abutting against the end of the main structure and slidable longitudinally relative to the main structure, knives mounted on said die-block and adapted to cut in both directions through the slits in said die-block and means for forcing one end of said die-block against the chisel-edges on the main structure, as set forth.

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**756,907. SEEDER FOR POULTRY-YARDS. WILLIAM H. STRATHMANN, Chicago, Ill. Filed Dec. 21, 1903. Serial No. 185,977. (No model.)**



*Claim.*—1. In a device for the purpose described, the combination of a hopper, a feed device journaled therein, ground-wheels for supporting said hopper and one of which is connected directly with said feed device for operating it, a third wheel contributing to the support of said hopper and means whereby the hopper may be supported entirely upon said third wheel and the said wheels elevated from the ground.

2. In a device for the purpose described, the combination of a hopper, a feed-screw journaled in the bottom thereof and having projecting ends, ground-wheels for supporting the hopper secured on said ends, a third ground-wheel contributing to the support of the hopper, and a handle whereby the hopper may be elevated and supported upon said third wheel entirely with the first said wheels elevated from the ground.

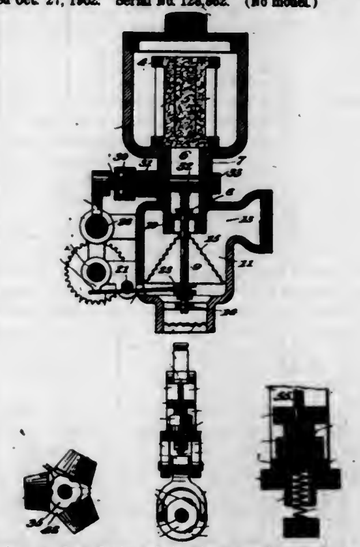
3. In a device for the purpose described, the combination of a hopper comprising a trough-shaped portion and end walls detachably secured thereto, journal-bearings formed on said end walls, a feed-screw arranged in the bottom of said hopper and having projecting ends journaled in said bearings, and wheels upon which said projecting ends are mounted.

4. In a device for the purpose described, the combination of a hopper comprising a trough-shaped portion and end walls secured thereto, journal-bearings formed on said end walls, a feed-screw having projecting ends journaled in said bearings, wheels in which said projecting ends are supported, and chutes formed on said end walls and projecting downwardly from said screw.

5. In a device for the purpose described, the combination of a hopper comprising front and back boards, a bottom casting having apertures separated by a double incline, the under side of said bottom portion being curved, and end walls secured to said front and back boards, a feed-screw journaled under the curved part of said bottom and having projecting ends, journaled bearings formed on said end walls and receiving said projecting ends, wheels upon which said projecting ends are supported, and a curved plate secured under said feed-screw and housing at the lower side thereof.

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**756,908. CARBURETER FOR GAS-ENGINES. GEORGE F. SWAIN, Harvey, Ill., assignor of one-half to Henry E. Kellogg, Harvey, Ill. Filed Oct. 27, 1902. Serial No. 128,862. (No model.)**



*Claim.*—1. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it, a valve controlling said passage, a device movable to engage and control the opening movement of the valve, a shaft mounted to turn and provided with a cam and means, independent of the valve-controlling device and actuated from said cam for moving the valve, said valve-moving means comprising a resilient part adapted to yield when the opening movement of the valve is limited.

2. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it, a valve controlling said passage, means for limiting the opening movement of the valve, resilient means for opening the valve and adapted to yield when the opening movement of the valve is limited and actuating mechanism connected with and arranged to actuate the valve-limiting means and also arranged to actuate the valve-moving means.

3. In a device of the character described, the combination of

a carbureter having a passage for the supply of liquid hydrocarbon to it, a valve controlling said passage, speed-controlled means for limiting the opening movement of the valve, and resilient means for opening the valve and adapted to yield when the opening movement of the valve is limited, substantially as set forth.

4. In a device of the character described, the combination of a carbureter having a passage for the supply of liquid hydrocarbon to it, a valve controlling said passage, means for opening said valve and comprising a resilient part, and speed-controlled means comprising a part adapted to engage and control the movement of the valve, substantially as set forth.

5. In a device of the character described, the combination of a carbureter having a passage for the supply of liquid hydrocarbon to it, a valve controlling said passage, means for opening the valve, a part movable to engage and limit the opening of the valve, speed-controlled means for moving said part and mechanism, independent of said speed-controlled means, for moving said part, substantially as set forth.

6. In a device of the character described, the combination of a carbureter having a passage for the supply of liquid hydrocarbon to it, a valve controlling said passage, means for opening the valve and mechanism, independent of said valve-opening means, and adapted to engage and control the opening movement of the valve, substantially as set forth.

7. In a device of the character described, the combination of a carbureter having a passage for the supply of liquid hydrocarbon to it, a valve controlling said passage, means comprising a cam and lever for opening the valve, another cam mounted for movement and adapted to engage and control the opening of the valve and speed-controlled mechanism for operating said cam, substantially as set forth.

8. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it, a valve controlling said passage, a shaft having driving means and provided with a cam, an elastic part interposed between the cam and valve for communicating movement to the valve to open the same, and means for controlling the opening movement of the valve, substantially as set forth.

9. In a device of the character described, the combination of a carbureter having a passage for the supply of liquid hydrocarbon to it, a valve controlling said passage, a shaft having driving means and provided with a cam, a lever formed from elastic material with one end engaged with said cam and its opposite end connected with the valve for communicating the movement of the cam to the valve to open the same, and means for controlling the opening of the valve, substantially as set forth.

10. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it, a valve controlling said passage, a stem connected with the valve and provided with a grooved collar, a shaft having driving means and provided with a cam, a lever formed from elastic material with one end engaged with said cam and its opposite end engaged with the grooved collar of the valve-stem for communicating movement to the valve to open the same and means for controlling the opening movement of the valve, substantially as set forth.

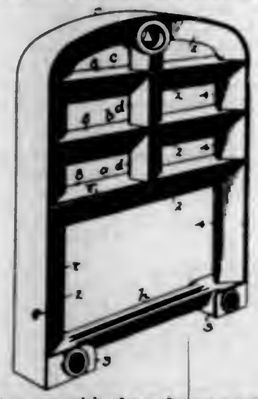
11. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it a valve controlling said passage, means for opening said valve and comprising a resilient part, a cam arranged for movement and adapted for engagement with the valve to limit the opening movement thereof and speed-actuated means for moving said cam, substantially as set forth.

12. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it a valve controlling said passage, means for opening the valve and comprising a resilient part, a cam mounted for movement and adapted for engagement with the valve to limit the opening movement thereof, a shaft on which said cam is held, an arm on said shaft, a shaft held to turn, a governing device held on said shaft, and operated therefrom, and a sleeve on said shaft and movably connected with the governing device and having engagement with the arm of the cam-shaft to move the same, substantially as set forth.

13. In a device of the character described, the combination of a carbureter having a passage for supplying liquid hydrocarbon to it, a valve controlling said passage, means for opening said valve and comprising a resilient part, a cam mounted for movement and adapted for engagement with the valve to limit the opening movement thereof, a shaft on which the cam is held, an arm on said cam-shaft, a driven shaft having a sleeve connected with and arranged to move the arm on the cam-shaft and provided with a governing device for moving said sleeve, and means for moving the sleeve independently of the governing device, substantially as set forth.

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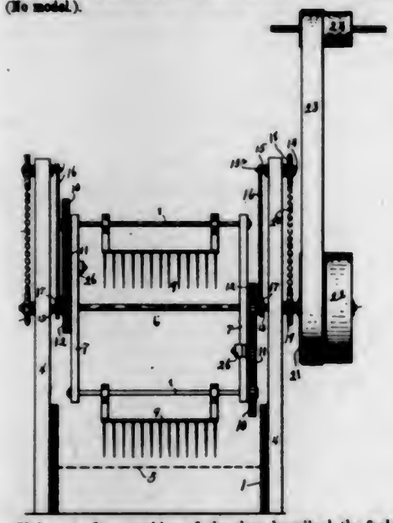
**756,909. HOT-WATER FURNACE. SIMON TACHE, Cleveland, Ohio. Filed Sept. 19, 1903. Serial No. 173,759. (No model.)**



*Claim.*—As a new article of manufacture, a section for a water-heating furnace having a hollow three-sided outer frame extending from the bottom of said section upward on both sides and over the top thereof, the said frame being triangular in cross-section with the outer side 5 at right angles to the plane of the section and the sides 4 thereof converging to a substantially V shape, thereby forming sharp abutting edges at the junction of said sides 4 and 5, and said section having a series of three several triangular cross portions, *a*, *b* and *c*, one above the other and communicating with said outer frame at their ends and having converging sides 2 in substantially V shape below, thus providing sharp abutting edges on the plane 8 at their top, and a central vertical substantially diamond-shape fluid connection *d* uniting said cross portions with the top of said outer frame, thereby providing a maximum of exposed surfaces to the heat in a given size of furnace, substantially as described.

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**756,910. FORKING, ELEVATING, AND CONVEYING MACHINE. ARTHUR P. TATTERSON, Stockton, Cal., assignor of one-half to George W. Tatterson, Stockton, Cal. Filed Feb. 14, 1903. Serial No. 143,413. (No model.)**



*Claim.*—1. In a machine of the class described, the forks 9 rigidly secured to the shafts 8, which are pivoted in the ends of the arms 7, the shaft 6 rigidly secured to the center of the arms 7 and journaled transversely of the tub or vat 1, a train of gears journaled on the shaft 6 and rigidly secured to the shaft 8 and means of securing the main gear of the train of gears against continuous and complete rotation, all substantially as shown and described.

2. In a machine of the class described the combination with a washing tub or vat having feed and squeeze rolls of the shaft 6 journaled in the post transversely of the tub or vat, the arms 7 rigidly secured to the shaft 6, the shafts 8 pivoted in the ends of said arms 7 and having the forks 9 rigidly secured thereto, the gear-wheel 10 rigidly secured to one end of the shaft 8, the gear-wheel 12 loosely journaled on the shaft 6, the idler-wheel 11 adjustably journaled on the arm 7 and adapted to engage both gear-wheels 10 and 12, the pin 17 rigidly inserted in the side of the wheel 12, the pitman-arm 16 adapted to engage the pin 17 and the crank 15; said crank 15 secured to the shaft 14 which is journaled in the top of the post 4, the sprocket 18 rigidly secured to the shaft 14, the sprocket 19 rigidly secured to the shaft 6, the sprocket-chain 20 adapted to engage both sprockets 18 and 19, and means for imparting motion to the shaft 6, all substantially as shown and described and for the purposes set forth herein.

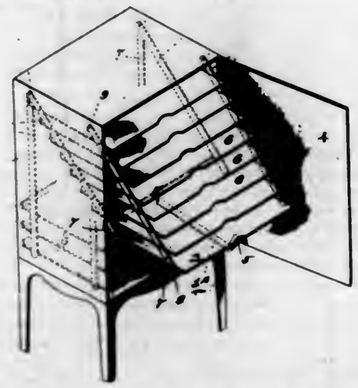
3. A series of forks journaled in a revolving frame, which carries a train of gears adapted to control said forks and maintain the same in a depending position during the entire revolution of the frame aforesaid, all substantially as shown and described.

4. In a machine of the class described the means for oscillating a fork in a revolving frame, comprising a train of gears, journaled on the arm of the frame, one of which is adapted to engage the fork by means of a shaft, a pitman engaging another of the train of gears, a pitman wheel or crank engaging said pitman and means for operating said pitman-wheel simultaneously with the revolution of the frame aforesaid all substantially as shown and described.

5. In a machine of this class, a main shaft journaled transversely of a suitable tub or vat, having arms rigidly attached in their centers at right angles thereto, forks rigidly mounted on shafts, journaled in each end of said arms, a train of gears engaging said fork-shafts journaled on the side of the arms aforesaid, means for adjusting said train of gears on said arms, the pitman 16 engaging the initial gear of the train of gears whereby the forks are oscillated to and fro while being rotated around the main shaft, and means for operating the pitman all substantially as shown and described.

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**756,911. CABINET. CHARLES F. THOLIN, Rockford, Ill. Filed Dec. 27, 1902. Serial No. 136,811. (No model.)**



*Claim.*—1. In a cabinet, in combination, a casing provided with a door; a plurality of shelves pivotally supported within said casing; and means actuated by the movement of the door for moving said shelves upon their pivotal supports.

2. In a cabinet, in combination, a casing; a shelf structure comprising a vertical series of shelves pivotally supported between a plurality of pivotal links; a member hinged to said casing; and intermediate means in operative connection with said member and said shelf structure, whereby the movement of said member may serve to draw said shelf structure forward within the casing to provide a freer access to articles resting upon the shelves of said structure.

3. In a cabinet, in combination, a casing; a hinged closure therefor; a shelf structure comprising a vertical series of shelves pivotally supported between a plurality of pivotal links; and a pivotal link for transmitting the movement of said closure to the shelf structure to draw said shelf structure forward within the casing to provide a freer access to articles resting upon the shelves of said structure.

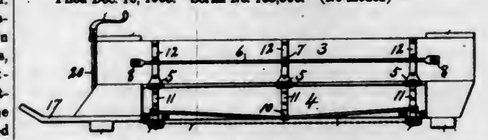
4. In a cabinet, in combination, a casing; a closure therefor; a shelf structure pivotally supported within said casing; a bracket secured to said closure; and a link pivotally connected with said bracket and with said shelf structure, to draw said structure forward within the casing to provide a freer access to articles resting upon the shelves of said structure.

5. In a cabinet, in combination, a casing; a hinged closure therefor; a shelf structure mounted upon pivotal links supported within said casing; a bracket secured to said closure on the inner side thereof and near its hinge-support; a stud projecting from said shelf structure; and a link having a pivotal connection with the bracket and with the stud, for drawing the shelf structure forward within the casing when the door is opened, to provide a freer access to articles resting upon the shelves of said structure.

6. In a cabinet, in combination, a casing having two side walls and a door; two links pivotally mounted upon the upper inner face of each of said side walls; a plurality of shelves pivotally supported by said links; a rail at the rear edge of each of said shelves; a stud projecting downward from the lower one of said shelves; a bracket secured to the lower edge of the door on the inner face thereof; and a link pivotally connected with said stud and said bracket, for drawing the shelves forward within the casing when the door is opened, to provide a freer access to articles resting upon the shelves.

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**756,912. DUMP-WAGON. HENRY C. TRIPP, Auburn, N. Y. Filed Dec. 16, 1903. Serial No. 185,396. (No model.)**



*Claim.*—1. In a dump-wagon, in combination, a box having bottom doors hinged to the sides of the box and inclining downwardly and inwardly therefrom, a cable having a portion thereof extending transversely of and under the doors and connected to said doors at opposite sides of their meeting edges, and means to wind and unwind the cable.

2. In a dump-wagon, in combination, a box having bottom doors hinged to the sides of the box and inclining downwardly and inwardly therefrom, sheaves on the front ends of the doors, a sheave on the rear end of one of the doors, an anchorage on the rear end of the other door, a cable passed around said sheaves and attached to the anchorage, and means to wind and unwind the cable.

3. In a dump-wagon, the combination of a box having swinging bottom doors hinged to the sides of the box and inclining downwardly and inwardly therefrom, truss-rods secured to the doors, and means to control the operation of the doors.

4. In a dump-wagon, the combination of a box having swinging bottom doors hinged to the sides of the box and inclining downwardly and inwardly therefrom, truss-rods extending lengthwise of the doors, parallel with their meeting edges and secured to said doors, and means to close the doors.

5. In a dump-wagon, the combination with the sides and ends of a box, of swinging bottom doors hinged to the lower edges of the sides and meeting in a plane substantially midway between and parallel with their swinging axes, truss-rods secured to the doors parallel with and between the axes and meeting edges, and means for closing the doors.

6. In a dump-wagon, the combination with the sides and ends of a box, of swinging bottom doors, hinged to the sides, and truss-rods on the sides spanning the distances between the ends, to prevent the spreading of the sides.

7. In a dump-wagon, the combination, with the sides and ends of a dump-box having swinging bottom doors, of truss-rods at the sides and tie-rods at the ends of the box, the tie-rods connecting corresponding ends of the truss-rods.

8. In a dump-wagon, the combination, with the sides and ends of a box having swinging bottom doors hinged to the sides, of truss-rods on the sides above the swinging axes of the doors and additional truss-rods on the doors near their meeting edges and below said axes.

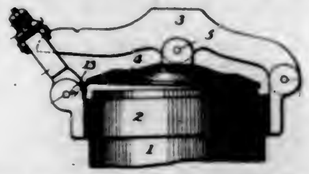
9. In a dump-wagon, the combination with the sides and ends of a box having swinging bottom doors hinged to the sides, an upright drum, a cable attached to the drum and extending under the

doors and transversely of their meeting edges, one end being anchored to one of the door and rendering over a bearing on the other door.

10. In a dump-wagon, the combination with the sides and ends of a box having swinging bottom doors hinged to the sides, an upright drum, a cable attached to the drum and extending under the doors and transversely of their meeting edges, one end being anchored to one of the doors and rendering over a bearing on the other door, of truss-rods lengthwise of and upon the sides and doors and tie-rods connecting the sides of the box and ends of the truss-rods.

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**756,913. VULCANIZER.** HARRY W. TROTT, New Bethlehem, Pa. Filed Aug. 29, 1903. Serial No. 171,333. (No model.)




*Claim.*—1. In a vulcanizer, the combination with the body and the lid, of the lever 3 pivoted to the body and adapted to bear upon the lid, the lever 8 pivoted to the body, the arm pivotally carried by the lever 8 and adapted to bear upon the lever 3, and means for drawing said arm down upon said lever to securely close the lid.

2. In a vulcanizer, the combination with the body and the lid, of the lever 3 pivoted to the body and adapted to bear upon the lid, the locking-lever 8, the arm pivoted to said locking-lever, and the screw for clamping said arm upon the lever 3.

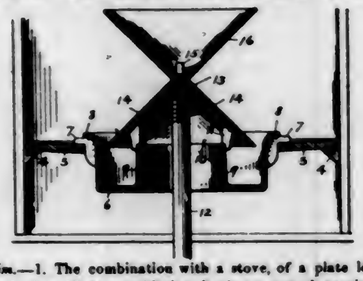
3. In a vulcanizer, the combination with the body, the lid, and means for locking the lid, of a lever pivoted to the body, and a pawl carried by said lever and adapted to engage and open the lid.

4. In a vulcanizer, the combination with the body and the lid, of a lever pivotally connected with the body, and a pawl connected with said lever, said pawl being adapted to pass under the lid when the lever is moved in one direction, and to raise the lid when the lever is moved in the opposite direction.

5. In a vulcanizer, the combination with the body and lid, of a lever 3 adapted to bear upon and close the lid, a lever 8 having a pivoted arm and means for clamping said arm against the lever 3 to lock the lid, and a pawl carried by said lever 8 and arranged to raise the lid when the lever 8 is moved out of engagement with the lever 3.

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**756,914. HYDROCARBON-BURNER.** WILLIAM D. TUCKER, Anderson, Ind. Filed July 21, 1903. Serial No. 166,421. (No model.)



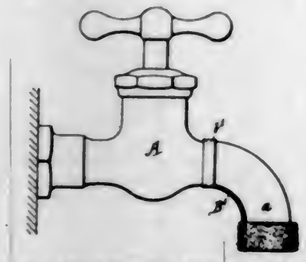

*Claim.*—1. The combination with a stove, of a plate located transversely, in said stove, said plate having a central opening and forming an air cut-off except through said central opening, a drip-pan of less diameter than the diameter of the plate-opening, held in said opening so as to provide air-passages between the pan and plate, said drip-pan having a central opening and an upward flange surrounding said opening, a conical hood mounted in the pan over said flange, but sufficiently remote to provide an air-passage between said hood and flange, said hood having an oil-exit at its apex, and a conical shell resting upon and covering the hood and causing the oil to flow from the apex to the bottom of the hood.

2. The combination with a stove, of a transverse plate located therein, said plate having a central opening whereby the air is cut off except through said opening, a drip-pan of less diameter than the diameter of the opening in said plate, suspended and held in said opening so as to provide air-passage between pan and plate, said pan having a central opening a raised surrounding flange, a conical hood supported in the pan above the central flanged opening said hood having an oil-opening at its apex, a supply-pipe discharging through said oil-opening, a conical shell resting upon said hood and an inverted conical deflector removably secured to the shell.

3. The combination with a stove, of a transverse ring located therein, said ring having a central opening which forms the only air-passage through the ring, a pan mounted loosely in said opening so as to have a surrounding air-passage, said pan having a center-draft opening, a hood over said center-draft opening having an oil-exit at its top, a shell surrounding and resting upon the hood to deflect the oil to the bottom of the hood, and a deflector secured to the outside of the shell.

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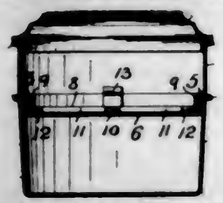
**756,915. GLASS-PROTECTING ATTACHMENT FOR FAUCETS.** JOSEPH R. TOOR, St. Paul, Minn. Filed May 12, 1902. Serial No. 106,936. (No model.)




*Claim.*—In a glass-protector, a head, stem and base, the head being incased and embracing a faucet-spout, the said stem being bent to the contour of the spout and the base forming a spring-clasp encircling the spout.

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**756,916. FUMIGATOR.** ABRAHAM VAN WINKLE, Newark, N. J. Filed July 25, 1903. Serial No. 166,946. (No model.)




*Claim.*—1. An incense-burner or fumigator, comprising, a lower receptacle adapted to contain a powder, an upper receptacle detachably arranged upon said lower receptacle, a matrix or pattern in said upper receptacle arranged therein for forming some of the powder in mass form in said upper receptacle, and a cover on said upper receptacle provided with a wire-gauze covered opening, substantially as and for the purposes set forth.

2. An incense-burner or fumigator, comprising, a lower cylindrical receptacle having an annular bead, an upper cylindrical receptacle having an annular shoulder resting upon said bead of the lower receptacle, and an annular bead surrounding the open portion of said upper receptacle, said receptacles being detachably connected one with the other, a circular matrix or pattern removably arranged in said upper receptacle, and a cover on said upper receptacle provided with air-openings, substantially as and for the purposes set forth.

3. An incense-burner or fumigator, comprising, a lower cylindrical receptacle having an annular bead, an upper cylindrical receptacle having an annular shoulder resting upon said bead of the lower receptacle, and an annular bead surrounding the open portion of said upper receptacle, said receptacles being detachably connected with each other, a circular matrix or pattern removably arranged in said upper receptacle, a cover on said upper receptacle provided with an opening, and a wire-gauze covering over said opening, substantially as and for the purposes set forth.

4. An incense-burner or fumigator, comprising, a lower cylindrical receptacle having an annular bead, an upper cylindrical receptacle having an annular shoulder resting upon said bead of the lower receptacle, and an annular bead surrounding the open portion of said upper receptacle, said receptacles being detachably connected

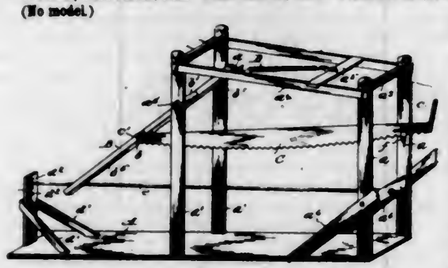


with each other, a circular matrix or pattern removably arranged in said upper receptacle, comprising, a marginal rim, a diametrically-extending bar connected with said rim, laterally-extending arms at the opposite edges of said bar, and arms projecting from said rim and extending between the arms of said diametrical bar, and a cover on said upper receptacle provided with air-openings, substantially as and for the purposes set forth.

5. An incense-burner or fumigator, comprising, a lower cylindrical receptacle having an annular bead, an upper cylindrical receptacle having an annular shoulder resting upon said bead of the lower receptacle, and an annular bead surrounding the open portion of said upper receptacle, said receptacles being detachably connected with each other, a circular matrix or pattern removably arranged in said upper receptacle, comprising, a marginal rim, a diametrically-extending bar connected with said rim, laterally-extending arms at the opposite edges of said bar, and arms projecting from said rim and extending between the arms of said diametrical bar, a cover on said upper receptacle provided with an opening, and a wire-gauze covering over said opening, substantially as and for the purposes set forth.

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**756,917. APPARATUS FOR SAWING WOOD.** WILLIAM R. WALKER, Fort Smith, Ark. Filed Jan. 16, 1904. Serial No. 189,285. (No model.)




*Claim.*—1. In an apparatus for sawing wood, the combination, of a frame, a bar pivoted therein to swing longitudinally thereof and provided at its lower end with a slot, a saw-blade pivoted at one end in the bar above said slot, and a guide-rod vertically adjustable in the frame and passing through the slot in the swinging bar, substantially as shown.

2. In an apparatus for sawing wood, the combination, of a frame, a bar pivoted therein to swing longitudinally thereof, and provided at its lower end with a longitudinal slot, a saw-blade pivoted in the bar and provided at its opposite end with a handle, a post at one end of the frame, and a rod adjustably attached to the post, extending therefrom through the slot in the swinging bar and attached at its other end to the forward part of the frame.

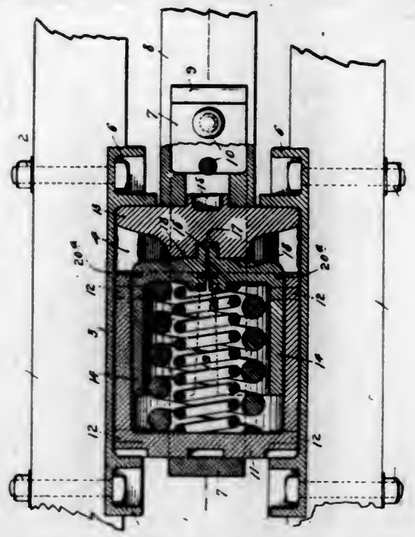
3. In an apparatus for sawing wood, the combination, of a frame, a bar pivoted therein to swing longitudinally thereof, said bar being provided at its lower end with a longitudinal slot and at its upper end projecting above its pivot, a spring connected to the upper end of the bar and to the frame, a saw-blade adjustably pivoted in a slot in the bar and at its other end provided with a handle, a rod vertically adjustable in the frame and passing through the slot at the lower end of the bar, a pin on the supporting-frame for supporting the saw, and a sawbuck forming part of said frame.

4. In an apparatus for sawing wood, the combination, of a frame comprising a base-board and two pairs of uprights connected at their upper ends, a bar pivoted between one pair of uprights and having a slot near its lower end, a saw-blade pivoted at one end in said bar and extending therefrom through the frame between the other pair of uprights and provided with a handle, inclined pieces secured to the latter uprights to form a sawbuck, a supporting-pin for the saw secured above the sawbuck to one of the uprights thereof, a post at the end of the frame opposite the sawbuck, and a rod secured to said post and sawbuck, and said rod passing through the slot in the lower end of the swinging bar to which the saw is connected; together with a spring connected to the swinging bar, substantially as herein shown and described.

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**756,918. DRAFT-COUPLING FOR CARS.** EDWIN C. WASHBURN, Minneapolis, Minn. Filed Sept. 8, 1903. Serial No. 172,260. (No model.)

*Claim.*—1. A frictional spring-retarding device, comprising a pair of telescoping members, with a spring compressed between them, one of the said telescoping members being split or divided, and having adjacent lugs, and a base member having a seat, receiving the said lugs, substantially as described.




2. A frictional retarding device, comprising a pair of telescoping parts, one of which parts is split or divided and fulcrumed for contact with the other member, and packings forming substantially air-tight joints between the sections of said divided member, and between said divided member and the cooperating frictional member, whereby the said telescoping members afford an air-cushion.

3. A frictional spring-retarding device, comprising a pair of cup-like telescoping members, one of which has a radial movement, for frictional engagement with the other member, and forms tight joints therewith, whereby an air-cushion is afforded, and a spring inclosed within and pressed between the said telescoping members, substantially as described.

4. The combination with the telescoping cup-shaped members, one of which is split or divided, and has adjacent fulcrum-lugs 17, of a base member 13 having the seat 16 receiving said fulcrum-lugs 17, and a coiled spring contained within and compressed between the said cup-shaped members, substantially as described.

5. The combination with a draft-box having abutments, and a draft-bar having a draft-yoke, of a cup-shaped follower 11, having the angular projections engageable with said draft-box and the inner abutments thereof, the divided or split cup-shaped frictional member 14 telescoping into said member 11 and provided with the fulcrum-lugs 17, the base member 13 cooperating with the outer abutments of said draft-box, and having the seat 16 receiving said fulcrum-lugs 17, and the spring compressed within said telescoping members 11 and 14 and pressing the sections of the latter into frictional engagement with the former, the said members 11, 13 and 14 being embraced by the yoke of said draft-bar, substantially as described.

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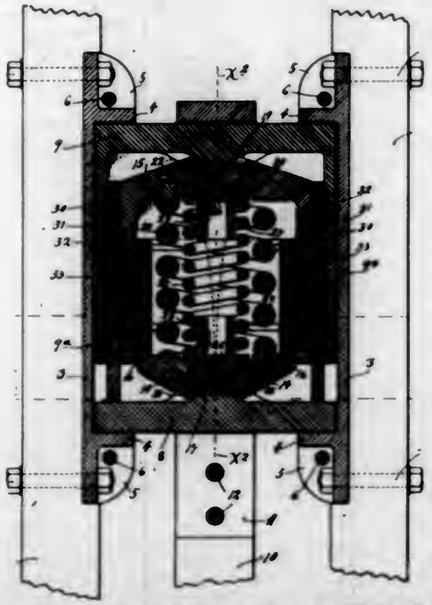
**756,919. DRAFT-RIGGING.** EDWIN C. WASHBURN, Minneapolis, Minn. Filed Dec. 11, 1903. Serial No. 184,754. (No model.)

*Claim.*—1. In a draft-rigging, the combination with a pair of primary followers, one thereof having frictional flanges, of a pair of divided supplemental followers, telescoping one within the other and made up of fulcrumed frictionally-engaging sections, one pair of which sections have their base of reaction against the frictional flanges of the one follower, and a spring compressed between the divided supplemental followers and tending to maintain frictional engagement between said parts.

2. The combination with parts to be cushioned, of a pair of divided frictional followers, made up of fulcrumed frictional sections, said followers telescoping one within the other, a spring compressed between said divided followers, and frictional members against which the sections of the outer divided follower are frictionally pressed, substantially as described.

3. A frictional spring-retarding device comprising a pair of telescoping members, at least one of which is made up of a pair of

fulcrumed sections, and a yielding device compressed between said members and tending to separate the sections of said divided follower, both at their free and at their fulcrumed ends, substantially as described.



4. A frictional retarding device comprising a pair of frictionally-engaging members, at least one of which members is made up of a pair of fulcrumed sections, a wedge applied to the fulcrumed ends of said fulcrumed sections, and a spring compressed between the said frictional members and acting on the said wedge, said wedge and spring tending to separate said fulcrumed sections, both at their free ends and at their fulcrumed ends, substantially as described.

5. The combination with a pair of followers, of a pair of supplemental followers, applied, one to each thereof, said supplemental followers comprising fulcrumed frictionally-engaging surfaces, wedges acting on the fulcrumed ends of said fulcrumed members, and a spring compressed between the said wedges, and operating thereon, substantially as described.

6. The combination with a pair of primary followers and a pair of supplemental divided followers, said supplemental followers having engagements with said primary followers, tending to separate the sections thereof at their fulcrumed ends, and a spring compressed between the said supplemental followers, and acting thereon, substantially as described.

7. A frictional spring-retarding device comprising a pair of telescoping frictional members, at least one of which is made up of a pair of fulcrumed sections, a wedge engaging diverging surfaces formed on the base of said fulcrumed sections, for spreading them, and a spring compressed between said telescoping frictional members, and acting on the said wedge, substantially as described.

8. A frictional retarding device comprising a pair of telescoping members, one thereof having frictional flanges, of a pair of supplemental followers, each made up of a pair of fulcrumed frictionally-engaging sections, friction-plates interposed between the outer fulcrumed sections and the flanges of one of the said primary followers, and subject to one of the followers, and a spring compressed between the said supplemental followers, substantially as described.

9. The combination with a pair of followers and supplemental divided followers, made up of fulcrumed sections telescoping under frictional engagement, a spring compressed between said supplemental followers, and tending to spread the sections thereof, and cam-surfaces acting on the sections of the outermost supplemental followers and tending to force the same together when either of the followers is moved with respect to the other, substantially as described.

10. In a draft-rigging for cars, the combination of fixed abutments and cooperating followers, one of said followers having parallel friction-flanges, of a pair of telescoping frictionally-engaging supplemental followers made up of fulcrumed sections, friction-plates interposed between the sections of the outer supplemental follower and the parallel flanges of the one follower, said friction-plates having cam-surfaces acting on the said supplemental-follower sections to press the same together when one of the followers is moved with respect to the other, wedge-shaped spring-bases, acting on the fulcrumed ends of the supplemental-follower sections and tending to spread them, a spring compressed between said spring-bases, and another spring compressed between said divided supplemental followers, substantially as described.

11. The combination with the followers 8 and 9, the former having a fulcrum-ridge 17, and the latter having the friction-flanges $9^a$ and fulcrum-ridge 19, of the fulcrumed follower-sections 14, having the fulcrumed surfaces 18, engaging said fulcrum-ridge 17, the fulcrumed follower-sections 15 frictionally telescoping on said sections 14 and having the fulcrumed surfaces 20 engaging said fulcrum-ridge 19, a spring compressed between the follower-sections 14 and the follower-sections 15, and the friction-plates 30 interposed between said follower-sections 15 and the friction-flanges $9^a$ and subject to the follower 8, substantially as described.

12. In a draft-rigging, the combination of fixed abutments and pair of followers 8 and 9, the former having the fulcrum-ridge 17, and the latter having the fulcrum-ridge 19 and friction-flanges $9^a$, of the supplemental-follower sections 14 having the diverging fulcrum-surfaces 18 engaging said ridge 17, the supplemental-follower sections 15 having the fulcrumed surfaces 20 engaging said fulcrum-ridge 19, the friction-plates 30 interposed between said followers 15 and said friction-flanges $9^a$, said friction-plates having cam-surfaces acting on said followers 15 to force the same together under movements of either of the followers, wedge-shaped spring-seats engaging the fulcrumed ends of the said follower-sections 14 and 15, a spring compressed between said spring-bases, and another spring compressed directly between the follower-sections 14 and the follower-sections 15, said parts operating substantially as described.

13. The combination with a pair of primary followers, one thereof having frictional flanges, of a pair of divided supplemental followers telescoping one within the other, the outer member telescoping within the flanges of said flanged follower, said divided supplemental followers having beveled engagements with said primary followers whereby the sections thereof are put under strain tending to spread or separate them, and a spring compressed between said supplemental followers, substantially as described.

## 756,920. METALLIC TRUCK-BOLSTER. EDWIN C. WASHBURN, Minneapolis, Minn. Filed Dec. 17, 1903. Serial No. 185,483. (No model.)



*Claim.*—1. In a truck-bolster, the combination with a cast bolster-body having detachable end caps, of a truss-rod reacting on said end caps, and a strut interposed between the intermediate portion of said bolster-body and truss-rod, substantially as described.

2. A cast truck-bolster, the body portion of which is formed with upper and lower plates, with a central vertical web, and with crossed truss-ribs, substantially as described.

3. A metallic truck-bolster having a cast body portion formed hollow, with open ends, but with internal webs and reinforcing-flanges, of end caps interlocking with the open ends of said bolster-body, truss-rods passed through the lower plate of said bolster-body and through said end caps, nuts on the outer ends of said truss-rods, and struts interposed between the intermediate portions of said bolster-body and truss-rods, substantially as described.

4. A cast bolster-body made up of the outwardly-converging upper and lower plates 2 3, central web 4 and crossed truss-ribs 7, substantially as described.

5. A cast bolster-body formed with outwardly-converging upper and lower plates, and with a central vertical web uniting the said upper and lower plates, having reinforcing-ribs 8 and 9 extending outward and united to form the side plates 10, substantially as described.

6. A cast bolster-body formed with reinforcing webs and flanges, and having cast integral with the upper end portions thereof, the rectangular pockets 12, having depressions or seats 13, substantially as and for the purposes set forth.

7. A cast bolster-body having outwardly-converging upper and lower plates, the latter at their outer ends being formed with the seats or depressions 20 for cooperation with lateral-motion devices, substantially as described.

8. The combination with a cast bolster-body formed with outwardly-converging upper and lower plates, and with a central vertical web 4, of caps engaging the ends of said bolster-body, truss-rods passed through said caps, one on each side of the central web of said bolster-body, nuts on the outer ends of said rods, and struts interposed between the intermediate portions of said bolster-body and truss-rods, substantially as described.

## 756,921. DRAFT-EQUALIZER. AUSTIN K. WATERS, Albion, Pa. Filed Oct. 23, 1903. Serial No. 178,255. (No model.)

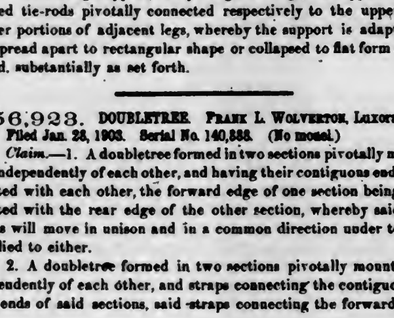


*Claim.*—1. In a draft-equalizer, the combination with a tongue having a plate secured thereto and projecting laterally therefrom, of an equalizing-beam pivotally mounted upon the plate at one side of the tongue, a swingletree and a doubletree connected to opposite ends of the beam, the point of pivotal mounting of the beam being nearer to the swingletree than to the doubletree, and means connected with the tongue in the rear of the beam and adapted for connection with the beam adjacent to the tongue to hold the end of the beam with the doubletree against forward movement.

2. In a draft-equalizer, the combination with a tongue having plates secured thereto and projecting at opposite sides thereof and having each perforations therethrough, of an equalizer-beam having a pivot-bolt engaged therethrough at a point nearer to one end than to the other and adapted for engagement with a perforation of either plate, a hammer-strap engaged with the pivot-bolt and connected to the tongue in the rear of the plate, a doubletree pivotally connected to the end of the beam nearest to its pivot-bolt and adapted to project at both sides of the tongue, swingletrees attached to the doubletree, a swingletree connected to the opposite end of the beam, said doubletree and swingletree being movable to lie at either side of the beam, and means for holding the doubletree and the connected end of the beam against forward pivotal movement.



## 756,922. FOLDING LEG FOR FURNITURE. WILLIAM C. WILLETS, Minneapolis, Minn. Filed July 10, 1903. Serial No. 164,945. (No model.)



*Claim.*—1. The combination with an article, of supports therefor comprising bars or plates, means for removably attaching them to the base of the article, legs pivotally connected to the ends of the bars, and oppositely-inclined tie-rods pivotally connected to the upper and lower portions of adjacent legs, substantially as set forth.

2. A folding support comprising bars or plates, means for removably attaching them to the base of an article, legs pivotally connected to the ends of the bars, and oppositely-inclined tie-rods pivotally connected to the upper and lower portions of adjacent legs, whereby the support is adapted to be spread apart to rectangular shape or collapsed to flat form as desired, substantially as set forth.

3. A folding-support comprising legs pivotally connected together and each composed of a plurality of rods, sleeves inclosing said rods, and oppositely-inclined tie-rods swiveled to the upper and lower portions of adjacent legs, whereby the support is adapted to be spread apart to rectangular shape or collapsed to flat form as desired, substantially as set forth.

4. A folding support comprising legs pivotally connected together and each composed of a plurality of rods, sleeves formed of spirally-wound wires inclosing said rods, and oppositely-inclined tie-rods pivotally connected to the upper and lower portions of adjacent legs, substantially as set forth.

5. A folding support, comprising legs pivotally connected together and each composed of a plurality of rods, and oppositely-inclined tie-rods swiveled to the upper and lower portions of adjacent legs, whereby the support is adapted to be spread apart to rectangular shape or collapsed to flat form as desired, substantially as set forth.

6. A folding support, comprising four legs consisting of a plurality of rods connected together, and inclined tie-rods each of which has a lower end portion upwardly bent to constitute a part of one of the legs, and its other end bent to form an eye for loosely encircling the upper portion of an adjacent leg, substantially as set forth.

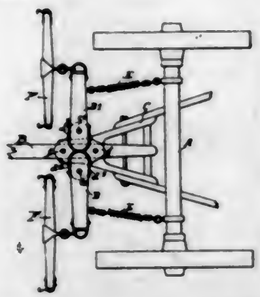
7. A folding support, comprising four legs, and oppositely-inclined tie-rods pivotally connected respectively to the upper and lower portions of adjacent legs, whereby the support is adapted to be spread apart to rectangular shape or collapsed to flat form as desired, substantially as set forth.

## 756,923. DOUBLETREE. FRANK L. WOLVERTON, Lisbon, Ark. Filed Jan. 28, 1903. Serial No. 140,888. (No model.)

*Claim.*—1. A doubletree formed in two sections pivotally mounted independently of each other, and having their contiguous ends connected with each other, the forward edge of one section being connected with the rear edge of the other section, whereby said sections will move in unison and in a common direction under tension applied to either.

2. A doubletree formed in two sections pivotally mounted independently of each other, and straps connecting the contiguous inner ends of said sections, said straps connecting the forward edge

of one section with the rear edge of the complementary section, and adapted to bear on the projecting inner ends of the sections, for the purpose described.

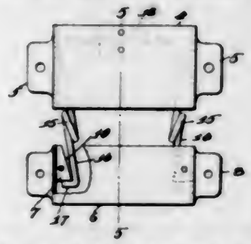


3. A doubletree formed in two sections pivotally mounted independently of each other and having their contiguous ends rounded, and flexible straps connecting the front edge of one section with the rear edge of the other section and fitting over the rounded ends of the other section.

4. A doubletree formed in pivotally-mounted sections, means for positively coupling the contiguous ends of the sections, said means being secured to opposite edges of the respective sections, whereby the forward movement of one section will cause a like movement of the complementary section, and tension devices connected with said sections and adapted to resist their forward movement.

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**756,924. BAG-FASTENER.** JOHN D. WOOD, St. Louis, Mo. Filed June 23, 1903. Serial No. 162,835. (No model.)



*Claim.*—1. A grip-fastener, comprising a plate 4, means for securing said plate to the body of the grip, a plate 6 provided on its inner walls with shoulders, a fastener constructed of a single piece of wire and secured to said plate 4; said fastener 11 being provided with loops 13 concealed by the plate 4, and hooks 17 laterally and oppositely disposed on said fastener, adapted to be engaged with and released from the shoulders of said plate 4; and loops 15 formed intermediately of the loops 13 and hooks 17, substantially as specified.

2. A grip-fastener, comprising a plate 4, means for securing said plate to the body of the grip, a plate 6 provided on its inner walls with shoulders, a fastener constructed of a single piece of wire and secured to said plate 4; said fastener 11 being provided with loops 13 concealed by the plate 4, and hooks 17 laterally and oppositely disposed on said fastener, adapted to be engaged with and released from the shoulders of said plate 4; loops 15 formed intermediately of the loops 13 and hooks 17; and a cleat 18 for securing the fastener to the plate 4, substantially as specified.

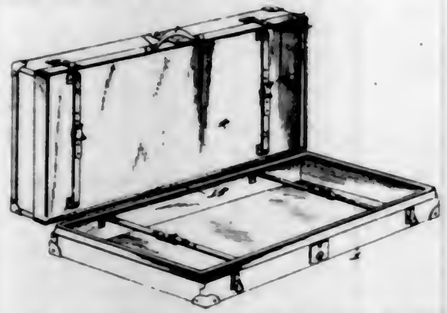
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**756,925. DRESS-SUIT CASE.** JOHN D. WOOD, St. Louis, Mo. Filed Sept. 3, 1903. Serial No. 171,744. (No model.)

*Claim.*—1. A suit-case, comprising two body-sections provided with inwardly-projecting edges, an intermediate lid-section provided with flanges into which said edges are adapted to be shut for converting the case into two separate and distinct compartments, and means carried by the body-sections and lid-section for securing the same together, substantially as specified.

2. In a suit-case, a lid-section comprising a steel rim and metal connecting-pieces 8 passing from one side of said rim to the other for supporting the handle, substantially as specified.

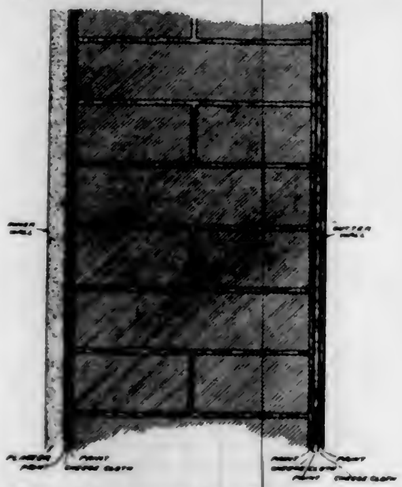
3. In a suit-case, a lid-section adapted to receive oppositely-disposed body-sections, said lid-section comprising a solid rim, and connecting-strips secured to said rim for supporting the handle and consequently the grip, substantially as specified.



4. In a suit-case, a lid-section comprising a solid rim, connecting-strips secured to each side of said rim, and a handle secured to said lid-section, substantially as specified.

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**756,926. WALL-FACING FOR DAMPPROOFING.** WILLIAM ZAISSER, New York, N. Y., assignor to Universal Compound Company, New York, N. Y., a Corporation of New York. Filed Dec. 23, 1903. Serial No. 186,347. (No model.)

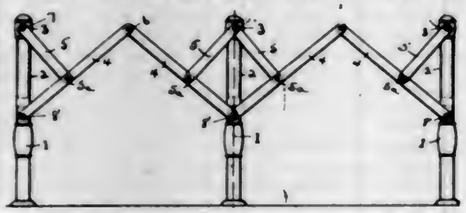


*Claim.*—1. For dampproofing metallic surfaces the method herein described, which consists in providing the surface with a layer of adhesive waterproof composition, applying cheese-cloth to such coating under pressure and reinforcing the cheese-cloth with a finishing-coating of adhesive waterproof composition.

2. The method herein described of dampproofing plastered walls, which consists in coating the wall with an adhesive layer of waterproof composition, applying a facing of cheese-cloth under pressure to such coating, applying a coating of waterproof adhesive composition to the cheese-cloth and providing the latter with a finishing-facing of plaster.

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**756,927. FOLDING PEDESTAL.** CHARLES H. ASHLEY, San Francisco, Cal. Filed June 23, 1903. Serial No. 162,777. (No model.)



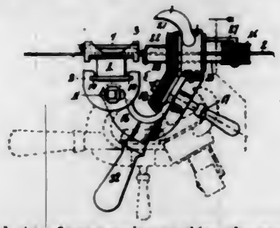


*Claim.*—1. A folding pedestal comprising end legs and intermediate legs, said legs being arranged in pairs with heads slidably mounted in the upper portions of each of said legs, said legs being connected at their upper ends and their lower ends, a pair of levers pivoted at their one ends to each other and at their other ends to the intermediate leg and one of the end legs, with hangers pivoted to said slidable heads and to each of the said levers at a point to one side of the center thereof, said levers where pivoted to one another, being connected by transverse rods, said rods supporting the object when the legs are contracted so as to bring the upper ends of said rods above the heads of said legs.

2. A folding pedestal comprising end and intermediate legs arranged in pairs with a head slidably mounted in the upper portion of each of said legs, transverse rods connecting the said heads, levers each pivoted at one end of the other and at their other ends to the said legs, the pivotally-connected ends of said levers lying between the said legs, transverse rods connecting the said pivotally-connected ends of said levers, and hangers each at one end pivoted to one of said levers at a point nearer to the pivot of said lever to the leg than to its pivotal connection with the other lever, and at the other end pivoted to the slidable head of said leg.

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**756,928. FENCE-WEAVING MACHINE.** BENJAMIN F. BAILEY, Ogden, Mich. Filed May 24, 1902. Serial No. 108,771. (No model.)



*Claim.*—1. In a fence-weaving machine, the combination of a post mounted to slide upon the horizontal wires, a carriage mounted on said post to slide vertically thereon, a bracket hinged to said carriage to swing in the arc of a horizontal circle, means carried by said bracket for feeding the stay-wire to the horizontal wires and winding said stay-wire thereon, and means for adjusting the hinge of the bracket laterally of the carriage, substantially as set forth.

2. In a machine for weaving wire fence, the combination of a vertical post, jaws movable upon said post adapted to receive the horizontal wires of the fence, a carriage mounted to slide vertically on said post, a bracket hinged to said carriage, means carried by said bracket for feeding the stay-wires to the lateral wires and for winding said stay-wires thereon.

3. In a fence-weaving machine, the combination of the vertical post having adjustable jaws thereon adapted to receive the lateral wires of the fence to maintain the post in position, a carriage adapted to slide vertically on said post, a bracket hinged to said carriage, said bracket carrying a rotary agent channeled to receive the line-wire of the fence and adapted to stand in horizontal alinement with the jaw on the post which receives said wire, said rotary agent having an opening for the passage of the stay-wire adapted to pass through said rotary agent eccentric to the line-wire of the fence lying in said channel, and means for rotating said agent.

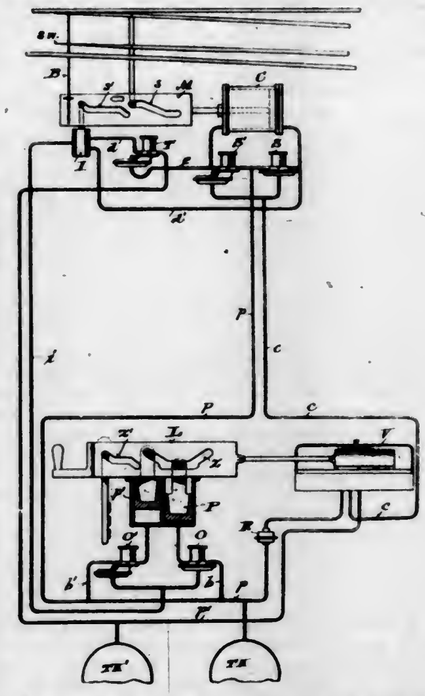
4. In a fence-weaving machine, the combination, with the means for supporting the line-wires of the fence, of a movable bracket having a crank journaled therein, a pinion on said crank, a ring carried at the extremity of said bracket having an opening therethrough, a gear-wheel journaled in said ring and meshing with said pinion, the hub of said gear-wheel having a channel adapted to register with the opening in the ring, an arresting-pin extending from the bracket in alinement with said crank, said pin being so positioned as to cause the channel in the hub of the gear-wheel to register with the opening in said ring when the crank is brought into alinement therewith.

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**756,929. PNEUMATIC SWITCH AND SIGNAL APPARATUS.** WILLIAM J. BROOKS, Milwaukee, Wis. Filed Nov. 3, 1902. Serial No. 129,873. (No model.)

*Claim.*—1. In a power switch or signal apparatus, a switch or signal, a power-supply for said switch or signal and means actuated by atmospheric pressure against a vacuum to release said power-supply to operate the switch or signal.

2. In a power switch or signal apparatus, a switch or signal, a power-supply for said switch or signal and means actuated by atmospheric pressure against a vacuum to release said power-supply to operate the switch or signal in one direction only.



3. In a switch or signal apparatus, a switch or signal and means to indicate the position of said switch or signal by atmospheric pressure against a vacuum.

4. In a switch or signal apparatus, a switch or signal and means to indicate the position of said switch or signal by atmospheric pressure against a vacuum in one direction only.

5. In a power switch or signal apparatus, a switch or signal, means for controlling the movement of said switch or signal, and means to indicate the position of said switch or signal by atmospheric pressure against a vacuum, said indicating means acting upon the controlling means.

6. In a power switch or signal apparatus, a switch or signal, means for controlling the movement of said switch or signal and means to indicate the position of said switch or signal by atmospheric pressure against a vacuum in one direction only, said indicating means acting upon the controlling means.

7. In a switch or signal apparatus, a switch or signal, means for operating the same, a power-supply for indicating the position of said switch or signal after completed operation and means actuated by atmospheric pressure against a vacuum to release said power-supply to give said indication.

8. In a switch or signal apparatus, a switch or signal, means for operating the same, a power-supply for indicating the position of said switch or signal after completed operation and means actuated by atmospheric pressure against a vacuum to release said power-supply to give said indication in one direction only.

9. In a pneumatic switch or signal apparatus, a switch or signal, a motor for the switch or signal, a supply of air under pressure for operating said motor in both directions and means actuated by atmospheric pressure against a vacuum for releasing said supply to operate the motor in one direction only.

10. In a power switch or signal apparatus, a switch or signal, a supply of air above atmospheric pressure, a vacuum-supply and means for operating the switch or signal in one direction only by air above atmospheric pressure and in the other direction only by atmospheric pressure against the vacuum.

11. In a switch apparatus, a supply of air above atmospheric pressure, a vacuum-supply, means for indicating one position of the switch only by air above atmospheric pressure and means for indi-

cating the other position of the switch only by atmospheric pressure against the vacuum.

12. In a pneumatic switch or signal apparatus, a switch or signal, a supply of air above atmospheric pressure, a vacuum-supply, a motor, connections between the motor and the switch or signal, and means to cause the motor to move in one direction only by the air above atmospheric pressure, and in the other direction only by atmospheric pressure against the vacuum.

13. In a power switch or signal apparatus, a switch or signal, a supply of air above atmospheric pressure, a vacuum-supply, a motor at the switch or signal, a controlling-station, a single air-carrying connection between the controlling-station and the motor, means at the motor for causing it to move in one direction only when air above atmospheric pressure is introduced into said single connection, means at the motor for causing it to move in the other direction only when said single connection is connected with the vacuum-supply and means at the controlling-station for alternately connecting said supply above atmospheric pressure or said vacuum-supply with the single connection.

14. In a power-switch apparatus, a switch, a supply of air above atmospheric pressure, a vacuum-supply, a motor for the switch, means for controlling the movement of the motor, mechanism actuated alternately by air above atmospheric pressure and by atmospheric pressure against the vacuum and operating upon said controlling means to indicate the position of said switch, a single air-carrying connection between said indicating mechanism and the switch, and means for alternately forming a connection between the supply of air above atmospheric pressure or the vacuum-supply with said single connection, according to the position of said switch.

15. In a pneumatic switch or signal apparatus, a switch or signal, a supply of air above atmospheric pressure, a vacuum-supply, a cylinder, a piston, connections from the piston to the switch or signal to operate the latter in either direction, valve mechanism to admit air above atmospheric pressure from the supply to either side of the piston alternately, a single pipe controlling said valve mechanism, means for connecting the supply of air above atmospheric pressure or the vacuum-supply alternately with said single pipe and means to operate the valve mechanism to admit air to one side of the piston only when the single pipe is connected with the supply of air above atmospheric pressure and to the other side of the piston only when said single pipe is connected to the vacuum-supply.

16. In a pneumatic switch or signal apparatus, a switch or signal, a supply of air above atmospheric pressure, a vacuum-supply, a cylinder, a piston, connections from the piston to the switch or signal to move the latter in either direction, two valves to admit air above atmospheric pressure from the supply to either side of the piston alternately, a single pipe controlling both valves, means for connecting the supply of air above atmospheric pressure or the vacuum-supply alternately with said single pipe, means to operate one of the valves through said single pipe by the air above atmospheric pressure without affecting the second valve, and means to operate said second valve through said single pipe by atmospheric pressure against the vacuum without affecting the first valve.

17. In a pneumatic switch or signal apparatus, a switch or signal, a cylinder, a piston for operating the switch or signal, a supply of air above atmospheric pressure, a vacuum-supply, two valves for admitting air above atmospheric pressure into said cylinder to opposite sides of said piston, two diaphragms for operating said valves, a single air-carrying connection leading to both diaphragms, means connecting one diaphragm and its valve to cause said valve to open to admit air to the cylinder only when air above atmospheric pressure is introduced into said connection, means connecting the other diaphragm and its valve to cause this latter valve to open to admit air to the cylinder only when the vacuum-supply is connected to said single connection and means to connect the single connection with the supply of air above atmospheric pressure or the vacuum-supply alternately.

18. In a pneumatic switch apparatus, a supply of air above atmospheric pressure, a vacuum-supply, a switch, a cylinder and piston for operating said switch, a controlling mechanism at the tower, indicating mechanism at the tower acting upon said controlling mechanism to indicate the position of the switch, a single pipe from the indicating mechanism to the switch, a slide-valve at the switch for alternately connecting two independent pipes with said single connection according to the position of the switch, a valve and diaphragm located between said pipes and cylinder, one of said pipes communicating with one end of the cylinder and the other of said pipes communicating with the outlet-port of said valve, the inlet-port communicating with the vacuum-supply, an air-passage leading from the other end of the cylinder into the air-chamber under the diaphragm and means connecting the diaphragm with the valve to open the latter and establish communication between the inlet and outlet ports when air above atmospheric pressure is introduced into said air-passage and to close said communication and open the outlet to the atmosphere through exhaust-ports in said valve when no pressure exists in said air-passage.

19. The combination in a pneumatic relay-valve of a valve for controlling the admission of air at a pressure different from that of the atmosphere, a diaphragm operated by air at a pressure also different from that of the atmosphere but on the other side of the atmospheric pressure-line from the pressure controlled by the valve, with means connecting the diaphragm with the valve for operating the latter.

20. The combination in a pneumatic relay-valve for controlling the admission of air at a pressure different from that of the atmosphere, of a valve-casing provided with suitable inlet, outlet, and exhaust ports, and with valve-seats, an admission-valve body and an exhaust-valve body connected to move together and to suitably control communication between said ports, a diaphragm operated by air at a pressure also different from that of the atmosphere but on the other side of the atmospheric pressure-line from the pressure controlled by the valve, a stem projecting from the exhaust-valve body through the casing, a plate on the diaphragm, rods projecting from said plate outside of the ports, and a cross-bar attached to the rods and in line with the exhaust-valve stem for operating the valve-bodies from the diaphragm through the stem.

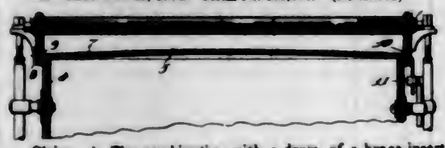
21. The combination in a pneumatic relay-valve for controlling the admission of air at a pressure different from that of the atmosphere, of a valve-casing provided with suitable inlet, outlet, and exhaust ports, and with valve-seats, an admission-valve body and an exhaust-valve body connected to move together and to suitably control communication between said ports, a diaphragm operated by air at a pressure also different from that of the atmosphere but on the other side of the atmospheric pressure-line from the pressure controlled by the valve, a stem projecting from the exhaust-valve body through the casing, a plate on the diaphragm, rods projecting from said plate outside of the ports, and a cross-bar attached to the rods and in line with the exhaust-valve stem for operating the valve-bodies from the diaphragm through the stem, and a hood attached to the casing to protect the projecting parts.

22. In railway signaling apparatus, means whereby one movement of the switch-points, signal, or other movable part and the indication of such movement is effected or controlled by a pressure above atmospheric pressure and the other or reverse movement is effected or controlled by suction or vacuum.

23. In pneumatic railway signaling, means whereby air-pressure in a pipe effects or controls one movement of the apparatus which movement effects or controls its own indication also by air-pressure in a pipe, and a vacuum or suction in the same pipe or pipes effects or controls the other or reverse movement of the apparatus and the indication of such movement, substantially as described.

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**756,930. DRUM-SNARE BRACE. EMILE DOULADOUR, St. Louis, Mo. Filed Feb. 15, 1904. Serial No. 193,677. (No model.)**



*Claim.*—1. The combination with a drum, of a brace inserted in position to resist the tension of the snares, substantially as specified.

2. The combination with a drum, of a brace inserted in the hoop parallel with the snares and outside of the snares to resist the tension of the snares, substantially as specified.

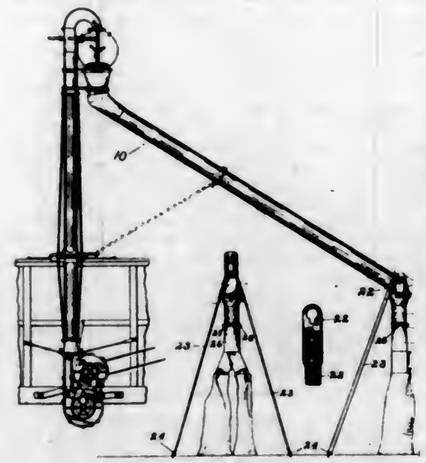
3. A drum-snare brace, comprising a brace removably inserted in the hoop outside of the snare-head and parallel with the snares; and means of holding said brace in position; substantially as specified.

4. A drum-snare brace, comprising the combination with a snare-head mechanism of a brace inserted in the hoop; and screws inserted through the hoop and into the ends of the brace, substantially as specified.

5. The combination with a drum, of a brace on a line parallel with the snares to prevent expansion or contraction; substantially as specified.



**756,931. BAGGING ATTACHMENT FOR GRAIN-ELEVATORS. CHESTER BRADFORD, Indianapolis, Ind. Filed Jan. 5, 1903. Serial No. 137,943. (No model.)**



*Claim.*—1. The combination, in a grain-elevator, of a pivotally-attached and downwardly-inclined discharging spout or conductor through which the grain is discharged from said elevator, a hopper-support upon the lower end of said conductor, an inverted-hopper-like head pivotally secured to said support and having an open side into which the end of said conductor extends, and a grain receiving and discharging device mounted by a swiveling joint at the lower edge of said head.

2. The combination, in a grain-elevator, of the discharging conductor-spout thereof, a band adapted to be secured to the discharging end of said spout and provided with arms or bearings extending out therefrom, a hopper or head-piece pivotally carried from said arms or bearings, and a grain receiving and discharging device mounted on said hopper or head-piece.

3. The combination, in a grain-elevator, of the discharging conductor-spout thereof, a band secured to the discharging end of said spout and provided with knobs or ears and also with arms or bearings, a hopper or head-piece carried from said arms or bearings, a grain receiving and discharging device carried on said hopper or head-piece, and props extending from said knobs or ears to the ground whereby said grain receiving and discharging device may be strongly and rigidly supported independently of the machine but without interfering with the manipulation of the grain receiving and discharging device itself.

4. The combination, in a grain-elevator, of the downwardly-inclined conductor, a grain-receiving hopper or head carried by said conductor, a grain receiving and discharging device swivelingly mounted upon said hopper or head, ears above said grain receiving and discharging device on a part attached to said conductor, and props the upper ends whereof are adapted to separately engage with said ears and which extend to the ground and constitute a rigid support for the grain receiving and discharging device independently of the machine from which the grain is received.

5. The combination, in a grain-elevator, of a conductor through which the grain is discharged therefrom, a pivoted terminal at the lower end of said conductor, a grain receiving and discharging device swivelingly supported from said terminal, and props extending from the terminal structure to the ground and thus adapted to support and steady the grain receiving and discharging device while leaving the latter free to swivel about its immediate support.

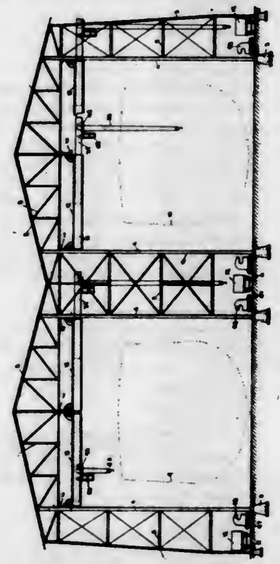
6. The combination, in a grain-elevator, of the discharging spout or conductor, a grain receiving and discharging device, and an intermediate hopper or head upon which said grain receiving and discharging device is mounted and into which said conductor discharges, said hopper or head being provided with a flange at the point opposite the mouth of the conductor which extends down within the upper edge of the grain receiving and discharging device, thus covering the crack at that point and preventing escape of any grain.

7. The combination, in a grain-elevator, with the discharging spout or conductor, of a grain-receiving head or hopper supported by said conductor and provided with a track-flange at its lower edge, a grain receiving and discharging device carried from said grain-receiving head or hopper, clips attached to said grain receiving and discharging device forming the means of engagement to said track-flange, one of said clips (as 18) being removable, a housing (as 19) in which said removable clip is mounted, and a cam-lever (as 20) mounted in said housing and adapted to impinge upon and hold said clip firmly in place when in one position and to permit said clip to be removed and the grain receiving and discharging device thus removed when in the other position.

8. The combination, with a grain-elevator, of a grain-receiving head or hopper provided with a track-flange at its lower edge, a grain receiving and discharging device carried from said grain-receiving head or hopper, clips attached to said grain receiving and discharging device forming the means of engagement to said track-flange, one of said clips being removable, a housing in which said removable clip is mounted, and a cam-lever mounted in said housing and adapted to impinge upon and hold said clip firmly in place when in one position and to permit said clip to be removed and the grain receiving and discharging device thus removed from said grain-receiving head or hopper when in the other position.

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**756,932. CRANE AND SUPPORTING STRUCTURE THEREFOR. VICTOR R. BROWNING, Lakewood, Ohio. Filed June 22, 1901. Serial No. 65,568. (No model.)**



*Claim.*—1. A supporting structure, runways on said structure, a crane-body mounted for traveling on the runways, said body consisting of an open-sided framework, a telescopic beam within said body, means for moving said beam longitudinally within the body, and a trolley carried by the beam.

2. A supporting structure, runways on said structure, a crane-body mounted for traveling on the runways, a telescopic beam within said crane-body, a motor, a drum driven by said motor, a cable passing about said drum and secured to the telescopic beam whereby the beam may be moved within the crane-body, and a trolley carried by said beam.

3. A supporting structure, runways on said structure, a crane-body mounted for traveling on the runways, other runways within the crane-body, a beam within the crane-body and mounted for traveling on the runways therein, a motor mounted on the crane body, a drum driven by said motor, a cable passing about said drum and secured to the beam whereby the latter may be moved within the crane-body, and a trolley carried by said beam.

4. A supporting structure, a crane-body mounted within said structure, a beam supported by said crane-body, means whereby the beam may be moved back and forth with reference to the crane-body, a trolley supported by said beam, an operator's platform carried by the trolley, and means within reach of the operator on the platform for controlling the operations of the crane.

5. A supporting structure, runways on said structure, a crane-body mounted on said runways, a motor on said crane-body for propelling the same along the runways, runways on the crane-body, a beam supported upon these runways, a motor geared to the beam for moving it back and forth with reference to the crane-body, runways on the beam, a trolley supported upon these runways, and a motor for moving the trolley back and forth on the beam.

6. In a ship-building plant, main supporting-towers extending alongside the berth on its opposite sides, trusses connecting said towers, a runway supported by one of said towers, an additional runway supported by the trusses, a crane body or bridge carried by said runways, a movable trolley supported from said crane-body, and means whereby the trolley may be caused to travel past the ends of said body for the purpose specified.

7. In a ship-building plant, main supporting-towers extending alongside the berth on opposite sides thereof, trusses connecting said towers, runways supported from said towers and trusses, a crane body or bridge supported by said runways, a telescopic beam mounted in said crane-body, means for moving the beam back and forth in the crane-body, and a trolley carried by said beam.

8. In a ship-building plant, main supporting-frames extending alongside the berth on its opposite sides, longitudinal bracings 6 for strengthening said frames, said bracings being omitted and the frames left open toward their tops, runways supported from said frames above the open portion thereof, crane-bodies mounted for traveling on said runways, means for delivering material for use alongside the supporting-frames outside the runways, and means carried by said crane-body for reaching through the open portion of the frames to reach the material, and for delivering it to the proper place for use.

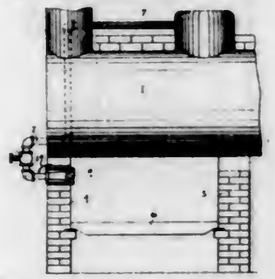
9. In a ship-building plant, a crane-supporting structure which consists of open-work toward its top, a crane-body mounted for traveling on said structure opposite said open-work, a telescopic beam carried by said crane-body, means for thrusting said beam out through the said open-work, and a trolley carried by said beam.

10. In a ship-building plant, a crane-supporting structure which consists of open-work toward its top, a crane-body mounted for traveling on said structure opposite said open-work, a telescopic beam carried by said crane-body, means for thrusting said beam out through the said open-work, a trolley carried by said beam, an operator's platform carried by said trolley, and means within reach of the operator when on the platform for controlling the operations of the crane.

11. In a ship-building plant, main supporting-towers extending alongside the berth on opposite sides thereof, trusses connecting said towers, runways supported from said towers, a crane body or bridge supported on said runways, a telescopic beam mounted in said crane-body, means for moving the beam back and forth in the crane-body, and a trolley carried by said beam.

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**756,933. SMOKE-CONSUMER.** REUBEN B. BRYANT, Detroit, Mich., assignor of one-half to George W. Corns, Detroit, Mich. Filed June 24, 1903. Serial No. 162,881. (No model.)



*Claim.*—1. A smoke-consuming device comprising a cylindrical chamber, located adjacent to the fire-box of the boiler and connected therewith, and provided at its inner face with apertures adapted to be opened and closed by means of movable balls, said chamber having integrally formed on its rear portion a superheating-chamber, terminating in a sleeve to form a pipe connection.

2. A smoke-consumer comprising a cylindrical chamber provided with apertures on its inner portion, independently-moving bodies within said chamber adapted to open and close said apertures, a superheating-chamber formed integral with said cylindrical chamber and provided with partitions, saids uperheating-chamber terminating in a sleeve adapted to form a pipe connection whereby said cylindrical chamber is connected with the steam-dome of the boiler.

3. A device for the purpose set forth, consisting of a cylindrical chamber closed at its ends and having a series of diverging apertures through its front wall, a plurality of movable bodies adapted to operate against the curved wall of said chamber, said chamber having a superheating-box formed integral therewith and extending therefrom, and means on said box for connecting with a steam source.

4. In a boiler-front having a series of apertures connected with a combustion-chamber, an injector in one of said openings having a series of diverging holes in its inner face, a series of balls in said injector for the purpose of breaking the stream of steam as it passes from said holes, a sleeve in said opening inclosing said injector, said sleeve serving to prevent the heat of the wall of the combustion-chamber affecting the injector injuriously.

5. A smoke-consumer comprising a cylindrical chamber provided with apertures on its inner portion and a tapering superheating-chamber formed integral with the cylindrical portion having partitions.

6. In a smoke-consumer, the combination of a cylindrical chamber provided with diverging apertures on its inner portion, a tapering superheating-chamber formed integral with the cylindrical portion, having partitions, and a tapering sleeve surrounding said cylindrical and taper part.

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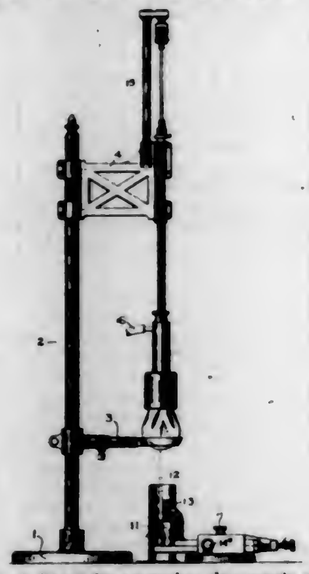
**756,934. METHOD OF PROTECTING METALS.** PETER J. BURNS, Elizabeth, N. J., assignor of one-half to Louis H. Barker, Jersey City, N. J. Filed Feb. 2, 1903. Serial No. 141,500. (No specimens.)

*Claim.*—1. The method of coating exposed metal work which consists, first, in covering the surface of the metal with a coating of suitable paint; secondly, in applying to said coat of paint while moist and sticky a layer of paper, and, thirdly, in applying a second coat of paint to said paper while the inner coat of paint is still moist.

2. The method of coating exposed metal-work which consists, first, in applying a coat of suitable paint; secondly, in applying to said paint a layer of paper or equivalent material substantially impervious to air, and, thirdly, in applying an outer coat of paint to said paper or material while the inner coat of paint is still moist.

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**756,935. PERFORATING GLASS BULBS.** WILLIAM R. BURROWS, Newark, N. J., assignor to General Electric Company, a Corporation of New York. Filed Mar. 19, 1902. Serial No. 98,909. (No model.)



*Claim.*—1. Means for puncturing glass vessels, comprising a burner for directing a flame axially of the vessel against the point to be punctured, a removable cap for applying air-pressure to rupture the glass at the point at which the flame is applied, and means for adjusting the pressure of the air.



2. Means for rupturing the wall of a glass bulb, comprising a support for the bulb, a gas-burner beneath the same directing a flame upwardly against a point of its wall, and a movable cap connected with a source of definite gas-pressure for forming an air-tight joint with the mouth of the bulb.

3. Means for puncturing a glass bulb, comprising a support, a gas-burner beneath the same for softening the glass wall at a definitely-circumscribed point, a movable cap communicating with a source of gaseous pressure, and means for lowering the cap over the neck of the bulb and withdrawing it therefrom.

4. Means for puncturing a glass vessel, comprising a support, a burner for directing a flame on the point where the puncture is to be made in a line substantially normal to the wall of the vessel about that point, a member adapted to register with an open part of the vessel, a source of fluid-pressure, and a continuously-open connection between said member and the source of fluid-pressure.

5. Means for puncturing a glass vessel, comprising a support for the vessel, a burner beneath the same for directing a flame on the point where the puncture is to be made, an air-pipe, and means for applying air-pressure thereby continuously to the bulb while the glass is softening.

6. Means for puncturing a glass vessel, comprising a support for the vessel, a burner beneath the same for directing the flame at a definitely-circumscribed point on the same, a source of gaseous pressure, and a cap connected thereto and adapted to be applied to an open part of the vessel to maintain a continuous pressure while the glass is softening.

7. Means for puncturing a glass vessel, comprising, in combination, a support for the vessel, a burner for directing a flame against a definite point thereon, a source of gaseous pressure communicating with the vessel, and an adjustable leak-valve for regulating the pressure.

8. Means for puncturing glass vessels comprising means for directing a flame at a definitely-circumscribed point on the vessel in a line substantially normal to the wall of the vessel about that point, and means for supplying gaseous pressure to the vessel continuously while the glass is softening.

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**756,936. COMPOSITION FUEL.** CHARLES H. CARPENTER, Decatur, Ind., assignor to Globe Coal Mfg. Co., South Bend, Ind., a Corporation of Indiana. Filed July 10, 1903. Serial No. 164,992. (No specimens.)

*Claim.*—1. The herein-described composition of matter, consisting of clay, or like earthy matter, sand; vegetable refuse; and powdered rosin substantially in the proportions specified, and for the purpose described.

2. The herein-described composition of matter for fuel consisting of clay nine hundred pounds, vegetable refuse six hundred and fifty pounds, sand two hundred and twenty-five pounds, and powdered rosin two hundred and twenty-five pounds, substantially as described.

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**756,937. SYNCHRONIZING DEVICE.** NATHAN B. CHURCH, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 27, 1902. Serial No. 125,026. (No model.)

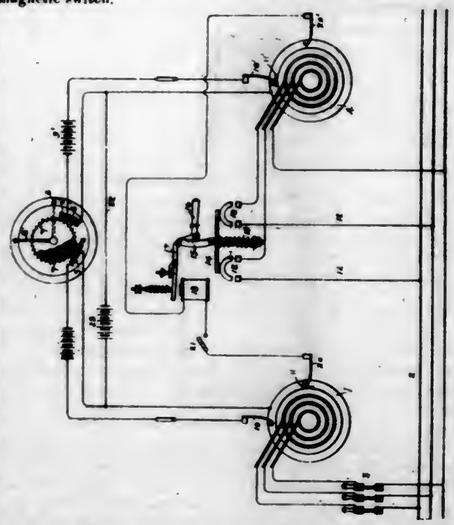
*Claim.*—1. The combination with two alternating-current machines, of means for indicating to the attendant when the two machines are running at approximately the same speed, means for automatically coupling said machines in parallel whenever they coincide in phase, and a manually-operated device whereby the attendant can cause said coupling means to operate or not, at will.

2. The combination with two alternating-current machines, of an electromagnetic switch for connecting one of said machines to the line, circuit-closers controlled respectively by the two machines for energizing said switch when the machines are in phase, and a manually-operated device for permitting or preventing the operation of said circuit-closers, at will.

3. The combination with two alternating-current machines, of an electromagnetic switch for connecting one of said machines, said circuit-closers being controlled by the two machines respectively, and being closed thereby when the machines are at the same point of their rotation, and a manually-operated device controlling the circuit of said circuit-closers.

4. The combination with two alternating-current machines, of an electromagnetic switch for connecting one of said machines to the line, a hand-switch in circuit with the electromagnet, and two circuit-closers in series therewith, each controlled by one of said machines.

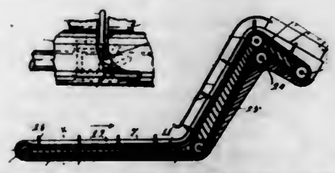
5. The combination with two alternating-current machines, of a speed-indicator for each machine, an electromagnetic switch for automatically connecting one of said machines to line when the two machines are in phase, and a hand-switch controlling said electromagnetic switch.



6. The combination with two alternating-current machines, of a speed-indicator for each machine, an electromagnetic switch for connecting one of said machines to the line, two circuit-closers controlled respectively by said machine for energizing said switch when the machines are in phase, and a hand-switch in series with the electromagnetic switch.

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**756,938. GRAIN-CARRIER.** JOSEPH COFFMAN, Liberty, Ind. Filed Aug. 1, 1903. Serial No. 167,844. (No model.)



*Claim.*—1. In a grain-carrier, the combination with an integral structure consisting of a horizontal platform, an elevator inclined upwardly therefrom and a deck declining at right angles from the elevator, said structure being formed with L-shaped open grooves in its upper surface and with horizontal grooves in the under surface of the platform portion and communicating by quarter-turns with said L-shaped grooves, the grooves in the deck portion being gradually deepened toward its discharge end, of endless chains movable in the corresponding said grooves, laterally-movable fingers mounted at intervals thereon, driving sprocket-wheels for the chains mounted at the external angle between the platform and the elevator, and idle antifriction-rollers mounted respectively at the grain end of the platform, the discharge end of the deck and in the external and internal angles between the elevator and deck, for the purpose set forth.

2. In a grain-carrier the combination of a deck formed integral with an elevator and a platform, said deck having open L-shaped grooves in its upper surface, said grooves being gradually deepened and terminating in quarter-turns around the discharge end of the deck, of endless chains movable in said respective grooves, laterally-movable fingers mounted at intervals on the chains, and driving-wheels for the chains mounted at the junction of the platform with the elevator, substantially as specified and for the purpose set forth.

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**756,939. BOTTLE.** WALDO COBARD, Willcockson, Ark. Filed July 6, 1903. Serial No. 164,443. (No model.)

*Claim.*—1. In combination with a bottle or package having a projecting portion, a binder for embracing the bottle, and a seal for

securing the said binder and comprising a portion adapted to be bent around said projecting portion of the bottle, the bendable portion being scored or weakened at determinate points to prevent straightening thereof after being bent without producing fracture, substantially as described.

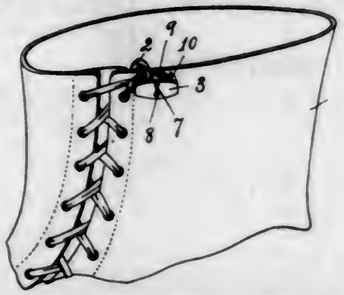


2. The combination of a bottle or like package having a projecting lip portion, a binder for embracing the bottom and sides of the bottle and having an end portion constructed to engage over the aforesaid projecting lip, and a seal loosely connected with the opposite end portion of the binder and having securing-tabs to extend along opposite sides of the bent end of the binder and bent around the said projecting lip to secure the parts, substantially as described.

3. The combination of a bottle or like package having a projecting lip at the upper end of its neck and having an opening in its bottom, a bottom-closure, a seal adapted to extend over the neck of the bottle and having securing-tabs provided with weakened portions, and a binder having one end loosely secured to an edge portion of the seal and having its opposite end portion bent to engage over the aforesaid projected lip and to come between the securing-tabs and seal, which tabs are bent over and under said projected lip, substantially as specified.

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**756,940. SHOE-LACE FASTENER.** CHARLES A. COOGER, Oakland, Cal. Filed Mar. 30, 1903. Serial No. 150,112. (No model.)




*Claim.*—1. A lace-fastener comprising an elongated button attached near the ends of its short axis to the upper of the shoe, the ends of the long axis being free, but having inwardly-extending ribs, said button between said ends and the points of attachment being spaced its entire width from the upper to receive the shoe-laces, substantially as described.

2. A lace-fastener comprising a portion attached directly to the upper of a shoe, a portion extending therefrom substantially parallel with said upper but spaced therefrom, the space between said latter portion and upper being unobstructed, and a resilient portion extending inwardly toward the upper from the last-named portion and at a distance from the attached portion, said fastener between said attached and resilient portions being spaced its entire width from the upper, substantially as described.

3. A lace-fastener comprising a portion attached directly to the upper, a portion extending therefrom substantially parallel with said upper, but spaced therefrom, and having an inwardly-directed resilient rib, and a portion extending from said last-named portion inward toward the upper and at a distance from the attached portion, substantially as described.

4. A lace-fastener comprising a portion having a resilient inner surface secured directly to the upper, a portion extending therefrom substantially parallel with the upper, but spaced therefrom, and a terminal resilient portion extending inward toward the upper, substantially as described.

5. A lace-fastener comprising a portion secured to the upper of a shoe, portions extending in opposite directions therefrom, spaced from said upper and having resilient ribs, and terminal portions extending inward toward the upper, substantially as described.

6. A lace-fastener comprising a portion secured to the upper, portions extending in opposite directions therefrom but spaced from said upper and having resilient ribs, and terminal resilient inwardly-hooked portions, substantially as described.

7. A lace-fastener comprising a portion secured to the upper having a resilient inner surface in contact with said upper, a portion extending therafrom substantially parallel with the upper and having a resilient rib spaced from said upper, and a terminal inwardly-extending hooked portion, substantially as described.

8. A lace-fastener comprising a central portion secured to the upper and having an inner resilient surface in contact with the upper, portions extending in opposite directions therefrom, having resilient friction devices permitting the shoe-laces to pass between the same and the upper and terminal inwardly-extending hook portions, substantially as described.

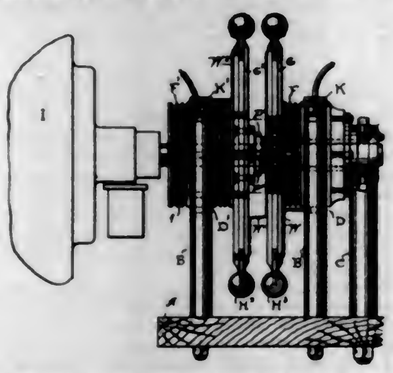
9. A lace-fastener comprising a holding device for the laces secured on the outside of the upper to said upper, said holding device comprising means for holding the ends of the shoe-lace, a stiffener-plate behind the leather of the upper, and means for securing said stiffener-plate to said leather independent of the means for securing the holding device, substantially as described.

10. A lace-fastener comprising a holding device for the shoe-laces secured on the outside of the upper to said upper, said holding device comprising a portion secured against the outer surface of the upper, a portion extending therefrom between which and the upper the shoe-laces pass, and an inwardly-extending hook portion to prevent unwinding of the laces, a stiffener-plate behind the leather of the upper and means for securing said stiffener-plate to said leather independent of the means for securing the holding device thereto, substantially as described.

11. A lace-fastener comprising a button secured to the upper having an outer portion of hard rubber and an inner portion of soft rubber, the soft-rubber portion having projections extending inward toward the upper and spaced from the part by which the button is attached to the upper whereby the lace is held between said projections and said part, substantially as described.

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**756,941. SPARK-GAP FOR ROENTGEN-RAY APPARATUS.** JOHN T. H. DENFFER, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed June 18, 1898. Serial No. 683,779. (No model.)




*Claim.*—1. An arc-rupturing device comprising terminals between which the arc is formed and means for revolving said terminals.

2. A spark-gap apparatus comprising relatively adjustable terminals and means for revolving said terminals.

3. The combination of spark-gap terminals normally in fixed relation to each other, and means for simultaneously moving said terminals through a fluid in a direction at an angle to a line between said terminals.

4. The combination of synchronously-moving spark-gap terminals and means for causing sparks to pass between said terminals.

5. The combination of synchronously-moving spark-gap terminals, and means for adjusting the length of the spark-gap while the terminals are in motion.

6. The combination of spark-gap terminals with means for synchronously revolving said terminals.

7. In a spark-gap apparatus, the combination of a rotating disk, a pair of balls carried upon the disk, a second disk facing the first and also carrying a pair of balls, collector rings and brushes, with a connection from the collector-rings to one of each of the sets of balls and an electrical connection between the remaining balls.

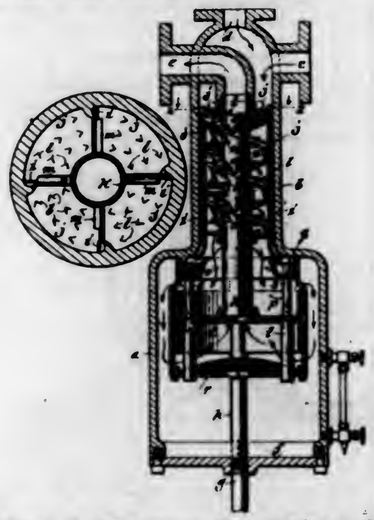
8. The combination of a motor, a pair of disks driven thereby, and spark-gap terminals at opposite points upon the disks, so arranged as to mechanically balance the latter, with means for leading current to the disks.

9. The combination with spark-gap terminals, of means for moving the gap included between the terminals without changing the relation between the terminals and the included gap, to keep the terminals cool.

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**756,942. STEAM-SEPARATOR.** JOSEPH G. DUCK, Milwaukee, Wis., assignor of one-half to John G. Thompson, Milwaukee, Wis. Filed June 6, 1902. Serial No. 110,408. (No model.)



*Claim.*—1. In a steam-separator, the combination of a chamber having steam inlet and outlet connections and a water-discharge connection, and a spiral arranged in the path of the steam and having horizontally-disposed transverse gutters communicating with vertically-disposed channels leading into said chamber, substantially as described.

2. In a steam-separator, the combination of a chamber having steam inlet and outlet connections and a water-discharge connection, and a spiral arranged in the path of the steam and having on the upper side staggered spikes and at intervals transverse horizontally-disposed gutters for conducting off the water intercepted by said spikes, substantially as described.

3. In a steam-separator, the combination of a chamber having a vertically-disposed contracted neck with a steam-inlet at the upper end, a steam-outlet and a water-discharge connection, and a spiral coiled within said neck around its axis and having on the upper side transverse gutters which communicate with channels leading downward into said chamber, substantially as described.

4. In a steam-separator, the combination of a chamber having a contracted neck with a steam-inlet at its upper end, a horizontally-disposed catch-basin and a shield arranged one above the other in said chamber, a steam-outlet leading from said chamber above said shield, drain-tubes passing downwardly from said catch-basin into the chamber below said shield, a spiral coiled within said neck around its axis and drain-channels leading from said spiral into said catch-basin, substantially as described.

5. In a steam-separator, the combination of a chamber having a contracted neck with a steam-inlet at its upper end, a number of horizontally-disposed catch-basins arranged one above another in said chamber, drain-tubes passing downwardly from said catch-basins, water-discharge and steam-outlet connections leading from said chamber, and a spiral coiled within said neck around its axis and having transverse gutters on the upper side communicating with channels leading downwardly therefrom into the upper catch-basin, substantially as described.

6. In a steam-separator, the combination of a chamber having steam inlet and outlet connections and a water-discharge connection, and a spiral arranged in the steam-inlet passage to said chamber provided on one side with transverse gutters and on the other side with deflectors, substantially as described.

7. In a steam-separator, the combination of a chamber having steam inlet and outlet connections and a water-discharge connection, a spiral arranged in the steam-inlet passage to said chamber and provided on the upper side with spikes and on the under side with deflectors arranged to direct steam against the opposing spikes, and drain-channels extending transversely across the upper side of said spiral and leading therefrom downwardly into said chamber, substantially as described.

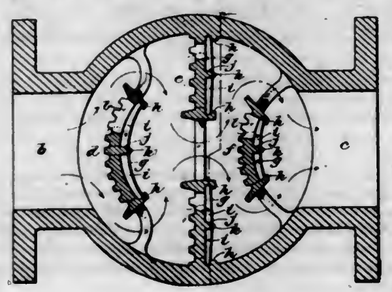
8. In a steam-separator, the combination of a chamber having a detachable bottom and a contracted neck with a steam-inlet at its upper end, a spiral fitted in said neck to form a sinuous passage for the inflowing steam and having transverse gutters arranged to communicate with channels leading downwardly in said neck into said chamber, one or more catch-basins and a deflector, connected one above another below and with said spiral and also connected and removable together with the detachable bottom of said chamber, and drain-tubes extending downwardly from each catch-basin, substantially as described.

9. In a steam-separator, the combination of a chamber having a contracted neck with a steam-inlet at the upper end and descending channels on the sides, a spiral fitted in said neck to form a sinuous passage for the inflowing steam and having transverse gutters communicating at their outer ends with the channels in said neck, horizontally-disposed catch-basins arranged one above another below said spiral, the upper catch-basin being annular in form and placed in position to receive the discharge from the lower ends of the channels in said neck, a steam-outlet pipe passing downwardly through the bottom of said chamber from a point below the lower catch-basin, a shield on the upper end of said outlet-pipe, and drain-tubes extending downwardly from said catch-basins, the drain-tubes of the upper basin discharging into the drain-tubes of the lower basin and the drain-tubes of the lower basin extending through and discharging below said shield, substantially as described.

10. In a steam-separator, the combination of a chamber having a detachable bottom with a steam-outlet and water-discharge pipes attached thereto and a contracted neck having a steam-inlet connection at its upper end and descending drain-channels at its sides, a spiral fitted in said neck and having transverse gutters communicating with the channels in said neck, horizontally-disposed catch-basins arranged one above the other, a shield on the upper end of the steam-outlet pipe, and drain-tubes extending downwardly from the catch-basins, the drain-tubes of the lower basin passing through and discharging below said shield, said spiral and catch-basins being attached to each other and to the steam-outlet pipe by which they are supported, substantially as described.

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**756,943. STEAM-SEPARATOR.** JOSEPH G. DUCK, Milwaukee, Wis., assignor of one-half to John G. Thompson, Milwaukee, Wis. Filed Aug. 21, 1902. Serial No. 120,468. (No model.)



*Claim.*—1. A steam-separator consisting of a chamber having steam inlet and outlet connections and a vertically-disposed baffle-plate arranged between the inlet and outlet transversely thereto and having oblique passage-ways extending downwardly through it from front to back and formed on the back with lugs, and a sheet-metal plate sprung over and supported by said lugs to form a space opening at the bottom into the lower part of said chamber, substantially as described.

2. A steam-separator consisting of a chamber having inlet and outlet connections on opposite sides and vertically-disposed baffle-plates arranged transversely between said connections and having vertically-corrugated front faces and oblique passages which extend downwardly through them from front to back into vertical spaces opening at their lower ends into said chamber, substantially as described.

3. A steam-separator consisting of a chamber having inlet and outlet connections on opposite sides and staggered baffle-plates extending partially across said chamber and having oblique passages extending downwardly through them from front to back into vertical spaces which open below into said chamber, substantially as described.

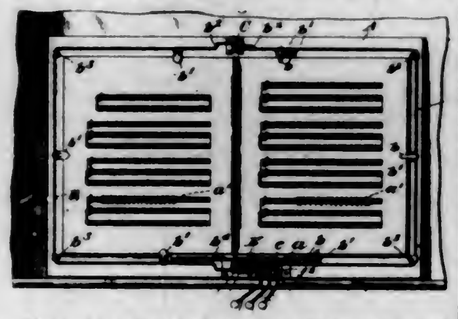
4. A steam-separator consisting of a vertically-disposed cylindrical chamber having inlet and outlet connections on opposite sides, vertically-disposed and centrally-located baffle-plates curved toward the inlet connection and intermediate side baffle-plates having oblique passages extending downwardly through them from front to back into vertical spaces which open below into said chamber, substantially as described.

5. A steam-separator consisting of a chamber having horizontally-disposed inlet and outlet connections on opposite sides, and vertically-disposed and centrally-located baffle-plates and intermediate side baffle-plates extending from the top of said chamber and terminating between the bottom and said inlet and outlet connections, said plates having oblique passages extending downwardly through them from front to back into spaces which open below into said chamber, substantially as described.

6. A steam-separator consisting of a chamber having steam inlet and outlet connections on opposite sides, vertically-disposed horizontally-curved baffle-plates arranged centrally opposite said inlet and outlet connections with openings between them and the side walls of said chamber, vertically-disposed side baffle-plates arranged between said curved plates on opposite sides of said chamber with an opening between their inner edges, said plates being vertically corrugated on their front sides and having oblique passages extending downwardly through them from front to back, and vertical plates inclosing at the backs of said baffle-plates spaces which open into said chamber below, substantially as described.

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**756,944. MUSIC-LEAF TURNER.** GEORGE H. EGGLESTON, Waterloo, Iowa. Filed Feb. 11, 1903. Serial No. 142,907. (No model.)



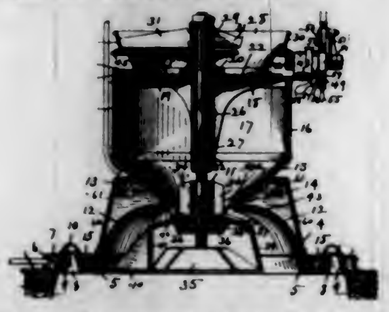
*Claim.*—1. In a music-leaf turner, the combination of a sheet-engaging frame, pivoted to swing from right to left, leaf-engaging devices on the said frames, a pin on the lower member of the frame, a spring engaging the frame and adapted to be put under tension when the frame is turned to the right, a rocking catch adapted to engage the pin and hold the frame when turned down to the right, a rock-shaft having its upper end rotatably journaled in suitable supports, and carrying said catch which is rigidly attached thereto and having its lower end bent to one side to enable its upper end to be rocked and cause the catch to disengage the pin and release the frame when the lower end of the shaft is pressed back, substantially as described.

2. In a music-leaf holder, the combination of a board, a series of leaf-turning frames attached thereto pivoted so as to swing from left to right, sheet-music-holding devices on said frames, springs secured adjacent to the lower pivots of the holders in the path of movement of the frames and adapted to be engaged by the frames as the latter are turned down to the right and be put under compression thereby; catches engaging the frames to hold them down and parallel spring-controlled rock-shafts having their upper portions extending at right angles to the lower part of the frame and rotatably journaled in suitable supports, and having their lower portions bent to one side and provided with keys so that by pressing back said keys the shafts will be rocked, said catches being rigidly secured to the upper ends of said shafts on their extremities, for the purpose and substantially as described.

3. The combination of a series of leaf-turning frames pivoted at their upper and lower ends so as to swing horizontally from left to right, sheet-music-engaging clips on the said frames, a series of springs adjacent to the lower pivots of the frames and respectively adapted to engage the frames when they are turned down to the right and be put under compression thereby, and pins attached to the lower ends of the frames, beveled catches adapted to respectively engage the pins on the frames, parallel rocking shafts, having their inner ends journaled in suitable supports and carrying said catches and having their outer ends bent to one side and provided with finger-pieces on their extremities, and springs for rocking and holding said rock-shafts normally in position to cause the catches to engage the pins on the lower members of the frame and hold the latter until the catches are released by rocking the shafts, substantially as specified.

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**756,945. FEED DEVICE FOR GAS-PRODUCERS.** VICTOR E. EDWARDS, Worcester, Mass., assignor to the Morgan Construction Company, Worcester, Mass., a Corporation of Massachusetts. Filed Sept. 7, 1900. Serial No. 29,275. (No model.)



*Claim.*—1. The combination in a feeding device for a gas-producer of a coal-reservoir 17 having a hopper-shaped bottom provided with an opening 14, a depending serrated flange surrounding said opening, a rotating disk beneath said opening and a series of ribs or projections on said rotating disk opposing the serrated edge of said flange, substantially as described.

2. The combination in the feeding device for a gas-producer, having an opening through which coal is fed to the heating-chamber of the producer, of a removable plate over said opening, a long depending hub from said plate, a shaft journaled in said hub and a coal-distributing device carried by said shaft, substantially as described.

3. The combination with a coal-reservoir having a hopper-shaped bottom and an opening therein for the delivery of coal from the reservoir, of a removable plate forming a cover for said reservoir and having holes for the admission of coal to the reservoir, of a long depending hub extending from the under side of said plate into said reservoir, a rotating shaft journaled in said hub, a shovel carried by the lower end of said shaft and means for rotating the shaft, substantially as described.

4. The combination of a coal-reservoir having supply and discharge openings, of a rotating shovel placed beneath said discharge-opening and consisting of a central disk having a coal-distributing flange, said central disk having an annular inclined surface to facilitate the passage of the coal, substantially as described.

5. The combination with the heating-chamber of a gas-producer, of a coal-reservoir having a discharge-opening through which coal is discharged to said heating-chamber, a rotating hopper above said reservoir, a series of openings between said hopper and said reservoir and means for varying the size of said openings, whereby the supply of coal is controlled, substantially as described.



6. In a feeding device for a gas-producer, the combination of a coal-reservoir having supply and discharge openings, means for distributing the coal delivered through said delivery-opening, means for closing said supply-opening, a rotating hopper placed above and in communication with said supply-opening and means for rotating said hopper, substantially as described.

7. The combination with the heating-chamber of a gas-producer, of a feeding mechanism comprising the following instrumentalities, a chamber above the heating chamber, coal-distributing apparatus in said chamber, a coal-reservoir above said coal-distributing chamber, a rotating hopper above said reservoir and variable openings between said hopper and said coal-reservoir, substantially as described.

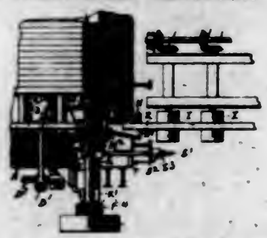
8. The combination with the rotating hopper 28, of an annular rack attached to said hopper, a pinion engaging said rack, a pawl-and-ratchet mechanism by which said pinion is rotated, means for disengaging said pawl consisting of a disk 53, flange 54, weighted handle 55, lug 56, a weighted hinged latch 58 and lugs 57, substantially as described.

9. The combination of a coal-reservoir having a discharge-opening for the delivery of coal to the gas-producer, a plate 18 supported by said reservoir and having a supply-opening for the admission of coal, a long depending hub extending from said plate into said reservoir, a shaft journaled in said hub, a short hub extending upward from said plate, a registering-gate journaled on said short hub, a central hub resting on said short hub and attached to said shaft, a hopper carried by said central hub, means for rotating said hopper and a distributing-shovel carried by said shaft and located beneath the discharge-opening of said coal-reservoir, substantially as described.

10. The combination with a gas-producer of a shell supported above the heating-chamber of the producer and having a lower dome-shaped section and an upper hopper-shaped section communicating with said lower section and forming a portion of a coal-reservoir, of a band resting on said dome-shaped section and overlapping said hopper-shaped section to form a water-reservoir, substantially as described.

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**756,946. FEEDING MECHANISM FOR BILLET-HEATING FURNACES.** VICTOR E. EDWARDS, Worcester, Mass., assignor to the Morgan Construction Company, Worcester, Mass., a Corporation of Massachusetts. Filed Nov. 18, 1901. Serial No. 82,756. (No model.)



*Claim.*—1. In a furnace for heating billets, the combination with the heating-chamber and a track for billets extending lengthwise through said heating-chamber, of a pushing mechanism for pushing the billets along said track and a pair of feed-rolls one placed above the other and inserted in an opening in the walls of the furnace with their axes within the plane of the inner surfaces of the end and side walls of the furnace, said rolls being arranged to feed a billet transversely to said track and in front of said pushing mechanism, substantially as described.

2. In a furnace for heating billets, the combination with the heating-chamber and a longitudinal track for billets inclosed within said chamber, of a pair of feed-rolls arranged to feed a billet into said chamber and transversely to said track, said rolls being inserted within an opening in the walls of the furnace with the axes of said rolls placed within the plane of the inner surfaces of the end and side walls, whereby the billet is delivered on said track, substantially as described.

3. In the billet-feeding mechanism of a furnace, the combination with the heating-chamber and a track for billets lengthwise said chamber, of a pair of feed-rolls one above the other with their axes located within the planes of the inner surfaces of the end and side walls of the furnace with the opening between said rolls in the plane of said track.

4. The combination with the heating-chamber of a furnace of feed-rolls for feeding a billet into said chamber and transversely thereto, said rolls being at one side of and within said chamber and having their axes placed within the plane of the inner side of the side wall, substantially as described.

5. The combination with the heating-chamber of a furnace, of a pair of feed-rolls having their axes placed within the plane of the inner side of the side wall of said chamber, a funnel-shaped guide-trough by which a billet is conducted to said rolls and means for moving the billet into said guide-trough, and a track for the billets arranged lengthwise the heating-chamber and parallel with the axes of said feed-rolls, substantially as described.

6. In the billet-feeding mechanism of a furnace, the combination of a lower feed-roll journaled in fixed bearings, an upper feed-roll journaled in bearings capable of a tilting motion, whereby said upper feed-roll can be raised or lowered and means for tilting said bearings, substantially as described.

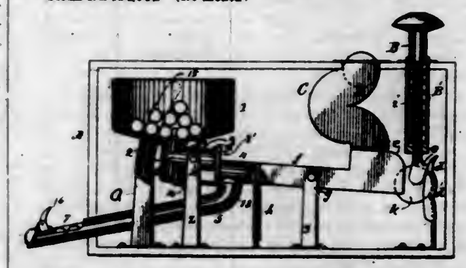
7. The combination of rolls G and G', a tilting sleeve forming the bearing of roll G', a rod M pivotally connected with said sleeve, a lever P by which said rod is raised and spring O applied to said rod to press it downwardly, substantially as described.

8. The combination of rolls G and G', a tilting sleeve forming the journal-bearing of roll G', a wedge-shaped support beneath said sleeve, means for adjusting said support transversely to said sleeve and a spring by which said sleeve is pressed downwardly, substantially as described.

9. In the billet-feeding mechanism of a furnace, a pair of feed-rolls carried on the ends of a pair of shafts, gears connecting the opposite ends of said shafts, with one of said shafts pivotally supported near its geared end and capable of being rocked on its pivot, whereby its feed-roll is raised or lowered, substantially as described.

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**756,947. VENDING-MACHINE.** CHARLES H. EGGLESTON, COLIN F. HARDY, and VON ASTWERP LEFFER, Marshall, Mich.; said Eggleston assignor to E. J. Kirby, Marshall, Mich. Filed Sept. 19, 1903. Serial No. 174,044. (No model.)



*Claim.*—1. In a vending-machine, a pivoted hopper and a receiving-tube extending down through its bottom and provided with a port in combination with a lever moving the said tube, a pivoted dividing-tube in contact with the said receiving-tube and adapted to receive pills therefrom, but provided with a shield for closing the said port while the lever is in normal position and means for tilting the said lever to open the port for the outward passage of a pill into the said dividing-tube, the hopper being rocked on its pivots by the same vibration of the lever and the receiving-tube being thrust up among the pills to stir the same substantially as set forth.

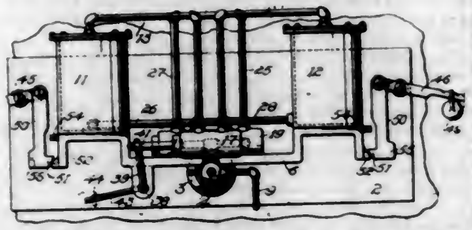
2. A lever and means for operating the same, in combination with a receiving-tube carried thereby, a pivoted dividing-tube adapted to receive a pill from the said receiving-tube when the said lever is oscillated and a discharge-tube 5, the said lever being provided with a tubular part 4 a divider 8 and stop 3', the said tubular part 4 being arranged to receive the pills from the said dividing-tube and deliver them to the said discharge-tube and the said divider 8 being arranged between the said tubular part and stop and adapted to permit the passage of the pills one by one when the said divider is lowered by the rocking of the lever arranged and operated substantially as set forth.

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**756,948. AUTOMATIC FEED FOR STEAM-BOILERS.** HUGH W. FELLOWS, Los Angeles, Cal., assignor of one-half to Henry Cogswell, Los Angeles, Cal. Filed Oct. 7, 1903. Serial No. 176,084. (No model.)

*Claim.*—1. A feeding apparatus comprising a rocking balance-beam, receptacles carried by said balance-beam, a tubular pivot for the balance-beam, valves supported on the balance-beam exteriorly of the tubular pivot, water inlet and outlet connections leading

through said tubular pivot to and from one of said valves, a pressure connection leading through said tubular pivot to the other of said valves, connections from said valves to the upper and lower parts of the aforesaid receptacles, valve-operating means connected with said valves, and fixed means engaging said valve-operating means substantially as and for the purpose set forth.



2. A feeding apparatus comprising a rocking balance-beam, receptacles carried by said balance-beam, a tubular pivot for the balance-beam, valves supported on the balance-beam exteriorly of the tubular pivot, water inlet and outlet connections leading through said tubular pivot to and from one of said valves, a pressure connection leading through said tubular pivot to the other of said valves, connections from said valves to the upper and lower parts of the aforesaid receptacles, a rock-shaft carried by the balance-beam and having arms engaging said valves, and an operating-arm; fixed means engaging said operating-arm to operate the rock-shaft and valves.

3. A water-feed apparatus comprising a movable receptacle, adjustable means for weighing the water-supply to the receptacle and a valve connected to be operated by the weighing movement of the receptacle, connections controlled by said valve for admitting water to the receptacle when the valve is in position corresponding to unloaded condition of the receptacle and to establish a feed-supply connection from the receptacle when the valve is in the position corresponding to the loaded condition of the receptacle and a valve connected with a pressure-supply and controlled by the weighing movement of the receptacle to establish a condition of pressure on the water in the receptacle.

4. An automatic feed apparatus, a balance-beam, latches engaging the respective ends of the balance-beam and weighted to respond to a definite pressure, receptacles carried by the respective arms of the balance-beam, a valve controlled by the movement of the balance-beam and pipe connections controlled by said valve to establish alternately water-supply connections to, and water-feed connections from said receptacles and a valve having a pressure-supply connection and controlled by the movement of the balance-beam to admit pressure to the water in the receptacle on the depressed end of the balance-beam.

5. An automatic feed apparatus, a balance-beam, adjustable weighing means provided with latches engaging the respective ends of the balance-beam and weighted to respond to a definite pressure, receptacles carried by the respective arms of the balance-beam, a valve controlled by the movement of the balance-beam and pipe connections controlled by said valve to establish alternately water-supply connections to, and water-feed connections from said receptacles, and a valve having a pressure-supply connection and controlled by the movement of the balance-beam to admit pressure to the water in the receptacle on the depressed end of the balance-beam.

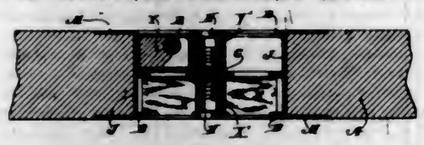
6. An automatic feed apparatus, a balance-beam, weighing-arms provided with adjustable weights and with latches engaging the respective ends of the balance-beam and weighted to respond to a definite pressure, receptacles carried by the respective arms of the balance-beam, a valve controlled by the movement of the balance-beam and pipe connections controlled by said valve to establish alternately water-supply connections to, and water-feed connections from said receptacles, and a valve having a pressure-supply connection and controlled by the movement of the balance-beam to admit pressure to the water in the receptacle on the depressed end of the balance-beam.

7. In combination with a rocking balance-beam, receptacles on the respective arms thereon, a water-valve carried by the balance-beam, a rock-shaft carried by the balance-beam and having an operating-arm and connected to said valve, and fixed means engaging said operating arm to operate the rock-shaft and valve.

8. A water-feed apparatus for steam-boilers comprising a balance-beam means for adjustably weighing the pressure on the arms of the balance-beam, receptacles on the arms of said balance-beam having their upper portions at the desired water-level in the boiler, water-pipe connections to and from the upper and lower parts of the respective receptacles, a valve having a water connection and a connection from the boiler, and controlling said pipe connections to the receptacles alternately to put said receptacles alternately in communication with the water-supply and the boiler, and a valve having a steam-supply connection from the boiler and connected to the respective receptacles to put said receptacles alternately in communication with the boiler steam-pressure.

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**756,949. SPIRIT-LEVEL. ROBERT B. FERGUSON, Los Angeles Cal. Filed Dec. 19, 1902. Serial No. 135,915. (No model.)**



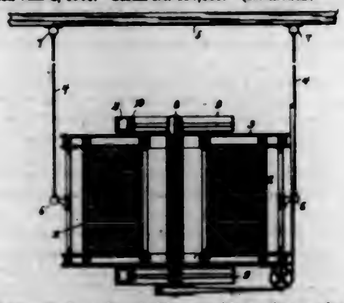
*Claim.*—1. A spirit-level comprising a stock having a transverse opening therethrough; a casing surrounding said opening; a central hub therein having radial arms extending therefrom to the casing; two sectors one on each side of the stock in said opening carrying bubble-glasses visible from either side of the stock; axles projecting from the center of the ends of said hub upon which said sectors are revolubly mounted and forming means to lock the sectors at any angle; a graduated scale surrounding said opening concentric with the axles on which the sectors rotate, index-pointers on said sectors.

2. In a spirit-level of the character herein described, a main stock having a transverse circular opening therethrough; a casing surrounding said opening; a hub therein secured to the casing by radial arms and having central screw-threaded sockets in each end thereof for the reception of the screw-threaded shanks on the thumb-screws; thumb-screws disposed in the center of said hubs and forming axles for the sectors and adapted to lock, when screwed tight, the sectors against movement on their axles; two sectors carrying bubble-glasses revolubly mounted in said opening on said axles, both bubble-glasses being visible from either side of the stock through said opening; index-pointers on the periphery of the sectors; an annular graduated scale around each end of the opening, the same being concentric with the axles of the sectors.

3. The herein-described level comprising the stock A having a transverse opening therethrough; a casing J in the stock surrounding said opening; a central hub G in said opening, the said hub being supported by radial arms F extending therefrom and uniting the same with the casing; two sectors X and Y visible through said opening from either side of said stock, the sectors being pivotally mounted on screws H passing through openings in extensions X′ and Y′ on said sectors; set-screws H forming axles therefor; and adapted to frictionally engage the sectors; index-pointers E on said sectors; an annular graduated scale *b* on the sides of the stock one at each end of and surrounding said opening, the scales being concentric with the axles of the sectors; a bubble-glass D in each of said sectors visible through said opening in either direction, substantially as herein shown and described.

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**756,950. DRIVING MECHANISM FOR SIEVE BOLTING-MACHINES. JOHN FRASER and ALLAN G. MATHER, Milwaukee, Wis. Filed Jan. 5, 1903. Serial No. 137,813. (No model.)**



*Claim.*—1. In a sieve bolting-machine, a frame of considerable height adapted to hold a plurality of horizontally-disposed sieves therein one above the other, four or more rods jointed to and depending from a support and attached by jointed connections to the frame at distant points thereof and medially of the height of the frame and so as always to maintain parallelism with each other and the horizontal positions of the sieves, a vertical shaft mounted revolubly in and centrally of the frame, unbalanced loads on the shaft at one and the same side thereof above and below the frame, and means for rotating the shaft while permitting a gyration of the frame and its load.

2. In a sieve bolting-machine, a frame of considerable height adapted to hold a number of horizontal sieves therein one above another in a plurality of series, four or more rods jointed to and depending from a support and attached by jointed connections to the frame at distant points thereof and medially of the height of the frame and so as always to maintain parallelism with each other and the horizontal positions of the sieves, a vertical shaft mounted revolubly in and centrally of the frame, wheels on the shaft respectively above and below the frame said wheels being loaded at one and the same side of the shaft and having a plurality of pockets for receiving therein additional loading material whereby the unbalanced load can be added to as desired, a pulley on the shaft, idle pulleys mounted on the frame near its lateral side and a belt running on the pulleys adapted to rotate the shaft.



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**756,951. MACHINE FOR HANDLING MATERIAL. ROGER B. FRIEND, Oakland, Cal., assignor to the Interlock Paper Company, San Francisco, Cal., a Corporation of California. Filed Dec. 13, 1902. Serial No. 135,061. (No model.)**



*Claim.*—1. A machine for handling folded material provided with a receiving device for the folded material, a conveyer constructed to receive and retain one end of said folded material and means for operating said conveyer.

2. A machine for handling folded material provided with a receiving device for the folded material, an endless traveling element, a device carried by said element constructed to receive and retain one end of said folded material and means for operating said element.

3. A machine for handling folded material provided with a receiving-trough, sprocket-wheels, a sprocket-chain passing thereover, and a conveyer detachably connected with said chain constructed to receive and retain one end of said folded material and means for operating said chain.

4. A machine for handling folded material provided with a receiving device, sprocket-wheels, sprocket-chains passing thereover carrying arms, and a conveyer detachably connected with said arm to progress the material through said device.

5. A machine for handling folded material provided with a receiving device, a clamping device and a conveyer to progress the material and to retain one end thereof while clamped by said device.

6. A machine for handling folded material provided with a receiving device, a clamp for one end of the material, a traveling element carrying an arm at predetermined points thereon and a conveyer detachably connected with said arm to progress the material through said device and to retain one end thereof while clamped.

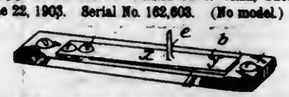
7. A machine for handling folded material, provided with a receiving-trough, wheels mounted at the ends thereof, an endless device passing over said wheels and carrying an arm, a conveyer detachably connected with said arm and constructed to engage the folded material and draw the same through said trough when said device is actuated, means for actuating said device and means for clamping the opposite end of the paper.

8. A machine for handling folded paper provided with a trough, wheels mounted at the side and adjacent to the ends thereof, an endless device passing over said wheels, means for actuating said device, arms carried by said device having a hook, conveyers detachably connected with said hooks and constructed to engage one end of the folded material and transport the same through the trough and to be disengaged from said hook at the completion of the movement of the material and a clamp to retain the other end of the material.

9. A machine for handling folded material provided with a trough, wheels mounted at the side and adjacent to the ends thereof means for actuating said wheels to propel said device, arms carried by said device having hooks, conveyers having a clamp to engage the folded material below the upper fold thereof and draw the same into the trough and be disengaged from said arm when the movement of the material is completed, and a stationary spring-clamp at the receiving end of the trough to retain the other end of the material below the upper fold thereof.

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**756,952. FREE REED. JAMES R. C. GALE, Sutton, England. Filed June 22, 1903. Serial No. 162,603. (No model.)**



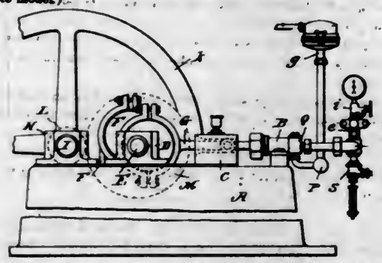
*Claim.*—1. The combination with an unconstrained free reed for organs, harmoniums and similar musical instruments of a tuning-strip mounted perpendicularly to the upper side of the reed substantially as herein described and shown.

2. The combination with an unconstrained free reed for organs harmoniums and similar musical instruments of a combined tuning and voicing strip mounted perpendicularly to the upper side of the reed and operating substantially as described and for the purposes specified.

3. The combination with a free reed for organs, harmoniums and the like musical instruments of a cross-cut lug attached to its upper side and a strip inserted in the cut and secured by expanding in the way and manner set forth.

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**756,953. SYSTEM FOR INTIMATELY MIXING MILK. AUGUSTE GAULIN, Paris, France. Filed Sept. 30, 1902. Serial No. 126,440. (No model.)**



*Claim.*—1. In a machine of the class described, squeezing elements having coöperating concave and convex squeezing-surfaces and means to force liquid between the surfaces, substantially as described.

2. In a machine of the class described, coöperating elements having squeezing-surfaces, means to yieldingly hold the elements in contact and means to force the milk between the surfaces, substantially as described.

3. In a machine of the class described, a capillary-stream-forming element, coöperating squeezing elements having hard contacting squeezing-surfaces and means to force the milk through the stream-forming element and between the squeezing-surfaces, substantially as described.

4. In a machine of the class described, a capillary-stream-forming device and a squeezing device to squeeze the capillary streams so formed, substantially as described.

5. In a machine of the class described, successively-acting pumps, a reservoir connected to and charged by said pumps, a capillary-stream-forming device, squeezing devices having coöperating conical surfaces, means to yieldingly hold the squeezing devices together, an air-vent and a relief-valve on the reservoir, substantially as described.

6. In a machine of the class described, a strainer, a reservoir connected to the strainer, pumps connected to the reservoir to draw the liquid through the strainer, a second reservoir to which liquid is delivered by said pumps, an air-valve and a loaded relief-valve on the second reservoir, capillary tubes fed from said reservoir, a chamber at the end of said tubes and an agate piece fitting the end of said chamber, a rod acting on the end of said agate piece, a coil-spring to yieldingly hold the rod and agate piece against the end of the chamber, said rod provided with lateral grooves and a discharge-passage leading from around the ends of said grooves, substantially as set forth.

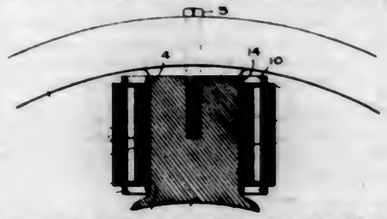
7. In a machine of the class described, an element having a reentrant conical surface, a complementary conical element to fit the same and means to force milk between them, substantially as described.

8. In a machine of the class described, an element of hard metal having a reentrant conical surface, a complementary conical element of agate to fit the same and means to force milk between the elements, substantially as described.

9. In a machine of the class described, an element having a reentrant conical surface and capillary orifices formed at the apex of the conical surface, a complementary conical element, to fit the former surface, means to force milk through the orifices and between the conical surfaces, and means to hold the elements yieldingly in contact, substantially as described.

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**756,954. MAGNET-COIL SPOOL. HENRY GEMMINGHAUSEN, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 13, 1902. Serial No. 123,307. (No model.)**




*Claim.*—1. As an article of manufacture, a coil-spool comprising a cylindrical body of sheet metal, and end retaining devices formed out of corrugated metal bars or strips.

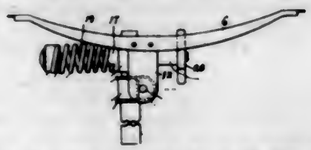
2. A coil-spool comprising a body member and end retaining members secured thereto, the said retaining members having portions curved to fit the body portion and intermediate portions looped to form fingers.

3. A coil-spool comprising a body member and an end retaining member, said end retaining member being formed out of corrugated metal.

4. A coil-spool comprising a body member, and an end retaining member formed out of a corrugated bar of bendable metal.

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**756,955. CHAIR-SEAT SPIDER. JULIUS M. GERMANSON, Milwaukee, Wis. Filed Oct. 17, 1902. Serial No. 127,673. (No model.)**




*Claim.*—1. In a chair-seat spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, said spreader provided with an elongated slot, depending pivot-ears, a spindle extended upwardly into a slot of the spreader, the ends of said slot acting as stops to contact with the extended end of the spindle, and thereby limit the tilting of the chair, and said spindle provided below the upper extremity thereof with an elongated slot, a head-piece supported on the spindle, a bolt for pivotally connecting the head-piece to the pivot-ears, and a spring-pressed adjusting-rod passing through the elongated slot of the spindle.

2. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, said spreader provided with a top piece and with a rear depending portion, the top piece having an elongated slot therethrough, and the ends of said top portion being downwardly bent to form the outer thicknesses of pivot-ears, and the rear depending portion having its ends forwardly bent to form the inner thicknesses of the depending pivot-ears, a spindle having its upper end extending into the elongated slot of the spreader, a head-piece supported on the spindle, and a bolt for pivotally connecting the head-piece to the pivot-ears.

3. In a seat-spider, the combination of longitudinal arms adapted to be secured at their ends to a seat, a spreader secured at its ends to the arms, said spreader being struck from a single blank of metal and shaped to form a top piece having downwardly-turned ends, a rear depending portion having forwardly-flanged ends, the said forwardly-flanged ends constituting inner thicknesses of pivot-ears, and the downwardly-turned ends of the top piece forming outer thicknesses of said pivot-ears, a spindle, a head-piece supported on the spindle, and a bolt for pivotally connecting the head-piece to the pivot-ears.

4. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, said spreader provided with a top piece and with a rear depending portion, the top piece having its ends provided with depending portions forming the outer thicknesses of pivot-ears, and the rear depending portion provided with a recess, and having its ends forwardly flanged and forming the inner thicknesses of pivot-ears, a spindle provided below its upper extremity with an elongated slot, a head-piece supported on the spindle, a bolt for pivotally connecting the head-piece to the pivot-ears, and a spring-pressed adjusting-rod passing through the recess of the depending rear portion of the spreader and through the elongated slot of the spindle.

5. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, depending pivot-ears, a head-piece of approximately semitubular form with its rounded side foremost, and having its rear edges provided with projecting apertured lips, a spindle passing through the registering apertures of the lips and supporting the head-piece, and a bolt for pivotally connecting the head-piece to the pivot-ears.

6. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, depending pivot-ears, a head-piece struck from a single sheet of metal and formed into approximately semitubular form with its rounded side foremost, and with projecting apertured lips at its rear edges, a spindle passing through the registering apertures of the lips and supporting the head-piece, and a bolt for pivotally connecting the head-piece to the pivot-ears.

7. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, depending pivot-ears, a head-piece of approximately semitubular form with its rounded side foremost and having its rear edges provided with projecting apertured lips, a spindle supporting the head-piece and passing through the registering apertures of the lips, a spacing-plate arranged between the rear edges of the head-piece and rounded at a medial portion for the accommodation of the spindle, and a bolt for pivotally connecting the head-piece to the pivot-ears.

8. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, depending apertured pivot-ears, a head-piece of approximately semitubular form with its rounded sides foremost and having its rear edges provided with projecting apertured lips, a spindle supporting the head-piece and passing through the registering apertures of the lips, a spacing-plate arranged between the rear edges of the head-piece, the ends of said plate being turned forwardly and provided with apertures, and a bolt having its ends supported in the registering apertures of the pivot-ears and the forwardly-turned ends of the spacing-plate, said bolt pivotally connecting the head-piece to the pivot-ears.

9. In a seat-spider, the combination of longitudinal arms adapted to be attached at their ends to a seat, a spreader secured at its ends to the arms, said spreader struck from a single blank of metal and shaped to form a top piece having depending ends forming pivot-ears a head-piece struck from a single blank of metal and shaped into approximate semitubular form with the rounded side foremost, and formed at its rear edges with projecting apertured lips, a spindle supporting the head-piece and passing through the registering apertured lips of said head-piece, and a bolt for pivotally connecting the head-piece to the pivot-ears.

10. A spreader for a seat-spider, comprising a top piece having downwardly-bent ends forming the outer thicknesses of pivot-ears, and a rear depending portion having forwardly-bent ends forming the inner thicknesses of the pivot-ears.

11. A spreader for a seat-spider struck from a single blank of metal and shaped to form a top piece having depending ends constituting the outer thicknesses of pivot-ears, and a rear depending portion having forwardly-bent ends forming the inner thicknesses of the pivot-ears.

12. A head-piece for a seat-spider, consisting of a semitubular piece having its top and bottom edges provided with projecting horizontal apertured lips.



13. A head-piece for a seat-spider struck from a single blank of metal and shaped into semitubular form, the top and bottom edges thereof formed with projecting horizontal apertured lips.

14. A head-piece for a seat-spider, consisting of a semitubular piece having its top and bottom edges provided with projecting horizontal apertured lips, and a spacing-plate between said top and bottom edges.

15. A head-piece for a seat-spider, consisting of a semitubular piece having its top and bottom edges provided with projecting apertured lips, and a spacing-plate between said top and bottom edges, said spacing-plate provided with forwardly-turned apertured ends.

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**756,956. PRESERVE-JAR AND CAP THEREFOR. RUTH A. GILCHRIST, Wilkesbarre, Pa. Filed Feb. 21, 1903. Serial No. 144,504 (No model.)**



*Claim.*—1. As an improved article of manufacture, a cap for a preserve-jar, consisting of a suitable body portion formed with a downwardly and inwardly extending displacing projection of suitable size for displacing a portion of the contents of a jar and dispelling air therefrom, and a vertical attaching-flange with a large annular space between said flange and the displacing projection for the reception of displaced food and juices, said flange being provided on its inner surface with a quick-acting interrupted worm-thread, the whole being constructed of a single piece of material, substantially as described.

2. As an improved article of manufacture, a cap for a preserve-jar, consisting of a body portion constructed of glass or other suitable material with a downwardly-extending displacing projection of suitable size for displacing a portion of the contents of a jar and dispelling air therefrom, and a vertical flange provided on its inner surface with an inwardly-projecting interrupted worm-thread, with a large annular space between the flange and the displacing projection for the reception of the displaced food and juices, the outer surface of the flange being formed with ribs or corrugations, substantially as described.

3. As an improved article of manufacture, a cap for a preserve-jar, consisting of a body portion constructed of glass or other equivalent material and formed with a downwardly-extending displacing projection of a suitable size for displacing a portion of the contents of a jar and dispelling air therefrom, and a vertical flange provided on its inner surface with an inwardly-projecting interrupted worm-thread, with a large annular space between the flange and the displacing projection for the reception of the displaced food and juices, the outer surface of the flange being formed with comparatively long vertically-arranged ribs or corrugations which extend practically the entire height of the cap and in line with the interrupted worm-thread, said ribs or corrugations, however, not interfering with the threads, substantially as described.

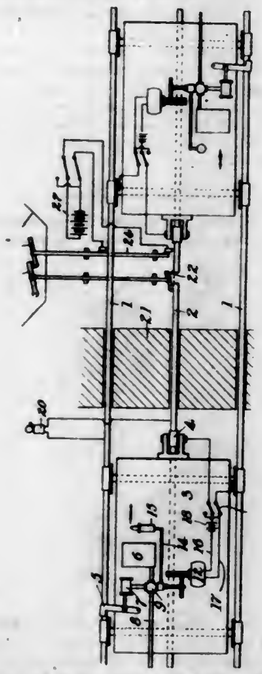
4. A preserve-jar and cap therefor, comprising in its construction a suitable glass body of ordinary thickness, having a vertical neck portion formed with an outwardly-projecting interrupted worm-thread, and a shoulder at the lower end of the threaded portion, in combination with a cap having a vertical flange and an inwardly and downwardly extending displacing projection of suitable proportions and which is of considerably less diameter than the cap proper so as to leave a large annular space all around between it and the inner surface of the said flange, said flange being formed with an inwardly-projecting interrupted quick-acting worm-thread which engages the projecting worm-thread on the jar, and said flange being also provided on its lower edge with a peripheral groove or depression, and a rubber gasket applied on the jar around the shoulder thereof between said shoulder and the lower edge of the flange, the construction and operation being such that the cap can be quickly applied to the jar, during which application a certain amount of the contents of the jar will be displaced and be forced up into the annular space of the cap, and the air expelled between the threads, the gasket on the shoulder of the jar being firmly gripped and held in the groove or depression in the lower edge of the flange of the cap, substantially as described.

5. A preserve-jar and cap therefor comprising in its construction a jar having a neck portion formed with an interrupted quick-acting worm-thread in combination with a cap formed with a downwardly and inwardly extending displacing projection and a vertical attaching-flange with a large annular space between said flange and the displacing projection, said flange being provided on its inner surface with a quick-acting interrupted worm-thread which engages thread on the jar, substantially as described.

6. As an improved article of manufacture a cap for a preserve-jar constructed from a single piece of glass or other equivalent material and formed with a vertical attaching-flange which latter is provided on its inner surface with a quick-acting interrupted worm-thread and with a downwardly-extending centrally-arranged displacing projection which extends substantially to or a little below the lower edge of the attaching-flange with a large annular space between said flange and said projection, substantially as described.

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**756,957. ELECTRIC SAFETY SYSTEM FOR RAILWAYS. JACOB HAWKS and CHARLES S. GILMAN, Rivera, Cal. Filed May 7, 1902. Serial No. 106,264. (No model.)**




*Claim.*—1. An electric circuit comprising a track-rail conductor constituting one side of the circuit, an insulated normally closed conductor constituting the other side of the circuit and extending along the track, a car, an air-brake for said car, an air-valve therefor, an electric motor connected to operate said circuit and adapted to operate said air-valve to repeatedly open and close the same, and electric generating means on the car for energizing said circuit.

2. An electric circuit comprising a track-rail conductor forming one side of the circuit, an insulated normally closed conductor constituting the other side of the circuit and extending along the track, a plurality of cars, air-brakes for said cars, air-valves for said brakes, electric motors on the cars connected to the circuits of the respective cars and connected to operate said air-valves to repeatedly open and close the same, and electric generating means on each car of such strength that when the cars approach sufficiently to decrease the resistance of said circuit to a definite amount, said motor will operate said valve to set the air-brakes on each car.

3. An electric circuit comprising a track forming one side of the circuit, and an insulated normally closed and continuous conductor forming the other side of the circuit and extending along the track, a car on the track, air-brakes on said car, a rotary valve controlling said air-brake, and an electric motor carried by said car to rotate said valve to alternately open and close the same, said means being connected to said circuit and controlled thereby, the resistance of said circuit being normally sufficient to prevent said motor from being operated.

4. An electric circuit, a car, air-brakes on said car, a valve

connected to the air-brake system, the stem of said valve being threaded and having a shoulder thereon, a gear revolubly mounted on the threaded portion of said stem, a motor, the driving-shaft of said motor having an elongated pinion which meshes with said gear, a battery in said circuit to drive said motor, the resistance of said circuit being normally sufficient to prevent said motor from being operated.

5. A car, an air-brake for said car, a rotary air-valve for said brake, adapted upon continuous rotation to repeatedly open and close air communication therethrough, an electric motor operating said air-valve, an electric circuit, an energizing-circuit for said motor comprising a track-rail conductor and a continuous normally closed insulated conductor extending along the track, and means for interrupting said insulated conductor at a fixed point along the track to cause operation of the brakes from such fixed point.

6. An electric circuit comprising a track forming one side of the circuit, and an insulated normally closed and continuous conductor forming the other side of the circuit and extending along the track, a car on the track, air-brakes on said car, a rotary valve controlling said air-brakes, and an electric motor carried by said car to rotate said valve to alternately open and close the means, said means being connected to said circuit and controlled thereby, the resistance of said circuit being normally sufficient to prevent said motor from being operated, means for interrupting said insulated conductor at a fixed point along the track to cause operation of the brakes from such fixed point.

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**756,958. OPTICAL APPLIANCE.** JOHANN HARRASS, Chicago, Ill. Filed Nov. 23, 1903. Serial No. 182,330. (No model.)




*Claim.*—1. In an optical appliance, the combination with the supporting parts, of a slidable member, a set of cylinders; a set of holders for said cylinders revolubly mounted side by side in said slidable member, said holders being circular in form and having a circumferential groove in their peripheries; and a key in said slidable member for entering the groove in said holders for the purpose described.

2. In an optical appliance, the combination with the supporting parts, of a slidable member, a cylinder, a circular cylinder-holder revolubly mounted in said slidable member; a pointer on said holder and markings on said slidable member adjacent to the periphery of said holder for indicating the angles of inclination of said pointer.

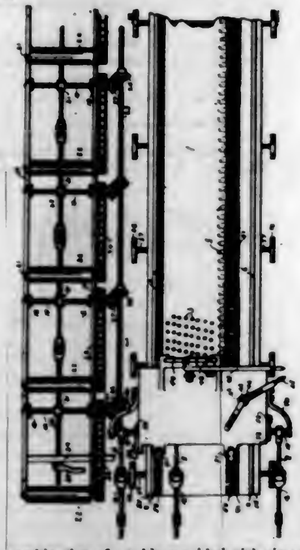
3. In an optical appliance, the combination of a screen having a sight-aperture therein; a lens-disk behind said screen and a head-rest adjustably mounted upon said screen above the sight-aperture therein, said head-rest being adapted to make contact with the top of the forehead of the patient to thereby control the vertical as well as the horizontal location of the eye of the patient substantially in the manner and for the purpose described.

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**756,959. GAGE-TABLE AND CONVEYER.** CHARLES W. HERMAN, Canton, Ohio, assignor of one-half to Albert T. Bowman, Canton, Ohio. Filed Jan. 7, 1904. Serial No. 188,008. (No model.)

*Claim.*—1. In a gage-table and conveyer, the combination of a table having a series of pin-apertures, pins adapted to be located in the apertures, a scale upon the face of the table, a gage-head movable along the table and said gage-head provided with grip-jaws and a conveyer located parallel with the table, substantially as and for the purpose specified.

2. The combination of a table provided with a series of pin-apertures, pins adapted to be located in the apertures, a gage-head movable upon the table, and said gage-head provided with a sliding head adapted to engage a pin located in an aperture of the table and beam-conveying mechanism, substantially as and for the purpose specified.



3. The combination of a table provided with pin-apertures, pins adapted to be secured in the apertures, a gage-head movable upon the table and the table provided with a rack-bar, a shaft journaled in the gage-head, said shaft provided with a pinion meshing with the rack-bar and a ratchet-wheel secured to the upper end of the shaft, and the lever and detent adapted to operate the pinion and move the carriage, and a bar-conveyer located parallel with the table, substantially as and for the purpose specified.

4. In a gage-table and conveyer a table having mounted thereon a traveling gage-head, a sliding head carried by the gage-head, pins located in apertures, a conveyer located parallel with the gage-table, said conveyer having rollers adapted to carry the beam, and means for elevating and lowering the rollers, substantially as and for the purpose specified.

5. The combination of a series of roller-arms fixed to shafts, said roller-arms provided with rollers at their free ends, arms fixed to the shafts to which the roller-arms are attached, sprocket and beveled wheels loosely mounted upon said shafts, sprocket-wheels fixed to the shafts of the rollers and drive-chains, a shaft provided with beveled gear-wheels meshing with the beveled gear-wheels mounted upon shafts to which the roller-arms are attached and a rod connected to the arms and means for imparting lengthwise movement to the rod, substantially as and for the purpose specified.

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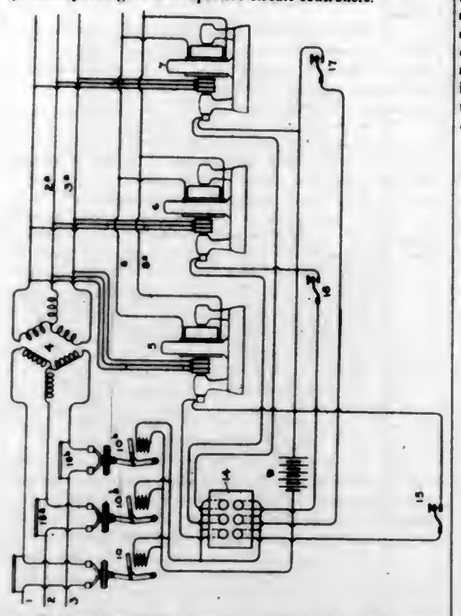
**756,960. ROTARY-CONVERTER SYSTEM.** EDWARD M. HEWLETT, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed July 24, 1899. Serial No. 724,909. (No model.)

*Claim.*—1. The combination of a source of current, a distributing-circuit supplied thereby, a plurality of centrifugal circuit-controllers at different distributed points in the distributing-station, a circuit-breaker for the supply-circuit controlled thereby, and an indicator operated by the several circuit-controllers to show which circuit-controller has been operated.

2. The combination of an electric supply-circuit, a plurality of rotary converters operated thereby, circuit-controllers operated by the respective converters upon abnormal fluctuation of speed, a circuit-interrupter for the supply circuit controlled in common by the said controllers, and a plurality of indicators in circuit with the respective circuit-controllers.

3. The combination of an electric supply-circuit, a plurality of rotary converters connected therewith, an automatic circuit-breaker for the main circuit, a plurality of automatic circuit-controllers for said circuit-breaker corresponding to the several converters and operated upon dangerous increase of speed, a plurality of hand-controlled circuit-controllers, and an annunciator having a series of drops corresponding to the respective circuit-controllers.





4. The combination with a rotary converter, of a circuit-breaker in one of the converter-circuits, a centrifugal circuit-controller on the rotary member of the converter, contact-rings engaged thereby at a predetermined speed, and circuit connections leading therefrom to the trip-coil of the circuit-breaker.

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**756,961. IGNITER MECHANISM FOR EXPLOSIVE-ENGINES.** NED R. HILDRETH, Lansing, Mich. Filed June 19, 1902. Serial No. 112,579. (No model.)



*Claim.*—1. In an igniter for explosive-engines, the combination, with the igniting mechanism, of a reciprocatory rod, a dog mounted on said rod adapted to engage and operate said igniting mechanism, said dog being slidable upon said rod and adapted to tilt thereon, and means for returning said dog after the tilting movement, means for sliding the dog longitudinally on said rod and for holding said dog against longitudinal movement only, at two predetermined points.

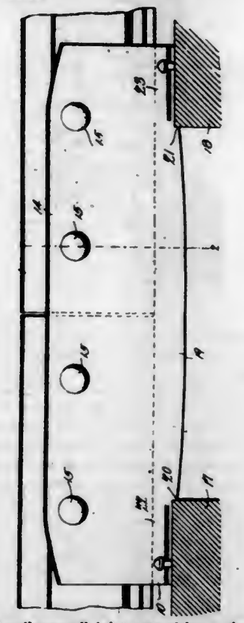
2. In an igniter for explosive-engines, the combination, with the igniting mechanism, of a reciprocatory rod, a dog having a central longitudinal opening through which said rod passes, the shape of said opening at the lower end of the dog being round and substantially oblong at the upper end to allow a tilting movement of the dog upon the rod, said dog being also movable longitudinally upon said rod and adapted to actuate the igniting mechanism, and a spring attached thereto for restoring it after a tilting movement.

3. In an igniter for explosive-engines, the combination with the igniter mechanism of a reciprocatory rod, the dog mounted upon said rod to move longitudinally thereon, said dog being adapted to actuate the igniter mechanism, an eccentric lever pivoted to said rod and engaging the lower end of said dog, whereby said dog may be adjusted upon the rod and held from longitudinal movement after adjustment.

4. In an igniter for explosive-engines, the combination with the cylinder, of a rock-shaft extending into the cylinder and carrying a movable electrode, a fixed electrode extending into the cylinder in the path of the movable electrode, a collar upon the end of said rock-shaft, a spring-actuated arm adapted to strike said collar and rotate said shaft to separate the electrodes, a reciprocatory rod, a dog mounted on said rod to slide longitudinally and tilt transversely thereon, said dog being adapted to engage the free end of said arm when moving in one direction and to slip past said arm on the return movement, and means for locking said dog against longitudinal movement only, at two predetermined points on said rod.

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**756,962. RAILROAD JOINT AND CHAIR.** WILLIAM H. HOOPER and THOMAS J. BUNDAY, Conroe, Tex. Filed May 21, 1903. Serial No. 158,171. (No model.)



*Claim.*—1. A railway-rail joint comprising a chair adapted to support the abutting rail ends and with extended sides for engagement with the opposite base-flanges of the rails and having transverse spaced apertures, the apertures of one side being angular the chair having central reinforcing portions provided with shoulders for engagement with the adjacent faces of the ties, and clamp-bolts engaging said transverse apertures, and having one end thereof made angular to fit said angular apertures.

2. A railway-rail joint comprising a chair adapted to support the abutting rail ends and with extended sides for engagement with the opposite base-flanges of the rails and having transverse spaced apertures, the chair having central reinforcing portions provided with shoulders for engagement with the adjacent faces of the ties, the outer faces of said sides being flush with the lower edges of the chair, and with the ends of said extended sides curving inwardly to provide flanges to receive fastening-spikes.

3. A railway-rail joint comprising a chair adapted to support the abutting rail ends and with extended sides for engagement with the opposite base-flanges of the rails, one of said sides extending to a point relatively near the upper face of the tread of the rail, and having the tread thereof curved downwardly at its opposite ends to guide the wheels thereonto in their passage thereover.

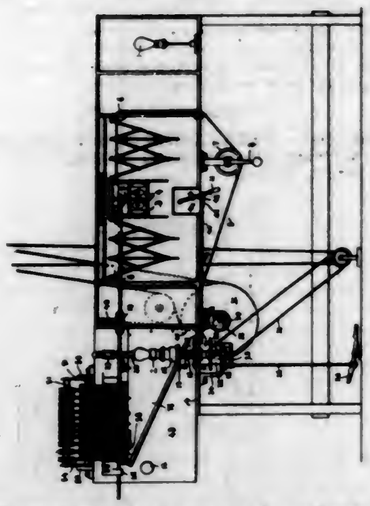
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**756,963. PHOTOMETRIC APPARATUS.** JOHN W. HOWELL, Newark, N. J., assignor to General Electric Company, a Corporation of New York. Filed Oct. 17, 1903. Serial No. 177,435. (No model.)

*Claim.*—1. The combination of a photometer, and means for producing a label marked to correspond to the position to which the photometer has been adjusted.

2. The combination of a photometer having an adjustable screen, and means for delivering a label marked to correspond to the position of the screen.

3. The combination of a photometer having an adjustable member, and means for rendering accessible to the operator a label marked to correspond to the position to which said member has been adjusted.



4. The combination of a photometer, and means for releasing a label marked to correspond to the position to which the photometer has been adjusted.

5. The combination of a photometer having an adjustable carriage, and means controlled by the operator for releasing a label marked to correspond to the position of the carriage.

6. The combination with a photometer having an adjustable member, of a plurality of labels, and means for releasing a label selected by the position to which said member has been adjusted.

7. The combination with a photometer, of a plurality of labels, and means controlled by the operator for releasing a label selected according to the photometer adjustment.

8. The combination with a photometer, of a reel, a tape wound thereon, and means for automatically cutting off a section of the tape.

9. In combination with a photometer having an adjustable member, a plurality of tapes, and means for cutting off a section of a tape selected by the position to which said member has been adjusted.

10. The combination with a photometer, of a reel, a tape wound thereon, and means for automatically unwinding a section of the tape.

11. The combination with a photometer having an adjustable member, of a plurality of reels, tapes thereon, and automatic means for unwinding a section of a tape selected by the position of said member.

12. The combination of a photometer for incandescent lamps, a plurality of labels for the lamps, and a feeding device operating on the labels.

13. The combination with a photometer having a standard light, an adjustable member, and a support for a light to be tested, of means for opening and closing circuit to said support, and means operated by opening said circuit for releasing a label marked to correspond to the position to which said member has been adjusted.

14. The combination with a photometer having a standard light, an adjustable carriage, and a support for a light to be tested, of means for opening and closing circuit to said support, a plurality of labels, and means operated by opening said circuit for releasing a label selected by the position to which the carriage has been adjusted.

15. The combination with a photometer having a support for a light to be tested, of means for opening and closing circuit to the support, a tape, and means operated by opening said circuit for cutting off a section of the tape.

16. The combination of a photometer having an adjustable carriage, a standard light and a support for a light to be tested, means for opening and closing circuit to said support, a plurality of tapes, and means operated by opening said circuit for cutting off a section of a tape selected by the position of the carriage.

17. The combination with a photometer having a support for a light to be tested, of means for opening and closing circuit to the support, a tape, and a feed device therefor, operated by opening said circuit.

18. The combination with a photometer, and a support for a light to be tested, of means for opening and closing circuit to said support, a plurality of reels, tapes thereon, and means operated by opening said circuit for unwinding a section of a tape selected by the adjustment of the photometer.

19. In combination with a photometer having an adjustable carriage, a rod attached to said carriage and movable longitudinally therewith, means for turning said rod, and means operated by said rod when turned for releasing a label marked to correspond to the position to which the carriage has been adjusted.

20. In combination with a photometer having an adjustable member, a rod attached to said member and movable longitudinally therewith, means for turning said rod, a tape, and means operated by said rod when turned for cutting off a section of the tape.

21. In combination with a photometer having an adjustable carriage, a rod attached to said carriage and movable longitudinally therewith, means for turning said rod, a plurality of tapes, and means operated by said rod when turned for cutting off a section of a tape selected by the position of the carriage.

22. In combination with a photometer having an adjustable carriage, a rod attached to said carriage and movable longitudinally therewith, means for turning said rod, a tape, and a feed device therefor operated by said rod when turned.

23. In combination with a photometer having an adjustable carriage, a rod attached to said carriage and movable longitudinally therewith, means for turning said rod, a plurality of reels, tapes wound thereon, and means operated by said rod when turned for unwinding a section of a tape selected by the position of the carriage.

24. The combination with a photometer, of a plurality of tapes, and means for feeding a tape selected by the photometer adjustment and cutting off a section of the tape.

25. The combination with a photometer having an adjustable carriage, means for automatically releasing a label marked to correspond to the position to which the carriage has been adjusted, and a chute for carrying the label to a position convenient for the operator.

26. In combination with a photometer, a label-releasing device comprising a plurality of reels mounted in two rows, the reels of one row being staggered relatively to those of the other, tapes on the reels, a guide having passages for the tapes, and a cutting device in proximity to the guide.

27. In combination with a photometer, a label-releasing device comprising a plurality of reels mounted so as to be individually removable, tapes on the reels, and a cutting device for the tapes.

28. In combination with a photometer, a reel, tape thereon, a rotatable rod, a finger mounted thereon, and means for rotating the rod, whereby the finger draws the tape from the reel.

29. In combination with a photometer, a plurality of tapes, a finger movable back and forth before the tapes, and means for moving the finger into engagement with a tape.

30. In combination with a photometer, a plurality of reels, tapes thereon, a guide for the tapes having a plurality of separate passages, a finger movable back and forth before the guide, and means whereby the finger draws a tape through a passage of the guide.

31. In combination with a photometer, a plurality of reels, a guide, a cutting device in proximity to the guide, a finger movable back and forth before the guide, means for moving the finger toward the guide, and means for operating the cutting device.

32. In combination with a photometer, a label-releasing device comprising a tape, a finger, means for moving the finger in one direction in contact with the tape, and means for moving it in the opposite direction out of contact therewith.

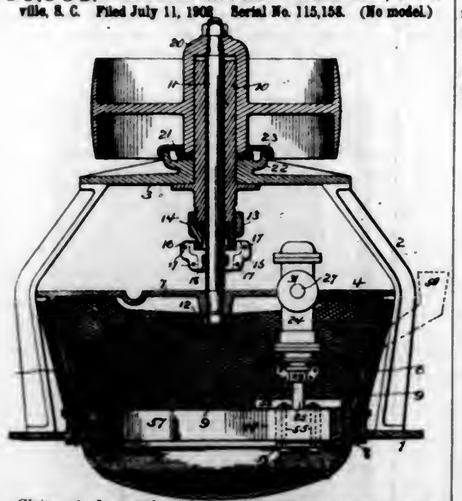
33. In combination with a photometer, a label-releasing device comprising a reel, a tape thereon, a finger, means for moving the finger to draw the tape from the reel, and stops for the finger at the limits of its movement.

34. In combination with a photometer, a label-releasing device comprising a plurality of tapes, a guide therefor having a plurality of separate passages, a spring-finger, means for moving the finger to draw a tape through a passage of the guide, and means for insuring contact of the finger with a tape.

35. In combination with a photometer having a support for a light to be tested and an adjustable carriage, a rod attached to the carriage and movable longitudinally therewith, means for opening and closing circuit to said support, means operated by opening said circuit for turning the rod, and means operated by the rod when turned for releasing a label.



**756,964. PULVERIZING-MACHINE. SAMUEL HUGHES, Summerville, S. C. Filed July 11, 1903. Serial No. 165,158. (No model.)**



*Claim.*—1. In a pulverizing-machine, the combination with a shaft, and a bearing therefor, of a gland on said bearing, packing in the gland, a cup under the bottom of said gland, a split packing-ring secured on the shaft and closing the cup and an elastic packing in said ring.

2. In a pulverizing-machine, the combination with a shaft and a bearing therefor, of a gland on said bearing having a chambered bottom, a split packing-ring closing the chambered bottom of the gland, and lubricant-chambers around and at the top of said bearing.

3. In a pulverizing-machine, the combination with a roll-shaft, of a roll, a split conical bushing on the shaft in the roll, a pin passed through the bushing and shaft, a dowel-pin in said bushing, a plate beneath the roll and bushing, and headed bolts passed through said plate and roll and secured in place by nuts, the heads of said bolts serving as stirrers for the machine.

4. In a pulverizing-machine, the combination with a roll-shaft and a roll, of a vertical bearing for the shaft, provided at its lower end with a gland, and a split ring provided with a drip-chamber, secured to the shaft and receiving the lower end of said gland.

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**756,965. MACHINE FOR MANUFACTURING BALLS FROM SHEET METAL. ALLEN JOHNSTON, Ottumwa, Iowa. Filed Dec. 15, 1902. Serial No. 135,285. (No model.)**

*Claim.*—1. In a machine for forming hollow balls, a punch and die for drawing the flat blank into cup shape, means for removing the blank from the punch a closing-die carrying its own ejector, and a positioning device whereby the cupped blank is positioned for the operation of the closing-die.

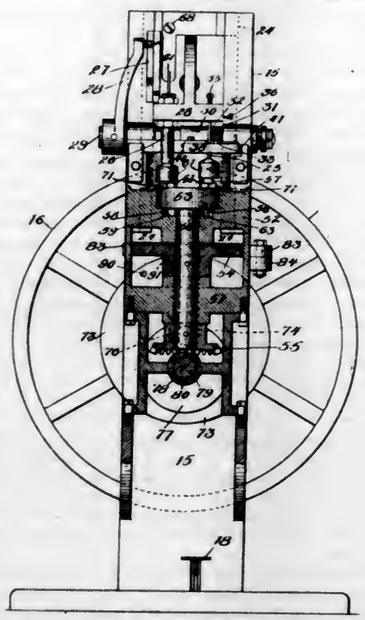
2. In a machine for forming hollow balls, means for drawing the blank into cup shape, means for removing the cup from the punch of the drawing means, a die for closing the cup and carrying its own ejector, and a device receiving the cupped blank from the drawing devices and positioning it for the operation of the closing-die.

3. In a machine for forming hollow balls, means for drawing the blank into cup shape and a die for closing the cupped blank and carrying its own ejector, in combination with a device receiving the cupped blank from the drawing means and supporting it during the operation of the closing-die, and means for ejecting the formed ball from the closing-die.

4. In a machine for forming hollow balls, a punch and die for drawing the flat blank into cup shape, means contacting with the edge or points of the cupped blank and serving to remove it from the punch, and means carrying an ejector for both closing and ejecting the cupped blank, in combination with a holder into which the blank is delivered by the cupping means, and by which it is carried into position to be acted upon by the closing means.

5. In a machine for forming hollow balls, means for forming the blank into cup shape, in combination with a device for holding the cup with its open end uppermost and supporting it in that position while it is being closed, a die for closing the open end and carrying an ejector, and an ejecting device in said die.

6. In a machine for forming hollow balls, the combination of means for cupping the blank, and a holder which is adapted to support the cupped blank during the closing operation and which receives the cupped blank in proper position for that operation, a closing-die for closing the open end of the cupped blank, and an ejector for said closing-die acting on the outer surface of the closed end.



7. The combination in a machine for forming hollow balls, of means for cupping the blank, means acting on the open edge of the blank and serving to detach it from the cupping means, and means for closing the cupped blank, and a holder for supporting the cupped blank while it is being closed, said holder receiving the cupped blank from the cupping means both said closing means and said holder being provided with ejectors, substantially as specified.

8. In a machine for forming hollow balls, the combination with means for severing the blank in rectangular form, of a hollow die upon which the blank is placed when severed, a punch for forcing the blank into the die and into cup form, and stripping devices movable toward the punch for removing the blank.

9. In a machine for forming hollow balls, the combination with means for severing the blank in rectangular form, of a hollow die upon which the blank is placed when severed, a punch for forcing the blank into the die and into cup form, stripping devices movable toward the punch for removing the blank therefrom, and a recessed holder into which the blank is forced by the punch.

10. In a machine for forming hollow balls, the combination with means for cupping the blank and a closing-die carrying an ejector adapted to act on the surface of the closed ball, of a hemispherical die or holder in which the cupped blank is deposited by the cupping means, and means for moving said holder into position for the action of the closing-die.

11. In a machine for forming hollow balls, means for cutting out a rectangular blank of flat metal, a hollow die, a punch for forcing the blank through the hollow die, and forming a cup with upstanding points, a supporting-die to receive the closed end of the cup, a closing-die adapted to fully close said points, and mechanism for operating the cutting means, the punch and the closing-die.

12. In a machine for forming hollow balls, a die through which the blank is forced in the cupping operation, a punch for carrying the blank through the said die, spring-pressed stripping devices movable toward the punch and serving to strip the cupped blank therefrom, a plurality of hemispherical dies or holders, a support for such hemispherical dies, a closing-die adapted to close the points of the blank into hemispherical form and into contact with each other, and means for bringing the hemispherical dies into acting position relative to both the cupping-die and the closing-die.

13. In a machine for forming hollow balls, means for forming

an angular blank from flat metal, a hollow die through which the blank is forced, a plurality of hemispherical holders receiving the blank from the hollow die, means for forcing the blank through the hollow die and depositing it in one of the hemispherical dies, movable stripping devices for stripping the blank from said forcing means and a die for closing the point of the blank into hemispherical form and into contact with each other.

14. In a machine for forming hollow balls, means for forming a rectangular blank of flat metal, a hollow die, a movable hemispherical holder, means for forcing the blank through the hollow die and leaving it in said hemispherical holder, and a closing-die cooperating with the hemispherical die in closing the open end of the blank into hemispherical form with the points in contact, and an ejector adapted to act upon the outer surface of the closed blank and to force it from the closing-die.

15. In a machine for forming hollow balls, means for forming a rectangular blank of flat metal, a hollow die, a movable hemispherical holder, means for forcing the blank through the hollow die and leaving it in said hemispherical holder, and means for closing the open end of the blank into hemispherical form with the points in contact, said hemispherical holder and said closing means being both provided with ejectors adapted to act on the surface of the ball.

16. In a machine for forming hollow balls, means for cutting off a rectangular blank of flat metal, a hollow die, a punch for forcing the blank through the hollow die, a movable hemispherical holder, a closing-die adapted to close the open end of the blank and to force the points thereof into close contact, said closing-die carrying its own ejector, and mechanism for operating the cutting means, the punch and the closing-die and for positioning the hemispherical holder.

17. In a machine for forming hollow balls, means for cutting off the blank of flat metal, a hollow die, a punch for forcing the blank through the hollow die, a plurality of hemispherical dies receiving the cupped blanks from the punch, a die for closing the cups and carrying its own ejector, and means for positioning the hemispherical dies alternately under the punch and under the closing-die, substantially as specified.

18. The die for closing the open end of the cupped rectangular blank, adapted to force the points of the blank closely together in hemispherical form and complete the ball, and carrying an ejector adapted to act on the outer surface of the ball and discharge it from the die.

19. The combination with the cupping devices and the closing-die, of the hemispherical holder, the cap surrounding the holder, means for positioning the cap vertically, and means for positioning the holder alternately under the cupping devices and under the dies, both the closing-die and the hemispherical holder having ejecting devices, substantially as specified.

20. The machine for making hollow balls having a movable holder for the cupped blanks, and means actuating such holder intermittently and adapted to start and stop the same slowly, such actuating means embracing a driving-shaft 19 and a driven shaft parallel with, but located eccentrically of the axis of the driving-shaft, and gearing for transmitting motion from the driving to the driven shaft.

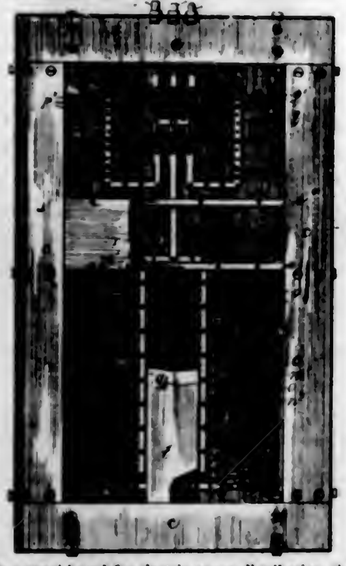
21. In a machine for forming hollow balls from sheet metal, a hemispherical lower die adapted to support the cupped blank during the closing operation, an upper hemispherical die for closing the cupped blank, and ejectors for both of said dies adapted to eject the completed ball from either die in which it may stick.

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**756,966. PANEL-BOARD FOR ELECTRIC DISTRIBUTION. GEORGE H. JOHNS, Chicago, Ill. Filed Nov. 30, 1903. Serial No. 182,001. (No model.)**

*Claim.*—1. In a panel-board for electric distribution, the combination of substantially parallel load bus-bars, a raceway between said load bus-bars for the meter-conductors; a set of load-contacts located at intervals along said bus-bars; a meter bus-bar; a meter connected to said load bus-bar and to said meter bus-bar and a set of fixed load-contacts, each fixed load-contact being adjacent to its respective load-contact on said load bus-bar, but insulated therefrom, and all of said load-contacts having their load connections arranged outside of the load bus-bars, whereby said raceway is free to receive the meter-conductors.

2. In a panel-board for electric-power distribution, the combination of a meter, meter-conductors, substantially parallel bus-bars connected to said meter through said meter-conductors, a raceway between the said bus-bars for receiving the meter-conductors, a set of load-contacts located at intervals along the bus-bar and arranged on the outer side thereof to leave said raceway free to receive the said meter-conductors only, and a fixed contact adjacent to each one of said load-contacts but insulated therefrom and adapted to be connected to the remaining polarity of the various loads, said fixed contacts being adapted for electric connection with the proper supply-terminals through said meter-conductors.



3. In a panel-board for electric-power distribution, the combination of a meter, meter-conductors, two parallel bus-bars as *g* and *h* connected to one of the supply-terminals and forming between them a raceway for the meter-conductors, load-contacts mounted on said bus-bars to lead outwardly to one polarity of the loads, fixed load-contacts adjacent to each of first-mentioned contacts but insulated therefrom and also adapted to lead outwardly to the remaining polarity of the loads whereby said raceway is free for receiving the said meter-conductors only.

4. In a panel-board for electric distribution, the combination of a slab of insulating material, two parallel load bus-bars mounted thereon, a raceway for the meter-conductors between said parallel bus-bars; meter bus-bars; insulated strips transverse to said load and forming a second raceway between said meter bus-bars and the ends of the load bus-bars, means for connecting said meter bus-bars to the meters, load-contacts arranged along said load bus-bars and adapted to lead outwardly to the loads; and other load-contacts adjacent to the aforesaid load-contacts in pairs, but insulated therefrom, said last-mentioned load-contacts being also adapted to lead outwardly to the loads, the said raceways being thereby free of conductors except the remaining meter-conductors.

5. As an article of manufacture, a panel-board comprising a slab of insulating material; two parallel load bus-bars arranged longitudinally thereon parallel to the sides thereof, upon one end portion of said slab; two meter bus-bars as *p* and *q*, a portion of each also being arranged longitudinally on said slab and parallel to the edges thereof said load bus-bars and meter bus-bars occupying different end portions of said slab, transverse insulating-strips located between the meter bus-bars and the ends of the load bus-bars to thereby form a raceway extending transversely across said slab; and said load bus-bars being far enough apart to form a raceway between them, for the purpose described.

6. As an article of manufacture, a panel-board comprising a slab of insulating material; two parallel load bus-bars arranged longitudinally thereon parallel to the sides thereof, and located upon one half of the slab; a raceway between said load bus-bars, a removable cover for said raceway; a second raceway connecting with said first raceway and extending across the slab; a removable cover for said second raceway; and meter bus-bars located upon the other half of said slab and separated from said load bus-bars by said transverse raceway, all substantially for the purpose described.

7. As an article of manufacture, a slab of insulating material; a longitudinal and a transverse raceway thereon for the meter-conductors; bus-bars fixed on said slab at the sides of said raceways; a set of load-contacts fixed on the bus-bars bordering the longitudinal raceway; a second set of load-contacts insulated from the first but arranged adjacent thereto in pairs; means for connecting said second set of load-contacts to the meters; means for connecting the remaining bus-bars to the meters; and means for connecting the bus-bars on different sides of the transverse raceway to different supply-terminals.

8. As an article of manufacture, a slab of insulating material; a longitudinal and a transverse raceway thereon for the meter-conductors; bus-bars fixed on said slab at the sides of said raceways, a set of load-contacts fixed on the bus-bars bordering the longitudinal raceway; a second set of load-contacts insulated from the first but arranged adjacent thereto in pairs; means for connecting said second set of load-contacts to the meters; means for connecting the remaining bus-bars to the meters; means for connecting the bus-bars on different sides of the transverse raceway to different supply-terminals, and a metallic casing wherein said slab is inclosed and supported.



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**756,967. HOOF AND SHOE EXPANDER. GEORGE KELLER, Gilman, Ill. Filed Feb. 11, 1903. Serial No. 142,839. (No model.)**



*Claim.*—1. A hoof-expander having a transverse member, and a plurality of pivotal members mounted on the transverse member and having handle portions, offset hoof-engaging portions, and transverse connecting portions adapted for alinement when the hoof-engaging portions are fully extended.

2. A hoof-expander having a transverse slotted member, and a plurality of operating members pivoted in the slot, having handle portions, offset hoof-engaging portions, and intermediate transverse connecting portions adapted for alinement in the plane of the transverse member when the hoof-engaging portions are extended.

3. A hoof-expander comprising reversely-operating lever members each consisting of a handle-section and a serrated expansion-section disposed in a common plane and connected by a lateral section, a longitudinally-slotted frame embracing the opposite sides of said levers, and coupling-pins movably connecting said levers to said frame, substantially as described.

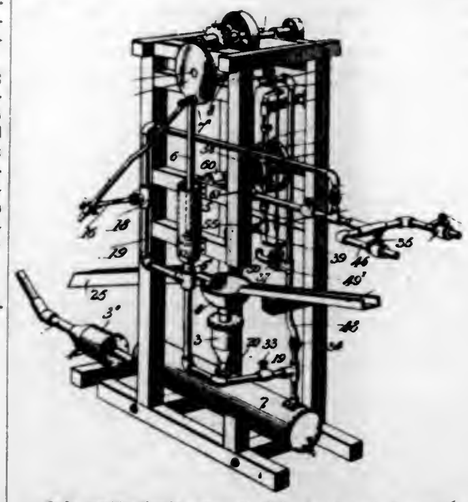
4. A hoof-expander consisting of a longitudinally-slotted frame, operating-levers pivotally mounted in said frame, and extending from one side thereof, said levers extending laterally in opposite directions within the slot of said frame, and having extensions projecting therefrom and provided with opposite serrated faces, substantially as described.

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**756,968. PUMP. JOHN O. KIRKSEY, Carthage, Mo., assignor of one-fourth to Hiram L. Shannon, Carthage, Mo. Filed Mar. 31, 1903. Serial No. 150,459. (No model.)**

*Claim.*—1. The combination in an apparatus of the character specified of an air-tight receiver provided with an inlet-valve adapted to open when the fluid-pressure within the receiver is low and an outlet-valve adapted to open when the fluid-pressure within the receiver is high, and means for alternately increasing and decreasing the pressure within the receiver, said means comprising an air-pump, a source of compressed fluid in addition to said air-pump, a pipe leading from said source of compressed fluid to said receiver, and a valve mounted in said pipe and alternately opened and closed by the compression and exhaust movements of said air-pump.

2. The combination in apparatus of the class described of an air-tight receiver having an inlet-valve adapted to open when the fluid-pressure within the receiver is low and an outlet-valve adapted to open when the fluid-pressure within said receiver is high, pipes leading into said receiver one of which communicates with a source of compressed fluid and the other with the open air, valves mounted in said pipes, and operative means for said valves comprising an operating-lever for each valve, a spring adapted to hold each valve-lever normally in position to close its valve, and a revolving member disposed between said levers and adapted to alternately actuate each lever to open the valve associated therewith.

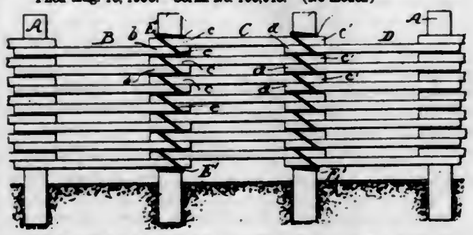


3. In combination in apparatus of the class described, a receiver, a pipe leading thereto from a source of compressed fluid, a second pipe leading from said receiver to the open air, a valve in each pipe, an operating-lever for each valve, a movable member associated with each valve-lever, said movable member being adjustable in length, a connection between said valve-levers comprising a spring and serving to hold said levers normally in position to close said valves, and means located between the said movable members for alternately engaging each member to open the valve associated therewith.

4. The combination with a receiver of a pipe leading thereto from a source of compressed fluid, a second pipe leading from said receiver to the open air, a valve provided in each pipe, a valve-lever associated with each valve for operating the same, a slidable member associated with each valve-lever and terminating in a curved rod disposed across the end thereof, said curved rods being placed opposite each other, a connection between said valve-levers comprising a spring and adapted to hold said levers in position to close the valves associated therewith and a revolving member between said curved terminals adapted to engage each of said terminals alternately to open the valve associated therewith.

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**756,969. FENCE. STEPHEN S. KNIGHT, Newmarket, Tenn. Filed Aug. 10, 1903. Serial No. 168,915. (No model.)**



*Claim.*—In a fence, the combination of a plurality of vertical posts set at convenient distances apart, and a plurality of horizontal rails overlapping each other in pairs on said posts, with wires having hooks at their ends, enwrapping said rails and posts, holding said rails in position on said posts, said wires themselves being secured by wrapping their ends around the tops and bottoms of said posts above and below said rails, and staples driven into said posts, bestriding said wires, and passing through said hooks, further securing said wires in position.

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**756,970. HEAT-RADIATING DRUM. EDWARD J. LANGELL and FRANK A. LANGELL, New Baltimore, Mich. Filed June 25, 1903. Serial No. 162,990. (No model.)**

*Claim.*—1. In a heat-radiating drum, the combination of a drum

an angular blank from flat metal, a hollow die through which the blank is forced, a plurality of hemispherical holders receiving the blank from the hollow die, means for forcing the blank through the hollow die and depositing it in one of the hemispherical dies, movable stripping devices for stripping the blank from said forcing means and a die for closing the point of the blank into hemispherical form and into contact with each other.

14. In a machine for forming hollow balls, means for forming a rectangular blank of flat metal, a hollow die, a movable hemispherical holder, means for forcing the blank through the hollow die and leaving it in said hemispherical holder, and a closing-die cooperating with the hemispherical die in closing the open end of the blank into hemispherical form with the points in contact, and an ejector adapted to act upon the outer surface of the closed blank and to force it from the closing-die.

15. In a machine for forming hollow balls, means for forming a rectangular blank of flat metal, a hollow die, a movable hemispherical holder, means for forcing the blank through the hollow die and leaving it in said hemispherical holder, and means for closing the open end of the blank into hemispherical form with the points in contact, said hemispherical holder and said closing means being both provided with ejectors adapted to act on the surface of the ball.

16. In a machine for forming hollow balls, means for cutting off a rectangular blank of flat metal, a hollow die, a punch for forcing the blank through the hollow die, a movable hemispherical holder, a closing-die adapted to close the open end of the blank and to force the points thereof into close contact, said closing-die carrying its own ejector, and mechanism for operating the cutting means, the punch and the closing-die and for positioning the hemispherical holder

17. In a machine for forming hollow balls, means for cutting off the blank of flat metal, a hollow die, a punch for forcing the blank through the hollow die, a plurality of hemispherical dies receiving the cupped blanks from the punch, a die for closing the cups and carrying its own ejector, and means for positioning the hemispherical dies alternately under the punch and under the closing-die, substantially as specified.

18. The die for closing the open end of the cupped rectangular blank, adapted to force the points of the blank closely together in hemispherical form and complete the ball, and carrying an ejector adapted to act on the outer surface of the ball and discharge it from the die.

19. The combination with the cupping devices and the closing-die, of the hemispherical holder, the cap surrounding the holder, means for positioning the cap vertically, and means for positioning the holder alternately under the cupping devices and under the dies, both the closing-die and the hemispherical holder having ejecting devices, substantially as specified.

20. The machine for making hollow balls having a movable holder for the cupped blanks, and means actuating such holder intermittently and adapted to start and stop the same slowly, such actuating means embracing a driving-shaft 19 and a driven shaft parallel with, but located eccentrically of the axis of the driving-shaft, and gearing for transmitting motion from the driving to the driven shaft.

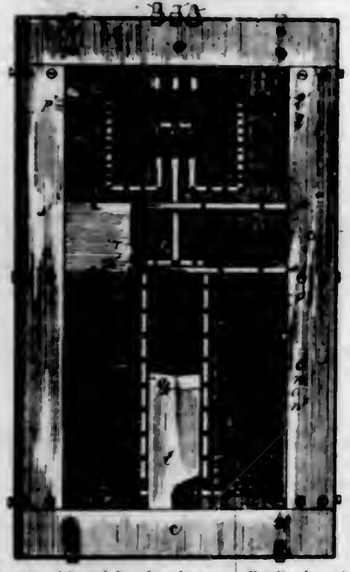
21. In a machine for forming hollow balls from sheet metal, a hemispherical lower die adapted to support the cupped blank during the closing operation, an upper hemispherical die for closing the cupped blank, and ejectors for both of said dies adapted to eject the completed ball from either die in which it may stick.

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**756,966. PANEL-BOARD FOR ELECTRIC DISTRIBUTION. GEORGE H. JOHNS, Chicago, Ill. Filed Nov. 20, 1903. Serial No. 182,001. (No model.)**

*Claim.*—1. In a panel-board for electric distribution, the combination of substantially parallel load bus-bars, a raceway between said load bus-bars for the meter-conductors; a set of load-contacts located at intervals along said bus-bars; a meter bus-bar; a meter connected to said load bus-bar and to said meter bus-bar and a set of fixed load-contacts, each fixed load-contact being adjacent to its respective load-contact on said load bus-bar, but insulated therefrom, and all of said load-contacts having their load connections arranged outside of the load bus-bars, whereby said raceway is free to receive the meter-conductors.

2. In a panel-board for electric-power distribution, the combination of a meter, meter-conductors, substantially parallel bus-bars connected to said meter through said meter-conductors, a raceway between the said bus-bars for receiving the meter-conductors, a set of load-contacts located at intervals along the bus-bar and arranged on the outer side thereof to leave said raceway free to receive the said meter-conductors only, and a fixed contact adjacent to each one of said load-contacts but insulated therefrom and adapted to be connected to the remaining polarity of the various loads, said fixed contacts being adapted for electric connection with the proper supply-terminals through said meter-conductors.



3. In a panel-board for electric-power distribution, the combination of a meter, meter-conductors, two parallel bus-bars as *g* and *h* connected to one of the supply-terminals and forming between them a raceway for the meter-conductors, load-contacts mounted on said bus-bars to lead outwardly to one polarity of the loads, fixed load-contacts adjacent to each of first-mentioned contacts but insulated therefrom and also adapted to lead outwardly to the remaining polarity of the loads whereby said raceway is free for receiving the said meter-conductors only.

4. In a panel-board for electric distribution, the combination of a slab of insulating material, two parallel load bus-bars mounted thereon, a raceway for the meter-conductors between said parallel bus-bars; meter bus-bars; insulated strips transverse to said load and forming a second raceway between said meter bus-bars and the ends of the load bus-bars, means for connecting said meter bus-bars to the meters, load-contacts arranged along said load bus-bars and adapted to lead outwardly to the loads; and other load-contacts adjacent to the aforesaid load-contacts in pairs, but insulated therefrom, said last-mentioned load-contacts being also adapted to lead outwardly to the loads, the said raceways being thereby free of conductors except the remaining meter-conductors.

5. As an article of manufacture, a panel-board comprising a slab of insulating material; two parallel load bus-bars arranged longitudinally thereon parallel to the sides thereof, upon one end portion of said slab; two meter bus-bars as *p* and *q*, a portion of each also being arranged longitudinally on said slab and parallel to the edges thereof said load bus-bars and meter bus-bars occupying different end portions of said slab, transverse insulating-strips located between the meter bus-bars and the ends of the load bus-bars to thereby form a raceway extending transversely across said slab; and said load bus-bars being far enough apart to form a raceway between them, for the purpose described.

6. As an article of manufacture, a panel-board comprising a slab of insulating material; two parallel load bus-bars arranged longitudinally thereon parallel to the sides thereof, and located upon one half of the slab; a raceway between said load bus-bars, a removable cover for said raceway; a second raceway connecting with said first raceway and extending across the slab; a removable cover for said second raceway; and meter bus-bars located upon the other half of said slab and separated from said load bus-bars by said transverse raceway, all substantially for the purpose described.

7. As an article of manufacture, a slab of insulating material; a longitudinal and a transverse raceway thereon for the meter-conductors; bus-bars fixed on said slab at the sides of said raceways; a set of load-contacts fixed on the bus-bars bordering the longitudinal raceway; a second set of load-contacts insulated from the first but arranged adjacent thereto in pairs; means for connecting said second set of load-contacts to the meters; means for connecting the remaining bus-bars to the meters; and means for connecting the bus-bars on different sides of the transverse raceway to different supply-terminals.



8. As an article of manufacture, a slab of insulating material; a longitudinal and a transverse raceway thereon for the meter-conductors; bus-bars fixed on said slab at the sides of said raceways, a set of load-contacts fixed on the bus-bars bordering the longitudinal raceway; a second set of load-contacts insulated from the first but arranged adjacent thereto in pairs; means for connecting said second set of load-contacts to the meters; means for connecting the remaining bus-bars to the meters; means for connecting the bus-bars on different sides of the transverse raceway to different supply-terminals, and a metallic casing wherein said slab is inclosed and supported.

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**756,967. HOOF AND SHOE EXPANDER. GEORGE KELLER, Gilman, Ill. Filed Feb. 11, 1903. Serial No. 142,639. (No model.)**



*Claim.*—1. A hoof-expander having a transverse member, and a plurality of pivotal members mounted on the transverse member and having handle portions, offset hoof-engaging portions, and transverse connecting portions adapted for alinement when the hoof-engaging portions are fully extended.

2. A hoof-expander having a transverse slotted member, and a plurality of operating members pivoted in the slot, having handle portions, offset hoof-engaging portions, and intermediate transverse connecting portions adapted for alinement in the plane of the transverse member when the hoof-engaging portions are extended.

3. A hoof-expander comprising reversely-operating lever members each consisting of a handle-section and a serrated expansion-section disposed in a common plane and connected by a lateral section, a longitudinally-slotted frame embracing the opposite sides of said levers, and coupling-pins movably connecting said levers to said frame, substantially as described.

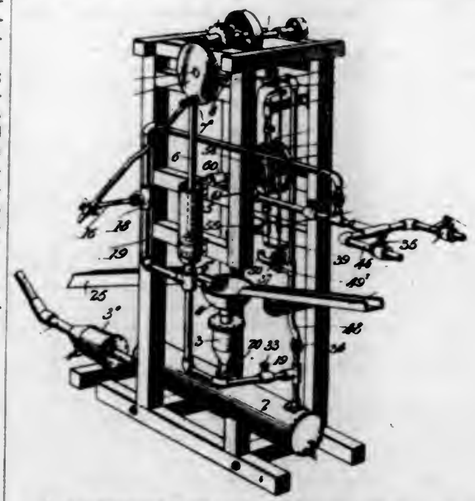
4. A hoof-expander consisting of a longitudinally-slotted frame, operating-levers pivotally mounted in said frame, and extending from one side thereof, said levers extending laterally in opposite directions within the slot of said frame, and having extensions projecting therefrom and provided with opposite serrated faces, substantially as described.

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**756,968. PUMP. JOHN G. KIRKSEY, Carthage, Mo., assignor of one-fourth to Hiram L. Shannon, Carthage, Mo. Filed Mar. 31, 1903. Serial No. 150,459. (No model.)**

*Claim.*—1. The combination in an apparatus of the character specified of an air-tight receiver provided with an inlet-valve adapted to open when the fluid-pressure within the receiver is low and an outlet-valve adapted to open when the fluid-pressure within the receiver is high, and means for alternately increasing and decreasing the pressure within the receiver, said means comprising an air-pump, a source of compressed fluid in addition to said air-pump, a pipe leading from said source of compressed fluid to said receiver, and a valve mounted in said pipe and alternately opened and closed by the compression and exhaust movements of said air-pump.

2. The combination in apparatus of the class described of an air-tight receiver having an inlet-valve adapted to open when the fluid-pressure within the receiver is low and an outlet-valve adapted to open when the fluid-pressure within said receiver is high, pipes leading into said receiver one of which communicates with a source of compressed fluid and the other with the open air, valves mounted in said pipes, and operative means for said valves comprising an operating-lever for each valve, a spring adapted to hold each valve-lever normally in position to close its valve, and a revolving member disposed between said levers and adapted to alternately actuate each lever to open the valve associated therewith.

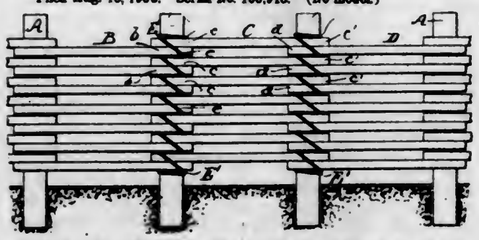


3. In combination in apparatus of the class described, a receiver, a pipe leading thereto from a source of compressed fluid, a second pipe leading from said receiver to the open air, a valve in each pipe, an operating-lever for each valve, a movable member associated with each valve-lever, said movable member being adjustable in length, a connection between said valve-levers comprising a spring and serving to hold said levers normally in position to close said valves, and means located between the said movable members for alternately engaging each member to open the valve associated therewith.

4. The combination with a receiver of a pipe leading thereto from a source of compressed fluid, a second pipe leading from said receiver to the open air, a valve provided in each pipe, a valve-lever associated with each valve for operating the same, a slidable member associated with each valve-lever and terminating in a curved rod disposed across the end thereof, said curved rods being placed opposite each other, a connection between said valve-levers comprising a spring and adapted to hold said levers in position to close the valves associated therewith and a revolving member between said curved terminals adapted to engage each of said terminals alternately to open the valve associated therewith.

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**756,969. FENCE. STEPHEN S. KNIGHT, Newmarket, Tenn. Filed Aug. 10, 1903. Serial No. 168,915. (No model.)**



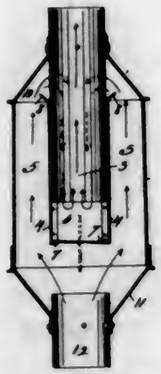
*Claim.*—In a fence, the combination of a plurality of vertical posts set at convenient distances apart, and a plurality of horizontal rails overlapping each other in pairs on said posts, with wires having hooks at their ends, enwrapping said rails and posts, holding said rails in position on said posts, said wires themselves being secured by wrapping their ends around the tops and bottoms of said posts above and below said rails, and staples driven into said posts, bestriding said wires, and passing through said hooks, further securing said wires in position.

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**756,970. HEAT-RADIATING DRUM. EDWARD J. LANGELL and FRANK A. LANGELL, New Baltimore, Mich. Filed June 25, 1903. Serial No. 162,990. (No model.)**

*Claim.*—1. In a heat-radiating drum, the combination of a drum

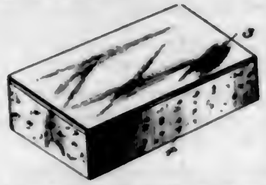
having vertical partitions therein dividing said drum into side and central chambers, a pipe-section leading from the drum communicating with said central chambers, the outer wall of the central chambers being formed by the wall of the drum, a damper to close the bottom of the central chambers, a pipe-section leading into the drum below said damper, the side and central chambers communicating at their upper ends, and all of said chambers being adapted to communicate at their lower ends with the pipe-section leading into the drum.



2. A heat-radiating drum comprising a cylindrical body having vertical partitions therein dividing said body into a plurality of chambers, comprising side and central chambers, the outer wall of the central chambers being formed by the wall of the drum, a pipe-section extending centrally into the drum and communicating at its lower end with the central chambers, a damper to close the lower ends of the central chambers below the end of said pipe-section, a pipe-section leading from the lower end of the drum, the central chambers communicating with the side chambers at the top of the drum, and the side chambers communicating with the pipe-section leading from the drum.

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**756,971. GLASS-FACED BRICK OR BUILDING-BLOCK.** JAMES H. LEIGHTON, Akron, Ohio, assignor of one-half to Hiram S. Sumner, Akron, Ohio. Filed May 25, 1903. Serial No. 158,699. (No model.)



*Claim.*—A building unit composed of a facing of glass or like material and a vitreous body having a spongy or porous nature welded to said facing by a fused joint, said body comprising sand, spar, alkali and a metallic oxid mixed and heated to about 2,000° to 2,500° Fahrenheit, substantially as specified.

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**756,972. METHOD OF EJECTING ROCK-CUTTINGS FROM HOLES IN ROCK WHILE DRILLING THEM.** JOHN G. LEYNER, Denver, Colo. Filed June 14, 1898. Serial No. 683,399. (No model.)

*Claim.*—1. The herein-described method of expelling rock-cuttings from holes in rock during the process of drilling the holes, which consists in simultaneously supplying to the holes during the drilling operation water and air, both under pressure.

2. The herein-described method of expelling rock-cuttings from holes in rock during the process of drilling the holes, which consists in uniting and commingling compressed water and compressed air and discharging the combined stream under pressure at the drilling-point during the drilling operation.

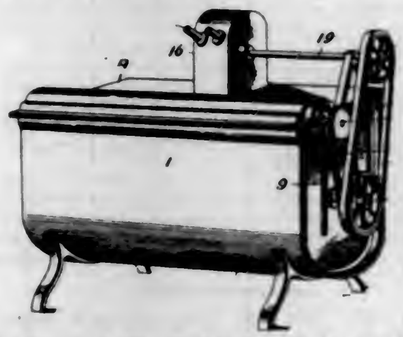
3. The herein-described method of expelling rock-cuttings from holes in rock during the process of drilling the holes, which consists in commingling with a rock-drilling engine, water under pressure and a portion of the actuating fluid of the engine under pressure, and discharging said commingled fluids under pressure at the drilling-point during the drilling operation.

**756,972.**



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**756,973. APPARATUS FOR WASHING FILTERING MATERIAL.** CHARLES H. LOEW, Cleveland, Ohio. Filed Aug. 31, 1903. Serial No. 171,401. (No model.)



*Claim.*—1. An apparatus for cleansing filtering material, comprising a tank having an agitator therein and means for introducing water into the interior of said tank in the form of a fierce splash or rain.

2. An apparatus for cleansing filtering material, comprising a tank provided with a large water-inlet opening, an agitator in said tank, a water-supply pipe, and means intermediate of said water-supply pipe and water-inlet opening, serving to reduce the pressure of the water in its passage from said pipe to said opening, whereby the water is introduced into the interior of the tank in the form of a spray or rain, for the purpose set forth.

3. An apparatus for cleaning filtering material, comprising a tank provided with a large water-inlet opening, an agitator in said tank, and a water-motor connected with said agitator and arranged contiguous to said large water-inlet opening, whereby the pressure of water is reduced and said water introduced into the tank in the form of a spray or rain and the energy derived therefrom employed to operate the agitator.

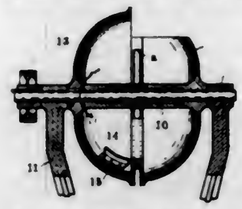
4. An apparatus for cleaning filtering material, comprising a tank provided with a large water-inlet opening in its top, a casing located over said opening and having an open bottom in communication therewith, means through which water under pressure is supplied to said casing, a water-wheel in said casing, and an agitator in said tank connected with said wheel and driven thereby.

5. An apparatus for cleaning filtering material, comprising a tank provided with a large water-inlet opening, a casing located over said opening and having an open bottom in communication therewith, means through which water under pressure is supplied to said casing, a water-wheel in said casing, an agitator in said tank connected with said wheel and driven thereby, a rotative screen in said tank connected with said agitator, and a discharge-opening from the tank leading from said screen.



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**756,974. FEEDING-HOPPER.** CHARLES R. MOON, Muncie, Ind. Filed July 13, 1903. Serial No. 165,348. (No model.)



*Claim.*—1. The combination, in a feeding-hopper, of two hollow members arranged with their open ends adjacent to each other, one rotatable and the other fixed, and provided with a delivery slot or space at or near the adjacent edges of said members, a guard carried by the fixed member and covering the lower portion of said slot or space, and means for rotating the rotatable member.

2. The combination, in a feeding-hopper, of a fixed and a rotatable member together forming the inclosing walls of a receiving-chamber, a delivery-opening at or near the adjacent edges of said members, a guard fixedly positioned and extending over the lower portion of said opening, a projection on the inner surface of the rotating member for engaging with and moving the articles placed therein, and means for rotating said rotatable member.

3. The combination, in a feeding-hopper, of a fixed member and a rotatable member constituting the walls of the receiving-chamber, a slot or space forming a delivery-opening at or near the point where the said members come together, a fixed shield covering the lower portion of said slot or space the interior diameter of which is greater than that of said slot or space whereby tracks for the heads or larger portions of the articles are provided, said tracks terminating in a delivery-point whence the articles can be taken successively, as desired.

4. The combination, in a feeding-hopper, of a cup-shaped rotating member, a fixed member arranged adjacent the open end of the cup-shaped member with a delivery-channel between, and a guard covering the lower portion of said channel.

5. The combination, in a feeding-hopper, of a cup-shaped rotating member, a fixed member arranged adjacent the open end of the cup-shaped member with a delivery-channel between, a guard covering the lower portion of said channel, a feeding projection on the inner surface of the rotating member for engaging with and moving the articles placed therein.

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**756,975. VARNISH.** ARNAUD MULLER-JACOBS, Richmond Hill, N. Y., assignor to Cosmos Chemical Company, a Corporation of New York. Filed July 2, 1903. Serial No. 164,004. (No specimens.)

*Claim.*—1. The combination of stear-amid with varnish.

2. The combination of stear-amid with varnish solutions.

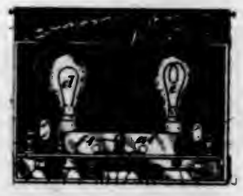
3. The combination of solutions of stear-amid and varnish elements.

4. The combination of solutions of an amid of the higher fatty acids in which some of the hydrogen has been replaced by an alkyl radical and varnish elements.

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**756,976. PORTABLE TESTING AND COMPARING INSTRUMENT FOR ELECTRIC INCANDESCENT LAMPS.** ALBERT MCCANDLISH, George Lane, Bradbury, England. Filed June 26, 1903. Serial No. 163,184. (No model.)

*Claim.*—1. A portable testing and comparing instrument for an electric incandescent lamp, comprising a casing, a plurality of lamp-sockets mounted therein adjacent to one end thereof, a watt or ampere meter in said casing adjacent to the other end thereof, electrical conductors in communication with said lamp-sockets and said wattmeter and means for connecting said instrument with an ordinary electric-light circuit, substantially as shown and described.



2. In a device of the class described, a casing both ends of which are hinged thereto, a coating of black material on the inner side of said casing, a laterally-arranged partition at one end of said casing, a plurality of electric-lamp sockets adjacent thereto and on either side thereof, a watt or ampere meter in the other end of said casing, an electric lamp in each of said sockets, and means for energizing said lamps and said watt or ampere meter, substantially as shown and described.

3. In a device of the class described, a casing both ends of which are hinged thereto, a partition-plate laterally arranged in one end of said casing, an electric-lamp socket adjacent thereto and on either side thereof, a watt or ampere meter in the other end of said casing, a positive and negative binding-post adjacent to said watt or ampere meter, a spring-operated slidably-movable transversely-arranged bar in the end of said casing adjacent to said binding-posts, a spring-plate mounted in said casing one, either side of said movable bar and adapted to make electric contact therewith, a contact-point normally in connection with each of said spring-plates, electrical conductors connecting said electrical lamps, watt or ampere meter, binding-posts, contact-points, spring-plates and movable bar, substantially as shown and described.

4. A device of the class described, comprising a casing each end of which is hinged thereto, a plurality of lamp-sockets mounted therein, an electric lamp in each of said sockets, a watt or ampere meter at the opposite end of said basing, a slidably-movable bar adjacent to said watt or ampere meter, spring-plates adjacent to said slidably-movable bar and adapted to make electrical contact therewith, a positive and negative binding-post adjacent to said meter, contact-points normally in electrical communication with said spring-plates and electrical conductors connecting said lamps, meter, binding-post, slidably-movable bar, spring-plates and contacts consisting of a wire connecting the positive binding-post on one side of said casing with the contact-points adjacent thereto, said wire also being connected with one pole of said meter, a wire connecting another pole of said meter with said slidably-movable bar, a wire connecting one of said spring-plates with one of said lamp-sockets, a lamp placed therein, a wire connecting the other of said spring-plates with the other of said lamp-sockets a lamp therein and a wire connecting said lamp-sockets and lamps with the negative binding-posts in said casing, substantially as shown and described.

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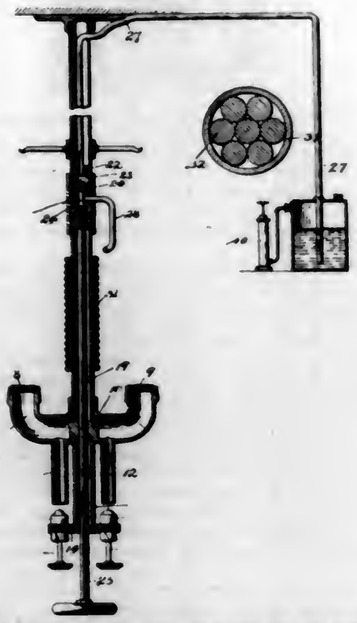
**756,977. LAMP.** JOHN P. NAGEL, Chicago, Ill. Filed Aug. 15, 1901. Serial No. 72,065. (No model.)

*Claim.*—1. In a lamp, a burner, a support for said burner, said support being provided with a plug having a valve-chamber, means for supplying a suitable fluid to said chamber, a generator communicating with said chamber and arranged in proximity to the burner, whereby the fluid in the generator will be gasified, a valve for controlling the flow of fluid from the valve-chamber to the generator, means for conducting the gas from the generator to the burner, a core inside of said generator consisting of a plurality of twisted strands, and a second valve for controlling the flow of gas to the burner.

2. In a lamp, a plurality of burners, a supporting-tube for said burners, said tube being provided with a plug having a valve-chamber, means for supplying a suitable fluid to said chamber, a generator communicating with the said valve-chamber and surrounding the burner-supporting tube in proximity to the burners, whereby the fluid in the generator will be gasified, a valve for controlling the flow of fluid from the valve-chamber to the generator, means for conducting gas from said generator to the burners, and a valve for each burner for controlling the flow of gas thereto.

3. In a lamp, a plurality of burners, a tube for supporting said burners, said tube being provided with a plug having a valve-cham-

ber, a second plug in the tube having a perforation in communication with the valve-chamber, a pipe leading into the tube above the second plug for conveying a suitable fluid to the valve-chamber, a generator communicating with said valve-chamber and consisting of a pipe coiled around said burner-supporting tube and having branches at its lower end communicating with said burners, a core in said generator consisting of a plurality of twisted strands, a valve for controlling the flow of fluid from the valve-chamber to the generator, and a valve for each burner for controlling the flow of gas thereto.



4. In a lamp, a burner, a tube connected with the burner and extending above and below the same, a plug in the upper end of the tube having a valve-chamber, a generator in communication with the valve-chamber arranged in proximity to the burner, whereby the fluid in the burner will be gasified, means for supplying a suitable fluid to the valve-chamber, a valve for controlling the flow of the fluid from the valve-chamber to the generator, having a stem extending longitudinally of and below the tube and provided at a point below said tube with an actuating device, means for supplying gas from the generator to the burner, and a second valve for controlling the flow of gas to the burner.

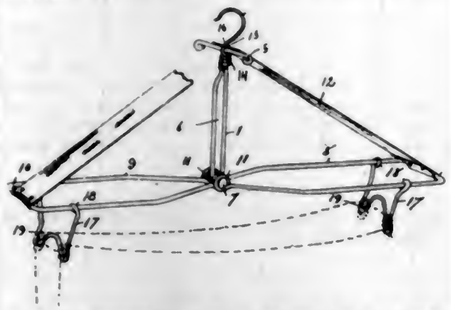
5. In a lamp, a burner, a supporting-tube for said burner, said tube being provided with a plug having a valve-chamber, means for supplying a suitable fluid to said chamber, a generator communicating with said valve-chamber and surrounding the burner-supporting tube in proximity to the burner whereby the fluid in the generator will be gasified, a valve for controlling the flow of fluid from the valve-chamber to the generator, means for conducting gas from said generator to the burner, and a valve for said burner for controlling the flow of gas thereto.

6. In a lamp, a burner, a supporting-tube for said burner, said tube having a chamber therein, means for supplying a suitable fluid to said chamber, a generator communicating with said chamber and surrounding the burner-supporting tube in proximity to the burner whereby the fluid in the generator will be gasified, valve mechanism for controlling the supply of fluid from said chamber to said generator, means for conducting gas from said generator to said burner, and a valve for the burner for controlling the flow of gas thereto.

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**756,978. GARMENT-HANGER.** WILLIAM H. OLMSTEAD and JAMES D. COMEY, Detroit, Mich. Filed Mar. 5, 1903. Serial No. 146,428. (No model.)

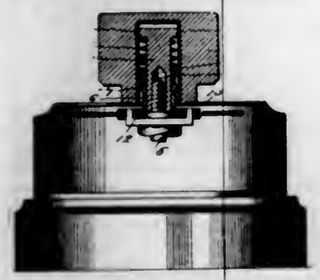
*Claim.*—1. In a garment-hanger, the combination of the central loop, a pintle slidable in said loop, side braces having their inner ends journaled on said pintle, a strap attached at its ends to the outer ends of said braces, a support at the upper end of the central loop, over which said strap passes, a hook swiveled to the upper end of said loop, an eyelet in the strap adapted to receive the stem of said hook.



2. In a garment-hanger, the combination of a central frame member having a longitudinal way therein, a pintle adapted to slide vertically in said way, side braces having their inner ends journaled on said pintle, the upper end of the central portion of the frame having a transverse cross-arm, a hook swiveled thereon below said cross-arm and a strap attached at its opposite ends to the outer ends of said braces and supported at its central portion by said cross-arm.

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**756,979. HANDLE FOR ROTARY SNAP ELECTRIC SWITCHES.** CHARLES G. PERKINS, Hartford, Conn. Filed Oct. 29, 1903. Serial No. 178,961. (No model.)



*Claim.*—1. A handle for a rotary snap electric switch having a recess containing a part that is longitudinally movable in the recess and is adapted to be connected with the switch-spindle, a part that is also longitudinally movable in the recess and is adapted to thrust against a part to be held outside the recess, and yielding means thrusting the two longitudinally-movable parts in opposite directions, substantially as specified.

2. A handle for a rotary snap electric switch having a longitudinally-movable block, a yielding connection between the handle and the block, a longitudinally-movable collar, and a yielding connection between the handle and the collar, substantially as specified.

3. A handle for a rotary snap electric switch having a thimble fixed with relation to the body, a block fitting and longitudinally movable in the thimble, a yielding connection between the thimble and the block, a collar longitudinally movable in the thimble, and a yielding connection between the collar and the thimble, substantially as specified.

4. A handle for a rotary snap electric switch having a thimble fixed with relation to the body, a longitudinally-movable block in but non-rotatable with relation to thimble, a spring holding the block inwardly, a collar movable in the thimble, and a spring thrusting the collar outwardly, substantially as specified.

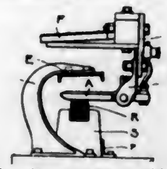
5. A handle for a rotary snap electric switch having a thimble fixed with relation to the body, a block movable longitudinally in the thimble, a collar movable longitudinally in the thimble, and means thrusting the block and collar in opposite directions, substantially as specified.

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**756,980. ELECTRIC RAILWAY.** WILLIAM B. POTTER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed July 5, 1902. Serial No. 114,328. (No model.)

*Claim.*—1. In an electric-railway system, a third rail in combination with a sectionalized metallic protecting-strip therefor, the sections of said protecting-strip being insulated from each other.





2. In an electric-railway system, a third rail in combination with a sectionalized metallic protecting-strip secured above the same and overhanging the said rail on both sides thereof, the adjacent sections of said protecting-strip being out of contact with each other.

3. In an electric-railway system, a third rail in combination with a sectionalized metallic protecting-strip secured above the same with a small clearance between the said strip and the top of the rail, the sections of said protecting-strip being electrically insulated from each other.

4. In an electric-railway system, a third rail the upper surface of which is adapted to be engaged by a current-collector, said rail having a small depth with respect to its cross-section, insulating-supports therefor, and a metallic protecting-strip supported entirely above the upper surface of said rail but in close proximity thereto.

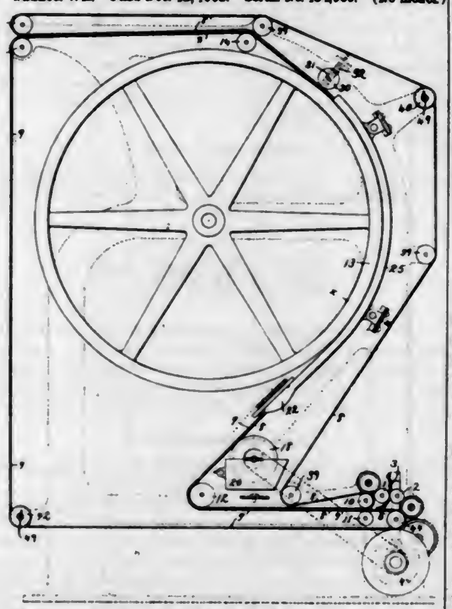
5. In an electric-railway system, a third rail the upper surface of which is adapted to be engaged by a current-collector in combination with a sectionalized metallic strip mounted above the same in close proximity thereto and overhanging the said rail on both sides thereof, the overhanging part of said strip not extending below the upper surface of said rail on either side of the same.

6. In an electric railway, a third rail, a series of insulating-supports therefor, a guard for said rail composed merely of a shallow channel-bar, and a series of brackets for supporting said channel-bar in substantially a horizontal plane so that no part of said channel-bar extends below the upper surface of said third rail.

7. The combination with a third-rail conductor, of a guard therefor consisting merely of a thin metal strip supported in substantially a horizontal plane by means of brackets fastened to the cross-ties in such a manner as to allow a small clearance between the guard and the top of the third-rail conductor and to allow ready access to the upper surface of the rail from either side of said rail.

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**756,981. ENVELOP-MACHINE.** WILLIAM L. RINEHART, Milwaukee, Wis. Filed Dec. 13, 1902. Serial No. 134,909. (No model.)



*Claim.*—1. In a machine of the described class, the combination of a flexible stock-conveyer; pasting and folding devices operative in cooperation with said conveyer; a drum, bearing against the conveyer and adapted to impart a gripping pressure to the conveyer members which engage the stock; and a segmental guide extending from the folder partially around the drum, said guide being formed with angle flanges adapted to hold the folded edges of the stock in position.

2. In a machine of the described class, the combination of a flexible stock-conveyer, comprising superposed members adapted to hold the stock between them; pasting, folding and sticking devices arranged in cooperative relation to the conveyer; a drum located between the folding and sticking devices with the conveyer running on a segment of its periphery; and segmental flanged guides extending along that portion of the drum which is in conveyer-contact, said guides being formed to hold the folded edges of the stock in position pending the operation of the sticking devices.

3. In a machine of the described class, the combination with a paper-folding device having curved guides at the sides adapted to turn the edges of the stock; of a guideway extending from the rear of the folding device, adapted to engage and hold the turned edges in position; a conveyer for the stock, arranged to convey the same through the folding device and guideway; and means for applying pressure to the conveyer, whereby the same is made to grip the stock during its passage through said guide.

4. In a machine of the described class, a set of guides for holding the folded edges of the stock; a conveyer having superposed bands adapted to receive the stock between them, and arranged to convey it along the guides; and means for applying pressure to the conveyer while passing the guides.

5. In a machine of the described class, a segmental guideway, comprising two angularly-flanged bars; a drum revolving in close proximity to the guideway on the concave side; and a set of superposed pairs of conveyer-tapes bearing on the drum between the bars forming the guideway.

6. In a machine of the described class, a segmental guideway, comprising two angularly-flanged bars; a drum revolving in close proximity to the guideway on the concave side; and a set of superposed pairs of conveyer-tapes bearing on the drum between the bars forming the guideway; and means for adjusting one of the guide-bars with reference to the other.

7. In a machine of the described class, a segmental guideway, comprising two angularly-flanged bars; a drum revolving in close proximity to the guideway on the concave side; a set of superposed pairs of conveyer-tapes bearing on the drum between the bars forming the guideway; and means for adjusting one of the guide-bars with reference to the other; together with means for correspondingly adjusting one pair of tapes to and from another pair of the set.

8. In a machine of the described class, the combination of sets of conveyer-tapes, arranged in superposed pairs; tape-adjusting pulleys for the tapes of at least one pair; means for adjusting the pulleys to regulate the positions of the tapes; a set of gluing-wheels adjustable in correspondence with the positions of the tapes; a drum bearing upon the tapes beyond the gluing-wheels; a sheet-folding device, and segmental guideway formed in sections, one at each side of the tape conveyer, and adjustable in correspondence therewith; said segmental guideway being formed with a curvature conforming substantially to that of the drum, and located in close proximity thereto.

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**756,982. VARIABLE-POWER LIFTING-JACK.** EUGENE M. ROBINSON, Chicago, Ill., assignor to himself, and WILLIAM H. FINLEY, Winnetka, Ill. Filed Apr. 6, 1901. Serial No. 54,714. (No model.)

*Claim.*—1. In a lifting-jack, the combination of the frame of the jack, lifting mechanism, a main lever adapted to operate the said lifting mechanism, an auxiliary lever pivoted at the end to the frame at a distance from the pivotal point of the main lever less than the length of the main lever, and a connection between the said levers secured to one lever at a fixed point adapted to slide along the other lever, for the purposes set forth.

2. In a lifting-jack, the combination of the frame of the jack, lifting mechanism, a main lever adapted to operate said lifting mechanism, an auxiliary lever pivoted at a distance from the pivotal point of the main lever less than the length of the main lever, a connection between said levers secured to one lever at a fixed point and adapted to slide along the other lever, and means for detachably securing a working handle to each of the said levers.

3. In a lifting-jack, the combination of a frame, a lifting-screw, a ratchet-wheel adapted to transmit power to said screw, a main lever adapted to operate said ratchet-wheel, an auxiliary lever pivoted at its end to the frame at a distance from the pivotal point of the main lever less than the length of the main lever, and a connec-

tion between the said levers secured to one lever at a fixed point and adapted to slide on the other lever for the purposes set forth.




4. In a lifting-jack, the combination of a frame, a lifting-screw, a ratchet-wheel adapted to transmit power to said screw, a main lever adapted to operate said ratchet-wheel, an auxiliary lever pivoted to the frame at its end at a distance from the pivotal point of the main lever less than the length of the main lever, a connection between the said levers rigidly secured to one lever and adapted to slide on the other lever, and means for detachably securing a working handle to each of said levers.

5. In a lifting-jack, the combination of the frame of the jack, a lifting-screw, a main lever adapted to operate said lifting-screw, connecting mechanism between the said lever and said screw, an auxiliary lever pivoted at its end to the frame at a point distant from the pivotal point of the main lever less than the length of the main lever, a pin or stud on one of the said levers entering a cam-slot in the other lever, and means for detachably securing a working handle to said levers, for the purposes set forth.

6. In a lifting-jack, in combination with the frame of the jack, a lifting-screw, means for securing said screw against rotation while permitting it to move up and down, a nut or wheel upon said lifting-screw, a main lever having a ratchet connection with said nut or wheel, an auxiliary lever pivoted at its end to the frame at a distance from the pivotal point of the main lever less than the length of the main lever, a pin or stud on one of said levers entering a cam-slot in the other lever, and means for detachably securing a working handle to said lever, for the purposes set forth.

7. In a lifting-jack, in combination with the frame, a lifting-screw adapted to move up and down in the frame, means for preventing the screw from turning on its axis, a bevel-gear threaded on said screw, a shaft journaled in the frame at right angles to the screw, another bevel-gear on said shaft meshing with the first bevel-gear, a ratchet-wheel on said shaft, a main lever, a pawl on said lever engaging said ratchet-wheel, means for reversing said pawl so that the direction of the motion of the screw is reversed, an auxiliary lever pivoted at its end to the frame at a distance from the pivotal point of the main lever less than the length of the main lever, and a connection between said levers secured to one lever at a fixed point and adapted to slide along the other lever for the purposes set forth.

8. In a lifting-jack, in combination with the frame of the jack, a lifting-screw adapted to move up and down in the frame, means for preventing the screw from turning on its axis, a bevel-gear threaded on said screw, a shaft journaled in the frame at right angles to the screw, another bevel-gear on said shaft, a main lever, a pawl on said lever engaging said ratchet-wheel, means for reversing said pawl so that the direction of motion of the screw is reversed, an auxiliary lever pivoted at its end to the frame at a distance from the pivotal point of the main lever less than the length of the main lever, an elongated slot in one of said levers, a pin or stud in the other lever adapted to slide backward and forward in the said slot, and means for detachably securing working handles in said levers for the purposes set forth.

9. In a lifting-jack in combination with the frame, a lifting-screw adapted to move up and down, means for preventing the screw from turning on its axis, a bevel-gear threaded on said screw, a shaft journaled in the frame at right angles to the screw, another bevel-gear on said shaft meshing with the first bevel-gear, means for attaching a wrench to said shaft, a ratchet-wheel on said shaft, a lever journaled on said shaft, a pawl on the said lever engaging said ratchet-wheel, means for reversing said pawl so that the direction of the motion of the said screw is reversed, an auxiliary lever pivoted at its end to the frame at a point distant from the pivotal point of the main lever less than the length of the main lever, and a connection between the said levers secured to one lever at a fixed point and adapted to slide over the other lever, for the purposes set forth.

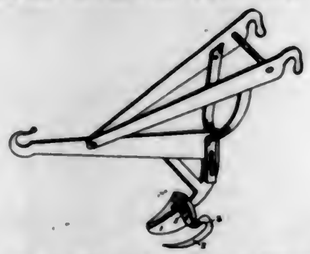
10. In a lifting-jack, the combination of the frame of the jack, lifting mechanism, a main lever adapted to operate said lifting mechanism, an auxiliary lever pivoted at its end to the frame at a point distant from the pivotal point of the main lever less than the length of the main lever, a cam-slot in the main lever and a pin on the auxiliary lever adapted to slide in the said slot, for the purposes set forth.

11. In a lifting-jack, the combination of the frame, the lifting-screw, a ratchet-wheel adapted to transmit power to said lifting-screw, a main lever adapted to operate said ratchet-wheel, an auxiliary lever pivoted at its end to the frame at a point distant from the pivotal point of the main lever less than the length of the main lever, a cam-slot in the main lever and a pin on the auxiliary lever adapted to slide in the said slot, for the purposes set forth.

12. In a lifting-jack, in combination with the frame of the jack, a lifting-screw, a main lever adapted to operate said lifting-screw, connecting mechanism between said lever and said screw, an auxiliary lever pivoted at its end to the frame at a point distant from the pivotal point of the main lever less than the length of the main lever, a cam-slot in the main lever, and a pin or stud on the auxiliary lever entering said slot, for the purposes set forth.

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**756,983. CULTIVATOR ATTACHMENT. ARAMIAS RODOCKER, Massillon, Ohio. Filed Jan. 4, 1904. Serial No. 187,661. (No model.)**



*Claim.*—In an attachment for cultivators, a lifting-arm secured to the shovel of the cultivator and located at one side of the shovel, said arm extended rearward at its upper end and downward and forward to the bottom end thereof, said downward and forward extending portion spaced from the edge of the shovel, substantially as and for the purpose specified.

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**756,984. EYEGLASS ATTACHMENT FOR SUSPENDING SUPPLEMENTAL EYEGLASSES. WILL X. SEARLE, Petoskey, Mich. Filed Aug. 20, 1903. Serial No. 170,219. (No model.)**



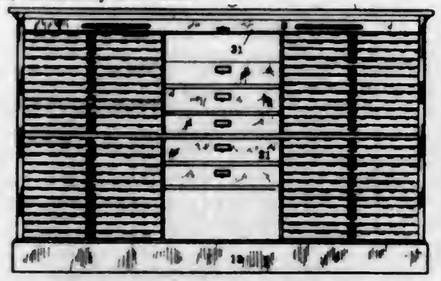
*Claim.*—As an article of manufacture, an attachment for suspending supplemental eyeglasses, the same comprising a removable hook device consisting of a single length of spring-wire having an end portion bent into a loop to form an attaching-eye and having the body portion thereof recurved to provide a spring-engaging portion or shank.

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**756,985. TICKET-CASE. ALBERT H. SELLARS, Indianapolis, Ind. Filed July 11, 1903. Serial No. 165,072. (No model.)**

*Claim.*—1. In a ticket-cabinet, drawers containing comparatively long narrow compartments provided near their forward ends with ticket-receiving pins, whereby the tickets when placed therein are held to desired position, substantially as shown and described.

2. The combination, in a ticket-cabinet, of drawers containing a multiplicity of long comparatively narrow compartments arranged to fit the tickets to be contained therein, a pin arranged at the forward end of each compartment and adapted to extend through the perforations in the agents' stubs in said tickets, the top of said cabinet forming a table or desk for the ticket-seller's use in doing his work, substantially as set forth.

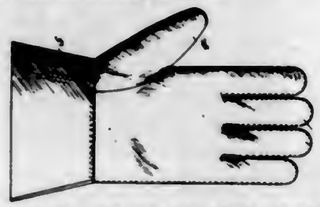



3. In a ticket-cabinet, ticket-containing drawers provided near their forward ends with ticket-receiving pins adapted to pass through holes in the ends of the tickets and hold said tickets to desired position, substantially as set forth.

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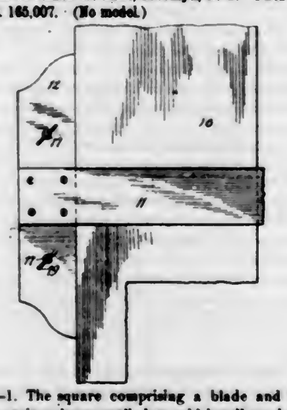
**756,986. REVERSIBLE GLOVE. HORATIO S. SIMPSON, Mankato, Kans., assignor of one-half to W. B. Wood, Mankato, Kans. Filed Dec. 10, 1903. Serial No. 184,645. (No model.)**



*Claim.*—A hand-covering comprising a body or hand blank composed of corresponding hand-sections of like form having an approximately V-shaped cut-away portion extending from the upper horizontal edge portion thereof and exactly intermediate the side edges thereof, said hand-sections being folded upon each other upon a line intermediate the side edges thereof and the sides of the V-shaped cut-away portion thereof, a thumb-blank of approximately V shape and composed of upper and lower sides of the same size and outline, said thumb-blank having the upper and lower sides aforesaid folded upon each other and secured to the body hand-blank at the V-shaped cut-away portion, and a wristband attached to the upper edge portion of the hand-section and the upper edge portions of the thumb sides.

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**756,987. T-SQUARE. FRANK R. SMALL, Brooklyn, N. Y., assignor of one-half to James W. Kent, Brooklyn, N. Y. Filed July 10, 1903. Serial No. 165,007. (No model.)**




*Claim.*—1. The square comprising a blade and handle, combined with a spring-clamp applied to said handle and extending inwardly therefrom to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of same; substantially as set forth.

2. The square comprising the blade and handle, combined with a spring-clamp applied to said handle and comprising an arm extending inwardly from said handle and carrying a runner to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of same; substantially as set forth.

3. The square comprising the blade and handle, combined with a spring-clamp applied to said handle and comprising an arm extending inwardly from said handle and carrying a runner to yieldingly engage the lower surface of a drawing-board and bied said blade against the upper surface of same, said arm being adapted to yield laterally in a pivotal manner when the square is moved along the board, whereby said runner will become deflected and draw said handle against the edge of the board; substantially as set forth.

4. The square comprising the blade and handle, combined with a spring-clamp applied to said handle and comprising an arm extending inwardly from said handle and carrying a roller having a soft periphery to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of the same; substantially as set forth.

5. The square comprising the blade and handle, combined with a spring-clamp applied to said handle and comprising an arm extending inwardly from said handle and carrying a roller having a soft periphery to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of the same, said arm being adapted to yield laterally in a pivotal manner when the square is moved along the board, whereby said roller will become deflected and draw said handle against the edge of the board; substantially as set forth.

6. The square comprising a blade and handle, combined with a clamp applied to said handle and comprising a pair of springs having inwardly-extending arms carrying runners to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of same; substantially as set forth.

7. The square comprising a blade and handle, combined with a clamp applied to said handle and comprising a pair of springs having inwardly-extending arms carrying runners to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of same, said arms being flexible to a limited degree whereby they are enabled to yield laterally when the square is moved along the board and deflect said runners for drawing said handle against the edge of the board; substantially as set forth.

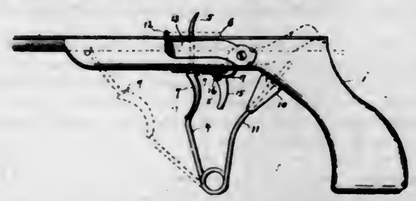
8. The square comprising a blade and handle, combined with a clamp applied to said handle and comprising a pair of springs having inwardly-extending arms carrying rollers having soft peripheries to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of same; substantially as set forth.

9. The square comprising a blade and handle, combined with a clamp applied to said handle and comprising a pair of springs having inwardly-extending arms carrying rollers having soft peripheries to yieldingly engage the lower surface of a drawing-board and bind said blade against the upper surface of same; said arms being flexible to a limited extent whereby they are enabled to yield laterally when the square is moved along the board and deflect said rollers for drawing said handle against the edge of the board; substantially as set forth.

10. The square provided upon its handle with the coiled springs 13 having the inwardly-extending arms 14 carrying the rollers 15 for engagement with the lower surface of a drawing-board and to bind the blade of the square against the upper surface of same; substantially as set forth.

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**756,988. TOY PISTOL. ELDRIDGE J. SMITH, Washington, D. C., assignor, by direct and mesne assignments, to Parker Bros., Inc., Salem, Mass., a Corporation of Maine. Filed Sept. 11, 1902. Renewed Sept. 4, 1903. Serial No. 172,027. (No model.)**



*Claim.*—1. A disk-projector having a bar for impelling a disk and a surface for directing the same, a spring attached to the pro

jector and adapted to engage the edge of the disk before it is impelled.

2. A disk-projector having a bar for impelling a disk and a surface for directing the same, a disk-rotator located behind the point where the bar disengages the disk and adapted to engage the disk.

3. A disk-projector having a movable bar for impelling a disk and a surface for directing the same, a disk-rotator located on the projector at a point between the starting and stopping points of said bar and adapted to engage the disk.

4. A disk-projector consisting of a means for directing the disk, a spring attached to said means and having an impelling-lever adapted to engage the disk, a spring also attached to said means and adapted to engage the edge of the disk.

5. A disk-projector consisting of a means for directing the disk, a spring attached to said means and having an impelling-lever adapted to engage the disk, a spring also attached to said means and adapted to engage the edge of the disk in advance of the point of engagement of the impelling-lever.

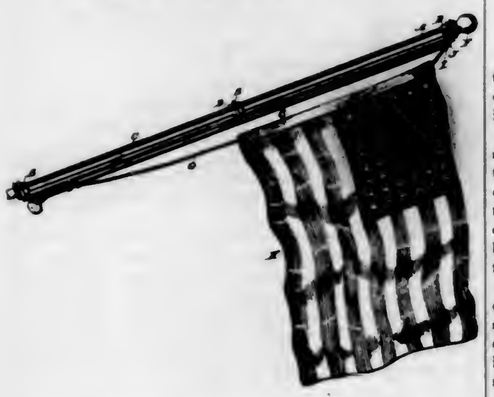
6. A disk-projector consisting of a slotted barrel having a surface for directing the disk, a spring attached to said barrel and having an impelling-lever entering the slot of the barrel, a trigger attached to said barrel and adapted to retain said impelling-lever against the tension of the said spring and a spring attached to the barrel and adapted to engage the edge of the disk.

7. A disk-projector having a surface for directing a disk, a spring-actuated impelling-bar having its upper end curved backward and adapted to engage the disk.

8. A disk-projector provided with disk-projecting and rotating means, and means to produce projecting movement thereof in the line of travel of the disk.

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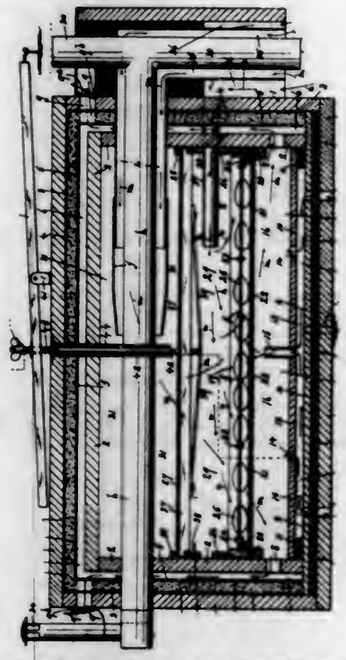
**756,989. FLAGPOLE. HERMAN G. SUER, New York, N. Y., assignor of one-half to Samuel A. Saucier, New York, N. Y. Filed Aug. 9, 1902. Serial No. 119,004. (No model.)**



*Claim.*—1. The combination with a flagpole upon which a flag is required to be moved longitudinally, of a holder of a length equal to that portion of said pole required to be traversed by said flag, said holder mounted on and to rotate about said pole and restricted against longitudinal movement upon said pole, said holder comprising a head having a swivel mounted to rotate about an axis lying outside of and parallel with the axis of said pole, a foot having a swivel mounted to rotate about an axis in alinement with the axis of said swivel in said head, and a member rigidly connecting said head and said foot maintaining the alinement of the axis of said swivel.

2. The combination with a flagpole and a flag to be moved longitudinally thereon, of a holder of a length equal to that portion of said pole required to be traversed by said flag, said holder mounted on and to rotate about said pole and restricted against longitudinal movement upon said pole, said holder comprising a swivel at its upper end mounted to rotate about an axis lying outside of and parallel with the axis of said pole, a second swivel at its lower end mounted to rotate about an axis in alinement with the axis of said first swivel, a member carrying, and maintaining the alinement of, said swivels, flag-cord guides on said swivels and a flag-cord carrying said flag passed through said flag-cord guides without twisting.

**756,990. INCUBATOR AND BROODER. EDWARD T. TOLHURST, London, and WILLIAM WILSON, London township, Canada. Filed Aug. 3, 1903. Serial No. 168,066. (No model.)**



*Claim.*—1. In a device of the class described, a box or receptacle consisting of inner and outer spaced-apart inclosing walls, in combination with layers of strawboard placed between spaced-apart inclosing walls, substantially as and for the purpose set forth.

2. In a device of the class described, a box or receptacle consisting of inner and outer spaced-apart inclosing walls, in combination with a lining of strawboard adjacent to the inner side of the outer inclosing wall, a layer of silk floss or similar material adjacent to said strawboard lining, a strawboard partition at the inner side of said silk floss, and an air space or chamber between said strawboard partition and said inner inclosing wall, substantially as and for the purpose set forth.

3. In a device of the class described, a box or receptacle, in combination with a flue-pipe, a branch from which extends through said box or receptacle, a cap on the end of said branch, a branch extending upward from said cap, and an opening or openings formed in the upper end of said branch, substantially as and for the purpose set forth.

4. In a device of the class described, a box or receptacle, a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a cap on the end of said branch, a branch extending upward from said cap, and an opening or openings formed in the upper end of said branch, in combination with a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, and a branch tube extending from said hot-air tube, surrounding said branch flue-pipe, and extending into said box or receptacle, substantially as and for the purpose set forth.

5. In a device of the class described, a box or receptacle, a flue-pipe, and a branch pipe extending from said flue-pipe through said box or receptacle, in combination with a hot-air tube, open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube extending from said hot-air tube, surrounding said branch flue-pipe, and extending into said box or receptacle, and a telescoping tubular section adapted to be adjusted back and forth on the branch from said hot-air tube, substantially as and for the purpose set forth.

6. In a device of the class described, a box or receptacle, and a canvas partition therein, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a cap on the end of said branch, a branch extending upward from said cap, and an opening or openings formed in the upper end of said branch, a hot-air tube open at its lower end and closed at its upper



end and surrounding said flue-pipe, and a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, substantially as and for the purpose set forth.

7. In a device of the class described, a box or receptacle, and an egg tray or holder therein, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, a tube surrounding said hot-air tube and open at its lower end and closed at its upper end, and a branch tube extending from said tube into said box or receptacle, below said hot-air tube, and above said egg tray or holder, substantially as and for the purpose set forth.

8. In a device of the class described, a box or receptacle, a canvas partition therein, and an egg-tray below said canvas partition, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle above said canvas partition, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, a tube surrounding said hot-air tube and open at its lower end and closed at its upper end, and a branch tube extending from said tube into said box or receptacle, below said canvas partition, and above said egg-tray, substantially as and for the purpose set forth.

9. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, outlet-openings formed in the ends of said inner inclosing walls near the bottom and in the ends of the outer inclosing walls near their top, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a cap on the end of said branch, a branch extending upward from said cap, and an opening or openings formed in the upper end of said branch, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, and a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, substantially as and for the purpose set forth.

10. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls outlet-openings formed in the ends of said inner inclosing walls near the bottom and in the ends of the outer inclosing walls near their top, a canvas partition, and an egg tray or holder below said canvas partition, both located in said box or receptacle, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle above said canvas partition, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube surrounding said branch flue-pipe, and extending from said hot-air tube into said box or receptacle, a tube surrounding said hot-air tube and open at its lower end and closed at its upper end, and a branch tube extending from said tube into said box or receptacle, below said canvas partition, and above said egg-tray, substantially as and for the purpose set forth.

11. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, openings formed in the ends of said inner inclosing walls near the bottom and in the outer inclosing walls near the top, openings formed in the bottom of said box or receptacle, a removable floor in which openings are formed, and an air space or chamber between said removable floor and the inner face of the bottom of said box or receptacle, in combination with a flue-pipe, a branch pipe exteading from said flue-pipe through said box or receptacle, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, and a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, substantially as and for the purpose set forth.

12. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, openings formed in the ends of said inner inclosing walls near the bottom and in the outer inclosing walls near the top, openings formed in the bottom of said box or receptacle, a removable floor in which openings are formed, an air space or chamber between said removable floor and the inner face of the bottom of said box or receptacle, a canvas partition in said box or receptacle, and an egg tray or holder below said canvas partition, both located in said box or receptacle, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle above said canvas partition, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube surrounding said branch flue-pipe, and extending from said hot-air tube into said box or receptacle, below said canvas partition, and above said egg-tray, substantially as and for the purpose set forth.

13. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, outlet-openings formed in the ends of said inner inclosing walls near the bottom and in the ends of the outer inclosing walls near their top, and draft-regulating dampers adapted to close more or less of the openings at the top of the outer inclosing walls, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a cap on the end of said branch, a branch extending upward from said cap, and an opening or openings formed in the upper end of said branch, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, and a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, substantially as and for the purpose set forth.

14. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, outlet-openings formed in the ends of said inner inclosing walls near the bottom and in the ends of the outer inclosing walls near their top, draft-regulating dampers adapted to close more or less of the openings at the top of the outer inclosing wall, a canvas partition, and an egg tray or holder below said canvas partition, both located in said box or receptacle, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle above said canvas partition, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube surrounding said branch flue-pipe, and extending from said hot-air tube into said box or receptacle, a tube surrounding said hot-air tube and open at its lower end and closed at its upper end, and a branch tube extending from said tube into said box or receptacle, below said canvas partition, and above said egg-tray, substantially as and for the purpose set forth.

15. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, openings formed in the ends of said inner inclosing walls near the bottom and in the outer inclosing walls near the top, draft-regulating dampers adapted to close more or less of the openings at the top of the outer inclosing wall, openings formed in the bottom of said box or receptacle, a removable floor in which openings are formed, and an air space or chamber between said removable floor and the inner face of the bottom of said box or receptacle, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, and a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, substantially as and for the purpose set forth.

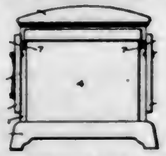
16. In a device of the class described, a box or receptacle consisting of two spaced-apart inclosing walls, an air space or chamber between said inclosing walls, openings formed in the ends of said inner inclosing walls near the bottom and in the outer inclosing walls near the top, draft-regulating dampers adapted to close more or less of the openings at the top of the outer inclosing wall, openings formed in the bottom of said box or receptacle, a removable floor in which openings are formed, an air space or chamber between said removable floor and the inner face of the bottom of said box or receptacle, a canvas partition in said box or receptacle, and an egg tray or holder below said canvas partition, both located in said box or receptacle, in combination with a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle above said canvas partition, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube surrounding said branch flue-pipe and extending from said hot-air tube into said box or receptacle, a tube surrounding said hot-air tube and open at its lower end and closed at its upper end, and a branch tube extending from said tube into said box or receptacle, below said canvas partition, and above said egg-tray, substantially as and for the purpose set forth.

17. In a device of the class described, a box or receptacle, a flue-pipe, a branch pipe extending from said flue-pipe through said box or receptacle, a cap on the end of said branch, a branch extending upward from said cap, and an opening or openings formed in the

upper end of said branch, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, and a branch tube extending from said hot-air tube, surrounding said branch flue-pipe, and extending into said box or receptacle, in combination with a bar, a thermostat secured to the under side of said bar, a rod resting on said thermostat and extending upward through said bar and the top of said box or receptacle, and its upper end screw-threaded, a winged nut adapted to engage with the upper screw-threaded end of said rod, a lever pivoted on a fulcrum secured to said box or receptacle, and its inner end adapted to engage with the upper end of said rod, and a damper suspended from the outer end of said lever over the upper end of said flue-pipe, substantially as and for the purpose set forth.

18. In a device of the class described, a box or receptacle, a canvas partition, and an egg tray or holder located therein, a flue-pipe, and a branch pipe extending from said flue-pipe through said box or receptacle, a hot-air tube open at its lower end and closed at its upper end and surrounding said flue-pipe, a branch tube extending from said hot-air tube, surrounding said branch flue-pipe, and extending into said box or receptacle, a tube surrounding said hot-air tube and open at its lower end and closed at its upper end, and a branch tube extending from said tube into said box or receptacle, below said canvas partition, and above said egg-tray, in combination with a bar, a thermostat secured to the under side of said bar, a rod resting on said thermostat and extending upward through said bar and the top of said box or receptacle, and its upper end screw-threaded, a winged nut adapted to engage with the upper screw-threaded end of said rod, a lever pivoted on a fulcrum secured to said box or receptacle and its inner end adapted to engage with the upper end of said rod, and a damper suspended from the outer end of said lever over the upper end of said flue-pipe, substantially as and for the purpose set forth.

## 756,991. ELECTRIC CONDENSER. MATTHEW O. TROY, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed July 19, 1902. Serial No. 116,281. (No model.)



*Claim.*—1. The combination of a condenser, a case for the condenser, and a lead extending from a terminal of the condenser out through an opening in the case and then back into the case.

2. The combination of a condenser, an ear extending therefrom, and a lead or terminal therefor, consisting of a strip of metal bent around the ear and fastened thereto.

3. The combination of a condenser, a case therefor, an ear extending from the condenser, a terminal or lead consisting of a strip of conducting material bent around and secured to the ear, and then bent over so as to lie parallel with or flat against the edge of the condenser, the end of said strip being passed out through an opening in the case and then laid flat against the side of the case, and a cover for said case.

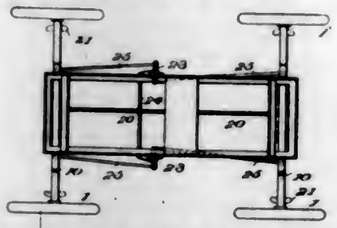
4. The combination of a case for a condenser, consisting of a body portion and a cover therefor, and a terminal for the condenser, consisting of a flat piece of metal lying flat against an outside edge of the case.

5. The combination of a sectional condenser, a retaining frame or receptacle for the sections of the condenser, terminals carried by the frame or receptacle, and a cover removable for permitting any section of the condenser to be inserted in or withdrawn from the receptacle, thereby automatically making or breaking contact with terminals carried by the receptacle.

6. The combination of a retaining frame or receptacle, contact springs or terminals carried by opposite walls of said frame or receptacle, and a plurality of condenser-sections each provided with terminals arranged so that when the section is inserted in or removed from the frame or receptacle the terminals of the condenser-section make or break connection with corresponding terminals on said frame or receptacle.

## 756,992. MOTOR-VEHICLE. CHARLES R. TWITCHELL, Dayton Heights, Cal., assignor to Brown-Winstanley Manufacturing Company, Los Angeles, Cal., a Corporation of California. Filed Aug. 17, 1903. Serial No. 169,740. (No model.)

*Claim.*—1. A motor-vehicle having its axles composed of pivotally-mounted end sections, driving-wheels intermediate said sections having differential gearing with such sections, and an operative connection with the driving-wheel of each axle, as set forth.



2. A motor-vehicle having its axles composed of pivotally-mounted end sections, driving-wheels intermediate said sections having differential gearing with such sections, an operative connection with the driving-wheel of each axle, and means arranged between the two axles connected to the opposite sections thereof for effecting the turning of the vehicle, as set forth.

3. A motor-vehicle having each of its axles composed of pivotally-mounted end sections and a central section, a wheel or pulley on such central section having a beveled pinion, gearing-disks with which said pinion engages, knuckle-joint connections between said gearing-disks and said end sections, and an operative connection with each of said wheels or pulleys, as set forth.

4. The combination with the axle having end sections and a central section, of sleeves inclosing such end sections pivotally secured at opposite upper and lower points, a central driving wheel or pulley having differential gearing with such end sections, and knuckle-joints between said end sections and the said gearing, opposite pivots of said knuckle-joint being in vertical line with the pivots of said sleeve, as set forth.

5. The combination with the vehicle-bed, and the bolster, of shoes secured on the outer ends of the latter, shiftable axle-sections upon which said shoes bear near the outer ends of such axle-sections, and means for shifting such axle-sections independently of the bolster, as set forth.

6. The combination with the vehicle-bed, and the bolster, of shoes secured on the outer ends of the latter, bed-supporting springs also secured on such ends, axle-sections having universal-joint connections at their inner ends, differential gearing between said sections, and means for shifting said axle-sections independently of the bolster, as set forth.

7. The combination with the axle-sections, of the sleeves inclosing the same, stationary casings, casings secured on said sleeves pivoted at opposite upper and lower points to said stationary casings, differential gearing intermediate said axle-sections, and universal joints on the inner ends of said axle-sections, the vertical pivots of said joints being in vertical line with the pivots of said sleeve-casings, as set forth.

8. The combination with the axle-sections having beveled collars near their ends, of the sleeves on said sections having cupped ends, ball-bearings between such ends and collars, casings to which said sleeves are pivoted, and means for shifting such axle-sections and sleeves, as set forth.

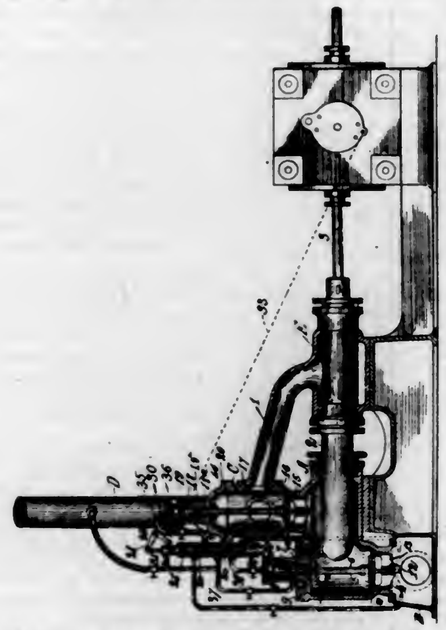
9. The combination with the vehicle-bed, and the bolsters, of shoes secured on the outer ends of the latter, bed-supporting springs also secured on such ends, axle-sections pivoted near their inner ends, differential gearing intermediate said axle-sections, knuckle-joints between the latter and said gearing, a chain connection with the gearing of each axle, two bell-crank levers, a bar connecting the same, and rods connecting said bell-crank levers to said axle-sections, substantially as set forth.

## 756,993. VALVE MECHANISM FOR PUMPS. HERMANN USCHER, Chicago, Ill., assignor to Charles C. Worthington, Irvington, N. Y. Filed Aug. 14, 1900. Serial No. 626,787. (No model.)

*Claim.*—1. In a pump, an induction-valve mounted within the pump-barrel, a valve-stem on said valve carrying pistons, one of said pistons being adapted to move in a cylinder on the head of said pump-barrel, and the other of said pistons of less area being adapted to move in a passage between said cylinder and said pump-barrel, and valve-controlled connection between said cylinder and a source of supply of fluid-pressure for actuating said piston to operate said valve.



2. In a pump, a pump-barrel and a pressure-chamber, valves in said pump-barrel and said pressure-chamber provided with valve-stems, pistons on said valve-stems moving in cylinders on the heads of said pump-barrel and said pressure-chamber, passages between said cylinders and said pump-barrel and pressure-chamber, pistons of less area than said pistons in said cylinders movable in said passages, connection between said cylinders and a source of supply of fluid under pressure, and valve mechanism interposed between said cylinders and said source of supply of fluid-pressure for controlling the influx and efflux thereof to actuate said pistons at intervals to operate said valves.



3. In a pump, induction and eduction valves mounted upon valve-stems provided with differential pistons, said pistons having greatest area moving in auxiliary cylinders on said pump, and pistons of less area moving in passages between said auxiliary cylinders and said pump, connection between said auxiliary cylinders and a source of supply of fluid-pressure for actuating said pistons moving in said auxiliary cylinders, and a valve interposed between said auxiliary cylinders and said source of supply of fluid under pressure and operated from any moving portion of said pump or engine driving the same, for controlling the induction and eduction of fluid under pressure to and from said auxiliary cylinders.

4. In a pump, induction and eduction valves connected with plungers moving in auxiliary cylinders on said pump, connection between said cylinders and a source of supply of fluid-pressure, and means for alternately admitting such fluid-pressure to corresponding ends of said plungers at opposite limits of the movement of the plunger of said pump, the faces of said plungers acted upon by said fluid-pressure to cause said valves respectively to open being of areas not greater than the areas of the respective valve-seats of said valves.

5. In a pump, induction and eduction valves connected with plungers moving in auxiliary cylinders on said pump, a pipe connecting the lower chamber of one of said cylinders with the stand-pipe a balanced valve connected with said stand-pipe, pipes connecting the upper chambers of said auxiliary cylinders with said valve, pipes connecting said valve with the suction-chamber of said pump, and means for operating said valve for alternately connecting said pipes communicating with the upper chambers of said auxiliary cylinders with said stand-pipe and said suction-chamber, whereby said induction and eduction valves will be operated.

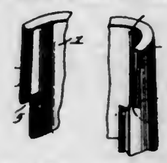
6. In a pump, a valve mounted upon a valve-stem carrying pistons at its other end, the end piston having a greater area than the inner piston, a cylinder in which one of said pistons moves, alternate connection between said cylinder and a source of supply of fluid-pressure and a waste-pipe, a passage between said cylinder and a chamber of said pump in which the inner one of said pistons moves, and a valve-seat upon which said valve is mounted, said face of said inner piston communicating with said chamber of said pump being of not greater area than the valve-seat.

7. In a pump, an eduction-valve mounted upon a valve-stem carrying differential pistons at one end, a cylinder in which one of said pistons moves, a passage between said cylinder and the pressure-chamber in which the other of said pistons moves, the area of the face of said last-named piston acted upon by the pressure in said pressure-chamber being less than the area of the other piston and not greater than the area of the valve-seat of said eduction-valve.

8. The combination of induction pump-valve 5, cylinder 8, piston 7 on the valve-stem in said cylinder, pipes 37 and 38 connecting with the cylinder on opposite sides of said piston, pressure and exhaust pipes 39, 40, valve mechanism actuated by a moving part of the pump for connecting said pipe 38 alternately with the pressure and exhaust pipes, and piston 7ª on the valve-stem subjected to the pressure in the pump-chamber.

9. The combination of eduction pump-valve 16, cylinder 19, piston 18 in said cylinder on the valve-stem, pipe 35 connecting with the cylinder 19 for admitting pressure on pieton 18 tending to close the valve, pressure and exhaust pipes 37, 34, valve mechanism actuated by a moving part of the pump for connecting pipe 37 alternately with the pressure and exhaust pipes, and piston 18ª on the valve-stem acting to aid in opening the valve and subjected to the pressure acting on the back of the valve.

## 756,994. LAMP-CHIMNEY. ROSE I. VALLEE, Seattle, Wash. Filed Aug. 3, 1903. Serial No. 168,077. (No model.)

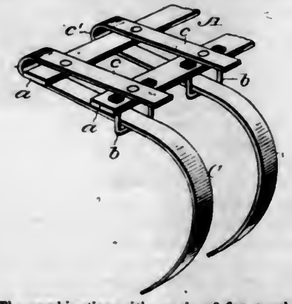


*Claim.*—1. A lamp-chimney comprising two sections, one of which is provided with convex longitudinal edges and the other with grooved edges, one of said sections having offset portions formed near its upper end on its longitudinal edges to form overhanging projections, and the other section having offset portions spaced from the top thereof with the terminals thereof inclined upwardly to form seats to receive said overhanging projections of the other section.

2. A lamp-chimney comprising two sections one of which has the longitudinal edges thereof reversely beveled to form inverted-V-shaped projections, and the other section having its longitudinal edges provided with V-shaped grooves, one of said sections having an overhanging projection and the other section having an upwardly-inclined shoulder forming a seat to receive said projection.

3. A lamp-chimney comprising two sections one of which has offset portions formed near its upper end on its longitudinal edges to form overhanging projections, and the other section having offset portions spaced from the top thereof with the terminals thereof inclined upwardly to form seats to receive said overhanging projections of the other section.

## 756,995. SPRING-TOOTH FOR CULTIVATORS AND HARROWS. SIDNEY F. VANCE, Salmon, Tex., assignor of one-half to Lorenzo D. Woodard, Elkhart, Tex. Filed July 7, 1903. Serial No. 164,561. (No model.)

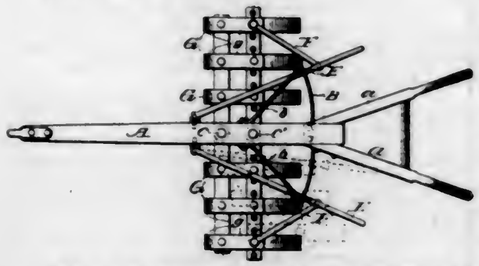


*Claim.*—The combination with a pair of flat tooth-supporting bars, and bails attached to the rear bar to depend therefrom, of

spring-teeth each tooth comprising a single piece of flat metal shaped to provide at the forward portion a return-bend, diverging portions which extend rearward from the return-bend, means for attaching the upper portion of the tooth to each of the supporting-bars, the tooth being passed through the bail which is attached to depend from the rear supporting-bar, substantially as shown and for the purpose set forth.

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**756,996. CULTIVATOR. SIDNEY F. VANCE, Salmon, Tex., assignor of one-half to Lorenzo D. Woodard, Elkhart, Tex. Filed July 7, 1903. Serial No. 164,562. (No model.)**



*Claim.*—1. In a cultivator, the combination with a beam having handles, of parallel bars arranged in pairs the bars being pivoted directly to the beam, levers pivoted to the beam in advance of the parallel bars, links attached to the levers and to the bars, and ratchet-bars attached to the rear portion of the beam to project therefrom and be engaged by the levers, substantially as shown.

2. In a cultivator, the combination with the beam and handles therefor, of parallel bars pivoted to the beam, teeth which connect the bars to each other, curved ratchet-bars attached to the beam rear of the parallel bars, levers pivoted to the beam in advance of the bars and links pivoted to the outer ends of the rear bars and to the levers rear of the ratchet-bars, substantially as shown.

3. In a cultivator, the combination with a beam and its handles, of parallel bars pivoted to the beam, levers pivoted to the beam and connected to the bars by links, ratchet-bars attached to the beam to be engaged by the levers, spring-teeth pivotally connected to the bars, and bails through which pass the spring-teeth, the teeth being vertically movable between the side members of the bail, for the purpose set forth.

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**756,997. DEVICE FOR SECURING FURNITURE-JOINTS IN POSITION. DAVID E. VANVACTOR, Argos, Ind. Filed May 8, 1903. Serial No. 156,205. (No model.)**



*Claim.*—1. A fastening tie or link of the class described, consisting of a wire doubled upon itself to form end loops with the ends of the wire located between said loops and a connecting member for securing said ends in position while holding the strands of the wire apart to enable them to be twisted upon each other by the rotation of said connecting member.

2. As an improved article of manufacture, a fastening-tie for securing furniture-joints together by tension, comprising a wire doubled upon itself to form end loops, the ends of the wire being located between said loops, in combination with a turnbuckle for connecting the ends of said wire with the body portion opposite to said ends.

3. A fastening-tie of the class described, comprising a wire doubled back upon itself to form end loops, the ends of the wire being bent and interlocked with the body portion at a point between said loops, in combination with a turnbuckle connected with said ends and interposed between the two strands of the tie.

4. A fastening device of the class described, comprising a wire doubled back upon itself from opposite directions to form end loops, a connecting member having a bore therethrough from side to side with longitudinal grooves upon opposite sides in the plane of the axis of said bore, the ends of said wire being passed through said bore and locked to the body of the wire upon the opposite side, the strands of the wire lying respectively in said opposite grooves.

5. A fastening-tie of the class described, comprising a wire doubled back from opposite directions upon itself to form end loops, a connecting member having a bore therethrough from side to side with opposite longitudinal grooves located in the plane of the axis of said bore, the ends of said wire being passed through said bore, bent over the body of the wire upon the opposite side and thence back into said bore, the parallel strands of the wire lying respectively in said opposite grooves, and means upon said connecting member for receiving an operating-tool.

6. The combination with a structure, comprising a frame and intervening members having end-joint connections therewith, of a tie in operative connection with opposite members of said frame, said tie comprising a wire doubled back from opposite directions upon itself to form end loops for connection with the opposing members of said frame, the ends of the wire being bent and interlocked with the body portion between said loops, and a turnbuckle connected with said wire ends, said turnbuckle being interposed between the two strands of said wire.

7. The combination with a structure comprising a frame and intervening members having end-joint connections therewith, of a tie in operative connection with opposite members of said frame, said tie comprising a wire doubled back from opposite directions upon itself to form end loops for connection with the opposing members of said frame, the ends of the wire being bent and interlocked with the body portion between said loops, and a turnbuckle connected with said wire ends, said turnbuckle being interposed between the two strands of said wire, said strands being twisted thereby to draw upon the opposite members of said frame.

8. The combination in an article of furniture, of a frame having grooves for the reception of the ends of a jointed connecting member such as a seat-board, a jointed connecting member having end joints fitted to project into said grooves, a connecting-tie comprising a wire doubled back upon itself from opposite directions to form end loops, the ends of the wire being bent and interlocked with the body portion at a point between said loops, a turnbuckle connected with said wire ends, said turnbuckle being interposed between the two strands of said wire, and means for connecting the loops of said tie to the opposite members of said frame.

9. A seat of the class described consisting of frame members for the seat and back respectively grooved upon their inner faces, connecting seat and back members having end joints fitted within said grooves and ties for connecting the frame members consisting of twisted wires having their ends connected by means of intervening turnbuckles secured thereto.

10. A seat of the class described having a back-frame, the members of which are provided with grooves upon their inner faces, T-shaped flanges at the top, a back-panel having its ends fitted within said grooves, a twisted-wire tie for connecting said frame members at the lower part of and behind said back-panel and a top piece having grooves formed therein adapted to receive said T-shaped flanges, thereby forming a finish for the top of said back-panel and a tie for the upper ends of said frame members.

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**756,998. BRUSH. GEORGE A. VICKERY, Lexington, Mass. Filed Nov. 9, 1903. Serial No. 180,347. (No model.)**

*Claim.*—1. A brush having a bristles-holding member, comprising a perforated plate backed by a filling of sheet material, said bristles passing through said plate and into sheet-filling and having their ends united by, and embedded in a cementitious binder, a cap-plate covering said bristles-holding member; a brush-head; a centrally-located coupling-screw for clamping said bristles-holding member to said head; a cushioning-rim provided with a reinforcing fabric sheet secured between said head and bristles-holding member, and water-supply means providing a supply-conduit through said head and said coupling-screw.





2. In a brush a perforated bristles-holding member comprising a thin plate backed by a filling of sheet material, said bristles passing through said plate and into said sheet-filling and having their butt-ends united by a cementitious binder.

3. A brush-head adapted for connection to a bristles-holding member, a handle connection secured thereto, a rubber cushioning-rim for said head and engaging the edges thereof, a sheet fabric underlying the said head and joining the inner edges of said rim, to which said sheet is vulcanized, and a water-conduit passing from said handle connection through said head.

4. A brush provided with a cushioning-rim having its inner edges connected by a sheet of cloth fabric.

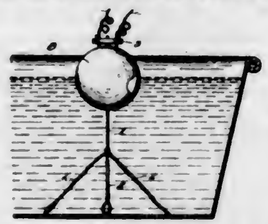
5. A brush having a brush-holding member, a head provided with a water-supply conduit, and a screw for securing said bristles-holding member to said head adapted to pass through the former into the latter and provided with a passage extending the length thereof to form an extension of said water-supply conduit into and among the bristles of said bristles-holding member.

6. A brush having a bristles-holding member, a water-supply member, and provided with a water-supply conduit leading from the supply member through the bristles-holding member to discharge into and among the bristles, and a spraying-nozzle at the outlet of said conduit to spread and distribute the water laterally among the bristles.

7. A cushioning member for brushes, the same comprising a cushioning-body secured to a fabric attaching member, the latter adapted to be attached to said brush, and to thereby afford a means for holding said body in position upon said brush.

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**756,999. OVERFLOW-ALARM. EDWARD M. WEEKS, Washington, D. C. Filed Jan. 20, 1904. Serial No. 189,873. (No model.)**



*Claim.*—1. As an article of manufacture, an alarm device comprising a guide, an adjustable support of flexible material for said guide, a disk, or plate, of non-conducting material carried at the upper portion of said guide, electrical connections secured to said disk, and a float slidably supported on said guide and arranged to short-circuit said electrical connections in its upper position, substantially as described.

2. As an article of manufacture, an alarm device comprising a guide and an adjustable standard therefor, formed of a single length of flexible wire with said guide, and constituting means whereby the position of the guide can be adjusted by bending said flexible standard, a disk, or plate, of non-conducting material carried at the upper portion of said guide, electrical connections secured to said disk, and a float slidably supported on said guide and arranged to short-circuit said electrical connections in its upper position, substantially as described.

3. As an article of manufacture, an alarm device comprising a guide, an adjustable support of flexible material for said guide, a perforated disk, or plate, of non-conducting material secured to the upper portion of said guide, electrical connections extending through the perforations of said disk to secure them to the latter and to constitute loops extending from the lower surface thereof, and a float slidably supported on said guide and arranged to contact with said loops when in its upper position, substantially as described.

4. As an article of manufacture, an alarm device comprising a guide, an adjustable support of flexible material for said guide, a perforated disk, or plate, of non-conducting material arranged on the upper portion of said guide, shoulders formed integral with said guide in position to clamp said disk, electrical connections extending through the perforations of said disk to secure them to the latter and to constitute loops extending from the lower surface thereof, and a float slidably supported on said guide and arranged to contact with said loops when in its upper position, substantially as described.

5. As an article of manufacture, an alarm device comprising a guide and an adjustable standard therefor, formed of a single length of flexible wire with said guide, and constituting means whereby the position of the guide can be adjusted by bending said flexible standard, a perforated disk, or plate, of non-conducting material secured to the upper portion of said guide, electrical connections extending through the perforations of said disk to secure them to the latter and to constitute loops extending from the lower surface thereof, and a float slidably supported on said guide and arranged to contact with said loops when in its upper position, substantially as described.

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**757,000. DEMAND-METER. ROGER S. WHITE, Philadelphia, Pa., assignor to General Electric Company, a Corporation of New York. Filed Aug. 15, 1903. Serial No. 169,619. (No model.)**



*Claim.*—1. In an electric meter, the combination of an indicator, mechanism for actuating the indicator, an electroresponsive device for releasing the mechanism, and means whereby the operation of the mechanism stores energy opposing the action of said device.

2. A maximum-demand meter, comprising an indicator, mechanism for actuating the indicator, a device responsive to current conditions for releasing the mechanism, and means whereby the movement of the mechanism stores energy to counterbalance said device.

3. A maximum-demand meter, comprising an indicator, mechanism for actuating the indicator, a device responsive to current conditions for releasing the mechanism, and means whereby the movement of the mechanism accumulates a weight tending to stop the mechanism.

4. A maximum-demand meter, comprising a magnet-coil, an armature therefor, an indicator, actuating mechanism therefor, means whereby the armature when attracted releases the driving mechanism, and means whereby the mechanism when released tends to move said armature into braking relation to the mechanism.

5. A maximum-demand meter, comprising an indicator, actuating mechanism therefor, a magnet-coil, an armature therefor, means whereby the armature when attracted releases the driving mechanism, and means whereby a weight tending to move said armature into braking relation to the driving mechanism is progressively increased while said mechanism is running.

6. A maximum-demand meter, comprising an indicator, actuating mechanism therefor, an arm carrying means for stopping the mechanism, a device responsive to current conditions for moving the arm in a direction to release the mechanism, and means whereby the mechanism when released increases a weight tending to move the arm in the opposite direction.

7. A maximum-demand meter comprising an indicator, actuating mechanism therefor, a receptacle secured to the armature, means whereby the armature releases said driving mechanism when attracted by the magnet, and means

whereby said mechanism when released accumulates a weight in said receptacle to overcome the attraction of the magnet.

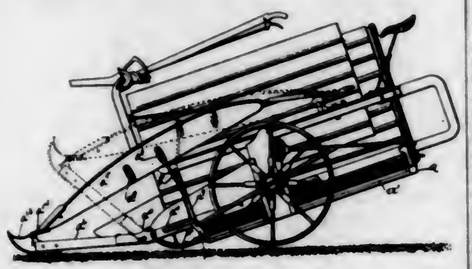
8. A maximum-demand meter, comprising an indicator, actuating mechanism therefor, a pallet governing said mechanism, a magnet-coil, a core therefor arranged to prevent movement of the pallet when the core is released by the magnet-coil, and means whereby the operation of the mechanism accumulates energy opposing the attraction of the magnet-coil.

9. A maximum-demand meter, comprising an indicator, actuating mechanism therefor, a pallet governing the same, an arm on the pallet, a magnet-coil, an armature and anarm secured thereto arranged so that the said arms are separated when the magnet attracts its armature, and means whereby the operation of the mechanism tends to move the last-mentioned arm into the path of movement of the arm on the pallet.

10. A maximum-demand meter, comprising an indicator, actuating mechanism therefor, a device responsive to current conditions for releasing said mechanism, means opposing said releasing device progressively increased in power by the movement of the mechanism, and means for resetting the parts of the mechanism affected without moving the other parts.

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**757,001. GRAIN-HARVESTING MACHINE.** WILLIAM N. WHITELY, Springfield, Ohio. Filed June 3, 1901. Serial No. 62,997. (No model.)



*Claim.*—1. In a grain-harvesting machine, in combination, a finger-bar, a grain-conveying belt, a supporting-platform for said belt, a grain-divider located at the grainward end of said platform, a divider-frame connected to said platform and to said finger-bar one member of said divider consisting of a rail pivotally connected to said divider-frame, another member of said divider consisting of a cap extending forward into the standing grain and pivotally connected at its forward end with said rail, said divider-cap inclining from its point upward and rearward, a pivotal link supporting said divider-cap, supporting means from said finger-bar for said link, means for maintaining said divider in its elevated positions.

2. In a grain-harvesting machine, in combination, a finger-bar, a grain-divider located at the grainward end of the platform and finger-bar, a divider-frame connected to said platform and to said finger-bar, one member of said divider consisting of a rail projecting in advance of the cutters, and pivotally connected in front of the cutters to a member of the divider-frame, another member of said divider consisting of a cap pivotally connected at its forward end to said rail, an upwardly-projecting link pivotally connecting with said divider-cap supporting means from said finger-bar for said link.

3. In a grain-harvesting machine, in combination, a finger-bar, a horizontal grain-conveying belt, a platform for the support and protection of said belt, a grain-divider located at the grainward end of said platform and said finger-bar, a rail member $a^4$ of said divider extending forward in advance of the cutters, a member $a^4$ of the divider-frame and a shoe $a^3$, said parts rigidly connected to said platform and finger-bar and projecting forward of the cutters, forming a pivotal support for said rail $a^4$, another member of said divider consisting of a cap pivotally connected to the forward end of said pivoted rail $a^4$, supporting means from said finger-bar for the rearward end of said cap, a stop device independent of the pivot for the rail $a^4$ to limit said rail and divider-cap in vertical movement while their forward ends are free to follow the undulations of the ground.

4. In a grain-harvesting machine, in combination, a finger-bar, a grain-divider located at the grainward end of the platform, a divider-frame connected to said platform and finger-bar, one member of said frame consisting of a rail extending across the platform, another member of said divider-frame consisting of a shoe rigidly connected to said rail and to said finger-bar, one member of said divider consisting of a rail projecting forward into the grain and pivotally connected in advance of the cutters to said divider-frame, another member of said divider consisting of a cap, a pivotal connection between said rail and said cap near their forward ends whereby said divider may be elevated into a folded position, a locking means between said divider-rail and platform-rail of said divider-frame for holding said divider in a folded position.

5. In a grain-harvesting machine, in combination, a finger-bar, a grain-conveying belt, a platform to support said belt, a grain-divider located at the grainward end of said platform, a divider-frame located at the grainward end of said platform and finger-bar, one member of said frame extending across and secured to the grain-receiving platform, a shoe member of said frame connected to the finger-bar and extending upward and forward and joined with the first-mentioned member of said frame in front of the cutters, one member of said divider consisting of a rail pivotally connected to the forward end of said divider-frame in front of the cutters, a stop between said rail and said divider-frame to limit said rail in its vertical movements, another member of said divider consisting of a cap, its forward end pivotally connected to and supported by said rail, said divider-cap extending upward and rearward from its pivotal connection with said rail, flexible supporting means from said finger-bar for the rearward end of said cap all for the purpose of forming a floating grain-divider to conform to the undulations of the ground.

6. In a grain-harvesting machine, in combination, a grain-conveying belt, a platform to support said belt, a finger-bar, a divider-frame located at the grainward end of said platform and finger-bar, one member of said frame extending lengthwise across the width of said platform and secured thereto and extending forward of the cutters, a shoe member of said frame connected to the finger-bar and extending forward and upward and connecting with the upper member of said divider-frame, a rail extending forward into the grain in advance of the cutters, its rear end pivotally connected with said shoe, a divider-cap pivotally connected at its forward end to said rail, an upward-projecting support from said finger-bar, and pivotally connected to said divider-cap to hold said divider-cap in working position.

7. In a grain-harvesting machine, in combination, a grain-receiving platform, a grain-divider at the grainward end of said platform, a divider-frame located at and secured to the grainward end of said platform, one member of said divider consisting of a rail projecting in advance of the cutters and pivotally connected with a member of the divider-frame forward of the cutters, another member of said divider consisting of a cap pivotally connected at its forward end with the forward end of said rail, a supporting means for holding said divider-cap and said rail in an elevated position for transporting through narrow ways.

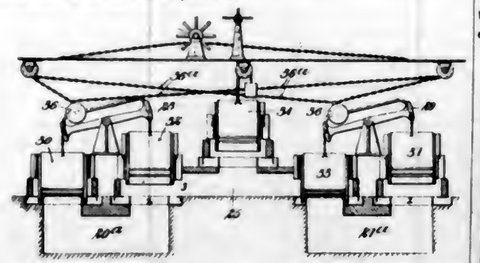
8. In a harvesting-machine, in combination, a horizontal grain-conveying belt, a finger-bar, a platform to support said grain-conveying belt, a divider-frame secured to the grainward end of said finger-bar and platform, a divider-rail extending forward in advance of the cutters and pivotally connected with a member of said divider-frame forward of the cutters, a divider-cap pivotally connected to the forward end of said rail, means for holding said divider-rail in a semi-elevated position to pass over the uncut grain and guide it under the cutters without dividing it, the cutters acting to cut the swath free from the standing grain.

9. In a grain-harvesting machine, in combination, a platform, a finger-bar, a divider-frame secured to the grainward end of said platform and finger-bar, a grain-divider located at the grainward end of said platform, one member thereof consisting of a rail projecting forward in advance of the cutters into the uncut grain and forming the lower part of said divider, a rail member of said divider-frame extending across said platform and pivotally supporting said divider-rail, another member of said divider consisting of a cap, its forward end pivotally connected with said rail, a link pivotally connecting to said divider-cap, supporting means from said finger-bar for said link, a pivotal connection between said rail and said divider-frame that will allow vertical movement within fixed limits of the forward end of said divider in passing over the ground, said rail and divider-cap held against sidewise movement by said pivotal-joint connection between said divider and said divider-frame.

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**757,002. VALVE FOR REGENERATIVE FURNACES.** JAMES M. WIGHT and HARRY HYATT, Cleveland, Ohio. Filed June 5, 1903. Serial No. 160,154. (No model.)

*Claim.*—1. In combination, a casing having bottom and side flue-ports, a trough surrounding the bottom port, and a water-cooled valve movable vertically into and out of said trough and having an external water seal in all positions.



2. In combination, a valve-casing open at top and having bottom and side ports and a water cooled and sealed valve movable vertically through the top of the casing, to open or close the ports, substantially as described.

3. The combination with a valve-casing open at the top and bottom and having a side port, and water-troughs around said top and bottom openings, of a valve movable vertically in the casing and wholly removable through the top opening, and having flanges which dip into said troughs.

4. In combination, a port, a water-trough around the same, a side port above the trough, a valve over the trough and movable into or out of the same, and a constant water seal for the valve above the side port.

5. In combination, a casing having a bottom and a side port, a water-trough around the former and a water-trough above the latter; and a valve movable vertically in the casing over the bottom port, and having a water-cooled wall which dips into the water-trough around said bottom port and a depending flange which dips into the upper trough in both open and closed positions of the valve.

6. In combination, a valve-casing having upper and lower water-troughs overflowing from the former to the latter, and a water-cooled valve therein, arranged to be sealed in the troughs and to overflow into the upper trough.

7. The combination with a valve-casing comprising a lower section having a bottom port and a trough around the same, a middle section above the same, having a side port and a cover over the trough, and an upper section upon said middle section and having a trough, of a vertically-movable valve in the casing, sealed in the troughs.

8. The combination with a casing open at the top and having bottom and side ports and water-troughs above and below the side port, of a water-cooled valve movable in the casing over the bottom port, and sealed in the troughs, and removable from the casing through the top opening.

9. In a regenerative valve system, the combination with a furnace-flue having two ports, and tubular valve-casings open at both ends, one end of each having one of said ports therein, and gas and stack flues in communication with the casings respectively, of two oppositely-acting exposed valves working through the other ends of the casings and controlling the said ports.

10. The combination with two vertical tubular valve-casings each of which has a furnace-port in the lower end thereof, and one of which has a gas and the other a stack port in the side thereof, of oppositely-acting valves movable vertically in the casings through the open upper ends thereof, and water-troughs around the furnace-ports and the said upper ends, in which the valves dip.

11. The combination with a pair of vertically-movable valves, of a pivoted beam to the ends of which each of the valves is connected, and a weight shiftable along the beam to operate the valves.

12. In a regenerative valve system, the combination with two pair of reciprocating valves, of a pivoted beam to the ends of which a valve of each pair is connected, weights slidable on the beams, to tilt the same and reverse the valves, and means to simultaneously shift the weights.

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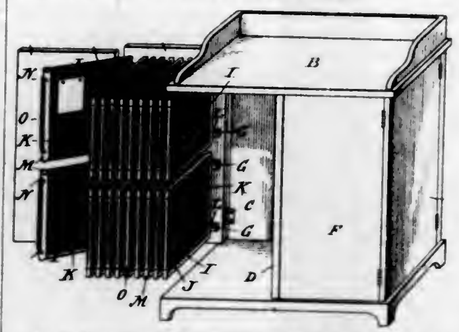
**757,003. DISPLAY-CABINET.** ELIJAH A. WILCOX, New York, N. Y. Filed Feb. 3, 1903. Serial No. 141,710. (No model.)

*Claim.*—1. A display-cabinet comprising a fixed back, top and base, movable sides hinged to the back, movable fronts hinged to the sides, and a number of vertically-disposed display-frames mounted upon the inner surface of the sides.

2. A display-cabinet comprising a fixed back, top and base, movable sides hinged to the back, movable fronts hinged to the sides, and a number of vertically-disposed removable display-frames mounted upon the inner surface of the sides.



3. A display-cabinet comprising a base, a back, a top, a centrally-disposed partition, sides hinged to the back, fronts hinged to the sides, and a number of removable display-frames pivotally mounted on the inner surface of the sides of the cabinet.



4. A display-cabinet comprising a fixed back, top and base, sides hinged to the back, fronts hinged to the sides, bracket-supports mounted upon the sides, and a number of movable display-frames carried by said bracket-supports.

5. A display-cabinet comprising a fixed back, top and base, sides hinged to the back, display-frames hinged upon the inner surface of the sides, together with means for determining the distance between the display-frames when closed.

6. A cabinet provided with hinged sides adapted to be extended on each side thereof, and a plurality of display-frames removably mounted on said sides and adapted to be spread apart when the sides are opened.

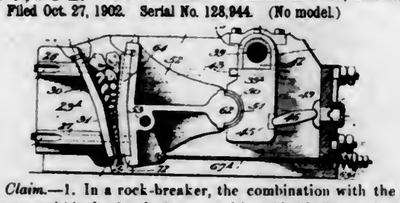
7. A cabinet provided with hinged sides adapted to be extended on each side thereof, brackets secured to said sides, and display-frames removably mounted in said brackets adapted to be separated when the sides are opened.

8. A cabinet provided with hinged sides, adapted to be extended on each side thereof, bracket-supports on said sides, a plurality of display-frames having projecting hooks which coöperate with said brackets on said sides, and permit the display-frames to be separated when the sides are opened.

9. A cabinet provided with hinged sides adapted to be extended on each side thereof, a plurality of hangers pivotally mounted on said sides, together with fronts hinged to the sides.

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**757,004. ROCK-BREAKER.** WILLIAM E. WILD, Denver, Colo. Filed Oct. 27, 1902. Serial No. 128,944. (No model.)



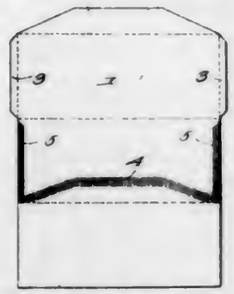
*Claim.*—1. In a rock-breaker, the combination with the sides and rear-end block of a shaft mounted in said side frames having a crank portion between said sides, an arm mounted on said crank portion of said shaft between said side frames, a shaft slidably journaled in said side frames, a walking-beam mounted on said shaft intermediate of its ends, a rock-breaking jaw removably secured on one end of said walking-beam, a knuckle bearing between the opposite end of said walking-beam and said arm, a head-end block slidably mounted between said side frames adjacent to the rock-breaking jaw of said walking-beam, a rock-breaking jaw removably secured to said head-end block, and adjustable yoke-bolts adjustably secured to said sides and rear-end block and arranged in holding contact with said head-end block, substantially as described.

2. In a rock-breaker, the combination with the sides, the fixed rear-end block and the yoke-bolts extending through said rear-end block, slots in the inner sides of said side arranged to permit adjustable movement of the yoke portion of said yoke-bolts, guideway-recesses in the head end of the inner sides of said sides, a head-end block fitting slidably between said sides and provided with projecting guideway-lugs fitting slidably in said guideway-recesses in said sides and provided with a recess in its outer end in which the yoke portion of said yoke-bolts rests, substantially as described.

3. In a rock-breaker, the combination with the sides, the rear-end blocks, the adjustable head end, fixed jaw-blocks and the yoke-bolts, with the driving crank-shaft provided with suitable fly-wheels and driving-pulley, with the actuating-arm pivotally mounted on said crank-shaft, the walking-beam slidably and pivotally mounted in said sides and arranged with one end opposing said head-end fixed-jaw block, rock-breaking jaws removably secured to the opposing faces of said head-end blocks and said walking-beam and arranged to form a V-shaped opening between them of two different tapering pitches, the top of each tapering portion being the widest, vertical dovetailed, tapering recesses in the sides of said sides opposite said jaws, and tapering cheek-plates removably secured in said tapering recesses, substantially as described.

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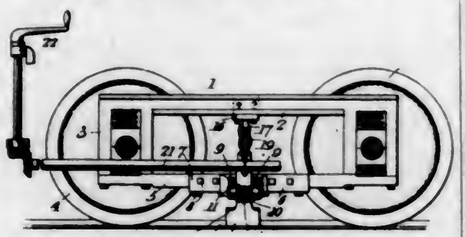
757,005. **COMBINED LETTER-SHEET AND ENVELOP.** EWING L. WILSON, Peck, Idaho. Filed Nov. 10, 1903. Serial No. 180,603. (No model.)



*Claim.*—A combined letter-sheet and envelop provided at one end and along opposite portions of the lateral margins adjacent to said end with foldable sealing-flaps, and provided upon the back with gummed areas disposed adjacent to the lateral margins and extending completely across the back of the sheet, said gummed areas corresponding in position to the margins of said foldable sealing-flaps when the combined letter-sheet and envelop is folded for sealing.

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757,006. **BRAKE.** MICHAEL A. WODAL, Camden, N. J. Filed Oct. 29, 1903. Serial No. 179,064. (No model.)



*Claim.*—1. In a car-brake, the combination with a truck-frame, a supporting-bracket secured thereto, a brake-shoe pivoted to said bracket, means for forcing the brake-shoe into engagement with the side of the track-rail, and a spring for returning said shoe to its normal position.

2. In a car-brake, the combination with a truck-frame, a supporting-bracket provided with angularly-disposed longitudinal flanges secured to said frame, a brake-shoe pivoted to the bracket, means for forcing the brake-shoe into engagement with the side of the track-rail, and a spring one end of which is secured to the truck-frame the opposite end thereof being fastened to said shoe.

3. In a car-brake, the combination with a truck-frame, a supporting-bracket secured thereto, a brake-shoe having its contact-face inclined or beveled pivoted to said bracket, means for forcing the shoe into engagement with the side of the track-rail, and means for returning said shoe to its normal position.

4. In a car-brake, the combination with a truck-frame, a supporting-bracket provided with a bifurcated extension secured to the frame, a laterally-disposed brake-shoe pivoted between the bifurcated ends of said extension, means for forcing the shoe into engagement with the side of the track-rail, and a spring secured to the frame and shoe respectively for returning the latter to its normal position.

5. In a car-brake, the combination with a truck-frame, a supporting-bracket secured thereto, a laterally-disposed brake-shoe provided with an enlarged head having an inclined or beveled contact-face pivoted to the bracket, and means for forcing the brake-shoe into engagement with the side of the track-rail.

6. In a car-brake, the combination with a truck-frame, of a supporting-bracket secured thereto, a laterally-disposed brake-shoe pivoted to the bracket, an operating-shaft, and a flexible connection between the shoe and the operating-shaft.

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757,007. **LAMP-TERMINAL.** HOWARD I. WOOD and RALPH C. ROBINSON, Schenectady, N. Y., assignors to General Electric Company, a Corporation of New York. Filed July 26, 1902. Serial No. 117,117. (No model.)



*Claim.*—1. In combination, a conducting-rod, a main terminal carried thereby, and a clamping device also carried by said rod.

2. In combination, a conducting rod or stem, a main terminal detachably carried by said rod, and movable clamping means also carried by said rod, said main terminal and said clamping means being formed with cooperating surfaces for positioning said main terminal.

3. In combination, a conducting stem or rod having one end threaded, a portion of said threaded end being slitted to form clamping-jaws, a nut on said rod, means for forcing said jaws together when the nut is screwed along said rod, and a tubular terminal also mounted on said rod having a portion of its interior threaded to fit said threaded rod and another portion of its interior of larger diameter to surround said clamping-nut.

4. In combination, a rod or stem, and a main terminal and a separate supplemental terminal each detachably secured to said rod.

5. In an electric lamp, a rod having an axial opening or recess formed in one end, said recess being enlarged to form a chamber at its inner end, and a second rod forming one of the terminals of the lamp of less diameter than the first-mentioned rod having an enlarged end inserted in said recess in said first-mentioned rod so that the enlarged end of the second rod is retained by the walls of the chamber in the first-mentioned rod.

6. In combination, a rod, a main terminal carried thereby, a clamping device also carried by said rod, and a supplemental terminal secured to said rod by said clamping device.

7. In combination, a rod, a main terminal detachably mounted thereon, a clamping device also carried by said rod, and a supplemental terminal detachably secured to said rod by said clamping device.

8. In an electric lamp, a rod having one end slitted to form clamping-jaws, an axial recess in said slitted end terminating in an enlarged chamber, and a terminal for said lamp consisting of a rod with an enlargement at one end and located in said recess with said enlargement in the enlarged chamber.

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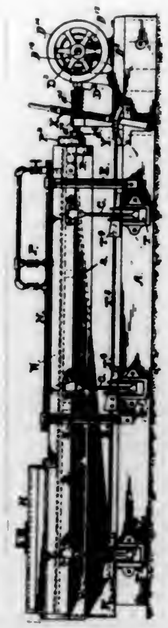
757,008. **ORE-CONCENTRATOR.** GEORGE R. WOODBURY, San Francisco, Cal. Filed Dec. 4, 1899. Serial No. 739,096. (No model.)

*Claim.*—1. In an ore-concentrator, a reciprocating table, wooden strips thereon disposed in parallel rows, and extending from one end of the table-surface for a portion of the length thereof, and a relatively thin metal strip of the same width as the wooden strip and fastened on the top of the wooden strip, said metal strip extending beyond the wooden strip and being fastened directly on the surface of the table beyond the terminal end of the strip, the extension forming a continuation of the riffle.

2. In a concentrator, a base, grooved boxes thereon, the top of each of which rests on top of the base, a block slidingly mounted in each box, and provided with hook-ended side pieces, a wedge between said side pieces and the top of each box, a rod connected to the wedges in the desired position, a leg projecting up from each block, a table mounted above the base on one side and supported by the legs on the other side, and means for reciprocating the table.

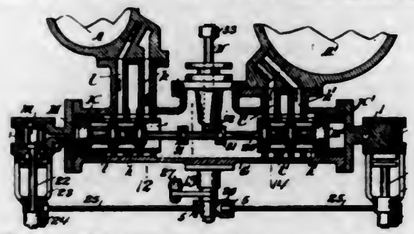


757,008.



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757,009. **STEAM-ENGINE.** CHARLES C. WORTHINGTON, Dunnfield, N. J. Filed May 16, 1899. Serial No. 716,991. (No model.)



*Claim.*—1. The combination with two steam-cylinders, of a valve device controlling the ports of both cylinders, a reciprocating steam-actuated valve-rod upon which said valve device is mounted, and valve mechanism separate from said valve device and valve-rod controlling the admission and exhaust of steam for actuating said rod, substantially as described.

2. The combination with two steam-cylinders, of a valve device controlling the ports of both cylinders, a reciprocating steam-actuated valve-rod upon which said valve device is mounted, and valve mechanism separate from said valve device and valve rod mechanically actuated by the engine and controlling the admission and exhaust of steam for actuating said rod, substantially as described.

3. The combination with two steam-cylinders, of a valve device controlling the ports of both cylinders, a reciprocating valve-rod carrying said valve device, pistons at opposite ends of said rod, and separate valves controlling the admission and exhaust of steam outside said pistons for moving the valves in opposite directions, substantially as described.

4. The combination with two steam-cylinders, of a piston-valve device controlling the ports of both cylinders, a reciprocating valve-rod carrying said valve device, valve-actuating pistons at opposite ends of said rod, and separate valves controlling the admission and exhaust of steam outside said actuating-pistons for moving the valves in opposite directions, substantially as described.

5. The combination with two steam-cylinders, of a valve device controlling the ports of both cylinders, a reciprocating valve-rod carrying said valve device, pistons on said rod for moving it in opposite directions, and valve mechanism separate from said valve device and valve-rod controlling the admission and exhaust of steam for actuating said pistons, and means for actuating said valve mechanism mechanically from a moving part of the engine, substantially as described.

6. The combination with two steam-cylinders, of a valve device controlling the ports of both cylinders, a reciprocating valve-rod carrying said valve device, pistons at opposite ends of said rod, and separate valves mechanically actuated by the engine and controlling the admission and exhaust of steam for actuating said pistons, substantially as described.

7. The combination with two steam-cylinders, of a piston-valve device controlling the ports of both cylinders, a reciprocating valve-rod carrying said valve device, pistons at opposite ends of said rod and separate valves mechanically actuated by the engine and controlling the admission and exhaust of steam outside said actuating-pistons for moving the valves in opposite directions, substantially as described.

8. The combination with two steam-cylinders, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, and valve mechanism controlling the admission and exhaust of steam for actuating said pistons, substantially as described.

9. The combination with two steam-cylinders, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons at opposite ends of said rod, and separate valves controlling the admission and exhaust of steam outside said pistons for moving the valves in opposite directions, substantially as described.

10. The combination with two steam-cylinders, of separate piston-valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, and valve mechanism controlling the admission and exhaust of steam for actuating said pistons to move the valves, substantially as described.

11. The combination with two steam-cylinders, of separate piston-valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, and valve mechanism mechanically actuated by the engine and controlling the admission and exhaust of steam for actuating said pistons, substantially as described.

12. The combination with two steam-cylinders, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons at opposite ends of said rod, and separate valves mechanically actuated by the engine and controlling the admission and exhaust of steam outside said pistons for moving the valves in opposite directions, substantially as described.

13. The combination with high and low pressure cylinders arranged side by side, their steam-ports, and connections for conducting steam from the high-pressure cylinder to the ow-pressure cylinder, of a valve device controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valve device, and valve mechanism separate from said valve device and valve-rod controlling the admission and exhaust of steam for actuating said rod, substantially as described.

14. The combination with high and low pressure cylinders arranged side by side, their steam-ports, and connections for conducting exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, and valve mechanism for controlling the admission and exhaust of steam for actuating said pistons, substantially as described.

15. The combination with high and low pressure cylinders arranged side by side, their steam-ports, and connections for conducting exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, and valve mechanism mechanically actuated by the engine and controlling the admission and exhaust of steam for actuating said pistons, substantially as described.

16. The combination with high and low pressure cylinders arranged side by side, their steam-ports and connections for conducting exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons at opposite ends of said rod, and separate valves mechanically actuated by the engine and controlling the admission and exhaust of steam outside said pistons for moving the valves in opposite directions, substantially as described.

17. The combination with high and low pressure cylinders ar-

ranged side by side, their steam-ports and connections for conducting exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, of separate piston-valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, and valve mechanism mechanically actuated by the engine and controlling the admission and exhanst of steam for actuating said pistons, substantially as described.

18. The combination with the steam cylinder or cylinders, pump-cylinders, piston or pistons, plungers and rocking beam of a direct-acting beam-pump, of a valve device controlling the steam-ports, a reciprocating valve-rod carrying said valve device, pistons on said rod for moving it in opposite directions, and valve mechanism actuated by a moving part of the pump and controlling the admission and exhaust of steam for actuating said pistons on said member, substantially as described.

19. The combination with the steam cylinder or cylinders, pump-cylinders, piston or pistons, plungers and rocking beam of a direct-acting beam-pump, of a valve device controlling the steam-ports, a reciprocating valve-rod carrying said valve device, pistons at opposite ends of said rod, separate valves controlling the admission and exhaust of steam outside said pistons for moving the valve device in opposite directions, and means for actuating said separate valves from a moving part of the pump, substantially as described.

20. The combination with the steam cylinder or cylinders, pump-cylinders, piston or pistons, plungers and rocking beam of a direct-acting beam-pump, of a piston-valve device controlling the steam-ports, a reciprocating valve-rod carrying said valve device, valve-actuating pistons at opposite ends of said rod, control-valve mechanism controlling the admission and exhaust of steam outside said valve-actuating pistons for moving the valve device in opposite directions, and means for actuating said control-valve mechanism from a moving part of the pump, substantially as described.

21. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, valve mechanism controlling the admission and exhaust of steam for actuating said pistons, and means for actuating said valve mechanism from a moving part of the pump, substantially as described.

22. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of separate piston-valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, valve mechanism controlling the admission and exhaust of steam for actuating said pistons to move the valves, and means for actuating said valve mechanism from a moving part of the pump, substantially as described.

23. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons at opposite ends of said rod, separate control-valves controlling the admission and exhaust of steam outside said pistons for moving the valves in opposite directions, and means for actuating said control-valves from a moving part of the pump, substantially as described.

24. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of separate pistoo-valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons at opposite ends of said rod, valve mechanism controlling the admission and exhaust of steam outside said pistons for moving the valves in opposite directions, and means for actuating said valve mechanism from a moving part of the pump, substantially as described.

25. In a compound direct-acting beam-pump, the combination with the high and low pressure cylinders arranged side by side, their steam-ports, and connections for conducting exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, valve mechanism for controlling the admission and exhaust of steam for actuating said pistons, and means for actuating said valve mechanism from a moving part of the pump, substantially as described.

26. In a compound direct-acting beam-pump, the combination with the high and low pressure cylinders arranged side by side, their steam-ports, and connections for conducting exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, of separate valves controlling the ports of the two cylinders, a reciprocating valve-rod carrying said valves, pistons on said rod for moving it in opposite directions, separate control-valves controlling the admission and exhaust of steam for actuating said pistons, and means for actuating said control-valves from a moving part of the pump, substantially as described.

27. The combination with two steam-cylinders arranged side by side, of valve mechanism for said cylinders, a single steam-chest for said cylinders, and steam-ports for the cylinders controlled by said valve mechanism for admitting steam to one or both of the cylinders independently of the space within the valve-chest and for exhausting one or both of said cylinders to the space within the valve-chest, substantially as described.

28. The combination with two steam-cylinders arranged side by side, of separate valves for said cylinders, a single steam-chest for said cylinders, and separate steam-ports for the cylinders controlled by said valves for admitting steam to one or both of the cylinders independently of the space within the valve-chest and for exhausting one or both of said cylinders to the space within the valve-chest, substantially as described.

29. The combination with two steam-cylinders arranged side by side, of a steam-chest having valve-chambers and ports for the two cylinders at opposite ends of the chest, piston-valves for the two cylinders in said chambers, and means for moving said valves in opposite directions, substantially as described.

30. The combination with two steam-cylinders arranged side by side, of a steam-chest having valve-chambers and ports for the two cylinders at opposite ends of the chest, piston-valves for the two cylinders in said chambers, and connections between the valves whereby the valves move together in both directions, substantially as described.

31. The combination with two steam-cylinders arranged side by side, of a steam-chest having valve-chambers for the two cylinders at opposite ends of the chest, piston-valves for the two cylinders in said chambers, connections between the valves whereby the valves move together in both directions, and steam-ports for the cylinders controlled by said valves for admitting steam to one or both of the cylinders independently of the space within the valve-chest and for exhausting one or both of said cylinders to the space within the valve-chest, substantially as described.

32. The combination with high and low pressure cylinders arranged side by side, of a single steam-chest for the cylinders, valves for the two cylinders, and steam-ports for the cylinders controlled by said valves to admit steam to the high-pressure cylinder independently of the space within the steam-chest and to exhaust the high-pressure cylinder into the space within the steam-chest, and to admit steam to the low-pressure cylinder from the space within the steam-chest and to exhaust the low-pressure cylinder independently of the space within the steam-chest, substantially as described.

33. The combination with high and low pressure steam-cylinders arranged side by side, of a steam-chest having valve-chambers at opposite ends for the two cylinders, piston-valves in said chambers, and steam-ports controlled by said pistons to admit steam to the high-pressure cylinder independently of the space within the steam-chest and to exhaust the high-pressure cylinder into the space within the steam-chest, and to admit steam to the low-pressure cylinder from the space within the steam-chest and to exhaust the low-pressure cylinder independently of the space within the steam-chest, substantially as described.

34. The combination with the steam-cylinder A, of steam-chest G having valve-chamber K, piston-valve L in said chamber, admission-port H connecting with the valve-chamber independently of the space within the steam-chest, exhaust-port I communicating with the space within the steam-chest, and ports controlled by said valve for admitting steam to the cylinder from admission-port H and for exhausting steam from cylinder A to the space within the steam-chest, substantially as described.

35. The combination with the high and low pressure cylinders A, A', of steam-chest G, valve-chambers K, K' at opposite ends of the steam-chest and opening into the space between the valve-chambers, piston-valves L, L' in said valve-chambers, admission-port H connecting with the valve-chamber K independently of the space between the valve-chambers, exhaust-port I communicating with the valve-chamber K', and ports controlled by said valves for admitting steam to the cylinder A from admission-port H and exhausting into the space between the valve-chambers and for admitting steam from the space between the valve-chambers to the cylinder A' and exhausting from the cylinder A' to the exhaust-port I, substantially as described.



36. The combination with the high and low pressure cylinders A, A', of steam-chest G having valve-chambers K, K' at opposite ends of the steam-chest and opening at their inner ends into the space between the valve-chambers, exhaust-passage $i^2$ and admission-passage $k^2$ connecting the outer ends of the valve-chambers with the space between the valve-chambers, admission-port H communicating with the valve-chamber K, exhaust-port I communicating with the valve-chamber K', and ports controlled by said valves for admitting steam from admission-port H to the cylinder A and exhausting from cylinder A to the space between the valve-chambers from the inner end of valve-chamber K or through passage $i^2$ and for admitting steam to the cylinder A' from the space between the valve-chambers through the inner end of the valve-chamber K or through passage $k^2$ and for exhausting from cylinder A' through exhaust-port I, substantially as described.

37. The combination with steam-cylinders A, A', of steam-chest G having valve-chambers K, K', and piston-valves L, L' in said chambers controlling the cylinder steam-ports and connected together, pistons M, M' outside the valves, and steam-chambers for said pistons, substantially as described.

38. The combination with steam-cylinders A, A', of steam-chest G having valve-chambers K, K' and piston-valves L, L' in said chambers controlling the cylinder steam-ports and connected together, pistons M, M' outside the valves, steam-chambers for said pistons, admission and exhaust ports for said steam-chambers, and control-valves m, m' at opposite ends of the steam-chest, substantially as described.

39. The combination with steam-cylinders A, A', of steam-chest G having valve-chambers K, K' and piston-valves L, L' in said chambers controlling the cylinder steam-ports and connected together, pistons M, M' outside the valves, admission and exhaust ports 1, 2, 3, 4 at opposite ends of the steam-chest for admitting and exhausting steam outside said pistons, and control-valves m, m', substantially as described.

40. The combination with steam-cylinders A, A', of steam-chest G having steam-ports for the two cylinders at opposite ends and admission and exhaust ports H, I, and valves controlling the ports for admitting steam from port H independently of the space within the steam-chest between the valves and for exhausting through said space, substantially as described.

41. The combination with steam-cylinders A, A', of steam-chest G having valve-chambers K, K' for two cylinders at opposite ends, admission and exhaust ports H, I, and ports connecting the cylinder-ports with the admission and exhaust ports H, I of the valve-chest, and connected piston-valves L, L' in said valve-chambers controlling the cylinder steam-ports, substantially as described.

42. The combination with steam-cylinders A, A', of steam-chest G having ports for the two cylinders at opposite ends, admission-port H connecting with one of the cylinders, exhaust-port I connecting with the other cylinder, and ports connecting each of said cylinders with the space within the valve-chest for conducting the exhaust from one cylinder through the valve-chest to the other cylinder and valves controlling said ports, substantially as described.

43. The combination with steam-cylinders A, A', of steam-chest G having valve-chambers K, K' at opposite ends, admission and exhaust-ports H, I connecting respectively with valve-chambers K, K', ports for connecting said valve-chambers with the steam-cylinder ports of two steam-cylinders, and passages $i^2$, $k^2$ connecting the outer exhaust-port of chamber K and the outer admission-port of chamber K' with a receiver between the chambers with which the inner ports of the chambers connect and valves controlling said ports, substantially as described.

44. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of admission and exhaust ports for the steam-cylinders arranged to secure the closing of the exhaust-port in each cylinder by the piston for cushioning at only one end of each cylinder, substantially as described.

45. The combination with the vertical steam and pump cylinders, pistons, plungers and rocking beam of a vertical direct-acting beam-pump, of admission and exhaust ports for the steam-cylinders arranged to secure the closing of the exhaust-port by the pistons for cushioning at only the upper ends of the cylinders, substantially as described.

46. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of a single port forming the admission and exhaust port for each end of each cylinder, the port at one end only of each cylinder being arranged to be closed by the pistons to cushion the latter, substantially as described.

47. The combination with the vertical steam and pump cylinders, pistons, plungers and rocking beam of a vertical direct-acting beam-pump, of a single port forming the admission and exhaust port for each end of each cylinder, the port at the upper end only of each cylinder being arranged to be closed by the pistons to cushion the latter, substantially as described.

48. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of a single port at each end of each cylinder forming the admission and exhaust port, said port at one end of each cylinder only having a main exhaust connection with the cylinder closed by the piston as it approaches the end of its stroke for cushioning and another connection with the cylinder outside of and not closed by the piston, substantially as described.

49. The combination with the steam and pump cylinders, pistons, plungers and rocking beam of a direct-acting beam-pump, of a single port at each end of each cylinder forming the admission and exhaust port, said port at one end of each cylinder only having a main exhaust-connection with the cylinder closed by the piston as it approaches the end of its stroke for cushioning and another connection with the cylinder outside of and not closed by the piston, and an adjustable valve controlling said second connection with the cylinder for regulating the exhaust and admission through said connection, substantially as described.

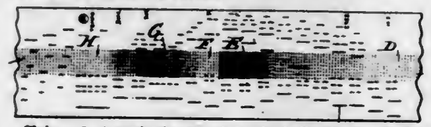
50. The combination with two steam-cylinders and their pistons, and a rocking beam connecting said pistons, of ports for the admission and exhaust of steam, a valve mechanism arranged to permit the free exhaust of steam during the main part of each stroke and arranged to cushion each piston by the exhaust-steam at one end only of each cylinder and to permit the slow exhaust of the cushioning steam and the admission of steam behind the piston for beginning the next stroke, substantially as described.

51. The combination with two steam-cylinders, pistons and piston-rods, and a rocking beam connecting said piston-rods, of single admission and exhaust ports k, l, K', l' for the respective cylinders, said ports k, K' having a connection with the cylinder closed by the piston as it approaches the end of its stroke, passages 7 connecting said ports k, K' with the cylinder-ports 6 beyond the movement of the piston, and adjustable valves for controlling said ports 6, substantially as described.

52. In a beam-engine, the combination with a rod or plunger, of connecting-pieces x, beam F, links y connected to the connecting-pieces x and pivots 14 connecting the opposite ends of the beam F to the links y and extending through openings in the connecting-pieces x formed to permit the movement of the pivots across the line of the rods, substantially as described.

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**757,010. MUSIC-SHEET.** HENRY P. BALL, New York, N. Y., assignor of one-half to Samuel Insull, Chicago, Ill. Filed Aug. 18, 1902. Serial No. 119,985. (No model.)




*Claim.*—1. A music-sheet having color indications applied thereon in the direction of its length as a line of definite width, said indications produced by a single color varied in depth in accordance with the expression to be given to the musical notes to be produced.

2. A music-sheet provided with an expression body shaded to represent different degrees of intensity of color.

3. A music-sheet provided with an expression body shaded in the direction of its length and formed of a series of marks of variable thickness, assembled to indicate different shades of color.

4. A music-sheet having color indications in the form of a continuous line, varying in depth of color applied along one side of the music-sheet.

5. A music-sheet having color indications in the form of a continuous line arranged along a music-sheet and varying in depth of color, together with printed words indicative of acts to be performed by the operator of the musical instrument upon which the music-sheet is used.

6. A music-sheet having arranged along the sheet, a line of definite color but varying in depth of shade in accordance with the sound characteristics to be given to the notes to be produced on the musical instrument through which such music-sheet is passed.

7. A music-sheet having sound perforations therein, and color indications thereon, said color indications of the same color but vary-

ing in shade in accordance with the characteristics which it is desired shall be imparted to the musical sounds indicated by the sound perforations.

8. A perforated music-sheet having an expression indication, consisting of a shaded marking of uniform width across the sheet.

9. A perforated music-sheet having an expression indication, consisting of an aggregation of markings of uniform length and various widths.

10. A music-sheet having perforations therein representing the notes to be played, and an expression indication corresponding in position on the sheet longitudinally with said perforations, consisting of a colored zone or area running longitudinally on the sheet and shaded in intensity of color.

11. A music-sheet having its entire surface colored in various shades of the same color.

12. A music-sheet having a zone of its surface colored in various shades of the same color.

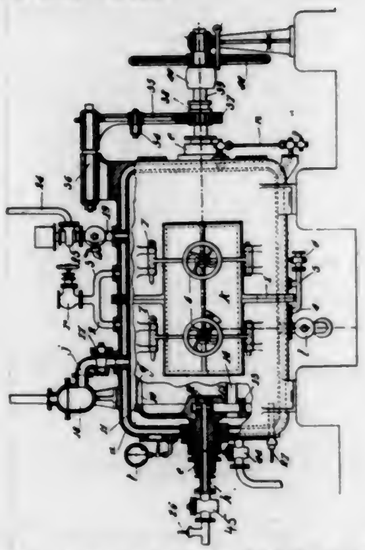
13. A music-sheet having a continuous zone of its surface colored in various shades of the same color.

14. A music-sheet having its entire surface colored in various shades of the same color, and perforations in said sheet at those places where the shade changes.

15. A music-sheet having a zone of its surface colored in various shades of the same color and perforations in said sheet at those places where the shade changes.

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**757,011. APPARATUS FOR WASHING, DISINFECTING, AND DRYING.** LOUIS H. BARBE, Paris, France. Filed June 16, 1903. Serial No. 161,758. (No model.)



*Claim.*—1. An apparatus for washing, disinfecting and drying comprising an external fixed casing in two parts each having a steam-space, and containing a movable barrel, a steam-supply arranged on the top of the said casing and feeding two branch pipes leading to the two steam-spaces, and a corresponding discharge-tap arranged at the bottom of the said casing and communicating with two pipes, said two pipes connecting with the two steam-spaces, substantially as described.

2. An apparatus for washing, disinfecting and drying, comprising an external casing adapted to be heated and containing a movable barrel, the arrangement on said casing of a tap connecting the apparatus with a vacuum-pump, a tap for the introduction of the solvent, a tap for the readmission of air into the apparatus, a pipe provided with a tap placing the apparatus in communication through a filter with a suitable condenser, a level-indicator and a corresponding overflow and a manometer substantially as described.

3. An apparatus for washing, disinfecting and drying comprising a double casing adapted to be heated by steam and a system of pipes and taps enabling vacuum to be produced in the apparatus, solvent introduced therein and to be placed in communication with an apparatus for condensing the vapor of the solvent, the arrangement of a movable barrel provided with a pipe for the introduction of carbonic-acid gas to its interior, a tap governing the introduction of the gas and a perforated tap insuring its distribution and revolving with the drum and a raising-paletto substantially as described.

4. An apparatus for washing, disinfecting and drying a casing adapted to be heated by steam, a movable barrel therein, a shaft 39 on which the barrel is mounted and means for driving the barrel comprising a toothed sector 35, a pulley and a toothed wheel 37 splined to the said shaft to be shifted longitudinally thereof said toothed wheel cooperating with the toothed sector when engaging the same and coacting with the pulley 40 when shifted out of engagement with the sector substantially as described.

5. An apparatus for washing, disinfecting and drying adapted to be heated at its periphery by a circulation of steam and in its interior by a supply of inert hot gas penetrating by a perforated pipe mounted in the movable barrel the arrangement on the shaft of this barrel of a fly-wheel enabling a door of said barrel to be brought opposite the door of the casing and of fixing the barrel in this position by means of a spindle (43a) the whole substantially as hereinbefore described and shown as an example in the accompanying drawings.

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**757,012. AERIAL VEHICLE.** ALEXANDER G. BELL, Washington, D. C. Filed June 1, 1903. Serial No. 159,557. (No model.)



*Claim.*—1. A compound cellular aerial vehicle composed of pentahedral elements triangular in cross-section so disposed as to have meeting corners and connected at said corners.

2. An aerial vehicle composed of elements triangular in cross-section so disposed as to have meeting corners or edges at which they are connected and having a single bar or stick at the meeting edges of two elements.

3. An aerial vehicle comprising cellular elements triangular in cross-section, combined to form a structure of hexagonal outline, and provided with covered surfaces.

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**757,013. ANESTHETIC-VAPOR INHALER.** GEORGE L. BENNETT, Chicago, Ill. Filed July 16, 1903. Serial No. 165,860. (No model.)



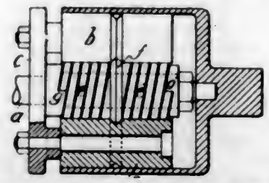
*Claim.*—1. The combination in an inhaler of the rotating valve-core provided with a large port and a plurality of small ports varying in diameter, said valve-core adapted to rotate in a cylindrical shell having corresponding inlet and outlet ports, substantially as described.

2. The combination in an inhaler of the indicator provided with a plurality of small apertures in one end and an oblong aperture in the opposite end, said apertures corresponding with the apertures in said rotating valve-core, a slidable cover actuated by a screw, said screw connected to the rotating valve-core, and arranged to move both valve-core and slide in unison substantially as set forth.

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**757,014. FRICTION-GEARING.** OTTO R. P. BERGLUND and ERNST O. W. HEMMELMAR, Stockholm, Sweden. Filed Dec. 8, 1903. Serial No. 184,322. (No model.)

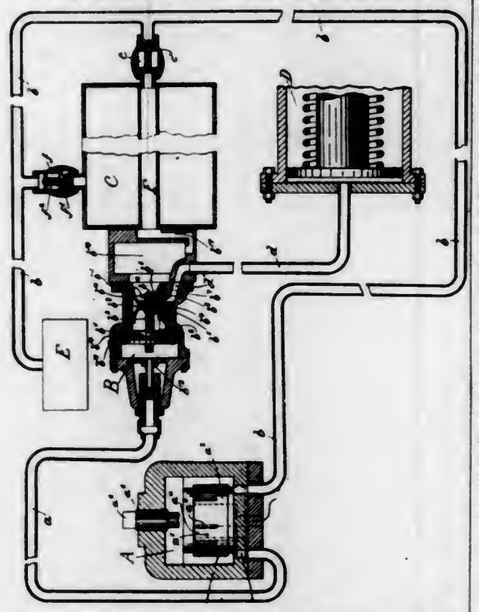
*Claim.*—1. In friction-gearings the combination of a rotating shaft, friction-wheels having each a beveled portion and arranged around the shaft on a support, a sleeve, surrounding the friction-wheels, and a spiral spring between the shaft and friction-wheels, said spring surrounding the shaft and being actuated by it at one end but free from it at the other end and a ring or collar, having a conical portion and connected to the free end of the spring and bearing against the correspondingly-shaped portion of the friction-wheels.



2. In friction-gearings the combination of grooved friction-wheels, arranged on a support, a shaft between them, a sleeve surrounding the friction-wheels, and two spiral springs surrounding the shaft and being actuated at one end by the shaft, but free from it at the other end and a ring, conical in cross-section, surrounding the shaft and connected to the free ends of the spring, said ring being adapted to engage with the grooves in the friction-wheels.

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**757,015. STRAIGHT-AIR AUTOMATICALLY-ACTING BRAKE.** JOHN H. BLEOO, Brooklyn, N. Y., assignor to Abraham B. Levy, New York, N. Y. Filed June 12, 1902. Serial No. 111,322. (No model.)



*Claim.*—1. In an air-brake system for single cars the combination of a brake-cylinder, a controlling-valve and a governing-valve of the triple-valve type, a reservoir C, and pipe connections all connected in such manner as to receive pressure from a single source and to maintain the same given air-pressure throughout the system when the parts are in the release position, means for maintaining said given predetermined air-pressure throughout the entire system, hereinbefore specified, an automatically-unseated valve normally balanced when the air-pressure is normal and adapted to be seated upon leakage of air-pressure from one side thereof, means for supplying straight air to the brake-cylinder operative upon a movement of the automatically-unseated valve and an automatically-seated valve operative upon reduction of the air-pressure, whereby upon breakage or excessive leakage in the system the brake will be automatically set.

2. In an air-brake apparatus the combination of a brake-cylinder, a controlling-valve, a reservoir, a governing-valve of the triple-valve type, a pipe F and a plurality of check-valves, one controlling the admission of air to the pipe F and the other controlling admission of air to the reservoir, one of the said valves being seated automatically and the other of the said valves being unseated automatically, and means whereby a reduction of pressure in the pipe system will effect the seating of both valves.

3. In an automatic safety air-brake system the combination of a brake-cylinder, a governing-valve of the triple-valve type, a reservoir and a controlling-valve, the said brake-cylinder, reservoir, governing-valve and triple valve being united by a single-pipe system whereby an equalization of pressure may be maintained under normal conditions throughout the entire system and a check-valve intervening between the reservoir and the source of air-supply with means for normally holding the said check-valve off its seat and for permitting the said check-valve to be reseated upon a reduction of pressure on the supply side.

4. In an automatic safety air-brake system the combination of a brake-cylinder, a governing-valve of the triple-valve type, a reservoir and a controlling-valve, the said brake-cylinder, reservoir, governing-valve and triple valve being united by a single-pipe system whereby an equalization of pressure may be maintained under normal conditions throughout the entire system and a plurality of check-valves one intervening between the reservoir and the source of air-supply and the other intervening between the governing-valve and the source of air-supply.

5. In an automatic safety air-brake system the combination of a brake-cylinder, a governing-valve of the triple-valve type, a reservoir and a controlling-valve, the said brake-cylinder, reservoir, governing-valve and triple valve being united by a single-pipe system whereby an equalization of pressure may be maintained under normal conditions throughout the entire system and a check-valve normally held in an open position and a check-valve normally held in a closed position with means for closing one of the valves upon a reduction of air-pressure on its supply side and for opening the other valve upon a reduction of the pressure upon the side opposite to the supply side.

6. In an automatic safety air-brake system the combination of a brake-cylinder, a governing-valve of the triple-valve type, a reservoir and a controlling-valve, the said brake-cylinder, reservoir, governing-valve and triple valve being united by a single-pipe system whereby an equalization of pressure may be maintained under normal conditions throughout the entire system, a plurality of valves and means for maintaining the said valves in their closed position upon an abnormal reduction in pressure and for causing a brake-applying movement of the governing-valve to take place whereby upon a break occurring in the system or an abnormal reduction of the pressure the brake will be applied and held set until the abnormal condition has been remedied.

7. The combination of a brake-cylinder, a governing-valve in the nature of a triple valve, an air-supply pipe in communication with the governing-valve on one side thereof, an air-containing space on the opposite side of the governing-valve and a controlling-valve in the air-supply pipe having means for effecting the admission of air to the governing-valve at a normal pressure when in one position and at a reduced pressure when in another position whereby after a normal pressure has been communicated to the governing-valve the pressure may be reduced by the controlling-valve so as to check the motion of the governing-valve at the desired point.

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**757,016. TRIPLE VALVE FOR AIR-BRAKE SYSTEMS.** JOHN H. BLEOO, New York, N. Y., assignor to Abraham B. Levy, New York, N. Y. Filed June 11, 1903. Serial No. 161,003. (No model.)

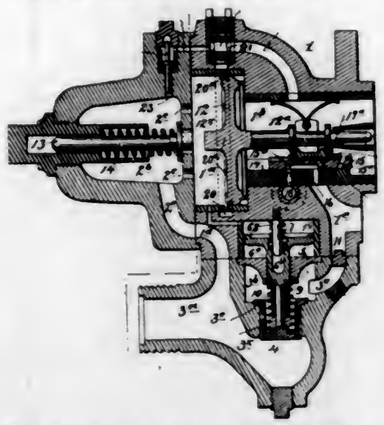
*Claim.*—1. The combination of a triple valve, with an emergency-valve having a chamber normally maintained by a port in communication with the piston-chamber of the triple valve on the train-pipe side of said piston to permit auxiliary air to act to close the emergency-valve after the triple-valve piston has moved for an emergency application, substantially as described.

2. The combination of a triple valve, with an emergency-valve in open communication with train-pipe air that communicates with the triple valve by a port leading to the piston-chamber of the triple valve on the train-pipe side of the piston and arranged to be covered and uncovered by said piston for placing said emergency-valve in communication with auxiliary air when an emergency application or stop is made, substantially as described.

3. The combination of a triple valve, with an emergency-valve adapted to control the passage of train-pipe air, and means for placing the emergency-valve in communication with auxiliary air to cause auxiliary-air pressure to close said valve when an emergency application or stop is made, substantially as described.

4. The combination of a triple valve, with an emergency-valve in communication with train-pipe air on the train-pipe side of the

triple-valve piston, a piston for said emergency-valve, means for normally maintaining equal pressure upon said valve and piston, and means for reducing pressure on one side of the piston to permit said valve to operate for an emergency application and to cause auxiliary air to close said valve, substantially as described.



5. The combination of a triple valve provided with a piston, with an emergency-valve to control train-pipe pressure, a piston for said valve within a chamber that communicates by a passage with train-pipe air, said passage being arranged to be placed in communication with auxiliary air by the piston of the triple valve upon an emergency application, whereby auxiliary-air pressure will close the emergency-valve, substantially as described.

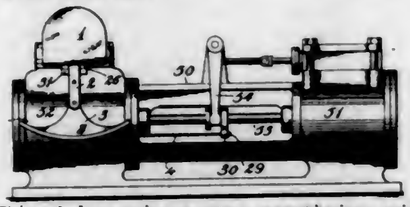
6. The combination of a triple valve, with an emergency-valve communicating with train-pipe air and adapted to normally close a chamber that communicates with a passage leading to a brake-cylinder or atmosphere, a port connecting the triple-valve-piston chamber on the train-pipe side of the piston with the emergency-valve on the side opposite the direct pressure of train-pipe air, said port being in position to be closed by said piston upon the reduction of train-pipe air for an emergency application, the piston being arranged to open said port upon further movement to place said port in communication with auxiliary air, substantially as described.

7. The combination of a triple valve provided with a piston, with an emergency-valve in communication with a chamber that communicates with a passage to permit the escape of train-pipe air, a piston to coact with the emergency-valve, and a chamber for said piston in communication with a chamber of the triple valve, whereby in normal positions the emergency-valve and its piston will have balanced pressure thereon and upon movement of the triple-valve piston the chamber of the emergency-valve piston will be placed in communication with auxiliary air, substantially as described.

8. An emergency-valve in combination with a triple valve in free and open connection with train-pipe air on the train-pipe side of the triple-valve piston without any intervening valves controlling said emergency-valve, the triple-valve piston being arranged to place one side of the emergency-valve in communication with auxiliary air upon an emergency application, substantially as described.

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**757,017. MEASURING APPARATUS.** FRANCIS BLOSSOM and WINFIELD A. HALLER, New York, N. Y. Filed Dec. 30, 1903. Serial No. 187,091. (No model.)



*Claim.*—1. In measuring apparatus, a support having a projecting sleeve, a shaft mounted within said sleeve, an indicator operated from said shaft, a wheel secured on said shaft and having a ball-race, an oscillating spring-pressed driving-arm mounted on said sleeve, a ball operating in an inclined groove in said arm and cooperating with said race, a spring-pressed finger to hold said ball in operative position, a holding-ball engaging said race, said driving-arm having a sector to be connected with a pump-piston and said arm being of adjustable length to compensate for the density of the fluid pumped.

2. In measuring apparatus, a support, a shaft mounted in said support, an indicator operated from said shaft, a wheel secured upon said shaft, an oscillating driving-arm adjacent said wheel, a driving-spring having an adjusting-ratchet and secured to said arm, a clutch on said arm to engage said wheel and to rotate the same in unison with said arm in one direction, said arm having means to be connected with a pump-piston and being of adjustable length to compensate for the density of the fluid pumped.

3. In measuring apparatus, an indicator, an oscillating arm adjacent said indicator, means connecting said indicator and driving-arm to operate said indicator when said arm rotates in one direction, and means normally tending to rotate said arm in one direction, said driving-arm having means to be connected with a displacement device and being formed with adjusting means to compensate for the density of the displaced fluid.

4. In measuring apparatus, a shaft, an indicator operated from said shaft, an oscillating driving-arm adjacent said shaft, intermittently-gripping means on said arm to rotate said shaft in unison therewith in one direction, said arm being provided with a sector to be connected with a displacement device and being of adjustable length to compensate for the density of fluid displaced.

5. In measuring apparatus, a support having a projecting sleeve, a shaft mounted within said sleeve, an indicator operated from said shaft, a wheel secured to said shaft and provided with a laterally projecting rim, an oscillating driving-arm mounted on said sleeve adjacent said wheel, a driving-spring secured to said arm and connected with a ratchet mounted on said sleeve, a catch to hold said ratchet in adjusted position and an intermittent grip-clutch on said arm engaging the inner face of said rim.

6. In measuring apparatus, a support having a projecting sleeve, a shaft mounted within said sleeve, an indicator operated from said shaft, a wheel secured to said shaft and provided with a laterally-projecting rim, an oscillating driving-arm mounted on said sleeve adjacent said wheel, a driving-spring secured to said arm and connected with a ratchet mounted on said sleeve, a catch to hold said ratchet in adjusted position, a ball mounted in a groove in said arm and cooperating with a race formed in the inner face of said rim, and a pivoted spring-pressed finger engaging said ball and holding the same in operative position.

7. In measuring apparatus, a support having a projecting sleeve, a shaft mounted within said sleeve, an indicator operated from said shaft, a wheel secured to said shaft and provided with a laterally-projecting rim, an oscillating driving-arm mounted on said sleeve adjacent said wheel, a driving-spring secured to said arm and connected with a ratchet mounted on said sleeve, a catch to hold said ratchet in adjusted position, a plurality of oppositely-disposed balls mounted in said arm and engaging the inner face of said rim and means to prevent the rotation of said wheel in one direction.

8. In measuring apparatus, a support having a projecting sleeve, a shaft mounted within said sleeve, an indicator operated from said shaft, a wheel secured to said shaft and provided with a laterally-projecting rim, an oscillating driving-arm mounted on said sleeve adjacent said wheel, a driving-spring secured to said arm and connected with a ratchet mounted on said sleeve, a catch to hold said ratchet in adjusted position, a plurality of oppositely-disposed balls mounted in said arm and engaging the inner face of said rim and a ball cooperating with the inner face of said rim to prevent rotation of said wheel in one direction.

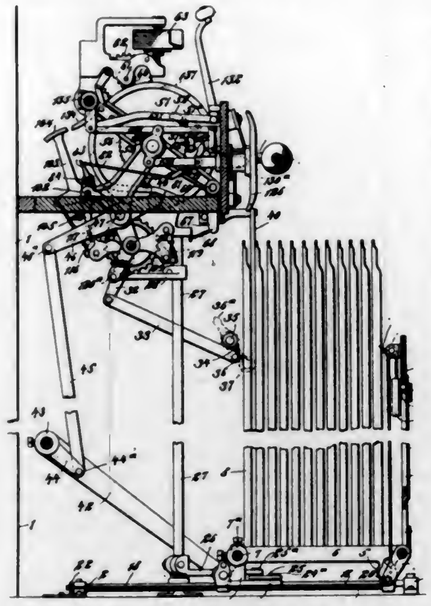
9. In measuring apparatus, a shaft, an indicator operated from said shaft, an oscillating driving-arm adjacent said shaft, intermittently-gripping means on said arm to rotate said shaft in unison therewith in one direction, said arm being of adjustable length to compensate for the density of fluid displaced and means to connect said arm with a displacement device and to oscillate said arm through an angle proportionate to the amount of fluid displaced.

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**757,018. CARRIAGE-FEED DEVICE FOR MUSIC-BOXES.** GUSTAV A. BRACHHAUSEN, Rahway, N. J., assignor to Regina Music Box Company, Rahway, N. J., a Corporation of New Jersey. Filed June 27, 1902. Serial No. 113,419. (No model.)

*Claim.*—1. In a music-box, the combination with the driving mechanism for the note-sheet, of a carriage arranged to hold a plurality of note-sheets, means for feeding said carriage, means for connecting the said driving mechanism with the carriage-feed device and with the note-sheet conveying device, or disconnecting the said driving mechanism therefrom, so that the note-sheets may be changed or the same note-sheet played over, as desired.





2. In a music-box, the combination with a driving mechanism comprising a driving drum, and a note-sheet-driving device arranged to cooperate with said drum, of means for throwing the note-sheet-driving device into and out of operative connection with the drum, a carriage arranged to hold a plurality of note-sheets, mechanism for feeding the carriage, mechanism for conveying the note-sheets to and from the carriage, an operating device for said feed mechanism and conveying mechanism, means for connecting said operating mechanism with the driving-drum, and means for disconnecting the driving-drum from said mechanism.

3. In a music-box, the combination with a driving mechanism comprising a driving-drum, and a driving device for the note-sheet, of means for controlling the operative connection of said driving device with the drum, a note-sheet-changing device, an operating device therefor, means for connecting said operating device with the driving-drum, and means for disconnecting the operating device from the driving-drum.

4. In a music-box, the combination with a drum having operative connections to drive a note-sheet, and a ratchet-wheel held to turn therewith, of a disk mounted to turn about the same axis as the drum, but loose relatively thereto, a pawl mounted on said disk and arranged to engage the ratchet-wheel so as to connect the said disk with the drum, means for throwing the pawl out of engagement with the ratchet-wheel, and a note-sheet-changing device actuated by said disk.

5. In a music-box, the combination with a drum having operative connections to drive a note-sheet, a note-sheet-changing device, an operating-disk for said note-sheet-changing device, said disk being mounted loosely in relation to the drum, means for connecting the operating-disk with the drum so that they will revolve together, and a movable disconnecting device arranged to project into the path of said connecting means and to free the disk from the drum.

6. In a music-box, the combination with the driving mechanism for the note-sheet, of a carriage arranged to hold a plurality of note-sheets, hand-operated mechanism for feeding the carriage, automatic mechanism likewise arranged to feed the carriage, and a controlling-arm connected with the hand-operated mechanism and arranged to engage the automatic mechanism in such a manner as to throw the latter mechanism out of action in a certain position of said arm.

7. In a music-box, the combination with the driving mechanism for the note-sheet, of a carriage arranged to hold a plurality of note-sheets, hand-operated means for feeding the carriage, automatic mechanism for feeding the carriage, a controlling-arm operatively connected with the hand-operated mechanism and arranged to throw the automatic mechanism out of action, automatic mechanism for conveying the note-sheets to and from the carriage, and means controlling the connection of said automatic mechanism with the driving mechanism, whereby said automatic mechanism may be thrown out of action while the driving mechanism of the note-sheet remains in action.

8. In a music-box, the combination with the driving mechanism for the note-sheet, of a carriage arranged to hold a plurality of note-sheets, a carriage-feed device, pawls extending in opposite directions and arranged to drive the carriage-feed device, and to arrest it respectively, connected arms for operating said pawls, and means for imparting a rocking motion to said arms from the said driving mechanism.

9. In a music-box, the combination of the driving mechanism for the note-sheet, mechanism for normally arresting said driving mechanism, a starting device for throwing said arresting means out of action, a stop arranged to temporarily keep the starting device in its releasing position, a carriage-feed device, which, together with said stop, is actuated by the driving mechanism, and a note-sheet carriage operated by said feed device.

10. In a music-box, the combination with the driving mechanism for the note-sheet, of a carriage arranged to hold a plurality of note-sheets, a carriage-feed device, a device for conveying the note-sheets to and from the carriage, an operating-disk controlling said carriage-feed device and conveying device, means for normally connecting said operating-disk with the driving mechanism, a device for disconnecting the operating-disk from the driving mechanism, and a starting-lever, having means for releasing the driving mechanism by the initial movement of said lever so as to cause the operation of the note-sheet, the conveying device and the carriage-feed device, and means operative upon a further movement of the starting-lever, for throwing the disconnecting device into action so as to render the conveying device and the carriage-feed device inactive.

11. In a music-box, the combination with the driving mechanism for the note-sheet, of a note-sheet-changing device, operating mechanism therefor, means for normally connecting said operating mechanism with the driving means, a disconnecting device for freeing the said operating mechanism from the driving mechanism, and a starting-lever, having means for releasing the driving mechanism by the initial movement of said lever so as to cause the operation of the note-sheet and the note-sheet-changing device, and means operative upon a further movement of the starting-lever bringing the disconnecting device into action so as to interrupt the operation of the note-sheet-changing device.

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**757,019. SYSTEM OF MOTOR CONTROL.** FRANK L. BUTLER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 13, 1902. Serial No. 123,306. (No model.)

*Claim.*—1. In a system of motor control, a motor-controller comprising a plurality of separately-actuated contacts, a pneumatic actuating device for each contact, and a master-controller comprising separate and independently-actuated valves for controlling said devices individually from a distance and mechanical means for actuating said valves in any predetermined order.

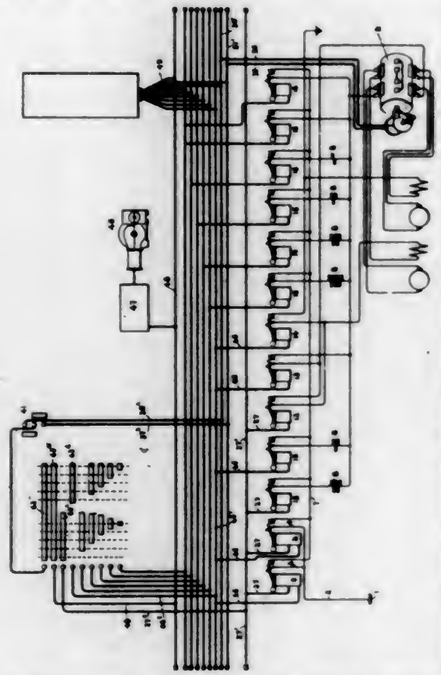
2. In a system of motor control, a motor-controller comprising a plurality of separately-actuated contacts, a pneumatic actuating device for each contact, a master-controller comprising separate and independently-actuated valves for controlling said devices individually from a distance, and a plurality of pipes for connecting the pneumatic actuating devices with their corresponding controlling-valves.

3. In a controller for electric motors, the combination with a plurality of separately-actuated contacts for controlling the motors, of a pneumatic actuating device for each contact, a pneumatically-actuated reversing-switch, a master reversing-valve, and a master-controller comprising a plurality of separately-actuated valves for controlling said contact-actuating devices and a valve for controlling the admission of compressed fluid to said master reversing-valve.

4. In a system of motor control, a motor-controller comprising a plurality of separately-actuated contacts, a pneumatic actuating device for each contact, a system of train-pipes, pipes connecting each pneumatic actuating device to its corresponding train-pipe, a master-controller comprising a plurality of separate and independently-actuated valves, and pipes connecting each of said valves to its corresponding train-pipe.

5. In a system of motor control, the combination of a plurality of electric motors, a resistance, separately-actuated contacts for con-

trolling the amount of resistance inserted in circuit with said motors, separately-actuated contacts for connecting said motors in series and in parallel relationship, pneumatic actuating devices for each of said contacts, a plurality of separate and independently-actuated valves forming a master-controller for said pneumatic devices, and a series of cams for operating said valves so as to connect the motors in series with a resistance in circuit, then to cut out said resistance, then to connect the motors in parallel with resistance in circuit, and then to cut out said resistance.



6. In a system of train control, the combination of a plurality of motors, a plurality of motor-controllers each comprising a plurality of separate pneumatically-actuated contacts, a master-controller, pipes connecting the actuating means of corresponding contacts of said motor-controllers directly to said master-controller, and means in said master-controller for controlling the admission of compressed fluid to said pipes in any desired order, whereby the corresponding contacts of the several motor-controllers are operated simultaneously and the contacts in any one controller are operated in any desired order.

7. In a system of train control, the combination with an electric motor, of separately-actuated contacts for controlling the electric circuits, pneumatic actuating devices therefor, and a master-controller for said pneumatic devices comprising a casing containing a chamber, a plurality of pipes, valves for individually connecting said chamber and pipes, and a movable valve-controller provided with cams for operating said valves in a predetermined order.

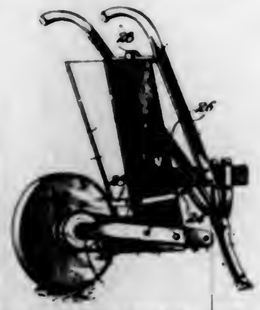
8. The combination with a plurality of pneumatically-actuated electric contacts, of a casing containing a chamber, pipes connecting said casing with a source of fluid-pressure and with the contact-actuating devices, valves for individually connecting said chamber and pipes, and a cylinder carrying cam-segments for opening said valves.

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**757,020. FERTILIZER-DISTRIBUTER.** James M. Butler, Bernice, La. Filed Aug. 19, 1903. Serial No. 170,060. (No model.)

*Claim.*—1. In a device of the class described, a hopper comprising front and rear sides, downwardly-converging side pieces extending below said front and rear sides, a frame-bar interposed between the lower ends of the side pieces below the lower ends of the front and rear pieces, guard-plates interposed between the latter and the frame-bar, and connecting-bolts extending through the side pieces, the guard-plates and the frame-bar.

2. In a device of the class described, a hopper comprising front and rear sides, downwardly-converging side pieces extending below said front and rear sides, a frame-bar interposed between the lower ends of the side pieces below the lower ends of the front and rear pieces, guard-plates interposed between the latter and the frame-bar, rearwardly-extending brackets disposed exteriorly against the ower ends of the side pieces, and bolts extending transversely through and connecting said brackets, side pieces, guard-plates and frame-bar



3. In a device of the class described, a hopper composed of front and rear pieces and side pieces converging downwardly and extending below said front and rear pieces, a frame-bar interposed between said side pieces below the lower ends of the front and rear pieces, brackets extending rearwardly from the hopper, one of said brackets having an offset, an axle journaled in said brackets, a ground-engaging wheel and a band-wheel mounted upon said axle, brackets extending forwardly from the hopper, a pulley journaled between said brackets, and an endless band connecting said pulley with the band-wheel upon the axle, the upper lead of said band traveling above the frame-bar and through the openings between the latter and the front and rear sides of the hopper.

4. In a device of the class described, a hopper having downwardly-converging sides, rearwardly and forwardly extending brackets connected with said hopper, band-supporting means journaled in said brackets, an endless band, cups upon the latter, and means for imparting motion to said endless band.

5. In a device of the class described, a hopper having downwardly-converging side pieces and front and rear pieces terminating above the lower ends of said side pieces, a frame-bar secured between said side pieces below the lower terminals of the front and rear pieces, a flexible flap connected interiorly with the rear side of the hopper, forming a closure, a slide connected exteriorly with the front side of the hopper and constituting a gage, an endless carrier mounted on the lower part of the hopper with its upper lead above the frame-bar, and operating means.

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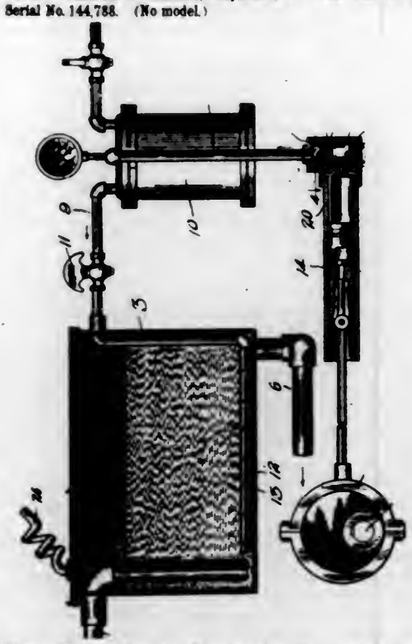
**757,021. SCISSORS OR SHEARS.** Joseph M. Bybeton, Walnut Grove, Minn. Filed Sept. 8, 1903. Serial No. 172,306. (No model.)



*Claim.*—Scissors or shears, comprising blades, one provided with a laterally-projecting pivot-stud and having a longitudinal recess provided with an enlargement intermediate its ends, and the other being pivotally mounted upon said stud, a bowed plate-spring fitting in said recess and having one end formed with an opening receiving said stud, said end of the spring forming with the stud-carrying blade a fork in which the pivoted blade is movably mounted upon said stud, said spring being held from lateral movement by the walls of said recess and being provided with a central enlargement having a threaded opening and engaging shoulders of the said enlargement of the recess to hold it from longitudinal movement, and a screw mounted in the stud-carrying blade and having a threaded end engaging said threaded hole in the central enlargement of the bowed spring, whereby the latter may be adjusted to various tensions.



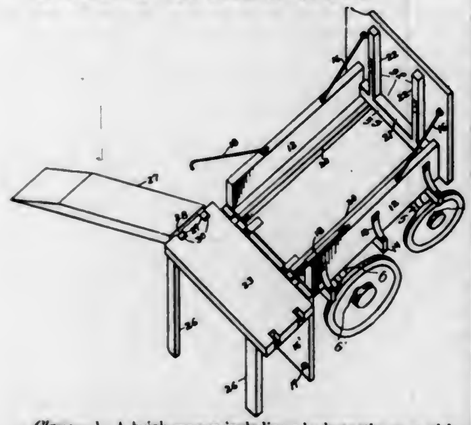
**757,022. WATER-COOLER FOR INTERNAL-COMBUSTION ENGINES.** Charles W. Carrier, Desplaines, Ill. Filed Feb. 24, 1903. Serial No. 144,788. (No model.)



*Claim.*—The combination of a motor having a water-jacket, a water-tank, a pump, operated by the motor, a flow connection from the bottom of the tank to the pump and from thence to the water-jacket, a return connection from the water-jacket to the bottom of the water-tank, an air-pump operated by the motor, and a connection therefrom discharging into the bottom of the water-tank, the discharge portion of said connection being in the bottom of the body of water in the tank and between the flow and return water connections, substantially as described.

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**757,023. WAGON-BOX.** Daniel Clark, Powassan, Canada. Filed Feb. 25, 1903. Serial No. 145,100. (No model.)

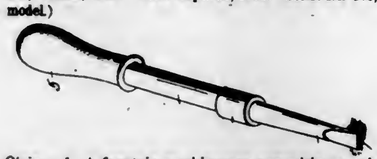


*Claim.*—1. A brick-wagon including a body portion comprising a floor, side pieces projecting upwardly therefrom, sills disposed longitudinally upon the said floor parallel to the sides and spaced therefrom, the said sills being of lesser height than the sides, and racks each including a base, uprights extending from the base, and braces for supporting the uprights upon the base, the racks resting removably upon the sills between the sides, the base of the rack being of greater length than the distance between a side and the sill adjacent to the opposite side.

2. A wagon including a body portion comprising a floor having raised side portions and longitudinal sills parallel with the sides and spaced therefrom and adapted to support racks as specified, a front disposed upon the floor and against the forward ends of the sides, braces connecting the upper portion of the front and the upper edges of the sides, an end-gate hinged to the rear end of the floor and braces attached to the upper edge of the sides and removably connected to the said end-gate when in closed position, the said front and end gate being of a height equal to that of the racks and greater than that of the sides.

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**757,024. MARKING AND LETTERING PEN.** Charles C. Clement, Boston, Mass. Filed Sept. 30, 1903. Serial No. 175,186. (No model.)

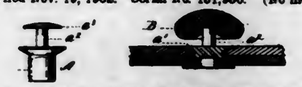


*Claim.*—1. A fountain marking-pen comprising a tubular barrel open at its upper end and having a tapering tip at its lower end, and a bulb of compressible material fitted loosely upon the upper end of the barrel, whereby slight pressure upon the bulb will be effective to increase the flow of marking fluid from the tip of the pen and the relaxation of pressure upon the bulb will not cause the marking fluid to be drawn upward in the barrel of the pen.

2. A fountain marking-pen comprising a short barrel having both ends open, a tapering tubular tip secured at the lower end of the barrel, and a compressible bulb fitted loosely upon the upper end of the barrel, the entire structure being of such dimensions that when in use the bulb will lie in contact with the hand of the user and the increased pressure upon the pen in making a bold stroke will cause pressure against the bulb and increase the rate of flow of the fluid from the tip of the pen.

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**757,025 LACING-BUTTON.** Albert L. Cole, Auburndale, Mass. Filed Nov. 19, 1902. Serial No. 131,930. (No model.)



*Claim.*—1. As a new article of manufacture, a lacing-button, made up of a securing member or body having a shoulder; a neck, and a head, covered with plastic material, which, when hardened, has a smooth surface; the outer portion of said surface adjacent to the surface of the shoulder, being oblique to that of the shoulder and forming with said latter surface, a space between said shoulder and said head-covering, adapted to be filled by a lacing-string or the like, that part of said adjacent surface of the head-covering, not covered by said lacing or the like, having an obliquity that permits garments to rub over said exposed part without catching thereon.

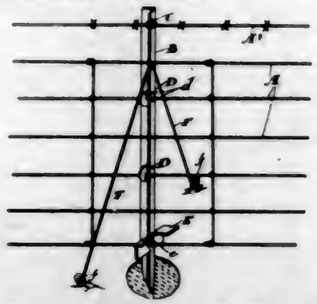
2. A lacing-button consisting of a body provided with a shoulder; a centrally-disposed neck; and a head with a covering of plastic material, which, when hardened, has a smooth surface, said head and covering forming a button, the under surface of said button having toward the neck, a curvature approaching, and then receding from, the adjacent surface of the shoulder; said surfaces and said neck being designed and proportioned to be adapted to be engaged by a lacing or the like; the outer part of said lacing or the like being compressed and filling the entrance to the space formed between said shoulder shank and head-covering; and the portion of said surface, uncovered by said lacing or the like, having such obliquity as to prevent garments catching thereon; while the inner part of said lacing or the like, expanding in the space about the neck, and thus by offering resistance to compression, tends to retain the lacing or the like in the grip of the lacing-button.

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**757,026. FENCE-POST.** Adolphus H. Cook and Chester R. Cook, Almira, and William H. Hood, Hagerman, Canada. Filed Aug. 4, 1902. Serial No. 118,371. (No model.)

*Claim.*—1. In combination with a fence-post, a hook secured thereto by one end and having its other end extending along the side of the post, with its intermediate portion extending around the edge of the post, said hook presenting an open mouth to receive a wire and engaging the wire when the post is turned, substantially as described.

2. In combination a post and a plurality of horizontal wires, a hook attached to the post by one of its ends and having its other end disposed along the side of the post substantially horizontal to present a mouth for receiving one of the wires, and means for engaging another of the wires when the post is turned to throw the hook into engagement with its wire, said means being arranged on the post and being movable vertically in relation to the wire to be held thereby, substantially as described.



3. In a fence-post, the combination with the posts and the upper guard-strand thereof, of a double hook having one end hooked into the post and the other end passed over and under the wire, the intermediate part of the hook extending around the edge of the post, so as to form a supporting-eye on the edge of the post to grip and hold the longitudinal guard-wire as and for the purpose specified.

4. In combination with a fence-post, holding means for a wire strand engaging and releasing the said strand by turning the said post about its vertical axis and means for holding the post against backward turning consisting of a bar pivoted to the post and having a notch to engage a wire strand, said bar extending horizontally across the wire when in engaging position.

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**757,027. HYDROCARBON-BURNER.** THOMAS H. DELANEY, Norwich, Conn. Filed Mar. 28, 1903. Serial No. 149,958. (No model.)



*Claim.*—1. In a hydrocarbon-burner three superimposed sections, a base-section or pan, corner-posts, an intermediate section or retort-casting resting upon said corner-posts with an air-space therebetween, the bottom of the retort-casting being set in to receive said corner-posts, said retort-casting being formed with a central transverse chamber, oppositely-extending channels connecting with said central chamber and with like channels at the end of said section.

2. A hydrocarbon-burner composed of three superimposed sections, a base-section or pan, corner-posts, an intermediate section or retort-casting resting upon said corner-posts with an air-space therebetween, the bottom of the retort-section being set in to receive said corner-posts, said retort-casting being formed with a central transverse chamber oppositely-extending channels connecting with said central chamber and with like channels at the end of said section, a cover-plate for said retort-casting, and mixing-tubes depending from the cover-plate into the said retort-casting, and vapor-discharging pipes for discharging vapor into said mixing-tubes, said vapor-discharge pipes each being connected to the end channels of the retort-casting.

3. A hydrocarbon-burner composed of three superimposed sections, a base-section or pan, corner-posts, an intermediate section or retort-casting resting upon said corner-posts with an air-space therebetween, a cover-plate for said retort-casting, and mixing-tubes depending from the cover-plate into the retort-casting, and vapor-discharging pipes for discharging vapor into said mixing-tubes, the bottom of the retort-casting being set in to receive the corner-posts, said retort-casting being formed with a central transverse chamber, oppositely-extending channels connecting with said central chamber and with the like channels at the end of said section, and a longitudinal channel for the introduction of fresh air.

4. A hydrocarbon-burner, composed of three superimposed sections, a base-section or pan, corner-posts, an intermediate section or retort-casting resting upon said corner-posts with an air-space therebetween, a cover-plate for said retort-casting, mixing-tubes depending from the cover-plate into the retort-casting, vapor-discharge pipes for discharging vapor into said mixing-tubes, the bottom of the retort-casting being set in to receive said corner-posts, said retort-casting being formed with a central transverse chamber, oppositely-extending channels connecting with said central chamber and with like channels at the end of said section, a connection between the mixing-tubes and a longitudinal air-channel for the introduction of fresh air, and an oil-supply pipe leading into the lower part of said central transverse chamber.

5. In a hydrocarbon-burner, in combination, a base-section or pan, a retort casting or section mounted on said base-section and formed with central transverse chamber with openings on opposite sides of said chamber and channels at the ends of said section communicating with the oppositely-extending channels and an air-duct for introducing fresh air to the burner, downwardly-discharging burner-pipes located in said openings, pipe connections between the end channels and said pipes, a connection between said duct and the vapor-discharge pipes, and an oil-supply pipe connected with the central transverse chamber of said retort-section.

6. A hydrocarbon-burner, comprising a base-section or pan, a retort casting or section mounted on the base-section and formed with central transverse chamber with openings on opposite sides of said chamber, vertical pipes extending into said openings, a short pipe connecting each of said vertical pipes with the longitudinal channel for the introduction of fresh air to the burner, a cover-plate for the retort-casting, mixing-tubes depending from the said cover-plate into the retort-casting, and vapor-discharge pipes for discharging vapor into the said depending tubes, which latter form mixing-tubes.

7. A hydrocarbon-burner comprising three superimposed sections, a base-section or pan, an intermediate section, and a retort casting or section, the latter being formed with a central transverse chamber, oppositely-extending channels connecting with said central chamber and with like channels at the end of said casting, a top section secured to the retort-casting, pipes connecting the end channels, plugs in said pipes, cut-off valves, vertical pipes extending into the retort-casting and forming mixing-tubes, a longitudinal channel for the introduction of fresh air to the burner, an oil-supply pipe leading into the lower part of the said central transverse chamber, and short pipes connecting the vertical pipes with the said longitudinal channel.

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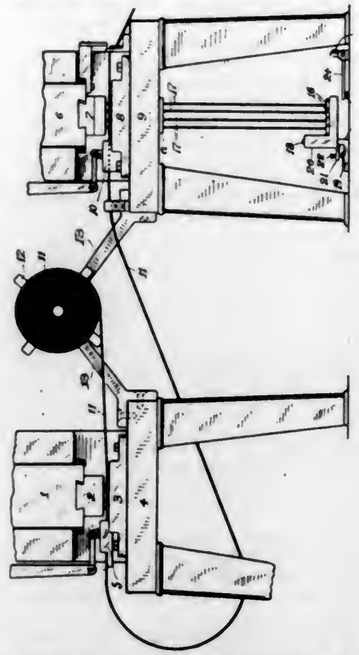
**757,028. MACHINE FOR CUTTING OUT SHEET-METAL BLANKS FOR CHAIN-LINKS.** FREDERICK BOGE, Bridgeport, Conn., assignor to the Smith & Egge Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Feb. 24, 1903. Serial No. 144,850. (No model.)

*Claim.*—1. In a machine for cutting out sheet-metal blanks for chain-links, the combination of the two independently-operating presses, one for punching out the eyes of the blanks and the other for cutting out the blanks themselves, with means for feeding a sheet-metal strip between the two presses and for reversing the faces of said strip while thus fed whereby the eyes and blanks are cut from opposite faces of the strip thereby bringing the burs on the same side of the blanks.

2. In a machine for cutting out sheet-metal blanks for chain-links, the combination of the independently-operating presses, one for punching out the eyes of the blanks and the other for cutting out the blanks themselves, means for first passing a continuous sheet-metal strip beneath the eye-punching devices and then reversing said strip and passing it beneath the blank-cutting devices, an elevated platform beneath the bed of the press for cutting out the blanks and capable of sustaining a predetermined weight, a series of keeper-blocks supported on said platform and having elongated wires projecting upwardly therefrom into the blank-receiving wells of the press, and a lever immediately beneath said platform and which controls the disengagement of the clutch mechanism of the press for cutting out the blanks.

3. In a machine for cutting out sheet-metal blanks for chain-links, the combination of the bed of the press which cuts out the blanks themselves having a block secured therein, the die-plate secured upon said bed immediately above said block, the wells for the blanks secured within said block immediately below the openings in the die-plate, the keeper-blocks suitably supported and having wires which extend upwardly therefrom within said wells, and the guide-blocks each composed of a centrally-disposed stationary jaw and laterally-movable jaws normally distended, and means for holding said jaws in closed position, said guide-blocks capable of being clamped around said wires and forced upwardly within suitably-shaped openings in the bottom of the block which contains said wells, whereby said wires will be steadied and maintained in proper position to receive the blanks, substantially as set forth.





4. In a machine for cutting out sheet-metal blanks for chain-links, the combination of a lever which controls the disengagement of the clutch mechanism of the press for cutting out the blanks, a spring-sustained platform immediately above said lever, instrumentalities for cutting out said blanks and delivering them into suitable receptacles, a series of keeper-blocks supported on said platform and having projecting upwardly therefrom wires whose free ends extend within said receptacles, and means for initially holding and steadying the ends of said wires, substantially as set forth.

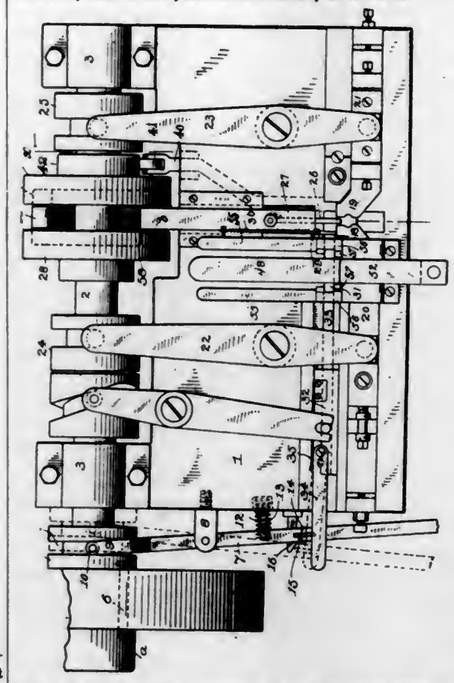
5. In a machine for cutting out sheet-metal blanks for chain-links, the combination of a press containing punches for cutting out the eyes of the blanks, a second press containing punches for cutting out the blanks themselves and having suitable well-like receptacles in the bed thereof and immediately beneath the die-plate, a series of keeper-clocks properly supported and having wires whose free ends project upwardly within said receptacles, and the continuous strip of sheet metal initially passed through the first-named press whereby the eyes may be punched out and then bowed and passed in the reverse direction through the second-named press whereby the blanks themselves may be cut out and delivered upon said wires with all the burs on the uppermost faces of said blanks, substantially as set forth.

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**757,029. MACHINE FOR MAKING SHEET-METAL CHAIN.** FREDERICK BOGE, Bridgeport, Conn., assignor to the Smith & Egge Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Feb. 24, 1903. Serial No. 144,851. (No model.)

*Claim.*—1. In a machine for automatically making sheet-metal chain, the combination of means for holding a stack of blanks, a feed-well into which said blanks are delivered, a reciprocatory feed-finger whereby said blanks are successively fed forward and threaded through the eyes of previously-bent blanks, a pair of shaping-dies, means for operating said dies, the mandrel-pin, means for carrying said pin forward and backward, means for elevating and depressing said pin at the ends of said forward and backward movements respectively, the resilient dog having a beveled nose and normally projected into the feedway of the blanks, and the reciprocatory push-finger, substantially as and for the purpose specified.

2. In a machine for automatically making sheet-metal chain, the combination of means for delivering the blanks to the feed-finger, means for initially bending the blanks into U shape, the reciprocatory feed-finger for threading the blanks through the eyes of previously-bent blanks, and the resilient beveled-nosed dog normally projected in the path of the blanks as they are acted upon by said finger whereby said blanks will be automatically turned edgewise and firmly held in this position, substantially as set forth.



3. In a machine for automatically making sheet-metal chain, the combination of the reciprocatory shaping-dies, means for feeding and means for turning the link-blanks into proper position with respect to said dies, the mandrel-pin for bending the blank into U shape between said dies, means for giving the mandrel-pin four motions whereby said pin is elevated within the bend of an initially-bent blank and then advanced to bring said blank in proper position preparatory to the action of the shaping-dies to effect the upsetting of the previously-completed link and then withdrawn from the link after the effective action of the shaping-dies and retracted to normal position, substantially as set forth.

4. In a machine for automatically making sheet-metal chain, the combination of the power-pulley, the clutch, the spring-actuated clutch-lever, means for latching the same in effective position, the reciprocatory feed-block, the feed-finger carried by said block, and capable of a sliding movement therein, and means interposed between said finger and latching means whereby an obstruction to the free movement of said finger will automatically release the latch and effect the stopping of the machine, substantially as set forth.

5. In a machine for automatically making sheet-metal chain, the combination of the power-pulley, the clutch, the clutch-lever, a spring for normally throwing said lever out of effective position, a latch-lever pivoted to the clutch-lever, a stationary hook, a spring connected to said lever whereby the latch-lever will be kept normally in engagement with said hook, the reciprocatory feed-block, the feed-finger capable of sliding in ways in said block, the trip-lever pivoted to said block, and extending immediately in front of said latch-lever, the spring secured to the feed-block and bearing against the trip-lever whereby the latter is held in normal position, and a frictional connection between said trip-lever and feed-finger whereby any undue opposition to the free movement of the latter will cause said trip-lever to effect the automatic stopping of the machine, substantially as set forth.

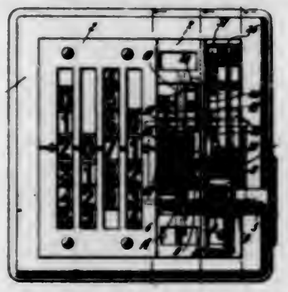
6. In a machine for automatically making sheet-metal chain, the combination of the power-pulley, the clutch, the lever which controls the clutch, devices for bolding said lever in effective position, the feed-block, the feed-finger carried by said block and capable of a sliding movement therein, and a resiliently-acting lever pivoted to said block and normally interposing a predetermined resist-

ance to the sliding movements of the feed-finger relatively to said block and also extending in proximity to the devices for holding the clutch-lever in effective position, whereby extraordinary opposition to the free movement of said feed-finger will release said holding device and effect the automatic stopping of the machine, substantially as set forth.

7. The combination of the block having therein the feed-well and provided with gates in its upper edge, the elevated inclined track having an ascent at the base of said inclination, said ascent terminating in a notch at its upper end, the keeper-bar above said track, and the parallel inclined stationary ways leading into said well, substantially as set forth.

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757,080. **SIGNALING APPARATUS.** ERNEST A. FALLER, New York, N. Y., assignor of one-half to James W. Chisholm, New York, N. Y. Filed June 22, 1903. Serial No. 162,601. (No model.)



*Claim.*—1. In a signaling apparatus the combination with a frame of a rotatable shaft, a series of disks on said shaft adapted to make and break electric circuits, means for rotating said shaft, means for interrupting said rotation, an escapement device for regulating said rotation, an electromagnet controlling said interrupting means, contacts for circuits through said electromagnet and contacts for said circuits through said disks.

2. The combination with a plurality of selective devices adapted for use in preëstablishing a signal, of make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

3. The combination with a plurality of displaceable selective devices adapted for use in preëstablishing a signal, make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

4. The combination with a plurality of rotatable selective devices adapted for use in preëstablishing a signal, make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

5. The combination with a plurality of peripherally-supported rotatable selective devices adapted for use in preëstablishing a signal, make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

6. The combination with a plurality of selective devices for use in preëstablishing a signal, of rotatable make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

7. The combination with a plurality of displaceable selective devices for use in preëstablishing a signal, of rotatable make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

8. The combination with a plurality of rotatable selective devices for use in preëstablishing a signal, of rotatable make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

9. The combination with a plurality of peripherally-supported rotatable selective devices for use in preëstablishing a signal, of rotatable make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

10. The combination with a plurality of selective devices for use in preëstablishing a signal, of axially-supported rotatable make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

11. The combination with a plurality of displaceable selective devices for use in preëstablishing a signal, of axially-supported rotatable make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

12. The combination with a plurality of rotatable selective devices for use in preëstablishing a signal, of axially-supported rotatable, make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

13. The combination with a plurality of peripherally-supported rotatable selective devices for use in preëstablishing a signal, of axially-supported make-and-break devices, one for each of the selecting devices for transmitting said signal and adapted to make slidable contact with the corresponding selective devices at successive periods.

14. The combination with selective members adapted for use in preëstablishing a signal, of make-and-break devices, one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

15. The combination with displaceable selective members adapted for use in preëstablishing a signal, of make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

16. The combination with rotatable selective members adapted for use in preëstablishing a signal, of make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with it selective member.

17. The combination with peripherally-supported rotatable selective members adapted for use in preëstablishing a signal, of make-and-break devices one for each selecting device for transmitting said signal, and adapted to make continuous contact of predetermined duration with its selective member.

18. The combination with selective members adapted for use in preëstablishing a signal, of rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

19. The combination with displaceable selective members adapted for use in preëstablishing a signal, of rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermindd duration with its selective member.

20. The combination with rotatable selective members adapted for use in preëstablishing a signal, of rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

21. The combination with peripherally-supported rotatable selective members adapted for use in preëstablishing a signal, of rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

22. The combination with selective members adapted for use in preëstablishing a signal, of axially-supported rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

23. The combination with displaceable selective members adapted for use in preëstablishing a signal, of axially-supported rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

24. The combination with rotatable selective members adapted for use in preëstablishing a signal, of axially-supported rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

25. The combination with peripherally-supported rotatable selective members adapted for use in preëstablishing a signal, of axially-supported rotatable make-and-break devices one for each selecting device for transmitting said signal and adapted to make continuous contact of predetermined duration with its selective member.

26. The combination with a series of selective devices or members, of a corresponding series of make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

27. The combination with a series of displaceable selective devices or members, of a corresponding series of make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

28. The combination with a series of rotatable selective devices or members, of a corresponding series of make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

29. The combination with peripherally-supported rotatable selective devices or members, of a corresponding series of make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device

30. The combination with a series of selective devices or members, of a corresponding series of rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

31. The combination with a series of displaceable selective devices or members, of a corresponding series of rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

32. The combination with a series of rotatable selective devices or members, of a corresponding series of rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

33. The combination with a series of peripherally-supported rotatable selective devices or members, of a corresponding series of rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

34. The combinations with a series of selective devices or members, of a corresponding series of axially-supported rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

35. The combination with a series of displaceable selective devices or members, of a corresponding series of axially-supported rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

36. The combination with a series of rotatable selective devices or members, of a corresponding series of axially-supported rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

37. The combination with a series of peripherally-supported rotatable selective devices or members, of a corresponding series of axially-supported rotatable make-and-break devices one for each selecting device adapted to make continuous electrical contact of predetermined duration and at successive periods with its selective device.

38. The combination with selective devices, of a corresponding number of make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

39. The combination with displaceable selective devices, of a corresponding number of make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

40. The combination with rotatable selective devices, of a corresponding number of make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

41. The combination with peripherally-supported rotatable selective devices, of a corresponding number of make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

42. The combination with selective devices, of a corresponding number of rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

43. The combination with displaceable selective devices, of a corresponding number of rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

44. The combination with rotatable selective devices, of a corresponding number of rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

45. The combination with peripherally-supported rotatable selective devices, of a corresponding number of rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

46. The combination with selective devices, of a corresponding number of axially-supported rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

47. The combination with displaceable selective devices, of a corresponding number of axially-supported rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

48. The combination with rotatable selective devices, of a corresponding number of axially-supported rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

49. The combination with peripherally-supported rotatable selective devices, of a corresponding number of axially-supported rotatable make-and-break devices divided in groups or sets, each group or set of the make-and-break devices adapted to make contact with the selective devices at successive periods.

50. The combination with selective devices for preëstablishing a signal, of an equal number of devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

51. The combination with displaceable selective devices for preëstablishing a signal, of an equal number of devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices and each group or set adapted to make contact with corresponding selective devices at successive periods.

52. The combination with rotatable selective devices for preëstablishing a signal, of an equal number of devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

53. The combination with peripherally-supported rotatable selective devices for preëstablishing a signal, of an equal number of devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

54. The combination with selective devices for preëstablishing a signal, of an equal number of rotatable devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

55. The combination with displaceable selective devices for preëstablishing a signal, of an equal number of rotatable devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and

each group or set adapted to make contact with corresponding selective devices at successive periods.

56. The combination with rotatable selective devices for preestablishing a signal, of an equal number of rotatable devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

57. The combination with peripherally-supported rotatable selective devices for preëstablishing a signal, of an equal number of rotatable devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

58. The combination with selective devices for preëstablishing a signal, of an equal number of axially-supported rotatable devices for transmitting said signal, said transmitting devices being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set adapted to make contact with corresponding selective devices at successive periods.

59. The combination with displaceable selective devices for preestablishing a signal, of an equal number of axially-supported rotatable devices for transmitting said signal, said transmitting means being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set to make contact with corresponding selective divices at successive periods.

60. The combination with rotatable selective devices for preestablishing a signal, of an equal number of axially-supported rotatable devices for transmitting said signal, said transmitting means being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set to make contact with corresponding selective devices at successive periods.

61. The combination with peripherally-supported rotatable selective devices for preëstabiishing a signal, of an equal number of axially-supported rotatable devices for transmitting said signal, said transmitting means being divided in groups or sets, each device in a group or set adapted to make contact of predetermined duration with one of the selective devices, and each group or set to make contact with corresponding selective devices at successive periods.

62. The combination with means for dividing an entire electrical signal into groups or sets comprising a plurality of separate variable signals, of means for simultaneously transmitting the variable signals forming a group or set, and means for successively transmitting the groups or sets forming the entire signal.

63. The combination with means for preëstablishing an entire electrical signal, of means for dividing the same into groups or sets comprising separate variable signals, means for causing the simultaneous transmission of the separate variable signals forming a group or set, and means for causing the successive transmission of the groups or sets forming the entire signal.

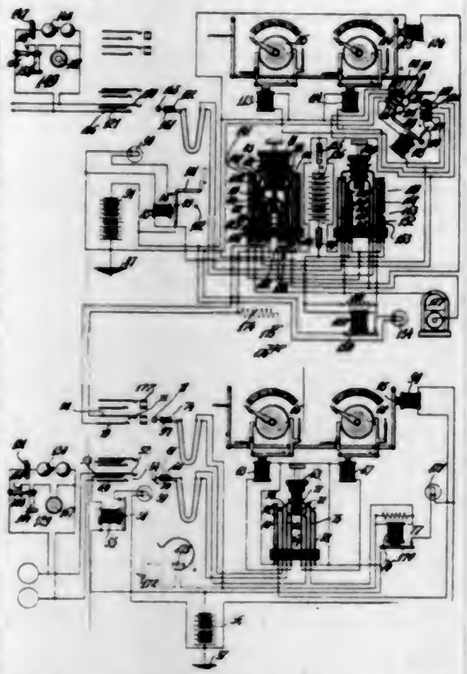
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**757,031. SEMI-AUTOMATIC TELEPHONE-EXCHANGE. ERNEST A. FALLER, New York, N. Y., assignor of one-half to James W. Chisholm, New York, N. Y. Filed July 1, 1903. Serial No. 163,968. (No model.)**

*Claim.*—1. The combination with a series of individual sending apparatus and a common recording-station, of means for the simultaneous transmission of variable signals from each of the sending apparatus to the recording-station, and a plurality of common recording means for the signals at the recording-station each controlled by one part of the variable signals.

2. A semi-automatic telephone system, containing two conductors and a ground return, indicating means at an exchange operated by current passing over a circuit containing one conductor and the ground, a signal-sender started by current passing over a circuit containing the other conductor and the ground, means for the simultaneous transmission of a plurality of variable electric signals over both said circuits, and means for restarting the sending apparatus by current passing over a circuit containing both conductors.

3. The combination with sending and recording apparatus, of three circuits connecting the same and formed by two conductors and a ground return, one circuit comprising one conductor and the ground adapted to start the sending apparatus, another circuit comprising both conductors adapted to restart the sending apparatus, and the third circuit comprising the other conductor and the ground and adapted in common with the first circuit to transmit variable electric signals.



4. The combination with a series of individual sending apparatus and a recording-station common to a group of the same, of means for the transmission of variable signals from each of the sending apparatus to the recording-station of its group, and a plurality of recording means for the signals at the recording-station for each group controlled by one part of a variable signal.

5. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing selective devices and make-and-break devices both divided into groups or sets, each group or set of make-and-break devices adapted to make contact with the corresponding group of selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

6. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing selective devices and automatic make-and-break devices both divided into groups or sets, each group or set of make-and-break devices adapted to make contact with the corresponding group of selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

7. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing selective devices and rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

8. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing selective devices and axially-supported rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

9. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing displaceable selective devices and make-and-break devices both divided into groups or sets, each group or set of make-and-break devices adapted to make contact with the corresponding group of selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

10. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing displaceable selective devices and automatic make-and-break devices both divided into groups or sets, each group or set of make-and-break devices adapted to make contact with the corresponding group of selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

11. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing displaceable selective devices and rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

12. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing displaceable selective devices and axially-supported make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

13. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing rotatable selective devices and make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

14. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing rotatable selective devices and automatic make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

15. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing rotatable selective devices and rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

16. An electric signaling system comprising sending-stations connected in groups to recording-stations and organized to transmit divided variable signals from each of the sending-stations to its recording-station, said sending-stations containing rotatable selective devices and axially-supported rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods and thereby transmitting signals to a plurality of recording means at the recording-station, each of the recording means controlled by one part only of the entire signal.

17. The combination with signal-sending stations and a receiving-station, of means at the sending-station for dividing an entire electrical signal into groups or sets comprising a plurality of separate variable signals, means for simultaneously transmitting the variable signals forming a group or set, means for successively transmitting the groups or sets forming the entire signal, and means at the receiving-station for recording the signal sent.

18. The combination with signal-sending stations and a receiving-station, of means at the sending-station for preëstablishing an entire electrical signal, means for dividing the same into groups or sets comprising separate variable signals, means for causing the simultaneous transmission of the separate variable signals forming a group or set, means for causing the successive transmission of the groups or sets forming the entire signal, and means at the receiving-station for recording the separate variable signals.

19. The combination with signal-sending stations and a receiving-station, of means at the sending-station for preëstablishing an entire electrical signal, means for dividing the same into groups or sets comprising separate variable signals, means for causing the simultaneous transmission of the separate variable signals forming a group or set, means for causing the successive transmission of the groups or sets forming the entire signal, and means at the receiving-station for successively recording the groups or sets forming the entire electrical signal and for simultaneously and separately recording the variable signals forming the groups or sets.

20. The combination with means for dividing an entire electrical signal into groups or sets of separate variable signals, of means for simultaneously sending the separate variable signals forming a group or set, means for simultaneously but separately receiving said separate variable signals forming said groups or sets, means for successively sending the groups or sets forming the entire signal, and means for simultaneously and separately receiving the separate variable signals forming the successive groups or sets.

21. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups or signals, each group comprising more than one variable signal, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

22. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing selective devices and make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

23. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing selective devices and automatic make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

24. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing selective devices and rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the various signals forming a group, and hand-operated means at the recording-station adapted to connect an of the signal-sending apparatus with the receiving means.

25. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising

more than one variable signal, and each sending apparatus containing selective devices and axially-supported rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

26. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing displaceable selective devices and make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

27. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing displaceable selective devices and automatic make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

28. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing displaceable selective devices and rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

29. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing displaceable selective devices and axially-supported make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

30. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing rotatable selective devices and make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

31. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing rotatable selective devices and automatic make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

32. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing rotatable selective devices and rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand-operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

33. The combination with a plurality of signal-sending apparatus and a recording-station, said sending apparatus being adapted to simultaneously transmit groups of signals, each group comprising more than one variable signal, and each sending apparatus containing rotatable selective devices and axially-supported rotatable make-and-break devices divided into groups or sets, each group or set adapted to make contact with the selective devices at successive periods, of signal-receiving means at the recording-station for simultaneously receiving the variable signals forming a group, and hand operated means at the recording-station adapted to connect any of the signal-sending apparatus with the receiving means.

34. A telephone system comprising subscribers' stations and a central exchange, signal-sending means at the subscribers' stations adapted to send simultaneously more than one variable signal forming a group and to send successively the groups forming an entire signal, signal-receiving means at the central exchange adapted to receive simultaneously but separately the variable signals forming a group and successively the groups forming the entire signal, one or more loop-circuits at the exchange, and means for connecting any two subscribers' stations through one of the loop-circuits.

35. A telephone system comprising subscribers' stations and a central exchange, signal-sending means at the subscribers' stations adapted to send simultaneously more than one variable signal forming a group and to send successively the groups forming an entire signal, signal-receiving means at the central exchange adapted to receive simultaneously but separately the variable signals forming a group and successively the groups forming the entire signal, one or more loop-circuits at the exchange and hand-operated means for connecting any two subscribers' stations through one of the loop-circuits.

36. A telephone system comprising subscribers' stations and a central exchange, signal-sending means at the subscribers' stations adapted to send simultaneously groups of more than one variable signal, and to send successively the groups forming an entire signal, signal-receiving means at the exchange for each of the variable signals forming a group, one or more loop-circuits at the exchange, and means for connecting any two subscribers' stations through one of the loop-circuits.

37. A telephone system comprising subscribers' stations and a central exchange, signal-sending means at the subscribers' stations adapted to send simultaneously groups of more than one variable signal, and to send successively the groups forming an entire signal, signal-receiving means at the exchange for each of the variable signals forming a group, one or more loop-circuits at the exchange, and hand-operated means for connecting any two subscribers' stations through one of the loop-circuits.

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**757,032. CLASP-PIN. HENRY W. FISHEL, New York, N. Y. Filed June 9, 1903. Serial No. 160,707. (No model.)**



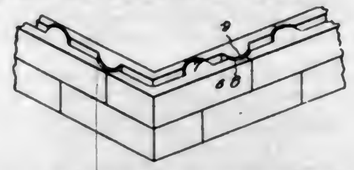
*Claim.*—1. A clasp-pin, comprising a solid, metallic main body portion of thick heavy metal, a clasp at one end, and an end portion integral with the said main body at the other end, said integral end portion being turned transversely to the length of the body of the pin, and provided with a solid bunch of metal having a curved outside face merging into the face of the main body portion and forming a continuation thereof, the other end of the body portion also having a curved outside face merging into the body and forming a continuation thereof and a pin pivoted to said solid bunch of metal, with a pivot-pin arranged transversely in the end portion of the pin, said pin having a point adapted to cooperate with the clasp, for substantially the purposes set forth.

2. A clasp-pin, comprising a solid metallic main body portion of thick heavy metal, a clasp at one end, and an end portion at the other end, forming a bunch of metal having a curved outside face merging into the face of the main body portion and forming a continuation thereof, the other end of the body portion also having a curved outside face merging into the body and forming a continuation thereof, and a pin pivoted to said bunch of metal forming an end portion, with a pivot-pin arranged transversely in the end portion of the pin, said pin having a point adapted to cooperate with the clasp, for substantially the purposes set forth.



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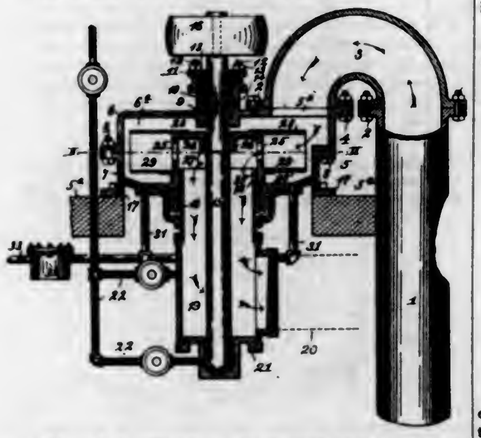
**757,033. BUILDING-BLOCK. ROBERT T. FROST, Dows, Iowa. Filed Oct. 14, 1903. Serial No. 176,974. (No model.)**



*Claim.*—A corner building-block having a long side, and a short side half the length of the long side, a projection at the middle of the back of the long side, of equal height to the block, and a recess of equal height to the block, at the inner end corner of each side.

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**757,034. GAS-SEPARATOR. OSCAR GERLACH, Iola, Kans. Filed Mar. 23, 1903. Serial No. 149,233. (No model.)**



*Claim.*—In an apparatus of the character described, a casing provided with inlet and outlet ports and comprising two cup-shaped sections the upper one of which is provided with a central bearing, while the lower one has a reduced bottom portion provided with a central threaded opening, a threaded nipple engaging the threaded opening of the casting and extending upwardly in the latter a suitable distance, a T secured to the lower threaded end of the nipple, an outlet-pipe leading from the T, and a plug closing the lower end of the T and provided with a step-bearing; a shaft journaled in the bearings, a fan rigidly mounted upon the shaft and provided with apertures, an extension forming part of the fan and surrounding the upper portion of the nipple, and drain-pipes communicating with the lower cup-shaped casting at a point above the lower end of the extension on the fan.

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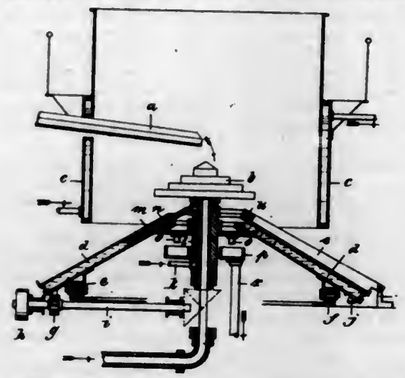
**757,035. APPARATUS FOR THE MANUFACTURE OF SLAG CEMENT. CARL GRAHN, Frankfort-on-the-Main, Germany, assignor, by mesne assignments, to Henry Edmunds, London. Filed Mar. 5, 1903. Serial No. 96,762. (No model.)**

*Claim.*—1. The combination of a rotary distributer, means for conveying material to said distributer, and a rotary table located below the distributer and arranged to receive the material therefrom.

2. The combination of a rotary distributer, means for conveying material thereto, a rotary table located below the distributer and arranged to receive the material therefrom, and a stationary scraper adjacent to the table.

3. The combination of a rotary distributer, means for conveying material thereto, a rotary table arranged to receive the material from the distributer, and means for imparting different rotary movements to the table and to the distributer.

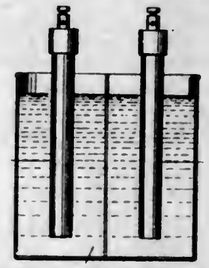
4. The combination of a rotary distributer, means for conveying the material thereto, and a conical rotary table located below the distributer and arranged to receive the material therefrom.



5. The combination of a stationary casing, a rotary distributer within the casing, and a rotary table located exteriorly of the casing and arranged to receive the material from the distributer.

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**757,036. PROCESS OF PRODUCING CHEMICAL COMPOUNDS. JOHN J. GRIFFIN, Washington, D. C. Filed Jan. 16, 1902. Renewed Sept. 3, 1902. Serial No. 122,010. (No specimens.)**



*Claim.*—1. The process of producing chemical compounds, which consists in passing an electric current from an anode of a carbid through an electrolyte which reacts chemically on said carbid and which yields an electrolytic product which will react on the product of said chemical reaction to give the desired compound, as set forth.

2. The process of producing chemical compounds, which consists in passing an electric current from an anode of calcium carbid through an electrolyte which reacts chemically on calcium carbid and which yields an electrolytic product which will react on the product of said chemical reaction to give the desired compound, as set forth.

3. The process of producing chemical compounds, which consists in passing an electric current to a cathode of a carbid, through an electrolyte which yields an electrolytic product which will react on said carbid, as set forth.

4. The process of producing chemical compounds, which consists in passing an electric current to a cathode of calcium carbid, through an electrolyte which yields an electrolytic product which will react on calcium carbid, as set forth.

5. The process of producing chemical compounds, which consists in passing an electric current to a cathode of a carbid, through an electrolyte which reacts chemically on said carbid and which yields an electrolytic product which will react on the product of said chemical reaction to give the desired compound, as set forth.

6. The process of producing chemical compounds, which consists in passing an electric current to a cathode of calcium carbid, through an electrolyte which reacts chemically on calcium carbid and which yields an electrolytic product which will react on the product of said chemical reaction to give the desired compound, as set forth.

7. The process of producing chemical compounds, which consists in passing an electric current between electrodes each of which consists of a carbid, and through an electrolyte which is chemically active toward said carbid, as set forth.

8. The process of producing chemical compounds, which consists in passing an electric current between electrodes each of which con-

sists of a carbid, and through an electrolyte which is electrochemically active toward said carbid, as set forth.

9. The process of producing chemical compounds, which consists in passing an electric current between electrodes each of which consists of a carbid, and one of calcium carbid, and through an electrolyte which is chemically active toward calcium carbid, as set forth.

10. The process of producing chemical compounds, which consists in passing an electric current between electrodes each of which consists of a carbid, and one of calcium carbid, and through an electrolyte which is electrochemically active toward calcium carbid, as set forth.

11. The process of producing chemical compounds, which consists in passing an electric current between electrodes each of which consists of calcium carbid, and through an electrolyte which is chemically active toward calcium carbid, as set forth.

12. The process of producing chemical compounds, which consists in passing an electric current between electrodes each of which consists of calcium carbid, and through an electrolyte which is electrochemically active toward calcium carbid, as set forth.

13. The process of producing chemical compounds, which consists in passing an electric current through an aqueous solution of sulfuric acid to a cathode of calcium carbid, as set forth.

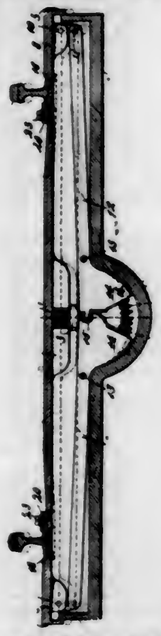
14. The process of producing chemical compounds, which consists in passing an electric current from an anode of calcium carbid through an aqueous solution of sulfuric acid, as set forth.

15. The process of producing chemical compounds, which consists in passing an electric current from an anode of calcium carbid through an aqueous solution of sulfuric acid to a cathode of calcium carbid, as set forth.

16. The process of producing chemical compounds, which consists in passing an electric current between electrodes, one of which consists of a carbid, and through an electrolyte which is electrochemically active toward said carbid, and maintaining in suspension in said electrolyte an insoluble substance capable of entering into reaction with the electrochemical product, as set forth.

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**757,037. RAILWAY-TIE.** CURTIS C. GRIMES, Kansas City, Mo. Filed Aug. 24, 1903. Serial No. 170,515. (No model.)



*Claim.*—1. A railway-tie consisting of a stationary member, a movable rail-supporting member, and a resilient connection securing the movable member to the stationary member in such a manner that its opposite ends will be depressed alike.

2. A railway-tie consisting of a case, guides secured thereto, a movable cover for said case provided with grooves to receive the guides, and a resilient connection securing the cover to the case.

3. A railway-tie consisting of a case, dovetail guides secured thereto, a movable cover for said case provided with dovetail grooves to receive the guides, and a resilient connection securing the cover to the case.

4. A railway-tie consisting of a case, a movable cover for said case, levers operatively securing the cover to the case, and means for normally retaining the cover in an elevated position.

5. In a railway-tie, a case, a movable cover for said case, levers hinged at their adjacent ends and operatively securing the cover to the case, and means for normally retaining said cover in an elevated position.

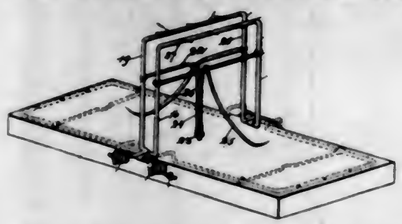
6. In a railway-tie, a case having a depressed semicircular central portion, a movable cover for said case, levers hinged together at their adjacent ends and operatively securing the cover to the case, segmental portions at the adjacent ends of the levers adapted to operate in the depressed portion of the case, and one or more springs interposed between the adjacent ends of said segmental portions.

7. A railway-tie consisting of a case having a depressed semicircular central portion, a movable cover for said case, links pivoted to the under side of the cover near its opposite ends, levers fulcrumed in the case and hinged together at their adjacent ends and pivotally secured at their outer ends to the lower ends of the links, segmental portions formed on the adjacent ends of the levers adapted to operate in the depressed portion of the case, and one or more springs interposed between the adjacent ends of said segmental portions.

8. A railway-tie consisting of a case, a movable cover for said case, a resilient connection securing the cover to the case, undercut portions in the upper surface of the cover near its opposite ends to receive one side of the base of the rail, and a clamp suitably secured to the upper surface of the cover for securing the opposite side of the base-rail.

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**757,038. ANIMAL-TRAP.** CHARLES G. HAWKINS, Des Moines, Iowa, assignor of one-half to R. W. Swanston, Des Moines, Iowa. Filed Jan. 13, 1903. Renewed Nov. 23, 1903. Serial No. 182,411. (No model.)



*Claim.*—1. In an animal-trap, the combination of a platform, spring-arches attached to the edges of the platform, a trigger adjustably attached to the center of said platform for engaging and releasing said spring-arches, barbed arms in said trigger, extending over each end of the platform and away from its central portion, so arranged that the arches will be released from a locked position by moving the outer end of either of said arms, substantially as and for the purposes stated.

2. In a device of the class described, the combination of a platform, arches springingly attached to said platform and at the central portion of said platform, a connecting-piece in each of said arches between the uprights therein, a trigger attached to the central portion of said platform designed to engage each of said connecting-pieces, arms extending longitudinally of the platform and away from each other, substantially as and for the purposes stated.

3. In an animal-trap, the combination of a platform, spring-arches midway between the ends of said platform, a connecting-piece in each of said arches between the uprights therein, a trigger mounted in the upper surface of said platform, designed to engage said connecting-piece, and to release the spring-arches, substantially as and for the purposes stated.

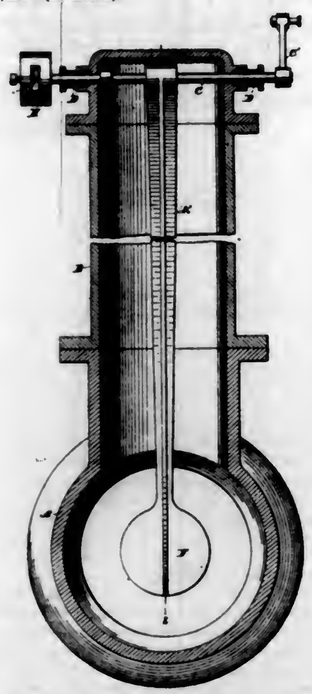
4. In an animal-trap, the combination of a platform, springing arches midway between the ends of said platform, designed to spring from over the center of the platform away from each other, a connecting-piece between the uprights in each of said arches, a trigger adjustably attached in the upper surface of said platform, designed to engage the cross-pieces in said arches and to release the springing arches so that when released they will move in opposite directions, for the purposes stated.

5. In an animal-trap, the combination of a platform, arches springingly attached to the central portion of said platform, a trigger attached to the central portion of said platform for engaging said arches when they are in an upright position, arms on said trigger, extending longitudinally of the platform and away from each other, designed to release the arches from an upright position when either of said arms is moved, substantially as and for the purposes stated.



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**757,039. VELOCITY-REGULATOR FOR FLUIDS IN MOTION.** JOHN A. F. HERRENSCHMIDT, Brooklyn, N. Y. Filed Jan. 13, 1902. Serial No. 89,494. (No model.)



*Claim.*—1. The combination with a conduit through which a fluid is adapted to pass, a propelling device for imparting motion to said fluid, a motor for said propelling device, a regulating device for controlling said motor, a movable resistance device located in the path of the fluid, and an operative connection from the said resistance device to the regulating device, so that the action of the motor will be governed according to the speed of the propelled fluid.

2. The combination with a conduit through which a fluid is adapted to pass, of a pivoted resistance device arranged in the path of the fluid, to be moved by the fluid to different positions according to the velocity of the fluid, and means, controlled by the movement of said resistance device, for governing the velocity of the fluid in said conduit.

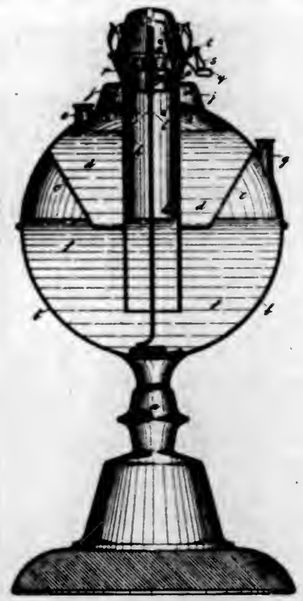
3. The combination with a conduit through which a fluid is adapted to pass, of a pump for propelling said fluid through the conduit, a motor for driving said pump, a regulating device controlling the supply of the active agent to said motor, a movable resistance device arranged in the path of the fluid, and an operative connection from said resistance device to the regulating device.

4. The combination with a pipe or conduit through which a fluid is adapted to pass, of a casing arranged laterally of said conduit and communicating therewith, a resistance device pivoted inside of the casing and extending into the path of the fluid, and means, controlled by the movement of said resistance device, for governing the velocity of the fluid in the conduit.

5. The combination with a conduit through which a fluid is adapted to pass, of a pivoted resistance device extending into the path of the fluid, a weight connected with said resistance device and adjustable toward and from the pivot thereof, so as to have a tendency to throw the resistance device with greater or less force in a direction opposite to the flow of the fluid, and means, controlled by the movement of said resistance device, for governing the velocity of the fluid in the conduit.

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**757,040. SAFETY OIL-LAMP.** ARTHUR E. HOLDAWAY, London, England. Filed May 1, 1903. Serial No. 155,213. (No model.)



*Claim.*—In combination a tank having an upper section *d* for water and a lower section *f* for oil, a wick-tube *h* arranged centrally of the tank and an inverted cup *j*, the said wick-tube, water-tank and inverted cup having perforations extending through their walls, substantially as described.

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**757,041. MUSCLE-DEVELOPING FINGER-BAND.** SAMUEL HOFFELD, Philadelphia, Pa. Filed Jan. 4, 1904. Serial No. 187,721. (No model.)



*Claim.*—1. In a finger-exercising device for performers of musical instruments, the combination of an open ring or band, means for adjustably connecting the ends of said ring together, a screw-threaded post formed on the upper side of said ring or band, and a weight having an interiorly-threaded aperture adapted to be screwed onto said post, substantially as described.

2. In a finger-exercising device for performers of musical instruments, the combination of an open ring or band having overlapping ends, perforations formed in one of said ends, a beveled stud formed in the opposite end to adjustably engage said perforated end and hold the same against an opening movement but which will permit the ends to be slipped together to decrease the diameter of the ring, a threaded stud arranged on the upper side of said ring, and a spherical weight adapted to be screwed on said threaded stud, substantially as described.

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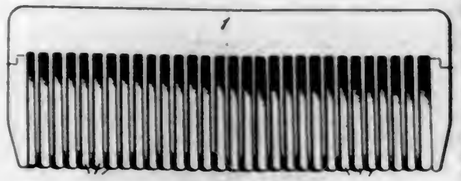
**757,042. COMB.** NATHAN D. INGRAM, New York, N. Y. Filed Sept. 21, 1903. Serial No. 173,958. (No model.)

*Claim.*—1. A comb comprising a series of teeth having sides arranged obliquely to the face of the comb.

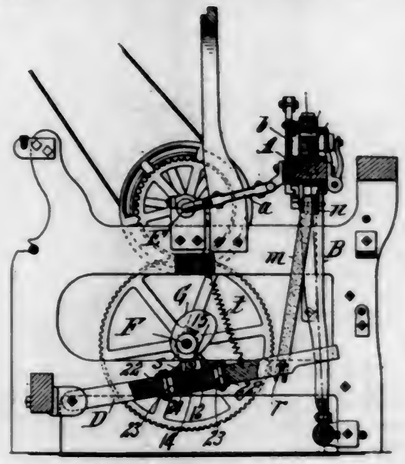
2. A comb comprising a series of teeth whose cross-sections are parallelograms other than rectangles.

3. A comb having teeth with parallel side surfaces arranged obliquely to the face of the comb.

757,042.



757,043. PICKER MECHANISM FOR LOOMS. GODFROID JOLICOEUR, Augusta, Me. Filed May 27, 1903. Serial No. 158,923. (No model.)



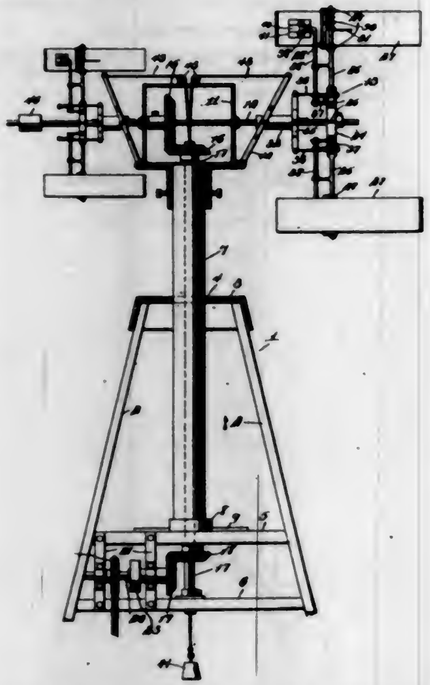
*Claim.*—1. In a loom, the combination with the lay having at the end portion of its beam a slideway, and having its sword vertically slotted, of a shuttle-thrower consisting of a carrier-block slidable in said way, and a picker carried by the block and extending upwardly through the shuttle-race in the lay, a cam-operated lever, having its forward end extended for guided engagement through the slot in the lay-sword, a strap connected to said lever, being intermediately sheave-guided and connected to said carrier-block, and a spring for retracting the shuttle-thrower.

2. In a loom, the combination with the lay-beam having at the upper portion of its extremity the shuttle-race having at the lower portion of such extremity opposite slideways with a downward opening therebetween, and having the slot i, of a shuttle-thrower consisting of a block made in sections, one thereof having flanges engaging in said ways and the other being clamped to the under side of the first-named section, and the picker carried by the united blocks and extending upwardly through the slot and raceway in the lay, the cam-operated lever, a strap secured thereto, intermediately sheave-guided and secured to and between the said clamped blocks, and a double-leaf spring, one member of which is secured to the end of the lay and the other end to the shuttle-thrower.

3. In a loom, the combination with the lay having a shuttle-race and having a slideway, of a shuttle-thrower movable in said slideway and provided with the picker extending upwardly through the shuttle-race, the cam G, the lever D having the slots, the strap secured to the lever, intermediately guided in the lay-sword and connected to the shuttle-thrower, a retracting-spring for the lever, a retracting-spring for the shuttle-thrower, and a cam-impingement-receiving appliance comprising a fitting having an aperture, a roller therein, and side flanges, an under flanged fitting, and the uniting headed bolts, with nuts, the shanks of the bolts passing through the lever-slots and through the upper and lower metallic fittings.

757,044. WINDMILL. CHARLES J. JONES, Yellowstone Park, Wyo. Filed Sept. 8, 1903. Serial No. 172,396. (No model.)

*Claim.*—1. In a device of the class described, the combination with a shaft, of a wind-wheel mounted thereon and provided with pivoted sails, said sails being movable on their pivots to active or inactive position, springs acting upon the blades for maintaining them in one of said positions, rock-shafts acting upon the sails to move them to the other position, and means for automatically operating the rock-shafts.



2. In a device of the class described, the combination with a shaft, of a wind-wheel mounted thereon and provided with pivoted sails, said sails being movable on their pivots to active or inactive position, springs acting upon the sails to maintain them in one of said positions, rock-shafts acting upon the sails to move them to the other position, a collar slidable on the shaft, operative connections between the collar and rock-shafts for actuating the latter, and means for automatically operating the collar.

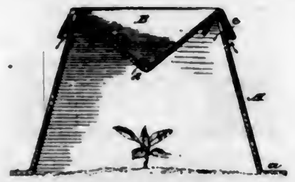
3. In a device of the class described, the combination with a shaft, of a wind-wheel mounted thereon and provided with pivoted sails, said sails being movable on their pivots to active or inactive position, springs acting upon the sails to maintain them in one of said positions, rock-shafts acting upon the sails to move them to the other position, a collar slidable on the shaft, operative connections between the collar and rock-shafts for actuating the latter, a pivoted lever connected with the collar, and a weighted connection engaged with and automatically actuating said lever.

4. In a device of the class described, the combination with a shaft, of a wind-wheel mounted thereon and provided with pivoted sails, said sails being movable on their pivots to active or inactive position, springs bearing upon the blades at one side of their pivots for maintaining them yieldably in one of said positions, rock-shafts acting upon the blades at the opposite sides of their pivots to move them against the action of the spring to the other position, and means for automatically operating the rock-shaft.

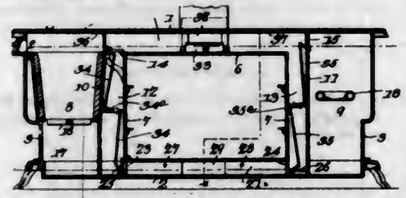
757,045. PLANT-PROTECTOR. ANNIE M. LANE, Lakeside, Cal. Filed Jan. 25, 1904. Serial No. 190,498. (No model.)

*Claim.*—A plant-protector, comprising a suitable body adapted to be placed over the plant and having at its base an outwardly and horizontally extending flange to serve as a wide support for the body to prevent it from sinking into the ground, a plurality of openings at the upper end of the body and through the side wall thereof for the ingress of air, a removable cone-shaped hood having openings at the apex thereof, and a flange extending below the plane of the openings at the top of the body to guard against the rain or wind blowing therethrough, said flange flaring outwardly to provide a space for the air to pass up and through the openings to the interior of the body, substantially as and for the purpose set forth.





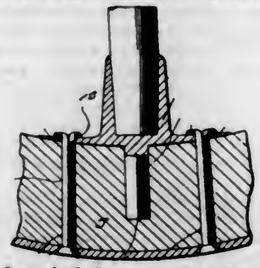
757,046. STOVE. ALBERT A. LITTLE, Lima, Ohio. Filed Nov. 30, 1903. Serial No. 183,222. (No model.)



*Claim.*—1. In a device of the class described, a casing, fire-pots at the ends of said casing, a burner within one of said fire-pots for the consumption of vaporous or gaseous fuel, an oven disposed between and spaced from the back walls of said fire-pots, dampers at the upper edges of the latter, adapted to close the flue-spaces between the back walls and the ends of the oven, dampers adapted to close communication between said flue-spaces and the space between the bottom of the oven and the bottom plate of the casing, obstructions between the rear edge of the bottom plate of the oven and the bottom plate of the casing, said obstructions being spaced apart, obstructions between the rear edge of the top plate of the oven-casing and the top plate of the outer casing, said obstructions being spaced apart, and a damper disposed in the space between the latter obstructions and controlling the passage of the products of combustion to the final exit.

2. In a device of the class described, a casing, a fire-pot at one end of said casing for the consumption of solid fuel, a fire-pot at the opposite end of the casing, a burner in the latter fire-pot for the consumption of gaseous or vaporous fuel, an oven disposed between said fire-pots and spaced from the back walls of the same, dampers hinged at the upper edges of the back walls of the fire-pots and adapted to close the upper ends of the flues between said back walls and the ends of the oven, dampers arranged to close communication between the lower ends of said flues and the flue-space beneath the oven, and connections between said upper and lower damper whereby said upper and lower dampers, at either end of the oven, may be simultaneously operated.

757,047. SPOKE-SOCKET. GEORGE W. MALONEY, Bart, Colo. Filed Nov. 24, 1903. Serial No. 182,484. (No model.)



*Claim.*—In a wheel, the combination with a felly, having recesses in its inner face and a perforation at each side of each recess, of sockets comprising each a tubular body portion, a clip at the base of the body portion fitted against the inner face and the side faces of the felly and having perforations alining with the adjacent perforations of the felly, said sockets including also each a pin projecting from the lower end of the body portion and engaging a recess of the felly, bolts passed inwardly through the tire, the felly and clips and having their inner ends split, and washers disposed upon the bolts against the fellies and against which the bolts are riveted.

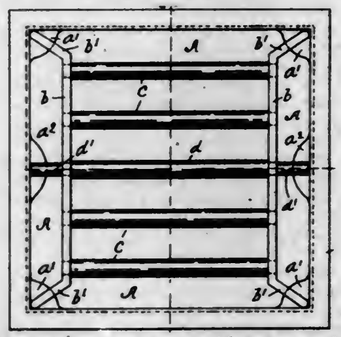
757,048. CURTAIN-POLE. AARON MILLER, Altoona, Pa. Filed Oct. 3, 1903. Serial No. 175,686. (No model.)



*Claim.*—1. A curtain-pole, comprising upper and lower sections, each section being semicircular in cross-section throughout the greater portion of its length and terminating at one end in rectangular cross-section, pairs of projecting members carried by each section, and a clip mounted upon each section for clamping them together, each clip having corresponding slots and recesses therein for coöperation with said projecting members, whereby the clips may be slidably and pivotally disposed for clamping the sections together.

2. A curtain-pole made up in longitudinal sections, each section having a pair of projections near one of its ends, and clips having corresponding slots and recesses for coöperation with said projections to clamp the sections together.

757,049. SEWER-INLET GRATING. LOUIS H. MEYER, Haverhill, Mass., assignor to Charles Wolcott, Haverhill, Mass. Filed Feb. 11, 1904. Serial No. 193,045. (No model.)

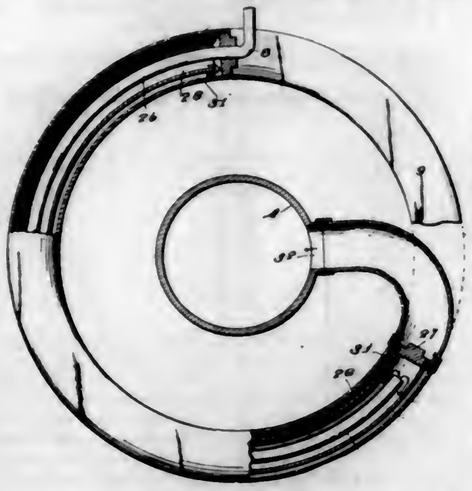


*Claim.*—1. A sewer-grating comprising a rectangular frame having a shelf at each corner thereof, a pair of grate-bars having parallel middle portions and obliquely-disposed ends extending into the corners of said frame, and resting on said shelves, and a series of cross-rods connecting the parallel portions of said bars, substantially as described.

2. A sewer-grating comprising a rectangular frame having a shelf at each corner, a pair of grate-bars having obliquely-disposed end portions extending into the corners of said frame and resting on said shelves, a series of cross-rods connecting the middle portions of said bars, and a pair of shelves on said frame adjacent the middle portions of said bars, one of said cross-rods having its end portions extending through said bars, terminating adjacent the sides of the frame and resting on said last-named shelves, substantially as described.

3. In combination with the rectangular frame of a sewer-inlet, a pair of grate-bars having obliquely-disposed end portions extending into the corners of said frame, supporting-shelves in each corner of the frame on which the ends of said bars rest, and a series of cross-rods having their ends socketed in the portion of said bars between the oblique end portions thereof, substantially as described.

**757,050. STEAM-GENERATOR.** REUBEN A. MITCHELL and LESTER L. LEWIS, Oil City, Pa., assignors to the Oil City Gas Engine Starter Company, Oil City, Pa., a Corporation of Pennsylvania. Original application filed Dec. 28, 1901, Serial No. 87,612. Divided and this application filed Jan. 5, 1903. Serial No. 137,923. (No model.)



*Claim.*—1. A steam-generator, comprising a plurality of nested, intercommunicating, coiled tubes, the inner end of each inner tube being inclosed by the next outer tube and forming a continuous passage therewith.

2. A steam-generator, comprising a plurality of nested, intercommunicating coiled tubes, each inner tube emptying into the next successive outer tube.

3. A steam-generator comprising a plurality of nested intercommunicating tubes having their alternately opposite ends closed, substantially as described.

4. A steam-generator comprising a plurality of nested intercommunicating coiled tubes having their alternately opposite ends closed, substantially as described.

5. In a steam-generator, the combination with a heating means, of a plurality of nested, intercommunicating coiled tubes forming a continuous, circuitous passage and means for supplying liquid to one of the tubes.

6. In a steam-generator, the combination with a suitable heating means, of a plurality of nested, intercommunicating coiled tubes, means for passing liquid through each of the tubes, and means for causing the same, during its travel through each successive tube to move in an opposite direction to its movement in the next preceding tube.

7. In a steam-generator the combination of nested intercommunicating coiled tubes forming a continuous passage, each outer tube having that end closed receiving the discharge from the next inner tube, means for supplying liquid to the innermost tube and means for directing heat products into contact with said coil.

8. A steam-generator comprising a plurality of nested tubes having their alternately opposite ends closed and each inner tube discharging against the closed end of the next successive outer tube.

9. A steam-generator comprising a plurality of nested tubes coiled in a vertical column, the innermost tube receiving a supply at the top of the column and the outermost tube discharging at the bottom thereof, said tubes having their alternately opposite ends closed and being intercommunicating and forming a continuous passage, substantially as described.

10. A water-tube boiler provided with a water-tube and with a plurality of concentric pipes extending longitudinally within the water-tube and open at opposite ends, substantially as set forth.

11. A water-tube boiler provided with a coiled water-tube and with a plurality of concentric pipes extending longitudinally within the water-tube and open at opposite ends, substantially as described.

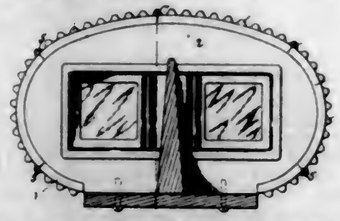
**757,051. DOOR-STOP.** WILLIAM P. NOLAN, Bessemer, Ala. Filed June 19, 1903. Serial No. 162,163. (No model.)

*Claim.*—1. The combination with a frame having grooves in its sides and top, of stops, a tongue integral with and extending from said stops into the said grooves, in which it moves transversely, a spring connected to the stops, and means fixedly secured to the frame to support the stops to the frame, means connecting said spring and said fixedly-secured means to form a resilient mounting for the stop.



2. The combination with a frame having grooves in its sides and top, of stops, a tongue extending from the stop and projecting into the said grooves constructed to move transversely thereof, a plate secured to said stops provided with elongated slots, a spring secured in said plate, a second plate mounted above the first-named plate, a lug depending therefrom and engaging the spring, and screws passing through the last-named plate and through the elongated slots of the first-named plate, whereby the last-named plate is fixedly secured to the said frame.

**757,052. STEREOSCOPE.** CHARLES L. PAPPENHAGEN, Meadville, Pa., assignor to R. L. Singley, Meadville, Pa. Filed Nov. 10, 1903. Serial No. 180,596. (No model.)



*Claim.*—1. In a stereoscope, a hood having a plurality of raised pockets, and a lens-frame having raised portions corresponding to the pockets of the hood and adapted to engage therein and means adapted to unite the ends of said hood.

2. In a stereoscope, a hood having a plurality of raised pockets and a lens-frame having a plurality of binding members secured on its periphery and adapted to engage with the pockets on the hood to secure the said hood and lens-frame from any movement in relation to each other and means adapted to unite the ends of said hood.

3. In a stereoscope, a hood having a series of raised pockets or beads adjacent to its forward edge, a lens-frame, and means carried by the latter adapted to engage with the raised pockets in the hood to prevent relative movement between the hood and lens-frame and means adapted to unite the ends of said hood.

4. In a stereoscope, a hood having a plurality of raised pockets, and a lens-frame having raised portions corresponding to the pockets of the hood and adapted to engage therein, and means adapted to secure the ends of said hood.

5. In a stereoscope, a hood having a plurality of raised pockets and a lens-frame having a plurality of binding members secured on its periphery and adapted to engage with the pockets on the hood to secure the said hood and lens-frame from any movement in relation to each other, and means adapted to secure the ends of said hood.

6. In a stereoscope, a hood having a series of raised pockets or beads adjacent to its forward edge, a lens-frame, and means carried by the latter adapted to engage with the raised pockets in the hood to prevent relative movement between the hood and lens-frame, and means adapted to secure the ends of said hood.

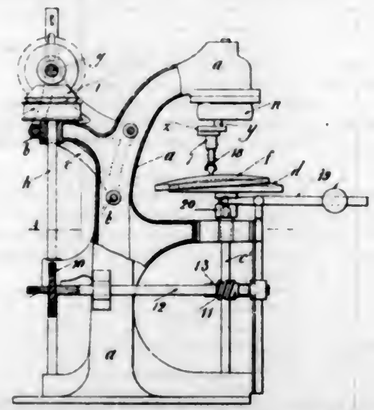
7. In a stereoscope, a hood having a plurality of projecting pockets adjacent to its forward edge, and a lens-frame having raised portions corresponding to the pockets of the hood and adapted to engage therein.

8. In a stereoscope, a hood forming one member, a lens-frame forming another member, a plurality of raised pockets on one of said members, corresponding raised portions on the other member adapted to engage in the said pockets, and means adapted to unite the ends of the said hood.

**757,053. MACHINE FOR GRINDING LENSES.** CLAUDE L. RANEAU, Paris, France. Filed Sept. 3, 1903. Serial No. 171,848. (No model.)

*Claim.*—1. A machine to grind lenses comprising two grinding-disks *d* and *f*, in combination with a vertical shaft *y*, a pulley *n* guided in the frame and adapted to turn around its geometrical axis and provided with an eccentrical hub, through which passes freely the shaft *y*, a pinion *t* keyed on the shaft *y*, a second pinion *s*, fixed on the frame and the geometrical axis of which coincides with that of the pulley *n*, a hoop *u* to maintain always the two pinions in engagement, a disk *z*, fixed to the inferior part of the shaft *y* and provided with the grooves 17, a socket 7 fixed so that it can be regulated on the disk *z* and a shaft 8 sliding in the socket 7 and which carries away with it the disk *f*, substantially as described and for the purpose set forth.

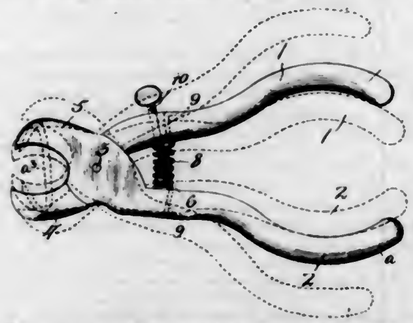




2. A machine for grinding lenses comprising two grinding-disks *d* and *f*, in combination with the means for carrying away the disk in an epicycloidal movement, a lever 19, pivoted on the frame, a socket 20 connected operatively to the disk *d*, a shaft *e* on which the socket 20 may slide, a counterweight 21, adapted to be moved on the lever 19 and a spring 18 which tends to cause the going down of the disk *f*, substantially as described and for the purpose set forth.

3. A machine for grinding lenses comprising two grinding-disks *d* and *f*, the means for giving the disk *f* an epicycloidal movement, a hub to control the pressure of the disks *d* and *f*, one with regard to the other, a horizontal driving-shaft *g*, the conical pinions 6 and 4 and the pulleys 1, 2, 3, disposed on the said shaft, a vertical shaft *h*, receiving the movement of the shaft *g* by the conical pinion *i*, a pulley *l* keyed on the shaft *h* and which carries away with it through a strap the pulley, *n*, crossed by the shaft *y* and a helicoidal wheel 10 which gears with a second wheel 11, keyed on the horizontal shaft 12, provided at the other end with a keyed worm 11 and a helicoidal wheel 13, keyed on the shaft *e*, substantially as described and for the purpose set forth.

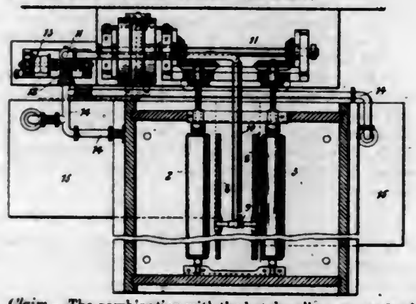
**757,054. HOG-RINGER.** GLENN A. ROBINSON, Geneseo, Ill. Filed Dec. 18, 1903. Serial No. 185,765. (No model.)



*Claim.*—1. A hog-ringer comprising pivoted handles provided with jaws, and a spring interposed between the handles and acting thereon by contraction to partially close the jaws to grip a ring, and adapted, when the handles are compressed, to close the jaws to compress and close a ring and by expansion to open the jaws when the handles are released, substantially as described.

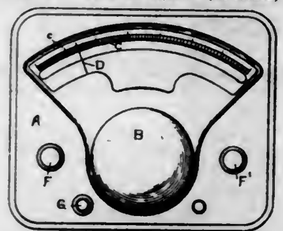
2. A hog-ringer comprising pivoted handles provided with jaws, a lug upon one handle, a coiled spring secured at its ends to the handles and surrounding said lug, and a set-screw upon the other handle extending through the spring to engage said lug, substantially as described.

**757,055. MACHINE FOR DYEING TEXTILE FABRICS.** CHARLES L. ROTHWELL-JACKSON and EDWARD W. HUNT, Bolton, England. Filed Nov. 12, 1903. Serial No. 180,967. (No model.)



*Claim.*—The combination with the batch-rollers, means for driving and reversing the same, the self-adjusting drum, the pivoted arms supporting the same, of the roller 6 and the spurt-pipes 8 carried by the pivoted arms, a circulating-pump and suitable connecting-pipes, for supplying liquor to the spurt-pipes, substantially as and for the purposes herein set forth.

**757,056. MEANS FOR PROTECTING ELECTRICAL MEASURING INSTRUMENTS.** MAURICE C. RYPINSKI, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed July 25, 1901. Serial No. 69,664. (No model.)



*Claim.*—1. An electrical measuring instrument provided with means for gaging the energy of a circuit for one of its factors, and means for accurately measuring said energy in the same factor, if not excessive.

2. An electrical measuring instrument provided with a large impedance in circuit with its measuring-coil to roughly gage a factor of the energy of a circuit, and means for short-circuiting said impedance to accurately measure said energy in the same factor, if found not excessive.

3. A voltmeter having an impedance large relatively to the possible maximum voltage of the circuit on which it is to be used, said impedance being auxiliary to the normal impedance in circuit with its measuring-coil, and means for short-circuiting the auxiliary impedance.

4. A voltmeter having a large resistance auxiliary to the normal resistance in circuit with its measuring-coil, and means for short-circuiting the auxiliary resistance.

5. An electrical measuring instrument having a base, a measuring-coil, a recess in its base, a rod of high resistance in said recess in series with the measuring-coil to roughly gage the energy of a circuit, and a circuit-closing switch in shunt to said rod to permit the energy to be accurately measured.

6. An electrical measuring instrument having a recess in its base, spring-clips in said recess, a rod of carbon of high resistance held in said clips, and a circuit-closing switch in shunt to said rod.

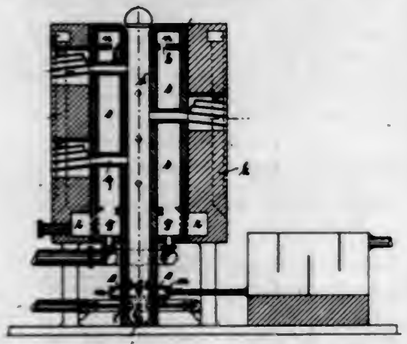
**757,057. 1-5-NITROANTHRAQUINONE-SULFONIC ACID.** ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed Jan. 12, 1904. Serial No. 188,702. (No specimens.)

*Claim.*—The herein-described new 1-5-nitroanthraquinone-sulfonic acid which in the shape of the potassium salt forms microscopic plates of sharp outlines soluble with difficulty in cold water; being transformed into 1-5-amidoanthraquinone-sulfonic acid when treated with reducing agents, and being transformed into 1-methylamidoanthraquinone-5-sulfonic acid upon treatment with an aqueous solution of methylamin; substantially as described.

757,058. 1-8-NITROANTHRAQUINONE-SULFONIC ACID. ROBERT R. SCHMIDT, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed Jan. 12, 1904. Serial No. 188,708. (No specimens.)

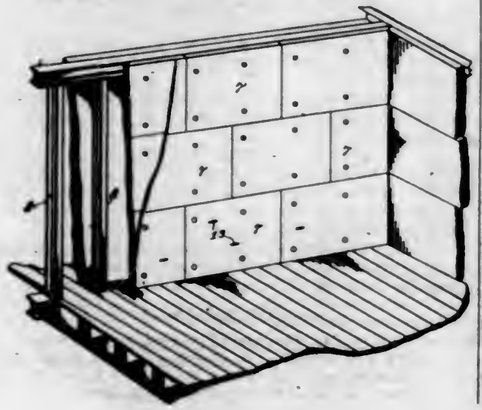
*Claim.*—The herein-described new 1-8-nitroanthraquinone-sulfonic acid, which in the shape of the potassium salt forms microscopic needles soluble with difficulty in cold water; being transformed into 1-8-amidoanthraquinone-sulfonic acid when treated with reducing agents, and being transformed into 1-methylamidoanthraquinone-8-sulfonic acid upon treatment with an aqueous solution of methylamin, substantially as described.

757,059. FURNACE FOR PRODUCING ZINC. PAUL SCHNEIDER, Lipine, Germany. Filed Oct. 29, 1902. Serial No. 129,267. (No model.)



*Claim.*—In a furnace for extracting zinc, the combination of a vertical receptacle or shaft for the charge of ore mixed with fuel, with a device for heating the upper part of the charge through the walls of said receptacle, a number of condensers or collectors of the liquid zinc for this reduction-chamber, a number of twyers in the lower part of the shaft which is not arranged to be heated, an oxidation-chamber, a condensing-chamber and openings above the twyers and suitable channels for leading the gases from this oxidation-chamber for the slag to the condensing-chamber.

757,060. PLASTER-BOARD. HARRY H. SHARP, Hartford, Conn., assignor of two-thirds to George Ulrich, Hartford, Conn., and James O'Loughlin, New Britain, Conn. Filed July 16, 1903. Serial No. 165,740. (No model.)



*Claim.*—1. A plaster-board impervious to moisture and having a surface pervious to moisture.

2. A plaster-board having a lamina of a waterproof material, and an exterior covering of fireproof material pervious to moisture.

3. A plaster-board comprising an interior lamina of waterproof fibrous material and an exterior of non-waterproof fireproof fibrous material.

4. A plaster-board comprising a body portion of fibrous waterproof material and a coating upon such body portion of non-waterproof fireproof fibrous material.

5. A plaster-board having an interior portion capable of resisting moisture and its entire plaster-receiving surface capable of resisting fire and of resisting moisture but slightly.

6. A plaster-board capable of resisting the moisture of plaster and having a surface capable of yielding to the influence of the moisture from plaster and of being penetrated thereby.

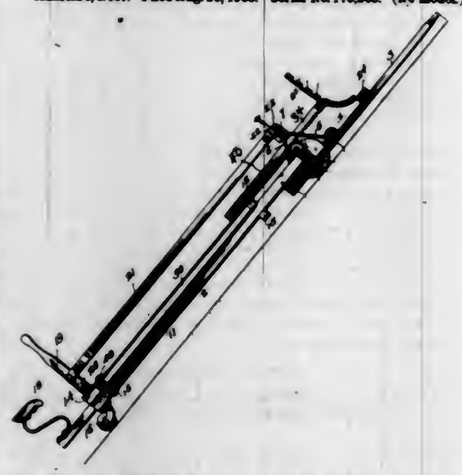
7. A plaster-board capable of resisting the moisture of plaster and having a surface capable of yielding to the influence of the moisture from plaster and of being penetrated and partially disintegrated thereby.

8. A wall or partition comprising a plaster-board capable of resisting the moisture of plaster and having a surface capable of yielding to the influence of the moisture from plaster and of being penetrated thereby; apertures through the board; and plaster upon the board interlocked with such apertures and commingled with the surface of the board.

9. A plaster-board comprising an interior lamina of waterproof material and an exterior of fireproof material.

10. A plastic board comprising an interior lamina of waterproof material and an exterior of non-waterproof material.

757,061. PUSH-RAKE. OLIVER D. SHIRK and DANIEL W. SHIRK, Minatare, Nebr. Filed Aug. 20, 1903. Serial No. 170,203. (No model.)



*Claim.*—1. A rake of the class described, having a sweep or load-ejecting element movable longitudinally thereon, a traction-wheel, and means driven by the traction-wheel to move the said sweep or load-ejecting element in the opposite direction to that of the movement of the rake, substantially as described.

2. A rake of the class described, having a traction-wheel, a shiftable sweep or load-ejecting element movable longitudinally on the rake-teeth, mechanism operated by the said traction-wheel to move said sweep or load-ejecting element in the opposite direction to that of the movement of the rake, and means to throw said mechanism into and out of gear.

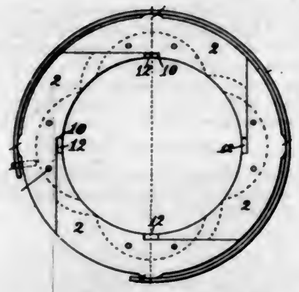
3. A rake of the class described, having a traction-wheel, a shiftable sweep or load-ejecting element, movable longitudinally on the rake-teeth, means operated by the traction-wheel to move said sweep or load-ejecting element in the opposite direction to that of the rake, and means to automatically throw the first-mentioned means out of gear when the sweep or load-ejecting element has been moved.

4. In a rake of the class described, having longitudinally-disposed rake-teeth, the combination of a power element, a shiftable sweep element movable longitudinally on the rake-teeth to eject the load, means actuated by the power element to operate the sweep element, means to throw said sweep-element-operating means in gear, and means to automatically throw the same out of gear.

5. The combination of a rake, a power-wheel, a pinion driven thereby, a sweep element shiftable on the rake to eject a load therefrom, a rack actuated by the pinion to operate the sweep, and means to throw the power-wheel into and out of gear with the pinion, substantially as described.



757,062. METALLIC PACKING FOR PISTON-RODS. FREDERICK R. SMALL, Boston, Mass. Filed Sept. 5, 1903. Serial No. 172,159. (No model.)



*Claim.*—1. A metallic rod-packing comprising a single ring composed of a plurality of segments of uniform shape, each provided with inner and outer tangential flat surfaces arranged in planes at an angle to each other, and having formed in the center of its inner surface a groove or recess having a length less than the length of the segment, and a slot cut through the center of the outer tangential surface and a tongue fitted to and secured in said recess, and projecting from the inner tangential surface and engaging the slot of a contiguous segment, and having its inner edge curved to fit the periphery of the rod upon which it is to be used.

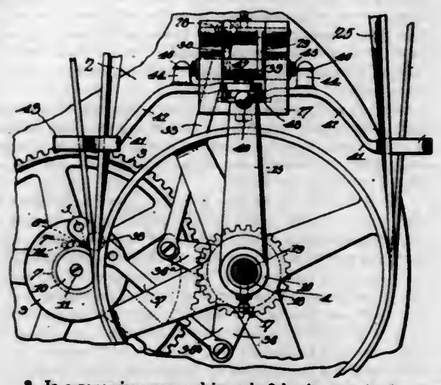
2. In a metallic rod-packing, the combination of a plurality of segments of uniform shape, each provided with a curved inner surface, with inner and outer flat tangential surfaces arranged in planes at an angle to each other, with a slot cut through the outer tangential surface, and with a groove or recess in the center of its inner face and extending partly into said curved surface and partly into the inner tangential surface and having a curved bottom, in combination with a crescent-shaped tongue fitted to and secured in said recess, and projecting from said inner tangential surface, and engaging the slotted end of a contiguous segment.

3. In a metallic rod-packing, the combination of a plurality of segments of uniform shape, each provided with a curved inner surface to bear upon the rod, inner and outer tangential surfaces arranged in planes at an angle to each other, a slot cut through the end thereof having the outer tangential surface, and having a curved bottomed recess formed in its inner face, partly within the curved surface thereof and partly within the inner tangential surface, a shoulder connecting the inner ends of said inner curved and tangential surfaces; a crescent-shaped tongue fitted to and secured in said recess, and projecting beyond said inner tangential surface and into the slot in the end of a contiguous segment; and means for automatically pressing all of said segments into close contact with the surface of the rod.

4. In a metallic rod-packing, the combination of a plurality of segments of uniform shape each provided with an inner tangential surface at one end, and an outer tangential surface at its other end and a slot cut through the outer tangentially-surfaced end; a tongue projecting from said inner tangential surface; a boss projecting from the outer curved edge of said segment intermediate of its ends; and a segmental spring nearly surrounding said segments and bearing upon said bosses to press said segments into close contact with the periphery of the rod upon which it is to be used.

757,063. REVERSING-GEAR. ERNST G. SMITH, Columbia, Pa. Filed Oct. 23, 1903. Serial No. 178,330. (No model.)

*Claim.*—1. In a reversing-gear, the combination with a driven shaft, of collars mounted loosely thereon, means connected with the shaft for engaging the first collar, means upon each collar for engaging the next succeeding one, a disk loose upon the shaft and adapted to receive motion from the last collar of the series, and reversing mechanism connected with said disk and actuated by the latter.



2. In a reversing-gear, a driven shaft having a projection, a collar mounted loosely upon said shaft and having a lug to be engaged by the projection of the shaft, a disk mounted loosely upon the shaft and having an eccentric-pin, means for transmitting motion between the collar upon the shaft and the pin upon the disk, belt-shifting mechanism, and means connecting the disk upon the driven shaft with said belt-shifting mechanism to start the latter into operation when the said disk is set in motion.

3. In a reversing-gear, a driven shaft having a projection, collars upon said shaft having means whereby they are caused to be successively rotated with the latter, a disk mounted loosely upon the outer end of the shaft and having engaging means adapted to be engaged by the outermost collar, belt-shifting mechanism, and connecting means between the latter and the disk upon the driven shaft whereby said belt-shifting mechanism shall be set in motion when the said disk is set in motion with the shaft.

4. In a reversing-gear, a driven shaft, eccentric engaging means upon the latter, collars mounted upon said shaft and adapted to be successively rotated with the latter, a disk connected axially and revolubly with the shaft and having a housing for the tumblers, and means, adapted to be engaged by the outermost tumbler, whereby said disk shall be partially rotated with the shaft.

5. In a reversing-gear, a driven shaft, a disk upon the latter, means for setting said disk in motion at the end of a predetermined number of revolutions, a movable bracket, belt-shifting mechanism supported thereon, said mechanism including a rock-lever, and adjustable connecting means between said rock-lever and the said disk whereby movement of the latter in either direction shall cause the rock-levers to be operated.

6. In a reversing-gear, a driven shaft, a spur-gear upon said shaft, a pinion meshing with said spur-gear, a fixed shaft, a sleeve revoluble upon the latter and carrying said pinion, a bracket mounted pivotally upon said shaft, a frame supported upon said bracket, a rock-lever connected pivotally with said frame, belt-forks actuated by said lever, a disk connected with the driven shaft and adapted to be set in motion by the latter at the end of a predetermined number of revolutions in one direction, and connecting means between said disk and the rock-lever, said connecting means including a socketed lever engaging a ball upon the rock-lever, a connecting-bolt and a spring mounted upon said bolt.

7. In a reversing-gear, a stationary shaft, a sleeve mounted for rotation on said shaft, a pulley fixed upon said sleeve, loose pulleys adjacent to opposite sides of the fixed pulley, two belts, one straight and one twisted, connecting two of said pulleys with the source of power, pivotally-mounted belt-hooks engaging said belts, a spring connecting said belt-hooks at opposite sides of their fulcrum, and means for reversing the positions of said belt-hooks.

8. In a device of the class described, a stationary shaft, a pair of loose pulleys upon said shaft, a fast pulley disposed between said loose pulleys, two belts, one straight and one twisted, connecting the pulleys with the source of power, belt-hooks supported pivotally above the pulleys, a spring connecting said belt-hooks, a sheath incasing said spring, a rock-lever, arms depending from the latter and engaging the sheath at opposite sides of the latter and at opposite sides of the fulcrum of the belt-hooks, and means for actuating said rock-lever at predetermined intervals.

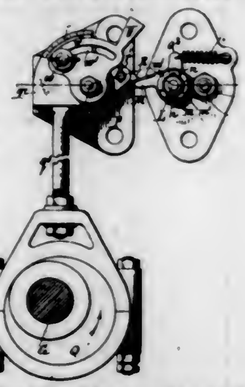
9. In a device of the class described, a pair of pivotally-mounted

belt-hooks, a spring connecting said belt-hooks, the ends of said spring being connected with said hooks at opposite sides of the fulcrum, a driving-pulley, two loose pulleys adjacent to the sides of said driving-pulley, belts connecting said pulleys with the source of power, said belts being engaged by the belt-hooks, and means for automatically reversing the latter so as to transfer one belt from the driving-pulley to a loose pulley and another belt from a loose pulley to a driving-pulley.

10. In a device of the class described, a pair of belt-hooks mounted pivotally upon the same axis, a spring connecting said belt-hooks, the ends of said spring being connected with said hooks at opposite sides of the axis, a sheath incasing said spring, and operating means adapted to engage said sheath.

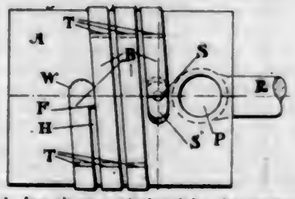
11. In a device of the class described, a stationary shaft, a fixed pulley upon said shaft, a pair of loose pulleys upon said shaft adjacent to opposite sides of the fixed pulley, belts connecting said pulleys to the source of power, a bracket extending over said pulleys, a reversing-lever and a pair of belt-hooks supported pivotally and concentrically upon the said bracket, a spring connecting said belt-hooks, a sheath incasing said spring, a rock-lever supported above, and having depending arms engaging said sheath on opposite sides of the same and at opposite sides of the pivotal point of the belt-hooks, lugs upon the eye-ring of the reversing-lever adapted to engage the belt-hooks, means for transmitting motion from the pulley-supporting shaft to a driven shaft, and means connected with the latter for tripping the rock-lever at the end of a predetermined number of revolutions in either direction of said driven shaft.

### 757,064. ELECTRIC IGNITER FOR GAS-ENGINES. HARRY J. SMITH, Buffalo, N. Y., assignor to the Alberger Company, Buffalo, N. Y. Filed Aug. 3, 1901. Serial No. 70,749. (No model.)



*Claim.*—An electric igniter for gas-engines comprising stationary and movable contacts, a latch yieldingly connected with the movable contact, a rocking trip-lever, a pawl arranged on one end of the lever and adapted to engage with said latch, an actuating mechanism connected with the opposite end of said lever for oscillating the same, an eccentric upon which said lever is journaled and which is provided at opposite ends with trunnions, a bifurcated supporting-bracket provided with bearings on its members in which said trunnions are journaled, an adjusting-handle connected with one of said trunnions and provided with a segmental slot, and a clamping-bolt arranged in said slot, substantially as set forth.

### 757,065. PISTON-RING. WILLIAM C. SMITH, Merrimac, Mass. Filed July 15, 1903. Serial No. 165,575. (No model.)



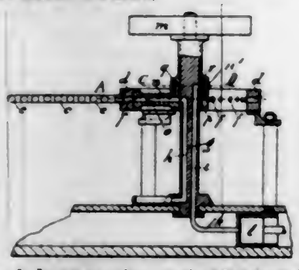

*Claim.*—1. In a piston, a spiral peripheral metallic packing-ring divided transversely into several parts, a peripheral groove adapted to receive said ring, and means for maintaining said parts in close end-to-end contact.

2. In a piston, a spiral peripheral metallic packing-ring divided in several parts, a spring secured in said piston adapted to maintain said parts in close end-to-end contact, and said spring also adapted to maintain said parts in close contact with the cylinder-walls.

3. In a piston, a spiral peripheral metallic packing-ring divided transversely in several parts, each part being less than a turn of the spiral, a spiral peripheral groove in said piston having a stop at one end, a spring secured in said piston adapted to maintain said ring in close contact with said stop, and said spring also adapted to maintain said parts in close end-to-end contact, and in close contact with the cylinder-walls.

4. In a piston, a spiral peripheral metallic packing-ring divided transversely in several parts, each part being less than a turn of the spiral, a spring secured in said piston adapted to maintain said parts in close contact, a spiral peripheral groove in said piston adapted receive said ring, a cut-away portion in the groove-wall at one end, and a widened portion of the ring adapted to fit into said cut-away portion, substantially as and for the purposes set forth.

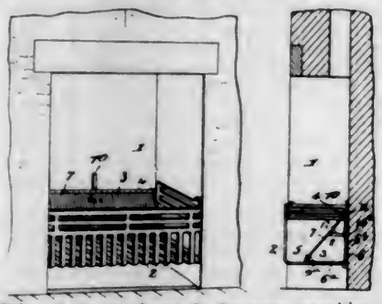
### 757,066. PNEUMATIC TYPE-WRITER WITH OPEN-PIPE SYSTEM. MAXIMILIAN SOBLIK, Duesseldorf, Germany. Filed Oct. 29, 1902. Serial No. 129,188. (No model.)



*Claim.*—1. In a type-writer, a series of perforated keys, a perforated ring connected thereto, a rotatable hollow arm movable along the surface of said ring, a pair of air-ducts, and means on said arm for connecting said air-ducts, substantially as specified.

2. In a type-writer, a series of perforated keys, a perforated ring connected thereto, a rotatable hollow arm, movable along the inner surface of the ring, and an axle having a pair of air-ducts and embraced by the arm, substantially as specified.

### 757,067. FIRE-GRATE ATTACHMENT. MATTHEW A. STEWART, New York, N. Y. Filed Jan. 15, 1903. Serial No. 139,118. (No model.)



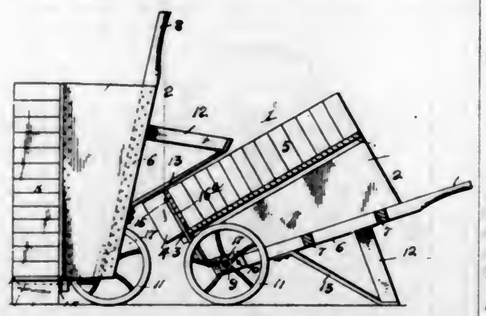
*Claim.*—1. An attachment for fire-grates comprising a series of bars having spaces between them, cross-bars connected to the ends of the first-named bars, standards secured to said bars for supporting the first-named bars in an upwardly and rearwardly inclined position within an open fire-grate, a damper comprising a series of bars connected together and having spaces between them, guides carried by the cross-bars for supporting said damper to slide with respect to the first-named bars, and means for operating said damper, substantially as described.

2. In a grate attachment of the character described, the combination of a pair of bars provided with opposed grooved portions, parallel bars connected with said bars to have spaces between them, standards connected with said first-named bars and arranged to support the said parallel bars in an upwardly and rearwardly inclined position, a damper provided with openings and adapted to be guided by said grooved bars, and means for operating said damper, substantially as described.

3. In a grate attachment of the character described, the combination of upwardly and rearwardly inclined bars having spaces between them, horizontally-disposed bars connected with the first-named bars, means for supporting said bars, a damper to coact with said inclined bars to regulate the draft between them, a handle pivotally connected with one of the horizontal bars, and an extension from said damper pivotally connected with said handle, substantially as described.

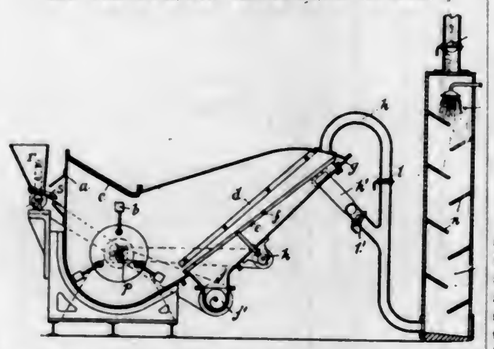


### 757,068. BRICK-PALLET AND TRUCK. FRANCIS E. SWIFT and EDWARD A. SWIFT, Washington, Iowa. Filed Sept. 3, 1903. Serial No. 171,751. (No model.)



*Claim.*—In combination with a brick-pallet comprising a base or backing board having supporting elements to support it above the ground, a truck having side beams, upstanding side boards, a platform extending between said side boards and disposed on the upper edges thereof, and substantially rectangular standards having their lower arms secured on the side beams at the front ends thereof and their upper arms extending across the front end of the platform and projecting upwardly therefrom to form hooks which are adapted to be run under the base-board of the pallet, the platform being adapted to support the load on the pallet when the latter is loaded on the truck.

### 757,069. IMPACT ORE-PULVERIZER. JAMES THANE, London, England, assignor to the Oliver Mill Company, Limited, London, England. Filed Mar. 23, 1903. Serial No. 149,175. (No model.)



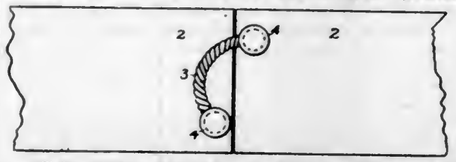
*Claim.*—1. In a pulverizing-mill, the combination with a casing, rotary beaters mounted therein, and means for feeding the material to said beaters, of a screen within said casing, delivery-outlets in the casing at the front and back of said screen for the dust, and a delivery-receptacle beneath said screen adapted to receive and deliver the graded material, substantially as described.

2. In a pulverizing-mill, the combination with a casing, rotary beaters mounted therein and means for feeding the material to said beaters, of a "grizzly" within said casing a screen behind said "grizzly" orifices in the casing for the delivery of dust by the current of air set up by the beaters and a gravity delivery device under the screen for the graded material, substantially as described.

3. In a pulverizing-mill, the combination with the casing, rotary beaters mounted therein, of a "grizzly" mounted in said casing, a screen behind said "grizzly," dust-delivery orifices on either side of said screen, an independent delivery device for the graded ore and a settling-chamber connected to the dust-delivery orifices adapted to collect the dust for further treatment, substantially as described.

4. In a pulverizing-mill having revolving beaters, in combination, a screen pivoted in the delivery-casing on an axis passing through or near the center of gravity of said screen, a resilient buffer supporting the upper end of said screen and permitting a rocking motion only, means for imparting a rocking motion to said screen and a delivery-chamber below the screen for the graded material, substantially as described.

### 757,070. RAIL-BONDING CONSTRUCTION. EDWARD G. THOMAS, Waltham, Mass. Filed Mar. 19, 1903. Serial No. 148,524. (No model.)



*Claim.*—1. In a rail-bonding construction, the combination with a pair of rails of a bond having a flexible portion, each end of which is secured in fixed relation to one of the rails at a point located at a substantial distance to one side of a line passing through the other point and running parallel with the length of the rails, said flexible portion being located on the same face of the rails.

2. In a rail-bonding construction, the combination with a pair of rails of a bond comprising a flexible portion the ends of which are secured in fixed relation to the respective rails at points which are diagonally related with respect to the length of the rails, the distance between each of said points and the end of the corresponding rail being less than one-half the distance between the points themselves.

3. In a rail-bonding construction, the combination with a pair of rails of a bond the ends of which are secured in fixed relation to the respective rails at points located in a line extending diagonally with respect to the length of the rails, said diagonally-related ends being located on the same face of the rails and connected by a flexible portion, substantially as described.

### 757,071. HAMMER. JOHN A. THOMAS, Millville, Fla. Filed July 15, 1903. Serial No. 165,548. (No model.)



*Claim.*—In a device of the class described, the combination of a hammer-head provided at one side of its eye with an opening, said hammer-head being also provided at one side with a slot or recess and having a projection at one end thereof, forming a guard, a spring-actuated fulcrum-bar or plunger, located within the opening, and a spring-actuated dog mounted in the slot or recess and having an extended end located adjacent to and flush with the projection, whereby the dog is prevented from being accidentally operated in the use of the hammer, substantially as described.

### 757,072. FAUCET ATTACHMENT. JOHN J. TOBBEIN, Cedar Rapids, Iowa. Filed Aug. 10, 1903. Serial No. 169,013. (No model.)

*Claim.*—1. A valve, a valve-casing, a registering member revolubly mounted on the valve-casing and axially alined with the valve, said registering member being movable with the valve.

2. A valve, a valve-casing, a registering member revolubly mounted on the valve-casing and axially alined with the valve, and means carried by the valve for rotating the registering member and retaining the same in position on the valve-casing.

3. A valve, a valve-casing, a registering member revolubly mounted on the valve-casing, and means carried by the valve for rotating the registering member and retaining the same in position on the valve-casing.



4. A valve, a valve-casing, a registering member revolubly mounted on the valve-casing and axially alined with the valve, means carried by the valve for rotating the registering member and retaining the same in position on the valve-casing, and means for locking said member from return movement.

5. A valve, a valve-casing, a registering-ring revolubly mounted on the valve-casing, a spring-pawl carried by the valve for rotating the ring and retaining the latter in position on the valve-casing, said ring being adjustable independently of the valve.

6. A valve, a valve-casing, a registering-ring revolubly mounted on the valve-casing and provided with a series of notches or teeth, a spring-pawl adapted to engage the notches or teeth for rotating the ring, said registering-ring being adjustable independently of the valve and retained in position on the valve-casing by the spring-pawl.

7. A valve, a revolving registering-ring, teeth formed in the ring, a pawl carried by the valve adapted to engage the teeth and rotate the ring, and shoulders or stops on the valve-casing adapted to engage the pawl and limit the movement of the valve.

8. A valve, a valve-casing, teeth formed on the valve-casing, a revolving registering-ring provided with a pawl adapted to engage said teeth, and means carried by the valve for engaging the ring and rotating the same.

9. A valve, a revolving registering-ring movable therewith, teeth formed in the ring, a spring-pawl carried by the valve adapted to engage the teeth and rotate the ring, and means for limiting the movement of the valve.

10. A valve, a valve-casing, teeth formed in the valve-casing, a registering-ring provided with an annular groove or channel revolubly mounted on the valve-casing, a pawl seated within the groove or channel and adapted to engage the teeth on the valve-casing, and means carried by the valve for engaging the ring and rotating the same.

11. In a registering-valve, a valve-casing provided with an annular flange having teeth formed therein, a registering-ring provided with an annular groove or channel revolubly mounted on the flange, a spring-pawl one end of which is seated in the groove or channel the opposite end thereof being bent outwardly and adapted to engage the teeth on the flange, and means carried by the valve for rotating the ring.

12. In a registering-valve, a valve-casing provided with a plurality of teeth and having its upper portion recessed to form shoulders or stops, a registering-ring revolubly mounted on the valve-casing, and a spring-pawl carried by the valve and adapted to engage and rotate the ring, the shoulders or stops being arranged in the path of the pawl to limit the movement of the valve.

13. In a registering-valve, a valve-casing provided with an annular rib having a recess formed therein defining shoulders or stops, a registering-ring provided with pawl-engaging teeth revolubly mounted on the valve-casing and bearing against the annular rib, a pawl carried by the valve adapted to engage the teeth and rotate the ring, said pawl being adapted to travel in the recessed portion of the annular rib and engage the stop or shoulders to limit the movement of the valve.

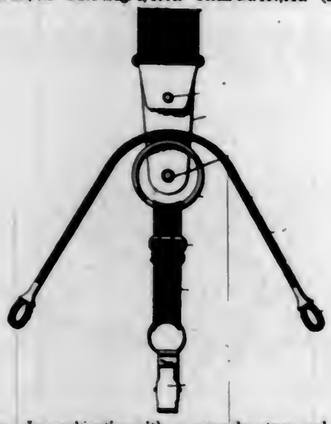
14. In a registering-valve, a valve-casing, a hand or pointer secured to the casing, a graduated ring revolubly mounted on the casing and adapted to register with the hand or pointer, a spring-pawl carried by the valve adapted to engage and rotate the ring, and means for locking the ring from return movement.

15. In a registering-valve, a valve-casing, a registering-ring revolubly mounted on the casing, teeth formed in the ring, a spring-pawl provided with a depending lug and having a shoulder formed in the head thereof carried by the valve, said shoulder being adapted to engage the teeth and rotate the ring, and means carried by the casing for engaging the lug and limiting the movement of the valve.

16. In a device of the class described, a valve having uniform movement, and a valve-actuated registering member having variable movement and serving at each movement thereof to register successive and equal amounts.

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**757,073. SUSPENDER ATTACHMENT.** JAMES L. UBELLAR, Kankakee, Ill. Filed Aug. 1, 1903. Serial No. 167,910. (No model.)



*Claim.*—In combination with a suspender-strap end, an elongated eye fastened thereto, a strap passed through said eye, a stud fastening said strap to the eye, a socket member near one end of the strap adapted to engage over said stud to form a loop, a ring in the loop formed by said strap, a cord resting on a portion of the circumference of said ring, a clasp suspended from said ring, the latter and said cord being held in operative positions by said loop, as set forth.

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**757,074. AIR-HEATING SYSTEM.** CHARLES A. VAUGHN, Seltsland, Pa. Filed Mar. 24, 1903. Serial No. 149,240. (No model.)



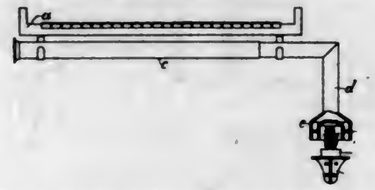
*Claim.*—1. In an air-heating system, the combination with a stove or heater, of a heating-chamber in communication with the combustion-chamber of said stove or heater, a fresh-air pipe traversing said heating-chamber, and a distributer in an apartment above that in which the said stove or heater is located and from which distributer the fresh heated air is delivered into the upper apartment, said distributer comprising a coil which is in communication with the said fresh-air pipe and from which coil the heated fresh air is delivered into said upper apartment, and a drum the chamber of which is in communication with said heating-chamber and which drum incloses said coil.

2. In an air-heating system, the combination with a stove or heater, of a fresh-air distributer, comprising a coil, in an apartment above that in which said stove or heater is located, a drum inclosing said coil, a smoke-pipe serving as a heating-chamber and connecting the combustion-chamber of said stove or heater with the chamber of said drum, a fresh-air pipe traversing said smoke-pipe and communicating with said distributer, an inlet-elbow secured in the side of said smoke-pipe to receive and support said fresh-air pipe, and semicircular strips or braces having outturned ends clamped to said fresh-air pipe and serving to center and support the same within the smoke-pipe.



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**757,075. APPARATUS FOR WARMING KEYBOARDS OF ORGANS.** GUSTAV M. WAIDENSCHLAGER, Seifriedsburg, Germany. Filed May 21, 1903. Serial No. 158,133. (No model.)



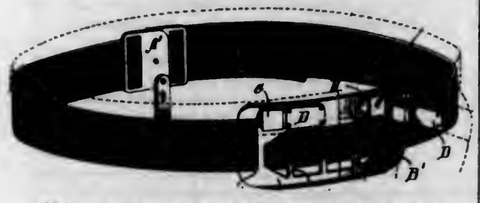
*Claim.*—1. In apparatus for warming keyboards of organs, a keyboard-table furnished with a slot, and a pipe arranged below this table and provided at its top side with holes for the issue of heated air to the keyboard, substantially as herein set forth.

2. In apparatus for warming keyboards of organs, a keyboard-table furnished with a slot, a pipe arranged below this table and provided with holes at its top side for the issue of heated air to the keyboard, an air-inlet funnel at one end of the pipe, a box arranged in the said funnel and open below, and means for heating this box, there being an air-space between the box and the air-inlet funnel, substantially as herein set forth.

3. In apparatus for warming keyboards of organs, a keyboard-table furnished with a slot, a pipe arranged below this table and provided at its top side with holes for the issue of heated air to the keyboard, and a removable cap provided at the rear end of the said pipe, substantially as herein set forth.

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**757,076. SKIRT-ADJUSTER.** HENRY WETHERBY, New York, N. Y. Filed Dec. 17, 1903. Serial No. 185,583. (No model.)



*Claim.*—1. A skirt and waist adjuster comprising a band of textile fabric, a slotted frame-plate upon said band, hooks projecting from the marginal edge of an elongated aperture in said plate, which hooks are fastened to the marginal edge of said band, straps forming socket members upon said plate, combined with hooks secured at unequal distances from the ends of a skirt-band and adapted to be caught in said socket members in opposite directions, as set forth.

2. A skirt and waist adjuster comprising a band of textile fabric adapted to be fastened about the body of a wearer, a metallic slotted frame-plate mounted upon said band and having integral hooks along the marginal edge of an aperture in said plate, to which the marginal edge of the band is fastened, and fastening means carried by the portion of the band intermediate said slots and designed to be secured to the center line of the back of a shirt-waist, combined with hooks secured adjacent to the meeting ends of the band of a skirt adapted to be caught in socket members forming a portion of said plate, as set forth.

3. A skirt and waist adjuster comprising a band adapted to be fastened about the body of a wearer, a slotted metallic plate mounted upon said band, means for fastening the portion of the band intermediate the slots of the plate to a shirt-waist, straps forming socket members upon said plate, the portions of the plate adjacent to the inner edges of said straps being sunken or depressed, combined with hooks secured to the meeting ends of the band of a skirt and in opposite directions, the ends of said hooks adapted to be positioned in said depressions at the ends of the straps and be fulcrumed over the edges of the straps to draw the waistband of the skirt taut, as set forth.

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**757,077. FISHING APPARATUS.** FRANK B. WHIPPLE, Geneseo, N. Y. Filed Nov. 17, 1902. Serial No. 131,774. (No model.)



*Claim.*—1. In apparatus of the class described, the combination of a lure, a victim-detaining device, and a slidable connection between them, said slidable connection including a yieldable element, substantially as described.

2. In combination with a victim-detaining device, an electric lamp, a battery connected thereto, and buoyant means to partially sustain the weight of the battery in the water, substantially as described.

3. Fishing apparatus provided with a battery having a light-emitting luring element operated thereby, buoyant means to partially sustain the weight of the battery in the water, and a victim-detaining element, substantially as described.

4. A fishing-line having a battery, buoyant means to partially sustain the weight of the battery in the water, a light-emitting luring element operated by the battery, and a victim-detaining element, substantially as described.

5. Fishing apparatus including a battery, buoyant means to partially sustain the weight of the battery in the water, and a luminous lure operated by the battery, substantially as described.

6. A fishing apparatus including a battery and an electrically-luminous lure operated thereby, closely connected thereto and adapted to be cast into the water therewith, substantially as described.

7. A fishing apparatus having a battery and an electrically-luminous lure operable thereby, connected thereto and adapted to be cast into the water therewith, substantially as described.

8. A fishing apparatus having a battery, an electric lamp operated thereby, and a victim-detaining device, all connected and adapted to be placed in the water together, substantially as described.

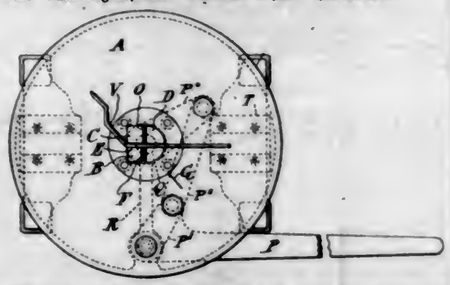
9. A fishing-line having a battery, an electric lamp operated

thereby, a victim-detaining device, all connected together and adapted to be cast in the water, and buoyant means to partially sustain the weight of the battery in the water and correspondingly lessen the pull thereof on the line, substantially as described.

10. A fishing apparatus comprising an electric light, a battery and a bait, all closely connected and adapted to be placed in the water together, and a line attached thereto, substantially as described.

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**757,078. BENDING-MACHINE. JAMES J. WOOD, Fort Wayne, Ind. Filed Aug. 28, 1903. Serial No. 171,109. (No model.)**



*Claim.*—1. A bending-machine for bars or the like including in combination a horizontal table for supporting the weight of the bar, and holding and bending means for the bar projecting above said table and supported at their lower ends, said table being entirely free of other projections above so as to leave room for the bar to lie in any direction from the holding and bending means.

2. A bending-machine for bars or the like including in combination a horizontal table for supporting the bar, a pair of posts B and C having a space between them, and a bending-tool D, said posts B and C and tool D being supported at their lower ends and said table being entirely free of other projections above it so as to leave room for the bar to lie in any direction from the posts and bending-tool.

3. A bending-machine for bars or the like including in combination a horizontal table, a pair of fixed vertical posts thereon between which the bar may be placed, a bending-tool projecting above said table and having a bearing-face in line with the bearing-face of the outer one of said posts and movable horizontally to bend the free portion of the bar, and an angle-plate adapted to rest on said table and overlie the two bearing-faces of the inner one of said posts to adapt the machine for bending thinner bars.

4. A bending-machine for bars or the like including in combination a pair of lateral supports B and C having a space between them with one open end through which a bar may be introduced, means for bending the portion of the bar outside of said space, and a clip L for bracing said supports at the open end having openings M and N fitting closely over said posts.

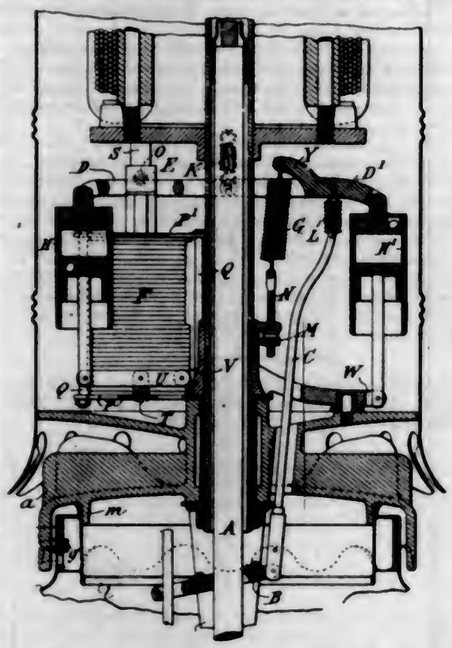
5. A bending-machine for bars or the like including in combination a pair of lateral supports B and C having a space between them with one open end through which a bar may be introduced, a bending-tool D, and a clip L for bracing said posts and tool having openings M and N fitting closely over said posts, and an opening a with its edge forming a rear support for the tool D.

6. A bending-machine for bars or the like including in combination a horizontal table A, a pair of posts B and C having a space between them, a movable bending-tool D cooperating therewith having a bearing only at its lower end, a central rotatable disk W carrying and fixedly connected with said bending-tool and carried in a socket in the table A, and a plate X carrying said lateral supports and overlying and holding down said disk and having an opening through which the tool D projects.

7. A bending-machine for bus-bars or the like including in combination a horizontal table, a bending-tool rotating horizontally over said table, a hand operating member therefor, and power-multiplying connecting mechanism between said operating member and the pivot of said bending-tool, whereby the hand operating member moves through a greater arc than the bending-tool.

8. A bending-machine for bus-bars or the like including in combination a horizontal table, a bending-tool rotating horizontally over said table, an arm $P^3$ of said tool, an arm $P^7$ carried by said table, a link connecting said arms, said parts being arranged to bring said arm $P^3$ near its dead-center and said arm $P^7$ approximately at right angles to the link at the end of an operation, and hand-operated means for turning said arm $P^3$.

**757,079. ELECTRIC-ARC LAMP. JAMES J. WOOD, Fort Wayne, Ind. Filed Sept. 4, 1903. Serial No. 172,022. (No model.)**



*Claim.*—1. In an alternating-current arc-lamp in combination, a regulating-magnet, and a feed mechanism including a lever yieldingly supported at its pivotal point for transmitting movement from the magnet to the carbon.

2. In an alternating-current arc-lamp in combination, a regulating-magnet, a lever connected at one end to the movable member of said magnet and at the other end to the carbon-feeding device and yieldingly supported at its intermediate pivotal point.

3. In an alternating-current arc-lamp in combination, a regulating-magnet, and a feed mechanism including a yieldingly-supported lever for transmitting movement from the magnet to the carbon, said lever being also yieldingly connected to the movable member of said magnet.

4. In an alternating-current arc-lamp in combination, a regulating-magnet having a yieldingly-supported coil, and a feed mechanism including a lever yieldingly supported at its pivotal point connected to the armature of said magnet.

5. In an alternating-current arc-lamp in combination, a regulating-magnet having a yieldingly-supported coil, and a feed mechanism including a lever yieldingly connected to its support at its pivotal point and also yieldingly connected to the armature of said magnet.

6. In an alternating-current arc-lamp in combination, a regulating-magnet having a coil yieldingly supported, a link pivotally connected at one point to the fixed structure and pivotally connected at another point to the coil, and a feed mechanism connected to the armature of said magnet.

7. In an alternating-current arc-lamp in combination, a regulating-magnet having a coil yieldingly supported, an armature, a feed mechanism connected to said armature, and a dash-pot connected to said coil and arranged to retard movement of said coil toward said armature.

8. In an alternating-current arc-lamp in combination, a regulating-magnet having a coil yieldingly supported, an armature, means for retarding the attracted movement of said armature, and a dash-pot connected to said coil and arranged to retard movement of said coil toward said armature.

9. In an alternating-current arc-lamp in combination, a regulating-magnet having a coil yieldingly supported and connected to the fixed structure by a link, a feed mechanism including a lever connected to the armature of said magnet, and a dash-pot having one of its parts connected to said lever and the other to said link so as to retard movement of said coil toward said lever.



10. In an alternating-current arc-lamp in combination, a regulating-magnet, a lever connected at one end to the movable member of said magnet and at the other end to the carbon-feeding device and yieldingly supported at its intermediate pivotal point, and a dash-pot at the end connected to the carbon-feeding device and acting to retard the separating movement of this end of the lever.

11. In an alternating-current arc-lamp in combination, a regulating-magnet, a lever connected at one end to the movable member of said magnet and at the other end to the carbon-feeding device and yieldingly supported at its intermediate pivotal point, and dash-pots one at each end of said lever and both acting to retard the separating movement thereof.

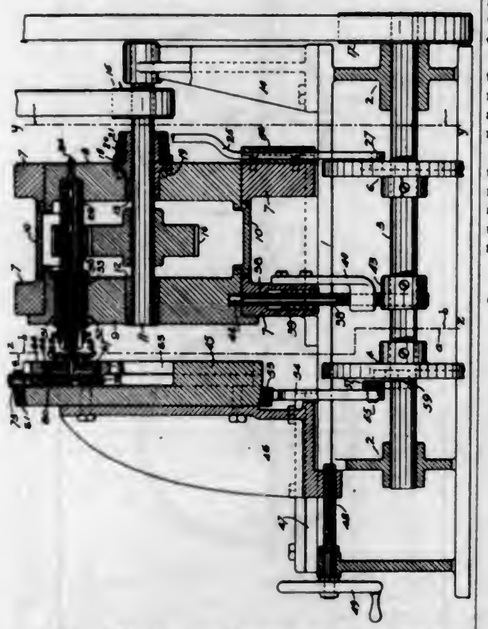
12. In an alternating-current arc-lamp in combination, a regulating-magnet, a carbon-feeding device in direct engagement with the carbon, and means in unyielding connection with said device when moved in a direction for transmitting the feeding movement to the carbon and in yielding connection with said device when moved in a direction for transmitting the separating movement to the carbon.

13. In an alternating-current arc-lamp in combination, a regulating-magnet, a lever operated thereby, a carbon-feeding clutch, an operating-rod therefor, said lever bearing directly on said rod to transmit a feeding movement unyieldingly, and a spring connection between said lever and rod to transmit a separating movement yieldingly.

14. In an arc-lamp in combination, a regulating-magnet having a movable coil and a movable core, and a dash-pot interposed between the coil and the core to resist the approach of one toward the other.

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**757,080. MACHINE FOR FORMING COLLAR-BUTTONS. EDWARD J. YALE, North Attleboro, Mass. Filed May 6, 1903. Serial No. 155,954. (No model.)**



*Claim.*—1. In a machine of the class described, the combination with a rotating spindle of a chuck mounted in the spindle, an exteriorly-tapered split spring-collar mounted upon the end of the chuck, a longitudinally-sliding collar upon the spring-collar, and means independent of the spindle for reciprocating the sliding collar.

2. In a machine for reducing hollow blanks, the combination with the head of a barrel mounted to revolve in the head, rotary members in the barrel for carrying the blanks, and means upon the head for clamping the blanks upon the rotary members.

3. In a machine for reducing hollow blanks, the combination with the head of a barrel mounted to revolve in the head, rotary members in the barrel upon which the blanks are clamped, means for clamping the same, and means upon the head for unclamping the blank.

4. In a machine for reducing hollow blanks, the combination with the head of a barrel mounted to revolve in the head, rotary members in the barrel for carrying the blanks, clamping-collars upon the rotary members, and a plate upon the head and in the path of the collars adapted to contact with and guide the latter into clamped position.

5. In a machine for reducing hollow blanks, the combination with the head of a barrel, mounted to revolve in the head, rotary members in the head for carrying the blanks, collars upon the rotary members for clamping the blanks upon the latter, and a beveled plate upon the head and in the path of the collars adapted to contact with and guide the collars into unclamped position.

6. In a machine of the class described, the combination with the frame of a head upon the frame, a spindle-barrel in the head, a shaft journaled in the frame loosely traversing the barrel, a ratchet fixed to the barrel, a swinging arm mounted on the barrel adjacent the ratchet, a driving-shaft journaled in the frame, a cam provided with a channel upon its face mounted on the driving-shaft, a rod slidably mounted to the head, means upon one end of the rod for registering with the cam-channel, means upon the other end of the rod for engaging the swinging arm, and a pawl upon the rod for engaging the ratchet.

7. In a machine of the class described, the combination with the frame of a head, a revolving barrel mounted in the head, spinning spindles rotatably mounted in the barrel, a face-plate mounted upon the frame, a series of roller-couplets mounted upon the face-plate, and means for advancing each spindle end to the roller-couplets in succession.

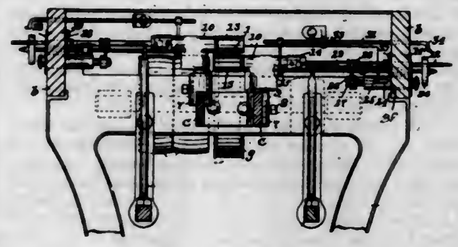
8. In a machine of the class described, the combination with the frame of a head, a revolving barrel mounted in the head, spinning spindles rotatably mounted in the barrel, a longitudinally-adjustable face-plate mounted upon the frame, a series of roller-couplets in the face-plate, means for adjusting the face-plate, and means upon the barrel for locking each spindle in alinement with the roller-couplets in succession.

9. In a machine of the class described, the combination with the frame of a face-plate mounted upon the frame, a series of carrier-couplets mounted in the face-plate, a roller upon each carrier, and means upon the face-plate for forcing the members of each carrier-couplet toward or away from each other.

10. In a machine of the class described, the combination with the frame of a face-plate mounted upon the frame, a series of carrier-couplets mounted in the face-plate, a roller upon each carrier, a right and left hand screw engaging each carrier-couplet, pinions upon the screws, a ring-gear engaging the pinions, and means for reciprocating the ring-gear.

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**757,081. QUILLING-MACHINE. GEORGE ADSIT, Paterson, N. J., assignor to the Benjamin Eastwood Company, Paterson, N. J., a Corporation of New Jersey. Filed May 1, 1903. Serial No. 155,158. (No model.)**



*Claim.*—1. In a quilling or other similar machine, the combination of a suitable support, rotary parts comprising an alined spindle and driving device therefor arranged in said support and movable the one longitudinally away from the other, clutch members adapted to disconnectively connect said spindle and its driving device, a spring normally forcing the movable part away from the other, and holding means for said spring normally resisting the action thereof to move said part, substantially as described.

2. In a quilling or other similar machine, the combination of a suitable support, an alined spindle and driving device therefor arranged in said support, said spindle being movable longitudinally away from its driving device, clutch members adapted to disconnectively connect said spindle and its driving device, a spring normally pressing said spindle away from its driving device, and holding means

for said spring normally resisting the action thereof to move said spindle, substantially as described.

3. In a quilling or other similar machine, the combination of a suitable support, rotary parts comprising an alined spindle and driving device therefor arranged in said support and movable the one longitudinally away from the other, clutch members adapted to disconnectively connect said spindle and its driving device, a spring normally forcing the movable part away from the other, holding means for said spring normally resisting the action thereof to move said part, and means, actuative from the cop being wound, for causing said holding means to release said spring, substantially as described.

4. In a quilling or other similar machine, the combination of the frame, a spindle journaled in said frame, a spindle-driving device alined therewith, a clutch for disconnectively connecting said spindle and its driving device, said spindle being movable longitudinally to disconnect the clutch, a spring-actuated means adapted to effect the longitudinal movement of said spindle, means for retaining said spring-actuated means in a retracted position, and means for effecting the release of said spring-actuated means, substantially as described.

5. In a quilling or other similar machine, the combination of the frame, a spindle journaled in said frame, a spindle-driving device alined therewith, a clutch for disconnectively connecting said spindle and its driving device, said spindle being movable longitudinally to disconnect the clutch, a spring-actuated means adapted to effect the longitudinal movement of said spindle, means for retaining said spring-actuated means in a retracted position, and means, controlled from the cop being wound, for releasing said spring-actuated means, substantially as described.

6. In a quilling or other similar machine, the combination of the frame, alined rotary members, one of which is a spindle and the other of which is its driving device, a clutch disconnectively connecting said members, one of said members being movable away from the other to disengage said clutch, a spring-actuated device controlling the longitudinal movement of said member, means, resisting the action of said spring-actuated device, for holding said members engaged, and means, actuated from the cop being wound, for disengaging said spring-actuated device from said holding means, substantially as described.

7. In a quilling or other similar machine, the combination of the frame, interlocking members revolubly arranged in said frame and one of which is a spindle and the other of which is its driving device, one of said members being movable away from the other to disengage said members, a spring-actuated device adapted to move said movable member away from the other member, means for holding said device retracted, a rotary and threaded part engageable with the cop being wound, and an oscillating part engaging the threaded portion of said rotary threaded part, said rotary threaded part being engageable with said spring-actuated device to release the same from its holding means, substantially as described.

8. In a quilling or other similar machine, the combination of a spindle, a driving device therefor, a clutch disconnectively connecting said spindle and its driving device, means for moving said spindle away from its driving device to disengage the clutch, a rotary part engageable with the cop being wound and controlling said spindle-moving means, and means, actuative from the spindle, for automatically moving said rotary part away from the spindle, substantially as described.

9. In a quilling or other similar machine, the combination of a suitable support, an alined spindle and driving device therefor arranged in said support, clutch members disconnectively connecting said spindle and its driving device, said spindle being movable longitudinally to disengage said clutch, and a fixed braking device arranged to be frictionally engaged by said spindle upon the longitudinal movement thereof, substantially as described.

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**757,082. ROVING-CAN. EMERY ANDREWS, Kennebunk, Me.; Paul Irving Andrews and Harry Edwin Andrews executors of said Emery Andrews, deceased. Filed Sept. 17, 1897. Serial No. 651,973. (No model.)**



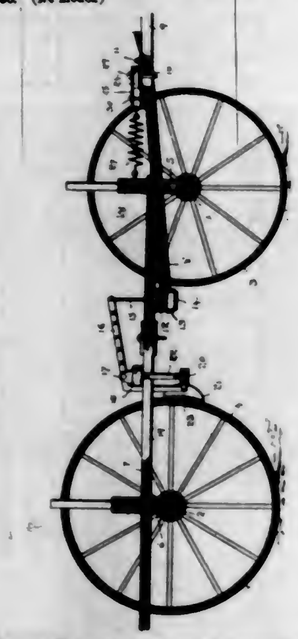
*Claim.*—1. A roving-can comprising a sheet of flexible material forming the cylindrical flangeless body of the can and having straight lateral edges butted together to obviate the production of shoulders either inside or outside said body, the said body having a smooth inner surface free from projections to catch the fibrous material which is contained within the can, a joining-strip overlying the joint at the outside of the said body and having its opposite edges secured to the exterior of the butting edges of the said sheet, and a kicking-band encircling the said body, the proximate or meeting edges of the kicking-band and joining-strip being butt-jointed to obviate the formation of a projection, substantially as described.

2. A roving-can comprising a sheet of flexible material forming the body of the can and having its lateral edges butted together, a joining-strip overlying the joint and having its opposite edges secured to the butting edges of the said sheet, a reinforcing-band encircling the body and having its ends brought adjacent the opposite edges of the said joining-strip, and a second joining-strip overlying or bridging the first joining-strip and having its ends secured to the said ends of the reinforcing-band, substantially as described.

3. A roving-can comprising a sheet of flexible material forming the body of the can and having its lateral edges butted together, a joining-strip overlying the joint and having its opposite edges secured to the butting edges of the said sheet, a reinforcing-band encircling the body and having its ends brought adjacent the opposite edges of the said joining-strip, and a second joining-strip of thin sheet metal overlying or bridging the first joining-strip and having its ends secured to the said ends of the reinforcing-band, substantially as described.

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**757,083. WAGON-BRAKE. BARNARD B. BARNETT, Spartanburg, S. C. Filed Apr. 11, 1903. Renewed Feb. 17, 1904. Serial No. 194,060. (No model.)**



*Claim.*—1. The combination with the running-gear of a wagon, of brake mechanism operatively connected therewith and actuated by the forward hounds, a draft-tongue pivotally connected with the forward ends of said hounds, a strap connected with said hounds and extending across the tongue, and a wedge connected with and operated by the whiffletree and adapted to be forced between the tongue and said strap, substantially as and for the purpose described.

2. The combination with the running-gear of a wagon and a brake connected therewith and also operatively connected with the forward hounds and adapted to be operated by the rocking movement of said hounds, a draft-tongue having a pivotal connection with the forward ends of said hounds, a strap connected with the front ends of the hounds and passing across the tongue, a whiffletree having a forward and backward movement on the tongue, a sliding wedge movable lengthwise of the tongue and adapted to engage said strap, and a yoke connecting the whiffletree and wedge, substantially as and for the purpose described.



3. The combination with the running-gear of a wagon and a brake mounted thereon and operatively connected with and actuated by the rocking movement of the forward hounds, a draft-tongue having a pivotal connection with said hounds, a strap connected with said hounds and extending across the tongue, a whiffletree having a movement lengthwise of the tongue, a sliding wedge adapted to be moved under said strap, a yoke connecting the whiffletree and wedge, and a spring for forcing the yoke and whiffletree rearward and carrying the wedge under the strap, substantially as described.

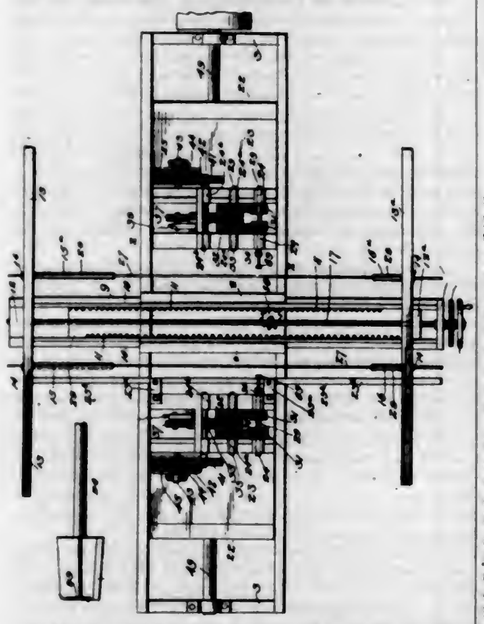
4. The combination with the running-gear of a wagon and a brake mounted thereon and operatively connected with and actuated by the rocking movement of the forward hounds, of a draft-tongue having a pivotal connection with said hounds, a strap connected with said hounds and extending across the tongue, a whiffletree movable lengthwise of the tongue, a wedge adapted to be moved under the strap, a yoke connecting the whiffletree and wedge, a spring connected with the yoke for forcing the whiffletree and wedge rearward, and a detachable pin for locking the yoke against movement, substantially as described.

5. The combination with the running-gear of a wagon, of a brake-beam provided with brake-shoes, an elbow-lever for operating said beam, tilting-forward hounds connected at their rear ends by a cross-bar, a hanger embracing said cross-bar and having a linked connection with the elbow-lever and a sliding relation to said cross-bar, and a draft-tongue having a pivotal connection with the forward hounds, substantially as described.

6. The combination with the running-gear of a wagon, of a brake-beam provided with brake-shoes, an elbow-lever connected with said brake-beam and fulcrumed on the running-gear, rocking-forward hounds connected at their rear ends by a cross-bar extending beneath the reach, a hanger embracing said cross-bar and provided with a roller upon which said cross-bar rests and is adapted to slide, said hanger having a linked connection with the elbow-lever, and a draft-tongue having a pivotal connection with said forward hounds, substantially as described.

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**757,084. GROOVING-MACHINE. OTTO BOEHM, Baltimore, Md. Filed June 25, 1903. Serial No. 163,078. (No model.)**



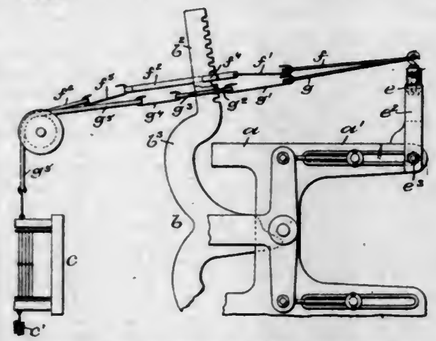
*Claim.*—1. In a machine of the character described, a series of tool-spindles provided with pinions, the pinions upon adjacent spindles being offset so that the pinions of alternate spindles will lie in the same plane, a series of driving-shafts therefor, each of said driving-shafts being provided with gears, each meshing with a plurality of adjacent pinions in the same plane, and with driving-pinions and gears for operating said driving-pinions, one of said operating-gears being adjustable so as to be thrown in and out of gear to vary the number of driven spindles, substantially as described.

3. In a grooving-machine, the combination of a suitable frame, transverse guides upon said frame, a work-supporting carriage movable along said guides and formed with oppositely-disposed rack-bars, a main drive-shaft in said frame, an oscillating shaft, driving connections between said shafts, a pinion upon said oscillating shaft adapted to mesh with either of said rack-bars to reciprocate said carriage, means for shifting said pinion into engagement with either rack-bar, and tool-carriages upon said frame provided with suitable cutting-tools, substantially as described.

4. In a grooving-machine, the combination of a suitable frame, guides upon said frame, a work-supporting carriage movable along said guides and provided with a depending bracket, a drive-shaft in said frame, a secondary shaft geared to said drive-shaft, a cam upon said secondary shaft, a pivoted lever actuated by said cam, a bell-crank lever connected to said bracket upon the carriage, a connection between said lever and bell-crank lever, tool-carriages mounted upon said frame and provided with a plurality of rotary cutting-tools, and means for driving said tools, substantially as described.

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**757,085. LENO-MOTION FOR LOOM-DOBBIES. JOHN R. BOLTON, Easthampton, Mass. Filed July 20, 1903. Serial No. 166,387. (No model.)**



*Claim.*—1. In a leno-motion for looms, a loom-dobby and harnesses operated thereby, a bar pivotally secured at its center to a support on the loom-dobby, a yoke with hooks, means for connecting the yoke with one end of the pivoted bar and with the harnesses controlling the cross-threads, a flat link having an elongated slot, means for connecting the link to the other end of the pivoted bar and to the doup-harness, springs on the harnesses connecting with a fixed part of the loom, operating means consisting of two harness-levers moving in opposite directions and engaging with the hooks on the yoke to give a half-and-return motion to the cross-threads, and means consisting of a harness-lever passing through the slot in the flat link to give a full movement to the cross-threads when not in use for cross-weaving, as described.

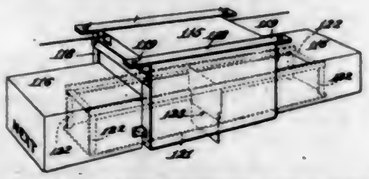
2. In a leno-motion for looms, the combination of the connecting-bar $d$ having the hooks $d'$ and $d^2$ adjustably secured in the slots $d^3$ $d^3$ by the nuts $d^4$ $d^4$ and pivotally secured to the support $c$ by the bolt $d^5$ through the slot $c'$, the support $c$ having the ends $c^2$ $c^2$ secured to the dobby-frame by the bolts $c^3$ $c^3$, the strap $f$ on the hook $d'$, the link $f'$, and yoke $f^2$ with the hooks $f^3$ and $f^3$ to engage with the harness-levers $b'$ and $b^3$, the link $f^3$ and the cording $f^5$ connecting with the harness controlling the cross-threads, the strap $g$ on the hook $d^2$, the link $g'$, and the flat link $g^2$ having the elongated slot $g^3$ for the harness-lever $b^3$, the link $g^4$, and the cording $g^5$ connecting with the doup-harness, the spring $c'$ connecting with the harnesses and a fixed part of the loom, and means for operating the harness-levers, all for the purpose as described.

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**757,086. STREET, STATION, PROGRAM, OR ADVERTISING INDICATOR. RUDOLPH BOSSHARD, Los Angeles, Cal. Filed Oct. 23, 1902. Serial No. 128,447. (No model.)**

*Claim.*—1. In an indicator, means for confining a series of cards

in substantial pack form, a vertically-movable frame mounted on said means away below the pack of cards, means for allowing a card to drop against the movable frame, and means for actuating the movable frame toward the pack and restoring the card.



2. In an indicator, means for confining a series of cards in substantial pack form, a vertically-movable frame mounted on said means away below the pack of cards, means for allowing said cards to drop sequentially onto the vertically-movable frame, and means for actuating the movable frame toward the pack and restoring each card after being exposed.

3. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, a series of cards supported by said traveling frame, means to hold said cards stationary, said traveling frame being provided with a pair of opposite slots, a vertically-movable frame extending along under each card and means to propel said traveling frame and bring said slots under said cards step by step, and allowing the cards to drop sequentially onto the vertically-movable frame, and means for raising the vertically-movable frame and restoring the cards.

4. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, said traveling frame being provided with a pair of opposite slots, a series of cards supported by said traveling frame, combs mounted on said main frame and engaging said cards, a vertically-movable frame extending along under each card and means to move said traveling frame and bring said slots under said cards step by step, and allowing the cards to drop sequentially onto the vertically-movable frame, and means for raising the vertically-movable frame and restoring the cards.

5. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, said traveling frame having a pair of oppositely-arranged slots, a series of cards supported by said traveling frame, a plurality of combs connected to said main frame, one pair of combs engaging said cards on one edge, and another pair of combs engaging said cards on their opposite edges, means for propelling said traveling frame step by step, a vertically-movable frame extending along under each card, and means for raising said vertically-movable frame.

6. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, said traveling frame having a pair of oppositely-arranged slots, a series of cards supported by said traveling frame, a plurality of combs connected to said main frame, one pair of combs engaging said card on one edge, another pair of combs engaging said cards on their opposite edges, and means to propel said traveling frame and bring said slots into register with the bottom edges of said cards step by step, a vertically-movable frame extending horizontally along under each card away below the cards, and means for raising the vertically-movable frame.

7. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with opposite slots, means to propel said traveling frame and bring said slots under said cards step by step, and means for retracting said cards, said last means embracing a vertically-movable rectangular frame under said cards, parallel therewith, and spaced apart therefrom.

8. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means which allow a card to project by said traveling frame, and means for propelling said traveling frame in two directions and bring said slots under said cards step by step, a vertically-movable rectangular frame under said cards, spaced apart therefrom, and means for raising said vertically-movable frame.

9. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with a pair of oppositely-arranged slots, means to propel said traveling frame in two directions and bring said slots under said cards step by step, a vertically-movable rectangular frame under said cards, spaced apart therefrom, and means for raising said vertically-movable frame.

10. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with a pair of oppositely-arranged slots, means to propel said traveling frame in two directions and bring said slots under said cards step by step, thereby allowing said cards to drop sequentially, and means to retract a card after it has been dropped, said last means embracing a vertically-movable rectangular frame under said cards, parallel therewith, and spaced apart therefrom.

11. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop through said frame, means to propel said traveling frame under said cards, thereby allowing said cards to drop in consecutive order, and means for producing an audible signal when a card is dropped, a vertically-movable rectangular frame under said cards, spaced apart therefrom, and means for raising said vertically-movable frame.

12. In an indicator, a main frame, a traveling frame mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop through said frame, a vertically-movable frame mounted on said main frame underneath said cards, means to propel said traveling frame step by step and allow said cards to drop sequentially, and means for raising said vertically-movable frame.

13. In an indicator, a main frame, a traveling frame mounted on said main frame, a vertically-movable frame on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop through said traveling frame, means for propelling said traveling frame in two directions underneath said cards and allowing said cards to drop sequentially, and means for raising said vertically-movable frame.

14. In an indicator, a main frame, a traveling frame comprising a pair of oppositely-arranged angle-bars, end bars connected to said angle-bars, one of said angle-bars being provided with teeth on its upper edge, a series of cards supported by said angle-bars, a detent engaging said teeth, and means for operating said detent, each of said angle-bars being provided with a slot, said slots being arranged opposite each other.

15. In an indicator, a main frame, a traveling frame comprising a pair of angle-bars which are connected at each end, one of said angle-bars being provided with teeth upon its upper edge, both of said angle-bars being provided with opposite slots, a detent engaging said teeth, means for operating said detent, a series of vertical cards resting upon the angle-bars, and means for raising said cards.

16. In an indicator, a main frame, a traveling frame comprising a pair of angle-bars, one of said bars being toothed, a detent engaging the teeth on said bar, a series of vertical cards supported by said angle-bars, means for operating said detent and propelling said traveling frame to bring said slots under said cards and allowing said cards to drop sequentially, a vertically-movable frame mounted on said main frame, and means for operating said vertically-movable frame.

17. In an indicator, a main frame, a traveling frame mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop through said traveling frame, a series of teeth on said traveling frame, a detent engaging said teeth, means for operating said detent and thereby moving said traveling frame by said cards and allowing said cards to drop in consecutive order, a vertically-movable frame carried by said main frame, and means for raising said vertically-movable frame immediately before a card is dropped.

18. In an indicator, a main frame, a traveling frame comprising a pair of angle-bars connected at each end, a series of cards, said cards being provided with shoulders on each end, said shoulders resting upon said angle-bars, said angle-bars being provided with slots, and means for moving said traveling frame and bringing said slots under the shoulders of one card at a time.

19. In an indicator, a main frame, a traveling frame comprising a pair of angle-bars connected at each end, a series of cards, each of said cards being provided with shoulders on each end, said shoulders resting upon said angle-bars, said angle-bars being provided with slots, means for moving said traveling frame and bringing said slots under one card at a time, and means for raising a card after it has been dropped.

20. In an indicator, a main frame, a traveling frame mounted on said main frame, said traveling frame being provided with teeth, a detent engaging said teeth, said traveling frame being provided with means for allowing a card to drop therethrough, means for operating and propelling said traveling frame, a series of cards supported by said traveling frame, and another frame pivoted to the main frame and resting upon the upper edges of said cards.



21. In an indicator, a main frame, a traveling frame mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop therethrough, means for propelling said traveling frame in two directions and allowing said cards to drop sequentially, means for raising said cards, and means bearing by gravity upon the upper edges of said cards to assist in holding said cards upon the traveling frame.

22. In an indicator, a main frame, a traveling frame mounted thereon, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing said cards to drop sequentially, a vertically-movable frame underneath said cards, means for raising said vertically-movable frame, a rock-frame pivoted to the main frame, said rock-frame being connected to said movable frame by links.

23. In an indicator, a main frame, a traveling frame mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop therethrough, a bracket carried by said frame, a lever pivoted to said bracket, said traveling frame being provided with teeth, a detent engaging said teeth, means intermediate said detent and said lever for actuating said detent when said lever is rocked, said detent adapted to move said traveling frame along said cards and allow the same to drop in consecutive order.

24. In an indicator, a main frame, a traveling frame mounted on said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop therethrough, a bracket carried by said main frame, a lever pivoted to said bracket, said traveling frame being provided with teeth, a detent engaging said teeth, means intermediate said detent and said lever for actuating said detent when said lever is rocked, said detent adapted to move said traveling frame along said cards and allow the same to drop in consecutive order, and means for raising said cards.

25. In an indicator, a main frame, a traveling frame mounted thereon, a series of cards supported by said traveling frame, said traveling frame being provided with means for allowing a card to drop therethrough, a series of teeth on said traveling frame, a bracket on said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a bell-crank lever pivoted to said wrist-plate, a detent engaging said teeth, connections between said detent and said bell-crank lever, said bell-crank lever lying in the path of movement of said first-named lever, and means for raising said cards embracing a rock-frame, one end of said first-named lever resting upon said rock-frame.

26. In an indicator, a main frame, a traveling frame provided with teeth, a series of cards supported by said traveling frame, the traveling frame being provided with means for allowing a card to drop therethrough, a bracket on said main frame, a lever pivoted to said bracket, the upper end of said lever being offset, a wrist-plate pivoted to said main frame, a bell-crank lever carried by said wrist-plate, a detent engaging the teeth of said traveling frame, connections between said detent and said bell-crank lever, and means for raising said cards embracing a rock-frame, one end of said first-named lever being in contact with a portion of said rock-frame, the offset of said lever lying a short distance from the bell-crank lever.

27. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of slots, a series of cards supported by said traveling frame, a vertically-movable frame embracing end pieces united by side bars, a rock-frame pivoted to the main frame, links connecting said rock-frame with said end pieces, and means for first operating said rock-frame and then advancing said traveling frame.

28. In an indicator, a main frame, a traveling frame mounted on said main frame and provided with opposite slots, a series of cards vertically supported by said traveling frame, a pair of combs carried by the main frame and holding said cards from sidewise movement, a vertically-movable frame, and means for raising said vertically-movable frame and then advancing said traveling frame.

29. In an indicator, a main frame, a traveling frame mounted on said frame and provided with opposite slots, a series of cards vertically supported by said traveling frame, a pair of combs carried by the main frame and holding said cards from sidewise movement, a vertically-movable frame, and means for raising said vertically-movable frame and then advancing said traveling frame, and then lowering said vertically-movable frame while said traveling frame is advancing.

30. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of slots, a series of cards supported by said traveling frame, a bracket on said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a bell-crank lever pivoted to said wrist-plate, a post on said main frame, an intermediate lever pivoted on said post, a second detent pivoted to said post and engaging said intermediate lever, both of said detents engaging the teeth of said traveling frame, and said bell-crank lever lying in the path of movement of said first-named lever.

31. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of slots, a series of cards supported by said traveling frame, a bracket on said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a bell-crank lever pivoted to said wrist-plate, a post on said main frame, an intermediate lever pivoted on said post, a second detent pivoted to said post and engaging said intermediate lever, both of said detents engaging the teeth of said traveling frame, said bell-crank lever lying in the path of movement of said first-named lever, a vertically-movable frame mounted on said main frame, a rock-frame pivoted to said main frame, and connections between said rock-frame and said vertically-movable frame, the lower end of said first-named lever contacting with said rock-frame.

32. In an indicator, a main frame, a traveling frame carried thereby and provided with a pair of slots, a pair of combs on opposite sides of said main frame, each comb lying slightly above said traveling frame, a series of cards in said combs resting upon said traveling frame, another pair of combs on opposite sides of the lower part of said main frame, and means for propelling said traveling frame and bringing said slots into register step by step with the teeth of the upper pair of combs.

33. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of opposite slots, said traveling frame being provided with a series of teeth, a series of cards supported by said traveling frame, a bracket carried by said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a slide carried by said wrist-plate, a projection from said slide, a spring carried by said wrist-plate and bearing against said projection, a bell-crank lever pivoted to said wrist-plate and provided with a toe which bears against the upper end of said slide, a detent formed on one end of said bell-crank lever, another detent connected with said bell-crank lever, and means for operating said bell-crank lever, rocking said wrist-plate, advancing said detents and thereby said traveling frame and allowing said cards to drop sequentially.

34. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of opposite slots, said traveling frame being provided with a series of teeth, a series of cards supported by said traveling frame, a bracket carried by said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a slide carried by said wrist-plate, a projection from said slide, a spring carried by said wrist-plate and bearing against said projection, a bell-crank lever pivoted to said wrist-plate and provided with a toe which bears against the upper end of said slide, a detent formed on one end of said bell-crank lever, another detent connected with said bell-crank lever, means for operating said bell-crank lever, rocking said wrist-plate, advancing said detents and thereby said traveling frame and allowing said cards to drop sequentially, and means for restoring said cards to their original position.

35. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of opposite slots, said traveling frame being provided with a series of teeth, a series of cards supported by said traveling frame, a bracket carried by said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a slide carried by said wrist-plate, a projection from said slide, a spring carried by said wrist-plate and bearing against said projection, a bell-crank lever pivoted to said wrist-plate and provided with a toe which bears against the upper end of said slide, a detent formed on one end of said bell-crank lever, another detent connected with said bell-crank lever, means for operating said bell-crank lever, rocking said wrist-plate, advancing said detents and thereby said traveling frame and allowing said cards to drop sequentially, a vertically-movable frame mounted on said main frame, and means connecting said first-named lever with said vertically-movable frame whereby the latter is operated.

36. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of opposite slots, said traveling frame being provided with a series of teeth, a series of cards supported by said traveling frame, a bracket carried by said

main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a slide carried by said wrist-plate, a projection from said slide, a spring carried by said wrist-plate and bearing against said projection, a bell-crank lever pivoted to said wrist-plate and provided with a toe which bears against the upper end of said slide, a detent formed on one end of said bell-crank lever, another detent connected with said bell-crank lever, means for operating said bell-crank lever, rocking said wrist-plate, advancing said detents and thereby said traveling frame and allowing said cards to drop sequentially, means for restoring said cards to their original position, a vertically-movable frame mounted on said main frame, a rock-frame mounted on said main frame, links connecting said rock-frame with said vertically-movable frame, a portion of said rock-frame lying in the path of movement of said first-named lever.

37. In an indicator, a main frame, a traveling frame slidably mounted on said main frame and provided with a pair of slots, a series of cards supported on said traveling frame, said traveling frame being provided with teeth, a bracket on said main frame, a pair of levers pivoted to said bracket, a wrist-plate pivoted to said main frame, a pair of bell-crank levers each being provided with a detent on one end, a pair of posts on said main frame, a detent pivoted to each post, both of said detents engaging the teeth of said traveling frame, each set of detents being connected with its adjacent bell-crank lever, each bell-crank lever lying in the path of movement of its adjacent first-named lever.

38. In an indicator, a main frame, a traveling frame slidably mounted on said main frame, and provided with a pair of slots, a series of cards supported on said traveling frame, said traveling frame being provided with teeth, a bracket on said main frame, a pair of levers pivoted to said bracket, a wrist-plate pivoted to said main frame, a pair of bell-crank levers each being provided with a detent on one end, a pair of posts on said main frame, a detent pivoted to each post, both of said detents engaging said teeth, each set of detents being connected with its adjacent bell-crank lever, each bell-crank lever lying in the path of movement of its adjacent first-named lever, a vertically-movable frame mounted on said main frame, a rock-frame pivoted to said main frame and connected to said vertically-movable frame, a portion of said rock-frame being in contact with both of said first-named pair of levers.

39. In an indicator, a main frame, a traveling frame mounted thereon and provided with a pair of slots, a series of cards supported by said traveling frame, a pair of links pivoted to the upper end of the main frame, and inclosing said cards, and means to propel said traveling frame along said cards.

40. In an indicator, a main frame, a traveling frame mounted thereon and provided with a pair of slots, a series of cards supported by said traveling frame, said cards being provided with shoulders on each end and having a considerable amount of their center portions cut away, and means for propelling said traveling frame and allowing said cards to drop sequentially, a vertically-movable frame under said cards comprising opposite bars extending along away below the shoulders of the cards, and means for raising said movable frame and bringing the upper edge thereof on a line with the shoulders of the cards.

41. In an indicator, a main frame, a traveling frame slidably mounted thereon and provided with a pair of opposite slots, said traveling frame being provided with a series of teeth, a series of cards supported by said traveling frame, a bracket carried by said main frame, a lever pivoted to said bracket, a wrist-plate pivoted to said main frame, a slide carried by said wrist-plate, a projection from said slide, a spring carried by said wrist-plate and bearing against said projection, a bell-crank lever pivoted to said wrist-plate and provided with a toe which bears against the upper end of said slide, a detent formed on one end of said bell-crank lever, another detent connected with said bell-crank lever, means for operating said bell-crank lever, rocking said wrist-plate, advancing said detents, and thereby said traveling frame, and allowing said cards to drop sequentially, means for restoring said cards to their original position, a vertically-movable frame mounted on said main frame, a rock-frame mounted on said main frame, links connecting said rock-frame with said vertically-movable frame, a portion of said rock-frame lying in the path of movement of said first-named lever, in combination with a pair of wheels and an axle, journals mounted on the axles, a pair of guides connected with the journal, a frame carried by the journal, an L-shaped lever pivoted to said frame, one end of said L-shaped lever projecting below the lowest point of the wheel, the other end of said lever projecting between said pair of guides, and a flexible connection from said L-shaped lever to said first-named lever which is pivoted on the bracket.

42. In an indicator, a box having an open bottom, a plate having a slot and covering the opening, and means for actuating said plate.

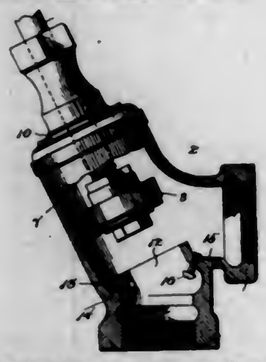
43. In an indicator, a box having an open bottom, a plate having a slot and covering the opening, and means for actuating said plate step by step.

44. In an indicator, in combination with a series of cards and means for exposing said cards, a box inclosing said cards and means, said box having an open bottom, a plate having a slot and covering the opening, and means for actuating the plate.

45. In an indicator, a main frame, a traveling frame carried by said main frame, a series of cards supported by said traveling frame, said traveling frame being provided with a pair of opposite slots, means to slide said traveling frame and bring said slots under said cards step by step, a box inclosing said named elements, said box having an opening at the bottom, a plate connected to said traveling frame and covering the opening, said plate having a slot substantially in line with the slots in the traveling frame.

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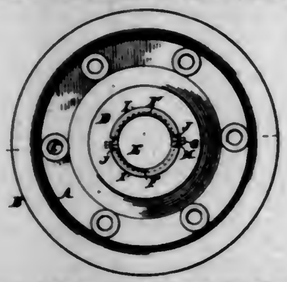
757,087. **RADIATOR-VALVE.** ADOLPHUS L. BOWER, Lima, Ohio. Filed Apr. 14, 1903. Serial No. 152,497. (No model.)



*Claim.*—A combined hot-water and steam-radiator valve comprising a valve-casing having angularly-related inlet and outlet necks and provided at the inner end of the inlet-neck with an inclined valve-seat flange set oblique to the planes of both of said necks, and forming thereabout an angular drain-gutter, the lowest point of which gutter is below the plane of the inner side of the outlet-neck, said valve-casing being further provided with an auxiliary heating-vent piercing the valve-seat web in the highest point of the gutter at one side of the face of the valve-seat at a point near to the outlet-neck, a temporary removable closure-plug fitted in said vent and exposed for manipulation through the inlet-neck, and a cut-off valve-disk arranged over the oblique valve-seat.

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757,088. **SHEET-METAL PULLEY.** CHARLES A. BRINLEY, Philadelphia, Pa., assignor to American Pulley Company, a Corporation of Pennsylvania. Filed Jan. 26, 1904. Serial No. 191,094. (No model.)



*Claim.*—1. A sheet-metal pulley consisting of two pulley parts formed of stamped sheet metal having central holes, in combination with a hub extending through the holes of the pulley parts and consisting of semicircular parts having flanges G acting as spacing portions between the two pulley parts and also provided with edges I flanged over upon said two pulley parts to hold them to the hub.

2. A sheet-metal pulley consisting of two pulley parts formed of stamped sheet metal having central holes provided with one or more notches J, in combination with a hub extending through the holes of the pulley parts and consisting of semicircular parts having flanges G acting as spacing portions between the two pulley parts and flanges H to fit into the notches J of the pulley parts and further provided with edges I flanged over upon said two pulley parts to hold them to the hub and upon the spacing portions.



3. In a sheet-metal pulley, the combination of two pulley parts A A of stamped sheet metal united together and having holes at their central portions, with a hub consisting of sections of sheet metal which are abutted to form a circular bearing and having flanges of shorter length than the length of the hub to form spacing-flanges between the pulley parts and also having the curved edges of the hub flanged or upset over the edges of the holes of the pulley parts to hold them to the hub and upon the spacing-flanges.

4. In a sheet-metal pulley, two pulley parts A A of stamped sheet metal united together and having holes at their central portions, combined with a hub consisting of sheet metal curved to form a circular bearing and having flanges of shorter length than the length of the hub abutted together to form spacing-flanges between the pulley parts and also having the curved edges of the said hub flanged or upset over the edges of the holes of the pulley parts to hold them to the hub and upon the spacing-flanges and further provided with means to lock the hub within the pulley parts against turning.

5. A sheet-metal pulley, consisting of two pulley parts formed of stamped sheet metal formed with abutting faces and cup-shaped central portions D having central holes and united by a series of eyelets between the hub and periphery, in combination with a hub extending through the holes of the pulley parts and consisting of two semicircular parts having flanges G acting as spacing parts between the two pulley parts and also provided with edges I formed over upon said two pulley parts to hold them to the hub.

6. A sheet-metal pulley consisting of two pulley parts formed of stamped sheet metal, combined with a hub having a circular portion extending through the pulley parts and flanged or upset over them and spacing-flanges extending laterally from the circular part to retain the pulley parts at the requisite distance apart.

7. A sheet-metal pulley consisting of two pulley parts formed of stamped sheet metal, combined with a hub having a circular portion extending through the pulley parts and flanged or upset over them and spacing-flanges extending laterally from the circular part to retain the pulley parts at the requisite distance apart, and provided with locking-flanges H to fit into the pulley parts and prevent them turning on the hub.

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757,089. **DROVER'S WHIP.** HENRY BROWN, Chicago, Ill. Filed Oct. 20, 1903. Serial No. 179,127. (No model.)



*Claim.*—1. In a whip, the combination with a lash, of a stock provided, at its free end, with a transverse groove and also with a transverse opening parallel with and adjacent said groove, thongs on the inner end of said lash adapted to be passed through said opening and securely bound into said groove, whereby pivotal motion of said lash relatively to said stock is prevented.

2. In a whip, the combination with a lash and thongs on the inner end of said lash, a stock provided at its free end with projections adapted to receive said thongs between the same and hold the latter against pivotal motion relatively to said stock in one direction, said stock being also provided with a transverse opening adjacent said projections adapted to receive said thongs for fastening said lash to said stock and hold said lash against relative pivotal motion in another direction.

3. In a drover's whip the combination with a stock provided in its end with a transverse concave groove and provided below said groove with a transverse opening axially parallel with said groove, of a lash comprising a filling member having a thong at one end passing through said opening and lying partially within said groove for holding the end of said member firmly within the latter, and a braided casing terminating in a strap passing through said opening and lying partially in said groove for holding the end of said casing firmly within the same, said filling member and said casing being thus held against pivotal motion relatively to said stock.

4. In a drover's whip, the combination with a stock provided in its end with a transverse concave groove and provided below said groove with a transverse opening axially parallel with said groove, of a lash comprising a filling member having a thong at one end passing through said opening and lying partially within said groove for holding the end of said member firmly within the latter, and a braided casing terminating in a strap passing through said opening and lying partially in said groove for holding the end of said casing firmly within the same, and a reinforcing-sleeve on said casing extending partially within said groove.

5. In a drover's whip, the combination with the stock provided adjacent its free end with a transverse opening and provided in its free end with a concave groove axially parallel with said opening, of a shot-bag and thongs, attached to the base of said shot-bag, adapted to lie within said groove and be secured therein by means of a cord or thong passing through said opening, said bag being thus held against pivotal motion relatively to said stock, and a braided casing or covering surrounding said shot-bag and lying partially within said groove, said casing or covering being secured to said stock below said groove.

6. In a drover's whip, the combination with the stock, provided adjacent its free end with a transverse opening and provided in its free end with a concave groove axially parallel with said opening, of a shot-bag and thongs attached to the base of said shot-bag adapted to lie within said groove and be secured therein by means of a cord or thong passing through said opening, said bag being thus held against pivotal motion relatively to said stock, and a braided casing or covering surrounding said shot-bag and lying partially within said groove, said casing or covering being secured to said stock below said groove, and a reinforcing-sleeve mounted on said casing and lying partially within said groove for further preventing relative pivotal motion between said lash and said stock.

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757,090. **PENCIL-SHARPENER.** FRANK H. CRANE, Chicago, Ill., assignor of one-half to Harry A. Dubis, Chicago, Ill. Filed June 20, 1903. Serial No. 162,307. (No model.)



*Claim.*—1. A pencil-sharpener comprising a casing adapted to form a handle, a frame pivoted to and folding within the casing and adapted to receive and confine the shavings, and a knife-blade carried by said frame.

2. A pencil-sharpener comprising a folding casing and frame, a knife-blade carried by and forming a part of the bottom of said frame, and a slip-lid for the frame.

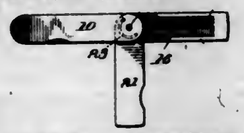
3. A pencil-sharpener comprising a handle, a frame, and a knife-blade pivoted in the outer end of the frame and having its free end arranged beneath a part of the handle.

4. A pencil-sharpener comprising a handle, a frame, a knife-blade pivoted in the outer end of the frame and having its free end arranged beneath a part of the handle, and a notch in the handle to permit the blade to be swung on its pivot into position for sharpening.

5. A pencil-sharpener comprising a folding casing and frame, a knife-blade and a guard forming the bottom of the frame, and a slip-lid for closing the frame.

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757,091. **PENCIL-SHARPENER.** FRANK H. CRANE, Chicago, Ill., assignor of one-half to Harry A. Dubis, Chicago, Ill. Filed Aug. 17, 1903. Serial No. 169,794. (No model.)

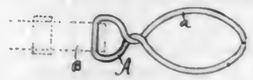



*Claim.*—1. A pencil-sharpener comprising a handle, a frame pivoted to and adapted to be folded into the handle, and a knife-blade pivotally mounted on the pivot of the frame and connected with the frame to form a portion of the bottom thereof.

2. A pencil-sharpener comprising a handle, a frame pivoted to and adapted to fold into the handle, a knife-blade pivotally mounted on the pivot of the frame, and a projection on said blade to engage a notch in the frame.

3. A pencil-sharpener comprising a handle, a frame open at the top and pivoted to and adapted to fold into the handle, a lid to close the top of the frame, a guard on the bottom of the frame, and a knife-blade pivotally mounted with the frame in the handle and having its outer end detachably connected with the frame.

**757,092. CHECKREIN ATTACHMENT.** JOHN A. CLARY, Fort Worth, Tex., assignor of one-third to Hard Butler, Fort Worth, Tex. Filed July 29, 1903. Serial No. 167,372. (No model.)



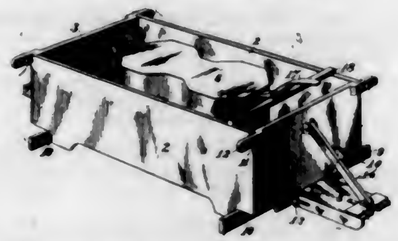
*Claim.*—1. As a new article of manufacture the herein-described checkrein-release comprising a single piece of spring-wire bent at the central part to form a loop for attaching the checkrein and having the ends bent to form an eye for the checkrein-hook and having the terminals thereof pressing together.

2. A checkrein-release comprising a spring-wire having a closed loop formed in the central part thereof for engaging a checkrein and having the terminals thereof bent to form an eye for the check-hook and pressing against each other thereby adapting said eye to be opened under abnormal strain to release the check-hook.

3. A checkrein-release comprising a wire bent to form a loop at the central part thereof for engaging a checkrein and having the arms extending from said loop twisted and bent to form an eye for engaging the check-hook, the terminals thereof being lapped together and capable of being sprung open to release the check-hook under abnormal strain.

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**757,093. CEMENT-MOLD.** ROBERT B. COLTRIN, Jackson, Mich. Filed Oct. 22, 1903. Serial No. 178,072. (No model.)



*Claim.*—1. In a mold, a base and separable side and end members, and adjustable connections between said base and members and between the members for holding them in operative position, which connections permit adjustment of said members and are adapted to remain fixed or set after adjustment so as to permit separation of the members without disturbance or unfastening of said connections.

2. In a mold, a base and separable side and end members, set or relatively fixed connections between said base and members permitting detachment of the latter, and connections between said members for holding them in operative position.

3. In a mold, a base and separable side and end members set against its edges connected thereto at their lower parts, one corresponding pair of said members being interposed or fitted between the other pair, and connections between said members for holding them in operative position, said connections holding the outer pair of members from both inward and outward displacement, and means holding the inner pair of members in position and permitting separation thereof without unfastening said connections.

4. In a mold, a base and separable or outwardly-movable side and end members, one pair of said members having lugs or projections engaging the outer faces of the other members to hold them in operative position, whereby on outward movement of the former members the latter may also be moved outwardly, and means holding said former members in operative position and permitting outward movement thereof.

5. In a mold, a base having end and lateral projections or extensions, separable side and end members having cut-away portions or depending parts resting over or beside said projections, and bolts or equivalent devices adjustably secured in slots in said projections and engaging the outer faces of said members, and connections between said members for holding them in operative position.

6. In a mold, a base having end extensions or projections, side members, and separable or outwardly-movable end members, and foldable or intermediately-hinged braces between said end members and extensions adapted when straight to hold the members in raised position.

7. In a mold, a base, separable or outwardly-movable side and end members, one opposite pair of said members having foldable braces connected to them and to the base adapted when straight to hold said members in raised position, and connections between the braced members and the others for holding the latter also in raised position.

8. In a mold, a base having opposite projections or extensions separable or outwardly-movable side and end members, and foldable braces between said extensions and the corresponding members, the latter being fitted between or within the other members and having lugs or projections engaging the outer sides of said other members.

9. In a mold, a base having end arms or extensions and lateral lugs or projections, side members resting on said lateral projections and having parts depending between or beside them and abutting against the sides of the base, end members resting on said end extensions having a cut-away portion thereover or depending parts beside said extensions and abutting against the ends of the base, bolts secured in slots in said lateral projections and end extensions or equivalent adjustable devices engaging the outer faces of said members to hold their lower parts in place, foldable or intermediately-hinged braces between said end members and extensions, and connections between said end and side members for holding the latter in vertical position with the end members.

10. In a mold, a base having end arms or extensions and lateral lugs or projections, side members resting on said lateral projections and having parts depending between or beside them and abutting against the sides of the base, end members interposed between or within the side members resting on said end extensions having a cut-away portion thereover or depending parts beside said extensions and abutting against the ends of the base, bolts secured in slots in said lateral projections and end extensions or equivalent adjustable devices engaging the outer faces of said members to hold their lower parts in place, foldable or intermediately-hinged braces between said end members and extensions, the connections of said braces to one of said parts being adjustable, and slotted lugs projecting from said end members and having bolts or equivalent devices secured therein and engaging the outer faces of said members.

11. In a mold, a receptacle for the material to be molded having an outwardly-movable door or member, and a foldable or intermediately-hinged brace between said member and the base of the receptacle, the connection to one of said parts being adjustable.

12. In a mold, a receptacle for the material to be molded having an outwardly-movable door or member, a foldable or intermediately-hinged brace pivotally connected to said member and an extension of the base, the connection to the latter comprising a plate to which said brace is pivoted having a depending fastening-bolt adjustably secured in a slot in said extension or equivalent fastening means.

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**757,094. CEMENT-MOLDING APPARATUS.** ROBERT B. COLTRIN, Jackson, Mich. Filed Oct. 22, 1903. Serial No. 178,073. (No model.)





*Claim.*—1. In a molding apparatus, opposite supports, side members held at their opposite ends by said supports, and end members interposed between said side members and held in place by abutment against said supports, said side members being separable from each other to break the mold.

2. In a molding apparatus, opposite supports adapted to be moved toward or away from each other, side members having their opposite ends or parts held by said supports, and end members interposed between said side members and held from outward movement by abutment against said supports.

3. In a molding apparatus, opposite supports having slotted standards rising therefrom, side members transversely disposed thereto and each held in a corresponding pair of said slotted standards, and end members interposed between said side members and held against the inner faces of said standards, and extensible rods connecting said supports.

4. In a molding apparatus, opposite supports, and side members held by and between said supports and adjustably attached thereto to permit the supports to be moved toward or from each other or lengthwise of said members, said side members in connection with suitable end members constituting a mold.

5. In a molding apparatus, opposite side mold plates or members, cross-supports therefor, slides on said supports having angularly-adjustable slotted standards in which said plates are held, and end plates interposed between said side plates and held against outward movement by said standards.

6. In a molding apparatus, opposite supports, opposite mold members held by and between said supports and permitting adjustment of the latter with respect to each other, and extensible rods or braces connecting said supports.

7. In a molding apparatus, opposite supports each having a pair of slotted standards, and opposite mold plates or members transversely disposed thereto and each held in or extending through corresponding opposite slotted standards, whereby said supports can be moved from and toward each other.

8. In a molding apparatus, opposite mold plates or members, opposite cross-supports therefor each having a pair of slotted standards in which said plates are held, and cross-plates interposed between said former plates and held from outward movement by said standards.

9. In a molding apparatus, opposite side plates or mold members, opposite cross-supports therefor having slotted standards in which said plates are held, whereby said supports can be moved from and toward each other, end plates interposed between said side plates and held from outward movement by said standards, and means permitting separation of one plate with its standards from the other.

10. In a molding apparatus, opposite mold plates or members cross-supports therefor having slotted standards in which said plates are held, lugs projecting from said standards and set-screws in said lugs for binding against said plates.

11. In a molding apparatus, opposite mold plates or members, cross-supports therefor having slotted standards in which said plates are held, and extensible rods or braces connecting said supports.

12. In a molding apparatus, opposite side mold plates or members, cross-supports therefor, slides on said supports having angularly-adjustable slotted standards in which said plates are held, end plates interposed between said side plates and held against outward movement by said standards, and means for securing said parts rigidly with relation to each other.

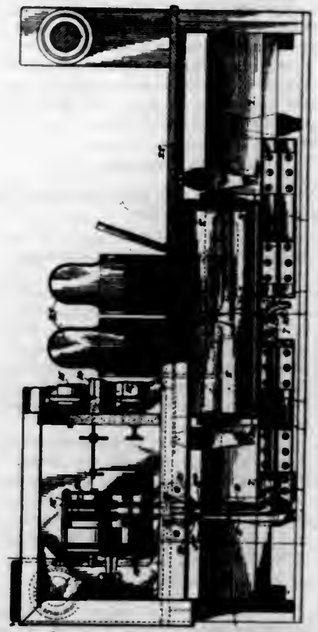
13. In a molding apparatus, a mold plate or member having supporting-slides therefor and cross ways or supports for said slides, a slide-locking device comprising a stud or bolt inserted through one part and a longitudinal slot in the other, having a handle engaging one member and an inclined or cam-faced head engaging the other adapted in one position to release the slide and in another position to bind.

14. In a molding apparatus, a mold plate or member, supporting-slides therefor, and opposite crossways for said slides consisting of outwardly-flanged supports, said slides resting on said flanges and against the outer sides of said ways or supports.

15. In a molding apparatus, a mold plate or member, opposite supports therefor having pivoted or angularly-adjustable standards which hold said member, said standards and supports having cooperating slotted segments or arms, and fastening devices in the slots of said segments.

16. In a molding apparatus, opposite side mold plates or members, cross-supports therefor, slides on said supports having angularly-adjustable standards which hold said plates, end plates, and means for adjustment of the latter toward and from each other.

**757,095. WINDING DEVICE FOR AUTOMATIC MUSICAL-INSTRUMENT MOTORS.** WILLIAM F. COOPER, Jr., and HERBERT B. SHARPS, Chicago, Ill., assignors to the Cable Company, a Corporation of Illinois. Filed Dec. 21, 1903. Serial No. 186,726. (No model.)



*Claim.*—1. In an automatic musical instrument, in combination with the pumper, a motor; winding-cables therefrom; a pedal for operating the pumper having rigid with it a part extending upward and fulcrumed at its upper end near the upper part of the instrument; a lever-arm extending rigidly forward from said upwardly-extending part near its fulcrum, and connected to the cable.

2. In an automatic musical instrument, in combination with a motor having cables for winding it, a pumper for operating the instrument having its oscillating board hinged at the upper end near the upper part of the instrument; a lever-arm extending forward from said upper end and connected with the cables, and means for operating the pumper.

3. In an automatic musical instrument, in combination with a motor having a cable for winding the same, the pumper having its oscillating board hinged at the upper end and swinging back and forth at the lower end, the pedal rigid with said lower end projecting forward therefrom, and a lever-arm rigid with the upper end projecting forward therefrom and connected to the cable.

4. In an automatic musical instrument, in combination with the pumper, a motor having cables for winding the same, a foot-actuated element for operating the pumper hinged at its upper end toward the upper part of the instrument and oscillating back and forth below such hinge; a lever-arm extending rigidly forward from the upper end of said oscillating element; a link extending from the cable loosely through an eye in said lever-arm, and a stop on the link beyond the eye.

5. In an automatic musical instrument, in combination with the motor having cables for winding the same; the pumper comprising a foot-actuated element fulcrumed at the upper part of the instrument, farther rearward than the motor; a lever-arm extending forwardly therefrom; a link connected with the winding-cable and extending loosely through an eye on said lever-arm and provided with a stop beyond the eye.

6. In an automatic musical instrument, in combination with a motor having two cables for winding the same; the foundation-board of the pneumatic action rigid with the case, the pumpers having their oscillating boards hinged to said foundation at the upper edge; a rock-shaft mounted upon the foundation-board having at one end a lever-arm connected with the oscillating board by one of the pumpers for rocking said shaft as the pumper-board oscillates, and having at the other end an upwardly-extending arm connected with one of the motor-winding cables.

7. In an automatic musical instrument, in combination with a motor having cables for winding the same, the foundation-board for the exhaust-chamber rigid with the case, the pumpers at the rear side of such foundation-board having their oscillating boards hinged thereto at the upper edge, one of said oscillating boards having a rigid lever-arm projecting forward from its upper end; a rock-shaft journaled upon the upper edge of the foundation-board and having at one end a lever-arm extending substantially parallel with the oscillating board of the other pumper, and operatively engaged therewith, and at the other end a lever-arm extending forwardly, said two forwardly-exteading lever-arms being connected to the motor-winding cables respectively.

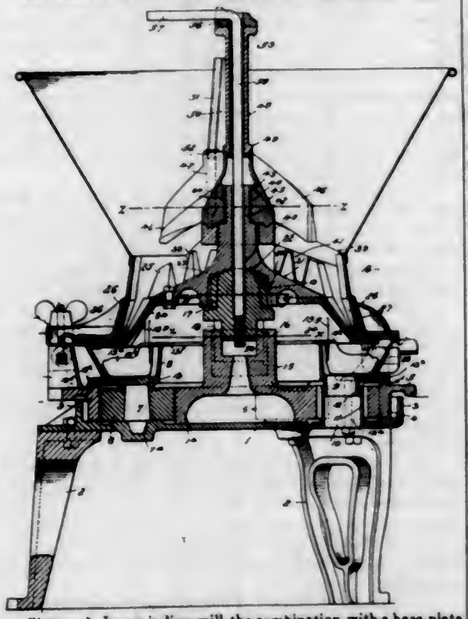
757,096. **PIN.** SIMON DANCYGER, Dayton, Ohio. Filed Sept. 8, 1903. Serial No. 172,213. (No model.)



*Claim.*—1. As an improved article of manufacture the pin formed of a single piece of wire having the bend and two circular loops on a plane adjacent to form the head, bends over the central portion with the two ends being adjacently parallel, one terminating in a point laterally inclined and the other projecting to form the shaft and nearly in line with the plane of the head, said points adapted to penetrate a fabric in separate orifices to hold more securely, substantially as set forth.

2. As an improved article of manufacture the pin formed of a single piece of wire having the bend and two circular loops on a plane adjacent to form the head, bends over the central portion with the two ends being adjacently parallel, one terminating in a point curved downwardly and the other projecting to form the shaft, and arranged laterally parallel, and both adapted to penetrate a fabric in separate orifices, substantially as set forth.

757,097. **GRINDING-MILL.** WILLIAM C. DEARDS, WILLIAM R. COPENHAVER, and DOW L. ADELSPERGER, Springfield, Ohio, assignors to the Foos Manufacturing Company, Springfield, Ohio, a Corporation of Ohio. Filed Nov. 6, 1901. Serial No. 81,308. (No model.)



*Claim.*—1. In a grinding-mill, the combination, with a base-plate having a marginal flange which forms an oil-receptacle, of a master-wheel located in said receptacle and provided with internal teeth, an outer grinding-ring mounted on and rotating with said master-wheel, pinions mounted on the base-plate within the receptacle and meshing with the master-wheel, a central gear located in the receptacle and meshing with the pinions, and an inner grinding-ring connected and rotating with said central gear, substantially as described

2. In a grinding-mill, the combination, with a base-plate having a marginal flange which forms an oil-receptacle, of a master-wheel located in said receptacle, supported and traveling on the base-plate, and provided with internal teeth, an outer grinding-ring mounted on and rotating with said master-wheel, pinions having fixed bearings on the base-plate within the receptacle and meshing with the master-wheel, a central gear resting on the base-plate within the receptacle and meshing with the pinions, and an inner grinding-ring connected to and rotating with said central gear, substantially as described.

3. In a grinding-mill of the character described, the combination, with a master-wheel, and an outer cone or casing mounted on and rotating therewith, of a fixed annular grist-receiving trough, located between the master-wheel and casing, said casing being provided with a depending flange or fillet located adjacent to and outside of the outer upper edge of the trough, substantially as described.

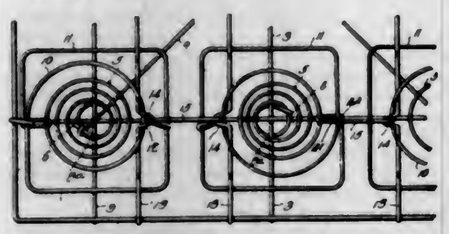
4. In a grinding-mill, the combination, with a base, of an internally-toothed master-wheel mounted thereon, gearing mounted on the base within the master-wheel, an inner grinding-cone having a separable clutch connection with said gearing, and an outer grinding-cone hinged to and rotating with the master-wheel and provided with a bearing which supports the inner grinding-cone, substantially as described.

5. In a grinding-mill, the combination, with a base, of an internally-toothed master-wheel mounted thereon, gearing mounted on the base within the master-wheel, an inner grinding-cone having a separable clutch connection with said gearing, and an outer grinding-cone hinged to and rotating with the master-wheel and provided with a bearing for the inner grinding-cone, and with means for supporting said inner grinding-cone and adjusting the same vertically relatively to the outer cone, substantially as described.

6. In a grinding-mill, the combination, with a base provided with pinions, and an internally-toothed master-wheel meshing therewith, of a central gear having an upwardly-extending hub provided with a clutch member, an inner grinding-cone, a knuckle-piece having a clutch member to engage with that of the gear and having a rocking driving connection with the inner cone, an outer cone hinged to and rotating with the master-wheel and provided with a bearing, the inner cone being provided with a hub extending upward through said bearing and having a clutch member on its upper end, a breaker-hub resting on the bearing and having a clutch member to engage that of the hub of the inner cone, a sleeve resting on the breaker-hub, and an adjusting-rod having a bearing on the upper end of the sleeve, extending through the sleeve and through the breaker and inner-cone hubs, and screwing into the knuckle-piece, substantially as described.

7. In a grinding-mill, the combination, with a horizontal master-wheel provided with lugs having trunnions arranged on one side thereof in line and provided at the other side with pivoted bolts having clamping-nuts, of an outer cone provided with arms having grooves to receive said trunnions, said grooves being closed at their inner ends and open at their outer ends, said outer cone being provided on the opposite side with slotted lugs to receive the pivoted bolts, substantially as described.

757,098. **BED-SPRING.** JONAS F. DIXON and THOMAS J. RIDEWAY, Carthage, Mo. Filed Apr. 22, 1903. Serial No. 153,815. (No model.)

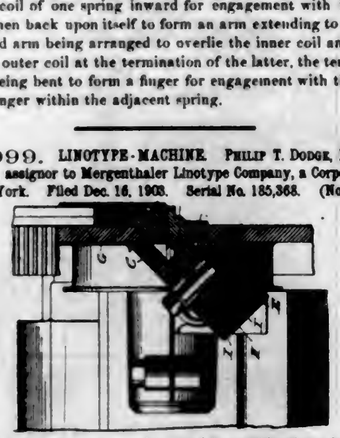


*Claim.*—1. A bed-spring comprising a plurality of individual springs, a stringer lying beneath and within the upper coil of the springs and bent to form a finger extending above said coil, and a connection between the springs, said connection being formed by bending the wire at the termination of the last coil of one spring first inward for engagement with one of its inner adjacent coils, then back upon itself to form an arm extending to the next spring, said arm being arranged to overlie the inner coil and to underlie the outer coil at the termination of the latter, the terminal of the arm being bent to form a finger for engagement with the finger of the stringer within the adjacent spring.

2. In a bed-spring, the combination with a plurality of individual springs each having at its top two coils lying in the same horizontal plane, the outer of said coils being of substantially rectangular form, and the inner coil provided with a recess, of a stringer extended beneath the coil and bent to form a horizontal finger which projects into said recess, and a connection between the springs, said connection being formed by bending the wire at the termination of the outer coil of one spring inward for engagement with its inner top coil, then back upon itself to form an arm extending to the next spring, said arm being arranged to overlie the inner coil and to underlie the outer coil at the termination of the latter, the terminal of the arm being bent to form a finger for engagement with the finger of the stringer within the adjacent spring.

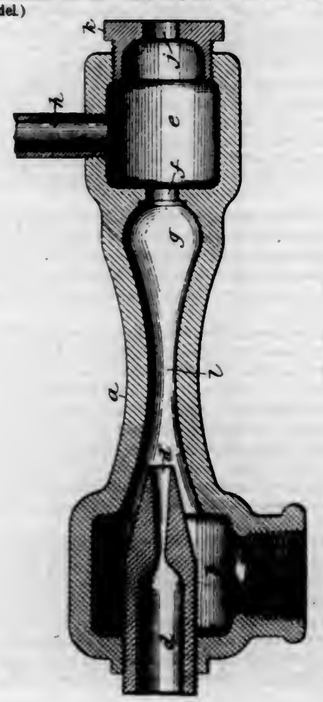


757,099. **LINOTYPE-MACHINE.** PHILIP T. DODGE, Brooklyn, N. Y., assignor to Mergenthaler Linotype Company, a Corporation of New York. Filed Dec. 16, 1903. Serial No. 185,368. (No model.)



*Claim.*—In a linotype-machine and in combination with a mold wherein the slug or linotype is cast, two successively-acting knives, the first arranged to remove the principal portion of the protruding metal, and the second acting directly against the back of the mold, whereby it is adapted to give a smooth finishing cut and to render the slug of definite and uniform height.

757,100. **ATOMIZER FOR LIQUID FUEL.** EDWARD G. DUISENBERG, Honolulu, Hawaii. Filed May 28, 1903. Serial No. 159,068. (No model.)



*Claim.*—1. An atomizer for liquid fuel, comprising a casing provided with an air-chamber, a steam-injector for drawing air into said chamber, a mixing-chamber having a fuel-inlet, a plug in the end of said casing provided with a constricted outlet to the furnace in axial alinement with the casing and a constricted passage between the air-chamber and the mixing-chamber to impart a high velocity to the air and steam entering said mixing-chamber.

2. An atomizer for liquid fuel, comprising a casing provided with an air-chamber, a steam-injector for drawing air into said chamber, an enlarged air and steam chamber, a mixing-chamber beyond the latter and provided with a fuel-inlet and a constricted burner-outlet in axial alinement with the casing leading to the furnace, and a constricted passage between the air and steam chamber and the mixing-chamber, to impart a high velocity to the air and steam entering the mixing-chamber.

3. An atomizer for liquid fuel, comprising the casing *a*, having the air-chamber *b* provided with the inlet *c*, the steam-injector *d* entering said air-chamber, the air and steam chamber *g*, the passage *l* connecting the chambers *b* and *g*, the mixing-chamber *e* connected to the chamber *g*, the fuel-supply *h* entering said chamber *e* and the outlet-plug *k* having a constricted orifice *j*.

757,101. **ANIMAL-POKE.** THOMAS H. EWING, Wichita, Kans., assignor of two-thirds to Will J. Stewart and W. J. Sharon, Wichita Kans. Filed Sept 25, 1903. Serial No. 174,618. (No model.)



*Claim.*—1. In an animal-poke, a ring comprising sections, one of which has an eye, the other section being provided with an outstanding loop forming a pivot-stud that passes through the eye, and a fastening device passing through the looped pivot-stud.

2. In an animal-poke, a ring comprising sections, one of which has a looped eye, the other section being provided with an outstanding pivot-stud that passes through the eye and has an opening, and a fastening device passing through the opening in the stud.

3. In an animal-poke, a ring comprising wire sections, one of which is provided with looped portions forming eyes, the other section having looped portions constituting pivot-studs that are passed through the eyes, and fastening devices passing through the studs.

4. In an animal-poke, a ring comprising bow-sections, one of said sections being provided at its terminals with sets of loops constituting eyes, the other section being provided at its terminals with outstanding loops constituting pivot-studs that are arranged to be passed through the eyes of the first-mentioned sections, and keys passing through the studs to hold the same in the eyes.

5. In an animal-poke, a ring comprising bow-sections, one of said sections having eyes, the other being formed of wire and having its terminal portions doubled, said doubled portions being offset and passed through the eyes to form pivot-studs, the remaining portions being twisted upon the main bow and having their free ends offset and constituting spurs.

6. In an animal-poke, the combination with a ring, of a stop-arm having one terminal portion twisted about the ring with the end thereof projecting rearwardly and constituting a prod.

7. In an animal-poke, the combination with a ring having a loop, of a stop-arm having one terminal portion passed through the loop and twisted about the ring, the end of said terminal portion projecting rearwardly of the ring and constituting a prod.

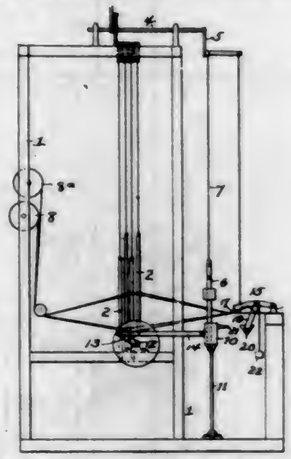
8. In an animal-poke, the combination with a ring, of a stop-arm having one terminal portion twisted about the ring, the end of said terminal portion projecting to one side of the ring and constituting a prod, and a brace-wire twisted about the arm and ring having its terminals formed into prods.

9. In an animal-poke, a ring comprising pivoted bow-sections each section having an intermediate loop, a stop-arm for each section having one terminal passed through the loop and twisted about the bow at one side thereof, and a brace-wire connecting each bow and its corresponding arm, being twisted about the same.

10. In an animal-poke, the combination with a neck-embracing ring, of a nose-embracing ring comprising sections, one of which is offset, pivot-studs that pass through the other section, and links attached to the neck-embracing ring and engaging the pivot-studs, said links constituting fastening means for holding the studs in place.

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**757,102. LOOM FOR WEAVING CARTRIDGE-BELT FABRICS.** WILLIAM C. FISHER, Middletown, Conn., assignor to the Russell Manufacturing Company, Middletown, Conn. Filed July 16, 1903. Serial No. 165,351. (No model.)



*Claim.*—In a loom for weaving cartridge-belts, the combination of means for producing a body portion of varying width and slack portions for pockets, with means for collecting the slack portions and forming receptacles on the belt, both of said means cooperating to produce a wide body portion provided with pockets and narrow strap portions united with the wide body portion by integral tapering portions.

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**757,103. BROOM-BINDING MACHINE.** SAMUEL P. FRALEY, Chicago, Ill. Filed May 23, 1903. Serial No. 158,372. (No model.)

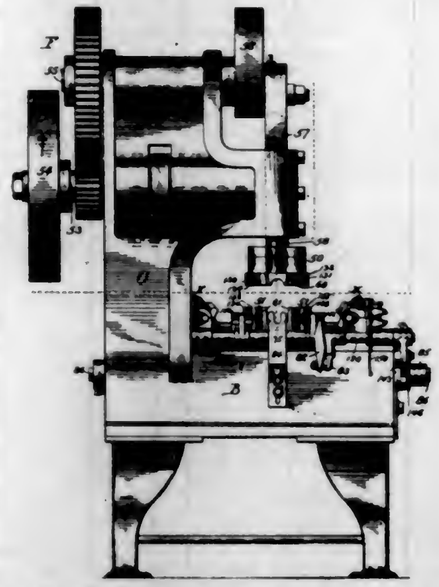
*Claim.*—1. In a machine for binding brooms, the combination of shaping and compressing mechanism, means for holding wires in binding position about said straw and means for curving, seating and turning the ends of the wires into the straw, for the purposes described.

2. In a broom-binding machine, in combination with compressing and shaping mechanism, and traveling heads on either side thereof, a shaft beneath said heads having cylinders provided with cam-grooves, spools or rollers on said heads projecting into said grooves, said heads having bending and clenching mechanism thereon and means for turning said shaft whereby said heads are advanced and withdrawn, for the purposes described.

3. In a machine for binding brooms, traveling heads having bending and clenching mechanism on opposite sides thereof, pinions adapted to roll along a track and carry said heads, means for advancing said heads and for causing said pinions to turn loosely about them during said advance, and means for withdrawing said heads and locking said pinions securely to said heads during said withdrawing movement, whereby said head is turned over during said withdrawing movement, substantially as described.

4. In a machine for binding brooms, dies adapted to shape and compress the straw and to carry binding-wires on opposite sides of the broom so that the projection of one wire upon the other will cross the latter near the middle at an acute angle.

5. In a broom-binding machine, means for holding binding-wires in binding position on opposite sides of the broom, their ends projecting beyond the broom edges, cams adapted to successively advance and withdraw traveling heads and bring the ends of said wires into engagement with binding and seating mechanism mounted thereon, substantially as described.



6. In a machine for binding brooms, in combination with means for holding binding-wires on each side of the broom with ends projecting beyond the edge, benders having guideways adapted to contact with said ends, means for forcing said wire end to bend along said guideway, and a spring-finger adapted to stop said wire at the extremity of the guideway, for the purposes described.

7. In a machine for binding brooms, in combination with means for holding binding-wires on each side of the broom with ends projecting beyond the edge, benders having guideways adapted to contact with said ends, means for forcing said wire ends to bend along said guideways, and spring-fingers adapted to stop said wire at the extremity of the guideways, said guideways being so turned near their extremities and said fingers being so placed that the extremities of each wire are bent in a short curve, and means for withdrawing said benders without marring said curves, for the purposes described.

8. In a broom-binding machine, a pair of traveling heads adapted to be advanced and withdrawn along a track at each side of said broom, benders and clenchers oppositely mounted on said head, and means for turning said head about its axis during the withdrawing movement whereby the positions of benders and clenchers are interchanged.

9. In combination with means for compressing and shaping the straw of broom-blanks, and means for holding binding-wires in binding position, the ends extending beyond the edges of the straw, benders adapted to compress each wire at the ends, said benders having a guideway adapted to contact with said ends around the edges of the broom, and a spring-finger adapted to stop said wire at the extremity of the guideway, said guideway being so turned near its extremity and said finger being so placed that the extremity of the wire is bent in a short curve around said edges, and means for withdrawing said benders without marring said curves, for the purposes described.

10. In a machine for binding brooms, in combination with means for holding binding-wires on opposite sides of the broom with ends projecting beyond the edges thereof, benders having guideways and spring-fingers thereon adapted to curve the ends of the binding-wires about the edges of the broom and impart to the extremities thereof an abrupt short curve, means for advancing and operating said benders and withdrawing them without marring said curves, clenching mechanism adapted to force the ends of said wires together and hook

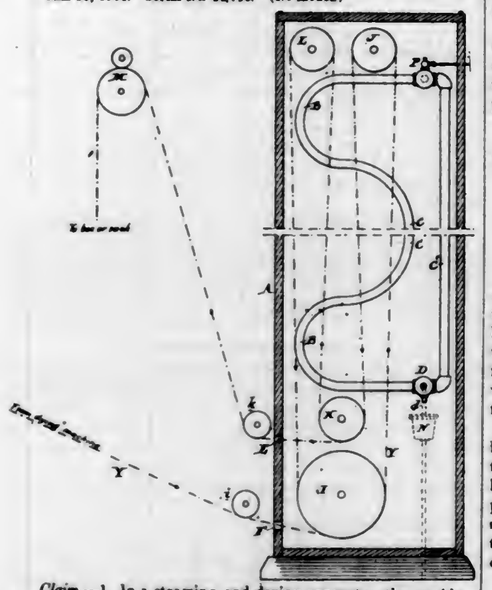


and loop them into the straw near the edge of said broom, and means for advancing, operating and withdrawing said clenching mechanism.

11. In a machine for binding brooms, in combination with heads M and N, plungers provided with wedge-shaped portions operating therein, clencher-jaws 138 with heels 139 curved about said wedge-shaped portions, blocks 142, rock-shaft 120 adapted to press said blocks against said plungers, force them into heads M and N and cause said heels to ride apart on said wedge-shaped portions, thereby compressing said jaws, means for withdrawing said pressure, springs adapted to cause said heels to ride down said wedge-shaped portions and springs adapted to open said jaws, for the purposes described.

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**757,104. APPARATUS FOR OXIDIZING AND DRYING TEXTILE MATERIAL.** JOHN W. FRIES, Winston-Salem, N. C. Filed Jan. 25, 1901. Serial No. 44,716. (No model.)



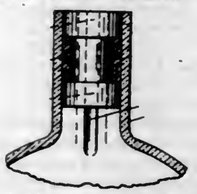
*Claim.*—1. In a steaming and drying apparatus, the combination of an upright chamber having apertures for the entrance and egress of the yarn, &c., only at its lower part, vertical steam-pipes extending transversely across the chamber at its middle part and between which the yarn is caused to travel, one or more guide-rollers within the chamber above the pipes, and guide-rollers within the chamber below the pipes and adjacent to the apertures.

2. In a steaming and drying apparatus, the combination of a closed chamber having apertures for the entrance and egress of the yarn, &c., at its lower part, a series of guiding-rollers for the yarn or textile material at upper and lower parts of the chamber and located within the same, and steam-pipes for heating the interior of the chamber having portions projecting between the upper and lower rollers and in the path of the traveling yarn or textile material, means to supply steam to the upper part of the steam-pipes, and a steam-trap connected with the lower part of the steam-pipes to remove the water of condensation.

3. In a steaming and drying apparatus, the combination of an upright chamber having apertures for the entrance and egress of the yarn, &c., only at its lower part, steam-pipes extending transversely across the chamber at its middle part in bends, one or more guide-rollers within the chamber above the pipes, guide-rollers within the chamber below the pipes and adjacent to the apertures, and a valved pipe for admitting steam to the interior of the chamber.

4. In a steaming and drying apparatus, the combination of a closed chamber having apertures for the entrance and egress of the material to be treated arranged at its lower part, guides near the top and bottom within the chamber for the material to be treated, steam-pipes within the chamber having portions thereof projecting between the upper and lower guides for producing radiant heat while the material being treated is subjected to a bath of steam produced by vaporizing its moisture, and means for admitting steam to the chamber

**757,105. BOTTLE.** PETER J. GERMAIN, Quincy, Mass. Filed June 9, 1903. Serial No. 160,731. (No model.)



*Claim.*—1. The combination, with a bottle-neck provided with a longitudinal groove, of a stopper of hard material having longitudinal ribs on its end portions which fit in the said groove and having also a circumferential groove at its middle portion, and a ring of packing material arranged in the said circumferential groove.

2. The combination, with a bottle-neck, of a stopper of hard material having a circumferential groove, interlocking devices formed on the adjacent surfaces of the said neck and stopper and permitting the stopper to slide longitudinally in the neck, and a ring of packing material arranged in the said groove.

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**757,106. ROLLING SHUTTER.** WAINRIGHT R. GERVAIS, Chicago, Ill. Filed Aug. 25, 1902. Serial No. 120,919. (No model.)

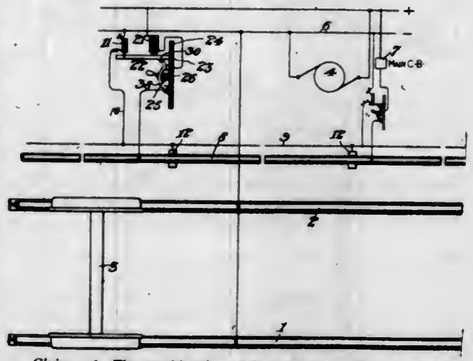


*Claim.*—1. A rolling shutter of the character herein described, comprising in combination a series of sheet-metal slats having a trough form and provided with flanges at one edge which extend the length of the slats and are inclined away from the body portion of the slats in an opposite direction and at substantially the same angle from a common base-line, and connecting-hinges the pintle-eyes of which are arranged adjacent to the outer edges of the aforesaid flanges, for the purpose set forth.

2. A rolling shutter of the character herein described, comprising in combination a series of sheet-metal slats having a segmental trough form and provided with flanges at one edge which extend the length of the slats and are curved away from the segmental body portion of the slats in an opposite direction and at substantially the same curve or angle from a common base-line, and connecting-hinges the pintle-eyes of which are arranged adjacent to the outer edges of the aforesaid flanges, for the purpose set forth.

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**757,107. SAFETY DEVICE FOR ELECTRIC-RAILWAY SYSTEMS.** GEORGE GIBBS, New York, N. Y. Filed Aug. 26, 1903. Serial No. 170,776. (No model.)



*Claim.*—1. The combination with an electric-railway system including a working conductor and the usual circuit-breakers, of an auxiliary circuit, and means capable of being energized by current flowing in said auxiliary circuit for opening the feed-circuit, a terminal of the said auxiliary circuit being in proximity to the working conductor.

2. The combination with an electric-railway system including a working conductor and feed-wires normally connected therewith, of an auxiliary circuit including means for rupturing the feed-circuit, a terminal of the said auxiliary being in proximity to the working

conductor and adapted to coöperate therewith in case of a derangement of the system.

3. The combination with an electric-railway system including a working conductor, the usual circuit-breakers, and trip-coils therefor, of supplementary circuit-breakers in the feed-wires and an auxiliary circuit containing a trip-coil for operating the said supplementary circuit-breakers, a terminal of the said circuit being in proximity to the working conductor.

4. The combination with an electric-railway system including a working conductor, the usual circuit-breakers, and trip-coils therefor, of an auxiliary circuit containing a supplementary trip-coil, and a contact in proximity to the working conductor constituting one terminal of the said auxiliary circuit.

5. The combination with an electric-railway system, including a working conductor, feed-wires, circuit-breakers, and main trip-coils for the said circuit-breakers, of a series of contacts arranged in proximity to the working conductor, an auxiliary circuit running to the said contacts, and supplementary trip-coils for the circuit-breakers, such trip-coils being adapted to operate the trips with comparatively small amounts of electrical energy.

6. The combination with an electric-railway system including a working conductor, feed-wires, circuit-breakers, and main trip-coils for the said circuit-breakers, of a series of contacts arranged in proximity to the working conductor, an auxiliary circuit running to the said contacts, and supplementary trip-coils for the circuit-breakers such trip-coils being made effective by one or more of its coöperating contacts.

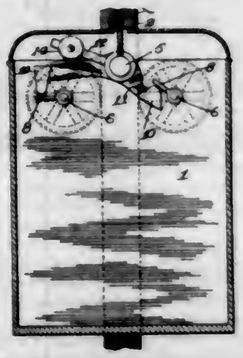
7. In an electric-railway system, a working conductor, feed-wires therefor, circuit-breakers included in the feed-wires, main trip-coils for the said circuit-breakers, and supplementary trip-coils therefor, in combination with means whereby the circuit-breakers can be operated independently of the said main trip-coils, such means consisting of an auxiliary circuit adapted to be operated by a disturbance of the working conductor, as set forth.

8. In an electric-railway system a working conductor, feed-wires therefor, circuit-breakers included in the feed-wires, and main trip-coils for the said circuit-breakers, in combination with circuit-controllers coöperating with the working conductor, an auxiliary circuit connected with the said circuit-controllers, and supplementary trip-coils in the circuit of the said controllers, the said supplementary trip-coils being adapted to operate the circuit-breakers in response to the action of the circuit-controllers.

9. The combination with an electric-railway system having a sectional working conductor and feed-wires normally connected therewith, each feed-wire containing a circuit-breaker, of an auxiliary circuit including means for rupturing the feed-circuits, the said auxiliary circuit having a terminal in operative relation to each section, and means whereby a relative movement between any section and its corresponding terminal operates the circuit-breaker.

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**757,108. ELEVATOR. MIHAL GIGLER, Reserve township, Allegheny county, Pa. Filed June 22, 1903. Serial No. 162,551. (No model.)**



*Claim.*—1. A safety attachment for elevators comprising in combination with the vertical guides 2, and car, a shaft 5 journaled in the opposite walls of the car, a cable secured to said shaft, weighted members for rocking said shaft, shafts 6 mounted in the car, pinion-wheels mounted upon said shafts 6 and having flattened portions normally held adjacent to said guides, and means for turning said pinions so that the teeth on the circumferences thereof will impinge against the guides, as the shaft 5 is rocked by the weights carried thereby, as set forth.

2. A safety apparatus for elevators comprising in combination with guides, a car mounted between the same, a shaft 5 journaled in the opposite sides of the car, a cable secured to said shaft, shafts 6 journaled in the car, pinions mounted on the ends of said shafts 6 having flattened portions normally held adjacent to the guides, arms projecting from the shafts 6, a lever mounted upon the shaft 5, weighted members secured to and adapted to rock the shaft 5 in case the cable secured thereto breaks, the ends of said lever designed to contact with said arms as the shaft 5 rocks, for the purpose of throwing the flattened portions of the pinions away from the guides and causing the teeth of said wheels to impinge against the opposite edges of the guides, as set forth.

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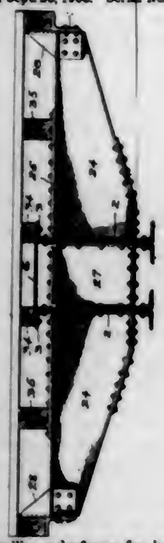
**757,109. BLUE-RED LAKE AND PROCESS OF MAKING SAME. GILLIS GULLBRANSON, Höchst-on-the-Main, Germany, assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation of Germany. Filed Mar. 3, 1903. Serial No. 145,992. (Specimens.)**

*Claim.*—1. The herein-described process of making blue-red color-lakes (pigment colors) fast to light, which consists in precipitating the azo dyestuff from diazotized orthoamidobenzoic acid and beta-naphthol-disulfonic acid R with a precipitant, substantially as set forth.

2. As new products, blue-red color-lakes (pigment colors) fast to light, obtained from the azo dyestuff from diazotized orthoamidobenzoic acid and beta-naphthol-disulfonic acid R, being blue-red powders or pastes, insoluble in cold and hot water, also insoluble in oils and varnishes, yielding orthoamidobenzoic acid and alpha-amido beta-naphthol-disulfonic acid when treated with stannous chlorid.

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**757,110. RAILWAY-CAR UNDERFRAME. JOHN M. HANSEN, Pittsburg, Pa. Filed Sept. 28, 1903. Serial No. 174,937. (No model.)**



*Claim.*—1. A metallic underframe for box, flat, gondola, and similar railway cars, constructed without side-carrying members and comprising body-bolsters extending out to the car sides, center sills connecting said body-bolsters and being the sole carrying means of the car, and cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides.

2. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters, said sills being of greater depth at their central portions than at their ends and being the sole carrying means of the underframe, and cantaliver-transoms secured to the deep central portions of the center sills and extending out to the car sides.

3. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills comprising vertical plates of varying depth and having flanged bars secured to their top and bottom edges, and cantaliver-transoms secured to said center sills intermediate the body-bolsters and extending to the car sides.

4. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and forming the sole carrying means of the underframe, and transoms secured to said center sills intermediate the body-bolsters, said transoms comprising filling members on each side of the center sills extending out to the car sides, and a top tie-plate secured to said filling members and extending uninterruptedly across the center of the car.

5. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and being the sole carrying means of the underframe, and cantaliver-transoms connected to said sills intermediate the body-bolsters and comprising top and bottom tie members extending uninterruptedly across the car-underframe and filling-pieces between said top and bottom tie members.

6. A metallic underframe for box, flat, gondola, and similar railway cars, constructed without side carrying members and comprising body-bosters extending out to the car sides, center sills connecting said bolsters and being the sole carrying means of the car, cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides, and braces between the center sills in line with said transoms

7. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and comprising vertical plates of greatest depth at their central portions and having flanged strengthening-bars secured to their upper and lower edges, cantaliver-transoms secured to said center sills intermediate the body-bolsters, and a top cross-tie secured to the upper portions of said transoms and extending through slots in the web-plates of the center sills.

8. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and comprising web-plates formed deepest at their central portion and having strengthening-angles riveted to their top and bottom edges, and transoms intermediate the body-bolsters and comprising filling-pieces secured to the center sills and extending out to the car sides and top and bottom cross-ties secured to the upper and lower portions of said filling-pieces and extending through slots formed in the webs of the center sills.

9. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and forming the sole carrying means of the underframe, cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides, brackets secured to the ends of said transoms, and wooden floor-stringers secured to said brackets.

10. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters, cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides and having their upper faces below the top of the center sills, and wooden floor-stringers supported by said transoms.

11. A railway-car underframe comprising body-bolsters, center sills connecting said bolsters, said center sills being of increased depth at their central portions, and reinforcing-bars riveted to said center sills inside of the body-bolsters and extending toward the center of the car.

12. A railway-car underframe comprising body-bolsters, center sills connecting said bolsters and comprising web-plates of varying depth, strengthening-bars riveted to the top and bottom edges thereof, and reinforcing-bars riveted to said web-plates and extending from the body-bolsters toward the center of the car.

13. A railway-car underframe comprising body-bolsters composed of transverse members and a top cover-plate secured thereto, center sills connecting said bolsters, and triangular brace-plates in the angles between the center sills and body-bolsters inside of the latter and below the top cover-plate thereof and secured to said body-bolsters and center sills.

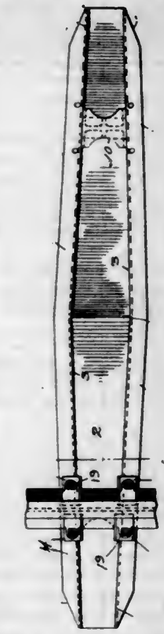
14. A railway-car underframe comprising body-bolsters, center sills of increased depth at their central portions and connecting said body-bolsters, reinforcing-bars riveted to the sides of the center sills inside of the body-bolsters and extending toward the center of the car, and brace-plates interposed in the angles between the center sills and body-bolsters inside of the latter and secured to the reinforcing-bars of the center sills and to the body-bolsters.

15. A railway-car underframe comprising body-bolsters, center sills, end sills, diagonal braces secured at the corners of the car and abutting against and secured to the body-bolsters outside of the center sills, and brace-plates interposed in the angle between the center sills and body-bolsters and inside of the latter and secured to said body-bolsters and center sills.

16. In a railway-car underframe, the combination of body-bolsters, center-sills connecting said body-bolsters and being of increased depth at their central portions, end sills, diagonal braces connected at the corners of the cars and secured to the body-bolsters outside of the center sills, reinforcing-bars secured to the sides of the center sills and projecting toward the center of the car, and brace-plates interposed in the angle between the center sills and body-bolsters and inside of the latter and secured to the latter and the reinforcing-bars.

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**757,111. METALLIC RAILWAY-TIE. JOHN M. HANSEN, Pittsburg, Pa. Filed Dec. 9, 1903. Serial No. 184,493. (No model.)**



*Claim.*—1. A metallic railway-tie comprising a plate bent or pressed into trough shape and having the bottom thereof sloping from the center toward both ends.

2. A metallic cross-tie comprising a plate bent or pressed into trough shape and having the bottom thereof sloping from the center toward both ends, said trough being provided with outwardly-projecting flanges at the upper edges of its sides.

3. A metallic railway-tie comprising a plate bent or pressed into trough shape and having the bottom thereof sloping from the center toward both ends and having outwardly-projecting flanges at the upper edges of its side, said flanges being curved downwardly at their ends.

4. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly, said trough member being of varying width and having its bottom sloping from the center toward both ends.

5. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly, said trough member being of varying width and having its bottom sloping from the center toward both ends and having outwardly-projecting flanges at the upper edges of its sides.

6. A metallic railroad-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly, said trough member being of varying width and having outwardly-projecting flanges at its upper edges, said flanges being curved downwardly at their ends.

7. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly, said trough-

shaped member having vertical sides and being of greatest width at its central portion and tapering thence toward both ends.

8. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly and being of greatest width at its central portion and tapering thence toward both ends, said trough-shaped member having vertical sides and having outwardly-projecting flanges at the upper edges of sides.

9. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly and being of greatest width at its central portion and tapering thence toward both ends and having outwardly-projecting flanges at the upper edges of its sides, said flanges being curved downwardly at their ends.

10. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly and being of greatest width at its central portion and tapering thence toward both ends and having its bottom sloping from its central portion toward both ends.

11. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly and having outwardly-projecting flanges at its upper edges, said trough-shaped member being of greatest width at its central portion and tapering toward both ends and having its bottom sloping from its central portion toward both ends.

12. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly and having outwardly-projecting flanges on its upper edges, said trough-shaped member being of greatest width at its central portion and tapering toward both ends and having its bottom sloping from its central portion toward both ends, and said flanges being curved downwardly at their ends.

13. A metallic railway-tie comprising a plate of substantially uniform width bent or pressed into trough shape of greatest width and least depth at its central portion and decreasing in width and increasing in depth toward its ends.

14. A metallic cross-tie comprising a plate of substantially uniform width bent or pressed into trough shape with outwardly-projecting flanges at its edges and being of greatest width and least depth at its central portion and decreasing in width and increasing in depth toward its ends.

15. A metallic cross-tie comprising a plate of substantially uniform width bent or pressed into trough shape of greatest width and least depth at its central portion and decreasing in width and increasing in depth toward its ends, and being bent so that its bottom slopes from its central portion toward both ends.

16. A metallic railway-tie comprising a plate of substantially uniform width bent or pressed into trough shape and having outwardly-projecting flanges at its edges, said trough being of greatest width and least depth at its central portion and decreasing in width and increasing in depth toward its ends, and said flanges being curved downwardly at their ends.

17. A metallic railway-tie comprising a trough member adapted to be placed with its sides projecting upwardly and having outwardly-projecting flanges at the upper edges of its sides, the bottom of said trough sloping from its central portion toward the ends and the outwardly-projecting flanges being horizontal near its ends to form a seat for the rail.

18. A metallic railway-tie comprising a plate bent or pressed into trough shape and having the bottom thereof sloping from its central portion toward both ends, and rail-supporting members in said trough and having openings in their lower edges.

19. A metallic railway-tie comprising a trough-shaped member adapted to be placed with its sides projecting upwardly and having outwardly-projecting flanges at its upper edges, rail-securing clips, and bolts with non-circular heads passing through the flanges of said trough member and in close proximity to the side walls thereof whereby the latter act as bolt-locks.

20. A metallic railway-tie comprising a trough-shaped member placed with its sides projecting upwardly and having openings in its bottom, and rail-supports in said trough and provided with dowels projecting into the holes in the bottom of said trough.

21. A metallic railway-tie comprising a trough-shaped body placed with its sides projecting upwardly and having holes in its bottom, rail-supports in said trough and provided with dowels projecting into the holes in the bottom of the trough, and rail-securing clips secured to said trough and having portions bearing against the upper corners of the rail-support.

22. A metallic railway-tie comprising a trough-shaped member placed with its sides projecting upwardly, rail-securing clips secured to said trough, and a rail-support in said trough provided with extensions at its corners interlocking with said rail-securing clips.

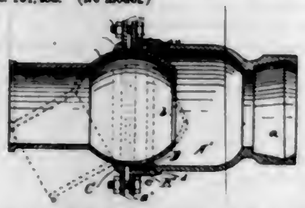
23. A metallic railway-tie comprising a trough-shaped member having outwardly-projecting flanges on its upper edges, rail-clips secured to said flanges and having a horizontal portion projecting over the rail-base and vertical portions projecting down into the trough and bearing against the side walls thereof.

24. A metallic railway-tie comprising a trough-shaped member having outwardly-projecting flanges, a rail-clip secured to said outwardly-projecting flanges and having a horizontal portion adapted to project over the rail-base and having a rearwardly-projecting portion resting on the trough-flanges and having a dowel projecting through a hole in said flanges.

25. A metallic railway-tie comprising a trough-shaped body provided with outwardly-projecting flanges, rail-securing clips secured to said flanges and provided with vertical portions projecting down into the trough and bearing against the side walls thereof, and rail-supports in said trough and having their corners bearing against the downwardly-projecting portions of the rail-clips.

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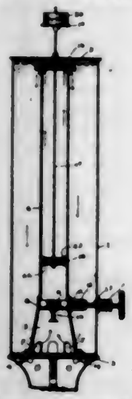
**757,112. ADJUSTABLE JOINT FOR WATER AND STEAM PIPES.** ALBA L. HOLMES, Grand Rapids, Mich. Filed Nov. 16, 1903. Serial No. 181,452. (No model.)



*Claim.*—In an adjustable pipe-coupling, a short annular body having an enlarged ball at one end, a bell having a shoulder at the end adjacent to the ball, the walls extending in a direct line back some distance from said shoulder and then curving to the normal size of the body of the ball, a wooden dam and metal gasket in the end of the bell around the ball, a clamping-ring bearing upon the surface of the ball opposite the bell, and firmly connected with the bell, substantially as and for the purpose set forth.

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**757,113. REGULATOR.** EDWIN HOLMES, Cleveland, Ohio. Filed Aug. 1, 1902. Serial No. 117,912. (No model.)



*Claim.*—1. In a regulator of the class described, an outer vessel for liquid, a cylinder in said vessel, said cylinder being covered by the liquid, a piston in the cylinder, means for causing the piston to move back and forth in the cylinder, a valve on one side of the piston to admit the liquid to the cylinder as the piston moves in one direction, and ducts on the other side of the piston through which the liquid escapes from the cylinder, said ducts extending at an angle with the direction of motion of the piston.

2. In a regulator of the class described, an outer vessel for liquid, a cylinder in said vessel, a cap for the cylinder, a piston in the cylinder, means for causing the piston to move back and forth in the cylinder, a valve below the piston to admit the liquid to the cylinder as the piston moves upwardly, and ducts formed in said cap for permitting the liquid to escape as the piston is thus moved, said ducts opening downwardly at their outer ends, for the purpose specified.

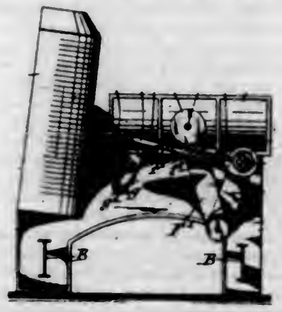


3. In a regulator of the class described, an outer vessel for liquid, a cylinder in said vessel, a cap for the cylinder, a piston in the cylinder, means for causing the piston to move back and forth in the cylinder, a valve below the piston to admit the liquid to the cylinder as the piston moves upwardly, ducts formed in said cap for permitting the liquid to escape as the piston is thus moved, said ducts opening under the liquid and in a downward direction at their outer ends, and a stuffing-box on the cap and surrounding the piston-rod, for the purpose specified.

4. In a regulator, an outer vessel for liquid, a cylinder in said vessel, a cap for the cylinder, a piston, means for causing the piston to move back and forth in the cylinder, means carried by the piston to prevent the escape of the liquid past the same as it moves in either direction, ducts through the cap to permit the discharge of the liquid above the piston as the latter moves upwardly, said ducts opening downwardly as specified, a base-piece having an annular flange into which the cylinder is secured, a valve for admitting liquid to the cylinder from the base-piece as the piston moves upwardly, a second valve secured to the flange of the base-piece below the end of the cylinder, the stem of the valve having a conical end to close the opening through the valve and extending outwardly through the outer casing, for the purpose specified.

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**757,114. STEREOTYPE-CASTING MACHINE.** CHARLES R. HOPKINS, Worcester, Mass., assignor of one-half to Ferdinand Wesel, Brooklyn, N. Y. Filed July 18, 1903. Serial No. 166,093. (No model.)



*Claim.*—1. In a stereotype-casting machine, the combination, with a stationary cope supported in an upright position, of a movable drag, members movably connected with the drag and arranged when moved to their limit to bring the drag from a horizontal position to a position adjacent the cope, and mechanism arranged to cooperate with said members for advancing the drag into contact with the cope, substantially as set forth.

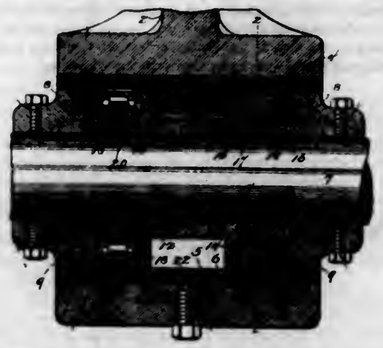
2. In a stereotype-casting machine, the combination, with a stationary cope supported in upright position and a movable drag, of a toggle-lever mechanism for moving said drag from a horizontal position about half-way between the upper and lower ends of the cope into an upright position in front of and substantially parallel with said cope, and a cam mechanism operated in conjunction with the toggle-lever mechanism for moving the drag into working contact with the cope by two successive operations, substantially as set forth.

3. In a stereotype-casting machine, the combination, with a stationary cope supported in upright position and a movable drag, of a transverse shaft, a toggle-lever mechanism between the shaft and drag, eccentric cam-sleeves for supporting said shaft, a transverse connection between said cam-sleeves, and a lever mechanism attached to one of said cam-sleeves for operating the toggle-lever mechanism and cam-sleeves by two successive operations for moving the drag into working contact with the cope, substantially as set forth.

4. In a stereotype-casting machine, the combination, with a stationary cope supported in an upright position, of a movable drag, mechanism including a lever for moving the drag from a horizontal position to an upright position adjacent the cope, and means on said lever arranged to cause the mechanism to advance the drag into contact with the cope, substantially as set forth.

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**757,115. CONVERTIBLE ROLLER-BEARING.** JOSEPH C. HORNOR, Paterson, N. J., assignor, by mesne assignments, to Henry W. Gray, Jr., Boston, Mass. Filed Mar. 12, 1903. Renewed Mar. 3, 1904. Serial No. 196,321. (No model.)



*Claim.*—1. A convertible bearing comprising a bearing-box, roller and surface bearing elements, including a double-acting member, and means adapted for holding said double-acting member in fixed relation to the box, and in fixed relation to a shaft.

2. A convertible bearing comprising a bearing-box, roller and surface bearing elements, housed one within the other, and means for securing the coöperating parts to hold the roller-bearing elements out of action while the other elements are in action, and vice versa.

3. A convertible bearing comprising a bearing-box, roller and surface bearing elements housed one within the other, said surface-bearing element being arranged to constitute a journal turning in the bearing-box, and means adapted for holding said surface-bearing element in fixed relation to the bearing-box and also in fixed relation to a shaft.

4. A convertible bearing comprising a bearing-box, a double-acting shell having a bearing fit in the box, bearing-rollers housed within the shell and engaging the same, and means adapted for holding the shell fixed with reference to the bearing-box, and with reference to a shaft.

5. A convertible bearing comprising a bearing-box, a double-acting shell having a bearing fit within the box, bearing-rollers housed within the shell and contacting therewith, coupling means for connecting the shell rigidly with the shaft, and separate coupling means for connecting the shell rigidly with the bearing-box.

6. A convertible bearing, comprising a bearing-box having an interior working bore, a double-acting bearing-shell having an exterior journal-face fitting the working bore of the box, said bearing-shell being further provided at its ends with coupling-heads carrying coupling means for engagement with the shaft, locking means for rigidly connecting the bearing-shell with the bearing-box, and roller sets encircling the shaft and housed within the shell, the rollers of said sets contacting with the inner surface of the shell.

7. In a bearing of the class described, the combination with the shaft and the bearing-box having an interior contact-surface, of a plurality of roller sets encircling the shaft, each roller set embodying a sectional cage, a circular series of ellipsoidal bearing-rollers mounted in the cage and projecting beyond the periphery thereof, and a circular series of smaller idle rolls journaled in the cage in alternating relation to the bearing-rollers.

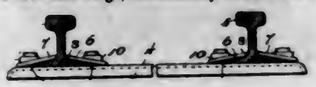
8. In a roller-bearing, the combination, of a roller set comprising a two-part cage consisting of complemental matching holding-rings detachably united and provided in their meeting faces with a peripheral series of rounded recesses forming ellipsoidal roller-seats, and also provided in the intervals alternating with said seats with bearing-sockets, a circular series of ellipsoidal bearing-rollers loosely interlocked within the roller-seats, and smaller idle rolls alternating with the bearing-rollers and having reduced pintles journaled in the bearing-sockets of the rings.

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**757,116. RAILWAY-TRACK FASTENER.** JOSEPH C. HORNOR, Paterson, N. J. Filed Sept. 18, 1903. Serial No. 173,718. (No model.)

*Claim.*—In a track-fastener of the class described, the combination with the rails, of a metallic tie having an upper flat rest-surface, a pair of transversely straight and flat malleable-iron clamp-plates arranged respectively at the inner and outer sides of the rail and of a length substantially equaling the width of the upper rest-

surface, each of said clamp-plates being arranged obliquely and clearing the upper edge portion of the base-flange with its outer edge binding upon the tie and its inner edge binding against the web of the rail and the contiguous portion of the base, combined fastening and bracing bolts passed through the clamp-plates and the tie at the edges of the base-flange, and bolt-head supports disposed at the upper sides of the clamp-plates and overlapping the vertical plane of the edges of the base-flange, substantially as described.



## 757,117. HOOK. MATTHEW M. HOWLAND, Providence, R. I. Filed Nov. 13, 1903. Serial No. 181,042. (No model.)



*Claim.*—1. A hook constructed by doubling or folding a piece of stock upon itself bringing two portions of the same together making the hook portion of a double thickness, and an eye for the hook formed at the bend by the bringing of the two parts together.

2. A hook constructed by doubling the two ends of the stock back upon itself forming a hook portion of a double thickness, and an eye in said hook formed by the bend in bringing the two ends together.

3. A hook constructed from flat stock said stock being doubled upon itself forming a hooked portion of a double thickness of material, and an eye in said hook formed by the bend in the material.

4. A hook constructed from flat stock, said stock being doubled upon itself forming a double thickness of material at its hooked portion, ribs drawn up around the eye of said hook, said eye being formed by bending the material upon itself.

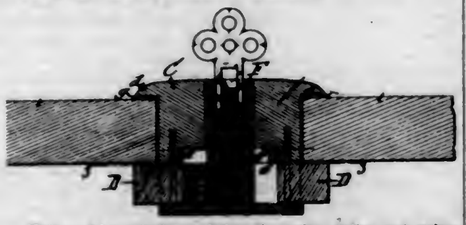
5. A hook constructed from flat stock, said stock being doubled upon itself forming a hooked portion of double thickness, ribs or flanges on said hooked portion forming a saddle on which to take the strain, an eye in said hook formed by the bend in the material.

6. A hook constructed from flat stock, said stock being doubled upon itself forming a hooked portion of double thickness, ribs or flanges on said hooked portion forming a saddle on which to take the strain, an eye in said hook, strengthening-ribs drawn up around said eye, said eye being formed by the bend in doubling the material upon itself.

7. A hook constructed from flat stock, said stock being doubled upon itself forming a double thickness of material at its hooked portion, means for holding said two thicknesses together, ribs drawn up around the eye of said hook, said eye being formed by the bend in doubling the material upon itself.

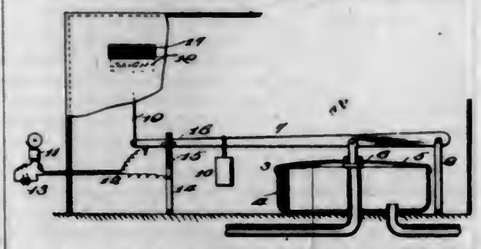
8. A hook constructed from flat stock, said stock being doubled upon itself forming a hooked portion of double thickness, ribs or flanges on said hooked portion forming a saddle on which to take the strain, means for securing said two thicknesses together, an eye in said hook, strengthening-ribs drawn around said eye, said eye being formed by the bend in doubling the material upon itself.

## 757,118. BUNG-LOCK. HENRY HUBERT, New York, N. Y. Filed Dec. 1, 1903. Serial No. 183,316. (No model.)



*Claim.*—A bung-lock, consisting of a casing, sliding and spring-actuated bolts guided in openings in the lower part of the casing and provided with lugs at their inner ends, a bored stationary tumbler-cylinder in the lower part of said casing, an axially-rotatable tumbler-cylinder in the upper part of the casing, provided with bores and means for receiving a key for rotating the cylinder on its axis, spring-supported tumbler-pins sliding in the bores of the lower and upper cylinders, and lugs on the upper cylinder engaging the lugs at the inner ends of the sliding bolts for permitting the drawing of the same into the casing when the upper tumbler-cylinder is axially rotated by the key, substantially as set forth.

## 757,119. FLUID-PRESSURE CUT-OFF AND ALARM. ROBERT M. HUGHES, Cadiz, Ohio, assignor of one-half to Frank H. Atkinson, Cadiz, Ohio. Filed Feb. 2, 1904. Serial No. 191,751. (No model.)



*Claim.*—1. In a fluid-pressure cut-off and alarm, the combination of a casing, supply and distributing pipes connected to the casing, a diaphragm forming a side of the casing and confining the pressure and receiving the force thereof, a valve connected to and movable with the diaphragm and adapted to close the supply-pipe when the pressure falls below the normal, a lever connected to and movable with the valve, and audible and visual signals connected to said lever and actuated thereby, substantially as set forth.

2. In a fluid-pressure cut-off and alarm, the combination of a casing, supply and distributing pipes connected to the casing, a diaphragm forming a side of the casing and confining the pressure and receiving the force thereof, a valve connected to and movable with the diaphragm and adapted to close the supply-pipe when the pressure falls below the normal, a lever connected to and movable with the valve, a catch adapted to interlock with the lever and hold the valve seated when the pressure ceases, and an electric alarm-circuit having its terminals connected to, respectively, said lever and catch and closed by the interlocking thereof, substantially as set forth.

3. In a fluid-pressure cut-off and alarm, the combination of a casing, supply and distributing pipes connected to the casing, a diaphragm forming a side of the casing and confining the pressure and receiving the force thereof, a valve connected to and movable with the diaphragm and adapted to close the supply-pipe when the pressure falls below the normal, a lever connected to and movable with the valve, a catch adapted to interlock with the lever and hold the valve seated when the pressure ceases, an electric alarm-circuit having its terminals connected to, respectively, said lever and catch and closed by the interlocking thereof, and an indicator connected to said lever and movable therewith to designate when the pressure is on or off, substantially as specified.

## 757,120. PLOW. JAMES B. JARMIN, Madison, Wis., assignor to American Plow Company, Madison, Wis., a Corporation of Wisconsin. Filed Dec. 7, 1903. Serial No. 183,560. (No model.)

*Claim.*—1. In a plow, mechanism for putting the plow into the ground point downward, for automatically leveling the plow at a predetermined depth, for raising the plow out of the ground point first and for automatically adjusting it in position for reentering the ground, said mechanism comprising a support pivotally connected with the forward part of the plow-beam and a plurality of rear supports connected with the plow-beam, one of said rear supports having a lost-motion connection at one end, and the other of said rear supports being arranged to be alternately thrown into and out of operation.

2. The combination in a sulky-plow, of a support pivotally connected with the forward part of the plow-beam and carried by the structure, of a support also carried by the structure, pivotally connected with the rear portion of the plow-beam and having a lost-motion connection at one end, a third support, means arranged to automatically throw said third support out of operation as a support at a certain stage in the descent of the plow, and for resetting the same into supporting position at a stage in the raising of the plow, and means for raising and lowering the plow, all so arranged that the initial movement of the plow-point upwardly and downwardly will be more rapid than the movement of the heel of the plow, thereby causing the plow to descend point first into the ground and to rise point first out of the ground.





3. The combination with a frame, of a plow, a pair of arms, pivotally connected with said frame, having a pivotal connection with said plow and arranged to support the plow in the frame, supporting means comprising a link pivotally connected with the plow and with the frame, behind said arms, one of said connections being a slotted connection, and a second link extending from the frame to the plow and having rocking bearings at each end, and means, operated by the movement of the plow to plowing position, whereby said last-named link is tripped from one of its bearings.

4. The combination with a frame, of a bail pivotally mounted therein, a plow carried by said bail, a pair of link-arms, of greater length than the arms of said bail, arranged, to alternately support the plow, within said frame and behind said bail, and means operated by the descent of the plow to plowing position, whereby one of said arms is tripped out of supporting position and the rear of the plow drops until it is supported by the other of said arms.

5. The combination with a frame, of a bail pivotally mounted therein, a plow pivotally carried by said bail, a link of greater length than the arms of said bail, pivotally secured at one end to said frame and at the other end to said plow behind said bail, one of said connections being a slotted connection, a second rocking link also longer than the bail-arms and extending between the frame and a portion of the plow structure, all so arranged that the rear of the plow will be supported by the last-named link as the plow moves downwardly, and means interposed in the path of the last-named link for tripping it out of supporting position as the point of the plow approaches plowing position.

6. The combination with a frame, of a bail pivotally supported thereby, a plow pivotally supported by said bail, an arm extending from the plow-beam back of said bail, a pin carried by said arm, a link having slotted engagement with said pin and of greater length than the bail-arms, said link being pivotally supported at its lower end by a part of the structure, and a second link of greater length than the bail-arms, said link extending from a fixed point on the structure to a bearing-surface of the arm carried by the plow-beam, having a rocking bearing at each end and diverging from said first-named link, all so arranged that the last-named link will support the rear of the plow as the plow descends, and means interposed between said links whereby said last-named link is tripped out of supporting position whenever the plow descends to a predetermined point.

7. The combination with a frame, of a plow, a pivotal support for the front part of the plow, a pair of differential supports for the back part of the plow, all so arranged that the plow will descend point first into the ground, and means actuated by the descent of the plow whereby the weight of the back part of the plow will be automatically shifted from one to the other of said differential supports as the plow reaches a predetermined depth, whereby the plow will automatically level itself after descending point first into the ground.

8. The combination with a frame, of a plow, means moving in the arc of a circle for supporting the forward end of the plow within said frame, a plurality of supports moving in the arc of a larger circle than said first-named means, for supporting the back part of the plow within said frame, one of said last-named supports having a slotted engagement with a part of the structure between the frame and the plow, and a device whereby upon the descent of the plow to a predetermined depth the weight of the back part of the plow is automatically shifted from one of said last-named supports to the slotted supporting device.

9. The combination with a frame, of a plow, a bail carrying the plow and journaled within the frame, a segmental rack pivotally supported in the frame and arranged to move in unison with the bail, an arm movably mounted on said rack, means for locking said arm in different positions upon said rack, and a stop interposed in the path of said arm.

10. The combination with a frame, of a plow carried thereby, means for raising and lowering the plow in said frame, an arm mounted to move in unison with said plow-operating means, mechanism for locking said arm in a plurality of positions, and a stop interposed in the path followed by said arm during the lowering of the plow.

11. The combination with a frame, of a plow carried thereby, means for lowering the plow in said frame, a segmental rack arranged to be rocked by the operation of said plow-lowering means, a movable arm mounted upon said rack, means for locking said arm at different positions on the periphery of said rack, and a stop interposed in the path described by said arm during the descent of the plow.

12. The combination with a frame, of a plow mounted therein, means for lowering the plow in said frame, a segmental rack arranged to be moved by said plow-lowering means and arranged to be swung on its axis thereby, an arm pivoted to said rack, a spring-pressed dog carried by said arm and arranged to engage the teeth of said rack so as to lock the arm in any adjusted position on said rack, and a stop interposed in the path described by said arm during the descent of the plow.

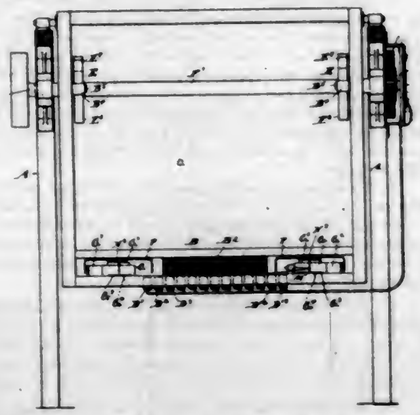
13. The combination with a frame, of a bail journaled thereto, a plow pivotally supported by said bail, a segmental rack connected with said bail so as to move in unison therewith and upon their common axis, an arm pivoted to the rack, a spring-pressed dog carried by the arm and arranged to engage the teeth of the rack, and a stop carried by the frame and arranged in the path described by the arm during the downward movement of the plow.

14. The combination with a plow-frame, of a pair of brackets carried thereby, a sleeve journaled in one of said brackets, a stop carried on said sleeve, means carried by the frame, for engaging said stop, a plow-carrying bail, journaled at one end in one of said brackets and extending at the opposite side of the frame through the sleeve and rigidly secured to said sleeve, a foot-lever journaled to the frame, operative connections between said foot-lever and said sleeve, whereby the sleeve may be rotated upon its axis by the operation of said lever, a second sleeve rigidly secured to said first-named sleeve, a second operating-lever, and operative connections between said second lever and said second-named sleeve, whereby the bail may be moved upon its axis, a shoulder upon the frame, a pivoted lever carried by said last-named sleeve and arranged to lock said shoulder, a spring arranged to hold said lever in locking engagement with said shoulder, and means, operated by the forward movement of the last-named operating-lever, for disengaging said pivoted lever from said shoulder.

## 757,121. LOOM FOR WEAVING WIRE FABRICS. FRANK JOHNSON, New York, N. Y. Filed July 17, 1903. Serial No. 165,917. (No model.)

*Claim.*—1. In a loom for weaving wire fabrics, a lay carrying a series of electromagnets, a battery, a commutator for automatically magnetizing and demagnetizing said magnets successively, an armature-shuttle traversed along said lay by the action of said magnets, and means carried by said commutator for cutting out one or more magnets at each end of said series when required.

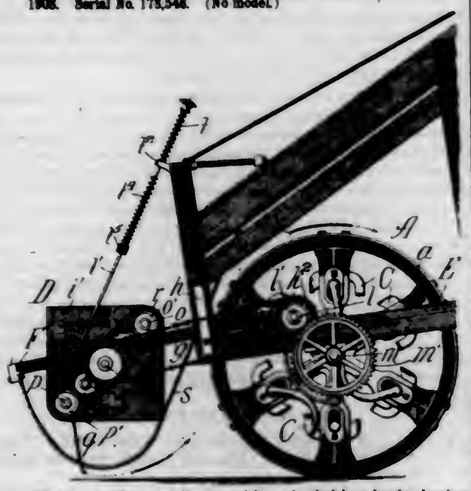
2. In a loom for weaving wire fabrics, a lay carrying a series of electromagnets, a battery, a commutator for automatically magnetizing and demagnetizing said magnets successively, an armature-shuttle traversed along said lay by the action of said magnets, the said commutator having portions serving to induce the movements of said shuttle, and portions serving to hold said shuttle at rest at the ends of its travel, and means for conditioning said commutator to cut out one or more magnets at each end of the series and to lengthen the periods of rest.



3. In a loom for weaving wire fabrics, a lay carrying a series of electromagnets, a battery, an armature-shuttle traversed by the action of said magnets, a commutator controlling said magnets and comprising two series of contact-pieces serving to magnetize and demagnetize said magnets successively, and two contact-pieces serving to magnetize and demagnetize two receptacle-magnets adapted when energized to hold said shuttle at the ends of its throw, in combination with said receptacle-magnets, and means for adjusting the latter relatively to the center line of the loom, and shields mounted on said commutator and serving to shorten the travel of said shuttle and lengthen its periods of rest at the ends of its throw.

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**757,122. HAY-LOADER.** BENJAMIN F. KAPEL, Rock Falls, and HENRY F. ROOSEBOOM, Sterling, Ill., assignors to Sterling Manufacturing Company, Sterling, Ill., a Corporation of Illinois. Filed Oct. 26, 1903. Serial No. 178,546. (No model.)



*Claim.*—1. The combination with a wheeled hay-loader having a frame and a gatherer, an auxiliary rotary rake supported on said frame at the rear of the gatherer and geared with a revolving part of the loader, the rake members of said auxiliary rake having ground contact during a part of their movement.

2. The combination with a wheeled hay-loader having a frame and a gatherer, an auxiliary rotary rake yieldingly supported on said frame at the rear of the gatherer and geared with a revolving part of the loader, said auxiliary rake provided with rotary rake members geared together and having ground contact during a part of their movement.

3. In combination with a hay-loader of the character described, having a loader-frame and a gatherer, a rotary raking-sweeper comprising a reel supported on the loader-frame to extend behind the gatherer, said reel having heads with rakes journaled in them and geared together and with the gatherer to coöperate therewith.

4. In combination with a hay-loader of the character described, having a loader-frame and a gatherer, a rotary raking-sweeper comprising a reel supported on the loader-frame to extend behind the gatherer, said reel having heads with rakes journaled in them and geared together and with the gatherer to coöperate therewith, and an adjusting device connected with the rake-gearing for adjusting the pitch of the rake-teeth.

5. In combination with a hay-loader of the character described, having a loader-frame and a gatherer, a rotary raking-sweeper comprising a reel supported on the loader-frame to extend behind the gatherer, said reel having angular heads with rakes journaled in them and geared together and with the gatherer to coöperate therewith.

6. In combination with a hay-loader of the character described, having a loader-frame and a gatherer, a rotary raking-sweeper comprising a reel supported on the loader-frame to extend behind the gatherer, said reel having angular heads formed with rounded corners, and rakes journaled in said heads and geared together and with the gatherer to coöperate therewith.

7. In combination, a hay-loader of the character described having a loader-frame and a gatherer and a gatherer-axle, a gear-wheel on the gatherer-axle and a sprocket with a pinion for said gear-wheel journaled on the loader-frame, a supplemental frame extending rearward from said loader-frame, and a sweeper comprising heads on a shaft journaled in said supplemental frame, a pinion fixed on said supplemental frame and through which said shaft passes loosely, said fixed pinion carrying a sprocket having a chain connection with said first-named sprocket, and rakes journaled in said heads and carrying pinions, with idle pinions gearing them with said fixed pinion.

8. In combination, a hay-loader of the character described having a loader-frame and a gatherer and a gatherer-axle, a gear-wheel on the gatherer-axle and a sprocket with a pinion for said gear-wheel journaled on the loader-frame, a supplemental frame hinged to said loader-frame and extending rearward thereof and yieldingly suspended toward its free end from said loader-frame by spring-rods, and a sweeper comprising heads on a shaft journaled in said supplemental frame, a pinion fixed on said supplemental frame and through which said shaft passes loosely, said shaft carrying a sprocket having chain connection with said first-named sprocket, rakes journaled in said heads and carrying pinions, and idle pinions between the rake-pinions and fixed pinions.

9. In combination, a hay-loader of the character described having a loader-frame and a gatherer and gatherer-axle, a gear-wheel on the gatherer-axle and a sprocket with a pinion for said gear-wheel journaled on the loader-frame, a supplemental frame hinged to said loader-frame, a sweeper comprising heads on a shaft journaled in said supplemental frame and carrying a sprocket having a chain connection with said first-named sprocket, and rakes journaled in said heads and carrying pinions, an adjusting-head suspended from said supplemental frame, and a pinion fixedly connected with said supplemental frame, geared by idle pinions with the pinions on the rakes and loosely surrounding the sweeper-shaft.

10. In combination, a hay-loader of the character described having a loader-frame and a gatherer and gatherer-axle, a gear-wheel on the gatherer-axle and a sprocket with a pinion for said gear-wheel journaled on the loader-frame, a supplemental frame hinged to said loader-frame, a sweeper comprising heads on a shaft journaled in said supplemental frame and carrying a sprocket having a chain connection with said first-named sprocket, rakes journaled in said heads and carrying pinions, an adjusting-head having a hanger provided with an arc-shaped slot at which it is adjustably bolted to a bar of said supplemental frame, a sleeve fixedly supported by said supplemental frame and carrying a pinion, and idle pinions gearing said rake-pinions with the stationary pinion on said sleeve, through which the sweeper-shaft extends.

11. In a hay-loader of the character described, the combination with the gatherer-wheels of a conveyer comprising endless chains and slats tied together to form the apron and stop-shoes in the paths of the endless chains and slats of the conveyer-apron, each shoe comprising a body having a chain-guide at one end and a slat-stop at the opposite end.

12. In a hay-loader of the character described, the combination with the gatherer-wheels of a conveyer comprising endless chains and slats tied together to form the apron, and stop-shoes secured at intervals on the inner sides of said wheels in the paths of the endless chains and slats of the conveyer-apron, each shoe comprising a body having a chain-guiding lip at one end and at its other end a chain-receiving offset and a stop-finger.



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**757,123. LAWN-RAKE.** OTTO KAMPFF, New York, N. Y., assignor of one-half to Frederick Kampff, Brooklyn, N. Y. Filed June 19, 1903. Serial No. 162,255. (No model.)



*Claim.*—1. A lawn-rake, having a plurality of teeth, the points of the end teeth of which extend somewhat beyond the points of the intermediate teeth, and forked backwardly-curved and flattened prongs at the point of the end teeth, substantially as set forth.

2. A lawn-rake, having a plurality of teeth, the lower ends of the end teeth of which are provided with backwardly-curved and flattened prongs that are located slightly below the lower ends of the intermediate teeth, and a V-shaped recess between the prongs, substantially as set forth.

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**757,124. DRIVEN-WELL POINT.** OTTO KAMPFF, New York, N. Y., assignor of one-half to Frederick Kampff, Brooklyn, N. Y. Filed June 19, 1903. Serial No. 162,256. (No model.)



*Claim.*—A well-point, consisting of a support, a rotatable tip provided with helical grooves, a stud extending from said tip into said support and provided with an annular groove, and means connected with said support and forming a swivel connection with said stud, substantially as set forth.

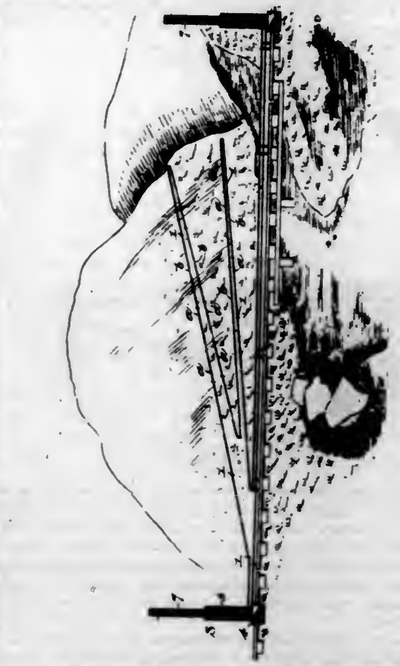
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**757,125. ELECTRICAL RAILWAY DANGER-SIGNAL.** WILLIAM R. KARNS, Parkers Landing, Pa. Filed Nov. 12, 1903. Serial No. 180,980. (No model.)

*Claim.*—1. In a railway danger-signal, the combination with the signal to be actuated and electrical controlling means therefor, of a normally closed guarding-circuit including said controlling means and comprising a conductor strung in exposed positions at danger-points and provided with a multiplicity of readily-rupturable portions.

2. In a railway danger-signal, the combination of a normally closed rupturable guarding-circuit arranged in an exposed position, and mechanism controllable from said circuit and comprising means for actuating a visual signal and also for positioning a detonating signal.

3. In a railway danger-signal, the combination of a normally closed rupturable guarding-circuit arranged in an exposed position and including a controlling-magnet, a clutch held and released by the magnet, and signal mechanism locked and released by the clutch and comprising means for actuating a visual signal and also for positioning a detonating signal



4. In a railway danger-signal, the combination of a rupturable guarding-circuit arranged in an exposed position and including a controlling-magnet, a signal-carrier for positioning a detonating signal, a visual signal operatively related to the signal-carrier, and a clutch controlled by said magnet and arranged to lock and release the signal-carrier.

5. In a railway danger-signal, the combination of a normally closed guarding-circuit including a controlling-magnet, a signal-carrier arranged to swing over the track-rail and having a holder for a detonating signal, a visual signal operatively connected with the signal-carrier, and a trip-clutch controlled by the magnet and arranged to lock and release the signal-carrier.

6. In a railway danger-signal, the combination of a guarding-circuit including controlling means, a swinging drop-arm having a supporting-plate for carrying and positioning detonating signals over the rails, a movable visual signal having an operative connection with the drop-arm, and a trip-clutch controlled by the magnet and arranged to lock and release the drop-arm.

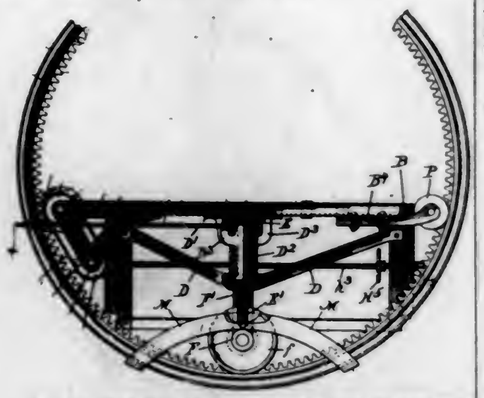
7. In a railway danger-signal, the combination of a guarding-circuit including a controlling-magnet, an upright stand supporting a signal-bracket, pivotal semaphore-blades mounted on the bracket, vertically-swinging drop-arms pivotally mounted on the stand and provided contiguous to their pivots with short heel ends and carrying at the opposite ends supporting-plates for holding and positioning detonating signals, impelling-springs attached to the drop-arms, adjusting connections between the drop-arms and semaphore-blades, a vertically-movable trip-clutch consisting of a cross-head arranged to lie between the heels of the opposite drop-arms, a carrying-stem for the clutch and an armature drop-lever pivotally connected at an intermediate point to the carrying-stem and pivotally supported upon one of its extremities, the other extremity of said lever being controlled by the magnet.

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**757,126. GRAIN-HARVESTER.** EDWIN M. KELLOGG, Madison, Wis., assignor of one-half to William C. Thompson, Chicago, Ill. Filed Mar. 4, 1899. Serial No. 707,753. (No model.)

*Claim.*—1. In a harvesting-machine, in combination with an

open-center traction wheel or ring, the main frame extended therethrough and having a rigid, tubular trunk, $D^8$, within the wheel, a tubular, interiorly-threaded sleeve in such trunk, having at its lower end a fork; a foot-wheel journaled in such fork and tracking on the interior of the traction-wheel rim; a screw-shaft extending within said interiorly-threaded sleeve, stopped at its upper end on the frame, and having at said end a horizontal beveled gear, rotated with it; a shaft journaled in the trunk, and a pinion on said shaft meshing with said beveled gear, the shaft being extended past the wheel-rim, substantially as and for the purpose set forth.



2. In a grain-harvester, in combination with an open-center traction-wheel, a main frame extending therethrough; a foot-wheel and two stay-wheels tracking on the interior of the traction-rim, and arms on the frame on which said foot-wheel and stay-wheels have their bearings, the foot-wheel bearing being adjustable to vary its distance from the line which connects the stay-wheel bearings, one of the stay-wheel bearings being adjustable to vary its distance from the other.

3. In a grain-harvester, in combination with an open-center traction-wheel, the main frame extending therethrough; a foot-wheel and stay-wheels tracking on the interior of the traction-rim; arms on the main frame on which said foot and stay wheels respectively are journaled, the foot-wheel-bearing arm comprising a sleeve and the wheel-bearing stem telescoped with the sleeve, said stem being tubular and interiorly threaded and a screw-shaft screwed thereinto, and a wheel at the upper end of such screw-shaft, and means for rotating it at will, whereby the foot-wheel arm may be extended and contracted to raise and lower the frame within the wheel.

4. In a harvesting-machine, in combination with an open-center traction-wheel, the main frame extending therethrough, a foot-wheel and two stay-wheels tracking on the interior of the traction-wheel; a gear-pinion concentric with one of the stay-wheels, and a gear-rim on the interior of the traction-wheel with which the gear-pinion meshes; arms on which said foot and stay wheels are journaled, the foot-wheel arms being extensible, and suitable means for extending and contracting it, and one of the stay-wheel arms being adjustable to vary its distance from the other.

5. In a harvesting-machine, in combination with an open-center traction-wheel, a main frame extending therethrough, a binder-frame supported on the main frame outside the traction-wheel; an arm extending downwardly from the main frame within the traction-wheel, and an arm jutting rigidly therefrom and forking fore and aft, and a bar rigid with the binder-frame, supported in the extremities of said fork-arms adapted to slide therethrough fore and aft.

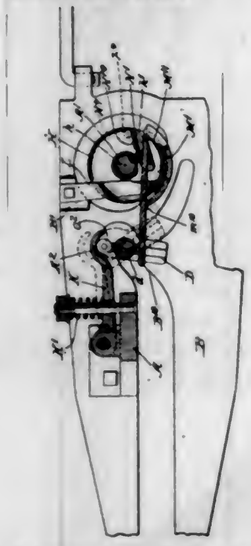
6. In a harvesting-machine, in combination with an open-center traction-wheel, the main frame having its front and rear sills extending therethrough; a binder mounted on the main frame outside the traction-wheel; the traction-rim having an interior gear-rim; a main pinion on the main frame meshing with such gear-rim, and the power-train of the machine connected with said pinion; the binder mechanism comprising the packer-shaft underneath the deck, and power-communicating connections for driving the same extending thereto through the traction-wheel; the main binder-shaft and train for driving the same above the deck, and power-communicating connections extending thereto past the traction-wheel outside thereof.

7. In a harvesting-machine having an open-center traction-wheel encompassing the frame fore and aft, the frame extending through such wheel and having a foot-wheel tracking on the interior of the open-center traction-wheel; a hanger extended from the bearing or support of the foot-wheel and engaging a flange of the traction-wheel to prevent the latter from falling away from the foot-wheel.

8. In a harvesting-machine having an open-center traction-wheel and the frame extending through the open center and encompassed fore and aft by the traction-wheel, a foot-wheel on the frame tracking on the interior of the traction-wheel to support the frame within the wheel, and a saddle or yoke having arms extending fore and aft from the bearings of the foot-wheel past the tread-rim at both sides, and thence transversely outside the tread-rim.

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**757,127. CORD-KNOTTER.** EDWIN M. KELLOGG, St. Paul, Minn., assignor of one-half to William C. Thompson, Chicago, Ill. Filed July 23, 1900. Serial No. 24,482. (No model.)



*Claim.*—1. In a knotter for a grain-binder, in combination with a suitable knotting-hook, a cord-holder comprising two elements, one revoluble and the other non-revoluble, between which both ends of the cord remain lodged during the laying of the knot; means for rotating the revoluble element in direction to carry the side at which the cord is lodged toward the knotter-bill during the wrapping of the cords on the bill by the rotation of the latter, said elements of the holder being relatively formed at the surfaces which constitute the lodging-places respectively of the holder end of the cord and of the needle end of the same so as to clamp such holder end firmly and to exert only mild pressure on the needle end during a substantial portion of the wrapping of the cords about the bill to form the knot.

2. In a knotter for a grain-binder, the combination of a knotting-hook with the cord-holder comprising two elements, one revoluble and the other non-revoluble, between which both ends of the cord are lodged during the knot-laying operation, the cooperating surfaces of said elements being relatively formed at the portion which forms the lodging place of the holder end so as to clamp said end, and at the portion which forms the lodging place of the needle end so as to afford said end lodgment with mild pressure from the lodgment of the cord between said elements throughout a substantial portion of the period of wrapping the cords on the bill to form the knot; and means for operating said revoluble element in a direction to carry the lodging places of both ends toward the knotting-hook during said knot-laying operation.

3. In a knotter for a grain-binder, in combination with the knotting-hook, a cord-holder comprising two elements, one having movement with respect to the other; means for moving the former to cause the cord to be lodged between said elements and to carry the cord thus lodged toward the knotting-hook, said cord-holder elements being relatively formed at the portion of their cooperating surfaces



which forms the lodging place of the holder end of the cord so as to clamp said end, and at the portion which constitutes the lodging place of the needle end so as to afford said end lodgment with mild pressure from the time said needle end is lodged between said elements throughout a substantial portion of the period of wrapping the cords on the bill to form the knot.

4. A cord-knotter for a grain-binder provided with means for engaging the cord running from the needle to the knotting-hook and an element of a holder onto which the cord is drawn lengthwise and lodged and on which it is retained by said cord-engaging means, said parts being relatively formed to cause and permit such carrying lodgment and retention with only slight pressure on the cord during the portion of the knot-laying operation next following said engagement and lodgment of the latter.

5. A cord-knotter for a grain-binder comprising two elements of a holder, one of which has movement past or along the length of the other, said moving element being adapted to engage the cord running from the needle to the knotting-hook to lodge it on the other element, said elements being formed respectively to cause and receive such lodgment with only slight pressure on the cord; and means for operating the moving element in direction to carry the lodgment of the cord thereon toward the knotting-hook during the knot-laying operation.

6. In a cord-knotter, a holder having a suitable cord-clamping shoe, and means for engaging the needle-cord and carrying it lengthwise toward the knotting-hook and between the walls of the holder without affecting the pressure of such clamping-shoe on the holder end of the cord during the greater part of the operation of wrapping the cords on the bill to form the knot.

7. A cord-knotter; a holder comprising means for engaging the loose end or needle-cord and lodging it between the walls of the holder and simultaneously carrying it with only slight pressure toward the knotter-hook, in combination with means for gradually releasing the held end of the cord while under pressure during the knot-laying operation.

8. In a knotter for a grain-binder a cord-holder comprising two elements, one of which moves relatively to the other to engage and carry the cord between said elements toward the knotter-bill during the rotation of the latter to form the knot, said holder elements having cooperating surfaces between which the cord is lodged, one of said elements having said surface provided with a long recess back of the cord-encountering point, affording lodgment for the needle-cord in which said cord is held with only mild pressure, said recess extending for a distance approximately equal to the movement of the moving part occurring while the cords are wrapped around the bill for forming the knot.

9. In a knotter for a grain-binder, a cord-holder comprising two elements between which the cord is grasped, one of which carries the cord to the other in direction toward the knotter-bill during the formation of the knot on the bill, said carrying element having its face on which the cord is first received, provided with a recess extending back with respect to the direction of rotation from the cord-encountering point, said recess being of gradually-diminishing depth to accommodate the cord; whereby the cord is held by only mild pressure in said recess, the length of such recess being approximately equal to the movement which said cord-carrying element makes while the bill is wrapping the cords about it for the knot.

10. In a knotter for a grain-binder, a cord-holder comprising two elements between which the cord is clamped; means for causing relative movement between said elements in direction to cause the cord to be drawn lengthwise between them, the cord-pressing face of one of said elements being shaped with respect to the direction of movement to cause it to approach the corresponding face of the other element as said movement progresses lengthwise with respect to the cord, so gradually and slightly as to cause only mild pressure on the cord during the greater part of the period of wrapping the cord about the bill to form the knot.

11. In a knotter for a grain-binder, a cord-holder comprising two elements between which the cord is clamped, one of which draws the cord lengthwise into contact with the other, the cord-pressing face of such drawing element being shaped with respect to its path of movement so as to approach the corresponding face of the other element as it advances lengthwise with respect to the cord along said other element from the cord-encountering point, so gradually and slightly as to produce only mild pressure on the cord during the greater part of the wrapping of the cords about the bill to form the knot.

12. In a knotter for a grain-binder, a cord-holder comprising a fixed element and a moving element which draws the cord lengthwise into contact with the fixed element, the cord-pressing face of said moving element being shaped with respect to its path of movement so as to approach the opposite face of the fixed element as it advances lengthwise of the cord along said fixed element from the cord-encountering point, so gradually as to exert only mild pressure on the cord during the greater portion of the wrapping of the cords on the bil to form the knot.

13. In a knotter for a grain-binder, a cord-holder comprising a fixed element and a moving element which draws the cord lengthwise into contact with the fixed element, the moving element having a groove in its cord-pressing face which is deepest at the cord-encountering point and extends, gradually diminishing in depth, back with respect to the direction of movement from cord-encountering point so gradually as to exert only mild pressure on the cord during the greater portion of the wrapping of the cords on the bill to form the knot.

14. In a knotter for a grain-binder, a cord-holder comprising a revoluble element having its face, which is transverse to the axis, provided with a cord-receiving recess, which at the position of rest of said element, extends in said face substantially in the plane of the cord-path from a point within the periphery to said periphery, forming a gap therethrough, in combination with a shoe which presses toward the periphery to hold the cord thereagainst; said revoluble element having in the peripheral face on which the shoe presses, a groove leading from the gap formed in the periphery by the cord-receiving recess, back with respect to the direction of rotation, affording space within which the needle-cord is received, and relieved from the pressure of the shoe, said groove extending in said periphery for a distance corresponding to a substantial portion of the period of formation of the knot by the bill.

15. In a knotter for a grain-binder, a cord-holder comprising a revoluble element having its face which is transverse to the axis provided with a cord-receiving recess extending in said face non-radially with respect to the axis of rotation from a point within the periphery to the periphery, and forming a gap therethrough, in combination with a shoe which presses toward the periphery to hold the cord thereagainst, said revoluble element having in the peripheral face on which the shoe seats, a cord-receiving groove which commences at and merges in the gap which the cord-receiving recess in the transverse face forms through the periphery, and extends from said gap back with respect to the direction of rotation for a distance corresponding to a substantial portion of the period of formation of the knot; whereby the cord received in said groove is relieved of the pressure of the shoe so as to be held only mildly thereby during such portion of the rotation.

16. In a knotter for a grain-binder a cord-holder comprising a revoluble element having its face which is transverse to the axis provided with a cord-receiving recess which extends in said face from a point within the periphery to the periphery, forming a gap therethrough, in combination with a shoe which presses toward the periphery of the revoluble element to hold the cord thereon; a cord-receiving groove in the peripheral face of the revoluble element on which the shoe seats, commencing at the gap and merging therein, and extending therefrom back with respect to the direction of rotation; and mechanism which gives such revoluble element one complete revolution for each knotting operation, bringing it to rest with said recess in the transverse face extending substantially in the plane of the cord's path.

17. In a knotter for a grain-binder, a cord-holder comprising a revoluble cylinder having one face transverse to its axis provided with a cord-receiving recess which extends from a point within the periphery to said periphery, forming a gap therethrough; a shoe which presses toward the periphery to hold the cord thereon; means for rotating the revoluble element to cause one edge of the gap to carry the cord lodged in the recess under or behind the shoe; and a cord-stop whose cord-encountering edge extends over said transverse recessed face in cord-severing relation to one of the edges in said face, of said recess.

18. In a knotter for a grain-binder, a cord-holder comprising a revoluble cylinder having a face transverse to its axis provided with a cord-receiving recess extending from a point within the periphery to the periphery, forming a gap therethrough; a shoe which presses upon the periphery of said element to hold the cord thereagainst; means for rotating said revoluble element to cause one edge of the gap in the periphery to carry the cord lodged in the recess of said transverse face under or behind the shoe; a cord-stop whose cord-encountering edge stands adjacent to said transverse recessed face of the cylinder in shearing relation to one of the edges in said face of said recess.

19. In a knotter for a grain-binder, a cord-holder comprising a revoluble cylinder having a face transverse to its axis provided with a cord-receiving recess commencing at a point within the periphery and extending in said face to the periphery, forming a gap therethrough, said periphery having a face on which a shoe may seat; a shoe which presses toward said face to hold the cord thereon; a cord-receiving groove cut back in said peripheral face, under or behind the shoe, commencing at and merging in the gap formed in the periphery by the recess in the transverse face, and extending from said gap back with respect to the direction of rotation, to afford the cord a long seat in which it is relieved of the extreme pressure of the shoe and held only mildly thereby; mechanism for giving the cylinder one revolution for each knotting action, bringing it to rest with the recess in the transverse face substantially in the plane of the cord's path, and with the gap which said recess forms in the periphery at the opposite side of the holder from the knotter-bill.

20. In a knotter for a grain-binder, a cord-holder comprising a revoluble cylinder whose plane of rotation is transverse to the plane of the cord's path, said cylinder having a face transverse to its axis and facing toward the cord's path, recessed to receive the cord, such recess commencing within the periphery and extending to and through said periphery, forming a gap therethrough, in combination with a shoe pressing inward toward the periphery of the cylinder to hold the cord thereagainst; mechanism which gives the holder one complete revolution for each knotting action, and brings it to rest with the recess in the transverse face substantially in the plane of the cord's path, and with the gap which said recess forms in the periphery at the opposite side of the holder from the knotter-bill; and a rigid knife whose cutting edge extends over said transverse recessed face of the cylinder in cord-severing relation to one of the edges in said face of said recess.

21. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder whose plane of rotation is transverse to the plane of the cord's path, said cylinder having its face toward the cord-path recessed to receive the cord, such recess extending to the periphery of the cylinder and forming a gap therein; a shoe pressing in toward the outer periphery of the cylinder to clamp the cord thereagainst; mechanism which gives the holder one complete revolution for each knotting action, and brings it to rest with the gap substantially in the plane of the cord's path, on the opposite side of the holder from the knotter-bill; and a cord-stop whose cord-encountering edge extends across the cord's path, adjacent to the recessed face of the holder at the side of the axis of the latter toward the knotter-bill.

22. In a knotter for a grain-binder, a cord-holder comprising a revoluble cylinder having at one face a sloping cord-receiving recess commencing in the surface of such face and extending deepening to the periphery and forming a gap therethrough; a shoe pressing in toward such periphery to clamp the cord thereagainst; a fixed cord-stop extending across the plane of the cord's path over the surface of the face of the cylinder in which said cord-receiving recess is formed; mechanism which revolves the cylinder and brings it to rest with the gap in the periphery at the side remote from the knotter-bill, the sloping recess extending from such gap toward the knotter-bill; the cord-stop having a cord-severing edge, and said edge being between the surface in which said sloping recess is formed, and the direct line of the cord drawn taut from the bill to the top of said recess and in position to cooperate with one edge of the recess for cutting the cord.

23. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder whose plane of rotation is transverse to the plane of the cord-path; a concentric shoe which presses in toward the periphery of the cylinder to clamp the cord thereagainst, said cylinder having the face toward the cord-path provided with a cord-receiving recess which extends to the periphery and forms a gap therein, said periphery of the cylinder having a groove which merges in said gap at one side thereof diminishing in depth from the gap to the remote end of the groove; and mechanism which revolves the cylinder to carry the groove behind the shoe, deeper end foremost.

24. In a knotter for a grain-binder, a cord-holder comprising a revoluble cylinder having a face transverse to its axis provided with a cord-receiving recess which commences within the periphery and extends to the periphery, forming a gap therethrough; a shoe which presses toward the periphery to hold the cord thereagainst; mechanism for giving the cylinder one complete revolution in each knotting operation to cause the cord laid in the recess in the transverse face to be caried by the edge of the gap toward the shoe, the side of the recess which faces the shoe as the holder thus revolves being undercut at the end toward the periphery.

25. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder having one face provided with a cord-receiving recess which extends to the periphery forming a gap therein; a shoe pressing in toward said periphery to clamp the cord thereagainst; the side of the recess which faces the entrance end of the shoe as the cylinder is revolved being undercut at the periphery, and the periphery having a groove which merges in said undercut forming a rounded corner; said groove diminishing in depth as it extends back from the recess to the remote end.

26. In a knotter for a grain-binder, in combination with the knotter-bill a cord-holder, comprising a revoluble cylinder having its axis inclined to that of the knotter-bill to tilt the cylinder up on the side remote from the bill, such cylinder having its face toward the cord-path provided with a sloping, cord-receiving recess, which, in the direction of its greatest slope, trends non-radially with respect to the cylinder, deepening toward the periphery of the latter, and which forms a gap in said periphery; mechanism which gives the cylinder one revolution for each complete knotting action, and brings it to rest with said gap at the side remote from the knotter-bill, the trend of the taut cord from the shallow end of the recess to the knotter-bill at the position of rest being slightly away from the recessed face of the cylinder; and a cord-stop extending across the plane of the cord-path in the angle between said taut cord and said face of the cylinder having its cord-encountering edge situated in cord-encountering relation to the edge of the cord-receiving recess as the cylinder revolves.

27. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder having one face provided with a sloping recess extending to the periphery and forming a gap therein; said recessed face of the cylinder being slightly hollowed, and a fixed knife extending over the said face, across the plane of the cord-path, and inclined from its back to the cutting edge to correspond to the hollowing of said face; whereby its edge stands in shearing relation to the advancing edge of the recess and below or back of the line of the cord drawn taut from the knotter-bill into said recess.

28. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder having one surface provided with a cord-receiving recess which extends to the periphery and forms a gap therein; a shoe which presses against the periphery to clamp the cord thereagainst; said shoe having a lug which overhangs the margin of the cylinder at the side remote from the knotter-bill, and having its edge at that side sloped to guide the cord in toward the axis of the cylinder; mechanism which revolves the holder and brings it to rest with said recess at the side remote from the knotter-bill and the advance edge of the recess just entering behind the shoe; said side of said recess being undercut at the edge of the gap where said edge is overhung by the lug of the shoe; whereby the cord drawn drawn down along the guiding edge of the shoe into the gap is delivered into said undercut and prevented from hanging in the edge of the recess.

29. In a knotter for a grain-binder, a cord-holder, comprising a revoluble cylinder whose plane of rotation is transverse to the plane of the cord-path; a concentric shoe pressing in toward the periphery of the cylinder to clamp the cord thereagainst, said cylinder having its face toward the cord-path provided with a cord-receiving recess which extends to the periphery of the cylinder and forms a gap therein; said periphery being cut back from its cylindrical outline to form an eccentric face or seat for the lodgment of the cord which commences at the gap and merges in the cylindrical outline a short distance therefrom, around the periphery in the direction of rotation.

30. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder having one face provided with a cord-receiving recess extending to the periphery of the cylinder; a shoe pressing in toward said periphery to clamp the cord thereagainst; a rigid stop for severing the cord, whose cord-encountering edge extends over the recessed face of the cylinder in cord-severing relation to one edge of the recess, such blade or bar terminating beyond the periphery of the cylinder and having a guard in which the end is received, to prevent the fibers of the cord passing by said end.

31. In a knotter for a grain-binder a cord-holder, comprising a revoluble cylinder having one face provided with a cord-receiving recess extending to the periphery of the cylinder; a shoe pressing toward said periphery to clamp the cord thereagainst; a rigid stop for severing the cord, whose cord-encountering edge extends over the recessed face of the cylinder in cord-severing relation to one edge of the recess; such blade or bar terminating beyond the periphery of the cylinder; and the shoe having a recess into which the end of such bar protrudes, whereby the shoe guards the end of said cord-stop and prevents the fibers of the cord passing by said end.



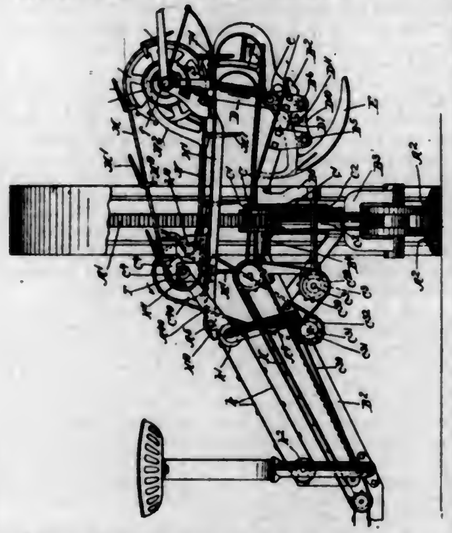
32. In a knotter for a grain-binder, in combination with the knotter-bill a cord-holder comprising a revoluble cylinder; a shoe pressing on the outer periphery of the cylinder to clamp the cord thereagainst and extended above the cylinder on the side of the cord-path opposite the knotter-bill axis; such shoe having an extension on the side of the holder toward the knotter-bill, such extension having its edge sloped to guide the cord laid by the needle inward toward the knotter-bill axis; and mechanism which gives the cylinder one revolution for each complete knotting operation.

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## 757,128. HARVESTER AND BINDER.

Edwin M. Kellogg, St. Paul, Minn., assignor of one-half to William C. Thompson, Chicago, Ill.

Filed Mar. 8, 1901. Serial No. 50,288. (No model.)



*Claim.*—1. In a grain-binder, in combination with binding mechanism, a bundle accumulating and compacting device, consisting of an endless conveyer having grain-actuating arms or fingers adapted to yield to the resistance of the grain; a unitary device operating as integral, mounted on the frame and at one part of its extent constituting a tripper for tripping the binder into and out of action, and at another part of its extent constituting a support for holding the grain-actuating fingers of the bundle-accumulating device operatively protruded, said fingers having lever projections which ride on the support and force the same back and operate the tripper when the fingers yield to the resistance of the grain.

2. In a grain-binder, in combination with binding mechanism, a bundle-accumulating device, consisting of an endless conveyer having grain-actuating arms or fingers adapted to yield to the resistance of the grain, and means for driving it continuously through the binder in discharge direction; a unitary device operating as integral, mounted on the frame, and at one part of its extent constituting a tripper for tripping the binder into and out of action, and at another part constituting a support for holding the grain-actuating fingers of the bundle-accumulating device operatively protruded; said fingers having lever projections which ride on said supporting part and force back the same and thereby the tripping part when the fingers yield to the resistance of the grain.

3. In a grain-binder, in combination with a knotter-operating wheel, a continuously-driven wheel coaxial therewith and means for clutching said wheels together; a chain which is continuously driven through the binder in discharge direction; grain-actuating fingers on such chain, adapted to yield to the resistance of the grain; a support for holding such fingers operatively protruded; a tripper for operating said clutching means; connections from said support for operating said tripper; and means by which the fingers, yielding to the resistance of the grain, move the support and cause it to operate the clutching means to start the binder.

4. In a grain-binder, in combination with the knotter-operating wheel, a continuously-driven wheel and means for clutching it with the knotter-operating wheel; a chain which is continuously driven through the binder in discharge direction, and which drives said continuously-driven wheel; grain-actuating fingers on such chain, adapted to yield to the resistance of the grain, a support for the fingers yieldingly mounted on the frame and a tripper for operating the binder-clutch, said fingers having lever projections by which when the fingers yield to the resistance of the grain, the support is forced back and the tripper is caused to operate the clutch to start the binder.

5. In a grain-binder, a main binder-shaft; a continuously-driven wheel thereon and means for clutching it with the shaft; a bundle accumulating and compacting device, consisting of an endless conveyer having grain-actuating arms or fingers; a unitary device operating as integral, mounted on the frame and at one part of its extent constituting a tripper for operating the clutch, and at another part a support for holding the grain-actuating fingers of the bundle-accumulating device operatively protruded, the fingers having lever projections which ride on the supporting part and force back the same, and thereby operate the tripper when the fingers yield to the resistance of the grain.

6. In a grain-binder, in combination with the main binder-shaft, a continuously-driven wheel thereon, and means for clutching it with the shaft; a bundle accumulating and compacting device consisting of an endless conveyer having grain-actuating fingers adapted to yield to the resistance of the grain, and means for driving it continuously through the binder in discharge direction; a unitary device operating as integral, mounted on the frame and at one part constituting a tripper for operating the clutch, and at another part a support for holding the grain-actuating fingers of the bundle-accumulating device operatively protruded, the fingers having lever projections by which when said fingers yield, the support is forced back, and the tripper is caused to operate the clutch to start the binder.

7. In a grain-binder, in combination with the knotter-operating wheel, a continuously-driven wheel coaxial therewith; means for clutching said wheels together; a chain which is continuously driven through the binder in discharge direction at the same side of the grain's path as said continuously-operating wheel, and which drives said wheel; grain-actuating fingers on such chain, adapted to yield to the resistance of the grain; a support for holding the fingers operatively protruded, and a tripper operatively connected with said support for operating said clutching means, the fingers being provided with means by which, when they yield to the resistance of the grain, they force back the support, causing it to operate the clutch to start the binder.

8. In a grain-binder, a continuously-driven conveyer-chain operating through the binder; a wheel on the main binder-shaft continuously driven by such chain; a clutch for connecting it operatively with the shaft; yielding devices on the chain by means of which it advances the grain to accumulate and make compact the bundles, a tripping device for operating the clutch, connections whereby said tripping device is operated by the yielding of the grain-advancing devices on the chain to the resistance of the grain.

9. In a grain-binder, in combination with the binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the latter with said continuously-driven wheel; a conveyer operating through the binder, having yielding grain-advancing fingers, and connections by which the yielding of said fingers to the resistance of the grain operates said engaging means, causing the conveyer-operating wheel to rotate the shaft.

10. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel loose on the same shaft at the same end of the bearing as the knotter-operating wheel; means for clutching the latter with such continuously-driven wheel; a conveyer operating through the binder, having yielding grain-advancing fingers; and connections by which the yielding of such fingers to the resistance of the grain operates said clutching means, causing the conveyer-operating wheel to rotate the shaft.

11. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the latter with such continuously-driven wheel; a continuously-driven conveyer operating through the binder, having yielding grain-advancing fingers; and connections by which the yielding of said fingers to the resistance of the grain operates such engaging means, causing the conveyer-operating wheel to rotate the shaft.

12. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating

wheel fast on the shaft; a continuously-driven wheel loose on the same shaft at the same end of the bearing as the knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; a continuously-driven conveyer operating through the binder, having yielding grain-advancing fingers, and connections by which the yielding of said fingers to the resistance of the grain operates such clutching means, causing the continuously-driven wheel to rotate the shaft.

13. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; a continuously-driven conveyer operating through the binder, having grain-advancing fingers adapted to yield to the resistance of the grain; and means by which the grain-advancing fingers, so yielding, operate the said engaging means to engage the continuously-driven wheel with the shaft.

14. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; a conveyer operating through the binder, having yielding grain-advancing fingers; connections by which the yielding of such fingers to the resistance of the grain operates said engaging means, causing said continuously-driven wheel to rotate the shaft; and means by which the rotation of the shaft renders said fingers inoperative through the binder while the latter is operating.

15. In a grain-binder, in combination with the main binder-shaft, the bearing on which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; a continuously-driven conveyer operating through the binder, having grain-advancing fingers, adapted to yield to the resistance of the grain; a yielding support, for holding them operatively protruded; and connections by which the yielding of said fingers to the resistance of the grain operates said engaging means, causing the continuously-driven wheel to rotate the shaft; and means by which the rotation of the shaft withdraws such support to make said fingers inoperative through the binder while the latter is operating.

16. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; a continuously-driven conveyer operating through the binder, having grain-advancing fingers adapted to yield to the resistance of the grain; a spring-held support for such fingers; means operated by the yielding of such support, for operating said engaging means and causing the continuously-driven wheel to rotate the shaft; and means by which the rotation of the shaft withdraws such support to make said fingers inoperative through the binder while the latter is operating.

17. In a grain-binder, in combination with the main binder-shaft, the knotter-operating wheel fast on the shaft; a continuously-driven wheel loose on the same shaft; means for engaging the shaft with such continuously-driven wheel; a continuously-driven conveyer operating through the binder, having yielding grain-advancing fingers, and connections by which the yielding of the grain-advancing fingers to the resistance of the grain operates said engaging means, causing the continuously-driven wheel to rotate the shaft and knotter-operating wheel.

18. In a grain-binder, in combination with the main binder-shaft, the knotter-operating wheel fast on such shaft; a continuously-driven wheel loose on the same shaft; means for clutching the shaft with said continuously-driven wheel; a continuously-driven conveyer operating through the binder, having grain-advancing fingers adapted to yield to the resistance of the grain; a yielding support for holding such fingers operatively protruded into the grain's path; and means operated by the yielding of such support, for operating said clutching means and causing the continuously-driven wheel to rotate the shaft.

19. In a grain-binder, in combination with the main binder-shaft, the knotter-operating wheel fast on the shaft; a continuously-driven wheel located at the same side of the grain's path through the binder as said knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; a continuously-driven conveyer-chain actuating said continuously-driven wheel and operating through the binder at the same side of the grain's path as the knotter-operating wheel, and having grain-advancing fingers adapted to yield to the resistance of the grain; a yielding support for holding such fingers operatively protruded into the grain's path, and means operated by the yielding of such support for operating said engaging means and causing the continuously-driven wheel to rotate the shaft.

20. In a grain-binder, in combination with the main binder-shaft, a knotter-operating wheel fast on said shaft; a continuously-driven wheel loose on the same shaft; means for clutching the shaft with such continuously-driven wheel; a continuously-driven conveyer operating through the binder at the same side of the grain's path as said main binder-shaft, and having grain-advancing fingers adapted to yield to the resistance of the grain; a yielding support for holding such fingers operatively protruded into the grain's path, and means operated by the yielding of such support for operating such clutching means and causing the continuously-driven wheel to rotate the main binder-shaft.

21. In a grain-binder, in combination with the main binder-shaft, the knotter-operating wheel fast on said shaft; a continuously-driven wheel loose on the same shaft; means for clutching the shaft with the continuously-driven wheel; a continuously-driven conveyer operating through the binder, at the same side of the grain's path as the main binder-shaft, and having grain-advancing fingers adapted to yield to the resistance of the grain; a spring-held support for the fingers; means operated by such support for operating the clutching means and causing the continuously-driven wheel to rotate the main binder-shaft; and means by which the rotation of such shaft withdraws such support to make the fingers inoperative through the binder while the latter is operated.

22. In a grain-harvester, in combination with mechanism for forwarding the grain toward the binding devices, adapted to deliver the same at the limit of their own path of action, a continuously-driven conveyer independent of said forwarding means, operating from the delivery side of the latter through the binder, and having grain-advancing fingers adapted to yield to the resistance of the grain; a fixed support for holding the fingers operatively protruded at a portion of their path commencing at the delivery side of the forwarding devices thence a short distance toward the bundle-space; a yielding support for holding them so protruded through the bundle-space; binding mechanism, and means for tripping it into action, operatively connected with such yielding support.

23. In a grain-harvester, in combination with the binding mechanism, mechanism for forwarding the grain to the binder; a continuously-driven conveyer, operating from the delivery side of the forwarding devices through the binder at the same side of the grain's path as the band-securing mechanism, and having grain-actuating fingers adapted to yield to the resistance of the grain; a support for holding the fingers operatively protruded into the grain's path at the portion of said path commencing at the delivery side of the forwarding devices and extending thence a short distance toward the bundle-space; a support for holding such fingers operatively protruded through the bundle-space, yielding in a direction to permit such fingers to be withdrawn from operative position; means for tripping the binding mechanism into action operatively connected with the yielding support; and means operated by the initial action of the binder for withdrawing the yielding support positively in the same direction in which it yields, to allow the fingers to become inoperative throughout the bundle-space during the binding action.

24. In a grain-binder, in combination with a retaining-gate at the discharge side; means for latching it, and means operated by the cord-holder for unlatching it to permit the discharge of the bundle.

25. In a grain-binder, in combination with a retaining-gate at the discharge side, hinged at the needle rock-shaft side, a latch for securing it and means operated by the cord-holder for unlatching it to permit the discharge of the bundle.

26. In a grain-binder, in combination with a retaining-gate at the discharge side, hinged at the needle rock-shaft side of the bundle-path; means for latching it on the opposite side of said path, and the cord-holder of the knotting mechanism having a projection which unlatches the gate to permit the discharge of the bundle.

27. In a grain-binder, in combination with the main binder-shaft, the bearing in which it is journaled; the knotter-operating wheel fast on the shaft; a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel; means for engaging the shaft with such continuously-driven wheel; means for advancing the grain comprising a chain which drives said wheel operating through the binder and having grain-engaging fingers, an element in said grain-advancing means being adapted to yield to the resistance of the grain to the fingers; and means by which such yielding operates such engaging means, causing the continuously-driven wheel to rotate the shaft.

28. In a grain-harvester, in combination with an open-center traction-wheel, grain-forwarding mechanism, arranged to deliver the grain sideward toward the opening of such wheel; a continuously-driven conveyer overhanging the path of the grain through the binder, extending into the opening of the wheel and operating to engage the grain at the delivery thereof from said forwarding devices within the wheel.

29. In a grain-harvester, in combination with an open-center traction-wheel having an interior driving-gear rim, a train on the grainward side of the wheel, driven by said interior gear-rim; the binder at the stubbleward side of the wheel comprising the main binder-shaft, the bearing in which it is journaled, the knotter-operating wheel fast on the shaft, a continuously-driven wheel at the same end of the bearing as the knotter-operating wheel, means for engaging the shaft with such continuously-driven wheel, a chain which drives said wheel, operating through the binder and having grain-advancing fingers; and means by which the resistance of the grain to such advancing-fingers operates said engaging means, causing the continuously-driven wheel to actuate the shaft.

30. In a grain-harvester, in combination with an open-center traction-wheel having an interior driving gear-rim, a train at the grainward side of said wheel driven by said interior gear-rim; a binder at the stubbleward side of the traction-wheel; two sprocket-wheels above the path of the grain, one in a train at the grainward side of the wheel, and the other in the binder-train at the stubbleward side of the wheel, and conveying mechanism comprising a chain connecting said sprocket-wheels, extending through the open center of the traction-wheel, overhanging the path of the grain.

31. In a grain-harvester, in combination with an open-center traction-wheel having an interior driving gear-rim, a train at the grainward side of the traction-wheel driven by said interior gear-rim; a binder at the stubbleward side of the traction-wheel; two sprocket-wheels, one in the train at the grainward side of the wheels, and the other in the binder-train, both above the path of the grain; an endless conveyer, comprising a chain passing about said sprocket-wheels through the open center of the traction-wheel above the path of the grain; means for clutching the sprocket-wheel in the binder-train with the main binder-shaft; a tripper for operating said clutching means; yielding grain-advancing fingers on said chain; and connections by which the yielding of the fingers to the resistance of the grain operates the tripper, whereby the binder mechanism is driven by the conveyer-chain and tripped into action by the resistance of the grain to the grain-advancing action of the latter.

32. In a grain-harvester, in combination with an open-center traction-wheel having an interior driving gear-rim, a train deriving power from such gear-rim and having its shaft and wheels at the grainward side of the traction-wheel; forwarding mechanism driven by said train, arranged to move the grain sidewise stubbleward toward the open center of the wheel; said train having a shaft extending fore and aft above the path of the grain at the grainward side of the wheel; the main frame having sills extending through the open center of the wheel, and binder-frame, mounted on said sills at the stubbleward side of the wheel, said binder-frame having an arm projecting grainward through the traction-wheel above the path of the grain; and a wheel journaled in said arm and feathered on said fore-and-aft shaft at the grainward side of the traction-wheel; and a drive-chain passing about said feathered wheel and extending stubbleward through the center of the traction-wheel above the path of the grain, and the binder-train having its prime wheel driven by said chain.

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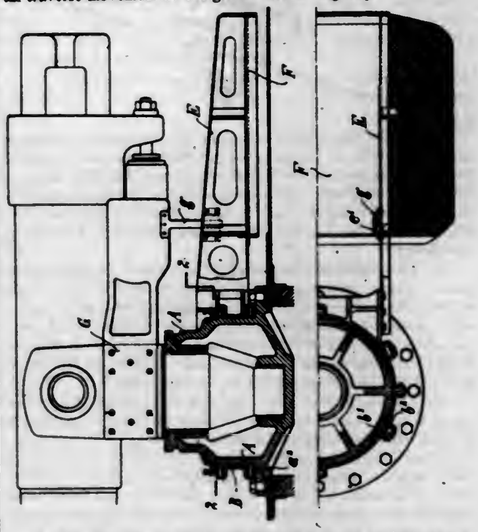
**757,129. PIVOT-GUN.** Johannes Krohn, Essen-on-the-Ruhr, Germany, assignor to Fried. Krupp, Aktiengesellschaft, Essen-on-the-Ruhr, Germany. Filed Jan. 12, 1904. Serial No. 188,673. (No model.)

*Claim.*—1. In combination with a pivot-gun and its mount, a serving-step rotatably supported on said mount independently of the gun-pivot.

2. In combination with a pivot-gun mount having a pivot-head upon which the gun rotates, a serving-step rotatably mounted upon the pivot-head independently of the gun-pivot.

3. In combination with a pivot-gun mount having a pivot-head upon which the gun rotates, a serving-step rotatably mounted upon the pivot-head independently of the gun-pivot and means causing the serving-step to rotate with the gun in the horizontal traverse of the gun.

4. In a pivot-gun, the combination of the gun having a pivot, the mount having a pivot-head receiving the gun-pivot, a serving-step having rotary support on said mount, concentric with, but independent of the gun-pivot, and means for transmitting the horizontal traverse movement of the gun to the serving-step



5. In a combination with a pivot-gun, having a suitable mount, a serving-step having rotary support independent of the gun-pivot, and means transmitting horizontal traverse movement of the gun to the serving-step, but permitting relative movement between the gun and step in the direction of recoil.

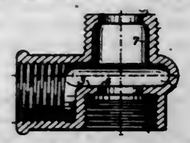
6. In a combination with a pivot-gun, having a suitable mount, a serving-step having a rotary support independent of the gun-pivot, and means transmitting horizontal traverse movement of the gun to the serving-step, but permitting relative movement between the gun and step in the direction of recoil, and consisting of a carrier projecting from one of said parts and a slot on the other, in which the carrier engages, and which is elongated in the direction of recoil.

7. In a pivot-gun, the combination of the gun and its mount, a serving-step having a rotary bearing on the mount independent of the gun-pivot, a carrier projecting downward from the gun and a slot in said serving-step elongated in the direction of recoil to permit relative movement of the carrier in that direction, but fitting said carrier to cause transmission of rotary movement from the gun to the step in the direction of horizontal traverse.

8. In a pivot-gun, the combination of the gun having a pivot, the mount having a pivot-head receiving said pivot, a ring surrounding said pivot-head and having a rotary bearing thereon, a serving-step supported by said ring, and a connection transmitting rotary traverse of the gun to the serving-step.

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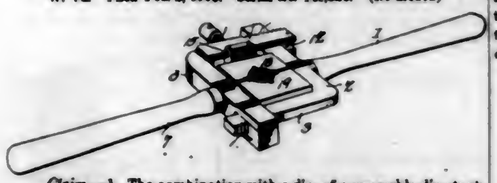
**757,130. FITTING.** James J. Lawler, Mount Vernon, N. Y. Filed Oct. 6, 1903. Serial No. 175,941. (No model.)



*Claim.*—1. A fitting provided with a female end; a laterally-elongated body above said end, a male end above said body, and an internally-threaded side outlet so positioned that the peripheral line at the lowest point will be about on a line with the lower edge of said inlet end, substantially as described.

2. A fitting provided with a female end internally threaded, an internal annular shoulder above said thread, a laterally-elongated body above said annular shoulder, a male nipple externally threaded above said body, said nipple having an inner annular flange, in combination with a side outlet, internally threaded, said outlet being positioned so that its center is on a line with said internal annular shoulder, substantially as shown and described.

**757,131. HAND TURNING-TOOL.** ELROY LEONARD, Lenox, W. Va. Filed Feb. 2, 1903. Serial No. 141,526. (No model.)



*Claim.*—1. The combination with a die, of a separable die-stock comprising two frame members each provided with serrations adapted to engage with serrations on its fellow, said members being adapted, when joined, to present a die-receiving opening, and means provided on one of said frame members to force said die against the other frame member and thereby hold the frame members and the die in association.

2. The combination with a die, of a die-stock comprising two frame members each presenting two arms disposed at right angles to each other and provided with serrated surfaces adapted to engage with corresponding surfaces upon the arms of the other frame member, and a screw carried by one of said frame members and adapted to force said die against the other frame member and thereby to hold the frame members and the die in engagement.

3. The combination with a die, of a die-stock comprising two frame members each presenting two arms disposed at right angles to each other, the arms of one frame member being slotted to receive the arms of the other frame member, and the arms of both frame members being provided with serrations adapted to interlock when the arms are joined, and a screw carried by one of said frame members and adapted to force said die against the other frame member to hold the die and the frame members in engagement.

4. The combination with a die, of a die-stock comprising separable frame members which interlock and present a die-receiving opening, and means carried by one of said frame members to engage said die and by forcing the die against the other frame member, to hold the die and the frame members in association.

5. The combination with a die, of a die-stock comprising a pair of frame members each having arms disposed at right angles which interlock, and means carried by one arm of one of said frame members to engage with said die and by forcing the die against the opposite frame member, to hold the die and the frame members in association.

6. The combination with a separable die, of a die-stock presenting a pair of frame members which interlock and present a die-receiving opening and means provided on one of said frame members to engage one member of said die and by forcing the die against the opposite frame member, to hold the die and the frame members in association.

7. The combination with a die having grooves in opposite sides thereof, of a die-stock comprising two interlocking frame members having ribs adapted for engagement with said grooves, said frame members being adapted when interlocked to present a die-receiving opening, and means mounted on one of said frame members, to force said die into engagement with the opposite frame member and thereby to hold said die and said frame members in association.

8. The combination with a die, of a die-stock comprising a pair of frame members which interlock and present a die-receiving opening, one of said frame members being slotted for the reception of a screw, a screw provided in the slotted frame member, and a jam-nut mounted on said screw for engagement with the frame member, said screw serving to force the die against the frame member opposite that upon which the screw is carried and thereby to hold the die and frame members in association.

9. The combination with a die, of a die-stock comprising a pair of frame members each presenting arms disposed at right angles to each other, the arms of one frame member being slotted to receive the arms of the other frame member and the arms of both frame members being provided with interlocking portions adapted for simultaneous engagement when said frame members are assembled, a screw passing through the slot in one of said frame members, and a grooved jam-nut carried by said screw and adapted to engage the sides of said slot thereby enabling the screw to be brought into engagement with the die to force it against the opposite frame member and to hold the die and the frame members in engagement.

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**757,132. GAGE AND MARKER.** WILLIAM B. LOUGH, Parmington, W. Va. Filed Dec. 2, 1903. Serial No. 183,473. (No model.)

*Claim.*—1. A gage and marker for doors having marking-points adapted to indicate on the edge of the door the position of the mortise for the face-plate, and marking-points arranged at right angles to the first-named points and adapted to indicate on the side of the door the position of the keyhole and knob-bolt.



2. An adjustable gage and marker for marking doors to receive mortise-locks, having an adjustable marking-point and a stationary marking-point adapted to indicate on the edge of a door the upper and lower edges of the mortise and having adjustable marking-points arranged at right angles to said first-named marking-points and adapted to indicate on the side of the door the positions of the keyhole and knob-hole.

3. A gage and marker for marking doors, comprising a plate adapted to rest against the edge of the door, marking-points on said plate to indicate the position of the mortise of a lock, pivoted links attached to said plate, a bolt adapted to enter the bolt-hole of a lock, a marking-point on the inner end of said bolt, a pin adapted to enter the keyhole of the lock and a marking-point on the inner end of said pin.

4. A gage and marker for marking doors comprising a plate adapted to be applied to the edge of the door, marking-points on said plate, a plate secured at right angles to the first-named plate and adapted to be applied to the side of the door and having a slot for the reception of the face-plate, of a lock, a bolt and a pin having marking-points, adjustable links upon which the bolt and pin are carried and a link connecting one of said adjustable links to the said slotted plate.

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**757,133. HOLDER FOR DENTAL BITE-TAKERS.** EDMUND B. MARSHALL, Rome, Ga. Filed Jan. 19, 1904. Serial No. 189,090. (No model.)



*Claim.*—1. A device of the character specified comprising a trial-plate-supporting frame adapted to enter a patient's mouth, a clamping-frame movably connected with the plate-holding frame and adapted to extend under the patient's chin, and means for positively forcing said frames into clamping-engagement with the patient's lower jaw.

2. A device of the character specified comprising a trial-plate-holding frame of wire bent to conform to the curve of the patient's lower jaw, a clamping-frame of wire movably connected with the plate-holding frame and adapted to extend under the patient's lower jaw, and means for forcing said frames into clamping engagement with the patient's lower jaw.

3. A device of the character specified comprising a trial-plate-holding frame presenting two diverging arms each consisting of substantially parallel portions of wire spaced apart to present an opening somewhat wider than the row of teeth in a patient's lower jaw, and means for positively clamping said frame upon the lower jaw of a patient.

4. In a device of the character specified, a trial-plate supporting frame having a forwardly-projecting shank, a frame extending beneath the patient's chin and also having a forwardly-projecting shank, means for connecting said frames for relative pivotal movement, and means disposed between the shanks for forcing the shanks apart and thereby causing the frames to clamp the patient's lower jaw.

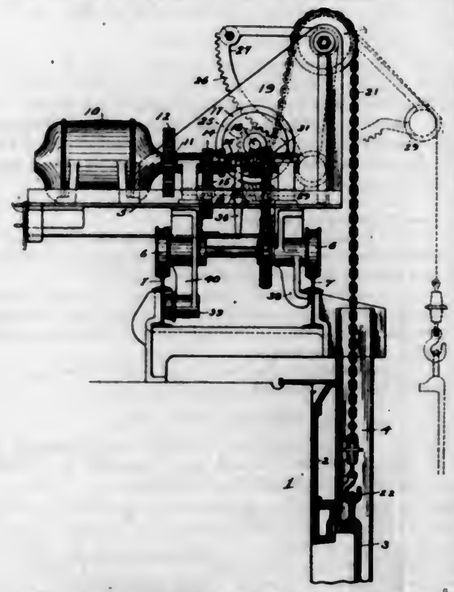
5. In a device of the character specified, a trial-plate-supporting member having a downwardly-disposed hook thereon, and a member extending beneath the chin and removably engaging said hook, and means between said members for forcing them into clamping engagement with a patient's lower jaw.

6. In a device of the character specified, a trial-plate-supporting member having a forwardly-projecting shank, a downwardly-disposed hook at the rear end of said shank, a clamping member removably engaging said shank and extending beneath the plate-holding member, said clamping member having a forwardly-projecting shank, and a screw threaded in the shank of the clamping member and engaging the under surface of the shank of the plate-supporting member.

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**757,134. COKE-OVEN-DOOR HOIST.** CLYDE S. MASON, Buffalo, N. Y. Filed Sept. 30, 1903. Serial No. 175,212. (No model.)



*Claim.*—1. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a carriage arranged to move on ways above the oven or furnace, a chain or cable for engaging the door, a winding-drum on said carriage on which said chain is wound, and mechanism on said carriage operated from said winding-drum and adapted to engage said chain and deflect the same to move the door outwardly.

2. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a furnace, a door therefor, overhead ways, a carriage arranged to move on said overhead ways, hoisting mechanism on said carriage comprising a chain or cable arranged to engage the door, a winding-drum on which said cable is wound, an oscillating frame adapted to engage said cable and deflect the same, and mechanism for oscillating said frame.

3. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a chain or cable for engaging the door, of a winding-drum on which said chain is wound, and mechanism operated from said winding-drum and arranged to engage said chain and deflect the same to move the door outwardly.

4. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a chain or cable adapted to engage the door, a winding-drum on which said chain is wound, an oscillating frame arranged to engage said chain and deflect the same to move the door outwardly, and actuating mechanism common to both said drum and said oscillating frame.

5. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a chain or cable for engaging the door, a guiding-sheave over which said chain passes, a winding-drum to which said chain is connected, and an oscillating frame driven from said winding-drum and arranged to engage said chain.

6. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a chain or cable for engaging the doors, a guide-sheave over which said chain passes, a hoisting-drum on which said chain is wound, an oscillating frame arranged to engage said chain and deflect the same, gear-segments on said oscillating frame, and gearing for rotating said winding-drum and engaging said segments to oscillate said frame.

7. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a carriage moving on ways over the oven or furnace, a winding-drum on said carriage, a chain or cable wound on said drum and arranged to engage the door, mechanism operated from said drum and arranged to engage said chain and deflect the same to move the door outwardly, and a motor on said carriage and geared to said drum.

8. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a carriage arranged to move on overhead ways, a hoisting-drum on said carriage, an oscillating frame, gearing on said carriage for rotating said drum and oscillating said frame, and a door-engaging chain arranged to be wound on said drum and deflected by said oscillating frame.

9. In apparatus for handling doors of coke-ovens, furnaces and the like, the combination of a carriage arranged to travel on overhead tracks, a chain arranged to engage the door, a support to which said chain is secured, an oscillating frame on the carriage arranged to engage the chain and deflect the same, and gearing for oscillating said support.

10. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a frame, a winding-drum mounted in said frame, a chain or cable passing therefrom and arranged to engage the door, mechanism operated from said drum and arranged to engage said chain and deflect the same to move the door outwardly, a motor, a worm driven by said motor, and a worm-gear engaging said worm and connected to said drum.

11. In mechanism for handling doors of coke-ovens, furnaces and the like, the combination of a carriage arranged to move on overhead tracks, a winding-drum on said carriage, a chain secured to said drum, mechanism operated from said drum and arranged to engage said chain and deflect the same to move the door outwardly, a motor also mounted on said carriage, gearing between said motor and winding-drum including a worm and worm wheel, gearing between said motor and the carriage-wheels, and clutch mechanism arranged to connect the motor to either of said trains of gearing.

12. Mechanism for handling the doors of coke-ovens, furnaces and the like, the combination of an upright frame, a guide-sheave mounted in the upper end thereof, an oscillating frame also mounted in the upper end thereof, a winding-drum mounted below said guide-sheave, a chain passing over said guide-sheave and secured to the winding-drum, a motor, and mechanism driven from said motor and arranged to operate both said winding-drum and said oscillating frame.

13. Mechanism for handling the doors of coke-ovens, furnaces and the like, comprising an upright frame, a guide-sheave mounted in the upper end thereof, an oscillating frame mounted in the upper end of said frame and provided with a segmental gear or rack, a winding-drum mounted below said guide-sheave, a gear rotating with said winding-drum and arranged to engage said segmental gear or rack, a chain or cable passing over the guide-sheave and secured to said drum, and mechanism for rotating said drum.

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**757,135. MANUFACTURE OF DISK WHEELS OF METAL.** FRANZ MELAUN, Charlottenburg, Germany, assignor to Fried. Krupp, Essen-on-the-Ruhr, Germany. Filed July 9, 1903. Serial No. 164,902. (No model.)

*Claim.*—1. The method of making car-wheels which consists in forming an approximately T-shaped bar into a ring, securing the ends of the bar together, and welding to the inner periphery of the

ring thus formed, an inner ring having a deflected outer periphery of a circumference greater than the circumference of the inner periphery of the outer or first-formed ring.



2. The method of making car-wheels which consists in welding together the inner periphery of an outer ring, T-shaped in cross-section and having its inner periphery extending inwardly to a point approximately midway between the rim and the hub of the wheel to be formed, and an outer periphery of a flange on an inner hub-ring, said flange having its outer periphery deflected and of a greater circumference than the circumference of the inner periphery of the outer ring.

3. The method of making car-wheels which consists in forming an approximately T-shaped bar into a ring, then welding the ends of the bar together, and welding the inner periphery of the ring thus formed with an inner ring.

4. The method of making car-wheels which consists in forming an approximately T-shaped bar into a ring then welding together simultaneously the ends of the bar, the inner periphery of the ring thus formed with the outer periphery of a flange on an inner hub-ring, and a face on the inner hub-ring with the face on another hub-ring.

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**757,136. OXIDIZING ORGANIC COMPOUNDS.** MARTIN MOMBT, Höchst-on-the-Main, Germany, assignor to Farbwerks, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation. Filed Sept. 4, 1902. Serial No. 123,126. (No specimens.)

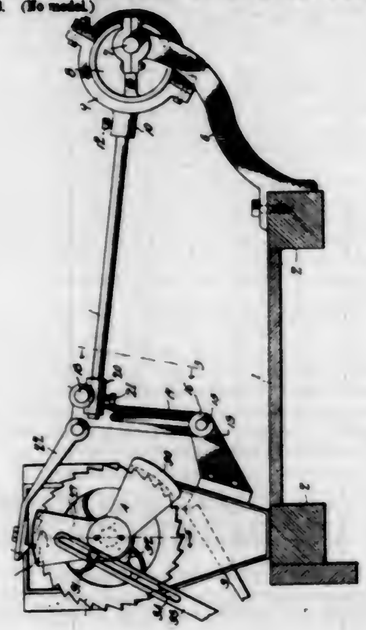
*Claim.*—1. The herein-described process for oxidizing aromatic hydrocarbons and their substitution products, which consists in causing ceric compounds to act on said aromatic compounds, substantially as set forth.

2. The herein-described process for oxidizing aromatic hydrocarbons and their substitution products, which consists in causing the oxids of the cerite group to act on said oxy compounds in presence of acids, substantially as set forth.

3. The herein-described process for oxidizing aromatic hydrocarbons and their substitution products, which consists in causing ceric salts to act on said organic compounds, substantially as set forth.

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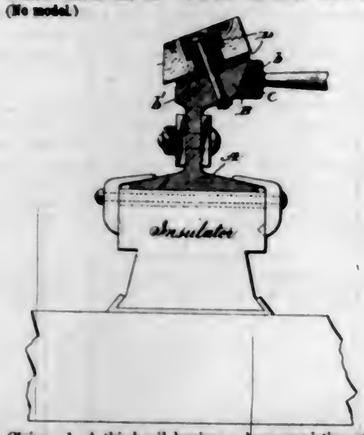
**757,137. FEEDING MECHANISM FOR COTTON-SEED LINTERS.** JOHN S. MUSSO, Memphis, Tenn. Filed Mar. 28, 1903. Serial No. 150,046. (No model.)



*Claim.*—In a device of the class described, the combination of a ratchet-wheel upon the feeder-shaft, a shield connected pivotally with said ratchet-wheel and having a forwardly-extending pin and a cam-shaped extension, a guard-plate at the upper end of said shield extending over a portion of the teeth of the ratchet-wheel, a counterweight at the lower end of said shield, a slotted rod connected with the pin upon the shield-plate and adapted, at the upward limit of its movement, to engage the cam-shaped projection, means within the hopper of the machine for actuating said connecting-rod, a rocking member and a pawl upon said rocking member having engagement with the teeth of the ratchet-wheel limited by the guard-plate of the shield.

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**757,138. THIRD RAIL FOR ELECTRIC RAILWAYS.** PATRICK T. MCGOWAN, Avoca, Pa. Filed Dec. 22, 1903. Serial No. 186,174. (No model.)




*Claim.*—1. A third rail having a base consisting of opposite, horizontally-extending flanges, a web rising from the base, and a laterally-extending flange at the top of the web, having a brush-engaging side surface.

2. A third rail having a brush-engaging side surface that inclines downward and inward.

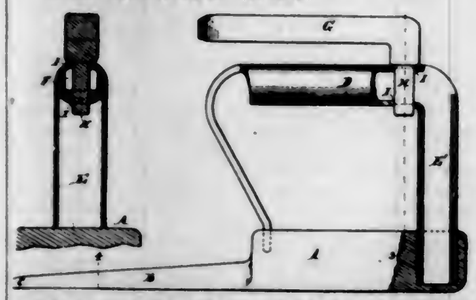
3. A third rail having a brush-engaging side surface that inclines downward and inward, and an upper surface that inclines downward from the point where it joins the side surface.

4. A third rail having a base consisting of opposite, horizontally-extending flanges, a web rising from the base, and a laterally-extending flange at the top of the web, having a brush-engaging side surface that inclines downward and inward.

5. A third rail having a brush-engaging side surface, and a guard attached to and supported by the top of the rail.

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**757,139. SAD-IRON.** MARY MCLAUGHLIN, Philadelphia, Pa., assignor of one-half to Anna H. Cassel, Philadelphia, Pa. Filed May 12, 1903. Serial No. 156,738. (No model.)



*Claim.*—1. A sad-iron having a thick body portion and a long forwardly-extended thin portion made of a width substantially equal to the body portion and tapering in thickness from the body portion to the end whereby the end is very thin and the increasing thickness permits the heat to be conducted readily throughout the extended thin portion without excessive loss



2. A sad-iron having a thick rectangular body portion and an extended thin front portion made of a width substantially equal to the body portion but tapering in thickness from the body portion to the end and also made flat on the bottom and curved on the top in a transverse direction, substantially as shown.

3. A sad-iron having a thick body portion provided with a handle and a forward extended thin portion of approximately the width of the body portion and having the end blunt with rounded corners and made relatively flattened in shape vertically with a gradual taper from the end to the body portion.

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**757,140. HIP-ADJUSTER.** EDWARD B. NEFFELER, Aberdeen, S. D. Filed Oct. 31, 1902. Serial No. 129,561. (No model.)



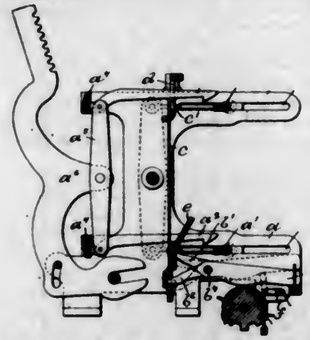
*Claim.*—1. A hip-adjuster comprising a metal hip-socket, having a splint pivoted thereto, and means for adjusting the splint, and securing the same to the body of the wearer, substantially as described.

2. A hip-socket, having a swelled or bulging portion to fit the end of the femur, and means for adjusting and holding the socket in place.

3. A surgical appliance comprising a hip-socket, a belt secured to the socket, a splint pivoted to the socket, and means for securing the splint firmly to the body to support and hold the socket in place.

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**757,141. SHEDDING MECHANISM FOR LOOMS.** OSCAR L. OWEN, Whitinsville, Mass., assignor to the Whitin Machine Works, Incorporated, Whitinsville, Mass. Filed June 30, 1902. Serial No. 113,339. (No model.)



*Claim.*—1. In a shedding mechanism for looms, the combination with the hooked jacks, a counterweighted lever for operating one of the jacks direct, a lever for operating the other jack by means of a rod, the rod, and the pattern, of a grate the slotted portion of which has two bars placed oblique to each other to form the supports for the rods supporting the upper jacks, one of said bars also forming a stop to limit the movement of the counterweighted lever, as described.

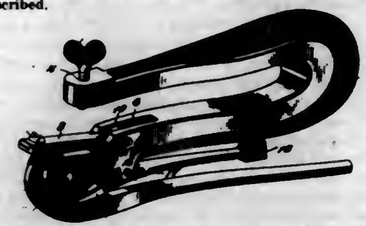
2. In combination with the jacks, the lifters, the connectors, and the pattern of a shedding mechanism of a loom, of the lever $b'$ operating one of a series of jacks, the lever $b^2$ and the rod $c$ operating one of the other series of jacks, the grate $d$ provided with the bars $d^3$, $d^4$, $d^5$ and the lugs $d^6$, and the grate $e$ having bars $e^4$ $e^5$ and lugs $e^6$, as described.

3. In a shedding mechanism, the combination with the jacks and the levers $b'$ and $b^2$, of the grate $e$ having the slotted portions $e^3$ and $e^3$ formed in one casting, the slotted portion $e^3$ and the slotted portion $e^3$ having the cross-bars $e^4$ and $e^5$ offset oblique to each other, as described.

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**757,142. BOLT-HOLDER.** HILLMAN A. PARSON, Republic, Iowa. Filed July 6, 1903. Serial No. 164,416. (No model.)

*Claim.*—1. A device of the class described comprising an open frame having a top and bottom adapted to receive between them the part to be operated on, the top being provided with means for engaging the same, means arranged at the bottom of the device for engaging the head of a bolt, a cam-lever fulcrumed on the frame at the bottom thereof and arranged to actuate the bolt-engaging means, and an automatically-operating dog arranged to engage the cam of the lever to lock the same in its adjusted position, substantially as described.



2. A device of the class described comprising an open frame adapted to receive the part to be operated on, means arranged at the bottom of the frame for engaging a bolt, a cam-lever fulcrumed on the frame at the bottom thereof and arranged to actuate the bolt-engaging means, and an automatically-operating dog arranged to engage the cam of the lever to lock the same in its adjusted position, substantially as described.

3. A device of the class described comprising an open frame, means located at the bottom of the frame for engaging a bolt, a cam-lever arranged to actuate the bolt-engaging means and provided at its cam with a ratchet, and an automatically-operating dog arranged to engage the ratchet for locking the lever in its adjusted position, substantially as described.

4. A device of the class described comprising an open frame, means located at the bottom of the frame for engaging a bolt, a cam-lever arranged to actuate the bolt-engaging means and provided with a curved ratchet, and an automatically-operating gravity-dog arranged to engage the ratchet of the lever, substantially as described.

5. A device of the class described comprising a frame having upper and lower portions, the lower portion being extended beyond the upper portion, means carried by the upper portion for engaging the part to be operated on, bolt-engaging means mounted on the extended lower portion of the frame and hinged to the same, and means for actuating the bolt-engaging means and engaging the same beyond the point of hinging for locking the same, substantially as described.

6. A device of the class described comprising a frame having upper and lower portions, the lower portion being bifurcated, bolt-engaging means arranged at the lower portion of the frame, a cam-lever mounted in the bifurcation of the frame and having a handle portion extended longitudinally of the latter, and a dog located between the lever and the frame and mounted on the latter and arranged to lock the former in its adjusted position, substantially as described.

7. A device of the class described comprising a frame, a pivoted bolt-engaging jaw or member extending longitudinally of the frame, and a cam-lever fulcrumed on the frame and engaging the pivoted jaw or member at the outer side thereof, substantially as described.

8. A device of the class described comprising a frame having an opening, a bolt-engaging jaw or member located at the opening and pivoted at its inner portion to the frame and provided at its outer portion with means for engaging a bolt, and means mounted on the frame and arranged to actuate the jaw or member at the outer portion thereof, substantially as described.

9. A device of the class described comprising an approximately U-shaped frame, a jaw or member extending longitudinally thereof at the inner face of one side of the frame and provided with means for engaging a bolt, a cam-lever arranged to actuate the jaw or member, and a pivoted locking device for engaging the cam of the lever for holding the latter in its adjusted position, substantially as described.

10. A device of the class described comprising an approximately U-shaped frame, a jaw or member extending longitudinally thereof at the inner face of one side and pivoted to the same, and a cam-lever mounted on the frame and engaging the outer face of the jaw or member, substantially as described.

11. A device of the class described comprising a frame, a hinged jaw or member having a bolt-engaging device extended through it,

and adjusting means operating against the jaw or member at the outer end of the bolt-engaging device, substantially as described.

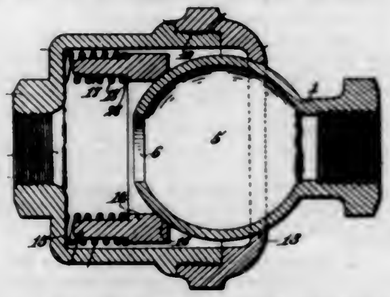
12. A device of the class described comprising a frame, a jaw or member movably connected with the frame and provided with a knife having a shank extending through the jaw or member, and an adjusting device engaging the outer end of the shank of the knife, substantially as described.

13. A device of the class described comprising a frame having one side bifurcated, a cam-lever fulcrumed in the bifurcation, a dog mounted on the frame and engaging the cam-lever, and a jaw or member pivoted to the frame at the inner end of the bifurcation and arranged to be engaged by the cam-lever, substantially as described.

14. A device of the class described comprising an approximately U-shaped frame having one side extended beyond the other, means mounted on the short side for engaging the part to be operated on, a jaw or member extending longitudinally at the other side of the frame at the inner face thereof and pivoted at its inner end and provided at its outer portion with means for engaging, a cam-lever mounted on the frame and engaging the jaw or member at the outer side thereof, and means for locking the cam-lever in its adjustment, substantially as described.

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**757,143. FLEXIBLE PIPE-COUPLING.** JOHN J. REILLY, Louisville, Ky. Filed Jan. 6, 1903. Serial No. 38,634. (No model.)



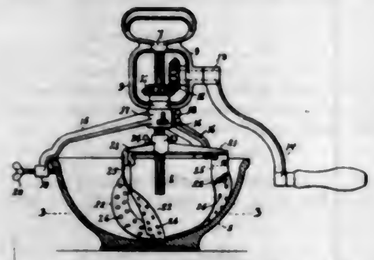
*Claim.*—1. In a pipe-coupling of the ball-and-socket type, a hollow ball or spherical portion on one of the parts, an annular bearing-surface on the other of the parts having the same curvature as said ball, a tubular presser-block, located out of guiding contact with, and capable of lateral movement in, the part in which it is mounted, and having an annular concave surface in contact with said ball, and a plurality of springs acting upon said presser-block around the edges thereof for maintaining said ball in constant contact with said bearing-surface.

2. In a pipe-coupling of the ball-and-socket type, a hollow ball or spherical portion on one of the parts, an annular bearing-surface on the other of the parts having the same curvature as said ball, a tubular presser-block in contact with said ball, located out of guiding contact with, and capable of lateral movement in, the part in which it is mounted, and provided with longitudinally-extending fingers or projections around the outer edges thereof and coil-springs surrounding said fingers or projections and acting upon said presser-block and said ball to maintain the latter in constant contact with said bearing-surface.

3. In a pipe-coupling, the combination with a shell or casing having annular bearing-surfaces at two points, and two coupling-sections having balls or spherical enlargements thereon located within said shell or casing, of two tubular presser-blocks located within but out of guiding contact with said shell or casing between said balls, each of which is provided with an annular concave surface which lies in contact with one of said balls, and a plurality of springs arranged around the outer edges of said presser-blocks and acting thereon for forcing the same apart and maintaining said balls in constant contact with said bearing-surfaces.

4. In a pipe-coupling, the combination with a shell or casing having annular bearing-surfaces at two points, and two coupling-sections having balls or spherical enlargements thereon located within said shell or casing, of two tubular presser-blocks located within said shell or casing between said balls, one of said blocks having longitudinally-extending fingers or projections thereon, and coil-springs surrounding said fingers or projections and acting upon said blocks in opposite directions to force the same apart and maintain said balls in constant contact with said bearing-surfaces.

**757,144. MIXING-MACHINE.** WILLIAM G. RICHARDSON, Milwaukee, Wis. Filed Oct. 12, 1903. Serial No. 176,588. (No model.)



*Claim.*—1. In a mixing-machine, the combination of a bracket adapted to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms extending outwardly from the shaft and rotatable therewith, and stirrer-blades depending from the arms and extending into the bowl, said blades being so constructed that, in conjunction with the eccentric mounting of the shaft, each of said blades in its circular path of travel around the bowl is for a fractional part of its travel caused to approach nearer and nearer to the side of the bowl, for another fractional portion of its travel to have its outer edge in contact with the wall of the bowl, and for the remaining fractional portion of its circular path of travel to gradually increase its distance from the side of the bowl until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

2. In a mixing-machine, the combination of a bracket adapted to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms radiating outwardly from the shaft and rotatable therewith and stirrer-blades depending from the arms and extending into the bowl and set at an angle oblique to the radial arms, said blades being so constructed that, in conjunction with the eccentric mounting of the shaft, each of said blades in its circular path of movement around the bowl is caused for a fractional part of its travel to approach nearer and nearer to the side of the bowl, for another fractional portion of its travel to have its outer edge in contact with the wall of the bowl, and for the remaining fractional portion of its circular path of travel to gradually increase its distance from the side of the bowl until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

3. In a mixing-machine, the combination of a bracket adapted to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms radiating outwardly from the shaft and rotatable therewith, and stirrer-blades depending from the arms and extending into the bowl, said blades being concavo-convex in cross-section, with the convexity outermost, and said blades being so constructed that, in conjunction with the eccentric mounting of the shaft, each of said blades in its circular path of travel around the bowl is caused for a fractional part of its travel to approach nearer and nearer to the side of the bowl, for another fractional portion of its travel to have its outer edge in contact with the wall of the bowl, and for the remaining fractional portion of its circular path of travel to gradually increase its distance from the side of the bowl until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

4. In a mixing-machine, the combination of a bracket adapted to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms extending from the shaft and rotatable therewith, and stirrer-blades depending from the arms and extending into the bowl, said blades having a series of openings therethrough, and said blades being so constructed that, in conjunction with the eccentric mounting of the shaft, each of said blades in its circular path of travel around the bowl is caused for a fractional part of its travel to approach nearer and nearer to the side of the bowl, for another fractional portion of its travel to have its outer edge in contact with the wall of the bowl, and for the remaining fractional portion of its circular path of travel to gradually increase its distance from the side of the bowl until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

5. In a mixing-machine, the combination of a bracket adapted



to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms extending outwardly from the shaft and rotatable therewith, and stirrer-blades depending from the arms and extending into the bowl, said blades at their upper ends being farthest away from the wall of the bowl and gradually approaching nearer said wall of the bowl toward their lower ends, and said blades being so constructed that, in conjunction with the eccentric mounting of the shaft, each of said blades in its circular path of travel around the bowl is for a fractional part of its travel caused to approach nearer and nearer to the side of the bowl, for another fractional portion of its travel to have its outer edge in contact with the wall of the bowl, and for the remaining fractional portion of its circular path of travel to gradually increase its distance from the side of the bowl until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

6. In a mixing-machine, the combination of a bracket adapted to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms radiating outwardly from the shaft and rotatable therewith, and stirrer-blades depending from the arms and extending into the bowl, and set at angles oblique to the radial arms, the inner edges of the blades being concave, and said blades being so constructed that in conjunction with the eccentric mounting of the shaft each of said blades in its circular path of travel around the bowl, is for a fractional part of its travel, caused to approach nearer and nearer to the side of the bowl, for another fractional portion of its travel to have its outer edge in contact with the wall of the bowl, and for the remaining fractional portion of its circular path of travel to gradually increase its distance from the side of the bowl until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

7. In a mixing-machine, the combination of a bracket adapted to be adjusted above a bowl or other receptacle, a shaft revoluble in said bracket and eccentrically mounted therein, arms radiating outwardly from the shaft and rotatable therewith, and stirrer-blades depending from the arms and extending into the bowl, said blades being concavo-convex in cross-section and having their outer edges convex, and said blades being farthest away from the wall of the bowl at their upper ends, and gradually approaching nearer the wall of the bowl toward their lower ends, the said construction of the blades, in conjunction with the eccentric mounting of the shaft causing each blade in its circular path of travel around the bowl to approach nearer and nearer to the side of the bowl for a fractional part of its travel, to have its outer edge in contact with the wall of the bowl for another fractional portion of its travel, and to gradually increase its distance from the side of the bowl for the remaining fractional portion of its circular path of travel, until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

8. In a mixing-machine, the combination of a bracket comprising a hub, a long arm radiating from the hub, and two short arms also radiating from the hub, the outer ends of said arms adapted to engage the rim of a bowl or other receptacle, a stirrer-shaft revolubly mounted in the hub, arms extending from the stirrer-shaft, and stirrer-blades depending from said arms and extending into the bowl, said blades being so constructed that, in conjunction with the eccentric mounting of the shaft, each of said blades in its circular path of travel around the bowl from the space between the long arm and one short arm being caused to approach nearer and nearer to the side of the bowl, in the space bounded between the two short arms to have its outer edge in contact with the wall of the bowl, and in the space between the last short arm and the long arm, to have its distance from the wall of the bowl gradually increased, until the terminal point of one complete circular path of travel is reached, at which point the blade is at its maximum distance from the side of the bowl.

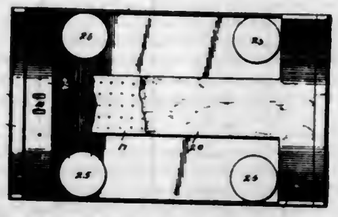
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**757,145. JOURNAL-BOX.** IRA R. ROGERS and GEORGE A. FRY, Columbus, Ohio. Filed June 12, 1903. Serial No. 161,236. (No model.)

*Claim.*—1. In a device of the character described, a spring-supported cellar, and opposite journal-bearing brackets carried by the cellar, yieldable independently thereof and projected above the ends of the cellar to support a journal.

2. In a device of the character described, a spring-supported cellar, and opposite journal-bearing brackets projected above the ends of the cellar and frictionally supported upon the cellar to yield independently thereof.

3. In a device of the character described, a cellar, opposite journal-bearing brackets carried by the cellar, and a detachable bridge member connecting the brackets.



4. As a new article of manufacture, a journal-bearing bracket having an arcuate journal-seat, a Babbitt-metal facing for one portion of the seat, and packing for the other portion of the seat.

5. As a new article of manufacture, a journal-bearing bracket embodying an upright plate forming a shank, a concaved seat at the top of the shank, and a longitudinal facing of Babbitt metal for one portion of the seat.

6. As a new article of manufacture, a journal-bearing bracket embodying an upright plate forming a shank, the upper edge of the shank being concaved, dished flanges projected at opposite sides of the upper edge of the shank, one of the flanges having an outer upstanding rim, and a facing of Babbitt metal fitted at the seat between the rim and the adjacent flange.

7. In a device of the character described, opposite journal-bearing brackets embodying shanks having concaved upper edges, inner and outer dished flanges at the concaved edges of the shanks, a facing of Babbitt metal for each of the outer flanges, and a bridge member connected at opposite ends to the inner flanges.

8. In a device of the character described, a cellar having opposite transverse sockets, journal-bearing brackets having shanks fitted in the sockets, and set-screws piercing the sockets and bearing against the shanks.

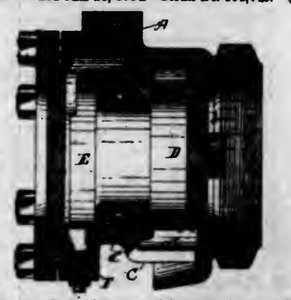
9. In a device of the character described, a cellar having opposite transverse sockets, packing at one of the inner walls of each of the sockets, a set-screw piercing the opposite wall of each socket, and a journal-bearing bracket having a shank fitted in each socket and held against the packing by the set-screw.

10. In a device of the character described, a cellar having transverse sockets on the inner faces of its end walls, transverse partitions adjacent to the end walls, packing within the sockets, set-screws piercing the partitions, and journal-bearing brackets having shanks fitted between the partitions and the ends of the cellar and held against the packing by the set-screws.

11. In a device of the character described, the combination of a spring-supported cellar, transverse partitions within the cellar and near the ends thereof, opposite journal-bearing brackets, each bracket embodying a shank to fit between a partition and the adjacent end of the cellar, and provided at its upper end with a dished seat, a facing of Babbitt metal at the outer portion of the seat, set-screws piercing the partitions and frictionally engaging the shanks, a bridge member connecting the seats of the brackets, and packing upon the bridge member and the seats.

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**757,146. RELIEF-VALVE FOR LOCOMOTIVE-ENGINE CYLINDERS.** RICHARD P. C. SANDERSON, Norfolk, Va., assignor to Star Brass Manufacturing Company, Boston, Mass., a Corporation of Massachusetts. Filed Jan. 26, 1904. Serial No. 190,749. (No model.)



*Claim.*—1. A relief-valve comprising a casing provided with an upper inlet adapted to be connected with the steam-chest, an under

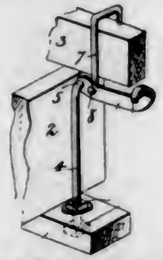
inlet adapted to be connected with the cylinder, and a side inlet leading to the atmosphere and located between the other two inlets, a valve located between said upper and lower inlets, and adapted to slide freely in said casing toward and from its seat and close the passage between said upper and under inlets, the under surface of said valve seating on the edge of said under inlet, said valve having a bearing-surface extending from its seating-surface upward and adapted to close said side inlet when the valve is seated, as described.

2. The relief-valve structure above described consisting of a casing and a valve, said casing having a valve-seat and an inlet below the valve-seat, a cylindrical chamber above the valve-seat, an inlet leading into said cylindrical chamber above said valve, and a side inlet leading from the atmosphere into said chamber just above the valve-seat, said valve being substantially cylindrical in shape, its lower end being beveled to conform to the shape of the valve-seat, said lower inlet being of less diameter than the diameter of the valve, said valve when seated closing said side inlet, and the valve above its seat serving as a bearing to guide said valve in its passage off and onto its seat, as described.

3. A relief-valve comprising two members, a valve-casing and a valve, said casing having an upper inlet, a lower inlet, and a side inlet connected to the atmosphere, and a cylindrical passage connecting said upper and said lower inlets, said lower inlet being less in cross-area than the said passage above it, and having a valve-seat about its upper edge, said valve being located in said passage and adapted to close upon said valve-seat and close said lower and side inlets, and at all times separate said upper and lower inlets and to be moved or retained in place by an excess of steam pressure or vacuum upon its upper or lower side as the case may be, as described.

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**757,147. CLAMP FOR HAY-RACKS.** PHILLIP SCHMITT, Parker, S. D. Filed Nov. 24, 1902. Renewed Aug. 29, 1903. Serial No. 171,296. (No model.)



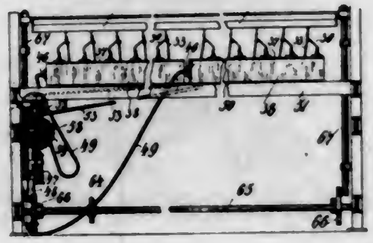
*Claim.*—1. In a clamp for hay-racks, the combination of a standard bearing an arm, a lever fulcrumed on said arm and bearing a hook located to engage said standard to limit the swing of said lever, and a hook pivoted to said lever and adapted to engage the side bar of a hay-rack, substantially as described.

2. In a clamp for securing hay-racks, the combination of a standard bearing a hook engaging the cross-bar of a hay-rack, a lever fulcrumed on said standard and bearing a hook located to engage said standard, and a hook pivoted to said lever and constructed to engage the side bar of a hay-rack, substantially as described.

3. In a clamp, the combination of a support, a locking-lever fulcrumed on said support and bearing a hook constructed to engage said support to limit the swing of said lever, and a hook pivoted to said lever, substantially as described.

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**757,148. SCOURING-MACHINE FOR WOVEN FABRICS.** JEAN SCHWEITER, Horgen, Switzerland. Filed Mar. 5, 1902. Serial No. 96,368. (No model.)



*Claim.*—1. In a scouring-machine for woven fabrics, the combination with an elastic cushion adapted to be distended by fluid-pressure, of transversely-reciprocating knives constructed to be steadily pressed against the fabric by said cushion.

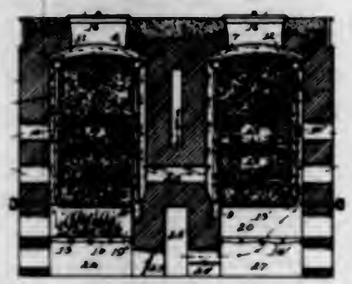
2. In a scouring-machine for woven fabrics, the combination with the knife-carrier and knives pivotally arranged on a knife-carrier, of a pressing-cushion adapted to act elastically through the introduction of a fluid-pressure medium, shoes supported on the cushions, and linked connections between the shoes and the knives, substantially as described.

3. In a scouring-machine for woven fabrics, the combination with a plurality of scouring devices comprising knives arranged in consecutive rows, and elastic cushions, the number of which corresponds to the number of knife-rows, which cushions are adapted to hold a fluid-pressure medium and against which the corresponding knife-rows bear, of means for moving adjacent scouring devices in opposite directions, and vertically-movable fabric-guides bringing the knives into contact with the fabric only in one direction of movement, as and for the purpose set forth.

4. The combination with the transversely-moving knives, of fabric-guides movable to bring the fabric into contact with the knives only in one direction of movement of said knives.

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**757,149. GARBAGE-CREMATORY.** HARRIS R. SMITH, Bridgeport, Conn., assignor to Jeremiah D. Toomey, Bridgeport, Conn. Filed Apr. 11, 1902. Serial No. 102,380. (No model.)



*Claim.*—1. The combination, in a garbage-crematory of the character described having a garbage-chamber, of an open-work garbage-holding cage the sides and bottom of which are made of pipe through which water is adapted to circulate, means for burning the garbage located below said cage, transverse pipes running through said cage, removable rods located between the pipes forming the bottom of said cage to prevent the garbage dropping therefrom until sufficiently dry to burn, for the purpose set forth.

2. The herein-described garbage-crematory having chambers adapted to be operated in pairs, a partition-wall between said chambers, a garbage-holding cage located in each of said chambers the sides and bottoms of which are made of pipe through which hot water is adapted to circulate, means for burning the garbage, removable rods located between the pipes forming the bottoms of the cages to prevent the garbage dropping from said cages until it has been sufficiently dried to burn, cold-water header-pipes on which said cages are supported in such manner that said cages are isolated from the walls of said chambers, flues in said partition so that, when the fire is burning under one cage, the heat will circulate around said cage, through said flues and entirely around the cage in the adjoining chamber and dry the garbage therein preparatory to starting a fire in said second chamber, for the purpose set forth.

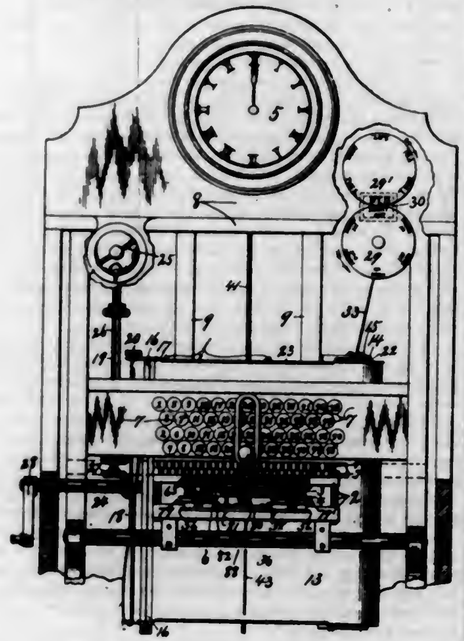
3. The herein-described garbage-crematory having chambers, a garbage-holding cage made of pipe in each chamber and isolated from the walls thereof, removable rods located between the pipes forming the bottom of said cage to prevent the garbage dropping from said cage until it has been sufficiently dried to burn, communication between said chambers, a chimney-flue for the escape of the products of combustion, dampers for opening or closing communication with said flue, said chambers operated in pairs so that, when fire is started in one chamber, the damper on that side is closed, while the one leading from the other chamber is opened, the heat passing around the cage in said first chamber and into the second chamber and around the cage therein and out through the grate-bars for said second chamber and into said chimney-flue, for the purpose set forth.

4. The combination, in a garbage-crematory of the character described, of a garbage-holding cage made of pipe through which water is adapted to circulate, removable rods located between the lower tier of pipe to prevent the garbage dropping from said cage until sufficiently dried to burn, for the purpose set forth.

5. The combination, in a garbage-crematory having a garbage-chamber, of a garbage-holding cage open at the top and constructed of pipe, removable rods located between the pipes forming the bottom of said cage to prevent the garbage dropping from said cage until it has been sufficiently dried to burn, a header-pipe adapted to hold water and support said cage out of contact with the walls of said chamber and for the circulation of heat around said cage, for the purpose set forth.

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**757,150. TIME-RECORDER.** ARTHUR R. SNOW, Syracuse, N. Y., assignor, by mesne assignments, to Syracuse Time Recorder Company, Syracuse, N. Y., a Corporation of New York. Filed Jan. 30, 1902. Serial No. 91,910. (No model.)



*Claim.*—1. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen, time-printing wheels mounted on and movable with the horizontal carriage and having an independent movement toward and from the platen.

2. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen, time-printing wheels mounted on and movable with the horizontal carriage and having an independent movement toward and from the platen and a single operating member connected to move the horizontal carriage laterally and to move the printing-wheels toward and from the platen.

3. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, and time-printing wheels movable toward and from the platen.

4. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen and horizontally-disposed time-printing wheels movable toward and from the platen.

5. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on, the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support and an ink-ribbon mounted on the support and extending between the type-wheels and platen.

6. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support, a spring normally forcing the support toward the platen, and means to move the support against the action of the spring.

7. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support, a spring normally forcing the support toward the platen and an operating member connected to move the support against the action of the spring and to automatically disconnect from the support when the spring is tensioned.

8. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support movable toward and from the platen, clock-actuated printing-wheels mounted horizontally on the support, a spring normally forcing the support toward the platen and an operating member connected to move the support against the action of the spring, and to automatically disconnect from the support when the spring is tensioned and an ink-ribbon extending between the platen and printing-wheels.

9. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support mounted on the horizontal carriage and movable toward and from the platen, clock-actuated printing-wheels arranged horizontally on the support, and means to actuate the support.

10. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a rotary indicator-disk actuated by the vertical movement of the carriage, clock-actuated printing-wheels movable toward and from the platen and an ink-ribbon between the platen and printing-wheels.

11. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, manual means to move the carriage vertically, an upright flat platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a rotary shaft connected to move the carriage vertically, a rotary indicator-disk connected to and actuated by the shaft and clock-actuated printing-wheels having independent movement toward and from the platen.

12. In a time-recorder the combination of a frame having vertical ways, an upright carriage mounted on the ways, a vertical toothed rack on the carriage, a rotary shaft having a pinion meshing with the rack, to raise and lower the carriage, a worm on the shaft, a rotary indicator-disk actuated by said worm to indicate the period of the day, a second rotary disk actuated by the former disk to indicate the day of the week, an upright platen on the carriage, an upright roller journaled on the carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable

across the face of the platen, and clock-actuated printing-wheels movable toward and from the platen.

13. A time-recorder comprising a platen and a record-sheet support, a plate having a plurality of rows of numerals, a time-printing wheel movable toward and away from and lengthwise of the platen, separate rows of shoulders, the shoulders of one row being staggered with the shoulders of the other row and corresponding to the numerals of said plate, and a centering and holding member adapted to engage the shoulders of either row as the type-wheel is moved toward the platen for the purpose specified.

14. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable laterally across the face of the platen, a sliding support mounted on the horizontal carriage and movable toward and from the platen, horizontally-arranged time-printing wheels mounted on the support, a master-clock and a flexible shaft connecting the clock to drive one of the printing-wheels which is connected to drive the other printing-wheel, and means to actuate the sliding support.

15. In a time-recorder, the combination with a master-clock, and an indicator-plate, of horizontally-arranged type-wheels, one being actuated by the master-clock and the other by the former wheel, a slidable support for said type-wheels movable lengthwise of said indicator-plate toward and from the platen, and means for centering and holding the printing-type at the printing-point.

16. In a time-recorder, a supporting-frame, lower and upper rows of shoulders, the shoulders of one row being staggered with those of the other row, a platen and a record-sheet support, a carriage movable lengthwise of said rows of shoulders and carrying a type-wheel and a lever movable toward and from the platen, said lever having an independent movement for engaging the shoulders of either row independently of those of the other row.

17. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage, a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets, a sliding support movable toward and away from the platen, a spring normally forcing the support toward the platen, means to engage and move the support against the action of the spring and to disengage from the support when the spring is tensioned and clock-actuated printing-wheels mounted on the support.

18. In a time-recorder the combination of a frame having vertical and horizontal ways, vertical and horizontal carriages movable on their respective ways, a flat upright platen on the vertical carriage a record-sheet roller mounted on the vertical carriage at one of the upright edges of the platen and carrying a roll of record-sheets movable toward and away from the platen, a spring normally forcing the support toward the platen, a single operating member mounted on the support for moving the same and for moving the horizontal carriage endwise, said operating member having an independent movement coacting with centering-shoulders to hold the horizontal carriage from endwise movement, and clock-actuated printing-wheels mounted on the support.

19. In a time-recorder, the combination with a support for a continuous roll of record-sheets and printed mechanisms, of clamping means for securing the free end of the record-sheet to the support, and means for severing the end sheet from those remaining on the support.

20. In a time-recorder, a platen for supporting a continuous series of record-sheets and means to plant the sheet to the platen, in combination with means to sever each record-sheet from the rest, and clock-actuated printing-wheels to print upon the record-sheet as described, and means to move said wheels toward and from the platen.

21. In combination with a platen for supporting a continuous series of record-sheets adapted to be fed successively across the face of the platen, clock-actuated printing mechanism and means to move the same to print upon the record-sheet, and means for severing the record-sheets while in operative position on the platen.

22. In a time-recorder, a vertically-movable carriage, a platen and a reel mounted on the carriage, the reel being at one side of the platen, for supporting a roll of continuous record-sheets, a clamp at the other side of the platen to hold the free end of the record-sheet, and a cutter in proximity to the clamp to sever the record-sheets as they are drawn from the reel, and time-printing mechanism for the purpose set forth.

23. In a time-recorder, the combination with a record-sheet support, a platen and a carriage for the time-printing wheels, of a plurality of toothed racks, the teeth of one being staggered with the teeth of the other, a dog to engage the teeth of either rack independently of the others, and a plate having a plurality of rows of numerals for each rack substantially as set forth.

24. A holding device for movable carriages of time-recorders comprising a plurality of toothed racks each having its teeth staggered with those of the other rack, and a dog on the carriage to engage the teeth of each rack independently.

25. A time-recorder comprising a frame having upright and transverse ways, a carriage guided on the upright ways and provided with a platen and a reel, a series of connected record-sheets wound on the reel and having one end drawn across the platen, means to hold said end in position, a cutter mounted on the carriage to sever the record-sheets one from the other, means actuated by the carriage to indicate the position of the carriage, a day-indicating member adapted to be shifted one step at each cycle of movement of the former indicator, a second carriage movable on the transverse ways, an ink-ribbon, and clock-actuated type-wheels mounted on the second carriage and means to move the type-wheels toward and from the platen for the purpose set forth.

26. A time-recorder comprising a frame having upright and transverse ways, a carriage guided on the upright ways and provided with a platen and a reel, a series of connected record-sheets wound on the reel and having one end drawn across the platen, means to hold said end in position, a cutter mounted on the carriage to sever the record-sheets one from the other, means actuated by the carriage to indicate the position of the carriage, a day-indicating member adapted to be shifted one step at each cycle of movement of the former indicator, a second carriage movable on the transverse ways, a sliding support on the second carriage, time-printing wheels and ribbon-reels on the support, a feed mechanism actuated by the support and adapted to rotate the reels alternately to feed the ribbon in reverse directions, and means provided on the ribbon to shift the feed from one reel to the other.

27. A time-recorder comprising a frame having upright and transverse ways, a carriage guided on the upright ways and provided with a platen and a reel, a series of connected record-sheets wound on the reel and having one end drawn across the platen, means to hold said end in position, a cutter mounted on the carriage to sever the record-sheets one from the other, means actuated by the carriage to indicate the position of the carriage, a day-indicating member adapted to be shifted one step at each cycle of movement of the former indicator, a second carriage movable on the transverse ways, a sliding support on the second carriage, time-printing wheels and ribbon reels on the support, a feed mechanism actuated by the support and adapted to rotate the reels alternately to feed the ribbon in reverse directions, and means provided on the ribbon to shift the feed from one reel to the other and additional means operating when the support is moved in the act of printing for locking the second carriage from movement.

28. In a time-recorder, a platen and record-sheet mounted thereon, a time-printing wheel and carriage therefor movable toward and away from the platen, a spring for forcing the carriage toward the platen, and an operating member detachably connected to the carriage to draw the same away from the platen against the action of the spring said operating member being released from the carriage by its continued movement.

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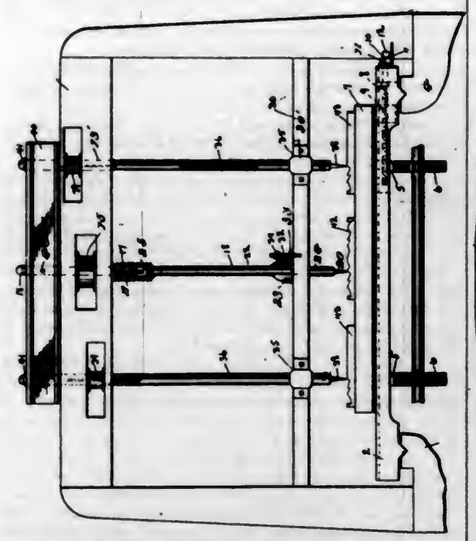
**757,151. AUTOMATIC CARVING-MACHINE. FRANK STRAUCH, Chicago, Ill., assignor to S. Karpen & Bros., Chicago, Ill., a Copartnership. Filed Jan. 23, 1901. Serial No. 44,308. (No model.)**

*Claim.*—1. In an automatic carving-machine the combination of a traveling bed with a vertically-movable cutter, a vertically-movable tracer connected with said cutter, a lifting-screw, deflectable means provided in said tracer for engagement by the pattern, and a device engaging said screw upon the movement of said deflectable means and thereupon lifting the tracer and cutter, substantially as described.

2. In an automatic carving-machine the combination with a traveling bed and feeding means of a tracer and a plurality of cutting-tools capable of reciprocation, a bar connecting said tracer and tools and whereto the tracer is rigidly connected, and a tracer-lifting screw, automatically operable when said tracer is encountered by the pattern.

3. The pattern-tracing mechanism for automatic carving-machines comprising the tracer-spindle provided with the tracer-feelers, in its point, feeler-levers, a lifting-screw, and means upon said levers for engagement with said screw to lift said spindle and point when a tracer-feeler is subjected to side pressure, substantially as described.





4. In an automatic carving-machine the combination of a traveling bed and a feed-table, with a tracer, a plurality of cutters, a bar connecting said tracer and cutters for positive movement together, the driven-screw feelers in said tracer for operation by the pattern upon said table, and means associated with said feelers for engagement with said screw to lift said tracer and cutters, substantially as described.

5. In an automatic carving-machine the combination of a traveling bed and feed-table, with a tracer and a plurality of cutters, means for rotating said cutters, means connecting said tracer and cutters for simultaneous movement in the same direction toward and from said feed-table, and a lifting-screw automatically operable to lift said tracer and cutters from engagement of the pattern with said tracer, substantially as described.

6. In an automatic carving-machine the combination of a traveling bed and feed-table, with a pattern-tracer, a plurality of cutters connected with said tracer for movement therewith, pattern-feelers provided in said tracer, and automatically-operable means associated with said feelers and operating to lift said tracer and cutters when the pattern engages either or both of said feelers, substantially as described.

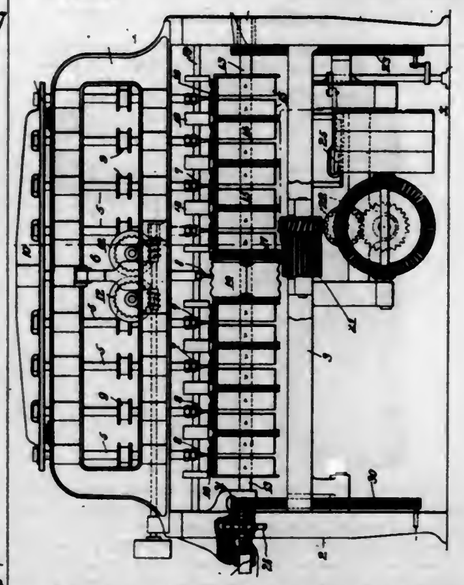
7. In an automatic carving-machine the combination of work and pattern carrying means with cutting-tools and a tracer comprising a point to rest upon the pattern, feelers provided in said point, feeler-levers, a driven screw and screw-engaging means provided upon said levers and operable by said feelers, as and for the purpose specified.

8. In an automatic carving-machine the combination of pattern and work carrying and feeding means with a tracer, a plurality of cutters connected with said tracer for movement therewith, pattern-feelers provided in said tracer and adapted for lateral engagement by the pattern and continuously-operated means rendered operative by the action of one or more of said feelers to retract said tracer and cutters, substantially as described.

9. In an automatic carving-machine, the combination of pattern and work carrying and feeding means, with a plurality of cutter-spindles, a tracer-bar suitably guided and having a tracer-point, means connecting said bar and spindles for simultaneous movement, a feeler or feelers provided in said tracing-point and a retracting device operating automatically to retract said tracer and spindles when a feeler is pressed upon as by a pattern, substantially as described.

10. In an automatic carving-machine, a tracer and tracer-retracting mechanism comprising the tracer bar and point provided with pattern-feelers, a continuously-driven retracting device and connections by which said bar and point are retracted upon the operation of a feeler, substantially as described.

**757,152. AUTOMATIC CARVING-MACHINE. FRANK STRAUCH and CHARLES L. RUSH, Chicago, Ill., assignors to S. Karpen & Bros., Chicago, Ill., a Copartnership. Filed Jan. 10, 1902. Serial No. 89,203. (No model.)**



*Claim.*—1. In an automatic carving-machine, the combination of a suitable driven cutter with the pattern-tracing mechanism connected therewith, automatic tracer-retracting means suitably driven, a shaft, a rotary pattern mounted thereon, work-feeding means also mounted thereon, means for driving the shaft and feeding the same and reversing means provided in connection therewith, substantially as described.

2. In an automatic carving-machine, the combination of a suitable frame with a tracer and a plurality of cutter-spindles in the same plane each parallel with said tracer and connected therewith for simultaneous movement with said tracer, an automatic tracer-retracting mechanism provided in said frame, a rotary pattern and a rotary device having its axis in the plane of said spindles and tracer and transverse to said spindles, for carrying and feeding the pattern and work with respect to said tracer and spindles, respectively, substantially as described.

3. The automatic tracing and cutting mechanisms, in combination with a rotary and longitudinally-movable shaft having adjustable pattern and work holding devices, means for driving said shaft alternately in opposite directions and means for feeding said shaft longitudinally, substantially as described.

4. In an automatic carving-machine, the combination with the vertical shaft having both pattern and work holding means, of associated work-holders the driving-gear of said means, the long pinion in mesh therewith, the reversing mechanism associated with said pinion, the feed mechanism connected with said shaft and the tracer and cutters, substantially as described.

5. In an automatic carving-machine, the shaft having adjustable pattern and work carrying devices, in combination with means for driving and feeding said shaft, the tool-heads arranged upon opposite sides of such shaft and each containing its complement of automatic tracer and cutting mechanisms, substantially as described.

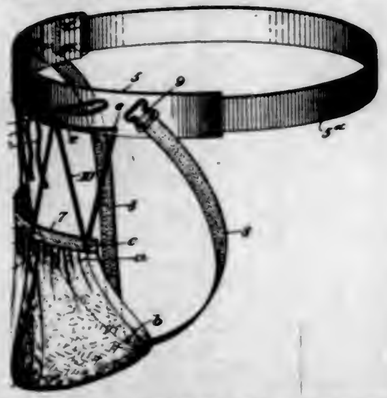
6. An automatic carving-machine having a work and pattern carrying mechanism, in combination, with a feed mechanism, the tool-heads arranged upon opposite sides of said work and pattern carrying mechanism and each containing a complement of automatic tracer and cutting mechanisms, substantially as described.

7. In an automatic carving-machine the opposed tool-heads each provided with a full complement of tracer and cutting mechanisms automatically operable, in combination with a single rotary pattern and a single work-feeding mechanism arranged between the tracers and tools of the opposite heads, substantially as described.

8. In an automatic carving-machine the combination of the tracer and cutting-tool with the work and pattern carrying shaft,

the gear thereon, the long pinion wherewith said gear is engaged, means for alternating the direction of movement of said pinion and an intermittent transverse feed mechanism associated with said shaft, substantially as described.

757,158. **SUSPENSORY BANDAGE.** WILLIAM A. TAIBBE, Portland, Me. Filed Sept. 9, 1903. Serial No. 172,467. (No model.)



*Claim.*—1. In a suspensory bandage, the combination with a waistband having a non-elastic front portion, and a series of spaced perforations in said portion of the waistband, of a sack formed of an elongated piece of fibrous fabric that is folded to lap and aline the ends thereof, a perforate band secured on said end portions, and a flexible strand engaging in the perforations of the sack-band and the waistband-front, and which by adjustment defines the space between said bands.

2. In a suspensory bandage, the combination with a waistband having a non-elastic front portion, of a sack formed of fibrous material, means to adjustably suspend the front of the sack from the front of the waistband, and two under-straps attached at the rear of the sack by lower ends thereof, and adjustably secured at their upper ends upon said waistband.

3. In a suspensory bandage, the combination with a waistband having a series of spaced perforations in the front portion, of a sack formed of an oblong strip of fibrous fabric, plaited at the ends, lapped at the ends and front edge thereof, a sack-band secured along the alined top edges of the plaited ends, said sack-band having a series of spaced perforations therein, a flexible strand woven into and between the waistband-perforations and the holes in the sack-band and tied together at its ends, said strand by its engagement with the waistband and sack-band defining the space between them, and two under straps affixed by their lower ends upon the rear edge of the sack at its fold and at their upper ends engaged with two buckles held on the front portion of the waistband.

757,154. **SUPPORT FOR BICYCLE HANDLE-BARS.** ROBERT H. TATE, Portland, Oreg. Filed Aug. 5, 1903. Serial No. 168,305. (No model.)



*Claim.*—1. In a bicycle or like machine, a handle-bar post, a clamp mounted to revolve around the post, adapted to take a position at either side of the post or in front thereof, a spring-bar having a free end adapted to engage and lock the clamp when brought to any one of the aforesaid positions, a rotatable cam carried by the post and provided with an eccentric opening for engaging and releasing said spring-bar from engagement with the clamp, and a helical spring for normally holding said cam out of engagement with the spring-bar and for returning said cam to its normal position after it has been used to disengage said locking-bar.

2. A handle-bar post, a handle-bar clamp mounted to revolve around the said post, a locking device for the said clamp carried by the said post, and a tension-controlled adjusting-cap adapted to carry the locking device temporarily out of locking relation to the said handle-bar clamp, which adjusting device automatically returns to its normal position when released, as described.

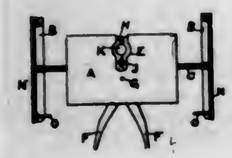
3. In a bicycle or like machine, a handle-bar post, a handle-bar clamp mounted to turn upon the said post, a locking-shank located in the said post and having an angular head the horizontal member whereof extends out through a slot at the upper portion of the post, that portion of the handle-bar clamp which revolves around the post being provided with slots adapted to register with the slot in the post as the handle-bar is turned, and a tension-controlled adjusting-cap mounted to turn on the said post, which cap is provided with a cam-slot receiving the vertical member of the head of the said locking-shank, as and for the purpose set forth.

4. In a bicycle or like machine, the combination with a bicycle-handle-bar post having an annular flange thereon, a handle-bar clamp mounted to revolve around the post in engagement with the flange, the upper edge of that portion of the clamp surrounding the post being provided with a series of slots and the post at its upper end with a slot capable of registry with any one of the slots in the handle-bar clamp, and a spring-shank located within the said handle-bar post, having an angular outwardly-extending head, the horizontal member of which head extends through the slot in the handle-bar-post and the vertical member upwardly from the horizontal member, of a washer fitted over the upper end of the handle-bar post and extending over that portion of the handle-bar clamp turning on the post, the washer being provided with a diametrical slot in which the vertical member of the locking-head has play, a tension-controlled adjusting-cap mounted to turn upon the said washer, and provided with a cam-slot which receives the vertical member of the said locking-head, and means substantially as shown and described for retaining the said adjusting-head and washer in their relative positions to each other and to the handle-bar post, as specified.

5. In a bicycle, a handle-bar post, a clamp mounted to revolve around the post and adapted to take a position at either side of the post or in front thereof, said post having a recess at its rear side, said clamp having a rear recess and side recesses adapted to be brought into registration with said recess in the post, a locking-bar carried by said post and having a free end extending into said recess at the rear of the post and adapted to engage any one of said recesses in the clamp when the same is brought into registration with said rear recess, whereby to lock the clamp and post into engagement with each other, operating means carried upon said post for engaging said free end of the locking-bar to move the same out of engagement with said clamp, and means for automatically moving and holding said operating means out of engagement with said bar.

6. In a bicycle or like machine, a handle-bar post, a clamp mounted to revolve around the post, adapted to take a position at either side of the post or in front thereof, a locking device to automatically engage and lock the clamp when brought to any one of the aforesaid positions, an operating device carried by the post, for releasing the locking device from locking engagement with the clamp, and means for normally holding said operating device out of engagement with the locking device, and for automatically returning the operating device to its normal position after it has been used to disengage said locking device.

757,155. **VENETIAN-WINDOW-BLIND CLIP.** FREDERICK TIBBET, Goole, England. Filed May 12, 1903. Serial No. 156,779. (No model.)





*Claim.*—1. The combination, with a pair of tape-clips, and a connecting-link between them; of a cord-clip slidable on the said link.

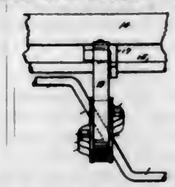
2. The combination, with a pair of tape-clips, and a connecting-link between them; of a cord-clip slidable on the said link and provided with a fastening device for attaching it to the adjacent blind-slat.

3. The combination, with a pair of tape-clips, each said clip comprising two bars pivoted together at one end and provided with a locking device at the other end, of a link connecting the said pair of clips, and a cord-clip slidable on the said link.

4. The combination, with a pair of tape-clips, and a connecting-link between them; of a casing slidable on the said link, and a pair of spring-pressed levers pivoted to the said casing and operating to grip the cord.

5. The combination, with a pair of tape-clips, and a connecting-link between them; of a cord-clip carried by the said link and provided with one seat for gripping the cord and a second seat in which the cord is free to slide.

757,156. **HAY-LOADER.** JOHN H. THOMAS, Springfield, Ohio, assignor to the Thomas Manufacturing Company, Springfield, Ohio. Filed Nov. 12, 1900. Serial No. 36,207. (No model.)



*Claim.*—1. In a hay-loader, a crank-shaft, with a series of cranks thereon, and a sectional pulley secured to the medial portion of one of said cranks at the axis of rotation of said shaft, and a bearing for said pulley supported in the frame, substantially as described.

2. In a hay-loader, the combination, with a frame, of a crank-shaft provided with a plurality of cranks and supported at its ends in bearings on the frame, a bearing-block or pulley secured to the intermediate portion of the crank-shaft with its center of rotation coincident with that of said shaft, a cross piece or brace mounted on the frame, and a strap connected with said cross-piece and passing around the bearing-block, substantially as described.

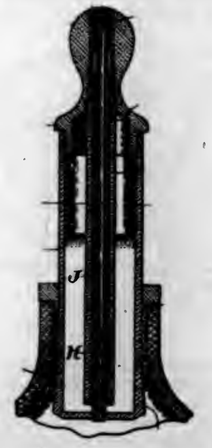
3. In a hay-loader, the combination, with a frame, of a crank-shaft provided with a plurality of cranks and supported at its ends in bearings on the frame, a bearing-block or pulley secured to the intermediate portion of the crank-shaft with its center of rotation coincident with that of said shaft, a cross piece or brace mounted on the frame, and a strap pivotally connected with said cross-piece and passing around the bearing-block, substantially as described.

4. In a hay-loader, the combination, with a frame, of a crank-shaft supported at its ends in bearings on said frame and having its intermediate portion bent to form a plurality of cranks connected by diagonal arms, a bearing-block diametrically divided and having diagonal grooves in its meeting faces, connecting lugs and bolts and a grooved periphery, said block being mounted on one of the diagonal arms of the crank-shaft with its center of rotation coincident with that of the shaft, a cross-piece mounted on the frame, and a strap connected with said cross-piece and fitting the grooved periphery of the bearing-block, substantially as described.

5. In a hay-loader, the combination, with a frame, of a crank-shaft provided with a plurality of cranks and supported at its ends in bearings on said frame, a bearing-block secured to the intermediate portion of the crank-shaft with its center of rotation coincident with that of said shaft, a cross-piece mounted on the frame and comprising a body portion and a truss-rod, and a strap pivotally mounted on the truss-rod and passing around the bearing-block, substantially as described.

757,157. **ATOMIZER.** CHARLES L. TURNER, Winthrop, Mass., assignor to Rhodes Lockwood, William H. Lockwood, and Rhodes G. Lockwood, Boston, Mass., (copartners as firm of Davidson Rubber Company.) Filed June 26, 1903. Serial No. 163,195. (No model.)

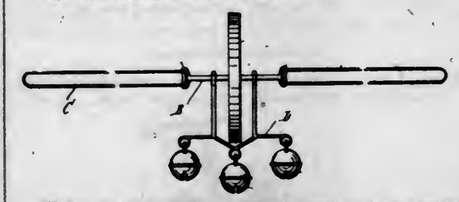
*Claim.*—1. An atomizer comprising a bulb; a receptacle to which the bulb is fastened made in two separable parts detachably fastened together, and with a discharge-orifice through one end; a pair of tubes within the receptacle comprising an inner tube fixed at one end to one of the two parts of the receptacle and communicating at that end with the interior of the bulb, the other end of said inner tube registering with the discharge-orifice of the receptacle; and an outer tube surrounding the inner tube held at one end by the other part of the receptacle and communicating at that end with the discharge-orifice and at its other end with the interior of the receptacle.



2. An atomizer comprising a bulb; a receptacle arranged within the mouth of the bulb made in two separable parts detachably fastened together, and with a discharge orifice at one end; an inner tube within the receptacle fixed to one part thereof, one end of the inner tube registering with the discharge-orifice and the other end communicating through the end of the receptacle with the interior of the bulb; an outer tube surrounding the inner tube held at one end by the other part of the receptacle and communicating at that end with the discharge-orifice and at its other end with the receptacle, and an air passage-way communicating with the receptacle adapted to admit air to compensate for liquid removed therefrom.

3. In an atomizer, in combination, a bulb and a liquid-receptacle, the latter arranged to slide telescopically within the mouth of the bulb, the inner end of said receptacle being made with an exterior tapering enlargement for limiting the outward movement of the receptacle, and adapted to be wedged into the mouth of the bulb to prevent leakage between the receptacle and bulb.

757,158. **TOY.** WILLIAM G. TURRILL, Boston, Mass. Filed Nov. 18, 1903. Serial No. 181,621. (No model.)



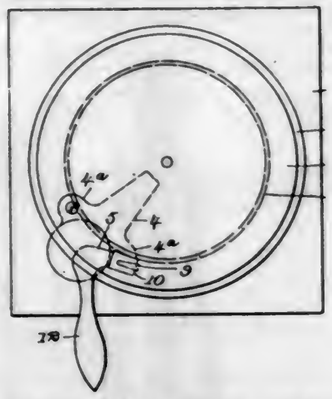
*Claim.*—1. In a toy, the combination, with a wheel provided with a spindle, and flexible connections for revolving the said wheel and spindle, of a yoke suspended from the said spindle, and sounding devices carried by the said yoke.

2. In a toy, the combination, with a wheel provided with a spindle having loops at its ends, and flexible connections secured to the said loops and operating to revolve the said wheel and spindle, of a yoke suspended from the said spindle, and sounding devices carried by the said yoke.

757,159. **FRICTION-BRAKE.** LOUIS P. VALIQUET, New York, N. Y., assignor to Victor Talking Machine Company, a Corporation of New Jersey. Filed Oct. 1, 1903. Serial No. 175,296. (No model.)

*Claim.*—1. The combination of the containing-casing, the bell-crank journaled in the wall thereof, the spring-actuated pitman pivoted to the crank-arm inside the casing and the brake-pad carried

by the crank-arm outside of the casing, together with means for rotating the bell-crank, the casing being so shaped as to permit the inner crank and spring-pitman to pass slightly beyond the dead-point when the brake is in its position of disengagement.



2. The combination of the casing having a tapering chamber formed therein, the bell-crank journaled in the wall of the casing near one side at the larger end thereof, a pitman pivoted to the crank-arm inside the casing, and having its other end loosely guided in the smaller end of the casing, a spring forcing said pitman toward the larger end of the casing, and a brake-pad carried by the crank-arm outside of the casing.

3. The combination of the casing having a tapering chamber formed therein, the bell-crank journaled in the wall of the casing near one side at the larger end thereof, a pitman pivoted to the crank-arm inside the casing, and having its other end loosely guided in the smaller end of the casing, a spring forcing said pitman toward the larger end of the casing, and a brake-pad carried by the crank-arm outside of the casing, together with a handle attached to the bell-crank outside of the casing.

4. In a friction-brake, the combination of the crank-arm, the brake-pad carried thereon, and a flexible extension of said arm bent back around the pad.

5. In a friction-brake, the combination of the crank-arm, the brake-pad carried thereon, and a flexible extension of said arm bent back around the pad, said flexible extension being provided with a pointed tip driven into the brake-pad.

6. In a friction-brake mechanism for talking-machines, the combination of the rotating table provided with a circular rib on its under side located some distance from its circumference, the motor-box on which the table is mounted, the brake mechanism located on top of said box under the table, and cooperating with said circular rib, and the brake-operating handle projecting beyond said table.

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**757,160. LAWN-SPRINKLER.** ADDISON VANDERVOORT, Belleville, Canada. Filed Sept. 24, 1903. Serial No. 174,673. (No model.)



*Claim.*—1. A lawn-sprinkler provided with an inclined nozzle having a horizontal revoluble movement and also a rotatable movement upon its axis simultaneously with the horizontal revoluble movement, substantially as described.

2. A lawn-sprinkler provided with an inclined nozzle having a horizontal revoluble movement and also a rotatable movement upon its inclined axis, substantially as described.

3. A lawn-sprinkler provided with a tubular member having a horizontal revoluble movement, and a nozzle carried by the tubular member and set at an inclination and having a rotatable movement on its axis simultaneously with the said revoluble movement of the tubular member, substantially as described.

4. A lawn-sprinkler having an upstanding open-ended tubular support provided at one end with means for connection with a water-supply, a tubular member having a horizontal revoluble movement and mounted upon and in communication with the top of the support, and an inclined nozzle mounted upon the tubular member and rotatable simultaneously with the said revoluble movement of the tubular member, substantially as described.

5. In a lawn-sprinkler, the combination with an inclined nozzle, of means for imparting to the same a horizontal revoluble movement, and means for rotating the nozzle on its axis simultaneously with its horizontal revoluble movement, substantially as described.

6. In a lawn-sprinkler, the combination with an upstanding inclined nozzle, of means for imparting a horizontal revoluble movement to the same, and means for rotating the nozzle upon its axis simultaneously with the said revoluble movement, substantially as described.

7. In a lawn-sprinkler, the combination with an upstanding open-ended tubular support having one end provided with means for connection with a water-supply, of a tubular member in communication with the support, means for imparting a horizontal revoluble movement to the tubular member, an inclined nozzle mounted to rotate upon the top of the tubular member, and means for rotating the nozzle upon its axis simultaneously with the horizontal revoluble movement of the tubular member, substantially as described.

8. In a lawn-sprinkler, the combination with a support having leg-standards, of an open-ended tubular post rising from and piercing the support, a hose-coupling carried by the lower end of the post, an open-ended tubular member rotatably carried by and rising above the post, an elbow carried by and rotatable with the upper end of the tubular member, a discharge-nozzle carried by the upper end of the elbow and rotatable thereon, means for rotating the tubular member to swing the nozzle in a circuitous path, and means to rotate the nozzle upon the elbow independently of the swinging movement thereof.

9. In a lawn-sprinkler, the combination of a tubular support having means for connection with a source of water, of a tubular member set at an inclination and mounted to swing in a circuitous path upon the support, a nozzle set at an inclination and mounted to rotate upon the tubular member, and means to frictionally engage the nozzle and thereby rotate the latter upon the tubular member independently of the swinging movement of the latter.

10. In a lawn-sprinkler, the combination with a tubular support having means for connection with a source of water-supply, of a tubular member set at an angle and mounted to rotate upon the support, a discharge-nozzle mounted to rotate upon the tubular member and having a friction wheel or disk, and a stationary friction device in frictional engagement with the wheel or disk to rotate the nozzle independently of the rotation of the tubular member.

11. In a lawn-sprinkler, the combination with a tubular support having means for connection with a water-supply, of a tubular member set at an inclination and mounted to rotate upon the top of the support, a discharge-nozzle set at an angle and mounted to rotate independently upon the tubular member, a friction disk or wheel carried by the nozzle and mounted concentrically with respect to the tubular member, and a stationary member in frictional engagement with the uppermost portion of the disk or wheel to simultaneously rotate the latter and the nozzle independently of the tubular member.

12. In a lawn-sprinkler, the combination with a substantially horizontal base having leg-standards, of a tubular post piercing the base and having its lower end provided with means for connection with a water-supply, of a tubular rotatable member mounted upon and set at an inclination to the upper end of the post, a nozzle set at an inclination to and mounted for independent rotation upon the tubular member, a friction wheel or disk carried by the nozzle and disposed concentrically with respect to the tubular member, posts rising from the base at opposite sides of the tubular post, and a stationary ring carried by said posts with the nozzle projected through the ring and the latter lying in frictional engagement with the upper side of the disk or wheel.



13. In a lawn-sprinkler, the combination with a base, of a tubular post rising therefrom, and having a hose-coupling and also provided with a lateral discharge-opening, a water-wheel in cooperative relation with the discharge-opening, a tubular member set at an inclination to and mounted for rotation upon the upper end of the tubular post, a gear-wheel carried by the upper end of the member, an operative connection between the water-wheel and the gear-wheel, a discharge-nozzle set at an inclination to and mounted for rotation upon the tubular member, a friction wheel or disk carried by the nozzle concentrically with the tubular member, and a ring embracing the tubular member and supported upon the base in frictional engagement with the uppermost edge of the friction wheel or disk to rotate the nozzle independently upon the tubular member.

14. The combination with a base, of a stationary tubular post rising therefrom and having a hose-coupling and also provided with a lateral discharge-opening, a water-wheel mounted in cooperative relation with the discharge-opening, a tubular member rotatably telescoped upon the post, a gear-wheel carried by the upper end of the member, an elbow also carried by the upper end of said member, a discharge-nozzle set at an inclination and rotatably telescoped upon the upper end of the elbow, a friction wheel or disk carried by the nozzle and set at an inclination to the post, stationary posts rising from the base at opposite sides of the tubular post, a ring supported by the posts and frictionally engaging the uppermost portion of the edge of the friction disk or wheel, and an operative connection between the water-wheel and the gear-wheel.

15. In a lawn-sprinkler, the combination with a base, of an upstanding tubular member carried thereby and having a hose-nozzle and also provided with a lateral discharge-opening, a nozzle set at an inclination to and rotatable upon the post, a substantially horizontal gear-wheel mounted upon the post and connected to the nozzle, a pair of supports rising from the base at opposite sides of the post, brackets carried by the supports, a shaft mounted in the brackets, a gear upon the shaft and in mesh with the first-mentioned gear, a water-wheel rotatably mounted upon one of the supports in cooperative relation with the discharge-opening of the tubular post, and an operative connection between the water-wheel and the shaft.

16. The combination with a base, of a tubular post rising therefrom and provided with a hose-coupling and a lateral discharge-opening, supports rising from the base at opposite sides of the post, a water-wheel rotatably mounted upon one of the supports in cooperative relation with the discharge-opening in the post, a worm mounted upon said support and in operative relation with the water-wheel, brackets carried by the supports, a substantially horisontal shaft carried by the brackets, a gear-wheel upon the shaft and in mesh with the worm, a worm upon the horizontal shaft, a tubular member rotatably telescoped upon the post and provided with a substantially horizontal gear in mesh with the worm on the shaft, and a discharge-nozzle carried by and set at an inclination to the top of the tubular member.

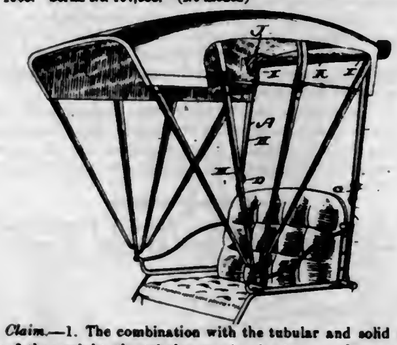
17. The combination with a base, of a tubular post rising therefrom and provided with a hose-coupling and a lateral discharge-opening, supports rising from the base at opposite sides of the post, a water-wheel rotatably mounted upon one of the supports in cooperative relation with the discharge-opening in the post, a worm mounted upon said support and in operative relation with the water-wheel, brackets carried by the supports, a substantially horizontal shaft carried by the brackets, a gear-wheel upon the shaft and in mesh with the worm, a worm upon the horizontal shaft, a tubular member rotatably telescoped upon the post and provided with a substantially horizontal gear in mesh with the worm on the shaft, an elbow carried by the upper end of the tubular member, a nozzle set at an inclination and mounted to rotate independently upon the upper end of the elbow, a friction wheel or disk carried by the nozzle and set at an inclination to the post, and a substantially horizontal ring embracing the nozzle and carried by the supports, said ring being in frictional engagement with the uppermost portion of the periphery of the friction wheel or disk.

18. A nozzle having a bracket extending from it at an angle and provided with a screw-threaded socket, and a headed spreader having a threaded shank engaging the socket, the head of the spreader being circular and adjustable across the discharge end of the nozzle, substantially as described.

19. In a lawn-sprinkler, the combination with a stand embodying legs, a ring connecting the upper ends of the legs, and crossed braces within the ring and provided at the point of crossing with an opening, of a top plate supported upon the ring and the braces and provided with a screw-threaded opening registering with the opening in the braces, a hose-coupling applied to the under side of the braces and registering with the opening therein, a tubular post having its lower screw-threaded end engaging the screw-threaded opening in the plate and also the internally-screw-threaded upper end of the coupling, and a nozzle connected to the upper end of the post.

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**757,161. BUGGY-TOP ATTACHMENT.** EDWARD WALTER, Keytesville, Mo., assignor of three-fourths to William G. Gaston, Henry L. Sneed, and Millard F. Courtney, Keytesville, Mo. Filed July 25, 1903. Serial No. 167,033. (No model.)



*Claim.*—1. The combination with the tubular and solid members of the upright, the tubular member having a transverse opening and the solid member a transverse groove, of the spring-actuated catch carried by the tubular member adapted to engage the transverse groove of the solid member, and the lever and rod for operating the said catch, as specified.

2. The combination with the tubular member having a transverse opening, of the solid member having a transverse groove, the casting having a transverse opening, the catch pivoted to the casting, the spring carried by the casting and bearing upon the catch, and the lever and rod for operating the catch, as specified.

3. The combination with the tubular member having a transverse opening, of the solid member having a transverse groove, the casting having a transverse opening coinciding with the transverse opening in the tubular member, the catch, the arms carrying the catch and pivoted to the casting, the yoke connecting the arms, the leaf-spring connected to the casting and bearing upon the catch, the lever and the rod connecting the lever and yoke, all arranged and adapted to operate substantially as shown and described.

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**757,162. SPIKE-EXTRACTOR.** ELMER E. WELSH, Lawrence, Kans., assignor to J. T. Blair and Robert Wray, trustees. Filed Apr. 17, 1903. Renewed Feb. 18, 1904. Serial No. 194,397. (No model.)



*Claim.*—1. In spike-extractors, the combination of a main lever, clutching-jaws mounted at the extremity of said main lever, and an operating-lever having pin-and-slot connections with said clutching-jaws.

2. In spike-extractors, the combination of a main lever; clutch-

ing-jaws pivoted to the extremities of said main lever; an operating-lever having sliding connections with said clutching-jaws, and means for controlling said operating-lever from the upper portion of said main lever.

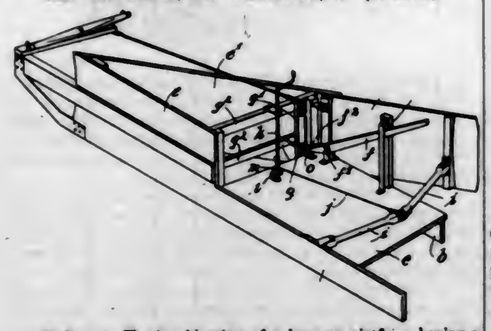
3. In spike-extractors, the combination of a main lever; clutching-jaws pivoted to the extremity of said main lever; an operating-lever having sliding connections with said clutching-jaws; a connecting-rod pivoted to said operating-lever, and a hand-lever pivoted to said main lever and said connecting-rod.

4. In spike-extractors, the combination of a main lever; clutching-jaws pivoted to the extremity of said main lever; an operating-lever having sliding connections with said clutching-jaws; a hand-lever pivoted to said main lever and controlling said operating-lever, and means for locking said clutching-jaws in position.

5. In spike-extractors, the combination of a main lever; clutching-jaws pivoted to the extremity of said main lever; recesses in said clutching-jaws; an operating-lever; projections on said operating-lever engaging said recesses, and mechanism for controlling said operating-lever.

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**757,163. SNOW-PLOW. WARREN F. WHEELER, Stoneham, Mass. Filed Nov. 11, 1903. Serial No. 180,644. (No model.)**



*Claim.*—1. The combination of a base or platform having a runner, a plow having a runner hinged to the base, and means supported by the base for tipping the plow sidewise.

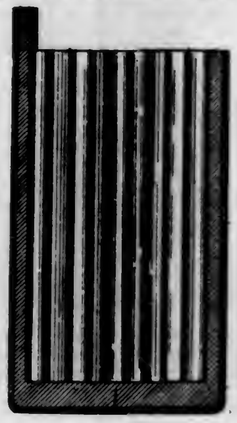
2. The combination of a base or platform having a runner, a plow having a runner hinged to the base, and a lever fulcrumed on the base and engaged with the plow.

3. The combination of a base or platform having a runner, a plow having a runner hinged to the base, means supported by the base for tipping the plow, and a sliding connection between the plow and base.

4. The combination of a base or platform having a runner, a plow having a runner hinged to the base, a lever fulcrumed on the base and engaged with the plow, and a sliding connection between the base and the plow, said connection including a vertical rod affixed to the plow and engaged with the lever.

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**757,164. BATTERY-CELL. EMERSON WHITMAN, Lynn, Mass. Filed July 2, 1903. Serial No. 164,063. (No model.)**



*Claim.*—1. A battery-cell, comprising a substantially cylindrical member of carbon surrounded by a coating of glass.

2. A battery-cell, comprising a substantially cylindrical member of porous carbon surrounded by a coating of glass, said glass permeating the pores of said porous carbon.

3. In a battery-cell, a composite cathode made of carbon and of glass.

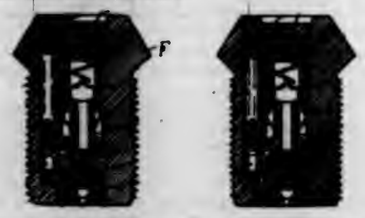
4. In a battery-cell, a composite cathode made of porous carbon saturated with glass.

5. In a battery-cell, a receptacle for holding the battery-plate, said receptacle being made of porous conducting material and covered exteriorly with glass.

6. In a battery-cell, the combination of a hollow member of conducting material, and a cylindrical coating of glass encircling said hollow member and adhering thereto.

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**757,165. PERCUSSION-FUSE FOR EXPLODING SHELLS. KARL WIESER, Rüttenscheid, near Essen-on-the-Ruhr, Germany, assignor to Fried. Krupp, Essen-on-the-Ruhr, Germany. Filed Apr. 30, 1902. Serial No. 105,249. (No model.)**



*Claim.*—1. In a percussion-fuse, the combination with a fuse-stock, and a non-rotatable primer, of two passages communicating ignition to the bursting charge, a delay-action device in one of said passages, and manually-operated means rotatable independently of the primer to one position to open the other passage and to another position to close it.

2. In a percussion-fuse, the combination with a fuse-stock, and a non-rotatable primer, of two passages communicating ignition to the bursting charge, a delay-action device in one of said passages, a cock turning independently of primer in the other passage and movable to one position to open said passage, and to another position to close said passage.

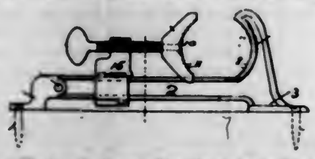
3. In a percussion-fuse, the combination with a fuse-stock, and a non-rotatable primer of two passages communicating ignition to the bursting charge, a delay-action device in one of said passages, a cock turning independently of primer in the other passage and movable to one position to open said passage, and to another position to close said passage, and means for fixing the cock in its respective positions.

4. In a percussion-fuse of substantially the character herein described, having two passages communicating ignition a delay-action device in one of said passages, a cock turning in and arranged to open and close the other passage, a spring-arm on said cock, and means engaging the spring-arm in the opened and closed positions of the cock.

5. In a percussion-fuse of substantially the character herein described, having two passages communicating ignition, a delay-action device in one of said passages, a cock turning in and arranged to open and close the other passage, a spring-arm on the free end of the cock, and recesses $J'$, $J^3$, in the fuse, into which the spring-arm enters at the respective ends of the cock's turning movement.

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**757,166. BONE-HOLDING DEVICE. KARL WIETSCH, Jr., Newark, N. J. Filed July 1, 1902. Serial No. 113,961. (No model.)**



*Claim.*—The herein-described butcher's bone-clamp, comprising opposite end feet 3, 4, and a raised bar 2, extending between said feet, an integral upwardly-projecting stop or rest 6, at one end of said bar, curved at its inner face to fit against a bone and being corrugated, a sliding carrier surrounding said bar and adapted to be set at any desired point thereon, a clamping-screw working in said carrier and a clamping member 9, loosely mounted on the end of said screw and presenting to the rest 6, a correspondingly curved and corrugated gripping-face, said feet having means for attachment to a bench or the like and forming stops to prevent inadvertent removal of the slide from the bar, and one of said feet being detachable to permit removal from the bar when desired.



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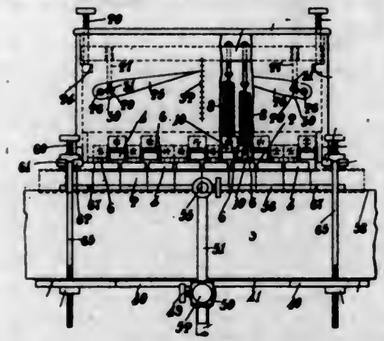
**757,167. COVER FOR PACKING VESSELS. CHARLES C. WOODS, Easton, Pa., assignor to Canister Manufacturing Company, Easton Pa. Filed July 8, 1903. Serial No. 164,710. (No model.)**



*Claim.*—In combination with a head for a packing vessel having an upwardly-extending flange surrounding an opening, a cap or cover having a depending flange to fit around the flange of the head, the said cap-flange being turned upwardly at its lower edge forming a rounded bead or lower edge, the said flange thence being bent outwardly and downwardly forming a concave rim surrounding the lower part of the said cap-flange, substantially as described.

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**757,168. EXERCISING ATTACHMENT FOR MUSICAL INSTRUMENTS. HARRY WRAITH, Bradford, England. Filed Mar. 11, 1902. Serial No. 97,769. (No model.)**



*Claim.*—1. An attachment for musical instruments comprising a series of keys, a frame in which said keys are pivoted at their rear ends, means for holding said frame in position with the keys thereof over the keys of the instrument, and means carried by the frame for applying an adjustable tension to the said keys, the front ends of the keys being exposed for manipulation by the fingers, substantially as described.

2. In combination, a frame adapted to be attached to the musical instrument, keys pivotally carried thereby, a cross-bar, means for adjustably holding said cross-bar in the frame and a series of springs connecting the said cross-bar and the keys, substantially as described.

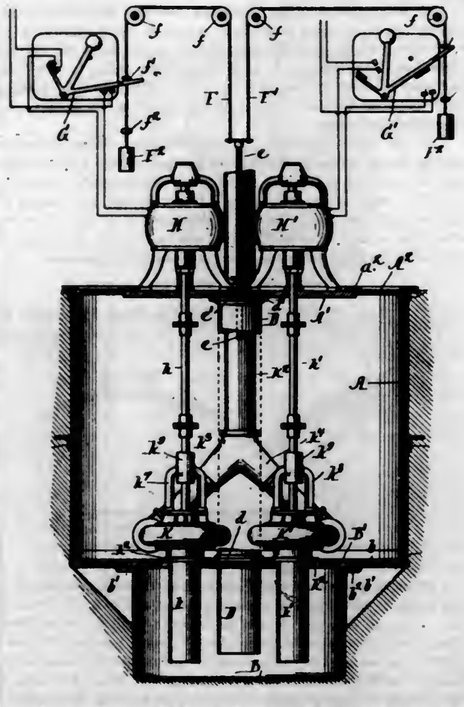
3. An attachment for musical instruments for exercising the fingers and wrists comprising a frame, means for securing the same in proximity to the keyboard including an adjustable pillar adapted to rest on the floor with means for clamping the same to the instrument, keys pivotally connected to said frame and means for applying a variable spring tension to said keys, substantially as described.

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**757,169. AUTOMATIC SEWAGE-EJECTOR. EDWARD YEOMANS, Chicago, Ill. Filed Oct. 12, 1903. Serial No. 176,634. (No model.)**

*Claim.*—1. An apparatus of the character described comprising an inclosing casing, a pump within said casing, a liquid-tight tank or reservoir connected to said inclosing casing and extending below the bottom thereof, a pipe for admitting liquid to said tank or reservoir, suitable pipes leading from said tank or reservoir to the pump and from the pump to the outside of the inclosing casing.

2. An apparatus of the character described, comprising an inclosing casing provided with an annular top plate and cover, a subjacent tank or reservoir of smaller diameter than said casing and provided with an expanded annular portion fixed to the bottom of said casing, a cover for said tank or reservoir resting upon said annular portion, pump mechanism within said casing and induction and discharge pipes connected with the cover of said tank or reservoir.



3. An apparatus of the character described comprising an inclosing casing, a pump within said casing, a liquid-tight tank or reservoir located below said casing and having an expanded annular portion connected to the bottom of said casing, a pipe for admitting liquid to the tank or reservoir and suitable pipes leading from said tank or reservoir to the pump and from the pump to the outside of the casing.

4. An apparatus of the character described, comprising an inclosing casing, pump mechanism within said casing, a liquid-tight tank or reservoir having an expanded annular portion connected to the bottom of said casing and provided with braces extending between said annular portion and the side wall of said tank or reservoir.

5. An apparatus of the character described, comprising an inclosing casing, pump mechanism within said casing, a liquid-tight tank or reservoir connected to said inclosing casing and extending below the bottom thereof, a float pipe or extension leading upwardly from said tank or reservoir to a point above the pump mechanism, a float, suitable means whereby said float controls the action of said pump mechanism and suitable pipes for the admission and discharge of liquid to and from said tank or reservoir.

6. An apparatus of the character described, comprising an inclosing casing, pump mechanism within said casing, a liquid-tight tank or reservoir connected to said casing and extending below the bottom thereof, a float-pipe leading upwardly from the lower part of said tank or reservoir to a point above said pump mechanism, a float, suitable means whereby said float controls the action of said pump mechanism and suitable pipes for the admission and discharge of liquid to and from said tank or reservoir.

7. An apparatus of the character described, comprising an inclosing casing, pump mechanism within said casing, a liquid-tight tank or reservoir connected to said casing and extending below the bottom thereof, covers for said tank or reservoir and for said casing and induction and float pipes extending between said covers and supporting the cover of said inclosing casing, a float, suitable means whereby said float controls the action of said pump mechanism and a suitable discharge-pipe leading from the tank or reservoir.

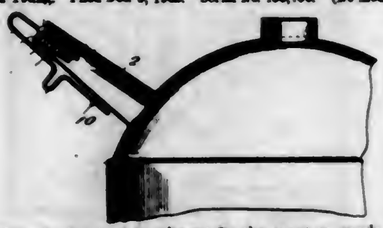
8. An apparatus of the character described, comprising an inclosing casing, pump mechanism within said casing, a liquid-tight tank or reservoir connected to said casing and extending below the bottom thereof, said tank or reservoir being provided at its top with a port and with a valve for closing said port and suitable pipes for the admission and discharge of liquid to and from said tank or reservoir.

9. An apparatus of the character described comprising an inclosing casing, a pump within said casing, a liquid-tight tank or reservoir connected to said casing and extending below the bottom thereof, an induction-pipe leading through said casing to said tank and provided with a valve-seat and valve and suitable pipes leading from the tank or reservoir to the pump and from the pump to the outside of the casing.

10. An apparatus of the character described, comprising an inclosing casing, pump mechanism within said casing, a liquid-tight tank or reservoir connected to said casing and extending below the bottom thereof, an induction-pipe leading through said casing to said tank and provided with a valve-seat and with a vertically-movable valve, a valve-stem leading from said valve through the top of the inclosing casing and means for operating said valve-stem.

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**757,170. VALVE ATTACHMENT FOR OIL-CANS.** ERNEST A. YOUNG and LYNN C. FULLER, Hardwick, Vt.; said Fuller assignor to said Young. Filed Dec. 3, 1902. Serial No. 133,736. (No model.)




*Claim.*—1. A valved attachment for the spout or nozzle of a can, consisting of a band having an inner flange to form a valve-seat, bars projected from the band, a guide connecting the bars at their outer ends, a stem passed through the guide and band, a valve carried by the stem and closing outward against the aforesaid valve-seat and serving with the said guide and bars to direct the stem in its movements, and a spring mounted upon the stem and confined between the valve and guide and normally holding the valve seated, substantially as specified.

2. A valved attachment for the spout or nozzle of a can, consisting of a band having an inner flange to form a valve-seat, bars grouped about the central line and extended from said band in parallel relation, a guide connecting the bars at their outer ends, a valve closing outward against said valve-seat and directed in its movements by said bars, a stem carrying the valve and working through the aforementioned guide and projected beyond the band and bent to form a finger-rest, and a spring mounted upon the stem and confined between the valve and guide, substantially as set forth.

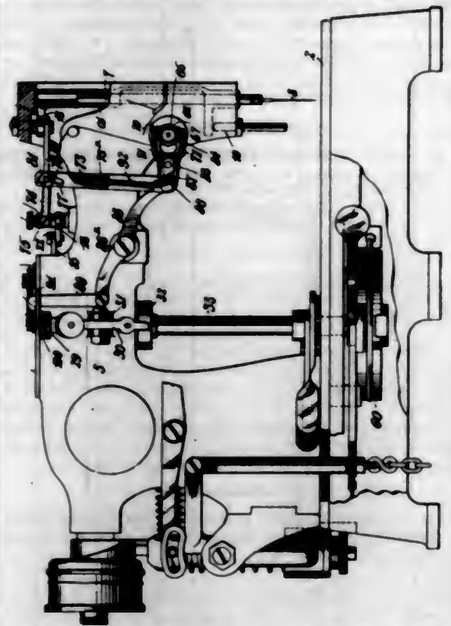
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**757,171. THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.** EDWARD B. ALLEN, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Nov. 24, 1903. Serial No. 183,445. (No model.)

*Claim.*—1. In a sewing-machine, the combination with stitch-forming devices, and a tension device normally acting upon the thread for each stitch-setting operation, of periodically inoperative thread-feeding mechanism and automatically-acting devices for positively operating the same after a predetermined number of stitches has been formed.

2. In a sewing-machine, the combination with stitch-forming mechanism comprising a needle and complemental under-thread stitch-forming devices, of a tension device acting uniformly upon the thread in all the stitch-setting operations, means for setting the stitches, a device whereby the position of concatenation of the upper and lower threads may be varied, and automatic means for controlling the operation of said device for changing the character of the stitches of succeeding groups at predetermined times.

3. In a sewing-machine, the combination with stitch-forming devices, of thread tension and feeding devices, a take-up normally acting to set each stitch and to draw thread for the succeeding stitch for a given number of stitches, and automatic actuating means operating the thread-feeding device at fixed and predetermined times to supply thread for each of a succeeding number of stitches, whereby the character of the stitches of successive groups is changed.



4. In a sewing-machine, the combination with stitch-forming devices and a uniformly-acting tension device, of a thread-feeding mechanism operating in conjunction with said tension device, and means for causing the alternate action and inaction of said thread-feeding mechanism for feeding the thread in successive groups of stitches.

5. In a sewing-machine, the combination with stitch-forming devices, and a take-up, of a rotary tension-wheel, and means alternately active and inactive for feeding the thread in successive groups of stitches in effecting the periodical rotation of said tension-wheel independently of the pull of the thread under the action of the take-up in the normal operation of the stitch-forming devices.

6. In a sewing-machine, the combination with stitch-forming devices, and a take-up, of a rotary tension-wheel, and positively-actuated means alternately operated for successive groups of stitches to rotate said tension-wheel and to permit its rotation by the normal pull of the thread under the action of the take-up in the stitch-forming operation.

7. In a buttonhole stitching and barring machine, the combination with stitch-forming devices, a take-up, and barring mechanism, of a tension device acting uniformly upon the needle-thread in the setting of all the stitches, and means acting in advance of the take-up in the barring operation for feeding the exact amount of thread required for the bar-stitches.

8. In a buttonhole stitching and barring machine, the combination with stitch-forming devices, comprising upper and lower thread mechanism, barring mechanism and a tension device, of means for positively locating, under uniform conditions of tension for the stitch-setting operation, the position of the concatenation of the threads at different points in reference to the needle-punctures for the side and bar stitches.

9. In a buttonhole stitching and barring machine, the combination with stitch-forming devices, and barring mechanism, of a tension device and thread-feeding mechanism inactive for feeding the thread during the side-stitching operation, and means for automatically bringing said thread-feeding mechanism into action during the formation of the barring-stitches.

10. In a buttonhole stitching and barring machine, the combination with stitch-forming mechanism and barring mechanism, of a tension device and thread-feeding mechanism inoperative in feeding the thread during the side-stitching operation, and means connected with the barring mechanism for automatically bringing said thread-feeding mechanism into action during the formation of the barring-stitches.



11. In a buttonhole stitching and barring machine, the combination with stitch-forming devices, and barring mechanism, of a thread-feeding device inoperative upon the thread during the side stitching, and automatically-acting means for positively operating the same to determine the exact amount of thread used for the barring-stitches.

12. In a buttonhole stitching and barring machine, the combination with stitch-forming devices comprising a laterally-moving needle-bar and means for adjusting the throw of the same, and barring mechanism, of a thread-feeding device and means governed by the lateral movement of the needle-bar for determining the exact amount of thread used for the barring-stitches.

13. In a buttonhole stitching and barring machine, the combination with stitch-forming devices and barring mechanism, of a periodically-acting thread-feeding device and means connected with the barring mechanism for controlling its time of action.

14. In a buttonhole stitching and barring machine, the combination with stitch-forming devices comprising a needle and lower thread-carrying loop-taker, and barring mechanism, of a rotary needle-thread tension device, and means acting during the barring operation to positively rotate said tension device to give up slack thread after said loop-taker begins to expand the needle-thread loops.

15. In a sewing-machine, the combination with a vertically-reciprocating and laterally-vibrating needle and complemental stitch-forming devices, and means for varying the lateral movements of said needle, of a tension device, and thread-feeding mechanism with means for actuating the same to feed the thread proportionately to the lateral movements of the needle.

16. In a sewing-machine, the combination with stitch-forming devices, a take-up and a continuously-operating tension device, of thread-feeding mechanism and periodically-acting means controlled in its time of action by an operative member of the machine to cause the action of the thread-feeding mechanism during the formation of alternate groups of stitches for measuring off a given length of thread intermediate the tension device and the stitch-forming devices, whereby the thread thus drawn off may be freely manipulated in the stitch formation but may be drawn taut by the take-up against the tension device in setting the stitches.

17. In a sewing-machine, the combination with stitch-forming devices, a tension device uniformly operative in the setting of each stitch, and a take-up normally acting to successively tighten the thread against the tension in setting each stitch and draw-thread through the tension for the succeeding stitch, of means acting periodically upon the tension device to prevent the normal thread-drawing action of said take-up upon the thread after the setting of the stitch and thereby changing the character of the stitches of successive groups.

18. In a buttonhole stitching and barring machine, the combination with stitch-forming devices, and barring mechanism for varying the relative lengths of the stitches for the side-stitching and barring operations, of a constant tension device, a take-up normally acting to successively tighten the thread against the tension device in setting each stitch and draw-thread through the tension for the succeeding stitch, and means controlled in its time of action by the barring mechanism and operating upon the tension device to confine the action of the take-up to setting the bar-stitches.

19. In a buttonhole stitching and barring machine, the combination with stitch-forming devices, and barring mechanism for varying the relative lengths of the stitches for the side-stitching and barring operations, of a tension device, continuously but normally ineffectively operating thread-feeding mechanism, and periodically-acting means controlled by the barring mechanism for throwing the latter into effective operation.

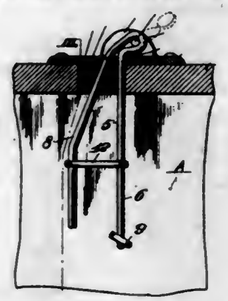
20. In a sewing-machine, the combination with stitch-forming mechanism and a rotary tension-wheel with connected toothed wheel, of a yoke having toothed jaws embracing said toothed wheel, means for reciprocating said yoke, and means for automatically throwing the jaws of said yoke into and out of engagement with said toothed wheel to cause the periodical rotation of said tension-wheel.

21. In a sewing-machine, the combination with stitch-forming mechanism and a rotary tension-wheel with connected toothed wheel, of a yoke having yielding toothed jaws embracing said toothed wheel, and means for automatically throwing said jaws simultaneously into and out of engagement with said toothed wheel to cause the periodical rotation of said tension-wheel.

22. In a sewing-machine, the combination with stitch-forming devices, and a uniformly-acting tension device, of means controlled in the time of action by an operative member of the machine acting independently of the relative movements of the needle and work and operating to periodically change the character of the individual stitches of successive groups of predetermined number.

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**757,172. BOX-FASTENER.** CHARLES W. BEEHLER, St. Louis, Mo. Filed Dec. 5, 1903. Serial No. 183,986. (No model.)




*Claim.*—1. In a box-fastener, the combination of an apertured lid-plate, and a spring-catch consisting of a single wire comprising a swivel-arm loosely connected to the box, a spring-arm, means for confining said spring-arm arranged to receive the pressure thereof when the catch is moved, and a return-bend arm located at the outer end of said swivel and spring arms; said return-bend arm being adapted to pass through said lid-plate and engage the outer face of the plate, substantially as set forth.

2. In a box-fastener, the combination of an apertured lid-plate, and a spring-catch consisting of a single wire comprising a swivel-arm, a spring-arm, a lid-plate-engaging arm, and a staple confining said swivel and spring arms, substantially as set forth.

3. In a box-fastener, the combination of an apertured lid-plate and a spring-catch consisting of a single wire comprising a swivel-arm, a spring-arm, a lid-plate-engaging arm, a staple confining said swivel and spring arms, and a staple confining the swivel end of said swivel-arm, substantially as set forth.

4. In a box-fastener, the combination of an apertured lid-plate, and a spring-catch consisting of a single wire comprising a swivel-arm having a prong, a spring-arm, a lid-plate-engaging arm, and means for confining said swivel and spring arms, substantially as set forth.

5. In a box-fastener, the combination of an apertured lid-plate, and a spring-catch consisting of a single wire comprising a swivel-arm having a prong, a spring-arm, a lid-plate-engaging arm, a staple straddling said swivel and spring arms, and a staple for holding said prong in the wall of the box, substantially as set forth.

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**757,173. DREDGE.** ALBERT BOSCHKE, San Francisco, Cal. Filed Mar. 25, 1903. Serial No. 149,604. (No model.)

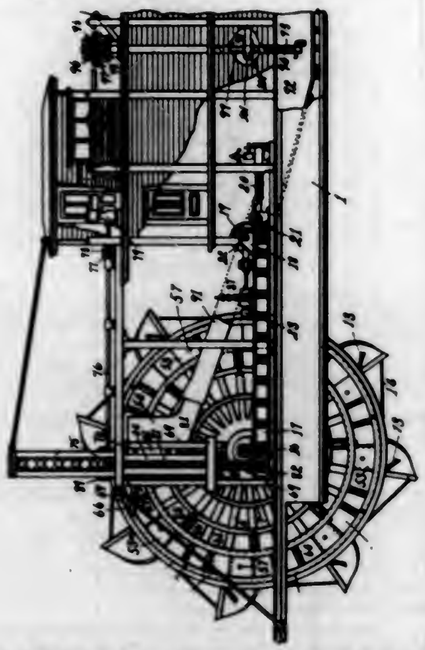
*Claim.*—1. In a dredger, the combination of a wheel, dredging-buckets secured on the periphery thereof, said wheel having an annular plate, a pair of friction-rollers engaging the sides of said plate, shafts carrying said rollers, bearings for said shafts, a transverse slideway for said bearings, and means for exerting a yielding pressure toward each other upon said bearings, substantially as described

2. In a dredger, the combination of a wheel, a series of dredging-buckets carried on the periphery of said wheel, said wheel having annular side plates, two pairs of friction-rollers engaging said side plates, shafts carrying said rollers, bearings for said shafts in pairs, a transverse slideway for said bearings and means for exerting a yielding pressure upon each pair of bearings toward each other, substantially as described.

3. In a dredger, the combination of a wheel, a series of dredge buckets secured upon the periphery of said wheel, said wheel having an annular friction-plate, a pair of friction-rollers engaging said plate, shafts movable to and from each other carrying said rollers, means for driving said shafts in unison, and means for resiliently forcing said shafts toward each other, said means comprising compound levers engaging the bearings of said shafts, and a spring between said compound levers to operate the same, substantially as described.

4. In a dredger, the combination of the dredging-wheel, and dredging-buckets said dredging-wheel having a friction-plate, of a pair of friction-rollers, and means for forcing said rollers toward each other, said means comprising a pair of levers extending sub-

stantially parallel from their pivots, an intermediate lever, links connecting said intermediate lever with each of the other levers, one of said links being at the end of said lever and the other at an intermediate point thereof, a spring upon the other end of said intermediate lever, and a link connected with the opposite end of said spring and with the lever to which the other terminal link is connected, substantially as described.



5. In a dredger, the combination with the wheel having a series of dredging-buckets and a friction-plate, of a pair of friction-rollers for applying power to said plate, and means for forcing said rollers toward each other to press the plate therebetween, comprising the levers 36, 37 operatively connected with said rollers, the link 42, the lever 43 to which said link is jointed, means for pivotally connecting said lever 43 with the lever 37, the spring 48 engaging the other end of the lever 43, and the link 50 engaged by the other end of said spring, substantially as described.

6. In a dredger, the combination with the wheel having a series of dredging-buckets and a friction-plate, of a pair of friction-rollers for applying power to said plate, and means for forcing said rollers toward each other to press the plate therebetween, comprising the levers 36, 37 operatively connected with said rollers, the link 42, the lever 43 to which said link is jointed, means for pivotally connecting said lever 43 with the lever 37, means for varying the length of said pivotal connection.

7. In a dredger, the combination with the wheel having a series of dredging-buckets and a friction-plate, of a pair of friction-rollers for applying power to said plate, and means for forcing said rollers toward each other to press the plate therebetween, comprising the levers 36, 37 operatively connected with said rollers, the link 42, the lever 43 to which said link is jointed, means for pivotally connecting said lever 43 with the lever 37, the spring 48 engaging the other end of the lever 43, and the link 50 engaged by the other end of said spring, and means for varying the amount of compression of said spring.

8. In a dredger, the combination of a wheel, a series of peripheral buckets secured thereto and having lips arranged to cut the material, said wheel having side plates with openings therein alternately at opposite sides of the wheel registering with alternate buckets, circumferentially-sliding closures for said openings, hoppers at opposite sides of the wheel into which the material is discharged through said openings, and means automatically operated by the advance of the wheel for withdrawing said closures from said openings as the openings arrive at the hopper, substantially as described.

9. In a dredger, the combination of a wheel, a series of peripheral buckets secured thereto and having lips arranged to cut the material, said wheel having side plates with openings therein alternately at opposite sides of the wheel registering with alternate buckets, circumferentially-sliding doors closing said openings, hoppers at opposite sides of the wheel into which the material is discharged through said openings, and means automatically operated by the advance of the wheel for withdrawing each door in succession as its opening arrives at said hopper, substantially as described.

10. In a dredger, the combination of a dredging-wheel having a series of buckets constructed to cut the material to be dredged and having annular side plates, said buckets having conduits leading to openings in said side plates, the hoppers, doors for closing said openings, a radially-movable bolt for each door normally holding said door against rearward movement, and means for automatically arresting said door as the wheel advances when the opening arrives opposite to the hopper, substantially as described.

11. In a dredger, the combination of a wheel, a series of dredging-buckets carried thereby, having conduits leading to opposite sides of the wheel alternately, wheel-plates at opposite sides of the wheel having openings to which the conduits lead, rings secured upon said wheel-plates, doors sliding between said rings, hoppers, and means for withdrawing the doors from the openings to permit the material to discharge into the hoppers, substantially as described.

12. In a dredger, the combination of a wheel, a series of dredging-buckets carried thereby, having conduits leading to opposite sides of the wheel alternately, wheel-plates at opposite sides of the wheel having openings to which the conduits lead, rings secured upon said wheel-plates, studs connecting said rings with said plates, friction-rollers on said studs.

13. In a dredger, the combination of a wheel, having annular side plates, a series of dredging-buckets secured thereto, each plate having a series of openings through which the buckets discharge, doors closing said openings, a hopper on each side of the wheel, and means for automatically withdrawing each door as the corresponding opening arrives at the hopper, said means comprising a projection upon the door, and a pivoted hook upon the hopper, said wheel having means for disengaging said hook from said projection to permit said door to advance with the wheel when the door has been sufficiently withdrawn, substantially as described.

14. In a dredger, the dredging-wheel having the annular side plates, the rings secured thereon, the buckets, and the doors between the rings, said side plates having the radial ribs 64 for limiting the movements of the doors, substantially as described.

15. In a dredger, the wheel having the annular side plates, the buckets discharging through openings in said side plates, and the doors suitably guided upon the sides of said plates, said plates having means for limiting the movements of the doors while permitting the door to move either in advance or behind a corresponding opening to allow the opening to be open in either case, substantially as described.

16. In a dredging-machine, the wheel having the side plates with openings, the doors sliding over said openings, and the individual bolts for said doors, said bolts moving radially of said wheel, substantially as described.

17. In a dredger, the combination of a wheel, the swinging girders, the bearings on the ends of the girders for the shaft of the wheel, a vertical screw on each side of the wheel, means for rotating said screws in unison, nuts on said screws moving vertically with the rotary movement of the screws, and connections between said nuts and girders to support the latter, substantially as described.

18. In a dredger, the combination of the wheel having dredging-buckets, the swinging girders, the bearings for the wheel-shaft on the ends of said girders, the vertical screws on opposite sides of the wheel, the worm-gears on the upper end of the screws, the longitudinal shafts having worms engaging said worm-gears, means for rotating said longitudinal shafts in unison, nuts on said screws and connections between said nuts and girders to support the latter from the former, substantially as described.

19. In a dredger, the combination of the wheel, the swinging girders, the bearings on the ends of the girders for the shaft of the wheel, a vertical screw on each side of the wheel, means for rotating said screws in unison, nuts on said screws moving vertically with the rotary movement of the screws, and connections between said nuts and girders to support the latter, hoppers into which the material is discharged and connections between said hoppers and nuts whereby the hoppers rise and fall with the wheel, substantially as described.

20. In a dredger, the combination of the wheel, the swinging girders, the bearings on the ends of the girders for the shaft of the wheel, a vertical screw on each side of the wheel, means for rotating said screws in unison, nuts on said screws moving vertically with the rotary movement of the screws, and connections between said nuts and girders to support the latter, hoppers into which the material is discharged vertical rails, and guides for said hoppers engaging said rails to guide the hoppers in their vertical movement, and connections between said hoppers and nuts whereby the hoppers rise and fall with the wheel, substantially as described.

21. In a dredger, the combination of a wheel, dredging-buckets carried thereby, vertically-swinging girders, bearings carried at the free ends of said girders for the shaft of the wheel, vertical screws on opposite sides of the wheel, means for rotating said screws in unison, nuts on said screws vertically-movable carriers supported by said nuts, hangers and links connecting said carriers with said girders, hoppers at the sides of the wheel for discharging the material cut by the buckets, supports for said hoppers on said carriers, vertical guide-rails, and means secured upon the hoppers for guiding said hoppers on said rails, substantially as described.

22. In a dredger, the combination of the wheel, the dredge-buckets secured thereon, the vertically-swinging girders, the bearings on the ends of the girders for the shaft of the wheel, a vertical screw on each side of the wheel, means for rotating said screws in unison, nuts on said screws moving vertically with the rotary movement of the screws, carriers supported upon said screws and moved therewith, means for supporting the ends of the girders upon said carriers, and equalizing means for equalizing or balancing the weight upon the carriers, substantially as described.

23. In a dredger, the combination of the wheel, the dredge-buckets secured thereon, the vertically-swinging girders, the bearings on the ends of the girders for the shaft of the wheel, a vertical screw on each side of the wheel, means for rotating said screws in unison, nuts on said screws moving vertically with the rotary movement of the screws, carriers supported upon said screws and moved therewith, said carriers extending to the outside of the nuts, and means for supporting the weight of the girders upon the carriers both at the inside and at the outside of the nuts, substantially as described.

24. In a dredger, the combination of the wheel, the dredge-buckets secured thereon, the vertically-swinging girders, the bearings on the ends of the girders for the shaft of the wheel, a vertical screw on each side of the wheel, means for rotating said screws in unison, nuts on said screws moving vertically with the rotary movement of the screws, carriers supported upon said screws and moved therewith, said carriers extending to the outside of the nuts, cables attached to said carriers on opposite sides of the nuts, and fixed pulleys above and below said carriers around which said cables are carried, thereby equalizing or distributing the weight of the carriers and girders upon the nuts, substantially as described.

25. In a dredger, the combination of a wheel, a series of peripheral buckets secured thereon and having lips arranged to cut the material, conduits from said buckets discharging alternately on opposite sides of the wheel, circumferentially-sliding closures for said conduits, hoppers at opposite sides of the wheel into which the material is discharged from said conduits, and means automatically operated by the advance of the wheel for withdrawing said closures from said openings as the openings arrive at the hoppers, substantially as described.

26. In a dredger, the combination of a wheel, bearings for the shaft thereof, carriers for said bearings, means for balancing the weight of the bearings on said carriers, nuts supporting said carriers, vertical screws on said side of the wheel through said nuts and means for rotating said screws in unison to raise and lower the wheel, substantially as described.

27. In a dredger, the combination of a wheel, bearings for the shaft thereof, carriers for said bearings, means for balancing the weight of the bearings on said carriers, said means comprising cables attached to said carriers on opposite sides of the nuts, and fixed pulleys above and below said carriers around which said cables are passed, nuts supporting said carriers, vertical screws on each side of the wheel through said nuts and means for rotating said screws in unison to raise and lower the wheel, substantially as described.

28. In a dredger, the combination of a dredging-wheel having buckets, and hoppers at the sides of said wheel into which the material is discharged, chutes leading from said hoppers, pump-wells into which said chutes discharge the material, pipes extending vertically upward from near the bottom of each well, screw-propellers in said pipes, and a pipe-line into which the material is discharged by said screw-propellers, substantially as described.

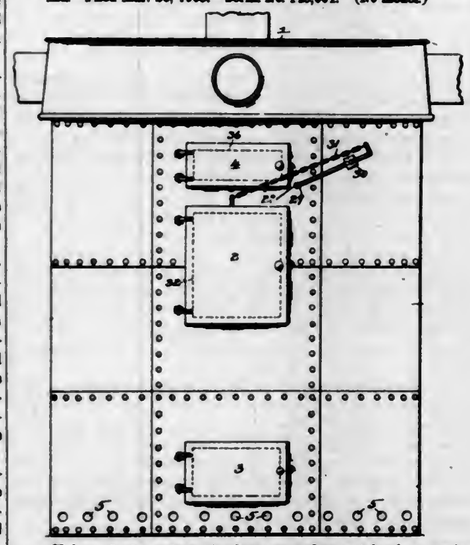
29. In a dredger, the combination of a wheel having a series of excavating-buckets on its periphery, a hopper into which the material so excavated is discharged, a pump-well, a conduit from said hopper to said pump-well, a pipe leading from near the bottom of said pump-well, a screw-propeller in said pipe, and a pipe-line into which the material is discharged by said screw-propeller, substantially as described.

30. In a dredger, the combination of a wheel having a peripheral series of dredging-buckets, hoppers at the sides of the wheel into which the material is discharged from said buckets, pump-wells, conduits from said hoppers to said pump-wells, pipes leading vertically from near the bottom of said pump-wells, screw-propellers in said pipes, outlet-tubes directed diagonally upward and then horizontally and converging toward the rear end, and a single pipe into which they discharge, said pipe conveying the spoil to the place of deposit, substantially as described.

31. In a dredger, the combination with the dredger proper, provided with means for excavating the material, means for elevating the material so excavated, and a pipe for conducting the material to the rear end, of a barge having an intermediate pipe thereon, and a rigid coupling flexibly connecting a corner of the barge with a corner of the dredger, substantially as described.

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**757,174. HOT-AIR FURNACE.** WILLIAM W. BRYAN, Angola, Ind. Filed Mar. 20, 1903. Serial No. 148,691. (No model.)



*Claim.*—1. In a hot-air furnace, a fire-pot having openings around its base, and staves secured to the outside of said fire-wall, as and for the purpose described.

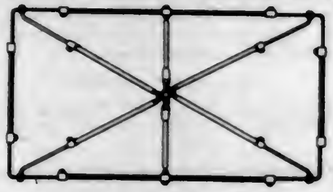
2. In a hot-air furnace, a casing, a platform erected therein, a fire-wall erected on said platform, having openings at its base, staves secured to the outside of said fire-wall, a combustion-chamber above and around said fire-wall, a heating-chamber outside of said combustion-chamber, a flue-opening in the center of the top of said heating-chamber, and tubes connecting the platform with the top of said heating-chamber, substantially as shown and described.

3. In a hot-air furnace, a casing having suitable doors, and openings at its base for the admission of cold air, a platform erected in said casing, a fire-wall erected on said platform having openings around its base, staves secured to the outside of said fire-wall, a combustion-chamber above and around said fire-wall, a heating-chamber outside of said combustion-chamber, a flue-opening in the center of the top of said heating-chamber, and tubes connecting the platform with the top of said heating-chamber, substantially as shown and described.

4. In a hot-air furnace, a casing having suitable doors, and openings at its base for the admission of cold air, a platform erected inside of said casing, a fire-wall erected on said platform, having openings at its base, staves secured to the outside of said fire-wall, a combustion-chamber above and around said fire-wall having an opening in its top, a damper pivotally mounted in said opening and controlled by a counterweight, a heating-chamber outside of said combustion-chamber, a flue-opening in the center of the top of said heating-chamber and in vertical alinement with the damper-opening aforesaid, and tubes connecting the platform with the top of said heating-chamber, substantially as shown and described.

5. In a hot-air furnace, a casing having suitable doors, and openings at its base for the admission of cold air, a platform erected in said casing, a fire-wall erected on said platform having openings around its base, staves secured to the outside of said fire-wall, a combustion-chamber above and around said fire-wall having an opening in its top, a damper pivotally mounted in said opening and controlled by a counterweight, a heating-chamber outside of said combustion-chamber, a flue-opening in the center of the top of the heating-chamber and in vertical alinement with the damper-opening aforesaid, and tubes connecting the platform with the top of said heating-chamber, substantially as shown and described.

## 757,175. ADJUSTABLE CANOPY. EDWARD G. BURLAND, Watsonville, Cal. Filed Mar. 19, 1903. Serial No. 148,629. (No model.)



*Claim.*—1. A canopy having an elastic framework possessing inherent elasticity and adapted to fit over frames of various shapes and sizes, said canopy having a centrally-located open-collar portion in its top and opening radially through one side of the canopy.

2. A canopy having a covered framework possessing inherent elasticity and adapted to fit over supporting-frames of various shapes and sizes, said canopy having, in its top, a centrally-located open collar leading radially through one side of the canopy, and means for securing together the opposite edges of the radial opening.

3. A canopy-top having a framework made of elastics to conform in shape and size to various supporting means said canopy-top having an open collar centrally located and opening through the side; suspending devices around the edges of the top; and a curtain depending from said top and having suspending devices to detachably engage those of said top, said curtain separate from the canopy-top.

4. The combination with a canopy-frame having a rectangular base and means for centrally supporting it from above, of a canopy-top having an elastic skeleton framework, said top open at one side and having an open-collar portion to embrace the said frame-support, means for securing the meeting edges of the opening in said top, hooks along the lower edge of the top engaging the base, and curtains hooking over the edge of said base and draping downward from said top to complete the canopy.

## 757,176. CONCENTRATING SLUICE-BOX. CHARLES M. CARTER, Sultan, Wash. Filed June 26, 1903. Serial No. 163,304. (No model.)



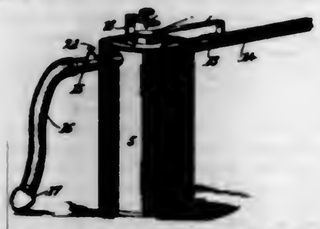
*Claim.*—1. A sluice-box having a series of bottomless riffles in its lower portion, a series of pliable chutes spanning the open lower sides of the riffles and adapted to be lowered to inclined positions, and false-bottom members attached individually to the pliable chutes and arranged to span the lower open sides of said riffles and thereby close the latter.

2. A sluice-box having a series of bottomless riffles, a series of pliable chutes, hinged members attached to said chutes and arranged to span the lower open sides of the riffles for closing them, and means for clamping the free ends of said hinged members individually in raised positions.

3. A sluice-box having a series of bottomless riffles, a series of members hinged to said sluice-box and disposed to span the riffles therein for closing the latter, a pliable chute attached to the sluice-box and to the hinged members, and clamps for individually holding said hinged members in closed position.

4. A sluice-box having a series of spaced members arranged to form a plurality of bottomless riffles, a series of movable members adapted in one position to close the lower sides of said bottomless riffles, a series of chutes attached to said movable members and shiftable therewith, and means for holding said movable members in their closed and opened positions.

## 757,177. PNEUMATIC MASSAGE APPARATUS. FREDERICK H. CRABTREE, Anaconda, Mont. Filed Nov. 18, 1903. Serial No. 181,611. (No model.)



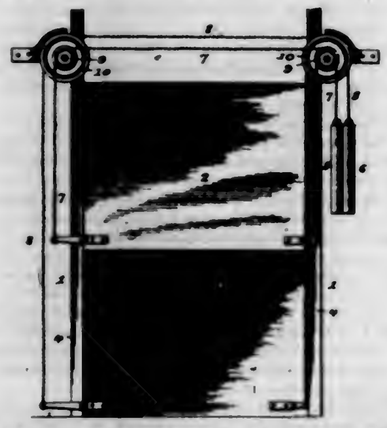
*Claim.*—1. The combination of a cylinder having an opening in the bottom thereof, a vacuum-tube leading into said cylinder, an outlet-tube leading from the cylinder, a piston movable in the cylinder, and a valve operated by said piston.

2. The combination of a cylinder having an opening formed therein for the admission of air, a vacuum-tube connected with said cylinder, a flexible tube also connected with said cylinder, a spring-tensioned valve designed to normally close the opening in the cylinder, a rod carried by said piston for opening the valve at predetermined times to admit atmosphere into the cylinder, and means comprising a bracket and an adjustable screw carried thereby, for regulating the movement of the valve away from its seat, substantially as set forth.

3. In a pneumatic massage apparatus, the combination of a hollow member provided with a valve, a piston disposed within said hollow member and controllable by atmospheric pressure but otherwise free, means for varying the air-pressure upon one side of said piston without affecting the air-pressure upon the other side thereof, a valve to be opened by movements of said piston, and a pneumatic connection between said hollow member and the organ to be treated.

4. In a pneumatic massage apparatus, the combination of a hollow member provided with a valve, a piston loosely disposed within said hollow member and provided with a stem for opening said valve, means for applying atmospheric pressure to one side of said piston for the purpose of moving the same relatively to said valve, a pneumatic member for connecting said hollow member with the organ to be treated, and an adjustment screw for partially closing said pneumatic member.

## 757,178. VERTICALLY-MOVING DOOR. WILLIAM A. CROSS, Chicago, Ill. Filed Aug. 1, 1903. Serial No. 167,820. (No model.)



*Claim.*—1. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a pair of individual counterweights, a pair of individual flexible connections attached at one end to the respective counterweights and at the other end to the lower portion of the respective door-sections, individual overhead pulleys for the passage of said flexible connections, the said pulleys having different diameters and secured together so as to rotate in unison, and means for imparting rotation to said pulleys, substantially as set forth.

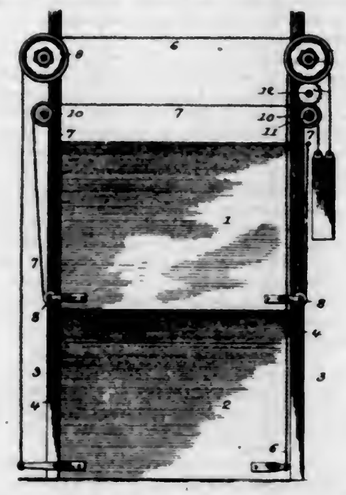


2. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a pair of individual counterweights, a pair of individual flexible connections attached at one end to the respective counterweights and at the other end to the lower portion of the respective door-sections, individual overhead pulleys for the passage of said flexible connections, the said pulleys having different diameters and secured together so as to rotate in unison, and means for imparting rotation to said pulleys, the same comprising a shaft carrying said pulleys, and an operating-pulley secured to said shaft, substantially as set forth.

3. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a pair of individual counterweights, a pair of individual branched flexible connections attached at one end to the respective counterweights and at the other end to the respective lower corners of the respective door-sections, individual overhead pulleys for the passage of said flexible connections, the said pulleys having different diameters and secured together to rotate in unison, and means for imparting rotation to said pulleys, substantially as set forth.

4. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a pair of individual counterweights, a pair of individual branched flexible connections attached at one end to the respective counterweights and at the other end to the respective lower corners of the respective door-sections, individual overhead pulleys for the passage of said flexible connections, the said pulleys having different diameters and secured together to rotate in unison, and means for imparting rotation to said pulleys, the same comprising a shaft carrying said pulleys and an operating-pulley secured to said shaft, substantially as set forth.

## 757,179. VERTICALLY-MOVING DOOR. WILLIAM A. CROSS, Chicago, Ill. Filed Aug. 1, 1903. Serial No. 167,821. (No model.)



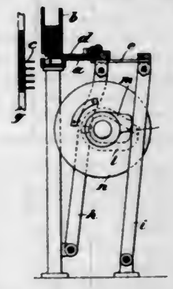
*Claim.*—1. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a counterweight, a flexible connection attached at one end to said counterweight with its other end looped around a pulley on the upper door-section and attached to the wall of the building, a flexible connection attached at one end to said counterweight and at the other end to the lower door-section, individual overhead pulleys for the passage of said flexible connections, and means for imparting simultaneous rotation to said pulleys, substantially as set forth.

2. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a counterweight, a flexible connection attached at one end to said counterweight with its other end looped around a pulley on the upper door-section and attached to the wall of the building, a flexible connection attached at one end to said counterweight and at the other end to the lower door-section, individual overhead pulleys for the passage of said flexible connections, and means for imparting simultaneous rotation to said pulleys, the same comprising an operating-shaft, an intermediate pinion carried by said shaft, and gear-wheels attached to the overhead pulleys aforesaid and meshing with said pinion, substantially as set forth.

3. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a counterweight, a branched flexible connection attached at one end to said counterweight with its branched ends looped around pulleys on the upper door-section and attached to the wall of the building, a branched flexible connection attached at one end to said counterweight with its branched ends attached to the respective lower corners of the lower door-section, individual overhead pulleys for the passage of said flexible connections, and means for imparting simultaneous rotation to said pulleys, substantially as set forth.

4. In a door-closing mechanism, the combination of a pair of door-sections, means for guiding the same in a vertical direction, a counterweight, a branched flexible connection attached at one end to said counterweight with its branched ends looped around pulleys on the upper door-section and attached to the wall of the building, a branched flexible connection attached at one end to said counterweight with its branched ends attached to the respective lower corners of the lower door-section, individual overhead pulleys for the passage of said flexible connections, and means for imparting simultaneous rotation to said pulleys, the same comprising an operating-shaft, an intermediate pinion carried by said shaft, and gear-wheels attached to the overhead pulleys aforesaid and meshing with said pinion, substantially as set forth.

## 757,180. APPLIANCE FOR ISOLATING MATCH-STICKS. FRANZ CERWENY, Deutschlandsberg, near Gratz, Austria-Hungary. Filed May 27, 1902. Serial No. 109,190. (No model.)



*Claim.*—1. In a match-making machine, the combination with a grooved plate for receiving the match-sticks and means for reciprocating said plate, a series of needles supported by the plate and sliding in the grooves thereof, and means carried by the plate for causing a forward movement of the needles, of devices adapted to receive said match-sticks when the forward movement of the plate and needles is completed, and means adapted to return the needles to their normal positions after the grooved plate has receded in order to clear the grooves of splinters and the like, and to leave the grooves open to receive a further supply of match-sticks.

2. In a match-making machine, the combination with a reciprocating grooved plate having a shoulder, of means for reciprocating the plate, a laterally-disposed bar adapted to be engaged by the shoulder and carried with the grooved plate in its forward movement, a series of needles carried by the lateral bar sliding in the grooves of the plate and adapted to be left at their extreme forward position when the plate recedes and means independent of the movement of the plate for returning the bar and its needles to their normal position.

3. In a match-making machine, the combination with a receptacle for holding match-sticks, a grooved reciprocating plate under the receptacle and adapted to receive into its grooves match-sticks from said receptacle, means for reciprocating the plate, a series of needles sliding in the grooves of the plate and having their forward movement controlled by said plate, means for returning the needles to their normal positions after the plate has receded, and device-

adapted to receive said match-sticks with the forward movement of the plate and needles and have the match-sticks held in place by the needles while the plate recedes.

4. In a match-making machine, the combination with a receptacle for holding match-sticks, of devices adapted to receive the match-sticks, a reciprocating plate beneath the receptacle and having grooves to temporarily contain the match-sticks, means for reciprocating the plate, a series of needles carried in the grooves back of the match-sticks and moving forward with the plate to force the sticks into the receiving devices and remaining in their forward position while the grooved plate returns, and means for returning the needles to their normal positions at the rear ends of the grooves and clearing the grooves of splinters and chips.

5. In a match-making machine, the combination with a receptacle for holding match-sticks, of devices adapted to receive the sticks, a reciprocating plate with longitudinal grooves to carry the matches and a shoulder, a lateral bar normally engaged by the shoulder, a series of needles carried by the bar and playing in the grooves of the plate but normally retained in the rear ends of said grooves, means for moving the plate with the match-sticks and the bar with the needles toward the devices to receive the sticks and receding the plate and means for returning the bar and needles to their normal positions after the recession of the grooved plate.

6. In a match-making machine, the combination with a receptacle for holding match-sticks, of devices adapted to receive the sticks, a grooved reciprocating plate adapted to hold the sticks and carry them to the receiving devices, means for reciprocating the plate, a lateral bar having needles adapted to play in grooves back of the sticks, be carried forward by the grooved plate, force the sticks into the receiving devices, prevent the entrance of sticks into the grooves until the return of the needles to their normal positions in the back of the grooves and clear the grooves of chips, splinters and the like on their return movement, and means for returning the bar and needles to their normal position after the reciprocation of the grooved plate.

7. In a match-making machine, the combination with a receptacle for holding the match-sticks, of devices for receiving the sticks, a reciprocating grooved plate adapted to carry the sticks from the holder to the receiver, needles carried by a common bar, playing in the grooves and adapted to force the sticks into the receiving devices, a lever actuating the grooved plate, a cam operating the lever in its forward and backward movement, a lever connected with the needle-bar and adapted to return the needles to their normal positions after the recession of the grooved bar and a cam adapted to operate the latter lever to return the needle-bar.

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**757,181. ELEVATOR-OPERATING MECHANISM.** MICHAEL J. DALY, Pittsburg, Pa., assignor of one-half to W. T. Wallace, Pittsburg, Pa. Filed May 16, 1903. Serial No. 157,406. (No model.)



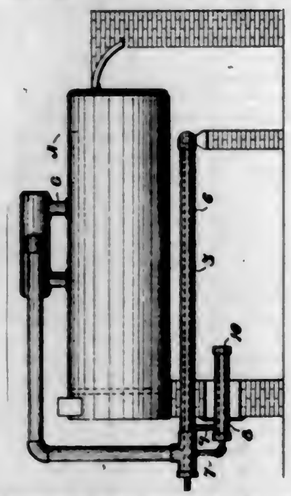
*Claim.*—1. In a device of the character described, the combination with a controlling-lever, of a lever fulcrumed on a door-track, a cam provided on one end of the said lever and lying in the path of the controlling-lever, and said fulcrumed lever having an enlarged end normally lying behind the door and locking the same from opening.

2. In a device of the character described, the combination with a controlling-lever having a lug on one side thereof, of an L-shaped lever, said lever being arranged in an aperture in the car-wall and pivoted at its one end therein, the vertical leg thereof normally lying entirely within the wall of said car, the horizontal leg of said L-shaped lever projecting within the car and having a notch formed in its edge adapted to be engaged by said lug on said controlling-lever, a projection centrally mounted on said vertical leg opposite said horizontal leg, the end of said projection being provided with an integral cup, an antifriction-ball loosely held in said cup, and a cam-track on the elevator-door adapted to engage said ball, as and for the purpose set forth.

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**757,182. SUPERHEATER FOR OIL-BURNERS.** JAMES M. DONAHUE, Santa Rosa, Cal. Filed Oct. 16, 1903. Serial No. 177,235. (No model.)

*Claim.*—1. The combination with a furnace, of a pipe receiving steam therefrom, a pipe connected with the first-named pipe and extending horizontally beneath the boiler said second pipe returned substantially upon itself to the front of the boiler, the two members of the said pipe lying in substantially the same horizontal plane, a burner positioned in a lower horizontal plane than the steam-pipe, and an oil-pipe concentric with and extending throughout the steam-pipe and having its returned end connected with the burner.



2. The combination with a steam-boiler and a steam-drum connected therewith, of a steam-pipe leading from the drum, a second pipe into which the steam-pipe leads said second pipe extending through the front of the furnace and beneath the boiler and thence bent horizontally and returned to the front of the furnace, the parts of said second pipe lying in substantially the same horizontal plane, a burner positioned in a lower horizontal plane than the steam-pipe and leading through the front of the furnace, an oil-pipe concentric with and traversing the second-named pipe, and a pipe connecting the returned end of the oil-pipe with the burner.

3. The combination with a steam-boiler and an oil-burner, of a pipe connected with and receiving steam from the boiler, a return-pipe within the furnace and having its members in substantially the same horizontal plane, an oil-pipe within and traversing the steam-pipe, a vertical pipe connecting the oil-pipe with the burner, and an independent vertical pipe connection between the steam-pipe and said burner.

4. The combination with a steam-boiler, a furnace, a pipe connected with the boiler and extending through the furnace, and an oil-pipe located concentrically within the first-named pipe, of a burner formed of outer and inner concentric tubes with which the superheating steam and oil pipes respectively connect, a flat screw-cap fitting the discharge end of the outer tube, and having a screw-threaded depression engaging the end of the inner tube, and discharge-slits formed in said cap and communicating respectively with the steam and oil pipes of the burner

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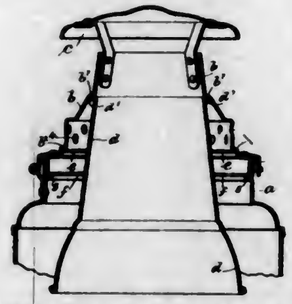
**757,183. SIGNAL-LANTERN.** FREDERICK W. DRESSEL, New York, N. Y., assignor to the Dressel Railway Lamp Works, New York, N. Y., a Corporation of New York. Filed Jan. 23, 1904. Serial No. 190,274. (No model.)

*Claim.*—1. In a signal-lantern, the combination with the lantern-body and tapering metal top hinged thereto and having a series of air-entrance apertures circularly arranged, of an auxiliary chimney or tubular septum, perforated annulus-plates connected to the outer surface thereof at spaced-apart intervals and arranged to be received in the upper open end of the lantern-body when the hinged top is swung to one side, and a rim in the upper open end of the body forming a seat to receive the lowermost annulus-plate and to support the same and the auxiliary chimney.

2. In a signal-lantern, the combination with the body of the lantern having an open top of appreciable area and a rim therein forming a seat, of a tapering top hinged thereto and having offset portions forming shoulders, and a series of air-entrance apertures therein circularly arranged, an auxiliary chimney or tubular septum



cylindrical and tapering, perforated annulus-plates horizontally arranged with reference to the axis of said auxiliary chimney at suitable spaced-apart intervals and secured to the outer surface of said auxiliary chimney, the lower plate resting upon said rim and supporting said plates and auxiliary chimney, and the other annulus-plate and the upper end of the chimney coming against the shoulders of the top and thereby forming contact therewith, the said chimney and plates being bodily removable from the upper end of the lantern when the hinged top is swung over out of the way.



3. In a signal-lantern, the combination with the lantern-body having an open upper end of appreciable area and a rim 5 within the upper open end forming a seat, of a tapering top hinged to the lantern-body at one side and provided with a catch at the opposite side, said tapering top having offset portions forming shoulders appreciably distant from one another, and a series of circularly-arranged air-entrance apertures between said shoulders, a cylindrical and tapering auxiliary chimney, perforated annulus-plates spaced apart and secured to the outer surface of said auxiliary chimney in planes parallel with one another and at right angles to the imaginary axis of said chimney, said parts being bodily removable from the lantern-body when the top is swung over on the hinge, the said chimney and plates being supported by the lower annulus-plate resting upon the rim 5 which forms a seat to support the entire chimney and plates, the upper annulus-plate when the top is closed coming against the lowermost shoulder forming contact therewith, and the upper end of the auxiliary chimney coming against and forming contact with the uppermost shoulder so as to complete the continuity of the auxiliary chimney with the upper tapering end of the top and to form an air-chimney between the parts of the top and the auxiliary chimney for the entrance of external air to pass down through the perforated annulus-plates, substantially as set forth.

4. In a signal-lantern, the combination with the lantern-body and tapering metal top hinged thereto and having a circularly-arranged series of air-entrance apertures, of an auxiliary chimney or tubular septum, a perforated annulus-plate connected to the outer surface thereof and arranged to be received in the upper open end of the lantern-body when the hinged top is swung over, and a rim in the open upper end of the lantern-body forming a seat to receive the annulus-plate and to support the same and the auxiliary chimney.

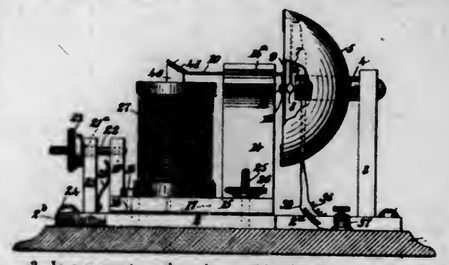
5. In a signal-lantern, the combination with the lantern-body and tapering metal top hinged thereto, of an auxiliary chimney or tubular septum separate from the body and hinged top, and whose maximum diameter is smaller than the open upper end of the body, and of sufficient length when in place to extend down into the lantern-body and up into the hinged top, and means for supporting the said auxiliary chimney at the upper end of the lantern-body and about midway of its length.

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**757,184. MEGAPLEX RELAY.** RICHARD A. ENGLER, Dubuque, Iowa. Filed July 13, 1903. Serial No. 165,248. (No model.)

*Claim.*—1. In a megaplex relay, the combination of a microphone, an induction-coil having primary terminals connected therewith and also having secondary terminals, a battery connected with said microphone and with said primary terminals, another microphone connected with said induction-coil and actuated thereby for controlling an independent circuit, and electrical connections for said secondary terminals of said induction-coil and for said independent circuit.

2. In a megaplex relay, the combination of a plurality of microphones and a plurality of induction-coils, each of said induction-coils being provided with primary and secondary terminals and each of said microphones being connected in series with the primary terminals of another induction-coil, the secondaries of said induction coils being connected in series with the line.



3. In a megaplex relay, the combination of a plurality of microphones, and a plurality of induction-coils, each induction-coil being provided with primary and secondary terminals, and each of said microphones being connected in series with the terminals of an induction-coil, the secondaries of said induction-coils being connected in series with each other and with the line.

4. In a megaplex relay, the combination of a number of induction-coils each having a core together with primary and secondary terminals, microphones having an armature controllable by the magnetic field of said cores, electrical connections for said microphones, and wiring connecting said secondary terminals in series with each other.

5. In a megaplex relay, the combination of a plurality of induction-coils, each provided with a core together with primary and secondary terminals, a plurality of microphones connected with said primary terminals and also connected with a source of electricity for the purpose of energizing said cores, and electrical connections for binding said secondary terminals in series with each other.

6. In a megaplex relay, the combination of a plurality of induction-coils, each provided with a core together with primary and secondary terminals, and a plurality of microphones connected with said primary terminals and also connected with a source of electricity for the purpose of energizing said cores, said secondary terminals of the several induction-coils being connected in series with each other and with the line.

7. In a megaplex relay, the combination of a stationary member, a movable member mounted thereupon, an induction-coil mounted upon said movable member and provided with a core, a stationary microphone provided with an armature disposed adjacent to said core and said armature.

8. In a megaplex relay, the combination of an induction-coil provided with primary and secondary windings and a microphone and a source of electricity connected with said primary winding, a microphone disposed adjacent to said induction-coil and provided with a movable armature actuated directly by the magnetic influence thereof, a source of electricity connected with said last-mentioned microphone, and another induction-coil having a primary and a secondary winding, said primary winding being connected with said last-mentioned microphone and said secondary winding being connected with said secondary winding of said first-mentioned induction-coil.

9. In a megaplex relay, the combination of an induction-coil provided with a primary and a secondary winding, a microphone connected with said induction-coil and actuated by the magnetic attraction thereof, a source of electricity connected with said microphone, another induction-coil provided with a primary and a secondary winding, wiring connecting the primary winding of said last-mentioned coil with said microphone, and means for connecting the secondary windings together in series with each other and with the line.

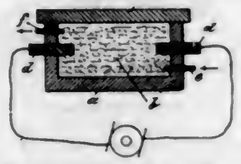
10. In a megaplex relay, the combination of a plurality of induction-coils each provided with a primary and a secondary winding, means for connecting the several secondary windings in series with each other and with the line, a microphone disposed adjacent to each of said induction-coils and provided with a vibratory armature actuated by the magnetic attraction thereof, and electric connections between said microphone and the primary winding of one of said induction-coils.

11. In a megaplex relay, the combination of an induction-coil provided with primary and secondary windings, a microphone having a vibratory magnetic member disposed adjacent to said induction-coil and actuated by the magnetic attraction therefrom, the arrangement being such that the space between said vibratory ar-

mature and said induction-coil is greater at one moment than at another for the purpose of controlling the magnetic influence of said induction-coil upon said vibratory armature, the currents generated in said secondary winding being varied thereby, and means for rendering cumulative the effects of said currents generated by said secondary winding and said microphonic currents.

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757,185. **MANUFACTURE OF CYANAMID SALTS.** Georg Erlwein, Berlin, Germany, assignor to The Firm of Cyanid-Gesellschaft mit Beschränkter Haftung, Berlin, Germany. Filed Aug. 16, 1902. Serial No. 119,933. (No specimens.)



*Claim.*—1. The process of producing a cyanamid salt of calcium which consists in heating a mixture containing lime and carbon in the presence of a nitrogen-bearing gas.

2. The process of producing cyanamid salts of calcium which consists in heating a mixture containing lime and carbon in the presence of a nitrogen-bearing gas to a temperature higher than that required for combining nitrogen with a carbid.

3. The process of producing a cyanamid salt of calcium which consists in heating a mixture containing lime and carbon in the presence of a nitrogen-bearing gas to a temperature lower than is required to form a carbid.

4. The process of producing a cyanamid salt of calcium which consists in heating a mixture containing lime and carbon in the presence of a nitrogen-bearing gas to a temperature higher than that required for combining nitrogen with carbid but lower than is required to produce a carbid.

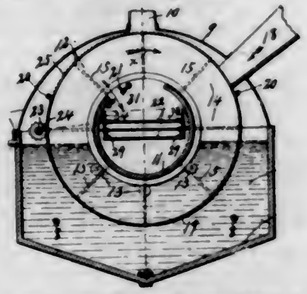
5. The process of producing cyanamid salts of calcium which consists in heating a mixture containing lime and carbon to a temperature of 2,000° centigrade in the presence of a nitrogen-bearing gas.

6. The process of producing cyanamid salts of calcium which consists in heating a mixture containing lime and an excess of carbonaceous material to a temperature of 2,000° in the presence of a nitrogen-bearing gas.

7. The process of producing cyanamid salts of calcium which consists in heating by means of an electric current a mixture containing lime, carbon and a conducting material in the presence of a nitrogen-bearing gas.

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757,186. **APPARATUS FOR SCALDING AND WASHING FRUITS AND VEGETABLES.** Rosman I. Fancher, Cincinnati, Ohio. Filed Mar. 19, 1903. Serial No. 148,482. (No model.)



*Claim.*—1. The combination with a vat adapted to contain a scalding fluid and means to heat the fluid, of a fixed hollow shell extending transversely through the vat, and provided with an opening in its upper wall, a conveyer operating lengthwise of and within the shell beneath the opening, a revolving carrier movable through the scalding fluid, means to discharge the material to be scalded onto the carrier, said carrier discharging the scalded material through the opening in the shell and onto the conveyer.

2. In combination with a vat, means to introduce steam into the vat, a revolving carrier within the vat, a fixed screen encircling the lower portion of the carrier, means to discharge the material to be scalded onto the carrier and a conveyer operating axially of and within the carrier, said carrier being adapted to discharge the scalded material onto the conveyer.

3. In combination with a vat adapted to contain a scalding liquid, means to heat the liquid, inner and outer fixed concentric circular walls within the vat and dipping into the liquid, the inner wall being imperforate, a revolving carrier movable between said walls for carrying the material to be scalded through the scalding fluid, and a conveyer operating axially of and within the carrier for receiving the scalded material from the carrier.

4. In combination with a vat adapted to contain a scalding fluid, means to heat the fluid, inner and outer concentric circular walls within the vat and dipping into the fluid, the outer wall being perforated and the inner wall being provided with an opening in its top, a rotary carrier movable between said walls and provided with a series of pockets having their inner ends open and successively registering with the opening in the inner concentric wall whereby the scalding fluid is discharged automatically within said inner wall and means to feed the material to be treated into the pockets.

5. In a scalding and washing apparatus for fruits and vegetables, the combination with a vat adapted to contain a scalding fluid and means to heat the fluid, of a rotary carrier having a series of pockets movable through the liquid, said pockets being open at their inner and outer ends, a perforated wall closing the outer open ends of the pockets which are immersed in the liquid, an imperforate inner wall closing the inner ends of the pockets which are immersed in the liquid, said inner wall being open at the top and the carrier discharging the scalded material through said opening and a conveyer operating axially of and within the carrier beneath said opening for receiving the material discharged from the carrier through the opening and means to actuate the conveyer.

6. In an apparatus for scalding and washing fruits and vegetables, the combination with a vat adapted to contain a scalding fluid and means to heat the fluid, of a rotary carrier having a circular central opening and a series of pockets communicating with the opening, said pockets being open at their inner and outer ends and movable through the scalding fluid for conveying the material to be treated therethrough, a closure for the outer ends of the immersed pockets and a conveyer operating in the central opening of the carrier, the several pockets of the carrier successively discharging at their inner ends onto the conveyer and means to actuate the conveyer.

7. An apparatus for scalding and washing fruits and vegetables comprising a vat adapted to contain a scalding fluid, means to heat the fluid, a rotary carrier within the vat having a central opening and a series of pockets surrounding the opening and open at their inner and outer ends, means for revolving the carrier, additional means for discharging the material to be treated into the open outer ends of the pockets as the carrier is revolved, a closure for the outer ends of the immersed pockets and a conveyer operating axially of and within the central opening of the carrier, the several pockets of the carrier discharging successively from their inner ends onto the conveyer.

8. In combination with a vat adapted to contain a scalding fluid and means to heat the fluid, a rotary carrier having a central opening and a series of pockets surrounding the opening and open at their inner and outer ends, means to rotate the carrier, means to feed the material to be treated into the outer ends of the pockets during the rotation of the carrier, a closure for the outer ends of the immersed pockets, a conveyer operating through the central opening, means to actuate the conveyer, said carrier being adapted to discharge the scalded material through the inner end of the pockets onto the conveyer and a perforated steam-pipe arranged within the central opening of the carrier for discharging steam against the scalded material as it is discharged from the pockets onto the conveyer.

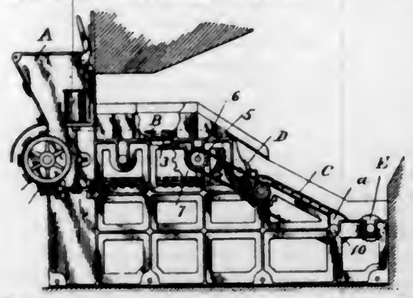
9. An apparatus for scalding and washing fruits and vegetables comprising a vat adapted to contain a scalding fluid, means for heating the fluid, a rotary carrier having a central opening and a series of pockets movable through the fluid, a perforated wall covering the outer ends of the pockets which are immersed in the liquid, a second concentric wall covering the inner ends of the pockets and open at the top above the liquid-level, a conveyer operating within the central opening of the carrier, said carrier being adapted to discharge the scalded material from the inner ends of the pockets through the opening in the inner wall and upon the conveyer, means to actuate the conveyer and a water-pipe located above the conveyer and adapted to discharge the water upon the material while being conveyed from the carrier.



10. An apparatus for scalding and washing fruits and vegetables comprising a vat adapted to contain a scalding fluid, steam-pipes projecting into the interior of the vat for heating the fluid, a rotary carrier within the vat having a central opening and a series of pockets surrounding said opening and communicating therewith, inner and outer concentric walls covering the inner and outer ends of the pockets which are immersed in the liquid, the inner wall having an opening in its top to receive the scalded material discharged from the inner ends of the pockets, means to feed the material to be treated into the outer ends of the pockets during the rotation of the carrier, a conveyer operating within the central opening of the carrier to receive the scalded material, a perforated steam-pipe discharging steam against the material discharged from the inner ends of the pockets and a water-pipe discharging onto the material in the conveyer.

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757,187. **SMOKELESS SELF-CLEANING GRATE.** Frederick Girtanner and Alice Girtanner, New York, N. Y., assignors to United States Mining & Trading Co., a Corporation of New York. Filed July 11, 1903. Serial No. 165,038. (No model.)



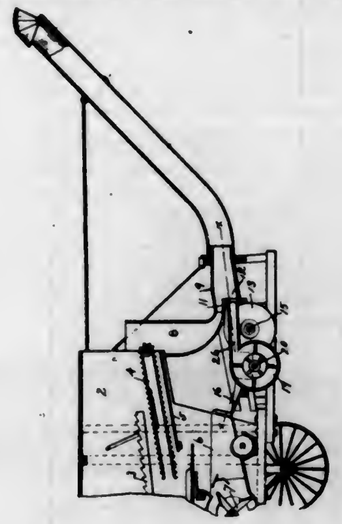
*Claim.*—1. A self-cleaning furnace-grate comprising a number of traveling grates arranged contiguous to each other and an intermediate clearing-roll, substantially as described.

2. A self-cleaning grate comprising a plurality of traveling grates arranged with their adjacent ends at different levels, and a clearing-roll arranged at the ends of the last traveling grate and having its periphery projecting above and below the axis of the end shaft of the said grate, substantially as described.

3. A self-cleaning furnace-grate comprising a number of traveling grates arranged contiguous to each other, an intermediate clearing-roll adapted to crush and clear the clinkers intermediate of the adjacent ends of the grate, and an end clearing-roll, substantially as described.

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757,188. **PNEUMATIC STRAW-STACKER.** Thomas Goodale, Wadena, Minn. Filed Oct. 29, 1903. Serial No. 178,970. (No model.)



*Claim.*—1. The combination, with a stacker-tube, of a trunk adapted to receive the straw and having air-passages at the sides, blast-fans communicating with said passages, a centrally-arranged air-passage leading into said trunk, a third blast-fan adapted to receive the chaff and communicating with said centrally-arranged passage.

2. The combination, with a trunk arranged to receive the straw and provided with a stacker-tube and having air-passages at its sides, of blast-fans connected with said passages, a centrally-arranged air-passage between said side passages, and a third blast-fan having a chaff-collecting plate and communicating with said centrally-arranged passage.

3. In a separator, the combination, with a straw belt or carrier, of an air-trunk communicating with the discharge end of said belt, a stacker-tube connected with said trunk, air-passages provided at the sides of said trunk, blast-fans communicating with said passages, a middle air-passage, a third blast-fan provided in advance of said side fans and communicating with said middle passage, and means for delivering chaff to said third fan, substantially as described.

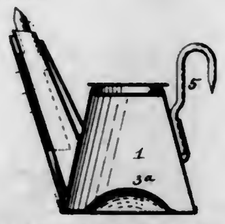
4. The combination, with a separator, of an air-trunk arranged near the straw belt or carrier to receive the straw therefrom, a stacker-tube connected with said air-trunk, two blast-fans having air-passages leading into said air-trunk, a third blast-fan between said first-named fans and in front of the same and having an air-passage leading into said trunk, and a chaff-collecting plate partially inclosing said third blast-fan and communicating with the interior of its casing, substantially as described.

5. In a separator, the combination, with a shoe and a grain-pan, of a plate provided near said shoe, a fan-casing having openings in its side walls to receive material from said plate, a fan operating in said casing, a blast-passage connected with said casing, an air-trunk into which said blast-passage discharges, a stacker-tube connected with said trunk, fan-casings provided on each side of said air-blast passage and having passages also communicating with said air-trunk, blast-fans provided in said last-named casings, a straw-conveying spout provided above said fan-casings and having its discharge end leading into said air-trunk, and a straw-conveying belt or carrier having its discharge end near the receiving end of said spout, substantially as described.

6. The combination, with a stacker-tube, of a trunk adapted to receive the straw and having two air-passages, blast-fans communicating with said passages, a third air-passage leading into said trunk, and a third blast-fan adapted to receive the chaff and communicating with said third passage.

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757,189. **MINER'S LAMP.** Joshua A. Hadley, Brazil, Ind., and Edward B. Putnam, Carbondale, Ill. Filed July 31, 1903. Serial No. 167,738. (No model.)



*Claim.*—1. In a lamp, the combination of a receptacle having a raised bottom member, a wick-tube connected to said receptacle, a heater adjustably mounted on said wick-tube and adapted to extend into the wick-flame, and means arranged between said raised bottom member and said heater, for the purpose aforesaid.

2. In a lamp, the combination of a receptacle, a wick-tube connected to said receptacle, a slidingly-mounted heater provided with a finger-piece regulator and a spout surrounding said heater and having a slot therein to accommodate said thumb-piece regulator and means arranged between said heater and the bottom of said receptacle adapted to transmit heat to said bottom.

3. In a lamp, the combination of a receptacle having a wick-tube, a heater arranged upon said tube and adapted to engage the wick-flame, said receptacle having a vacuum-chamber between bottom members thereof, and means adapted to transmit the heat from said heater to said chamber.

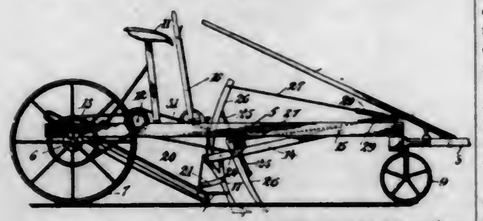
4. In a lamp, the combination of a receptacle having a wick-tube, connecting therewith, near its bottom, a heater arranged upon said wick-tube and adapted to engage the wick-flame, said recep-

tacle having a flat bottom member and a conical bottom member said members forming a vacuum-chamber, and means adapted to transmit the heat from said heater to said chamber.

5. In a lamp, the combination of a receptacle having a wick-tube connecting therewith, near its bottom, a heater mounted upon said tube and having engagement with the wick-flame, said receptacle having a flat bottom member and a conical bottom member having an upward extension or elongation contacting with said heater.

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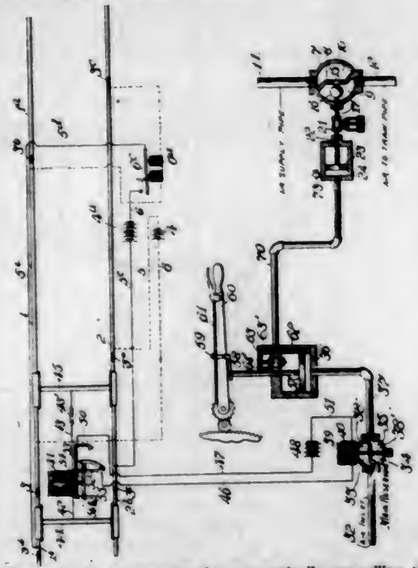
**757,190. BEET-HARVESTER.** HERSCHEL M. HEILIG, Tecumseh, and MERRIMAN H. REED, Blue Springs, Nebr., assignors to said Heilig, and Hugh Scilley, Leavitt, Nebr. Filed Apr. 9, 1903. Serial No. 151,762. (No model.)



*Claim.*—In a beet-harvester, the combination with a frame having guides, of pivotal rods slidably engaging with said guides on the frame, a crank-shaft, spading devices each connected to a crank of the shaft and to one of said pivotal rods, and springs connected to the frame and to the rods, each spring being of sufficient tension to hold the rod against slidable movement under normal conditions in the service of the spading device and adapted to give under undue strain when the spading device encounters an obstruction.

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**757,191. DEVICE FOR PREVENTING RAILWAY COLLISIONS.** CHARLES HOLTHAUS and JOSEPH F. BUTLER, Pittsburg, Pa. Filed Mar. 5, 1903. Serial No. 146,313. (No model.)



*Claim.*—1. In an apparatus for automatically controlling the brakes of a railway-train and actuating the throttle-valve lever, the combination with a track and a local circuit, of a controlling-magnet carried by the engine, an electrically-controlled valve in communication with the air-supply, a throttle-actuating controlling-cylinder in communication with said valve and connected to the throttle-lever, a valve-casing in communication with the air-supply and train line, a controlling-valve in said casing, a secondary cylinder and a piston therein for actuating said valve, and a governor in communication with said valve-casing, substantially as described.

2. In an apparatus for automatically controlling the brakes of a railway-train and simultaneously operating the throttle-valve lever, the combination with a normally closed track-circuit including a magnet, a normally open local circuit including the armature of the magnet of the local circuit, of a controlling-magnet carried by the engine and adapted to be energized by current passing through the track-circuit, means interposed between the throttle-valve lever and the air-supply for actuating said throttle-valve lever through the medium of the air-supply, and means interposed between the air-supply and train line and in communication with the throttle-valve-lever-actuating means for applying the brakes simultaneously with the actuating of the throttle-valve lever, substantially as described.

3. In a device for automatically controlling the brakes of a railway-train and actuating the throttle-valve lever thereof, the combination with a normally closed track-circuit including a magnet having an armature and a contact-point, a normally open local circuit including the armature and contact of the track-circuit magnet, of means carried by the engine and connected with the throttle-valve lever and electrically operated for actuating said lever, means also carried by the engine and operated by the air-pressure to exhaust the air and apply the brakes, and a local battery carried by the engine for establishing a circuit and permitting said means to operate when the track-circuit is closed, substantially as described.

4. In an apparatus for automatically controlling the brakes of a railway-train and automatically actuating the throttle-valve lever to shut off the steam, the combination with the controlling-lever for the throttle-valve, a yoke pivoted thereto and adapted to release the locking-dog of said lever, means operative through a track and local circuits for actuating said lever through connection with the yoke, and means also operative through said circuits for simultaneously applying the brakes with the actuating of the throttle-valve lever, substantially as described.

5. In an apparatus for simultaneously actuating the throttle-valve of an engine to shut off the steam and exhausting the air to apply the brakes automatically, the combination with the brake apparatus, of means including a track-circuit, a local circuit and a controlling-magnet, an air-cylinder, a piston therein with its rod or stem connected to a yoke pivoted to the throttle-lever and adapted to release the locking-dog of the same and connections between said cylinder and an air-supply for actuating the piston to operate the throttle-valve, and means in communication with said air-cylinder whereby the brakes are applied automatically and simultaneously with the actuating of the throttle-valve lever, substantially as described.

6. In an apparatus for automatically actuating the throttle-valve lever of an engine to shut off the steam and exhaust the air to apply the brakes, the combination with the brake apparatus, of brake-actuating means and throttle-lever-actuating means both operative through the medium of a normally closed track-circuit including a magnet its armature and a contact-point the armature and contact-point being included in a normally closed track-circuit, and a controlling-magnet mounted on the engine and adapted when energized to complete a circuit to cause the brake-actuating means and throttle-actuating means to operate and respectively apply the brakes and shut off the steam.

7. The herein-described means for simultaneously actuating the throttle-valve lever of an engine to shut off the steam and exhaust the air to apply the brakes, embodying a brake-governor, a valve for normally closing the communication between the governor and the train-line of the brake apparatus, an air-cylinder with a piston therein for actuating said valve, a second air-cylinder with a piston therein having its stem pivotally connected to the throttle-valve lever, a valve-casing in communication with said second cylinder, and with an air-supply, an electrically-controlled valve in said casing, connections between said second cylinder and the brake-controlling cylinder, a controlling-magnet on the engine, and means for completing a circuit through said magnet for actuating the electrically-controlled valve in the valve-casing to admit air to said cylinders, as and for the purpose described.

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**757,192. TIP OR TERMINAL FOR ELECTRIC WIRES.** STEPHEN C. HOUGHTON, San Francisco, Cal. Filed Dec. 30, 1903. Serial No. 187,168. (No model.)

*Claim.*—1. A tip or terminal for electric wires consisting of a pin having a wire-engaging clamp at one end thereof, and a tube through which said pin is projected having a split ferrule, substantially as described.

2. A tip or terminal for electric wires consisting of a pin having a wire-engaging clamp at one end thereof, and a tube through which said pin is projected having a split ferrule provided with an inwardly-extended flange, substantially as described



3. A tip or terminal for electric wires consisting of a pin having a flattened overturned end for engaging the wire, and a tube through which said pin is projected having a split ferrule which incloses the end of the pin and engages the wire-covering, substantially as described.

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**757,193. DEVICE FOR ATTACHING FLEXIBLE MATERIALS TO ROOFS AND SIDES OF BUILDINGS.** FRANK S. HOWARD, Lombard, Ill. Filed Oct. 8, 1903. Serial No. 176,242. (No model.)



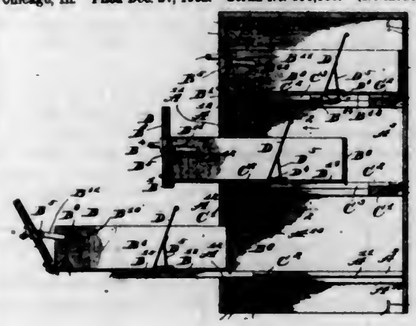
*Claim.*—1. A continuous binder, of wire or other suitable material, curved in a plane perpendicular to the plane of the roof or other surface to which it may be applied, with loops or enlargements in a plane parallel to the surface to which it may be applied at suitable intervals to receive nails, substantially as, and for the purpose shown and described.

2. A continubus binder of wire or other suitable material, formed on curves in a plane parallel to the plane of the roof, when in place, and also formed on curves perpendicular to the plane of the roof when in place, with loops at suitable intervals to receive nails, substantially as and for the purpose shown and described.

3. A binder of wire formed in convolutions in a plane parallel with the plane of the roof when in place, having a loop in the middle to receive a nail, and curved perpendicularly to the plane of the roof, and having each extreme end bent and turned upward from the roof, substantially as, and for the purposes shown and described.

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**757,194. SECTIONAL FILING-CABINET.** HENRY J. HUEBNER, Chicago, Ill. Filed Dec. 27, 1902. Serial No. 136,809. (No model.)





*Claim.*—1. In a cabinet, in combination, two side walls; a pair of guide-bars on the inner face of each of said side walls, each pair of guide-bars forming between them a groove; and a slide-frame comprising two side members formed of channel-iron, one web of each of said channel-irons being adapted to slide within the groove formed between said guide-bars.

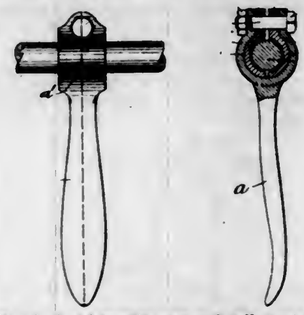
2. In a cabinet, in combination, two side walls; a pair of guide-bars on the inner face of each of said side walls, each pair of guide-bars forming between them a groove; a slide-frame comprising two side members formed of channel-iron, one web of each of said channel-irons being adapted to slide within the groove formed between said guide-bars; a drawer loosely supported by said slide-frame and having a stop-bar adapted to engage a portion of said slide-frame; and a stop-bar in said cabinet adapted to be engaged by a portion of said slide-frame.

3. In a drawer, in combination, a forward end; a rear end; two sides and a bottom composed of two pieces of sheet metal, each bent to form a side and a portion of the bottom, a space being provided between the adjacent edges of the portions forming the bottom; and a locking-rod secured at its ends in said forward end and rear end and lying in the open space in said bottom.

4. In a drawer, in combination, a forward end comprising a fixed portion and a drop-front pivotally connected with said fixed portion; two sides, one of which is provided with a slot; a link pivotally connected with said drop-front and having a stud adapted to slide within said slot, the length of said slot forming a limit for the downward pivotal movement of said drop-front; a locking-rod secured within the drawer; and a follower movably mounted upon said locking-rod.

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**757,195. ROD-GRASPING ARM OR HANDLE.** HENRY H. HUFF, Boston, Mass. Filed Dec. 5, 1903. Serial No. 183,855. (No model.)

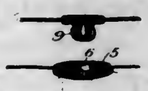


*Claim.*—1. A rod-grasping arm or handle having at one end a compressible yoke whose arms are separated by a rod-receiving space open at its outer end to permit the yoke to be applied to a rod by an endwise movement, the width and depth of said space exceeding the diameter of the rod, grasping-jaws insertible endwise between the yoke and rod, and means for compressing the yoke to cause the jaws to grasp the rod, the yoke and jaws having complemental engaging means to prevent the yoke from turning or slipping on the jaws.

2. A rod-grasping arm or handle forked at one end to form a compressible yoke, the arms of which are separated by a rod-receiving space open at its outer end and of greater depth and width than the rod, jaws insertible endwise between the yoke and rod and having serrations formed to engage the rod, and a headed bolt having a clamping-nut engaged with the outer portions of the arms of the yoke, said jaws having ears which are engaged by said bolt.

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**757,196. SNAP-FASTENER.** THEOPHILUS R. HYDE, Jr., and ERNEST D. SIMONS, Waterbury, Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn., a Corporation of Connecticut. Filed Jan. 30, 1904. Serial No. 191,288. (No model.)



*Claim.*—1. A snap-fastener, comprising a socket-piece to receive the stud, having a tubular hollow head and a base-flange, and a combined cap and rivet therefor, the latter composed of a cap proper and arms terminating in a cylindrical portion, the arms being bent di-

rectly over the head externally and the cylindrical portion upset within the head and clenching the head directly between the arms and cylindrical portion to fasten the members upon opposite sides of an article.

2. A snap-fastener socket-piece, to engage a stud, having a tubular open-ended head and a base-flange, and a combined cap and rivet therefor composed of a cap proper and arms terminating in a cylindrical portion, the socket-piece and the cap being applied upon opposite sides of an article, the arms being bent backward by and forming a pocket for the head and the cylindrical portion upset within the head, thereby clenching the head directly between the arms and cylindrical portion.

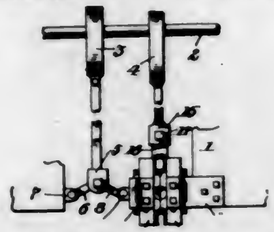
3. A snap-fastener, comprising a socket-piece to engage a stud, having a head open at both ends and a base-flange, and a combined cap and rivet having connecting-arms, said cap provided with an internal washer, and the rivet portion adapted to enter the head of the socket-piece and be upset therein and the arms bent backward against the washer and about the head to clench the head directly between the upset rivet and bent arms.

4. A snap-fastener, comprising a socket-piece having an open-ended head passed through an opening in the goods, and a flange to embrace the back of the goods, a combined cap and rivet having a cap proper with arms to embrace the head externally and a cylindrical portion entering the head of the socket-piece and upset therein, the socket-head being engaged directly by and clenched between the arms and cylindrical portion, and a complemental stud adapted to be engaged by the socket-piece.

5. A snap-fastener, comprising a socket-piece to engage a stud member, having a flange provided with projections to grip the object to which it is applied, and also having an open-ended hollow head, in combination with a combined cap and rivet applied to the opposite side of the goods from the socket-piece and having arms bent backward over the head externally and a cylindrical portion upset within the head and serving to clench the head directly between the arms and cylindrical portion.

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**757,197. COMBINATION-DIE FOR FORGING-MACHINES.** HARRY JEFFREY, Allegheny, Pa. Filed Apr. 15, 1902. Serial No. 102,979. (No model.)



*Claim.*—1. A multiple die for forging-machines comprising a die-block constructed on a side thereof, with a centrally-raised die portion leaving marginal surfaces extending outwardly from the die portion and providing grooves at the edges thereof in advance of which the hammer is adapted to operate, and having recesses of different dimensions formed in the face thereof at the edges of the latter, and raised portions upon the marginal surfaces at the edges of the die portion of a thickness equal to the depth of the die portion beneath the recesses.

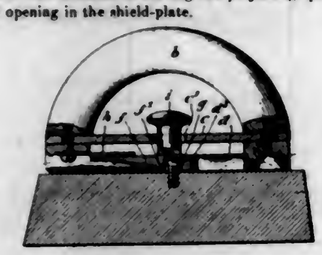
2. The combination of a main die-block, an auxiliary die-block, and means for securing the auxiliary die-block to a side of the main die-block at an edge of the latter.

3. The combination of a main die-block constructed on a side thereof, with a centrally-raised die portion providing grooves at the edges thereof, an auxiliary die-block seated in a groove against the die portion and means for securing the auxiliary die-block to the main die-block.

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**757,198. SAD-IRON.** MICHAEL JOYCE, Salt Lake City, Utah. Filed May 4, 1903. Serial No. 155,551. (No model.)

*Claim.*—A sad-iron, comprising a body provided with upwardly-projected lugs at each side of its top forming a longitudinal guideway on the top of the body, a bevel-headed stud fastened to the body in the guideway intermediate the ends thereof, an arched handle, a non-conducting shield-plate fastened to the bottom of the handle and having an opening therein, a connection-plate fastened to the handle beneath the shield-plate and having a longitudinal slot and a beveled transverse abutment at the inner end of the slot, said abutment being arranged to engage its beveled portion with the said bevel-headed stud, a dog having at its front end a shoulder arranged to engage the stud on the side opposite the abutment, the other end of the dog having trunnion-like members rockably mounted in the connection-plate, a spring yieldingly pressing the dog into active position, and a knob attached to the dog and projecting upward through the said opening in the shield-plate.



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**757,199. VEHICLE-TIRE.** MICHAEL A. KENNEDY, Boston, Mass., assignor to Trodair Rubber Company, Boston, Mass., a Corporation of New Jersey. Filed Aug. 24, 1900. Serial No. 27,827. (No model.)



*Claim.*—1. A vehicle-tire provided with a strip of elastic vulcanized rubber formed with a series of orifices or chambers extending obliquely from the inner face toward the outer face or tread of the tire, said orifices being staggered with reference to each other so that the walls of one row of orifices may be in vertical alinement with the orifices of the next row to allow the complete collapsing of the fabric.

2. A rubber tire provided with a series of orifices extending at an angle to the longitudinal axis of the tire, each orifice being surrounded by an elastic web which forms the wall of the orifice and separates it from the adjacent orifices and a sheath or envelop of canvas or the like inclosing the rubber containing the perforations, substantially as described.

3. A vehicle-tire consisting of rubber molded and vulcanized so as to form a series of tubular orifices or chambers extending obliquely from the base of the tire to its tread, each orifice being surrounded by an elastic web which is stretched when the tire is compressed substantially as described.

4. A vehicle-tire comprising an air-tight envelop or tube containing next its outer face or tread a strip of rubber having a series of independent inclosed orifices extending at an angle to the longitudinal axis of the tire, and separated from each other by distensible webs or walls the inner or base portion of said tube being left vacant to form an annular air-chamber substantially as described.

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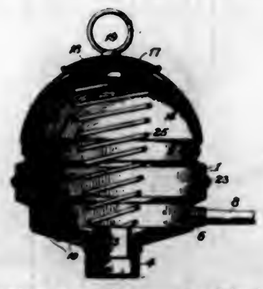
**757,200. ATOMIZER.** STEPHEN KETTLE, Chicago, Ill., assignor of two-thirds to Stephen R. Kettle, Chicago, Ill., and Herbert W. Scott, North Chicago, Ill. Filed Aug. 27, 1903. Serial No. 170,925. (No model.)

*Claim.*—1. In an atomizing or spraying apparatus of the character herein described, the combination of a casing having an open rim at top, inner and outer flexible diaphragms, marginally secured to said rim and adapted for manual actuation, a valved air-inlet to said casing, and outlet-passage therefrom substantially as set forth.

2. In an atomizing or spraying apparatus of the character herein described, the combination of a casing having an open rim at top, inner and outer flexible diaphragms, marginally secured to said rim and adapted for manual actuation, a spring within said casing tending to force said diaphragms outward, a valved air-inlet to said casing, and an outlet therefrom, substantially as set forth.

3. In an atomizing or spraying apparatus of the character herein described, the combination of a casing having an open rim at top, inner and outer flexible diaphragms, marginally secured to said rim and adapted for manual actuation, a valved air-inlet to said casing, an outlet-passage from said casing provided with a removable valve-seat and valve, a liquid-receptacle connected with said outlet-passage, and a discharge-nozzle on said receptacle, substantially as set forth.





4. In an atomizing or spraying apparatus of the character herein described, the combination of a casing having an open rim at top, inner and outer flexible diaphragms, marginally secured to said rim and adapted for manual actuation, a valved air-inlet to said casing, an outlet-passage from said casing provided with a removable valve-seat and valve, a liquid-receptacle connected with said outlet-passage, and a discharge-nozzle on said receptacle, the same comprising an air-tube provided with a jet-head at its discharge end, and a smaller tube arranged within the air-tube and extending from the jet-head aforesaid to the bottom of the receptacle substantially as set forth.

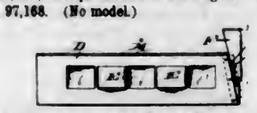
5. In an atomizing or spraying apparatus of the charater herein described, the combination of a casing having an open rim at top, inner and outer flexible diaphragms marginally secured to said rim and adapted for manual actuation, a housing having a depending skirt engaging the exterior of the casing and adapted to inclose the diaphragms, a valved air-inlet to said casing, and an outlet-passage therefrom, substantially as set forth.

6. In an atomizing or spraying apparatus of the character herein described, the combination of a casing having an open rim at top, inner and outer flexible diaphragms, marginally secured to said rim and adapted for manual actuation, a spring-cap arranged beneath the inner diaphragm an intermediate plate arranged between the diaphragms, an outer plate arranged upon the other diaphragm, a spring within the casing tending to force said diaphragms outward, a valved air-inlet to said casing, and an outlet-passage therefrom, substantially as set forth.

7. In an atomizing or spraying apparatus of the character herein described, the combination of a flexible diaphragm, with a spring for moving said diaphragm in one direction, said spring consisting of two spiral intercoils, connected together at one end by an integral cross member, substantially as set forth.

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**757,201. WINDOW-VENTILATOR.** HARRY C. KIDWELL, Washington, D. C., assignor to the Pullman Automatic Ventilator Company, York, Pa., a Corporation of West Virginia. Filed Mar. 7, 1902 Serial No. 97,168. (No model.)



*Claim.*—1. As a new article of manufacture, a ventilator-board comprising two members having beveled edges arranged in sliding engagement, an extension carried on the engaging edge of one member, a seat in the engaging edge of the other member formed to contain said extension, whereby a dust-proof joint is provided between the two members when in their normal position, and means carried by said extension and seat and constructed to maintain the two members with their beveled edges in parallelism, substantially as described.

2. As a new article of manufacture, a ventilator-board comprising two members having beveled edges arranged in sliding engagement, an extension carried on the engaging edge of one member, a seat in the engaging edge of the other member formed to contain said extension, whereby a dust-proof joint is provided between the two members when in their normal position, and means carried by said extension and seat and constructed to maintain the two members with their beveled edges in parallelism and to limit their relative movement, substantially as described.

3. In a window-ventilator, a board formed in two pieces having corresponding beveled edges, said pieces being adapted to slide on said beveled edges, a slotted plate secured in the beveled edge of one piece, and the other piece secured near its beveled edge to said plate through said slot, substantially as shown and described.

4. In a window-ventilator, a board having a slanting end, a slotted plate secured thereto, an end piece having a slanting end to fit the slanting end of said board, and means to secure said end piece through said slot, substantially as and for the purpose shown and described.

5. In a window-ventilator, a board formed in two pieces by a cut on an oblique line, a slotted plate secured to one of said pieces, and a pin in the other piece inserted through said slot, substantially as and for the purpose shown and described.

6. In a window-ventilator, a board formed with a projecting weather-strip on its upper edge, and a grooved strip to fit over said projecting weather-strip, substantially as shown and described.

7. In a window-ventilator, a board formed with a projecting weather-strip on its upper edge, and a strip grooved to fit over said weather-strip and having its top edge beveled toward the exterior of the window, substantially as shown and described.

8. In a window-ventilator, a board having a slanting end, a plate secured in said slanting end and projecting therefrom, the projecting portion of said plate slotted, an end piece having a slanting edge to fit the slanting end of said board and grooved to receive the projecting portion of said plate, and a pin to secure said end piece in said slot, substantially as shown and described.

9. In a window-ventilator, a board having a slanting end, a plate secured in said slanting end and projecting therefrom, said projecting portion of said plate having a slot therein parallel with said slanting end, an end piece having a slanting edge of the same degree as the slanting end on said board, a groove in said slanting edge to receive the projecting portion of said plate, and a pin inserted through said end piece and the slot in said plate, substantially as shown and described.

10. A window-ventilator consisting of a board formed in two pieces by a cut made on an oblique line, means to permit said pieces to be slidably adjusted on said obliquely-cut line, a projecting weather-strip on the top edge of each part of said board, and a strip grooved on its lower edge to fit over said projecting weather-strip, substantially as shown and described.

11. In a window-ventilator, a board formed with a projecting weather-strip, a strip grooved to fit over said projecting weather-strip, and a piece of felt secured to the top edge of said strip, substantially as shown and described.

12. In a window-ventilator, a board formed with a projecting weather-strip, a strip grooved to fit over said projecting weather-strip having its top edge beveled toward the exterior of the window, and a piece of felt secured to said beveled edge, substantially as shown and described.

13. In a window-ventilator, a board having a slanting end, a plate secured in said slanting end and projecting therefrom, said projecting portion of said plate having a slot therein parallel with said slanting end, an end piece having a slanting edge of the same degree as the slanting end of said board, a groove in said slanting edge to receive the projecting portion of said plate, a pin inserted through said end piece and the slot in said plate, a furring-block in the outer end of said board and at the outer edge of said end piece, a projecting weather-strip on the top edge of said board and end piece, a strip grooved to fit over said projecting weather-strip, the top of said strip beveled to fit the bottom of a window-sash, and a piece of felt secured to said beveled edge, substantially as shown and described.

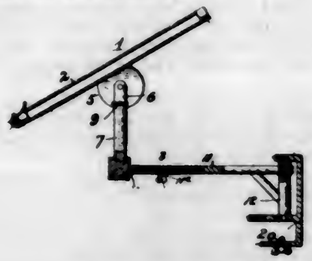
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**757,202. BOOK-HOLDER.** ROBERT L. KINNAN, Williamstown, Ky. Filed June 10, 1903. Serial No. 160,938. (No model.)

*Claim.*—1. A device of the character described, embracing a book-support, a set-screw-equipped yoke bearing a fixed standard and adapted for attachment to a convenient point, a crane-like horizontally-swinging member with its upright pivoted to, and between, lateral extensions of said standard and yoke, a horizontally-extensible member telescoping said horizontally-swinging member and having a fixed upright standard, and angularly-adjustable means fixed to said book-support and pivoted to said standard, with means for the retention of said angular adjustable means.

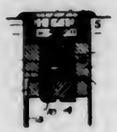
2. A device of the character described, comprising a set-screw-equipped yoke bearing a fixed standard and adapted to be connected

with a table or like article, a horizontally-swinging crane-like member with its upright pivoted to, and between, lateral extensions of said standard and yoke, and an extensible horizontally-sliding part telescoping said horizontally-swinging crane-like member, and bearing a fixed standard, a book-support having an angularly-adjustable disk pivoted in said standard, and an adjusting-screw passing through said standard and engaging said disk.



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757,203. **PUSH-BUTTON.** CHARLES J. KLEIN, New York, N. Y. Filed Nov. 14, 1902. Renewed Feb. 23, 1904. Serial No. 194,842. (No model.)



*Claim.*—1. An improved device of the class described, comprising a tubular body member provided at opposite sides with transverse openings, adapted to receive circuit-wires extending through said body member, securing means fitting within one end of said body member and engaging with said circuit-wires, and circuit-closing means fitting within the other end of said body member and arranged for direct engagement with said circuit-wires to close an electrical circuit through the same.

2. An improved device of the class described, comprising a tubular body member provided at opposite sides with transverse openings adapted to receive circuit-wires extending through said body member, said body member being closed at one end and provided at the other end with circuit-closing means arranged for direct engagement with said circuit-wires to close an electrical circuit through the same.

3. An improved device of the class described, comprising a tubular body member formed to receive circuit-wires transversely and interiorly, said body member being provided at one end with circuit-closing means arranged for direct engagement with said circuit-wires to close an electrical circuit through the same.

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757,204. **HAIR-CLAMP.** WILLIAM J. KOENIG, New York, N. Y. Filed Aug. 20, 1903. Serial No. 171,173. (No model.)



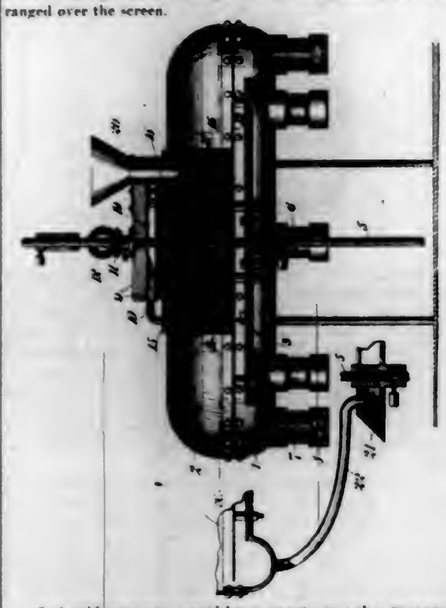
*Claim.*—A hair-clamp, comprising a body formed of an integral section of material and having a front plate curved longitudinally and provided on its upper and lower edges with inwardly-projecting serrations or teeth, and at each end with a stud or projection, one of said studs being curved outwardly reversely to the curvature of the front plate, and an elastic band fastened to the other side and having a bight therein arranged to be engaged with the first-named or reversely-curved stud.

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757,205. **GOLD-SEPARATOR.** JOHN W. KORTHAUS, Denver, Colo. Filed July 29, 1903. Serial No. 167,432. (No model.)

*Claim.*—1. A gold-separator comprising an annular trough, a rotary shaft on which said trough is mounted, a riffle-plate extended upward from the outer wall of the trough and curved inward, a screen arranged horizontally in the separator and having an imperforate portion extended partly across the trough, and mercury-containers communicating with said trough or trap.

2. A gold-separator comprising an annular trough, a plate to which said trough is connected, a shaft on which the said plate is mounted, a riffle-plate extended upward and curved inward from the outer wall of the trough or trap, a screen-plate extended horizontally in the machine above said bottom plate, the said screen-plate having an imperforate portion extended over the trap or trough and terminating inward of the outer wall thereof, mercury-containers communicating with the trough or trap, and grinding devices arranged over the screen.



3. A gold-separator comprising an annular trough or trap mounted to rotate, mercury-pockets carried by said trough or trap, a screen extended through the machine and having an imperforate portion extended over the trap or trough and terminating inward of the outer wall thereof, a grinding-plate mounted on the shaft above said screen, a receiver or hopper having a perforated lower portion surrounding said plate, and a metallic brush coacting with the grinding-plate.

4. A gold-separator comprising an annular trough or trap, tubes depending therefrom and communicating with the interior thereof, bottoms for said tubes having screw-thread engagements therewith, a rotary shaft carrying the trough or trap, a screen extended horizontally in the machine and having an imperforate portion projected over the trough or trap, a curved riffle-plate extended upward from the outer wall of the trough or trap, a perforated plate having teeth secured to the shaft above said screen, a metallic brush supported over said plate, and a receiver surrounding the plate and having a perforated lower portion.

5. A gold-separator, comprising an annular trough, means for imparting rotary motion to the trough, a screen-plate having an imperforate portion extended over the trough and terminating inward of the outer edge thereof, and a mercury-container arranged below the trough and communicating therewith.

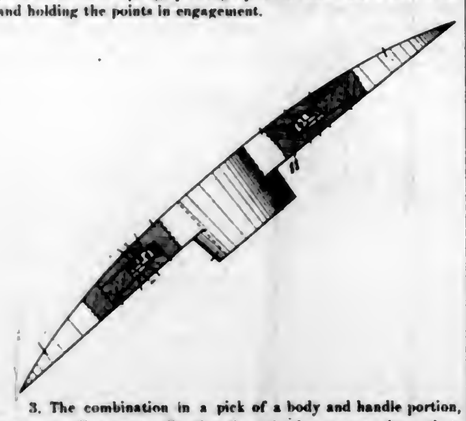
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757,206. **PICK AND POINT.** LAJOS KOVÁCS and MIHÁLY KOVÁCS, San Francisco, Cal. Filed Sept. 25, 1903. Serial No. 174,589. (No model.)

*Claim.*—1. The combination in a pick of a body portion having a handle-socket and extensions at each side thereof, said extensions having tapering rectangular sockets leading inwardly from the center of their outer ends, pick-points having centrally-located shanks adapted to fit said sockets, said shanks being provided with engaging catches and corresponding latches pivoted within and protected by the walls of the sockets and adapted to engage with the catches of the pick-point shanks.

2. The combination with a pick having an opening for the handle, arms extending in either direction therefrom, and having tapering internal sockets made in the outer ends, of pick-points adapted to form a continuation outwardly of said arms, said points having centrally-located shanks adapted to fit the sockets, hook-catches formed upon the inner ends of the pick-point shanks, levers fulcrumed between their ends in the chamber interior thereto having hooks or latches adapted to engage the catches of the pick-points and elastic springs pressing upon the inner ends of the levers and holding the points in engagement.





3. The combination in a pick of a body and handle portion, arms extending outwardly therefrom having rectangular sockets made in their ends, levers pivoted between their ends in said sockets having latches formed at the outer ends and elastic springs pressing endwise against the inner ends by which said latches are normally held substantially central within the sockets, pick-points having shanks fitting the sockets and hook-shaped catches on the inner ends of said shanks, said hooks being adapted to engage the latches of the levers by the yielding of the latter when the pick-points are seated.

4. The combination in a pick-point of a head having socketed extensions in opposite directions, hook-shaped levers fulcrumed between their ends and concealed in said extensions and elastic cushions against which the inner ends of the levers abut, pick-points having shanks adapted to fit the sockets of the body portion and hook-catches upon the inner ends which engage with the latches of the levers, and means by which said latches will be disengaged when it is desired to remove the pick-points.

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757,207. **WRENCH.** JACOB KUHN, Pittsburg, Pa., assignor of one-fourth to A. Eisenrath, Allegheny, Pa. Filed Feb. 15, 1904. Serial No. 193,653. (No model.)



*Claim.*—In a wrench, the combination of a shank carrying a toothed rack and a stationary jaw, a sliding jaw having a central and transverse opening formed therein, a sleeve fitting in said transverse opening and embracing said shank, said sleeve having formed therein screw-threaded apertures, a spring arranged in said sleeve, an apertured lug carrying a beveled heel adapted to engage said toothed rack, and screw-threaded caps secured in said screw-threaded apertures, all parts being arranged substantially as described and for the purposes set forth.

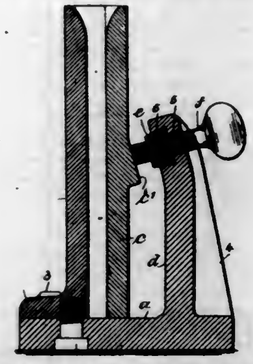
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757,208. **INGOT-MOLD.** CHARLES A. LEIBMAN, New York, N. Y., assignor to E. P. Reichheim and Company, New York, N. Y., a Firm. Filed Aug. 14, 1903. Serial No. 169,432. (No model.)

*Claim.*—1. An ingot-mold comprising a base, a two-part matrix, one member being fixed to said base and the other member slidably adjustable thereon, a post upon said base and adjustable means movable laterally on the post for clamping the movable member of the matrix so that in any position the pressure on both edges of the matrix is the same, making both joints equally tight.

2. An ingot-mold comprising a base, a two-part matrix, one member of which is fixed to the base and the other member slidably adjustable thereon, a post upon said base and extending parallel with the matrix members from one edge of the base to a point more than half-way across the same, and adjustable means for clamping the movable member of the matrix so that in any position, the pressure on both ends of the matrix is the same, making both joints equally tight.

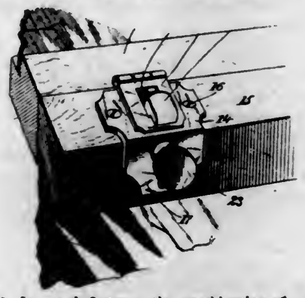
3. An ingot-mold comprising a base, a two-part matrix, one member of which is fixed to the base and the other member slidably adjustable thereon, and having an external shoulder, a post upon said base and extending parallel with the matrix members from one edge of the base to a point more than half-way across the same and having a slot and a dovetail groove in its upper end arranged horizontally, a tapered nut in said groove and a clamp-screw passing through said slot and into and through said nut, whereby the said screw and nut may be moved and adjusted to contact centrally with the shoulder of the adjustable member of the matrix in any position to make the joints at both ends of the matrix equally tight.



4. An ingot-mold comprising a base, a two-part matrix, one member of which is fixed to the base and the other member slidably adjustable thereon, a post upon said base and extending parallel with the matrix members from one edge of the base to a point more than half-way across the same, and having a slot and a dovetail groove in its upper end arranged horizontally, a tapered nut in said groove, and a clamp-screw passing through said slot and into and through said nut whereby the said screw and nut may be moved and adjusted to contact centrally with the shoulder of the adjustable member of the matrix in any position to make the joints at both ends of the matrix equally tight.

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757,209. **SASH-FASTENER.** JAMES A. LONG, Spokane, Wash. Filed Oct. 7, 1903. Serial No. 176,068. (No model.)



*Claim.*—1. In a sash-fastener, the combination of a U-shaped member adapted to be secured to the bottom and side faces of the upper-sash rail, a slotted plate hinged to the inner leg of the U-shaped member and adapted to overreach the top of the lower-sash rail, a member secured to the lower-sash rail having a screw-controlled hook carried by said member and adapted to extend upwardly through said slotted plate to engage the same to hold the two sashes locked together, the sides of said U-shaped member having opposing apertures in horizontal alinement, a securing-bolt received into said apertures and connecting the two opposite sides of the U-shaped member, said bolt passing horizontally from one member to the other through the upper-sash rail, the head of the bolt being countersunk in the inner side of the U-shaped member, and the outer end thereof having threaded engagement with the aperture in the outer side of the U-shaped member.

2. In a sash-fastener, the combination with a member secured to the upper-sash rail and having a slotted plate hinged to its upper end to overlap the lower-sash rail, of a hook carried by the lower-sash rail and adapted to extend upwardly through said slotted plate,

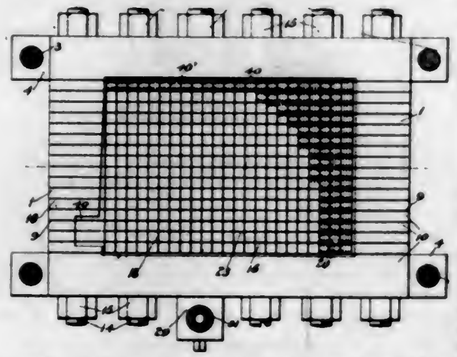
and a screw for moving said hook into and out of locking engagement with said plate.

3. In a sash-fastener, the combination of an attaching-plate arranged to be secured to one rail, a slotted plate hinged to said plate, a plate arranged to be secured to the other rail, the latter plate having a right-angle extension at its front portion, and a lug at its rear portion, the extension and lug each having an aperture, which apertures are in alinement, a screw-rod rotatable in said apertured members, but prevented from endwise movement therein, said plate attached to the second rail containing a slotted portion, and a hook member extending through said slotted portion and having a threaded aperture at which it engages said screw-rod.

4. In a sash-fastener the combination with a member carried by the upper-sash rail, of a hook and screw carried by the lower-sash rail, said screw being held against longitudinal movement and engaging said hook to move the same into and out of locking engagement with said member carried by the upper sash

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**757,210. APPARATUS FOR MAKING GRIDS FOR SECONDARY-BATTERY PLATES.** ALBERT F. MADDEN, Newark, N. J., assignor, by mesne assignments, to the Electric Storage Battery Co., Philadelphia, Pa., a Corporation of New Jersey. Filed Apr. 11, 1903. Serial No. 152,155. (No model.)



*Claim.*—1. In apparatus of the character described, a grid-forming die provided with channels and interstices in which the grid is formed and means through which fluid is admitted to said channels and interstices to eject the grid from the die.

2. In apparatus of the character described, a composite grid-forming die constructed of immovable parts, and provided with channels and interstices projecting below the facial plane of the die for the reception of the grid-forming metal, and means for supplying fluid to the channels and interstices of the die for the purpose of ejecting the grid after it has been formed.

3. In apparatus of the character described, a plurality of hard-metal bars having interstices and channels cut therein, a plurality of soft-metal plates interjacent and contiguous to the metal bars adapted to form channels between said bars, and means for conveying fluid to the channels and interstices of the assembled die, for the purpose explained.

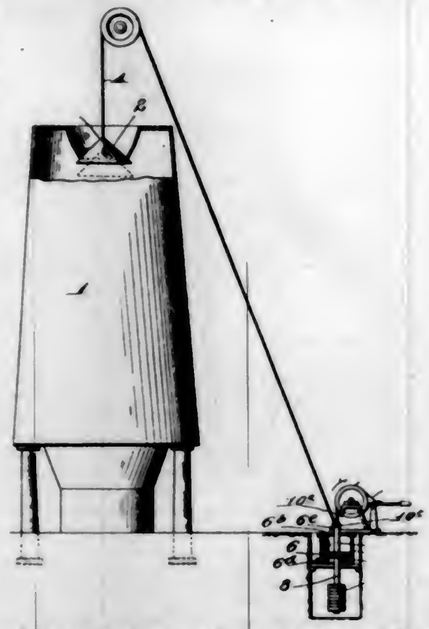
4. In apparatus of the character described, a grid-forming die composed of alternate series of steel bars provided with transverse channels and interstices and soft-metal plates arranged to form longitudinal channels, means for binding the bars and plates together, and means for admitting fluid to the channels and interstices, for the purpose explained.

5. In apparatus of the character described, a die whose component grid-forming elements are a series of hard-metal bars, provided with channels and interstices projecting below the facial plane of the die, and a series of soft-metal plates arranged in alternate relation with the said bars and cut away below the facial plane of the die to form longitudinal channels, means for securing the bars and plates in contiguous relation, and a pipe forming part of the assembled die and provided with openings for admitting fluid into the channels and interstices, for the purpose explained.

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**757,211. ELEVATING AND LOWERING DEVICE FOR BLAST-FURNACE BELLS.** WILLIAM I. MANN, Pittsburg, Pa. Filed Dec. 22, 1902. Serial No. 136,269. (No model.)

*Claim.*—1. A device for elevating and lowering blast-furnace bells comprising a flexible member adapted to be connected directly to the bell, a rocking drum, an air-cylinder, a piston operating in said cylinder and connected directly to said flexible member, a counterweight connected to the said piston, a flexible connection between said piston and said drum, and operating means for said drum.



2. A device for elevating and lowering blast-furnace bells comprising a flexible member adapted to be connected directly to the bell, a rocking drum, an air-cylinder, a piston operating in said cylinder and connected directly to said flexible member, a counterweight connected to the said piston, a flexible connection between said piston and said drum, operating means for said drum, and means for retarding the movement of said drum.

3. A device for elevating and lowering blast-furnace bells comprising a cable connected at its upper end to the bell, a rocking drum, an air-cylinder, a piston operating in said cylinder, a piston-rod connected to said piston and extending above and below the same, said upper end of said piston-rod connected to the lower end of said cable, a flexible connection between the upper end of said piston-rod and said drum, a counterweight connected to the lower end of said piston, and means for operating said drum.

4. A device for elevating and lowering blast-furnace bells comprising a cable connected at its upper end to the bell, a rocking drum, an air-cylinder, a piston operating in said cylinder, a piston-rod connected to said piston and extending above and below the same, said upper end of said piston-rod connected to the lower end of said cable, a flexible connection between the upper end of said piston-rod and said drum, a counterweight connected to the lower end of said piston, means for operating said drum, and means for retarding the movement of said drum.

5. A device for elevating and lowering blast-furnace bells comprising a flexible member connected directly at its upper end to the bell, a gravity-returned cushioning device for the bell connected directly at its upper end to the lower end of said flexible member, a rocking drum, and a direct flexible connection between said drum and the upper end of the cushioning device, said drum when operated adapted to elevate said flexible connection causing thereby the lowering of the bell and said cushioning device adapted through intervention of said flexible member to return the bell by gravity to its closing position.

6. A device for elevating and lowering blast-furnace bells comprising a flexible member connected directly at its upper end to the bell, a gravity-returned cushioning device for the bell connected directly at its upper end to the lower end of said flexible member, a rocking drum, a direct flexible connection between said drum and the upper end of the cushioning device, said drum when operated adapted to elevate said flexible connection causing thereby the lowering of the bell and said cushioning device adapted through intervention of said flexible member to return the bell by gravity to its closing position, and means for retarding the movement of said rocking drum.

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**757,212. TYMPAN FEED-GAGE FOR PRINTING-PRESSES.** IRWIN H. MILLS, Cincinnati, Ohio, assignor to William J. Bauman, Dayton, Ky. Filed Feb. 13, 1903. Serial No. 143,191. (No model.)



*Claim.*—1. A gage-pin or the like formed of a piece of spring metal bent upon itself to produce three members one above another, the lower member having means for attachment to a tympan-sheet and the upper member having a downwardly-directed part forming a bearing to be engaged by a sheet to be printed and a pliant tongue adjustably held to the members and having an end portion extended in front of the said bearing.

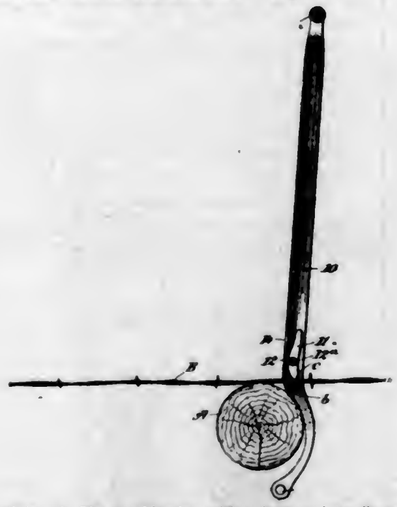
2. A gage-pin or the like formed of a piece of spring metal bent upon itself to produce three members one above another, the lower member having its free end rearwardly extended and pointed to be passed through a tympan-sheet and said lower member and also the member above it being adapted to press elastically on the typman-sheet to hold the device in position thereon and the upper member having its forward end provided with a downwardly-directed part forming a bearing to be engaged by a sheet to be printed.

3. A gage-pin or the like formed of a piece of metal bent upon itself to form three members, the lower member having at its rear end a point to be passed through a tympan-sheet and the forward end of the upper member being bent downward and provided with pointed parts spaced apart and adapted to bear on a tympan-sheet, and a pliant tongue held for movement on the gage with an end passed through the space between said pointed parts.

4. A gage-pin or the like formed of a piece of spring metal bent upon itself to produce three members one above another, the lower member having a pointed rear end to be passed through a tympan-sheet and the upper member having its forward end provided with a downwardly-directed part forming a bearing to be engaged by a sheet to be printed and a pliant tongue adjustably held to the upper member with an end portion extended in front of said bearing.

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**757,213. WIRE-FENCE TOOL.** JOHN A. MILLER, Avondale, Colo. Filed May 19, 1903. Serial No. 157,772. (No model.)



*Claim.*—1. The combination with a lever, a laterally-curved head on one end of the lever, and a recessed shoulder on the head at each side of the lever where the head is joined thereto, of two dogs respectively pivoted by a single bolt on opposite sides of the lever, each dog having a lateral recess therein, and springs engaging the bolt and dogs within the respective recesses in said dogs, each dog having a cam-shaped end which coacts with a respective recessed shoulder to hold a wire.

2. The combination with a lever having a transverse grip-piece on one end, a laterally-curved head on the opposite end, terminating in a perforated enlargement, and a shoulder between the head and the body of the lever, of a spring-pressed dog pivoted on the lever and having a cam-shaped end, that coacts with the shoulder, to hold a wire.

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**757,214. PISTON-RING.** DONALD B. MORISON, Hartlepool, England. Filed Feb. 7, 1903. Serial No. 142,394. (No model.)



*Claim.*—1. The combination with a piston and its cover, of a packing-ring between, free to expand, and a continuous ring independent of the cover to limit the expansion of the packing-ring, substantially as set forth.

2. A packing for pistons comprising a split ring having a shoulder at its inner periphery and a continuous ring encircling the shoulder to limit the expansion of the split ring.

3. A packing for pistons comprising a split ring having shoulders formed on its opposite flat faces and continuous rings encircling the shoulders to limit the expansion of the split rings, substantially as and for the purposes set forth.

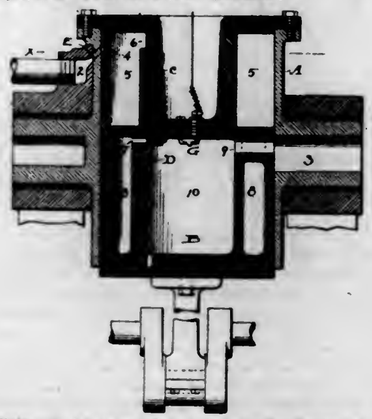
4. The combination with a piston and its cover, of a piston-packing between them and an independent continuous ring of less diameter than the bore of the cylinder into which the piston fits to surround a portion of the packing and limit its expansion, substantially as set forth.

5. The combination with a piston and its cover, of a packing-ring having a lateral shoulder and a continuous ring having a thickness about equal to the height of the shoulder, and surrounding it, and a groove cut in the inner circular face of the said continuous ring, substantially as and for the purposes set forth.

6. The combination with a piston having a body, a cover and a peripheral groove, one wall of which is formed by the cover and the opposite wall in the body, oppositely-situated circular grooves in the opposite walls of the peripheral groove in the piston, an expansible packing in the groove in said piston having grooves on its opposite faces and a continuous ring lying partly in a groove in the packing and partly in a groove in a side wall of the peripheral groove of the piston, substantially as described.

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**757,215. EXPLOSIVE-ENGINE.** JOHN J. MURRAY, Cleveland, Ohio, assignor of one-half to Davis D. Hobbs, Cleveland, Ohio. Filed July 8, 1903. Serial No. 164,646. (No model.)



*Claim.*—1. In an explosion-engine, a piston having an internal explosion-chamber and a gas-carrying chamber about said explosion-chamber and open thereto through a port, substantially as described.

2. In an explosion-engine, a suitable cylinder and a piston therein provided with a central explosion-chamber and an annular chamber about the same, said annular chamber connected by a passage with said explosion-chamber, and an exhaust-port from said explosion-chamber, substantially as described.

3. In an explosion-engine, a cylinder provided with a compression-head extending into the same from one end and an annular space between the wall of the cylinder and said head provided with

a gas-inlet, in combination with a piston having an annular chamber adapted to run into the said annular space, and the said parts constructed to fill the said annular chamber with gas on the forward stroke of the piston when the explosion occurs, substantially as described.

4. In an explosion-engine, a cylinder provided with an inwardly-extending explosion-head and an annular space between said head and the walls of the cylinder, in combination with a piston having an annular chamber adapted to run into said annular space, said parts provided with passages to fill the said annular chamber with gas on the compression-stroke of the piston, and the piston having an outlet-port from the said annular chamber into the interior thereof and an exhaust from said interior, substantially as described.

5. The cylinder having an explosion-head extending into one end thereof and a piston in the other end, the said cylinder having an annular space about said head with a gas-inlet and a recess in the wall thereof, and the said piston having a central explosion-chamber and a gas-receiving space outside said chamber provided with a lateral passage opening into said chamber and in position to communicate with the said recess in the cylinder on the forward stroke of the piston, substantially as described.

6. In explosion-engines, a cylinder provided with an inwardly-extending explosion-head, in combination with a piston having an explosion-chamber opposite said head and a walled gas-carrying space having an outlet into the said explosion-chamber, substantially as described.

7. In an explosion-engine, a cylinder having a space at one end with a gas-inlet, in combination with a piston having a gas-carrying chamber arranged to run into said space and provided with an inlet-passage for gas, whereby on the forward stroke of the piston the gas-carrying chamber thereof is filled with gas, substantially as described.

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**757,216. SPRINKLER-CAP BOTTLE-CLOSURE. EDWARD A. MCILHENNY, New Iberia, La. Filed June 24, 1903. Serial No. 162,963. (No model.)**




*Claim.*—1. A stopperless bottle-cap having a sprinkler-nipple formed thereon, and a foil formed on the cap and adapted to be twisted or crimped about the neck of a bottle to fix the cap thereto.

2. A bottle-cap having an annular concavity formed therein, a disk covering the concavity, and a thin sheet or foil thimble formed on the cap.

3. A bottle-closure comprising a cap having a sprinkler-nipple, a concavity formed in the cap, a seat surrounding the concavity, and a disk applied to the seat over the concavity.

4. A bottle-closure comprising a cap having a sprinkler-nipple, a stem in communication with the nipple, a seat surrounding the stem, a flexible disk held by the stem on the seat, and a foil formed on the cap and projecting from the periphery of the seat.

5. A bottle-closure comprising a cap having a sprinkler-nipple, a stem of larger internal diameter than the internal diameter of the nipple formed on the cap, a concavity or groove surrounding the stem, a seat surrounding the concavity, a flexible disk fitting the stem and resting on the seat over the cavity, and a foil formed on the cap and projecting from the periphery of the seat.

6. A bottle-closure comprising a cap having a sprinkler-nipple, an inner stem the bore of which is of larger diameter than the bore of the nipple, a shoulder at the juncture of the stem and nipple to limit or restrict the discharge of the latter, a seat surrounding the stem, a disk held by the stem on the seat, and a foil formed on and depending from the cap to form a crimpable thimble.

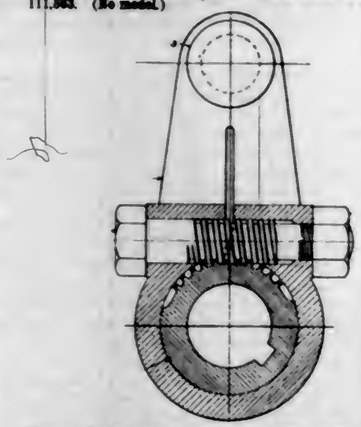
7. A bottle-closure comprising a stiff metallic cap-plate having a sprinkler-nipple formed thereon, a seat in the face of the plate opposite the nipple, a stem on the seat-face of the cap forming a continuation of the nipple, and a thin sheet or metallic foil projecting from the cap for attaching the latter to a bottle.

8. A bottle-closure comprising a cap having a sprinkler-nipple, a stem in communication with the nipple, a bead on the stem, a flexible disk fitting the stem and held thereon by the bead, and a foil-thimble depending from the cap.

9. A bottle-cap having a sprinkler-nipple, a stem on the cap and forming a passage from the bottle to the nipple, a cork disk carried by the stem, and a flexible foil depending from the cap and adapted to be twisted or crimped about the bottle-neck to fix the cap.

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**757,217. MEANS FOR ADJUSTING ENGINE-VALVES. EDWARD S. NEWTON, Fond du Lac, Wis. Filed June 16, 1902. Serial No. 111,863. (No model.)**

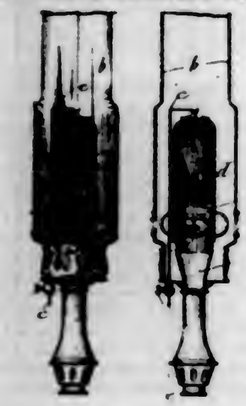


*Claim.*—1. In combination, a valve-stem, a sleeve keyed on the valve-stem and provided on its circumference with worm-gear teeth, a rocker-arm on the sleeve about the valve-stem the rocker-arm being split from the sleeve and valve-stem aperture in the direction of its length toward its wrist-pin extremity, a worm revoluble in the rocker-arm and gearing with said sleeve, the worm being disposed at a right angle to the axis of the valve-stem and located on the side of the sleeve that is toward the wrist of the rocker-arm, and means for pinching the split rocker-arm to the worm.

2. In combination, a valve-stem provided peripherally with worm-gear teeth, a rocker-arm about the valve-stem the rocker-arm being split from its valve-stem aperture in the direction of its length toward its wrist-pin extremity, a worm revoluble in the rocker-arm and gearing with said worm-teeth, the worm being disposed at a right angle to the axis of the valve-stem and located on that side of the valve-stem that is toward the wrist of the rocker-arm, and means for pinching the split rocker-arm to the worm.

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**757,218. SELF-IGNITING BURNER. GUSTAV OBERLAENDER, New York, N. Y. Filed July 22, 1903. Serial No. 166,576. (No model.)**

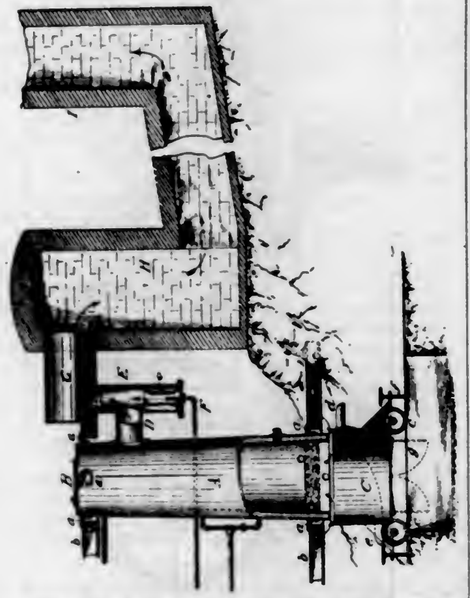


*Claim.*—1. An igniting-cap for incandescent gas-burners, comprising a sleeve attachable to the upper part of a burner-tube, a top for said sleeve provided with openings, and means supported within said sleeve and below said top capable of incandescence when impinged by a current of combustible gas, substantially as set forth.

2. An igniting-cap for incandescent gas-burners, comprising a sleeve attachable to a burner-tube, a top for said sleeve provided with openings, a screen in said sleeve, and means supported within said sleeve below said top and in proximity to said screen capable of incandescence when impinged by a current of combustible gas, substantially as set forth.

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**757,220. PROCESS OF SMELTING ORES. ALLEN R. PARTRIDGE, San Francisco, Cal., assignor of one-half to Frank W. Page, San Francisco, Cal. Filed Mar. 30, 1900. Renewed July 22, 1903. Serial No. 166,635. (No specimens.)**



*Claim.*—The herein-described method of smelting ores consisting in admitting air freely at atmospheric pressure to the bottom of the smelter, and producing a suction at the top of the smelter by injecting a jet of steam or air through a relatively narrow passage, causing said steam or air to pass transversely an outlet from the upper end of the smelter and to then expand to fill a relatively wider passage beyond said outlet, substantially as described.

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**757,221. SMELTING-FURNACE. ALLEN R. PARTRIDGE, San Francisco, Cal., assignor of one-half to Frank W. Page, San Francisco, Cal. Filed Mar. 30, 1900. Renewed July 22, 1903. Serial No. 166,636. (No model.)**



*Claim.*—A self-supporting burner, comprising a burner-tube, a foraminated wall in said burner-tube arranged transversely thereto, and means supported within said burner-tube below the upper edge of the same and above the foraminated wall, adapted to be brought to incandescence when impinged by a current of combustible gas, substantially as set forth.

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**757,219. IGNITING ATTACHMENT FOR BURNERS. GUSTAV OBERLAENDER, New York, N. Y. Filed July 27, 1903. Serial No. 167,072. (No model.)**

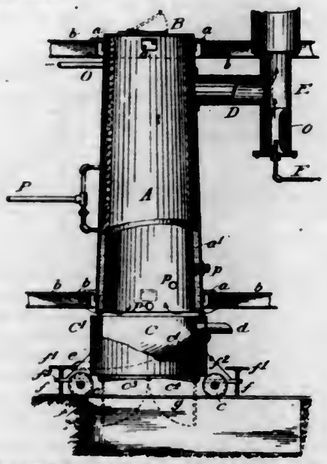


*Claim.*—1. An igniting-cap for incandescent gas-burners, comprising a sleeve attachable to the upper part of a burner-tube, a top for said sleeve provided with openings, and means supported within said sleeve and below said top capable of incandescence when impinged by a current of combustible gas, substantially as set forth.

2. An igniting-cap for incandescent gas-burners, comprising a sleeve attachable to a burner-tube, a top for said sleeve provided with openings, a screen in said sleeve, and means supported within said sleeve below said top and in proximity to said screen capable of incandescence when impinged by a current of combustible gas, substantially as set forth.

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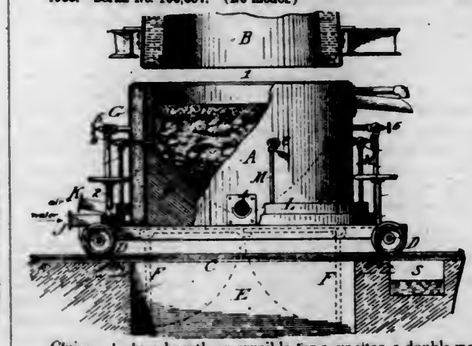
*Claim.*—1. In a smelter, an outlet for products of combustion, a flue having one closed end and extending across and communicating with said outlet and of reduced diameter at one side of said outlet, and an injector-pipe placed at said closed end in the reduced part thereof, and discharging in said contracted part between the closed end and the outlet whereby the fluid injected through said pipe will be discharged past said outlet and fill the normal area of the flue beyond the outlet.



2. In a smelter, an outlet for products of combustion, a flue having one closed end and extending across and communicating with said outlet, and of reduced diameter at one side of said outlet, an injector-pipe entering through said closed end and into the reduced diameter; and a stack of greater diameter than the normal diameter of the flue, and communicating therewith, whereby a fluid injected through said pipe will be discharged past the said outlet, will fill the normal area of the flue beyond the outlet, and will then escape into said stack.

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**757,222. HEARTH FOR SMELTING-FURNACES. ALLEN R. PARTRIDGE, San Francisco, Cal., assignor of one-half to Frank W. Page, San Francisco, Cal. Filed Oct. 22, 1900. Renewed July 22, 1903. Serial No. 166,637. (No model.)**



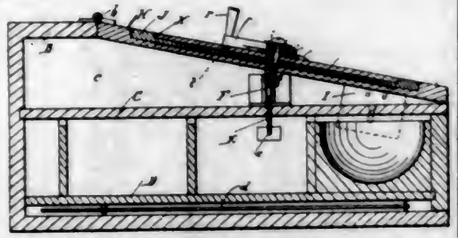
*Claim.*—1. In a hearth or crucible for a smelter, a double wall or casing for the same forming a water-space, extending continuously and entirely around the hearth, a water-supply pipe and a number of water-inlet pipes to said space, all in communication with said water-space.

2. In a hearth or crucible for a smelter, a double wall or casing for the same forming a water-space, extending continuously and entirely around the hearth, a water pipe or passage extending around the hearth, valved pipes extending from said passage into the water-space, a water-supply pipe leading into said passage and a water-discharge.

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**757,223. CASH-REGISTER. WILLIAM G. POWELL, Tallahassee Fla., assignor to Eugene O. Locke and William B. Owen, Duval county Fla. Filed Sept. 1, 1903. Serial No. 171,473. (No model.)**

*Claim.*—1. In a cash-register, the combination, with a case, and a movable top plate normally locked to the said case and provided with a sight-slot and numbered on its upper side; of a revoluble ring arranged above the said top plate and numbered on its under side in line with the said sight-slot, the numerals on the said ring being readable when the said top plate is unlocked from the case and raised.



2. In a cash-register, the combination, with a case, and a movable top plate normally locked to the said case and provided with a sight-slot and numbered on its upper side, of a revoluble ring provided with a series of sight-holes which come over one end of the said sight-slot, said ring being numbered on its under side in line with the other end of the said sight-slot, and a revoluble disk numbered on its under side in line with the sight-holes of the said ring, the numerals on the said ring and disk being readable when the said top plate is unlocked from the case and raised.

3. In a cash-register, the combination, with a case having a horizontal partition, and a top plate hinged to the case and provided with a sight-slot, the said top plate being numbered on its upper side and a chamber being formed between the said top plate and partition; of a revoluble ring arranged above the said sight-slot and numbered on its under side in line with the said sight-slot.

4. In a cash-register, the combination, with a case, and a movable top plate normally locked to the said case and provided with a circular chamber in its upper side and a sight-slot in the bottom of the said chamber; of a revoluble ring provided with a circular recess in its upper side and a series of sight-holes which come over one end of the said sight-slot, said ring being journaled in the said chamber, and a revoluble disk journaled in the said recess over the sight-holes.

5. In a cash-register, the combination, with a top plate, a revoluble ring provided with a series of holes, and a revoluble disk also provided with a series of holes; of a pointer for engaging with the said holes and revolving the said disk and ring, a stop for the said pointer provided with a slot and secured to the said plate, and a catch pivoted to the said stop in the said slot and normally preventing the said disk from revolving.

6. In a cash-register, the combination, with a top plate, a revoluble ring provided with a series of holes, a revoluble disk also provided with a series of holes, and a central pin projecting from the said plate; of a pointer for engaging with the said holes and revolving the said disk and ring, a stop-bar for the said pointer provided with a slot and secured at one end to the said pin and at the other to the said plate, and a catch which is pivoted in the said slot and which normally prevents the said disk from revolving.

7. In a cash-register, the combination, with a top plate, a revoluble ring provided with a series of holes and a wedge-shaped trip on its upper side, and a revoluble disk also provided with a series of holes; of a pointer for engaging with the said holes and revolving the said disk and ring, a stop for the said pointer provided with a slot and secured to the said plate, and a catch pivoted to the said stop in its said slot and arranged in the path of the said trip and normally engaging with the said disk.

8. In a cash-register, the combination, with a case, and a movable top plate normally locked to the said case and provided with a sight-slot and numbered on its upper side, a revoluble ring provided with a series of exposed holes and a series of sight-holes which come over one end of the said sight-slot, said ring being numbered on its under side in line with the other end of the said sight-slot, and a revoluble disk also provided with a series of exposed holes and numbered on its under side in line with the sight-holes of the said ring; of a pointer for engaging with the said exposed holes and revolving the said disk and ring, a stop for the said pointer secured to the said plate, and a catch which normally prevents the said disk from revolving.

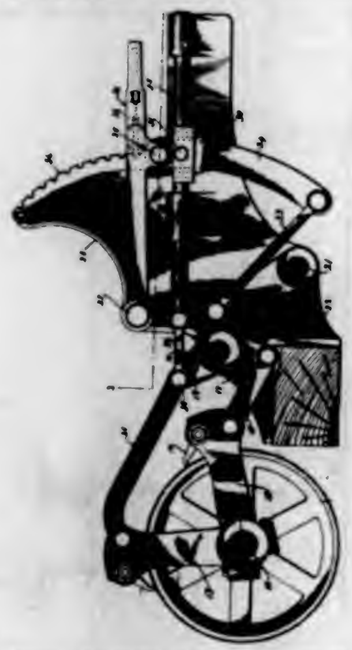
9. In a cash-register, the combination, with a case having a slidable cash-drawer, a top plate provided with a hole, and a catch which normally locks the cash-drawer and which projects upward through the said hole in the top plate; of a revoluble ring provided with a series of holes, a pointer for engaging with the said holes and revolving the said ring and operating the said catch, and a stop for the pointer secured to the said plate adjacent to the projecting end of the said catch.

10. In a cash-register, the combination, with a case having a slidable cash-drawer, a top plate provided with a central pin and a hole, and a catch which normally locks the cash-drawer and which has a V-shaped tappet on one end which projects through the said hole in the top plate; of a revoluble ring provided with a series of holes, a pointer pivoted on the said pin and engaging with the said holes and operating to revolve the ring and actuate the said tappet, and a stop for the said pointer secured to the said plate adjacent to the said tappet so that the end portion of the pointer can be placed between the said stop and the tappet.

11. In a cash-register, the combination, with a case, and a movable top plate normally locked to the said case and provided with a sight-slot and numbered on its upper side, a revoluble ring provided with a series of sight-holes which come over one end of the said sight-slot, said ring being numbered on its under side in line with the other end of the said sight-slot, and a revoluble disk numbered on its under side in line with the sight-holes of the said ring; of a releasable catch which normally prevents the said disk from revolving, means for revolving the said disk and the said ring in one direction, and means for preventing the said ring and disk from being revolved in the reverse direction.

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**757,224. SAWMILL SET-WORKS.** DE WITT C. PRESCOTT, Chicago, Ill., assignor of three-fourths to Sumner K. Prescott, Loren L. Prescott, and Edward L. Prescott, Marinette, Wis. Filed June 12, 1903. Serial No. 161,142. (No model.)



*Claim.*—1. In a sawmill set-works, in combination, a rotatable shaft, a ratchet-wheel thereon, oscillating pawl-carriers, a rocker-shaft having crank-arms, link connection between the crank-arms and the pawl-carriers, a reciprocating element connected with a crank-arm of the rocker-shaft, an oscillating link or arm in sliding engagement with the reciprocating member, and means for actuating the oscillating link or arm.

2. In a sawmill set-works, in combination, a rotatable shaft, a ratchet-wheel thereon, oscillating pawl-carriers, a rocker-shaft having crank-arms, link connection between the crank-arms and the pawl-carriers, a reciprocating element connected with a crank-arm of the rocker-shaft, a second rocker-shaft having a crank-arm, a block pivotally attached to the reciprocating element, a pivoted hand-lever, a link or arm pivotally attached to the hand-lever and in sliding engagement with the block, and link connection between such arm and the crank-arm of the second rocker-shaft.

3. In a sawmill set-works, in combination, a rotatable shaft, a ratchet-wheel thereon, pawl-carriers oscillating on the shaft, a reciprocating bar connected with the pawl-carriers, a block pivotally attached to the bar, a pivoted hand-lever, a swinging arm pendent from the lever and in sliding engagement with the block, and means for swinging the arm.

4. In a sawmill set-works, in combination, a rotatable shaft, a ratchet-wheel thereon, pawl-carriers oscillating on the shaft, a reciprocating bar connected with the pawl-carriers, a block pivotally attached to the bar, a pivoted hand-lever, a quadrant over which the lever sweeps, a swinging arm pendent from the lever and in sliding engagement with the block, and means for swinging the arm.



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**757,225. CIGARETTE OR CIGAR BOX.** ALOIS MADER G. PHAKI, New York, N. Y. Filed June 20, 1903. Serial No. 162,343. (No model.)



*Claim.*—1. A box for the purpose described, comprising a casing member having an opening at one side, and a sliding member having a match-receptacle at its inner end, the said receptacle having an open end arranged for registering with the side opening of the casing when said sliding member is partly drawn out.

2. In a box, the combination with a casing member having an opening at one side, of an inner sliding member comprising a tray portion, an extension from said tray portion adapted to fold over the tray, the said extension also forming the top, bottom and a side wall of a match-receptacle at the inner end of the tray, and an extension on one of the side walls of the tray, forming an end wall of said receptacle, the opposite end of said receptacle being open to register with the side opening of the casing.

3. In a box, the combination with a casing member having an opening in one side near the lower edge, of an inner sliding member comprising a tray portion, an extension from the bottom of said tray portion adapted to fold over the tray, the said extension forming the top, bottom and a side wall of a match-receptacle at the inner end of the tray, and flaps on said extension for engaging against the sides of the tray.

4. In a box, the combination with a casing closed at one end and open at the other end, the said casing being provided with an opening in one of its side walls, of an inner sliding member comprising a tray, an end-closure for said tray, an extension at the inner end of said tray adapted to fold over the tray, and also to form the walls of a match-receptacle at the rear end of the tray, and lateral flaps on said extension for engaging against the sides of the tray.

5. In a box, the combination with a casing having an opening through one of its side walls, one end of said casing being closed and the other end open, of an inner sliding member having a tray portion, a flap at one end of the tray forming a closure, an extension on the opposite end of the tray having a portion forming the bottom wall of a match-receptacle, a portion forming the side wall of the receptacle, a portion forming the top wall of the receptacle, and a portion extended over the tray and having lateral flaps at its end for engaging the sides of the tray, said match-receptacle being open at one end and closed at the other end.

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**757,226. CARPET-FASTENER.** RICHARD REINHOEB, Newark, N. J. Filed Oct. 9, 1903. Serial No. 176,261. (No model.)



*Claim.*—1. A device for fastening carpets, or the like, comprising, a chambered shell adapted to be arranged in a floor or similar body, an annular bead connected with said shell adapted to become embedded in the floor or similar body to prevent the withdrawal of said shell from the floor or similar body, a holding means in said shell, and a pin or stud inserted in the carpet, or the like, and in frictional engagement with said holding means in the shell, substantially as and for the purposes set forth.

2. A device for fastening carpets, or the like, comprising, a chambered shell adapted to be arranged in a floor or similar body, an annular bead connected with said shell adapted to become embedded in the floor or similar body to prevent the withdrawal of said shell from the floor or similar body, a flexible holding means in said shell, and a pin or stud inserted in the carpet, or the like, and in frictional holding engagement with said flexible holding means in the shell, substantially as and for the purposes set forth.

3. A device for fastening carpets, or the like, comprising, a chambered shell adapted to be arranged in a floor or similar body, an annular bead connected with said shell arranged to become embedded in said floor or similar body to prevent the withdrawal of said shell from the said floor or similar body, a flexible and longitudinally-split tubular sleeve in said shell, and a fastening pin or stud adapted to be brought in frictional holding engagement with the tubular part of said split sleeve, substantially as and for the purposes set forth.

4. The herein-described carpet-fastener, consisting, of a shell 4 provided with an annular bead 5, a throat 7, and a flaring mouth 6, a tubular sleeve in said shell, said sleeve being arranged between said bead and said throat, and a pin or stud adapted to be brought in frictional holding engagement with the tubular part of said sleeve, substantially as and for the purposes set forth.

5. The herein-described carpet-fastener, consisting, of a shell 4 provided with an annular bead 5, a throat 7, and flaring mouth 6, a tubular and longitudinally-split sleeve in said shell, said sleeve being arranged between said bead and said throat, and a pin or stud adapted to be brought in frictional holding engagement with the tubular part of said sleeve, substantially as and for the purposes set forth.

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**757,227. BOLTING-MILL.** ARTHUR RENAULT, Chateauroux, and GEORGES CUSSOU, St. Genou, France. Filed Feb. 1, 1900. Serial No. 3,694. (No model.)



*Claim.*—1. An apparatus for bolting or grading flour and other pulverulent materials, comprising hard smooth-surfaced rollers, revolving at a high speed and arranged at different levels and each in receiving relation to the roller next above, whereby the fine particles will be retained on the rollers by the adhesive property of said particles while the coarse particles will be thrown off, as set forth.

2. An apparatus for bolting or grading flour and other pulverulent materials, comprising hard smooth-surfaced rollers revolving at a high speed and arranged at different levels and each in receiving relation to the next roller above, whereby the fine particles will be retained on the rollers by the adhesive property of said particles while the coarse particles will be thrown off, and scrapers for removing the fine particles adhering to the said rollers, as set forth.

3. An apparatus for bolting or grading flour and other pulverulent materials, comprising hard smooth-surfaced rollers revolving at a high speed and arranged at different levels and in receiving relation to each other, whereby the fine particles will be retained on the rollers by the adhesive property of said particles while the coarse particles will be thrown off, a concave grid above the uppermost roller, a rotary brush the periphery of which is adjacent to and concentric with the grid, and means for feeding the material to the brush, as set forth.

4. An apparatus for bolting or grading flour and other pulverulent materials, comprising a plurality of rollers rotating at a high speed and having hard smooth surfaces, said rollers being arranged one above the other and adapted to retain the fine particles thereon by the adhesive property of said particles, a hollow cylinder having a perforated or reticulated sheathing arranged above the uppermost roller, and means for feeding the material to the periphery of said cylinder, as set forth.

5. An apparatus for bolting or grading flour and other pulverulent materials, comprising a plurality of rollers rotating at a high speed and having hard smooth surfaces, said rollers being arranged one above the other, a hollow cylinder having a perforated or reticulated sheathing and arranged above the uppermost roller, a spout for delivering the material to the periphery of the cylinder, a grid at the upper part of the spout, and a rotary brush adjacent to the grid, as set forth.

6. An apparatus for bolting or grading flour and other pulverulent materials, comprising a plurality of rollers having hard smooth surfaces and rotating at a high speed, said rollers being arranged one above the other and adapted to retain the fine particles thereon by the adhesive property of said particles, and means for causing the material to be delivered to the said rollers nearer to or farther from their longitudinal centers, as and for the purpose set forth.

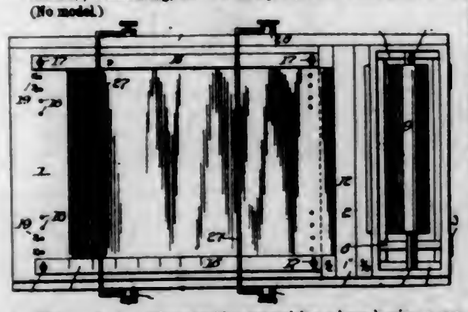
7. An apparatus for bolting or grading flour and other pulverulent materials, comprising a series of rollers having hard smooth surfaces, said rollers being arranged one above the other and adapted to retain the fine particles thereon by the adhesive property of said particles, a scraper for each roller for removing the fine particles therefrom, a feed device for delivering the material to the uppermost roller, an outwardly and downwardly inclined plate arranged adjacent to the top and bottom rollers, and adjustable inclined plates for causing the material to be delivered to the rollers nearer to or farther from their longitudinal centers, as set forth.

8. In an apparatus for bolting or grading flour and the like, a plurality of hard smooth-surfaced rollers revolving at a high speed and arranged one above the other, means for delivering the material to the uppermost roller, and an adjustable plate for each roller for causing the material to be delivered nearer to or farther from the longitudinal center thereof, as set forth.

9. In an apparatus for bolting or grading flour and the like, a plurality of hard smooth-surfaced rollers revolving at a high speed and arranged one above the other, a scraper for each roller, means for delivering the material to the uppermost roller, and adjustable plates for causing the material to be delivered to the rollers nearer to or farther from their longitudinal centers, as set forth.

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757,228. **CUTTING AND TRIMMING MACHINE.** ALBERT R. ROEHIGK, Wilkinsburg, Pa. Filed Aug. 18, 1903. Serial No. 169,570. (No model.)



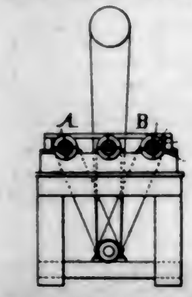
*Claim.*—1. A cutting-machine comprising a base having a casing pivotally secured to its one end, longitudinal guides carried upon said base, guides carried within said casing and adapted to support a roll, yokes carried within guides upon the sides of the base and adapted to be adjusted, suitable scales arranged upon the guides mounted upon the casing, substantially as described.

2. A cutting-machine comprising a base having a casing pivotally secured to its one end, guides carried within said casing and adapted to support a roll, adjustable longitudinal guides carried upon the base and having a scale arranged thereon, and adjustable horizontal guides secured to the sides of the base, substantially as described.

3. A cutting-machine comprising a base having a casing pivotally secured to its one end, guides mounted within said casing, bearings supported upon said guides, a roll rotatably mounted upon said bearings, adjustable longitudinal guides carried upon the base and having a scale arranged thereon, and adjustable horizontal guides secured to the sides of the base, substantially as described.

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757,229. **ARTICHOKE-TRIMMER.** ALPHONSE ROUSSEGUIERE, San Francisco, Cal., assignor of one-half to Robert Eickmott, San Francisco, Cal. Filed Jan. 2, 1903. Serial No. 137,488. (No model.)




*Claim.*—1. A device for trimming artichokes and the like including a head having a central portion made concaved and with a central opening for receiving the stem of the artichoke, said concaved portion provided with slots at opposite sides with other slots at points intermediate of the first-named slots; cutters projecting into said first-named slots and adjustably secured to the rear outside portion of the concaved portion, and conforming substantially to the curvature thereof; other cutters fitting the second-named slots; and means for rotating said head.

2. A device for trimming artichokes and the like including a cutter-head having an outwardly-presented convex portion with a central opening said head having, also, an annular rim surrounding its convex portion; cutters secured in the convex portion of the cutter-head and provided with convex edges; and means for rotating the cutter-head.

3. A device for trimming artichokes and the like including cutter-heads having yokes and having outwardly-presented convex portions with centrally-located openings; outwardly-converging cutters secured in said convex portion and provided with convex cutting edges; means adjustably securing the cutters to the head; and means for rotating the yokes.

4. An artichoke-trimmer comprising cutter-heads having outwardly-presented concaved portions to receive the vegetable, and central openings to receive the stems thereof; other cutter-heads having outwardly-presented convex portions with central openings; cutting appliances positioned in the concaved and convex portions; and means for rotating the heads.

5. A device for trimming artichokes including a disk having a plane exterior portion, a concave portion interior thereto, with a central opening, and slots radiating to the outside of the concave portion, knives adjustably fixed with their cutting edges projecting into the concavity, and other knives projecting through the plane surface to operate in unison with the first-named knives.

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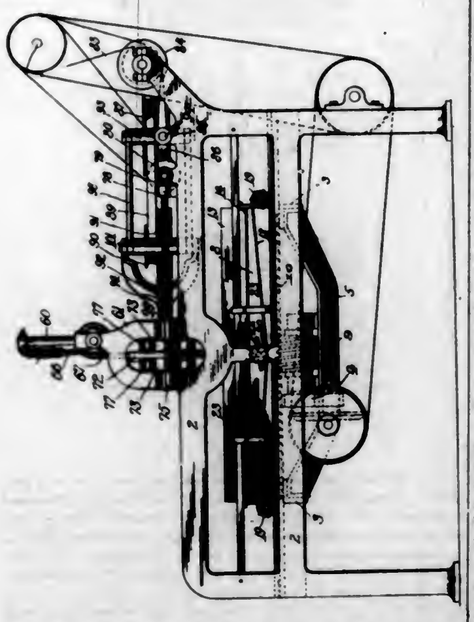
757,230. **AUTOMATIC CARVING-MACHINE.** CHARLES L. ROBBINS and FRANK STRIBEL, Chicago, Ill., assignors to Universal Automatic Carving Machine Company, a Corporation of New Jersey. Filed Nov. 24, 1902. Serial No. 132,902. (No model.)

*Claim.*—1. In a carving-machine, the pattern and work holding and feeding means, in combination with a tool-head, a plurality of driven cutters and a pattern-tracer held therein, a retracting mechanism normally connected with said head but capable of being disconnected therefrom, said mechanism being operative to retract said tracer and cutters when the tracer is pressed upon by the pattern, and said tracer and cutters being laterally operable by hand when said head and said mechanism are disconnected, substantially as described.

2. In a carving-machine, the work and pattern holding and feeding means, in combination with a tool-head, a tracer and a cutter-spindle provided therein, automatic means for retracting said head and therewith said tracer and spindle, whenever the tracer encounters a projection in the pattern, means for driving said spindle, parallel-motion means holding said head and adapting the same for various lateral movements by hand, substantially as described.

3. In a carving-machine, the work and pattern holding and feeding table, in combination with a tool-head, flexible means whereby said head is suspended and adapted for vertical movement, a tracer and a cutter-spindle provided in said head, the spindle being suitably driven, the parallel-motion connections for said head, occupying a substantially horizontal plane and swiveled to said head, and permitting lateral movement of said head, and an automatic retracting mechanism operative upon said head and normally guiding the same for movement perpendicular to said table, substantially as described.





4. In a carving-machine, the work and pattern holding and feeding means, in combination with the tool head or frame, the cutter-spindles journaled therein, the tracer attached thereto, means suspending said head for vertical movement and permitting the horizontal movement thereof for hand operation, means for fixing said head against horizontal movement and moving the same vertically, substantially as described.

5. In a carving-machine, the work and pattern holding and feeding means, in combination with the tool-head the tracer and the cutter-spindles provided therein, and the driven retracting mechanisms provided at the ends of said head, as and for the purpose specified.

6. In a carving-machine, the work and pattern holding and feeding means, in combination with the tool-head the tracer and cutter-spindles provided therein, means sustaining the weight thereof, the retracting devices in moving connection with the ends of said head and adapted to retract said head automatically and said head being adapted to be freed from said retracting devices and thereafter to move in all necessary directions for hand-carving, substantially as described.

7. In a carving-machine, suitable means for holding and feeding the pattern and work, in combination with a rigid tool-head, the tracer and the cutting-tools carried thereby, means sustaining the weight of said head, said head having bifurcated ends, the revolving retracting devices engaged with said ends and when pressed upon thereby adapted to retract said head, substantially as described.

8. In a carving-machine, suitable means for holding and feeding the pattern and work, in combination with the tool-head provided with tracing and cutting tools and suitably sustained, the bifurcated ends of said head, the disks arranged in engagement with the ends of said head and whereon said ends are pressed and cramped when the tracing-tool is engaged by the pattern, substantially as described.

9. In a carving-machine, the work and pattern holding means, in combination with the tracer and cutter-head, a suitable frame, a shaft journaled thereon above said head, means tending to rotate said shaft, the pulleys on said shaft and the flexible connections between said pulleys and said head, as and for the purpose specified.

10. In an automatic carving-machine, a suitable frame, in combination with work and pattern holding means movable therein, the tool-head, means sustaining the same, the revoluble disks provided in said frame and having hubs engaged with the ends of said head, said disks being operative to retract said head, substantially as described.

11. In an automatic carving-machine, a suitable frame, in combination with pattern and work holding means movable therein, a mechanism for actuating said means, the tool-head, the tracer and the cutter-spindles provided therein, the parallel-motion structure pivotally joining said frame and head, the spindle-driving devices therein, the detachable bifurcated blocks upon said head, the rotary devices engaged with said blocks for retracting said head and the means sustaining the weight of said head, substantially as described.

12. In an automatic carving-machine, the frame in combination with work and pattern holding means movable therein, the tool-head occupying a plane that is perpendicular to the plane of said means, the tracer and cutting-tools provided in said head, spring-actuated means tending to retract said head and the positively-operable retracting devices provided at opposite ends of said head, substantially as described.

13. In a carving-machine, a suitable frame, in combination with work and pattern holding means movable in said frame, the tool-head, the tracer and the cutting-tools provided therein, means for driving said tools, means partially sustaining said head, the rotary disks provided in said frame, at the ends of said head and said head having friction-buttons on opposite sides of each disk, as and for the purpose specified.

14. In a carving-machine table, the combination of the frame with the pairs of parallel T-bars, the clamps 32 hooked therein and provided with clamping jaws or points, substantially as described.

15. In a carving-machine, a suitable frame, in combination with pattern and work holding means therein, the tool-head provided with tracing and cutting tools, the latter suitably driven, the shaft 62 arranged above said head, the pulleys 65 upon said shaft, the cables or cords wound thereon and sustaining said head, the smaller pulleys 64 on said shaft, the cables wound thereon and the springs 58 whereto said cables are connected, as and for the purpose specified.

16. In a combined automatic and hand carving-machine, a feed-table and means for actuating the same, in combination with a tool-head carrying tools that are perpendicular to said table, a tool-head-retracting mechanism constantly driven and normally engaged with said head, said mechanism being operable to retract said head and the tools therein when said head is subjected to pattern-pressure, flexible means sustaining said head and partially supporting the weight thereof, means for disconnecting said head from said retracting mechanism for movement irrespective thereof, and a parallel-motion mechanism connected with said head and restricting the free movement thereof, substantially as described.

17. In a combined automatic and hand carving-machine, a work-feeding table and means for reciprocating and feeding the table, in combination with a tool-head extending transversely of said table, parallel-motion means for maintaining the transverse relation of said head to the table, and connected to said head by universal joints to permit longitudinal, vertical and tilting motions of said head, flexible means sustaining said head, an automatic power-actuated retracting mechanism and means for connecting said head to said retracting mechanism, substantially as described.

18. In a combined automatic and hand carving-machine, the machine-frame and a feed-table provided therein, in combination with a tool-head arranged above said table, flexible supports for said head, a plurality of cutter-spindles arranged in said head, a driving-shaft parallel with said head, means extending therefrom for driving said cutter-spindles, a parallel-motion device for maintaining the parallel relation of said head and shaft and permitting various hand movements of the head with relation to said table, a tracer and a pattern together limiting the downward movement of said head, automatic retracting mechanisms arranged at the ends of said head and means for connecting said head thereto for automatic vertical retraction thereby, substantially as described.

19. In a carving-machine, a suitable frame, in combination with a work-feeding table, means for actuating said table, a tool-head arranged above said table, tools in said head, a pattern and a tracer, the one held by said head and the other by said table, rotary disks provided in said frame at the ends of said head, and said head having frictional parts on opposite sides of each disk for engagement with and operation by said disks when said head is subjected to pattern-pressure, substantially as described.

20. In a carving-machine, the machine-frame, in combination

with a work-feeding table arranged therein, means for actuating said table, a tool-head arranged above said table, flexible means extending from above said head and sustaining the same, a plurality of cutting-tools carried by said head, a shaft in said frame parallel with said head, the pulley-frame 93 parallel with said shaft and journaled in the machine-frame, the jointed arms connecting said frame 93 to said head, the parallel bar or frame 97 joining said toggles, and pulleys provided on said shaft, said frame 93, said frame 97 and said cutting-tools, connected by suitable belts, substantially as described.

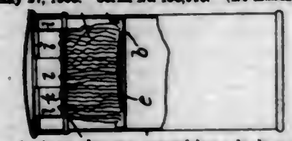
21. In a carving-machine, the machine-frame, in combination with the feed-table therein, a winding-shaft arranged above said table in said frame, the springs acting on said shaft, the tool-head 50 and the flexible connections wound on said shaft and sustaining said head, substantially as described.

22. In a carving-machine, the feed-table provided with rods 25, in combination with the work-elevating clamps, each comprising two parts, 27, 28, having notches for engagement with a rod 25 and means for tightening said parts on such rod, the parallel work-holding bars arranged on the upper ends of said clamps and means for securing the work or panels on said bars, substantially as described.

23. In an automatic carving-machine, the side frames, in combination with the horizontal bracket-bars, 6, thereon, the cross-bars 3 connecting said side frames, the bed for reciprocating on said bracket-bars 6, the bed-reciprocating mechanism and the depending truss-bars attached to said cross-bars 3 and supporting said reciprocating mechanism, substantially as described.

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**757,231.** POWDER-CAN. EDWARD S. SAVAGE, Brooklyn, N. Y. Filed May 27, 1903. Serial No. 158,918. (No model.)



*Claim.*—1. A powder-can comprising a body provided with a perforated diaphragm within and dividing the same into two compartments and a perforated cover rotatably attached to said diaphragm to open and close the passages therethrough, combined with a cover for the can and a powder-puff attached to said cover and contained in one compartment of the can when the cover is on, substantially as described.

2. In a powder-can, the combination of the can-body with a perforated diaphragm within the same, a movable perforated cover for the diaphragm rotatably attached thereto, a cover for the can, and a puff attached to said can-cover and inclosed by the can when the cover therefor is placed thereon.

3. In a powder-can, the combination with the cover for the can, of a plate, a powder-puff connected with the plate, and legs or arms on said plate engaging with the cover between the web and flange parts thereof.

4. In a powder-can, the combination with the cover for the can provided with a bead or groove, of a plate having a powder-puff fixed thereto, and legs or arms extending from said plate and engaging with said bead or groove.

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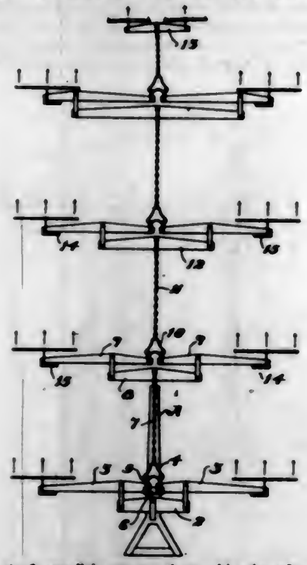
**757,232.** DRAFT-EQUALIZER. PETER V. SCHAUDOMEY, Sacramento, Cal. Filed Dec. 12, 1903. Serial No. 184,934. (No model.)

*Claim.*—1. In draft-equalizing means, the combination of the pole of the vehicle, a draft-bar pivoted thereon, equalizing-bars pivoted to said draft-bar, a flexible coupling between the adjacent ends of said equalizing-bars, a plate sustained by said coupling and supported on the pole, and flexible connections between said coupling and draft-bars in front.

2. In draft-equalizing means, the combination of a series of successively-arranged draft-bars, a pair of equalizing-bars pivoted to each draft-bar, pivoted connections between the adjacent ends of the equalizing-bars and including a yoke with substantially a triangular opening having three symmetrical points of attachment and flexible connections between said yoke and the draft-bar next in series.

3. In draft-equalizing means the combination with a series of successively-arranged draft-bars, of a pair of equalizers hinged rearward of said draft-bars, a coupling between the adjacent ends of said equalizers permitting of a limited horizontal oscillating movement, and a chain connecting said couplings with the draft-bar next in series.

4. In draft-equalizing means the combination with a draft-bar, an equalizer hinged thereto, said hinge comprising a member having bifurcated, segmental oppositely-curved embraces and the other member having axially-alined pin members to engage said embraces.

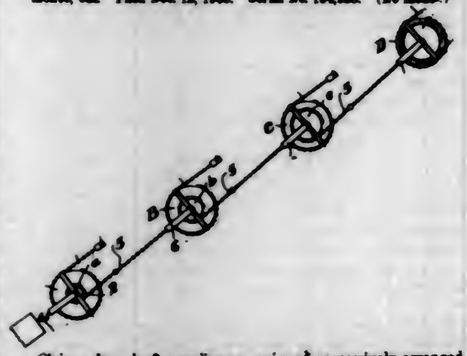


5. In draft-equalizing means, the combination of a series of successively-arranged draft-bars, the rearmost one of which is fulcrumed to the pole of the vehicle, equalizing-bars connected with the ends of the draft-bars, and connections including yokes with symmetrical and separated points of attachment between the adjacent ends of the equalizing-bars and the draft-bars next in series, and transversely-perforated plates on the back and near the outer ends of the equalizing-bars to permit a clevis to be engaged more or less remote from the fulcrum of the respective equalizing-bar.

6. A draft-equalizing system comprising a series of successively-arranged draft-bars, equalizing-bars fulcrumed to the draft-bars, flexible connections between a draft-bar and an equalizing-bar next in rear thereof and including a yoke with substantially a triangular opening having three symmetrical points of attachment, means at the outer ends of the equalizing-bars for placing a plurality of animals abreast, and means connected to the foremost draft-bar for the attachment of two leading animals.

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**757,233.** DRAFT-EQUALIZER. PETER V. SCHAUDOMEY, Sacramento, Cal. Filed Dec. 12, 1903. Serial No. 184,935. (No model.)

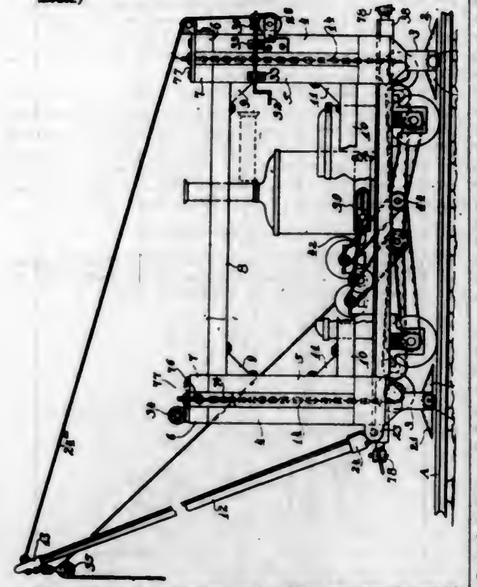


*Claim.*—In a draft-equalizer, a series of successively-arranged blocks, each block comprising a larger pulley and two smaller pulleys coaxial and rigidly interlocked with the larger pulley, the smaller pulleys gradually increasing in diameter relative to their respective large pulleys away from the lead or rear end of the series, chains secured to the several pulleys and wrapped a portion of a turn thereon, draft-bars connected with the chains on the larger pulleys and the chains on the smaller pulleys except at the forward end of the series connecting with the block in advance.



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**757,234.** LOG LOADING AND SKIDDING MACHINE. MICHAEL SCHMALTZ, Duluth, Minn. Filed Oct. 22, 1903. Serial No. 178,184. (No model.)



*Claim.*—1. In a log loading and skidding machine the combination of a derrick-car, an engine-car positioned within said derrick-car and attached thereto by flexible means adapted to be operated to raise said engine-car into suspension from said derrick-car, and means carried by said engine-car adapted to operate said flexible means, substantially as described.

2. In a log loading and skidding machine, the combination of a derrick-car, an engine-car positioned within said derrick-car, and horizontally-arranged sliding bolts positioned at the corners of said engine-car and adapted in operative position to engage vertically-arranged guideways formed in said derrick-car, substantially as described.

3. In means for the purposes described, the combination of a derrick-car provided with a derrick, an engine-car positioned within said derrick-car and provided with a hoisting-engine, hoisting means supported by said derrick and connected with said engine and adjustable means carried by said engine-car and adapted to engage vertically-arranged guideways formed on said derrick-car, substantially as described.

4. In means for the purposes described, an engine-car comprising a body portion and supporting-trucks an engine carried by said car, spools positioned near each corner of said car, hoisting-cables secured to each of said spools and extending upwardly above the surface of said car, and means connecting said spools with said engine, substantially as described.

5. In means for the purposes described, the combination with a supporting-frame having sides and an overhead portion, of a car positioned within said frame and provided with windlass-spools, vertically-arranged flexible means secured at their upper ends to the overhead portion of said supporting-frame and secured at their lower ends to said spools respectively, and means carried by said car for rotating said spools to wind portions of said flexible means on said spools, substantially as described.

6. In means for the purposes described, a locomotive comprising a vehicle, a driving and hoisting engine carried thereby, means adapted in operative position to connect said engine to the axles of the supporting-trucks of said vehicle, flexible means adapted in operative position to detachably secure said vehicle to a relatively independent overhead support, and means adapted in operative position to connect said flexible means to said engine, substantially as described.

7. In means for the purposes described, the combination with a derrick-car of a locomotive engine-car detachably and removably secured to said derrick-car beneath the upper surface and between the sides thereof and means adapted in operation to suspend said engine-car from said derrick-car, substantially as described.

8. In means for the purposes described an engine-car comprising a vehicle, an engine carried by said vehicle, winding-spools carried by said vehicle near each corner of the same, means adapted in operation to transmit motive power from said engine to said spools to rotate the same, flexible means attached to each of said spools and adapted to be attached at their opposite ends to overhead supports, substantially as described.

9. In means for the purposes described the combination with a car adapted to stand or move upon a railway-track and provided with a derrick, of an engine-car adapted to stand or move upon said track between the sides of said derrick-car and attached to said car by suspending-cables, means carried by said engine-car for operating said cables to raise said engine-car above said track into suspension from said derrick-car, a hoisting-cable supported by said derrick, means carried by said engine-car for operating said hoisting-cable to lift relatively independent articles, and adjustable means adapted, in operative position, to prevent longitudinal or transverse movement of said engine-car with relation to said derrick-car, substantially as described.

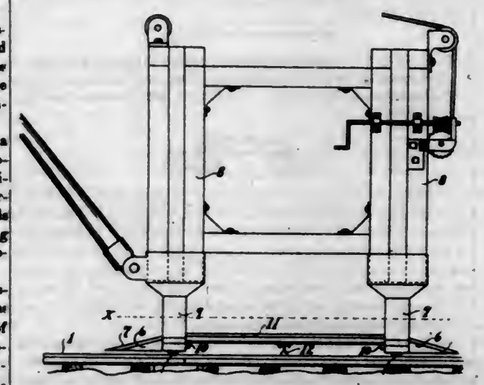
10. In a log loading and skidding machine, the combination with a railway-track of a car adapted to move thereon, a track extending from the first said track over each of the supporting-wheels of said car, a second car adapted to stand upon the first said track between the second said tracks, detachable means for securing the second said car to the first said car and adapted in operation to raise the second said car above the first said track, and means for operating said detachable means, substantially as described.

11. In means for the purposes described, the combination with a railway-track, of a car adapted to stand or move thereon, a track extending from the first said track over each of the supporting-wheels of said car, a second car adapted to stand or move on the first said track between the second said tracks, and adjustable means adapted in operative position to secure the second said car against transverse or longitudinal movement with respect to the first said car, and in retracted position to permit longitudinal movement of the second said car with respect to the first said car, substantially as described.

12. In a log loading and skidding machine, the combination of a frame adapted to stand upon a railway-track and comprising side walls, an overhead portion, transverse frame-supporting sills extending over said track, and bridge portions carried by said sills and extending from said track over said sills, a car adapted to stand on said track and removably positioned between the side walls of said frame, detachable means securing said car to said frame and adapted in operation to raise said car into suspension on said frame, means carried by said car for operating said securing means, a derrick, hoisting means supported thereon, and means carried by said car for operating said hoisting means, substantially as described.

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**757,235.** DERRICK-CAR. MICHAEL SCHMALTZ, Duluth, Minn. Filed Dec. 21, 1903. Serial No. 186,986. (No model.)

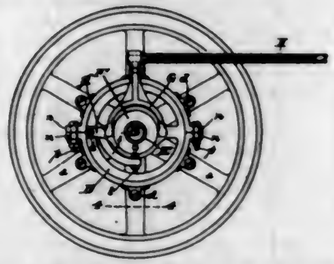


*Claim.*—In a car, the combination of transverse sills adapted to extend over the parallel rails of a railway-track, vertically-yielding

journal-boxes mounted in said sills, supporting-wheels normally adapted to roll upon said track and mounted on shafts journaled in said boxes and adapted to recede within said sills sufficiently to lower said sills to the track when abnormal weight is borne by said sills, inclined approaches extending from the forward face of the forward one of said sills toward the track-rails, inclined approaches extending from the rearward face of the rearward one of said sills toward the track-rails, and bridge-rails mounted upon and extending over the forward said approaches and sill and to and over the rearward said approaches and sill, substantially as described.

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**757,236. FRICTION-CLUTCH.** CHARLES SEYBOLD, Dayton, Ohio. Filed July 23, 1903. Serial No. 166,589. (No model.)



*Claim.*—1. In a friction-clutch, a rotating and a non-rotating member, a rim or band divided into sections with the sections loosely secured together, and the band, thus united, loosely secured to one member, and a contact-piece secured to the other member contacting with said band to couple the two members together, substantially as described.

2. In a friction-clutch, a rotating and a non-rotating member, a rim or band divided into sections with the sections loosely secured together, and the band, thus united, loosely secured to one member, and an expansion-band secured to the other member, with means for expanding the band within the loosely-fitted rim to couple the members, substantially as described.

3. In a friction-clutch, the combination with a shaft, and an expansion-band secured thereto, of a fly-wheel loosely mounted on said shaft, and a secondary rim or band for the fly-wheel, said rim or band being divided into sections, with the sections loosely secured together, and the band thus united loosely fitted on said fly-wheel, within which loosely-fitted rim the expansion-band is mounted, and means for actuating said expansion-band to couple the shaft and fly-wheel, substantially as shown and described.

4. In a friction-clutch, a fly-wheel or pulley, carrying lugs on its spokes, and a ring divided into sections, with the sections loosely secured together, the ring thus united, provided with shoulders or projections fitting over said lugs, the space between the projections on the ring being greater than that between the side faces of the lugs, whereby play is permitted said ring, and screws for securing said ring to the fly-wheel, the apertures for which in the ring are enlarged to prevent any strain upon the screws, substantially as shown and described.

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**757,237. SNAP-FASTENER.** ERNEST D. SIMONS, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn., a Corporation of Connecticut. Filed Aug. 12, 1903. Serial No. 169,280. (No model.)



*Claim.*—1. A spring-socket member, for snap-fasteners, having a base-flange, a stud-receiving dome rising therefrom and constricted to form a mouth, said dome adapted to be engaged by an independent fastening coöperating with the base-flange to secure the socket member to an article, and an unyielding ring externally surrounding said mouth and resting upon said base-flange, and operating wholly independently of the fastening solely as a means to prevent overcoming the elastic limit of the socket.

2. A spring-socket member, for snap-fasteners, constricted about its mouth, and having a base-flange, and an unyielding thin, flat metal ring applied externally in the constricted portion and resting upon the base-flange, combined with means independent of the ring for securing the socket member to material.

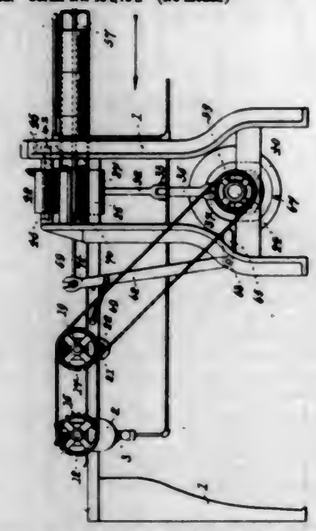
3. A spring-socket member, for snap-fasteners, having a dome, a base-flange, a yielding mouth, an unyielding ring externally surrounding said mouth and resting upon the base-flange, and a shoulder on the dome above the ring, combined with means independent of the ring for securing the socket member to material.

4. A snap-fastener, having a socket member provided with a dome, a base-flange, a contracted mouth, and slits through the flange and mouth and extending into the dome, and an unyielding ring applied externally to the contracted mouth next the flange and dome and adapted to prevent the elastic limit of the socket from being overcome, combined with means independent of the ring for securing the socket member to material.

5. A snap-fastener, having a socket member provided with a dome, a base-flange, a contracted mouth, and slits through the flange and mouth and extending into the dome, and an unyielding ring applied externally to the contracted mouth next the flange and dome and adapted to prevent the elastic limit of the socket from being overcome, combined with a cap or cover adapted to engage the dome and secure the socket to an article independently of the ring.

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**757,238. MACHINE FOR PRODUCING BODY-SEAMS IN SHEET-METAL CANS.** ALEXANDER SLAYMAN, Baltimore, Md. Filed Dec 11, 1902. Serial No. 134,754. (No model.)



*Claim.*—1. In a machine for producing body-seams in sheet-metal cans devices to coat with solder the two lateral edges of a sheet of metal, other devices to crimp the said solder-coated edges of the sheet, a stationary or fixed mandrel, with means to bend the sheet around the mandrel and interlock its crimped edges thereon, combined with an eccentric roll arranged over the mandrel, mechanism to rotate the said eccentric roll and bring its surface into contact with the locked edges of the sheet and thereby flatten the same or form a seam, and a heating mechanism to melt the solder in the flattened seam, the various operations being effected in sequence as specified.

2. In a machine for producing body-seams in sheet-metal cans, devices to crimp the lateral edges of a sheet of metal, a mandrel, and means to bend the sheet around the mandrel and interlock its crimped edges thereon, combined with an eccentric roll arranged over the mandrel, and mechanism to rotate the said eccentric roll and thereby bring its surface into contact with the interlocked edges of the sheet upon the mandrel and thereby produce a flattened seam, substantially as specified.

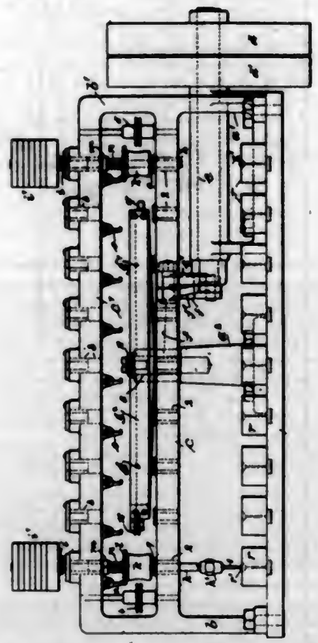
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**757,239. DRILLING-MACHINE.** GEORGE SMITH, Plainfield, N. J. Filed June 6, 1903. Serial No. 160,300. (No model.)

*Claim.*—1. In a drilling-machine, the combination with a prime mover for imparting rotary movement, of a series of vertically-movable, independent drilling devices each having a part separable to bring the respective drilling devices to a state of rest and a part revoluble, and a band from the prime mover.



2. The combination with a series of vertically-movable drilling devices having parts separable to bring the respective drilling devices to a state of rest and other parts revoluble, and a support therefor, of a band connecting said drilling devices, and means connected to the band for imparting rotary movements in opposite directions to the series of drilling devices.



3. In a drilling-machine, the combination with a prime mover for imparting rotary movement, of a series of vertically-movable independent drilling devices, a series of coacting and contacting revoluble parts associated with said drilling devices, separable at the pleasure of the operator so as, with the movement of one part, to bring the respective drilling devices to a state of rest without arresting the revolution of the other part, and a band from the prime mover.

4. The combination with a series of vertically-movable drilling devices and a support therefor, of a band connecting said drilling devices, means connected to the band for imparting rotary movements in opposite directions to the series of drilling devices, and a series of drill-blocks axially in line with the drilling devices, and axially perforated and having seats concentric with the perforations at one end to receive the stones to be bored and, centering-pins adapted to be received in the holes of the blocks.

5. In a drilling-machine, the combination with parallel frame parts having bearings, of a shaft, a drill-holding device connected with the lower end of the shaft, a loose spool mounted on said shaft, a spring-controlled friction-disk revoluble with said shaft and adapted to bear on said spool so as to communicate the movement of the spool to the shaft, means for applying pressure to the shaft for the boring operations, and means for supporting the said friction-disk in an elevated position so that the shaft may come to rest while the spool keeps on revolving.

6. In a drilling-machine, the combination with parallel frame parts having bearings, of a shaft, a drill-holding device connected with the lower end of the shaft, a loose spool mounted on said shaft, a spring-controlled friction-disk revoluble with said shaft and adapted to bear on said spool so as to communicate the movement of the spool to the shaft, a centering-arbor and a series of removable weights mounted thereon and adapted for applying pressure to the shaft, a hook pivoted to one of the parts of the frame and adapted when the friction-disk is elevated to engage the same and hold it in a separated relation to the spool, so that the shaft may be at rest while the spool is revolving.

7. In a drilling-machine, the combination with the horizontal frame parts *c*, *c'* having a series of vertically-alined apertures, of a series of bearing-sleeves in said apertures, a series of drilling devices each comprising a shaft vertically movable and a drill-attaching device at its lower end, a spool and spool-sleeve connected and surrounding the shaft, a friction-disk surrounding the shaft above the spool and adapted to engage the upper surface of the spool, said friction-disk having a hub-center and a pin passing through the same into a longitudinal groove of the shaft, a short sleeve around the upper end of the shaft secured thereto, and a spring around the shaft between the sleeve and the disk adapted to press the friction-disk with force upon the upper end of the loose spool so as to cause the shaft and connected parts to travel with the spool, a band passing around the spools of the series of drilling devices, and means for imparting alternating rotary movements to the said drilling devices.

8. In a drilling-machine, the combination with the horizontal frame parts *c*, *c'* having a series of vertically-alined apertures, of a series of bearing-sleeves in said apertures, a series of drilling devices each comprising a shaft vertically movable, and a drill-attaching device at its lower end, a spool and spool-sleeve connected and surrounding the shaft, a friction-disk surrounding the shaft above the spool and adapted to engage the upper surface of the spool, said friction-disk having a hub-center and a pin passing through the same into a longitudinal groove of the shaft, a short sleeve around the upper end of the shaft secured thereto, a spring around the shaft between the sleeve and the disk adapted to press the friction-disk with force upon the upper end of the loose spool so as to cause the shaft and connected parts to travel with the spool, a centering-arbor passing through the bearing of the upper frame part and engaging a recess in the upper end of said shaft, removable weights for applying degrees of pressure to the vertically-movable shaft, and a hook device adapted to engage the friction-disk and hold the same above the loose spool so as to maintain the shaft in a state of rest while the spool is revolving.

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**757,240. SKATE.** THOMAS SPACIE, Globe, Ariz. Filed June 23, 1903. Serial No. 162,771. (No model.)



*Claim.*—1. A skate, comprising a flat foot-plate having its forward and rearward ends reduced in width to render them springy, said sections being bent downwardly in direction of each other, these downwardly-extending portions being provided with elongated slots, and a runner consisting of duplicate plates having similar projections at each end, said projections being equal in length to the length of said elongated slots, and the two projections together being equal in width to the width of said slots, to adapt the projections on the ends of the duplicate plates to entirely fill their respective slots in said bent-down portions of the plate when entered thereinto, the space between the projections at the forward end of the duplicate runners and at the rearward end thereof being slightly greater than the space between the two downwardly-bent springy ends of said foot-plate, whereby said ends may be sprung from each other to receive the duplicate runners between them with the projections at the ends of the runners received into said slots to rigidly hold the two members of a runner in flat engagement with each other upon a foot-plate with said runners clamped endwise between the downwardly-bent ends of the foot-plate.

2. A skate, comprising a foot-plate having a downward projection at its forward end and a similar projection at its rear end, each projection having an elongated vertical slot therein, and a runner constructed of similar parallel members provided with vertical teeth at each end accurately fitting said vertical slots to hold the two sections of the runner upon the foot-plate and in flat engagement with each other, said runner having inverted transverse dovetailed grooves in its upper edge, and short screws threaded into the foot-plate with their heads extending downwardly and received into said transverse grooves to form further means for securing the runner to the foot-plate.

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**757,241. HAIR-CURLER.** NATHANIEL B. STONE, Outlook, Wash. Filed Sept. 17, 1903. Serial No. 173,519. (No model.)

*Claim.*—1. A hair-curler comprising a single hollow flexible tube adapted to have the hair coiled upon one end and the other end doubled upon said coil and provided with a pin secured within and projecting from one end of said tube, the projecting end of said pin being formed enlarged with a reduced neck between its outer

end and the end of the tube, and the opposite end of the tube being open and of a diameter less than that of the bulb on the end of said pin, whereby said projecting end is adapted to be inserted in the opposite end of said tube which will expand to receive it and then contract around said neck part, whereby said ends may be secured together, substantially as set forth.



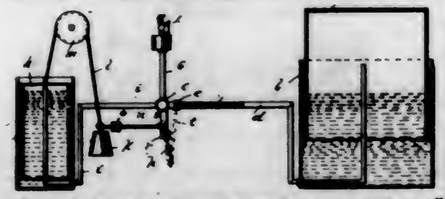
2. A hair-curler comprising a single hollow flexible tube adapted to have the hair coiled upon one end and the other end doubled back upon said coil, a pin mounted within one end of said tube and projecting a short distance therefrom adapted to be inserted within the other end of said tube which is open, the end upon which the hair is to be wound being formed of substantially uniform diameter throughout, whereby it may be withdrawn from the coil of hair without catching in said coil, substantially as set forth.

3. A hair-curler comprising a flexible tube, a fastening device for securing its ends together and a removable handle having an arm adapted to be inserted in one end of said tube and a clamp engaging with its outside surface, substantially as set forth.

4. A hair-curler comprising a flexible tube and a removable handle having a clamp thereon, and a fastening device for securing the two ends of the tube together when doubled, substantially as set forth.

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**757,242. AUTOMATIC GAS IGNITING AND EXTINGUISHING APPARATUS.** ELI H. STOW, Binghamton, N. Y. Filed July 30, 1903. Serial No. 167,850. (No model.)



*Claim.*—1. In combination with a gas-burner, means to cut off the supply of gas thereto and means to exhaust gas from the burner and cause immediate extinction of the flame.

2. In an apparatus of the class described, the combination of a casing, a gas-pressure-operated device therein, a burner carried by and movable with the said gas-pressure-operated device and having a valve disposed externally of the casing, and a connection between the casing and the valve to automatically operate the latter by the movement of the burner.

3. In apparatus of the class described, the combination of a gas-pressure-operated device having an element movable by gas-pressure in one direction, a burner movable with said movable element and having a valve disposed externally of the casing, and a connection between the valve and a relatively fixed element to operate the valve automatically by the movement of the burner.

4. In apparatus of the class described, the combination of a movable burner having a valve provided with an operating-arm, a link connected to said operating-arm, and a pivoted element adjustable on said link.

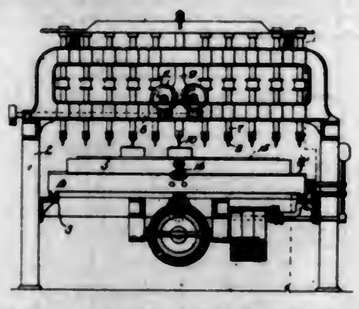
5. In apparatus of the class described, the combination of a burner, a gas-pressure-operated device to automatically control the supply of gas to the burner, means including a valve to supply gas to said device, and an exhauster having an actuating element automatically controlled by said valve to exhaust gas from the device when the supply of gas thereto has been cut off.

6. In apparatus of the class described, a gas-pressure-operated device having a flexible wall of substantially truncated conical form and means to supply gas thereto through its smaller end and to exhaust gas therefrom, for the purpose set forth.

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**757,243. AUTOMATIC CARVING-MACHINE.** FRANK STEBER, Chicago, Ill., assignor to S. Karpen & Bros., Chicago, Ill., Copartners. Filed Apr. 24, 1902. Serial No. 104,445. (No model.)

*Claim.*—1. In a carving-machine, the combination of cutting and tracing tools with pattern and work-feeding means, one thereof adapted to yield in the direction of the feed to the opposition of the other, substantially as described.



2. In an automatic carving-machine, the combination of cutting and tracing tools and a tracer-retracting mechanism, with a feed-table, the speed of which varies inversely with the lateral pressure of the work and pattern upon said tools, substantially as described.

3. A carving-machine having a tracer and a cutting-tool arranged for movement together, in combination with a feed-table, driving means therefor and a yielding connection between the said driving means and said table, permitting the partial or complete stopping of the table by the tracer and tool during the operation of said driving means, substantially as described.

4. In an automatic carving-machine, a tracer, a cutting-tool connected therewith, an automatic retracting mechanism, in combination with a feed-table, driving means therefor, a yielding connection between said driving means and table, said retracting mechanism being operable in proportion to the lateral pressure exerted thereon and said table moving at a speed varying inversely with the resistance of the tracer and tool to the movement of said table, substantially as described.

5. In an automatic carving-machine, the combination of a suitable frame with a feed-table movable upon said frame, driving means for said table, a yielding connection between said driving means and table, a driven cutter, a tracer-bar connected therewith and having a pattern-tracing point, automatic retracting means in connection with said tracer-bar operable in proportion with the lateral pressure that is exerted upon said tracer-point and a pattern provided upon said table to exert a variable pressure upon said point and ecative the communication of movement to said table by said driving means, substantially as described.

6. In an automatic carving-machine a plurality of parallel cutter-spindles and cutting-tools arranged in substantially a single plane, in combination with the pattern-tracer bar parallel with said spindles, connected for simultaneous movement therewith and provided with a tracing-tool, the retracting mechanism operative to automatically retract said tracer-bar and spindles, a feed-table movable in a plane perpendicular to said bar-spindles, a pattern thereon in engagement with said tracing-tool, table-driving means and a yielding connection provided between said table and said driving means, whereby the speed of the movement of said table by said driving means is made inversely variable with respect to the lateral pressure of said pattern upon said tracing-tool, substantially as described.

7. In an automatic carving-machine, the combination of a plurality of cutter-spindles with a pattern-tracer connected with said spindles, a driven retracting device for retracting said tracer and spindles, a feed-table adapted for reciprocation in a plane perpendicular to said tracer and spindles, a pattern provided thereon and engaged with said tracer, table-driving means and means for imparting to said table thereby, movement the speed of which varies inversely with the lateral pressure of the pattern upon said tracer, as and for the purpose specified.

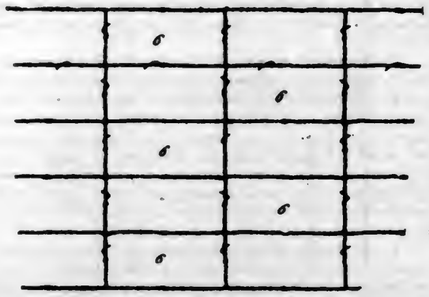
8. An automatic carving-machine, comprising a suitable frame, in combination with a work-cutter and a tracer provided therein, an automatic tracer-retracting mechanism, a feed-table provided with a vertically-adjustable grating for the pattern and work and the table-driving mechanism yieldingly connected with the table, substantially as and for the purpose specified.

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**757,244. WIRE FABRIC.** THOMAS SUTHERLAND, Hutchinson Minn., assignor of three-fourths to Gus B. Hedrick, Hutchinson, Minn. Filed Feb. 10, 1902. Serial No. 93,294. (No model.)



*Claim.*—1. A wire fabric composed of several paneled sections having corresponding legs thereof twisted together, and which paneled sections are formed of reversely-looped independent wires having corresponding legs thereof twisted together, substantially as described.



2. A wire fabric composed of several paneled sections having corresponding legs thereof twisted together, which paneled sections are formed of reversely-looped independent wires having corresponding legs thereof twisted together, and which fabric has marginal, or top and bottom, line-cables composed of the horizontal strands of the original panels and reinforcing line-wires twisted together, substantially as and for the purposes set forth.

3. A wire fabric formed of a series of line-wires reversely looped in opposite directions to form vertical and horizontal strands, each composed of pairs of wires suitably twisted together substantially as described.

4. A wire fabric, composed of a series of line-wires reversely looped in opposite directions and forming vertical and horizontal strands, each consisting of a pair of wires and the wires of each strand being suitably twisted together, substantially as described.

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**757,245. FOOT-REST FOR SEATS.** THOMAS SWAN, Flint, Mich. Filed May 14, 1903. Serial No. 157,102. (No model.)



*Claim.*—1. In a detachable locked joint, the combination of a fixed part adapted to be fixedly attached to a seat, said part having a hook thereon, a dependent swinging portion having an eye adapted to fit the hook and a rearward-extending shoulder adapted to fit the under side of the fixed portion, forming another shoulder preventing the inward swinging of the detachable portion beyond a certain fixed angle, substantially as described.

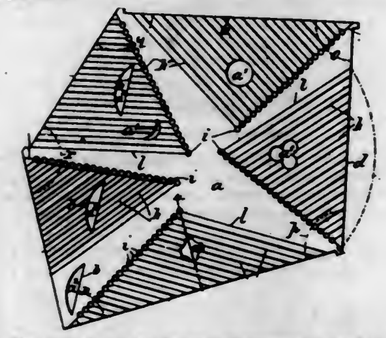
2. In a bracket adapted to sustain a foot-rest, the combination of a fixed metal portion attached to the bottom of a seat and projecting but very little above the same, the outer end beyond the edge of the seat being formed with a depending portion, a hook extending from such depending portion, the upper edge of said hook being below the upper surface of said flat portion sufficiently far to permit the upper end of a detachable portion to be depressed below the upper surface of said fixed portion, a depending hanging portion having an eye adapted to fit said hook and having projecting rearwardly a shoulder preventing its swinging downwardly and inwardly beyond a certain fixed angle, substantially as described.

3. In a bracket adapted to sustain a foot-rest, the combination of a fixed metal portion attached to the bottom of a seat and projecting but very little above the same, the outer end beyond the edge of the seat being formed with a depending portion, a hook extending from such depending portion, the upper edge of said hook being below the upper surface of said flat portion sufficiently far to permit the upper end of a detachable portion to be depressed below the upper surface of said fixed portion, a depending hanging portion having an eye adapted to fit said hook and having projecting rearwardly a shoulder preventing its swinging downwardly and inwardly beyond a certain fixed angle, said hook having formed a reëntering angle therein on its lower face whereby the shoulder upon said detachable portion on passing said reëntering angle permits said detachable portion to be lifted and disengaged from the hook, substantially as described.

4. As an article of manufacture, a detachable lock-joint comprising a member G and an interlocking member C, said member G having a reëntering surface $g^3$, upon one side adapted to receive a stirrup formed upon the detachable member, also a reëntering angle $d'$ opposite said reëntering surface $g^3$, whereby when the opposite member is swung away from its fixed position it may be longitudinally moved to detach the stirrup from the member G, substantially as described.

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**757,246. DRAWING AND DESIGNING APPARATUS.** HAROLD H. ARLETT, London, England. Filed Feb. 16, 1903. Serial No. 143,506. (No model.)



*Claim.*—A device for drawing plotting or setting out geometrical polygonal figures and the like consisting of a disk-like instrument made of an irregular polygonal formation with each angle-forming pair of its adjacent sides constituting an external angle of the polygon which can be drawn thereby, and with each such external angle bisected by a line adapted to serve as the radius of the describing arc of the largest polygon which can be drawn by such angle, the angle subtended by such arc being included between said radius and a similar radius incised or grooved in the surface of the disk, each such bisecting-line being divided and pierced with a plurality of holes adapted to act as centers for the describing arcs of the different-sized polygons which can be drawn by the angle such line bisects, each hole being countersunk on the under side and adapted to engage with a centering-pin, and the parts of the disk included between said radii of each such largest describing arc being divided by grooves incised in the surface of the disk and running from the center holes of such bisecting radius parallel with said incised or grooved radius of said arc to the chord of such arc, and serving to determine the lengths of the sides of the polygons appropriate to the respective center holes, said grooves being incised in the face of the disk and made alternately wide and narrow as a ready guide for the eye and adapted to guide a pencil slid thereabout, and the disk being pierced with geometrical openings adapted to serve as stencils and as means by which the disk can be held at an inclination to the paper or board and easily shifted about its centering-pin, as set forth.

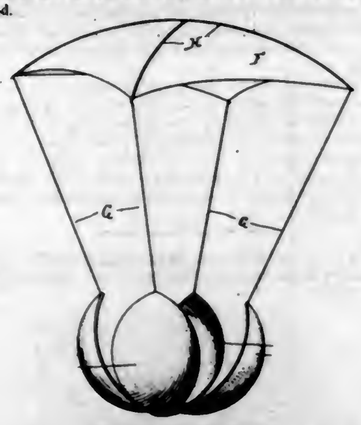
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**757,247. TOY.** GEORGE J. ALTENRATH, Philadelphia, Pa. Filed June 25, 1903. Serial No. 163,075. (No model.)

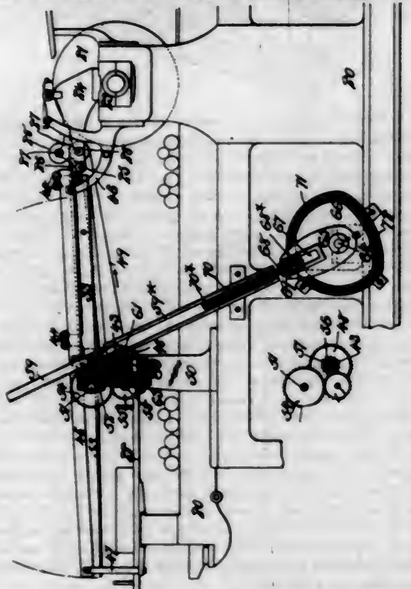
*Claim.*—1. A toy consisting of a hollow ball, said ball being divided into a plurality of leaves, said leaves all being hinged together at one end so that said ball may open similar to the petals of a flower, a parachute connected by flexible connections with each of the leaves, said parachute being crossed or reinforced by light strips of resilient material so as to cause the parachute to open quickly, as and for the purpose specified.

2. A toy consisting of a hollow ball, said ball being divided into four leaves or sections, each leaf or section being cut off slightly at one end so that when the leaves or sections are together an opening will be left at the lower end of the ball, a frame arranged within the opening, said frame being provided with as many sides as there

are leaves to the ball, hinges, one secured to each leaf and hinged to the faces of the frame so that all of the leaves are hinged together, a parachute formed of flexible material, flexible connections connecting each of the leaves with the parachute, as and for the purpose specified.



757,248. SHEET-DELIVERY MECHANISM FOR PRINTING-MACHINES. HOWARD M. BARBER, Stonington, Conn., assignor to C. B. Cottrell & Sons Company, New York, N. Y., a Corporation of New Jersey. Filed June 30, 1903. Serial No. 163,676. (No model.)



*Claim.*—1. In a printing-machine, the combination of an impression-cylinder, a receptacle for printed sheets, a reciprocating sheet-carriage and stationary ways therefor between said cylinder and receptacle, a fly arranged between said cylinder and receptacle, an endless carrier common to both said sheet-carriage and said fly for receiving sheets from the cylinder, and means for operating said carriage, carrier and fly whereby sheets may be delivered printed side up by the carriage or printed side down by the fly.

2. In a printing-machine, the combination of an impression-cylinder, a receptacle for printing sheets, a reciprocating sheet-carriage and stationary ways therefor between said cylinder and receptacle, a fly arranged between said cylinder and receptacle, an endless carrier in said sheet-carriage for receiving sheets from the cylinder, and means for operating said carriage, carrier and fly whereby sheets may be delivered printed side up by the carriage or printed side down by the fly.

3. In a printing-machine, the combination of an impression-cylinder, a receptacle for printed sheets, a reciprocating sheet-carriage and ways therefor between said cylinder and receptacle, a fly arranged between said cylinder and receptacle, a shaft and gears thereon one for driving the carriage and another for operating the fly, and means for fastening one of said gears to said shaft and unfastening it therefrom to render the carriage operative or inoperative.

4. In a printing-machine, the combination of an impression-cylinder, a receptacle for printed sheets, a reciprocating sheet-carriage and ways therefor between said cylinder and receptacle, a fly arranged between said cylinder and receptacle, a shaft and a sleeve capable of turning thereon, means for producing rotary motion of said sleeve in opposite directions alternately, a gear fast on said sleeve for operating the fly, gearing fast on said shaft for operating the carriage, and means for fastening said sleeve to said shaft and unfastening it therefrom according as the carriage or the fly is to be operative.

5. In a printing-machine, the combination of an impression-cylinder, a receptacle for printed sheets, a sheet-carriage having a to-and-fro movement between said cylinder and receptacle, an endless carrier in said carriage for the reception of sheets from the cylinder, a pulley in gear with and deriving rotary motion from the cylinder, a pulley on one of the shafts of the endless carrier, an idler-pulley on the carriage, an idler-pulley and a pivot therefor in fixed position, and a driving-belt for said tapes running on the four pulleys.

6. The combination with the impression-cylinder, the reciprocating sheet-carriage and the endless carrier in said carriage, of a pulley in gear with and deriving motion from the cylinder, a pulley on one of the shafts of the endless carrier, an idler-pulley on the carriage, an idler-pulley and a pivot therefor in a fixed position, a detent for the latter pulley to restrict its rotation to one direction, and a belt running on the several pulleys for driving the carrier within but independently of the carriage.

7. In a printing-machine, the combination with a shaft for operating the sheet-delivery, a gear on said shaft and a rack engaging with said gear for giving it a rotary motion in opposite directions alternately, of a rotary shaft, a crank on said shaft, a connection between said crank and rack, and means for rendering said crank inoperative during a portion of its revolution for holding the sheet-delivery device stationary at the end of its backward movement.

8. In a printing-machine, the combination with a shaft for operating the sheet-delivery, a gear on said shaft and a rack engaging with said gear for giving it a rotary motion in opposite directions alternately, of a crank-shaft, a crank-arm on said shaft, a crank-wrist fitted to move within said arm toward and from its shaft, a connection between the crank-wrist and rack, and a stationary cam with which said wrist engages for controlling its movements to produce the forward and backward movements of the sheet-delivery device and to hold said device stationary for a time at the end of its backward movement.

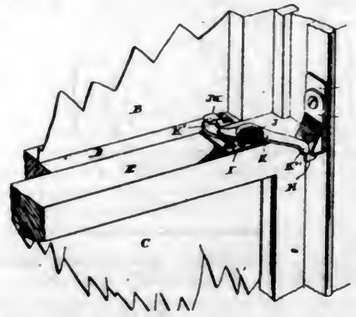
9. In a printing-machine, the combination with a shaft for operating the sheet-delivery, a gear on said shaft and a rack engaging with said gear for giving it a rotary motion in opposite directions alternately, of a crank-shaft, a crank-arm on said shaft, a crank-wrist fitted to move within said arm toward and from its shaft, a connection between the crank-wrist and rack, and a stationary cam with which said wrist engages for controlling its movements to produce the forward and backward movements of the sheet-delivery device, the gradual stoppage of said device at the end of its backward movement and the gradual starting of said device on its forward movement.

10. In a printing-machine, the combination with the impression-cylinder and an endless delivery-carrier, of a pulley on said carrier and a pulley between said carrier and the cylinder, gearing between the latter pulley and the cylinder, a belt running on said pulleys for driving said carrier, and means for engaging said gearing with the cylinder and disengaging it therefrom during alternate revolutions of the cylinder.

11. In a printing-machine, the combination with the impression-cylinder and a sheet-receptacle for printed sheets, of a reciprocating sheet-carriage and an endless carrier therein between said cylinder and receptacle, means for giving said carriage a to-and-fro motion between the cylinder and said receptacle and a rest while at that end of its movement when it is nearest the cylinder, a pulley and belt for driving said carrier in the carriage, gearing between said pulley and the cylinder for driving said pulley and belt, and clutch mechanism for engaging said gearing with the cylinder while the carriage is so at rest, and disengaging it at other times.



757,249. AUTOMATIC SASH-LOCK. CHARLES S. BARNARD Bridgeport, Conn. Filed May 21, 1903. Serial No. 158,141. (No model.)

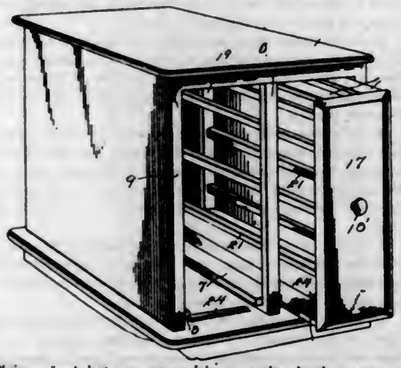


*Claim.*—1. An automatic sash-lock comprising a pivotal lever for attachment to a window-sash, a spring to normally hold the same out of engagement, a catch for the engagement of the lever, an inclined faced lug upon the casing for the engagement of the lever and adapted to be moved out of such engagement to release the lever, substantially as described.

2. An automatic sash-lock comprising a pivotal lever attached to a window-sash, a catch for the engagement of such lever and a pivotal lug upon the casing for automatically throwing said lever into said catch with the closing of the sash and means for releasing the lever to raise the sash.

3. An automatic sash-lock, comprising a pivotal lever, one end adapted to extend over the lower rail of the upper sash, means for attachment to said rail for engagement by said lever, a pivotal lug secured to the casing to engage the opposite end of the lever with the closing of the sash to throw the inner end of the lever into engagement and means for the releasement of said parts for the opening of the window.

757,250. HAT-CASE. PERCY M. BEARD, Hardinsburg, Ky. Filed Aug. 5, 1903. Serial No. 168,358. (No model.)

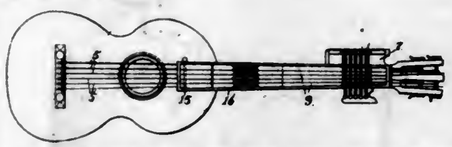


*Claim.*—1. A hat-case comprising a casing having upper and lower spaced rails, and a drawer comprising upper and lower laterally-spaced horizontal members engaged beneath the upper and lower rails respectively, uprights connecting said members, a front connecting the forward uprights and laterally-spaced shelf-bars connected to the front and rear uprights.

2. A hat-case comprising a casing having upper and lower spaced rails and a drawer comprising upper and lower laterally-spaced horizontal members engaged beneath the upper and lower rails respectively, uprights connecting said members, a front connecting the forward uprights, laterally-spaced shelf-bars connecting the front and rear uprights in pairs and having perforations in their upper faces, and U-shaped spacing-bars having their extremities engaged downwardly in the perforations of the shelf-bars.

757,251. MUSICAL INSTRUMENT. JOHAN E. BERGLUND, San Francisco, Cal. Filed Dec. 29, 1903. Serial No. 187,012. (No model.)

*Claim.*—1. In a stringed musical instrument, chord-producing devices, consisting of transverse damper-levers to act upon the strings, long operating-levers longitudinally disposed over these, having pins to contact with the several damper-levers, and transverse key-levers above said operating-levers to operate the latter, substantially as specified.



2. In a stringed musical instrument, a triple series of pivoted levers for playing chords, namely, transverse damper-levers to act upon the strings, long operating-levers longitudinally disposed, having pins to engage said damper-levers and depress the same, transverse key-levers above said operating-levers with means to engage the latter, means to automatically raise said damper-levers after depression, and a movable hinged frame in which said triple series of levers are movably carried, substantially as specified.

3. In a stringed musical instrument, in combination with the main body and neck or finger-board, a movable frame hinged to the side of said finger-board, and a triple series of pivoted levers for playing chords, mounted in said frame, whereby the levers can be turned back for tuning the strings, or applied for operating the same, said levers consisting of transverse dampers to act upon the strings, longitudinal operating-levers to engage the damper-levers, and transverse key-levers to operate the said longitudinal levers, substantially as specified.

757,252. MAGNESIA CEMENT COMPOSITION. ERNST BUDTEL, Milwaukee, Wis. Filed June 29, 1903. Serial No. 163,644. (No specimens.)

*Claim.*—1. The new composition of matter comprising magnesia, in combination with magnesium sulfate and barium chlorid.

2. The new composition of matter consisting of a substance containing magnesia, in combination with magnesium sulfate and barium chlorid.

3. The new composition of matter comprising a substance containing magnesia, in combination with magnesium sulfate, barium chlorid, and a filling.

4. The new composition of matter comprising burned magnesite, in combination with magnesium sulfate and barium chlorid.

5. The new composition of matter consisting of burned, pulverized magnesite, in combination with magnesium sulfate, barium chlorid, and a filling.

6. The new dry-powder compound, comprising burned, pulverized magnesite, in combination with magnesium sulfate and barium chlorid, adapted, by the addition of water, to form a cement.

7. The new dry-powder compound, comprising burned, pulverized magnesite, in combination with magnesium sulfate, barium chlorid and a filling, adapted, by adding water, to form a cement.

8. The new composition of matter having the formula $MgCl_2$, $5MgO+17H_2O+BaSO_4$.

9. The new composition of matter comprising magnesium sulfate and barium chlorid, in combination with magnesia in substantially the relative proportions set forth.

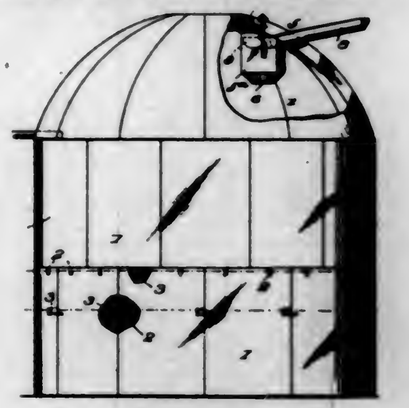
10. The new composition of matter comprising magnesium sulfate and barium chlorid, in combination with burned magnesite, in substantially the relative proportions hereinbefore described.

11. The herein-described method of producing magnesia cement which consists in mixing with a pulverized substance containing magnesia, pulverized magnesium sulfate and barium chlorid, and by the addition of water effecting the instantaneous production of magnesium chlorid and barium sulfate, the magnesium chlorid immediately combining with the magnesia, resulting in immediately starting the binding process and thereby causing the entire mass to gradually set, the barium sulfate remaining as a filling which is indissoluble in water, substantially as described.

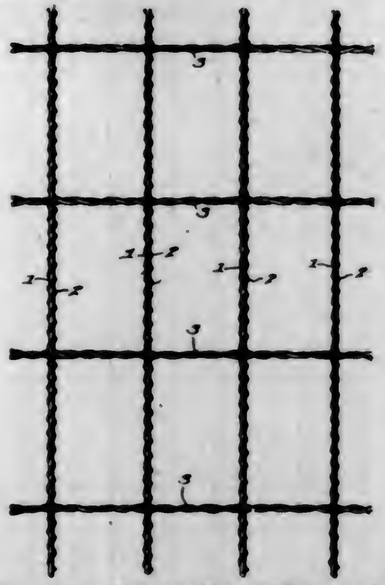
757,253. CISTERN. GEORGE W. BOYER, Desoto, Mo. Filed Aug. 10, 1903. Serial No. 168,974. (No model.)

*Claim.*—A cistern composed of superposed courses, each course comprising a plurality of sections, the sections of one course breaking joint with the sections of the next adjacent course, dowel connections between the vertical edges of the sections to prevent in-

ward or outward displacement thereof and having vertical play to admit of a limited vertical movement of the sections, and dowel connections between the abutting ends of the upper and lower sections to prevent any movement thereof after being assembled.



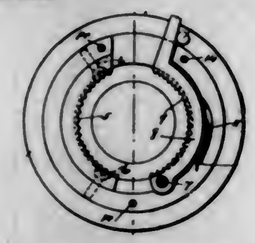
757,254. WIRE FABRIC. Levi M. Brown, Pekin, Ill., assignor to American Trust Fence Company, Pekin, Ill. Filed Mar. 26, 1903. Serial No. 149,502. (No model.)



*Claim.*—A fence fabric comprising vertically-arranged stay-wires, each having a wire of less diameter coiled thereon, and a series of horizontal cables each composed of two strands of wires twisted together throughout their lengths and arranged at suitable distances apart on said stays, the twist between adjacent stays being in reverse directions and one of the strands of the cables being in contact with the larger wires between the coils thereon and the other strand of said cable being in contact with a coil on said larger wires.

757,255. DOG FOR LATHES. Charles H. Brown, Allegheny, Pa. Filed Mar. 14, 1903. Serial No. 147,716. (No model.)

*Claim.*—In combination, a circular plate 4 having a circular flange extending part way around it, an annular plate 13 secured to the flange, a stationary concaved serrated bar 5 seated in said plate 4, a pivoted serrated bar 6, having a lever and extending beyond the circumference of said plates and limited in its movements by the ends of the flange of said plate 4, and a spring pressing against said pivoted bar, as set forth.



757,256. BED-COVERING. Benson W. Brown, New York, N. Y. Filed Nov. 20, 1902. Serial No. 132,092. (No model.)



*Claim.*—1. As a new article of manufacture, a bed-cover having cord-strands connected thereto and extending across one end portion and the two side portions thereof, said strands having means for engagement with a bedstead to fasten the cover thereto or suspend it thereover.

2. As a new article of manufacture, a bed-cover having longitudinal and transverse casings attached thereto near the edges thereof, and a continuous cord threaded through said casings and having loops projecting through said casings.

3. As a new article of manufacture, a bed-cover provided with side and transverse casings spaced to form intermediate gaps at the adjacent ends of said casings, and a cord extending through said casings and provided with loops at said gaps between the side and transverse casings.

4. As a new article of manufacture, a bed-cover having side and transverse casings attached thereto near the edges thereof, said side casings being provided with transverse slits, and a cord threaded continuously through the side and transverse casings and adapted to have its free ends drawn through either of the slits in the side casings.

5. A bed-cover having independent fastening and suspension cords attached thereto, said cords extending longitudinally of said cover, and the fastening-cords being located on the cover between the edges thereof and said suspension-cords.

6. Means for holding and suspending covers on beds, consisting of posts having means for supporting the same adjacent to a foot-section of a bedstead, a single bed-cover, independent fastening and suspension cords attached longitudinally to said bed-cover near the side edges thereof, the suspension-cords lying adjacent to the fastening-cords, and means for detachably connecting either the suspension-cords or the fastening-cords to said posts.

7. The combination of independent sets of cover-supporting devices arranged at different elevations and adjacent to a foot-section of a bedstead, a bed-cover, cord-fasteners at or near the head-section of a bedstead, and a cord attached longitudinally to said cover within the edges thereof, said cord engaging detachably with either set of cover-supporting devices and with the cord-fasteners to secure the cover and form a drapery at the sides and an end portion thereof.

8. The combination of posts having means for attaching the same to a bedstead adjacent to a foot-section thereof, a series of fastening devices secured at intervals to said posts, and a cover having longitudinal independent fastening and suspension cords adapted for engagement individually with one or the other of said fastening devices; said fastening-cords holding said cover firmly against



displacement on the bed, and the suspension-cords being effective in maintaining the cover in a raised condition over the bed.

9. In a device of the class described, a corner-fixture having a sectional foldable post, a fastening-plate on one member of said post, and separate cover-supporting devices carried by the sections of said posts.

10. In a device of the class described, a corner-fixture having a foldable post, means for attaching one member of said post to a bedstead, and separate cover fastening and suspension devices carried by said posts at different elevations thereon.

11. A bed-cover having within each side edge a continuous sheath which is provided at intervals with transverse openings or slits, and cord-strands each extending continuously through one of said sheaths and adapted to have its free end portions drawn through either of the openings or slits therein.

12. A bed-cover having a fastening-cord, and a separate suspension-cord attached to said cover adjacent to the fastening-cord, combined with independent cover-holding devices having means for securing the same at different elevations on a bedstead in position for engagement by said fastening-cord or the suspension-cord.

13. A bed-cover provided with fastening and suspension cords extending longitudinally thereof, said fastening-cords being located between the suspension-cords and the edges of the cover, and said suspension-cords being attached on curved lines to the cover.

14. In a device of the class described, a corner-fixture having a sectional hinged post, means for locking the members of said posts in their operative positions, an offset clamp on one member of said post, and separate cover-supporting devices carried by the respective members of the post.

15. The combination of corner-posts each having means for securing the same to a bedstead adjacent to an end section thereof, a cover-holding device on each post, a cover-suspension device carried by each post at a point above the cover-holding device, and a bed-cover having separate longitudinal cords provided with loops for detachably engaging with either of said devices.

757,257. TELEPHONE-RECEIVER SUPPORT. James A. Brown, Warren, Ohio. Filed Oct. 8, 1903. Serial No. 176,263. (No model.)

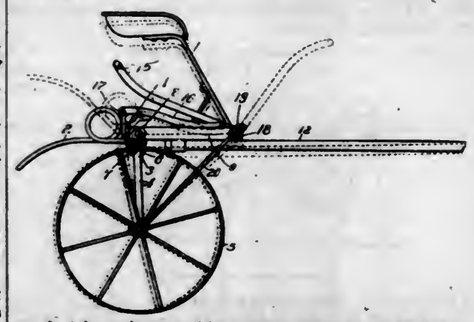


*Claim.*—1. In combination with a box-telephone provided with a ledge and a depressible switch-hook, a bracket engaging said ledge, an arm pivoted to the bracket to swing in a plane at right angles to the switch-hook, and an adjustable finger carried by said arm to engage and release the switch-hook as the arm is swung toward and from the same, substantially as described.

2. A telephone-receiver support and switch-actuating device comprising a bracket having offset arms to engage above and beneath the ledge of a telephone-box, a receiver-supporting arm pivoted to said bracket to swing toward and from the switch-hook of the telephone, and a pivoted finger carried by said arm to engage and release the switch-hook as the arm is swung toward and from the same, substantially as described.

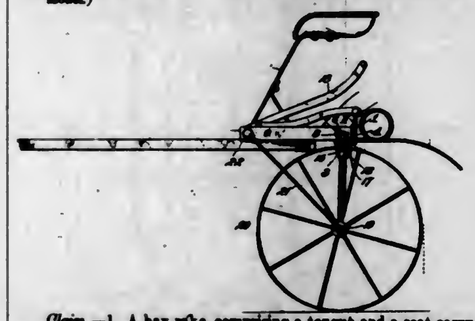
757,258. HORSE HAY-RAKE. Luther Brown, Platte county, Mo. Filed Sept. 24, 1903. Serial No. 174,384. (No model.)

*Claim.*—1. A hay-rake, comprising a tongue and seat-carrying frame, a transverse bar equipped with rake-teeth, and pivoted to said frame and adapted to turn about a horizontal axis to raise or lower the teeth, bearings secured to said bar, horizontal axles journaled in said bearings provided with depending crank-arms having outturned ends, wheels journaled on said crank-arms below the axes of said axles, an inclined brace pivotally connected to said frame at their front ends and pivotally connected at their rear ends to said crank-arms below the axes thereof, and means for rotating said tooth-carrying bar and for securing it in position with its teeth elevated or lowered.



2. A hay-rake, comprising a tongue and seat-carrying frame, a transverse bar equipped with rake-teeth and pivoted to said frame and adapted to turn about a horizontal axis to raise or lower the teeth, bearings secured to said bar, horizontal axles journaled in said bearings and provided with depending crank-arms having outturned ends, means to prevent endwise movement of said axles in said bearings, wheels journaled on the outturned ends of said axles, inclined braces pivotally connecting said frame with the outturned ends of said crank-arms, and means for rotating said tooth-carrying bar and for securing it in position with its teeth elevated or lowered.

757,259. HORSE HAY-RAKE. Luther Brown, Platte county, Mo. Original application filed Sept. 24, 1903, Serial No. 174,384. Divided and this application filed Dec. 15, 1903. Serial No. 185,195. (No model.)



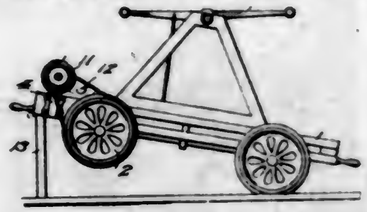
*Claim.*—1. A hay-rake, comprising a tongue and a seat-carrying frame, a transverse bar equipped with rake-teeth pivoted to said frame to turn about a horizontal axis, bearings secured to said bar, an arched axle having its bridge portion fitting loosely in said bearings, wheels journaled on the crank portions of said axle, inclined braces pivotally connecting said frame with the cranks of said axle below its bridge portion, and means for rotating the tooth-carrying bar and for securing it in position with its teeth elevated or lowered.

2. A hay-rake, comprising a tongue, a seat-carrying frame having lateral extensions, a transverse bar equipped with rake-teeth and pivoted to said frame for movement about a horizontal axis, bearings secured to said bar, an arched axle having its bridge portion fitting loosely in said bearings, means to prevent endwise movement of the axle in said bearings, wheels journaled on the crank portions of said axle, inclined braces pivotally connecting the crank portions of the axle with the extensions of said frame, and means for rotating the tooth-carrying bar and for securing it in position with its teeth elevated or lowered.

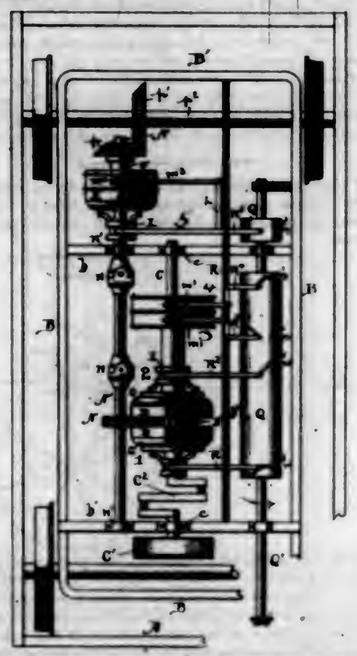
757,260. GRINDING ATTACHMENT. Mix Brown, Rosser, Tex. Filed May 16, 1903. Serial No. 157,455. (No model.)

*Claim.*—A grinding attachment comprising a wheeled hand-car

having a platform thereon, mechanism for driving the car, a slotted bracket secured to one side of the platform, a standard having its lower end detachably mounted in said slotted bracket, the upper end of the standard having a curved bearing therein, a tubular arm secured to said bearing, a base-piece secured to the standard and detachably mounted on the platform, a supporting-web secured to the standard, tubular arm and base-piece, a revoluble shaft passing through said tubular arm having on one end a pulley-wheel and on the other end a grinding-stone, and a belt mounted on said pulley-wheel and on the flanged periphery of the car-wheel below said pulley, substantially as specified.



**757,261. POWER-TRANSMISSION GEAR.** WILLIAM O. BROWN, Chicago, Ill., assignor to National Hydrocarbon Car Company, Chicago, Ill., a Corporation of Illinois. Filed May 2, 1903. Serial No. 155,290. (No model.)



*Claim.*—1. In power-transmission gears, the combination of a power-shaft, a rigid gear-wheel mounted on the power-shaft, intermediate gear-wheels meshing therewith, a gear-wheel exterior of the intermediate wheels and provided with interior teeth meshing with the intermediate gear-wheels, two clutch mechanisms one connected with the intermediate gear-wheels and the other connected with the exterior gear-wheel, and a power-transmission gear-wheel adapted to be engaged by both the clutches, substantially as described.

2. In power-transmission gears, the combination of a power-shaft, a rigid gear-wheel mounted on the power-shaft, intermediate gear-wheels meshing therewith, a gear-wheel exterior of the intermediate wheels and provided with interior teeth meshing with the intermediate gear-wheels, two clutch mechanisms one connected with the intermediate gear-wheels and the other connected with the exterior gear-wheel, a power-transmission gear-wheel adapted to be engaged by both the clutches, a brake mechanism adapted to hold the intermediate gear-wheels against revolution around the power-shaft, and a brake mechanism adapted to engage the exterior gear-wheel, substantially as described.

3. In power-transmission gears, the combination of a power-shaft, a fixed gear-wheel mounted on the power-shaft, an inner sleeve on the power-shaft, an outer sleeve exterior of the inner sleeve and terminating in an exterior gear-wheel provided with internal teeth, intermediate gear-wheels rotatably connected with the inner sleeve and adapted to mesh with the fixed gear-wheel and the exterior gear-wheel, a power-transmission gear-wheel, a clutch mechanism connected with the interior sleeve, and a clutch mechanism connected with the exterior sleeve, both clutch mechanisms being adapted to engage the power-transmission gear-wheel, substantially as described.

4. In power-transmission gears, the combination of a power-shaft, a fixed gear-wheel mounted on the power-shaft, an inner sleeve on the power-shaft, an outer sleeve exterior of the inner sleeve and terminating in an exterior gear-wheel provided with internal teeth, intermediate gear-wheels rotatably connected with the inner sleeve and adapted to mesh with the fixed gear-wheel and the exterior gear-wheel, a power-transmission gear-wheel, a clutch mechanism connected with the interior sleeve, a clutch mechanism connected with the exterior sleeve, both clutch mechanisms being adapted to engage the power-transmission gear-wheel, a brake mechanism adapted to hold the intermediate gear-wheels against revolution around the power-shaft, and a brake mechanism adapted to engage the exterior gear-wheel, substantially as described.

5. In power-transmission gears, the combination of a power-shaft, a fixed gear-wheel on the power-shaft, an inner sleeve on the power-shaft terminating in an outwardly-extending journal-plate, an exterior sleeve encircling the interior sleeve and terminating in an exterior gear-wheel provided with interior teeth, a recessed wheel rotatably mounted on the power-shaft, intermediate gear-wheels meshing with the fixed gear-wheel and the exterior gear-wheel and rotatably mounted between the recessed wheel and the journal-plate, a power-transmission gear-wheel rotatably mounted on the interior sleeve, a clutch mechanism on the interior sleeve, and a clutch mechanism on the exterior sleeve both clutch mechanisms adapted to engage the power-transmission gear-wheel to transmit power from one of the sleeves, substantially as described.

6. In power-transmission gears, the combination of a power-shaft, a fixed gear-wheel on the power-shaft, an inner sleeve on the power-shaft terminating in an outwardly-extending journal-plate, an exterior sleeve encircling the interior sleeve and terminating in an exterior gear-wheel provided with interior teeth, a recessed wheel rotatably mounted on the power-shaft, intermediate gear-wheels meshing with the fixed gear-wheel and the exterior gear-wheel and rotatably mounted between the recessed wheel and the journal-plate, a power-transmission gear-wheel rotatably mounted on the interior sleeve, a clutch mechanism on the interior sleeve, a clutch mechanism on the exterior sleeve both clutch mechanisms adapted to engage the power-transmission gear-wheel to transmit power from one of the sleeves, a brake mechanism encircling the exterior gear-wheel, and a brake mechanism encircling the recessed wheel, the brake mechanisms being adapted to prevent rotation of the sleeves, substantially as described.

7. In power-transmission gears, the combination of two shafts, a gear mechanism operating between the shafts, planetary gears having predetermined ratios to one another on each of the shafts adapted to receive and impart varying speeds, and clutch mechanisms on each of the shafts adapted to work in conjunction with the respective planetary gears to vary the speeds imparted thereby, substantially as described.

8. In power-transmission gears, the combination of a power-transmitting and a power-receiving shaft having a cooperative relation to one another, a gear mechanism cooperating between the shafts, gears on each of the shafts having predetermined ratios to one another, each of the gears being adapted to receive and to impart varying degrees of rotation and adapted to lock with its respective shaft and rotate therewith, and means for varying the degrees of speed imparted from the shafts through their respective gears, substantially as described.

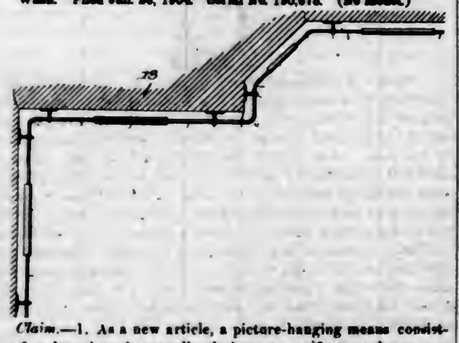
9. A power-transmission gear consisting of a power-shaft and an intermediate shaft, a fixed gear-wheel on the power-shaft, a power-transmission gear-wheel rotatably mounted with respect to the power-shaft, two clutch mechanisms adapted to engage with the power-transmission gear-wheel, both of the clutch mechanisms adapted to receive motion from the fixed gear-wheel, an intermediate power-transmission gear-wheel meshing with the power-transmission gear-wheel, a fixed gear-wheel mounted on the intermediate shaft, a pinion rotatably mounted with respect to the intermediate shaft and adapted to receive full speed of revolution from the power-shaft and reduced speed of revolution from the fixed gear thereon, and means for changing the speed of the revolution imparted to the pinion, substantially as described.

10. In power-transmission gears, the combination of a power-shaft, a fixed gear-wheel mounted on the power-shaft, a transmission gear-wheel revolubly mounted on the power-shaft, an exterior gear-wheel revolubly mounted on the shaft and provided with interior teeth, intermediate gear-wheels meshing with the fixed gear-wheel and the exterior gear-wheel, two clutch mechanisms one of them connected with the exterior gear-wheel and the other one connected with the intermediate gear-wheels both clutch mechanisms adapted to impart motion to the power-transmitting gear-wheel, a power-transmission shaft adapted to receive motion from the power-transmission gear-wheel, a pinion revolubly mounted on the power-transmission shaft, a gear mechanism on the power-transmission shaft, and a clutch mechanism adapted to transmitting revolution to the pinion through the gear mechanism, substantially as described.

11. In power-transmission gears, a combined brake and clutch mechanism consisting of a rotatable shaft, a fixed gear-wheel mounted on the shaft, an exterior gear-wheel encircling the shaft, provided with interior teeth, intermediate gear-wheels meshing with the fixed gear-wheel and the external gear-wheel, a mounting for the intermediate gear-wheels, a pinion on the mounting, a brake mechanism adapted to engage the exterior gear-wheel, a clutch mechanism adapted to engage the mounting for the intermediate pinions, a controlling-cylinder provided in its face with a groove, and a lever connected with the clutch and brake mechanism and adapted to enter the groove in the cylinder and be controlled thereby to operate the brake and clutch mechanisms, substantially as described.

12. In power-transmission gears, the combination of a power-shaft, a fixed gear on the power-shaft, an external gear-wheel provided with interior teeth, said external gear-wheel having a predetermined ratio to the fixed gear-wheel, intermediate gear-wheels meshing with the fixed gear-wheel and the external gear-wheel, a power-transmission gear-wheel rotatably mounted with respect to the power-shaft, two clutch mechanisms adapted to engage the power-transmission gear-wheel, one of the clutch mechanisms connected with the external gear-wheel and the other clutch mechanism connected with the intermediate gear-wheels, a brake mechanism adapted to prevent rotation of the external gear-wheel and a brake mechanism adapted to hold the intermediate gear-wheels in fixed relation with respect to the shaft, a power-transmission shaft, a gear-wheel on the power-transmission shaft meshing with the power-transmission gear-wheel, a fixed gear-wheel on the power-transmission shaft, an external gear-wheel rotatably mounted with respect to the power-transmission shaft and provided with interior teeth, intermediate gear-wheels meshing with the fixed gear-wheel and the teeth of the external gear-wheel, the fixed gear-wheel and exterior gear-wheel having a predetermined ratio different from the ratio of the fixed gear-wheel, and external gear-wheel on the power-shaft, a clutch mechanism adapted to lock the external gear-wheel to the shaft, and a brake mechanism adapted to prevent rotation of the external gear-wheel, substantially as described.

**757,262. PICTURE-HANGING DEVICE.** JOHN BRYDEN, Colfax, Wash. Filed Jan. 26, 1904. Serial No. 190,673. (No model.)

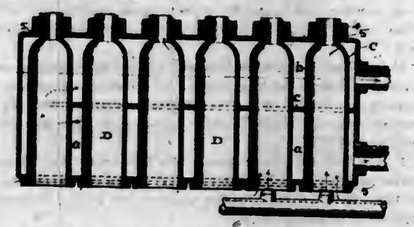


*Claim.*—1. As a new article, a picture-hanging means consisting of rod-sections intermediately bent to conform to the corners and angles of the room and with sleeves slidable upon the adjacent ends of said rod-sections and hooks detachably engaging said rod-sections and spaced apart thereon and having threaded terminals for attachment to the walls of the room.

2. As a new article, a picture-hanging means consisting of rod-sections intermediately bent to conform to the corners and angles of the room and with sleeves slidable upon the adjacent ends of said rod-sections, and hooks detachably engaging said rod-sections and spaced apart thereon and with threaded terminals for attachment to the walls of the room.

3. As a new article, a picture-hanging means consisting of rod-sections having sleeves slidable thereon and forming detachable couplings between the ends of the same and supporting means consisting of a plurality of hooks spaced apart thereon and having contracted inlets and with threaded terminals for attachment to the walls of the room.

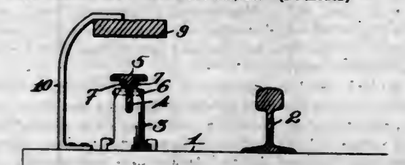
**757,263. WATER-HEATING AND STEAM-GENERATING DEVICE.** JESSE T. BURR, Glenville, Ohio. Filed June 4, 1903. Serial No. 159,967. (No model.)



*Claim.*—1. A water-heater comprising a fluid-tight casing having water inlet and outlet openings relatively at the same side of the casing, in combination with a series of burner-tubes extending through said casing and open to the outside air at both ends, said burner-tubes contracted at their upper ends, and locked fluid-tight with said casing at both ends, and means dividing said casing into two communicating compartments open respectively to said inlet and outlet openings, substantially as described.

2. The casing having water inlet and outlet openings at substantially the same side, a partition between said openings dividing the casing into two communicating compartments, burner-tubes extending through the top and bottom of said casing and through said partition, said tubes having reduced upper portions and means thereon securing said tubes at the top, and flanges on said tubes bearing against the bottom of the casing, substantially as described.

**757,264. ELECTRIC RAILWAY.** DAVID J. CARLE, Lima, Ohio. Filed Mar. 11, 1903. Serial No. 147,236. (No model.)



*Claim.*—1. In an electric-railway system, a continuous third rail comprising a plurality of substantially T-shaped rails arranged end to end and each consisting of a vertical web provided on its upper end with laterally-extending flanges, in combination with fish-plates uniting the adjacent ends of said rails and bare electrical conductors arranged in contact with the under sides of said flanges and clamped between the same and the upper edges of the fish-plates, substantially as described and for the purpose specified.

2. In an electric-railway system, a continuous third rail comprising a plurality of substantially T-shaped rails arranged end to end and each consisting of a vertical web provided on its upper end with laterally-extending flanges, fish-plates uniting the adjacent ends of said rails, bare electrical conductors arranged in contact with the under sides of said flanges and clamped between the same and the upper edges of the fish-plates, and pedestals of insulating material in which the webs of the rails are embedded and fastened, substantially as described and for the purpose specified.

**757,265. LOCK.** JOHN S. CAMPBELL, London, England. Filed Jan. 16, 1903. Serial No. 139,280. (No model.)

*Claim.*—1. In a lock, the combination with a frame-plate, case,

spring-actuated locking member, and a member confined within the case by the locking member and movable endwise therein to actuate the locking member.



2. In a lock, the combination with a frame-plate, case, spring-actuated locking member, and a member confined within the case by the locking member and movable endwise therein to actuate the locking member, and means for permitting the moving the locking member out of the way so as to liberate the member within the case at will.

3. In a lock, the combination with a frame-plate, locking member, and multiplex actuating member, of means for restraining the movement of a portion only of said actuating member, whereby the operation of the several parts of the actuating member may be variously controlled.

4. In a lock, the combination with a frame-plate, locking member, and multiplex actuating member, of means for preventing direct manipulation of the actuating member, and a key for operating a part of the actuating member.

5. In a lock, the combination with a frame-plate, locking member, and actuating member, of mechanism for restraining the movement of the outermost part of said actuating member and means for actuating the locking member through the end thrust of a key adapted to be inserted into said outermost part.

6. In a lock, the combination with a frame-plate, locking member, actuating member and case, any part of which actuating member may singly actuate said locking member, of means for restraining the movement of a portion but not all of the actuating member, whereby a variety of means for actuating the locking member may be employed.

7. In a lock, the combination with a frame-plate, actuating member and case, of a spring-actuated locking member removably confining the actuating member within the case.

8. In a lock, the combination with a frame-plate, locking member, multiplex actuating member and case, the actuating member or any part thereof constituting means for actuating the locking member, of means permitting operative substitution of one actuating member for another within the case at will.

9. In a lock, the combination with a frame-plate, locking member, multiplex actuating member and case, the actuating member comprising an innermost key-actuated part, an outermost part, and an intermediate guard-plate.

10. In a lock, the combination with a frame-plate, locking member, multiplex actuating member comprising a plurality of parts operatively related to the locking member, of a dog adapted to retain or release at will a portion of the actuating member, whereby the actuating member may be operated as a push-fastening or a key-actuated device at will.

11. In a lock, the combination with a frame-plate, locking member, multiplex actuating member comprising outermost, innermost and intermediate parts, of means for dogging the outermost and intermediate parts, and a detachable keyhole-disk upon the intermediate part, through which the innermost part is operatively accessible to a key.

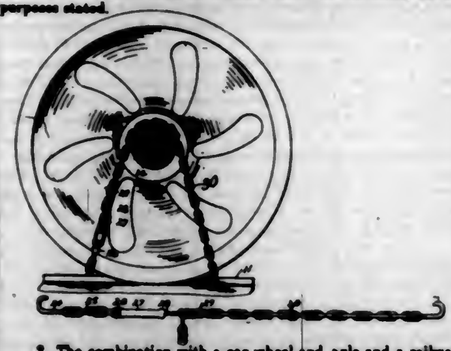
12. In a lock, the combination with a frame-plate, locking member, and multiplex actuating member, said actuating member comprising rotatable and non-rotatable parts, of means for operating the rotatable part by a key inserted through the non-rotatable part.

13. In a lock, the combination with a frame-plate, locking member, actuating member, of a dog upon the plate cooperating with the actuating member in the manner and for the purpose specified, and means for fixing the dog against accidental dislodgment in either the dogging or the clearing position.

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**757,266. IMPLEMENT FOR USE IN REPLACING CAR-AXLE BEARERS.** ADDIS CASE, Perry, Iowa. Filed Apr. 18, 1903. Renewed Jan. 19, 1904. Serial No. 189,761. (No model.)

*Claim.*—1. The combination with a car wheel and axle, and a railway-rail supporting the car-wheel, of two hooks shaped to admit a portion of the ball of the rail and provided with shanks to rest on top of the rail, and a chain attached to the hooks, passed under the car-wheel on opposite sides of its point of contact with the rail, and passed over the car-axle inside of the wheel, for the purposes stated.



2. The combination with a car wheel and axle and a railway-rail supporting the car-wheel, of two hooks designed to admit the outer portion of a ball of a rail, a chain attached to the hooks, passed under the wheel at opposite sides of its point of contact with the rail and passed over the car-axle, and means in the chain for adjusting its length, for the purposes stated.

3. In a device of the class described, the combination of a hook designed to admit the outer portion of the ball of a rail, provided with a cheek to rest on top of the rail, a chain connected with the hook, a turnbuckle connected with the chain, a screw-threaded rod having a slotted head at right angles to the body of the rod, said rod mounted in the turnbuckle, a second hook shaped to engage the outer portion of the ball of a rail, and a chain connected with the second hook, its links being designed to enter the slotted head of the said rod, for the purposes stated.

4. In a device of the class described, a hook member to engage one side of the ball of a rail and to fit on top of the ball and project beyond the opposite side thereof, and a second hook member slidingly connected with the first to engage the opposite side of the ball of a rail.

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**757,267. PRESSURE-BLOWER.** ALFRED W. CASE, Highland Park, Conn. Filed Feb. 13, 1903. Serial No. 142,943. (No model.)



*Claim.*—A pressure-blower consisting of a spiral shell that is circular in cross-section and has a tangential outlet, an annular plate secured to each side of the spiral shell, an upwardly-extending arm secured to the lower part of each annular plate, bearings supported by the arms, a shaft held by the bearings, a fan located within the shell and supported by the shaft, the said fan consisting of radial arms, fan-blades fastened to the arms, an annular plate supported by the arms each side of the blades, a peripheral plate encircling the blades and side plates and having a relatively small opening immediately in front of each blade, tubes extending outwardly from the side plates of the fan through the annular plates fastened to the sides of the shell, a packing secured to each side plate of the shell about a tube, and a collar on each tube outside of each packing, substantially as specified.

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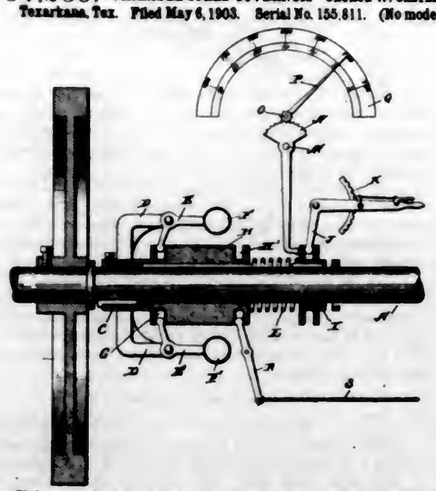
**757,268. CORSET-STAY.** LEWIS I. CASSIDY, Lexington, Ky., assignor to William B. Cassidy, Lexington, Ky. Filed Sept. 19, 1903. Serial No. 173,502. (No model.)



*Claim.*—The herein-described cap or protector for the purposes set forth constructed of a sheet-metal blank having a centrally-disposed tongue at one end and having crossing cuts to form attaching-points, the longitudinal edge portions of the blank being folded upon the blank, and said tongue being folded to inclose the space formed between the recurved longitudinal edge portions, substantially as set forth.



**757,269. VARIABLE-SPEED GOVERNOR.** GEORGE W. CASTEEL, Texarkana, Tex. Filed May 6, 1903. Serial No. 155,811. (No model.)



*Claim.*—1. In a device of the character described, the combination of a driving-shaft with arms secured thereon, governor balls and levers pivoted to said arms, a sleeve mounted upon the driving-shaft and adapted to slide longitudinally thereof, the governor-levers being in connection with said sleeve, a lever for controlling the source of power also in connection with said sleeve, a collar mounted upon the driving-shaft and adapted to slide longitudinally thereof, a spring interposed between said collar and the sleeve, a controlling-lever for the purpose of sliding said collar longitudinally of the shaft, and indicating means dependent upon the movement of said collar for its motion, as and for the purpose specified.

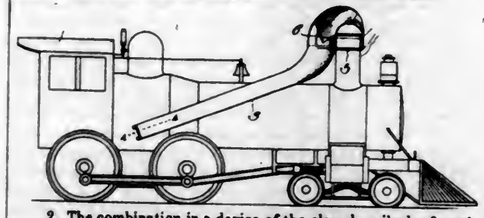
2. The combination of a driving-shaft with a collar secured rigidly thereon, right-angle arms extending outward from said collar upon opposite sides, bell-crank levers pivoted to the outer end of said arms, weights or balls secured upon one member of the levers, a sleeve mounted upon the driving-shaft and adapted to slide longitudinally thereof, the other members of the bell-crank levers being in engagement with said sleeve, a lever for controlling the source of power also connected to said sleeve, a collar mounted upon the driving-shaft and adapted to slide longitudinally thereof, a spring interposed between said collar and the sleeve, a controlling-lever in engagement with said collar for the purpose of sliding the same longitudinally, a dial, a pointer-hand, and means extending from said pointer-hand to the controlling-collar whereby the pointer-hand is moved by the movement of the collar, as and for the purpose specified.

3. In a device of the character described, a driving-shaft, a centrifugal governor carried by said driving-shaft, a sliding member connected to the source of power and also to the governor and adapted to be moved by said governor as the speed of the driving-shaft is increased or diminished, a spring adapted to exert pressure against the slidable member against any action of the governor, means for compressing or reducing the tension upon the spring, and means depending upon the movement of the controlling mechanism for indicating the speed of the motor upon a dial, as and for the purpose specified.

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**757,270. SPARK AND CINDER ARRESTER.** WALDO S. CAVENDER, Willard, Ill. Filed Nov. 12, 1903. Serial No. 180,931. (No model.)

*Claim.*—1. The combination in a device of the class described, of a pair of deflecting-wings each presenting a deflecting-surface curved upward, outward, rearward, and downward, said wings being united upon a curved line and having the rear ends thereof disposed at a lower level than the forward ends, and means for securing said wings in position above a smoke-stack, said securing means including a pair of resilient members each attached at one end to one of the deflecting-wings at its forward end, extending downward from said points of attachment to about the level of the rear ends of said wings, being bent at that point and extending rearwardly to be attached to the rear portion of the deflecting-wing to which its forward end in attached, the rearwardly-extending portions of said resilient members being curved to correspond to the dimensions of a smoke-stack, and means provided upon said resilient members for forcing them into clamping engagement with a smoke-stack.

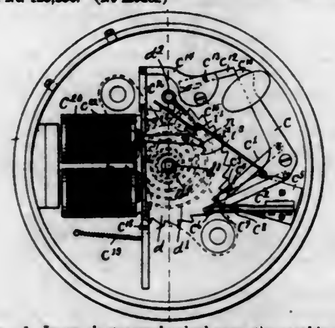


2. The combination in a device of the class described, of a pair of curved deflecting-wings joined upon a curved line extending from above a smoke-stack rearward and downward behind the smoke-stack, and means for securing said deflecting-wings in position, said securing means including a pair of resilient members attached at their ends to said wings and each consisting of a downwardly-extending portion and a rearwardly-extending portion, said downwardly-extending portions being normally divergent and said rearwardly-extending portions being curved to correspond to the outside of a smoke-stack, and a slide permanently secured upon the downwardly-extending portions of said resilient members to force said resilient members into clamping engagement with the smoke-stack.

3. The combination with means at the top of a smoke-stack for deflecting the products of combustion downward and rearward, of conduits to convey said products of combustion rearward from said deflecting means, said conduits leading into the fire-box of the engine but having openings therein through which the products of combustion may be allowed to escape into the outer air, and dampers provided in said conduits to direct the products of combustion into the fire-box or allow them to pass into the open air.

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**757,271. ELECTROMECHANICAL GONG.** FREDERICK W. COLE, Newton, Mass., assignor to United States Fire and Police Telegraph Company, Boston, Mass., a Corporation of Maine. Filed Oct. 4, 1902. Serial No. 126,859. (No model.)



*Claim.*—1. In an electromechanical gong, the combination of a striking-arm, actuating mechanism therefor, a let-off engaging said arm, an electromagnet, an armature therefor which is connected with said let-off and which operates said let-off to release the striking-arm when moved into its full retracted position, a dog engaging said armature for holding it in its semiretracted position, which is released by said armature when the latter is moved into its attracted position, and when released, permits said armature to move into its full retracted position, and means, operated by the striking-arm for restoring said dog, substantially as described.

2. In an electromechanical gong, the combination of a striking-arm, actuating mechanism therefor, a pivoted let-off engaging said arm, an electromagnet, an armature therefor, an unyielding link connecting said armature with said let-off, said armature operating to move said let-off when moved into its full retracted position, a dog engaging said armature for holding it in its semiretracted position, which is released by said armature when the latter is moved into its attracted position, and when released disengages said armature permitting it to move into its full retracted position, and means for operating said dog to restore the armature and parts connected therewith, substantially as described.

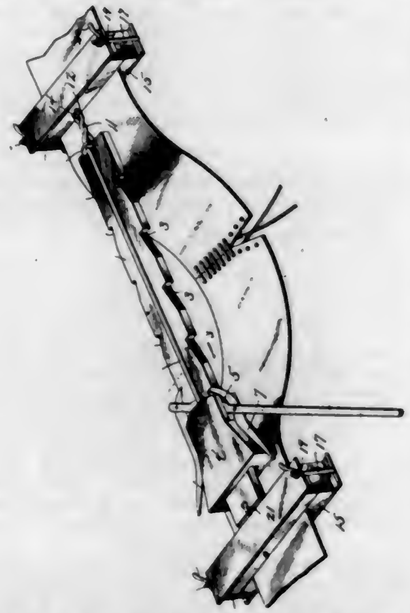
3. In an electromechanical gong, the combination of a striking-arm, actuating mechanism therefor, a pivoted let-off engaging said arm, an electromagnet, an armature therefor, an unyielding link connecting said armature with said let-off, said armature operating to move said let-off when moved into its full retracted position, a dog engaging said armature for holding it in its semiretracted position, which is released by said armature when the latter is moved into its attracted position, and when released disengages said armature permitting it to move into its full retracted position, and means, operated by the striking-arm, for operating said dog to restore the armature and parts connected therewith, substantially as described.

4. In an electromechanical gong, the combination of a striking-arm, actuating mechanism therefor, a let-off engaging said arm, an electromagnet, its armature, and an unyielding link connecting said let-off with said armature, whereby the let-off is positively moved in both directions, and also held by the armature, substantially as described.

5. In an electromechanical gong, the combination of a striking-arm, actuating mechanism therefor, a pivoted let-off engaging said arm, consisting of a pivoted dog $c^{13}$, and a pivoted arm bearing it, an electromagnet, its armature, and an unyielding link connecting the arm bearing the let-off with said armature, whereby the let-off is positively moved in both directions and also held by the armature, substantially as described.

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**757,272. BELT-STRETCHER.** JAMES B. COOPER, Pendleton, Ind., assignor of one-half to Fred B. Aiman, Pendleton, Ind. Filed May 2, 1903. Serial No. 155,386. (No model.)



*Claim.*—1. A belt-stretcher, consisting of a pair of locking-clamps, each clamp comprising two members, a stretcher-bar attached to one clamp and provided with notches in its opposite edges, a block movably held on the bar, a lever mounted in the block and carrying dogs to engage the said notches, and means connecting the other clamp and the block.

2. A belt-stretcher, comprising two clamping devices, a bar connected to one of the clamping devices, an adjustable block carried by the bar, and means on either side of the bar for connecting the block to the other clamping device.

3. A belt-stretcher, comprising two clamping devices, a bar connected to one of the clamping devices, an adjustable block carried by the bar, and two parallel rods or bars fastened to the block and connected by a twist forming an eye connected to the other clamping device.

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**757,273. HARNESS-FASTENER.** ERNST CORNITIUS, Waco, Tex. Filed Oct. 8, 1903. Serial No. 176,397. (No model.)



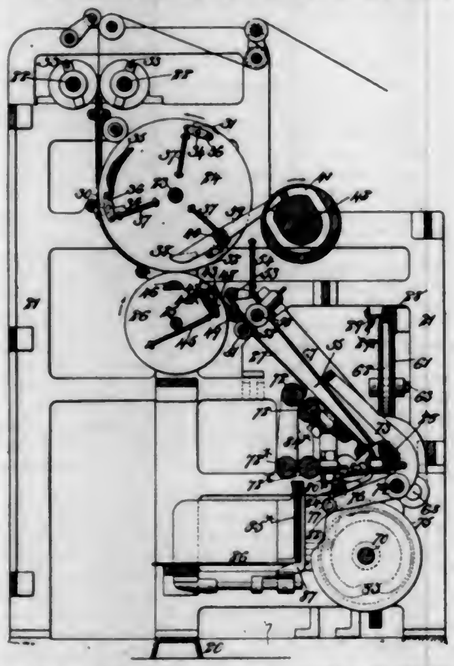
*Claim.*—1. In devices of the character described, a fastener member formed of a single piece of metal adapted to be secured at one end to a harness-piece and at its other end provided with a raised portion having sloping sides with apertures therethrough adapted to be passed over a suitable hooked support.

2. In devices of the class described, a fastener member comprising an elongated strip of metal secured at one end to a harness-piece and at its other end provided with a raised portion having sloping sides with apertures therethrough adapted to be passed over a suitable hooked support.

3. In devices of the character described, a fastener member comprising an elongated tapering oval-shaped strip of metal adapted to be secured at its smaller end to a harness-piece and bent at its larger end to form a raised portion having sloping walls each provided with an aperture therethrough adapted to be passed over a suitable hooked support.

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**757,274. MACHINERY FOR CUTTING AND FOLDING PAPER OR OTHER FABRICS.** EDGAR H. COTTRELL, Stonington, Conn., assignor to C. B. Cottrell & Sons Company, New York, N. Y., a Corporation of New Jersey. Filed Aug. 7, 1903. Serial No. 168,610. (No model.)



*Claim.*—1. The combination of a rotary cylinder for collecting a plurality of sheets one upon another on its periphery, a stationary table arranged below and having a slant downward and outward from said cylinder, and sheet-carrying devices between said cylinder and the upper edge of said table for taking the collections of sheets from said cylinder and presenting them upon said table.

2. The combination of a rotary cylinder for collecting a plurality of sheets one upon another on its periphery, a rotary carrier furnished with grippers for taking the collections of sheets from said cylinder, a table having a downward slant laterally from said cylinder and carrier, and rollers arranged between said carrier and the upper edge of said table for receiving the collections from said carrier and presenting them upon said table.

3. The combination of a rotary cylinder for collecting a plurality of sheets one upon another on its periphery, a rotary carrier furnished with grippers for taking the collections of sheets from said cylinder, a table having a downward slant laterally from said cylinder and carrier, rollers at the upper edge of said table for depositing thereon sheets taken from said carrier, and stationary sheet-supports between said carrier and rollers.

4. The combination of a slanting table for receiving sheets, means for depositing sheets on said table from the upper edge thereof, and an intermittently-moving sheet-carrier running along the lower edge of said table.

5. The combination of a slanting table and means for depositing sheets thereon from the upper edge thereof, an intermittently-moving sheet-carrier running along the lower edge of said table, and stops on said carrier for arresting said sheets in their descent on the table and alining them.

6. The combination of a slanting table for receiving sheets, means for depositing sheets on said table from the upper edge thereof, and an intermittently-moving carrier running along the lower edge of said table and consisting of an endless rack furnished with grippers which have stops for arresting the sheets in their descent on said table and assuring the alinement of successive deposits.

7. The combination of a slanting table for receiving sheets, means for depositing sheets on said table from the upper edge thereof, an intermittently-moving carrier running along the lower edge of said table, and pressers at the upper edge of said table for pressing down thereon the upper parts of the sheets when their lower edges reach the carrier.

8. The combination of a slanting table for receiving sheets, an intermittently-moving sheet-carrier running along the lower edge of said table, means for depositing sheets upon said table from the upper edge thereof during the intermissions of the movement of said carrier, and a cutter for cutting the so-deposited sheets into smaller sheets during said intermissions of movement.

9. The combination of a slanting table for receiving sheets, an intermittently-moving sheet-carrier running along the lower edge of said table, means for making successive deposits of sheets one upon another upon said table from the upper edge thereof during successive intermissions of the movement of said carrier, a cutter for cutting on said table a number of said successive deposits into smaller sheets and a folder for folding together on said table a number of the so-cut smaller sheets.

10. The combination of a slanting table for receiving sheets, means for depositing sheets upon said table, and an intermittently-moving sheet-carrier comprising an endless rack and attached grippers arranged opposite the face of said table with the lower run of the rack opposite to and in operative proximity to the lower edge of said table.

11. The combination of a slanting table, means for depositing sheets on said table from the upper edge thereof, an intermittently-moving sheet-carrier comprising an endless rack furnished with grippers and running along the lower edge of said table, a rock-shaft furnished with knockers for opening said grippers for the reception of sheets during the intermissions of the movement of said carrier, and a rotary cam for actuating said rock-shaft.

12. The combination of a slanting table, means for depositing sheets on said table from the upper edge thereof, an intermittently-moving sheet-carrier comprising an endless rack furnished with grippers and running along the lower edge of said table, a folding-blade cooperating with said table, a supporting-shaft and knockers thereon for opening said grippers and a connection between said folding-blade and knockers for actuating said knockers with the movement of the blade.

13. The combination of a slanting table, means for depositing sheets on said table from the upper edge thereof, an intermittently-moving sheet-carrier comprising an endless rack and attached grippers and running along the lower edge of said table, a folding-blade cooperating with said table, a rock-shaft and knockers fast thereon for opening said grippers for the reception of sheets, a rotary cam for actuating said rock-shaft, other knockers loose on said rock-shaft for opening said grippers for liberating the sheets, and a connection between said other knockers and the folding-blade for actuating said knockers.



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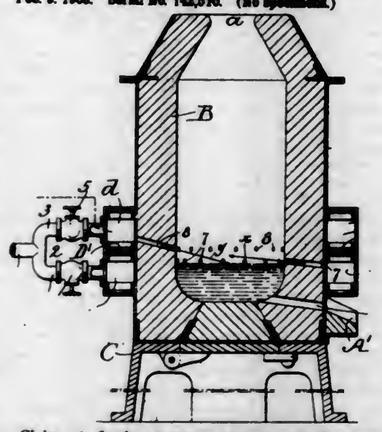
**757,275. METHOD OF MAKING HORSESHOES.** JOHN CROWLEY, Jacksonville, Fla. Filed Dec. 23, 1902. Serial No. 136,361. (No model.)



*Claim.*—The herein-described method of making horseshoes consisting in twisting a bar of greater width than thickness at opposite sides or points to provide a thick front portion and to form an integral calk, and shaping the end portions of the bar to form the sides of the shoe, substantially as described.

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**757,276. PROCESS OF CONVERTING CRUDE IRON INTO MALLEABLE IRON OR STEEL.** JOHN J. DERBER, Chester, Pa. Filed Feb. 9, 1903. Serial No. 142,510. (No specimens.)



*Claim.*—1. In the conversion of molten crude or cast iron into malleable iron or steel, subjecting the bath of molten metal to the action of oxidizing-blasts directed over the surface area of the bath by means of an annular series of jets extending upwardly and obliquely and converging at a common point centrally above the bath-surface, substantially as shown and described.

2. In the conversion of molten crude or cast iron into malleable iron or steel first subjecting the bath of molten metal to the action of oxidizing-blasts directed against the surface area of the bath by means of an annular series of jets extending downwardly and obliquely, and converging at a common point centrally on the bath-surface, and then subjecting the bath to oxidizing-blasts by means of an annular series of jets extending upwardly and obliquely and converging at a common point centrally above the bath-surface, substantially as shown and described.

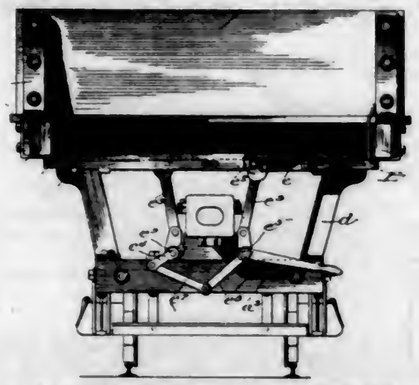
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**757,277. METHOD OF MOUNTING HOPPERS FOR DUMP-CARS.** JOHN C. DEPEW, Chicago, Ill. Filed Nov. 21, 1903. Serial No. 182,100. (No model.)

*Claim.*—1. In a device of the class described, the combination of a hopper tiltably mounted, draw-bars normally projecting under the hopper, supports within which the draw-bars are mounted and into which they may be retracted, a revoluble rock-shaft with which the draw-bars are connected, and means for revolving the shaft to simultaneously draw the draw-bars from their projected position under the hopper to allow the hopper to be tilted, substantially as described.

2. In a device of the class described, the combination of a tiltably-mounted hopper, draw-bars normally outwardly projected beneath the hopper to support the same, a support within which the

draw-bars are slidably mounted, a revoluble rock-shaft with which the draw-bars are connected, and means for revolving the shaft to simultaneously draw back the draw-bars from their projected position beneath the hopper to allow the hopper to be tilted, substantially as described.



3. In a device of the class described, the combination of a tiltably-mounted hopper provided with projected portions at each corner, supports at each end of the hopper between which the hopper is adapted to be tilted and of a length to allow the projected portions of the hopper to swing down over the ends thereof without contact therewith, draw-bars normally projecting outwardly from the supports beneath the hopper and adapted to be drawn back into the supports to allow the hopper to be tilted, and means for simultaneously withdrawing the draw-bars, substantially as described.

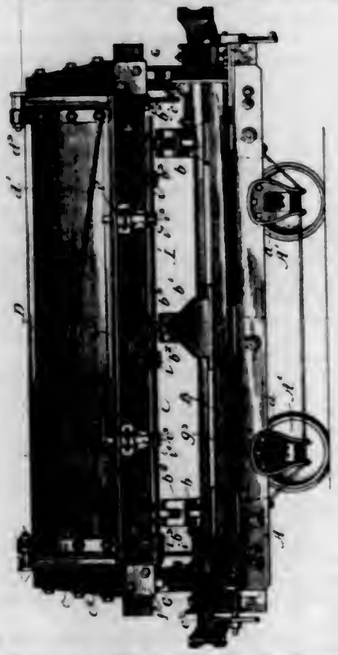
4. In a device of the class described, the combination of a tiltably-mounted hopper provided with projected portions at each corner, supports at each end of the hopper between which the hopper is adapted to be tilted and of a length to allow the projected portions of the hopper to swing down over the ends thereof without contact therewith, draw-bars normally projecting outwardly from the supports beneath the hopper and adapted to be drawn back into the supports to allow the hopper to be tilted, a rock-shaft extending longitudinally of the hopper, a connection between each of the draw-bars and the rock-shaft, and means for rocking the shaft to simultaneously retract the draw-bars from beneath the projected portions of the hopper, substantially as described.

5. In a device of the class described, the combination of a tiltably-mounted hopper provided with projected portions at each corner, supports at each end of the hopper between which the hopper is adapted to be tilted and of a length to allow the projected portions of the hopper to swing down over the ends thereof without contact therewith, draw-bars normally projecting outwardly from the supports beneath the hopper and adapted to be drawn back into the supports to allow the hopper to be tilted, a rock-shaft extending longitudinally of the hopper, draw-arms pivoted to the rock-shaft, inner and outer links pivoted to the draw-arms, the outer links being pivoted at their outer ends to the draw-bars and the inner links being pivoted at their inner ends to the supports within which the draw-bars are located, and means for rocking the shaft to draw down the draw-arms and the inner and outer links to retract the draw-bars simultaneously from beneath the projected portions of the hopper, substantially as described.

6. In a dump-car, the combination of a truck, a hopper tiltably mounted on the truck and provided with outwardly-projecting side sills, rigidly-supported raised cross-rails at each end of the truck of a length to allow the projecting portions of the side sills of the hopper to swing down over the ends thereof and spaced a sufficient distance to allow the body of the hopper to swing down between them, draw-bars slidably mounted within the cross-rails and normally projecting under the projected portions of the side sills of the hopper, a longitudinally-extending rock-shaft on the discharging side of the hopper, draw-arms pivoted to the rock-shaft, inner and outer links pivoted to the draw-arms and normally held in position within the cross-rails and adapted to be drawn down therefrom, the outer links being pivoted to the draw-bars and the inner links being pivoted within the cross-rails, and means for rocking the shaft to simultaneously draw down the draw-arms and links to retract the draw-bars, substantially as described.

7. In a dump-car, the combination of a truck, a hopper pivotally mounted on the truck and provided with outwardly-projecting side sills, rigidly-supported raised cross-rails at each end of the truck of a length to allow the projecting portions of the side sills of the hopper to swing down over the ends thereof and spaced a sufficient distance to allow the body of the hopper to swing down between them, draw-bars slidably mounted within the cross-rails and normally projecting under the projected portions of the side sills of the hopper, a longitudinally-extending rock-shaft on the discharging side of the hopper, draw-arms pivoted to the rock-shaft, inner and outer links pivoted to the draw-arms and normally held in position within the cross-rails and adapted to be drawn down therefrom, the outer links being pivoted to the draw-bars and the inner links being pivoted within the cross-rails, a longitudinally-extending rock-shaft on the discharging side of the hopper, a rock-arm pivoted to the operating-link, and a lever pivoted to the arm for rocking the shaft to simultaneously draw down the draw-arms and links connected therewith and retract the draw-bars simultaneously from beneath the projected portions of the side sills to allow the hopper to swing down between the end cross-rails, substantially as described.

757,278. HOPPER FOR DUMP-CARS. JOHN C. DEPEW, Chicago, Ill. Filed Nov. 21, 1903. Serial No. 182,101. (No model.)



*Claim.*—1. In a dumping mechanism, the combination of a hopper tiltably mounted, swinging doors on each side of the hopper, supporting-arms from which the doors are hung, means for supporting the hopper in horizontal position and allowing it to be tilted when desired, means for holding fixed in normal position, the door and the supporting-arms which support the door on that side of the car from which the contents is to be discharged, and means for allowing the arms supporting the opposite door to be moved with the hopper and maintain a fixed relation thereto, substantially as described.

2. In a dumping mechanism, the combination of a hopper tiltably mounted, swinging doors on each side of the hopper, supporting-arms at each end of the hopper between which the two doors are pivoted, a pivotal mounting for the ends of the supporting-arms, means for holding the door and the arms supporting the door on the discharging side of the hopper fixed in their normal position as the hopper is being tilted and allowing the arms supporting the opposite door to be swung with the hopper, substantially as described.

3. In a dumping mechanism, the combination of a hopper tiltably mounted, swinging doors on each side of the hopper, supporting-arms at each end of the hopper between which the two doors are pivoted, a pivoted mounting for the ends of the supporting-arms, a sliding arm for each of the supporting-arms pivoted thereto, and means for limiting the upward movement of the sliding arms and allowing their downward movement for holding in fixed position the supporting-arms on the discharging side of the hopper and allowing the supporting-arms on the opposite side of the hopper to be swung up with the hopper in fixed relation therewith, substantially as described.

4. In a dump-car, the combination of a truck, a hopper tiltably supported on the truck, swinging doors on each side of the hopper, supporting-arms at each end of the hopper between which the doors are hung, a pivotal mounting for the supporting-arms in line with the pivotal mounting for the hopper, and means for holding in fixed position the arms supporting the door on the discharge side of the hopper and allowing the opposite arms to be swung on their pivotal mounting with the hopper, substantially as described.

5. In a dump-car, the combination of a truck, a hopper tiltably supported on the truck, swinging doors on each side of the hopper, supporting-arms at each end of the hopper between which the doors are hung, a pivotal mounting for the supporting-arms in line with the pivotal mounting for the hopper, means for holding in fixed position the arms supporting the door on the discharge side of the hopper and allowing the opposite arms to be swung on their pivotal mounting with the hopper, draw-bars on each side of the hopper upon which the hopper normally rests and is held in horizontal position, and means for withdrawing the draw-bar on the discharge side of the hopper and allowing the hopper to be tilted, substantially as described.

6. In a dump-car, the combination of a truck, a hopper pivotally mounted thereon, swinging doors on the sides of the hopper, supporting-arms at each end of the hopper between which the swinging doors are hung, a pivotal mounting for the supporting-arms, draw-rods projecting outwardly under the sides of the hopper for supporting the same in horizontal position, a rock-shaft extending from one end of the hopper to the other for operating all the draw-rods on one side of the hopper, a connection between the rock-shaft and the draw-rods for withdrawing the same, and means for rocking the rock-shaft to simultaneously withdraw the draw-rods on the discharging side of the hopper, substantially as described.

7. In a dump-car, the combination of a truck, a hopper pivotally mounted thereon, swinging doors on the sides of the hopper, supporting-arms at each end of the hopper between which the swinging doors are hung, a pivotal mounting for the supporting-arms in line with the pivotal mounting for the hopper, draw-rods projecting outwardly under the sides of the hopper for supporting the same in horizontal position, a rock-shaft extending from one end of the hopper to the other for operating all the draw-rods on one side of the hopper, a connection between the rock-shaft and the draw-rods for withdrawing the same, and means for rocking the rock-shaft to simultaneously withdraw the draw-rods on the discharging side of the hopper, substantially as described.

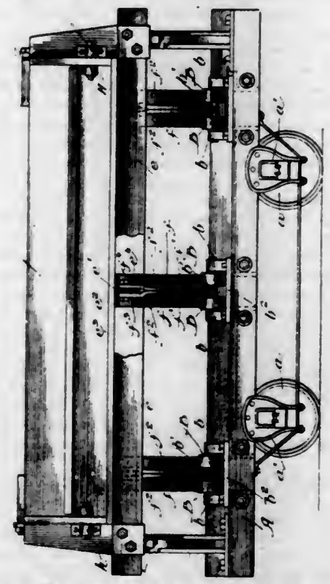
8. In a dump-car, the combination of a truck, a hopper pivotally mounted on the truck and provided with side sills projecting beyond the ends of the hopper, raised cross-rails on the truck between which the hopper is adapted to swing, draw-rods slidably mounted within the cross-rails and normally projecting therefrom under the side sills of the hopper, means for simultaneously withdrawing the draw-bars on the discharging side of the hopper, swinging side doors for the hopper, supporting-arms between which the doors are hung, a pivotal mounting for the supporting-arms, and means for holding the supporting-arms on the discharging side of the hopper in fixed position as the hopper is tilted and allowing the supporting-arms on the opposite side of the hopper to swing therewith, substantially as described.

9. In a dump-car, the combination of a truck, a hopper pivotally mounted on the truck and provided with side sills projecting beyond the ends of the hopper, raised cross-rails on the truck between which the hopper is adapted to swing, draw-rods slidably mounted within the cross-rails and normally projecting therefrom under the side sills of the hopper, means for simultaneously withdrawing the draw-bars on the discharging side of the hopper, swinging side doors for the hopper, supporting-arms between which the doors are hung, a pivotal mounting for the supporting-arms, a sliding arm for each of the supporting-arms pivoted thereto, a guideway for each of the sliding arms through which the sliding arms are adapted to slide, and an abutment on each of the sliding arms for preventing the forward movement of the supporting-arms toward the discharging side of the hopper and allowing the sliding arms connected with the supporting-arms on the opposite side of the hopper to be moved backward as said supporting-arms are raised by the movement of the hopper, substantially as described.



10. In a dumping device, the combination of a hopper tiltably mounted, a side door for the hopper, supporting-arms at each end of the hopper between which the door is hung, a pivotal mounting for the supporting-arms in line with the pivotal mounting for the hopper, means for preventing movement of the supporting-arms on the discharging side of the hopper as the hopper is tilted and for allowing the supporting-arms on the opposite side of the hopper to be moved therewith, draw-pins normally projecting above the floor of the hopper outside of the doors, preventing the outward movement of the doors, rocking rods provided with fixed arms with which the draw-pins are pivotally connected, an inwardly-extending bent arm for each of the rocking rods, a loop or eye for each of the bent arms on one of the supporting-arms adjacent thereto through which the bent arm is adapted to slide allowing the bent arm operating the rocking rod on the discharging side of the hopper to be moved through the eye on the supporting-arm on the same side of the hopper for rocking the rod, allowing the bent arm on the opposite side of the hopper to remain stationary within the loop or eye on the supporting-arm on the same side of the hopper, substantially as described.

757,279. DUMP-CAR. JOHN C. DEPEW, Chicago, Ill. Filed Nov. 30, 1903. Serial No. 183,183. (No model.)



*Claim.*—1. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper and having its center of curvature on a line with the axis of revolution of the hopper, trunnions on the line of the axis of revolution outwardly projecting from the ends of the hopper, mountings for the trunnions, rollers for supporting the rocker and on which the rocker is adapted to travel, swinging doors for the hopper, supporting-arms attached at their inner ends on a line with the axis of revolution of the hopper between which arms the doors are hung, and means for holding in their normal position the door and the supporting-arms on the discharging side of the hopper, allowing the door and arms on the opposite side of the hopper to be raised therewith, substantially as described.

2. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper and having its center of curvature on a line with the axis of revolution of the hopper, rollers for supporting the rocker and on which the rocker is adapted to travel, swinging doors for the hopper, supporting-arms attached at their inner ends on a line with the axis of revolution of the hopper between which arms the doors are hung, and means for holding in their normal position the door and the supporting-arms on the discharging side of the hopper, allowing the door and arms on the opposite side of the hopper to be raised therewith, substantially as described.

3. In a device of the class described, the combination of a hop-

per, a rocker secured to the body of the hopper, and having its center of curvature on a line with the axis of revolution of the hopper, rollers for supporting the rocker on which the rocker is adapted to travel, swinging doors for the hopper, supporting-arms pivoted at their inner ends on a line with the axis of revolution of the hopper between which arms the doors are hung, abutments for preventing the downward movement of the door, and supporting-arms on the discharging side of the hopper and allowing the door and arms on the opposite side of the hopper to be raised therewith, substantially as described.

4. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper, provided with an outwardly-projecting flange and curved to have its center of curvature lie in the line of the axis of revolution of the hopper, and two pairs of rollers, the rollers of each pair being spaced to allow the flange on the rocker to project thereinto for supporting the rocker and allowing it to move upon the rollers, substantially as described.

5. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper, provided with an outwardly-projecting flange and curved to have its center of curvature lie in the line of the axis of revolution of the hopper, two pairs of rollers, the rollers of each pair being spaced to allow the flange on the rocker to project thereinto for supporting the rocker and allowing it to move upon the rollers and trunnions outwardly projecting from the hopper in a line with the axis of revolution thereof, substantially as described.

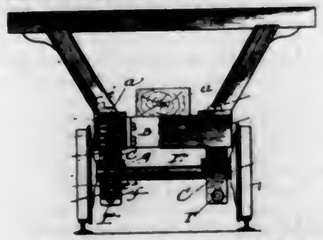
6. In a device of the class described the combination of two raised cross-rails on a truck, a pair of rollers rotatably mounted on the truck, each pair of rollers being laterally spaced a considerable distance, journal-mountings on the raised cross-rails, a hopper mounted between the raised cross-rails and having trunnions carried by the journal-mountings, and a rocker, secured to the body of the hopper and bent to have its center of curvature in the line of the axis of revolution of the hopper and adapted to contact the rollers on the truck and support the hopper, substantially as described.

7. In a device of the class described the combination of two raised cross-rails on a truck, a pair of rollers rotatably mounted on the truck, each pair of rollers being laterally spaced a considerable distance, journal-mountings on the raised cross-rails, a hopper mounted between the raised cross-rails and having trunnions carried by the journal-mountings, and a rocker, secured to the body of the hopper and bent to have its center of curvature in the line of the axis of revolution of the hopper and adapted to contact the rollers on the truck and support the hopper, and swinging doors at the sides of the hopper and supporting-arms from which the doors are hung and means for holding the supporting-arms on the discharging side of the hopper in normal position, and allowing the supporting-arms on the opposite side to be raised with the hopper, substantially as described.

8. In a device of the class described, the combination of a truck, two pairs of rollers, rotatably mounted on the truck, each pair of rollers being laterally spaced a considerable distance, and the individual rollers of each pair being longitudinally spaced a suitable distance, elevated cross-rails at the ends of the truck, a hopper pivotally mounted between the end rails, a rocker secured to the body of the hopper and bent to have its center of curvature lie in the line of the axis of revolution of the hopper, said rocker being formed of two sections of angle-iron, secured together to provide an outwardly-extending flange, adapted to enter the space between the individual rollers of each pair, and allow the under faces of the angle-iron to contact the rollers for tilting the hopper, substantially as described.

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**757,280. TRUCK.** JOHN C. DEPEW, Chicago, Ill. Filed Dec. 2, 1903. Serial No. 183,434. (No model.)



*Claim.*—1. In a truck, the combination of side sills, having channels on the lower faces, pedestals secured within the channels and journals rotatably mounted within the pedestals, substantially as described.

2. In a truck, the combination of side sills, provided with channels on their under faces, pedestals fixedly mounted within the channels in the side sills, springs within the pedestals, journal-blocks adapted to bear against the springs and journals rotatably mounted upon the journal blocks, substantially as described.

3. In a truck, the combination of side sills formed from angle-beams, having a flat upper section and an angularly-disposed side section, pedestals secured to the under face of the flat upper section, each of the pedestals being provided with a recess in its interior, a spring within the recess, a bearing-block adapted to contact the spring and journals rotatably mounted by the bearing-blocks, for mounting the truck, substantially as described,

4. In a truck the combination of side sills formed from U-beams, pedestals mounted within the channels in the U-beams and fixedly secured to the under face of the web-section of the U-beams, each of the pedestals being provided with a recess in its interior and journals rotatably mounted within the recess in the pedestals, substantially as described.

5. In a truck the combination of side sills, formed from inverted U-beams, journals rotatably mounted and journal-mountings secured within the recesses in the U-beams, substantially as described.

6. In a truck, the combination of side sills, formed from inverted U-beams, journals rotatably mounted, journal-mountings secured within the recesses in the U-beams and provided with springs for resiliently mounting the journals, substantially as described.

7. In a truck, the combination of side sills formed of inverted U-beams, pedestals rigidly secured within the channels in the U-beams and provided with recesses in their interior, springs within the recesses, journal-blocks adapted to contact the springs, journals rotatably mounted upon the journal-blocks, journal-boxes adapted to be slipped into the pedestals and means for securing the journal-boxes fixedly in place, substantially as described.

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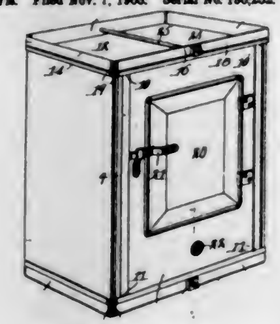
**757,281. COOKING VESSEL.** HARRIETTE M. DE SACHET, Somerville, Mass. Filed Nov. 2, 1903. Serial No. 179,472. (No model.)



*Claim.*—A cooking vessel, having, in combination, a body provided with a nose, and a strainer removably secured to the nose comprising a piece of wire-gauze closing the nose and bent around and under the edge of the same and in close contact therewith, and an elastic wire frame secured to the outer edge of the strainer and having eyes formed in its ends, the body having cooperating pins for engaging the eyes and holding the strainer closely against the nose, substantially as described.

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**757,282. BREAD AND CAKE CLOSET.** HENRY W. DIERS, River Falls, Wis. Filed Nov. 7, 1903. Serial No. 180,232. (No model.)

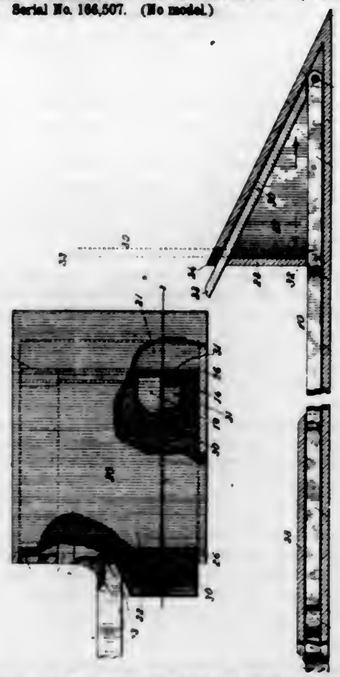




*Claim.*—A safe of the class described comprising a plurality of removable side panels and a pair of end members, an oppositely-disposed pair of the side panels being provided with grooved flanges and the other and adjacent side panels with coincident flanges to seat within the grooved flanges, said end members having grooved flanges in which the end edges of the side panels seat, the flanges on the side panels being terminated short of the ends of the latter and serving as bearing-stops for the adjacent edges of the end flanges, and a pair of locking-bolts extending transversely through the safe adjacent respectively to opposite ends thereof and in engagement with the end flanges for securing the end members in position.

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**757,283. COKE-PULLER.** ANDREW J. DOSS, Switchback, W. Va., assignor to James Ellwood Jones, Switchback, W. Va. Filed July 21, 1903. Serial No. 166,507. (No model.)



*Claim.*—1. A coke-puller comprising an underworking wedge-like hollow scraper movable over the bottom of a coke-oven and provided with a slot or opening, an adjustable coke-holder disposed within said hollow scraper and projecting through said slot, and means for thrusting said coke-holder into operative position to hold coke on the outstroke.

2. A coke-puller comprising an underworking wedge-like hollow scraper provided with an opening in its upper part and with a hollow shank, an actuating-bar extending through said hollow shank into said hollow scraper, and an adjustable coke-holder consisting of a plate hinged to said bar and thrust into operative position through said opening.

3. A coke-puller comprising an underworking wedge-like hollow scraper provided with a slot in its upper part and with a hollow shank having an interior stud, an actuating-bar extending through said hollow shank into said hollow scraper and provided with a slot engaged by said stud, and an adjustable coke-holder consisting of a plate hinged to said bar and thrust into operative position through said opening.

4. A coke-puller comprising an actuating-bar, an underworking wedge-like hollow scraper slidable on said bar and provided with a slot in its upper part, an adjustable coke-holder disposed within said hollow scraper and projecting through said slot and means connecting said coke-holder with said bar.

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**757,284. LOADING-MACHINE.** ANDREW J. DOSS, Switchback, W. Va., assignor to James Ellwood Jones, Switchback, W. Va. Filed Sept. 4, 1903. Serial No. 172,016. (No model.)

*Claim.*—1. The combination of a traveling runway, a traveling shovel movable over said runway, and having a forward thrust beyond it, means for reciprocating said shovel on said runway and thrusting its front end beyond said runway into a mass of material to be moved, and means for engaging the material in said shovel for discharging it.



2. The combination of a traveling runway, a traveling shovel movable over said runway, and having a forward thrust beyond it, means for reciprocating said shovel on said runway and thrusting its front end beyond said runway into a mass of material to be moved, and automatic means for reversing the travel of the shovel at the opposite ends of its movement.

3. The combination of a traveling runway, a traveling shovel movable over said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for engaging the material in said shovel for discharging it, and automatic means for reversing the travel of the shovel at the opposite ends of its movement.

4. The combination of a traveling runway, a traveling shovel movable over said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for elevating the front end of the shovel on the backward movement, and automatic means for reversing the shovel at opposite ends of its movement.

5. The combination of a traveling runway, a traveling shovel movable over said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for elevating the front end of the shovel on the backward movement, and means for engaging the material in said shovel for discharging it.

6. The combination of a traveling runway, a traveling shovel movable on said runway, and having a forward thrust beyond it, means for reciprocating said shovel on said runway and thrusting its front end beyond said runway into a mass of material to be moved, and a scraper disposed at the delivery portion of said runway for discharging the material from the shovel.

7. The combination of a traveling runway, a traveling shovel movable on said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, and a pivoted scraper disposed at the delivery portion of said runway and adapted to swing in one direction to permit the passage of the loaded shovel behind it and provided with a stop to hold it in fixed position in front of the load for discharging the latter on the next forward movement of the shovel.

8. The combination of a traveling runway, a traveling shovel movable on said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, and a pivoted scraper disposed at the delivery portion of said runway and composed of a plurality of independently-movable fingers.

9. The combination of a car, a carriage movable thereon, an inclined runway mounted on said carriage, a traveling shovel movable over said runway, and having a forward thrust beyond it, means for reciprocating said shovel on said runway and thrusting its front end beyond said runway into a mass of material to be moved, and means for moving said carriage on said car to change the position of thrust of said shovel.

10. The combination of a car, a carriage movable thereon, an inclined runway mounted on said carriage, a traveling shovel movable over said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for moving said carriage on said car to change the position of thrust of said shovel, and means for locking the carriage in any desired position on the car.

11. The combination of a car, a carriage movable thereon, an inclined runway mounted on said carriage, a traveling shovel movable over said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, and means for moving said carriage lengthwise of said car to change the position of thrust of said shovel.

12. The combination of a car, a traveling carriage mounted on said car and comprising a platform and a swiveling base, an inclined runway mounted on said swiveling base, a traveling shovel disposed on said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, and means for oscillating said base.

13. The combination of a car, a traveling carriage mounted on said car and comprising a platform and a swiveling base, an inclined runway mounted on said swiveling base, a traveling shovel disposed on said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for oscillating said base, and means for moving said carriage on said car to change the position of take-up of said shovel.

14. The combination of an inclined runway, a traveling shovel disposed thereon, means for reciprocating said shovel on said runway and thrusting it forward at the front thereof to take up material, a striker at the front of said runway for knocking off surplus material, and a discharging device at the rear of said runway.

15. The combination of a traveling runway comprising an inclined front portion and a horizontal rear portion, a traveling shovel movable over said inclined and horizontal portions, and means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved.

16. The combination of a traveling runway comprising an inclined front portion and a horizontal rear portion, a traveling shovel movable over said inclined and horizontal portions, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, and means for engaging the material in the shovel for discharging it.

17. The combination of a traveling runway comprising an inclined front portion and a horizontal rear portion, a traveling shovel movable on said runway, means for reciprocating said shovel on said runway for taking up material, and a scraper disposed at the rear portion of said runway for discharging the material from the shovel.

18. The combination of a traveling runway comprising an inclined front portion and a horizontal rear portion, a traveling shovel movable over said inclined and horizontal portions and having a forward thrust beyond said runway, means for reciprocating said shovel on said runway for taking up material, and means for elevating the front end of the shovel on the backward movement thereof.

19. The combination of a traveling runway comprising an inclined front portion and a horizontal rear portion, a traveling shovel movable over said inclined and horizontal portions, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for elevating the front end of the shovel on the backward movement thereof and means for engaging the material in the shovel for discharging it.

20. The combination of a traveling runway comprising an inclined front portion and a horizontal rear portion, a traveling shovel movable over said inclined and horizontal portions, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, means for elevating the front end of the shovel on the backward movement thereof, and a scraper disposed at the delivery portion of said runway for discharging the material from the shovel.

21. The combination of a movable runway comprising an inclined front portion and an elevated rear portion, a traveling shovel disposed thereon, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be taken up, and automatic means for reversing the shovel at the opposite ends of its movement.

22. The combination of a runway, a traveling shovel movable thereon and having a forward thrust beyond it, pulleys at opposite ends of said runway, a belt on said pulleys engaging the rear portion of said shovel between said pulleys, and means for driving said belt.

23. The combination of a runway, a traveling shovel movable over said runway and having a forward thrust beyond it, sprocket-wheels at opposite ends of said runway, a sprocket-chain passing over said sprocket-wheels and connecting with said shovel between said sprocket-wheels, driving means, and means for engaging the material in said shovel for discharging it.

24. The combination of a runway, a traveling shovel movable over said runway and having a forward thrust beyond it, sprocket-wheels at opposite ends of said runway, an endless sprocket-chain passing over said sprocket-wheels and pivotally connected to the rear portion of the body of said shovel between said pulleys, and driving means.

25. The combination of a traveling base, standards supported thereon, a tilting runway supported on said standards and provided with an arc-shaped side plate having a segmental rack, a pinion engaging said rack, means for actuating said pinion, and a traveling shovel movable over said runway and having a forward thrust beyond it.

26. The combination of a traveling base, standards supported thereon, a tilting runway supported on said standards and provided with an arc-shaped side plate having a segmental rack, a pinion engaging said rack, means for actuating said pinion, a locking device for holding said runway in adjusted position, a traveling shovel adapted to reciprocate on said runway and having a forward thrust beyond the front end thereof, and means for reciprocating said shovel on said runway.

27. The combination of a movable runway comprising main and branch tracks, a traveling shovel movable on said tracks, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be taken up, and an automatic switch for switching the front portion of the shovel on the branch track on the backward movement.

28. The combination of a runway comprising an inclined portion provided with two tracks disposed one above the other, a traveling shovel provided with rear and forward supports, one set of said supports engaging one of the tracks on the backward and forward movements of the shovel and the other set engaging one of said tracks on the forward movement and the other track on the backward movement.

29. The combination of a runway comprising an inclined portion provided with two tracks disposed one above the other, a traveling shovel provided with rear and forward supports, one set of said supports engaging one of the tracks on the backward and forward movements of the shovel and the other set engaging one of said tracks on the forward movement and the other track on the backward movement, and automatic switches connecting said tracks.

30. The combination of a traveling runway comprising an inclined portion provided with two tracks disposed one above the other, a traveling shovel provided with rear and forward supports, one set of said supports engaging one of the tracks on the backward and forward movements of the shovel and the other set engaging one of said tracks on the forward movement and the other on the backward movement.

31. The combination of a traveling runway comprising an inclined portion provided with two tracks, disposed one above the other, a traveling shovel provided with rear and forward supports, one set of said supports engaging one of the tracks on the backward and forward movements of the shovel and the other set engaging one of said tracks on the forward movement and the other on the backward movement, and automatic switches connecting said tracks.

32. The combination of a traveling runway comprising an inclined portion provided with main and branch tracks, the branch track being disposed above the main track, a traveling shovel provided with rear and forward supports, the rear supports traveling on the main track in both the forward and backward movements of the shovel and the forward supports traveling on the main track on the forward movement and on the branch track on the backward movement to elevate the front of the shovel and avoid loss of coal.

33. The combination of a traveling and swiveling runway comprising an inclined portion having main and branch tracks, the branch track being disposed above the main track, automatic switches connecting the branch track with the main track, the rear switch being normally open for the main track and the front switch being normally open for the branch track, a traveling shovel provided with rear and forward supports engaging said tracks, the forward supports riding up the branch track on the backward movement for leveling the shovel, and means for reciprocating said shovel on said tracks.



34. The combination of a car, a traveling carriage mounted on said car, a runway mounted on said carriage and comprising an inclined portion having main and branch tracks, the branch track being disposed above the main track, automatic switches connecting the branch track with the main track, the rear switch being normally open for the main track and the front switch being normally open for the branch track, a traveling shovel provided with rear and forward supports engaging said tracks, the forward supports riding up the branch track on the backward movement for leveling the shovel, and means for reciprocating said shovel on said tracks.

35. The combination of a car, a traveling carriage thereon, a runway mounted on said carriage and provided with two tracks disposed one above the other, a traveling shovel provided with rear and forward supports, one set of said supports engaging one of the tracks on the backward and forward movement of the shovel and the other set engaging one of said tracks on the forward movement and the other on the backward movement.

36. The combination of a car, a runway supported on said car comprising an inclined portion having main and branch tracks, the branch track being disposed above the main track, automatic switches connecting the branch track with the main track, the rear switch being normally open for the main track and the front switch being normally open for the branch track, a traveling shovel provided with rear and forward supports engaging said tracks, the forward supports riding up the branch track on the backward movement for leveling the shovel, and means for reciprocating said shovel on said tracks.

37. The combination of a traveling runway comprising an inclined portion having main and branch tracks, the branch track being connected with the main track by automatic switches, a traveling shovel provided with rear and forward supports engaging said tracks and operating said switches, and means for reciprocating said traveling shovel on said runway.

38. The combination of a traveling runway comprising an inclined portion having main and branch tracks, the branch track being connected with the main track by automatic switches, a traveling shovel provided with rear and forward supports engaging said tracks and operating said switches, means for reciprocating said traveling shovel on said runway, and automatic means for reversing the movement of the shovel.

39. The combination of a traveling runway, a traveling shovel thereon provided with rear and forward trunnions engaging said runway, sprocket-wheels mounted on said runway, endless sprocket-chains movable over said wheels and having links pivoted to the rear trunnions of said traveling shovel and driving mechanism for said chains.

40. The combination of a car, a traveling carriage thereon comprising a platform provided with a peripheral rack and a swiveling base provided with a pinion engaging said rack, a runway mounted on said carriage, a traveling shovel on said runway, and means for moving said shovel on said runway.

41. The combination of a car, a carriage movable thereon, a runway mounted on said carriage and comprising an inclined downwardly-curved front portion and an elevated horizontal rear portion adapted to extend over a point of discharge, a traveling shovel movable throughout said runway and adapted to project beyond the front thereof for scooping up material, means for reciprocating said shovel on said runway, and means for moving said carriage on said car to advance the thrust of the shovel.

42. The combination of a car, a carriage movable thereon, a traveling runway mounted on said carriage and comprising an inclined downwardly-curved front portion and an elevated horizontal rear portion adapted to extend over a point of discharge, a traveling shovel movable throughout said runway and adapted to project beyond the front thereof for scooping up material, and means for reciprocating said shovel on said runway.

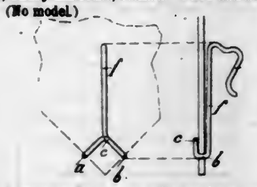
43. The combination of a car, a traveling platform thereon, a swiveling base on the platform, a runway mounted on the swiveling base, a traveling shovel on the runway, a motor mounted on the swiveling base, a driving-shaft operated by the motor, mechanism for moving the platform on the car, mechanism for reciprocating the traveling shovel on the runway, and clutches connecting said mechanisms with the driving-shaft.

44. The combination of a car, a traveling platform thereon, a swiveling base on the platform, a runway mounted on the swiveling base, a traveling shovel on the runway, a motor mounted on the swiveling base, a driving-shaft operated by the motor, mechanism for moving the platform on the car, mechanism for reciprocating the traveling shovel on the runway, clutches connecting said mechanisms with the driving-shaft, and means for turning said base.

45. The combination of a traveling runway comprising an inclined front portion and an elevated horizontal rear portion adapted to extend over a point of discharge, a traveling shovel movable over said runway, means for reciprocating said shovel on said runway and thrusting it into a mass of material to be moved, and a chute disposed under the front part of the horizontal portion of said runway and under the rear part of the inclined portion thereof.

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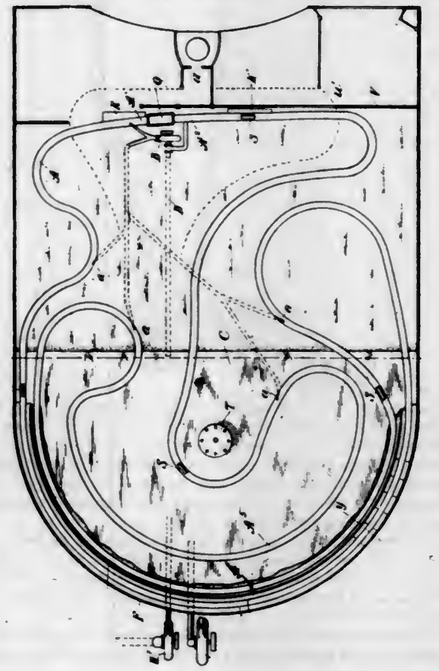
**757,285. SUPPORT FOR SLATES OR TILES ON ROOFS.** PAUL DUCHEMIN, Thury-Harcourt, France. Filed Oct. 21, 1903. Serial No. 177,909. (No model.)




*Claim.*—A support for square tiles or slates, consisting of three points of support for the lower point of the tile or slate, formed by a bent wire or strip, and having a vertical part, the upper part of which forms a spring-hook, embracing the batten of the roof, its lower end bent down laterally to form one of the supporting-arms *b*, then bent across the front to form the bridge-piece *c*, and finally bent up laterally to form the other supporting-arm *a*, its end meeting the vertical part *f*, substantially as set forth and shown.

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**757,286. AMUSEMENT APPARATUS.** GEORGE H. DU CLOS, Brooklyn, N. Y., assignor to Pleasure Park Amusement Company, a Corporation of New York. Filed Nov. 14, 1903. Serial No. 181,146 (No model.)



*Claim.*—1. In an amusement apparatus the combination of a projecting roof, a canal having a stretch passing beneath said roof and means for forcing water to flow from said roof and fall outside said stretch, said canal also having a stretch passing outside said roof and beyond where the water falls and substantially parallel thereto.

2. In an amusement apparatus the combination of a canal having two parallel stretches, partitions on each side of one of the said stretches, a glass roof therefor covering said stretch, an extension of said roof covering the other stretch, and means for forcing water to flow from said roof and beyond said other stretch.

3. In an amusement apparatus the combination of a canal having two parallel stretches, partitions on each side of one of the said stretches, a roof therefor covering said stretch, an extension of said roof covering the other stretch, means for forcing water to flow from said roof and beyond said other stretch, and means for supplying steam to said passage and illuminating said steam.

4. In an amusement apparatus the combination of a canal having three parallel stretches, a covering over one of said stretches containing scenes, said covering having a roof extending over the next stretch, means for forcing water to flow from said roof and fall beyond said second stretch and between said second stretch and said third stretch.

5. In an amusement apparatus the combination of a canal having two parallel stretches, partitions on each side of one of the said stretches, a roof therefor covering said stretch, an extension of said roof covering the other stretch, and means for forcing water to flow from said roof and beyond said other stretch and means for injecting water into said canal at a plurality of points and in the normal direction of flow

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757,287. **ARTIFICIAL LEG.** LEE DUGGAR, Rocky Mount, N. C. Filed Nov. 20, 1903. Serial No. 181,979. (No model.)



*Claim.*—1. The combination of the lower leg-section, the foot jointed thereto, a cushion between the rear portion of the leg-section and the foot, a lever provided in its under side with a recess, the foot having a boss entering said recess, such lever bearing at its rear end beneath the front portion of the lower end of the leg-section, and the cushion between the under side of the rear end of said lever and the foot, substantially as set forth.

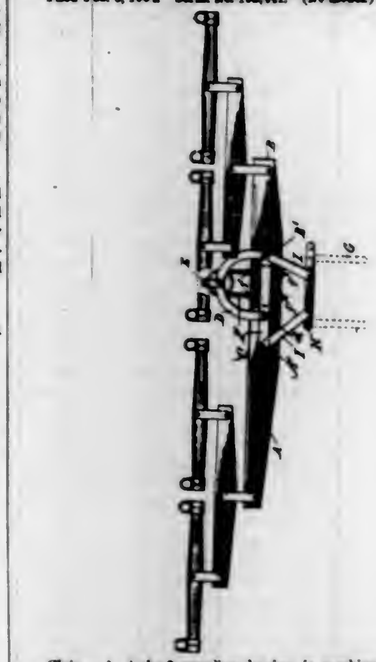
2. The combination with the foot and the lower leg-section jointed to the foot, and having a portion extending in front of said joint, and the lever bearing at its rear end beneath the front portion of the lower end of the leg-section and cushioned, substantially as set forth.

3. The combination of the thigh-section, the lower leg-section, the bolt connecting said sections, the bearing-block conformed in its upper face to the said bolt and seated in the thigh-section and adapted for adjustment, and fastening devices at the ends of and operating beneath said bearing-block, substantially as set forth.

4. The combination with the lower leg-section, and the thigh-section having an opening for the joint-bolt, and a recess below such opening for the bearing-block, the lower leg-section, the bolt connecting the thigh-section and lower leg-section, the bearing-block in the recess below the bolt and conformed at its upper side to said bolt, and the screws operating beneath said bearing-block at the ends of the latter for securing said bearing-block, substantially as set forth.

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757,288. **DRAFT-EQUALIZER.** WILLIAM S. EMERY, Peoria, Ill. Filed Feb. 6, 1904. Serial No. 192,441. (No model.)



*Claim.*—1. A draft-equalizer having, in combination, a pair of differential levers overlapping at their ends, plates spanning the overlapping ends of the levers, pivots connecting the plates and levers so as to permit of their relative movement, a pulley, a frame or yoke supporting the pulley and a chain or the like passing over the pulley and having its ends connected to the overlapping ends of the differential levers, respectively, substantially as described.

2. In a draft-equalizer, the combination of a pair of differential levers having overlapping ends, plates spanning the overlapping ends of the levers, pivots connecting the plates and levers so as to permit of their relative movement, a yoke, a pulley supported by the yoke, a chain or the like extending over the pulley and having its ends secured to the overlapping ends of the levers respectively, and draft-links extending rearward from the plates, substantially as described.

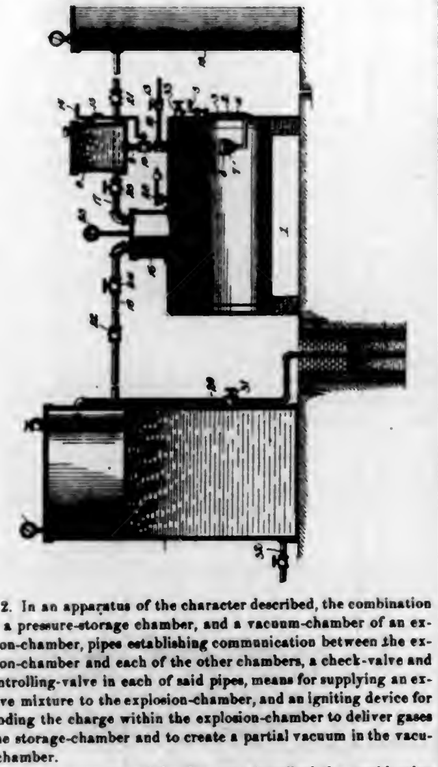
3. In a draft-equalizer, the combination of a pair of differential levers having their ends scarfed and overlapped, plates spanning the overlapping ends of the levers, pivots connecting the plates and levers, a pulley, a chain or the like passing over the pulley and having its ends secured to the overlapping ends of the levers, respectively, means for supporting the pulley and means for transmitting the load to the levers, substantially as described.

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757,289. **POWER-GENERATING APPARATUS.** ROBERT L. EVERETT, Scottsbluff, Nebr. Filed Mar. 31, 1902. Serial No. 100,852. (No model.)

*Claim.*—1. In an apparatus of the character described, the combination with a pressure-storage chamber and a vacuum-chamber, of an explosion-chamber in communication therewith, check-valves controlling the communication between the explosion-chamber and each of the other chambers, means for supplying an explosive mixture to the explosion-chamber, and an igniting device for exploding the charge within the explosion-chamber to deliver gases to the storage-chamber and create a partial vacuum in the vacuum-chamber.





2. In an apparatus of the character described, the combination with a pressure-storage chamber, and a vacuum-chamber of an explosion-chamber, pipes establishing communication between the explosion-chamber and each of the other chambers, a check-valve and a controlling-valve in each of said pipes, means for supplying an explosive mixture to the explosion-chamber, and an igniting device for exploding the charge within the explosion-chamber to deliver gases to the storage-chamber and to create a partial vacuum in the vacuum-chamber.

3. In an apparatus of the character described, the combination with a pressure-storage chamber and a vacuum-chamber, the latter having means for permitting the ingress and egress of water, of an explosion-chamber communicating with the vacuum-chamber above the water-level and also communicating with the compression-chamber, check-valves controlling the communication between the explosion-chamber and each of the other chambers, means for supplying an explosive mixture to the explosion-chamber, and an ignition device for exploding the charge within the explosion-chamber to deliver gases to the storage-chamber and to create a partial vacuum in the vacuum-chamber above the water-level.

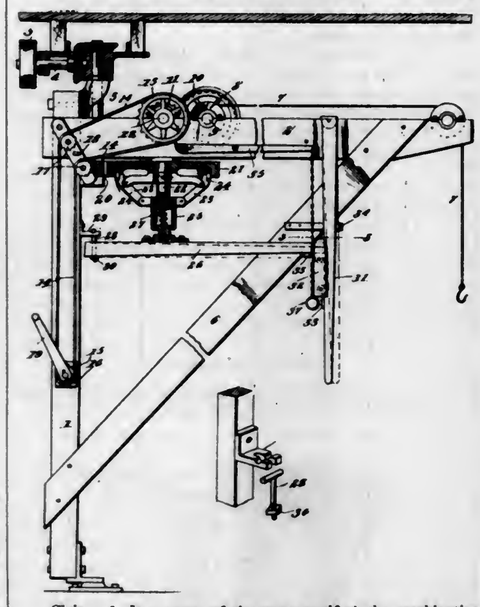
4. In an apparatus of the character described, the combination with a pressure-storage chamber and a vacuum-chamber, of an explosion-chamber in communication therewith, oppositely-opening valves controlling the communication between the explosion-chamber and each of the other chambers, a charge-chamber exterior to the combustion-chamber, a torch-receptacle upon the interior of said combustion-chamber, a spray-nozzle discharging into the torch and in communication with the charge-chamber, and an air-pipe communicating with the nozzle.

5. In an apparatus of the character described, the combination with a pressure-storage chamber, and a vacuum-chamber, of an explosion-chamber in communication therewith, oppositely-opening valves controlling the communication between the explosion-chamber and each of the other chambers, means independent of the vacuum-chamber for supplying an explosive mixture to the explosion-chamber, and an igniting device for exploding the charge within the explosion-chamber to deliver gases to the storage-chamber and create a partial vacuum in the vacuum-chamber.

6. In an apparatus of the character described, the combination with a pressure-storage chamber, and a vacuum-chamber, of an explosion-chamber in communication therewith, oppositely-opening valves controlling the communication between the explosion-chamber and each of the other chambers, means independent of the vacuum-chamber for supplying an explosive mixture to the explosion-chamber, an ignition device for exploding the charge within the explosion-chamber to deliver gases to the storage-chamber and to create a partial vacuum in the vacuum-chamber, a stand-pipe opening into the vacuum-chamber, and an outlet preventing the water or other fluid drawn into the vacuum-chamber from escaping to the explosion-chamber.

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757,290. **CRANE.** LEONARD S. FLECKENSTEIN, Easton, Md. Filed Dec. 7, 1903. Serial No. 184,121. (No model.)



*Claim.*—1. In a crane of the type specified, the combination with hoisting mechanism and a vertical shaft which is operatively connected therewith, and a driving-gear mounted loose on said shaft and provided with a friction-rim, of a series of movable friction devices, and means for carrying said devices into and out of engagement with the gear, substantially as described.

2. In a crane of the type specified, the combination with hoisting mechanism and a vertical shaft which is operatively connected therewith, and a driving-gear mounted loose on the shaft and provided with a friction-rim, of a series of levers and a carrier fixed to the shaft and to which the said levers are pivoted, and means connected with the inner ends of the levers whereby they may be adjusted vertically for engaging the friction devices or disengaging the same, substantially as described.

3. The combination with hoisting mechanism, and a vertical shaft operatively connected therewith, of a gear mounted loose on said shaft and provided with a friction-surface, a series of independent friction devices adapted for engagement with such gear at different points, a carrier for said devices which is fixed on the shaft and revolves with it, and means for operating said devices for throwing them into and out of engagement with the friction-surface, substantially as described.

4. The combination with the hoisting mechanism, and a vertical shaft operatively connected therewith, of a gear which is mounted loose on said shaft, means for constantly driving said gear, friction devices adapted to engage the rim of said gear at different points, the same consisting of levers pivoted in such manner that their outer ends engage the gear, a frame constituting a carrier and fulcrum for said levers, and secured to the shaft so as to revolve with it, a step with which the inner ends of the levers are connected, and a vertically-movable support upon which said step is pivotally mounted in the manner shown and described.

5. The combination with hoisting mechanism, a vertical shaft which is operatively connected therewith, a gear mounted loose on said shaft, and means for driving the same, of friction-levers adapted to engage the rim of said gear, and a frame constituting a carrier and fulcrum for the levers, the same being secured to the shaft

so as to revolve with it, a hollow step with which the inner ends of the levers are pivotally connected, a spring arranged in said step and interposed between it and the shaft, so as to exert downward pressure, and a vertically-movable support upon which the step rests, substantially as described.

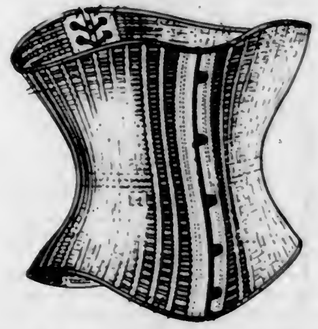
6. In a crane of the type specified, the combination with hoisting mechanism, driving mechanism and clutch mechanism adapted to engage the latter, of a lever pivoted on the post of the crane and serving by vertical movement to adjust the clutch for engagement and disengagement, a hand-lever pivoted at its upper end, and a link connecting the same with the aforesaid horizontal lever, so that by shifting the vertical lever the horizontal lever is raised and lowered substantially as described.

7. The combination with hoisting mechanism, power mechanism for driving it, and a friction-clutch for engaging the two mechanisms when desired, of a horizontal pivoted lever supporting certain members of the friction-clutch, a pivoted and pendent hand-lever, and a link connecting the two levers and adapted to swing vertically, the arrangement being as described, whereby, when the pendent lever is in vertical position, the horizontal lever is supported and locked in position to hold the friction-clutch in engagement, substantially as described.

8. In a crane of the type specified, the combination with the boom and a winding-drum mounted thereon, of a shaft arranged parallel to the drum and geared therewith, and also provided with a sprocket-wheel, an endless chain mounted on said sprocket, a hand-lever and a sprocket pivoted on the post of the crane, and intermediate pulleys arranged at the junction of the boom and post, whereon the chain is adapted to run in the manner shown and described.

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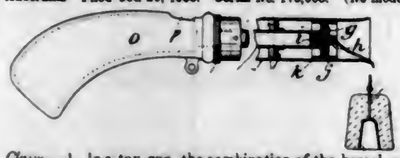
**757,291. CORSET.** DOMENICO FOGLIANO, New York, N. Y. Filed Oct. 2, 1903. Serial No. 175,493. (No model.)



*Claim.*—1. A corset comprising front, rear, side and intermediate stay pockets, flexible front-strip pockets, and a body portion of horizontally-extending strips arranged in close proximity to each other to form air-spaces, said intermediate-stay pockets arranged between the front, rear and side stay pockets and said strip-pockets arranged at a point slightly removed from said front-stay pockets and flexibly connected therewith, and each of said strips of a length so as to extend from the strip-pockets to the rear-stay pockets and consisting of a length of non-elastic material folded along its median line with the folds secured together by a row of stitches near each edge of the strip, said strips of material secured against the inner face of said intermediate and side stay pockets and the ends of said strips of material extending into the strip-pockets and the rear-stay pockets and secured therein.

2. A corset comprising front, rear, side and intermediate stay pockets, flexible front-strip pockets, and a body portion of horizontally-extending strips arranged in close proximity to each other to form air-spaces, said intermediate-stay pockets arranged between the front, rear, and side stay pockets and said strip-pockets arranged at a point slightly removed from said front-stay pockets and flexibly connected therewith, and each of said strips of a length so as to extend from the strip-pockets to the rear-stay pockets and consisting of a length of non-elastic folded material with the folds secured together by a row of stitches near each edge of the strip, said strips of material secured against the inner face of said intermediate and said side pockets and the ends of said strips of material extending into the strip-pockets and the rear-stay pockets and secured therein.

**757,292. TOY GUN.** FREDERICK GALE, Lancefield, Victoria, Australia, assignor of one-third to Thomas Arnold Parks, Romsey, Australia. Filed Oct. 26, 1903. Serial No. 178,605. (No model.)



*Claim.*—1. In a toy gun, the combination of the barrel, a stopper adapted to close the open end thereof, a plunger adapted to reciprocate in said barrel, and a cord connecting said plunger and said stopper, said stopper being hollowed out to form a chamber for the reception of a dart or other missile, substantially as described.

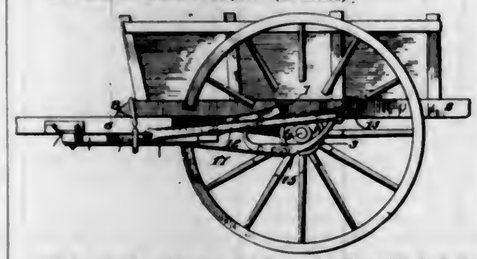
2. In a toy gun, the combination of the barrel, a plunger working in said barrel and provided with an eyelet, a stopper adapted to close one end of said barrel and provided with an eyelet, and an elastic cord secured at its ends in said eyelets, said stopper being recessed to form a chamber for the reception of a dart or other missile, substantially as described.

3. In a toy gun, the combination of the hollow barrel, a stopper adapted to close one end thereof, said stopper being provided with an eyelet, a piston provided with a cupped leather washer, means for fastening said washer to said piston, said means being provided with an eyelet, an elastic cord connecting said eyelets, and means for operating said piston, substantially as described.

4. In a toy gun, the combination of a hollow barrel, a piston adapted to reciprocate therein, a piston-rod attached to said piston, a hollow handle attached to said piston-rod, a stopper adapted to be inserted in one end of said gun-barrel, and an elastic cord connecting said piston and said stopper, substantially as described.

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**757,293. DUMPING-CART.** SAMUEL GANTZ, Hagerstown, Md., assignor of one-half to Charles C. Cochran, Hagerstown, Md. Filed Nov. 7, 1903. Serial No. 180,189. (No model.)



*Claim.*—1. In a dumping-cart, the combination with the body, the axle provided with wheels, collars mounted loosely on the axle, and shafts which are pivotally connected with the body, of a rock-shaft journaled in the shafts, means for rotating the same, and means for connecting it with the axle for the purpose of drawing the latter forward as required for tilting the body, substantially as described.

2. In a dumping-cart, the combination with the body, the axle, wheels and collars mounted loosely thereon, and shafts pivotally connected with the body, of a transverse rock-shaft having crank-arms, rods connecting said arms with the axle, and a lever applied to the projecting end of the rock-shaft, substantially as and for the purpose specified.

3. In a dumping-cart, the combination with the body, the axle, collars and wheels mounted thereon, and shafts pivotally connected with the body, of the means for shifting the axle and thereby effecting the dumping of the body automatically, the same consisting of a transverse rock-shaft and rods connecting it with the axle, a hand-lever affixed to the rock-shaft, and a combined pull and locking bar pivoted to said lever, and a catch attached to one of the shafts and adapted for engagement with the locking-bar, substantially as described.

4. In a dumping-cart, the combination with the tiltable body, the axle provided with supporting-wheels, and shafts pivotally connected with the body, of a keeper arranged centrally between the wheels and attached to the under side of the body so as to embrace the axle, a slidable brake-bar arranged in front of the wheels, and rods connecting rigidly with the aforesaid keeper, and means for shifting the axle forward, the brake-bar being moved forward when the body tilts, substantially as described.



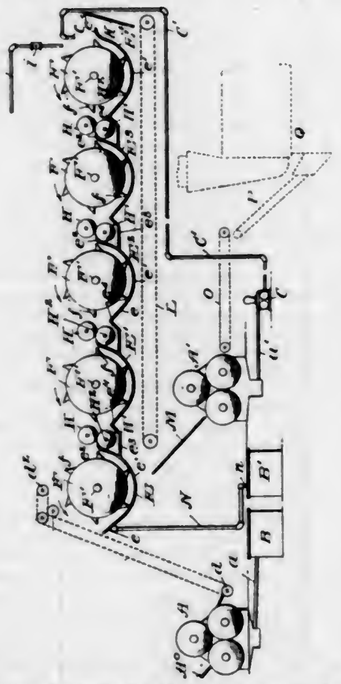
**757,294. TURPENTINE-BOX.** ROBERT L. GAYLORD, Clyo, Ga. Filed Aug. 29, 1903. Serial No. 171,277. (No model.)



*Claim.*—A turpentine-box formed from a single rectangular blank of sheet metal and comprising a pocket formed by bending said blank upon itself along a transversely-extending line and then bending the ends of said folded portion diagonally to form angular flaps, a retaining-strip integral with one edge of the pocket and overlapping the angular flaps, and a bent portion to the blank extending from the pocket and folded longitudinally upon itself to produce a concavo-convex surface.

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**757,295. PROCESS OF EXTRACTING SUCROSE.** WILLIAM J. GIBBENS, New Orleans, La., and EVI W. CHRISTIE, Valley Cottage, N. Y., assignors to the Christie Engineering Company, Limited, New Orleans, La., a Corporation of Louisiana. Filed Sept. 28, 1903. Serial No. 174,979. (No model.)



*Claim.*—1. The herein-described method of extracting the sucrose from sugar-cane, which consists in grinding the cane in one or more mills, in subjecting the bagasse so ground to a series of immersions in a liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, and in finally subjecting the bagasse so treated to the heavy pressure of another mill, whereby most of the liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, substantially as described.

2. The herein-described method of extracting the sucrose from sugar-cane, which consists in grinding the cane in one or more mills, in subjecting the bagasse so ground to a series of immersions in a heated liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, and in finally subjecting the bagasse so treated to the heavy pressure of another mill, whereby most of the heated liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, substantially as described.

3. The herein-described method of extracting the sucrose from sugar-cane, which consists in grinding the cane in one or more mills, in subjecting the bagasse so ground to a series of immersions in a liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, in causing the liquid to flow through the system in an opposite direction to the motion of the bagasse, and in finally subjecting the bagasse so treated to the heavy pressure of another mill, whereby most of the liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, substantially as described.

4. The herein-described method of extracting the sucrose from sugar-cane, which consists in grinding the cane in one or more mills, in subjecting the bagasse so ground to a series of immersions in a heated liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, in causing the liquid to flow through the system in an opposite direction to the motion of the bagasse, and in finally subjecting the bagasse so treated to the heavy pressure of another mill, whereby most of the heated liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, substantially as described.

5. The herein-described method of extracting the sucrose from sugar-cane, which consists in grinding the cane in one or more mills, in subjecting the bagasse so ground to a series of immersions in a liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, and in finally subjecting the bagasse so treated to the heavy pressure of another mill, whereby most of the liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, and in injecting the liquid expressed by the last mill in the last immersion-chamber and causing said liquid to flow through the system in an opposite direction to the motion of the bagasse, whereby the weaker liquid encounters the bagasse containing less sucrose, and the strength of the sucrose solution increases as the quantity of sucrose to be extracted from the bagasse increases, substantially as described.

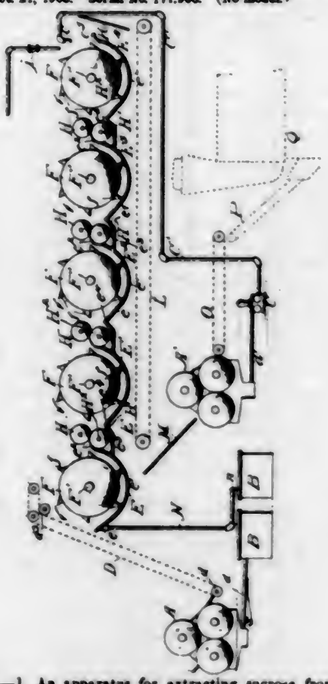
6. The herein-described method of extracting the sucrose from sugar-cane, which consists in grinding the cane in one or more mills, in subjecting the bagasse so ground to a series of immersions in a heated liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, and in finally subjecting the bagasse so treated to the heavy pressure of another mill, whereby most of the heated liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, and in injecting the liquid expressed by the last mill in the last immersion-chamber and causing said liquid to flow through the system in an opposite direction to the motion of the bagasse, whereby the weaker liquid encounters the bagasse containing less sucrose, and the strength of the sucrose solution increases as the quantity of sucrose to be extracted from the bagasse increases, substantially as described.

7. The herein-described method of extracting the sucrose from sugar-cane, which consists in subjecting the cane to heavy pressure thereby extracting a large percentage of the juice therefrom, in subjecting the bagasse remaining after said pressure to a series of immersions in a liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, and in finally subjecting the bagasse so treated to another and final heavy pressure, whereby most of the liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, in injecting the liquid expressed by the last heavy pressure in the last immersion-chamber and causing said liquid to flow through the system in an opposite direction to the motion of the bagasse, whereby the weaker liquid encounters the bagasse containing less sucrose, and the strength of the sucrose solution increases as the quantity of sucrose left in the bagasse increases, substantially as described.

8. The herein-described method of extracting the sucrose from sugar-cane, which consists in subjecting the cane to heavy pressure thereby extracting a large percentage of the juice therefrom in subjecting the bagasse remaining after said pressure to a series of immersions in a heated liquid adapted to dissolve out the sucrose, in squeezing part of said liquid out of the bagasse between each pair of immersions, and in finally subjecting the bagasse so treated to another and final heavy pressure whereby most of the liquid contained therein is squeezed therefrom and the bagasse is left in a comparatively dry condition, in injecting the liquid expressed by the last heavy pressure in the last immersion-chamber and causing said liquid to flow through the system in an opposite direction to the motion of the bagasse, whereby the weaker liquid encounters the bagasse con-

taining less sucrose, and the strength of the sucrose solution increases as the quantity of sucrose left in the bagasse increases, substantially as described.

757,296. **APPARATUS FOR EXTRACTING SUCROSE FROM SUGAR-CANE.** WILLIAM J. GIBBENS, New Orleans, La., and EVI W. CHRISTIE, Valley Cottage, N. Y., assignors to the Christie Engineering Company, Limited, New Orleans, La., a Corporation of Louisiana. Filed Oct. 21, 1903. Serial No. 177,968. (No model.)



*Claim.*—1. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, means for delivering the bagasse from one mill to one end of the series of tanks, means for pushing the bagasse through the tanks *seriatim*, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, a series of overflow-pipes connecting said tanks *seriatim*, and an overflow-pipe for carrying off the liquid from the first tank of the series after it has passed through the several tanks in the reverse direction to that of the bagasse, substantially as described.

2. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, means for conveying the bagasse from one mill through said series of tanks, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, a series of overflow-pipes connecting said tanks *seriatim*, and an overflow-pipe for carrying off the liquid from the first tank of the series after it has passed through the several tanks in the reverse direction to that of the bagasse, substantially as described.

3. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, compression-rollers between each pair of tanks, means for delivering the bagasse from one mill to one end of the series of tanks, means for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for supplying liquid to the last tank of the series, an overflow-pipe connecting adjacent tanks, with means for carrying off the liquid from the first tank of the series after it has traveled through the series of tanks in an opposite direction to the motion of the bagasse, substantially as described.

4. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, compression-rollers between each pair of tanks, means for delivering the bagasse from one mill to one end of the series of tanks, means for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, a series of overflow-pipes connecting said tanks *seriatim*, and an overflow-pipe for carrying off the liquid from the first tank of the series after it has passed through the several tanks in the reverse direction to that of the bagasse, substantially as described.

5. An apparatus for extracting sucrose from sugar-cane, comprising a mill, a series of immersion-tanks, and a series of compression-rollers, means for delivering the bagasse from said mill to one end of the series of tanks, means for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying off the bagasse from the end of the series of tanks, means for supplying water before the last compression of the bagasse, an overflow-pipe connecting adjacent tanks, with means for carrying off the liquid from the first tank of the series after it has traveled through the series of tanks in an opposite direction to the motion of the bagasse, substantially as described.

6. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, and a series of compression-rollers, means for delivering the bagasse from one mill to one end of the series of tanks, means for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, means for causing the liquid to flow through said tanks *seriatim*, in the reverse direction to that of the bagasse, and an overflow-pipe for carrying off the liquid from the first tank of the series, substantially as described.

7. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, rotary pushers for conveying the bagasse from one mill through said series of tanks, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, a series of overflow-pipes connecting said tanks *seriatim*, and an overflow-pipe for carrying off the liquid from the first tank of the series after it has passed through the several tanks in the reverse direction to that of the bagasse, substantially as described.

8. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, compression-rollers between each pair of tanks, means for delivering the bagasse from one mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for supplying liquid to the last tank of the series, an overflow-pipe connecting adjacent tanks, with means of carrying off the liquid from the first tank of the series after it has traveled through the series of tanks in an opposite direction to the motion of the bagasse, substantially as described.

9. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, compression-rollers between each pair of tanks, means for delivering the bagasse from one mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, a series of overflow-pipes connecting said tanks *seriatim*, and an overflow-pipe for carrying off the liquid from the first tank of the series after it has passed through the several tanks in the reverse direction to that of the bagasse, substantially as described.

10. An apparatus for extracting sucrose from sugar-cane, comprising a mill, a series of immersion-tanks, and a series of compression-rollers, means for delivering the bagasse from said mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying off the bagasse from the end of the series of tanks, means for supplying water before the last compression of the bagasse, an overflow-pipe connecting adjacent tanks, with means for carrying off the liquid from the first tank of the series after it has traveled through the series of tanks in an opposite direction to the motion of the bagasse, substantially as described.



11. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, and a series of compression-rollers, means for delivering the bagasse from one mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, means for causing the liquid to flow through said tanks *seriatim*, in the reverse direction to that of the bagasse, and an overflow-pipe for carrying off the liquid from the first tank of the series, substantially as described.

12. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, compression-rollers between each pair of tanks, means for delivering the bagasse from one mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, provided with V-shaped pusher-teeth, scrapers for cleaning said pushers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for supplying liquid to the last tank of the series, an overflow-pipe connecting adjacent tanks, with means for carrying off the liquid from the first tank of the series after it has traveled through the series of tanks in an opposite direction to the motion of the bagasse, substantially as described.

13. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, compression-rollers between each pair of tanks, means for delivering the bagasse from one mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, provided with V-shaped pusher-teeth, scrapers for cleaning said pushers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, a series of overflow-pipes connecting said tanks *seriatim*, and an overflow-pipe for carrying off the liquid from the first tank of the series after it has passed through the several tanks in the reverse direction to that of the bagasse, substantially as described.

14. An apparatus for extracting sucrose from sugar-cane, comprising a mill, a series of immersion-tanks, and a series of compression-rollers, means for delivering the bagasse from said mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, provided with V-shaped pusher-teeth, scrapers for cleaning said pushers, means for carrying off the bagasse from the end of the series of tanks, means for supplying water before the last compression of the bagasse, an overflow-pipe connecting adjacent tanks, with means for carrying off the liquid from the first tank of the series after it has traveled through the series of tanks in an opposite direction to the motion of the bagasse, substantially as described.

15. An apparatus for extracting sucrose from sugar-cane, comprising two mills, a series of immersion-tanks, and a series of compression-rollers, means for delivering the bagasse from one mill to one end of the series of tanks, rotary pushers for pushing the bagasse through the tanks *seriatim* and delivering same to said compression-rollers, provided with V-shaped pusher-teeth, scrapers for cleaning said pushers, means for carrying the bagasse from the end of the series of tanks to the second mill, means for pumping the liquid expressed from the second mill to the last tank of the series, means for supplying additional water to said tank, means for causing the liquid to flow through said tanks *seriatim*, in the reverse direction to that of the bagasse, and an overflow-pipe for carrying off the liquid from the first tank of the series, substantially as described.

16. In apparatus of the character described, the combination with a tank having a curved bottom, of a rotary pusher mounted above said tank and provided with V-shaped teeth having the engaging edge substantially radial, the said teeth projecting down into said tank and pushing the bagasse through said tank, substantially as described.

17. In apparatus of the character described, the combination with a tank having a curved bottom, of a rotary pusher mounted above said tank and provided with V-shaped teeth having the engaging edge substantially radial, the said teeth projecting down into said tank and pushing the bagasse through said tank, with means for cleaning the surface of said scraper and said teeth, substantially as described.

18. In apparatus of the character described, the combination with a tank having a curved bottom, of a rotary pusher mounted above said tank and provided with V-shaped teeth having the engaging edge substantially radial, the said teeth projecting down into said tank and pushing the bagasse through said tank, curved pivoted arms mounted above said rotary pusher and provided with a scraping-blade adapted to engage the face of said pusher and pass over said teeth, substantially as described.

19. In apparatus of the character described, the combination with a rotary pusher, comprising a drum, with V-shaped teeth secured on the surface of said drum, curved pivoted arms mounted above said drum, and a scraper-blade secured to the end of said arms and adapted to engage the outer surface of said drum and also the faces of said teeth, substantially as described.

20. In apparatus of the character described, the combination with a rotary pusher, comprising a drum, with V-shaped teeth secured on the surface of said drum, curved pivoted arms mounted above said drum, and a scraper-blade having a curved scraping edge secured to the end of said arms and adapted to engage the outer surface of said drum and also the faces of said teeth, substantially as described.

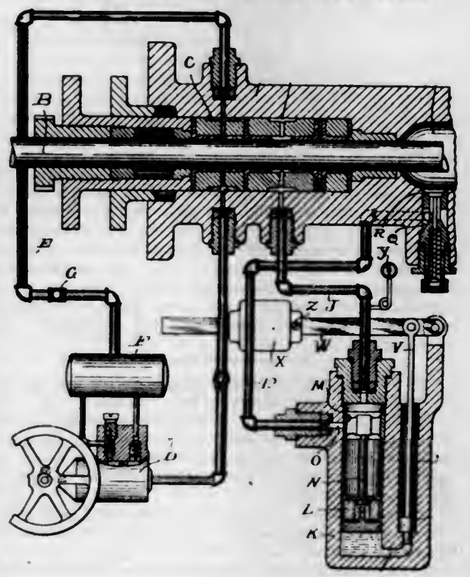
21. In apparatus of the character described, the combination with a rotary pusher, comprising a drum, with V-shaped teeth secured on the surface of said drum, curved pivoted arms mounted above said drum, a scraper-blade secured to the end of said arms and adapted to engage the outer surface of said drum and also the faces of said teeth, and stops on said arms adapted to limit the downward travel thereof, substantially as described.

22. In apparatus of the character described, a series of tanks, provided with curved bottoms, with a perforated plate in the bottom of said tank, a second tank mounted beneath said perforated plate and provided with heating-coils, and overflow-pipes connecting said tanks *seriatim*, substantially as described.

23. In apparatus of the character described, the combination with a tank having a curved bottom $c'$, a curved tongue $c^3$, and plane faces $c^3$ and $c^4$, of a rotary pusher mounted above said curved bottom, and compression-rollers mounted in rear of said tongue and above said plane faces $c^3$ and $c^4$, substantially as described.

24. In apparatus of the character described, the combination with a tank having a curved bottom $c'$, a curved tongue $c^3$, and plane faces $c^3$ and $c^4$, of a rotary pusher mounted above said curved bottom, and compression-rollers mounted in rear of said tongue and above said plane faces $c^3$ and $c^4$, a heating-tank mounted below the curved bottom of said tank connected therewith by perforations, a drain-pipe from beneath the compression-rollers to said heating-tank, and an overflow-pipe for carrying off the liquid from said tank, substantially as described.

757,297. **REFRIGERATING-MACHINE.** JUSTUS C. GOOSMANN, Chicago, Ill. Filed Oct. 8, 1903. Serial No. 176,316. (No model.)



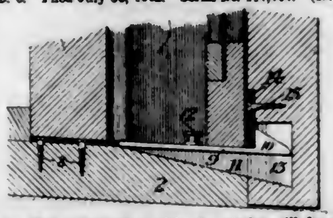
*Claim.*—1. The combination with the compressor-cylinder and stuffing-box of a refrigerating-machine, an escape-gas chamber in said stuffing-box, an escape-gas chamber having valve-controlled connection with said cylinder, and connection between said escape-gas chambers, of two differential cylinders, one of which is interposed in said connection between said escape-gas chambers, a piston-valve in said cylinder controlling said connection, a piston in said cylinder controlling said piston-valve, a piston in said other cylinder, a fluid-pressure passage connecting said cylinders and serving to transmit motion from one piston to the other thereof, and a weight bearing on said last-named piston to hold same at the lower limit of its movement against the action of the escape-gas pressure and hold said piston-valve in position to cut off the connection between said escape-gas chambers, substantially as described.

2. In a refrigerating-machine, the combination with the compressor-cylinder and stuffing-box, of an escape-gas chamber in said stuffing-box, a pocket adapted to receive the escape gas from said stuffing-box chamber, and valve-controlled connection between said pocket and said compressor-cylinder, of a cylinder connected with said stuffing-box chamber, a piston therein, connection between said cylinder and said pocket, a piston-valve in said cylinder connected with said piston and controlling the connection between said cylinder and said pocket, a fluid-pressure chamber on the other side of said piston, a second cylinder connected with said fluid-pressure chamber, a piston in said cylinder, a lever pivotally mounted at one end and carrying a weight at its free end, and connection between said last-named piston and said lever adjacent the pivot of the latter, said lever being adapted to bear upon said piston to control the pressure in said fluid-pressure chamber and thereby control the movements of said first-named piston by the action of the escape-gas pressure, substantially as described.

3. In a refrigerating-machine, the combination with the compressor-cylinder and stuffing-box, of an escape-gas chamber in said stuffing-box, an escape-gas-receiving chamber having valve-controlled connection with said cylinder and connected with said stuffing-box chamber, a valve-chamber interposed in said connection, a fluid-pressure-actuated piston-valve in said chamber controlling said connection and actuated in one direction by the escape-gas pressure, fluid-pressure devices actuating said piston-valve against the action of said escape-gas pressure, and means exerting a constant load on said last-named fluid-pressure devices for controlling the escape-gas release-pressure, substantially as described.

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**757,298. SHUTTER-FASTENER.** JAMES B. HALIDAY, Washington, D. C. Filed July 30, 1902. Serial No. 117,707. (No model.)



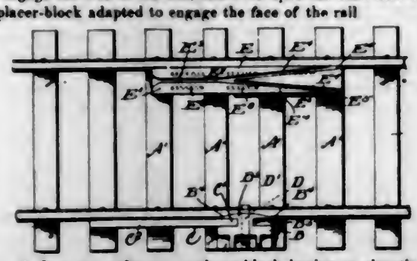
*Claim.*—The combination with the window-sill formed with a recess and provided with a spring depressible plate located over said recess and having an upwardly-projecting hook end extending beyond the outer face of the sill, of a window-blind formed with a recess above its lower edge and in line with the recess of the sill and having a plate overlapping the recess from its upper part and adapted to have the hook end of the depressible spring-plate engage therewith when fitting in the recess, whereby the blind may close against the outer face of the sill and a screen may fit over the spring depressible plate between the sash and blind, substantially as described.

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**757,299. CAR-REPLACER.** HARDIN Q. HALL, Louisville, Ky. Filed Sept. 23, 1903. Serial No. 174,327. (No model.)

*Claim.*—1. A car-replacer, comprising a replacer-block having an elevating-bar extending therefrom parallel with the outer face of the rail, and a frog-block disposed parallel with the face of the opposite rail and provided with a groove therein diverging toward the rail at one end thereof.

2. In a car-replacer, a replacer-block having an elevating-bar extending therefrom parallel with the outer face of the rail, a frog-block disposed parallel with the face of the opposite rail and provided with a groove therein diverging in opposite directions at one end thereof, ribs upon the opposite faces of said frog-block adapted to engage the web of the rail, and a rib upon the inner face of the replacer-block adapted to engage the face of the rail



3. In a car-replacer, a replacer-block having an elevating-bar extending therefrom parallel with the outer face of the rail, a frog-block disposed parallel with the face of the opposite rail and provided with a groove therein diverging in opposite directions at one end thereof, ribs upon the opposite faces of said frog-block adapted to engage the web of the rail, a rib upon the inner face of the replacer-block adapted to engage the face of the rail, and a tie-bar engaging the web of the rail opposite the rib upon the replacer-block and removably secured at its opposite end to said block.

4. In a car-replacer, a replacer-block having upon its upper face rectangular sockets, strengthening-ribs extending from said sockets to the base of the block, a replacing-face inclined in opposite directions and disposed at one side of the sockets in the block, and a web-contacting face extending below said replacing-face.

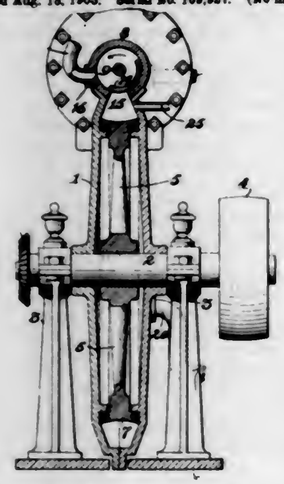
5. In a car-replacer, a replacer-block having upon its upper face rectangular sockets, strengthening-ribs extending from said sockets to the base of the block, a replacing-face inclined in opposite directions and disposed at one side of the sockets in the block, a web-contacting face extending below said replacing-face, parallel lugs depending from the under face of said block, and a tie-bar having at one end a web-engaging head and provided at its opposite end with an aperture to receive a retaining device carried by the replacer-block.

6. In a car-replacer, a replacer-block having opposite angular sockets in its upper face and provided with means to prevent movement thereof longitudinally of the rail, means carried by said block to prevent lateral movement thereof relative to the rail, an elevating-bar having an angular head to fit said sockets, and an inclined face extending from said head to the opposite end of the bar.

7. In a car-replacer, a frog-block of substantially the height of a rail and having an inclined portion at one end with a groove extending therethrough and merging into diverging grooves extending to the edges at the opposite end of the block where the outer walls thereof are cut away, contact-ribs upon the opposite faces of the block disposed to engage the rail-web, and spaced holding-lugs depending from the under face of the block.

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**757,300. ROTARY FLUID-MOTOR.** KARL P. HAHGI, New York, N. Y. Filed Aug. 18, 1903. Serial No. 169,927. (No model.)





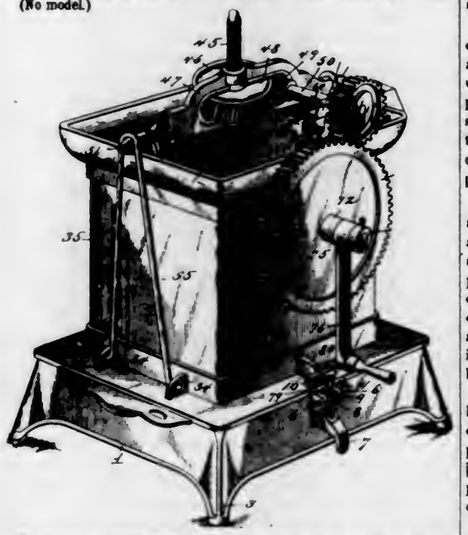
*Claim.*—1. A rotary motor, having an annular chamber, a rotating piston-carrier provided with radial pistons movable through said chamber, a main shaft driven by the piston-carrier, a valve-chest mounted on the said chamber, a valve mounted rotatively therein and controlling the inlet and outlet ports for the fluid, mechanism between the main shaft and said valve for rotating the latter, and an abutment-disk rotating with said valve and having a gateway for the passage of the pistons, said abutment having its axis of rotation at right angles to the axis of the motor-shaft and its periphery so disposed as to rotate fluid-tight across the concave surface of the piston-carrier.

2. A rotary motor, having an annular chamber, a rotating piston-carrier provided with radial pistons movable through said chamber, a main shaft driven by the piston-carrier, a valve-chest mounted on said chamber, two like connected valves mounted rotatively in said chest and controlling, respectively, inlet and outlet port-passages in the chest, an abutment-disk between and rotating with said valves, and having a gateway for the passage of the pistons, said abutment and valves having their common axis of rotation at right angles to the axis of the motor-shaft and the abutment having its periphery disposed to rotate fluid-tight across the concave surface of the piston-carrier, and means for controlling the admission of the fluid to the valve-chest at either side of said abutment.

3. In a rotary motor, a casing having in it an annular chamber C, a main shaft concentric with said chamber, a piston-carrier 5, fixed on said shaft and having a concave rim 7 forming one wall of the chamber C, pistons 6 secured in said rim 7, and adapted to travel through the chamber C, a valve-chest 8 mounted on the casing and connected with the chamber by parts 15, a shaft 9 rotatively mounted in said chest at right angles to the axis of the motor-shaft, a disk-like abutment 12 fixed on said shaft, said abutment having in it a gateway *g* and bearing about its periphery on the inner surface of the chest and on the concave rim of the piston-carrier, two valves 14 and the shaft 9 in said chest at the respective sides of said abutment and controlling the supply of fluid to the motor, means for driving the shaft 9 from the motor-shaft, and means for admitting fluid to the chest at either side of the abutment at will.

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**757,301. COMBINATION PRESS AND BUTTER-MOLD.** WILLIAM N. HARING, Nyack, N. Y. Filed Oct. 17, 1903. Serial No. 177,486. (No model.)



*Claim.*—1. A combination mold and press of the class set forth, consisting of a molding-base adapted to remain in stationary position, a hopper hinged to the upper portion of one side of the base, pressure devices removably applied to and held within the hopper, and operating mechanism for said pressure devices carried by the hopper, the said pressure devices and operating mechanism being wholly supported by the hopper.

2. A combination mold, and press of the class set forth, consisting of a molding-base adapted to remain in stationary position, a hopper hinged to said base, pressure devices detachably secured to the hopper, the pressure devices and operating mechanism therefor being wholly carried by the hopper.

3. A combination mold and press of the class set forth, consisting of a molding-base having a molding device removably mounted therein and divided into regular forms, a receptacle hinged to one side of the base, pressure devices removably applied to and held within the receptacle, operating mechanism detachably secured to the receptacle, the pressure devices and operating mechanism therefor being wholly supported by the receptacle, and a dressing-slide disposed in close relation to the forms of the molding device.

4. In a molding device of the class set forth, the combination of a molding-base having a molding device removably mounted therein and divided into regular forms, clearing devices movably disposed in the forms, and a receptacle attached to one side of the base.

5. In a mold of the class set forth, the combination of a molding-base having a removable molding device therein divided into separate forms, a dressing-slide disposed in close relation to the upper portions of the forms, and a receptacle hinged to one side of the molding-base and having pressure mechanism coöperating therewith, the dressing-slide being fully exposable by turning the receptacle over one side of the base.

6. In a molding device of the class set forth, the combination of a molding-base of hollow form having supports on the inner portion thereof, a divided molding device removably mounted in the said base and adapted to engage said supports, and a receptacle hinged to one side of the base and having pressure devices operating in connection therewith.

7. In a mold of the class set forth, the combination of a molding-base, a molding device removably fitted within the base and having a groove in the upper surface thereof, a receptacle having a rib at its lower end to enter the said groove, and pressure devices in the receptacle.

8. In a mold of the class set forth, the combination of a molding-base, a molding device movably mounted in said base and divided into separate forms an open dressing-slide movable in close relation to the upper edges of the separate forms and having one terminal thereof which is normally held inclosed on the molding device formed with a rigid cutting edge, and a receptacle hinged to one side of the base and provided with pressure mechanism, the movement of the receptacle over the base fully exposing the dressing-slide and permitting the latter to be readily removed or applied.

9. In a molding device of the class set forth, the combination of a molding-base, a molding device removably mounted in said base a dressing-slide loosely mounted on and freely removable from the upper portion of the molding device and normally having one end projecting outwardly from the base, and a receptacle hinged to one side of the base and movable over the upper part of the latter and the slide, the lower end of the receptacle being provided with a recess in its lower end to receive the dressing-slide and also having pressure devices coöperating therewith.

10. In a molding device of the class set forth, the combination of a molding-base having a molding device removably mounted therein and withdrawable from the upper portion thereof, a locking-catch at one side of the base, a hopper hinged to the side of the base opposite that carrying the catch and provided with a base-flange for engagement at one side by the catch, and pressure devices and operating mechanism therefor wholly mounted in and on the hopper and separable from the latter, the said pressure devices and operating mechanism being movable with the hopper over one side of the base to grip the latter.

11. In a mold of the class set forth, the combination of a base having recesses in the upper edges of the opposite ends, a molding device removably mounted in the said base and having grips at opposite ends to fit in the said recesses, the grips being normally projected outwardly beyond the opposite ends of the base, and a hopper hinged to one side of the base and having pressure devices cooperating therewith.

12. In a molding device, the combination of a molding-base having molding means therein, a hopper hinged to one side of the base and provided with pressure devices, and a support movably attached at one end to one side of the hopper.

13. In a molding device of the class set forth, the combination of a base having molding devices therein separated by intersecting partitions, a dressing-slide movable in close relation to the molding devices, the said slide being formed with two longitudinally-disposed openings separated by a central brace and also having the inner end walls of the openings reduced to form cutting edges, the central brace being disposed over the central partition of the molding de-

vices, and a hopper hinged to one side of the base and having pressure devices coöperating therewith.

14. In a molding device of the class set forth, the combination of a base, a mold removably mounted therein and withdrawable through the upper portion thereof, the said mold being divided in separate forms by intersecting partitions, a dressing-slide loosely disposed over and freely removable from the upper edges of the said partitions, the dressing-slide having longitudinal openings separated by a central brace, and inner cutting edges and outer grip means, the brace being centrally located and normally disposed over the central partition of the forms, and a hopper hinged to one side of the base and having pressure devices coöperating therewith, the hopper being movable over the upper portion of the dressing-slide and base.

15. In a mold of the class set forth, the combination of a molding-base, a hopper movably attached to one side of the base, pressure mechanism coöperating with the hopper, and including a support engaging the upper part of the latter and resilient yokes for removably engaging opposite extremities of the support.

16. In a molding device of the class set forth, the combination of a molding-base, a hopper movably attached to one side of the base, a plunger movably disposed in the hopper and having a screw projecting upwardly therefrom, a worm-wheel engaging the screw, a removable shaft having a worm in mesh with the worm-wheel, a shaft-lock carried by the hopper to engage the shaft carrying the worm, a frame supporting the worm-wheel, means for removably engaging the frame, and gearing carried by the shaft and applied to the side of the hopper.

17. In a mold of the class set forth, the combination of a molding-base, a hopper hinged to one side of the base, a gear rotatably mounted on one side of the hopper, a plunger disposed in the hopper and having a feed-screw projecting upwardly therefrom, a frame removably held in the upper portion of the hopper and carrying a worm-wheel through which the said screw projects, a removable shaft having a worm in mesh with the worm-wheel, and a pinion engaging the said gear, and means carried by the hopper for securing the frame and the parts carried thereby in the hopper.

18. In a mold of the class set forth, the combination of a molding-base, a hopper movably attached to one side of the base, a plunger in the hopper having upper guides and a feed-screw projecting upwardly therefrom, a frame removably held in the upper portion of the hopper and carrying a worm-wheel through which the screw projects, a worm-shaft having a worm detachably mounted thereon to engage the worm-wheel, and a pinion, means for removably supporting the worm-shaft on the hopper, and a gear on the side of the hopper with which the pinion on the worm-shaft is adapted to mesh.

19. In a mold of the class set forth, the combination of a molding-base, a hopper movably attached to one side of said base, a removable pressure device in the hopper provided with feeding means, freely-removable actuating means on the upper portion of the hopper to operate said feeding means, devices for removably holding said actuating means on the hopper, and primary operating means on one side of the hopper with which a portion of said actuating means engages.

20. In a mold of the class set forth, the combination of a molding-base, a hopper movably attached to one side of said base, a frame removably held in the upper portion of the hopper and having a shell-bearing and projecting outwardly from one extremity, a worm-wheel held in the said frame, a plunger having a feed-screw projecting upwardly through the worm-wheel, a worm-shaft separately mounted on the upper portion of the hopper and in the shell-bearing and provided with a worm to engage the said worm-wheel, and gearing for operating the worm-shaft.

21. In a mold of the class set forth, the combination of a molding-base, a hopper movably attached to one side of said base and having a hinged shaft-lock at its upper portion, and pressure devices removably held in the hopper and including a worm-shaft removably engaged by the said lock.

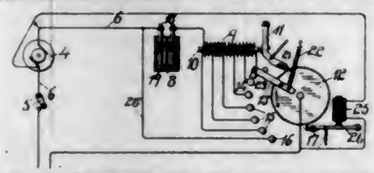
22. In a molding device of the class set forth, the combination of a molding-base, a hopper movably disposed on said base, a frame removably applied to the upper part of the hopper and having oppositely-projecting extremities, resilient yokes movably attached to the hopper to engage the said extremities, a plunger and feeding means therefor held by the frame and a portion of the hopper, and gearing for actuating the said feeding means.

23. A mold of the class set forth consisting of a molding-base, a hopper movably attached to one side of the base and having an immovable stub-shaft projecting outwardly therefrom below the upper edge thereof, a pressure device in the hopper, a gear rotatably mounted on and freely removable from the said shaft and having projections on the outer end of the hub thereof, an operating-crank on the stub-shaft having recesses in the inner side of the portion thereof engaging the said shaft to receive the projections of the gear, and mechanism between the gear and the pressure device for actuating the latter.

24. In a molding device of the class set forth, the combination of a molding-base, a hopper movably attached to one side of the base, a frame applied to the upper part of the hopper and having depending legs near the opposite ends, the extremities of the frame projecting over the opposite ends of the hopper, yokes for removably engaging the frame extremities, a worm-shaft removably held on the hopper and in a portion of the said frame and carrying a pinion and a worm, a worm-wheel held in the frame to mesh with the worm on the said shaft, a plunger having a screw-stem extending upwardly through the worm-wheel, and primary operating means held on one side of the hopper and including a gear to mesh with the pinion on the said shaft.

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**757,302. ELECTRIC-CURRENT REGULATOR. NEWTON HARRISON, New York, N. Y., assignor of one-half to William Henry Laird, New York, N. Y. Filed Apr. 21, 1903. Serial No. 153,718. (No model.)**



*Claim.*—1. The combination with a motor, a generator, and switch, of a chemical interrupter and a self-induction coil provided with means whereby the sections of the self-induction coil may be thrown into and out of the circuit to vary the self-induction in the motor-circuit, substantially as described.

2. The combination with a generator, and an electrically-operated device, of a chemical interrupter and a self-induction coil provided with means whereby sections of the self-induction coil may be thrown into and out of the circuit to vary the self-induction, and whereby the self-induction coil and the interrupter may also be cut out of the circuit, substantially as described.

3. The combination with a generator and a motor of means for interrupting the circuit, and a self-induction coil divided into sections in said circuit, and means for cutting said sections out of the circuit to vary the self-induction, substantially as described.

4. The combination with a source of an electric current, and an electrically-actuated device, of means for interrupting the circuit, a self-induction coil divided into sections in said circuit, and means for cutting sections out of the circuit to vary the self-induction, substantially as described.

5. The combination with a generator and a motor, of a chemical interrupter and a self-induction coil in said circuit to set up self-induction in the said circuit, substantially as described.

6. The combination with a source of an electric current and an electrically-operated device, of means for interrupting the circuit, means for cutting the said interrupting means out of the circuit and a self-induction coil in said circuit to set up self-induction in the said circuit, substantially as described.

7. In the main circuit of an electric system the combination with a source of direct electric current and an electrically-actuated device, of means for interrupting the said direct current and means for producing self-induction to reduce the impressed electromotive force flowing through the said electrically-actuated device.

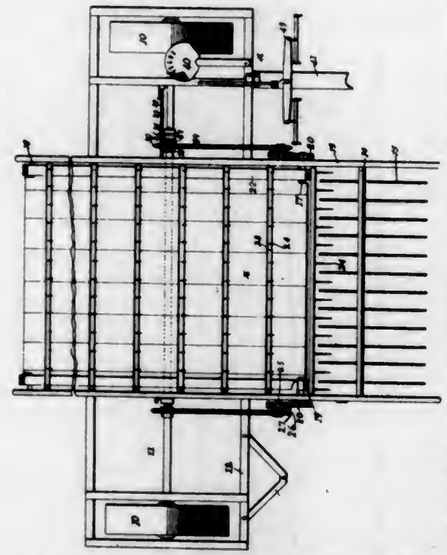
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**757,303. HAY AND SHOCKED-GRAIN LOADER. ROY HAWKINS, Fonda, Iowa. Filed May 4, 1903. Serial No. 155,555. (No model.)**

*Claim.*—1. In a machine of the class described, the combination of an axle, a traction-wheel fixed to each end thereof, a frame supported by the axle, a tongue pivoted to one side of the frame, means for connecting draft-animals to the other side of the frame, means for adjusting the frame relative to the tongue, side pieces fixed to the central portion of the frame and extended parallel with the traction-wheels, stationary rods fixed between the forward ends of the side pieces and a conveyer extending from the rear of the stationary rods upwardly and rearwardly to a point of discharge, and means for driving said conveyer from the axle of the traction-wheels, for the purposes stated.

2. In a machine of the class described, the combination of an axle, traction-wheels fixed to the ends thereof, a frame mounted upon said axle, a tongue hinged to the frame at one side, means for adjustably securing the frame relative to the tongue, means for securing a pair of draft-animals to the opposite side of the machine-frame, two side pieces extended parallel with the traction-wheels and fixed to the central portion of the said frame, a cross-bar between the forward ends of the side pieces, rods fixed to said cross-bar and running parallel with the side pieces, a solid bottom between the side pieces, a toothed conveyer passing over the solid bottom, the teeth thereof moving upwardly between the said rods at the front of the platform, and means driven by the axle 11 for operating the said cooveyer.



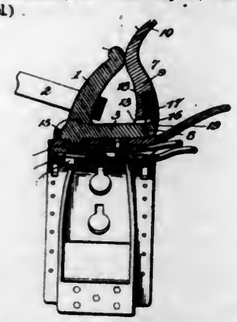


3. In a machine of the class described, the combination of an axle, traction-wheels fixed to the ends thereof, a frame mounted upon said axle, a tongue hinged to the frame at one side, means for adjustably securing the frame relative to the tongue, means for securing a pair of draft-animals to the opposite side of the machine-frame, two side pieces extended parallel with the traction-wheels and fixed to the central portion of the said frame, a cross-bar between the forward ends of the side pieces, rods fixed to said cross-bar and running parallel with the side pieces, a solid bottom between the side pieces, a toothed conveyer passing over the solid bottom, the teeth thereof moving upwardly between the said rods at the front of the platform, and means driven by the axle 11 for operating the said conveyer, and a bracket fixed to the central portion of the said axle and designed to receive a wagon-tongue.

4. In a device of the class described, the combination of an axle, two traction-wheels fixed to the opposite ends thereof, a frame 12 mounted on the axle, a tongue hinged to the frame, means for adjustably securing the frame relative to the tongue, a bracket fixed to the frame at the side opposite from the said tongue, side pieces 13 fixed to the central portion of the said frame, a solid bottom between the side pieces extending to a point near their forward ends, a cross-piece fixed between the side pieces, rods 15 fixed in said cross-pieces, a shaft beneath the forward end of the said solid bottom, an endless conveyer having cross-pieces 23 and teeth 24 driven by said shaft, pinions 20 fixed to the ends of said shaft, a short shaft fixed to the side pieces adjacent to the said pinions, a pinion and a sprocket-wheel on each of said short shafts, said pinions on the short shafts being in mesh with the other pinions, two ratchet-faced hubs each having a sprocket-wheel thereon rotatably mounted upon the axle, sprocket-chains connecting the said sprocket-wheels with the sprocket-wheels on the short shafts, two clutch devices slidingly mounted on the axle, means for simultaneously throwing them in engagement with the ratchet-faced hubs, and a bracket mounted upon the central portion of the axle designed to receive a wagon-tongue, substantially as and for the purposes stated.

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**757,304. CHECK-HOOK. CHRISTIAN HEILRATH and SAMUEL M. TABER, Sacramento, Cal. Filed July 28, 1903. Serial No. 167,339. (No model.)**



*Claim.*—1. A device of the class described comprising a hook, and a substantially L-shaped catch pivotally mounted in rear of the hook and composed of an upwardly-extending arm normally fitting against the rear face of the end of the hook and extended above the same to form a handle, and an arm extending forwardly from the lower end of the said arm and arranged to carry a checkrein out of the hook, substantially as described.

2. A device of the class described comprising a hook, and a substantially L-shaped catch mounted in rear of the hook and comprising an upwardly-extending arm normally fitting against the rear face of the end of the hook to close the same and extended above the hook to form a handle, and an approximately horizontal arm extending from the lower end of the said arm and arranged to be swung to an upwright position with its upper or rear face substantially flush with the end of the hook, whereby the checkrein will be thrown out of the hook and prevented from catching on the end of the same, substantially as described.

3. A device of the class described comprising a hook, a substantially L-shaped catch composed of an upwardly-extending arm normally fitting against the rear face of the end of the hook and extended above the same to form a handle or grip, and a forwardly-extending arm arranged to swing upward to a position substantially flush with the end of the hook, and means for limiting the upward movement of the forwardly-extending arm, substantially as described.

4. A device of the class described comprising a hook provided at its upper end with a stop, and a substantially L-shaped catch comprising an upwardly-extending arm normally fitting against the end of the hook, and a forwardly-extending arm arranged to swing upward to carry a checkrein out of the hook and having its upward movement limited by the stop, whereby its upward or rear face is held substantially flush with the end of the hook to prevent the checkrein from catching thereon, substantially as described.

5. A device of the class described comprising a hook, and a substantially L-shaped catch having an upwardly-extending arm normally fitting against the rear face of the end of the hook, said catch being also provided with a forwardly-extending arm having an opening receiving the hook, the latter being completely encircled by the forwardly-extending arm, substantially as described.

6. A device of the class described comprising a hook having a base extending rearward from it, and a substantially L-shaped catch pivoted at its angle to the rear end of the base and comprising an upwardly-extending arm normally fitting against the end of the hook, and a forwardly-extending arm having a longitudinal opening to receive the base and the hook and extending around the same, substantially as described.

7. A device of the class described comprising a hook provided at its top with a projection forming a stop, and a substantially L-shaped catch composed of an upwardly-extending arm normally fitting against the end of the hook, and a forwardly-extending arm having an opening to receive the hook and provided with a notch adapted to receive the said projection when the forwardly-extending arm is swung upward, substantially as described.

8. A device of the class described comprising a hook provided at its top with a projection, a base extending rearward from the hook, and a substantially L-shaped catch composed of an upwardly-extending arm, and a forwardly-extending arm having a longitudinal opening to receive the hook and the base and provided at its front end with a notch arranged to receive the projection of the hook when the forwardly-extending arm is swung upward, substantially as described.

9. A device of the class described comprising a hook provided at its top with a projection, a base extending rearward from the hook, and a substantially L-shaped catch composed of an upwardly-extending arm fitted against the end of the hook and extended above the same to form a handle, and a forwardly-extending arm having a longitudinal opening receiving the base and surrounding the hook, said forwardly-extending arm being arranged to engage the projection, substantially as described.

10. A device of the class described comprising a hook, a base extending rearward from the hook, an approximately L-shaped catch pivoted at its angle to the rear end of the base and provided in one of its arms with a bore or socket, and a spring-actuated device mounted in the bore or socket and adapted to engage the upper face or the rear end of the base, substantially as described.

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**757,305. HAT-RECEPTACLE FOR AUDITORIUMS.** JAMES T. HENDERSON, New York, N. Y. Filed June 3, 1903. Serial No. 159,339. (No model.)



*Claim.*—1. The combination with a seat, of flexible webs secured to the under side of the seat, and depending therefrom, and a rigid bottom to three sides of which the webs are secured, the bottom being adapted to be folded up against the rear web and then up against the under side of the seat with the side webs folded inward between the under side of the bottom and the seat.

2. In a hat-receptacle, the combination of a seat, a rectangular member of wire provided at its corners with loops serving as screw-holes and also provided with a projection intermediate of two of said loops, said projection being made by a bend in the wire and forming a catch, a plurality of webs connected with said wire and free to fold against the same, and a bottom member connected with said webs and free to be engaged by said catch.

3. In a hat-receptacle, the combination of a seat, a rectangular member of wire connected therewith and provided with a projection, said projection being made by a bend in said wire and integral therewith, a plurality of webs connected with said member of wire, a bottom member connected with said webs and supported thereby said bottom member being free to fold, first, against one of said webs, and second, against said seat, said projection being free to engage said bottom member so as to maintain the same in folded position.

4. A receptacle for hats adapted to be secured to the under side of a seat, comprising a frame having openings to receive fastening means and provided with a catch, a rigid bottom, and sides and back of flexible material secured to the bottom and frame, the bottom being adapted to fold up against the back and then up against the frame with the flexible sides folded inward upon the under side of the bottom.

5. A receptacle for hats, comprising a wire frame having eyes at its corners and an integral catch on one member at about the center of length thereof, a rigid bottom, and sides and back of flexible material secured to the frame and bottom, the bottom being adapted to fold up against the back and then up against the frame with the flexible sides folded inward upon the under side of the bottom.

6. In a hat-receptacle, the combination of a box-like member to be connected with a seat-bottom, said member consisting of back and side webs of flexible material, a bottom member connected with said side webs and free to fold into a position substantially parallel to said back web so as to engage the same face to face, said back web and said bottom member thus folded being together free to fold against the bottom of said seat, and a locking device for securing said bottom member in a position substantially parallel to said seat.

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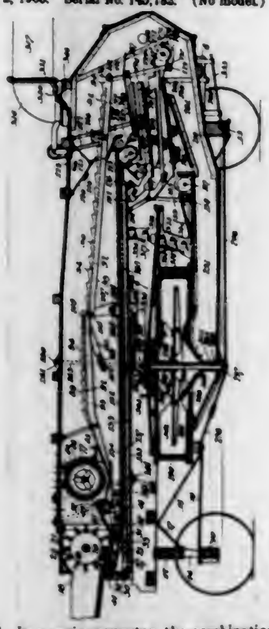
**757,306. EXTENSION-BRACE.** FREDERICK W. R. HEYMEL, Pisgah, Mo. Filed Mar. 2, 1903. Serial No. 145,859. (No model.)

*Claim.*—The improved extension-brace, comprising two non-revoluble tubes 1 and 2, a screw 4 extending within one end of the said tube 2, a bolt or rivet 5 extending through said tube and said screw and fixing the screw against rotation in the tube, and said screw projecting free from said tube 2 and adapted to slide loosely within the other tube, said screw-carrying tube having an integral means at its free end to prevent its rotation, a washer 6, and an angular wrench-movable separate nut 7 revolubly mounted upon said screw between said tubes and adapted to force said washer against the inner end of the said tube 1, to separate the two tubes, substantially as specified.



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**757,307. GRAIN-SEPARATOR.** GRAN W. HILL, Alexandria, Mo. Filed Mar. 2, 1903. Serial No. 145,782. (No model.)



*Claim.*—1. In a grain-separator, the combination with threshing mechanism, of a separating-cylinder located in the path of the material discharged by the threshing mechanism, said cylinder having an exterior surface formed by a plurality of relatively overlapping slats spaced apart and disposed tangential to a circle of smaller diameter than said cylinder, and open ends spaced from the walls of the casing and communicating with ways for the passage of its contents to the interior of the separator.

2. In a grain-separator, the combination with threshing mechanism, of a separating-cylinder disposed in rear of and receiving the direct discharge from the threshing mechanism, said separating-cylinder having open ends spaced from the walls of the casing and an exterior surface formed by spaced overlapping blades.

3. In a grain-separator, the combination with threshing mechanism, of rotary separating means located in rear of and exposed to the impact of material discharged directly from said threshing mechanism, said separating means consisting of a receiver having open ends spaced from the walls of the casing, and an exterior surface composed of obliquely-disposed slats spaced apart and overlapping each other.

4. In a grain-separator, a separating-cylinder disposed in rear of and preceding the direct discharge from the threshing-cylinder, said separating-cylinder having openings for the passage of grain and material rendered heavy by the adhesion of grain into the interior thereof, open ends for the discharge of said material, and an intermediately-disposed dividing-ring.

5. In a grain-separator, a separating-cylinder disposed in rear of and receiving the direct discharge from the threshing-cylinder, said separating-cylinder having blades disposed tangentially to a circle of smaller diameter than said cylinder, open ends, and an intermediately-disposed dividing-ring.



6. In a grain-separator, a casing having a contracted throat, threshing mechanism in said throat, and a separating-cylinder mounted in the casing directly in the path of material discharged from the threshing mechanism, said separating-cylinder being of a length exceeding that of the threshing-cylinder and having an exterior surface consisting of blades disposed tangentially to a circle of smaller diameter than said cylinder.

7. In a grain-separator, a casing having a contracted throat and an auxiliary casing in rear of said throat but exceeding the width of the latter, in combination with threshing mechanism mounted in the throat, and a separating-cylinder disposed in rear of the threshing mechanism, directly in the path of material discharged from the latter, said separating-cylinder having sides open for the reception and ends open for the discharge of grain and finer particles, the ends of said separating-cylinder being extended through the auxiliary casing.

8. In a grain-separator, a separating-cylinder comprising a plurality of blades disposed tangentially to a circle of smaller diameter than said cylinder, and means for connecting and supporting said blades, which latter form the exterior surface of the separating-cylinder, in combination with a threshing-cylinder disposed in front of said separating-cylinder, said threshing-cylinder being much shorter than the separating-cylinder and adapted to discharge and diffuse the threshed material violently against the face of the separating-cylinder, the latter being rotated at a high rate of speed, but less than the rate of rotation of the threshing-cylinder.

9. In a grain-separator, the combination with threshing mechanism, of a separating device located in rear of and exposed to the impact of material discharged directly from said threshing mechanism, said separating device comprising a cylindrical rotary structure having open ends and an exterior surface composed of obliquely-disposed slats overlapping each other and disposed tangentially to a circle of smaller diameter than said cylinder, said separating-cylinder being rotated in the same direction as the threshing-cylinder and at a high rate of speed, the slats presenting on the downgoing side of the cylinder the outer edges of said slats and the widest portion of the interspaces toward the threshing-cylinder.

10. In a grain-separator, a separating-cylinder having blades disposed tangentially to a circle of smaller diameter than the cylinder, and open ends, said cylinder being disposed to discharge material between its ends and the walls of the separator-casing, in combination with auxiliary-casing means serving to direct such discharge in a downward direction, and a grain-pan disposed below to receive such discharge.

11. In a grain-separator, a threshing-cylinder and an open-ended separating-cylinder disposed in rear of and receiving the direct discharge from the threshing-cylinder and having an exterior surface formed of slats tangentially to a circle of less diameter than the cylinder and between which grain and material rendered heavy by the adhesion of grain may be passed into the interior of said cylinder, in combination with a rotary grate disposed in front of the lower part of said separating-cylinder and revolving in an opposite direction to the latter.

12. In a grain-separator, a separating-cylinder disposed in rear of the threshing-cylinder and provided with blades tangential to a circle of less diameter than the cylinder and with braces secured at one end to said blades to prevent the admission of long straw between the latter.

13. In a grain-separator, an open-ended separating-cylinder disposed in rear of the threshing-cylinder and provided with blades tangential to a circle of smaller diameter than the cylinder and with braces secured to said blades to prevent the admission of long straw.

14. In a grain-separator, a separating-cylinder disposed in rear of the threshing-cylinder and having blades disposed tangentially to a circle of smaller diameter than the cylinder and staggered cross-braces to prevent the admission of long straw, said cross-braces having free ends normally out of contact with the blades adjacent to the ones to which they are secured.

15. In a grain-separator, a separating-cylinder having blades tangential to a circle of smaller diameter than the cylinder and V-shaped cross-braces secured to said blades.

16. In a grain-separator, a separating-cylinder having blades tangential to a circle of smaller diameter than the cylinder and V-shaped cross-braces secured to said blades and having free vibratory arms.

17. In a grain-separator, a threshing-cylinder, a separating-cylinder disposed in rear of the threshing-cylinder and having open delivery ends and sides open to the admission of grain and finer particles, and a centrally-disposed annular partition.

18. In a grain-separator, a separating-cylinder having open discharge ends and a centrally-disposed dividing-ring, in combination with an auxiliary casing to direct the discharge from said cylinder in a downward direction, and a receiving-pan having separate compartments to receive the discharge from the ends of said separating-cylinder.

19. In a grain-separator, the combination of threshing mechanism, a separating-cylinder of greater length than the threshing-cylinder disposed in rear thereof and having obliquely-disposed overlapping slats and open discharge ends, passages for conducting the matter discharged from the separating-cylinder to the said grain-pan, and an intermediately-disposed grate inclined from the concave in an upward and rearward direction toward the separating-cylinder.

20. In a grain-separator, the combination of a threshing-cylinder, a concave, a separating-cylinder of greater length than the threshing-cylinder disposed in rear thereof and having an exterior surface composed of slats tangential to a circle of a smaller diameter than the cylinder, and open discharge ends, a grain-pan, passages for conducting the matter discharged at the ends of said separating-cylinder to said grain-pan, an intermediately-disposed grate extending from the concave upwardly and rearwardly in the direction of the separating-cylinder, and a rotary grate disposed between the latter and the upper end of the inclined grate.

21. In a grain-separator, a threshing-cylinder, a separating-cylinder disposed in rear of the threshing-cylinder and having an exterior surface composed of blades disposed tangentially to a circle of smaller diameter than the cylinder, and open discharge ends, an auxiliary casing directing the discharge of said separating-cylinder in a downward direction, a rotary grate disposed to cooperate with the separating-cylinder to feed the straw in a downward direction, and a reciprocating straw-rack having its front end extended under said separating-cylinder.

22. In a grain-separator, the combination of threshing mechanism, a separating-cylinder disposed in rear of the threshing-cylinder and in the path of material discharged therefrom, said separating-cylinder having open discharge ends and an exterior surface composed of obliquely-disposed overlapping blades tangential to a circle of smaller diameter than the cylinder, said slats being spaced apart for the admission into the interior of the cylinder of grain and finer particles, and a rotary grate cooperating with the separating-cylinder to feed in a downward direction and under the said separating-cylinder the straw and coarser particles intercepted by the latter.

23. In a grain-separator, a casing having a contracted throat, threshing mechanism disposed in said throat, a separating-cylinder having open ends extending through the side walls of the auxilliary casing and communicating with the spaces between the latter and the outer casing, said separating-cylinder having side openings for the passage of grain and finer particles to be discharged at the ends thereof and said separating-cylinder forming an obstruction to the passage of straw and coarser particles, a rotary grate cooperating with the separating-cylinder to feed straw and coarser particles rearwardly under said separating-cylinder, and a reciprocatory straw-rack reduced at its front end and extending between the sides of the auxiliary casing below and in front of the separating-cylinder.

24. In a grain-separator, a separating-cylinder having open discharge ends disposed between the sides of an auxiliary casing, a reciprocatory straw-rack reduced at its front end and extending between the sides of the auxiliary casing below and in front of the separating-cylinder, and shelves disposed in rear of the separating-cylinder above the straw-rack to cover the spaces adjacent to the latter exposed by the movement thereof in a rearward direction.

25. In a grain-separator, a separating-cylinder having open discharge ends and disposed between the sides of an auxiliary casing, a reciprocatory straw-rack having reduced sides at its front end extended between the sides of the auxiliary casing in a forward direction below the separating-cylinder, and means for preventing material from passing between the reduced sides of the straw-rack and the walls of the casing.

26. In a grain-separator, the combination with the frame or casing of the machine, of a separating-cylinder having open discharge ends, and an auxiliary casing comprising in part flange-bars secured to the side walls of the main casing and having flanges extending over the rear portion of the separating-cylinder, and a cross-bar secured under the deck of the main casing and having a flexible guard-strip.

27. In a grain-separator, a separating-cylinder comprising rings provided at their inner edges with laterally-extending annular rims and provided on their sides with flanges tangential to a circle of smaller diameter than the cylinder, connected at their inner ends with said rims, in combination with slats or blades secured to said flanges and supported at their inner edges against the annular rims.

28. In a grain-separator, a separating-cylinder comprising heads consisting of rings provided at their inner edges with laterally-extended annular rims and with flanges tangential to a circle of smaller diameter than the cylinder, an intermediate supporting-ring provided at its inner edge with oppositely-extending annular rims and provided at the sides thereof with flanges tangential to a circle of smaller diameter than the cylinder and having slots adjacent to said flanges, the slats or blades having centrally-disposed slots engaging the slots of the intermediate supporting-ring, said blades being permanently secured to the flanges of the intermediate supporting-ring of the end rings or heads.

29. In a grain-separator, a separating-cylinder having open ends, and exterior surfaces composed of blades tangential to a circle of smaller diameter than the cylinder and an intermediate supporting-ring engaging said blades, in combination with a partition consisting of an annulus secured to said intermediately-disposed supporting-ring.

30. In a grain-separator, a reciprocatory rack comprising front and rear sections, oscillatory operating-arms, pivotal connecting means between said straw-rack sections and the ends of the operating-arms above the fulcra of the latter, the rear section being connected with said arms at a point less remote from the fulcrum than the front section, thereby imparting to the said front and rear sections strokes of unequal length.

31. In a grain-separator, a reciprocatory straw-rack comprising front and rear sections, a rock-shaft having upwardly-extending oscillating operating-arms, pivotal connecting means between said front and rear sections and the upwardly-extending operating-arms, the rear section being connected with said arms at a point less remote from the axis of the rock-shaft than the front section, said pivotal connecting-points being elevated above the receiving-point of the front section and also above the discharge-point of the rear section, thereby forming a raised portion or, divide.

32. In a grain-separator, a reciprocatory straw-rack comprising sections or members pivotally connected with oscillating operating-arms at points above the fulcra of said arms and elevated above the respective receiving and discharge ends of said sections, the rear section being overlapped by the front section of the rack.

33. In a grain-separator, a straw-rack comprising reciprocatory sections and oscillatory operating-arms having pivotal connection above their fulcra with the adjacent ends of said sections, the front section being connected with said operating-arms at points more remote from the fulcra than the rear section, and overlapping the latter.

34. In a grain-separator, the combination with a reciprocatory straw-rack, of a fall-board hinged under the deck of the casing, straps supporting the free end of said dividing-board, and auxiliary means to positively limit the extent of the upward and downward movements of the latter.

35. In a grain-separator, a reciprocatory grain-pan having a screen provided with longitudinally-disposed dividing-strips, in combination with a grated concave discharging into the middle compartments only, a separating-cylinder discharging into the outer compartments only, and a straw-rack having a grated bottom discharging into all the compartments formed by the dividing-strips upon the separating-screen of the grain-pan.

36. In a grain-separator, a reciprocatory grain-pan having a grain-bottom and a separating-bottom extending in rear of the grain-bottom, a cleaning-screen and a delivery-screw disposed underneath the discharge end of the grain-bottom of said grain-pan and controllable means for directing the discharge from said grain-bottom at will onto the cleaning-screen or into the casing of the delivery-screw.

37. In a grain-separator, a reciprocatory grain-pan having a grain-bottom and a separating-bottom extending in rear of the grain-bottom, a shoe having pivotal connection with said grain-pan, additional supporting means for the tail end of said shoe, a cleaning-screen in the said shoe, a delivery-screw disposed in a casing underneath the discharge end of the grain-bottom, and means whereby the discharge from the grain-bottom may be directed at the will of the operator onto the cleaning-screen or into the casing of the delivery-screw.

38. In a grain-separator, a reciprocatory grain-pan having a grain-bottom and a separating-bottom extending in rear of the grain-bottom, a shoe having pivotal connection with said grain-pan, a cleaning-screen in said shoe, a delivery-screw disposed in a casing underneath the discharge end of the grain-bottom, means for directing the discharge from the grain-bottom at the will of the operator onto the cleaning-screen, or into the casing of the delivery-screw, and a double screw disposed in a casing beneath the discharge end of the separating-bottom of the grain-pan and delivering the discharge from said separating-bottom in opposite directions through the walls of the casing of the machine.

39. In a grain-separator, the machine-casing, bur-casings having flanges extending through openings in the walls of the machine-casing, a right and left screw, a casing for said screw supported on and connected with the flanges of the bur-casings, and auxiliary concentric openings in the walls of the machine-casing to permit the return of material from the bur-casings, peripherally of the burs, into the machine-casing.

40. In a grain-separator, grinding means for operating upon threshed material to which grain still adheres, said grinding means comprising stationary burs, revoluble housings, burs connected yieldably with said housings, springs interposed between the edges of said burs and the housings, and connecting means including lugs upon the movable burs, loosely engaging openings in the housings, whereby said burs are tiltingly connected with the housings.

41. In a grain-separator, grinding means for operating upon threshed material to which grain still adheres, said grinding means comprising stationary burs, revoluble housings, burs connected yieldably and tiltingly with said revoluble housings and cooperating with the stationary burs, and obliquely-disposed blades mounted upon the sides of the revoluble housings and operating to expel from the bur-casings the material which has been operated upon by the burs.

42. In a grain-separator, grinding means for operating upon threshed material to which grain still adheres, said grinding means comprising stationary burs, revoluble housings, burs connected yieldably and tiltingly with said revoluble housings and cooperating with the stationary burs, means for feeding the threshed, partly-separated material to the eyes of the burs, and means upon the stationary burs and revoluble housings for expelling said material, after being operated upon by the burs and for directing and deflecting it to one of several points for recleaning.

43. In a grain-separator, grinding means for operating upon threshed material to which grain still adheres, said grinding means comprising stationary burs having flanges extending through openings in the walls of the machine-casing, revoluble burs cooperating with said stationary burs, casings inclosing said burs, a screw-casing supported upon and connected with the flanges of the stationary burs, a right and left screw in said casing to receive threshed and partly-separated material and deliver the same to the burs, auxiliary openings in the machine-casing disposed peripherally of the burs and concentric therewith, and means connected with said burs for transmitting the material operated upon by the burs through said openings into the casing of the machine.

44. In a grain-separator, grinding means for operating upon threshed material to which grain still adheres, said grinding means being disposed in casings on the outer sides of the walls of the machine, means for feeding the threshed and partly-separated material to said grinding means, means for returning the material after being operated upon by the grinding means to the interior of the casing of the machine, a chaffing-screen and a cleaning-screen within the latter, and means for deflecting the material returned from the grinding mechanism into the machine-casing upon the chaffing-screen or the cleaning-screen at the will of the operator.

45. In a grain-separator having exteriorly-disposed grinding means for operating upon threshed material to which grain still adheres, and openings through which such material after being operated upon by the grinding means is returned into the casing of the machine, a transverse casing partly inclosing said return-openings, a transverse deflecting-board, and a hinged deflecting-board having a flange adapted to engage the said transverse deflecting-board and to cooperate therewith to direct the discharge from the return-openings in a different direction from the opposite side of the hinged deflecting-board to that bearing the flange, and means, accessible from the outside of the casing, for manipulating said hinged deflecting-board.

46. In a grain-separator having exteriorly-disposed grinding means and openings through which material operated upon by said grinding means may be restored to the interior of the casing, a transverse casing partially inclosing said openings and adjustable deflecting means cooperating with said casing to deflect the discharge from the grinding means in the desired direction within the casing of the separator.

47. In a grain-separator having means exterior of the casing for rethreshing threshed and partly-separated material, a reciprocatory grain-pan having a screen top, means for conveying material discharged over said screen top to the rethreshing means, a chaffing-screen disposed to receive the material discharged from the rethreshing mechanism, a tailings-receptacle, and means for conveying material from the latter to the screen top of the reciprocatory grain-pan.



48. In a grain-separator having means exterior of the casing for rethreshing threshed and partly-separated material, a reciprocatory grain-pan having a screen top, means for conveying material discharged over said screen top to the rethreshing mechanism, a chaffing-screen disposed to receive the material discharged from the rethreshing mechanism, means for creating suction within a prescribed portion of the casing, and fingers extending from the chaffing-screen rearwardly into the path of the suction.

49. In a screen-separator having means exterior of the casing for rethreshing threshed and partly-separated material, a reciprocatory grain-pan having a screen top, means for conveying material discharged over said screen top to the rethreshing mechanism, a chaffing-screen disposed to receive the material discharged from the rethreshing mechanism, means for creating suction within a prescribed portion of the casing, fingers extending from the chaffing-screen rearwardly into the path of suction, a tailings-receptacle disposed below the fingers of the chaffing-screen, and means for conveying material from said tailings-receptacle to the screen top of the grain-pan.

50. In a grain-separator, a reciprocatory grain-pan, supporting means connecting the rear end of said pan with the bottom of the casing, a pair of shoes supported from the under side of said grain-pan and by the supporting means so as to operate in unison with the grain-pan, but the lower shoe having a shorter stroke than the upper one, supporting means for the tail ends of said shoes, a separating-screen mounted adjustably in the upper shoe, a cheat-screen supported in the lower shoe, and a delivery-screw disposed to receive the discharge from the cheat-screen.

51. In a grain-separator, a reciprocatory grain-pan having a separating-screen, grinding means for operating upon threshed and partly-separated material discharged from said screen, means for cleaning and separating the discharge from the grinding means, said means including a chaffing-screen, means for creating suction within a prescribed portion of the machine-casing, fingers extending from the chaffing-screen into the path of suction, a tailings-screw disposed in the path of suction below the fingers of the chaffing-screen, and elevating means to receive the discharge from the tailings-screw and convey the same to the separating-screen of the grain-pan at a point not effected by the suction.

52. In a grain-separator, the combination with the tailings-screw, of an elevator and a hinged door forming a discharge-valve at the upper end of the elevator-casing.

53. In a grain-separator, the combination with a tailings-screw, of an elevator receiving the discharge from the same, a hinged door forming a discharge-valve at the upper end of the elevator-casing, a weight arranged to balance said valve and to keep it normally in a closed position, and friction means to assist in keeping said valve normally closed.

54. In a grain-separator, a fan-casing disposed horizontally under the floor of the casing of the machine, a suction-duct connecting the central portion of the bottom of said casing with the tail end of the machine, and a suction-fan mounted upon a vertical shaft in said casing.

55. In a grain-separator, a fan-casing disposed horizontally under the floor of the casing of the machine, a duct connecting the central portion of the bottom of said casing with the tail end of the machine, a vertical shaft having bearings within the casing, one of said bearings being connected with the bottom on the inlet-duct, a suction-fan mounted upon said shaft, inclined braces connecting the leaves of said fan with an auxiliary hub upon the fan-shaft, and an eduction-spout connecting the side of the fan-casing with the discharge-spout.

56. In a grain-separator, a fan-casing disposed horizontally below the floor of the machine, a duct connecting the central portion of the bottom of said casing with the tail end of the machine, a fan-shaft having bearings in the fan-casing and in the bottom of the duct, a spider bearing against the lower end of the fan-shaft and a truss supporting said spider.

57. In a grain-separator, a fan-casing disposed horizontally under the floor of the casing of the machine, a duct connecting the central portion of the bottom of said fan-casing with the tail end of the machine, a vertical shaft having bearings within the casing, one of said bearings being connected with the bottom of the inlet-duct, a flanged disk connected with the upper bearing and supported upon the top of the fan-casing, a bevel-gear mounted upon the fan-shaft and supported in said flanged disk, lubricating means extending through the latter to the bearing of the fan-shaft and means for transmitting motion to the latter from the shaft of the threshing-cylinder.

58. In a grain-separator having a suction-fan, air-inlet valves, normally open and adapted to be gradually closed by a pressure of air impinging thereon, in combination with a relief-valve normally closed and adapted to be gradually opened by the increase of pressure on the valve.

59. In a grain-separator, a casing normally closed at its rear end, grain-separating mechanism disposed in the rear end of said casing, valved air-inlets disposed in front of said separating mechanism, said valves being normally open to the admission of air, means for setting up a suction in the rear end of the casing, whereby the valves controlling the air-inlets will be gradually closed by the relative increase of pressure on them, and an inwardly-opening relief-valve so located as to permit the passage of air to the suction means without interfering with the separating means.

60. In a grain-separator having a suction-fan, means operated by the suction of said fan for gradually obstructing the admission of air by the increasing speed of the fan, and means for preventing the sudden restoration of said obstructing means to normal, open position in the event of the speed of the fan being suddenly checked, and a relief-valve normally closed and adapted to gradually open for the admission of air by the increasing speed of the fan.

61. In a grain-separator having a suction-fan, separately-disposed means for obstructing the admission of air into the interior of the casing, screens and separating devices disposed in the paths of suction through the separate obstructing means, a duct connecting the tail end of the machine with the central part of the bottom of the fan-casing and a blast or exit spout connecting the side of the latter with a discharge-spout.

62. In a grain-separator having a suction-fan, an eduction-spout connecting the casing of said fan with the elbow of the discharge-spout, a plurality of curved downwardly and forwardly tapered grate-bars disposed at the upper end of said eduction-spout, and a duct connecting the grated section of the latter with the casing of the tailings-screw.

63. In a grain-separator having a suction-fan, an eduction-spout connecting the casing of said fan with the elbow of the discharge-spout, a plurality of curved, downwardly and forwardly tapered grate-bars having laterally-extending flanges secured in the interior of said eduction-spout at its upper end, and a duct connecting said grated upper end with the casing of the tailings-screw.

64. In a grain-separator, a grain-pan having a separating-screen and a grain-bottom, in combination with longitudinal strips spacing said screen from said grain-bottom, additional strips mounted upon the upper side of the screen, and connecting means for said strips, said strips coacting to form longitudinal divisions in the grain-pan.

65. In a grain-separator, a grain-pan comprising a grain-bottom and a corrugated separating-screen, in combination with longitudinal dividing-strips engaging the upper and under sides of said screen, and connecting means for said strips whereby the corrugations of the screen are crushed at the points of contact with said strips.

66. In a grain-separator, a longitudinally-disposed system of grain-separating devices, a straw-rack disposed above said separating devices, a suction-fan disposed under the casing of the machine, an air-duct connecting the casing of said fan with the tail end of the machine, and air-inlet valves disposed in front of the separating-screens and adapted to be actuated by the pressure of incoming air to obstruct the passage thereof.

67. In a grain-separator, a system of longitudinally-disposed grain-separating devices, a straw-rack disposed above said separating devices, a suction-fan disposed under the casing of the machine, an air-duct connecting the fan-casing with the tail end of the machine, air-inlet valves disposed in front of the separating mechanism and adapted to close under the pressure of incoming air and an air-inlet valve disposed above the straw-rack near the tail end of the latter and adapted to open under the pressure of incoming air.

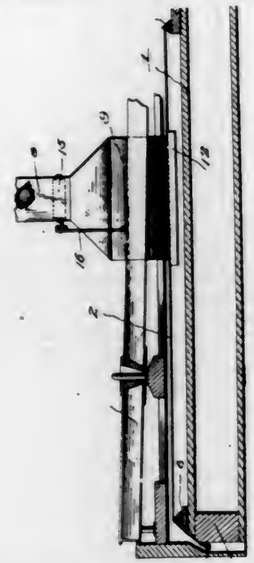
68. In a grain-separator, a system of longitudinally-disposed grain-separating devices, a straw-rack disposed above said separating devices, a suction-fan disposed under the casing of the machine, a duct connecting the casing of the fan with the tail end of the machine, air-inlet valves disposed in front of the separating-screens and adapted to be actuated by the pressure of incoming air to obstruct the passage thereof, and a relief-valve disposed above the tail end of the straw-rack, said relief-valve being normally closed, but adapted to open under the pressure of incoming air.

69. In a grain-separator, a longitudinally-disposed system of grain-separating devices, a straw-rack disposed above said separating devices, a suction-fan, a duct connecting the casing of said fan with the tail end of the machine, an air-inlet valve disposed above the tail end of the straw-rack and adapted to open under the pres-

sure of incoming air, a fall-board hinged mounted under the deck of the machine-casing in front of said air-inlet valve and adapted for the passage under it of straw passing over the straw-rack in the direction of the tail end of the machine and air-inlet valves disposed in front of the separating-screens and adapted to be actuated by the pressure of incoming air to assist the passage thereof.

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**757,308. SOSTENUTO DEVICE FOR STRINGED INSTRUMENTS.** SILAS A. HUNT, Chicago, Ill. Filed Dec. 7, 1903. Serial No. 184,120. (No model.)



*Claim.*—1. In a stringed musical instrument, pipes arranged adjacent to the strings thereof, to discharge currents of air or other fluid to said strings, and means for carrying said currents around the string, substantially as and for the purpose described.

2. In a stringed musical instrument, pipes having broad, flattened and tapered discharge-nozzles, to discharge a current of air to said strings, means for directing said currents around said strings and means for admitting an induced current of air to the same, substantially as and for the purpose described.

3. In a stringed musical instrument, inclined pipes having broad, flattened and tapering discharge-nozzles, to discharge a current of air to said strings, a stop-block, having a groove or channel formed in the same to receive said current of air and direct it around said string and between the same and the forward wall of said groove, substantially as and for the purpose described.

4. In a stringed musical instrument, inclined pipes having broad, flattened and tapering discharge-nozzles, to discharge a current of air to said strings, a stop-block, having a groove or channel formed in the same to receive said current of air, said groove having an abrupt front wall and an inclined rear wall to direct said current of air around said string and between the same and said abrupt front wall, an inlet-passage formed below said inclined pipe-nozzle to admit an induced current of air, substantially as and for the purpose described.

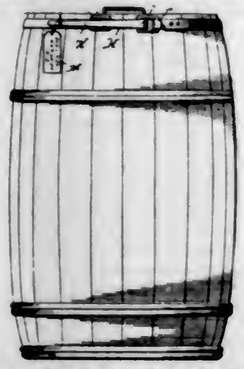
5. The combination with the strings of a stringed instrument, of air-pipes having broad, flattened and tapered discharge-nozzles, discharge-openings arranged in said nozzles adjacent to said strings, the width of said openings being one-half the diameter of its adjacent string, stop-blocks arranged below said strings, longitudinal grooves formed in said blocks to receive a current of air from said nozzles, and direct the same around said string, and means for controlling the discharge of air from said nozzles, substantially as and for the purpose described.

6. The combination with the strings of a stringed instrument, of air-pipes having discharge-nozzles arranged adjacent to said strings, valves arranged in said pipes, means, actuated by the keys of said instrument, whereby said valves are opened and closed upon the pressing and releasing of said keys, to admit and cut off a current of air to said strings, a stop-block arranged beneath each of said strings and discharge-nozzles, a groove formed in said block to direct said current of air around said string and to admit an induced air-current below said nozzle, substantially as and for the purpose described.

7. In a stringed musical instrument, means by which a current of air or other fluid is directed to the individual strings of the same, said strings being flattened on one side where acted on by said air-current, to intensify the tone or sound emitted by said vibrating strings, and means whereby said air-current is carried around said strings, substantially as described.

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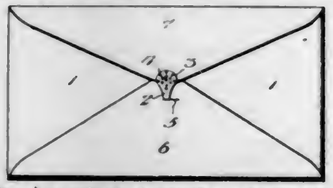
**757,309. BARREL-HEAD SECURER.** STUART A. HUNTER, Newton, Kans. Filed Nov. 17, 1903. Serial No. 181,465. (No model.)



*Claim.*—In a barrel-head securer, the combination with the barrel having the groove in its upper portion, the head fitting in said groove, the flat band or hoop secured to the barrel on the exterior and opposite the groove, the pair of similar loops secured to the end of the hoop or band, the link having one end pivoted in one of the loops and having its other end passing through the other loop, the clamping-lever pivoted to the latter end of said link, the fastening for securing the free end of the clamping-lever and for receiving a markjng or indicating device.

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**757,310. SAFETY-ENVELOP.** JAMES F. IRWIN, Philadelphia, Pa. Filed Dec. 16, 1903. Serial No. 185,432. (No model.)



*Claim.*—An envelop having side flaps and a slotted bottom flap arranged thereupon, a tongue extending from the inner end of one of the side flaps and through the slot in the bottom flap, an enlarged apertured portion integral with the tongue and forming a head, and a sealing-flap adapted to overlap the side and bottom flaps and to be overlapped by and affixed to the apertured head.

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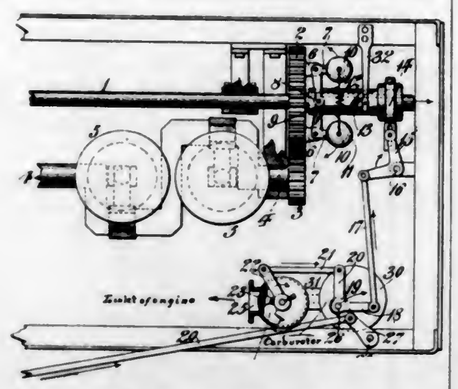
**757,311. GAS OR INTERNAL-COMBUSTION ENGINE GOVERNOR.** PETER JENKINS, Philadelphia, Pa. Filed Sept. 8, 1903. Serial No. 172,205. (No model.)

*Claim.*—1. In a device of the character named, a carbureter, a throttle-valve, a governor, connections between said governor and throttle, a bell-crank lever which forms a part of said connections, a pivoted arm carrying the fulcrum of the bell-crank lever, and hand-controlled means for moving said arm and thereby the throttle, whereby but a single throttle-valve is employed for both governing the charge admitted to the engine-cylinder and for admitting more or less gas independently at the will of the operator.

2. In a device of the character named, a cam-shaft, a sleeve splined thereupon for longitudinal movement, a spiral contact on said sleeve, a governor adapted to actuate said sleeve, a carbureter, a



throttle-valve, connections between said governor and throttle, a bell-crank lever which forms a part of said connections, a pivoted arm carrying the fulcrum of the bell-crank lever, and hand-controlled means for moving said arm and thereby the throttle, whereby but a single throttle-valve is employed for both governing the charge admitted to the engine-cylinder and for admitting more or less gas independently at the will of the operator.




3. In a device of the character named, a governor, a carbureter, a sleeve, connections between said governor and sleeve for moving the latter, a bell-crank actuated by the movement of said sleeve, a second bell-crank, a rod connecting said bell-cranks, a lever or arm pivoted to a fixed point, said last-mentioned bell-crank being pivoted to said lever, means for adjusting the position of said lever, a throttle-valve for said carbureter and connections intermediate said last-mentioned bell-crank and said throttle-valve.

4. In a device of the character named, a longitudinally-movable sleeve, a spiral contact thereon, a coöperating contact, a groove in said sleeve, a governor adapted to move said sleeve longitudinally, a ring in engagement with said groove, a bell-crank pivoted to a fixed point and connected to said ring, a second bell-crank, a rod common to said bell-cranks, an arm or lever upon which said second bell-crank is pivotally mounted, said arm being pivoted to a fixed point a carbureter, a throttle-valve for said carbureter, connections intermediate said second bell-crank and valve, and means for adjusting the position of said second bell-crank.

5. In a device of the character named, a governor, a longitudinally-movable sleeve having a groove therein, connections from said governor eogaging said groove, a spiral contact 13 on said sleeve, a coöperating contact, a ring 14 engaging a second groove in said sleeve, a bell-crank 15 connected to said ring, said bell-crank being fulcrumed at a fixed point, a second bell-crank 19, a rod 17 connecting said bell-cranks, a lever 27 fulcrumed at a fixed point 28, said bell-crank 19 being pivoted to said lever, a carbureter having a commingling-chamber 24 therein, a valve 20 controlling the discharge of gas from said commingling-chamber, an arm 22 for actuating said valve, a rod 21 intermediate said arm and the bell-crank lever 19, and a rod 29 for adjusting simultaneously the position of said lever 27 and said bell-crank 19.

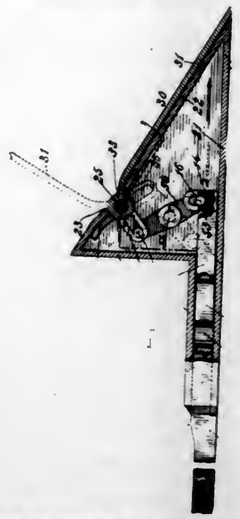
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**757,312. COKE-PULLER.** JAMES R. JONES, Switchback, W. Va. Filed July 21, 1903. Serial No. 166,462. (No model.)

*Claim.*—1. A coke-puller comprising an underworking wedge-like scraper movable over the bottom of a coke-oven, an adjustable coke-holder hinged to said scraper and provided with a crank-arm, a lever engaging said crank-arm, and an actuating-rod connected with said lever for swinging said coke-holder into operative position.

2. A coke-puller comprising an underworking wedge-like hollow scraper movable over the bottom of a coke-oven and provided with a transverse slot in its upper face, an adjustable coke-holder hinged to said scraper at said slot and comprising a plate overlying the upper face of said scraper in front of said slot and a shank underlying the upper face of said scraper behind said slot, and means for swinging said coke-holder into operative position.

3. A coke-puller comprising an underworking wedge-like scraper, an actuating-bar having a sliding connection with said scraper for moving it over the bottom of a coke-oven, an adjustable coke-holder connected with said scraper, and means connecting said actuating-bar with said coke-holder for swinging it into operative position.



4. A coke-puller comprising an actuating-bar, an underworking wedge-like scraper slidable on said bar and movable over the bottom of a coke-oven, an adjustable coke-holder hinged to said scraper, and provided with a slotted crank-arm, and a lever connecting said slotted crank-arm with said actuating-bar.

5. A coke-puller comprising an actuating-bar provided with a cross-bar at its front end having eyes, an underworking wedge-like scraper slidable on said bar and movable over the bottom of the coke-oven, and an adjustable coke-holder connected with said scraper, and provided with slotted crank-arms and levers connecting said crank-arms with said eyes.

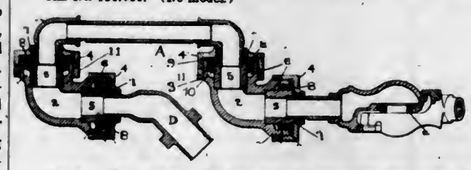
6. A coke-puller comprising an actuating-bar, an underworking wedge-like scraper slidable on said bar and movable over the bottom of a coke-oven, an adjustable coke-holder connected with said scraper and provided with a slotted crank-arm, and a lever provided with a pin engaging said slotted crank-arm and having a slot-and-pin connection with said actuating-bar.

7. A coke-puller comprising an underworking wedge-like scraper, an actuating-bar for moving said scraper over the bottom of a coke-oven, said scraper having a slidable connection with said bar, an adjustable coke-holder connected with said scraper, and means for connecting said coke-holder with said actuating-bar.

8. A coke-puller comprising an underworking wedge-like scraper operative on its instroke to loosen coke for withdrawal and provided with a coke-holder adjustable after the instroke to engage and hold loosened coke on the outstroke, an actuating-bar for moving said scraper over the bottom of a coke-oven, said bar and scraper having a limited sliding connection with each other, and means connecting said actuating-bar with said coke-holder for actuating the latter when one of said sliding parts moves relatively to the other sliding part.

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**757,313. FLEXIBLE METALLIC PIPE-COUPLING FOR RAILWAY-CARS.** JAMES JOYNT, St. Louis, Mo. Filed Nov. 11, 1903. Serial No. 180,789. (No model.)



*Claim.*—The improved flexible metallic pipe-coupling, comprising a series of short pieces of pipe, a pipe connection, and a double-ended casing having a socket in each end, a packing-ring mounted in each socket, a spring also mounted in each socket, a nipple having a shoulder near its outer end, a cap bearing upon said shoulder and threaded upon the exterior of said casing, and a nut for lock-

ing said cap against turning upon said casing, substantially as specified.

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757,314. ELECTRIC-LAMP GUARD. JONAS KAUFMAN, Newcastle, Pa. Filed Aug. 1, 1903. Serial No. 167,917. (No model.)



*Claim.*—1. In a lamp-guard, a fixedly-held wire ring, a series of wire members hingedly secured thereto at their ends, a second wire ring having eye portions through which said wire members pass, said second ring being adjustable to and from the fixedly-held ring, for the purposes specified.

2. In a lamp-guard, a ring arranged to encircle the lamp-socket, a plurality of wire loops having their ends hingedly secured to the said ring, said loops having cam portions for engaging the lamp-socket to hold the guard in place.

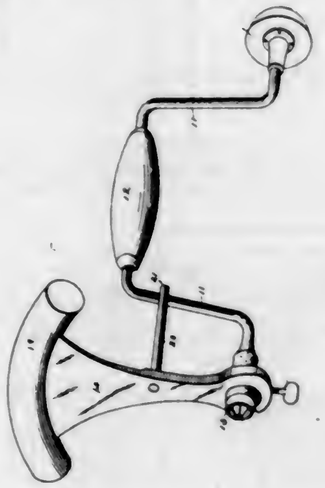
3. In a lamp-guard, a ring arranged to encircle the lamp-socket, a plurality of wire loops having their ends hingedly secured to the said ring, said loops having cam portions for engaging and clamping the lamp-socket to hold the guard in place.

4. In a lamp-guard, a ring arranged to encircle the lamp-socket, a plurality of wire loops having their ends hingedly secured to the said ring, said loops having cam portions for engaging and clamping the lamp-socket to hold the guard in place, and an adjustable ring mounted on said loops and adapted to hold said loops to their open or closed position, as specified.

5. In a lamp-guard, a ring arranged to encircle the lamp-guard, a plurality of wire loops having their ends hinged to the said encircling ring, said loops each having cam portions for clamping the lamp-socket, said loops being so shaped to conform to the general outline of the lamp-bulb and having their lower portions abutting when the guard is closed, a second wire ring having eye portions mounted on the said loops for adjustment to and from the encircling ring to open and close the guard, for the purposes specified.

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757,315. BALANCE-WEIGHT FOR BRACES. CHARLES F. KRABLE, Indianola, Iowa. Filed Oct. 3, 1903. Serial No. 176,211. (No model.)



*Claim.*—1. The combination with a brace, of a weight detachably secured to a portion of the brace, and a rod connected with the weight and also with the crank-arm of the brace, for the purposes stated.

2. The combination with a brace, of an arm having a weight at one end, means at the other end of the arm for detachably securing it to the bit-holder of the brace, and means for connecting the arm with the crank-arm of the brace.

3. The combination with a brace, of an arm having an opening at one end to receive the bit-holder of the brace, a thumb-screw seated in the arm to engage the bit-holder and clamp it between the thumb-screw and the portion of the arm opposite from the thumb-screw, a weight on the other end of the arm, and a rod seated in the arm and having a forked end overlapping the adjacent portion of the crank-arm of the brace, substantially as and for the purposes stated.

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757,316. RAIL-JOINT. CHARLES F. KEENER, Grafton, W. Va. Filed Aug. 28, 1903. Serial No. 171,132. (No model.)



*Claim.*—1. A rail-joint comprising two rails made rights and lefts, one rail having recesses with inclined faces, the other rail being provided with tongues having inclined faces registering with the faces of said recesses, substantially as described.

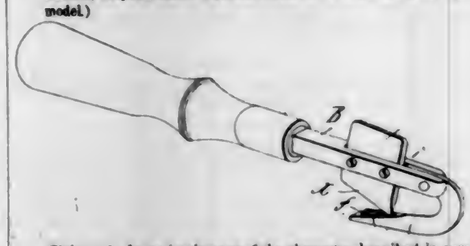
2. The combination with a rail provided with a recess having inclined upper walls and vertical side walls in the base of one end thereof and a cut-away portion above said recess and provided with inclined faces, of a second rail having tongues adapted to pass into and fit snugly in said recess and into said cut-away portion, substantially as described.

3. The combination with a rail provided with a recess having inclined upper walls and vertical side walls in the base of one end thereof and a cut-away portion above said recess and provided with inclined faces, the said recess having a less longitudinal length than the said cut-away portion, relative to the rail, of a second rail having tongues of unequal length, the lower being the shorter, projecting into said recess, substantially as described.

4. In a rail-joint, the combination with the rail A cut away as at $A^3$ and $A^4$ and provided with inclined faces $a'$, $a^2$, $a^3$, and $a^4$ and vertical faces $a$, $a^5$ $a^6$ and $a^7$, of a rail B provided with tongues $B^3$ and $B^4$ having inclined faces $b'$, $b^2$, $b^3$, $b^4$, and vertical faces $b$, $b^5$, $b^6$, and $b^7$, substantially as described.

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757,317. CUTTER FOR LINOLEUM OR THE LIKE. EDWARD KIERNEY, Holyoke, Mass. Filed Jan. 4, 1904. Serial No. 187,638. (No model.)



*Claim.*—1. In an implement of the character described, in combination, a handle having a shank provided with an underturned extension, having an upwardly-opening socket therein and a blade carried by an intermediate portion of said shank in the median vertical longitudinal plane of the implement, and depending therebelow and having its extremity protruding downwardly into said upwardly-opening socket.

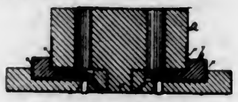
2. In an implement of the character described, in combination, a handle having a shank provided with an underlying return bent extension D having an upwardly-opening socket therein, and a blade carried by an intermediate portion of the shank having at its lower end a cutting edge which is inclined upwardly toward the handle end of the implement, a portion of the blade protruding downwardly into said upwardly-opening socket.

3. In an implement of the character described, in combination, a handle having a shank provided at an intermediate portion thereof with the vertical aperture $a$ therethrough and provided with the underlying return bent wedge-formed extension D having the upwardly-opening socket $y$ therein, the blade having a portion thereof located within said aperture and having set-screws therefor which screw through portion of the shank at one side of the said aperture and have a binding engagement against the blade, the lower end of said blade having a cutting edge which is inclined upwardly toward the handle end of the implement, its corner farthest from such end protruding within the said socket.



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757,318. APPARATUS FOR SETTING DIAMONDS FOR INDUSTRIAL PURPOSES. FRIEDRICH KRAUSE, Hoboken, N. J. Filed Oct. 23, 1903. Serial No. 178,263. (No model.)



*Claim.*—1. A base having a slit or flat opening or perforation and a mantle or wrapping having a flat tail adapted to be passed through and bent at the slit to hold a diamond in position during casting.

2. A base having one or more slits or flat perforations, combined with a mold adapted to be set on the base and a diamond-holding casing or wrapping having a flat tail adapted to be secured through the slit.

3. The combination with a slitted base or plate, a diamond incased in a metal covering or mantle having a flat tail secured in or through the slit, and a form adapted to sit on the base about the diamond for a casting to be made therein engaging the diamond.

4. The combination with a slitted base or plate, a diamond incased in a metal covering or mantle having a flat tail secured in or through the slit, and a form adapted to sit on the base in eccentric or other suitable position for a casting to be made for engaging the diamond.

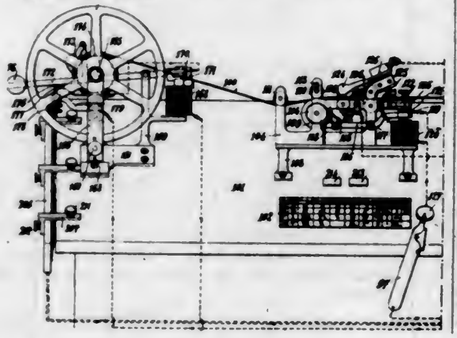
5. The combination with a slitted base or plate, a diamond incased in a metal covering or mantle having a flat tail secured in or through the slit, and a form adapted to sit on the base about the diamond for a casting to be made therein engaging the diamond, said form being adapted to sit on the base in eccentric and other desired positions.

6. A base having a slit or opening and a foot, a wrapping secured to the base, and a sectional form or mold adapted to sit on the foot to receive a casting, said base, foot and mold having dowel or engaging portions to hold the parts in position.

7. A base having a slit or flat opening or perforation and a mantle or wrapping having a flat tail adapted to be passed through and bent at the slit to hold a diamond in position during casting, combined with a mold, said device having air channels or vents.

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757,319. TYPE SETTING OR COMPOSING MACHINE. JULES LAGARDE, Clermont-Ferrand, France. Filed Oct. 29, 1902. Serial No. 129,231. (No model.)



*Claim.*—1. Electrical controlling mechanism for type setting and composing machines comprising a "reader" operated by a perforated strip to transmit current impulses, and a multiplier for distributing such impulses, said devices being combined and operated so that as the perforated tape passes through the "reader" current impulses are transmitted to the multiplier in an order and combination determined by the nature of the perforations in the tape and such multiplier directs current impulses according to the order and combination determined by the reader to circuits operating the keys of a type setting or composing machine.

2. Electrical controlling mechanism for type setting and composing machines comprising a "reader" operated by a perforated strip to transmit current impulses, a multiplier for distributing such impulses and a distributing and controlling contact-board operated in combination so that as the perforated tape passes through the reader, current impulses are normally transmitted to the multiplier in an order and combination determined by the nature of the perforations in the tape and such multiplier directs current impulses according to the order and combination determined by the reader to contact on the distributing and controlling contact-board and through these to electromagnets operating the keys of a type setting or composing machine, but wherein the circuits through the reader and multiplier may be broken and coupled through the contact-board directly to any desired circuit operating the keys of the type setting or composing machine to facilitate the correction of errors.

3. In electrical controlling mechanism for type setting and composing machines wherein a reader operated by a perforated strip transmits current impulses to a multiplier and such multiplier directs current impulses, according to the order and combination determined by the reader, to circuits operating the keys of type setting or composing machines, a reader wherein a perforated tape is fed, a feed-drum for the tape, a ratchet-wheel coupled to such drum, a pawl, a trembler carrying such pawl and an electromagnet and contact for the trembler, both of which are in the transmitting-circuit, a metal cylinder included in the transmitting-circuit and over which the strip is fed, and a series of contact-fingers, also contained in the transmitting-circuit but insulated one from the other, and coupled independently to the different parts of the multiplier.

4. In electrical controlling mechanism for type setting and composing machines wherein a reader operated by a perforated strip transmits current impulses to a multiplier and such multiplier directs current impulses according to the order and combination determined by the reader, to circuits operating the keys of type setting or composing machines, unwinding and rewinding mechanism for the perforated strip wherein the strip is unwound from the center of the unwinding-spool and rewound upon a drum, comprising a carriage and drum respectively, a ratchet-wheel and a pawl gearing therewith for operating the carriage and drum, tremblers, and the electromagnets and contacts for said tremblers, said electromagnets and contacts being arranged in a common circuit so that the operation of the one synchronizes with that of the other.

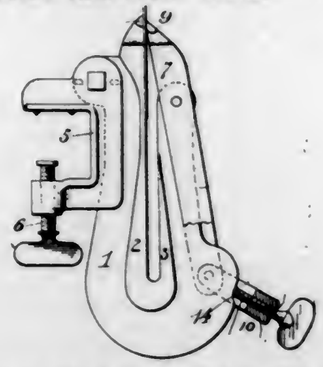
5. In electrical controlling mechanism for type setting and composing machines wherein a reader operated by a perforated tape transmits current impulses to a multiplier and such multiplier directs current impulses, according to the order and combination determined by the reader to circuits operating the keys of type setting or composing machines, a multiplier composed of a series of commutators each having an oscillating arm, an electromagnet for operating each arm, each electromagnet being controlled by one of the contact-fingers of the reader, and in which the contact on the oscillating arm of the first of the series of commutators is connected to a generator and making contact with one of two fixed contacts coupled with contacts on the oscillating arm of the second commutator of the series which contacts make contact with one of two sets of contacts coupled to contacts on the oscillating arm of the third commutator of the series and so on in multiple, and the fixed contacts of the last commutator of the series are coupled to the circuits operating the keys of the type setting or composing machine.

6. An automatic electric controlling device for type composing or setting machines comprising a perforated record-strip unwinding and winding mechanism a record "reading" device with a series of contact-arms adapted to rest upon the record-strip and in electrical connection with a corresponding series of commutators electrically connected with the keys of the type composing or setting machine substantially as described.

7. In electrical controlling mechanism for type setting and composing machines, record-strip-unwinding mechanism consisting of a revoluble carriage having adjustable supports for supporting a spool of record-strip, means for revolving such carriage and a guide for

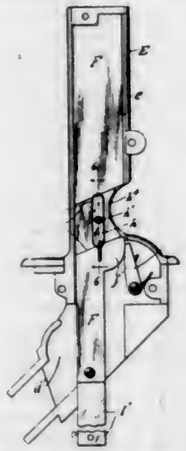
conducting the record-strip from the center of the spool as said strip is unwound.

## 757,320. SAW-VISE. Martin Laursen, Rochester, Minn. Filed July 3, 1903. Serial No. 164,720. (No model.)



*Claim.*—A vise of the character described, consisting of a stationary jaw member, a bifurcated movable jaw member pivoted, a short distance below its upper end, to the corresponding end of one arm of said fixed jaw member, said stationary jaw having a projection adjacent the lower end of the removable jaw and a yoke pivoted to the lower ends of the legs of said movable jaw member, and equipped with a binding-screw arranged to bear upon said arm adjacent the projection, whereby, by slightly turning said screw in one direction, said yoke may be moved upward to quickly release or open the jaw members.

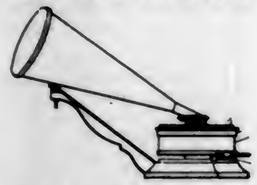
## 757,321. COIN-CONTROLLED VENDING-MACHINE. Frank B. Levanseler, Chicago, Ill. Filed Mar. 13, 1902. Serial No. 98,062. (No model.)



*Claim.*—1. In a coin-controlled vending-machine, the combination with a casing provided with a slot, of a coin-carrier movably located in said casing and having on one of its sides a recess provided with a slot and below said recess with a shoulder and on its other side a notch, a spring to engage the notch on the coin-carrier, a gage-piece located in said slot and provided with a projection on one of its sides, a spring-actuated dog pivotally secured to the casing to contact with the shoulder on the coin-carrier, substantially as described.

2. In a coin-controlled vending-machine, the combination with a casing for the operating mechanism provided with a slot, of a coin-carrier movably located in said casing and having on one of its sides a recess provided with a slot and on its other side a notch, a gage-piece located in said slot and provided with a projection on one of its sides, and a spring to engage the notch on the coin-carrier, substantially as described.

## 757,322. PHONOGRAPH. Theodor Lhota, Vienna, Austria-Hungary. Filed July 1, 1903. Serial No. 163,975. (No model.)



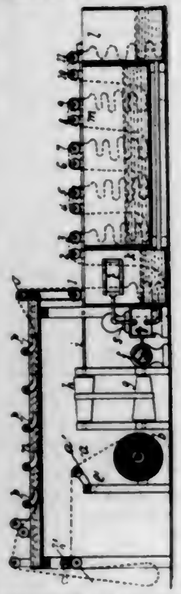
*Claim.*—1. As an improved article of manufacture, a support for a phonograph-plate comprising a rotatable hollow body in the form of a box or drum and a removable cover for said body on which the plate is designed to rest.

2. As an improved article of manufacture a support for a phonograph-plate, comprising a rotary hollow drum, arched at its lower end, and a removable cover for said drum, as set forth.

3. As an improved article of manufacture a support for a phonograph-plate, comprising a rotary hollow drum arched at the bottom, and a removable cover for said drum having means to enter the holes in the plates and keep them in position within the drum.

4. The combination with the foot-piece and a vertical spindle mounted therein, of a hollow drum on said spindle, a horizontal crank-shaft, means for actuating the same, and means on said crank-shaft and movable therewith for frictionally revolving the said drum about its spindle, as set forth.

## 757,323. PHOTOGRAPHIC DEVELOPING APPARATUS. Otto Liebkampff and Willy Nauck, Leipzig, Germany. Filed Sept. 24, 1902. Serial No. 124,696. (No model.)



*Claim.*—In an apparatus of the class described, developing, water and fixing baths arranged in succession and each adapted to receive a photographic tape, a plurality of fingers arranged one in advance of the other for holding the tape down while in the developing-bath, and a plurality of horizontally-alined tape-receiving rollers arranged in cooperating pairs along the top of the water and fixing baths, one roller of each pair constituting a guide-roller and the other a driving-roller, and mechanism for actuating the driving-rollers in unison.

## 757,324. SAFETY ATTACHMENT FOR ELEVATORS. George G. Little, St. Louis, Mo. Filed June 2, 1903. Serial No. 159,795. (No model.)

*Claim.*—1. A safety device for elevators, comprising a frame, guide-tubes located at the sides of the elevator-shaft extending throughout its depth, a plurality of clutches carried by said frame and arranged to be brought in contact with the guide-tubes, said clutches having semicircular contact-surfaces, arms and toggles carried by said frame for operating said clutches, and a lever operating said arms and toggles whereby the clutches may be applied or released, substantially as specified.



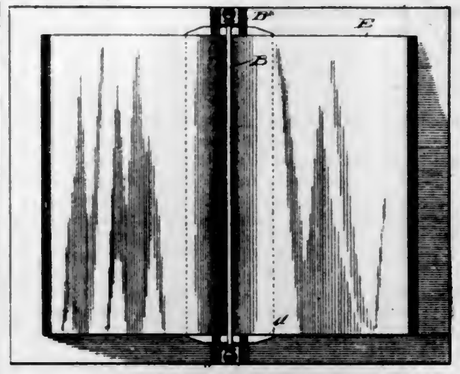


2. A safety device for elevators, comprising vertical guide-tubes secured to the sides of the elevator-shaft, a clutching mechanism, a plurality of arms and toggles operating said clutching mechanism, vertical rods located within said frame attached to the upper member of the elevator-frame, said rods automatically placing the clutching mechanism in operation at the instant the cage should release itself from the cable, substantially as specified.

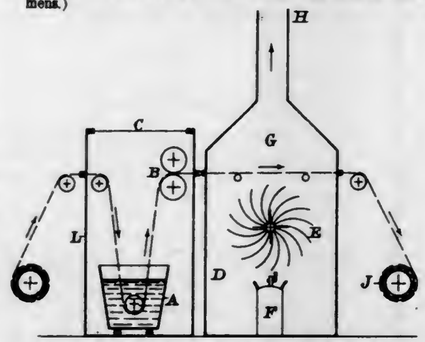
3. A safety device for elevators, comprising guide-tubes located within the elevator-shaft, an elevator-cage, arms and toggles carried by and located on two sides of said elevator-cage, guide-plates controlling the movement of the toggles and arms, fulcrums manipulating the guide-plates, clutching-shoes having semicircular contact-surfaces engaging with the guide-tubes, and a means for placing the several parts in operation at the instant the cage should release itself from the cable, substantially as specified.

4. A device of the class described, comprising a clutching mechanism carried by the elevator-cage, guide-tubes located in the elevator-shaft, clamping-jaws arranged to come in contact with said guide-tubes, a plurality of toggles and levers connected to guide-plates secured to the sides of the cage, rods and arms arranged to operate said levers and toggles for throwing the said clamping-jaws in contact with the guide-tubes, in the event of accident, guide-rollers carried by said cage and engaging with the guide-tubes to retain said cage in erect position, a means for allowing the cross-timber of the cage to slide a short distance downwardly when released of the cable, automatically allowing the mechanism to be placed in operation and stopping the cage within the shaft almost instantly, and a hand-lever whereby the said mechanism may be released and the cage allowed to gradually descend the shaft, substantially as specified.

## 757,325.



## 757,326. WATERPROOFING TISSUES. Thiebaud Luthringer, Lyons, France. Filed Apr. 25, 1903. Serial No. 154,309. (No specimens.)



*Claim.*—1. A new process of waterproofing threads and yarns for the weaving of textile fabrics such as silk, wool, cotton, pure or mixed, which consists in submerging the textile material in a solution of inodorous carbids of hydrogen solids such as stearin, paraffin, spermaceti, &c., dissolved in sulfid of carbon, and in leading said textile material through a closed chamber, and exposing it therein to a current of carbonic-acid gas, substantially as described.

2. A new process of waterproofing threads and yarns for the weaving of textile fabrics such as silk, wool, cotton, pure or mixed, which consists in submerging the textile material in a solution of inodorous carbids of hydrogen solids such as stearin, paraffin spermaceti, &c., dissolved in sulfid of carbon and in leading said textile material through a closed chamber and exposing it therein to a current of carbonic-acid gas, said gas being projected with force against the textile material by suitable ventilating means, substantially as described.

3. A new process of waterproofing threads and yarns for the weaving of textile fabrics such as silk, wool, cotton, pure or mixed which consists in submerging the textile material in a solution of inodorous carbids of hydrogen solids such as stearin, paraffin spermaceti, &c., dissolved in sulfid of carbid, then removing the excess of solution from the textile material by pressure, and in leading said textile material through a closed chamber exposing it therein to a current of carbonic gas said gas being projected with force against the textile material by suitable ventilating means.

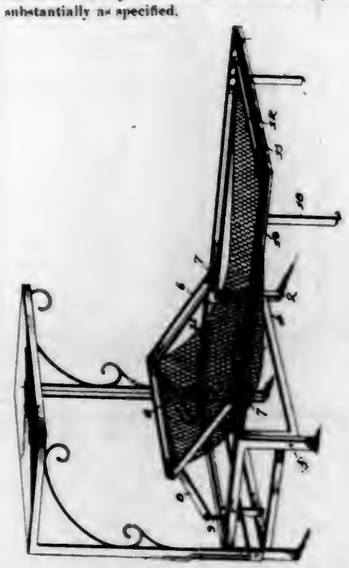
## 757,325. PERIODICAL-HOLDER. William G. Lloyd, Chicago, Ill. Filed May 26, 1903. Serial No. 158,826. (No model.)

*Claim.*—The combination with a removable holder for periodicals and the like comprising side covers and a rigid back to which the side covers are flexibly connected, a bracket rigidly secured to said back near one end thereof and having a hole therethrough, a second bracket secured to said back near the opposite end thereof and having an open hook thereon, a rod extending through the hole in and longitudinally movable with respect to the first bracket and adapted to be engaged with and disengaged from the hook in the second bracket, and knobs on the ends of said rod of a diameter greater than the hole in the bracket and the opening through the hook, whereby a lateral movement of one end of said rod disengages the same from the open hook on said second bracket and permits the rod to be slid longitudinally through the hole in the first bracket, thereby leaving the back of the holder unobstructed to receive the periodical.

## 757,327. BED. George L. Marple, St. Louis, Mo., assignor of one-half to Herman E. Christrup, St. Louis, Mo. Filed Apr. 7, 1903. Serial No. 151,552. (No model.)

*Claim.*—1. A bed comprising a main frame, a folding frame having its one end bent downwardly at right angles, said folding frame pivoted to the main frame at the downwardly-projecting right-angle portion, a head-rest pivotally secured to the folding frame at a point forward of the front legs of the main frame, arms 8 pivotally secured to the head-rest, an operating-lever, arms projecting from said operating-lever and pivotally connected to the arms 8 where-

by the said head-rest may be raised on an incline or placed horizontally, substantially as specified.



2. A bed of the class described, comprising a main frame, a movable frame having an integral downward projection, said movable frame pivotally secured to the front legs of the main frame, a head-rest pivotally secured to the movable frame at a point forward of the front legs of the main frame, arms 8 secured to the free end of the head-rest, an operating-lever controlling said arms 8 for tilting the head-rest, a wire mattress secured to said head-rest, an adjusting device located at the foot of the movable member supporting the opposite end of said wire mattress, the movable member and head-rest supporting the mattress in a hammock-like position by means of the arms 8 and operating-lever, substantially as specified.

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### 757,328. ART OF PREPARING XANTHIN DERIVATIVES.

MITFORD C. MARSH, Washington, D. C., administrator of FRITZ ACH, deceased, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Germany, a Firm. Filed Feb. 7, 1903. Serial No. 142,589. (Specimens.)

*Claim.*—1. In the art of preparing xanthin derivatives, the process which consists in acting upon an 8-alkyl-xanthin with an agent which will give up a haloid element.

2. In the art of preparing xanthin derivatives, the process which consists in acting on an 8-alkyl-xanthin with a chlorinizing agent.

3. In the art of preparing xanthin derivatives, the process which consists in acting upon an 8-methyl-xanthin with a chlorinizing agent.

4. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing agent to act on a bath of an 8-alkyl-xanthin.

5. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing reagent to act on a solution of an 8-alkyl-xanthin.

6. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing reagent to act on a bath of an 8-alkyl-xanthin, the relative proportions being molecular according to the number of chlorin atoms to be bound in the resultant compound.

7. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing reagent to act on a solution of 8-alkyl-xanthin, the relative proportions being molecular according to the number of chlorin atoms to be bound in the resultant compound.

8. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing agent to act on a bath of an 8-methyl-xanthin.

9. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing reagent to act on a solution of an 8-methyl-xanthin.

10. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing reagent to act on a bath of an 8-methyl-xanthin, the relative proportions being molecular according to the number of chlorin atoms to be bound in the resultant compound.

11. In the art of preparing xanthin derivatives, the process which consists in causing a chlorinizing reagent to act on a solution of 8-methyl-xanthin, the relative proportions being molecular according to the number of chlorin atoms to be bound in the resultant compound.

12. In the art of preparing xanthin derivatives, the process which consists in causing chlorin to act on a bath of an 8-methyl-xanthin.

13. In the art of preparing xanthin derivatives, the process which consists in causing chlorin to act on a solution of an 8-methyl-xanthin.

14. In the art of preparing xanthin derivatives, the process which consists in causing chlorin to act on a bath of an 8-methyl-xanthin, the relative proportions being molecular according to the number of chlorin atoms to be bound in the resultant compound.

15. In the art of preparing xanthin derivatives, the process which consists in causing chlorin to act on a solution of an 8-methyl-xanthin, the relative proportions being molecular according to the number of chlorin atoms to be bound in the resultant compound.

16. The process which consists in acting upon a bath of an 8-alkyl-xanthin in chloroform with a chlorinizing reagent.

17. The process which consists in acting on a solution of an 8-methyl-xanthin in chloroform with a chlorinizing reagent.

18. The process which consists in acting upon a bath of an 8-alkyl-xanthin in chloroform with chlorin.

19. The process which consists in acting on a solution of an 8-methyl-xanthin in chloroform with chlorin.

20. The process which consists in acting on a bath of an 8-alkyl-xanthin in chloroform with a chlorinizing reagent and then, after the reaction is complete, driving off the chloroform and evaporating to dryness.

21. The process which consists in acting on a bath of an alkylized 8-alkyl-xanthin in chloroform with a chlorinizing reagent, then after the reaction is complete, driving off the chloroform and evaporating to dryness.

22. The process which consists in acting on a bath of an 8-methyl-caffein in chloroform with a chlorinizing reagent, then after the reaction is complete, driving off the chloroform and evaporating to dryness.

23. The process which consists in acting on a bath of an 8-methyl-caffein in chloroform with a chlorinizing reagent, then after the reaction is complete, driving off the chloroform and evaporating to dryness, then redissolving in acetic ether and crystallizing therefrom.

24. The process which consists in acting on a bath of an 8-alkyl-xanthin in chloroform with chlorin, then after the reaction is complete, driving off the chloroform and evaporating to dryness.

25. The process which consists in acting on a bath of an alkylized 8-alkyl-xanthin in chloroform with chlorin, then after the reaction is complete, driving off the chloroform and evaporating to dryness.

26. The process which consists in acting on a bath of an 8-methyl-caffein in chloroform with chlorin, then after the reaction is complete, driving off the chloroform and evaporating to dryness.

27. The process which consists in acting on a bath of an 8-methyl-caffein in chloroform with chlorin, then after the reaction is complete, driving off the chloroform and evaporating to dryness, then redissolving in acetic ether and crystallizing therefrom.

28. As a new chemical compound, an 8-chloro-alkyl-xanthin which is distinguished by having the alkyl group in the position 8 chlorinized, and which has substantially no basic properties.

29. As a new chemical compound, an 8-trichloro-alkyl-xanthin which is distinguished by having the three of the hydrogen atoms in the position 8 replaced by chlorin, and which has substantially no basic properties.

30. As a new chemical compound, an 8-trichloro-methyl-xanthin having the three hydrogen atoms of the methyl group in the position 8 replaced by chlorin, which has substantially no basic properties, and which is distinguished by forming in colorless crystals which melt at a high temperature, which are not soluble in hot chloroform.

31. As a new chemical compound, 8-trichloro-alkyl-caffein, being derived from 8-alkyl-caffein by the substitution of chlorin for three hydrogen atoms in the alkyl group at the position 8, and which has substantially no basic properties.



32. As a new chemical compound, 8-trichloro-methyl-caffein having the formula hereinbefore given, which has substantially no basic properties, which is soluble in acetic ether and hot chloroform and crystallizes therefrom in white needles having a melting-point of about 182° to 184° centigrade and being stable or non-volatile at ordinary pressures.

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### 757,329. PROCESS OF MAKING XANTHIN DERIVATIVES.

MITFORD C. MARSH, Washington, D. C., administrator of FRITZ ACH, deceased, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Germany, a Firm. Filed Feb. 7, 1903. Serial No. 142,590. (No specimens.)

*Claim.*—1. The process of making xanthin derivatives which consists in submitting an 8-chloro-alkyl xanthin to hydrolysis.

2. The process of making xanthin derivatives which consists in submitting an 8-chloro-methyl xanthin to hydrolysis.

3. The process of making xanthin derivatives which consists in submitting an 8-trichloro-methyl xanthin to hydrolysis.

4. The process which consists in heating an 8-chloro-alkyl xanthin with water.

5. The process which consists in heating an 8-chloro-alkyl xanthin with water and concentrating the resultant solution.

6. The process which consists in heating an 8-chloro-alkyl xanthin with water and concentrating the resultant solution, and, finally, partly neutralizing the hydrochloric acid contained in the solution until the solution reacts slightly acid.

7. The process which consists in heating an 8-chloro-methyl xanthin with water.

8. The process which consists in heating an 8-chloro-methyl xanthin with water and concentrating the resultant solution.

9. The process which consists in heating an 8-chloro-methyl xanthin with water and concentrating the resultant solution, and, finally, partly neutralizing the hydrochloric acid contained in the solution until the solution reacts slightly acid.

10. The process which consists in boiling an 8-trichloro-methyl xanthin with water.

11. The process which consists in boiling an 8-trichloro-methyl xanthin with water and concentrating the resulting solution.

12. The process which consists in heating an 8-trichloro-alkyl xanthin with water until solution is effected, and, finally, partly neutralizing the hydrochloric acid contained in the solution until a weak acid reaction takes place.

13. The process which consists in heating an 8-trichloro-methyl xanthin with water until solution is effected and, finally, partly neutralizing the solution to weak acid reaction.

14. The process which consists in boiling an 8-trichloro-methyl xanthin with water until solution is effected, then condensing the solution, and, finally, partly neutralizing the solution to slight acid reaction.

15. The process which consists in boiling an 8-trichloro-methyl xanthin with water until solution is effected, then condensing the solution, and cooling, and, finally, partly neutralizing the solution to slight acid reaction.

16. The process which consists in boiling an 8-trichloro-methyl xanthin containing the group $CH_2Cl$ in the position 7 with water until solution is effected, then further heating the solution until the formaldehyde has substantially all escaped.

17. The process which consists in boiling an 8-trichloro-methyl xanthin containing the group $CH_2Cl$ in the position 7 with water until solution is effected, then further heating the solution until the formaldehyde has substantially all escaped, then condensing the solution, and, finally, partly neutralizing the solution to slight acid reaction.

18. The process which consists in boiling an 8-trichloro-methyl xanthin containing the group $CH_2Cl$ in the position 7 with water until solution is effected, then further heating the solution until the formaldehyde has substantially all escaped, then condensing the solution, and cooling, and, finally, partly neutralizing the solution to slight acid reaction.

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### 757,330. ALKOXY-CAFFEIN AND PROCESS OF MAKING SAME.

MITFORD C. MARSH, Washington, D. C., administrator of FRITZ ACH, deceased, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Germany, a Firm. Original application filed Apr. 16, 1898, Serial No. 677,857. Divided and this application filed Feb. 10, 1903. Serial No. 142,777. (Specimens.)

*Claim.*—1. The process of preparing 3'-8-dialkoxy-caffein, which consists in treating 3'-alkoxy-8-chloro-caffein with alkali-alkylate.

2. The process of preparing 3'-8-dimethoxy-caffein, which consists in treating 3'-methoxy-8-chloro-caffein with sodium-methylate.

3. The process which consists in preparing 3'-8-dimethyl-caffein, which consists in dissolving 3'-methoxy-8-chloro-caffein in methyl alcohol and heating the solution to the boiling-point together with sodium-methylate, in the proportions, substantially as stated.

4. The process of preparing 3'-8-dimethyl-caffein which consists in dissolving 3'-methoxy-8-chloro-caffein in methyl alcohol and heating the solution to the boiling-point, together with sodium-methylate, in the proportions substantially as stated, then evaporating and taking up the residue with water.

5. The process of preparing 3'-alkoxy-8-hydroxy-caffein, which consists in treating dialkoxy-caffein with hydrochloric acid.

6. The process of preparing 3'-methoxy-8-hydroxy-caffein, which consists in heating 3'-8-dimethoxy-caffein with hydrochloric acid.

7. The process which consists in heating 3'-8-dimethoxy-caffein on the water-bath, together with dilute hydrochloric acid until solution takes place, all in the proportions, substantially as specified.

8. The process of preparing 3'-methoxy-8-hydroxy-caffein, which consists in heating 3'-8-dimethoxy-caffein on the water-bath, together with dilute hydrochloric acid until solution takes place, all in the proportions substantially as specified, then cooling, then allowing to stand, and then draining the resultant crystals.

9. The process of preparing 3'-methoxy-8-hydroxy-caffein, which consists in heating 3'-dimethoxy-caffein on the water-bath, together with dilute hydrochloric acid until solution takes place, all in the proportions substantially as specified, then cooling, then allowing to stand, then draining the resultant crystals, and, finally, after washing the crystals with ice-water, recrystallizing from methyl alcohol.

10. The process which consists in acting upon 3'-8-dichloric caffein with an alcohol and treating the resultant 3'-alkoxy-8-chloro-caffein with an alkali-methylate.

11. The process which consists in acting upon 3'-8-dichloro-caffein with methyl-alcohol and then treating the resultant 3'-methoxy-8-chloro-caffein with sodium-methylate.

12. The process which consists in acting upon 3'-8-dichloro-caffein with an alcohol, then treating the resultant 3'-alkoxy-8-chloro-caffein with alkali-methylate and, finally, treating the resultant dialkoxy-caffein with HCl.

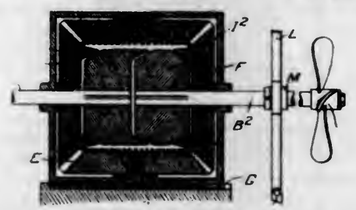
13. The process which consists in acting upon 3'-8-dichloro-caffein with methyl-alcohol, then treating the resultant 3'-methoxy-8-chloro-caffein with sodium-methylate, and, finally, acting upon the resultant 3'-8-dimethoxy-caffein with hydrochloric acid.

14. As a new chemical compound, 3'-methoxy-8-hydroxy-caffein having the structural formula hereinbefore given, which crystallizes in coarse colorless needles having a melting-point of about 228° to 229° centigrade, which is readily soluble in water, hot methyl alcohol and hot ethyl alcohol, and is also soluble in alkalies, including ammonia, and which gives a murexid reaction.

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### 757,331. REVERSING MECHANISM.

ARTHUR MEAD, Bridgeton, Me. Filed Oct. 31, 1903. Serial No. 179,277. (No model.)




*Claim.*—1. In a reversing mechanism for launches, a longitudinally-movable propeller-shaft having a double-faced clutch on one end, an engine-shaft having a clutch member to engage therewith, a train of reversing-gears held against rotation with the shafts, the reversed gear also having a clutch member, and means for shifting the propeller-shaft longitudinally.

2. In a reversing mechanism for launches, a longitudinally-movable propeller-shaft having a double-faced clutch on one end, an engine-shaft in line with said propeller-shaft, having a clutch member to engage therewith, a train of reversing-gears held against rotation, the reversing-gear also having a clutch member, and means for shifting the propeller-shaft longitudinally to engage either clutch.

3. In a reversing mechanism, a driven shaft having a clutch member, a train of reversing-gears held against rotation with the shafts, a clutch member on the reversed gear thereof, a second shaft longitudinally movable in line therewith, a clutch member thereon adapted to engage with said first-mentioned clutch member and with

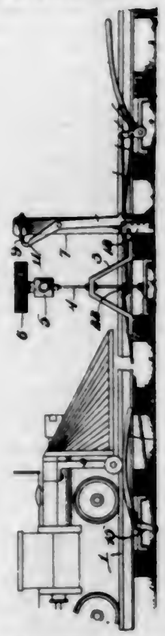
the clutch member on the reversed gear, and means to move the second shaft.

4. In a reversing mechanism, a power-shaft having a double-faced clutch member, a train of reversing-gears held against rotation therewith but slightly movable longitudinally thereof, a clutch member on each of two of the oppositely-moving gears of said train, a second shaft longitudinally movable in line with the first shaft, a double-faced clutch member thereon, and means to move said second shaft so that it may be driven by the power-shaft directly, or indirectly through the gears.

5. In a reversing mechanism, a driven shaft having a double-faced clutch member, a gear loosely mounted on said shaft and having a clutch member on its face, a second shaft longitudinally movable in line therewith, a double-faced clutch member thereon adapted to engage with said first-mentioned clutch member, a second loosely-mounted gear on the said second shaft and provided with a clutch member, reversing means between the first and second gears, and means to move the shaft to engage the driven shaft or the said clutch member on the said second gear, said train of gears being held against rotation with said shafts, but slidable relative thereto.

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**757,332. RAILWAY-SIGNAL. WILLIAM C. MINER, Traverse City, Mich. Filed Dec. 15, 1903. Serial No. 185,312. (No model.)**



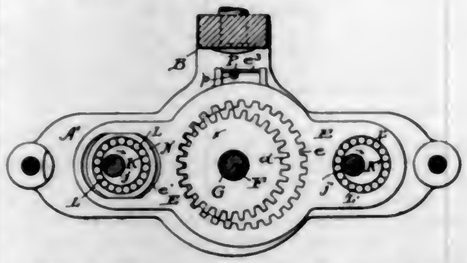
*Claim.*—1. In a railway-signal, the combination with a track, of a rotary shaft sustained adjacent thereto and carrying a danger-signal, two pairs of levers disposed on opposite sides of the track and operable respectively by trains traveling in opposite directions, and operative connections between each pair of levers and the shaft for rotating the latter, one lever of each pair being operable for moving the signal to danger and the other to non-danger position.

2. In a railway-signal, the combination with a track, of a rotary shaft sustained adjacent thereto and carrying a danger-signal, two pairs of levers disposed on opposite sides of the track and operable respectively by trains traveling in opposite directions, a bell-crank fixed upon the shaft and having one of its arms operatively connected with one pair of the levers, a second bell-crank pivotally sustained at the opposite side of the track, operative connections between one arm of the second bell-crank and the first-mentioned bell-crank, and connections between the other arm of the second bell-crank and the adjacent pair of levers, one lever of each pair being operable to rotate the shaft in one direction and the other in the reverse direction.

3. In a railway-signal, the combination with a rotary shaft carrying a danger-signal, of a standard carrying a bell, a lever pivoted to the standard and operable for actuating the bell, and means operable by a passing train for simultaneously rotating the shaft and actuating the lever.

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**757,333. HOIST. EDWARD Y. MOORE, Cleveland, Ohio. Filed Oct. 17, 1903. Serial No. 177,459. (No model.)**



*Claim.*—1. In a hoist, the combination of a pulley, an external gear connected therewith, an internal gear surrounding the external gear and adapted to mesh therewith and having a larger number of teeth, and mechanism for gyrating said internal gear, said mechanism at the same time and of itself preventing said internal gear from rotating.

2. In a hoist, in combination, a pulley, external gear formed thereon, a yoke surrounding the external gear and having internal gear-teeth of a larger number than the teeth of the external gear, and means for gyrating said yoke.

3. In a hoist, a frame, a driving-shaft rotatably mounted therein, a rotatable pulley, an external gear connected therewith, a yoke surrounding the external gear and having internal teeth greater in number than the teeth of the internal gear, mechanism for gyrating said yoke, and an operative connection between said mechanism and said driving-shaft.

4. In a hoist, in combination, a frame, a driving-shaft rotatably mounted therein, a driven pulley loosely surrounding the driving-shaft, an external gear formed on said pulley, a yoke having internal teeth and surrounding said gear with play between them, mechanism for gyrating said yoke, and an operative connection between said mechanism and said shaft.

5. In a hoist, the combination of a pulley, a gear connected therewith, a yoke having teeth engaging one side of said gear, a pair of eccentrics for gyrating said yoke, a driving-shaft, and a gear connecting the same with one of said eccentrics.

6. In a hoist, in combination, a frame, a driving-shaft rotatably mounted therein, a driven pulley loosely surrounding the driving-shaft, an external gear formed on the driven pulley, a yoke having an internal gear surrounding said external gear and possessing more teeth, a pair of eccentrics for gyrating said yoke, and driving connections between said eccentrics and said driving-shaft.

7. In a hoist, the combination of a pulley, an external gear connected therewith, an internal gear surrounding the external gear and adapted to mesh therewith and having a larger number of teeth, means for bodily circulating said internal gear, and means tending to balance said internal gear.

8. In a hoist, in combination, a frame, a pulley rotatably mounted therein, an external gear connected therewith, a yoke having an internal gear surrounding said external gear and possessing more teeth, means for gyrating said yoke, and a spring arranged to assist in supporting said yoke.

9. In a hoist, in combination, a frame, a driving-shaft rotatably mounted therein, a driven pulley loosely surrounding the driving-shaft, an external gear formed on the driven pulley, a yoke having an internal gear surrounding said external gear and possessing more teeth, a pair of eccentrics for gyrating said yoke, a pair of gears connected with said eccentrics, and a gear on the driving-shaft meshing with each of the said pair of gears.

10. In a hoist, in combination, a frame, a driving-shaft rotatably mounted therein, a driven pulley loosely surrounding the driving-shaft, an external gear formed on the driven pulley, a yoke having an internal gear surrounding said external gear and possessing more teeth, a pair of eccentrics for gyrating said yoke, operative connections between said eccentrics and shaft, and a spring assisting in supporting said yoke.

11. In a hoist, in combination, a frame having a pair of side members, a driving-shaft journaled across said members, a main pulley between said members supported thereby and loosely surrounding said driving-shaft, an external gear formed on said main pulley, a yoke between said side members surrounding said external gear and having an internal gear of a greater number of teeth than the external gear, short shafts journaled in said side members on opposite sides of the main pulley, an eccentric on each shaft occupying an opening in the yoke, a gear on each of said short shafts, and a gear on the driving-shaft meshing with the two gears last mentioned.

12. In a hoist, in combination, a frame, a pulley, an external gear connected to said pulley, a yoke surrounding said external gear and having an internal gear of a greater number of teeth than the external gear, eccentrics for gyrating the yoke, one of said eccentrics having independent lateral movement with reference to the yoke, and means for operating the eccentrics.

13. In a hoist, in combination, a frame, a pulley, an external gear connected to said pulley, a yoke surrounding said external gear and having an internal gear of a greater number of teeth than the external gear, eccentrics for gyrating the yoke, one of said eccentrics occupying a laterally-elongated opening in the yoke, and means for operating the eccentrics.

14. In a hoist, in combination, a frame having a pair of side members, a driving-shaft journaled across said members, a main pulley between said members supported thereby and loosely surrounding said driving-shaft, an external gear formed on said main pulley, a yoke between said side members surrounding said external gear and having an internal gear of a greater number of teeth than the external gear, short shafts journaled in said side members on opposite sides of the main pulley, an eccentric in each shaft for gyrating the yoke, a gear on each of said short shafts, and a gear on the driving-shaft meshing with the two gears last mentioned, one of said eccentrics having around it a bushing slidably occupying a laterally-elongated opening in the yoke, and rollers between the last-mentioned eccentric and the bushing.

15. In a hoist, the combination of a pair of side members connected together, a hollow sleeve carried thereby extending across the members, a main pulley mounted on said sleeve and having formed on it an external gear, the frame being offset outwardly to accommodate the main pulley, a yoke loosely confined between the side members of the frame and having an internal gear of a greater number of teeth than the external gear, and surrounding the said external gear with play between them, mechanism for gyrating said yoke, a main driving-shaft journaled in said sleeve and a connection between said shaft and said mechanism.

16. In a hoist, the combination of a pair of side members connected together, a main pulley carried thereby and having formed on it an external gear, the frame being offset outwardly to accommodate the main pulley, a yoke loosely confined between the side members of the frame and having an internal gear of a greater number of teeth than the external gear and surrounding the said external gear with play between them, a pair of eccentrics rotatably mounted between the side members of the frame within openings in the yoke whereby the rotation of the eccentrics gyrates the yoke, a main driving-shaft loosely extending through the axis of said pulley, and gearing connecting said driving-shaft with the eccentrics.

17. In a hoist, the combination of a frame, a pulley carried thereby and having formed on it an external gear, a yoke having an internal gear of a greater number of teeth than the external gear and surrounding the said external gear with play between them, a pair of eccentrics rotatably mounted within openings in the yoke whereby the rotation of the eccentrics gyrates the yoke, a main driving-shaft, gearing connecting said driving-shaft with the eccentrics, a driving-wheel for operating the main shaft, and a brake adapted to be thrown on by the descending load and thrown off by the driving-wheel.

18. In a hoist, in combination, a main pulley, a driving-shaft, an operative connection between the driving-shaft and main pulley, a cup loosely surrounding the driving-shaft, ratchet mechanism for allowing said cup to rotate in one direction but not in the other, a collar on the shaft within the cup, brake-shoes between the collar and the inner periphery of the cup arranged to be thrown into engagement with such periphery by relative rotative movement between the shoes and collar, a driving-wheel loosely mounted on said shaft and connected with said shoes, and a connection between said driving-wheel and said collar which connection allows limited rotative movement between the same.

19. In a hoist, in combination, a driving-shaft, a cup loosely surrounding the same, teeth on the exterior of said cup, a pawl engaging said teeth and preventing rotation of the cup in one direction, a hand-wheel loosely mounted on the shaft, brake-shoes within the cup connected with the hand-wheel, a collar rigid on the shaft within the cup, there being a wedging connection between the collar and brake-shoes whereby when the hand-wheel is turned relatively faster than the collar in the direction of movement allowed to the cup the brake-shoes are forced toward the cup.

20. In a hoist, in combination, a driving-shaft, a cup loosely surrounding the same, teeth on the exterior of said cup, a pawl engaging said teeth and preventing rotation of the cup in one direction, a hand-wheel loosely mounted on the shaft, brake-shoes within the cup connected with the hand-wheel, a collar rigid on the shaft within the cup, there being a wedging connection between the collar and brake-shoes whereby when the hand-wheel is turned relatively faster than the collar in the direction of movement allowed to the cup the brake-shoes are forced toward the cup, the connection from the hand-wheel to the brake-shoes having loose play, and tending to take up such play, buffer-springs, and a connection between the hand-wheel and the collar having loose play.

21. In a hoist, in combination, a pair of side members, a hollow sleeve carried by said members and projecting beyond one of them, a main pulley mounted on said sleeve between said members, a main driving-shaft journaled within said sleeve, operating mechanism connecting said driving-shaft with said main pulley, a cup mounted on said hollow sleeve and on the outer side of one of said frame members, ratchet-teeth on the outer side of said cup, a pawl carried by the adjacent frame member and engaging said teeth, a hand-wheel on the main shaft on the outer side of said cup, and a friction-clutch within the cup between it and the hand-wheel, which clutch is thrown into action when the hand-wheel rotates relatively faster than the driving-shaft in the direction to elevate the load or relatively slower in the direction to lower the load

22. In a hoist, the combination of raising mechanism including a driving-wheel and shaft, a clutch member rotatable in one direction but not in the other, and a friction-brake arranged to be established in both directions of rotation of the raising means by differential rotative movement of the driving-wheel and shaft.

23. In a hoist, in combination, a pulley, a driving-shaft, a connection between the shaft and the pulley, a rotatable clutch member, mechanism for allowing said member to rotate in one direction but not in the other, means for driving said shaft, and a clutch between said shaft and said clutch member adapted to be thrown into engagement in either direction of rotation of said shaft by relative rotative movement between the shaft and its driving means.

24. In a hoist, in combination, a main pulley, a main shaft, an operative connection between said shaft and pulley, a clutch member loosely surrounding said shaft, a ratchet and pawl to allow said clutch to rotate in the direction to raise the load but not in the opposite direction, a wheel mounted on said shaft and having limited rotation relative thereto, and a friction-brake adapted to engage said clutch member when the wheel rotates relatively slower than the shaft in the direction to lower the load.

25. In a hoist, the combination of a pulley, a gear connected therewith, another gear meshing with the gear first mentioned, one of said gears being external and the other a surrounding internal gear having a larger number of teeth, and a plurality of eccentrics for gyrating one of said gears.

26. In a hoist, in combination, a pulley, a yoke, an external gear connected with one of such members, a meshing internal gear connected with the other of such members and having a larger number of teeth than the external gear, and a driving mechanism adapted of itself and without additional guiding means to give said yoke an orbital non-rotative movement.

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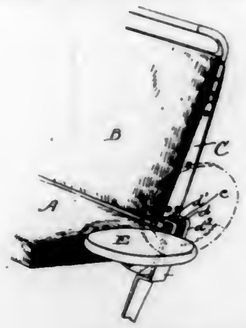
**757,334. EMERGENCY CAR-SEAT. MAYNARD H. MURCH, JR., Cleveland, Ohio. Filed Aug. 17, 1903. Serial No. 169,705. (No model.)**

*Claim.*—1. The combination of a clamp adapted for attachment to the frame of a car-seat, a block pivoted thereto on a horizontal pivot, a seat-supporting arm pivoted to said block on a vertical pivot, and a seat secured to said arm, substantially as described.

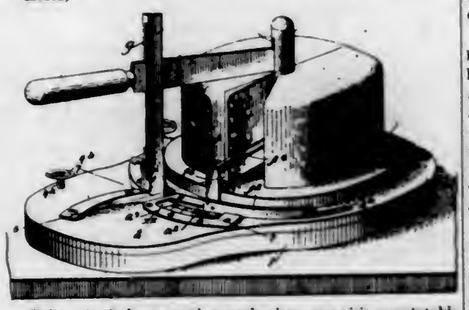
2. The combination of a clamp adapted for connection with a car-seat frame, and having two outwardly-extended arms, a block lying between said arms and pivoted thereto on a horizontal pivot, a seat-arm resting upon said block and pivoted thereto on a vertical pivot and adapted to be swung over and rest upon one of the outwardly-extended clamp-arms, substantially as described.

3. The combination of a clamp consisting of two counterpart members adapted at their inner ends to embrace the edges of a frame member of a car-seat, and having two outwardly-extended arms, a block lying between said arms and pivoted thereto on a horizontal axis, a bolt for drawing said clamp members together to hold them in the described relationship with the seat-frame member and with said block, an arm resting upon said block and pivoted thereto on

a vertical axis and adapted to be turned upon said axis so as to extend over and rest upon one of the outwardly-extended clamp-arms, and a seat secured to said seat-arm, substantially as described.



757,335. CHEESE-CUTTING APPARATUS. PHILIP S. MCCROSKEY, Logan, Kans. Filed July 2, 1903. Serial No. 164,053. (No model.)



*Claim.*—1. A cheese-cutting mechanism, comprising a rotatable cheese-holder, an adjustable dial having a major scale which indicates the gross value of the cheeses and a minor scale which indicates the predetermined divisional values of the cheeses and a member for gaging the movement of the cheese which coacts with the said adjustable dial, as set forth.

2. A cheese-cutting mechanism, comprising a cheese-holder, a dial having a series of major scales which indicates the gross values of the cheeses to be cut and a minor scale for each gross-value scale which indicates the predetermined divisional values of the cheese, a setting member for gaging the rotary movement of the cheese which includes an indicating-finger movable concentrically with the cheese-holder axis and adapted for movement in alinement with any one of the combined sets of the major and minor scales, as specified.

3. In a cheese-cutting mechanism as described; in combination with a rotatable cheese-holder, a sweep-arm pivoted in axial alinement with the cheese-holder and having a gage-finger concentrically movable with the axis of the cheese-holder, and adapted to engage the cut face of the cheese; of a dial having a set of major-scale marks which indicate the gross value of the cheese, a set of minor-scale marks, one for each of the major scales, and which determine the desired divisions of each gross mark, the minor-scale marks being disposed in a line concentric in the movement of the sweep-arm, the several minor-scale marks radiating from the axis of the dial, as set forth.

4. In a cheese-cutting mechanism; in combination with a rotary cheese-carrier and a gage member having an indicator-finger pivoted at the axis of the carrier to sweep in the horizontal plane and moved by contact with the cut face of the cheese when the cheese is turned; of a dial-plate radially disposed with respect to the cheese-carrier and rotatably mounted, the said dial-plate having a series of predetermined space-marks which indicate the divisional or cut values of the cheese on lines concentric with the axis of the cheese-holder over which the indicator-finger of the gage member is adapted to be moved, as set forth.

5. A dial-plate for cheese-cutting machines having a series of major-scale marks that indicate the gross value of the cheese, a series of minor-scale marks that indicate the divisional or cut values of the cheese, the said minor-scale marks extending from the major-scale marks in a spiral line toward the axis of the dial, the said dial being rotatable whereby to bring any one of the combined sets of major and minor scale marks in a line concentric with the sweep of the indicator-finger of the gage member, as set forth.

6. A cheese-cutting mechanism as described; comprising a rotatable cheese-carrier, a post projected axially thereof and having a vertical and radially-disposed slit in one side, a vertical slotted knife-guide in radial alinement with the post-slit, a rotary dial-plate whose axis is in radial alinement with the slotted knife-guide and the post, the said dial having a major scale for indicating the gross cheese values and a minor scale for indicating the predetermined divisions of the said gross values, a gage member adapted to contact with the cut face of the cheese and having a finger movable from the said major and minor scale marks on the dial and automatically returnable to the normal position and a slicing-knife guided in the slitted post and the slotted guides, as set forth.

7. In a cheese-cutting mechanism of the character described; in combination with the rotary cheese-holder, and rotary dial having divisional marks and located in a plane parallel with the plane of the rotary cheese-holder, and adapted to turn in a circle eccentric to the circle in which the rotary cheese-holder turns, of a gage member movable in an arc concentric with the cheese-holder and over the aforesaid dial divisions, said gage including a pivotal member adapted to gravitate to the horizontal and in a position radial to the axis of the cheese-holder to contact with the cut face of the cheese and to be swung in a vertical plane for the purposes described.

8. In a cheese mechanism of the character described; in combination with the rotatable cheese-holder, mounted to rotate in a horizontal plane, a rotary dial having predetermined divisional marks and mounted in a plane parallel to the cheese-holder to turn on an axis eccentric to that of the rotatable cheese-holder, a gage pivoted on the axial line of the cheese-holder to swing in the horizontal plane, the said gage including a finger for traveling over the divisional marks of the dial and a radial member to engage the cut face of the cheese and means for automatically holding the said member in contact with and to move the said member toward the cheese.

9. A dial for cheese-cutting machines having a setting-gage movable by the cheese as it is turned to a cutting position; said dial having a series of arbitrarily-spaced marks at its periphery which indicate the different gross values of the cheese, and a series of supplemental marks for each gross-value mark disposed in a line beginning from the said gross marks and extending spirally inward to the axis of the dial, the corresponding supplemental value-marks in each series being disposed with respect to each other, in a line concentric with the axis of the cheese-holder, to be disposed by the setting-gage, as set forth.

757,336. LOOSE-LEAF BINDER. JOHN L. MCMILLAN, Syracuse, N. Y. Filed Sept. 18, 1902. Serial No. 123,900. (No model.)

*Claim.*—1. In combination with a cover comprising a back of permanent form, and cover-boards flexibly connected therewith; a pair of rock-shafts carried in bearings in said cover and provided with impaling-hooks and with intermeshing gears, substantially as described and shown.

2. In combination with a suitable cover having a back member of permanent form; two rock-shafts carried in supports therein; toothed sectors carried by and connecting said shafts; and a locking device for holding said shafts against turning.

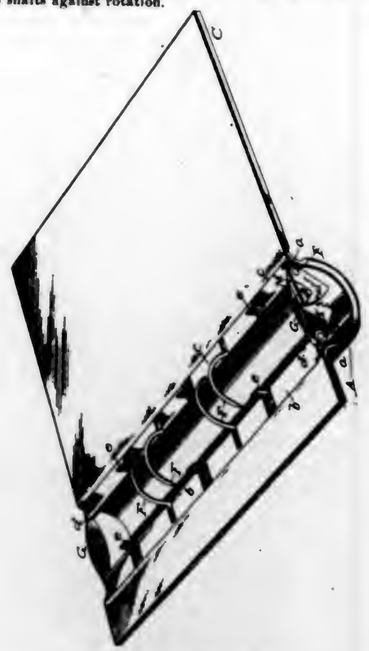
3. In combination with a cover comprising a back of permanent form and cover-boards or lids; plates carried by said boards and overhanging the back; rock-shafts carried by said plates and provided with impaling-pins; sectors connecting said rock-shafts; and a locking device for holding said sectors and shafts against movement about their axes.

4. In combination with back A and cover-boards B, C, plates b, c carried by the said cover-boards; rock-shafts D, E carried by said plates and provided with impaling-pins F; connecting-plate G; sectors H, I carried by the rock-shafts D, E; and a detent carried by one of said sectors and adapted to engage with a pin or projection on the connecting-plate G.

5. In combination with a cover comprising a back of permanent form and cover-boards or lids; rock-shafts arranged at the inner adjacent edges of said lids; impaling-pins carried by said shafts; sectors connecting said rock-shafts; means carried by the shafts for clamping or holding the innermost edges of the leaves in position; and means for locking the shafts against rotation.

6. In combination with a cover comprising a back of permanent form and cover-boards or lids; rock-shafts arranged at the inner adjacent edges of said lids; impaling-pins carried by said shafts; arms secured to the shafts, said arms being arranged to bear against the innermost edges of the sheets when the pins are thrown past each other; sectors carried by the rock-shafts; and means for locking the shafts against rotation.





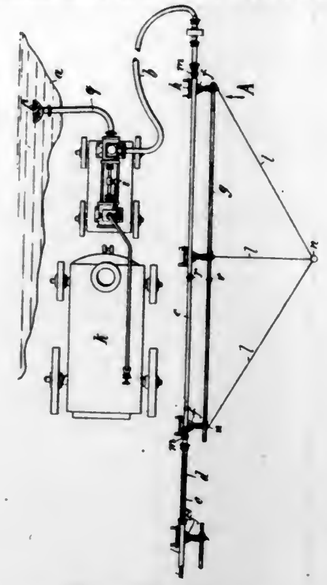
757,337. PROCESS OF MAKING ADHESIVES. ANTON NETTL, Prague, Austria-Hungary. Filed June 17, 1903. Serial No. 161,948. (No specimens.)

*Claim.*—1. The process of manufacturing a water-soluble adhesive agent from the spent sulfite liquors resulting in the manufacture of cellulose, which consists in first removing sulfurous acid and its salts, then boiling the liquid with some chlorate and with an acid, until the tannic acid originally contained in the liquid has become converted into gallic acid and into sugar, then continuing the boiling or cooking process in the presence of oxidants, until the gallic acid has been converted into tannoxyl and tanno-melanic acid and until the solution has assumed a lighter color, and then adding to the still hot solution a solution of glue-like substances.

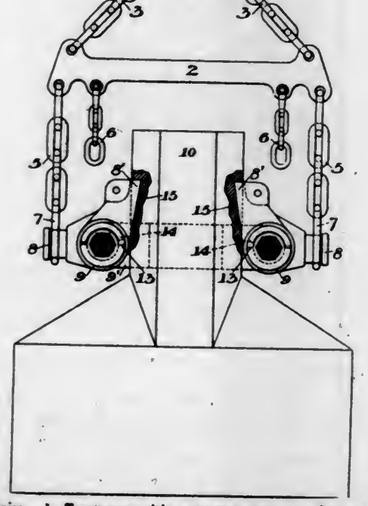
2. The process of manufacturing a water-soluble adhesive agent from the spent sulfite liquors, resulting in the manufacture of cellulose, which process consists in removing and destroying the sulfurous acid and the sulfites present, filtering the liquid and then boiling or cooking the liquid obtained with some chlorate and with acid under pressure until the tannic acid, originally present in the liquid has been destroyed and then continuing the boiling or cooking process, until the dark-colored liquid has assumed a light yellow-red color, substantially as described, and then neutralizing the liquid, then separating liquid from and deposits formed, then adding to the liquid an aqueous solution of glue from any suitable source, then reducing the liquid to the desired consistency and body, and reducing the residue to powder.

757,338. AMBULANT WATERING APPARATUS. PHILIPP NOLTING, Bielefeld, Germany. Filed July 20, 1903. Serial No. 166,380. (No model.)

*Claim.*—The combination with a source of water or liquid manure, of a hose, a pipe or hose line divided into a plurality of sections connected with each other by hoses, a plurality of distributing devices in said pipe or hose line, a plurality of trolleys for each section of said pipe or hose line, said trolleys being each provided with a swiveling joint and a pole for the leading wheel, a plurality of rods or laths hinged to said swiveling joints of said trolleys for each section of said pipe or hose line for supporting this section, a plurality of rods or laths for pivotally connecting said poles of said trolleys for each section of said pipe or hose line, means for yieldingly connecting the opposed end trolleys of the adjoining sections of said pipe or hose line, a common draft-piece for each section of said pipe or hose line, and means for connecting said common draft-piece with said poles of said trolleys for each section of said pipe or hose line.



757,339. METAL-TONGS. JESSE R. OAKLEY, Braddock, Pa. Filed Dec. 28, 1903. Serial No. 186,830. (No model.)



*Claim.*—1. Tongs comprising an upper support, a lower support having swinging jaws with projecting lever-arms, and flexible connections on the upper support arranged to engage either the lever-arms or the jaws; substantially as described.

2. Tongs comprising an upper support, a lower yoke having bell-crank levers with their inner ends formed as jaws, and swinging connections on the support arranged to engage either the bell-crank lever-arms or the jaws; substantially as described.

3. Toogs comprising an upper support, a lower yoke having bell-crank levers with their inner arms formed as jaws, and flexible connections arranged to engage the outer bell-crank arms and the jaws, the connections for the arms being longer than those for the jaws; substantially as described.

4. Tongs comprising an upper support, a lower yoke having swinging jaws, and levers thereon, connections between the support and the yoke, and stops for limiting the tilting movement of the jaws; substantially as described.

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**757,340. TELEPHONE-SUPPORT.** HOWARD H. OOTHOUDT and WILLIAM F. STAHL, Toledo, Ohio. Filed Jan. 29, 1904. Serial No. 191,182. (No model.)

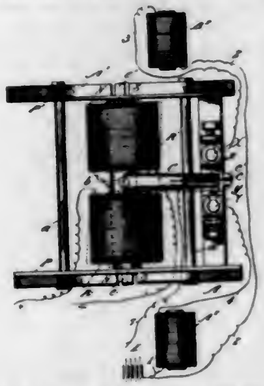


*Claim.*—1. A telephone-support comprising a metallic bracket-arm made of a single piece of wire, a hinge member to which the ends of said wire are pivoted, said wire being bent to form radial slots, a clamping member carried by each of said slotted portions, and a winged nut and a screw for holding each of the clamping members in an adjusted position, as set forth.

2. A telephone-support comprising a bracket-arm made of a wire, the ends of which are pivoted to a hinge member adapted for attachment to a desk, said wire being bent upon itself at its longitudinal center to form a slot in alinement with the bracket-arm, thence bent upon itself at angles to said slot in alinement with said arm, and the shank of the wire being twisted together, a clamping member carried by each slot, a winged nut and a screw for holding each clamping member in an adjusted position, as set forth.

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**757,341. RELAY-MAGNET.** WILLIAM PALMER, Jr., Rincon, N. Mex. Filed June 14, 1902. Serial No. 111,693. (No model.)



*Claim.*—1. A relay-magnet comprising two horseshoe-magnets arranged parallel to each other, an electromagnet having the opposite ends of its core extended between the poles of the horseshoe-magnets with the longitudinal axis of the core at right angles to the plane of the horseshoe-magnets and a helix at each end of the core inside the horseshoe-magnets, pivots for the electromagnet arranged between the two helices in an axial line at right angles to the core, an arm connected to the electromagnet and moving therewith on its pivots, and back and front contacts for the arm adapted to connect with two independent circuits substantially as described.

2. A relay-magnet comprising two horseshoe-magnets arranged in vertical planes parallel to each other, an electromagnet made with a single core disposed between the horseshoe-magnets at right angles to the plane of the same and two spaced-apart helices, said core being extended at opposite ends between the poles of the horseshoe-magnets, pivots arranged between the sections of the helices on an axis at right angles to the core, an arm attached to the relay, and front and back contacts for the arm adapted to connect with two independent circuits substantially as described.

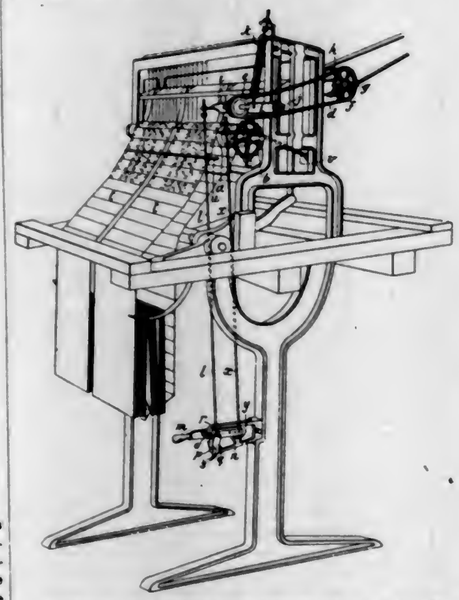
3. A relay-magnet comprising two horseshoe-magnets arranged in vertical planes parallel to each other, two frame-plates connected thereto in parallel positions, cross-bars connecting the two horseshoe-magnets and plates, an electromagnet made with two spaced-apart helices and having an extended core forming pole-pieces extended at opposite ends between the poles of the horseshoe-magnets, pivots mounted in the cross-bars and arranged between the sections of the helices on an axis at right angles to the core, an arm attached to the relay, and front and back contacts for the arm adapted to connect with two independent circuits substantially as described.

4. A relay-magnet comprising two parallel horseshoe-magnets, an electromagnet having the opposite ends of its core extended between the poles of each horseshoe-magnet at right angles to the plane of and between the horseshoe-magnets, pivots for the electromagnet arranged in an axial line at right angles to its core, an arm connected to the electromagnet and moving therewith on its pivots, and back and front contacts for the arm combined with a local battery and two independent electric circuits, one of which connects with and is completed through one of said contacts of the relay-arm, and the other of which is connected with and completed through the other of said contacts substantially as and for the purpose described.

5. A relay-magnet comprising a horseshoe-magnet, an electromagnet pivoted in its middle and having its core extended between the poles of the horseshoe-magnet, an arm attached to the electromagnet and having its end slotted and provided with a flat spring fixed in the inner end of said slot in middle position therein, a retaining-seat for the outer end of said spring and front and back contacts for the arm substantially as shown and described.

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**757,342. JACQUARD.** WILLIAM A. PARDOE, Dewsbury, England. Filed July 22, 1903. Serial No. 166,612. (No model.)



*Claim.*—1. In a jacquard, the combination, with the cylinder, of means for turning said cylinder by power, when at its outermost position and when the loom is not weaving, and means for effecting the engagement, or disengagement, of the driving means with, or from, said cylinder.

2. In a jacquard, the combination, with the cylinder, of means for turning said cylinder by power, when at its outermost position and when the loom is not weaving, means for effecting the engagement, or disengagement, of the driving means with, or from, said cylinder, and means for automatically stopping the cylinder.

3. In a jacquard, the combination with the card-cylinder, of a chain-wheel mounted upon the cylinder-axis, a chain-wheel on the power-shaft, a spring-controlled lever pivoted to the frame, a pulley carried by said lever, a chain passing over said pulley and over the chain-wheel on the power-shaft, and means for keeping the chain temporarily engaged with the chain-wheel on the cylinder-axis.



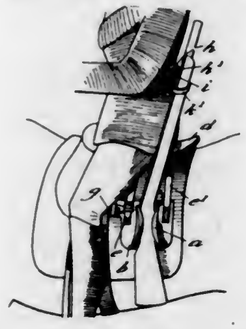
4. In a jacquard, the combination with the engaging and disengaging mechanism and with the driving mechanism, of a rod (or rods) secured to the circle or chaplet of cards, a lever adapted to be actuated by said rod (or rods) and connected with the hand-lever mechanism so as to automatically effect the disengagement of the cylinder from the power-shaft.

5. In a jacquard, the combination with the hand-lever of the engaging and disengaging mechanism, of an elbow-lever, a shoulder on the short arm of said elbow-lever, means for connecting the hand-lever with the chain-engaging mechanism, means for connecting the elbow-lever with the automatic chain-disengaging mechanism, and a pin on the hand-lever adapted, when engaged with a shoulder on the elbow-lever, to retain the hand-lever in the depressed position and thereby keep the cylinder engaged with the driving-shaft.

6. In a jacquard, the combination with the card-cylinder, a chain-wheel mounted upon its axis, a chain-wheel on the power-shaft, a spring-controlled lever pivoted to the jacquard-frame, an adjustable pulley carried by said lever, and a chain passing over said pulley and over the chain-wheel on the power-shaft, of a hand-lever, a flexible connection between said hand-lever and the spring-controlled lever, an elbow-lever acting in conjunction with the hand-lever for keeping this latter depressed and the chain engaged with the chain-wheel on the cylinder-axis, a releasing-lever actuated by rods on the cards or chaplet for automatically disengaging the chain from the chain-wheel on the cylinder-axis, and a flexible connection between the releasing-lever and the elbow-lever.

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**757,343. RIFLE-HOLDER FOR MOUNTED TROOPS.** JOHN H. PATTERSON, Aldershot, England. Filed June 22, 1903. Serial No. 162,486. (No model.)



*Claim.*—In a rifle-holder for mounted troops, in combination, a spring-clip suspended from the skirt of the saddle, a slotted plate attached to the belt of the rider, a stud attached to the rifle and having a transversely-elongated head of less width than the width of the slot in said plate, and adapted to pass through said slot and engage said plate when the rifle is supported in the saddle-clip; substantially as described.

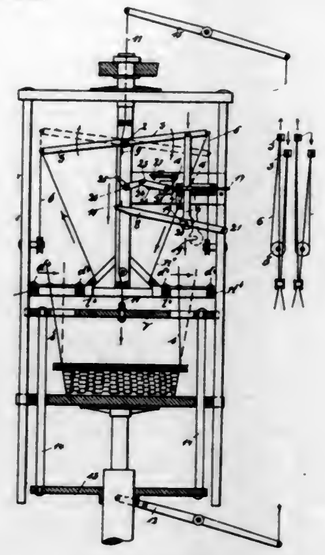
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**757,344. BASKET-MAKING MACHINE.** ARNO POHORELEC, Oschatz, Germany. Filed Mar. 8, 1899. Serial No. 708,249. (No model.)

*Claim.*—1. In a machine for making baskets, the combination of means adjustably supporting the bottom of the basket with the rods or stakes thereon, a series of reeds to embrace and operate the upper ends of said rods or stakes, and a cord to connect up said reeds for each side of the basket and operate the same to form sheds according to the direction of pull on said cord, means for operating the cord, and means for beating home the hand-laid withes, substantially as described.

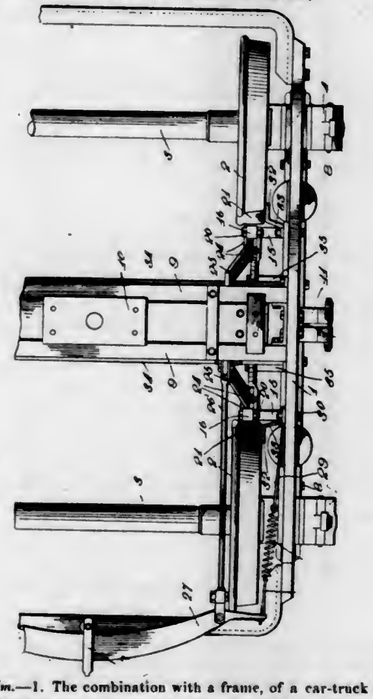
2. In a machine for making baskets, the combination of the table to support the basket-bottom and the stakes thereon, means for supporting the said table in a rotatable and vertically-adjustable manner, a frame to rotate with said table, a series of reeds mounted in said frame to embrace the upper ends of the said stakes, means for operating said reeds to form sheds also mounted in said rotary frame, a beater having slots for the passage of the said stakes, and means for raising the same and allowing it to suddenly fall to beat home the hand-laid withes immediately before the change of shed, substantially as described.

757,344.



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**757,345. BRAKE-RIGGING.** WILLIAM G. PRICE, New York, N. Y. Filed Oct. 30, 1903. Serial No. 179,213. (No model.)



*Claim.*—1. The combination with a frame, of a car-truck and an equalizer-bar, comprising a plurality of parallel members separately formed, of a brake-shoe hung from a laterally-projecting bracket supported by said bar.

2. The combination with a truck-frame and an equalizer-bar therefor, comprising a plurality of members connected together, of brake mechanism, and means for supporting the same connected with said equalizer-bar intermediate the ends thereof.

3. The combination with a truck-frame and a plurality of members comprising equalizer-bars therefor, at each side thereof, of means connecting said bars, and brake mechanism supported by said bars intermediate the ends thereof.

4. The combination with the frame of a truck and equalizer-bars therefor, each bar comprising a plurality of connected members, of means for preventing lateral separation of said bars, brake-shoe-supporting means supported by said connected members, and a brake-shoe hung from each of said bars.

5. The combination with a truck-frame and equalizer-bars therefor, each bar comprising a plurality of members, of a tie-rod projected through, and connecting said bars, and means on said tie-rod for preserving the separation of said members.

6. The combination with a truck-frame and equalizer-bars therefor, of a brake-rigging supported between the members comprising said bars independently of said frame.

7. The combination with a truck-frame and an equalizer-bar therefor, comprising a plurality of substantially parallel members, of a bracket a part of which is supported between the members of said bar, and brake mechanism supported by said bracket.

8. The combination with a truck-frame and an equalizer-bar therefor, comprising a plurality of substantially parallel members, of a bracket a part of which is secured between the members of said bar, and a brake-shoe supported by said bracket.

9. The combination with a truck-frame, of an equalizer-bar carried thereby, a bracket supported by said bar, a hook formed on said bracket, a link pivoted within said hook, and brake mechanism carried by said link.

10. The combination with a truck-frame, of an equalizer-bar carried thereby, a bracket supported by said bar between the members thereof, a link pivoted to said bracket, a shoe pivotally connected to said link, and means for swinging said link.

11. The combination with a truck-frame, of equalizer-bars therefor, and beamless brake-rigging carried by said bars.

12. The combination with a truck-frame and wheels supporting the same, of an equalizer-bar connecting said wheels, and beamless brake-rigging supported by said bar and disposed between said wheels.

13. The combination with supporting-wheels and a truck-frame carried thereby, of a brake-rigging for said wheels, an equalizer-bar and laterally-extending brackets thereon for supporting said brake-rigging.

14. The combination with supporting-wheels and a truck-frame carried thereby, of brake-shoes, means for supporting the same, levers for actuating said shoes, a draw-bar for actuating said levers extending on one side of one of said wheels, and a release-spring extending on the other side of said wheels.

15. The combination with wheels and a truck-frame supported thereby, of brake mechanism for said wheels, a draw-bar for actuating said brake mechanism extending on one side of one of said wheels; a release-spring extending on the other side of said wheel, and an evener-bar engaged by said draw-bar and actuated by said release-spring.

16. The combination with supporting-wheels and a truck-frame carried thereby, of an equalizer-bar connecting said wheels, a brake-shoe for one of said wheels, and a bracket extending from said equalizer-bar and limiting said shoe against lateral play.

17. The combination with supporting-wheels and a truck-frame carried thereby, of a brake-shoe for one of said wheels, means for applying said shoe to said wheels, and a laterally-projecting bracket carried by said equalizer-bar for limiting said shoe against lateral play.

18. The combination with a truck-frame and an equalizer-bar therefor, of a brake mechanism carried by said bar, and a bracket carried by said bar and extending beneath said mechanism.

19. In a truck for vehicles having equalizer-bars, brake-shoes, brake-heads, and brake-hangers, a brake-rigging carried by said bars intermediate the ends thereof, the said brake-heads being connected to the brake-hangers.

20. The combination with a truck-frame, of equalizer-bars therefor, a brake-head, a brake and a laterally-extending bracket therefor, said brake-head being connected to the hanger, the hanger being connected to the bracket, and the bracket being connected with the equalizer-bars.

21. The combination with a truck-frame having equalizer-bars therefor, of a brake-shoe-supporting bracket, a part of the said bracket being clamped between the equalizer-bars.

22. The combination with a truck-frame having equalizer-bars therefor, and a brake-shoe-supporting bracket, a part of the said bracket being secured between the members comprising said equalizer-bars.

23. The combination with a truck-frame having equalizer-bars and spring-seats therefor, of a brake-rigging having a bracket and clamp therefor, the said clamp being formed integral with the said spring-seats.

24. The combination with a truck-frame of equalizer-bars therefor, a brake-hanger, a brake-bracket, and a brake-head, the brake-head being directly connected to the said hanger, the said hanger directly connected to the said bracket and the said bracket directly connected to said equalizer at a point between the wheels.

25. In a truck for vehicles, wheels, side frames, equalizer-bars, brake-shoes, brake-heads, brake-hangers and brackets therefor, a brake-rigging carried by said bars at points between the wheels, the said brake-heads being connected with the said brake-hangers.

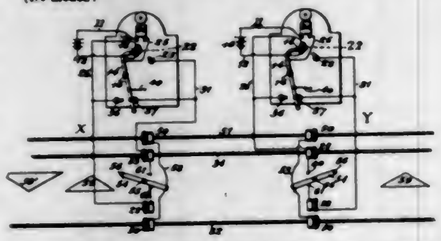
26. The combination with a truck-frame, of equalizer-bars therefor, and brake-rigging having live and dead levers carried by said bars at points between the wheels of a given truck.

27. The combination with a truck-frame, of equalizer-bars therefor, brake-rigging supported by said bars, and means on said bars to prevent lateral shifting of said brake-rigging.

28. The combination with a truck-frame, of equalizer-bars therefor, a beamless brake-rigging supported by said bars, and means on said bars to prevent lateral shifting of said brake-rigging.

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**757,346. ELECTRIC SIGNAL FOR RAILWAYS. WILLIAM B. RAMSAY, Hickory, N. C. Filed May 29, 1903. Serial No. 159,332. (No model.)**



*Claim.*—1. In an electric railway signaling system, a local battery and alarm circuit on each train, each of said circuits having two terminals, a road-bed conductor, traveling contacts engaging both the traffic-rails and the road-bed conductor, switching devices carried by the train, and a double cam arranged on the road-bed and serving to shift the switching devices and change connections between the terminals of the train-circuits and the rails in accordance with the direction of travel of the train.

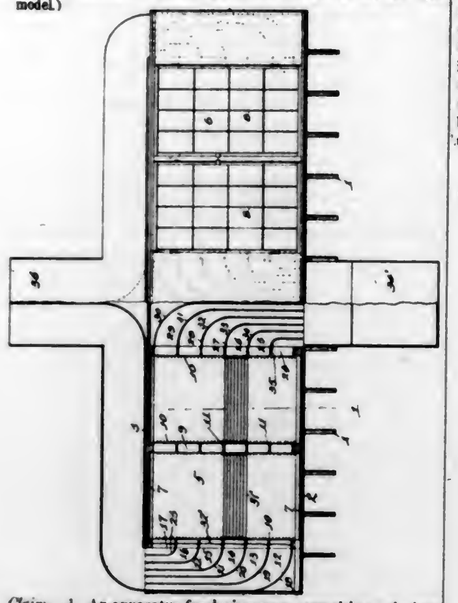
2. In an electric railway signaling system, the combination with local alarm and battery circuits on the trains, a third rail disposed at one side of the longitudinal center of the road-bed, traveling contacts carried by each train and having fixed positions at points equidistant from the longitudinal center of the train so that one or other of such contacts will engage the third rail in accordance with the direction in which the train is moving, said third-rail contacts forming the terminals of the train-circuit, a switch controlling the train-circuit, and a double cam arranged on the road-bed and serving to engage the switch and change the direction of the circuits in accordance with the direction of travel of the train.

3. In an electric railway signaling system, local alarm and battery circuits on the trains, a third rail, a movable switch carried by each train, contact-blocks electrically connected to the terminals of the train-circuits, a double road-bed cam for engaging and moving the switches, and auxiliary testing-cams disposed adjacent to the road-bed cams and serving to automatically shift the position of the switch and change the circuits for testing.

4. In an electric railway signaling system, the combination with current-conductors arranged along the road-bed, of a local signaling system arranged in each train and comprising a battery, an alarm, a movable switch-lever, a pair of contacts disposed on each side of the switch-lever, a contact-block carried by and insulated from the switch-lever, a pair of contacts disposed one on each side of the block, current-conducting wires connected to the road-bed conductors, one of said wires being connected to one of the contacts of the switch-lever and one of the contacts of the block and the other of said wires being connected to the oppositely-disposed contacts, a current-conducting wire connecting the switch-lever to one binding-post of the alarm, and wires leading from the opposite poles of the battery and connected respectively to the second binding-post of the alarm and the movable contact-block.



**757,347. APPARATUS FOR DRYING EGGS. ARTHUR D. ROBINSON, St. Louis, Mo. Filed May 25, 1903. Serial No. 158,765. (No model.)**



*Claim.*—1. An apparatus for drying eggs, comprising a drying-compartment, partitions subdividing said compartment into subcompartments having a common source of hot-air supply and having a common exhaust-pipe, a suction-fan in said exhaust-pipe, doors opening into said subcompartments, and gauze in said subcompartments stretched across the passage-ways leading to the fan to equalize the draft-pressure through said subcompartments, substantially as specified.

2. An apparatus for drying eggs, comprising a main drying-compartment, partitions partly forming subcompartments having a common source of hot-air supply and having a common exhaust-pipe, a suction-fan in said exhaust-pipe, drying-pans adapted to complete said subcompartments, doors opening into said subcompartments, and gauzes in said subcompartments stretched across the passage-ways leading to the fan to equalize the draft-pressure through said subcompartments, substantially as specified.

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**757,348. DOUBLE-CURRENT VENTILATOR. HENRY I. M. ROSS, Dunedin, New Zealand. Filed Sept. 3, 1902. Serial No. 121,993. (No model.)**

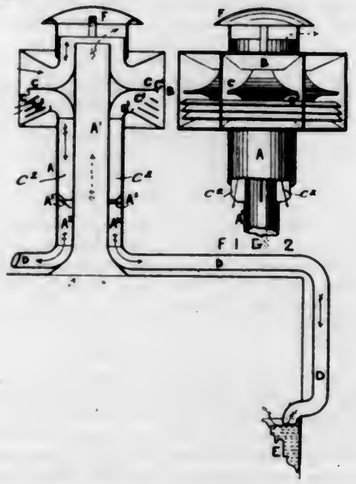
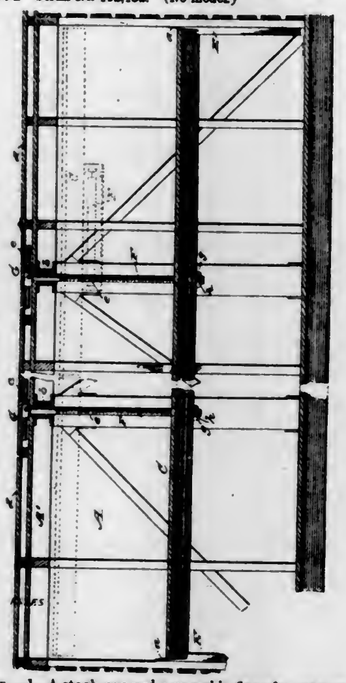


FIG 2

*Claim.*—In a ventilator, the combination of two concentric vertical tubes of unequal diameters, the outer tube projecting above the inner tube and provided near its upper end but below the upper end of the inner tube with horizontally-disposed trumpet-shaped air-inlets, horizontal diaphragms arranged in the air-inlets for dividing the incoming air into up and down currents, vertical partitions arranged in the annular space between the two tubes and terminating above the bottoms of said tubes, and balanced valves arranged to prevent back or reverse currents of air passing up through the space between the tubes, substantially as described.

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**757,349. STOCK-CAR. JOHN L. ROUSE, Degraff, Ohio. Filed Feb. 5, 1904. Serial No. 192,152. (No model.)**



*Claim.*—1. A stock-car and a movable floor for converting said car from a single-deck to a double-deck car, and means for operating said floor, comprising an upright screw-rod, said screw-rod being jointed whereby its lower section may be swung up to a horizontal position after the floor has been raised to the roof of the car, and means for supporting the rod in said horizontal position, substantially as and for the purpose set forth.

2. A stock-car and a movable floor therefor, and a suitable screw-rod for raising or lowering said floor, and a plurality of upright supports for the floor to rest upon when brought into use, said supports having wedge-shaped guides for guiding the floor to the supports and rigidly supporting it while in use, substantially as and for the purpose described.

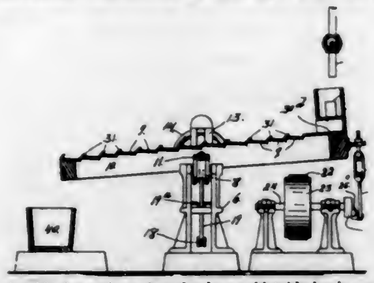
3. A stock-car, a movable floor, a plurality of supports therefor having wedge-shaped guides at their upper ends, a jointed screw-rod for operating the floor, means for holding the lower section of the jointed screw-rod in a horizontal position, and a slidable panel upon the under side of the movable floor to close the space between the floor and the door of the car, substantially as and for the purpose specified.

4. A stock-car and movable floor with means for operating it, and tubular hangers depending therefrom, and a gate slidingly connecting with the hangers, and means for holding the hangers and gate in a horizontal position under the floor when not required for use, and means for holding the gate in an extended position for use or in a closed position in the hanger, substantially as and for the purpose set forth.

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**757,350. CONCENTRATOR. JOHN RUDDY, Denver, Colo. Filed Aug. 22, 1902. Serial No. 120,701. (No model.)**

*Claim.*—1. A concentrating-table composed of a number of longitudinal pans widest at the center of the table and diminishing in width toward the opposite edges thereof arranged to have a transverse intermittent discharge from one to the other, the discharge being completely interrupted during the rocking stroke of the table in one direction, the said pans or shelves being provided with riffles projecting above their discharge edge and shaped to hold the concentrates on the pan, and means for simultaneously imparting to the table a longitudinal reciprocation and a rocking or oscillating movement.



2. A table for saving mineral values, said table having a series of longitudinal shelves widest at the center of the table and diminishing in width toward the opposite edges thereof, giving the table a stepped surface crosswise of its length, the shelves having a transverse discharge from one to another, and means for simultaneously imparting to the table a longitudinal reciprocation and a rocking or oscillating motion, the latter being regulated to make the transverse discharge intermittent whereby the discharge is completely interrupted during the rocking stroke of the table in one direction.

3. A table for saving mineral values, said table being provided with a series of longitudinally-disposed concentrating-pans adapted to retain a portion of the material under treatment, said pans being widest at the central portion of the table and diminishing in width toward the opposite edges thereof and means for simultaneously imparting to the table a movement having a tendency to cause the material to travel thereon from the head toward the tail of the table, and a movement causing the pans to overflow or discharge intermittently from one to another in a transverse direction, whereby the discharge is completely interrupted during appreciable intervals.

4. A table for saving mineral values, said table having a series of longitudinally-disposed pans arranged to give the table a transversely-stepped surface, the table being mounted on an axis lying in a vertical plane passed longitudinally through its central portion, the central pans being widest, and the other pans diminishing in width from the center in both directions, and means for imparting to the table a longitudinal reciprocation and a rocking motion at right angles to its longitudinal movement, substantially as described.

5. In a concentrating apparatus, the combination with a suitable support, of a concentrating-table provided with a series of longitudinally-disposed parallel pans rigidly connected with the table and giving its surface a transversely-stepped appearance, said pans being of varying width to compensate for the reduced motion in the vicinity of the table's axis, a shaft secured to the longitudinal center of the table and resting on the support, and means for simultaneously imparting to the shaft and table a longitudinal reciprocation and a transverse rocking or oscillating movement, the arrangement being such as to cause the pans to have an intermittent discharge from one to the other, the discharge being completely interrupted during one stroke of the rocking movement.

6. In a concentrating apparatus, the combination with a suitable support, of grooved wheels mounted thereon, a shaft engaging said wheels, and a concentrating-table having its central longitudinal portion secured to the shaft, said table being composed of a series of longitudinal, parallel pans decreasing in width from the central portion of the table in both directions, and means for imparting to the shaft and table a longitudinal reciprocation and a rocking motion at right angles to the reciprocation, substahtially as described.

7. In concentrating apparatus, the combination with a suitable support, of grooved pulleys mounted thereon, one of said pulleys being vertically adjustable, a shaft engaging said pulleys, a concentrating-table mounted on the shaft, said table being composed of longitudinal parallel pans decreasing in width from the central part of the table in both directions, and means for simultaneously imparting to the table a longitudinal reciprocation and a transverse rocking motion, said means being arranged to give the pans an intermittent, transverse discharge from one to the other.

8. In a concentrating apparatus, the combination with a suitable support, of a shaft mounted to rock and slide longitudinally thereon, a concentrating-table having its central longitudinal portion made fast to said shaft, said table being composed of a series of longitudinal, parallel pans decreasing in width from the central part of the table in both directions, and means for simultaneously imparting to the shaft and table a longitudinal reciprocation and a rocking motion, substantially as described.

9. The combination with a suitable support, of a shaft mounted thereon and having a longitudinal movement, said shaft being spring-actuated in one direction, a lever connected with the shaft for actuating the table in the opposite direction to place the spring under tension, and a concentrating-table having its central longitudinal portion attached to the shaft, said table being composed of a series of parallel, longitudinally-disposed pans widest at the center or in the vicinity of the table's axis, and means for imparting to the table a rocking movement at right angles to its longitudinal reciprocation, the rocking means being arranged to cause the pans to discharge intermittently from one to the other, the discharge from one pan to another being completely interrupted during the rocking stroke of the table in one direction.

10. The combination with a suitable support, of a table movably mounted thereon and composed of a series of parallel longitudinally-disposed pans widest at the center of the table, means for imparting to the table a longitudinal reciprocation, an operating-crank, and a suitable connection between the said crank and the table whereby a rocking movement is imparted to the table, calculated to cause the pans to have an intermittent discharge from one to the other, the discharge from one pan to the other being completely interrupted at predetermined intervals.

11. The combination with a suitable support, of a table movably mounted thereon and composed of a series of parallel, longitudinally-disposed pans widest at the center of the table, and means for imparting to the table a transverse rocking movement whereby the pans are made to overflow or discharge intermittently from one to another, the discharge being completely interrupted during the rocking stroke of the table in one direction.

12. In concentrating apparatus, the combination with a suitable support, of sheaves mounted thereon, a shaft engaging said sheaves, a spring surrounding the shaft, a hand-wheel threaded on the shaft and bearing against one extremity of the spring, a stationary support through which the shaft passes, a lever for imparting to the shaft a longitudinal movement in one direction whereby the spring is placed under tension, the spring imparting the movement in the opposite direction, and a table mounted on the support and composed of a series of parallel longitudinally-disposed pans, said pans being widest at the center of the table, means for feeding the material to be treated, to the table, means for supplying the necessary wash-water to the table, and means for imparting to the table a rocking movement at right angles to its reciprocating movement, whereby the pans are caused to overflow or discharge intermittently from one to another, the discharge or overflow from one pan to another being completely interrupted at regular intervals or during the rocking movement of the table in one direction, substantially as described.

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**757,351. SAFETY-PIN.** EDWARD L. SANDS, Webb City, Mo. Filed Feb. 10, 1903. Serial No. 142,736. (No model.)



*Claim.*—A safety-pin formed of a single length of wire bent substantially at its center forming back and pin members, an inwardly-extended eye midway of the bend between the back and pin, a portion of the back member at the end opposite the eye being curved to form double loop members, and the end of the wire coiled around the back member and having a flattened portion extended between the loop members.

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**757,352. MANUFACTURE OF WHISKY, GIN, OR OTHER SPIRITS.** JULES M. SABOURET, Lille, France. Filed Dec. 22, 1902. Serial No. 136,258. (No specimens.)

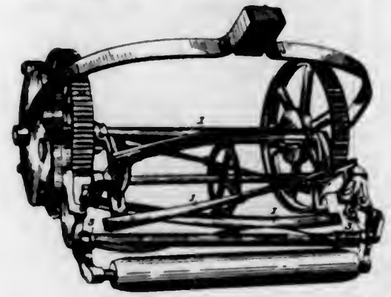
*Claim.*—1. In the process of manufacturing distilled spirits the process which consists in selecting a yeast from a wash coming from a wort of the same composition as the wort for producing the spirit, eliminating the impure ferment from the yeast, then cultivating the yeast in a wort having the same composition as the wort giving the wash the yeast was selected from, then preventing the increase of the yeast by the addition thereto of a quantity of spirit from a wash having the same composition as the wash the yeast was selected from and cultivated in, then sterilizing a wort of the same composition as the wort giving the wash from which the yeast was selected, and then incorporating the cultivated yeast in said sterilized wort.

2. In a process of manufacturing distilled spirits, the process which consists in selecting a yeast from a wash coming from a wort of the same composition as the wort for producing the spirit, eliminating the impure ferment from the yeast, then cultivating the yeast in a wort having the same composition as the wort giving the wash the yeast was selected from, and then preventing the increase of the yeast by the addition thereto of a quantity of spirit from a wash having the same composition as the wash the yeast was selected from and cultivated in.



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**757,353. LAWN-MOWER.** EDWARD W. SAYRE, Cape May, N. J., assignor to himself, Louis C. Sayre, and Thomas S. Sayre, Cape May, N. J. Filed July 9, 1903. Serial No. 164,818. (No model.)



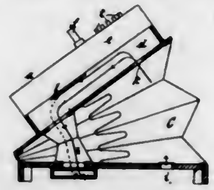
*Claim.*—1. A lawn-mower having a rotating reel with cutting-blades thereon and a rotating cutter coacting with the cutting-blades of said reel, substantially as specified.

2. A lawn-mower having a rotating reel with cutting-blades thereon and a rotating cutter with spirally-disposed cutting-blades coacting with the successive cutting-blades of the reel, substantially as specified.

3. A lawn-mower having a rotating reel and a rotating cutter coacting with the successive blades of the reel and rotated by contact therewith, substantially as specified.

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**757,354. MUSICAL INSTRUMENT.** RICHARD SCHELLER, Hamburg, Germany. Filed June 4, 1903. Serial No. 63,123. (No model.)

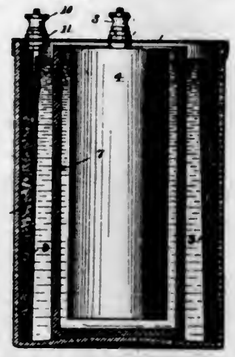


*Claim.*—1. The herein-described wind musical instrument comprising two independent bellows, inlet-valves in the bottom of each, a compressible cover upon the top of each, a reed-board for each bellows, a wind-chest for each bellows, of which the cover forms the bottom and the reed-board the top, a passage-way extending under both bellows, and a pair of compressible passage-ways, one communicating through each bellows between the wind-passage and the wind-chest, substantially as described.

2. In the wind musical instrument herein described comprising two independent bellows, a compressible cover for each bellows, a reed-board for each bellows, a keyboard and thumb-guard for each bellows, a wind-chest for each bellows of which the cover forms the bottom and the reed-board the top and a passage connecting the two wind chests, substantially as described.

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**757,355. GALVANIC BATTERY.** CHARLES R. SCHOENHERR, Waterbury, Conn., assignor to the Waterbury Battery Company, Waterbury, Conn., a joint stock company. Filed Nov. 22, 1899. Serial No. 737,884. (No model.)



*Claim.*—1. In a battery, the combination with the other parts, of an annular perforated depolarizer-receptacle, broadest through its top edge.

2. In a battery, the combination with the other parts, of an annular receptacle for holding a depolarizer having a perforated side wall set at an angle other than a right angle to a vertical line passing through said receptacle, and a zinc adjacent to said perforated wall.

3. In a battery, the combination with the other parts, of an annular receptacle for holding a depolarizer having an interior perforated tapering side wall, an exterior cylindrical vertical side wall and a zinc intermediate of said receptacle.

4. In a battery, the combination of the other parts, a receptacle for holding a depolarizer comprising an interior annular independently removable perforated side wall inclined at an angle other than a right angle to a vertical line passing through the receptacle, and a solid exterior wall.

5. In a battery, the combination with the other parts, of an annular depolarizer-holder with a perforated side wall, at least one of its walls being set at an angle other than a right angle to a vertical line through the holder.

6. In a battery, the combination with the other parts, of a receptacle for holding a depolarizer having an annular interior perforated side wall set at an angle other than a right angle to a vertical line passing through the said receptacle and an exterior cylindrical vertical wall.

7. The combination in a battery, of a jar, an oxid-of-copper element in said jar, a compartment for said element adjacent to the vertical wall of said jar and having a perforated inner wall, a cylindrical element bent up of a single sheet-metal piece, and having a central transverse end containing a binding-post thereon, an exciting fluid to operate in conjunction with said copper and zinc, substantially as shown and described, and means interposed between the two elements to form an electrical resistance.

8. In a galvanic battery of the class described, the combination with a glass jar, of a perforated sheet-metal cylinder arranged therein resting upon the bottom and forming an annular compartment adjacent to the jar, an oxid-of-copper element in said compartment, a cylindrical zinc element arranged centrally of said oxid and comprising a single piece of sheet-zinc rolled up with its inner end extending diametrically across the axial line of said cylindrical body, a post centrally arranged upon said transverse portion, and an electrical resistance disposed between said copper and zinc elements to preserve the energy of the battery.

9. In a galvanic battery of the class described, the combination with a suitable negative element, of a positive pole comprising a cylindrical body formed only of a single piece of sheet metal bent around with its inner end freely deflected diametrically across the axial line of said zinc body, a binding-screw centrally located on said deflected portion, substantially as shown and described.

10. In a battery, the combination with the other parts, of a receptacle for holding a depolarizer having an interior annular perforated side wall set at an angle other than a right angle to a vertical line passing therethrough and forming a central opening in the receptacle.

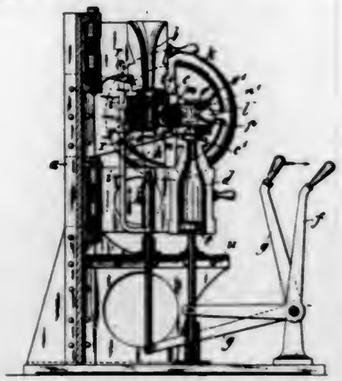
11. In a battery, the combination with the other parts, of a receptacle for holding a depolarizer, one wall of which is in the form

of a hollow perforated cone extending under some part of the depolarizer-holding space, all substantially as set forth.

12. In a battery, the combination with the other parts, of a receptacle for holding a depolarizer, having a perforated wall circular in cross-section which extends under some part of the depolarizer-holding space and set at an angle other than a right angle to a vertical line passing through the said receptacle.

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**757,356. GLASS-BLOWING MACHINE.** HEINRICH SEVERIN, Achern, Germany. Filed June 22, 1903. Serial No. 162,641. (No model.)



*Claim.*—1. In a machine for the manufacture of glass articles, the combination with a multipart receiving-mold and a multipart finishing-mold, of a rotatable element, and two mouth-molds arranged alternately at opposite sides of the axis thereof and adapted for closing the lower part of the receiving-mold and the upper part of the finishing-mold.

2. In a machine for the manufacture of glass articles, a multipart receiving-mold, a multipart finishing-mold, a rotatable element carrying two mouth-molds arranged alternately at opposite sides of the axis thereof and adapted for closing the lower part of the receiving-mold and the upper part of the finishing-mold, and means for supplying air under pressure to the two molds.

3. In a machine for the manufacture of glass articles, a multipart receiving-mold, a multipart finishing-mold, a closure for the lower portion of the receiving-mold, and a mouth-plunger provided with means for automatically opening the said closure.

4. In a machine for the manufacture of glass articles, a receiving-mold, a finishing-mold, a rotatable element carrying two mouth-molds, one of which is adapted to close the lower part of the receiving-mold and the other the upper part of the finishing-mold, a mouth-plunger adapted to coact with the receiving-mold, means for normally closing the entrance to the mouth-mold of the receiving-mold, and means actuated by the mouth-plunger to allow the said plunger to enter the mouth-mold of the receiving-mold.

5. In a machine for the manufacture of glass articles, a receiving-mold, a finishing-mold, a rotatable element carrying two mouth-molds, one of which is adapted to close the lower part of the receiving-mold and the other the upper part of the finishing-mold, means for supplying air under pressure to each mouth-mold, a valve for preventing the escape of air from each of the said molds, a mouth-plunger, and means carried by the plunger to open the valve to permit the plunger to enter the mouth-mold of the receiving-mold.

6. In a machine for the manufacture of glass articles, the combination of a multipart receiving-mold, a multipart finishing-mold, a rotatable element provided with bores, mouth-molds carried by opposite sides of the element and communicating with the bores, valves for closing the bores, a mouth-plunger coacting with the receiving-mold, means for releasing the valve of the bore with which the plunger coacts, to permit the latter to enter the mouth-mold of the receiving-mold, and a bulb-supporting plunger coacting with the finishing-mold.

7. In a machine for the manufacture of glass articles, the combination with a receiving-mold formed in two sections, and a finishing-mold formed in two sections, of a rotatable plate, and two mouth-molds arranged alternately at opposite sides of the axis thereof and adapted for closing the lower part of the receiving-mold and the upper part of the finishing-mold.

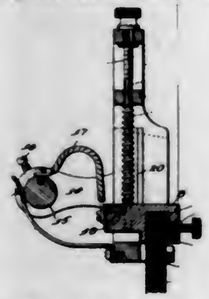
8. In a machine for the manufacture of glass articles, the combination with a receiving-mold formed in two sections, and a finishing-mold formed in two sections, of a rotatable plate, of two mouth-molds arranged alternately at opposite sides of the axis thereof and adapted for closing the lower part of the receiving-mold and the upper part of the finishing-mold, and a mouth-plunger arranged out of contact with the parts of the machine.

9. In a machine for the manufacture of hollow glass articles, the combination with a receiving-mold and a finishing-mold, each consisting of two sections, of a rotatable plate, two mouth-molds arranged alternately at opposite sides of the plate and of the axis thereof, said plate being provided with bores communicating with the mouth-molds, valves for closing the bores, and a mouth-plunger provided with means for opening a valve before the plunger enters a bore.

10. In a machine for the manufacture of hollow glass articles, the combination with a receiving-mold and a finishing-mold each consisting of two sections, of a rotatable plate, two mouth-molds arranged alternately at opposite sides of the plate and of the axis thereof, said axis being provided with ducts to supply air to the mold at the same time but independently of each other.

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**757,357. DYNAMO BRUSH-HOLDER.** WILLIAM SLEE, St. Louis, Mo. Filed Sept. 8, 1903. Serial No. 172,197. (No model.)



*Claim.*—1. A brush-holder of the class described, comprising a frame, arms connected to said frame, said arms supported upon the brush-rod of the dynamo, a brush-retaining casting loosely mounted within said frame, a sliding plate mounted within said frame, screws carried by said frame and passing through said plate whereby the same is raised and lowered, a spring located between said plate and the brush-retaining casting for supplying tension to said casting, a brush held within said brush-retaining casting, and means for retaining said brush in perfect electrical contact with the commutator of a dynamo, substantially as specified.

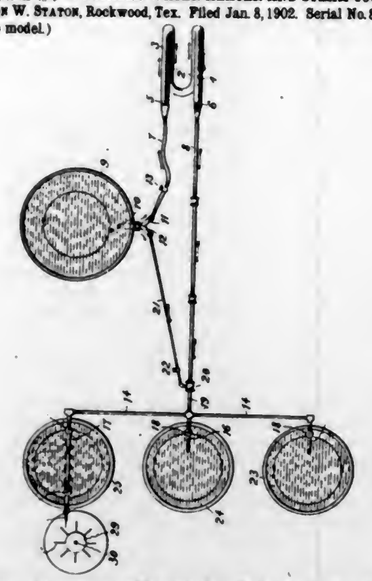
2. A brush-holder of the class described, comprising a frame, guides mounted within said frame, a casting loosely mounted within said frame and adapted to slide upon said guides, a socket formed in said casting, a plate mounted within said socket, a brush clamped in said socket by said plate, an adjusting device located in said frame for regulating the tension of the brush upon the commutator of the dynamo, electrical connection between the casting and the dynamo brush-rod, substantially as specified.

3. A brush-holder of the class described, comprising a frame, arms pivotally mounted to said frame, said frame and arms supported on the dynamo brush-rod, vertical guides located within said frame and formed integral therewith, a brush-retaining casting slidably mounted between said guides, a clamping device located in said casting for clamping and retaining the brush in position, a sliding plate located in said frame, screws carried by said frame and passing through the sliding plate, a spring located between the sliding plate and the brush-retaining casting, its tension being imparted upon said brush-retaining casting for keeping the brush at all times in electrical contact with the commutator of the dynamo, substantially as specified.

4. A dynamo brush-holder, comprising a frame, arms pivotally connected to said frame, recesses formed in the sides of said frame whereby said frame may be tilted at the desired angle in conformity with the position of the commutator, a casting slidably mounted within the frame, a carbon brush clamped within said casting, a tension-regulating device carried by the frame, whereby proper tension is imparted to the brush, a spring carried by said frame and connected to the dynamo brush-rod for retaining the frame in its adjusted position, and a contact between the casting and the dynamo brush-rod, substantially as specified.



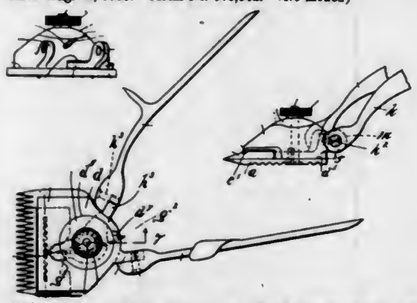
**757,358. PORTABLE WATER-HEATER AND STEAM-COOKER.** JOHN W. STATON, Rockwood, Tex. Filed Jan. 8, 1902. Serial No. 88,845 (No model.)



*Claim.*—An apparatus of the class described comprising, a steam-generating coil having extended tapering terminals, a tank or reservoir, a main water-pipe extending from the tank to one end of the coil and having a flexible portion detachably fitted on the tapered portion thereof, a steam-pipe extending from the other end of the coil and detachably fitting the tapered portion thereof, a distributing-pipe connected with the steam-pipe, a suction-pipe extending from the tank or reservoir to the steam-pipe and valves for controlling the passage of steam and water through the pipes, said steam and main water pipes being separable from the heating-coil and located beyond the body portion thereof, substantially as described.

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**757,359. HAIR-CLIPPER.** GEORGE F. STEVENS, Northwood, N. H. Filed Aug. 27, 1903. Serial No. 170,962. (No model.)

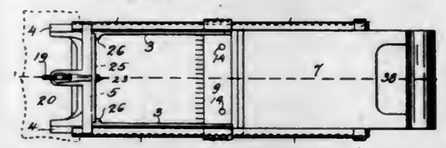


*Claim.*—A hair-clipper comprising a fixed bottom cutter, a movable top cutter bearing thereon, a post secured to the fixed cutter, a housing secured at its rear portion to the fixed cutter, its forward portion overhanging the movable cutter, said housing having an opening surrounding the post, a spring-receiving recess communicating with said opening, and a cap formed to cover said opening and recess, means on the post for detachably securing the cap, a lever fulcrumed on the post within the housing and engaged at one end with the movable cutter, its other end projecting from the housing, a spring surrounding the post within the housing and provided at one end with an arm engaging the lever and at the other end with an arm engaging the recess in the housing, and a pair of handles, one connected with the housing and the other with the lever.

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**757,360. COMBINED POTATO SLICER AND GRATER.** LAWRENCE L. STEVENS, Los Angeles, Cal. Filed Mar. 17, 1903. Serial No. 148,236. (No model.)

*Claim.*—1. A potato-slicer comprising a bracket-frame having lateral extending flanges, lateral walls, an end brace and a rear end wall made integrally a part of the frame, the said rear end wall provided with projections, a cutter-plate, a cutter-blade, a strip for securing the cutter-blade to the cutter-plate and having overturned ends or stops, the said overturned ends or stops adapted to abut against the said projections, the said cutter-plate provided with rearwardly-projecting walls and a brace connecting the rear ends thereof, a gage-plate, means for vertically and longitudinally adjusting the gage-plate within the rearwardly-projecting walls of the cutter-plate, a carrier, vertical knives and devices for removably fastening the carrier to the gage-plate.



2. In a potato-slicer, a bracket-frame having lateral flanges, lateral walls, an end brace and a rear wall, the said rear wall provided with projections extending outside the said lateral walls, in combination with a cutter-plate, a cutter-blade secured to the cutter-plate, provided with slots on the under beveled face thereof, a strip having overturned ends or stops fastened to the cutter-plate, an adjustable gage-plate, a carrier, vertical knives and devices for removably securing the carrier to the gage-plate.

3. In a potato-slicer, a bracket-frame having lateral flanges, lateral walls, a rear wall and an end brace, the said frame provided with projections, in combination with a cutter-plate, a cutter-blade, a strip extending across the cutter-plate for fastening the cutter-blade to the cutter-plate and having stops adapted to abut against the said projections when the cutter-plate is thrust inwardly upon the bracket-frame, the grater or sheet metal forming a brace for the cutter-plate on the under side thereof extending from side to side thereof, said cutter-plate provided with rearwardly-projecting walls, a brace connecting the inner ends of said walls, a gage-plate, a carrier, removably secured between the said rearwardly-projecting walls, the vertical knives and means for longitudinally and vertically adjusting the gage-plate between the projecting walls.

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**757,361. PROCESS OF RENDERING LEATHER DURABLE AND WATERPROOF.** FRIEDERICH STOFFER, Hamburg, Germany. Filed Oct. 15, 1902. Serial No. 127,411. (No specimens.)

*Claim.*—Process of making the upper for shoes durable and waterproof, which consists in first applying a solution of caoutchouc or india-rubber to its inner or flesh side, and then in rubbing in talcum powder till a smooth surface is formed substantially as described and for the purpose set forth.

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**757,362. COIN COUNTING AND DELIVERY MACHINE.** LAWSON SUMNER, Colorado Springs, Colo. Filed June 6, 1903. Serial No. 160,328. (No model.)

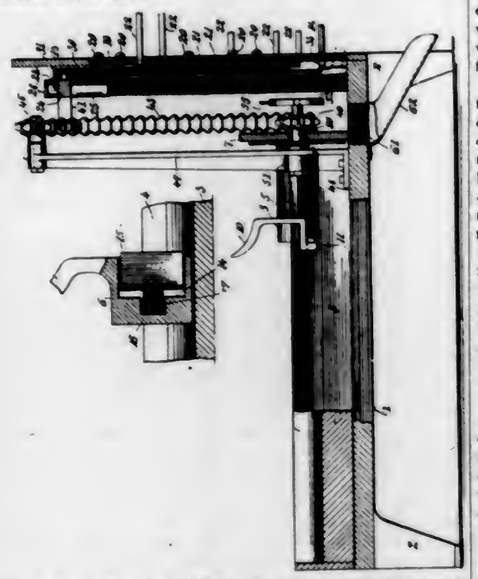
*Claim.*—1. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

2. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, means for operating the ejector device, and an actuator for said means, coacting with each of the key-levers, the latter having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

3. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a feed device for the coins, a series of operating key-levers, and means for operating said ejector device therefrom, said key-levers having different degrees of movement, for causing the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

4. A coin counting and delivery machine, comprising a trough

for containing a quantity of coins, an ejector device at the discharge end thereof, a spring-actuated follower for feeding the coins to the ejector device, a series of operating-levers, means for operating said ejector device, and an actuator for said means, coacting with each of said key-levers, the latter having different degrees of movement to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.



5. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, means for operating the ejector device therefrom, and means for locking said ejector device against movement in either direction, immediately succeeding the ejectment of the last coin from the trough.

6. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a feed device for the coins, a series of operating key-levers, means for actuating the ejector device therefrom, and means, carried by said feed device, for locking said ejector device against movement in either direction, immediately succeeding the ejectment of the last coin from said trough.

7. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a spring-actuated feed device for the coins, a series of operating key-levers, means for operating the ejector device therefrom, and an independently-spring-actuated device, carried by said feed device, for locking the said ejector device against movement in either direction, immediately succeeding the ejectment of the last coin from the trough.

8. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, means for operating the ejector device therefrom, and means for locking this device against movement in either direction, immediately succeeding the ejectment of the last coin from the trough, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

9. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, means for actuating said ejector device therefrom, and means for checking the movement of the ejector device at the limit of depression of each of said levers.

10. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, means for actuating said ejector device therefrom and means for checking the movement of the ejector device at the limit of depression of each of said levers, said means including a notched disk, a spring-controlled lever having a tooth for entering said notches, and a vertically-movable rod engaging said lever, and actuated by the rise and fall of each lever.

11. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, means for actuating said ejector device therefrom, and means for checking the movement of this device at the limit of depression of each key-lever, said levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

12. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible devices, for actuating said ejector device, means for checking the movement of the ejector device at the downward limit of each of said depressible devices, one of the latter being common to all the others and depressed by each of the others of the series thereof, and a device coacting with said common depressible device, for operating said means for checking the movement of the ejector device, substantially in the manner set forth.

13. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a spring-actuated feed for the coins, an abutment for the latter, a series of operating key-levers, and means for actuating the ejector device therefrom, said key-levers having different degrees of movement to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

14. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, and an endless movable sprocket-chain, combined with a depressible beam, and a spring-controlled pawl, for actuating the ejector device from the key-levers, the latter having different degrees of movement, to cause said ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

15. A coin counting and delivery machine, comprising a base having an opening therein, a trough on the base, for containing a quantity of coins, the discharge end of said trough leading to said opening, an ejector device at said discharge end of the trough, a keyboard having vertical slots therein, of different heights, a series of operating key-levers having numbered digits and provided with guides working in said slots, and means for actuating the ejector device from the key-levers, to cause said device to be moved by each of the latter to a different extent, to deliver from the machine a different and determinate number of said coins.

16. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins, and said means being constructed in part of a spring-retracted vertically-movable beam.

17. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins, and said means being constructed in part of a spring-retracted vertically-movable beam, the levers being bent to engage said beam.

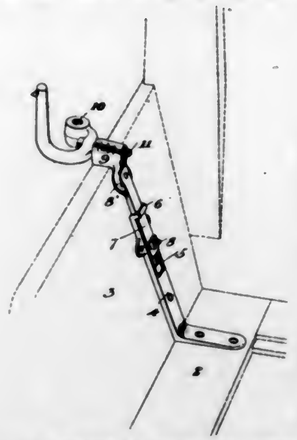
18. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, this device being constructed of a body portion having arms radially disposed thereto at suitable distances apart.

19. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, this device being constructed of a body portion having radially-disposed arms, the edges of said body portion intermediate the arms being bulged or outwardly curved.

20. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating the ejector device therefrom, said key-levers having different degrees of movement to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of coins, and said ejector device being constructed of a body portion having radial arms.



## 757,363. SEAT-IRON FOR CARRIAGE-TOPS. Henry C. Swan, Cleveland, Ohio. Filed Nov. 20, 1902. Serial No. 132,147. (No model.)



*Claim.*—1. A seat-iron for carriage-tops, comprising a body portion arranged to fit against the inner side of the seat-panel and having an outward horizontally-projecting hollow socket with an inner angular portion, a removable supporting-iron for the top having a horizontally-projecting angular plug portion arranged to fit in the socket, and means for securing the parts together; substantially as described.

2. A seat-iron for carriage-tops, comprising a body portion arranged to be permanently secured to the inner side of the seat-panel and having an outward horizontally-projecting hollow socket with an angular cavity and a screw-threaded hole at the end of the cavity, a removable supporting-iron for the top having a hollow angular plug arranged to fit in the socket, and a set-screw extending through the parts and engaging the screw-threaded hole of the socket; substantially as described.

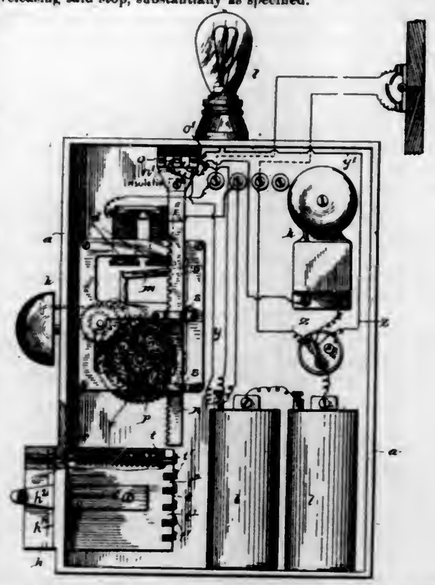
3. A seat-iron for carriage-tops, comprising a body portion arranged to be secured to the inner side of the seat-panel and a removable supporting-iron for the top, one of said parts having a horizontally-projecting socket with an angular cavity open at its outer end, and the other having a horizontally-projecting angular portion arranged to fit in the cavity, and means for securing the parts together; substantially as described.

4. A seat-iron for carriage-tops, comprising a body portion arranged to be secured to the inner side of the panel and having an outwardly and horizontally projecting upper end portion and a removable canopy-top socket, one of said parts having a socket portion with a tapered angular cavity and the other having a tapered horizontally-extending plug arranged to fit in the cavity, and means for securing the plug within the angular socket; substantially as described.

5. In seat-irons for carriage-tops, a seat-iron set comprising a body portion arranged to be permanently secured to the inner face of the seat-panel, and a pair of removable irons, one being arranged for a canopy-top and the other for an extension-top, the body portion and the removable irons being arranged with an angular plug and-socket connection, whereby the seat may be adapted to either a canopy-top or an extension-top; substantially as described.

## 757,364. COMBINED LIGHTING AND ALARM DEVICE. John Thorsen, Chicago, Ill. Filed Sept. 24, 1903. Serial No. 174,485. (No model.)

*Claim.*—1. In an alarm device, a motor having a pinion, a rack-bar engaging said pinion, alarm devices, means above and in the path of movement of said rack-bar for effecting the operation of one of said alarm devices, means below and in the path of movement of said rack-bar for setting the other of said alarm devices in operation, a stop for keeping said motor out of operation, and means for releasing said stop, substantially as specified.

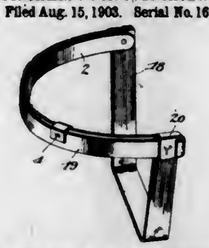


2. In an alarm device, the combination with a motor having a pinion, of a cartridge-holder, a spring-pressed firing-pin for said cartridge-holder having a trigger attachment, a stop for holding said trigger attachment and firing-pin withdrawn, a rack-bar engaging said pinion and operating in the path of said trigger attachment, a stop for keeping said motor out of operation, and means for releasing said stop, substantially as specified.

3. In an alarm device, the combination with a motor having a pinion, of a cartridge-holder, a spring-pressed firing-pin for said cartridge-holder having a trigger attachment, a stop for holding said trigger attachment and firing-pin withdrawn, a rack-bar engaging said pinion and operating said trigger attachment, a second alarm device, means located above and in the path of said rack-bar for setting the same in operation, a stop for keeping said motor out of operation, and means for releasing said stop, substantially as specified.

4. In an alarm device, the combination with a motor having a pinion, of a cartridge-holder, the spring-pressed firing-pin of said cartridge-holder having a trigger attachment, a stop for holding said trigger attachment and firing-pin withdrawn, a rack-bar engaging said pinion and operating said trigger attachment, a second alarm device, a spring-contact in circuit therewith and located above and in the path of said rack-bar, a stop for keeping said motor out of operation, and means for releasing said stop, substantially as specified.

## 757,365. ATTACHMENT FOR OVERSHOES. William H. Tillson, Quincy, Ill. Filed Aug. 15, 1903. Serial No. 169,637. (No model.)



*Claim.*—1. An attachment for overshoes comprising a stiffener for the overshoe-wall consisting of a strip of sheet metal, means for positively attaching the stiffener to the overshoe-wall on the inside thereof, a bail pivotally mounted on the stiffener and a catch on the bail to engage with the upper margin of the wall of the overshoe to limit the downward movement of the bail.

2. An attachmennt for overshoes comprising a stiffener disposed on the inside of the overshoe along the upper margin of the wall

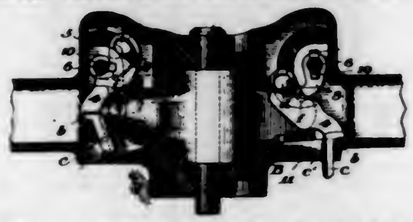
thereof, a bail pivotally mounted upon the stiffener and depressible within the overshoe, means for positively attaching the stiffener to an overshoe, and a hook carried by the bail for engagement with the upper margin of the overshoe-wall to limit the downward movement of the bail.

3. An attachment for overshoes comprising a stiffener for overshoes adapted to lie in contact with the inside of an overshoe, hooks provided on the stiffener for engagement with the upper edge of the overshoe-wall and having bent portions at the ends thereof to engage the outer surface of the overshoe-wall, and a bail pivotally connected at its terminals with the stiffener and provided with a catch to limit the downward movement of the bail.

4. An attachment for overshoes comprising a stiffener consisting of a strip disposed horizontally along the inside of the upper margin of the overshoe, a second strip rigidly connected with the first strip and extending downward inside the overshoe and across the bottom thereof, and a bail pivotally attached to the stiffener on the inside thereof.

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**757,366. CAR-COUPLING. CLINTON A. TOWER, Cleveland, Ohio, assignor to the National Malleable Castings Company, a Corporation of Ohio. Filed June 13, 1903. Serial No. 161,966. (No model.)**



*Claim.*—1. A coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, and a curved guide for said piece concentric with the lever; substantially as described.

2. A coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, said lever engaging the piece freely during its lifting motion, and engaging it rigidly when moving the knuckle open, said locking and opening piece extending into an opening in the floor of the coupler and being adapted when raised to rest upon the margin of said opening; substantially as described.

3. A coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, said lever engaging the piece freely during its lifting motion, and engaging it rigidly when moving the knuckle open, said piece being adapted to engage a recess in the coupler-head, and said lever being adapted to draw it out of contact with the recess during the initial motion of the parts; substantially as described.

4. A coupler having a locking and opening piece, a lever adapted to engage a recess therein, and trunnions at the upper portion of the piece; substantially as described.

5. A coupler having a locking and opening piece, a lever adapted to engage the same freely during its initial movement and then to engage it rigidly, and a recess on the coupler-head adapted to engage said piece, said lever being arranged to impart to the piece an initial motion to free it from the projection, succeeded by a lifting motion to release the knuckle and a swinging motion to move the knuckle open; substantially as described.

6. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, and an operating device exterior to the coupler-head and connected detachably to the lever; substantially as described.

7. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, and an operating-spindle connected detachably to the lever; substantially as described.

8. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, and an operating-spindle connected detachably to the lever by a key; substantially as described.

9. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, an operating-spindle connected detachably to the lever, and a coupling-eyepiece on the spindle adapted to receive loosely an operating-crank; substantially as described.

10. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion, and engaging it rigidly when moving the knuckle open, an operating-spindle connected detachably to the lever, and a coupling-eyepiece fitted detachably on the spindle and held by a projection on the coupler-head; substantially as described.

11. A coupler having a lock, an operating-spindle having a connecting-key, and a slot on the coupler-head adapted to permit withdrawal of the spindle only when the lock has been moved past its normal limit; substantially as described.

12. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised, and swung forwardly, said lever engaging the piece freely during its lifting motion and having a hook portion adapted to engage it rigidly when moving the knuckle open; substantially as described.

13. A coupler having a locking and opening piece, a lever contained within the coupler-head, and an operating-spindle connected detachably to the lever; substantially as described.

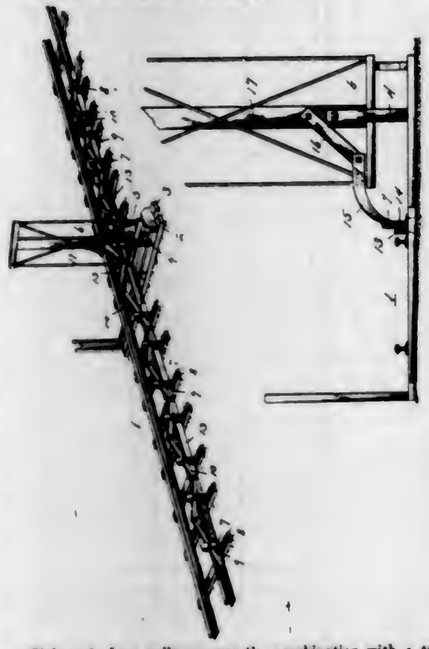
14. A coupler having a locking and opening piece, a lever contained within the coupler-head, an operating-spindle having a crank connection, and a coupling-eyepiece fitted to the spindle and constituting a second crank connection; substantially as described.

15. A coupler having a locking and opening piece, a lever contained within the coupler-head, an operating-spindle, and a coupling-eyepiece fitted detachably thereto; substantially as described.

16. In a coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, and a curved guide, said locking and opening piece fitting at the upper end in the guide and having at the lower end a portion adapted to engage the knuckle; substantially as described.

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**757,367. RAILWAY-GATE. LOUIS TREBERT, Beaver, Wis., assignor of one-half to Henry A. Tagatz, Beaver, Wis. Filed Oct. 4, 1902. Serial No. 125,921. (No model.)**



*Claim.*—1. In a railway-gate, the combination with a transversely-arranged gate pivoted to be swung in a vertical plane, of a plurality of approximately inverted-U-shaped castings forming standards and arranged in series adjacent to the gate, inclined levers pivoted in the standards and connected to each other and to the gate, and means for actuating the levers simultaneously so as to raise or lower the gate.

2. In a device of the character described, the combination with a gate, standards on either side of the gate to which it is pivoted, a plurality of pivoted levers connected to the gate, each alternate lever being inclined at an opposite direction to the preceding one, and a rail connected to the levers and adapted to be operated upon so as to actuate the levers to raise and lower the gate.

3. The combination with a gate, of a plurality of levers arranged adjacent to the gate and inclined in opposite alternating series, said levers being connected to each other, a rail connecting the levers so as to operate them simultaneously, an operating-lever at the end of the first-named levers, a link connection between the gate and the operating-levers, whereby pressure upon the rail will tilt the gate.

4. In a railway-gate, the combination with a gate, of levers, each lever having one of its ends bifurcated and the other end slotted, and means for connecting the inmost lever to the gate, and means for connecting the levers and adapted to be operated upon so as to actuate the levers to operate the gate.

5. In a railway-gate, the combination with a gate, means for operating said gate, gates arranged at angles to the first-named gate, a shaft, links connecting the shaft to the last-named gates to permit the operation of one gate to operate the other, another shaft, links connecting the last-named shaft to the first-named gate and one of the last-named gates, whereby the opening of the first-named gate will close the last-named gates and the closing of the first-named gate will open the last-named gates.

6. In a railway-gate, the combination with a gate, of levers, each lever having one of its ends bifurcated and the other end slotted, means for connecting the inmost lever to the gates, means for connecting the levers and adapted to be operated upon to actuate the levers to operate the gate, gates arranged at angles to the first-named gate, a shaft, links connecting the shaft to the last-named gates to permit the operation of one gate to operate the other, another shaft, links connecting the last-named shaft to the first-named gate and one of the last-named gates, whereby the opening of the first-named gate will close the last-named gates, and the closing of the first-named gate will close the last-named gates.

7. In a railway-gate, the combination with a gate, of levers, each alternate lever being inclined in an opposite direction to the one preceding it, means for connecting the inmost lever to the gate, means for actuating the levers to operate the gate, gates arranged at angles to the first-named gate, a shaft provided with an arm, a link connecting the shaft to the first-named gate, a link connecting the arm to one of the last-mentioned gates, a shaft provided with arms, and links connecting the last-named arms to the last-named gates.

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**757,368. CONSTRUCTION OF BULKHEADS. JOHN TRUAX, Longbranch, N. J. Filed Jan. 2, 1904. Serial No. 187,377. (No model.)**

*Claim.*—1. A pile having a hook pivoted thereto near its point.

2. A pair of piles, one having a hook pivoted thereto near its point, and the other having a corresponding catch.

3. A series of piles, each having a hook pivoted thereto near its point, and also having a catch for cooperation with the hook of the adjoining pile.

4. A pile provided near its point with a movably-mounted member for connecting it to the next pile.

5. A pile having upon one side a pivoted hook and upon the opposite side a catch.

6. A pile having grooved sides and provided with a pivoted hook.

7. A series of gage-piles having grooved sides, and means independent of the grooves for anchoring the sunken portions of the piles to one another.

8. A series of piles having grooved sides, each pile being provided with a hook and a catch for anchoring the sunken portions of the piles together.

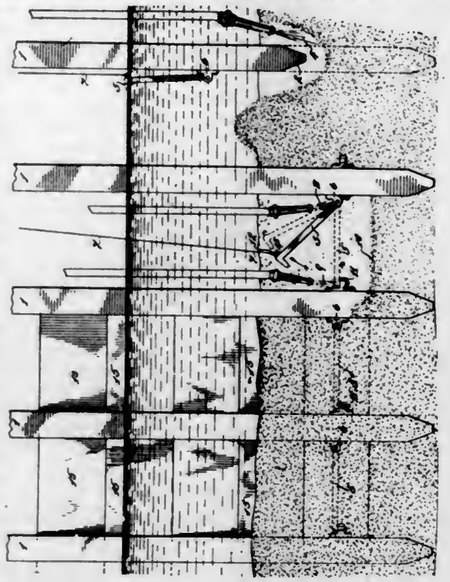
9. A pile provided upon one side with a pair of hooks and upon the other side with a pair of catches.

10. A series of piles having grooves in their sides, and each provided upon one side with hooks one at each side of the groove, and upon the other side with catches similarly disposed.

11. A series of piles having grooves in their sides, and means at the sides of the grooves for connecting the piles together.

12. A bulkhead comprising a series of gage-piles having grooved sides, the spaces between adjoining piles being filled by plates placed one above another with their edges in the grooves; and means being provided independent of the plates and grooves for positively connecting the sunken portions of said piles.

13. A bulkhead comprising a series of gage-piles, means positively connecting the sunken portions of said piles, and plates independent of said connecting means and placed one above another and filling the spaces between said piles and connected thereto.



14. A bulkhead comprising a series of gage-piles connected together by sunken hooks, and filler-plates independent of said hooks and mounted between said piles and connected thereto.

15. A bulkhead comprising a series of gage-piles having grooved sides and means connecting their sunken portions together by hooks placed in both front and rear of the grooves, and filler-plates between said piles and occupying said grooves.

16. A bulkhead comprising gage-piles having sunken means for positively connecting them together, means being also provided for anchoring the upper portions of said piles, and the spaces between said piles being filled with plates independent of said connecting means and placed one above another and connected by their edges to the piles.

17. The herein-described method of forming a bulkhead, consisting in sinking a series of gage-piles, then connecting their sunken portions, and then sinking filler-plates between the piles.

18. The herein-described method of forming a bulkhead, consisting in sinking a series of gage-piles, then connecting their sunken portions in both front and rear, then sinking filling-plates between the piles, and piling said plates one upon another between the piles above their sunken portions.

19. The herein-described method of forming a bulkhead, consisting in providing a series of gage-piles each with means for connecting it to the next, sinking said piles with said connecting means in dormant position, and then moving said connecting means to effective position.

20. The herein-described method of forming a bulkhead, consisting in providing a gage-pile near its point with a connecting device, sinking said pile at a suitable distance from another gage-pile, with said connecting device in dormant position, clearing a space for said connecting device, and causing the latter to connect said piles.

21. The herein-described method of forming a bulkhead, consisting in pivoting a hook to a gage-pile near its point, sinking said pile with said hook extending up alongside thereof, and at a suitable distance from another gage-pile, clearing a space beneath said hook between the piles, and causing said hook to catch upon said other gage-pile.

22. The herein-described method of forming a bulkhead, consisting in sinking at suitable intervals gage-piles provided with dormant hooks, clearing spaces between the piles, by hydraulic action, for the movement of the hooks, causing said hooks to connect the piles, and sinking filler-plates between the piles.

23. A sea-wall comprising a series of gage-piles set at an inclination and connected together, at a point below the water or sand

line, by latch and catch devices, substantially as described, and fillings between the piles.

24. The herein-described method of forming a bulkhead, consisting in providing gage-piles with connecting means, sinking the piles at intervals, holding the connecting means in dormant position during the sinking operation, making a clearance below the connecting means between the piles, guiding the connecting means into engagement, to connect the piles, and filling the space between the piles.

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757,369. **BUSTLE.** ELLA VAUGHN, New Orleans, La. Filed Oct 9, 1901.. Serial No. 78,036. (No model.)



*Claim.*—As a new article of manufacture, the bustle having a pad comprising sections of vegetable sponge or looka, each formed with a flat back surface and a convex outer surface, and joined together at their adjacent edges, a folded marginal binding for the same, a belt to which said bustle is connected by its upper corners, and a strap attaching said bustle to said belt by the middle of its upper edge for attaching said bustle to the person of the wearer, all substantially as shown and described.

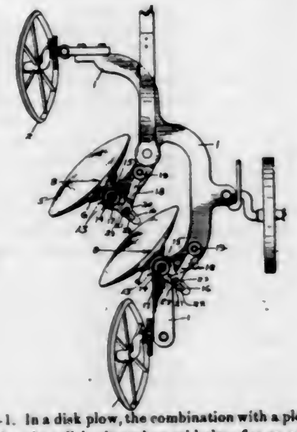
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757,370. **PROCESS OF MAKING MONOBENZOYL ARBUTIN.** CARL VILMAR, Zellerfeld, Germany. Filed Oct. 24, 1902. Serial No. 128,649. (Specimens.)

*Claim.*—The process for the preparation of monobenzoyl arbutin by causing benzoyl chlorid to react upon arbutin and adding alkali to neutralize the product of the reaction.

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757,371. **DISK PLOW.** CHAPIN WAGNER, Indianapolis, Ind. Filed Oct. 22, 1902. Serial No. 128,214. (No model.)



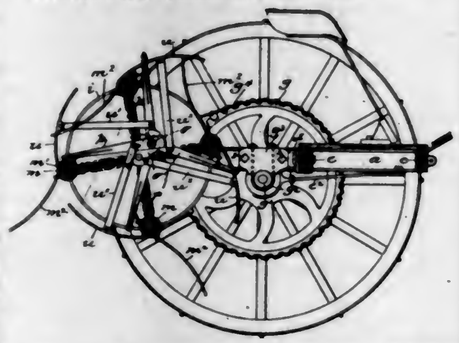
*Claim.*—1. In a disk plow, the combination with a plow-supporting frame and a plow-disk pivoted on said plow-frame, of a radially-extending arm fixed on the end of the pivotal center of said plow-disk and graduated, as described, a retaining-arm pivotally secured at a fixed point on said supporting-frame and adjustably connected at its opposite end to said radially-extending arm, and said retaining-arm having a fixed pivotal point so situated on said frame that said retaining-arm will be approximately at right angles with said radially-extending arm at all points when connected to the latter.

2. In a disk plow, the combination with a plow-supporting frame and a plow-disk pivoted on said plow-frame, of a radially-extending arm fixed on the pivotal center of said plow-disk and provided with a longitudinally-extending slot and said arm graduated, as described, and a retaining-arm pivotally secured at a fixed point on said supporting-frame and situated thereon so that said retaining-arm will be approximately at a right angle with said radially-extending arm when connected to the latter, and said retaining-arm provided with an indicating-finger whereby the angle at which the plow-disk is set indicated on said graduated scale on said radially-extending arm.

3. In a disk plow, the combination with the plow-supporting frame and a series of plow-disks pivoted on said plow-frame, of a series of radially-extending arms fixed on the pivotal centers of said plow-disks independently of each other and provided with longitudinally-extending slots, and said arms graduated, as described, and retaining-arms pivotally secured at fixed points on said supporting-frame and so situated thereon that each of said retaining-arms will be approximately at a right angle with its radially-extending arm, said retaining-arms each provided with an indicating-finger whereby the angles, at which each, of said plow-disks to which said retaining-arms are connected, is set, are indicated on said graduated scales on said radially-extending arms.

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757,372. **HAY-TEDDER.** CHARLES W. WARNER, Melrose, Mass. Filed Sept. 6, 1898. Serial No. 690,262. (No model.)



*Claim.*—1. In a hay-tedder, a reel having several fork-carrying bars, a stationary bar disposed eccentric to the axis of the reel and adjustable relative thereto, forks carried by the fork-carrying bars and fork-arms mounted on said eccentric bar and adjustably connected with the crowns of said forks, substantially as described.

2. In a hay-tedder, a reel having longitudinal fork-carrying bars bearing cams and forks having circular bearing portions embracing said bars and cams, substantially as described.

3. In a hay-tedder, a reel having longitudinal fork-carrying bars reduced on one side, and cams secured to said bars opposite the said reduced sides, substantially as described.

4. In a hay-tedder, a reel having longitudinal fork-carrying bars adjustable on their axes bearing cams on which the forks are mounted and means for holding said bars in adjusted position on their axes, substantially as described.

5. In a hay-tedder, a reel having longitudinal fork-carrying bars adjustable on their axes, bearing cams on which the forks are mounted and means for holding the bars with said cams in different positions to vary the velocity of the forks during their tedding stroke, substantially as described.

6. In a hay-tedder, a reel having fork-carrying bars provided with cams upon which the forks are mounted, said cams being adjusted so that lines at right angles to the chords of their arcs form chords to the arc of the reel, substantially as described.

7. In a hay-tedder, two sets of rollers, bearing-boxes therefor, and supports for said boxes, stationary axles having rotary sleeves thereon passing through said boxes, a reel having end pieces or heads secured to said sleeves and means for rotating said sleeves, and an eccentric bar secured to the inner or adjacent ends of said stationary axles, substantially as described.

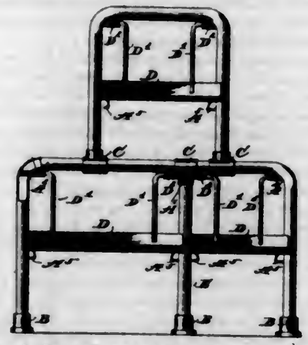
8. In a hay-tedder, several tedder-forks carried by a reel, means for operating them, combined with stripper-arms loosely mounted on the fork-carrying bars and adapted to operate between the tines of the forks, and means for operating them, substantially as described.

9. In a hay-tedder, several tedder-forks carried by a reel, means for operating them, combined with stripper-arms for the forks loosely mounted on the fork-carrying bars, and links connecting them with the fork-arms, substantially as described.

10. A tedder-fork having a crown and tines, a brace for holding said crown and tines in a predetermined relative position, and a wedge-block for adjusting the relative position of the crown and tines of the fork, substantially as described.



757,373. **ROLL-PAPER HOLDER.** GEORGE W. WEBSTER, Chicago, Ill.; Maria L. Webster executrix of said George W. Webster deceased. Filed Feb. 13, 1902. Renewed Nov. 23, 1903. Serial No 182,407. (No model.)



*Claim.*—1. In a roll-paper holder, in combination, an integral U-shape supporting-frame of tubular construction, said frame being provided near its angles and on its inner side with two opposite openings; a cutter-bar; rods secured to said cutter-bar, extending into the openings in said frame; a spring having an engagement with one of said rods and with said frame; and brackets secured to said frame on opposite sides of the inner face thereof, for supporting the shaft upon which the paper-roll is mounted.

2. In a roll-paper holder, in combination, an integral supporting-frame composed of a tube of substantially inverted-U form, said frame being provided with openings near its angles; a cutter-bar; rods secured to said cutter-bar and extending into the openings near the angles of said frame; a spring surrounding one of said rods and having an engagement with said frame; brackets secured to said frame for supporting the shaft upon which the paper-roll is mounted; and supporting-feet having sockets for receiving the ends of said tubular frame.

3. In a roll-paper holder, in combination, an integral U-shape frame of tubular construction, having openings near its angles and on its inner side; a cutter-bar; rods secured to said cutter-bar extending into the openings in said frame; a spring having an engagement with one of said rods and with said frame; brackets on said frame for supporting the shaft upon which the paper-roll is mounted, each of which brackets is formed from a single piece of wire bent in U form, the ends of which wire are adapted to enter openings in the tube of said frame; plugs constituting nuts in the ends of the tube forming said frame; supporting-feet having sockets adapted to receive the ends of said tube; and screws passing through said feet into said plugs.

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757,374. **SEAM FOR SEWED ARTICLES.** HAROLD A. WEBSTER, Haverhill, Mass., assignor of one-half to Charles K. Fox, Haverhill, Mass. Filed July 31, 1903. Serial No. 167,666. (No model.)



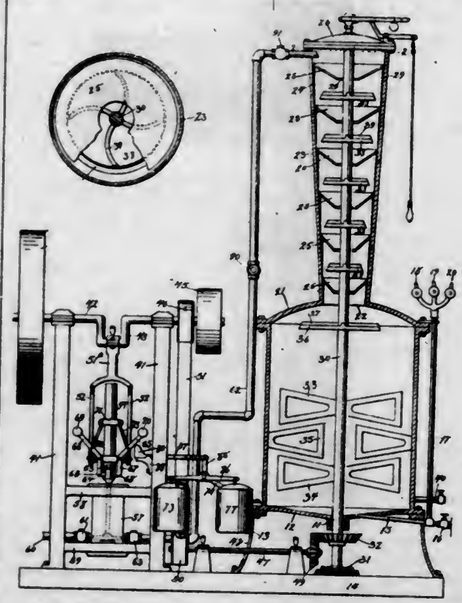
*Claim.*—1. A seam comprising a compound article or piece of work composed of two or more layers, a series of loops drawn through the work and connected at their bases by stretches of thread integral with the loops and bearing on one surface of the work, and locking members forming parts of the same thread, each locking member bearing on another surface of the work and engaging one or more of the loops, said locking members being independent of each other and interlocked only with the loops.

2. A seam comprising a compound article or piece of work composed of two or more layers, and a single thread bearing on one surface of the work and having a series of longer and shorter loops drawn through the work, the outer portion of each longer loop bearing on another surface of the work and passing through one or more of the shorter loops, the longer loops being independent of each other and interlocked only with the shorter loops.

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757,375. **CARBONATOR.** FRANK B. WEST, Colfax, Iowa. Filed Oct. 11, 1902. Serial No. 126,949. (No model.)

*Claim.*—1. In a carbonator, the combination with a water-tank, of a tapering funnel portion supported on the tank and having communication therewith at its bottom, the lower end of the funnel portion being of less diameter than the diameter of the tank, an upright shaft journaled in the tank and extending through the funnel portion, a plurality of funnels supported in the funnel portion and spaced apart, a plurality of disks carried by the shaft and located below the funnels, fans attached to the shaft and arranged in the tank below the lower end of the funnel portion, means for supplying liquid to the upper end of the funnel portion, and means for rotating the shaft.



2. In a carbonator, the combination with a water-tank having a funnel portion tapering toward its lower end, of funnels located in the tank and spaced from each other, said funnels having central discharge-openings, an upright shaft extending longitudinally through the funnel portion and through the openings in the funnels, disks carried by the shaft and located below the discharge-openings, and radially-disposed curved flanges arranged on the upper faces of the disks.

3. In a carbonator, the combination with a cylindrical liquid-receiving tank, of a downwardly-tapering funnel portion projecting above the tank and of less diameter than the same, the lower end of the funnel portion being in communication with the top of the tank, a vertical shaft extending through the tank and funnel portion, a plurality of funnels supported within the funnel portion of the tank and having centrally-disposed discharge-openings, a plurality of horizontally-arranged disks carried by the shaft and located beneath the funnels, said disks having radially-disposed flanges on their upper faces, radialiy-disposed fans carried by the shaft and located in the tank below the funnel portion, said fans being spaced apart, stationary fans attached to the walls of the tank and arranged between the fans of the shaft, means for rotating the vertical shaft, and means for supplying liquid to the top of the funnel portion above the funnels therein.

4. In a carbonator, the combination with a liquid-receiving tank, of agitating means located therein, a pump for supplying liquid to the tank, common driving means for actuating the agitating means and pump, and means for automatically disconnecting the pump and driving means without stopping said driving means.

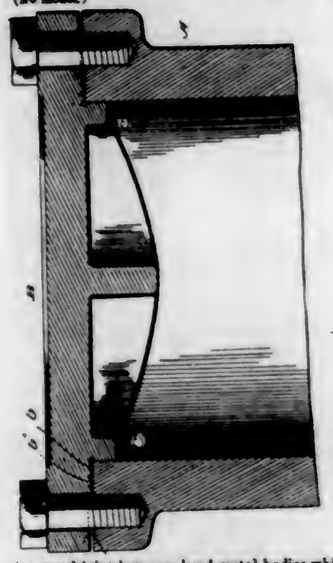
5. In a carbonator, the combination with a liquid-receiving tank, of agitating means located therein, a pump for supplying liquid to the tank, said pump including a reciprocatory plunger, common driving means for actuating the agitating means and reciprocating the pump-plunger, and means actuated by the liquid in the tank for disconnecting the plunger and driving means.

6. In a carbonator, the combination with a liquid-receiving tank, of agitating means located therein, a pump for supplying liquid to the tank, said pump including a reciprocatory plunger, a driving-shaft having a crank, mechanism connecting the agitating means and driving-shaft for moving the latter, a clutch connection between the piston and crank of the shaft, and means actuated by the liquid

within the tank for operating the clutch, said means being movable into the path of movement of said clutch.

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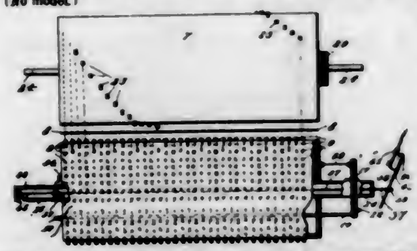
757,376. GROUND JOINT. RICHARD WHITAKER, New Brunswick, N. J., assignor of two-thirds to Robert W. Johnson and James W. Johnson, New Brunswick, N. J. Filed Mar. 7, 1903. Serial No. 146,693. (No model.)



*Claim.*—A ground joint between hard-metal bodies which consists in the plane face of one of said bodies extending uniformly from its inner edge to its outer edge and the surface area of the opposed body reduced in size and provided with a series of grooves with means uniting said bodies, substantially as specified.

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757,377. PRINTING-TELEGRAPH RECEIVER. JAMES D. WHITE, London, England. Filed Aug. 29, 1903. Serial No. 171,201. (No model.)



*Claim.*—1. An electromagnetic printing device, comprising a type-cylinder having circularly-arranged series of characters of three kinds disposed around the cylinder with the three kinds arranged side by side in circular series, and forming groups which are repeated along the length of the cylinder, electromagnetic devices for giving both a rotary and a variable longitudinal movement to said cylinder, a hammer-cylinder arranged parallel to the first-named cylinder and bearing a single row of spirally-arranged impact-faces, and electromagnetic devices for imparting to this cylinder a step-by-step rotary movement, and an integral lateral movement to deliver the printing blow, substantially as and for the purpose described.

2. An electromagnetic printing device, comprising a type-cylinder having circularly-arranged series of characters of three kinds disposed around the cylinder with the three kinds arranged side by side in circular series and forming groups which are repeated along the length of the cylinder, electromagnetic devices for giving both a rotary and a variable longitudinal movement to said cylinder, a hammer-cylinder arranged parallel to the first-named cylinder and bearing a single row of spirally-arranged impact-faces, electromagnetic actuating devices for this hammer-cylinder, the electromagnetic actuating devices for one cylinder being constructed and arranged to be operated by a current of one polarity and that of the other cylinder being constructed and arranged to be operated by a current of the opposite polarity, the sliding of the type-cylinder being effected by a variable subsidiary device and the hammer-cylinder being arranged to move laterally to deliver the printing blow, substantially as and for the purpose described.

3. An electromagnetic printing device comprising a type-cylinder having circularly-arranged series of characters of three kinds disposed around the cylinder with the three kinds arranged side by side in circular series and forming groups which are repeated along the length of the cylinder, electromagnetic devices for actuating the cylinder with a step-by-step rotary movement and also a variable longitudinal character-shifting movement, a hammer-cylinder arranged in movable bearings parallel to the first-named cylinder and bearing a single row of spirally-arranged impact-faces, and electromagnetic actuating devices for both rotating this hammer-cylinder with a step-by-step movement and also projecting it bodily toward the other cylinder to deliver a printing blow, substantially as described.

4. An electromagnetic printing device comprising a longitudinally-sliding type-cylinder having circularly-arranged characters of three kinds disposed around the cylinder with the three kinds arranged side by side in circular series and forming groups which are repeated along the length of the cylinder, electromagnetic devices for rotating this cylinder, a hammer-cylinder arranged in movable bearings parallel to the first-named cylinder and bearing a row of spirally-arranged impact-faces, electromagnetic actuating devices for turning the hammer-cylinder and swinging it bodily and laterally to deliver the printing blow, and an electromagnetic device acted upon by the lateral printing movement of the hammer-cylinder and in turn adjusting longitudinally the type-cylinder with a variable throw, substantially as described.

5. In an electromagnetic printing device, the combination of the type-cylinder bearing three kinds of characters disposed side by side in circular series and forming groups repeated along the length of the cylinder, a hollow axle carrying the said cylinder and having a rigidly-attached ratchet-wheel and connected to the cylinder as described for rigid rotation therewith and a longitudinal sliding motion of the cylinder thereon, a helical spring arranged in the hollow axle and connected to the axle and the cylinder, a central pull-wire attached to the cylinder, a lever attached to the pull-wire and bearing a magnetized armature, an articulated armature-finger, two electromagnets operating respectively upon the magnetized armature and the armature-finger, a battery, circuit, and circuit-switching device, and a laterally-movable hammer-cylinder and mechanism for operating the circuit-switching device by the lateral movement of the hammer-cylinder, substantially as described.

6. In an electromagnetic printing device, the combination of the type-cylinder bearing three kinds of characters disposed side by side in circular series and forming groups repeated along the length of the cylinder, a hollow axle carrying the said cylinder and having a rigidly-attached ratchet-wheel and connected to the cylinder as described for rigid rotation therewith and also a longitudinal sliding motion of the cylinder thereon, a helical spring arranged in the hollow axle and connected to the axle and cylinder, a central pull-wire extending through the axle and attached to the cylinder, a lever attached to the pull-wire and bearing a magnetized armature, an articulated armature-finger, two electromagnets operating respectively upon the magnetized armature and armature-finger, a battery-circuit, a circuit-breaking and pole-changing arm, a pair of rigidly-connected ratchet-wheels, one of them having one-third the number of teeth of the other and working in the plane of and lifting the circuit-breaking and pole-changing arm with a three-phase movement, a three-phase switch operated by said arm, a laterally-moving hammer-cylinder having an arm and a pawl acting upon the ratchet-wheel which has the larger number of teeth so as to operate the three-phase circuit-breaking and pole-changing arm by the back-and-forth movement of the hammer-cylinder, substantially as and for the purpose described.

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757,378. KNITTING-MACHINE NEEDLE. CHARLES R. WOODWARD, Nottingham, England. Filed Aug. 24, 1903. Serial No. 170,543. (No model.)



*Claim.*—1. A knitting-machine needle provided with a recess and a latch arranged to lie in said recess, the said latch being provided with a nose which projects above the needle-stem when in its open position, substantially as set forth.

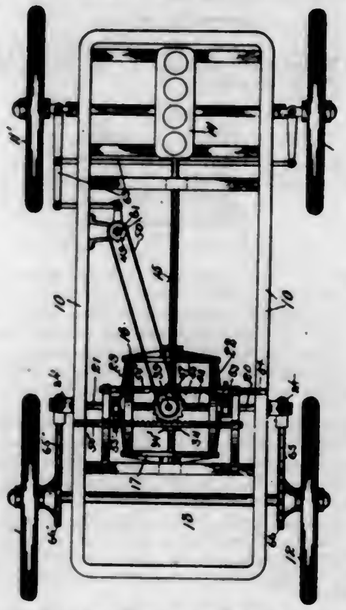
2. A knitting-machine needle provided with a recess in its stem, and a latch pivoted in said recess, one end of said latch being spoon-shaped and arranged to lie in said recess when in its open position, and its opposite end provided with a nose that is arranged to project outside and above the surface of the needle-stem when the latch is open, substantially as set forth.

3. The combination of a hooked needle-shank, a double-ended pivoted latch, a spoon at one end and a nose or projection at the other end of the latch, the said needle-shank being provided with a recess to receive and cover the spoon when the latch is open and the nose or projection when the latch is closed, and with a slot at the bottom of the recess, substantially as herein set forth.

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757,379. FRICTIONAL POWER-TRANSMITTING DEVICE. WILLIAM O. WORTH and JOHN D. WORTH, Chicago, Ill. Filed Dec. 30, 1903. Serial No. 187,027. (No model.)



*Claim.*—1. In a frictional power-transmitting device, a driving-shaft, two confronting driving-disks thereon, two driven shafts disposed transversely to the driving-shaft, a driven wheel carried by each of said driven shafts, means for moving said driven shafts transversely in opposite directions to bring the opposite driven wheels into contact with the opposite driving-disks.

2. In a frictional power-transmitting device, a driving-shaft, two separated, confronting driving-disks thereon, two driven shafts disposed transversely of the driving-shaft on opposite sides thereof, a friction-driven wheel carried by each of said driven shafts between the driving-disks, and means for moving said driven wheels simultaneously in opposite directions into contact with the opposite driving-disks.

3. In a frictional power-transmitting device, a driving-shaft, two confronting driving-disks secured thereto, two driven shafts disposed transversely of the driving-shaft, a driven wheel carried by each of said driven shafts disposed between the driving-disks, and means for laterally moving the adjacent ends of said driven shafts in opposite directions to bring the opposite driven wheels into contact with the opposite driving-disks.

4. In a frictional power-transmitting device, a driving-shaft, a driving-disk mounted thereon, two driven shafts disposed on opposite sides of the driving-shaft, a driven wheel carried by each of said driven shafts, and means for simultaneously moving the corresponding ends of said driven shafts in opposite directions to move one of said driven wheels into contact with the driving-disk, and remove the opposite driven wheel from said driving-disk.

5. In a frictional power-transmitting device, a driving-shaft, two confronting driving-disks thereon, two driven shafts transversely disposed relative to the driving-shaft on opposite sides thereof, a box structure loosely mounted on the driving-shaft and comprising two members relatively movable longitudinally of the driving-shaft, and each affording a bearing for the inner end of one of the driven shafts, and means for moving said movable box members in opposite directions to bring the driven wheels into contact with the driving-disks with equal pressure.

6. In a frictional power-transmitting device, a driving-shaft, two parallel confronting driving-wheels thereon, two driven shafts disposed transversely of the driving-shaft on opposite sides thereof, a driven wheel carried by each of said driven shafts, a pivotal bearing for one end of each of said driven shafts, a movable bearing for the opposite end of each of said driven shafts, and means for simultaneously moving said movable shaft-bearings in opposite directions to bring the opposite driven wheels into contact with the driving-disk.

7. In a frictional power-transmitting device, a driving-shaft, two parallel confronting driving-disks thereon, two driven shafts disposed transversely of the driving-shaft on opposite sides thereof, and in a common plane therewith, a driven wheel carried by each of said driven shafts, a bearing pivoted to turn on an axis transverse to the common plane of the shafts at the outer end of each of said driven shafts, a bearing member carried by the driving-shaft and having two relatively movable parts, one arranged to afford bearing to the inner end of each of the driven shafts, and means for simultaneously moving said movable parts of the bearing member in opposite directions to bring the opposite driven wheels into contact with the opposite driving-disks.

8. In a frictional power-transmitting device, a driving-shaft, two confronting driving-disks carried thereby, two driven shafts arranged transversely of the driving-shaft on opposite sides thereof in a common plane therewith, a driven wheel carried by each of said driven shafts, a bearing for the outer end of each of said driven shafts, arranged to permit slight oscillating movement about an axis transverse to the plane of the shaft-axes, a split bearing-box surrounding the driving-shaft having two independently-movable members each arranged to afford bearing to the inner end of one of the driven shafts, and means for simultaneously moving the box-sections in opposite directions to bring the opposite driven wheels into contact with the opposite driving-disks.

9. In a frictional power-transmitting device, a driving-shaft, two confronting driving-disks thereon, two driven shafts disposed transversely to the driving-shaft, a friction-driven wheel carried by each of said driven shafts, vertically-adjustable bearings for the outer and inner ends of each of said shafts, one of said bearings for each shaft being arranged to permit slight pivotal play of the shaft about an axis transverse to the plane of the shafts, and means for moving the other shaft-bearings simultaneously in opposite directions, to bring the opposite driven wheels into contact with the opposite driving-disks.

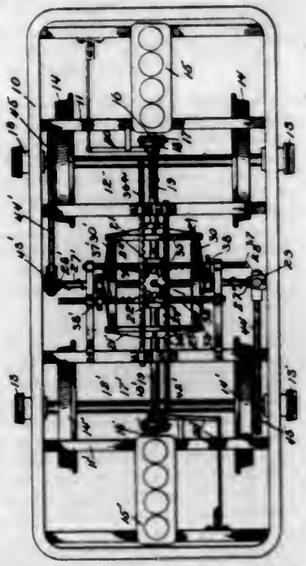
10. In a frictional power-transmitting device, a driving-shaft, two confronting driving-disks carried by said shaft, one of said driving-disks being adjustable longitudinally of the shaft, two driven shafts arranged in a common plane with the driving-shafts and disposed transversely relative thereto on opposite sides thereof, a friction-driven wheel carried by each of said driven shafts, and means for moving said driven shafts in opposite directions to bring the opposite driven wheels into contact with the opposite driving-disks.

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757,380. POWER INSTALLATION FOR SELF-PROPELLED VEHICLES. WILLIAM O. WORTH and JOHN D. WORTH, Chicago, Ill. Filed Jan. 23, 1904. Serial No. 190,362. (No model.)

*Claim.*—1. In a self-propelled vehicle, the combination of a frame, two independent axles mounted for rotation in said frame, traction-wheels carried by said axles, two primary sources of power mounted in longitudinal alinement at opposite ends of said frame, a driving-shaft independent of both engine-shafts mounted between said engines in alinement therewith, clutch devices for independently connecting either engine-shaft with the driving-shaft, two driving-disks mounted on said driving-shaft intermediate its ends, two driven shafts arranged transversely to said driving-shaft, bearing-slides supported from said shafts and carrying the inner ends of said driven shaft, mounted to move longitudinally relative to the driving-shafts, means for simultaneously moving said bearing-slides in opposite directions, driven wheels slidably mounted on said driven shafts, means for sliding said driven wheels upon their respective shafts, and a driving connection between one of said driven shafts and one of the axles and a connection between the opposite shaft and the opposite axle.

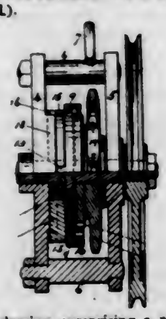
2. In a self-propelled vehicle, a frame, traction-wheels arranged at opposite ends of said frame, an engine arranged at each end of the frame, a driving-shaft arranged between the engines and normally disconnected therefrom, clutch devices at opposite ends of said driving-shaft for independently connecting the opposite ends of said shaft to the proximate engine-shafts, two independent driven shafts arranged transversely of the driving-shaft, frictional power-transmitting devices arranged to drive said driven shaft in like direction, a gearing connection between one of the driven shafts and a traction-wheel at one end of said vehicle, and driving connections between the opposite driven shafts and a traction-wheel at the other end of said vehicle.



3. In a power-transmitting device, a driving-shaft, two driving-disks arranged thereon in confronting relation, two driven shafts arranged on opposite sides of the driving-shaft, two driven wheels carried by said driven shafts, a sleeve loosely surrounding the driving-shaft, a bearing-slide for the inner end of each of said driven shafts slidably mounted upon said sleeve, and means for simultaneously moving the said bearing-slides in opposite direction, to bring the opposing driving-wheels into engagement with the opposing driving-disks.

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**757,881. AUTOMATIC CHECK AND RELEASE MECHANISM.** JACOB D. WRIGHT, Worcester, Mass. Filed May 28, 1903. Serial No. 159,072. (No model.)



*Claim.*—1. A mechanism comprising a rotatable power-shaft, an eccentric fixed on said shaft, an internally-toothed gear mounted on said eccentric, an externally-toothed gear-wheel of less diameter mounted loose on the shaft and meshing with said internally-toothed gear, means for preventing rotation but permitting bodily gyratory movement of said internally-toothed gear, and a driven member attached to said externally-toothed gear, substantially as set forth.

2. In combination, as described, a rotatable shaft, an eccentric fixed thereon, a gear-disk mounted on said eccentric, a gear-wheel mounted loose on said shaft with its teeth differentially meshing with the teeth of said gear-disk, an open-centered reciprocating disk adjacent to said gear-disk, intermatching radial lugs and recesses that prevent rotation of said gear-disk, and intermatching lugs and grooves approximately at right angles to the first named, that confine said reciprocating disk to a stationary member, a load-wheel mounted loose on the shaft and rigidly attached to said gear-wheel, and means for applying power to said shaft.

3. The combination, substantially as described, of the supporting-frame, a rotatable axial shaft mounted therein, an eccentric fixed on said shaft, a stationary member having a guideway transverse to the shaft-axis, a movable plate provided with confining guides that move in said guideway, a transverse guideway in said movable plate, a gear-wheel or disk mounted on said eccentric and provided with an internally-toothed rim, means engaging said disk with the transverse guideway on said plate, a driven member or load-wheel mounted loose on the shaft and having a spur-gear that meshes with the internally-toothed rim of said disk, and an operating-wheel or means for rotating said axial shaft.

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**757,882. PURIFIER FOR STEAM-BOILERS.** NOAH W. YANTIS and SOLOMON YANTIS, Assumption, Ill. Filed June 30, 1903. Serial No. 163,773. (No model.)



*Claim.*—1. In a purifier of the character described, a frame provided with a cover and a rest, and a pan slidably mounted upon the rest and movable beneath the cover, substantially as set forth.

2. In a water-purifier of the character described, the combination of a frame having upwardly-converged supports, a cover secured to the upper ends of the supports, and a pan slidable beneath the cover and having its sides upwardly converged, substantially as described.

3. In a purifier of the character described, a frame comprising a horizontal portion, uprights, and angle-bars forming rests, said angle-bars having their wings secured to both said uprights and the horizontal portion, and a pan slidably mounted upon said supports, substantially as specified.

4. In a boiler-purifier, a frame comprising horizontal and upright portions, angle-bars having their wings secured to the said horizontal and upright portions, a cover secured to the upper ends of the uprights, and a pan slidable upon the angle-bars, substantially as set forth.

5. In a purifier of the character described, the combination of a series of supports, each comprising a horizontal portion, legs, and upwardly-converged uprights, a transversely-curved cover secured to the upper ends of the uprights, angle-bars having their wings secured both to the horizontal and upright portions of the supports and constituting rests, and a pan slidable upon the horizontal wings of the angle-bars and having its sides upwardly converged, substantially as set forth.

6. In combination, a settling-pan, a deflector arranged thereabove and longitudinal fenders placed between said deflector and settling-pan and downwardly converged toward their lower edges, substantially as set forth.

7. A boiler-cleaner comprising a receptacle, means for supporting the receptacle in the boiler, and a cover spaced from said receptacle and projecting beyond the sides of the same.

8. A boiler-cleaner comprising an elongated trough-shaped receptacle, means for supporting the same within the boiler, and a cover spaced from said receptacle and having its side portions sloped outwardly and downwardly from a medial line and projected beyond the sides of the said receptacle, substantially as specified.

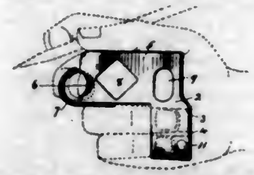
9. A boiler-cleaner comprising a receptacle, means for supporting the same in the boiler, and a detachable cover spaced from said receptacle and projecting beyond the sides of the same.

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**757,383. DEVICE FOR TEACHING PENMANSHIP.** FRANK C. YOUNG, New Haven, Conn., assignor of one-half to George A. Booth, New Haven, Conn. Filed Oct. 19, 1903. Serial No. 177,693. (No model.)



*Claim.*—1. A device for teaching penmanship, the said device having a body formed with one or more finger-holes and provided with an arm adapted to be grasped by the second finger, the said device being adapted to be contained within the palm of the hand.



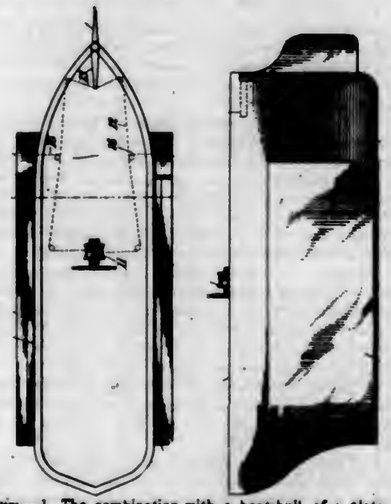
2. A device for teaching penmanship, the said device having a body formed with finger-holes and provided with an arm adapted to be grasped by the second finger and furnished with a finger-guard.

3. A device for teaching penmanship, the said device having a body formed with finger-holes and provided with an arm adapted to be grasped by the second finger and extending outwardly at a right angle from the upper end of the said body, and the said arm being furnished at its outer end with a pivotal finger-guard arching over the outer edge of the arm.

4. In a device for teaching penmanship, the combination with a body formed with one or more finger-holes and provided with an arm to be grasped by the second finger, of an antifriction-ball on which the device rides over the paper.

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**757,384. STEERING AND STEADYING MECHANISM FOR BOATS.** WILLIAM H. YOUSE, Troy, N. Y. Filed Feb. 14, 1903. Serial No. 143,310. (No model.)



*Claim.*—1. The combination with a boat-hull, of a plate extended across the bottom of the hull, and side plates extended from the first-named plate some distance from its edge to connections with the sides of the hull, thus forming chambers open at both ends for the passage of water.

2. The combination with a boat-hull, of a plate extended across the bottom thereof and secured to the keel, side plates extended from said first-named plate to connections with the sides of the hull, swinging doors at the forward ends of said plates, and means for operating said doors.

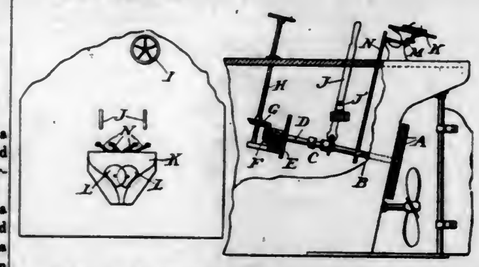
3. The combination with a boat-hull, of a plate extended across the bottom thereof, side plates connecting said first-named plate with the sides of the hull, vertically-swinging doors at the forward ends of said plates, and means for operating the doors.

4. The combination with a boat-hull, of a plate extended across the bottom thereof, side plates connecting said first-named plate with the sides of the hull, a rudder arranged at the stem of the hull, and means for operating the said rudder.

5. The combination with a boat-hull, of a plate extended across the bottom thereof and secured to the keel, upwardly-swinging doors at the forward end of the hull, a rudder arranged at the stem of the hull, and means for operating said rudder and simultaneously closing the door at one side and opening the door at the other side of the hull.

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**757,885. MEANS FOR RETARDING AND STEERING VESSELS.** AARON ZERBE, Zerbe, Pa. Filed June 25, 1903. Serial No. 163,072. (No model.)



*Claim.*—1. In a device of the character described, two shafts upon each side of a boat, extending longitudinally of the boat and protruding from the rear thereof, two plates secured to the outer end of the shafts, said plates normally lying against the rear portion of the boat so as to present no resistance to the water, means located upon the interior of the vessel for rotating the plates outward beyond the sides of the vessel, clutches whereby the shafts may be caused to operate independently or together, and levers for operating the clutches, as and for the purpose specified.

2. In a device of the character described, two shafts extending from the interior of a vessel through the rear portion thereof, plates or blades secured to the outer end of said shafts, said plates or blades so formed as to lie against the rear portion of the vessel so as to present no resistance to the water, clutches arranged upon the interior of the vessel, one member of each of the clutches being feathered upon the shafts, levers for moving said movable members of the clutches, means for rotating the other members of the clutches from one source of power, as and for the purpose specified.

3. In a device of the character described, two shafts extending from the interior of a vessel through the rear portion thereof, plates or blades secured to the outer end of said shafts and so formed as to normally lie against the rear portion of the vessel, but when the shafts are rotated said blades will project more or less beyond each side of the rear of the vessel, clutches arranged upon the interior of the vessel, one member of each of the clutches feathered upon the shafts, levers for moving said movable members of the clutches, two shafts arranged in alinement with the other shafts but disconnected therefrom, the other members of the clutches secured rigidly to these counter-shafts, a gear-wheel secured to each of the counter-shafts and meshing with one another, a beveled wheel secured to one of the counter-shafts, a second beveled wheel meshing with the other beveled wheel, said second beveled wheel being secured to a vertical shaft, said vertical shaft adapted to be rotated by a suitable source of power, and means located upon the deck for indicating the position of the retarding-plates, as specified.

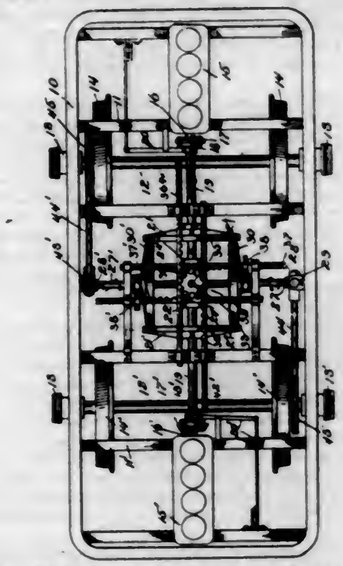
4. In a device of the character described, two shafts upon each side of a boat extending longitudinally of the same and protruding from the rear thereof, two plates secured to the outer ends of the shafts, said plates normally lying against the rear portion of the boat so as to present no resistance to the water, means located upon the interior of the vessel for rotating the plates outward beyond the sides of the vessel, two miniature plates arranged upon the deck of the vessel adapted to operate over a representation of the stern of the vessel, means extending upward from the shafts for rotating said miniature plates so as to indicate to the operator the position of the larger plates, as and for the purpose specified.

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**757,886. METHOD OF REDUCING METAL BARS INTO SHEETS.** THOMAS V. ALLIS, Bridgeport, Conn. Filed Dec. 31, 1903. Serial No. 187,380. (No model.)

*Claim.*—The method herein described of reducing metal bars into sheets in pile in a heated state, which consists in first reducing hot bars to plates by passing the bars between "roughing-rolls," second, collecting while hot the plates thus produced one upon another in pile within a heating-furnace and finally transferring and subjecting such pile so heated and while hot to the action of rolls to reduce the plates therein to sheets.

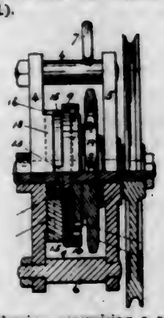
2. In a self-propelled vehicle, a frame, traction-wheels arranged at opposite ends of said frame, an engine arranged at each end of the frame, a driving-shaft arranged between the engines and normally disconnected therefrom, clutch devices at opposite ends of said driving-shaft for independently connecting the opposite ends of said shaft to the proximate engine-shafts, two independent driven shafts arranged transversely of the driving-shaft, frictional power-transmitting devices arranged to drive said driven shaft in like direction, a gearing connection between one of the driven shafts and a traction-wheel at one end of said vehicle, and driving connections between the opposite driven shafts and a traction-wheel at the other end of said vehicle.



3. In a power-transmitting device, a driving-shaft, two driving-disks arranged thereon in confronting relation, two driven shafts arranged on opposite sides of the driving-shaft, two driven wheels carried by said driven shafts, a sleeve loosely surrounding the driving-shaft, a bearing-slide for the inner end of each of said driven shafts slidably mounted upon said sleeve, and means for simultaneously moving the said bearing-slides in opposite direction, to bring the opposing driving-wheels into engagement with the opposing driving-disks.

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**757,381. AUTOMATIC CHECK AND RELEASE MECHANISM.** Jacob D. Wright, Worcester, Mass. Filed May 23, 1903. Serial No. 159,072. (No model.)



*Claim.*—1. A mechanism comprising a rotatable power-shaft, an eccentric fixed on said shaft, an internally-toothed gear mounted on said eccentric, an externally-toothed gear-wheel of less diameter mounted loose on the shaft and meshing with said internally-toothed gear, means for preventing rotation but permitting bodily gyratory movement of said internally-toothed gear, and a driven member attached to said externally-toothed gear, substantially as set forth.

2. In combination, as described, a rotatable shaft, an eccentric fixed thereon, a gear-disk mounted on said eccentric, a gear-wheel mounted loose on said shaft with its teeth differentially meshing with the teeth of said gear-disk, an open-centered reciprocating disk adjacent to said gear-disk, intermatching radial lugs and recesses that prevent rotation of said gear-disk, and intermatching lugs and grooves approximately at right angles to the first named, that confine said reciprocating disk to a stationary member, a load-wheel mounted loose on the shaft and rigidly attached to said gear-wheel, and means for applying power to said shaft.

3. The combination, substantially as described, of the supporting-frame, a rotatable axial shaft mounted therein, an eccentric fixed on said shaft, a stationary member having a guideway transverse to the shaft-axis, a movable plate provided with confining guides that move in said guideway, a transverse guideway in said movable plate, a gear-wheel or disk mounted on said eccentric and provided with an internally-toothed rim, means engaging said disk with the transverse guideway on said plate, a driven member or load-wheel mounted loose on the shaft and having a spur-gear that meshes with the internally-toothed rim of said disk, and an operating-wheel or means for rotating said axial shaft.

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**757,382. PURIFIER FOR STEAM-BOILERS.** Noah W. Yantis and Solomon Yantis, Assumption, Ill. Filed June 30, 1903. Serial No. 163,778. (No model.)



*Claim.*—1. In a purifier of the character described, a frame provided with a cover and a rest, and a pan slidably mounted upon the rest and movable beneath the cover, substantially as set forth.

2. In a water-purifier of the character described, the combination of a frame having upwardly-converged supports, a cover secured to the upper ends of the supports, and a pan slidable beneath the cover and having its sides upwardly converged, substantially as described.

3. In a purifier of the character described, a frame comprising a horizontal portion, uprights, and angle-bars forming rests, said angle-bars having their wings secured to both said uprights and the horizontal portion, and a pan slidably mounted upon said supports, substantially as specified.

4. In a boiler-purifier, a frame comprising horizontal and upright portions, angle-bars having their wings secured to the said horizontal and upright portions, a cover secured to the upper ends of the uprights, and a pan slidable upon the angle-bars, substantially as set forth.

5. In a purifier of the character described, the combination of a series of supports, each comprising a horizontal portion, legs, and upwardly-converged uprights, a transversely-curved cover secured to the upper ends of the uprights, angle-bars having their wings secured both to the horizontal and upright portions of the supports and constituting rests, and a pan slidable upon the horizontal wings of the angle-bars and having its sides upwardly converged, substantially as set forth.

6. In combination, a settling-pan, a deflector arranged thereabove and longitudinal fenders placed between said deflector and settling-pan and downwardly converged toward their lower edges, substantially as set forth.

7. A boiler-cleaner comprising a receptacle, means for supporting the receptacle in the boiler, and a cover spaced from said receptacle and projecting beyond the sides of the same.

8. A boiler-cleaner comprising an elongated trough-shaped receptacle, means for supporting the same within the boiler, and a cover spaced from said receptacle and having its side portions sloped outwardly and downwardly from a medial line and projected beyond the sides of the said receptacle, substantially as specified.

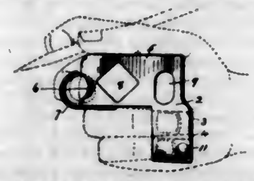
9. A boiler-cleaner comprising a receptacle, means for supporting the same in the boiler, and a detachable cover spaced from said receptacle and projecting beyond the sides of the same.

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**757,383. DEVICE FOR TEACHING PENMANSHIP.** Frank C. Youse, New Haven, Conn., assignor of one-half to George A. Booth, New Haven, Conn. Filed Oct. 19, 1903. Serial No. 177,993. (No model.)



*Claim.*—1. A device for teaching penmanship, the said device having a body formed with one or more finger-holes and provided with an arm adapted to be grasped by the second finger, the said device being adapted to be contained within the palm of the hand.



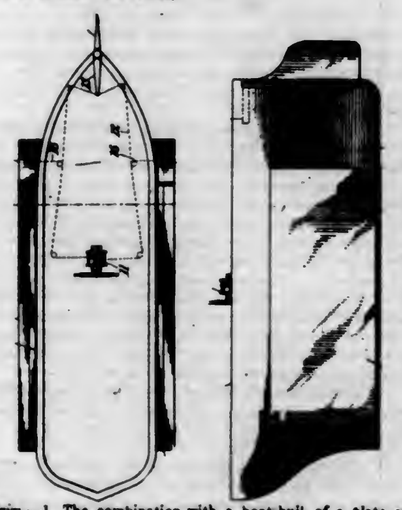
2. A device for teaching penmanship, the said device having a body formed with finger-holes and provided with an arm adapted to be grasped by the second finger and furnished with a finger-guard.

3. A device for teaching penmanship, the said device having a body formed with finger-holes and provided with an arm adapted to be grasped by the second finger and extending outwardly at a right angle from the upper end of the said body, and the said arm being furnished at its outer end with a pivotal finger-guard arching over the outer edge of the arm.

4. In a device for teaching penmanship, the combination with a body formed with one or more finger-holes and provided with an arm to be grasped by the second finger, of an antifriction-ball on which the device rides over the paper.

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**757,384. STEERING AND STEADYING MECHANISM FOR BOATS.** William H. Young, Troy, N. Y. Filed Feb. 14, 1903. Serial No. 143,310. (No model.)



*Claim.*—1. The combination with a boat-hull, of a plate extended across the bottom of the hull, and side plates extended from the first-named plate some distance from its edge to connections with the sides of the hull, thus forming chambers open at both ends for the passage of water.

2. The combination with a boat-hull, of a plate extended across the bottom thereof and secured to the keel, side plates extended from said first-named plate to connections with the sides of the hull, swinging doors at the forward ends of said plates, and means for operating said doors.

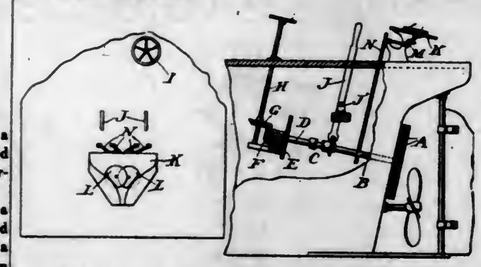
3. The combination with a boat-hull, of a plate extended across the bottom thereof, side plates connecting said first-named plate with the sides of the hull, vertically-swinging doors at the forward ends of said plates, and means for operating the doors.

4. The combination with a boat-hull, of a plate extended across the bottom thereof, side plates connecting said first-named plate with the sides of the hull, a rudder arranged at the stem of the hull, and means for operating the said rudder.

5. The combination with a boat-hull, of a plate extended across the bottom thereof and secured to the keel, upwardly-swinging doors at the forward end of the hull, a rudder arranged at the stem of the hull, and means for operating said rudder and simultaneously closing the door at one side and opening the door at the other side of the hull.

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**757,385. MEANS FOR RETARDING AND STEERING VESSELS.** Aaron Zerbe, Zerbe, Pa. Filed June 25, 1903. Serial No. 163,072. (No model.)



*Claim.*—1. In a device of the character described, two shafts upon each side of a boat, extending longitudinally of the boat and protruding from the rear thereof, two plates secured to the outer end of the shafts, said plates normally lying against the rear portion of the boat so as to present no resistance to the water, means located upon the interior of the vessel for rotating the plates outward beyond the sides of the vessel, clutches whereby the shafts may be caused to operate independently or together, and levers for operating the clutches, as and for the purpose specified.

2. In a device of the character described, two shafts extending from the interior of a vessel through the rear portion thereof, plates or blades secured to the outer end of said shafts, said plates or blades so formed as to lie against the rear portion of the vessel so as to present no resistance to the water, clutches arranged upon the interior of the vessel, one member of each of the clutches being feathered upon the shafts, levers for moving said movable members of the clutches, means for rotating the other members of the clutches from one source of power, as and for the purpose specified.

3. In a device of the character described, two shafts extending from the interior of a vessel through the rear portion thereof, plates or blades secured to the outer end of said shafts and so formed as to normally lie against the rear portion of the vessel, but when the shafts are rotated said blades will project more or less beyond each side of the rear of the vessel, clutches arranged upon the interior of the vessel, one member of each of the clutches feathered upon the shafts, levers for moving said movable members of the clutches, two shafts arranged in alinement with the other shafts but disconnected therefrom, the other members of the clutches secured rigidly to these counter-shafts, a gear-wheel secured to each of the counter-shafts and meshing with one another, a beveled wheel secured to one of the counter-shafts, a second beveled wheel meshing with the other beveled wheel, said second beveled wheel being secured to a vertical shaft, said vertical shaft adapted to be rotated by a suitable source of power, and means located upon the deck for indicating the position of the retarding-plates, as specified.

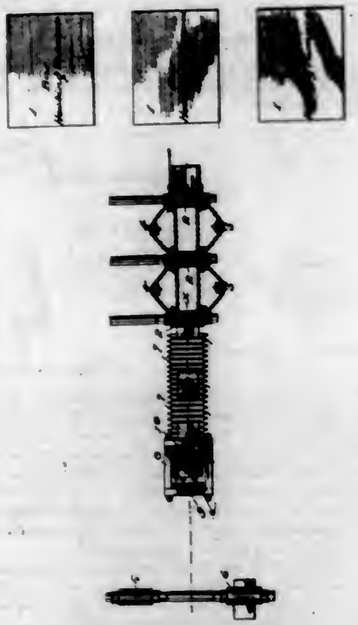
4. In a device of the character described, two shafts upon each side of a boat extending longitudinally of the same and protruding from the rear thereof, two plates secured to the outer ends of the shafts, said plates normally lying against the rear portion of the boat so as to present no resistance to the water, means located upon the interior of the vessel for rotating the plates outward beyond the sides of the vessel, two miniature plates arranged upon the deck of the vessel adapted to operate over a representation of the stern of the vessel, means extending upward from the shafts for rotating said miniature plates so as to indicate to the operator the position of the larger plates, as and for the purpose specified.

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**757,386. METHOD OF REDUCING METAL BARS INTO SHEETS.** Thomas V. Allen, Bridgeport, Conn. Filed Dec. 31, 1903. Serial No. 187,380. (No model.)

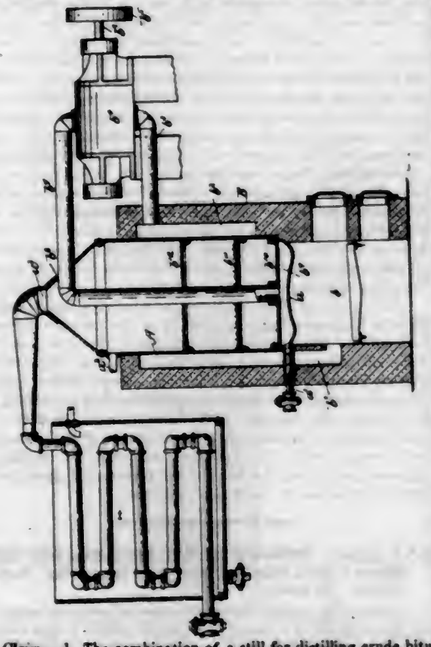
*Claim.*—The method herein described of reducing metal bars into sheets in pile in a heated state, which consists in first reducing hot bars to plates by passing the bars between "roughing-rolls," second, collecting while hot the plates thus produced one upon another in pile within a heating-furnace and finally transferring and subjecting such pile so heated and while hot to the action of rolls to reduce the plates therein to sheets.

757,886.



## 757,887. STILL FOR CRUDE BITUMINOUS MATERIAL.

HORACE W. ASH, Cambridge, Mass., assignor to Warren Brothers Company, Charleston, W. Va., a Corporation of West Virginia. Original application filed Apr. 17, 1903, Serial No. 153,347. Divided and this application filed June 22, 1903. Serial No. 162,563. (No model.)



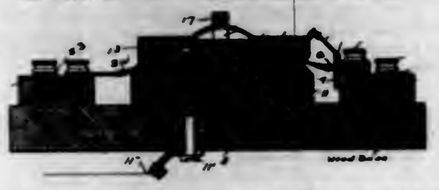
*Claim.*—1. The combination of a still for distilling crude bituminous material, a furnace below said still having a heating-chamber surrounding said still, a flue extending from said heating-chamber to a blower, said blower and a connection between the blower and the interior of the still whereby the products of combustion after acting against the exterior of the still are then introduced into the interior of the still and caused to be forced through the material therein.

2. The combination of a still for distilling crude bituminous material, a compartment at the exterior of the still, a furnace so located as to heat the exterior of the still, the interior of the furnace being in communication with the aforesaid compartment, the compartment being in communication with the interior of the still, whereby the products of combustion may pass from the furnace to the compartment and there heat the exterior of the still, and then pass on and be injected into the interior of the still.

3. The combination of a still for distilling crude bituminous material, a chamber in which the still is located, a furnace beneath the still, communicating passages between the furnace and the chamber and the interior of the still.

4. The combination of a still for distilling crude bituminous material, a chamber in which the still is located, a furnace beneath the still, communicating passages between furnace and the chamber and the interior of the still and means for causing the products of combustion to pass into the distilling material in the still.

## 757,888. LIGHTNING-ARRESTER. GARRETT RADCOCK, Chicago, Ill. Filed Sept. 20, 1902. Serial No. 124,184. (No model.)



*Claim.*—1. In a lightning-arrester, fixed line and ground carbon plates, a fusible retardation-wire between said plates and having its terminals connected respectively in series with the circuit or instrument and provided with a suitable insulating-covering, substantially as described.

2. In a lightning-arrester, fixed line and ground carbon plates having transverse corrugations or ribs in their contiguous surfaces, a serpentine retardation fuse-wire pressed within said corrugations and having its terminals connected respectively in series with the circuit and instruments, and an insulating-covering for said fuse-wire.

3. In a lightning-arrester, the combination, with a base of non-conducting material, of a carbon plate having a ground connection secured to said base, a line carbon plate, a metallic holder therefor, said line and ground carbon plates having corrugated contiguous surfaces, a retardation fuse-wire pressed within said corrugations and insulated from said plates and having its terminals connected respectively with the line and cable, a stud having a threaded end to enter said base, and an arm to overhang and engage said holder and press said plates together, substantially as described.

4. A safety device for electric circuits, comprising fixed line and ground plates, a fusible retardation-wire interposed between said plates and extending zigzag from side to side thereof, and an insulating-covering for said wire.

5. A safety device for electric circuits, comprising fixed line and ground plates having roughened contiguous surfaces, a fusible retardation-wire interposed between said plates and pressed into the depressions therein, and an insulating-covering for said wire.

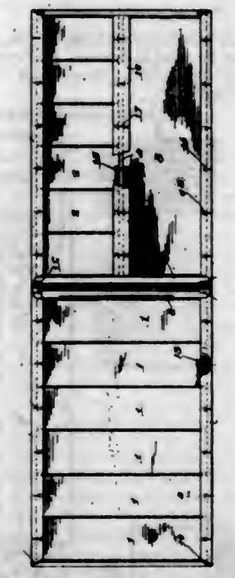
6. A safety device for electric circuits, comprising fixed line and ground plates, a fusible retardation-wire interposed between said plates, and a strip of insulating material carbonizable by a heavy current separating said wire and plates.

7. A safety device for electric circuits, comprising fixed line and ground plates having corrugated or fluted surfaces, a fuse-wire serpentine in form interposed between said plates and pressed into the depressions or flutes therein, and an insulating-strip of textile material separating said wire and plates and adapted to be broken down and carbonized by a current of high potential and close the ground-circuit through said plates when said wire is fused.

8. A safety device for electric circuits, comprising fixed line and ground plates, a fusible retardation-wire arranged between said plates in the line-circuit and extending zigzag from side to side of said plates, and an insulating-strip of textile material normally supporting and insulating said wire and plates and adapted to be carbonized and made a conductor by a current of high potential and close the circuit through said ground-plate when the line-circuit is opened by the fusing of said retardation-wire.



## 757,889. SAMPLE-CARD BOOK. EDWARD W. BREDEMEIER, Chicago, Ill. Filed Sept. 11, 1903. Serial No. 172,710. (No model.)



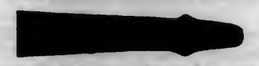
*Claim.*—1. A leaf for a sample-card book, comprising a backing, border-strips having flanges at the edges of said backing and spaced therefrom, sample-cards provided with notches in their edges inserted under said flanges and lugs engaging in said notches and securing said flanges to said backing.

2. A leaf for a sample-card book, comprising a backing, border-strips having flanges overlapping said backing and spaced therefrom, sample-cards having notches in their edges inserted under said flanges, and stitching passing through said notches and securing said flanges to said backing.

3. A leaf for a sample-card book, comprising a backing, U-shaped border-strips embracing the edges of said backing, stitching passing through said backing and border-strips at intervals, and sample-cards inserted under said strips and having notches embracing said stitching.

4. A leaf for a sample-card book, comprising a backing, binding-strips secured along the edges of said backing and having their inner edges free, an additional strip secured on a face of said backing and having free edges, lugs passing through said binding and additional strips at intervals, and sample-cards having their edges inserted under said strips and provided with notches engaging said lugs.

## 757,890. STOCKING. LILLIAN CALKINS, Grand Rapids, Mich., assignor of one-half to Mabel B. Draper, Grand Rapids, Mich. Filed Jan. 31, 1903. Renewed Feb. 26, 1904. Serial No. 195,475. (No model.)



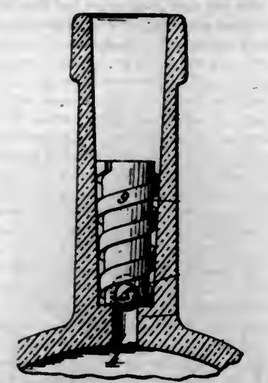
*Claim.*—1. As a new article of manufacture a stocking woven or knit with the foot in direct line with the leg, and opposite heel projections B, B, substantially as and for the purpose set forth.

2. As a new article of manufacture a stocking leg and foot woven in direct line and the foot arranged to be folded alternately to reverse the position of the foot portion relative to the leg portion of the stocking, substantially as and for the purpose set forth.

3. As a new article of manufacture a stocking having the leg and foot in a continuous line with heel projections B B opposite each other the foot adapted to fold from either heel at practically right angles with the leg, and the opposite heel projection adapted to fold over to reinforce the instep of the stocking.

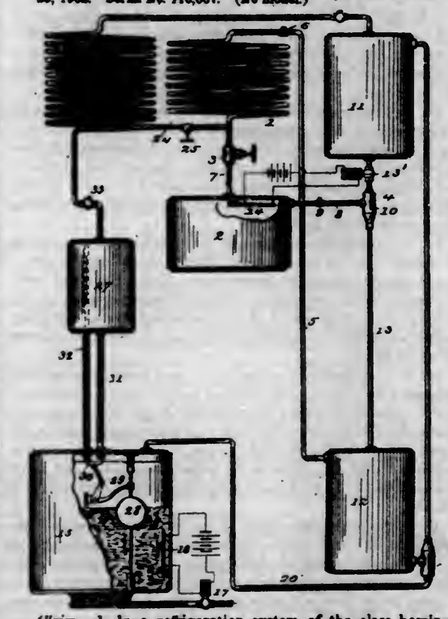
## 757,891. NON-REFILLABLE BOTTLE. WILBUR A. COKE, Norfolk, Va., assignor of one-half to Charles M. Barnett, Norfolk, Va. Filed Aug. 7, 1903. Serial No. 168,674. (No model.)

*Claim.*—1. A bottle having a neck, a stop in the neck, and a duct connecting the interior of the neck and the body of the bottle, combined with a plug permanently secured in said neck and fitting against said stop, the plug being externally threaded, having a chamber in its lower side and a recess affording communication between said chamber and the lower end of the groove between the threads of the plug, and a valve adapted, when the bottle is in an upright position, to be seated against the upper end of said duct, and when said bottle is tilted or inverted, to enter said chamber.



2. A bottle having a neck, an annular stop in the neck, and a duct connecting the interior of the neck with the body of the bottle, combined with a tapered plug permanently secured in said neck, the latter being also tapered interiorly, said plug fitting against said annular stop, being externally threaded, having a chamber in its lower side, and an aperture affording communication between said chamber and the lower end of the groove between the threads of the plug, and a spherical valve adapted normally to be seated against the upper end of said duct and to roll in said chamber when the bottle is tilted or inverted.

## 757,892. REFRIGERATION SYSTEM AND APPARATUS. CLYDE J. COLEMAN, Chicago, Ill., assignor, by mesne assignments, to Clarence W. Coleman, Chicago, Ill. Filed Oct. 14, 1899. Renewed July 25, 1902. Serial No. 116,687. (No model.)



*Claim.*—1. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-

chamber, of an injector arranged intermediate of said chambers, and means connected with the cooling-chamber for automatically controlling the action of such injector, substantially as set forth.

2. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of an injector arranged intermediate of said chambers, and means connected with the cooling-chamber for automatically controlling the motive fluid of such injector, substantially as set forth.

3. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of an injector arranged intermediate of said chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, and means for preventing a retrograde movement of the refrigerant medium, substantially as set forth.

4. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of an injector arranged intermediate of such chambers, means connected with the cooling-chamber for intermittently controlling the action of such injector, and means for preventing a retrograde movement of the refrigerant medium, substantially as set forth.

5. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of an injector arranged intermediate of such chambers, means connected with the cooling-chamber for intermittently controlling the motive fluid of said injector, and means for preventing a retrograde movement of the refrigerant medium, substantially as set forth.

6. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of such chambers, and means connected with the cooling-chamber for automatically controlling the action of such injector, substantially as set forth.

7. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, and means for elevating the motive fluid to such gravity-injector, substantially as set forth.

8. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of such chambers, an elevated supply-chamber, means connected with the cooling-chamber for automatically controlling the action of such injector, and means for elevating the motive fluid to such supply-chamber, substantially as set forth.

9. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of such chambers, an elevated supply-chamber, means connected with the cooling-chamber for automatically controlling the action of such injector, and an injector for elevating the motive fluid to such supply-chamber, substantially as set forth.

10. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of said chambers and adapted to effect the transfer of the refrigerant medium from one to the other, a lifting-injector for elevating the motive fluid to such gravity-injector, and a thermal pressure-generator, connected to said lifting-injector, substantially as set forth.

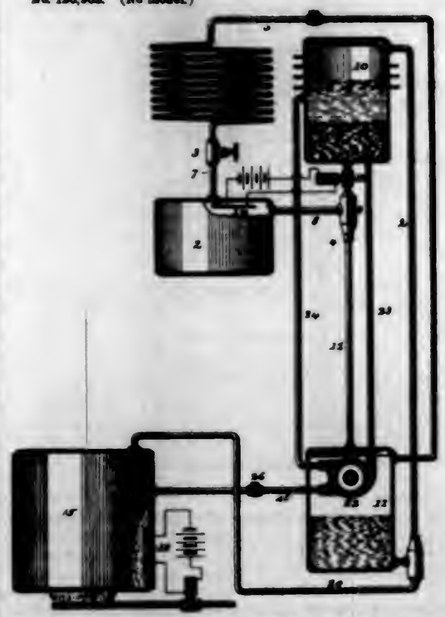
11. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of said chambers, and a closed power-circuit embracing a thermal pressure-generator, a lifting-pump for the motive fluid of the gravity-injector, a condensing-chamber, and a return connection to the pressure-generator, substantially as set forth.

12. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of said chambers, and a closed power-circuit embracing a thermal pressure-generator, a lifting-pump for the motive fluid of the gravity-injector, a condensing-chamber, a return connection to the pressure-generator, and means for automatically controlling such return connection, substantially as set forth.

13. In a refrigeration system of the class herein described, the combination with the storage-chamber and the cooling-chamber, of a gravity-injector arranged intermediate of said chambers, and a closed power-circuit embracing a thermal pressure-generator, a lifting-pump for the motive fluid of the gravity-injector, a condensing-chamber, a return connection to the pressure-generator, and means for automatically controlling such return connection, the same comprising a valve controlling the inlet from such connection, and a float within the generator controlling said valve, substantially as set forth.

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**757,398. REFRIGERATION SYSTEM.** CLYDE J. COLEMAN, Chicago, Ill., assignor, by mesne assignments, to Clarence W. Coleman, Chicago, Ill. Filed Jan. 12, 1900. Renewed Aug. 25, 1902. Serial No. 120,962. (No model.)



*Claim.*—1. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber, of a compression apparatus arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such compression apparatus, a primary pressure-generator, means actuated by such primary generator for imparting movement to the motive fluid of such compression apparatus, and a pumping-engine operated through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.

2. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber, of a compression apparatus arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such compression apparatus, a primary pressure-generator, means actuated such by primary generator for imparting movement to the motive fluid of such compression apparatus, and a pumping-engine operated by the intermediate motive fluid of the compression apparatus and through the agency of the motive pressure to return the motive-pressure fluid to the pressure-generator, substantially as set forth.

3. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber, of a compression apparatus arranged intermediate of such chambers means connected with the cooling-chamber for automatically controlling the action of such compression apparatus, a primary pressure-generator, means actuated by said primary generator for imparting movement to the motive fluid of such compression apparatus, a separating-chamber, and a pumping-engine operated through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.

4. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber, of an injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, a primary pressure-generator, means actuated by such primary generator for imparting movement to the motive fluid of such injector, and a pumping-engine operated through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.



5. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber, of an injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, a primary pressure-generator, means actuated by such primary generator for imparting movement to the motive fluid of such injector, and a pumping-engine operated by the intermediate motive fluid of the injector and through the agency of the motive pressure to return the motive-pressure fluid to the pressure-generator, substantially as set forth.

6. In an automatic system of refrigeration, the combination with the storage chamber and the cooling-chamber, of an injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, a primary pressure-generator, means actuated by such primary generator for imparting movement to the motive fluid of said injector, a separating-chamber, and a pumping-engine operated through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.

7. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber of a main injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, a primary pressure-generator, an auxiliary injector actuated by said primary generator for imparting movement to the motive fluid of the main injector, and a pumping-engine operated through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.

8. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber of a main injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, a primary pressure-generator, an auxiliary injector actuated by said primary generator for imparting movement to the motive fluid of the main injector, and a pumping-engine operated by the intermediate motive fluid to the main injector and through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.

9. In an automatic system of refrigeration, the combination with the storage-chamber and the cooling-chamber, of a main injector arranged intermediate of such chambers, means connected with the cooling-chamber for automatically controlling the action of such injector, a primary pressure-generator, an auxiliary injector actuated by said primary generator for imparting movement to the motive fluid of the main injector, a separating-chamber, and a pumping-engine operated through the agency of the motive pressure to return the motive-pressure fluid to the primary generator, substantially as set forth.

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**757,894. MEANS FOR VARIABLY OPERATING AND CONTROLLING ELECTRIC MOTORS.** RUDOLF EICHMEYER, Yonkers, N. Y.; Rudolf Eichmeyer, Jr., Carl Eichmeyer, and Mary T. Eichmeyer executors of said Rudolf Eichmeyer, deceased. Filed June 2, 1898. Serial No. 476,351. (No model.)

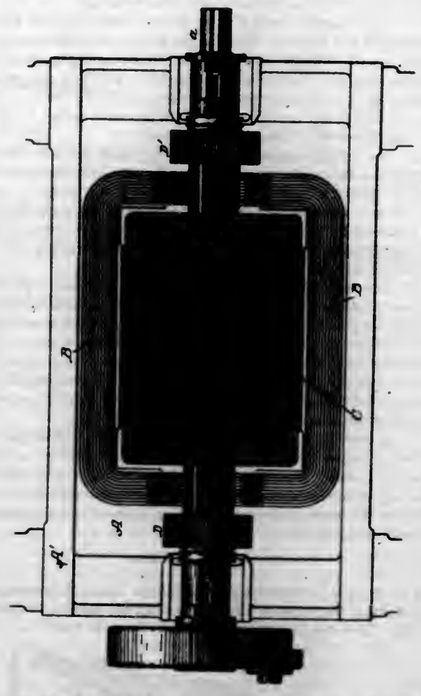
*Claim.*—1. The combination substantially as hereinbefore described, of an electric motor having an armature located in a suitable magnetic field, and provided with separate windings and commutators; and a switch which separately controls said windings for operating them in series and in parallel, and which while working said windings in parallel, will also weaken the field of the motor for increasing its speed.

2. The combination in a series-parallel controller, of a movable switch having contact-plates thereon, stationary brushes bearing on said plates, a stationary drum having contact-plates thereon, resistances connected to the contact-plates on said stationary drum, and a set of brushes mechanically connected to the revolving drum and bearing upon the stationary drum, the connections and arrangements being so made that the revolving drum acts to connect the motors in series and in parallel, while the stationary drum acts to vary the resistance of the motor-circuit.

3. In an electric motor, the combination of a series field-winding, a shunt field-winding, two armature-windings, means for connecting the armature-windings in series and in parallel, and means for varying the effect of the series field-winding.

4. The combination with an electric motor having separate sets of field-coils, and separately-commutated armature-windings, of a switch which separately controls the armature-windings, for working them in series and in parallel, and which while operating them in parallel will shunt a part of the field-coil, substantially as described.

5. The combination substantially as herinbefore described, of an electric motor having in its field-coil circuit an outside resistance, and also having an armature provided with separate windings and separate commutators, and a switch which separately controls said armature-windings for operating them in series and in parallel, and which while operating them in parallel will also relieve the field-coils from the resistance.



6. The combination substantially as hereinbefore described, of an electric motor having a field-coil in separate sections and an armature provided with separate windings, and separate commutators; an outside resistance in the field-coil circuit, and a switch which separately controls the armature-windings for working them in series and in parallel, and which while working them in parallel will cut out resistance from the field-coils, and also shunt a portion of said coils.

7. The combination substantially as hereinbefore described, of an electric motor having an armature provided with separate windings and separate commutators, and also having a field-coil in separate sections; an outside resistance, and a switch which separately controls said armature-windings for working them first in series and in series with the resistance, and then in parallel without the resistance, and which also separately controls field-coil sections, for working them in series and in parallel.

8. The combination with an electric motor having separate armature-windings and separate commutators, of a controlling-switch embodying a set of movable contact-plates and stationary brushes coöperating therewith, and also a set of stationary contact-plates and a coöperating movable brush which is mechanically connected with said movable plates, substantially as described.

9. For use in an electric-motor organization an electric switch embodying in combination substantially as hereinbefore described a set of movable switch-plates and coöperating stationary brushes, and another set of stationary switch-plates with coöperating brushes which move with, or in harmony with the movable switch-plates, and separate resistances which are separately controlled by one of said sets of switch-plates and brushes.

10. In a series-parallel controller for electric motors having shunt and series windings and a plurality of armature-windings, means for connecting the armature-windings in series and in parallel, and means for shunting the series windings.

11. In a series-parallel controller for electric motors having shunt and series windings and a plurality of armature-windings, means for connecting the armature-windings in series and in paral-

lel, means for shunting the series windings by a resistance, and means for varying said resistance.

12. In combination with a motor having shunt and series field-windings and two separate armature-windings, a controlling-switch having its contacts constructed and arranged to first connect the two armature-windings in series with one another and with the series field-winding, then to connect the two armature-windings in parallel and finally to short-circuit the series winding.

13. In combination with a motor having shunt and series field-windings and two separate armature-windings, a controlling-switch having its contacts constructed and arranged to first connect the two armature-windings in series with one another and with the series field-winding in a circuit containing resistance, then to remove said resistance, and finally to connect the two armature-windings in parallel, with the series winding short-circuited.

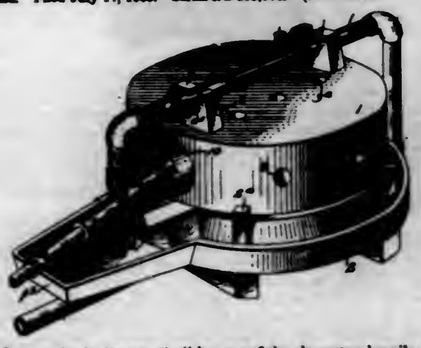
14. In combination with a motor having shunt and series field-windings and two separate armature-windings, a controlling-switch having a plurality of operative positions, in the first of which it connects the two armature-windings in series with one another and with the series field-winding, and in the last of which it connects the two armature-windings in parallel, with the series winding short-circuited.

15. In combination with a motor provided with two separate armature-windings and a field winding or windings adapted to produce different field-magnet strengths, a controlling-switch constructed and arranged to connect the two armature-windings in series with one another with the field winding or windings connected to produce a maxim field and thereafter to connect the two armature-windings in parallel with one another with the field winding or windings connected to produce a weakened field.

16. A switch for varying resistance comprising three main contact-plates, two sets of smaller contact-plates, the said two sets of plates being placed at opposite ends of two of the main contact-plates, resistance connected between the said two main contact-plates and the smaller plates, and a sliding connection for electrically connecting the plates.

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**757,895. GASEOUS-FUEL BURNER.** OSCAR FALKENWALDE, Baltimore, Md., assignor of one-half to J. Savage Williams, Baltimore, Md. Filed July 17, 1903. Serial No. 165,962. (No model.)

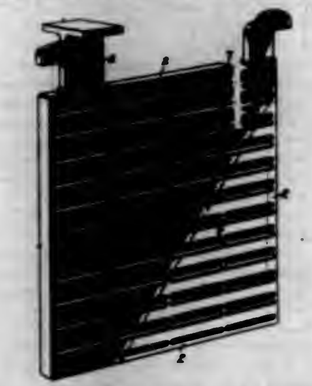


*Claim.*—1. An improved oil-burner of the character described; comprising a body having a central longitudinal bore, a series of transversely-disposed apertures bisecting said bore, a series of inlets in the top and bottom that communicate with the central bore, said body having bridge portions on the top at each end, each bridge portion having an L-shaped slot in communication therewith, and a generator comprising a pipe-section adapted to be slipped down into the vertical portions of the L-shaped slots in the bridge portions and to be drawn into the horizontal portion thereof, means for clamping said pipe into said recesses, a pendent pipe-section secured to one end of the horizontal pipe-section and projected down in the heat zone at the rear end of the burner-body and an ejector pendently supported from the other end of the horizontal pipe-section to discharge into the front end of the central bore in the burner-body, as described.

2. A gaseous-fuel burner comprising a circular-shaped body having a central bore, apertures that communicate with and radiate from the said bore and extend through the sides of the body, inlets in the top and bottom that communicate with the central bore, said body having bridge members at the top at each end, a generator comprising a horizontal pipe, a pendent portion connected to one end thereof adapted to join with the feed-pipe to be held in the heat zone at the rear end of the burner-body, a pendent member on the other end of the said pipe, a valve connected therewith adapted to discharge into the central end of the central bore in the body 1, means for detachably mounting the horizontal pipe-section in the bridge-pieces, burner-inlets in the top of the burner-body, and a detachable base having recesses for supporting the burner-body, said base having air-inlets, a collecting-pocket at each end, a longitudinal channel-way having air-inlets, and circular channel-ways communicating with the under pockets, said base having apertured cross-pieces or supports at the bottom, said feed-pipe running through said cross-piece apertures and disposed in the same vertical plane as the generator-pipe, all being arranged substantially as shown and for the purposes described.

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**757,896. STORAGE-BATTERY GRID.** GEORGE W. FROST, Columbus, Ohio. Filed Feb. 9, 1904. Serial No. 192,831. (No model.)



*Claim.*—1. A double-lattice battery-grid, comprising a frame, retaining-strips on the opposite faces and in staggered relation, and a web extending from each strip substantially through the grid, as set forth.

2. A battery-grid, comprising a rectangular frame, a series of retaining-strips extending between the sides of the frame at each face of the grid, the strips of the two series being relatively staggered, and a horizontal web extending from each strip substantially through the grid, as set forth.

3. A battery-grid, comprising a rectangular frame, a series of retaining-strips extending between the sides of the frame at each face of the grid, the strips of the two series being relatively staggered, and a horizontal, median web extending from each strip substantially through the grid, as set forth.

4. A battery-grid, comprising a rectangular frame, a series of retaining-strips extending between the sides of the frame at each face of the grid, the strips of the two series being relatively staggered, a horizontal, median web extending from each strip substantially through the grid, and an intermediate, vertical stiffening rib or ribs extending from the top to the bottom of the grid, as set forth.

5. A battery-grid, comprising a rectangular frame, a series of retaining-strips extending between the sides of the frame at each face of the grid, the strips of the two series being relatively staggered, a horizontal web extending from each strip substantially through the grid, and bars or narrow flanges on the edges of said strips and webs, as set forth.

6. A battery-grid, comprising a frame, retaining-strips on the opposite faces and in staggered relation, a web extending from each strip substantially through the grid, and a terminal lug having a laterally-flanged head.

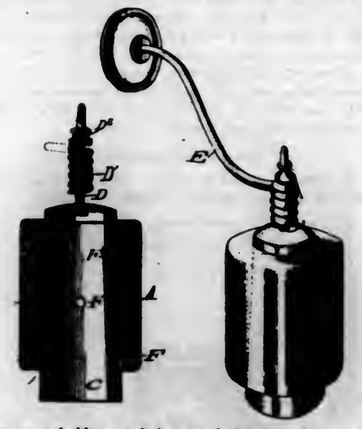
7. A pair of battery-electrodes, each electrode having a terminal lug with a lateral, relatively thin, broad flange, the adjacent edges of said flanges being fused together, as set forth.

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**757,897. SOAP AND SOAP-HOLDER.** ERWIN M. GOLDSMITH, Philadelphia, Pa. Filed May 28, 1902. Serial No. 109,868. (No model.)

*Claim.*—1. A suspended soap-holding device consisting of a vertically-arranged mandrel exteriorly of tapering form, the widest diameter of which is below, a vertically-extending journal rising from the head of said mandrel and rigidly connected therewith, a tubular piece in which said journal is freely mounted, means on said journal and detachable therefrom for retaining the latter suspended from said tubular piece and an arm secured to said tubular piece sustaining the same.





2. In a soap-holder, a tubular mandrel, exteriorly of tapering form, and interiorly open to the atmosphere, and having a soap-ventilating recess in its wall, and a support on which said mandrel is pivotally mounted.

3. In a soap-holder, a tubular mandrel exteriorly of tapering form, the widest part of which is below, a head on said mandrel, a journal rising from said head, a bearing for said journal, an arm carrying said bearing, a removable shoulder connected with the upper end of said journal and overlapping the inner wall of said bearing, and rotatably sustaining said mandrel, said mandrel being interiorly open to the atmosphere and having a soap-ventilating recess in its side wall.

4. A cake of soap having a bore of tapering form, the widest part of which is below, said bore being open at both ends, a mandrel exteriorly of tapering form, a head on said mandrel, a journal rising from said head, a bearing for said journal, and a removable shoulder connected with said mandrel and overlapping the inner wall of said bearing, said mandrel being open to the atmosphere and having a recess in its side wall, adapted to ventilate said bore.

5. A cake of soap having a bore of tapering form, the widest part of which is below, said bore being open at both ends, in combination with a holding device for said cake, consisting of a vertically-arranged mandrel exteriorly of tapering form, the widest diameter of which is below, said cake being separately fitted on said mandrel and depending freely thereon by wedging action, a vertically-extending journal rising from the head of said mandrel and rigidly connected therewith, a tubular piece in which said journal is freely mounted, means on said journal and detachable therefrom for retaining it in said tubular piece and an arm secured to said tubular piece sustaining the same.

6. A suspended soap-holding device consisting of a rotatable mandrel exteriorly of tapering form, the widest part of which is below and which is interiorly open to the atmosphere, a journal rising vertically from said mandrel, a bearing for said journal and a device detachably connected with said journal and riding freely on said bearing for supporting said mandrel.

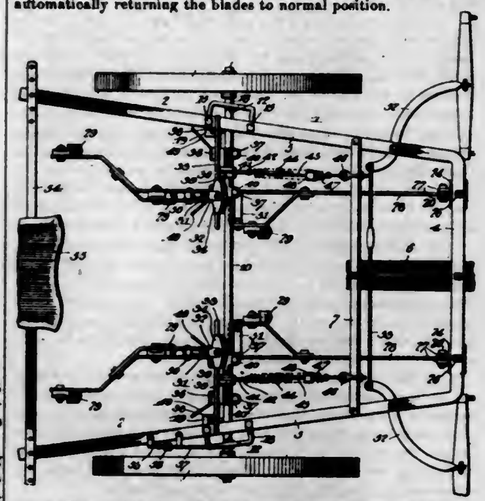
7. A cake of soap having a bore of tapering form, said bore being open at both ends, in combination with a suspended soap-holding device, consisting of a mandrel exteriorly of tapering form, the widest part of which is below, and which is interiorly open to the atmosphere, and means detachably connected with and supporting said mandrel, said cake being separately fitted on said mandrel and depending freely thereon by wedging action.

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**757,898. CULTIVATOR.** GEORGE W. GOSS and CHARLES R. GOSS, Baltimore, Ohio, assignors to Roderick Lean Manufacturing Company, Mansfield, Ohio. Filed Sept. 19, 1903. Serial No. 173,870. (No model.)

*Claim.*—1. The combination with a cultivator-frame, of a guide associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, one or more blades connected and movable with the hanger, said blades being movable downward under pressure for entrance into the ground, and means for automatically returning the blades to normal position.

2. The combination with a cultivator-frame, of a guide pivotally associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, one or more blades connected and movable with the hanger, said guide being adapted to swing on its pivot to permit the blades to move downward under pressure for entrance into the ground, and means for automatically returning the blades to normal position.



3. The combination with a cultivator-frame, of a guide pivotally associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, one or more blades connected and movable with the hanger, said guide being adapted to swing on its pivot to permit downward movement of the blades under pressure for entrance into the ground, and means acting upon the guide for automatically returning the blades to normal position.

4. The combination with a cultivator-frame, of a guide pivotally associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, one or more blades connected and movable with the hanger, said guide being adapted to swing on its pivot to permit downward movement of the blades under pressure for entrance into the ground, and a spring acting upon the guide for automatically returning the same and the blades to normal position.

5. The combination with a cultivator-frame, of a guide associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, one or more blades connected and movable with the hanger, said blades being movable downward under pressure for entrance into the ground, and a spring for automatically returning the blades to normal position.

6. The combination with a cultivator-frame, of a guide associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, a beam pivotally associated with the frame and connected and movable with the hanger, said beam carrying one or more blades and being movable downward under pressure for entrance of the latter into the ground, and means for automatically returning the beam to normal position.

7. The combination with a cultivator-frame, of a guide pivotally associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, a beam pivotally associated with the frame and connected and movable with the hanger, one or more blades carried by the beam, said guide being adapted to swing on its pivot to permit downward movement of the beam under pressure for entrance of the blades into the ground, and means acting upon the guide for automatically returning the same and the blades to normal position.

8. The combination with a cultivator-frame, of a guide pivotally associated therewith, a hanger movably connected with the guide for travel in a direction transversely of the machine, a beam pivotally associated with the frame and connected and movable with the hanger, one or more blades carried by the beam, said guide being adapted to swing on its pivot to permit downward movement of the beam under pressure for entrance of the blades into the ground, and a spring acting upon the guide for automatically returning the same and the blades to normal position.

9. The combination with a cultivator-frame, of a pair of beams pivotally associated therewith, one or more blades carried by each beam, means suspending the beams for independent travel in a direction transversely of the machine, said beams being movable downward independently under pressure for entrance of the blades into the ground, and means for automatically returning the beams to normal position.

10. The combination with a cultivator-frame, of a pair of beams, one or more blades carried by each beam, means suspending the beams for independent travel in a direction transversely of the machine, said beams being movable downwardly independently under pressure for entrance of the blades into the ground, and means for automatically returning the beams independently to normal position.

11. The combination with a cultivator-frame, of a pair of beams, one or more blades carried by each beam, means suspending the beams for independent travel in a direction transversely of the machine, said beams being movable downwardly independently under pressure for entrance of the blades into the ground, and springs for automatically returning the beams independently to normal position.

12. The combination with a cultivator-frame, of a pair of beams, one or more blades carried by each beam, means suspending the beams for independent travel in a direction transversely of the machine, said beams being movable downward independently under pressure for entrance of the blades into the ground, means for limiting the downward movement of the beams, and means for automatically returning the beams to normal position.

13. The combination with a cultivator-frame, of a pair of beams, one or more blades carried by each beam, means suspending the beams for independent travel in a direction transversely of the machine, said beams being movable downward independently under pressure for entrance of the blades into the ground, adjustable means for limiting the downward movement of the beams and means for automatically returning the beams to normal position.

14. The combination with a cultivator-frame, of a pair of guides pivotally associated therewith, a pair of hangers movably connected one with each guide for independent travel in a direction transversely of the machine, one or more blades connected and movable with each hanger, said guides being adapted to swing independently on their pivots to permit downward movement of the blades under pressure for entrance into the ground, means for limiting said movement of the guides, and means for automatically returning the guides and blades to normal position.

15. The combination with a cultivator-frame, of a pair of guides pivotally associated therewith, a pair of hangers movably connected one with each guide for independent travel in a direction transversely of the machine, one or more blades connected and movable with each hanger, said guides being adapted to swing independently on their pivots to permit downward movement of the blades for entrance into the ground, means connected with the guides for limiting said movement, and springs for automatically returning the guides to normal position.

16. The combination with a cultivator-frame, of a pair of guides pivotally associated therewith, a pair of hangers movably connected one with each guide for independent travel in a direction transversely of the machine, one or more blades connected and movable with each hanger, said guides being adapted to swing independently on their pivots to permit downward movement of the blades for entrance into the ground, adjustable means connected with the guides for limiting said movement and springs for automatically returning the guides to normal position.

17. The combination with a cultivator-frame, of an axle associated therewith, a casting pivoted upon the axle, a vertically-disposed frame carried by the casting and having a horizontal portion or guide, a hanger connected with the guide for travel in a direction transversely of the machine, one or more blades connected and movable with the hanger, said guide being adapted to swing to permit downward movement of the blades for entrance into the ground, a pair of adjustable links connected with the casting and frame for limiting said movement, and a spring for returning the guide and blades to normal position.

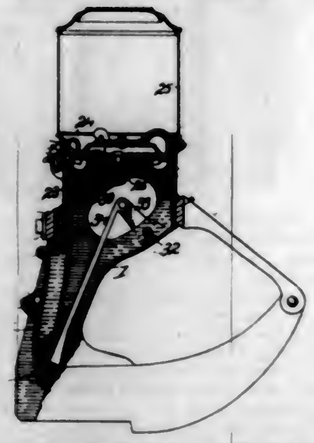
18. The combination with a cultivator and its axle, of boxes sustaining the axle and provided with bearing-fingers, castings mounted loosely on the axle and having bearing-plates engaging the bearing-fingers, guides sustained by the castings, hangers connected with and designed for travel on the guides, one or more blades sustained by each of the hangers, said guide-sustaining castings being adapted to swing independently on their pivots to permit downward movement of the blades for entrance into the ground, means connected with the castings for limiting said movement, and springs for returning the same to normal position.

19. The combination with a cultivator-frame comprising a pair of substantially U-shaped plates spaced vertically one above the other, of boxes disposed between said plates, an axle journaled in the boxes, beams connected with the frame, cultivator-blades carried by the beams, and means for raising and lowering the beams.

20. The combination with a cultivator-frame comprising a pair of substantially U-shaped plates spaced vertically one above the other, of bearing-plates oppositely disposed upon the inner faces of the frame-plates, castings pivoted between the bearing-plates, beams pivotally connected with the castings, blades carried by the beams, and means for raising and lowering the beams.

## 757,399. CORN-PLANTER. LEVI P. GRAHAM, Decatur, Ill.

Filed Oct. 26, 1903. Serial No. 178,008. (No model.)




*Claim.*—1. In a planter, the combination of a hollow shank, a valve-plate pivoted between its ends in the rear part of the shank with its lower end closable against the lower front wall of the shank, a second valve-plate connected with the first valve-plate in front thereof and closable backward above the pivot against a surface of the shank, a spring to hold the valves closed, a plunger-bar to force the valves open and expel the seed from the lower valve, and means other than the plunger-bar for holding the valves open.

2. In a planter the combination of a hollow shank, a tubular structure pivoted between its ends in the rear part of the shank, a lower valve formed of a downward continuation of the rear wall of the tube, an upper valve formed of an upward continuation of the front wall of the tube, a spring to hold the valves closed against surfaces of the shank, a plunger-bar to force the valves open and expel seed from the lower valve; and means independent of the plunger-bar for holding the valves open.

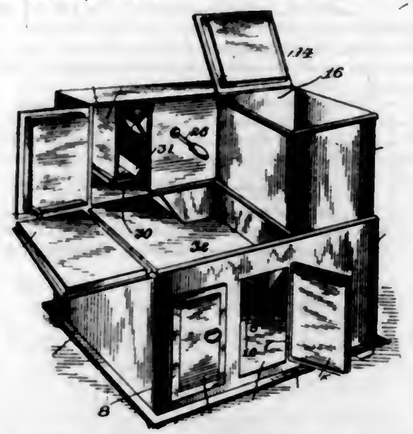
3. In a planter, the combination of a hollow shank, a valve-plate pivoted between its ends in the rear part of the shank and closable against the lower front wall of the shank, a second valve-plate connected with the first valve-plate in front thereof and closable backward above the pivot against a surface of the shank, a spring to hold the valves closed, a plunger-bar to force the valves open and expel seed from the lower valve, and a turn-button on the shank in position to engage the valves and hold them open.

4. In a planter, the combination of a hollow shank, a valve-plate pivoted between its ends in the rear part of the shank and closable against the lower front wall of the shank, and a second valve-plate connected with the first valve-plate in front thereof and closable backward above the pivot against a surface of the shank.

## 757,400. KITCHEN-CABINET. BLANCH GUELFF, Hazelhurst, Pa. Filed Dec. 16, 1901. Serial No. 86,156. (No model.)

*Claim.*—1. In a kitchen-cabinet, the combination of a flour-bin, partitions arranged in the rear of said bin and forming a compartment, an endless conveyer arranged in said compartment, an inclined guide arranged within said compartment below the upper end and transversely of the conveyer, a chute slidably mounted on said guide and adapted when extended to project beyond said compartment an opening in front of said guide and chute, a door adapted to close said opening, a kneading-pan arranged laterally of the conveyer and in front of the said guide and chute and a lid for said pan, said lid when closed being below the end of said chute, whereby when the chute is in its extended position flour may be delivered into said pan or upon said lid

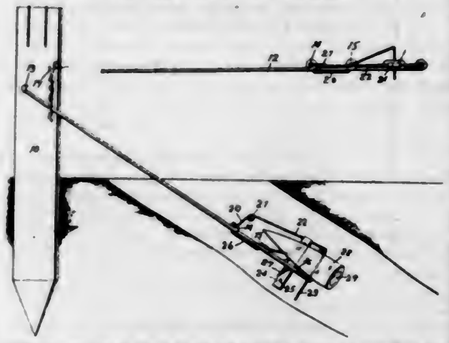





2. The combination with the body portion of the cabinet, a pan arranged in the top thereof, a cover hinged to one side of the said pan, a bin projecting above the said pan, a pair of partitions arranged in the rear of the said pan and forming a compartment, an endless conveyer mounted in the said compartment and projecting above the said pan, a sifting mechanism operated by the said conveying mechanism, means for operating the said conveyer, a guide to receive the material from the conveyer, a spring-pressed chute slidably mounted on the said guide, one of said partitions being formed with an opening in front of the said chute, a door closing the said opening, and means carried by the said door for supporting the said cover when in an open position.

## 757,401. ANIMAL-TRAP. MARTIN C. HARLAN, Stuart, Iowa.

Filed July 27, 1903. Serial No. 167,135. (No model.)

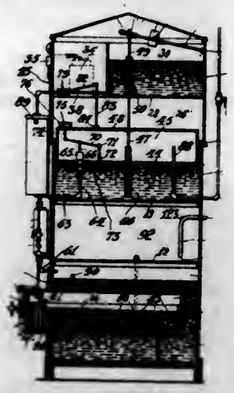



*Claim.*—1. An improved animal-trap, comprising in combination a stake, an arm pivoted to the stake, a bait-holder at the free end of the arm and a yieldingly-corrugated holder fixed to the stake and adjustably supporting said arm.

2. An improved animal-trap, comprising in combination a stake, an arm pivoted to the stake and having a number of loops formed in its free end, a spring-wire having its central portion fixedly connected with one of said loops and having a portion extended substantially parallel with the arm and having one end passed downwardly through one of the loops in the arm, a bar formed on or fixed to the arm, having a number of openings therein and passed downwardly through one of the loops in the arm, the other end of said spring-wire designed to pass through one of the openings in said bar, beneath the arm.

3. In a device of the class described, the combination of a stake, a wire arm pivoted to the stake and having three round loops and one oblong loop formed in its free end portion, a spring-wire having its central portion secured to one of said loops and having a part extended substantially parallel with and above the arm and having one end extended downwardly through one of the loops in the arm, a flat bar having openings therein fixedly attached to the spring-wire and extended downwardly through one of the openings in the arm, the other end of said spring-wire passing first through one of the openings in the arm, then extended laterally, and having an end to project through the openings in the bar beneath the arm, arranged and combined substantially in the manner set forth and for the purposes stated.

## 757,402. ACETYLENE-GAS GENERATOR. GEORGE LAPORTE, St. Félix de Valois, Canada. Filed Mar. 26, 1903. Serial No. 149,740. (No model.)



*Claim.*—1. In a gas-generator, a receptacle having a main dividing-partition and a second dividing-partition disposed transversely with respect to the same, said second dividing-partition closing off a portion of said receptacle to form a float-compartment, a plurality of auxiliary dividing-partitions disposed transversely to said first main dividing-partition and forming a plurality of cell-compartments, the edges of said auxiliary partitions being depressed below the edges of said receptacle and said main partitions, and openings through said main partitions at substantially the height of the upper edges of said auxiliary partitions whereby a liquid reagent may pass successively through said cells and into said float-compartment.

2. In a gas-generator, in combination, a body comprising an upper supply-reservoir and a lower reservoir constituting a washer for the gas, a gas-holder formed between said reservoirs, generating apparatus, and means for passing the gas therefrom through said washer to said gas-holder.

3. In a gas-generator, a body comprising an upper supply-reservoir, a lower washing-reservoir, a gas-holder formed therebetween, in combination with generating apparatus, means for passing the gas from said generating apparatus through said washer and to said gas-holder, and automatic means for controlling the gas-supply to said gas-holder.

4. A gas-generator comprising a body having an upper reservoir, a lower washing-reservoir, and a gas-holder therebetween, in combination with gas-generating apparatus, means for passing the gas therefrom through said washing-reservoir and to said gas-holder, a pipe connection leading from said supply-reservoir to said generating apparatus, a valve in said pipe connection, a second valve through which the gas is delivered to said gas-holder, said gas-holder comprising a bell, and connections between said bell and said valves.

5. A gas-generator comprising a body having an upper supply-reservoir, a lower washing-reservoir, and a gas-holder disposed therebetween, said body including a compartment formed between said gas-holder and said lower reservoir, a pipe opening communication between the lower portion of said lower reservoir and said compartment, in combination with a gas-generating apparatus, a supply-pipe leading thereto from said supply-reservoir and including a valve, a delivery-pipe leading from said generating apparatus to said gas-holder, said gas-holder including a bell, and connections between said bell and said valve.

6. In a gas-generator, in combination, a body having two transverse heads forming two lower compartments, and a water-tank thereabove, the lower of said compartments being adapted to contain water, and constituting a washer for the gas generated, a pipe connecting the lower portion of said lower compartment with the lower portion of the compartment above, a bell disposed within said

water-tank, and constituting a holder for the gas generated, and a bonnet surmounting said body above said bell and constituting a supply-reservoir.

7. In a gas-generator, in combination, a body having a transverse lower head forming a lower water-compartment constituting a washer for the gas generated, an upper transverse head whereby a compartment is formed between said heads, a pipe connecting the lower portion of said water-compartment with the lower portion of said last compartment, said body above said upper head being adapted to contain water, a bell constituting a gas-holder and disposed in the upper portion of said body, a bonnet disposed above said body and constituting a supply-reservoir, there being a tubular member in connection with said bonnet constituting a guide, a rod carried by said bell and projecting upwardly through said tubular member, and a weighted arm attached to the side of said bonnet, and adapted to depress said bell.

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**757,408. ADVERTISING WASTE-PAPER BOX.** SAMUEL LAVERS, Anderson, Ind. Filed Jan. 21, 1904. Serial No. 190,007. (No model.)



*Claim.*—1. An advertising-box comprising the outer box, having removable advertising-slides and the inner removable box, substantially as specified.

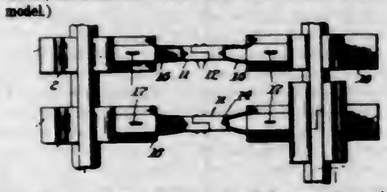
2. An advertising-box comprising the outer box having removable advertising-slides, the inner removable box, and illuminating devices located in the space between the inner and outer boxes, substantially as specified.

3. An advertising-box comprising the outer box, having removable advertising-slides, the inner removable box, illuminating devices located in the space between the inner and outer boxes, a skeleton cover for the space between the two boxes, and a cover for the inner box, substantially as specified.

4. An advertising-box, comprising the skeleton frame having a base, a top, and inner and outer corner connections, a removable box within the inner corner connections, removable advertising-slides between the inner and outer corner connections, and illuminating devices in the space between the inner box and the outer box formed by the outer corner connections and advertising-slides, substantially as specified.

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**757,404. METALLIC TIE AND RAIL FASTENER.** JOSEPH F. LEVER, Braddock, Pa. Filed Dec. 5, 1903. Serial No. 183,865. (No model.)



*Claim.*—1. In a metallic tie and rail fastener, tie-sections carrying outside fish-plates on their upper faces and being cut away at their inner ends, blocks fitted in said cut-away portions and provided at their inner ends with lugs to engage in notches in the tie-sections, connecting-bar having its ends engaging the ends of said blocks, and means connecting said tie to the tie-sections, substantially as described.

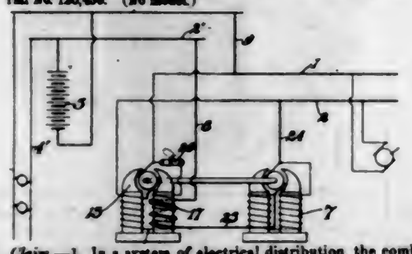
2. In a metallic tie and rail fastener, a pair of tie-sections each provided on its upper face with an outside fish plate or bar, a block fitted into each tie-section and provided with an inside fish plate or bar, and detachable tying means connecting the tie-sections together, substantially as described.

3. A metallic tie and rail fastener comprising outer tie-sections, inner fastening members, means engaging said inner fastening members, and means operated by said first-named means for drawing said tie-sections toward each other to secure the track-rails in place, substantially as described.

4. A tie formed of a plurality of spaced-apart sections, removable blocks arranged therein, a securing means engaging the ends of said blocks, and a flexible means connected to said first-named means and the tie-sections respectively.

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**757,405. BOOSTER APPARATUS.** LAMAR LYNDON, New York, N. Y., assignor to National Battery Company, Jersey City, N. J., and Buffalo, N. Y., a Corporation of New Jersey. Filed Aug. 31, 1903. Serial No. 170,430. (No model.)



*Claim.*—1. In a system of electrical distribution, the combination with a main generator and consumption devices, of an auxiliary generator in series on the line, and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits one of which is in series on the line and the other of which is provided with a switch whereby the current through that circuit may be cut in or out as desired.

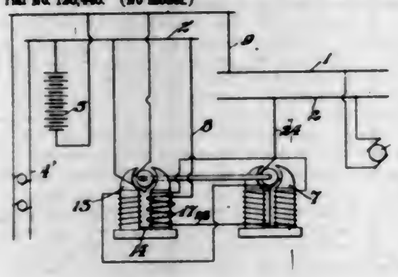
2. In a system of electrical distribution, the combination with a main generator and consumption devices, of an auxiliary generator and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits which are wound to assist each other and one of which is in series on the line while the other of which is provided with a switch, whereby the current through that circuit may be cut in or out as desired.

3. In a system of electrical distribution, the combination with a main generator and a storage battery, of an auxiliary generator in series on the line, and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits one of which is in series on the line and the other of which is provided with a switch whereby the current through that circuit may be cut in or out as desired.

4. In a system of electrical distribution, the combination with a main generator and consumption devices of an auxiliary generator in series on the line, a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits, one of which circuits comprises an auxiliary coil in series on the line and the other of which circuits is in shunt with the circuit through the armature of said motor, and a switch in the second-named circuit whereby current through that circuit may be cut in or out as desired.

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**757,406. BOOSTER APPARATUS.** LAMAR LYNDON, New York, N. Y., assignor to National Battery Company, Jersey City, N. J., and Buffalo, N. Y., a Corporation of New Jersey. Filed Aug. 31, 1903. Serial No. 170,440. (No model.)





*Claim.*—1. In a system of electrical distribution, the combination with a main generator and consumption devices, of an auxiliary generator in series on the line, and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits which are differentially wound and which are connected with the line in such a way that variations of current strength in the line will cause like variation of current strength in one of said circuits and inverse variations of current strength in the other of said circuits.

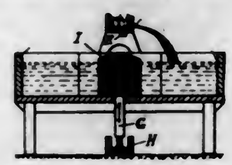
2. In a system of electrical distribution, the combination with a main generator and consumption devices, of an auxiliary generator in series on the line, and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits which are differentially wound and one of which circuits is in series on the line and will therefore have like variations of current strength as the line, while the other of which circuits is so connected with the line that it will have variations of current strength inversely proportional to the variations of current strength of the line.

3. In a system of electric distribution, the combination with a main generator and consumption devices, of an auxiliary generator in series on the line, and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits which are wound to oppose each other and one of which is in series with the line while the other of which is in shunt across the brushes of the auxiliary generator.

4. In a system of electrical distribution, the combination with a main generator and a storage battery, of an auxiliary generator in series on the line, and a motor operatively connected with the armature of said auxiliary generator, said motor having two field-circuits which are wound to oppose each other and one of which is in series with the line while the other of which is in shunt across the brushes of the auxiliary generator.

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**757,407. FISH-CULTURE TANK.** LARKIN MAYHALL, Sultan, Wash. Filed Jan. 2, 1904. Serial No. 187,546. (No model.)



*Claim.*—1. In a fish-culture tank, the combination with a central water-outlet pipe and protecting-screen therefor, of inlet-streams of water arranged to produce a rotary motion of the water in the tank around said outlet-pipe.

2. In a fish-culture tank, the combination with a central water-outlet pipe and protecting-screen therefor, of inlet-streams of water arranged to produce a rotary motion of the water in the tank around said outlet-pipe, and of inlet-streams of water arranged to agitate and aerate the water in said tank.

3. In a fish-culture tank, the combination with a central water-outlet pipe and protecting-screen therefor, of a supply-pipe producing inlet-streams of water in directions substantially tangential to the rotary motion of the water in said tank.

4. In a fish-culture tank, the combination with a central water-outlet pipe and protecting-screen therefor, of a supply-pipe producing inlet-streams of water in directions substantially tangential to the rotary motion of the water in said tank, and other streams of water in vertical direction therefrom and adapted to agitate and aerate the water in said tank.

5. In a fish-culture tank, the combination with a central water-outlet pipe and protecting-screen therefor, of a supply-pipe having holes therein adapted to throw streams of water into said tank said holes being inclined so as to cause said streams to meet the water in the tank in a direction substantially tangential to the motion of the water.

6. In a fish-culture tank, the combination with a central water-outlet pipe and protecting-screen therefor, of a supply-pipe having holes therein adapted to throw streams of water into said tank some of said holes being inclined so as to cause the streams therefrom to meet the water in the tank in a direction substantially tangential to the motion of the water, and the other holes therein being directed downward so as to cause the streams therefrom to agitate and aerate the water in the tank.

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**757,408. MUSIC-STAND.** RICHARD D. NOBLE, Sausalito, Cal., assignor of one-half to Thomas L. Hill, San Francisco, Cal. Filed June 17, 1903. Serial No. 161,822. (No model.)



*Claim.*—1. In a music-stand, telescoping sections adapted to slide together, folding tripod-legs pivoted to the bottom section outside of the circumferential limits thereof, and retractile springs attached to said bottom section above and to the tripod-legs below said pivots, so that they hold the legs close together when folded, and in an expanded position when extended.

2. In combination with an extensible telescoping stem and folding tripod-legs, a music-rack consisting of bottom bars having angular ledges, centrally pivoted to fold vertically upward, slots in said bottom bars, upright clamping-bars movably carried in said slots, and intermediate extensible connecting-links.

3. In combination with an extensible telescoping stem and folding tripod-legs, a music-stand consisting of a central bar, slotted flanged bottom bars centrally pivoted to said bar, to fold upward against the same, upright sliding bars movably and removably carried in the slots of the bottom bars, spring gripping-clamps attached to said sliding bars, and pivoted extensible parallel-motion links between said sliding bars and the central bar respectively.

4. In combination with an extensible telescoping stem and folding tripod-legs, a music-stand consisting of a central bar, slotted flanged bottom bars centrally pivoted to said bar, to fold upward against the same, upright sliding bars movably and removably carried in the slots of the bottom bars, spring gripping-clamps attached to said sliding bars, pivoted extensible parallel-motion links between said sliding bars and the central bar respectively, and an extensible elastic member 27, attached to the central bar at the top, and attachable at the bottom between the flanged bottom bars, for holding the music-sheets in position.

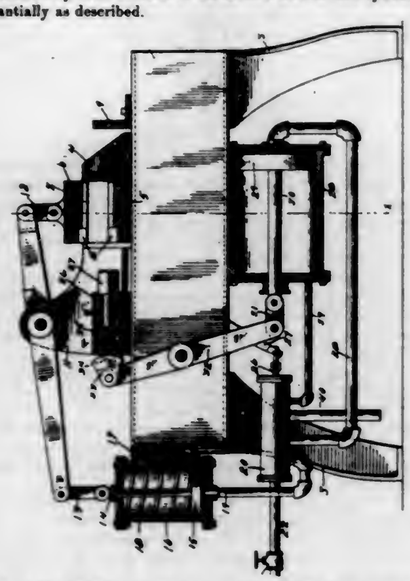
5. In a music-stand, a rack for music-sheets consisting of slotted flanged bottom bars separately pivoted at the center to fold together upward in parallel position, upright sliding end bars movably carried in the slots of the said bottom bars, spring gripping-clamps attached to said end bars, and pivoted extensible parallel-motion cross-links secured between said end bars and at the center, to cause the end bars to move parallel and equally from the center each way.

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**757,409. BOLT-HEADING MACHINE.** HANS O. OLSON, Two Harbors, Minn., assignor of one-half to W. B. Lawrence and H. H. McNamara, Duluth, Minn. Filed Feb. 19, 1903. Serial No. 144,057. (No model.)

*Claim.*—1. The combination, with a frame, of a female die thereon divided horizontally into a fixed and a vertically-movable member between which the bolt to be headed is placed, a lever horizontally pivoted at a point intermediate to its ends on said frame and pivotally connected at one end to and overhanging said vertically-movable member, a cylinder having its piston connected with the other end of said lever, a plunger horizontally slidable toward and from said die, a second lever vertically pivoted at a point intermediate to its ends on said frame and having its upper end connected with said plunger, a second cylinder arranged beneath said frame having its piston connected with the lower end of said second lever, a valve-casing and a sliding valve mounted therein, pipes connecting said valve-casing with said cylinders and with a motive fluid, and a single operating-lever arranged to move said valve and successively admit motive fluid to said cylinders, for the purpose specified.

2. A bolt-heading machine, comprising a frame composed of parallel channel-bars placed on edge and back to back with a space between them and suitable legs supporting the same, a fixed die-section resting upon the upper edges of said bars, a vertically-movable die-section, guides between which said movable die-section is raised and lowered, a lever horizontally pivoted at a point intermediate to its ends on said frame and connected at one end with said movable die-section, an upright cylinder having its piston connected with the other end of said lever, a plunger slidably arranged on said bars and movable toward and from said die-section, an upright lever pivoted at a point intermediate to its ends between said bars and connected at its upper end to said plunger, a horizontal cylinder supported beneath said bars and having its piston connected with the lower end of said upright lever, a valve-casing having pipe connections with said cylinders and with a motive fluid, and a valve arranged to control successively the admission of the motive fluid to said cylinders, substantially as described.



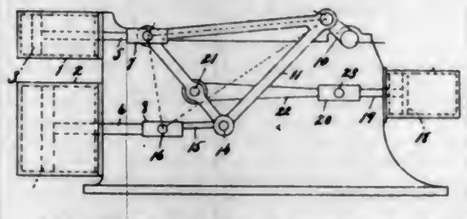
3. A bolt-heading machine, comprising parallel bars placed on edge with a space between them and suitable legs supporting the same, a female die mounted upon the upper edges of said bars and divided horizontally into a fixed and a movable section, guides between which said movable section is vertically slidable, a horizontally-arranged lever pivoted at a point intermediate to its ends on said bars above said die and having one end pivotally connected with said movable die-section, an upright cylinder having its piston connected with the other end of said lever, a plunger slidably arranged on the upper edges of said bars and movable toward and from said die, an upright lever pivoted at a point intermediate to its ends between said bars and provided at its upper end with a head having a rounded face adapted to bear on said plunger and pivotally connected therewith, a horizontal cylinder beneath said bars having its piston connected with the lower end of said upright lever, a valve-casing having pipe connections with said cylinders and with a source of motive fluid, and a valve arranged to control the admission of motive fluid to said cylinders successively.

4. The combination, with a frame, of a female die supported thereon and divided horizontally into a fixed and a movable section, guides between which said movable section is arranged to reciprocate vertically, a lever pivotally connected with said movable section, a sliding plunger movable toward and from said die, an upright lever centrally arranged with respect to the direction of movement of said plunger and pivotally connected thereto, cylinders connected with said levers, a valve-casing having pipe connections with said levers and a source of motive fluid, and a sliding balanced valve arranged to control the admission of fluid successively to said cylinders.

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**757,410. COMBINED ENGINE AND COMPRESSOR.** SIDNEY A. REEVE, Worcester, Mass., assignor to Charles F. Brown, trustee, Reading, Mass. Filed Mar. 11, 1901. Serial No. 50,536. (No model.)

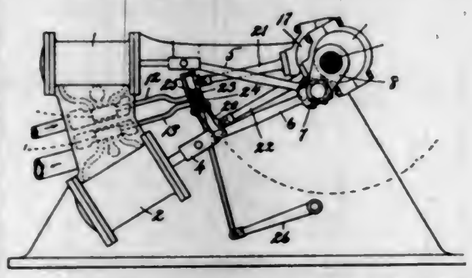
*Claim.*—1. A combined steam-engine and compressor comprising two engine-cylinders having non-synchronous pistons, a crank, a rigid reciprocating member connecting the two pistons with the crank, and an elastic-fluid-compressor cylinder whose piston receives motion from said reciprocating member, and is timed to reach dead-point slightly ahead of the later of the two engine-pistons.



2. A combined steam-engine and compressor comprising two engine-cylinders having non-synchronous pistons, a crank, a rigid connecting member having wrists connecting it with the later-timed of the two pistons and with the crank and a third wrist, an elastic-fluid compressor having its piston alined and rigidly connected with the earlier-timed engine-piston, and a link connecting the said third wrist with the said alined pistons.

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**757,411. VALVE-GEAR.** SIDNEY A. REEVE, Worcester, Mass., assignor to Charles F. Brown, trustee, Reading, Mass. Filed Mar. 21, 1901. Serial No. 52,147. (No model.)



*Claim.*—1. In a reciprocating steam-engine, a plurality of cylinders having non-synchronous pistons and non-synchronous valves, a single link connected to produce the complete steam-distributive cycles of movements of said valves, and means connected with said link for giving it a combined rocking and translating movement.

2. In a reciprocating steam-engine, a plurality of cylinders having non-synchronous pistons and non-synchronous valves, a link connected to operate said valves, means including an eccentric and a device having a fixed motion for imparting a combined rocking and translating movement to said link, and means for automatically governing said eccentric according to the speed of the engine.

3. In a reciprocating steam-engine, a plurality of cylinders having non-synchronous pistons and non-synchronous valves, a link-block connected with said valves, a reversing-link slidingly related to said block, means connected with the link for giving it a combined rocking and translating movement, and means for shifting the position of the block on the link.

4. In a reciprocating steam-engine, a plurality of valves, a link operating said valves unequally and non-synchronously, an eccentric connected to one portion of said link, and a device having a mid-gear motion, connected to the mid-gear portion of said link.

5. In a reciprocating steam-engine, a link forming part of a reversible-link mechanism, a part having a mid-gear motion connected substantially at the middle of said link, an eccentric connected with one end of said link, and a governor controlling said eccentric.

6. In a link-motion, a link, a guiding member, a link-block, a journal rigid therewith and mounted in a bearing on said guiding member, a wrist rigid with said journal, and a valve operated by said wrist.

7. In a link-motion, a link, a rocking guide, a wrist rigid therewith, a valve operated by said wrist, a link-block, a journal rigid therewith and mounted in a bearing on said rocking guide, a second wrist rigid with said journal, and a second valve operated by said wrist.



**757,412. LADLE AND MOLD.** SOLON O. RICHARDSON, Jr., Toledo, Ohio. Original application filed Mar. 28, 1903, Serial No. 150,008. Divided and this application filed Dec. 28, 1903. Serial No. 186,841. (No model.)



*Claim.*—1. In an apparatus for casting glass, the combination with a glass-furnace, of a substantially closed chamber, a removable molding-receptacle located within said chamber, a conduit leading from the metal-containing chamber of the furnace into said closed chamber, a cylindrical casting-ladle arranged to receive metal from said conduit and arranged to convey metal into said molding-receptacle, means for intermittently stopping the flow from said ladle to said molding-receptacle, means for keeping said closed chamber at a sufficiently high temperature, and a restricted opening for permitting the passage of the molding-receptacle into and out of said closed chamber without materially affecting the temperature of said chamber.

2. In a device of the class described, the combination with a glass-furnace, of a heated chamber, a receptacle, means for transferring the molten metal into said receptacle, said means comprising a conduit leading from said furnace, and a cylindrical ladle arranged to receive metal from said conduit and provided with a comparatively large opening adjacent to said conduit, and a relatively small opening adjacent to said receptacle, said ladle and receptacle being within said heated chamber.

3. In a device of the class described, the combination with a glass-furnace, of a heated chamber, a receptacle, means for transferring the molten metal into said receptacle, said means comprising a conduit leading from said furnace, a ladle provided with an opening arranged to continuously receive metal from said conduit, and a pouring-spout separate from said opening, said ladle and receptacle being within said heated chamber, and means, outside of said chamber, for operating said ladle so as to cause an intermittent flow of metal through said spout.

4. In a device of the class described, the combination with a glass-furnace, of a heated chamber, a receptacle, means for transferring molten metal into said receptacle, said means comprising a conduit leading from said furnace, a cylindrical ladle arranged to receive metal from said conduit, said ladle and receptacle being within said heated chamber, and means for operating said ladle consisting of a rod connected with said cylinder and terminating in a crank outside of said heated chamber.

5. In a device of the class described, the combination with a glass-furnace, of a heated chamber, a receptacle, means for transferring molten metal into said receptacle, said means comprising a conduit leading from said furnace, a cylindrical ladle arranged to receive metal from said conduit, said ladle and receptacle being within said heated chamber, and means for operating said ladle consisting of a hollow rod connected with said cylinder and terminating in a crank outside of said heated chamber.

6. In a device of the class described, the combination with a glass-furnace, a substantially closed heated chamber, a conduit leading from said furnace, a casting-ladle arranged to receive the metal from said conduit, molding means comprising a plurality of separate receptacles, and a movable carrier adapted to successively bring each receptacle from outside into said heating-chamber and adjacent to the spout of said casting-ladle and thence again outside of said chamber.

7. In a device of the class described, the combination with a glass-furnace, a substantially closed heated chamber, a conduit leading from said furnace, a casting-ladle arranged to receive the metal from said conduit, a rotatable carrier extending partly into and partly outside of said chamber, and molding means comprising a plurality of separate receptacles arranged around the outer edge of said carrier, so that each receptacle may, in succession, be brought adjacent to the spout of said casting-ladle.

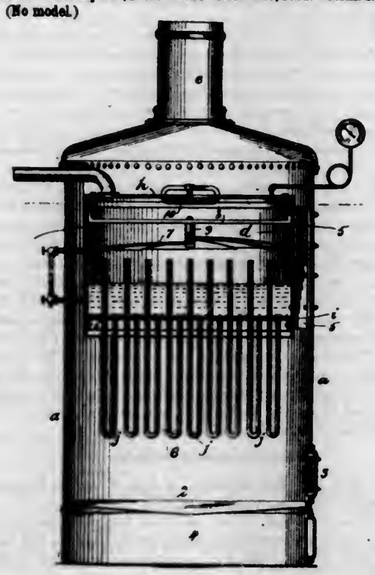
8. In a device of the class described, the combination with a glass-furnace comprising a plurality of substantially closed chambers in free communication with each other, of molding means, and means for continuously carrying said molding means into, and removing said means from, one of said chambers, said chamber being provided with opening so located and proportioned as to allow the continuous ingress and egress of said molding means to and from the exterior of said chamber without materially reducing the heat of said chamber.

9. In a device of the class described, the combination with a glass-furnace comprising a plurality of chambers in free communication with each other, of molding means, and means for inserting said molding means into, and removing said means from, one of said chambers, said chamber being provided with an approximately U-shaped opening to allow the ingress and egress of molding means to and from the exterior of said chamber without materially reducing the heat within said chamber.

10. An apparatus for the manufacture of glass, comprising a reducing-chamber, a working chamber, a heated casting-chamber, a conduit leading from said working chamber arranged to convey the molten metal into a casting-ladle within said heated casting-chamber, and means for tilting said casting-ladle and discharging its contents into a series of receptacles, each one of which is successively brought adjacent to the spout of said ladle by means of a revolving plate, said plate being so arranged that each of the receptacles are successively carried thereon outside of said casting-chamber without materially reducing the temperature of said chamber.

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**757,413. STEAM-GENERATOR.** HERBERT E. RIDER, New York, N. Y. Filed Apr. 24, 1901. Renewed Dec. 29, 1902. Serial No. 137,066. (No model.)



*Claim.*—1. The combination, in a steam-generator, of a combustion-chamber, a shell, and one or more generator-tubes having or each having a looped portion extending from the shell into the combustion-chamber and exposed freely on all sides to the heated gases therein from the point where it leaves the shell to the point where it again enters the shell, and having ends of unequal length the shorter ends terminating in the boiler below the water-line and the longer ends entering the boiler below the water-line and extending up therein above the water-line, and a reflecting-plate arranged within the shell directly above the upper end or ends of the generator tube or tubes, substantially as set forth.

2. In a steam-generator, the combination with a shell, of a collapsible reflecting-plate composed of overlapping sections pivoted on a central axis, such reflecting-plate being arranged within the shell and in the steam-space thereof between the water-line and the steam-outlet of the generator, substantially as set forth.

3. In a steam-generator, the combination with a shell and one or more generator-tubes extending upwardly therein and terminating above the water-line, of a collapsible reflecting-plate composed of overlapping sections pivoted on a central axis, such reflecting-plate being arranged within the shell above the end or ends of the generator tube or tubes, substantially as set forth.

4. In a steam-generator, the combination with a shell and one or more generator-tubes having or each having an end terminating below the water-line and an end terminating above the water-line, of a collapsible reflecting-plate composed of overlapping sections pivoted on a central axis, such reflecting-plate being arranged within the shell and above the upper end or ends of the tube or tubes, substantially as set forth.

5. In a steam-generator, in combination, a combustion-chamber, a shell, one or more generator-tubes having or each having a looped portion extending from the shell into the combustion-chamber and exposed freely on all sides to the heated gases therein from the point where it leaves the shell to the point where it again enters the shell and having ends of unequal length terminating respectively below and above the water-line, and a collapsible reflecting-plate composed of overlapping sections pivoted on a central axis, such reflecting-plate being arranged within the shell directly above the upper end or ends of the generator tube or tubes, substantially as set forth.

6. In a steam-generator, in combination, a casing having a combustion-chamber therein, a shell within the casing and arranged above the combustion-chamber with an annular space between the shell and casing and brackets whereby the shell is supported in the casing, U-shaped generator-tubes arranged with their looped portions within the combustion-chamber and having ends of unequal length which project through the crown-sheet of the shell into the interior thereof, their shorter ends terminating below the water-line and their longer ends extending up therein above the water-line terminating above the water-line, and a reflecting-plate arranged within the shell directly above the longer ends of the generator-tubes, substantially as set forth.

7. In a steam-generator, in combination, a combustion-chamber, a cylindrical shell arranged above the combustion-chamber and having a hand-hole and plate therein, and a collapsible reflecting-plate composed of overlapping sector-shaped sections of smaller diameter than the shell and pivoted on a central axis, such reflecting-plate being arranged within the shell and in the steam-space thereof between the water-line and the steam-outlet of the generator, substantially as set forth.

8. In a steam-generator, in combination, a casing having a combustion-chamber therein, a cylindrical shell within the casing and arranged above the combustion-chamber with an annular space between the shell and casing and brackets whereby the shell is supported in the casing, U-shaped generator-tubes arranged with their looped portions within the combustion-chamber and having ends of unequal length which project through the crown-sheet of the shell into the interior thereof, their shorter ends terminating below the water-line and their longer ends terminating above the water-line, the shell having a hand-hole and plate therein, and a collapsible reflecting-plate composed of overlapping sector-shaped sections of smaller diameter than the shell and pivoted on a central axis, such reflecting-plate being arranged within the shell and directly above the longer ends of the generator-tubes, substantially as set forth.

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**757,414. UPHOLSTERY.** MYRTIE M. ROGERS, Chicago, Ill. Filed Nov. 24, 1903. Serial No. 182,497. (No model.)

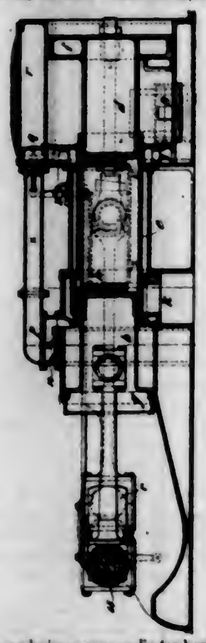
*Claim.*—1. An upholstered article of furniture, having its upholstery formed of covered detachable sections, the top and bottom sections each having a filling of a mixture of metal shavings and fibrous material, and the intermediate sections having a filling of metal shavings, as herein set forth.



2. A mattress-section, having a filling, consisting of a mixture of metal shavings, and fibrous material, as herein set forth.

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**757,415. GAS-MOTOR ENGINE.** ARTHUR ROLLASON, Long Eaton, England. Filed May 22, 1901. Serial No. 61,367. (No model.)



*Claim.*—1. An explosive-engine cylinder having two larger cylinders in tandem therewith at its ends, one of said cylinders having port connections arranged to draw in and compress the charge, and the other cylinder having port connections arranged to draw in and compress air, and two plungers in the motive cylinder arranged to reciprocate simultaneously in opposite directions, each plunger having an enlarged piston portion fitting in one of the end cylinders, substantially as described.

2. A gas-motor engine having a motive cylinder with an air-compressing cylinder and an explosive-compressing cylinder in alinement therewith at its opposite ends, two pistons in the motive cylinder connected by connecting-rods to opposite cranks on the same shaft, each having an enlarged portion serving as a piston for one of the compressing-cylinders, in combination with the self-acting valves *s* and the air-space *l*; substantially as described.

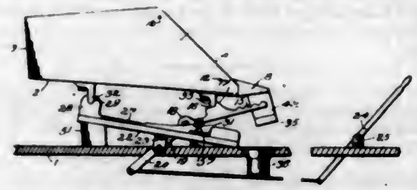
3. A gas-motor engine having a motive cylinder with an air-compressing cylinder and an explosive-compressing cylinder in alinement therewith at its opposite ends, two pistons in the motive cylinder connected by connecting-rods to opposite cranks on the same shaft, each having an enlarged portion serving as a piston for one of the compressing-cylinders, in combination with the passages *m*, the valve *n* with its operating-lever, the valve *p*, the spring-valves *q* with their operating-levers, and the reservoir *r*; substantially as described.

4. An explosive-engine cylinder having two larger cylinders in tandem therewith at its ends, one of said cylinders having port connections arranged to draw in and compress the charge, and the other cylinder having port connections arranged to draw in and compress air, two plungers in the motive cylinder arranged to reciprocate simultaneously in opposite directions, each plunger having an enlarged piston portion fitting in one of the end cylinders, storage-chambers connected to the end cylinders and valve mechanism arranged to feed the compressed air and charge successively into the working cylinder; substantially as described.



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**757,416. TRACK-SANDER.** CHARLES V. ROTE, Lancaster, Pa., assignor of two-thirds to Parke R. Shoe, Lancaster, Pa., and Charles Forney, Harrisburg, Pa. Filed Feb. 4, 1903. Serial No. 141,830. (No model.)



*Claim.*—1. The combination, in a sander, of a sand-box hinged to a support, a rack-bar, a brush on the sand-box and meshing with the rack-bar, and means for successively engaging the brush with the teeth of the rack-bar, for the purpose specified.

2. The combination, in a sander, of a sand-box hinged to a support, a movable rack-bar, and a brush on the sand-box and engaging the rack-bar for the purpose specified.

3. The combination, in a sander, of a sand-box hinged to a support, a horizontally-movable rack-bar, and a brush on the sand-box and engaging the rack-bar, for the purpose specified.

4. The combination, in a sander, of a sand-box hinged to a support, a reciprocating rack-bar, and a brush on the sand-box and engaging the rack-bar, for the purpose specified.

5. The combination, in a sander, of a sand-box hinged to a support, a rack-bar movable in a plain approximately parallel with that of the axis through which power is applied thereto, and a brush on the sand-box and engaging the rack-bar, for the purpose specified.

6. The combination, in a sander, of a sand-box hinged to a support, a reciprocation rack-bar, and a connection between the sand-box and the rack-bar, whereby the reciprocation of the rack-bar imparts motion to the sand-box, for the purpose specified.

7. The combination, in a sander, of a sand-box hinged to a support, parallel rack-bars, a connection between the sand-box and the rack-bars, and means for successively engaging said connection with the teeth of both rack-bars, for the purpose specified.

8. The combination, in a sander, of a sand-box hinged to a support, parallel rack-bars, a brush connection between the sand-box and the rack-bars, and means for successively engaging said brush connection with the teeth of both rack-bars, for the purpose specified.

9. The combination, in a sander, of a sand-box hinged to a support, reciprocating parallel rack-bars, and a brush connection between the sand-box and said rack-bars, for the purpose specified.

10. The combination, in a sander, of a sand-box hinged to a support, a reciprocating shaker-frame comprising parallel rack-bars united at one end by a cross-bar and hinge-lugs on the cross-bar, wherethrough power is applied to the shaker-frame, and a brush connection between the sand-box and said rack-bars, for the purpose specified.

11. The combination, in a sander, of a sand-box hinged to a support, a rack-bar, a brush connection between the sand-box and the rack-bar, means for successively engaging the brush with the teeth of the rack-bar, and means for throwing the sand-box into an inoperative position, for the purpose specified.

12. The combination, in a sander, of a sand-box hinged to a support, a rack-bar, a brush connection between the sand-box and the rack-bar, means for successively engaging the brush with the teeth of the rack-bar, and a device for throwing the sand-box into an inoperative position through a movement of the rack-bar, for the purpose specified.

13. The combination, in a sander, of a sand-box hinged to a support, a reciprocating rack-bar, a bearing on the rack-bar and elevated above the teeth thereof, and a brush on the sand-box and meshing with the teeth of the rack-bar and adapted to engage the top of said bearing, for the purpose specified.

14. The combination, in a sander, of a sand-box hinged to a support, a reciprocating rack-bar, a bearing on the rack-bar and elevated above the teeth thereof, a rib on said bearing, and a brush on the sand-box and normally meshing with the teeth of the rack-bar and adapted to engage the top of said bearing behind the rib thereon, for the purpose specified.

15. The combination, in a sander, of a sand-box hinged to a support, a reciprocating shaker-frame comprising parallel rack-bars united at one end by a cross-bar, ribs supporting the cross-bar and rising from one end toward the other, and a brush connection between the sand-box and the teeth of the rack-bars, for the purpose specified.

16. The combination, in a sander, of a sand-box hinged to a support, a reciprocating shaker-frame comprising parallel rack-bars united at one end by a cross-bar, ribs supporting the cross-bar and terminating at one end in abrupt elevations, and a brush connection between the sand-box and the teeth of the rack-bars, for the purpose specified.

17. The combination, in a sander, of a sand-box hinged to a support, a reciprocating rack-bar, a brush connection between the sand-box and the teeth of the rack-bar, means for raising the brush connection above the teeth of the rack-bar, and means for raising the rack-bar above its normal position, for the purpose specified.

18. The combination, in a sander, of a sand-box hinged to a support, a reciprocating shaker-frame comprising parallel rack-bars united at one end by a cross-bar, and bearings on said rack-bars and elevated above the teeth thereof, a brush connection normally between the sand-box and the teeth of the rack-bars and adapted to engage the tops of said bearings, and ribs supporting said cross-bar and rising from one end toward the other, for the purpose specified

19. The combination, in a sander, of a sand-box hinged to a support, a reciprocating shaker-frame comprising parallel rack-bars, bearings on the rack-bars and elevated above the teeth thereof, a rib on each of said bearings, a brush connection normally between the sand-box and the teeth of the rack-bars and adapted to engage the tops of said bearings behind the ribs thereon, and ribs supporting the cross-bar of the shaker-frame and each terminating at one end in an abrupt elevation, for the purpose specified.

20. The combination, in a sander, of a sand-box, grooved standards beneath one end of the sand-box, hinge-lugs on the sand-box and engaging the grooves in said standards, reciprocating rack-bars beneath the other end of the sand-box, and a brush connection between the sand-box and the rack-bars, for the purpose specified.

21. The combination, in a sander, of a sand-box inclined downward from its rear toward its front end, grooved standards beneath the rear end of the sand-box, hinge-lugs on the sand-box and engaging the grooves in said standards, reciprocating rack-bars beneath the front end of the sand-box, and a brush connection between the sand-box and the rack-bars, for the purpose specified.

22. The combination, in a sander, of a sand-box inclined downward from its rear toward its front end, grooved standards beneath the rear end of the sand-box, hinge-lugs on the sand-box and engaging the grooves in said standards, lips on the hinge-lugs and engaging the sides of said standards, reciprocating rack-bars beneath the front end of the sand-box, a brush connection between the sand-box and the rack-bars, and means for raising the front end of the sand-box to an inoperative position, for the purpose specified.

23. In a sander, a sand-box provided with a discharge-opening at its front end and expanding from the rear toward said front and having the rear end normally elevated above the front, for the purpose specified.

24. In a sander, a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and having its front wall sloping backward from said discharge-opening, for the purpose specified.

25. In a sander, a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and having its front wall sloping backward from said discharge-opening, said sand-box expanding from the rear toward the front, for the purpose specified.

26. In a sander, a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and having its front wall sloping backward from said discharge-opening, said sand-box having the rear end normally elevated above the front, for the purpose specified.

27. In a sander, a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and having its front wall sloping backward from said discharge-opening, said sand-box expanding from the rear toward the front and having the rear end normally elevated above the front, for the purpose specified.

28. The combination, in a sander, of a sand-box provided with a discharge-opening in front adjacent to the bottom thereof, and a deflector-plate secured contiguous to the front wall of the sand-box, for the purpose specified.

29. The combination, in a sander, of a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and hav-

ing its front wall sloping backward from said discharge-opening, and a deflector-plate secured contiguous to the front wall of the sand-box, for the purpose specified.

30. The combination, in a sander, of a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and expanding from the rear toward the front, and a deflector-plate secured contiguous to the front wall of the sand-box, for the purpose specified.

31. The combination, in a sander, of a sand-box provided with a discharge-opening in front adjacent to the bottom thereof and expanding from the rear toward the front and having the rear end normally elevated, the front wall of the sand-box sloping backward from said discharge-opening, and a deflector-plate secured contiguous to the front wall of the sand-box and above said discharge-opening, for the purpose specified.

32. The combination, in a sander, of a sand-box, and a vibrating platform in front of the discharge-opening therein, for the purpose specified.

33. The combination, in a sander, of a sand-box, and an uptilted platform in front of the discharge-opening therein, for the purpose specified.

34. The combination, in a sander, of a sand-box, and an uptilted and vibrating platform in front of the discharge-opening therein, for the purpose specified.

35. The combination, in a sander, of a hinged sand-box, a platform in front of the discharge-opening therein, a funnel connected with the platform, and a stationary pipe into which said funnel discharges, and means for agitating the sand-box, for the purpose specified.

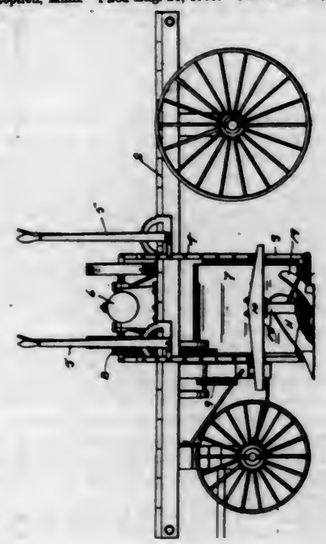
36. The combination, in a sander, of a sand-box, a platform in front of the discharge-opening therein, a stationary pipe receiving the discharge from said platform, and a depending cleaner connected with the platform and engaging the stationary pipe, for the purpose specified.

37. The combination, in a sander, of a sand-box, a platform in front of the discharge-opening therein, a funnel connected with the platform, a stationary pipe into which said funnel discharges, and a depending cleaner attached to the funnel and engaging the stationary pipe, for the purpose specified.

38. The combination, in a sander, of a sand-box expanding from the rear toward the front and having its front wall sloping backward from the discharge-opening beneath it, the rear end of the sand-box being normally elevated, an uptilted and vibrating platform in front of said discharge-opening, a funnel connected with the platform, a stationary pipe into which said platform discharges, a depending cleaner attached to the funnel and engaging the stationary pipe, and means for reciprocating the discharge end of the sand-box, for the purpose specified.

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**757,417. DITCHING AND GRADING MACHINE. RICHARD RUSSELL, Stephen, Minn. Filed Aug. 28, 1903. Serial No. 171,047. (No model.)**



*Claim.*—1. The combination, with a traveling apron, of a plow provided at the receiving end of said apron, and a supplementary moldboard interposed between said plow and apron, for the purpose specified.

2. The combination, with an apron and its frame, of a plow provided at the receiving end of said apron, and a supplementary moldboard rigidly secured to said frame and having an upwardly and inwardly curved portion in the rear of said plow-moldboard, for the purpose specified.

3. The combination, with an apron and its frame, of a plow, and a plate provided between said plow and frame and secured to the latter and having its forward edge forming a continuation of the plow-point and its rear edge upwardly turned, substantially as described.

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**757,418. INSULATING AND SUSPENDING DEVICE. JOSEPH SACHS, Hartford, Conn., assignor to The Johns-Pratt Company, Hartford, Conn., a Corporation of Connecticut. Filed Jan. 5, 1903. Serial No. 137,799. (No model.)**



*Claim.*—1. As an insulating and suspending device and in combination, a bell structure for connection to a support, a device situated in the axial center of the bell and depending therefrom as a part for attachment thereto of the device or devices to be suspended, a central block extending between said parts and connecting the same, and a section of insulating and preferably composition material within the bell structure and between the same and surrounding the major portion of the internal parts, and presenting a maximum non-conducting surface against the passage of the electric current.

2. As an insulating and suspending device and in combination, a bell structure and devices connected therewith for engaging a support, a bolt or equivalent device in the axial center of the said bell structure and depending therefrom, a block engaging the major portion of said bolt device and means for permanently connecting the block to the bell structure, and a section of insulating and preferably composition material within the bell structure and extending between the same and surrounding the major portion of the block and presenting a maximum non-conducting surface against the passage of the electric current.

3. As an insulating and suspending device, and in combination, a bell structure having at least one extension from the surface thereof adapted for connection with a support, and a central internal recess, a block structure within the bell in the axial center thereof received within a central recess, means for connecting the said block structure to the bell, a suspending device having a head and stem received in a recess of the block and the stem depending from the block, and a section of insulating and preferably composition material within and between the bell and surrounding the major portion of the block structure and presenting a maximum non-conducting surface against the passage of the electric current.

4. As an insulating and suspending device, and in combination, a bell structure having at least one extension from the surface thereof adapted for connection with a support and a central internal recess, a block structure within the bell in the axial center thereof received within the central recess, means for connecting the said block structure to the bell, a suspending device having a head and stem received in a recess of the block and the stem depending from the block, an annulus structure at the lower end of the block device and surrounding the stem of the suspending device, a nut on the stem of the suspending device coming against the under surface of the associated parts, and a section of insulating and preferably composition material within and between the bell and surrounding the major portion of the block structure and presenting a maximum non-conducting surface against the passage of the electric current.

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**757,419. DILUENT FOR MEDICAL COMPOUNDS. JOSEPH M. SCHOTT, Minneapolis, Minn. Filed Mar. 21, 1904. Serial No. 199,201. (No specimens.)**



*Claim.*—1. A germicidal diluent consisting of powdered resinous bark substantially free from tannin, in admixture with ingredients having medicinal value, substantially as described.

2. A composition of matter, comprising substantially dry ingredients of condimental and tonic character, and a dry diluent consisting of pulverulent resinous bark substantially free from tannin.

3. A composition of matter, comprising medicinal pulverulent ingredients in dry, artificial form, and a diluent consisting of pulverulent pine-tree bark substantially free from tannin.

4. The improvement in the art of manufacturing substantially dry medicinal compounds, that consists in leaching resinous bark with water, then drying the bark, then adding suitable medicinal ingredients thereto, and finally reducing the whole to an impalpable powder, substantially as described.

5. The improvement in the art of manufacturing dry diluents for medicinal compounds, that consists in removing tannin and associated glucocides from resinous tree-bark by leaching the unground bark with running water, then drying the resultant bark product, still in its natural form, and finally reducing the same to powder, substantially as described.

6. The improvement in the art of manufacturing substantially dry medicinal compounds, that consists in leaching resinous bark with running water, then removing the bark from the water, then drying the bark, and then simultaneously pulverizing and mixing the bark with suitable medicinal ingredients, substantially as described.

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**757,420. WIRE CLIP FOR CUSHION-SPRING WORK. WATSON R. SMITH, Jackson, Mich. Filed July 24, 1902. Serial No. 116,782. (No model.)**



*Claim.*—1. A clip for spring-cushion work, comprising a single piece of wire bent intermediate its ends to form oppositely-disposed parallel members, each member having a portion bent at a right angle thereto and then directed in the same plane as the aforesaid members to form a second set of spaced parallel members, each member of the first-mentioned parallel members having a portion bent back toward itself to form a single open hook, and each free end of the second-mentioned parallel members having a portion bent back toward itself to form a single open hook lying in the same plane as the member from which it is formed, all of said hooks lying in the same plane, and each hook capable of being brought into contact with the member from which it is bent.

2. In a spring-cushion, the combination with a frame, of springs arranged within the frame, stay-wires crossing each other in pairs between the springs and resting upon each diagonally opposite spring, and clips engaging the outer convolution of each spring and extending inwardly upon the spring for engagement with that portion of the stay resting thereupon.

3. In a spring-cushion, the combination with a frame, of springs arranged therein, stay-wires crossing each other in pairs and resting upon each diagonally opposite spring, and clips comprising a single piece of wire bent intermediate its ends to form oppositely-disposed parallel members, each member having a portion bent at a right angle thereto, and then directed in the same plane as the aforesaid members to form a second set of spaced parallel members, each member of the first-mentioned parallel members having a portion bent to form a single hook immediately therebeneath for engagement with one of said springs, and each free end of the second-mentioned parallel members having a portion bent to form a hook lying in substantially the same plane as said parallel members for engagement with that portion of the stay resting upon said spring.

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**757,421. OIL-BURNER. ROBERT G. SPEER, St. Louis, Mo. Filed July 15, 1903. Serial No. 165,843. (No model.)**

*Claim.*—1. In an oil-burner of the character herein described, the combination of a horizontal retort provided with a pendent outlet-pipe, a horizontal discharge-pipe connected to the lower end of said outlet-pipe, a preheating-pan arranged beneath the discharge-pipe and provided with an inclined bottom, and a deflecting-plate arranged in separate relation to the forward end of such pan to form an air-supply passage and extended up and attached to the forward side of the retort, substantially as set forth.

2. In an oil-burner of the character herein described, the combination of a horizontal retort provided with a pendent outlet-pipe, a horizontal discharge-pipe connected to the lower end of said outlet-pipe, a preheating-pan arranged beneath the discharge-pipe and provided with an inclined bottom and with extended end walls which support the retort, and a deflecting-plate arranged in separation relation to the forward end of such pan to form an air-supply passage and extended up and attached to the forward side of the retort, substantially as set forth.



3. In an oil-burner of the character herein described, the combination of a horizontal retort provided with a pendent outlet-pipe, a horizontal discharge-pipe connected to the lower end of said outlet-pipe, a preheating-pan arranged beneath the discharge-pipe and provided with an inclined bottom and with extended end walls which support the retort, and a deflecting-plate arranged in separated relation to the forward end of such pan to form an air-supply passage and extended up and attached to the forward side of the retort, said retort being provided with ears for attachment to said upwardly-extended end walls, substantially as set forth.

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**757,422. DRY BATTERY. ALFRED F. SWAN, Bayonne, N. J., and ALLEN W. ROSE, New York, N. Y., assignors of one-half to Patent Development Company of America, New York, N. Y., a Corporation of New York. Filed July 22, 1903. Serial No. 166,518. (No model.)**



*Claim.*—1. In a battery, the combination of a casing, a negative element and two separated positive elements therein, active material interposed between the negative element and the positive elements, and a switch device and connections whereby the positive elements may be alternately switched into circuit with the negative element so that each positive element may be allowed to recuperate while the other is being used.

2. A battery of the kind described, comprising a case with the zinc and carbon elements extending entirely across the case, the carbon forming a transverse partition in the case and carrying active material on both sides of it.

3. A battery of the kind described, comprising a case forming a cell, a carbon element extending entirely across the case, and dividing the cell into two parts so as to carry active material on each side of the carbon, and zinc elements suitably separated from the carbon and the active material and extending also across the case.

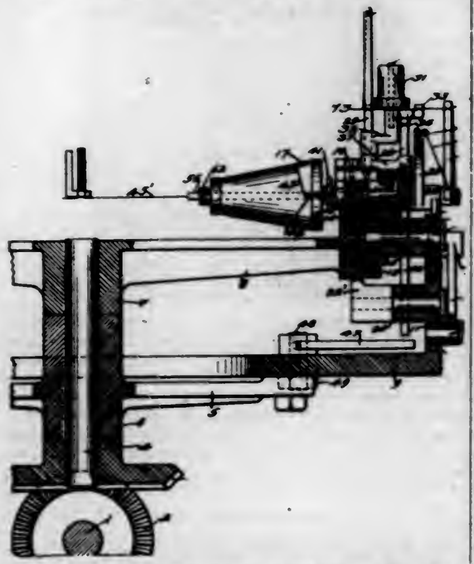
4. In a battery, the combination of a casing, a pair of cells therein each consisting of a negative element and two separated positive elements, active material interposed between the positive elements and the negative element and a switch device and connections whereby the positive elements of each cell may be alternately switched into circuit with both the negative elements.

5. A battery comprising a rectangular case having transverse partitions to form a series of cells, a carbon element extending entirely across each cell, and dividing the same into two cells, a plurality of zinc elements held in each division of the case and in parallel relation with the carbon, means for holding the active mate-

rial on each side of the carbon, and suitable separating matter interposed between the active material and the zincs.

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**757,428. BRAIDING-MACHINE. John P. Swift, Pawtucket, R. I., assignor of three-fourths to Adam Sutcliffe, Pawtucket, R. I. Filed June 4, 1902. Serial No. 110,135. (No model.)**



*Claim.*—1. In a braiding-machine the combination of a stationary circular bed having a toothed rim; a series of gears 11 in mesh with said rim and revoluble both upon their own axes and also around said bed; a series of bobbin-carriers; a gear 13 in mesh with said bobbin-carriers, and integral with 13 a pinion 12 in mesh with the gears 11; an inner series of bobbins mounted on said bobbin-carriers; an outer series of bobbins; a plurality of thread-guiding members, and means for rotating said bobbin-carriers in one direction and said outer series of bobbins and said thread-guiding members in an opposite direction; substantially as described for the purpose specified.

2. In a braiding-machine, a stationary circular bed having a toothed rim; a spider revolubly mounted above said bed; a trackway formed by recesses within the extremities of said spider; a series of bobbin-carriers sliding in said trackway; an inner series of bobbins borne by said bobbin-carriers; an outer series of bobbins mounted upon the extremities of said spider; a plurality of movable thread-guiding arms also mounted upon said extremities, and operating to guide the thread from said outer series of bobbins across the path of said inner series of bobbins at predetermined intervals; and means for simultaneously revolving in opposite directions said thread-guiding members and said bobbin-carriers, substantially as described.

3. In a braiding-machine a revoluble segmental trackway; a series of thread-supplying devices mounted thereon; a plurality of thread-guiding members therefor; a series of connecting-rods actuating said members; a series of gears operating said connecting-rods and engaging a stationary rack common to them all, the whole in combination with said stationary rack; the relative position of said thread-guiding members being so adjustable as to present the thread guided by said members in a variable relation to a second set of thread-supplying devices, so as to form braid of different styles, substantially as described.

4. In a braiding-machine the combination of a stationary circular bed having a toothed rim; a series of gears 11 in mesh with said rim, and rotatable both upon their own axes and also around said bed; a spider supporting said gears and revolubly mounted above said bed; a segmental circular trackway concentric with said rim, and formed by recesses within the extremities of said spider; a series of bobbin-carriers moving in said trackway; a set of gearing intermediate said bobbin-carriers and the gears 11 and operating to drive said bobbin-carriers in said trackway; a plurality of movable thread-guiding members mounted upon the extremities of said spider; and a series of connecting-rods 19 operated by said gears 11, the relative arrangement of parts being such that said bobbin-carriers and said thread-guiding members revolve in opposite directions by means of the revolution of said spider, substantially as described for the purpose specified.

5. In a braiding-machine a circular bed having a toothed rim; a revoluble segmental trackway suitably mounted on said bed; an outer series of bobbins supported upon the segments of said trackway; a plurality of thread-guiding members also supported upon said segments; a series of bobbin-carriers moving in said trackway but in an opposite direction thereto, each of said bobbin-carriers having a segmental rack upon the bottom thereof; an inner series of bobbins supported by said bobbin-carriers; a series of gears and pinions mounted upon the segments of said trackway and intermediate the toothed rim of said bed and said bobbin-carriers, and a series of connecting-rods connecting said gears with said thread-guiding members and operating to pass the thread from said outer series of bobbins over and under the thread from any desired number of bobbins of said inner series, substantially as described.

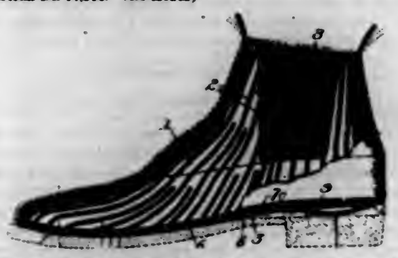
6. In a braiding-machine, a tension device consisting of a seat crossed by the thread; a weight resting thereon; a movable rod normally suspended underneath said weight by a loop of said thread when said machine is in operation, in such a manner that the draft upon the thread raises said rod until it engages and lifts said weight from the thread, thus releasing the desired amount of thread, substantially as described.

7. In a braiding-machine of the type mentioned, an automatic stopping device consisting of an unbalanced disk revolubly mounted on the hub of each of the inner series of bobbins and having an arm radially projecting therefrom; a vertical rod supported by the thread from a bobbin of the outer series, by means of a lateral slot therein; an upright rod 29; a two-armed bracket revolubly mounted thereon; one arm of said bracket being slotted to receive the thread aforesaid after the same passes from said vertical rod, the other arm of said bracket projecting downwardly toward the radially-projecting arm of the unbalanced disk aforesaid, and adapted to engage said arm when said disk is released by the breaking of a thread from a bobbin of said inner series; a spring-actuated shipper-rod; a latch-bar engaging said shipper-rod; a dog operating the said latch-bar; the relation between said parts being such that the breaking of a thread from a bobbin of said outer series at once releases said vertical rod causing the same to drop and engage said dog and stop the machine by means of said dog, latch-bar and shipper-rod, while the breaking of the thread from a bobbin of said inner series releases said vertical rod in like manner, by the consequent engagement of the radial arm of the aforesaid disk with the downwardly-projecting arm of the bracket aforesaid, all substantially as described for the purpose specified.

8. In a braiding-machine the combination of the following instrumentalities: a segmental member 22; a bobbin-carrier composed of an upper member 13 adapted to hold a bobbin, and a lower member 14 fixed upon said member 13 and sliding easily in said segmental member 22, the lower surface of 14 forming a rack; a gear 13 and integral therewith a pinion 12, said gear 13 being in mesh with the rack upon the member 14; a gear 11 in mesh with said pinion 12; a thread-guiding arm 24 25; a connecting-rod 19 connecting said arm with the gear 11; the whole forming one of a series, each gear 11 of which is in mesh with a stationary circular rack 10, common to said series; the whole in combination with said rack 10; substantially as described for the purpose specified.

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**757,424. SHOE. Louis Vogel, St. Louis, Mo. Filed Mar. 10, 1902. Serial No. 97,396. (No model.)**



*Claim.*—1. A ventilating-lining for shoes comprising a sole having separated ribs on its under side, a lining proper secured to said sole and extending upwardly, and upwardly-extending separated ribs on the outer side of said lining, the spaces between the ribs on the sole communicating with some of the spaces between the ribs on the lining proper.

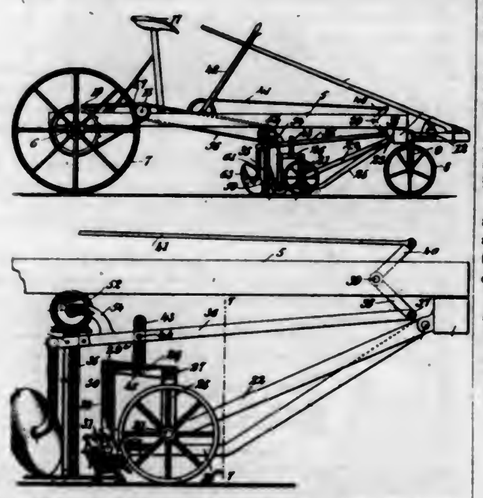
2. A ventilating-lining for shoes comprising a sole having longitudinally-extending ribs on its under side and a spring secured to the under side of the heel portion thereof, a lining proper secured to said sole and extending upwardly, and upwardly-extending separated ribs upon the outer side of said lining, the spaces between the ribs on the sole communicating with some of the spaces between the ribs on the lining.

3. A ventilating-lining for shoes comprising a sole having separated ribs on its under side and perforations communicating with the spaces between said ribs, a lining proper secured to said sole and extending upwardly, and upwardly-extending separated ribs on the outer side of said lining, the spaces between the ribs on the sole communicating with some of the spaces between the ribs on the lining proper.



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**757,425. BEET-HARVESTER. Herschel M. Heilig, Tecumseh, and Merriman H. Reed, Bluesprings, Nebr., assignors to said Heilig, and Hugh Scilley, Leavitt, Nebr. Filed Apr. 9, 1903. Serial No. 151,761. (No model.)**



*Claim.*—1. A beet-harvester having a main frame, a positively-driven cutter mechanism, means for suspending said cutter mechanism from said main frame, a wheeled trailing frame, a gage carried by said frame, and means connecting said trailing frame with the cutter-suspending means for automatically changing the height of the cutter mechanism when the gage encounters a beet-plant.

2. A beet-harvester having a main frame, a top-cutter mechanism, means for suspending said cutter mechanism from said main frame, adjusting devices including a revoluble gage adapted to encounter projecting beet-plants and a wheeled trailing frame movable independently of the main frame, and lever connections between the trailing frame and the cutter-suspending devices for varying the height of the latter without affecting the main frame.

3. A beet-harvester having an adjustable cutter-frame, cooperating cutter devices suspended from said frame, a wheeled gage-frame carrying a revoluble gage, and automatic adjusting mechanism controllable by said wheeled gage-frame and connected operatively with said cutter-frame for varying the height of the latter when a part of the gage-frame encounters a projecting beet-plant.

4. In a beet-harvester, a top-cutting mechanism having a pair of cooperating cutter-disks, means for positively driving said disks, a pivoted frame carrying said cutter mechanism, a wheeled trailing frame, a trailing gage-frame carrying a gage, and means connecting the several frames for varying the height of the cutter-frame automatically when the gage encounters an obstruction in its path.

5. In a beet-harvester, a pivoted frame suspended from a main frame, a pair of cooperating disks disposed in lapping engagement and carried by said pivoted frame, means for holding said disks in cooperative relation and permitting them to spread automatically, means for driving said disks, a trailing wheeled frame, a trailing gage-frame carrying a revoluble gage, and lever connections between the gage-frame, the wheeled frame, and the cutter-frame for automatically changing the height of the cutter mechanism.

6. In a beet-harvester, the combination with a main frame, of independent trailing frames connected therewith, a lever connecting said trailing frames, a cutter-frame having operative connection with said lever and carrying a suspended cutter mechanism, gage-wheels journaled on one of said trailing frames, and a revoluble gage mounted on the other trailing frame.

7. In a beet-harvester, the combination with a main frame, of independent trailing frames, one of said frames having gage-wheels and the other frame supporting a revoluble gage, a cutter-frame, connections between the trailing frames and said cutter-frame, and a cutter mechanism supported by said cutter-frame, said cutter-frame carrying means for positively driving the cutter mechanism and the revoluble gage.

8. In a beet-harvester, the combination with a cutter-frame, of a cutter mechanism suspended therefrom, a revoluble gage disposed in advance of the cutter mechanism, means connecting said revoluble gage with said cutter-frame, and devices for positively driving the cutter mechanism and said revoluble gage.

9. In a beet-harvester, a revoluble gage consisting of a shaft having a series of disks spaced therbon, in combination with a cutter mechanism disposed in rear of said gage, means actuated by the gage to determine the elevation of said cutter mechanism, and means for positively driving said gage.

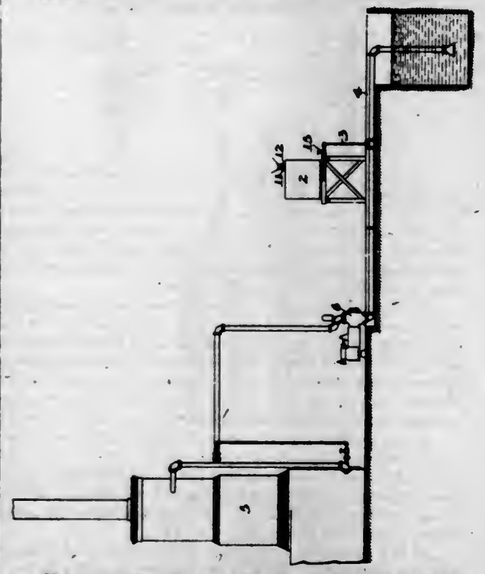
10. In a beet-harvester, the combination with a cutter mechanism one of the members of which is positively driven, of an ejector-disk disposed obliquely to said cutter mechanism and having frictional engagement with the driven member thereof.

11. In a beet-harvester, the combination with a cutter mechanism, of an inclined ejector-disk having frictional engagement with a member of said cutter mechanism, and means for yieldably holding said ejector-disk in operative position.

12. In a beet-harvester, the combination with a cutter mechanism, of a hanger pivotally supported in rear of said cutter mechanism, an ejector-disk journaled in said hanger, and a tension device for holding the hanger and disk normally in active relation to the cutter mechanism.

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**757,426. APPARATUS FOR FEEDING NEUTRALIZING AGENTS TO STEAM-BOILERS. John Mory, Braddock, and Thomas A. McGuigan, Brinton, Pa. Filed Feb. 10, 1904. Serial No. 192,860. (No model.)**

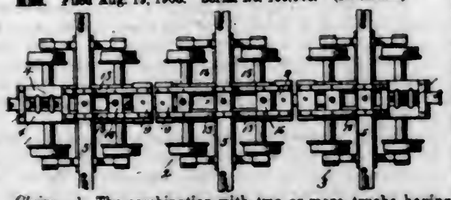


*Claim.*—1. Apparatus for supplying a neutralizing solution to a steam-boiler, comprising a mixing-tank, a water-supply to the tank, means for regulating the water-supply to the tank, means for mixing the solution in the tank, a discharge-pipe from the tank to the boiler, and a float-regulated discharge-valve with a feed-pump and boiler; substantially as described.

2. Apparatus for supplying a neutralizing solution to a steam-

boiler, comprising a mixing-tank, a water-supply to the tank, means for regulating the water-supply to the tank, means for mixing the solution in the tank, a discharge-pipe from the tank to the main boiler feed-line, and a float-regulated discharge-valve adapted to close automatically as the level in the tank falls; substantially as described.

757,427. RAILWAY-CAR. CHARLES R. STEWART, McHenry, Miss. Filed Aug. 19, 1903. Serial No. 169,978. (No model.)



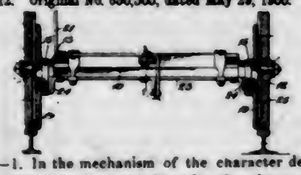
*Claim.*—1. The combination with two or more trucks having the sills thereof spaced apart and provided with cross-plates on their upper and lower faces, adapted to receive a coupling-pin, and a coupling-bar adjustable between the opposing sills of the trucks, and provided with apertures to receive the coupling-pin, substantially as and for the purpose set forth.

2. The combination with the end trucks having the sills thereof spaced apart, of an intermediate truck having sills spaced apart, and two coupling-bars adjustable, respectively, between the forward and rearward portion of said sills and the sills of the adjoining trucks, and means for connecting said bars to the sills, substantially as and for the purpose set forth.

3. A truck having the sills thereof spaced apart to receive a coupling-bar, and provided with cross-plates adapted to receive a coupling-pin, and a bolster-strap for each sill secured over the said cross-plates and forming a connecting-brace therefor, substantially as and for the purpose set forth.

# REISSUES.

12,212. ADJUSTABLE WHEEL-FLANGE. HENRY FATIC, Middletown, Ind., assignor, by mesne assignments, to Swanitz Company, Chicago, Ill., a Corporation of Delaware. Filed Mar. 4, 1902. Serial No. 96,712. Original No. 650,505, dated May 29, 1900.



*Claim.*—1. In the mechanism of the character described, the combination with the wheel and the axle, of a sleeve mounted on said axle, a disk rotating on said sleeve, means for normally retaining said sleeve with said disk concentric with said wheel, and means for moving said sleeve to a position in which said disk shall be eccentric to said wheel with its lower periphery extending below the tread of said wheel, substantially as set forth.

2. In a mechanism of the character described, the combination with the recessed wheel and the axle, of a sleeve mounted on said axle, a disk rotating on said sleeve, means for normally retaining said sleeve with said disk concentric with said wheel and located in said recess, and means for moving said sleeve to a position in which said disk shall be eccentric to said wheel with its lower periphery extending below the tread of said wheel, substantially as set forth.

3. In a mechanism of the character described, the combination with the wheel and the axle, of a sleeve mounted on said axle, a disk on said sleeve, and means for giving said sleeve and disk a movement of translation in a direction diagonal to the plane of rotation of said wheel and also to the axis of said axle, substantially as and for the purposes set forth.

4. In a mechanism of the character described, the combination with the wheel and the axle, a sleeve mounted on said axle and a disk on said sleeve, of means for imparting a movement of translation to said disk and sleeve in a spiral direction to and from said wheel, substantially as and for the purposes set forth.

5. In a mechanism of the character described, the combination with the wheel and axle, of an eccentric spindle connecting the journal-bearing of said axle with the axle proper, said spindle having a spiral groove thereon, a flanged sleeve having an aperture therein eccentric to its periphery, said aperture adapted to fit on said spindle, said sleeve having also a slot in its inner face, a pin on said sleeve engaging said spiral groove on said spindle, a disk revolving on said flange on said sleeve, and a bent lever engaging said slot in said sleeve and adapted to impart a spiral movement to said sleeve and disk, substantially as and for the purposes set forth.

6. In a mechanism of the character described, the combination with the wheel and the axle, of a sleeve mounted on said axle and in proximity to said wheel, a bearing on said sleeve eccentric to said bearing of said sleeve on said axle, a disk mounted on said bearing on said sleeve, and means for rotating said sleeve on said axle, to give said disk a movement of translation, substantially as set forth.

7. A wheel and axle in combination with an eccentric sleeve on said axle, a flange-disk separate from said wheel and mounted on the sleeve, whereby a shifting of said sleeve is permitted, to bring the disk into predetermined position, and locking mechanism for holding said disk in such position.

8. The combination of a wheel and axle, an eccentric sleeve mounted to rotate on the axle, and a flange disk on said sleeve separate from said wheel, whereby the rotation of said eccentric sleeve throws said flange outside the periphery of the wheel.

9. The combination of an axle, a wheel having a recessed side, an eccentric sleeve mounted to rotate on the axle, and carrying a disk normally resting in the recess of the wheel, and means for withdrawing the disk from the recess and protruding it at the bottom of the wheel, by the rotation of said sleeve, substantially as described.

10. A recessed wheel provided with a revolvable flange disk of less diameter than the wheel, rotary means for shifting the said disk out of the recess and beyond the periphery of the wheel, substantially as described.

11. In a vehicle wheel, an eccentrically mounted flange disk, an axle carrying the bearing of said disk, and a spiral engaging device on the axle, whereby the rotation of the disk will remove it from the wheel and protrude it beyond the circumference of the wheel, substantially as described.

12. The combination with a vehicle wheel and axle, of an eccentric sleeve carrying a disk, mounted to rotate upon said axle and adapted to fit closely within the wheel, and a spiral groove in the axle and an engaging pin in the sleeve of the disk, whereby the rotation of the sleeve withdraws the disk from the wheel and protrudes it beyond the circumference of the wheel, substantially as described.

# DESIGNS.

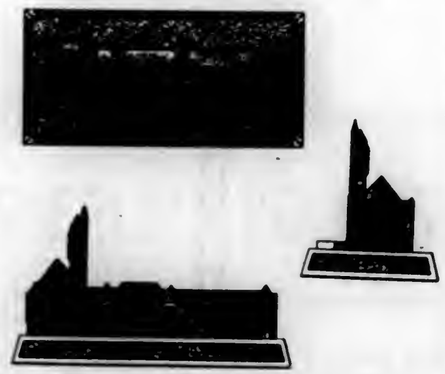
36,871. BACK FOR HAND-MIRRORS OR SIMILAR ARTICLES. LORENZO FREUND, Newark, N. J., assignor to Kerr and Thiery, of New Jersey and New York, N. Y., a Copartnership. Filed Mar. 3, 1904. Serial No. 196,460. Term of patent 7 years.





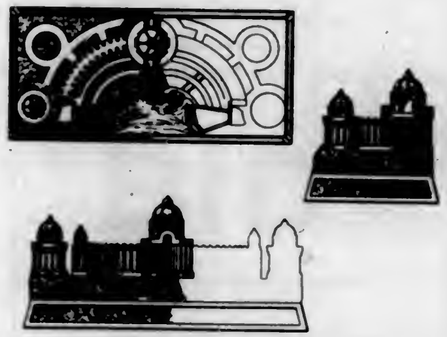
*Claim.*—The ornamental design for the back of a hand-mirror or similar article, as shown.

36,872. PAPER-WEIGHT. LOUIS V. ARONSON, Newark, N. J. Filed Feb. 23, 1904. Serial No. 194,967. Term of patent 3½ years.



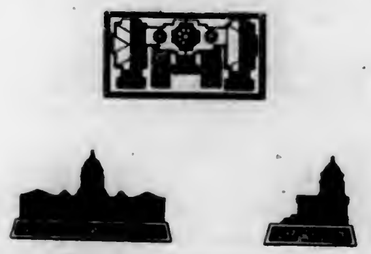
*Claim.*—The ornamental design for a paper-weight as shown.

36,873. PAPER-WEIGHT. LOUIS V. ARONSON, Newark, N. J. Filed Feb. 23, 1904. Serial No. 194,980. Term of patent 3½ years.



*Claim.*—The ornamental design for a paper-weight as shown.

36,874. PAPER-WEIGHT. LOUIS V. ARONSON, Newark, N. J. Filed Mar. 12, 1904. Serial No. 197,893. Term of patent 3½ years.



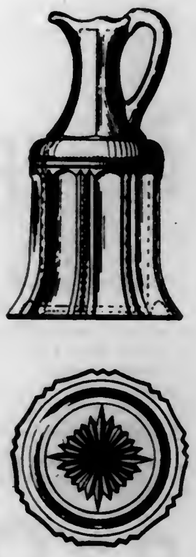
*Claim.*—The ornamental design for a paper-weight as shown.

36,875. CANDLESTICK. ALBERT STEVIN, New Bedford, Mass., assignor to The Fairpoint Corporation, New Bedford, Mass. Filed Mar 2, 1904. Serial No. 196,249. Term of patent 7 years.



*Claim.*—The ornamental design for a candlestick, as shown.

36,876. CRUET. WILLIAM B. PEIRS, Washington, Pa. Filed Apr. 21, 1903. Serial No. 153,711. Term of patent 7 years.



*Claim.*—The ornamental design for a cruet as shown.

36,877. COFFEE-POT. ALBERT STRETTIS, New Bedford, Mass., assignor to The Fairpoint Corporation, New Bedford, Mass. Filed Feb. 10, 1904. Serial No. 193,017. Term of patent 7 years.



*Claim.*—The ornamental design for a coffee-pot, as shown.

36,878. DENTAL-TOOL HANDLE. CARL H. SEEGER, Manitowoc, Wis. Filed Feb. 17, 1904. Serial No. 193,956. Term of patent 14 years.



*Claim.*—The ornamental design for a dental-tool handle substantially as herein shown.



# TRADE-MARKS

## REGISTERED APRIL 12, 1904.

42,850. GAMES PLAYED WITH CARDS. PARKER BROS., Salem, Mass. Filed Mar. 9, 1904.

SHERLOCK HOLMES

The words "SHERLOCK HOLMES." Used since February 15, 1904.

42,851. GAMES PLAYED WITH CARDS. PARKER BROS., Salem, Mass. Filed Mar. 9, 1904.

SIR

The word "SIR." Used since February 1, 1903.

42,852. GAMES PLAYED WITH CARDS. PARKER BROS., Salem, Mass. Filed Mar. 9, 1904.

BID

The word "BID." Used since February 15, 1904.

42,853. PLAYING-CARDS. HARRY R. GAVITT, Topeka, Kans. Filed Mar. 17, 1904.

G.S.E.

The letters "G. S. E." Used since March 15, 1903.

42,854. LEAD-PENCILS. L. & C. HARDTMUTH, Vienna and Budweis, Austria-Hungary, and London, England. Filed Mar. 15, 1904.

FAUST

The word "FAUST." Used since November, 1903.

42,855. SOUND-MAGNIFYING HORNS. R. A. & A. G. SCHOTTEL, New York, N. Y. Filed Feb. 18, 1904.

42,855.

MEGA

The representation of four horns arranged in pairs opposed to each other. The smaller ends of each pair of horns are adjacent to each other and their mouths or bells are presented upwardly and downwardly, respectively. Between the two upper horns appears a scroll or ribbon and between the two lower horns appears a similar scroll or ribbon. Between the two scrolls in the field of the representation appears the word "MEGA." Used since January 1, 1902.

42,856. SELF-PLAYING PIANOS AND PIANO-PLAYERS. KOHLER & CAMPBELL, New York, N. Y. Filed Mar. 5, 1904.

AUTOPIANO

The word-symbol "AUTOPIANO." Used since January, 1904.

42,857. TOY FURNITURE. ROSENMANN & DORN, Newark, N. J. Filed Mar. 10, 1904.

R D &

The representation of a Maltese cross with the upper and fourth arm removed and with a disk in the center inclosed in double circular lines and having in its center a rosette, while in the three arms of the said cross are arranged, respectively, the letters "R D" and the character "&." Used since January 4, 1904.

42,858. WOVEN HAMMOCKS. NATIONAL HAMMOCK CO., New York, N. Y. Filed Mar. 8, 1904.

Oso

The word "Oso." Used since January 1, 1903.

42,359. BLANKETS AND LIKE PROTECTIVE COVERINGS. SMITH, Hoge & Co., New York, N. Y. Filed Feb. 23, 1904.



The representation of two folded blankets placed one across the other. Used since February 16, 1904.

42,360. COTTON AND WOOL GOODS AND LININGS. THE BRADFORD DYERS' ASSOCIATION, LIMITED, Bradford, England. Filed Dec. 30, 1903.



The representation of a bird's nest with eggs therein. Used since July 7, 1903.

42,361. DRESS PIECES AND LININGS OF SILK. THE BRADFORD DYERS' ASSOCIATION, LIMITED, Bradford, England. Filed Dec. 30, 1903.



The representation of a bird's nest with eggs therein. Used since July 7, 1903.

42,362. CORSETS. JAMES A. HOUSTON, Boston, Mass. Filed Mar. 5, 1904.

La Paix

The words "La Paix." Used since January, 1904.

42,363. HOSIERY. JOHN BLOOD & Co., Philadelphia, Pa. Filed Mar. 12, 1904.



The representation of a shield or frame of irregular and fanciful shape. Upon this shield and above and below the center of same are scrolls. Between these scrolls is the representation of a smaller shield of different shape, having thereon a representation of a lion rampant. The smaller shield is surmounted by the representation of a helmet, above which is a lion's head. Used since June, 1893.

42,364. LEATHER BOOTS AND SHOES. MADISON M. BAKER, Boston, Mass. Filed Mar. 5, 1904.

RADIUM

The word "Radium." Used since November 2, 1903.

42,365. RUBBER BOOTS AND SHOES. GOODYEAR RUBBER COMPANY, St. Paul, Minn. Filed Mar. 5, 1904.



The representation of two elephants harnessed to a boot and pulling in opposite directions. Used since January, 1902.

42,366. LEATHER BOOTS AND SHOES AND LEATHER FOR SAME. FRANK G. JOSEE, Boston, Mass. Filed Mar. 7, 1904.



PLUTO

The word "Pluto," associated with the representation of a conventional devil holding in one hand a fork and having suspended at his side a sword. Used since February 24, 1904.

42,367. LEATHER BOOTS AND SHOES AND LEATHER FOR SAME. FRANK G. JOSEE, Boston, Mass. Filed Mar. 7, 1904.



RED RAVEN

The words "Red Raven," associated with the representation of a raven printed in red. Used since February 24, 1904.



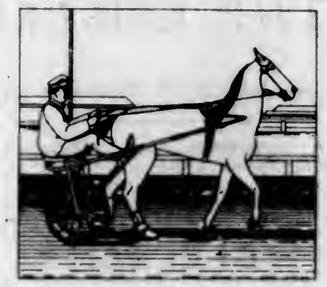
42,368. LEATHER SHOES FOR MEN AND BOYS. BARKER, BROWN & Co., Huntington, Ind. Filed Jan. 11, 1904.




The words "Good for Bad Boys." inclosed within an oval border. Used since May 1, 1901.

42,369. VETERINARY REMEDY. LEANDER D. KING, Boston, Mass. Filed Feb. 26, 1904.

LOU DILLON



The representation of the trotting mare Lou Dillon harnessed in a pneumatic sulky with a driver seated thereon, the said representation being accompanied by the words "Lou Dillon." The mare and sulky are represented as on a race-track, being shown on a rectangular field or background illustrating part of the track and the fence along the edge thereof, as well as sheds and buildings beyond. Used since November 18, 1903.

42,370. LINIMENT FOR EXTERNAL USE. MORRIS SPIEGEL, Albany, N. Y. Filed Nov. 6, 1897.



BEAVER

The representation of a beaver and the word "Beaver." The beaver appears crouched upon the bank of a stream or lake, mountains, trees, and shrubbery forming a background. Used since February 26, 1869.

42,371. HEADACHE-POWDERS. WILLIAM GAHS, Wheeling, W. Va. Filed Mar. 9, 1904.

SOME-MORE-OF-EM

The hyphenated word "Some-more-of-em." Used since February 1, 1899.

42,372. HAIR GROWER AND RESTORER. MOUNT AND MOUNT, Indianapolis, Ind. Filed Jan. 15, 1904.

42,372.

Hairstoria

The word "Hairstoria." Used since July 15, 1902.

42,373. TOOTH-WASH AND TOOTH-POWDER. ROSE DEUTSCHBEIN, Hartford, Conn. Filed Feb. 17, 1904.

GERMINOL

The word "Germinol." Used since March 15, 1901.

42,374. PERFUMERY. COLGATE & Co., New York, N. Y. Filed Mar. 21, 1904.

FANTASY

The word "Fantasy." Used since March 1, 1904.

42,375. TOILET SOAP. COLGATE & Co., New York, N. Y. Filed Mar. 21, 1904.

FANTASY

The word "Fantasy." Used since March 1, 1904.

42,376. CERTAIN NAMED SOAP. VINOLIA Co., LIMITED, London, England. Filed Dec. 30, 1903.

DYLISSIA

The word "Dylissia." Used since January, 1899.

42,377. POLISH FOR SHOES AND LEATHER GOODS. WHITTEMORE BRO'S AND Co., Cambridge, Mass. Filed Oct. 12, 1903.

OILYCREAM

The word "Oilycream." Used since May 1, 1903.

42,378. POLISHES FOR LEATHER GOODS. WHITTEMORE BRO'S AND Co., Cambridge, Mass. Filed Dec. 30, 1903.

BON-TON

The hyphenated word "Bon-Ton." Used since December 1, 882.

42,379. LIQUID COMPOUND FOR USE IN CUTTING, BORING, AND DRAWING OF METAL. SIDNEY RABINOFF, New York, N. Y. Filed Jan. 23, 1904.

HARVYLINE

The word "HARVYLINE." Used since December 15, 1903.

42,380. PAINT. GILLILY & BARD, Port Allegany, Pa. Filed Mar. 1, 1904.




The representation of a paint pot and brush and the letters and character "G & B." Used since January 1, 1904.

42,381. BAKING POWDER AND SODA. MCCORD-STEWART COMPANY, Atlanta, Ga. Filed Mar. 4, 1903.

FARMBELL

The word-symbol "FARM BELL." Used since November, 1900.

42,382. YEAST. JOHN L. ROONEY, Wellington, Kans. Filed Jan. 29, 1904.




The representation of a woman's face, said representation being a reproduction of a portrait of an elderly woman's face, of a medallion-like nature and oval shape, associated with the word "GRANDMA'S." Used since November 1, 1903.

42,383. SHREDDED CITRON. CLAUS J. CLAUSEN, Clinton, Iowa. Filed Mar. 3, 1904.



The word "CITRONATE" and the representation of a fruit-dish bearing fruit. Used since September 20, 1903.

42,384. CIGARS. ALEJANDRO P. POLADURA, New Orleans, La. Filed Mar. 8, 1904.

CAN'T BE CONQUERED

The words "CAN'T BE CONQUERED." Used since March, 1879.

42,385. WHISKY. HIRAM WALKER & SONS, LIMITED, Walkerville, Canada, and Detroit, Mich. Filed Feb. 11, 1904.

THE EPICURE

The words "THE EPICURE." Used since February 1, 1904.

42,386. RAZOR-STROPS. PETER L. FROST and GEO. R. CRAW, Chicago, Ill. Filed Feb. 29, 1904.

RADIUMITE

The word "RADIUMITE." Used since October 1, 1903.

42,387. HAMMERS. FRANK W. WHITCHER, Boston, Mass. Filed Feb. 18, 1904.

CRISPIN

The word "CRISPIN." Used since 1872.

42,388. CERTAIN NAMED AUXILIARY HEATERS AND PARTS ACCESSORY THERETO. NOVELTY MANUFACTURING COMPANY, Jackson, Mich. Filed Feb. 12, 1904.

X-Radium

The word-symbol "X-RADIUM." Used since December 15, 1903.

42,389. ANTIFRICTION AND BABBITT METALS. BENJAMIN H. SEABURY, Tacoma, Wash. Filed Mar. 10, 1904.

IMPERIAL

The word "IMPERIAL." Used since May 1, 1899.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.



# LABELS

## REGISTERED APRIL 12, 1904.

10,929.—*Title:* "JUSTICE, UNITY, EQUITY, HAND MADE IN AMERICA." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,930.—*Title:* "NOT MADE BY A TRUST." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,931.—*Title:* "BY INDUSTRY WE THRIVE." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,932.—*Title:* "UNITED WE HOLD, DIVIDED WE FALL." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,933.—*Title:* "HONEST LABOR, FAIR HONEST WAGES." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,934.—*Title:* "UNION GIVES STRENGTH, AMERICA." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,935.—*Title:* "SKILLED LABOR OF AMERICA." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,936.—*Title:* "HAND UNITED TO HAND LABOR CONQUERS ALL." (For Hats.) C. H. MERRITT & SON, Danbury, Conn. Filed March 9, 1904.

10,937.—*Title:* "HOFMEISTER PLACKET." (For Ladies' Clothing.) FLORA HOFMEISTER, Racine, Wis. Filed March 14, 1904.

10,938.—*Title:* "CRÈME JOSEPHINE." (For Toilet Preparation.) THE JOSEPHINE CRÈME COMPANY, New York, N. Y. Filed March 15, 1901.

10,939.—*Title:* "MME LA FORGUE'S CRÈME DES ROSES." (For Cold-Cream.) LEAH P. HILL, Salt Lake City, Utah. Filed March 15, 1904.

10,940.—*Title:* "DR. GREY'S ALMOND CREAM TOILET SOAP." (For Toilet Soap.) ENTERPRISE SOAP WORKS, Nashville, Tenn. Filed March 21, 1904.

10,941.—*Title:* "DR. GREY'S ALMOND CREAM TOILET SOAP." (For Toilet Soap.) ENTERPRISE SOAP WORKS' Nashville, Tenn. Filed March 21, 1904.

10,942.—*Title:* "TUFIBER." (For Toilet-Paper.) SCOTT PAPER Co., Philadelphia, Pa. Filed March 15, 1904.

10,943.—*Title:* "WONDER WORKER REMEDIES." (For Medicine.) LUCILE MARLION, Portland, Oreg. Filed Feb. 17, 1904.

10,944.—*Title:* "RICHARDSON'S TOLU-PINE." (For Medicine.) WILL S. RICHARDSON, Marietta, Ohio. Filed March 11, 1904.

10,945.—*Title:* "FLOR FINA CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH COMPANY, Cleveland, Ohio. Filed March 16, 1904.

10,946.—*Title:* "HABANA CIGARS." (For Cigars.) THE CENTRAL LITHOGRAPH COMPANY, Cleveland, Ohio. Filed March 16, 1904.

10,947.—*Title:* "EXTRA FINA CIGAR." (For Cigars.) THE CENTRAL LITHOGRAPH COMPANY, Cleveland, Ohio. Filed March 16, 1904.

10,948.—*Title:* "PUROS CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH COMPANY, Cleveland, Ohio. Filed March 16, 1904.

10,949.—*Title:* "PRIMEROS CIGARS." (For Cigars.) THE CENTRAL LITHOGRAPH Co., Cleveland, Ohio. Filed March 16, 1904.

10,950.—*Title:* "PUROS CIGARROS." (For Cigars.) THE CENTRAL LITHOGRAPH COMPANY, Cleveland, Ohio. Filed March 16, 1904.

10,951.—*Title:* "ARCHON." (For Cigars.) FLORA V. ESHLEMAN, Philadelphia, Pa. Filed March 2, 1904.

10,952.—*Title:* "ZEMBRA." (For Cigars.) L. GOLOVINE, New York, N. Y. Filed March 18, 1904.

10,953.—*Title:* "STOCK CIGAR." (For Cigars.) SCHMIDT & Co., New York, N. Y. Filed March 1, 1904.

10,954.—*Title:* "TARPON MARYLAND RYE WHISKEY." (For Whisky.) Jos. R. STONEBRAKER & Co., Baltimore, Md. Filed March 16, 1904.

10,955.—*Title:* "PETER'S THE ORIGINAL MILK-CHOCOLATE." (For Milk Chocolate.) D. PETER, Vevey, Switzerland. Filed March 21, 1904.

10,956.—*Title:* "PETER'S THE ORIGINAL MILK-CHOCOLATE." (For Milk Chocolate.) D. PETER, Vevey, Switzerland. Filed March 21, 1904.

10,957.—*Title:* "COLONIAL JELLY." (For a Jelly Powder.) NIAGARA FRUIT JELLY Co., Buffalo, N. Y. Filed March 9, 1904.

10,958.—*Title:* "IDOL." (For Flour.) LEXINGTON ROLLER MILLS Co., Lexington, Ky. Filed May 26, 1902.

10,959.—*Title:* "APEX." (For Flour.) LEXINGTON ROLLER MILLS Co., Lexington, Ky. Filed May 26, 1902.

10,960.—*Title:* "POLARIS BRAND." (For Canned Salmon.) ROBERT D. HUME, Wedderburn and Goldbeach, Oreg., and San Francisco, Cal. Filed March 17, 1904.

10,961.—*Title:* "ELECTRIC CLEANSING FLUX PASTE." (For Flux Paste.) GEORGE L. LEITZE, Buffalo, N. Y. Filed February 23, 1904.

10,962.—*Title:* "JUMBO BRAZING COMPOUND." (For Brazing Compound.) J. E. ARNOLD & Co., Denton, Tex. Filed March 18, 1904.

10,963.—*Title:* "RADIUM MANTLE." (For Gas-Mantles.) HORACE A. KEEFER, Chicago, Ill. Filed February 26, 1904.

# PRINTS

## REGISTERED APRIL 12, 1904.

949.—*Title:* "RELIANCE." (For Hat-Fasteners.) NATIONAL BUSINESS OPPORTUNITIES Co., New York, N. Y. Filed March 7, 1904.

950.—*Title:* "BALL BEARING GARTERS." (For Garters.) THE C. A. EDGARTON MFG. Co., Shirley, Mass. Filed March 18, 1904.

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951.—*Title:* "OUR SPRING STYLES." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed March 21, 1904.

952.—*Title:* "BIRDS OF A FEATHER." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed March 21, 1904.

953.—*Title:* "OUR SHOES WILL BEAR THE CLOSEST SCRUTINY." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed March 21, 1904.

954.—*Title:* "CASTORIA." (For a Medicine.) THE CENTAUR CO., New York, N. Y. Filed March 16, 1904.

955.—*Title:* "THE TOUCH OF TIME." (For Cold-Cream.) DAGGETT & RAMSDELL, New York, N. Y. Filed March 17, 1904.

956.—*Title:* "IN EVERY MAN'S POCKET." (For Cigars.) SEITER & KAPPES, New York, N. Y. Filed February 26, 1904.

957.—*Title:* "GLOBE STARCH." (For Starch.) AMERICAN LITHOGRAPH COMPANY, New York, N. Y. Filed March 18, 1904.

958.—*Title:* "RUSSIAN OVERLAND TEA CO." (For Teas.) GREGORI ZALINOFF, New York, N. Y. Filed March 21, 1904.

959.—*Title:* "THE ROMÜNDER 'COMFORT' PASSENGER CAR." (For Passenger-Cars.) HERMANN ROMÜNDER, Milwaukee, Wis. Filed March 19, 1904.



# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE GILL BROTHERS COMPANY.

*Decided February 12, 1904.*

TRADE-MARKS—INTERFERENCE—ABANDONMENT BY REGISTRANT.

Where an applicant for registration of a trade-mark which has been registered by another files affidavits making out a *prima facie* case of abandonment of the mark by the registrant, *Held* that an interference should be declared to determine the question of abandonment and the present ownership of the mark.

ON PETITION.

TRADE-MARK FOR GLASSWARE.

Application for registration filed June 22, 1903, No. 68,561.

*Messrs. Steuart & Steuart* for the applicant.

ALLEN, *Commissioner:*

This is a petition that the above-entitled application for the registration of a trade-mark be placed in interference with registered trade-mark No. 20,190 to Wm. Foester & Company.

The Examiner says that the marks are substantially the same and are applied to substantially the same merchandise, and he has rejected the application on the registered mark. The applicant does not claim to have been the first to adopt the trade-mark, but claims that Foester & Company have abandoned its use and that the Gill Brothers Company is now the lawful owner of the mark and wishes an opportunity to show that fact.

The right to registration depends upon the present ownership of the trade-mark, and it is clear that priority of adoption alone does not establish present ownership. It depends upon present use of the mark, and to retain title to a mark once adopted there must be continuous use of it thereafter. If after adopting a mark its use is abandoned, the field is left open to others, and one who subsequently adopts it and uses it continuously may acquire title to it.

The question of abandonment therefore may be a material one in the interference and may control the decision. The applicant in this case has raised the question of abandonment and has filed affidavits as to it, making out a *prima facie* case. The burden of proof is on it; but it should be given an opportunity to prove its allegations, and it is believed that the declaration of an interference is the proper way to afford that opportunity.

The petition is granted.

### IN RE DEITSCH.

*Decided February 19, 1904.*

COPY OF APPLICATION FURNISHED—CERTIFICATE OF COURT.

Where a party has brought suit on a patent for infringement and testifies in regard to another application for patent relating to the same invention and the judge trying the case certifies that a copy of the application would be admitted in evidence, *Held* that a petition for a copy by the defendant will be granted.

IN the matter of the petition of Charles and Edward Deitsch to inspect and obtain copies of application of Robert B. Shepherd.

ALLEN, *Commissioner:*

This is a petition by Deitsch brothers that they be permitted to inspect and obtain copies of the above-entitled abandoned application.

It appears that the inventor, Shepherd, has brought suit on a patent against the petitioners and that when testifying in that suit he referred to the above-entitled application relating to the same subject-matter as his patent. He refused to state the number and date of the application and refused to produce the papers, because he did not have them. The court then granted a motion by the petitioners for a certificate that a copy of the application would be admitted in evidence if furnished.

The petitioners served a copy of this petition upon the attorneys representing the inventor in the suit, and no reason has been made to appear why the petition should not be granted.

The petition is granted.

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### SARFERT *v.* MEYER.

*Decided February 12, 1904.*

1. INTERFERENCE—SUCCESSIVE INTERFERENCES BETWEEN SAME CASES CONDEMNED.

A single interference between the same parties upon the same applications should be sufficient ordinarily, and a second interference should be necessary only under very exceptional circumstances.

2. SAME—SAME—ESTOPPEL.

Where an interference was decided in favor of S. because of limitations in the issue, it being suggested that M. was the first inventor of the broad invention, and where in view of that suggestion a second interference was declared and was decided in favor of S., *Held* that M. is not entitled to present other claims and contest a third interference. He is estopped, since upon entering the second interference he should have asserted all claims to the common invention which he wished to contest with S.

3. SAME—AMENDMENT OF ISSUE AFTER DECISION NOT PERMITTED.

After an interference has proceeded to a decision upon the question of priority of invention it is too late to amend the issue or add a new count, since that would make it necessary to take new testimony, as in a new interference.

APPEAL on motion.

SINGEING-MACHINE.

Application of Max Sarfert. Reissue application of Robert Meyer.

*Messrs. Wiedersheim & Fairbanks* for Sarfert.

*Mr. Percy B. Hills* for Meyer.

ALLEN, *Commissioner:*

This is an appeal by Meyer from the decision of the Examiner of Interferences denying his motion to transmit the above-entitled interference to the Primary Examiner to consider a claim proposed by Meyer as an additional count to the interference.

All of the testimony has been taken upon the present issue, and the Examiner of Interferences has rendered judgment thereon in favor of Sarfert. It appears that it is because of the construction placed upon the issue by the Examiner of Interferences in that decision that Meyer now wishes the Office to formulate another issue. He seems to think that he was the first inventor of some broader issue, if not of the present issue as construed by the Examiner of Interferences.

It is to be noted that the present interference is the second one between these parties. The first interference was decided in favor of Sarfert upon consideration of voluminous testimony presented on both sides. The issue of that interference was comparatively narrow, and after its conclusion Meyer strenuously contended that he was the first inventor of the broad matter common to his case and Sarfert's and that he should not be deprived of an opportunity to prove it because of the decision against him upon the specific issue. He argued that the testimony taken and the findings of fact by the tribunals considering the case sustained his contention. In view of all of the circumstances it was held that his broader claims could not be rejected because of the decision in the first interference, and therefore the second interference resulted. Being defeated in the second interference, Meyer comes forward and, in effect, asks for a third interference, giving as reasons substantially those given for the second interference. To add the new count proposed by Meyer would amount to the declaration of a new interference, since if it is different from the present count the parties would be entitled to take new testimony as to it.

It is now too late to add the new count to the present interference, for the reason that when the proceedings have reached the present stage it is better to allow the interference to proceed to a conclusion, leaving other possible disputes involving the taking of new testimony for subsequent determination. Aside from the question of procedure, however, it must be held that Meyer is not entitled upon the merits to contest a third issue with Sarfert.

There must be an end some time to the institution of successive interferences between the same parties, and particularly with reference to the same applications. Ordinarily a single interference between the same applications should be sufficient, and a second interference should be necessary only under very exceptional circumstances.

In the present case the claims constituting the issue of the second interference were formulated by Meyer after examinating Sarfert's application and after he had a full knowledge from the testimony taken of the nature of Sarfert's work. Presumably he stated in his claims everything embodied in Sarfert's case which he regarded as his own invention. If he intended to assert claim to any of that subject-matter, it was clearly his duty to do so at that time. Having failed to assert the present proposed claim at that time, he cannot be permitted to come forward with it at this late date and subject Sarfert to the trouble and expense of a third interference. He is estopped.

The decision of the Examiner of Interferences is affirmed.

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## EX PARTE A. ENGELHARD & SONS COMPANY.

*Decided February 20, 1904.*

1. TRADE-MARK—"ENGELHARD"—SURNAME NOT REGISTRABLE.

The ordinary surname "Engelhard" written in ordinary copy-book script upon a picture of a cloud-bank *Held* not registrable as a trade-mark.

2. SAME—NAME OF APPLICANT.

The statute prohibits the registration of a mark which is merely the name of the applicant, and therefore where the name is included in a mark presented it cannot be registered unless the other elements of the mark remove it from the inhibition of the statute.

3. SAME—SAME—ACCESSORIES WITH NAME—REGISTRABILITY.

The inhibition against the registration of mere names is not to be avoided by insignificant details of form and by the use of accessories of moderate importance, but only by those which rise into such relative importance as to so dwarf the mere name as to render it of minor importance in the whole effect produced upon the mind of the observer.

4. SAME—SAME—NAME MUST BE NON-ESSENTIAL.

The spirit of the statute requires the reduction of the name element in the mark to be carried so far that the name becomes a negligible or non-essential factor in the whole effect produced, so that if the rest of the mark should remain and the name should be changed it would not present a substantially different appearance.

5. SAME—SAME—TEST OF REGISTRABILITY—INFRINGEMENT BY MERE NAME.

The form of mark presented must be regarded as merely the name of the applicant where the mere name printed in the ordinary way by a rival merchant upon the same class of goods would create confusion—in other words, where the mere name would infringe.

6. SAME—SAME—SUBSTITUTE FOR NAMES—PERVERSION OF TRADE-MARK.

Trade-marks are primarily intended to be indexes of origin substituted for the name of the maker, and therefore to attempt to insert among the characteristics of trade-marks those names which it was the primary purpose of trade-marks to supplant is a tendency in the wrong direction and a perverted use of the trade-mark.

7. SAME—SAME—NAMES SHOULD BE EXCLUDED.

If names were entirely excluded from trade-marks and were then placed in proximity to them upon the goods as used, the right separation of the registrable and non-registrable elements would be best made.

8. SAME—SAME—UNFAIR COMPETITION.

The protection to be given to the mere name will be derived from the principles governing unfair competition and not from the technical ground of trade-mark.

ON APPEAL.





TRADE-MARK FOR GROCERIES.

Application for registration filed June 24, 1902, No. 66,082.

*Mr. Henry Schreiter* for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register a trade-mark for tea. The applicant's description of its trade-mark is in the following words:

The trade-mark, as represented in the accompanying facsimile, showing the picture of a cloud-bank, whereon the letters E, n, g, e, l, h, a, r, d, are arranged on a line ascending from the left to the right, and a stroke, beginning at the letter d, drawn at an angle to the line on which the letters are arranged and terminating in a curve. The letters are produced in the same color as the cloud whereon they are set, but the color of the letters is of darker tint. On the light side of the letters, a white border and on the shaded side a dark border is provided, giving the letters the appearance of relief upon the clouds.

The Examiner has rejected this mark for the reason that he finds the word Engelhard to be a common surname and finds this to be the salient feature of the trade-mark. The applicant contends that the mode in which the name is written, with the accessories consisting of the cloud-bank, the stroke beneath, and the light border about the letters, takes this mark out from the inhibition of section 3 of the act of March 3, 1881, which provides that—

no alleged trade-mark shall be registered * * * which is merely the name of the applicant.

It is conceded that Engelhard is the name of the applicant.

This case illustrates one of the attempts frequently made to avoid the objection which may be raised against *mere* names by some details of form and by the use of accessories of moderate importance. It should be said in the present case that the word is written in conventional copy-book script. If, then, the mere name of an applicant cannot be registered as a trade-mark, we have to determine in cases of this sort whether the other elements of the mark remove it from the inhibition of the statute. It is evident that insignificant details of the mark will not suffice to make the whole composition distinct from the mere name, and therefore registrable.

To determine in any particular case whether the form of mark presented for registration is merely the name of the applicant, we may consider whether the use of the mere name printed in the ordinary way by a rival merchant would create confusion, for the reason that the impression created by the mark as used would be substantially the impression created by the mere name. Thus we may measure the relative values to be given to the mere name and those to be given to its formal attributes and accessories in the total visual effect produced. If the mere name printed in the ordinary way would create so nearly the impression created by this mark as to render the user of the mere name an infringer, then to protect this mark as a trade-mark would be to protect the mere name, to which the statute expressly refuses protection. If accessories are to save the mere name from the inhibition of the statute, they must rise into such relative importance and must so dwarf the mere name as to render this latter of minor importance in the whole effect produced upon the mind of the observer and to prevent such result of infringement as just mentioned. In fact, it seems to me that a due regard to the spirit of the statute requires the reduction of the name element in the mark to be carried so far that the name becomes a negligible or non-essential factor in the whole effect produced, so that if the rest of the mark should remain and the name should be changed it would not present a substantially different appearance. It is evident that reduced to this relative importance the name might as well be omitted from the mark. It seems that if names were entirely excluded from trade-marks and were then placed in proximity to them upon the goods as used the right separation of the registrable and non-registrable elements would be best made.

It must be remembered that trade-marks are primarily intended to be indexes of origin, substituted in place of the name of the maker, thus conveying by new and distinct means what might otherwise have been conveyed by the name of the maker, and thus avoiding the necessity for its use. The mark was clearly intended to replace the name for this purpose, and therefore to attempt to insert among the characteristics of trade-marks those names which it was the primary purpose of trade-marks to supplant seems to be a tendency in the wrong direction—a perverted use of the trade-mark.

Whatever protection may be given to the mere name will be derived from the principles governing unfair competition, and the protection afforded by courts of equity in cases of unfair competition is as complete as that afforded within the technical ground of trade-marks. The two fields are contiguous, but need not on that account be confused. There is a line of principle which divides them. It must be a rare case—one in which the elements are blended with unusual skill—where the name can be said to enter into the effect produced by the mark and not constitute a mere label upon it.

Being of the opinion that the mark under consideration presents an appearance so little modified from the name used alone as to make the modifications comparatively insignificant, I conclude that this mark is not properly registrable under the statute, and the decision of the Examiner refusing to register it is affirmed.

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## EX PARTE SEGELHORST.

*Decided March 29, 1904.*

1. DESIGNS—FINAL REJECTION—AMENDMENT TO SPECIFICATION.

Where in a design case the claim is rejected and the applicant is required to cancel unnecessary description in the specification and he files an amendment canceling the description and asking for reconsideration of the claim, *Held* that the case is in condition for final rejection.

2. SAME—SAME—SAME—CLAIM NOT AMENDED.

An amendment to the specification in a design case canceling unnecessary description does not change the invention claimed and does not introduce any new elements for consideration upon the question of patentability of the claim. It is not, in effect, an amendment of the claim.

ON PETITION.

DESIGN FOR A BADGE.

*Messrs. Higdon & Longan & Hopkins* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner of Designs finally rejecting the claim in the above-entitled case.

The petitioner contends that the final rejection was premature, in that it was made immediately after an amendment to the specification and since no consideration of the application was given as amended.

The record shows that the Examiner rejected the claim as not patentable and required the applicant to eliminate from the specification unnecessary description. The applicant complied with the requirement as to the specification and presented an argument upon the question of patentability of the claim. The Examiner thereupon finally rejected the claim.

The practice followed by the Examiner was regular and proper. The amendment to the specification canceling the unnecessary matter did not change the invention claimed and introduced no new elements for consideration upon the question of patentability. The Examiner was called upon by the applicant's argument to reconsider the question of patentability, and being of the opinion that his previous action was right he properly finally rejected the claim. Under Rule 64 the Examiner was required to act upon the merits of the application without regard to the action upon mere matters of form. Amendments in matters of form constituted no reason for suspending action upon the merits.

The petitioner's contention that in design cases amendments to the specification constitute amendments to the claim and entitle the applicant to reconsideration is not well founded. Unless the amendment changes the thing claimed it does not entitle the applicant to two considerations, and it is very clear that the mere cancellation of unnecessary matter does not change the invention claimed.

The petition is denied.

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## EX PARTE PICKLES.

*Decided March 30, 1904.*

DIVISION—ACTION ON MERITS NOT MADE—PRACTICE.

Where division is required it must be settled before the Office will examine the merits of each separate claim to determine the question of patentability. An examination of two or more independent inventions will not be made in one case.

ON PETITION.

SWING-BACK CAR-SEATS.

*Mr. Joseph L. Levy* for the applicant.

ALLEN, *Commissioner:*

This is a petition for a rehearing of a petition from the action of the Primary Examiner requiring division.

The original petition was dismissed because prematurely brought, the matter not having been twice acted upon. (79 MS., 35.) Something was said in that decision as to the independence of the inventions claimed.

This petition for rehearing is said to be based upon the decision of the Supreme Court in *U. S., ex rel. Steinmetz*, v. *Allen*, (109 O. G., 549,) rendered since the decision in this case; but the pertinency of that decision is not apparent. It is to be noted that the petition from the Examiner's requirement for division was dismissed, and there is nothing in the above-cited decision to require that the petition be entertained and decided. On the contrary, the ruling was that such questions are appealable to the Examiners-in-Chief in the first instance.

It is said in this petition:

> It is therefore requested that these claims be allowed to stay in the case and that the Examiner act on them as on the other claims, so that all may be appealed to the Board of Examiners-in-Chief, should the Examiner refuse to allow said claims.

It is supposed that by his request for action upon the claims the petitioner means that the Examiner should make an examination as to the patentability of each claim separately in addition to requiring division, so that the applicant may appeal upon patentability as well as upon division. To follow this practice would make it necessary for this Office to examine in one application as many different inventions as the applicant might choose to present. The Office has uniformly refused to examine upon their merits two or more independent inventions in one application, and no reason is seen for changing that practice merely because a requirement for division is now appealable to the Examiners-in-Chief instead of petitionable to the Commissioner. The refusal to make such examination was founded upon sound reason, and that reason applies now as well as it did heretofore.

There are certain decisions which say that all reasons for rejection should be given when an appeal is to be taken; but those decisions were rendered upon the supposition that a requirement for division was not a rejection. They are not now to be applied to cases where division is required. Where division is required, it must be settled before the Office will examine the merits of each separate claim to determine the question of patentability.

The petition for rehearing is denied.

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## DECISIONS OF THE U. S. COURTS.

### Court of Appeals of the District of Columbia.

HERMAN *v.* FULLMAN.

*Decided March 1, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION.

*Held* that the evidence establishes the fact that Fullman reduced the invention to practice before Herman's date of conception and reduction to practice, and therefore the decision awarding priority of invention to Fullman must be affirmed.

2. SAME—REDUCTION TO PRACTICE.

Where the evidence shows beyond question that Fullman made a full-sized blue-print machine embodying the invention in March, 1901, and the witnesses testify that it was operated to see how it would work and that blue-prints were actually made by it and distributed during April, *Held* that the machine must be regarded as a reduction to practice.





3. SAME—PRELIMINARY STATEMENT—EVIDENCE AT VARIANCE WITH STATEMENT.

Where the evidence on behalf of a party to an interference shows that the invention was made at a date later than that alleged in the preliminary statement, *Held* that the evidence is not to be disregarded because of the variance from the statement.

4. SAME—SAME—SAME—DATES LATER THAN ALLEGED—TECHNICAL OBJECTION.

Where the dates proved are later than those alleged in the preliminary statement no harm or prejudice is caused to the opposing paryt, and since it is a general rule that no attention will be paid to technical objections which have caused no substantial injury, *Held* that the evidence will not be disregarded.

5. SAME—PRIORITY ALONE DECIDED ON APPEAL—RIGHT TO CLAIM RES ADJUDICATA.

On an appeal to the court relating to priority of invention the question whether one party's application furnishes a basis for the claims of the issue will not be considered, since it is rendered *res adjudicata* by the declaration of the interference. The only question to be determined is priority of invention.

*Mr. H. C. Evert* and *Mr. Jas. B. Connolly* for the appellant.

*Mr. John H. Roney* and *Mr. George R. Hamlin* for the appellee.

ALVEY, *C. J.:*

This is an appeal from the Patent Office in the matter of an interference declared between the application of Reinhold Herman filed October 1, 1901, and the application of James M. G. Fullman filed July 24, 1901; the said applications being for patents for an improvement in a machine for making blue-prints by artificial light, instead of the former method of producing blue-prints by means of sunlight. Fullman being first to file his application occupies the position of senior party of record, and consequently the *onus* of proof to overcome the *prima facie* case thus made in his favor is upon Herman. The issue is declared in five sections or counts as follows:

> 1. In an apparatus for copying or reproducing drawings, &c., the combination of a cylinder, means to support the subject-matter to be copied or reproduced upon the exterior of said cylinder, an arc-lamp adapted to be lowered into the interior of said cylinder, and means to automatically break the circuit for the purpose of extinguishing the light.
> 2. A printing-frame and a lamp, movable one in relation to the other, in combination with an automatic device to cut off the light upon the completion of the printing process.
> 3. In an apparatus for copying drawings, &c., the cylindrical printing-frame, the suspended electric lamp and means for controlling its descent within the frame, an electric switch controlling the light-circuit, and means for automatically opening the switch when the lamp has completed its travel.
> 4. In an apparatus for copying drawings, &c., the cylindrical support for the drawing, a suspended lamp arranged to descend axially within the frame, a governing apparatus for controlling the descent of the lamp, and the automatically-operated switch controlling the light-circuit.
> 5. In an apparatus for copying or reproducing drawings, &c., the combination of a cylinder adapted to be rotated, means to support the subject-matter to be copied or reproduced upon the exterior of said cylinder, an arc-lamp adapted to be lowered into said cylinder, and means to automatically break the circuit for the purpose of extinguishing the light.

With respect to this last or fifth count the Commissioner held that it did not in fact present a case of interference as between the structures described in the two applications, and he therefore dissolved the interference as to the fifth count. The question of interference on this appeal, therefore, must be considered with respect to counts 1 to 4 inclusive, irrespective of the fifth count.

Herman, upon whom rests the burden of proof, alleges in his preliminary statement, conception and the making of drawings, in October, 1900, disclosure in January, and reduction to practice, by making a full-sized machine, in June, 1901.

Fullman, in his preliminary statement, alleges conception on or about June 6, 1900, the making of drawings on or about June 12, 1900, disclosure to others on or about June 12, 1900, and the reduction of the invention to practice by the construction of a full-sized working apparatus on or about the 10th of July, 1900. As we have stated, his filing date was the 24th day of July, 1901.

The question presented to and decided by the tribunals of the Patent Office was purely one of fact, and all three of the tribunals in that Office concurred in holding Fullman to be entitled to priority of invention. They found as matter of fact, and so held, that while Herman had conceived and reduced his invention to practice, yet the reduction to practice was not prior to June, 1901, the time alleged in his preliminary statement; and that the disclosure and reduction to actual practice on the part of Fullman was found to be between March 25 and April 1, 1901, and, consequently, priority of invention was required to be awarded to Fullman.

It was found from the evidence by the tribunals of the Patent Office, and we think properly found, that Herman had by June 1, 1901, successfully reduced the invention of the issue to practice. And the 1st of June, 1901, being the date of disclosure and reduction to practice, and that date being prior to the date of filing the application by Fullman, the burden of proof is thereby shifted to Fullman to establish a date of invention and reduction to practice prior to June 1, 1901. This was found to have been done by Fullman by the tribunals of the Patent Office, and we think their finding was in all respects correct.

In his testimony, Fullman states that, on March 25, 1901, he completed a full-sized machine. This statement of fact is corroborated by evidence of circumstances that place the contention of Fullman beyond serious question. It appears from the evidence in the case that a blue-print machine was bought from the Pittsburgh Blue-Print Company, by the Pittsburgh and Lake Erie R. R. Company, and was placed in their office early in March, 1901. This machine did not contain the automatic switch. But the Fullman Company, of which Fullman, the appellee, was a member, entered into a contract with the P. & L. E. R. R. Co. to erect said blue-print machine, and to provide the same with the automatic switch. This is not only shown by the testimony of witnesses, but is made clear beyond doubt by a letter, dated March 21, 1901, from the Pittsburgh & Lake Erie R. R. Co., written by Atwood, the chief engineer of the railroad company, addressed to the Fullman Company in regard to the machine, and what was to be embraced in its construction. The writer of the letter says:

> GENTLEMEN: Referring to your proposition of March 8th, in which you agree to erect one electric blue-print machine in blue-print room, fifth floor of our terminal station. Our company to furnish woodwork required and the machine in the room, and you to mount the autogear main switch, the rheostat and automatic

switch of your design on a slate slab, which you will also furnish.

You will also mount the slab on the wall as directed, and furnish the *automatic switch* required to cut the current out when the lamp has made its full motion downward. You are also to furnish stop which will check the motion of the lamp gradually as it reaches its lowest position—all for the sum of $28.00. This proposition is hereby accepted.

This letter manifestly refers to the automatic switch, the subject of the issue of this interference; and shows that Fullman had reduced his invention to practical operation and use before this contract with the railroad company was made. In execution of the contract for setting up the machine with the improvements attached, as mentioned in the letter, Dinkel, an employee and foreman in the Fullman Company was sent by the company to erect the machine and apply the automatic switch. He testifies that he erected and operated the machine on March 25, 1901, but did not make any blue-prints. He merely worked the machine to see that all the parts worked properly. Dinkel's evidence is clear as to the construction and operation of the machine, and is corroborated as to about the time stated and shown by the testimony of Stovel, who was superintendent of the work that was done at the Pittsburgh and Lake Erie R. Co., in Pittsburg, at the time. Stovel states that a blue-print machine installed by the Fullman Company was operated for making blue-prints on April 1, 1901, when the terminal station at Pittsburg was opened. Forsberg, a chief draftsman in the engineer's office of the Pittsburgh and Lake Erie R. R. Company, at Pittsburg, testifies that the machine erected at their office by the Fullman Company was completed and ready for operation prior to April 1, 1901. Stovel describes the machine, and its operation, as follows:

A glass cylinder for holding paper, an arc-lamp moving up and down inside the cylinder, the movement of arc-lamp controlled by reel with pendulum escape motion, current to arc-lamp controlled by a double-pole fused switch, together with rheostat and a spring-switch for cutting out current when the arc-lamp has reached the bottom of its travel.

He says that blue-prints were made and turned out by this machine on April 1, 1901, and that such blue-prints were distributed to visitors of the railroad station building on that day.

We shall not be more specific in reciting the evidence in the case. That has been done quite fully by the tribunals of the Patent Office, and especially in the opinion of the Commissioner of Patents; and it would serve no useful purpose to repeat it. We are satisfied with the conclusion reached by them.

But it is contended on the part of Herman, that though it be conceded that Fullman was prior in reducing to practice the invention claimed by him, still, he is not entitled to judgment of priority of invention in this interference, because there is no adequate foundation in Fullman's application for the specific invention of this issue. But that question is one that cannot be presented in this case of interference. The question, whether or not an applicant, whose application is involved in an interference, has a right to make the claim put in issue, is determined, and becomes *res adjudicata*, by the declaration of interference, so far as the interference proceedings are concerned. Otherwise great confusion would be brought about in the proceedings in the Patent Office. It is to avoid such confusion that the law has provided for a special preliminary proceeding by which the question of interference and of priority of invention may be determined, and in such proceeding the question of the patentability of the claims to invention are not presented for determination after declaration of interference made. The question in the interference proceeding, after declaration made, is that of priority of invention alone. It is true, the Commissioner, while the proceeding on interference declared is pending before him on appeal, may, for cause appearing, suspend the interference proceeding and refer the case back to the Primary Examiner for review of the question, whether there is rightful ground for declaring interference. (*Rules of Practice*, P. O., 126.) But that question is not involved in the determination of the issue of interference.

There is also a question made, though not as required by Rule 159 of the Patent Office, as to the right of Fullman to have his evidence considered, relating to disclosure and reduction to practice, under his preliminary statement. It is objected that because of a discrepancy between the date of reduction to practice, as stated in the preliminary statement, and that shown in evidence, by Fullman, such evidence should not have been considered by the tribunals of the Patent Office, nor by this court on appeal. Such discrepancy does appear to exist, and Fullman, in his testimony has offered an explanation as to how such discrepancy occurred. But it does not appear that any harm or prejudice has been produced to Herman by the variance. Rule 159 of the Patent Office declares that:

Evidence touching the matter at issue will not be considered on the hearing which shall not have been taken and filed in compliance with the rules. But notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof to the Office, and also to the opposite party, informing him at the same time that, unless it should be removed, he (the objector) should urge the objection at the hearing.

It does not appear that any harm or prejudice has been caused to Herman by this variance between the dates in the preliminary statement and those shown in the proof produced by Fullman. The dates furnished in the proof are later than those stated in the preliminary statement; and it is not perceived how prejudice could well be produced by such discrepancy. We think, therefore, there is no ground or proper foundation for excluding the evidence from consideration.

Being of opinion that the question of priority of invention was properly decided in the Patent Office, we shall affirm the decision of the Commissioner of Patents, and direct that the proceeding and this decision be certified to the Commissioner of Patents, as directed by law. Decision affirmed.





THE

# OFFICIAL GAZETTE

OF THE

# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 109—No. 8. TUESDAY, APRIL 19, 1904. PRICE—$5 per year

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| Reissues | None. | | |
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TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 2 | | Nevada | | |
| Alaska Territory | | | New Hampshire | 1 | |
| Arizona Territory | 2 | | New Jersey | 22 | 2 |
| Arkansas | 1 | | New Mexico Ter't'y | | |
| California | 15 | 5 | New York | 95 | 43 |
| Colorado | 6 | | North Carolina | 3 | 4 |
| Connecticut | 19 | 2 | North Dakota | 2 | |
| Delaware | 1 | | Ohio | 46 | 2 |
| District of Columbia | 2 | | Oklahoma Territ'y | 4 | |
| Florida | 2 | | Oregon | 2 | |
| Georgia | 4 | | Pennsylvania | 72 | 1 |
| Hawaii Territory | | | Porto Rico | | |
| Idaho | 1 | | Rhode Island | 12 | 3 |
| Illinois | 58 | 6 | South Carolina | | |
| Indian Territory | 1 | | South Dakota | 1 | |
| Indiana | 21 | 2 | Tennessee | | |
| Iowa | 8 | 2 | Texas | 3 | |
| Kansas | 4 | | Utah | | |
| Kentucky | 7 | 1 | Vermont | 3 | |
| Louisiana | 3 | | Virginia | 6 | 1 |
| Maine | 2 | | Washington | 8 | 1 |
| Maryland | 5 | 2 | West Virginia | | |
| Massachusetts | 35 | 13 | Wisconsin | 10 | 3 |
| Michigan | 12 | | Wyoming | | |
| Minnesota | 9 | 5 | U. S. Army | | |
| Mississippi | 1 | | U. S. Navy | | |
| Missouri | 23 | 3 | | | |
| Montana | 3 | 1 | Total to citizens of the United States | 542 | 108 |
| Nebraska | 5 | 1 | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Prints. | Countries. | Patents and Designs. | Trade Marks and Prints. |
|---|---|---|---|---|---|
| Argentina | 1 | | Netherlands | | |
| Austria-Hungary | 3 | | Newfoundland | | |
| Belgium | | | New South Wales | | |
| Brazil | | | New Zealand | 1 | |
| British West Indies | | | Norway | | |
| Canada | 9 | 1 | Queensland | | |
| Cape Colony | | | Roumania | | |
| Chile | | | Russia | 1 | |
| China | | | San Salvador | | |
| Costa Rica | | | Scotland | 2 | 1 |
| Cuba | | | South Africa | | |
| Denmark | | | Spain | | |
| Ecuador | | | Sweden | | |
| England | 23 | 4 | Switzerland | 2 | 1 |
| France | 7 | | Transvaal, South Africa | 1 | |
| Germany | 19 | 6 | Turkey | | |
| India | 1 | | Victoria | | |
| Ireland | 2 | | Western Australia | 1 | |
| Italy | | 1 | | | |
| Japan | | | Total to citizens of foreign countries | 73 | 15 |
| Java | | | | | |
| Mexico | | 1 | | | |

## Disclaimer.

375,102.—*William Robert Smith*, New York, N. Y. AUTOMATIC WEIGHING-SCALE. Patent dated December 20, 1887. Disclaimer filed April 9, 1904, by the assignees, the *Empire State Trust Company* and the *National Automatic Weighing Machine Company*.

Enter their disclaimer—

"To that part of the claim in said specification which is in the following words, to wit:

"6. The combination of the vertically-sliding rack, the latch, and the chute whereby a coin dropped into the chute releases said rack by the momentum of its fall, substantially as described."

## Changes in Classification.

(ORDER No. 1,585.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., April 14, 1904.*

The following change in the classification of patents is hereby directed, to take effect this day:

In Division XXXI, class 210, Water Purification, establish subclass 20, Liquid-sterilizers.

F. I. ALLEN,
*Commissioner.*

## Date of Patent.

RULE 207. The weekly issue closes on Thursday, and the patents of that issue bear date as of the third Tuesday thereafter. If the final fee in any application is not paid on or before Thursday, the patent will not go to issue until the following week.

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business April 12, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 332 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Mar. 30 | Mar. 30 | 174 |
| 321 | I. Tillage, etc., and Fences | Mar. 16 | Mar. 25 | 176 |
| 158 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Mar. 16 | Mar. 16 | 248 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Mar. 14 | Mar. 29 | 268 |
| 178 | XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc. | Mar. 14 | Mar. 28 | 200 |
| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Mar. 14 | Mar. 28 | 237 |
| 318 | VI. Chemistry, Explosives, Fertilisers, Medicines, Sugar and Salt, Surgery, etc. | Mar. 14 | Mar. 26 | 172 |
| 333 | X. Carriages and Wagons | Mar. 14 | Mar. 21 | 232 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Mar. 14 | Mar. 17 | 290 |
| 148 | XXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc. | Mar. 14 | Mar. 16 | 292 |
| 324 | XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements. | Mar. 14 | Mar. 16 | 325 |
| 329 | XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc. | Mar. 14 | Mar. 16 | 266 |
| 75 | XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Mar. 14 | Mar. 12 | 296 |
| 338 | IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc. | Mar. 14 | Mar. 11 | 414 |
| 137 | VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus. | Mar. 14 | Mar. 8 | 366 |
| 142 | IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution. | Mar. 14 | Mar. 2 | 382 |
| 306 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Mar. 14 | Feb. 15 | 459 |
| 308 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Mar. 12 | Mar. 29 | 252 |
| 159 | XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography. | Mar. 12 | Mar. 29 | 155 |
| 315 | XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers. | Mar. 12 | Mar. 15 | 287 |
| 327 | XVIII. Steam-Engineering, etc. | Mar. 12 | Mar. 14 | 218 |
| 379 | XXIII. Acoustics, Horology, Recorders, and Registers. | Mar. 12 | Mar. 9 | 246 |
| 312 | VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures. | Mar. 12 | Mar. 5 | 431 |
| 109 | XVI. Telegraphy and Telephony | Mar. 12 | Feb. 25 | 216 |
| 112 | XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc. | Mar. 12 | Feb. 5 | 399 |
| | *Between one and two months.* | | | |
| 128 | II. Farm Products, etc., Lubricators, Presses, etc. | Mar. 10 | Mar. 3 | 329 |
| 378 | XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture. | Mar. 9 | Mar. 1 | 436 |

*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| 344 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Mar. 5 | Mar. 23 | 274 |
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Mar. 4 | Feb. 23 | 297 |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Mar. 1 | Mar. 15 | 242 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Feb. 26 | Feb. 6 | 380 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Feb. 25 | Jan. 14 | 432 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Feb. 23 | Feb. 23 | 426 |
| 105 | XVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Feb. 15 | Feb. 1 | 283 |
| | *Between two and three months.* | | | |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Feb. 11 | Feb. 6 | 492 |
| 133 | XXII. Fire-Arms, Ordnance, Navigation. | Feb. 6 | Jan. 13 | 360 |
| 322 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Feb. 5 | Feb. 4 | 557 |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Jan. 16 | Dec. 14 | 542 |

Total number of applications awaiting action.....12,041

| | | | |
|---|---|---|---|
| *Under one month.* | | | |
| *Designs | Mar. 28 | Apr. 8 | 34 |
| †Trade-Marks | Mar. 26 | Apr. 11 | 40 |
| ‡Labels and Prints | Apr. 12 | Apr. 11 | 2 |

### Roster of Attorneys.

A "Roster of Attorneys," comprising an alphabetical list of such attorneys as had registered and were entitled to practice before the United States Patent Office January 20, 1904, is now ready for delivery. Price, 20 cents.

### Complete Applications.

It is hereby ordered that applications shall not be given serial numbers as complete applications and forwarded to the examining divisions for examination (1) when the petition has not been signed by the inventor; (2) when the specification and claims have not been signed by the inventor and the signature attested by two witnesses; (sec. 4888, Rev. Stats.;) (3) when the drawing has not been signed by the inventor or his attorney in fact and the signature attested by two witnesses; (sec. 4889, Rev. Stats.;) and (4) when the oath to the application does not fill the requirements of sections 4887 and 4892, Revised Statutes.

The requirements of section 4896, Revised Statutes, respecting the right of executor or administrator to make application for a patent for the invention of a deceased person must also be observed before the application will be considered as complete and forwarded for examination.

* * * * * * * * *

This order, so far as applicable, relates to applications for the registration of trade marks, labels, and prints, which must in all respects comply with the requirements of the statutes.

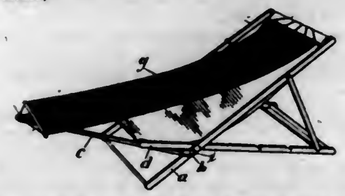
[Sections 4887, 4888, and 4893, Revised Statutes, above mentioned were amended by the Act of March 3, 1903.]



# PATENTS

## GRANTED APRIL 19, 1904.

**757,428. FOLDING HAMMOCK-STAND. GOLDEN F. ALLEN, Walthamston, England. Filed Sept. 5, 1903. Serial No. 172,111. (No model.)**



*Claim.*—In folding hammock-stands the combination with a collapsible "deck-chair," of blocks pivotally attached to the side bars of the chair, bars pivotally attached one to each of the said blocks and having notches formed on the under side of their free ends, a hammock attached to the upper end of the chair, a ring attached to the lower end of said hammock and engaging with the notches aforesaid, substantially as described and illustrated herein.

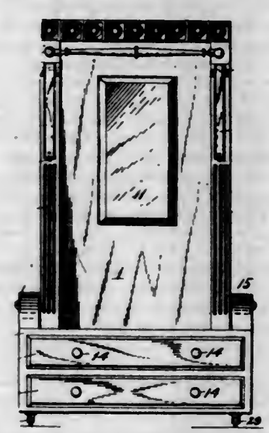
**757,429. SHEARING-TOOL. SANTIAGO ARCE, Buenos Aires, Argentina. Filed Oct. 3, 1903. Serial No. 175,606. (No model.)**



*Claim.*—1. The combination in a clipper of a casing comprising the pole-pieces and the field-coil core of a field-magnet; the pole-pieces terminating at their rear ends in plates 15 and 16, a cap-plate 28 having lugs which hold it to the plates 15 and 16, and also having a diagonal opening, a base-plate 1 having a finger-plate at its forward end, a front wall 11 connected to the plate 28, plates 14 interposed between the base-plate 1 and the pole-pieces of the field-magnet, a lower casting 42 fixedly connected to the base-plate 1, and an upper casting 41 abutting at its forward end against the rear end of the cap-plate, handle portions arranged between the castings 41 and 42 of the casing and connected together and to said castings; and also to the plates 15 and 16; one of said portions having a chamber, a diagonal bracket 25 connected to the pole-pieces of the field-magnet, and having an upwardly-extending portion arranged in the opening of the plate 28, an oscillatory bar pivoted in the casing and having a cutter at its forward end, an armature journaled in the bracket 25 and the base-plate 1, and connected with the oscillatory bar, a field-coil mounted on the core, a commutator intermediate of the field-coil and the armature, and a controller electrically connected with the field-coil and adapted to be connected with a source of electrical energy; said controller being located in the chamber of one handle portion, and having a lever extending therefrom.

2. In a clipper, the combination of a casing comprising the pole-pieces and the field-coil core of a field-magnet, handle portions fixed to said casing; one of said handle portions having a chamber in its inner side, a cutter-bar, an armature mounted in the casing and connected with the cutter-bar, a field-coil mounted on the core, a commutator intermediate of the field-coil and the armature, a controller comprising contact-pieces $l'$ $l^3$, $l^2$ and $l^4$; and a switch-lever movable between the pairs of contact-pieces $l'$ $l^2$ and $l^3$ $l^4$; the said controller being arranged in the chamber of the handle portion with its lever extending therefrom, a conductor 51 connected to the contact-piece $l^2$ and the field-coil, and adapted to be connected to one pole of an electrogenerator, a conductor $52^a$ connected with the contact-plates $l'$ and $l^3$ and adapted to be connected to the opposite pole of an electrogenerator, and a conductor 52 connecting the contact-piece $l^4$ and the field-coil.

**757,430. FOLDING BEDSTEAD AND CHEST. WILLIAM A. ARNOLD, Fort Smith, Ark. Filed Oct. 22, 1903. Serial No. 178,038. (No model.)**

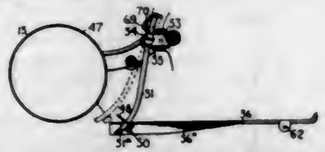


*Claim.*—A folding bed, consisting of a base 12; perforated hinge extensions 15, rising from said base, and each side thereof; sleeve-bearings 16, provided, each, with a flange 17, fitting in the perforations of said extensions; bed-frame 1, provided with perforations through its side pieces; sleeve-bearings 18, each having a flange 19, fitting in the perforations of said side pieces; bolts 20, passing through said sleeve-bearings, and thereby bringing said bed-frame between said hinge extensions; headboard 23, hinged to the head cross-piece of said bed-frame; dovetailed bar 27, secured to said head cross-piece; weights 28, fitting on said bar; spring-bolt 21', attached to

said base, its bolt end adapted to rest against the rear face of said bed-frame; bolt-keeper sunk in a depression in one edge of headboard 23; spring-bolt 24, secured to the upper edge of one of the side pieces of the bed-frame, its point adapted to enter the bolt-keeper in the edge of said headboard; legs 6, hinged to the front face, and each edge, and near the foot of the bed-frame, and trunk-hinges 8, hinged to said feet and front face of said bed-frame, substantially as shown and described, and for the purposes set forth.

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**757,431. TYPE-WRITING MACHINE. WALTER J. BARRON, Brooklyn, N. Y., assignor to the Densmore Typewriter Company, Syracuse, N. Y., a Corporation of New York. Filed Jan. 18, 1901. Serial No. 43,748. (No model.)**



*Claim.*—1. In a type-writing machine, as a means for notifying the operator that a predetermined point upon a page of writing has been reached, the combination with a carriage, of a paper-controlled device and a coöperating device, one of said devices being arranged upon the carriage and the other thereof being arranged upon the framework of the machine, and said devices being caused to coact by a movement of the carriage along the framework.

2. In a type-writing machine, the combination of a carriage, a device which may be positioned by the paper, and means for notifying the operator that a predetermined portion of the page has been reached, said means being adapted to be actuated by a movement of said carriage after the positioning of said device.

3. In a type-writing machine, the combination of a carriage, a part held in an inoperative position by the paper, and means which may be engaged by said part during a longitudinal movement of the carriage, after said part has been released by the paper, for notifying the operator that a predetermined portion of the page has been reached.

4. In a type-writing machine, the combination of a carriage, a cylindrical platen thereon, a movable arm also supported upon said carriage and provided with a finger releasable by the paper, a device upon the fixed framework which may be engaged by said movable arm during a longitudinal movement of the carriage, and means connected to said framework device for notifying the operator that a predetermined portion of the page has been reached.

5. In a type-writing machine, the combination of a carriage, a series of types, and keys therefor, and means called into action by a movement of the paper in line-space direction for locking said keys.

6. In a type-writing machine and in combination, a carriage, a device controlled by the paper, and a key-locking device actuated by the carriage after the release of the paper-controlled device.

7. In a type-writing machine, the combination of a carriage, a movable arm mounted on the carriage and releasable by the paper, and a key-locking device mounted upon the frame of the machine and extending to a point where it may be actuated by said arm upon the release of the latter by the paper.

8. In a type-writing machine, the combination of a carriage, a part thereon releasable by the paper, and a key-locking device extending to a position where it may be actuated by said part during a longitudinal movement of the carriage.

9. In a type-writing machine, the combination of a carriage, a device releasable by the paper, and key-locking and bell-ringing mechanisms coöperating with said releasable device.

10. In a type-writing machine, the combination of a carriage, means releasable by the paper for locking the key during the writing of a line, and a bell-striking device with which said releasable device coöperates during a return movement of the carriage.

11. In a type-writing machine, the combination of a carriage, means releasable by the paper for locking the keys, and means for releasing the keys.

12. In a type-writing machine, the combination of a carriage, a device releasable by the paper, means coöperating with said releasable device for locking the keys, means for releasing the keys, and means also coöperating with said releasable device for ringing the bell during a return movement of the carriage.

13. In a type-writing machine, the combination of a carriage, letter-spacing devices, line-spacing devices, means for locking the keys when a predetermined point is reached in the line of writing, and means for locking the keys when a predetermined point is reached in line-space direction.

14. In a type-writing machine, the combination of a carriage, means for feeding the paper in two directions, and means for locking the keys when the paper has reached predetermined points in its feeding movements in both directions.

15. In a type-writing machine, the combination of a carriage, letter-feeding mechanism, line-spacing devices, key-locking mechanism, means for actuating said key-locking mechanism at a predetermined point in each line of writing, and means released by the sheet for causing an actuation of said key-locking mechanism at a predetermined point in the page of writing.

16. In a type-writing machine, the combination of a carriage, a device controlled by the paper, and a bell mechanism actuated by the carriage after the release of the paper-controlled device.

17. In a type-writing machine, the combination of a carriage, letter-spacing devices, line-spacing devices, a margin-gage bar, key-locking devices connected to said bar, a tappet upon said bar, and an arm releasable by the paper for coacting with said tappet to lock the keys.

18. In a type-writing machine, the combination of a carriage, letter-spacing devices, line-spacing devices, a margin-gage bar, key-locking devices operated by an endwise movement of said bar, a tappet extending forwardly from said bar, and an arm releasable by the paper for engaging said tappet so as to move the bar endwise.

19. In a type-writing machine, the combination of a carriage, letter-spacing devices, line-spacing devices, a journaled margin-gage rack, key-locking devices operable by an endwise movement of said rack, a bell-ringing device operable by a pivotal movement of said rack, a tappet connected to said rack, and a device mounted upon the carriage and releasable by the paper for engaging said tappet both to move the said rack endwise and also to give said rack a pivotal movement.

20. In a type-writing machine, the combination of a carriage letter-spacing devices, line-spacing devices, a journaled margin-gage rack, key-locking devices operable by an endwise movement of said rack, bell-ringing devices operable by a pivotal movement of said rack, a tappet connected to said rack and having an inclined face, and a device upon the carriage releasable by the paper for engaging the said tappet during a movement of the carriage in letter-feeding direction so as to move said rack endwise, and engaging with said inclined face during a return movement of said carriage so as to impart a pivotal movement to said rack.

21. In a type-writing machine, the combination of a carriage, a platen, a platen-frame, arm 51 pivoted on said platen-frame, finger 48 supported upon said arm, tappet 56, margin-gage rack 29, and key-locking devices operable by said rack.

22. In a type-writing machine, the combination of a platen-frame, a platen, recess 47 upon said platen, finger 48, arm 51, tappet 56 having an inclined face, means operated by said tappet during a movement of the platen in letter-space direction for locking the keys, and means operated by said tappet during a return movement of the carriage for ringing a bell.

23. In a type-writing machine, the combination of platen 15, finger 48, arm 51, tappet 56, having an inclined face, margin-gage rack 29, key-locking devices operable by said rack by a movement thereof in one direction, and a bell-ringing device operable by a movement thereof in another direction.

24. In a type-writing machine, the combination of a platen, paper guiding and feeding devices, a recess in said platen, a finger adapted to lie in said recess between the platen and the paper, and a device called into action when said finger is released by the sheet for notifying the operator that a predetermined point upon the page has been reached.

25. In a type-writing machine, the combination of a platen, paper guiding and feeding devices, a recess in said platen, an arm, a finger adjustable upon said arm and adapted to lie in said recess between the paper and the platen, and a device called into action when said finger and arm are released by the sheet for notifying the operator that a predetermined point upon the page has been reached.

26. In a type-writing machine, the combination of a carriage, a platen, devices for guiding and feeding the paper, arm 51, finger 48 adjustable upon said arm in a direction longitudinally of the platen and adapted to be held by a sheet of paper in the machine, the longitudinal adjustment of said finger being effective to meet varying conditions in the width of the paper, and means called into action when said finger is released by the sheet, for notifying the operator that a predetermined point upon the page has been reached.

27. In a type-writing machine, the combination of a platen, recess 47 therein, loop 48, 49, arm 51 having groove 52 and screw 50, and a device operable by said arm when released by the paper for notifying the operator that a predetermined point upon the page has been reached.

28. In a type-writing machine, the combination of a platen, paper guiding and feeding devices, loop 48, 49, screw 50, arm 51, tappet 56, and key-locking devices movable by said tappet.

29. In a type-writing machine, the combination of a carriage, a device operable by a longitudinal movement of said carriage for notifying the operator that a predetermined line in the page has been reached, and a striker controlled by the paper and coöperating with said device.

30. In a type-writing machine, the combination of a paper-controlled arm, means coacting therewith for indicating to the operator by the actuation of an alarm the point which has been reached upon the page of writing, and means for holding said arm in a position of disuse.

31. In a type-writing machine, the combination of a platen, a platen-frame, finger 48 adapted to be released by the paper, arm 51 pivoted upon the platen-frame, and button 68.

32. In a type-writing machine, the combination of a platen, finger 48, arm 51, button 68, ledge 70, tappet 56, and means controlled by said tappet for locking the keys.

33. In a type-writing machine, the combination of a platen, a pressure-roller movable away from the platen, a device adapted to be engaged by the paper, a connection between said device and said pressure-roller such that when said pressure-roller is moved away from the platen said device is moved into position to be engaged by the paper, and means for notifying the operator that a predetermined portion of the page has been reached.

34. In a type-writing machine, the combination of a platen, a pressure-roller, a lever for releasing said pressure-roller, a device adapted to be engaged by the paper and moved by said release-lever to a position where it may be engaged by the paper, and means acting on the release of said device by the paper, for notifying the operator that a predetermined portion of the page has been reached.

35. In a type-writing machine, the combination of a platen, pressure-roller 18, lever 89, means operated by said lever for releasing said pressure-roller, arm 51 having a part operable by said lever, finger 48 moved by said lever to a position where it may be controlled by the paper, and a device operable by said arm 51 when said finger is released by the paper, and during a longitudinal movement of the carriage, for notifying the operator that a predetermined portion of the page has been reached.

36. In a type-writing machine, the combination of a carriage, and sounding means for notifying the operator when an end of the page approaches the printing-line, said sounding means being actuated by a movement of the carriage.

37. In a type-writing machine, the combination of a carriage, sounding means controlled by the paper, and means operated by the longitudinal movement of the carriage for actuating said sounding means.

38. In a type-writing machine, the combination of a carriage, a tripping device controlled by the paper, an automatic actuation of said tripping device being afforded by the line-feed movement of the paper, and a sounding device actuated by a movement of the tripping device with the carriage during the travel of the latter.

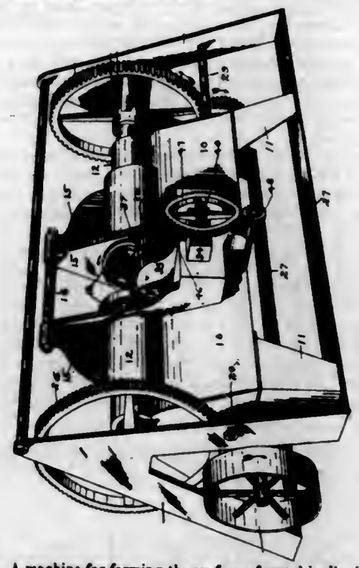
39. In a type-writing machine, the combination of a carriage, a sounding device, actuating means controlled by the travel of the carriage for actuating said sounding device, and means controlled by the paper for rendering said actuating means operative.

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**757,432. MACHINE FOR ROLLING WHEELS. FRANKLIN P. BATH, Indianapolis, Ind. Filed Nov. 3, 1902. Serial No. 129,921. (No model.)**

*Claim.*—1. A machine for forming the surface of metal bodies including a pair of rotary clamping-dies for holding and rotating the metal body, a pair of rollers adapted to bear radially against the periphery of the metal body and oppositely located, one of said rollers having its periphery convex in cross-section and the other substantially straight in cross-section, and means for forcing said rollers against the metal body.

2. A machine for forming the surface of metal bodies including a pair of clamping-heads, a pair of shafts mounted in the same horizontal line and carrying said clamping-heads on their adjacent ends, a suitable framework in which said shafts are mounted, means for rotating said clamping-heads when the metal body is clamped between them, a yoke-shaped frame acting against the ends of said shafts for resisting the lateral thrust of said shafts while the metal body is clamped, and a roller adapted to press against the periphery of the metal body as it is rotated.



3. A machine for forming the surface of metal bodies including a pair of clamping-heads, a pair of shafts mounted on the same horizontal line and carrying said clamping-heads on their adjacent ends, a suitable framework in which said shafts are mounted, means for longitudinally moving one of said shafts, a yoke-shaped frame between the ends of which said shafts and the means for longitudinally adjusting one of them is mounted, so that said frame will resist the lateral strain on said parts when the metal body is clamped between said clamping-heads, and means for rotating said shafts.

4. A machine for forming the surface of metal bodies including means for holding and rotating the metal body, a pair of rollers adapted to engage the periphery of the metal body as it is rotated, means for moving them toward each other and the metal body simultaneously, and means for adjusting the position of said rollers with reference to the metal body, so that one of them will engage and act upon the metal body in advance of the other.

5. A machine for forming the surface of metal bodies including means for holding and rotating the metal body, a pair of rollers adapted to engage the periphery of the metal body as it is rotated, one of said rollers having its periphery formed with a central annular extension adapted to spread and laterally displace the metal, and the other roller being a finishing-roller, means for moving them toward each other and the metal body simultaneously, and means for adjusting the position of said rollers with reference to the metal body, so that the metal-displacing roller will first engage and act upon the metal body.

6. A machine for forming the surface of metal bodies including means for holding and rotating the metal body, a pair of rollers adapted to engage the periphery of the metal body as it is rotated, one of said rollers formed to act as a metal-displacing roller, and the other a finishing-roller, means for adjusting the position of said rollers with reference to the metal body, so that the metal-displacing roller will first engage and act upon the metal body, and means for moving said rollers toward each other and the metal body at variable speeds.

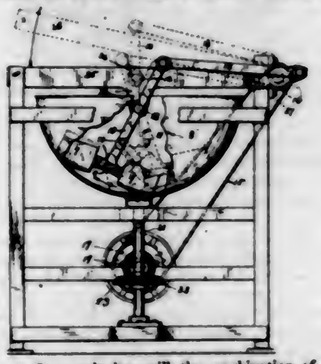
7. A machine for forming the surface of metal bodies including means for holding and rotating the metal body, a pair of rollers adapted to engage the periphery of the metal body as it is rotated, a pair of blocks slidably mounted in the framework of the machine in which said rollers are mounted, said blocks being on opposite sides of the means for holding the metal body, a shaft extending through said sliding blocks, said shaft having reversely-threaded portions near the ends thereof, means for preventing longitudinal movement of said shaft, means for driving the shaft, and nuts surrounding the threaded portions of said shaft that are secured to said blocks whereby the latter are actuated.

8. A machine for forming the surface of metal bodies including

means for holding and rotating the metal body, a pair of rollers adapted to engage the periphery of the metal body as it is rotated, a pair of blocks slidably mounted in the framework of the machine in which said rollers are mounted, said blocks being on opposite sides of the means for holding the metal body, a shaft extending through said sliding blocks, said shaft having reversely-threaded portions near the ends thereof, one threaded portion being coarser than the other, means for preventing longitudinal movement of said shaft, means for driving the shaft, and nuts surrounding the threaded portions of said shaft that are secured to said blocks whereby the latter are actuated.

9. A machine for forming the surface of metal bodies, including means for holding and rotating the metal body, a pair of rollers adapted to engage the periphery of the metal body as it is rotated, one being a metal-displacing roller and the other a finishing-roller, a pair of blocks slidably mounted in the framework of the machine in which said rollers are mounted, said blocks being on opposite sides of the means for holding the metal body, a shaft extending through said sliding blocks, said shaft having reversely-threaded portions near the ends thereof for actuating said roller-carrying blocks, the threads at the end actuating the finishing-roller being coarser than the threads at the other end of said roller, means for preventing the longitudinal movement of said shaft, means for driving the shaft, and nuts surrounding the threaded portions of said shaft that are secured to said blocks whereby the latter are actuated.

### 757,433. REDUCING-MILL. HERMAN W. BECHT, Cincinnati, Ohio. Filed May 30, 1903. Serial No. 159,897. (No model.)

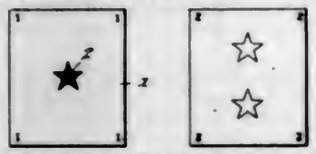


*Claim.*—1. In a reducing-mill, the combination of a general frame, a bowl supported thereon, means to rotate the same, rubbers resting normally against the lower part of this bowl, an arm pivotally attached between its ends to a fixed point on the frame and having the rubbers mentioned attached to its lower end and means connecting to its upper end whereby this arm is oscillated in a vertical plane within the bowl and in a manner to reciprocate the rubbers connected to its lower end in the same plane whereby they are dragged back and forth from side of the bowl to the opposite side thereof the connection of the rubbers to the arm being also a pivotal one whereby their contact with the bowl is made a yielding one, their individual motion being in the same plane as the one whereby they are reciprocated by the arm to which they are connected.

2. In a reducing-mill, the combination of a general frame, an arm forming a part of it and supported across the top of the same, a bowl below, means to rotate the same, rubbers to operate in conjunction with the bowl, being normally in contact with the lower part of it, an arm pivotally attached between its ends to the frame-arm above mentioned and to the lower end of which the rubbers are connected, and means to oscillate this arm in a manner whereby the rubbers are dragged in a straight path back and forth over the lower part of the bowl and from one side of the same to the other, the connection of the rubbers to the arms being pivotal so that their contact with the bowl is a yielding one.

3. In a reducing-mill, the combination of a general frame, a shaft supported on the upper part thereof, bearings for it, a frame-arm supported across this frame it being with one of its ends pivotally connected to the shaft mentioned, a bowl supported below this frame-arm, means to rotate it, an arm pivoted between its ends to the frame-arm mentioned and extending with its lower end into the bowl, rubbers pivotally attached to its lower end, operative connection between its upper end and the shaft mentioned whereby said arm is oscillated in a vertical plane and in a manner to cause the rubbers to be dragged with a reciprocating motion across the lower part of the bowl, and means whereby the other end of the frame-arm is detachably held on the general frame so that after disconnected said arm may be swung upwardly to raise the operating parts out of the bowl.

### 757,434. GAME. PERCIVAL D. BIRD, Louisville, Ky. Filed Oct. 10, 1903. Serial No. 176,599. (No model.)

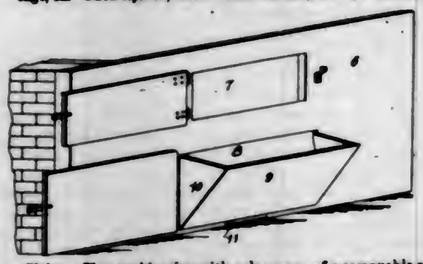


*Claim.*—1. A pack of cards formed of sequences of cards, the values of which are indicated by stars and the sequences being designated by the colors of the stars, similar sequences of smaller stars, a sequence of cards containing flags and having numerals for designating their respective values, and a card containing a distinctive picture.

2. A pack of cards comprising three sequences of large stars, each ranging in value from one to ten and said sequences being distinguished by differences in colors of the stars, three sequences of cards ranging in value from one to ten and containing small stars, the sequences being distinguished by the colors of the stars, six similar sequences of cards containing flags, the values of said cards being indicated by numerals, and one card containing a picture.

3. A pack of cards composed of three sequences of cards containing large stars and each sequence containing ten cards of different values, said sequences being of different colors, three sequences of cards containing small stars, the cards of each sequence being of different values from one to ten and designated by colors, numerals upon the cards of said sequences for indicating their respective values, six similar sequences of cards ranging in value from one to ten, respectively, and each containing a flag, and a card containing a suitable picture on one face thereof.

### 757,435. ASH-CHUTE FOR FURNACES. FRANK J. BLUM, Chicago, Ill. Filed Apr. 17, 1903. Serial No. 153,062. (No model.)



*Claim.*—The combination with a doorway, of a removable rocking chute and door, having flanges at the lower edge thereof fitting over the lower edge of the doorway, and also having stops engaging the doorway and limiting the outward swing.

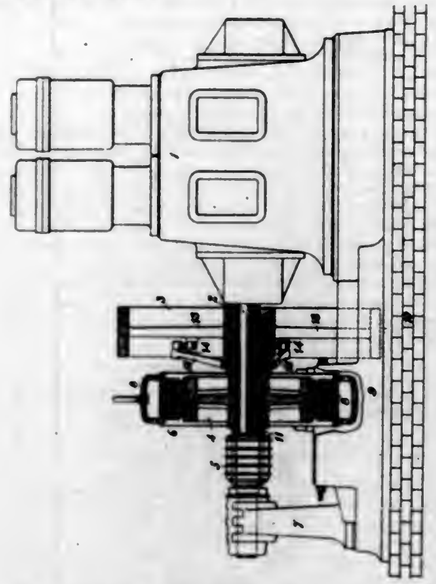
### 757,436. ELECTRICAL GENERATING SYSTEM. WILLIAM A. ROSS, Pittsburg, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed July 12, 1901. Serial No. 68,048. (No model.)

*Claim.*—1. The combination with an engine and a dynamo-electric machine having its rotating member mounted upon the engine-shaft, of a flexible, resilient connection between one of the members of the dynamo and its support whereby it is free to move around its axis independently of said support, within defined limits, in either direction.

2. The combination with a plurality of engines and a plurality of electric generators each of which has its rotating member mounted upon the corresponding engine-shaft, of a flexible, resilient connection between one of the members of each generator and its support whereby said members are permitted to move around their axes, within defined limits, in either direction to maintain synchronism of the generators.



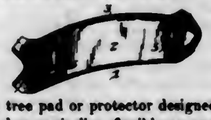
3. The combination with a plurality of engines and a plurality of electric generators the rotating member of each of which is mounted upon the corresponding engine-shaft, of flexible, resilient connections between the rotatable member of each generator and the shaft of its engine whereby said rotatable members may move around their axes in either direction, within defined limits, to maintain synchronous relation.



4. The combination with a plurality of engines and a plurality of electric generators connected in parallel to the same circuit and each having its rotating member mounted upon the corresponding engine-shaft, of flexible, resilient connections between the rotatable member of each generator and the engine fly-wheel, whereby synchronous operation may be maintained.

5. The combination with a plurality of engines and a plurality of electric generators connected in parallel to the same circuit, the rotating member of each generator being mounted upon the corresponding engine-shaft, of flexible, resilient connections between the rotatable member of each generator and the engine-shaft whereby synchronous operation of the generators may be maintained.

### 757,437. PAD OR TREE-PROTECTOR. GEORGE E. BROWN, Selma, Cal., assignor of one-half to J. H. Wright, Jr., Selma, Cal. Filed Dec 18, 1903. Serial No. 185,716. (No model.)



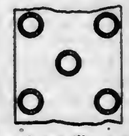
*Claim.*—1. A tree pad or protector designed to be interposed between a limb and an encircling flexible connection, said tree-pad being curved to present a concaved face to the limb and provided with transversely-disposed exteriorly-arranged tongues for engaging the flexible connection, substantially as described.

2. A tree pad or protector designed to be interposed between a limb, and an encircling flexible connection to prevent the latter from cutting into the limb, said tree pad or protector being provided with a transversely-disposed tongue for engaging the flexible connection, and having projections at opposite sides of the latter to prevent the tree pad or protector from slipping, substantially as described.

3. A tree pad or protector designed to be interposed between a limb, and an encircling flexible connection to prevent the latter from cutting into the limb, said tree pad or protector being provided with a transversely-disposed tongue for engaging the flexible connection, and having its corners bent outward to form projecting portions, substantially as described.

4. A tree pad or protector designed to be interposed between a limb, and an encircling flexible connection to prevent the latter from cutting into the limb, said tree pad or protector consisting of a curved plate provided with transverse tongues for engaging the flexible connection, and having the corners at each end bent outward to provide opposite projecting portions, substantially as described.

### 757,438. PROCESS OF STENCILING. CHARLES L. BURDICK, Wood Green, England, and HENRY PERVILHAC, Villeurbanne, France. Filed Sept. 10, 1903. Serial No. 172,671. (No specimens.)



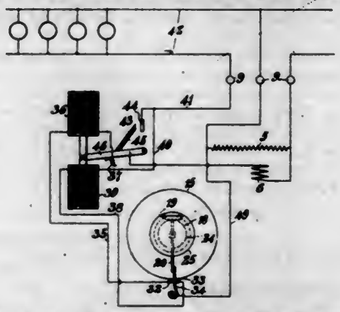
*Claim.*—1. A process of stenciling consisting in first applying stopping-out medium through the apertures of a stencil to parts not intended to receive color and then applying color through the apertures of a second stencil, substantially as set forth.

2. A process of stenciling consisting in first applying stopping-out medium through the apertures of an endless revolving stencil to parts not intended to receive color and then applying color through the apertures of a second endless revolving stencil.

3. A process of stenciling consisting in first spraying stopping-out medium through the apertures of a stencil to parts not intended to receive color and then spraying color through the apertures of a second stencil, substantially as set forth.

4. A process of stenciling consisting in first applying a stopping-out medium, composed of paraffin, beeswax and turpentine, through the apertures of a stencil to parts not intended to receive color, then applying color over and around the said medium through the apertures of a second stencil and finally removing the said medium and the superimposed color by means of a suitable agent, substantially as set forth.

### 757,439. PREPAYMENT ELECTRICAL MEASURING INSTRUMENT. FRANK CONRAD, Edgewood Park, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed June 24, 1903. Serial No. 162,906. (No model.)



*Claim.*—1. In a prepayment electrical measuring instrument, the combination with a switch for making and breaking the main circuit of the instrument and two electromagnets for respectively and positively moving said switch to its circuit-opening and its circuit-closing positions, of a counting-train, a coin-actuated member, a device for closing the circuit of each magnet and for opening that of the other, operating connections between the coin-actuated member and said device and operating connections between the counting-train and said device.

2. In a prepayment electric wattmeter, the combination with a switch for making and breaking the series circuit of the instrument and two electromagnets for respectively and positively opening and closing said switch, of a circuit-controller for said magnets, a coin-actuated member, a counting-train, operating connections between the coin-actuated member and the circuit-controller and operating connections between the counting-train and said controller.

3. In a prepayment-wattmeter, the combination with two electromagnets for respectively making and breaking the series circuit of the meter and a switch for making the circuit of either magnet and breaking that of the other, of a coin-chute and a coin-operated wheel located therein and having a shaft, a device for operating said switch geared to said shaft, a counting-train and gearing between the same and said switch-operating device.

4. In a prepayment-wattmeter, the combination with a device for opening and closing the series circuit of the meter comprising two solenoids, a single core therefor and a movable contact-terminal connected to said core, of a coin-chute, a coin-operated wheel therein having a shaft, a switch for closing the circuit of either solenoid and opening that of the other, a rotatable member for controlling said switch geared to the shaft of the coin-actuated wheel, a counting-train and gearing between the same and the said rotatable member.

5. In a prepayment-wattmeter, the combination with two electromagnets for respectively making and breaking the series circuit of the meter and a single switch for making and breaking the circuits of both magnets, of a rotatable controlling device for said switch having an idler-pinion, a coin-actuated wheel geared to said pinion to rotate the controlling device in one direction and a counting-train geared to said pinion to rotate the controlling device in the other direction.

6. In a prepayment, electrical measuring instrument, the combination with means for making and breaking the circuit of an actuating-winding of the instrument, of a rotatable controlling device having an idler-pinion, a coin-actuated wheel geared to said pinion to rotate the controlling device in one direction and a counting-train geared to said pinion to rotate the controlling device in the other direction.

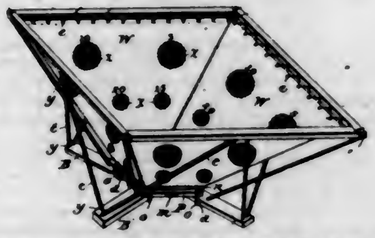
7. In a prepayment electrical measuring instrument, the combination with registering mechanism and actuating-coils therefor, of electromagnetic means for opening and closing an actuating-circuit, a switch for making and breaking the circuits of said electromagnetic means, a rotatable controlling device for said switch having an idler-pinion, a coin-actuated wheel geared to said pinion to rotate the controlling device in one direction and connections between said pinion and the registering mechanism whereby the controlling device is rotated in the opposite direction.

8. In a prepayment, electrical measuring instrument, the combination with a counting-train, a rotatable armature and actuating-coils therefor, of electromagnetic means for making and breaking the circuit of one or more of said coils, a switch for opening and closing the circuits of said electromagnetic means, a controlling device for said switch having an idler-pinion, a coin-actuated wheel geared to said pinion to rotate said controlling device in one direction and connections between said pinion and the counting-train whereby the latter rotates the controlling device in the opposite direction.

9. In a prepayment electric meter, the combination with a motor and a registering means operated thereby, of a switch for opening and closing the motor-circuit, two electromagnets for respectively and positively moving said switch in opposite directions, a coin-operated device, a circuit-controller for said magnets, and two sets of operating connections for said circuit-controller, one to the coin-operated device and the other to the registering means and each movable independently of the other.

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**757,440. GAME-TABLE. JOHN S. CROXFORD, Newport, Me. Filed Aug. 19, 1903. Serial No. 170,066. (No model.)**



*Claim.*—1. In a game-table of the class described the combination of a rectangular frame and depressed center board, canvas connecting the same and network pockets of different sizes in said canvas.

2. In a game-table of the class described the combination with a frame and depressed center board, canvas connecting the same, and network pockets of different sizes in said canvas, of a bell *m* located in said depressed center board and, so arranged that when the center pin *c* is struck with a ball, the bell will ring, substantially as described.

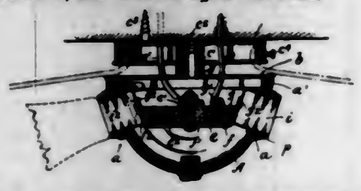
3. In a game-table of the class described the combination with a frame and depressed center board, canvas connecting the same, and network pockets of different sizes in said canvas, said depressed center board containing the bell *m*, of tenoned uprights or supports, tenoned on both ends and fitting into mortises in the frame, and center board, and so arranged that they form a natural support and brace-work for the entire framework, substantially as described.

4. In a game-table of the class described, the combination with side arms, depressed center board, side pieces provided with hooks, and tenoned uprights connecting the same; of a canvas located between the same and provided with openings, network pockets of different sizes connected to the margins of said openings; a bell contained in the center board and provided with operating means; said canvas being secured to center board and provided with eyelets near its periphery, and a strengthening-cord passing through said eyelets and over said hooks, substantially as described.

5. In a game-table of the class described, the combination with side arms having slots, depressed center board, side pieces provided with hooks, and tenoned uprights connecting the same; of a canvas located between the same and provided with openings, network pockets of different sizes connected to the margins of said openings; a bell contained in the center board and provided with operating means; a lock-strap passing around said center board, being vertically slidable upon the same and having loops passing around said side arms and fitting into slots in the same; said canvas being fastened to said lock-strap and provided with eyelets near its periphery; and a strengthening-cord passing through said eyelets and over said hooks, substantially as described.

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**757,441. CLUSTER-SOCKET. JOHN H. DALE, New York, N. Y. Filed Feb. 18, 1904. Serial No. 194,175. (No model.)**



*Claim.*—1. In a cluster-socket, the combination of a finishing-cap and a block of insulating material located centrally therein, and having lamp-contacts attached thereto for a plurality of lamps, said block being supported wholly by said cap, and a suitable support with which said cap is removably connected.

2. A cluster-socket comprising a finishing-cap, means for attaching it to a support, a block of insulating material located centrally inside of the cap, lamp-socket terminals attached to the block, and means for supporting and suspending the block upon or from the cap whereby it is removable with the cap from the support.

3. A cluster-socket comprising a finishing-cap having a plurality of openings therein, means for attaching the cap to the ceiling or other support, a block of insulating material located centrally inside of the cap, lamp-socket pieces attached to said block and projecting respectively through said openings and means whereby said block is supported wholly from the cap through the engagement thereof by said socket-pieces.

4. A cluster-socket comprising a finishing-cap, having a plurality of openings therein, a plurality of threaded shells projecting into said openings, threaded insulating-sleeves engaging said shells and the cap and connecting the same rigidly together and a centrally-disposed block of insulating material carrying circuit-terminals inside of said cap and supported wholly by attachment to said shells.

5. A cluster-socket comprising a finishing-cap having a plurality of openings therein, a disk of insulating material contained in said cap, metallic plates fixed to the opposite sides of said disk, metallic threaded shells attached to one of said metallic plates and projecting through the respective openings in the cap, and contact-pieces attached to the other plate and presented respectively opposite the inner ends of said shells, means for connecting and insulating said shells to and from the cap whereby the disk and its attachments are supported wholly by the cap, and a support for the cap independent of said disk, shells and contacts, substantially as described.

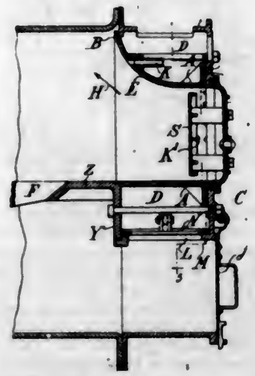
6. A cluster-socket comprising a finishing-cap having a plurality of openings therein, a metallic disk closing the top of said cap, and removably connected therewith and having means for attachment to a support, a block of insulating material wholly within the cap and mounted independent of said disk and electric terminals carried by the insulating-block and presented at the respective openings in the cap.

7. A cluster-socket comprising a dome-shaped finishing-cap having a plurality of openings therein, a support-plate adapted to cover the concave side of said cap and removably connected therewith, a block of insulating material inside of said cap, circuit-terminals attached to said block and binding-screws for conductors connected with said terminals and located on that face of the block adjacent to said support-plate, whereby the removal of the cap from the support-plate will expose the binding-screws.

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**757,442. FURNACE. SAMUEL C. DAVIDSON, Belfast, Ireland. Filed July 2, 1903. Serial No. 164,043. (No model.)**



*Claim.*—1. A furnace-front having a detachable doorway and being formed with an air-chamber entirely surrounding the lateral and top and bottom sides of said doorway, and leading to the furnace-fire, said doorway on the surface facing the fire being flared laterally and upwardly inward, and having tubular air-passages through said flared surfaces, to heat and admit air to the top surface of the fire from said air-chamber.

2. A furnace-front having a detachable doorway and being formed with an air-chamber entirely surrounding the lateral and top and bottom sides of said doorway, and leading to the furnace-fire, in combination with a substantially horizontal and straight partition-plate extending from side to side of said furnace-front, and separating the air-space which is below said detachable doorway from the ash-pit, and valved air-admission ports in said partition-plate for passage of air from said air-chamber into the ash-pit.

3. A furnace-front having a detachable doorway and being formed with an air-chamber entirely surrounding the lateral and top and bottom sides of said doorway, and leading to the furnace-fire, said doorway on the surface facing the fire being flared laterally and upwardly inward, and having tubular air-passages through said flared surfaces, to heat and admit air to the top surface of the fire from the said air-chamber, and a substantially horizontal and straight partition-plate extending from side to side of said furnace-front and separating the air-space which is below said detachable doorway from the ash-pit, and valved air-admission ports in said partition-plate for passage of air from said air-chamber into the ash-pit.

4. A furnace-front having a doorway, and being formed with an air-chamber surrounding said doorway on top, sides and bottom thereof, combined with a horizontal plate arranged below the bottom of said doorway, so as to leave a space between the two, an air-admission passage in said front arranged with a part of its effective opening below the bottom of said doorway, whereby air may be admitted directly to said space, and ports in said plate leading to the ash-pit.

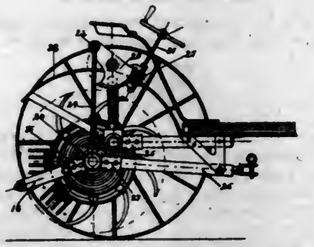
5. A furnace-front having a doorway and an inner plate formed integrally with each other, and an outer plate and surrounding ring formed integrally with each other, said two parts being bolted together.

6. A furnace-front comprising a doorway and an inner plate formed integrally with each other, an outer plate and surrounding ring formed integrally with each other, and an inner ash-pit plate and dead-plate formed integrally with each other, said several parts being bolted together.

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**757,443. PLOW. FRANK DEWIDDER, Kansas City, Mo. Filed July 8, 1903. Serial No. 164,703. (No model.)**

*Claim.*—1. A plow, comprising an axle, a series of wheels mounted on said axle, a series of forks mounted on said wheels, and means for turning said forks relatively to the axle.



2. A plow, comprising an axle, a series of wheels mounted on said axle, a series of curved forks mounted on said wheels, and means for turning said forks automatically relatively to the axle.

3. A plow, comprising an axle, a series of wheels mounted on said axle, a series of perforations in the peripheries of said wheels, a series of sockets in the hubs of said wheels, a series of forks having shanks inserted through said peripheral perforations and seated in the sockets in said hubs, crank-arms mounted on said shanks, pins in said crank-arms, reciprocating bars having perforations therein engaging said pins, friction-wheels in the ends of said bars, and disks mounted on said axle and having inturned flanges forming cam-faces adapted to engage said friction-wheels.

4. A plow, comprising an axle, a series of wheels mounted on said axle, a series of oscillating forks mounted on said wheels, a scraper-frame mounted on said axle, a series of scrapers mounted on said frame in close proximity to said forks, and means for oscillating said forks.

5. A plow, comprising an axle, a series of wheels mounted on said axle, a series of forks mounted in the periphery of said wheels, crank-arms mounted on said forks and adapted to turn said forks upon the turning of said crank-arms, a reciprocating bar adapted to turn said crank-arms, and means for reciprocating said bar.

6. A plow, comprising an axle, a series of wheels mounted on said axle, a series of perforations in the rims of said wheels, a series of sockets in the hubs of said wheels, and a series of curved forks having shanks extending through said peripheral perforations and seated in said sockets, a reciprocating bar, means for reciprocating said bar, and suitable connection between said bar and said shanks to oscillate said forks upon reciprocation of said bar.

7. A plow, comprising an axle, a series of wheels mounted on said axle, a series of oscillating forks mounted in the peripheries of said wheels, a reciprocating bar suitably connected to said forks to oscillate the same upon the reciprocation of said bar, a pair of disks mounted upon said axle having cam-faces thereon adapted to engage and reciprocate said bar, and suitable means for bracing said disk.

8. A plow, comprising an axle, means on said axle for carrying forks, forks carried by said means, cam-faced disks mounted on said axle, and means operated by said disks for turning said forks.

9. In a plow, the combination with an axle, of a series of digging-tools arranged around said axle and movable to points above and below the soil, of means for automatically turning the digging-tool, separately from its movement above and below the soil to dump the soil therefrom.

10. In a plow, the combination of a digging-tool, means for moving the digging-tool to points below and above the soil to be plowed, and means for moving digging-tool separately from its movement above and below the soil to dump the soil therefrom.

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**757,444. AXLE. JOSEPH H. ENTERKIN, Craig, Nebr. Filed Aug. 14, 1903. Serial No. 169,524. (No model.)**



*Claim.*—In an axle, the combination of a tree provided with a circular and threaded end, a removable spindle having a threaded socket, in its inner end, snugly receiving said end of the tree, and also having a threaded aperture in the wall of the socket, a screw bearing in said aperture of the spindle, and set against the threaded end of the tree; said screw having an angular head, and a spring-fastener pivoted, at one end, on the spindle, and having an angular

aperture, adjacent to its opposite end, receiving the head of the screw, and also having flanges *f* bearing against the sides of said head.

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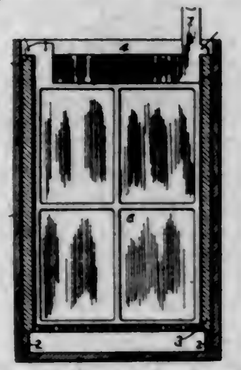
**757,445. HORSESHOE.** JACOB FISHER and ALBERT CORBOY, Columbus, Ohio. Filed Mar. 31, 1903. Serial No. 150,407. (No model.)



*Claim.*—The combination with a horseshoe having an integral heel-calk, of an angular double-pointed removable and reversible calk fitted in the angle between the shoe and the integral calk, a headed fastening intermediately piercing the removable calk and also passing through the shoe at the juncture thereof with the integral calk, the head of the fastening being at the lower end thereof and lying against the front of the removable calk, the upper end of the fastening being projected externally of the shoe and screw-threaded, and a removable nut fitted to the screw-threaded end of the fastening.

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**757,446. SECONDARY BATTERY.** LOUIS H. FLANDERS, Wilkinsburg, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed July 10, 1903. Serial No. 165,038. (No model.)



*Claim.*—1. An imperforate, porous, earthenware, separator-plate of corrugated structure and having thickened side edges.

2. In a secondary battery, a receptacle, a set of porous separator-plates having thickened side edges and assembled to form a series of compartments that are open at top and bottom and are closed at their sides by said thickened edges, and plate-electrodes located between said plates and having projections that rest upon their upper edges.

3. In a secondary battery, the combination with a receptacle having supporting-ledges and porous separator-plates that rest upon said ledges and have thickened edges in contact with each other, of plate-electrodes supported by said separator-plates and located in the spaces between them.

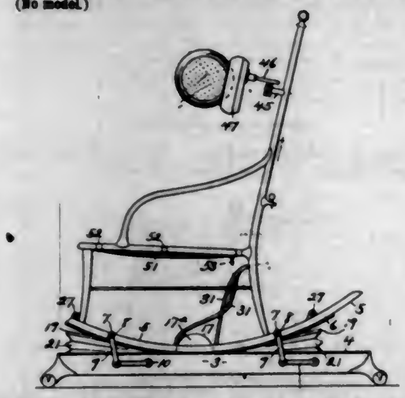
4. In a secondary battery, the combination with a receptacle having supporting-pieces at or near its bottom and a series of corrugated, porous plates having thickened edges that rest upon said supporting-pieces, of a series of plate-electrodes located in the spaces between said porous plates and having projections that rest upon the tops of said thickened edges.

5. In a secondary battery, the combination with a receptacle, of a plurality of porous plates having thickened side edges that combine to form the end walls of chambers that are open at top and bottom, and plate-electrodes that are located in said chambers and are supported by said end walls.

6. In a secondary battery, the combination with a receptacle and a plurality of corrugated, porous plates having thickened side edges, of a plurality of plate-electrodes severally located in the chambers formed by the body portions of said porous plates and their thickened edges and supported upon said edges.

7. In a secondary battery, the combination with a receptacle having internal projections at or near its bottom and a plurality of porous plates resting upon said projections and having thickened side edges in engagement so that the plates are laterally self-supporting, of plate-electrodes located between said separator-plates and removably supported upon said thickened edges.

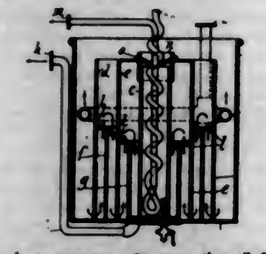
**757,447. ROCKING-CHAIR WITH AIR APPARATUS.** MAX FRIEDLAND, Kansas City, Mo. Filed Mar. 2, 1903. Serial No. 145,853. (No model.)



*Claim.*—The combination, with a rocking-chair having a stationary base, of a bottom board secured within the base, two air-pumps, an air-reservoir between said pumps, ports connecting said pumps to said reservoir, said reservoir being provided with an elastic top, two rods connecting the rockers, arms operatively connecting the rods to the pumps, metallic tubes forming the frame of the back of the chair, flexible tubes connecting said reservoir to said metallic tubes, brackets secured to said metallic tubes, chambers supported by said brackets, said brackets being adapted for conducting the air into the chambers, said chambers having perforated fronts, and wings or blades revolubly mounted within said chambers; substantially as described.

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**757,448. APPARATUS FOR SEPARATING OIL AND GREASE FROM WATER.** EDUARD FRIEDDORF, Düren, Germany. Filed Feb. 16, 1903. Serial No. 143,717. (No model.)



*Claim.*—1. In an apparatus for separating oil from fluids and depriving it of every trace of water in the same operation, an outer vessel, a fluid-supply pipe with perforated lateral ring portion within said vessel, concentric internal divisions and overflow-partitions leading the waste fluid toward the middle of the apparatus, a draw-off pipe for the waste fluid, a central tube for collecting the pure oil, means for delivering the oil in small quantities from the upper part of the vessel into said collecting-tube, and means within said collecting-tube for evaporating the last traces of water from the oil, substantially as stated.

2. In the apparatus of the character described, an upright cylindrical outer vessel, a perforated ring-shaped supply-pipe in the interior of said vessel, a concentric division perforated at its lower end and reaching nearly to the upper end of said vessel, a half-way overflow-partition with perforated top flange within said division, a concentric division within the first division and perforated at its lower end, an overflow-partition with perforated top flange and slightly lower than the previous partition, a draw-off pipe leading from the bottom of the vessel and externally up to the level of said divisions, a central oil-collecting tube, adjustable means on said tube for delivering small quantities of oil from the upper part of the vessel into said tube, and a steam-coil within said collecting-tube, substantially as and for the purpose stated.

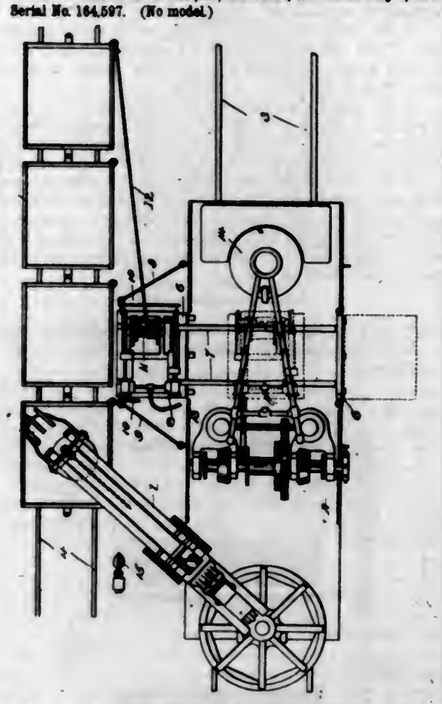
3. In the apparatus of the character described, the outer vessel, the ring-shaped supply-pipe, concentric divisions and partitions, the draw-off pipe determining the level of the liquid within the apparatus, the central collecting-tube with looped steam-coil extending



from the top of the apparatus down to the bottom of the said tube, and a delivery-pipe, substantially as shown and described.

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**757,449. CAR-PLACING ATTACHMENT FOR POWER-EXCAVATORS.** HENRY H. GEORGE, Jr., Richmond, Va. Filed July 7, 1903. Serial No. 164,597. (No model.)



*Claim.*—1. The combination with a power-excavator and its sustaining-car, of a bracket extending laterally from the side of the car, and a spotting-engine removably supported on said bracket, said car being adapted to receive the engine when removed from the bracket.

2. The combination with a power-excavator and its sustaining-car, of an engine support or bracket hinged to the side of the car and adapted to be folded into vertical position when not in use, and a spotting-engine adapted to be supported on said bracket.

3. The combination with a power-excavator and its sustaining-car, of a bracket or support extending laterally from the side of the car, braces connecting said support with the car-body, and a spotting-engine normally located on the car and movable on the said bracket, for the purpose set forth.

4. The combination with an excavator and its sustaining-car, of a support or bracket extending laterally from said car, a track for dump-cars adjacent to said bracket, a pulley-block anchored adjacent to said track, a spotting-engine supported by said bracket, and a rope connected with said engine and adapted to be passed through said pulley-block and connected to said dump-cars.

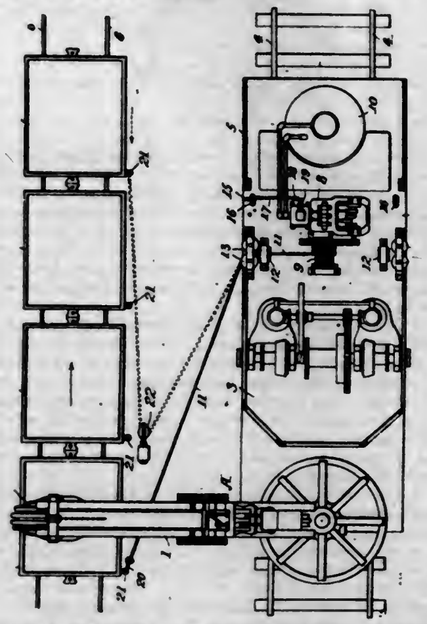
5. The combination with an excavator and its sustaining-car, of transverse guides or rails on said car, a bracket extending laterally from the car and a spotting-engine supported on said guides or rails and movable thereon to said bracket, for the purpose set forth.

6. The combination with an excavator, and its sustaining-car, of transverse guides or rails movably mounted on said car, a bracket extending laterally from the car and a spotting-engine supported on said guides or rails and movable thereon to said bracket, said rails being also partially movable onto said bracket to form an additional support for said engine, for the purpose set forth.

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**757,450. CAR-PLACING ATTACHMENT FOR EXCAVATORS.** HENRY H. GEORGE, Jr., Richmond, Va. Filed Jan. 26, 1904. Serial No. 190,646. (No model.)

*Claim.*—1. The combination with a power-excavator and its sustaining car or platform, of a track adjacent to the excavator and adapted to sustain cars to be filled by the excavator, a spotting-engine upon the excavator-platform and independent of the excavating apparatus, a drum operated by said engine, a cable connected with said drum, and means for connecting the cable with dump-cars on said track, whereby said cars may be successively located in position to be filled by the excavator.

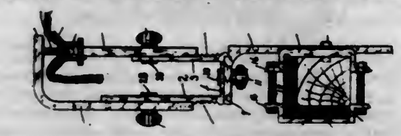


2. The combination with a power-excavator and its sustaining car or platform, of a track adjacent to the excavator and adapted to sustain cars to be filled by the excavator, a spotting-engine upon the excavator-platform and independent of the excavating apparatus, a drum operated by said engine, a cable connected with said drum, sheaves suitably mounted at the side of the platform through which said cable passes, and means for connecting the cable with dump-cars on said track, whereby said cars may be successively located in position to be filled by the excavator.

3. The combination with a power-excavator and its sustaining car or platform, of a track adjacent to the excavator and adapted to sustain cars to be filled by the excavator, a spotting-engine upon the excavator-platform and independent of the excavating apparatus, a drum operated by said engine, a cable connected with said drum, sheaves arranged at opposite sides of the platform for guiding the cable, means for controlling the spotting-engine from either side of the platform, and means for connecting the cable with dump-cars on said track, whereby said cars may be successively located in position to be filled by the excavator.

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**757,451. BEDCLOTHES-HOLDER.** FREDERICK L. GERMAIN, Buffalo, N. Y. Filed Nov. 22, 1902. Serial No. 133,500. (No model.)



*Claim.*—In a bedclothes-holder, the combination of a base, removably secured to the bed-frame on opposite sides thereof, two vertical and parallel uprights upon such base, a vertical clamping device with an upper horizontal arm adjustable upon the vertical upright upon one side of the base, a vertical clamping device with an upper angular head adjustable upon the vertical upright upon the other side of the base, and a T-shaped strip in engagement with the angular heads and horizontal arms of the vertical clamping devices, for holding the bedclothes between the T-shaped strip and the angular heads, substantially as shown and described.

**757,452. STEAM-ENGINE.** LOUIS GOSS, Jr., Atlantic City, N. J. Filed May 16, 1903. Serial No. 157,429. (No model.)

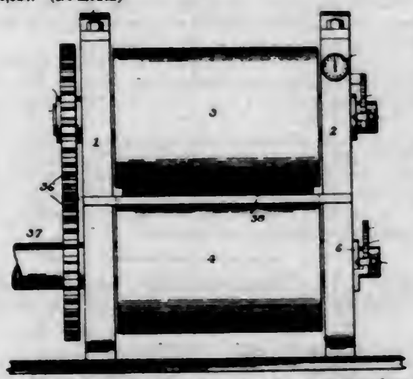


*Claim.*—1. A device of the kind described comprising a cylinder slotted longitudinally along one side midway its ends and closed at the ends, a piston-rod in the cylinder, pistons at each end of the rod, a union-coupling on the piston-rod midway the pistons a cross-head secured at one end in said coupling and projecting through the slot, a casing having a slotted bottom, a guide-block sliding in the casing and having a depending leg secured at its lower end to the outer end of the cross-head, and a driving-rod connected to said cross-head.

2. The combination with a cylinder slotted longitudinally and closed at each end of pistons, therein, a rod connecting the pistons, a T-shaped coupling on the piston-rod, a cross-head connected to the coupling, a casing secured to the cylinder above the slot, the bottom of said casing being longitudinally slotted, a guide-block sliding in said casing, said block having a depending slotted leg extending through the slot of the casing and connected to the cross-head, and a driving-rod working in the slot of the leg and pivotally connected to the cross-head.

3. The combination with a cylinder longitudinally slotted on one side, of pistons therein, a piston-rod within the cylinder connecting the pistons, a cross-head secured to the piston-rod midway the pistons and projecting through the slot, a hollow, longitudinal casing integral with the cylinder and having its bottom longitudinally slotted, a guide-block sliding in the casing, a slotted depending leg secured at its upper end to the guide-block and extending downward, the said cross-head extending into the slot of the depending leg, and a drive-rod extending into said slot and pivotally connected to the cross-head.

**757,453. MACHINE FOR SEPARATING METAL SHEETS.** GEORGE GROVE, Cumberland, Md. Filed Aug. 14, 1903. Serial No. 169,527. (No model.)




*Claim.*—1. The combination of a series of magnets spaced apart with an opposite series also spaced apart, the spaces of one series being opposite the magnets of the other series, and means for feeding a pack of metal sheets between the series, substantially as described.

2. The combination of a series of magnets arranged at different angles with an opposite series also arranged at different angles, and means for feeding a pack of metal sheets between the series, substantially as described.

3. The combination of a series of magnets arranged in different radial planes about an axial line, with a second series arranged in different radial planes about an axial line parallel to that of the first series, and means for feeding a pack of metal sheets between the series, substantially as described.

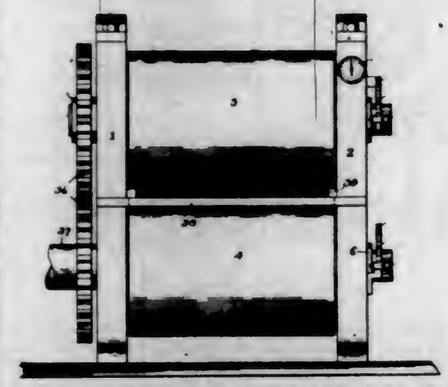
4. The combination of a series of magnets spaced apart and arranged about an axial line in different radial planes, with a second series of magnets also spaced apart and arranged in different radial planes about an axial line parallel with that of the first series, the spaces of one series being opposite to the magnets of the other series, and means for feeding a pack of metal sheets between the two series, substantially as described.

5. The combination with two hollow, parallel rolls, of magnets inside of each roll arranged in different planes transverse to the axis to act in directions outward from the line of contact of the rolls, substantially as described.

6. The combination with two hollow, parallel rolls, of a series of magnets spaced apart in each roll with the magnets of one series opposite the spaces of the other, both series acting in directions outward from the line of contact of the rolls, substantially as described.

7. The combination with two hollow, parallel rolls, of a series of magnets spaced apart in each roll with the magnets of one series opposite the spaces of the other, both series acting in directions outward from the line of contact of the rolls, and each magnet of each series being arranged in a different radial plane from the adjacent magnet, substantially as described.

**757,454. PROCESS OF SEPARATING METAL SHEETS.** GEORGE GROVE, Cumberland, Md. Filed Aug. 14, 1903. Serial No. 169,528. (No model.)




*Claim.*—1. The process herein described for separating metal sheets from packs which consists in causing the pack to pass between magnets arranged to act in opposite directions on opposite sides of the pack.

2. The process herein described for separating metal sheets from packs which consists in causing the pack to pass between two magnets arranged to act in opposite directions on opposite sides of the pack.

3. The process herein described for separating metal sheets from packs which consists in causing the pack to pass between magnets acting in opposite directions upon the opposite sides of the pack in lines diagonal to the line of travel of the pack.

**757,455. ROTARY ENGINE.** ARTHUR GUINDON, Montreal, Canada. Filed Aug. 10, 1903. Serial No. 168,913. (No model.)

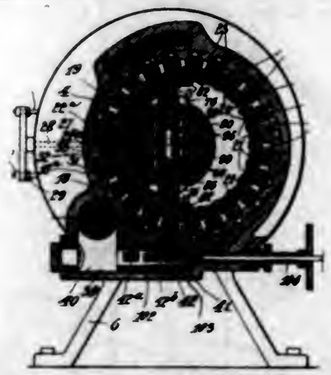
*Claim.*—1. In a rotary engine, in combination, a cylinder, the wall whereof is composed of a plurality of circumferentially-arranged rollers, and a rotatable piston having shoes adapted to rest against said rollers as said piston rotates.

2. In a rotary engine, in combination, a rotatable piston having shoes, a cylinder in which said piston is mounted, said cylinder having a plurality of longitudinally-disposed rollers which constitute the inner wall thereof and are engaged by said shoes as said piston rotates, and other rollers disposed behind said first rollers, the surfaces whereof are in contact with the surfaces of said first rollers.

3. In a rotary engine, in combination, a cylinder, the inner wall whereof is composed of a plurality of longitudinally-disposed rollers, a rotatable piston mounted within said cylinder, and having shoes adapted to contact with the surfaces of said rollers, and outer rollers disposed behind said first rollers, the surfaces whereof contact with the surfaces of said first rollers, the wall of said cylinder having recesses adapted to receive the outer portion of said outer rollers.



4. In a rotary engine, in combination, a cylinder, rings attached in the heads thereof, rollers mounted between said rings and constituting the inner wall of said cylinder, and a rotary piston mounted in said cylinder, and having shoes adapted to engage the surfaces of said rollers.



5. In a rotary engine, in combination, a cylinder, oppositely-disposed rings attached to the heads thereof, rollers carried therebetween and disposed circumferentially so as to constitute the inner wall of said cylinder, keepers disposed between said rollers, and attaching to said rings, and a rotary piston mounted within said cylinder, having shoes adapted to engage the inner sides of said rollers.

6. In a rotary engine, in combination, a cylinder, a pair of oppositely-disposed rings carried in the heads thereof, rollers mounted between said heads and constituting the inner wall of said cylinder, keepers disposed between said rollers, outer rollers disposed behind said first rollers and bearing against the rear sides thereof, said outer rollers having spindles, said rings having openings adapted to receive the extremities of said spindles, and a piston rotatably mounted within said cylinder and having shoes adapted to slide upon said first rollers.

7. In a rotary engine, in combination, a cylinder having opposite heads, rings carried by the inner sides of said heads, said rings having notches in the inner edge thereof, rollers disposed between said rings and constituting the inner wall of said cylinder, keepers conforming substantially to the adjacent surfaces of said rollers, and having extremities received by said notches, outer rollers disposed behind said first rollers, the surfaces whereof contact with the surfaces of said first rollers, said rings having openings, said outer rollers having spindles received thereby, and a rotary piston mounted within said cylinder, and having shoes resting upon said first rollers.

8. In a rotary engine, in combination, a cylinder, a plurality of rollers constituting the inner wall of said cylinder, a rotary piston mounted within said cylinder and having shoes sliding upon said rollers, an abutment-plate mounted in the wall of said cylinder and co-operating with said piston, a plurality of outer rollers disposed circumferentially behind said first rollers, and in contact therewith, said cylinder having oppositely-disposed inlet and outlet ports, and a packing-strip cooperating with one of said rollers substantially between said inlet-port and said abutment-plate.

9. In a rotary engine, a drum having a transverse opening therethrough, a piston mounted in said transverse opening, and comprising a pair of oppositely-disposed plates, rollers therebetween, packing-strips between said plates and said drum, and shoes carried by the extremities of said plates, said shoes being adapted to run upon the interior of the wall of the cylinder of said engine.

10. In a rotary engine, a drum, having a transverse opening therethrough, a piston mounted in said drum and comprising a pair of oppositely-disposed plates, packing-strips between said plates, packing-strips between said plates and said drum, rollers between said plates, and shoes carried by the extremities of said plates, said shoes being adapted to run upon the interior of the wall of the cylinder of said engine.

11. In a rotary engine, in combination, a drum having a transverse opening therethrough, a piston mounted in said opening, said piston comprising a pair of oppositely-disposed plates, said plates having enlargements constituting heads, said heads having transverse grooves therein, packing-strips mounted in said grooves between said plates, said heads having transversely-disposed channels, rollers mounted therein and lying between said plates, roller-plates carried in the wall of said transverse opening, rollers carried by said plates, and bearing upon the rear face of said first plates, and shoes carried by the extremities of said head, said shoes being adapted to run upon the interior of the wall of the cylinder of said engine.

12. In a rotary engine, in combination, a drum having a transverse opening therethrough, a piston mounted in said transverse opening, and comprising a pair of oppositely-disposed plates, said plates having enlargements constituting heads, said heads having transverse grooves, packing-strips carried in said grooves between said plates, said heads further having transverse channels, rollers carried in said channels, and lying between said plates, roller-plates carried in the wall of said transverse opening, and having longitudinally-disposed channels therein, rollers carried in said channels and bearing upon the rear sides of said first plates, said transverse opening having grooves near the periphery of said drum, packing-strips mounted in said grooves and resting against the rear sides of said first plates, and shoes carried by said heads, and adapted to run upon the interior of the wall of the cylinder of said engine.

13. In a rotary engine, in combination, a drum having a transverse opening therethrough, said opening having enlarged recesses in the walls thereof, roller-plates carried in said enlarged recesses, a piston mounted between said roller-plates, and comprising a pair of oppositely-disposed plates, said roller-plates having channels therein disposed longitudinally with respect to said plates, rollers carried in said channels and rolling upon the rear face of said plates, packing-strips between said plates, said transverse opening having transversely-disposed grooves, packing-strips mounted therein and resting upon the rear face of said plates, and shoes carried by the extremities of said plates and adapted to run upon the interior of the wall of the cylinder of said engine.

14. In a rotary engine, in combination, a cylinder having oppositely-disposed heads, ports formed in said heads, a piston rotatably mounted in said cylinder, and having shoes adapted to traverse said ports, said ports having bridges adapted to prevent the lateral movement of said shoes.

15. In a rotary engine, in combination, a cylinder having an inlet-port in the head thereof, a piston rotatably mounted in said cylinder, and adapted to traverse said port, said port being formed in sections, and means for admitting steam to said sections in succession.

16. In a rotary engine, in combination, a cylinder having an inlet-port in the head thereof, said inlet-port having a bridge dividing the same into sections, a rotary piston mounted within said cylinder, a shoe carried thereby adapted to traverse said port, and means for admitting steam to said sections successively in the direction in which said shoe traverses said port.

17. In a rotary engine, in combination, a main head, cylinders attached to opposite sides of said head, valve-chests formed in said cylinders, valves mounted in said chests, inlet-ports formed in said heads and leading from said valve-chests to the interior of said cylinders, exhaust-ports formed in said heads, and exhaust-passages formed in the walls of said cylinders and connecting said exhaust-ports with the exhaust-pipe of said engine.

18. In a rotary engine, in combination, a main head, a pair of cylinders attached to opposite sides thereof, a valve-chest formed in the upper portion of one of said cylinders, a valve-chest formed in the lower portion of the other of said cylinders, ports formed in said main head connecting said valve-chests with the interiors of said cylinders, valves mounted in said valve-chests, exhaust-ports formed in said heads, exhaust-passages formed in said cylinders, and connecting with said exhaust-ports, said exhaust-passages being adapted to lead the escaping steam through the exhaust-pipe of said engine.

19. In a rotary engine, in combination, a drum having a transverse opening with parallel transverse faces disposed substantially at right angles to the axis of said drum, a piston mounted in said transverse opening, said piston comprising oppositely-disposed plates, shoes carried thereby, and pallets attached to said plates, the upper faces whereof rest against the said transverse faces of said drum, said plates being radially movable with respect to said drum.

20. In a rotary engine, in combination, a drum having a transverse opening presenting parallel faces disposed substantially at right angles to the axis of said drum, said parallel faces constituting a guide, a piston mounted between said parallel faces, said piston comprising a pair of oppositely-disposed plates, said plates being disposed substantially parallel with the axis of said drum, pallets attached to the edges of said plates and resting their upper faces against said transverse faces of said drum, said plates having grooves, packing-strips mounted in said grooves between said plates, rollers carried between said plates, and shoes carried by the extremities of said plates.

21. In a rotary engine, in combination, a drum having a transverse opening presenting opposite transverse faces disposed substan-

tially at right angles to the axis of said drum, a piston mounted in said transverse opening, said piston comprising a pair of oppositely-disposed plates, wrists formed at the extremities of said plates, shoes carried upon said wrists, pallets attached to the edges of said plates, the outer faces whereof rest against the said transverse faces of said drum, the upper extremities of said pallets conforming to, and constituting a continuation of said wrist, said shoes having sockets which receive the upper extremities of said pallets with said wrists.

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**757,456. APPARATUS FOR REMOVING SURPLUS MOISTURE FROM PHOTOPRINTS, &c. JOSEPH HALDEN, Manchester, England. Filed Aug. 11, 1902. Serial No. 119,316. (No model.)**




*Claim.*—1. The herein-described means for removing the surplus moisture from photoprints and the like, comprising a guide arranged at one side of the rinsing-bath and a bar provided with a strip of caoutchouc, the latter being arranged parallel with the said guide, the caoutchouc strip and the guide being adapted to press between them the photoprint or the like from which moisture is to be removed, substantially as set forth

2. In apparatus for removing the surplus moisture from photoprints and the like, the combination with a guide *b* of a bar *c* having a strip of caoutchouc attached thereto and means for maintaining the said strip in light pressing contact with the photoprint or the like, substantially as set forth.

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**757,457. NUT-LOCK. JOHN W. HANCOCK, Mattoon, Ill. Filed Oct. 17, 1903. Serial No. 177,469. (No model.)**




*Claim.*—1. In a nut-lock, the combination with a washer having recesses therein, and means for preventing the rotation of the washer; of a nut having a threaded recess therein, spring-pressed pawls slidably mounted within the nut and adapted to engage the washer, and means for simultaneously retracting the pawls.

2. In a nut-lock, the combination with a recessed washer, and means for preventing the rotation thereof; of a nut having a screw-threaded recess therein, spring-pressed pawls slidably mounted within the nut, a plate connecting the pawls, and a lever operating the plate and pawls.

3. In a nut-lock, the combination with a recessed washer, and means for preventing the rotation thereof; of a nut having a screw-threaded recess therein, pawls slidably mounted within the nut and adapted to engage the recesses, plungers slidably mounted within the nut and connected to the pawls, springs inclosing the plungers and bearing on the pawls, a plate connecting the plungers, and means upon the plate for moving the same from the nut.

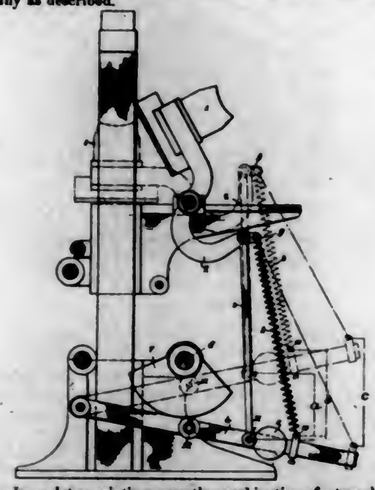
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**757,458. PLATEN PRINTING-PRESS. JOSEF HEIL, Offenbach, Germany. Filed Nov. 7, 1903. Serial No. 180,237. (No model.)**

*Claim.*—1. In a platen printing-press, the combination with a rocking type-bed of means for balancing the latter consisting of a lever connected thereto, and provided with an adjustable balance-weight, said lever being mounted so that during the ascent of said bed it is rocked beyond the dead-point of balance substantially as described.

2. In a platen printing-press, the combination with a type-bed and means for rocking the same, of a counterweighted lever for balancing said bed, and springs connected to the latter and to said counterweighted lever, said springs being tensioned in proportion to the upward movement of the bed substantially as described for the purpose set forth.

3. In a platen printing-press, the combination with a type-bed, and means for rocking the latter, of a rearward extension to the latter, a counterweighted lever connected to said extension for balancing the bed, and springs connected to said extension and adjustably connected to the counterweighted lever, said springs being tensioned during the upward movement of the bed in proportion to the difference of the points of attachment of said springs to the counterweighted lever and of the latter to the bed respectively, substantially as described.




4. In a platen printing-press the combination of a type-bed and means for rocking the same, of a pivoted counterweighted lever connected to said bed and adapted to be rocked beyond the dead-point of balance before said bed reaches its highest position, springs connected at one end to said bed, and a pivoted lever also attached to the bed and to which the other ends of said springs are connected substantially as described for the purpose set forth.

5. In a platen printing-press, the combination with a type-bed, and means for rocking, balancing and controlling the movement of same, of an inking device comprising an inking-carriage, means for reciprocating the same over the bed, and means for pressing said inking-carriage on the bed with a uniform pressure at all points of its movement comprising a compensating lever pivoted to said reciprocating means, a spring connected to the latter and to the compensating lever the tension of said spring being constant, and a cam-path against which said compensating lever bears substantially as described.

6. In a platen printing-press, the combination with a type-bed and means for rocking balancing and controlling the movement of same, of an inking device adapted to be reciprocated over the bed, mechanism for locking the bed in its upper position comprising a pivoted lever connected to said bed, a disk, and means for rotating the same, a lever system operated by said disk, pawl-and-ratchet gear operated by said lever system, a cam connected to said pawl-and-ratchet gear, and a locking-lever acted upon by said cam and adapted to engage the aforesaid pivoted lever, and means for disconnecting the pawl-and-ratchet gear from said disk substantially as described.

7. In a platen printing-press, the combination with a type-bed and means for rocking, balancing and controlling the movement thereof, of an inking device adapted to be reciprocated over the bed, an inking-cylinder adapted to supply said inking device, and means for uniformly distributing ink on said cylinder, comprising a licking-roller, means for supplying the latter, levers supporting said licking-roller, arms adapted to be coupled and uncoupled to and from said levers, and means for rocking said arms from the bed substantially as described.

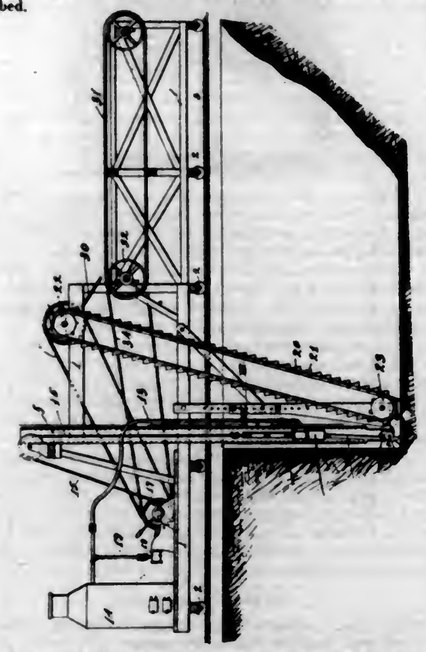
8. In a platen printing-press, the combination of a rocking type-bed, means for balancing and controlling the movement thereof, an inking device adapted to be reciprocated over said bed, means for pressing said inking device on the bed with a uniform pressure at all points of its movement, means for locking the bed in its upper position for inking purposes, an inking-cylinder adapted to supply said inking device, and means for uniformly distributing ink on said cylinder substantially as described.

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**757,459. TRENCH-DIGGER. JOHN HELM, St. Louis, Mo. Filed July 3, 1903. Serial No. 164,236. (No model.)**



*Claim.*—1. A trench-digger comprising a main frame having vertical guideways, an elongated framework movably mounted in said guideways, an engine mounted on said framework, and a cutter-head arranged to be actuated by said engine, substantially as described.



2. A trench-digger comprising a main frame having vertical guideways, an elongated framework movably mounted in said guideways, an engine mounted on said framework, and a cutter-head located at the lowermost portion of said framework and arranged to be actuated by said engine, substantially as described.

3. A trench-digger comprising a main frame having vertical guideways, an elongated framework movably mounted in said guideways, an engine mounted on said framework, a cutter-head located at the lowermost portion of said framework and arranged to be actuated by said engine, and means for hoisting said framework, all arranged so that the weight of the framework and of the engine feed the cutter continuously downward, substantially as described.

4. A trench-digger comprising a main frame having vertical guideways, an elongated framework movably mounted in said guideways, an engine mounted on said framework, a cutter-head located at the lowermost portion of said framework and arranged to be actuated by said engine, means for hoisting said framework, and means for gathering the loosened material, substantially as described.

5. A trench-digger comprising a main frame having vertical guideways, an elongated framework movably mounted in said guideways, an engine mounted on said framework, a cutter-head located at the lowermost portion of said framework and arranged to be actuated by said engine, means for hoisting said framework, means for gathering the loosened material, and a delivery-conveyer for the loosened material, substantially as described.

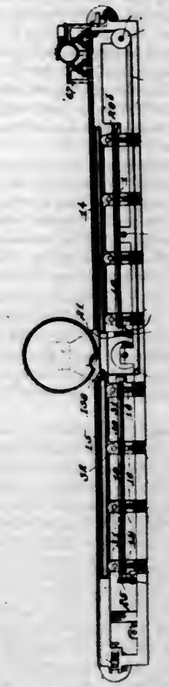
6. A trench-digger comprising a main frame having vertical guideways, an elongated framework movably mounted in said guideways, an engine mounted on said framework, a cutter-head located at the lowermost portion of said framework and arranged to be actuated by said engine, means for hoisting said framework, an adjustably-mounted gathering-conveyer for the loosened material and a delivery-conveyer for said loosened material, substantially as described.

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**757,460. PRINTING-PRESS. FREDERICK J. HERDLE, Chicago, Ill. Filed Mar. 21, 1903. Serial No. 148,970. (No model.)**

*Claim.*—1. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; and separate means for simultaneously raising and separately lowering said beds.

2. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; and separate means actuated by the traveling transfer-roller for simultaneously raising and separately lowering said beds.



3. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; an inking mechanism adapted to travel over the form-bed; and separate means for simultaneously raising and separately lowering said beds.

4. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; an inking mechanism adapted to travel over the form-bed; and separate means actuated by the traveling transfer-roller for simultaneously raising and separately lowering said beds.

5. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; a series of eccentrics for supporting one of said beds; and a sliding rod adapted to be moved by the traveling transfer-roller, for actuating said eccentrics to raise or lower said bed.

6. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; two series of eccentrics, one for supporting each of said beds; and a sliding rod for each of said series of eccentrics, adapted to be moved by the traveling transfer-roller for actuating said eccentrics to raise or lower said beds.

7. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; an inking mechanism adapted to travel over said form-bed; a series of eccentrics for supporting one of said beds; and a sliding rod adapted to be moved by the traveling transfer-roller, for actuating said eccentrics to raise or lower said bed.

8. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; an inking mechanism adapted to travel over the form-bed; a series of eccentrics for supporting each of said beds; and a sliding rod for each of said series of eccentrics, adapted to be moved by the traveling transfer-roller for actuating said eccentrics to raise or lower said beds.

9. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; a series of eccentrics for supporting one of said beds; a sliding rod adapted to be moved by the traveling transfer-roller; and a gear connection between said sliding rod and said series of eccentrics.

10. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller; means for traveling said roller over said beds successively; separate means actuated by the traveling transfer-roller for simultaneously raising and separately lowering said beds; and means actuated by the travel of said transfer-roller for reversing the direction of its travel.

11. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; separate means for lowering the printing-bed and the form-bed successively during the travel of the transfer-roller in one direction over said beds and for raising said beds simultaneously upon the reverse travel of the transfer-roller.

12. In a printing-press, in combination, a form-bed; a printing-bed; a transfer-roller adapted to travel over said beds successively; separate means for lowering the printing-bed and the form-bed successively during the travel of the transfer-roller in one direction over said beds and for raising said beds simultaneously upon the reverse travel of said transfer-roller; an inking mechanism; and means for traveling said inking mechanism over the form-bed.

13. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a transfer-roller adapted to travel forward and backward over said main frame independently of the inking mechanism; and means actuated by the travel of said roller for reversing the direction of travel of said inking mechanism.

14. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a clutch for changing the direction of travel of said inking mechanism; a transfer-roller adapted to travel forward and backward over said main frame; and an arm adapted to be actuated by said transfer-roller for operating said clutch to reverse the travel of said inking mechanism.

15. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a transfer-roller adapted to travel forward and backward over said main frame; means actuated by the travel of said roller for reversing the direction of travel of said inking mechanism; and means actuated by the travel of said inking mechanism for stopping the travel of said inking mechanism.

16. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a clutch for changing the direction of travel of said inking mechanism; a transfer-roller adapted to travel forward and backward over said main frame; an arm adapted to be actuated by the travel of said impression-roller for operating said clutch to reverse the direction of travel of said inking mechanism; and an arm adapted to be actuated by the travel of said inking mechanism for operating said clutch to stop the travel of said inking mechanism.

17. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a transfer-roller adapted to travel forward and backward over said main frame independently of the inking mechanism; and means actuated by the travel of said transfer-roller for starting the travel of said inking mechanism.

18. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a transfer-roller adapted to travel forward and backward over said main frame independently of the inking mechanism; means actuated by the travel of said inking mechanism for stopping the travel of said inking mechanism; and means actuated by the travel of said transfer-roller for starting the travel of said inking mechanism.

19. In a printing-press, in combination, a main frame; a form-bed on said main frame; an inking mechanism adapted to travel forward and backward over said form-bed; a transfer-roller adapted to travel forward and backward over said main frame; means actuated by the travel of said transfer-roller for reversing the direction of travel of said inking mechanism; means actuated by the travel of said inking mechanism for stopping the travel of said inking mechanism; and means actuated by the travel of said transfer-roller for again starting the travel of said inking mechanism.

20. In a printing-press, in combination, a carriage; a clutch for traveling said carriage forward and backward; a second carriage; an arm adapted to be operated by said second carriage and adapted to have an operative connection with said clutch; and means actuated by the travel of said first-mentioned carriage for disconnecting said arm from said clutch.

## 757,461. MEANS FOR SECURING IMPRESSION-SURFACES TO PRINTING-ROLLERS. FREDERICK J. HERDLE, Chicago, Ill. Filed Sept. 8, 1903. Serial No. 172,326. (No model.)



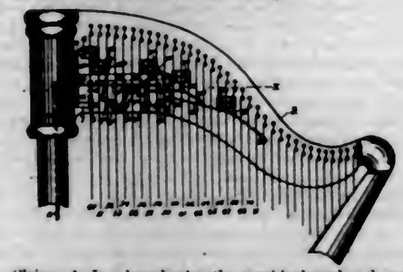
*Claim.*—1. In an impression-roller, in combination, a roller; an impression-blanket lying upon the periphery of said roller; and a peripheral series of hooks adjustably supported in each end of the roller for holding the sides of the blanket with relation to said roller.

2. In an impression-roller, in combination, a roller; an impression-blanket lying upon the periphery of said roller; means for securing upon said roller the ends of said blanket; and a peripheral series of hooks adjustably supported in each end of the roller for holding the sides of the blanket with relation to said roller.

3. In an impression-roller, in combination, a roller provided in its ends with a series of recesses; an impression-blanket lying upon the periphery of said roller; a hook lying in each of the recesses in said roller and adapted to engage the sides of said blanket; and means for moving said hooks to stretch said blanket.

4. In an impression-roller, in combination, a roller provided in its ends with a series of recesses; an impression-blanket lying upon the periphery of said roller; a hook lying in each of said recesses, said hooks having engaging points extending from the periphery of the roller in position to engage the sides of said blanket, each of said hooks also having a screw-threaded portion; and a nut on said screw-threaded portion for moving said hooks to stretch said blanket.

## 757,462. HARP. THOMAS J. HERSEE, Richmond, Ind. Filed Oct. 19, 1903. Serial No. 177,584. (No model.)



*Claim.*—1. In a harp having the usual body and neck and hollow column and head, a recess formed in the under side of the neck and communicating with the interior of the head, a plate secured to the neck on each side of said recess, a plurality of spindles pivoted between and by said plates, an arm extending up from each of said spindles between said plates, a shaft secured between said plates within said head, a plurality of bell-cranks pivoted on said shaft, a connecting-rod pivoted to each of said bell-cranks and to each of said arms of said spindles, an adjustable arm attached to each of said spindles outside of and adjoining one of said plates, a coil-spring surrounding said spindles, a plurality of adjustable plates secured on the side of the neck, an inner disk and an outer disk pivoted over said adjustable plates by a central screw, means for adjustably securing said outer disk to the inner disk circumferentially, a pair of fingers extending out from the face of the outer disks, an arm extending out from the inner disk, a connecting-bar pivoted at one end to said arm of the inner disk and pivoted at the other end to said adjustable arm, a rod pivoted to each of said bell-cranks and extending down through said column, all substantially as shown and described and for the purposes set forth.

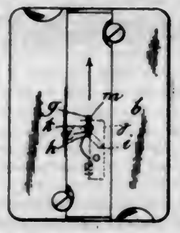
2. In a harp having the usual body, neck, head and hollow column, a recess formed in the under side of the neck adjacent to and in communication with the interior of the head, a plate secured to the neck on each side of said recess, a plurality of spindles pivoted to and between said plates, an arm extending up from each of said spindles between said plates, a shaft secured between said plates within the head, a plurality of bell-cranks pivoted on said shaft, a



connecting-rod pivoted to each of said bell-cranks and to each of said arms, an adjustable arm attached to each of said spindles, outside of said recess and adjoining one of said plates, a spring surrounding each of said spindles, a plurality of adjustable plates secured on the side of the neck, an inner and an outer disk pivoted over said adjustable plates, means for adjustably securing said outer disk to the said inner disk, a pair of fingers extending out from the face of the outer disk, an arm extending out from the inner disk, a connecting-rod pivoted at one end to said arm of the inner disk and pivoted at the other end to said adjustable arm, a plurality of strings suspended vertically between said body and neck and tuned eleven strings to the octave, a bass octave and a plurality of treble octaves, certain of said strings being disposed over said outer disks whereby they are adapted to be engaged by said fingers, all substantially as described.

3. In a harp having the usual body, neck and head, a hollow column vertically connecting the body and neck with the interposed head, a plurality of strings suspended between said body and neck and tuned eleven strings to the octave, a bass octave having an F, G, A, B-flat, B, C, C-sharp, D, E, F and F-sharp string with means for sharping the first, second and eighth of said strings, one or more treble octaves having a G, A, B-flat, B, C, C-sharp, D, E, F, F-sharp, and a G string with means for sharping the first and seventh of said strings, the said means for sharping certain of said strings consisting of the following instrumentalities: a recess formed in the under side of the neck adjacent to and in communication with the interior of the head, a plate secured to the neck on each side of said recess, a plurality of spindles pivoted by and between said plates, an arm extending up from each of said spindles between said plates, a shaft secured between said plates within the head, a plurality of bell-cranks pivoted on said shaft, a connecting-rod pivoted to each of said bell-cranks and to each of said arms, an adjustable arm attached to each of said spindles outside of said recess and adjoining one of said plates, a plurality of adjustable plates secured on the side of the neck, an inner and an outer disk pivoted over said adjustable plates, means for rotatably securing said outer disk to the inner disk, a pair of fingers extending out from the face of the outer disk, an arm extending out from the inner disk, a connecting-bar pivoted at one end to said arm of the inner disk and pivoted at the other end to said adjustable arm, and means for preventing rattling of the parts, all substantially as shown and described.

## 757,463. THREAD-CUTTING DEVICE FOR SEWING-MACHINES. JAMES T. HOGAN, Jersey City, N. J., assignor to the National Machine Company, Mamaroneck, N. Y., a Corporation of New York. Filed June 3, 1903. Serial No. 159,905. (No model.)



*Claim.*—1. In a sewing-machine, the combination with needle and shuttle thread mechanism, and a throat-plate having a needle-hole therein and a slot extending laterally from said needle-hole, of a stationary thread-cutting knife, arranged transversely of said slot and beneath the upper surface of said throat-plate and with its cutting edge facing said needle-hole, and a spring thread-gripping device arranged beneath the said thread-cutting knife, the cutting edge of said knife, and the receiving end of said gripping device, arranged to face in the direction of feed, whereby feeding movement of the work will be in a direction away from said knife and gripper, and thread held by the said gripper upon the removal of one piece of work will be withdrawn from the said gripper by the initial feeding movement of the next piece of work at the commencement of a fresh sewing operation.

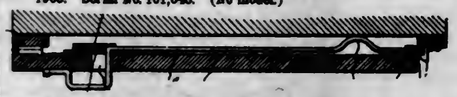
2. In a sewing-machine, the combination with needle and shuttle thread mechanism, and a throat-plate having a needle-hole therein and a slot extending laterally from said needle-hole, of a stationary abutment secured to the under side of the throat-plate and having one of its side faces arranged substantially in a line with said slot, a stationary thread-cutting knife secured between said abutment and the throat-plate, and with its cutting edge crossing said slot and facing said needle-hole, and a spring thread-clamping member secured to the side face of said stationary abutment, in a line with said slot.

3. In a sewing-machine, the combination with needle and shuttle thread mechanism, and a throat-plate having a needle-hole therein and a slot extending laterally from said needle-hole, of a stationary thread-cutting knife arranged beneath the upper surface of said throat-plate, and with its cutting edge transverse of the said slot and facing said needle-hole, and a thread-gripping device secured to the said throat-plate immediately beneath said cutting-knife, and comprising a stationary abutment having one side face substantially in a line with said slot, a spring gripping member secured thereto and means for adjusting the tension of the said spring member.

4. In a sewing-machine, the combination with needle and shuttle thread mechanism, and a throat-plate having a needle-hole therein and a slot extending laterally from said needle-hole, of a stationary thread-cutting knife arranged beneath the upper surface of said throat-plate, and with its cutting edge transverse of the said slot and facing said needle-hole, and a thread-gripping device secured to the said throat-plate immediately beneath said cutting-knife, and comprising a stationary abutment having one side face substantially in a line with said slot, a spring gripping member engaging same, and an adjusting-screw securing said spring member to said abutment, said screw arranged upon adjustment to adjust the tension of said spring member.

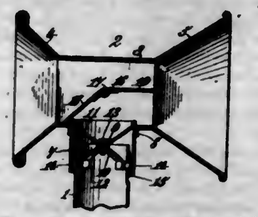
5. In a sewing-machine, the combination with needle and shuttle thread mechanism, and a throat-plate having a needle-hole therein and a slot extending laterally from said needle-hole, of a stationary thread-cutting knife arranged beneath the upper surface of said throat-plate, and with its cutting edge transverse of the said slot and facing said needle-hole, and a thread-gripping device secured to the said throat-plate immediately beneath said cutting-knife, and comprising a stationary abutment having one side face substantially in a line with said slot, a spring gripping member comprising a single strip of spring metal arranged to engage the side face of said stationary abutment at two points, and a securing and adjusting screw engaging spring member at a point intermediate its said points of engagement, and adjustable toward and away from the stationary abutment to adjust the tension of said spring member.

## 757,464. LATCH. OMER F. ISBELL, Blair, Wis. Filed June 11, 1903. Serial No. 161,040. (No model.)



*Claim.*—The combination with a pair of spaced catches, and swinging member intermediate the catches and adapted to close an opening, of a sliding bolt carried by the swinging member, and having oppositely-disposed bends near the respective ends, one of said bends extending through an opening in the swinging member, said bends forming handles, terminal bearings for the bolt carried on opposite sides of the door and in which the bolt is slidably mounted, an intermediate bearing adjacent to one of the bends and having a spring therein pressing against the bend in the bolt, and a free end on the bolt to independently engage either catch.

## 757,465. VENTILATOR. SAMUEL H. JACOBSON, New York, N. Y., assignor to National Ventilating Company, Newark, N. J., a Corporation of New Jersey. Filed Jan. 6, 1903. Serial No. 138,007. (No model.)



*Claim.*—1. The combination with a ventilating pipe or conduit, of a rotary cowl comprising a hollow transversely-extending body having an opening in the bottom wall thereof, a neck or tube secured to said body, extending through said opening and surrounding said pipe

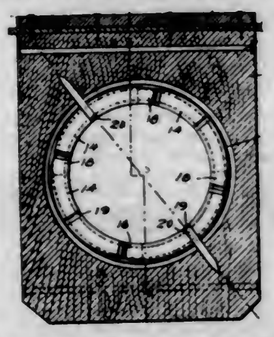
or conduit, bearing-plates located at the common center of said neck and pipe, by means of which said cowl is supported from and mounted to turn on said pipe, angularly-arranged arms leading upwardly from the upper of said plates and connecting the same with said neck, angularly-arranged arms leading downwardly from the lower of said plates and connecting the same with said pipe, and a valve in the body of said cowl forming a contracted passage therethrough and serving to cut off said opening from the direct current of air.

2. The combination with a ventilating pipe or conduit having openings in the sides thereof, of a rotary cowl comprising a hollow transversely-extending body having an opening in the bottom wall thereof, a neck or tube secured to said body, extending through the latter opening and having its upper end projecting above the bottom wall of said body, forming a shoulder, the said neck surrounding said pipe or conduit, bearings between said neck and pipe, located at the common center thereof, antifrictional rollers mounted within the openings in said pipe, projecting beyond the outer surface thereof and adapted to be engaged by the inner surface of said neck, and a valve in the body of said cowl, forming a contracted passage therethrough and serving to cut off said pipe from the direct current of air.

3. The combination with a ventilating pipe or conduit, of a cowl comprising a hollow transversely-extending body having an opening in the bottom wall thereof communicating with said pipe, a neck or tube secured to said body and extending through said opening, with its upper end projecting above the bottom wall of said body, forming a shoulder, the said neck surrounding said pipe or conduit and rotatably mounted thereon, and a valve in the body of said cowl, forming a contracted passage therethrough and serving to cut off said opening from the direct current of air.

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**757,466. DUST-GUARD.** BOZHE JACOBSEN, Minneapolis, Minn., assignor of one-fourth to David H. Howell, Minneapolis, Minn. Filed June 18, 1900. Serial No. 20,642. (No model.)



*Claim.*—1. The dust-guard, comprising the board 7 provided with an axle-hole and a groove 15, in combination with the ring of sections provided in said groove, encircling means holding and tending to compress said ring of sections, there being a square-shouldered groove in one or more of said sections and a square-shouldered pin or nail engaged therewith and driven into said board, substantially as described.

2. The dust-guard, comprising the board 7 provided with the axle-hole and the groove 15, in combination with the ring of metallic sections and a compression-spring provided in said groove, radial guide-grooves and pins or spikes preventing the rotation of said ring in said groove, substantially as described.

3. The dust-guard, comprising the single-piece board 7 provided with the axle-hole and the groove 15, in combination with the ring of metallic sections provided in said groove and having overlapping ends, a compression-spring encircling said ring of sections, and the guide-pins for said sections occupying radial positions in said groove and preventing the rotation of the ring of sections, substantially as described.

4. The dust-guard, comprising the guard proper provided with an axle-hole and having a V-groove in its upper edge, in combination with the flexible strip 9, a fastening or molding 11 whereby said strip is secured in said groove and the edges of said strip projecting beyond the surfaces of said board, as and for the purpose specified.

5. The bearing or packing ring for dust-guards comprising a plurality of curved metallic sections 14 provided with radial guide-grooves and having spring-retaining grooves, and retaining nails or pins for same, in combination with a compression-spring inclosing the ring of sections, substantially as described.

6. The dust-guard, comprising the board provided with an axle-hole and an annular groove 15, the packing-ring arranged in said groove and composed of inflexible sections of substantially the same width as said groove and having reduced ends which are overlapped, a compression-spring inclosing the ring of sections, grooves 19 and pins 20 for preventing the rotation of said ring in said board by permitting the expansion and contraction thereof in said groove, substantially as described.

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**757,467. TIE-PLATE.** WILLIS S. JONES, Chicago, Ill. Filed Oct. 16, 1902. Serial No. 127,498. (No model.)



*Claim.*—1. A corrugated tie-plate comprising upwardly-turned ribs adapted to support the rail and downwardly-turned ribs arranged alternately therewith adapted to afford engagement upon the tie at a plurality of points and lateral sharp inturned flanges adapted for engagement in the tie.

2. A tie-plate comprising thick side bars and an intermediate comparatively thin web, corrugations in said web providing alternate raised ribs approximately in the plane of the top of said side bars and downwardly-turned ribs intermediate the same in the plane of the bottom of said side bars.

3. A tie-plate comprising thick side bars and an intermediate comparatively thin web, corrugations in said web providing alternate raised ribs approximately in the plane of the top of said side bars and downwardly-turned ribs in the plane of the bottom of said side bars forming a plurality of points of contact with the tie and longitudinally-extending sharpened inturned flanges adapted to engage the tie.

4. A tie-plate comprising thick side bars, downwardly and inwardly turned sharp flanges integral therewith, an intermediate thin web connecting the side bars and corrugated longitudinally to provide upwardly-extending ribs approximately in the plane of the tops of said side bars and alternate downwardly-extending ribs lying in the plane of the bottom of said side bars, and a plurality of sharp longitudinal flanges intermediate of the middle and edges of the plate and together with the lateral flanges adapted to engage in and compress the material of the tie beneath and at the sides of the plate.

5. A tie-plate comprising thick side bars, an intermediate comparatively thin web connecting the same, a plurality of wave-like corrugations in said web, the upper surfaces of said corrugations corresponding with the upper surfaces of the side bars and the lower surfaces thereof corresponding with the bottom of the side bars, the ends of alternate bends in the web being permanently closed, and means on the under side of said plate adapted to positively engage in a tie or the like.

6. A tie-plate comprising lateral supporting-bars and an intermediate web of less thickness integrally connecting the same, integral downwardly and longitudinally extending sharp flanges at the margins of said side bars and of said web adapted to engage in the tie, corrugations in said web providing upwardly-turned bends and downwardly-directed bends adapted to support the rail and for engagement on the tie respectively, and downwardly-turned sharp flanges at the ends of one or more of said corrugations presenting vertical flat faces against the grain of the tie and acting to resist lateral thrust.

7. A corrugated tie-plate provided transversely at one or both ends with downwardly-directed vertical-faced chisel-pointed flanges adapted to engage transversely the grain of the tie and to resist lateral thrust from the rail.

8. A tie-plate comprising thick side bars, an intermediate thin web integral therewith and corrugated longitudinally to provide ribs having thin contact-surfaces alternately in the planes of the top and the bottom of said side bars, and downwardly-turned vertically-faced, chisel-pointed flanges on one or more of the upper ribs of said corrugations adapted to engage transversely in the grain of the tie and to resist lateral thrust and closing the space below said ribs.

9. As an article of manufacture, a tie-plate comprising alternate upwardly and downwardly directed corrugations, and a plurality of integral longitudinal sharp flanges disposed along the margins and intermediate of the margins of said plate, and transverse chisel-pointed flanges integral with one or more of said upwardly-directed corrugations, acting positively to engage in the grain of the tie and closing the ends of said corrugations.

10. A tie-plate provided at one end and intermediate of its ends with a plurality of sharp downwardly-turned, vertical-faced, transverse flanges extending below the lower surface of the plate.

11. A corrugated tie-plate provided intermediate of its ends on its lower side with a plurality of integral, downwardly-turned, sharp-edged flanges extending transversely of the plate and arranged staggering thereon and each having a vertical, flat face directed toward one end of the plate and acting to resist lateral thrust from the rail when supported thereon.

12. A tie-plate comprising thick side bars having integral downwardly and inwardly turned sharp flanges along each edge thereof, an intermediate thin corrugated web connecting said side bars and a plurality of downwardly-directed transverse flanges at the ends and intermediate of the ends of the plate, some of which close corrugations.

13. A corrugated tie-plate having integral sharp depending longitudinal flanges at the sides and intermediate of the sides of the plate and sharp-edged transverse flanges each presenting an approximately vertical face toward the outer end of the plate.

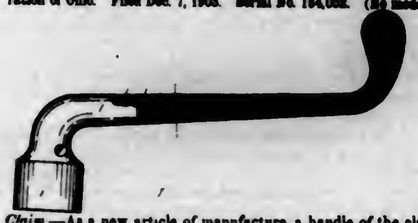
14. A tie-plate corrugated longitudinally and having a central portion thinner than its sides, sharp depending integral flanges extending longitudinally of the corrugations and a plurality of transverse sharp flanges extending below and closing certain of the corrugations at the ends and intermediate of the ends.

15. A corrugated tie-plate having thick sides and a thin corrugated intermediate portion, a plurality of sharp longitudinal flanges extending at right angles with the plate below the corrugations and transverse chisel-pointed flanges at the ends and intermediate of the ends of the corrugations presenting flat vertical faces toward the end of the plate.

16. A corrugated tie-plate provided transversely with one or more downwardly-directed vertical-faced flanges adapted to engage transversely the grain of the tie and to resist lateral thrust from the rail.

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**757,468. BRAKE-HANDLE.** CLAUDE J. KEPLINGER, Canton, Ohio, assignor to the Canton Hard Rubber Company, Canton, Ohio, a Corporation of Ohio. Filed Dec. 7, 1903. Serial No. 184,092. (No model.)



*Claim.*—As a new article of manufacture, a handle of the class described, adapted to be attached to the brake or controlling mechanism of a car, consisting of a metal center or base, the personal-contact surface of said metal center or base provided with a permanent and integral outer insulating-shell, substantially as and for the purpose set forth.

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**757,469. RETORT COKE-OVEN.** ANDREW C. KLOMAN, Saxton, Pa., assignor of one-fifth to William M. Scott, Saxton, Pa. Filed May 26, 1903. Serial No. 158,790. (No model.)

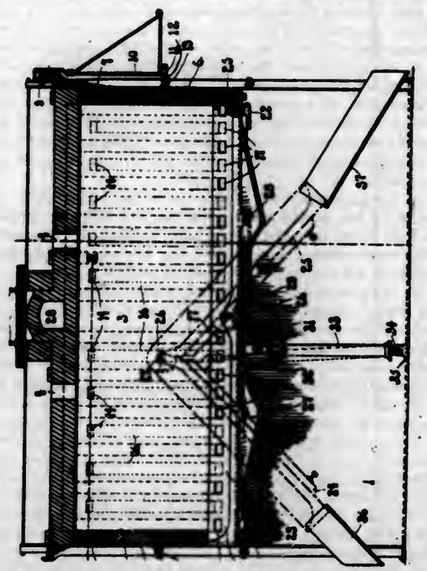
*Claim.*—1. In a retort coke-oven, a horizontal flue-containing bottom pivotally mounted, and means for swinging the same into an inclined position.

2. In a retort coke-oven, a horizontal flue-containing bottom capable of being flexed, and means for flexing the same.

3. In a retort coke-oven, a horizontal flue-containing bottom composed of pivotally-connected sections, and means for causing the pivoted portion to assume a higher position than the end portions, whereby a fulcrum is formed for breaking apart the cake of coke and inclined beds are provided for the separated parts of the cake.

4. In a retort coke-oven, a horizontal bottom, composed of pivotally-connected sections, and means for elevating the pivoted portion of the same, whereby a fulcrum is formed for breaking apart the cake of coke and inclined beds are provided for the separated parts of the cake.

5. In a retort coke-oven, a horizontal bottom composed of sections hinged together, one section having a fixed pivot and the other having a support capable of travel when the sections are flexed.



6. In a retort coke-oven, a horizontal bottom, composed of sections hinged together, one section having wheels, and a track on which said wheels travel when the sections are flexed.

7. In a retort coke-oven, a movable bottom for the same, containing therein a portion of the oven-flues.

8. In a retort coke-oven, a series of parallel ovens, walls common to each two adjoining ovens, and a series of uptake and downtake flues in each wall, the uptake receiving gases given off from one oven and the downtakes receiving gases given off from the other oven.

9. In a retort coke-oven, a series of parallel ovens, walls common to each two adjoining ovens, a series of uptake and downtake flues in each wall associated respectively with said ovens, an offtake-flue common to each series of uptake and downtake flues, and a main offtake-flue common to the other offtake-flues.

10. In a retort coke-oven, a series of parallel ovens, the side walls between the adjoining ovens having two sets of flues, one set connected to the heating-flues of the oven on one side of the wall and the other to those of the oven on the other side thereof, one of the walls at one end of the series having both sets of flues whereby an additional oven may be built adjoining said wall without any change in said wall.

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**757,470. GAME.** JEREMIAH R. KNAPP, Norwalk, Ohio, assignor of one-half to Samuel C. Tyler, Norwalk, Ohio. Filed Aug. 17, 1903. Serial No. 169,513. (No model.)



*Claim.*—1. In a game-board, the combination of a playing-field, of an alley located alongside the field and of sufficient width to permit the play therethrough of different sizes of balls, said alley at one end having a return-spring arranged to cause the rebound of a ball striking the same, and an obstruction defining the boundary between the alley and field, said obstruction being located above the surface sufficiently to permit the passage thereunder of the smaller ball and retain the larger one in the alley.

2. In a game-board, the combination with a playing-field, of an alley located longitudinally alongside the field and of sufficient width to permit the play therethrough of different sizes of balls, said alley

having at one end a longitudinally-disposed partition forming a reduced ball-receiving pocket and having at its other end a return-spring arranged to cause the rebound of a ball striking the same, and a bar defining the boundary between the alley and field, said bar being located above the surface sufficiently to permit the passage thereunder of a small ball and to retain a larger one in the alley.

3. In a game-board, the combination with a transversely-concaved playing-field provided in its surface with a series of ball-receiving pockets, of a straight alley located alongside the field and having a closed outer side and closed ends, and a bar defining the boundary between the alley and field, said bar being arranged above the surface to permit the passage thereunder of balls of a predetermined size.

4. In a game-board, the combination with a playing-field, of an alley, and a bar located between the alley and field and elevated above the surface thereof, said field being provided with a plurality of transversely-disposed grooves extending from one side of the field beneath the bar and having ball-receiving pockets.

5. In a game-board, the combination with a playing-field, of an alley located alongside the playing-field and of sufficient width to permit the free passage of balls of different sizes, and an obstruction defining the boundary between the alley and field, said obstruction being located above the surface of the same sufficiently to permit the passage thereunder of the smaller ball and at the same time retain the larger one in the alley, said playing-field having grooves in its surface that extend from points contiguous to the obstruction.

6. In a game-board, the combination with a centrally-disposed transversely-concave playing-field, of alleys located on opposite sides of the field, and bars located longitudinally of the board and spaced above the surface thereof, said bars defining the field and alleys.

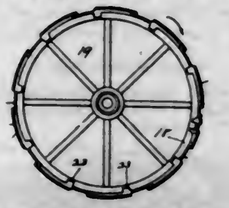
7. In a game-board, the combination with a centrally-disposed playing-field, of alleys located on opposite sides thereof and at the sides of the board, longitudinally-disposed bars defining the alleys and field and elevated above the surface of the board, said field having transversely-disposed grooves extending beneath the bars and having a series of pockets located in staggered relation.

8. In a game-board, the combination with a transversely-concaved playing-field, of alleys arranged longitudinally along the opposite sides of the field, said alleys having closed ends and outer walls, and bars defining the opposite side walls of the field and the inner walls of the alleys, said bars being elevated above the surface to permit the passage thereunder of balls of a predetermined size.

9. In a game-board, the combination with a transversely-concave playing-field, having transverse grooves provided with pockets, of alleys located at the sides of the field, longitudinally-disposed bars elevated above the surface of the board and defining the field and alleys, a longitudinally-disposed partition located in one end of each alley, and a return-spring arranged in the opposite end of each alley.

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**757,471. TRACTION-BAND FOR WHEELS.** LE GRAND KNIGHT, Chicago, Ill. Filed Sept. 28, 1903. Serial No. 174,870. (No model.)



*Claim.*—1. A traction-band, comprising a series of interlocking links having lugs on one of their surfaces to engage the tire or felly, and means to tighten the band circumferentially on the wheel, substantially as described.

2. A traction-band comprising a series of interlocking links having lugs on their inner surfaces to engage the tire or felly and raised portions on their outer surfaces, and means to tighten the band circumferentially on the wheel, substantially as described.

3. A traction-band comprising a series of links united together, each link consisting of two members having their ends approximated and provided at one of their ends with a recess and at their other ends with a transverse portion, substantially as described.

4. A traction-band comprising a series of links united together, each link consisting of two members having their ends approximated and provided at one of their ends with a recess and at their other ends with a transverse portion, said members also having on one of their surfaces lugs to engage the tire or felly and on the other surface raised portions, substantially as described.

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**757,472. CANDY-FLATTING MACHINE.** HENRY G. LAPOE, Chicago, Ill. Filed Sept. 14, 1903. Serial No. 173,087. (No model.)



*Claim.*—1. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, journaled to revolve in angular relation one to the other, and means for causing said disks to revolve in unison, substantially as set forth.

2. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, one of which is formed with a conical marginal portion, means journaling said disks in angular relation one to the other, and means for causing said disks to revolve in unison, substantially as set forth.

3. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, journaled to revolve in angular relation one to the other, and means for causing said disks to revolve in unison, the same comprising a driving-pin on one disk engaging an orifice in the other disk, substantially as set forth.

4. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, one of which is formed with a conical marginal portion, means journaling said disks in angular relation one to the other, and means for causing said disks to revolve in unison, the same comprising a driving-pin on one disk engaging an orifice in the other disk, substantially as set forth.

5. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, journaled to revolve in angular relation one to the other, a tangential discharge-plate arranged between said disks, and means for causing said disks to revolve in unison, substantially as set forth.

6. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, means journaling said disks in angular relation one to the other, a tangential discharge-plate arranged between said disks and means for causing said disks to revolve in unison, substantially as set forth.

7. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, journaled to revolve in angular relation one to the other, a guide-plate and a tangential discharge-plate arranged between said disks, and means for causing said disks to revolve in unison, substantially as set forth.

8. In a candy-flatting machine, the combination of a supporting-base, a pair of opposed flatting-disks, one of which is formed with a conical marginal portion, means journaling said disks in angular relation one to the other, a guide-plate and a tangential discharge-plate arranged between said disks, and means for causing said disks to revolve in unison, substantially as set forth.

9. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for the upper flatting-disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, and means for causing said disks to revolve in unison, substantially as set forth.

10. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, one of said disks having a conical marginal portion, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for said upper disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, and means for causing said disks to revolve in unison, substantially as set forth.



11. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for the upper flatting-disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, and a driving-pin on one disk engaging in an orifice in the other disk and cause a rotation of both disks in unison, substantially as set forth.

12. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, one of said disks having a conical marginal portion, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for said upper disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, and a driving-pin on one disk engaging in an orifice in the other disk and cause a rotation of both disks in unison, substantially as set forth.

13. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for the upper flatting-disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, a tangential discharge-plate arranged between said disks, and means for causing said disks to revolve in unison, substantially as set forth.

14. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for the upper flatting-disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, a guide-plate and a tangential discharge-plate arranged between said disks, and means for causing said disks to revolve in unison, substantially as set forth.

15. In a candy-flatting machine, the combination of a supporting-base, an under flatting-disk journaled upon a central boss on said base and provided with an annular rack on its under side, an upper flatting-disk journaled in angular relation to the under flatting-disk, an obliquely-arranged journal-stud socketed in the central boss aforesaid and forming a journal-bearing for the upper flatting-disk, a driving-shaft carrying a bevel-pinion meshing with the annular rack aforesaid, a spiral spring interposed centrally between said disks, a screw-threaded extension at the upper end of said stud, a nut engaging the same, and an interposed washer having a non-rotative longitudinal adjustment on said extension, substantially as set forth.

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**757,473. HOOF-PAD.** ELMER E. LEMON, Millersburg, Ohio, assignor of one-half to Charles March, Millersburg, Ohio. Filed Sept. 1, 1903. Serial No. 171,837. (No model.)

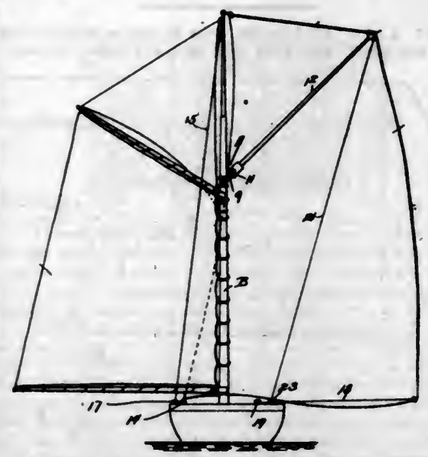


*Claim.*—As an improved article of manufacture, a hoof-pad formed of a single piece of sheet metal, and provided with a V-shaped opening extending slightly beyond the frog, the edges of said V-shaped opening provided with upturned flanges, said flanges curved to fit the adjacent surface of the frog, the pad formed of a size adapted to be clamped at its edges between the hoof and shoe, and located entirely within the line of the shoe-attaching nails, substantially as specified.

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**757,474. SPINNAKER-SAIL.** GEORGE A. LOWRY, Chicago, Ill. Filed Sept. 15, 1902. Serial No. 123,416. (No model.)

*Claim.*—1. The combination with a mast, of a spinnaker sprit or boom connected to the mast near its top or head, and a spinnaker-sail having its upper outer corner connected to said boom, and a sheet connected to the upper inner corner of said sail and leading to the mast at a point above said sprit or boom, as and for the purpose set forth.



2. The combination with a mast, of a sprit or boom pivotally connected thereto at a point adjacent to the masthead and connected at its free end to the upper corner of a spinnaker-sail, and a sheet connected to the upper inner corner of said sail and leading to the mast at a point above said sprit or boom, as and for the purpose set forth.

3. The combination with a mast, of a spinnaker sprit or boom connected thereto through a universal-joint connection, and a spinnaker-sail having its upper outer corner connected to the free end of said boom, and a sheet connected to the upper inner corner of said sail and leading to the mast at a point above said sprit or boom, as and for the purpose set forth.

4. The combination with a mast, of a spinnaker sprit or boom connected thereto through a universal-joint connection at a point adjacent to the masthead, and a spinnaker-sail having its upper outer corner connected to the free end of said boom, and a sheet connected to the upper inner corner of said sail and leading to a point on said mast above the sprit or boom, as and for the purpose set forth.

5. A spinnaker-sail of substantially rectangular shape, a spinnaker sprit or boom having its outer free end connected to the upper and outer corner of the sail, and operating ropes or lines connected to the other corners of the sail, the rope or line connected to the upper inner corner of said sail leading to a point above said sprit or boom as and for the purpose set forth.

6. A spinnaker-sail of substantially rectangular shape connected at its inner lower corner to the boat, a sprit or boom having its outer or free end connected to the upper and outer corner of the sail, and sheets connected to the other corners of said sail, the sheet connected to the upper inner corner leading to a point above the sprit or boom, as and for the purpose set forth.

7. A spinnaker-sail of substantially rectangular shape having its lower inner corner connected to the boat, a sprit or boom connected to the diagonally opposite corner, and operating-lines connected to the other corners of said sail, the line connected to the upper inner corner leading to a point above the sprit or boom as and for the purpose set forth.

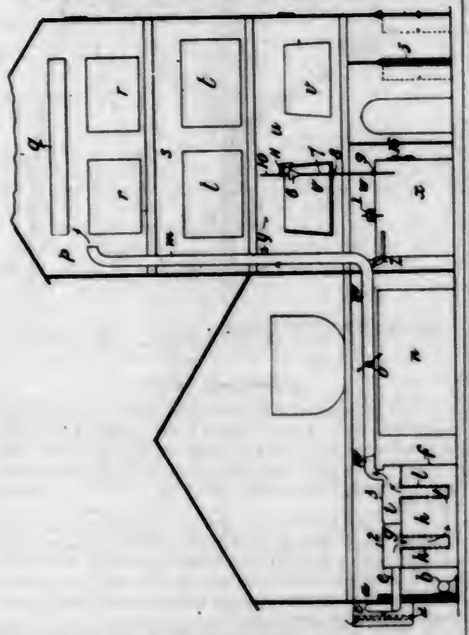
8. The combination with a mast, of a spinnaker sprit or boom hinged or pivotally connected thereto at a point near the masthead, a spinnaker-sail of substantially rectangular shape having its outer upper corner connected to the free end of said sprit or boom and its diagonally opposite corner connected to the boat, and a hoisting-line connected to the outer free end of said sprit or boom, and to the upper inner corner of the sail and leading to the mast at a point above the point of pivotal connection of the sprit or boom; all combined and arranged as and for the purpose set forth.

9. The combination with a mast, of a spinnaker sprit or boom pivotally connected near the masthead, a spinnaker-sail of substantially rectangular shape having its outer upper corner connected to the free end of said boom, a hoisting-rope connected to the upper inner corner of said sail and leading to the mast at a point above the point of pivotal connection of the sprit or boom to the mast, braces or stay-ropes also connected to the free end of said boom.

and a clue-line connected to the lower outer corner of said sail, all combined and arranged as and for the purpose set forth.

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757,475. AIR-PURIFIER. JOHN ST. PATRICK MACARDLE, Dundalk, Ireland. Filed Nov. 2, 1903. Serial No. 179,500. (No model.)



*Claim.*—1. Apparatus for filtering and purifying air comprising a casing divided into compartments, hollow filtering elements in each compartment, means to force the air in one direction through the elements in one compartment and through the elements in the next compartment in another direction, substantially as set forth.

2. Apparatus for filtering or purifying air supplied to a brewery or other building comprising a fan, a casing divided into compartments, a horizontal partition having a number of slots, a number of open or skeleton inner frames, a number of open or skeleton outer frames, filtering material intermediate the outer and inner frames and flanges attached to the said frames, said flanges being adapted to be attached to the said partition so that the interiors of the filter-frames are open to one compartment in the casing and the exteriors of the said filter-frames are within another compartment in the casing substantially as described and shown.

3. Apparatus for filtering or purifying air supplied to a brewery or other building comprising a fan, a casing divided into compartments, a horizontal partition having a plurality of slots, a gutter surrounding each of the said slots, filled with liquid, filter-frames consisting of a plurality of open or skeleton outer frames, a plurality of open or skeleton inner frames, filtering material intermediate the said outer and inner frames and a vertical flange surrounding each filter-frame adapted to dip into the said gutters and to make a seal, a cover for the said casing, means for fixing the said filter-frames to the partition in such manner that the interiors of the filter-frames are open to one compartment in the casing and the exteriors of the said filter-frames are within another compartment and means for fixing the said cover to the casing substantially as set forth.

4. Apparatus for filtering or purifying air supplied to a brewery or other building comprising a fan, a casing divided into four compartments, a horizontal partition dividing the two upper from the two lower compartments the first compartment being in connection with the fan and the last compartment opening to the place to be supplied with purified air, a plurality of slots in said partition, a gutter surrounding each of the said slots filled with liquid to form a seal a gutter surrounding the top of the said casing and containing liquid, filter-frames so arranged that the interiors of the said frames are open to one compartment in the casing and the exteriors thereof are within another compartment in the casing such frames consisting of a plurality of open or skeleton outer frames, a plurality of open or skeleton inner frames, filtering material intermediate the said outer and inner frames and a vertical flange surrounding each filter-frame adapted to dip into the said gutters and to make a seal, means for fixing the said filter-frames to the partition, a pipe or coil for supplying hot air or steam or cold air, a perforated pipe or coil for supplying steam for sterilizing purposes, a cover for the said casing a vertical flange depending from the said cover and adapted to form a seal with the liquid in the gutter surrounding the casing and means for securing the cover to the casing substantially as set forth.

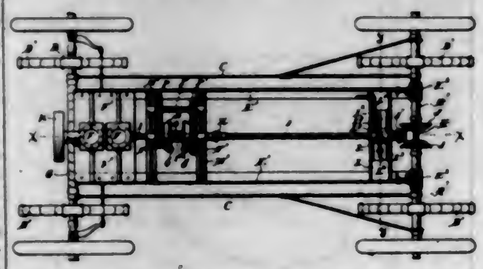
5. Apparatus for filtering or purifying air supplied to a brewery or other building comprising a fan, a casing divided into four compartments, a horizontal partition dividing the two upper from the two lower compartments, the first compartment being in connection with the fan and the last compartment opening to the place to be supplied with purified air, a valve to close said opening when the fan is not working, a gutter surrounding the top of the said casing and containing liquid, a plurality of slots in said partition, a gutter surrounding each of the said slots and containing liquid, filter-frames so arranged that their interiors are open to one compartment and their exteriors are within another compartment in the said casing, such frames consisting of a plurality of open or skeleton outer frames, a plurality of open or skeleton inner frames, filtering material intermediate the said outer and inner frames and a vertical flange surrounding each filter-frame adapted to dip into the said gutters surrounding the slots and to make a seal, means for fixing the said filter-frames to the partition, a pipe or coil for supplying hot air or steam or cold air, a perforated pipe or coil for supplying steam for sterilizing purposes, a cover for the said casing a vertical flange depending from the said cover and adapted to form a seal with the liquid in the gutter surrounding the casing and means for securing the cover to the casing substantially as set forth.

6. Apparatus for filtering and purifying air comprising a casing divided into compartments, a plurality of hollow fibrous filtering elements in each compartment, means to force air through the compartments and hollow elements from the exterior to the interior of the elements in one compartment and the interior to the exterior of the elements in the next compartment alternately, substantially as set forth.

7. Apparatus for filtering and purifying air comprising a casing divided into compartments, a set of hollow fibrous filtering elements in the compartments, means to force air in one direction through the elements in one compartment and in an opposite direction through the elements in another compartment, and means in one or more of the compartments to sterilize the air as it passes from one set of hollow elements to another, substantially as set forth.

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757,476. VEHICLE RUNNING-GEAR. CHARLES P. MALCOLM, Owosso, Mich. Filed Apr. 18, 1903. Serial No. 153,232. (No model.)



*Claim.*—1. In a motor-vehicle running-gear, the combination of the driving-axle, and the vehicle-body and engine supported on springs each entirely independent of the other, an engine-supporting frame pivoted at one end on the driving-axle and at its other end spring-supported from the other axle, the engine having a shaft extended rearward, and a balance-wheel on said shaft forward of the front spring, a pivotal support for the rear end of said shaft and a universal joint in said shaft between said pivotal support and the balance-wheel.

2. In a motor-vehicle running-gear, the combination of a driving-axle, a vehicle-body and an engine supported on springs each entirely independent of the other, an engine-supporting frame pivoted at one end of the driving-axle and at the other spring-supported from the other axle, the engine-shaft extended rearward, a balance-wheel on the said shaft forward of the front spring, a laterally-movable bearing for the rear end of the shaft, and pivoted means in said bearing adapted to be moved to change the angle thereof.

3. In a motor-vehicle running-gear the combination, with the driving-axle, of an engine-supporting frame pivotally secured at one end to said axle and spring-supported at its opposite end, an engine on said frame having a divided driving-shaft extending longitudinally of the frame in a line described radially from the driving-axle, a balance-wheel on said shaft forward of the front spring, a gear on said shaft, a gear on the axle in mesh with said gear, a counter-shaft extending parallel with the driving-shaft, frames provided with bearings for the divided ends of the driving-shaft and the counter-shaft and secured to the frame, a sleeve connecting the divided ends of the drive-shaft and splined to the driving ends, friction-cones on said sleeve, a small gear sleeved on the shaft at one side of the sleeve and provided with a friction-cup, a large gear secured to the shaft at the other side of the sleeve and also provided with a cup, a large gear secured to the counter-shaft in mesh with the small gear, and a small gear on the counter-shaft in mesh with the large gear.

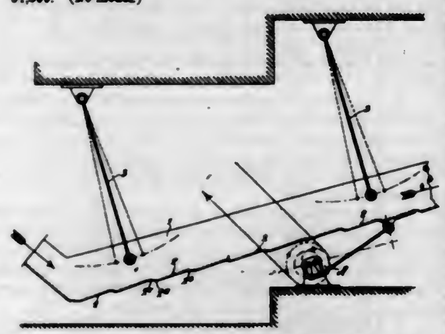
4. In a motor-vehicle running-gear, the combination of an engine supported at the forward end entirely independent of the vehicle-body, a rearwardly-extending engine-shaft, a balance-wheel on the forward end thereof in advance of the support of the engine, a flexible joint in said shaft, a laterally-movable bearing-ring for the rear end of said shaft, a bearing-block pivotally mounted in said ring, and means for changing the angle of said bearing-block.

5. In a motor-vehicle running-gear, the combination of an engine supported at the forward end entirely independent of the vehicle-body, a rearwardly-extending engine-shaft, a balance-wheel on the forward end thereof in advance of the support of the engine, a flexible joint in said shaft, a laterally-movable bearing-ring for the rear end of said shaft, a bearing-block pivotally mounted in said ring, means for changing the angle of said bearing-block and means preventing longitudinal movement of said block within said ring.

6. In a motor-vehicle running-gear, the combination of an engine supported at the forward end entirely independent of the vehicle-body, a rearwardly-extended engine-shaft, a balance-wheel thereon, a laterally-movable bearing-ring for the rear end of said shaft, means pivoted in said ring, and means for changing the angle of said means.

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757,477. APPARATUS FOR CONVEYING MATERIALS. HERMANN MARCUS, Cologne, Germany. Filed Sept. 28, 1900. Serial No. 31,399. (No model.)



*Claim.*—1. In an apparatus for conveying materials, the combination of a carrier effecting motion of the material, guided in a right line, and means substantially as described, imparting to said carrier and material carried thereby a progressively-accelerating motion in a forward direction and drawing said carrier beneath the material by a reverse movement quick at first and progressively retarded in speed in the return stroke, as explained.

2. In an apparatus for conveying materials, the combination of the chute 1 having at bottom carrying-surfaces 2 gradually inclined upward in a forward direction from $2^a$ to $2^b$ and shoulders $2^c$, $2^c$ at rear of said carrying-inclines, means for guiding said chute longitudinally in an approximately rectilinear longitudinal movement, connecting-rods 13 jointed at one end to the chute; and crank mechanism substantially as described, pivoted to the opposite ends of the connecting-rods and actuating the chute in a reciprocating movement accelerating uniformly in speed from beginning toward the end of the forward stroke and by a reverse movement quick at first and uniformly diminishing in speed to the end of the backward stroke, as and for the purposes explained.



757,478. AUTOMATIC DYEING APPARATUS. JAMES MARSHALL, Fall River, Mass. Filed Jan. 7, 1904. Serial No. 188,061. (No model.)



*Claim.*—1. In an automatic dyeing apparatus, the combination of a vat adapted to hold dye liquor, perforated partitions separating said vat into cross-sections, a longitudinal shaft passing through said partitions, and forks arranged upon said shaft operating between said partitions substantially as described and shown.

2. In an automatic dyeing apparatus the combination of a vat adapted to hold dye liquor, perforated partitions dividing said vat into cross-sections, a longitudinal shaft through the vat, stirring-forks arranged between said partitions radiating from said shaft, and mechanism operating said shaft to raise the materials being dyed upon said forks, suspending them above the liquor an appreciable time whereby the dye is absorbed into the fabric, lowering the materials and stirring them through the liquor, raising them at the opposite side, an appreciable suspension, and automatically repeating the process by a reciprocatory movement substantially as described and shown.

3. In an automatic dyeing apparatus the combination of a vat adapted to hold dye liquor, perforated cross-partitions dividing said vat into sections, through which the dye liquor flows and wherein different materials to be dyed may be arranged to be dyed in the one operation, a longitudinal shaft passing through said partitions, and forks operating in each section to stir and raise the materials with a reciprocatory movement substantially as described and shown.

4. In an automatic dyeing apparatus the combination of a vat adapted to hold dye liquor, perforated partitions dividing said vat into cross-sections a longitudinal shaft carrying radiating forks operating between said sections arranged in said vat, means to give a reciprocatory movement to said shaft, and means to limit the extent of said movement substantially as described and shown.

5. In a dyeing apparatus the combination of an inclosed vat adapted to hold dye liquor, perforated partitions dividing said vat into cross-sections, means for stirring the materials to be dyed automatically within said inclosure actuated and controlled from without, steam and water admission conduits controlled from without, and a vent to said inclosure for carrying away the vapors arising from the dye liquor, substantially as described and shown.

6. In an automatic dyeing apparatus the combination of a vat adapted to hold dye liquor, perforated partitions dividing said vat into cross-sections, a longitudinal shaft through the vat, stirring-forks operating between said partitions radiating from said shaft, and mechanism operating said shaft to raise the materials being dyed upon said forks, rotating them slowly above the liquor an appreciable time whereby the dye is absorbed into the fabric, lowering them gently at the opposite side, and stirring them through the dye liquor by a slow rotary motion substantially as described and shown.

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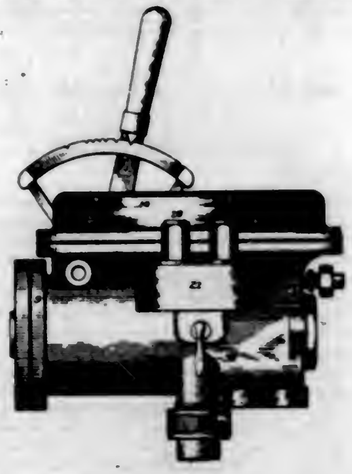
757,479. VALVE MECHANISM. HARRY R. MASON, Chicago, Ill., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Aug. 16, 1901. Serial No. 72,345. (No model.)

*Claim.*—1. A feed device for an engineer's brake-valve, comprising a casing, two pressure devices in said casing, arranged to act at different pressures, and a separate valve for throwing the lower pressure device out of action, in order to insure the operation of the higher pressure device, substantially as described.

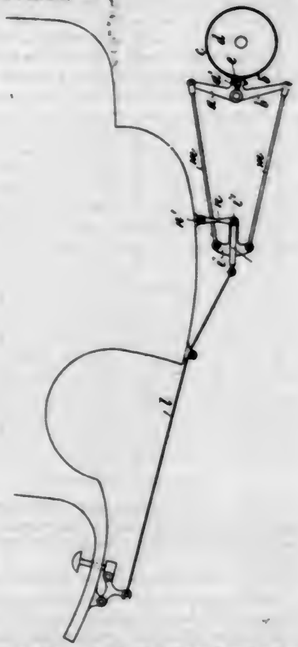
2. A pressure device, comprising a casing, two valvular structures therein for controlling the flow of fluid therethrough, arranged to act at different pressures, and an independent valve for throwing the lower pressure structure out of action, in order to insure the operation of the higher pressure structure, substantially as described.

3. The combination with an engineer's brake-valve of a feed device comprising a casing containing two valves controlling communication between the main reservoir and train-pipe, the valves being set to open at different pressures, and means independent of the engineer's valve for cutting the low-pressure valve out of operation.

4. The combination with an engineer's brake-valve of a feed device comprising a casing containing two spring-actuated valves for controlling communication between the main reservoir and train-pipe, the springs being adjusted for different pressures, and an independent valve for cutting the low-pressure feed-valve out of operation.



## 757,480. BAND OR STRAP BRAKE. PETER C. MIDDLETON and WILLIAM S. H. SMITH, Croydon, England. Filed May 3, 1903. Serial No. 156,284. (No model.)



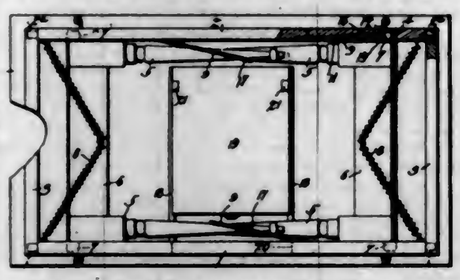
*Claim.*—1. A band-brake, to act in either direction dependent upon the direction of rotation of the brake-drum, consisting of a pair of levers pivotally fixed and connected to the crossed ends of the brake-band; a fixed stop located between said levers adapted to limit their motion toward one another; and alternative means for transmitting the motion of the operating-lever to one or the other of said levers, as set forth.

2. A band-brake to act in either direction dependent upon the direction of rotation of the brake-drum, consisting of a pair of levers pivotally fixed: a band encircling said drum the ends of which are crossed and connected to the said levers; a fixed stop located between said levers adapted to limit their motion toward one another; a yoke pivotally and movably mounted; a pair of connectors connecting the yoke to the said levers; and means for transmitting the motion of the operating-lever to said yoke, substantially as set forth.

3. A band-brake to act in either direction dependent upon the direction of rotation of the brake-drum, consisting of a pair of levers—each connected to its respective connector and to the crossed ends of the brake-band; a fixed stop located between said levers to enable either of them to act as the fixed end of the brake-band; and an alternative device to enable either of the connectors to transmit the motion of the operating-lever to its respective lever, as set forth.

4. The combination with a pair of levers each connected to its respective connector and to the crossed ends of the brake-band, and a fixed stop located between said levers to enable either of them to serve as the fixed end of the brake-band, of a rocking yoke (pivotally and movably mounted) connected at its ends to the said connectors and at its pivot to the operating-connector of the hand or foot lever, substantially as set forth.

## 757,481. FOLDING TABLE. WALTER R. MONTGOMERY, Shreveport, La. Filed Nov. 28, 1902. Serial No. 133,126. (No model.)



*Claim.*—1. A table having a top provided with ways terminating short of the edges of the table, a drawer arranged in the said ways and adapted to be moved in the center of the table and provided at its inner end with a notch, a movable stop mounted on the top and arranged to limit the inward movement of the drawer and adapted also to be arranged to pass through the notch or recess, and folding legs arranged to fold at opposite sides of the drawer when the latter are at the center of the table, substantially as described.

2. In a folding table, the combination of a top, a folding leg pivotally connected with the top and capable of a limited sliding movement and a catch mounted on the top of the table and arranged to engage the leg to hold it from swinging, said catch being also provided with a lug or flange to lock the leg against sliding, substantially as described.

3. In a folding table, the combination of a top having side rails provided with elongated bearings, folding legs provided with kerfs or recesses and having journals arranged in the bearings, and catches mounted on the side rails and provided with shoulders for engaging the side faces of the legs and having lugs or flanges for engaging the kerfs or recesses, substantially as described.

4. In a folding table, the combination of a top provided with side and end rails, the side rails having elongated bearing recesses or slots, folding legs arranged in pairs and having journals fitting in the bearing recesses or slots, and catches mounted on the side rails and engaging the legs to hold the same in their operative position and provided with arms for locking the same in their folded position, substantially as described.

5. In a folding table, the combination of a top provided with side and end rails, the side rails being pivotally mounted and provided with bearings and legs having pivots arranged in the bearings of the side rails, substantially as described.

6. In a folding table, the combination of a top, end rails secured to the top and provided with bearings, side rails provided with pivots or journals arranged in the bearings in the end rails and adapted to swing outward, said side rails also being provided with bearings, and folding legs provided with pivots or journals arranged in the bearings of the side rails and adapted to be placed therein and removed therefrom, when the side rails are swung outward, substantially as described.

7. In a folding table, the combination of a top, fixed end rails secured to the top and provided with bearings, side rails having journals arranged within the bearings, said side rails being also provided with bearings and adapted to swing inward and outward, legs arranged in pairs and provided with journals arranged in the bearings of the side rails and locking devices mounted on the side rails and carried by the same and adapted to engage the legs to hold the latter in their operative position, substantially as described.

8. In a folding table, the combination of a top provided with bearings, side rails having pivots or journals arranged in the bearings and adapted to swing outward, said side rails also being provided with bearings, legs arranged in pairs and having pivots fitting in the bearings of the side rails, and catches mounted on the side rails and engaging the legs, said legs being adapted to be interlocked with and removed from the side rails when the latter are swung outward, substantially as described.



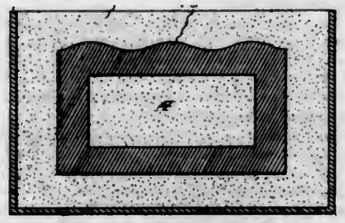
## 757,482. GAS-BURNER ATTACHMENT. EDMOND D. MCCAHILL, Chicago, Ill. Filed Mar. 28, 1903. Serial No. 149,930. (No model.)



*Claim.*—1. In combination, a burner having a supply-pipe and a pilot-pipe, a rotary valve having a passage to open the supply-pipe and a by-pass always in register with the supply-pipe and the pilot-pipe, a bell-crank lever pivoted on the burner, one end of the lever being normally elevated above the burner, an arm attached to the valve, a rod connecting the valve-arm and the other end of the bell-crank lever, and means for maintaining the former end of the lever in its elevated position.

2. A burner having a supply-pipe, a valve having a passage to open and close the pipe and a by-pass always in register with the supply-pipe, a pilot-pipe constantly in register with the by-pass, a bell-crank lever pivoted on the burner, one end of the lever being movable toward and away from the burner-openings, a weight on the other end of the lever, and a rod connecting the lever and valve whereby to open and close the main passage of the valve when the lever is oppositely operated.

## 757,483. PROCESS OF MANUFACTURING STONE. JACOB C. MCCLENAHAN, Wilmington, Del. Filed May 23, 1903. Serial No. 158,479. (No specimens.)



*Claim.*—1. The herein-described process of making stone which consists in saturating a molding material with a chemical solution, pouring a liquid stone composition into the saturated molding material, afterward resaturating the molding material with a chemical solution, and allowing the mass to harden by absorption.

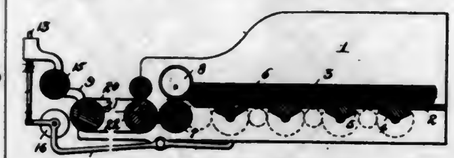
2. The herein-described process of making stone which consists in saturating a porous molding material with a hardening solution, pouring a liquid stone composition into the saturated molding material, subsequently resaturating the molding material with a similar hardening solution, and allowing the mass to set while absorbing the hardening solution.

3. The herein-described process of making stone which consists in saturating a porous molding material, pouring a liquid stone composition into the said molding material, and applying successive quantities of the hardening solution to the molding material after the stone composition is in the latter.

4. The herein-described process of making stone which consists in saturating a silicious molding material with a hardening chemical solution, pouring a liquid stone composition onto the saturated molding material and subsequently resaturating said molding material with a similar solution.

5. The herein-described process of making stone which consists in pouring a liquid stone composition in or on a chemically-saturated molding material, and a chemically-saturated core material, and subsequently resaturating the porous molding material and core material, and allowing the mass to set while absorbing the chemical solution.

## 757,484. PAPER-FEEDING DEVICE. THEODORE G. MCGIRR, New York, and JOSEPH B. MCGIRR, Brooklyn, N. Y.; said Theodore G. McGirr assignor to American Wrapping and Box Machine Company, New York, N. Y. Filed Dec. 22, 1902. Serial No. 136,091. (No model.)



*Claim.*—1. In a paper-feeding device, the combination of a support for a pile or mass of paper or other material, said support having a stationary bottom or supporting-floor provided with a series of openings, a series of rolls having a part of their circumferential surface adapted to project through the openings in the floor during the rotation of said rolls to thereby lift the mass of paper or material from the stationary floor and feed a sheet forward, and means for rotating said rolls.

2. The combination with means for supporting a pile or mass of paper or other material and selecting and feeding forward the successive sheets to a discharge-roll one after another, of an eccentrically-mounted roll for regulating the discharge, of means for automatically arresting the movement of these sheets, and subsequently releasing and delivering them at predetermined intervals.

3. The combination with means for supporting a pile or mass of paper or other material and selecting and feeding forward the successive sheets, a gaging device situated above said means and comprising a roll eccentrically mounted, means for supporting and conveying such successive sheets in their further movement, and means for automatically arresting the movement of these sheets and subsequently releasing and delivering them at predetermined intervals.

4. In a paper-feeding device, the combination of a support for a pile or mass of paper or other material, said support having a stationary supporting-floor provided with a series of openings, a series of rolls having segmental portions adapted to project through the said openings in the floor to raise or lift the entire mass or pile of material from the stationary floor and feed therefrom a single sheet, and means for rotating said rolls.

5. In a paper-feeding device, the combination of a stationary support for a pile or mass of paper, a series of rolls for intermittently bodily lifting said pile or mass and selecting and moving from said pile or mass a single sheet, a high-speed feeding-roll adjacent the series of rolls for engaging the selected sheet and feeding it rapidly from the pile or mass, and a gaging device disposed adjacent the high-speed roll for preventing the discharge of more than a single sheet.

6. In a paper-feeding device, the combination of a stationary support for a pile or mass of paper, a series of rolls for selecting and moving from said pile or mass a single sheet, a high-speed feeding-roll adjacent the series of rolls for engaging the selected sheet and feeding it rapidly from the pile or mass, and an eccentrically-mounted roll for regulating the discharge of sheets from the pile or mass.

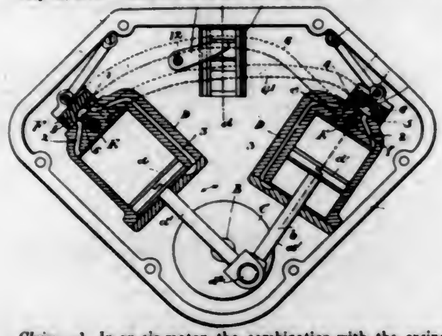
7. In a paper-feeding device, the combination of a support for a pile or mass of paper or other material, said support having a stationary floor provided with a series of openings, a series of rolls having a part of their circumferential surface adapted to project through the openings in the floor during the rotation of said rolls to thereby lift the mass of paper or material from the stationary floor and feed a sheet forward, a high-speed feeding-roll for drawing the sheet from the pile or mass and means for rotating said rolls.

8. The combination of a support for a pile or mass of paper or the like, a series of rolls having segmental portions to engage and feed sheets of paper at intervals, means for operating the segmental rolls, an eccentrically-mounted roll for regulating the number of sheets to be fed by the segmental rolls, means for arresting the forward movement of the sheets, and devices having portions outside

the path of travel of the paper adapted to engage said means at suitable intervals to move the same and permit the sheets to pass.

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757,485. **MOTOR.** JOHN T. MCGRATH, Port Huron, Mich. Filed July 16, 1903. Serial No. 165,858. (No model.)



*Claim.*—1. In an air-motor, the combination with the casing, main shaft and crank-wheel, of the oscillating cylinders provided with passage-ways leading from each end thereof to the top thereof, coacting slide-valves supported on links and passage-ways leading to the slide-valves and cylinder passage-ways as and for the purpose specified.

2. In a device of the class described, the combination with an air-tight casing, of the main shaft, a crank-wheel secured thereto, a pair of oscillating cylinders located in the casing, the piston-rods operatively connected to the crank-wheel, the slide-valves coacting with the cylinders, inlet and exhaust openings for the casing, supply-passages communicating between the inside of the casing and the cylinders and slide-valves and exhaust-passages communicating between the exhaust-outlet and the cylinders and slide-valves as and for the purpose specified.

3. In a device of the class described, the combination with a suitable air-tight casing, of the main shaft, the crank-wheel secured thereto, a pair of oscillating cylinders located in such casing, the piston-rods operatively attached to the crank-wheel, the slide-valves coacting with the cylinders, inlet and exhaust openings for the casing, inlet-passages communicating between the inside of the casing and the cylinders and slide-valves, and exhaust-passages communicating between the exhaust-outlet and the cylinders and slide-valves, and a reversing-valve as and for the purpose specified.

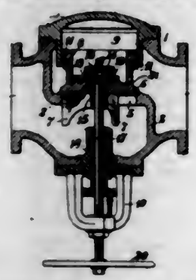
4. In a device of the class described, the combination with the casing, the main shaft and crank-wheel, of the oscillating cylinders and their pistons and the piston-rods connected to the crank-wheel, said cylinders having passage-ways leading from each end thereof to the top thereof, coacting slide-valves supported on links, a pair of passage-ways one communicating on its right with the passages of the right-hand cylinder and on its left with the valve of the left-hand cylinder, and the other passage-way communicating on its right with the slide-valve of the right-hand cylinder and on its left with the passage-way of the left-hand cylinder and means for connecting either one of said passages with the interior of the casing and the other with the exhaust-opening as and for the purpose specified.

5. In a device of the class described, the combination with the casing having the supply and exhaust passage-ways, of the main shaft and crank-wheel, the oscillating cylinders and their pistons connected to the crank-wheel, the coacting slide-valves and their link connections with the casing, said slide-valves being adapted to slide on valve-seats on the tops of the cylinders and said slide-valves and cylinders having sliding contact with valve-seats formed integral with the casing, shafts upon which the cylinders are pivotally mounted, springs encircling said shafts and adapted to force the cylinders against the casing valve-seats, said cylinders and slide-valves having suitable ports and passages to form communication between the inlet and exhaust passages and the portions of the cylinders above and below the pistons alternately as and for the purpose specified.

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757,486. **THROTTLE-VALVE.** ROBERT A. MCKEE, Pittsburg, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed May 24, 1902. Serial No. 108,811. (No model.)

*Claim.*—1. The combination with the main valve embodying a piston, and a cylinder therefor, one of said parts having a small port or passage for transferring fluid-pressure to or from the cylinder and having a larger port for transferring fluid-pressure from or to the cylinder, of a supplemental valve for said larger port, the opening of which serves to substantially balance opposing pressures exerted against the main valve and a single means for opening both valves.



2. The combination with a main valve embodying a piston, and a cylinder therefor, one of which has a port or passage for admitting fluid-pressure from the inlet side of the main valve to the cylinder and the other of which has a port or passage for exhausting the pressure from the cylinder to the outlet side of the main valve, said ports being of unequal size, of a supplemental valve for the larger of said ports, the opening of which serves to substantially balance the opposing pressures exerted against the main valve and a single means for opening both valves.

3. The combination with a main valve embodying a piston, and a cylinder therefor, one of said parts having a port or passage between the cylinder and the space at the inlet side of the main valve and one of said ports having a port or passage between the cylinder and the space at the outlet side of the main valve, said ports or passages being of unequal size, of a supplemental valve for the larger of said ports or passages the opening of which serves to provide a balance of opposing pressures exerted against the main valve and a single means for opening both of said valves.

4. The combination with a main valve having a piston, of a cylinder for said piston between which and the main fluid-pressure conduit, at one side of the main valve, is a leakage port or passage and at the other side of the main valve is a larger port or passage, a supplemental valve for said larger port or passage and a single means for operating both valves.

5. The combination with a fluid-pressure conduit and a main valve therefor having a piston, of a cylinder for said piston between which and the conduit, at the inlet and outlet sides of the valve, are ports or passages of unequal size, a supplemental valve for the larger port and a single means for successively actuating the supplemental valve and the main valve.

6. The combination with a fluid-conduit and a main valve therefor having a piston provided with two ports opening respectively from the cylinder in which it operates to the inlet and outlet portions of the conduit, of a supplemental valve serving to normally close one of said ports and a single means for successively actuating the supplemental valve and the main valve.

7. The combination with a fluid-conduit and a valve therefor having a piston provided with a small, valveless inlet-port and a relatively large exhaust-port, of a cylinder into and from which said ports respectively admit and exhaust the fluid, and a supplemental valve for the exhaust-port having a lost-motion connection with the main valve and initially movable to effect equalization of opposing pressures upon the main valve.

8. The combination with a fluid-conduit, and a main valve therefor provided with a piston, of a cylinder for said piston between which and the conduit, at the respective sides of the valve, are ports of different size, a supplemental valve for the larger of said ports connected to the main valve and having lost motion with reference thereto whereby initial movement of the supplemental valve equalizes opposing pressures upon the main valve and subsequent movement unseats said main valve.

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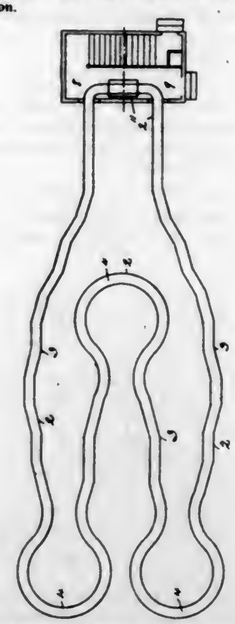
757,487. **ROLLER-COASTER.** GEORGE A. MCLAUGHLIN, Pittsburg, Pa. Filed Oct. 31, 1903. Serial No. 179,339. (No model.)

*Claim.*—1. In a roller-coaster, an inclined track composed of alternate zigzag and curved sections.

2. In a roller-coaster, an inclined track constructed with rails adapted to carry a car, rails above said first-mentioned rails and guide-rails at the sides of said track and arranged in alternate zigzag and curved portions.



3. In a roller-coaster, a station, a zigzag track leading therefrom on an incline, a curved continuation thereof, a zigzag track leading from said curve toward said station, a second curved portion, a zigzag portion leading therefrom in the direction of the first-mentioned portion, a third curve connected therewith and a zigzag portion connecting the same with the said station, and a car adapted to roll thereon.



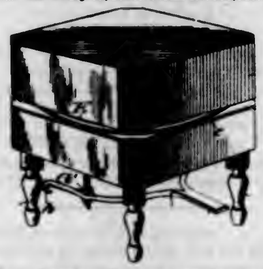
4. In a roller-coaster, a station having two floors therein, an inclined track composed of alternate zigzag and curved sections leading out from the second floor of said station and back to the first floor of said station, a car running on said track and an elevator in said station to lift said car to the second floor on its return.

5. In a roller-coaster, an inclined track arranged in alternate zigzag and curved sections, a car-truck running thereon, a car-body carried by said truck and means to cause said car-body to rotate relative to said truck.

6. In a roller-coaster, an inclined track arranged in alternate zigzag and curved sections, a car-truck running on said track, a car-body carried by said truck, and means to cause said car-body to rock relative to said truck.

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757,488. **BUTCHER'S CHOPPING-BLOCK.** JOSIAH T. NICHOLS, Portsmouth, Va. Filed July 22, 1903. Serial No. 166,610. (No model.)

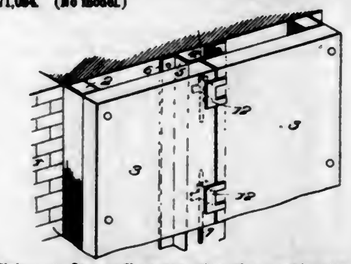


*Claim.*—1. In a chopping-block, the combination with a suitable support upon which is mounted a revoluble block, of a treadle-lever pivoted to the support, and provided with means for holding and locking the block at any desired position, all adapted to operate substantially as set forth.

2. The combination in a chopping-block, of a support, a rotatable block pivoted thereon, annular ball-races attached to the under side of block and upper side of support respectively, balls between said races, a treadle-lever pivoted to the support, bolts connected to said lever adapted to engage and lock the block, and springs for normally holding said bolts in uplifted locking position, all substantially as and for the purpose described.

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757,489. **WALL-FURRING.** JAMES H. NICHOLSON, New York, N. Y., assignor to Freeman, Dobbin Fireproofing Company, New York, N. Y., a Corporation of New York. Filed Aug. 27, 1903. Serial No. 171,094. (No model.)



*Claim.*—1. In a wall construction, the combination with slabs arranged in parallel series, of studding designed to support the slabs of adjacent series, such studding consisting of an approximately U-shape member having its bridged portion forming seats for the slabs, and means for securing the slabs to the studding.

2. In a wall construction, the combination with slabs arranged in parallel series, of studding designed to support the slabs of adjacent series, such studding consisting of an approximately U-shape member having its bridged portion forming seats for the slabs and provided with a series of slots, clips movable in such slots and normally engaging the studding at their inner ends and their outer ends engaging and holding the slabs to the studding.

3. In a wall construction, a stud designed to accommodate the adjacent edges of fireproof slabs, such stud having parallel angular portions provided with flanges designed to be secured to a wall or other support, the main body portion of such stud spanning the edges of adjacent slabs and having a slot designed to register with the space intermediate such adjacent slabs, and a clip designed to be accommodated by such slot and having inner and outer lateral portions designed to engage, respectively, the inner face of the stud and the outer faces of the slabs.

4. In a wall construction, a stud designed to accommodate the adjacent edges of fireproof slabs, such stud consisting of a single piece of metal bent to form parallel angular portions and the latter bent to form flanges designed to be secured to a wall or other support, the main body portion of such stud spanning the edges of adjacent slabs, and having a slot designed to register with the space intermediate such adjacent slabs, and a clip designed to be accommodated by such slot and having inner and outer lateral portions designed to engage, respectively, the inner face of the stud and the outer faces of the slabs.

5. In a wall construction, a stud having a bridging portion designed to span the edges of adjacent slabs to form seats therefor, such bridging portion having a slot designed to register with the space intermediate such slabs, and a clip designed to secure the slabs to the stud, such clip having outer lateral portions designed to engage the slabs, and a body portion designed to be accommodated between such slabs and within such slot and having its end divided, such divided portions being bent in opposite directions to engage the inner face of the stud.

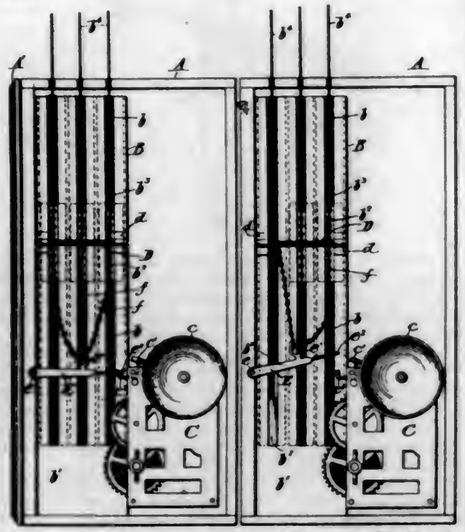
6. In a wall construction, the combination with the slabs, and studs consisting of strips having metallic sheathing designed to support such slabs at one edge, of studs having bridging portions forming seats for the edges of adjacent slabs and provided with a vertical series of longitudinal slots designed to register with the space intermediate such slabs, and clips having outer flanges and central body portions, the former designed to engage the slabs and the latter to be accommodated by said slots and having their free ends divided, such divided portions being designed to be bent to form inner flanges to engage the inner faces of the studs.

7. As an article of manufacture, a U-shape stud for wall-furring having a slot in its bridged portion, and an I-shape clip having its body portion accommodated by said slot.

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757,490. **BURGLAR AND FIRE ALARM.** MATTHEW NICKELS, Philadelphia, Pa., assignor of one-half to Frank P. Wagner, Philadelphia, Pa. Filed Aug. 14, 1903. Serial No. 169,437. (No model.)

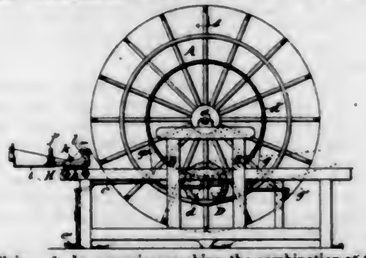
*Claim.*—1. A device of the type set forth, comprising a plurality of guideways, weights arranged to slide in said guideways, a series of leaders attached to said weights, a trip-catch pivoted at one end in the casing, and extending across the said guideways, the opposite end of said trip-catch normally engaging the alarm, a roller mounted in bearings and extending across the guideways, and means connected to said weights and to said trip-lever at an intermediate point thereof, and passing over the said roller for operating the said trip-catch.



2. A device of the type set forth comprising a plurality of guideways, weights arranged to slide in said guideways, a series of leaders attached to said weights, a trip-catch pivoted at one end in the casing, and extending across the said guideways, the opposite end of said trip-catch normally engaging the alarm, a roller mounted in bearings and extending across the said guideways, chains secured to said weights and to said trip-catch at an intermediate point, and passing over the said roller.

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757,491. **WARPING-MACHINE.** FREDERICK OTT, Woonsocket, R. I. Filed Mar. 29, 1902. Serial No. 100,502. (No model.)



*Claim.*—1. In a warping-machine, the combination of the reel; a guide-roller from which the warp-threads are fed to the reel in sections; and means for causing the guide-roller to vibrate laterally several times during each rotation which the reel makes, substantially as described.

2. In a warping-machine, the combination of a wide reel capable of holding a plurality of warp-sections; a reed-frame with reed and guide-roller capable of feeding a single section of warps to the reel; means for laterally adjusting the reed-frame for feeding successive sections to the reel; and means for imparting a lateral vibration to the guide-roller from which the warps are fed to the reel, substantially as described.

3. In a warping-machine, the combination of the reel; a reed; an undershot roller, *k*, and an overshot roller, *l*, from which the warps pass down to the reel; and means for imparting lateral vibration to the overshot roller, substantially as described.

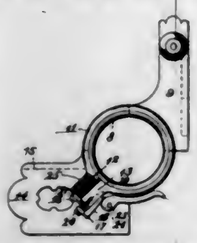
4. In a warping-machine the combination of a large reel; a small guide-roller from which the warp-threads are fed to the reel; and means whereby the guide-roller is caused to vibrate laterally a number of times during each complete rotation of the reel, substantially as described.

5. In a warping-machine the combination of a large reel; a small guide-roller from which the warps are fed in sections to the reel, and which slides laterally in its bearings; a disk with a cam-groove fixed upon the same shaft as the roller; and a pin projecting into the cam-groove; whereby the warps are caused to lie in a zigzag position upon the reel, substantially as described.

6. In a warping-machine, the combination with the reel; of means for causing the warps as they are fed in sections to the reel to vibrate laterally a number of times for each rotation of the reel, whereby the warp-threads of each section are caused to be built up separately upon the reel by reason of the zigzag position in which they are fed, substantially as described.

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757,492. **FRICTIONAL LOCKING-HINGE.** PHILIP C. PALMER, Kansas City, Mo. Filed Apr. 20, 1903. Serial No. 153,451. (No model.)



*Claim.*—1. In a frictional locking-hinge, a rigid member, a flexible member encircling the same and provided with integral jaws, means for moving said jaws toward each other, and adjustable means for limiting said movement.

2. In a frictional locking-hinge, an arm provided with a rigid inner ring, another arm provided with a split ring loosely embracing the inner ring, jaws formed integral with the adjacent ends of the split ring, a wedge adjustably secured to one of said jaws, and a lever fulcrumed on one of the arms and provided with a cam-face adapted to press against said wedge in order to cause the split ring to tightly engage the inner ring.

3. In a frictional locking-hinge, an arm, a ring formed integral therewith, another arm, a split ring secured thereto and loosely embracing said ring, jaws formed integral with the adjacent ends of the split ring, an adjusting-screw engaging one of said jaws, a wedge suitably secured to said adjusting-screw, and a lever fulcrumed on one of the arms and having a cam-face adapted to impart movement to the wedge and jaw.

4. In a frictional locking-hinge, an arm, a ring formed integral therewith, another arm, a split ring secured thereto and loosely embracing the first-mentioned ring, jaws formed integral with the adjacent ends of the split ring, a lever fulcrumed on one of the arms and provided with a cam-face adapted to impart movement to one of said jaws, and a set-screw projecting from the adjacent side of the opposite jaw.

5. In a frictional locking-hinge, an arm, a rigid ring formed integral therewith, another arm, a split ring formed integral therewith and loosely embracing the rigid ring, an arm to which the split ring is secured, jaws formed integral with the opposite ends of the split ring, a set-screw projecting from one of said jaws, a wedge adjustably secured to the opposite jaw, and a lever fulcrumed on one of the arms and provided with a cam-face adapted to press the wedge-containing jaw toward the projecting end of the set-screw.

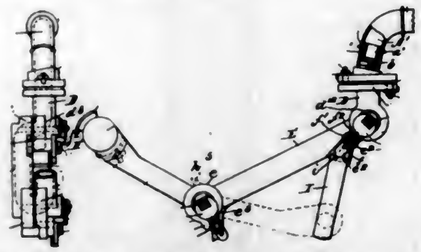
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757,493. **FLEXIBLE METAL PIPE-COUPLING FOR CONNECTING THE AIR AND STEAM PIPES OF RAILWAY-CARS.** GEORGE D. PETTIBONE, Jefferson, Iowa, assignor of one-half to Henry C. Laub, Denison, Iowa. Filed Jan. 18, 1902. Serial No. 90,275. (No model.)

*Claim.*—1. In a flexible pipe-coupling, the combination with a fixed section of a horizontally-oscillating section, complemental faces on the adjacent ends of said sections, oppositely-disposed segmental slots therein, bolts rigidly engaged on said faces adapted to slidably engage in said slots and hold the sections in close contact, a plurality of vertically-oscillating sections and means for folding and closing said sections when not in use.



2. In a device of the class described, the combination with a fixed section, of a horizontal plate thereon, a segmental slot in said plate, a horizontally-oscillating section provided with a horizontal plate, a segmental slot thereon, a bolt rigidly fixed on said plates adapted to slidingly engage in the slots, a plurality of oscillating sections, a coupling-head on the free end thereof and means for closing said head when not in use.



3. In a flexible pipe-coupling the combination with a plurality of pipe-sections, of laterally-opening joint-cups thereon, a packing-seat in each cup, a two-part packing-ring therein, an integral bolt in one of said cups journaled in the adjacent cup, a nut on said bolt adapted to hold said cups in close contact, an integral lug on the same section with the bolt a slidable lock thereon adapted to hold said nut from turning and means for holding said pipe-coupling in a folded position.

4. In a device of the class described the combination with joint-cups having pipe extensions and interfitting faces and a packing-seat in each face, of a two-part packing therein adapted to turn with one face and move on the other, a hub formed on the center of one of said cups, a threaded bolt integral with the other adapted to pass through the hub, a nut on the protruding end thereof, an integral lug on the section carrying the bolt and a lock movably engaged thereon adapted to hold said nut from turning.

5. In a jointed connection for pipe-coupling the combination with a fixed section having a horizontal plate, of a vertical section having a similar plate, packing between said plates, segmental recesses in said plates for connecting the sections to allow said vertical section to oscillate, an intermediate pipe-section having jointed connection with the vertical section, an end section having jointed connection with the intermediate section and adapted to fold beneath the same, a coupling-head thereon and a plate adapted to close the head when not in use.

6. A jointed metal pipe-coupler for railway-cars comprising a fixed section, a horizontally-oscillating section, an intermediate section having a stop thereon, and an end section provided with a coupling-head and adapted to fold over and rest upon the stop of the intermediate section and adapted thereby to be supported in an upright position.

7. A jointed metal pipe-coupler comprising a fixed section, a horizontally-oscillating section, an intermediate section, an end section having a coupler-head at the free end thereof, and a cover-plate affixed to the intermediate section to close against the open face of the coupler-head.

8. The coupler-head for train-pipe connection comprising a cup-joint having a gasket seated in and projecting from the face thereof, a segment rim-flange projecting therefrom, an overhanging segment-flange to engage the rim-flange of the connecting joint-section, and a set-bolt passing through the flange of the coupler-head.

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757,494. **EXPANSION BORING-TOOL.** WILLIAM POEHLMAN, Middletown, N. Y. Filed Feb. 19, 1903. Serial No. 144,155. (No model.)



*Claim.*—1. An expansion boring-tool having a body with lateral openings, and side recesses, in combination with vertically-disposed wedges seated in the recesses and having threads on one side, a ring threaded on the wedges, tool-holders in the lateral openings and means on the tool-holders engaged by the wedges and ring whereby the operation of the wedges and ring adjusts the tool-holders and means for retaining the ring in its adjusted position.

2. In an expansion boring-tool, a body having a transverse tool-way, a tool-holder in said way having a projection, wedges arranged to bear upon opposite sides of said projection and relatively movable to project or retract the tool-holder and means for holding the wedges in adjusted positions.

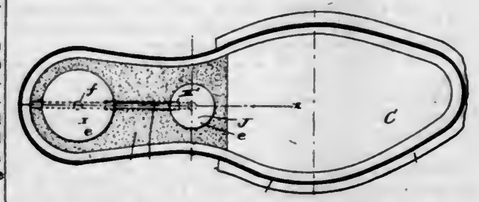
3. An expansion boring-tool having a body provided with lateral openings, tool-holders seated in the lateral openings, and having projections with oppositely-disposed camming-surfaces, a ring on the body frictionally engaging the projections of the tool-holders, members coacting with the ring on the projections of the tool-holders, means for connecting the ring and members so that movement of the ring communicates movement to the members in the opposite direction, and means for holding the ring in an adjusted position.

4. In an expansion boring-tool, a body having lateral openings and longitudinal recesses, tool-holders having inverted-V-shape projections in said openings, an annular ring with a lower beveled edge, wedges seated in the recesses having their ends engaging the projections of the tool-holders, the ring and wedges being threaded together and moved oppositely, means for retaining the ring in its adjusted position.

5. An expansion boring-tool having a body provided with lateral openings and a pointer, tool-holders having projections with camming-surfaces, in the openings, a ring and wedges coacting oppositely on the camming-surfaces, means for holding the ring in adjusted position, the said ring having graduated divisions under the pointer and cooperating means on the ring and wedges for holding them in relative adjustment.

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757,495. **ELECTRIC-SOLE SHOE.** ADAM REED, St. Joseph, Mo. Filed Feb. 4, 1904. Serial No. 192,018. (No model.)



*Claim.*—1. An electric sole for shoes comprising a slitted cushion, and a galvanic couple comprising electrically-connected elements exposed above the slitted cushion and provided with means disposed in said slitted cushion, whereby the elements are removably connected thereto.

2. As an article of manufacture, a galvanic couple for use on shoe-soles, comprising flat elements having tongues extending in opposite directions therefrom, and a strip extending between and permanently connecting the said elements.

3. In an electric sole, the combination of a cushion, a covering thereon having slits *a' b'*, and a galvanic couple arranged on the covering and having disk-like elements electrically connected together, and also having tongues projecting beyond the elements and removably arranged in the slits of the covering.

4. In an electric sole, the combination of a cushion, a covering thereon having slits *a' b'*, and a galvanic couple arranged on the covering and having a disk-like element and a second disk-like element having a tongue arranged in one of the slits of the covering, and also having a strip connected to the first-mentioned element and extending beyond the same and forming a tongue which is arranged in the other slit of the covering.

5. An electric sole comprising a cushion having a vertical slot, and a galvanic couple made up of elements having flat disks disposed above and below the cushion and connected together, and means electrically connecting the said elements.

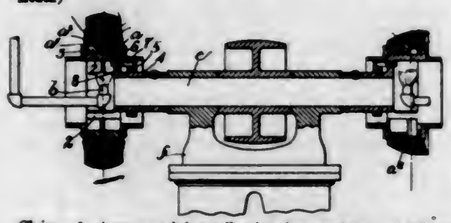
6. In an electric-sole shoe, the combination of an insole, a cushion arranged on said insole, and having a vertical slot in its rear portion, and, a galvanic couple made up of elements having flat disks disposed above and below the cushion and connected together by means extending through the vertical slot, and means electrically connecting the said elements,

7. In an electric-sole shoe, the combination of an insole, of

leather or other suitable material, having a lip at its under side, a cushion arranged on said insole throughout the area thereof, and having a longitudinal central, vertical slot in its rear portion, extending to its rear end, disks of felt or other soft material connected to the insole, and arranged below the slot of the cushion, a thin metallic strip extending between said disks, removable galvanic-couple elements arranged on the soft disks and the metallic strip, and respectively comprising flat disks disposed above and below the cushion, and a connection interposed between said disks and resting in the slot of the cushion, a covering arranged over the forward portion of the cushion, and having a depending portion disposed alongside the lip of the insole, a vamp or upper having a depending portion disposed alongside that of the covering, a welt, and a seam uniting the welt, the depending portions of the vamp and covering, and the lip of the insole.

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**757,496. WAX-APPLYING ROLL OR BRUSH.** WILLIAM A. REED, Chelsea, Mass. Filed July 9, 1903. Serial No. 164,782. (No model.)



*Claim.*—1. A wax-applying roll or brush comprising a rigid hub or holder, and a compressible or yielding refractory absorbent body supported by the holder and adapted to be heated, said body being of practically uniform density from its center to its periphery.

2. A wax-applying roll or brush comprising a rigid hub or holder, and a compressible or yielding body of asbestos surrounding the hub and adapted to be heated, said body being of practically uniform density from its center to its periphery.

3. A wax-applying roll or brush comprising a rigid hub or holder, and a plurality of asbestos rings or washers mounted on the hub and collectively constituting an annular compressible or yielding refractory absorbent body which is of practically uniform density from its center to its periphery.

4. A wax-applying roll or brush comprising a rigid hub having means for attachment to a shaft, and a series of asbestos rings or washers mounted on the hub, the said hub being provided with means for preventing sidewise displacement of said washers.

5. A wax-applying roll or brush comprising a hollow rigid hub open at one end and having a shaft-engaging sleeve at its other end, and an annular asbestos body surrounding the hub, the said hub having means for preventing displacement of the asbestos body.

6. A wax-applying roll or brush comprising a rigid hub or holder, a compressible or yielding refractory absorbent body supported by the holder, and a flexible porous cover inclosing said body.

7. A wax-applying roll or brush comprising a rigid hub or holder, a compressible or yielding refractory absorbent body supported by the holder and a flexible porous refractory cover inclosing said body.

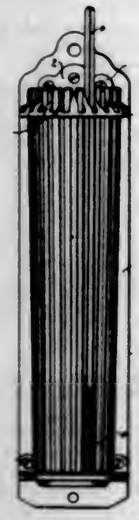
8. A wax-applying roll or brush comprising, first a rigid hub or holder composed of a tubular outer portion, and a two-part hollow inner portion having flanges engaging the ends of the outer portion and a shaft-engaging sleeve, and secondly, a compressible or yielding refractory body surrounding said outer portion.

9. A wax-applying roll or brush comprising, first, a rigid hub or holder composed of a tubular outer portion having one or more flanges, and a two-part inner portion having flanges engaging the ends of the outer portion and a shaft-engaging sleeve, and secondly, a compressible or yielding refractory body surrounding said outer portion and engaged with the flange or flanges thereof.

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**757,497. CLOTHES-DRIER.** PER A. RIDGELL, Salem, Ohio. Filed Feb. 3, 1904. Serial No. 191,804. (No model.)

*Claim.*—1. In a clothes-drier the combination of a back board having brackets secured to and held in spaced relation to each other, said brackets provided with sockets, guide-bars having their upper and lower ends seated in said sockets, drier-bars having detachably connected thereto guide-loops and the guide-loops located around the guide-bars and the upper bracket provided with partition-webs, the webs and said bracket provided with a flange located in a plane below the top of the bracket, substantially as and for the purpose specified.



2. In a clothes-drier the combination of brackets held in spaced relation, the lowermost bracket provided with a flange having a beveled edge, guide-bars connected to the brackets, drier-arms having connected thereto guide-loops, said guide-loops located around the guide-bars and the upper bracket provided with openings, and a flange located in a plane below the top of the bracket, and partition-webs formed upon the upper side of the bracket, substantially as and for the purpose specified.

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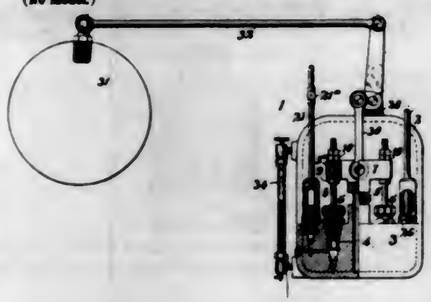
**757,498. BRACKET FOR UNIVERSAL STANDS OR SUPPORTS.** ALFRED L. ROGERS, Oakpark, Ill. Filed Oct. 10, 1903. Serial No. 176,515. (No model.)



*Claim.*—An adjustably-movable bracket having a bifurcated tubular rear end with two perforated ears and a clamping-screw, also having a tubular forward end with an integral boss, which boss has a screw-threaded opening and an opening communicating between the screw-threaded opening in the boss and the tubular forward portion of the bracket, said communicating opening being of a diameter less than that of the opening in the boss, a plug adapted to lie within the opening in the boss, said plug having a stem for extending through said intermediate opening, and a locking-screw for the opening in said boss.

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**757,499. OIL-PUMPING APPARATUS.** CYRUS ROSEBOOM, Edgewood Park, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed May 23, 1900. Serial No. 17,774. (No model.)





*Claim.*—1. The combination with an oil-reservoir, of a pump-cylinder communicating with said reservoir by means of a valved passage, a piston operating in said cylinder, a discharge-pipe communicating with said cylinder by a valved passage and an interposed transparent tube containing a freely-movable device, the movement of which indicates the flow of oil.

2. The combination with an oil-reservoir and a cylinder communicating therewith, of a piston operating in said cylinder, operating mechanism for said piston, means for providing more or less lost motion between the piston and its operating mechanism, a discharge pipe and passage leading from the cylinder, a transparent tube interposed between said passage and the discharge-pipe and a valve in said tube for indicating the flow of oil.

3. In a lubricating-pump for steam-engines, the combination with an oil-reservoir and means for drawing oil therefrom and forcing it into the part requiring lubrication, of a pipe or passage through which the oil passes, having a transparent section and a movable indicator located in the transparent section and actuated by the oil forced therethrough.

4. The combination with an oil-reservoir and a series of connecting-passages leading therefrom, of a piston and check-valve cooperating to draw oil through the first of said passages and to force it through the succeeding passages, one of which has a transparent section and a movable device in said transparent section that is actuated by the flow of oil to afford a visible indication thereof.

5. A sight-feed for a force-feed lubricator, comprising in combination, an oil-duct, a transparent portion thereof, and a movable indicator contiguous to said transparent portion, moved by the movement of the oil, and adapted by its position to indicate the flow or non-flow of the oil, substantially as set forth.

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**757,500. FOUNTAIN-PEN.** WILLIAM B. ROTHWELL, Philadelphia, Pa. Filed Dec. 14, 1903. Serial No. 185,021. (No model.)



*Claim.*—1. In a fountain-pen, a holder, a pen and a device, consisting of a flat strip tapering to a point, one surface forming with the pen a channel or way, and the rear portion of the device formed into a coil interposed between the pen and holder, whereby is permitted the automatic flow of ink from the holder-reservoir to the pen, substantially as described.

2. In a fountain-pen, a device consisting of a flat strip tapering to one end and having the sides beveled one surface of which forms with the pen a channel or way, and the opposite end formed into a coil having beveled sides, substantially as and for the purposes described.

3. In a fountain-pen, a device consisting of a flat narrow strip of pliable material, one surface forming with the pen a channel or way, and the rear of the device formed into a coil interposed between the pen and holder, substantially as and for the purposes described.

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**757,501. PRESS.** GEORGE B. ROWE, Moore, Okla. Filed June 20, 1903. Serial No. 162,396. (No model.)

*Claim.*—1. In a press, the combination of a baling-chamber, a laterally-movable wing, a plunger, means for positively moving the wing laterally in each direction, and a guard closing the space between the end of the baling-chamber and the corresponding end of the said wing, substantially as set forth.

2. In a press, the combination of a baling-chamber, a laterally-movable wing, a plunger, means for positively moving the wing laterally in each direction, a guard closing the space between the end of the baling-chamber and the corresponding end of the said wing, said guard comprising spaced elements and projections applied to the wing to operate between the spaced elements of the guard, substantially as set forth.

3. In a press, the combination of a baling-chamber, a laterally-movable wing, teeth projected from the end of the wing, a reciprocating plunger, means for positively moving the said wing, and a grated guard closing the space formed between the end of the baling-chamber and the adjacent end of the wing and receiving the teeth of said wing between the elements or bars, substantially as described.

4. In a press, the combination of a baling-chamber, a pivoted wing, teeth projected from the end of the wing, a plunger, means for positively moving the wing laterally at its free end, and a grated guard for closing the space between the end of the baling-chamber and the wing and curved on the arc of a circle having the axis of the pivoted wing for its center, the spaces between the bars or elements of the guard receiving the teeth of the wing, substantially as specified.



5. In a press, the combination of a baling-chamber, a plunger, a laterally-movable wing, and a plate yieldingly connected to the end portion of the wing adjacent to the baling-chamber, substantially as set forth.

6. In a press, the combination of a baling-chamber, a reciprocating plunger, laterally-movable wings closing the space formed between the plunger and receiving end of the baling-chamber, means for normally holding said wings separated, and a connection between said wings and the plunger for drawing the wings inward as the plunger advances, substantially as specified.

7. In a press, the combination of a baling-chamber, a reciprocating plunger, oppositely-disposed wings pivoted at a point between their ends, a spring for drawing the outer ends of the wings together and spreading the end portions adjacent to the baling-chamber, and a connection movable with the plunger for drawing the inner ends of the wings together as the plunger advances, substantially as described.

8. In a press, the combination of a baling-chamber, a reciprocating plunger, laterally-movable wings, and guards applied to the upper edges of the wings and upwardly flared, substantially as set forth.

9. In a press, the combination of the baling-chamber, a reciprocating plunger, oppositely-disposed pivoted wings, means for normally spreading the wings at the end adjacent to the baling-chamber, and rollers connected with the plunger and movable therewith and adapted to travel upon the outer sides of the wings and draw the latter inward as the plunger advances, substantially as described.

10. In a press, the combination of a baling-chamber, a reciprocating plunger, oppositely-disposed pivoted wings, teeth projected from the inner ends of the wings, and grated guards projected from the sides of the baling-chamber to close the space formed between the receiving end of said chamber and the contiguous ends of the wings, the spaces formed between the bars or elements of the guards receiving the teeth of said wings, substantially as described.

11. In a press, and in combination with the baling-chamber and reciprocating plunger, a roller located at the receiving end of the baling-chamber, a frame arranged upon the baling-chamber and pivoted at one end thereto and having spaced pendent portions at the opposite end in which the said roller is journaled, a cross-bar, a

threaded rod passed through the cross-bar, a tension-spring mounted upon the threaded rod, a set-nut for confining the tension-spring and exerting a pressure upon the said pivoted frame, and a ratchet mechanism between the pivoted frame and roller to prevent turning of the latter in one direction, substantially as specified.

12. In a press, the combination of the baling-chamber, a rebounding plunger, a rod loosely mounted in the plunger, a shoe carried by said rod and adapted to engage with a portion of the press, and a spring exerting a pressure upon said rod to cause the shoe to engage with the press to offer a greater or less resistance to the movement of the plunger, substantially as set forth.

13. In a press, the combination of the baling-chamber, a reciprocating plunger, a spring for effecting a return of the plunger, connected at one end to the plunger, a shaft having an arm to the outer end of which the opposite end of the spring is attached, an operating-shaft, and worm-gearing between the two shafts, substantially as described.

14. In a press, the combination with the baling-chamber having opposite walls movable at the delivery end, a plunger arranged to operate in the baling-chamber, bars arranged to bear against the movable sides of the baling-chamber, tension-bars coöperating with the aforesaid bars, springs mounted thereon, a shaft having crank portions to effect longitudinal movement of the tension-bars to cause the springs mounted thereon to exert a greater or less pressure upon the bars bearing against the movable sides of the baling-chamber, and means for securing said shaft in an adjusted position, substantially as set forth.

15. In a press, the combination with the baling-chamber having opposite walls movable at the delivery end, a plunger arranged to operate in the baling-chamber, bars arranged to bear against the movable sides of the baling-chamber, tension-bars coöperating with the aforesaid bars, springs mounted thereon, a shaft having crank portions to effect longitudinal movement of the tension-bars to cause the springs mounted thereon to exert a greater or less pressure upon the bars bearing against the movable sides of the baling-chamber, said shaft having an operating-crank to effect turning thereof, and a pin loosely mounted upon said operating-crank for securing it and the shaft in an adjusted position, substantially as set forth.

16. In combination, a baling-chamber, a reciprocating plunger, a power mechanism, a flexible connection between said plunger and power mechanism, and a windlass applied to the plunger for varying the length of the connection between the plunger and power mechanism, substantially as set forth.

17. In a press, and in combination with the baling-chamber and reciprocating plunger, a power mechanism comprising a drum provided with a straight slot and enlargements at the ends of said slot, and a draft-slide having a flattened portion to travel in said slot and prevent turning of the slide relative to the slot when moving in the straight portion thereof and adapted to turn in the end enlargements thereof, substantially as set forth.

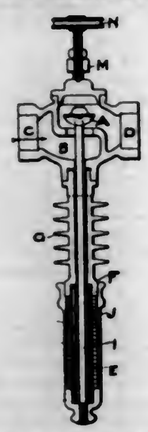
18. In a press, and in combination with the baling-chamber and reciprocating plunger, a power mechanism comprising a drum provided with a straight slot and enlargements at the ends of said slot, a draft-slide having a flattened portion to travel in said slot and to turn in the end enlargements thereof, and cams for coöperating with said flattened portion of the draft-slide to effect proper turning thereof at the end of its movement in each direction, substantially as set forth.

19. In a press, and in combination with the baling-chamber and reciprocating plunger, a power mechanism comprising a drum having a plurality of intersecting straight slots having enlargements at their points of intersection, and a draft-slide having a flattened portion to successively travel in the straight slots and to turn in the enlargements at the intersections thereof, substantially as described.

20. In a press, and in combination with the baling-chamber and reciprocating plunger, a power mechanism comprising a drum having in one side a plurality of intersecting straight slots provided with enlargements at their points of intersection and having a single straight slot at the opposite side provided at its ends with enlargements, and a draft-slide adapted to coöperate with the slots in either side of the drum according as it may be required to impart two or more complete strokes to the plunger during a single revolution of the drum, substantially as set forth.

21. In a press, the combination with the baling-chamber, reciprocating plunger, spring for returning the plunger to a normal position and operating means for advancing the plunger to its work, of means for preventing a too rapid return of the plunger, the same consisting of a pulley, plates forming a mounting therefor, and a spring for causing the plates to grip the pulley with a greater or less force, substantially as described.

## 757,502. APPARATUS FOR REGULATING THE FLOW OF FLUIDS. JOHN J. ROYLE, Irlam, near Manchester, England. Filed Oct. 29, 1902. Serial No. 129,330. (No model.)




*Claim.*—1. A tube of india-rubber extensible in the direction of its length, a fixed open tubular part into which one end of the tube fits, and through which a fluid under pressure enters the tube, a closed ended cup into which the opposite end of the tube neatly fits, a fluid-controlling device, and means for connecting the cup with the said fluid-controlling device, in combination with a sheath of non-extensible rings neatly fitting outside the tube of india-rubber and, with the tube at its shortest length, the said rings lying side by side, as set forth.

2. In a fluid-controlling valve, a valve-casing having a tubular extension, a valve within said casing, a cap part, a rod connecting the said part to the valve, an elastic tube between and fitting within the said cap and the said tubular extension, a sleeve or casing for the said tube which prevents lateral enlargement but allows longitudinal extensions, and springs, with adjusting means, for holding the said valve from its seating, as set forth.

3. In a reducing-valve, a valve-casing with two valve-seatings, a main pressure-reducing valve and a relief-valve on the reduced-pressure side of slightly smaller area than the main valve, a rod connected to the main valve and passing to the exterior of the valve-casing, a cross-bar on the said rod, and a set of springs connected to the said rod and to the relief-valve, and means for varying the tension of the springs, as set forth.

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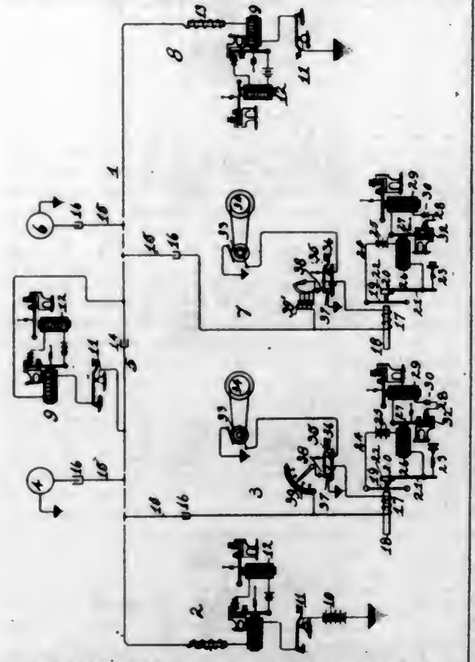
## 757,503. TELEGRAPH SYSTEM. HARRY O. ROSE, Chicago, Ill., assignor to Western Telegraphone Company, Chicago, Ill., a Corporation of South Dakota. Filed Aug. 31, 1903. Serial No. 171,366. (No model.)

*Claim.*—1. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line, said key being connected with the relay and having a normal contact included in the normal circuit of the relay and two alternate contacts, one constituting a terminal of said supply, and a conductor containing resistance to the current from said supply having one terminal in association with the line and the other in the remaining alternate contact of said key, substantially as described.

2. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic sounder



apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line and a conductor containing resistance to the current from said supply and brought into and out of parallel relation with said relay by said key or switching mechanism, substantially as described.



3. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line, said key being connected with the relay and having a normal contact included in the normal circuit of the relay and two alternate contacts, one constituting a terminal of said supply, and a conductor containing resistance to the current from said supply having one terminal in association with the line and the other in the remaining alternate contact of said key, substantially as described.

4. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations, a supply of wave-form current at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line and a conductor containing resistance to the current from said supply and brought into and out of parallel relation with said relay by said key or switching mechanism, substantially as described.

5. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations, a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line and subsidiary circuit connections governed by said switching mechanism and constituting a path for a portion of the current through the line-relay at the sending-station and an additional path from the supply toward the main line independent of said relay, substantially as described.

6. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations, a supply of wave-form current at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line, and subsidiary circuit connections governed by said switching mechanism and constituting a path for a portion of the current through the line-relay at the sending-station and an additional path from the supply toward the main line independent of said relay, substantially as described.

7. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat and normally closed through the contacts of the relay, a sending-key mechanism at each station and circuit connections whereby a portion only of the telegraphic current impressed at a sending-station is directed through the line-relay to operate the sounder at the sending-station, substantially as described.

8. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat and normally closed through the contacts of the relay, a sending-key mechanism at each station and subsidiary circuit connections thrown into circuit by the sending-key or switching mechanism when operated whereby a portion only of the telegraphic current impressed at a sending-station is directed through the line-relay to operate the sounder at the sending-station, substantially as described.

9. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat and normally closed through the contacts of the relay, a sending-key mechanism at each station and subsidiary circuit connections thrown into circuit by the sending-key or switching mechanism when operated whereby a portion only of the telegraphic current impressed at a sending-station is directed through the line-relay to operate the sounder at the sending-station, substantially as described.

10. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a local circuit at each station including the contacts of said relay; a local relay in each local circuit; a telegraphic sounder at each station; a normally open circuit containing each sounder; and a switch controlled by each local relay operating to close its sounder-circuit when operated upon the energization of said line-relay, substantially as described.

11. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station including a vibratory

contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay, a local circuit at each station including the contacts of said relay; a local relay in each local circuit; a telegraphic sounder at each station; a normally open circuit containing each sounder; and a switch controlled by each local relay operating to close its sounder-circuit when operated upon the energization of said line-relay, substantially as described.

12. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay, a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat and normally closed through the contacts of the relay, a sending-key or switching mechanism at each station and means whereby the wave-form current at a sending-station effects the operation of the sounder at that station, substantially as described.

13. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a circuit at each station including said elements, a telegraph-sounder controlled by said circuit and means whereby the outgoing wave-form current at a sending-station will effect the operation of the telegraphic sounder at said station, substantially as described.

14. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, two contact elements normally in engagement controlled by the line-relay; a circuit at each station including said elements, a telegraph-sounder controlled by said circuit and means whereby the outgoing wave-form current at a sending-station will effect the operation of the telegraphic sounder at said station, substantially as described.

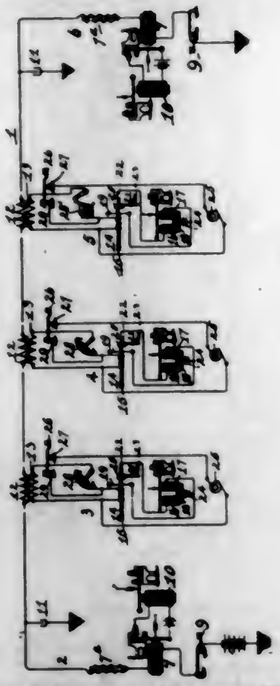
15. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-sound-controlling magnet or relay at each station comprising a permanent magnet as a core for the helix of the relay, key sending mechanism, and circuit connections to define at a sending-station a path for a portion of the telegraphic current through said line-relay and a path for a portion of the current to the telegraph-line, substantially as described.

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**757,504. TELEGRAPH SYSTEM. HARRY O. RUSH, Chicago, Ill., assignor to Western Telegraphone Company, Chicago, Ill., a Corporation of South Dakota. Filed Aug. 31, 1903. Serial No. 171,360. (No model.)**

*Claim.*—1. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a sending-key at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder whose magnet has two differentially-wound helices, and two independent circuits each containing a sounder-helix, one of said circuits being closed through the contacts of the relay while the other circuit is permanently closed, substantially as described.

2. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a sending-key at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder whose magnet has two differentially-wound helices, and two independent circuits each containing a sounder-helix, one of said circuits being closed through the contacts of the relay, substantially as described.



3. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a sending-key at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder whose magnet has two differentially-wound helices, and two independent circuits each containing a sounder-helix, one of said circuits being closed through the contacts of the relay, substantially as described.

4. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a sending-key at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder whose magnet has two differentially-wound helices, and two independent circuits each containing a sounder-helix, one of said circuits being closed through the contacts of the relay, substantially as described.

5. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic-sounder apparatus controlled by the contacts of each relay, resistance to the current emanating from said supply, a sending-key mechanism and circuit connections whereby said resistance and relay are together included in parallel of said supply when the key is operated at a sending-station, substantially as described.

6. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic-sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line, said key having an alternate contact constituting a terminal of said supply whereby when the key is actuated said supply is operatively associated with the telegraph-line, said key also having a normal contact connected with a relay-terminal, and a resistance also connected between said relay-terminal and said key independently of the normal contact, substantially as described.



7. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic-sounder apparatus controlled by the contacts of each relay, resistance to the current emanating from said supply, a sending-key mechanism and circuit connections whereby said resistance and relay are together included in parallel of said supply when the key is operated at a sending-station, substantially as described.

8. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; telegraphic-sounder apparatus controlled by the contacts of each relay, sending-key mechanism at each station for associating the current-supply thereat with said line, said key having an alternate contact constituting a terminal of said supply whereby when the key is actuated said supply is operatively associated with the telegraph-line, said key also having a normal contact connected with a relay-terminal, and a resistance also connected between said relay-terminal and said key independently of the normal contact, substantially as described.

9. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, two contact elements normally in engagement controlled by the line-relay; a circuit at each station including said elements, and a telegraph-sounder controlled by said circuit, said sounder having a controlling-magnet with differential coils, one of said coils being included in a circuit including the relay-contacts, substantially as described.

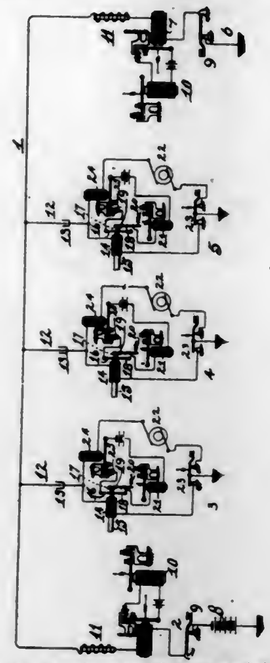
10. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, two contact elements controlled by the line-relay; a circuit at each station including said elements, and a telegraph-sounder controlled by said circuit, said sounder having a controlling-magnet with differential coils, one of said coils being included in a circuit including the relay-contacts, substantially as described.

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**757,505. TELEGRAPHY. HARRY O. RUSH, Chicago, Ill., assignor to Western Telegraphone Company, Chicago, Ill., a Corporation of South Dakota. Filed Aug. 31, 1903. Serial No. 171,400. (No model.)**

*Claim.*—1. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a sending-key or switching mechanism at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station containing said sounder and the contacts at said relay, a sending-key or switching mechanism at each station, an electromagnet controlling connections of said sounder to deënergize the same when said electromagnet is energized, said electromagnet being adapted for inclusion in circuit with the source of supply through the agency of said key or switching mechanism, substantially as described.

2. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station including said elements, and a telegraph-sounder controlled through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat and normally closed through the contacts of the relay, an electromagnet at each station having circuit connections controlled by the sending-key or switching mechanism thereat and operating independently of the line-relay magnet for effecting operation of the sounder at a sending-station, substantially as described.



3. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a sending-key or switching mechanism at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat and normally closed through the contacts of the relay, an electromagnet at each station having circuit connections controlled by the sending-key or switching mechanism thereat and operating independently of the line-relay magnet for effecting operation of the sounder at a sending-station, substantially as described.

4. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station containing said sounder and the contacts at said relay, a sending-key or switching mechanism at each station, an electromagnet controlling connections of said sounder to deënergize the same when said electromagnet is energized, said electromagnet being adapted for inclusion in circuit with the source of supply through the agency of said key or switching mechanism, substantially as described.

5. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency

of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station containing said sounder and said contacts, a sending-key or switching mechanism at each station, an electromagnet included by said key or switching mechanism in circuit with the supply of wave-form current at a sending-station and a switch controlled by said electromagnet and normally forming a part of the sounder-circuit and operated upon the energization of the electromagnet by the wave-form current to open the sounder-circuit, substantially as described.

6. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat, and normally closed through the contacts of the relay, a sending-key or switching mechanism, and means at each station controlled by the sending-key or switching mechanism thereat and operating independently of the line-relay magnet for effecting operation of the sounder at a sending-station, substantially as described.

7. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station controlling the sounder thereat, and normally closed through the contacts of the relay, a sending-key or switching mechanism, an electromagnet at each station having circuit connections controlled by the sending-key or switching mechanism thereat and operating independently of the line-relay magnet for effecting operation of the sounder at a sending-station, substantially as described.

8. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station containing said sounder and the contacts of the relay, a sending-key or switching mechanism at each station, an electromagnet controlling connections of said sounder to deënergize the same when said electromagnet is energized, said electromagnet being adapted for inclusion in circuit with the source of supply through the agency of said key or switching mechanism, substantially as described.

9. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station including a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against said vibratory contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a telegraphic sounder at each station; a circuit at each station containing said sounder and said contacts, a sending-key or switching mechanism at each station, an electromagnet included by said key or switching mechanism in circuit with the supply of wave-form current at a sending-station, and a switch controlled by said electromagnet and normally forming a part of the sounder-circuit and operated upon the energization of the electromagnet by the wave-form current to open the sounder-circuit, substantially as described.

10. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against the aforesaid contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a circuit at each station including said contact elements, and a telegraph-sounder in said circuit, substantially as described.

11. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, a vibratory contact element actuated by the magnet of the relay, and a traveling contact element possessing inertia and normally resting against the aforesaid contact element but separable therefrom through the agency of wave-form current impressed upon the relay; a circuit at each station including said contact elements, and a telegraph-sounder in said circuit, and means whereby the outgoing wave-form current at a sending-station will effect the operation of the telegraphic sounder at said station, substantially as described.

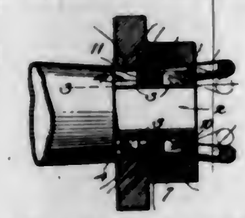
12. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, two contact elements normally in engagement controlled by the line-relay; a circuit at each station including said elements, a telegraph-sounder controlled by said circuit, key sending mechanism and an electromagnet controlled by the key sending mechanism for operating the sounder independently of the line-relay, substantially as described.

13. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station; a line-relay at each station comprising a permanent magnet as a core for the helix of the relay, two contact elements controlled by the line-relay; a circuit at each station including said elements, a telegraph-sounder controlled by said circuit, key sending mechanism and an electromagnet controlled by the key sending mechanism for operating the sounder independently of the line-relay, substantially as described.

14. A system of telegraphy comprising a transmission-line uniting a plurality of telegraph-stations; a supply of wave-form current at each station, a line-sound-controlling magnet or relay at each station comprising a permanent magnet as a core for the helix of the relay, key sending mechanism, and a relay receiving outgoing current supplementing the line-relay for producing sounds at a sending-station, substantially as described.

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**757,506. AXLE-NUT.** CHARLES SCHNEIDER, Sr., New Connerstown, Ohio. Filed July 7, 1903. Serial No. 164,589. (No model.)

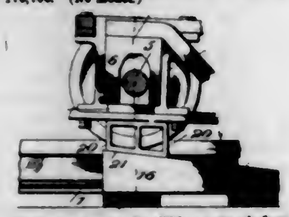


*Claim.*—1. The combination with a spindle having lugs associated therewith, of a hollow nut applied to the spindle and having inner cavities forming a wall or abutment, locking members pivoted and inclosed within the nut and operable for engagement with said lugs, said members normally bearing upon the wall or abutment, and means for holding the members to engaging position.

2. The combination with an axle-spindle having lugs associated therewith, of a hollow nut applied to the spindle and having inner cavities forming a wall or abutment, locking members pivoted and inclosed within the nut and having cross-bars for engagement with the lugs, said cross-bars normally bearing upon the wall or abutment, and leaf-springs attached to the nut and bearing upon the inner faces of the cross-bars to maintain them in engaging position.

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**757,507. DEVICE FOR LIFTING THE FRAMES OF RAILROAD-TRUCKS.** WILLIAM SCHOTT, Flint, Mich. Filed Oct. 27, 1903. Serial No. 178,706. (No model.)



*Claim.*—1. An apparatus for lifting a truck from its axle, comprising a base-block having an inclined surface with ways adjacent



thereto, and a lifting-block having an inclined surface corresponding to the surface of the base-block, ways adjacent to said inclined surface which coact with the ways of the base-block, said lifting-block being forced up the incline of the base-block for separating the truck from the axle thereof when said truck is moved, substantially as described.

2. An apparatus for lifting a truck from its axle, comprising a base-block having an inclined surface with ways, a lifting-block having an inclined surface and ways, the inclination of the two blocks being the same and their ways coacting with each other, rollers intermediate the two blocks and bearing on the two inclined surfaces, the lifting-block being rolled up the inclined surface of the base-block for separating the truck from the axle thereof when said truck is moved, substantially as described.

3. An apparatus for lifting a truck from its axle, comprising a base-block having an inclined surface, ways formed adjacent the inclined surface, a lifting-block having an inclined surface corresponding to the inclination of the base-block, ways on said lifting-block which cooperate with the ways of the base-block, the upper surface of the said lifting-block being flat, rollers between the two blocks, and means for limiting the movement of the lifting-block on the base-block, the lifting-block being rolled up the incline of the base-block for separating the block from the axle thereof by the movement of the truck, substantially as described.

4. An apparatus for lifting a truck from its axle, comprising a base-block having an inclined surface, a lifting-block having an inclined surface corresponding to the inclination of the inclined base-block, the upper surface of the lifting-block being flat and on approximately a horizontal plane for vertically lifting a journal from the axle supported thereby, the lifting-block being shorter than the base-block and guided thereon, and means for holding the blocks together, but allowing one to be moved lengthwise of its companion block, but independent thereof, the lifting-block being moved up the incline of the base-block by the movement of the truck, substantially as described.

5. An apparatus for lifting a truck from its axle, comprising a base-block having an inclined surface, a lifting-block adapted to be slid up the incline surface of the base-block, said lifting-block being shorter than the base-block and guided thereon, the upper face of the lifting-block adapted to lift a journal from the axle supported thereby, and means for holding the blocks together but allowing one to be moved lengthwise of its companion block, but independent thereof, the lifting-block being moved up the incline of the base-block by the movement of the truck, substantially as described.

6. An apparatus of the class described, comprising a base-block having an inclined surface, a lifting-block adapted to slide up the inclined surface of the base-block, and a detachable filler-block, the filler-block fitting under a box of a truck, and the lifting-block below the frame of the truck below the lifting-block, the lifting-block being moved up the incline of the base-block to elevate the truck and the filler-block by the movement of the truck, substantially as described.

7. An apparatus of the class described, comprising a base-block, and a lifting-block, the two blocks having surfaces, flanges on the upper surface of the lifting-block, a filler-block adapted to be fitted between the flanges of the lifting-block, the lifting-block being moved up the base-block by the movement of the frame carrying axles and wheels, to separate the axles from the frame, substantially as described.

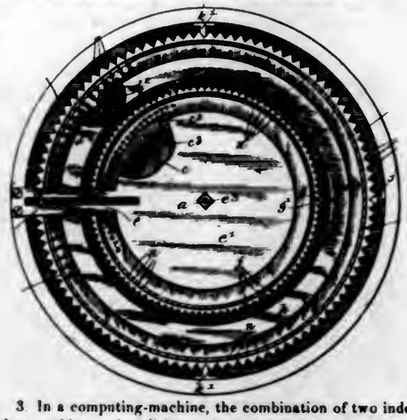
8. An apparatus for lifting a truck from an axle comprising a lifting-block and a base-block, the lifting-block being shorter than the base-block and the faces of the two blocks being inclined in parallel relationship to each other, means for fastening the two blocks together, but allowing the lifting-block to be moved lengthwise the base-block by a truck to separate its wheels from its frame, substantially as described.

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**757,508. COMPUTING-MACHINE.** JAMES A. SCOTT and WILLIAM F. TAYLOR, Chicago, Ill. Filed Feb. 24, 1903. Serial No. 144,684. (No model.)

*Claim.*—1. In a computing-machine, the combination of an annular number-disk, the central portion whereof is removed; a plurality of number-circles on said number-disk; a screen above said disk covering one of the series of numbers on said number-disk, and legs for supporting said screen, said legs passing through the central aperture of said number-disk.

2. In a computing-machine, the combination of a rotating number-disk having number circles thereon, a screen for covering one of the number-circles on said disk, rollers for supporting said number-disk, and a track on said number-disk for engagement with said roller to prevent eccentric rotation of said number-disk.



3. In a computing-machine, the combination of two independently-movable number-disks, each of said disks bearing upon their surface two series of numbers, one series on each of said disks representing multiplicand and the other series representing products, and the numbers in one multiplicand series progressing by units from one to one hundred and the numbers in the other multiplicand series progressing by hundreds from one hundred upward.

4. In a computing-machine, the combination of an annular number-disk, the central portion whereof is removed; a plurality of number-circles on said number-disk, and a ring concentric with said number-disk constituting a stationary screen, said screen being supported above said number-disk and the outer diameter of said screen being sufficiently great to cover one of said number-circles.

5. In a computing-machine, the combination of two rotatable number-disks, each bearing a plurality of number-circles thereon, a pivot for centrally supporting the inner one of said number-disks, and rollers for supporting the outer one of said number-disks.

6. In a computing-machine, the combination of two independently-movable number-disks, each of said disks bearing upon their surface two series of numbers, one series on each of said disks representing multiplicands and the other series representing products; and the numbers in one multiplicand series progressing by a common difference equal to the difference between the highest and lowest numbers in the other multiplicand series.

7. In a computing-machine, the combination of two independently-movable number-disks, each of said disks bearing upon their surface two series of numbers, one series on each of said disks representing multiplicands and the other series representing products; and a sight for exhibiting one at a time the numbers in the multiplicand series.

8. In a computing-machine, the combination of an annular number-disk, the central portion whereof is removed; a plurality of number-circles on said disk; a screen above said disk covering one of the series of numbers thereon; legs passing through the central aperture of said number-disk for supporting said screen; a second rotating number-disk having the same axis of rotation as said annular number-disk; a plurality of number-circles on said second number-disk; a screen above said second disk for covering one of the series of numbers thereon; and pockets in each of said disks for receiving a pencil or other implement for rotating said disks.

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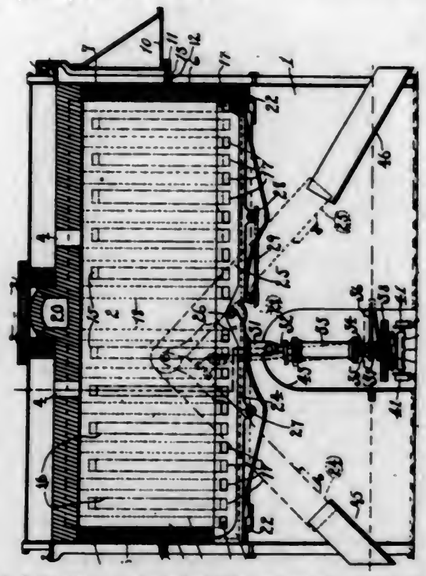
**757,509. RETORT COKE-OVEN.** WILLIAM M. SCOTT, Saxton, Pa. Filed June 15, 1903. Serial No. 161,418. (No model.)

*Claim.*—1. In a retort coke-oven plant, a battery of coke-ovens having pivotally-mounted bottoms, and transportable means adapted to be operatively connected to any selected bottom for swinging the same on its pivotal mounting.

2. In a retort coke-oven plant, a battery of coke-ovens having pivotally-mounted bottoms, a car arranged to travel beneath said bottoms, and means mounted on the car and adapted to be operatively connected to any selected bottom for swinging the same on its pivotal mounting.

3. In a retort coke-oven plant, a battery of coke-ovens having pivotally-mounted bottoms, a car arranged to travel beneath the said bottoms, a beam on the car, means mounted on the car and adapted to be operatively connected to any selected bottom for

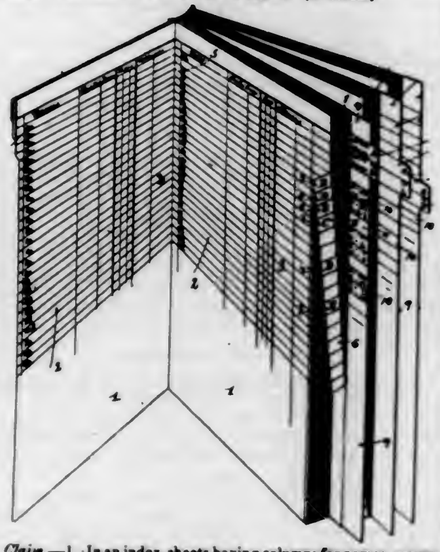
swinging the same on its pivotal mounting, and means cooperating with said beam for sustaining the reaction of said first-named means while operating the said bottoms.



4. In a retort coke-oven plant, a battery of coke-ovens having pivotally-mounted bottoms, walls supporting the ovens proper, and having a passage-way therethrough transversely of the oven-chambers, the passage-way having horizontal shoulders, a car arranged to travel in said passage-way, a beam on the car, adapted to interlock with said shoulders, and means mounted on the car and adapted to be operatively connected to any selected bottom for swinging the same on its pivotal mounting.

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757,510. **LEDGER-INDEX.** GILBERT C. SHEPHERD, Brooklyn, N. Y. Filed Mar. 3, 1901. Serial No. 50,376. (No model.)



*Claim.*—1. In an index, sheets having columns for names, groups or sets of letters at the left-hand side of the columns corresponding to the beginning letters of the names to be inserted there, and spaces between the different groups or combinations of letters having a less number of letters than the adjacent letter or groups for the extension thereinto of names belonging to either set.

2. In an index, tabbed sheets having columns for names, different sets of letters for the front side of the column corresponding to the names to be there inserted, parts of the columns between the different sets having a less number of printed characters than the preceding and following set to allow the names of either set to be extended into said parts, a leader-sheet having a vertical series of spaces and having in each space an upper and lower line corresponding to the two pages to which each such space refers, each line containing the same subdivision of the letters as appear in the corresponding column.

3. In an index, tabbed sheets having columns for names, different sets of letters for the front side of the column corresponding to the names to be there inserted, a leader-sheet having a vertical series of spaces and having in each space an upper and lower line corresponding to the two pages to which each such space refers, each line containing the same subdivisions of the letters as appear in the corresponding columns.

4. In an index-book, a number of tabbed index-sheets, leader-sheets placed at desired intervals among the index-sheets, said leader-sheets projecting beyond the edge of the index-sheets and having a vertical series of spaces corresponding to the tabs and containing subdivisions of the initial letter positioned in the spaces according to their location in the said columns, and stopped tags attached to said leader-sheets indicating the initial letter or letters covered by the said leader-sheet.

5. In an index, a series of tabbed sheets, having columns 2 for names, sets of printed combinations of letters at one side of the column corresponding to the names to be inserted, a leader-sheet having a projection on which two vertical series of spaces 9 and 13 are produced, each space being adjacent a tab, the spaces 13 each having the general initial letter and the spaces 9 each having the same subdivisions of the letters as are printed in the columns 2, the letters being in two rows corresponding to the two corresponding pages of the tabbed sheets.

6. The combination with a plurality of stepped index-sheets, the leader-sheets between the stepped index-sheets are interposed, the leader-sheets projecting beyond the edges of the stepped index-sheets, the leader-sheets having thickened edges, and indicational tabs extending from said thickened edges, substantially as described.

7. A sheet having an added strip along one of its edges, a projection from the outer edge of said strip overlapping the strip and the edge of the sheet, and a covering-strip overlying the edge of the sheet through which the projection passes, substantially as described.

8. In an index, a series of tabbed sheets having columns 2 for names, sets of printed combinations of letters at the front side of the column corresponding to the names to be inserted, a leader-sheet having a projection on which a vertical series of spaces is produced, each space being adjacent a tab and having the same subdivision of the letters as are printed in the columns 2, said leader-sheet having a projecting tab, the letters being in two rows corresponding to the two pages.

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757,511. **MECHANICAL MOVEMENT.** DANIEL W. SEIBT, Chicago, Ill., assignor to Addison Bybee, Milford, Utah. Original application filed Dec. 10, 1901, Serial No. 86,223. Divided and this application filed June 22, 1903. Serial No. 162,577. (No model.)

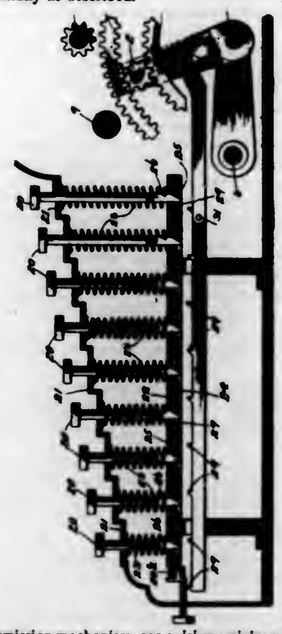
*Claim.*—1. Transmission mechanism, comprising the combination of a driving member, a limiting member, and a transmitting member, the three engaging one another and the former two cooperating to regulate the travel of the latter, means for imparting movement to the driving member, and means for variably regulating the travel of the limiting member, whereby the transmitting member is governed by the travel of the limiting member, substantially as described.

2. Transmitting mechanism, comprising the combination of a driving member pivotally supported near its center, and means for forcing said member forward and backward, with two complemental movable members engaging said driving member on opposite sides of its pivotal support, and means for limiting the movement of one of said movable members at will, whereby the movement of one of said movable members is governed by the travel of the other, substantially as described.

3. Transmitting mechanism, comprising a driving-pinion and means for rotating said pinion, in combination with a limiting member and a transmitting member meshing with said pinion on opposite sides of its center, and means for limiting the travel of said limiting member, whereby the movement of the transmitting member is governed by the travel of the limiting member, substantially as described.



4. Transmitting mechanism, comprising a freely-rotating driving-pinion, and means for forcing said pinion forward and backward, in combination with two complemental cog-rack members meshing with said pinion on opposite sides of its center, whereby the movement of one of the cog-rack members is governed by the travel of the other, substantially as described.

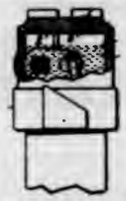


5. Transmission mechanism, comprising a pinion supported upon an oscillating lever, and means for operating said lever, in combination with two complemental segmental cog-racks meshing with said pinion on opposite sides of its center, and means for limiting the movement of one of said cog-racks, whereby the movement of one of said cog-racks is controlled by the travel of the other, substantially as described.

6. Transmission mechanism, comprising a pinion pivotally supported upon an oscillating lever, and means for oscillating said lever, in combination with two oscillating levers or arms each provided with a segmental cog-rack meshing with said pinion on opposite sides of its center, and means whereby the movement of one of the cog-racks will be limited by the travel of the other cog-rack, substantially as described.

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757,512. **HYDRAULIC JACK.** FRANCIS H. STILLMAN, New York, N. Y. Filed Nov. 8, 1902. Serial No. 130,505. (No model.)



*Claim.*—1. A hydraulic jack provided with a capillary vent affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

2. A hydraulic jack provided with a vent comprising a plurality of capillary air-ducts affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

3. A hydraulic jack having a vent comprising a capillary air-duct extending through the wall of the fluid-reservoir above the operating fluid, and affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

4. A hydraulic jack having a vent comprising a capillary slit extending through the wall of the fluid-reservoir above the operating fluid, and affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

5. A hydraulic jack having in the wall of the fluid-reservoir above the operating fluid a plug containing a capillary vent extending through the plug and wall, and affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

6. A hydraulic jack having in the wall of the fluid-reservoir above the operating fluid a plug containing a vent comprising a plurality of capillary air-ducts, and affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

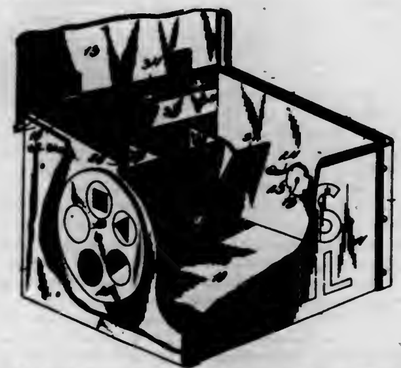
7. A hydraulic jack having in the wall of the fluid-reservoir above the operating fluid a plug containing a capillary vent comprising a slit cut in the plug and affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

8. A hydraulic jack having in the charging-orifice a screw-plug slit from end to end to form in it a capillary vent affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

9. A hydraulic jack having in the charging-orifice a screw-plug slit across the screw-thread and from end to end of the plug to form in it a capillary vent affording an outlet for the air that is compressed in the fluid-chamber by the action of a weight rapidly lowered with the jack.

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757,513. **MAIL-BOX.** NELSON H. STUBBS and MATHEW S. ALLEN, Guthrie, Okla. Filed Aug. 23, 1902. Serial No. 120,850. (No model.)



*Claim.*—In a mail-box, the combination with a mail-receptacle having an end wall, of a supplemental wall secured to the outer face of the receptacle and having a sight-opening, said supplemental wall extending across and being spaced from the end wall forming a compartment that is open at its top and bottom, a spindle extending across the compartment and being journaled in the walls, and an indicator-disk located in the compartment and secured to the spindle, said disk coacting with the sight-opening of the supplemental wall.

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757,514. **PROCESS OF PROVIDING CIGARS WITH SMOKE-IMPROVING PORTIONS AT THE POINTED ENDS.** HERMANN F. M. THOMS, Stegnitz, Germany, assignor to Hermann Otto Wendt, Bremen, Germany. Filed July 30, 1903. Serial No. 167,655. (No specimens.)

*Claim.*—1. The process of providing cigars with a smoke-improving portion at the pointed end which essentially consists in making the fillers, impregnating the pointed end portion of same with a solution of a salt composed of a metal of the iron group, drying, and wrapping, substantially as and for the purpose specified.

2. The process of providing cigars with a smoke-improving portion at the pointed end portion which essentially consists in making the fillers, impregnating the pointed end portion of same with a solution of ferrous sulfate, drying and wrapping, substantially as and for the purpose specified.

3. The process of providing cigars with a smoke-improving portion at the pointed end which essentially consists in making the fillers, providing the same at the zone of the pointed end with small

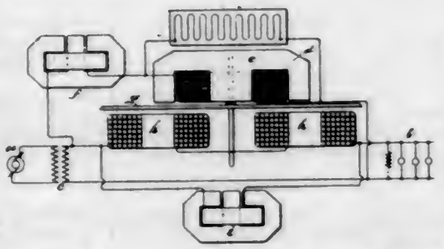
holes extending inwardly, dipping the fillers with said ends into a solution of ferrous sulfate, allowing the said end portions to remain for a time in contact with said liquor, removing the fillers from the liquor, causing them to dry and then applying the wrapper, substantially as and for the purpose specified.

4. As a new article of manufacture a cigar made with a filler a portion of the pointed end of which is impregnated with salts of metals of the iron group, and a wrapper which is not impregnated with such salt, substantially as and for the purpose specified.

5. As a new article of manufacture a cigar made with a filler a portion of the pointed end of which is impregnated with ferrous sulfate, and a wrapper which is not impregnated with salts of the iron group, substantially as and for the purpose specified.

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**757,515. PHASE REGULATION. ROBERT M. TINGLEY, Wilkinsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed May 9, 1896. Serial No. 590,841. (No model.)**



*Claim.*—1. In a wattmeter, an induction-motor device having two energizing-coils supplied from a single source of alternating current and a closed circuited armature, one of said coils being in shunt to the translating devices, the other being in series with said translating devices, at least one of said coils being shunted by a local circuit of different time constant than that of the coil shunted, substantially as described.

2. In a wattmeter, an induction-motor device having two energizing-coils supplied with current from a single source, one of said coils being in shunt to the work-circuit, the other being in series with said work-circuit, the series coil being separately shunted by a circuit of greater time constant than that of itself, substantially as described.

3. In a wattmeter, an induction-motor device having, when in operation, two periodic fluxes corresponding in phase with the current of their energizing-coils, and separated from each other by an angle differing from ninety degrees by the angle of current lag in the work-circuit, such phase-angle difference being maintained by the action of circuits in shunt to one or both of said coils, the energizing-coils being supplied from a single source of alternating current, substantially as described.

4. An instrument for measuring electrical energy comprising a shunt-connected coil, a series-connected coil, a movable armature located in the magnetic fields of said coils, an inductive resistance in the shunt-circuit, and an inductive resistance in shunt to said series coil, whereby the currents in the shunt and series coils are brought into the required phase relation.

5. The combination with an alternating-current circuit of means for measuring the true energy therein, comprising a coil connected in shunt and a coil connected in series with said circuit, an armature actuated by said coils, an inductive resistance in shunt to said series coil, whereby the desired phase relation is secured.

6. The combination with a field-coil, and an inductive resistance in series therewith, of a second field-coil and an inductive resistance in shunt thereto.

7. In an alternating-current meter operated by currents differing in phase and comprising two actuating-coils, means for causing the current through one of said coils to lag behind its electromotive force approximately ninety degrees, and an inductive resistance in shunt to the other of said coils.

8. An electric measuring instrument comprising a rotatable, closed-circuit armature, an inducing-coil connected in series in the work-circuit, a second inducing-coil connected across the said circuit and having an inductive resistance in series with it and a shunt around one of said coils and entirely outside of both magnetic fields, said shunt having a resistance for increasing the phase angle between said magnetic fields.

9. The combination in an alternating-current inductive wattmeter, of primary magnetizing coils or circuits, only two in number, the one being in series and the other in shunt relation to the consumption-circuit and the two carrying currents having a phase-angle difference other than ninety degrees, and a phase-adjusting circuit or branch circuit for causing the phase difference between the currents in said two magnetizing-circuits to be substantially equal to ninety degrees.

10. In a phase-adjusting device especially adapted for adjusting the phase of induction-wattmeters, the combination of two energizing coils or circuits having a phase difference other than ninety degrees, one of the said circuits being in shunt or shunt relation to the source of electric energy and the other of the circuits being in series or series relation with the source of electric energy, one at least of the said coils being shunted by a local circuit of a different time constant than that of the coil shunted, whereby the current phase of either circuit may be adjusted with respect to the other circuit to bring about a phase difference of ninety degrees between the two circuits.

11. In phase adjustment, the combination of a plurality of coils or circuits one in series or series relation with a source of current-supply and the other in shunt or shunt relation with a source of current-supply and a shunt around one of the said coils entirely outside of the magnetic field of the said coil, said shunt having a resistance for increasing the phase angle between the said magnetic fields.

12. In an alternating-current-motor meter, the combination of a rotor, a series coil, a shunt-coil and a phase-adjusting resistance in parallel with the series coil for bringing the currents in the coils into quadrature.

13. In a motor-meter for alternating currents, the combination of a rotor, a series coil, a shunt-coil acting with the series coil and provided with phase-adjusting means for lagging the phase of its current and an inductive resistance in parallel with the series coil, as and for the purposes set forth.

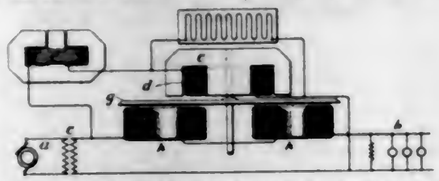
14. In a motor-meter for alternating currents, the combination of a rotor, a series coil, a shunt-coil and an inductive resistance electrically connected to the series coil and operating to produce quadrature between the currents in the coils as set forth.

15. In a motor-meter for alternating currents, the combination of a rotor, a shunt and a series coil, an inductive resistance acting upon the current in the series coil and an adjustable inductive resistance operating upon the current in the shunt-coil whereby quadrature is produced between the phases of the currents in the said coils.

16. In a phase-adjustment device, the combination of a plurality of coils carrying currents differing in phase by an angle other than ninety degrees and phase-advancing means for one of the coils in shunt relation to said coil for bringing about quadrature between the coils.

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**757,516. PHASE-ANGLE-ADJUSTING MEANS. ROBERT M. TINGLEY, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Original application filed May 9, 1896, Serial No. 590,841. Divided and this application filed Apr. 24, 1900. Serial No. 14,175. (No model.)**



*Claim.*—1. The combination in an alternating-current circuit, of a field-coil connected in series in said circuit, a second field-coil in shunt upon said circuit, an inductive resistance in series with said second field-coil and a non-inductive resistance in shunt thereto.

2. In an alternating-current meter operated by currents differing in phase and comprising two actuating-coils, means in series with one of said coils for causing the current therein to lag behind its impressed electromotive force approximately ninety degrees and means in shunt to said coil for increasing said angle of lag.

3. The combination with two field-coils and means for lagging the phase of the magnetic field produced by one of them, of means in shunt and in non-inductive relation to said last-named coil for causing a further lag of its magnetic field.

4. The combination with an alternating-current circuit of means for measuring the true energy therein, comprising a coil connected



in series with and a coil connected in shunt upon said circuit, an armature actuated by said coils, an inductive resistance in series with said shunt-connected coil and a non-inductive resistance in shunt to said coil.

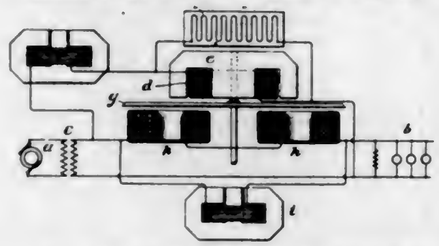
5. The combination with two field-coils and means for lagging the phase of the current in one of them, of means in shunt to the last-named coil for causing a further lag of its current phase.

6. In a phase-adjusting device, the combination of two field-coils traversed by current, means for lagging the phase of the current of one field-coil and a phase-adjusting means in shunt to the last-named coil for causing a further lag of its current phase.

7. The combination with two field-coils and means for lagging the phase of the magnetic field produced by one of them, of means in shunt to said last-named coil for directly causing a lag of its current phase.

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**757,517. METHOD OF PHASE-ANGLE ADJUSTMENT. ROBERT M. TINGLEY, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Original application filed May 9, 1896, Serial No. 590,841. Divided and this application filed Apr. 24, 1900. Serial No. 14,176. (No model.)**



*Claim.*—1. In the method of measuring the electrical energy of a single-phase circuit, the improvement which consists in establishing by currents from the single source supplying the energy to be measured, two periodic magnetic fluxes, one proportional to the electromotive force of the supply-circuit and the other proportional to the current flowing to the translating devices, said fluxes having a phase difference equal to an angle differing from ninety degrees by the angle of lag in the work-circuit and acting inductively upon a closed circuited armature, and maintaining the phase difference of said fluxes by the action of currents shunted around part or all of the energizing-coils and outside their magnetic fields substantially as described.

2. In the method of measuring the energy of a single-phase circuit, the improvement which consists in establishing by currents from the single source supplying the energy to be measured, two periodic magnetic fluxes, one proportional to the electromotive force of the supply-circuit and retarded behind the supplied current, and the other proportional to the quantity of said current and advanced relatively to the main current by an angle equal to the complement of the angle of retardation of said other flux, minus the angle of lag of the work-circuit, and acting inductively upon a closed circuited armature, substantially as described.

3. The method of increasing the phase angle between the currents in two independent field-coils which consists in shunting one of said coils by an inductive resistance the self-induction of which is greater than that of the said coil.

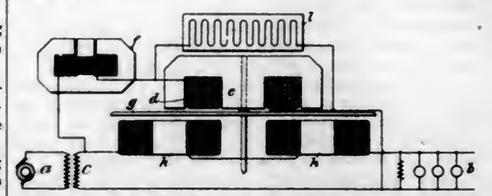
4. The method of producing a desired phase angle between two magnetic fields which consists in lagging the current in one of the field-producing coils by introducing inductive resistance directly into its circuit and advancing the current in the other field-producing coils by subjecting the same to the action of an inductive shunt.

5. The method of producing a quadrature relation between two coils, one in series relation with a work-circuit, and the other in a shunt or shunt relation to the work-circuit, which consists in effecting a lag of the phase of the magnetic flux of one coil and shunting one of the coils by a shunt having a different time constant than that of the said coils.

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**757,518. METHOD OF PHASE-ANGLE ADJUSTMENT. ROBERT M. TINGLEY, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Original application filed May 9, 1896, Serial No. 590,841. Divided and this application filed Feb. 4, 1901. Serial No. 46,196. (No model.)**

*Claim.*—1. The method of producing a desired phase angle between two magnetic fields which consists in lagging the current in one of the field-producing coils by introducing inductive resistance directly into the circuit and shunting said coil by a non-inductive resistance.



2. The method of increasing the phase angle between the currents in two independent field-coils which consists in shunting one of said coils by a resistance having a lesser time constant than said coil.

3. The method of producing a desired phase angle between two magnetic fields which consists in lagging the current in one of the field-producing coils by introducing inductive resistance directly into its circuit and causing a further lag by shunting said coil by a resistance having a lesser time constant than the coil.

4. The method of producing a quadrature relation between two current-circuits, which consists in shunting a circuit carrying a monophase current thereby producing a shunt-circuit, effecting a lag of the phase of the current therein and producing a further lag of the current phase of the shunt-circuit by shunting the same by a resistance having a different time constant from that of the shunt.

5. The method of producing a quadrature relation between currents flowing in two coils, which consists in lagging the phase of the current in one of the said coils and shunting the said coil by non-inductive resistance which will produce a further lag in the current phase of the said coil.

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**757,519. FIREPROOF BUILDING CONSTRUCTION. GEORGE A. TURNBULL, Chicago, Ill. Filed Dec. 9, 1901. Serial No. 85,220. (No model.)**



*Claim.*—1. In a fireproof construction, the combination with a support of fireproof coverings on opposite sides thereof, air-chambers between the support and one of the coverings and means engaged on the walls of said air-chambers for supporting the other covering therefrom out of contact with the support.

2. A fireproof construction comprising a metallic base consisting of corrugated sheet metal, said corrugations forming parallel cylindric loops or folds partly opened on the inner side thereof and arched bends between the folds, a filling material covering said loops or folds on the convex side thereof and filling the spaces between the same.

3. In a fireproof construction a sheet of metal having corrugations therein forming shallow concave and deep cylindrical depressions alternately disposed in one side of said sheet and deep irregular depressions in the other side thereof and a fireproofing material engaging in said irregular depressions.

4. The combination with girders, of corrugated sheets supported transversely thereon, said corrugations forming upwardly-directed tubular loops or folds partly closed at the bottom thereof, a corrugation between adjacent loops or folds, a plurality of shoulders on the inner surface of said sheet adapted to rest on said girders, a filling of concrete or the like covering the loops or folds on the convex side thereof, a plurality of hangers having heads thereon complemental with the inner side of said loops and engaging therein and a ceiling suspended therefrom out of contact with said girders.

5. The combination with girders, of sheets of metal supported transversely thereon said sheets comprising a plurality of parallel corrugations having upwardly-directed loops or folds partly closed at the bottom, said sheet curving upwardly between said corrugations or folds, fireproofing material filling the spaces between the corrugations and covering the upper surface thereof, a floor secured thereon and a plurality of hangers engaged in said corrugations and acting to support therefrom a ceiling or the like.

6. In a device of the class described, the combination with the girders of a corrugated plate or sheet extending transversely thereof, upwardly-directed loops or folds in said sheet forming downwardly-

opening partly-closed corrugations, said corrugations forming regular cylindric depressions in one side of said sheet and irregular depressions in the other side thereof, fireproofing material filling said sheet on the upper side thereof to a point above said loops or folds, a hanger secured in said corrugations and extending below the girders, a ceiling-strip engaging in the ends of said hanger and acting to lock the same in position and means for securing lath thereon.

7. The combination with metallic girders of a sheet supported thereon provided with a plurality of partly-tubular corrugations partly open on the under side, a hanger engaged at one end in said corrugations and extending downwardly on each side and out of contact with the girders, means at the lower end of each hanger for engaging ceiling-strips and permanently-attached means on the ceiling-strips adapted to secure thereto metallic lath, said girders being free from contact with the structure thus formed with the exception of the contact therewith of the corrugated sheet.

8. A floor and ceiling construction comprising the combination with metallic I-beams of a partly-metallic floor supported thereon and providing air-chambers transversely of the beams above the same and means engaging in said air-chamber of the floor adapted to support a ceiling below the beam and free from contact therewith.

9. A flooring and ceiling construction comprising transverse beams, a sheet supported thereon, partly-tubular corrugations therein and an upwardly-curved portion between the corrugations, hangers engaging in said corrugations by heads shaped to conform thereto and supports at the lower end of each hanger adapted to positively engage and support a ceiling-strip and means on the ceiling-strip for securing metallic lath thereto.

10. In a device of the class described a hanger comprising a strip of metal shaped at the upper end to provide a head and recessed at its lower end to admit therein an article to be supported.

11. The combination with a hanger provided at one end with a head and having the other end transversely and longitudinally slotted, of a ceiling-strip engaged thereby and means permanently secured thereon for engaging lath thereto.

12. A hanger of the class described comprising a metallic strap having on one end thereof a head and having the other end thereof slit longitudinally and notched horizontally to engage a ceiling-strip substantially as described.

13. A ceiling-strip for the purpose specified comprising a metallic bar provided with elongated apertures along its length, a wire clip engaged in said apertures each clip bent at one end to form a locking-key therefor and the other end adapted to be bent up and engage thereto metallic lath or the like.

14. The combination with supporting-beams of a floor supported thereon and provided with a plurality of tubular air-spaces above and extending transversely of the beam, hangers engaged in said air-spaces and depending on each side of the beam and out of contact therewith, shouldered bolts engaging the lower ends of said hangers below and out of contact with the beams, and means carried on the lower ends of said hangers for supporting the ceiling

15. In a floor construction, the combination with supporting-beams of a sheet of metal laid transversely thereon and provided with partly-tubular corrugations extending transversely of the beam, hangers engaged in said corrugations on each side of the beam and out of contact therewith having a length greater than the depth of the beam, bolts engaging the lower ends of said hangers together and means thereon for spacing said lower ends of the hangers out of contact with the beam and means on the lower end of each hanger for supporting therefrom a ceiling.

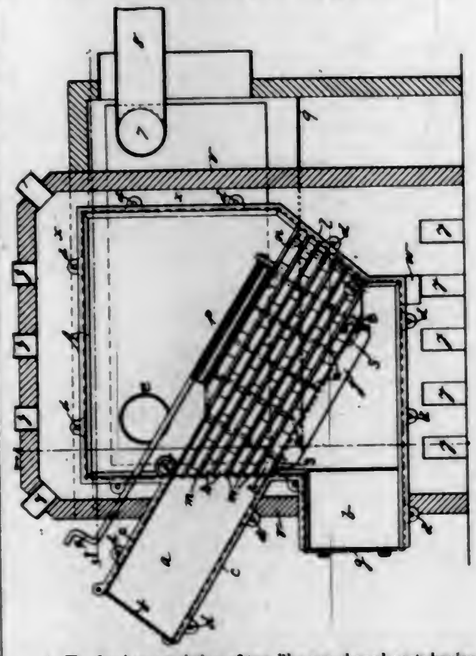
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**757,520. HOT-AIR HEATING-FURNACE.** EDWARD A. TUTTLE, New York, N. Y.; Arthur C. Tuttle and Herbert B. Tuttle executors of said Edward A. Tuttle, deceased. Filed Sept. 26, 1900. Renewed Jan. 13, 1904. Serial No. 188,923. (No model.)

*Claim.*—1. The fire-box consisting of two like pan-shaped parts having ash-port and magazine-extension gaps, and smoke outlet or outlets, said parts joined and clamped together at the edges and set up with the meeting joint in the vertical center plane, the magazine being above the ash-port and suitably inclined for self-feeding the coal.

2. The fire-box consisting of two like pan-shaped parts having ash-port and magazine-extension gaps, and smoke outlet or outlets, said parts joined and clamped together at the edges and set up with the meeting edges in the vertical central plane, the magazine being above the ash-port and suitably inclined for self or end feeding, and the inclined grate in combination and coincident therewith.

3. The fire-box consisting of two like pan-shaped parts having ash-port and magazine-extension gaps, and smoke outlet or outlets, said parts joined and clamped together at the edges and set up with the meeting joint in the vertical central plane, the magazine being above the ash-port and suitably inclined for self or end feeding; the inclined grate in combination and coincident therewith, and a throat-space at the lower extremity of the grate, opening into the ash-pit.



4. The fire-box consisting of two like pan-shaped parts having ash-port and magazine-extension gaps, and smoke outlet or outlets, said parts joined and clamped together at the edges and set up with the meeting joint in the vertical central plane, the magazine being above the ash-port and suitably inclined for self-feeding; the inclined grate in combination and coincident therewith, a throat-space at the lower extremity of the grate opening into the ash-pit, and the protective plates at the sides of the fire-grate.

5. The fire-box consisting of two like pan-shaped parts having ash-port and magazine-extension gaps, and smoke outlet or outlets, said parts joined and clamped together at the edges, and set up with the meeting joint in the central vertical plane, the magazine being above the ash-port and suitably inclined for self-feeding; the inclined grate in combination and coincident therewith, a throat-space at the lower extremity of the grate opening into the ash-pit, the composite protective plates at the sides of the fire-grate, said plate having the ribbed back offsetting it from the fire-box plates and forming air-ducts supplying air over the fire-bed and valves controlling said ducts.

6. The combination with the fire-box, inclined self-feeding magazine and fire-grate, of the quadrilateral secondary air-chamber, primary air-chamber of like form inclosing three sides of the secondary air-chamber, horizontal smoke-flues located in the three divisions of said former chamber, cold-air inlet to said primary chamber, and air-passages from the primary air-chamber to the secondary air-chamber through the lower part and opposite sides of the wall of the latter chamber, the hot-air outlets being at the top of the secondary air-chamber.

7. The combination with the fire-box, inclined self-feeding magazine and fire-grate, of the quadrilateral secondary air-chamber, primary air-chamber of like form surrounding three sides of the secondary air-chamber, horizontal smoke-flues located in the three divisions of said chamber, and connected with the fire-box through the inclosure of the secondary air-chamber, inlet for cold air to the primary air-chamber, discharge-pipe of the smoke-flues extended through said cold-air inlet, and air-inlets from the primary air-chamber to the secondary air-chamber through the opposite sides of the wall of said latter chamber at the base.

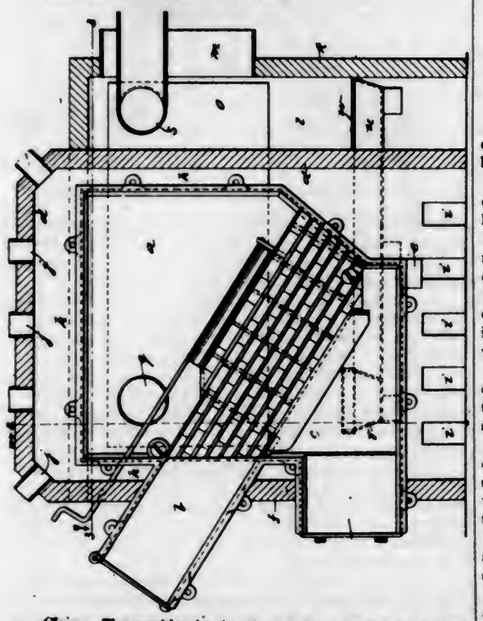
8. The combination with the inclined fire-bed and magazine, of vertical air-passages behind and intermediate of the side walls of the fire-bed, and the shell of the fire-box from the ash-pit to the surface of the fire-bed, and valves lying over the inues of said passages at their upper ends, said valves having their pivot-rods extending upward through the front wall of the furnace, said passages being formed in said side walls.

9. A hot-air self-feeding furnace having the quadrilateral primary and second air-heating chambers, the former surrounding three sides of the latter, with cold-air inlet to the primary chamber, and inlets from opposite sides of the primary chamber to the secondary chamber and the baffle-plate, arranged to cause the air to traverse the primary chamber from back to front before reaching the inlets to the secondary chamber.

10. The combination with the fire-box, quadrilateral inclosure therefor, primary air-chamber and inclosure therefor surrounding three sides of the secondary air-chamber inclosure, horizontal smoke-flues located in said primary chamber, and connected with the fire-box through the inclosure of the secondary air-chamber, inlet for cold air to the primary chamber, discharge-pipe of the smoke-flues extended through said cold-air inlet, air-inlets from the primary air-chamber to the secondary air-chamber through the wall of said latter chamber at the base, and the baffle-plates in the primary chamber causing the cold air to traverse the length of the smoke-flues before reaching the inlets from the primary chamber to the secondary chamber.

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**757,521. HOT-AIR FURNACE.** EDWARD A. TUTTLE, New York, N. Y.; Arthur C. Tuttle and Herbert B. Tuttle executors of said Edward A. Tuttle, deceased. Filed Nov. 28, 1900. Renewed Jan. 13, 1904. Serial No. 188,924. (No model.)



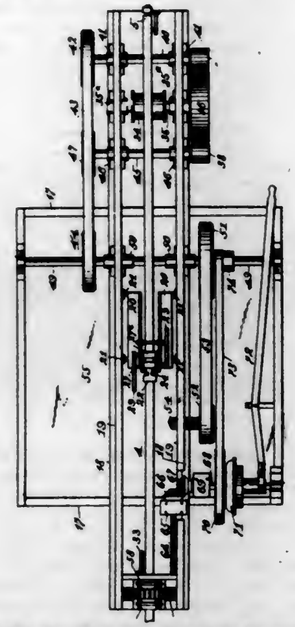
*Claim.*—The combination in a hot-air furnace, of the primary chamber receiving the air to be heated, and adapted for moderately heating the air, the secondary air-heating chamber inclosed in the primary chamber, the fire-box contained in said secondary heater, and adapted for more highly heating the air, a series of passages for the air from the primary chamber to the secondary chamber located along the bottom of the wall separating the two chambers, an evaporating-pan located in the primary chamber above said passages and constituting a baffle device causing the air to traverse said chamber laterally from the cold-air inlet to the passage into the space below the pan, and along said space from the inlet into it to the series of passages therefrom into the secondary chamber.

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**757,522. CEMENT-KILN-CLEANING MACHINE.** CHESTER J. VAN DEUSEN, Iola, Kans. Filed May 25, 1903. Serial No. 158,677. (No model.)



*Claim.*—1. In a kiln-cleaning machine, a rotary head for rotating the cleaning-bar.



2. In a kiln-cleaning machine, a carriage for reciprocating the cleaning-bar, and a frame having universal movement, the carriage being operatively mounted upon said frame.

3. In a kiln-cleaning machine, a rotary head for rotating the cleaning-bar, and a frame having universal movement, the rotary head being operatively mounted upon said frame.

4. In a kiln-cleaning machine, a carriage, a rotary head, and means for operating the carriage and the head either simultaneously or independently.

5. In a kiln-cleaning machine, a cleaning-bar, a carriage for operating the same, consisting of a suitable frame, a roller mounted in the frame, and cams adapted to hold the cleaning-bar in contact with the roller.

6. In a kiln-cleaning machine, a cleaning-bar, a carriage for operating the same, consisting of a suitable frame, a head secured to the frame, and suitable means for securing the cleaning-bar to said head.

7. In a kiln-cleaning machine, a cleaning-bar, a carriage for operating the same, consisting of a suitable frame, a slotted head secured to the frame and the interior of which flares outwardly toward one end, and suitable means for securing the cleaning-bar to the slotted portion of said head.

8. In a kiln-cleaning machine, a rotary head suitably mounted and consisting of a cylinder, open at its opposite ends, and rollers suitably arranged in said cylinder.

9. In a kiln-cleaning machine, a rotary head suitably mounted and consisting of a cylinder, the interior of which flares outwardly toward its opposite ends from a central point, and rollers arranged at said central point to form a hollow square.

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**757,523. INDUCTION-COIL.** RICHARD VARLEY, Providence, R. I., assignor to Varley Duplex Magnet Company, a Corporation of New Jersey. Filed Dec. 14, 1903. Serial No. 185,027. (No model.)

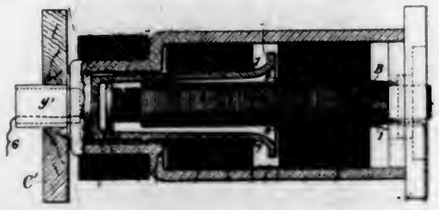


*Claim.*—1. In an induction-coil, the combination of a secondary winding divided into sections and a single concentric sleeve or cylinder of insulating material surrounding a plurality of sections of said winding and having an inwardly-projecting flange extending between two adjacent sections of said secondary winding.

2. In an induction-coil, the combination of a secondary winding divided into sections, the inside ends of which are electrically connected, and a sleeve of insulating material surrounding said sections and having a flange extending between them, for the purpose

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**757,524. INDUCTION-COIL. RICHARD VARLEY, Providence, R. I., assignor to Varley Duplex Magnet Company, a Corporation of New Jersey. Filed Dec. 30, 1903. Serial No. 187,200. (No model.)**



*Claim.*—1. In an induction-coil, the combination with a casing-head provided with an opening, of a core and primary coil wound thereon, said core and coil being removable through the opening in the casing-head.

2. In an induction-coil, the combination with two casing-heads, of a core and primary and secondary windings, said core and windings being supported by and between said heads, one of the heads provided with an opening through which the core and primary winding can be removed without disturbing the secondary winding.

3. In an induction-coil, a core having permanently fixed to one end thereof an insulating-disk, in combination with a supporting-frame to which said disk is attached.

4. In an induction-coil, the combination of a core provided with a porcelain disk-like head, said core and head being connected by a vitreous cement.

5. In an induction-coil, the combination of a core having an insulating-disk attached to one end and a frame provided with an opening and means for securing said disk in the opening.

6. In an induction-coil, the combination of a core, a primary coil wound thereon, a cup of insulating material into which one end of the core and primary coil projects and a secondary coil divided into a plurality of sections, a portion of which surrounds the cup, while the remainder surrounds that portion of the core and primary coil not covered by the cup.

7. In an induction-coil, the combination of a core, a primary coil wound thereon, a cup of insulating material into which one end of the core and primary coil projects and a secondary coil divided into a plurality of sections, a portion of which surrounds the cup, while the remainder surrounds that portion of the core and primary coil not covered by the cup, said cup having a flange extending into a space between the two portions of the secondary winding.

8. In an induction-coil, the combination of a core and primary coil wound thereon, a secondary winding surrounding the core and primary coil and divided into two sections, said sections being electrically connected together at their outer ends, and an insulating-shield interposed between one of the sections and the primary coil and core, said shield having a flange extending radially outward between the two sections of the secondary winding.

9. In an induction-coil, the combination of a core and a primary coil wound thereon, a cup of insulating material into which one end of the core and the primary coil project, a secondary winding divided into two sections, one of which directly surrounds the covered end of the core and primary coil, while the other surrounds the cup, said cup provided with a flange extending into a space between the two sections of the secondary winding, means for supporting said cup and means for supporting the said core and primary coil in a central position within the cup.

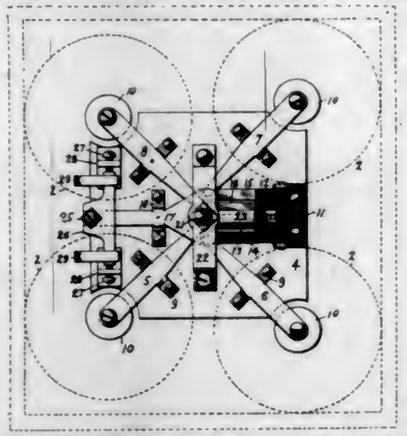
10. In an induction-coil, the combination of two heads, a cylindrical insulating-body supported by and between said heads, a secondary winding axially arranged in and supported by said body, a cup of insulating material also supported by and centered within said body, said cup extending through a portion of said secondary winding, a core and primary coil wound thereon, one end of the core being supported in one of said heads while the other end enters a socket in said cup, substantially as described.

11. In an induction-coil, two cup-shaped bodies of insulating material, one contained within the other, one of said cups being of considerably less diameter than the other and the other having a portion of reduced diameter into which the first fits, a core and primary coil inclosed by the inner cup, a secondary coil inclosed by the outer cup and surrounding the inner cup and a condenser occupying the annular space formed by the reduced portion of the outer cup.

12. In an induction-coil, the combination of two glass cups, one of which is concentrically located within the other, cushioning material interposed between the opposing surfaces of the cups, a primary coil inclosed by the inner cup and a secondary coil occupying a space between the two cups.

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**757,525. INDUCTION-COIL. RICHARD VARLEY, Providence, R. I., assignor to Varley Duplex Magnet Company, a Corporation of New Jersey. Filed Jan. 12, 1904. Serial No. 188,696. (No model.)**



*Claim.*—1. The combination of a plurality of induction-coils, a plurality of armature-levers corresponding respectively thereto and a single circuit-controlling lever common to all of said armature-levers and adapted to be actuated successively thereby.

2. The combination of a plurality of induction-coils, a single vibrating circuit-interrupter common to all of the coils, and a plurality of mechanical circuit-controllers adapted to be operated successively and controlling the circuit of the respective coils.

3. The combination of a plurality of induction-coils, a plurality of armature-levers corresponding respectively thereto, a single circuit-controlling lever common to all of said armature-levers and adapted to be actuated successively thereby and a plurality of springs applied respectively to said levers.

4. The combination of a plurality of induction-coils, a plurality of armature-levers corresponding respectively thereto, a single circuit-controlling lever common to all of said armature-levers and adapted to be actuated successively thereby, a plurality of springs applied respectively to said levers and a single adjusting-screw common to all of said springs.

5. The combination of a plurality of induction-coils, arranged around a center and with their axes parallel and a plurality of armature-levers corresponding respectively thereto and approaching a common point, and a single circuit-controlling lever having one end in position to be actuated by any of said armature-levers.

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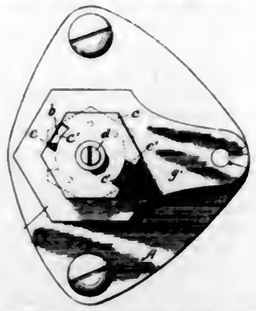
**757,526. LOCK-NUT. RICHARD VARLEY, Providence, R. I., assignor to Varley Duplex Magnet Company, a Corporation of New Jersey. Filed Jan. 12, 1904. Serial No. 188,696. (No model.)**

*Claim.*—1. The combination of a nut, a locking-plate fitting over the same, means for preventing the turning of said plate and a retaining-plate axially pivoted to the top of the nut and adapted to be turned to overlap the locking-plate.

2. The combination of a nut, a locking-plate consisting of a body having an opening adapted to fit over the nut and a tailpiece having an opening therein, a fixed pin adapted to engage the opening of the tailpiece, and a retaining-plate rotatably attached to the top of the nut and adapted to overlap the locking-plate.



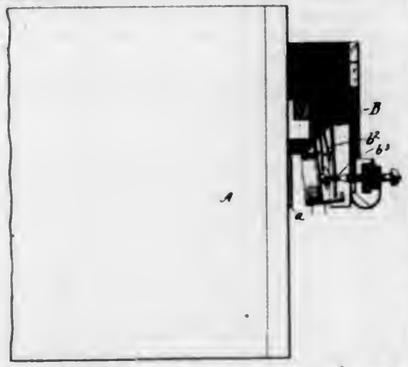
3. The combination of a polygonal nut, a locking-plate having an opening adapted to fit over said nut, a polygonal plate of the same shape and diameter as the nut and rotatably attached to the top of the nut, whereby the rotation of the plate to a certain position will cause the latter to overlap the locking-plate.



4. The combination of a polygonal nut, a locking-plate adapted to fit over the same, a polygonal plate rotatably attached to the top of the nut, openings in said plate and pins carried by the nut and projecting into the openings to determine the limits of rotation of the plate, for the purpose set forth.

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**757,527. VIBRATOR FOR INDUCTION-COILS. RICHARD VARLEY, Providence, R. I., assignor to Varley Duplex Magnet Company, a Corporation of New Jersey. Filed Jan. 20, 1904. Serial No. 189,326. (No model.)**



*Claim.*—1. The combination of a pair of electrical contacts, one of which is a screw and a tipping bar carrying said screw, substantially as described.

2. Two contact-points having a normal relative movement into and out of contact with each other, in combination with means for swinging one contact out of the path of the other and into position for inspection.

3. In an induction-coil vibrator, the combination of a bridge-frame, a part of which is mounted on pivots, and a contact-screw carried by said frame.

4. In an induction-coil vibrator, the combination of a contact-screw, a supporting element therefor, said supporting element being pivoted to enable the screw to be removed from its working position.

5. An induction-coil vibrator, comprising a pivoted bar, a contact-screw carried thereby and a spring adapted to retain the bar in either of two positions.

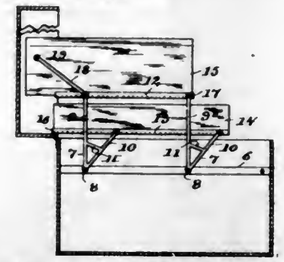
6. An induction-coil vibrator, comprising a rocking bar having flat surfaces, a contact-screw carried thereby and a spring adapted to bear upon said flat surfaces respectively to retain the bar in either of two positions.

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**757,528. TRUNK. JOHN A. H. VILLNOW, Milwaukee, Wis. Filed July 24, 1903. Serial No. 166,791. (No model.)**

*Claim.*—1. A trunk provided with a swinging cover, trays for said trunk, bell-crank levers connecting the trays to the trunk and controlled by the cover for automatically raising the trays when the cover is opened.

2. A trunk provided with a swinging cover, trays for said trunk connecting means for the trays and the trunk comprising bell-crank levers whereby the trays are raised when the cover is opened and lowered when the cover is closed.



3. A trunk provided with a swinging cover, trays for said trunk, bell-crank levers connecting the trays to the trunk and controlled by the cover for automatically raising the trays ont of the trunk and carrying the uppermost tray to the rear when the cover is opened.

4. A trunk provided with a swinging cover, trays for said trunk, bell-crank levers connecting the trays to the trunk and controlled by the cover for automatically raising the trays out of the trunk and supporting them at different distances from the front edge of the trunk-body.

5. A trunk provided with a swinging cover, trays for said trunk, bell-crank levers connecting the trays to the trunk and controlled by the cover for automatically raising the trays out of the trunk and supporting them in a stepped arrangement with relation to the trunk-body.

6. A trunk provided with a swinging cover, trays for said trunk, and means for supporting the trays comprising bell-crank levers having arms of different lengths, said levers being pivoted to the trunk-body and having connection with the cover.

7. A trunk provided with a swinging cover, trays for said trunk, and means for supporting the trays comprising bell-crank levers having arms of different lengths, and tracks carried by the arms of the same length, said levers having connection with the cover.

8. A trunk provided with a swinging cover, trays for said trunk, and means for supporting the trays comprising bell-crank levers having arms of different lengths and parallel angular tracks carried by the arms, said levers having connection with the cover.

9. A trunk provided with a swinging cover, trays for said trunk, and means for supporting the trays comprising bell-crank levers having arms of different lengths, parallel angular tracks carried by the arms, and stops located at the ends of the tracks, said levers having connection with the cover.

10. A trunk provided with a swinging cover, supporting-strips secured in the ends of the trunk, bell-crank levers pivoted to each supporting-strip and having arms of different lengths, parallel angular tracks pivoted to the arms of the bell-crank levers, stops located at the ends of the tracks, and links pivoted to the cover and to the bell-crank levers, said tracks being adapted to have the trays fit therein to be raised and lowered on opening and closing the cover so that when raised the uppermost tray is carried to the rear.

11. A trunk provided with a swinging cover, trays for said trunk means for supporting the trays comprising bell-crank levers having arms of different lengths, said trays being supported by lever-arms of the same length, and means for connecting said bell-crank levers with the cover.

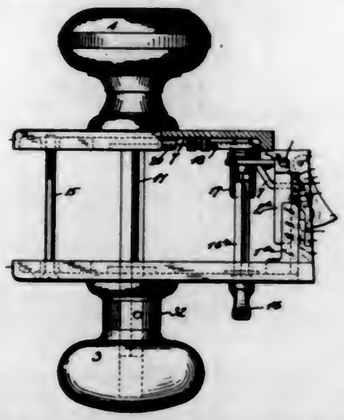
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**757,529. LOCK AND LATCH. HENRY G. VOIGHT, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn., a Corporation of Connecticut. Filed Jan. 19, 1904. Serial No. 189,666. (No model.)**

*Claim.*—1. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob.

2. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates, said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob, said roll-backs being concentrically rotatable.

3. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob, one of said roll-backs being mounted to rotate in the other roll-back.



4. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob, and means to lock one of the knobs against rotation, and a key-controlled mechanism located on the same side as said locked knob for retracting said latch-slide independently of either knob.

5. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob, and means to lock one of the knobs against rotation, and a key-controlled mechanism located on the same side as said locked knob for retracting said latch-slide independently of either knob, said key-controlled means coacting with the roll-back which is actuated by the unlocked knob

6. In a device of the character described, two adjustably-connected plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob, the means of connection between one knob and one roll-back being adjustable.

7. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates said knobs being in alinement, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob, and means to engage one of said roll-backs and lock one of the knobs against rotation, and a key-controlled mechanism located on the same side as said locked knob for retracting said latch-slide independently of either knob.

8. In a device of the character described, two plates arranged to be secured to opposite sides of a door, a knob carried by each of said plates, a spindle spanning the space between and in line with both of said knobs, a latch-slide carried by one of said plates, two roll-backs coacting with said slide, one of said roll-backs being operated by one of said knobs the other roll-back being operated by the other knob.

9. In a device of the character described, a plate arranged to be fitted to the outside of a door, another plate arranged to be fitted to the inside of a door, a knob carried by each of said plates, a spindle spanning the space between said knobs and in line therewith one of said plates carrying complete latch-operating mechanism arranged on one side of the door and covered by said plate, a latch, the said parts being so arranged that the space between said knobs may be varied without disconnecting either knob from said spindle.

10. In a device of the character described, two plates, a knob carried by each plate said knobs being in alinement, a latch-slide carried by one of said plates, two independently-rotatable roll-backs carried by the same plate and coacting with said slide, means of connection between one knob and one of said roll-backs and an extensible extension between the other knob and the other roll-back whereby said plates may be applied to doors of different thicknesses without disconnecting either knob from said roll-backs.

11. In a device of the character described, a pair of plates adjustably connected at one end whereby said plates may be moved toward or away from each other but are held in parallelism, a latch-slide carried by one of said plates, a latch bolt or head adjacent to the connection between said plates, two roll-backs carried by one of the plates and coacting with the slide and arranged to operate the same independently, one of said roll-backs being connected with one knob, the other roll-back being connected with the other knob through the slidable and rotatable spindle, and means to yieldingly press said spindle into operative relation with its roll-back.

12. In a device of the character described, a pair of plates adjustably secured together at one end, a knob carried by each plate, a cylinder-lock carried by one of said knobs, a spindle spanning the space between said knobs, said spindle making a connection with said cylinder-lock and at one end and with the opposite knob at the other end, one of said connections being slidable whereby the plates and knobs may be adjusted to and fro without disconnecting the spindle.

13. In a device of the character described, two plates arranged to be placed on opposite sides of a door, a knob carried by each plate, a roll-back carried by one of said knobs, a second roll-back connected with the other knob said connection comprising a spindle said roll-backs being concentric, one of said roll-backs having a hub passing through the other roll-back, a key-operating means arranged within the first-mentioned knob and connected with said last-mentioned roll-back whereby one of the roll-backs may be rotated from either side of the door and means for locking against rotation the knob containing the key-controlled mechanism, a latch bolt or head and a latch-slide connected therewith and arranged to be engaged by both of said roll-backs.

14. In a device of the character described, a pair of side plates adjustably connected to each other at one end said adjustable connection including an end plate carried by one of said side plates and an extension-piece detachably connected to said end plate and arranged to overlie the adjacent edge of the opposite side plate, and means for holding said extension-piece in place when the parts are assembled.

15. In a device of the character described, a pair of side plates adjustably connected to each other at one end said adjustable connection including an end plate carried by one of said side plates and an extension-piece detachably connected to said end plate and arranged to overlie the adjacent edge of the opposite side plate, and means for holding said extension-piece in place when the parts are assembled, said extension lying flush on its outer surface with the face of said face-plate.

16. In a device of the character described, a pair of side plates adjustably connected to each other at one end said adjustable connection including an end plate carried by one of said side plates and an extension-piece detachably connected to said end plate and arranged to overlie the adjacent edge of the opposite side plate, and means for holding said extension-piece in place when the parts are assembled, said extension lying flush on its outer surface with the face of said face-plate and overlying said face-plate on its inner surface.

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**757,580. COIN-CONTROLLED APPARATUS. WESLEY WERNER, New York, N. Y. Filed May 7, 1903. Serial No. 155,963. (No model.)**



*Claim.*—1. In a coin-controlled apparatus a rotary coin-barrel a main or connecting shaft, the complemental wheels of a Geneva gear operating with said shaft and coin-barrel, projections carried adjacent to the said coin-barrel by one of the Geneva gear-wheels for causing a coin held in said coin-barrel to rotate said Geneva gear-wheels, substantially as described.

2. In a coin-controlled apparatus, a rotary coin-barrel, a main or connecting shaft, the complemental wheels of a Geneva gear operating with said shaft and coin-barrel, projections adjacent to the said coin-barrel for causing the coin in the coin-barrel to rotate the said Geneva gear-wheels and an eccentric cam for pushing the coin forward in the slot of the coin-barrel during the rotation of the coin-barrel, substantially as described.

3. In a coin-controlled apparatus, a rotary coin-barrel, a main or connecting shaft, the complemental wheels of a Geneva gear operating with said shaft and coin-barrel, a ratchet-wheel secured to one of the Geneva gear-wheels and provided with projections held adjacent to the said coin-barrel, a pawl engaging said ratchet-wheel and a cam for pushing the coin in the coin-barrels into engagement with one of the said projections, substantially as described.



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**757,531. PREPARING IRON PYRITES FOR DESULFURIZATION. UTLEY WEDER, Ardmore, Pa. Filed Aug. 21, 1903. Serial No. 170,362. (No specimens.)**

*Claim.*—1. The mode herein described of preparing relatively small particles of iron pyrites for desulfurization, said mode consisting in combining said particles with sulfate of iron and forming them into blocks or briquets, substantially as specified.

2. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the same with iron oxid and sulfuric acid and then forming the mass into blocks or briquets, substantially as specified.

3. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the same with iron oxid and sulfuric acid, and, after reaction of acid and oxid has produced a sufficient quantity of sulfate of iron, forming the mass into blocks or briquets, substantially as specified.

4. The mode herein described of preparing relatively small particles of iron pyrites for desulfurization, said mode consisting in combining said particles with sulfate of iron and sulfate of lead and forming them into blocks or briquets, substantially as specified.

5. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfate of iron, oxid of iron and sulfuric acid, and then forming the mass into blocks or briquets, substantially as specified.

6. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfate of iron, sulfate of lead, oxid of iron and sulfuric acid, and then forming the mass into blocks or briquets, substantially as specified.

7. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfuric acid and oxid of iron, in the form of pyrites cinder, and then forming the mass into blocks or briquets, substantially as specified.

8. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfuric acid and oxid of iron, in the form of leached pyrites cinder or purple ore, and then forming the mass into blocks or briquets, substantially as specified.

9. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfate of iron, sulfuric acid and iron oxid in the form of pyrites cinder, and then forming the mass into blocks or briquets, substantially as specified.

10. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfate of iron, sulfate of lead, sulfuric acid and iron oxid in the form of pyrites cinder and then forming the mass into blocks or briquets, substantially as specified.

11. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfate of iron, sulfuric acid and iron oxid in the form of leached pyrites cinder or purple ore and then forming the mass into blocks or briquets, substantially as specified.

12. The mode herein described of preparing small particles of iron pyrites for desulfurization, said mode consisting in mixing the pyrites with sulfate of iron, sulfate of lead, sulfuric acid and iron oxid in the form of leached pyrites cinder or purple ore and then forming the mass into blocks or briquets, substantially as specified.

13. As a new article of manufacture a block or briquet composed of relatively small particles of iron pyrites and a binder consisting of sulfate of iron, substantially as specified.

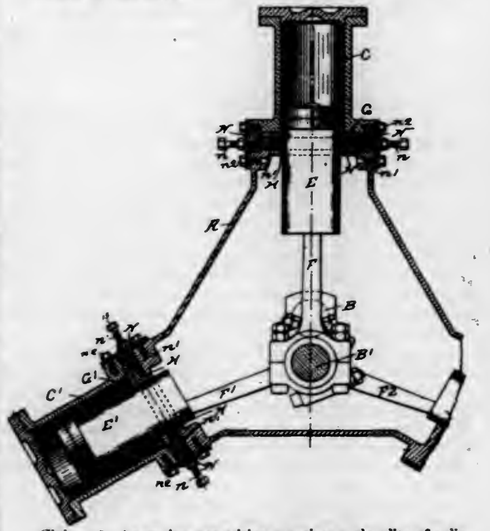
14. As a new article of manufacture a block or briquet composed of relatively small particles of iron pyrites and a binder consisting of sulfate of iron mixed with oxid of iron, substantially as specified.

15. As a new article of manufacture a block or briquet composed of relatively small particles of iron pyrites and a binder consisting of sulfate of iron mixed with sulfate of lead, substantially as specified.

16. As a new article of manufacture a block or briquet composed of relatively small particles of iron pyrites and a binder consisting of sulfate of iron mixed with sulfate of lead and oxid of iron, substantially as specified.

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**757,582. MULTICYLINDER EXPANSION-ENGINE. CHARLES J. WILLIAMS, East Greenwich, England. Filed Jan. 15, 1903. Serial No. 89,810. (No model.)**



*Claim.*—1. An engine comprising a casing, a plurality of cylinders and valve-chambers mounted therein about a central shaft and arranged radially to said shaft, the pistons and valves thereof being in operative connection with said shaft, said cylinders being graduated in size, means for passing live steam through the first of said valve-chambers and cylinders on each side alternately of the piston thereof, and means for admitting partially-expanded steam to the other valve-chambers and cylinders and to each side of the pistons thereof alternately, thereby making said pistons double acting, said cylinders and valve-chambers being also so arranged as to work in conjunction with each other, substantially as shown and described.

2. A double-acting engine comprising a casing, a plurality of cylinders and valve-chambers in said casing, a piston provided with a trunk in each of said cylinders, said trunks being elongated in cross-section, packing devices for each of said trunks consisting of two wedge-shaped blocks of antifriction material arranged in the inner heads of each of said cylinders, and means for adjusting said packing devices with reference to said trunks, substantially as shown and described.

3. A double-acting engine comprising a casing, a plurality of cylinders in said casing arranged about a central shaft and at predetermined angles to each other, the outer ends of said cylinders being removable, a piston in each of said cylinders, a trunk smaller in area secured to each of said pistons, a connecting-rod pivoted within each of said trunks and connected with the crank-pin of said shaft, a detachable head secured to each of said trunks thereof, permitting access to the ends of said connecting-rods, and means for directly admitting steam to each side of said pistons alternately, substantially as shown and described.

4. An engine of the class described, comprising a casing, a plurality of cylinders and valve-chambers arranged therein about a central shaft and at predetermined angles to each other, a piston and

trank in each of said cylinders, a rod connecting each of said pistons and trunks with a crank-pin of said shaft, a valve within each of said valve-chambers, a valve-spindle connected with each of said valves, an eccentric-sheave provided with an eccentric-strap mounted on said shaft, a link connecting each of said valve-spindles with said eccentric-strap, and means for admitting steam to each of said valve-chambers and cylinders successively directly on each side of said pistons alternately, substantially as shown and described.

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**757,533. MOTOR-CAR. WALTER G. WILSON, Westminster, England. Filed Dec. 3, 1900. Serial No. 38,434. (No model.)**



*Claim.*—1. In a motor-car, the combination with the car-body, of a motor and shaft and a motor-supporting frame movable transversely and longitudinally to said car-body and also about the axis of motion of the shaft, substantially as set forth.

2. In a motor-car, the combination with the car-body, the driving-wheels and axles, of a motor-frame supported at one end movably about the axis of the motor-shaft and at the other end immovably laterally on said axles, and a motor situated in the framing remote from said axles, substantially as set forth.

3. In a motor-car, the combination with the car-body, the driving-wheels and axles, of a motor-frame supported at one end on the axles of the driving-wheels and laterally immovable thereon, yielding suspending members and means to pivotally suspend the frame at the other end, a motor and its shaft on the frame, said motor remote from the axles of the driving-wheels, and the axis of the motor-shaft being in the same vertical line with the point of pivotal suspension, substantially as set forth.

4. In a motor-car, the combination with the car-body, the driving-wheels and their axles, of a motor-frame supported at one end on the axles of the driving-wheels and more or less yielding suspension members at the other end to pivotally suspend said frame from the car-body, a motor and motor-shaft on said frame, said motor situated remote from the driving-wheels and the axis of the motor-shaft being in the same vertical line with the pivoted point of suspension, substantially as set forth.

5. In a motor-car, the combination with the car-body, the driving-wheels and axles, of a motor-frame supported at one end on the axles of the driving-wheels and immovable laterally thereon, a pivot on the car-body, a two-armed lever on said pivot, suspension-links to connect said lever with the front of said frame, a motor and shaft on the frame, said motor-shaft being in a vertical line with the pivots, substantially as set forth.

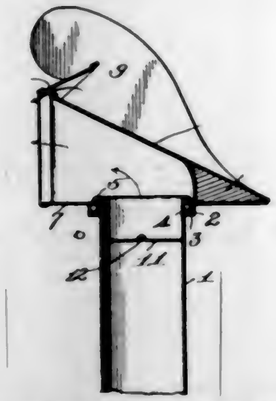
6. In a motor-car, the combination with the car-body, the driving-wheels and axles, of a frame supported at one end on the axles and immovable laterally thereon, a two-armed lever pivoted to the car-body, a motor and its shaft on said frame, flexible suspension-straps connecting the arms of said lever with the front end of said frame to permit the frame to oscillate about the axis of the motor-shaft, said motor situated at the front end of the frame, substantially as set forth.

7. In a motor-car, the combination with the car-body, the driving-wheels and axles, of a T-shaped frame, bearings for the axles of the driving-wheels in the transverse member of the frame, a motor-shaft, and a motor mounted at the extremity of the longitudinal member of the frame, supports for said extremity, whereby the said frame can oscillate about the motor-shaft and can also move relatively to the car-body, substantially as and for the purpose set forth

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**757,534. VENTILATOR. CHARLES A. WITHERS, Augusta, Ga., assignor to International Ventilator and Deflector Company, Washington, D. C., a Corporation of the District of Columbia. Filed May 22, 1903. Serial No. 158,364. (No model.)**

*Claim.*—1. A ventilator comprising a body portion, a hood rotatably mounted thereon and comprising a flat bottom and a converged cap connected thereto, said cap having its rear end of greater height than its forward end and forming in connection with said flat bottom at the rear thereof a mouth for the hood, said flat bottom provided with an opening for establishing communication between the hood and the body portion, and said flat bottom at its rear end projecting from each side of the cap, a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and extending in an inclined manner with respect to said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted.



2. A ventilator comprising a body portion, a hood rotatably mounted thereon and comprising a flat bottom and a converged cap connected thereto, said cap having its rear end of greater height than its forward end and forming in connection with said flat bottom at the rear thereof a mouth for the hood, said flat bottom provided with an opening for establishing communication between the hood and the body portion, and said flat bottom at its rear end projecting from each side of the cap, a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and extending in an inclined manner with respect to said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted, a weight arranged in the forward end of said hood, and a vane mounted upon said hood and provided with a slit adapted to receive the said band for retaining the upper portion of said band in position.

3. A ventilator comprising a body portion, a hood rotatably mounted thereon and comprising a flat bottom and a converged cap connected thereto, said cap having its rear end of greater height than its forward end and forming in connection with said flat bottom at the rear end thereof a mouth for the hood, said flat bottom provided with an opening for establishing communication between the hood and the body portion, and said flat bottom at its rear end projecting from each side of the cap, a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and extending in an inclined manner with respect to said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted, and a valve mechanism connected with the said body portion and adapted to be moved to an open position by the pressure of the wind and to return to its closing position by gravity when pressure is removed therefrom.

4. A ventilator comprising a body portion, a hood rotatably mounted thereon and comprising a flat bottom and a converged cap connected thereto, said cap having its rear end of greater height than its forward end and forming in connection with said flat bottom at the rear thereof a mouth for the hood, said flat bottom provided with an opening for establishing communication between the hood and the body portion, and said flat bottom at its rear end projecting from each side of the cap, a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted, a weight arranged in the forward end of said hood, a vane mounted upon said hood and provided with a slit adapted to receive the said band for retaining the upper portion of said band in position, and a valve mechanism connected with the said body portion and adapted to be moved to an open position by the pressure of the wind and to return to its closing position by gravity when pressure is removed therefrom.



5. A ventilator comprising a body portion provided at its top with a grooved ring forming a ball-race and further provided with an annular flange a suitable distance above said ring, balls mounted in said race, a hood comprising a flat bottom and a cap, said flat bottom provided with an opening for establishing communication between the hood and bottom portion, said flat bottom mounted upon the balls in said race and retained in said position by means of said flange, said cap constructed in a converging manner so that its rear end will be of greater height than its forward end and forming in connection with the flat bottom at the rear end thereof a mouth for the hood, said bottom at its rear end projecting from each side of the hood, and a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and extending in an inclined manner with respect to said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted.

6. A ventilator comprising a body portion provided at its top with a grooved ring forming a ball-race and further provided with an annular flange a suitable distance above said ring, balls mounted in said race, a hood comprising a flat bottom and a cap, said flat bottom provided with an opening for establishing communication between the hood and bottom portion, said flat bottom mounted upon the balls in said race and retained in said position by means of said flange, said cap constructed in a converging manner so that its rear end will be of greater height than its forward end and forming in connection with the flat bottom at the rear end thereof a mouth for the hood, said bottom at its rear end projecting from each side of the hood, a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and extending in an inclined manner with respect to said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted, a weight arranged in the forward end of said hood, and a vane mounted upon said hood and provided with a slit adapted to receive the said band for retaining the upper portion of said band in position.

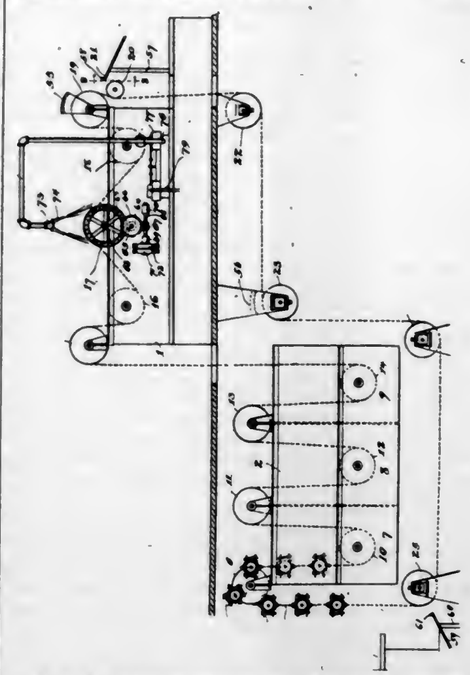
7. A ventilator comprising a body portion provided at its top with a grooved ring forming a ball-race and further provided with an annular flange a suitable distance above said ring, balls mounted in said race, a hood comprising a flat bottom and a cap, said flat bottom provided with an opening for establishing communication between the hood and bottom portion, said flat bottom mounted upon the balls in said race and retained in said position by means of said flange, said cap constructed in a converging manner so that its rear end will be of greater height than its forward end and forming in connection with the flat bottom at the rear end thereof a mouth for the hood, said bottom at its rear end projecting from each side of the hood, a band connected to the projecting portions of the bottom and extending around said cap, said band projecting over the rear end of said cap and extending in an inclined manner with respect to said cap and forming in connection with the cap an inclined air-passage having its rear or discharge end contracted, and a valve mechanism connected with the said body portion and adapted to be moved to an open position by the pressure of the wind and to return to its closing position by gravity when pressure is removed therefrom.

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**757,535. BOTTLE-SOAKING APPARATUS. WALTER B. WRIGHT, Chicago, Ill., assignor to E. Goldman & Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 20, 1903. Serial No. 153,472. (No model.)**

*Claim.*—1. In a bottle-soaking apparatus, the combination of a soaking-tank, a flexible endless conveyer, a series of guides over which said conveyer travels, arranged to direct the conveyer through the solution in the soaking-tank repeatedly, a series of carriers mounted upon said endless conveyer, each adapted to detachably hold a bottle-crate, a gate mechanism upon each carrier adapted to normally hold a crate in position therein, and a trip device mounted adjacent to the path of travel of the carrier and operating to automatically open the gate mechanisms of the several carriers to automatically discharge the latter during the progress of the conveyer.

2. In a bottle-soaking apparatus, the combination of a soaking-tank, an endless conveyer, a series of guides over and around which said conveyer travels, arranged to direct the conveyer through the solution within the soaking-tank, a series of carriers mounted upon said endless conveyer each provided with a gate mechanism for holding a bottle-receptacle within the carrier, a tripping device located adjacent to the path of travel of the conveyer and adapted to cooperate with said gate mechanism to automatically open the latter as the carriers reach the tripping-point, and inclined ways located in position to receive the bottle-receptacles as they are discharged from the carriers, substantially as described.



3. In a bottle-soaking apparatus, the combination of a soaking-tank and a rinsing-tank, an endless conveyer, a series of guides arranged to support and direct said endless conveyer through the solutions in the soaking and rinsing tanks, said guides being arranged to effect repeated reversals of the endless conveyer as the latter progresses, a series of carriers mounted at intervals apart upon said conveyer each adapted to hold a bodily-removable bottle-receptacle, a series of bottle-receptacles adapted to said carriers, a gate mechanism upon each carrier adapted to normally hold a bottle-receptacle in position therein and comprising a trip-arm, a relatively fixed stop located adjacent to the path of the endless conveyer and adapted to coöperate with the trip-arms of the several carriers, and supports adapted to receive said bottle-receptacles as the latter are discharged from the carrier, for the purpose set forth.

4. In a bottle-soaking apparatus, the combination of a soaking-tank and a rinsing-tank, an endless flexible conveyer, guide-supports supporting and directing said conveyer and arranged to direct the latter through the solutions in the soaking and rinsing tanks, a series of carriers revolubly mounted upon said endless conveyer each adapted to hold a bodily-removable bottle-holder, means upon each carrier and coöperating means upon a relatively fixed support adjacent to the path of travel of the carriers for effecting a reversal of the several carriers as they are successively carried past a predetermined point.

5. In a bottle-soaking apparatus, the combination of a soaking-tank, an endless flexible conveyer, guide-supports supporting and directing said conveyer and arranged to direct the latter through the solutions in the soaking-tank, a series of carriers revolubly mounted upon said endless conveyer each adapted to hold a bodily-removable bottle-holder, mechanism upon each carrier for adjustably holding a bottle-holder therein, a coöperating trip device located adjacent to the path of travel of the carriers and adapted to automatically release the holders within the carriers as the latter pass said trip device.

6. In a bottle soaking and rinsing apparatus, the combination of a soaking-tank, a rinsing-tank, an endless conveyer, a series of revoluble guide-supports about which said conveyer is trained, arranged to direct the conveyer through the soaking and rinsing tanks and to reverse said conveyer in relation to said tanks, a series of carriers revolubly mounted upon said endless conveyer to rotate upon axes arranged transversely of the conveyer, a wheel connected with

each carrier concentrically with its axis of rotation, a coöperating reversing member mounted upon a fixed support adjacent to the path of travel of the wheels of the carriers and adapted to effect a reversal of said carriers as the latter pass, a series of bottle-holders adapted to said carriers, a gate mechanism upon each carrier arranged to detachably hold a bottle-holder therein and provided with a tripping device, a coöperating trip member located adjacent to the path of travel of the carriers, and inclined ways arranged to receive the bottle-holders as they are automatically released and discharged from the carriers, substantially as described.

7. In a bottle soaking and rinsing apparatus, the combination of a soaking-tank, a rinsing-tank, an endless conveyer, a series of revoluble guide-supports about which said conveyer is trained, arranged to direct the conveyer through the soaking and rinsing tanks and to reverse said conveyer in relation to said tanks, a series of carriers revolubly mounted upon said endless conveyer to rotate upon axes arranged transversely of the conveyer, a wheel connected with each carrier concentrically with its axis of rotation, a coöperating reversing member mounted upon a fixed support adjacent to the path of travel of the wheels of the carriers and adapted to effect a reversal of said carriers as the latter pass, a series of bottle-holders adapted to said carriers, a gate mechanism upon each carrier arranged to detachably hold a bottle-holder therein and provided with a tripping device, a coöperating trip member located adjacent to the path of travel of the carriers, inclined ways arranged to receive the bottle-holders as they are automatically released and discharged from the carriers, a spraying apparatus located in proximity to the conveyer, and means for delivering liquid through said spray apparatus under pressure.

8. In a bottle soaking and rinsing apparatus, the combination of a soaking-tank and a rinsing-tank, an endless conveyer, guide-supports arranged to support and direct said conveyer through both said tanks, a series of carriers upon said conveyer each adapted to detachably hold a bottle-holder, a series of bottle-holders adapted to said carriers, mechanism for automatically effecting the discharge of the bottle-holders from the carriers at a point beyond the rinsing-tank, considered with reference to the circuit of the endless carrier, and other mechanism for automatically effecting the discharge of the bottle-holders from the carriers at a point beyond said first-mentioned discharging mechanism and between the latter and the point where the conveyer enters the soaking-tank, substantially as described.

9. In a bottle-handling apparatus, the combination with an endless conveyer and means for supporting and actuating the latter, of a carrier mounted upon said conveyer and comprising an open frame provided with alined trunnions revolubly engaging the carrier, parallel opposing ways upon the opposite ends of said carrier, a bottle-crate adapted to fit within said ways, a detent mechanism for holding the crate against rotation upon its trunnions in two positions of adjustment, and means for removably holding said bottle-holder in position within the carrier.

10. In a bottle-handling apparatus, the combination with an endless conveyer comprising parallel conveyer-chains and mechanism for supporting and actuating said conveyer, of a series of carriers revolubly mounted upon said conveyer, each comprising an open frame provided at opposite ends with alined trunnions engaging the conveyer-chains, and opposed parallel ways upon the interior of said carrier-frame, a series of bottle-crates adapted to said ways, a gate mechanism arranged to control the entrance-passage to said ways and provided with a trip-arm, a friction member mounted upon one of said conveyer-chains adjacent to each carrier, a coöperating friction member mounted upon the carrier and whereby the latter is yieldably held in a predetermined angular relation to the conveyer-chain, a reversing-wheel mounted upon the carrier, and means for actuating said reversing-wheel and said trip-arm located adjacent to the path of travel of the carrier.

11. In a bottle-handling apparatus, the combination with a conveyer, of a carrier comprising an open rectangular frame provided at each end with trunnions, dividing cross-frame members, a plurality of pairs of ways arranged in opposed relation upon the end-frame members and cross-frame members of the carriers, a gate mechanism arranged to control the entrance-passage to each compartment of the carrier and a series of bottle-holding crates each comprising a main apertured plate adapted to fit at its ends within the ways of one of the carrier-compartments and apertured to receive and support a plurality of bottles, and a coöperating plate rigidly supported in fixed relation to the main plate and provided with apertures to receive the neck portions of the bottles, substantially as described.

12. In a bottle-handling apparatus, the combination of a flexible endless conveyer, guide-supports over which said conveyer is arranged to travel, a series of carriers revolubly mounted upon said conveyer, a series of bottle-holders each adapted to hold a plurality of bottles, means upon each carrier for detachably holding a bottle-holder engaged with the carrier, a detent mechanism for holding the holders against rotation upon its trunnions in two positions of adjustment, and means for actuating said conveyer.

13. A carrier for endless conveyers comprising a main frame provided with crate-receiving ways and a gate mechanism for controlling said ways comprising an angular gate member having its free end arranged to normally stand in alinement with the ways, a spring normally holding said gate member in operative position, a rocking cam interposed between said gate member and a stationary part, and a trip-arm operatively connected with said rocking cam and arranged to project beyond the margin of the carrier for engagement with a relatively stationary stop, substantially as described.

14. In a carrier for endless conveyers, the combination of a main frame provided with trunnions adapted for engagement with a flexible conveyer, ways upon said main frame for receiving a holder, and a gate mechanism for holding the holder within the ways of the carrier comprising a gate member having one of its ends arranged to project into alinement with the ways, a spring arranged to hold said gate member in its normally projected position, a rocking cam arranged to act upon the gate member to retract the same, and a trip-arm operatively connected with said cam.

15. In a carrier for endless conveyers, the combination of a main frame provided with trunnions adapted for engagement with a flexible conveyer, ways upon said main frame for receiving a holder, and a gate mechanism for holding the holder within the ways of the carrier comprising a gate member having one of its ends arranged to project into alinement with the ways, a spring arranged to hold said gate member in its normally projected position, a rocking cam arranged to act upon the gate member to retract the same and a trip-arm operatively connected with said cam, said gate member being provided at its projecting end with a terminal antifriction-roller, for the purpose set forth.

16. A carrier for endless conveyers, comprising a rectangular main frame provided at each end with alined trunnions, a reversing-wheel operatively connected with one of said trunnions, friction devices adapted to hold the carrier in various angular positions, one or more cross-frame members dividing the main frame into compartments, crate-receiving ways arranged in opposed relation in each of said compartments, and one or more gate mechanisms controlling the delivery ends of said ways comprising a spring-pressed gate member arranged to normally project across the entrance to the ways, a non-circular-shaped rocking cam interposed between a part moving with said gate member and a fixed part of the carrier, and a trip-arm rigid with the axis of the rocking cam and arranged to project beyond the lateral edge of the carrier-frame, for the purpose set forth.

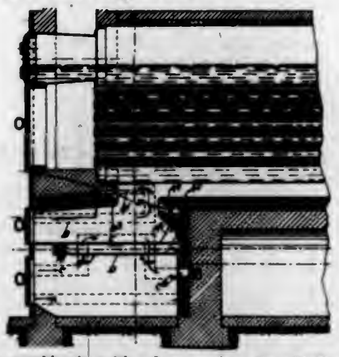
17. In a bottle soaking and rinsing apparatus, the combination of a soaking-tank and a rinsing-tank, an endless conveyer, guide-supports arranged to support and direct said conveyer through both said tanks, a series of carriers upon said conveyer each adapted to detachably hold a bottle-holder, a series of bottle-holders adapted to said carriers, a working floor or platform arranged in proximity to an upwardly-traveling portion of said conveyer, mechanism for automatically effecting the delivery of said holders from the carriers at a point contiguous to said working platform or floor, a delivery-chute located adjacent to a downwardly-moving portion of said conveyer and at a point beyond the rinsing-tank, mechanism for effecting the automatic discharge of the holders from the carriers upon said chute, and mechanism for effecting a travel of the conveyer, substantially as described.

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**757,536. FURNACE.** Otto Wuerbach, Chicago, Ill. Filed May 31, 1902. Serial No. 109,694. (No model.)

*Claim.*—1. A furnace comprising a series of hollow grate-bars provided with connections which lead to the external atmosphere by means of which air may be drawn therethrough, a contracted opening above said grate-bars through which the products of combustion pass, a chamber in the wall opposite one face of said contracted opening and extending therealong, a connection leading from said hollow grate-bars to said chamber, a forwardly-projecting part in front of said chamber provided with a substantially vertical face and a series of separated openings in said face and connecting said chamber with said contracted opening.

2. A furnace provided with a series of passage-ways associated therewith through which air is passed so as to become highly heated and which passage-ways discharge substantially horizontally on opposite sides of the furnace above the fire, so that this heated air is brought into contact with the smoke from the fire so as to consume it, the discharge-openings on the opposite sides of the furnace opposed so that the currents of air are forced toward each other and a series of hollow grate-bars connected therewith so as to form parts of some of said passage-ways and through which a portion of the air passes so as to cool the grate-bars.



3. The combination with a furnace of a series of hollow grate-bars, a passage-way at the side of the furnace leading to the rear thereof, a connection between said passage-way and the rear end of said hollow grate-bars, a second passage-way in the wall of said furnace and a connection between the front of said bars and said passage-way, a contracted opening above the grate, one or more discharge-openings in the wall thereof, said discharge-opening connected with said passage-way.

4. The combination with a furnace of a series of hollow grate-bars, a connecting-chamber at each end thereof, two passage-ways in the wall of the furnace, one leading to the external atmosphere and to the connecting-chamber at one end of the grate, the other leading from the connecting-chamber at the other end of the grate to a point above the grate-bars.

5. A furnace comprising a series of hollow grate-bars provided with connections which lead to the external atmosphere, by means of which air may be drawn therethrough, said grate-bars also provided with a connection leading to the furnace-chamber above the grate, a passage-way leading along the side of the furnace so that the air therethrough will be heated, and provided with a connection leading to the furnace-chamber above the grate said connections provided with opposed discharge-openings so that the currents of air are forced toward each other above the fire, thus coming into contact with the smoke, and means for independently regulating the currents of air supplied to the opposed discharge-openings.

6. A furnace comprising a series of hollow grate-bars provided with connections which lead to the external atmosphere by means of which air may be drawn therethrough, a contracted opening above said grate-bars through which the products of combustion pass, a chamber in the wall opposite one face of said contracted opening and extending therealong, a connection leading from said hollow grate-bars to said chamber and a series of separated openings connecting said chamber with said contracted opening, a second chamber in the wall opposite the other face of said contracted opening and extending therealong, a series of independent openings connecting said chamber with the contracted opening and a passage-way connected with said chamber and extending along the side of said furnace, said passage-way communicating with the external air and means for separately and independently regulating the current of air passing through the openings on the opposite sides of said contracted opening.

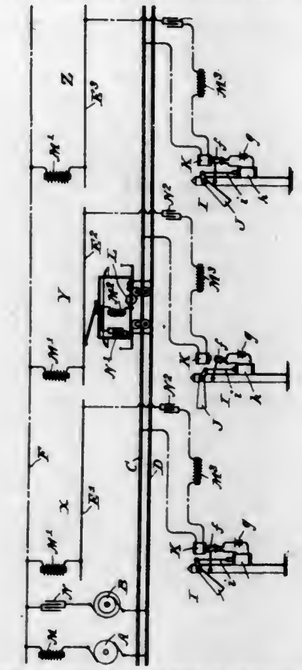
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**757,537. METHOD OF SIGNALING FOR ELECTRIC RAILWAYS.** Samuel M. Young, New York, N. Y. Filed Nov. 6, 1903. Serial No. 180,061. (No model.)

*Claim.*—1. A method of operating signals upon an electric railway where the signals are adapted to be controlled by the movement of the motor-vehicles in said system, which consists in impressing an alternating current upon the conductors which separately form return-paths for the power-circuit, normally transmitting such alternating current through the signaling devices employed, and shunting said alternating current around successive signaling devices.



2. A method of operating signals upon an electric railway where the signals are adapted to be controlled by the motor-vehicles in said system and where the traffic-rails separately form return-paths for the power-circuit and are divided into blocks, which consists in impressing an alternating current upon the traffic-rails, normally transmitting such alternating current through the signaling devices in all of the blocks and shunting said alternating current around a signaling device in a block when a motor-vehicle moves into a block.



3. A method of operating signals upon an electric railway, which consists in creating a difference of potential between the traffic-rails of the system which separately form return-paths for the power-circuit and over which a current differing in character is flowing, actuating signaling devices by the current due to such difference in potential and shunting said current around certain of said signaling devices through the instrumentality of apparatus actuated by the power-current transmitted.

4. A method of operating signals upon an electric railway, which consists in impressing a current upon conductors which separately form return-paths for the power-current and through which a power-current differing in character is flowing, segregating said currents, actuating signaling devices by said impressed current and shunting said impressed current around certain of said signaling devices through the instrumentality of apparatus actuated by the power-current.

5. A method of operating signals upon an electric railway, which consists in creating a difference of potential between the opposite rails of each block of a railway, and over each of which rails a current differing in character from that due to the created difference of potential is separately flowing, employing the current due to such difference of potential for actuating mechanism for carrying signals to the clear position, and in short-circuiting such current in a block by the movement of a car into a block, whereby the signal will automatically be moved to the clear position.

6. A method of operating motor-vehicles and signals upon an electric railway, which consists in generating two currents differing in character, transmitting said currents to a distribution-circuit, wherein the traffic-rails are divided into blocks and separately form return-paths for the power-current, segregating such currents by means of apparatus located in the blocks, employing one of such currents to operate the motor-vehicles upon the railway, the other to operate the signaling devices, and in short-circuiting the signaling devices of a block as the motor-vehicle moves into a block.

7. A method of operating motor-vehicles and signals upon an electric railway, which consists in generating two currents differing

in character, transmitting such currents to a distribution-circuit, wherein the rails are divided into blocks and separately form return-paths for the power-current, segregating such currents by means of apparatus located in the blocks, employing one of said currents to operate the motor-vehicles upon the railway, and the other of said currents to create a difference of potential between the opposite rails of a block to actuate the signaling devices in the block, and in short-circuiting such signaling devices when a motor-vehicle moves into a block.

8. A method of operating motor-vehicles and signals upon an electric railway, which consists in generating two currents differing in character, transmitting said currents to a distributing-circuit, wherein the rails are divided into blocks and each rail separately serves as a return-path for the power-currents, segregating said currents by means of induction apparatus included within the blocks, using one current to operate the motor-vehicles, the other to actuate the signaling devices i the blocks, and in short-circuiting said signaling devices as a motor-vehicle moves into a block.

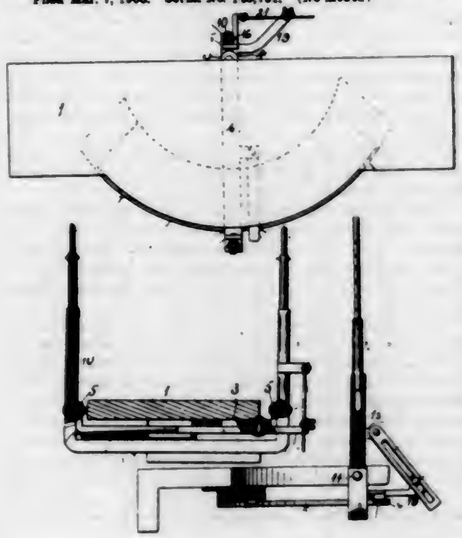
9. A method of operating motor-vehicles and signals upon an electric railway, which consists in generating two currents differing in character, transmitting said currents to a distribution-circuit, wherein both rails form a part of the circuit, separately serve as return-paths to the generators and are divided into blocks through the instrumentality of devices which will freely permit the passage of one current but stop the passage of the other current, segregating said currents, using one current to operate the motor-vehicles, the other to actuate the signaling devices, and short-circuiting a signaling device when a motor-vehicle moves into a block.

10. A method of operating motor-vehicles and signals upon an electric railway, which consists in generating two currents differing in character, transmitting such currents to the rails of a railway, causing one of said currents to divide and separately flow through each of the rails of said railway as the return-path for the power-circuit, separating the other of said currents and segregating it between different blocks of the railway, using one of said currents to operate motor-vehicles upon the railway, and the segregated currents to actuate signaling devices in the blocks of the railway.

11. A method of operating motor-vehicles and signals upon an electric railway, which consists in generating two currents, transmitting said currents to a distribution-circuit, wherein the traffic-rails are divided into blocks, form the return-path for the power-current, and are rendered electrically independent of each other so far as relates to one of the currents transmitted by means of reactance devices interposed between the blocks, using one of said currents to operate the motor-vehicles upon the railway, dividing the other current between the blocks, limiting its action to individual blocks and using such current to actuate a signaling device in each block, and employing the motor-vehicles to short-circuit the signaling devices as they enter a block.

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757,538. **MITER-BOX.** CHARLES A. ANDERSON, Rockford, Ill. Filed Mar. 7, 1903. Serial No. 146,781. (No model.)

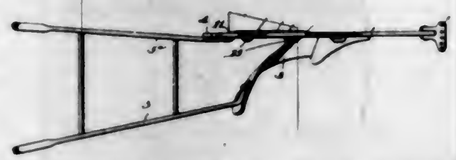


*Claim.*—1. A miter-box comprising a platform, a bar located beneath the platform having upturned ends and having a pivotal connection with the platform, a saw-guide located beneath the bar having uprights pivotally connected to the upturned ends, movable saw-guides located in the uprights, a curved notched plate and a spring-plate connected to the bar and adapted to enter the notches.

2. A miter-box comprising a platform, a bar located beneath the platform having upturned ends and having a pivotal connection with the platform, a saw-guide located beneath the bar having uprights pivotally connected to the upturned ends, movable saw-guides located in the uprights, a curved notched plate, a spring-plate connected to the bar and adapted to enter the notches, an arm extending from the bar and a slotted link forming a connection between the arm and one of the uprights.

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757,539. **PLOW.** ORVILL C. BABCOCK, Saginaw, Mich. Filed Mar. 19, 1903. Serial No. 148,580. (No model.)

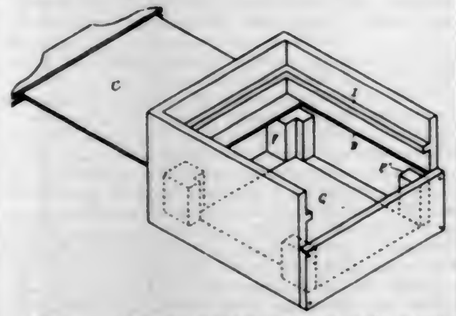


*Claim.*—1. In a plow, a landside comprising a smooth vertically-disposed plate extended forwardly to form an entire beam for the attachment of draft, said plate being provided with a rearwardly and upwardly extending bracket for the attachment of one handle and with a rearwardly-extending heel.

2. In a plow, the combination with a single plate constituting a landside having a forwardly-extending beam and a rearwardly-extending heel, of the herein-described subsoiling attachment comprising an elongated, sharpened, wedge-shaped plate having an upstanding flange beveled at its front and rear ends and secured detachably to the landside with the cutter-blade in horizontal alinement with the lower edge of the latter, the upstanding flange being secured to said landside with its beveled ends in intimate contact with the latter, said ends or terminals being confined within the limits of the landside.

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757,540. **PLATE-BOX.** HAROLD D. BICKFORD and RALPH C. BICKFORD, Waterville, Me. Filed Dec. 4, 1903. Serial No. 183,719. (No model.)

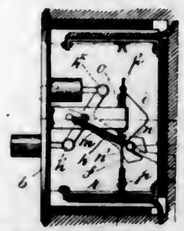


*Claim.*—1. A plate-box provided with means rigidly secured to the inside thereof for positioning the plates therein away from the sides and inner end and a sliding cover for said box, the vertical walls of said box extending upwardly above said cover and being provided on the inside thereof with means for securing a photographic-plate holder above said sliding cover, whereby the plates may be discharged from the box directly into the plate-holder without exposure to the light when the sliding cover is removed.

2. A plate-box having a sliding cover in the top thereof, vertical walls extending above said cover and on three sides thereof and means for securing a photographic-plate holder to said box above said cover, whereby the plates may be discharged from the box to the plate-holder without exposure to the light, and spacing-blocks within the box for positioning the plates so that they may be delivered, when the box is inverted, directly into the opening in a plate-holder.



757,541. **PUSH-BUTTON SWITCH.** WALTER A. CHURCH, Binghamton, N. Y. Filed June 17, 1903. Serial No. 161,838. (No model.)



*Claim.*—1. In combination with a base or support, a cam immovable with respect thereto, a reciprocating switch-bar operatively mounted in the support, a lever for actuating said switch-bar, means for actuating the lever, and means mounted in and carried by the lever for imparting a rapid movement to the switch-bar.

2. In combination with a base or support, a stationary cam operatively mounted with relation to the base, a reciprocating switch-bar mounted on the support, a lever having a movement independent of the switch-bar, means for actuating the lever, and means mounted in and carried by the lever for imparting a sudden movement to the lever and the switch-bar.

3. In combination with a base or support, a lever pivoted thereto, a reciprocating switch-bar, a cam mounted upon the support, push-buttons for imparting an initial movement to the lever to move it in opposite directions, and means borne by the lever for causing a sudden secondary movement of the lever and moving the switch-bar.

4. In combination with a base or support, a switch-lever pivoted thereto and provided with a recess, a member transversely arranged to said lever and borne in the recess, springs for holding said member in the recess, a stationary cam operatively arranged with relation to the lever and adapted to control the movement of the transverse member in its recess, and a reciprocating switch-bar adapted to be moved by said lever.

5. In combination with a base or support, a stationary cam mounted upon the support, a reciprocating switch-bar adapted to slide in said support, a tilting lever pivotally supported on said support, push-buttons for moving said lever, and a roll, spring-retained in said lever and cooperating with the cam to cause a rapid movement of the switch-bar.

6. In combination with a base or support, a reciprocating switch-bar adapted to slide therein and provided with a recess, an actuating-lever for said switch-bar and means for imparting movement thereto, said lever projecting through the recess of the switch-bar, a stationary cam operatively mounted with respect to said lever and switch-bar, and a spring-retained roll mounted in the lever and cooperating with the cam and adapted to impart a rapid movement to said lever and switch-bar.

7. In combination with a base or support, a lever pivoted thereto, push-buttons and connections between said buttons and the lever for tilting the latter, a reciprocating switch-bar embracing the lever, a cam-surface arranged on opposite sides of the lever, rolls mounted to move with the lever and move over the face of the cams, and springs intermediate the rolls and support for controlling the movement of the lever and switch-bar embraced thereby during the movement of the rolls over the face of the cams.

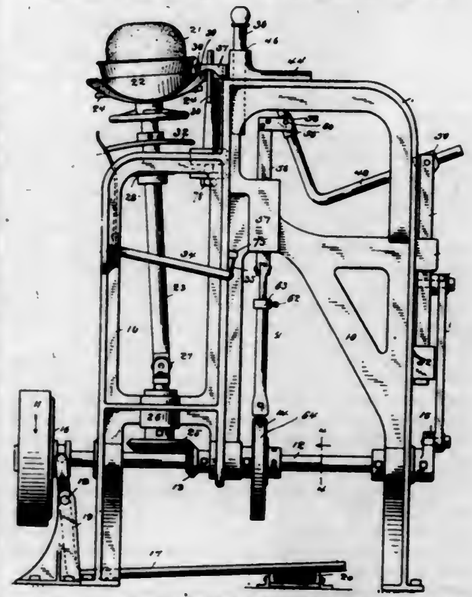
8. In combination with a base or support comprising two side members, a reciprocating switch-bar mounted in said support, cams extending from each of said side members, a pivoted switch-lever having a plurality of arms, push-buttons operatively connected with two of the arms of the switch-lever, a pair of rolls carried by the other arm of said lever and arranged to contact with the cams, and means for holding the rolls in contact with the cams and permitting a movement of the rolls independent of the swinging movement of the switch-lever, and contacts cooperating with the reciprocating switch-bar.

9. In combination with a base or support including two side parts, opposing recesses formed in said side parts, a reciprocating switch-bar arranged to slide in said recesses and having an opening therethrough, a pivoted switch-bar arranged between the two side parts of the support and extending through the opening of the switch-bar, a slot formed in the end of said switch-bar, stationary cams a pair of rolls supported in said slot and cooperating with the cams, springs for retaining the rolls in engagement with the cams, and push-buttons for actuating the switch-bar.

10. In combination with a support, a stationary cam mounted on the support, a reciprocating switch-bar arranged to slide in the support and provided with an opening, a pivoted switch-lever having a plurality of arms, push-buttons connected with two of said arms, a cooperating member borne in and moving with the other of said arms, and means for retaining it in engagement with the switch-lever, and angularly-disposed surfaces upon opposite sides of the switch-lever arranged to engage and move the reciprocating switch-bar.

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757,542. **HAT-TRIMMING MACHINE.** FRANK C. CRAW, South Norwalk, Conn., assignor of one-half to William H. Craw, South Norwalk, Conn. Filed Aug. 10, 1903. Serial No. 168,979. (No model.)



*Claim.*—1. In a machine of the character described the combination with means for rotating a curled hat and means for retaining the hat in position to be operated upon, of a vertically-movable cutter-arm adapted to rest upon the top of the curl, and means for automatically moving the hat laterally toward and from the cutter.

2. In a machine of the character described the combination with a matrix and a shaft by which it is carried, of a cutter and a vertically-movable cutter-arm adapted to rest upon the top of the brim of a curled hat on the matrix, and means for automatically moving the hat laterally toward and from the cutter.

3. In a machine of the character described the combination with a matrix and a shaft by which it is carried, of a cutter, a vertically-movable cutter-arm by which it is carried and which is adapted to rest upon the top of the curl of a hat on the matrix and a bearing-rod which is engaged by the outer edge of the brim of a hat on the matrix.

4. In a machine of the character described the combination with a matrix and a shaft by which it is carried, of a cutter, a vertically-movable cutter-arm adapted to rest upon the top of the curl of a hat on the matrix, a bearing-rod and means for retaining the edge of the brim of a hat on the matrix in engagement with the bearing-rod.

5. In a machine of the character described the combination with a matrix, a shaft by which it is carried and an oval plate secured to said shaft with its long diameter at right angles to the long diameter of the matrix, of a cutter, an arm by which it is carried and which is adapted to rest upon the top of the curl of a hat on the matrix, a bearing-rod and a spring engaging the oval plate and acting to retain the edge of the brim of a hat on the matrix in engagement with the bearing-rod.

6. In a machine of the character described the combination with a matrix, a shaft by which it is carried and an oval plate secured to said shaft with its long diameter at right angles to the long diameter of the matrix, of a cutter, an arm by which it is carried and which is adapted to rest upon the top of a curl of a hat on the matrix, a bearing-rod, a spring engaging the oval plate, a rock-shaft by which it is carried and means for locking the rock-shaft with the

spring in operative position, whereby the pressure of the edge of a hat-brim on the bearing-rod is equalized and the action of the spring may be entirely relieved.

7. In a machine of the character described the combination with a matrix, a shaft by which it is carried and a cutter, of an adjustable bearing-rod and means for retaining the edge of the brim of a hat on the matrix in engagement with said bearing-rod.

8. In a machine of the character described the combination with a matrix and a shaft by which it is carried, of a vertically-movable cutter-carrier having an arm to which the cutter is attached and which is adapted to rest on the brim of a hat on the matrix, means for automatically moving the hat laterally relatively to the cutter, and a reciprocating cross-head which carries the cutter-carrier.

9. In a machine of the character described the combination with a rotating hat-holder and means for retaining a hat thereon in position to be operated upon, of a reciprocating cross-head, a cutter and a carrier therefor which is vertically movable in the cross-head, and means for automatically moving the hat laterally relatively to the cutter.

10. In a machine of the character described the combination with a cutter, framework having a slot 29 and a block adapted to move in said slot, of a matrix, a universally-jointed shaft by which it is carried and which is journaled in said block and means for retaining a hat on the matrix in position to be operated upon.

11. In a machine of the character described the combination with a cutter, framework having a slot 29 and a block adapted to move in said slot, of a matrix, a universally-jointed shaft by which it is carried, said shaft being journaled in the block and carrying an oval plate at right angles to the matrix, a bearing-rod and a spring engaging the oval plate whereby the edge of the brim of a hat on the matrix is retained in engagement with the bearing-rod.

12. In a machine of the character described the combination with a matrix and a shaft by which it is carried, of a bearing-rod, means for retaining the edge of the brim of a hat on the matrix in eogagement with the bearing-rod, a cutter, a cutter-arm therefor which is provided with a slot through which the bearing-rod passes and a vertically-movable cutter-carrier to which the cutter-arm is secured.

13. In a machine of the character described the combination with a matrix and a shaft by which it is carried, of a bearing-rod, means for retaining the edge of the brim of a hat on the matrix in engagement with the bearing-rod, a cutter, a cutter-arm therefor which is provided with a slot through which the bearing-rod passes, a cutter-carrier to which the cutter-arm is secured and a cross-head having an opening and slot to receive the cutter-carrier and cutter-arm, so that the cutter-carrier may be lifted and the cutter-arm raised above the bearing-rod and allowed to rest on the top of the cross-head to retain the cutter out of operative position.

14. In a machine of the character described the combination with a hat-holder and means for retaining a hat thereon in position to be operated upon, of a reciprocating cross-head, a vertically-movable cutter carried thereby, means for automatically moving the hat laterally relatively to the cutter, and means for adjusting the throw of the cross-head when the sides of a brim are in position to be operated upon, whereby the width of the curl is determined.

15. In a machine of the character described the combination with a hat-holder and means for retaining a hat thereon in position to be operated upon, of a reciprocating cross-head, a vertically-movable cutter carried thereby, means for automatically moving the hat laterally relatively to the cutter, and means for adjusting the throw of the cross-head when the quarters of a brim are in position to be operated upon, whereby the style of the curl is determined.

16. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating angle-lever pivoted thereto, a slide 56 on which the operating-lever has its fulcrum, said fulcrum shifting as the slide moves up and down, and a slide 51 with which the opposite end of the operating-lever has a sliding connection.

17. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating angle-lever pivoted thereto, a slide 56 with which the operating-lever has sliding connection, said sliding connection serving as the fulcrum of the lever, a slide 51 and a block pivoted to said slide through which the rear end of the operating-lever passes.

18. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, a slide 56 on which the operating-lever has its fulcrum, said fulcrum varying with the movement of the slide, a slide 51 with which the opposite end of the lever has sliding connection, a rotating disk, a strap inclosing said disk and an adjustable rod connecting said strap with slide 56 whereby said slide may be raised or lowered thereby varying the fulcrum of the operating-lever, changing the throw of the cross-head and determining the width of the curl of a hat-brim at the sides.

19. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, a slide 56 on which the operating-lever has its fulcrum, said fulcrum varying with the movement of the slide, a slide 51 with which the opposite end of the lever has sliding connection, a rotating disk, means for adjusting said disk eccentrically and a strap and rod connecting said disk with slide 56, whereby said slide may be raised or lowered thereby varying the fulcrum of the operating-lever at the periods of time when the quarters of a hat-brim are in position to be acted on by the cutter.

20. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as the fulcrum of the lever and said fulcrum shifting with the movements of the slide and means for adjusting said slide without shifting of the fulcrum when it is desired to change the width of a curl at the sides without change at the quarters.

21. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a fulcrum for the lever and said fulcrum shifting with the movements of the slide and means for adjusting the movements of the slide, whereby the fulcrum of the operating-lever is shifted and the throw of the cross-head regulated when the quarters of a hat-brim are in position to be operated upon.

22. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a fulcrum for the lever and said fulcrum shifting with the movements of the slide, shaft 12, a disk on said shaft, means for adjusting said disk eccentrically thereto in either direction and a strap and rod connecting said disk with slide 56, whereby said slide may be caused to move either with or in reverse to slide 51 thereby varying the position of the fulcrum, substantially as shown, for the purpose specified.

23. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a variable fulcrum for the lever, a shaft, a hub on said shaft having flattened sides, a disk having a slot engaging the flattened sides of the hub and a scale, a plate on the hub having a point adapted to register with the graduations of the scale, means for locking the disk at any desired eccentricity to the shaft and a strap and rod connecting the disk with slide 56 whereby the fulcrum of the operating-lever may be varied to change the throw of the cross-head in accordance with the scale on the disk.

24. In a machine of the character described the combination with framework having a scale 73, a hat-holder and a cutter, of a cross-head having a point adapted to register with the scale to determine width of curl, an operating-lever pivoted to the cross-head, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a variable fulcrum for the operating-lever and means for adjusting the throw of slide 56 and consequently of the cross-head in accordance with the scale.

25. In a machine of the character described the combination with a hat-holder and a reciprocating cross-head, of a cutter, a cutter-arm to which it is secured, a cutter-carrier vertically movable in the cross-head to which the cutter-arm is secured, and means for automatically moving the hat laterally relatively to the cutter.

26. In a machine of the character described the combination with a hat-holder and a reciprocating cross-head, of a cutter, a spring by which it is carried, a cutter-arm to which the spring is attached and a cutter-carrier vertically movable in the cross-head to which the cutter-arm is secured.

27. In a machine of the character described the combination with a hat-holder, a reciprocating cross-head and a bearing-rod, of a cutter, a spring by which it is carried, a cutter-arm to which the spring is attached, said cutter-arm and spring being slotted to permit the bearing-rod to pass therethrough, and a cutter-carrier vertically movable in the cross-head to which the cutter-arm is secured.

28. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating angle-lever pivoted thereto, slides 51 and 56, blocks pivoted to said slides through which the operating-lever slides freely, said slide 56 serving as a variable fulcrum for the lever, a shaft, a disk eccentrically adjustable thereon and a strap and rod connecting said disk with slide 56, the parts being so combined and arranged that when the eccentric is adjusted in one direction said slides will move upward simultaneously and when the disk is adjusted in the opposite direction slide 56, which is the fulcrum of the operating-lever, will move downward when slide 51 is moving upward.

29. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a variable fulcrum for the lever, a shaft having a crank by which slide 51 is operated and a disk eccentrically adjustable thereon and connections by which slide 56 is operated, the parts being so combined and arranged that when the disk is adjusted in the direction of the crank, the slides will move upward together thereby varying the fulcrum of the operating-lever and the throw of the cross-head to produce fuller quarters, and when the disk is adjusted in the opposite direction slide 56 will move downward as slide 51 moves upward thereby varying the fulcrum of the operating-lever and the throw of the cross-head to produce narrower quarters.

30. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a variable fulcrum for the lever, a shaft, a disk carried thereby, means for adjusting said disk on the shaft and a strap and adjustable rod connecting said disk with slide 56, adjustment of said disk on the shaft acting to vary the fulcrum of the operating-lever in use and consequently the throw of the cross-head, whereby the quarters of a curl may be made fuller or narrower without change of width at the sides and adjustment of the connecting-rod acting to raise or lower the fulcrum of the operating-lever but without variation in use whereby the sides of a curl may be made wider or narrower without change at the quarters.

31. In a machine of the character described the combination with a hat-holder and a cutter, of a cross-head, an operating-lever pivoted thereto, slides 51 and 56 with which the operating-lever has sliding connection, said slide 56 serving as a variable fulcrum for the lever, a shaft having a crank and connection by which slide 51 is operated and a disk eccentrically adjustable thereon and a strap and adjustable connecting-rod by which slide 56 is operated, whereby the fulcrum of the operating-lever may be adjusted to produce a curl having wider or narrower sides or wider or narrower quarters or both sides and quarters may be varied simultaneously.

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**757,543. FOUNTAIN-PEN. MARTIN R. CROSSMAN, Boston, Mass. Filed Jan. 28, 1904. Serial No. 191,057. (No model.)**



*Claim.*—1. In a pen, a barrel, an open-ended slotted feed-tube inserted in the end of said barrel, and a removable plug to close the open end of said tube.

2. In a fountain-pen, a barrel containing an ink-reservoir and having a substantially axial opening in one end, an open-ended slotted feed-tube inserted in said opening, and a removable plug to close the open end of said tube.

3. In a fountain-pen, a barrel having an ink-chamber and provided at one end with an opening, an open-ended slotted feed-tube inserted into said opening and projecting beyond the barrel, a removable plug in the end of said feed-tube, the end of the barrel being formed with an annular chamber surrounding the feed-tube, and a pen-point frictionally held in said chamber.

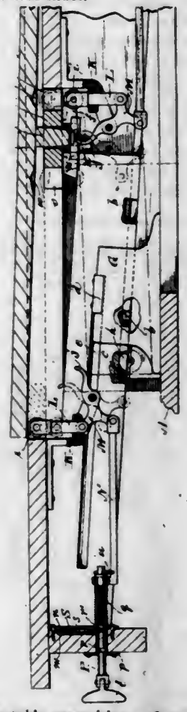
4. In a fountain-pen, a barrel having an ink-reservoir provided with an opening in one end, an open-ended slotted feed-tube fixedly secured in said opening and projecting beyond the barrel, a removable plug to close the open projecting end of the feed-tube, and means to prevent said plug from working its way into the tube.

5. In a fountain-pen, a barrel having an ink-chamber and provided with an opening at one end, a slotted combined feed and filling tube inserted in said opening and projecting beyond the barrel, and a removable plug closing the projecting open end of said tube, the slot in said tube forming a channel to conduct ink to the pen-points.

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**757,544. EXTENSION-TABLE. JOSEPH DOBRODENKA and FRANK DOBRODENKA, Milwaukee, Wis. Filed Dec. 19, 1903. Serial No. 185,773. (No model.)**

*Claim.*—1. An extension-table comprising a frame provided with upwardly-extending side bars and oppositely-inclined tracks, slides on the tracks, leaves fast on the slides, end bars and brackets depending from the leaves, carriers guided in the brackets, antifriction-rollers mounted in the carriers, bell-crank levers in connection with said carriers and provided with hook extensions, spring-controlled pull-rods extending through said end bars, links connecting said levers and the pull-rods, spring-controlled latches arranged in conjunction with the end bars to engage notches at right angles to each other in said rods, a slotted cross-piece fast on said side bars midway of their extremities and provided with notches normally engaged by said rollers, a top having a depending batten loose in the cross-piece slot, a keeper depending from said batten for the engagement of the hook extensions of the aforesaid levers, and means for limiting play of said slides.



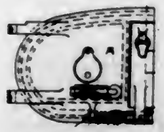
2. An extension-table comprising a frame provided with upwardly-extending side bars and oppositely-inclined tracks, slides on the track, leaves fast on the slides, end bars and brackets depending from the leaves, having carriers guided in the brackets, antifriction-rollers mounted in the carriers, bell-crank levers in connection with said carriers and provided with hook extensions, spring-controlled pull-rods extending through said end bars, links connecting said levers and the pull-rods, stops extending from said rods to come into contact with the links, spring-controlled latches arranged in the end bars to engage notches at right angles to each other in the aforesaid rods, a slotted cross-piece fast on said side bars midway of their extremities and provided with notches normally engaged by said rollers, a top having a depending batten loose in the cross-piece slot, a keeper depending from said batten for the engagement of the hook extensions of the aforesaid levers, and means for limiting play of said slides.

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**757,545. FIRE-DOOR FOR LOCOMOTIVES. GEORGE S. EDMONDS, Albany, N. Y. Filed Sept. 24, 1903. Serial No. 174,428. (No model.)**

*Claim.*—1. In the door of the fire-box of a locomotive-engine a secondary or emergency door constructed therein, hinged at the bottom, said hinges being on the outside and without the center of gravity, a counterbalance attached to the upper portion of said door on the inside thereof, adapted to hold said door closed by its weight, and a ring or handle on the ontside of said door adapted to be taken hold of in opening said door, substantially as described and for the purposes set forth.

2. In a locomotive-engine, a fire-door constructed within the door of said engine and hinged thereto; a bar turning with said door upon said hinges; notches and teeth constructed at one end of said bar, adapted to mesh with like notches and teeth attached to the main door of said engine, substantially as described and for the purposes set forth.



3. In a locomotive-engine an emergency or secondary door constructed within the door of said engine and hinged thereto, said hinges being provided with a bar turning thereon, notches and teeth constructed on one end of said bar, a sleeve or bearing attached to the main door of the engine, a rod or bar adapted to slide lengthwise within said sleeve but not to turn therein; a shoulder on one end of said bar, notches and teeth upon the same end of said bar adapted to mesh with the notches and teeth in the first-mentioned bar; and a spring adapted to bear against said sleeve and against said shoulder and hold the teeth of said bar in the notches on the first-mentioned bar, substantially as described and for the purposes set forth.

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**757,546. SMOKE-CONVEYER.** WILLIAM L. GALE, Louisville, Ky. Filed July 17, 1903. Serial No. 166,015. (No model.)



*Claim.*—1. In a smoke-conveyer, a rigid tube-section carried by each car, reversible end sections also carried by each car, said members being telescopically adjustable, pins carried by adjacent telescopic members, adjusting-levers having links triangular in form and embracing said pins, and springs normally tending to support said members, substantially as specified.

2. In a smoke-conveyer, a tube-section secured to the central portion of each car, end sections also carried by each car and reversible with respect to the central section, each of the end sections being provided with telescopically-adjustable members, pins carried by the telescopically-adjustable members, adjusting-levers having triangular links embracing the pins, each of said links having a recess to receive one of the pins, and springs normally tending to support said members.

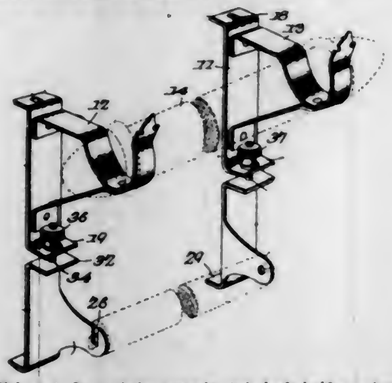
3. In a smoke-conveyer, telescopic members having means for adjusting the same, rods connecting the members, said rods being pivotally connected at one end of one of said members, perforated guide-lugs for the reception of the opposite end of the rod, and a spring encircling each rod and tending to separate the members, the pivotal connection of the rod permitting lateral play of the parts to follow the movement of the train.

4. In a smoke-conveyer, a conveyer-tube having an outlet-opening in vertical alinement with the smoke-stack of the engine; a cover normally closing said opening, a deflector pivoted to the smoke-stack and connected to said cover, and means for adjusting the deflector and simultaneously moving said cover to opening position.

5. In a smoke-conveyer, a conveyer-tube having an opening directly in alinement with the smoke-stack of the engine, a deflector pivoted to the smoke-stack and normally inclined with respect both to the horizontal and vertical to thereby deflect the products of combustion from the stack to the tube, an operating-rod connected to the deflector, a cover normally closing the opening, and a link or rod connecting the deflector with the cover, substantially as specified.

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**757,547. COMBINED WINDOW-CURTAIN AND SHADE-ROLLER HOLDER.** ADAM F. GILBERT, Farmersville, Ohio. Filed Oct. 14, 1903. Serial No. 177,072. (No model.)



*Claim.*—1. In a window curtain and shade holder, a bracket for the support of the curtain-pole having a lateral lug for engagement with one side of the window-casing, a bracket for the support of the shade-roller having a lateral lug for engagement with the opposite side of the casing, and coupling means between said curtain-pole bracket and shade-roller bracket, substantially as specified.

2. In a window curtain and shade holder, a bracket for the support of the curtain-pole having a lateral lug for engagement with one side of the window-casing, a bracket for the support of the shade-roller having a lateral lug for engagement with the opposite side of the casing, and a clamp-screw connecting said curtain-bracket and roller-bracket for adjustably coupling them to said casing.

3. In a window curtain and shade holder, a bracket for the support of the curtain-pole having a lateral lug at one end for engagement with one side of the window-casing and a reversely-disposed perforated lateral lug at its opposite end, a bracket for the support of the shade-roller having a lateral lug at one end for engagement with the opposite side of the casing and with a reversely-disposed perforated lateral lug at its opposite end, and a clamp-bolt engaging said perforated lug and operating to clamp said brackets to the casing, substantially as specified.

4. In a window curtain and shade holder, a curtain-pole bracket having a lateral lug for engagement with one side of a window-casing, a shade-roller bracket having a lateral lug for engagement with the other side of the casing, and adjustable connecting means between said brackets.

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**757,548. BOTTLE STOPPER AND OPENER.** FRED GOODRICH, New Britain, Conn., assignor to Tapin Manufacturing Company, New Britain, Conn., a Corporation. Filed Feb. 15, 1904. Serial No. 193,506. (No model.)



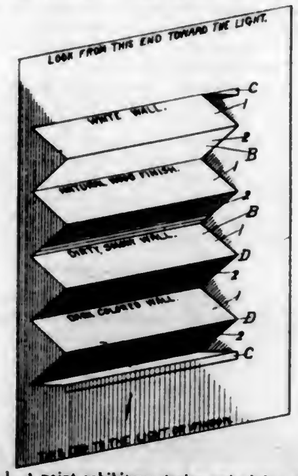
*Claim.*—1. An expansible bottle-stopper, having a nut provided with an open handle, broad at the top, and with two separate inward projections at the junction of the handle and nut with a bolt-space between the said two projections, substantially as described.

2. An expansible bottle-stopper having a nut and bolt, the said nut having an open handle with two separate inward projections at the junction of the handle and nut with a bolt-space between the said two projections, and with the threaded end of the bolt riveted down to prevent the nut from being detached all substantially as described.



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**757,549. DEVICE OR MEANS FOR ADVERTISING AND EXHIBITING PAINTS, WALL-FINISHES, OR THE LIKE.** JOHN F. GOULD, Port Richmond, N. Y., assignor to the Muralo Company, New Brighton, New York, N. Y. Filed Jan. 16, 1904. Serial No. 189,257.




*Claim.*—1. A paint-exhibiting device embodying suitable material arranged in such manner as to afford opposed surfaces at an angle to each other, one of which surfaces is colored and adapted to reflect upon the other which is left white.

2. A paint-exhibiting device embodying suitable material arranged in such manner as to afford a series of opposed surfaces at angles relative to each other, the surfaces which are adapted to reflect upon the others being finished in successively lighter or darker shades or colors, the others being left white.

3. A paint-exhibiting device embodying a piece of paper folded into plaits in such manner that one of the surfaces of each plait reflects against the adjacent surface of the adjoining plait, said reflecting-surfaces being colored successively in lighter or darker shades or colors, the opposed surfaces being left white.

4. A paint-exhibiting device embodying a piece of paper folded into plaits in such manner that one of the surfaces of each plait reflects against the adjacent surface of the adjoining plait, said reflecting-surfaces being successively colored in lighter or darker shades or colors, the opposed surfaces being left white, the said folded or plaited paper being suitably attached to a base sheet or board, whereby the plaits may be suitably extended.

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**757,550. FRUIT OR VEGETABLE PEELER.** THEODORE M. GUEST, Moravia, N. Y., assignor of one-half to Grant P. Sommerville, Moravia, N. Y. Filed Apr. 15, 1903. Serial No. 152,773. (No model.)



*Claim.*—1. A paring-knife consisting of a concave body portion in the form of an obtuse-angled triangle provided with a blade forming one side of a slot extending across the concavity and disposed parallel to a side adjacent the obtuse angle.

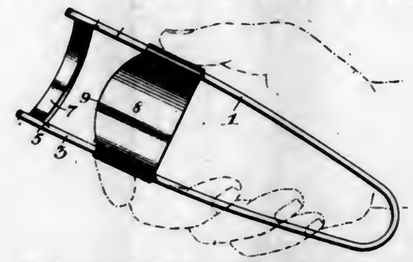
2. A paring-knife comprising a transversely-concaved body portion, one end of which is tapered to form a handle, and the opposite end provided with a slot disposed at an oblique angle to the length thereof, and a knife-blade extending above and across the concave surface of the body portion.

3. A knife comprising a concave body portion in the form of an obtuse-angled triangle, having a slot parallel to a side adjacent the obtuse angle and extending across the concavity, and a knife-blade forming one side of the slot, having its rear edge bent outwardly and downwardly.

4. A paring-knife comprising a transversely-concaved body portion, one end of which is tapered to form a handle, and the opposite end provided with a slot disposed at an oblique angle to the length thereof, a concave knife-blade extending across the concave surface of the body portion at said slot and having its rear edge bent outwardly and downwardly, said body portion being provided with a cutting edge at one side, and a cutting-point at the joining of said side and the front edge.

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**757,551. FRUIT OR VEGETABLE PEELER.** THEODORE M. GUEST, Moravia, N. Y., assignor of one-half to Grant P. Sommerville, Moravia, N. Y. Filed May 8, 1903. Serial No. 156,231. (No model.)



*Claim.*—1. In a device of the class specified, a frame comprising a pair of arms having grooved end portions, a curved cutting-blade having its opposite ends adapted to the grooves, and a curved guard slidably mounted on the two arms and adjustable toward and from said cutting-blade.

2. In a device of the class specified, a frame comprising a pair of arms each provided with an inclined slot, a knife-blade having its opposite ends disposed within the slots, and a guard carried by said arms and adjustable thereon.

3. In a device of the class specified, a frame comprising a pair of spaced arms each having a groove, a guard member embracing both arms, and a knife having its opposite ends fitted within the grooves, the length of the knife being greater than the distance between the bottom walls of said grooves.

4. In a device of the class specified, a frame, a knife carried thereby, and a guard carried by the frame, that edge of the guard adjacent to the knife being curved outward toward the knife so that the central portion of the guard shall lie closer to the knife than the end portions thereto.

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**757,552. BRIDGE CONSTRUCTION.** SAMUEL W. HILL, Ross township, Allegheny county, Pa. Filed Aug. 20, 1902. Renewed Feb. 23, 1904. Serial No. 194,880. (No model.)

*Claim.*—1. In an arched bridge, the combination of arched channel-bars and angle-irons forming girders, arched plates secured to the under face of said girders, channel-bar tie-plates secured at their flanges arranged between said girders, and a filling of concrete embedding and surrounding said girders, substantially as described.

2. In an arched bridge, the combination of girders formed of channel-bars and angle-irons securely riveted together, arched plates secured to the under face of said channel and angle irons, channel-bar tie-plate secured to said arched plates, braces extending and connecting the upper flanges of said channel-bars, and a filling of cement concrete embedding said channel and angle irons, substantially as described.

3. In an arched bridge, the combination of arched channel-bars, the flanges of which extend in opposite directions, arched angle-irons interiorly reinforcing said steel bars, arched plates secured to the under face of said channel and angle irons forming girders, channel-bar tie-plates connected at their flanges and connected to said arched plates, in combination with a filling of cement concrete and earth, substantially as described.

4. In a bridge, the combination with the arched channel-bars, of interiorly-arranged angle-bars secured to the said channel-bars, arched plates engaging and being secured to the under faces of the said channel-bars, and a filling of cement concrete.

5. The combination with the arched beams, of arched plates secured to the lower faces of the said beams, channel-bar tie-plates arranged between the said arched beams, said tie-plates being secured to the said arched plates, and a filling of concrete or the like.

6. The combination with the beams, of plates secured to the lower faces of the said beams, and extending beyond the edges there-

of, tie-plates resting upon and secured to the extended portions of the said arched plates, and a filling, substantially as described.



7. The combination with the arched beams, of interiorly-arranged angle-bars secured to the said beams, bars secured to the upper edges of the said beams, arched plates secured to the under faces of the said arched beams, and extending beyond the edges thereof, channel-bar tie-plates secured to the extended portions of the said arched plates, and a filling of concrete, substantially as described.

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757,558. **ARCH-BRIDGE CONSTRUCTION.** SAMUEL W. HILL, Pittsburg, Pa. Filed Mar. 30, 1903. Serial No. 150,069. (No model.)



*Claim.*—1. A composite arched bridge, comprising a metallic frame, inherently rigid and continuous, the parts of which are self-centering and self-supporting, sustaining and embedded in an arch of concrete material, from abutment to abutment; the whole forming a solid complete arch-bridge.

2. In a bridge, the combination with inherently rigid, continuous metallic arched girders open at their top and closed at their bottom or intrados faces, of a plurality of tie-plates extending transversely thereto which are connected together at their edges and connected at their ends to the girders, and a backing of concrete-cement filling surrounding the upper parts of the girders and on top of the tie-plates.

3. In an arched-bridge construction, an arched metallic frame comprising a number of built-up arched metallic girders, and a concrete filling or backing, the spandrels of said bridge having inserted horizontally-disposed hollow cylinders to lighten the same.

4. In a bridge, the combination with rigid, continuous metallic arched girders, of a plurality of channel tie-plates extending transversely thereto which are connected together at their flanges and connected at their ends to the girders, and a backing of concrete cement in which the upper parts of the girders and tie-plates are embedded.

5. In a viaduct construction of arched bridges as herein described, the combination of tie bars or rods connecting the girders of one arch with the opposite girders of the adjoining arch through the intervening piers.

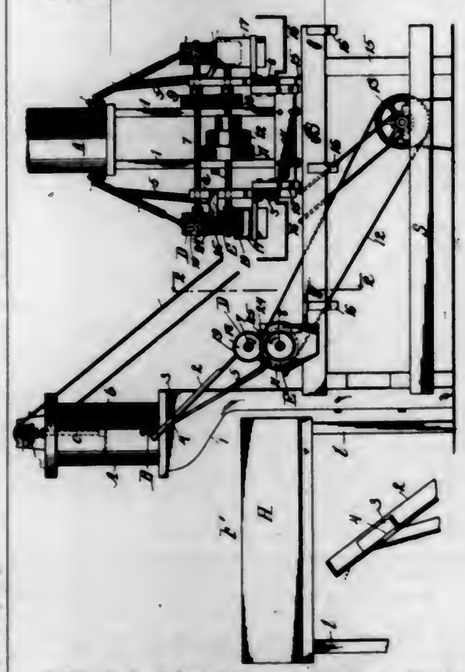
6. In a bridge, the combination with a metallic frame, of a concrete-cement filling or backing, and hollow bodies disposed horizontally in the concrete filling or backing adapted to lighten the steady load on the haunches.

7. In a bridge, the combination with a metallic frame, of a concrete-cement filling or backing, hollow bodies disposed horizontally in the concrete-cement filling or backing adapted to lighten the steady load on the haunches, and compensating or tie rods extending in the concrete cement in a general horizontal direction in relation to the abutments and crown of the arch.

8. The herein-described method of constructing arched bridges without the use of temporary false framework and lagging for centering the same, which consists in, first, preparing the foundations; secondly, anchoring thereto, in successive order, a plurality of continuous and inherently rigid self-sustaining arched girders or ribs, adapted to sustain and carry the concrete as component parts of the metallic frame of the structure; thirdly, uniting said arched ribs laterally into a complete rigid arched frame by tie-plates or channels, and finally adding a concrete body portion to the rigid frame thus formed.

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757,554. **COLORING-MACHINE.** ADEL C. HOUSE, South Butler, N. Y. Filed Aug. 20, 1901. Renewed Feb. 15, 1904. Serial No. 193,668. (No model.)



*Claim.*—1. A roll for use in a coloring-machine, having the periphery thereof formed of felt and having tacks or brads driven therein at various points whereby portions of said covering will be held at a level below that of the rest.

2. In a coloring-machine, a roll D having a covering 19 of felt or like material, and tacks or holding devices 20 driven into the periphery of said roll, whereby portions of said covering are held depressed.

3. A roll for use in a coloring-machine having its periphery formed of a suitable color holding and delivering material, and having portions of said periphery depressed below the normal, uniform level thereof, the construction and arrangement being such that there is a gradual rise from the point of greatest depression to the point of normal level whereby a shaded effect is produced upon stock colored by such rolls.

4. A roll for use in a coloring-machine having the periphery thereof formed of felt, and having tacks or brads driven therein at various points, whereby portions of said covering will be held at a level below that of the rest and said covering material will rise gradually on all sides about the tacks up to the normal level.

5. A roll for use in a coloring-machine having its periphery formed of a suitable covering, and having portions of its periphery depressed, so that there is a gradual rise from the points of depression to the normal level, whereby a shaded mottled effect is secured upon stock colored by such roll.

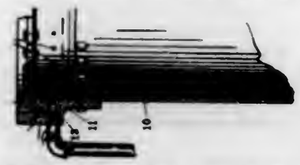
6. A roll for use in a coloring-machine having its periphery formed of suitable material, and having portions of said material depressed below the normal level thereof, the rise from the points of greatest depression to the points of normal level being gradual, whereby shades of color of varying tones will be produced upon stock colored by such roll.

7. A printing or coloring surface, for use in a coloring-machine, formed of suitable yielding material and having portions of said material depressed so that there is a gradual rise from the points of depression to the normal level whereby a shaded or mottled effect is secured upon stock colored by such surface.

8. A printing-surface for use in a coloring-machine having a color-retaining face with portions thereof depressed below the normal level of said face, both the normal level and the depressed portions being arranged to print whereby a shaded effect is produced upon stock colored thereby.

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757,555. **COOKING RETORT OR KETTLE.** ORRA HUSSELL, Indianapolis, Ind. Filed Dec. 19, 1903. Serial No. 185,842. (No model.)



*Claim.*—1. The combination, with a retort having an open end, of an annulus secured to said open end and provided with an internal chamber communicating with the interior of the retort, and supply-pipes leading into said chamber.

2. The combination, with a retort having an open end, of an annulus secured to said open end and provided with an internal chamber communicating with the interior of the vat, supply-pipes leading into said chamber, a cover-receiving surface formed at the upper end of said annulus, a coacting cover, and means for detachably securing said cover to the vat.

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757,556. **MANTLE-SUPPORT.** WILSON P. JOHNSON, Columbus, Ohio. Filed Feb. 2, 1904. Serial No. 191,681. (No model.)

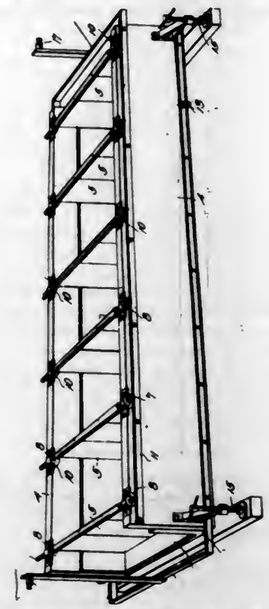


*Claim.*—1. In a mantle-support, the U-shaped bridge having perforated upright arms, in combination with a bar to engage the perforations of said arms and extend beyond the same.

2. In a mantle-support, the U-shaped bridge having a horizontal portion with a seat for the loop of the mantle and perforated upright arms, in combination with a bar to pass through said perforations and project beyond the arms.



757,557. **ELECTROLYTIC DEPOSITION APPARATUS.** WILLIAM J. JORY and JOSEPH H. JORY, San Francisco, Cal. Filed Apr. 7, 1903. Serial No. 151,492. (No model.)



*Claim.*—1. An apparatus of the character specified, comprising a sluice-box and electrodes swinging on horizontal axes and adapted to float on the surface of a stream passing through the box.

2. An apparatus of the character specified, comprising a sluice-box and electrodes swinging freely on axes disposed transversely of the sluice-box.

3. An apparatus of the character specified, comprising a sluice-box, bearings supported thereby and containing mercury, horizontal rods or shafts working in the mercury, and freely-swinging plates, forming electrodes supported by the shafts.

4. An apparatus of the character specified, comprising a sluice-box, bearings carried thereby and containing mercury, shafts having collars working in the mercury, and electrodes supported by the shafts.

5. An apparatus of the character specified, comprising a sluice-box, and reversible swinging electrodes supported thereby.

6. An apparatus of the character specified, comprising a sluice-box, swinging electrodes supported thereby, and adapted to rest on the surface of the flow through the box and means for limiting the range of movement of the electrodes.

7. An apparatus of the character specified, comprising a sluice-box, bearings supported thereby and containing mercury, shafts having collars working in the mercury, stops carried by the collars, and reversible electrodes carried by the shafts.

8. An apparatus of the character specified, comprising a sluice-box, plates disposed on the bottom thereof, bearings containing mercury supported by the box, shafts having collars working in the mercury, plates swinging on said shafts and forming electrodes, and electrical connections in circuit with the bearings and with the plates.

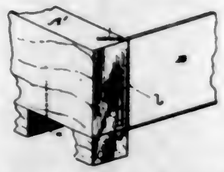
9. An apparatus of the character specified, comprising a sluice-box, transverse shafts rotatably mounted at the top of said sluice-box, and plates having oppositely-curved ends supported midway of their ends upon said shafts and forming reversible electrodes.

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757,558. **FRUIT OR BERRY BOX.** JOSEPH E. LYNAN, San Jose, Cal. Filed Nov. 29, 1901. Serial No. 83,960. (No model.)

*Claim.*—1. A box or similar receptacle comprising a body formed of side pieces and end pieces of different thickness joined at right angles, having the joints at the corners formed by an angularly-set groove extending into the end piece at an obtuse angle to the plane of the side piece and situated within the plane of the outer face of the piece in which said groove is made, side pieces having their ends bent at an angle to the grooves in the end pieces, the ends thereof

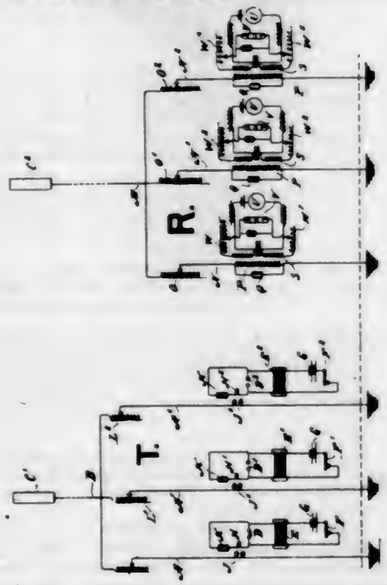
being bent to bring the side pieces in a plane with the edges of the end pieces, and a bottom board united to the end pieces by a joint composed of an angularly-set groove extending into the end piece at an angle to and above the plane of the said bottom board, and having its ends bent to stand at an angle to the plane of the bottom.



2. In a box or other similar receptacle, the combination of side pieces and end pieces joined together at right angles, each end piece having a groove in the inner face thereof at the meeting angle of the perpendicular inner face and horizontal bottom face thereof, and extending upwardly into the solid substance of the end piece at an angle to the said perpendicular and horizontal faces, and a bottom board having the ends scored and bent upward to stand above the plane of the bottom at an obtuse angle, said angularly-bent end pieces being fitted to the grooves to be retained therein without other fastening means, and to bring the lower face of the bottom substantially flush with the horizontal bottom face of the end pieces.

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**757,559. WIRELESS-TELEGRAPH SYSTEM.** GUGLIELMO MARCONI, London, England, assignor to Marconi's Wireless Telegraph Company, Limited, London, England, a Corporation. Filed Nov. 19, 1901. Serial No. 82,856. (No model.)




*Claim.*—1. At a station employed in wireless telegraphy, a conductor, a plurality of open circuits electrically connected with said conductor, a corresponding number of instruments one electrically connected with each open circuit, and means whereby the time periods of the open circuits are caused to differ from each other, substantially as described.

2. At a station employed in wireless telegraphy, a conductor, a plurality of open circuits electrically connected with said conductor, a corresponding number of instruments one electrically connected with each open circuit, and a variable inductance included in each open circuit, substantially as described.

3. At a station employed in wireless telegraphy, a conductor, a plurality of instruments, a corresponding number of electrical transformers, one circuit of each transformer being electrically connected with the conductor and the other circuit of which includes one of the instruments aforesaid, and means for adjusting the time periods of each pair of transformer-circuits so as to be in accord with each other, whereby the time periods of the circuits connected with the common conductor are caused to differ from each other, substantially as described.

4. At a station employed in wireless telegraphy, a conductor, a plurality of instruments, a corresponding number of electrical transformers, one circuit of each transformer being a persistent oscillator, and the other circuit being a good radiator or absorber, each persistent-oscillator circuit including one of the instruments aforesaid, and means for adjusting the time periods of each pair of circuits so as to be in accord with each other, whereby the time periods of the circuits connected with the common conductor are caused to differ from each other, substantially as described.

5. In a station employed in wireless telegraphy, a conductor, a plurality of connections therefrom, a variable inductance included in each of said connections, and instruments, one for each connection, electrically connected therewith, substantially as described.

6. At a station employed in wireless telegraphy, a conductor, a plurality of connections therefrom, an inductance included in each of said connections, all of said inductances differing, and instruments one for each connection, electrically connected therewith, substantially as and for the purpose described.

7. At a station employed in wireless telegraphy, a conductor, and a plurality of separate instruments electrically connected with the conductor through connections which differ in inductance from each other, substantially as and for the purpose described.

8. At a station employed in wireless telegraphy, a conductor, a transmitting instrument electrically connected with the conductor through an inductance, and a receiving instrument electrically connected with the conductor, through an inductance, the said inductances differing from each other, substantially as and for the purpose described.

9. In a system of wireless telegraphy, a transmitting-station provided with a radiating-conductor, a plurality of separate transmitting instruments electrically connected with the radiating-conductor through connections which differ in inductance from each other, and a receiving-station provided with an absorbing-conductor, and a plurality of separate receiving instruments electrically connected with the absorbing-conductor through connections which differ in inductance from each other, substantially as and for the purpose described.

10. In a system of wireless telegraphy, a transmitting-station provided with a radiating-conductor, a plurality of separate and differently-tuned transmitting instruments electrically connected with the radiating-conductor through connections which differ in inductance from each other, and a receiving-station provided with an absorbing-conductor, and a plurality of separate receiving instruments, electrically connected with the absorbing-conductor, and tuned to accord with the separate transmitting instruments hereinbefore specified, substantially as and for the purpose described.

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**757,560. MACHINE FOR CUTTING SHEETS.** MARSHALL MERIAM, Pepperell, Mass. Filed May 29, 1903. Serial No. 159,328. (No model.)

*Claim.*—1. In a machine for cutting sheets, a sheet-guide comprising a bottom, adjustable sides, and means for simultaneously adjusting the sides, the means comprising a threaded rotatable shaft connected with the sides, the threads preventing movement of the sides after adjustment.

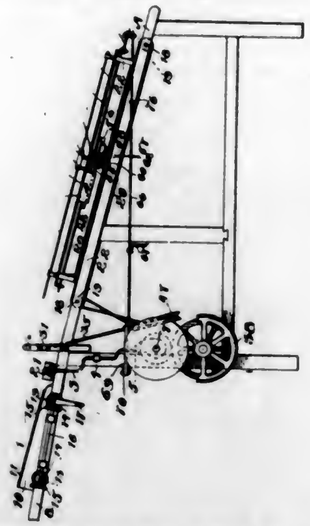
2. The combination with a cutting-machine and a cutter, of a chute leading thereto, guides mounted on the chute, a plurality of oppositely-threaded shafts connected with the guides, gears located on the ends thereof, an intermediate shaft, gears mounted on the intermediate shaft and meshing with the gears on the threaded shafts, and means for operating one of the gears to simultaneously operate each threaded shaft and the guides.

3. A cutting-machine comprising a table, a cutting device, means for actuating the cutting device and a binder for the material being cut, the binder comprising a retaining means, pitmen secured thereto, a rotatable shaft, cams keyed on the shaft, the lower ends of the pitmen bearing on the cams the pitmen, and binder adapted to actuate the cams when the binder is in its raised position.

4. A cutting-machine comprising a table, a cutting device thereon, means for actuating the cutting device, a binder for the material, and runners superposed above the table, the material passing beneath the runners which serve to retain it in position.

5. A cutting-machine comprising a table, and a cutting device, a wheel, flexible means extending from the cutting device to the wheel, and means actuated by the rotation of the wheel for automatically reversing the direction of such rotation.





6. A cutting-machine comprising a suitable support, and a cutting device, a wheel, flexible means connecting the cutting device and wheel, means for rotating the wheel, clutch members, a movable bar connected with the clutch members and means on the wheel adapted to engage the movable bar to reverse the direction of rotation of the wheel.

7. A cutting-machine comprising a table and a cutting device, a wheel, flexible means connecting the wheel and cutting device, a train of gears, the wheel connected with one of the gears, clutch members adapted to engage the remaining gears, a movable bar, a yoke formed therein, the bar rigidly connected to the clutch members and a pin carried by the wheel, the pin adapted to alternately engage the sides of the yoke and reverse the rotation of the wheel.

8. A cutting-machine comprising a suitable support, a cutting device, means for operating the cutting device, a catch, driving means, mechanism connecting the catch and driving means, the material adapted to engage the catch whereby to trip the latter to cause the actuation of the driving means and a plate carried by the catch, the plate provided with an upturned end to cause the positive engagement of the material and catch.

9. The combination with a cutting-table, of a cutting device, means for operating the cutting device, a driving means, mechanism for temporarily retaining the driving means out of operation, the mechanism including a pair of friction-gears, one of the gears being mutilated, and a trip, a pivoted member with which the trip is connected, a catch depending from and rigidly secured to the pivoted member, the catch adapted to be struck and actuated by the material.

10. A cutting-machine comprising a table, adjustable means for regulating the lengths into which the material is to be cut, a trip carried by the adjusting means, a rocking member, driving means, means connecting the rocking member and the driving means and means connecting the adjusting means and the rocking member to operate the trip.

11. A cutting-machine comprising a table, means for regulating the lengths into which the material is to be cut, a trip carried by the adjusting means, a rocking member, driving means, a cam on the driving means, mechanism connecting the cam and the rocking member and means connecting the rocking member and the adjusting means to cause the actuation of the trip.

12. A cutting-machine comprising a table, a cutter, means for adjusting the lengths into which the material is to be cut, a suitably-journaled rocking member, a lever secured thereto, a driving-shaft, a cam secured thereon, a suitably-supported lever, means for constantly retaining the lever in engagement with the cam, a rod connecting the two levers, and means connecting the rocking member and the adjusting means whereby to actuate the latter.

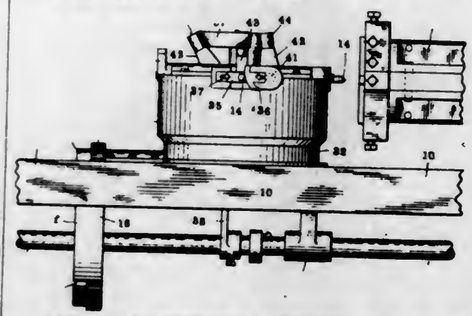
13. A cutting-machine comprising a table, a cutter, means for operating the cutter, movable means for retaining the cutter-operating means out of operation, a block carried by the retaining means, a trip for engaging the block and means, the operation of which is so timed with relation to the cutter-operating means as to cause the engagement of the trip and block at the completion of the travel of the cutter.

14. A cutting-machine comprising a table, a cutter, means for operating the cutter, and an adjustable catch, the catch provided with an upturned plate to cause the positive engagement of catch and material and prevent the latter from running up the catch.

15. A cutting-machine comprising a table, a cutter, means for operating the cutter, a catch, a locking-cam, the catch adapted to be engaged by the fed material to cause its depression and means for automatically raising the catch, the means comprising a pair of supports, a rocking bar journaled therein, means connecting the rocking bar and locking-cam, a lever secured to the rocking bar, a second lever secured to the frame of the machine, a cam for operating the last-named lever and a rod connecting the two levers.

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**757,561. CHUCK.** CHARLES R. MOOR, Muncie, Ind. Filed July 6, 1903. Serial No. 164,317. (No model.)



*Claim.*—1. The combination of a multiplicity of sets of coacting chuck-jaws, a revoluble structure carrying said jaws, a rock-shaft for one jaw of each set, an arm connected to each rock-shaft, an independently-movable shaft centrally located with respect to said revoluble structure, a cam, carried by said shaft, into the path of which said arms extend, means for revolving the chuck structure about the cam, and means for independently moving the shaft, whereby the jaws are closed after the article to be held thereby is introduced and automatically opened after the required operation has been performed.

2. The combination of a revoluble chuck-head, means for intermittently moving the same, a multiplicity of sets of coacting chuck-jaws mounted on said head, one jaw of each set being movable, a cam, intermediate connections between said cam and all of the movable chuck-jaws, and means for independently moving the cam.

3. The combination, in a chuck-head, of a stationary jaw, a movable jaw, a rock-shaft on which said movable jaw is mounted, a spring surrounding said rock-shaft by which the jaw is normally held closed, an arm extending out from said rock-shaft by means of which said jaw may be opened, means for revolving the chuck-head, and means for automatically operating said arm as the chuck-head revolves.

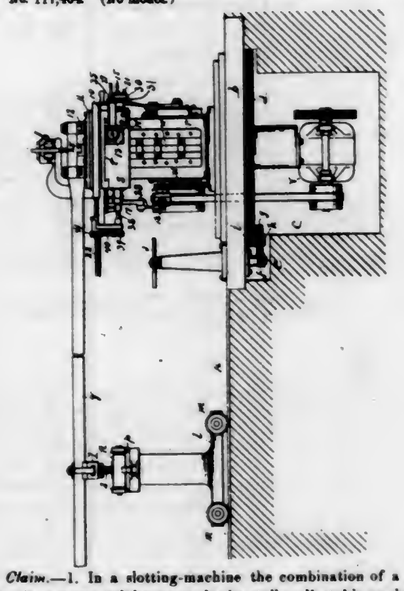
4. The combination of, a rotary chuck-head, a multiplicity of sets of chuck-jaws mounted thereon, rock-shafts upon which the movable chuck-jaws are mounted, arms carried by said rock-shafts, an independently-movable central shaft, a cam mounted thereon extending into the paths of said arms, a stop on an adjacent rigid portion of the structure, an arm carried by the cam-shaft, means for normally holding said arm against said stop, a second arm carried by said cam-shaft and a moving part adapted to intermittently come in contact with said last-named arm and thus move said cam-shaft and cam a short distance in opposition to the tension of the means by which the first-mentioned arm on said shaft is normally held against the stop, and then to escape therefrom.

5. The combination of a rotary chuck-head, a multiplicity of sets of jaws thereon, one jaw of each of said sets being mounted on a rock-shaft, said rock-shafts, arms thereon for operating the same, springs connected to said rock-shafts whereby the chuck-jaws carried thereby are normally held closed, a central shaft extending through said chuck-head and bearing a cam upon its outer end adapted to come in contact with the arms on the rock-shaft and operate the same to open the jaws carried thereby, means whereby the chuck-

head is intermittingly moved, and means for slightly moving the cam-shaft and thus carrying the cam out of engagement with one of the arms on the chuck-jaw-carrying rock-shaft, at a time when the chuck-head is at rest and said jaws have just received an article to be operated upon, thereby permitting the chuck-jaw to grip said article.

6. The combination of, a rotatable chuck-head, a stationary jaw carried thereby, a rock-shaft positioned adjacent said stationary jaw, a coöperating jaw carried by said rock-shaft having a cam-face, means whereby said rock-shaft is actuated to hold said jaws closed, an arm on said rock-shaft, an independently-movable shaft centrally located with respect to the chuck-head, and means carried by said shaft for operating said arm independently of the rotation of the chuck-head.

757,562. **SLOTTING-MACHINE.** MATTHEW MORTON and HENRY R. MORTON, Muskegon Heights, Mich. Filed July 29, 1902. Serial No. 117,464. (No model.)



*Claim.*—1. In a slotting-machine the combination of a turn table, a base supported thereupon, horizontally-adjustable mechanism for holding the work carried by said base, and a reciprocatory cutter carried by said base.

2. In a slotting-machine the combination of a supporting-foundation, a turn-table supported upon said foundation, a supporting-base located upon said turn-table, a reciprocatory cutter carried by said base and driving mechanism to actuate said cutter, said driving mechanism located below the turn-table.

3. In a slotting-machine the combination of a turn-table, a support therefor, a supporting-base located upon the turn-table, a reciprocatory cutter carried by said base, horizontally-adjustable work-feeding mechanism mounted upon said base, and means upon said support geared with the turn-table to actuate the same.

4. In a slotting-machine the combination of a support having a countersunk portion or well, a turn-table carried by said support, a supporting-base upon the turn-table, cutter mechanism carried by said base, revolving mechanism to engage the work mounted upon said base and driving mechanism located in the countersunk portion or well of the support to drive the cutter mechanism.

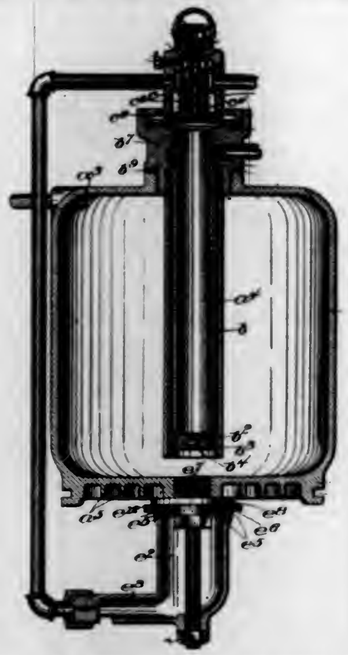
5. In a slotting-machine the combination of a turn-table, a supporting-base carried by the turn-table, an additional turn-table at the upper end of said base to engage the work, and cutter mechanism carried by said base, whereby the cutter mechanism may be turned and operated without moving the work.

6. In a slotting-machine the combination of a turn-table, reciprocatory cutter mechanism, means to adjust the cutter mechanism relative to the turn-table, and means to carry one end of the work, said means movable toward and from the cutter mechanism, and in a transverse direction.

7. In a slotting-machine the combination of a turn-table having a vertical axis, horizontally-adjustable cutter mechanism carried thereby, a truck movable toward and from the cutter mechanism, and a carriage mounted upon said truck to support the work movable in a direction transverse to the movement of the truck.

8. In a slotting-machine the combination of a turn-table, a base thereupon, a reciprocatory cutter carried by said base, a laterally-adjustable feed-table upon the upper portion of the base, a cross feed-table adjustable upon the lateral feed-table in a direction transverse to the movement of the lateral feed-table, a revolving plate upon the cross feed-table, and means for holding the work upon the revolving plate.

757,563. **WATER-HEATER.** EDWARD R. MURPHY, Chelsea, Mass., assignor to Puffer Manufacturing Company, a Corporation of Maine. Filed Nov. 12, 1903. Serial No. 180,823. (No model.)



*Claim.*—1. In a heater for liquids, the combination with a receptacle for the liquid, of a burner below the receptacle, a valve-casing having an outlet-duct to supply the said burner, a valve-passage formed in said casing and having a free inlet for gas and a restricted outlet leading to said casing, a valve having a longitudinal duct to afford communication between said passage and said casing, a valve-seat within said casing to close said duct, and a thermostatic device to control the movement of said valve relative to said valve-seat.

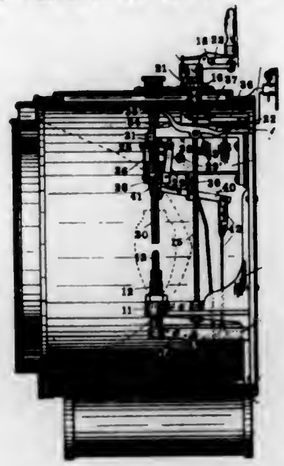
2. In a heater for liquids, the combination with a receptacle for the liquid, of a burner below the receptacle, a valve-casing having an outlet-duct to supply the said burner, a valve-passage formed in said casing and having a free inlet for gas and a restricted outlet leading to said casing, a valve having a longitudinal duct to afford communication between said passage and said casing, a valve-seat within said casing to close said duct, and a closed chamber provided with a diaphragm to act on said plug, and containing an expansible fluid, said chamber projecting into the main receptacle for the liquid.

3. In a heater for liquids, the combination with a receptacle for the liquid, of a burner below the receptacle, an insulating member interposed between said burner and said receptacle, a valve-casing having an outlet-duct to supply said burner, a passage formed in said casing and having a free inlet for gas and a restricted outlet communicating with said valve-casing, a valve-seat within said passage, a valve having a duct to afford communication between said passage and said casing, said duct being closed by said valve-seat, and a thermostatic device to control the movement of said valve, as set forth.

4. The combination with a receptacle for the liquid; of a closed chamber projecting into said receptacle and containing a fluid; a diaphragm at one end of said chamber; a valve-shell above said diaphragm, said valve-shell being provided with an inlet and outlet for fuel; a valve-seat projecting into said valve-shell and held in position by a yielding member such as a spring; means for adjusting the said seat to vary the normal position thereof; a valve controlled by said diaphragm and coöperating with said seat; and a burner, the supply of fuel for which is controlled by said valve, substantially as described.



757,564. **ELECTRIC HEADLIGHT.** WILLIAM H. NORTHALL, Elwood, Ind. Filed Mar. 20, 1903. Serial No. 148,705. (No model.)



*Claim.*—1. In an electric-arc lamp, the combination with a pair of carbon-holders, of electrically-operated means for supporting one of said holders, means for adjustably moving the other holder toward and from the first holder, and means operated by said adjusting means for releasing and refastening the carbon in the first holder to compensate for the adjustment of the second holder.

2. In an electric-arc lamp, the combination of a pair of carbon-holders, of a solenoid, connections between said solenoid and one of said carbon-holders for supporting the same, a threaded rotatable rod threaded into the other holder and supporting the same, means for grasping a carbon in one of said holders, and means operated by the rotation of the rotatable rod for releasing said grasping means at one point in its rotation to compensate for the movement of the adjustable holder.

3. In an electric-arc lamp, the combination with a suitable support, of a carbon-holder movably mounted therein, electrically-operated means for controlling the position of said carbon-holder, a lever arranged to engage said carbon-holder and move it in opposition to said electrically-operated means, a carbon-grasping means carried by said carbon-holder, a second carbon-holder, means for adjusting said carbon-holder, and intermediate connections between said adjusting means and the lever.

4. In an electric-arc lamp, the combination with a suitable support, of a pair of carbon-holders, electrically-operated means for supporting one of said holders, and means for moving said electrically-operated holder toward the other holder against the action of the electric operating means whereby the length of the arc may be adjusted.

5. In an electric-arc lamp, the combination with a pair of carbon-holders, of a solenoid, a connection between said solenoid and one of the holders, and means for moving the solenoid-operated holder toward the other holder against the action of the solenoid.

6. In an electric-arc lamp, the combination with a suitable support, of a carbon-holder movably mounted therein, a solenoid, a connection between said solenoid and said carbon-holder, a lever arranged to engage said carbon-holder and move it in opposition to said solenoid, means for operating said lever, and a coöperating second carbon-holder.

7. In an electric-arc lamp, the combination with a suitable support, of a carbon-holder movably mounted therein, a solenoid, a connection between said solenoid and carbon-holder, a lever arranged to engage said carbon-holder and move it in opposition to the solenoid, a second carbon-holder, a rotatable threaded rod threaded into said second carbon-holder and supporting the same, a cam-bar adapted to move the first carbon-holder in a direction opposite to that caused by the lever, means carried by the cam-bar for operating the lever, and connections between said cam-bar and rotatable rod.

8. In an electric-arc lamp, the combination with a suitable support, of a carbon-holder movably mounted therein, a solenoid, a connection between said solenoid and carbon-holder, a lever arranged to engage said carbon-holder and move it in opposition to the solenoid, a second carbon-holder, a rotatable threaded rod threaded into said second carbon-holder and supporting the same, a cam-bar adapted to move the first carbon-holder in a direction opposite to that caused by the lever, means carried by the cam-bar for operating the lever, connections between said cam-bar and rotatable rod, carbon-grasping means carried by the first carbon-holder and normally holding the carbon therein, and means carried by the cam-bar for engaging said grasping means to intermittently release the carbon.

9. In an electric-arc headlight, the combination with the casing thereof, of a pair of carbon-holders, electrically-operated means for normally maintaining the arc distance, and means operable from the exterior of the casing for moving one of the carbon-holders toward the other against the operation of the electrically-operated arc distance-controller.

10. In an electric-arc headlight, the combination with a casing, of a pair of carbon-holders movably mounted therein, a solenoid, connections between said solenoid and one of said carbon-holders for supporting the same, a threaded rotatable rod threaded into the other carbon-holder, to support the same and extending to the exterior of the casing, means carried by the extended end of the said rotatable rod by means of which it may be operated from the exterior of the casing, means for grasping the carbon by one of the holders, and means operated by the rotation of the rotatable rod for releasing said grasping means at one point in its rotation to compensate for the movement of the adjustable holder.

11. In an electric-arc headlight, the combination with a suitable casing, of a carbon-holder movably mounted therein, electrically-operated means for controlling the position of said carbon-holder, a lever arranged to engage said carbon-holder and move it in opposition to said electrically-operated means, a carbon-grasping means carried by said carbon-holder, a second carbon-holder, means for adjusting said carbon-holder, intermediate connections between said adjusting means and the lever, and means for rotating the adjusting means from the exterior of the casing.

12. In an electric-arc headlight, the combination with a suitable casing, of a pair of carbon-holders, electrically-operated means for supporting one of said holders, means for moving said electrically-operated holder toward the other holder against the action of the electric-operated means, whereby the length of the arc may be adjusted, and means for operating said moving means from the exterior of the casing.

13. In an electric-arc headlight, the combination with a suitable casing, of a pair of carbon-holders, a solenoid, a connection between said solenoid and one of the holders, means for moving the solenoid-operated holder toward the other holder against the action of the solenoid, and means for operating said moving means from the exterior of the casing.

14. In an electric-arc headlight, the combination with a suitable casing, of a carbon-holder movably mounted therein, a solenoid, a connection between said solenoid and said carbon-holder, a lever arranged to engage said holder and move it in opposition to said solenoid, means outside of the casing for operating said lever, and a coöperating second carbon-holder.

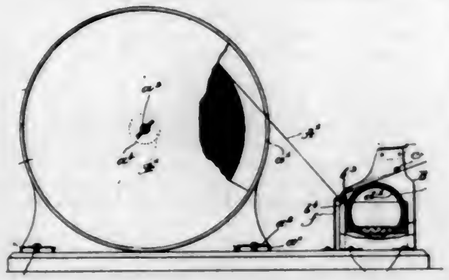
15. In an electric-arc headlight, the combination with a suitable casing, of a carbon-holder movably mounted therein, a solenoid, a connection between said solenoid and carbon-holder, a lever arranged to engage said carbon-holder and move it in opposition to the solenoid, a second carbon-holder, a rotatable threaded rod threaded into said second carbon-holder to support the same, a cam-bar adapted to move the first carbon-holder in a direction opposite to that caused by the lever, means carried by the cam-bar for operating the lever, connection between said cam-bar and rotatable rod, and means for rotating said rod from the exterior of the casing.

16. In an electric-arc headlight, the combination with a suitable casing, of a carbon-holder movably mounted therein, a solenoid, a connection between said solenoid and carbon-holder, a lever arranged to engage said carbon-holder, a rotatable threaded rod threaded into said second carbon-holder and supporting the same, a cam-bar adapted to move the first carbon-holder in a direction opposite to that caused by the lever, means carried by the cam-bar for operating the lever, connection between said cam-bar and rotatable rod, carbon-grasping means carried by the first carbon-holder

and normally holding the carbon therein, means carried by the cam-bar for engaging said grasping means to intermittently release the carbon, and means for rotating the rotatable rod from the exterior of the casing.

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**757,565. STRIP-DELIVERING APPARATUS.** GEORGE NORWOOD, Winthrop, Mass., assignor, by mesne assignments, to himself and John S. Richardson, Boston, Mass. Filed Aug. 21, 1903. Serial No. 170,318. (No model.)



*Claim.*—1. In an apparatus of the class described, a stand having a bolt, a tube surrounding said bolt and provided with a spring-sustained strip-lifter, a moistening device, and means for sustaining a roll of gummed paper.

2. In an apparatus of the class described, a moistening device, a spring-sustained strip-lifter, and a cutter, combined with a part presenting a circular flange, and a disk entering said flange, and means to move the disk to clamp the roll of paper of whatever thickness.

3. In an apparatus of the class described, means for sustaining a roll of gummed paper, a strip-lifter, and a moistening device comprising a box and a cylindrical piece of thin sheet metal sustaining a pad, said cylindrical piece being normally held stationary in the box, but adjustable therein to bring different portions of the pad into operative relation with the paper.

4. In an apparatus of the class described, a box to contain water, a pad-holder, comprising a tube, and a fibrous covering thereon, the tube and covering being normally restrained from rotation in the box, but adjustable therein to bring different portions of the fibrous covering into operative relation to the paper.

5. In an apparatus of the class described, a stand having a bolt, a tube surrounding said bolt and provided with a spring-sustained strip-lifter embracing and guiding the paper, a moistening device, means for sustaining a roll of gummed paper, and a device located behind said tube to sustain the strip of paper, said device preventing the strip from escaping from said tube.

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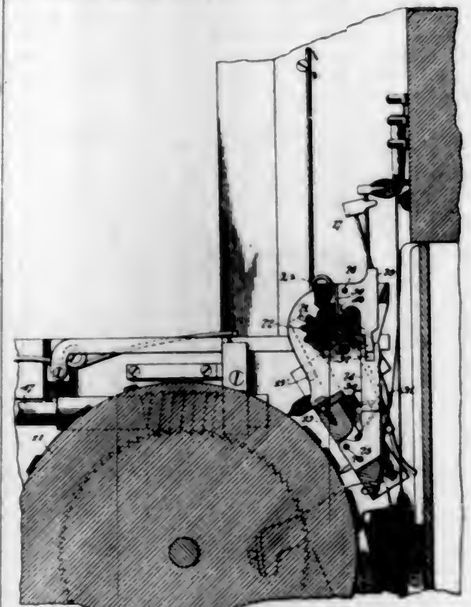
**757,566. MECHANICAL PIANO.** PAOLO POMERO, Philadelphia, Pa. Filed Jan. 7, 1904. Serial No. 188,082. (No model.)

*Claim.*—1. In a device of the class specified, the combination with a pin-barrel, of a hammer-lever formed of a plurality of connected sections, one of which is engaged by the pin-barrel to effect movement of the others to operative position, a hammer carried by the upper section, and means for effecting a rapid vibratory movement of said section.

2. In a device of the class specified, the combination with a pin-barrel, of a hammer-lever formed of a plurality of connected sections of which the lower is engaged by the pin-barrel, a hammer carried by the upper section, and a revoluble cylinder having longitudinal ribs to effect rapid vibratory movement of the upper hammer-carrying section.

3. In a device of the class specified, the combination with a pin-barrel, of a hammer-lever formed of a plurality of connected sections of which the lower is engaged by the pin-barrel to effect movement to operative position, a toothed cylinder for engagement with the upper hammer-carrying section of the lever to move the same in one direction, and a spring for effecting movement of said hammer-carrying section in the opposite direction.

4. In a device of the class specified, the combination with a pin-barrel, of a sectional hammer-carrying lever, said sections having separate pivots and one of the sections being engaged and moved to operative position by the pin-barrel, a tongue forming a part of the hammer-carrying section, a ribbed cylinder with which said tongue is moved into engagement by movement of the pin-engaged section, and a spring carried by one of the sections and operating on a second section to effect the movement of the hammer against the strings.



5. In a device of the class specified, the combination with a revoluble pin-barrel, of a hammer-carrying lever comprising a lower pivotally-mounted section adapted to be engaged by the pin-barrel, an intermediate section pivotally connected to the lower section, a spring tending to keep the two sections in engagement with each other, an upper hammer-carrying section connected to the intermediate section and movable thereby to operative position, and a revoluble ribbed cylinder for engaging and operating the hammer-carrying section.

6. In a device of the class specified, the combination with a pin-barrel, of a hammer-carrying lever comprising a lower pivoted section adapted to be engaged by the pin-barrel, an intermediate section having a hinge connection with the lower section, a spring tending to keep the two sections in engagement with each other, an upper pivotally-mounted hammer-carrying section having a loose connection with the upper portion of the intermediate section, a tongue forming a part of the upper section, and a ribbed cylinder for engaging with said tongue substantially as specified.

7. In a device of the class specified, the combination with a pin-barrel, of a lever formed of a plurality of connected sections, the upper and lower of said sections having independent supporting-pivots and the intermediate section being connected to both the upper and lower sections, a ribbed cylinder with which the upper section is movable into engagement by the operation of the pin-barrel on the lower section, the upper and intermediate sections both yielding during the operation of said cylinder.

8. In a device of the class specified, the combination with a pin-barrel, of an operating-lever comprising a lower pivotally-mounted section adapted to be engaged by the pin-barrel, a spring for holding said section in operative position, an intermediate section having a hinge connection with the lower section and provided at its upper end with a slot, a spring carried by the lower section and operating against the intermediate section, an upper pivotally-mounted section having a depending tongue engaging a slot of the intermediate section, a hammer carried by the upper section, a pendent tongue forming a part of the upper section, and a ribbed cylinder for engaging said tongue.

9. In a device of the class specified, the combination with a pin-barrel, of a sectional lever of which the lower portion is engaged by the pin-barrel, a hammer carried by the upper section, supporting-pivots for the upper and lower sections a pendent tongue carried by the upper section a wear-plate on said tongue, and a ribbed cylinder for engaging said wear-plate.



10. In a device of the class specified, the combination with the end standards, of a supporting means for the standards a bar carried by said standards, a plurality of sectional hammer-carrying levers of which the lower sections are pivoted to the standard-supporting means, supporting-pivots carried by the bar for holding the upper sections, the intermediate sections of the levers having a pivoted connection with the lower sections and a loose connection with the upper sections, a ribbed cylinder having end bearings in the standards, and means for revolving said cylinder.

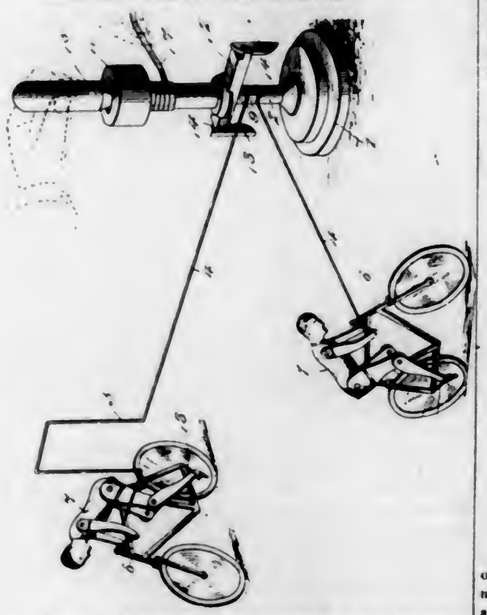
11. In a device of the class specified, the combination with a pin-barrel, of a crank-shaft, worm-gearing connecting the crank-shaft and pin-barrel, a pivoted action-bar, means for adjusting the same to operative and inoperative positions, a series of tremolo-hammers carried by the bar, a ribbed cylinder having supporting-bearings carried by the bar, a spindle on which said cylinder is secured, a gear carried by the spindle, and a second gear having an operative connection with the main crank-shaft, the spindle-carried gear being movable out of the mesh with spindle-gearing when the action-bar is adjustable to inoperative position.

12. In a device of the class specified, the combination with a pin-barrel, of a crank-shaft, connecting-gearing between the crank-shaft and the pin-barrel, a pivoted action-bar, standards carried by the bar, tremolo-hammer levers supported by the standards and bar, a ribbed cylinder for actuating the tremolo-hammers, a spindle carrying the cylinder and having bearings in said standards, a miter-gear secured to the spindle, a shaft extending transversely of the piano-casing, and mounted in suitable bearings therein, a miter-gear secured to said shaft and with respect to which the spindle-carried gear is adjusted, a horizontally-disposed shaft having bearings at the front of the casing, miter-gears connecting the two shafts, and gearing connections between said horizontal shaft and the crank-shaft.

13. In a device of the class specified, the combination with a pin-barrel, of a hammer-lever formed of a plurality of pivoted sections of which the lower and intermediate sections have a pivotal connection, and are simultaneously adjustable, a main hammer-carrying section having a yieldable connection with the intermediate section, and a stop carried by the intermediate section for engaging the hammer-carrying section.

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**757,567. TOY.** JOHN J. QUINLAN, Charlestown, Mass. Filed Oct. 21, 1903. Serial No. 177,920. (No model.)



*Claim.*—1. In a device of the character described, the combination with a stem having a rod projecting therefrom, and figure-carrying arms projecting from the rod; of a sleeve revolubly mounted upon the rod, arm-engaging devices connected to the sleeve, a handle, and a spring connected at opposite ends to the sleeve and handle.

2. In a device of the character described, the combination with a stem having a rod projecting therefrom, and a laterally-extending arm loosely mounted upon the rod; of a sleeve revolubly mounted upon the rod, an arm-engaging device connected to the sleeve, a handle loosely mounted upon the rod, a spring connected at opposite ends to the handle and sleeve, and means for winding the spring.

3. In a device of the character described, the combination with a stem having a rod projecting therefrom, and a figure-carrying arm loosely mounted upon and extending from the rod; of a sleeve revolubly mounted upon the rod, a dog pivotally connected to the sleeve and adapted to engage the arm, a drum integral with the sleeve, a handle loosely mounted upon the rod, a spring within the drum and connected at opposite ends thereto and to the handle, and means for winding the spring.

4. In a device of the character described, the combination with a base having a stem thereon, and a rod projecting from the stem: of figure-carrying arms loosely mounted upon the rod, a sleeve revolubly mounted upon the rod, an arm integral therewith, a dog pivoted on the arm and adapted to engage the figure-carrying arm, a handle loosely mounted on the rod, a spring connected at opposite ends to the handle and sleeve, and means for winding the spring.

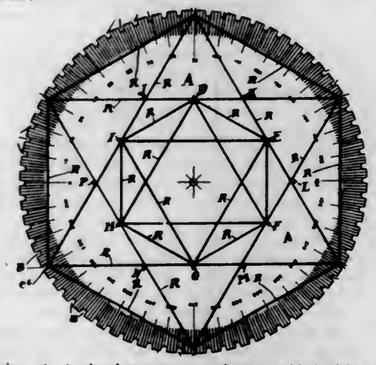
5. The combination with a base having a stem thereon, and a rod projecting from the stem; of a figure-carrying arm loosely mounted upon and extending from the rod, a sleeve revolubly mounted upon the rod, a dog pivotally connected to the sleeve and adapted to engage the arm, a stop for the dog, a drum integral with the sleeve, a handle loosely mounted upon the rod and projecting into the drum, a spring within the drum and secured at opposite ends to the handle and drum, and means for winding the spring.

6. In a device of the character described, the combination with a base having a stem thereon, and a rod projecting from the stem: of laterally-extending arms loosely mounted upon the rod, figures connected to the arms, a sleeve revolubly mounted upon the rod, arms upon the sleeve, dogs pivoted to said arms and adapted to engage the figure-carrying arms, stops for the dogs, a drum integral with the sleeve, a handle loosely mounted upon the rod and projecting into the drum, a spring within the drum and secured to the handle and drum, and means for winding the spring.

7. In a device of the character described, the combination with a base having a stem projecting therefrom; of arms loosely mounted upon the rod, wheels connected to the arms, cranks revoluble with one of the wheels of each arm, jointed figures mounted above said wheels and connected to the cranks, a sleeve loosely mounted upon the rod, a handle loosely mounted on the rod, a spring connected at opposite ends to the handle and sleeve, arm-engaging dogs connected to the sleeve, and means for winding the spring.

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**757,568. PROTRACTOR AND ITS ACCOMPANIMENTS.** JOSEPH H. RENSHAW, Cincinnati, Ohio, assignor of one-half to Charles E. McKeag, Lockland, Ohio. Filed Feb. 17, 1902. Serial No. 94,529. (No model.)



*Claim.*—1. A circular protractor-sheet provided with notches on its edge, and an elastic band or bands, adapted for use in connection with such notches and in application thereto, substantially as and for the purposes specified.

2. A circular protractor-sheet provided with notches on its edge, and adapted to receive a band or bands, for mathematical purposes, substantially as and for the purposes specified.

3. A circular protractor-sheet, having marginal graduations, and provided with notches, and a band or bands, adapted to enter

such notches for mathematical purposes, substantially as and for the purposes specified.

4. A circular protractor-sheet having marginal graduations, and provided with notches adapted to receive an elastic band or bands, the elastic band or bands, cord or cords, in combination therewith, substantially as and for the purposes specified

5. A circular protractor having marginal graduations and provided with notches on its edge, and having one or more perforations in the sheet, and a band, or bands, adapted to enter said notches, and means for holding the band in the desired perforation or perforations, substantially as and for the purposes specified.

6. A circular protractor-sheet, provided with notches on its edge, and having one or more perforations in the sheet, and a band or bands, adapted to enter said notches, and means for holding such band in each of such perforations, substantially as and for the purposes specified.

7. A circular protractor-sheet provided with notches on its edge and having one or more perforations in the sheet, and an elastic band or bands, adapted to enter said notches, and means for holding such band at or in each of such perforations, substantially as and for the purposes specified.

8. A circular protractor-sheet provided with notches on its edge, marginal graduations, and a central perforation marginally graduated, and a band or bands, and means for holding such band in such perforation, substantially as and for the purposes specified.

9. A circular protractor-sheet provided with notches on its edge, marginal graduations, and a central perforation marginally graduated, and an elastic band or bands, and means for holding such band in such perforation, substantially as and for the purposes specified.

10. A circular protractor-sheet provided with marginal graduations, and notches at its edges, and one or more perforations at desired places in it, the perforations being of a diamond shape, the diagonals of the latter being in the line of and perpendicular to the radius of the circle of the protractor, one or more bands, and means for holding the said band in each of such perforations, substantially as and for the purposes specified.

11. A circular protractor-sheet provided with marginal graduations, and notches at its edges, and one or more perforations at desired places in it, the perforations being of a diamond shape, the diagonals of the latter being in the line of and perpendicular to the radius of the circle of the protractor, one or more elastic bands, and means for holding the said band in each of such perforations, substantially as and for the purposes specified.

12. A circular protractor-sheet having notches at its edge, and one or more perforations in it as desired, and a split ring, and one or more bands adapted to enter any one of said notches, and be held by said ring in connection with one of said perforations, substantially as and for the purposes specified.

13. A circular protractor-sheet having marginal graduations, and notches at its edge, and composed of a substance transparent enough to see marks on a substance below it, and one or more bands, adapted to be used in connection with such notches, substantially as and for the purposes specified.

14. A circular protractor-sheet having marginal graduations, and notches at its edge, and composed of a substance transparent enough to see marks on a substance below it, and one or more elastic bands, adapted to be used in connection with such notches, substantially as and for the purposes specified.

15. A circular protractor having marginal graduations and notches on its edge, and composed of a material, which latter readily receives marks and allows them to be readily erased, and a band or bands, adapted to be received in the notch or notches, substantially as and for the purposes specified.

16. As a new article of manufacture, a circular protractor composed of a transparent material, adapted to receive marks and permitting them to be readily erased, and having notches on its edge, and marginal graduations, one or more bands, for use with such notches, substantially as and for the purposes specified.

17. As a new article of manufacture, a circular protractor composed of a transparent material, adapted to receive marks and permitting them to be readily erased, and having notches in its edge, and marginal graduations, one or more bands, for use with such notches, and one or more perforations at suitable places, and means for holding a band, at each of such perforations, substantially as and for the purposes specified.

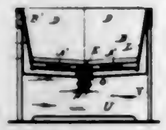
18. A circular protractor having graduations, and one or more perforations, and one or more bands, and means for holding the band at each of such perforations, substantially as and for the purposes specified.

19. As a new article of manufacture, a circular protractor composed of a material, adapted to receive marks and permitting them to be readily erased, and having notches in its edge, and marginal graduations, one or more bands, for use with such notches, and one or more perforations at suitable places, and means for holding a band, at each of such perforations, substantially as and for the purposes specified.

20. A protractor duly laid off with marginal graduations, and provided with notches located on opposite edges, and an elastic band adapted to be connected to the notches and strained between the same, the notches being located relatively to the graduations, and adapted to locate the elastic band relatively to the latter, substantially as and for the purposes specified.

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**757,569. MILK-VAT.** GOTTLIEB H. SIMON, Kiel, Wis. Filed Apr. 1, 1903. Serial No. 150,530. (No model.)



*Claim.*—1. An open-mouthed vessel such as a milk-vat comprising a plurality of sections of sheet metal having their contiguous edges bent outwardly at right angles to their central portions and secured together so as to perform the twofold function of seams and strengthening-flanges in combination with parallel reinforcing-bars rigidly affixed to, and in direct contact with the sides of said strengthening-flanges, substantially as set forth.

2. A milk-vat comprising a plurality of sections of sheet metal, having their contiguous edges bent outwardly at right angles to their central portions and secured together, forming seams and strengthening-flanges in combination with one or more transversely-arranged reinforcing-bands located between their respective ends and the center of the vat, secured at their respective upper ends to the side rails of the vat, and having their central portions extending downwardly and beneath the bottom of the vat, substantially as set forth.

3. A milk-vat comprising a plurality of sections of sheet metal, having their contiguous edges bent outwardly at right angles to their central portions and secured together, forming seams and strengthening-flanges in combination with one or more transversely-arranged reinforcing-bands located between their respective ends and the center of the vat, and reinforcing bridge-blocks O, and angle-irons P, P secured to the center of said reinforcing-bands at their junction with the longitudinal seams or strengthening-flanges of the sheet-metal section comprising the bottom of the vat, substantially as set forth.

4. A milk-vat comprising a plurality of sections of sheet metal, the contiguous edges of which are secured together by right-angular bends adapted to serve the twofold functions of seams and strengthening-flanges in combination with longitudinal reinforcing-rails H and angle-irons J, J, secured to the longitudinal central flange of the vat by a plurality of bolts, substantially as set forth.

5. A milk-vat comprising a plurality of separate sections of sheet metal, secured together at their contiguous edges by right-angular bends forming seams and strengthening-flanges which seams and strengthening-flanges are arranged both longitudinally and transversely of the vat and converge toward the center of the bottom, from the ends and sides of the vat, terminating at slight distances apart in combination with a separate plate of metal centrally located beneath the converging ends of said strengthening-flanges and secured to the bottom of the vat by a plurality of rivets, substantially as, and for the purpose specified.

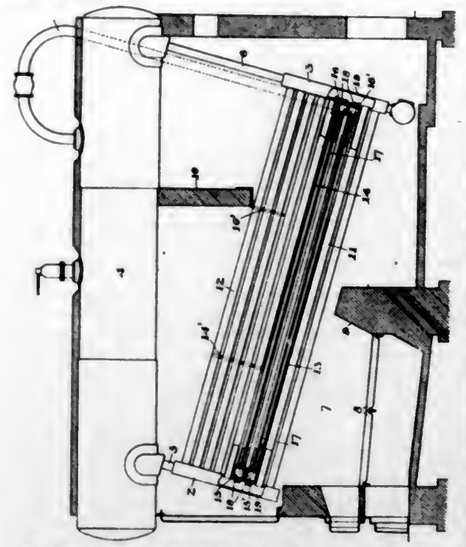
6. A milk-vat comprising a plurality of sections of sheet metal, having their contiguous edges bent outwardly at right angles to their central portions and secured together so as to perform the twofold functions of seams and strengthening-flanges for the exterior surface of the vat arranged both longitudinally and transversely of the vat; a rectangular frame secured to the upper marginal edge of the vat, and a plurality of vat-supporting legs secured at their upper ends to the sides of the vat, substantially as set forth.

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**757,570. SUPERHEATER.** JAMES P. SHEDDON, Barberton, Ohio, assignor to the Stirling Company, Chicago, Ill., a Corporation of New Jersey. Filed Apr. 20, 1903. Serial No. 153,407. (No model.)

*Claim.*—1. A water-tube boiler having end boxes connected by water-tubes, a superheater interposed between the water-tubes and baffles between the superheater and the water-tubes and arranged to direct the gases over one set of water-tubes, thence over the superheater-tubes, and thereafter over other water-tubes; substantially as described





2. A water-tube boiler having front and rear headers connected by inclined tubes, said tubes being arranged in a plurality of sets, a superheater between the sets, and baffles on each side of the superheater and arranged to direct the gases among the lower water-tubes, thence over the superheater-tubes after leaving the water-tubes, and thereafter over further water-tubes after leaving the superheater-tubes; substantially as described.

3. A water-tube boiler having front and rear headers connected by inclined water-tubes, said tubes being arranged in separated horizontal sets, a superheater between the sets, said superheater having end boxes or headers connected by steam-tubes, and baffles above and below the superheater and arranged to direct the gases among the lower water-tubes, thence over the superheater-tubes in the next reverse pass, and then over further water-tubes in the successive pass; substantially as described.

4. A water-tube boiler having front and rear headers connected by inclined water-tubes, a superheater arranged between the water-tubes and having end headers through which the superheater-tubes may be reached and baffles between the superheater and the water-tubes above and below it; substantially as described.

5. A water-tube boiler having front and rear headers connected by inclined water-tubes, and a superheater arranged between the water-tubes, said superheater having tubes arranged to give the steam a double pass through the superheater-tubes before passing the point of use; substantially as described.

6. A water-tube boiler having front and rear headers connected by inclined water-tubes, and a superheater arranged between the water-tubes, said superheater having end headers connected by tubes, the headers being arranged to allow withdrawal of the steam-tubes through the headers of the water-tubes; substantially as described.

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**757,571. AIR-VALVE FOR SAFETY TRAIN-STOPS.** HIRAM G. SEDGWICK, New York, N. Y. Filed Aug. 24, 1903. Serial No. 170,517. (No model.)



*Claim.*—1. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber adapted to be connected to the train-pipe of the air-brake system, a valve therein, mechanism connected to and adapted to automatically move said valve to successively vent the train-pipe, and means adapted to be engaged by a road-bed device to set said valve-moving mechanism in operation.

2. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber adapted to be connected to the train-pipe of an air-brake system, a valve in said chamber, mechanism connected to and adapted to move said valve to successively vent the train-pipe.

3. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein, mechanism for rotating said valve to successively vent the train-pipe, and mechanism adapted to be actuated by a road-bed device to set the valve-rotating mechanism in operation.

4. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein formed with a series of ports, mechanism for rotating said valve, and a mechanism adapted to be engaged by a road-bed device to set the valve-rotating mechanism in operation.

5. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein, mechanism for rotating said valve to successively vent the train-pipe, and mechanism adapted to be actuated by a road-bed device to set the valve-rotating mechanism in operation, and means to arrest the movement of the valve after the successive venting of the train-pipe.

6. An air-valve for an automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein mechanism for rotating said valve to successively vent the train-pipe, mechanism adapted to be actuated by a road-bed device to set the valve-rotating mechanism in operation, and means operating automatically to arrest the valve in its closed position after the successive venting of the train-pipe.

7. An air-valve for automatic train-stopping apparatus comprising, a valve-chamber, a rotary valve therein provided with a series of ports, means for rotating said valve, means normally holding the valve-rotating mechanism out of operation, means adapted to be operated by a road-bed device to release the valve-rotating means, and means for automatically arresting the valve-rotating mechanism after the successive venting of the train-pipe.

8. In an automatic safety train-stop mechanism, the combination of a train equipped with a fluid-brake system, an actuating device on the road-bed, and a single valve device connected to the system and adapted to successively vent the same when actuated by the road-bed device.

9. In an automatic train-stopping mechanism, a train equipped with a fluid-brake system, an actuating device on the road-bed, and means connected to the system for successively removing separate charges of fluid therefrom to apply the brakes gradually.

10. In combination a train equipped with a fluid-brake system, means connected to the system for successively venting the system to apply the brakes, and actuating means on the road-bed.

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**757,572. MATCH-MACHINE.** MARK A. SHELDON, Detroit, Mich., assignor of one-third to Alexander McVittie, Detroit, Mich. Filed Sept. 21, 1901. Serial No. 76,021. (No model.)

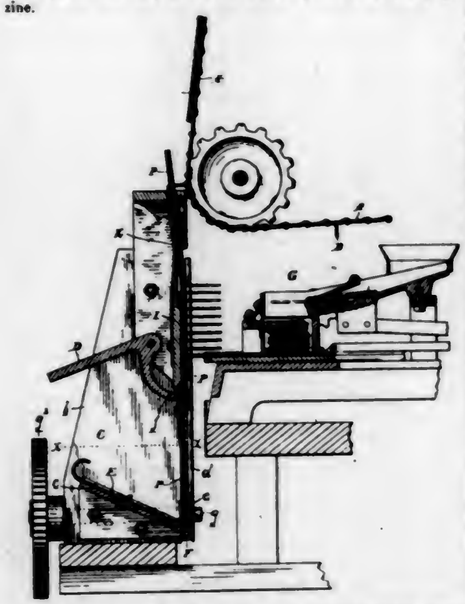
*Claim.*—1. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical carrier, of means for successively feeding the plates to the carrier, comprising an inclined support arranged adjacent to the carrier and adapted to engage a number of plates at their lower edges and a pressure device adapted to bear against the back of the rearmost plate at the upper edge thereof.

2. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical carrier, of means for successively feeding the plates to the carrier, comprising means for supporting a number of plates adjacent to the carrier and forming a suitable incline upon which the plates are adapted to slide upon their lower edges into the path of the carrier by the action of gravity and a pressure device adapted to press against the plates at their upper edges, whereby said plates are urged into the path of the carrier independently at both their upper and lower edges.

3. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical carrier, of means for successively feeding the plates to the carrier, comprising a plate-holding magazine having vertical sides for guiding the plates laterally into engagement with the carrier, a bottom inclined toward the carrier and upon which the lower edges of the plates are slidingly supported and a pressure device adapted to bear against the upper edges of the plates only.

4. In match machinery employing wholly independent plates

for holding the splints, the combination with a vertical carrier having guides in which the plates are carried, of a plate-holding magazine adjacent to the carrier and communicating with the space between the guides, means in said magazine for urging the plates forwardly into the space between the guides, and a yielding pressure device acting independently of said means to press against the backs of the plates after they have been moved upward from said magazine.



5. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical carrier having guides in which the plates are carried, of a plate-holding magazine communicating with the space between the guides of the carrier, means for urging the plates into the space between the guides for their successive engagement with the carrier and a yielding pressure device acting independently of said means to press against the backs of the plates after they have been moved upward from the magazine.

6. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical carrier having vertical guides in which the plates are carried, of means for successively feeding the plates to the carrier comprising an inclined support for supporting a number of plates upon their lower edges adjacent to the carrier, a pressure device adapted to bear against the upper edge of the rearmost plate, means for guiding the plates laterally into the space between the guides.

7. In match machinery employing wholly independent plates for holding the splints, of a vertical carrier composed of two endless chains revolving in a vertical plane common to both of them and forming between their adjacent vertical portions a space equal to the width of a plate in which the plates are adapted to be carried by the chains, a plate-holding magazine at the foot of the carrier-chains communicating with the space between the carriers and means for successively feeding the plates from said magazine into said space and a spring disposed above said feeding means to act against the backs of the plates.

8. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical carrier having vertical guides in which said plates are carried, means at the base of the carrier for successively feeding the plates to said carrier and comprising an inclined support upon which a number of plates are adapted to be supported upon their lower edges, a pressure device adapted to bear against the upper edge of the rearmost plate, a device for sticking rows of splints horizontally into said plates while in transit with said carrier and a cross-bar adapted to support the back of the plates in sticking.

9. In match machinery employing wholly independent plates for holding the splints, of a vertical carrier composed of two endless chains revolving in a vertical plane common to both of them and forming between their adjacent vertical portions a space equal to the width of the plates and in which the plates are adapted to be carried by the chains, means on one side of the vertical plane of the carrier-chains to successively supply the same with empty plates and means upon the opposite side of said plane to supply the plates with splints while in transit with the chains and a spring disposed above said feeding device to act against the backs of the plates.

10. In match machinery employing wholly independent plates for holding the splints, the combination of a vertical subcarrier, means at the base of said carrier for successively supplying the same with empty plates, and comprising an inclined support arranged adjacent the carrier, a pressure device adapted to bear against the back of the rearmost plate at the upper edge only thereof, means for sticking splints in horizontal rows into the face of said plates while in transit with said carrier, and a main carrier having a vertical portion extending above the subcarrier and adapted to cooperate therewith to carry away the filled plates, said main carrier adapted to receive said plates with the sides into which the matches have been stuck.

11. In match machinery employing wholly independent plates for holding the splints, the combination with a main carrier composed of carrier-chains having carrier-lugs adapted to engage with and carry the plates, a portion of said main carrier arranged to travel in a substantially vertical path, of vertical guides below said vertical portion and adapted to guide the plates into engagement with the vertical portion of the main carrier, the rear portion of said guides near the upper end being made yielding, a subcarrier extending within a portion of said guides and adapted to elevate the plates within the guides, means for successively feeding empty plates at the base of the subcarrier and means for sticking rows of splints into the plates, while in transit with the subcarrier, into that side of the plates which are brought into engagement with the main carrier.

12. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical subcarrier having means at the base for successively supplying the same with empty plates and with means for sticking splints into the plates while in transit with said carrier, and a spring disposed above said feeding means to act against the backs of the plates of vertical guides extending above the subcarrier whereby the plates after having received the splints are released from engagement with the carrier and are free to be removed endwise from between said guides.

13. In match machinery employing wholly independent plates for holding the splints, the combination with a vertical subcarrier having means at the base for successively supplying the same with empty plates and means for supplying the plates with splints while in transit with said carrier, of vertical guides extending above the subcarrier and in which the plates are carried upwardly after receiving the splints without being in positive engagement with the subcarrier, and a main carrier adapted to carry the plates in the treatment of the splints and having a substantially vertical portion adjacent to the top of the guides and adapted to engage with the plates while in transit between said guides.

14. In match machinery employing wholly independent plates for holding the splints, the combination of a vertical subcarrier having means at the base for successively supplying the same with empty plates and means for filling said plates with splints while in transit with said subcarrier, of vertical guides in which said plates are carried by the subcarrier, and a main carrier wholly independent of the subcarrier and having a substantially vertical portion adjacent to the top of said guides, said guides extending some distance above the subcarrier and adapted to guide the plates into engagement with said vertical portion of the main carrier, the arrangement being such that if desired the filled plates may be removed by hand from between the guides, without being taken up by the main carrier, or the main carrier may be provided with filled plates from other sources.

15. In match machinery employing wholly independent plates for holding the splints, the combination with an independent and separately-organized device for filling the empty plates with splints and comprising a carrier in which the filled plates are carried upwardly between guides extending above the top of the carrier, whereby the filled plates after passing into that portion of the guides are released from engagement with the carrier and are removably held between the guides, of a main carrier wholly independent of the aforesaid device and having a substantially vertical portion adjacent to the top of said guides and adapted to engage with the plates while in transit between said guides upon that face of the plates into which the splints have been stuck, whereby said carrier is adapted to carry the plates for the treatment of the splints.



16. In match machinery employing wholly independent plates for holding the splints, the combination with a main carrier adapted to receive and carry the plates for the treatment of the splints, a subcarrier, a plate-holding magazine having inclined bottom and means for holding said plates against lateral displacement, means for applying splints horizontally to the plates, and a cross-bar against which the back of the plates abut in sticking.

17. In match machinery employing wholly independent plates for holding the splints, the combination with a main carrier adapted to receive and carry the plates for the treatment of the splints, a subcarrier, a plate-holding magazine having inclined bottom and means for holding said plates against lateral displacement, means for applying splints horizontally to the plate, and a cross-bar against which the back of the plates abut in sticking, the lower edge of said bar being beveled.

18. In match machinery employing wholly independent plates for holding the splints, the combination with a main carrier adapted to receive and carry the plates for the treatment of the splints, a subcarrier, a plate-holding magazine having inclined bottom and means for holding said plates against lateral displacement, means for applying splints horizontally to the plates, a cross-bar against which the back of the plates abut, the lower edge of said bar being beveled, and a gravity-dog adapted to engage a plate below said cross-bar.

19. In match machinery employing wholly independent plates for holding the splints, the combination with a main carrier adapted to receive and carry the plates for the treatment of the splints, a subcarrier, a plate-holding magazine having inclined bottom and means for holding said plates against lateral displacement, means for applying splints horizontally to the plates, a cross-bar against which the back of the plates abut, the lower edge of said plate being beveled, a gravity-dog adapted to engage a plate below said cross-bar, and a spring secured to the rear face of said cross-bar for yieldingly holding a plate in position.

20. In match machinery employing wholly independent plates for holding the splints for treatment, the combination with a main carrier for the plates, of a plate-feeding device therefor adapted to supply said main carrier with fresh plates as required for the continued operation of said carrier, said device being composed in part of a plate-holding magazine having an inclined bottom upon which the plates rest with their lower edges free to slide to the foot of the incline, vertical side walls which hold said plates in position against lateral displacement, vertical stops on said side walls at the foot of the incline for the plates to rest against, and a gravity-dog in the upper portion of the magazine adapted to bear against the top portion of the plates of the magazine.

21. In match machinery employing wholly independent plates for holding the splints for treatment, the combination with a main carrier therefor, of a plate-feeding device for said main carrier adapted to automatically supply it with fresh plates as required for the continuous operation of said main carrier, said device composed in part of a magazine having an opening in front for the free insertion of the empty plates by hand, an inclined bottom for the lower edges of the plates to rest upon free to slide downwardly by gravity, vertical side walls to hold the plates in position against lateral displacement, vertical stops at the rear edges of the side walls adapted to retain the plates in vertical position in the magazine and a gravity-dog pivotally secured in the upper portion of the magazine adapted to cooperate in conjunction with the bottom of the magazine to feed the plates automatically against the vertical stops.

22. In match-making machinery, the combination with wholly independent plates and a main carrier adapted to receive and carry the plates for treating the splints, of a device for supplying said carrier automatically with fresh plates as required for the continuous operation of said carrier, said device composed in part of two endless carrier-chains arranged in a vertical plane common to both and provided with carrying-lugs adapted to carry the plates between the proximate parts of the carrying-chains with their vertical side edges in contact therewith, vertical guide-bearings in which said proximate parts of the carrier-chains travel, and a magazine adjacent to said carrier-chains having inclined bottom for the lower edges of the plates to rest upon to slide downward freely by gravity, and means for preventing lateral displacement of said plates and adapted to receive and hold empty plates and to automatically feed the same into the path of the carrier-chain and gravitating means secured in the upper portion of the magazine to cooperate in conjunction with said inclined bottom to feed the plates automatically and to hold them vertically.

23. In match machinery, the combination with wholly independent plates for holding the splints, and a main carrier adapted to receive and carry the plates for treating the splints, of a device for supplying said main carrier with fresh plates as required for the continuous operation of said carrier, said device composed in part of two endless carrier-chains arranged in a vertical plane common to both and adapted to carry the plates in the space between the two chains in contact with their side edges, and vertical guide-bearings for the plates while in transit with said carrier-chains, said carrier-chains having carrying-lugs spaced apart a distance equal to the length of the plates and the plates having their upper and lower edges cut away to form recesses for said carrying-lugs.

24. In match machinery, the combination with wholly independent plates for holding the splints, and a main carrier adapted to receive and carry the plates for treating the splints, of a device for supplying said main carrier with fresh plates as required for the continuous operation of said carrier, said device composed in part of two endless vertical carrier-chains arranged in a plane common to both and having carrying-lugs adapted to carry the plates in a space between their proximate portions and in contact with the side edges of the plates, and a magazine adjacent to said carrier-chains and having vertical side walls forming a space between them equal to the width of the plates and communicating with the space between the carrier-chains, said magazine having inclined bottom for the lower edges of the plates to rest upon to slide downward freely by gravity, and means for preventing lateral displacement of said plates and adapted to receive and hold the empty plates and a gravitating dog disposed in the upper portion of said magazine for cooperation in conjuction with the inclined bottom of said magazine to feed said plates and hold their upper ends in position to automatically feed them into the space between the carrier-chains.

25. In match machinery, the combination with wholly independent plates for holding the splints and a main carrier for holding the plates in the treatment of the splints, of a device for automatically supplying the plates with splints and delivering them to the main carrier as required, said device embodying in part a subcarrier composed of two carrier-chains having carrier-lugs, portions of said chains being arranged in vertical guideways and adapted to receive and carry the plates in the space between them in contact with the side edges thereof, a stop having a beveled lower edge for engagement with said plates, and gravitating means for holding the upper ends of the plates in position.

26. In match machinery, the combination with wholly independent plates for holding the splints and a main carrier for holding the plates in the treatment of the splints, of a device for automatically supplying the plates with splints and delivering them to the main carrier as required for the continued operation of the same, said device composed in part of two carrying-chains, independent of the main carrier, and having a step-by-step motion, portions of said carrier-chains arranged in vertical guideways and adapted to receive and carry the plates between them in contact with the side edges thereof, said carrier-chains having carrying-lugs spaced apart a distance equal to the length of the plates.

27. In match machinery, the combination with wholly independent plates for holding the splints and a main carrier for holding the plates in the treatment of the splints, of a device for automatically supplying the plates with splints and delivering them to the main carrier as required for the continued operation of the same, said device composed in part of two carrying-chains, independent of the main carrier, and having a step-by-step motion, portions of said carrier-chains arranged in vertical guideways and adapted to receive and carry the plates between them in contact with the side edges thereof, said carrier-chains having carrying-lugs spaced apart a distance equal to the length of the plates, the plates having cut-away portions at the corners to form recesses for the carrying-lugs.

28. In match machinery, the combination with wholly independent plates for holding the splints, and a main carrier for holding the plates in the treatment of the splints, of a horizontally-actuated device for automatically supplying the plates with splints in a horizontal direction and delivering them to the main carrier as required for the continuous operation of the same, a subcarrier comprising two endless carrier-chains independent of said main carrier and arranged in a common vertical plane and having a step-by-step motion to hold the plates in a vertical position during the insertion of the splints, and vertical guideways in which portions of said chains travel to receive and carry the plates in the space between them, said portions being of a length to carry a few plates at a time, and means against which the backs of the plates abut during the process of sticking.

29. In match machinery, the combination with wholly independent plates for holding the splints, of a device for automatically supplying the plates with splints and delivering them to a main carrier for the treatment of the splints, said device comprising a sub

carrier composed of two carrier-chains arranged in a common vertical plane and provided with carrying-lugs for the plates, spaced apart equal to the length of the plates, portions of said chains adapted to receive and carry the plates in a vertical path in the space between them in contact with the side edges thereof and a main carrier composed of two carrier-chains having carrying-lugs, portions of said carrier-chains arranged to travel in the path of the plates of the subcarrier and adapted to engage with and carry the plates in contact with the marginal portions along the side of the plates, said plates being adapted to engage with the carrying-lugs of the aforesaid carriers.

30. In match machinery, the combination with wholly independent plates for holding the splints, of a device for automatically providing the plates with splints and supplying them to a main carrier adapted to hold the plates in the treatment of the splints, said device comprising a separate subcarrier having step-by-step motion and adapted to carry the plates in a vertical path, a magazine adapted to hold the empty plates and to automatically deliver the same to said subcarrier in the travel of the same, a gravitating device disposed in the upper portion of the magazine to automatically engage the upper ends of the plates, a splint-sticking device adjacent to the path of the subcarrier and cooperating therewith to provide the plates with splints and a main carrier composed of two carrier-chains having continuous motion and provided with carrying-lugs adapted to engage with slots in the marginal side portions of the plates, portions of said carrier-chains arranged to travel substantially in a vertical path contiguous to the path of the plates of the subcarrier and adapted to engage with and transfer the plates from the subcarrier to the main carrier.

31. In match machinery, the combination with wholly independent plates for holding the splints, of a device for automatically providing the plates with splints and supplying them to a main carrier for holding the plates in the treatment of the splints, said device composed in part of a separate subcarrier having step-by-step motion and consisting of two carrier-chains having carrying-lugs for the plates, portions of said carrier-chains traveling in vertical guides and adapted to receive and to hold the plates between them in contact with the side edges thereof, a main carrier having continuous motion and consisting of two carrier-chains having carrying-lugs and adapted to carry the plates in contact with the marginal side portions of the plates, portions of which carrier-chains travel contiguous to the path of the plates on the subcarrier and adapted to transfer the plates from the same to the main carrier and means at the point of transfer for yieldingly holding the plates against the main carrier.

32. In match machinery, the combination with independent splint-holding plates P, of the endless carrier-chains F having carrying-lugs spaced apart equal to the length of the plates and having proximate portions arranged in vertical guideways and adapted to receive and carry the plates in the space between the same, and the plate-holding magazine C communicating with said space and provided with the vertical side walls *b* the inclined bottom *c* the slide E and the gravity-dog D.

33. In match machinery, the combination with independent splint-holding plates, of the endless carrier-chains F having carrying-lugs spaced apart equal to the length of the plates and having proximate vertical portions adapted to receive and carry the plates in the space between the same, the plate-holding magazine communicating with said space and provided with means to automatically feed the plates into said space, the splint-sticking device G, in the path of the aforesaid carrier, the cross-bar I opposite the splint-sticking device, the main carrier A provided with carrying-lugs adapted to engage into marginal slots in the plates and the spring K yieldingly holding the plates in position at the point of transfer.

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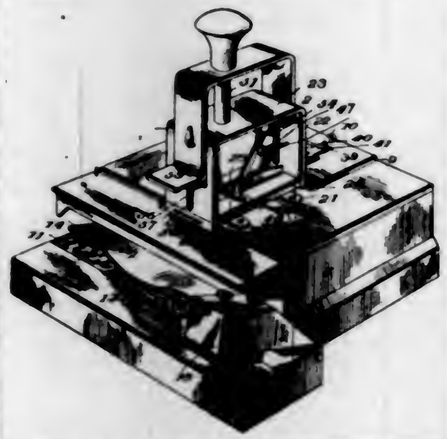
**757,573. COUPLING FOR SECTIONAL CONVEYER-SPOUTS.** CHARLIE P. SPENCER, Alexandria Bay, N. Y. Filed Oct. 17, 1903. Serial No. 177,464. (No model.)



*Claim.*—A coupling for sectional conveyer-spouts, comprising a fixture rigidly attached to one section of the conveyer, a link one end of which is maintained in sliding engagement with the fixture the other end of the link being in movable and separable engagement with a fixture on an adjacent section of the spout, substantially as shown and for the purpose set forth.

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**757,574. MACHINE FOR SEALING ENVELOPS AND MAILABLE MATTER AND AFFIXING STAMPS THERETO.** JAMES N. STACY, Portland, Oreg. Filed June 1, 1903. Serial No. 159,679. (No model.)



*Claim.*—1. In a machine of the character described, means for moistening the sealing-flap of the mailable matter and wetting the space to which the stamp is to be affixed, the same consisting of a pan containing absorbent material, a plate covering a portion of the pan and constituting a table or support, a hinged presser-plate arranged above the absorbent material contained in the pan, and a box secured to an end portion of the presser-plate and provided with a moistening-pad, substantially as described.

2. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a passage for the stamp-strip, a feeder mounted to reciprocate upon said plate and having a movement toward and from the plane of said passage, a vertically-movable frame, a feed-pawl actuated by said frame for operating the feeder, and a trip for pressing the feeder to cause it to make positive engagement with the stamp-strip, substantially as specified.

3. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage, a feeder mounted for reciprocating movement with reference to said plate and having a movement toward and from the plane of the stamp-strip passage, a vertically-movable frame, a feed-pawl actuated by said frame for operating the feeder, a trip movable with the feeder, and a set-screw cooperating with said trip to admit of adjusting the feed of the stamps to a nicety, substantially as set forth.

4. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a feeder slidable in said guide and movable toward and from the plane of the stamp-strip, a vertically-movable frame, a feed-pawl connected with said frame and adapted to actuate said feeder, a trip pivoted to said feeder and movable therewith, and a set-screw cooperating with said trip for actuation thereof and adapted to admit of adjusting the feed of the stamp-strip, substantially as described.

5. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a slide mounted in said guide, a feeder connected to the slide and having a movement toward and from the plane thereof, a vertically-movable frame, a feed-pawl connected with said frame for actuation of the feeder, and a trip for effecting positive engagement of the feeder with the stamp-strip preliminary to forward movement of the feeder, substantially as specified.

6. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a slide mounted in said guide and provided upon its upper side with a rib having a shoulder, a feeder connected at one end to the slide and free at its opposite end to move toward and from the plane of the slide, said feeder having a slot to receive the rib of the slide, a vertically-movable frame, a feed-pawl actuated by said frame and adapted to engage with the shoulder of the rib forming a part of the aforementioned slide, and means for pressing the free end of the feeder into engagement with the stamp-strip, substantially as set forth.

7. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a feeder mounted for reciprocal movement in said guide and having a portion movable toward and from the plane of the stamp-strip passage, means for pressing said movable portion of the feeder into engagement with the stamp-strip preliminary to the forward movement of the feeder, and means for holding the depressed portion of the feeder in positive engagement with the stamp-strip during the forward movement, substantially as described.

8. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away and having longitudinal slots in the upper and lower walls of the stamp-strip passage in coincident relation, a feeder mounted for reciprocal movement in said guide and having an end portion provided with spurs and movable toward and from the plane of the stamp-strip passage to admit of projecting said spurs into the longitudinal slots or withdrawal of the spurs therefrom, means for pressing the free end of the feeder downward upon the return stroke thereof, and means for holding the free end of the feeder depressed during its forward movement, substantially as set forth.

9. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, said guide having a longitudinal edge portion of the upper wall notched or cut away at intervals in its length, a feeder arranged to reciprocate in said guide and having an end portion movable toward and from the plane of the stamp-strip passage and provided with a lateral extension to pass through said notches or cut-away portions of the edge portion of the upper wall of the guide, and means for depressing the free end of the feeder to cause its lateral extension to pass through the rearmost notch to engage under the edge portion of the wall between the two sets of notches in the forward movement of the feeder, substantially as specified.

10. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, said guide having front and rear notches in a longitudnal edge portion of the wall, a feeder mounted to reciprocate in the guide and having an end portion vertically movable and formed with a lateral extension to pass through said front and rear notches, means for pressing the free end of the feeder downward into engagement with the stamp-strip when in a normal position, and means for holding the free end of the feeder depressed by engagement thereover, substantially as described.

11. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, said guide having front and rear notches in a longitudinal edge portion of the wall, a feeder mounted to reciprocate in the guide and having an end portion vertically movable and formed with a lateral extension to pass through said front and rear notches, means for pressing the free end of the feeder downward into engagement with the stamp-strip when in a normal position, and a spring-standard having a portion arranged to engage over the free end of the feeder and hold the same depressed and in engagement with the stamp-strip, substantially as specified.

12. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, said guide having front and rear notches in a longitudinal edge portion of the wall, a feeder mounted to reciprocate in the guide and having an end portion vertically movable and formed with a lateral extension to pass through said front and rear notches, said lateral extension having its rear edge inclined, means for depressing the free end of the feeder, and a spring-standard having a portion arranged to engage over the lateral extension of the feeder and adapted to be pressed aside by engagement therewith of the inclined portion of the lateral extension upon the return stroke of said feeder, substantially as specified.

13. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a feeder mounted to reciprocate in said guide and provided with a lateral extension having its rear edge inclined, means for depressing the free end of the feeder, and a spring-standard having a pendent portion to overhang the lateral extension of the feeder and to be engaged by the inclined edge thereof, substantially as and for the purpose set forth.

14. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a feeder mounted to reciprocate in said guide, a detent for preventing backward movement of the stamp-strip upon the return stroke of the feeder, and means for throwing the detent into and out of operative position, substantially as described.

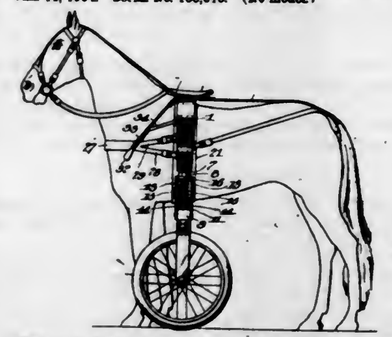
15. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, a feeder mounted to reciprocate in said guide, a detent for preventing backward movement of the stamp-strip upon the return stroke of the feeder, and a lever having a cam portion for engagement with the detent to cause the same to engage with the stamp-strip, substantially as specified.

16. In a machine for sealing and stamping mailable matter, the combination of a plate provided with a stamp-strip passage and a guide, the latter having the intermediate portion of its upper wall cut away, the lower wall of the stamp-strip passage having a portion cut away, a detent located in the opening formed by the cut-away portion of the lower wall of the stamp-strip passage, and means for exerting a pressure upon the detent to cause it to engage with the stamp-strip, substantially as set forth.

17. In a machine for sealing and stamping mailable matter, the combination of a base provided with a well adapted to receive a roll of stamps, a plate secured to the base and provided with a stamp-strip passage, a feeder mounted to reciprocate upon said plate and having a portion movable toward and from the stamp-strip passage, a trip for depressing the vertically-movable portion of the feeder, means for holding the movable part of the feeder depressed, a vertically-movable frame, a feed-pawl actuated by said frame, and a cutter and pressure-plate carried by said vertically-movable frame, substantially as set forth.

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**757,575. SULKY.** GEORGE W. ST. CLAIR, Lexington, Ky. Filed Jan. 11, 1904. Serial No. 188,610. (No model.)



*Claim.*—1. In a vehicle of the class described, a yieldably-supported frame, a driver's seat mounted on said frame, and means for securing said driver's seat in fixed position relative to the body of the horse.

2. In a vehicle of the class described, a pair of wheels, a frame yieldably supported by said wheels, a driver's seat rigidly mounted on the frame, and means for securing the vehicle in fixed position relative to the body of the horse.

3. In a vehicle of the class described, an arched frame, devices for securing said frame in position over the body of a horse and fixed relatively thereto, brackets slidably mounted at the ends of said frame, cushioning devices between said brackets and said frame, and wheels mounted in said brackets.

4. In a vehicle of the class described, a wheeled frame, a seat

rigidly mounted on said frame and means for securing said frame in position over the horse's back and fixed relatively to the body of the horse.

5. In a vehicle of the class described, an arched frame, wheeled brackets slidably connected with said frame, cushioning devices between said brackets and said frame, means for adjusting said cushions relative to said frame, and devices arranged between said frame and said brackets to limit the expansion of said cushioning devices.

6. In a vehicle of the class described, a frame, wheeled brackets slidably connected with said frame, cushioning devices between said brackets and said frame, and adjusting-straps disposed between said frame and each bracket whereby the expansion of said cushioning devices may be limited.

7. In a vehicle of the class described, an arched frame arranged to pass over a horse's back, wheeled brackets connected with said frame, cushioning devices between said brackets and said frame, and connections between said frame and the harness whereby said frame may be secured in fixed position relative to a horse.

8. In a vehicle of the class described, an arched frame adapted to pass over the back of a horse, means for securing said frame firmly in position relative to the horse, wheeled brackets slidably connected with said frame, cushioning devices between said brackets and said frame, and means for adjusting said cushioning devices relative to said brackets and said frame in order to adapt the frame to horses of different heights.

9. In a vehicle of the class described, a wheeled frame adapted to pass over a horse's back, harness adapted to secure said frame in fixed position relative to the body of a horse immediately behind the horse's shoulders, a seat fixed upon the top of said frame, and stirrups supported in front of said frame and slightly below the level of the seat.

10. In a vehicle of the class described, a wheeled frame adapted to be secured in position behind the horse's shoulders, a driver's seat mounted upon said frame, harness adapted to hold said frame in fixed position relative to the body of the horse, stirrup-straps extending forward from said seat and said frame, and stirrups carried by said straps.

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**757,576. BUTTON FOR GARMENTS.** ROSA STEINER, Vienna, Austria-Hungary. Filed June 3, 1903. Serial No. 160,659. (No model.)



*Claim.*—1. A flexible button for garments or the like, comprising a spirally-wound cord forming a core around which is worked a thread in any suitable manner whereby the plies of the cord are united together, and an eyelet comprising one or more loops of the same thread of which the button is formed.

2. A flexible button for garments, consisting of a layer of fabric, cords arranged on said fabric in any desired form, said cord being worked over by thread and secured thereby to the fabric, a cord forming the circumference of the button, and an eyelet for said button formed of the same material comprising the main part of the button.

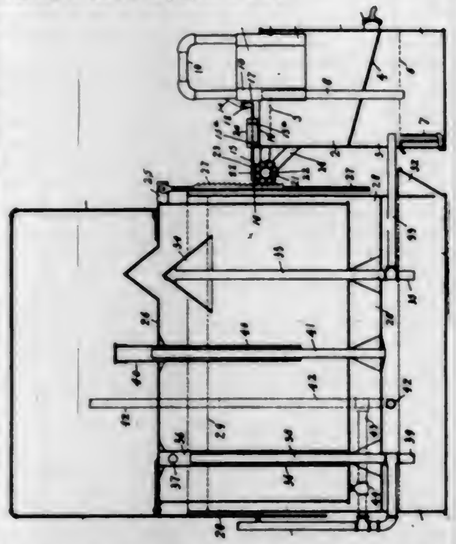
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**757,577. ACETYLENE-GAS GENERATOR.** WILLIAM J. STIBBON, London, Canada, assignor to John C. Grosch, London, Canada. Filed Dec. 23, 1901. Serial No. 87,031. (No model.)

*Claim.*—1. In a machine of the class described, a carbid-case closed at its upper end, open at its lower end, and in one side of which an opening is formed, a carbid-holder open at the upper end, in the side of which perforations are formed, which is provided with a partition on which the carbid is placed, and which is supported and locked in place in said carbid-case, in combination with a pipe which is secured to said carbid-case, the opening in the side of the latter permitting the gas to pass from said case to said pipe, substantially as and for the purpose set forth.

2. In a machine of the class described, a carbid-case closed at its upper end, open at its lower end, and in one side of which an opening is formed, a carbid-holder open at the upper end, in the side of which perforations are formed, which is provided with a partition on which the carbid is placed and which is supported and locked in place in said carbid-case, and a pipe secured to said carbid-case, the opening in the side of the latter permitting the gas to pass from said case to said pipe, in combination with a conducting-pipe the upper end of which telescopes the pipe secured to the carbid-case, substantially as and for the purpose set forth.

3. In a machine of the class described, a carbid-case, a generator-tank, a shoulder secured to said carbid-case, a sliding bar provided with a flange and antifriction-roller, and a holder provided with antifriction-rollers for guiding and holding the sliding bar in line as it moves to or from said shoulder secured to said carbid-case in combination with a shaft provided with a ratchet-wheel and pins for operating said sliding bar and a ratchet-bar secured to the gasometer for revolving said ratchet-wheel as the gas is consumed, substantially as and for the purpose set forth.



4. In a machine of the class described, a carbid-case, a pipe secured thereto, a generator-tank, a flange secured to the interior face of said generator-tank, and curved recesses formed in said internal flange, to which said pipe is fitted and with which it is adapted to engage, in combination with a pipe telescoping with the pipe on the opposite side of the carbid-case, substantially as and for the purpose set forth.

5. In a machine of the class described, a carbid-case, a pipe secured thereto, a generator-tank, a flange secured to the interior face of said generator-tank, and curved recesses formed in said internal flange to which said pipe is fitted and with which it is adapted to engage, a pipe adapted to telescope with the other end of the pipe secured to the carbid-case, a shoulder secured to said carbid-case, a sliding bar provided with a flange and antifriction-roller, a holder provided with antifriction-rollers, for guiding and holding the sliding bar in line, as it moves to or from said shoulder secured to said carbid-case, in combination with a shaft provided with a ratchet-wheel, and pins for operating said sliding bar, and a ratchet-bar secured to the gasometer, for revolving said ratchet-wheel, as the gas is consumed, substantially as and for the purpose set forth.

6. In a machine of the class described, a carbid-case, a pipe secured thereto and communicating therewith and a generator divided into two chambers by an inclined bottom in combination with a pipe extending from and communicating with said chambers in said generator-tank and the upper end of said pipe telescoping into the pipe secured to the carbid-case, substantially as and for the purpose set forth.

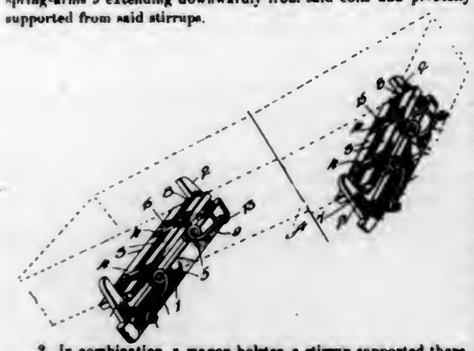
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**757,578. WAGON-SPRING.** CHARLES L. THOMAS, Amsterdam, N. Y., assignor to W. S. Shuler Spring Company, Amsterdam, N. Y., a Corporation of Maine. Filed Oct. 7, 1902. Serial No. 126,381. (No model.)

*Claim.*—1. In a device of the class described, in combination with a wagon-bolster, a body-supporting supplemental bolster, having spaced supplemental-bolster beams 3, 3 and cross-bars 4, 4 connecting the upper side of said supplemental-bolster beams, stirrups 12 adapted to straddle the wagon-bolster, and a one-piece coil-spring at each end of said supplemental bolster provided with coils 5, 5, arms 6 extending along the under side of said supplemental-bolster bars and suitably connected thereto, the connecting part 8 between said arms being bent upwardly so that it lies in substantially the



plane of the upper side of said supplemental-bolster beams, and the spring-arms 9 extending downwardly from said coils and pivotally supported from said stirrups.

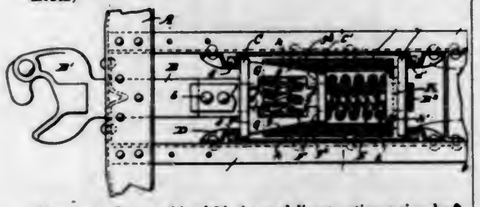


2. In combination, a wagon-bolster, a stirrup supported thereon, an integral spring engaging the ends of said stirrup and extending inwardly therefrom, coils in said spring, a supplemental bolster, and an extension of said spring joining said coils and projecting outwardly and upwardly to engage the bottom and end of said supplemental bolster.

3. In combination, a bolster, a stirrup supported thereon, an integral spring secured to the ends of said stirrup and extending inwardly, coils in said spring, a supplemental bolster, a connection between said coils engaging the bottom and end of said supplemental bolster, and an opening in said supplemental bolster adapted to permit the free action of the spring.

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**757,579. COMBINED FRICTION AND DIRECT-ACTING SPRING DRAFT-RIGGING FOR RAILWAY-CARS.** FREDERICK B. TOWNSEND, Chicago, Ill., assignor to W. H. Miner Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 14, 1904. Serial No. 188,949. (No model.)



*Claim.*—1. In a combined friction and direct-acting spring draft-rigging, the combination with a draw-bar, draw-bar extension, side plates or stop-castings and followers, of a longitudinally-acting spring, a transversely-acting spring, a pair of transversely-movable friction plates or blocks, a longitudinally-movable friction shell or case and a spring seat or block interposed between the rear end of the longitudinally acting spring and the rear follower, substantially as specified.

2. In a combined friction and direct-acting spring draft-rigging, the combination with a draw-bar, draw-bar extension, side plates or stop-castings and followers, of a longitudinally-acting spring, a transversely-acting spring, a pair of transversely-movable friction plates or blocks, a longitudinally-movable friction shell or case and a spring seat or block interposed between the rear end of the longitudinally-acting spring and the rear follower, said spring seat or block and said longitudinally-movable friction shell or case having interengaging shoulders, substantially as specified.

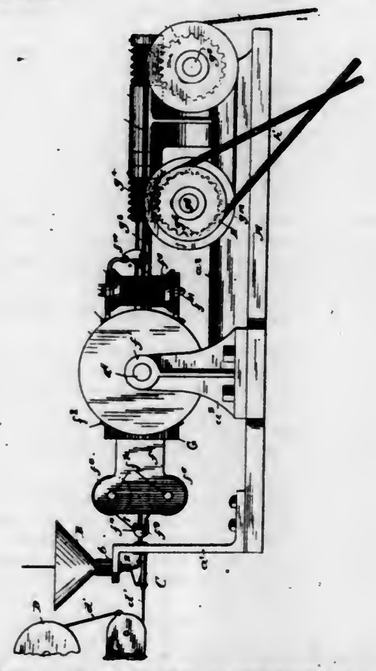
3. In a combined friction and direct-acting spring draft-rigging, the combination with a draw-bar, draw-bar extension, side plates or stop-castings and followers, of a longitudinally-acting spring, a transversely-acting spring, a pair of transversely-movable friction plates or blocks having inclined friction-faces, a longitudinally-movable friction shell or case having inclined friction-faces engaging the inclined friction-faces of said transversely-movable friction plates or blocks, and a spring seat or block interposed between the rear end of the longitudinal spring and the rear follower, substantially as specified.

4. In a combined friction and direct-acting spring draft-rigging, the combination with a draw-bar, draw-bar extension, side plates or stop-castings and followers, of a longitudinally-acting spring, a transversely-acting spring, a pair of transversely-movable friction plates or blocks having inclined friction-faces, a longitudinally-movable friction shell or case having inclined friction-faces engaging the inclined friction-faces of said transversely-movable friction plates or blocks and a spring seat or block interposed between the rear end of the longitudinal spring and the rear follower, said spring seat or block and said friction shell or case having interengaging shoulders to cause said shell or case to return to its normal position as the longitudinal spring expands, substantially as specified.

5. The combination with a draw-bar, draw-bar extension, side plates or stop-castings and followers, of a transversely-acting spring, a longitudinally-acting spring, a pair of transversely-movable friction-blocks against which said transversely-acting spring bears, and having inclined friction-faces, a longitudinally-movable friction shell or case surrounding and taking the lateral thrust of said transversely-movable friction-blocks and having inclined friction-faces engaging the inclined friction-faces of said transversely-movable friction-blocks, and connecting means between said shell and the rear follower for causing said longitudinally-movable friction shell or case to return to its normal position when the longitudinally-acting spring expands, substantially as specified.

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**757,580. MACHINE FOR MAKING FUSES.** GEORGE LIEPHARD, New York, and EDWARD C. TRUTNER, West New Brighton, N. Y., assignors to Nordlinger, Charlton Fire Works Company, New York, N. Y., a Corporation of New Jersey. Filed Feb. 11, 1902. Serial No. 93,509. (No model.)



*Claim.*—1. In a fuse-machine, the combination with a hopper for the fuse material, means for feeding a strip of paper below the same, and means for feeding a cord immediately above said paper strip, of a trough extending transversely on either side of the discharge-opening of said hopper and having a segmental and annular opening at one end adapted to guide said paper strip, a separate guide on said trough for said cord, and means for folding said paper strip around said cord and fuse material.

2. In a fuse-machine, the combination with a hopper for the fuse material and means for feeding a strip of paper transversely below the same, of a trough, extending transversely on either side of the discharge-opening of said hopper and having a segmental and annular opening at one end and adapted to receive and guide said paper strip through said trough in a curved form, means for folding said paper strip with its contents into a compact mass, and means for binding a continuous thread about said mass.

3. In a fuse-machine, the combination with a hopper for the fuse material, means for feeding a strip of paper below the same and means for feeding a cord immediately above said paper strip, of a

trough, extending transversely on either side of the discharge-opening of said hopper and having a segmental and annular opening at one end, adapted to guide said paper strip, a separate guide on said trough for said cord, means for folding said paper strip around said cord and fuse material, means for further compressing said fuse into a more compact mass, and means for binding a continuous thread about said mass.

4. In a fuse-machine, the combination with a hopper for the fuse material, of a feeding-trough adjacent said hopper, means for feeding a strip of paper through said feeding-trough, and a folding device located in said trough but separated therefrom and having a cylindrical opening for taking up said paper and contents and compressing the same into a compact mass.

5. In a fuse-machine, the combination with a hopper for the fuse material, of a feeding-trough adjacent said hopper, means for feeding a strip of paper through said feeding-trough, and a folding device located above said trough comprising a curved arm extending downwardly from said hopper, and having an annular opening for taking up said paper and contents and compressing the same into a compact mass.

6. In a fuse-machine, the combination with a hopper, of a trough located below the same and having a segmental and annular opening cut in at one end thereof, means for feeding a strip of paper, through said opening, below said hopper, and means for folding said paper and contents, comprising a curved arm extending downwardly from said hopper and having a cylindrical opening for taking up said paper and contents and compressing the same into a compact mass.

7. In a fuse-machine, the combination with a hopper for the fuse material, of a feeding-trough adjacent said hopper, means for feeding a strip of paper through said feeding-trough, a folding device located above said trough comprising a curved arm extending downwardly from said hopper and having an annular opening for folding said paper and contents, and further means for compressing said paper and contents into a compact mass, comprising a head on said trough having a central conical bore therethrough.

8. In a fuse-machine, the combination with a hopper, of a trough below said hopper having a segmental and annular opening cut in at one end thereof, means for feeding a strip of paper through said opening below said hopper, means for folding said paper and contents comprising a curved arm extending downwardly from said hopper and having a cylindrical opening therethrough, and further means for compressing said paper strip and contents into a compact mass, comprising a head on said trough having a central conical bore therethrough.

9. In a fuse-machine, the combination with a hopper for the fuse material, of a feeding-trough adjacent said hopper, means for feeding a strip of paper through said feeding-trough, means for feeding a cord through said trough immediately above said paper strip, and a folding device located in said trough but separate therefrom, and having a cylindrical opening for folding said paper strip around said cord and fuse material.

10. In a fuse-machine, the combination of a hopper having a conical neck and adapted to receive the fuse material and a central cord for the fuse, a reel for the covering of the said fuse, a tension-roll for the said covering, guides for the said covering and the said central cord, a compressing device having a cylindrical opening and a slot, and means for further compressing the fuse into a compact body.

11. In a fuse-machine, the combination with a hopper for the fuse material, of a semicylindrical feeding-trough arranged transversely below said hopper, means for feeding a strip of paper through said feeding-trough, means located in said trough for forming the fuse into a cylindrical shape, a cylindrical head on said trough, having a central conical bore for further compressing the fuse material, and mechanism for winding continuous threads, in opposite directions, about said compressed material.

12. In a fuse-machine, the combination with a hopper for the fuse material, of a semicylindrical feeding-trough arranged transversely below said hopper, means for feeding a strip of paper through said trough, means located in said trough for forming the fuse into a cylindrical shape, comprising a curved arm extending downwardly from said hopper and having a substantially cylindrical opening in the lower part thereof, a head on said trough having a conical bore for further compressing the fuse material, and mechanism for winding continuous threads, in opposite directions, around said compressed mass.

13. In a fuse-machine, the combination with a hopper for the fuse material, of a semicylindrical feeding-trough arranged transversely below said hopper, means for feeding a strip of paper through said feed-trough, means located in said trough for forming the fuse into a cylindrical shape, a cylindrical head on said trough having a central conical bore for further compressing the fuse material, mechanism for winding continuous threads, in opposite directions, about said compressed material, grooved wheels for drawing the said fuse through said winding mechanism, and means for operating said grooved wheels.

14. As an article of manufacture, a folding device for fuse-making machines and the like, comprising a curved arm with a yoke secured thereto, having a cylindrical opening and slot passing through said arm adjacent to said yoke.

15. In a fuse-machine, a trough, means on said trough for folding a paper ribbon, and means intermediate of the ends of the trough for raising the said paper clear of the trough, and folding it about a pulverulent material.

16. In a fuse-machine, a trough, means at one end of said trough for folding a paper ribbon, means intermediate of the ends of the trough for raising the said paper clear of the trough, and folding it about a pulverulent material, and means at the other end of said trough for further folding said paper about the said material.

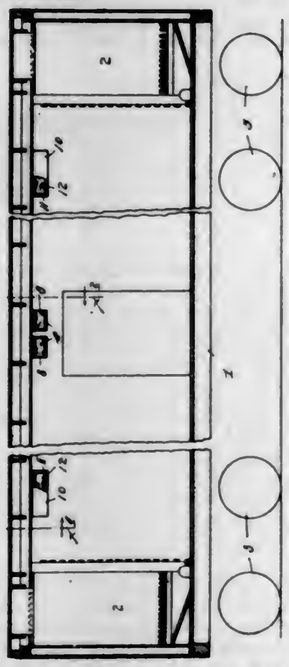
17. In a fuse-machine, a trough, a folder centrally located intermediate of the ends of the trough, and a yoke on said folder to properly hold the same with relation to the trough.

18. In a fuse-machine, a hopper, a neck supporting said hopper and provided with a passage, a curved arm extending from a point adjacent to said passage, and a cylindrical opening in said arm extending in a direction substantially perpendicular to that of the passage.

19. In a fuse-machine, a trough which supports a paper ribbon at its extremities, means located intermediate of said extremities and above the trough for folding the paper ribbon about the pulverulent material, and raising said paper clear of the central portion of the trough.

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**757,581. AIR-AGITATOR FOR REFRIGERATOR-CARS.** HOWARD A. TURNER, Minneapolis, Minn. Filed Aug. 24, 1903. Serial No. 170,519. (No model.)



*Claim.*—1. A car-body having means for agitating or circulating the air within the same, involving one or more blades or leaves, arranged to be vibrated, with respect to the car-body, under vibrating movements of the latter, substantially as described.

2. A car-body having means for producing a circulation or agitation of air therein, comprising a case or stall and an agitating blade or leaf mounted therein and arranged to be vibrated, with respect to the car-body, under vibratory movements of the latter, substantially as described.



3. A car-body having means for producing a circulation or agitation of air therein, comprising one or more agitating blades or leaves loosely suspended within said car-body and adapted to be vibrated, under vibratory movements of the car-body, substantially as described.

4. A car-body having means for producing a circulation or agitation of air therein, comprising a plurality of diverging open stalls, and a plurality of agitating blades or leaves mounted within said stalls and adapted to be vibrated, under vibratory movements of the car-body, substantially as described.

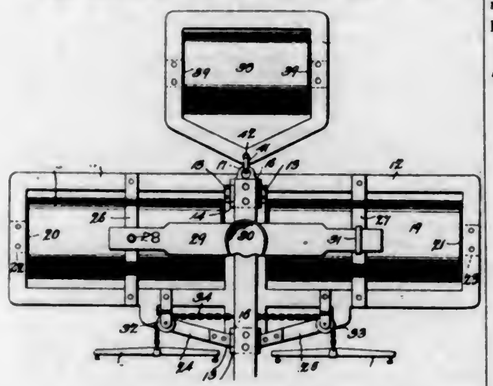
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**757,582. PROCESS OF WELDING STEEL PLATES, &c., TO SHEETS OF ALUMINIUM AND ALUMINIUM-PLATED OTHER METALS.** HEINRICH WACHWITZ, Hersbruck, near Nuremberg, Germany, assignor, by direct and mesne assignments, to the Wachwitz Patents Syndicate, Limited, London, England. Filed May 6, 1903. Serial No. 155,847. (No specimens.)

*Claim.*—A process for welding plates or bodies of steel or other metals which are liable to slow oxidation when being heated, to sheets, of aluminium or other metals plated with aluminium, consisting in cleaning the surfaces of the aluminium or aluminium coating and of the steel plate, or other metal plate which surfaces are subsequently to be placed in juxtaposition placing the metal to be welded upon the steel plate or other metal plate, heating them to a moderate temperature and uniting them by a suitable pressure by means of rolls or other appliances sufficiently to prevent oxidation of the junction when being further heated, then further heating the compound plate close to the melting-point of the metal plated upon the steel or other plate, and welding the same by rolling or other pressure in this state.

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**757,583. LAND-ROLLER.** ROBERT V. WALLACE, Alki, Wash. Filed Mar. 28, 1903. Serial No. 150,041. (No model.)



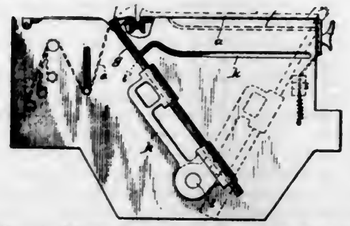
*Claim.*—1. In a land-roller, a draft-tongue, a pivotal connection between the rear ends of the frames and the draft-tongue, a pair of frames provided with forwardly and inwardly extending supporting-arms hingedly connected to the tongue, rollers mounted for rotation in said frames, a trailer-frame flexibly connected to the rear end of the tongue and having a roller journaled therein and a pair of draft-pulleys mounted for rotation respectively upon the supporting-arms.

2. In a land-roller, a draft-tongue, frames flexibly connected at their adjacent ends to opposite sides of the tongue, rollers mounted for rotation in said frames, seat-brackets secured to the frame and extending above the rollers, one of said brackets being provided with a guide-strap, and a seat-base connected at one end to one of the brackets and having its opposite end passing through said guide-strap and vertically movable therein.

3. In a land-roller, a draft-tongue, frames provided with forwardly and inwardly extending arms flexibly connected to opposite sides of said tongue, a pivotal connection between the rear ends of the frames and the draft-tongue, rollers mounted for rotation in said frames, pulleys mounted for rotation respectively upon the forwardly-extending arms and spaced apart upon opposite sides of said tongue, and a flexible medium movably engaging said pulleys and having swingletrees upon its ends in advance of said pulleys, substantially as described.

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**757,584. MACHINE FOR MANUFACTURING CIGARS.** BERNHARD WERTHEIMER, Karlsruhe, Germany. Filed Jan. 18, 1901. Serial No. 43,792. (No model.)



*Claim.*—1. In a cigar-making machine, an apron for rolling tobacco, having an elastic section, which is adapted to have the cigar-filler placed thereon, and inelastic strips of greater length than the normal width of the elastic section extending across said elastic section.

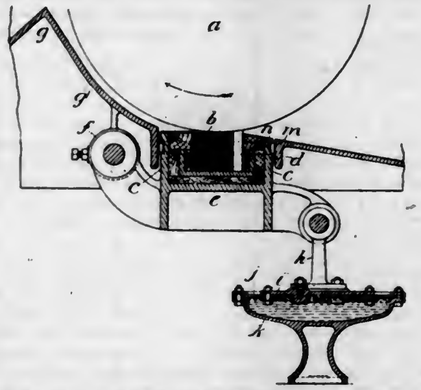
2. In a cigar-making machine, an apron for rolling tobacco having a portion, removed and replaced by a section of elastic sheeting, and two inelastic strips bridging said elastic section at the sides of the apron, said strips being of greater length than the normal, unstretched, width of the section of elastic sheeting.

3. In a cigar-making machine, an apron having an intermediate portion of one end removed, whereby a cigar rolled by said apron will when engaged by said end be confined at its ends and unconfined throughout more or less of its body, the shape of the portion removed from the apron determining the form of the finished cigar.

4. In a cigar-making machine, the combination of an apron having an intermediate elastic section and having one end forked or bifurcated, and inelastic strips extending across said elastic section and of a length greater than the normal length of said section, and a rolling-table having a depression or hollow in which the unconfined portion of a cigar held by the forked end of the apron can freely move.

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**757,585. PULP-BEATING ENGINE.** JOHN WHITE, Edinburgh, Scotland. Filed Sept. 10, 1903. Serial No. 172,612. (No model.)



*Claim.*—1. In a pulp-beating engine the combination with the beating-roll, of a knife-plate, a plate-box movable in relation to the roll and carrying said knife-plate, a resilient support maintaining said plate-box in operative position, and a connection of said plate-box to said support wholly out of contact with the stuff, as described.

2. In a pulp-beating engine the combination with the beating-roll of a knife-plate, a plate-box which is movable in relation to the roll and carrying said knife-plate and a flexible diaphragm connected to said box and maintaining said box in operative position by fluid-pressure acting on said diaphragm, the connection of said diaphragm to said plate-box being wholly out of contact with the stuff as described.

3. In a pulp-beating engine the combination with the beating-roll and the beater-trough of a knife-plate, a movable plate-box carrying said knife plate projecting through an opening in the beater-trough, the said box being maintained in operative position by a resilient support and a pivoted beam carrying said box and wholly out of contact with the stuff, substantially as described.

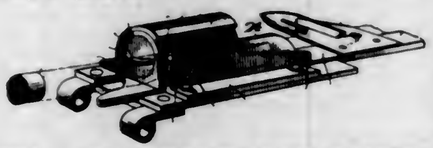
4. In a pulp-beating engine the combination with the beating-roll and the beater-trough of a knife-plate a movable plate-box carrying said knife-plate and projecting through an opening in the beater-trough a pivoted beam carrying said box and wholly out of contact with the stuff and a flexible diaphragm connected to said beam and maintaining said box in operative position by fluid-pressure acting on said diaphragm.

5. In a pulp-beating engine the combination with the beating-roll and the beater-trough having an opening therein under the beating-roll of a knife-plate, a plate-box carrying the said knife-plate and vertically movable in said opening, a pivoted beam carrying said plate-box and wholly out of contact with the stuff, a fluid-pressure chamber, and a flexible diaphragm in said chamber arranged to support said beam and maintain the knife-plate in operative position in relation to the beating-roll.

6. In a pulp-beating engine the combination with the beating-roll and the beater-trough having a flanged opening therein under the beating-roll, of a plate-box carrying a knife-plate and fitted so as to be vertically movable in said opening, a packing composed of flexible tubing interposed between the plate-box and the sides of the flanged opening, a resilient support, and a connection of said support to said plate-box wholly out of contact with the stuff substantially as described.

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**757,586. CUTTING APPARATUS FOR MOWING-MACHINES.** JOHN H. WIEKAMP, Mishawaka, Ind. Filed Oct. 20, 1903. Serial No. 177,775. (No model.)



*Claim.*—1. In a device of the class described, a pitman-hook, a sickle-head having an orifice for the passage of the pitman-hook and provided with a cylindrical recess screw-threaded at its outer end and smooth and of a slightly-reduced diameter at its inner end and a smooth plug seated in the inner end of said recess, an exteriorly-screw-threaded plug engaging the outer end of said recess, said plugs having recesses coöperating to form bearings for the pitman-hook and said outer plug having a handle whereby it may be manipulated.

2. In a device of the class described, a pitman-hook, a sickle-head having an orifice for the passage of said pitman-hook and provided with a cylindrical recess screw-threaded at its outer end and smooth and of a slightly-reduced diameter at its inner end, a plurality of thin disks seated in the inner end of the recess the bottom of which is provided with an opening, a smooth plug occupying the remaining portion of the unthreaded part of the recess, and an exteriorly-screw-threaded plug fitted in the screw-threaded part of the recess, said plugs having transverse recesses coöperating to form bearings for the pitman-hook.

3. In a device of the class described, a sickle-head having an oblong orifice in the side wall thereof and provided with a cylindrical recess, plugs axially revolubie and longitudinally movable in said recess and provided on their inner ends with cavities forming bearings, a pitman-hook insertible through the orifice in the side wall of the sickle-head and journaled in said bearings, there being means for retaining the plugs in adjusted position in the recess of the sickle-head, and means for retaining the pitman-hook in engagement with its bearings.

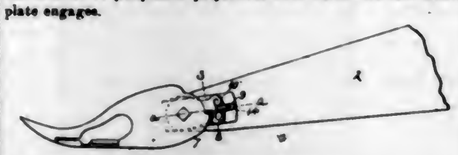
4. In a device of the class described, a sickle-head having a cylindrical recess and provided in one side with a vertical oblong opening, axially-rotatable plugs longitudinally movable and adjustable in said recess and provided at their inner ends with concavities affording a bearing, and a crank-pin journaled in said bearing and insertible through the oblong opening in the side of the casing.

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**757,587. DIVIDER FOR HARVESTING-MACHINES.** GEORGE WILSON, Rockford, Ill., assignor to Emerson Manufacturing Company, Rockford, Ill., a Corporation of Illinois. Filed July 18, 1903. Serial No. 166,308. (No model.)

*Claim.*—1. An outer divider for harvesting-machines comprising a shoe and wing, and a plate interposed between the shoe and wing having a slidable connection with the wing and an adjustable connection with the shoe.

2. An outer divider for harvesting-machines comprising a shoe and wing, a plate interposed between the shoe and wing having a slidable connection with the wing, and a plate interposed between the first-named plate and shoe and provided with a tubular projection and a series of peripheral projections with which the first-named plate engages.



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**757,588. LOCK.** STANISLAUS WISNIEWSKI, Warsaw, N. D. Filed Nov. 13, 1903. Serial No. 181,095. (No model.)



*Claim.*—1. A lock of the class described comprising a casing, a bolt movable within the casing and provided with a reduced stem having threads adapted to be engaged by a key, and a coiled spring surrounding the reduced stem and spaced from the same and forming an intervening key-receiving space, substantially as described.

2. A lock of the class described comprising a casing provided with threads adapted to be engaged by a key, a bolt having a threaded portion for engagement with a key, and a spring surrounding the threaded portion of the bolt and spaced from the same to permit a key to engage the bolt, substantially as described.

3. A lock of the class described comprising a casing having threads, a bolt also provided with threads, said threads being adapted to be engaged by a key, and a coil-spring surrounding the threaded portion of the bolt and spaced therefrom to provide an intervening key-receiving space, substantially as described.

4. A lock of the class described comprising a casing having threads for engagement with the key, and a spring-actuated bolt also provided with threads for engagement with a key, said bolt being mounted for reciprocation and held against rotary movement, substantially as described.

5. A lock of the class described comprising a threaded casing, a spring-actuated bolt also provided with threads, said bolt being mounted for reciprocation and held against rotary movement, and a locking member or shackle for engagement with the bolt, substantially as described.

6. A lock of the class described comprising a casing having interior threads for engagement with the key, a bolt having exterior threads for engagement by a key, said bolt being mounted for reciprocation, and a spring engaging the bolt, substantially as described.

7. A lock of the class described comprising a casing having an open interiorly-threaded end, a bolt provided with an exteriorly-threaded stem and having a projecting lug for engagement with a shackle or locking member, and a spring engaging the bolt, substantially as described.

8. A lock of the class described comprising a casing provided with an interiorly-threaded end, a bolt having an exteriorly-threaded stem and provided with a projecting lug, a fastening device limiting the movement of the bolt and fitting against the lug to form a guide, and a spring for engaging the bolt, substantially as described.

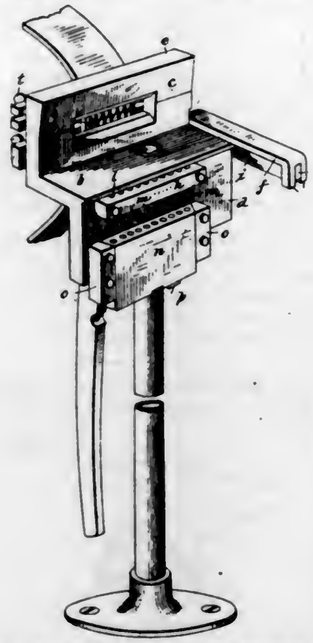
9. A lock of the class described comprising a casing having interior screw-threads, a bolt having exterior screw-threads, and a key provided with interior and exterior screw-threads for engagement with the bolt and the casing, substantially as described.

10. In a lock of the class described, the combination with a casing, and a threaded reciprocating spring-actuated bolt, of a key provided with threads for engaging the bolt, and having means for engaging the casing, whereby it is adapted to move the bolt against the action of the spring, substantially as described.

11. In a lock of the class described, the combination with an interiorly-threaded casing, and an exteriorly-threaded bolt, of a key provided with interior and exterior threads for engaging the bolt and the casing, said key being also provided with a reduced portion and having a shoulder to bear against the casing, substantially as described.

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**757,589. IMPLEMENT FOR FASTENING BELTS.** WHITFORD W. WOODLEY, Elizabeth City, N. C. Filed Apr. 25, 1903. Serial No. 154,217. (No model.)



*Claim.*—1. In an implement of the class described the combination, of a table and a support therefor, said table having provided along its rear edge with an upright flange or plate, and at its right-hand end with a straight-edge device lying at a right angle to said upright flange, said straight-edge device consisting of a movable member mounted and guided on the table and adapted to clamp a belt down upon the table.

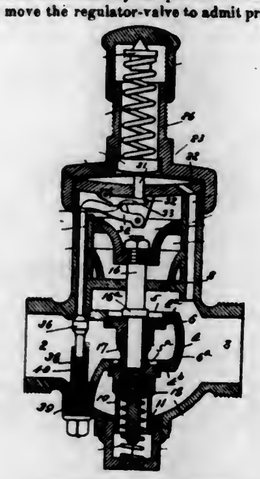
2. In combination with a table-top and a support therefor, an upright flange extending along the rear edge of the table-top and forming one edge of a square, and a straight-edge device at the right-hand end of the table-top forming the other edge of the square, this straight-edge device consisting of a bar *i* secured to the edge of the table-top and provided at its ends with lugs *h*, and a vertically-movable bar or straight-edge *f* having its ends turned down and bifurcated to embrace lugs *h* for the purpose set forth.

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**757,590. PRESSURE-REGULATOR.** BARNHARDT ZINDEL, Green-bay, Wis. Filed Jan. 11, 1904. Serial No. 188,578. (No model.)

*Claim.*—1. In a pressure-regulator the combination, of a main-valve casing formed with inlet and outlet ports, a bridge-wall separating said ports and formed with two horizontal portions one above the other and provided with openings therein, a pair of valves in said casing, adapted to close said ports, the upper valve being on the inlet side of the said wall and formed with a depending internally-threaded boss, the lower valve being on the outlet side of said wall and formed with an upward-extending sleeve threaded at its upper end into the boss of the upper valve, a stem carrying said valves and formed with a collar against which the upper valve is clamped, a nut screwed on the lower end of said valve-stem to hold the valves in place and formed with a depending stem, a spring surrounding said stem and yieldingly holding the valves against their seats, a piston-chamber above the valves into which the valve-stems project, a piston on said stem within the chamber, a regulator-valve controlling an inlet to the top of the piston-chamber, a diaphragm exposed to the pressure at the outlet of the main-valve casing, means for exerting an opposed pressure on said diaphragm, and a lever mechanism operated by the movement of the diaphragm to control the movement of the regulator-valve.

2. In a pressure-regulator, the combination of a main-valve casing formed with inlet and outlet ports, a bridge-wall separating said ports and formed with two horizontal portions one above the other and provided with openings therein, a pair of valves in said casing adapted to close said openings in the bridge-wall, the upper valve being on the inlet side of the said wall and the lower valve being on the outlet side of said wall, means for rigidly connecting said valves together, means for yieldingly holding said valves to their seats, a piston-chamber, a stem connected to said valves and extending into the piston-chamber, a piston on said stem within the chamber, a valve-compartment at one side of the piston-chamber above the passage through the main-valve casing, the upper end of the piston-chamber being in communication with said compartment through a suitable port, a regulator-valve for said port, a port between said compartment and the inlet-port of the main-valve casing, and mechanism controlled by the pressure at the outlet of the main casing to move the regulator-valve to admit pressure to above the piston.



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**757,591. PACKING-BOX.** MARK O. ANTHONY, New York, N. Y., assignor to himself, Henry C. Traute, and John R. Nolan, New York, N. Y. Filed Sept 16, 1903. Serial No. 173,263. (No model.)



*Claim.*—1. A packing-box having on the inner side of its bottom a series of bars each of which is provided in one of its edges with a series of substantially semicircular open recesses or sockets for the reception of the bottom ends of bottles, said bars being separated from each other to loosely receive the bottom ends of the bottles and permit slight vibratory movement thereof, and a series of reinforcing-bars carried by the lid and provided with flaring recesses or sockets in line with those in the bottom of the box, said recesses or sockets being adapted to receive the tops of the bottles when the lid is closed to hold the bottles in place.

2. A packing-box provided on the inner side of its bottom with a series of separated bars having open recessed edges which afford rows of sockets to receive and support the bottom ends of bottles, and provided on the inner side of its lid with a series of reinforcing-bars having recesses or sockets which are in line with those in the bottom of the box, and are adapted to receive the tops of the bottles when the lid is closed and thereby hold the bottles in place.

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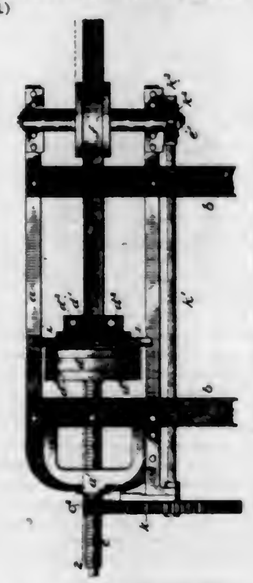
**757,592. PROCESS OF BENDING TUBES.** GEORGE F. ATWOOD, Hoboken, N. J., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed July 11, 1902. Serial No. 115,107. (No specimens.)

*Claim.*—1. The herein-described process of bending metal tubes which consists in first subjecting the tube to a longitudinal tensile stress sufficient to stretch the tube approximately to the elastic limit of the metal, and then bending the tube while maintaining such a tensile stress.

2. The herein-described process of bending metal tubes which consists in subjecting the tube to a longitudinal tensile stress sufficient to stretch the tube approximately to the elastic limit of the metal, and then bending the tube while gradually increasing the said tensile stress.



757,593. MACHINE FOR BENDING TUBES. GEORGE F. ATWOOD, Hoboken, N. J., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed July 11, 1902. Serial No. 115,108. (No model.)



*Claim.*—1. In a tube-bending machine, the combination with clamps adapted to unyieldingly hold the tubing, of a mandrel and mechanism for moving the clamped tube to bend the same over the mandrel, and mechanism for initially retracting one of said clamps to stretch the tubing, the clamps being held relatively in position to maintain the tubing under a longitudinal tensile stress as the bend is made.

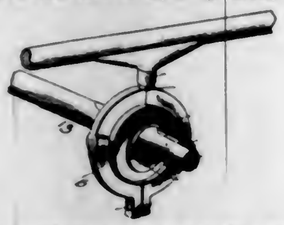
2. In a tube-bending machine, the combination with a rotating mandrel and clamps for holding one end of the tube, supported by said mandrel, of a screw *c* carrying a chuck for holding the other end of the tube, a pinion mounted to rotate with the screw, a spur-gear meshing with the pinion, and a shaft and worm-gear connecting said spur-gear with the rotating mandrel, said spur-gear and pinion being arranged to be thrown into and out of mesh with each other.

3. In a machine for bending tubes, the combination with a rotating mandrel and clamps for holding one end of the tube, supported by said mandrel, of a chuck for holding the other end of the tube, a screw for retracting the chuck to stretch the tube, and gearing arranged to simultaneously rotate the mandrel and advance the chuck, whereby the tube is bent around the mandrel while subjected to a longitudinal tensile stress.

4. The combination with the clamps *g g* adapted to hold one end of the tube to be twisted, of a movable chuck adapted to hold the other end of the tube, and a screw *c* for retracting the chuck whereby the tube is stretched longitudinally, the chuck being rotatably mounted; whereby the tube may be twisted under a longitudinal tensile stress.

5. In a tube-bending machine, the combination with a rotating mandrel carrying a clamp adapted to hold one end of a tube, of a reciprocating chuck for holding the other end of the tube, means for initially retracting the chuck to stretch the tube, and mechanism adapted to rotate the mandrel and advance the chuck while maintaining the longitudinal strain upon the tube.

757,594. NECK-YOKE CENTER. JOSEPH R. BEEBE, Harlan, Iowa. Filed Aug. 14, 1903. Serial No. 169,517. (No model.)



*Claim.*—1. In combination, a pole-tip having a shoulder and a rib spaced therefrom, a neck-yoke center comprising a suspending-ring, a pole-tip ring pivotally mounted within the suspending-ring and having a groove to receive the rib of the pole-tip, substantially as set forth.

2. In a neck-yoke center, the combination of a suspending-ring, a pole-tip ring pivotally mounted within the suspending-ring, and means for contracting the suspending-ring to compensate for wear between the pivot-mountings of the pole-tip ring, substantially as set forth.

3. In combination, a clip, a suspending-ring composed of similar parts having outer extensions at the extremities of said parts, means for connecting corresponding extensions to the clip by a swivel-joint, means for connecting the remaining extensions so as to contract the suspending-ring, and a pole-tip ring having oppositely-disposed bearings mounted in sockets of the parts of the suspending-ring, substantially as described.

757,595. FIRE-GRATE OR FIREPLACE. FREDERICK J. BOSTEL, Westminster, London, England. Filed Jan. 31, 1903. Serial No. 141,321. (No model.)



*Claim.*—1. A fireplace or fire-grate in which the back is rigidly connected to the bottom, so that the latter will move radially to an inclined or horizontal position while the back is swung rearward or forward, the angle between them remaining the same.

2. A fireplace or fire-grate mounted upon a hinge or bearings whereby it can be tilted and the orifice leading into the flue or chimney thus varied in size.

3. In a fireplace means for regulating combustion comprising a grate having a back B, a front rail E and sides A, the latter carrying pivotal members F, supports G for said members, the fire-bars H, and the ash-box J located below said rail and fire-bars.



757,596. ENVELOP OR EXPANDING WALLET. ALVAN BUSHNELL, Jr., Philadelphia, Pa. Filed July 6, 1903. Serial No. 164,367. (No model.)



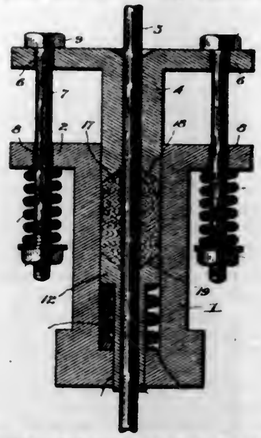
*Claim.*—1. In an envelop or wallet, a false back arranged upon the outside of the real back, an opening formed through the false back, runners arranged upon each side and interposed between the false and real back, each of said runners consisting of a strip folded longitudinally, the real back being secured to one flap of the strip, the false back being secured to the other flap, the runners being arranged with the fold outward, the false back being secured to the real back along the lower edge but being left free of one another along the upper edge in which a card may be inserted, as and for the purpose specified.

2. In an envelop or wallet, a false back arranged upon the outside of the real back, said false back having an opening formed therethrough, a card adapted to be inserted from above between the false back and the real back, runners arranged at each side and interposed between the false and real back for guiding the card, each of said runners consisting of a longitudinally-folded strip, the real back being secured to the outside of one flap of the strip, the false back being secured to the outside of the other flap of the strip, a runner extending longitudinally of the wallet outside of the runners and being interposed between the real and the false back to which it is secured upon each side, a strip extending across the lower end between the real and the false back, as and for the purpose specified.

3. In an envelop or wallet, a false back arranged upon the outside of the real back, an opening formed through the false back, a removable card adapted to be inserted from above between the real and the false back so as to be viewed through the opening, runners arranged upon each side between the real and the false back, each of said runners consisting of a longitudinally-folded strip, the folds of said strip being secured to the real and false back, the fold of the strip being outward so as to form a guide for the card, a strip interposed between the real and the false back at the lower end, the upper end of the false back having an extension formed therewith adapted to be folded over and secured in the fold of the wallet or upon the back of the envelop, a space being left between each folded side for the insertion of the card, as and for the purpose specified.

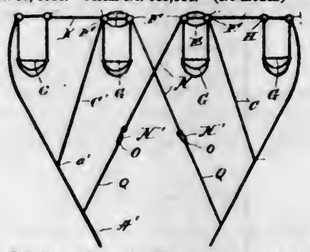
757,597. ROD-PACKING. CLARENCE W. CALDWELL, Portage, Ohio. Filed July 25, 1901. Renewed Oct. 8, 1903. Serial No. 176,313. (No model.)

*Claim.*—1. In a packing of the class described, the combination of a stuffing-box, a rod operative therein, a gland and follower in the rod and movable in both directions therewith and also toward and from each other, a packing pressed between the gland and follower and movable also in opposite directions with the rod, and counteracting-springs pressing the gland and follower toward each other and at opposite ends of the packing, substantially as described.



2. In a packing of the class described, the combination of a stuffing-box, a rod operated therein, a gland and follower in the rod and movable therewith in both directions and also movable toward and from each other, a packing compressed between the gland and follower, said packing being also movable longitudinally in both directions and with the rod, counteracting-springs pressing the gland and follower toward each other and at opposite ends of the packing, and means to vary the tension of the springs, substantially as described.

757,598. DRIVING-REINS. GEORGE H. CARLIN, Lewistown, Ill. Filed Dec. 19, 1903. Serial No. 185,881. (No model.)



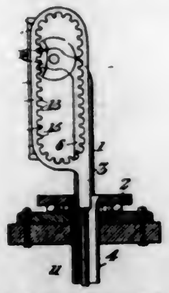
*Claim.*—Driving-reins for four horses abreast comprising in combination with nose-bands adapted to engage the heads of the inside horses, head-stalls and bits for the horses, bit-rings upon said bits, reins A and A' connected to the bit-rings of the outside head-stalls, branching reins C and C' connected respectively to the outer bit-rings of the two inside head-stalls, cross-checks connecting the bits of the inside head-stalls with the adjacent bit-rings of the end head-stalls, and intersecting checks secured at their forward ends to the rings carried by said nose-bands, snap-hooks secured to said intersecting checks, branching straps secured to the driving-reins, and eyes carried by said branching straps and connected to said hooks, as set forth.

757,599. POWER-TRANSMITTER. JOHN COATES, Hemet, Cal. Filed Oct. 18, 1902. Serial No. 127,881. (No model.)

*Claim.*—1. In a device for the transmission of power a driven shaft, a pinion upon said shaft having teeth provided with slightly-indented sides, a frame inclosing said pinion and provided with interiorly-disposed teeth adapted for engagement with the teeth of the pinion, the teeth upon the sides of the frame having slightly-indented sides.

2. In a device for the transmission of power, a driven shaft, a pinion upon said shaft provided at its ends with peripheral flanges, a frame inclosed between said flanges and inclosing the pinion, cogs

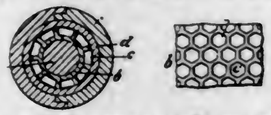
disposed interiorly upon said frame and forming an endless rack engaging the pinion the teeth of the sides of the rack and those of the pinion being provided with slightly-indented sides, and auxiliary means for supporting either side of the rack in engagement with said pinion.



3. In a device for the transmission of power a driven shaft, a pinion upon said shaft, a pitman having an elongated frame with interiorly-disposed teeth engaging said pinion the teeth upon the sides of the frame and those of the pinion being provided with slightly-indented sides, a shouldered bracket extending rearwardly from one side of the frame, a supporting-frame for the driven shaft having one of its side members laterally extended, and a pin secured to said extension and engaging the shouldered bracket of the reciprocatory frame.

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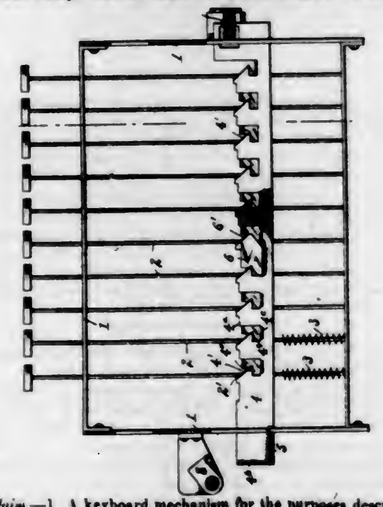
757,600. **GOLF-BALL.** THERON C. CRAWFORD, London, England. Filed July 17, 1903. Serial No. 165,984. (No model.)



*Claim.*—A golf-ball comprising a solid core inclosed within a covering composed of stiff material and formed as to its outer surface with numerous cells, a covering composed of yielding material surrounding the said cellular covering, and an outer casing composed of wear-resisting material.

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757,601. **KEYBOARD MECHANISM FOR MECHANICAL CASHIERS, REGISTERS, AND RECORDERS.** ISAAC S. DEMENT, East Orange, N. J., and FOSTER J. HULL, Brooklyn, N. Y., assignors, by mesne assignments, to American Mechanical Cashier Company, a Corporation of New Jersey. Filed Mar. 30, 1903. Serial No. 150,132. (No model.)



*Claim.*—1. A keyboard mechanism for the purposes described comprising groups of keys representing different denominations, said groups being capable of operation in a predetermined order of sequence, means actuated on operation of a key of one group to prevent operation of keys in another group out of said order of sequence, and means to prevent operation of all other keys in the group of the actuated key.

2. In a machine of the class described, the combination of a series of keys, a slide common to the series and engaged by the keys thereof, key-locking devices mounted on said slide and actuated by one of said keys to prevent operation of the other keys.

3. In a machine of the class described, the combination of a series of keys, a spring-controlled slide common to the series and engaged by the keys thereof, key-locking devices mounted on said slide and actuated by one of said keys to prevent operation of the other keys.

4. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, and means mounted on said slide and actuated by one of the keys to prevent operation of the other keys.

5. In a machine of the class described, the combination of a series of keys, a slide common to the series and engaged by the keys thereof, slidable blocks mounted on said slide and actuated by one of said keys to prevent operation of the other keys.

6. The combination of a series of keys, a series of slidable blocks corresponding to and engaged by said keys, each block provided with an inclined portion for engagement with a key, a stop portion to arrest the action of a key, and a portion to engage with a key when the latter is operated to lock all the blocks in advance of said operated key from movement, and means consisting of a slide carrying said blocks and in engagement therewith to reset all said blocks.

7. The combination of a plurality of keys arranged in groups, a slide for each group, means on each slide adapted to be engaged by any key of the corresponding group whereby any operated key in the group acts to operate the slide, a plurality of locking devices movably mounted on each slide and adapted to be operated by any key in the corresponding group, the operation of any key in group thereby locking all the other keys in the group.

8. The combination with a plurality of keys, arranged in groups, of a main slide for each group, provided with means whereby it is operated by all the keys of that group, and a plurality of subsidiary sliding devices mounted on each main slide, arranged end to end and provided with means for engaging with the keys and with the main slide, so that operation of any key will operate one of the subsidiary sliding devices and will also operate the main slide, said main slide being provided with means for holding the operated key inoperated position, and the subsidiary slides being provided with means for locking all the other keys of that group from operation.

9. The combination with a plurality of groups of keys of a corresponding plurality of slides, each key provided with portions engaged by the respective slides to operate the slides, and to lock the operated key in operated position, a plurality of locking devices mounted on the said slides aforesaid and adapted to be engaged by the respective keys to prevent operation of unoperated keys, said slides being provided with means engaging said locking devices to restore same to normal position, and a resetting means adapted to restore all said slides to normal position.

10. The combination with a plurality of keys, arranged in groups, of a main slide for each group, provided with means whereby it is operated by all the keys of that group, and a plurality of subsidiary sliding devices mounted on each main slide, arranged end to end and provided with means for engaging with the keys and with the main slide, so that operation of any key will operate one of the subsidiary sliding devices and will also operate the main slide, said main slide being provided with means for holding the operated key in operated position, and also with means for intercepting the keys of an adjacent group, and the subsidiary slides being provided with means for locking all the other keys of that group from operation.

11. In a machine of the class described, the combination of a series of keys, a slide common to the series and engaged by the keys thereof, key-locking devices mounted on said slide and actuated by one of said keys to prevent operation of the other keys, and means to restore said key-locking devices to normal position.

12. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, other locking devices mounted on said slide and actuated on operation of a key to lock unoperated keys, and means to restore both locking devices to normal position.



13. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, other locking devices mounted on said slide and actuated on operation of a key to lock unoperated keys, and means to restore simultaneously both locking devices to normal position.

14. In a machine of the class described, the combination of groups of keys, a slide for each group, and means for engaging the slide by each key of a group, each slide provided with means to lock the keys of an adjacent group, and also provided with locking means for the unoperated keys of the group.

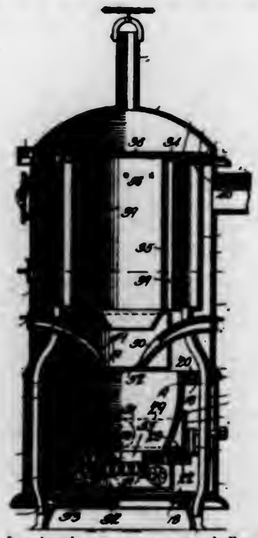
15. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, other locking devices mounted on said slide and actuated on operation of a key to lock unoperated keys, and means to restore simultaneously both locking devices to normal position, and means to release all locking devices simultaneously

16. A keyboard mechanism for the purposes described, comprising groups of keys representing different denominations, the keys of different groups being capable of operation in a predetermined order of sequence, and devices controlled by the operation of each group to lock the keys of all the other groups except the one next in said predetermined order of sequence, and means to lock all the unoperated keys of the operated group.

17. A keyboard mechanism for the purposes described comprising groups of keys representing different denominations, the keys of different groups to be operated in a predetermined order of sequence, devices controlled by the operation of any key in a group to lock the keys of all the other groups except the one next in the predetermined order of sequence, other locking devices actuated by the operated key to lock all unoperated keys of the same group, means to lock the operated keys in depressed position and means to release all the locking devices simultaneously.

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757,602. **HEATING STOVE OR FURNACE.** ROBERT W. DODGE, Kansas City, Mo. Filed June 23, 1903. Serial No. 162,813. (No model.)



*Claim.*—1. In a heating-stove, an outer shell, a fire-receptacle within said shell, and reversely-disposed tapering air-feed pipes leading through said shell and curving downwardly and terminating above the fire in the receptacle, and discharging in opposite directions, substantially as described.

2. In a heating-stove, an outer shell, a fire-receptacle within said shell, reversely-disposed tapering air-feed pipes leading through said shell and curving downwardly and terminating above the fire in the receptacle, and discharging in opposite directions, and controlling-valves at the inlet ends of said air-pipes, substantially as described.

3. In a heating stove or furnace, a lower shell-section having a fire-receptacle detachably supported therein, a grate movably supported below the fire-chamber, an upper shell-section detachably supported upon the lower shell-section, and reversely-disposed tapering air-feed pipes leading through said upper shell-section and curving downwardly and terminating above the fire and discharging in opposite directions, substantially as described.

4. In a heating stove or furnace, a lower shell-section having a fire-receptacle detachably supported therein, a grate movably supported below the fire-chamber an upper shell-section detachably supported upon the lower shell-section, reversely-disposed tapering air-feed pipes leading through said upper shell-section and curving downwardly and terminating above the fire and discharging in opposite directions, and controlling-valves at the inlet ends of said air-feed pipes, substantially as described.

5. In a heating-stove, an inclosing shell, a fire-chamber and grate in the lower part of said shell, an annular drum supported in said shell and spaced therefrom above said fire-chamber, cold-air flues leading to said drum, means for discharging the heated air from said drum, reversely-disposed tapering air-feed pipes leading through said shell and curving downwardly and terminating above the fire-chamber, and a fuel-magazine within said drum and spaced therefrom and provided with gas-escape apertures connecting with the space between said drum and magazine, substantially as described

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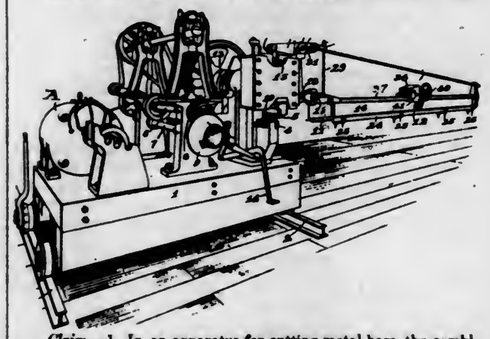
757,603. **MECHANISM FOR HOLDING ELECTROTYPE-PLATES.** CHARLES W. BERNARD, Chicago, Ill. Filed June 30, 1903. Serial No. 163,680. (No model.)



*Claim.*—In mechanism of the class described, two separable bases 9 and 10, adapted to fit together, locking mechanism secured to one of said bases adapted to engage with the other base, an inclined rule near the outer edge of the top of each base inclined toward the opposite rule adapted to fit in slots cut in the base of the electrotype substantially as shown and described for the purposes set forth.

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757,604. **APPARATUS FOR CUTTING METAL BARS.** VICTOR E. EDWARDS, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass., a Corporation of Massachusetts. Filed Dec. 15, 1902. Serial No. 135,245. (No model.)



*Claim.*—1. In an apparatus for cutting metal bars, the combination with the cutting mechanism, comprising a reciprocating ram provided with a cutting-blade, of a pivoted platform for supporting the piece severed from the bar, an intermediate pivoted lever connected with said reciprocating ram, and also connected with said bar-supporting platform whereby said platform is rocked simultaneously with the operation of cutting, substantially as described.

2. The combination in a bar-cutting mechanism, comprising a reciprocating ram and a shear-blade, of a swinging bar carrying a stop-plate for determining the length of the severed piece, a pivoted lever, connected at one end with said reciprocating ram and at the opposite end with said swinging bar whereby the distance between the stop-plate and the cutting mechanism is varied to release the severed piece, substantially as described.

3. In a machine for cutting metal bars, the combination with a pair of shear-blades, of a bar provided with rack-teeth, a frame adjustable along said bar, a pinion-journaled in said frame and engaging the teeth of the bar, a pivoted latch carried by said frame

and engaging said rack-teeth, and means for locking said latch from disengagement, substantially as described.

4. In a machine for cutting metal bars, the combination of a rack-bar, a frame movable on said bar, a stop-plate carried by said frame, a pivoted latch-lever carried by said frame and engaging the teeth of the rack-bar, said latch-lever being adjustable relatively to said frame, substantially as described.

5. The combination of a rack-bar, a frame movable thereon, a stop-plate carried by said frame, a T-shaped bar pivotally connected with said frame and having an internal screw-thread, a screw-threaded rod held in said bar and provided with a flanged head adapted to engage the teeth of said rack, substantially as described.

6. The combination of a rack-bar, a frame movable thereon, a latch-lever pivoted on said frame and having means of adjustment relatively thereto, a tapering bar by which said lever is held in engagement with the teeth of said rack-bar, substantially as described.

7. In a mechanism for cutting metal bars, the combination with a platform for supporting the piece severed from the bar, of a retaining-plate, at the side of said platform, and means for moving said retaining-plate below the plane of the supporting-platform, substantially as described.

8. In a mechanism for cutting metal bars, an inclined platform for supporting the piece severed from the bar, a retaining-plate at the lower side of said platform, and means for depressing said retaining-plate to release the bar, substantially as described.

9. In a machine for cutting metal bars, the combination with a platform for supporting the piece severed from the bar, of a retaining-plate carried on the free ends of arms, attached to a rock-shaft, a rock-shaft and means for rocking said shaft simultaneously with the completion of the cutting operation, whereby said retaining-plate is depressed to release the severed piece, substantially as described.

10. In a machine for cutting metal bars, the combination with a platform for supporting the piece severed from the bar, of a retaining-plate whereby the severed bar is held from sidewise movement on said platform, means for depressing said plate below the plane of the platform, and a spring for restoring the retaining-plate to its normal position, substantially as described.

11. In a machine for cutting metal bars, the combination with the cutting mechanism comprising a reciprocating ram, of a pivoted lever connected with said reciprocating ram, a platform for supporting the piece severed from the bar, said platform being pivoted at one end, a stop adjustable on said platform and a connecting-rod between the free end of said platform and said pivoted lever, substantially as described.

12. In a machine for cutting metal bars, the combination with the cutting mechanism comprising a reciprocating ram, of a pivoted lever connected with said ram, a platform for supporting the severed piece cut from the bar, said platform being pivoted at one end, a stop adjustable on said platform and an adjustable connection between the free end of said platform and said pivoted lever, substantially as described.

13. In a machine for cutting metal bars, the combination with the cutting mechanism, of a platform for supporting the piece severed from the bar, a retaining-plate, an adjustable connecting mechanism between said retaining-plate and the cutting mechanism whereby said plate is moved to release the severed piece, substantially as described.

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**757,605. EYELET. JOHANN C. EBOSLE, Barmen, Germany. Filed July 19, 1900. Serial No. 24,233. (No model.)**



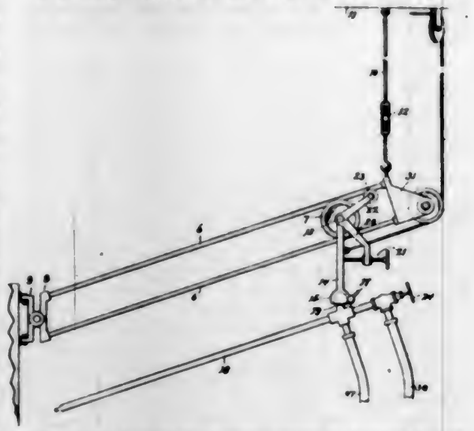
*Claim.*—1. An eyelet comprising a metal body, having an upper flange, a cover of plastic material on the upper surface of said flange, and a metal ring on the body below the said flange, said ring having an upwardly and inwardly bent flange embedded in the plastic material.

2. An eyelet of substantially tubular shape comprising a metal body provided with an upper flanged part having an inturned upper edge, and a cover of plastic material in which said inturned edge is embedded and said material also covering the top or upper surface of said flanged part and terminating in the plane of its lower surface, substantially as described.

3. An eyelet of substantially tubular shape, comprising a metal body, flanged at its upper end, a metal ring surrounding said end and having an inwardly-bent edge inclosing said flanged upper end and a cover of plastic material on top of and between the ring and said flanged part, substantially as described.

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**757,606. MEANS FOR OPERATING HYDROCARBON-BURNERS FOR METALLURGICAL FURNACES. HERMAN W. FALK, Milwaukee, Wis., assignor to the Falk Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Mar. 5, 1903. Serial No. 146,292. (No model.)**



*Claim.*—1. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, a burner carried by the carriage, means for permitting an angular adjustment of the burner, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

2. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace and arranged on a gradual incline outwardly, a carriage adapted to travel on said rail, a burner carried by said carriage, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for permitting the carriage to travel inwardly on the rail by its own weight so as to carry the burner to the opening of the furnace.

3. In means for operating burners for furnaces, the combination of a furnace provided with an opening, an inclined rail, means for adjusting the inclination of said rail, a carriage adapted to travel on the rail, a burner carried by said carriage, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

4. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail pivotally connected at its inner end to the furnace, a suspending means for the outer end of the rail, means for adjusting said suspending means so as to provide for the inclination of the rail, a carriage adapted to travel on said rail, a burner carried by the carriage, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

5. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail pivotally connected at its inner end to the furnace, a pivotally-suspended rod, pivotally connected at its lower end to the outer end of the rail, said rod consisting of sections, a turnbuckle connecting the oppositely-threaded ends of said sections, and adapted when turned to shorten or lengthen the rod, in order to provide for the proper inclination of the rail, a carriage adapted to travel on said rail, a burner carried by the carriage, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

6. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a track extending from the furnace and consisting of parallel rails arranged one above the other, a carriage provided with a wheel or trolley arranged between and engaging the rails, and adapted to travel thereon, a burner carried by said carriage, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the track, and means for causing the carriage to travel inwardly on the track so as to carry the burner to the opening of the furnace.



7. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, a burner having a turning connection with the carriage so as to provide for varying the angle of said burner, means for holding the burner in the position to which it is turned, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

8. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, a burner having a universal-joint connection with the carriage, means, after the burner is turned on the universal-joint connection, for holding said burner at adjusted position, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing said carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

9. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, an arm depending from the carriage, a burner having a universal-joint connection with the depending arm, means after the burner is turned on the universal-joint connection for holding said burner at adjusted position, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing said carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

10. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, a burner carried by said carriage, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, means for causing the carriage to travel inwardly on the rail, so as to carry the burner to the opening of the furnace, and means for raising or lowering the burner.

11. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, an arm turnably depending from the carriage, another arm extending from the carriage and provided at its lower end with a screw-threaded opening, a set-screw turning through said opening and against the turnable arm, a burner connected to the turnable arm, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

12. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a track extending from the furnace, said track consisting of parallel rails arranged one above the other, a roller or trolley between said rails and engaging the same, a shaft or axis for said roller or trolley, an arm movably depending from the shaft or axis, another depending arm provided in its lower portion with a screw-threaded opening, and also provided with an extension projecting from its upper end, the extremity of said extension carrying a roller bearing against the upper rail of the track, a set-screw turning through said screw-threaded opening and against the movable depending arm, a burner connected to the movable depending arm, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the track, and means for causing the carriage to travel inwardly on the track so as to carry the burner to the opening of the furnace.

13. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, a burner carried by the carriage, means for raising and lowering the burner, means for swinging said burner in different directions, means for holding the carriage and the burner carried thereby in an outwardly-adjusted position on the rail, and means for causing the carriage to travel inwardly on the rail so as to carry the burner to the opening of the furnace.

14. In means for operating burners for furnaces, the combination of a furnace provided with an opening, a rail extending from the furnace, a carriage adapted to travel on said rail, a burner carried by the carriage, and a counterweighted cable connected to the carriage and normally holding said carriage and the burner carried thereby outwardly, but permitting said carriage and burner to move inwardly, when the cable is slackened.

15. In means for operating burners for furnaces, the combination of a furnace provided with openings at two points, burners arranged near the openings, and mechanisms for controlling said burners and arranged adjacent to each other and at a desired distance from the furnace, each of said mechanisms constructed, when operated in one way, to permit the burner to move inwardly to the opening of the furnace, and when oppositely operated to cause the burner to be drawn outwardly.

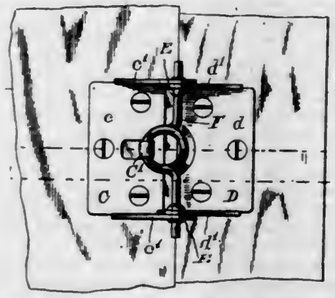
16. In means for operating burners for furnaces, the combination of a furnace provided with openings at two points, rails extending from the furnace at points near the openings, carriages adapted to travel on said rails, burners carried by the carriages, and mechanism for controlling the carriages and arranged adjacent to each other and at a desired distance from the furnace, each of said mechanisms constructed when operated in one way to permit the carriage controlled thereby and the burner carried by the carriage to move inwardly to the opening of the furnace, and when oppositely operated to cause the carriage and the burner carried thereby to be drawn outwardly.

17. In means for operating burners for furnaces, the combination of a furnace provided with openings at two points, burners arranged near the openings, mechanisms for controlling said burners and arranged adjacent to each other and at a desired distance from the furnace, each of said mechanisms constructed, when operated in one way, to permit the burner to move inwardly to the opening of the furnace, and when oppositely operated to cause the burner to be drawn outwardly, fuel-supply mechanism, and means for causing the fuel-supply mechanism, when operated in one way, to supply fuel to the burner which is moved inwardly, and to stop the supply of fuel to the burner which is moved outwardly, and vice versa, when operated in the opposite way.

18. In means for operating burners for furnaces, the combination of a furnace provided with openings at two points, burners arranged near said openings, mechanisms for controlling the burners and arranged at a desired distance from the furnace, each of said mechanisms when operated in one way adapted to permit the burner controlled thereby to move inwardly, and when operated in the opposite way to be drawn outwardly, fuel-supply mechanism arranged at a desired distance from the furnace, and means for causing the fuel-supply mechanism, when operated in one way, to supply fuel to the burner which is adjusted inwardly, and stop the supply of fuel to the burner which is adjusted outwardly, and vice versa, when operated in the opposite way.

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**757,607. SPRING-HINGE. HENRY L. FERRIS, Harvard, Ill., assignor to Hunt, Helm, Ferris & Company, Harvard, Ill., a Corporation of Illinois. Filed Dec. 26, 1903. Serial No. 186,623. (No model.)**



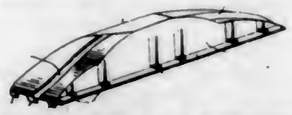
*Claim.*—In a device of the class described, the combination with two leaves having upturned ears pivoted together, of a hook upon one member substantially at its longitudinal center, perforations in the ears upon the other leaf, and a spring having a central coil hooked over said hook, and having its ends extending through said perforations.

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**757,608. CAR OR ENGINE REPLACER. FREDERICK J. FEWINGS, Duluth, Minn. Filed June 17, 1903. Serial No. 161,940. (No model.)**

*Claim.*—1. A car and engine replacer comprising an inner and an outer replacing-block substantially segmental in contour and each having its upper surface provided with an inclined offset, the incli-

nation of the offset being downwardly from the outer to the inner side of its respective block and the said offset further converging inwardly toward its inner end, and a rib formed upon the upper surface of each of said blocks, each of said ribs substantially segmental in contour in the direction of its length and extending diagonally toward the inner side of its respective block, said ribs cooperating with each other during the operation of replacing.



2. A replacer-block having a rib on its upper surface, said rib substantially segmental in contour in the direction of its length, extending diagonally of the upper surface of and toward the inner side of said block, and said block further provided with a groove in its upper surface said groove formed in the upper surface of the block at a point removed from said rib and said groove extending in a segmental manner in the direction of its length and extending diagonally toward the inner side of the block.

3. A replacer-block having its upper surface provided with an inclined offset, the inclination thereof being downwardly from the outer to the inner side of the block, said block having its upper surface further provided with a rib substantially segmental in contour in the direction of its length and extending diagonally toward the inner side of the block and terminating in said offset at one side thereof.

4. A replacer-block having its upper surface provided with an inclined offset, the inclination thereof being downwardly from the outer to the inner side of the block, said block having its upper surface further provided with a rib substantially segmental in contour in the direction of its length and extending diagonally toward the inner side of the block and terminating in said offset at one side thereof, said block having its upper surface further provided with a groove extending in a segmental manner in the direction of its length and extending diagonally toward the inner side of the block and terminating in said offset at the other side thereof.

5. A replacer-block having its upper surface provided with an inclined offset, the inclination thereof being downwardly from the outer to the inner side of said block and the said offset further converging inwardly toward its inner end, said block having its upper surface further provided with a rib substantially segmental in contour in the direction of its length and extending diagonally toward the inner side of the block and terminating in said offset at one side thereof.

6. A replacer-block having its upper surface provided with an inclined offset, the inclination thereof being downwardly from the outer to the inner side of said block and the said offset further converging inwardly toward its inner end, said block having its upper surface further provided with a rib substantially segmental in contour in the direction of its length and extending diagonally toward the inner side of the block and terminating in said offset at one side thereof, said block having its upper surface further provided with a groove extending in a segmental manner in the direction of its length and extending diagonally toward the inner side of the block and terminating in said offset at the other side thereof.

7. An onter replacer-block having its upper surface provided with an inclined offset, the inclination thereof being downwardly from the outer to the inner side of said block, said block further provided on its upper surface with a rib extending diagonally in opposite directions and toward the inner side of said block, said rib of a length equal to that of the length of the block.

8. A replacer-block having its upper surface provided with an inclined offset, the inclination thereof being downwardly from the outer to the inner side of said block and the said offset further converging inwardly toward its inner end, said block further provided on its upper surface with a rib substantially segmental in contour in the direction of its length and extending diagonally in opposite directions toward the inner side of said block

9. A replacer-block having its upper surface provided with a rib substantially segmental in contour in the direction of its length, extending diagonally of the upper surface of and toward the inner wall of said block, said block having its inner wall recessed and terminating at its bottom in a laterally-extending flange provided with cut-away portions registering with said recesses and forming thereby openings through which extend holdfast devices.

10. A replacer-block having its upper surface provided with a rib substantially segmental in contour in the direction of its length, extending diagonally of the upper surface of and toward the inner wall of said block, said block having its inner wall recessed and terminating at its bottom in a laterally-extending flange provided with cut-away portions registering with said recesses and forming thereby openings through which extend holdfast devices, said block further provided with depending fastening-spurs.

11. A replacer-block having a portion of its upper surface provided with a groove substantially segmental in contour in the direction of its length, extending diagonally of the upper surface and toward the inner wall of said block, said block having its inner wall recessed and terminating at its bottom in a laterally-extending flange provided with cut-away portions registering with said recesses and forming thereby openings through which extend holdfast devices.

12. A replacer-block having a portion of its upper surface provided with a groove substantially segmental in contour in the direction of its length extending diagonally of the upper surface of and toward the inner wall of said block, said block having its inner wall recessed and terminating at its bottom in a laterally-extending flange provided with cut-away portions registering with said recesses and forming thereby openings through which extend holdfast devices, said block further provided with depending fastening-spurs.

13. A replacer-block having a groove in its upper surface substantially segmental in the direction of its length and extending diagonally toward the inner wall of the block, said groove terminating at a point adjacent to the center of the block and the inner wall thereof.

14. A replacer-block having a rib on its upper surface substantially segmental in the direction of its length and extending diagonally toward the inner wall of the block, said rib terminating at a point adjacent to the center of the block and the inner wall thereof.

15. A replacer-block of shell-like formation provided with a plurality of interiorly-arranged transversely-extending strengthening-braces integral with the lower face of its top wall and with the inner face of its side walls, said braces having their inner sides of greater thickness than their outer sides, said block further provided in its upper surface with a groove substantially segmental in the direction of its length and extending diagonally toward the inner wall of the block, said groove terminating at a point adjacent to the center of the block and the inner wall thereof.

16. A replacer-block of shell-like formation provided with a plurality of interiorly-arranged transversely-extending strengthening-braces integral with the lower face of its top wall and with the inner face of its side walls, said braces having their inner sides of greater thickness than their outer sides, said block further provided in its upper surface with a rib substantially segmental in the direction of its length and extending diagonally toward the inner wall of the block, said rib terminating at a point adjacent to the center of the block and the inner wall thereof.

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**757,609. ELECTRICAL TELEPHONE APPARATUS. Pliny H. Fist, Clay, Iowa. Filed June 13, 1903. Serial No. 161,316. (No model.)**

*Claim.*—1. In an apparatus of the character described, a series of telephones connected on a single circuit or line, electrically-controlled means associated with said telephones whereby a plurality of quickly-successive impulses are caused to pass over the line, means operated by said impulses for locking out all the instruments in the series except the ones at the transmitting and receiving stations, and means for retarding the action of said locking-out means to permit the action of the cutting-in means for the receiving instrument

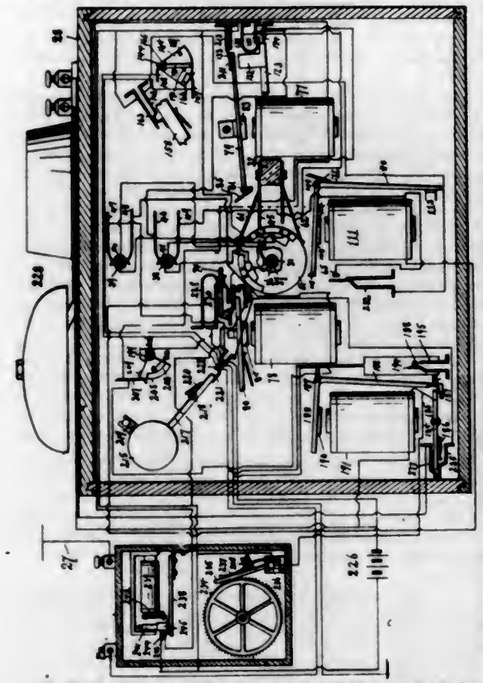
2. In an apparatus of the character described, a series of telephones connected on a single circuit or line, electrically-controlled means associated with said telephones whereby a plurality of quickly-successive impulses are caused to pass over the line, means operated by said impulses for locking out all the instruments in the series except the ones at the transmitting and receiving stations, and means for retarding the action of said locking-out means to permit the action of the cutting-in means for the receiving instrument.

3. In an apparatus of the character described, a series of telephones connected on a single circuit or line, electrically-controlled means associated with said telephones whereby a plurality of quickly-successive impulses are caused to pass over the line, a segment of insulating material mounted for oscillation and carrying spaced contact-plates, a contact member associated with said electrically-controlled means for intermittent engagement with said contact-plates, and means for retarding the oscillatory action of said segment, substantially as described.

4. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for rotation and associated with said telephone, a series of oppositely-disposed contact-plates divided into sections and adapted to be brought intermittently into electrical contact with electrical conductor means, means associated with the call mechanism of said telephones whereby a series of impulses may be transmitted through said contact-sections, an arm carried by said segment and provided with weights upon its ends, whereby the movements of said segments are retarded, substantially as described.







5. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for rotation and associated with said telephones, a series of oppositely-disposed contact-plates divided into sections and adapted to be brought intermittently into electrical contact with electrical conductor means, means associated with the call mechanism of said telephones whereby a series of impulses may be transmitted through said contact-sections, means operative by said impulses for locking out all the telephones of the series except the receiving and transmitting ones, and means associated with said contact-sections whereby said lock-out means will be retarded to permit the action of connecting means for the said receiving and transmitting instruments.

6. In an apparatus of the character described, a series of telephones connected on a single circuit or line, means operative by the call mechanism of the telephones whereby a plurality of quickly-successive impulses are caused to pass over the line, an electromagnet associated with said impulse-producing means, an armature operative by said electromagnet and provided with a lateral arm, an arm mounted for oscillation and carrying weights upon its ends, means for holding said arm yieldingly in one position and out of electrical connection with said magnet, said weighted arm having a lateral projection adapted to be engaged by said armature-arm to actuate said weighted arm and connect it electrically with said magnet, substantially as described.

7. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for oscillation and associated with said telephones, a series of contact-plates disposed in predetermined order or groups upon said disks, electrically-operated means for causing a selected one of said disks to move forward continuously, and means operating simultaneously by said operating-means for causing all the other disks to remain stationary, substantially as described.

8. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for rotation and associated with said telephones, and carrying contact-plates disposed in predetermined order or groups, means for yieldingly holding said disks from movement in one direction, a ratchet-segment carried by each of said disks, a pawl in yieldable engagement with said segment, means operative by the call mechanism of said telephone for actuating said pawls.

9. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material and mounted for oscillation and associated with said telephones, a series of opposing contact-plates divided into sections and spaced upon said disks, means operated by the call mechanism of said telephones for oscillating said disks, a ratchet-wheel mounted for rotation and carrying a gear, an arm carrying a gear-segment engaging said gear, a cylinder having a plunger connected to said gear-segment, an outwardly-opening valve in said plunger, means associated with the call mechanism of said telephones whereby a series of electrical impulses may be transmitted through said contact-sections and simultaneously actuate said ratchet-wheel and gearing and depress said plunger which in its slow return movement will cause the line to be held exclusively by the transmitting and receiving stations.

10. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for oscillation and provided with opposing contact-plates divided into sections and adapted to be brought intermittently into electrical contact with the above circuit, a system of electromagnets in electric circuit with said above circuit and associated with the call mechanism of the telephones, arms mounted for vibrations and carrying weights upon their free ends, means associated with the above mechanism whereby said arms are operated.

11. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for rotation and associated with said telephones, a series of contact-plates carried by said disks and divided into oppositely-disposed sections, means operative by the "call" mechanism of the telephones for operating said disks and intermittently opening and closing electrical circuits through said contact-sections, a bar mounted for oscillation and having weights upon its free ends, a segment of insulating material mounted to oscillate with said arm and carrying a contact-section, a yieldable contact in electrical connection with one of said series of disk-contacts, and engaging said segment and adapted to contact with its contact-section when said segment is oscillated.

12. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for rotation and associated with said telephones, a series of contact-plates carried by said disks and divided into oppositely-disposed sections, means operative by the "call" mechanism of the telephones for operating said disks and intermittently opening and closing electrical circuits through said contact-sections, a plurality of electromagnets in electrical association with said "call" mechanism, a ratchet-wheel mounted for rotation and carrying a gear-wheel, an arm mounted for oscillation and carrying a gear-segment on one end engaging said gear, and with the other end adapted to release an armature-trip associated with one of said electromagnets, a cylinder having a plunger connected to said gear-segment and having an outwardly-opening valve, whereby the return movement of the plunger is retarded.

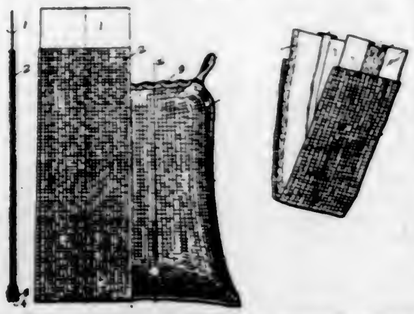
13. In an apparatus of the character described, a series of telephones connected on a single circuit or line, a series of disks of insulating material mounted for rotation and associated with said telephones, a series of contact-plates carried by said disks and divided into oppositely-disposed sections, stops disposed to limit the movement of said disks in one direction, springs disposed to hold said disks yieldably against movement in the opposite direction, means operative by the call mechanism of the telephones for operating said disks and intermittently opening and closing electrical circuits through said contact-sections.

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**757,610. ODOR-PROOF BAG. Willis P. Flowers, Scranton, Pa., assignor, by direct and mesne assignments, to The Fertilizer Bag Manufacturing Co., Scranton, Pa., a Corporation of Delaware. Filed Mar. 14, 1902. Renewed Feb. 21, 1903. Serial No. 144,527. (No model.)**

*Claim.*—1. A bag consisting of an outer sack of stretchable material, and an inner sack of non-stretchable odor-proof material having a folded portion to provide a fullness, and having a part of the

folded portion cemented to the material of the outer sack to cause the two sacks to open alike when filling, substantially as specified.

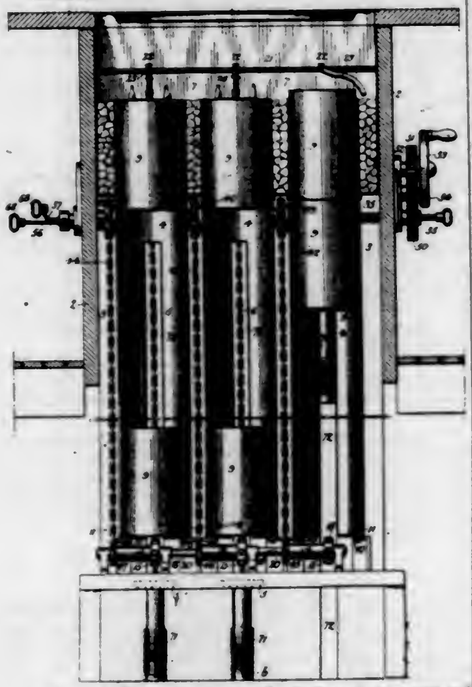


2. A bag consisting of an outer sack of stretchable material, and an inner sack of non-stretchable odor-proof material having longitudinal box-plaits, and having the outer portion of said plaits cemented to the subjacent portions of the outer sack, substantially as described.

3. A bag consisting of an outer strip of textile folded intermediate of its ends, an inner strip of odor-proof material of greater length and width than the outer strip, the longitudinal edge portions of the inner strip being cemented and secured between the longitudinal edge portions of the outer strip and the end portions of the inner strip being loose and projected beyond the ends of the outer strip, said inner strip having the transverse fullness taken up by a box-plait, a portion of which is secured to the outer strip by an adhesive to leave a fullness in the portions at each side of the longitudinal connecting part, substantially as set forth.

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**757,611. LIQUID-DISPENSING APPARATUS.** CHARLES A. GILDEMEYER, Philadelphia, Pa. Filed May 29, 1903. Serial No. 159,316. (No model.)



*Claim.*—1. The combination in a liquid-dispensing apparatus of an elevator for the package of liquid, a shaft or tube in which said elevator is arranged and through which a package may be raised, a cooling-chamber at the top of said shaft or tube and means for operating the elevator.

2. The combination in a liquid-dispensing apparatus, of an elevator for the package of liquid, a shaft or tube in which said elevator is arranged and through which a package may be raised, a cooling-chamber at the top of said shaft or tube and means for supporting the package in the raised position.

3. The combination in a liquid-dispensing apparatus, of an elevator for the package of liquid, a shaft or tube in which said elevator is arranged and through which a package may be raised, a cooling-chamber at the top of the tube, and means for supporting said package at the top of the tube within the zone of the cooling-chamber.

4. The combination in a liquid-dispensing apparatus, of an elevator for the packages of liquid, a shaft or tube in which said elevator is arranged and through which a package may be raised, a cooling-chamber at the top of said shaft or tube, means for bringing said packages into position beneath the tube and means for operating the elevator, such means being operable from a single point.

5. The combination in a liquid-dispensing apparatus, of an elevator for the packages of liquid, a shaft or tube in which said elevator is arranged and through which a package may be raised, a horizontal conveyer for said packages arranged to position them beneath the elevator, means for operating the elevator, a shaft, and means for bringing said shaft alternately into engagement with the means for operating the horizontal conveyer and the elevator mechanism.

6. The combination in a liquid-dispensing apparatus, of an elevator for the packages of liquid, a shaft or tube in which said elevator is arranged and through which a package may be raised, a cooling-chamber at the top of said shaft or tube, and a spring-controlled latch in the upper part of the tube for supporting the package.

7. The combination in a liquid-dispensing apparatus, of a shaft or tube for the package containing the liquid, means for raising the said package within the shaft or tube, a cooling-chamber at the top of the tube, means for supporting said package within the tube, and air-inlet and liquid-discharge connections mounted within said cooling-chamber and adapted to be connected to the package raised into the same.

8. The combination in a liquid-dispensing apparatus, of the shaft or tube, means for raising a liquid package within the same, a support for the package, a tapping device carried by said package, an outlet-pipe for the liquid, an air inlet pipe, and means for connecting said pipes with the packages.

9. The combination in a liquid-dispensing apparatus, of the shaft or tube, a cooling-chamber surrounding the upper part of said shaft or tube, means for raising a package of liquid into the space surrounded by the cooling-chamber, a support for said package, and means for connecting said package with the air-inlet and discharge pipes.

10. The combination in a liquid-dispensing apparatus, of the horizontal conveyer, a shaft or tube, a vertically-moving elevator adapted to engage a package which has been brought into position by the horizontal conveyer, a shaft having coacting mechanism for operating the horizontal conveyor and the elevator, and means for placing said shaft alternately in operative relation with said horizontal conveyer and the elevator.

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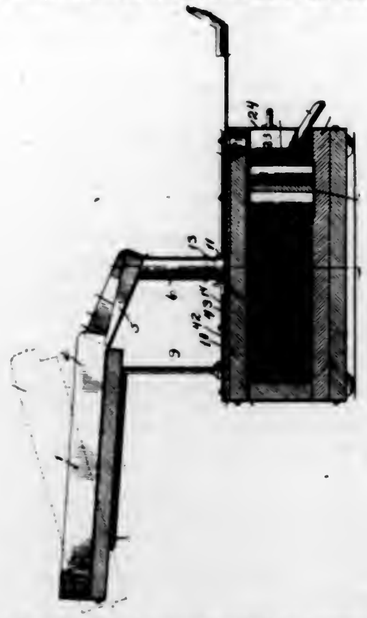
**757,612. COIN COUNTING AND PACKAGING MACHINE.** ESHINGTON N. GILPILLAN, Chicago, Ill. Filed May 26, 1903. Serial No. 159,069. (No model.)

*Claim.*—1. In a machine for the purpose described, the combination of a longitudinally-reciprocatory slide having a number of coin-apertures arranged in line longitudinally thereof, an apertured support for said slide for receiving the coins successively from said apertures in the slide, and an upright chute for the coins arranged over said slide with its lower end contiguous to the face thereof and in line with the apertures therein.

2. In a machine for the purpose described, the combination of a longitudinally-reciprocatory slide provided with a number of coin-apertures extending in rows, both lengthwise and transversely thereof, a row of coin-chutes equal in number to the apertures in the transverse rows of said slide, extending transversely of said slide and in line respectively with the longitudinal rows of apertures in said slide, a support for said slide and for the coins in the apertures therein, and means at the end of said support for receiving the coins from the apertures in said slide.

3. In a machine for the purpose described, the combination of a reciprocatory slide having a row of coin-apertures extending longitudinally thereof, a coin-chute for holding a column of coins over and in line with said row of coin-apertures, means below said slide for holding the coins in the apertures therein until the apertures reach a certain point in the stroke of the slide, and means below the slide shiftable longitudinally thereof for holding receivers in register with the apertures in the slide when the latter reach said point.





4. In a machine for the purpose described, the combination of a reciprocatory slide having a longitudinal row of coin-apertures, a coin-chute for holding a column of coins over and in line with said apertures, means below said slide for retaining the coins in the aperture therein until the apertures reach a certain point in the movement of the slide, a drawer arranged below the slide and movable lengthwise thereof, and means supported on said drawer for receiving the coins and adapted to be moved by the drawer into register with the apertures in the slide when they reach said point.

5. In a machine for the purpose described, the combination of a slide having a longitudinal row of coin-apertures, a coin-chute for holding a column of coins over and in line with said apertures, means below the slide for holding the coins in the apertures therein until the apertures reach a certain point in the stroke of the slide, a drawer arranged below the slide and movable lengthwise thereof, and a chute supported on said drawer and adapted to be brought into registee thereby with said apertures when they reach said point.

6. In a machine for the purpose described, the combination of a reciprocatory slide having a transverse row of coin-apertures, a row of upright coin-chutes arranged in line with said apertures respectively and extending across and over said slide, inclined coin-chutes leading downwardly to said upright chutes respectively, a tray for feeding said inclined chutes with coins, and means for retaining the coins in said apertures until the apertures reach a certain point in the stroke of the slide.

7. In a machine for the purpose described, the combination of a reciprocatory slide having a transverse row of coin-apertures, a row of upright coin-chutes arranged in line with said apertures respectively and extending across and over said slide, inclined coin-chutes leading downwardly to said upright chutes respectively, a removable tray for feeding said inclined chutes with coins, and means for retaining the coins in said apertures until the apertures reach a certain point in the stroke of the slide.

8. In a machine for the purpose described, the combination of a reciprocatory slide having a coin-aperture therein, means for retaining a coin in said aperture until the aperture reaches a certain point in the stroke of the slide, means for holding a column of coins over said slide in line with said aperture, a counter having an actuating member and an inclined finger on said slide adapted to strike and operate said actuating member.

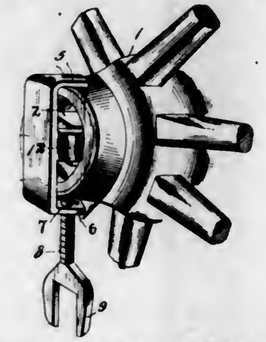
9. In a machine for the purpose described, the combination of a reciprocatory slide having a transverse row of coin-apertures, a series of upright coin-chutes arranged over said slide transversely thereof, and respectively in line with said apertures, means for supplying said chutes with coins, means for detachably securing said chutes above said slide adjustably with relation to the slide, and means below the side for retaining the coins in said apertures until the latter reach a certain point in the stroke of the slide.

10. In a machine for the purpose described, the combination of a reciprocatory slide having a transverse row of coin-apertures, a series of upright coin-chutes extending transversely of said slide and arranged respectively in line with said apertures, inclined coin-chutes supported on and leading to the upper ends of said upright chutes respectively, a removable support on which said upright chutes are carried, and means below said slide for retaining the coins in said apertures until the apertures reach a certain point in the stroke of the slide.

11. In a machine for the purpose described, the combination of a reciprocatory slide having a longitudinal row of coin-apertures, means for supplying said apertures with coins, means for retaining the coins in said apertures until the apertures reach a certain point in the stroke of the slide, receivers arranged in succession lengthwise of the line of movement of said slide for receiving the coins when they reach a certain point, means for moving said receivers longitudinally of the slide, and an automatic catch for respectively locking said receivers in register with said point.

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**757,613. NUT-WRENCH.** WILLIAM E. GILLILAND, Coatsburg, Ill. Filed Sept. 21, 1903. Serial No. 174,076. (No model.)



*Claim.*—1. A nut-wrench, consisting of a bar having right-angularly-disposed ears formed on one end and a right-angularly-disposed lug formed on its opposite end, plates projecting from said bar to form nut-engaging jaws, and means for removably attaching said bar, to the hub of a vehicle, substantially as described.

2. A nut-wrench, consisting of a bar having right-angularly-disposed ears formed on one end, said ears being arranged on an arc, a right-angularly-disposed lug formed on the opposite end of said bar, a threaded hole formed in said lug, a set-screw or bolt adapted to be screwed into said hole, and parallel plates formed on said bar and projecting therefrom to form nut-engaging jaws, substantially as described.

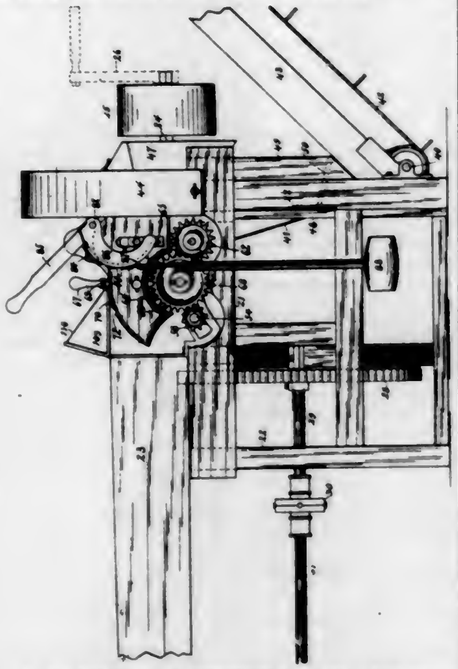
3. A nut-wrench, consisting of a bar having right-angularly-disposed ears formed on one end, said ears being arranged on an arc, a right-angularly-disposed lug formed on the opposite end of said bar, a threaded hole formed in said lug, a set-screw or bolt having a head in the form of a nut wrench, said set-screw or bolt being adapted to be screwed into said threaded hole, and plates formed on the edges of said bar slightly above the center of and projecting from the same in parallel relation to form nut-engaging jaws, substantially as described.

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**757,614. FEED-CUTTER.** FRANK HAMACHEK, Kewaunee, Wis. Filed Sept. 5, 1899. Serial No. 729,410. (No model.)

*Claim.*—1. In a feed-cutter, the combination of a frame, feed-rollers mounted therein, cutting mechanism adapted to cut the material advanced by the feed-rolls, a shaft to be driven, said shaft having a disk or member mounted thereon, which disk or member is provided on one face with conical projections arranged circularly therearound, a main shaft on a plane intersecting the plane of the driven shaft, a worm-wheel on the main shaft, said wheel provided

with outstanding beveled ribs or guides, parallel portions of said ribs or guides describing an arc of a circle of which the shaft is the center or axis, and other parallel portions of said ribs or guides continuing at oblique angles to the first-referred-to ribs or guides, and said ribs or guides being of such varying thicknesses both at their base and outer edge as to permit them to conform to the varying spaces between the conical projections due to the circular arc described by the conical projections in their rotation, and as determined by parallel vertical lines drawn through the axes of the conical projections, and gearing between the driven shaft and the feed-rolls.



2. In a feed-cutter, the combination of a frame, a main rotatable shaft, cutting mechanism mounted on said shaft, another shaft disposed at an angle to the first-named shaft, bearing boxes or sleeves through which the said latter shaft loosely passes, one of said sleeves (75) provided with projecting pivots or pins, and located in the side 77, the other sleeve (74) being slidably mounted and located in the opposite side 77, a pinion mounted on said latter shaft, a gear-wheel with which the pinion meshes, a rod 73 having a threaded connection with the sliding sleeve 74, and a lever 67 connected to said rod 73 and adapted when operated to thrust the pinion into and out of meshing engagement with the gear-wheel.

3. In a feed-cutter, the combination, of a frame, a shaft having a pinion mounted thereon, means for driving the shaft, bearing-sleeves through which the shaft loosely passes, one of said sleeves provided with projecting pivots or pins adapted to turn in suitable recesses therefor in the side 77, a rod connected to the other bearing-sleeve, a gear-wheel with which the pinion meshes, feed-rollers, a gearing between said gear-wheel and the axes of the feed-rollers, and a lever connected to the rod and adapted when operated to thrust the pinion into or out of engagement with the gear-wheel.

4. In a feed-cutter, the combination, of a frame, a shaft having a pinion mounted thereon, means for driving the shaft, bearing-sleeves through which the said shaft loosely passes, one of said sleeves provided with projecting pivots or pins adapted to turn in suitable recesses therefor in the side 77, a rod having a threaded connection with the other bearing-sleeve, a gear-wheel with which the pinion meshes, feed-rollers, a gearing between said gear-wheel and the axes of the feed-rollers, and a lever connected to the rod and adapted when operated to thrust the pinion into or out of engagement with the gear-wheel.

5. In a feed-cutter, the combination, of a shaft having a pinion mounted thereon, means for driving the shaft, bearing-sleeves through which said shaft loosely passes, one of said sleeves provided with projecting pivots or pins adapted to turn in suitable recesses therefor in the side 77, a rod connected to the other bearing-sleeve, a gear-wheel with which the pinion meshes, feed-rollers, a gearing between said gear-wheel and the axes of the feed-rollers, a lever connected to the rod, and adapted when operated to thrust the pinion into or out of engagement with the gear-wheel, a spring-pressed dog pivotally connected to the handle portion of said lever, and a segment having notches in the curved edge thereof, said dog, when pressed inwardly against the action of the spring, adapted to be disengaged from one notch of the segment, and the lever to be thereby turned by the force of the gearing, until the dog is brought into position to engage the other notch of the segment.

6. The combination of a movable feed-roller, bars in which the axes of said feed-roller are mounted, said bars provided along one edge with teeth forming racks, wheels bearing against the edges of the bars which are opposite to the toothed edges thereof, a shaft having pinions thereon and engaging the racks, and a lever connected to said shaft and adapted to raise or lower the movable feed-roller at will of the operator.

7. The combination with feed-rollers provided with peripherally-projecting knives, and mechanism for operating the same, of ledger-plates arranged adjacent to the feed-rollers and provided with edged slits to permit the projecting knives of the rollers to pass therethrough and cut, split, or shear off the material, substantially as set forth.

8. The combination of feed-rollers provided with peripherally-projecting knives, bars in which the axis of one of the feed-rollers is mounted, means for raising and lowering said bars, a hood connected to the bars and extending over the rollers, and an edged ledger-plate connected to the hood, said ledger-plate having edged slits adapted to permit the projecting knives of the roller to pass through in slitting or shredding the material, substantially as set forth.

9. The combination, of feed-rollers, bars in which the axis of one of the feed-rollers is mounted, a shaft, a connection between said shaft and the bars, whereby as the shaft is turned, the bars are raised or lowered, a curved segmental arm extending from the shaft, a chain or flexible device arranged adjacent to the curved edge of the segmental arm, and a weight secured to said chain or connection.

10. The combination, of feed-rollers, bars in which the axis of one of the feed-rollers is mounted, a shaft, a connection between said shaft and the bars, whereby as the shaft is turned the bars are raised or lowered, a lever extending from said shaft, a curved segmental arm depending from the shaft, a chain or flexible connection arranged adjacent to the curved edge of the segmental arm, and a weight connected to said chain or connection.

11. The combination, of feed-rollers, bars in which the axis of one of the feed-rollers is mounted, a shaft, a connection between said shaft and the bars, whereby when said shaft is turned the bars are raised or lowered, a curved segmental arm depending from the shaft, a chain or flexible device arranged adjacent to the curved edge of the segmental arm, and a weight connected to the chain or connection, said weight being in the form of a mallet.

12. The combination, of a frame, feed-rollers journaled therein, a hood arranged over the passage in advance of the feed-rollers, the top of said hood gradually converging toward the feed-rollers, and perpendicular rollers in the passage in advance of the feed-rollers, the top of said hood forming the upper bearings for said perpendicular rollers.

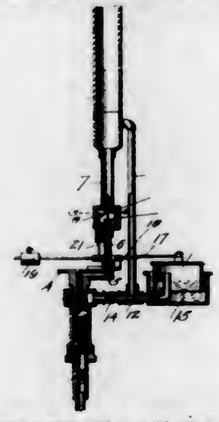
13. In a feeder and cutter, the combination of rollers arranged adjacent to each other, and with a space therebetween and having a series of cutting-knives arranged circularly therearound, one of said rollers being yieldingly mounted, and adapted to shred the material longitudinally as it is fed therethrough.

14. The combination of a frame having recesses in its opposite sides, feed-rollers journaled in the frame, and perpendicular rollers fitting in said recesses, in advance of the feed-rollers, the lower ends of the perpendicular rollers being journaled in openings at the lower ends of the recesses.

15. In a feed-cutter, the combination of a frame, feed-rolls mounted therein, cutting mechanism adapted to cut the material as it is advanced by the feed-rolls, a shaft to be driven, said shaft having a disk or member mounted thereon, which disk or member is provided on one face with conical projections arranged circularly therearound, said conical projections consisting of conical rollers rotatably mounted on pins extending from the face of the disk or member, a main shaft on a plane intersecting the plane of the driven shaft, a worm-wheel on the main shaft, said wheel provided with outstanding beveled ribs or guides, parallel portions of said ribs or guides describing an arc of a circle of which the shaft is the center or axis, and other parallel portions of said ribs or guides continuing at oblique angles to the first-referred-to ribs or guides, and said ribs or guides being of such varying thicknesses both at their base and outer edge as to permit them to conform to the varying spaces between the conical projections due to the circular arc described by the conical projections in their rotation, and as determined by parallel vertical lines drawn through the axes of the conical projections, and a gearing between the driven shaft and the feed-rolls.

16. In a feed-cutter, the combination of a frame, feed-rolls mounted therein, cutting mechanism adapted to cut the material advanced by the feed-rolls, a shaft to be driven, said shaft having a disk or member mounted thereon, which disk or member is provided on one face with conical projections arranged circularly therearound, a main shaft on a plane intersecting the plane of the driven shaft, a worm-wheel mounted on the main shaft, said wheel provided with outstanding beveled ribs or guides, parallel portions thereof arranged spirally around the shaft, and said ribs or guides being of such varying thicknesses both at their base and outer edge as to permit them to conform to the varying spaces between the conical projections due to the circular arc described by the conical projections in their rotation, and as determined by parallel vertical lines drawn through the axes of the conical projections, and a gearing between the driven shaft and the feed-rolls.

## 757,615. GAS-GENERATOR. HANS C. HANSON, Albert Lea, Minn., assignor to The American Gas Machine Company, Albert Lea, Minn. Filed Sept. 28, 1903. Serial No. 174,938. (No model.)



*Claim.*—In a gas-generator, the combination of an upright generator provided at its upper end with a burner and a deflecting-plate above the burner, a mixing-chamber above the deflecting-plate, a vapor-conducting tube leading from the generator to the mixing-chamber and provided with a jet-outlet discharging into said chamber, a service-pipe arranged above the mixing-chamber and adapted to receive the commingled vapor and air therefrom, a pressure-regulator arranged at one side of the generator and having a movable element operated by gas-pressure, a pipe leading therefrom to the vaporizing-burner, a pipe leading from said pipe to the service-pipe to supply the vaporizing-burner and generator with gas from said service-pipe, a needle-valve adapted to be operated to close the jet-outlet upon an excess of pressure in the service-pipe, and a lever fulcrumed to the generator and connected on opposite sides of its fulcrum to the valve and movable element of the pressure-regulator, and adapted to be rocked by said regulator to operate the valve to open or close the jet-outlet, substantially as described.

## 757,616. STEP-LADDER. PHILIP HERDER, Jr., Cleveland, Ohio. Filed Sept. 9, 1903. Serial No. 172,533. (No model.)

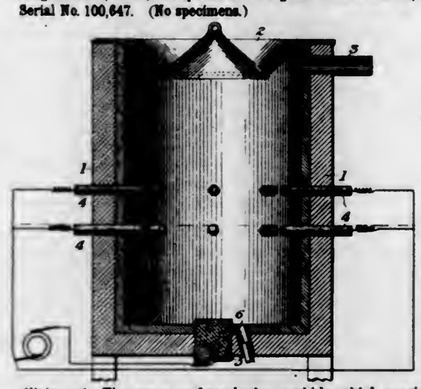
*Claim.*—In an extension step-ladder, the combination of a step-section having a platform, plates pivoted to the platform and adapted to be swung beyond the edge thereof, brackets attached to the side pieces of the step-section, guides the end portions thereof being inturned said guides being pivoted to the brackets, a prop-section maintained in sliding engagement with the guides, the side pieces of the prop-section having the upper ends beveled, substantially as shown and for the purpose set forth.



757,616.



## 757,617. PROCESS OF PRODUCING CARBID. WILLIAM S. HORRY, Niagara Falls, N. Y., assignor to Union Carbide Company, Niagara Falls, N. Y., a Corporation of Virginia. Filed Mar. 29, 1902. Serial No. 100,647. (No specimens.)



*Claim.*—1. The process of producing carbids, which consists in placing the terminals of a source of electric current in contact with different parts of a charge of carbid-forming materials, passing different quantities of electric current through different portions of said charge, and increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid, as set forth.

2. The process of producing carbids, which consists in placing the terminals of a source of electric current in contact with different parts of a charge of carbid-forming materials, passing different quantities of electric current through different portions of said charge, and increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, as set forth.

3. The process of producing carbids, which consists in placing the terminals of a source of electric current in contact with different parts of a charge of carbid-forming materials, passing different quantities of electric current through different portions of said charge, increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh material as required, as set forth.

4. The process of producing calcium carbid, which consists in placing the terminals of a source of electric current in contact with different parts of a charge containing a calcium compound and carbon, passing different quantities of electric current through different portions of said charge, and increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid, as set forth.

5. The process of producing calcium carbid, which consists in placing the terminals of a source of electric current in contact with different parts of a charge containing a calcium compound and carbon, passing different quantities of electric current through different portions of said charge, and increasing the current density along the path of the current in the charge to a point where the heat gener-

ated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, as set forth.

6. The process of producing calcium carbid, which consists in placing the terminals of a source of electric current in contact with different parts of a charge containing a calcium compound and carbon, passing different quantities of electric current through different portions of said charge, increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh materials as required, as set forth.

7. The process of producing carbids, which consists in placing the terminals of a source of electric current in contact with different parts of a charge of carbid-forming materials, and passing different quantities of electric current through different portions of said charge and causing the lines of current-flow to converge through the charge, thereby increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid, as set forth.

8. The process of producing carbids, which consists in placing the terminals of a source of electric current in contact with different parts of a charge of carbid-forming materials, passing different quantities of electric current through different portions of said charge and causing the lines of current-flow to converge through the charge, thereby increasing the current density along the path of the current in the charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh materials as required, as set forth.

9. The process of producing carbids, which consists in interposing a charge of carbid-forming materials as a resistance-conductor in an electric circuit, passing through different portions of said charge different quantities of electric current to cause the materials to react to form carbid and the carbid to be brought into a molten condition, removing the molten carbid and supplying fresh materials as required, and moving the charge substantially along the path of current-flow, as set forth.

10. The process of producing carbids, which consists in interposing a substantially vertical charge of carbid-forming materials as a resistance-conductor in an electric circuit, passing different quantities of electric current through different portions of said charge, and increasing the current density in a portion of said charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid, as set forth.

11. The process of producing carbids, which consists in interposing a substantially vertical charge of carbid-forming materials as a resistance-conductor in an electric circuit, passing different quantities of electric current through different portions of said charge, and increasing the current density in a portion of said charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, as set forth.

12. The process of producing carbids, which consists in interposing a substantially vertical charge of carbid-forming materials as a resistance-conductor in an electric circuit, passing different quantities of electric current through different portions of said charge, increasing the current density in a portion of said charge to a point where the heat generated by the resistance of the charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh materials as required, as set forth.

13. The process of producing calcium carbid, which consists in interposing a substantially vertical charge containing a calcium compound and carbon as a resistance-conductor in an electric circuit, passing different quantities of electric current through different portions of said charge, and increasing the current density in a portion of said charge to a point where the heat generated by the resistance of said charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, as set forth.

14. The process of producing calcium carbid, which consists in interposing a substantially vertical charge containing a calcium compound and carbon as a resistance-conductor in an electric circuit, passing different quantities of electric current through different portions of said charge, and increasing the current density in a portion of said charge to a point where the heat generated by the resistance of said charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh materials as required, as set forth.

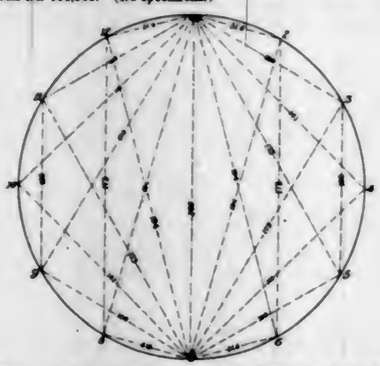
15. The process of producing calcium carbid, which consists in interposing a substantially vertical charge containing a calcium compound and carbon as a resistance-conductor in an electric circuit, passing different quantities of electric current through different portions of said charge, increasing the current density in a portion of said charge to a point where the heat generated by the resistance of said charge causes the materials to react to form carbid and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh materials as required, as set forth.

16. The process of producing carbids, which consists in interposing a substantially vertical charge of carbid-forming materials as a resistance-conductor in an electric circuit, and passing through said conductor a plurality of electric currents superposed in such order that the current density increases through the conductor, thereby gradually heating the charge to a temperature sufficient to effect the production of carbid, as set forth.

17. The process of producing carbids, which consists in interposing a substantially vertical charge of carbid-forming materials as a resistance-conductor in an electric circuit, passing through said conductor a plurality of electric currents superposed in such order that the current density increases through the conductor, thereby gradually heating the charge to a temperature sufficient to effect the production of carbid and to bring the carbid into a molten condition, and tapping off the molten carbid and supplying fresh materials as required, as set forth.

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**757,618. PROCESS OF ELECTRIC HEATING.** WILLIAM S. HORRY, Niagara Falls, N. Y., assignor to Union Carbide Company, Niagara Falls, N. Y., a Corporation of Virginia. Filed Apr. 5, 1902. Serial No. 101,506. (No specimens.)



*Claim.*—1. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to flow along paths which cross each other through said body, as set forth.

2. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to simultaneously flow along paths which cross each other through said body, as set forth.

3. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to flow along paths which cross each other through said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

4. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to simultaneously flow along paths which cross each other through said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

5. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to flow along paths which cross each other through said body, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

6. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to simultaneously flow along paths which cross each other through said body, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

7. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to flow along paths which cross each other through said body, progressively shifting the path of the phase of maximum electromotive force, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

8. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to simultaneously flow along paths which cross each other through said body, progressively shifting the path of the phase of maximum electromotive force, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

9. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, and causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, as set forth.

10. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

11. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

12. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, progressively shifting the path of the phase of maximum electromotive force, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

13. The process of electrically heating a circular body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points around its periphery, and causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, as set forth.

14. The process of electrically heating a circular body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

15. The process of electrically heating a circular body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other through said body, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, with the phase of maximum electromotive force passing substantially along a diameter of the circular body, as set forth.

16. The process of electrically reducing a body consisting of a mixture of a compound and a reducing agent, which consists in causing different phases of polyphase current to flow through said body or the products of reduction thereof, along paths which cross each other, as set forth.

17. The process of electrically reducing a body consisting of a mixture of a compound and a reducing agent, which consists in causing different phases of polyphase current to flow through said body or the products of reduction thereof, along paths which cross each other, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

18. The process of electrically reducing a circular body consisting of a mixture of a compound and a reducing agent, which consists in using active terminals of a source of polyphase current, placed substantially in contact with the body or the products of reduction thereof, at various points around its periphery, and causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other, as set forth.

19. The process of electrically reducing a circular body consisting of a mixture of a compound and a reducing agent, which consists in using active terminals of a source of polyphase current, placed substantially in contact with the body or the products of reduction thereof, at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

20. The process of producing carbids by electrically heating a body of carbid-forming materials, which consists in causing different phases of polyphase current to pass through said body or the carbid produced therefrom, along paths which cross each other, as set forth.

21. The process of producing carbids by electrically heating a body of carbid-forming materials, which consists in causing different phases of polyphase current to pass through said body or the carbid produced therefrom, along paths which cross each other, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

22. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in using active terminals of a source of polyphase current placed substantially in contact with the body or the carbid produced therefrom, at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other, as set forth.

23. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in using active terminals of a source of polyphase current placed substantially in contact with the body or the carbid produced therefrom, at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other, and causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, as set forth.

24. The process of producing carbids by electrically heating a body of carbid-forming materials, which consists in causing different phases of polyphase current to pass through said body or the carbid produced therefrom, along paths which cross each other, and tapping off the molten carbid and feeding in fresh materials as required, as set forth.

25. The process of producing carbids by electrically heating a body of carbid-forming materials, which consists in causing different phases of polyphase current to pass through said body or the carbid produced therefrom, along paths which cross each other, causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, and tapping off the molten carbid and feeding in fresh materials as required, as set forth.

26. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in using active terminals of a source of polyphase current placed substantially in contact with the body or the carbid produced therefrom, at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other, and tapping off the molten carbid and feeding in fresh materials as required, as set forth.

27. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in using active terminals of a source of polyphase current placed substantially in contact with the body or the carbid produced therefrom, at various points around its periphery, causing different phases of the current to simultaneously flow between several of said terminals and along paths which cross each other, causing each phase to traverse a path of resistance corresponding to the electromotive force of that phase, and tapping off the molten carbid and feeding in fresh materials as required, as set forth.

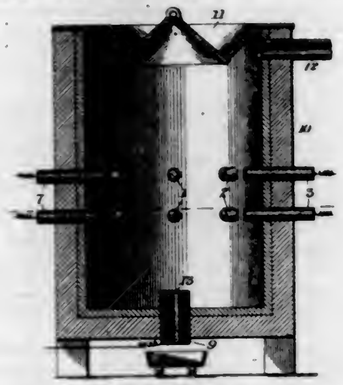
28. The process of electrically heating a body of conducting material, which consists in placing a series of electrodes substantially in contact with the body at various points around its periphery, causing different phases of a polyphase current to simultaneously flow between several of said terminals and along paths which cross each other through said body, and removing and replacing each electrode as consumed, as set forth.

29. The process of electrically melting a body of conducting

material, which consists in holding the body within retaining-walls, placing a series of electrodes, passing through the walls, substantially in contact with the body at various points around its periphery, causing different phases of a polyphase current to simultaneously flow between several of said electrodes and along paths which cross each other through said body, and withdrawing one of the electrodes and permitting the molten product to escape through the opening left thereby, as set forth.

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757,619. **PROCESS OF ELECTRIC HEATING.** WILLIAM S HORRY, Niagara Falls, N. Y., assignor to Union Carbide Company Niagara Falls, N. Y., a Corporation of Virginia. Filed Apr. 28, 1902. Serial No. 105,027. (No specimens.)




*Claim.*—1. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to flow along paths which converge to a common point within said body, as set forth.

2. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to simultaneously flow along paths which converge to a common point within said body, as set forth.

3. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to flow along paths which converge to a common point within said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

4. The process of electrically heating a body of conducting material, which consists in causing different phases of a polyphase current to simultaneously flow along paths which converge to a common point within said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

5. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, and causing different phases of the current to flow along paths which converge to a common point within said body, as set forth.

6. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, and causing different phases of the current to simultaneously flow along paths which converge to a common point within said body, as set forth.

7. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, causing different phases of the current to flow along paths which converge to a common point within said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

8. The process of electrically heating a body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points, causing different phases of the current to simultaneously flow along paths which converge to a common point within said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

9. The process of electrically heating a circular body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points around its periphery, and causing different phases of the current to simultaneously flow along paths which converge to a common point within said body, as set forth.

10. The process of electrically heating a circular body of conducting material, which consists in placing the active terminals of a source of polyphase current substantially in contact with the body at various points around its periphery, causing different phases of the current to simultaneously flow along paths which converge to a common point within said body, and progressively shifting the path of the phase of maximum electromotive force, as set forth.

11. The process of electrically heating and reducing a body consisting of a mixture of a compound and a reducing agent, which consists in causing different phases of a polyphase current to flow along paths which converge to a common point within said body thereby heating the body to a temperature sufficient to effect reduction, as set forth.

12. The process of electrically heating and reducing a circular body consisting of a mixture of a compound and a reducing agent, which consists in using active terminals of a source of polyphase current, placed substantially in contact with the body, at various points around its periphery, and causing different phases of the current to simultaneously flow along paths which converge to a common point within said body, thereby heating the body to a temperature sufficient to effect reduction, as set forth.

13. The process of producing carbids by electrically heating a body of carbid-forming materials, which consists in causing different phases of polyphase current to flow along paths which converge to a common point within said body, thereby heating the body to a temperature sufficient to effect the production of carbid, as set forth.

14. The process of producing carbids by electrically heating a body of carbid-forming materials, which consists in causing different phases of polyphase current to simultaneously flow along paths which converge to a common point within said body, thereby heating the body to a temperature sufficient to effect the production of carbid, as set forth.

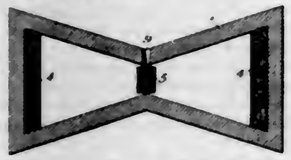
15. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in using active terminals of a source of polyphase current, placed substantially in contact with the body of the carbid produced therefrom, at various points around its periphery, and causing different phases of the current to flow along paths which converge to a common point within said body, thereby heating the body to a temperature sufficient to effect the production of carbid, as set forth.

16. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in causing different phases of a polyphase current to flow along paths which converge to a common point within said body, thereby heating the body to a temperature sufficient to effect the production of carbid, and tapping off the molten carbid and feeding in fresh materials as required, as set forth.

17. The process of producing carbids by electrically heating a circular body of carbid-forming materials, which consists in causing different phases of a polyphase current to simultaneously flow along paths which converge to a common point within said body, thereby heating the body to a temperature sufficient to effect the production of carbid, and tapping off the molten carbid and feeding in fresh materials as required, as set forth.

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757,620. **METHOD OF ELECTRIC HEATING.** WILLIAM S. HORRY, Niagara Falls, N. Y., assignor to Union Carbide Company, Niagara Falls, N. Y., a Corporation of Virginia. Filed June 6, 1902. Serial No. 110,469. (No specimens.)




*Claim.*—1. The herein-described process which consists in passing superposed electric currents through a pool of conductive material and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.

2. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.



perposed electric currents through a pool of conductive material of varying cross-section and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.

3. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.

4. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid of varying cross-section and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.

5. The herein-described process of making calcium carbid which consists in passing superposed electric currents through a pool of conductive material and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid and withdrawing the carbid from the region of maximum current density, as set forth.

6. The herein-described process of making calcium carbid which consists in passing superposed electric currents through a pool of conductive material of varying cross-section and thereby maintaining in such body a region of maximum current density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum current density, as set forth.

7. The herein-described process of making calcium carbid which consists in passing superposed electric currents through a pool of calcium carbid and thereby maintaining in such pool a region of maximum current density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum current density, as set forth.

8. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid, of varying cross-section and thereby maintaining in such body a region of maximum current density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum current density, as set forth.

9. The herein-described process which consists in passing superposed electric currents through a pool of conductive material and thereby maintaining in such pool a region of maximum energy density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum energy density, as set forth.

10. The herein-described process which consists in passing superposed electric currents through a pool of conductive material of varying cross-section and thereby maintaining in such pool a region of maximum energy density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum energy density, as set forth.

11. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid and thereby maintaining in such pool a region of maximum energy density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum energy density, as set forth.

12. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid of varying cross-section and thereby maintaining in such pool a region of maximum energy density, feeding into contact with such pool a suitable charge, and withdrawing the product from the region of maximum energy density, as set forth.

13. The herein-described process of making calcium carbid which consists in passing superposed electric currents through a pool of conductive material and thereby maintaining in such pool a region of maximum energy density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum energy density, as set forth.

14. The herein-described process of making calcium carbid which consists in passing superposed electric currents through a pool of conductive material of varying cross-section and thereby maintaining in such body a region of maximum energy density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum energy density, as set forth.

15. The herein-described process of making calcium carbid which consists in passing superposed electric currents through a pool of calcium carbid and thereby maintaining in such pool a region of maximum energy density, feeding into contact with such pool a mixtnre of a calcium compound and carbon, thereby producing calcium carbid, and withdrawiug the carbid from the region of maximum energy density, as set forth.

16. The herein-described process which consists in passing superposed electric currents through a pool of calcium carbid, of varying cross-section and thereby maintaining in such body a region of maximum energy density, feeding into contact with such pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum energy density, as set forth.

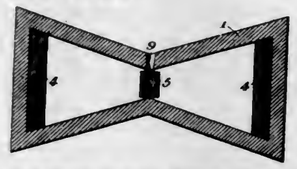
17. The herein-described process which consists in placing three or more electrodes in contact with a pool of conductive material, passing superposed currents through said pool and thereby maintaining in the pool a region of maximum current density, feeding into contact with said pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.

18. The herein-described process which consists in placing three or more electrodes in contact with a pool of calcium carbid, passing superposed electric currents through said pool and thereby maintaining in the pool a region of maximum current density, feeding into contact with said pool a mixture of a calcium compound and carbon, thereby producing calcium carbid, and withdrawing the carbid from the region of maximum current density, as set forth.

19. The herein-described process which consists in supporting a pool of conductive material partly upon a suitable hearth and partly upon the upper ends of electrodes, passing an electric current through said pool between said electrodes and maintaining in the pool a region of maximum current density, feeding into contact with said pool a suitable charge, and withdrawing the product from the region of maximum current density, as set forth.

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757,621. **ELECTRIC FURNACE.** WILLIAM S. HORRY and EDGAR F. PRICE, Niagara Falls, N. Y., assignors to Union Carbide Company, Niagara Falls, N. Y., a Corporation of Virginia. Filed Oct. 11, 1902. Serial No. 126,823. (No model.)




*Claim.*—1. An electric-resistance furnace, comprising a hearth to support a charge or molten product of conductive material, three or more electrodes in contact with said charge or product and so arranged and connected to the source of electric current as to maintain a region of maximum current density in an intermediate portion of said charge or product, and means adjacent to the region of maximum current density for withdrawing the product by gravity, as set forth.

2. An electric-resistance furnace, comprising a hearth to support a charge or molten product of conductive material and of varying cross-section, three or more electrodes in contact with said charge or product and so arranged and connected to the source of electric current as to maintain a region of maximum current density in an intermediate portion of said charge or product, and means adjacent to the region of maximum current density for withdrawing the product by gravity, as set forth.

3. An electric-resistance furnace, comprising a hearth to support a charge or molten product of conductive material with an intermediate portion of less cross-section than its end portions, a plurality of electrodes in contact with said charge or product and so arranged and connected to the source of electric current as to maintain a region of maximum current density at said intermediate portion, and means adjacent to said intermediate portion for withdrawing a product by gravity, as set forth.

4. An electric-resistance furnace, comprising a hearth to support a charge or molten product of conductive material with an intermediate portion of less cross-section than its end portions, three or more electrodes in contact with said charge or product and so ar-

ranged and connected to the source of electric current as to maintain a region of maximum current density at said intermediate portion, and means adjacent to said intermediate portion for withdrawing a product by gravity, as set forth.

5. An electric-resistance furnace, comprising a hearth to support a charge or molten product of conductive material, and three or more electrodes arranged to pass superposed electric currents through said charge or product and to maintain therein a region of maximum current density, as set forth.

6. An electric-resistance furnace, comprising a hearth to support a charge or molten product of conductive material, three or more electrodes arranged to pass superposed electric currents through said charge or product and to maintain therein a region of maximum current density, and means adjacent to the region of maximum current density for withdrawing the product by gravity, as set forth.

7. An electric-resistance furnace, comprising a hearth supporting a body of a conductive carbid or carbid-forming material, and three or more electrodes arranged to pass superposed currents through said body and maintain therein a region of maximum current density, as set forth.

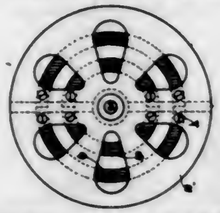
8. An electric-resistance furnace, comprising a hearth supporting a body of a conductive carbid or carbid-forming material, three or more electrodes arranged to pass superposed currents through said body and maintain therein a region of maximum current density, and means adjacent to the region of maximum current density for withdrawing the product by gravity, as set forth.

9. An electric-resistance furnace, comprising a laterally-converging hearth to support a body of conductive material, electrodes arranged to maintain in said body a region of maximum current density, and means adjacent to said region of maximum current density for withdrawing a product by gravity, as set forth.

10. An electric-resistance furnace, comprising a laterally-converging hearth supporting a pool of a conductive carbid or carbid-forming material, and electrodes arranged to maintain in said pool a region of maximum current density, as set forth.

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**757,622. WINDING OR HOISTING DRUM.** HENRY F. JAMES, Franklin, Pa. Filed Nov. 28, 1902. Serial No. 133,142. (No model.)



*Claim.*—In a hoisting or winding drum, a primary drum having a flange at each end thereof, radial beads upon said flanges, holes formed in said flanges adapted for the reception of bolts or screws, in combination with semicylindrical shells, having a flange at each end thereof adapted to be received between the flanges of the primary drum, and be attached thereto by means of screws or bolts, means of relieving the shearing strain upon said bolts or screws, substantially as specified.

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**757,623. BODY-HANGER FOR VEHICLES.** HARRIETT JONES, Waukesha, Wis. Filed June 11, 1903. Serial No. 161,041. (No model.)



*Claim.*—1. In a body-hanger for vehicles, a cap provided in its under side with a longitudinal recess, closed at the ends and having openings in one side thereof.

2. In a body-hanger for vehicles, a cap having a longitudinal recess in its under side, closed ends and openings in one side thereof, in combination with a hanger having a shouldered portion forming a yoke fitted in said cap.

3. In a device of the class described, a hanger having supporting-brackets for a vehicle-body and provided with a central shouldered portion forming a yoke, in combination with a cap having a seat in its under side to accommodate the yoke of the hanger, openings in its front side for the passage of the arms of said yoke, a supporting-spring, and means for securing the yoke-carrying cap in position upon said spring.

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**757,624. HAY-STACKER.** JOHN W. KENWORTHY, Maxwell, Nebr., assignor of one-half to A. W. Plummer, Maxwell, Nebr. Filed Nov. 30, 1903. Serial No. 183,277. (No model.)



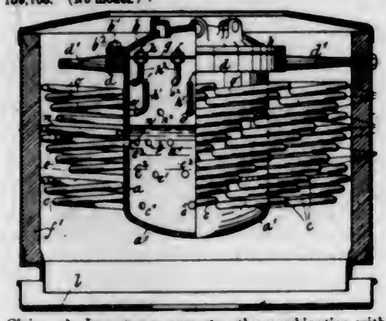
*Claim.*—1. In a hay-stacker, the combination with an inclined way or skid, of a carrier or follower comprising a collecting-frame, and a pusher-frame pivotally connected to said collecting-frame, and adapted to push the same up said inclined way or skid, substantially as described.

2. In a hay-stacker, the combination with an inclined way or skid, of a carrier or follower comprising a wheeled frame, and a pivotally-connected tongue or frame for pushing said wheeled frame up said inclined way or skid, substantially as described.

3. In a hay-stacker, the combination with an inclined way or skid, of a carrier or follower comprising a collecting-frame, rollers for supporting said frame, and a tongue or pole pivotally connected to said collecting-frame and adapted to push said frame up said inclined way or skid, substantially as described.

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**757,625. STEAM-GENERATOR.** JOHN G. A. KITCHEN and LUDLOW P. PERKINS, Lancaster, England. Filed June 1, 1903. Serial No. 159,705. (No model.)



*Claim.*—1. In a steam-generator the combination with a central cylindrical water and steam chamber of several horizontal rows of helically-skewed heating-coils of tubing, each coil having several convolutions partly overlapping each other and radial ends fixed to said chamber, and the coils in each upper row of coils being set over



to one side relatively to the coils in the row below so that the helical axes of the coils coincide and continuous helically-ascending rows of convolutions are formed.

2. In a steam-generator the combination of a central cylindrical chamber, a horizontal row of helical tubular coils fixed thereto above the water-level, a horizontal partition-plate dividing the steam-space above said row of coils, elbow-pipes fixed to the lower inlets of said coils and extending near to said partition-plate, and elbow-pipes fixed to the upper outlets of said coils and extending through said partition-plate.

3. A steam-generator consisting of a central water and steam chamber, several horizontal rows of helically-skewed heating-coils of tubing each having several convolutions partly overlapping each other and radial ends fixed to said chamber, each upper row of coils being set over to one side relatively to the row below so that the helical axes of the coils coincide and continuous helically-ascending rows of convolutions are formed, the topmost horizontal row of coils being above the water-level in the central chamber, a partition-plate horizontally dividing the steam-space thereof, an elbow-pipe connected to the lower end of each coil in the topmost row and reaching upward near to said partition-plate, and another elbow-pipe connected to the upper end of each of said coils and passing through said partition-plate.

4. The combination of a central water and steam chamber formed of a shell having a solid bottom end and a top cover, an annular flange fixed on the upper end of said shell to which said cover is attached by bolts, a partition-plate gripped between said flange and cover, several horizontal rows of helically-skewed heating-coils of tubing each having several convolutions partly overlapping each other and radial ends fixed to said shell, each upper row of coils being set over to one side relatively to the one below so that the helical axes of the coils coincide and continuous helically-ascending rows of convolutions are formed, the topmost row of coils being above the water-level in the shell; elbow-pipes connected to the inlet ends of the topmost row of coils and ascending near to said partition-plate, elbow-pipes connected to the outlet ends of said topmost row of coils and passing through said partition-plate and secured thereto by nuts, a circular casing surrounding said shell and coils, and arms fixed to said annular flange and to the casing and adapted to support the generator.

5. In a steam-generator the combination with a central cylindrical water and steam chamber of several horizontal rows of helically-skewed heating-coils of tubing, each coil having several convolutions partly overlapping each other and radial ends fixed to said chamber, and the coils in each upper row of coils being set over to one side relatively to the coils in the row below so that the helical axes of the coils coincide and continuous helically-ascending rows of convolutions are formed, the upper ends of the coils in each row and the lower ends of the coils in the next row above being disposed in the same horizontal plane.

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**757,626. ELECTRICALLY-DRIVEN MACHINE FOR SAWING LOGS, &c.** KASPAR KOTTMANN, Zurich, Switzerland. Filed May 1, 1903. Serial No. 155,219. (No model.)

*Claim.*—1. A sawing-machine comprising a bed, means to fasten the same onto the wood to be cut up, a saw, means to rotate the same, means to move it longitudinally of the bed and means to adjust it transversely of said bed, substantially as set forth.

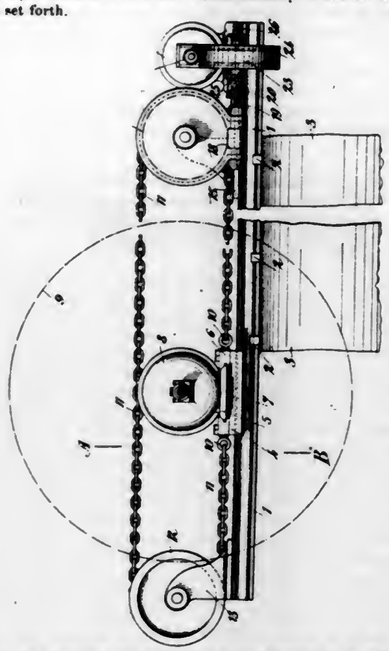
2. A sawing-machine comprising a bed consisting of a single bar, a carriage mounted thereon, an electric motor at one end of the bar, mechanism driven by the motor to move the carriage along the bar, an electrically-driven saw on said carriage and means to adjust the saw transversely of the carriage, substantially as set forth.

3. In a portable sawmill, a bed comprising a single bar, a carriage slidable along the bar, electrically-driven mechanism on one end of the bar to actuate the carriage and an electric motor having a saw mounted on its shaft, on said carriage and adjustable transversely thereof, substantially as set forth.

4. In a portable sawmill, a bed comprising an I-beam, a pivoted carriage slidable thereon, an electrically-driven chain to actuate the carriage and an electric motor having a saw fixed on its shaft connected to the carriage and adjustable transversely thereof, substantially as set forth.

5. In a portable sawmill, a bed comprising an I-beam, a pivoted carriage slidable thereon, an electric motor and speed-reducing mechanism to drive the carriage and fixed to one end of the beam, an electric motor having a saw fixed on its shaft, pivoted to the carriage, said motor and saw adjustable transversely of the carriage, substantially as set forth.

6. In a portable sawmill, a single bar, means to secure it longitudinally of the log to be cut, a carriage slidable along said bar, a plate pivoted to the carriage, an electric motor and a saw mounted on the plate and revoluble with it, substantially as and for the purpose set forth.

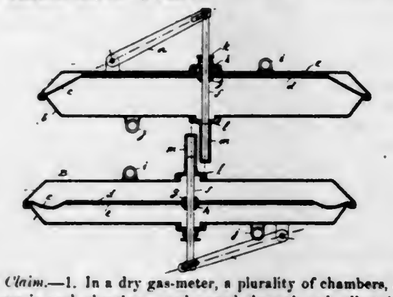


7. In a portable sawmill, a single bar adapted to be spiked to the log to be cut, a carriage movable longitudinally of the bar, an electric motor secured to one end of the bar to impart movement to the carriage, and an electric motor having a saw secured to its shaft slidable transversely of the plate and carriage, substantially as and for the purpose set forth.

8. In a portable sawmill, a single bar adapted to be spiked to the log to be cut, a carriage, a chain-sheave at one end of the bar and a driving-wheel at the other, an electric-motor worm geared to the driving-wheel, and an electric motor, having a saw secured to its shaft, mounted on the carriage and slidable transversely thereon, substantially as and for the purposes set forth.

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**757,627. DRY GAS-METER.** SAMUEL KOZMINSKI, Charlottenburg, Germany, assignor to The Firm of Vesta, Fabrik Automatischer Gasmesser G. M. B. H., Charlottenburg, Germany. Filed Aug. 29, 1902. Serial No. 121,505. (No model.)



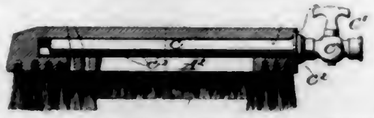
*Claim.*—1. In a dry gas-meter, a plurality of chambers, a diaphragm in each chamber, a rod passed through and adjustably secured to each diaphragm, guides on the adjacent faces of said chambers for adjacent ends of said rods, stuffing-boxes on the opposite sides of said chambers through which said rods pass, links provided with slots at one end receiving means on the outer ends of said rods, and oscillatory shafts to which the opposite ends of said links are connected, all substantially as and for the purpose specified.

2. In a dry gas-meter, a plurality of chambers, a reciprocatory diaphragm in each chamber, rods passed through and adjustably se-

cured to each of said reciprocatory diaphragms, guides on the adjacent faces of said chambers for the adjacent ends of said rods, stuffing-boxes on the opposite sides of said chambers through which said rods pass, links provided with slots at one end to receive means on the outer ends of said rods, and oscillatory shafts to which the opposite ends of said links are connected, all substantially as and for the purpose specified.

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757,628. **FOUNTAIN-BRUSH.** ANNIE B. LANDRETH, Bristol, Pa. Filed Apr. 1, 1902. Serial No. 100,892. (No model.)

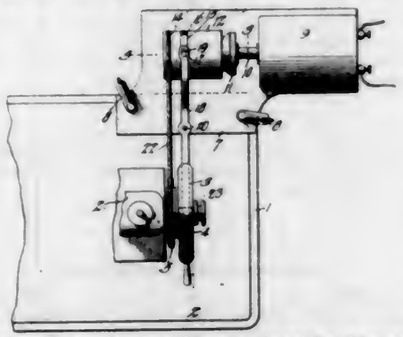


*Claim.*—1. A brush, having a recess extending longitudinally into the back from one end, leaving the sides and back of the brush unobstructed so as to be used while held in the hand, an attachable and detachable nozzle having a pipe projecting into the recess, a cock outside of the recess, and a coupling for connecting a hose or supply-pipe to the nozzle, and means for releasably attaching said nozzle to the brush with its pipe inclosed in the recess, said recess having longitudinally-arranged openings leading to the bristled face of the brush, and the pipe having a line of perforations communicating with said openings.

2. A brush having a recess extending longitudinally into the back from one end, leaving the sides and back unobstructed so as to be used while held in the hand, a detachable and attachable nozzle having a pipe projecting into the recess, a cock outside the recess, and a coupling for connecting a hose or supply-pipe thereto, an angular attaching-plate secured to the nozzle and adapted to fit in a correspondingly-shaped depression in the end of the brush at the mouth of the recess and means for releasably securing the plate in the depression in different positions, the recess in the back having openings leading to the bristled face of the brush, and the pipe having a line of perforations corresponding to the openings, the adjustment of the attaching-plate permitting the pipe to be set so as to bring its perforations into or out of register with the openings in the recess.

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757,629. **SEWING-MACHINE MOTOR.** JACOB H. MACON, Jr., Tampa, Fla. Filed Dec. 24, 1902. Serial No. 136,483. (No model.)

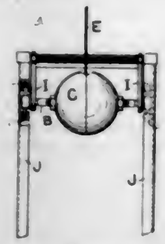


*Claim.*—The combination of a supporting-table, a driven machine supported upon said table and including a drive-wheel, a bracket detachably connected with said table, a motor supported upon said bracket, a shifting-lever pivotally connected with the latter, the handle of said lever being extended in proximity to the drive-wheel of the machine supported upon the table, and a brake-shoe connected with said lever and adapted to engage the periphery of the driving-wheel.

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757,630. **SAFETY DEVICE FOR TROLLEY-POLES.** PHELAN MCCULLOUGH, THOMAS BLANEY, and ROBERT BAROS, Liverpool, England. Filed Jan. 22, 1901. Serial No. 44,276. (No model.)

*Claim.*—1. A safety device for trolley-poles and other like current-collectors, comprising a spring-barrel mounted on a suitable axis, a weighted hollow ball or frame within which the spring-barrel is mounted, teeth mounted on one part, pivoted dogs or the like mounted on the other part, and a trolley-cord passing to the barrel round which it is wound and attached at one end thereto, whereby in ordinary use the spring-barrel will pay out or take up any slack therein, while if there be a sudden pull on the cord this will give a certain movement to the barrel which will cause the dogs on the one part to fly out by centrifugal force and interlock with the teeth on the other part and so lock the two parts together, substantially as and for the purpose described.



2. In a safety device, of the kind mentioned, the suspension-hooks pivoted to an upright frame or guide, a weighted hollow ball or frame supported thereby, said supporting device for the ball being arranged with a counterweight as to move clear of the ball or its spindle, when the ball is raised sufficiently to liberate it substantially as described.

3. In a safety device, of the kind mentioned, a bar attached to the spindle at each end, and bent upward at the center to form a handle by which the device can be carried, whereby the barrel-spring is prevented from coming unwound, substantially as described.

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757,631. **VEHICLE-TIRE FILLER.** CLARENCE D. NIEDLINGER, St. Louis, Mo. Filed Aug. 10, 1903. Serial No. 169,025. (No specimens.)

*Claim.*—1. The herein-described composition of matter as a filler for tires having mixed together glue, glycerin, saccharine matter and formaldehyde in substantially the proportions and manner set forth.

2. The herein-described composition of matter as a filler for vehicle-tires having mixed together glucose, glue, glycerin and formaldehyde in substantially the proportions and in the manner set forth.

3. The herein-described composition of matter as a filler for vehicle-tires, it having glucose, glue, glycerin, tannin and formaldehyde in substantially the proportions and manner set forth.

4. The herein-described composition of matter as a filler for vehicle-tires, having mixed together glue, glucose, glycerin, saccharine matter, formaldehyde, and chrome-alum in substantially the proportions and manner set forth.

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757,632. **EXPLOSIVE-ENGINE.** HERBERT R. PALMER, Cleveland, Ohio, assignor of one-half to Edwin Fowler, Cleveland, Ohio. Filed Jan. 12, 1903. Serial No. 138,595. (No model.)

*Claim.*—1. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured to the explosion end of said piston, said cup being of less diameter than the bore of said cylinder, a lining of heat-insulating material within said cup, and means for protecting said lining.

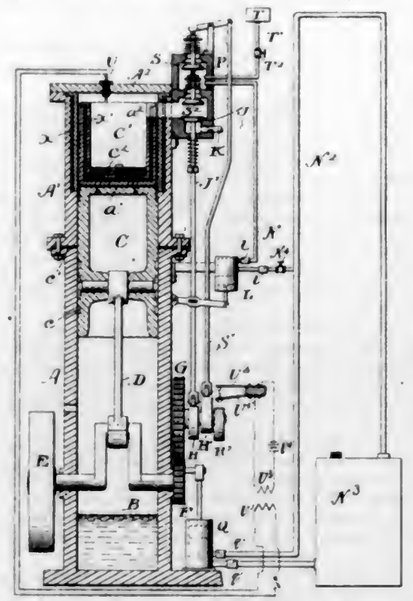
2. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured to the explosion end of said piston, said cup being of less diameter than the bore of said cylinder, a lining of heat-insulating material within said cup, and a metal protector for said lining.

3. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured to the explosion end of said piston, said cup being of less diameter than the bore of said cylinder, a lining of heat-insulating material within said cup, a protector for said lining, and means for holding said protector within said cup.

4. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured to the explosion end of said piston, said cup being of less diameter than the bore of said cylinder, a lining of heat-insulating material within said cup, and a metal cup inside of said lining for protecting the same.



metal cup inside of said lining for protecting the same, said last-mentioned cup having a flange resting upon the upper edge of said other cup.



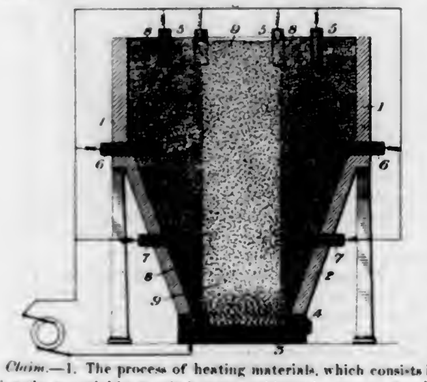
6. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured to the explosion end of said piston, said cup being of less diameter than the bore of said cylinder, means within said cup for protecting it from the heat, and an insulating medium between said cup and the explosion end of said piston.

7. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured to the explosion end of said piston, and means for increasing and decreasing the depth of said cup to vary the amount of the compression.

8. In an explosive-engine, in combination, a cylinder, a piston therein, a cup with its closed end secured adjacent to the explosion end of said piston, and plates removably secured within said cup for varying the amount of compression in the cylinder.

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757,633. **ELECTRIC HEATING.** EDGAR F. PRICE, Niagara Falls, N. Y., assignor to Union Carbide Company, Niagara Falls, N. Y., a Corporation of Virginia. Filed Apr. 5, 1902. Serial No. 101,502. (No model.)



*Claim.*—1. The process of heating materials, which consists in placing the material in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current, through a portion of the conductor in proximity to said material, as set forth.

2. The process of heating materials, which consists in placing the material in proximity to a resistance-conductor of loose, broken or granular material, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current, through a portion of the conductor in proximity to said material, as set forth.

3. The process of reducing a compound, which consists in placing a mixture of the compound and a reducing agent in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current, through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor effects reduction, as set forth.

4. The process of reducing a compound, which consists in placing a mixture of the compound and a reducing agent in proximity to a resistance-conductor of loose, broken, or granular material, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor effects reduction, as set forth.

5. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, as set forth.

6. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a resistance-conductor of loose, broken or granular material, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, as set forth.

7. The process of producing carbids, which consists, in placing carbid-forming materials in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, and the carbid to be brought into a molten condition, as set forth.

8. The process of producing carbids, which consists, in placing carbid-forming materials in proximity to a resistance-conductor of loose, broken or granular material, and passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, and the carbid to be brought into a molten condition, as set forth.

9. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a stable resistance-conductor, passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh material as required, as set forth.

10. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a resistance-conductor of loose, broken or granular material, passing superposed electric currents through said conductor, thereby increasing the current density along the path of the current through a portion of the conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh material as required, as set forth.

11. The process of heating materials, which consists in placing the material in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material and heating it ununiformly as set forth.

12. The process of heating materials, which consists in placing the material in proximity to a resistance-conductor, of loose, broken or granular material, and passing superposed electric currents through

said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material and heating it ununiformly, as set forth.

13. The process of reducing a compound, which consists in placing a mixture of the compound and a reducing agent in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material to a point where the heat generated by the resistance of the conductor effects reduction, as set forth.

14. The process of reducing a compound, which consists in placing a mixture of the compound and a reducing agent in proximity to a resistance-conductor, of loose, broken or granular material, and passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material to a point where the heat generated by the resistance of the conductor effects reduction, as set forth.

15. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a stable resistance-conductor, and passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, as set forth.

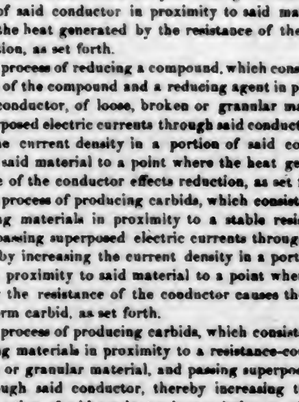
16. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a resistance-conductor, of loose, broken or granular material, and passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, as set forth.

17. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a stable resistance conductor, passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh material, as required, as set forth.

18. The process of producing carbids, which consists in placing carbid-forming materials in proximity to a resistance-conductor, of loose, broken or granular material, passing superposed electric currents through said conductor, thereby increasing the current density in a portion of said conductor in proximity to said material to a point where the heat generated by the resistance of the conductor causes the materials to react to form carbid, and the carbid to be brought into a molten condition, and tapping off said molten carbid and supplying fresh material as required, as set forth.

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**757,634. ELECTRIC-RESISTANCE FURNACE.** EDGAR F. PRICE, Niagara Falls, N. Y., assignor to Union Carbide Company, Niagara Falls, N. Y., a Corporation of Virginia. Filed Apr. 30, 1903. Serial No. 155,024. (No model.)



*Claim.*—1. An electric-resistance furnace, comprising a stable resistance-conductor in position to heat the charge, and means for passing different quantities of electric current through different portions of said conductor, thereby producing a varying current density through the conductor and heating it ununiformly, as set forth.

2. An electric-resistance furnace, comprising a stable resistance-conductor in position to heat the charge, means for passing different quantities of electric current through different portions of said conductor, thereby producing a varying current density through the conductor and heating it ununiformly, and means adjacent to the region of maximum current density for withdrawing a product by gravity, as set forth.

3. An electric-resistance furnace, comprising a stable resistance-conductor in position to heat the charge, and means for passing through said conductor a plurality of electric currents superposed in such order that the current density increases through the conductor, thereby heating it ununiformly, as set forth.

4. An electric-resistance furnace, comprising a stable resistance-conductor in position to heat the charge, means for passing through said conductor a plurality of electric currents superposed in such order that the current density increases through the conductor, thereby heating it ununiformly, and means adjacent to the region of maximum current density for withdrawing a product by gravity, as set forth.

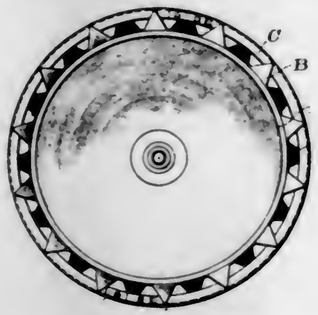
5. An electric-resistance furnace, comprising a stable resistance-conductor in position to heat the charge, and means for passing through said conductor a plurality of electric currents superposed in such order that the current density increases along the path of the current through the conductor, thereby heating it ununiformly, as set forth.

6. An electric-resistance furnace, comprising a stable resistance-conductor in position to heat the charge, means for passing through said conductor a plurality of electric currents superposed in such order that the current density increases along the path of the current through the conductor, thereby heating it ununiformly, and means adjacent to the region of maximum current density for withdrawing a product by gravity, as set forth.

7. An electric-resistance furnace for the production of carbids, comprising a stable resistance-conductor in proximity to the charge of carbid-forming materials, and means for passing through said conductor a plurality of electric currents superposed in such order that the current density increases through the conductor to a point where the heat generated by the resistance of the conductor will cause the materials to react to form carbid, as set forth.

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**757,635. TREAD FOR TRACTION-WHEELS.** JOHN W. PRIDMORE, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill., a Corporation of New Jersey. Filed Aug. 16, 1902. Serial No. 119,539. (No model.)



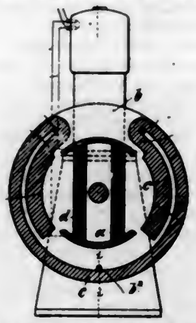

*Claim.*—1. In a traction-wheel comprising a plurality of rows of lags having an annular space between them, and treads overlying the lags and having an annular space between them corresponding to the space between the rows of lags.

2. In combination, in a traction-wheel, the rows of lags B, B', the annular space $B^3$ between said rows, and the separate treads C, C', overlying the rows of lags B, B', respectively, and having the annular space $C^3$ between the treads corresponding to the space between the rows of lags.

3. In combination in a traction-wheel, the lags B and B' secured to the rim thereof, the annular space $B^3$ between said lags, the grooves $b'$ and $b'$ in the apexes of said lags, the treads C and C' having one member lying over the lags and a transverse member lying in said grooves respectively and the plate $c$ by means of which the sections of said treads are secured together and in position.



**757,636. FLY-WHEEL FOR QUICK-RUNNING INTERNAL-COMBUSTION ENGINES.** FRITZ REICHENBACH, Charlottenburg, Germany. Filed June 19, 1903. Serial No. 162,274. (No model.)



*Claim.*—1. In a quick-running internal-combustion engine, the combination with the engine-shaft and the means for rotating it, of a fly-wheel consisting of non-magnetic material; a magnet fixed to said fly-wheel and adapted to form the tire of the same; a stationary armature adapted to be excited by the poles of said magnet; a bobbin surrounding said armature, and means for utilizing the currents generated in said bobbin for igniting the explosive mixture required for driving the said fly-wheel with its magnet, as set forth.

2. In a quick-running internal-combustion engine, the combination with the engine-shaft and the means for rotating it, of a fly-wheel consisting of non-magnetic material; a circular permanent magnet fixed to said fly-wheel and adapted to form the tire of the same; a stationary armature embraced by said magnet and adapted to be excited by the poles of the same; a bobbin surrounding said armature, and means for utilizing the currents generated in said bobbin for igniting the explosive mixture required for driving the said fly-wheel with its magnet, as set forth.

3. In a quick-running internal-combustion engine, the combination with the engine-shaft and the means for rotating it, of a fly-wheel consisting of non-magnetic material; a circular permanent magnet fixed to said fly-wheel and adapted to form the tire of the same and having its pole-pieces formed by bent-up portions embraced by its legs; a stationary armature embraced by said magnet and adapted to be excited by the poles of the same; a bobbin surrounding said armature, and means for utilizing the currents generated in said bobbin for igniting the explosive mixture required for driving the said fly-wheel with its magnet, as set forth.

4. In a quick-running internal-combustion engine the combination, with the engine-shaft and the means for rotating it, of a fly-wheel, a magnet fixed thereto, a stationary armature, a bobbin surrounding said armature whereby the rotation of the fly-wheel will generate an electric current in said bobbin, and means for utilizing the currents thus generated for igniting the explosive mixture in the engine-cylinder.

5. In a quick-running internal-combustion engine the combination, of a fly-wheel, a circular permanent magnet fixed thereto, a stationary armature embraced by said magnet and adapted to be excited by the poles of the same, a bobbin surrounding said armature whereby the rotation of the magnet will generate an electric current in said bobbin and means for utilizing the current thus generated for igniting the explosive mixture.

6. In an internal-combustion engine the combination of the engine-shaft, a circular permanent magnet carried thereby, a stationary armature embraced by said magnet and adapted to be excited by the poles of the same, a bobbin surrounding said armature, and means for utilizing the current generated in said bobbin for igniting the explosive mixture.

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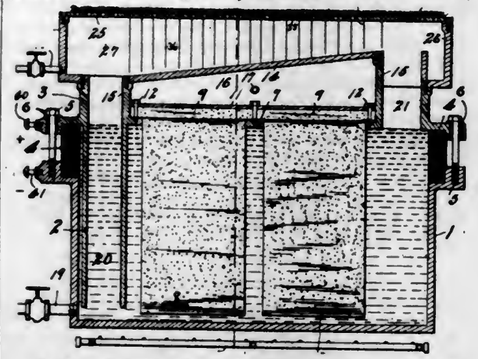
**757,637. GAS-BATTERY.** JAMES H. REID, Newark, N. J. Filed Aug. 3, 1903. Serial No. 168,028. (No model.)

*Claim.*—1. In a gas-battery, an electrolyte and means for retaining the same in fluid condition by heat, a passage for the circulation of said electrolyte and wires extending into said passage in position to interrupt the passage of bubbles.

2. In a gas-battery, an electrolyte, a circulating-passage for the same, and mechanical means to interrupt the bubbles in said passage.

3. In a gas-battery, a containing vessel, a circulating-passage connected therewith and having an inclined floor, and pendent wires extending nearly to the floor, all combined.

4. In a gas-battery, the combination of a containing vessel having a grid-covering, a series of porous electrodes extending through the grid, and electrical connections from the vessel and from the porous electrodes, forming battery-terminals.



5. In a gas-battery, the combination of an inclosing metallic vessel and partitions dividing the same, an electrolyte inclosed in the vessel and extending above the partitions, a grating insulated from the vessel and having bars above the partitions and parallel therewith, porous electrodes supported by said grating and extending between the partitions, and means for feeding gas into the porous electrodes.

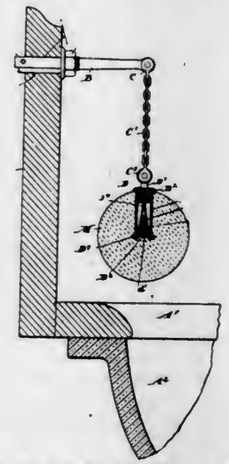
6. In a gas-battery, the combination of an inclosing vessel a fluid electrolyte, a porous electrode, means for forcing gas into the electrode, and means for circulating an electrolyte around said electrode, and an overflow-chamber provided with means for breaking the bubbles in the electrolyte.

7. The combination of the containing metallic vessel, an insulating-strip at the top thereof, an extension or annex above the insulation, a series of porous carbon electrodes supported by the extension, means for forcing gas into the porous electrodes, and electrical conductors connected respectively to the vessel and to the electrodes.

8. In a gas-battery, the combination of a containing vessel, a fluid electrolyte therein, means for circulating said electrolyte, and a perforate cover adapted to confine the electrolyte while passing a gas.

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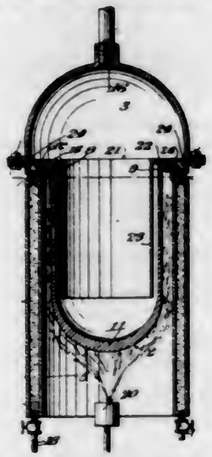
**757,638. SOAP-HOLDER.** JOHN S. ROAKE, Brooklyn, N. Y. Filed June 4, 1901. Renewed Sept. 11, 1903. Serial No. 172,823. (No model.)



*Claim.*—1. The bracket B and pin B' on the inner end thereof, the slab A having a hole $a$ and groove $a'$ therein receiving said inner end and pin, the plug $b$ filling said groove, and the nut $B^2$ drawing said pin against the rear face of said slab and also concealing said plug, combined with a flexible ligament suspended from the outer end of said bracket, substantially as and for the purpose specified.

2. As an improved article of manufacture, a soap cake formed with a cavity therein, a button located within and inclosed by the soap and having a depression in its under face, a flange, and a conical stud opposite said depression undercut below, a head having means whereby it may be supported by a chain, a flange on said head, a tubular extension from the latter, two spring-tongues having inwardly-projecting lips inclosed in said extension and adapted to be separated by said stud and engage in said undercut, said extension being inserted in the cake and locked thereto by the inclosed button, the said head being provided with a keyhole to permit the insertion of a key between said spring-tongues to allow separation of said head and button when said cake is worn away, all substantially as shown and described.

## 757,639. STEAM-GENERATOR. Gustus L. Ross, Pasadena, Cal. Filed June 18, 1903. Serial No. 161,963. (No model.)



*Claim.*—1. A steam-generator comprising a casing formed with an annular water-chamber, having outlet at the top and lateral passage-way through the chamber non-communicating with the interior thereof, an upper member forming a closure over said outlet and provided with a steam-outlet, and an open-topped chamber connected at its top with said water-chamber and extending downwardly within the water-chamber and opening into said upper member.

2. A steam-generator comprising a casing formed with a water-chamber open at the top, an upper member forming a closure over said water-chamber and provided with a steam-outlet, and an open-topped chamber connected at the top with the water-chamber and extending downwardly within and separated from the water-chamber and opening into said upper member; a fire passage-way being provided through the generator between said chambers.

3. A steam-generator comprising a casing formed with an annular water-chamber open at the top, an open-topped chamber connected at the top with the annular water-chamber and extending downwardly within and separated from the water-chamber, and a top chamber over both of said chambers.

4. A steam-generator comprising a casing formed with an annular water-chamber open at the top, an open-topped inner chamber connected at its top with the water-chamber and extending downwardly within the water-chamber but separated therefrom, and an upper chamber over both of the aforesaid chambers, and bridges extending across the annular water-chamber and formed with passages extending from the space between the inner chamber and the water-chamber and the outside of the water-chamber.

5. A steam-generator comprising a casing formed with an annular water-chamber, open at the top, an open-topped inner chamber connected at the top with the water-chamber and having a rounded bottom, and an upper chamber over both the water-chamber and the inner chamber.

6. A steam-generator comprising a casing formed with an annular water-chamber, open at the top, an open-topped inner chamber connected at the top with the water-chamber, and extending downwardly within the water-chamber, a chamber extending over both the aforesaid chambers, and a deflector extending from over the water-chamber downwardly within the inner chamber.

7. A steam-generator comprising an outer casing member formed with an open-topped annular water-chamber, an inner member formed with an open-topped chamber, the said members having flanges, and means fastening said flanges together and an upper member fastened to the water-chamber and forming a closure over both said chambers, and being provided with a steam-outlet.

8. A steam-generator comprising an outer casing member formed with an annular open-topped water-chamber and having inner and outer flanges, an inner chamber formed with an outwardly-extending flange secured to the aforesaid inner flange, and an upper member extending over both of the aforesaid chambers and having an outwardly-extending flange secured to the aforesaid outer flange.

9. A steam-generator comprising a casing member formed with an annular water-chamber, an inner member formed with an open-topped chamber connected at its top with the water-chamber, an upper member secured to the said casing member and formed with a chamber extending over both the aforesaid chambers, and a deflector member having a flange secured between the upper member and the said casing member, and a tubular portion extending downwardly within the inner member.

10. A water-chamber having a substantially upright water-heating wall, means for supplying water to such chamber, a steam-chamber having a steam-outlet and connected intermediate its top and bottom to receive water from the water-chamber, and means for applying heat to said chambers; said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water connections which communicate between said chambers.

11. A water-heating chamber having an upright heating-wall, means for supplying water thereto, a steam-chamber having a steam-outlet, means for conducting water or steam from the water-chamber to the lower part of the steam-chamber, and means for heating the chamber; said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water connections which communicate between said chambers.

12. A water-chamber having a substantially vertical heating-wall, means for supplying water to such chamber, a steam-chamber connected with the top of the water-chamber to receive water therefrom, and means for applying heat to said chambers, the water-chamber extending below the level at which the heat is applied, and said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water connections which communicate between said chambers.

13. A steam-chamber having an outlet, a water-chamber having a contracted outlet to the steam-chamber, above the bottom of both the chambers, and a burner arranged in heating relation with both of said chambers; said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water connections which communicate between said chambers.

14. An inner steam-chamber having an outlet in its upper part, a water-chamber inclosing the steam-chamber and having a contracted outlet to the steam-chamber, above the bottom of both the chambers, and a burner arranged in heating relation with both of the chambers; said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water-chamber outlet.

15. A steam-chamber having an outlet, a water-chamber having an outlet to the steam-chamber above the bottom thereof, and a baffle extending downwardly into the steam-chamber between the water-outlet and the steam-outlet; said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water-chamber outlet.

16. A steam-chamber having a outlet, a water-chamber having an outlet to the steam-chamber, above the bottom of both chambers, and a baffle extending in the steam-chamber between the water-outlet and the steam-outlet; said steam-chamber being inclosed at the top by an upper member which extends over and incloses the water-chamber outlet.

17. A steam-generator comprising an inner steam-chamber member, a hollow water-chamber member surrounding and opening at the top into the same, a baffle extending over the opening between the chambers formed by said members, into the steam-chamber, an upper member fastened to the water member, extending over and inclosing said opening and inclosing the top of the chamber formed by the inner member, means for supplying water to the water-chamber, means for emitting steam from the steam-chamber and means for applying heat between the water and steam chambers.

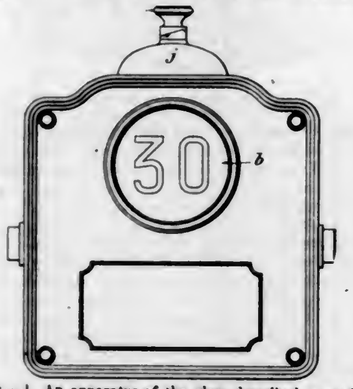
18. A steam-generator comprising a steam-chamber member, a water member surrounding the same and communicating therewith, a dome or upper member fastened to the water member and inclosing



open tops of both chambers, means for supplying water to the water-chamber and means for emitting steam from the steam-chamber.

19. A steam-chamber member open at top, a dome member inclosing the open top of the steam-chamber member means for applying heat to the external walls of the steam-chamber member and means for supplying a thin sheet of water or steam around the upper edge of the wall of the steam-chamber member.

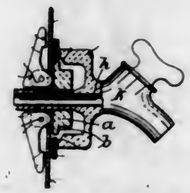
## 757,640. TOO-GREAT-SPEED ALARM. Gaston Rougaix, Paris, France. Filed Mar. 2, 1903. Serial No. 145,771. (No model.)




*Claim.*—1. An apparatus of the class described comprising a driving-shaft, a clutch-sleeve slidably mounted on the said shaft, a centrifugal device operated by the shaft and connected to the said sleeve to move the same in correlation with the speed of the shaft, an indicating device connected to the said sleeve to show at the outside of the apparatus the movements of the sleeve along the shaft and consequently to show the speed of the said shaft, in combination with a second sleeve loosely mounted on the shaft, means to bring the said sleeve to a stop in several determined positions on the shaft, an indicating device connected to the said sleeve to show at the outside of the apparatus its position on the shaft, and a speed-alarm connected to the last-mentioned sleeve, the result being that the said speed-alarm is operated by the second sleeve when the speed of the shaft is sufficiently great to cause the regulating device to move the first sleeve into contact with the second sleeve.

2. An apparatus of the class described, comprising a driving-shaft, a sleeve slidably mounted on the shaft, a ball-regulator mounted on the shaft and connected to the said sleeve, a neck or groove formed on the sleeve, a forked lever engaged in the said groove, a graduated disk mounted on a stud or pivot, a pulley on the said disk, a spring, a string connecting the said lever to the said spring in passing over the pulley, in combination with a second sleeve loosely mounted on the shaft, a groove on the said sleeve, a forked lever engaged in the said groove, means for fixing at will the said lever in several determined positions, projections on the second sleeve, a lever operated by the said projections and a bell arranged to be struck and rung by the said lever.

## 757,641. SELF-GRIP AND DRAW-OFF ATTACHMENT FOR VESSELS. Lewis E. Saunders, Perth, Western Australia, Australia, assignor of one-third to Henry John Saunders, Perth, Western Australia, Australia. Filed July 17, 1903. Serial No. 166,010. (No model.)




*Claim.*—1. The combination with grippers and an internally-threaded hub to which said grippers are pivoted to fold and spread out radially; of a correspondingly-threaded spreader and a clamping member on the spreader fitting over the hub, said spreader adapted to engage and spread the grippers to hold them against folding and to draw the hub toward said clamping member when the spreader is screwed through the hub, for the purposes set forth.

2. The combination with grippers and an internally-threaded hub to which said grippers are pivoted to fold and spread out radially; of a tubular correspondingly-threaded spreader and a clamping member thereon fitting over the hub, said spreader adapted to engage and spread the grippers and hold them against folding and to draw the hub toward the clamping member when the spreader is screwed through the hub, for the purposes set forth.

3. The combination with the grippers and a hub having portions of different diameter, said grippers pivoted to the hub portion of least diameter to fold and spread out radially; of a correspondingly-threaded spreader and a clamping member thereon fitting over the portion of greatest diameter of the hub, said spreader adapted to engage and spread the grippers and hold them against folding and to draw the hub toward the clamping member when the spreader is screwed through the hub, for the purpose set forth.

4. The combination with the grippers having rounded backs, flat gripping-faces and pointed ends and a hub to which said grippers are pivoted to fold and spread out radially, and when folded to have their points in or substantially in line with the center of the hub; of a tubular spreader and a clamping member thereon fitting over the hub, said spreader adapted to be screwed through the hub and engage and spread the grippers and hold them against folding and to simultaneously draw said hub toward said clamping member, for the purposes set forth.

5. The combination with a hub and grippers pivoted thereto to fold and spread out radially and having heel extensions projecting over the bore of the hub when said grippers are folded; of a spreader and a clamping member thereon projecting over the hub, said spreader adapted to be screwed through the bore of said hub and thereby engage said extensions, spread the grippers, hold them against folding and simultaneously draw the hub toward the clamping member, for the purpose set forth.

6. The combination with a hub and grippers having heel-lugs pivotally connected to said hub and so constructed as not to project beyond the periphery of such hub when the grippers are folded, said grippers having heel extensions projecting over the bore of the hub when so folded; of a spreader and a clamping member thereon, said spreader screwing through the hub and thereby engage and spread the grippers, hold them against folding and simultaneously draw the hub toward said clamping member, for the purposes set forth.

7. The combination with the grippers and a hub to which they are pivoted to fold and spread out radially; of a spreader and a chambered clamping member thereon fitting over the hub, said spreader screwing through the hub and adapted to engage and spread the grippers and hold them against folding and to simultaneously draw the hub toward the clamping member, for the purposes set forth.

8. The combination with a hub, grippers pivoted thereto to fold and spread out radially, said grippers being recessed to form a shoulder *e'* at the inner end of a flat gripping-surface *g*; of a spreader and a circular clamping member thereon fitting around the hub within the circle of the aforesaid shoulders *e'*, said spreader screwing through the hub and adapted to engage and spread the grippers and hold them against folding and simultaneously draw the hub toward the clamping member, for the purpose set forth.

9. The combination with a hub and folding grippers carried thereby; of a threaded member and a clamping member thereon, said threaded member screwing through the hub and thereby spreading the grippers and simultaneously drawing said hub toward the clamping member, for the purposes set forth.

10. The combination with a hub provided with an abutment and grippers pivoted to said hub in front of its abutment; of a threaded member and a clamping member thereon, said threaded member screwing through the hub and thereby spreading the grippers and drawing said hub toward the clamping member, for the purposes set forth.

11. In combination with a hub having a bore formed therein, an abutment on said hub, gripping members pivoted on the hub in front of said abutment, a projection on each gripping member adapted to lie across said bore, a member adapted to be inserted into said bore and engage the projection of each gripping member and a tightening member out of contact with the hub, substantially as and for the purpose specified.

12. In combination with a hub portion having a threaded central bore, an abutment formed on the periphery of the hub, gripping members pivotally mounted on the hub in front of said abutment, a projection on each gripping member adapted to lie across the bore

of the hub, a threaded member screwing into said bore to move said projection parallel to the longitudinal axis of the bore, and a tightening member out of contact with the hub, substantially as described.

13. A draw-off attachment for vessels, comprising a hub portion having a threaded central bore, a peripheral flange on said hub, lugs formed on one end of the latter, arms pivoted on said lugs, a gripping-face formed on one end, a nose on the opposite end of each of said arms, and a tube movable in said bore adapted to engage the nose of each arm and radially move the gripping end, substantially as described.

14. A draw-off attachment for vessels, comprising a hub portion having a central bore, a peripheral flange on said hub, gripping members pivoted on the hub, projections on said members adapted to lie across the bore of the hub, a tube movable in said bore adapted to engage said projections, and a tightening member carried by the tube, substantially as and for the purpose specified.

15. The combination with a vessel having an aperture formed therein, of a hub having a central bore therein and adapted to be seated in said aperture, an abutment on the hub adapted to engage the wall, gripping members on the hub adapted to be projected through said aperture, a member insertible in said bore adapted to radially spread said gripping members, and a tightening member on the spreading member and out of contact with said hub, substantially as and for the purposes specified.

16. The combination with the wall of a vessel having an aperture formed therein, of a hub adapted to be inserted in the aperture, a flange on said hub of larger diameter than the aperture, gripping members pivotally mounted on the hub in front of said flange capable of being assembled within the circumference of the aperture, means for spreading the grippers beyond said circumference and a member operated by the spreading means adapted to engage the vessel, substantially as and for the purposes specified.

17. The combination with the wall of a vessel having an aperture formed therein, of a hub having a threaded central bore and adapted to be inserted in the aperture, a peripheral flange on said hub of larger diameter than the aperture, arms pivoted on the hub in front of said flange capable of being assembled within the circumference of the aperture, a gripping-face formed on one end, a nose on the opposite end of each of said arms, a tube movable in said bore adapted to engage the nose of each arm to radially move the gripping end, a nut carried by the tube adapted to engage the wall of the vessel and a tap on said tube, substantially as and for the purposes specified.

18. The combination with a vessel having an aperture therein, a hub insertible into said aperture and grippers pivoted to said hub to fold and spread out radially; of a tap having a stem screwing into said hub and a chambered clamping member fitting over the hub, said stem adapted to engage and spread the grippers and simultaneously draw the hub toward the clamping member to clamp the tap to the vessel, and an elastic washer interposed between said clamping member and the vessel, for the purposes specified.

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**757,642. HARNESS.** FREDERICK J. SCHENK, Monticello, Ill. Filed Jan. 12, 1903. Serial No. 138,792. (No model.)

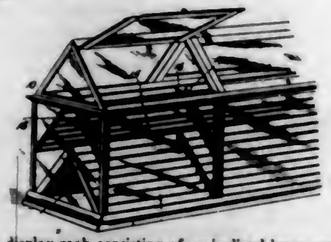


*Claim.*—In a device of the class described, a post curved upwardly and rearwardly and provided with a vertical longitudinal slot terminating at its upper end in a circular enlarged portion, in combination with a connecting member comprising a shank, square in cross-section, the size of said shank being equal to the width of the slot in the post, said shank being provided with a loop and a cross-bar adapted to engage opposite sides of the post, the length of said shank between the loop and the cross-bar being equal to the thickness of said post, to obviate longitudinal displacement of said connecting member.

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**757,643. DISPLAY RACK OR CASE.** CHARLES D. ALLEN, Oklahoma, Okla. Filed June 30, 1903. Serial No. 163,803. (No model.)

*Claim.*—1. A display-rack consisting of an inclined lower support provided with a plurality of spaced recesses disposed in step-like order, and a plurality of division rods or slats disposed in vertical alinement above said recesses, and means for adjusting said division rods or slats to vary the distances between them, substantially as specified.

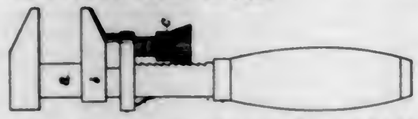


2. A display-rack consisting of an inclined lower support provided with a plurality of spaced recesses disposed in step-like order, upper supports spaced above the ends of said lower supports and inclined to correspond therewith, spaced rods or slats disposed upon said inclined upper supports in substantial vertical alinement above the recesses in said lower support, and means for adjusting said rods or slats to vary the distances between them, substantially as specified.

3. A display-rack consisting of a gable-shaped supporting-frame having a plurality of longitudinally-arranged, vertically-disposed, laterally-spaced slats secured to the opposite sides of said frame to form slot-like stepped recesses, and a gable-shaped skeleton frame supported above said first-mentioned frame and having a plurality of longitudinally-arranged laterally-spaced division members connecting the members of said frame and disposed to form slot-like spaces therebetween in vertical alinement above said slot-like recesses of the lower supporting-frame.

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**757,644. WRENCH.** GEORGE S. ANDRUS, Globe, Ariz. Filed Dec. 15, 1903. Serial No. 185,291. (No model.)



*Claim.*—A wrench consisting of a jaw and shank, the shank having a concave ratchet-face; a sliding jaw thereon; an adjusting-screw with a cone-shaped base having a threaded engagement with the sliding jaw, the cone-shaped base being adapted to engage the concave shank-ratchet; a spring tending to press the sliding jaw toward the shank and engage the cone-shaped base with the ratchet substantially as set forth.

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**757,645. SEEDBOX.** RICHARD BASSETT, Dover, N. J. Filed Oct. 28, 1903. Serial No. 178,893. (No model.)



*Claim.*—1. A seedbox comprising a curved segmental open-topped receptacle of rigid material, the outer upper edge of which is provided with a rigid handle arranged substantially midway of the length of the box, and a loop secured to the opposite upper edge substantially midway of its length, a ring secured in said loop, and a supporter for engaging with said ring.

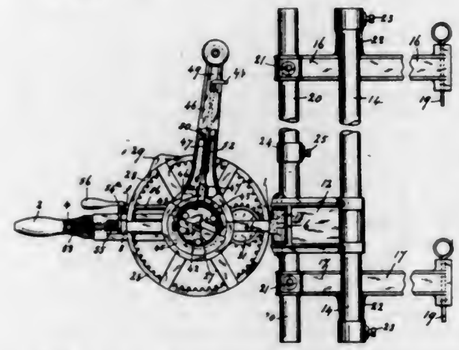


2. In a seedbox, an elongated curved open-topped rigid receptacle, the ends of which are rounding and the central portion of the inner side being curved inwardly a bottom made to fit said sides, a rigid handle secured on the upper edge of the outer side substantially midway of its length and a loop having a ring loosely mounted therein, said loop being secured to the upper edge of the inwardly-bent side midway of its length, and a hook for securing said loop to the restricted supporting means.

3. A seedbox comprising an elongated curved open-topped receptacle of rigid material, the ends of which are convex and the central portions of the inner and outer sides being concave and convex respectively, the convex side having a rigid handle secured to the upper edge midway of its length, the concave side having a loop secured thereto and a ring held in the loop, said loop being secured to the box directly opposite the rigid handle, and means for supporting said box by said ring.

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**757,646. WIRE-FENCE-WEAVING MACHINE.** ARTHUR E. BLASHILL, London, Canada. Filed Dec. 26, 1902. Serial No. 136,632. (No model.)



*Claim.*—1. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17 mounted on said spacer-bar, and means for holding the upper and lower horizontal fence-wires 61 in engagement with said horizontal bars, and brackets 22 extending from said horizontal bars, in combination with a pivot-bar 14 secured to said brackets, and a frame 1 connected to and adapted to swing pivotally and slide vertically on said pivot-bar, substantially as and for the purpose set forth.

2. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17 and spacers 24 mounted on said spacer-bar, and means for holding said horizontal bars and spacers at the position to which they are adjusted on said spacer-bar and for holding the horizontal fence-wires 61 in engagement therewith, and brackets 22 extending from said horizontal bars, in combination with a pivot-bar 14 secured to said brackets, and a frame 1 connected to and adapted to swing pivotally and slide vertically on said pivot-bar, substantially as and for the purpose set forth.

3. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17, provided with flanges, and mounted on said spacer-bar, means for holding the upper and lower horizontal fence-wires 61 between said flanges, and brackets 22 extending from said horizontal bars, in combination with a pivot-bar 14 secured to said brackets, and a frame 1 connected to and adapted to swing pivotally and slide vertically on said pivot-bar, substantially as and for the purpose set forth

4. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17 and spacers 24, provided with flanges, and mounted on said spacer-bar, and means for holding said horizontal bars and spacers at the position to which they are adjusted on said spacer-bar and for holding the horizontal fence-wires 61 between said flanges, and brackets 22 extending from said horizontal bars, in combination with a pivot-bar 14 secured to said brackets, and a frame 1 connected to and adapted to swing pivotally and slide vertically on said pivot-bar, substantially as and for the purpose set forth.

5. In a wire-fence-weaving machine, a pivot-bar 14, means for supporting said bar, and a coupling 12 adapted to swing pivotally and slide vertically on said bar, in combination with a frame 1 pivotally mounted on said coupling and provided with a shoulder 6 which is adapted to engage with said coupling to limit the pivotal movement of said frame thereon, substantially as and for the purpose set forth.

6. In a wire-fence-weaving machine, a pivot-bar 14, means for supporting said bar, and a coupling 12 adapted to swing pivotally and slide vertically on said bar, in combination with a frame 1 provided with a tension-bar 8, and a torsion-spring 15 connected at one end to said coupling and its other end engaging with said tension-bar, to adapt said frame to move pivotally on said coupling with a steady even motion, substantially as and for the purpose set forth.

7. In a wire-fence-weaving machine, a pivot-bar 14, means for supporting said bar, and a coupling 12 adapted to swing pivotally and slide vertically on said bar, in combination with a frame 1 provided with a tension-bar 8, in which notches, *a*, are formed at different elevations, and a torsion-spring 15 connected at one end to said coupling and its other end adapted to engage with and rest in one of the notches, *a*, in said tension-bar, to adapt said frame to move pivotally on said coupling with a steady even motion, and to regulate the resistance of said spring on said tension-bar, substantially as and for the purpose set forth

8. In a wire-fence-weaving machine, a pivot-bar 14, means for supporting said bar, and a coupling 12 adapted to swing pivotally and slide vertically on said bar, in combination with a frame 1 provided with a shoulder 6 and tension-bar 8, and a torsion-spring 15 connected at one end to said coupling and its other end adapted to engage with said tension-bar, to adapt said frame to move pivotally on said coupling with a steady even motion, and to limit the pivotal movement of said frame on said coupling, substantially as and for the purpose set forth.

9. In a wire-fence-weaving machine, a pivot-bar 14, means for supporting said bar, and a coupling 12 adapted to swing pivotally and slide vertically on said bar, in combination with a frame 1 provided with a shoulder 6 and tension-bar 8, in which bar 8 notches, *a*, are formed at different elevations, and a torsion-spring 15, connected at one end to said coupling, and its other end adapted to engage with and rest in one of the notches, *a*, in said tension-bar, to adapt said frame to move pivotally on said coupling with a steady even motion, to limit the pivotal movement of said frame on said coupling, and to regulate the resistance of said spring on said tension-bar, substantially as and for the purpose set forth.

10. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17 and spacers 24 mounted on said spacer-bar, and means for holding said horizontal bars and spacers at the position to which they are adjusted on said spacing-bar, and for holding the horizontal fence-wires 61 in engagement therewith, brackets 22 extending from said horizontal bars and a pivot-bar 14 secured to said brackets, in combination with a coupling 12 adapted to swing pivotally and slide vertically on said pivot-bar, a frame 1 pivotally mounted on said coupling 12 and provided with a shoulder 6, substantially as and for the purpose set forth.

11. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17 and spacers 24 mounted on said spacer-bar, and means for holding said horizontal bars and spacers at the position to which they are adjusted on said spacing-bar and for holding the horizontal fence-wires 61 in engagement therewith, brackets 22 extending from said horizontal bars, and a pivot-bar 14 secured to said brackets, in combination with a coupling 12 adapted to swing pivotally and slide vertically on said pivot-bar, a frame 1 pivotally secured to said coupling and provided with a tension-bar 8, and a torsion-spring 15 connected at one end to said coupling and its other end adapted to engage with said tension-bar, substantially as and for the purpose set forth.

12. In a wire-fence-weaving machine, a spacer-bar 20, upper and lower horizontal bars 16 and 17 and spacers 24, mounted on said spacer-bar, and means for holding said horizontal bars and spacers at the position to which they are adjusted on said spacing-bar and for holding the horizontal fence-wires 61 in engagement therewith, brackets 22 extending from said horizontal bars, and a pivot-bar 14 secured to said brackets, in combination with a coupling 12 adapted to swing pivotally and slide vertically on said pivot-bar, a frame 1 provided with a shoulder 6 and tension-bar 8, and a torsion-spring 15 connected at one end to said coupling and its other end adapted to engage with said tension-bar, substantially as and for the purpose set forth.

13. In a wire-fence-weaving machine, a frame 1, provided with a handle 2 and with a flange 5, a locking-lever 56 pivoted on said handle, a locking-bolt 58 provided with a shoulder, *g*, and connected to said locking-lever, and extending through said flange 5, and a coil-spring 59 encircling said locking-bolt and interposed between

the shoulder, *g*, thereon and the flange 5, in combination with a beveled gear-wheel 32 in which a socket 33 is formed, and means for supporting said beveled gear-wheel, substantially as and for the purpose set forth.

14. In a wire-fence-weaving machine, a frame 1 provided with a flange 5 and with a handle 2, a locking-lever 56 pivoted on said handle, a locking-bolt 58 provided with a shoulder, *g*, connected to said locking-lever and extending through said flange 5, and a coil-spring 59 encircling said locking-bolt and interposed between the shoulder, *g*, thereon and the flange 5, in combination with an automatic dog 53 provided with flanges 54 and 54ª, a coil-spring 55 encircling said dog, and interposed between said flanges and an abutment on said handle, and means for guiding and holding said dog in line as it is adjusted back and forth, substantially as and for the purpose set forth.

15. In a wire-fence-weaving machine, a frame 1 provided with a flange 5, and with a handle 2, in which an opening 3 and socket 4 are formed, a locking-lever 56 pivoted on said handle, a locking-bolt 58 provided with a shoulder, *g*, connected to said locking-lever and extending through said flange 5, and a coil-spring 59 encircling said locking-bolt and interposed between the shoulder, *g*, thereon and the flange 5, in combination with an automatic dog 53 located in said opening 3 and socket 4, and provided with flanges 54 and 54ª, and a coil-spring 55 encircling said dog and interposed between said flanges thereon and an abutment on said handle, substantially as and for the purpose set forth.

16. In a wire-fence-weaving machine, a frame 1 provided with a flange 5, with a handle 2, and with a spindle 27, a locking-lever 56 pivoted on said handle, a locking-bolt 58 provided with a shoulder, *g*, connected to said locking-lever and extending through said flange 5, a coil-spring 59 encircling said locking-bolt and interposed between the shoulder, *g*, thereon and the flange 5, an automatic dog 53 provided with flanges 54 and 54ª, a coil-spring 55 encircling said dog and interposed between said flanges and an abutment on said handle, and means for guiding and holding said dog in line as it is adjusted back and forth, in combination with a wheel 28 mounted on said spindle 27 and provided with a cam 29, substantially as and for the purpose set forth.

17. In a wire-fence-weaving machine, a frame 1 provided with a handle 2, and a locking-lever 56 pivoted on said handle and provided with a shoulder, *f*, in combination with an automatic dog 53 provided with flanges 54 and 54ª, the latter adapted to engage with said shoulder, *f*, on said locking-lever, and a coil-spring 55 encircling said dog and interposed between said flanges and an abutment on said handle, and means for guiding and holding said dog in line as it is adjusted back and forth, substantially as and for the purpose set forth.

18. In a wire-fence-weaving machine, a frame 1 provided with a handle 2, and a locking-lever 56 pivoted on said handle, in combination with an automatic dog 53 provided with flanges 54 and 54ª, the latter adapted to engage with the side of the locking-lever to hold the machine unlocked, a coil-spring 55 encircling said dog and interposed between said flanges and an abutment on said handle, and means for guiding and holding said dog in line as it is adjusted back and forth, substantially as and for the purpose set forth.

19. In a wire-fence-weaving machine, a frame 1 provided with a handle 2 and spindle 27, a locking-lever 56 pivoted on said handle, an automatic dog 53 provided with flanges 54 and 54ª, the latter adapted to engage with the side of the locking-lever, a coil-spring 55 encircling said dog and interposed between said flanges and an abutment on said handle, and means for guiding and holding said dog in line as it is adjusted back and forth, in combination with a wheel 28 mounted on said spindle 27, and provided with a cam 29 which is adapted to engage with said automatic dog, substantially as and for the purpose set forth.

20. In a wire-fence-weaving machine, a frame 1 provided with a flange 5, with a handle 2, and with a spindle 27, a locking-lever 56 pivoted on said handle and provided with a shoulder, *f*, a locking-bolt 58 provided with a shoulder, *g*, connected to said locking-lever and extending through said flange 5, a coil-spring 59 encircling said locking-bolt and interposed between the shoulder, *g*, thereon and the flange 5, an automatic dog 53 provided with flanges 54 and 54ª, the latter adapted to engage with said shoulder, *f*, on said locking-lever, a coil-spring 55 encircling said dog and interposed between said flanges and an abutment on said handle, and means for guiding and holding said dog in line as it is adjusted back and forth, in combination with a wheel 28 mounted on said spindle 27 and provided with a cam 29, substantially as and for the purpose set forth.

21. In a wire-fence-weaving machine, a frame 1 in which a slot 11 is formed, and which is provided with a spindle 27, an internal gear-wheel 28 mounted on said spindle, and a ratchet-crank 46 secured to said gear-wheel, in combination with a shaft 34 mounted in said frame and in which a channel 35 is formed, a weaving-plate 38 connected to said shaft 34, in which plate slots, *n*, and, *m*, are formed, the slot, *m*, being formed in said plate in line with the channel 35 in the shaft 34, and both adapted to register with the slot 11 in the frame 1, and means for communicating motion from said gear-wheel 28 to said shaft 34, substantially as and for the purpose set forth.

22. In a wire-fence-weaving machine, a frame 1 provided with a spindle 27 and in which the slot 11 is formed, an internal gear-wheel 28 mounted on said spindle, a plate 42 secured to said gear-wheel, and provided with an annular flange 43, in which sockets 44 are formed, and a rim-flange 45 formed on said annular flange, in combination with a crank 46, the inner end of which encircles said annular flange and which is provided with flanges 50 and 51, a dog 47 held in contact with said crank, and adapted to engage with and be disengaged from the sockets 44 in said annular flange 43, and provided with a shoulder, *c*, and a spring 52 encircling said dog and interposed between said flange 50 on said crank and said shoulder, *c*, on said dog, substantially as and for the purpose set forth.

23. In a wire-fence-weaving machine, a frame 1 in which a slot 11 is formed, and which is provided with a spindle 27 and curved guides 10, an internal gear-wheel 28 mounted on said spindle, and a ratchet-crank 46 secured to said gear-wheel, in combination with a shaft 34 mounted in said frame, and in which a channel 35 is formed, a weaving-plate 38 connected to said shaft 34, in which plate slots, *n*, and, *m*, are formed, the slot, *m*, being formed in said plate in line with the channel 35 in the shaft 34, and both adapted to register with the slot 11 in the frame 1, and means for communicating motion from said gear-wheel 28 to said shaft 34, substantially as and for the purpose set forth.

24. In a wire-fence-weaving machine, a frame 1 in which a slot 11 is formed, and which is provided with a spindle 27 and curved guides 10, an internal gear-wheel 28 mounted on said spindle, and a ratchet-crank 46 secured to said gear-wheel, in combination with a shaft 30 mounted in said frame, a gear-pinion 31 secured to one end and a beveled gear-wheel 32 to the other end of said shaft 30, a shaft 34 in which a channel 35 is formed, mounted in said frame and located at right angles to said shaft 30, a beveled gear-wheel 36 in which a slot 37 is formed, secured to one end of and an enlarged head 40 to the other end of said shaft 34, a weaving-plate 38 in which slots, *n*, and, *m*, are formed, secured to said beveled gear-wheel 36, and a sleeved spindle or bobbin secured to and at one side of said enlarged head, substantially as and for the purpose set forth.

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**757,647. BOTTLE. EDGAR BLUE and QUINTUS HERNDON, Garvin, Ind. Ter. Filed Feb. 25, 1903. Renewed Feb. 27, 1904. Serial No. 195,676. (No model.)**



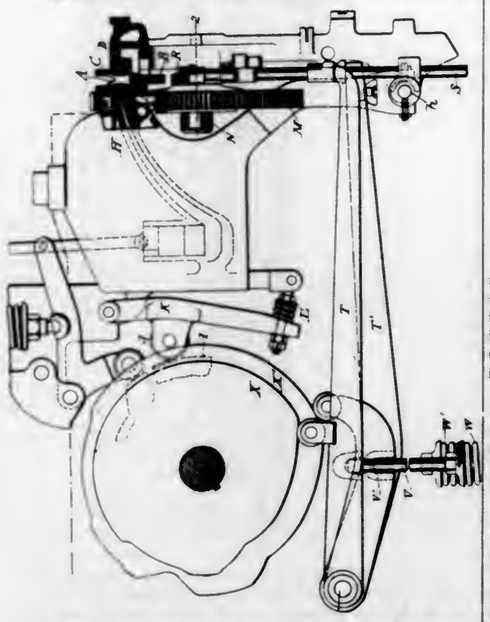
*Claim.*—1. In a bottle, the combination, with a sealing-disk disposed at the mouth of the neck thereof, of a tubular cap provided with an inwardly-extending flange at its outer end adapted to cooperate with the sealing-disk to clamp the latter in position, adjustable interlocking means between the cap and the neck of the bottle, and means for directing the movement of the cap in applying the same to the neck of the bottle, whereby locking of the cap to the neck of the bottle is facilitated.

2. In a bottle of the character described, a neck having a cork thereon and reduced at the upper portion thereof and having a longitudinal rib disposed upon said reduced portion, a semicircular groove located upon the reduced portion of the neck and having vertical grooves leading therefrom at the end portions of same, a semicircular locking-spring seated in the aforesaid groove of the neck and having lateral spring-teeth projected therefrom, a sealing-disk disposed above the cork of the bottle, and a tubular cap having its outer end inwardly flanged and having a groove upon the inner periphery thereof to register with the rib upon the neck, notches also disposed upon the inner periphery of the cap and adapted to interlock with the teeth of the locking-spring, whereby the cap is locked to the neck, the sealing-disk being clamped in place by the inwardly-flanged portion of the aforesaid cap, substantially as and for the purpose specified.



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**757,648. LINOTYPE-MACHINE. SAMUEL J. BRIDEN, Brooklyn, N. Y., assignor to the Mergenthaler Linotype Company, a Corporation of New York. Filed Sept. 12, 1903. Serial No. 173,006. (No model.)**



*Claim.*—1. In a linotype-machine, comprising a line of matrices, wedge-spacers, and a movable mold with a horizontal shoulder engaging over the ears of the matrices, and in combination with said elements, means for advancing the spacers through the matrix-line, the latter timed to relieve the spacers in all cases from pressure during the retreat of the mold, whereby wear between the mold and the matrix-ears is prevented.

2. In a linotype-machine, a mold, matrices having ears with horizontal surfaces to aline against the mold, wedge-spacers to justify the line, and spacer-operating mechanism arranged to cease its action on the spacers prior to the separation of the mold and matrices.

3. In a linotype, the combination of the following elements; a line of matrices having ears, wedge-spacers in said line, a vertically-movable elevator or support for said line, a mold having a horizontal shoulder or surface adapted to engage over the matrix-ears, means for advancing and retracting the mold, and means for advancing the wedges arranged to cease its action prior to the withdrawal of the mold.

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**757,649. MANUFACTURE OF PLASTER-OF-PARIS. WILLIAM BROTHERS, Prestwich, England. Filed July 13, 1903. Serial No. 165,376. (No specimens.)**

*Claim.*—1. The process of preparing plaster-of-paris from calcium sulfate in any form comprising the cooking or boiling of such calcium sulfate in the presence of water, and separating the crystals so formed, and drying them before cooling, substantially as described.

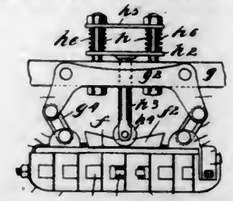
2. The process of preparing plaster-of-paris from calcium sulfate in any form, comprising cooking or boiling the sulfate in water, at a temperature between 212° and 260° Fahrenheit, removing the water from the solid material, and drying the same before cooling at a temperature not below 175° Fahrenheit, substantially as described.

3. The process of preparing plaster-of-paris from calcium sulfate in any form comprising cooking or boiling the sulfate in an aqueous solution, at a temperature between 212° and 260° Fahrenheit, removing the water from the solid material and drying the same before cooling at a temperature not below 175° Fahrenheit, substantially as described.

4. The process of preparing plaster-of-paris from calcium sulfate in any form comprising cooking or boiling the sulfate in an aqueous solution of potassium sulfate, at a temperature between 212° and 260° Fahrenheit, removing the water from the solid material and drying the same before cooling at a temperature not below 175° Fahrenheit, substantially as described.

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**757,650. MEANS FOR CLEANING THE THIRD RAILS OF ELECTRICAL RAILWAYS. WILFRID CHAUSSE, New York, N.Y. Filed Sept. 30, 1903. Serial No. 175,119. (No model.)**



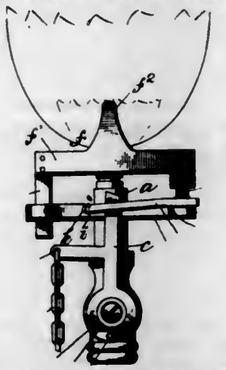
*Claim.*—1. The herein-described means for cleaning the third rail of an electrical railway, comprising a vertically-movable spring-depressed scraper adapted to bear on said rail and consisting of a rod or bar on which is mounted a plurality of plates separated by intervening spaces arranged diagonally of said bar, the opposite corners of the end plates on said bar being rounded, substantially as shown and described.

2. The herein-described means for cleaning the third rail of an electric railway comprising a vertically-movable spring-depressed scraper composed of a horizontal bar, diagonally-arranged plates mounted thereon and separated by diagonally-arranged blocks, the opposite end plates being beveled at their opposite corners, substantially as shown and described.

3. The herein-described means for cleaning the third rail of an electric railway comprising supports, links suspended from said supports, a scraper device suspended from said links and adapted to bear on the third rail, said scraper device being provided at the top with a vertically-arranged guide-plate, the top edge of which is inclined from both ends toward the center, and a vertically-movable spring-depressed rod provided at its lower end with a wheel adapted to bear on said plate, substantially as shown and described.

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**757,651. GAS-BURNER. OLIVER D. CORNELL, Hartford, Conn. Filed July 15, 1903. Serial No. 165,536. (No model.)**



*Claim.*—1. In combination with a burner, a valve, a spring for closing the valve, a valve-lever for controlling the movements of the valve, a reciprocating pin forming a positive stop for the valve-lever in one position, a thermostatic bar operatively arranged with relation to the burner, and means intermediate said thermostatic bar and pin for moving the latter and permitting the engagement of the lever and the pin-moving means.

2. In combination with a burner, a thermostatic bar operatively arranged with relation to the burner, a valve and a valve-lever for controlling the movements of the valve, a spring for normally holding the valve in a closed position, a trip-lever connected at one end to the thermostatic bar and actuated thereby and having its opposite end arranged adjacent to a stop-pin, a stop-pin for positively

holding the valve-lever in open position and arranged to release the valve-lever and throw it into direct contact with its cooperating lever upon predetermined movements of the thermostatic bar.

3. In combination with a burner, a valve for controlling the flow of fluid to the burner, a lever for actuating said valve, the latter normally held in closed position by a spring, the lever-spring, a positive stop for locking the valve-lever with the valve in open position and automatic means including a thermostatic bar for releasing the lever from the positive stop and afterward controlling its movements dependent upon the temperature of the thermostatic bar.

4. In combination with a burner, a valve for controlling the flow of fluid to the burner, a thermostatic bar for controlling the closing movements of the valve, said bar arranged adjacent to the flame of the burner and having centrally arranged thereon a projecting part for conducting heat to the bar and radiating heat therefrom.

5. In combination with a burner, a valve for controlling the flow of fluid to the burner, a valve-lever for actuating the valve, a base-piece secured to the tube and having a depressed portion at one end, a lever pivoted in said depressed portion and bearing at one side against a resilient projection on the base-piece and having its end adapted for free engagement with the valve-lever.

6. In combination with a burner, a valve controlling the flow of fluid through the burner, a lever for actuating said valve, a resilient stop for positively locking the valve-lever and valve in open position, and automatic means including an expanding thermostatic member for moving said resilient stop and releasing the valve member for engagement therewith whereby said lever will assume a position adjacent to the stop-actuating means and will be released from said position by the contractile movement of the thermostatic member.

7. In combination with a burner, having a valve for controlling the flow of fluid to the burner, a valve-lever for actuating said valve, a spring for normally holding the valve in closed position, a thermostatic bar, a spring-actuated pin arranged to form a positive stop to hold the valve-lever with the valve in open position said valve-lever resting against the periphery of the pin, a trip-lever connected at one end to the thermostatic bar and actuated thereby and having its end arranged to contact with the end of the stop-pin whereby an expansive movement of the thermostatic bar depresses the pin and releases the valve-lever to a position at the end of the pin and adjacent to the contacting portion of the trip-lever and upon a contractile movement of said bar will release said lever for a closing movement.

8. In combination with a burner having a valve for controlling the flow of fluid through the burner, a valve-lever for actuating said valve provided with a blade-like end, a spring-pressed stop, actuating means for said stop including a thermostatic bar and a lever the latter provided with a cam-surface adjacent to the stop whereby the valve-lever may be freely moved between the stop and its engaging lever in one direction and will engage the resilient stop and be released therefrom for engagement with its actuating means dependent upon the action of the thermostatic bar.

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**757,652. SAFETY ATTACHMENT FOR GAS-COCKS.** BERTRAM F. EDWARDS, San Francisco, Cal. Filed July 30, 1903. Serial No. 167,549. (No model.)



*Claim.*—1. An attachment for a gas-cock comprising a locking means and means by which it is readily attached to the gas-key, in combination with a keeper and means whereby it is readily attached to the gas-pipe said keeper having a notch to automatically receive the locking member when the latter is brought into line therewith.

2. An attachment for a gas-cock and adapted to be applied to the latter, comprising a member attachable to the key and having a spring-pressed locking device, and a keeper attachable to the gas pipe or fixture and having a notch to receive the spring-pressed locking device of the first-named member when said parts are brought into alinement.

3. An attachment for a gas-cock adapted to be applied thereto and comprising a curved plate and clamps for attaching it to the stationary gas pipe or fixture said plate having a notch; a clamp embracing the gas-key; and a latch pivotally secured to said last-named clamp and having a portion to automatically spring into engagement with said notch when the key is turned to bring the notch and latch into alinement.

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**757,653. BURNER.** JOHN D. GREEN, Toledo, Ohio, assignor of one-half to George L. Mills, Arthur R. Gordon, and W. E. Dittenhaver, Toledo, Ohio. Filed Nov. 18, 1902. Serial No. 131,682. (No model.)



*Claim.*—1. In a burner, the combination with a casing, of a perforate commingling-wall extending across the interior of the casing dividing the same into separate compartments, the wall of the casing being provided with burner-outlets that communicate with one of the compartments, and a mixer that communicates with the other compartment, whereby fuel passing through the mixer will pass through the commingling-wall to the burner-outlets.

2. In a burner, the combination with a casing having a burner-outlet, of an air-mixer communicating with the interior of the casing, and a commingling element arranged in the casing between the mixer and the burner-outlet and comprising a partition-wall extending across the casing and having passage-ways therethrough.

3. In a burner, the combination with a casing having burner-outlets, of an air-mixer communicating with the interior of the casing, a superheating-chamber arranged within the casing, and a commingling element located in the casing between the mixer and the burner-outlets and comprising a wall connected with the superheating-chamber and having passage-ways therethrough.

4. In a burner, the combination with a casing having a burner-outlet, of an air-mixer communicating with the interior of the casing, a superheating-chamber extending through the casing and spaced from the side walls thereof, and a commingling-wall connecting the chamber and the casing between the burner-outlet and air-mixer and having passage-ways therethrough.

5. In a burner, the combination with a casing having a burner-outlet, of an air-mixer communicating with the interior of the casing and located at one end thereof, a pipe extending through the casing and connected with the mixer, and a wall extending from the pipe to the casing and having passage-ways therethrough.

6. In a burner, the combination with a casing having end walls and burner-outlets, of spaced conducting-pipes extending from end to end of the casing, an elbow connecting the pipes at one end of the casing and located exteriorly thereof, and a mixer communicating with the interior of the casing and connected with one of the pipes.

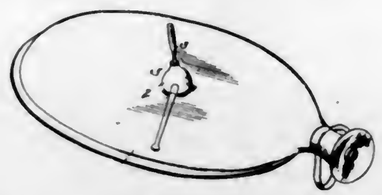
7. In a burner, the combination with a casing having end walls and burner-outlets, of spaced conducting-pipes extending from end to end of the casing, an elbow connecting the pipes at one end of the casing, and a mixer communicating with the interior of the casing and located between the pipes at the end opposite the elbow said mixer being connected with one of the pipes.



8. In a burner, the combination with a casing having end walls and a removable cap provided with burner-outlets, of spaced conducting-pipes extending from end to end of the casing, one of said pipes being located along the bottom thereof, an exteriorly-arranged elbow connecting the pipes at one end of the casing, a mixer communicating with the interior of the casing at the other end and located between the pipes, said mixer being connected with one of the pipes, and a commingling-wall extending from the inner pipe to the casing and having passage-ways therethrough.

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**757,654. SYRINGE.** HENRY M. GUILD, Erie, Pa.; Norman J. Maxwell, executor of said Guild, deceased, assignor, by mesne assignments, to Charles A. Tyrrell, New York, N. Y. Filed Aug. 12, 1903. Serial No. 169,296. (Model.)



*Claim.*—1. In combination, a head provided with an injection-tube and an opening in communication with said tube, a rotary valve mounted in the said head and extended across the aforesaid opening thereof and having an opening to register therewith in one position of the valve, matching screw-threads between the valve and head to effect a simultaneous longitudinal movement of the valve with its rotary movement, and an interlocking groove and stop between the head and valve to limit the combined rotary and longitudinal movement thereof and to effect a crowding or closing of the screw-threads of the valve and head by a cam or wedging action, substantially as described.

2. In a syringe, the combination of a conoidal-shaped head having a longitudinal valve-opening and a transverse opening extended into the head from one side and intersecting the valve-opening, the inner end portion of the transverse opening being closed, threaded and contracted, a valve having its inner end reduced and threaded to match the reduced threaded portion of the said transverse opening and provided with an opening to register with the aforesaid valve-opening, and having the enlarged portion adjacent to the threaded part provided with a circumferential groove, and a stop fitted into an opening of the head and extended into the said circumferential groove to act with a wall thereof by a cam or wedging action upon turning the valve to limit its combined rotary and longitudinal movement and effect a closing or crowding of the matching screw-threads between the valve and head, substantially as set forth.

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**757,655. GUARD FOR RAZORS.** JOHN GUINAN, Brooklyn, N. Y. Filed Sept. 15, 1903. Serial No. 173,313. (No model.)



*Claim.*—1. In combination, a razor, a guard adapted to lie along either side of the blade and spaced therefrom a determinate distance, a clip fitted to the shank, a post journaled to the clip, means pivotally connecting the rear end of the guard to the post to admit of swinging the guard at its front end toward and from the blade to clear the cutting edge thereof preliminary to swinging the guard from one side of the blade to the other by turning of the post in the clip, and means for securing the outer end of the guard to the front end of the razor when the said guard is moved to occupy a position at one side or the other of the blade.

2. In a guard for razors, the combination of a clip provided with a bearing-sleeve, a post journaled in said sleeve and having an outer extension at one end, a guard-bar, a pin pivotally connecting the guard-bar to the opposite end of said post, an end of said pin projecting to engage with the bearing-sleeve and in conjunction with the said outer extension of the post to prevent longitudinal play thereof, and means for securing the outer end of the guard-bar to the razor, substantially as specified.

3. In a guard for razors, the combination of a clip to be secured to the shank of the razor and having a forward projection to engage with the heel of the razor-blade, a post journaled to said clip, a guard-bar pivotally connected to said post, and means for securing the outer end of the guard-bar to the toe portion of the razor-blade, substantially as set forth.

4. In a guard for razors, the combination of the clip to be fitted to the shank of the razor and having inner points or extensions to extend over the back of said shank, a post journaled to the clip, a guard-bar pivoted to said post, and means for securing the guard-bar to the onter end of the razor-blade, substantially as described.

5. In a guard for razors, the combination of a clip to be fitted to the shank thereof, a guard-bar pivotally connected with said clip, and a fastener of staple form to supplement the action of the clip in securing the latter to the razor, substantially as set forth.

6. In a guard for razors, the combination of a clip to be fitted to the shank thereof, a guard-bar pivotally connected with said clip, a fastener of staple form having its legs of unequal length and adapted to embrace opposite sides of the clip, the longer leg being round, and keepers at the sides of the clip to receive the legs of the staple-fastener, substantially as set forth.

7. In combination, a razor, a guard, means for connecting the inner end of the guard to the rear portion of the razor, a clip pivoted to the outer end of the guard and adapted to secure said end to the front end of the blade, and lugs projected from opposite sides of the guard across the path of the legs of the clip to prevent outward displacement thereof.

8. In a razor-guard, the combination of the guard-bar having lugs at opposite sides, and a clip embracing opposite sides of the guard-bar and pivoted thereto and having notched portions to receive the said lugs, substantially as set forth.

9. In combination, a razor, a guard, means pivotally connected with the inner end of the guard for securance thereof to the rear portion of the blade, a clip pivoted to the outer end of the guard, and tongues extended rearward from the clip to embrace the back and opposite sides of the blade adjacent to the back, substantially as specified.

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**757,656. RAZOR.** JOHN GUINAN, Woodhaven, N. Y. Filed Oct. 16, 1903. Serial No. 177,320. (No model.)



*Claim.*—1. In combination with a razor, a safety attachment comprising a guard, a clamp at the inner end of the guard, a lever for tightening the clamp and provided with ears to embrace opposite sides of the shank of the razor, and means for securing the outer end of the guard to the razor-blade, substantially as set forth.

2. In combination with a razor, a safety attachment comprising a guard, a clamp at the inner end of the guard, a lever for tightening the clamp and provided with ears to embrace opposite sides of the shank of the razor, an interlocking projection between said lever and shank to prevent relative longitudinal displacement of the guard, and means for securing the guard at its outer end to the blade of the razor, substantially as specified.

3. In combination with a razor having a portion of its shank of polygonal form in cross-section, a guard, a clamp at the inner end of the guard composed of jaws oppositely deflected between their ends to embrace upper, lower and opposite side portions of said polygonal portion of the shank, and means for securing the outer end of the guard to the blade, substantially as set forth.

4. In combination, a razor having a portion of its shank reduced and of polygonal form in cross-section, a safety attachment comprising a clamp composed of jaws oppositely deflected between their ends to embrace upper, lower and opposite side portions of the polygonal portion of the shank and conforming to the faces thereof, and having the ends of the jaws abutting against the shoulders formed at the ends of said polygonal portion, and means for securing the outer end of the guard to the blade of the razor, substantially as set forth.

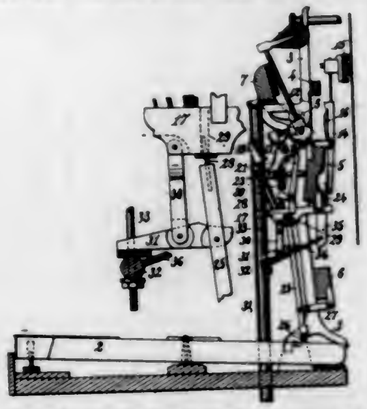
5. A safety attachment for razors comprising a guard consisting of spaced members connected at intervals and having portions projected from opposite sides to properly space the guard from either side of the blade, substantially as set forth.

6. In a safety attachment for razors, a guard comprising spaced longitudinal members and intermediate connecting portions, the latter being deflected to form projections at opposite sides of the guard to properly space the same from either side of the blade, substantially as set forth.

7. In a safety attachment for razors, a guard comprising a strip

having a series of elongated openings formed therein to provide spaced parallel members and intermediate connecting portions, the latter being alternately deflected from the plane of the strip to form spacing projections at opposite sides of the guard, substantially as set forth.

757,657. **UPRIGHT-PIANO ACTION.** FRANZ HAMMERLE, Melrose, Mass. Filed Sept. 10, 1903. Serial No. 172,883. (No model.)



*Claim.*—1. An upright piano, having hammers, jack-levers, and devices operated by the oscillations of said jack-levers to operate the hammers to produce notes, abstracts interposed between the jack-levers and the keys of the piano, said abstracts connected to the jack-levers by a telescopic connection, adjusting-levers pivotally attached at one end to the abstracts, a rail moved bodily up and down by the operation of a pedal and supporting the opposite ends of the adjusting-levers, and auxiliary abstracts pivotally connecting the jack-levers to the adjusting-levers forming extensions of the abstracts when said pedal is pressed downward.

2. An upright piano, having keys, hammers, jack-levers, and devices operated by the oscillations of said jack-levers to operate the hammers to produce a note upon the strings of the piano, abstracts interposed between the jack-lever and the keys, pins on the abstracts entering recesses in the under surface of the jack-levers forming telescopic connections between the abstracts and the jack-levers, adjusting-levers pivotally attached at one end to the abstracts, a rail moved bodily up and down by the operation of a pedal and supporting the opposite ends of the adjusting-levers, and auxiliary abstracts pivotally connecting the jack-levers to the adjusting-levers forming extensions of the abstracts when said pedal is depressed.

3. In an upright-piano action, a movable hammer-rail to vary the movements of the hammers, a lost-motion attachment consisting of a rail connected to and moved with the hammer-rail when moved to vary the movements of the hammers, adjusting-levers resting upon the said rail which is connected to the hammer-rail, said adjusting-levers pivotally connected to the abstracts by which the keys are connected to the hammer-operating devices, auxiliary abstracts pivotally connected to the adjusting-levers and to the jack-levers of the action, and a telescopic connection between the abstracts and the jack-levers allowing of movements of the jack-levers independent of the abstracts.

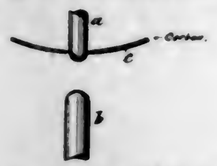
4. In an upright-piano action, abstracts introduced between the keys and the mechanisms to operate the hammers, combined with adjusting-levers pivotally attached to the abstracts, auxiliary abstracts pivotally attached to the adjusting-levers and to the hammer-operating mechanisms, and a rail supporting the free ends of the adjusting-levers and operated by the soft pedal, said auxiliary abstracts forming substantially extensions of the abstracts when the soft pedal is depressed.

757,658. **PROCESS OF MAKING GLUE AND GELATIN FROM BONES.** HERMANN HILBERT, Houfeld, Germany. Filed Oct. 14, 1902. Serial No. 127,360. (No specimens.)

*Claim.*—1. The hereinbefore-described process for the production or manufacture of gelatin and glue from bones, which consists in grinding the bones to a coarse flour, subjecting the ground material suspended in water to the simultaneous action of hydrochloric acid and sulfurous-acid gas, washing the material thus treated, and finally heating and stirring the ground and treated material in the presence of water to dissolve out the gelatin or glue, substantially as set forth.

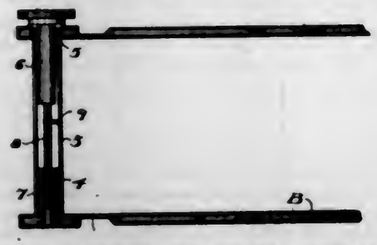
2. The process of producing glue or gelatin from bones, which consists in treating bone-flour while suspended in water, to the simultaneous action of sulfurous acid and hydrochloric acid while agitating the mass, substantially as described.

757,659. **ELECTRIC-ARC LAMP.** ROBERT HOFFELT, Berlin, Germany. Filed May 13, 1902. Serial No. 107,104. (No model.)




*Claim.*—In an arc-lamp with electrodes partly composed of metal, and in which the negative electrode is above the positive one, and in which the lower or positive electrode contains at least five per cent. and the upper or negative one less than five per cent. of metal for the purpose of lessening the formation of slag on the negative electrode and preventing the dropping of slag on the positive one: an annular refractory reflector closely surrounding the negative electrode, immediately at the arc; such reflector being essentially composed of carbon, carborundum or of magnesia, lime or other refractory material, for the purpose of attaining a high degree of durability of such electrode.

757,660. **LOOSE-LEAF BINDER.** JOHN W. HUMBE, San Francisco, Cal., assignor to the Hicks-Judd Company, San Francisco, Cal., a Corporation of California. Filed Sept. 25, 1903. Serial No. 174,584. (No model.)




*Claim.*—1. A temporary binder comprising a suitable base with interiorly-threaded projecting tubes the threads of which extend for a portion only of the length of the tubes, binding-screws having one portion slidably fitting the tubes and having another portion forming a threaded head to engage the threaded portion of the tube, and means intermediate of the aforesaid portions of the screws for preventing the withdrawal of the screws from the tubes.

2. A temporary binder having one cover provided with rigid projecting tubes, said tubes having a portion of their interior remote from their outer ends threaded, binding-screws each having one portion of a diameter substantially equal to the inner diameter of the tube and having another portion forming a threaded head, the portion between the head and first-named portion being of reduced diameter and said head engaging said threaded portion of the tube, and means engaging the shoulder formed by the head for preventing the withdrawal of said screws from the tubes.

3. A temporary binder having one cover provided with rigid interiorly-threaded projecting tubes and the other cover perforated coincidently with said tubes, screws fitting said perforations and tubes and provided with reduced portions intermediate of their ends, and stops in the tubes engaging in said reduced portions to prevent the withdrawal of the screws from the tubes.

757,661. **LADY'S TOILET-TABLE AND TRAVELING-TRUNK COMBINED.** ANNA L. JACOB, Lucknow, India. Filed June 21, 1902. Serial No. 112,669. (No model.)

*Claim.*—1. A traveling-trunk having its front recessed from a short distance below the top, a front hinged to the trunk-body and extending to the top thereof, a tray fitting the recess and secured on the front, a flap upon the tray for covering the same, trays and shelves fitted in the body of the trunk, and a hinged lid carrying a mirror in the central portion thereof and provided with receptacles on either side thereof.



2. A traveling-trunk E having its front recessed a short distance below the top, a front F hinged to the trunk-body E and extending to the top and having the strip I, a tray N fitting the recess and secured on the said front, a flap J for covering the tray, a sliding shelf M within the body E, a tray G having the compartments *l* and *k* arranged in the top of the body, and a lid A carrying the mirror B and provided with the receptacles C and D.

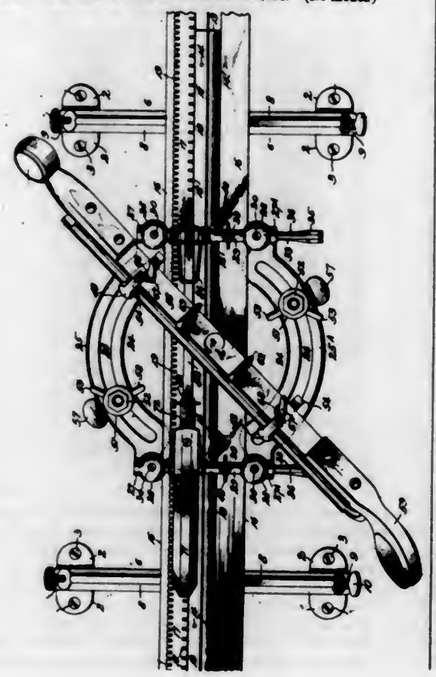


757,662. **BELT-FASTENER.** JOHN P. JUNKIN and ARCH ALEXANDER, Phebe, Miss. Filed May 29, 1903. Serial No. 159,234. (No model.)



*Claim.*—A belt-fastener comprising a plate provided with a series of slots or openings at each end to receive the end portions of a piece of belt material, and the oppositely-disposed fastening devices mounted on the central portion of the plate, and having approximately L-shaped engaging heads forming inner recesses and adapted to engage the ends of a belt, substantially as described.

757,663. **SAW-FILING MACHINE.** NICOLAUS KALL, Denver, Colo. Filed July 28, 1903. Serial No. 167,301. (No model.)



*Claim.*—1. In a saw-filing machine, the combination with the standard having clamping-arms secured thereto, of horizontal clamping-bars having tracks upon their sides supported between the said arms, a carriage having a step-by-step movement on the tracks; sockets secured to the carriage so as to be horizontally and obliquely adjusted; guides vertically adjustable in said sockets and a file-holder supported in the guides, substantially as shown.

2. In a saw-filing machine, the combination with a pair of saw-clamps having tracks upon their sides, of a carriage having a step-by-step movement on said tracks, said carriage comprising a pair of substantially semicircular plates which are connected so as to move in unison, and each plate having a concentric semicircular slot; horizontally and obliquely adjustable sockets secured within the slots; vertically-adjustable obliquely-disposed guides in said sockets; a file-holder supported in said guides, and means for supporting and clamping the saw-guides, substantially as shown.

3. In a saw-filing machine, the combination with a pair of saw-clamps having tracks upon their sides, of a carriage supported upon said tracks, said carriage comprising a pair of substantially semicircular plates, each having a post at its extremities and a concentric semicircular slot, the posts on one plate having notches which engage the adjacent track while those on the other plate have shoulders which rest upon the track; rods which pass through the upper ends of the posts so as to unite the plates and means for securing them therein; horizontally and vertically adjustable guides secured within the semicircular slots; a file-holder supported in said guides, a tension device for maintaining frictional contact between the carriage and tracks whereby said carriage is adjustably clamped to said track; means carried by the carriage and tracks for imparting a step-by-step movement to the carriage and means for supporting and clamping the saw-clamps, substantially as shown.

4. In a saw-filing machine, the combination with a saw-holder having tracks on its sides, of a carriage mounted on said tracks, comprising two substantially semicircular plates, each having a concentric semicircular slot; posts at the extremities of one plate having notches which engage one of the tracks; similar posts on the other plate having shoulders which rest upon the opposite track and a rod for connecting the posts at each end of the plate and above the tracks; arms pivoted to the shouldered posts, having inclined projections which lie beneath the edge of the track, threaded rods pivotally secured to their free ends which pass up through holes in the rods, connecting the plates, and are provided with thumb-screws and a spring interposed between the thumb-screw and connecting-rod, whereby said shoulder and inclined projections are caused to clamp said track, adjustable guides carried by the carriage, and means for imparting a step-by-step movement to the said carriage, substantially as shown.

5. In a saw-filing machine, the combination with the saw-holder having tracks thereon, and a carriage having semicircular slots, one on each side of the track, of sockets having reduced threaded ends flattened on diametrically opposite sides and shoulders formed by the reduced ends, the said reduced ends extending up through the slots in the carriage; wedged-shape washers interposed between the shoulders and the under side of the carriage; similar washers placed upon the extended reduced end so as to rest upon the carriage; an ordinary washer placed upon the last-mentioned wedge-shaped washer and a nut screwed upon the end of the socket and down upon the top washer; a thumb-screw in the bottom of the socket and an engaging set-screw at right angles thereto; guides having depending stems which fit into the sockets and rest upon the thumb-screws, and thumb-screws extending through the sides of the sockets so as to engage the stem of the guides, substantially as shown.

6. In a saw-filing machine, the combination with a saw-holder having tracks thereon, of a notched spacer adjustably secured to one of the tracks, yokes at each end of the tracks, screws which pass through slots in the track and into one arm of the yoke and thumb-screws which pass through threaded holes in the bend of the yoke and engage the end of the track; one arm of the yoke lying beneath the track, while the other arm rests upon the top of the tracks, substantially as shown.

7. In a saw-filing machine, the combination with a saw-holder having tracks thereon, a notched spacer-bar adjustably secured to the tracks and a carriage mounted upon the tracks having variably-adjustable guides secured thereto, which support a file-holder; of mechanism for moving the said carriage step by step, comprising a hand-lever which is pivotally mounted at one end of the carriage and having a depending arm, the end of which is adjacent to the spacer; a spring-actuated dog pivoted at its rear end to said arm having a tooth at its forward end, which engages the notches in the

spacer and an inclined shoulder on its upper edge, a guide for the forward end of said dog, a spring-actuated arm pivoted at the opposite end of the carriage so as to lie beneath the file-holder, the forward end of which is adjustably connected to the hand-lever and is provided with a stop-pin, which engages the notches in the spacer, the said arm being designed to be lifted by the hand-lever so as to simultaneously disengage its stop-pin from the notch in the spacer and lift the file-holder vertically, substantially as shown.

8. In a saw-filing machine, the combination with a saw-holder having tracks thereon, of a carriage mounted on said tracks comprising two connected plates which lie one on each side of the tracks and are each provided with a horizontally-disposed semicircular slot, sockets having reduced ends which are extended up through said semicircular slots; wedge-shape washers on the sockets above and below the slots; adjusting-screws in the bottoms of the sockets and inclined guides having stems which fit into the sockets and rest upon the adjusting-screws; the said guides by reason of the sockets, the slots, the wedge-shape washers and the adjustiug-screws, being capable of adjustment horizontally, vertically and at an incline to a vertical line, substantially as shown.

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**757,664. FOUNTAIN-PEN. FRANK M. KEORNER, Philadelphia, Pa. Filed July 28, 1903. Serial No. 167,302. (No model.)**



*Claim.*—1. A fountain-pen feed embodying two ducts extending lengthwise thereof and arranged at opposite sides of the body of the feed and communicating at a point intermediate the ends of the feed.

2. A fountain-pen feed embodying two longitudinal ducts which overlap and communicate at a point intermediate the ends of the feed, and an air-obstructing surface at the inner end of one of said ducts.

3. A fountain-pen feed embodying two longitudinal ducts which overlap and communicate at a point intermediate the ends of the feed, and an air-chamber at the inner end of one duct.

4. A fountain-pen feed embodying two longitudinal ducts which overlap and communicate at a point intermediate the ends of the feed, and an air-obstructing surface at the inner end of each duct.

5. A fountain-pen feed comprising a cylindrical body provided at one side with a groove extending from a point near one end toward the opposite end and having a depth greater than one-half the diameter of the body, a second duct extending from a point near the opposite end of the body lengthwise thereof and arranged at the opposite side, said ducts overlapping and communicating at a point intermediate the ends of the feed, and an air-obstructing surface at the inner end of one of said ducts.

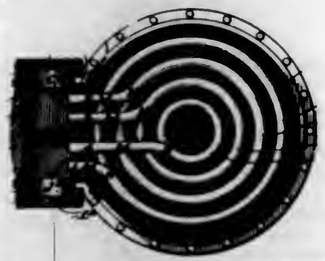
6. A fountain-pen feed comprising a cylindrical body extending beyond the inner end of the outer pen-section and provided with a duct extending from near the outer end lengthwise thereof toward the opposite end, a second duct extending from near the inner end outward toward the opposite end and arranged at the opposite side of the body, said ducts having a depth greater than one-half the thickness of the feed and overlapping and communicating at a point intermediate the ends of the feed, and an air-obstructing surface at the inner end of one of said ducts.

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**757,665. FEED-WATER HEATER. JOSEPH E. LEWIS, Hartford, Conn., assignor to Whitlock Coil Pipe Company, Hartford, Conn., a Corporation. Filed Dec. 29, 1902. Serial No. 136,958. (No model.)**

*Claim.*—1. In a feed-water heater, the combination with a heating-chamber, of a series of pipes inclosed in said chamber, a pair of headers connecting the ends of said pipes, each of said headers having a partition by which it is divided into two separate compartments, with said pipes connecting a compartment in one end of one of said headers with the compartment in the opposite end of the other header, substantially as described.

2. In a feed-water heater, the combination with a shell or casing inclosing a heating-chamber and having openings for the projecting ends of pipes, a series of pipes inclosed in said chamber and having their ends projecting through said openings, headers inclosing chambers communicating with said pipes, a removable cap on said headers opposite the ends of said pipes, and openings in the ends of said headers, and screw-threaded collars attached to the ends of said headers for supply and discharge pipes, substantially as described.

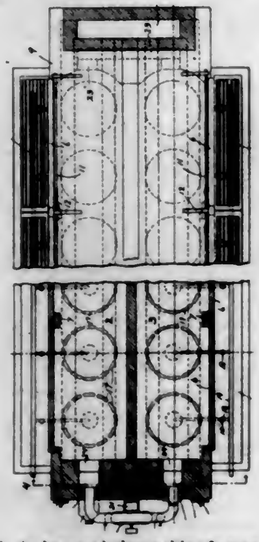


3. The combination with a shell or casing, inclosing a heating-chamber and having openings in its sides, of a series of pipes inclosed in the heating-chamber and having their ends projecting through said openings, headers outside said casing inclosing chambers and provided with flanged necks between said chambers and said casing and attached to said casing around said openings, removable caps on one side of said headers and opposite said pipes, and screw-threaded collars attached to the opposite ends of said headers to receive supply and discharge pipes, substantially as described.

4. The combination with a shell or casing inclosing a heating-chamber, having openings in its sides, of a series of coiled pipes having their ends projecting through said openings, headers outside said casing inclosing chambers communicating with said pipes, a removable cap on the side of each header and opposite said pipes, and an opening in the end of each header to receive discharge and supply pipes.

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**757,666. GLASS-MELTING FURNACE. MICHAEL M. MAHER, Kittanning, Pa., assignor of two-thirds to Robert Barner and J. C Woodward, of Kittanning, Pa. Filed Sept. 22, 1902. Serial No. 124,327 (No model.)**



*Claim.*—1. An improved glass-melting furnace comprising two communicating chambers, valved stack and valved blower connections for each chamber whereby draft may be maintained alternately in reverse directions through the chambers, and heating means independent of the stack and blower connections.

2. An improved glass-melting furnace comprising two chambers in communication at one point only, valved stack and valved blower connections for the non-communicating portion of each chamber whereby draft may be maintained alternately in reverse direction



through the chambers, and heating means independent of the stack and blower connections.

3. An improved glass-melting furnace comprising two chambers arranged side by side and in communication at one end only, valved stack and valved blower connections for the non-communicating end of each chamber whereby draft may be maintained alternately in reverse directions through the chambers, and heating means independent of the stack and blower connections.

4. An improved glass-melting furnace comprising two chambers communicating at one point only, a single stack and a single blower each having valved connection with the non-communicating portion of each chamber whereby draft may be maintained alternately in reverse directions through the chambers, and heating means independent of the stack and blower connections.

5. In a glass-melting furnace, a chamber, valved stack connections for opposite portions of the chamber whereby draft may be maintained therethrough alternately in reverse directions, heating means at the bottom of the chamber, and pots adapted to be removably positioned in the chamber.

6. In a glass-melting furnace, two chambers in communication at one end only, a valved stack connection for the opposite end of each chamber whereby draft may be maintained through the chambers alternately in reverse directions, heating means at the bottom of each chamber, and pots adapted to be removably positioned in the chambers.

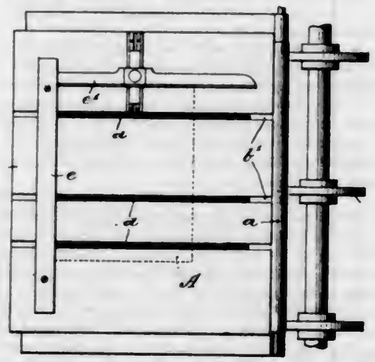
7. An improved glass-melting furnace divided by a central wall into two communicating chambers each provided with an outlet, means for creating a draft from either chamber into the other, pots removably positioned in the chambers, and heating means.

8. An improved glass-melting furnace comprising a chamber, a stack, flues beneath the chamber communicating with different portions thereof and with the stack, means for causing the chamber to discharge into the flues through either of said points of communication, and heating means.

9. An improved glass-melting furnace comprising two chambers in communication at one end, flues beneath the chamber-floors having valved communication therewith, a stack with which said flues communicate, means for creating a draft in either chamber which flows into and through the other chamber and from thence through the floor-flues into the stack, and heating means.

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**757,667. MECHANISM FOR FEEDING THIN FLAT FLEXIBLE BLANKS. LEWIS A. MAYALL, Philadelphia, Pa. Filed Aug. 26, 1903. Serial No. 170,785. (No model.)**



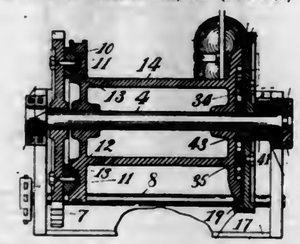

*Claim.*—1. A conveying mechanism for thin, flat flexible blanks, comprising two feed-rolls positively driven at predetermined speed and a table arranged in front of said feed-rolls, in combination with an endless chain arranged to travel in a horizontal path across the table toward the feed-rolls in a groove formed in said table, two sprockets arranged below the table and around which the chain travels with accelerated speed in a circular path, a conveyer carried by said chain, and means whereby said conveyer may tilt backward and downward contrary to the direction in which the chain is traveling when said chain leaves its horizontal path to thereby decrease in pushing force sufficient to neutralize the acceleration in speed of the chain.

2. A conveying mechanism, comprising an endless chain, two sprockets around which the chain travels in a circular path, and a table having a channel-way, wherein the chain travels in a horizontal path, in combination with a conveyer, comprising a front pushing-face and two side wings projecting rearwardly from said face, said side wings being slotted, and said conveyer being pivotally connected adjacent to its front face with one pintle of one link of said chain and slottedly connected at its side wings with the other pintle of said link, substantially as and for the purposes described.

3. In an endless conveying mechanism arranged to travel partly in a horizontal and partly in a circular path at varying speeds, means, whereby when the conveyer enters into its circular path under accelerated speed its conveying-surface recedes to neutralize said accelerated speed in pushing the article to be conveyed.

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**757,668. WINDLASS. GEORGE W. MENEFEE, Berkeley, Cal. Filed May 27, 1903. Serial No. 158,984. (No model.)**




*Claim.*—1. The combination of the friction-wheel, the winding-drum arranged to be brought into engagement with said friction-wheel by an endwise movement, the brake-wheel having a connection with the winding-drum permitting rotary movement of the latter in one direction while arresting it in the other, the brake-band around said brake-wheel, a lever for operating said brake-band, a weight normally holding said lever in its operative position, and means for raising the lever against said weight to release the brake-band, substantially as described.

2. The combination of the friction or driving wheel, the winding-drum arranged to be brought into engagement with said driving-wheel by an endwise movement, and the brake-wheel, mounted concentrically with the winding-drum, said brake-wheel and drum having, the one a series of notches, and the other a dog engaging the notches in succession, permitting the movement of the winding-drum in one direction while preventing its movement in the opposite direction, a brake-band around the brake-wheel, means for normally holding said brake-band tight therearound, and means for loosening the brake-band when desired, substantially as described.

3. The combination of the friction or driving wheel, the winding-drum adapted to be engaged by said driving-wheel, the brake-wheel at the end of the winding-drum opposite to the driving-wheel, and means for operatively connecting said winding-drum and brake-wheel comprising a circular series of notches on one of said elements and a series of spring-actuated dogs on the other element, said dogs being unsymmetrically arranged with reference to said notches so that only one of them can be in engagement with a notch at the same time, substantially as described.

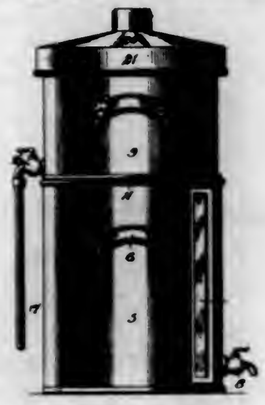
4. The combination of the friction-wheel, the winding-drum, the brake-wheel having an operative connection with the winding-drum to restrain its rearward movement and the ring secured upon the side of the brake-wheel and overhanging the periphery of the end of the winding-drum, substantially as described.

5. The combination of the winding-drum, the brake-wheel having a connection with the winding-drum permitting rotary movement of the latter in one direction while arresting it in the other, the brake-band around said brake-wheel, a lever for operating said brake-band, a weight normally holding said lever in its operative position, and means for raising the lever against said weight to release the brake-band, substantially as described.

6. The combination of the winding-drum, the brake-wheel at the end of the winding-drum, and means for operatively connecting said winding-drum and brake-wheel comprising a circular series of notches on one of said elements and a series of spring-actuated dogs on the other element, said dogs being unsymmetrically arranged with reference to said notches so that only one of them can be in engagement with a notch at the same time, substantially as described.

7. The combination of the winding-drum, the brake-wheel having an operative connection with the winding-drum to restrain its rearward movement, and the ring secured upon the side of the brake-wheel and overhanging the periphery of the end of the winding-drum, substantially as described.

**757,669. CREAM-SEPARATOR.** CHARLES T. MCCARROLL, Ottumwa, Iowa. Filed Aug. 11, 1903. Serial No. 169,137. (No model.)



*Claim.*—1. In a cream-separator, the combination with a milk-receiving vessel, of a reservoir constructed to be placed thereon and supported thereby, a water-conduit carried by and in communication with the reservoir, said conduit depending below the bottom of the reservoir and into the milk-receiving vessel, and a milk-tube carried by the reservoir, extending through the same and discharging into the vessel.

2. In a cream-separator, the combination with a milk-receiving vessel, of a water-reservoir constructed to be placed thereon, spaced depending water-tubes carried by the reservoir, and a milk-tube extending vertically through the reservoir and the bottom thereof, said tube being disposed between the water-conduits.

3. In a cream-separator, the combination with a milk-receiving vessel, of a water-reservoir having a bottom, a partition located in the reservoir and extending from the bottom, dividing the interior into separate compartments, a conduit connecting the compartments and located in the milk-receiving vessel, and a water-discharge in communication with one of the compartments.

4. In a cream-separator, the combination with a milk-receiving vessel, of a water-reservoir having a bottom, an inclined partition extending from the bottom to one side thereof, forming an inclosed water-receiving compartment, a conduit connecting the main portion of the reservoir and the water-receiving compartment and depending in the milk-receiving vessel, and a water-discharge in connection with the water-receiving compartment.

5. In a cream-separator, the combination with a milk-receiving vessel, of a water-reservoir having a bottom that fits snugly within the top of the receiving vessel, an inclined partition extending from the bottom of the receiver to one side thereof and forming an inclosed water-receiving compartment, spaced depending water-tubes connecting the reservoir and receiving-compartment, said tubes depending into the milk-receiving vessel, a valved discharge leading from the water-receiving conduit, and a milk-tube extending through the water-conduit and bottom thereof, said tube discharging into the milk-receiving vessel.

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**757,670. ELECTRICALLY-HEATED SOLDERING-IRON.** ALFRED C. MCCLOSKEY, Philadelphia, Pa. Filed May 6, 1903. Serial No. 156,320. (No model.)

*Claim.*—1. The combination of an electrically heated heating iron, a soldering head provided with a hollowed out lower end, a partition of metal separating the space formed in the lower end of the soldering iron from the lower end of the heating iron, and means for connecting the heating iron and the soldering iron together.

2. In an electrically heated soldering apparatus, in combination, a heating iron, a soldering iron, a frame located exteriorly of said soldering iron, in engagement therewith, and adapted to move longitudinally thereof, and means for maintaining the frame in projected position relative to the said soldering iron.

3. In an electrically heated soldering apparatus, in combination, a heating iron, a soldering iron having slots formed upon opposite sides thereof, a U-shaped frame secured to the soldering apparatus and adapted to move longitudinally thereof, the said frame being guided by said slots.

4. In a soldering apparatus, in combination, an electrically heated heating iron, a cylindrical soldering head connected thereto, and provided with a hollowed out lower end, a partition of metal separating the space formed in the lower end of the soldering iron from the lower end of the heating-iron, vertical flanges formed upon the upper end of the soldering iron and adapted to surround the lower end of the heating iron, substantially as described.



5. In an electrically heated soldering apparatus, in combination, a heating iron, a cylindrical soldering iron formed with a hollowed out lower end and having slots formed upon opposite sides of the said soldering iron, a U-shaped frame secured to the soldering apparatus and adapted to move longitudinally thereof, the said frame being guided in part by the said slots, substantially as described.

6. In an electrically heated soldering apparatus, in combination, a heating iron, a soldering iron connected to the said heating iron, a movable ring surrounding the heating iron, a U-shaped frame having its respective legs connected to the said ring at opposite sides thereof, and extending longitudinally of the said apparatus, means for guiding the movement of the U-shaped frame, and means for holding the said frame in projected normal position, substantially as described.

7. In an electrically heated soldering apparatus, in combination, a heating iron, a soldering iron provided with a flange which surrounds an end portion of the heating iron, a packing device located at the edge of the said flange, consisting of a flat ring resting upon said flange, and having a flange located at its inner edge and arranged at right angles to the plane thereof and extending between the upper edge of the first named flange and the body of the heating iron, and a suitable packing material located below the flange upon the ring and between the body of the flange upon the soldering iron and the heating iron, substantially as described.

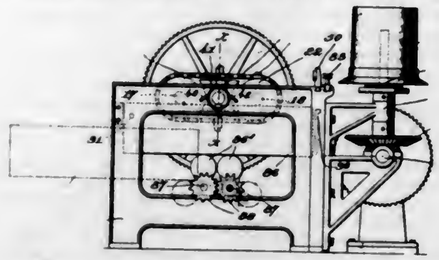
8. In an electrically heated soldering apparatus, in combination, a heating iron, a soldering cylinder having screw threaded connection with the lower end of the said iron, the said cylinder being provided with a hollowed out lower end, a partition of metal separating the space in the lower end of the cylinder from the lower end of the heating iron, flanges formed upon the upper end of the soldering cylinder and adapted to surround the lower end of the heating iron, a movable ring surrounding the heating iron, a U-shaped frame having the respective legs of the U connected at opposite sides of the said ring, and means for holding the said frame in projected position, substantially as described.

9. In an electrically heated soldering apparatus, in combination, a heating iron, a soldering iron connected to the said heating iron, a movable ring surrounding the heating iron, a U-shaped frame having its respective legs connected to the said ring at opposite sides thereof and extending longitudinally of the said apparatus, means for guiding the movement of the U-shaped frame, wire coil springs located at opposite sides of the said apparatus and adapted to hold the said frame in projected position, substantially as described.



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**757,671. WIRE-DRAWING MACHINE.** DANIEL J. MCMAHON, Taunton, Mass. Filed Mar. 4, 1903. Serial No. 146,045. (No model.)



*Claim.*—1. In a wire-drawing machine, a frame mounted to turn about its axis and having a plurality of faces in different planes, a plurality of drawing-drums revolubly mounted in said frame, and drum-rotating mechanism, said frame having means to support a die on each of its faces.

2. In a wire-drawing machine, a frame mounted to turn about its axis and having a plurality of faces in different planes, a plurality of drawing-drums revolubly mounted in said frame, drum-rotating mechanism, and a plurality of series of dies carried by the frame, a series of dies being situated on each face thereof.

3. In a wire-drawing machine, a frame comprising separable parts, a plurality of drawing-drums revolubly mounted in one part of said frame, a stringing-up device carried by the other part of said frame, drum-rotating mechanism, and dies carried by said frame, the line of separation between the parts of the frame being so situated that when the parts are separated the ends of the drums are exposed.

4. In a wire-drawing machine, a two-part revoluble frame, a drawing-drum mounted in one part of said frame, the other part of the frame having bearings for the end of the drum which bearings are withdrawn from the drum when the frame is separated so as to leave the end of the drum exposed, a stringing-up device, and dies carried by said frame on each side of said drum.

5. In a wire-drawing machine, a two-part revoluble frame, dies carried thereby, a drawing-drum mounted in one part of said frame, and a stringing-up device carried by the other part of said frame, the line of separation between the two parts of the frame being substantially at the end of the drawing-drum whereby in stringing up the machine the wire may be wound about said drum a plurality of times between successive dies.

6. In a wire-drawing machine, a revoluble frame comprising two separable parts, a plurality of drawing-drums, and drum-rotating mechanism carried by one part of said frame, and a stringing-up device carried by the other part of said frame, the plane of separation between the two parts of the frame being substantially in the plane of the end of the drums.

7. In a wire-drawing machine, a revoluble frame comprising two separable parts, a plurality of drawing-drums, drum-rotating mechanism, and a plurality of series of dies carried by one part of said frame, and a stringing-up device carried by the other part of said frame, the plane of separation between the two parts of the frame being substantially at the ends of the drums.

8. In a wire-drawing machine, a revoluble frame comprising two separable parts, a plurality of drawing-drums, and drum-rotating mechanism, carried by one part of said frame, and a stringing-up device carried by the other part of the frame and comprising a grip mechanism, and means to carry the latter about all of the drums.

9. In a wire-drawing machine, a plurality of drawing-drums, die-carrying means having dies supported thereby, a grip mechanism, and means to move said grip mechanism about all of the drums, whereby the end of the wire to be drawn may be threaded through one die and then caused by said grip mechanism to encircle the drums.

10. In a wire-drawing drum, a frame comprising two separable sections, a plurality of drawing-drums carried by said frame, dies also supported by the frame, a grip mechanism, and means to move the grip mechanism about the drums, the line of separation between the two parts of the frame being substantially at one end of the drums whereby the loop of wire which is carried about both of the drums by the grip mechanism may be slipped off from the end of one of the drums when the frame is separated.

11. In a wire-drawing machine, a frame comprising separable parts, a plurality of drawing-drums carried by one section of said frame, dies also carried by the frame, a sprocket-chain passing around the drums and carried by the other section of the frame, a grip mechanism carried by said chain, means to connect the chain to one of the drums whereby the rotation of said drum will carry the grip mechanism about said drums.

12. In a wire-drawing machine, a driving-shaft having a driving-gear thereon, a frame movable about said shaft as an axis, a drawing-drum carried by said frame and situated eccentric to the driving-shaft, gears connecting said driving-gear and driving-drum, and dies carried by the frame.

13. In a wire-drawing machine, a driving-shaft having a driving-gear thereon, a two-part frame revoluble about said shaft, a drawing-drum carried by one part of said frame and situated eccentric to the driving-shaft, gears connecting said driving-gear to the drawing-drums, dies carried by said first part of the frame, and a stringing-up device carried by the other part of the frame.

14. A die-holder having vertical recessed fingers, and a die adapted to be received loosely in the recess in said fingers and held against displacement in a vertical direction by the walls of the recess.

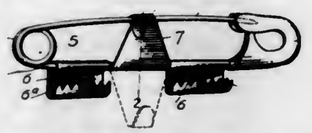
15. In a wire-drawing machine, a frame having a dovetail groove, a series of individual die-holders slidably sustained in said groove and each having a base shaped to fit the groove, and vertical fingers rigidly secured together but swiveled to said base portion.

16. In a wire-drawing machine, a frame having a dovetail groove, a series of individual die-holders slidably sustained in said groove, and each having a base shaped to fit the groove, and vertical fingers rigidly secured together but swiveled to said base portion, each finger having an open recess to receive a die which is held against vertical movement by the walls of said recess.

17. In a wire-drawing machine, a die, means to draw the wire therethrough, a block, block-rotating mechanism, and a pawl-and-ratchet connection between the block and its rotating mechanism.

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**757,672. SKIRT-SUPPORTER.** ANNIE M. OTT, Denver, Colo. Filed Nov. 25, 1903. Serial No. 182,695. (No model.)



*Claim.*—1. In a device of the class described, the combination with a safety-pin provided with a plurality of downwardly-extending skirt-engaging members, of a hook, movably secured to the shank of said pin and adapted to engage the middle portion of the pin-arm when the device is in place, substantially as described.

2. In a device of the class named, the combination with a safety-pin having two pronged hooks depending from its shank, of a third hook hinged to the shank of said pin in between the first-mentioned hooks and adapted to engage the pin-arm, substantially as described.

3. In a device for supporting skirts, the combination with a safety-pin, comprising a shank and a spring-arm, of three adjacent hooks hinged to the shank of said pin, the outer ones of said hooks being adapted to engage the skirt while the middle one is adapted to engage the spring-arm of said pin, substantially as described.

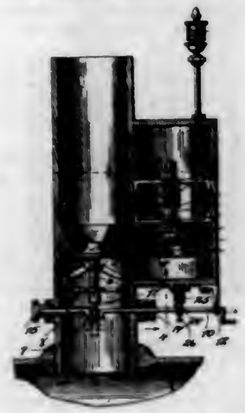
4. In a device of the class named, in combination, a safety-pin, two skirt-engaging members consisting of plates, one extremity of which is movably connected with the shank of the pin, while their opposite extremities are provided with upwardly-extending prongs, and a third member located between the two skirt-engaging members, said third member consisting of a plate, one extremity of which is bent around the shank of the pin, while its free extremity is provided with a hook adapted to engage the pin-arm, all substantially as described.

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**757,673. WHISTLE ATTACHMENT FOR GAS-ENGINES.** WILLIAM L. PAUL, Davis, N. C. Filed Oct. 8, 1903. Serial No. 176,268. (No model.)

*Claim.*—1. The herein-described means for storing and utilizing the exhaust of gas-engines to blow a whistle, comprising the combination with a gas-engine cylinder, of an exhaust tube or port, 3,

an auxiliary storage-chamber 13, said auxiliary chamber communicating with said exhaust-port 3, a valve 5 located in said port 3, having a stem 6, a shaft having a crank-arm, a link connecting said crank-arm and stem 6, means to partially rotate said shaft whereby said valve 5 may be opened or closed, a valve 18 in the auxiliary chamber 13 and means to hold said valve normally closed, and a whistle communicating with said auxiliary chamber, as set forth.



2. In combination with the cylinder of a gas-engine, of an exhaust-chamber 3, an auxiliary chamber 13 formed integral therewith, said chambers having a communicating passage, a valve 5 located in said exhaust-chamber and above said communicating passage, whereby when said valve is closed the exhaust-gases will be forced through said passage into the auxiliary chamber 13, a valve 18 at the lower end of said auxiliary chamber adapted to be opened by the pressure of the exhaust-gases, a stem for said valve, brackets designed to receive said stem and retain the valve in place, a spring surrounding said stem between said brackets, designed to close said valve 18 when the valve 5 is opened, and a whistle communicating with said auxiliary chamber, as set forth.

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**757,674. COAL-OIL-LAMP BURNER.** HARRY J. PAWLING, New Columbia, Pa. Filed Sept. 29, 1903. Serial No. 175,050. (No model.)



*Claim.*—1. A lamp-burner attachment comprising a supporting member formed of a single piece of wire, one end of which is bent to form a squared shoulder arranged to engage the neck of the font, the opposite end of the wire being bent to form an arm arranged to engage the inner wall of the font.

2. A lamp-burner attachment comprising a supporting member, one end of which is rigidly secured to the base of the burner and provided with a squared shoulder arranged to engage the neck of the font, the opposite end thereof being provided with a curved arm having a terminal knob arranged to engage the inner wall of the font.

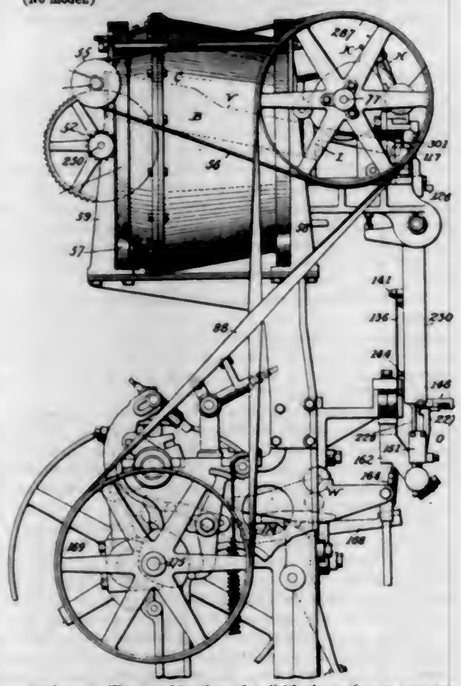
**757,675. MANUFACTURE OF RULERS.** HEINRICH R. PFUCKER, Dresden, Germany. Filed Aug. 30, 1902. Serial No. 121,692. (No model.)



*Claim.*—In a flexible ruler, the combination of an open metal frame, comprising side members connected by a plurality of cross-pieces, with strips of rubber, situated one above and one below said metal frame, their inner surfaces being directly connected together, the two side edges of the ruler projecting beyond the rubber edges and lying in the same horizontal plane, substantially as described.

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**757,676. MACHINE FOR FEEDING AND SORTING NAIL-BLANKS.** ERASTUS R. PIERCE and LEWIS W. NEWTON, New Brighton, Pa., assignors to Standard Horse Nail Company, New Brighton, Pa., a Corporation of Pennsylvania. Filed Apr. 1, 1903. Serial No. 150,625. (No model.)



*Claim.*—1. The combination of nail-blank-sorting means provided with a receiving-channel, means for carrying blanks to a position longitudinally nearly in line with said channel, and a deflector arranged to contact with and shift only blanks of proper length with their ends in position to enter the said channel, substantially as set forth.



2. In a machine for supplying nail-blanks to a finisher, the combination of a hopper, a transfer device, a conductor having an inclined channel for conducting the blanks by gravity from the hopper to a position to be seized by the transfer device, and sorting devices having a vertical channel arranged to receive the blanks longitudinally from the transfer device, and a deflector whereby blanks of proper character are carried into line with said receiving-channel, substantially as set forth.

3. In a nail-blank-feeding mechanism, the combination of a revolving drum inclined in both directions toward its largest diameter at a point between the ends with wings or buckets on its inner walls, at said enlargement, and a conductor arranged to receive and transfer the blanks to a point outside of the drum, substantially as set forth.

4. In a nail-blank-feeding mechanism, the combination of a drum with buckets, a conductor within the drum, arranged to receive blanks dropped from the buckets and to transfer blanks to a point outside of the drum and constructed to permit scrap to pass from the conductor, and a scrap-discharger located in the drum beneath the conductor and extending outward beyond the drum for discharging scrap to a point outside the drum, substantially as set forth.

5. In a nail-blank-feeding mechanism the combination of a drum with buckets, a conductor extending in an inclined position through and outward beyond the drum and having a central channel, means for reciprocating the conductor, and a hopper with diverging side plates inclined at the lower ends, substantially as set forth.

6. The combination in a nail-blank-feeding mechanism, of an inclined conductor provided with parallel separated bars having upper edges inclined downward toward the outer sides, and means for reciprocating said bars, substantially as set forth.

7. The combination in a nail-blank-feeding mechanism, of an inclined conductor provided with parallel separated bars, with upper edges inclined from the inside downward, a divided hopper having sides secured to the conductor and arranged to move with the conductor, and means for reciprocating said bars, substantially as set forth.

8. In a nail-feeding mechanism, appliances arranged to contact with each end of a curved blank at one side thereof, and at a point between the ends at the opposite side thereof to press thereon at these three points, and turn the blank one-fourth of a revolution on its longitudinal axis substantially as set forth.

9. In a nail-feeding mechanism, fingers adapted to grasp a nail by the head, a deflector, and a tube all arranged to deliver a nail to the tube in an inclined position to cause a nail curved in the direction of its lesser diameter to turn one-fourth of a revolution on its longitudinal axis as it passes into the tube, substantially as set forth.

10. In a nail-feeding mechanism, fingers adapted to grasp a nail by its head, a deflector, a tube and a feeder all arranged to deliver a nail obliquely to the tube and cause a properly-curved nail to turn one-fourth of a revolution, and no more, on its longitudinal axis as it passes into the tube, substantially as set forth.

11. In a nail-blank-feeding mechanism, appliances for transferring the blanks from one position to another, consisting of a central and two side members adapted to hold the blank by contact with the top and two of the sides of the head of the blank and means for bringing the central member forcibly against the head after it is gripped by the side members and means for swinging said transferring appliances, substantially as set forth.

12. In a nail-feeding mechanism, the combination of a drum with buckets, a conductor for transferring the nails to a point outside of the drum, and appliances whereby any nails that fail to become properly arranged in the conductor will be dislodged and fall into the lower part of the drum, said dislodging appliances being located within the drum, substantially as set forth.

13. In a nail-feeding mechanism, the combination of a drum with buckets, a conductor for transferring the nails to a point outside of the drum, a scrap-discharger to discharge the scrap outside of the drum, and appliances whereby any nails that fail to become properly arranged in the conductor will be dislodged and fall into the lower part of the drum, said dislodging appliances being located within the drum, substantially as set forth.

14. In a nail-blank-feeding mechanism, a conductor consisting of separated bars for transferring blanks from one position to another, a hopper, and means for imparting to the bars independent vibratory motions, substantially as set forth.

15. The combination in a nail-blank-feeding mechanism, of an inclined conductor provided with parallel separated bars, a hopper arranged above the conductor at one end, and means for vibrating the bars with a movement of one in advance of that of the other, substantially as set forth.

16. The combination in a nail-blank-feeding mechanism, of an inclined conductor provided with parallel separated bars, a hopper arranged above the conductor at one end, and a shaft having cranks differently disposed, the cranks operating on the bars independently, substantially as set forth.

17. The combination in a nail-blank-feeding mechanism, of an inclined conductor provided with parallel separated bars, a fixed stop at the lower end of the conductor, and a transfer device provided with jaws supported to yield when carried down and onto the head of a blank and to engage the sides of the head and lift the blank when carried upward, substantially as set forth.

18. The combination with the parallel bars, of the conductor and with means for vibrating them one ahead of the other, of the yoke R connected to one of the bars and supporting a set-screw bearing on the other bar, substantially as set forth.

19. The combination in a nail-blank-feeding mechanism, of an inclined conductor provided with parallel separated bars, means for reciprocating the bars independently, and a conducting-trough I connected to one of the bars below the slot between the same, substantially as set forth.

20. The combination with the inclined slotted conductor, of a pusher consisting of a reciprocating arm having blades at its free end arranged to make contact with blanks as they pass toward the pusher along the conductor, substantially as set forth.

21. The inclined conductor having independent separated bars and means for moving them one in advance of the other, combined with a guard adjustably supported by one of the bars, substantially as set forth.

22. The combination with means for feeding blanks successively to a determined position, of a reciprocating transferrer, means for carrying it vertically to and from said position, said transferrer provided with means for seizing the blanks in succession to lift them vertically from the conductor, a tube, and means for carrying the ends of the blanks held by the transferrer to a position over said tube, substantially as set forth.

23. The combination with means for feeding blanks successively to a determined position, of a reciprocating transferrer, means for carrying it vertically to and from said position, said transferrer provided with means for seizing the heads of the blanks in succession, sorting means including a tube having a vertical channel, and means arranged to act on blanks of proper length while held by the transferrer to carry their ends into position to enter the channel, substantially as set forth.

24. The combination with means for feeding blanks successively to a determined position, of a reciprocating transferrer provided with fingers arranged to engage and seize the heads of the blanks, means for carrying the fingers upward, a tube, and means for carrying the ends of the blanks held by the transferrer to a position over said tube, substantially as set forth.

25. The combination of a conductor having parallel bars between which the shanks of nails hang, a vibrating arm, lateral fingers carried by said arm and extending toward each other and pivoted to rock on horizontal axes and separate as they are brought vertically onto the head of a blank in said conductor and to grip the blank below the top of the head and lift it as the arm rises, substantially as set forth.

26. The combination with the conductor having bars between which nail-blanks hang with the heads resting on the bars, of a vibrating arm, lateral fingers carried by said arm and extending toward each other and pivoted to rock and separate as they are brought onto the head of a blank and to grip the blank on opposite sides of the head and lift it as the arm rises, and a spring arranged to rock the fingers downward at their inner ends, substantially as set forth.

27. The combination with the feeding means, of a vibrating arm carrying parallel rock-shafts, and fingers extended toward each other, supported transversely and adjustably by said shafts, and arranged to rock upward by contact with the blanks, substantially as set forth.

28. The combination of a vibrating arm, parallel rock-shafts, 67, 67, fingers 2, 2, extending toward each other and arranged to rock upward by contact with the blanks, and adjusting and securing devices, substantially as set forth.

29. The combination with the conductor and transfer and sorting devices, of a guard U, and means whereby said guard is carried between the blanks and the transferrer when the sorting devices are not in condition to receive a blank, substantially as set forth.

30. The combination of the conductor, transferrer and guard U provided with inclined side wings, and means for carrying the guard forward and back, substantially as set forth.

31. In a nail-blank-feeding mechanism, a conductor for transferring blanks, a sorting-tube, fingers and operating devices for lift-

ing the blanks vertically one at a time out of the conductor and depositing them endwise in said tube, substantially as set forth.

32. The combination with the transfer-fingers and sorting-tube, and means for reciprocating the fingers to carry nail-blanks vertically upward above the tube, of a deflector for swinging out the lower ends of the blanks held by the fingers, substantially as set forth.

33. The combination with the transfer-fingers and sorting-tube, and means for reciprocating the fingers to carry nail-blanks vertically upward above the tube, of a deflector for swinging out the blanks held by the fingers, and provided with a lip arranged to engage only blanks of proper length, substantially as set forth.

34. The combination with a sorting-tube, of a transferrer, and means for swinging a blank held thereby to and depositing it in the tube in a position at an angle to the tube with its head above the tube, substantially as set forth.

35. The combination with a sorting-tube having a channel oblong in cross-section, of a transferrer, and means for swinging a blank held thereby to a position at an angle to the sorting-tube with its head above the tube, and for turning the blank to bring its head in position to coincide with the channel, substantially as set forth.

36. The combination with means for transferring a blank, of a sorting-tube having a channel oblong in cross-section approximating the dimensions of the blank-head in cross-section to permit the blank to enter the tube only in one position, substantially as set forth.

37. The combination with the sorter-tube having a channel oblong in cross-section, of a transfer device, and a feeder arranged above said tube to bear on the head of a blank, substantially as set forth.

38. The combination with the sorter-tube having a channel oblong in cross-section, of a transfer device, and a yielding feeder arranged above said tube to bear on the head of a blank, substantially as set forth.

39. The combination with the sorter-tube having a channel oblong in cross-section, of a transfer device, and a feeder consisting of a yielding plate above said tube and inclined over said channel, substantially as set forth.

40. The combination with a transfer device, of a sorting-tube having separable sections, and means for separating the sections to permit the discharge of blanks which do not pass from the tube, substantially as set forth.

41. The combination with the transferrer, of a sectional sorting-tube and magazine-tube, levers carrying the sections of the tube, and means for operating one lever to shift the tube and the other to separate the sections, substantially as set forth.

42. The combination with the magazine-tube, the sorting-tube and lever carrying the same, of a shaft to which said lever is connected, and means for clamping the lever to the shaft in different positions, substantially as set forth.

43. The combination of the conductor, transferrer, guard U, magazine-tube, sorting-tube and lever carrying the sorting-tube, of connections between the lever and guard whereby to shift the latter only when the sorting-tube is shifted, substantially as set forth.

44. The combination with the guard U, divided tube J, transfer devices, and lever 108 connected with part of the tube, of the rock-shaft 120 connected with the guard and carrying an arm bearing on an extension of said lever to be rocked on the movement of the lever, substantially as set forth.

45. The combination with the transfer devices and magazine-tube, of a sorting-tube in separable sections, and means for shifting the tube laterally and for separating the sections after the introduction of each blank, for the purpose set forth.

46. The combination with the magazine-tube and the L-shaped sections of the sorting-tube J, of a lever 108 carrying one section and a lever 102, carrying the other section of the tube, and means for vibrating said levers to separate the sections and carry them over and from the magazine-tube, substantially as set forth.

47. The combination with the magazine-tube M and the sorting-tube J, of means for vibrating it at regular intervals to and from the magazine-tube, constructed to permit the tube to retain its position away from the tube M when a blank projects partially out of the lower end of the tube J, substantially as set forth.

48. The combination of a laterally-movable sorting-tube in separable sections, and a magazine-tube arranged to receive blanks passing properly through and from the sorting-tube when the latter is in position above the magazine-tube, substantially as set forth.

49. The combination of a laterally-movable sorting-tube in separable sections, a magazine-tube arranged to receive blanks passing properly through and from the sorting-tube when in position above the magazine-tube, a conductor, a guard movable over the same, transfer devices for carrying the blanks from the conductor to the sorting-tube, and connections between the guard and sorting-tube whereby the guard is retained in place when a blank prevents the movement of the sorting-tube, substantially as set forth.

50. The combination with the sorting-tube, of a magazine-tube, the delivery end of which is formed by a series of plates or strips clamped together, substantially as set forth.

51. The combination with the tube N and its detent, of means for supporting blanks falling from the tube, a carrier for carrying the blanks from the supporting means, and means operated on the movement of the carrier to shift the detent, substantially as set forth.

52. The combination with the tube N and its detent, and support below the tube, of the carrier, and strip 136 connected with the detent and in position to be struck by the carrier, substantially as set forth.

53. The combination with the tube N, perforated block and slide, of a carrier and means whereby the slide is carried from below the perforation as the carrier moves into position to receive the blank, substantially as set forth.

54. The combination with the tube N, detent, perforated block, jaws 140, 140, and slide, of a carrier, and means whereby the slide is carried from below the perforation as the carrier moves into position to receive the blank, substantially as set forth.

55. The combination with the carrier for presenting blanks to the finishing-machine, of a tube N, a slide for preventing the passage of blanks from the tube, and means for shifting the slide as the carrier moves into receiving position, substantially as set forth.

56. The combination with the tube N and carrier, of the perforated block 146, slide and jaws 140, 140, substantially as set forth.

57. The combination with the tube N, detent, detent-blade 136 and carrier adapted to contact with the detent-blade, of the perforated block 146, slide and jaws 140, 140, substantially as set forth.

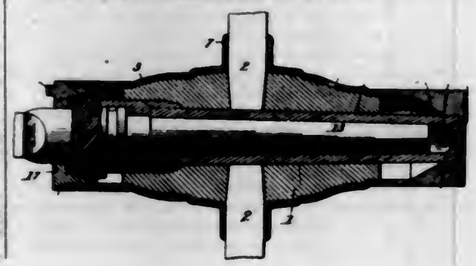
58. In a nail-blank-feeding mechanism, a tube adapted to hold a number of blanks in line, end to end one above the other, a slide at the bottom of the tube, a detent in the tube adapted to engage the blank next above the one standing on the slide, and appliances to operate the slide and detent, whereby when the slide is moved, the blank standing on the slide will be allowed to fall and the blank next above will be engaged by the detent and prevented from falling until the slide is again closed, a support for supporting a blank after it has passed from the tube, finishing devices, and means for transferring the blanks successively from said support to said devices, substantially as set forth.

59. In a nail-blank-feeding mechanism, a tube adapted to hold a number of blanks in line, end to end one above the other, a slide at the bottom of the tube, jaws for engaging the head of the blank, a detent in the tube adapted to engage the blank next above the one standing on the slide, and appliances to operate the slide and detent, whereby when the slide is moved, the blank standing on the slide will be allowed to fall between said jaws, and the blank next above, will be engaged by the detent and prevented from falling until the slide is again closed, substantially as set forth.

60. The combination of a finishing-machine and automatic means for feeding thereto horseshoe-nail blanks consisting of two groups of mechanism, the first group adapted to gather and arrange the blanks to be fed, and to reject those that are unsuitable and to deliver those which are suitable to the second group, and adjusted to run at a greater speed than the finishing-machine to which the blanks are to be fed, and the second group adapted to receive the blanks from the first group and deliver them to the finishing-machine, at the same speed as the finishing-machine, substantially as set forth.

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757,677. VEHICLE-WHEEL. JAMES A. POLK, Terrell, TEX. Filed Dec. 30, 1903. Serial No. 187,226. (No model.)





*Claim.*—1. A vehicle-wheel, having a hub constructed of a wooden member and metal sheaths applied to it, the outer sheath having a closed end and an axle-box pocket to center said axle-box as it is driven into the hub, combined with an axle-box having a closed outer end.

2. A vehicle-wheel, having a hub constructed of a wooden member and metal sheaths applied to it, the outer sheath having a closed end and a cylindrical pocket in such closed end with an adjacent convergent wall, combined with an axle-box having a closed outer end.

3. A vehicle-wheel, having a hub composed of a wooden core and inner and outer metal sheaths, the outer sheath closed at its outer end, a closed-end axle-box, and a screw-cap applied to the inner sheath.

4. A vehicle-wheel, having a hub composed of a wooden core, an outer surrounding metal sheath extending from the middle to the outer end and having an integrally-closed outer end, and an inner surrounding metal sheath extending from the middle to the inner end, an axle-box longer than the wooden core and having an oil-chamber at its outer end and a feed-tube opening into it, and a screw-cap applied to the inner end of the hub.

5. A vehicle-wheel, having a hub provided with a wooden core, a closed-end outer metallic sheath, an open-end inner metallic sheath having an internal screw-thread, a closed-end axle-box, and a screw-cap inserted in the screw-threaded sheath and having an outwardly-projecting lug for use in unscrewing it.

6. A vehicle-wheel, having a hub provided with a screw-cap to close its inner end, said cap having a rearwardly-projecting lug between which and the axle an obstruction may be placed so as to effect the unscrewing of said cap.

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757,678. LACING-LOOP. GEORGE W. PRENTICE, Providence, R. I. Filed July 23, 1903. Serial No. 166,707. (No model.)



*Claim.*—The sheet-metal pronged lacing-loop hereinbefore described having a divided table member and a tie member bent to form a loop or arch, the latter being integral with and uniting the two parts of said table, substantially as described.

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757,679. LACING-LOOP. GEORGE W. PRENTICE, Providence, R. I. Filed Dec. 21, 1903. Serial No. 186,991. (No model.)



*Claim.*—As an improved article of manufacture the one-piece sheet-metal lacing-loop, substantially as hereinbefore described, the same comprising a forked base or table member having attaching-prongs depending therefrom, and an elongated narrower member bent to form a closed arch or loop, its lower portion passing through the forked part of the base and extending thereunder and terminating in a downwardly-bent attaching-prong, and having said prongs disposed on opposite sides of the loop.

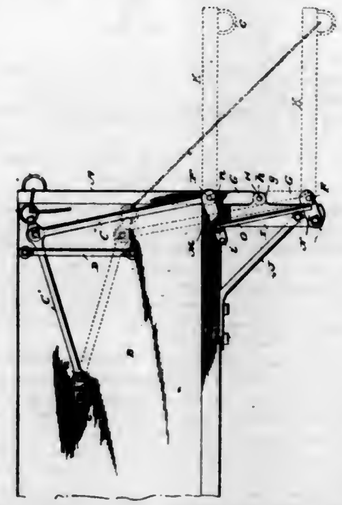
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757,680. END-GATE. OLIVER R. REYNOLDS, Brockton, Mass. Filed Sept. 14, 1903. Serial No. 173,130. (No model.)

*Claim.*—1. An end-gate for vehicles capable of opening and closing about an axis which is substantially in the plane of the bottom of the wagon-body, and a member connected to the gate and pivotally mounted at a point below the same and the vehicle-body, and capable of swinging about its pivotal center to lower the gate so that the axis about which it opens and closes is lowered to a plane below the wagon-body.

2. An end-gate for vehicles capable of opening and closing about an axis which is substantially in the plane of the bottom of the vehicle, and means connected to the end-gate and pivotally mounted below the same and movable about its axis to lower the gate substantially edgewise until the plane of the first-named axis is lowered to a point below the vehicle-body and below the axis of said connecting means.

3. An end-gate and a rod extending across the lower portion thereof in substantially the plane of the bottom of the vehicle-body and about which rod the gate may open and close, and a section carrying said rod and gate and hingedly mounted below said section capable of swinging about its hinged connection to lower the lower portion of the gate and the rod to a point below the bottom of the vehicle-body, and said gate capable of swinging about the rod in said lowered position whereby it may be supported substantially horizontally at a point below the vehicle-body.



4. The combination with a wagon-body, of an end-gate therefor; a rod extending across the lower portion of the same; a section below and standing in line with the gate and pivotally mounted at its lower portion, said gate capable of swinging about said rod to allow the gate to open in substantially the plane of the body of the wagon, and said section carrying said gate and rod and capable of swinging from a point above its pivotal center to a point below the same, whereby the gate may be held at different vertical elevations.

5. The combination with a wagon-body, of an end-gate therefor; a pivot-rod extending across the lower portion of the same; a section below normally in line with the gate and pivotally secured at its lower portion whereby it may swing from a point above its pivotal center to a point below the same, and carry the gate and its axial rod with it to allow the gate to open about the rod from a point which is below the wagon-body; and means for holding the swinging section in either of its positions.

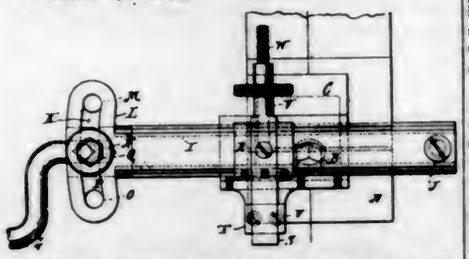
6. The combination with a wagon-body, of an end-gate therefor; a rod extending across the lower portion of the same; a section below and in line with the gate, when the latter is closed; a rod parallel with the first-named rod and upon which the section is turnable, said section pivotally connected to the first-named rod and capable of turning from a point above the second-named rod to a point below the same; and a latching mechanism comprising hook members adapted to engage the first-named rod in its several positions and thereby hold the parts in place.

7. The combination with a wagon-body, of an end-gate therefor; a rod extending across the lower portion of the same; a section below and in line with the gate, when the latter is closed; a second rod below and parallel with the first rod, said section pivotally mounted on said second rod and capable of swinging from a point above to a point below the same; latching mechanism for the swinging section in either of its positions; and jointed-rod connections between the first-named rod and the wagon-body.

8. The combination with the wagon-body and the pivoted end-gate thereof, of a swinging member below and normally in line with said gate and capable of swinging from a point above its pivot to a point below the same, latching devices for the swinging member and consisting of upper and lower hook members and a connection therebetween; a support against which the swinging member abuts in either of its positions; and jointed rods on the sides of the wagon-body, one of which is pivoted to said body and the other is mounted upon the axis of the end-gate said jointed rods having a connection for the end-gate chain.

9. In a wagon, an end-gate and means whereby the same may be held supported substantially in the plane of the body of the wagon-body and at points below the plane of said body.

**757,681. TAPER ATTACHMENT FOR TURRET-LATHES.** CHARLES G. RICHARDSON, Springfield, Vt. Filed Oct. 31, 1903. Serial No. 129,544. (No model.)

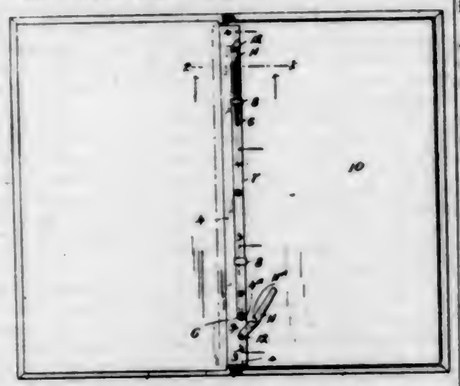


*Claim.*—1. In combination with the tool-carrier of a turret-lathe movable in the direction of the axis of rotation of the work and means for moving a tool supported on said carrier in a direction transverse to said axis, a cam-guide mounted on the turret adjacent to said tool-carrier; the said guide being bodily movable and adjustable to vary its inclination and controlling proportionately to said inclination, the extent of movement of said means for moving said tool, substantially as described.

2. In combination with the tool-carrier of a turret-lathe movable in the direction of the axis of rotation of the work, and a tool movable on said carrier in a direction transverse to said axis, an independently-supported bar mounted on the turret and extending in proximity to the path of said carrier and pivoted at one extremity, means for securing said bar in definite position on its pivot and a sliding piece traversing said bar and connected to said tool, substantially as described.

3. The combination with the tool-carrier of a turret-lathe, of the supporting-block C mounted on the turret and having a recess, bar E in said recess and secured at one end to an independent support, bar I pivoted at one end to bar E, means for holding said bar in angular adjustment on its pivot, a sliding block R on bar I and a tool-actuating rod S connected to said sliding block, substantially as described.

**757,682. TEMPORARY BINDER.** WILLIAM J. RILE, New York, N. Y., assignor to Edward L. Shipman, New York, N. Y. Filed Dec. 9, 1903. Serial No. 184,384. (No model.)



*Claim.*—1. The combination of the covers and hinges, one of which is provided with a slot opening through the side edge thereof, a loop mounted to slide along the hinge, a binding-tongue, and an arm movably connected with the hinge and adapted to extend across the slot and arranged to lie in position upon the hinge to permit the loop to pass thereover, substantially as described.

2. The combination of the covers and hinges, one of which is provided with a slot having one side opening through the edge of the hinge, a loop mounted to slide along the hinge, an arm pivotally carried by the hinge and provided with a recess to coincide with the slot, and a holding-tongue adapted to pass through the slot and to enter the recess in the arm, said arm being arranged to lie along the hinge to permit the loop to pass thereover, substantially as described.

3. The combination of the covers and hinges, one of which is provided with slots opening through the side edge thereof, a strip secured upon the hinge, loops mounted to slide upon the strip, arms pivotally carried by the hinge adapted to lie along the same, and holding-tongues carried by one hinge and arranged to pass through said slots, said arms being arranged to lie under the tongues when the latter are bent down to permit the loops to slide over the tongues and arms, substantially as described.

4. The combination of the covers and hinges, one of the latter being provided with slots opening through the edge thereof, a strip upon the hinge, loops mounted to slide on the strip, arms pivotally supported by the hinge and provided with recesses in one side to aline with the slots in the hinge, and holding-tongues carried by one hinge and arranged to pass through the slots in the other hinge and to receive the recesses in said arms, said tongues being arranged to be bent down upon the arms so that the tongues and arms lie parallel in line to have the loops pass over them, substantially as described.

5. The combination of the covers and hinges, one of which is provided with a slot opening through the side edge thereof, a strip secured upon said hinge, a loop mounted to slide along the strip, a holding-tongue carried by one hinge and arranged to pass through said slot in the other hinge, and an arm movably connected with the last-named hinge and adapted to retain said tongue in said slot and arranged to lie in position upon the hinge to permit said loop to pass thereover, substantially as described.

**757,683. JAR-FASTENER.** SAMUEL A. ROOSE, New Brighton, Pa. Filed Dec. 4, 1903. Serial No. 183,769. (No model.)



*Claim.*—1. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and means supported upon said standard for bringing said standard and bail into contact, substantially as described

2. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and a cam supported on said standard for bringing said standard and bail into contact, substantially as described.

3. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and a cam pivoted to said standard, for bringing said standard and bail into contact, substantially as described.

4. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and a cam pivoted to said standard and engaging with said bail for moving said bail into contact with the top of said standard, substantially as described.

5. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and a cam pivoted to said standard at one side of the center line and engaging with said bail for moving said bail into contact with the top of said standard, substantially as described.

6. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and having a notch at its top and a cam pivoted to said standard and engaging with said bail for moving said bail into and out of said notch, substantially as described.

7. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and having a notch at its top, said notch having one side higher than the other and a cam pivoted to said standard at one side of the center line and engaging with said bail for moving said bail into and out of said notch, substantially as described.

8. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and having a notch at its top, said notch having one side higher than the other, and a cam pivoted to said standard and engaging with said bail for moving said bail into and out of said notch, substantially as described.



9. The combination with a jar and a lid therefor, said lid having a socket, of a bail secured to said jar and a fastener comprising a standard bearing upon said lid and having an extension projecting into the socket and a cam pivoted to said standard and engaging with said bail to move it into contact with the top of said standard, substantially as described.

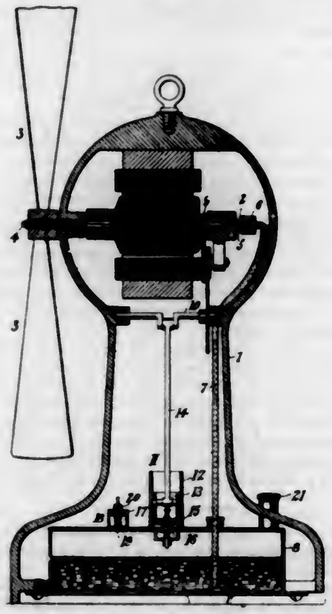
10. The combination with a jar and a lid therefor, of a standard bearing against said lid, said standard comprising a base and two uprights having notches at their top, one side of said notches being higher than the other, a spring-bail, and a cam pivoted between said uprights at a point removed from the center line and engaging said bail to lift it into and out of said notches, substantially as described.

11. The combination with a jar and a lid therefor, of a standard bearing upon said lid, a bail secured to said jar, a cam pivoted to said standard and engaging with said bail for moving said bail into spring-pressed engagement with the top of said standard, and means for locking the bail in its position against the standard, substantially as described.

12. The combination with a jar and a lid therefor, of a bail secured to said jar and a fastener comprising a standard having notches for receiving a locking-body, bearing upon said lid, a cam having a hole for receiving a locking-body pivoted to said standard and engaging with said bail for moving said bail into spring-pressed engagement with the top of said standard, and a body inserted in the hole in said cam and engaging with the notches in said standard to lock the bail against the top of the standard, substantially as described.

13. A jar-fastener comprising a standard adapted to rest upon a lid and engage a bail and means secured to said standard for moving a bail into and out of contact with said standard, substantially as described.

**757,684. FAN FOR DISINFECTING PURPOSES.** WILLIAM W. ROCHESTER, New York, N. Y. Filed July 21, 1903. Serial No. 166,445. (No model.)



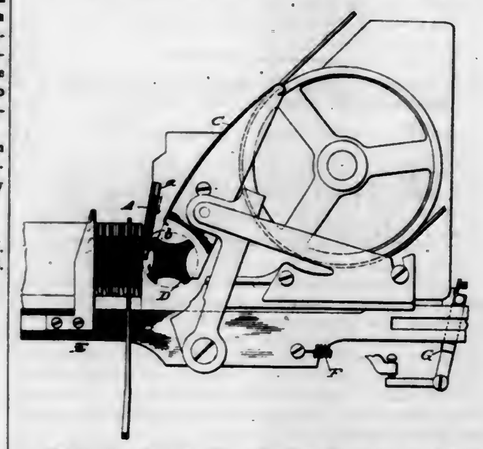
*Claim.*—1. In a fan or blower, in combination, a hollow shaft having an inlet-orifice, and having an outlet-orifice at the center of the rotating fan, a liquid-reservoir, a conduit connecting the inlet-orifice of the hollow shaft with the reservoir, means for driving the fan, and means for discharging liquid from the reservoir through the conduit, the hollow shaft, and the outlet-orifice, as set forth.

2. In a fan or blower, in combination, a hollow shaft having an inlet-orifice, and having an outlet-orifice at the center of the rotating fan, a liquid-reservoir, a conduit connecting the inlet-orifice of the hollow shaft with the reservoir, an air-compressor connected with the reservoir, means for driving the fan, and means for actuating the compressor, as set forth.

3. In a fan or blower, in combination, a hollow shaft having an inlet-orifice, and having an outlet-orifice at the center of the rotating fan, a liquid-reservoir, a conduit connecting the inlet-orifice of the hollow shaft with the reservoir, a reciprocating air-compressor connected with the reservoir, a crank-shaft, a pitman connecting the crank-shaft and the compressor, means for driving the fan, and means for rotating the crank-shaft, as set forth.

4. In a fan or blower, in combination, a hollow shaft having an inlet-orifice, and having an outlet-orifice at the center of the rotating fan, a liquid-reservoir, a conduit connecting the inlet-orifice of the hollow shaft with the reservoir, means for driving the fan, means for compressing air above the liquid in the reservoir, and means for maintaining a constant pressure therein.

**757,685. LINOTYPE-MACHINE.** DANIEL D. SCOTT, Boston, Mass., assignor to Mergenthaler Linotype Company, a Corporation of New York. Filed Oct. 19, 1903. Serial No. 177,563. (No model.)



*Claim.*—1. A linotype-matrix having on one side a vertical face from top to bottom, and on the opposite side a face extending vertically downward for a portion of its length and gradually reduced in thickness for the remainder of its length.

2. A font or series of linotype-matrices, comprising matrices of different thicknesses, corresponding to the characters in their edges, all of the matrices in the font being inclined or beveled inwardly on one side toward the lower end, and all having the same or approximately the same thickness at the end.

3. A matrix for a linotype-machine, having at the lower end a reduced or beveled portion *b*, and a recessed portion $a^2$ below the level of the surface *b*.

4. In a linotype-machine, a series of matrices differing in thickness in their body portions, the thicker matrices reduced in thickness at their lower end, in combination with a pushing device to assemble the matrices in line and advance the line, whereby substantially uniform action of the assembling devices is secured, notwithstanding the variation in the thickness of the incoming matrices.

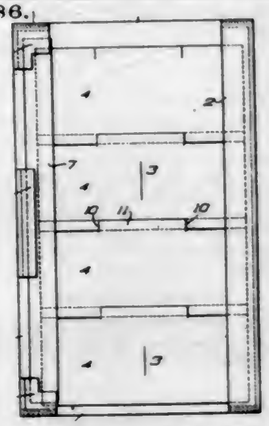
5. In a linotype-machine, the combination of thick and thin matrices, the former reduced at their lower end, in combination with the yielding resistant for the composed line, the star-wheel to assemble the matrices and advance the line, and means for delivering the matrices successively to the end of the line in advance of the star-wheel.

**757,686. HOLDER FOR CARD-INDEXING CARDS.** HEYWARD SCUDDER, Boston, Mass. Filed May 1, 1903. Serial No. 156,130. (No model.)

*Claim.*—1. The combination of an index-card holder with a series of detachably-interlocking index-cards mounted flatwise therein, in edgewise relation, one to another; and means for preventing the cards from slipping past one another when in place.

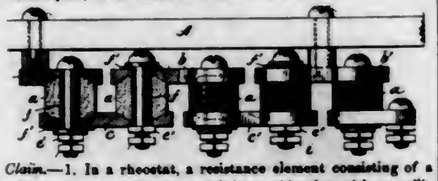
2. The combination of an index-card holder; and a series of detachably-interlocking index-cards arranged flatwise in the holder and edgewise in relation one to another.

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## 757,687. RHEOSTAT. ISLE R. STORRY, Amsterdam, N. Y.

Filed Sept. 2, 1903. Serial No. 171,602. (No model.)



*Claim.*—1. In a rheostat, a resistance element consisting of a tube of graphite or similar material, in combination with metallic heads and a rod passing through the tube and engaging with the heads to clamp them against the ends of the tube.

2. In a rheostat, a resistance element consisting of a tube of graphite or similar material having conical ends, in combination with metallic heads having conical seats for said ends, and a rod passing through the tube and engaging with the heads to clamp them against the ends of the tube.

3. In a rheostat, the combination of a plurality of parallel tubular resistance elements, metallic connectors along each set of ends thereof and connecting the elements in series, and rods passing through the elements and securing the connectors to the opposite ends thereof.

4. In a rheostat, the combination with a plurality of tubular resistance elements, metallic end pieces connecting them together in series, and insulated rods extending through the tubes and respectively in contact alternately with end pieces at opposite ends of the elements.

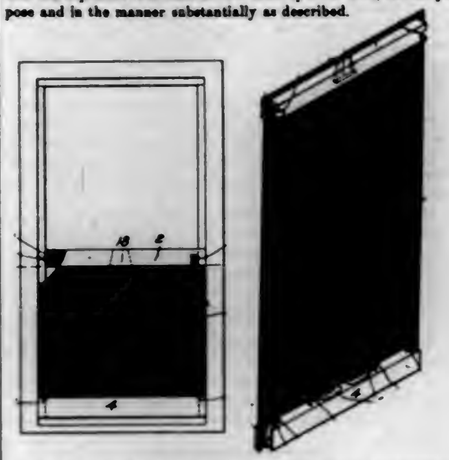
5. In a rheostat, the combination with a plurality of parallel resistance-rods, metallic connectors along each set of ends of the rods, connecting the rods in series, and a series of binding devices arranged along one set of ends of the rods and electrically connected alternately with the two sets of metallic connectors, for the purpose set forth.

6. In a rheostat, the combination of a plurality of parallel tubular resistance elements, metallic connectors along each set of ends thereof and connecting the elements in series, and rods passing through the elements and securing the connectors to the opposite ends thereof, said rods being in electrical connection with one of the metallic connectors only, and binding devices for wires carried by each rod.

7. In a rheostat, the combination of a plurality of tubular parallel resistance elements, metallic heads or connectors connecting the elements in series, headed rods passing through the elements and connectors to hold them together and insulating material interposed between the rods and the elements and between one of the heads of the rods and the connector, for the purpose set forth.

## 757,688. WINDOW-SCREEN. GEORGE H. STOUT and LUCIUS A. TURNER, Denver, Colo. Filed Aug. 17, 1903. Serial No. 169,787. (No model.)

*Claim.*—1. A screen for windows consisting of a sheet of screen fabric spanning the window-opening and having top and bottom horizontal frame-bars, of means for securing said top bar in rigid parallel relation to the under face of the head of the window-frame, and means for maintaining the inner surface of the screen fabric at its side edges closely against the outer vertical faces of the window-frame consisting of take-up levers at both ends of said bottom bar having end fulcrum-bearings in the opposing faces of the window-frame and bearings on said bottom bar near its ends, hooks on said bottom bar between its end take-up-lever bearings adapted to retain the depressed free ends of said take-up-lever bars, for the purpose and in the manner substantially as described.



2. In a detachable window-screen having only horizontal top and bottom frame-bars the top bar of which is fixed to studs projecting from the inner faces of the window-frame and the bottom bar of which is held down toward the sill of the window-frame by take-up levers having a fulcrum-socket bearing in the inner faces of the window-frame, a vertically-adjustable eyed bearing for said take-up levers located on top of and near the ends of said bottom bar, hooks on top of said bottom bar retaining the depressed free ends of said take-up levers passing through vertical slots in the ends of said bottom bars, substantially as described.

3. In a window-screen of the class described, means for securing its top bar in fixed parallel relation to the under face of the window-frame head, means for holding the outer vertical edges of the screen fabric close against the outer faces of the window-frame, consisting of take-up levers carried on and near the ends of the bottom bars having fulcrum-bearings in the inner faces of the window-frame, vertically-adjustable bearings for said take-up levers located on said bar inwardly from its ends and hooks on said bars inwardly beyond the bearing thereon of the take-up levers and hooks on the bottom bar located between the adjustable take-up-lever bearing thereon whereby to engage and retain the free ends of said take-up levers, substantially as described.

4. A screen for windows consisting of a sheet of fabric closing the window-opening and contacting with the outer faces of the brick-mold or blind-stop and having top and bottom horizontal frame-bars, slots in the ends of said top bar, stud-openings into said slots on the inner side of said top bar adapted to receive studs projecting from the opposing faces of the window-frame and means for downwardly pulling said screen fabric adjustably against its fixed top-retaining means, substantially as and for the purpose described.

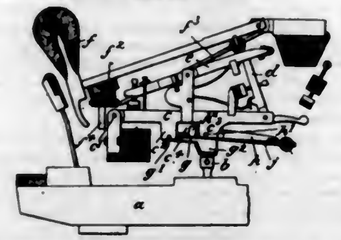
## 757,689. PIANISSIMO DEVICE FOR GRAND-PIANO ACTIONS. ALBERT T. STRAUBE, New York, N. Y. Filed Feb. 6, 1904. Serial No. 192,337. (No model.)

*Claim.*—1. In a pianissimo device for grand-piano actions, the combination of a wippen with a lower lever pivoted thereto, a capstan engaging the same, an upper lever also pivoted to the wippen and adapted to be engaged by the lower lever out of alinement with the capstan, and pedal-operated means for raising the upper lever, substantially as specified.

2. In a pianissimo device for grand-piano actions, the combination of a wippen with a lower lever pivoted thereto, an upper lever engaging the lower lever, a lost-motion rod engaging the upper lever, a hammer rest-rail, and means for connecting the lost-motion rod to said rail, substantially as specified.

3. In a pianissimo device for grand-piano actions, the combination of a wippen having a rear flange and a front flange, with a lower lever pivoted to the rear flange, and an upper lever pivoted to the front flange and engaging the lower lever, substantially as specified.



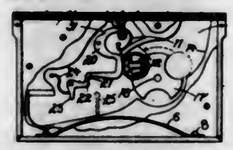


4. In a pianissimo device for grand-piano actions, the combination of a wippen having a rear flange, a front flange and an intervening recess, with a lower lever pivoted to the rear flange, and an upper lever pivoted to the front flange and having a head within the recess that engages the lower lever, substantially as specified.

5. In a pianissimo device for grand-piano actions, the combination of a wippen having a rear flange and a front flange, with a lower lever pivoted to the rear flange, a capstan in vertical alinement with the front flange, and an upper lever pivoted to the front flange and adapted to engage the lower lever out of vertical alinement with the capstan, substantially as specified.

6. In a pianissimo device for grand-piano actions, the combination of a wippen with a lower lever pivoted thereto, an upper lever engaging the lower lever, a lost-motion rod engaging the upper lever, a hammer rest-rail having a pivoted arm, a bar secured to the lost-motion rod, and means for adjustably connecting said bar to said arm so as to adjust the play of the lost-motion rod, substantially as specified.

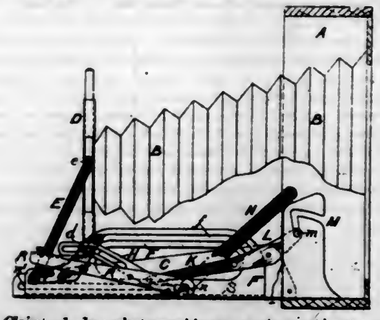
## 757,690. COIN-CONTROLLED DISPENSING APPARATUS. DANIEL SULLIVAN, St. Louis, Mo. Filed Aug. 15, 1903. Serial No. 169,756. (No model.)



*Claim.*—1. In a coin-controlled dispensing device, a suitable receptacle, a spring-actuated lid hinged to the same, a catch carried by the lid, a spring-controlled latch pivoted to the front wall of the receptacle, a spring-controlled pivoted trigger having two arms carried by the front wall of the receptacle, a terminal tooth carried by the upper arm of the trigger, a latch-controlling lever pivoted intermediate the trigger and the latch and having a terminal tooth normally engaging the tooth on the trigger, a rotatable spindle located in advance of the lever, a lobed disk secured to the spindle for advancing the coin against the lever, the lever and trigger being oscillated with the advance of said coin and the teeth aforesaid interlocking with said oscillation, a coin-chute, a coin-slot formed in the lid and registering with the coin-chute, a cover-plate for the several parts, a keyhole being formed in the cover-plate at a point adjacent to the edge of the coin when the latter is resting against the trigger, said keyhole being adapted to receive the tooth of a rotatable key for forcing the coin past the trigger and restoring the parts to their normal position, substantially as set forth.

2. In a coin-controlled dispensing device, a suitable receptacle, a spring-actuated lid hinged to the same, a catch carried by the free edge of the lid, a spring-controlled latch pivoted to the front wall of the receptacle, a bent lever pivoted in proximity to the latch, a rotatable spindle mounted adjacent to the lever, a disk secured to the spindle having a series of arms for advancing the coin against the lever, a spring-controlled pivoted trigger cooperatively connected with the lever for arresting the lever when the latter has been oscillated by the advance of the coin, the latter being adapted to be subsequently forced against the trigger for restoring the parts to their normal position, a coin-chute, a coin-slot formed in the lid and registering with the coin-chute, the trigger being adapted to arrest the coin after the latter has been forced past the lever, substantially as set forth.

## 757,691. PHOTOGRAPHIC CAMERA. HENRY P. TATTERSALL, Hale, England. Filed Mar. 30, 1903. Serial No. 150,333. (No model.)



*Claim.*—1. In a photographic camera the combination with the body A, the bellows B, and the base-board C, of a front D capable of moving backward and forward upon the base-board, pins *d* attached to the bottom edges of the front, a bracket provided with a longitudinal curved slot carried by the base-board in which slot the pins *d* slide to and fro, and means for propelling the front along the said slot, as the base-board is opened and closed, substantially as described and shown.

2. In a photographic camera, the combination with the body A, the bellows B, and the base-board C, of a front D capable of moving backward and forward upon the base-board, pins *d* attached to the bottom edges of the front, a bracket provided with a longitudinal curved slot carried by the base-board in which slot the pins *d* slide to and fro, a slotted lever H pivoted to the base-board and engaging the pins *d* on the front, an operating-lever L pivoted to the base-board, a link K connecting the levers H and L, and a cam M fitted to the body with which a pin *m* on the lever L engages to propel the front backward and forward, as the base-board is opened and closed substantially as described.

3. In a photographic camera the combination with the body A, the bellows B, base-board C, strutted front D, and supporting-struts E, of projections D on the lower edges of the front, engaging a longitudinal channel *f* at the side of the base-board, a bracket F on the base-board provided with a guiding-channel *f*, and propelling mechanism connected with the body of the camera to propel the strutted front D backward and forward as the base-board is opened and closed, substantially as described.

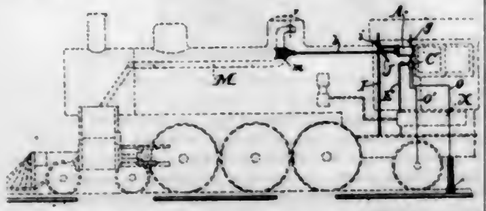
4. In a photographic camera the combination with the body A, bellows B, base-board C, strutted front D, and supporting-struts E, of projections *d* on the lower edges of the front, engaging a longitudinal channel *f* at the side of the base-board, a bracket F on the base-board provided with a guiding-channel *f*, a propelling-cam M, fitted to the side of the body, a propelling-lever L pivoted to the base-board provided with a pin *m* to engage the cam M, a second lever H pivoted to the base-board, and engaging the projections *d* on the front, and a link K connecting the levers L and H, substantially as described.

5. In a photographic camera, the combination with the body A, bellows B, base-board C, strutted front D, and supporting-struts E, of projections *d* on the lower edges of the front, engaging a longitudinal channel *f* at the side of the base-board, a bracket F on the base-board provided with a guiding-channel *f*, a propelling-cam M, fitted to the side of the body, a propelling-lever L pivoted to the base-board provided with a pin *m* to engage the cam M, a second lever H pivoted to the base-board and engaging the projections *d* on the front, a link K connecting the levers L and H, locking-levers P pivoted to the base-board to hold the projections *d* rigid when drawn out, strute N to support the base-board provided with pins *n* to slide in slots *n'*, and locking-lever R pivoted to the base-board to engage the strut-pin *n* and hold it rigid, substantially as described

## 757,692. BLOCK-SYSTEM EMERGENCY APPARATUS. FREDERICK V. THOMPSON, Philadelphia, Pa., assignor of one-half to Frank Baker, Philadelphia, Pa. Filed Jan. 16, 1903. Serial No. 138,490. (No model.)

*Claim.*—1. In a block-system emergency apparatus, the combination of a locomotive and a track divided into sections, a relay for each section, a battery for each section, a relay-circuit for each section including the relay and battery of that section, the opposite poles of which are connected respectively to the main rails of the

track of the corresponding section, whereby said circuit is adapted to be closed by the bridging of the rails of said section, a third rail in each section, emergency-circuits controlled by the relay of one section and including the batteries of the two adjacent sections, the opposite poles of which are connected to one of the main rails and the third rail of said adjacent sections respectively, said emergency-circuits being adapted to be closed through said relay by the closing of said relay-circuit, a contact device on the locomotive adapted to contact with said third rail, an emergency apparatus on the locomotive and a magnet on the locomotive controlling said emergency apparatus in circuit between said contact device and the locomotive-wheels, whereby, when said locomotive is on one of said adjacent sections, the corresponding emergency-circuit is closed by means of the locomotive and the closed relay-circuit, substantially as described.



2. In a block-system emergency apparatus, the combination, of a locomotive, a track divided into sections, a third rail for each section, a relay for each section, a battery for each section, a relay-circuit for each section including the battery and relay of such section, the opposite poles of which are connected respectively to the main rails of the tracks of such section whereby such relay-circuit is adapted to be closed by bridging the rails of such section, electrical connection from the armature of each relay to the main rails of adjacent sections, electrical connections from each relay to the batteries of adjacent sections, and electrical connection from each battery to the third rail of the corresponding section, thus forming an emergency-circuit for each section, whereby the closing of the relay-circuit of one section attracts the armature of such relay and closes the emergency-circuits of adjacent sections except between the third rail and main rail of such sections, an emergency apparatus on the locomotive and electrical devices on the locomotive controlling said emergency apparatus and adapted to close the emergency-circuit between said third rail and main rail, substantially as described.

3. In a block-system emergency apparatus, the combination of a track divided into sections, a third rail for each section, a relay-circuit in circuit with each section, an emergency-circuit controlled by each relay and connected with the third rails of adjacent sections, a locomotive, the train-line pipe of an air-brake system on the locomotive, a valve adapted to open the train-line pipe, the throttle-valve, a steam-pipe leading to the throttle-valve, an auxiliary throttle-valve in said steam-pipe, means for operating the first valve and the auxiliary throttle-valve by pressure fluid, a valve adapted to control the action of said pressure fluid, and electrical devices on the locomotive controlling said valve, said electrical devices and relay-circuit being adapted to close said emergency-circuit.

4. In a block-system emergency apparatus, the combination of a track divided into sections, a third rail for each section, a relay-circuit in circuit with each section, an emergency-circuit controlled by each relay and connected with the third rails of adjacent sections, a locomotive, the train-line pipe of an air-brake system on the locomotive, a pipe leading to the train-line pipe, a valve on the first-named pipe, the throttle-valve, a steam-pipe leading to the throttle-valve, an auxiliary throttle-valve in said steam-pipe, means for operating the first valve and the auxiliary throttle-valve by pressure fluid, a valve adapted to control the action of said pressure fluid, and electrical devices on the locomotive controlling said valve, said electrical devices and relay-circuit being adapted to close said emergency-circuit.

5. In a block-system emergency apparatus, the combination of a track divided into sections, a third rail for each section, a relay-circuit in circuit with each section, an emergency-circuit controlled by each relay and connected with the third rails of adjacent sections, a locomotive, the train-line pipe of an air-brake system on the locomotive, a valve adapted to open the train-line pipe, a throttle-valve, a cylinder, a piston therein adapted to be operated by pressure fluid, connections between said piston and said valves, a pipe leading to the cylinder, a pipe leading from a source of fluid-supply, an intermediate chamber, a pin-valve adapted to seat in the pipe leading to the cylinder, and electrical devices on the locomotive controlling said valve, said electrical devices and relay-circuit being adapted to close said emergency-circuit.

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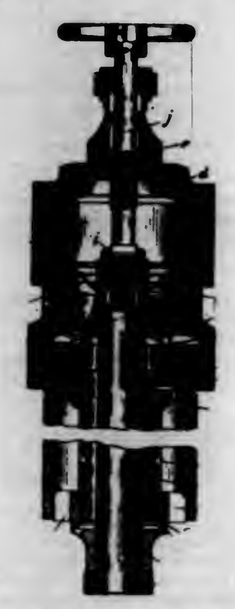
**757,693. BLASTING COMPOUND.** JACOB TOLLNER, New York, N. Y., assignor to F. G. Dahlenwaldt and H. M. Grant, New York, N. Y. Filed July 29, 1903. Serial No. 167,383. (No specimens.)

*Claim.*—1. The blasting compound described, consisting of nitrate of potash, nitrate of soda, sulfur, tanbark, and horse-manure, combined in about the proportion specified.

2. A composition of matter consisting of nitrate of potash, approximately fifteen per centum, nitrate of soda, approximately thirty per cent., sulfur, approximately fifteen per cent., spent tanbark, approximately twenty per cent., and horse-manure, approximately twenty per cent., mixed and incorporated substantially as described.

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**757,694. AUTOMATIC STEAM-TRAP.** JOSEPH M. TOWER, East Orange, N. J., assignor to Safety Car Heating & Lighting Company, a Corporation of New Jersey. Filed June 12, 1903. Serial No. 161,317. (No model.)



*Claim.*—1. In an expansion-trap, in combination, a head provided with a valve-seat, a valve adapted to the said seat, an expansion member carrying the said valve, an external casing surrounding the said expansion member, a spider intervening between the external casing and the expansion member and an adjustable supporting and locking means for supporting the expansible member in its adjusted position.

2. In an expansion-trap the combination of a chambered head divided by a partition having a valve-seat on each of the two faces thereof, a plurality of tubes, one within the other, constituting an expansion device, one tube carrying a valve cooperating with one seat and a manually-operated valve cooperating with the other seat and adapted to discharge steam through a portion of the space within the inner tube.

3. An expansion-trap, comprising in combination a supporting-head, a plurality of tubes constituting an expansion device projecting from said head and connected thereto, a valve carried by one of the said tubes, a valve-seat in the head adapted to said valve, another valve-seat in the said head, a hand-operated valve also in the said head, the valve-seat for said hand-operated valve permitting steam to escape from the trap through a space in the interior of the interior tube when the hand-operated valve is off its seat.

4. In an expansion-trap, the combination of a plurality of tubes, one within the other constituting an expansion device, an automatic valve connected with the expansion device, a valve-seat in the head and a hand-operated valve cooperating with the said valve-seat and adapted when operated to permit the discharge of steam through a space in the interior of the interior tube.

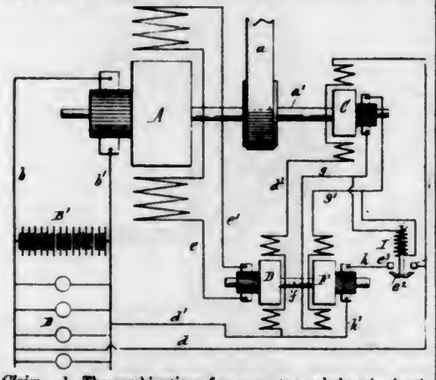
5. In an expansion-trap, the combination of a head located entirely at one end of the trap, a plurality of tubes supported thereby, one located within the other to constitute an expansion device, the interior tube $q$ being open to the atmosphere, a valve-seat in the head communicating with the tube $q$, an automatically-operated valve and a hand-operated valve cooperating with the seat communicating with tube $q$ and adapted to permit the discharge of steam through the tube $q$, substantially as described.

6. In an expansion-trap, the combination of a chambered head divided by a partition having a valve-seat on each of the two faces thereof, an expansion-operated valve cooperating with one seat and a manually-operated valve cooperating with the other seat, an outer tube $u$ and an inner tube $q$ under the control of the manually-operated valve, whereby steam may be blown through the trap by the pipe $q$ without coming in contact with the outer tube $u$.

7. In an expansion-trap, the combination of a head at one end of the trap having a valve-seat, a plurality of connected tubes supported from said head and constituting an expansion device and one of the said tubes carrying a suitable valve adapted to the valve-seat, a hand-operated valve in the head and means whereby steam may be blown through the trap out of contact with one of the tubes.

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**757,695. ELECTRIC LIGHTING AND POWER SYSTEM.** WILLIAM A. TURBAYNE, Buffalo, N. Y., assignor to Charles M. Gould, New York, N. Y. Filed Jan. 13, 1902. Renewed Sept. 29, 1903. Serial No. 175,091. (No model.)



*Claim.*—1. The combination of a generator and electric circuit, an exciter for the field-winding of the generator, an electric motor actuating said exciter and having its armature supplied from a practically constant source, and means for varying the field magnetism of the motor in correspondence with variations in the speed of the armature of the generator and irrespective of variations of current in the main circuit, substantially as set forth.

2. The combination of a generator and an electric circuit, an exciter for the field-winding of the generator, an electric motor actuating said exciter and having its armature supplied from a practically constant source, and means for varying the speed of the motor inversely to the variations in speed of the armature of the generator and irrespective of variations of current in the main circuit, substantially as set forth.

3. The combination of a generator and an electric circuit, an exciting-dynamo for the field-winding of the generator, an electric motor for actuating said exciting-dynamo and having its armature supplied from a practically constant source, and a dynamo for exciting the field of said motor and having its armature driven at a speed which varies correspondingly with the speed of the armature of the main generator, substantially as set forth.

4. The combination of a main generator and an electric circuit, a dynamo for exciting the field of said main generator and having its field supplied from a practically constant source, a dynamo having its field supplied from a practicaliy constant source and the speed of the armature of which varies correspondingly with the speed of the armature of the main generator, and a motor for driving said exciting-dynamo and having its armature supplied from a practically constant source and its field supplied from said second-mentioned dynamo, substantially as set forth.

5. The combination of a main generator and an electric circuit, a dynamo for exciting the field of said main generator, a second dynamo the armature of which is driven at a speed corresponding to the speed of the armature of the main generator, a motor for driving said first dynamo and the field of which is supplied from said second dynamo, the fields of said dynamos and the armature of said motor being supplied from the same practically constant source, substantially as set forth.

6. The combination of a generator and an electric circuit, an exciter for the field-winding of the generator, an electric motor actuating said exciter and having its armature supplied from a practically constant source, an electric circuit for varying the field magnetism of the motor in correspondence with the variations in the speed of the armature of the generator, and an electric switch included in said circuit and controlling said source of supply for the motor-armature, substantially as set forth.

7. The combination of a main generator, an exciter apparatus therefor comprising a dynamo and means for driving the same, and means for controlling the electromotive force of the exciter apparatus in inverse correspondence with the speed of the main generator, substantially as set forth.

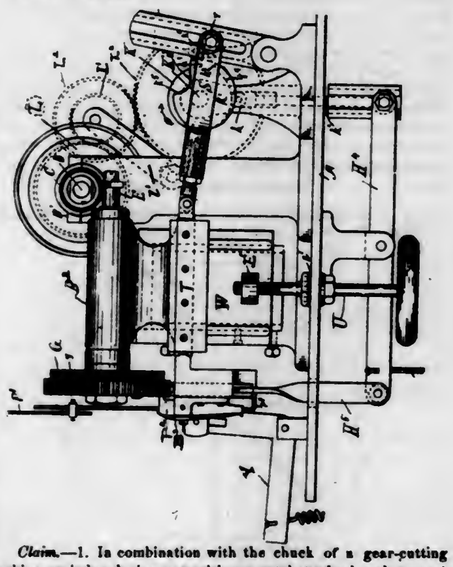
8. The combination of a main generator, an exciter apparatus therefor comprising a dynamo and means for driving the same, a dynamo driven at a speed corresponding to that of the main generator and having its armature-circuit connected to the exciter apparatus to vary the electromotive force thereof in inverse correspondence with the speed of the main generator, substantially as set forth.

9. The combination of a main generator, a storage battery connected therewith, an exciter apparatus therefor comprising a dynamo and means for driving the same, and means for controlling the electromotive force of the exciter apparatus in inverse correspondence with the speed of the main generator, substantially as set forth.

10. The combination of a main generator, a storage battery connected therewith, an exciter apparatus therefor comprising a dynamo and means for driving the same, a dynamo driven at a speed corresponding to that of the main generator and having its armature-circuit connected to the exciter apparatus to vary the electromotive force thereof in inverse correspondence with the speed of the main generator, substantially as set forth.

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**757,696. GEAR-CUTTING MACHINE.** WILLIAM A. TWINING, Cleveland, Ohio, assignor of one-half to Edward A. Albright and Charles O. Bartlett, Cleveland, Ohio. Filed Jan. 27, 1902. Serial No. 91,479. (No model.)



*Claim.*—1. In combination with the chuck of a gear-cutting machine, an index device comprising a ratchet-wheel, and a gage-wheel connected to the chuck and rotatable therewith, a pair of spring-held levers having a link adjustably connected thereto, with a spring-pressed pawl carried by one of the levers engaging the ratchet-wheel, a locking means actuated by the movement of said

levers for engagement with said gage-wheel, and means connected to said levers for actuating the same, a vertically-movable plunger connected to said last-named means, and a cam for actuating said plunger.

2. In a gear-cutting machine, the combination of a chuck, an indexing device secured to the chuck, comprising a ratchet-wheel and a locking-wheel, means for revolving said ratchet-wheel comprising a pair of spring-held levers, a link connected to said levers, a spring-pressed pawl carried by one lever engaging the ratchet-wheel, a locking-piece to engage the locking-wheel secured to the other lever, a cam, a plunger actuated by said cam, a lever having one of its ends connected to said plunger, and a pitman actuated by said last-named lever and being operatively connected to one of the first-named levers.

3. In a gear-cutting machine, the combination of a chuck, an indexing device secured to the chuck comprising a ratchet-wheel and a locking-wheel, means for rotating said ratchet and locking wheels comprising slotted levers, a pawl carried by one of said levers for engaging said ratchet-wheel, a link, connected to said levers, and having its securing means engaging the slots of said levers, a locking means for engagement with said locking-wheel, and means for simultaneously actuating said levers and locking means, whereby said pawl and locking means will be alternately moved into engagement with the ratchet-wheel and locking-wheel respectively.

4. In a gear-cutting machine, the combination of a chuck, an indexing device comprising a ratchet-wheel and a locking-wheel, a pair of spring-pressed levers adjustably connected by a link, a spring-pressed pawl carried by one of said levers for engagement with said ratchet-wheel, a locking-piece for engaging said locking-wheel carried by the other lever, a pitman connected to the last-named lever, a plunger, a lever having its ends connected to said pitman and plunger respectively and means for actuating said plunger.

5. In a gear-cutting machine, in combination with a belt-shifting means including a spring-pressed rod having means thereon engaging the belt and supporting means therefor, of an indexing means comprising a ratchet-wheel, a locking-wheel, and means for actuating the ratchet-wheel, a locking member formed with an opening and being carried by said ratchet-wheel-actuating means, a rod normally engaging said belt-shifting means and having its lower portion formed with an inturned lug, said ratchet-wheel-actuating means including a pivoted lever for forcing said rod inwardly whereby its lug will engage the opening of said locking member, and a cam carried by said wheel for actuating said last-named lever.

6. In a gear-cutting machine, the combination of a chuck, an indexing device comprising a ratchet-wheel, a locking-wheel, a pair of slotted levers, a spring interposed between and connected to said levers, a link adjustably connected to said levers, a pawl carried by one of said levers engaging said ratchet-wheel, a locking means secured to the other lever for engagement with the locking-wheel, a pitman connected to said last-named means, a lever connected to said pitman, a weight connected to said last-named lever for returning the first-named levers to their normal positions, a cam, and a plunger carrying a roller engaging said cam and being operatively connected to said last-named lever.

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757,697. TIRE-TIGHTENER. CLIFTON T. UMSTED, Fort Scott, Kans. Filed Dec. 15, 1903. Serial No. 185,309. (No model.)



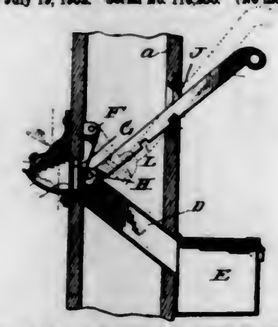
*Claim.*—1. A tire-tightener, comprising a wheel having a felly cut through with its ends converging outwardly, wear-plates secured to the ends of the felly, and provided with sockets in their outer sides receiving the ends of the felly, and longitudinal grooves at their inner sides, a wedge fitting between said plates and having a tongue-and-groove relation therewith and provided with a threaded stem, a rod secured to the hub of the wheel, and having its outer end reduced, and a turnbuckle journaled on said rod and screwed to said stem.

2. A tire-tightener, comprising a wheel having a felly cut through with its ends converging outwardly, wear-plates secured to the ends of the felly, and provided with sockets in their outer sides receiving the ends of the felly, and longitudinal grooves at their inner side, a wedge fitting between said plates and having a tongue-and-groove relation therewith and provided with a threaded stem, a rod secured to the hub of the wheel and having its outer end reduced, a turnbuckle journaled on said rod and screwed to said stem, and means to lock the turnbuckle from turning on said rod.

3. A tire-tightener comprising a wheel having its felly cut through, wear-plates secured on its ends and having their faces converging outwardly, a wedge fitting between and having a tongue-and-groove relation with said plates and provided with a threaded stem, a plate secured to the hub and provided with a central opening and with segmental flanges engaging the opposite sides of contiguous spokes, a rod bearing at its inner end on said plate between said flanges and having a tenon extending through the hole of the plate and into the hub, and having its outer end reduced and of cylindrical form, a turnbuckle journaled on the reduced end of the rod, and screwed to said wedge-stem, and means to lock the turnbuckle against rotatable movement on the rod.

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757,698. LETTER-BOX. HENRY H. WARNER, Tacoma, Wash. Filed July 19, 1902. Serial No. 116,260. (No model.)




*Claim.*—1. In a mail-receptacle provided with a conduit for the insertion of mail therein, the combination of means movable to obstruct the conduit, and mechanism extending exterior of said receptacle and constructed to securely lock said movable means in either its closed or open position, substantially as described.

2. In a mail-receptacle provided with a conduit for the insertion of mail therein, the combination of a closure arranged to, in its closed position, obstruct the conduit, and a lever extending exterior of said receptacle, and constructed and arranged to securely lock said closure in either its closed or open position, substantially as described.

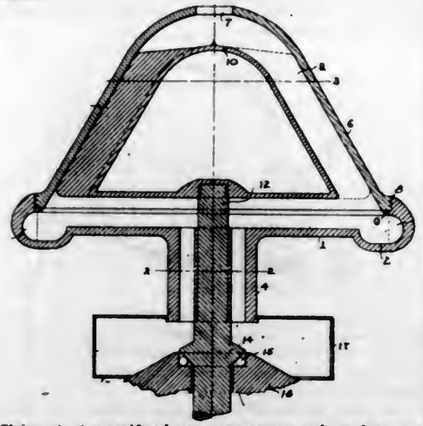
3. In a mail-receptacle provided with a conduit for the insertion of mail therein, the combination of means movable to obstruct the conduit, said movable means constructed and positioned to constitute a visual signal when in its closed position, and mechanism extending exterior of said receptacle and constructed to securely lock said movable means in either its closed or open position, substantially as described.

4. In a mail-receptacle adapted to be positioned within a compartment, the combination of a conduit constructed to extend through a wall of such compartment and arranged in communication with the interior of said receptacle, means movable to obstruct said conduit, and mechanism accessible within said compartment and constructed to actuate said movable means and securely lock the same in either its closed or open position, substantially as described.

5. In a mail-receptacle adapted to be positioned within a compartment, the combination of a conduit constructed to extend through a wall of such compartment and arranged in communication with the interior of said receptacle, means movable to obstruct said conduit, said movable means constructed and positioned to constitute a visual signal when in its closed position, and mechanism accessible within said compartment and constructed to actuate said movable means and securely lock the same in either its closed or open position, substantially as described.



757,699. CENTRIFUGAL ORE-CONCENTRATOR. EDMUND R. WEBB, Spokane, Wash. Filed Oct. 22, 1903. Serial No. 178,132. (No model.)



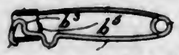
*Claim.*—1. A centrifugal ore concentrator and amalgamator, comprising a rotatable base having water-escape openings and an annular trough, an outer cone having its lower edge concentric with the trough, and provided with an inlet-opening in its upper end, an inner concentric cone supported above said base, and one or more radial wings extending across the annular space between said cones.

2. A centrifugal ore concentrator and amalgamator, comprising a rotatable base provided with a peripheral trough and having a hub containing water-escape openings, a cone having its lower edge coincident with the outer wall of the trough and provided with an inlet in its upper end, and an inner concentric cone supported above said base.

3. A centrifugal ore concentrator and amalgamator, comprising two concentric cones affording between them an annular space increasing in diameter from above downward, a mercury-trough below and concentric with said space, means for rotating said cones and trough, and openings in the bottom of said outer cone for the escape of material fed to the machine.

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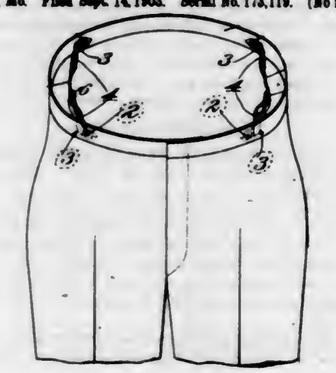
757,700. SAFETY-PIN. FREDERICK WESTPHAL, New York, N. Y. Filed Dec. 31, 1903. Serial No. 185,990. (No model.)



*Claim.*—A safety-pin composed of two side parts having a spring connection at one end, one of said parts being pointed at the other end, and the other part being formed into an outwardly-directed hook and having loops projecting in opposite directions and in the same plane with the separate side parts, and a link-shaped band mounted on the last-named part and provided at its inner end with a transverse member, substantially as shown and described.

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757,701. GARMENT-SUPPORTER. THOMAS M. WHELESS, St. Louis, Mo. Filed Sept. 14, 1903. Serial No. 173,119. (No model.)



*Claim.*—The combination with a trousers having oppositely-disposed pairs of buttons on the inner face of the waistband of the trousers, elastic webs terminally engaging the buttons and disposed on the inner sides of the trousers, the intermediate portions of the webs having free independent movements with respect to the trousers to fit over the hips of the wearer; substantially as described.

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757,702. PROCESS OF MAKING ORTHO-OXY-CARBON ACIDS. GEORG WICHMANN, Berlin, Germany, assignor, by direct and mesne assignments, to Chemische Fabrik auf Actien, (vorm. E. Schering,) Berlin, Germany, and Société Chimique des Usines du Rhone, (anciennement Gilliard, P. Monnet et Cartier,) St. Fons, near Lyons, France. Filed Mar. 19, 1901. Serial No. 51,925. (No specimens.)

*Claim.*—1. The process of producing ortho-oxy-carbon acids which consists in reacting with carbon dioxid on a mixture of an alkaline phenolate and a sulfite, and separating from the resulting alkali salt of the ortho-oxy-carbon acid, the ortho-oxy-carbon acid, substantially as described.

2. The process of producing ortho-oxy-carbon acid from a mixture of an alkaline salt of a phenol and a sulfite, said process consisting in treating with carbonic acid a mixture obtained by fusing an alkali salt of a sulfo-acid of aromatic hydrocarbons with caustic alkali and separating from the alkali salt thus obtained the ortho-oxy-carbon acid, substantially as described.

3. The process of producing ortho-oxy-carbon acids from a mixture of an alkali salt of a phenol and a sulfite, said process consisting in treating a mixture obtained by fusing an alkali salt of a sulfo-acid of aromatic hydrocarbons with caustic alkali, from which mixture is separated a portion of the sulfite, with carbonic acid and separating from the alkali salt thus obtained the ortho-oxy-carbon acid, substantially as described.

4. The process of producing ortho-oxy-carbon acids from a mixture of an alkali salt of a phenol and a sulfite, said process consisting in separating from the fused mixture a part of the sulfite by treating the mass with a quantity of water insufficient to completely dissolve the mass and then subjecting the mass to treatment with carbon dioxid and separating out the ortho-oxy-carbon acid.

5. The process of producing salicylic acid, consisting in acting with carbon dioxid on a mixture of alkali phenolate with alkali sulfite and then separating the salicylic acid from the alkaline salt produced, substantially as described.

6. The process of producing salicylic acid, which consists in melting alkali-benzol sulfonate with caustic alkali and reacting with carbon dioxid on said mixture and separating from the resulting alkali salt, the salicylic acid.

7. The process of producing salicylic acid, which consists in melting benzol-sulfonate of alkaline metal with caustic alkali, separating from the resulting mixture of alkali phenolate and alkali sulfite a portion of the latter, then reacting with carbon dioxid on said mixture and separating the salicylic acid from its alkali salt thus produced, substantially as described.

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757,703. IGNITER FOR OIL-STOVES. WILLIAM H. WILDER, Gardner, Mass. Filed July 26, 1902. Serial No. 117,096. (No model.)



*Claim.*—1. An igniting medium for oil-stoves, composed of a multiple thickness of incombustible absorbent material of varying widths.

2. An igniting medium for oil-stoves composed of a multiple thickness of incombustible absorbent material of varying widths, the narrow portions being intermediate of the wide portions, substantially as described.

3. An igniting medium for oil-stoves comprising a multiple thickness of absorbent material varying in width, the narrow portion extending from the top downwardly.

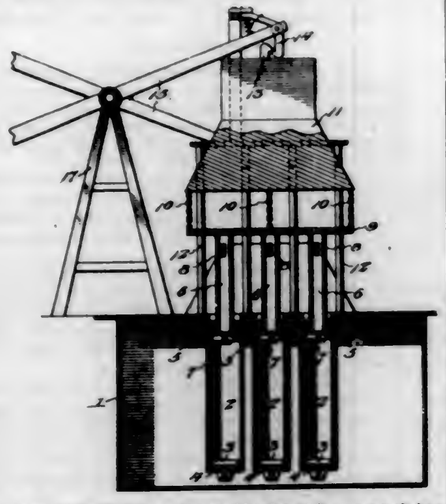
4. An igniting medium for oil-stoves composed of an elongated strip wound upon itself and a strip of less width folded within the same.

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757,704. AIR-COMPRESSOR. JOHN C. WILLIAMS, Kansas City, Mo. Filed July 11, 1903. Serial No. 165,134. (No model.)

*Claim.*—1. In an air-compressor, the combination with a receptacle having a valved cylinder therein, a valved piston slidably mounted within the cylinder, and a tabular rod to the piston having

an air-inlet; of a lever fulcrumed adjacent the cylinder, a weight above the piston, a flexible connection between the weight and piston, and means for automatically engaging the lever with, and disengaging it from the weight.



2. In an air-compressor, the combination with a receptacle having a valved cylinder opening thereinto, a valved piston within the cylinder and a tubular rod to the piston having air-inlets; of guides, a weight mounted upon the guides and above the rod, a flexible connection between the weight and rod, a lever, a hooked bell-crank lever for engaging the weight, and means for automatically disengaging the weight.

3. In an air-compressor the combination with a receptacle, a valved cylinder opening thereinto, a valved piston within the cylinder and a tubular rod to the piston having an air-inlet; of guides, a weight mounted thereon above the rod, a flexible connection between the weight and rod, a hooked arm to the weight, an operating-lever, a hooked bell-crank lever pivoted thereto, and a release-stop.

4. In an air-compressor the combination with a receptacle having a valved cylinder opening thereinto, a valved piston within the cylinder and a tubular rod extending from the piston and having an air-inlet; of guides, a weight mounted upon the guides and above the rod, a flexible connection between the weight and rod, a hooked arm to the weight, a spring-pressed hooked bell-crank lever pivoted to the operating-lever, and a stop in the path of the bell-crank lever.

5. In an air-compressor the combination with a receptacle, of cylinders projecting thereinto and having valved outlets, valved pistons within the cylinders, tubular rods extending from the pistons and having inlets, frames connecting the pistons to form groups, guides, a weight slidably mounted upon the guides and above each frame, a flexible connection between each weight and its frame, operating-levers, hooked arms to the weights, hooked bell-crank levers pivoted to the operating-levers, stops in the paths of the bell-crank levers, a pulley, and a flexible strip mounted thereon and connecting the free ends of the operating-levers.

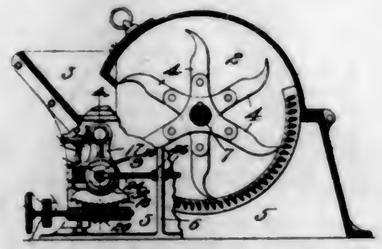
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**757,705. SHREDDING-MACHINE OR THE LIKE.** MILTON F. WILLIAMS, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Company, St. Louis, Mo., a Corporation of Missouri. Filed Apr. 6, 1903. Serial No. 151,361. (No model.)

*Claim.*—1. In a machine of the character indicated, pivotally-supported carrier-plates, a breaker member carried by said plates, said plates having segmental gears thereon, and gears coöperating with said segmental gears for adjusting said plates pivotally; substantially as described.

2. In a machine of the character indicated, pivotally-supported carrier-plates having segmental gears formed upon their ends, a breaker member supported directly upon and carried by said plates, and suitably-supported worms coöperating with said gears; substantially as described.

3. In a machine of the character indicated, a casing having transverse plates, pivotally-supported carrier-plates having segmental gears upon their ends, a breaker-roll journaled in said plates, adjusting-gears coöperating with said segmental gears, eyebolts at the ends of said roll and passing through said transverse casing-plates, and nuts upon said bolts engaging opposite sides of said casing-plates; substantially as described.



4. In a machine of the character indicated, the combination with beaters, of carrier-plates adjustable toward and away from said beaters, a breaker-roll journaled in said carrier-plates, and means carried by one of said plates for adjusting said roll circumferentially; substantially as described.

5. In a machine of the character indicated, the combination with beaters, of carrier-plates adjustable toward and away from said beaters, a breaker-roll journaled in said carrier-plates and provided with a gear, and an adjusting-gear coöperating with said first-mentioned gear and supported upon one of said carrier-plates; substantially as described.

6. In a machine of the character indicated, the combination with beaters, of carrier-plates adjustable toward and away from said beaters, a breaker-roll journaled in said carrier-plates, a gear upon said breaker-roll, one of said carrier-plates having a hub thereon, a collar supported upon said hub and provided with lugs, and a gear journaled in said lugs and coöperating with said first-mentioned gear to adjust said breaker-roll circumferentially; substantially as described.

7. In a machine of the character indicated, the combination with slotted frame-plates, of exteriorly-arranged hangers pivoted to said frame-plates, the pivotal points of the hangers being above the slots, a roller breaker element mounted in said hangers between the frame-plates, the spindle of said element passing through the slot, means for adjusting the hangers simultaneously in different directions so that the breaker element preserves parallelism, and pivoted revoluble beaters coöperating with said breaker element; substantially as described.

8. In a machine of the character indicated, the combination with a casing, of a grinding-surface, pivoted revoluble beaters, and a feed-hopper, of hangers pivoted to the casing, a revoluble breaker element suspended by said hangers so as to be interposed between the lower edge of the hopper and the front edge of the grinding-surface, and means for adjusting the hangers and their carried breaker element inwardly and outwardly with respect to the revoluble beaters, said means preserving parallelism of the breaker element to its associate parts; substantially as described.

9. In a machine of the character indicated, the combination with a casing, of a grinding-surface, pivoted revolving beaters, a feed-hopper, hangers pivotally mounted on the casing, a revoluble breaker element suspended by said hangers, cutting or breaking edges carried by said breaker element for supporting the material at the time it is being operated upon by the revolving beaters, means for bodily adjusting the breaker element inwardly and outwardly, said means preserving parallelism of said breaker element with respect to its associate parts, and independent means for circumferentially adjusting said breaker element; substantially as described.

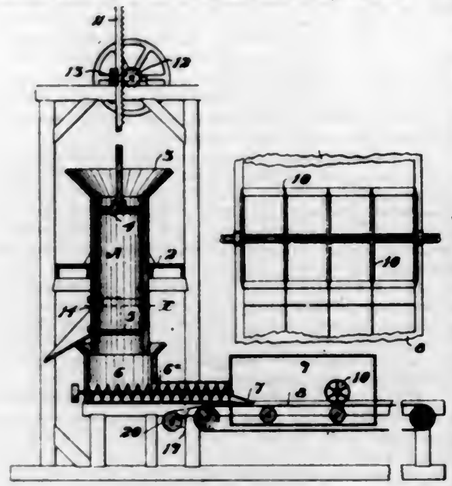
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**757,706. PROCESS OF TREATING FRUITS.** CHARLES R. WILSON, San Francisco, Cal. Filed Oct. 13, 1903. Serial No. 176,835. (No specimens.)

*Claim.*—1. The herein-described process of treating fresh drupaceous fruits which consists in first subjecting the fresh fruit to pressure to express the pulp and juice and collecting the same separate from the skins and pits, then spreading the separated pulp and juice in a thin sheet-like form, and finally drying the sheet whereby the resultant product is a dried cake composed entirely of the pulp of raw fruit.

2. The herein-described process of treating fresh drupaceous fruits, which consists in first subjecting the fruit to pressure to express the pulp and juice and collecting the same separate from the skins and pits, then spreading the pulp and juices and delivering the same in a sheet-like form, bleaching the expressed pulp, subdividing the sheet, and finally drying the subdivided product whereby the resultant product is a cake composed of dried raw fruit-pulp.





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**757,707. NON-REFILLABLE BOTTLE.** THOMAS M. WOOD, Stamford, Conn. Filed Aug. 10, 1903. Serial No. 168,954. (No model.)



*Claim.*—1. A bottle-stopping device comprising an outer tube adapted for attachment to a bottle, a slotted inner tube secured to the outer tube, a ball-seat adapted to engage the bottle-neck and be attached to the inner tube and a ball adapted to travel along the inner tube and to engage the seat to close the bottle.

2. A bottle-stopping device comprising an outer tube for attachment to a bottle, a slotted inner tube closed at its outer end, a ball-seat adapted to engage the bottle-neck and a ball adapted to move outward in the inner tube in pouring and to engage the seat when the bottle is not tilted.

3. A bottle-stopping device comprising an outer tube adapted for attachment to a bottle, an inner tube having upper and lower series of slots and a cross-pin between said series of slots, a ball-seat adapted to engage the bottle-neck and a ball adapted to move outward in the inner tube when the bottle is tilted until stopped by the pin and to engage the seat when the bottle is in its normal position.

4. A bottle-stopping device comprising an outer tube adapted for attachment to a bottle, an inner tube having upper and lower series of slots, a cross-pin below the upper series of slots and a ball-socket between the pin and the lower series of slots, a ball-seat adapted to engage the bottle-neck and a ball adapted to move into the socket and prevent passage of liquid into the inner tube in the tilted position and to engage the seat when the bottle is in its normal position, substantially as shown, for the purpose specified.

5. A bottle-stopping device comprising an outer tube and an inner tube with a pouring-space between them, said inner tube having slots to permit passage of liquid from the inner tube into the outer tube in pouring and other slots to permit passage of liquid from the outer tube into the inner tube when refilling is attempted, a ball-seat and a ball adapted to pass into the inner tube in pouring and to normally engage the seat to close the bottle and prevent the entrance of liquid.

6. A bottle-stopping device comprising an outer tube and an inner tube with a pouring-space between them, said inner tube being closed at its outer end for the purpose set forth, and having upper and lower series of slots and a cross-pin, for the purpose set forth; a ball-seat and a ball adapted to pass into the inner tube in pouring and to normally engage the seat.

7. A bottle-stopping device comprising an outer tube internally threaded at its lower end, an inner tube having an angle-flange internally and externally threaded and engaging the outer tube, a ball-seat having a flange externally threaded to engage the flange on the inner tube and a ball adapted to pass into the inner tube in pouring and to engage the seat to close the bottle.

8. The combination with the flange of a bottle-neck, of an outer tube secured thereto by closing the lower end of the tube under the flange, a slotted inner tube closed at its outer end and secured to the outer tube with a pouring-space between them, a ball-seat engaging the neck of the bottle and secured to the inner tube and a ball adapted to pass into the inner tube in pouring and to normally engage the seat.

9. The combination with the flange of a bottle-neck, of an outer tube secured thereto by closing the lower end of the tube under the flange, an inner tube which is closed at its outer end, is secured to the outer tube and is provided with upper and lower series of slots and a cross-pin below the slots of the upper series leaving a socket between said cross-pin and the slots of the lower series, a ball-seat engaging the neck of the bottle and secured to the inner tube and a ball normally engaging the seat to close the bottle and adapted to pass into the socket to permit passage of liquid into the outer tube in pouring and to prevent its passage into the inner tube, the slots of the upper series permitting passage of liquid from the outer tube into the inner tube above the ball to seat the latter when refilling is attempted.

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**757,708. KNITTING-MACHINE NEEDLE.** STEPHEN WOODWARD, Franklin Falls, N. H. Filed Aug. 21, 1903. Serial No. 170,263. (No model.)



*Claim.*—1. A knitting-machine needle comprising a body provided at one side with a countersink having a wall substantially at right angles to the length of the needle and drilled close to said wall, a latch, a rivet inserted in the drilled hole of the body, the end of the rivet being turned over into the countersink and the wall of the countersink being flattened down.

2. A knitting-machine needle comprising a body provided at one side with a countersink having a wall substantially at right angles to the length of the needle and drilled close to said wall, a latch, and a rivet inserted in the drilled hole of the body, the end of the rivet being turned over into the countersink and upset therein the wall of the countersink being pressed or hammered to overlap one end of the rivet.

3. A knitting-machine needle comprising a body provided at one side with a countersink and presenting a wall substantially at right angles to the length of the needle, said body having a hole drilled therethrough close to said wall, a latch, and a rivet the end of which is bent over and upset in said countersink, a portion of the body of the needle overlapping the bent outer end of the rivet.

4. A knitting-machine needle comprising a body provided at one side with a countersink, a rivet having its end in said countersink and held therein by a portion of the metal at the side of the needle overlapping the end of said rivet in said countersink.

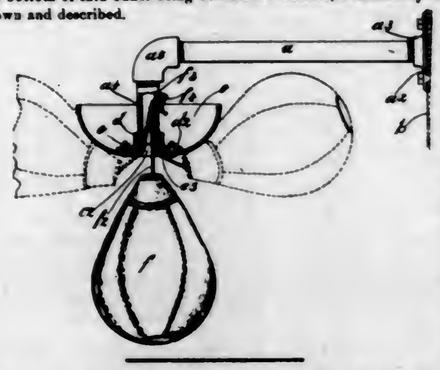
5. A knitting-machine needle comprising a body provided at one side with a countersink, and at its opposite side with a hole presenting a burred edge, a rivet one end of which enters the hole having the bur, the other end of which stands in the countersink, the bur when thrown backwardly in confining the rivet in the needle engaging the rivet at one end, the upturned metal of the countersink when depressed overlapping the end of said rivet in said countersink.

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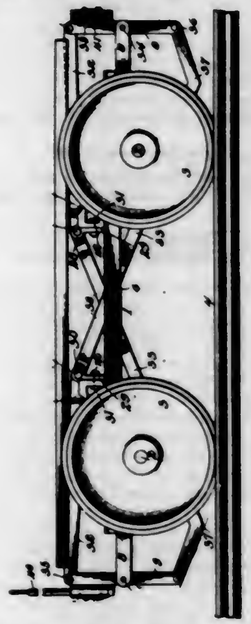
**757,709. EXERCISING APPARATUS.** GEORGE YOERGER, Brooklyn, N. Y. Filed Feb. 3, 1904. Serial No. 191,776. (No model.)

*Claim.*—An exercising apparatus of the class described, com-

prising a bracket-arm adapted at one end to be secured to a wall or other support and provided at its opposite end with a depending tubular member, a cup-shaped buffer secured to the lower end of said depending tubular member, and a poaching-bag suspended beneath said buffer by means of a flexible connection which passes upwardly therethrough and into said tubular member, the opening in the bottom of said buffer being beveled or rounded, substantially as shown and described.



757,710. ELEVATING BRICK-CAR. ANDREW J. ZILKER, ALBERT L. TIDHARSH, and CHARLES J. ARMSTRONG, Austin, Tex. Filed Apr. 9, 1903. Serial No. 151,905. (No model.)



*Claim.*—1. In a car or truck of the class described, the combination of a lower frame provided with wheels and having vertical guides, an upper vertically-movable frame provided with vertical slides arranged in the guides of the lower frame, and a shiftable wedge for raising and lowering the upper frame, substantially as described.

2. In a car or truck of the class described, the combination of a lower frame provided with wheels, an upper vertically-movable frame, shiftable wedges mounted on one of the frames and operating against the other to raise and lower the upper frame, operating-levers located at the ends of the car, and means for connecting the operating-levers with each of the wedges, whereby the upper frame may be raised and lowered from either end of the car, substantially as described.

3. In a car or truck of the class described, the combination of a lower frame, a vertically-movable frame, a shiftable wedge, and a movable antifriction device interposed between the wedge and one of the frames, substantially as described.

4. In a car or truck of the class described, the combination of a lower frame, an upper frame, a reciprocating wedge, and a shiftable antifriction device movable with the wedge and interposed between the same and one of the frames, substantially as described.

5. In a car or truck of the class described, the combination of a lower frame, an upper frame, a reciprocatory wedge for raising and lowering the upper frame, and a shiftable antifriction device interposed between the wedge and one of the frames and comprising a series of antifriction rollers or wheels spaced apart and connected with one another, substantially as described.

6. In a car or truck of the class described, the combination of a lower frame, an upper frame, a reciprocatory wedge for raising and lowering the upper frame, and a shiftable antifriction device interposed between the wedge and the frame and comprising a series of antifriction rollers or wheels spaced apart, and a frame receiving the rollers or wheels and connected with the same, substantially as described.

7. In a car or truck of the class described, the combination of a lower frame, an upper frame provided with an antifriction device, a reciprocating wedge having an inclined face receiving the antifriction device of the upper frame, and a shiftable antifriction device interposed between the wedge and the lower frame and movable with the former, substantially as described.

8. In a car or truck of the class described, the combination of a lower frame having a guide, an upper frame having a slide arranged in the guide, an antifriction-wheel carried by the slide, and a reciprocating wedge mounted on the lower frame and having an inclined upper face to receive the antifriction-wheel, substantially as described.

9. In a car or truck of the class described, the combination of a lower frame, an upper frame having an antifriction-wheel, and a reciprocating wedge presenting an inclined upper face to the wheel and provided at the upper portion with a seat to receive the wheel, substantially as described.

10. In a car or truck of the class described, the combination of a lower frame, an upper frame having an antifriction-wheel, a wedge mounted on the lower frame and having an inclined upper face and provided with inner and outer curved seats, and means for reciprocating the wedge, substantially as described.

11. In a car or truck of the class described, the combination of a lower frame having a way and provided with ribs forming rails, stops located at the ends of the ribs, a shiftable antifriction device comprising rollers or wheels arranged on the ribs, and an approximately oblong frame connecting the rollers or wheels, an upper frame and a reciprocatory wedge mounted upon the shiftable antifriction device and receiving the upper frame, substantially as described.

12. In a car or truck of the class described, the combination of a lower frame, a guide mounted on the lower frame and provided with parallel flanges and having a bifurcated lower portion, an upper frame having a slide arranged in the said guide, and a wedge for raising and lowering the upper frame, said wedge being movable through the opening of the guide, substantially as described.

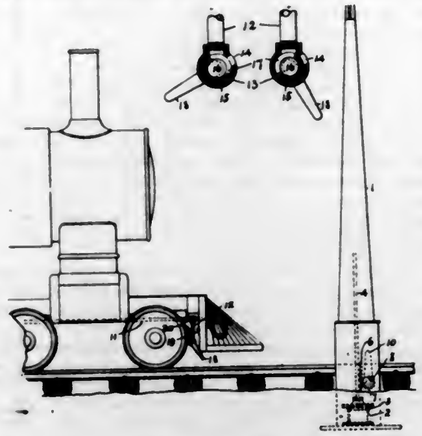
13. In a car or truck of the class described, the combination of a lower frame, an upper frame, shiftable devices for raising and lowering the upper frame, operating-levers fulcrumed between their ends and located at the ends of the car or truck, short connecting-bars extending from the upper arms of the operating-levers to the adjacent shiftable devices, and the long connecting devices extending from the lower arms of the levers and crossing at the center of the car or truck and connected with the shiftable devices, substantially as described.

14. In a car or truck of the class described, the combination of a lower frame, a vertically-movable upper frame, shiftable wedges for raising and lowering the upper frame, operating-levers fulcrumed between their ends and located at the ends of the car or truck and provided with sockets adapted to receive a handle or bar, and the upper and lower connecting means extending from the arms of the levers to the wedges, the lower connecting means being crossed at the center of the car or truck, substantially as described.

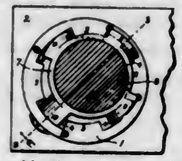
757,711. MEANS FOR STOPPING RAILWAY-TRAINS AT DANGER-SIGNALS. WILLIAM I. ADAMSON, Philadelphia, Pa. Filed June 8, 1903. Serial No. 160,553. (No model.)

*Claim.*—In a train-stopping device, a signal operative by power applied to a piston, a rod from the piston, a rack upon the rod, a pinion engaging the rack and operating a shaft having an arm at its opposite end adapted to move to vertical and horizontal positions, and a valve located in communication with a train-pipe, having means to abut the arm aforesaid when it is placed in a vertical position and thereby open the valve and the train-pipe.





757,712. TABLE-LEG ATTACHMENT. JACOB F. ARNOLD, Massillon, Ohio. Filed May 5, 1903. Serial No. 155,778. (No model.)



*Claim.*—1. In combination, a table, a circular bracket on the table, flanges on the inner edge of the bracket and notches between the flanges, wedge-shaped sockets between the flanges and the table and a radial slot in the bracket opening in one notch; and a leg, a circular plate on the leg, a radial arm on the plate adapted to enter the slot and wedge-shaped lugs on the plate adapted to enter through the notches into the sockets.

2. In combination, a circular bracket, flanges on the inner edge of the bracket and notches between the flanges, wedge-shaped sockets in the flanges and a radial slot opening in one notch; and a circular plate, a radial arm on the plate adapted to enter the slot, and wedge-shaped lugs on the plate adapted to enter through the notches into the sockets.

757,713. EXPLOSIVE COMPOUND. JOHN P. ARNOLD, Colfax, Ill. Filed Oct. 18, 1902. Serial No. 127,812. (No specimens.)

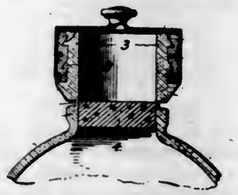
*Claim.*—1. An explosive compound, consisting of chlorate of potash, yellow prussiate of potash, saltpeter, sulfur and tannin, substantially as herein described.

2. An explosive compound consisting of chlorate of potash, yellow prussiate of potash, saltpeter, sulfur and tannin, the tannin existing in the compound in the form of a binder adherent to the non-soluble substances.

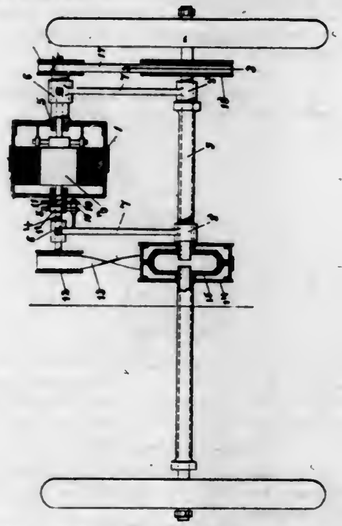
3. An explosive compound consisting of chlorate of potash, yellow prussiate of potash, saltpeter, sulfur and tannin, the tannin existing in the compound as a coating of the insoluble ingredients, brought to this condition by being dissolved in alcohol, and the latter evaporated out, substantially as described

757,714. BOTTLE. JOHN AULD, Hamden, N. Y. Filed Aug. 12, 1903. Serial No. 169,199. (No model.)

*Claim.*—The combination of a receptacle provided at its neck with a frangible ligament and having an exterior annular enlargement above the same to form a horizontal seat, said neck being also provided above the enlargement with triangular ribs shouldered at their lower faces, a cap arranged on the neck and resting upon the upper edges thereof and upon the seat and spaced from the neck at the sides thereof to form an interspace, said cap being provided on the inner faces of the sides with ribs shouldered at their upper faces, one of the ribs being arranged at the bottom of the cap, a cement filling arranged in the said interspace and securing the cap to the frangible portion of the neck, and a stopper fitted in the neck and extending below the frangible ligament, substantially as described.



757,715. PROPULSION OF ELECTRIC AUTOMOBILES. JONAS W. ATLESWORTH, East Orange, N. J. Filed June 24, 1903. Serial No. 162,973. (No model.)



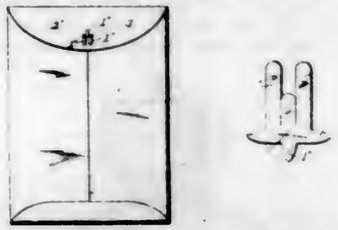
*Claim.*—1. In apparatus of the class described, the combination of an electric motor having a rotatable armature part and a rotatable field part, means for normally locking one of said parts from rotation, a pair of driven wheels, connections between the two rotatable motor parts and said wheels, and a releasable clutch in the connection from the normally stationary member, substantially as and for the purposes set forth.

2. In apparatus of the class described, the combination with an electric motor whose field-magnets and armature are independently rotatable in opposite directions, of a pair of driven wheels, connections between said rotatable elements and said wheels, a releasable clutch in one of said connections, and means for locking against rotation, the rotatable element connected with said clutch, substantially as and for the purposes set forth.

3. In an apparatus of the class described, the combination with an electric motor whose armature and field-magnets are independently rotatable in opposite directions, of a driven shaft, connections between said shaft and said rotatable elements, for driving the shaft in a single direction, a releasable clutch in one of said connections and means for locking against rotation the rotatable element connected with said clutch, substantially as and for the purposes set forth.

4. In apparatus of the class described, the combination with an iron-clad electric motor whose field-magnets and armature are capable of independent rotation in opposite directions, of a driven shaft, connections between said armature and driven shaft, reverse connections between the field and driven shaft, a releasable clutch in said reverse connections, and means for locking said field from rotation, substantially as set forth.

**757,716. ENVELOP-FASTENER.** GEORGE D. BARBER, Worcester, Mass. Filed Dec. 5, 1903. Serial No. 183,890. (No model.)



*Claim.*—1. An envelop-fastener comprising a flat body portion having attaching-prongs projecting from three edges thereof, by which it is secured to the envelop, and three bendable tongues extending from one edge opposite one of the attaching-prongs, said bendable tongues being of different lengths.

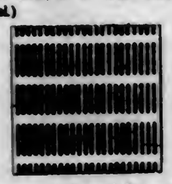
2. An envelop-fastener comprising a flat body portion having attaching-prongs projecting from the body portion at three edges thereof, and three bendable tongues extending from one edge opposite one of the attaching-prongs, the intermediate prong being shorter than the other two.

**757,717. THILL-TUG.** JOSEPH S. BEAR, West Norwich, Vt. Filed Jan. 18, 1904. Serial No. 189,557. (No model.)



*Claim.*—A thill-tug comprising a plate bent to form a loop and having an opening near one end across which a bar extends and around which the free end of the plate is bent, a buckle-tongue secured to the bar, and strap-openings on both sides of the loop.

**757,718. PROCESS OF MAKING STORAGE-BATTERY PLATES.** JOSEPH BIJUR, New York, N. Y. Filed Feb. 10, 1903. Serial No. 142,748. (No model.)



*Claim.*—1. The process substantially as herein described of making open-work plates for storage batteries and the like from individual elements having interstices, which consists in first filling the interstices of the individual elements with a soluble material to prevent said interstices from becoming filled with molten metal, assembling the elements in the desired arrangement with channels or spaces between them, pouring said channels or spaces with molten metal to embrace the elements to form the completed structure, and then removing the filling material from the interstices of the elements to leave the finished open-work plate.

2. The process substantially as herein described of making open-work plates for storage batteries and the like from individual elements having interstices, which consists in first filling the interstices of the individual elements with a powder infusible at the temperature used in the process, to prevent said interstices from becoming filled with molten metal, assembling the elements in the desired arrangement with channels or spaces between them, pouring said channels or spaces with molten metal to embrace the elements to form the completed structure, and then removing the powder from the interstices of the elements with a suitable solvent to leave the finished open-work plate.

3. The process substantially as herein described of making open-work plates for storage batteries and the like from individual elements having interstices, which consists in first filling the interstices of the individual elements with a soluble powder, to prevent said interstices from becoming filled with molten metal, assembling the elements in the desired arrangement with channels or spaces between them, pouring said channels or spaces with molten metal to embrace the elements to form the completed structure, and then removing the soluble powder from the interstices of the elements with a suitable solvent to leave the finished open-work plate.

4. The process substantially as herein described of making open-work plates for storage batteries and the like from individual elements having interstices, which consists in first filling the interstices of the individual elements with soda-ash, to prevent said interstices from becoming filled with molten metal, assembling the elements in the desired arrangement with channels or spaces between them, pouring said channels or spaces with molten metal to embrace the elements to form the completed structure, and then removing the soda-ash from the interstices of the elements with a suitable solvent to leave the finished open-work plate.

5. The process substantially as herein described of making open-work plates for storage batteries and the like from individual elements having interstices, which consists in first filling the interstices of the individual elements with a soluble material to prevent said interstices from becoming filled with molten metal, assembling the elements in the desired arrangement with channels or spaces between them, pouring said channels or spaces with molten metal to chemically unite the elements to form the completed structure, and then removing the filling material from the interstices of the elements to leave the finished open-work plate.

6. The process substantially as herein described of casting metal about an open-work element, which consists in filling the interstices with a soluble substance that is infusible at the temperatures employed, then casting the metal about the said element, and subsequently washing the structure in a solvent of the said substance.

**757,719. APPARATUS FOR CASTING BATTERY-PLATES.** JOSEPH BIJUR, New York, N. Y. Filed Feb. 10, 1903. Serial No. 142,749. (No model.)



*Claim.*—1. As an improved article of manufacture, a slat or cross-piece adapted to form an integral part of a cast plate or other structure, said slat comprising a body portion having removable core-pieces embedded therein at intervals, and provided with apertures between the core-pieces and at the ends of said body portion, for substantially the purposes set forth.

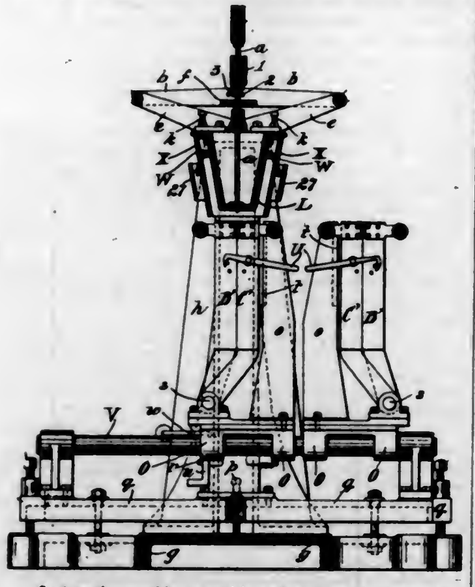
2. As an improved article of manufacture, a slat or cross-piece adapted to form an integral part of a cast plate or other structure, said slat comprising a body portion having removable core-pieces embedded in its sides, and provided with apertures extending between those sides in which the said core-pieces are embedded and arranged between the core-pieces and at the ends of the body portion of the slat, for substantially the purposes set forth.

3. As an improved article of manufacture, a slat or cross-piece adapted to form an integral part of a cast plate or other structure, said slat comprising a body portion having removable core-pieces embedded in one side at intervals, and provided with apertures between the core-pieces and at the ends of said body portion, for substantially the purposes set forth.

**757,720. CASTING-MACHINE.** JOSEPH BIJUR, New York, N. Y. Filed Feb. 10, 1903. Serial No. 142,750. (No model.)



*Claim.*—1. A casting-machine comprising a frame, a pot supported thereon and provided with pouring-apertures in its bottom, means for adjusting the pot in vertical and horizontal planes, a mold movable beneath the pot, and means for adjusting the mold in vertical and horizontal planes, for substantially the purposes set forth.



2. A casting-machine comprising a frame, a pot having pouring-apertures in its bottom and means for adjusting the pot, a mold movable longitudinally of the frame beneath the pot and consisting of two parts pivoted for movement in a vertical plane, and means for adjusting said mold, for substantially the purposes set forth.

3. A mold for a casting-machine, consisting of two parts arranged to open and close, means for maintaining cast elements and cross-slats in position in said mold for casting an open-work structure having lugs connected thereto, and said mold being also provided with means affording provision for pouring vertical channels evenly and uniformly between the elements, for substantially the purposes set forth.

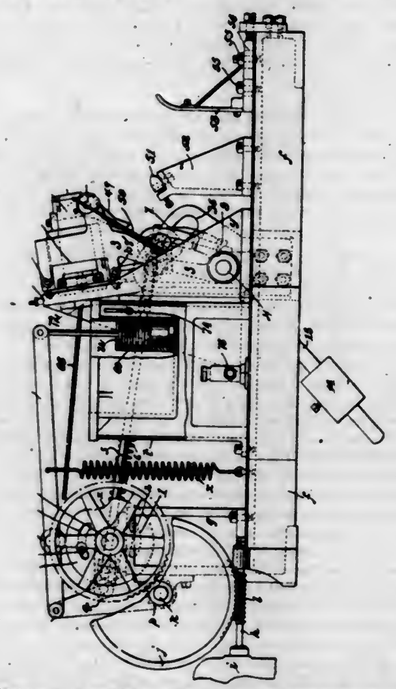
4. A mold for a casting-machine, comprising two parts arranged to open and close, having means for arranging elements within said mold with vertical pouring-channels between the same, spaces in the mold forming wells for casting lugs upon the finished structure, and other wells of such capacity that they are filled in substantially the same time that the first-named wells are filled, said other wells having necks for insuring that only the superheated metal fresh from the melting-pot is deposited in the interval where a joint is expected, for substantially the purposes set forth.

5. A metal mold, provided with a sheet of highly-conducting metal upon the heated surface of the mold, whereby the heat is conducted laterally faster than it is transmitted through the thickness of the metal of the mold, and the temperature of the mold is maintained substantially uniform all over, for substantially the purposes set forth.

6. A machine for casting parts of battery-plates onto the parts adapted to become active, comprising a suitable mold constructed to afford provision for holding and supporting said solid parts adapted to become active with at least one interval or space arranged to receive the metal to be cast, and means for superheating melted lead and directing it downward to the bottom of the interval or space to be filled, provision being afforded by the machine as constructed for progressively directing the freshly-incoming portions of the melted lead to the successive portions of the said interval or space from the bottom to the top, as said interval or space is gradually filled up, whereby the superheated lead is deposited directly against the portions of the said parts where it is to remain and solidify, for substantially the purposes set forth.

7. A machine for uniting parts of a battery-plate by means of an intermediate relatively long and narrow rib between such parts, said machine comprising means for supporting solid parts in position to present opposed faces to the relatively long and narrow interval in which the rib is to lie, and means for bringing melted and superheated lead as distinguished from solder into direct contact with the said opposed faces of said solid parts at opposite sides of the interval, provision being afforded by the apparatus as constructed for preventing the lead from making contact with said opposed faces until substantially at its final resting-place, whereby the said superheated lead shall not flow lengthwise of the said interval while in contact with the solid parts, and shall give up heat upon opposite sides in a regular and determinate manner throughout all portions while cooling down to the melting-point of the solid parts, for substantially the purposes set forth.

**757,721. APPARATUS FOR CASTING OPEN-WORK STRUCTURES.** JOSEPH BIJUR, New York, N. Y. Filed Feb. 10, 1903. Serial No. 142,751. (No model.)



*Claim.*—1. A mold for casting open-work structures, comprising series of relatively movable interleaved plates, one series having recesses therein and the other series being provided with tongues, both said series of plates being of greater length than the casting, whereby the metal is prevented from leaking around the ends of the plates, for substantially the purposes set forth.

2. A mold for casting open-work structures, comprising relatively movable series of pad-leaves having tongues, and recessed bars interleaved between said pad-leaves, both said series of pad-leaves and bars being of greater length than the casting, whereby the metal is prevented from leaking around the ends of the leaves and bars, for substantially the purposes set forth.

3. A mold for casting open-work structures, comprising a series of recessed bars, separated by plates having tongues, the notches between the tongues being of substantially the same depth as the recesses in the bars, and the unnotched top surfaces of the plates cooperating with the unrecessed ends of the bars, to form a seal at each side of the casting, the bars and plates being movable relatively to each other, for substantially the purposes set forth.

4. A mold for casting open-work structures, comprising a series of recessed bars, separated by plates having tongues, the ends of which tongues are flush with the tops of the bars, the notches between the tongues being of substantially the same depth as the recesses in the bars, and the plates being movable relatively to the bars, whereby the tongues may be withdrawn from between the recessed portions of said bars, for substantially the purposes set forth.

5. A mold for casting open-work structures comprising a series

of recessed bars separated by plates having tongues, the notches between the tongues being of substantially the same depth as the recesses in the bars, the bars and plates being movable relatively to each other, and a removable cover having sprues therein, for substantially the purposes set forth.

C A mold for casting open-work structures comprising a series of recessed bars separated by plates having tongues, the notches between the tongues being of substantially the same depth as the recesses in the bars, the bars and plates being movable relatively to each other, and a removable cover having sprues therein arranged opposite the notches in the said plates to afford provision for rapidly filling all parts of the mold with metal, for substantially the purposes set forth.

7. A mold for casting open-work structures, consisting of a pad-block, comprising pad-leaves having tongues, and bars interleaved between the same, said bars having recesses of substantially the same depth as the length of the tongues, and the bars being of greater length than the pad-leaves, to afford provision for securing the bars to the frame of the mold, the pad-block being movable relatively to the bars, whereby the tongues on the pad-leaves may be withdrawn from between the recessed portions of the bars, for substantially the purposes set forth.

8. A mold for casting open-work structures comprising a series of pad-leaves having tongues formed in one edge by notches, and bars interleaved between said pad-leaves, and each provided with a continuous and uniformly-deep recess extending substantially the length of the notched portions of the pad-leaves and of substantially the same depth as said notches, the pad-leaves and bars being movable relatively to each other, for substantially the purposes set forth.

9. A mold for casting open-work structures comprising a frame provided with substantially parallel bars each having a continuous and uniformly-deep recess, and a pad-block comprising a backing-plate provided with pad-leaves having tongues arranged between the recessed portions of the bars, the frame and pad-block being relatively movable, for substantially the purposes set forth.

10. A mold for casting open-work structures, comprising pad-leaves, a portion of each of which is provided with tongues separated by notches, there being an unnotched top space at each side of the tongues, and ejector-bars interleaved between the pad-leaves, and each bar provided with a recessed portion having an unrecessed portion at either side of the recess, the unrecessed portions of the ejector-bars cooperating with the unnotched top surfaces of the pad-leaves, to form a seal for the metal at either side of the casting, and means for moving the pad-leaves and ejector-bars relatively to each other, for substantially the purposes set forth.

11. In a casting-machine, the combination of a nozzle and means for forcing molten metal therethrough, a mold for casting open-work structures comprising series of relatively movable interleaved plates, one series having recesses therein and the other series being provided with tongues, means for automatically bringing said mold up to the nozzle and withdrawing it therefrom, means for shearing off the sprues as the mold is withdrawn from the nozzle, and means for brushing the chips from the shearing-knife, for substantially the purposes set forth.

12. In a casting-machine, the combination with a nozzle and means for forcing molten metal therethrough, of a mold for casting open-work structures comprising series of relatively movable interleaved plates, one series having recesses therein and the other series being provided with tongues, means for automatically moving the series of plates having tongues from between the recessed plates, and then inserting said plates between the recessed plates again to eject the casting as the mold is withdrawn, for substantially the purposes set forth.

13. In a casting-machine, the combination with a nozzle and means for forcing molten metal therethrough, of a crank-shaft and crank, a carriage-arm carrying a mold, a rod connected to the crank and slidable in a bearing relatively to the carriage-arm, and a spring connecting the carriage-arm with the crank, whereby provision is afforded for permitting the mold to rest at the nozzle during a portion of a revolution of the crank, for substantially the purposes set forth.

14. In a casting-machine, the combination with a nozzle and means for forcing molten metal therethrough, of a crank-shaft and crank, a carriage-arm carrying a mold, a rod connected to operate the carriage-arm from the crank-shaft in one direction and a spring connected to the crank-arm for operating the carriage-arm in the other direction, whereby provision is afforded for permitting the mold to rest at the nozzle during a portion of a revolution of the crank, for substantially the purposes set forth.

15. In a casting-machine, the combination with a nozzle and means for forcing molten metal therethrough, of a crank-shaft and crank, a rocking carriage-arm carrying a mold, an adjustable rod connecting the carriage-arm and the crank-shaft, means for adjusting the distance of the connection of said rod with the carriage-arm from the pivot of said arm, and a spring connecting the carriage-arm with the crank, for substantially the purposes set forth.

16. In a casting-machine, the combination with a pump and plunger for the molten metal, of a nozzle and nozzle-plate thereon, and a valve connected with said nozzle and constructed to admit air to the nozzle as the pump-plunger rises, whereby the metal may freely recede from the back of the nozzle-plate on the suction of the plunger, for substantially the purposes set forth.

17. In a casting-machine, the combination with a pump and plunger for the molten metal, of a nozzle and nozzle-plate thereon, and a valve communicating with said nozzle and constructed to close when the plunger descends, and open to the atmosphere when the plunger rises, whereby the metal may freely recede from the back of the nozzle-plate on the suction of the plunger, for substantially the purposes set forth.

18. A mold for casting open-work structures, having relatively movable series of plates provided with tongues, and recessed bars interleaved between said plates, the depth of said recesses being constant, for substantially the purposes set forth.

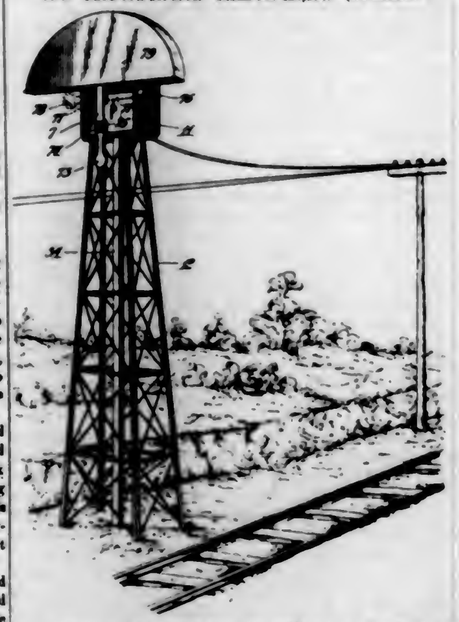
19. In a casting-machine, the combination of a pivoted carriage-arm, actuating mechanism therefor, adjustable connections between said mechanism and the carriage-arm, and means for varying the distance of said connections from the pivot of the carriage-arm, for substantially the purposes set forth.

20. In a casting-machine, the combination of a movable mold, rotary actuating mechanism therefor, and means for adjusting the proportion of a revolution of said actuating mechanism occupied in actuating the mold, for substantially the purposes set forth.

21. A nozzle-plate for a melting-pot, having its inner face of highly-conducting material heated to a materially higher temperature than its outer face of a poorer conducting material, whereby the metal is prevented from chilling on the inner face while caused to chill on the outer face, for substantially the purposes set forth.

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**757,722. ELECTRIC SEMAPHORE. DONA BONVENT, Providence, R. I. Filed Oct. 13, 1902. Serial No. 127,128. (No model.)**



*Claim.*—1. In a semaphore, the combination of swinging arms, an axle on which they are pivoted, a motor arranged to drive said axle, a pallet-wheel on an extended end of said axle, a second pallet pivotally mounted on a fixed part, an electrically-operated releasing device for breaking engagement between the arms of the said pallet-wheel and pallet, a safety device adapted to operate to actuate the return-signal of the semaphore, a notched wheel, a releasing-click mounted for cooperation with said notched wheel, and a connection between said wheel and the upper arm of said pallet.

2. In a semaphore, the combination of swinging arms, their axle, a motor for turning said axle, a pallet-wheel carried by the axle, a pallet-lever mounted for cooperation therewith, a secondary axle, a motor for turning the same, a wheel having a radial tooth mounted on the secondary axle, a click, a pitman connected with the said wheel and with the pallet, means for operating said click, and means for actuating the click to release the secondary axle and permit the rotation of the swinging arms.

3. In a semaphore, the combination of swinging arms, their axle, means for turning the axle, a pallet-wheel carried by the said axle, a pallet-lever for cooperation with the arms of the pallet-wheel, a secondary axle, means for turning the same, a wheel with radial tooth on said secondary axle, a click adapted for cooperation with the tooth of said wheel, connections between said wheel and pallet, means to operate the click, a primary and a secondary circuit-closing device and a signaling device located in the secondary circuit, and means carried by the pallet-wheel for cooperation with the secondary circuit-closing device whereby the operator is assured of the operation of the semaphore.

4. In a semaphore, the combination of swinging arms, their axle and means for turning the axle, of a pallet-wheel, a pallet-lever mounted for cooperation with said pallet-wheel, a toothed wheel, a connection between the same and the pallet-lever, means for actuating said wheel, a signaling device, means for controlling the same, and a safety device and connections whereby the operator is assured of the operation of the semaphore.

5. In a semaphore, the combination of swinging arms, an axle for the same and means for turning the axle, of a secondary axle, means for turning the same, coacting means on said axles, for holding the arms against turning, coacting means on the secondary axle and a pivoted pallet mounted on a stationary part for releasing said arms, a circuit-closing device controlling said means, and a secondary circuit-closing device embodying a spring-actuated bolt and bosses for cooperation therewith, as and for the purpose specified.

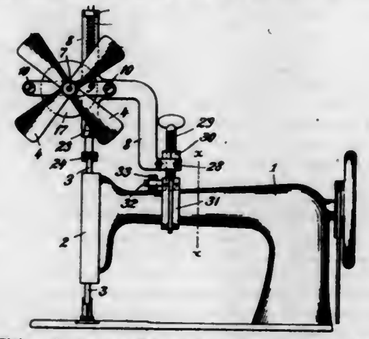
6. In a semaphore, the combination of swinging arms, an axle on which said arms are mounted, a motor adapted to intermittently drive said axle, a pallet-wheel mounted on said axle and having projecting arms, a double-armed pallet the upper arm of which is adapted to engage an arm of said pallet-wheel in one position and the lower arm when in the opposite position, an electromagnet adapted to cause the withdrawal of the upper arm of said pallet, a circuit adapted to energize said electromagnet, a circuit-closing device located in said circuit for completing the same, whereby the successive depression and releasing of said circuit-closing device causes the pallet-wheel to be rotated, a series of bosses projecting from the face of said pallet-wheel, a second circuit-closing device having a depressible bolt located adjacent to said pallet-wheel and adapted to be depressed by said bosses, an electric circuit connected to said second circuit-closing device, and signaling means located in said circuit and at the station where said first-mentioned circuit-closing device is located, whereby said signaling device is caused to be operated by the turning of said arms, substantially as described.

7. In an electric semaphore, the combination of swinging arms, a horizontal axle on which they are journaled, a suitable motor connected to said axle to turn the same, a four-armed pallet-wheel mounted on said axle, a two-armed pallet-lever pivoted on a stationary bracket at the side of the pallet-wheel and the upper arm of which normally engages therewith, a secondary axle mounted in stationary journals at the side of the main axle, a motor connected therewith to turn the same, a wheel having a radial tooth mounted on said secondary axle, a click having two members at opposite sides of said wheel adapted to engage said tooth, a pitman connected to said wheel and to said pallet to operate the same, an electromagnet adapted to operate said click, a circuit in which said magnet is located, and a circuit-closing device located in said circuit at a distant point whereby the depression of same will cause said click to be operated to release said secondary axle and the pallet-wheel thereby to be withdrawn to permit the rotation of said swinging arms, substantially as described.

8. In an electric semaphore, the combination of swinging arms, a horizontal axle on which they are journaled, a suitable motor connected to said axle to turn the same, a four-armed pallet-wheel mounted on said axle, a two-armed pallet-lever pivoted on a stationary bracket at the side of the pallet-wheel and the upper arm of which normally engages therewith, a secondary axle mounted in stationary journals at the side of the main axle, a motor connected therewith to turn the same, a wheel having a radial tooth mounted on said secondary axle, a click having two members at opposite sides of said wheel adapted to engage said tooth, a pitman connected to said wheel and to said pallet to operate the same, an electromagnet adapted to operate said click, a circuit in which said magnet is located, a circuit-closing device located in said circuit at a distant point whereby the depression of same will cause said click to be operated to release said secondary axle and the pallet-wheel thereby to be withdrawn to permit the rotation of said swinging arms, a second circuit-closing device located adjacent to the face of said pallet-wheel and having a depressible bolt, a circuit connected with the terminals of said last-named device, a signaling device such as a bell located in said last-mentioned circuit at the operating end of the line, and a series of bosses carried on the face of said pallet-wheel adapted to depress said last-named circuit-closing device at each quarter-revolution of said pallet-wheel, whereby the operator is assured of the operation of the semaphore, substantially as described.

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**757,723. ROTARY FAN ATTACHMENT FOR SEWING-MACHINES. HENRY W. G. VON CASTERN, New York, N. Y. Filed July 16, 1903. Serial No. 165,742. (No model.)**



*Claim.*—1. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a reciprocating part movable by a sewing-machine needle-bar, and mechanism interposed between said reciprocating part and the fan-shaft and continuously rotating the fan by intermittent impulses given said reciprocating part by or from the needle-bar.

2. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a reciprocating part movable by a sewing-machine needle-bar, and clutch mechanism interposed between said reciprocating part and the fan-shaft and continuously rotating the fan by intermittent impulses given said reciprocating part by or from the needle-bar.

3. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a reciprocating part movable by a sewing-machine needle-bar, mechanism interposed between said reciprocating part and the fan-shaft and continuously rotating the fan by intermittent impulses given said reciprocating part by or from the needle-bar, and means holding said reciprocating part in constant engagement with the reciprocating needle-bar.

4. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a reciprocating part movable by a sewing-machine needle-bar, clutch mechanism interposed between said reciprocating part and the fan-shaft and continuously rotating the fan by intermittent impulses given said reciprocating part by or from the needle-bar, and means holding said reciprocating part in constant engagement with the reciprocating needle-bar.

5. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a vertically-reciprocating rack-bar movable by or from a sewing-machine needle-bar, and a clutch having one member carrying a pinion engaged by the rack-bar and having another member coupled to the fan-shaft and continuously rotating the fan by intermittent impulses given the rack-bar by successive upstrokes of the needle-bar.

6. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a vertically-reciprocating rack-bar movable by or from a sewing-machine needle-bar, a clutch having one member carrying a pinion engaged by the rack-bar and having another member coupled to the fan-shaft and continuously rotating the fan by intermittent impulses given the rack-bar by successive upstrokes of the needle-bar, and means holding the reciprocating rack-bar in constant engagement with the reciprocating needle-bar.

7. A rotary fan attachment to sewing-machines, comprising a revoluble fan, a vertically-reciprocating rack-bar movable by or from a sewing-machine needle-bar, a clutch having one member carrying a pinion engaged by the rack-bar and having another member coupled to the fan-shaft and continuously rotating the fan by intermittent impulses given the rack-bar by successive upstrokes to the needle-bar, and a spring holding the reciprocating rack-bar in constant engagement with the reciprocating needle-bar.

8. A rotary fan attachment to sewing-machines, comprising a support adapted for attachment to a sewing-machine arm, a revoluble fan journaled in said support, a rack-bar adapted for vertical reciprocation in said support by or from the sewing-machine needle-bar, and clutch mechanism at the fan-shaft continuously rotating the fan by intermittent impulses given the rack-bar by successive upstrokes of the needle-bar.

9. A rotary fan attachment to sewing-machines, comprising a support adapted for attachment to a sewing-machine arm, a revoluble fan journaled in said support, a rack-bar adapted for vertical reciprocation in said support by or from the sewing-machine needle-bar, clutch mechanism at the fan-shaft continuously rotating the fan by intermittent impulses given the rack-bar by successive upstrokes of the needle-bar, and a spring holding the reciprocating rack-bar in constant engagement with the reciprocating needle-bar.

10. In a rotary fan attachment to sewing-machines, the combination, with a supporting-frame 8 having studs 11, 11, and a plate 9, detachably held to said studs, of a shaft 7 journaled in the parts 8, 9 and having a bearing 12 and screw-thread 16; a clutch comprising a member 13 journaled on shaft-bearing 12 and having recesses 14, a member 17 locked to the shaft-thread 16, and rollers 15 in said recesses 14 between the two clutch members 13, 17; a pinion 19 held to clutch member 13, and a rack-bar 20 21 guided on the frame 8 and engaging the clutch-pinion 19 and adapted for operation by a sewing-machine needle-bar, substantially as described.

11. In a rotary fan attachment to sewing-machines, the combination, with a supporting-frame 8 having studs 11, 11, and a plate 9 detachably held to said studs, of a shaft 7 journaled in the parts 8, 9 and having a bearing 12 and screw-thread 16; a clutch comprising a member 13 journaled on shaft-bearing 12 and having recesses 14, a member 17 locked to the shaft-thread 16, and rollers 15 in said recesses 14 between the two clutch members 13, 17; a pinion 19 held to clutch member 13, a rack-bar 20 21 guided on the frame 8 and engaging the clutch-pinion 19 and adapted for operation by a sewing-machine needle-bar, and a spring 25 on the rack-bar holding it to said needle-bar, substantially as described.

12. In a fan attachment to sewing-machines, the combination, with the fan-supporting frame and a reciprocating part fitted to said frame and adapted to actuate the fan from the needle-bar of a sewing-machine, of a screw fitted vertically in the fan-frame, a lock-nut on said screw adapted to secure said frame and the fan at the required vertical adjustment, and a clamp-dog also fitted on the screw and adapted with it to lock upon the arm of a sewing-machine, substantially as described.

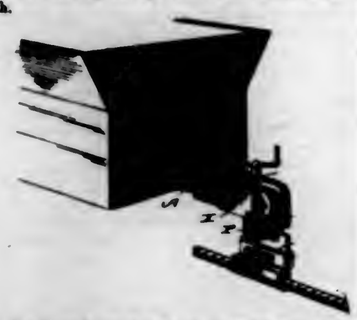
13. In a fan attachment to sewing-machines, the combination, with the fan-supporting frame and a reciprocating part fitted to said frame and adapted to actuate the fan from the needle-bar of a sewing-machine, of a screw fitted vertically in the fan-frame, a lock-nut on said screw adapted to secure said frame and the fan at the required vertical adjustment, a clamp-dog also fitted on the screw and adapted with it to lock upon the arm of a sewing-machine, and an auxiliary screw in the clamp-dog adapted to engage the sewing-machine arm and compensate for lateral incline of said arm and assure true vertical disposition of the reciprocating fan-actuating part, substantially as described.

14. In a fan attachment to sewing-machines, the combination, with a frame 8, a fan journaled thereon, a reciprocating part fitted in said frame, and means actuating said reciprocating part and the fan from the needle-bar of a sewing-machine, of a vertically-disposed screw 29 fitted in the fan-frame 8 and provided with a lock-nut 30, a clamp-dog 31 embracing the sewing-machine arm and with the screw 29 securing both the dog and fan-frame to said arm, and an auxiliary adjusting-screw 33 fitted in the dog and acting on the sewing-machine arm, substantially as described.

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**757,724. CABLE-GRIP.** THOMAS J. COOK, Searles, Ala. Filed Aug. 15, 1903. Serial No. 169,645. (No model.)

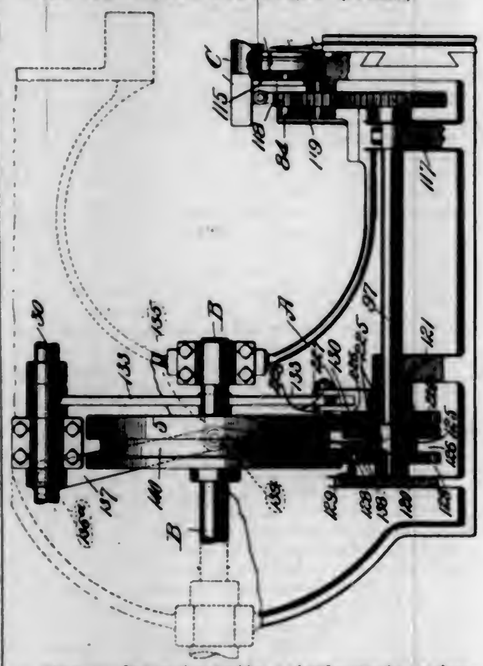
*Claim.*—1. A cable-grip comprising a U-shaped draw-bar, a nut secured between the members of said draw-bar, a plate connected to one side of the draw-bar and depending therefrom, said plate terminating in a fixed shoe, and a gripping-shoe slidable upon the depending plate, the rod carrying said gripping-shoe, said rod being threaded and working through the nut carried by the draw-bar, as set forth.



2. A cable-grip comprising the U-shaped draw-bar, a nut arranged between the members of the draw-bar, a plate secured to the forward end of the draw-bar and depending therefrom, said plate terminating in a fixed shoe, a movable shoe integral with a plate having its ends bent around the first-mentioned plate, a rod pivotally connected to the movable shoe, and threaded for a portion of its length, said threaded portion working through the nut, all of said parts being arranged and adapted to operate substantially as described.

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**757,725. SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES.** GEORGE L. CONSTAM, St. Louis, Mo., assignor to Champion Shoe Machinery Company, St. Louis, Mo., a Corporation of Missouri. Filed Feb. 1, 1904. Serial No. 191,574. (No model.)



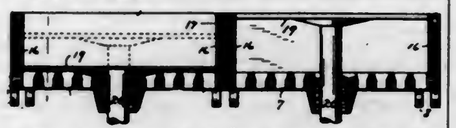
*Claim.*—1. In a sewing-machine, a shuttle-actuating mechanism for intermittently operating the shuttle, said mechanism comprising a shuttle-driver, a shuttle-driving shaft, operative connection between said shaft and said shuttle-driver, an oscillatory crank loosely mounted upon said shuttle-driving shaft, a rocking lever connected to said crank to oscillate the latter, a main shaft, driving connection between said main shaft and said lever for rocking the latter, and means for alternately operatively connecting said crank to and disconnecting said crank from said shuttle-driving shaft; substantially as described.

2. In a sewing-machine, a shuttle-actuating mechanism for intermittently operating the shuttle, said mechanism comprising a main shaft, a cam-block driven thereby, a shuttle-driver, a shuttle-driving shaft, operative connection between said shuttle-driver and said shuttle-driving shaft, an oscillatory crank loosely mounted upon said shuttle-driving shaft, a rocking lever connected to said crank to oscillate the latter, a clutch member cooperating with said crank and slidably mounted upon said shuttle-driving shaft but non-rotatable about said shaft, a second rocking lever engaging said clutch member, and driving connection for said levers between each of said levers and said cam-block; substantially as described.



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**757,726. BRICK-MOLD.** THOMAS S. CRAFT and ROBERT C. FINCH, Indianapolis, Ind. Original application filed June 16, 1903, Serial No. 161,664. Divided and this application filed Jan. 12, 1904. Serial No. 188,730. (No model.)

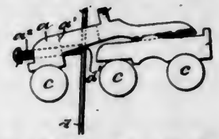


*Claim.*—1. A mold for brick-forming presses having a false movable bottom and a fixed bottom which is slotted so as to leave only knife-edge bearings of the fixed against the movable bottom to allow for the free discharge of foreign matter that may work past the false bottom.

2. A mold for brick-forming presses having a fixed slotted grid-iron body, removable sides and ends which thicken from bottom to top with oblique inner faces, removable upwardly-tapering linings held by said sides and ends and a false bottom movable within said mold.

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**757,727. TOP-ROLL SADDLE.** BERA DIXON, Bristol, R. I. Filed Oct. 16, 1902. Serial No. 127,548. (No model.)



*Claim.*—In a top-roll saddle, the combination with a weight-strap *d*, the head $d^1$ of the weight-strap and the contracted neck $d'$ below the head, of the saddle *a* provided with the slot $a'$, and the screw $a^2$ adapted to adjust the position of the weight-strap, as described.

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**757,728. APPARATUS FOR FOLDING AND WRAPPING PAMPHLETS.** STERLING ELLIOTT, Boston, Mass., assignor to the Elliott Company, Boston, Mass., a Corporation of Maine. Filed Nov. 6, 1902. Serial No. 130,302. (No model.)

*Claim.*—1. The combination with the devices for folding the article and applying the wrapper and folding the two together, of a reciprocating slide carrying two pairs of jaws, one jaw of each pair being fixed on the slide and the other movable to and from the fixed jaw, substantially as set forth.

2. The combination with the reciprocating slide and its fixed jaws, of a movable plate carrying jaws each in the form of a pivoted shoe, substantially as set forth.

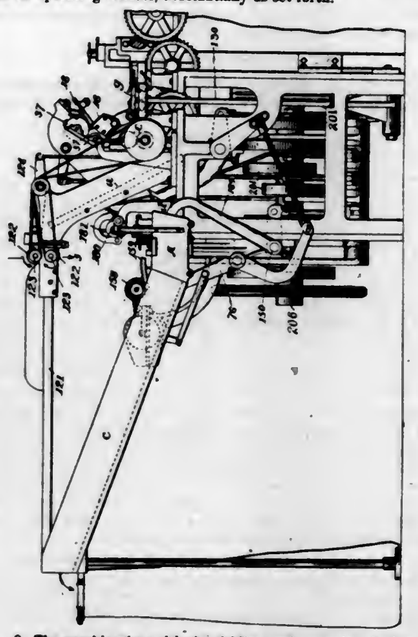
3. The combination with the reciprocating slide and its fixed jaws, of a plate carrying movable jaws and provided with curved guide-slots, pins extending from the slide into said slots, and means for moving said plate, substantially as set forth.

4. The combination of the reciprocating slide, its fixed jaws, movable plate-carrying jaws, a crank-shaft extending through the slide with its crank-pin fitting an opening in the plate, and means for rocking the crank-shaft, substantially as set forth.

5. The combination with the reciprocating slide, its fixed and movable jaws and operating crank-shaft, of a spring connected to hold the crank-shaft and plate in both extreme positions, substantially as set forth.

6. The combination with the reciprocating slide, fixed and movable jaws, and crank-shaft, of blades 137, 138, and means for bringing them alternately to operate upon the crank-shaft, substantially as set forth.

7. The combination with the reciprocating slide, fixed and movable jaws, crank-shaft, and blades 137 and 138, of means for swinging the said blades and a yielding connection between the blade 137 and its operating devices, substantially as set forth.



8. The combination with the folding and wrapping devices, of a paste-roll, a paster-head, a shaft carrying the same, means for rocking the shaft to carry the head to positions opposite the paste-roll and article to be pasted, and means for sliding the head away from the shaft after it is brought opposite the article, substantially as set forth.

9. The combination with the paster-head and rock-shaft supporting the same, of a pinion turning on said shaft, a yielding connection between the said pinion and the shaft, and means for turning the said pinion and for carrying the shaft back and forth, substantially as set forth.

10. The combination of the paster-head, rock-shaft, and supporting-arms, and bearings for limiting the rocking motion of the head, a rack and pinion for swinging the head, and spring connections between the pinion and the shaft, substantially as set forth.

11. The combination of the paster-head, shaft, supporting-arms, and stationary rack, and a pinion turning on the shaft and engaging the rack and carrying a pin and a bent spring connected with the shaft and having arms engaging the opposite sides of the pin, substantially as set forth.

12. The combination with the devices for bringing together and folding the article and the wrapper to present a standing edge of the wrapper, of two folder-blades 173, 174, a shaft carrying the same, and means for permitting a limited movement of the outer blade independently, of the inner one, substantially as set forth.

13. The combination of the rock-shaft 170, bent arms and a blade 171 carried thereby, a sleeve on said shaft with arms carrying a blade 174, and a frictional connection for limiting the movement of one blade in respect to the other, substantially as set forth.

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**757,729. PIN-RETAINER.** JAMES EVANS, Harrisburg, Pa. Filed Nov. 30, 1903. Serial No. 183,149. (No model.)



*Claim.*—1. A pin-retainer comprising a base-plate carrying a concave clamping member, a cooperating flat clamping member and means to move one of said members toward and away from the other, whereby the retainer can be applied laterally to the shank of a pin and will be incapable of lateral removal therefrom when said members are closed on the shank.

2. A pin-retainer comprising a base-plate carrying a stationary jaw having a slightly-concaved clamping-surface, a cooperating

movable jaw having a flat clamping-surface and means to actuate the latter jaw, whereby the retainer can be applied laterally to the shank of a pin, and will be incapable of lateral removal therefrom when said members are closed on the shank.

757,730. NECKTIE-SECURING DEVICE. FORREST FERGUSON, St. Louis, Mo. Filed July 11, 1903. Serial No. 165,170. (No model.)

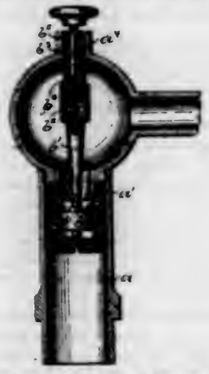


*Claim.*—1. A means for securing neckties in position comprising a socket member adapted to be connected with a tie, in combination with a button member which is provided with a base portion, an elongated flat shank having transverse slotted portions in its respective edges adjacent its upper end, and a separately-formed cap member which is connected with the shank member at its slotted portions, which cap is adapted to interlock with said socket member.

2. A means for securing neckties in position, comprising a socket member connected with a tie, in combination with a button member, said button member comprising a base, an elongated flat shank having slotted portions in its respective edges, and a cap portion having an annular bead engaging the slotted portions of the shank, the said cap being adapted to interlock with said socket member, substantially as described.

3. A collar-button for the purpose described, comprising a base, and an elongated substantially flat shank with cut-away portions in its respective edges, and a cap having an annular bead projecting into said cut-away portions of the shank, substantially as described.

757,731. FAUCET-VALVE. FREDERICK P. FIELD, Providence R. I. Filed Apr. 5, 1901. Serial No. 54,523. (No model.)

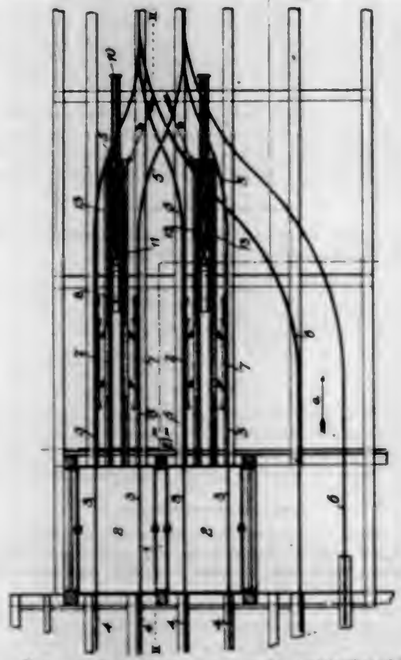


*Claim.*—1. The combination of an inlet-pipe, an outlet-pipe and a chamber connecting the two said pipes, a valve located within the inlet-pipe and controlling the communication of the same with said chamber, a reciprocating valve-operating stem mounted through said chamber and adapted to push upon the valve to open it and to be returned by the valve as it closes under pressure of the fluid in the inlet-pipe, the said valve being provided with telescoping oppositely-arranged recessed members constituting a telescoping cushioning device, substantially as and for the purpose set forth.

2. The combination of an inlet-pipe, an outlet-pipe and a chamber connecting the two said pipes, a valve located within the inlet-pipe and controlling the communication of the same with said chamber, a reciprocating valve-operating stem mounted within said chamber and adapted to push upon the valve to open it and to be returned by the valve as it closes under pressure of the liquid in the inlet-pipe, the said valve-stem comprising a rod and a fixed tubular bearing through which the rod slides, the said bearing projecting into the chamber and being recessed at its inner end to form a liquid-cushioning pocket, a cup-shaped body adapted to receive the liquid in the recess thereof and fixed upon said rod within the chamber and projecting outwardly and inclosing the inner end of said bearing and forming a loose fit therewith and telescoping with said bearing to form a cushioning device, substantially as and for the purpose set forth.

3. The combination of an inlet-pipe, an outlet-pipe and a chamber connecting the two said pipes, a valve located within the inlet-pipe and controlling the communication of the same with said chamber, a reciprocating valve-operating stem $b^4$, mounted within said chamber and adapted to push upon the valve to open it and to be returned by the valve as it closes under pressure of the liquid in the inlet-pipe, the said valve-stem comprising a rod, and a fixed tubular bearing $b^3$ through which the rod slides, the said bearing projecting into the chamber and being recessed at its inner end to form a liquid-cushioning pocket $b^6$, a cup-shaped body $b^5$ fixed upon said rod within the chamber and projecting outwardly and inclosing the inner end of said bearing and forming a loose fit therewith and telescoping with said bearing whereby a telescoping cushioning device is formed, substantially as and for the purpose set forth.

757,732. COAL-TIPPLE STRUCTURE. THOMAS W. FITCH, JR., Sewickley, Pa. Filed Jan. 23, 1904. Serial No. 191,054. (No model.)



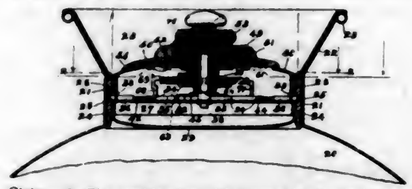
*Claim.*—1. In a coal-mine structure, the combination of a cage, tracks leading thereto, a truck movable in a direction parallel to that of a car upon the tracks and carrying a dog adapted to allow a car to pass along the track toward the cage but to abut against a car which has passed it in moving toward the cage and to impart a propelling force to the car, a fluid-pressure cylinder provided with a piston which imparts movement to the truck, and means for automatically reversing the piston when it shall have made a certain predetermined traverse, substantially as described.

2. In a coal-tipple structure, the combination with a cage, a car-track leading to the cage, a pusher for impelling cars from the track to the cage, and a fluid-pressure motor for impelling the pusher, of an adjustable trigger operated by the pusher and by its operation reversing the fluid-pressure motor, substantially as described.

3. In a coal-mine structure, the combination of a cage, tracks leading thereto, a carrier movable in a direction parallel to that of a car upon the tracks and carrying a dog adapted to allow a car to pass along the track toward the cage but to abut against a car which has passed it in moving toward the cage and to impart an impelling force to the car, and a fluid-pressure cylinder provided with a piston which by its movement imparts movement to the carrier, substantially as described.



757,733. LOCK. LOUIS A. FRANK, Chicago, Ill. Filed Oct. 5, 1903. Serial No. 175,745. (No model.)



*Claim.*—1. The combination with a vessel having in its opening a recess, of a cover to close the opening, a hollow spindle rotatably located in the cover, a dial fixed to the upper portion of said spindle and resting on the top of the cover, an operating-spindle located in the hollow spindle and having on its upper end a knob, a disk adjustably mounted on the hollow spindle below the top of the cover and having a recess in its periphery, a spring-actuated locking-bolt located in an opening in the wall of the cover to engage the recess in the opening of the vessel, means connecting the lower portion of the operating-spindle and the locking-bolt to retract the latter when said spindle is turned, and a standard on said connecting means to impinge the periphery of the disk when the bolt is projected and to fit in the recess thereof when said bolt is retracted.

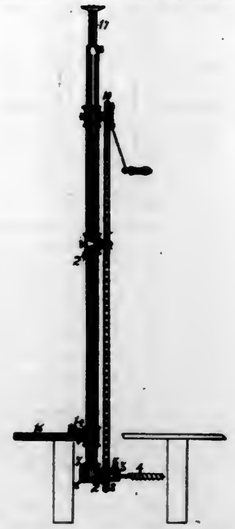
2. The combination with a vessel having a recess in its opening, of a cover to fit in and close said opening, a hollow spindle rotatably located in the cover, a dial fixed on the upper portion of said stem and resting on the top of the cover, an operating-spindle located in the hollow spindle, an upper and lower disk adjustably mounted on the hollow spindle below the top of the cover and each having a recess in its periphery, spring-actuated locking-bolts located in openings in the walls of the cover to engage the recess in the opening of the vessel, means connecting the lower portion of the operating-spindle and the locking-bolts to retract the latter when said spindle is turned, and a standard on said connecting means to fit in the recesses of the disks when the bolts are retracted.

3. The combination with a vessel having in its opening a recess, of a cover to close the opening, a hollow spindle rotatably located in the cover, a dial fixed to the upper portion of said spindle and resting on the top of the cover, an operating-spindle located in the hollow spindle and having on its upper end a knob, a disk adjustably mounted on the hollow spindle below the top of the cover and having a recess in its periphery, spring-actuated locking-bolts located in the openings in the walls of the cover to engage the recess in the opening of the vessel, means connecting the lower portion of the operating-spindle and the locking-bolts to retract the latter when said spindle is turned, and a standard on said connecting means to impinge the periphery of the disk when the bolts are projected.

4. The combination with a vessel having a recess in its opening, of a cover to fit in and close said opening and provided with a scale on its top, a hollow spindle rotatably located in the cover, a dial fixed to the upper portion of said spindle and resting on the top of the cover, an operating-spindle located in the hollow spindle and having on its upper end a knob, an upper and lower regulating-disk adjustably mounted on the hollow spindle and each having a recess in its periphery, spring-actuated locking-bolts located in openings in the walls of the cover to engage the recess in the opening of the vessel, means connecting the lower portion of the operating-spindle and the said bolts to retract the latter when the spindle is turned, and a standard located on the connecting means on each side of the operating-spindle to fit in the recesses of the disks when the bolts are retracted.

5. The combination with a vessel having an annular groove in its opening, of a cover to fit in and close said opening and provided with a scale on its top, a hollow spindle rotatably located in the cover, a dial fixed to the upper portion of said spindle and located above the top of the cover, an operating-spindle located in the hollow spindle and having on its upper end a knob, an upper and lower regulating-disk adjustably mounted on the hollow spindle below the top of the cover and each having a recess in its periphery, a supporting-bar secured diametrically within the cover and having guideways on its upper surface, a sliding block located within the guideways of the supporting-bar on each side of the operating-spindle and connected thereto, a spring-actuated locking-bolt movably secured to the outer end of each of the sliding blocks and extending through openings in the walls of the cover, and a standard mounted on one of the sliding blocks to fit in the recesses of the regulating disks when the locking-bolts are retracted.

757,734. BORING-MACHINE. CHARLES E. GADFIELD, Wellington, Ohio. Filed July 17, 1903. Serial No. 166,064. (No model.)



*Claim.*—1. A boring-machine, consisting of a main body portion provided at its base end with a suitable bearing, a chuck mounted in said bearing, a sprocket-wheel carried by and mounted on said chuck, a sleeve or shoulder secured to said chuck, an adjustable sleeve or ferrule secured to said main body portion, a sprocket-wheel mounted thereon and adapted to carry an operating-crank, an auxiliary sleeve or ferrule slidably and adjustably mounted on said main body portion, an auxiliary sprocket-wheel mounted thereon and adapted to carry said operating-crank, and a sprocket-chain passing over said sprocket-wheels whereby motion is transmitted to said chuck.

2. In a boring-machine, the combination with the main body portion provided at its lower end with a suitable bearing, a chuck mounted in said bearing, a sprocket-wheel mounted on said chuck, a sleeve or shoulder secured to said chuck, and an adjustable sleeve or ferrule secured to said main body portion and carrying a supporting-bar; of a second adjustable sleeve or ferrule secured to said main body portion, a sprocket-wheel mounted thereon, an operating-crank secured to said sprocket-wheel, and a sprocket-chain passing over said sprocket-wheels whereby motion is transmitted to said chuck.

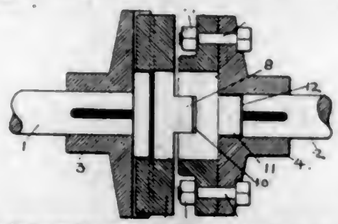
3. In a boring-machine, the combination with the main body portion provided at its lower end with a suitable bearing, a chuck mounted in said bearing and provided with a sprocket-wheel, a second adjustable sleeve or ferrule secured to said main body portion and carrying a sprocket-wheel, and a sprocket-chain passing over said sprocket-wheels; of a third or auxiliary sleeve or ferrule, carrying an auxiliary sprocket-wheel, slidably and adjustably mounted on said main body portion, an operating-crank secured to said auxiliary sprocket-wheel, and arms projecting from said auxiliary sleeve or ferrule and carrying rollers which take over the outside of the sprocket-chain to hold the same in contact with the sprocket-wheel.

4. In a boring-machine, the combination with the main body portion provided at its lower end with a suitable bearing, a chuck mounted in said bearing and provided with a sprocket-wheel, an adjustable sleeve or ferrule secured to said main body portion and carrying a sprocket-wheel, and a sprocket-chain passing over said sprocket-wheels; of a sleeve or ferrule slidably and adjustably mounted on said main body portion, and an auxiliary sprocket-wheel mounted on said sleeve or ferrule and provided with an operating-crank.

757,735. SHAFT-COUPLING. JEROME B. GEORGE, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass., a Corporation of Massachusetts. Filed July 8, 1902. Serial No. 114,775. (No model.)

*Claim.*—1. A shaft-coupling comprising hubs having flanges secured to the adjacent ends of the shafts and a locking ring or disk and filler interlocked with each other and interposed between and interlocked with one of said hubs, one of said interposed parts con-

structed and adapted to be secured to the adjacent hub, substantially as described



2. A shaft-coupling comprising hubs having flanges secured to the adjacent ends of the shafts and a locking ring or disk and filler interlocked with each other and interposed between and interlocked with said hubs, one of said interposed parts constructed and adapted to be secured to the adjacent hub, substantially as described.

3. A shaft-coupling comprising hubs having flanges secured to the adjacent ends of the shafts to be coupled, a locking ring or disk interlocked and capable of radial adjustment with relation to one of said hubs and a filler interlocking with said ring or disk and adapted to be interposed between the ring or disk and the other hub by sliding the filler into position radially, substantially as described.

4. A shaft-coupling comprising hubs having flanges secured to the adjacent ends of the shafts to be coupled, a locking ring or disk interlocked and capable of radial adjustment with relation to one of said hubs and a filler interlocking with said ring or disk and adapted to be interposed between the ring or disk and the other hub by sliding the filler into position radially, and means for securing the filler to the adjacent hub, substantially as described.

5. In a shaft-coupling, the combination with hubs having flanges secured to the adjacent ends of the shafts to be coupled, of a locking ring or disk adjacent to one of said hubs, the adjacent faces of said hub and locking ring or disk being radially ribbed and grooved to interlock with each other, and a filler adapted to be interposed between said locking ring or disk and the other hub and secured to the latter, adjacent faces of said ring and filler having diametrical tongue-and-groove interlocking connection with each other disposed at an angle to the radial interlocking connection of the ring with its adjacent hub, substantially as described.

6. In a shaft-coupling, the combination with hubs having flanges secured to the adjacent ends of the shafts to be coupled, of a locking ring or disk adjacent to one of said hubs, the adjacent faces of said hub and locking ring or disk being radially ribbed and grooved to interlock with each other, and a filler adapted to be interposed between said locking ring or disk and the other hub and secured to the latter, adjacent faces of said ring and filler having diametrical tongue-and-groove interlocking connection with each other disposed at an angle to the radial interlocking connection of the ring with its adjacent hub, the filler having a diametrical tongue-and-groove interlocking connection with its adjacent hub extending parallel with the tongue-and-groove interlocking connection with the ring, substantially as described.

7. In a shaft-coupling, the combination with hubs having flanges secured to the adjacent ends of hubs, with said hubs diametrically grooved on their inner faces at an angle to each other, of a locking ring or disk having a diametrically-disposed rib on one face which fits and is capable of sliding in the groove of its adjacent hub, this ring or disk provided on its opposite face with a tongue disposed diametrically and at an angle to the rib on its opposite face, and a filler provided with a tongue on one side fitted to the groove of the other hub and provided on its opposite face with a groove disposed parallel with said tongue and adapted to receive the adjacent rib of the locking ring or disk, and means for securing the filler to its adjacent hub, substantially as described.

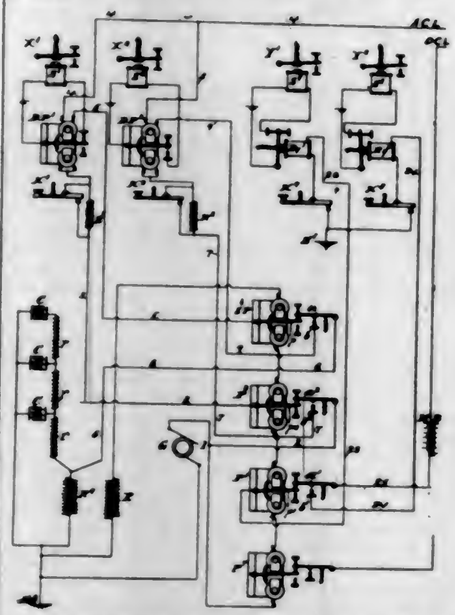
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**757,786. MULTIPLEX TELEGRAPHY.** John J. Gehman, Newark, N. J. Filed July 3, 1902. Serial No. 114,170. (No model.)

*Claim.*—1. In a telegraphic system, a main line, two sets of transmitters and receivers at a plurality of stations, and means operated by the main-line current for switching the corresponding sides of said sets alternately into and out of the main line.

2. In a telegraphic system, the combination of a main line, a circuit-changing relay operated by the main-line current, two sets of transmitters and receivers, and means actuated by said circuit-changing relay for connecting said sets alternately to said main line.

3. In a telegraphic system, the combination of a plurality of main lines connecting a plurality of stations, with a switching-relay and a duplicate set of transmitting and receiving instruments for each main line at each station the said relay adapted to switch the "sides" of the duplicate set of instruments alternately into and out of their main line, and all of said switching-relays adapted to be actuated by the current from one of said main lines, whereby all the corresponding "sides" of a line are connected or disconnected to it in unison.



4. In a telegraphic system, the combination of a main line, a source of electricity adapted to send alternating-current impulses over said line, a polar relay through the windings of which the main line passes, and a pair of independent receiving-relays, with means actuated by said polar relay for switching said receiving-relays alternately into and out of said main line.

5. In a telegraphic system, the combination of a main line, two receiving differentially-wound relays, and means for switching one winding of each of said relays into and out of said main line alternately, with an "artificial" line, a relay adapted to switch said "artificial" line into the second winding of each of said relays alternately, said "artificial" line being statically balanced to counteract discharges from the main line.

6. In a telegraphic system, the combination of a main line, two receiving differentially-wound relays, and means for switching one winding of each of said relays into and out of said main line alternately, with an "artificial" line statically balanced to counteract discharges from the main line, and a relay for switching said "artificial" line in and out of connection with the second winding of each of said relays alternately and in unison with the switching in and out of the main line through the first winding of said relays.

7. In a telegraphic system, a main line, a differentially-wound relay adapted to have the current from the main line alternately switched into and out of one of its windings, and means for sending through the other winding of said relay a counteracting discharge while carrying along all the current in the main line.

8. In a telegraphic system, a main line, a differentially-wound relay adapted to have the current from the main line alternately switched into and out of one of its windings, and means for sending through the other winding of said relay a current induced from the current in the main line, while carrying along all the current in said main line.

9. In a telegraphic system, a main line, an induction-coil having its primary winding in said main line, a differentially-wound relay having one winding inserted directly in and forming part of said main line and the other connected to the secondary winding of said induction-coil.

10. In a telegraphic system, a main line, an induction-coil having its primary winding connected to said main line, a differentially-wound relay having one winding connected to said main line, and means for shunting the secondary winding of said induction-coil into or out of the second winding of said relay.

11. In a telegraphic system, a main line, an induction-coil having its primary winding connected to said main line, a differentially-wound relay having one winding connected to the main line and the other connected to the secondary winding of said induction-coil, and means for short-circuiting this secondary winding of said induction-coil out of said relay during the "make" of the main-line circuit through the relay.

12. In a telegraphic system, a main line, an induction-coil, a controller-magnet and a differentially-wound relay, the primary of said induction-coil, the controller-magnet and one winding of said relay being connected to said main line, the secondary winding of said induction-coil being connected to the second winding of said relay and to the contacts of said controller-magnet.

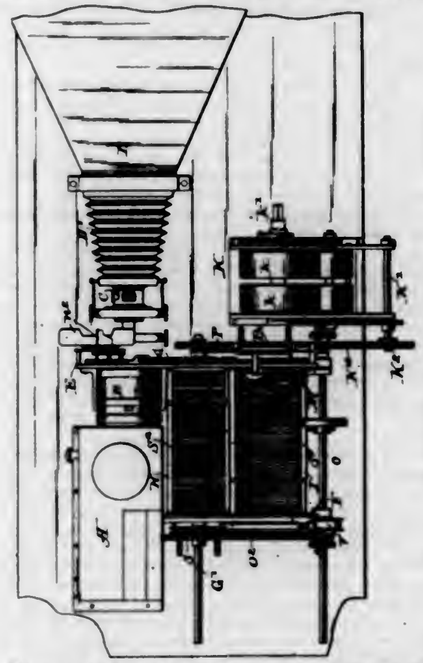
13. In a telegraphic system, a main line, an induction-coil having its primary winding in said main line, a differentially-wound relay having one winding inserted directly in and forming part of said main line and the other connected to the secondary winding of said induction-coil, and means for varying the strength of the discharges from the secondary of the induction-coil, through said relay.

14. In a telegraphic system, a plurality of main lines divided at each station, a controlling-relay at each division, all of said relays being actuated in unison by the current passing through one of said main lines, each relay adapted to switch the "sides" of the division it controls alternately in and out of one of said main lines.

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**757,737. SLIDE-FEEDING DEVICE FOR PICTURE-PROJECTING APPARATUS.** William M. Green, Evanston, and John R. Gert, Chicago, Ill. Filed July 30, 1903. Serial No. 167,522. (No model.)



*Claim.*—1. A slide-feeding apparatus comprising a delivery and a receiving slide-holder, and a rotative slide-carrier adapted to receive the slides from the delivery-holder, to carry the same into position for projection and to then carry said slides into position for delivery to the receiving-holder.

2. A slide-feeding apparatus comprising a delivery and a receiving slide-holder, a rotative slide-carrier adapted to receive slides from the delivery-holder, to carry the same into position for projection and to then carry said slides into position for delivery to the receiving-holder and means for shifting the slides from the said slide-carrier into the receiving-holder

3. A slide-feeding apparatus comprising two slide-holders arranged parallel with each other, rotative slide-carriers for shifting the individual slides from one holder to the other, at both ends of the holders.

4. A slide-feeding apparatus comprising two slide-holders arranged parallel with each other, and rotative slide-carriers for shifting the individual slides from one holder to the other, at both ends of the holders, one of said slide-carriers being adapted to carry the slides into position for projection in their passage from one holder to the other.

5. A slide-feeding apparatus comprising a delivery and a receiving slide-holder, a rotative slide-carrier adapted to receive the slides from the delivery-holder, to carry the same into position for projection, and to then carry said slides into position for delivery to the receiving-holder, means for moving the slides through the delivery-holder toward the slide-carrier, and means for shifting the slides from the slide-carrier into the receiving-holder.

6. The combination with a projecting apparatus, of two parallel slide-holders, rotative slide-carriers located at opposite ends of the holders and adapted to receive the slides from the holders, the slide-holders and the optical axis of the projecting apparatus being located at equal distances from the axis of rotation of the rotative slide-carriers and means acting to thrust the slides from the carriers into the holders.

7. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers located at opposite ends of the holders and adapted to receive the slides from the holders and means acting to thrust the slides from the slide-carriers into the holders and to move them through the latter.

8. A slide-feeding apparatus comprising two parallel slide-holders, rotative slide-carriers located at opposite ends of the holders, adapted to receive the slides from the holders, and reciprocating pressers acting to shift the slides from the carriers into the holders and to move them through the latter.

9. The combination with a projecting apparatus, of two slide-holders, rotative slide-carriers at both ends of said slide-holders for shifting the individual slides from one holder to the other, said slide-holders and the optical axis of the projecting apparatus being located at equal distances from the axis of rotation of the slide-carriers, one of said slide-carriers being adapted to carry the slides from one holder into position for projection and to then carry said slides into position for delivery to the other holder, and means for shifting the slides from the carriers into the holders and for moving them through the latter.

10. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers at both ends of said slide-holders for shifting the individual slides from one holder to the other, one of said slide-carriers being adapted to carry the slides from one holder into position for projection and to then carry said slides into position for delivery to the other holder and reciprocating pressers for shifting the slides from the carriers into the holders and for moving the slides through the holders.

11. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers located at opposite ends of the holders, means acting to move the slides through the holders, and means for giving intermittent rotative movement to the said slide-carriers, one of said slide-carriers being adapted to carry the slides into position for projection, and to hold them there during the intervals between the movement of the slide-carriers.

12. A slide-feeding apparatus comprising two slide-holders, two rigidly-connected rotative slide-carriers located at opposite ends of the holders and adapted to receive the slides from the said holders, and reciprocating pressers acting to thrust the slides from the carriers into the holders and to move them through the latter.

13. A slide-feeding apparatus comprising two slide-holders, two rigidly-connected, rotative slide-carriers located at opposite ends of the holders and adapted to receive the slides from the holders, means acting to thrust the slides from the carriers into the holders and through the latter, and means for giving intermittent rotative movement to the slide-carriers.

14. A slide-feeding apparatus comprising two parallel slide-holders, rotative slide-carriers located at opposite ends of the holders, reciprocating pressers acting to thrust the slides from the carriers into the holders and through the latter, means for giving intermittent rotative motion to the said slide-carriers, and means for actuating the said pressers adapted to advance the same during the intervals between the turning movements of the slide-carriers.

15. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers located at opposite ends of the said holders; a

rotative shaft on which both of said slide-holders are mounted, and means for giving intermittent rotative movement to said shaft.

16. A slide-feeding apparatus comprising a receiving and a delivery slide-holder, a rotative slide-carrier, and means for giving intermittent rotative movement to the slide-carrier consisting of a motor applied to give rotative movement to said slide-carrier, a plurality of stops on the slide-carrier, a detent adapted to engage said stops to arrest the movement of the slide-carrier, and means for actuating the said detent to release it from said stops.

17. A slide-feeding apparatus comprising a receiving and a delivery slide-holder, a rotative slide-carrier, and means for giving intermittent rotative movement to the slide-carrier consisting of a motor applied to give rotative movement to said slide-carrier, a plurality of stops on the slide-carrier, a detent adapted to engage said stops to arrest the movement of the slide-carrier, and a spring-actuated timing device for moving said detent to release it from the said stop.

18. A slide-feeding apparatus comprising a delivery and a receiving slide-holder, a rotative slide-carrier, spring-actuated means operating to turn the slide-carrier, and a stop mechanism for the slide-carrier comprising a plurality of stops on the carrier, a detent adapted to engage the said stops, a vertically-arranged slide-bar adapted to act by impact upon the said detent, a detent for holding the slide-bar in its elevated position, means actuated by the carrier for lifting the slide-bar into its elevated position, a detent for holding said slide-bar in its elevated position, and means acting on said slide-bar detent to release the same from the slide-bar at desired intervals.

19. A slide-feeding apparatus comprising a delivery and a receiving slide-holder, a rotative slide-carrier, spring-actuated means operating to turn the slide-carrier, and a stop mechanism for the slide-carrier comprising a plurality of stops on the carrier, a detent adapted to engage the said stops, a vertically-arranged slide-bar adapted to act by impact upon the said detent, a detent for holding the slide-bar in its elevated position, means actuated by the rotative carrier for lifting the slide-bar detent in its elevated position, and a spring-actuated timing mechanism acting on said slide-bar-supporting detent to release the slide-bar at desired intervals.

20. The combination with a rotative slide-carrier and means for turning the same, of a stop mechanism comprising a plurality of stops on the slide-carrier, a detent adapted to engage said stops, a vertically-moving slide-bar adapted to act by impact upon said detent, means operated by the rotative carrier for lifting the said slide-bar, a detent which holds the slide-bar in its elevated position, a rotative shaft provided with an arm adapted to engage said detent to release it from the slide-bar, and means for giving rotative movement to said shaft.

21. The combination with a rotative slide-carrier and means for turning the same, of a stop mechanism comprising a plurality of stops on the slide-carrier, a detent adapted to engage said stops, a vertically-moving slide-bar adapted to act by impact upon said detent, means operated by the rotative carrier for lifting the said slide-bar, a detent which holds the slide-bar in its elevated position, a rotative shaft provided with an arm adapted to engage said slide-bar detent to release it from the slide-bar, and a timing mechanism embracing an actuating-spring and a train of gears adapted to give rotative movement to said shaft.

22. The combination with a rotative slide-carrier and means for turning the same, of a stop mechanism comprising a plurality of stops on the slide-carrier, a detent adapted for engagement with said stops, a vertically-movable slide-bar adapted to act by impact upon said detent, means on the said slide-carrier for lifting the slide-bar, a detent for holding the slide-bar in its elevated position, a rotative shaft and an arm pivoted to said shaft and adapted for engagement with the said slide-bar detent, said arm being weighted and provided with a stop projection adapted to hold the arm in an extended position when at the rising side of the shaft and to permit the arm to fall by gravity when it passes over the axis of the shaft.

23. The combination with a slide-holder, and a rotative slide-carrier, of a reciprocating presser and means for operating said presser comprising a rock-shaft provided with a rigid arm connected with the presser, and also with a rigid actuating-arm, a rotative shaft provided with an eccentric, and a connecting-rod transmitting motion from said eccentric to said actuating-arm on the rock-shaft.

24. The combination with two slide-holders, of slide-carriers located at opposite ends of the holders and adapted to shift the slides from one holder to the other, reciprocating pressers located at the receiving ends of the holders, and means for actuating said holders comprising a rock-shaft provided with arms which are connected with the holders and also with actuating-arms, a rotative shaft provided with two eccentrics, and connecting-rods for transmitting motion from said eccentrics to the actuating-arms of the rock-shafts.

25. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers at opposite ends of the holders, a shaft on which said carriers are mounted, means applied to give intermittent rotative movement to said shaft, acting to turn the said shaft a part of a rotation at each movement thereof, reciprocating pressers, a presser-actuating shaft connected with the pressers and adapted to advance and retract the same by a complete rotation of said shaft, driving connections between said slide-carrier shaft and presser-actuating shaft, embracing a spring, and means actuated by one of the slide-carriers acting to control the turning movements of the said presser-actuating shaft.

26. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers located at opposite ends of the holders, a rotative shaft on which both of said slide-carriers are mounted, reciprocating pressers located at the receiving ends of both slide-holders, a rotative presser-actuating shaft, means for giving intermittent partial rotative movements to the slide-carrier shaft and actuating connections between said slide-carrier shaft and the presser-actuating shaft embracing a rotative part on the presser-actuating shaft, a spring connecting said rotative part with the latter shaft and means operated by one of the said rotative slide-carriers acting to control the turning movements of said presser-actuating shaft so as to permit the rotation of the same at the intervals between the turning movements of the said carriers.

27. A slide-feeding apparatus comprising two slide-holders, rotative slide-carriers at opposite ends of the holders, a rotative shaft on which said slide-carriers are mounted, reciprocating pressers located at the receiving ends of the slide-holders, a rotative presser-actuating shaft, means for giving intermittent partial rotative movements to the slide-carrier shaft, a rotative part on the presser-actuating shaft, a spring connecting said rotative part with the latter shaft, a stop-arm on the presser-actuating shaft, a detent adapted to engage said stop-arm, and means operated by one of said rotative slide-carriers acting on said detent to control the turning movements of said presser-actuating shaft.

28. The combination with a rotative slide-carrier shaft and means for giving intermittent rotative movement thereto, of a presser-actuating shaft, a part mounted to turn on said presser-actuating shaft which is driven from the slide-carrier shaft, a spring connecting said presser-actuating shaft with said rotative part thereon, a rigid stop-arm on said pressure-actuating shaft, a detent adapted to engage said arm, a lever connected with said detent, and cam-plates on one of the slide-carriers acting on said lever to shift the detent and release the stop-arm.

29. The combination with a rotative slide-carrier and carrier-shaft, of a reciprocating presser, a presser-actuating shaft, driving connections between said slide-carrier shaft and the presser-actuating shaft embracing a part mounted to rotate on the presser-actuating shaft, a spring connecting said rotative part on the presser-actuating shaft with the latter shaft, a stop-arm on said presser-actuating shaft, a detent adapted to engage said stop-arm, means operated by the rotative carriers for actuating the said detent, and a spring-arm adapted to engage said arm when in contact with the said detent to prevent backward turning of said presser-actuating shaft.

30. A slide-feeding apparatus comprising two slide-holders, a rotative slide-carrier, means for giving intermittent rotative movement to said slide-carrier, and means for controlling the speed of rotation of the slide-carrier, embracing a fan, and a train of gears driven by the rotative slide-carrier and operating the fan.

31. The combination with a projecting apparatus, of two slide-holders, and a rotative slide-carrier, the centers of said slide-holders and the optical axis of the projecting apparatus being located at equal distances from the axis of rotation of the slide-carrier, and at equal angular distances from each other, and the slide-carrier having slide-receiving apertures corresponding in location with said slide-holders and optical axis.

32. The combination with two slide-holders, of a rotative slide-carrier, a spring-motor for turning said slide-carrier, a stop mechanism for the slide-carrier comprising a plurality of stops on said carrier, a detent engaging said stops, means for actuating said detent to release it from the stop, and means for controlling the speed of rotation of the carrier comprising a series of gear-teeth on the carrier, a train of gears operated by said gear-teeth, and a fan operated by said train of gears.

33. The combination with a picture-projecting apparatus, of two slide-holders located at one side of the same, a rotative slide-carrier provided with slide-receiving apertures adapted to be carried by the turning of the slide-carrier in the position opposite the two slide-holders, and also into position in line with the optical axis of the projecting apparatus, means for moving the slides through one of said slide-holders into the apertures of the slide-carrier, and means for shifting the said slides from the slide-carrier into the other slide-holder.

34. The combination of a projecting apparatus, a vertically-arranged frame-plate, delivery and receiving slide-holders connected with said plate, said plate being provided with two apertures which coincide with the slide-holders and a third aperture in line with the optical axis of the projecting apparatus, a rotative slide-carrier mounted at the front face of the said plate, said slide-carrier being provided with slide-receiving apertures adapted to coincide with the apertures in the said plate, means for moving the slides from one of said slide-carriers into the slide-receiving apertures of the slide-carrier, and means for thrusting said slides from the apertures of the slide-carriers into the other slide-holder and through the latter.

35. A slide-feeding apparatus comprising a vertically-arranged frame-plate, delivery and receiving slide-holders connected with said plate, said plate being provided with two apertures coinciding with said holders and a third aperture in line with the optical axis of the projecting apparatus, a rotative slide-carrier having the form of a flat disk mounted to turn in contact with the outer face of said plate, said disk being provided with slide-receiving apertures adapted to coincide with the apertures in said plate, stops on the said carrier adapted to overlap the said apertures to hold the slides therein, means for moving the slides through the delivery-holder and into the apertures of said slide-carrier, and means for thrusting the slides from the said slide-carrier into the receiving-holder and through the latter.

36. A slide-feeding apparatus comprising a vertically-arranged frame-plate, slide delivering and receiving holders connected with said plate, said plate being provided with apertures adapted for the passage of the slides from and to said holders, a rotative slide-carrier having the form of a flat disk mounted in contact with the outer face of said plate, and means for thrusting the slides from the apertures of said slide-carrier into the receiving-holder, comprising a stationary supporting-plate attached at its outer margin to the said frame-plate and projecting inwardly over the slide-carrier, a reciprocating presser mounted in said supporting-plate and adapted to act upon the slides to force the same from the slide-carrier into the receiving-holder and means for giving reciprocatory motion to the said presser.

37. The combination with two slide-holders, of a rotative slide-carrier consisting of a disk and arms pivoted to the disk, and stops on the said disk to hold the pivoted arms extended when at the upwardly-moving side of the carrier.

38. The combination with a lantern or projecting apparatus, of two slide-holders located at the side of the said projecting apparatus, a rotative slide-carrier located at the front end of said holders, adapted to receive the slides from one of the holders to carry the same into position for projection, to then carry the same to the other holder, and a rotative slide-carrier at the rear of said slide-holders embracing a rotative disk, and a plurality of arms pivoted to the disk and adapted to stand in an extended position at the rising side of the disk and to hang in a depending position at the descending side of the disk.

39. The combination with a lantern or projecting apparatus of two slide-holders located at one side of the said projecting apparatus, a rotative slide-carrier located at the front end of said holders, adapted to receive the slides from one of the holders, to carry the same into position for projection to then carry the same to the other holder, a rotative slide-carrier at the rear of said slide-holders, embracing a rotative disk, a plurality of arms pivoted to the disk adapted to stand in an extended position at the rising side of the disk and to hang in a depending position at the descending side of the disk, and a curved guide at the rear ends of said slide-holders adapted to engage the outer edges of the said slides when the same are being moved by the said arms.

40. The combination with two slide-holders, of a rotative slide-carrier consisting of a disk and arms pivoted to the disk, stops on the said disk to hold the pivoted arms extended when at the upwardly-moving side of the carrier, and a spring-actuated detent-lever adapted to engage the free ends of said arms to temporarily hold said arms in their upright positions.

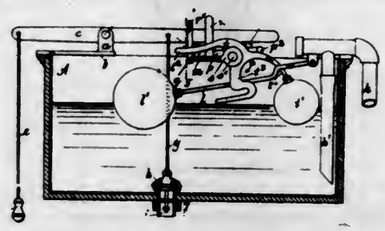
41. A slide-feed apparatus comprising two parallel vertically-arranged frame-plates provided with apertures for the passage of the slides and two slide-holders each consisting of rods which extend between and attached at their ends to the said plates, said rods being made telescopic to permit the length of the slide-holders to be adjusted.

42. A slide-feeding apparatus comprising two vertically-arranged parallel frame-plates, slide-holders formed by means of rods which extend between and are connected with the plates, rotative slide-carriers at the outer faces of the plates, and a shaft on which the said slide-carriers are mounted, said rods constituting the slide-carriers being telescopic, and the slide-carrier at the rear of the holders being connected with the said shaft by a spline and groove so that the rear plate may be shifted backwardly and forwardly to vary the length of the slide-holders.

43. The combination with two slide-holders, of rotative slide-carriers, reciprocating pressers, and spring-actuated detents at the receiving ends of the holders, adapted to hold the slides from outward movement after the same have been thrust into the holders by said pressers.

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**757,738. MECHANISM FOR OPERATING VALVES OF TANKS FOR WATER-CLOSETS.** PETER J. GRAM, Brooklyn, N. Y., assignor of two-thirds to Frederick Frey and George Blank, Brooklyn, N. Y. Filed Mar. 26, 1903. Renewed Feb. 27, 1904. Serial No. 195,549. (No model.)



*Claim.*—1. Mechanism for operating the inflow and outlet valves of a water-tank comprising a lever, means for operatively connecting it with the outlet-valve, and means for manually operating the lever; a drop-trigger, having a cam-shaped head, a finger, and a recess, pivoted underneath the lever; a lever, having one end operatively connected to the inflow-valve, a float set on its other end; a three-armed lever fulcrumed in position to engage with one of its arms the finger of the drop-trigger, with another arm the lever connected to the inflow-valve, and a float secured to the end of its third arm, substantially as herein shown and described.

2. Mechanism for automatically opening the outlet-valve of a water-tank to prevent an overflow, the mechanism comprising a lever, means for operatively connecting the lever with the outlet-valve of the tank; a drop-trigger, pivoted underneath the lever and having a cam-shaped head, a recess and a finger; a lever, fulcrumed to the tank in position to engage the finger of the drop-trigger; a float affixed to one end of this lever; a lever fulcrumed in position to engage with one arm the lever operating the outlet-valve, and with the other the lever to which the float is affixed; substantially as herein shown and described.

3. Mechanism for operating the inflow and outlet valves of a water-tank, comprising a lever, means for operatively connecting it with the outlet-valve, and means for manually operating the lever; a drop-trigger having a cam-shaped head, a finger, and a recess, pivoted underneath the lever; a lever having one end operatively connected to the inflow-valve, a float on its other end; a three-armed lever, fulcrumed in position to engage with one of its arms the finger of the drop-trigger, and with another arm the lever connected to the inflow-valve, and a float secured to the end of its third arm; a lever, fulcrumed in position to engage with one arm the lever operating the outlet-valve, and with the other arm, the three-armed lever, substantially as herein shown and described.

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**757,739. HORTICULTURAL IMPLEMENT.** ENOCH HAINES, Lakewood, Ohio. Filed June 22, 1903. Serial No. 162,536. (No model.)

*Claim.*—1. An earth-auger having a pointed head and vanes running spirally from point to top, and wings at its top set directly into the space between said vanes, in combination with a sweep adjustably secured to the standard above said vanes, substantially as described.

2. An earth-auger comprising a head with spiral vanes, and wings set into slots oppositely in the top of said head, in combination with a sweep adjustably fixed to the handle thereof, and adjustable shares on the ends of the sweep having cutting edges and turned surfaces, substantially as described.

757,739.



757,740. SAW-COVER. WILLIAM C. HAPPE, Davenport, Iowa. Filed Dec. 30, 1903. Serial No. 187,100. (No model.)



*Claim.*—1. A covering for saws, comprising a casing, a strip of fibrous material disposed longitudinally within the casing at one edge thereof, and means for holding the strip within the casing.

2. A covering for edged tools, comprising a casing of fabric, a strip of wood disposed within the casing for engagement of the edge of the tool, and a metallic binding-strip comprising spaced sides having inwardly-directed edges engaged with the edge of the casing, the wooden strip and a portion of the casing lying between the spaced sides.

3. A covering for saws, comprising a casing, a protection-strip disposed within the casing for engagement of the toothed edge of the saw, and means for holding the strip removably within the casing.

4. A covering for saws, comprising a casing of fabric having a protection-strip disposed longitudinally therein and in one edge thereof for engagement by the toothed edge of the saw, and a stiffening and binding strip engaged with the edge of the casing exteriorly thereof, said strip having spaced arms embracing the protection-strip to hold the latter removably within the casing.

5. A cover for saws, comprising a casing of fabric, a protection-strip disposed longitudinally therewithin and at one edge thereof for engagement by the toothed edge of the saw, and a metallic stiffening and binding strip comprising spaced sides directed toward each other at their edges, said binding-strip being engaged with the edge of the casing and lying with its spaced sides embracing the protection-strip and with its inwardly-directed edges lying therebeyond.

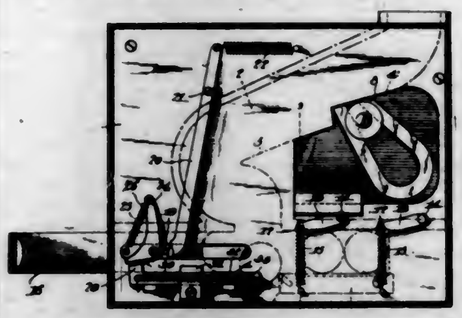
6. In a covering for saws, the combination with a casing of fabric, of a protection-strip disposed within the casing for engagement by the toothed edge of the saw.

757,741. COIN-DETECTOR. FREDERICK G. HARTELL, Chicago, Ill. Filed June 1, 1903. Serial No. 159,691. (No model.)

*Claim.*—1. In a coin-detector, a coin-engaging slide, a coin-rest including a movable member, means for maintaining the movable member in normal position during the forward movement of the slide, and means for moving said member to release position on the returning movement of the slide.

2. In a coin-detector, a coin-engaging slide, a coin-rest including a movable member, means for maintaining said movable member in initial position during forward movement of the slide, and means operable by the slide for moving said member to release position on the returning movement of said slide.

3. In a coin-detector, a coin-engaging slide, a coin-rest including a movable element, means for holding said element in initial position during the forward movement of the slide, and engaging means carried by the slide and movable element for effecting releasing movement of said element on the returning movement of the slide.



4. In a coin-detector, a coin-rest having a pointed portion for engaging the periphery of the coin, and a slide also having a pointed portion for engaging the periphery of the coin whereby after the insertion of a disk of metal softer than coin, said disk will be caught and limit inward movement of the slide.

5. In a coin-detector, a coin-rest, and a coin engaging and moving member having a pointed portion for engagement with a periphery of a coin, the point being forced positively into a disk of metal softer than the coin to thereby limit the movement of said member.

6. In a coin-detector, a pair of spaced coin-rests, initially separated for a distance less than the diameter of a predetermined coin, and a pointed slide adapted to engage a coin carried by the rests and to raise such coin above the rests, the engagement of the point of the slide with a spurious coin preventing full inward movement of said slide.

7. In a coin-detector, a pair of spaced coin-rests of which one is movable with respect to the other, said rests being initially spaced for a distance less than the diameter of a predetermined coin, a pointed slide for engaging and raising a coin over the rests, and means for operating the movable slide to effect the release of a spurious coin.

8. In a device of the class specified, a pair of coin-rests of which one is movable, a coin-engaging slide, a bell-crank lever carried thereby, a slidable bar carrying the movable coin-rest, a spring normally holding said bar from movement, and a lug carried by the bar and adapted to be engaged by the bell-crank lever on the outward movement of the slide.

9. In a device of the class specified, a movable coin-engaging member, having a sharpened point for engagement with the periphery of a coin, and an auxiliary pointed member between which and the movable coin-engaging member a spurious coin may be caught to prevent full inward movement of said coin-engaging member.

10. In a device of the class specified, a coin-rest having a sharpened edge, and a movable coin-engaging member having a sharpened point between which and the sharpened edge of the coin-rest a spurious coin may be caught and limit the movement of said member.

11. In a device of the class specified, a movable coin-engaging member having a point or tooth for biting into metals or materials softer than a standard coin, and a stationary member having a sharpened edge between which and the point or tooth a spurious coin may be caught to prevent full inward movement of said movable coin-engaging member.

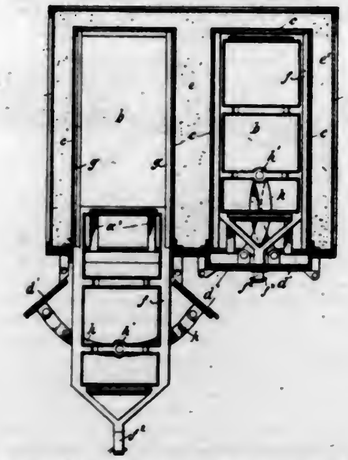
12. In a device of the class specified, a movable coin-rest having a sharpened edge, and a movable member coacting therewith and adapted to engage and bite into metals or other materials softer than standard coins.

13. In a device of the class specified, a pair of coin-rests of which one is movable, a movable and pointed coin-engaging member coacting therewith, and means controlled by said coin-engaging member for operating the movable coin-rest.

757,742. STOVE FOR HEATING SMOOTHING-IRONS OR THE LIKE. WILHELM HERRMANN, Frankfort-on-the-Main, Germany. Filed Sept. 14, 1903. Serial No. 173,123. (No model.)

*Claim.*—1. A stove for heating smoothing-irons comprising in combination a metal casing, a plurality of heating-chambers arranged side by side in said casing, means for insulating said chambers, grates for receiving the irons slidably supported within the heating-chambers one above the other, doors for closing said heating-chambers, and means for supplying heat to the chambers below the lower grate therein, substantially as described.



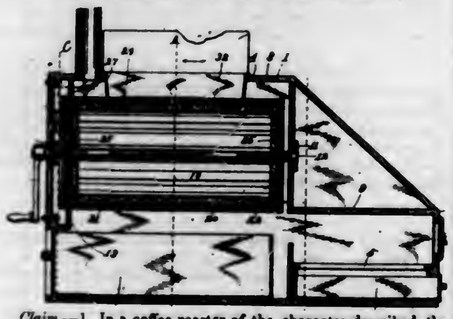


2. A stove for heating smoothing-irons, comprising in combination a metal casing, a plurality of heating-chambers arranged side by side in said casing, means for insulating said chambers, grates for receiving the irons slidably supported within the heating-chambers one above the other, doors for closing the chambers, means operated by the grates to open the doors on withdrawal of the grates and close them on insertion thereof, and means for supplying heat to the chambers below the lower grates therein, substantially as described.

3. A stove for heating smoothing-irons comprising in combination a metal casing, a plurality of heating-chambers arranged side by side in said casing, an insulating substance between said chambers, grates for receiving the irons slidably supported within said chambers, double-wing doors for closing said chambers, means operated by the grates to open the doors on withdrawal of the grates and close them on insertion thereof, and means for supplying heat to said chambers below the lower grates therein, substantially as described.

4. A stove for heating smoothing-irons, comprising a heating-chamber surrounded with insulating material, a series of grates slidably supported within the chamber and extending transversely thereof one above the other, a series of doors in one side of the chamber one above the other and connected respectively to the respective grates to be opened and closed by the sliding movement of the grates, means for supplying heat to said chamber below the lowest grate, and a flue leading from said chamber above the upper grate, substantially as set forth.

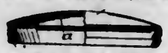
757,743. COFFEE-ROASTER. JOHN R. HERRIOTT, Kansas City, Kans., assignor of one-half to Alexander G. Lauthers, Kansas City, Kans. Filed Oct. 22, 1903. Serial No. 178,065. (No model.)



*Claim.*—1. In a coffee-roaster of the character described, the combination of a furnace, a rotating cylinder mounted in the furnace, constructed of metal, fire-clay and soapstone, a removable section in the periphery of the cylinder, an elongated opening in the top of the furnace, a hopper adapted to engage said opening and correspondingly engage over the removable section in the cylinder, a fire-bed in the lower front end of the furnace and a combustion-discharge pipe on the top rear end of the furnace adapted to cause the heat to envelop the cylinder on its exit from the fire-bed to the combustion-pipe, substantially as described.

2. In a coffee-roaster of the character described, the combination of a furnace, a rotating roasting-cylinder composed of soapstone, fire-clay and metal mounted in the furnace, an inward sheet-metal head 13 supported in the rear end of the furnace, a circular opening in said head adapted to admit the rear end of the roasting-cylinder to loosely engage, an outer removable head 15 at the rear end of the furnace forming a coffee smoke-chamber between the outer and the inner heads, substantially as described.

757,744. SHELL AND COVERING THEREFOR FOR BADGES, BUTTONS, MIRRORS, &c. WILLIAM HORNICK, Jr., Rochester, N. Y. Filed May 22, 1903. Serial No. 159,156. (No model.)



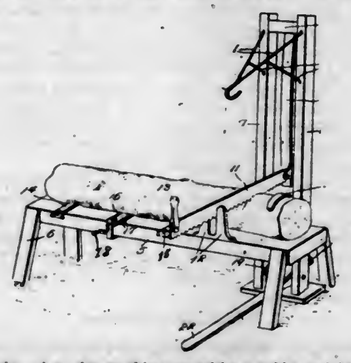
*Claim.*—1. As an article of manufacture for the purposes described, a shell having thereon and integral therewith a rearwardly and inwardly extending peripheral flange formed in two layers with a fold between them at the inner and rear edge of such flange and with the outer layer formed by the free edge of the metal comprising such shell bent outwardly and forwardly down upon such inner layer.

2. As an article of manufacture for the purposes described, a shell having thereon and integral therewith a rearwardly and inwardly extending peripheral flange formed in two layers with a fold between them at the inner and rear edge of such flange and with the outer layer formed by the free edge of the metal comprising such shell bent outwardly and forwardly down upon such inner layer, the rear edge of such flange also reducing the opening on the rear side of such shell.

3. As an article of manufacture for the purposes described, a shell having thereon and integral therewith a rearwardly and inwardly extending peripheral flange formed in two layers with a fold between them at the inner and rear edge of such flange and with the outer layer formed by the free edge of the metal comprising such shell bent outwardly and forwardly down upon such inner layer and a cover or cap stretched over such shell and with its free edges clamped between the layers of such flange.

4. As an article of manufacture for the purposes described, a shell having thereon and integral therewith a rearwardly and inwardly extending peripheral flange formed in two layers with a fold between them at the inner and rear edge of such flange and with the outer layer formed by the free edge of the metal comprising such shell bent outwardly and forwardly down upon such inner layer, the rear edge of such flange also reducing the opening on the rear side of such shell, and a cover or cap stretched over such shell and with its free edges clamped between the layers of such flange.

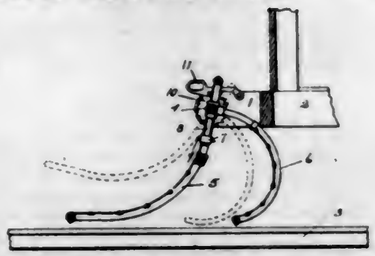
757,745. SAWING-MACHINE. JOSEPH A. HOUSE, near Thurston, Md. Filed May 8, 1903. Serial No. 156,253. (No model.)



*Claim.*—A sawing-machine comprising a table, uprights at one side of the table, a cross-beam connecting the upper ends of the up-

rights, a spring-plate secured against the cross-beam and depending therefrom, and having forwardly-directed ears at either side thereof at its lower end, a saw pivoted at one end and lying between the uprights and transversely of the table, a bracket attached to the uprights and extending outwardly and downwardly therefrom and having a hook thereon for the engagement of the free end of the saw when the latter is raised, a bifurcated plate secured to the table and extending upwardly therefrom and adapted to receive the saw within its bifurcation, a clamp comprising an arc-shaped member having diverging arms at one of its ends, one of said arms being pivoted to the table said arc-shaped plate being adapted for coöperation with the table to clamp a log thereagainst and a treadle connected with the remaining arm of the clamp to operate the latter.

757,746. **CAR-FENDER.** HARRY HOWE, Toledo, Ohio. Filed Dec. 10, 1903. Serial No. 184,594. (No model.)



*Claim.*—1. A device of the class described, comprising a main and an auxiliary fender suspended from a common axis, the said auxiliary fender being adapted to follow said main fender in adjacent position to the track for the purpose described.

2. A car-fender having a main and an auxiliary fender rotatably mounted on a common axis, the said auxiliary fender being adapted to approach the track as the former is raised.

3. A car-fender having a main and an auxiliary fender suspended from a common axis in juxtaposition to the track and adapted to be folded in compact form against the car-body to which they are attached.

4. A car-fender comprising a main and an auxiliary fender rotatably suspended from the body of a car with their lower portions in juxtaposition to the track and adapted to be folded in compact form against the front thereof, and means for locking said fenders in folded position.

5. A car-fender comprising main and auxiliary fenders rotatably mounted on a common axis, ratchet means for preventing a backward movement of said fenders after they have been elevated to a certain position, and means for retaining said fenders in either a rigid or a movable position with relation to each other.

6. A fender of the class described having the main and auxiliary fenders thereof pivotally mounted on a common axis, a dog and ratchet for controlling the movements of said fenders, means for locking said fenders in operative position or permitting them to be folded in compact form against the car-body.

7. A fender of the class described, having a shaft mounted in a supporting-bracket, a main fender mounted on said shaft, a second fender mounted on said shaft and extending to the rear of said first fender, means adapted to retain said fenders in rigid position or permit an independent movement thereof, and ratchet means for controlling the movements of said fenders, substantially as described.

8. A fender of the class described, comprising a shaft, a main and an auxiliary fender mounted on said shaft and adapted to be locked together in operative positions, a ratchet-pinion mounted on said shaft and adapted to rotate with said fenders, and a dog for engaging said pinion, substantially as described.

9. A fender of the class described, comprising rotatable main and auxiliary fenders mounted on a common shaft, arms projecting from said auxiliary fender in juxtaposition to said main fender, means adapted to engage said arms and retain said auxiliary fender in rigid position with relation to said main fender, and means for retaining said fenders in any position to which they may be moved, substantially as described.

757,747. **WRENCH.** EDWARD HOWELL, Murphysboro, Ill., assignor of one-half to James C. Hill, Murphysboro, Ill. Filed July 2, 1903. Serial No. 164,088. (No model.)

*Claim.*—1. In a wrench, a fixed jaw provided with a toothed shank and handle, a movable jaw slidably mounted upon said shank, and an adjusting-lever carried by the movable jaw upon the same face of the shank as the projecting portions of the jaws and provided with an eye upon its outer face and a tooth upon its inner face to engage the toothed portion of the shank, and parallel flanges extended from the handle to inclose and protect said lever.



2. In a wrench, a fixed jaw provided with a shank having a toothed face next the projecting portion of said jaw, a handle secured to said shank, a movable jaw slidably mounted upon said shank and provided with an elongated pivoting and spring-receiving recess therein, an adjusting-lever provided at one end with an eye and pivoted at its opposite end within said recess, an extended end to said lever beyond its pivot, a spring disposed within said recess to bear against the end of said lever beyond its pivot, and an engaging tooth carried by the face of said lever next the shank.

3. In a wrench, a fixed jaw provided with a shank having a toothed face next the projecting portion of said jaw, a handle secured to said shank, a movable jaw slidably mounted upon said shank and provided with a pivoting and spring-receiving recess therein, an adjusting-lever provided at one end with an eye and pivoted at its opposite end within said recess, a spring disposed within said recess to bear against the end of said lever beyond its pivot, an engaging tooth carried by the face of said lever next the shank, and projecting flanges extended from said handle at opposite sides of the shank to inclose and protect the free end of said lever.

757,748. **SPINNING-RING.** HARRISON B. HOYLE, Worcester, Mass. Filed Feb. 20, 1904. Serial No. 194,479. (No model.)



*Claim.*—1. The combination with a spinning-ring having an external flange on its upper edge, of a traveler-ring mounted on the upper edge of said ring, and having one or more attaching lips or arms which extend over and engage the external flange on said ring, substantially as shown and described.

2. The combination with a spinning-ring having an external flange on its upper edge, of a traveler-ring mounted on the upper edge of said ring, and having one or more attaching lips or arms which extend over and engage the external flange on said ring, and one or more lips or projections which extend within the upper edge of the ring, substantially as shown and described.

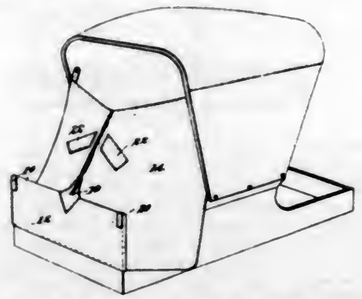
3. The combination with a spinning-ring having an external flange on its upper edge, of a traveler-ring mounted on the upper edge of said ring, and having one or more attaching lips or arms which extend over and engage the external flange on said ring, and also extend above the plane of the traveler, substantially as shown and described.

4. The combination with a spinning-ring having an external flange on its upper edge, of a traveler-ring mounted on the upper edge of said ring, and having one or more attaching lips or arms which extend over and engage the external flange on said ring, and also extend above the plane of the traveler, and one or more lips or projections which extend within the upper edge of the ring, substantially as shown and described.

757,749. **STORM-APRON.** GEORGE A. HUGHES, Atoka, Ky. Filed Dec. 1, 1903. Serial No. 183,362. (No model.)

*Claim.*—1. A storm-apron comprising a hood formed of two members united together, and an apron secured at its lower edge to said hood along the line of union of the members of the latter.

2. A storm-apron comprising a hood formed of two members having angular edges united together, and an apron also having an angular portion secured to said hood along the line of union of said angular edges thereof.



3. A storm-apron comprising a hood, an apron secured thereto and having securing-straps, and a central supporting-strap extending from said hood to the top edge of said apron.

4. A storm-apron comprising a hood formed of two members united together, an apron secured at its lower edge to said hood along the line of union of the members of the latter, and a central supporting-strap extending from the top edge of said apron to said hood.

5. A storm-apron comprising a hood formed of two members having angular edges united together, an apron secured at its lower end to said hood along the line of union of said angular edges, and a central supporting-strap extending from said hood to the top edge of said apron.

6. A storm-apron comprising a hood formed of two members having angular edges united together, and an apron also having an angular portion secured to said hood along the line of union of said angular edges, the angular portion of said apron terminating in parallel extensions secured to the end edges of said hood.

7. A storm-apron comprising a hood formed of two members united together, an apron secured at its lower edge to said hood along the line of union of said members, and stays extending over the top edge of said hood.

8. A storm-apron comprising a hood, an apron secured thereto and provided with rein-holes, means for holding said apron elevated along its central line, and flaps fitting over said rein-holes and provided with deflecting corners located adjacent said central line of the apron.

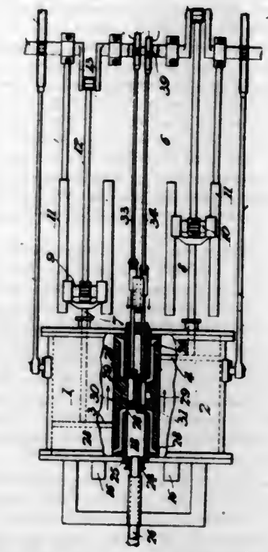
9. A storm-apron comprising a hood formed of two members united together, said hood having an opening therein, an apron secured at its lower edge to said hood along the line of union of said members, and stays fitting over the ends of said hood, one of said stays forming a flap for said opening.

757,750. **STEAM-ENGINE.** FRANKLIN P. HUNNEL, Bellevue, Ohio. Filed July 16, 1903. Serial No. 165,795. (No model.)

*Claim.*—1. In a steam-engine, a base-plate, a pair of parallel cylinders guided on the base-plate, a steam-chest disposed between the two cylinders and having suitable steam inlet and escape pipes, a pair of valves arranged in the steam-chest for governing the flow of steam therethrough to the cylinders, a main shaft, pistons arranged in the cylinders, angularly-disposed cranks connected one to each of the pistons, eccentrics carried by the main shaft and operatively connected to the cylinders to impart movement to the cylinders in the same direction as the pistons, and means operable by the shaft for moving the valves.

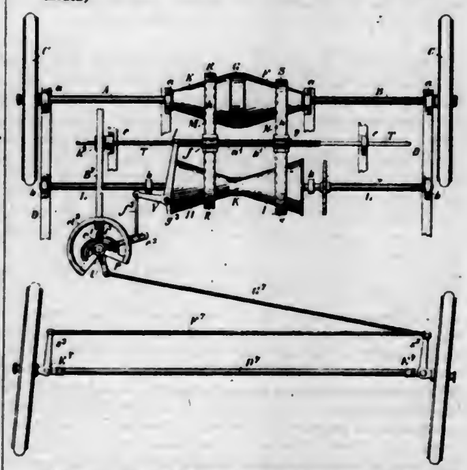
2. In a steam-engine, a bed-plate, a pair of parallel cylinders guided thereon, a steam-chest disposed between the two cylinders, a pair of valves arranged in the steam-chest for governing the flow of steam therethrough to the cylinders, pistons in said cylinders arranged to travel one slightly in advance of the other, a crank-shaft, angularly-disposed cranks carried by the shaft and connected one to each of the pistons, eccentrics mounted on the shafts and connected to the cylinders, auxiliary cranks carried by the shafts and having crank-pins, and valve-operating eccentrics mounted on said crank-pins, substantially as specified.

3. In a steam-engine, a pair of connected cylinders, a single valve-chest for said cylinders, valves arranged in the chest, steam supply and exhaust pipes connected to the chest, a main shaft, cranks arranged at an angle to each other and connected to the respective pistons, eccentrics carried by the shaft and connected to the cylinders, a crank on the shaft, and eccentrics carried by the crank and connected to the respective valves.



4. In a steam-engine, a frame having guideways, a pair of movable cylinders adapted to said guideways, a single steam-chest connecting the cylinders, steam supply and exhaust pipes extending through stuffing-boxes to the steam-chest, valves disposed in the chest for governing the flow of steam to and from the respective cylinders, a main crank-shaft having bearings on the frame, cranks disposed at an angle to each other and connected to the respective pistons, eccentrics mounted on said shaft and connected to the cylinders, a crank carried by the shaft, and a pair of eccentrics carried by the crank and disposed at an angle to each other corresponding to the angular relation of the piston-cranks, said eccentrics being connected to the respective valves, substantially as specified.

757,751. **MECHANISM FOR TRANSMITTING AND CONTROLLING POWER AND MOTION.** WILLIAM H. KESSLER, Passaic, N. J. Filed Nov. 1, 1902. Renewed Oct. 2, 1903. Serial No. 175,481. (No model.)



*Claim.*—1. The combination with two oppositely-arranged taper pulleys of corresponding shape and proportions placed in reversed relation with each other, and a belt extended from one to the other

of said pulleys and laterally movable along their length, of a belt-shifter arranged over the belt and parallel therewith, a nut fast to said shifter, a slidable screw parallel with the axes of the pulleys and working through the nut, means for rotating the screw to operate the nut and means for sliding the screw regardless of the rotation thereof, as and for the purpose set forth.

2. The combination with two oppositely-arranged taper pulleys of corresponding shape and proportions placed in reversed relation with each other, a belt having a longitudinal rib upon its outer surface extended from one to the other of said pulleys and laterally movable along their length, of a belt-shifter, arranged over the belt, parallel therewith and having grooved pulleys which engage with the rib on the belt, a nut fast to said shifter, a slidable screw parallel with the axes of the pulleys and working through the nut, means for rotating the screw to operate the nut, and means for sliding the screw regardless of the rotation thereof, as and for the purpose herein set forth.

3. The combination with two tapering pulleys fast on independent shafts axially in line with each other, and two oppositely-arranged pulleys of corresponding shape and proportions placed in reverse relation to the two independent pulleys and parallel therewith, of belt-shifters extended from the oppositely-arranged pulleys to the independent pulleys, nuts fast to the belt-shifters, a slidable screw threaded in opposite directions and passed through the nuts of the belt-shifters, means for rotating said screw to move the belt-shifters farther apart or nearer together as the case may be, and means for sliding the screw irrespective of its rotation to actuate the belt-shifters to simultaneously shift the belts in one direction or the other along the pulleys, as and for the purpose set forth.

4. The combination with two tapering pulleys fast on independent shafts axially in line with each other, and two oppositely-arranged pulleys of corresponding shape and proportions placed in reversed relation to the two independent pulleys and parallel therewith, of belt-shifters extended from the oppositely-arranged pulleys to the independent pulleys, nuts fast to the belt-shifters, a slidable screw threaded in opposite directions and passed through the nuts of the belt-shifters, and means for rotating said screw, of a hand-wheel shaft, a radial arm on said shaft, an elbow-lever, one arm of which connects with the screw, while the other arm thereof connects by a rod or link with the radial arm of the hand-wheel shaft, as and for the purpose set forth.

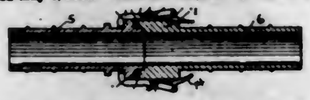
5. The combination with two tapering pulleys fast on independent shafts axially in line with each other, and two oppositely-arranged pulleys of corresponding shape and proportions placed in reversed relation to the two independent pulleys and parallel therewith, of belt-shifters extended from the oppositely-arranged pulleys to the independent pulleys, a nut fast to each of the belt-shifters, a slidable screw threaded in opposite directions and passed through the nuts of the belt-shifters, means for sliding said screw, a pinion for rotating said shaft, a rack for operating said pinion, a hand-wheel shaft, a cam on said hand-wheel shaft, and means for connecting the rack with the cam, whereby the screw may be rotated from the motion of the hand-wheel, as and for the purpose set forth.

6. The combination with two tapering pulleys fast on independent shafts axially in line with each other, a cylindric idler-pulley placed between them, two oppositely-arranged pulleys of corresponding shape and proportions placed in reversed relation to the two independent pulleys, parallel therewith and having fast between them a cylindric pulley which is opposite the idler-pulley aforesaid, of belt-shifters extended from the oppositely-arranged pulleys to the independent pulleys, nuts fast to the belt-shifters, a slidable screw threaded in opposite directions and passed through the nuts of the belt-shifters, means for rotating the screw, and means for sliding said screw irrespective of its rotation to simultaneously shift the belts in one direction or the other and to bring one or the other of said belts, as the case may be, upon the small cylindric pulley and the idler-pulley, as and for the purpose set forth.

7. The combination with two tapering pulleys fast on independent shafts axially in line with each other, and two oppositely-arranged pulleys of corresponding shape and size and placed in reversed relation with the two independent pulleys and parallel therewith, belt-shifters extended from the oppositely-arranged pulleys to the two independent pulleys, nuts fast to the belt-shifters, a slidable screw threaded in opposite directions and passed through the nuts of the belt-shifters, a hand-wheel shaft, means for transmitting motion from the hand-wheel shaft to the screw to rotate the same, and means for transmitting motion from the hand-wheel shaft to the screw to slide the same, of a bar having pivoted at the ends thereof axles provided with elbow-levers, a rod connecting said elbow-levers and means for transmitting motion from the hand-wheel shaft to said elbow-levers, as and for the purpose described.

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**757,752. HOSE-COUPLING. FRANK W. KELLER, Wilmerding, Pa. Filed May 1, 1903. Serial No. 155,173. (No model.)**

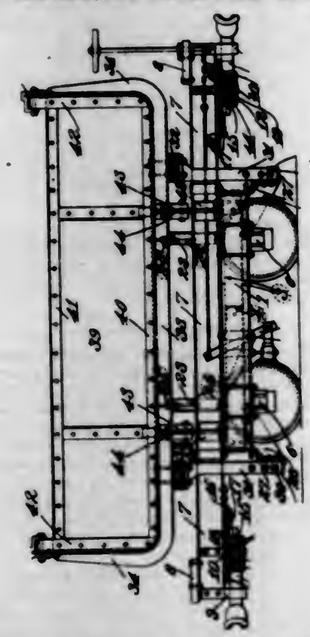


*Claim.*—1. A hose-coupling comprising a member having a socket, a second member adapted to engage the socket and having a flange in the rear of its engaging portion, levers pivoted to the first-named member, clutch-hooks pivoted to the levers and designed to engage behind the flange of the second member, said hooks having slots formed diagonally of their stems, ears upon the socketed member between which the stems of the hooks are slidably received, and pins engaged with the ears and lying loosely in the slots of the stems of the hook.

2. A hose-coupling comprising a member having a socket, a second member adapted to engage the socket and having a flange in the rear of its engaging portion, hooks disposed in pairs upon the socketed member, bifurcated levers having outwardly-directed ends removably engaged in said hooks, ears upon the socketed member arranged in pairs, clutch-hooks pivoted between the arms of each bifurcated lever and slidably engaged between the corresponding ears and adapted to engage over the flange of the second member, the stems of said hooks having diagonal slots therein, and pins engaged with each pair of ears and lying loosely in the slot of the stem therebetween.

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**757,753. DUMP-CAR. ARTHUR KIRK, Middletown, Pa., assignor to Middletown Car Works, Middletown, Pa., a Corporation of Pennsylvania. Filed Oct. 16, 1903. Serial No. 177,151. (No model.)**



*Claim.*—1. In a car, the combination with a truck-frame composed of channeled side members with their flanges presented outwardly, said side members being bent to form the ends of the frame, a splice-plate to connect the bent ends, and a superposed draft member; substantially as described.

2. In a car, the combination with a truck-frame composed of channels with their flanges presented outwardly, the side members of said frame being bent to form the end sections of the frame, longitudinally-disposed tie-bars, cross tie-bars, and a superposed draft member; substantially as described.



3. In a car, the combination with a truck-frame, of superposed draft member, arched tie-braces, and connection-plates for securing said draft member to the truck-frame, platforms on the ends of the draft member, and draft-rigging pivoted under the draft member; substantially as described.

4. In a car, the combination with a truck-frame, of an I-shaped draft member carried thereby and extending at each end beyond the truck-frame, stirrup-yokes suspended from the ends of the draft member, draw-bars carried by said stirrup-yokes, draft-springs, follower-plates, a bottom yoke bent to provide shoulders for the follower-plates, a top yoke secured to the extremities of the bottom yoke, both of said yokes being substantially U-shaped, a cross-bar connecting the free ends of the yokes, a swivel-stirrup engaging the closed ends of the yokes, and a pivoted bracket in which said swivel-stirrup is connected; substantially as described.

5. In a car, the combination with a truck-frame, of brackets depending from the end thereof, longitudinal sills for stiffening the frame, and flanged web-stiffeners riveted to said brackets and to said longitudinal sills; substantially as described.

6. In a car, the combination with a truck-frame having longitudinal sills, of brackets depending from the end thereof, track-plates supported by said brackets, and flanged plates 28 riveted to the brackets and to said sills; substantially as described.

7. In a car, the combination with transoms, of Z-shaped sills connected thereto, the bottom flanges of said sills being removed and the ends bent up to form end posts; substantially as described.

8. In a car, the combination with body-transoms, of sills having top and bottom flanges, the bottom flanges being discontinued a short distance beyond said transoms, and the remaining portion of the sills being bent up to form end posts; substantially as described.

9. In a dumping-car, the combination with a hinged side, of automatic locking-levers coöperating therewith, and means coöperating with said levers to positively lock the hinged side in its closed position; substantially as described.

10. In a dumping-car, the combination with a truck-frame and a hinged side wall, of locking-levers coöperating therewith, and means coöperating with said levers to positively lock the hinged side in its closed position; substantially as described.

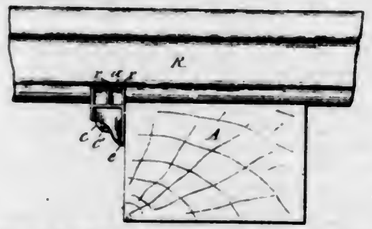
11. In a dumping-car, the combination with a tilting body having a hinged side, of locking-levers carried by said tilting body and coöperating with said hinged side, and a truck-frame with which said locking-levers also coöperate to positively lock the hinged side in its closed position; substantially as described.

12. In a dumping-car, the combination with a truck-frame, of a tilting body having a hinged side, overbalancing locking-levers coöperating with said hinged side, and means coöperating with said levers to positively lock the hinged side in its closed position; substantially as described.

13. In a dumping-car, the combination with a truck-frame having stop-blocks, of a tilting body having overbalanced locking-levers mounted thereon, the lower ends of said levers coöperating with said stop-blocks, whereby they are positively operated when the body approaches its upright position, and a hinged side on the tilting body, with the free end of which the overbalanced upper ends of the locking-levers coöperate; substantially as described.

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**757,754. RAILWAY-RAIL STAY. EDWARD LAAS, Elgin, and HIRAM H. SPONENBURG, Wadsworth, Ill. Filed Dec. 16, 1903. Serial No. 185,340. (No model.)**



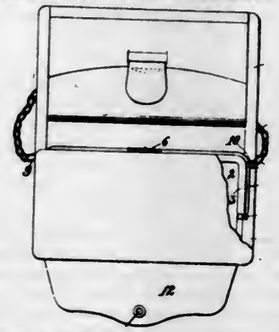
*Claim.*—1. A railway-rail stay consisting of two separate rail-gripping jaws fulcrumed on the rail-flanges and with horizontally-prolonged bottom bearings sustained out of contact with each other and abutting the side of the tie, lugs projecting from said bottom bearings, and a bolt engaging the lugs and provided with means for drawing the jaws into engagement with the rail as set forth.

2. A railway-rail stay consisting of separate laterally-movable rail-gripping jaws, each formed with a bottom portion bearing on the under side of the rail and with a depending lug, a bolt passing through the lugs and provided with a head on one end and with a nut on the opposite end, and an abutment depending from the bottom bearing of one of the jaws as set forth and shown.

3. A railway-rail stay consisting of separate laterally-movable rail-gripping jaws disposed at an angle in relation to each other and each formed with a bottom portion bearing on the under side of the rail and with a depending lug, a bolt engaging the lug and provided with means for drawing the jaws into engagement with the rail, and an abutment depending from one of said jaws as set forth.

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**757,755. POCKET-BOOK. OTTO A. LEHMAN, Hoboken, N. J. Filed Dec. 26, 1902. Serial No. 136,519. (No model.)**



*Claim.*—A pocket-book comprising a body portion having a pocket therein, a frame having two hinged members for closing the pocket, a flap projecting from the body portion and fitted to fold over the top of the frame into proximity to the body portion, a second flap projecting over the body portion in position to be secured to the first-named flap, and a suspension-chain having its ends attached to the outer portions of one of the frame members only.

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**757,756. COMBINED SKIRT AND WAIST HOLDER. MALLE LITTLE-PRITZKOW, New York, N. Y. Filed Oct. 24, 1903. Serial No. 178,420. (No model.)**



*Claim.*—1. A combined skirt and waist holder comprising a rigid open frame and pointed teeth or prongs rigidly carried by opposite ends of the frame and projected inwardly therefrom in opposite directions, both sets of teeth or prongs being inclined to one and the same side of the frame.

2. A combined skirt and waist holder comprising an open frame curved to conform to the contour of the body and a plurality of sharp and rigid teeth or prongs projecting inwardly from opposite ends of the frame and extending downwardly on the concave side of the said frame out of the curved plane thereof.

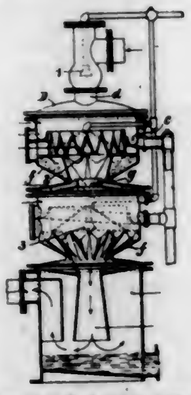
3. A combined skirt and waist holder comprising a rigid open frame curved to conform to the contour of the body and provided with sharp rigid curved teeth or prongs adapted to pass through the fabric to be engaged thereby, said teeth or prongs being rigidly attached to the said frame and extending downwardly on the concave side thereof out of the curved plane of the frame.

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**757,757. APPARATUS FOR OPERATING ON FINELY-DIVIDED FLUIDS OR SOLID MATERIALS. JOHANN LUEHR, Aix-la-Chapelle, Germany. Filed Apr. 27, 1903. Serial No. 154,598. (No model.)**

*Claim.*—1. An apparatus for effecting a succession of operations on matter adapted to be supplied in a fine state of division and the separation of the products which result in stages, consisting of a series of drum-shaped chambers of two kinds A and B which are alternately superposed on one another, the bottom of chamber A slop-

ing downward toward a central aperture and the bottom of chamber B sloping from the center downward to its outer periphery, and a shelving partition-plate *e* dividing by its upper edge the central aperture of A into an annular area and an interior circular area, the lower edge of *e* carrying a channel leading to an external collecting-pipe.

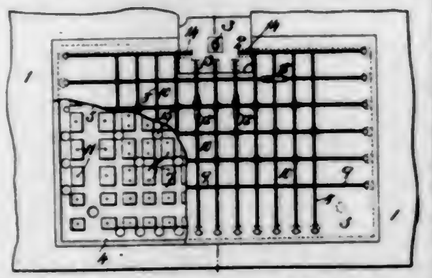


2. An apparatus for effecting a succession of operations on matter adapted to be supplied in a fine state of division and the separation of the products which result in stages, consisting of a series of drum-shaped chambers of two kinds A and B which are alternately superposed on one another, the bottom of chamber A sloping downward toward a central aperture and the bottom of chamber B sloping from the center downward to its outer periphery, the surfaces of A and B being indented to increase their area and efficiency and a shelving partition-plate *e* dividing by its upper edge the central aperture of A into an annular area and an interior circular area, the lower edge of *e* carrying a channel leading to an external collecting-pipe.

3. An apparatus for effecting a succession of operations on matter adapted to be supplied in a fine state of division and the separation of the products which result in stages, consisting of a series of drum-shaped chambers of two kinds A and B which are alternately superposed on one another, the bottom of chamber A sloping downward toward a central aperture and the bottom of chamber B sloping from the center downward to its outer periphery, a shelving partition-plate *e* dividing by its outer periphery, a shelving aperture of A into an annular area and an interior circular area, the lower edge of *e* carrying a channel leading to an external collecting-pipe and a series of pipes with distributing-nozzles for the admission of mixing fluids.

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**757,758. EMBOSSING-MACHINE.** HENRY S. MAIDHOF, New York, N. Y. Filed Mar. 10, 1903. Serial No. 147,097. (No model.)



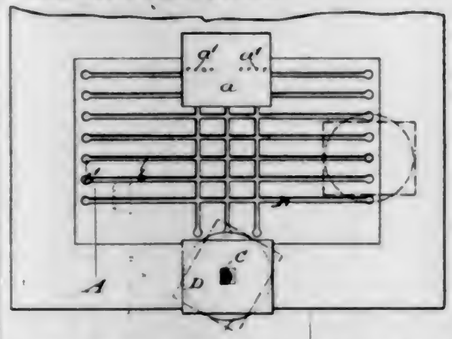
*Claim.*—1. A gage-plate having grooves therein for the reception of adjustable stops, and a platen having grooves therein forming extensions of the grooves in the gage-plate.

2. A gage-plate comprising a top plate having grooves therein for the reception of adjustable stops, said grooves intersecting thereby forming separated top-plate sections and a base secured to the top plate and having projections for spacing the separated top-plate sections from the base.

3. A gage-plate comprising a top plate having grooves therein for the reception of adjustable stops, said grooves intersecting and thereby forming separated top-plate sections and a base secured to the top plate and having projections for spacing the separated top-plate sections therefrom, the said base being provided at intervals with cleaning-holes therethrough.

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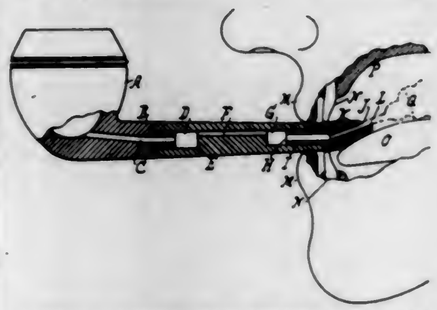
**757,759. ROTARY SUPPORT FOR EMBOSSING-MACHINE PLATENS.** HENRY S. MAIDHOF, New York, N. Y. Filed Mar. 10, 1903. Serial No. 147,098. (No model.)



*Claim.*—The combination with an embossing-machine table, of a platen-support rotatably mounted thereon, said support having a plurality of pairs of holes in its top surface arranged diametrically opposite each other, the holes of one pair being at a different distance from each other than the holes of another pair, the said holes being fitted to receive pairs of projections on platens.

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**757,760. MOUTHPIECE OR STEM FOR SMOKERS' ARTICLES.** JOSEPH A. MANAHAN, New York, N. Y. Filed Dec. 22, 1902. Serial No. 136,204. (No model.)



*Claim.*—1. A smoker's article including a bowl provided with a stem-section having a smoke-channel, a stem having a bore wholly within said stem and of differential diameter, the end portions of the bore being of greater diameter than the intermediate portion which constitutes a smoke-channel, and being extended below said intermediate portion to constitute wells, the outer well serving to receive said stem-section, and a mouthpiece fitted into the inner well, having a smoke-channel.

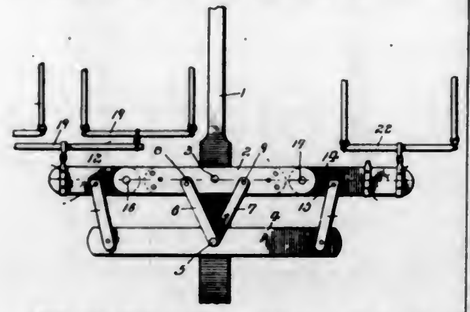
2. A smoker's article including a bowl provided with a stem-section having a smoke-channel, a stem having a bore wholly within said stem and of differential diameter, the end portions of the bore being of greater diameter than the intermediate portion which constitutes a smoke-channel, and being extended below said intermediate portion to constitute wells, the outer well serving to receive said stem-section, and a mouthpiece fitted into the inner well, having a smoke-channel, said smoke-channel having branches at its inner end.

3. A smoker's article including a bowl provided with a stem-section having a smoke-channel, a stem having a bore wholly within said stem and of differential diameter, the end portions of the bore being of greater diameter than the intermediate portion which constitutes a smoke-channel, and being extended below said intermediate portion to constitute wells, the outer well serving to receive said stem-section, and the smoke-channel in the latter opening directly into the interior of the bowl and extending downward therefrom at an angle and into said outer well, and a mouthpiece fitted into the inner well, having a smoke-channel.



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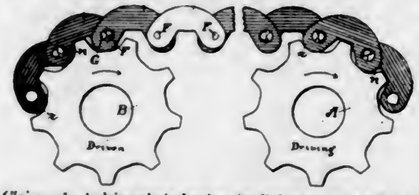
**757,761. DRAFT-EQUALIZER.** ELIJAH F. MORAN, Choice, Minn. Filed Oct. 27, 1903. Serial No. 178,739. (No model.)



*Claim.*—In a draft-equalizer, the combination with the pole and the center piece secured thereto, of the member parallel with the center piece and connected with the pole, the inclined braces, the long and short members in the same plane with the center piece and with each other and the plates upon opposite sides of said members and the center piece and forming the connections between the same and the said member, as and for the purpose specified.

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**757,762. DRIVE-CHAIN.** EVERETT P. MORSE, Trumansburg, N. Y., assignor to Morse Chain Company, Trumansburg, N. Y. Filed Sept. 26, 1901. Serial No. 76,616. (No model.)



*Claim.*—1. A drive-chain having its links composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and pintles formed in separate parts, of which one part engages with the plates of one link only and bears upon the other part of the pintle.

2. A drive-chain having each link composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and pintles formed in separate parts adapted to turn one upon the other, the apertures in said plates through which both parts of the pintles pass being made to hold in place one part of each pintle and to allow free movement or clearance of the other part thereof.

3. A drive-chain having each link composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and pintles formed in separate parts adapted to turn one upon the other, the apertures in said plates through which both parts of the pintles pass being made to hold in place one part of each pintle and to allow free movement or clearance of the other part thereof and which apertures in the intermediate plates have a larger clearance portion than in the outermost ones.

4. A drive-chain having each link composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and pintles formed in two parts engaging each other along the axis of oscillation of the links and adapted to rock one upon the other.

5. A drive-chain having each link composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and alternate links being free from engagement with the sprockets, and two-part pintles of which the seat-pins are mounted facing each other in the links which do not engage the sprockets and have plane bearing-surfaces which are substantially at right angles to the length of the links.

6. A drive-chain having each link composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and two-part pintles of which the seat-pins have flattened sides throughout their length whereby they hold a fixed position in each of the plates with which they engage.

7. A drive-chain having each link composed of a plurality of plates, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and two-part pintles of which the seat-pins have irregular rear surfaces whereby they hold a fixed position in each of the plates with which they engage.

8. A drive-chain having links adapted to arch over the sprockets, the alternate links being free from engagement with the sprockets, and the remaining links constructed to have external engagement by one end in running over one sprocket and external engagement by the other end in running over the other sprocket.

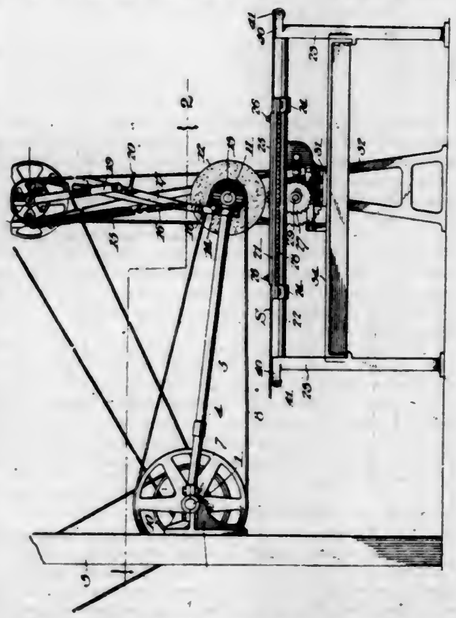
9. A drive-chain having adjacent links composed of a plurality of plates adapted to arch over the sprocket-teeth, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and pintles formed in two parts, of which one part engages with the plates of one link only and passes freely through openings in the plates of the adjacent link, and the other part engages with the plates of said adjacent link and passes freely through openings in the plates of the first-mentioned link.

10. A drive-chain having adjacent links composed of a plurality of plates adapted to arch over the sprocket-teeth, the plates of each link being interspersed upon the pintles with the plates of the adjacent links, and pintles formed in separate parts which bear upon each other throughout substantially the full width of the chain, one part of the pintle engaging with the plates of one link only and passing freely through openings in the plates of the adjacent link.

11. A drive-chain having each link composed of a plurality of plates interspersed upon the pintles with the plates of the adjacent links, and pintles formed in separate parts extending substantially the full width of the chain, and adapted to turn one upon another, the apertures in said plates being made to rigidly hold one part of each pintle and to allow free movement of the other part thereof.

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**757,763. POLISHING-MACHINE.** DAVID MCCANCE, Lockport, N. Y. Filed Feb. 1, 1904. Serial No. 191,563. (No model.)



*Claim.*—1. In a polishing-machine, a pivoted supporting-frame, a polishing element carried by said frame, toggle members for forcing said frame into operative position, and a spring engaging one of said toggle members and holding said members normally disalined.

2. In a polishing-machine, a pivoted supporting-frame, a polish-

ing element carried by said frame, a reciprocating work-carrier disposed beneath said polishing element, a pair of toggle-links arranged above said pivoted frame and having the lower member thereof pivotally connected with said frame, yielding means for holding said frame normally in inoperative position, and means disposed between said yielding means and said toggle members for adjusting the position of the supporting-frame relative to said yielding means.

3. In a polishing-machine, a pivoted supporting-frame, a polishing element carried by said frame, yielding means for holding said frame normally in inoperative position, toggle members for forcing said frame into operative position against the action of said yielding means, and means for limiting the pivotal movement of said toggle members.

4. In a polishing-machine, the combination of a pivoted supporting-frame, a rotary polishing element carried thereby, a carriage arranged for reciprocatory movement beneath said polishing element and in the plane of rotation thereof, a rack beneath said carriage, a pinion engaging said rack, and means at one side of said carriage for imparting movement to said rack.

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757,764. **WRENCH.** JOSEPH N. HOYER, Gould City, Wash. Filed Dec. 17, 1903. Serial No. 185,540. (No model.)



*Claim.*—1. A wrench comprising a handle, a head provided with jaws and having a ratchet-wheel and a peripheral groove adjacent to the latter, a guide attached at one end to the handle and having a lip at its opposite end engaged in said groove, said guide having a longitudinal passage therethrough and a transverse slot in its end opposite to the head, a pawl slidably mounted in said passage and having its end adjacent to the head beveled at one side and adapted for engagement with the ratchet-wheel, means for holding the pawl yieldably in engagement with the ratchet-wheel, and a pin engaged transversely through the pawl and lying in said slot, said pawl being movable with the pin from the slot and rotatable when the pin is thus disengaged.

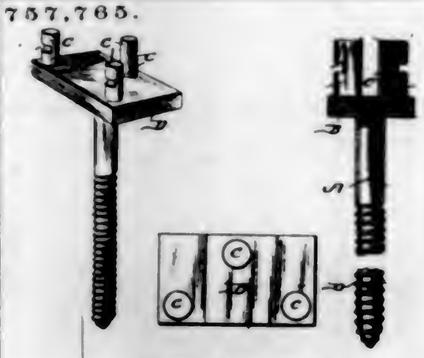
2. A wrench comprising a head having a fixed jaw and a transverse passage passing beneath the jaw, said head having a slot in its face from which the jaw projects and communicating with the passage, a second jaw having a threaded stem slidably engaged in the passage, the second jaw projecting through said slot, a lug upon the face of the fixed jaw opposite to the second jaw and having a groove therein and a feeding-nut engaged with said threaded-stem and having a peripheral base-flange engaging said groove.

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757,765. **INSULATOR.** JOHN W. OSBORNE, Winchester, Ill. Filed Aug. 15, 1903. Serial No. 169,656. (No model.)

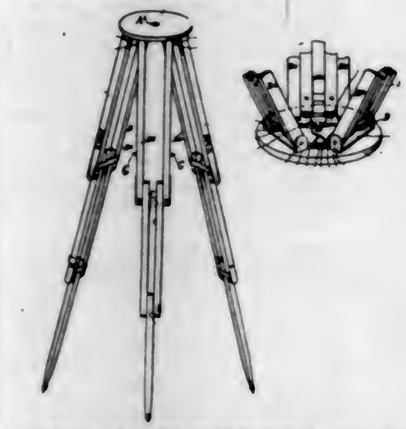
*Claim.*—An insulator comprising a threaded shank which is externally threaded, a flat rectangular plate arranged at the outer end of the shank, and the pins projecting at right angles from the said plate, said pins being arranged alternately adjacent the opposite edges of the plate, each pin having a notch produced therein, said notches being made in the outer sides of the pins, the pins, plate and shank being covered with non-conducting material, substantially as shown and described.

757,765.



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757,766. **FOLDING TRIPOD.** RICHARD P. PALMER, Bondhill, Ohio, assignor to William Hubbell Fisher, Cincinnati, Ohio. Filed Aug. 10, 1898. Serial No. 688,342. (No model.)



*Claim.*—1. In a tripod, the combination of a head, three plates, having end portions pivotally connected to each other, end to end, the outer plates being adapted for rotary movement toward and from each other and the central plate being held in fixed relation to the head, and the pivoted outer plates being adapted for rotary movement across the under side of the head, and under a holding device and legs pivoted on the respective plates, substantially as and for the purposes specified.

2. In a tripod, the combination of a head having a perforation, legs, two of which have plates pivotally connected to the head and arranged to swing across the same, each of said plates having a perforation adapted, when the plate is moved, to correspond with the perforation in the head, and a screw or the like passed through the perforation in the head and adapted for engagement with the perforation in said plates, substantially as and for the purposes specified.

3. In a tripod, the combination of a head, plates connected to the head and adapted for movement thereon and each formed with a perforation, the perforations in the plates being adapted to register with each other, a screw or the like adapted to be passed through said perforations, when in register, to hold the plates against relative movement, and legs, two of which are carried by said plates, substantially as set forth.

4. In a tripod, the combination of a head, having an opening to receive the tripod-screw, tripod-screw, legs, two of the legs each having a plate pivoted to the tripod-head, each plate having a hole located for alinement with the hole of the other plate, and with the tripod-screw opening of the head, when the legs are assembled for supporting the tripod-head, and a stop having a securing-stop with which the pivoted plates engage when the latter are approximated, substantially as and for the purposes specified.

5. In a tripod, the combination of the head, and a leg having a pivot-point held in fixed relation on the head, the plates E, each having a pivotally-connected leg, the pivots of the legs of the plates



being out of alinement with the pivot holding the central leg, and catches respectively present between adjacent legs, for locking the three legs together, substantially as and for the purposes specified.

6. In a tripod, the combination of a head, a central leg pivotally held thereon, plates loosely connected to the head and adapted for movement in parallel planes, other legs pivoted on said plates, and a holding device on the head to limit the movement of the plates, said holding device being independent of the screw which connects the tripod-head to the camera, but having a portion arranged to engage the plates to hold them to the head, substantially as set forth.

7. In a tripod, the combination of a head, a central leg pivotally held thereon, plates loosely connected to the head and adapted for movement in parallel planes, legs pivoted on said plates, a holding device on the head to limit the movement of the plates and a device carried by the head and having engagement with each plate and arranged to lock the plates against pivotal movement, substantially as set forth.

8. A tripod having folding legs adapted, when folded, for movement relative to each other, means for causing such movement of the tripod-legs, and devices actuated by such relative movement, and arranged to lock the legs in folded position, substantially as set forth.

9. In a tripod, the combination of a head, legs pivotally connected thereto, and adapted to be folded side by side, and when so folded, adapted for movement relative to each other, means for causing such movement, and devices, actuated by the movement of the legs relative to each other, and arranged to lock the legs in folded position, substantially as and for the purposes specified.

10. In a tripod, the combination of a head, a central leg pivotally held thereon, plates loosely connected to the head and adapted for movement in planes parallel with the pivotal axis of the central leg, other legs pivoted on said plates and adapted, by the movement of the plates, to be folded alongside the central leg and when so folded, adapted for movement relative to said central leg, and means for causing such movement, and means, actuated by the movement of the legs relative to each other and arranged to lock the legs in folded position, substantially as set forth.

11. In a tripod, the combination of a head, a central leg pivotally held thereon, plates loosely held on the head and adapted for movement in planes parallel with the pivotal axes of the central leg and having pivoted legs, the pivotal axis of which are out of alinement with the pivotal axis of the central leg when the plates are moved to bring the legs in position to be folded alongside each other and are adapted when the legs are so folded to be moved relatively to the central leg, and means actuated by the movement of the legs relative to each other for locking the legs in folded position, substantially as set forth.

12. In a tripod, the combination of a head, legs pivotally connected to the head and adapted by such construction to be located alongside of each other, means comprising devices carried by the legs and arranged for reciprocal engagement for interlocking the legs, pivot connection for enabling the head to be folded on the legs, said locking means adapted to be actuated by the last-named pivotal movement of the head, substantially as and for the purposes specified.

13. In a tripod, the combination of a head, legs pivotally connected to the head and adapted to be laid alongside each other, the pivotal axes of the legs, when laid alongside each other, being out of alinement and the head, when the legs are so laid, being adapted to be folded over on the legs to impart movement to said legs relative to each other, and interlocking devices carried by the legs and caused by the movement of the legs relative to each other to lock the legs together, substantially as set forth.

14. In a tripod, the combination of a head, legs pivotally connected to the head and adapted to be laid alongside each other, the pivotal axes of the legs, when laid alongside each other, being out of alinement, and the head, when the legs are so laid being adapted to be folded over on the legs to impart movement to said legs relative to each other, and interlocking devices, each consisting of a pin carried by one leg and adapted for engagement, when the legs are moved relative to each other, with an opening in another leg, to lock the legs together, substantially as and for the purposes specified.

15. In a tripod, the combination of legs, and three plates, each of which is adapted to hold the upper end of its respective leg, two of which plates are pivotally connected to the third, and each of which has a perforation adapted when the plate is moved to aline with the perforation of the opposite plate, and a screw or the like passed through the perforations of the plates, for engagement with the load to be supported by the tripod, substantially as and for the purposes specified.

16. In a tripod having legs, adjustable lengthwise, the combination of the legs, and devices thereon adapted when the legs are shortened to interengage, and means adapted to cause such devices to engage each other for locking the legs together, substantially as and for the purposes specified.

17. In a tripod having legs, adjustable lengthwise, the combination of these legs and devices thereon at a distance from the head for locking them together, when the head or sections are folded against the legs, substantially as and for the purposes specified.

18. In a tripod, having legs adjustable lengthwise, the combination of these legs, when edge to edge, and locking devices thereon at a distance from the head for enabling them to be locked together when the head or sections are folded against the legs, substantially as and for the purposes specified.

19. In a tripod, the combination of a head, having an opening to receive the tripod-screw, legs, two of the legs each having a hole located for alinement with the hole of the other plate, and with the opening in the head to receive the tripod-screw, when the legs are assembled for supporting the tripod-head, and a stop secured to the head and having extensions, under which an edge of the pivoted plates comes when approximated, the plates being kept from further approximation by the stop, substantially as and for the purposes specified.

20. In a tripod, the hinged connections between the head and the legs which are adapted as the head is folded down on the legs to move the central leg a distance different relatively to the other legs, and catches between said legs adapted to fasten the legs together by reason of the alternation of position of the central leg relatively to the outer legs, substantially as and for the purposes specified.

21. In a tripod, the hinged connections between the head and the legs which are adapted as the head is folded down on the legs, to move the central leg a distance different relatively to the other legs, and catches between said legs adapted to fasten the legs together by reason of the alternation of position of the central leg relatively to the outer legs, and the spring K, $K^3$, $K^4$, located on one section of a leg and adapted when the sections of the legs are folded to frictionize an inner section and prevent the same from falling out of position, substantially as and for the purposes specified.

22. A tripod-head comprising a horizontaly-arranged set of members pivoted together on vertical hinges, and means for locking them in position to form a rigid supporting-frame, substantially as and for the purposes specified.

23. In a tripod, the combination of a head, three plates having end portions pivotally connecting said plates to each other, end to end, the outer plates being adapted for rotary movement toward and from each other, and the central plate being held in fixed relation to the head, and the pivoted outer plates being adapted for rotary movement across the under side of the head, and under a stop and legs pivoted on the respective plates, substantially as and for the purposes specified.

24. In a tripod, the combination of a head, a central leg pivotally held thereto, plates loosely connected to the head and adapted for movement in parallel planes, legs pivoted on said plates, stop mechanism on the head to limit the movement of the plates, and a device carried by the head and having engagement with each plate and arranged to lock the plates against pivotal movement, substantially as and for the purposes specified.

25. A tripod comprising an instrument-base, a series of leg-holders supported thereby, said leg-holders being adapted to move outwardly in substantially the same plane into alinement with each other and to be moved into an angular position relatively to each other to support said base, and locking mechanism for securing the leg-holders in said angular position to said instrument-base, substantially as described.

26. A tripod, comprising an instrument-base, legs, a series of leg-holders supported by said instrument-base, each leg-holder being composed of a substantially flat plate provided with downwardly-projecting ears, said leg-holders being adapted to move outwardly in substantially the same plane into alinement with each other and to be moved into an angular position with reference to each other to support said base, and means for fastening said leg-holders in said angular position to said base, substantially as described.

27. In a tripod, the combination of an instrument-base, a series of leg-holders, one of said leg-holders being secured to said base and the other leg-holders being hinged to said first-named leg-holder,

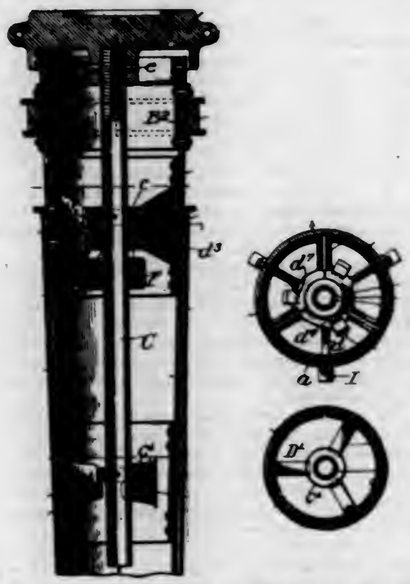
each leg-holder being composed of a substantially flat plate provided with downwardly-projecting ears, said leg-holders being adapted to be moved each in a single plane into an angular position with respect to each other, to support said instrument-base, and means securing said leg holders in said angular position, said means being also secured to said instrument-base, substantially as described.

28. In a tripod, the combination of an instrument-base, a series of leg-holders carried thereby, one of said leg-holders being secured to said base and the other leg-holders having hinge connections with said first-named leg-holder, each of said leg-holders being composed of a substantially flat plate provided with downwardly-projecting ears, said leg-holders adapted to be moved into an angular position with reference to each other, to support said base, and a screw passing through perforations in some of said leg-holders and in said instrument-base to secure said leg-holders in said angular position, substantially as and for the purposes specified.

29. In a tripod, the combination of an instrument-base, a series of leg-holders carried thereby, one of said leg-holders being secured to said base and the other leg-holders having pivoted connections with said first-named leg-holder and said base, each of said leg-holders being composed of a substantially flat plate provided with downwardly-projecting ears, said leg-holders adapted to be moved each in a single plane into an angular position with reference to each other, to support said base, and a screw passing through perforations in some of said leg-holders and in said instrument-base to secure said leg-holders in said angular position, substantially as described.

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**757,767. SECTIONAL CORE FOR MAKING CONCRETE PILES.** George H. Poor, Chicago, Ill., assignor to Samuel Worthington McMunn, Chicago, Ill. Filed Feb. 23, 1904. Serial No. 194,963. (No model.)




*Claim.*—1. A core for the purpose set forth comprising a plurality of radially-movable sections, each consisting of a plurality of transversely-curved metal plates, and interior segmental joint-plates arranged transversely of the sheet-metal plates and to which the adjacent ends of the latter are riveted.

2. A core for the purpose set forth comprising a plurality of radially-movable sections provided each with a plurality of inwardly-facing bearing-surfaces, and an endwise-movable actuating-rod extending lengthwise of the core and provided with a plurality of enlargements or collars adapted for engagement with said bearing-surfaces on the sections, said bearing-surfaces being provided with shoulders and adjacent to said shoulders with parts parallel with the longitudinal axis of the core, for engagement with said collars or enlargements, when the sections are expanded.

3. A core for the purpose set forth comprising a plurality of radially-movable sections, each provided with a plurality of inwardly-facing bearing-surfaces and an endwise-movable actuating-rod extending endwise of the core and provided with enlargements or collars adapted to engage said inwardly-facing bearing-surfaces, said bearing-surfaces having shoulders and adjacent to said shoulders parts parallel with the central axis of the core adapted for engagement with the said collars when the actuating-rod is moved endwise in the core, and a head to which said rod is attached, which is movable endwise of the core and adapted to bear upon the upper end of the same.

4. A core for the purpose set forth comprising a plurality of radially-movable sections, and a central actuating-rod provided with enlargements or collars adapted to engage inwardly-facing surfaces on the sections to hold the latter expanded, said rod being also provided with arms which extend longitudinally of the rod and are adapted to engage outwardly-facing surfaces formed on said sections to limit the outward movement of the same.

5. A core for the purpose set forth comprising a plurality of radially-movable sections, each section consisting of a plurality of curved sheet-metal plates joined end to end and segmental joint-plates to which the adjacent ends of the plates are riveted, and an endwise-movable actuating-rod extending lengthwise of the core and provided with a plurality of enlargements or collars, said joint-plates being provided with inwardly-facing bearing-surfaces adapted for engagement with the said enlargements or collars on the actuating-rod.

6. A core for the purpose set forth, comprising a plurality of radially-movable sections, each section consisting of a plurality of curved sheet-metal plates joined end to end and segmental joint-plates to which the adjacent ends of the plates are riveted, and an endwise-movable actuating-rod extending lengthwise of the core and provided with a plurality of enlargements or collars, said bearing-plates being provided with rigidly-attached ring-segments having inwardly-facing bearing-surfaces adapted for engagement with the said collars and also with outwardly-facing bearing-surfaces, and the said rod being provided with arms extending parallel therewith and adapted to engage the said outwardly-facing bearing-surfaces on said ring-segments.

7. A core for the purpose set forth comprising a plurality of radially-movable sections, each provided with a plurality of ring-segments having inwardly-facing bearing-surfaces, and an endwise-movable actuating-rod extending endwise of the core and provided with enlargements or collars adapted to engage the said inwardly-facing bearing-surfaces, said ring-segments being also provided with outwardly-facing bearing-surfaces, and the rod having arms arranged parallel with the rod and adapted to engage said outwardly-facing bearing-surfaces on said ring-segments.

8. A core for the purpose set forth, comprising a plurality of radially-movable sections, each provided with a plurality of ring-segments and also with a plurality of inwardly-extending arms, and an actuating-rod provided with a plurality of enlargements or collars adapted to engage collars, said ring-segments and arms being provided with inwardly-facing bearing-surfaces adapted for engagement with said enlargements or collars on the rod, the ring-segments being also provided with outwardly-facing bearing-surfaces, and the actuating-rod being provided with a plurality of arms arranged parallel therewith and adapted to engage said outwardly-facing bearing-surfaces of the ring-segments.

9. A core for the purpose set forth, comprising a plurality of radially-movable sections, each provided with a plurality of rigidly-attached ring-segments, an endwise-movable actuating-rod extending lengthwise of the core and provided with enlargements or collars, said ring-segments being provided with inwardly-facing bearing-surfaces adapted for engagement with said ring-segments, and having in their outer faces guide grooves or notches, and the said actuating-rod having arms extending parallel thereof and adapted to engage said guide grooves or notches in said ring-segments.

10. A core for the purpose set forth, comprising a plurality of radially-movable sections, each provided with a plurality of inwardly-facing bearing-surfaces, an endwise-movable actuating-rod extending lengthwise of the core and provided with a plurality of enlargements or collars adapted for engagement with the bearing-surfaces on the sections, a ring which surrounds the core, said core-sections being provided with guide-surfaces adapted to engage opposite sides of the ring.

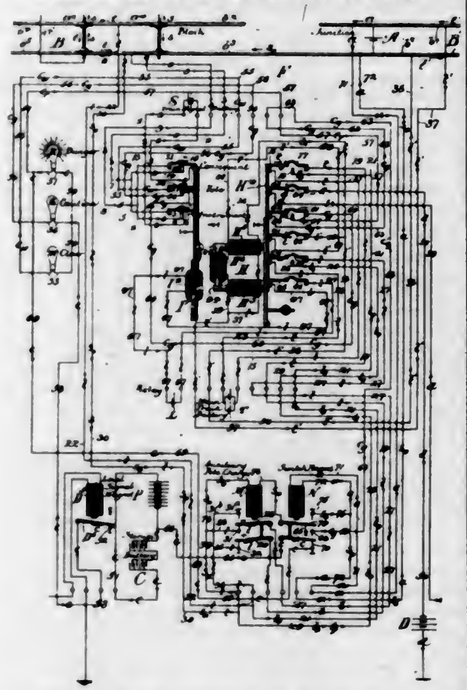
11. A core for the purpose set forth comprising a plurality of radially-movable sections, each provided with a plurality of inwardly-facing bearing-surfaces, an endwise-movable actuating-rod extending lengthwise of the core and provided with a plurality of enlargements or collars adapted for engagement with the bearing-surfaces of the sections, and a ring which surrounds the core; the several core-sections being provided with circumferentially-extending flanges which engage opposite edges of said ring.

12. A core for the purpose set forth comprising a plurality of radially-movable sections, provided each with a plurality of inwardly-facing bearing-surfaces, an endwise-movable actuating-rod provided with enlargements or collars adapted for engagement with the bearing-surfaces on the sections; and an adjustable stop on the exterior surface of the core adapted for contact with the edge of a shell placed thereupon.

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**757,768. SIGNAL APPARATUS.** Jonathan D. Price, Aurora, Ill., assignor to Miller Signal Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 21, 1902. Serial No. 90,612. (No model.)



*Claim.*—1. In signal apparatus of the character described, the combination of a track having its rails electrically divided into sections corresponding with blocks, signal-batteries, a track-battery for each block connected with both track-rails, and circuit-changing mechanism including an initially-energized electromagnet for each block connected with both track-rails in a normally closed circuit and controlled from the corresponding track-battery and having an armature, and a subsequently-energized electromagnet through which current from said last-named battery is directed by the movement of said armature.

2. In signal apparatus of the character described, the combination of a track having its rails electrically divided into sections corresponding with blocks, signal-batteries, a track-battery for each block connected with both track-rails, and circuit-changing mechanism including an initially-energized electromagnet for each block in a normally closed circuit with and controlled from the corresponding track-battery and having an armature, a subsequently-energized electromagnet through which current from said last-named battery is directed by the closing of said armature, and an armature for said second-named magnet controlling the circuit of a corresponding signal-battery.

3. In signal apparatus of the character described, the combination of a track having its rails electrically divided into sections corresponding with blocks, signal-batteries, a track-battery for each block connected with both track-rails, and circuit-changing mechanism including an initially-energized electromagnet for each block controlled from the corresponding track-battery and having an armature, a subsequently-energized electromagnet corresponding to each block and arranged in parallel with the corresponding first-named magnet and energized from the same track-battery, each parallel circuit being closed by the closing of the armature of the corresponding first-named magnet.

4. In signal apparatus of the character described, the combination of a track having its rails electrically divided into sections corresponding with blocks, signal-batteries, a track-battery for each block connected with both track-rails, and pole-changing mechanism including electromagnets in normally closed circuits and employing consequent poles, and armatures operated by said consequent poles and controlling the circuits of the corresponding signal-batteries.

5. In signal apparatus of the character described, the combination of a track having its rails electrically divided into sections corresponding with blocks, signal-batteries, a track-battery for each block connected with both track-rails, and pole-changing mechanism including electromagnets employing consequent poles, electropolarized armatures coacting with said consequent poles and controlling the circuits of the corresponding signal-batteries, and local batteries for energizing said electropolarized armatures and having their circuits controlled by said first-named magnets.

6. In signal apparatus of the character described, the combination of a track having its rails electrically divided into sections corresponding with blocks, signal-batteries, a track-battery for each block connected with both track-rails, and pole-changing mechanism including an initially-energized electromagnet for each block controlled from the corresponding track-battery and having an armature, a subsequently-energized electromagnet for each block through which current from said last-named battery is directed by the closing of said corresponding armature, electropolarized armatures for said second-named magnets, and relay-batteries for said armatures having circuits controlled by said first-named armatures.

7. In signal apparatus of the character described, the combination with suitable electrical blocks, track-batteries therefor, and signal track-batteries, of mechanism for each block connected therewith comprising an electromagnet having its legs equipped with coils initially energized in one direction and its heel or keeper energized with a coil subsequently energized to produce consequent poles, an electropolarized armature coacting with said consequent poles, and a circuit-changer for the corresponding signal-battery controlled by said armature.

8. In signal apparatus of the character described, the combination with suitable blocks, track-batteries therefor, and signal-batteries, of mechanism for each block-junction comprising an electromagnet having legs equipped with coils initially energized in one direction by the corresponding track-battery and a heel equipped with a coil subsequently energized by said track-battery to produce consequent poles, and an electropolarized armature controlled by said consequent poles and having a circuit supplied with non-reversing current, an armature controlled by the free poles of said first-named magnet and operating as a pole-changer for the track-battery of the corresponding block-junction, and a pole-changer operated by said electropolarized armature and controlling the circuit of the corresponding signal-battery.

9. In signal apparatus of the character described, the combination of a track electrically divided into blocks, track-batteries for the several blocks, and mechanism for each block-junction comprising an electromagnet having consequent poles, an electropolarized armature cooperating with said consequent poles, an armature controlled by the free poles of said magnet and carrying a pole-changer for the track-battery supplying current to the block in the rear, signal-batteries connected with the track, and a pole-changer for each signal-battery operated by one of the electropolarized armatures.

10. In signal apparatus of the character described, the combination of a track electrically divided into blocks and having both track-rails provided with relatively short insulated rail-sections, main track-batteries connected with the blocks near their advance ends, consequent-pole electromagnets connected with both track-rails near the rear ends of the several blocks, electropolarized armatures corresponding to the consequent poles of said electromagnets, armatures corresponding to the free poles of said electromagnets and serving as pole-changers for the track-batteries supplying current to the blocks in the rear, signal-batteries, each having one pole connected with a relatively short rail-section and the other pole connected with the advance end of the adjacent rail-section in the rear, and pole-changers for said signal-batteries operated by said electropolarized armatures.

11. In signal apparatus of the character described, the combination of a track electrically divided into blocks and having relatively short insulated rail-sections for each track-rail at the block-junctions, main track-batteries for the several block-junctions, electromagnets energized by said main track-batteries, auxiliary track-

batteries connected with both relatively short rail-sections at each block-junction, auxiliary electromagnets controlled by said last-named batteries, and signals controlled by both the main and auxiliary magnets.

12. In signal apparatus of the character described, the combination of a track electrically divided into blocks, track-batteries for the several blocks, train-signal-controlling batteries, each connected with two track-rail sections to form a local partial circuit, train-carried signals traversing said track, local signals, and circuit-changers controlling said local signals and said train-signal-controlling batteries and themselves controlled automatically from the several blocks.

13. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions, track-batteries for the several blocks, electromagnets connected with said blocks, pole-changers for said track-batteries controlled by said electromagnets, train-signal-controlling batteries, each connected with a relatively short rail-section and with the adjacent end of the rail-section in the rear, train-carried signals controlled by said last-named batteries, and local signals with local circuits controlled by said magnets.

14. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short insulated rail-sections for both track-rails at the several block-junctions, track-batteries connected with the advance ends of the several blocks, electromagnets connected with both track-rails at the rear ends of the several blocks and in advance of said relatively short sections, circuit-changers controlled by said electromagnets, and local signals controlled by said circuit-changers.

15. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short insulated rail-sections for both track-rails at the several block-junctions, main track-batteries connected with the blocks, main track-magnets connected with the blocks, auxiliary track-batteries connected with said relatively short rail-sections, auxiliary magnets energized thereby, and local signals with circuits controlled by magnets of both series.

16. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions, main track-batteries connected with the advance ends of the several blocks, consequent-pole electromagnets connected with the rear ends of the several blocks, armatures for said magnets serving as pole-changers for said track-batteries, local signals with circuits, electropolarized armatures controlled by the consequent poles of said magnets and serving as circuit-changers for said last-named circuits, auxiliary pole-changers for the track-batteries having circuit-changers in their circuits, and auxiliary track-magnets connected with said relatively short rail-sections and controlling said last-named circuit-changers.

17. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several blocks, main track-batteries for the several blocks, consequent-pole electromagnets connected with the rear ends of the several blocks, armatures controlled by said magnets and serving as main pole-changers for said track-batteries, auxiliary pole-changers for said track-batteries, auxiliary magnets controlling said pole-changers and having circuits provided with circuit-changers, auxiliary track-magnets controlling said last-named circuit-changers and connected with said relatively short rail-sections, auxiliary track-batteries connected with said relatively short rail-sections, train-signal-controlling batteries, each connected with a relatively short rail-section and the adjacent rail-section in the rear, pole-changers for said last-named batteries, electropolarized armatures carrying said pole-changers and controlled by the consequent poles of said first-named magnets, and train-carried signal mechanism controlled by said train-signal-controlling batteries.

18. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions, main track-batteries, consequent-pole electromagnets energized by said batteries, pole-changers for said batteries controlled by said magnets, electropolarized armatures controlled by the consequent poles of said magnets, train-signal-controlling batteries, each connected with a relatively short rail-section and the advance end of the adjacent rail-section to form therewith local partial circuits, pole-changers for said local partial circuits controlled by said electropolarized armatures, auxiliary pole-changers for said main track-batteries, magnets controlling the same, each connected with a relatively short rail and with the advance end of the rail-section in the rear thereof, circuit-changers for the circuits of said last-named magnets, magnets controlling the same and connected with both relatively short rail-sections of the corresponding block-junctions, and auxiliary track-batteries energizing said relatively short rail-sections.

19. In signal apparatus of the character described, the combination of electrical blocks, main track-batteries energizing the same, consequent-pole electromagnets connected with the several blocks and energized by said main track-batteries; armatures controlled by said electromagnets and serving as pole-changers for said track-batteries and serving also as circuit-changers for local signal-circuits, additional armatures controlled by said magnets and serving as circuit-changers for the circuits of said local signals, local signals, and circuits controlling said local signals and themselves controlled by said circuit-changers.

20. In signal apparatus of the character described, the combination of a track electrically divided into blocks, consequent-pole electromagnets connected with the rear ends of the several blocks, track-batteries connected with the advance ends of the several blocks, armatures controlled by said magnets and serving as pole-changers for the several track-batteries, local signals with circuits controlling the same, circuit-changers controlling said circuits and carried by said armatures, electropolarized armatures controlled by the consequent poles of said magnets, and circuit-changers for the circuits controlling said local signals carried by said last-named armatures.

21. In signal apparatus of the character described, the combination of a track electrically divided into blocks, track-batteries connected with the several blocks, consequent-pole electromagnets connected with the several blocks, local clear and caution signals with controlling-circuits, armatures for said magnets serving as pole-changers for said track-batteries and as circuit-changers for said last-named circuits, electropolarized armatures, and circuit-changers for said last-named circuits carried by said last-named armatures, whereby a clear signal may be obtained at a given block-junction when the armatures thereat of both series are closed, and a caution-signal may be obtained when the electropolarized armature is open and the other armature closed.

22. In signal apparatus of the character described, the combination of a track electrically divided into blocks, with relatively short rail-sections for each track-rail at the several block-junctions, main track-batteries, consequent-pole electromagnets connected with the several blocks, local clear, caution and danger signals with controlling-circuits, armatures controlled by said magnets and serving as pole-changers for said track-batteries and circuit-changers for said last-named circuits, electropolarized armatures controlled by the consequent poles of said magnets, circuit-changers for the controlling-circuits of said local signals carried thereby, auxiliary pole-changers for the track-batteries, auxiliary magnets controlling the same and having circuits provided with circuit-changers, auxiliary track-magnets controlling said last-named circuit-changers and connected with said relatively short rail-sections, and auxiliary track-batteries connected with said relatively short rail-sections, substantially as and for the purpose set forth.

23. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions, track-batteries for the several blocks, magnets energized therefrom, local clear, caution and danger signals with controlling-circuits, armatures for said magnets serving as pole-changers for said track-batteries, circuit-changers for the danger-signal circuits controlled by said armatures and including back contacts with conductors leading therefrom to the signal-controlling batteries, circuit-changers in the course of said conductors, auxiliary magnets controlling said circuit-changers and connected with said relatively short rail-sections, auxiliary track-batteries connected with said relatively short rail-sections, back contacts for said last-named circuit-changers connected with conductors for the danger-signal circuits, armatures with controlling means serving to automatically close them when the current for said first-named magnets is in one direction and to automatically open them when the current through said first-named magnets is in the opposite direction, circuit-changers carried by said last-named armatures and controlling the circuits of said clear and caution signals, said circuits being appropriately completed through said first-named conductors when said auxiliary magnets are energized.

24. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions, main track-batteries connected with the several blocks, consequent-pole electromagnets connected with the several blocks and energized by said batteries, armatures controlled by the free poles of said magnets and serving as pole-changers for said track-batteries, auxiliary pole-changers for said track-batteries, magnets controlling said auxiliary pole-changers and having circuits provided with circuit-changers, auxiliary magnets connected with said relatively short rail-sections and controlling said last-named circuit-changers, auxiliary track-batteries connected with said relatively short rail-sections, local clear, caution and danger signals with controlling-circuits and batteries energizing the same, conductors connected with one pole of each of said last-named batteries, circuit-changers for said conductors controlled by said auxiliary magnets, contacts carried by the free-pole armatures of said first-named magnets and connected with said conductors, partial circuits for said local signals provided with front and back contacts operating with said last-named contacts, electropolarized armatures controlled by consequent poles, and circuit-changers for the circuits of the clear and caution signals controlled by said electropolarized armatures.



25. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions, main track-batteries connected with the several blocks, consequent-pole electromagnets connected with the several blocks and energized by said batteries, armatures controlled by the free poles of said magnets and serving as pole-changers for said track-batteries, auxiliary pole-changers for said track-batteries, magnets controlling said auxiliary pole-changers and having circuits provided with circuit-changers, auxiliary magnets connected with said relatively short rail-sections, auxiliary track-batteries connected with said relatively short rail-sections, local clear, caution and danger signals with controlling-circuits and batteries energizing the same, conductors connected with one pole of each of said last-named batteries, circuit-changers for said conductors controlled by said auxiliary magnets, contacts carried by the free-pole armatures of said first-named magnets and connected with said conductors, partial circuits for said local signals provided with front and back contacts operating with said last-named contacts, electropolarized armatures controlled by consequent poles, circuit-changers for the circuits of the clear and caution signals controlled by said electropolarized armatures, train-signal-controlling batteries, each connected with a relatively short rail-section and with the advance end of the adjacent rail-section, pole-changers for said last-named batteries carried by said electropolarized armatures, and train-carried signals traversing said track.

26. In signal apparatus of the character described, the combination of a track electrically divided into blocks with relatively short rail-sections for each track-rail at the several block-junctions main track-batteries connected with the several blocks, consequent-pole electromagnets connected with the several blocks and energized by said batteries, armatures controlled by the free poles of said magnets and serving as pole-changers for said track-batteries, auxiliary pole-changers for said track-batteries, magnets controlling said auxiliary pole-changers and having circuits provided with circuit-changers, auxiliary magnets connected with said relatively short rail-sections and controlling said last-named circuit-changers, auxiliary track-batteries connected with said relatively short rail-sections, local clear, caution and danger signals with controlling-circuits and batteries energizing the same, conductors connected with one pole of each of said last-named batteries, circuit-changers for said conductors controlled by said auxiliary magnets, contacts carried by the free-pole armatures of said first-named magnets and connected with said conductors, partial circuits for said local signals provided with front and back contacts operating with said last-named contacts, electropolarized armatures controlled by consequent poles, circuit-changers for the circuits of the clear and caution signals controlled by said electropolarized armatures, and partial short circuits for said danger-signals having conductors serving as back contacts for the circuit-changers of said first-named conductors, whereby a danger-signal may be exhibited when said auxiliary track-batteries are short-circuited.

27. In signal apparatus of the character described, the combination of electrical blocks, batteries serving to energize the same, train-signal-controlling batteries at the several block-junctions, pole-changers for the several track-batteries automatically controlled from the several blocks, pole-changers for the several train-signal-controlling batteries automatically controlled from the several blocks, and train-carried signal mechanism comprising conductors for completing the circuits for the train-signal-controlling batteries at the block-junctions, clear and danger signals, circuits therefor, an armature controlling said last-named circuits, a solenoid serving to polarize said armature and connected with said conductors, two electromagnets coöperating with said armature, and connections between said magnets and the circuit of said armature-solenoid, whereby the current through all the solenoids, including the solenoids of said two electromagnets is affected by a reversal in the direction of the controlling-current from a local train-signal-controlling battery.

28. In signal apparatus of the character described, the combination of electrical blocks, batteries serving to energize the same, train-signal-controlling batteries at the several block-junctions, pole-changers for the several track-batteries automatically controlled from the several blocks, pole-changers for the several train-signal-controlling batteries automatically controlled from the several blocks, and train-carried signal mechanism comprising conductors for completing the circuits for the train-signal-controlling batteries at the block-junctions, clear and danger signals, circuits therefor, an armature controlling said last-named circuits, a solenoid serving to polarize said armature and connected with said conductors, two electromagnets coöperating with said armature, connections between said magnets and the circuit of said armature-solenoid, whereby the current through all the solenoids is affected by a reversal in the direction of the controlling-current from a local train-signal-controlling battery, and a train-carried battery connected with the circuits of the several solenoids of the train-carried mechanism, the current of said battery acting in conjunction with the controlling-current of one or the other of said two train-magnets, according to the direction of the controlling-current received from the track.

29. In signal apparatus of the character described, the combination of electrical blocks, batteries serving to energize the same, train-signal-controlling batteries at the several block-junctions, pole-changers for the several track-batteries automatically controlled from the several blocks, pole-changers for the several train-signal-controlling batteries automatically controlled from the several blocks, and train-carried signal mechanism comprising conductors for completing the circuits for the train-signal-controlling batteries at the block-junctions, clear and danger signals, circuits therefor, a solenoid serving to polarize said armature and connected with said conductors, two electromagnets coöperating with said armature, connections between said magnets and the circuit of said armature-solenoid, whereby the current through all the solenoids is affected by a reversal in the direction of the controlling-current from a local train-signal-controlling battery, and a train-carried battery having a closed circuit completed through that one of said two magnets which tends to draw the armature so as to complete the danger-signal circuit and having another circuit completed through the track-rails, assuming the track-rails to be continuous.

30. In apparatus of the character described, the combination of a track electrically divided into blocks, track-batteries for the several blocks, pole-changers for said batteries, intermediate insulations in the track-rails of one block, and track-battery relay mechanism thereat comprising a consequent-pole electromagnet connected with the rail-sections in advance of said insulations, an intermediate track-battery connected with the rail-sections in the rear of said insulations, an armature controlled by said magnet and carrying a circuit-changer for said last-named track-battery, and an electropolarized armature controlled by the consequent poles of said magnet and serving as a pole-changer for said last-named track-battery whereby the length of the block may be increased at will.

31. In signal apparatus of the character described, the combination of a track electrically divided into blocks, track-batteries for the several blocks, pole-changers for said track-batteries, local signals for the several block-junctions, circuit-changers therefor controlled from the track in advance, intermediate insulations in the track-rails of a block, and track-battery relay mechanism thereat comprising a consequent-pole electromagnet connected with the rail-sections in advance of said insulations, an intermediate track-battery connected with the rail-sections in the rear of said insulations, an armature controlled by said magnet and serving as a circuit-changer for said last-named track-battery, a magnet controlling the circuit of the local signal in advance of said relay-station, a conductor leading back from said magnet to said relay-station and provided with a contact, a contact carried by said armature and coöperating with said last-named contact, means connected with said last-named contact for completing the circuit of said last-named magnet, an electro polarized armature controlled by the consequent poles of said first-named magnet, and a pole-changer for said intermediate track-battery controlled by said last-named armature.

32. In signal apparatus of the character described, the combination of suitable electric blocks, batteries serving to energize said blocks, magnets automatically controlled from the several blocks, magnets having circuits provided with normally closed switches con-

trolled by said first-named magnets, said switches being open when the armatures of said first-named magnets are open, local signals, local signal-batteries with controlling-circuits for said signals, and normally open switches for said last-named circuits controlled by said second-named magnets, said last-named switches being closed when said magnets are deenergized.

33. In signal apparatus of the character described, the combination of suitable electric blocks, batteries serving to energize said blocks, magnets automatically controlled from the several blocks, magnets having circuits provided with normally closed switches controlled by said first-named magnet, said switches being open when the armatures of said first-named magnets are open, local signals, local storage batteries with circuits controlling said signals and having switches held normally open by said second-named magnets, and local primary batteries serving to charge said storage batteries.

34. In signal apparatus of the character described, the combination of a track electrically divided into blocks, and equipped at its several block-junctions with block-energizing batteries and block-controlled magnets, of relay mechanism comprising intermediate insulations in the track-rails of a block, a relay track-battery connected with both track-rails in the rear of said insulations, a consequent-pole electromagnet connected with both track-rails in advance of said insulations, an electropolarized armature controlled by the consequent poles of said last-named magnet, an armature controlled by the free poles of said consequent-pole electromagnet, and circuit-changers and pole-changers for said relay track-battery controlled by said armatures.

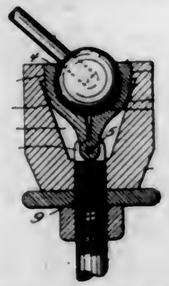
35. In signal apparatus of the character described, the combination with suitable track-circuits, including track-batteries and magnets in normally closed circuits with and controlled by said batteries and equipped with armatures, of signals, and magnets controlling said signals and energized by current from said batteries, the circuits of said last-named magnets being completed by the movement of said armatures, for the purpose set forth.

36. The combination with suitable electrical blocks, of consequent-pole electromagnets connected with said blocks, said magnets having coils energized subsequently to the energization of its main coils to produce the consequent poles, and circuit-changers controlled by said magnets.

37. The combination with suitable electrical blocks, of consequent-pole electromagnets connected with said blocks, said magnets having coils energized subsequently to the energization of its main coils to produce the consequent poles, switches controlled by said magnets, and train-carried mechanism controlled by said switches.

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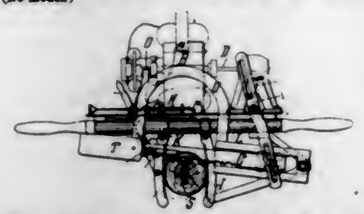
**757,769. UNIVERSAL JOINT.** KARL J. REDER, Washington, D. C. Filed June 5, 1903. Serial No. 160,147. (No model.)



*Claim.*—1. A universal joint consisting of a body having a tapering bore, a flange integral with said body and extending inwardly from the upper end thereof, a stem threaded in the lower end of said bore, locking members pivoted on said stem and adapted to operate in said bore and to have their outer faces engaged by the inner face of the flange so that when the said members are in a locking position the top portions of the said members will be in the same plane as the top portion of the flange, and a ball mounted in said locking members.

2. A universal joint consisting of a body having a tapering bore, a flange integral with said body and extending inwardly from the upper end thereof, a stem threaded in the lower end of said bore, locking members pivoted on said stem and adapted to operate in said tapering bore, a ball mounted in said locking members, and a washer disposed between the locking members and the ball, said washer surrounding more than the lower half of the said ball.

**757,770. PORTABLE CROSSCUT-SAW.** FELIX RICHTER, Borsdorf, near Leipzig, Germany. Filed July 14, 1903. Serial No. 165,463. (No model.)



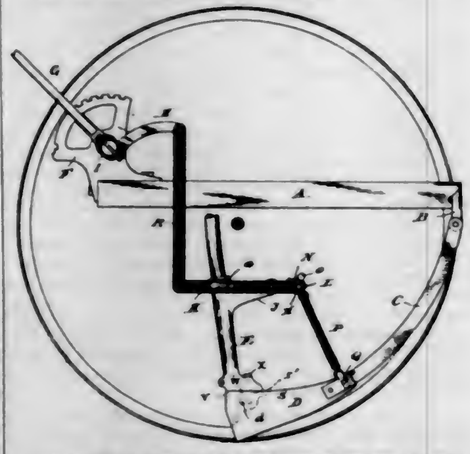
*Claim.*—1. In a portable sawing apparatus, the combination with a main frame, of a saw-frame pivotally mounted thereon, a saw arranged to reciprocate in the saw-frame, a motor on the main frame, a crank-shaft driven by the motor-shaft, a lever pivoted intermediate its ends and longitudinally slotted on each side of the fulcrum, the crank on the crank-shaft engaging the upper slot and a pin on one end of the saw engaging the lower slot to reciprocate the saw, and means for clamping the main frame to the timber to be sawed, substantially as described.

2. A portable sawing apparatus, comprising a main framing, a saw-frame carried by same, a saw reciprocating in said frame, an electric motor mounted on the main framing, a crank-shaft driven by the motor-shaft, a double slotted lever pivoted to the main framing and having one arm engaged by the crank-pin and the other by a pin on the saw, toothed jaws rigidly secured to the main framing, slides traveling on the latter, toothed jaws pivoted thereto and cooperating with the first said jaws, means for fixing the slides in any desired position and means for forcing the pivoted jaws against the timber, substantially as set forth.

3. A portable sawing apparatus comprising a main frame, a saw-frame carried thereby, a saw reciprocating in said frame, an electric motor mounted on the main frame, a crank-shaft driven by the motor-shaft, a double slotted lever pivoted to the main frame and having one arm engaged by a crank-pin and the other by a pin on the saw, toothed jaws rigidly secured to the main frame, slides traveling on the latter, toothed jaws pivoted to the slides and cooperating with the first-named jaws, pawls and racks for fixing the slides in any desired position, and toggle-levers for forcing the pivoted jaws against the timber, substantially as described.

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**757,771. GRAIN-DRILL.** LUTHER R. ROSY, Peoria, Ill. Filed Sept. 22, 1902. Serial No. 124,290. (No model.)



*Claim.*—1. In a grain-drill of the character described, the combination of a seed-tube, a furrow-opener pivoted at its forward end to the machine and carrying the said seed-tube, arms pivoted between their ends to the seed-tube, a spring attached at one end to the furrow-opener and at the other to the pivoted arms, the rear ends of the arms being pivotally connected with the machine substantially as described.

2. In a grain-drill, the furrow-opener pivoted at its forward end to swing vertically, a seed-tube carried thereby, a spring connected thereto for holding it in the ground, such spring being at its least tension at that time and means pivoted to the seed-tube to which said spring is also attached, the said spring imparting a uniform pressure to the furrow-opener through said means substantially as set forth.

3. In a grain-drill of the character described, the combination of a furrow-opener pivoted to the machine, a seed-tube carried thereby, a spring attached at one end to the furrow-opener between the seed-tube and the pivot of the furrow-opener, means pivoted to the seed-tube above the furrow-opener to which the opposite end of the spring is attached forward of said pivot, said means pivotally held at the rear of the pivot for the purposes set forth.

4. In a grain-drill, the furrow-opener pivoted on the machine-frame for vertical movement, a seed-tube carried thereon, arms pivoted to the seed-tube and extending both backward and forward from such pivot, a spring attached at one end to the furrow-opener and at the other to the arms at one end and pivotal connection to which the opposite ends of the arms are attached consisting of pivotally-hung adjustable arms on the machine all arranged substantially as described and for the purposes set forth.

5. A grain-drill comprising the furrow-opener vertically movable, a seed-tube carried thereby, arms pivoted to the seed-tube and extending both backward and forward from the pivot, a spring connected at one end to the furrow-opener and at the other to the arms at their forward ends, and means to which the rear ends of the said arms are pivoted substantially as and for the purposes described.

6. In a grain-drill, the furrow-opener pivoted to swing vertically, arms pivoted above the same and adapted to move therewith at their forward ends, means to which the rear ends are connected substantially as set forth, said forward ends projecting beyond the point of pivotal connection and a spring between and connected to the forward ends of the arms and to the furrow-opener for imparting downward movement to the furrow-opener for the purposes set forth.

7. In a grain-drill, a furrow-opener, a seed-tube carried thereon both adapted to move vertically, arms pivoted on the seed-tube between their ends, means by which the arms are pivotally held at their rear ends, and a spring connecting the free ends of the arms and the furrow-opener for imparting downward pressure to the latter for the purposes set forth.

8. In a grain-drill, a furrow-opener, a seed-tube thereon, arms pivoted to the seed-tube at a point located between their extremities, means to which the rear ends of the arms are pivoted and a spring connecting the furrow-opener with the ends of the arms forward of their pivot-points for the purposes indicated.

9. The combination with a furrow-opener pivoted to swing vertically, of arms pivotally hung at their rear ends from the machine, depending arms on said machine from which the first-described arms are suspended, the forward ends of said first arms pivoted to the furrow-opener to rise and fall therewith and move on their pivots in so doing and a spring connected at one end to the furrow-opener and at the other to the said arms forward of their pivots for the purposes set forth and described.

10. In a grain-drill, a furrow-opener pivoted to swing vertically on the machine-frame, a seed-tube carried thereby, arms pivoted to said seed-tube, means to which the rear ends of the arms are pivoted, the forward ends having movement with the said furrow-opener and a spring connected at one end to such furrow-opener and at the other to the ends of the arms forward of the pivots thereof for the purposes set forth.

11. In a grain-drill, a furrow-opener pivoted to swing vertically a seed-tube carried thereby, arms pivoted on the latter substantially parallel with the furrow-opener when at work in the ground, means to which the rear ends of such arms are pivoted, and a spring connected at one end to the furrow-opener and at the other to the forward ends of the arms, such spring being arranged substantially as described and for the purposes set forth.

12. In a grain-drill, a furrow-opener adapted to swing vertically, a seed-tube carried by said furrow-opener, arms pivoted to the seed-tube, means to which the arms are pivoted at their rear ends, such means consisting of adjustable arms on said machine, a spring connected at one end to the opposite ends of the first-described arms beyond their points of support on the seed-tube, said spring also connected to the furrow-opener, as set forth.

13. In a grain-drill, a furrow-opener pivoted to have vertical movement, a seed-tube mounted thereon, arms pivoted to such seed-tube and extending beyond the pivot both forward and backward, means to which the rear ends thereof are pivoted and a spring attached to the forward ends of such arms, said spring also connected to the furrow-opener substantially as set forth.

14. In a grain-drill, a furrow-opener pivoted to swing vertically, a seed-tube mounted thereon, the same having an extension projecting forward, arms pivoted on such extension and extending both forward and backward from such pivot, a lever on the drill-frame, an arm connected between such lever and the rear ends of the arms, and a spring capable of adjustment connected at one end to the forward end of the arms and at the other to the furrow-opener all arranged substantially as set forth and described.

15. A furrow-opener comprising the converging sides thereof, a casting 8 located between said sides and having the recess T therein at the top, there being a recess U in the rear side of such casting, the pin *d* for securing the casting in place between the converging sides in combination with the seed-tube having the lugs V W to enter between the sides of the furrow-opener at the rear of the casting 8, the said lug W adapted to enter the said recess U, and the bolt X for securing the seed-tube and casting together as set forth.

16. In a grain-drill, the ground-wheels, the frame A carried thereby, the furrow-opener D pivoted to the frame for vertical movement, the seed-tube E on the furrow-opener, the arms K pivoted thereto at a point between their forward and rear ends, a hand-lever G for raising and lowering the furrow-opener, connections R R between the hand-lever and the arms K at one end, a tension coil-spring P connected at one end to the furrow-opener and at the other to the arms K at their free ends and arranged substantially as shown.

17. In a grain-drill the ground-wheels, the frame A carried thereby, the furrow-opener D pivoted to the frame to swing vertically, the seed-tube E on the said furrow-opener, arms K pivoted to the seed-tube and extending backward of and forward from the pivot, an adjustable hand-lever G on the machine-frame, arms R for connecting the said lever and the arms K at their rear ends, a spring P attached to the furrow-opener and to the forward ends of the said arms and means for adjusting the spring for the purposes set forth and described.

18. In a device of the class described, the combination with a drag-bar, a shoe connected therewith and a chute carried thereby, of a lever connected with said chute, a spring connecting the lever with said drag-bar, means for adjusting the tension of said spring, and means for tilting said lever and increasing the tension of the spring, substantially as described.

19. In a device of the class described, the combination with a shoe and chute carried thereby, of a pivotally-mounted lever supported by said chute, a spring fixed at one end and at the other connected with said lever, and tilting means connected with said lever and moving the same against the tension of said spring substantially as described.

20. In a device of the character described, the combination with a shoe, drag-bar and grain-chute of a spring having a fixed end, a lever pivoted to said chute and connected with said spring, a yoke carried by said lever and extending past the chute and means connected with the yoke in rear of the chute for moving the lever to increase the tension of said spring, substantially as described.

21. In a device of the character described, the combination with a drag-bar, shoe and chute of a spring connected with said drag-bar, a lever pivoted to said chute and connected with said spring, a yoke surrounding the chute and connected with said lever, and means connected in rear of said chute with said yoke for moving the lever for increasing the tension of said spring substantially as described.

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**757,772. EXPANSIVE BRACELET.** MILTON S. RODENBERG, New York, N. Y. Filed June 16, 1903. Serial No. 161,696. (No model.)



*Claim.*—1. An expansible bracelet consisting of an endless series of overlapping connected sections, each section comprising a head and a tailpiece, the head of one section overlapping the tailpiece of an adjacent section, a link pivotally connected at its opposite ends respectively to the head of one section and the tailpiece of an adjacent section, and springs acting upon said heads and links for normally holding the sections in close overlapping contact and for maintaining the bracelet in its contracted condition.

2. An expansible bracelet consisting of a series of overlapping connected sections, each section comprising a head and a tailpiece and each head being formed with a recess in its lower face, connecting-links each pivotally connected at its opposite ends respectively

to the head of one section and the tailpiece of the adjacent section, said links normally lying in the recesses in the heads, and springs acting upon said heads and links for normally holding the sections in close overlapping contact and for maintaining the bracelet in its contracted condition.

3. An expansible bracelet consisting of a series of overlapping connected sections comprising a head and a tailpiece and each head being provided with a recess and a socket in its lower face, pivoted links each connecting the head of one section with the tailpiece of an adjacent section, said links normally lying within the recesses in the heads and the pivots of said links extending transversely of the bracelet and some of them lying within the recesses, and coil-springs surrounding the latter pivots and each provided with outwardly-extending ends, one of said ends of each spring being seated in the socket in each recessed head and the other end acting upon a link, substantially as described.

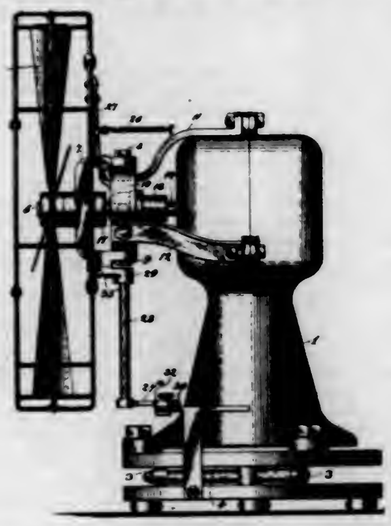
4. An expansion-bracelet comprising a series of overlapping sections, links each pivotally connected at its opposite ends respectively to adjacent sections, and a spring acting upon each link to normally maintain the bracelet in its contracted condition.

5. An expansion-bracelet comprising a series of overlapping sections, each section comprising an annular ring-like body, and foldable links forming pivotal connections between the said sections.

6. An expansible bracelet comprising a series of overlapping annular ring-like sections, foldable links pivotally connecting the sections, and springs acting upon the links to normally maintain the bracelet in its contracted condition.

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757,773. **ELECTRIC FAN.** FRANK H. ROSBRICH, Brooklyn, N. Y. Filed Dec. 10, 1901. Serial No. 85,364. (No model.)



*Claim.*—1. The combination of a movable support, a rotary fan mounted on said support, means for driving said fan, and means for shifting the fan on the support whereby the fan by its reaction acts to move the support.

2. The combination of a movable support, a rotary fan mounted on said support, means for driving said fan, and automatic means for intermittently shifting the fan on the support whereby the fan acts by reaction to intermittently move the support.

3. The combination of a movable support, a rotary fan mounted on said support, means for driving said fan, and automatic means for shifting the fan on the support in opposite directions, whereby the fan acts by reaction to move the support in opposite directions.

4. The combination of a pivoted support, a rotary fan mounted on said support, a motor for driving said fan, and automatic means for intermittently shifting the fan on the support so as to throw the axial line of the fan to one side of the pivotal line of the support and then back toward said pivotal line, whereby the fan acts by reaction to intermittently move the support in one direction.

5. The combination of a pivoted support, a rotary fan mounted on said support, a motor mounted on said support for driving said fan, and automatic means for intermittently shifting the fan on the support so as to throw the axial line of the fan to one side of the pivotal line of the support and then back toward said pivotal line, whereby the fan acts by reaction to intermittently move the support in one direction.

6. The combination of a pivoted support, a rotary fan mounted on said support, a motor for driving said fan, and mechanism for shifting the fan on the support in opposite directions so as to throw the axial line of the fan alternately on opposite sides of the pivotal line of the support, whereby the fan acts by reaction to move the support alternately in opposite directions.

7. The combination of a pivoted support, a rotary fan mounted on said support, a motor for driving said fan, flexible coupling connections between said motor and said fan, and automatic means for intermittently shifting the fan on the support so as to throw the axial line of the fan to one side of the pivotal line of the support and then back toward said pivotal line, whereby the fan acts by reaction to intermittently move the support in one direction.

8. The combination of a motor pivotally mounted on a suitable base-support, a rotary fan, a flexible coupling connection between said motor and said fan, and automatic means for intermittently shifting the axis of the fan out of and into the plane of the pivotal axis of the motor, whereby the motor is caused to intermittently revolve on its support.

9. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, and means for automatically shifting the axis of the fan out of the plane of the pivotal axis of the motor first in one direction and then in another whereby the motor is caused to revolve on its support alternately in opposite directions.

10. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, a yoke in which the fan is journaled, said yoke being pivotally mounted on said motor in a line intersecting said flexible connection and approximately parallel with the pivotal axis of the motor-support, and means for shifting said yoke on its pivot so as to cause the motor to rotate on its support alternately in opposite directions.

11. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, a yoke in which the fan is journaled, said yoke being pivotally mounted on said motor in a line intersecting said flexible connection and approximately parallel with the pivotal axis of the motor-support, means for shifting said yoke on its pivot so as to throw the axis of the fan out of the plane of the pivotal axis of the motor in opposite directions, and adjustable stops for fixing the position of the yoke in either direction.

12. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, a yoke in which the fan is journaled, said yoke being pivotally mounted on said motor in a line intersecting said flexible connection and approximately parallel with the axis of the motor-support, means for shifting said yoke on its pivot so as to throw the axis of the fan out of the plane of the pivotal axis of the motor in opposite directions, adjustable stops for fixing the position of the yoke in either direction and a spring so connected to the yoke as to hold it in contact with either stop.

13. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, a yoke in which the fan is journaled, said yoke being pivotally mounted on said motor in a line intersecting said flexible connection and approximately parallel with the pivotal axis of the motor-support, an arm connected to said yoke and extending on the opposite side of the pivot-line thereof from the fan, and means connected to the motor-support and adapted to operate said arm so as to cause the motor to rotate on its support alternately in opposite directions.

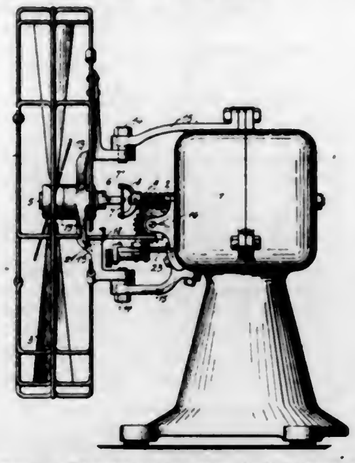
14. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, a yoke in which the fan is journaled, said yoke being pivotally mounted on said motor in a line intersecting said flexible connection and approximately parallel with the pivotal axis of the motor-support, an arm connected to said yoke and extending on the opposite side of the pivot-line thereof from the fan, a bar carried by the motor-support and a pair of stops adjustably connected to said bar and adapted to operate said arm so as to cause the motor to rotate on its support alternately in opposite directions.

15. The combination of a motor pivotally mounted on a suitable support, a rotary fan, a flexible coupling connection between said motor and said fan, a yoke in which the fan is journaled, said yoke being pivotally mounted on said motor in a line intersecting said flexible connection and approximately parallel with the pivotal axis of the motor-support, an arm connected to said yoke and extending on the opposite side of the pivot-line thereof from the fan, means connected to the motor-support and adapted to operate said arm so as to throw the axis of the fan out of the plane of the pivotal axis of the motor in opposite directions, adjustable stops for fixing the position of the yoke in either direction, and a spring so connected with the yoke as to hold it in contact with either stop.



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757,774. **FAN.** FRANK H. ROSBRICH, New York, N. Y. Filed Apr. 16, 1903. Serial No. 152,880. (No model.)



*Claim.*—1. A fan comprising a motor-shaft, a fan-blade shaft, a flexible coupling connection between said shafts and automatic means for shifting the axis of the fan-blade shaft out of line with the motor-shaft.

2. A fan comprising a motor having a rotary shaft, fan-blades supported on a suitable shaft, a flexible coupling connection between said shafts, and means actuated by said motor-shaft to impart rotary and oscillating movements to the fan-blade shaft.

3. A fan comprising a motor having a rotary shaft, fan-blades supported on a suitable shaft, a flexible coupling connection between said shafts, and means actuated by the motor-shaft to impart a continuous rotary movement and also oscillating movements in opposite directions to the fan-blade shaft.

4. In a fan the combination of a motor having a fixed support and comprising a rotary shaft, fan-blades supported on a suitable shaft and means to throw the axial line of the fan-blade shaft to one side of the axial line of the motor-shaft.

5. The combination of a motor having a rotary shaft, a movable yoke, a rotary fan-blade shaft having bearings in said yoke, and means for shifting said yoke to throw the axial line of the blade-shaft to one side of the motor-shaft.

6. The combination of a motor having a fixed support and comprising a rotary shaft, a movable yoke, a fan having bearings in said yoke and means actuated by said motor-shaft to impart a rotary movement to the fan and simultaneously therewith an oscillating movement to said movable yoke.

7. In a fan the combination of a motor having a rotary shaft, a pivoted yoke, a fan-blade shaft supported in said yoke, a flexible coupling connection between said shafts, and automatic means for intermittent shifting of said yoke to cause it to travel over an arc about the end of the motor-shaft.

8. In a fan the combination of a motor having a rotary shaft, a pivoted yoke, a fan-blade shaft supported in said yoke, a flexible coupling connection between said shafts, a cam actuated by said motor-shaft and a connection between said cam and said yoke whereby the latter may be oscillated about the end of the motor-shaft.

9. A fan comprising a motor-shaft, a fan-blade shaft, a flexible coupling connection between the two shafts, and means to simultaneously rotate and oscillate said fan-blade shaft.

10. A fan comprising a motor-shaft, a rotary fan-blade shaft, and means for oscillating the fan-blade shaft relatively to the motor-shaft.

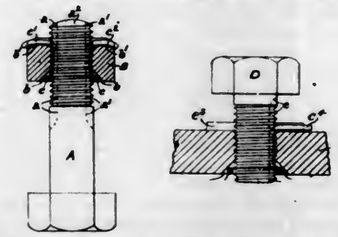
11. A fan comprising a motor mounted in a fixed or stationary support and having a rotary shaft, a rotary fan-blade shaft, and means for oscillating the fan-blade shaft relatively to the motor-shaft.

12. A fan comprising a motor mounted in a fixed or stationary support and having a shaft, a fan-blade shaft, a flexible coupling connection between said shafts, means to rotate said shafts and means to oscillate the fan-blade shaft relatively to the motor-shaft.

13. In a fan the combination of a motor having a rotary shaft, a fan-blade shaft, a flexible coupling connection between said shafts and means for intermittently shifting the fan-blade shaft so as to throw its axial line to one side or the other of the axial line of the motor-shaft.

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757,775. **NUT-LOCK.** WILLIAM RUNDLE, Johannesburg, Transvaal. Filed Dec. 29, 1903. Serial No. 187,051. (No model.)



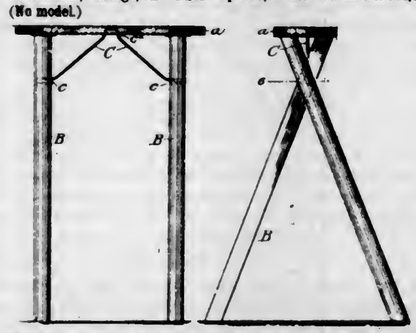
*Claim.*—1. A nut-lock or means for retaining a nut in position on a bolt or the like, comprising a bolt formed with a plurality of grooves longitudinally of and in the threaded portion, a nut provided with a recess in the under side, a wire fixing arranged in said recess which encircles or partially encircles the threaded portion of the bolt and projects up the longitudinal grooves and has its outer ends turned over into grooves formed in the top of the nut, substantially as described.

2. In a nut-lock or means for retaining a nut in position on a bolt or the like, in combination, the bolt A formed with the longitudinal grooves $a$ $a'$ in the threaded portion, the nut B formed with the recess $b$ on the under side and with a plurality of grooves $b'$ in the top thereof, the wire fixing comprising the base part $c$ arranged in the recess $b$ of the nut B, and the parts $c'$ $c^3$ fitting into the grooves $a$ $a'$ in the bolt A with their outer ends turned into the grooves $b'$ in the top of the nut to secure the nut in position on the bolt, substantially as described.

3. In a means for locking a set-screw or the like, in combination, the set-screw D formed with the longitudinal groove $e$ in the threaded portion thereof, the plate or other object E into which the set-screw D is screwed, the recess $e^3$ in the bottom of the plate E, the wire fixing comprising the part $c^3$ arranged in the recess $e^3$ and encircling or partially encircling the thread of the set-screw, and the part $c^4$ fitting into the groove $e$ in the set-screw, and having its outer end turned into engagement with one or other of the grooves $e^4$ in the top of the plate or other object E, substantially as described.

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757,776. **COMBINATION WALKING-STICK AND STOOL.** NOLA F. RUSSELL, Chicago, Ill. Filed Sept. 26, 1903. Serial No. 174,545. (No model.)



*Claim.*—1. The combination with a seat member and two pairs of legs, the legs of each pair being hinged together between their ends so as to be capable of being folded side by side or opened in

crosswise relation, means for attaching the upper ends of said legs to the seat member, a brace extending between and attached to said pairs of legs and with the seat member in a manner to lock said legs to the seat member and to brace the legs from swinging toward each other.

2. The combination with a seat member and two pairs of legs or standards, the legs of each pair being hinged between their ends so as to be capable of being folded side by side or opened in crosswise relation, said seat member being provided on its under side at each end thereof with laterally-separated, staggered sockets to receive the upper ends of the standards and a brace connected at its opposite ends with said legs or standards, and detachably connected at its central portion with the seat member.

3. The combination with a seat member and two pairs of legs or standards, hinge-pins for hinging the legs of each pair together in a manner to be folded side by side or opened in crosswise relation, laterally-separated, staggered sockets on the under side of the seat to receive the upper ends of said legs, and a brace having detachable connection at its opposite ends with said hinge-pins and adapted for detachable connection with the seat member.

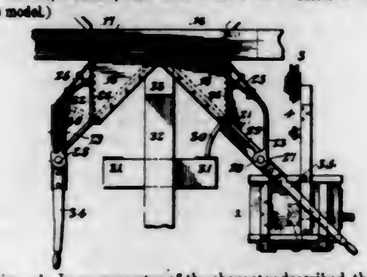
4. The combination with a seat member and two pairs of legs, hinge-pins for hinging together the legs of each pair, whereby they may be closed side by side or opened in crosswise relation, said hinge-pins being provided at their inner ends with apertures and a brace provided at its ends with hooks which enter said apertures, said seat member being provided with a notch adapted to receive the central part of said brace.

5. The combination with a seat member and two pairs of legs, the legs of each pair being hinged between their ends in a manner to be capable of being folded side by side or opened in crosswise relation, the upper ends of the legs of each pair being cut obliquely, at opposite angles, to the longitudinal axes of the legs, so as to fit the under side of the seat member when opened in crosswise relation, and a brace extending between the pairs of legs and detachably connected therewith and with the seat member.

6. The combination with the seat member A, the two pairs of legs B B hinged together by pins B', and the brace C having hooks at its ends which engage said apertured hinge-pins and adapted to be detachably locked at its central part to the seat member.

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**757,777. LOADING APPARATUS FOR TRAMWAYS.** HOMER M. SACKETT, Telluride, Colo. Filed June 7, 1902. Serial No. 110,663. (No model.)



*Claim.*—1. In an apparatus of the character described, the combination with a hopper having its bottom wall inclined in opposite directions from the center thereof; of valves controlling the discharge of material from opposite sides of the hopper, a support disposed under the apex of the bottom wall of the hopper, and a stop member carried by said support and disposed to be engaged by the valves to limit the movement thereof in one direction.

2. In an apparatus of the character described, the combination with a hopper having its bottom wall inclined in opposite directions from the center thereof; of chutes extending in opposite directions from the hopper, swinging bottom walls in said chutes provided with arcuate valves, a support disposed under the apex of the bottom wall of the hopper, and a stop member carried by said support and disposed to be engaged by the valves to insure the alinement of the bottom walls of the chutes and hopper.

3. In an apparatus of the character described, the combination with a hopper having its bottom wall inclined in opposite directions from the center thereof, of chutes extending in opposite directions from the hopper, rock-shafts journaled at the outer ends of the chutes, bottom walls carried by the rock-shafts, arcuate valves connected to the upper ends of said bottom walls, levers connected to the rock-shafts to operate the same, a support disposed under the apex of the bottom wall of the hopper, and a stop member carried by said support and disposed to be engaged by the valves to insure the alinement of the bottom walls of the chutes and hopper.

4. In an apparatus of the character described, the combination with the hopper having openings at opposite sides thereof, and a bottom wall inclined in opposite directions toward said openings; of oppositely-extending chutes, each comprising side walls bolted to the hopper at opposite sides of an opening and a movable floor-section, and an arcuate valve depending from one end of the movable floor-section of each chute.

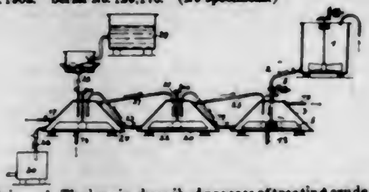
5. In an apparatus of the character described, the combination with a hopper having openings at opposite sides thereof and a bottom wall inclined in opposite directions toward said openings, of oppositely-extending chutes each comprising side walls bolted to the hopper at opposite sides of an opening, a top wall connecting the side walls and a movable floor-section, an arcuate valve depending from one end of the movable floor-section of each chute, means for operating the valves independently of each other, and means for limiting the movement of each valve.

6. In an apparatus of the character described, the combination with a hopper and a chute extending therefrom; of a swinging bottom wall for said chute, a valve operated by said wall, and an operating-handle connected to the movable chute-wall and extending in an opposite direction from the axis thereof and arranged to assume a substantially perpendicular position when the valve is closed.

7. In an apparatus of the character described, the combination with a hopper and a chute extending therefrom and having a swinging bottom wall; of an arcuate valve extending from one extremity of said bottom wall, a rock-shaft constituting the axis of the chute-wall, and an operating-handle secured to the rock-shaft and extending therefrom in a direction exactly opposite to the direction in which the chute-wall extends from the shaft, whereby when the chute-wall is moved to a vertical position to close the valve, said handle will hang directly in the center of gravity and thus aid in retaining the chute wall and floor in their proper positions.

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**757,778. PROCESS OF SEPARATING STARCH BY CENTRIFUGAL ACTION.** RICHARD SCHRADER, Sierakowo, Germany. Filed Oct. 28, 1902. Serial No. 129,170. (No specimens.)



*Claim.*—1. The herein-described process of treating crude starch-milk consisting in continuously subjecting the same to a plurality of centrifugal actions as it flows in one direction and passing the saturated water in the opposite direction, substantially as described.

2. The herein-described process of treating crude starch-milk which consists in continuously subjecting the same to a plurality of successive centrifugal actions as it flows in one direction, mingling fresh water with the milk during the last centrifugal action, and passing the water from each succeeding centrifugal action to each preceding action, substantially as described.

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**757,779. LEAF-RAISER FOR BOOKS.** CHARLES E. SEBASTIAN and HERMAN STOKES, New York, N. Y. Filed Jan. 23, 1904. Serial No. 190,315. (No model.)



*Claim.*—1. A leaf-raiser for books, comprising a socket, a retaining member, a neck connecting said socket and said retaining member, said neck being of smaller diameter than either the socket or the retaining member, and a lifting-disk surrounding said neck, said lifting-disk being engaged and clamped by the opposing faces of the socket and the retaining member.

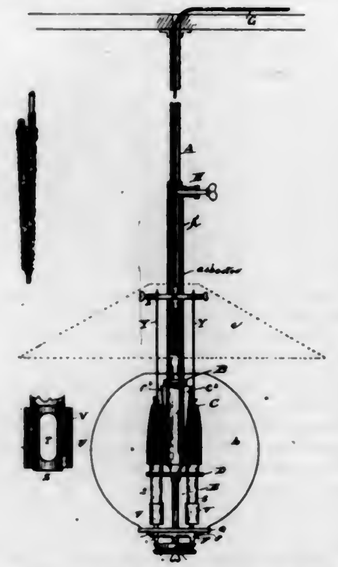
2. A leaf-raiser for books, comprising two members, one of said members having a reduced neck projected therefrom, and the other member having a socket formation to receive the end of said neck, and a lifting-disk surrounding said neck.

3. A leaf-raiser for books, comprising two members provided with inwardly-turned walls at their opposing ends, a reduced neck connecting said walls, and a lifting-disk surrounding said neck.



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**757,780. VAPOR-LAMP.** EDWARD SMITH, Peoria, Ill. Filed July 5, 1901. Serial No. 67,227. (No model.)



*Claim.*—1. In a vapor-lamp, a vertical generator adapted to be heated by the mantles of such lamp, a vapor-tube passing vertically through the entire length of the said generator and open at its upper end within the top of such generator, such tube descending to the jet-orifices of the lamp for conducting vapor thereto, a fluid-conducting tube descending into the generator parallel with the said vapor-tube with its open end near the bottom of the said generator so that the two open ends of both tubes overlap each other whereby the fluid is carried down past the end of one to the bottom of the generator, is vaporized and arises to the top of the generator and then descends through the other tube for the purposes described and a filling of straining material in such generator through which the vapor and fluid pass substantially as described.

2. A vapor-lamp comprising an inlet-tube G, the valve H for controlling the flow of fluid, the generator C into which the open end of said tube descends, a filling of straining material within the generator, the tube I opening from said generator above the lower open end of the inlet-tube G, said outlet-tube I adapted to convey vapor to the burners, a needle-valve below each burner, a pinion on the stem of each valve and a central gear engaging said pinions for operating the valves simultaneously whereby they may be opened and closed as described.

3. In a vapor-lamp the usual burners therefor, the gasolene-supply pipe thereto, valves for controlling the flow of vapor to the burners and means for operating such valves in a simultaneous manner whereby the light of each burner may be turned up or down to the same degree.

4. In a vapor-lamp, burners therefor, a needle-valve for each burner, a pinion M for each valve, a central gear N for operating the pinions simultaneously for the purposes set forth and a series of lugs on the periphery of the gear for limiting the movement thereof and the consequent movement of the pinions.

5. In a gasolene-vapor lamp, a tube A for supporting the lamp, the vertical generator C attached thereto, an insulating-covering for the tube A, a gasolene-conducting tube G within the tube A, a valve for governing the flow of the fluid therethrough, said tube G descending within the generator, a straining substance filling the generator to remove foreign matter from the fluid, a tube I for conducting vapor to the burners, said tube at its outlet being higher than the end of the inlet-tube, a series of needle-valves beneath the burners, a pinion on the stem of each, a center gear for operating each pinion, the mixing-tube S for grasping the top of the needle-valve for conducting heat from the burner proper to said valve for the purposes described and a sleeve V for such conductor all being arranged substantially as and for the purposes set forth.

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**757,781. COIL-SPRING CONTROLLER.** THOMAS A. SHEA, Oswego, N. Y., assignor to George R. Sloan, Jr., Oswego, N. Y. Filed Dec. 14, 1903. Serial No. 185,077. (No model.)



*Claim.*—1. In a coil-spring controller, the combination with the coil, of opposite spring-steel cap-plates, integral side flanges on the cap-plates, the ends of the flanges on one cap-plate being arranged within the ends of the other flanges, and inclined surfaces on the flange ends arranged in contact, so as to increase the friction between the inclined surfaces in proportion to the increase in load.

2. In a coil-spring controller, the combination with the coil or coils, of upper and lower cap-plates and integral side flanges on the cap-plates, the ends of the flanges being turned back at an angle to their flanges and said backturned ends arranged in contact.

3. In a coil-spring controller, the combination with the coil, of upper and lower cap-plates, integral side flanges on the cap-plates, one pair of flanges being arranged inside the other pair, and ends on the flanges backturned at an acute angle to their respective flanges, the inclined surfaces on the ends being arranged in contact.

4. In a coil-spring controller, the combination with the coils, of an upper cap-plate having integral, opposite, side flanges and integral ends on the flanges turned back and out at an acute angle, of a lower cap-plate having corresponding flanges and ends turned back and in at an acute angle, the angular ends on the flanges being arranged in contact.

5. In a coil-spring controller, the combination with the coils, of a lower cap-plate having a flat base and a pair of integral, opposite side flanges extending upwardly from the base, said flanges having ends in and back turned at an acute angle to their flanges, an upper cap-plate having a flat base, narrower than the base of the lower cap-plate, and a pair of corresponding flanges downwardly extending from the base, within the lower flanges, said upper flanges having ends out and back turned and arranged in contact with the lower flange ends, the portions of the lower cap-plate connecting the flanges to the base being bent in larger curves than the corresponding portions of the upper cap-plate.

6. As a new article of manufacture, tempered spring-steel cap-plates for coil-springs, integral flanges on both cap-plates, the flanges of one cap-plate being arranged within the flanges of the other cap-plate, and at least one pair of flanges being provided with wedge-like ends, said ends being arranged with their inclined surfaces in contact with the ends of the flanges of the other cap-plate.

7. Upper and lower cap-plates for coil-springs having integral side flanges, one pair of flanges being arranged within the other pair and wedge-like ends on at least one pair of flanges having the inclined surfaces in contact with the other flanges, at least one of said cap-plates being resilient.

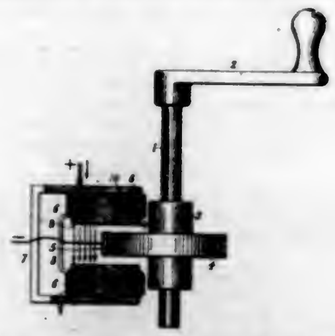
8. In a car-spring, the combination with one or more coil-springs, of upper and lower spring-steel cap-plates having flanges extending substantially at right angles to their bases, one pair of flanges being arranged within the other pair and wedge-like ends on the flanges having their inclined surfaces in contact.

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**757,782. ELECTRIC-ARC-RUPTURING DEVICE.** SIDNEY H. SHORT, London, England, assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Feb. 11, 1902. Serial No. 93,515. (No model.)

*Claim.*—1. In an electric-arc-rupturing device, the combination with the contact-points between which an arc is likely to be formed,

of a pole-piece in proximity to the arcing-point, the said pole-piece being insulated from the limb of the magnet to which it is attached.



2. In an electric-arc-rupturing device, the combination with the contact-pieces between which an arc is likely to be formed, of an electromagnet having a pole-piece in proximity to the arcing-point, the said pole-piece being connected to the limb of the magnet but insulated therefrom.

3. In an electric-arc-rupturing device, the combination with contacts between which the arc is likely to be formed, of an electromagnet having a bare pole-piece in proximity to the arcing-point, the said pole-piece being connected to the limb of the magnet but separated therefrom by suitable insulation.

4. In an electric-arc-rupturing device, the combination with one or more sets of contacts between which an arc or arcs is or are likely to be formed, of electromagnetic pole-pieces on opposite sides of each set, the said pole-pieces being arranged in proximity to the arcing point or points and being safely insulated at points behind their faces, as and for the purpose set forth.

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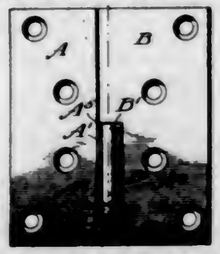
**757,783. METHOD OF MAKING SHOVELS. FREDERICK SKELTON, Martins Ferry, Ohio. Filed Dec. 7, 1903. Serial No. 184,116. (No model.)**



*Claim.*—The method of making shovels and the like, which consists in rolling out into a thin sheet a portion of a right-angled fang of a blank of metal, leaving that portion of the fang adjacent to the body of the blank in a thickened condition, then forging or compressing the thick portion of the fang to form a solid shank and simultaneously turning the edges of the lower end of the thin or rolled portion thereof to partially form a socket, and afterward turning the remaining part of said fang to complete the formation of the socket.

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**757,784. HINGE. JOHN W. SKILTON, Daytona, Fla. Filed Aug 11, 1903. Serial No. 169,123. (No model.)**



*Claim.*—1. In a hinge, a leaf having at one side a socket member closed at its lower end and provided with an integral bearing-face, a single bearing-ball disposed at the base of said socket and resting upon said face, a pintle member carried by one edge of a cooperating leaf and located within said socket and provided with a contact-point at its lower end bearing upon said ball, and an upper portion for said socket spaced from the base of the pintle.

2. In a hinge, a leaf having at one edge a socket member closed at its lower end and provided with a concave face, a single bearing-ball disposed at the base of said socket, a pintle member carried by one edge of a cooperating leaf and located within said socket and provided with a convex contact-point at its lower end bearing upon said ball, and an upper recessed portion for said socket spaced from the base of the pintle and adapted to receive and retain a body of lubricant.

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**757,785. SPRING-JACK FOR TELEGRAPH-SWITCHBOARDS. JOHN F. SKIRROW, East Orange, N. J. Filed Dec. 16, 1903. Serial No. 185,352. (No model.)**



*Claim.*—1. A spring-jack comprising, a block of non-conducting material formed with an enlargement thereon near its lower end, said enlargement being vertically slotted or recessed from its lower end upward, a contact-piece in said slot or recess, a contact-lever pivoted above said enlargement and formed with a vertical upper part and with a downward and inward curved lower part the lower end of which extends into the vertical recess or slot of the block and bears against the contact therein, a spring inserted between the upper end of the vertical part of the lever and the block to normally maintain the lower end of the lever against the contact in the recess, a card-holder permanently secured to the vertical part of the jack by a screw having a forward projecting head, a card adapted to fit said card-holder and formed with a recess to fit over said connecting-screw, and a cover-piece of transparent material of the same shape as the card and adapted to fit between the flanges of the card-holder plate.

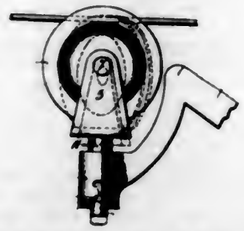
2. A spring-jack comprising, a block of non-conducting material formed with a forward-projecting enlargement near its lower end said enlargement being vertically slotted or recessed from its lower end upward, a rigid contact-piece in said slot or recess the walls of said slot projecting beyond the forward face of said contact-piece, a contact-lever pivoted above said enlargement and formed with a downward and inward curved lower part, the lower end of which extends into the recess in the enlargement and bears against the permanent contact therein, a spring acting on said lever and normally maintaining the lower end thereof against the permanent contact in the recess of the block, and a card-holder permanently attached to said contact-lever and adapted to hold a removable card bearing identifying-symbols.

3. A spring-jack comprising a suitable support, a pivot-post secured thereto, a rigid contact-piece secured thereto below the pivot-post, a contact-lever pivoted on said post, a spring acting against said lever to force its lower end into engagement with the rigid contact, a non-conducting wall or part extending outward on each side of the rigid contact and embracing between them the lower end of the lever, a card-holder rigidly connected to said lever and adapted to receive a card, a cover-strip of transparent material, and means for retaining said card and cover-strip in position in the card-holder.

4. A spring-jack comprising a suitable support, a rigid contact-piece secured thereto, a contact-lever pivoted to said support, a spring acting against said lever to force one of its ends into engagement with the rigid contact, an outward-extending insulating wall or part on each side of the rigid contact and embracing the adjacent part of the contact-lever, a card-holder permanently secured to the lever by a screw having a projecting head, a card adapted to fit said card-holder and formed with a recess to receive the said projecting screw-head, and a cover-piece of transparent material of the same shape as the card and adapted to fit in the card-holder, and to be held therein by the projecting screw-head.



**757,786. TROLLEY. CYRUS E. SMITH, Fall River, Mass., assignor of one-half to Charles S. Canfield, Fall River, Mass. Filed Sept. 25, 1903. Serial No. 174,634. (No model.)**



*Claim.*—1. The combination with a trolley-pole having a bearing-sleeve; of a cam provided on said sleeve and comprising two depressions terminating at the same points, a harp provided with a shank longitudinally movable and rotatable in the sleeve, a projection extending from the shank and engaging the cam, and a spring urging the harp in a vertical direction, the projection on the shank serving to prevent the withdrawal of said shank from the sleeve.

2. The combination with a trolley-pole having a bearing-sleeve, said sleeve having an apertured bottom wall, and a cam formed at the lower end of the sleeve and comprising two depressions terminating at the same points; of a harp provided with a shank formed with an enlargement at its upper end and having its lower end passed through the apertured bottom wall of the sleeve, a spring engaging a fixed part at one end and having its opposite end in engagement with the shank to urge the latter upwardly, and diametrically-opposed projections extending from the lower end of the shank and engaging the cam.

3. The combination with a trolley-pole provided with a depending end to form a guard, and with a bearing-sleeve at the extremity of said depending end; of a harp having a shank passed through the bearing-sleeve and provided with a radial projection at its lower end, a cam formed in the lower end face of the bearing-sleeve, and a spring urging the harp-shank in an upward direction to engage the projection with the cam.

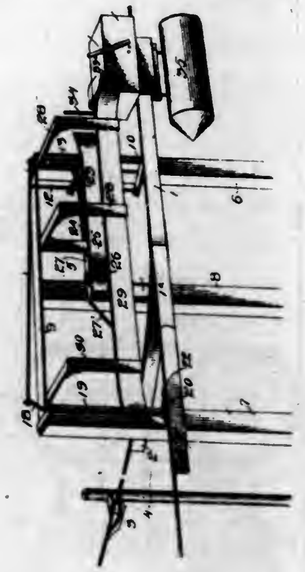
4. The combination with a trolley-pole having a bearing-sleeve, said sleeve being formed at its lower end with a cam; of a harp provided with a shank mounted in said sleeve for both rotary and longitudinal movement, a projection extending laterally from the shank and engaging the cam, a trolley-wheel mounted in the harp, and a spring arranged to urge the shank longitudinally to effect the rotary movement of the harp through the cooperation of the projection and the cam to aline the wheel with the pole.

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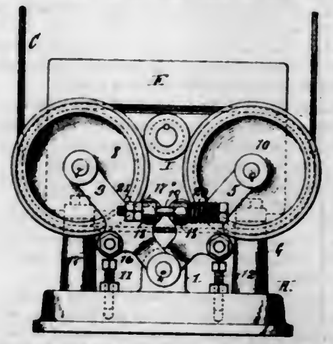
**757,787. RURAL MAIL-DELIVERY SYSTEM. WILLIAM A. SOMERS, GEORGE W. BREWER, and JOHN K. GIBSON, Clay Center, Nebr.; said Somers assignor of one-half to John M. Jones, Clay Center, Nebr. Filed Apr. 20, 1903. Serial No. 153,497. (No model.)**

*Claim.*—1. In a conveyer apparatus, the combination with a main line, a branch line, and a switch-station provided with a switch for controlling the passage of cars between said lines, of a rock-shaft provided with an actuating device operated by a car, a second rock-shaft, a connection between said shafts, means actuated by the second rock-shaft for adjusting the switch, a retracting-spring for resetting the switch and restoring the parts to their normal positions, a locking member, a locking device having a sliding engagement with said locking member and automatically operated by the car to hold the retracting-spring inactive until the car passes from the main line onto the branch line, said locking device being retracted with the switch-operating mechanism by the said retracting-spring, and means for maintaining the locking device in locking position until released by the passage of the car from the main line onto the branch line.

2. In a conveyer apparatus, the combination with a main line, a branch line, and a switch-station provided with a switch for controlling the passage of cars between said lines, of mechanism actuated by a car for adjusting the switch, means for resetting the switch and restoring the parts to their normal position, a locking member, a locking device coacting with said locking member and automatically retracted by the car to hold the said retracting means inactive until the car passes from the main line onto the branch line, said locking device being retracted with the switch-operating mechanism by the said retracting means, and means for maintaining the locking device in locking position until released by the passage of the car from the main line onto the branch line.



**757,788. HOISTING-GEAR FOR ELEVATORS. AUGUST SUNDH, Yonkers, N. Y., assignor to Otis Elevator Company, a Corporation of New Jersey. Filed July 31, 1903. Serial No. 167,747. (No model.)**



*Claim.*—1. In a hoisting-gear, a rotary pulley, two hoisting-drums in frictional contact therewith, swinging supports for said drums and a cable adapted to be connected to the load and extending around said drums.

2. In a hoisting-gear, a rotary pulley, two hoisting-drums in frictional contact therewith, supports for said drums swinging on a common axis and a cable adapted to be connected to the load and extending around said drums.

3. In a hoisting-gear, a rotary pulley, two hoisting-drums in frictional contact therewith, supports for said drums swinging on a common axis located below said drums and a cable adapted to be connected to the load and extending around said drums.

4. In a hoisting-gear, a rotary pulley, two hoisting-drums in frictional contact therewith, swinging supports for said drums, means for regulating the extent of movement of said supports from said pulley and a cable adapted to be connected to the load and extending around said drums.

5. In a hoisting-gear, a rotary pulley, two hoisting-drums in frictional contact therewith, swinging supports for said drums, means acting upon said supports to regulate said frictional contact and a cable adapted to be connected to the load and extending around said drums.

6. In a hoisting-gear, two hoisting-drums, a cable adapted to be connected to the load and extending around both, a toggle-sup-

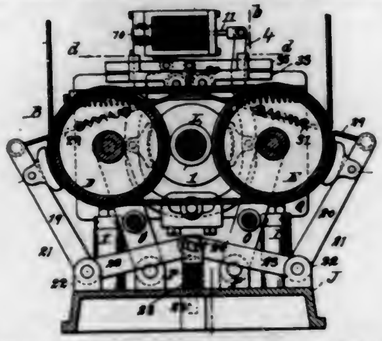
port for said drums and a rotary pulley interposed between and in frictional contact with said drums.

7. In a hoisting-gear, a rotary pulley, two movably-supported hoisting-drums having their axes below the axis of said pulley, means for raising said drums into frictional contact with said pulley and a cable adapted to be connected to the load and extending around said drums.

8. In a hoisting-gear, a rotary pulley, two hoisting-drums having their axes below the axis of said pulley, means for swinging said drums upward and into frictional contact with said pulley and a cable adapted to be connected to the load and extending around said drums.

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757,789. **ELEVATOR BRAKE MECHANISM.** AUGUST SUNDH, Yonkers, N. Y., assignor to Otis Elevator Company, a Corporation of New Jersey. Filed Aug. 5, 1903. Serial No. 168,264. (No model.)



*Claim.*—1. A moving member, a brake associated therewith and movable in the direction of motion of said member, and a second brake actuated by the impressed motion of said first brake due to its frictional contact with said member.

2. A moving member, a second moving member actuated by the first, a brake associated with the first member and movable in the direction of motion thereof and a brake associated with the second member and actuated by the impressed movement of said first brake due to its frictional contact with said first member.

3. A rotary member, a brake associated therewith and movable in the direction of rotation of said member, a second rotary member, a brake associated therewith and means for moving said second brake into operative relation with said second member by the impressed movement of said first brake due to its frictional engagement with said first member.

4. A rotary member and two devices for retarding the motion thereof, one of said devices being brought into operation by the other device through the frictional engagement of said last-named device with said member.

5. A rotary member, a brake acting thereon, a support for said brake constructed to move around the axis of said member and a second brake actuated by the impressed movement of said support due to frictional engagement of said brake with said member.

6. A rotary shaft, a friction-pulley and a friction-disk on said shaft, a brake associated with said friction-disk and movable in the direction of rotation thereof, a pulley driven by said friction-pulley and a brake associated with said driven pulley and actuated by the impressed movement of said first brake due to frictional engagement of said first brake and said friction-disk.

7. A hoisting-drum, a rotary friction-pulley for actuating the same, a brake constructed to retard the motion of said pulley and movable around the axis thereof and a second brake constructed to act upon said drum and operated by the impressed rotary movement of said first brake.

8. A rotary shaft, a friction-disk thereon arms connected at one end by a joint and embracing said disk, brakes on said arms bearing on said disk, a spring for normally forcing said arms together and thereby moving said brakes into contact with said disk, a solenoid supported on the free end of one of said arms and having its core connected to the free end of the other arm and constructed when energized to separate said arms and relieve the brake-pressure.

9. A rotary shaft, a mechanism driven thereby, a friction-disk on said shaft, a frame embracing said disk, brakes supported in said frame and bearing on said disk, a support for said frame constructed to permit the same to tilt in the direction of rotation of said disk and a retarding device associated with said driven mechanism and actuated by the tilting of said frame due to frictional engagement of said brakes.

10. A rotary shaft, a mechanism driven thereby, a friction-disk on said shaft, arms connected by a joint at one end and embracing said disk, brakes supported on said arms and bearing on said disk, means for opening and closing said arms to release or apply said brakes, a support for said arms constructed to permit the same to tilt in the direction of rotation of said disk, and a retarding device associated with said driven mechanism and actuated by the tilting of said arms due to frictional engagement of said brakes.

11. A rotary shaft, a mechanism driven thereby, a friction-disk on said shaft, arms connected by a joint at one end and embracing said disk, brakes supported on said arms and bearing on said disk, a spring for closing said arms and applying said brakes, an electromagnetic device for separating said arms and releasing said brakes, a support for said arms constructed to permit the same to tilt in the direction of rotation of said disk and a retarding device associated with said driven mechanism and actuated by the tilting of said arms due to frictional engagement of said brakes.

12. In a hoisting-gear, in combination with a motor, and a hoisting-drum driven thereby, a retarding device actuated by said motor and acting on said drum.

13. In a hoisting-gear in combination with a motor a hoisting-drum and friction-gear for driving said drum by said motor, a retarding device actuated by said motor and acting on said drum.

14. In a hoisting-gear in combination with a motor a hoisting-drum, and friction driving-gear interposed between the motor-shaft and drum, a brake actuated directly from said motor-shaft and acting on said drum.

15. In a hoisting-gear in combination with a motor a hoisting-drum and friction driving-gear interposed between the motor-shaft and drum, a retarding device acting on the motor-shaft, a retarding device acting on the drum and means for conjointly actuating said retarding devices.

16. A motor, a hoisting-drum actuated thereby, a primary brake acting on the motor-shaft, a secondary brake acting on the hoisting-drum and means for actuating the secondary brake through the application of the primary brake.

17. A motor, a hoisting-drum actuated thereby a primary brake acting on the motor-shaft, and movable in the direction of rotation thereof, a secondary brake acting on the hoisting-drum and means for actuating the secondary brake by the impressed movement of the primary brake.

18. In a hoisting-gear, an electric motor, a brake on the motor-shaft, a hoisting-drum, friction driving-gear between said drum and said motor, a brake on said drum and means for simultaneously applying said brakes and cutting off current to the motor.

19. In a hoisting-gear, an electric motor, a brake on the motor-shaft, a hoisting-drum, friction driving-gear between said drum and said motor, a brake on said drum and means for simultaneously releasing said brakes and establishing current to the motor.

20. In a hoisting-gear, an electric motor, an electrically-governed brake on the motor-shaft, a hoisting-drum actuated by said motor, a brake on said drum controlled by said shaft-brake, and means for simultaneously establishing current in said motor and releasing said shaft-brake.

21. In a hoisting-gear, an electric motor, an electrically-governed brake acting on the motor-shaft, a hoisting-drum actuated by said shaft, a brake acting on said hoisting-drum and mechanically actuated by said first brake and a device for conjointly controlling said last-named brake and motor.

22. In a hoisting-gear, a movably-supported hoisting-drum, a friction driving-pulley acting on one side of said drum, a stationary support for said pulley, a brake acting on the opposite side of said drum and operating to move said drum against said pulley, and means for simultaneously cutting off power from said pulley and applying said brake.

23. In a hoisting-gear, two movably-supported hoisting-drums, an electric motor, a friction-pulley driven by said motor and interposed between and acting on both of said drums, brakes acting on the outer sides of said drums and operating to force the same against said pulley and means for simultaneously cutting off current to said motor and applying said brakes.

24. An electric motor, a hoisting mechanism actuated thereby, retarding devices associated respectively with said mechanism and the motor-shaft, and means for simultaneously admitting current to said motor and releasing said retarding devices.

25. An electric motor, a hoisting mechanism actuated thereby, retarding devices associated respectively with said mechanism and the motor-shaft and means for simultaneously cutting off current to said motor and applying said retarding devices.

26. An electric motor, a hoisting-drum actuated thereby, retarding devices associated respectively with said drum and the shaft of said motor and means for controlling the direction of motion of said motor and the operation of said retarding devices.

27. In combination with an elevator-car and hoisting-gear, an electric motor, a hoisting-drum actuated thereby, retarding devices associated respectively with said drum and the motor-shaft, and means governed from said car for electrically controlling the direction of motion of said motor and simultaneously releasing said retarding devices upon the starting of said motor in either direction.

28. In combination with an elevator-car and hoisting-gear, an electric motor, a hoisting-drum actuated thereby, retarding devices associated respectively with said drum and the motor-shaft, and means governed from said car for cutting off current to said motor and simultaneously setting said retarding devices in operation.

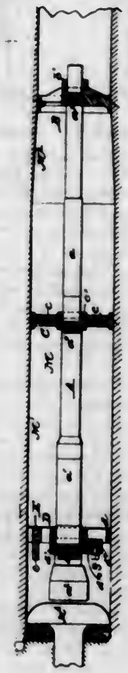
29. An electric motor, a mechanism actuated thereby, retarding devices associated respectively with said mechanism and said motor, means for establishing current in the motor-field and means for electrically controlling the direction of current in said motor-armature and the operation of said retarding devices.

30. The combination of a rotary shaft, a friction-disk thereon, brakes bearing on said disk, a frame embracing said disk carrying said brakes and rotatable about the axis of said disk, a sliding bar moved by said frame, a friction-pulley on said shaft, a hoisting-drum actuated by said pulley, a movable brake constructed to bear on said drum-periphery and means for actuating said brake controlled by said sliding bar.

31. The combination of a rotary shaft, a friction-disk thereon, brakes bearing on said disk, a frame embracing said disk carrying said brakes and rotatable about the axis of said disk, a sliding bar moved by said frame, a friction-pulley on said shaft, a hoisting-drum actuated by said pulley, a movable brake constructed to bear on said drum-periphery, a swinging lever carrying said brake, a spring acting on said lever normally to hold said brake away from said drum and means for actuating said lever to move said brake against said drum controlled by said sliding bar.

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757,790. **AUXILIARY BARREL FOR BREECH-LOADING GUNS.** VERNON C. TASKER, Bridgeport, Conn., assignor to The American Ordnance Company, Norfolk, Va., a Corporation of Virginia. Filed June 21, 1902. Serial No. 112,678. (No model.)



*Claim.*—1. Means for supporting a subcaliber gun in a piece of ordnance, consisting of an adapter or ring having two branches, a wedge and screw, the wedge held to one branch by the screw and bearing against the other branch.

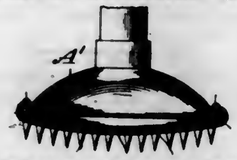
2. Means for supporting a subcaliber gun in a piece of ordnance consisting of an adapter or ring having two branches provided with a mortise; a plate resting in said mortise, secured to one branch and loose in the other, a screw and a wedge, the wedge held to one branch by the screw and bearing against the other branch.

3. Means for supporting a subcaliber gun in a piece of ordnance, consisting of the adapter or ring, D, having the two branches, $d^4$ $d^5$, provided with the mortise, $d^6$, the plate, $d^7$, located in said mortise secured to one branch and loose in the other; the wedge, F, fitting between the meeting ends of the branches; and the screw, E, engaging one branch of the adapter and the wedge.

4. Means for supporting a subcaliber gun in a piece of ordnance, consisting of the adapter or ring, D, having the two branches, $d^4$ $d^5$, provided with the mortise, $d^6$; the tenon or plate, $d^7$, in such mortise and secured to one branch; the wedge, F, fitting between the meeting ends of the branches; and the screw, E, engaging one branch of the adapter and the wedge.

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757,791. **BATH-SPRAY.** VICTOR C. VAN'T WOUD, New York, N. Y. Filed Nov. 10, 1903. Serial No. 180,601. (No model.)

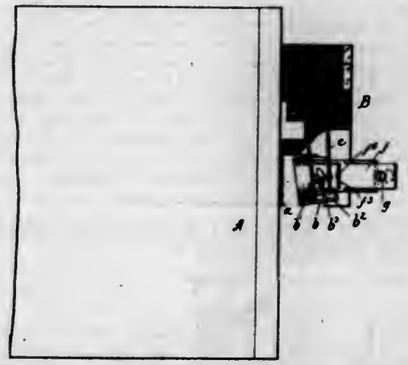


*Claim.*—1. A bath-spray comprising among its members, a hollow body composed of a non-flexible back portion and a flexible front portion constructed to engage the back portion, and provided with a series of flexible integral projections and apertures located between the bases of said projections, substantially as described.

2. A bath-spray comprising among its members, a hollow body composed of a non-flexible back portion and a flexible front portion constructed to engage the back portion, and provided with a series of flexible integral projections and apertures located between the bases of said projections, said front and back portions being provided with interlocking devices to hold them firmly in engagement, substantially as described.

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757,792. **CIRCUIT-CONTROLLER FOR INDUCTION-COILS.** RICHARD VARLEY, Providence, R. I., assignor to Varley Duplex Magnet Company, a Corporation of New Jersey. Filed Jan. 20, 1904. Serial No. 189,825. (No model.)



*Claim.*—1. The combination with an induction-coil, of a vibratory circuit-controller having a plurality of sets of contacts and means whereby any one set can be thrown into operative position and the other set or sets thrown out of operative position, substantially as described.

2. The combination of an induction-coil and a vibratory circuit-controller therefor, of a plurality of sets of contacts and means whereby one set can be manually substituted for another in operative position.

3. In a vibratory circuit-controller, the combination of a vibratory element, two contacts carried thereby and two shiftable contact-carrying levers corresponding respectively to the contacts on the said element and means whereby either pair of corresponding contacts may be thrown into operative position at will.

4. The combination of a vibratory element, two contacts carried thereby, two pivoted levers each carrying a contact corresponding respectively with those on the vibratory element, means for holding one lever in operative position and means for holding the other out of operative position.

5. The combination of a vibratory element, two contacts carried thereby, two pivoted levers carrying contacts corresponding respectively with those on the said element, a spring connecting said levers and means whereby when one lever is in operative position, the other lever will be held out of operative position by the first lever.

6. The combination of a vibratory element carrying two contacts, a pivoted lever carrying a contact corresponding to one of those on the vibratory element, a spring tending to hold the lever in operative position and a limiting-stop determining the position of the lever.

7. The combination of a vibratory element, two contacts carried thereby, two pivoted levers having their extremities overlapping each other and carrying contacts corresponding respectively with those on the said element, a retractile spring engaging both levers and a stop for each lever whereby the relative position of the levers is determined.

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757,793. **ADJUSTABLE HOOK FOR HAND-TRUCKS.** GEORGE M. VICKERS, Jr., Bala, Pa. Filed Oct. 20, 1902. Renewed Sept. 30, 1903. Serial No. 173,294. (No model.)



*Claim.*—1. In an adjustable hook for a hand-truck, two members, whereof one is adjustable upon the other, combined with means for locking the two members in required position, and a channel-piece pivotally secured to the free end of one of the members and adapted to assume different angular positions with respect to said member.

2. In an adjustable hook for a hand-truck, two members arranged alongside each other, one of said members having teeth and pivotally secured to the truck, and the other member having a channel-piece pivotally secured to one end thereof and adapted to assume different angular positions with respect to said member and independent of the position of the same, and at the other end having a bracket and pawl, said bracket adapted to slidably connect the two members and said pawl adapted to couple the same with each other by engaging the teeth of the pivotal member.

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757,794. **BOTTLE-TAP.** EDWIN WALKER, Erie, Pa. Filed Sept. 2, 1903. Serial No. 171,612. (No model.)



*Claim.*—1. The combination in a bottle-tap, of a hollow stem having the inlet end of the opening therein contracted, a valve for closing the outlet of the opening in the stem, and a rod operated by said valve extending through the opening in the stem and the contracted inlet portion thereof, and adapted to be withdrawn from the contracted portion thereof by the operation of the valve, substantially as set forth.

2. The combination in a bottle-tap, of a stem having a central opening therein contracted at its inlet end, a head on the outlet end of said stem, a valve-seat in said head, a valve in said head operating on said valve-seat, a discharge-opening in said head above the valve-seat, and a rod secured to said valve and movable therewith, of suitable diameter to fit and pass through the contracted portion of the opening at the inlet end of the bore in the stem and extending therethrough when the valve is closed a sufficient distance to form a portion of the point of the stem, substantially as set forth.

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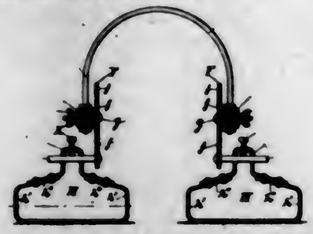
757,795. **RAKE.** OWEN M. WALKER, Willow, Ind. Filed Feb. 20, 1903. Serial No. 144,944. (No model.)



*Claim.*—A rake consisting of an angle-bar having perforations through one side thereof, teeth having reduced threaded stems engaged in and fitting their respective perforations, nuts engaged with the extremities of the stems and lying in the angle of the bar, and a handle having a forked shank and having perforations therethrough, said fork being engaged with the stems of certain of the teeth between the nuts and the angle-bar, the angle-bar at one side extending above the forked shank.

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757,796. **WHEEL-WEEDER.** CHARLES WEAR, Danvers, Mass., assignor to Charles S. Emmerton, Peabody, Mass. Filed July 27, 1903. Serial No. 167,022. (No model.)



*Claim.*—1. A wheel-weeder, consisting in combination, a rigid wheel-frame, a pair of slotted supporting-plates vertically adjustable on said frame, lateral pins carried by said plates and arranged below said frame and a pair of skeleton weeder-blades laterally adjustable on said pins, substantially as and for the purpose set forth.

2. A wheel-weeder, consisting in combination, a duplex rigid non-adjustable wheel-frame, supporting-plates vertically and pivotally adjustable on said frame, means for securing said plates in position, a pair of reversible weeder-blades laterally adjustable relative to each other, and means for securing said weeder-blades in their adjusted positions, substantially as and for the purpose set forth.

3. A wheel-weeder, consisting in combination, a duplex wheel-frame, consisting of two members secured together, each member having secured to it an adjustable weeder-support extending above and below the same, a lateral projection on the lower end of each of said supports, and a reversible skeleton weeder-plate having a socket adapted to be adjustably secured on said lateral projection, substantially as and for the purpose set forth.

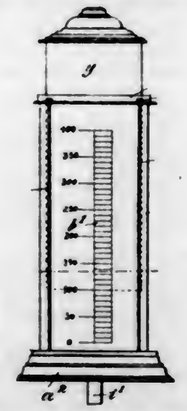
4. A wheel-weeder, consisting in combination a duplex non-adjustable wheel-frame, a pair of weeder-blades adjustably secured vertically and laterally relative to said frame, and an arched brace secured to said frame intermediate at the rear of the wheels, substantially as and for the purpose set forth.

5. A wheel-weeder comprising a duplex non-adjustable wheel-frame, supporting-plates vertically and angularly adjustable on said frame, means for securing said plates in position, a pair of weeder-blades, means carried by the lower end of said plates for supporting the said blades, means for adjustably securing the said blades to said supporting means, and an arched brace secured to said frame between the forward end thereof and the said plates.



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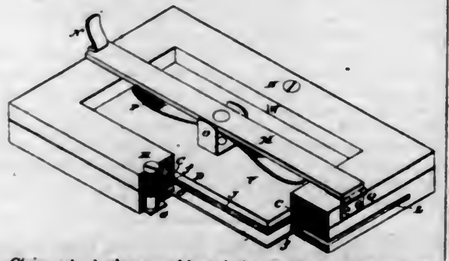
757,797. **SPIROMETER.** ARTHUR R. WELLS, New York, N. Y. Filed Jan. 4, 1904. Serial No. 187,602. (No model.)



*Claim.*—In a spirometer, a glass cylinder having a transparent scale combined with a perforated base having an upwardly-extending rim and a depending flange to constitute a foot, an annular top, rods for connecting the base to the top, a bell movable within the cylinder and having a lower edge which is visible through the scale, and an air-pipe projecting into the bell through the perforated base, substantially as specified.

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757,798. **PHOTOGRAPHIC-PRINTING APPARATUS.** HAWLEY C. WHITE and ALVIN H. MALLORY, North Bennington, Vt., assignors to H. C. White Co., a Corporation of Vermont. Filed Apr. 21, 1902. Serial No. 103,698. (No model.)



*Claim.*—1. A photographic-printing frame consisting of two members, the face member being an internally-rabbeted frame having a slot through its edge abreast the negative for the passage of the same, and a rear member being an externally-rabbeted frame adapted to fit the face member and close down on the inserted negative, and means for clamping the two frames together adjustably, whereby by loosening the clamp a slight separation of the members may be effected for the removal or insertion of the negative, substantially as specified.

2. The combination of an externally and an internally rabbeted frame with space between them for the reception of a negative, a slot through one of said frames for the passage of a negative, a device or devices for holding the two frames in apposition, and means adapted to slightly separate the two members to change negatives, substantially as specified.

3. The combination of an externally-rabbeted frame and an internally-rabbeted frame with space between them for the reception of a negative, and means for connecting and disconnecting them, of a separable closing back and a device for locking the back down against the paper, substantially as specified.

4. A photographic-printing frame consisting of an internally-rabbeted member to receive a negative, having a slot-opening therethrough for its passage, an internal binding-frame adapted to fit the interior of the rabbeted frame, adjustable means for connecting the two members and for regulating the binding pressure on the inclosed negative, and a closing back and elastic locking device for holding the paper in contact with the negative, substantially as specified.

5. A photographic-printing frame composed of two counterparts having a groove around the interior edge thereof to support the negative, a slot through one side of the frame on the plane of the groove for the passage of the negative, means for holding the negative in operative position in the frame, a back for confining the paper in close contact with the negative and a locking device for holding the back in operative position, substantially as specified.

6. A photographic-printing frame consisting of an internally-rabbeted member to receive the negative, an internal binding-frame adapted to fit the interior of the rabbeted frame, adjustable means for connecting the two members and for regulating the binding pressure on the inclosed negative, and a closing back and elastic locking device for holding the paper in contact with the negative, substantially as specified.

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757,799. **TELEPHONE-TRANSMITTER.** WALTER L. WILHELM, Buffalo, N. Y., assignor to Wilhelm Telephone Manufacturing Company, Buffalo, N. Y. Filed Jan. 23, 1902. Serial No. 90,295. (No model.)



*Claim.*—1. The combination of a support, a casing supported thereby, a microphone within said casing, a tubular holder for said microphone located within said casing, a mouthpiece outside of said casing, and a single detachable connection joining said mouthpiece and said tubular holder together and to said casing, substantially as set forth.

2. The combination of a support, a casing supported thereby, a microphone within said casing, a branched tubular holder located within said casing and having separated inner ends between which said microphone is supported, a mouthpiece outside of said casing, and a screw-threaded connection between said mouthpiece and said tubular holder, whereby said parts are attached together and detachably clamped on said casing, substantially as set forth.

3. The combination of a branched tubular holder having separated ends, a microphone, and a containing-frame for the microphone having separated plates on opposite sides of the microphone and arranged between the separated ends of said tubular holder and detachably secured thereto, substantially as set forth.

4. The combination of a supporting-arm, a casing secured thereto and formed of separable parts one of which is provided with an opening, a microphone within said casing, a tubular holder for said microphone located within said casing and having a part projecting through said opening, and a mouthpiece outside of said casing and having a screw-threaded engagement with said projecting part of said tubular holder, whereby the latter and said mouthpiece are connected together and clamped on said casing, substantially as set forth.

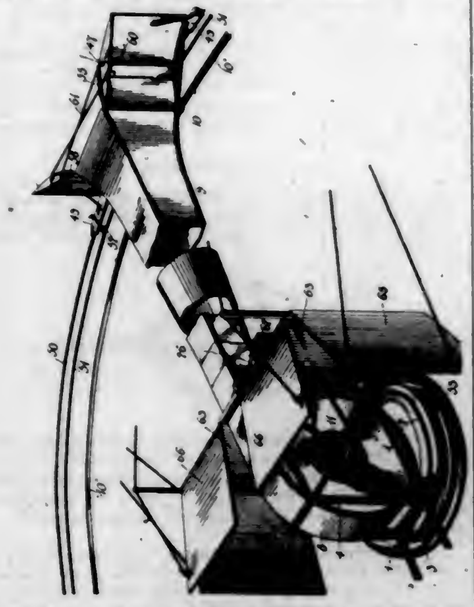
5. The combination with a transmitter-arm, of a casing secured thereto and composed of two substantially cup-shaped parts, means for detachably connecting said parts, a branched tubular holder arranged in said casing and having a screw-threaded ring projecting through an opening in one of said casing parts, a mouthpiece screwed on said projecting ring, and a microphone arranged between the inner ends of said branched tubular holder and supported thereby, substantially as set forth.

6. The combination of a microphone-containing frame having separated parallel cover-plates, a microphone supported between said cover-plates and having diaphragms arranged inside of and adjacent to said plates and protected thereby, and spring-clips secured to said containing-frame and arranged between and bearing against said diaphragms to hold the same in place between said cover-plates, substantially as set forth.

7. The combination of a containing-frame having separated plates, a microphone between said plates having diaphragms each located inside of and adjacent to one of said frame-plates, and holding-clips secured to said frame-plates and extending between said diaphragms for holding the same in said containing-frames, substantially as set forth.

8. The combination of a containing-frame comprising separated plates detachably connected together, a microphone contained between said plates and having a diaphragm, and means securing said diaphragm to one of said frame-plates whereby when said plate is detached from the other parts of the containing-frame the diaphragm is carried by it, substantially as set forth.

## 757,800. WIND-MOTOR. JOSEPH J. WILLIAMS, Oklahoma, Okla. Filed Mar. 16, 1904. Serial No. 198,466. (No model.)



*Claim.*—1. In a wind-motor, a moving part having impact-surfaces, a casing inclosing said part, a nozzle connected with the casing and arranged to direct air-currents against said surfaces, a movable vane exposed to the air-currents, a plurality of generators operatively connected with the vane, and means between the vane and generators for controlling the operation of the latter.

2. In a wind-motor, a moving part having impact-surfaces, a casing inclosing said part, a nozzle connected with the casing and arranged to direct air-currents against said surfaces, a movable vane in the nozzle, a plurality of generators operatively connected with the moving part, and means between the vane and generators for controlling the operation of the latter.

3. In a wind-motor, a moving part having impact-surfaces, a casing inclosing said part, a nozzle connected with the casing and arranged to direct air-currents against said surfaces, a movable vane exposed to the air-currents, a plurality of electric generators operatively connected with the moving part said generators having different capacities, and means between the vane and generators for effecting the alternate operation of the latter.

4. In a wind-motor, a moving part having impact-surfaces, a casing inclosing said part, a nozzle connected with the casing and arranged to direct air-currents against said surfaces, a vane in said nozzle movable by wind-pressures to expose greater or less areas of said surfaces, a plurality of generators of different capacities, and means including clutches between the vane and generators for controlling the operation of the latter.

5. In a wind-motor, a moving part having impact-surfaces, a casing inclosing said part, a nozzle connected with the casing and arranged to direct air-currents against said surfaces, a vane in said nozzle movable by wind-pressures to expose greater or less areas of said surfaces, a plurality of generators of different capacities operated from a common shaft, gearing between the shaft and moving part, and means including clutches between the vane and generator, driving-pulleys for controlling the operation of the generators.

6. In a wind-motor, a moving part having impact-surfaces, a casing inclosing said part, a nozzle connected with the casing and arranged to direct air-currents against said surfaces, a vane in the nozzle adjacent to the moving part said vane being movable by wind-pressures, a plurality of generators of different capacities, a shaft carrying loose pulleys connected with the generator-shafts, sprocket-gearing connecting said shaft and moving part, a shaft carrying cams and rotated by the movement of the vane, and clutches for said pulleys operated by said cams.

7. In a wind-motor, a wheel carrying blades, a nozzle arranged to direct air-currents against said blades, a vane in the nozzle movable by wind-pressures, a plurality of generators, a shaft operated from the wheel, loose pulleys on said shaft connected with the generator-shafts, a second shaft, cams adjustable on said second shaft, a pinion on the cam-shaft, an arm movable with the vane, a rack-bar between the arm and pinion, and clutches between the pulleys and cams.

8. In a wind-motor, a cylindrical casing having side exhaust-openings, a blade-wheel in the casing, a nozzle leading tangentially into the casing, said nozzle increasing in size from its inner end and terminating in a flaring mouth, curved deflectors at the sides of the nozzle-mouth and nozzle-controlling curved gates at the front of the deflectors, said deflectors and gates forming continuations of the nozzle-walls.

9. In a wind-motor, a wheel carrying blades, a nozzle arranged to direct air-currents against said blades said nozzle increasing in diameter toward its inlet end, deflectors at the sides of the inlet end, and a gate at said end formed in two sections foldable into recesses in the deflectors.

10. In a wind-motor, a cylindtical casing having side exhaust-openings, a blade-wheel in the casing, a nozzle leading tangentially into the casing, said nozzle increasing in size from its inner end, and wind-guards adjacent to the cylinder exhaust-openings and providing a partial vacuum at the latter.

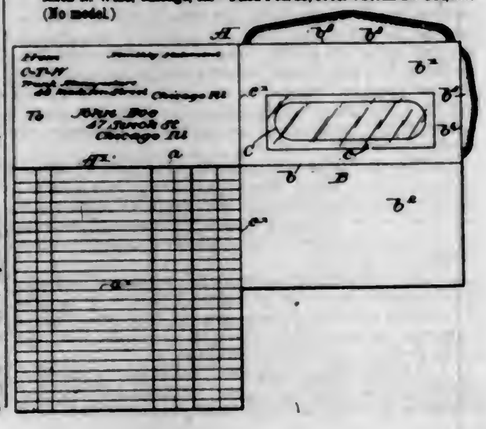
11. In a wind-motor, a cylindrical casing having side exhaust-openings, a blade-wheel in the casing, a nozzle connected tangentially with the casing, a wind-guard at the front and sides of the casing, the side portions of the guard being adjacent to the casing exhaust-openings, whereby to provide a partial vacuum at the latter.

12. In a wind-motor, a casing, a wheel therein carrying blades, a nozzle connected with the casing and arranged to direct air-currents against said blades, a wind-guard at the front of the motor, and foldable guards at the sides of the motor each formed of foldable sections.

13. In a wind-motor, a casing, a wheel therein carrying blades, a nozzle connected with the casing and arranged to direct air-currents against said blades, a wind-guard at the front of the motor, side guards hinged to the motor-frame, and foldable upper and side-guard extensions hinged to said side guards.

14. In a wind-motor, a casing, a wheel therein carrying blades, a nozzle connecting with the casing and arranged to direct air-currents against said blades said nozzle increasing in diameter from its inner end and terminating in a flared mouth, deflectors at the mouth having curved surfaces and recesses, nozzle-controlling gates foldable into said recesses, means for adjusting the gates, wheeled supports for the motor, the outer nozzle end and the deflectors, tracks for said wheeled supports, and means for moving the structure on said tracks.

## 757,801. COMBINED ENVELOP AND SHEET OF PAPER. RACE H. WILE, Chicago, Ill. Filed Feb. 26, 1903. Serial No. 144,966. (No model.)





*Claim.*—1. An integral envelop and sheet of paper, the former comprising front and rear sections, which may be detached from the sheet while leaving the latter intact and the sheet being adapted to be folded between said sections, one of said sections of the envelop being provided with an opening through which may be exposed an address written on the sheet.

2. An integral envelop and sheet of paper, the former comprising front and rear sections, which may be detached from the sheet while leaving the latter intact and the sheet being adapted to be folded between said sections, one of said sections of the envelop being provided with an opening through which may be exposed an address written on the sheet and a transparent cover applied over said opening.

3. An integral envelop and sheet of paper, the former comprising front and back sections, which may be detached from the sheet while leaving the latter intact and the sheet being adapted to be folded between said sections, one of said sections of the envelop being provided with an opening through which may be exposed an address written on the sheet, and one of said envelop-sections being provided with a flap which is adapted to be folded over and secured upon the other section of the envelop.

4. An integral envelop and sheet of paper, said envelop comprising two sections which extend laterally from one side margin of the sheet and between which sections the sheet is adapted to be folded, one of said envelop-sections being provided with an opening through which may be exposed an address on the sheet and means for fastening the sections of the envelop together around the folded sheet.

5. An integral envelop and sheet of paper, the envelop extending laterally from one side margin of the sheet and adapted to be detached or torn from the sheet along the line of said margin, said envelop being provided with an opening through which an address on the sheet may be exposed.

6. An integral envelop and sheet of paper comprising the sheet-section A', the two envelop-sections $b' b^2$ joined to the side margin of the sheet-section, the marginal flaps on the envelop-section $b'$ and the opening C in said envelop-section.

## 757,802. WAVE-RESPONSIVE DEVICE. ALBERT R. WOODWARD, Nashua, N. H., and HARRY SHOEMAKER, Philadelphia, Pa., assignors to Marie V. Gehring, Philadelphia, Pa. Filed July 9, 1903. Serial No. 164,709. (No model.)



*Claim.*—1. A wave-responsive device comprising a disk of aluminium in contact with a plurality of conductors in series therewith and a mass of rubber for exerting pressure at the contacts.

2. A wave-responsive device, comprising a disk of aluminium in contact with a plurality of masses of steel and a mass of rubber for exerting pressure at the contacts.

3. A wave-responsive device, comprising a disk of aluminium in contact with a plurality of masses of steel in series therewith and a mass of rubber for exerting pressure at the contacts.

4. A wave-responsive device comprising a disk of aluminium in contact with a plurality of masses of polished steel, and in series therewith and a mass of rubber for exerting pressure at the contacts.

5. A wave-responsive device comprising an aluminium disk in contact on each side with a conductor and a mass of rubber for exerting pressure at the contacts.

6. A wave-responsive device, comprising a plate of aluminium in contact on each side with a non-oxidized conductor and a mass of rubber for exerting pressure at the contacts.

7. A wave-responsive device, comprising a plate of aluminium, and in contact on each side thereof with a mass of steel and a mass of rubber for exerting pressure at the contacts.

8. A wave-responsive device, comprising an aluminium conductor and an oxidized conductor in contact therewith, and a mass of rubber surrounding said conductors and exerting pressure at the contact.

9. A wave-responsive device, a mass of aluminium, a mass of polished steel in contact therewith, and a mass of rubber for exerting relatively great pressure at the contact.

10. A wave-responsive device comprising an aluminium mass, a mass of non-oxidized conductor in contact therewith over a relatively small area, and a mass of rubber for exerting relatively great pressure at the contact.

11. A wave-responsive device comprising an aluminium plate and non-oxidized conductors in contact therewith on each side thereof, and a mass of resilient material surrounding said plate and conductors.

12. A wave-responsive device comprising an aluminium plate, a steel ball in contact with each side thereof, and a resilient mass surrounding the plate and balls for exerting pressure at the contact.

13. A wave-responsive device comprising a disk of aluminium in contact with a plurality of conductors in series therewith and a mass of resilient material surrounding said disk and conductors.

14. A wave-responsive device comprising a mass of aluminium in contact with a plurality of masses of steel and a mass of resilient material surrounding said masses of aluminium and steel.

15. A wave-responsive device comprising a mass of aluminium in contact with a plurality of masses of steel in series therewith and a mass of resilient material surrounding said masses of aluminium and steel.

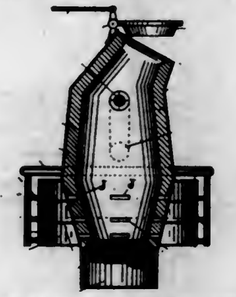
16. A wave-responsive device comprising a mass of aluminium in contact with a plurality of masses of polished steel and in series therewith and a mass of resilient material surrounding said masses of aluminium and steel.

17. A wave-responsive device comprising an aluminium disk in contact on each side with a conductor and a mass of resilient material surrounding said disk and conductors.

18. A wave-responsive device comprising a plate of aluminium in contact on each side with a non-oxidized conductor and a mass of resilient material surrounding said plate and conductors.

19. A wave-responsive device comprising a plate of aluminium and in contact on each side thereof with a mass of steel and a mass of resilient material surrounding said plate and mass of steel

## 757,803. PROCESS OF TREATING AND MANUFACTURING STEEL. WALTER B. BURROW, Norfolk, Va. Filed May 17, 1902. Serial No. 107,817. (No specimens.)



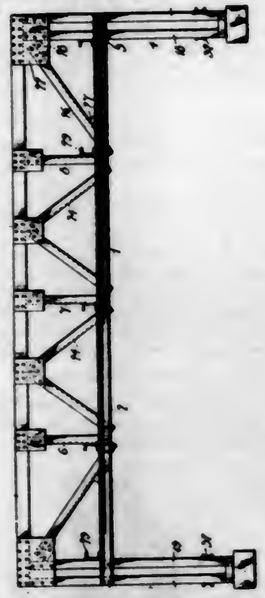
*Claim.*—1. The introduction of purifying agents in a finely-divided state into molten iron and steel by means of the atmospheric air-blast at variable pressures into different depths of the metal in a refractory-lined converter or vessel, as described.

2. The introduction of dephosphorizing material in a pulverulent form, in the manufacture of steel, by means of the air-blast under pressure in different thickness or depths of the molten metal and by drawing in the dephosphorizing material at a certain stage of the process by means of a vacuum, and the expulsion of the gases from the vessel on the introduction of the purifying material into the converter, substantially as described.

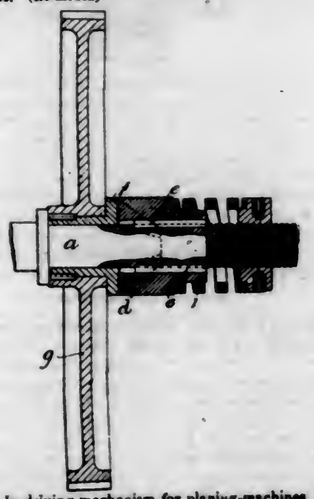
## 757,804. BRIDGE. ERNEST L. DILDINE and JAMES C. DILDINE, Cameron, Mo. Filed Dec. 21, 1903. Serial No. 186,065. (No model.)

*Claim.*—1. A triangular truss-bridge structure made throughout of standard parts and comprising end posts, bottom chords each consisting of two channel-bars bolted or riveted directly to opposite sides of said end posts, top chords composed of flanged beams resting on the end posts, flat end plates connecting the top chords and end posts, intermediate flanged bar-posts secured directly to the bottom chords and connected to the top chords by flat plates, end and intermediate tie-bars each consisting of a flanged bar secured to the top chord by a flat plate and secured directly to the outer bottom chord member independently of the connection between the latter, and the intermediate posts, and floor-beams secured directly to the bottom chord members and to the posts.

2. A triangular truss-bridge structure made throughout of standard parts and comprising end posts, bottom chords each consisting of two channel-bars bolted or riveted directly to opposite sides of said end posts, top chords composed of flanged beams resting on the end posts, flat end plates connecting the top chords and end posts, intermediate flanged bar-posts secured directly to the bottom chords and connected to the top chords by flat plates, end and intermediate tie-bars each consisting of a flanged bar secured to the top chord by a flat plate and secured directly to the outer bottom chord member independently of the connection between the latter and the intermediate posts, floor-beams secured directly to the bottom chord members and to the posts, and horizontally-crossed bars secured directly to the bottom chord members.

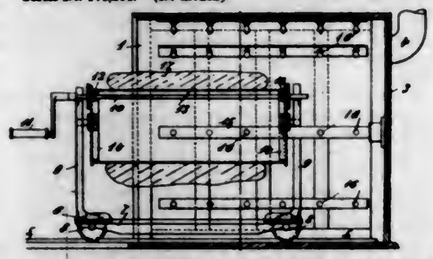


757,805. CLUTCH MECHANISM. WILLIAM D. FORD-SMITH and THEODORE COVENTRY, Salford, England. Filed Nov. 16, 1903. Serial No. 181,369. (No model.)



*Claim.*—In driving mechanism for planing-machines, the combination of a shaft, a wheel loose on the shaft and having a clutch member *f* rigidly connected thereto, a clutch member *d* splined to the shaft, and a spring arranged to be compressed by the separation of the clutch members, the said clutch members having double inclined surfaces between them remaining in engagement when the clutch members are separated and the spring compressed, whereby the power of the spring will react through the said inclines to assist in the driving action, substantially as described.

757,806. DISINFECTING APPARATUS. ALBERT GIESEKEPEN, Remscheid, Germany. Filed May 22, 1902. Renewed Aug. 29, 1903. Serial No. 171,286. (No model.)



*Claim.*—An improved disinfecting apparatus consisting of a casing the front wall of which is adapted to be opened of a series of electric lamps, arranged on the inner walls of said casing, of a tube horizontally extending from the back wall of said casing carrying electric lamps on its outer surface, of a carriage running on rails provided on the bottom of the casing, of an axle rotatably mounted in the upper end of the carriage-frame adapted to be rotated by means of a crank-handle from outside the disinfecting-casing, of shaking-pieces of triangular cross-section arranged on said axle distant from each other and of a cylindrical-shaped wire cage suspended on said shaking-pieces and adapted to receive the objects to be disinfected, substantially as described and shown and for the purpose set forth.

757,807. PHYSICIAN'S EXAMINING AND TREATING COUCH OR TABLE. CHARLES C. HAZARD, Washington Court-House, Ohio. Filed July 10, 1903. Serial No. 165,008. (No model.)

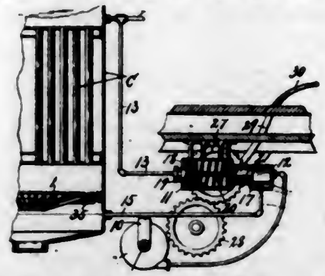


*Claim.*—1. In a surgical table or similar device having a movable and a stationary section, an elevating-bar pivoted at one end to the moving section, a winding-drum mounted on the stationary section, a flexible connection between the moving section and the free end of the elevating-bar and wound about said drum, a curved guideway for the free end of said bar, the curvature of said guideway being determined by the length of said bar, the substantially vertical movement of the pivoted end thereof and the maintenance of tautness in said flexible connection; and means for revolving said drum.

2. A surgical table or similar device having a movable and a stationary section, elevating mechanisms at each end of said table comprising a pair of rigidly-connected elevating-bars pivotally connected at their ends to the movable section, a shaft on the stationary frame, winding-drums and a worm-wheel on said shaft, flexible connections between the movable section and the free ends of said bars and wound about said drums, and curved guideways on the stationary section for the free ends of said bars, the said guideways being so curved as to effect a substantially vertical movement of the pivoted ends of the bars and maintain tautness in the flexible connections; a power-shaft and worms thereon adapted to engage said worm-wheels, and means for revolving said power-shaft.



757,808. STEAM-PROPELLED VEHICLE. HENRY K. HESS, Philadelphia, Pa. Filed Dec. 21, 1901. Serial No. 86,742. (No model.)



*Claim.*—In a steam-propelled vehicle, the combination with an engine and a steam-boiler mounted on the vehicle, an air-blast device connected to and actuated by the engine, a steam-cylinder connected to the boiler and receiving steam therefrom, a piston in the cylinder actuated in one direction by the steam-pressure, a spring for returning the piston, an air-chamber connected to and receiving air from the air-blast device and provided with an exhaust-port communicating with the combustion-chamber of the boiler, and a valve in the air-chamber operatively connected to and actuated by the piston and movable across the exhaust-port to close and open the port as the steam-pressure in the cylinder raises and lowers.

757,809. BINDING-POST. STEPHEN C. HOUGHTON, San Francisco, Cal. Filed Dec. 30, 1903. Serial No. 187,167. (No model.)



*Claim.*—1. A post having a hole and an inclined wire-engaging face at the side of said hole, a wire-receiving opening in the post intersecting a portion of said wire-engaging face, and a wire-holding wedge which enters said hole, the wire being held in firm engagement with said inclined face by the inclined portion of said wedge, substantially as described.

2. A post having a hole and an inclined wire-engaging face at the side of said hole, a transverse wire-receiving slot in said post leading to said inclined wire-engaging face, and a wire-holding wedge which enters said hole, the wire being held in firm engagement with said inclined face by the inclined portion of said wedge, substantially as described.

3. A post having a hole and a wire-engaging face at the side of said hole, a longitudinal wire-receiving slot in the post, intersecting a portion of said wire-engaging face, and a wire-holding wedge which enters said hole, the wire being held in firm engagement with said face by the inclined portion of said wedge, substantially as described.

4. A post having a hole with a conical recess at the bottom and a wire-engaging face at the side of said conical recess, a wire-receiving slot in the post intersecting a portion of said wire-engaging face, and a screw having a conical end which enters said hole, the wire being held in firm engagement with said face by the conical end of said screw, substantially as described.

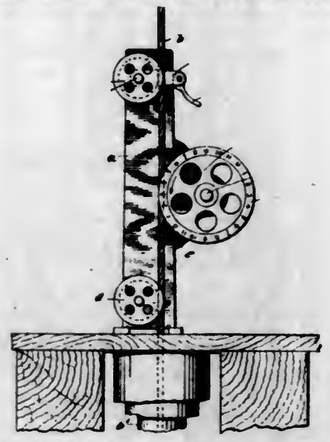
5. A post having a hole with a conical recess at the bottom and a wire-engaging face at the side of said conical recess, a transverse wire-receiving slot in the post leading to said wire-engaging face, and a screw having a conical end which enters said hole, the wire being held in firm engagement with said face by the conical end of said screw, substantially as described.

6. A post having a hole and a wire-engaging face at the side of said hole, a longitudinal wire-receiving slot in the post leading to said wire-engaging face, and a screw having a conical end which enters said hole, the wire being held in firm engagement with said face by the conical end of the screw, substantially as described.

7. A post having a screw-threaded shank, said shank having a hole and a wire-engaging face at the side of said hole, a longitudinal wire-receiving slot in the post leading to said wire-engaging face and a wedge having a clamping end which enters said hole, thereby forming a wire-receiving space between said wedge and the outer wall of said shank.

8. In a binding-post a threaded cylindrical shank, longitudinally slotted and tapped to receive a conically-pointed binding-screw, a conical wire-engaging face cooperating with said screw, said longitudinal slot forming an entrance-passage for a terminal wire.

757,810. MEASURING APPARATUS. CHARLES R. HUDSON, Warren, Ind. Filed Mar. 14, 1901. Serial No. 51,090. (No model.)



*Claim.*—A well-depth-measuring apparatus, comprising a vertically-extending frame, a register comprising a drive-wheel mounted on the frame intermediate its ends, the drive-wheel being adapted to be engaged by the well-rope, a rope-guide at one side of the drive-wheel and above the same, a rope-guide at the other side of the drive-wheel below the same, a clamp-frame movably mounted in the main frame transversely to the line of the rope and carrying one of said rope-guides, and a cam working with the clamp-frame to move the same horizontally, whereby to bind the rope against the drive-wheel of the register.

757,811. COMBINED CAR BRAKE AND STARTER. HENRY E. KELLOGG and GEORGE F. SWAIN, Harvey, Ill. Filed Mar. 30, 1903. Serial No. 150,130. (No model.)

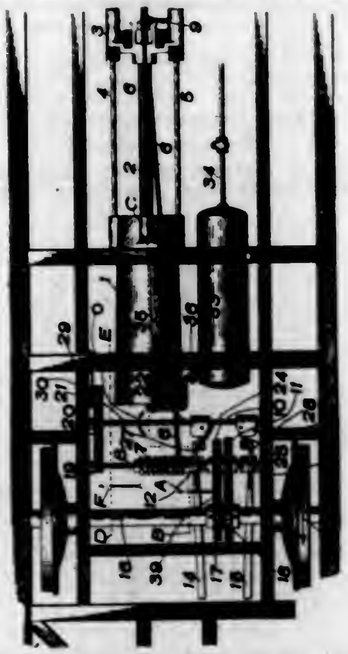
*Claim.*—1. A combined car brake and starter, comprising the combination with a car-axle, of a power-transmission shaft connected thereto and adapted to be rotated in one direction thereby, means providing an elastic resistance, means connecting said shaft with the resisting means, whereby said shaft is adapted to rotate in the opposite direction, means for locking the car-axle against movement in either direction, and means for disconnecting the axle and the power-shaft alternately operated by said axle and elastic resistance, substantially as described.

2. In a combined car brake and starter, a car-axle, and elastic resistance, a power transmission shaft, means operatively connecting said power-shaft with the elastic resistance, means for connecting said shaft with the axle, and means for disconnecting the axle from the power-transmission shaft, said means being alternately operated by the car-axle and the elastic resistance, substantially as described.

3. In a combined car brake and starter, a car-axle, an elastic resistance and a power-transmission shaft, and operative means adapted to be manipulated to hold the transmission-shaft from revolving in one direction, and the car-axle from revolving in either direction, and to release the said shaft and thereby the car-axle so that the latter may revolve in either one of both directions, at the will of the operator.

4. In a combined car brake and starter, a car-axle and an elastic

resistance, a power-transmission shaft, the latter connected to the elastic resistance and adapted to be revolved thereby in one direction, and adapted to be connected to the axle and be revolved thereby in either the same or the opposite direction thereof, in combination with means operated alternately by the elastic resistance and the car-axle, and adapted to disengage the car-axle from the transmission-shaft, when the latter has revolved to a desired limit.



5. An apparatus of the character described comprising a car-axle and an elastic resistance, a power-transmission shaft, the latter connected to the elastic resistance and adapted to be revolved thereby in one direction, and adapted to be connected to the axle and be revolved thereby in either the same or the opposite direction thereof, in combination with means operated alternately by the elastic resistance and the car-axle from the transmission-shaft during the time the latter is revolving back to its initial position, adapted to disconnect the axle from the power-shaft, and a stop adapted to limit such revolving movement.

6. In a combined car brake and starter, a car-axle and an elastic resistance, and means for connecting the latter with the axle whereby power is transmitted to revolve the axle in either direction, or to transmit power from the axle to the elastic resistance when the car-axle is revolving in either one of both directions, the elastic resistance consisting of compressed air and means for maintaining the latter in a compressed state.

7. In a device of the type set forth the combination with a car-axle, a power-transmission shaft adapted to be rotated in one direction by said axle, an elastic resistance connected with said shaft and adapted to rotate the same in the opposite direction, means for locking said shaft against movement in either direction, and rotatable means adapted to unlock said last-named means, substantially as described.

8. In a device of the character described, a car-axle, an elastic resistance, a power-shaft adapted to alternately work against and be rotated by said resistance, means adapted to communicate motion from the car-axle to said shaft, locking means to hold said axle from revolution in either direction, and means connected to said power-shaft adapted to disengage said locking means to permit movement of the car-axle, substantially as described.

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**757,812. BOARD FOR BUILDING PURPOSES.** Atwood R Keyes, Ayer, Mass. Filed Aug. 13, 1903. Serial No. 169,314. (No model.)

*Claim.*—1. A board for building purposes, having at its end two series of longitudinal locking-tongues the outer ends whereof are located in two intersecting, transverse planes, the tongues of one series being located opposite the spaces between those of the other series.



2. A board for building purposes, having at its end two series of longitudinal locking-tongues the outer ends whereof are located in two intersecting, transverse planes oblique to the upper and lower sides of the board, said outer ends of the tongues of one series forming continuations of the bottoms of the spaces or grooves between the tongues of the other series.

3. A board for building purposes, having at its end two series of longitudinal locking-tongues the outer ends whereof are located in two planes oblique to the upper and lower faces of the board and intersecting midway therebetween, the tongues of one series being offset laterally with relation to the tongues of the other series.

4. A board for building purposes, having at its end two series of longitudinal locking-tongues the outer ends whereof are located in two planes oblique to the upper and lower faces of the board and intersecting at right angles midway therebetween, the tongues of one series being offset laterally from those of the other series.

5. A board for building purposes, having at each end two series of longitudinal locking-tongues the outer ends whereof are located in two planes oblique to the upper and lower faces of the board and intersecting midway therebetween, the tongues of one series being offset laterally with relation to those of the other series.

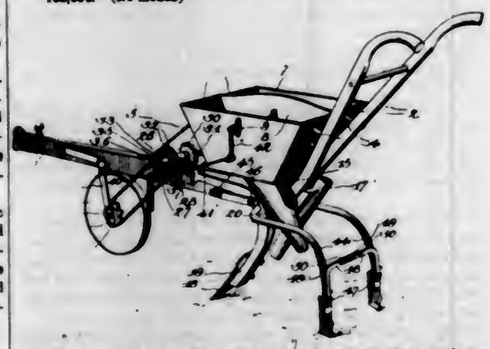
6. A board for building purposes, having at each end two series of longitudinal locking-tongues the outer ends whereof are located in two planes oblique to the upper and lower faces of the board and intersecting, the ends of the upper series of tongues at one end of the board being parallel to the ends of the tongues of the lower series at the other end of the board, and vice versa.

7. A board for building purposes, having at its end two series of longitudinal locking-tongues the outer ends whereof are located in two planes oblique to the upper and lower faces of the board and intersecting midway therebetween, the bottoms of the spaces or grooves between the tongues of one series lying in the plane of the ends of the tongues of the other series.

8. A board for building purposes, having at each end two series of longitudinal locking-tongues the outer ends whereof are located in two planes oblique to the upper and lower faces of the board and intersecting at right angles midway therebetween, the ends of the tongues of one series lying in the plane of and opposite the bottoms of the spaces or grooves between the tongues of the other series.

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**757,813. SEED-PLANTER AND FERTILIZER-DISTRIBUTER.** John D. Kinsey, Villa Rica, Ga. Filed Nov. 26, 1903. Serial No. 182,658. (No model.)



*Claim.*—1. In a machine of the class described, a beam, a hopper supported above the same and having compartments therein, a vibratory shoe mounted below one of said compartments, a shaft journaled transversely upon the beam, a ratchet-wheel upon said shaft, an arm extending forwardly from the vibratory shoe in the path of said ratchet-wheel, a sprocket-wheel mounted loosely upon the transverse shaft, an earth-engaging wheel, means for transmitting motion from the latter to the loose sprocket-wheel, and clutch means for locking the latter upon the transverse shaft.

2. In a machine of the class described, a beam, a hopper supported above said beam, distributing means including a vibratory shoe having a forwardly-extending non-resilient arm, a ground-engaging wheel, a shaft supported transversely upon the beam, means including clutch mechanism for transmitting motion from the ground-engaging wheel to said shaft, and a ratchet-wheel upon said shaft adapted to engage the arm extending from the vibratory shoe.

3. In a machine of the class described, a beam, a hopper supported above the same, distributing means including a vibratory shoe having a forwardly-extending arm and a shaft supported transversely upon the beam, a ratchet-wheel upon said shaft disposed in the path of the arm of the vibratory shoe, a sprocket-wheel mounted loosely upon the transverse shaft and having an annular series of ratchet-teeth in one side thereof, a collar secured upon the shaft and carrying a casing provided with diametrically opposite slots at its outer end, a spring-actuated bolt in said casing engaging the ratchet-teeth in the sprocket-wheel, a pin extending transversely through the beam and normally engaging the slots at the outer end of the casing, a ground-engaging wheel, and means for transmitting motion from the latter to the sprocket-wheel.

4. In a machine of the class described, mechanism to receive motion from the ground-engaging wheel and to transmit motion to the distributing mechanism, said means including a transverse shaft, a sprocket-wheel mounted loosely upon said shaft and receiving motion from the ground-engaging wheel, a collar mounted securely upon the shaft and having an arm carrying a casing, a spring-actuated bolt in the casing normally engaging ratchet-teeth formed upon the side of the sprocket-wheel, means for withdrawing said spring-actuated bolt and temporarily retaining it out of engagement with said ratchet-teeth, a ratchet-wheel upon the transverse shaft, and a non-resilient arm engaging said ratchet-wheel, preventing backward movement of the shaft.

5. In a machine of the class described, a beam, a standard connected with said beam and carrying a furrow-opener, shanks connected with said beam by means of bolts, one of which extends through the standard, covering-blades at the ends of said shanks, and brackets connected with said shanks by means of bolts which also serve for the securement of the covering-blades, said brackets being overlapped and provided with perforations for the adjustable connection of said brackets.



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**757,814. SEAL-LOCK.** John D. C. Knapp, Minneapolis, Minn. Filed Nov. 2, 1903. Serial No. 179,449. (No model.)



*Claim.*—1. The combination with a hasp, a lock-lever pivoted thereto, and a seal-holder from which the seal can be removed intact only when said lever is in an unlocking position, of a seal-punch, mounted to oscillate with, but to move laterally with respect to, said lock-lever, and one or more cam-dogs, over which said punch rides, under the unlocking movement of said lever, to break the seal, and under which said punch rides under the locking movement of the said lever, without movement to break the seal.

2. The combination with a hasp, a lock-lever pivoted thereto, and a seal-holder from which the seal is removable intact only when said lever is in an unlocking position, of one or more cam-acting ratchet-dogs, and a seal-punch mounted to oscillate with, but to move laterally with respect to, said lever, which punch, under the unlocking movement of said lever, rides over the cam-surfaces of said dogs, and breaks the seal, and under the locking movement of said lever rides under the ratchet-teeth of said dogs and locks said lever against unlocking movements, except when the said lever has first been moved to its locking position.

3. The combination with a hasp, a lock-lever pivoted thereto, and a seal-holder from which the seal can be removed intact only when said lever is in an unlocking position, of a seal-punch, mounted to oscillate with, but to move laterally with respect to, said lever, and a diametrically opposite pair of reversely-extended, pivoted cam-dogs, cooperating with reverse projections of said punch, to cam said punch laterally and break the seal, under the unlocking movement of said lock-lever, but permitting said punch to remain in a retracted position under the locking movement of said lever.

4. The combination with a hasp having a pocket and a seal-detaining flange, of a lock-lever pivoted to said hasp and having a seal-holder, the entrance to which is closed by said detaining-flange when said lever is in locking position, cam-acting ratchet-dogs pivotally mounted within the pocket of said hasp, and a punch-bar having punches working through said lock-lever and into the seal-holder, which punches cause said punch-bar to oscillate with said lever, but permit the same to move laterally, said punch-bar further having projections which ride over said dogs, to break the seal, under the unlocking movement of said lever, but pass under the teeth of said ratchet-dogs, under the locking movement of said lever.

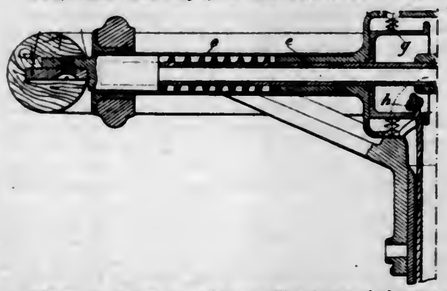
5. The combination with a hasp, a lock-lever pivoted thereto, and a seal-holder from which the seal can be removed intact only when said lever is in an unlocking position, of reversely-acting pairs of pivoted cam-dogs, mounted in said hasp, and a seal-punch, mounted to oscillate with, but to move laterally with respect to said lever, said punch having projections which cooperate with the one pair of cam-dogs, when said lock-lever is moved to one side of its locking position, and which cooperate with the other pair of dogs when said lever is moved on the other side of its locking position, substantially as described.

6. The combination with a hasp having the longitudinally-spaced pairs of vertically-spaced staple-passages, of a lock-lever pivoted to said hasp, and having the reversely-projecting pairs of hooks, the one pair of hooks cooperating with the one pair of staple-passages, and the other pair of hooks cooperating with the other pair of staple-passages, and means for holding the seal when said lever is in a locking position, and for breaking the seal when said lever is moved in either direction away from its locking position, substantially as described.

7. The combination with the hasp 1, having the pocket 6, detaining-flange 17, and the staple-passages 4, of the lock-lever 8, having the reversely-projecting hooks 10, and formed with the seal-holder 13, within which the seal is held by said flange 17 against displacement intact when said lever is in a locking position, the upper and lower pairs of reversely-acting ratchet-toothed cam-dogs 20, pivoted within said pocket 6, and the punch-bar 18, mounted to oscillate and move laterally within said pocket 6, and having the projecting punches 19 working through the back of said seal-holder, whereby said punch-bar is caused to oscillate with said lock-lever, said punch-bar further having projecting ends which, when said lever is moved from its locking position, ride over the diametrically opposite cam-dogs to break the seal, and when said lever is moved toward its locking position, ride under the ratchet-teeth of said dogs, substantially as described.

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**757,815. APPARATUS FOR CONTROLLING THE SPEED OF MOTOR-CAR ENGINES.** Arthur Krebs, Paris, France, assignor to Société Anonyme des Anciens Etablissements Panhard et Levassor, Paris, France. Filed May 8, 1903. Serial No. 156,314. (No model.)



*Claim.*—1. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, means rotatably mounted on said shaft, and means connected with said rotatable means and with the speed-regulating means of the engine for controlling the speed of the engine when said first means is rotated.

2. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, means rotatably mounted on said shaft, and cables having one of their ends secured to said rotatable means and their other ends to the speed-regulating means of the engine for controlling the speed of the engine when said first means is rotated.

3. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said

wheel, sleeves rotatably mounted on said shaft, and means connected with said sleeves and with the speed-regulating means of the engine for controlling the speed of the engine when said sleeves are rotated.

4. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, sleeves rotatably mounted on said shaft, and cables having one of their ends secured to said sleeves and their other ends secured to the speed-regulating means of the engine for controlling the speed of the engine when said sleeves are rotated.

5. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, means rotatably mounted on said shaft, means connected with said rotatable means and with the speed-regulating means of the engine for controlling the speed of the engine when said first means is rotated, and means for locking said rotatable means in its adjusted position.

6. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, sleeves rotatably and slidably mounted on said shaft, means connected with said sleeves and with the speed-regulating means of the engine and adapted when said sleeves are rotated to control the speed of the engine, and means for locking said sleeves in their adjusted position.

7. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, means rotatably mounted on said shaft and provided with winding-drums, and means connected with said drums and with the speed-regulating means of the engine and adapted to operate said latter means when said first means are rotated.

8. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, means rotatably mounted on said shaft and provided with winding-drums, means connected with said drums and with the speed-regulating means of the engine and adapted to operate said latter means when said first-mentioned means are rotated, and means for locking said rotatable means in their adjusted position.

9. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, a cap secured to said wheel, means rotatably mounted on said shaft, means connected with said rotatable means and with the speed-regulating means of the engine and adapted to operate the latter means when said first-mentioned means are rotated, and means for locking said rotatable means to said cap for securing said means in its adjusted position.

10. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, a cap secured to said wheel and provided with serrations, sleeves rotatably and slidably mounted on said shaft and provided with serrations, said serrations registering with and adapted to engage the serrations on said cap for locking said sleeves in their adjusted positions, means for normally retaining the serrations on the sleeves in close engagement with the serrations on said cap, and means connecting said sleeves to the speed-regulating means of the engine and adapted when said sleeves are rotated to operate said latter means.

11. An apparatus for controlling the speed of motor-cars, comprising a hollow steering-pillar, a steering-wheel mounted on said pillar, a shaft extending transversely of said wheel, means rotatably mounted on said shaft, and means traversing said hollow pillar and connected with said rotatable means and with the speed-regulating means of the engine for controlling the speed of the engine when said first means is rotated.

12. An apparatus for controlling the speed of motor-cars, comprising a hollow steering-pillar, a steering-wheel mounted on said pillar, a shaft extending transversely of said wheel, means rotatably mounted on said shaft, cables traversing said hollow pillar and having one of their ends secured to the speed-regulating means of the engine and adapted, when said rotatable means are operated, to operate said speed-regulating means.

13. An apparatus for controlling the speed of motor-car engines, comprising a hollow steering-pillar, a steering-wheel mounted on said pillar, a shaft extending transversely of said wheel, sleeves rotatably mounted on said shaft, cables traversing said hollow pillar and having one of their ends secured to said sleeves and their other ends secured to the speed-regulating means of the engine and adapted, when said rotatable means are operated, to operate said speed-regulating means.

14. An apparatus for controlling the speed of motor-car engines, comprising a hollow steering-pillar, a steering-wheel mounted on said pillar, a shaft extending transversely of said wheel, sleeves mounted on said shaft and provided with winding-drums, cables having one of their ends secured to said drums and their other ends secured to said speed-regulating means and adapted when said sleeves are rotated to operate said speed-regulating means.

15. An apparatus for controlling the speed of motor-car engines, comprising a hollow steering-pillar, a steering-wheel mounted on said pillar, a shaft extending transversely of said wheel, a cylindrical cap secured to said wheel, sleeves rotatably and slidably mounted on said shaft, cables having one of their ends secured to said sleeves and their other ends secured to the speed-regulating means of the engine and adapted when said sleeves are rotated to operate said last-mentioned means, and means for locking said sleeves to the cylindrical cap for securing said sleeves in their adjusted position.

16. An apparatus for controlling the speed of motor-car engines, comprising a hollow steering-pillar, a steering-wheel mounted on said pillar, a shaft extending transversely of said wheel, a cylindrical cap secured to said wheel and provided on its ends with serrations, sleeves rotatably and slidably mounted on said shaft and provided with serrations registering with and adapted to engage the serrations on the ends of the cap for locking said sleeves in their adjusted position, means traversing said hollow pillar and connecting said sleeves and the speed-regulating means of the engine and adapted when said sleeves are rotated to operate said last-mentioned means, and means adapted to normally retain the serrations on said sleeves in engagement with the serrations on the ends of said cap.

17. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, a rotatable and slidable means mounted on said shaft, winding-drums attached to said rotatable means, a cylindrical cap mounted on said wheel, said drums rotating within said cap, and means connecting said drums and the speed-regulating means of the engine and adapted when said rotatable means are rotated to operate said speed-regulating means.

18. An apparatus for controlling the speed of motor-car engines, comprising a steering-wheel, a shaft extending transversely of said wheel, a cylindrical cap mounted on said wheel and provided on its ends with serrations, a rotatable and slidable means mounted on said shaft, winding-drums arranged within said cylindrical cap and secured to said rotatable means, said rotatable means further provided with serrations registering with and adapted to engage the serrations on the ends of the cylindrical cap, means for normally retaining the serrations on the rotatable means in engagement with the serrations on the ends of said cylindrical cap and thereby lock said rotatable means in its adjusted position, and means connected to said drums and to the speed-regulating means of the engine and adapted, when said drums are rotated, to operate said speed-regulating means.

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**757,816. ANKLE-SUPPORTING SHOE.** GUSTAVUS KRIEGER, Brooklyn, N. Y. Filed Dec. 30, 1903. Serial No. 187,045. (No model.)



*Claim.*—1. In an ankle-supporting shoe, a shank-piece or heel-sole, a corset comprising flexible material having stiffener-strips associated therewith, the said flexible material having its lower edge portion turned inward on the line of the lower ends of said strips and secured to the under side of said heel-sole.

2. In an ankle-supporting shoe, a shank-piece or heel-sole secured to the sole of the shoe, a corset having its lower edge portion bent inward and secured to the under side of said heel-sole and its front edge portion secured to the shoe by the ordinary lacing-eyelets of the shoe, and an inner sole placed over said heel-sole.

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**757,817. PROCESS OF ELECTROLYTICALLY EXTRACTING COPPER AND ZINC FROM ORES.** STANISLAW LASKOWSKI, Kielce, Russia. Filed Oct. 10, 1902. Serial No. 126,649. (No specimens.)

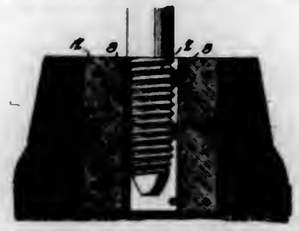
*Claim.*—Process for electrolytically obtaining metals, especially copper and zinc, out of their ores by means of insoluble anodes, consisting in tightly wrapping the insoluble anode in a porous and perfectly permeable envelop of fabric or other suitable material, the thickness of which is in inverse proportion to the applied density of current, for the purpose of preventing anodic oxidation of the cations, substantially as set forth.




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**757,818. BROOM.** FRANK R. LAY, Indianapolis, Ind. Filed Mar. 4, 1903. Serial No. 146,902. (No model.)




*Claim.*—1. As a new article of manufacture, a broom comprising a fibrous body having a handle-socket formed therein, a retaining-band applied to the body, staples extending wholly through the same transversely with their prongs lying within the circumference of the socket at opposite sides thereof, and a handle having a threaded portion extending into the socket with its threads in direct engagement with the staples.

2. As a new article of manufacture, a broom comprising a fibrous body having a handle-socket formed therein, a retaining-band applied to the body, fastening devices extending wholly through the band and fibrous body transversely and having their ends clenched, some of said devices lying within the circumference of the socket at opposite sides thereof, and a handle having a threaded portion extending into the socket with its threads in direct engagement with the fastening devices lying in the socket.

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**757,819. PROCESS OF MAKING CAR-WHEELS.** HENRIK V. LOSS, Philadelphia, Pa., assignor to Charles T. Schoen, Philadelphia, Pa. Original application filed Mar. 7, 1902, Serial No. 97,190. Divided and this application filed July 21, 1902. Serial No. 116,439. (No model.)



*Claim.*—1. The process of making car-wheels, which consists in heating a steel blank of greater thickness and less diameter than the finished wheel and of approximately the shape thereof, and while plastic forging the hub and adjacent portions of the web and while maintaining said hub and adjacent portions of the web in their forged shapes punching the axle-hole, and then roller-finishing the remainder of the web and flanged tread.

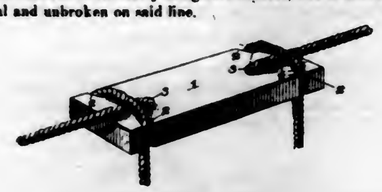
2. The process of making car-wheels, which consists in subjecting a cast-steel blank of greater thickness and less diameter than the finished wheel and of approximately the shape thereof to pressure, and thereby forming the hub and the web adjacent to the hub and while maintaining said hub and adjacent portions of the web in their forged shapes punching the axle-hole in the hub, then roller-finishing the remainder of the web and the flanged tread, and finally dishing the wheel, all in one heat.

3. The process of making car-wheels, which consists in heating a steel blank of greater thickness and less diameter than the finished wheel and of approximately the shape thereof, and while plastic forging the hub and adjacent portions of the web and simultaneously punching the axle-hole and then roller-finishing the remainder of the web and flanged tread.

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**757,820. LINE-HOLDER.** CHRISTIAN LYKER, New Rochelle, N. Y. Filed Jan. 13, 1904. Serial No. 188,910. (No model.)

*Claim.*—A line-holder, consisting of a block having open jam-notches in each side, and having an aperture therein intermediate and to the rear of the line joining said notches, said block being integral and unbroken on said line.



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**757,821. BASIC REFRACTORY MATERIAL.** ALEXANDER T. MACFARLANE, Rochester, England. Filed May 10, 1902. Serial No. 106,758. (No specimens.)

*Claim.*—1. The method of making a refractory material from Portland cement, consisting in mixing cement, in an anhydrous state, with a binding medium and then burning the same, substantially as described.

2. The method of producing a refractory material from Portland cement which consists in mixing said cement with a non-hydrating binding medium, and then burning the same, substantially as described.

3. The method of producing a refractory material from Portland cement and tarry matter, consisting in rendering the cement and tar anhydrous, mixing them together, and then burning them, substantially as described.

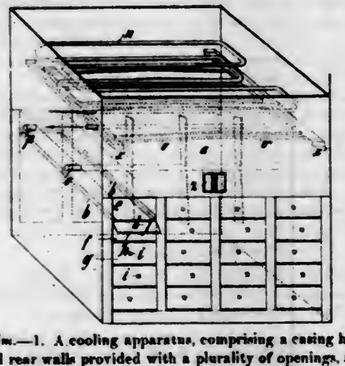
4. The method of making a refractory material from Portland or hydraulic cement, consisting in mixing such cement in a dry powdery state with a non-hydrating binding medium, compressing the whole and then burning the same, substantially as described.

5. A refractory material composed of anhydrous Portland or hydraulic cement and a non-hydrating binding medium burned together, substantially as described.

6. A refractory material consisting of a burned mixture of anhydrous Portland or hydraulic cement and tarry binding medium, substantially as described.

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**757,822. COOLING APPARATUS.** ERNEST P. F. MAGNIER, Amiens, France. Filed Sept. 11, 1903. Serial No. 172,761. (No model.)



*Claim.*—1. A cooling apparatus, comprising a casing having its front and rear walls provided with a plurality of openings, a plurality of guide-rails arranged in said casing, one set for each opening, supporting-frames movable on the guide-rails from the front to the rear of the casing, doors, one for each opening, and signaling means on said doors actuated by the supporting-frames, substantially as set forth.

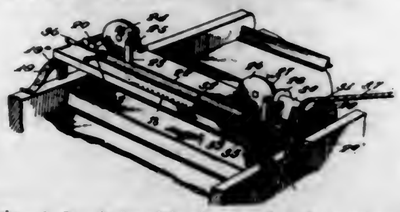
2. A cooling apparatus, comprising a casing having its front and rear walls provided with a plurality of openings, a plurality of guide-rails arranged in said casing, one set for each opening, supporting-frames movable on the guide-rails from the front to the rear of the casing, hinged doors, one for each opening, knobs on said doors, and rods movable in said knobs, substantially as set forth.

3. A cooling apparatus, comprising a casing having its front and rear walls provided with a plurality of openings, a plurality of guide-rails arranged in said casing, one set for each opening, and one set superposed on the other forming tiers, supporting-frames movable on the guide-rails from the front to the rear of the casing, doors for said openings, means arranged in the upper part of the in-

terior of the casing for cooling the air, and means arranged between the adjacent tiers of the supporting-frames for circulating the air in the casing, substantially as set forth.

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**757,823. SHARPENING ATTACHMENT FOR BAND-CUTTERS AND FEEDERS.** JOHN MANDERSON, Seattle, Wash., assignor of one-half to Harold J. Bancroft, Seattle, Wash. Filed Aug. 29, 1903. Serial No. 171,263. (No model.)



*Claim.*—1. In a device of the class described, the combination of a frame and carrying means supported thereby, of band-cutting means supported above said carrier, a spring supporting said band-cutting means, means for adjusting said band-cutting means vertically against the tension of said spring, and means carried by the device for guiding the said band-cutting means in its movement.

2. In a device of the class described, the combination of a frame and carrier-apron, of a plate arranged above said frame, a bracket supporting one end of said plate, a spring supporting the opposite end thereof, guiding means for said plate, and means for adjusting said plate against the tension of said spring and band-cutting means carried by said plate.

3. In a device of the class described, the combination with a frame and a carrier-apron, of a plate above said frame, a spring supported on said frame and carrying said plate, band-cutting means carried by said plate, and means for varying the tension of said spring.

4. In a device of the class described, the combination with a frame and a carrier-apron, of a plate positioned above the same, band-cutting means carried by said plate, a cushion interposed between said plate and frame, a fixed nut carried by the frame, and a bolt engaging said plate threaded into said fixed nut.

5. In a mechanism of the class described, the combination with a carrier-apron, a band-cutting knife arranged transversely thereof, means for swinging said knife longitudinally and edgewise, of a sharpening-tool contiguous to said knife and extending approximately parallel with the same, and means for moving said tool into the plane of the knife, while maintaining the parallelism.

6. In a mechanism of the class described, the combination with a carrier-apron, and a slotted plate arranged above the same, of a knife swinging within said slot, a sharpening-tool mounted contiguous to the plane of said slot, links pivotally engaging said sharpening-tool, a spring engaging one of said links and drawing the same away from said slot, and means adapted to facilitate the swinging of said tool upon its links for bringing the same into the plane of one wall of said slot.

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**757,824. TROLLEY-BASE.** FREDERICK S. MARTIN, Pittsburg, Pa., assignor to R. D. Nuttall Company, a Corporation of Pennsylvania. Filed Sept. 4, 1903. Serial No. 171,862. (No model.)

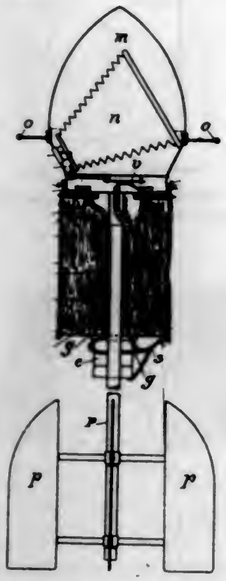


*Claim.*—1. In a trolley-base, a suitable support in the form of a ring, a trolley-arm support in the form of a ring surrounding the first-named ring on both sides thereof, and a ball-bearing between the inner side of the first-named ring and the trolley-arm support.

2. In a trolley for electric railways, a trolley-arm, and a cap supporting the same, a ring to which the said cap is connected, the said ring ending in a yoke, a cooperating ring constituting a support for the structure as a whole and located between the arms of the said yoke, and a ball-bearing between the inner side of the supporting-ring and the inner arm of the yoke

3. In a trolley-base, a suitable support, a cooperating part having a horizontal ball-bearing relation with said support, and a spring of good conducting material between the said support and the said cooperating part.

**757,825. ROCKET APPARATUS FOR TAKING PHOTOGRAPHS.** ALFRED MAUL, Dresden, Germany. Filed June 20, 1903. Serial No. 162,330. (No model.)



*Claim.*—1. In a rocket apparatus for taking photographs, the combination with a casing having compartments adapted to receive rockets, of a cap, means for securing said cap to said casing, and a photographic apparatus within said cap and set obliquely to the axis of the rocket apparatus.

2. In a rocket apparatus for taking photographs, the combination with a cylindrical casing, of a cap, means for securing said cap to said casing, a photographic apparatus within said cap and set obliquely to the axis of said rocket apparatus and means for projecting the said rocket apparatus upward.

3. In a rocket apparatus for taking photographs the combination with a casing, of a cap, means for connecting said cap to said casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus, means for projecting said rocket apparatus upward and means for operating said photographic apparatus at a predetermined time.

4. In a rocket apparatus for taking photographs, the combination with a casing, of a cap, means for connecting said cap to said casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus, means for projecting said rocket apparatus upward, means for operating said photographic apparatus at a predetermined time, and means for preventing a rotary motion of the apparatus in its upward flight.

5. In a rocket apparatus for taking photographs, the combination with a casing, of a cap, means for connecting said cap to said casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus, means for projecting said rocket apparatus upward, means for operating said photographic apparatus at a predetermined time, means for preventing a rotary motion of the apparatus in its upward flight, at least one parachute, means for normally retaining and securing the same to and within said casing, and means for releasing and ejecting the same from the said casing at a predetermined time.

6. In a rocket apparatus for taking photographs, the combination with a casing having compartments adapted to receive rockets, of a cap, a band secured to one end of said casing and screw-bolts passing through said band by means of which the said cap is connected to the casing, and a photographic apparatus within said cap and set obliquely to the axis of the apparatus.

7. In a rocket apparatus for taking photographs, the combination with a cylindrical casing having compartments therein adapted to receive rockets, of a cap, a metal band secured to one end of said casing and screw-bolts passing through the same and by which the said cap is connected to the casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus and rockets



in the said compartments for receiving the same for projecting the apparatus upward.

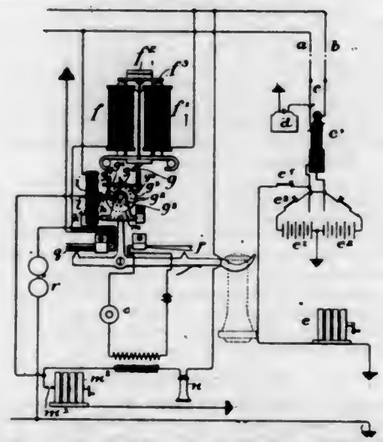
8. In a rocket apparatus for taking photographs, the combination with a casing having compartments therein adapted to receive rockets, of a cap, a metallic band secured to one end of the said casing, screw-bolts passing through the same by means of which the said cap is connected to the casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus, rockets placed within the said compartments for receiving the same and a time-fuse for operating the said photographic apparatus at a predetermined moment.

9. In a rocket apparatus for taking photographs, the combination with a casing having compartments therein adapted to receive rockets, of a cap, a metallic band secured to one end of the said casing, screw-bolts passing through the same by means of which the said cap is connected to the casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus, rockets placed within the said compartments for receiving the same, a time-fuse for operating said photographic apparatus at a predetermined moment, a rod connected to said casing and blades secured to the end of said rod for preventing any rotary motion of the apparatus in its upward flight.

10. In a rocket apparatus for taking photographs, the combination with a casing having rocket-compartments and parachute-compartments, of a cap, a metallic band secured to one end of the said casing, screw-bolts passing through the same by means of which the said cap is connected to the casing, a photographic apparatus within said cap and set obliquely to the axis of the apparatus, rockets placed within the said compartments for receiving the same, a time-fuse for operating said photographic apparatus at a predetermined moment, a rod connected to said casing, blades secured to the end of said rod for preventing any rotary motion of the apparatus in its upward flight, a parachute in each of said parachute-compartments, plates closing said parachute-compartments, devices for normally maintaining said plates in a closed relation for retaining and securing the parachutes to and within said compartments and controlled by said time-fuse for releasing said plates, and springs for ejecting the said parachutes from said compartments after the said plates have been released.

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**757,826. TELEPHONY.** ALBERT MEHREN, Chicago, Ill. Filed Jan. 16, 1904. Serial No. 189,328. (No model.)



*Claim.*—1. In a selective signaling telephone system, the combination with a telephone-line extending to an exchange, of a bodily-movable switch-actuating appliance at a substation of the line controlling the telephone-circuit, electromagnetic mechanism at the substation for operating said switch-actuating appliance, switching mechanism at the exchange for operating said electromagnetic mechanism whereby said switch-actuating appliance may be set in position to close the telephone-circuit controlled thereby, and a telephone switch-hook also controlling the said telephone-circuit serving when released to bodily move said switch-actuating appliance and to complete the closure of the telephone-circuit, substantially as described.

2. In a selective signaling telephone system, the combination with a telephone-line extending to an exchange, of a bodily-movable switch-actuating appliance at a substation of the line controlling the telephone-circuit, electromagnetic mechanism at the substation for operating said switch-actuating appliance, switching mechanism at the exchange for operating said electromagnetic mechanism whereby said switch-actuating appliance may be set in position to close the telephone-circuit controlled thereby, a telephone switch-hook also controlling the said telephone-circuit serving when released to bodily move said switch-actuating appliance and to complete the closure of the telephone-circuit, a signal-receiver at said substation, and a switch controlling the circuit of the signal-receiver closed by the aforesaid switch-actuating appliance when actuated by the operator, substantially as described.

3. In a selective signaling telephone system, the combination with a telephone-line extending to an exchange, of a bodily-movable switch-actuating appliance at a substation of the telephone-line, electromagnetic mechanism at the substation for operating said switch-actuating appliance to close the circuit through the signal-receiver at said station, switching apparatus at the exchange for operating said electromagnetic mechanism, and a telephone-receiver switch-hook serving to engage said switch-actuating appliance to move the same and thereby effect closure of the telephone-circuit, substantially as described.

4. In a selective signaling telephone system, the combination with a telephone-line extending to an exchange, of a bodily-movable switch-actuating appliance at a substation of the telephone-line, electromagnetic mechanism at the substation for operating said switch-actuating appliance, said switch-actuating appliance including a rotating member carrying two pins $g^4$ $k$ of unequal effective length, circuit-controlling springs or elements $i$ $k$ included in the signal-receiver circuit at said substation and adapted to be closed by one of said pins and a telephone contact element $l$, the other of said pins serving to connect the three contact elements $i$ $k$ and $l$, substantially as described.

5. In a selective signaling telephone system, the combination with a telephone-line extending to an exchange, of a bodily-movable switch-actuating appliance at a substation of the telephone-line, electromagnetic mechanism at the substation for operating said switch-actuating appliance, said switch-actuating appliance including a rotating member carrying two pins $g^4$ $k$ of unequal length, circuit-controlling elements $i$ $k$ $l$ controling the telephone-receiver and signal-receiver circuits and adapted to be controlled by such switch-actuating appliance, partially by the switching mechanism at the exchange to effect closure of the signal-receiving circuit, the switch-hook serving to effect bodily movement of the said switch-actuating appliance to effect closure of the telephone-receiver circuit, substantially as described.

6. In a selective signaling telephone system, the combination with a telephone-line extending to an exchange, of a bodily-movable switch-actuating appliance at a substation, electromagnetic mechanism at said station for operating said switch-actuating appliance, switching mechanism at the exchange for operating said electromagnetic mechanism, contact elements controlling the telephone-receiver and signal-receiver circuits at said substation, two of said elements being adapted for engagement through the agency of said switch-actuating appliance when operated from the exchange to effect closure of the signal-receiving circuit, and a switch-hook adapted to effect bodily movement of the switch-actuating appliance to cause the remaining contact element to close the telephone-receiver circuit, substantially as described.

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**757,827. BOX.** MELBOURNE F. MIDDLETON, Camden, N. J. Filed July 15, 1903. Serial No. 165,577. (No model.)



*Claim.*—1. A box-body having a bendable strip confined between the plies thereof, and a separate flanged cover for said box-body having slots for the passage of the ends of said strip, and a reinforce for said slots confined entirely within the flanges of the cover and having right-angled portions parallel with said flanges.

2. A box-body and a bendable strip secured within the same with its ends projecting above the top thereof, combined with a cover for said body having flanges, and a reinforce for said cover secured within the same at the junction of the side flanges and top and hav-

ing holes for the passage of the ends of the bendable strip, said reinforce being confined between the plies of the top.

3. A box-cover for use with a box having a bendable fastening-strip, the said cover having slots for the passage of the ends of said strip and a reinforce affixed within the cover and confined between the plies thereof with its ends bent at right angles and lying alongside the inner faces of the flange of the cover and having slots coincident with those in the cover.

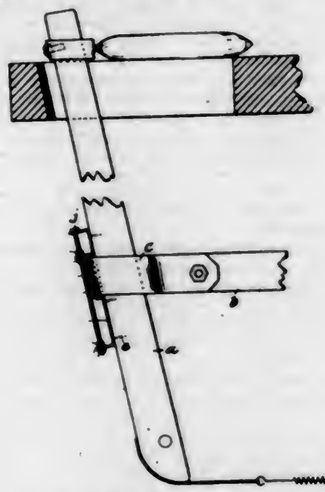
4. A box-body comprising a lower portion with bottom and sides and ends, a portion fitted therein and having its sides extended above the sides of the lower portion, and a bendable strip extended across the bottom and confined between the plies thereof and having its ends disposed vertically and between the sides of the lower and inner portions of the body.

5. A box-body comprising a lower portion with bottom and sides and ends, a portion fitted therein and having its sides extended above the sides of the lower portion, a bendable strip extended across the bottom within the box and having its ends disposed vertically and between the sides of the lower and inner portions of the body, and a flanged cover provided with slots for the passage of the ends of said strip and with a reinforce confined within the flanges thereof.

6. A box-body comprising a lower portion and an inner portion fitted therein, a bendable strip normally confined within the walls of said body between the upper and lower portions with its ends extended vertically above the upper edge of the body, and a cover having a flange to extend over the vertical portions of the strip and over the side portions of the body and to rest on the upper edge of the lower portion and to be pierced by the ends of the vertical portions of the strip.

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757,828. **PICKER-MOTION FOR LOOMS.** DAVID D. MILLER, Middletown, Conn. Filed Oct. 26, 1903. Serial No. 178,495. (No model.)



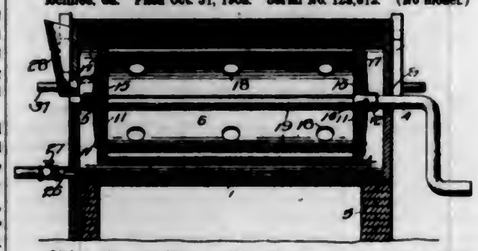
*Claim.*—1. The combination of the picker-stick, the lug-strap, and means for connecting the lug-strap to the picker-stick so as to be adjustable longitudinally of the latter, said means comprising a bracket secured to the picker-stick and having spaced projecting portions disposed the one above the other, a rod extending longitudinally of the picker-stick and mounted in said projecting portions, and a device directly engaged by the lug-strap and connected to the rod for adjustment longitudinally thereof, said device being disposed between said projecting portions, substantially as described.

2. The combination of the picker-stick the lug-strap, and means for connecting said lug-strap to the picker-stick so as to be adjustable longitudinally of the latter, said means comprising a rod extending longitudinally of the picker-stick, means, engaging said rod at spaced points thereon, for securing said rod to the picker-stick, and a device directly engaged by the lug-strap and connected to the rod for adjustment longitudinally thereof between its points of engagement with said securing means, substantially as described.

3. The combination of the picker-stick, the lug-strap, a threaded rod extending longitudinally of the picker-stick, a bracket having spaced projecting portions arranged the one above the other, said rod being mounted in said projecting portions, a loop receiving the lug-strap and penetrated by said rod and disposed thereon between said projecting portions, and nuts engaging the threaded portion of the rod and clamping said loop between them, substantially as described.

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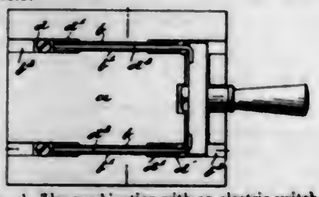
757,829. **WASHING-MACHINE.** JAMES W. MONTGOMERY, Cobbtochee, Ga. Filed Oct. 31, 1902. Serial No. 128,612. (No model.)



*Claim.*—In a washing-machine, the combination with a boiler comprising a lower section and a removable upper section, said lower section having outturned side flanges and the upper section being provided with side bars projecting beyond the ends of the upper section to form handles, said bars also serving to engage the flanges on the lower section and prevent lateral displacement of the upper section when in position.

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757,830. **MEANS FOR PROTECTING LIVE PARTS OF ELECTRIC SWITCHES OR THE LIKE.** WILLIAM MCDEVITT, Philadelphia, Pa., assignor of two-thirds to Washington Devereux and William W. Hollingsworth, Philadelphia, Pa. Filed Sept. 26, 1903. Serial No. 174,690. (No model.)

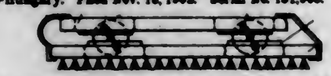


*Claim.*—1. The combination with an electric switch or equivalent device, of an insulating-block surrounding and protecting the live parts of the switch, the block having in its upper portion longitudinal grooves extending from end to end through the block and terminating at either end of the block in enlarged recesses to receive and surround the terminals and contacts of the switch, and the grooves being narrowed intermediate of the end enlargements to snugly fit the blades of the switch.

2. The combination with an electric switch or equivalent device, of an insulating-block, within which the live parts of the switch are concealed, the block having in its upper portion longitudinal grooves extending from end to end through the block and terminating at either end of the block in enlarged recesses to receive and inclose the terminals and contacts of the switch, the grooves being narrowed intermediate of the end enlargements to snugly fit the blades of the switch and the grooved portions of the block being of a depth sufficient to permit the switch parts to enter the block below the upper face thereof, when the switch is closed.

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757,831. **FLOOR OR LIKE BRUSH.** FRANZ NEIDENBACH, Fiume, Austria-Hungary, assignor of one-half to Karl Zellner, Fiume, Austria-Hungary. Filed Nov. 18, 1902. Serial No. 131,903. (No model.)



*Claim.*—1. In a brush for polishing floors and for other like purposes, a thrust-board and flexible connections between the thrust-board and the back of the brush for enabling the said board to be moved in advance of and relatively to the brush at the commencement of each reciprocation substantially as and for the purposes hereinbefore set forth.

2. In a brush for polishing floors and for other like purposes, a thrust-board, flexible connections for attaching the same to the back of the brush but for allowing relative movement, and antifriction



rollers between said board and brush substantially as and for the purposes hereinbefore set forth.

3. In a brush for polishing floors and for other like purposes, a thrust-board, flexible connections for attaching the board to the brush but for allowing relative movement between the two, friction-rollers between the board and brush, slotted disks on the ends thereof and pins on the board and brush engaging in the slots in the disks substantially as and for the purposes hereinbefore set forth.

4. A device for polishing floors and for like purposes, comprising a brush, a loose thrust-board on the back thereof, and means for limiting the relative movement between said board and brush, substantially as described.

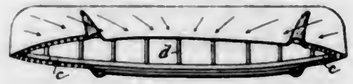
5. A device for polishing floors and for like purposes, comprising a brush, a loose thrust-board on the back thereof, antifriction devices between the board and back, and means for limiting the relative movement between said board and brush, substantially as described.

6. A device for polishing floors and for like purposes comprising a brush, a loose thrust-board on the back thereof and connected thereto by flexible connections, and antifriction devices between said board and back, substantially as described.

7. A device for polishing floors and for like purposes, comprising a brush, a loose thrust-board on the back thereof and connected thereto by straps, antifriction-rollers between the board and back, slotted disks on the ends of the rollers, and pins on the board and brush engaging in the slots in the disks, substantially as described.

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757,832. **BOAT.** JOHN C. NICHOL, Montreal, Canada. Filed May 21, 1902. Serial No. 108,400. (No model.)



*Claim.*—1. In the manufacture of a boat first saturating a single sheet of heavy felted fabric with a resinous substance, then applying said sheet to a mold or pattern which contains a separable keel then attaching the ends of said blank to the ends of said mold, then smoothing said blank upon the mold from the ends toward midships and attaching the edge of the blank to the mold as the smoothing progresses, then drying said fabric and finally removing it from the mold, substantially as described.

2. In the manufacture of a boat first saturating a single sheet of heavy felted fabric with a resinous substance, then applying said sheet to a mold or pattern which contains a separable keel, then drawing the ends of said blank over the ends of the mold and attaching same to the ends of the keel, then smoothing said blank upon the mold from the ends toward midships and attaching the edge of the blank to the mold as the smoothing progresses, then drying said fabric and finally removing it from the mold, substantially as described.

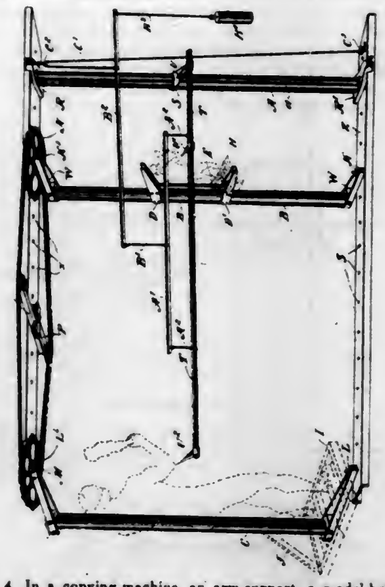
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757,833. **SCULPTOR'S COPYING-MACHINE.** ROBERT T. PAINE, Union, N. J. Filed Nov. 21, 1900. Serial No. 37,266. (No model.)

*Claim.*—1. In a copying-machine, an arm-support, an adjustable collar thereon provided with a socket, a work-holder, a model-holder, means for adjusting the distance between the holders, and means for swinging both holders, in combination with a freely-movable pointing and indicating arm provided with an offset pivot-pin which is loosely held within the socket of the adjustable collar aforesaid, and with pointing and indicating pins offset at the same side of the arm as the pivot-pin, substantially as described.

2. In a copying-machine, an arm-support, an adjustable collar thereon provided with a socket, a work-holder, a model-holder, means for adjusting the distance between the holders, and means for swinging both holders, in combination with a freely-movable pointing and indicating arm provided with an offset pivot-pin which is loosely held within the socket of the adjustable collar aforesaid, and with pointing and indicating pins connected with said arm, and a counterbalance for said arm, substantially as described.

3. In a copying-machine, an arm-support, a work-holder, a model-holder, means for adjusting the distance between the holders, and means for swinging both holders simultaneously, in combination with a pointing and indicating arm, having a pivot-pin offset at one side of the arm, and flexible connections between said arm adjacent said pivot-pin and the arm-support, whereby the arm is pivoted so as to have a free rocking and rotative movement with respect to the arm-support, means whereby said arm may be adjusted along the length of the arm-support, and pointing and indicating pins on the arm, substantially as described.



4. In a copying-machine, an arm-support, a model-holder, a work-holder, means for adjusting the distance between the holders, and means for swinging both holders simultaneously, in combination with a pointing and indicating arm having a pivot-pin, flexible connections between said arm adjacent the pivot-pin and the arm-support, whereby the arm is pivoted so as to have a free rocking and rotative movement with respect to the arm-support, means whereby the arm may be adjusted along the length of the arm-support, and pointing and indicating pins on the arm, substantially as described.

5. In a copying-machine, a base, a model-support and a work-support, means for simultaneously rotating said supports, an upright supported by said base, and an adjustable collar on said upright, in combination with a pointing and indicating arm, a bearing-pin fastened to said arm, and flexible connections fastening said arm to said collar, whereby said bearing-pin is held with its point bearing on said collar, substantially as described.

6. In a copying-machine, a model-support and a work-support, a pointing and indicating arm and a support for said arm, a pivot between said arm and said support, and elastic connections attached to said support and engaging said arm adjacent said pivot, whereby the arm has a free rocking and rotative movement about said support, substantially as described.

7. In a copying-machine, two bearing members, a spacing member between said bearing members, and a pointing and indicating arm pivoted on said spacing member, bearings in said bearing members in line with the pivot-point between said arm and spacing member, and a work-support and a model-support eccentrically mounted in said bearings, substantially as described.

8. In a copying-machine, two bearing members, a vertical spacing member between said bearing members, and a pointing and indicating arm adjustably and flexibly mounted on said spacing member, bearings in said bearing members and in line with the point of contact between said arm and spacing member, and a work-support and a model-support eccentrically mounted in said bearings, substantially as described.

9. In a copying-machine, a model-support, and a work-support, in combination with a pointing and indicating arm, a bearing member attached to said arm, at one side thereof, a support for said arm, and flexible connections between said support and said arm and attached to said arm adjacent the bearing member, whereby the end of the bearing member is held in contact with said support.

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757,834. **MECHANICAL TOY.** LORENZO D. PATTEN and DAVID LIPPY, Mansfield, Ohio, assignors of one-third to George Morehouse, Mansfield, Ohio. Filed Aug. 12, 1903. Serial No. 169,241. (No model.)

*Claim.*—In a mechanical toy, the combination of a platform pro-

vided with downturned axle-bearing flanges, a crank-axle journaled in the downturned flanges, a tongue connected to the forward end of the platform, and a traveling wheel carried by the tongue, a crocodile or alligator body mounted on the platform, a pivoted jaw connected to the body, a downward-extended arm secured to the jaw at its hinged or pivoted end, and a pitman connected to jaw-arm at one end and its opposite end journaled to the crank-axle, substantially as and for the purpose set forth.



## 757,885. EYE-EXTRACTOR FOR FRUITS OR VEGETABLES.

ROBERT PATTERSON, Rochester, N. Y., assignor of one-half to James L. Whalen, Rochester, N. Y. Filed Jan. 6, 1904. Serial No. 187,919. (No model.)



*Claim.*—1. An eye-extractor for fruits and vegetables, comprising a barrel open at its forward end and formed with a cutting edge, and a cutter mounted on and held in the barrel to move in the arc of a circle toward its forward end, and means for controlling the cutter.

2. An eye-extractor for fruits and vegetables, comprising a barrel open at its forward end and formed slanting and with an advance cutting edge, and a cutter pivoted to the barrel adapted to move across the open end of the barrel, and a spring arranged to act upon said cutter for holding the cutter distant from the open end of the barrel.

3. An eye-extractor for fruits and vegetables, comprising a barrel open at its forward end and formed slanting and with an advance cutting edge, and a hollow cutter mounted on the barrel to have motion in the latter toward and across its open end, and means for actuating the cutter.

4. A device of the kind described, comprising a barrel having a cutting edge at one end, and a cutter in the barrel and adapted to move toward and across the open end of the barrel, said cutter being held by a lever joined pivotally to the barrel, and a spring disposed to normally hold the cutter away from said open end.

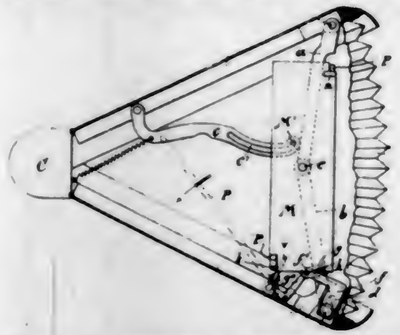
5. An eye-extractor for fruits and vegetables, comprising a barrel open at its forward end and formed with a cutting edge, and a cutter held in the barrel to move toward and across its open end, and an ejector held by the barrel to act at the front end of the barrel.

6. A device of the kind described, comprising a hollow metal barrel open at one end, and having a cutting edge, a perforated lever held pivotally to the barrel partly without and partly within the latter, and a cutter at the inner end of the lever, and an ejecting-spring longitudinally disposed under the barrel and passing through the lever.

7. A device of the kind described, comprising a barrel having a cutting edge at one end, and a cutter in the barrel held by a lever joined pivotally to the barrel, to move endwise in the barrel, and a longitudinally-disposed spring held by the barrel with its forward end resting on the inner surface of the barrel near said cutting edge.

8. A device of the kind described, consisting of a hollow, metal barrel open at one end and having a cutting edge thereat, and a cutter pivoted to the barrel and held to move pivotally therein, means for moving the cutter on its pivot, the edge of said cutter being adapted to meet the inner concave surface of the barrel and curved to have a continuous line of contact with said surface of the barrel.

## 757,886. PHOTOGRAPHIC CAMERA. JEAN A. PAUTARD, Geneva Switzerland. Filed July 31, 1901. Serial No. 70,313. (No model.)



*Claim.*—1. The combination with opposite camera sides connected to a lens-holder and adapted to be swung toward and away from each other, of a virtually-equilibrated plate-magazine between said sides, supporting means extending from both camera sides and being permanently connected to said magazine, said means being adapted to transmit movement of the camera sides to automatically turn said magazine into focal plane when the sides are opened and to lay it between said sides when the same are closed, and means for removing the foremost plate and holding it along the camera side against which the back of the magazine is brought in closing the camera.

2. The combination with opposite hinged camera sides connected by bellows-closure, of knuckle-levers hinged at their outer ends to said sides, a plate-magazine pivotally mounted upon the inner ends of said knuckle-levers, a guiding-lever projecting from one side and slidably engaging said magazine, a plate-manipulating lever on one of said sides, and means to operate said plate-manipulating lever.

3. The combination with two camera-sections adapted to be drawn apart and connected by bellows-closure, of a plate-magazine between said sections and free therefrom at its ends, supporting means permanently connecting said magazine intermediate of its ends to both camera-sections and adapted to swing it into transverse position when the said sections are opened apart and to bring it flatwise therebetween when closed, and means for removing the foremost plate and laying the same in the section against which the back of the magazine is brought in closing the camera.

4. The combination with two hinged camera-sections, of knuckle-levers joining said camera-sections, a plate-magazine pivotally mounted upon said knuckle-levers and supported thereby, means adapted to turn the said magazine in transverse position when the said camera-sections are opened apart and lay it flatwise therebetween when closed, means for locking the magazine in position when arriving in transverse position, means for releasing it and removing the foremost plate while in this position, and means for holding said plate upon the camera-section against which the back of the magazine is brought in closing the camera.

5. The combination with a plate-magazine pivotally mounted between two hinged camera-sections adapted to be opened apart, of supporting-levers for said magazine pivoted at their outer ends upon said two camera-sections and adapted to positively translate their reciprocal movements to said magazine to control its position between said camera-sections as they are opened and closed, means for removing the exposed plate and means for holding it along the camera-section against which the back of the magazine is brought in closing the camera.

6. The combination with a camera having opposite side sections adapted to swing toward and away from each other and a plate-magazine therebetween, of arms pivoted at their opposite ends to said side sections and having their adjacent ends pivoted together and pivotally connected to the magazine, means upon one section for guiding the pivotal movement of the magazine, and a plate-manipulating device secured to one of said sections.

7. The combination with a plate-magazine pivotally mounted between opposite camera sides connected to a lens-box and adapted to be swung toward and away from each other, of knuckle-levers pivoted at their outer ends to the said camera-sections and to the pivotal axis of the magazine at their opposite ends, guiding means slidably engaging said magazine to direct its movements, plate-manipulating levers upon one of the hinged camera-sections and adapted to engage and disengage the plates in turn as the hinged sections are opened and shut, and operating means for said plate-manipulating levers.

8. The combination with the hinged sides A, B, magazine M, pivotally mounted therebetween, and knuckle-levers *a*, *b*, one of which is pivoted to one of said sides in a slot *d*, of a plate-manipulating lever fulcrumed on said slotted side, and an arm *f*, extending from said knuckle-lever pivoted as set forth to said plate-lever.

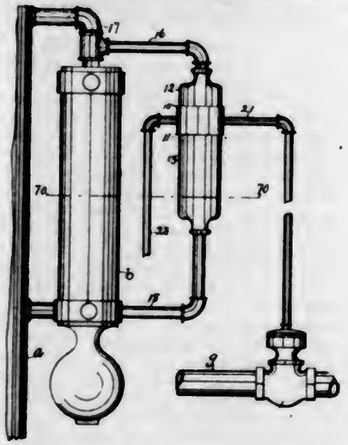
9. The combination with the hinged sides A, B, and magazine M, pivotally mounted between said sides upon knuckle-levers *a*, *b*, pivoted at their ends to said hinged sides, one of said sides having a slot *d*, receiving the pivotal pin of its knuckle-lever and a shoulder $d^3$, at one side of said slot, and the said lever having a stop adapted to clear said shoulder only when the lever is extended, of plate-manipulating means connected to said lever and adapted to be operated by the sliding of said lever in said slot *d*.

10. The combination of the hinged sides A, B, one having a slot *d*, knuckle-levers *a*, *b*, pivoted at their outer ends to said sides, one in the said slot a magazine pivotally mounted upon the adjacent ends of said levers, stop means for causing the slipping of the knuckle-lever pivot in said slot at the predetermined time and plate-manipulating means connected to said slipping lever and operated thereby.

11. The combination with the hinged sides A, B, one having a slot *d*, knuckle-levers *a*, *b*, pivoted at their opposite ends to said hinged sides, one in the slot *d*, and a plate-magazine pivotally mounted on the meeting ends of said levers, of a plate-manipulating lever fulcrumed upon the said slotted side, means connecting said plate-lever to the knuckle-lever, and stop means for causing the slipping of said knuckle-lever at predetermined times.

12. The combination with the hinged sides A, B, knuckle-levers *a*, *b*, and magazine M, pivotally mounted on said levers, of a plate P, having a pin *k*, at its lateral edge and being exposed by said magazine, a plate-manipulating lever *g*, fulcrumed on one hinged side and adapted to engage said pin, and means connecting said plate-lever to a knuckle-lever to actuate the same.

## 757,837. FEED-WATER REGULATOR. JOHN B. PERKINS, Revere, Mass. Filed Feb. 21, 1901. Serial No. 48,304. (No model.)



*Claim.*—1. The combination with a boiler, of a valve controlling the supply of water thereto, a piston connected with said valve to open the same, a cylinder in which said piston moves, a spring to close said valve, a valve-casing communicating with said cylinder and with said boiler, a regulating-valve in said casing controlling the passage of steam from the boiler to said cylinder and from the said cylinder to the exhaust therefor, and a float operatively connected to said regulating-valve and responsive to variations in the level of the water in the boiler to move said regulating-valve when the water in the boiler falls below a predetermined level and admit steam from from the boiler into said cylinder, and to move said valve in the opposite direction to cut off the cylinder from the boiler and connect said cylinder with the exhaust for the same when the said water rises to said predetermined level, substantially as described.

2. The combination with a boiler, of a valve controlling the supply of water thereto, a piston connected with said valve, a cylinder in which said piston moves, a diaphragm in said cylinder and coöperating with said piston, a spring to move said piston in opposition to said diaphragm, a casing communicating with said boiler and with the diaphragm-containing cylinder, a regulating-valve controlling the passage of steam from the boiler to said cylinder and from said cylinder to the atmosphere, and a float in said casing connected to said regulating-valve to move in the same direction, whereby the said regulating-valve is opened as the water in the boiler falls below a predetermined level to admit steam into the diaphragm-chamber and move the piston to open the water-supply valve and to close the exhaust for the said cylinder, and to cut off the supply of steam to the cylinder and connect it with the exhaust when the water in the boiler reaches a predetermined point, substantially as described.

3. The combination with a boiler, of a casing provided with a steam-chamber in communication with the steam-space of the boiler, and with a water-chamber in communication with the boiler below the normal water-line therein, a partition-wall in said casing provided with separate passages, a valve-cylinder extended above and below said partition-wall and provided with a port communicating with one of said passages in the partition-wall, a plurality of ports in the portion of the cylinder above said partition-wall, adapted to communicate with both of said passages, a piston-valve movable in the portion of the cylinder above the partition-wall and controlling the communication between said ports and said passages, and a float in the said water-chamber connected to said pieton-valve, substantially as described.

4. The combination with a boiler, of a casing provided with a steam-chamber in communication with the steam-space of the boiler and with a water-chamber in communication with the boiler below the normal water-line therein, a steam-outlet passage from said steam-chamber, a valve-cylinder extended into said steam-chamber and provided with a steam-port to establish communication between said steam-chamber and said steam-outlet, and with a second port to establish communication between said steam-chamber and a steam-exhaust passage, a valve in said cylinder to coöperate with the said ports, and a float in the water-chamber connected to said valve to move the same and close the exhaust-port when the steam-outlet is opened and vice versa, substantially as described.

5. The combination with a boiler, of a casing provided with a steam-chamber in communication with the steam-space of the boiler, and with a water-chamber in communication with the boiler below the normal water-line therein, separate steam-outlet passages from said steam-chamber, a valve-cylinder extended into said steam-chamber intermediate said steam-outlet passages and provided with a plurality of ports arranged at different levels and adapted to communicate with said steam-chamber, a valve in said cylinder coöperating with said ports to open and close the same in succession and to cut off communication between said passages in one position and to establish communication between the same in another position, and a float in the water-chamber connected to said valve to operate, substantially as described.

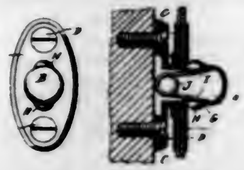
6. The combination with a casing provided with a partition-wall, a conical wall extended from said partition-wall, a valve-cylinder extended through said partition-wall and secured to said conical wall to form therewith a chamber, ports or openings in said valve-cylinder, a valve coöperating with said ports, ports or passages in the partition-wall, and a float connected to said valve, substantially as described.

7. The combination with a boiler provided with a water-inlet valve, a piston connected to said valve, and a cylinder in which said piston moves, of means to connect the said cylinder with the steam-space of the boiler and to connect said cylinder with the exhaust when the supply of steam is cut off, means responsive to the variation of the level of the water in said boiler to control the admission of steam into said cylinder and open said water-valve, means to resist the opening of said water-valve and to close the same, and means to adjust the said resistance according to the pressure in the said boiler, substantially as described.

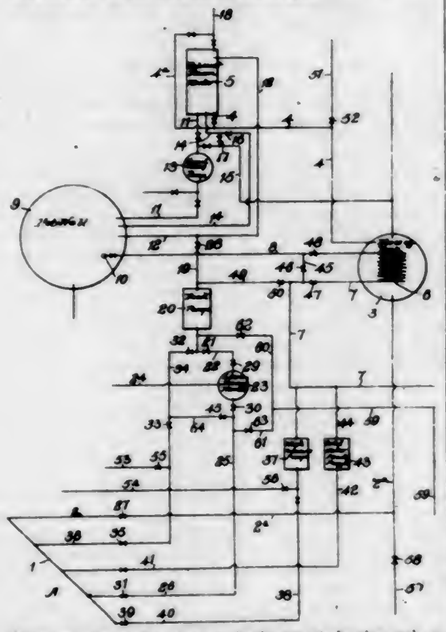
## 757,838. CURTAIN-FASTENER. FRANK P. PULSIFER, New Haven, Conn., assignor to the English & Merwick Co., New Haven, Conn., a Corporation. Filed Nov. 2, 1903. Serial No. 179,479. (No model.)

*Claim.*—1. A curtain-fastener comprising a plate and a post, said post made with a chamber opening through said plate, said post formed with holes in opposite sides, plungers projecting through said holes beyond the outer surface of said post, said plungers secured to the ends of a spring seated within said chamber, substantially as described.

2. A curtain-fastener comprising a plate and a post, said post made with a chamber opening through said plate, said post formed with holes in opposite sides, plungers projecting through said holes beyond the outer surface of said post, said plungers secured to the ends of a coiled spring seated within said chamber, substantially as described.



## 757,839. METHOD OF CLEANING AND RESTORING BOILERS TO SERVICE CONDITION. ALBERT R. RATHER, Beaver, Pa. Filed Nov. 27, 1903. Serial No. 182,864. (No model.)



*Claim.*—1. As an improvement in the art of cleaning and restoring boilers to service condition the method herein described consisting in heating water with the discharged foul contents of a boiler and replacing such foul contents with the water heated thereby, substantially as set forth.

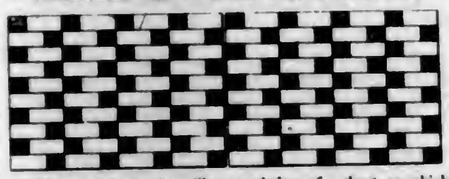
2. As an improvement in the art of cleaning and restoring boilers, to service condition, the method herein described, which consists in discharging the foul contents from the boiler, transferring the heat of the discharged contents to a fresh body of water, and feeding such heated water to the boiler, substantially as set forth.

3. As an improvement in the art of cleaning and restoring boilers to service condition, the method herein described, which consists in discharging the foul water from the boiler, transferring the heat of the foul water to a fresh body of water heating the fresh body of water above 212° Fahrenheit and feeding such superheated water to the boiler, substantially as set forth.

4. As an improvement in the art of cleaning and restoring boilers to service condition, the method herein described which consists in discharging the foul water from the boiler while under pressure, recharging the boiler with fresh heated water and maintaining pressure in the boiler during and between such discharging and recharging, substantially as set forth.

5. As an improvement in the art of cleaning boilers and restoring them to service condition, the method herein described, which consists in discharging the foul water from the boiler, filling the boiler with heated water and then subjecting the water in the boiler to a testing pressure substantially as set forth.

## 757,840. SUBSTITUTE FOR TILING. EMILE REISENSTEIN, Waltham, Mass. Filed Oct. 13, 1903. Serial No. 176,837. (No model.)



*Claim.*—1. Imitation tiling consisting of a sheet on which is represented a plurality of tiles of at least two different sizes, the representation of such larger and smaller tiles being alternate at the edges of said sheet, whereby the abutting line of contiguous sheets is rendered less distinguishable.

2. Imitation tiling consisting of a sheet on which is represented a plurality of courses, each consisting of alternately-disposed larger and smaller tiles so arranged that certain of the lines indicating the edges of said tiles and crossing the course-lines are continuous, whereby the abutting line of contiguous sheets is rendered less distinguishable.

3. Imitation tiling consisting of a sheet on which is represented a plurality of courses, each consisting of alternately-disposed larger and smaller tiles separated by well-defined lines so arranged that certain of said lines crossing the course-lines will be continuous, whereby the abutting line of contiguous sheets is rendered less distinguishable.

## 757,841. DRAFT AND BUFFING MECHANISM. FREDERIC W. RITTER, Jr., Washington Grove, Md. Filed Jan. 22, 1904. Serial No. 190,253. (No model.)



*Claim.*—1. In a draft and buffing mechanism, the combination with a friction element having an inclined face, of a relatively fixed friction element engaging therewith, a friction element engaging said first-named friction element and relatively movable with respect thereto, said friction element having an inclined face, a friction element relatively fixed with respect to said last-named friction element and relatively movable with respect to said first-named relatively fixed friction element, and means whereby the relative movement of the friction elements induces friction between said friction elements, substantially as and for the purposes specified.

2. In a draft and buffing mechanism, the combination with a friction element having an inclined face, a relatively fixed friction element having an inclined face, a friction element engaging said first-named element and being relatively movable with respect thereto, said friction element also having an inclined face, and means whereby friction is induced between the relatively movable friction elements, substantially as and for the purposes specified.

3. In a draft and buffing mechanism, the combination with a plurality of relatively movable friction elements having inclined faces, of a friction element engaged thereby, said friction element being relatively fixed with respect to one and relatively movable with respect to another of said first-named friction elements, and means whereby friction is induced between the relatively movable friction elements, substantially as and for the purposes specified.

4. In a draft and buffing mechanism, the combination with a coacting friction element, of relatively movable sets of friction elements, each set comprised of relatively fixed elements one of which frictionally engages an element of another set of friction elements, and means for inducing friction between the frictionally-engaged elements, substantially as and for the purposes specified.

5. In a draft and buffing mechanism, the combination with an interposed spring, of relatively movable friction elements which engage each other, said friction elements having inclined faces and each being restrained in its movement in one direction, of means whereby friction is induced between the relatively movable friction elements, substantially as and for the purposes specified.

6. In a draft and buffing mechanism, the combination with an interposed resilient element, of relatively movable friction elements



which engage each other, said friction elements having inclined faces and being movable with a displacement equal to the displacement of the load-applying member, a load-applying member, and an external friction element coacting with said first-named friction elements, substantially as and for the purposes specified.

7. In a draft and buffing mechanism, the combination with a resilient element, of friction elements which engage each other and which are relatively movable with a displacement equal to the displacement of the load-applying member, a load-applying member, and means whereby both abutment reactions of the spring simultaneously induce pressure between the relatively movable friction elements, substantially as and for the purposes specified.

8. In a draft and buffing mechanism, the combination with a spring, of relatively movable sets of friction elements, each set comprised of relatively fixed elements one of which frictionally engages an element of another set of friction elements, and means whereby both abutment reactions of the spring simultaneously induce pressure between the frictionally-engaged elements, substantially as and for the purposes specified.

9. In a draft and buffing mechanism, the combination with a spring, of a coacting friction element, a plurality of friction elements relatively fixed with respect to each other, and means whereby both abutment reactions of the spring simultaneously induce pressure between one of said relatively fixed friction elements and said coacting friction element, substantially as and for the purposes specified.

10. In a draft and buffing mechanism, the combination with a spring, of friction elements seated on each end thereof, said friction elements having inclined faces, a friction element engaging therewith and being relatively fixed with respect to one and relatively movable with respect to another of said friction elements, said last-named friction element also having an inclined face, and means for limiting the travel of said friction elements, substantially as and for the purposes specified.

11. In a draft and buffing mechanism, the combination with an interposed spring, of friction elements acted on thereby, said friction elements having inclined faces, friction elements having inclined faces which engage the inclined faces of said first-named friction elements and also friction-faces relatively movable with respect to said first-named friction elements, and an external friction element engaging said last-named friction elements, substantially as and for the purposes specified.

12. In a draft and buffing mechanism, the combination with an interposed spring, of friction elements acted on thereby, said friction elements having inclined faces, friction elements each of which engages said first-named friction elements and which have inclined faces means for limiting the travel of said friction elements, and an external friction element, substantially as and for the purposes specified.

13. In a draft and buffing mechanism, the combination with friction elements which are relatively movable lineally with a displacement equal to the displacement of the load-applying member and which engage each other, said friction elements having inclined faces, of an interposed spring, and means whereby pressure is induced between said friction elements by both spring-abutment reactions, substantially as and for the purposes specified.

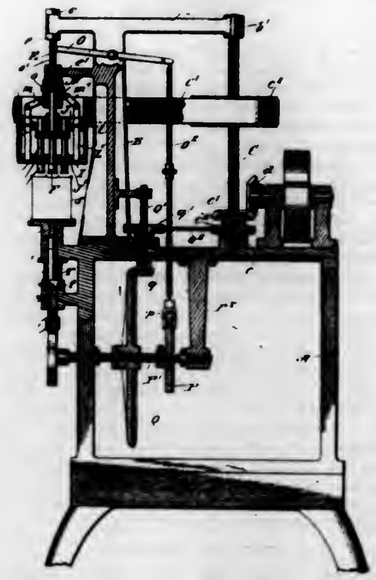
14. In a draft and buffing mechanism, the combination with a spring, of an external coacting friction element, a plurality of friction elements having inclined faces, said friction elements arranged in relatively movable sets comprised of relatively fixed elements, the elements of one set engaging the elements of another set, substantially as and for the purposes specified.

15. In a draft and buffing mechanism, the combination of two friction elements such as 2, two friction elements such as 3, said friction elements 2 and 3 arranged in clusters or sets in which the parts are relatively fixed, the element 2 of one set frictionally engaging element 3 of the other set, and means whereby the relative movement of the friction elements induces friction between said friction elements, substantially as and for the purposes specified.

## 757,842. CAN-CAPPING MACHINE. FRANK ROGERS, New York N. Y. Filed Oct. 1, 1902. Serial No. 125,457. (No model.)

*Claim.*—1. In a can-capping machine, the combination of a rotary head, means for presenting work to said head, mandrels mounted in said head to rotate therewith and each capable of rotation on its axis, means for rotating said mandrels on their axes simultaneously with the rotation of the head, and automatic devices for successively moving said mandrels in active relation to the work.

2. In a can-capping machine, the combination of a rotary head, means for presenting work to said head, rotary mandrels mounted in said head to turn therewith and each provided with a former, means for rotating the mandrels on their axes, and means for alternately adjusting said mandrels to bring the formers thereof successively into engagement with the work.



3. In a can-capping machine, the combination of a fixed spindle, a clamping-foot attached thereto, a reciprocatory stem in line with said spindle, a work-holder mounted on said stem and disposed in opposing relation to the clamping-foot, a retractor operable to move the stem and the holder away from the foot, a cam arranged to positively move the stem and the holder toward the foot, and crimping-formers revoluble around the clamping-foot.

4. In a can-capping machine, the combination of a spindle, a rotary head mounted on said spindle, mandrels carried by said head and geared to the spindle for rotation on their axes simultaneously with the rotation of the head, formers carried by the mandrels, means for presenting work to said formers, and means for adjusting the mandrels and the formers successively in position for engagement with the work.

5. In a can-capping machine, the combination of a rotary head, mandrels provided with formers and mounted in said head to rotate therewith, means for turning the mandrels on their axes, a suitable collar, and connections between said collar and the mandrels to successively adjust the formers into positions for action on the work.

6. In a can-capping machine, the combination of a rotary head, mandrels carried by said head, and having means for rotating them on their axes, levers mounted on the head and operatively related to the mandrels for adjusting them, a slidable collar linked to said levers, and a cam arranged to impart slidable movement to said collar.

7. In a can-capping machine, the combination of a spindle, a rotary head mounted thereon, a clamping-foot carried by the spindle, mandrels mounted in the head to rotate therewith and geared to said spindle for rotation on their axes, a collar slidable on the spindle, levers mounted in the head and operatively arranged to the mandrels, links connected to the levers and pivoted at different points to the collar, a cam, and connections between said cam and the collar to impart a progressive slidable movement to the latter.

8. In a can-capping machine, the combination with a work-holder, of a rotary head, crimping devices mounted in said head to rotate therewith, and means for positively rotating said crimping devices on their axes, simultaneously with the rotation of said head and independently of pressure applied to their working edges.

9. In a can-capping machine, the combination of a non-revoluble work-holder, means for imparting slidable movement to said work-holder, a rotary head occupying an operating relation to said work-holder, crimping devices mounted in said head to rotate therewith, and means for positively rotating the crimping devices on their axes and independently of pressure applied to their working edges.

**757,843. GRINDING OR SHARPENING DEVICE.** ISRAEL M. ROSE, Philadelphia, Pa. Filed Jan. 26, 1904. Serial No. 190,676. (No model.)




*Claim.*—1. In a grinding or sharpening device of the character stated, a sharpening-wheel, a bed of less diameter than said wheel extending axially therefrom, the periphery of said bed being approximately at a right angle with the face of said wheel, and a cap covering said wheel and bed and having a passage therein leading to said periphery and face.

2. In a grinding or sharpening device of the character stated, a sharpening-wheel, a bed of less diameter centrally thereon and connected therewith, a cap having therein a slot or passage leading from the exterior of said cap to said wheel, and a spring within said cap adjacent to the periphery of said bed and within the path of said passage.

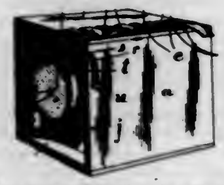
3. In a grinding or sharpening device of the character stated, a cap having a passage therein, a spring within said cap connected at one end and having its other end free and arranged adjacent to the side of said bed and in the path of said passage.

4. In a grinding or sharpening device of the character stated, a sharpening-wheel, a bed centrally thereon and connected therewith, a cap having a passage therein leading to said wheel, and a spring at one end within said cap having a stop at the free end thereof.

5. A grinding or sharpening device consisting of a rotatable sharpening-wheel, a shaft therefor, a bed of less diameter rising centrally from said wheel, and an inclosing case for said wheel and bed, the same having an inclined passage leading to said wheel and a spring within said casing in the path of said passage and adjacent to the side of said bed.

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**757,844. COMBINED BOX AND CUTTER FOR GOODS IN RIBBON FORM.** FREDERICK D. SCOTT, Montreal, Canada. Filed Dec. 17, 1903. Serial No. 135,614. (No model.)




*Claim.*—1. In a device of the class described, the combination with the casing having a slot through one of its faces, of a plate of metal having one end sharpened to form a cutting edge, and the opposite end designed to be inserted in the aforesaid slot, and sides designed to be bent inwardly to form guides from the said slot, as and for the purpose specified.

2. In a device of the class described, in combination, a casing having a plurality of slots through its top side, a plurality of partitions in the interior thereof, a bobbin suitably journaled in each of the divisions made by the said partitions and having a roll of material wound around in a continuous strip, a plurality of metal plates firmly secured to the top side and having a cutting edge, and extending sides forming part thereof bent inwardly to form guides from the said slots, and a flat spring secured at its lower end in the interior of the casing, and resting against the roll of material, as and for the purpose specified.

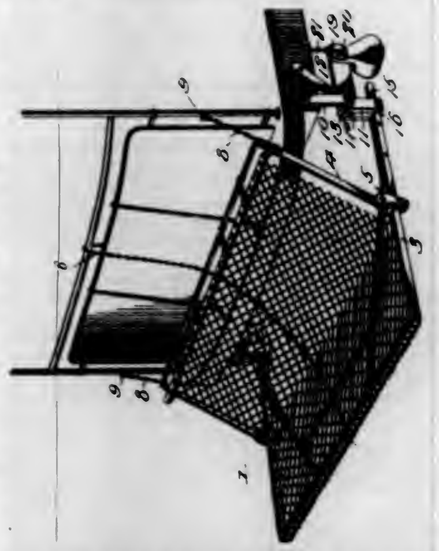
3. In a device of the class described, a cutter comprising a plate of metal having a cutting edge at one of its projecting ends, and a tongue at the opposite end and extending sides designed to be bent inwardly so as to partially cover the plate, as and for the purpose specified.

4. In a device of the class described, in combination, a casing having a plurality of slots in one of its faces, a cutter opposite to each slot on the edge of the face over which the material to be severed passes and individual guides from each of the slots having their sides turned over and designed to form substantially a covered passage for conveying the material over the cutter as and for the purpose specified.

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**757,845. CAR-FENDER.** EARL SHERWOOD, Honesdale, Pa. Filed Aug. 22, 1903. Serial No. 170,462. (No model.)

*Claim.*—1. In a car-fender, pivotal hangers, and a folding fender-frame having a separable and non-rotative connection with the hangers, said hangers being provided with means for counterbalancing the fender-frame and being also foldable therewith




2. In a car-fender, pivotal hangers, a folding fender-frame having a separable, non-rotative connection with the hangers and foldable therewith, and connections interposed between the fender-frame and a fixed point of support on the car and constituting supports upon which the fender-frame swings when thrown downward.

3. In a car-fender, counterbalancing hanging devices having pendent pivotal members, and a folding fender-frame having a separable, non-rotative connection with said pivotal hangers members and foldable therewith.

4. In a car-fender, counterbalancing hanging devices embodying hanger and counterbalance members operating in unison upon the movement of the hanger members in one direction, and a folding fender-frame having a non-rotative connection with the hanger members and foldable therewith.

5. In a car-fender, counterbalancing hanging devices embodying separate hanger and counterbalance members having a common pivotal support and operating in unison upon the movement of the hanger members in a backward direction, and a folding fender-frame having a separable, non-rotative connection with the hanger members and foldable therewith.

6. In a car-fender, counterbalancing hanging devices comprising separate pendent hanger and vertically-swinging counterbalance members, the hanger members being provided with sockets or openings, and a folding fender-frame having members separably and non-rotatably engaged in the sockets or openings of said hanger members.

7. In a car-fender, counterbalancing hanging devices each comprising a pendent hanger member and a vertically-swinging counterbalance member, said members having a common pivotal support and being adapted to cooperate upon the backward movement of the hanger members, a folding fender-frame having a back section and non-rotatably connected with the hanger members to fold therewith, and adjustable supporting connections connecting the back section of the fender-frame to a fixed point of support and constituting the fulcrum upon which the frame swings when thrown downward.

8. In a car-fender, counterbalancing hanging devices each consisting of a supporting-bracket, a pendent hanger-link pivotally suspended from said bracket, a vertically-swinging counterbalance-arm mounted at one end upon the pivot for the hanger-link and provided adjacent to such pivotal point with an engaging shoulder operated against by the link, a flexible limiting connection for the swinging end of the counterbalancing-arm, and a weight pendent from the counterbalancing-arm and having a tilting adjustment; in combination with a folding fender-frame having a separable, non-rotative connection with the links of the separate hanging devices.



**757,846. FEED-WATER HEATER.** SYDNEY W. SIMPSON, Camperdown, Great Yarmouth, England. Filed May 8, 1903. Serial No. 156,243. (No model.)

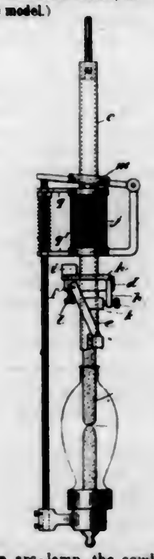



*Claim.*—1. In a feed-water heater, the combination with the steam-chamber, provided with steam inlet and outlet, of a detachable closing device fitted over an aperture in the walls of said chamber and provided with water inlet and outlet, and a water-heating device secured to said closing device and extending into the interior of said chamber and connected to said water inlet and outlet, whereby by removing said closing device said heating device may be removed from said chamber for examination, cleaning and repair, substantially as described.

2. In a feed-water heater, the combination with the steam-chamber provided with a steam-inlet, a steam-outlet, and an auxiliary aperture, a removable closing-plate secured to said chamber and closing said aperture, a feed-water heating-chamber secured to said plate, extending into said steam-chamber and having an opening communicating therewith through said plate, a coil connected at one end to the inner end of said chamber and surrounding the same, and having its other end communicating with an aperture in said plate, whereby by removing said plate, said water-chamber and coil may be removed therewith from the steam-chamber, substantially as described

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**757,847. ELECTRIC-ARC LAMP.** FREDERIK SINDING-CHRISTENSEN, New York, N. Y., assignor, by direct and mesne assignments, to Commercial Construction Company, New York, N. Y., a Corporation of New York, and William H. Locke, Jr. Filed May 4, 1903. Serial No. 155,476. (No model.)




*Claim.*—1. In an arc-lamp, the combination of arc-forming mechanism, feeding mechanism, an electromagnet in which the variations of current are adapted to operate direc ly the feeding mechanism, and connections independent of the feeding mechanism between the magnet and the arc-forming mechanism.

2. In an arc-lamp, the combination of arc-forming mechanism, feeding mechanism including a brake bearing against the carbon, an electromagnet having an armature connected with the arc-forming mechanism, and another armature connected with the brake.

3. In an arc-lamp, the combination of an arc-forming mechanism, feeding mechanism including a brake bearing against one of the carbons, two electromagnets side by side, an armature at one end of said magnets connected with the arc-forming mechanism and adapted when attracted by said magnets to unite their cores, and an armature at the other end of said magnets connected with the brake.

4. In an arc-lamp, the combination of arc-forming mechanism, feeding mechanism including a brake bearing against one of the carbons, an electromagnet, an armature at one end of the magnet normally held away from the magnet, a carbon-holder supported by the armature, and an armature at the other end of the magnet connected with the brake.

5. In an arc-lamp, the combination of arc-forming mechanism, feeding mechanism, an electromagnet, an armature at one end of the magnet; a rod secured to the armature, a spring engaging the rod and a relatively fixed part to hold the armature normally away from the magnet, a carbon-holder upon the rod, and an armature at the other end of the magnet connected with the feeding mechanism.

6. In an arc-lamp, the combination of arc-forming mechanism, an electromagnet, an armature for the magnet connected with the arc-forming mechanism, a brake bearing against the upper carbon, and another armature operated by the electromagnet and connected with the brake.

7. In an arc-lamp, the combination of arc-forming mechanism, an electromagnet, an armature for the magnet connected with the arc-forming mechanism, a carbon-guide, a lever bearing against the carbon, and another armature operated by the magnet and operatively connected with the lever.

8. In an arc-lamp, the combination of arc-forming mechanism, an electromagnet, an armature for the magnet connected with the arc-forming mechanism, a carbon-guide, a lever pivoted upon the guide and bearing against the carbon, another armature operated by the electromagnet, and a second lever interposed between the first-named lever and the second-named armature.

9. In an arc-lamp, the combination of a double magnet, an armature for transforming the double magnet into a single horseshoe-magnet, a holder for the lower carbon secured to said armature, feeding mechanism including a brake bearing against the upper carbon, the holder and the feeding mechanism being separately controlled by the magnet.

10. In an arc-lamp, the combination of a double magnet, an armature so related to the magnet as to be capable of being actuated by a relatively weak current, another armature so related to the magnet as to be capable of being operated only by a relatively stronger current, a holder for the lower carbon connected with the first-named armature, and feeding mechanism for the upper carbon connected with the second-named armature, whereby as the current in the magnet varies during the operation of the lamp the first-named armature and consequently the lower carbon will be held substantially stationary while the second-named armature will be moved to and from the magnet and the upper carbon will be fed downwardly into the arc.

11. In an arc-lamp, the combination of a double magnet, an armature at the upper end of said magnet and adapted when actuated to transform the double magnet into a single horseshoe-magnet, another armature at the lower end of said magnet, a holder for the lower carbon connected with the first-named armature, a feeding mechanism for the upper carbon connected with the second-named armature, whereby as the current in the magnet varies during the operation of the lamp the first-named armature and consequently the lower carbon will be held substantially stationary while the second-named armature will be moved to and from the magnet and the upper carbon will be fed downwardly into the arc.

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**757,848. BUCKET OR PAIL FASTENER.** RAYMOND STEIDL, Mattoon, Ill. Filed Nov. 12, 1903. Serial No. 180,877. (No model.)

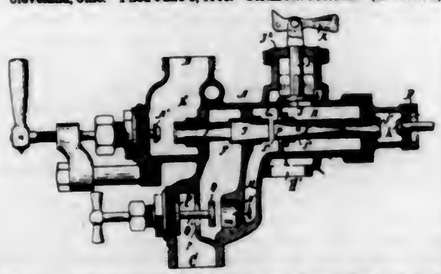



*Claim.*—A series of fasteners upon opposite sides of a pail or bucket, comprising in combination, ears upon the opposite sides of the pail or bucket, having separate projections having bearings in axial line, a wire yoke, as 5, having outturned spring-pintles fitting into the bearings in said projections and provided with intermediate eye-loops formed thereon, a second wire yoke, as 7, having out-

turned ends fitting into said eye-loops on the wire yoke 5, the free end of which yoke is bent over to form a hook.

## 757,849. INJECTOR FOR STEAM-BOILERS.

Thos. J. Sweeny, Cleveland, Ohio, assignor to John V. Kennedy and Adolph S. Deutsch, Cleveland, Ohio. Filed June 8, 1903. Serial No. 160,571. (No model.)



*Claim.*—1. In an injector, the combination with the main water-inlet, of a branch communicating therewith at one end, and communicating with the cold-water overflow-chamber, at its other end

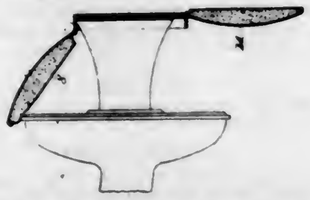
2. A steam-injector, comprising a suction-chamber, steam-chamber, cold and hot water overflow-chambers, and valves for controlling the same, with a main cold-water supply, and separate branch cold-water supply, both valve-controlled, said branch cold-water supply communicating with the main cold-water supply, and with the cold-water overflow-chamber, substantially as and for the purpose set forth.

3. In a steam-injector the combination with the cold-water supply-chamber, of a branch communicating with said cold-water supply-chamber, said branch being provided with a valve adapted to automatically open inward toward said branch, and a cold-water overflow-chamber with which said branch communicates, substantially as and for the purpose set forth.

4. A steam-injector comprising steam, suction, cold and hot water overflow-chamber, with suitable suction-tubes leading from one to the other of these chambers, a valve located in the hot-water overflow-chamber, opening outwardly and provided with means extending through the indicator for indicating its position, with means for locking said valve to its seat, substantially as set forth.

## 757,850. ANTISEPTIC ATTACHMENT FOR TELEPHONES.

Hugh L. Thompson, Waterbury, Conn. Filed Mar. 1, 1904. Serial No. 196,072. (No model.)



*Claim.*—1. An antiseptic attachment for telephones, comprising a wire disk, provided with means for suspending it over and upon the mouthpiece of a telephone, and a disinfecting-case therefor.

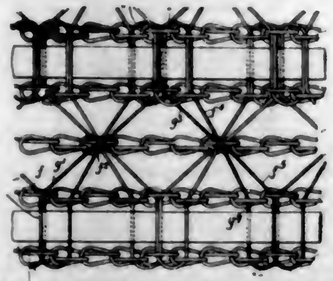
2. An antiseptic attachment for telephones, comprising a wire disk, provided with means for suspending it over and upon a telephone-mouthpiece, combined with a divided case therefor containing layers of absorbent material saturated with a disinfectant or germicide.

3. An antiseptic attachment for telephones, comprising a wire disk provided with means for suspending it over and upon a telephone-mouthpiece, combined with a divided and hinged case therefor containing layers of absorbent material saturated with a disinfectant or germicide.

## 757,851. ORNAMENTAL FABRIC.

Albert S. Waitzfelder New York, N. Y., assignor to the Kursheedt Manufacturing Company New York, N. Y., a Corporation of New York. Filed Dec. 14, 1903. Serial No. 185,065. (No specimens.)

*Claim.*—1. Fabric containing strips of stiffening material separated by open-work fabric consisting of rows of loops, joined by crossed weft-threads interlooped therewith, the said stiffening-strips being substantially parallel with the rows of loops.



2. Fabric containing strips of stiffening material separated by open-work fabric consisting of rows of loops each formed from a single thread, joined by crossed weft-threads interlooped therewith, the said stiffening-strips being substantially parallel with the rows of loops.

3. A fabric of the character described comprising spaced flexible strips located side by side, a row of loops located alongside the inner edge of each strip, another row of loops disposed between and in spaced relation to the first-mentioned rows, and weft-threads embracing the strips and interlocked with the various rows of loops.

4. A fabric of the character described comprising spaced strips, a continuous row of knit stitches formed from thread and located between the strips, and weft-threads embracing the strips and interlocked with the row of stitches, said weft-threads being separate from the thread forming the row of stitches.

5. A fabric of the character described comprising spaced strips, a continuous row of knit stitches formed from thread and located between the strips, and weft-threads embracing the strips and interlocked with the row of stitches, said weft-threads being disposed in intersecting relation and having their points of intersection in the row of stitching.

6. A fabric of the character described, comprising spaced flexible strips, rows of stitches extending longitudinally along the opposite edges of said strips, and substantially parallel separate sets of weft-threads passing diagonally across the spaces between the strips, said sets having looped portions located on opposite sides of the strips and interlocked with the rows of stitches.

7. A fabric of the character described, comprising spaced flexible strips, rows of loop-stitches extending longitudinally along the opposite edges of the strips, another row of loop-stitches extending longitudinally between the strips and the inner adjacent rows, and separate sets of weft-threads embracing the strips and interlooped with the rows of stitches located alongside the same, said sets of weft-threads being disposed in diagonal intersecting relation in the space between the strips and having their points of intersection located in and embraced by the said intermediate row of stitches.

## 757,852. LATERAL-MOTION CAR-TRUCK.

Edwin C. Washburn, Minneapolis, Minn. Filed Dec. 5, 1903. Serial No. 183,860. (No model.)

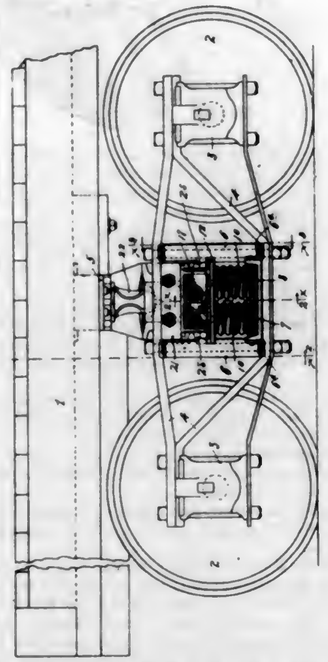
*Claim.*—1. The combination with a car-truck having bolster-columns and a transversely-movable bolster guided by said columns, spring-supported caps guided for vertical movements by said bolster-columns, and flattened segments supporting said bolster from said spring-supported caps and tending to hold said bolster centered under the weight of the load, substantially as described.

2. The combination with a car-truck, of spring-supported caps vertically movable thereon, oscillating segments fulcrumed on said caps, and provided with flattened segmental upper ends, and a truck-bolster, resting on said segments, with freedom for longitudinal movements transversely of the truck and tending to maintain a centered position under the weight of the load.

3. The combination with a truck and a truck-bolster movable transversely thereof, of spring-supported caps movable vertically on the truck-frame, bolster-supporting segments, flattened at both ends, and a truck-bolster resting on the flattened upper ends of said segments, said bolster being yieldingly held in a centered position under the weight of the load, and the said segments having, at their upper and lower ends, teeth engaging, respectively, with seats formed in the ends of said bolster and in said spring-supported caps, substantially as described.



4. The combination with a truck and a truck-bolster movable transversely thereof, of spring-caps guided for vertical movements by the bolster-columns of the truck-frame, and groups of coiled springs supporting said spring-caps from the truck side frames, and the oscillating segments supporting said truck-bolster from said spring-caps, said segments having flattened segmental ends and projecting teeth or end lugs engaging with said truck-bolster and with said spring-caps, substantially as described.



5. The combination with a truck and a truck-bolster movable transversely thereof, of the spring-caps 12 formed in their upper faces with a central rib $12^a$, flat bearing-surfaces 15 and seats 16, and formed at their sides with notches 14 embracing the adjacent edges of the truck-bolsters of the truck-frame, the groups of coiled springs 10 supporting said spring-caps in the truck side frames, and the oscillating segments 17 formed at their ends with the flattened segmental surfaces 18 and lugs 19, the lower surfaces 18 and lower lugs 19 engaging, respectively, with the bearing-surfaces 15 and seats 16 of said spring-caps, and the upper surfaces 18 and upper lugs 19 engaging, respectively, with the lower end surfaces of the truck-bolster and with seats formed in said bolster, the lower ends of said segments being notched to straddle the ribs $12^a$ of said spring-caps, substantially as described.

6. The combination with a truck-frame involving truck-bolsters having rest-lugs located slightly below the normal positions of the ends of the truck-bolsters, of a truck-bolster spring-supported from the truck side frames, and adapted to engage said rest-lugs when the said bolster is dropped to an abnormally low position, substantially as described.

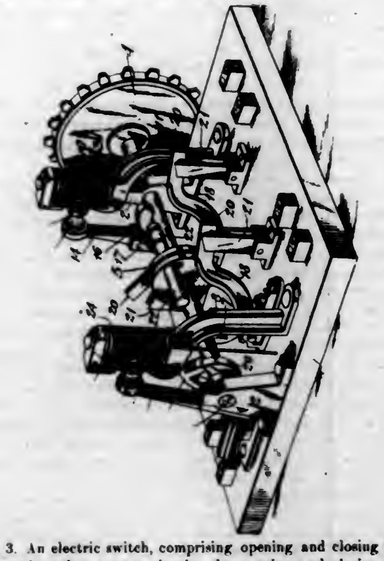
7. In a car-truck, the combination with a truck-bolster, of flattened rocking segments supporting said bolster, and segment-supports provided with central strengthening-ribs fitting notches formed in the lower ends of said rocking segments, substantially as described.

## 757,853. ELECTRIC SWITCH.

George H. Whittingham, New York, N. Y., assignor to Automatic Switch Company of Baltimore City, a Corporation of Maryland. Filed Oct. 29, 1903. Serial No. 179,013. (No model.)

*Claim.*—1. An electric switch comprising means for opening and closing supply, armature, and brake circuits and including blow-out devices for the supply and brake circuits, respectively, actuated to blow out the currents in their respective circuits alternately with the closing of the other circuit.

2. The combination of an electric switch for reversing the current in motors, provided with means for maintaining the armature-circuit closed after the supply-circuit has been opened, an electro-dynamic brake-circuit, means for automatically introducing said brake-circuit into the armature-circuit upon the opening of the supply-circuit, and blow-out devices for the supply and brake circuits, respectively, actuated to blow out the currents in their respective circuits alternately with the closing of the other circuit.



3. An electric switch, comprising opening and closing devices for supply and armature circuits, the opening and closing devices for the supply-circuit including a blow-out device, a second blow-out device designed to be included in a brake resistance-circuit, and means for actuating said blow-out devices alternately whereby one is open when the other is closed.

4. An electric switch, comprising opening and closing devices for supply and armature circuits, the opening and closing devices for the supply-circuit including a magnetic blow-out device consisting of an electromagnet and an arm movable toward and from the same and designed to close the circuit through such device, a second magnetic blow-out device designed to be included in a brake resistance-circuit and consisting of an electromagnet and an arm movable toward and from the same, a shaft provided with cams designed to move the said arms in one direction, and means for moving said arms in the opposite direction.

5. In an electric switch, opening and closing devices for an armature-circuit, supply-circuit opening and closing devices one of which is a blow-out device consisting of an electromagnet having a contact-surface and a swinging arm spring-pressed toward such surface to close the supply-circuit, a shaft provided with a cam designed to move said arm away from said surface whereby the magnet will blow out the current in the supply-circuit, and another opening and closing device for the supply-circuit consisting of a terminal and a segmental shoe mounted on said shaft, each end of said shoe being alternately brought into contact with said terminal as the shaft is turned.

6. An electric switch, comprising means for opening and closing a supply-circuit, armature-circuit terminals and contacts therefor consisting of rocking arms provided with central pivoted bowed portions and a blade at each end thereof, and a shaft provided with tappets designed to rock said arms so as to move their blades into and out of contact with the terminals, the said bowed portions providing clearances whereby the tappets may pass their points of operative contact with the arms, thereby preventing any undue strain from being exerted upon the blades.

7. In an electric switch, opening and closing devices for an armature-circuit, and supply-circuit opening and closing devices one of which is a blow-out device, the other consisting of a terminal and a segmental shoe each end of which is designed to be alternately brought into contact with said terminal, the blow-out device opening the supply-circuit in advance of the disengagement between either end of the contact-shoe and its terminal.

8. In an electric switch, opening and closing devices for an ar-

mature-circuit, a blow-out device constituting means for opening the supply-circuit at one side of the switch and comprising an electromagnet having a contact-surface and an arm provided with a contact movable thereby into contact with such surface and normally held thereagainst to close the supply-circuit, means for moving said arm away from such contact-surface against the means that tends to hold it against the same, and means for opening and closing the supply-circuit at the other side of the switch.

9. In an electric switch, opening and closing devices for an armature-circuit, a blow-out device constituting means for opening and closing the supply-circuit at one side of the switch and comprising an electromagnet having a contact-surface and a swinging arm carrying a contact movable thereby into contact with such surface, means for holding said arm normally under tension with its contact against such surface, a shaft provided with means for swinging said arm against such tension means, and means for opening and closing the supply-circuit at the other side of the switch.

10. In an electric switch, opening and closing devices for an armature-circuit, a blow-out device constituting means for opening and closing the supply-circuit at one side of the switch, and comprising an electromagnet having a contact-surface, a swinging arm carrying a contact movable thereby into contact with such surface and spring-pressed toward the magnet, a shaft provided with a cam for swinging said arm away from the magnet, and means for opening and closing the supply-circuit at the other side of the switch.

11. In an electric switch, opening and closing devices for an armature-circuit, a blow-out device constituting means for opening and closing the supply-circuit at one side of the switch and comprising a swinging arm spring-pressed in one direction and an electromagnet having a contact-surface for engagement by the contact of said arm, and a shaft provided with means for moving said arm away from the magnet, and means for opening the other side of the line or supply-circuit after the blow-out device has operated to disrupt the arc at the opposite side of the switch.

12. An electric switch, comprising armature-circuit terminals and blades therefor, a blow-out constituting means for opening and closing the supply-circuit at one side of the switch and comprising an electromagnet provided with a contact-disk, a swinging arm provided with a disk adapted to be brought into contact with said first-named disk and held normally in the position in which the two disks are in contact, a shaft provided with means for actuating the armature-circuit blades and also provided with means for moving said arm away from the magnet, and means for opening and closing the supply-circuit at the other side of the switch.

13. An electric switch, provided with a magnetic blow-out device forming part of the line or supply circuit and whose supports constitute primary poles, a contact-disk held between said primary poles and provided with means for producing between said two primary poles two consequent poles, and a complementary disk adapted to contact with said first-named disk.

14. An electric switch, provided with a magnetic blow-out device forming part of the line-circuit and constituting two primary poles, means for producing between two primary poles two secondary or consequent poles, and means for opening or breaking the line-circuit at a point coincident with said consequent poles.

15. An electric switch, provided with a magnetic blow-out device forming part of the line-circuit and constituting two primary poles, a bar mounted between said two poles, a contact-disk secured to said bar, means for producing consequent poles between said two primary poles, and a complementary disk adapted to contact with the first-named disk.

16. An electric switch, provided with a magnetic blow-out device forming part of the line-circuit and constituting two primary poles, a bar mounted between said two poles, a contact-disk secured to said bar, an iron disk interposed between said contact-disk and said bar and adapted to produce two consequent poles between the two primary poles, and a complementary disk designed to contact with the first-named disk.

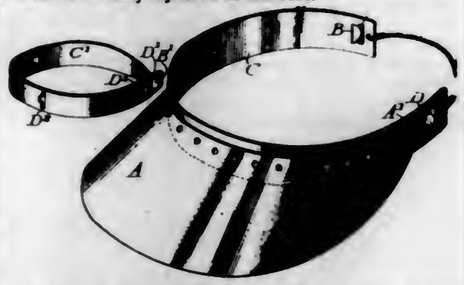
17. An electric switch, provided with a magnetic blow-out device provided with two primary poles, means for producing between the primary poles two consequent poles, and means for opening or breaking the circuit within the influence of the consequent poles.

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**757,854. EYE-SHADE.** NATHAN R. WICKERSHAM, West Bethlehem, Pa. Filed Apr. 23, 1903. Serial No. 153,897. (No model.)

*Claim.*—1. An eye-shade comprising a band and a separate vizor freely secured thereto, the upper edge of said vizor being movable on the outer face of said band.

2. An eye-shade comprising a band and a vizor, the upper edge of which is vertically adjustable on said band.




3. An eye-shade comprising a band and a vizor separate therefrom, the upper edge of said vizor being concave, said vizor being secured to said band adjacent its ends and having movable contact directly with the outer face thereof.

4. An eye-shade comprising a band and a vizor, the upper edge of which is concave, said vizor being secured to said band adjacent its ends so as to contact directly with the outer face thereof and to be vertically adjustable thereon.

5. An eye-shade comprising a band and a separate vizor detachably connected therewith, the upper edge of said vizor having moving contact directly with the outer face of said band, said band and said vizor being of different lengths between their points of connection.

6. An eye-shade comprising a band and a separate vizor, said parts being connected adjacent to their ends and being of different lengths between their places of connection.

7. An eye-shade comprising a band and a separate vizor, said parts being connected at their ends and said vizor being movable on the outer face of said band.

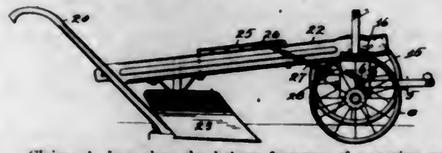
8. An eye-shade comprising a band and a vizor detachably connected together by means of coacting slots and tongues engageable in said slots.

9. An eye-shade comprising a resilient band and a separate resilient vizor detachably connected thereto, whereby the upper edge of said vizor has moving contact with the outer face of said band.

10. An eye-shade comprising a band, a separate vizor detachably secured thereto and means for retaining said band in position, the upper edge of said vizor being movable on the outer face of said band.

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**757,855. PLOW.** FERDINAND WIENER, Odin, Ill. Filed June 30, 1903. Serial No. 163,712. (No model.)



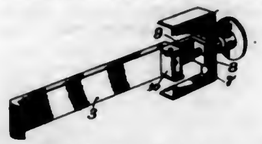

*Claim.*—1. In a plow, the bolster 6, means of mounting said bolster on wheels, posts extending upwardly from the bolster; a bed-plate mounted to be adjusted up and down upon said posts; a plow-share; a plow-beam attached to the plowshare and having its forward end carried by said bed-plate, so that the cutting depth of the plowshare may be regulated by adjusting the height of the bed-plate; and an adjustable connection between the bolster and the plow-beam, so that the distance between the plowshare and the bolster may be regulated, substantially as specified.

2. The improved plow comprising the bolster 6, an axle, suitable supporting-wheels, the bed-plate 16 having its ends provided with slots 17, vertical bars 18, means of adjusting the bed-plate up and down on the vertical bars, said bed-plate having a tapered recess 21 at the center of its length, and the plow-beam resting within said recess, substantially as specified.

3. In a plow, a bolster; suitable supporting-wheels for the bolster; posts extending upwardly from the bolster; a bed-plate mounted to be adjusted up and down upon said posts; a plowshare; a plow-beam attached to the plowshare, and having its forward end supported upon said bed-plate; a series of trunnions projecting upwardly from the plow-beam; a chain attached to the bolster and adjustably engaging said trunnions, substantially as specified.



**757,856. SASH-LOCK.** DANIEL WILDE, Washington, Iowa. Filed July 27, 1903. Serial No. 167,241. (No model.)



*Claim.*—1. The combination with a plate located transversely in the groove of a window-frame, said plate having a flange thereon with a threaded hole in said flange, of a screw which turns in said threaded hole, a jaw swiveled on the screw, and a box or casing mortised in the frame and flush therewith, said box or casing inclosing and concealing the flange, jaw and all but the protruding end of the screw.

2. The combination with a slidable plate located transversely in the groove of a window-frame, said plate having a jaw and flange thereon and provided with a threaded hole in the flange, of a screw which turns in said threaded hole, a jaw swiveled on the screw, and a box or casing mortised in the frame and flush therewith, said box or casing inclosing and concealing the flange, jaw and all but the protruding end of the screw.

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**757,857. FAN AND MIRROR ATTACHMENT FOR ROCKING-CHAIRS.** JOHN F. YOUNG, Seattle, Wash. Filed May 25, 1903. Serial No. 158,604. (No model.)

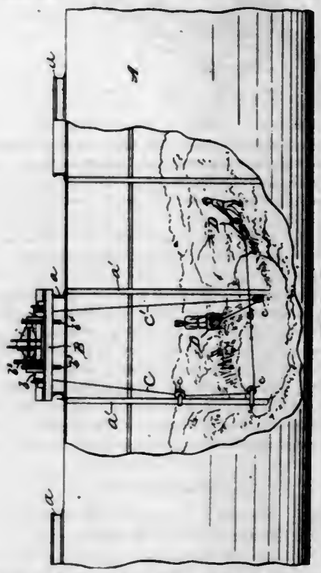


*Claim.*—1. In a fan and mirror attachment for rocking-chairs, a suitable supporting-frame having a pivot; a fan-spreader, consisting of a wire bent downwardly from its center and sharply turned up at its ends; a fan outspread and mounted upon the fan-spreader; a spring-clamp to receive and hold the outspread fan; said clamp also forming the mirror-support; a catch to hold the fan inoperative; said fan-clamp, mirror-support, and catch, consisting of a single wire bent to form bearings to receive said pivot, the central portion of said wire extending downwardly in the shape of a U to form the front member of the clamp, the ends of said wire extending downwardly parallel with the sides of said front member and to a point considerably below the horizontal part of said front member, the first one of said ends being bent to a horizontal position, extending across to and around the second end, back around its vertical part, then across to and around said second end again, and terminating in a hook to form said catch, the horizontal portions of said first end forming a mirror-socket, a mirror resting in said socket, the side ears of the mirror-back passing around the vertical portions of said first and second ends, the upper part of the mirror-back coming in opposition to the horizontal portion of the front member of the clamp, thus completing the rear member of the spring fan-clamp; said fan and fan-spreader being removably mounted in said spring-clamp, substantially as specified.

2. In a fan and mirror attachment for rocking-chairs, a suitable supporting-frame having a pivot; and a spring-clamp mounted on said pivot; said spring-clamp consisting of a single wire bent to form bearings to receive said pivot, the central portion of said wire extending downwardly in the shape of a U to form the front member of the clamp, the ends of said wire extending downwardly parallel with the sides of said front member and to a point considerably below the horizontal part of said front member, the first one of said ends being bent to a horizontal position, extending across to and around the second end, back around its vertical part, then across to and around said second end again, thus forming a mirror-socket, a mirror in said socket, the side ears of the mirror-back passing around the vertical portions of said first and second ends, the upper part of the mirror-back coming in opposition to the horizontal portion of the front member of the clamp, thus completing the rear member of the spring fan-clamp, substantially as specified.

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**757,858. APPARATUS FOR SCRAPING ORE FROM WINGS OF VESSELS.** MATTHEW ANDREWS, Cleveland, Ohio. Original application filed Aug. 24, 1903, Serial No. 170,523. Divided and this application filed Jan. 9, 1904. Serial No. 188,308. (No model.)



*Claim.*—1. The combination, with the hull of a vessel having suitable hatchways, of a frame carrying a winding-drum, said frame being adapted to span the hatchway and rest upon the hatch-coaming, means for anchoring the frame, and scrapers within the hold of the vessel arranged to be operated by said wind-drum.

2. The combination, with a vessel having suitable hatchways and having hatch-coamings surrounding the hatch-openings, of a frame adapted to rest upon the hatch-coaming, means for anchoring said frame to the hatch-coaming, and winding mechanism carried by such frame.

3. The combination, with a vessel having suitable hatchways and having hatch-coamings surrounding the hatch-opening, of a frame adapted to rest upon the hatch-coaming, means for anchoring said frame to the hatch-coaming and winding mechanism carried by such frame, cables leading from said winding mechanism down into the hold, pulleys around which said cables pass, and scrapers operated by said cables.

4. The combination with a vessel having a hatchway, a frame arranged to span such hatchway and rest upon the hatch-coaming, hooks carried by said frame and adapted to engage the coaming at the end of the hatchway, and winding mechanism carried by said frame.

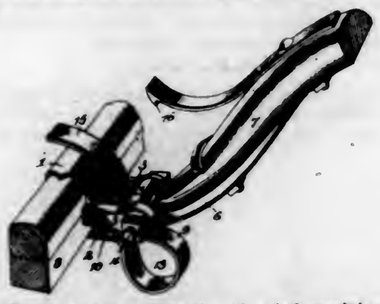
5. The combination with a vessel having a hatchway, a frame arranged to span such hatchway and rest upon the hatch-coaming, hooks carried by said frame and adapted to engage the coaming at the end of the hatchway, winding mechanism mounted on said frame, cables leading from said winding mechanism down into the hold of the vessel, pulleys carried by the stanchions of the vessel around which said cables pass, and scrapers secured to said cables.

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**757,859. COMBINED SHAFT-SUPPORT AND ANTIRATTLER.** JOHN C. BRIDGMAN, London, Ohio. Filed Sept. 23, 1903. Serial No. 174,235. (No model.)

*Claim.*—1. A combined shaft-support and antirattler provided with a front side arranged to engage the eye of a shaft or thill, and extended upward above the same to support the said shaft or thill

said extended portion being bent backward and presenting a convex front face, whereby any downward movement of the shaft or thill will operate to straighten such extended portion, substantially as described.

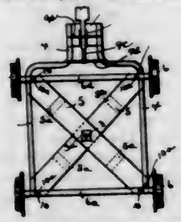


2. The combination with an axle, and a shaft coupled to the axle, of a combined shaft-support and antirattler comprising a resilient loop interposed between the eye of the shaft or thill and the axle, the front side of the loop being in engagement with the said eye, and being extended upward from the eye to form a support for the shaft or thill, and means carried by the shaft or thill for connecting it with the extended portion of the front side of the loop, substantially as described.

3. A combined shaft-support and antirattler, comprising a spring formed at an intermediate point with a depending loop designed to be located beneath a thill-coupling, and provided at one end with means for connecting it rigidly with an axle, the intermediate portion of the spring above the loop bearing against the thill-eye, and said spring being extended from the thill-eye-engaging portion backward and upward over the axle presenting a convex front face, the outer upper end being free, and a catch mounted rigidly on the shaft or thill and constructed to engage with and abut against the upper free end of the spring, substantially as described.

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**757,860. ORE-CAR. Charles Cancelmi, Stockton, Cal. Filed Oct. 5, 1903. Serial No. 175,906. (No model.)**



*Claim.*—1. In an ore-car the combination with suitable truck wheels and axles, of the side pieces 4, the braces 5 provided with the vertical projections $5^a$ adapted to prevent the car-box from sagging, said side pieces 4 and braces 5 connected to the axles by means of bolts $10^a$ and nuts 10 in the manner described, the side pieces 4 curved to form a nose at the front end thereof, a slotted platform $4^a$ on said nose, a turning platform 2 acting on the bolt 3, and resting on the vertical projections $5^a$, said platform being connected to the braces 5 by means of the bolt 3, hinges $2^a$, $1^b$, $1^c$, connecting said platform to a car-box 1, said car-box provided with a door or gate 8, said door or gate being provided with straps of suitable material $8^a$, the curved portions $8^d$ thereof forming, with the pins $8^c$, hinges, said door 8 working on said hinges, a bar $8^b$ suitably fastened on the door 8 and projecting downward beyond the bottom of said gate, a catch $7^a$ adapted to engage with said bar, a link 7 connected to the catch $7^b$ by a hinge $7^d$ and to a platform 2 by a hinge $7^c$, a hook 9 projecting upwardly through a slot $4^b$ in the platform $4^a$, a lever $9^b$ forming a component part of said hook, and adapted to be used to operate said hook, and a spring $9^c$ regulating said hook and lever, a downward projection $1^c$ on the front of the car 1, a slot $1^c$ therein adapted to receive the hook 9 and a handle $1^d$ suitably arranged on the front of the car-box 1 all substantially as described.

2. In an ore-car of the kind described the combination with a car-box 1 and an adjoined rotating platform 2, of a link 7 connected to the platform, a hinge $7^c$, a hinge $7^d$, said hinges adapted to connect the link 7 to the platform 2 and a catch $7^a$ respectively, a catch $7^a$, a pin $7^d$ and a bar $8^b$ suitably fastened on a box door or gate 8, said bar adapted to engage with and be held by the catch $7^a$, all substantially as set forth.

3. An ore-car comprising with suitable truck wheels and axles, the combination of a car-box 1 provided with a suitable handle $1^d$ and a downwardly-projecting lip $1^c$ provided with a slot $1^c$, said car-box also having a door or gate 8 provided with straps $8^a$ and the curved portions $8^d$ thereof with pins $8^c$ forming hinges, the bar $8^b$ suitably attached to the door 8, a platform 2 suitably hinged to the car-box 1 and acting on a bolt 3, a catch $7^a$ suitably attached to the car-box 1 by means of a pin $7^b$, a hinge $7^d$, a link 7, a hinge $7^c$, said catch $7^a$ attached to the platform 2 by means of said link 7 and hinges $7^c$ and $7^d$, side pieces 4 provided with intersecting braces 5, said side pieces 4 and braces 5 connected to axles $6^a$ by means of bolts $10^a$ and nuts 10, the platform 2 connected to the braces 5 at the point of intersection by means of a bolt 3 and a nut $3^a$, a slotted platform $4^a$ on the nose formed by the side pieces 4, a slot $4^b$ therein, a hook 9 projecting through the slot $4^b$ and adapted to engage with the slot $1^c$, a lever $9^b$ forming a component part of and adapted to regulate the motion of the hook 9, and a spring $9^c$ adapted to regulate said hook and lever, said hook, lever and spring suitably fastened within the nose formed by the side pieces 4, and upward projections $5^a$ on the braces 5 adapted to support the platform 2 and prevent it from sagging, all substantially as described.

4. An ore-car comprising the combination with suitable truck wheels and axles of the side pieces 4, the braces 5, the bolts 10 and nuts $10^a$ adapted to fasten the side pieces 4 and braces 5 to the truck-axles, a platform 2 attached to the braces 5 by means of a bolt 3 and nut $3^a$, said platform adapted to rotate on said bolt 3, a car-box 1 suitably attached to the platform 2 by means of hinges $2^a$, $1^b$, $1^a$, box door or gate 8 provided with straps $8^a$, two of said straps suitably curved over and adapted to form, with the pins $8^c$, hinges, a bar $8^b$ attached to and projecting down from the door or gate 8, a catch $7^a$ attached to the bottom of the car-box 1 by means of and rotating on a pin $7^b$, said catch adapted to engage with and hold the bar $8^b$, a link 7, a hinge $7^d$ adapted to connect the link 7 to the catch $7^a$, a hinge $7^c$ adapted to connect the link 7 to the platform 2, a downward-projecting lip on the front of the car-box 1, a slot $1^c$ in said lip, a hook 9 adapted to engage with said slot, a lever $9^b$ adapted to regulate the action of said hook and a spring $9^c$ adapted to regulate said hook and lever, a pin or axle $9^a$ on which said hook and lever act and a pin $9^d$ adapted to hold the spring $9^c$ in position, and a slotted platform $4^a$ suitably arranged on the side pieces 4 all substantially as described.

5. An improved ore-car comprising a combination with suitable truck wheels and axles, of the side pieces 4, intersecting braces 5, upward projections $5^a$ thereon, said side pieces 4 curved to form a nose at the front end of the car, said side pieces and intersecting braces suitably attached to the axles, a slotted platform $4^a$ on the nose formed by the side pieces 4, a slot $4^b$ therein, a hook 9 fastened in the said nose by means of a pin or axle $9^a$, said hook 9 projecting through the slot $4^b$, a lever $9^b$ forming a component part of the hook 9, a spring $9^c$ suitably attached within the nose formed by the side pieces 4 and adapted to regulate the action of the said lever and hook, a platform 2 attached to the braces 5 at the point of intersection by means of a bolt 3 and nut $3^a$, said platform adapted to revolve on said bolt 3 and to rest on the projections $5^a$, a car-box 1 suitably hinged to said platform 2, said box 1 being provided with a handle $1^d$ and having a downward-projecting lip $1^c$ provided with a slot $1^c$, said slot $1^c$ adapted to engage with the hook 9, a door or gate 8 suitably attached to the car-box 1 and provided with side straps $8^a$ and a bar $8^b$, said bar projecting a little downward from said door, a catch $7^a$ adapted to engage with and hold securely said bar $8^b$, said catch connected to the platform 2 by means of a link 7 and hinges $7^c$ and $7^d$, all substantially as described.

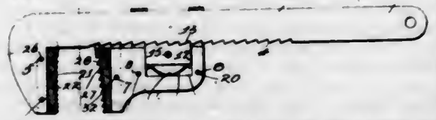
6. In an improved ore-car the combination of suitable truck wheels and axles, side pieces attached thereto and curved to form a nose at the front end of said car, braces for said side pieces, upward projections on said braces, a suitable revolving platform attached to the braces and resting on the projections thereon, a hook fastened in the nose formed by the side pieces and regulated by a suitable lever and spring, a platform on said nose, a slot therein for the reception of said hook, a car-box hinged to the platform 2 and provided with a slotted downward lip on its front, a slot in said projection adapted to engage with the said hook, a handle on said car-box, said car-box also being provided with a door or gate, side straps on said gate, said straps bent so as to form, with suitable pins, hinges, a bar suitably attached to said gate and projecting a little downward therefrom, a catch adapted to engage with said bar, said catch fastened to the car-box by means of a suitable pin, said catch being also adapted to rotate on said pin, a link connecting the said catch to the said rotating platform by means of suitable hinges, all substantially as set forth.

7. The combination in an improved ore-car of suitable wheels and axles, side pieces 4, intersecting braces 5, projections $5^a$ thereon, said side pieces and braces fastened to the axles, a rotating platform 2 suitably attached to said braces, car-box 1 hinged to said platform and provided with a catch $7^a$, said catch rotating on a pin $7^b$ and attached to the car-box by means of said pin, a link 7, hinges $7^c$ and $7^d$, a gate or door 8, straps $8^a$, pins $8^c$, a bar $8^b$ adapted to engage with the catch $7^a$, a nose formed at the front end of the car by curving the side pieces 4, a hook 9, a lever $9^b$ and a spring $9^c$ all fastened in said nose, a platform $4^a$ provided with a slot $4^b$, a lip $1^c$ provided with a slot $1^c$ adapted to engage with the hook 9 and a handle $1^d$ substantially as set forth.

8. The improved ore-car having a car-box 1 attached to a platform 2, said platform 2 rotating on the bolt 3 and attached to braces 5 by means of said bolt, projections $5^a$, side pieces 4, said braces and side pieces attached to axles $6^a$, wheels 6, a hook 9 adapted to engage with slot $1^c$, said slot suitably arranged in a lip on the front of car-box 1, the lever $9^b$ forming a component part of the hook 9 and a spring $9^c$ regulating said hook and lever, said hook, lever and spring suitably attached to the side pieces 4, said car-box 1 being provided with a handle $1^d$ and a suitable door or gate 8, and a means for automatically locking and unlocking said door or gate all substantially as set forth.

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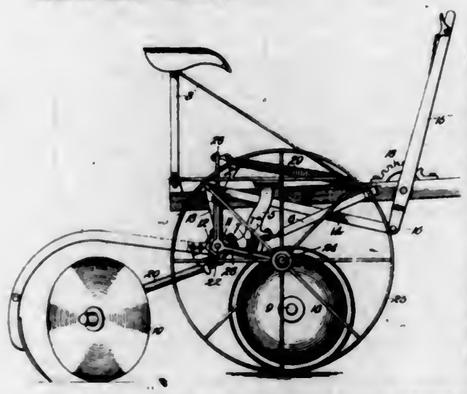
**757,861. COMBINED PIPE AND NUT WRENCH. George E. Carnes, St. Louis, Mo. Filed Apr. 7, 1903. Serial No. 151,551. (No model.)**



*Claim.*—In a combined pipe and nut wrench, the combination with the shank 1, having the teeth 4; of the stirrup 16 fitting upon the shank and having the hole 18 and the two holes 19; the adjustable jaw 6 secured within the stirrup by means of the pins 20, and having the recess 9; the locking-dog 12 located in the recess 9 and having the teeth 13 to engage the teeth 4; the spring 10 in said recess to press the locking-dog against the shank; the thumb-screw 14 secured to the locking-dog by the shank 15 extending through the hole 18; the removable wedge-shaped jaw 27 having the longitudinal recess 30 in which the rigid jaw is mounted, and having the transverse recess 31 in which the shank 1 slides, and having the pipe-gripping teeth 28; said jaw being thinner at its front end than at its back end, so as to produce an outwardly-flaring opening, and the pin 32 securing said jaw 27 in position, substantially as specified.

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**757,862. CULTIVATOR. Oliver H. Cloyd, Kansas City, Mo., assignor to Thomas E. Gaines, Kansas City, Mo. Filed Apr. 14, 1903. Serial No. 152,535. (No model.)**



*Claim.*—1. A single-row cultivator, comprising a seat-supporting frame, a transverse rock-shaft, cultivating appliances, and a pair of ground-wheels below said frame, in combination with rock-levers pivotally mounted on the rock-shaft to operate independently thereof, and provided at their front ends with outturned ends, large guard-wheels journaled on said ends, at the outer sides of the ground-wheels, and means for holding the front ends of said levers yieldingly depressed.

2. A single-row cultivator, comprising a seat-supporting frame, a transverse rock-shaft, cultivating appliances, and a pair of ground-wheels below said frame, in combination with rock-levers pivotally mounted on the rock-shaft to operate independently thereof, and provided at their front ends with outturned ends, large guard-wheels journaled on said ends at the outer sides of the ground-wheels, a transverse frame connecting said levers at the opposite side of their fulcrums from their front ends, and means engaging said frame to hold the guard-wheels yieldingly depressed.

3. A single-row cultivator, comprising a transverse rock-shaft, pins journaled in the ends of the same, rock-levers rigidly secured on the outer ends of said pins, a transverse frame connecting the upper ends of said levers, wheels journaled on the front ends of said levers, and means for holding the wheels yieldingly depressed.

4. A single-row cultivator, comprising a transverse rock-shaft, pins journaled in the ends of the same, rock-levers rigidly secured on the outer ends of said pins, a transverse frame connecting the upper ends of said levers, wheels journaled on the front ends of said levers, and springs connected to said frame and tending to draw the same forwardly.

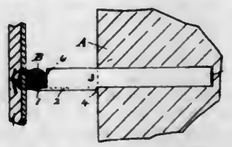
5. A single-row cultivator, comprising a cross-bar, a transverse rock-shaft, ground-wheel-carrying arms depending from the cross-bar, cultivating appliances connected to the shaft, rock-levers pivoted on said shaft and having outturned front ends, guard-wheels journaled on said ends outward of the ground-wheels, and means for holding said guard-wheels yieldingly depressed.

6. A single-row cultivator, comprising a cross-bar, a transverse rock-shaft, ground-wheel-carrying arms depending from the cross-bar, cultivating appliances connected to the shaft, rock-levers pivoted on said shaft and having outturned front ends, guard-wheels journaled on said ends outward of the ground-wheels, a transverse frame connecting said rock-levers, and means for holding the ground-wheels yieldingly depressed.

7. A single-row cultivator, comprising a tongue, a seat-supporting frame thereon, brackets depending from the frame, a cross-bar carried rigidly by and a rock-shaft journaled in the brackets, ground-wheel-carrying arms secured to the cross-bar, cultivating appliances secured to the shaft, pins journaled in the ends of the shaft, bell-crank levers secured on said pins, and having outturned front ends, guard-wheels journaled on said ends, an arched frame connecting the upper ends of the bell-crank levers, and retractile springs connecting said arched frame to the front portion of the seat-supporting frame.

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**757,863. METALLIC FURRING-CLIP. David Ewart, Ottawa, Canada. Filed Nov. 13, 1903. Serial No. 181,100. (No model.)**



*Claim.*—1. A sheet-metal furring-clip, comprising a body portion, and a clasping member, said clasping member standing at approximately right angles to the body portion, whereby the latter may be secured to a horizontally-extending face and the clasping member be in a position to engage a vertically-disposed member, substantially as described.

2. A sheet-metal furring-clip, comprising a flat body portion, and a curved clasping member having a flat bearing-face, the flat faces standing at approximately right angles to each other.

3. A sheet-metal furring-clip, comprising a flat body portion, and a clasping member having a flat bearing-face, the flat faces standing at approximately right angles to each other, and the adjacent ends of said body portion and clasping member overlapping, substantially as described.

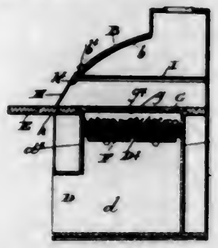
4. A sheet-metal furring-clip, comprising a flat body portion provided with means for securing it in place; and a clasping member having a flat bearing-face, the flat faces of said parts standing at right angles to each other and having their adjacent ends overlapping, substantially as described.

5. A sheet-metal furring-clip, comprising a flat body portion 3,

having its outer end 5 bent at a right angle thereto; and a clasping member 1 formed as an integral extension of said body portion and standing in a plane at approximately right angles to the body portion, the adjacent ends 4 and 6 of said clasping member and the body portion being suitably distanced.

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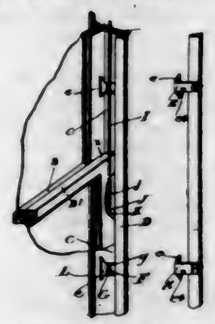
**757,864. BROILER.** JAMES FRYE, Toronto, Canada. Filed Apr 9, 1903. Serial No. 151,821. (No model.)



*Claim.*—In combination in a broiler, a casing having an arc-shaped top front, a grate in the casing, said casing having an opening leading from the grate to the outside of the casing, and an opening C in the top of the casing for the products of combustion, shelves in the casing above the grate, a hinged plate H, and a plate made of fire-brick covering the said grate when the broiler is to be used with charcoal, substantially as described.

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**757,865. WINDOW.** JAMES FRYE, Toronto, Canada. Filed June 8, 1903. Serial No. 160,626. (No model.)



*Claim.*—1. A window comprising a vertical slidable sash, side strips, a plurality of brackets secured to the side strips and having inwardly-turned ends forming guides for the vertically-slidable sash as and for the purpose specified.

2. In a window, the combination with a pair of vertical slidable sashes, of an outside strip and an inside strip, a plurality of brackets secured to one of said strips and having angularly-bent ends forming with said strip a guide for the inner sash and with the other strip a guide for the outer sash as and for the purpose specified.

3. In a window, the combination with the window-frame and a pair of vertical slidable sashes, of an outside strip and an inside strip, a plurality of brackets secured to the inside strip and having angularly-bent ends forming a guide for the inner sash and with the outer strip a guide for the outer sash, and means for securing said inner strip removable to the frame of the window as and for the purpose specified.

4. In a device of the class described, the combination with the vertical slidable window-sashes and the window-frame, of an outer strip vertically secured to the frame to form a guide for the outside sash, an inner strip adapted to form a guide for the inside of the inner sash, brackets having their main portions secured to said inner strip, said main or supporting portions having slots therein, eyes or staples secured to the window-frame and extending through said slots, locking-pins extending through said eyes or staples where they extend through said slots and guiding portions formed integral with said brackets and extending substantially at right angles to the body or main portion thereof as and for the purpose specified.

**757,866. SWINGLETREE OR DOUBLETREE.** ELIAS HAIMAN, Cleveland, Ohio. Filed Jan. 15, 1904. Serial No. 189,092. (No model.)



*Claim.*—1. As a new article of manufacture, a draft-bar, such as a swingletree or doubletree, the same formed from sheet metal bent into substantially U shape in cross-section and having integral hooks at its ends with their extremities in substantially the same vertical plane as the rear edges of the bar and midway between the planes of said edges horizontally, substantially as described.

2. A swingletree or doubletree of substantially U shape in cross-section and having double-sided hooks at each end integral with the respective sides of the tree and the extremities of said hooks terminating at the rear of the tree and substantially equidistant from the adjacent edges thereof and relatively between the planes of said edges, substantially as described.

3. A swingletree or doubletree formed of sheet metal in substantially U shape in cross-section and having integral hooks at each end, the ends of the body of the tree being contracted at the base of the hook and the point of the hook lying substantially midway between the rear edges of the tree behind said contracted portion, substantially as described.

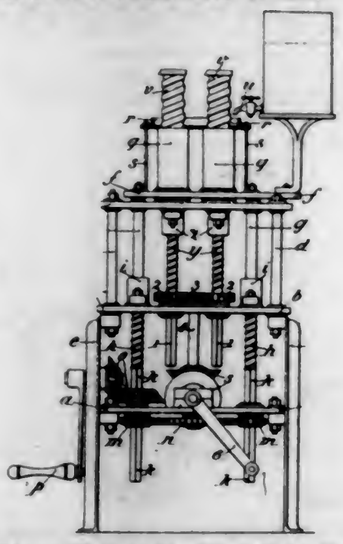
4. A swingletree or doubletree of sheet metal and substantially U shape in cross-section, the ends of the tree having hooks bent around from the front to the rear thereof and lying in a plane midway between the planes of the sides of the tree horizontally, said hooks formed each of two parts lying flat upon each other and fastened together at their extremity, substantially as described.

5. A swingletree or doubletree of sheet metal substantially U shape in cross-section and having reversely-curved integral hooks at each end, and a link midway the length of the tree having flattened ends pressed together and filling the space between the sides of the tree, and a rivet locking said link and tree together, thereby securing said link and strengthening the tree, substantially as described.

6. A whiffletree of substantially U shape in cross-section and having its extremities flattened and formed into hooks, said hooks being reversely curved from the front rearward and the points of the hooks extending toward the rear of the whiffletree, substantially as described.

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**757,867. APPARATUS FOR CASTING CYLINDERS FOR PHONOGRAPHS OR THE LIKE.** ADOLPHE HARDY, Neuilly-sur-Seine, France. Filed Oct. 31, 1903. Serial No. 179,235. (No model.)



*Claim.*—1. The combination with a mold and a core within the same peripherally grooved, and mechanism connected therewith for



effecting positively the movement of one of said parts in the direction of its length with respect to the companion part.

2. The combination with a mold and a core within the same peripherally grooved, and mechanism connected therewith for causing positively the reciprocation of one of said parts with respect to the companion part.

3. An apparatus of the character described, consisting of a mold, a grooved core within the same, and mechanism connected therewith for effecting positively the rotation of said core and simultaneously moving it in the direction of its length.

4. In an apparatus of the character described, a mold, a grooved core within and concentric to the mold, a cutting member carried by said core for the purpose of cutting clean the edge of the finished cylinder.

5. In an apparatus of the character described, the combination of a cylindrical mold, a helical grooved core within the mold, a cutting member carried by the core for cutting clean the upper edge of the finished cylinder, and means for rotating and reciprocating the core.

6. An apparatus for casting cylinders for phonographs and the like, consisting of a mold, a grooved core within and concentric to the mold, a tray supported by the mold, mechanism for imparting a rotary and reciprocating movement to the core, means for actuating said mechanism, and means for cutting clean the upper edge of the cylinder when cast.

7. An apparatus of the character described, a cylindrical mold, a helical grooved core within the mold and a cap on said core having a square-shaped tail end engaging a square hole of the core and sharp edges for the purpose of cutting clean the upper edge of the finished cylinder.

8. An apparatus of the character described, consisting of a series of cylindrical molds, helical grooved cores within and concentric to the molds, and means for advancing said cores consisting of vertical threaded rods and relatively fixed nuts on each of said rods in combination with a gear mechanism and a hand-operated crank.

9. In an apparatus of the character described, the combination of molds, helical grooved cores within the molds, a tray carried by said molds for the reception of the molten wax, means for imparting to the cores a rotary and reciprocating movement, and means for cutting clean the upper edge of the cylinder when cast.

10. In an apparatus for casting cylinders for phonographs and the like, the combination of cylindrical molds, helical grooved cores within and concentric to the molds, sockets forming the bottom of the molds between the molds and the cores, a tray for receiving the molten wax supported by the molds, means for imparting to the cores a rotary and reciprocating movement, and means for cutting clean the upper edge of the cylinder when cast.

11. An apparatus of the character described, a series of cylindrical molds, helical grooved cores within and concentric to the molds, vertical reciprocating sleeves between the molds and the cores, and means for imparting either to the cores or the sleeves vertical reciprocating movement.

12. An apparatus of the character described, a series of stationary cylindrical molds in connection with a tray for the wax, helical grooved cores within the said molds, means for moving said cores up and down, a series of sleeves in the annular space between the molds and the cores, and means for reciprocating said sleeves.

13. An apparatus of the character described, a series of stationary cylindrical molds in connection with a tray for the wax, helical grooved cores within the said molds, means for moving said cores up and down, a series of sleeves in the annular space between the molds and the cores, and means for reciprocating said sleeves consisting of vertically-guided stay-rods, and levers at the lower end of said rods, a shaft for receiving said levers and a hand-lever for operating said shaft.

14. In an apparatus of the character described, a mold, a grooved core within the mold, a vertically-reciprocating sleeve between the mold and the core, and means for independently operating the core and the sleeve.

15. An apparatus of the character described, a series of cylindrical molds, helical grooved cores within the molds, a cutting member carried by each of the cores for cutting clean the upper edge of the finished cylinder, means for reciprocating said cores, a series of sleeves in the annular space between the molds and the cores, and means for independently operating each of said sleeves in opposite directions from one another.

16. An apparatus of the character described, a series of stationary cylindrical molds in connection with a tray for the wax, helical grooved cores within and concentrically to said molds, means for reciprocating said cores, a series of sleeves in the annular spaces between the molds and cores, having cutting members carried by each of said cores for cutting clean the upper edge of the finished cylinder and means for reciprocating each of said sleeves for ejecting the finished cylinder.

17. An apparatus of the character described consisting of a mold, a grooved core within the mold, a cutting member carried by the said core, means for reciprocating the said core and means for ejecting the finished cylinder from the mold.

18. An apparatus of the character described, consisting of a series of molds, helical grooved cores within and concentric to the molds, a cutting member carried by each of said cores, means for rotating and reciprocating the said cores, a series of movable sleeves in the annular spaces between the molds and the cores, and means for moving said sleeves for ejecting the cylinder when cast.

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**757,868. PEN.** ARCHIBALD HART, Dunblane, Scotland. Filed Jan. 20, 1903. Serial No. 139,731. (No model.)



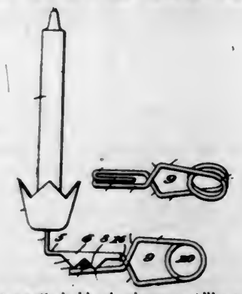
*Claim.*—1. A pen comprising a cylindrical body having twin nibs and a third nib located in a position between the twin nibs.

2. A pen comprising a cylindrical body having twin nibs and a central nib providing a division between the twin nibs.

3. A pen comprising a cylindrical body having twin nibs and a central nib providing a division between the twin nibs and a holder having split ends fitting on opposite sides of the central nib and providing an opening within which the central nib extends.

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**757,869. CHRISTMAS-TREE CANDLE-HOLDER.** HUGO G. HESS, Cincinnati, Ohio. Filed Nov. 2, 1903. Serial No. 179,609. (No model.)



*Claim.*—1. A candle-holder having a cup-like candle-receiving portion provided with a supporting-arm and a clamping member formed of a wire having a central coil from which are extended parallel arms having portions bent toward each other and crossed, one of the arms being secured to said supporting-arm of the candle-receiving portion and the other spring-arm being extended alongside of the supporting-arm to engage a twig or the like.

2. A candle-holder comprising a supporting-arm, a candle-receiving portion held on one end of said supporting-arm and a clamping member formed of a wire with a central coil and two parallel arms one of which is secured to the other end of the supporting-arm and the other of which is extended alongside of said supporting-arm in position to engage a twig or the like.

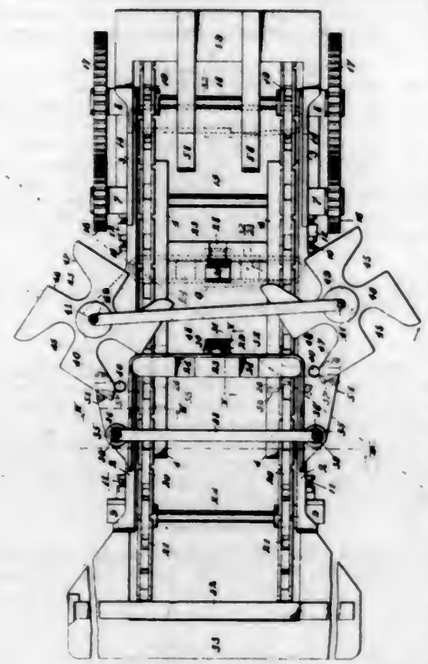
3. A candle-holder having a laterally-directed supporting-arm one side of which has serrated projecting wings extended along opposite edges, and a clamping member formed of a wire centrally bent and having a central coil from which are extended arms one above another, the said arms having portions bent toward each other and crossed and having, beyond said crossed portions other parallel parts one of which is secured to the supporting-arm and the other of which is extended alongside said arm in position to engage a twig or branch engaged between the serrations of the wings of the supporting-arm.

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**757,870. BOX-FORMING MACHINE.** SAMUEL Y. HESS, Kansas City, Mo. Filed July 19, 1902. Serial No. 116,300. (No model.)

*Claim.*—1. In a machine of the character described, a traveling form adapted to engage and carry therewith a metal strip, a gravity-clamp pivoted to the form, rollers adapted to bend the strip around the form in the shape of box sides, and means for automat-

ically disengaging the box sides from the form, substantially as described.



2. In a machine of the character described, a suitable frame, a table secured to the rear end thereof to receive sections of metal strips, a traveling form to engage and carry therewith one of said metal strips at a time, rollers for bending the strip around the form, and incline portions on the frame for automatically disengaging the strip from the form, substantially as described.

3. In a machine of the character described, a suitable frame, a table secured to the rear end thereof to receive sections of metal strips, a gage on the table to insure the proper placing of the metal strip, a traveling form adapted to engage and carry therewith, one piece at a time, said metal strips, rollers for bending the strip around the form, means for automatically delivering it from the form, and a table to receive it after said delivery, substantially as described.

4. In a machine of the character described, a frame consisting of side plates, rails formed thereon, horizontal shafts journaled in said plates in a lower plane than said rails, sprocket-wheels on said shafts in the same vertical planes as the rails, sprocket-chains connecting the longitudinally-aligned wheels, and having their upper strands above said rails, one or more forms connecting the sprocket-chains and provided with recesses to receive the inner edges of the rails and with horizontal extensions underlying the rails to prevent the form or forms from tilting while passing over the rails.

5. In a machine of the character described, a traveling form adapted to engage and carry at its front side a metal strip, means for bending the metal strip in approximately U-shape form around the ends of the traveling form, finishing-rollers adapted to bend the ends of the metal strip back against the rear surface of the form, stop-pins for arresting the motion of the finishing-rollers, levers to which the stop-pins are pivotally secured, lugs to which said levers are fulcrumed, and T-shaped ends on said levers arranged in the path of the traveling forms, substantially as described.

6. In a machine of the character described, a frame, consisting of side plates having inwardly-projecting longitudinal rails, traveling forms arranged to move forward upon the rails and to move rearward below and out of contact with the rails, and adapted when moving forward to carry metal strips, means for bending the strips around the forms in such forward passage, in the shape of box sides, means for delivering the box sides from the forms at or near the front ends of said rails, and a table provided with finger-bars to underlie and receive the box sides.

7. In a machine of the character described, a traveling form which moves in an endless or annular path and carries part way with it a metal strip, and rollers for bending said strip around the form.

8. In a machine of the character described, a traveling form which moves in an endless or annular path and carries part way with it a metal strip, and rollers adapted to be turned by said strip and in turning to bend the latter around the form.

9. In a machine of the character described, a traveling form which moves in an endless or annular path and carries part way with it a metal strip, two sets of rollers actuated successively by the strip to bend it around the form, and means to check the movement of the last set of rollers as the bent strip leaves them.

10. In a machine of the character described, a traveling form which moves in an endless or annular path, and carries part way with it a metal strip, means to partially bend said strip around the form, rollers to complete such bending operation and actuated by the strip and having a plurality of cavities, one set of which receives and bends the ends of the strip against the back of the form, and means to arrest said rollers with their following set of cavities arranged to receive and complete the bending of the ends of the next strip presented.

11. In a machine of the character described, a form traveling forward, downward, rearward, and upward in an endless path, and carrying a metal strip with it while traversing the upper portion of the path, means for bending such strip around the form, and an inclined way in the path of and adapted to lift the bent strip vertically from the form.

12. In a machine of the character described, an endless traveling conveyer, a metal-strip-carrying form secured thereto, means to bend the strip around the form, and side plates having upwardly-inclined ways between which the form passes; said inclined ways being adapted to engage the ends of the strip and lift it off the moving form.

13. In a machine of the character described, an endless traveling conveyer having a substantially horizontal axis, a metal-strip-carrying form secured to the conveyer, means to bend said strip around the form when the latter is above its conveyer-axis, and an inclined way intersecting the path of the form adapted to lift the bent strip vertically therefrom.

14. In a machine of the character described, a suitable frame having an inclined upper face, an endless conveyer having its axis substantially horizontal, a metal-strip-carrying form secured to the conveyer and adapted when above its conveyer-axis to occupy a substantially horizontal plane intersecting the plane of said inclined face, means to bend the strip around the form, and means to operate the conveyer and cause the strip to be lifted by said inclined face off the moving form.

15. In a machine of the character described, a form traveling in an endless path which has a substantially horizontal axis, and carrying part way with it, while above such axis a metal strip, a gravity-clamp for clamping the strip to the form while above such axis, and means to bend the strip around the ends of the form while the latter is above such axis.

16. In a machine of the character described, a form traveling in an endless path which has a substantially horizontal axis, and carrying part way with it, while above such axis a metal strip, a gravity-clamp for clamping the strip to the form while above such axis, a means to bend the strip around the ends of the form while the latter is above such axis, and means for withdrawing the strip from the form.

17. In a machine of the character described, a framework, substantially horizontal shafts journaled therein and suitably driven, wheels on said shafts, a conveyer on said wheels, a transversely-extending form on the conveyer, means to support a metal strip in position to be picked up by the advancing form, and a clamp carried by the form and adapted as the latter moves upward to move from in front of it and then to reverse such action and clamp the strip against the front side of the form as the latter about completes its upward movement.

18. In a machine of the character described, a framework, substantially horizontal shafts journaled therein and suitably driven, wheels on said shafts, a conveyer on said wheels, a transversely-extending form on the conveyer, means to support a metal strip in position to be picked up by the advancing form, a clamp carried by the form and adapted as the latter moves upward to move from in front of it and then to reverse such action and clamp the strip against the front side of the form as the latter about completes its upward movement, and means whereby a relative vertical movement shall take place between the conveyer and strip to withdraw the latter from between the form and clamp.



19. In a machine of the character described, a frame having inwardly-projecting and substantially horizontal rails, a traveling conveyer mounted in the frame and having a substantially horizontal axis and having its upper strand or portion upon the rails and its lower strand or portion below and out of contact with said rails, and a transversely-extending form, carried by the conveyer and adapted at times to travel upon said rails and provided with extensions to underlie said rails at such times to prevent the form from tilting.

20. In a machine of the character described, a traveling form to engage and carry therewith a metal strip, means to bend said strip to approximately U form, a pair of rollers to bend the arms of the U-strip against the back of the form, spring-actuated pins to check the movement of said rollers as the strip passes from engagement therewith, and levers carrying said pins and adapted to be operated to withdraw the pins from the path of said rollers, by the form as it presents another strip to said rollers.

21. In a machine of the character described, a form having inwardly-projecting rails, rollers suitably journaled, spring-elevated levers suitably mounted and provided with pins to intercept said rollers, and having their outer ends underlying said rails and provided with downwardly-inclined rear portions, a traveling conveyer, and a form carried thereby to successively present metal strips to said rollers and adapted preliminary thereto to engage the inclined portions of said levers to withdraw the pins from the path of the rollers.

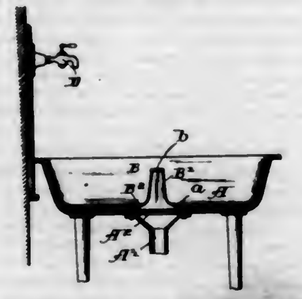
22. In a machine of the character described, a suitable frame having substantially horizontal rails, a traveling conveyer therein with its axis substantially horizontal and below the plane of the rails, a form carried by the conveyer to take up and carry a metal strip forwardly of said rails, a gravity-clamp pivotally carried by such form and adapted to be held by gravity substantially parallel with the front ends of the form and against said strip when the form is above such rails and to assume an angle thereto, when such face of the form is disposed at a substantial angle to the vertical.

23. In a machine of the character described, a traveling conveyer, a form carried thereby and adapted to carry part way with it a metal strip, means for bending said strip to approximately U form, rollers suitably journaled at opposite sides of the conveyer having a plurality of cavities to receive successive strips and be actuated thereby and bend their arms against the back of the form, and means to render such roller movement intermittent by arresting the rollers with their succeeding set of cavities in position to receive the arms of the next strip presented.

24. In a machine of the character described, a table to hold a metal strip, a conveyer contiguous thereto and having its axis substantially horizontal, a form carried by the conveyer and adapted to take the strip from the table, a clamp for automatically engaging and holding the strip against the form for at least a part of the travel of the latter, means to bend the ends of the strip around the form, and an inclined way intersecting the path of the form and adapted to lift the bent strip from between the latter and the clamp.

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**757,871. OVERFLOW DEVICE FOR SINKS.** KARL C. AKERS, Port Huron, Mich., and ROBERT ROSS, Sarnia, Canada. Filed June 17, 1903. Serial No. 161,773. (No model.)

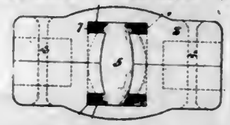



*Claim.*—1. An overflow device for sinks and the like comprising an upright tube open at its upper and lower ends and provided at its lower end with an extended, flat, flexible flange adapted to fit upon the upper face of the bottom of the sink around the drain-opening therein and to be held in place by the weight of the superposed water.

2. An overflow device for sinks comprising an upright tube which is open at its upper and lower ends, said tube being tapered downwardly and outwardly and provided at its lower end with a flat flexible flange which is adapted to fit upon the bottom of the sink around the drain-opening therein, and to be held in place by the weight of the superposed water.

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**757,872. PIPE-MANDREL.** WIBSLOW ALLDERDICE, Warren, Ohio. Filed May 22, 1903. Serial No. 158,247. (No model.)



*Claim.*—A pipe-mandrel having rollers within the same, said rollers having a bearing against each other at the middle portion, and having tangential bearings against the body of the mandrel, the mandrel having openings leading from the exterior for the passage of scale; substantially as described.

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**757,873. VALVE.** EVERETT P. ALLEN, Chicago, Ill. Filed Sept. 3, 1901. Serial No. 74,181. (No model.)



*Claim.*—1. In a valve, the combination with a casing, an inlet-port above the bottom of the same whereby a fluid-accumulating chamber is provided, an outlet-port from the chamber above the level of the inlet-port, a valve controlling said outlet-port, and a float adapted to close said valve, said float adapted to be operated solely by the change of volume of the liquid in said chamber, substantially as described.

2. In an air-vent valve for a radiator system, the combination with a casing provided with a nipple for engagement to the radiator or system, said nipple forming an inlet-port for the valve and located above the bottom of the casing whereby a fluid-accumulating chamber is provided, an outlet-port from the chamber above the level of the inlet-port, a valve controlling said outlet-port, and a float adapted to close said valve, said float adapted to be operated solely by the change of volume of the liquid in said chamber, substantially as described.

3. In a valve, the combination with a casing, an inlet-port above the bottom of the same whereby a fluid-accumulating chamber is provided, an outlet-port from the chamber above the level of the inlet-port, a valve controlling said outlet-port, a float adapted to operate said valve, said float adapted to be operated solely by the change of volume of the liquid in said chamber, and a check-valve also controlling said outlet-port and adapted to prevent the entry of air into the casing through the outlet-port, substantially as described.

4. In a valve, the combination with a casing, an inlet-port above the bottom of the same whereby a fluid-accumulating chamber is provided, an outlet-port from the chamber above the level of the inlet-port, a valve controlling said outlet-port, a float adapted to operate said valve, said float adapted to be operated solely by the change of volume of the liquid in said chamber, and an automatic check-valve also controlling said outlet-port and adapted to prevent the entry of air into the casing through the outlet-port, substantially as described.

5. In a valve, the combination with a casing, an inlet-port above the bottom of the same whereby a fluid-accumulating chamber is provided, a plug in the upper end of said casing provided with an outlet-port therethrough, a valve-seat on each end of said outlet-

port, a valve controlling the initial end of said outlet-port, a float adapted to operate said valve, said float adapted to be operated solely by the change of volume of the liquid in said chamber, and another valve controlling the final end of said outlet-port, said latter valve acting as a check-valve to prevent the return of air into the casing, substantially as described.

## 757,874. ROLL FOR MUSIC-CONTROLLERS. ALFRED ANDERSON, Cambridge, Mass., assignor to Thomas W. Carter, Boston, Mass.

Filed July 20, 1903. Serial No. 166,260. (No model.)



*Claim.*—1. A roll for holding music controller-sheets herein described, the same comprising a spindle, flanges and roll-bearing pins, the spindle having means for its elongation or contraction provided by a cut formed therein to separate the spindle into two parts and provide one part with a tongue and the other part with a tongue-holder, the tongue and tongue-holder so formed as to have a restricted movement longitudinally with respect to each other.

2. A roll for holding music controller-sheets herein described, the same comprising a spindle, flanges and roll-bearing pins, the spindle having interlocking means for its elongation or contraction comprising a tongue having a head upon one part of the spindle and a holder shaped to receive and contain the tongue and head upon another part of the spindle, the holder, tongue and head being from side to side of the diameter of the spindle and being shaped throughout to the size of the remainder of the spindle.

3. A roll for holding music controller-sheets herein described, the same comprising a spindle in two parts, each of which has a flange and a roll-bearing, and one of which parts has a tongue and neck formed at its end, and the other of which has a tongue-holder at its end formed to receive and hold the tongue and permit its restricted longitudinal movement therein.

4. A roll for holding music controller-sheets, the same comprising a spindle, flanges and roll-bearing pins, the spindle having interlocking means for its elongation or contraction and a reinforcing-sleeve applied to the roll over the interlocking means.

5. A roll for holding music controller-sheets, the same comprising a spindle, flanges and roll-bearing pins, the spindle having interlocking means for its elongation or contraction and a reinforcing-sleeve applied to the roll over the interlocking means and secured to the spindle in a manner to permit of said elongation or contraction.

6. A roll for holding music controller-sheets, the same comprising a spindle, flanges and roll-bearing pins, the spindle having integral, interlocking means for its elongation or contraction, and a reinforcing-sleeve covering said integral, interlocking means.

7. A roll for holding music controller-sheets, the same comprising a spindle, flanges and roll-bearing pins, and the spindle having integral, interlocking means for its elongation or contraction, a sleeve covering said means and attached to a portion of said spindle, and a controller-sheet adapted to be wound upon the spindle, attached by its inner end to a portion of the spindle and to the sleeve.

8. A roll for holding music controller-sheets, the same comprising a spindle, flanges, and roll-bearing pins, the spindle being in a plurality of sections, said sections having interlocking means, permitting of their restricted relative movement along the axis of the spindle, and of their free disengagement upon relative movement in another direction.

9. A roll the spindle of which is formed in a plurality of sections, said sections having interlocking means permitting of their restricted relative movement along the axis of the spindle and of their free disengagement in another direction.

10. A roll the spindle of which is formed in a plurality of sections, said sections having interlocking means preventing their relative rotation while permitting of their restricted relative movement along the axis of the spindle and their free disengagement upon relative movement in another direction.

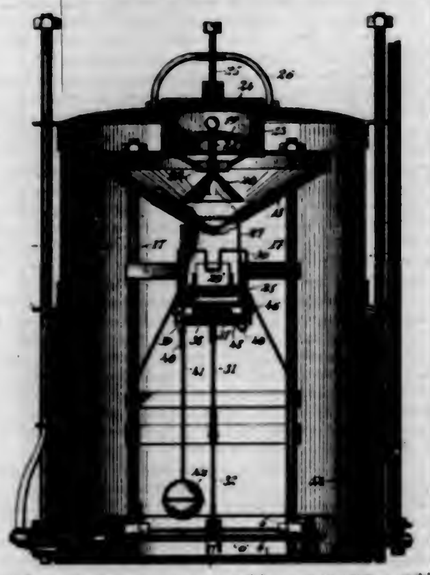
11. A roll the spindle of which is formed in a plurality of sections, the ends of the opposing sections of shapes to interlock by means of a tongue on the one section and a recess in the other section said tongue extending from the spindle-section as a relatively narrow shank and broadening beyond the shank, the tongue and recess being of a relative length and shape to provide the sections with a restricted longitudinal movement in either direction for substantially the purpose set forth.

12. A roll for holding music controller-sheets, the same comprising a spindle, flanges, and roll-bearing pins, the spindle having integral, interlocking means permitting of its restricted elongation and contraction and of its free dismemberment upon a relative movement of said means transverse to the axis of the spindle.

13. A roll for holding music controller-sheets, the same comprising a spindle, flanges and roll-bearing pins, the spindle having integral interlocking means permitting of its restricted elongation and contraction and of its free dismemberment upon a relative movement of said means transverse to the axis of the spindle, and a controller-sheet, the inner end of which is attached to the said spindle.

## 757,875. ACETYLENE-GAS GENERATOR. GEORGE A. BIDWELL, Pittsfield, Mass.

Filed May 13, 1903. Serial No. 156,905. (No model.)



*Claim.*—1. A gas-machine, comprising a gasometer, a carbid-holder arranged therein, a rotary cylinder having pockets for receiving carbid from the holder, a pendent rod having vertical guided movement and actuated by a downward movement of the gasometer-bell, the said rod being provided with means for imparting rotary motion to said cylinder when the rod is moved downward, and a float on said rod and acted on by the water in the gasometer to move the rod upward when the gasometer rises.

2. In a gas-machine, a gasometer, a carbid-holder arranged therein, a discharge-chute for the holder, a regulating-valve in the discharge-chute, means connected with said valve for regulating the same, the said means extending to the outer side of the gasometer, a rotary cylinder having pockets for receiving carbid from the chute, and means actuated by the gasometer-bell for rotating said cylinder.

3. In a gas-machine, a gasometer, a carbid-holder arranged therein, a discharge-chute with which the holder communicates, a valve for controlling the outlet of said chute, a vertically-arranged bar connected with said valve, an angle-lever arranged in the gasometer and having connection at one end with the lower end of said bar, and an adjusting-screw engaging with the lower end of said angle-lever and passing out through the wall of the gasometer.

4. In a gas-machine, a gasometer, a carbid-holder arranged therein, a discharge-chute with which the holder communicates, a gate-valve for controlling the outlet of said chute, an angle-lever arranged in the gasometer and having a horizontally-disposed member connected with said valve and a vertical member bifurcated at its lower end, and an adjusting-screw passing through the wall of the gasometer and having a head at its inner end formed with an annular channel engaged by the bifurcated end of the lever.

5. A gas-machine, comprising a gasometer, a conical carbid-holder arranged in the gasometer, a valve for controlling the outlet of said holder, a chute communicating with the holder, a valve for controlling the outlet of said chute, a downwardly and laterally inclined trough leading from the chute, a cylinder mounted to rotate at the end of said trough and having a series of pockets, and means for imparting rotary motion to said cylinder.

6. In a gas-machine, a gasometer, a carbid-holder arranged therein, a discharge-chute leading from the holder, a downwardly and laterally inclined trough leading from the chute, a cylinder mounted to rotate at the end of said trough, the said cylinder having a series of pockets, pins extended outward from one end of the cylinder, a pendent rod having vertical guided movement, a float on the lower end of said rod, and a finger pivoted to the rod and adapted for engaging with said pins for imparting rotary motion to the cylinder upon a downward movement of the rod.

7. In a gas-machine, a gasometer, a carbid-holder arranged therein, a cylinder having a series of pockets for receiving carbid from the holder, pins extended from one end of said cylinder, a pendent rod, a float on the lower end of said rod, a finger pivoted to the rod for engaging with said pins, and an angular lug at the opposite end of said cylinder, and a weighted lever having a shoulder portion for engaging with said lug.

8. In a gas-machine, a grid-like agitator mounted to rock in the lower portion of the gasometer, the shaft of said agitator having an angular end, a short shaft extended through the wall of the gasometer into the same and having an opening in its inner end to receive said angular end of the agitator-shaft, the opening in the inner end of the short shaft extending through the top of the same to permit of placing the agitator-shaft in the said opening or removing it therefrom, and a lever on the outer end of said short shaft.

9. In a gas-machine, an agitator arranged in the lower portion of the gasometer and comprising a grid-like frame, a horizontally-arranged rock-shaft on which the said frame is mounted and a platform resting on the bottom of the gasometer and provided with standards in which the shaft is journaled, a short shaft extending through the wall of the gasometer, and with which the agitator-shaft is removably engaged, and a lever on the outer end of the short shaft.

10. In a gas-machine, a gasometer, a carbid-holder arranged therein, a discharge-chute with which the holder communicates, a valve for controlling the outlet of said chute, means operated from the outer side of the gasometer for regulating said valve, a rotary cylinder having pockets for receiving carbid from the chute, and means for imparting rotary motion to said cylinder.

11. In a gas-machine, a gasometer, a carbid-holder arranged therein, a valve for controlling the outlet of the holder, a cylinder having a series of pockets for receiving carbid from the holder, a pendent rod having vertical guided movement, and moved downward by the lowering of the gasometer-bell, the said rod being provided with means for imparting rotary movement to the cylinder upon a downward movement of the rod, means for regulating the downward movement of the rod, and a float on the lower end of the rod and acted on by the water in the gasometer to lift said rod when the gasometer-bell rises.

12. In a gas-machine, a gasometer, a carbid-holder arranged therein, a valve for controlling the outlet of said holder, a chute communicating with the holder, a valve for controlling the outlet of said chute, an inclined trough leading from the chute, a cylinder mounted to rotate at the end of the trough and having a series of pockets for receiving carbid, a pendent rod adapted to be moved downward by the gasometer-bell, means for imparting rotary motion to the cylinder when the rod is moved downward, a float on the lower end of said rod for moving the rod upward, and means for preventing reverse movement of the cylinder when the rod is moved upward.

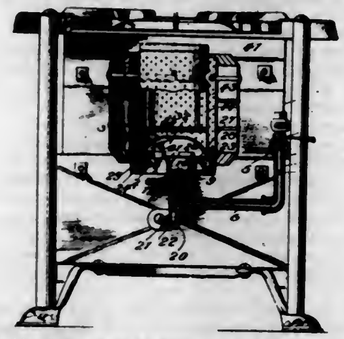
## 757,876. WICKLESS BLUE-FLAME OIL-STOVE. ATWELL J. BLACKFORD, Cleveland, Ohio, assignor to the American Stove Company, Jersey City, N. J., a Corporation of New Jersey.

Filed Dec. 6, 1902. Serial No. 134,106. (No model.)

*Claim.*—1. A blue-flame burner including a trough having a bottom, the bottom provided with a surrounding oil-receiving portion and with upwardly-extending perforated projections, a diaphragm seated upon the projections and provided with corresponding perforations, the said diaphragm forming a seat for the inner perforated tube of the combustion-section.

2. A blue-flame burner including a burner-trough having an outer surrounding wall and a bottom filling the space surrounded by said wall, said bottom provided with vertically-arranged perforated projections and a surrounding oil-channel.

3. A blue-flame burner including a trough having a bottom, the bottom provided with a surrounding oil-receiving portion and with upwardly-extending vertical projections embraced by the surrounding oil-receiving portion, the said projections being substantially conical in longitudinal section, and an oil-feed passing through the bottom and connected with the said surrounding oil-receiving portion.



4. A blue-flame burner including a trough having a bottom, the bottom provided with a surrounding oil-receiving portion, and with upwardly-extending projections, the said projections provided with openings in their upper ends, an oil-feed connected with the surrounding oil-receiving portion and a diaphragm seated upon the said projections and provided with openings corresponding to the openings of the projections, the said diaphragm adapted to form a seat for the lower end of the inner combustion-tube.

5. A blue-flame burner including a trough having a bottom, the bottom provided with a surrounding oil-receiving portion and with upwardly-extending projections, the projections provided with openings in their upper ends, and also provided with surrounding shoulders, a diaphragm provided with perforations corresponding with the openings in the projections and seated thereupon and held in position by the said shoulders or flanges.

6. A blue-flame burner including a trough having a bottom, the bottom having a surrounding oil-receiving portion and upwardly-extending projections, the projections having openings in their upper ends, a diaphragm seated upon the projections and having openings corresponding with the openings in the projections, the projections having members interlocking with the diaphragm to position and hold the diaphragm in place, the diaphragm adapted to form a seat for the lower end of the inner combustion-section.

7. A blue-flame burner including a trough having a bottom, the bottom provided with a surrounding oil-receiving portion and with upwardly-extending projections, the projections having openings in their upper ends, the projections provided with flanges surrounding the said openings, a diaphragm seated upon the projections and having openings embracing the said flanges, the diaphragm adapted to form a seat for the lower end of the inner combustion-section.

8. A blue-flame burner including a trough having an outer surrounding wall and a bottom filling the space surrounded by said wall; said bottom provided with a plurality of vertically-arranged perforated projections, an oil-channel surrounding said perforations, an oil-feed extending through said bottom and arranged centrally between said projections, and oil-feeding channels radiating from said oil-feed and extending between said projections to said oil-channel.

9. A blue-flame burner including a trough having a bottom, the bottom having a surrounding oil-receiving portion, a feed extending through the bottom, an oil-feeding channel connecting the oil-feed with the surrounding oil-receiving portion, and a diaphragm supported within the trough at a point above its bottom and adapted to receive the lower end of the inner combustion-section.

10. A blue-flame burner including a trough having a bottom, a surrounding oil-receiving portion, an oil-feed passing through the bottom and operatively connected with the oil-surrounding portion, and a combined diaphragm and air-deflector supported from the bottom of the trough and in a plane above the said oil-receiving portion.

11. A blue-flame burner including a trough having a bottom, a surrounding oil-receiving portion, a combined cap and air-deflector comprising a lower diaphragm and an upper diaphragm, the lower and upper diaphragms having openings out of line with each other, the said diaphragms being supported in a plane above the said oil-receiving portion.

12. A blue-flame burner including a trough having a bottom, the bottom having a surrounding oil-receiving portion and a com-

bined cap and air-deflector located within the trough and consisting of a diaphragm with a projecting portion adapted to receive the lower end of the inner combustion-tube, and with an upper inwardly-extending portion extending within the lower end of the inner combustion-tube, the said diaphragm and upper portion having openings.

13. An oil-burner including a trough, in combination with a combined cap and air-deflector located within the trough, the said air-deflector consisting of a diaphragm and a dome-shaped portion, the diaphragm and dome-shaped portion having air-passages.

14. A blue-flame burner including a trough having an oil-receiving portion, in combination with a combined cap and air-deflector consisting of a substantially horizontal diaphragm and a dome-shaped portion, the diaphragm and dome-shaped portion having air-passages.

15. A blue-flame burner including a trough having an oil-receiving portion, in combination with a combined cap and air-deflector consisting of a lower diaphragm and an upper dome-shaped portion, the diaphragm and dome-shaped portion having air-passages, the said combined cap and air-deflector having a laterally-extending flange adapted to receive the lower end of the inner combustion-section.

16. An oil-stove comprising a framework having a web portion extending through substantially the center thereof, an oil-trough, a main feed-pipe, a reservoir connected therewith, the main feed-pipe extending through the framework, an auxiliary pipe connecting the main feed-pipe with the burner, one end of the auxiliary pipe being supported by the said web, the said auxiliary pipe having a vertical portion connected with the main feed-pipe, and a vertically-arranged valve extending through the main feed-pipe and regulating the flow of oil therefrom to the said auxiliary pipe.

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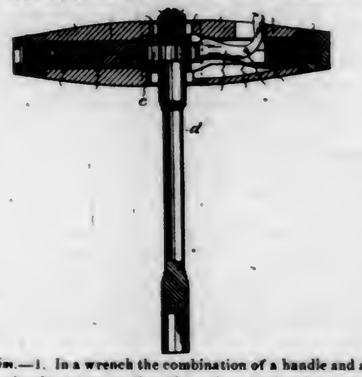
757,877. HOSE. FRANK B. BOSCH, Philadelphia, Pa. Filed Dec. 20, 1901. Serial No. 86,686. (No model.)



*Claim.*—A hose comprising in its construction inner and outer coverings of impervious material, and a series of three intermediate layers of textile material, the threads of the middle layer of the intermediate series being disposed in a given manner and the threads of the inner and outer layers being disposed in a contrary manner, whereby the tendency of the threads of one intermediate layer to expand or contract is resisted by the contrarily-arranged threads of an immediately adjoining layer.

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757,878. RATCHET-WRENCH. GEORGE BRAUER, Sacramento, Cal. Filed July 22, 1903. Serial No. 166,564. (No model.)




*Claim.*—1. In a wrench the combination of a handle and a head, having a circular aperture therethrough, a ratchet located in said head and having an annular screw-threaded aperture therethrough concentric with the aperture in the head, a socket-stud or socket-studs having a circular flange adapted to engage the aperture in the head and the bottom of the ratchet and having a screw-threaded tip or nipple adapted to engage the aperture in the ratchet and an additional screw-nipple with left-handed thread; a cylindrical locking-nut adapted to engage the circular aperture in the head and the top of the ratchet and having an internal left-handed screw-thread adapted to engage the left-handed screw-nipple of the stud; a spring-actuated dog adapted to engage the ratchet and normally hold it in rigid contact with the handle and means to operate the dog to disengage it from the ratchet, substantially as described.

2. In a wrench the combination of a bifurcated head having a circular aperture therethrough, a ratchet loosely mounted in said head having an annular screw-threaded aperture therethrough concentric with aperture in the head; a socket-stud or socket-studs having a circular flange adapted to engage the aperture in the head and the bottom of the ratchet and having a screw-threaded tip or nipple adapted to engage the aperture in the ratchet and an additional screw-nipple with left-handed thread; a cylindrical locking-nut adapted to engage the aperture in the head and the top of the ratchet and having an internal left-handed screw-thread adapted to engage the left-handed screw-nipple of the stud, a spring-actuated dog adapted to engage the ratchet and normally hold it in rigid contact with the handle and having an upwardly-extending arm by which it may be operated to release the ratchet; a longitudinal socket in the handle and a crank-shaped socket-bit adapted to engage the same, substantially as described.

3. The combination of a handle and a mortised head having a circular aperture therethrough, a ratchet located in the head having an annular screw-threaded aperture therethrough concentric with the aperture in the head, a tool-stud having a circular flange adapted to engage the bottom of the ratchet and the aperture in the head and having a screw-threaded tip or nipple adapted to engage the aperture in the ratchet and an additional screw-tip of left-handed thread on top of the first, a cylindrical locking-nut adapted to engage the top of the ratchet, the left-handed screw-tip of the stud and the aperture in the head and suitable means to connect or disconnect the ratchet to or from the handle in the operation of the tool, substantially as described.

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757,879. POCKET. LOUIS M. BROWN, Central City, S. D. Filed July 15, 1903. Serial No. 165,564. (No model.)



*Claim.*—1. A pocket for the purpose set forth, having the front centrally bulged and converging toward its lower extremity, the latter being closed, the inner opposing surfaces of the front and back of the pocket being roughened by intersecting corrugations arranged at an angle to each other.

2. A pocket for the purpose set forth, having the inner opposing surfaces of the front and back formed of rubber and roughened by forming thereon intersecting corrugated surfaces.

3. A pocket for the purpose set forth, having the inner surfaces of the front and back roughened over the entire extent of said surfaces within the pocket confines the lower end of the pocket being closed.

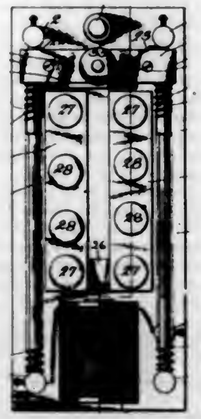
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757,880. ELECTRIC RHEOSTAT. ROY W. BROWN, Amsterdam, N. Y. Filed Apr. 21, 1903. Serial No. 153,592. (No model.)

*Claim.*—1. In a rheostat the combination of a resistance body, a movable contact-piece, contact-pieces located and supported on the resistance body and arranged so that as the movable contact-piece is moved along the resistance body parts of the resistance body will be cut out of the circuit, first a part at one end and then a part at the other end



2. In a rheostat the combination of a resistance body, an external circuit, a movable contact-piece having two contacts connected directly to the said external circuit, contact-pieces supported by the said resistance body and arranged so as to make contact with the contact-pieces connected to the ends of the resistance body and then to make contact with a contact-piece at a point farther from one end of the resistance body and then to a contact-piece at a point farther from the other end as the movable contact-piece is moved over the said contact-pieces.



3. In a rheostat the combination of a resistance body composed of a friable material, contacts supported by the said friable body and arranged so that the corresponding contacts counting from each end will be at different distances from the ends, a movable contact adapted to make contact with the contacts of the resistance body.

4. In a rheostat the combination of a pair of carbon rods electrically connected together at one end of each of said rods, a movable contact-piece, contacts supported on the said rods and arranged so that the said contact-piece will make contact with the contacts alternately on the rods as the contact-piece moves along the said contacts.

5. In a rheostat the combination with a pair of carbon rods, a movable contact-piece, contacts supported on the said rods and arranged so that the said contact-piece will make contact with a contact on one rod and then with a contact on the other rod before passing from the contact of the first-named rod and so alternately as the contact-piece moves over the said contacts.

6. In a rheostat the combination of a resistance body, a movable contact-piece having a pair of terminal contacts contacts supported on the said resistance body and adapted to make contact with the said terminal contacts, an electromagnet for securing the said contact-piece, and means for deenergizing the said electromagnet.

7. In a rheostat the combination of a resistance body, a movable contact-piece having two terminal contacts, guides for the said contact-piece, contacts connected to the said resistance body and adapted to make connection with the said terminal contacts, an electromagnet for securing the said movable contact-piece, a switch for deenergizing the said electromagnet, and a spring for causing the said contact-piece to return to its normal position.

8. In a rheostat the combination of a resistance body, contacts supported on the said resistance body, a contact-piece consisting of an insulating-body, a pair of sleeves supported by the said insulating-body, plungers, springs for controlling the said plungers, contact-shoes hinged to the said plungers and adapted to make contact with two of the said contacts at any one time.

9. In a rheostat the combination of a resistance body, contacts supported on the said resistance body and consisting of a contact-piece and a non-corrosive piece and means for clamping the said pieces to the resistance body by a means passing on the outside of the resistance body, and a movable means for making contact with the said contacts.

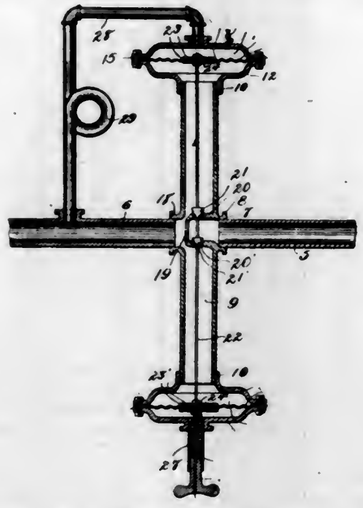
10. In a rheostat the combination of a resistance body, composed of carbon, contacts carried by the said resistance body and consisting of a contact-piece and a non-corrosive piece for connecting the said contact-piece with the said resistance body and means for securing the said pieces to the resistance body by clamping the said piece around on the outside of the said resistance body, a movable means for making contact with the said contacts.

11. In a rheostat the combination of a resistance body, contacts located on the said resistance body, bolts and a clamping-piece for clamping the said contacts around on the outside of the said resistance body, a non-corrosive body located between the said clamping-piece and the said resistance body.

12. In a rheostat the combination of a resistance body consisting of a pair of rods composed of carbon, contacts located on the said rods, non-corrosive material located between the said contacts and the said carbon rods, a contact-piece composed of an insulating-body, a pair of spring-contacts, a pair of sleeves and plungers located in the said sleeves and connected to the said contacts for guiding the same.

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757,881. REDUCING-VALVE. JAMES J. BURKE, Hartford, Conn. Filed June 25, 1902. Serial No. 113,094. (No model.)



*Claim.*—1. The combination, with a tube having an intermediate valve-chamber, and provided with an unobstructed extension on each side of said valve-chamber, of diaphragm-chambers, one located at each end of said tube; flexible diaphragms covering said chambers; chambered caps removably secured to the chambers, and serving to connect the diaphragms thereto; a spring bearing against one of the diaphragms; means for regulating the tension of said spring; a high-pressure pipe communicating with the valve-chamber; a valve-rod passing through the tube and valve-chamber and secured to the diaphragms, a valve on said rod, coöperating with a port of the valve-chamber; a low-pressure pipe connected to the tube; and a pipe leading from said low-pressure pipe and entering the cap of one of the diaphragm-chambers.

2. The combination, with a tube having an intermediate valve-chamber, and provided with an unobstructed extension on each side of said valve-chamber, of diaphragm-chambers secured to the ends of said tube; flexible diaphragms covering the tops of said chambers; chambered caps for securing the diaphragms in place; a rod secured to each diaphragm; valves on the rod, and coöperating with ports of the valve-chamber; a spring bearing against one of the diaphragms; means for adjusting the tension of said spring; a high-pressure pipe entering the valve-chamber; a low-pressure pipe communicating with the tube; and a trapped conduit leading from the low-pressure pipe to one of said chambered caps.

3. In a reducing-valve, the combination, with an unobstructed barrel having chambers in each of its ends and provided with a casing having ports, of flexible diaphragms located in and extending across said chambers; chambered caps for securing the diaphragms in place; a rod connected to said diaphragms and having an extension passing through one of them; valves carried by the rod and coöperating with the ports of the casing; a high-pressure pipe connected to said casing; a low-pressure pipe communicating with the barrel; a conduit leading from the low-pressure pipe to one of the chambered caps; a tube secured to one of the caps of the diaphragm-chambers; a spring in said tube, said spring surrounding the rod; and a longitudinally-perforated screw fitted over the ex-

tension of the valve-rod, and threaded into the tube, said screw serving to adjust the tension of the spring.

## 757,882. HITCHING-POST. THOMAS C. BUTTERWORTH, San Francisco, Cal. Filed Nov. 10, 1903. Serial No. 180,560. (No model.)



*Claim.*—1. A hitching-post comprising an underground casing with a surface plate having a central opening and also holes on each side of the central opening, a vertically-extensible post passing through the central hole, chains or cables attached at their upper ends to the extensible post and spaced a distance from the post and passing through the holes in the surface plate and sinker-weights attached to the lower ends of the chains within the casing to maintain said chains under tension and positively return them through the holes into the casing below substantially as and for the purpose described.

2. In a hitching-post of the kind described, the combination with the hollow post; of a cap mounted on the post and having a hole in the center, a weighted halter-chain passing through said hole, said chain having in its length an expansible spring-link adapted to be elongated so as to be drawn through said hole and to expand above the hole to hold the weight of the halter-chain suspended without tension on the portion of the halter-chain above the cap substantially as described.

3. In a hitching-post of the kind described, the combination with the hollow and vertically-extensible post and its casing having a surface plate at the top; of a cap mounted on the top of said post and extending completely over the surface plate and having a central hole through it, said cap being arranged concentrically above the surface plate, and a weighted halter-chain passing through the cap substantially as shown and described.

4. In a hitching-post of the kind described, the combination of a vertically-extensible hitching-post having a surmounting and overhanging cap, a casing for the post having a surface plate, and one or more chains connected to the overhang of the cap and extending through the surface plate of the casing in parallel position to the post to form therewith bicycle-holders as described.

5. In a hitching-post of the kind described, the combination of a vertically-extensible hitching-post having a surmounting and overhanging cap, a casing for the post having a surface plate, one or more chains connected to the overhang of the cap and extending through the surface plate and provided at the lower end with means for maintaining the chains under tension when the post is raised substantially as described.

6. In a hitching-post of the kind described, the combination of a vertically-extensible post having a surmounting and overhanging cap, and a vertically-extensible device attached to the overhanging cap and extending parallel to the post and at a distance therefrom into and out from the earth, whereby the post is maintained in steady upright position substantially as described.

7. In a hitching-post of the kind described, the combination of a vertically-extensible hitching-post having a surmounting and overhanging cap, a casing for the post having a surface plate, a chain attached to the overhang of the cap and passing through the surface plate, a weight for the lower end of the chain and a buffer spring arranged above the weight substantially as shown and described.

8. In a hitching-post of the kind described, the combination with the vertically-extensible post of two oppositely-acting sets of weights, one being provided with cushion-springs to form elastic stops to the upward movement of the post, and the other being connected to the post through cords and pulleys and arranged to lift the post up, substantially as and for the purpose described.

9. In a hitching-post of the kind described, the combination with a vertically-channeled surface plate and a vertically-extensible post moving through the plate; of an upright spring-catch arranged on the outer side of the post and moving through the channel of the surface plate and having a freely-moving upper end adapted to lock over the surface plate to hold the post in elevated position, and means for detachably securing the lower end of the catch to the lower end of the post substantially as described.

10. In a hitching-post of the kind described, the combination with a surface plate and a vertically-extensible post moving through the plate; of a locking-catch arranged on the outside of the post and having its lower end bent inwardly, a screw-plug for the lower end of the post having a circular groove with inlet-opening to receive the inturned end of the spring-catch, and a ring having a hole to receive the lower end of the spring-catch and arranged to be clamped between the screw-plug and the lower end of the post substantially as described.

## 757,883. CEMENTING MATERIAL AND PROCESS OF MAKING SAME. THOMAS W. CAPPON, Ossining, N. Y. Filed Dec. 2, 1903. Serial No. 183,490. (No specimens.)

*Claim.*—1. The process of forming a cementing material which consists in hydrating to a considerable extent a mixture of calcium and magnesium oxids and adding thereto a suitable proportion of a suitable chlorid, whereby an oxychlorid of magnesium is formed; substantially as described.

2. The process of forming a cementing material which consists in calcining magnesian limestone, then hydrating the same to a considerable extent and then adding to the unchanged resultant product a suitable proportion of hydrochloric acid or a suitable chlorid, substantially as described.

3. The process of manufacturing mortar which consists in adding a suitable proportion of sand or powdered stone to a cementing material formed by adding a suitable chlorid to a mixture of magnesium and calcium oxids hydrated to a considerable extent; substantially as described.

4. The process of manufacturing cementing material which consists in sprinkling a solution of a suitable chlorid upon a mixture of magnesium and calcium oxids hydrated to a considerable extent, while said mixture is in a state of agitation; substantially as described.

5. The process of manufacturing dry mortars which consists in mixing with sand or powdered stone a certain proportion of quicklime containing a magnesium oxid, then adding a proper proportion of aqueous solution of a suitable chlorid and finally completing the mixture by adding a suitable proportion of hydrated calcium and magnesium oxids hydrated to a considerable extent, substantially as described.

6. A dry mortar comprising a large proportion of sand or powdered stone, mixed with calcium and magnesium oxids hydrated to a considerable extent and a suitable chlorid; substantially as described.

7. The process of making a cement-powder, which consists in adding a suitable chlorid to a mixture of hydrates of magnesium and calcium with anhydrous oxids of the same bases; substantially as described.

8. A cementing material consisting of powdered hydrates and oxids of magnesium and calcium mixed with powdered chlorids capable, when dissolved in water of reacting with said magnesium hydrates and oxids to form oxychlorids of magnesium, substantially as described.

9. The process of manufacturing cementing material which consists in adding commercial hydrochloric acid to a mixture of more or less hydrated calcium and magnesium oxids in approximately the proportions of three parts acid, twelve parts calcium compound and eight parts magnesium compound, substantially as described.



## 757,884. THERMAL CUT-OUT. HENRY P. CLAUSEN, Chicago, Ill., assignor to P. C. Burns and J. G. Ihmsen, Chicago, Ill. Filed July 18, 1903. Serial No. 166,198. (No model.)



*Claim.*—1. A thermal cut-out comprising a heat-concentrating member, softenable material associated with said member and adapted to be softened by the heat thereof, coacting members bearing upon opposite sides of said softenable material, and means including a spring for causing the said coacting members to shear the softenable material upon the passage of an abnormally strong current and the consequent softening of said material, the said softenable material being removably interposed between the opposing edges of said members.

2. A thermal cut-out comprising a heat-concentrating member, suitable softenable material, and means including a pair of telescoping members and a spring for shearing said material upon the passage of an abnormally strong current and the consequent softening of said material, said softenable material being interposed between the opposing ends of said members.

3. A thermal cut-out comprising a heat-concentrating member, a body of softenable material, and means including relatively sliding members and a spring for shearing said material upon the passage of an abnormally strong current and the consequent softening of said material, the said softenable material being removably interposed between the opposing edges of said members.

4. A thermal cut-out comprising a suitable heating-coil, a thin sheet of softenable material, and means including a pair of sharp-edged telescoping members and a spring for shearing said sheet of softenable material upon the passage of an abnormally strong current and the consequent softening of said material, said softenable material being interposed between the opposing ends of said members.

5. A thermal cut-out comprising means for maintaining the electrical continuity of a circuit and for opening said circuit upon the passage of an abnormally strong current, said means including a heat-coil and a suitable spring, and including also a small thin removable ring of solder positioned in place to normally hold said spring under tension, but adapted when softened by the heat of said coil to release said spring.

6. A thermal cut-out comprising a member, softenable material engaging said member, a shearing member having a cutting edge bearing normally against said softenable material, a high resistance associated with said softenable material, and a spring normally exerting its tension through said shearing member on the softenable material.

7. A thermal protector comprising a support, a thin ring of solder on said support, a shearing member adapted to telescope over said support and provided with a circular cutting edge bearing normally against said solder, a heating member associated with said solder, and a spring normally exerting its tension through said shearing member on the solder.

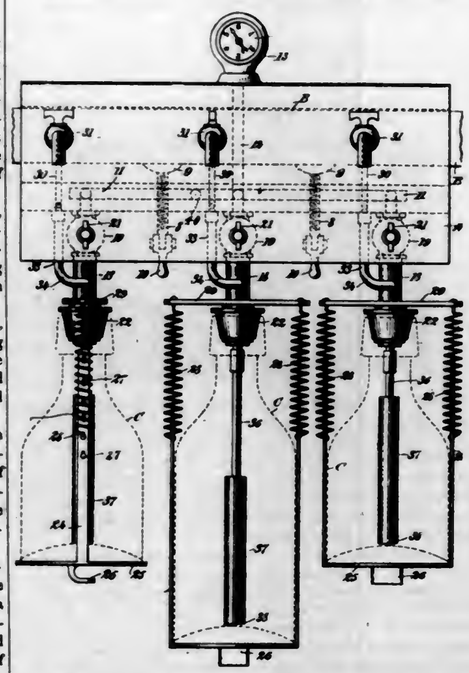
8. A thermal cut-out, comprising a body of softenable material, a pair of shearing members held normally against relative movement by said material, a resistance associated with said material, and a spring acting to shear said material upon the passage of sufficient current through said resistance and the consequent softening of said material.

## 757,885. ANTISEPTIC TOOTH-BRUSH HOLDER. JAMES A. COCHRANE, Cincinnati, Iowa. Filed Aug. 3, 1903. Serial No. 167,967. (No model.)



*Claim.*—An antiseptic tooth-brush holder, comprising a body vessel adapted to contain a liquid dentifrice and the head of a tooth-brush immersed in the dentifrice, said body vessel being upwardly inclined from its base and having its upper portion formed in a neck which inclines in the opposite direction, and a conical tubular cap, adapted to contain and cover the brush-handle and detachably connected to the body vessel, the latter and the cap having coacting devices to form a liquid-tight joint between them, and said cap having a hanger at its upper end, for the purpose set forth.

## 757,886. LIQUID-DISPENSING APPARATUS. WILLIAM B. COCHRANE, Chicago, Ill. Filed Mar. 24, 1903. Serial No. 149,352. (No model.)



*Claim.*—1. A liquid-dispensing apparatus having an angular counter-fixture provided with air-passages and with a series of individual liquid-passages, separate air and liquid cocks in communication with the respective passages of said counter-fixture, a series of pressure-pipes in communication with the air-passages and each having means for connecting the same with bottles or packages, and eduction-pipes fitted to the pressure-pipe and communicating individually with the liquid-passages.

2. A dispensing apparatus comprising a counter-fixture having means for clamping the same in position, air and liquid passages in said counter-fixture, pressure-pipes attached to the counter-fixture, and communicating with the air-passages therein, eduction-pipes fitted to the pressure-pipes and having communication individually with the liquid-passages, and suitable draw-cocks also communicating individually with said liquid-passages.

3. A dispensing apparatus comprising a counter-fixture having means for clamping the same in position, an air-passage in said frame or plate, a liquid-passage separate from said air-passage, a draw-cock for controlling the liquid-passage, a valved pressure-pipe in communication with the air-passage, and an eduction-pipe communicating with the liquid-passage and passing through the pressure-pipe.

4. A liquid-dispensing apparatus having a counter frame or plate provided with means for clamping the same in position, an air-passage and a series of liquid-passages in said frame or plate, a series of valved pressure-pipes communicating with the air-passage and each provided with a plug or stopper, and extensible eduction-pipes passing individually through the pressure-pipes and communicating in like manner with the liquid-passages of said counter frame or plate.

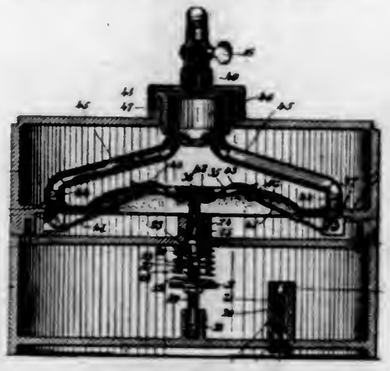
5. In a liquid-dispensing apparatus, the combination with a pressure-pipe having a bottle-stopper, of a cross-head fitted on said pipe above the stopper thereof and free to turn in a horizontal plane, a

stirrup, and springs connected to said cross-head and to the stirrup for suspending the latter from the cross-head.

6. In a liquid-dispensing apparatus, the combination with a pipe having a bottle-stopper, of a cross-head fitted on said pipe, a stirrup having its legs provided with a plurality of apertures, and springs attached to the cross-head and connected adjustably to the apertured legs of the stirrup, said springs being effective in suspending the stirrup from the cross-head, in variable relation thereto.

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**757,887. GAS-HOLDER.** JOHN H. COLE, Black Diamond, Wash. Filed June 11, 1903. Serial No. 161,013. (No model.)



*Claim.*—1. A gas-holder, comprising walls forming high and low pressure chambers in communication with each other, and the walls of the low-pressure chamber including a diaphragm, a valve controlling the communication between the two chambers, a stem in connection with the valve and attached to the diaphragm, a valve controlling the outlet from the low-pressure chamber, a connection between the diaphragm and said valve, and a spring actuating said connection, for the purpose specified.

2. A gas-holder, comprising walls forming high and low pressure chambers in communication with each other, and the walls of the low-pressure chamber including a diaphragm, a valve controlling the communication between the two chambers, a stem in connection with the valve and attached to the diaphragm, a valve controlling the outlet from the low-pressure chamber, a connection between the diaphragm and said valve, and a spring actuating said connection, for the purpose specified, said spring being attached to the diaphragm directly adjacent to the first-named valve-stem and having its free end acting toward the connection between the diaphragm and the second-named valve.

3. A gas-holder, comprising walls forming an inclosed high-pressure chamber having an outlet and an inlet orifice, a closure for the inlet-orifice, a valve commanding the outlet-orifice, additional walls forming an inclosed low-pressure chamber into which the outlet-orifice of the high-pressure chamber leads, the low-pressure chamber having an outlet, a valve commanding said outlet, and means for actuating the two valves, said means being operated by the pressure within the low-pressure chamber.

4. A gas-holder, comprising walls forming an inclosed high-pressure chamber having an outlet and an inlet orifice, a closure for the inlet-orifice, a valve commanding the outlet-orifice, additional walls forming an inclosed low-pressure chamber into which the outlet-orifice of the high-pressure chamber leads, the low-pressure chamber having an outlet, a valve commanding said outlet, and means for actuating the two valves, said means being operated by the pressure within the low-pressure chamber, and comprising a diaphragm, and connections between the diaphragm and the valves.

5. A gas-holder, comprising walls forming a high-pressure chamber, walls forming a low-pressure chamber, said chambers communicating with each other, a valve controlling said communication the walls forming the low-pressure chamber communicating with the outlet of the high-pressure chamber the low-pressure chamber having an outlet, a valve commanding the outlet of the low-pressure chamber, means for operating said valves, such means being actuated by the pressure in the low-pressure chamber, walls forming an additional or expansion chamber communicating with the outlet of the low-pressure chamber, and means for controlling the outflow from said expanded chamber.

6. A gas-holder, comprising walls forming a chamber, said chamber including a flexible diaphragm, a valve commanding an outlet from said chamber, connections between said valve and the diaphragm, and a support bearing on the diaphragm at the point of its attachment to the said valve connection.

7. A gas-holder, comprising walls forming high and low pressure chambers, the walls of the low-pressure chamber including a flexible diaphragm, a centrally-located valve commanding communication between the two chambers, said valve having its stem attached to the central portion of the diaphragm, a valve controlling an outlet from the low-pressure chamber, connections between the valve and said diaphragm, to operate the former, and a spring attached to the central portion of the diaphragm and extending outward and bearing against the diaphragm at the point of its attachment to said valve connections.

8. A gas-holder, comprising a body or outer casing having an upwardly-extending nipple surrounding an opening therein, walls forming a chamber set in said openings and supported by the nipple, said chamber having communication with the gas-holder proper, a cap secured over the nipple and top of said chamber, and a valve carried by the cap and commanding the outflow from said chamber.

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**757,888. AUTOMATIC PIPE-COUPLING.** CHRISTOPHER O. COLE, Whatcom, Wash. Filed Aug. 21, 1903. Serial No. 170,302. (No model.)



*Claim.*—1. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members in the said heads, and pneumatically-controlled means in each coupling-head for moving the said members into a coupling position, the means in one head being automatically controlled by the coupling member of the other head, as set forth.

2. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members in the said heads, and pneumatically-controlled means for moving the said members into a coupling position and locking the same therein, as set forth.

3. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members in the said heads, pneumatically-controlled means for moving the said members into a coupling position and locking the same therein, and a manually-controlled releasing device for the said means, to unlock the members, as set forth.

4. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members in the said heads, pneumatically-controlled means for moving the said members into a coupling position and locking the same therein, and a releasing device, controlled by the heads on separating the same, as set forth.

5. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members in the said heads, pneumatically-controlled means for moving the said members into a coupling position and locking the same therein, and an automatic releasing device for the said means, as set forth.

6. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members in the said heads, and pneumatically-controlled means for moving the said members into a coupling position and locking the same therein, the means in one head being actuated by the coupling member of the other head, as set forth.

7. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, and a pneumatically-controlled wedge in each coupling-head, for engaging and moving the said block, as set forth.

8. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, and pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, as set forth.

9. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, and pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, and a cylinder containing a piston connected with the said wedge, the said second piston-valve being connected with one end of the cylinder, as set forth.

10. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, and pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, a cylinder containing a piston connected with the said wedge, the said second piston-valve being connected with one end of the cylinder, an outlet from the said cylinder, leading to a port in the said fixed part, and a pipe on the entering coupling member, adapted to connect with the said port, the said pipe connecting with the piston-valves in the other coupling-head, a third piston-valve in each coupling-head, connected with the train-pipe and with the said outlet from the cylinder, and a pipe leading from the third piston-valve to the coupling member, to connect with the corresponding pipe in the other coupling member, as set forth.

11. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and movjng the said block, and pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, a cylinder containing a piston connected with the said wedge, the said second piston-valve being connected with one end of the cylinder, an outlet from the said cylinder, leading to a port in the said fixed part, a pipe on the entering coupling member, adapted to connect with the said port, the said pipe connecting with the piston-valves in the other coupling-head, a third piston-valve in each coupling-head, connected with the train-pipe and with the said outlet from the cylinder, and a pipe leading from the third piston-valve to the coupling member, to connect with the corresponding pipe in the other coupling member, as set forth.

12. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, and a releasing device for the said means, as set forth.

13. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, and a releasing device for the said means, controlled by the coupling-heads on separating the same, as set forth.

14. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, a cylinder containing a piston connected with the said wedge, the said second piston-valve being connected with one end of the cylinder, and a releasing device connected with the said second piston-valve and controlled by the coupling-heads on separation of the same, as set forth.

15. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, a cylinder containing a piston connected with the said wedge, the said second piston-valve being connected with one end of the cylinder, and a three-way valve interposed in the connection between the said second piston-valve and the said cylinder, to connect the latter with the atmosphere, as set forth.

16. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, a cylinder containing a piston connected with the said wedge, the said second piston-valve being connected with one end of the cylinder, an outlet from the said cylinder, leading to a port in the said fixed part, a pipe on the entering coupling member, adapted to connect with the said port, the said pipe connecting with the piston-valves in the other coupling-head, a third piston-valve in each coupling-head, connected with the train-pipe and with the said outlet from the cylinder, a pipe leading from the third piston-valve to the coupling member, to connect with the corresponding pipe in the other coupling member, and a releasing device connected with the said second pis-

ton-valve and controlled by the coupling-heads on the separation of the same, as set forth.

17. An automatic pipe-coupler having coupling-heads, pipe-carrying coupling members fulcrumed in the said heads, the member in one head being adapted to abut against a fixed part in the other head, a block movable in each coupling-head and adapted to engage the free end of the entering coupling member of the other head, to move the said entering coupling member against the said fixed part and lock it thereon, a wedge in each coupling-head, for engaging and moving the said block, pneumatically-controlled means in each coupling-head, actuated by the entering coupling member and connected with the corresponding wedge, the said means comprising a piston-valve connected with the train-pipe, a second piston-valve connected with the first-named piston-valve, a cylinder containing a piston connected with one end of the cylinder, an outlet from the said cylinder, leading to a port in the said fixed part, a pipe on the entering coupling member, adapted to connect with the said port, the said pipe connecting with the piston-valves in the other coupling-head, a third piston-valve in each coupling-head, connected with the train-pipe and with the said outlet from the cylinder, a pipe leading from the third piston-valve to the coupling member, to connect with the corresponding pipe in the other coupling member, and a three-way valve interposed in the connection between the second piston-valve and the said cylinder, to connect the latter with the atmosphere, as set forth.

18. An automatic pipe-coupler having a coupling-head adapted to receive a coupling member from an opposite coupling-head, a block movable in the coupling-head, to press the said entering coupling member against a fixed part in the said coupling-head, a wedge for engaging and moving the said block in one direction, a pneumatic cylinder, and a spring-pressed piston therein, connected with the said wedge, as set forth.

19. An automatic pipe-coupler having a coupling-head provided with a fixed part having a rounded-off portion, a coupling member fulcrumed on the fixed part and having its free end provided with a head adapted to fit the rounded-off portion of the fixed part in the opposite coupling-head, and a catch on the said coupling member, adapted to engage spaced notches in the fixed part, to hold the coupling member in either of two positions, as set forth.

20. An automatic pipe-coupler having a releasing device for a piston-valve, controlled from the draft coupler-head of the car, as set forth.

21. An automatic pipe-coupler having a releasing device for a piston-valve, comprising a lever engaging at one end the valve-stem of the piston-valve, a link pivotally connected with the said lever, a flexible connection between the link and the draw-bar, and a spring-catch for engaging the pivotal connection between the link and lever, to hold the connection in either of two positions, as set forth.

22. An automatic pipe-coupler having a releasing device for a piston-valve, comprising a lever engaging at one end the valve-stem of the piston-valve, a link pivotally connected with the said lever, a flexible connection between the link and the draw-bar, a spring-catch for engaging the pivotal connection between the link and lever, to hold the connection in either of two positions, a coupling-head on which the lever and catch are held, a spring-support for the coupling-head, provided with lugs, and a rod on the said lever, having stop-collars for engaging by the said lugs, as set forth.

23. An automatic pipe-coupler provided with a coupling-head, and a coiled-spring support for the rear end of the coupling-head, to allow longitudinal and sidewise motion of the coupling-head, as set forth.

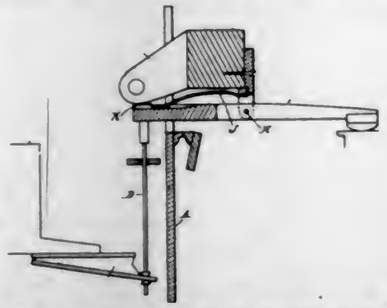
24. An automatic pipe-coupler provided with a coupling-head, a flexible suspension for suspending the forward end of the coupling-head from the draft-coupler head, and a longitudinally-extending coiled-spring support for the rear end of the coupling-head, to allow longitudinal and transverse movement of the coupling-head, as set forth.

25. An automatic pipe-coupler provided with a coupling-head having a rearwardly-extending hub, a sleeve slidable on the said hub, a fixed support, a spiral spring connecting the fixed support with the said sleeve, and a second spiral spring held on the said support and freely engaging the sleeve, to abut against the said head, as set forth.

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**757,889. KEY-STRIKER FOR PIANO-PLAYERS.** JOSEPH COURVILLE, Detroit, Mich., assignor to Farrand Organ Company, Detroit, Mich., a Corporation of Michigan. Filed Sept. 9, 1902. Serial No. 122,681. (No model.)

*Claim.*—1. In a piano-player, the combination with a horizontally-extending key-striking lever, of a fulcrum-bar therefor having at its rearward side a depending bifurcated bracket, a pivot-pin for securing said lever between the furcations of said bracket, a pneumatic motor for actuating one end of said lever, and an elongated rearwardly-extended spring-arm having an upwardly-extended portion engaging a slotted portion of said bracket between the furcations thereof, and bearing against the upper surface of said lever.

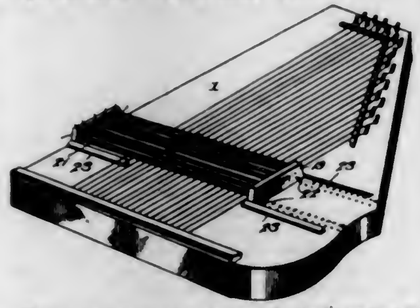


2. In a piano-player, the combination with a horizontally-extending key-striking lever, of a fulcrum-bar therefor having at its rearward side a depending bifurcated bracket, said key-striking lever being pivoted intermediate the furcations of said bracket, a pneumatic motor for actuating one end of said lever, and an elongated rearwardly-extended spring-arm having an upwardly-extended portion engaging a recessed portion of said bracket between the furcations thereof and bearing against the upper surface of said lever.

3. In a piano-player, the combination with a key-striking lever, of a supporting-bar therefor having a depending bifurcated bracket, said key-striking lever being pivoted intermediate the furcations of said bracket, means for actuating one end of said lever, and a spring-arm secured to the bracket at a point intermediate of and at the top of said furcations, said spring bearing against the upper surface of said lever.

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**757,890. AUTOHARP.** ELLIS B. CROSBY, Stevensville, Mont. Filed Nov. 14, 1902. Serial No. 131,441. (No model.)



*Claim.*—An autoharp comprising the body portion having spaced-apart guideways on opposite sides thereof and rows of openings in one side of the body portion between its guideways, and boxes having bars with mutes thereon movable in the guideways on both sides of the body, and rods secured to the boxes having ends projecting through one of the boxes and provided with hooks to engage the openings in the body whereby to adjust said boxes in the desired positions, substantially as specified.

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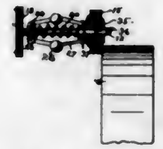
**757,891. PULLEY-DRIVING MECHANISM.** IRVIN J. DAILY, Indianapolis, Ind., assignor to Henricks Novelty Company, Indianapolis, Ind., a Corporation of Indiana. Filed Apr. 9, 1903. Serial No. 151,771. (No model.)

*Claim.*—1. The combination with a fly-wheel, of a pulley with its side in contact with the side of the fly-wheel, and a spring-controlled mounting for the pulley, substantially as and for the purpose set forth.

2. The combination with a fly-wheel, of a pulley with its side



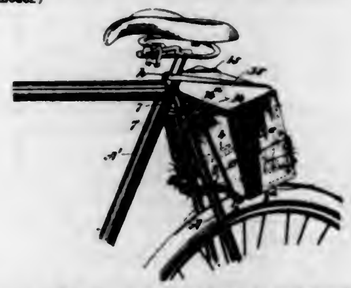
in contact with the rim of the fly-wheel, means for mounting said pulley to permit it to be movable toward or away from the fly-wheel on a line at a right angle to the surface of the fly-wheel with which the pulley is in engagement, a spring tending to force the pulley against the fly-wheel, and a governor for regulating the forcefulness of the contact between the pulley and the fly-wheel, substantially as set forth.



3. The combination with a fly-wheel, of an electric generator having suitable magnets and an armature within the same, a shaft carrying said armature, bearings in which said shaft is mounted, a pulley mounted on said shaft at a right angle to the shaft and with its side in contact with the rim of the fly-wheel so that the armature-shaft will extend at a right angle from the surface of the fly-wheel with which said pulley is in contact, and a spring tending to hold said pulley against the fly-wheel.

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**757,892. LUGGAGE-CARRIER.** FREDERICK DALEN, Binghamton, N. Y. Filed Apr. 9, 1903. Renewed Jan. 13, 1904. Serial No. 188,927. (No model.)



*Claim.*—1. A luggage-carrier, bent from wire-rod material, comprising a quadrangular bottom border frame, an upright back frame comprising two members formed integral with the side members of the bottom frame, a U-shaped laterally-projected contractible clasp formed of two lapped open hooks that are bent on the upper ends of the back-frame members, and means engaging said clasp for securing it and the back frame in contact with a frame-fork of a bicycle.

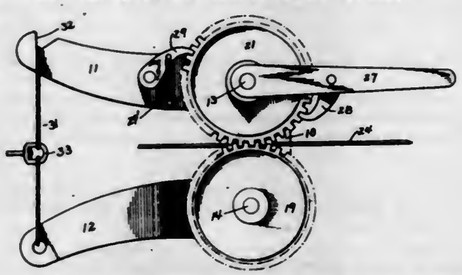
2. A luggage-carrier, bent from wire-rod material, comprising a quadrangular bottom border frame, a back frame embodying two members integral with and bent upward from side members of the bottom frame, each member of the back frame having an open horizontal hook formed on its upper end, said hooks lapping together and forming a contractible clasp, a transverse brace secured on the border frame near the back-frame members, means for holding the contractible clasp in secured engagement with a frame-fork of a bicycle, and means for detachably securing the bottom frame upon the lower portions of the same frame-fork.

3. A luggage-carrier bent from wire-rod material, comprising a quadrangular border frame, a back frame having two members turned up from the side members of the border frame, a front transverse brace-rod secured by its ends on said side members near the members of the back frame, an intermediate bottom-frame portion having hooked connection with the rear transverse bar on the border frame, and also having two similar members extended forward from the hook connection and seating on the transverse brace-rod, these extensions being return bent at their front ends to provide supplementary members therefor, the ends of said supplementary members having loose connection with the transverse brace-rod, means for securing the return-bent ends of the intermediate bottom-frame portion upon the fork of the bicycle-frame, and means for securing the upper ends of the back-frame members upon the said fork.

4. The combination with a bicycle frame-fork, above a wheel rotatable on said frame-fork, of a luggage-carrier formed of wire-rod material, comprising a quadrangular border frame for the bottom of the carrier, a back frame formed by bending its two members upward from the forward ends of the side bars of the border frame, lateral hook members on the upper ends of the two back-frame members that together provide a contractible U-shaped clasp an intermediate bottom-frame portion having a wide hook at its rear end engaged with the rear transverse bar of the border frame, and also having two elongated members extended forwardly from the hook, a transverse brace-rod engaged at its ends upon the side members of the border frame, said elongated frame members seating upon said brace-rod and extending forwardly, return-bent supplementary members at the forward ends of the elongated members of the intermediate bottom frame and secured upon the brace-rod, a strap and buckle adapted to secure the return-bent ends of the elongated members upon the bicycle frame-fork, and a strap and buckle for drawing the U-shaped clasp upon said frame-fork at the upper ends of the back-frame members.

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**757,893. WIRE-STRETCHER.** PHILIP O. DAUGHTERS, Highland, Ohio. Filed Apr. 24, 1903. Serial No. 154,062. (No model.)

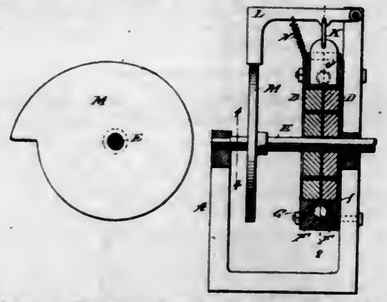


*Claim.*—1. A wire-stretcher comprising a plate, levers pivoted to the plate, a gripping-drum mounted upon each lever eccentric to the path of the lever and movable with the levers toward and away from each other, gears carried by the drums and movable therewith into and out of mutual engagement, an attaching-chain engaged at one end with the free end of one lever and engaged removably with the free end of the opposite lever, and means connected with one of the gear-wheels for rotating both wheels and their drums.

2. A wire-stretcher comprising a plate, levers pivoted to the plate, means for limiting the pivotal movement of one of the levers toward the other lever, a gripping-drum mounted upon each lever eccentric to its pivot and having a gear at one end, said drums and gears being movable with the levers to engage and disengage the gears and to swing the drums into and out of gripping relation, and a pivoted lever having a pawl disposed to engage one of the gears for rotating the gripping-drum.

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**757,894. ROTARY ENGINE.** JOHN S. DAVIS, Montgomery, Ala. Filed Mar. 14, 1904. Serial No. 198,178. (No model.)



*Claim.*—1. The improved rotary engine comprising the horizontal shaft, a metal disk secured thereto and having a peripheral projection whereby it is adapted to serve as a piston, opposite plates having coincident annular grooves forming a steam-passage, an abutment adapted to slide radially in said plates, steam inlet and outlet pipes connected with the plates and communicating with the steam-passage, an angular lever pivoted at a fixed point, and a link connecting it with the sliding abutment, a cam fixed on the aforesaid shaft and working in contact with the pendent end of the lever, and

a spring coacting with said lever for holding it in working contact with the cam, substantially as described.

2. In a rotary engine of the class specified, the combination, with parts forming an annular steam-passage, inlet and outlet steam-pipes, a sliding abutment, and means for operating the same, of a piston formed of a metal plate having a peripheral projection adapted to work in the steam-passage, and heavy plates secured on opposite sides of said disk and having less diameter than the disk so that they are surrounded by the parts forming the annular steam-passage, substantially as described.

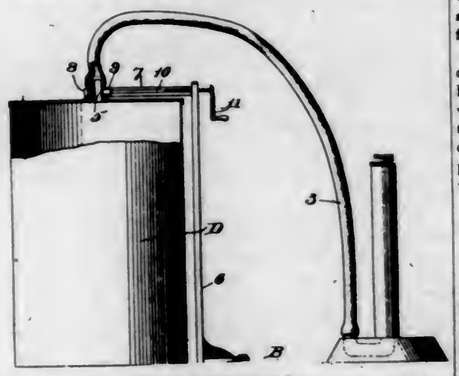
3. In a rotary engine of the class specified, the combination, with the shaft, the cam fixed thereto, a rotary piston, and parts forming an annular steam-passage, of a right-angular lever pivoted at a fixed point above the engine proper, and having a pendent free arm which works in contact with the cam, and a sliding abutment connected with said lever at a point between its fulcrum and pendent arm, substantially as described.

4. In a rotary engine of the class specified, the combination with the shaft, a cam fixed thereto, a rotary piston, and parts forming an annular steam-passage, of a lever pivoted at a fixed point above the engine proper and having a pendent arm which works in contact with the cam, and a sliding abutment connected with the lever at a point between its fulcrum and arm substantially as described.

5. In a rotary engine of the class specified, the piston composed of a metal disk having a peripheral loop and a block secured in said loop and serving as a steam-head, substantially as described.

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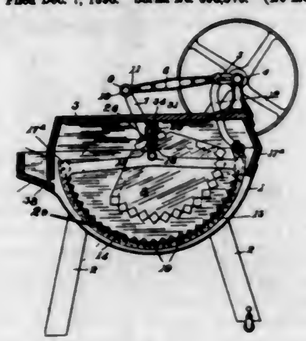
**757,895. APPARATUS FOR EXHAUSTING AIR FROM FRUIT-CANS.** ROBERT C. DAVIS, Columbus, Ohio. Filed Dec. 8, 1903. Serial No. 184,327. (No model.)



*Claim.*—An apparatus of the class described comprising a base, air-exhausting mechanism mounted thereon, a vertical standard carried by the base, an arm projecting laterally from the top of the standard and having a fixed lug at one end, a jaw arranged for sliding movement in the arm and coacting with the lug, and means for imparting movement to the jaw.

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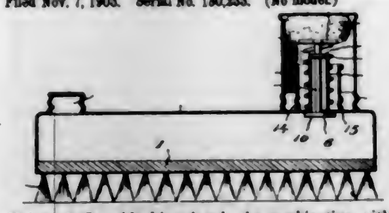
**757,896. WASHING-MACHINE.** CONRAD DIETZ, Cincinnati, Ohio. Filed Dec. 7, 1898. Serial No. 698,570. (No model.)



*Claim.*—In a washing-machine, the combination of a tub, a lower rubber mounted therein, a lid or cover having recesses provided with undercut side walls and formed in the inner surfaces of the side walls of the lid or cover with their tops opening at the top edges of said walls and closed by the top of the lid or cover, bearings having dovetailed sides to fit the undercut walls of the recesses and provided with slots, said bearings being held by the top of the lid or cover in said recesses, springs held in the bearings and of greater diameters than the width of said slots, an upper rubber having pivot-lugs engaging the slots in the bearings and means to operate the rubbers, substantially as set forth.

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**757,897. FOUNTAIN-BRUSH.** DAVID R. DUNKLE, Corning, N. Y. Filed Nov. 7, 1903. Serial No. 180,233. (No model.)



*Claim.*—1. In a blacking-brush, the combination with reservoir having an inlet; of a cup detachably secured upon the reservoir and having an outlet-tube therein, a rod slidably mounted within the tube, arms at one end of the rod, a valve at the other end thereof, a dauber engaged by the arms, a spring inclosing the outlet-tube and within the cup, said spring being interposed between the arms and the bottom of the cup, a flange inclosing the cup, and a cap extending over the dauber and detachably secured to the flange.

2. In a blacking-brush, the combination with a reservoir; of a cup detachably secured within and extending from the reservoir and having an outlet-tube integral therewith, a rod slidably mounted within the tube, a dauber secured to one end of the rod, a valve at the other end of the rod and within the reservoir, and a spring inclosing the outlet-tube and within the cup, said spring being interposed between the arms and the bottom of the cup and holding the valve normally closed.

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**757,898. ELECTRIC CONTROLLER.** ARTHUR C. EASTWOOD, Cleveland, Ohio. Filed Jan. 30, 1904. Serial No. 191,563. (No model.)

*Claim.*—1. In an electric controller the combination of bodies of resistance, contact-fingers connected thereto, a metallic cylinder having contact-buttons in electrical connection therewith and placed to be engaged by the fingers, a spindle for supporting the cylinder, metallic pieces also carried by but insulated from the spindle, and other contact-fingers for engagement with said pieces, substantially as described.

2. In an electric controller, the combination of bodies of resistance, contact-fingers connected thereto, a metallic cylinder having contact-buttons in electrical connection therewith and placed to be engaged by the fingers, a spindle for supporting the cylinder, metallic pieces also fixed to but insulated from the spindle, and other contact-fingers for engagement with said pieces, certain of the pieces being electrically connected to the metallic cylinder, substantially as described.

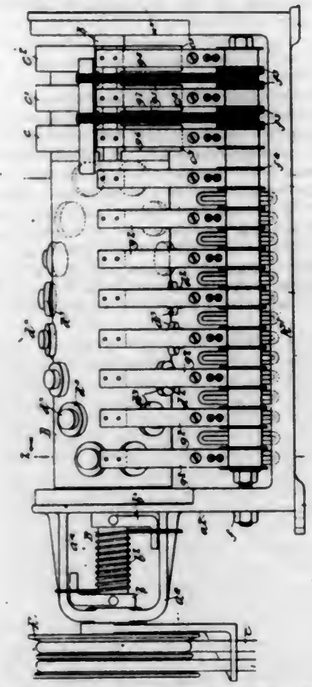
3. The combination of a supporting-spindle, a metallic cylinder together with two series of metallic pieces carried by said spindle, one piece of each series being connected to said cylinder, contact-buttons on the cylinder, with a series of contact-fingers for engaging said contact-buttons and the said series of metallic pieces, substantially as described.

4. The combination of a supporting-spindle, a metallic cylinder thereon having two series of contact-buttons in electrical connection with it, two series of metallic plates also attached to the spindle, and a series of contact-fingers placed to engage either series of contact-buttons and either series of plates, substantially as described.

5. A combination of a supporting-spindle, a metallic cylinder thereon having two series of contact-buttons in electrical connection with it, two series of metallic plates also attached to the spindle, a series of contact-fingers placed to engage either series of the contact-buttons and either series of the plates, with a conductor connecting the cylinder and a plate of each series, substantially as described.

6. A combination of a supporting-spindle, a metallic cylinder thereon having two series of contact-buttons in electrical connection with it, two series of metallic plates also attached to the spindle, a series of contact-fingers placed to engage either series of the contact-buttons and either series of the plates, with a conductor connecting the cylinder and a plate of each series, and other conductors respectively connecting together two plates in each series of plates, substantially as described.





7. In a controller the combination of a frame, a series of grids having resistance material and supported by the frame, contact-fingers fixed to the grids, a spindle, a metallic cylinder thereon having a series of contact-buttons fixed to and in electrical connection with it, two series of metallic strips also carried by the spindle, and electrical connections between certain of said strips, substantially as described.

8. The combination in a controller of a frame, a spindle, pieces of insulating material thereon, a metallic cylinder carried by said pieces, strips of metal carried on one of said pieces, contact-buttons on the cylinder, and contact-fingers placed to engage said buttons and metallic strips, substantially as described.

9. The combination in an electric controller of a frame, means thereon for supporting a series of contact-fingers, a spindle carried by the frame, a cylinder carried by the spindle having contact-pieces upon it placed to be engaged by the fingers, two series of contact-plates, also carried by the spindle, means for turning the spindle so that the fingers thereon will engage with the contact-pieces on the cylinder and also with the contact-plates, with means for automatically returning said cylinder to its "off" position after the spindle has been revolved, substantially as described.

10. The combination in a controller of a frame, contact-fingers supported thereby, a spindle, a plurality of series of contact-pieces carried thereby, means for turning the spindle and a spring having portions of its ends in removable engagement with said frame, said spring being placed to have its torsion varied by revolution of the spindle and acting upon said spindle to automatically return it to a position in which its contact-pieces are out of engagement with the contact-fingers, substantially as described.

11. In an electric controller the combination of a frame, a series of resistance-sections supported therein, said sections of resistance having contact-fingers connected to them, a series of spacing-grids also having contact-fingers, with a spindle having contact-pieces placed to be engaged by said two sets of fingers, substantially as described.

12. In an electric controller the combination of a frame, a bolt or bolts supported thereby, a series of resistance-carrying grids on said bolt or bolts, spacing-grids also on the bolts, means for insulating said grids from each other and from the bolts, contact-fingers electrically connected to and projecting from the grids, a spindle supported by the frame, and having contact-pieces, metallic plates also supported by said spindle and means connecting certain of said plates to the contact-pieces on the cylinder, substantially as described.

13. In an electric controller the combination of a frame, a cylinder revolubly supported therein, a plurality of series of contacts on the cylinder, a series of contact-fingers supported by the frame with a spring placed to be twisted by revolution of the cylinder in either direction from a given position, the ends of said spring bearing removably upon portions of the frame, substantially as described.

14. In an electric controller, the combination of a frame, a spindle mounted therein, a cylinder on the spindle contacts on the cylinder, and contact-fingers carried on the frame, with a spring on the spindle, and means for connecting one end of said spring to said spindle; the other end of the spring being in engagement with a part of the frame, substantially as described.

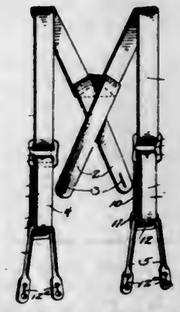
15. In an electric controller, the combination of a frame, a spindle mounted thereon, a cylinder on the spindle, contacts on the cylinder and contact-fingers on the frame, with a spring on the spindle and projecting pieces fixed to said spindle and placed to respectively engage the ends of said spring, said frame also having portions placed to engage the ends of the spring, substantially as described.

16. In an electric controller, the combination of a frame, a spindle mounted thereon, a cylinder on the spindle, contacts on the cylinder and contact-fingers on the frame, with a spring on the spindle and collars fixed to said spindle having means for respectively engaging the ends of the spring there being a portion of the frame placed to also engage said ends of the spring, substantially as described.

17. In an electric controller, the combination of a frame, a revoluble cylinder with contacts thereon and supported by the frame, contact-fingers placed to coöperate with said contacts and a spring having portions of both of its ends engaging the frame, said spring being placed to be twisted by revolution of the cylinder in either direction from the normal position, substantially as described.

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**757,899. COMBINED SUSPENDERS AND BELT.** STEPHEN L. ENGEL, New York, N. Y. Filed Sept. 14, 1903. Serial No. 173,170. (No model.)



*Claim.*—1. An article of the character described, comprising a band provided with rear straps, slides through which the ends of the band are passed to form loops, coupling-pieces upon said loops, and suspender-ends upon the ends of said band adapted to be engaged with holding means on said coupling-pieces and confined within the loops, substantially as described.

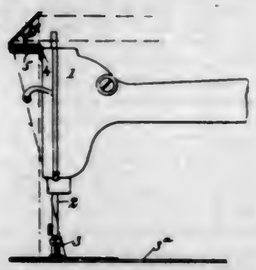
2. An article of the character described, comprising a band provided with rear straps adapted to fold parallel therewith, slides through which the ends of the band are passed to form loops, coupling devices upon said loops, and suspender-ends connected to the ends of the band within the loops and adapted to be attached to said coupling devices, the slides having means for connecting the ends of the rear straps thereto when said straps are folded parallel with the band, substantially as described.

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**757,900. ILLUMINATOR FOR SEWING-MACHINES.** PHILIP ENGLUND, Chico, Cal. Filed July 18, 1903. Serial No. 166,064. (No model.)

*Claim.*—1. In an illuminator for sewing-machines and the like, provided with a head and with a table, the combination of optical

mechanism, supporting mechanism for moving the same upon said head, and means controllable at will for adjusting said optical mechanism relatively to said table.



2. In an illuminator for sewing-machines and the like, the combination of a prismoidal lens, means for mounting the same upon a fixed member, adjustable mechanism for turning said prismoidal member in a plane crossing the optical axis thereof, and means for directing light upon said prismoidal lens.

3. In an illuminator for sewing-machines and the like, the combination of a prismoidal member, means for mounting the same upon a fixed member, mechanism for adjusting said prismoidal member to different angles in a plane crossing the general direction traversed by the light passing through said prismoidal member, and a mirror adjustable relatively to said prismoidal member.

4. In an illuminator for sewing-machines and the like, the combination of a bracket, and optical mechanism provided with a tongue for engaging said bracket, thereby securing said optical mechanism thereupon.

5. In an illuminator for sewing-machines and the like, the combination of a table, a head mounted thereover, optical mechanism for directing the light upon said table, and means for mounting said optical mechanism upon said head at a point adjacent to the top thereof, for the purpose of preventing said head from obscuring said light.

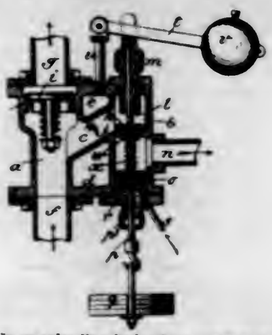
6. In an illuminator for sewing-machines and the like, the combination of an optical member for receiving light and for casting the same in the general direction of a table, and an optical member for distributing said light as received from said optical member, said optical member being thicker upon one of its edges than upon the other, for the purpose of refracting the light in the direction of said head.

7. In an illuminator for sewing-machines and the like, the combination of a prismoidal lens for distributing light upon the work, means for adjusting said lens, and a mirror for distributing the light upon said prismoidal lens.

8. In an illuminator for sewing-machines and the like, the combination of a water-prism, means for adjusting the general position thereof to different angles relatively to a fixed member, and an optical member disposed adjacent to said water-prism for distributing light received therefrom.

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**757,901. UNLOADING DEVICE FOR AIR-COMPRESSORS.** WILLIAM S. FAIRHURST, Brooklyn, N. Y., assignor of one-half to John J. Riley, Brooklyn, N. Y. Filed Apr. 29, 1902. Serial No. 105,134. (No model.)



*Claim.*—1. In an unloading device for a compressor, a chamber in the lower part of which is a cylinder, an upwardly-opening relief-valve and a seat therefor in said chamber above said cylinder, a piston in said cylinder, the piston being of larger area than the said valve, a communication between the outlet of the compressor and said chamber above said valve, an escape-outlet to the atmosphere from said chamber between said valve and piston, a communication between the receiver of the compressor and the space below its piston, a loading device applied to said valve for closing it, a spring between the piston and valve for opening the latter, and a loading device applied to said piston and acting thereon in opposition to the pressure in the receiver, substantially as herein described.

2. In an unloading device for a compressor, a valve-box containing two upright chambers, one of which contains a check-valve between the compressor-outlet and a receiver and the other of which contains an upwardly-opening relief-valve, a communication between the two chambers below the check-valve and above the relief-valve, a cylinder and a piston contained therein below the relief-valve in the chamber which contains said valve, the said piston being of larger area than the relief-valve, an outlet to the atmosphere from the space between said piston and the relief-valve, a communication between said cylinder and the receiver of the compressor below said piston, a loading device applied to said piston and acting thereon in opposition to the pressure in the receiver, a spring between the piston and the relief-valve for opening the latter, and a loading device applied to the latter for closing it, substantially as herein described.

3. In an unloading device for a compressor, a chamber in the top and bottom of which are stuffing-boxes and in the lower part of which is a cylinder containing a piston, an upwardly-opening relief-valve in said chamber above said piston, the piston being of larger area than the relief-valve, an inlet from the compressor-outlet to the space in said chamber above said valve, an outlet to the atmosphere from the space in said chamber between said valve and piston, a communication between the receiver of the compressor and the space in said chamber below said piston, a stem to said valve passing through the upper stuffing-box, a rod to said piston passing through the lower stuffing-box and extending upward toward the valve for opening the latter, a weight applied to the valve-stem for closing the valve, and a weight applied to the piston-rod for acting on the piston in opposition to the pressure in the receiver, substantially as herein described.

4. In an unloading device for a compressor, a chamber in the lower part of which is a cylinder, an upwardly-opening relief-valve and a seat therefor in said chamber above the said cylinder, a piston in said cylinder, a communication between the outlet of the compressor and said chamber above the said valve, an escape-outlet to the atmosphere from said chamber between said valve and piston, a communication between the receiver of the compressor and the space below its piston, a flexible air-tight diaphragm interposed between the piston and the communication from the receiver, a loading device applied to the said valve for closing it, a spring between the piston and valve for opening the latter and a loading device applied to said piston and acting thereon in opposition to the pressure in the receiver, substantially as herein described.

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**757,902. CAR-REPLACER.** CHRISTIAN A. FISCHER, Grand Forks, N. D. Filed Aug. 28, 1903. Serial No. 171,091. (No model.)



*Claim.*—1. A car-replacer comprising a frame, a carriage mounted to slide transversely thereon, and upright jacks screwing in the carriage, as set forth.

2. A car-replacer comprising a frame, a carriage mounted to slide transversely thereon, upright screw-jacks screwing in the carriage, and a cross-bar loosely connected with the upper ends of the said screw-jacks, as set forth.

3. A car-replacer comprising a frame for connection with the rails, to hold the frame against transverse movement, the frame being provided with a transverse guideway, a carriage mounted to slide in the said guideway, manually-controlled means for imparting a transverse-sliding movement to the said carriage, screw-jacks screwing in the carriage, and a cross-bar loosely connected with the upper ends of the said screw-jacks, as set forth.

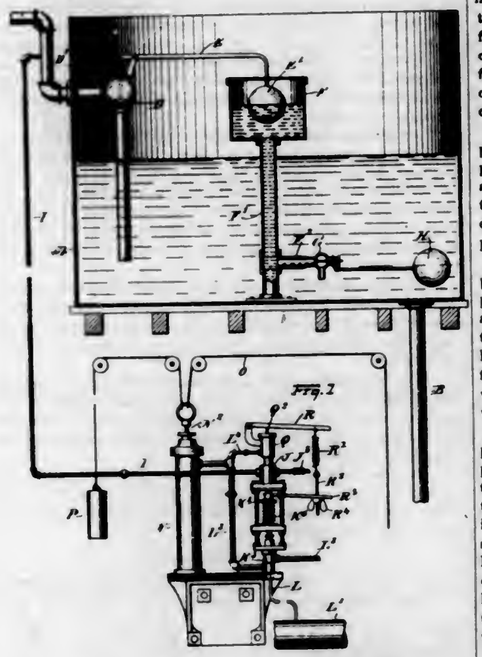


4. A car-replacer comprising a frame having longitudinal grooves at the bottom, for engagement with the rails, to hold the frame against transverse movement, the frame being provided in its top with a transverse guideway, a carriage mounted to slide transversely in the said guideway, and provided with a nut, a manually-controlled screw-rod, mounted to turn in the said frame and screwing in the said nut, screw-jacks screwing in the said carriage and provided with heads, pins extending from the heads, and a cross-bar having apertures into which the said pins fit loosely, as set forth.

5. A car-replacer comprising a frame having longitudinal grooves at the bottom, for engagement with the rails, to hold the frame against transverse movement, the frame being provided in its top with a transverse guideway, and provided with a nut, a manually-controlled screw-rod, mounted to turn in the said frame and screwing in the said nut, screw-jacks screwing in the said carriage and provided with heads, pins extending from the heads, a cross-bar having apertures into which the said pins fit loosely, and means, substantially as described, for connecting the cross-bar with the said pins, to prevent accidental detachment of the cross-bar from the pins, as set forth.

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**757,903. CONTROLLING DEVICE FOR MAINTAINING STEADY PRESSURE.** THOMAS P. FORD, New York, N. Y. Filed Dec. 10, 1903. Serial No. 184,587. (No model.)



*Claim.*—1. A controlling device of the class described, comprising a controlling-piston, connected with the part to be controlled and under the influence of the pressure-supply, a pressure-cylinder containing a piston, under the influence of the pressure of the device to be controlled and controlling a valve in the said pressure-supply, and a counterbalancing-cylinder having a piston, controlled by the pressure for the said controlling-piston and connected with the said valve, as set forth.

2. A controlling device of the class described, comprising a tank, a tank-supply pipe for filling the tank with water, a float-controlled device for operating the valves in the said tank-supply pipe, a pressure-pipe leading from the said tank-supply pipe, a pressure-cylinder containing a piston and into which leads the said pressure-pipe, a controlling-cylinder, a piston therein, connected with the device to be controlled, and a pressure-supply for the said controlling-cylinder and containing a valve controlled by the said piston in the pressure-cylinder, as set forth.

3. A controlling device of the class described, comprising a tank, a tank-supply pipe for filling the tank with water, a float-controlled device for operating the valves in the said tank-supply pipe, a pressure-pipe leading from the said tank-supply pipe, a pressure-cylinder containing a piston and into which leads the said pressure-pipe, a controlling-cylinder, a piston therein, connected with the device to be controlled, a pressure-supply for the said controlling-cylinder and containing a valve controlled by the said piston in the pressure-cylinder, a counterbalancing-piston, under the influence of the pressure from the said pressure-supply, and a spring-controlled lever connection between the said counterbalancing-piston and the valve in the pressure-supply, as set forth.

4. A controlling device of the class described, provided with a service-tank, a supply-pipe for the tank, having a valve, a mechanism for actuating the said valve suddenly on the water reaching a predetermined high level or a predetermined low level in the said tank, a pressure-pipe leading from the said tank-supply pipe, and mechanism for actuating the part to be controlled, the said mechanism being controlled by the pressure in said pressure-pipe, as set forth.

5. A controlling device provided with a service-tank, a supply-pipe for the tank, having a valve, an auxiliary tank, adapted to be filled from the service-tank when the water reaches a maximum level in the service-tank, means for controlling the outflow of the water from the auxiliary tank at the time the water in the main tank reaches a predetermined low level, a float device in the auxiliary tank, connected with the said valve in the supply-pipe, for controlling the supply of the water to the tank, a pressure-pipe leading from the tank-supply pipe, a pressure-cylinder having a piston and connected with the said pressure-pipe, and a fluid-controlled device for actuating the part to be controlled, the pressure for said fluid-controlled device being controlled from the piston in the pressure-cylinder, as set forth.

6. A controlling device of the class described, provided with a pressure-cylinder having a piston and connected with a pressure-pipe, a fluid-controlled device, for actuating the part to be controlled and having a pressure-supply pipe containing a valve controlled by the piston in the said pressure-cylinder, and a counterbalancing-cylinder having a piston and connected with the said pressure-supply pipe for the said fluid-controlled device, as set forth.

7. A controlling device of the class described, provided with a pressure-cylinder having a piston and connected with a pressure-pipe, a fluid-controlled device, for actuating the part to be controlled and having a pressure-supply pipe containing a valve controlled by the piston in the said pressure-cylinder, a counterbalancing-cylinder having a piston and connected with the said pressure-supply pipe for the said fluid-controlled device, and a spring-pressed lever device, for connecting the piston in the said counterbalancing-cylinder with the said valve in the supply-pipe, as set forth.

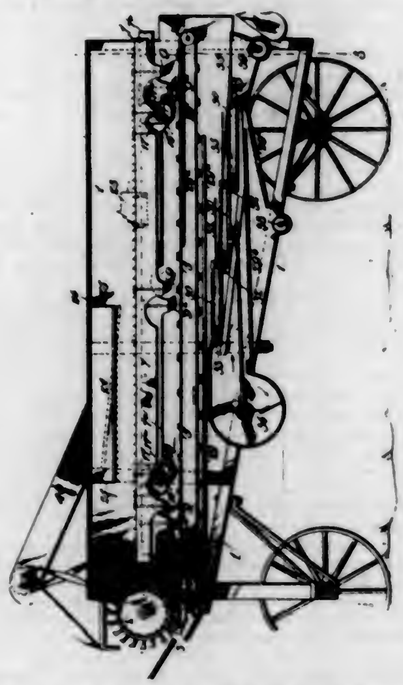
8. A controlling device of the class described, provided with a pressure-cylinder having a piston and connected with a pressure-supply pipe, a fluid-controlled device, for actuating the part to be controlled and having a pressure-supply pipe containing a valve controlled by the piston in the said pressure-cylinder, a counterbalancing-cylinder having a piston and connected with the said pressure-supply pipe for the said fluid-controlled device, and a spring-pressed lever device, for connecting the piston in the said counterbalancing-cylinder with the said valve in the supply-pipe, the said spring-pressed lever device comprising a lever pressed on by the piston in the counterbalancing-cylinder, a lever connected with the stem of the said valve and a spring connecting the levers with each other, as set forth.

9. A controlling device of the class described, provided with a pressure-cylinder having a piston and connected with a pressure-supply pipe, a fluid-controlled device, for actuating the part to be controlled and having a pressure-supply pipe containing a valve controlled by the piston in the said pressure-cylinder, a counterbalancing-cylinder having a piston and connected with the said pressure-supply pipe for the said fluid-controlled device, and a spring-pressed lever device, for connecting the piston in the said counterbalancing-cylinder with the said valve in the supply-pipe, the said spring-pressed lever device comprising a lever pressed on by the piston in the counterbalancing-cylinder, a lever connected with the stem of the said valve, a spring connecting the levers with each other, and means for adjusting the tension of the spring, as set forth.

10. A controlling device of the class described, provided with a main pressure-cylinder and a counterbalancing-cylinder, each cylinder containing a piston and the piston in the main pressure-cylinder controlling the valve in the supply-pipe for the said counterbalancing-cylinder, a lever connected with the piston in the counterbalancing-cylinder, a lever connected with the stem of the said valve, and a spring connecting the levers with each other, as set forth.

## 757,904. COMBINED GRAIN THRESHER AND SEPARATOR.

FRANK FREDERS, Taylors Falls, Minn. Filed May 5, 1903. Serial No. 155,739. (No model.)



*Claim.*—1. The improved rake and beater mechanism comprising two similar frames, each consisting of a series of horizontal longitudinal bars, transverse or cross bars connecting such longitudinal bars, and rotary shafts each provided with two sets of eccentrics, the respective sets being connected with the respective frames at the outer sides of same, substantially as described.

2. The improved rake and beater mechanism comprising two like frames each composed of a series of horizontal longitudinal bars, cross-bars connecting the same and supporting the bars intermediate the two outer ones, two transverse rotary shafts, eccentrics mounted thereon and engaging the two outer longitudinal bars of the respective frames, the eccentrics of each pair being projected in opposite directions, whereby rotary motion is imparted to the respective frames oppositely substantially as shown and described.

3. The improved rake and beater mechanism comprising two like frames each comprising two outer longitudinal bars and a series of thinner intermediate bars, cross-bars connecting the two outer bars and being secured to the under sides of the same, the inner bars being supported upon and rigidly attached to the said cross-bars, a crank mechanism for imparting the required movements to the two frames independently and simultaneously substantially as shown and described.

4. In rake and beater mechanism of the class described the combination with the two like but independent frames each comprising two outer relatively large bars, cross-bars attached to the under side of the same and rigidly connecting them, a series of smaller bars arranged parallel to the first outer ones, and fingers secured to the several cross-bars and having shoulders and a vertical extension on the side of the bars to which they are secured, substantially as shown and described.

5. In rake and beater mechanism of the class described, the combination with longitudinal toothed bars of bifurcated fingers whose forked members extend up on both sides of the longitudinal bars to which they are secured, substantially as shown and described.

6. In rake and beater mechanism the combination with a series of longitudinal toothed bars and cross-bars arranged beneath them of a series of supports or fingers which are rigidly secured to the cross-bars and have their upper portions bifurcated to embrace the bars and nuts applied to the joined ends of the fork, substantially as shown and described.

7. In rake and beater mechanism the combination with supporting cross-bars and a series of longitudinal bars of supporting fingers or posts whose upper portions are bifurcated to embrace the longitudinal bars, means for securing and clamping the upper ends of the forks and washers applied between the bars and the shoulders of the fork, substantially as shown and described.

8. In the improved rake and beater mechanism, consisting of two cooperative companion frames each frame consisting of a pair of outer longitudinal toothed bars, connecting and supporting cross-bars attached to the under side of the same said cross-bars being provided with a series of vertical holes for receiving and holding rakes and rake-holding fingers properly spaced in their proper positions, and a series of intermediate but smaller longitudinal bars arranged parallel to said outer bars, and a series of posts or fingers having threaded shanks which pass through the holes in the cross-bars, and nuts applied above and below the cross-bars, whereby the thinner bars are supported rigidly and adapted for vertical adjustment as described.

9. The combination, with the longitudinal toothed bars of plates secured to the sides thereof and projecting above the same, the said plates being sloped and notched on their front upper edge and extended horizontally at the top whereby they are adapted to raise the mingled straw and grain and to temporarily support the same while moving rearward onto the rakes proper, substantially as described.

10. The combination with the longitudinal toothed rake and beater bars and means for imparting vertical and endwise motion thereto of the overhead beater composed of a series of parallel slats and means for suspending the same whereby they constitute a floor but are adapted for individual movement vertically, substantially as shown and described.

11. The combination with the longitudinal toothed bars and means for imparting a vertical and endwise motion thereto of the overhead beater comprising a series of toothed bars arranged parallel to each other and aprons which are slitted to form strips, the latter being secured to the individual slats, and rollers and ratchet-and-pawl mechanism for adjusting and securing the overhead beater at different elevations and inclinations, substantially as shown and described.

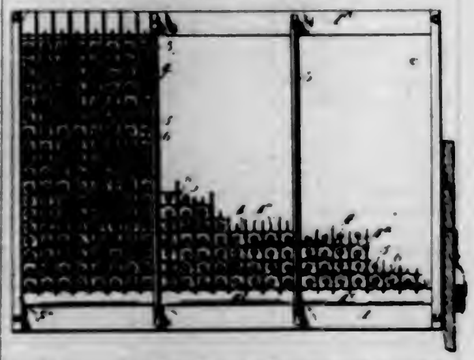
12. The improved overhead beater comprising a series of parallel slats, parallel horizontal shafts or rollers and means for supporting the slats and allowing individual movement vertically, the same consisting of aprons depending from the rollers, substantially as shown and described.

13. The combination with the rake and beater mechanism of the endless conveyer arranged beneath the same and grain-boards provided with tapered fingers and arranged beneath the upper and lower bights of the conveyer and parallel thereto, substantially as shown and described.

14. The combination, with a series of sieves arranged stepwise as described, of a grain-board arranged in a higher plane and provided with tapered fingers which extend over the series of sieves, substantially as described.

## 757,905. GRAIN-SCREEN.

FRANK FREDERS, Taylors Falls, Minn. Filed Nov. 18, 1903. Serial No. 181,696. (No model.)



*Claim.*—1. The improved grain-sieve comprised of a suitable rectangular frame, and a series of pivoted slats arranged transversely and having openings, and fingers and spacing-wires adapted to enter the openings of adjoining slats, substantially as described.

2. In a grain-sieve, the transverse pivoted slats constructed of sheet metal and having on one edge a series of integral fingers which are formed of projections from the plate constituting the body of the slat, the same being compressed laterally, as shown and described.

3. A grain-sieve comprising a suitable frame, a series of transverse pivoted slats having subdividing spacing-fingers and openings near their top edge, and spacing-wires and fingers passing through the said openings, substantially as described.

4. The grain-sieve formed of a suitable frame, and transverse pivoted slats provided with openings and a series of wires passing through said openings, the edges of the slats being recessed on the under side to allow spaces for the wires when the slats are folded, as described.

5. The improved sieve comprising a suitable frame, a series of transverse slats, pivoted as described, and provided with two sets of openings, and with a series of fingers adapted to enter the larger openings of adjoining slats, and a series of spacing-wires passing through the smaller openings and arranged intermediately of the fingers, substantially as shown and described.

6. The combination, with a suitable frame, and a series of pivoted slats arranged transversely and having pendent lever-arms, of a coupling-rod connecting the said arms, a toothed segment applied to the axle of one of the slats, and a spring-detent for engaging the segment to lock the slats at any required inclination, substantially as specified.

7. The combination of overlapping grain-sieve slats having alternating long and short fingers and slots which are arranged at corresponding distances from the side edges of the slats, substantially as described.

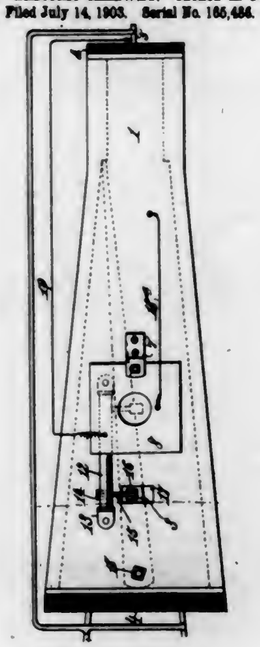
8. In a grain-sieve, the combination of a series of pivoted slats arranged parallel and provided with a series of fingers, and spacing-wires extending at right angles to the slats and intermediately of the fingers, whereby the fingers and wires subdivide the space between adjacent slats and form supports for the mingled grain, straw, and other material, substantially as specified.

9. In a grain-sieve, the combination, with a rectangular frame and a series of slats pivoted therein, and provided with a series of openings as specified, of a series of wires extending longitudinally of the frame and passing through said openings in the slats, the wires being detachably connected with the first slat of the series, substantially as described.



## 757,906. ELECTRIC RAILWAY.

GEORGE H. FRETTS, Springfield, Mass. Filed July 14, 1903. Serial No. 165,484. (No model.)



*Claim.*—1. The combination of an overhead switch-plate of trapezoidal form having depending flanges along its opposite edges and a flat under face to be directly engaged by a trolley-wheel, a conductor leading to and insulated from the narrow end of said switch-plate, two conductors leading to and insulated from the wide end of said switch-plate, a switch-tongue pivoted upon the under side of the switch-plate at the wide end thereof approximately centrally between said two conductors, a solenoid upon the switch-plate, a rock-shaft also on the switch-plate, having arms angularly disposed to each other, and linkage connections between said arms and solenoid-core and switch-tongue, the switch-plate being slotted for the connection of one of the links with the switch-tongue.

2. The combination of a switch-plate having depending flanges, a switch-tongue supported for swinging movement between said flanges, a solenoid supported by the switch-plate, a rock-shaft also supported by the switch-plate having arms, a link connecting one of said arms with the core of the solenoid, and a second link connected with the other arm, the switch-plate having a slot and the switch-tongue having a lug passing through said slot and connected with said second link.

## 757,907. TOOTH-BRUSH WITH WASHING DEVICE.

FRIEDRICH FRITZ, Trieste, Austria-Hungary. Filed Jan. 26, 1903. Serial No. 140,521. (No model.)



*Claim.*—The combination of a bulb, a handle member extending through one side of the bulb and out at the other, a brush arranged at one end of the handle member, said handle member having a bore communicating with the interior of the bulb at one end of said bore and opening into the brush at the other end of said bore and also having a port where it penetrates the bulb at said other side thereof, and check-valves arranged in said bore and port and opening in the direction of the brush end of the handle, substantially as described.

## 757,908. TALLY DEVICE.

LEONARD I. FROST, Highland, Kans. Filed Jan. 23, 1903. Serial No. 140,253. (No model.)

*Claim.*—1. A tally device comprising a base having a guideway, columns of cardinals on said base, columns of subordinate figures adjacent to the cardinal-columns, racks fixed in said guideway and having teeth on its sides and bottom spaced according to the figures in the cardinal and subordinate columns, and an indicator slidably fitted in the guideway to traverse the teeth of said racks.

2. A tally device having a grooved base provided with columns of cardinal and subordinate figures, a toothed bar fitted in said groove of the base, and slidable indicators individually fitted in grooves of said base, said slidable indicator in one groove being effective to impart movement to the bar in an adjacent groove of said base.

3. A tally device comprising a base having guideways and columns of cardinal and subordinate figures, racks secured in pairs in each guideway, a toothed slidable bar fitted in one of said guideways and having arms projecting across an adjacent guideway, and indicators fitted slidably in the guideways and having means to traverse the toothed racks and the bar, the indicator of one guideway being adapted to impart movement to the toothed bar of an adjacent guideway by impinging the arms thereof.

4. A tally device comprising a base having guideways and columns of cardinal and subordinate figures, toothed racks secured in each guideway, a toothed bar fitted between one pair of racks and in one of said guideways, the said bar being provided with arms which

extend across an adjacent guideway, and indicators slidably and individually fitted in said guideways, each indicator having tongues which ride on the racks, and one indicator being provided with a member which engages the teeth of the slidable bar.



5. A tally device comprising a base having guideways and columns of cardinal and subordinate figures, the walls of each guideway being provided with guide-grooves, racks secured in each guideway, a toothed bar fitted slidably in one guideway and provided with arms which overlap an adjacent guideway, and indicators each provided with ribs fitted in said grooves of the guideway, said indicators having tongues to engage with the racks, and one indicator having a movable member to engage with the toothed bar.

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**757,909. PORTABLE POWER-DAM. THEODORE F. GILLILAND, Bluffton, Ind. Filed Oct. 5, 1903. Serial No. 175,760. (No model.)**

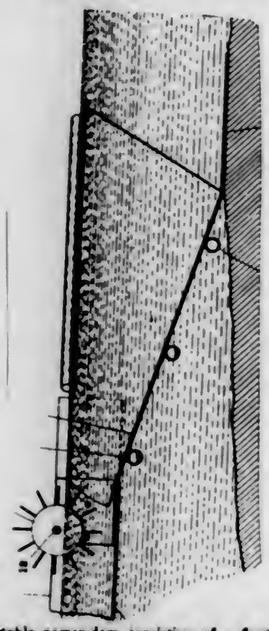
*Claim.*—1. A portable power-dam consisting of a floating sluiceway composed of sides and bottom, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides, and floats attached to said gathering-trough and adapted to partially support the weight thereof in operation.

2. A portable power-dam consisting of a floating sluiceway composed of sides and bottom, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides, stiffening-booms along the upper edges of said sides, and transverse stiffening-floats 20 arranged beneath said downwardly and rearwardly extending bottom, substantially as and for the purpose set forth.

3. A portable power-dam consisting of a floating sluiceway, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides and floats attached to said gathering-trough and adapted to partially support the weight thereof in operation.

4. A portable power-dam consisting of a floating sluiceway, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides, stiffening-booms along the upper edges of said sides, and transverse stiffening-floats 20 arranged beneath said downwardly and rearwardly extending bottom, substantially as and for the purpose set forth.

5. A portable power-dam consisting of a floating sluiceway, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides, and stiffening-booms secured to the upper edges of said sides.

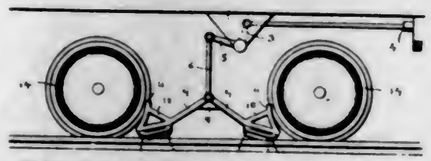


6. A portable power-dam consisting of a floating sluiceway composed of sides and bottom, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides, and stiffening-booms secured to the upper edges of said sides.

7. A portable power-dam consisting of a floating sluiceway composed of sides and bottom, a gathering-trough secured to the upstream end of said sluiceway and consisting of a downwardly and rearwardly extending bottom and upwardly-extending sides, stiffening-booms secured to the upper edges of said sides, and floats secured to said stiffening-booms, as and for the purpose set forth.

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**757,910. BRAKE FOR CARS. WILLIAM GOSSETT, Falls City, Nebr. Filed Sept. 10, 1903. Serial No. 172,675. (No model.)**



*Claim.*—1. A car-brake comprising a rotary shaft having arms extending therefrom, supporting-blocks suspended from the arms, oppositely-extending arms pivoted above and normally supported by the blocks, and brake-shoes at the ends of the arms adapted to be simultaneously applied to the wheels of a car and the rails upon which they are mounted.

2. A car-brake comprising a revoluble shaft, an arm extending therefrom, a link connected to the arm, a block supported by the link, oppositely-extending arms pivotally connected to the link and normally supported by the block, and shoes at the ends of the arms adapted to be simultaneously applied to the wheels of a car and to the rails on which they are mounted.

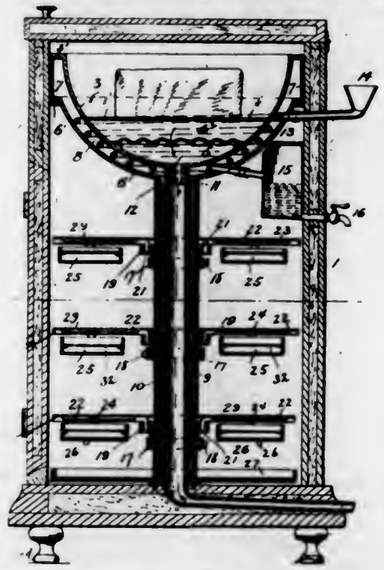
3. A car-brake comprising a revoluble shaft, arms extending therefrom, a rod, links connecting the rod with the arms, blocks extending from the links, oppositely-extending arms pivoted upon the rod and normally supported by the blocks, and shoes at the ends of said arms adapted to be simultaneously applied to the peripheries of car-wheels and the rails upon which they are mounted.

4. In a car-brake the combination with a revoluble shaft; of an arm extending therefrom, a link connected to the arm, a block secured to the link, oppositely-extending arms pivoted above and normally supported by the block, an angular extension to each arm having a concaved working face adapted to contact with the periphery of a wheel, and a shoe detachably secured to the extension and adapted to contact with a rail and form a fulcrum for the extension.

5. In a brake, the combination with a revoluble shaft having arms extending therefrom; of a rod, links connecting the rod and arms, blocks extending from the links, oppositely-extending arms pivotally mounted upon the rod and normally supported by the blocks, angular extensions at the ends of said arms and having concaved working faces, and shoes detachably secured to the extensions and adapted to contact with rails.

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**757,911. REFRIGERATOR. ROBERT R. GRAF, Baltimore, Md., assignor of two-thirds to William R. Krause and Potthast Brothers, Baltimore, Md. Filed Dec. 21, 1903. Serial No. 186,096. (No model.)**



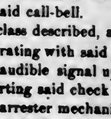
*Claim.*—1. A culinary cabinet or refrigerator embodying in its construction an ice chamber or receptacle having a partition of substantially concave form, a shelf supported thereby upon which the ice may rest, a supplementary partition, also of substantially concave form below the first-named partition of the ice-chamber, a central hollow standard with which the supplementary partition communicates, a pipe in the hollow standard with which the concave partition of the ice-chamber communicates, said pipe being provided with an offtake for the drip water, a coil of pipe between the said two partitions to receive drinking-water, means for filling the said pipe and for draining the water off therefrom.

2. In a culinary refrigerating-cabinet, the combination, with the ice-chamber and its concaved or dish-shaped partition, and a shelf supported by the said partition, of a similarly-shaped supplementary partition below the partition of the ice-chamber, a coil of pipe between said partitions, means whereby water may be poured into said pipe and allowing it to be cooled, and means extending outside of the cabinet for drawing off the cooled drinking-water.

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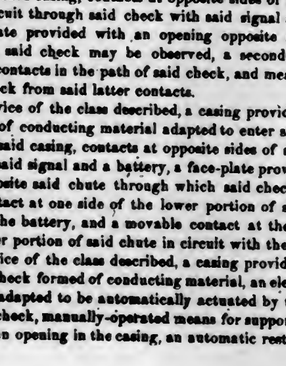
**757,912. POWDER DREDGER OR SHAKER. CHARLES E. GRAPEWINE, Los Angeles, Cal., assignor to George W. Beck, Los Angeles, Cal. Filed Mar. 11, 1903. Serial No. 147,329. (No model.)**

*Claim.*—The herein-described dredger or shaker having a top terminating in a spiral, the top having a horizontal groove for the reception of a lug or catch on the cap, a cap for said dredger adapted to fit over said top and having a limited rotary movement thereon, the cap having in its side wall a spiral slot and an inwardly-projecting lug or catch, substantially as herein shown and described.



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**757,918. SALE-RECORDER. DANIEL GRIFFITH, Butte, Mont. Filed June 6, 1903. Serial No. 160,367. (No model.)**



*Claim.*—1. In a device of the class described, a casing provided with a check-chute, a check cooperating with said chute, electrical means carried by the chute for automatically sounding an audible signal upon the introduction of the check; means for supporting said check to effect a secondary signal subsequent to the primary signal, and means for automatically releasing said check from said supporting means.

2. In a device of the class described, a casing provided with a check-chute, a check cooperating with said chute, electrical means carried by the chute for automatically sounding an audible signal upon the introduction of the check, and means for supporting said check to effect a secondary signal subsequent to the primary signal.

3. In a device of the class described, a casing provided with a check-chute, a check cooperating with said chute, means carried by said chute for sounding an audible signal upon the introduction of the check, means for supporting said check opposite an opening in said casing, a call-bell, and an arrester mechanism for supporting said check in circuit with said call-bell.

4. In a device of the class described, a casing provided with a check-chute, a check cooperating with said chute, means carried by said chute for sounding an audible signal upon the introduction of the check, means for supporting said check opposite an opening in said casing, a call-bell, an arrester mechanism for supporting said check in circuit with said call-bell, and a governor mechanism for timing the restoring movement of said arrester.

5. In a device of the class described, a casing provided with a chute, a check of conducting material adapted to enter said chute, a signal within said casing, contacts at opposite sides of said chute to establish circuit through said check with said signal and a battery, a face-plate provided with an opening opposite said chute through which said check may be observed, a secondary signal having circuit-contacts in the path of said check, and means for releasing said check from said latter contacts.

6. In a device of the class described, a casing provided with a chute, a check of conducting material adapted to enter said chute, a signal within said casing, contacts at opposite sides of said chute in circuit with said signal and a battery, a face-plate provided with an opening opposite said chute through which said check may be observed, a contact at one side of the lower portion of said chute in circuit with the battery, and a movable contact at the opposite side of the lower portion of said chute in circuit with the call-bell.

7. In a device of the class described, a casing provided with a check-chute, a check formed of conducting material, an electrically-operated signal adapted to be automatically actuated by the introduction of said check, manually-operated means for supporting said check opposite an opening in the casing, an automatic restoring de-

vice placed under tension in the travel of the supporting means to release the check, and arrester means moved into the path of the released check in the initial movement of the restoring mechanism.

8. In a device of the class described, a casing provided with a check-chute, a check adapted to travel in said chute and provided with a channel upon one face, a rib carried by said chute to enter said channel, and a pivoted guard provided with projections at opposite ends beveled upon their upper faces and mounted parallel to said chute to prevent the withdrawal of the check therefrom.

9. In a device of the class described, a casing provided with a check-chute, a check adapted to travel in said chute and provided with a channel upon one face, a rib carried by said chute to enter said channel, a pivoted guard mounted in said chute to prevent the withdrawal of the check therefrom, contact-plates at opposite sides of said chute to engage said check, and a signal and battery in circuit with said contacts.

10. In a device of the class described, a casing provided with a check-chute, a check adapted to pass through said chute, an arrester mechanism comprising an oscillating lever having arms at its opposite ends adapted to be alternately projected through said chute in different horizontal planes, and means for operating said arrester mechanism.

11. In a device of the class described, a casing provided with a check-chute, a check adapted to pass through said chute, an arrester mechanism comprising an oscillating lever having arms at its opposite ends adapted to be alternately projected through said chute, means for operating said arrester mechanism, a spring device for restoring said arrester mechanism to its initial position, and a governor mechanism for timing said restoring action.

12. In a device of the class described, a casing provided with a check-chute, a check adapted to pass through said chute, an arrester mechanism comprising an oscillating lever having arms at its opposite ends adapted to be alternately projected through said chute, means for operating said arrester mechanism, a spring device for restoring said arrester mechanism to its initial position, a governor mechanism for timing said restoring action, an electrical connection with one of the restoring-arms, a call-bell in circuit with said mechanism and a battery, and a contact opposite said arrester-arm in circuit with said battery.

13. In a device of the class described, a casing provided with a check-chute, a check adapted to pass through said chute, an arrester mechanism comprising an oscillating lever and supporting the arms at the opposite ends, a gear-wheel upon a shaft of said lever, a push-rod provided with a worm to engage said gear, a pivotally-mounted restoring-lever having its hub rotatable with said gear, and a spring extending from the free end of said restoring-lever to a fixed support.

14. In a device of the class described, a casing provided with a check-chute, a check adapted to pass through said chute, an arrester mechanism comprising an oscillating lever for supporting the arms at the opposite ends, a gear-wheel upon a shaft of said lever, a push-rod provided with a worm to engage said gear, a pivotally-mounted restoring-lever having its hub rotatable with said gear, a spring extending from the free end of said restoring-lever to a fixed support, a ratchet-wheel and gear rotatably mounted upon the shaft of said restoring-lever, a pawl carried by said restoring-lever to engage said ratchet-wheel, a shaft carrying a governor and provided with a pinion meshing with a gear carried by the ratchet-wheel, a gear-wheel and pinion at the opposite end of said shaft, and a counter-shaft parallel with said governor-shaft and provided with gears meshing with the wheel and pinion thereon.

15. In a device of the class described, a casing provided with a pivoted door, a drawer forming the bottom of said casing, and check-controlled devices mounted upon said inner face of the door in alinement with an opening at the top of the casing.

16. In a device of the class described, a casing provided with a pivoted door, a drawer forming the bottom of said casing, check-controlled devices mounted upon the inner face of said door in alinement with an opening at the top of the casing, a sliding bolt disposed within said casing to engage the projection from said door when closed, and a lock mechanism for said drawer.

17. In a device of the class described, a casing provided with a check-chute, a check formed of conducting material, an electrically-operated signal adapted to be actuated by the introduction of said check, means for supporting said check opposite an opening in said casing, manually-operated means for releasing said check from said support, a call-bell, means for automatically supporting said check in circuit with said call-bell, and means for automatically depositing said check at the lower portion of the casing.

**757,914. LAMP-HOLDER ATTACHMENT FOR VEHICLES.** AARON GROFF, Oakbottom, Pa. Filed Sept. 2, 1903. Serial No. 171,656. (No model.)



*Claim.*—1. A lamp holder or support comprising a straight body having a jaw integrally formed at one end thereof, a side of the body intermediate the ends thereof and adjacent the aforesaid jaw being cut away longitudinally, a removable member comprising a jaw for cooperation with the jaw upon the body, a shank integrally formed with the jaw and adapted to be received within the cut-away portion of the body, a supporting-arm projected upwardly from the body, and a fastening securing the removable member to the body.

2. A lamp holder or support comprising a body having an integral arm extending upwardly from one end thereof, a jaw formed upon the opposite end thereof, the body being cut away longitudinally adjacent the jaw aforesaid, the inner end of the cut-away portion being inclined, a removable member comprising a jaw for cooperation with the jaw of the body, and a shank integrally formed with the jaw, the said shank having an inclined end corresponding to the inclined end portion of the cut-away portion of the body, and a fastening-screw passed through openings in the body and shank and adapted to secure the removable member to the body.

**757,915. IMPLEMENT FOR DETACHING BOARDS FROM STRUCTURES.** FRED GUENTHER, Springvalley, Ill. Filed Aug. 19, 1903. Serial No. 170,008. (No model.)



*Claim.*—1. An implement of the character described, comprising a pair of spaced arms, a leg joined to and spaced from the arms, and a cam-lever pivoted upon the upper portion of the leg.

2. An implement of the character described, comprising a pair of depending spaced arms, a leg furcated in its upper portion, joined to the depending arms and spaced therefrom, and a cam-lever pivoted between the furcated portion of the leg.

3. An implement of the character described, comprising an elongated leg having two members that are offset near their upper ends, two depending arms joined to and spaced from the furcated members of the leg, at their upper ends, and a lever having a cam-head and pivoted at said head between the furcations of the leg.

4. An implement of the character described, comprising a pair of spaced arms, an adjustable rest-block on one of the arms, a leg joined to and spaced from the upper portions of the arms, and a lever having a cam-head and pivoted at said head upon the upper part of the leg.

5. An implement of the character described, comprising a pair of spaced arms, two leg members connected with and spaced from said arms by arched members, means for securing the leg members together, and a lever having a cam-head, and pivoted between the leg members near the arches.

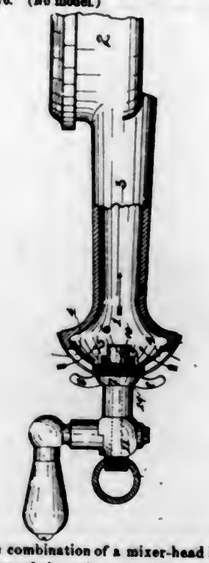
6. An implement of the character described, comprising a pair of spaced depending arms, two leg members connected with and spaced from said arms by arched members, bolts and nuts adapted to hold the leg members secured together, the upper portions of the leg members being offset to space them apart, a lever having a cam-head and pivoted at said head between the leg members above their offsets, and an adjustable rest-block on one of the arms.

7. An implement of the character described, comprising a pair of spaced depending arms, two elongated leg members offset near their upper ends, a spacing-strip between the leg members, bolts and nuts adapted to clamp the leg members upon the spacing-strip, arches connecting upper portions of the offset members of said leg with the depending arms, a lever having a cam-head and pivoted between the arches, and an adjustable rest-block mounted upon the outer side of one of the arms.

8. An implement of the character described, comprising a pair of spaced arms, two leg members connected with and spaced from said arms by arched members, a spacing-strip between the leg members, means for clamping the leg members upon the spacing-strip, a lever having a cam-head, a spacing-washer introduced between offset upper portions of the leg members, a lever having a cam-head loosely engaged by the spacing-washer, the latter being formed with sleeves that embrace said cam-head, and a pivot-bolt passing through the offset members, the sleeves, and the cam-head of the lever.



**757,916. GAS-MIXER.** AUGUST M. GUNNER, Dayton, Ohio, assignor to the Gem City Stove Co., Dayton, Ohio. Filed Feb. 15, 1904. Serial No. 193,576. (No model.)

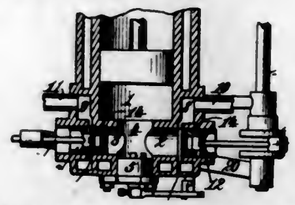


*Claim.*—1. The combination of a mixer-head having a series of ports for the admission of air, and a central screw-threaded opening, a mixer-cap fitting against said mixer-head and provided with corresponding openings registering with the openings in the mixer-head, a clamp-nut having a tubular screw-threaded stem which penetrates the central openings in the mixer-head and mixer-cap, the head of said nut engaging said cap and clamping it against the mixer-head, and a gas-supply cock having its discharge-stem projecting through said nut and discharging gas into the mixer-head.

2. In a fuel-gas burner, a mixer-head having a series of air ports or openings and a central opening, a mixer-cap inclosing the outer side of the mixer-head and having a series of air ports or openings which may register with the air ports or openings in the mixer-head and whereby the discharge of air to the mixer is regulated, a clamp-nut screwed into the central opening in said mixer-head and binding the mixer-cap against said head to make permanent the position of the openings in said cap with relation to the openings in the mixer-head, the said clamp-nut having an opening through its center for the reception of the discharge end of a gas-regulating cock.

3. The combination of a gas-mixer having the outer surface of its head rounded and provided with a series of air-openings and a central screw-threaded opening, a mixer-cap conforming to the shape of the mixer-head and having a series of air-openings which register with the similar openings in the mixer-head, and a central opening which registers with the central screw-threaded opening in the mixer-head, a clamping-nut having a tubular screw-threaded stem which penetrates the central openings in the mixer-cap and the mixer-head, said nut having an annular shoulder which engages the portion of the mixer-cap surrounding the central opening therein and clamps said cap against the mixer-head, and a gas-regulating cock having a stem portion thereof projecting through said nut and discharging gas into the center of the mixer-head.

**757,917. VALVE-GEAR FOR EXPLOSIVE-ENGINES.** LOUIS T. HAGAN and CHARLES HAGAN, Winchester, Ky. Filed June 30, 1903. Serial No. 163,785. (No model.)



*Claim.*—1. In a gas-engine, the combination with the explosion-cylinder provided with two alined valve-cylinders formed transversely in the cylinder-head and communicating at their inner ends with a port common to both of them leading into the explosion-cylinder, said valve-cylinders having circumferential apertures communicating with admission and exhaust passage-ways, of piston-valves disposed in said valve-cylinders, and means for simultaneously moving said valves in the same direction to open one of said apertures and close the other, substantially as described.

2. In a gas-engine, the combination with the explosion-cylinder provided with two alined valve-cylinders formed transversely in the cylinder-head and communicating at their inner ends with a port common to both of them leading into the explosion-cylinder, said valve-cylinders having circumferential apertures communicating with admission and exhaust passage-ways, of piston-valves disposed in said valve-cylinders, and coupled together to move in unison, and means for alternately moving said valves to open one of said apertures while the other still remains closed and finally close the first-named aperture and open the other aperture, substantially as described.

3. In a gas-engine, the combination with the explosion-cylinder provided with two alined valve-cylinders formed transversely in the cylinder-head and communicating at their inner ends with a port common to both of them leading into the explosion-cylinder, said valve-cylinders having circumferential apertures communicating with admission and exhaust passage-ways, of piston-valves disposed in said valve-cylinders, a shaft rotated by the engine and provided with a double crank, a pitman-connecting one of said cranks to one of the valves, and a curved yoke connecting the other crank to the other valve, substantially as described.

4. In a gas-engine, the combination with the explosion-cylinder provided with two alined valve-cylinders formed transversely in the cylinder-head and communicating at their inner ends with a port common to both of them leading into the explosion-cylinder, said valve-cylinders having circumferential apertures communicating with admission and exhaust passage-ways, of piston-valves disposed in said valve-cylinders, a shaft rotated by the engine and provided with a double crank, a pitman connecting one of said cranks to one of the valves and a yoke connecting the other crank to the other valve, the said crank-shaft being arranged to rotate at one-half the speed of the main shaft and the ends only of the valves being exposed to the effects of the explosion, substantially as described.

**757,918. VISE.** HARRY S. HARSTINE, Pittsburg, Pa., assignor of two-thirds to James D. Craft and Lewis R. Montgomery, Oakmont, Pa. Filed Aug. 18, 1903. Serial No. 169,932. (No model.)



*Claim.*—1. In a vise, the combination of a socket member having a substantially elliptical-shaped opening and provided with a curved slot, a sleeve extending through the elliptical-shaped opening, a barrel telescoping said sleeve and having a stem, an outer jaw adjustably mounted on said stem, means for locking said outer jaw in the adjusted position, a nut receiving the said sleeve and barrel, an operating-screw engaging said nut, a guide-arm engaging in the curved slot of the socket member, an inner jaw carried by the sleeve and means for engagement with the guide-arm to secure the inner jaw in an adjusted position.

2. In a vise, the combination of a socket member, a sleeve telescoping therein, a barrel telescoping the sleeve and provided with a stem, a nut receiving the barrel and sleeve, an operating-screw engaging the nut, an inner jaw mounted on the sleeve and adjustable to inclines at an angle to the vertical, means for securing said inner jaw in the adjusted position, an outer jaw adjustably mounted on the stem of the barrel, and means for securing the outer barrel in its adjusted position.

3. In a vise, the combination of a socket member, a sleeve telescoping therein, a barrel telescoping said sleeve, a nut receiving the barrel and sleeve, an operating-screw engaging said nut, a jaw carried by said sleeve, and a coacting jaw adjustably mounted on the stem of the barrel, substantially as described.

4. In a vise, the combination of a socket member, a sleeve engaging in said socket member, a barrel telescoping said sleeve, a jaw carried by the sleeve and provided with an annular flange engaging a convex face of the socket member, a coacting jaw mounted on the barrel, means whereby said jaws are adjusted in unison, and means for adjusting the coacting jaw independently of the first-named jaw.

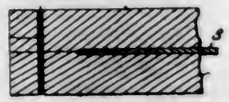
5. In a vise, a socket member, a sleeve telescoping the socket member, and a barrel telescoping the sleeve and provided with a stem, an inner jaw mounted on the barrel and adjustable to inclines at an angle to the vertical, means for securing said jaw in the adjusted position, an outer jaw mounted on the stem of the barrel and adjustable to inclines at an angle to the vertical independently of the inner jaw, and means for securing the outer jaw in the adjusted position.

6. In a vise, a pair of coacting jaws mounted for adjustment independently and in unison to inclines at an angle to the vertical, and also for adjustment independently and in unison at an angle to the horizontal, means for securing one of the jaws in the adjusted position, and separate means for securing the other of said jaws in the adjusted position.

7. In a vise, a socket member, a sleeve telescoping the socket member, an inner jaw carried by the sleeve and adjustable to inclines at an angle to the vertical, means for securing said jaw in the adjusted position, a barrel telescoping the sleeve, an outer jaw mounted on the barrel and adjustable to inclines at an angle to the vertical independent of the inner jaw, and means for securing said outer jaw in the adjusted position.

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**757,919. MACHINE-BELTING AND METHOD OF MAKING SAME.** BENTON G. HARLEY, Wyncote, Pa. Filed Dec. 26, 1903. Serial No. 186,658. (No model.)



*Claim.*—1. A belting composed of a plurality of plies of flexible material cemented together and embodying an interposed or intermediate metallic band of less width than the plies of flexible material, leaving cemented-together edges at opposite sides of such band, said edges being sewed together, the stitches being cemented in the thread-holes.

2. The herein-described method of manufacturing machine-belting, which consists in interposing a metallic band between a plurality of plies of belting material, cementing the plies of material together and, before the cement is hardened or sets, stitching the plurality of plies of belting material together, whereby the stitching takes up cement and is cemented and anchored in the stitch-holes, substantially as described.

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**757,920. HOTEL-REGISTER DESK.** JOHN I. HAYCRAFT, Linnous, Mo. Filed Jan. 27, 1904. Serial No. 190,807. (No model.)



*Claim.*—1. The improvement in register-desks herein described comprising the top having the compartments for cards and envelops and the corner-boxes for the ink-well, bell, toothpicks and matches and the downwardly-sloping surfaces for advertisements, the ring secured to the under side of the top and provided with the depending circular flange having on its inner face the cog-teeth and above the same the annular groove the base underlying said ring and forming a track for same, the pinions meshing with the cog-teeth of the flange and having top flanges operating in the annular groove, the screws forming journals for the pinion and projecting through and below the base and the pad-feet screwed on said screw substantially as set forth.

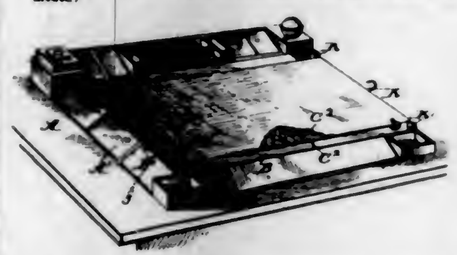
2. A register-desk comprising the base, the screws in the base and projecting above and below the same the cushion-posts on the lower end of the screws and supporting the base, the pinions journaled on the upper end of the screws, the top having a ring resting on the base and provided with a circular rack meshed by the pinions and means holding the base and ring together substantially as set forth.

3. The combination of the desk-top the ring on the under side of same and having the depending circular flange toothed on its inner side at its lower edge and provided in said side above its teeth with an annular groove, the base and the pinions journaled to the base and meshing with the teeth of said flange and having flanges projecting into the annular groove thereof substantially as set forth.

4. The combination of the desk-top, the ring on the under side thereof and having the rack or cog-ring and the annular groove above the same, the base, the screws passed through the base and projecting above and below the same, the pad-feet screwed on the lower ends of the screws and the pinions on the upper ends of the screws and meshing with the cog-ring and having flanges entering the groove above said cog-ring substantially as set forth.

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**757,921. BLOTTER ATTACHMENT FOR DESKS.** JOHN I. HAYCRAFT, Linnous, Mo. Filed Jan. 27, 1904. Serial No. 190,808. (No model.)



*Claim.*—1. The improvement, comprising a desk having a top portion provided with a slot for the passage of a blotter-strip and with depending sides, a roller journaled below the top and having a retracting-spring and a tubular portion provided with a longitudinal undercut groove, and a blotter-strip having a fabric section provided at one end with a casing and with a bar fitting therein and conformed to the undercut groove of the roller, and a bibulous section secured to the fabric section adjacent to the outer end thereof, said blotter-strip being arranged to operate through the slot in the desk-top and being provided at its free end with stop projections for limiting the retracting movement of the blotter-strip.

2. The combination of a retracting-roller, a blotter-strip having a bibulous portion, and a carrying portion to which said bibulous portion is secured, and connections between the carrying portion and the retracting-roller.

3. The combination with the desk-top having a slot for the passage of the blotter-strip, of a retracting-roller and the blotter-strip secured to said roller and operating through the slot in the desk-top and having a bibulous portion, substantially as described.

4. The combination of a desk-top, a retracting-roller and a blotter-strip secured to said roller, substantially as set forth.

5. The improvement herein described comprising a retracting-roller and a blotter-strip having a carrying portion secured to the roller, and a bibulous portion secured to said carrying portion.

6. The improvement herein described, comprising a retracting-roller consisting of a shaft, a tubular portion surrounding the shaft, a spring connection between said portion and the shaft, said tubular portion having a longitudinal groove, and a casing of tin or the like surrounding the tubular portion and bent at its edges in the groove of the tubular portion, the groove being adapted to receive and retain a connecting-bar, substantially as set forth.

7. The combination of a shaft, having an end slot, a tubular portion surrounding the shaft, a spring connection between the shaft and tubular portion, and a bracket having a blade or lug entering the slot in the shaft, substantially as set forth.



**757,922. BOWLING-ALLEY.** ANTON HERBST, New York, N. Y.; Anna Herbst, administratrix of said Anton Herbst, deceased, assignor of one-half to Kunigunde Eckert, Brooklyn, N.Y. Filed May 12, 1903. Serial No. 156,772. (No model.)



*Claim.*—1. In a bowling-alley, the combination, with longitudinal beams, transverse sleepers supported on the same and provided with dovetail upper ends, an alley proper consisting of parallel longitudinal strips provided with transverse dovetail recesses engaging the dovetail upper ends of the sleepers, said longitudinal strips being made in sections, the abutting ends of which are provided with tongue-and-groove joints, blocks below each abutting end of each section, and means connecting the blocks, substantially as set forth.

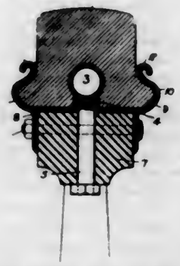
2. In a bowling-alley, the combination with the longitudinal supporting-beams having recesses provided with metallic blocks, transverse sleepers provided with screw-nuts and with dovetailed upper ends, parallel longitudinal strips forming the alley proper, and having dovetailed recesses in their lower sides arranged certain distances apart corresponding to the distance between the transverse sleepers, and engaging with the dovetail upper ends thereof, of leveling-screws resting on the metallic blocks of the longitudinal beams and engaging the screw-nuts of the sleepers, so as to permit the adjustment of the sleepers and alley proper for properly leveling the latter, substantially as set forth.

3. In a bowling-alley, the combination, with longitudinal beams and transverse sleepers supported on the same, of an alley proper consisting of parallel longitudinal strips, the ends of which are provided with tongue-and-groove joints, blocks below each abutting end of the longitudinal strips, means connecting the blocks, and means for attaching said alley proper to the transverse sleepers, substantially as set forth.

4. In a bowling-alley, the combination, with longitudinal supporting-beams having recesses provided with metallic blocks, of transverse sleepers provided with screw-nuts supported on said longitudinal beams, parallel longitudinal strips forming the alley proper supported on said sleepers, gutter-beams at the lateral ends of said sleepers provided with recesses, leveling-screws adjustable in the recesses of the gutter-beams resting on the metallic blocks of the longitudinal beams and engaging the screws of the sleepers so as to permit the adjustment of the sleepers and alley proper for properly leveling the latter, substantially as set forth.

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**757,923. VEHICLE-TIRE.** ALBERT C. HILLS, London, England. Filed Aug. 3, 1903. Serial No. 168,051. (No model.)



*Claim.*—1. In combination, an elastic tire, a hoop embedded in said tire, sockets on said hoop projecting through the base of the tire, adapted to bear against the felly of the wheel to relieve the tire from pressure, holes in the felly registering with the sockets on the hoop, fastening-bolts inserted through the holes in the felly, means for engaging the bolts with the sockets on the hoop, means for engaging the bolts with the felly, and flanges on the sides of the felly to prevent the tire from lateral displacement, substantially as and for the purpose set forth.

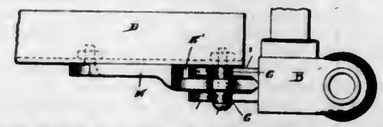
2. In combination, an elastic tire, a tubular hoop embedded in said tire, sockets on said hoop projecting through the base of the tire and adapted to bear against the felly of the wheel to relieve the tire from pressure, holes in the felly registering with the sockets on the hoop, fastening-bolts inserted through the holes in the felly, means for engaging the bolts with the sockets on the hoop, means for engaging the bolts with the felly, and flanges on the sides of the felly to prevent the tire from lateral displacement, substantially as and for the purpose set forth.

3. In combination, an elastic tire, a hoop embedded in said tire, screw-threaded sockets on said hoop projecting through the base of the tire and adapted to bear against the felly of the wheel to relieve the tire from pressure, holes in the felly registering with the sockets on the hoop, fastening-bolts inserted through the holes in the felly and screw-threaded to engage the sockets on the hoop, means for engaging the bolts with the felly and flanges on the sides of the felly to prevent the tire from lateral displacement, substantially as and for the purpose set forth.

4. In combination, an elastic tire, a hoop embedded in said tire, sockets on said hoop projecting through the base of the tire and adapted to bear against the felly of the wheel to relieve the tire from pressure, holes in the felly registering with the sockets on the hoop, fastening-bolts inserted through the holes in the felly, means for engaging the bolts with the sockets on the hoop, means for engaging the bolts with the felly, lateral projections on base of tire, side flanges on the felly of the wheel having lateral recesses to receive the projections of the tire, and means for securing one of the flanges detachably, substantially as and for the purpose described.

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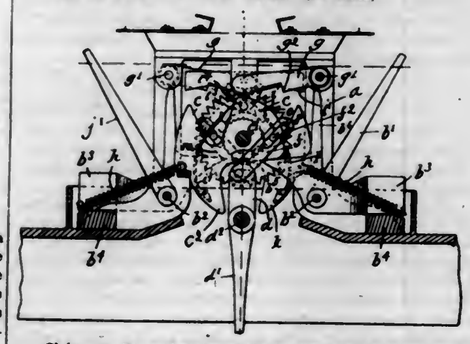
**757,924. BEDSTEAD-FASTENER.** HIRAM H. HIRSCH, Philadelphia, Pa. Filed Dec. 9, 1902. Serial No. 134,571. (No model.)



*Claim.*—In a device of the character described, a bedstead-post, bifurcated hooks extending inward therefrom, said hooks provided with downwardly-extending inclined slots, a side rail, a bracket secured to the outside end of the side rail, sleeves arranged upon the outside and inside of the outer end of the bracket, said posts adapted to fit within the slots of the hook, a headed screw-bolt passing through the sleeves and also through the side rail and provided with a nut upon its inner end, the outer end of the bracket formed polygonal, the crotch of the bifurcated hook also formed polygonal to correspond and adapted to be engaged by the outer end of the bracket when the parts are together, a screw-bolt passing through the inner end of the bracket and through a slot provided in the side rail, a nut threaded upon the inner end of the bolt, said slot formed concentric with the other screw-bolt, as and for the purpose specified.

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**757,925. ELECTRIC SWITCH.** CHARLES F. HOPEWELL, Cambridge, Mass., assignor to Uni Signal Company, a Corporation of Maine. Filed Oct. 7, 1903. Serial No. 176,021. (No model.)



*Claim.*—1. In an electric switch, the combination of a circuit-controlling device, an operating device therefor, an actuator for said operating device for giving it an initial movement, and a slotted link connecting said actuator with said operating device for giving said operating device a subsequent movement in continuation of said

initial movement, and a frame supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

2. In an electric switch, the combination of a circuit-controlling device, a cam-plate for operating it, an actuator adapted to be operated by a trolley having an extension which, when the actuator is moved in one direction only, engages a projection on the cam-plate for giving said plate an initial movement, a slotted link connected at one end to said extension on the actuator, and at the opposite end to said cam-plate for giving said cam-plate a subsequent movement in continuation of said initial movement, substantially as described.

3. In an electric switch, the combination of a circuit-controlling device, comprising a stationary contact member, and a movable contact member, the latter having a cam-engaging projection, a cam-plate for engaging said projection to move the movable contact member into engagement with the stationary contact member, and for holding it in such position while the cam-plate occupies its abnormal position, an actuator for said cam-plate, a retarding device for said cam-plate, means for engaging said retarding device on the return movement of said cam-plate and a frame supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

4. In an electric switch, the combination of a circuit-controlling device comprising a stationary contact member and a movable contact member, the latter having a weighted arm and also having a cam-engaging projection, a stop upon which said weighted arm rests, a cam-plate for engaging said projection to move the movable contact member into engagement with the stationary contact member and for holding said member in such a position while the cam-plate occupies its abnormal position, an actuator for said cam-plate, a retarding device for said cam-plate, means for engaging said retarding device on the return movement of said cam-plate and a frame supporting the parts with the actuator in position to be engaged by a trolley, substantially as described

5. In an electric switch, the combination of a circuit-controlling device comprising a stationary contact member, and a movable contact member, a locking device for holding said movable contact member in engagement with the stationary contact member, an operating device for said contact member, which moves it into engagement with the stationary contact member and also into engagement with the locking device, an actuator for said operating device, and a frame supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

6. In an electric switch, the combination of a circuit-controlling device comprising a stationary contact member and a movable contact member, a locking-arm for locking said movable contact member in engagement with said stationary contact member, an operating device for said contact member which governs the position of said locking-arm, an actuator for said operating device, and a frame supporting the parts with said actuator in position to be engaged by a trolley, substantially as described.

7. In an electric switch, the combination of a circuit-controlling device comprising a stationary contact member and a movable contact member, a locking-arm for locking said movable contact member in engagement with said stationary contact member, a cam-plate on which said locking-arm bears which governs its position, a projection on said movable contact member adapted to be engaged by said cam-plate, an actuator for said cam-plate, and a frame supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

8. In an electric switch, the combination of a circuit-controlling device, an operating device therefor, an actuator for said operating device, a locking-arm for the movable contact member of said circuit-controlling device, the position of which is governed by said operating device, an engaging portion on said operating device which strikes against the end of said locking-arm and limits its movement. substantially as described.

9. In an electric switch, the combination of a circuit-controlling device, an operating device therefor, an actuator for said operating device, a locking-arm for the movable contact member of said circuit-controlling device, the position of which is governed by said operating device, and a projection on said operating device which is adapted to engage said locking-arm, substantially as described.

10. In an electric switch, the combination of a circuit-controlling device comprising a stationary contact member and a movable contact member, a projection on said movable contact member, a cam-plate which engages said projection and moves said contact member into engagement with the stationary contact member, and holds it in such position, a pivoted actuator adapted to be operated by a trolley, and a slotted link connecting said cam-plate with said actuator, substantially as described.

11. In an electric switch, a circuit-controlling device, an operating device therefor, an actuator, a slotted link connecting said operating device with said actuator, a retarding device for said operating device, and means for engaging said retarding device on the return movement of said operating device, substantially as described.

12. In an electric switch, the combination of a circuit-controlling device, an operating device therefor, an actuator for giving to said operating device an initial movement, and a slotted link connecting said actuator with said operating device for giving to it a subsequent movement in continuation of said initial movement, a retarding device for said operating device, and means for engaging said retarding device on the return movement of said operating device, substantially as described.

13. In an electric switch, a circuit-controlling device, an operating device therefor, an actuator for giving to said operating device an initial movement, and a slotted link connecting said actuator with said operating device for giving to it a subsequent movement in continuation of said initial movement, a pawl borne by said operating device, a ratchet-wheel which it engages, an escape-wheel to which said ratchet-wheel is secured, and a pallet for said escape-wheel, substantially as described.

14. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, a cam-engaging projection on each movable contact member, a cam-plate for engaging each projection to move the movable contact member into engagement with the stationary contact member and for holding it in such position while the cam-plate occupies its abnormal position, an actuator for each cam-plate, a retarding device common to both cam-plates, and means for engaging said retarding device on the return movement of the cam-plates, substantially as described.

15. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, an operating device for each movable contact member, a pivoted actuator, a slotted link connecting each operating device with an extension on the actuator and a frame for supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

16. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, a cam-plate for each movable contact member, a pivoted actuator, a slotted link connecting each cam-plate with an extension on the actuator, and a frame for supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

17. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, an operating device for each movable contact member, an actuator having two extensions for respectively engaging the operating devices and for giving them an initial movement, a slotted link connecting each operating device with an extension on the actuator for giving to said operating device a subsequent movement in continuation of said initial movement, and a frame for supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

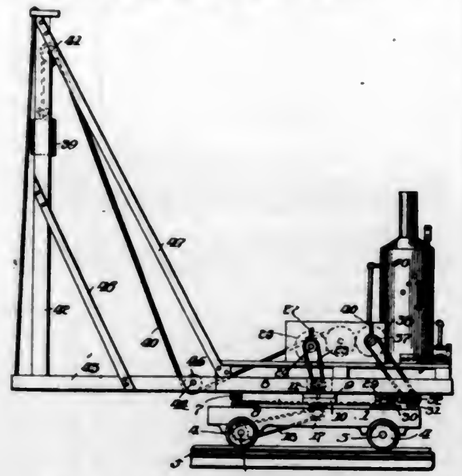
18. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, a locking device for each movable contact member, an operating device for each movable contact member which controls the position of the locking device therefor, an actuator for both the operating devices, a slotted link connecting each operating device with an extension on said actuator, and a frame for supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

19. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, a locking-arm for each movable contact member, a cam-plate for each movable contact member which also controls the position of the locking-arm for said member, an actuator, a slotted link connecting each cam-plate with an extension on said actuator, and a frame for supporting the parts with the actuator in position to be engaged by a trolley, substantially as described.

20. In an electric switch, the combination of two circuit-controlling devices, each comprising a stationary contact member and a movable contact member, an operating device for each movable contact member, an actuator for said operating devices, a slotted link connecting each operating device with an extension on said actuator, a retarding device common to both operating devices, and means for engaging said retarding devices on the return movement of the operating devices, substantially as described.



## 757,926. PILE-DRIVER. JOHN H. HOPKINS, Punxsutawney, Pa. Filed Sept. 30, 1903. Serial No. 175,148. (No model.)



*Claim.*—1. A device of the type set forth comprising a supporting-truck with a platform mounted to rotate on the truck, plates carried by the truck and by the platform with a shaft passing through the two, and having beveled gear-wheels arranged on its extremities, a shaft journaled in the truck and carrying a pinion meshing with the lower of said pinions and having a sprocket on its other end with a chain passing thereover, and a sprocket on one of the truck-axles over which said chain also passes, a driving-ram carried by the platform and means operated by the other of the said first-named pinions for operating the ram.

2. A device of the type set forth comprising a truck having a circular rack thereon, a plate on the truck with a platform on the truck also having a plate seating on the first-named plate, a shaft passing through said plates and carrying pinions on its ends, means operated by the lower of said pinions for driving the truck, a driving-ram on the platform and means operated by the upper of the said pinions to operate said ram.

## 757,927. BOGIE-TRUCK FOR ROLLING-STOCK. HENRY A. HOY, Bolton, England. Filed Oct. 5, 1903. Serial No. 175,846. (No model.)

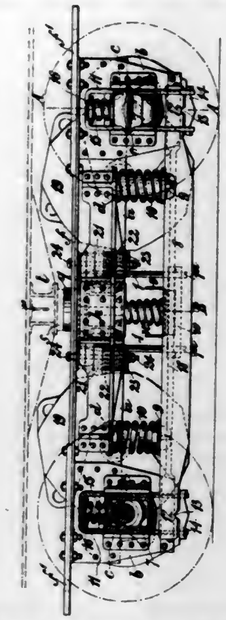
*Claim.*—1. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of spring-carriers the end portions of which extend below said axle-boxes, vertically-movable means extending over said axle-boxes for suspending said carriers from, and supporting-springs located between said carriers and frame.

2. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of spring-carriers the end portions of which extend below said axle-boxes, means for supporting said carriers, springs arranged between said axle-boxes and the supporting means for said carriers, and springs arranged between said carriers and frame.

3. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of longitudinal spring-carriers the end portions of which extend below said axle-boxes, means for supporting said carriers from said axle-boxes, springs arranged between said supporting means and said axle-boxes, and springs arranged between said carriers and said bogie-frame.

4. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of longitudinal beams arranged below the axle-boxes at the opposite sides of the bogie-truck, vertically-movable supports each embracing an axle-box and arranged to support one end of one of said beams, a spring located between the top of each axle-box and the corresponding vertically-movable support, and springs arranged between said beams and the bogie-frame.

5. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of brackets secured to the opposite sides of said frame, longitudinal beams arranged to extend below the axle-boxes, springs located between said brackets and beams, vertically-movable inverted-stirrup-shaped supports embracing said axle-boxes and supporting the ends of said beams, and springs arranged between said axle-boxes and supports.



6. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of longitudinal beams arranged one at each side of the truck and common to the two axle-boxes at the corresponding side of the truck, vertically-movable inverted-stirrup-shaped supports embracing the axle-boxes and the ends of said beams, a yoke-piece supported by the lower end of each support and formed with an upwardly-extending lug or bearing upon which the adjacent end of the corresponding beam bears, and a spring arranged between the top of each axle-box and the upper end of each support.

7. In a bogie-truck, the combination with the bogie-frame, the carrying-wheels therefor, and the axle-boxes, of brackets secured to the opposite sides of said frame and adapted to retain in place the upper ends of supporting-springs, longitudinal beams arranged below said axle-boxes and brackets and each provided with spring-holders, supporting-springs arranged between said brackets and the spring-holders on said beams, vertically-movable inverted-stirrup-shaped supports each embracing an axle-box and arranged to slide vertically between the sides thereof and the axle-box guides, a yoke-piece held by the lower end of each support and arranged to support the adjacent end of the corresponding beam, and a spring arranged between the top of each axle-box and the upper end of the corresponding support.

8. A bogie-truck comprising a bogie-frame, carrying-wheels and axle-boxes therefor, a vertically-movable bolster, a transverse beam arranged below said bolster and suspended from said frame, springs arranged between said bolster and said transverse beam, longitudinal beams adapted to be supported by said axle-boxes, and springs located between said beams and frame.

9. A bogie-truck comprising a bogie-frame, carrying-wheels and axle-boxes therefor, a vertically-movable bolster, a transverse beam arranged below said bolster and suspended from said frame, springs arranged between said bolster and said transverse beam, longitudinal beams adapted to be supported by said axle-boxes, springs located between said longitudinal beams and frame, and springs arranged between said axle-boxes and longitudinal beams.

10. A bogie-truck comprising a bogie-frame with carrying wheels and axle-boxes therefor, a bolster and transverse beam arranged one above the other with interposed springs and means for

suspending said transverse beam from said frame, spring-holding brackets secured to the outer sides of said frame, longitudinal beams arranged below said spring-holding brackets and axle-boxes, means for supporting said longitudinal beams from said axle-boxes, springs arranged between said longitudinal beams and brackets, and springs arranged between said axle-boxes and the supporting means for said beams.

11. A bogie-truck comprising two longitudinal side members or sole-bars, transverse members secured to and connecting said sole-bars, and a top plate secured to the upper portion of said sole-bars and transverse members, and formed with central and lateral openings, a bolster arranged to work vertically between said transverse members and provided with a bogie center and lateral bearing-pieces extending respectively through the central and lateral openings in said top plate, a transverse beam arranged below said bolster, springs arranged between said bolster and beam, links jointed at their upper ends to said transverse members and adapted at their lower ends to support said transverse beam near its ends, horn-plates and axle-box guides carried by said sole-bars, axle-boxes arranged between said axle-box guides, carrying-wheels having their axles extending through said axle-boxes, brackets secured to the outer sides of said sole-bars, spring-carriers arranged below said brackets and supported by said axle-boxes, springs located between said carriers and brackets, and springs located between said carriers and axle-boxes.

12. The improved bogie-truck comprising the two longitudinal sole-bars with connecting transoms, the top plate with central and lateral openings, the transverse members connecting the ends of the sole-bars, the horn-plates and axle-box guides with axle-boxes and carrying-wheels and axles, the bolster with bogie center and lateral bearing-pieces, the transverse beam with slotted suspension-links and longitudinal bars w, the springs between said bolster and transverse beam, the longitudinal brackets at the outer sides of said sole-bars, the longitudinal beams with spring-holders below said brackets, the springs between said longitudinal beams and brackets, the carriers with yoke-pieces embracing the axle-boxes and the ends of said longitudinal beams, and the springs between said carriers and axle-boxes, the whole constructed and arranged substantially as described and shown.

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**757,928. WIRE FENCE.** WALLACE B. HUGHES, Dallas, Tex., assignor of one-third to Joe Samuels, Dallas, Tex. Filed July 23, 1903. Serial No. 166,718. (No model.)



*Claim.*—1. The improved fence herein described consisting of the line-wires composed of strands twisted together to form a twisted cable, and stay-sections passed at their meeting ends in opposite directions between the strands of the twisted cable adjacent to each other, but free from interlocking connection and then twisted first entirely around their respective strands of the cable and then coiled around the twisted cables substantially as and for the purposes set forth.

2. The combination in a fence substantially as herein described, of the line-wires composed of strands twisted together, forming a twisted cable, and stay-sections inserted at their meeting ends between the strands of the twisted cable, with their ends extending in opposite directions through the cable, and free from interlocking connection with each other, the said ends being then twisted first entirely around their respective strands and close against the side of the body of the section from which the respective ends extend, and then coiled around the twisted cable whereby the spreading of the twisted cable at the point of insertion of the stay-sections is limited to the thickness of one of said sections and the coils may extend compactly from the stay-sections, substantially as and for the purposes set forth.

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**757,929. HOSE, ROD, OR PIPE COUPLING.** AUGUST W. HUBBMAN, Staunton, Ill. Filed July 6, 1903. Serial No. 164,696. (No model.)

*Claim.*—1. In hose, rod and pipe couplings, a female section having receiving-jaws hinged for movement to and from each other, the said jaws having interior locking-flanges and a locking-ring adapted in one position to close the jaws, a male section having a body portion to enter the space between said jaws of the female section, and an exterior recess to receive the locking-flanges of the said female section, said jaw-section of the coupling having parallel sides at its hinged end and being conically enlarged at its forward end within the clamping-ring, the opening between said jaws near their forward ends being also correspondingly enlarged conically, and the rear end of the male member of the coupling being conically enlarged to snugly fit said internal conical enlargement near the outer end of the jaws, said locking-ring also having an inclined bore to fit the inclined face of the jaws, as described.



2. In hose, rod and pipe couplings, a female section comprising a body, jaws oppositely hinged to the body, latch devices carried by the jaws, the said jaws having their inner and outer faces inclined outwardly toward their receiving ends, being provided with interior locking-flanges at the receiving ends, a locking-ring for the jaws, conforming at its inner face with the exterior inclination of the jaws and adapted to be held in locking position by the said latches, and a male section, having a member adapted to enter between the jaws of the female section, which member is provided with an annular recess to receive the flanges of the jaws of the female section, and an exterior inclined projection to engage with the inner inclined surfaces of the said jaws, as described.

3. In hose, rod and pipe couplings, a female section comprising a body member, jaws hinged to the body member, adapted for movement to and from each other, the jaws being provided with interior segmental locking-flanges at their receiving ends, spring-latches carried by the said jaws at their exterior portion, having free movement at their rear or inner ends, a locking-ring mounted to slide on the said jaws and adapted in one position to close the jaws, the said locking-ring being provided with recesses which receive offsets from the spring-latches when the locking-ring is in locking position to hold the spring in such position, a male section having a member adapted to enter the space between the jaws of the female section and provided with an exterior annular recess adapted in the locking position of the two sections to receive the locking-flanges of the jaws of the female section, the two sections having a continuous bore of uniform diameter, as and for the purpose described.

4. In hose, rod and pipe couplings, the combination with a female section comprising a body member, jaws oppositely hinged to the said body member, which jaws are exteriorly and interiorly conically shaped at their receiving portions and are provided at their receiving ends with interiorly-formed locking-flanges, each jaw being provided with an exterior recess, spring-latches attached at one of their ends to the exterior receiving ends of the said jaws, the body portions of the latches being adapted to the said recesses, each latch having an outwardly-extending shoulder formed thereon, and a locking-ring mounted to slide on the jaws, having its inner face inclined to correspond to the conical exterior formation at the receiving end of the jaws, the said locking-ring being further provided with opposing recesses adapted to receive the offset portions of the said latches, of a male section provided with a body member adapted to enter the female section between the jaws thereof, a cushion located in the female section receiving the inner end of the body member of the male section, a plain collar exteriorly formed on the body member of the male section near its outer end, and an opposing conically-formed collar likewise formed on the body member of the said male section, an annular space intervening the two collars, adapted for the reception of the flanges of the jaws of the female section when the two sections are in coupled position, all operating in the manner described.

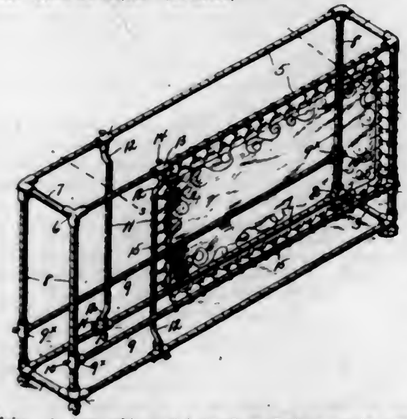
5. In hose, rod and pipe couplings, the combination with a female section comprising a body member, jaws oppositely hinged to the said body member, which jaws are exteriorly and interiorly conically shaped at their receiving portions and are provided at their receiving ends with interiorly formed locking-flanges, each jaw being provided with an exterior recess, spring-latches attached at one of their ends to the exterior receiving ends of the said jaws, the body portions of the latches being adapted to the said recesses, each latch having an outwardly-extending shoulder formed thereon, and a locking-ring mounted to slide on the jaws, having its inner face inclined to correspond to the conical exterior formation at the receiving end of the jaws, the said locking-ring being further provided with opposing recesses adapted to receive the offset portions of the said latches, of a male section provided with a body member adapted to enter the female section between the jaws thereof, a cushion located in the female section receiving the inner end of the body member of the male section, a plain collar exteriorly formed on the body member of the male section near its outer end, and an opposing conically-formed collar likewise formed on the body member of the said male section, an annular space intervening the two collars, adapted for the reception of the flanges of the jaws of the female section when the two sections are in coupled position, said jaws of the female section having exterior, longitudinal recesses at their meeting edges, the locking-ring being provided with interior ribs adapted to slide in the said recesses, whereby the locking-ring is prevented from turning on the female section, and the recesses therein are compelled to register with the latches when the locking-ring is brought into or out of locking engagement with the said jaws, as described.

6. In hose, rod and pipe couplings, a female section having receiving-jaws hinged for movement to and from each other, the said jaws having interior locking-flanges, a locking-ring adapted in one position to close the jaws, a male section having a body portion to enter the space between said jaws of the female section, and an exterior recess to receive the locking-flanges of the said female section, spring-latches on said jaws for holding said ring in clamping engagement therewith, said ring having recesses into which said latches are received, and coöperating means between said jaws and clamping-ring to prevent rotatable movement of said ring upon said jaws to hold the recesses in said ring in alinement with their respective latches.



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**757,930. DRYING AND STRETCHING FRAME FOR LACE CURTAINS.** GEORGE F. HULLINGS, Washington, D. C. Filed Oct. 1, 1903. Serial No. 175,354. (No model.)



*Claim.*—1. A stretching and drying frame for lace curtains, comprising a stationary frame, longitudinally-adjustable bars, independently-adjustable transverse bars, said adjustable bars each having a graduated scale thereon, and means for securing the bars in adjusted position.

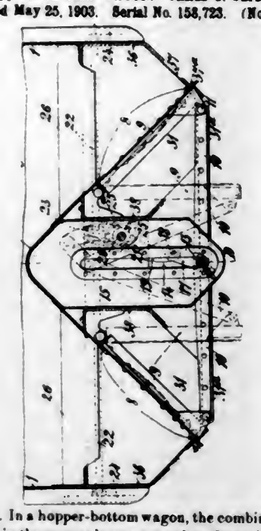
2. A drying-frame for lace curtains, comprising the stationary frame-bars having graduation-marks thereon, the sliding longitudinal bars and the independently-sliding transverse bars, said sliding bars having graduations to locate the pins or hooks to equalize the strain on the curtain.

3. A drying-frame for lace curtains, comprising the stationary frame, adjustable longitudinal bars, independently-adjustable offset transverse bars and means for securing said sliding bars in adjusted position.

4. A drying-frame for lace curtains, comprising the stationary frame having graduated longitudinal bars and corner-posts, longitudinal bars mounted to slide upon the corner-posts and provided with graduation-marks for the pins or hooks, transverse offset bars mounted to slide upon the longitudinal bars and provided with graduation-marks, for the pins or hooks, and means for securing the sliding bars independently to the stationary frames.

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**757,931. RAILWAY-WAGON.** JAMES T. JEPSON, Leeds, England. Filed May 25, 1903. Serial No. 158,723. (No model.)



*Claim.*—1. In a hopper-bottom wagon, the combination of a longitudinal ridge in the wagon-bottom, openings formed in the sides of the ridge, doors closing said openings and hinged at their upper edges back to back in pairs and lengthwise of the wagon, vertically-moving toggles pivoted to the lower parts of the doors, a longitudinal rock-shaft, lever-arms fixed upon said rock-shaft and linked to the knuckle of the toggles and means operable from either side of the wagon whereby said rock-shaft can be rocked so as to close and open said doors, as set forth.

2. In a hopper-bottom wagon, the combination of a longitudinal ridge in the wagon-bottom, openings formed in the sides of the ridge, doors closing said openings and hinged at their upper edges back to back in pairs and lengthwise of the wagon, vertically-moving toggles pivoted to the lower parts of the doors, a longitudinal rock-shaft located beneath the ridge and above the toggles, lever-arms fixed upon said rock-shaft and linked to the knuckle of the toggles and means operable from either side of the wagon whereby said rock-shaft can be rocked so as to close and open said doors, as set forth.

3. In a hopper-bottom wagon, the combination of a longitudinal ridge in the wagon-bottom, openings formed in the sides of the ridge, doors closing said openings and hinged at their upper adjacent edges back to back in pairs and lengthwise of the wagon and means whereby said doors can be opened or closed and locked from either side of the vehicle, as set forth.

4. In a hopper-bottom wagon, the combination of a longitudinal ridge in the wagon-bottom, openings formed in the sides of the ridge, doors closing said openings and hinged at their upper edges back to back in pairs and lengthwise of the wagon, vertically-moving toggles pivoted to the lower parts of the doors, a longitudinal rock-shaft, lever-arms fixed upon said rock-shaft and linked to the knuckle of the toggles and means for operating the longitudinal rock-shaft from either side of the wagon comprising a transverse shaft extending from side to side of the wagon and geared to the rock-shaft, as set forth.

5. In a hopper-bottom wagon, the combination of a longitudinal ridge in the wagon-bottom, openings formed in the sides of the ridge, doors closing said openings and hinged at their upper edges back to back in pairs and lengthwise of the wagon, vertically-moving toggles pivoted to the lower parts of the doors, a longitudinal rock-shaft, lever-arms fixed upon said rock-shaft and linked to the knuckle of the toggles and means for operating the longitudinal rock-shaft from either side of the wagon comprising a transverse shaft extending from side to side of the wagon and geared to the rock-shaft by a worm and worm-wheel, as set forth.

6. In a hopper-bottom wagon, the combination of a centrally-disposed girder comprising a longitudinal ridge in the wagon-bottom, openings in the sides of the ridge, doors closing said openings and hinged at their upper edges lengthwise of the wagon, sole-bars having inwardly and downwardly inclined lower flanges and cross-bars fitting said sole-bars and connecting them to the central girder as set forth.

7. In a hopper-bottom wagon, the combination of a centrally-disposed girder comprising a longitudinal ridge in the wagon-bottom, longitudinal members connected to said ridge, openings in the sides of the ridge, doors closing said openings and hinged at their upper edges lengthwise of the wagon, sole-bars having inwardly and downwardly inclined lower flanges and cross-bars fitting said sole-bars and connecting them to the central girder, as set forth.

8. In a hopper-bottom wagon, the combination of a centrally-disposed girder comprising a longitudinal ridge in the wagon-bottom, openings in the sides of the ridge, doors closing said openings and hinged at their upper edges lengthwise of the wagon, sole-bars having inwardly and downwardly inclined lower flanges and cross-bars at the ends of the doors and forming retaining-walls for the material during discharge, said cross-bars fitting said sole-bars and connecting them to the central girder, as set forth.

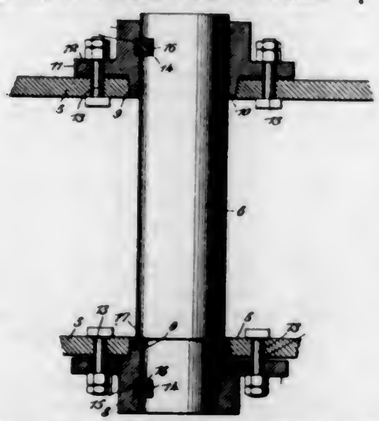
9. In a hopper-bottom wagon having a longitudinal ridge in the wagon-bottom, an underframe comprising a centrally-arranged girder formed by said ridge which forms a compression member, sole-bars, cross-bars between them and a tension member which dips below the cross-bars and is attached thereto, as set forth.

10. A hopper-bottom wagon having a longitudinal ridge in the wagon-bottom strengthened by a superposed beam or girder and provided with longitudinally-hinged doors, as set forth.

11. A hopper-bottom wagon having a longitudinal ridge in the wagon-bottom and an underframe comprising sole-bars having downwardly and inwardly inclined lower flanges, longitudinal members beneath the ridge and having downwardly and outwardly inclined lower flanges, cross-bars with correspondingly-inclined lower portions fitting between the sole-bars and longitudinal members and transverse stiffeners between the longitudinal members, as set forth

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**757,932. SHAFT-FASTENER.** WILLIAM A. JOHNS, Branch, Pa. Filed Aug. 13, 1903. Serial No. 169,313. (No model.)



*Claim.*—1. A means for fastening shafts immovably in place in machinery, consisting of a suitable machine-frame, bushings bolted to the machine-frame and having wedging engagement therewith, a shaft supported in said bushings, and keys for interlocking the shaft to the bushings.

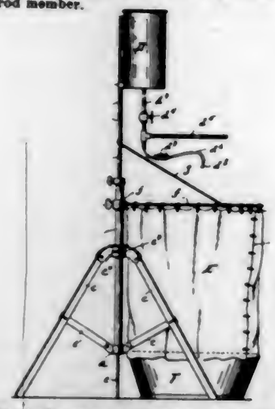
2. A means for fastening shafts immovably in machinery, consisting of a suitable machine-frame, bushings having conical hubs which are wedged into the machine-frame, bolts fastening the bushings in place, a shaft fitted in said bushings, and means for locking the shaft to the bushings.

3. A means for fastening shafts immovably in machinery, consisting of a suitable machine-frame, bushings having conical hubs and perforated flanges, bolts passing through said flanges and drawing the conical hubs into wedging engagement with a machine-frame, a shaft fitted in said bushings, there being key-seats in the shaft and the bushings, and keys occupying said key-seats and locking the shaft immovably in place within the bushings.

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**757,933. COMBINED AUTOMATIC SHOWER AND VAPOR BATH ADJUSTABLE FRAME.** ORIN J. LUKENBILL and ARTHUR T. HOUGHTEN, Detroit, Mich., assignors to the Union Specialty Co., Detroit, Mich. Filed Apr. 30, 1903. Serial No. 153,579. (No model.)

*Claim.*—1. In a bath apparatus, a main supporting-frame having a foldable leg-frame and an upright holding-rod member, a horizontally-arranged canopy-support having an adjustable mounting upon the main supporting-frame, and a brace arranged to be connected with the canopy-support and adjustably engaged with the holding-rod member.



2. In a bath apparatus, the combination of a frame-upright, a vertically-adjustable holding-rod carried by said upright and provided with notches, and a vertically-adjustable canopy-frame having a bracing-bail engaged with said notches.

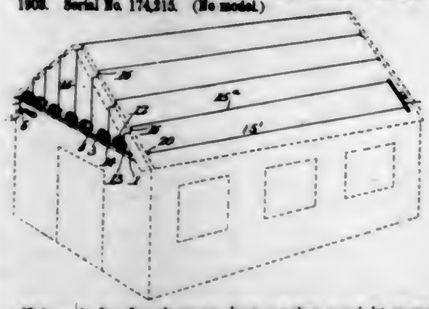
3. In a bath apparatus, a tubular frame-upright, a vertically-adjustable holding-rod mounted in the frame-upright and provided with a series of notches, a vertically-adjustable canopy-support having a collar member slidably and adjustably arranged on the frame-upright, and an inclined bracing-bail connected with the canopy-support and adjustably engaging said notches.

4. In a bath apparatus, a frame-upright carrying a canopy-support, a movable runner-bracket slidably and adjustably working upon the upright, a fixed collar fitted to the upright, and a foldable leg-frame having leg members pivoted to the runner-bracket and folding braces pivotally connected respectively with the runner-bracket and said fixed collar.

5. In a bath apparatus, a frame-upright having a leg-frame at its lower end, a vertically-adjustable holding-rod carried by the frame-upright, a vertically-adjustable canopy-support carried by the frame-upright and said holding-rod, and a supply-tank mounted upon the holding-rod and carrying spray devices.

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**757,934. FIRE-ALARM.** THOMAS F. LUTAKER, Concord, N. C., assignor of one-half to R. L. Umberger, Concord, N. C. Filed Sept. 22, 1903. Serial No. 174,315. (No model.)



*Claim.*—1. In a fire-alarm, an alarm member, a weight-supporting lever, a weight detachably connected thereto, a destructible means for holding the weight elevated, a rod extending from the lever to the alarm, and means for automatically restoring the rod and lever to initial position after the weight is detached.

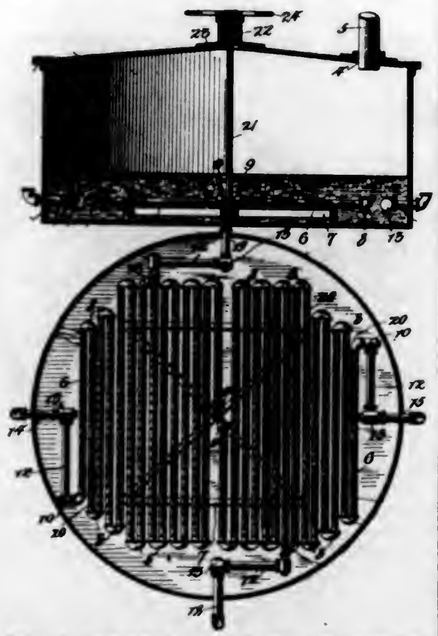
2. The combination with an alarm, of an alarm-releasing rod, a plurality of weight-supports having connection with said rod, destructible means for holding the supports in operative position, automatically-detachable weights carried by the supports, and means for restoring the rod to initial position after one of the weights is detached.



3. The combination with an alarm, of an alarm-releasing rod, a plurality of pivotally-mounted weight-supports each independently connected to the rod, automatically-detachable weights carried by the weight-supports, destructible means for retaining the supports in operative position, and a spring connected to the rod said spring being compressed on downward movement of a weight and serving to return the rod to initial position when said weight is detached.

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**757,935. CARBURETER.** SIDNEY A. LOCKHART, Syracuse, Nebr. Filed Dec. 10, 1903. Serial No. 184,626. (No model.)



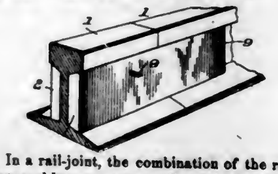
*Claim.*—1. In a carbureter, the combination with a closed tank for containing liquid hydrocarbon, having a gas-discharge pipe, of a series of horizontally-disposed, parallel perforated pipes arranged in two sections, means for supporting said pipes in position to be submerged in said hydrocarbon, means for raising and lowering the same, air-supply pipes arranged at diametrically opposite points in the sides of said tank, flexible connections between said air-pipes and said slitted pipes whereby air is supplied to said latter pipes and forced through the perforations of the same and into and through said liquid hydrocarbons to form a gaseous vapor in said tank, and means for adjusting the height of said slitted pipe-sections in said hydrocarbon, whereby the density of said gaseous vapor will be increased or diminished, substantially as described.

2. In a carbureter, the combination with a closed tank for liquid hydrocarbon, of a series of perforated pipes arranged to form two continuous sections adapted to be submerged in said hydrocarbon, a frame or spider to support said pipe-sections in said submerged position, a central vertically-disposed threaded shaft, secured to said frame or spider at its lower end, and adapted to pass through a packed opening in the top of said tank, means applied to the upper end of the shaft to raise and lower the same and the frame or spider carrying said sections of slitted pipes, and means for supplying said pipes with air, substantially as described.

3. In a carbureter, the combination with a closed tank for containing liquid hydrocarbon, of a series of perforated pipes arranged to form two continuous sections adapted to be submerged in said hydrocarbon, a frame or spider to support said pipe-sections in said submerged position, a central vertically-disposed threaded shaft secured to said frame or spider at its lower end, and adapted to pass through a packed opening in the top of said tank, means applied to the upper end of the shaft to raise and lower the same and the frame or spider carrying said sections of slitted pipes, air-supply pipes arranged in the sides of said tank at diametrically opposite points, and flexible connections between said air-supply pipes and said sections of slitted pipes to permit the same to be raised and lowered, substantially as described.

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**757,936. RAIL-JOINT.** MARTIN LÖFFLER, Homestead, Pa. Filed Jan. 16, 1904. Serial No. 189,325. (No model.)



*Claim.*—1. In a rail-joint, the combination of the rails, a fish-plate carrying integral lugs, a corresponding fish-plate having a recess and ways formed therein to receive said lugs, and locking-pawls arranged within the latter fish-plate, and means for operating said pawls, substantially as described.

2. In a rail-joint, the combination of the rails, a fish-plate carrying integral lugs extending through said rails, a corresponding fish-plate having ways formed therein, pawls secured in said latter fish-plate, and a removable key whereby said pawls are operated, substantially as described.

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**757,937. PAPER CLIP OR HOLDER.** WILLIAM LUKES, Newark, N. J. Filed Nov. 25, 1903. Serial No. 182,595. (No model.)



*Claim.*—1. In a paper-holding device, the combination with a body-plate doubled to form upper and lower forward extensions between which is formed a slot or aperture to receive a board, the upper extension being provided with stop-tongues and pivotal hooks or eyes and a shaft within said hooks or eyes, a clip-jaw arranged on said shaft and extending forward therefrom beyond the limits of said upper and lower extensions of said body-plate, where it is adapted to press upon the board or intervening papers or leaves, substantially as set forth.

2. The improved paper-holding clip, comprising a sheet-metal body doubled to form upper and lower extensions, the upper extensions being each bent upward near the opposite sides of the clip and between said upward bends being bent in the form of hooks and back from said bendings having a closed loop struck from said body, a shaft arranged within said hooks, a clip-jaw pivoted on said shaft, a spring coiled on said shaft and having ends bearing oppositely on said clip-jaw and body, the doubled or looped end bearing on said body being inserted in said closed loop, which latter spans the doubled end of the spring and holds the same upon the face of said body and a board fitting between said upper and lower extensions and held therein by the pressure thereon of the spring-controlled clip-jaw, substantially as set forth.

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**757,938. DENTAL APPLIANCE.** WILLIAM T. LYON, Portland Oreg. Filed July 8, 1903. Serial No. 164,701. (No model.)



*Claim.*—1. An appliance of the character stated, comprising a shell or cup having an internal screw-threaded bore, said cup adapted to receive the cast and a blank, a yieldable cover for said cast and blank, a ring to fit within the shell or cup and adapted to rest upon the periphery of the yieldable cover to hold the same in place and a threaded plug for closing the said internal bore of the shell

adapted to seat upon the ring for holding the same in place, substantially as shown and described.

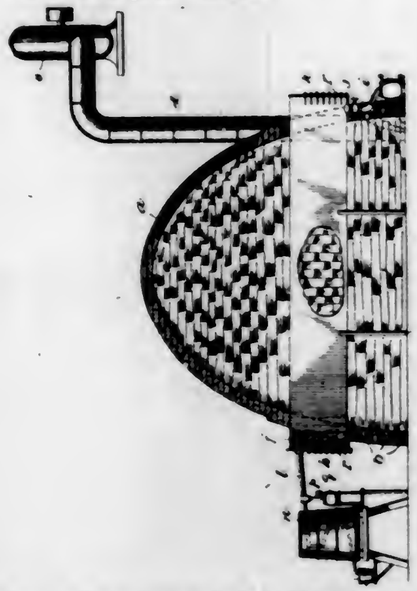
2. An appliance of the character stated comprising a shell or cup having an internal screw-threaded bore, said cup adapted to receive the cast and the blank, a yieldable covering for said cast and blank, a ring to fit within the shell or cup and adapted to rest upon the periphery of the yieldable covering, to hold the same in place, a threaded plug for closing said internal bore of the shell and adapted to seat upon the ring for holding the same in place, said plug including an upwardly-extending portion having an intrnal bore as and for the purposes described.

3. In an appliance of the character stated, a shell or cup having an internal screw-threaded bore, said cup being adapted to receive the cast and the blank, a yieldable covering for said cast and blank, a ring to fit within the shell or cup and adapted to rest upon the periphery of the yieldable covering to hold the same in place, a plug having a threaded portion for coöperating with the threaded bore of the shell for closing the said internal bore of the shell and adapted to seat upon the ring for holding the same in place, said plug including an upwardly-extending portion having an internal bore throughout its length, a plunger to fit said bore and adapted to operate therein for the purposes specified.

4. A dental appliance comprising a shell or cup 1 internally threaded as at 2 and adapted to receive the cast 9 and the blank 10, a shield 11, the shield securing the ring 8, a plug 4 having a threaded piston $4^a$, and the extension 5 internally bored as at $5^b$, and the plunger 6, all being arranged substantially as shown and for the purposes described.

5. An appliance of the character stated comprising a cup-shaped shell having an internally-threaded upper end and adapted to receive the cast and the blank therefor, a yieldable covering for the said cast and blank, a ring within the shell adapted to rest upon the peripheral edge of the covering to hold it in place over the cast and blank thereon, a plunger which includes a threaded pistou for closing and engaging the threaded end of the shell, said plunger also including a vertical extension, said extension having a central opening that extends through the piston end of the plunger, and a plug operable in the said central opening of the said plunger, as set forth.

## 757,939. APPARATUS FOR THE DISTILLATION OF WOOD AND PRODUCTION OF CHARCOAL. HENRY A. MACKIE, New Orleans, La., assignor of one-half to Elmer E. Wood, New Orleans, La. Filed Jan. 4, 1904. Serial No. 187,657. (No model.)

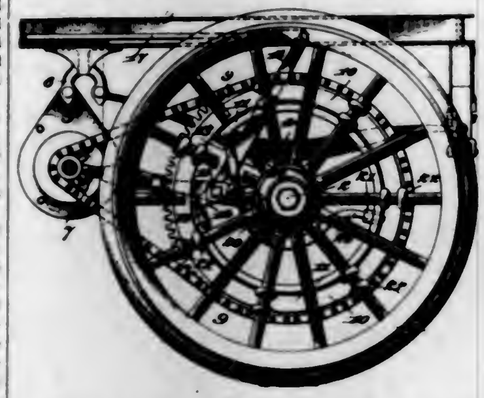


*Claim.*—1. The combination of a charcoal-kiln, an inclined retort passing through said kiln, and means for collecting the products of distillation from said retort, substantially as described.

2. The combination of a kiln, an inclined retort supported in said kiln and passing through the walls thereof, a drain-pipe attached to the lower end of said retort, a discharge-pipe for the lighter products of distillation leading from said retort, and means for condensing said lighter products, substantially as described.

3. The combination of a charcoal-kiln, provided with air-inlets, an inclined retort passing through the walls of said kiln and provided with doors one at each end, supports for said retort, a discharge-pipe for said kiln, a fan communicating with said discharge-pipe, a drainage-pipe leading from the lowest part of said retort, a discharge-pipe leading from the upper part of said retort, a drip-pipe communicating with said discharge-pipe, and a condensing-tank, substantially as described

## 757,940. VEHICLE-BRAKE. HIRAM P. MAXIM, Pittsburg, Pa. Filed June 13, 1903. Serial No. 161,260. (No model.)



*Claim.*—1. In a motor-vehicle brake, the combination with the vehicle wheel and body, of a motor suspended from the body by a hinge connection, gearing between said motor and the wheel, means for holding said motor an approximately uniform distance from the wheel-axis, a brake rim or drum rotating with said wheel, an expanding ring arranged to engage said drum, means for expanding said ring, and an anchor for said ring supported from the motor

2. In a vehicle-brake, the combination with the vehicle wheel and body, of a motor suspended from the body by a hinge-joint, a distance-rod hinged to said motor and to the vehicle-axle, a brake-drum arranged to rotate with said wheel, an expanding ring for engaging said drum, and a support for said ring connected to said distance-rod.

3. In a vehicle-brake, the combination with the vehicle wheel and body, of a motor suspended from the body by a hinge-joint, a distance-rod hinged to said motor and to the vehicle-axle, a brake-drum arranged to rotate with said wheel, an expanding ring for engaging said drum, a support for said ring connected to said distance-rod, and a second support for said ring engaging the same on the side opposite the first support.

4. In a vehicle-brake, the combination with the vehicle wheel and body, of a motor suspended from the body by a hinge-joint, a distance-rod hinged to said motor and to the vehicle-axle, a brake-drum arranged to rotate with said wheel, an expanding ring for engaging said drum, a support for said ring connected to said distance-rod, and an arm extending from said support and engaging the ring on the opposite side.

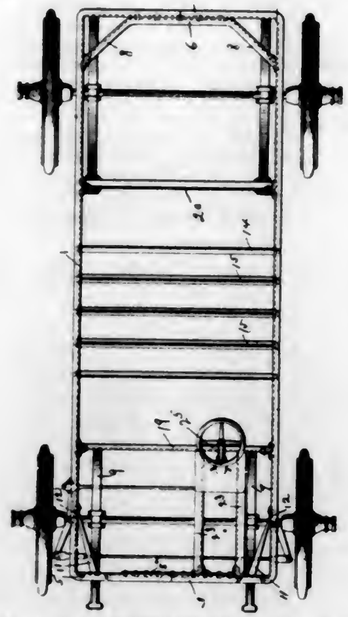
5. In a vehicle-brake, the combination with the axle and wheel, of a brake rim or drum rotating with the wheel, an expanding ring arranged to engage said rim, a support for said ring at the open side thereof, and a support on the opposite side of said ring with which said ring has a sliding connection.

6. In a vehicle-brake, the combination with the axle and wheel, of a brake rim or drum rotating with said wheel, an expanding ring arranged to engage said drum, means for supporting the open side of said ring from the vehicle-axle, and an arm extending from said support to the opposite side of the ring and having a sliding connection therewith.

7. In a vehicle-brake, the combination with the axle and wheel, of a brake rim or drum rotating with the wheel, an expanding ring arranged to engage said drum, links connected to the open ends of said ring, a swinging lever to which said links are connected, a support from the vehicle-axle in which said lever is mounted, and an arm connected to said support and extending to the opposite side of the ring with its end in sliding engagement therewith



## 757,941. MOTOR-VEHICLE RUNNING-GEAR. HIRAM P. MAXIM, Pittsburg, Pa. Filed July 11, 1903. Serial No. 165,107. (No model.)



*Claim.*—1. A running-gear frame for vehicles comprising two sections of structural metal shapes each having its ends bent at right angles to its body, the ends of said sections meeting at the longitudinal center of the vehicle, and splice members for securing said sections together, the splice member at the rear end having a broad lower face to serve as a base for the spring-bar.

2. A running-gear frame for vehicles comprising two sections of flanged structural shapes each having its ends bent at right angles to its body, said sections having their ends meeting at the longitudinal center of the vehicle and having a flange at the lower end, edge splice members for securing said sections together, the splice member at the rear end and flanged member having a bottom flange flush with the lower flange of the sections to give a broad base for the spring-bar.

3. A running-gear frame for vehicles comprising two sections of channel-bar each having its ends bent at right angles to its body, the ends of said sections meeting at the longitudinal center of the vehicle, and splice members for securing said sections together, the splice member at one end being a section of channel-bar having its bottom flange flush with the lower flange of the main channels to provide a broad base for the spring-bar.

4. A running-gear frame for vehicles comprising two sections of structural metal shapes each having its ends bent at right angles to its body, the ends of said sections meeting at the longitudinal center of the vehicle, and splice members for securing said sections together, the splice member at one end having its ends bent obliquely and secured to the side bars thereby serving as corner-braces.

5. A running-gear frame for vehicles comprising two sections of channel-bar each having its ends bent at right angles to its body, the ends of said sections meeting at the longitudinal center of the vehicle, and splice members for securing said sections together, the splice member at the rear end being a flanged shape having a bottom flange flush with the lower flange of the channel-bars and having its ends bent obliquely and secured to the side members, thereby serving as corner-braces.

6. A vehicle running-gear frame composed of side and end members of structural shapes, connecting means therefor, and spring supporting-bars secured to one end member adjacent the corners, said bars having their inner ends bent outwardly and secured to the adjacent side members thereby serving as corner-braces.

7. A vehicle running-gear frame comprising metallic side and end members, connecting means therefor, cross connecting-bars between said side members, two longitudinal members running from one end member to a cross connecting member, and steering-gear mounted between said longitudinal members.

8. A running-gear frame for vehicles comprising metallic side and end members, connecting means therefor, a metallic clip secured to the lower edge of one end member, said clip comprising a flat horizontal portion and depending legs, and a spring-bar secured by said clips.

9. A vehicle running-gear frame comprising metallic side and end members, connecting means therefor, a metallic clip comprising a flat horizontal portion and depending legs, a filling-piece at the base of said clip, securing means passing through said filling-piece, said clip, and one end member of the frame, and a spring-bar secured by said clip.

10. A running-gear frame for vehicles comprising side and end members of flanged shape having a flange on the lower edge, splice members for connecting said members together, the splice member at one end of the frame being a flanged shape having a lower flange flush with the lower flange of the end member, a spring-clip of U shape having a flat base riveted to the flanges of the end and splice member and having depending legs, and a spring-bar secured by said clip.

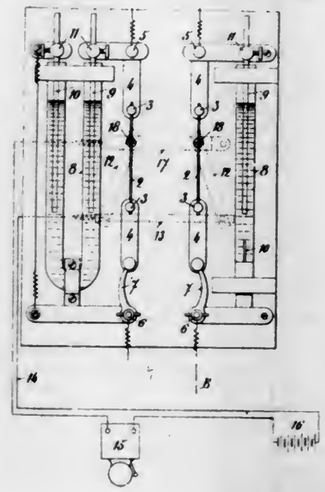
11. A running-gear frame for vehicles comprising side and end members, a battery-support comprising longitudinally-arranged angle-bars having their ends secured to the side members and their intermediate portions depressed below said side members, cross-bars connecting said angle-bars, and boards secured to the flanges of said angle-bars and serving to inclose the batteries.

12. A running-gear frame for vehicles comprising metallic side and end members, a battery-support comprising longitudinally-arranged bars having their ends secured to the side members and their intermediate portions depressed below said side members, and cross-bars connecting said longitudinal bars, said cross-bars being flanged shapes placed with their flanges downwardly and having said flanges cut away at the ends to provide a flat portion for securing to the longitudinal bars.

13. A vehicle running-gear frame comprising metallic side and end members, connecting means therefor, and a double-eyed bracket connected to said frame, one eye serving for the attachment of a spring and the other for the attachment of a motor.

14. A vehicle running-gear frame comprising metallic side and end members, connecting means therefor, a cross-bar connecting said side members and a double-eyed bracket connected to said cross-bar, one eye serving for the attachment of a spring and the other for the attachment of a motor.

## 757,942. AUTOMATIC COMMUTATOR. JULIEN H. MERCADIER, Louvres, France. Filed Oct. 16, 1903. Serial No. 177,363. (No model.)

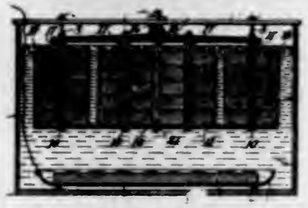


*Claim.*—1. In a commutator, the combination with the terminals of a main line, of a fuse-wire connecting said terminals, a shunt-line between said terminals, and a liquid rheostat in said shunt-line comprising a U-shaped tube to contain the resistance liquid, adjustable electrodes in the arms of said U-shaped tube, and means for securing said electrodes in their adjusted position, substantially as described.

2. In a commutator, the combination of a base of insulating material, terminals of a main line mounted upon said base, a fuse-wire connecting said terminals, a U-shaped tube mounted upon said base and adapted to contain a resistance liquid, apertured supports secured upon said base adjacent to the arms of said U-shaped tube, electrodes slidably mounted in said supports and projecting into the arms of said U-shaped tube, set-screws in said suppports to secure said electrodes in an adjusted position, and electrical connections between said supports and the terminals of the main line, substantially as described.

3. In a commutator, the combination of an apertured base of insulating material, terminals of a main line upon said base, a fuse-wire connecting said terminals and in alinement with the aperture in said base, a shunt-circuit between said terminals of greater resistance than said fuse-wire, and an electric signal-circuit comprising a fixed contact upon the under side of said base, a coacting spring-contact upon the under side of said base and a flexible connection engaged with said fuse-wire and extending through the aperture in said base to normally hold said spring-contact away from said fixed contact, substantially as described.

**757,943. STORAGE BATTERY.** ABRAHAM V. MERKOLE, New York, N. Y. Filed July 13, 1903. Serial No. 165,224. (No model.)



*Claim.*—1. In a storage battery, a battery element consisting of a supporting-bar provided with depending tubular members, bolts threaded through said tubular members, a stirrup-plate mounted upon said bolts, and tablets of active material encircling said tubular members and resting upon said stirrup-plate.

2. In a storage battery, an electrode consisting of a bridge-bar, longitudinal metallic members connected therewith and tubular members depending therefrom, tablets of active material connected with said tubular members, and means for maintaining said tablets in engagement with said tubular members.

3. In a storage battery, an electrode consisting of a supporting-bar, means for sustaining the same, longitudinal metallic members connected with said supporting-bar, a stirrup-plate mounted upon said longitudinal members, and tablets of active material resting upon said stirrup-plate.

4. In a storage battery, a battery element consisting of a bridge, a longitudinal supporting-bar connected therewith and provided with tubular members integral therewith and depending therefrom, a stirrup-plate disposed adjacent to the lower ends of said tubular members, bolts threaded through said stirrup-plates for the purpose of supporting the same, fastenings for securing said stirrup-plate to said supporting-bar, and tablets of active material mounted upon said stirrup-plate and engaging said depending tubular members.

5. In a storage battery, the combination of a metallic member provided with hollow metallic fingers, metallic rods disposed within said fingers and strengthening the same, tablets of active material provided with apertures and threaded upon said hollow metallic fingers, and a stirrup-plate mounted upon said metallic rods for supporting said tablets of active material.

6. In a storage-battery electrode, a conducting-bar provided with tubular fingers integral therewith, metallic rods disposed within said hollow fingers, tablets of active material encircling said hollow fingers, and a stirrup-plate connected with said metallic rods and supporting the weight of said tablets of active material.

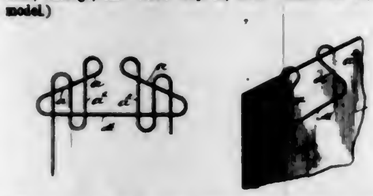
7. In a storage-battery electrode, the combination of a plurality of vertical suspension members, means for supporting the same, a single stirrup-plate connected with said suspension members, and tablets of active material mounted upon said stirrup-plates and supported thereby.

8. In a storage battery, the combination of an electrode consisting of a plurality of metallic bridges serving as conductors, means for supporting said bridges, vertical members connected with said bridges and depending therefrom, separate members for strengthening said vertical members, stirrup-plates connected with said vertical members and supported thereby, and tablets of active material mounted upon said stirrup-plates and supported thereby.

9. In a storage battery, the combination of an electrolytic vessel, bridges of conducting material engaging the same and resting thereupon, suspension members connected with said bridges and supported thereby, mechanism for strengthening said suspension members, and tablets of active material detachably engaging said suspension members.

10. In a storage-battery electrode, the combination of a vertical suspension member, bridge mechanism of conducting material integrally connected therewith and from which the same is suspended, electric connections for said bridge mechanism, and means for securing tablets of active material upon said suspension member.

**757,944. MULTIPLE-GRIP FASTENER.** HERMAN A. MEYERCORD, Chicago, Ill. Filed July 12, 1901. Serial No. 67,973. (No model.)



*Claim.*—1. A clip-fastener embracing a bottom bar and integral converging side bars of wire or the like the ends of which are turned over across the bottom and side bars affording binding contact with each at a plurality of points.

2. A clip-fastener comprising a reversely-curved wire or rod forming a bottom and a side bar and having one end thereof turned over across itself and the bottom and affording binding contact with each at a plurality of points.

3. A wire-clip fastener embracing a bottom bar, integral converging side bars and approximately parallel binding-bars having contact each with a side bar and the bottom bar at a plurality of points.

4. A clip-fastener comprising a reversely-curved wire having a straight end portion bent over and engaging at a plurality of points on the remaining portion of the wire, said straight portion being sharpened and forming an integral pin.

5. In a fastener, a wire bent intermediate of its ends to form a transverse bottom bar and converging side bars, the end portions of said wire at said converging ends of the side bars being turned reversely and bent to afford a plurality of parallel binding portions engaging at a plurality of points on said side bars and bottom bar, one of said ends being sharpened and forming a pin.

6. A pin embracing a wire sharpened at one end and bent at the other reversely and providing a V-shaped bend of wire extending transversely across and contacting with a plurality of approximately parallel binding-bars.

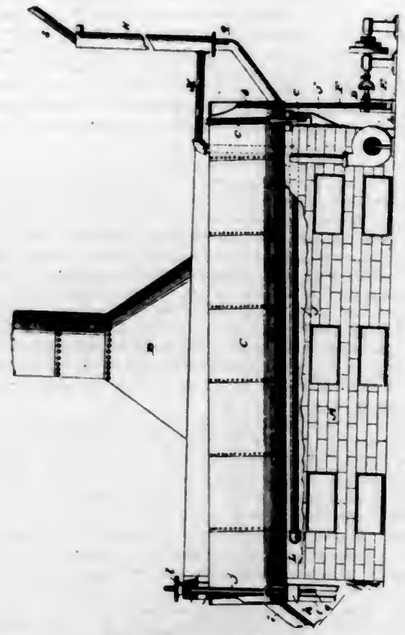
**757,945. APPARATUS FOR PREPARING CEREAL FOOD PRODUCTS.** JOHN H. MILLER, Sharpsville, Pa. Filed June 11, 1903. Serial No. 161,066. (No model.)

*Claim.*—1. An apparatus for the purpose described, comprising a furnace, a rotary cylinder, open at its opposite ends, arranged in the combustion-chamber of the furnace, and extending through opposite walls thereof, a drier arranged to discharge into the cylinder, at one end thereof, a blower, and a conduit connecting the blower and the drier, and extending through the combustion-chamber of the furnace.

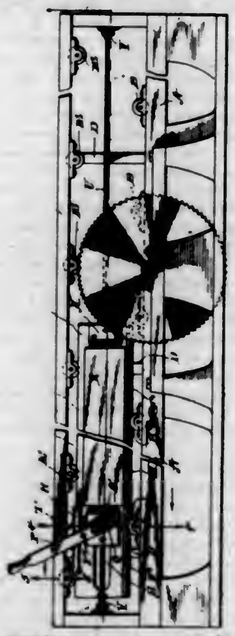
2. In an apparatus for the purpose described, the combination with a drier comprising a casing, having a vent, and a spring-backed valve controlling the same, an upright, foraminated tube arranged in the casing, a conduit connected with the upper end of said tube, and having a valve arranged to open under the weight of cereal, and close subsequent to the passage of the cereal; of a blower, a conduit intermediate of the blower and the drier casing, and exterior means for heating said conduit.



**757,945.**

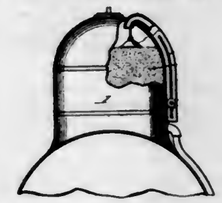


**757,946. RESAWING-MACHINE.** THOMAS J. MITCHELL, Rustburg, Va., assignor of one-half to Frank Nelson, Rustburg, Va. Filed Aug. 1, 1903. Serial No. 167,220. (No model.)



*Claim.*—A resawing apparatus comprising in combination with a saw and table, a frame adapted for attachment to said table and grooved antifriction-rollers mounted upon said frame, a carriage having a tongue on one longitudinal edge and a groove on its opposite edge designed to engage said rollers, a ledge projecting from one face of the carriage on which the block to be sawed rests, a fixed clamping-plate mounted on the face of the carriage, a movable block mounted in a slot of the carriage, a cross-piece secured to said block, its ends projecting from the slot, a movable lug carrying the clamping-plate secured to the opposite face of said block having edges projecting beyond the edges of the slot, a lever pivoted to the carriage having sliding pivotal connections with said lug, a rack-bar on the carriage, and a dog carried by the lever and engaging the teeth of said rack-bar, as set forth.

**757,947. GAGE FOR SAND-BOXES.** THOMAS E. MOONEY, Schenectady, N. Y. Filed Aug. 29, 1903. Serial No. 171,264. (No model.)



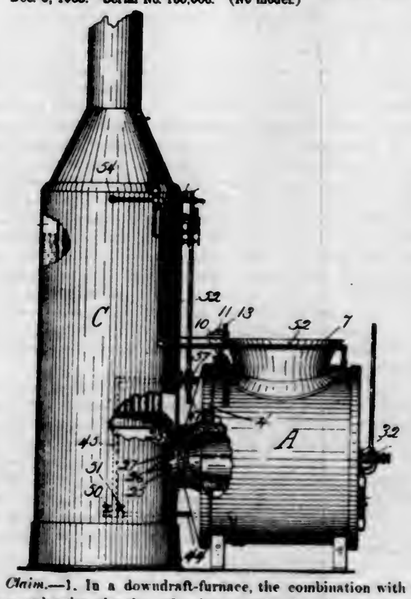
*Claim.*—The combination with a sand-box; of an upright tube opening into the top thereof and extending downward, a weight in the sand-box adapted to be seated on the sand therein, a slide within the tube and lighter than the weight, an index within a slot in the tube and connected to the slide, and a flexible connection between said weight and the slide, said connection being concealed within the tube.

**757,948. SIZING.** ARMAND MÜLLER-JACOBS, Richmond Hill, N. Y., assignor to Cosmos Chemical Company, a Corporation of New York. Filed July 2, 1903. Serial No. 164,003. (No specimens.)

*Claim.*—1. A sizing for fibrous substances consisting of an amid of the higher fatty acids in an emulsion comprising a suitable carrying or suspending body therefor.

2. A sizing for fibrous substances consisting of an amid of the higher fatty acids in a soluble magma having the property of keeping the amid in a finely-divided, discrete and insoluble state.

**757,949. FURNACE.** AMOS H. MYLIN, Lancaster, Pa., and LEWIS R. WHITE, Jersey City, N. J., assignors to Caloric King Furnace Company, Brooklyn, N. Y., a Corporation of New Jersey. Filed Dec. 3, 1903. Serial No. 183,608. (No model.)




*Claim.*—1. In a downdraft-furnace, the combination with an outer combustion-chamber, of an inner combustion-chamber in com

munication with the outer chamber, through the bottom wall of the inner chamber, said inner chamber being provided with an outlet and means for furnishing a supply of fuel and air down and around the inner chamber.

2. In a downdraft-furnace, the combination with an outer combustion-chamber, of an inner combustion-chamber in communication with the outer chamber, through the bottom wall of the inner chamber, said inner chamber being provided with an outlet, means for furnishing a supply of fuel and air down and around the inner chamber, and means for controlling the supply of air.

3. In a downdraft-furnace, the combination with an outer combustion-chamber, of an inner combustion-chamber in communication with the outer chamber, through the bottom wall of the inner chamber, said inner chamber being provided with an outlet, means for furnishing a supply of fuel and air down and around the inner chamber, means controlling the supply of air, and means creating a forced draft.

4. In a downdraft-furnace, the combination with an outer combustion-chamber, of an inner combustion-chamber having an imperforate upper portion and a perforated lower portion through which communication is had with the outer chamber, said inner chamber being provided with an outlet, means furnishing a supply of fuel and air down and around the inner chamber, and means controlling the supply of air.

5. In a downdraft-furnace, the combination with an outer combustion-chamber, of an inner combustion-chamber having an imperforate upper portion and a perforated lower portion, said inner chamber being provided with a draft-outlet, the outer chamber being provided with an opening through which fuel and air are fed down and around the inner chamber, a damper for controlling the supply of air, and means creating a forced draft.

6. In a downdraft-furnace, the combination with a metallic casing forming an outer combustion-chamber, of a shell of refractory material arranged within the casing and forming an inner combustion-chamber, said shell having openings in its lower portion through which communication is had with the outer combustion-chamber and being provided with an outlet, the outer chamber being provided with a top opening for the supply of fuel and air down and around the inner chamber.

7. In a downdraft-furnace, the combination with a metallic casing forming an outer combustion-chamber, of a shell of refractory material arranged within the casing and forming an inner combustion-chamber, said shell being provided with openings in its lower portion, by means of which communication is had with the outer chamber, and with an outlet, the outer chamber being provided with an opening at the top for the supply of fuel and air down and around the inner chamber, and means controlling the supply of air.

8. In a downdraft-furnace, the combination with an outer combustion-chamber, provided with an opening at the top through which a supply of fuel and air is fed down and around an inner chamber, the lower portion of said outer chamber being approximately semicylindrical in cross-section, of an inner combustion-chamber having an imperforate upper portion and having a draft-outlet, said inner combustion-chamber being in communication with said outer chamber.

9. In a downdraft-furnace, the combination with a casing forming an outer combustion-chamber having its lower portion substantially semicylindrical in cross-section, of a substantially cylindrical shell of refractory material arranged with its long axis substantially horizontal in the lower portion of the outer combustion-chamber, said shell having an imperforate upper portion and a perforated lower portion through which communication is had with the outer chamber, said outer chamber being provided with a top opening for the furnishing of a supply of air and fuel down and around the inner chamber, an outlet from one end of the inner combustion-chamber, a damper to regulate the supply of air through the top opening and means to produce a draft down through the top opening and out through the outlet.

10. In a downdraft-furnace, the combination with an outer combustion-chamber, a water-jacket around said chamber and a lining of refractory material to said chamber, of an inner combustion-chamber arranged within the outer chamber and communicating therewith through openings in the lower portion of the inner chamber, an upper opening in the outer combustion-chamber for furnishing a supply of fuel and air down and around the inner chamber, means controlling the supply of air, an outlet from the inner chamber, and means to create a draft in through the upper opening and out through the outlet.

11. In a furnace, the combination with an outer casing having an air-opening in its top, of a fuel-hopper on the casing communicating with the opening, a bracket on the casing, semicircular cover-halves pivotally supported on the bracket and adapted to close the opening, reinforcing-strips on the straight edges of the cover-halves, handles on the front ends of the reinforcing-strips, stops on the rear ends of the reinforcing-strips to engage when the cover-halves are swung back, meshing racks on both halves adjacent to the pivotal supports, a shell of refractory material within the casing having an external opening and holes for the admission of gas and air, and means to create an indraft through the air-opening and out through the shell.

12. In a furnace, the combination with a casing or fuel-receptacle composed of two concentric cylindrical boiler-shells, rings secured between the edges of said boiler-shells forming a water-space therebetween, and opposite circular heads secured to the respective ends of the rings, of a lining of refractory material within the casing, a fuel-hopper in the top of the casing communicating with the interior thereof through a suitable opening, a swinging cover on the hopper to regulate the admission of air through the opening, a cylindrical shell of refractory material supported between the heads and having a contracted nose arranged in an extension of one of said heads, said shell being provided with small holes for the entrance of the gas and air and with an external opening through said nose, and of means to produce an indraft through the hopper and out through the shell.

13. The combination in a main steam-generator and an auxiliary furnace therefor, of two concentrically-arranged cylindrical portions, rings secured between the edges of said portions forming a water-space or auxiliary boiler, inner and outer, circular heads secured to the respective ends of said auxiliary boiler having flanges on their inner faces and forming with the auxiliary boiler a fuel-receptacle, a fuel-hopper on the top of the receptacle communicating with a corresponding air and fuel opening, a swinging cover pivotally supported on the receptacle adjacent to the hopper to regulate the admission of the air through said opening, a cylindrical shell or combustion-chamber of refractory material centrally arranged in the receptacle between the heads and having small gas and air inlet holes on its lower portion, said shell having an external opening through said inner head to communicate with the fire-door of the main steam-generator and an opposite jet-hole through the outer head, a finishing-ring threaded to be adjustably fitted to the outer head and having the jet-hole, with a tapering interior, and an angular outer head to permit adjustment of the ring in the head, an arm bolted on the outer head adjacent to the jet-hole, a jet-nozzle supported on said arm and arranged partially within the jet-hole, a tapering valve in the nozzle, a steam-supply pipe to the nozzle, pipes connecting the auxiliary boiler and the boiler of the main generator both above and below, a water-supply pipe, and suitable valves in said pipes.

14. The combination in a main steam-generator and an auxiliary furnace therefor, of two concentrically-arranged cylindrical portions, rings secured between the edges of said portions forming a water-space or auxiliary boiler, inner and outer circular heads secured to the respective ends of said auxiliary boiler having flanges on their inner faces and forming with the auxiliary boiler a fuel-receptacle, a fuel-hopper on the top of the receptacle communicating with a corresponding air and fuel opening, a swinging cover pivotally supported on the receptacle adjacent to the hopper to regulate the admission of the air through said opening, a cylindrical shell or combustion-chamber of refractory material centrally arranged in the receptacle between the heads and having small gas and air inlet holes on its lower portion, said shell having an external opening through the inner head to communicate with the fire-door of the main steam-generator and an opposite jet-hole through the outer head, a finishing-ring threaded to be adjustably fitted to the outer head and having the jet-hole with a tapering interior and an angular outer head to permit adjustment of the ring in the head, an arm bolted on the outer head adjacent to the jet-hole, a jet-nozzle supported on said arm and arranged partially within the jet-hole, a tapering valve in the nozzle, a steam-supply pipe to the nozzle from the main steam generator, a steam-pipe connecting the tops of the auxiliary boiler and the boiler of the main generator, a connection-pipe between the steam-pipe and the steam-supply pipe, a water-pipe connecting the lower portions of the two boilers, a water-supply pipe to the water-pipe and suitable valves in said steam and water pipes.

15. The combination in a main steam-generator and an auxiliary furnace therefor, of two concentrically-arranged cylindrical portions, rings secured between the edges of said portions forming a water-space or auxiliary boiler, inner and outer, circular heads secured to the respective ends of said auxiliary boiler having flanges on their inner faces and forming with the auxiliary boiler a fuel-receptacle, a fuel-hopper on the top of the receptacle communicating with a corresponding air and fuel opening, a swinging cover pivotally supported on the receptacle adjacent to the hopper to regulate the admission of the air through said opening, a cylindrical shell or combustion-chamber of refractory material centrally arranged in the receptacle between the heads and having small gas and air inlet holes on its lower portion, said shell having a contracted nose arranged in an extension in the inner head, and being provided with an external opening through said nose and inner head to communicate with the fire-door of the main steam-generator and with an opposite jet-hole through the outer head, a packing-ring on the inner-head extension, flanges on the inner packing-ring to be bolted to the main steam-generator making a tight joint therewith, a jet-nozzle arranged partially within the jet-hole, a steam-supply pipe to the nozzle, pipes connecting the auxiliary boiler and the boiler of the main generator both above and below, a water-supply pipe, and suitable valves in said steam and water pipes.



## 757,950. DRILLING AND AUTOMATIC CENTERING DEVICE.

James J. McElwain and Elmer A. Young, Allegheny, Pa. Filed Nov 18, 1903. Serial No. 181,631. (No model.)



*Claim.*—1. The combination of a rotary spindle having a tool-socket and enlarged portion or shoulder, a sleeve bearing against said shoulder, a bell, arranged on said spindle and formed with a central cavity, a cap screwing into said cavity, a spring bearing against said cap and sleeve and a second sleeve arranged in the cavity in the bell and slidably keyed to said spindle, substantially as described.

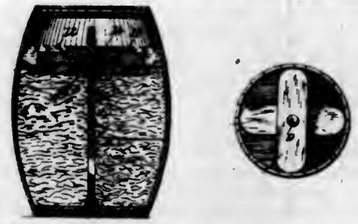
2. In a device of the character described, the combination of a centering-bell, a sleeve rotatably mounted in said bell, ball-bearings formed between each end of said sleeve and bell, a drill-spindle upon which said sleeve and bell are mounted, a sleeve mounted on the upper portion of said spindle, ball-bearings mounted between said sleeve and upper portion of the spindle, and a spring mounted between said last-mentioned sleeve and said bell, substantially as described.

3. In a device of the character described, the combination of a centering-bell, a sleeve rotatably mounted in said bell, a spindle slidably mounted within said sleeve by a feather connection, ball-bearings formed between each end of said sleeve and said bell, a sleeve mounted on the said drill-spindle intermediate its length, a ball-bearing formed between the upper portion of said spindle and said sleeve, a spring mounted between said last-mentioned sleeve and said bell whereby the spindle is normally held in the inoperative position within said bell, said spring providing yielding means whereby a drill in the spindle may be brought into operative relation with the piece of work, substantially as described.

## 757,951. KRAUT-DISPENSING BARREL.

Thomas W. McFarland, Jackson, Mo. Filed Sept. 30, 1903. Serial No. 175,169. (No model.)

*Claim.*—1. The combination with a spindle, of a follower having a removable section, and a clamp held on said spindle and engaging with said follower and the removable section of the follower.



2. In a receptacle or the class described, the combination of a threaded spindle having fixed relation to a cask or other container, a follower movable freely on said spindle, and a two-part clamp each member of which has threaded engagement with the spindle, said members of the clamp being recessed and assembled in crossing relation.

3. A receptacle of the class described, having an internal threaded spindle, a two-part follower movable freely with respect to said spindle, one part of said follower having a recess to receive the other part of the follower, and a clamp screwed on the spindle and binding against the members of said follower.

## 757,952. TENSION-REGULATOR FOR OVERHEAD CABLES.

John F. McKay and David J. McKay, Bowie, La. Filed Feb. 16, 1904. Serial No. 193,781. (No model.)



*Claim.*—1. In a tension-regulating device for overhead cables, the combination with a main cable, of an end guide therefor, fixed guides provided with means for attachment to a tree or other support, an anchoring device having a guide secured thereto, a tensioning device and an auxiliary cable connecting said tensioning device with said guides.

2. In a tension-regulating apparatus for overhead cables, the combination with a main cable, of a movable guide therefor, fixed guides provided with means for attachment to a tree or other support, an anchoring-guide provided with means for attachment to a post or other support, a tensioning device and an auxiliary cable connecting said device with said guides.

3. In a tension-regulating apparatus for overhead cables, the combination with a main cable, of fixed guides having means for at-

tachment to a tree or other support, a movable guide secured to the cable on one side of the tree, an anchoring-guide on the opposite side of the tree, a tensioning device and a cable connecting said device with said guides.

4. In a tension-regulating apparatus for overhead cables, the combination with a main cable, of fixed supports therefor provided with means for attachment to a tree or other stationary member, a movable guide provided with means for attachment to said cable, a tensioning device and means for connecting said device with said supports and guide.

5. In a tension-regulating apparatus for overhead cables, the combination of a movable guide provided with means for attachment to a main cable, an anchoring-guide having means for attachment to a post or other support, fixed guides located between said movable and anchoring guides, provided with means for attachment to a tree or other support, a tensioning and securing device and means for connecting said device in operative relation with said guides.

6. In a tension-regulating apparatus for overhead cables, the combination of a main cable having a movable block attached thereto, an anchoring-block provided with means for attachment to a post or other stationary member, standing blocks provided with guys for attachment to a tree or other support located between said movable and anchoring blocks, a tensioning and securing device having a revoluble winding-drum and provided with means for attachment to said tree or support, an auxiliary cable connecting said blocks and secured to said drum and means for applying power to said tensioning device.

7. In a tension-regulating apparatus for overhead cables, the combination with a main cable, of an auxiliary tensioning-cable provided with means for supporting the same from a tree or mast, a tensioning device also provided with means for attachment to said tree, means for applying power to said tensioning device, means for securing the tensioning device under any desired tension, and means connected to said tensioning-cable for anchoring the same.

8. In a tensioning apparatus for overhead cables, the combination with a main cable having a running block secured thereto, a tail-block having means for attachment to a stationary structure, a tensioning device, an auxiliary cable connecting said device with said blocks, and stationary blocks provided with guys for attachment to a tree or other support and positioned intermediate said running and tail blocks, whereby upon the failure of either block the remaining blocks and auxiliary cable will be held from falling.

9. A tension-regulating apparatus, comprising running and tail blocks, intermediate supporting and guiding blocks, a tensioning device and a cable cooperating with said device and blocks.

10. A tension-regulating apparatus, comprising a tensioning-cable provided with separate means for attachment to a main cable and to an anchor, a plurality of intermediate guiding and supporting means, and a tensioning device in cooperative relation therewith.

11. A tension-regulating apparatus, comprising means for attachment to a main cable and to an anchor respectively, intermediate means for attachment to a support, means for applying tension, and a cable connecting said means in cooperative relation.

12. A tension-regulating apparatus, comprising means for attachment to a main cable and to an anchor respectively, intermediate means for attachment to a support, means for applying tension a cable connecting said means in cooperative relation, and means for securing the parts in any desired position.

13. A tension-regulating apparatus, comprising main cable and anchor blocks, intermediate guiding and supporting blocks having means for attachment to a support, a tensioning-drum provided with differential winding-faces, pawl-and-ratchet mechanism, and means for attachment to said support, a cable secured to one of said faces and passing about said blocks, and a winding-cable connecting said other face with a source of power.

14. A tensioning device for cables, comprising a drum provided with a plurality of winding-barrels of different radii and a ratchet-rim, an axle therefor, a dog cooperating with said ratchet-rim, and a supporting-frame carrying means for attaching to a spar or other support.

15. A tensioning device for cables, comprising a drum provided with a plurality of winding-barrels of different radii and a ratchet-rim, an axle therefor, a dog cooperating with said ratchet-rim, a supporting-frame carrying means for attaching to a spar or other support, and means for bracing said drum against lateral thrust.

16. The combination with a main cable, of a tensioning-cable, a drum for acting on the tensioning-cable, and means for actuating the said drum, said means comprising a second drum and a cable in connection with the two drums.

17. The combination with a main cable, of a tensioning-cable in connection therewith, and a winding-drum for the tensioning-cable, said drum having means for embracing a tree or like standing support for securing the drum in place.

18. The combination with a main cable, of a tensioning-cable in connection therewith, a winding-drum for the tensioning-cable, said drum having means for embracing a tree or like standing support for securing the drum in place, a second drum having means of support separate from the first drum, and a driving connection between the two drums.

19. The combination with a main cable, of a tensioning-cable, means for exerting tension on said tensioning-cable, said means including a driving device having connection with a suitable source of power, and a driven device having connection with said driving device and with the tensioning-cable, and means in connection with said driven device and independent of the driving device for holding the same against the strain of the tensioning and main cables.

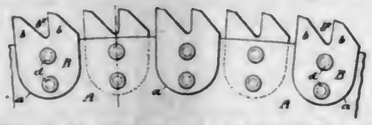
20. A tensioning device for cables, comprising a drum provided with a plurality of winding-barrels of different radii and a ratchet-rim, an axle therefor, a dog cooperating with said ratchet-rim, a supporting-frame carrying means for attaching to a spar or other support, and means for bracing said drum against lateral thrust, said means including guy-chains and turnbuckle-links.

21. The combination with a main cable, of a tensioning mechanism comprising a cable and a winding-drum, the said drum having securing means extending at one side thereof and adapted to embrace a tree, or like standing support, and means for driving said drum.

22. The combination with a main cable, of a tensioning mechanism comprising a cable and a winding-drum, the said drum having securing means extending at one side thereof and adapted to embrace a tree, or like standing support, and means separate from the drum for driving said drum, said driving means including a winch and a cable connecting the winch and drum.

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**757,953. INSERTIBLE SAW-TOOTH FOR METAL-SAWS.** CHARLES C. NEWTON, Philadelphia, Pa., assignor to the Newton Machine Tool Works, Incorporated, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Jan. 23, 1901. Serial No. 44,414. (No model.)



*Claim.*—1. The combination of a saw-blade having a series of recesses in each side, the recesses on one side alternating with those of the other side, with tooth-sections mounted in said recesses parallel to the plane of the saw-blade and of a thickness greater than the depth of the recesses, said tooth extending beyond the periphery of the blade and having means for securing them in position, substantially as described.

2. The combination of a circular saw-blade having a series of recesses in each side, one series of recesses alternating with the other series, uniformly flat tooth-sections parallel to each other and parallel to the plane of the saw-blade mounted in the recesses and projecting beyond the periphery of the blade, each of said sections being formed to fit the recesses and being provided with means whereby it is secured to the blade, substantially as described.

3. The combination of a saw-blade having a series of relatively shallow recesses in each side of the same, one series of the recesses alternating with the other series, flat tooth-sections mounted in the recesses and extending beyond the periphery of the blade, each tooth-section also projecting laterally as a whole beyond the face of the blade and having countersunk holes in it with correspondingly-formed pieces constructed to enter said holes and thereby retain the sections in position, substantially as described.

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**757,954. BRIDLE-BIT.** CLARENCE G. OLIN, Windsor, Ohio. Filed Apr. 13, 1903. Serial No. 152,421. (No model.)

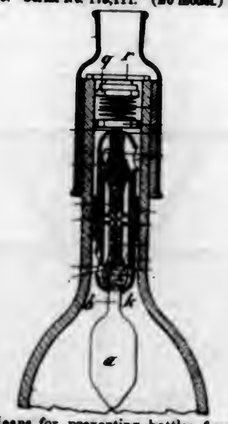


*Claim.*—A bridle-bit, comprising a bit-bar, side bars provided with rings at their opposite ends, and side pieces connecting the ends of the bit-bars to the forward ends of the side bar, said side pieces having a pronounced outward swell to clear the cheeks of the animal.

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**757,955. NON-REFILLABLE BOTTLE.** ADRIEN OULLIÉ, Paris, France, assignor to himself and Isidore Lambert, Paris, France. Filed Sept. 14, 1903. Serial No. 173,111. (No model.)



*Claim.*—1. Means for preventing bottles from being fraudulently filled, comprising a discharge-sleeve *f*, two independent balls *c*, *i*, for closing the sleeve, the ball *c* being provided with a float *a* and wings *e* and the ball *i* with wings *g*, a lantern *l* inclosing the sleeve and balls, an abutment-spring *p* above the lantern, a baffle-plate *r* above the spring, and a hood *s* adapted to be secured to the bottle-neck, as described.

2. In a non-refillable bottle, the combination of a bottle having a valve-seat in the neck thereof, a valve arranged to close said seat by gravity when the bottle is inverted, and a float attached to said valve and extending into the bottle.

3. A non-refillable bottle, the combination of a valve-seat arranged in the neck of the bottle, a valve arranged to engage said seat and close the same by gravity when the bottle is inverted, a float attached to said valve and projecting into the bottle, and means for limiting the movement of the valve and float away from the valve-seat.

4. In a non-refillable bottle, the combination of a valve-seat arranged in the neck of the bottle, a valve arranged to close said seat by gravity when the bottle is inverted, a float attached to said valve and extending into the bottle, a check-valve arranged in the neck of the bottle between said valve and the top of the bottle, and a valve-seat in said neck arranged to be engaged by said valve by gravity, when the bottle is in an upright position.

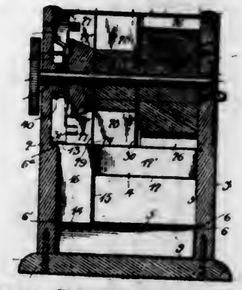
5. In a non-refillable bottle, the combination of a valve-seat arranged in the neck of the bottle, a valve arranged to close said seat by gravity when the bottle is inverted, a float attached to said valve and extending into the bottle, a check-valve arranged in the neck of the bottle between said valve and the top of the bottle, a valve-seat in said neck arranged to be engaged by said valve by gravity, when the bottle is in an upright position, and means for limiting the movement of the second valve away from its valve-seat when the bottle is inverted.

6. In a non-refillable bottle, the combination of a valve-seat arranged in the neck of the bottle, a valve arranged to close said seat by gravity when the bottle is inverted, a float attached to said valve and extending into the bottle, a check-valve arranged in the neck of the bottle between said valve and the top of the bottle, a valve-seat in said neck arranged to be engaged by said valve by gravity when the bottle is in an upright position, and a spring above said second valve and arranged to retain the valve seated when in an upright position, but to admit of the valve moving away from its seat by gravity, when the bottle is in an inverted position.

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**757,956. VENDING APPARATUS.** ROBERT E. PAYNE, New York, N. Y. Filed June 29, 1903. Serial No. 163,588. (No model.)

*Claim.*—1. In a coin-controlled vending apparatus, the combination of a casing having a coin-inlet and a goods-outlet, a feed device located therein and comprising two cylinders fixedly related, one of said cylinders having goods-pockets and receiving-pockets and the other cylinder having coin-pockets provided with bottoms inclined toward said receiving-pockets, a groove or recess being formed in the outer end of the latter cylinder adjacent to and communicating with the coin-pockets to expose the coins therein, a partition between the cylinders provided with openings connecting the coin-pockets with the receiving-pockets, said openings forming contracted inlets to the receiving-pockets, and a coin-engaging member projecting into said groove or recess to engage the coins in the coin-pockets to rotate the cylinder to discharge goods from the goods-pockets through the discharge-outlet, substantially as decribed.



2. In a coin-controlled vending apparatus, the combination of a casing having a coin-inlet and a goods-outlet, a feeding device located therein, and comprising a cylinder provided with goods-pockets, at one end with coin-pockets, and between said goods and coin pockets with receiving-pockets, said coin-pockets having bottoms inclined toward said receiving-pockets, and the latter having contracted entrances to allow coins of smaller size than intended for the coin-pockets to pass into the receiving-pockets, a groove or recess formed in the end of the cylinder adjacent to and communicating with the said coin-pockets, a swinging arm carrying a coin-engaging device projecting into said groove or recess to engage the coins in the coin-pockets to rotate the cylinder, and a closure for the coin-inlet movable with said arm, substantially as set forth.

3. In a coin-controlled vending apparatus, the combination of a casing having a coin-inlet and goods-outlet, a feed device located therein, and comprising two cylinders fixedly related, said cylinders being placed end to end, and one of them being provided with goods-pockets and receiving-pockets, and the other with coin-pockets provided with bottoms inclined toward said receiving-pockets, the coin-pocketed cylinder having also a groove or recess communicating with the coin-pockets, a partition between the cylinders provided with openings forming contracted entrances communicating between the coin and receiving pockets, said entrances being adapted to allow a coin smaller than that intended for the coin-pockets to pass into the receiving-pockets, and a coin-engaging member projecting into said groove or recess to engage the coins in the coin-pockets and rotate the feed device, substantially as shown and described.

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**757,957. CABINET.** LARS PEDERSON, Manitowoc, Wis. Filed Sept. 22, 1903. Serial No. 174,188. (No model.)

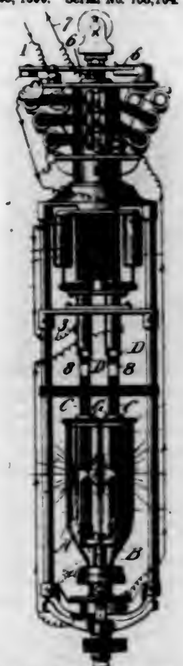


*Claim.*—A cabinet of the character described, embracing a primary compartment-section having a compartment-drawer, adapted to be moved beyond either open portion of said primary section, and additional corresponding sections, having their normally upper inner edges pivoted or hinged to the upper forward edges of said primary section, said additional or pivoted sections being adapted to form closures for the open ends of the compartments and drawers of said primary section and arranged to stand within the plane

of said primary section and to be elevated and rest upon said latter section and stand back to back.

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**757,958. ELECTRIC-ARC LAMP.** ISAAC W. PERCIVAL, St. Louis, Mo., assignor, by mesne assignments, to Westinghouse Electric & Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Jan. 23, 1899. Serial No. 703,164. (No model.)



*Claim.*—1. In an electric-lighting system supplied with direct current of constant potential and high voltage as described, an electric-arc lamp, comprising a plurality of fixed electrodes, a plurality of movable electrodes cooperating respectively with said fixed electrodes, a single small light-emitting globe for inclosing the arcs produced between said electrodes, means for supporting the fixed electrodes out of direct electrical connection with each other and so that their ends are in proximity to each other in said globe, a cap or cover for said globe provided with openings for the approximately air-tight passage therethrough of the movable electrodes, connections joining all of said electrodes in series, and a single magnetic control mechanism for said movable electrodes.

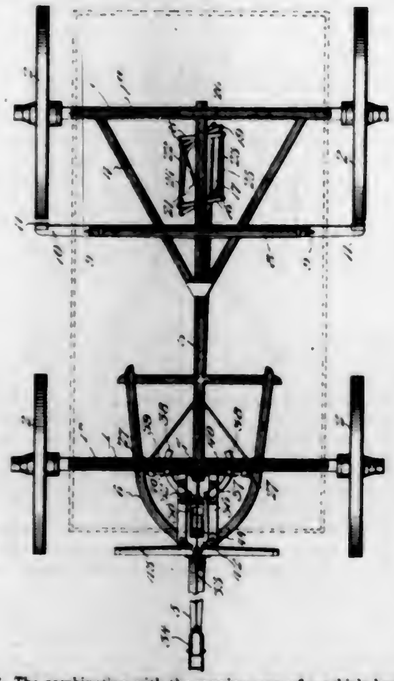
2. In an electric-lighting system supplied with direct current of constant potential and high voltage as described, an electric-arc lamp, comprising a plurality of fixed electrodes, a plurality of movable electrodes cooperating respectively with said fixed electrodes, a single small light-emitting globe for inclosing the arcs produced between said electrodes, means for supporting the fixed electrodes out of direct electrical connection with each other and so that their ends are in proximity to each other in said globe, a cap or cover for said globe provided with openings for the approximately air-tight passage therethrough of the movable electrodes, connections joining all of said electrodes in series, a single magnetic control mechanism for said movable electrodes, and means for permitting said movable electrodes to feed independently.

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**757,959. WAGON-BRAKE.** NICHOLAS PFEIFFER, Ripley, Ohio. Filed Nov. 11, 1903. Serial No. 180,726. (No model.)

*Claim.*—1. The combination with the running-gear of a vehicle having a brake-beam suspended therefrom, and means for holding the beam normally removed from the wheels of the running-gear; of oppositely-disposed series of levers, the levers of each series being arranged upon a single pivot connected to the running-gear, means for connecting the levers of the two series together and with the brake-beam, a tongue extending from the running-gear, a pivoted loop thereon, and connecting means between the loop and levers.

2. The combination with the running-gear of a vehicle having a brake-beam suspended therefrom, and automatic means for normally holding the beam removed from the wheels of the running-gear; of oppositely-disposed series of levers, the levers of each series being pivoted upon a single pin connected to the running-gear, rigid connections between the levers and the beam and levers, a tongue extending from the running-gear, a pivoted loop thereon, a connecting device between the loop and levers, and means operated by the tongue for locking the levers against movement.



3. The combination with the running-gear of a vehicle having a brake-beam depending therefrom, and a spring for holding the beam normally removed from the wheels of the gear; of a tongue extending from the running-gear, an operating device pivoted thereto, a pivoted loop connected to the operating device, a lug thereon, a rod connected to the loop, mechanism interposed between the rod and brake-beam, whereby the beam is applied to the wheels of the gear by the movement of the operating device, and a jaw slidably mounted upon the running-gear and adapted to engage the lug.

4. The combination with the running-gear of a vehicle having a brake-beam suspended therefrom, and means for applying the beam to the wheels of the running-gear; of oppositely-disposed spring-pressed jaws slidably mounted upon the running-gear, a loop pivoted to the running-gear, a lug thereon between and adapted to be engaged by one of the jaws, a rigid connection between the lug and the brake-applying mechanism, a tongue extending from the running-gear, and an operating device pivoted thereto and connected to the lug.

5. The combination with the running-gear of a vehicle having a spring-controlled brake-beam suspended therefrom, and means for operating the beam and tensioning the spring; of oppositely-disposed spring-pressed jaws slidably mounted upon the running-gear, a loop pivoted upon the running-gear, a lug thereon between and adapted to be engaged by one of the jaws, connecting devices between the lug and the beam-operating mechanism, means for swinging the loop and its lug, and a releasing-fork engaging the jaws.

6. The combination with the running-gear of a vehicle having a spring-controlled brake-beam suspended therefrom, and means for operating the beam and tensioning the spring; of oppositely-disposed spring-pressed jaws slidably mounted upon the running-gear, a movable lug interposed therebetween and adapted to be engaged thereby, a yoke pivoted to the running-gear, rods connecting the yoke with the lug and with the beam-operating mechanism, respectively, and means for imparting movement to the lug.



7. The combination with the running-gear of a vehicle having a spring-controlled brake-beam suspended therefrom, and operating mechanism connected to the beam; of brackets secured to the running-gear, oppositely-disposed spring-pressed jaws slidably mounted within the brackets, a pivoted fork extending below the jaws and adapted to impart vertical movement thereto, a whiffletree connected to the fork, a movable lug normally interposed between and adapted to be engaged by one of the jaws, connecting means between the lug and the beam-operating mechanism, and means for operating the lug.

8. The combination with the running-gear of a vehicle having a brake-beam suspended therefrom, and mechanism for operating the beam; of brackets secured to the running-gear, curved jaws slidably mounted therein, pins extending from the jaws, springs bearing upon the pins, a movable lug between and adapted to be engaged by one of the jaws, means for operating the lug, and connecting devices between the lug and the beam-operating mechanism.

9. The combination with the running-gear of a vehicle having a pivoted axle, a brake-beam suspended from the gear, and operating mechanism connected to the brake-beam; of oppositely-disposed jaws connected to the movable axle, pins extending therefrom and adapted to be engaged by the stationary portion of the gear, springs for holding the pins normally in contact with said stationary portion, a movable lug normally interposed between and adapted to be engaged by one of the jaws, said lug being connected to the movable axle, connecting devices between the lug and the beam-operating mechanism, a fork pivoted upon the running-gear and movable with the pivoted axle, said fork extending under and adapted to impart movement to the jaws, a whiffletree secured to the fork, and means for imparting movement to the lug.

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**757,960. PILE-DRIVING APPARATUS.** HIRAM W. PHILLIPS, Quincy, Mass. Filed Apr. 3, 1903. Serial No. 150,986. (No model.)



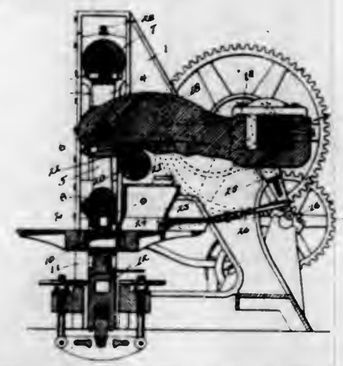
*Claim.*—1. In a pile-driving apparatus: a hammer and means for operating it; a supplemental guiding-frame, open at its lower end to allow of the passage of the hammer, constructed to slide between and to be guided by the main standards, and having top cleats adapted to engage with the upper end of said hammer whereby the said hammer in its ascent takes the said guiding-frame with it; and stops attached to the main standards, constructed to limit the downward passage of the said guiding-frame; substantially as and for the purpose set forth.

2. In a pile-driving apparatus; a hammer, and means for operating and guiding the same; a telescopic tube, adapted to receive and direct the piles, extending from the base of the pile-driver downwardly, said tube comprising a main tube and one or more extensions constructed to extend to the required length, and means for operating said tubes; substantially as and for the purpose set forth.

3. In a pile-driving apparatus: a hammer and means for operating it; a supplemental guiding-frame, open at its lower end to allow of the passage of the hammer, constructed to slide between and to be guided by the main standards, and having top cleats adapted to engage with the upper end of said hammer whereby the said hammer in its ascent takes the said guiding-frame with it; stops attached to the main standards, constructed to limit the downward passage of the said guiding-frame; and a telescopic tube, adapted to receive and direct the piles, extending from the base of the pile-driver downwardly, said tube comprising a main tube and one or more extensions constructed to extend to the required length, and means for operating said tubes; substantially as and for the purpose set forth.

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**757,961. BRICK-MACHINE.** CLINTON F. RANDALL and WILLIAM C. VANDEMAN, Anderson, Ind., assignors to the Anderson Foundry & Machine Works, Anderson, Ind., a Corporation. Filed Aug. 7, 1903. Serial No. 168,565. (No model.)



*Claim.*—1. In a brick-machine, a frame, the combination therewith of the molds, upper and lower plungers, toggles, side bars, crank-shaft, a fulcrum-roller journaled in the frame, a pitman-lever connecting the central toggle-joint to the crank-shaft and adapted to be influenced by said fulcrum-roll, and a slotted connection formed between the said pitman-lever end and the crank-pin, whereby at the moment of greatest compression the toggle flexation is suspended and the toggle system raised bodily, substantially as described.

2. In a brick-machine, a frame, the combination therewith of the molds, upper and lower plungers, toggles, side bars, crank-shaft, a fulcrum-roller journaled in the frame, a pitman-lever connecting the central toggle-joint to the crank-shaft and adapted to be influenced by said fulcrum-roll, one end of said pitman-lever having a sliding engagement with its connection, whereby at the moment of greatest compression the flexation of the toggles is suspended prolonging the interval of greatest compression, and the toggle system bodily raised during such interval, substantially as described.

3. In a brick-machine, a frame, the combination therewith of the molds, upper and lower plungers, toggles, side bars, crank-shaft, a fulcrum-roller journaled in the frame, a pitman-lever connecting the central toggle-joint to the crank-shaft and adapted to be influenced by said fulcrum-roll, the rear end of said pitman-lever having a slide-box formed therein, a sliding boss in said box, the crank-pin being journaled in said boss and an adjusting-plate in said slide-box, whereby at the moment of greatest compression the flexation of the toggles is suspended prolonging the interval of greatest compression, and the toggle system bodily raised during such interval, substantially as described.

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**757,962. FENCE-POST.** VICTOR E. RANDALL, Burlington, Mich. Filed Apr. 7, 1902. Serial No. 101,653. (No model.)

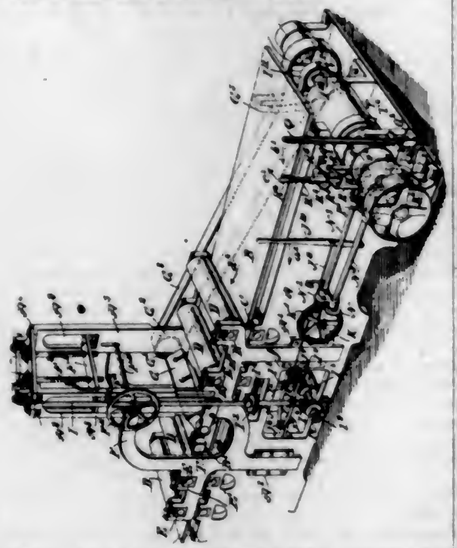
*Claim.*—1. A fence-post comprising an artificial-stone body, an angle-bar embedded within the same having continuous integral edges, and teeth projections extending beyond the planes of said edges, substantially as described.

2. A fence-post comprising an artificial-stone body, an angle-bar embedded within the same having continuous, integral edges and integral bonding projections extending beyond the planes of said edges, substantially as described.

757,962.



757,963. PLANER. EDWARD RAWSON, Moscow, Idaho. Filed May 31, 1903. Serial No. 158,117. (No model.)



*Claim.*—1. A planer provided with a bed, a frame vertically slidable thereon and carrying upper feed-rolls and a cutter-head, lower feed-rolls journaled in the said bed, a main shaft connected with the said cutter-head and the said lower feed-rolls, to rotate the same, and means for raising and lowering the said frame, the said means comprising screw-rods journaled on the said bed and screwing in the said frame, a shaft geared with the said screw-rods, a second shaft geared with the first shaft, a driving mechanism for the second shaft, and means under the control of the operator, for adjusting the said driving mechanism, to rotate the screw-rods in either a forward or backward direction, to raise or lower the frame, as set forth.

2. A planer provided with a bed, a frame vertically slidable thereon and carrying upper feed-rolls and a cutter-head, lower feed-rolls journaled in the said bed, a main shaft connected with the said cutter-head and the said lower feed-rolls, to rotate the same, means for raising and lowering the said frame, the said means comprising screw-rods journaled on the said bed and screwing in the said frame, a driving-gear for rotating the said screw-rods from the said main shaft, and means under the control of the operator, for adjusting the said driving-gear, to rotate the screw-rods in either a forward or backward direction, to raise or lower the frame, the said means comprising a lever under the control of the operator, a disk mounted to turn and connected with the said lever, and an arm mounted to swing and pivotally connected with the said disk, the said arm engaging the driving-shaft of the said gearing, for throwing the latter in engagement with oppositely-disposed driving gear-wheels, as set forth.

3. A planer provided with feed-rolls, mechanism for rotating the same forward and backward at a higher or lower rate of speed, a driving-shaft geared with the feed-rolls and carrying a double-bevel gear-wheel, bevel-pinions in mesh with the said bevel gear-wheel, shafts carrying the said pinions, means under the control of the operator, for moving the shafts toward and from each other, friction-pulleys on the said shafts, driven disks for engagement on their faces by the said friction-pulleys, and means under the control of the operator, for sliding the friction-pulleys on their shafts, to engage the friction-disks nearer to or farther from their centers, as set forth.

4. In a planer, the combination with a bed, and a vertically-adjustable frame carrying the upper feed-rolls and the cutter, of screw-rods mounted in the bed and screwing into the frame, a horizontal shaft geared with the screw-rods, a vertical shaft geared with the horizontal shaft and mounted at its lower end in a movable bearing, a second vertical shaft geared with the first-named vertical shaft, and mounted in movable bearings, a gear on the lower end of each vertical shaft, a driven shaft provided with gears for engagement with the gears of the vertical shafts, and means for moving the bearings of the vertical shafts, as and for the purpose set forth.

5. In a planer, the combination with a bed, and a vertically-movable frame carrying the upper feed-rolls and the cutter, of a horizontal shaft, means for raising and lowering the frame from said shaft, a vertical shaft geared with the horizontal shaft and provided with a friction-wheel at its lower end, a second vertical shaft geared with the first-named vertical shaft and provided with a friction-wheel at its lower end, pivoted arms in which the vertical shafts are mounted, means for swinging said arms, a driven shaft, and three friction-wheels on the driven shaft, one of the said wheels being a double-beveled wheel, as set forth.

6. In a planer, the combination with a driving-shaft, and feed-rolls, of three friction-disks on the driving-shaft, shafts extending between the disks, pivoted arms in which the shafts are mounted, means for swinging the arms on their pivots, friction-pulleys slidably mounted on the shafts between the disks, means for sliding said pulleys, a shaft geared with each of the said shafts, and means for operating one of the feed-rolls from said shaft, as set forth.

7. In a planer, the combination of a driving-shaft, feed-rolls, three friction-disks on the shaft, shafts extending between the disks, pivoted arms in which the shafts are mounted, means for swinging the arms on their pivots, friction-pulleys slidably mounted on the shafts between the disks, means for sliding said pulleys, a shaft means for operating one of the fixed rolls from the said shaft, a double-bevel gear-wheel on said shaft, and a pinion on each of the shafts mounted in the swinging arms, as set forth.

8. In a planer, the combination with a bed, and a vertically-sliding frame on the bed carrying the upper feed-rolls and the cutter, of screw-rods engaging the frame, a horizontal shaft geared with the screw-rods, a vertical shaft geared with the horizontal shaft and provided with a friction-wheel at its lower end, a second vertical shaft geared with the first-named vertical shaft and provided with a friction-wheel at its lower end, swinging bearings for the said vertical shafts, means for swinging said bearings, a driven shaft, and friction-wheels mounted on the driven shaft, and with which the friction wheels of the vertical shafts engage, one of the said wheels being double, as set forth.

9. In a planer, the combination with a bed, and a sliding frame carrying the upper feed-rolls and cutter, of a vertical shaft, mechanism for raising and lowering the frame from said shaft, a second shaft geared with the first shaft, swinging arms in which the said shafts are mounted, means for swinging said arms, a driven shaft, and gearing between the said shaft and the vertical shafts, as set forth.

757,964. FISH-LINE REEL. EDWARD D. ROCKWELL, Bristol, Conn., assignor to the Liberty Bell Company, Bristol, Conn., a Corporation of Connecticut. Filed Mar. 27, 1903. Serial No. 149,845. (No model.)

*Claim.*—1. In a fish-line reel, the combination, with a spring-controlled click, of a member, movable toward and from said click, to which one end of the click-spring is secured.



2. In a fish-line reel, the combination, with a click-wheel actuated only when the line is drawn out, of a spring-controlled click in engagement with said click-wheel, and a member, movable toward and from said click, to which one end of the click-spring is secured.

3. In a fish-line reel, the combination, with a click-wheel actuated only when the line is drawn out, of a spring-controlled click in engagement with said click-wheel, a member, movable toward and from the click, to which one end of the click-spring is secured, and means upon the exterior of the reel for controlling the movement of the movable member.

4. In a fish-line reel, the combination, with a spring-controlled click, of a member, movable toward and from said click, to which one end of the click-spring is secured, and means upon the exterior of the reel for controlling the movement of said movable member.

5. In a fish-line reel, the combination, with a click device, of a spring controlling said click device, a swinging arm to which one end of the spring is attached, a crank-pin connected to said arm, and means for controlling the movement of said crank-pin.

6. In a fish-line reel, the combination with a click device controlled by a spring, of a swinging arm to which one end of said spring is secured, a crank-disk having a crank-pin engaging said arm, means for rotating said disk and means for limiting the movement of said disk in either direction.

7. In a fish-line reel, the combination, with a click device, of a spring controlling said click device, an arm to which one end of said spring is secured, a crank-disk frictionally bound against one of the end plates of the reel and having a crank-pin connected to said arm, and means for rotating said crank-disk.

8. In a fish-line reel, the combination, with a click device, of a spring controlling said click device, an oscillatory arm to which one end of said spring is secured, and means for controlling the movement of said arm.

9. In a fish-line reel, the combination, with a click-wheel actuated only when the line is drawn out, of a click device in engagement therewith, a spring controlling said click device, and an oscillatory arm to which one end of said spring is secured.

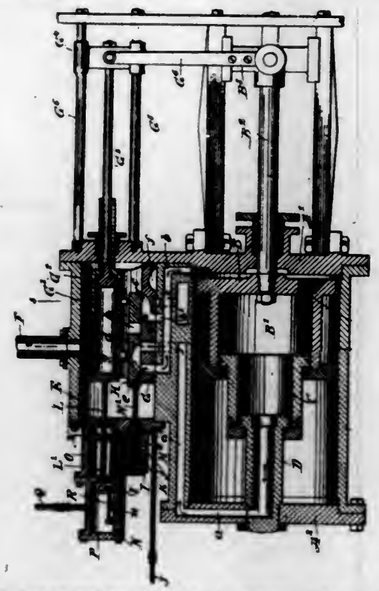
757,965. COMPOUND ENGINE. SIDNEY ROTHSCHILD, New York, N. Y. Filed July 20, 1903. Serial No. 166,253. (No model.)

*Claim.*—1. A compound engine having a low-pressure cylinder, a cylinder-piston reciprocating therein and having a head at one end and open at the other end, the cylinder-piston forming the high-pressure cylinder and the head forming the piston-head for both the high and low pressure cylinders, and means for conducting the motive agent into the open end of the high-pressure cylinder, to move the cylinder-piston in one direction and to subsequently conduct the motive agent from the said high-pressure cylinder into the low-pressure cylinder, as set forth.

2. A compound engine having a low-pressure cylinder, a cylinder-piston reciprocating therein and forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, a movable thimble in the said cylinder-piston, and means for conducting the motive agent into the high-pressure cylinder, to move the cylinder-piston in one direction and to subsequently conduct the motive agent from the said high-pressure cylinder into the low-pressure cylinder, as set forth.

3. A compound engine having a low-pressure cylinder, a cylinder-piston reciprocating therein and forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, a fixed inlet projecting into one end of the low-pressure cylinder, a movable thimble slidable in the cylinder-piston and on the fixed inlet, and means for conducting the motive agent into the said inlet and from the latter to the low-pressure cylinder, as set forth.

4. A compound engine having a low-pressure cylinder receiving the motive agent at one end, and a cylinder-piston reciprocating in the low-pressure cylinder and receiving the motive agent through the other end of the low-pressure cylinder, the said cylinder-piston forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, and a valve mechanism for controlling the motive agent to the said cylinder-piston and to conduct it from the latter to the low-pressure cylinder, as set forth



5. A compound engine having a low-pressure cylinder receiving the motive agent at one end, a cylinder-piston reciprocating in the low-pressure cylinder and receiving the motive agent through the other end of the low-pressure cylinder, the said cylinder-piston forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, and a valve mechanism for controlling the motive agent to the said cylinder-piston and to conduct it from the latter to the low-pressure cylinder, as set forth.

6. A compound engine having a low-pressure cylinder receiving the motive agent at one end, a cylinder-piston reciprocating in the low-pressure cylinder and receiving the motive agent through the other end of the low-pressure cylinder, the said cylinder-piston forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, a valve mechanism for controlling the motive agent to the said cylinder-piston and to conduct it from the latter to the low-pressure cylinder, and a starting-valve for the said valve mechanism, under the control of the engineer, to temporarily admit high-pressure steam into the low-pressure cylinder, as set forth.

7. A compound engine having a low-pressure cylinder receiving the motive agent at one end, a cylinder-piston reciprocating in the low-pressure cylinder and receiving the motive agent through the other end of the low-pressure cylinder, the said cylinder-piston forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, a valve mechanism for controlling the motive agent to the said cylinder-piston and to conduct it from the latter to the low-pressure cylinder, and a reversing mechanism for the said valve mechanism, as set forth.

8. A compound engine having a low-pressure cylinder receiving the motive agent at one end, a cylinder-piston reciprocating in the low-pressure cylinder and receiving the motive agent through the other end of the low-pressure cylinder, the said cylinder-piston forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, a valve mechanism for controlling the motive agent to the said cylinder-piston and to conduct it from the latter to the low-pressure cylinder, and a reversing mechanism for the said valve mechanism, comprising an auxiliary cylinder, a piston therein, connected with the valve mechanism and an auxiliary valve for controlling the admission and exhaust to and from the said auxiliary cylinder, as set forth.

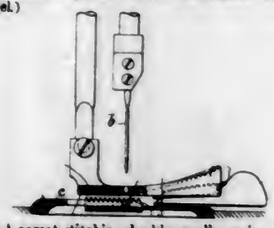
9. A compound engine having a low-pressure cylinder receiving the motive agent at one end, a cylinder-piston reciprocating in the low-pressure cylinder and receiving the motive agent through the other end of the low-pressure cylinder, the said cylinder-piston forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, a valve mechanism for controlling the motive agent to the said cylinder-piston and for conducting it from the lat-

ter to the low-pressure cylinder, a starting-valve for the said valve mechanism, under the control of the engineer, to temporarily admit high-pressure steam into the low-pressure cylinder, the said starting-valve having a valve-stem, carrying a piston, an auxiliary steam-cylinder in which reciprocates the said valve-stem piston, and a spring pressing the said valve-stem piston in one direction, as set forth.

10. A compound engine having a low-pressure cylinder provided with ports, a cylinder-piston reciprocating in said low-pressure cylinder and forming the high-pressure cylinder and the piston for both the high and low pressure cylinders, an inlet projecting into one end of the low-pressure cylinder, one of the ports of the low-pressure cylinder being connected with said inlet and the other port leading into the other end of said low-pressure cylinder, a telescopic connection between the cylinder-piston and the said inlet, and a valve mechanism for controlling said ports, as set forth.

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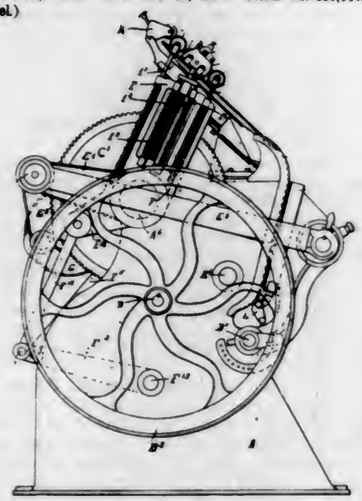
**757,966. MACHINE FOR SEWING CORSETS.** SAMUEL ROYLE, Southsea, England, assignor of two-thirds to John Madden and Adolph Joseph, London, England. Filed Feb. 28, 1903. Serial No. 145,525. (No model.)



*Claim.*—A corset-stitching double-needle sewing-machine, comprising a presser-foot longitudinally grooved on its under face, a double feller-guide integral with the presser-foot at the front end thereof, projecting in advance of the same, and in fixed proximity to the sewing-needles, the feller-guide being adapted to fell in opposite directions the overlapped portions of the work, a needle-hole plate having the rear portion of its surface containing the needle-holes and feed-claw slots at a higher level than the forward portion of said plate and having a short incline extending across the plate at right angles to the feed-claw slots and leading up from the lower to the higher level just in advance of the needle-holes, and a feed-claw having a middle member extending forwardly between the needle-holes, the slot in which the said member works being forwardly extended to intersect the said incline to permit the said member at the beginning of its feed-stroke to seize the work at the point of emergence of the work from the feller-guide and in advance of the sewing-point, as described.

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**757,967. PRINTING-PRESS.** DAVID H. SAUNDERS, Gloucester, Mass., assignor to Hanna V. P. Merchant and Augusta T. Saunders, Gloucester, Mass. Filed Jan. 15, 1903. Serial No. 139,117. (No model.)



*Claim.*—1. A printing-press having in combination, form-rollers, means for moving said rollers bodily over the form, means for positively rotating said rollers, and a distributing-roller resting upon and frictionally driven by said form-rollers, substantially as described.

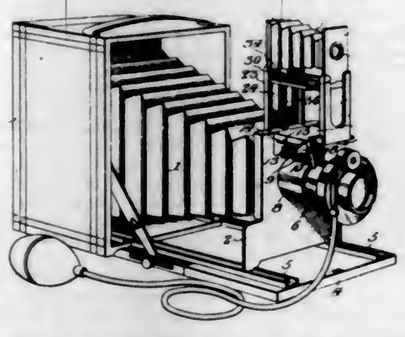
2. A printing-press having in combination, a fixed bed, grooved ways adjacent said bed, form-rollers provided with ribs for engaging said grooved ways, a distributing-roller resting upon and frictionally driven from said form-rollers, and means for moving said rollers across the bed, substantially as described.

3. A printing-press having in combination, form-rollers and a distributing-roller arranged above and between said form-rollers, a spring-held support for said rollers, means for subjecting the distributing-roller to the full tension of said spring or to any part thereof, and means for positively rotating said form-rollers, substantially as described.

4. A printing-press having in combination, form-rollers and a distributing-roller arranged above and between said form-rollers, a spring-held support for said rollers and means for subjecting the distributing-roller to the full tension of the spring or to any part of such tension, substantially as described.

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**757,968. FOCUSING DEVICE FOR CAMERAS.** MARTIN SCHELL, Rochester, N. Y. Filed June 19, 1903. Serial No. 162,295. (No model.)



*Claim.*—1. In an attachment for a camera of the class set forth, the combination of an adjustable lens-tube having a projection, a vertically-movable finder having a longitudinal adjustment, and means for simultaneously and proportionately moving the said lens-tube and the finder in a longitudinal direction.

2. In an attachment for a camera of the class set forth, the combination of an adjustable lens-tube, a vertically-movable finder, and means for simultaneously moving the finder and lens-tube in a longitudinal direction and for locking the parts against movement.

3. In an attachment for a camera of the class set forth, the combination of an adjustable lens-tube, a finder having means in connection therewith to elevate the same for inspection above the top of the camera-box, and means in engagement with the lens-tube and finder for simultaneously moving said parts longitudinally.

4. In an attachment for a camera of the class set forth, the combination of an adjustable lens-tube, a finder having an automatic vertical movement and a longitudinal adjustment, and means for engaging a part of the finder and lens-tube for simultaneously moving the same longitudinally proportionate distances.

5. In an attachment for a camera of the class set forth, the combination of an adjustable lens-tube, a vertically-movable finder having an adjustable lens, means for locking the finder in elevated position, and means engaging the parts of the finder and lens-tube for proportionately moving the latter in a longitudinal direction.

6. In an attachment for a camera of the class set forth, the combination with a camera-front having a lens-tube adjustably carried thereby, of a vertically-movable finder mounted on said front, and means for adjusting the finder-lens simultaneously with the camera-lens.

7. In an attachment for a camera of the class set forth, the combination with a movable camera-front carrying an adjustable lens-tube, of a finder mounted on the said front and having an adjustable lens, and means for adjusting the finder-lens simultaneously with the camera-lens and for locking the finder in collapsed condition.

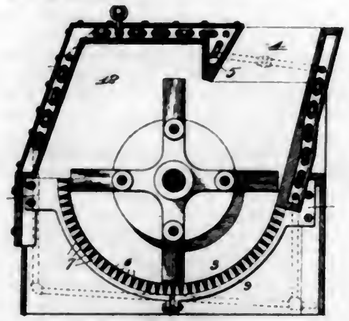
8. A camera having a vertically-movable and longitudinally-adjustable finder, and means for automatically locking the finder in elevated position.

9. A camera having an adjustable front, a longitudinally-adjustable finder carried by said front, means for automatically elevating the finder, and means for automatically locking the finder in elevated position.



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**757,969. PULVERIZING-MACHINE.** AUGUST SCHOELLHORN and HERMAN B. ALBRECHT, St. Louis, Mo. Filed Apr. 13, 1903. Serial No. 152,810. (No model.)

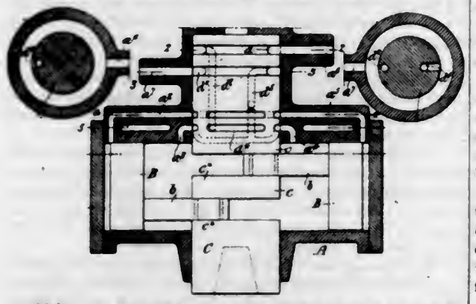


*Claim.*—1. In a pulverizer, the combination with the rotary beater, of a grate disposed beneath the beater, and composed of semicircular supporting-bands secured by their ends to the casing, divided intermediate of their ends, and grooved in their tops, semicircular bars fitted within the grooves of the semicircular supporting-band; provided with upwardly-projecting teeth, grate-bars extending transversely of the supporting-bands, and fitted between the teeth of the semicircular bars, and means for adjusting the adjacent ends of the sections of the semicircular bands toward one another.

2. In a pulverizer, the combination with a rotary beater, of a grate disposed beneath the beater, and composed of semicircular bands secured at their ends to the casing and divided intermediate of their ends, means for adjusting the adjacent ends of the sections of the semicircular bands toward one another, semicircular bars supported on the bands and provided with upwardly-extending teeth, and grate-bars extending transversely of the bars and resting between the teeth.

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**757,970. PNEUMATIC TOOL.** WILLARD T. SEARS, Harrisburg, Pa. Filed Sept. 4, 1903. Serial No. 172,014. (No model.)



*Claim.*—1. The combination in a pneumatic tool of a cylinder, a crank-shaft, a piston in the cylinder connected to the shaft, said cylinder having ports for the admission and exhaust of motive fluid, said ports being placed to permit the said fluid to act on both faces of the piston, the crank-shaft also having in it passages for controlling said fluid, said passages being formed to coact with the ports of the cylinder, substantially as described.

2. The combination in a pneumatic tool of a casing having in it two cavities and having passages connecting one cavity with the other cavity, a piston in one cavity and a shaft in the other, said shaft being connected to the piston and having in it passages connected to a source of supply for motive fluid, said passages being placed to coact with the passages of the casing and said latter passages opening into the cylinder so as to cause motive fluid to act positively on both faces of the piston, substantially as described.

3. The combination in a pneumatic tool of a casing having within it two cavities provided with passages connecting one cavity with the other, two pistons in one cavity and a shaft in the second cavity connected to said pistons, said shaft having in it passages connected respectively to the exhaust and to the source of supply for motive fluid, said shaft-passages coacting with the passages of the casing and said latter passages entering the piston-cavity in such positions as to permit of motive fluid being supplied to and exhausted from both faces of each piston, substantially as described.

4. The combination of a casing having in it two cavities intersecting one another, a shaft in one cavity extending into the other, pistons in the second cavity on opposite sides of the shaft and operatively connected thereto, the said casing having for each piston a plurality of passages whereby it is connected to the cavity for the shaft, said shaft having in it passages opening on its cylindrical surface and placed to coact with said first-mentioned passages, substantially as described.

5. The combination of a casing having two cylindrical cavities of which one is provided with a head or heads, two pistons in said cavity, a shaft in the second cavity elongated to extend between the pistons, said casing having a plurality of passages on each side of the shaft, said passages connecting respectively the ends of the piston-cavity and portions thereof adjacent to the shaft, to the shaft-cavity, said casing-passages opening into the piston-cavity at points beyond the ends of the strokes of the respective pistons and said shaft having it in passages placed to coact with the passages of the casing, substantially as described.

6. The combination of a casing having a cylinder with pistons therein, a crank-shaft in the casing having cranks and pins, a slotted plate rigidly attached to each piston, said plates being connected respectively to the pins independently of each other, there being exhaust and supply passages in the shaft opening on the cylindrical surface thereof and other passages in the casing coacting with the same and entering the piston-cavity, substantially as described.

7. The combination of a casing having in it two cavities, a pair of pistons in one cavity, a shaft in the other cavity connected to said pistons, said casing having in it two passages for each piston opening into the piston-cavity at points adjacent to the ends of the path traveled by said pistons, said passages also opening into the cavity for the crank-shaft, said shaft having a series of annular passages in its surface coacting with the other passages, certain of the annular passages being connected to a source of supply for motive fluid and others being connected to the exhaust, substantially as described.

8. The combination of a casing having in it two cavities, a shaft in one of said cavities having cranks and means for the attachment of a tool to be operated, said shaft having passages through it and two sets of passages opening on its cylindrical surface, pistons in the second cavity of the casing connected to the cranks, there being passages from the portions of the second cavity adjacent to the shaft, opening into the shaft-cavity and coacting with one set of passages in the shaft, and other passages from the ends of the second cavity also opening into the shaft-cavity and coacting with the second set of shaft-passages, substantially as described.

9. An engine having a cylinder, a piston and a crank-shaft connected thereto, said shaft having in it passages, there being other passages coacting with said shaft-passages and opening into the cylinder at points beyond the piston when it is at the two ends respectively of its stroke, so as to admit and exhaust motive fluid from both faces of the piston, substantially as described.

10. An engine having a cylinder, a crank-shaft extending into the same, pistons connected to the shaft and operating in the cylinder, said cylinder having opening into it a plurality of passages for each piston and said shaft being constructed with openings coacting with said passages for controlling the flow of motive fluid to and from the cylinder, substantially as described.

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**757,971. THERMAL CUT-OUT.** MICHAEL SETTER, Chicago, Ill., assignor to P. C. Burns and J. G. Ihmsen, Chicago, Ill. Filed Aug. 5, 1903. Serial No. 168,267. (No model.)



*Claim.*—1. A thermal cut-out comprising a couple of telescoping members, one of said members being composed of fiber or other suitable non-heat-conducting material, a removable piece of thin solder interposed between said members to keep them normally separated, a spring tending normally to telescope the members one

within the other, and a heating-coil adapted to soften said solder upon the passage of an abnormally strong current, and to thereby allow said spring to telescope the said members.

2. A thermal cut-out comprising a couple of telescoping members whereof one is of non-heat-conducting material, a removable piece of solder interposed between said members to keep them normally separated, a stem on which said non-heat-conducting member is adapted to slide, a metallic support through which said stem projects and against which said non-heat-conducting member bears, a spring tending normally to telescope said members and adapted to keep the non-heat-conducting member pressed tightly against said support, a heating-coil associated with said solder and adapted to soften the latter and thereby allow said members to telescope one within the other upon the passage of an abnormally strong current, a switch adapted to be opened by said spring when the solder softens, and another switch adapted to be closed by said stem when the solder softens.

3. A thermal cut-out comprising a metallic body portion provided with oppositely-extending stem portions, a heating-coil wound on said body portion, said body portion being provided with a chamber, a piece of insulation secured to one of said stems, a metallic head on said piece of insulation and connected with said heating-coil, the other terminal of said coil being connected with said body portion, a second piece of insulation mounted on the other of said stems and adapted to slide thereon, so as to telescope within the body portion, a thin ring of solder interposed between said body portion and said sliding piece of insulation, a spring engaging said head, a support against which the said sliding piece of insulation is held by said spring, a contact normally engaging said spring, and another contact normally out of engagement with the stem upon which the said sliding piece of insulation is mounted.

4. A thermal cut-out comprising two parts adapted to slide one upon the other, one of said members being of non-heat-conducting material, a removable piece of thin solder interposed between said members to normally prevent relative movement between the same, a spring-switch held normally closed by said solder, a heating-coil associated with said solder, and a support against which said non-heat-conducting member bears, said support thereby sustaining the normal pressure of said spring-switch.

5. A thermal cut-out comprising a normally closed spring-switch, means including two relatively sliding members for keeping said switch closed, one of said members being of non-heat-conducting material, and including also a removable piece of solder interposed between said members, and a heating-coil associated with said solder and adapted to be connected in series with said spring-switch.

6. A thermal cut-out comprising a couple of telescoping members, one of said members being composed of fiber or other suitable non-heat-conducting material, a removable piece of thin solder interposed between said members to keep them normally separated, a spring tending normally to telescope the members one within the other, and a heat-concentrating member adapted to soften said solder upon the passage of an abnormally strong current, and to thereby allow said spring to telescope the said members.

7. A thermal cut-out comprising a couple of telescoping members whereof one is of non-heat-conducting material, a removable piece of solder interposed between said members to keep them normally separated, a stem on which said non-heat-conducting member is adapted to slide, a metallic support through which said stem projects and against which said non-heat-conducting member bears, a spring tending normally to telescope said members and adapted to keep the non-heat-conducting member pressed tightly against said support, a heat-concentrating member associated with said solder and adapted to soften the latter and thereby allow said members to telescope one within the other upon the passage of an abnormally strong current, a switch adapted to be opened by said spring when the solder softens, and another switch adapted to be closed by said stem when the solder softens.

8. A thermal cut-out comprising a metallic body portion provided with oppositely-extending stem portions, a heat-concentrating member wound upon said body portion, said body portion being provided with a chamber, a piece of insulation secured to one of said stems, a metallic head on said piece of insulation and connected with said heat-concentrating member, the other terminal of said coil being connected with said body portion, a second piece of insulation mounted on the other of said stems, and adapted to slide thereon so as to telescope within the body portion, a thin ring of solder interposed between said body portion and said sliding piece of insulation, a spring engaging said head, a support against which said sliding piece of insulation is held by said spring, a contact normally engaging said spring, and another contact normally out of engagement with the stem upon which the said sliding piece of insulation is mounted.

9. A thermal cut-out comprising two members adapted to slide one upon the other, one of said members being of non-heat-conducting material, a removable piece of thin solder interposed between said members to normally prevent relative movement between the same, a spring-switch held normally closed by said solder, a heat-concentrating member associated with said solder, and a support against which said non-heat-conducting member bears, said support thereby sustaining the normal pressure of said spring-switch.

10. A thermal cut-out comprising a normally closed spring-switch, means including two relatively sliding members for keeping said switch closed, one of said members being of non-heat-conducting material, and including also a removable piece of solder interposed between said members, and a heat-concentrating member associated with said solder and adapted to be connected in series with said spring-switch.

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**757,972. THERMAL CUT-OUT. MICHAEL SETTER, Chicago, Ill., assignor to P. C. Burns and J. G. Ihmsen, Chicago, Ill. Filed Aug. 5, 1903. Serial No. 168,263. (No model.)**



*Claim.*—1. A thermal cut-out comprising a spring, two parts normally subject to the pull of said spring, a removable piece of solder adapted normally to prevent said members from being pulled apart or moved relatively to each other by the pull of said spring, and a heating-coil associated with said piece of solder, said solder being removable independently of all other parts.

2. A thermal cut-out comprising a spring, means including a removable piece of solder adapted to normally resist the pull of said spring, and a heating-coil associated with said solder, said solder being removable independently of all other parts.

3. A thermal cut-out comprising a spring, means secured at one end and engaged at the other end by said spring, said means thereby being adapted to resist the pull of said spring, said means including relatively movable members and a removable piece of solder for holding said members against relative movement and resisting the pull of said spring, and a heating-coil associated with said solder, said solder being removable independently of all other parts.

4. A thermal cut-out comprising a spring, means for resisting the normal pull of said spring, said means including two parts hinged together and a removable ring of solder for normally holding said parts against relative movement, and a heating-coil associated with said parts and solder.

5. A thermal cut-out comprising a spring, two parts normally subject to the pull of said spring, a removable piece of solder adapted normally to prevent said members from being pulled apart or moved relatively to each other by the pull of said spring, and a heat-concentrating member associated with said piece of solder, said solder being removable independently of all other parts.

6. A thermal cut-out comprising a spring, means including a removable piece of solder adapted to normally resist the pull of said spring, and a heat-concentratiag member associated with said solder, said solder being removable independently of all other parts.

7. A thermal cut-out comprising a spring, means secured at one end and engaged at the other end by said spring, said means thereby being adapted to resist the pull of said spring, said means including relatively movable members and a removable piece of solder for holding said members against relative movement and resisting the pull of said spring, and a heat-concentrating member associated with said solder, said solder being removable independently of all other parts.

8. A thermal cut-out comprising a spring, means for resisting the normal pull of said spring, said means including two members hinged together and a removable ring of solder for normally holding said members against relative movement, and a heat-concentrating member associated with said members and solder.



**757,973. STAY-BOLT. DAVID L. SHAFFER, Pittsburg, Pa. Filed July 18, 1903. Serial No. 166,085. (No model.)**



*Claim.*—1. A stay-bolt composed of two sections jointed together in such manner as to prevent independent rotary movement of said sections and each provided with means at its ends for attachment to the boiler-sheets.

2. A stay-bolt composed of two sections connected to each other by a knuckle-joint so arranged as to prevent independent rotary movement of said sections and each provided with means at its ends for attachment to the boiler-sheets.

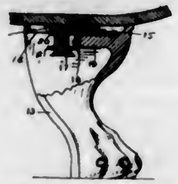
3. A stay-bolt composed of two sections provided with interlocking eyes at their meeting ends and each provided with means at its outer end for connection to the boiler-sheet.

4. A stay-bolt composed of two sections connected to each other by a knuckle-joint so arranged as to prevent independent rotary movement of said sections, one of said sections being of a diameter equal to the greatest diameter of said joint, and each section being provided with means at its ends for connection to the boiler-sheets.

5. A stay-bolt composed of two sections connected to each other by a flexible joint so arranged as to prevent independent rotary movement of said sections, one of said sections being of larger diameter than the other and hollow from its outer end into proximity to said joint.

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**757,974. LEG-FASTENING FOR BATH-TUBS, &c. THOMAS W. SINCOX, Noblesville, Ind., assignor to the McElwaine-Richards Company, Noblesville, Ind., a Corporation of Indiana. Filed Mar. 11, 1903. Serial No. 147,279. (No model.)**



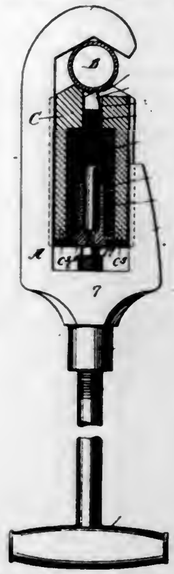
*Claim.*—The combination of a bath-tub or the like having a pair of extensions on the bottom thereof inclined with reference to each other and with their corresponding lateral edges dovetailed and having a stop-lug about midway of the ends of said extensions, a leg having a pair of oppositely-placed flanges inclined with relation to each other for engaging the dovetailed edges of said extensions and with a tongue extending centrally and horizontally on the upper end of the leg inward beyond said lug when the leg is put in place and having a slot in its end, and a screw-bolt extending upward through said slot with a nut on the upper end thereof that is clamped to said tongue and the nut engages said stop-lug to prevent the escape of the leg.

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**757,975. PIPE OR BAR CUTTER. WILLIAM T. SHELL, Octave, Ariz. Filed Aug. 19, 1903. Serial No. 170,014. (No model.)**

*Claim.*—1. A device of the class described, comprising a main body portion including a stationary jaw at one end thereof, a movable jaw slidable on the main body portion relative to the stationary jaw, said movable jaw having a hollow interior portion, a movable tubular socket within the hollow portion of the movable jaw, a tension-spring coiled around the socket and a cutter carried by said socket, substantially as set forth.

2. The combination with the main body portion, including a stationary jaw, of a movable jaw slidable on the main body portion but held against lateral movement, said movable jaw having a hollow interior portion, a tubular socket extending into the hollow interior portion, a cutter seated in said tubular socket and having its cutting edge extending through a bore in the movable jaw, and a handle having a rod portion threaded in the main body portion and designed to bear against the movable jaw for moving it toward the stationary jaw, the construction being such that a pipe or bar may be clamped between the movable jaw and the stationary jaw and cut with the edge of the cutter, substantially as set forth.



3. The combination of a main body portion, including a stationary jaw, a movable jaw having a hollow interior portion slidable on the main body portion toward and from the stationary jaw, said movable jaw being provided with guideways to engage with the sides of the main body portion and prevent lateral movement of the movable jaw, a tubular socket extending into the interior portion of the movable jaw, a cutter carried by said socket, a tension-spring coiled about the socket and occupying the hollow interior portion of the movable jaw, and a handle having a threaded rod portion designed to bear against the movable jaw for moving it relative to the stationary jaw, substantially as set forth.

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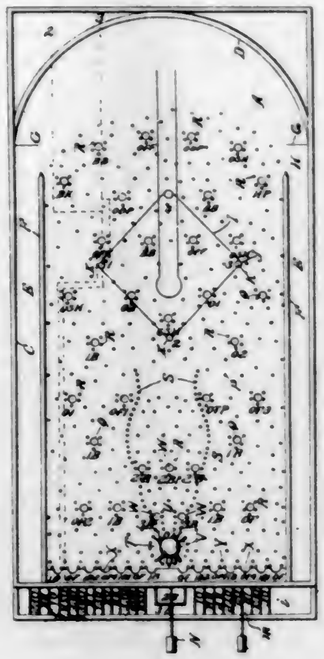
**757,976. GAME-BOARD. DAVID STANGER, Glassboro, N. J. Filed Nov. 11, 1903. Serial No. 180,693. (No model.)**

*Claim.*—1. The hereinbefore-described game-board having suitable support, in combination, side flanges and alley-ways, the latter having openings at their upper ends, a curved shoulder at the upper end of the board, the representation of a base-ball diamond on the board, having bases with socket-openings through the board, an upper series of pocket-openings through the board, ranging from side to side thereof, numerous similar lower pocket-openings through the board, yielding ball-trapping means in each said pocket-opening, having upper cup-shaped sides adapted to catch the rolling ball and for releasing it upon yielding action thereof, an elongated open-top court near the lower end of the board, a trap at and closing the lower end of the said court, a bell in the trap-shaped lower end of the court, pockets along the lower end of the board, numerous standing pins on the face of the board, small open-top courts around the pocket-openings through the board, and means on the under side of the board adapted for conveying balls passing through the pocket-opening, to the lower end of the game-board, substantially as described.

2. In combination with the hereinbefore-described game-board, having side alley-ways, the representation of a base-ball diamond, sockets at each base and adjustable pins therein, numerous pocket-openings through the board, standing pins on the face of the board, an enlarged court at the lower end of the board, small courts around the said pocket-openings, and pockets along the lower end of the board, of yielding traps at each pocket-opening through the board, consisting of a tilting arm, weighted at one end, and having its other end turned upwardly and provided with an open-bottom socket, an ejector having its free end adapted to enter the opening in the said socketed end, of the tilting arm, upon tilting action thereof, the said tilting arm having suitable support, substantially as described.

3. The combination with a game-board having side alley-ways, standing pins, the representation of a base-ball diamond, courts,

pockets and sets of pocket-openings indicating certain plays, of a series of separate ball-guideways, adapted to receive and convey the balls only, from one set of said pocket-openings, to the lower end of the game-board and into suitable receivers, a yielding socket in the said pocket-openings, having upper cup-shaped sides adapted to catch the rolling ball and for releasing it upon yielding action thereof, substantially as described.



757,977. LACE-FASTENER. Flora E. Stoke, Reynoldsville, Pa. Filed Nov. 21, 1903. Serial No. 182,141. (No model.)



*Claim.*—A fastener for shoe-laces formed in a single piece of material and comprising a base-plate, parallel plates connected thereto and integral therewith, and inwardly-extending converging spring-arms projecting from the parallel plates and normally contacting at their free ends.

757,978. COMBINATION COLLAR AND CUFF BUTTON. Albert E. Strang, Canton, Ohio. Filed May 15, 1903. Serial No. 157,261. (No model.)



*Claim.*—1. A combination collar and cuff button comprising a base having centrally thereof a stem, conical or tapering at the part thereof connecting with said base, a reversible hollow shank detachably fitting said stem and enlarged or flaring internally at one end thereof adjacent to said base, thereby to conform to said conical or tapering portion of the stem, said shank also having at this end an enlarged portion, and a head having a screw for fitting in the other end of said shank.

2. A combination collar and cuff button comprising a stem having a small head to form the head of a collar-button, a shank having a flange larger than the head of the stem, and a base, the shank being reversible to bring the flange thereof adjacent to the head, thereby forming a cuff-button with a broad head, or in a position adjacent to the base, thereby forming a collar-button having a head smaller than the head of the cuff-button.

757,979. MUSIC-LEAF TURNER. Charles Thoma, Jr., Carlstadt, N. J. Filed Jan. 4, 1904. Serial No. 187,618. (No model.)



*Claim.*—1. In music-leaf turners, pivoted, spring-controlled sheet-turning arms, spring-controlled latch-levers for the turning-arms, a release device for the latch-levers, an operating mechanism for the releasing device, and arms for establishing operative relation between the releasing device and the latch-levers, said arms being placed in position by the throw of the turning-arms.

2. In music-leaf turners, pivoted spring-controlled latch-levers for the turning-arms, actuating-arms for the latch-levers, connections whereby the actuating-arms are thrown into operative position by the throw of the turning-arms, a releasing-plate arranged for movement at the rear of the actuating-arms, the said plate being provided with an opening, shoes extending from the actuating-arms, having sliding connection with the latch-levers, and a shifting mechanism for the releasing-plate, as described.

3. In music-leaf turners, pivoted spring-controlled sheet-turning arms, spring-controlled latch-levers for the turning-arms, actuating-arms for the latch-levers, having sliding connection therewith and pivotal connection with the turning-arms, a releasing-plate having an opening therein located at the rear of the latch-levers and the actuating-arms, said plate being provided with an arched spring-section at one end, the remaining portion of the plate being flat, and a trip-arm connected with the releasing-plate, as set forth.

4. In music-leaf turners, pivoted spring-controlled sheet-turning arms, spring-controlled latch-levers for the turning-arms, actuating-arms for the latch-levers, having sliding connection therewith and pivotal connection with the turning-arms, a releasing-plate having an opening therein located at the rear of the latch-levers and the lifting-arms, the said plate being provided with an arched spring-section at one end, the remaining portion of the plate being flat, a trip-arm connected with the said releasing-plate, a finger-piece, a guide for the finger-piece, and an elbow-lever connected with the said finger-piece and having operative bearing upon the said trip-arm, as set forth.

5. In a music-leaf turner, a box-casing, a fixed shaft in the said casing, sheet-turning arms pivoted on the said shaft, each arm at its pivotal portion being provided with a drum, springs attached to the drum and to the casing, spring-controlled latch-levers for the said turning-arms, pivoted on the said casing, actuating-arms having sliding connection with the latch-levers and eccentric connection with the drums forming a portion of the turning-arms, a releasing-plate for the actuating-arms, and a shifting device located partially at the forward portion of the casing and partially within the casing, which shifting device has operative connection with the said releasing-plate, for the purpose described.

757,980. OIL-GAS GENERATOR AND BURNER. Jacob P. Tirrell, Boston, Mass.; William G. Rowe administrator of said Jacob P. Tirrell, deceased. Filed Apr. 9, 1903. Serial No. 151,738. (No model.)



*Claim.*—1. The combination of a substantially horizontal retort, means for forcing oil into the retort under pressure, an oil-distributing pipe having outlets within the retort, a closely-packed porous refractory filling covering said outlets and preventing the free flow of oil therefrom, said filling being in contact with the inner surface of the retort and preventing the accumulation of oil and the formation of carbon on said surface, and a burner which receives gas from the retort and heats the latter.



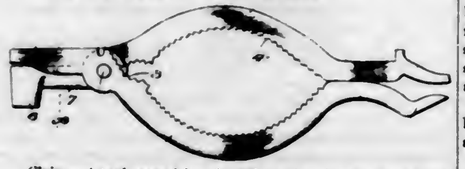
2. A kerosene-gas generator and burner comprising a substantially horizontal retort, an oil-distributing pipe within the retort, said pipe being provided with oil-outlets and separated by a space from the heated surface of the retort, a refractory porous filling covering said outlets and closely packed in the said space, said filling bearing closely against the external surface of the distributing-pipe and against the internal surface of the retort, whereby the oil is presented in a thin film to the heated surface of the retort and is prevented from accumulating and flowing upon said surface, means for supplying the distributing-pipe with oil under pressure, and a burner which receives gas from the retort.

3. A kerosene-gas generator and burner comprising a substantially horizontal elongated tubular retort, an oil-distributing pipe within the retort, said pipe being provided with oil-outlets and surrounded by a space within the retort, a refractory porous filling covering said outlets and closely packed in the space between the distributing-pipe and the retort, an oil-supply pipe detachably connected with one end of the retort and provided with a regulating-cock, a gas-delivering pipe detachably connected with the other end of the retort, and a burner communicating with the gas-delivery pipe.

4. In a kerosene-gas generator and burner, a substantially horizontal elongated tubular retort having means at its opposite ends for detachable connection with an oil-supply pipe and with a gas-delivery pipe, an oil-distributing pipe attached to the retort independently of the oil-supply pipe and extending a portion of the length of the retort, the retort and distributing-pipe being detachable from the supply-pipe, a refractory porous filling closely packed in the space between the retort and the distributing-pipe and covering the oil-outlets in the latter, and a loose refractory filter interposed between the inner end of the oil-distributing pipe and the gas-delivering end of the retort.

5. A burner-tube having parallel slits or gas-outlets extending transversely to the length of the tube, and intermediate slits alternately inclined in opposite directions.

757,981. HOUSEHOLD-TOOL. Herbert H. Tyrrell, Swain, N. Y., assignor of one-half to Michel J. Kelley, Swain, N. Y. Filed Mar. 18, 1903. Serial No. 148,439. (No model.)



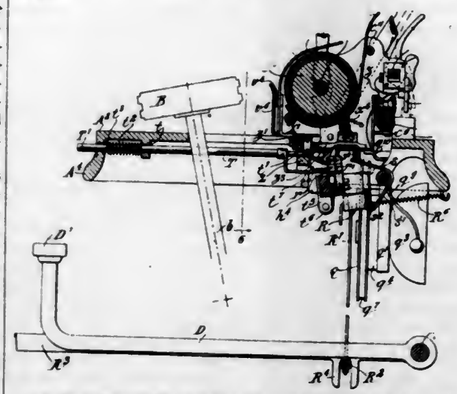
*Claim.*—A tool comprising pivoted members having corresponding jaws at one end, one of the jaws having a centrally-disposed integral tongue of uniform cross-section throughout its length, the other jaw having a corresponding groove, and both jaws having outer extensions adapted to come squarely together, substantially as set forth.

757,982. TYPE-WRITING MACHINE. Richard W. Uhlig, Rutherford, N. J., assignor to Henry C. Adams, Hackensack, N. J. Original application filed Mar. 29, 1900, Serial No. 10,614. Divided and this application filed Jan. 4, 1901. Renewed Dec. 30, 1902. Serial No. 137,209. (No model.)

*Claim.*—1. In a type-writing machine, the combination with the printing mechanism, a series of keys operating said mechanism, and a carriage carrying a rack, of a dog moved by said keys and engaging said rack for controlling the movements of the carriage, a pivoted frame carrying said dog, a stop carried by said frame for limiting the movement of said dog in said frame, and a spring carried by said frame, bearing against said dog at its under side, the one having a depression and the other a projection entering said depression, whereby said dog may rotate in either direction against the action of said spring.

2. In a type-writing machine, the combination with the printing mechanism, a series of keys for operating said mechanism, and a carriage carrying a rack, of a pair of dogs moved by said keys and engaging said rack for controlling the movements of the carriage, a pivoted frame carrying said dogs, a stop carried by said frame for limiting the movement of said dogs in said frame, a spring carried by said frame, bearing against one of said dogs at its under side, whereby said dog may rotate in either direction against the action of said spring, and a spring for the other of said dogs fixed to said frame and acting normally to hold said dog against its stop.

3. In a type-writing machine, the combination with the printing mechanism, a series of keys for operating said mechanism, and a carriage carrying a rack, of a pair of dogs moved by said keys and engaging said rack for controlling the movements of the carriage, a pivoted frame carrying said dogs, a stop carried by said frame for limiting the movement of said dogs in said frame, a spring carried by said frame, bearing against one of said dogs at its under side, the one having a depression and the other a projection entering said depression, whereby said dog may rotate in either direction against the action of said spring, and a spring for the other of said dogs fixed to said frame and acting to normally hold said dog against its stop.



4. In a type-writing machine, the combination with the printing mechanism, a series of keys for operating said mechanism, and a carriage carrying a rack, of a pair of dogs moved by said keys and engaging said rack for limiting the movements of the carriage, a pivoted frame carrying said dogs, stops carried by said frame for limiting the movement of said dogs in said frame, one of said dogs having a depression at its under side, a spring fixed to said pivoted frame and having a bent portion entering said depression, whereby said dog may rotate in either direction against the action of said spring, and a second spring for normally holding said second dog against its stop.

5. In a type-writing machine, the combination with a series of key-levers, and a spacing-lever, of a universal bar formed as a tube, and rods connecting said bar with the spacing mechanism.

6. In a type-writing machine, the combination with a carriage, of a plate carried by the carriage, and having a plurality of notches, a stop device adapted to engage said notches, means for locking the printing mechanism during such engagement, and means for disengaging said parts.

7. In a type-writing machine, the combination with a carriage, of a plate carried by the carriage, and having a series of notches, a stop device adapted to engage said notches, and means for preventing such engagement of said device with any predetermined notch.

8. In a type-writing machine, the combination with a carriage, of a plate carried by said carriage, and having a series of notches, a second plate adjustable along said first-mentioned plate and having a notch movable into coincidence with different notches in said first plate, and a stop device movable into such notches of said plates as they coincide.

9. In a type-writing machine, the combination with a carriage, of a plate carried by said carriage, and having a series of notches, a second plate adjustable along said first-mentioned plate and having a series of notches spaced differently from those of the first, and a stop device movable into such notches of said plates as they coincide.

10. In a type-writing machine, the combination with a carriage, a plate carried thereby having a stop, a frame for supporting said carriage, a feed-dog cooperating with said carriage to control its movements, a lever for operating said dog, a detent pivoted to said frame, adapted to be engaged by said stop, and upon engagement therewith to engage said lever to stop the movement of said dog, and a rod extending to the front part of said frame, for releasing said lever from engagement with said detent.

11. In a type-writing machine, the combination with a carriage, a plate carried thereby and having a stop, a frame for supporting said carriage, a dog cooperating with said carriage to control its movements, a lever for operating said dog, a detent pivoted to said frame adapted to be engaged by said stop, and upon engagement

therewith to engage said lever to stop the movement of said dog, a rod extending to the front part of said frame for moving said detent to release said lever from engagement therewith, and a catch moved by said rod, for engaging said lever, to hold said detent out of engagement therewith, whereby said detent is rendered inoperative until the next succeeding movement of the carriage, and its reëngagement with said stop is prevented.

12. In a type-writing machine, the combination with a carriage, of a stop adapted to limit the movement of the carriage in one direction for tabulating, and in the opposite direction for fixing the margin.

13. In a type-writing machine, the combination with a carriage, and a spacing mechanism, of a stop adapted to disconnect said spacing mechanism, and permit a rapid movement of the carriage, said stop adapted to be moved into the path of the carriage to limit its movement in one direction, and adapted to be moved into the path of the carriage to limit its movement in the opposite direction.

14. In a type-writing machine, the combination with a stationary frame, a carriage traveling along the top of said frame, and a transversely-oscillating spacing mechanism for controlling its movements, of a stop device sliding transversely across the top of said frame having a stop at its inner end and adapted to simultaneously move said spacing mechanism out of its operative position, and interpose its stop in the path of the carriage to limit its movement.

15. In a type-writing machine, the combination with a stationary frame, a carriage traveling along the top of said frame, and a transversely-oscillating spacing mechanism for controlling its movements, of a bar mounted independently of the carriage and adapted to be moved and to move said spacing mechanism out of its operative position, and a plurality of independently-operable stop devices sliding transversely across the top of said frame each having a stop at its inner end, and each adapted to interpose its stop in the path of said carriage for limiting its movement and to simultaneously move said bar to move said spacing mechanism out of its operative position.

16. In a type-writing machine, the combination with a stationary frame, a carriage traveling along the top of said frame, and a transversely-oscillating spacing mechanism for controlling its movements, of a stop device comprising a single movable part sliding transversely across the top of said frame, and projecting therethrough at its outer front end, and adapted when pressed rearwardly to interpose its inner end in the path of movement of the carriage, and to throw said spacing mechanism out of operative engagement with the carriage.

17. In a type-writing machine, the combination with a stationary frame, a carriage traveling along the top of said frame, and a transversely-oscillating spacing mechanism for controlling its movement, of a bar pivoted in said frame, and adapted to be moved to throw said spacing mechanism out of operative engagement with the carriage, a plurality of stop devices each comprising a single movable part sliding transversely across the top of said frame, projecting therethrough at its outer front end and spaced apart therein, and each adapted when pressed rearwardly to simultaneously move said bar and interpose its inner end in the path of movement of the carriage.

18. In a type-writing machine, the combination with a frame, a carriage and a spacing mechanism for controlling its movements, of a bar pivoted in said frame, and adapted to be moved to throw said spacing mechanism out of operation, a plurality of stop devices, each adapted to be moved longitudinally in said frame, and spaced apart therein, and each adapted to simultaneously move said bar and interpose a stop in the path of movement of the carriage, and a spring adapted to retract said stop device.

19. In a type-writing machine, the combination with the printing mechanism, of a carriage comprising a bottom plate, having angularly-bent end portions for forming bearings for the platen, one of said bent portions having a stop formed therein, and a line-spacing mechanism having a movable member adapted to engage said stop.

20. In a type-writing machine, the combination with a carriage, and a printing mechanism, of a holder between said carriage and printing mechanism for holding carbon-paper.

21. In a type-writing machine, the combination with a carriage, and a type-wheel, of a holder between said wheel and carriage, for holding carbon-paper in position to be struck by said type-wheel.

22. In a type-writing machine, the combination with a carriage, and a type-wheel, of a wire holder interposed between the two for holding carbon-paper.

23. In a type-writing machine, the combination with the printing mechanism, of a carriage, comprising a bottom plate, having angularly-bent end portions for forming bearings for the platen, one of said bent portions having a series of stops formed thereon, and a line-spacing mechanism having a movable member adapted to engage said stops.

24. In a type-writing machine, the combination with a printing mechanism, and a platen, of a series of fingers bearing against said platen, a rod bearing against said fingers, and a spring bearing against said rod for holding said fingers yieldingly against the platen.

25. In a type-writing machine, the combination with a printing mechanism, a carriage and a platen, of a series of fingers bearing against said platen, a rod bearing against said fingers, and a bow-spring on the carriage and bearing against said rod for holding said fingers yieldingly against the platen.

26. In a type-writing machine, the combination with the printing mechanism, a carriage, and a platen carried thereby, of a plate for guiding the paper to said platen, having formed integrally therewith a series of fingers extending around the platen for holding the paper thereto, and a rod fixed to said plate, and held in said carriage, whereby said plate and fingers are held in position.

27. In a type-writing machine, the combination with the printing mechanism, a carriage having slots formed therein, and a platen carried by said carriage, of a plate for guiding the paper to said platen, having formed integrally therewith a series of fingers extending around the platen for holding the paper thereto, and a rod fixed to said plate and held in said slots, whereby said fingers and rod may move relatively to the platen.

28. In a type-writing machine, the combination with a carriage, and a platen, of a series of spring-fingers extending around said platen for holding the paper thereto, and a paper-roller extending longitudinally of said platen, and pivots for said roll held in two of said fingers.

29. In a type-writing machine, the combination with a carriage, of a notched bar carried thereby, and a margin-stop slide carried by said bar, and comprising a block fitting said bar, a lever pivoted in said block having a portion for engaging said notches, and having a toe, and a spring fixed to said block and bearing against said toe for holding said lever in its engaging position.

30. In a type-writing machine, the combination with a frame, and a stop device carried thereby adapted to be operated to lock the printing mechanism, of a carriage having a plate formed integrally therewith, said plate having a stop adapted to engage said stop device to operate the latter.

31. In a spacing mechanism for a type-writing machine, the combination with the frame, of a spacer-bar formed with a groove at each end, and spacer-levers fulcrumed in the frame, and having their outer ends extending into said grooves in the spacer-bar.

32. In a spacing mechanism for a type-writing machine, the combination with the frame, of a spacer-bar formed with a groove at each end, spacer-levers fulcrumed in the frame, and having their outer ends extending into said grooves in the spacer-bar and pins holding said levers in said grooves.

33. In a type-writing machine, the combination with a printing mechanism of a spacing mechanism comprising a spacer-bar having a longitudinal groove at each end, and spacer-levers fulcrumed at their rear ends in the frame, and having their front ends bent angularly and confined in said grooves in the spacer-bar.

34. In a type-writing machine, the combination with a carriage having an antifriction-roller, of a top plate formed with a slot along which said carriage travels, and having a guideway for said roller formed integrally therewith.

35. In a type-writing machine, the combination with a carriage and mainspring-wheel, of a top plate supporting said carriage and having a depending lug for supporting said mainspring-wheel, whereby said carriage and wheel may be removed with said plate.

36. In a type-writing machine, the combination of a main frame, a top plate carried by said frame, a type-wheel extending above said top plate, and a carriage moving on said top plate and guides holding said carriage thereon, whereby the carriage may be removed with said plate.

37. In a type-writing machine, the combination with a bell and a bell-hammer, of a top plate having a projection formed thereon for supporting said parts, said projection having a slot forming a guide for said bell-hammer.

38. In a type-writing machine, the combination with a carriage, a mainspring-wheel for operating it, spacing mechanism and guides for said carriage, of a top plate carrying all of said parts, whereby said parts may be removed with said top plate by disconnecting the latter from its supports.

39. In a type-writing machine, a top plate formed with a slot constituting a carriage-way, and having a bearing for a spacing mechanism formed integrally therewith, bridging said slot and depending below the same.

40. In a type-writing machine, the combination with a frame, a carriage and a spacing mechanism for controlling its movements, of a top plate secured to said frame, a bar movable on said top plate and adapted to be moved to throw said spacing mechanism out of operative connection with said carriage, a series of stops having bearings in said top plate and adapted to move said bar and interpose a stop in the path of movement of the carriage, and a series of springs confined in said top plate for retracting said stops, whereby said stop mechanism is entirely carried by said top plate and may be removed therewith.

41. In a type-writing machine, the combination with a frame, a carriage movable thereon, and a type-wheel, of a scale fixed to said frame comprising two portions, the one extending to the left of the printing-point, and the other to the right thereof, and both arranged parallel to the path of movement of said carriage.

42. In a type-writing machine, the combination with a frame, and a scale-plate fixed thereto, comprising two portions, the one extending to the left of the printing-point, and the other extending to the right of said point, of a carriage moving on said frame, having two pointers for indicating the position of the carriage, the one moving along the left-hand portion of said scale and the other moving along the right-hand portion thereof.

43. In a type-writing machine, the combination with a frame and a carriage, said carriage having a roller and said frame having a runway for said roller, of a scale-plate fixed to said frame, and having a portion extending over said runway, whereby said carriage is held against play in said frame.

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**757,983. BOOT OR SHOE FOR ATHLETIC PURPOSES. PERCY A. VAILE, Auckland, New Zealand. Filed Apr. 14, 1903. Renewed Feb. 18, 1904. Serial No. 194,437. (No model.)**



*Claim.*—1. A boot or shoe of the class described, having a weight above the toe portion thereof, and means for holding the weight in said position.

2. A boot or shoe of the class described, having a weight disposed above the toe portion, and means on said boot or shoe for supporting said weight securely in place.

3. A boot or shoe of the class described, having a metallic portion constructed for the reception of a weight which is disposed above said toe portion.

4. A boot or shoe of the class described, having a weight supported removably in place above the toe portion thereof.

5. A boot or shoe of the class described, having a stiff metallic member fitted to the toe portion thereof, and a weight supported by said metallic member above said toe portion of the shoe.

6. A boot or shoe of the class described, having a metallic member on the toe portion thereof, an upstanding member on said metallic member, and a weight held removably in the upstanding member.

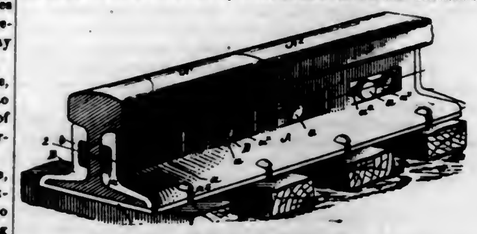
7. A boot or shoe of the class described, having an upstanding member at the toe portion thereof, and a weight clamped removably in said upstanding member.

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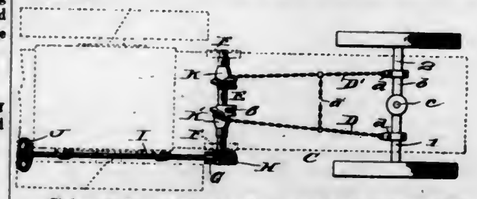
**757,984. RAIL-JOINT. MARTIN WARNER, Summit Mines, Pa. Filed Feb. 14, 1903. Serial No. 143,390. (No model.)**

*Claim.*—A rail-joint comprising in combination with the rails, a pair of opposing clamping-plates A and B each of which has a continuous groove on the inner face which extends lengthwise thereof and which has bolt or key apertures arranged to register with the bolt-apertures in the rails, one of the said clamping-plates having its keyhole-apertures formed with elongated slots and countersunk portions on the outer face surrounding the said slotted keyholes which portions are tapered at the end adjacent the circular portion of the keyhole-slots whereby to form wedge-surfaces, key pins or bolts each comprising a locking-head $d$ and a flattened shank $d'$ for cooperating with the said keyhole-slots and wedge portions, a central longitudinally-tapered and crosswise-elongated portion $d^3$, for engaging with the apertures in the rail, and a rounded neck $d^2$ having head $d^4$ for cooperating with the clamping-plate B, the central portion $d^3$ of the bolts being of such length that the opposite ends thereof will extend into the continuous grooves on the inner face of the plates A and B, substantially in the manner shown and described.





**757,985. TRACTION-ENGINE. FRANK C. WATSON, Des Moines, Iowa, assignor to Avery Manufacturing Company, Peoria, Ill., a Corporation of Illinois. Filed Aug. 6, 1902. Serial No. 118,661. (No model.)**



*Claim.*—1. In a steering-gear for a vehicle, the combination of the steering-wheels, steering-chains connected at their outer ends to the steering-wheels, a winding-drum, flanges on the drum to which the ends of the chains are secured and adapted to direct the chain longitudinally of the drum as it is wound up, and means for rotating said drum, substantially as set forth.

2. In a steering-gear for traction-engines, the combination of the steering-wheels, steering-chains connected therewith, a drum on which said chains are adapted to be wound having attaching means for the ends of the chains, and flanges on the drum leading helically from said attaching means around a portion only of the circumference of the drum and longitudinally thereof and termidating at points short of said attaching means, substantially as set forth.

3. In a steering-gear for traction-engines, the combination of the steering-wheels, steering-chains connected therewith, and a drum on which said chains are adapted to be wound, said drum increasing in circumference along helical lines followed by the chains as they are wound up and thence tapering outwardly toward its ends, substantially as set forth.

4. In a steering-gear for traction-engines, the combination of the steering-wheels, steering-chains connected therewith, and a drum on which said chains are adapted to be wound, said drum having chain-guiding helical flanges and recesses 7 at the bases of the flanges, substantially as set forth.

5. A drum for a steering mechanism having a flange for guiding the steering-chain longitudinally of the drum as it is wound up and a radially-disposed projection arranged adjacent to one end of said flange and adapted to provide therewith parts between which the chain can be secured to the drum, substantially as set forth.

6. The drum for taking up the steering-chains of traction-engines, having chain-receiving parts which increase in diameter as described from the points where the chains are attached, and helical flanges on said chain-receiving parts.

7. The drum for taking up the steering-chains of traction-engines having ears to which the chains are adapted to be secured, each pair of ears having a helical flange leading from one ear around the drum to the other ear, substantially as set forth.

8. A drum for a steering mechanism having a helical flange for guiding the chain on the drum, and a radially-disposed projection arranged adjacent to one end of said flange on the side thereof with which the chain is adapted to engage, and means for securing the chain to the drum between said projection and flange, substantially as set forth.

9. A drum for a steering mechanism having a guiding-flange

with one face of which the chain is adapted to engage, and projections on the drum to which the chain is secured arranged to direct the chain so that it will engage with the said face of the flange, substantially as set forth.

10. In a steering-gear for traction-engines, the combination of flexible steering connections, and a take-up drum for the same having two portions of its surface convexly shaped to compensate for the greater or less amount of chain to be taken up, and to prevent slackness or tightness of the chains, substantially as set forth.

11. A winding-drum for a steering mechanism having a winding-surface convex in longitudinal section, substantially as set forth.

12. A winding-drum for a steering mechanism having a winding-surface convex in longitudinal section and a guiding-flange on said surface, substantially as set forth.

13. A winding-drum for a steering mechanism having a spheroidal winding-surface, and a helical guiding-flange on said surface, substantially as set forth.

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**757,986.. GREENHOUSE OR OTHER GLAZED STRUCTURE.** CHARLES B. WEATHERBEE, Cranford, N. J. Filed July 24, 1903. Serial No. 166,866. (No model.)



*Claim.*—1. In a greenhouse structure, the combination with a foundation, of an angle-plate and means for securing the same to the foundation, an angle-bar with parts at an acute angle to one another, bar-uprights connecting the angle-plate and the angle-bar at a predetermined distance from one another, and sash-bars each comprising a wooden part and a T-iron bar let into a groove in the under surface of the wooden bar, and means for connecting the lower ends of the wooden and iron bars to the angle-bar.

2. In a greenhouse structure, the combination with a foundation, of bolts let into the foundation at spaced-apart distances, an angle-plate upon the upper surface of said foundation and secured thereto by said bolts, a series of bar-uprights and bolts for connecting the same at their lower ends to the vertical member of the angle-plate, an angle-bar having one part at an acute angle to the other part and having an intermediate flat upper surface, means for connecting the said angle-bar to the upper ends of the series of bar-uprights, sash-bars each comprising a wooden bar and a T-iron bar with the web of the T-iron bar let into a groove in the under surface of the wooden bar with the lower end of the wooden bar cut to rest upon the upper surface of the angle-bar, and the web of the T-iron bar cut through so as to rest on the flat surface of the angle-bar and the plate of the T-iron bar to pass down inside of the angle-bar, and means for securing both the wooden and T-iron bars to the angle-bar.

3. In a greenhouse structure, the combination with a foundation, of bolts let into the foundation at spaced-apart distances, a bed-plate and an angle-plate upon the upper surface of said foundation and secured thereto by said bolts, a series of bar-uprights and bolts for connecting the same at their lower ends to the vertical member of the angle-plate, an angle-bar having one part at an acute angle to the other part and having an intermediate flat upper surface, means for connecting the said angle-bar to the upper ends of the series of bar-uprights, sash-bars each comprising a wooden bar and a T-iron bar with the web of the T-iron bar let into a groove in the under surface of the wooden bar with the lower end of the wooden bar cut to rest upon the upper surface of the angle-bar and the web of the T-iron bar cut through so as to rest on the flat surface of the angle-bar and the plate of the T-iron bar to pass down inside of the angle-bar, and means for securing both the wooden and T-iron bars to the angle-bar.

4. In a greenhouse structure, the combination with a foundation, of an angle-bar having one part at an acute angle to the other and vertical part and having an upper intermediate flat surface, means for supporting the same upon and above the foundation, sash-bars each having a T-iron bar with the web of the T-iron bar cut through so as to rest on the flat surface of the angle-bar and permit the plate of the T-iron bar to pass down against the inner surface of the angle-bar, and means for securing the said plate to the angle-bar.

5. In a greenhouse structure, the combination with a foundation, of an angle-bar having one part at an acute angle to the other and vertical part and having an upper intermediate flat surface, means for supporting the same upon and above the foundation, sash-bars each having an iron bar arranged for contacting support and connection with the said angle-bar, and means for securing the said plate to the angle-bar.

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**757,987.** TOOL-HANGER. EDWIN R. WILLS, Chicago, Ill. Filed July 27, 1903. Serial No. 167,087. (No model.)



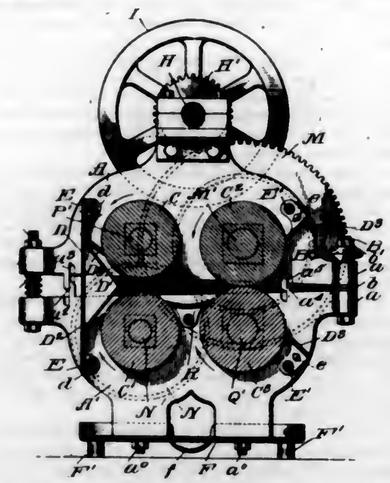
*Claim.*—The combination with a hook adapted for attachment to the clothing, of an eye-plate adapted for attachment to a tool, and for engagement with the hook, so as to suspend the tool therefrom, the upper portion of said eye-plate being offset and extending toward the upwardly-projecting free end of the hook, and constructed and arranged to force the portion of the eye-plate below the eye behind the bend of the hook when the tool is directly raised.

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**757,988.** SUGAR-CANE CRUSHER. HENRY WILSON and HENRY L. CRUMLEY, Richland, Ga. Filed July 3, 1903. Serial No. 164,179. (No model.)

*Claim.*—1. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, rollers journaled in said housing-plates, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.





2. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, rollers journaled in said housing-plates, a guard-plate cut away at its center to form a funnel and scrapers in front of the front rollers, a perforated turn-plate mounted between the lower pair of rollers, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.

3. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, rollers journaled in said housing-plates, a guard-plate cut away at its center to form a funnel and scrapers in front of the front rollers, scrapers in rear of the rear rollers, a perforated turn-plate mounted between the lower pair of rollers, and means for turning said rollers, substantially as described.

4. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, rollers journaled in said housing-plates, a guard-plate cut away at its center to form a funnel and scrapers in front of the front rollers, scrapers in rear of the rear rollers, a perforated turn-plate mounted between the lower pair of rollers, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.

5. In a mill of the character described, the combination with a suitable support, of the lower housing-plates mounted thereon, the upper housing-plates hinged to the lower, rollers journaled in said housing-plates, a guard-plate cut away at its center to form a funnel and scrapers in front of the front rollers and adjustable scrapers in rear of the rear rollers, a turn-plate mounted between the lower pair of rollers and means for turning said rollers, substantially as described.

6. In a mill of the character described, the combination with a suitable support, of the lower housing-plates mounted thereon, the upper housing-plates hinged to the lower, rollers journaled in said housing-plates, a guard-plate cut away at its center to form a funnel and scrapers in front of the front rollers, scrapers in rear of the rear rollers, a turn-plate mounted between the lower pair of rollers, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.

7. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, tie-bolts connecting the opposite pairs of housing-plates, rollers journaled in said housing-plates, a guard-plate mounted on the front tie-bolts and cut away at its center to form a funnel and scrapers in front of the front rollers, scrapers mounted on the rear tie-bolts in rear of the rear rollers, a perforated turn-plate mounted between the lower pair of rollers, and means for turning said rollers, substantially as described.

8. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, tie-bolts connecting the opposite pairs of housing-plates, rollers journaled in said housing-plates, a guard-plate mounted on the front tie-bolts and cut away at its center to form a funnel and scrapers in front of the front rollers and adjustable scrapers mounted on the rear tie-bolts in rear of the rear rollers, a perforated turn-plate mounted between the lower pair of rollers, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.

9. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, tongues projecting from said housing-plates and forming guards for the gear-wheels, rollers journaled in said housing-plates, and means for turning said rollers, substantially as described.

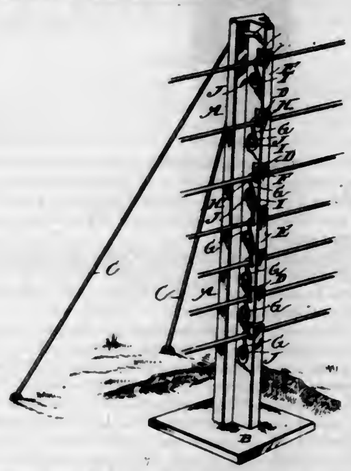
10. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, tongues projecting from said housing-plates and forming guards for the gear-wheels, rollers journaled in said housing-plates, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.

11. In a mill of the character described, the combination with the combined bed-plate and trough, of the lower housing-plates secured thereto, the upper housing-plates hinged to the lower, tongues projecting from said housing-plates and forming guards for the gear-wheels, rollers journaled in said housing-plates, a guard-plate cut away and bent in at its center to form a funnel in front of the front rollers, and means for turning said rollers, substantially as described.

12. In a mill of the character described, the combination with a suitable support, of the lower housing-plates mounted thereon, the upper housing-plates hinged to the lower, tongues projecting from said housing-plates and forming guards for the gear-wheels, rollers journaled in said housing-plates, a guard-plate cut away at its center to form a funnel in front of the front rollers, a perforated turn-plate mounted between the lower pair of rollers, a shaft journaled across the upper housing-plates, gearing connecting said shaft and the shafts of all of said rollers, and means for turning said shaft, substantially as described.

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**757,989.** FENCE-POST. MONROE C. WIX, Milburn, Ky. Filed June 4, 1903. Serial No. 160,056. (No model.)



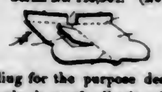
*Claim.*—1. A fence-post having L-shaped slots adapted to receive the fence-wire strands, and a plurality of strand-fastening devices adjustably secured to the post, one below the pocket end of each L-shaped slot, the strand-fastening devices having independent endwise movement, and adapted for hooking engagement with the fence-wire strands, substantially as described.

2. The combination with a fence-post having L-shaped slots

adapted for receiving the fence-wire strands, of independent hook devices pivotally and adjustably secured below the pocket end of each said L-shaped slot, and a securing-pin, the said hook devices being formed with an elongated slot adapted for receiving its securing-pin, and an upper hook-shaped bill adapted for engagement with the fence-wire strands, substantially as described.

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**757,990. BINDING.** ALBERT S. WOODARD, Mansfield, Ohio. Filed July 12, 1902. Serial No. 115,361. (No model.)

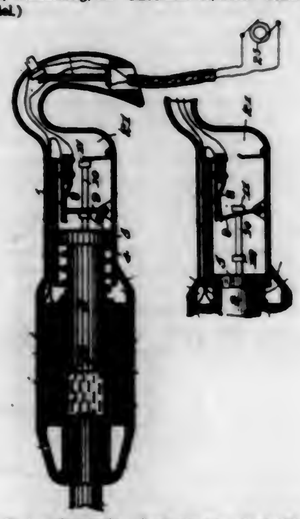


*Claim.*—1. A binding for the purpose described comprising a blank struck from a single sheet of adhesive fibrous material, said binding having two wings formed by creasing the blank intermediate its ends, a tongue struck up from the center of the blank, and end flaps formed by providing creases along the edge of the blank, said flaps being spaced apart.

2. As a new article of manufacture, a binding for folded sheets comprising a blank formed of a single piece of adhesive fibrous material, and having a central crease and a tongue formed in the blank by making an approximately ⊏-shaped incision, the end thereof terminating adjacent the fold.

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**757,991. RECIPROCATING ELECTRIC MOTOR.** ADOLPH F. CHRISTMAS, Pittsburg, Pa., assignor of two-thirds to Frank R. McFeatters, Wilkinsburg, Pa. Filed Mar. 16, 1903. Serial No. 148,009. (No model.)



*Claim.*—1. A reciprocating electric motor adapted for alternating currents comprising a magnet, a reciprocating armature cooperating with said magnet, a circuit for said magnet, and non-synchronous means for breaking said circuit at the moment of greatest self-induction of the current.

2. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil, a core therefor, a circuit for said coil, and non-synchronous means for breaking said circuit at the moment of greatest self-induction of the coil.

3. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil, a core therefor, a circuit for said coil, and non-synchronous means actuated by the core for breaking said circuit when said core has reached such position in the coil that the iron mass is symmetrically arranged with reference to said coil.

4. A reciprocating electric motor adapted for alternating currents comprising a single magnet-coil, a core therefor, a circuit for said coil, a circuit-breaker in said circuit, and a shoulder on said core arranged to contact with said circuit-breaker and open the circuit when the core contacts with a stationary part of the motor.

5. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil, a reciprocating armature cooperating therewith, a circuit for said coil, non-synchronous means for breaking the circuit at the moment of greatest self-induction of the current, and mechanical means for withdrawing said armature.

6. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil, a core therefor, a circuit for said coil, non-synchronous means for breaking said circuit when the core contacts with a metallic portion of the device, and a spring for withdrawing said core.

7. A reciprocating electric motor adapted for alternating currents comprising a single magnet-coil, a core therefor, a circuit for said coil, a spring for withdrawing said core, a circuit-breaker, and means on said core for actuating said circuit-breaker when said core is fully drawn into said coil and for making said circuit when the core reaches the limit of its outward movement.

8. A reciprocating electric motor adapted for alternating currents comprising a single magnet-coil, a core therefor, a circuit for said coil, a spring for withdrawing said core, terminals in said circuit adapted normally to open, a circuit-closing finger arranged to close said terminals, and means carried by said core and arranged to engage said finger and alternately cause the same to open and close said terminals.

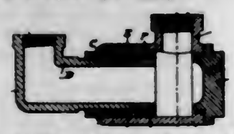
9. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil, a casing therefor provided with a cylindrical extension at one end, a reciprocating armature cooperating with said coil, ventilating ducts or passages through said magnet-coil, and a piston carried by said armature and working in said casing extension and arranged to cause a circulation of air through said ducts.

10. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil provided with ventilating-ducts, a casing therefor provided with a cylindrical extension at one end, a core for said coil, a spring for retracting said core, a piston carried by said core and working in said casing extension and arranged to cause a circulation of air through said ducts, and a circuit-breaker arranged to break the circuit when said core is fully drawn into said coil.

11. A reciprocating electric motor adapted for alternating currents comprising a magnet-coil, a sleeve of non-magnetizable metal for said coil, an iron mass at each end of said coil, a core for said coil, and means for breaking the circuit to said coil.

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**757,992. PACKED JOINT.** FREDERICK B. CLARK, Stamford, Conn., assignor of one-half to Edgar B. Wood, Stamford, Conn. Filed Sept. 24, 1901. Serial No. 76,426. (No model.)



*Claim.*—1. A pipe-joint comprising an outer casing having a pipe connection thereon, an inner tube entering one end of said casing and longitudinally slidable therein, a collar on said tube slidably fitting against the interior of the casing and exposed to any fluid-pressure in the same, packing compressed between said ring and the casing, and a plug closing the other end of the casing, substantially as described.

2. A pipe-joint, comprising an outer casing, an opening at one end of less diameter than the interior of the casing, a screw-plug at the other end of the casing of a diameter as great as the interior diameter of said casing, a branch opening in the wall of said casing adjacent to said plug, an elbow-pipe fitting, but free to move through, the opening of less diameter, said pipe being threaded at its end, packing between the part of the pipe within the casing and the interior walls of the casing, and a collar of substantially the diameter of the casing screwed onto the inner end of the pipe.

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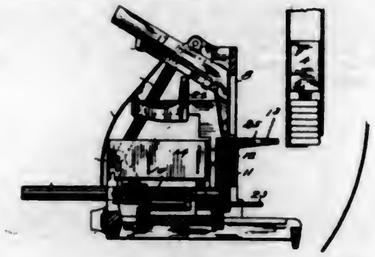
**757,993. VENDING-MACHINE.** DORR O. COLEMAN and ABOS SHEPARD, Southington, Conn.; said Shepard assignor to said Coleman. Filed Nov. 5, 1902. Serial No. 130,134. (No model.)

*Claim.*—1. A check-controlled apparatus for a vending-machine having an oscillating trough, a magnet attached to and movable with the trough, a plunger connected with and adapted to oscillate the trough at each reciprocation, a slide with a vertical channel adapted to be connected with the plunger through the medium of a coin, and mechanism which when the trough is tilted projects into the trough and removes articles retained therein, substantially as specified.

2. A check-controlled apparatus for a vending-machine having an oscillating coin-trough, mechanism for oscillating the trough,

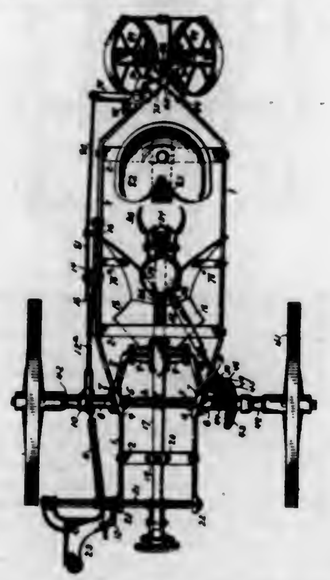


means for retaining blanks therein, and mechanism which when the trough is oscillated projects into and removes from the trough articles retained therein, substantially as specified.



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**757,994. SULKY LISTER-PLOW.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Filed Apr. 9, 1903. Serial No. 151,831. (No model.)



*Claim.*—1. In a sulky-lister, the combination of a frame comprising longitudinal bars, cross-bars connecting the same, a lister movably connected with the frame and whose upward movement is limited by one of the cross-bars, and a roller on another bar against which the beam of the lister engages when elevated.

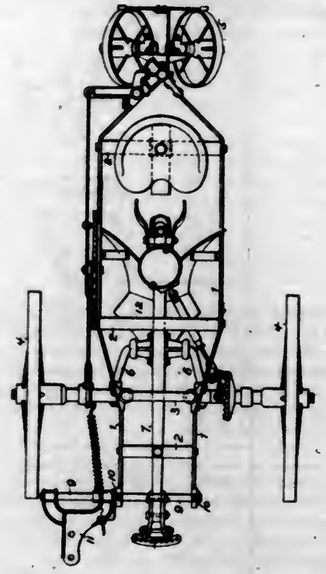
2. In a sulky-lister, the combination with a frame, an axle secured thereto, and wheels on the axle, of a lister, a yoke connected between its ends to the beam of the lister, sleeves on the axle to which the ends of the yoke are secured, and a lever to turn one of said sleeves and raise and lower the lister.

3. In a sulky-lister, the combination with a frame comprising longitudinal bars connected by cross-bars, of an axle bowed between its ends and secured to the longitudinal bars of the frame, wheels on said axle, a lister, a yoke pivotally secured between its ends in brackets on the lister-beam, sleeves on the axle to which the ends of the yoke are secured, an arm on one sleeve, and a lever fulcrumed between its ends and connected at one end by a link with said arm.

4. In a sulky-lister, the combination with a frame, an axle secured thereto and wheels on the axle, of a lister, sleeves on the axle, integral collars thereon at right angles thereto, a yoke pivotally secured between its ends to brackets secured to the lister-beam, and having its ends secured in said collars, an arm on one sleeve, a lifting-spring connecting said arm with the frame and adjustably mounted, and a lifting-lever also connected with said arm.

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**757,995. DRAFT DEVICE.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Original application filed Apr. 9, 1903, Serial No. 151,831. Divided and this application filed Jan. 20, 1904. Serial No. 189,859. (No model.)

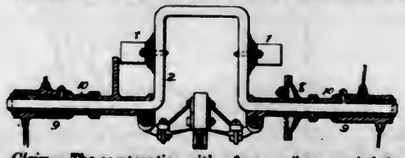


*Claim.*—1 The combination of a frame having its side bars spaced apart at its forward end, wheels supporting said frame, a rod extending across the forward end of the frame from one side bar to the other and projecting laterally beyond one of said side bars, and a removable pole-plate adapted for attachment to said cross-rod between the parallel bars of the frame or to the laterally-projecting portion of said cross-rod.

2. In a sulky-lister, the combination with a frame having an open forward end, wheels supporting the same, and a lister carried by said frame, of a clevis attached to the lister below the open forward end of the frame, a cross-rod extending across the open forward end of the frame and projecting laterally therefrom, and a removable pole-plate attachable to said rod either to one side of the frame or at the center thereof.

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**757,996. SULKY-PLOW.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Original application filed Apr. 9, 1903, Serial No. 151,831. Divided and this application filed Jan. 20, 1904. Serial No. 189,860. (No model.)



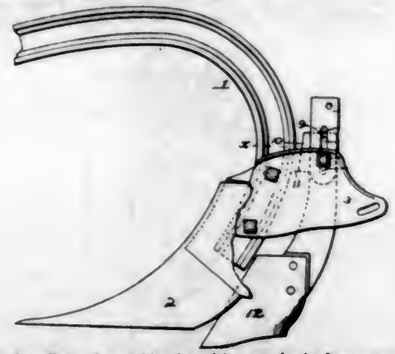
*Claim.*—The combination with a frame, a lister carried thereby, and an axle secured to the frame, of seed-dropping mechanism, a driving-gear on the axle for operating the seed-dropping mechanism, wheels on the axle having hubs more elongated on one side of the wheels than at the other sides thereof to vary the gage of the wheels by reversing them on the axle, and one of said hubs having cooperating clutch mechanism at both ends to lock with similar mechanism on the gear, when the wheels are in either position.

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**757,997. LISTER.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Original application filed Apr. 9, 1903, Serial No. 151,831. Divided and this application filed Jan. 20, 1904. Serial No. 189,861. (No model.)

*Claim.*—1. In a lister, the combination with a standard, of a rearwardly-projecting bracket secured thereto, a subsoiler-standard adjustably secured to the bracket, and an adjusting-wedge between

the subsoiler-standard and bracket to tilt the subsoiler by adjustment of the wedge.

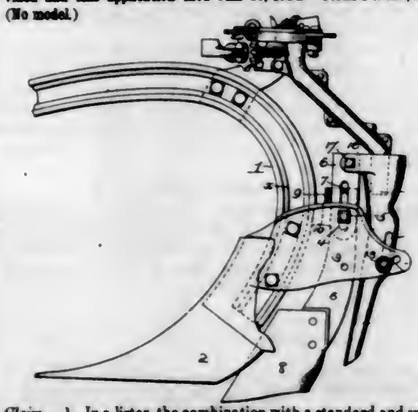


2. In a lister, the combination with a standard, of a rearwardly-projecting bracket secured thereto, a subsoiler-standard adjustably secured to the bracket, an adjusting-plate beside the standard having an elongated vertical slot, a clamping-bolt passed through these slots and also through a slot in the bracket, a lug on the bracket, and a wedge on the adjusting-plate between the forward edge of the subsoiler-standard and the lug

3. In a lister, the combination with a standard, of a rearwardly-projecting bracket secured thereto, a subsoiler-standard having an elongated vertical slot therein, an adjusting-plate beside the standard having an elongated vertical slot, a clamping-bolt passed through these slots and also through a slot in the bracket, a lug on the bracket, and a wedge on the adjusting-plate between the forward edge of the subsoiler-standard and the lug.

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**757,998. LISTER PLOW AND PLANTER.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Original application filed Apr. 9, 1903, Serial No. 151,831. Divided and this application filed Jan. 20, 1904. Serial No. 189,863. (No model.)



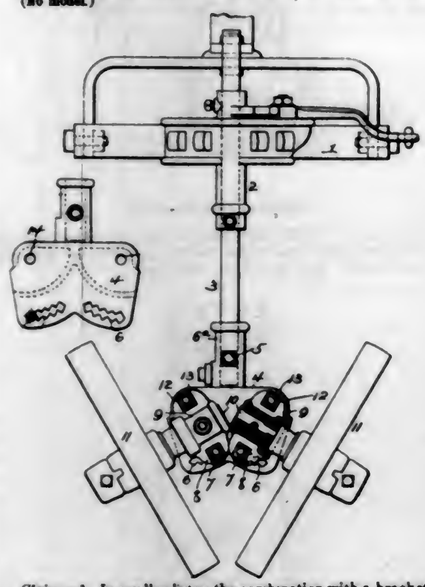
*Claim.*—1. In a lister, the combination with a standard and subsoiler behind the same, of a seed-tube pivotally supported to regulate the depth of planting and means for securing said tube at any desired adjustment.

2. In a lister, the combination with a standard, a rearwardly-projecting bracket secured to the standard, and a subsoiler adjustably secured to said bracket, of a seed-dropping tube pivotally adjustable on the bracket in rear of the subsoiler to regulate the depth of planting, said tube and subsoiler bearing such relation to each other, that when the tube is adjusted in one position it will deposit seed into the bottom of the furrow, and when adjusted to another position it will drop seed upon loose soil deposited into the furrow by the subsoiler.

3. In a lister, the combination with a standard, a rearwardly-projecting bracket secured thereto, and a subsoil-standard adjustably secured to the bracket, of a seed-tube pivotally secured at its upper end to the subsoil-standard and a clamping-bolt passed through a vertical slot in an extension on the seed-tube, and through an inclined slot in the bracket, to secure the seed-tube at any incline desired.

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**757,999. LISTER PLOW AND PLANTER.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Original application filed Apr. 9, 1903, Serial No. 151,831. Divided and this application filed Jan. 20, 1904. Serial No. 189,863. (No model.)



*Claim.*—1. In a sulky-lister, the combination with a bracket secured to the frame thereof, of sand-bands having ears at both sides, bolts pivotally securing the upper ears, bolts passing through the lower ears and through elongated slots in the bracket, said elongated slots having notched walls, to clamp the sand-bands at any angle, stubs secured in said sand-bands, and covering-wheels on said stubs.

2. In a sulky-lister, the combination with a standard, and a frame supported at its rear end by said standard, of a bracket secured to the lower end of said standard and having openings therein and elongated slots curved concentrically with said openings and having notched walls, sand-bands, stubs in said sand-bands, covering-wheels on the stubs, perforated ears on opposite sides of the sand-bands, bolts passed through one ear of each of said sand-bands and through the openings in the bracket to pivotally support the stubs, and other bolts passed through the other ears on the sand-bands and through the elongated slots in the bracket to secure the stubs and covering-wheels at the desired angle of inclination.

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**758,000. SULKY LISTER PLOW AND PLANTER.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Original application filed Apr. 9, 1903, Serial No. 151,831. Divided and this application filed Jan. 26, 1904. Serial No. 190,567. (No model.)

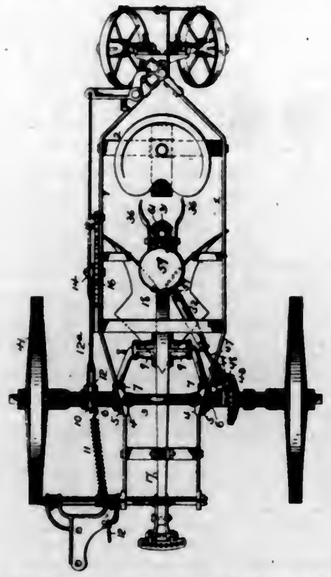
*Claim.*—1. The combination with a lister-standard, a rearwardly-projecting bracket secured thereto, and a seed-dropping tube secured to the bracket, of covering-hoes having adjustable connection with both the standard and bracket to permit their longitudinal adjustment.

2. The combination with a lister-standard, a rearwardly-projecting bracket secured thereto, and a seed-dropping tube secured to the bracket, of covering-hoes secured to both the standard and bracket and longitudinally adjustable, and spacing-washers between the hoes and bracket to adjust the hoes laterally.

3. The combination with a lister-standard, a rearwardly-projecting bracket secured thereto, and a subsoiler and seed-tube carried by said bracket, of covering-hoes having series of bolt-openings near their ends and between their ends for the reception of bolts to adjustably secure them to the standard and bracket and said hoes twisted and made with forward cutting edges to force the soil onto the seed.



4. In a lister, the combination with an axle, a driving-gear thereon and a traction-wheel transmitting motion thereto, of a seed-dropper, a shaft for operating the same, a pinion on the shaft meshing with the driving-gear, a casting on the axle having notches, a sleeve in which the end of said shaft is mounted to turn, and lugs on the sides of said sleeves fulcrumed in the notches in the casting to permit of pivotal movement of the shaft.

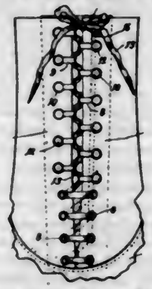


5. In a sulky-lister, the combination with a frame, a lister carried thereby, means for raising and lowering the lister, an axle secured to the frame, and traction-wheels thereon, of a driving-gear on the axle clutched to one of the traction-wheels, a casting on the axle adjacent to the gear and having an elongated pocket therein a sleeve projecting into said pocket and having lateral lugs at opposite sides of its rear end to fulcrum on the casting, a seed-dropper, a shaft for transmitting motion thereto supported at its end in said sleeve, a pinion loose on said shaft, a bracket projecting from the casting holding the pinion in mesh with the driving-gear, and a clutch on the shaft to lock the pinion thereto.

6. The combination with a seed-dropper, of a shaft for transmitting motion thereto, comprising an angular sleeve, a shaft having an angular head therein, a spring inclosed in said sleeve pressing against the head, and an angle-bar adjustably secured to the opposite end of the sleeve and against the spring to adjust the tension of the latter.

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**758,001. LACING DEVICE.** EDWARD T. DIXON, Sr., Milwaukee, Wis., assignor of one-half to Michael W. Quirk, Jr., Milwaukee, Wis. Filed July 24, 1901. Serial No. 69,464. (No model.)



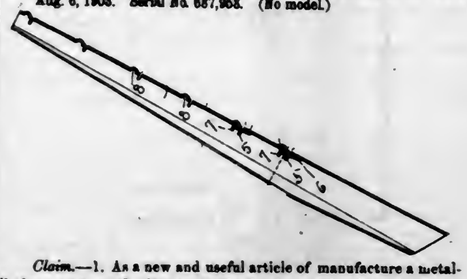
*Claim.*—1. In lacing devices, the combination of a shoe having flaps, a tongue secured along one edge and on the inside of one of the flaps, and having its opposite free edge overlapping the inside of the other flap, and said tongue provided throughout its length with a series of slits, a series of lacing devices arranged at intervals apart, and a shoe string or cord, one length thereof engaging alternately the lacing devices of the opposite flaps, and the other length passing through one of the flaps to the inside of said flap, then passed through the slits of the tongue, and finally passed through the upper portion of said flap to the outside thereof.

2. The combination with a shoe having flaps, a tongue, and lacing devices located along the edges of the flaps, of means for drawing the shoe-tongues smooth, comprising a shoe-lacing having a portion of the length thereof engaging the lacing devices, and another portion thereof carried longitudinally of and engaging the free edge of the tongue and also passing through an opening at the upper end of one of the flaps.

3. The combination with a shoe having flaps, a tongue, and lacing devices located along the edges of the flap, of means for drawing the tongue smooth, comprising a shoe-lacing having a portion of the length thereof engaging the lacing devices, and another portion of the length thereof extended longitudinally of and passing through a plurality of openings in the free edge of the tongue, and also through an opening at the upper end of one of the flaps.

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**758,002. FENCE-POST.** HEDLEY J. DONAHOE, Chicago, Ill. Filed Aug. 6, 1903. Serial No. 167,953. (No model.)



*Claim.*—1. As a new and useful article of manufacture a metallic fence-post angular in cross-section having notches formed through a corner thereof, for the transverse insertion of the fence-wires, and a cavity or indentation a slight distance from each of said notches for receiving a lug or head of the locking-key, substantially as set forth.

2. The combination with the fence-wires, of a metallic fence-post angular in cross-section and having notches formed through a corner thereof for the transverse insertion of such wires and a key passing between the wire and the back of the post, said post having a cavity or indentation and the key having a lug or head fitting and held in said indentation by the strain on the wire, substantially as set forth.

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**758,003. ADJUSTING MECHANISM FOR SHEET-MILLS.** SUMNER B. ELY, Allegheny, and HARRY H. ANDERSON and WILLIAM W. SLICK, Pittsburg, Pa., assignors to American Sheet Steel Co., New York, N. Y., a Corporation of New Jersey. Filed Dec. 14, 1903. Serial No. 185,078. (No model.)

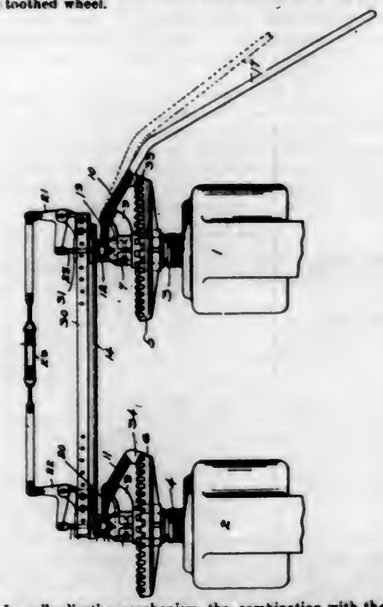
*Claim.*—1. In roll-adjusting mechanism, the combination with the adjusting-screws, of an operating-lever, connections between said lever and both screws whereby the latter may be rotated, and means operated from said lever for disengaging the rotating means from both screws.

2. In roll-adjusting mechanism, the combination with the adjusting-screws, of a toothed wheel connected to each screw, a pawl engaging each wheel, an operating-lever connected to one of said pawls, connections between said pawls to cause the same to move together, and other connections between said pawls whereby when one of said pawls is disengaged from its toothed wheel the other pawl will also be disengaged from its toothed wheel.

3. In roll-adjusting mechanism, the combination with the adjusting-screws, of a toothed wheel connected to each screw, a pawl engaging each wheel, an operating-lever connected to one of said pawls, connections between said pawls to cause the same to move together, and other connections between said pawls and operated from said lever for disengaging both of said pawls from their toothed wheels.

4. In roll-adjusting mechanism, the combination with the adjusting-screws, of a toothed wheel connected to each screw, a pivoted pawl engaging each wheel, a lever integral with one of said pawls, bell-crank levers connected to each of said pawls, a connecting member between said bell-crank levers, and other connections between said pawls to cause the same to move together.

5. In roll-adjusting mechanism, the combination with the adjusting-screws, of a toothed wheel connected to each screw, swivel-heads mounted adjacent to each wheel, connections between said heads to cause them to rotate together, a pawl pivoted in each head and engaging the toothed wheel, an operating-lever, and connections between said pawls whereby when one of said pawls is disengaged from its toothed wheel the other pawl will also be disengaged from its toothed wheel.



6. In roll-adjusting mechanism, the combination with the adjusting-screws, a toothed wheel connected to each screw, a head swiveled in proximity to each wheel, connections between said heads for causing the same to rotate together, a pawl pivoted in each head, an operating-lever connected to one of said pawls, a bell-crank lever mounted in proximity to each swivel-head, connections between said bell-crank levers and said pawls, and a link connecting said bell-crank levers.

7. In roll-adjusting mechanism, the combination with the adjusting-screws, of a toothed wheel connected to each screw, a swivel-head mounted on the upper end of each screw, a pawl pivoted to each head, an operating-lever connected to one of said pawls, connections between said heads to cause the same to rotate together, projections on said pawls extending into the axes of said screws, bell-crank levers having one of their arms also extending in the axes of said screws, links connecting the projections of the pawls to said arms of the bell-crank levers, and a connecting member between the remaining arms of said bell-crank levers.

8. In roll-adjusting mechanism, the combination with the adjusting-screws, a toothed wheel connected to each screw, a pawl engaging each wheel, an operating-lever connected to one of said pawls, connections between said pawls to cause the same to move together, and other connections between said pawls and operated from said lever whereby when one of said pawls is disengaged from its toothed wheel the other pawl will be moved to disengage it from its toothed wheel, the arrangement being such that one of said pawls is disengaged from its toothed wheel before the other pawl is disengaged from its wheel.

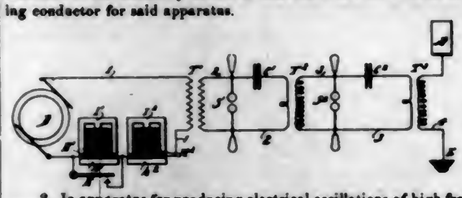
9. In roll-adjusting mechanism, the combination with the adjusting-screws, a toothed wheel connected to each screw, a pawl engaging each wheel, one of said pawls being longer than the other, an operating-lever connected to one of said pawls, connections between said pawls to cause the same to move together, and other connections between said pawls and operated from said lever for disengaging both of said pawls from their toothed wheels.

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## 758,004. DEVICE FOR WIRELESS TELEGRAPHY.

John A. Fleming, London, England, assignor to Marconi's Wireless Telegraph Company, Limited, London, England. Filed Apr. 8, 1901. Serial No. 54,775. (No model.)

*Claim.*—1. In apparatus for producing electrical oscillations of high frequency, the combination of a transformer, the primary circuit of which is permanently closed; means for producing an alternating current in the primary; means, controlled by a signal-key, for varying the current in the primary; a producer of electrical oscillations in the secondary circuit of said transformer, and a radiating conductor for said apparatus.



2. In apparatus for producing electrical oscillations of high frequency, the combination of a transformer, the primary circuit of which is permanently closed; means for producing an alternating current in the primary; a coil in said primary; a signaling-key and connections for varying the current through said coil; a producer of electrical oscillations in the secondary circuit of said transformer, and a radiating-conductor for said apparatus.

3. In apparatus for producing electrical oscillations of high frequency, the combination of a transformer, the primary circuit of which is permanently closed; means for producing an alternating current in the primary; a coil in the primary circuit; a signaling-key and connections for short-circuiting said coil; a producer of electrical oscillations in the secondary circuit of said transformer, and a radiating-conductor for said apparatus.

4. The combination of four circuits containing three transformers, the first circuit containing the primary of the first transformer, the second circuit containing the secondary of the first transformer and the primary of the second transformer, the third circuit containing the secondary of the second transformer and the primary of the third transformer, and the fourth circuit containing the secondary of the third transformer and having one end connected to an aerial conductor and the other end to a capacity which may be the earth, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, a condenser in the third circuit, a spark-gap in the third circuit in parallel with the primary of the third transformer and the condenser, and means for producing an alternating current in the first circuit.

5. The combination of a plurality of circuits containing transformers, the first circuit being permanently closed containing the primary of one transformer, the second circuit containing the secondary of said transformer and the primary of another transformer, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, means for producing an alternating current in the first circuit, means for preventing the establishment of a permanent arc in the spark-gap of the second circuit, and radiating-conductor for the apparatus.

6. The combination of four circuits containing three transformers, the first circuit containing the primary of the first transformer, the second circuit containing the secondary of the first transformer and the primary of the second transformer, the third circuit containing the secondary of the second transformer and the primary of the third transformer, and the fourth circuit containing the secondary of the third transformer and having one end connected to an aerial conductor and the other end to a capacity which may be the earth, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, a condenser in the third circuit, a spark-gap in the third circuit in parallel with the primary of the third transformer and the condenser, means for producing an alternating current in the first circuit, and means for preventing the establishment of a permanent arc in the spark-gap of the second circuit.

7. The combination of a plurality of circuits containing transformers, the first circuit being permanently closed containing the primary of one transformer, the second circuit containing the secondary of said transformer and the primary of another transformer, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, means for producing, means for varying an alternating current in the first circuit, and a radiating-conductor for the apparatus.

8. The combination of four circuits containing three transformers, the first circuit containing the primary of the first transformer, the second circuit containing the secondary of the first transformer and the primary of the second transformer, the third circuit containing the secondary of the second transformer and the primary of the third transformer, and the fourth circuit containing the secondary of the third transformer and having one end connected to an aerial conductor and the other end to a capacity which may be the earth, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, a condenser in the third circuit, a spark-gap in the third circuit in parallel with the primary of the third transformer and the condenser, means for producing and means for varying an alternating current in the first circuit.

9. The combination of a plurality of circuits containing transformers, the first circuit being permanently closed and containing the primary of one transformer, the second circuit containing the secondary of said transformer and the primary of another transformer, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser; means for producing an alternating current in the first circuit; a coil in said first circuit; a signaling-key and connections for varying the current through said coil, and a radiating-conductor for said apparatus.

10. The combination of four circuits containing three transformers, the first circuit containing the primary of the first transformer, the second circuit containing the secondary of the first transformer and the primary of the second transformer, the third circuit containing the secondary of the second transformer and the primary of the third transformer, and the fourth circuit containing the secondary of the third transformer and having one end connected to an aerial conductor and the other end to a capacity which may be the earth, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, a condenser in the third circuit, a spark-gap in the third circuit in parallel with the primary of the third transformer and the condenser, means for producing an alternating current in the first circuit, a coil in the first circuit, and means for varying the impedance of the coil.

11. The combination of a plurality of circuits containing transformers, the first circuit containing the primary of one transformer, the second circuit containing the secondary of said transformer and the primary of another transformer, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, means for producing an alternating current in the first circuit, a coil in the first circuit, means for short-circuiting the coil, and a radiating-conductor for the apparatus.

12. The combination of four circuits containing three transformers, the first circuit containing the primary of the first transformer, the second circuit containing the secondary of the first transformer and the primary of the second transformer, the third circuit containing the secondary of the second transformer and the primary of the third transformer, and the fourth circuit containing the secondary of the third transformer and having one end connected to an aerial conductor and the other end to a capacity which may be the earth, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, a condenser in the third circuit, a spark-gap in the third circuit in parallel with the primary of the third transformer and the condenser, means for producing an alternating current in the first circuit, two coils in the first circuit, movable cores in the coils, and means for short-circuiting one of the coils.

13. In apparatus for producing electrical oscillations of high frequency, the combination of a transformer the primary circuit of which is permanently closed, means for producing an alternating current in the primary, two coils in circuit with the primary, movable cores in the coils, and means for short-circuiting one of the coils.

14. The combination of a plurality of circuits containing transformers, the first circuit containing the primary of one transformer, the second circuit containing the secondary of said transformer and the primary of another transformer; a condenser in the second circuit; a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, means for producing an alternating current in the first circuit, two coils in the first circuit, movable cores in the coils, means for short-circuiting one of the coils, and a radiating-conductor for the apparatus.

15. The combination of four circuits containing three transformers, the first circuit containing the primary of the first transformer, the second circuit containing the secondary of the first transformer and the primary of the second transformer, the third circuit containing the secondary of the second transformer and the primary of the third transformer, and the fourth circuit containing the secondary of the third transformer and having one end connected to an aerial conductor and the other end to a capacity which may be the earth, a condenser in the second circuit, a spark-gap in the second circuit in parallel with the primary of the second transformer and the condenser, a condenser in the third circuit, a spark-gap in the third circuit in parallel with the primary of the third transformer and the condenser, means for producing an alternating current in the first circuit, two coils in the first circuit, movable cores in the coils, and means for short-circuiting one of the coils.

16. At a transmitting-station employed in wireless telegraphy, the combination of a transformer having a permanently-closed primary circuit, a generator, and an impedance-coil in said circuit, a shunt around said coil, a circuit-closer in said shunt in circuit with the primary circuit of the transformer and a spark-gap and a radiating-conductor for said apparatus.

17. At a transmitting-station employed in wireless telegraphy, an oscillation-transformer, the primary circuit of which is permanently closed; a second oscillation-transformer connected with that first named; a producer of electrical oscillations connected with the secondary circuit of each transformer; a radiating-conductor electrically connected with the apparatus; a signaling-key and a device controlled thereby for varying the power of the closed primary circuit aforesaid.

18. At a transmitting-station employed in wireless telegraphy, a permanently-closed primary circuit connected with a source of alternating current; a coil included in said circuit; a secondary winding connected with said coil; a signaling-key and connections for closing the circuit of said coil; an oscillation-producer connected with the apparatus, and a radiating-conductor also connected therewith.

19. At a transmitting-station employed in wireless telegraphy, a step-up oscillation-transformer the primary of which is permanently closed and is connected with a source of alternating current, and the secondary of which is connected with an oscillation-producer and with a radiating-conductor, substantially as described.

20. At a transmitting-station employed in wireless telegraphy, an oscillation-transformer the primary of which is permanently closed and is connected with a source of alternating current; a second oscillation-transformer, the primary of which is in circuit with the secondary of the first-named transformer; and a radiating-conductor connected with the secondary of the second transformer, substantially as described.

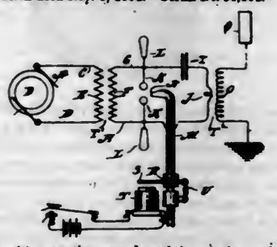
21. At a transmitting-station employed in wireless telegraphy, an oscillation-transformer the primary of which is permanently closed and is connected with a source of alternating current; an oscillation-producer in circuit with the secondary of said transformer; a second oscillation-transformer, the primary of which is also in circuit with the said secondary, and a radiating-conductor connected with the secondary of the second transformer, substantially as described.

22. At a transmitting-station employed in wireless telegraphy, an oscillation-transformer the primary of which is connected with a source of alternating current; an oscillation-producer in circuit with the secondary of said transformer; a second oscillation-transformer, the primary of which is also in circuit with the said secondary; an oscillation-producer in circuit with the secondary of the second transformer, and a radiating-conductor for the apparatus, substantially as described.

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## 758,005. APPARATUS EMPLOYED IN WIRELESS TELEGRAPHY.

John A. Fleming, London, England, assignor to Marconi's Wireless Telegraph Company, Limited, London, England, a Corporation. Original application filed Apr. 8, 1901, Serial No. 54,775. Divided and this application filed Nov. 9, 1901. Serial No. 81,661. (No model.)



*Claim.*—1. At a station employed in wireless telegraphy, the combination of an alternating-current transformer; an alternating-current generator; an oscillation-producer having a spark-gap connected with the secondary of said transformer; a radiating-conductor at said station; means adjacent to and independent of the spark-

ing terminals for extinguishing electrical arcs at the spark-gap of the producer, and a signal-key and connections controlling said extinguishing means, substantially as described.

2. At a station employed in wireless telegraphy, the combination of an alternating-current transformer; an alternating-current generator; an oscillation-producer having a spark-gap connected with the secondary of said transformer; a radiating-conductor at said station, arc-extinguishing means comprising a pipe adapted to discharge air under pressure across the spark-gap of the oscillation-producer, and a signal-key and connections controlling the discharge of air from the pipe-opening, substantially as described.

3. At a station employed in wireless telegraphy, the combination of a transformer having a constantly-closed primary circuit, an oscillation-producer having a spark-gap in the secondary circuit of the transformer, a radiating-conductor at said station, means adjacent to and independent of the spark-terminals for extinguishing electrical arcs at the spark-gap of the producer, and a signal-key and a connection controlling the extinguishing means, substantially as described.

4. At a station employed in wireless telegraphy, the combination of a transformer having a constantly-closed primary circuit, an oscillation-producer having a spark-gap in the secondary circuit of the transformer, a radiating-conductor at said station, arc-extinguishing means comprising a pipe having an opening adapted to discharge air under pressure across the spark-gap, and a signal-key and a connection controlling the discharge of air from the pipe-opening, substantially as described.

5. At a station employed in wireless telegraphy, an automatic producer of electrical oscillations, a radiating-conductor at said station, and means, comprising a signal-key and connections located near and independent of the said producer, for varying the strength of the current therein, substantially as described.

6. At a station employed in wireless telegraphy, an automatic producer of electrical oscillations, a radiating-conductor at said station, a power device located near and independent of the said producer for varying the strength of the current therein, and a signaling instrument and connections controlling the power device, substantially as described.

7. At a station employed in wireless telegraphy, the combination of an oscillation-producer having a spark-gap, electrical connections including the producer and a source of electrical energy, radiating-conductors at said station, arc-extinguishing means comprising a pipe having an opening adapted to discharge air under pressure across the spark-gap, a valve for said pipe, an electromagnet controlling the valve, and a signaling-key connected with the magnet, substantially as described.

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**758,006. WIRELESS TELEGRAPHY.** FRANCIS J. GREEN, Detroit, Mich., assignor to the American Engineering Company, Detroit, Mich., a Corporation of South Dakota. Filed Jan. 9, 1903. Serial No. 138,343. (No model.)



*Claim.*—1. The combination with a Hertzian-wave receiver, of an electrical circuit through said receiver, a relay actuated by the circuit through the receiver, a signal-circuit actuated by the relay-circuit, and variable signal-lights in the same signal-circuit.

2. The combination with a Hertzian-wave receiver, of an electrical circuit through said receiver, a relay-circuit actuated by the circuit through the receiver, a signal-circuit actuated by the relay-circuit, and differing signal-lights in the signal-circuit to indicate the direction from which an electrical impulse may be received.

3. A Hertzian-wave-receiving apparatus comprising a receiving-circuit, a relay-circuit, a signal-circuit containing variable signals, a retarding-circuit, and a tapping-circuit.

4. A Hertzian-wave-receiving apparatus comprising a plurality of receiving-circuits, a plurality of relay-circuits, a single signal-circuit, and plural signals in the signal-circuit.

5. A Hertzian-wave-receiving apparatus comprising a plurality of receiving-circuits, a plurality of relay-circuits, and a single signal-circuit, said single signal-circuit actuated by any one of the relay-circuits.

6. A Hertzian-wave-receiving apparatus comprising plural receiving-circuits, plural relay-circuits, a single signal-circuit actuated by any one of the relay-circuits, and variable signals in the signal-circuit.

7. A Hertzian-wave-receiving apparatus comprising plural receiving-circuits, plural relay-circuits, plural retarding-circuits, plural tapping-circuits, and a single signal-circuit.

8. The combination with a Hertzian-wave receiver of an electrical circuit through said receiver, a relay-circuit actuated by the circuit through the receiver, a signal-circuit actuated by the relay-circuit, and means to give differing signals in said signal-circuit whereby the differing signals will be cut in or out of the signal-circuit upon the reception of a Hertzian-wave impulse.

9. The combination with a Hertzian-wave receiver of an electrical circuit through said receiver, a relay-circuit actuated by the circuit through the receiver, a signal-circuit, variable signal-lights in the same signal-circuit, and a signal-bell in the relay-circuit.

10. The combination with plural Hertzian-wave receivers of a receiving-circuit through each of said receivers, relay-circuits actuated, respectively, by the corresponding receiving-circuit, a signal actuated by each of said relay-circuits, and screens to electrically segregate each of said receivers.

11. The combination with plural Hertzian-wave receivers of an electrical circuit through each of said receivers, relay-circuits actuated, respectively, by the corresponding receiving-circuits, a signal-circuit, a danger-signal in the signal-circuit actuated by each of the relay-circuits, and metal screens to electrically segregate and shield each of said receivers.

12. The combination with plural Hertzian-wave receivers of an electrical circuit through each of said receivers, relay-circuits actuated, respectively, by the receiving-circuits, a signal-circuit, variable danger-signals in the signal-circuit actuated by each of said relay-circuits, and screens to electrically segregate and shield each of said receivers.

13. The combination with a transmitter constructed to transmit Hertzian waves simultaneously in plural directions, of plural Hertzian-wave receivers, an electrical circuit through each of said receivers, a relay-circuit actuated by the circuit through the receiver, a signal-circuit actuated by the relay-circuit, and means to electrically segregate said receivers from said transmitter.

14. The combination with a Hertzian-wave receiver, of an electrical circuit through said receiver, a tapping device to vibrate said receiver, and means to increase the time constant of the tapping device.

15. The combination with a Hertzian-wave receiver, of an electrical circuit through said receiver, a relay-circuit actuated by the circuit through the receiver, a tapping device to vibrate the receiver, and a hollow solenoid actuated by the relay-circuit to retard the action of the tapping device.

16. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electric impulses from different directions, of a signal to make the direction of said impulses known.

17. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electric impulses independently the one of the other from different directions, and a signal whereby each receiver may make its impulses known.

18. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electrical impulses independently the one from the other from different directions, and a variable signal whereby each receiver may make its impulses known.

19. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electric impulses independently the one of the other from different directions, and independent signals whereby each receiver may make its impulses known.

20. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electrical impulses independently one from the other in different directions, means to segregate the impulses received from different directions, and a signal whereby each receiver may make its impulses known.

21. In combination apparatus for simultaneously transmitting and receiving electric impulses or Hertzian waves simultaneously from different directions, and means for segregating the impulses received from different directions at the same location or station.



22. In combination apparatus for simultaneously transmitting and receiving electric impulses or Hertzian waves simultaneously from different directions, means for segregating the impulses received from different directions at the same location or station, and signals to make the direction of the segregated impulses known.

23. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electric impulses from different directions, of a signal-circuit actuated by both of said receivers, and differing signals in the signal-circuit to make the direction of said impulses known.

24. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electric impulses from different directions, plural relay-circuits actuated by said receivers respectively, a signal-circuit actuated by each of the relay-circuits, and differing signals in the signal-circuit to make the direction of said impulses known.

25. The combination of plural Hertzian-wave receivers arranged to receive electric impulses independently from different directions, plural relay-circuits actuated by the receivers respectively, a common signal-circuit actuated by each of the relay-circuits, differing signals in the signal-circuit to make the direction of said impulses known, a transmitter, a support for the receivers and transmitter, and means to segregate the impulses of the transmitter from the receivers.

26. The combination with plural Hertzian-wave receivers arranged to receive electric impulses independently the one from the other from different directions, relay-circuits actuated by the receivers respectively, retarding-circuits actuated by said relay-circuits respectively, tapping-circuits actuated by the retarding-circuits respectively, a common signal-circuit actuated by each of the relay-circuits, and differing signals in the signal-circuit to make the directions of said impluses known.

27. In combination apparatus for transmitting Hertzian waves in different directions, apparatus for simultaneously receiving plural Hertzian waves from different directions, and means to segregate the receivers from the impulses of the transmitter, the transmitting apparatus and the receiving apparatus arranged to act simultaneously if desired.

28. The combination with plural Hertzian-wave receivers adapted for railroad danger-signaling without ground connections, of a signal-circuit actuated by each of said receivers, and means in the signal-circuit whereby a clear track in any given direction is indicated.

29. The combination with plural Hertzian-wave receivers adapted for railroad danger-signaling without utilizing the track as a ground or part of the circuit, of a signal-circuit actuated by each of said receivers, and means in the signal-circuit whereby a clear track in any given direction is indicated.

30. The combination with plural Hertzian-wave receivers adapted for railroad danger-signaling without ground connections, of a signal-circuit actuated by each of said receivers, and means in the signal-circuit whereby danger-signals may be received from either front or rear, and whereby the direction of the danger may be indicated.

31. The combination with plural receivers for electrical impulses or Hertzian waves adapted for railroad danger-signaling without ground connections, of a signal-circuit actuated by each of said receivers, a "clear" signal and a "danger-signal" in said signal-circuit, and means for cutting out the clear signal and cutting in the danger-signal when an electrical impulse is received by the corresponding receiver.

32. The combination with a Hertzian-wave-receiving apparatus adapted for railroad danger-signaling without ground connections, of an annunciator, said annunciator provided with means to simultaneously indicate a normally clear track in front and rear when no Hertzian-wave impulse is received, and with means to indicate the direction of danger when a Hertzian-wave impulse is received.

33. The combination with a Hertzian-wave-receiving apparatus adapted for railroad danger-signaling without ground connections, of an annunciator provided with a safety-signal to indicate a normally clear track when no Hertzian-wave impulse is received and with a danger-signal to indicate danger when a Hertzian-wave impulse is received, means to cut out the safety-signal and to cut in the danger-signal when a Hertzian-wave impulse is received.

34. The combination with a Hertzian-wave-receiving apparatus adapted for railroad danger-signaling without ground connections, of an annunciator, said annunciator provided with means to simultaneously indicate a normally clear track in front and rear when no Hertzian-wave impulse is received, and with means to indicate the direction of danger when Hertzian-wave impulses are simultaneously received from the front and rear.

35. The combination with a Hertzian-wave transmitter of circuit-breaking mechanism in electrical circuit with the primary of the transmitter adapted to give varying signals, and a signal whereby the action of the circuit-breaker may be known.

36. In a wireless receiving and transmitting apparatus a Hertzian-wave transmitter, means whereby the transmitter will automatically give varying signals, means to denote the operation of the transmitter, a plurality of Hertzian-wave-receiving mechanisms, means to protect the receiving mechanisms from the influence of the transmitter, means to retard the action of the receiving mechanisms, a safety device for indicating that no Hertzian-wave impulses are being received, a danger device whereby the actuation of any of said receivers is indicated, means to cut out the safety device and to cut in the danger device on the reception by any receiver of a Hertzian-wave impulse, said apparatus constructed to indicate the direction from which such an impulse is received without ground connections, and a danger-signaling apparatus adapted to simultaneously send and receive Hertzian-wave impulses from any direction.

37. A danger-signaling apparatus adapted to simultaneously send and to receive Hertzian-wave impulses from different directions, and to indicate the direction from which a given impulse is received.

38. The combination with a Hertzian-wave receiver comprising an electrical circuit through said receiver, of a relay-circuit actuated by the circuit through the receiver, a retarding-circuit actuated by the relay-circuit, a tapping-circuit actuated by the retarding-circuit, and a tapping device in the tapping-circuit to vibrate the receiver, said retarding-circuit arranged to retard the action of the receiving-circuit, and the action of the tapping device.

39. The combination with Hertzian-wave receivers without ground connections, of electrical circuits through each receiver, a signal-circuit, electric magnets in said signal-circuit, variable signals operated by the signal-circuit, and means actuated by each of said magnets to cut out and to cut in either of said signals.

40. In combination a transmitter for transmitting electric impulses or Hertzian waves, a plurality of Hertzian-wave receivers arranged to simultaneously receive electrical impulses from different directions, and means to electrically segregate said transmitter and receivers at the same location or station, said receivers and transmitter arranged to act simultaneously.

41. In combination a transmitter for transmitting Hertzian waves simultaneously in different directions, a plurality of receivers arranged to simultaneously receive Hertzian waves from different directions, means to electrically segregate said transmitter from said receivers and to segregate said receivers one from another, whereby electrical impulses may be simultaneously transmitted in different directions, and simultaneously received from different directions at the same location or station.

42. A wireless receiving and transmitting apparatus comprising means for simultaneously transmitting signals by Hertzian waves in different directions, means for simultaneously receiving signals by Hertzian waves from different directions, and means whereby the direction from which a signal is received may be indicated.

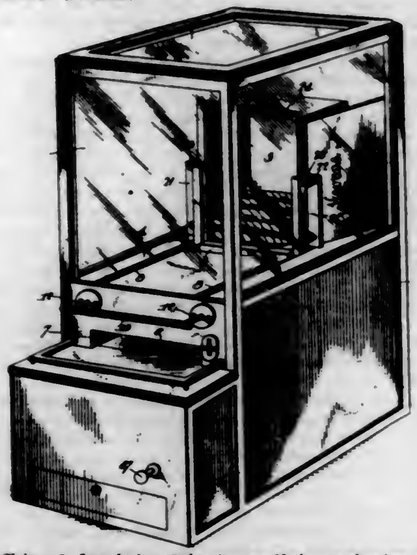
43. A wireless receiving and transmitting apparatus comprising means for simultaneously transmitting signals by Hertzian waves in different directions, means for simultaneously receiving signals by Hertzian waves from different directions, and means whereby the direction from which a signal is received may be indicated, the transmitting apparatus and the receiving apparatus arranged to simultaneously transmit and receive signals at the same station.

44. A wireless receiving and transmitting apparatus comprising means for simultaneously transmitting a plurality of signals by Hertzian waves in different directions, means for simultaneously receiving a plurality of signals by Hertzian waves from different directions, means to segregate said impulses from different directions, and means to indicate the direction from which any electric impulse is received, said transmitting and receiving apparatus arranged to simultaneously transmit and receive signals from different directions.

45. The combination with plural Hertzian-wave receivers, of a receiving-circuit through each of said receivers, relay-circuits actuated, respectively, by the corresponding receiving-circuit, a signal actuated by each of said relay-circuits and means to electrically segregate each of said receivers, the one from the other.

46. The combination with plural Hertzian-wave receivers arranged to simultaneously receive electric impulses from different directions, of a common signal-circuit actuated by either or both of said receivers, and differing signals in the signal-circuit to make the direction of said impulses known.

**758,007. VENDING-MACHINE.** FREDERICK G. HARTELL, Chicago, Ill., assignor of two-thirds to Yancey G. Caldwell, Paris, Tenn., and Louis M. Martin, Martin, Tenn. Filed June 1, 1903. Serial No. 159,892. (No model.)



*Claim.*—1. In a device of the class specified, a goods-receptacle, means for moving the same over a delivery-opening, and means for temporarily closing the mouth of the opening during the movement of the goods-receptacle.

2. In a device of the class specified, a slidable goods-receptacle open at its lower end, a support having a delivery-opening, means for moving the goods-receptacle over such opening, and means for temporarily closing the mouth of the opening during the movement of the goods-receptacle.

3. In a device of the class specified, a slidable goods-receptacle having an open bottom, a support having a delivery-opening, means for moving the receptacle to deliver goods to the opening, and means for partly closing said opening during the reciprocating movement of the goods-receptacle.

4. In a device of the class specified, a goods-receptacle having a discharge-opening, a support having a delivery-opening, means for moving the goods-receptacle, and means for partly closing the opening during the reciprocating movement of the goods-receptacle to thereby limit the quantity discharged.

5. In a device of the class specified, a goods-receptacle having a discharge-opening, a support having a delivery-opening, a bar adapted to enter the opening and limit the area of said opening, a pair of pivoted arms carrying said bar, and means associated with the goods-receptacle for engaging said pivot-arms and moving the bar.

6. In a device of the class specified, a goods-receptacle having a discharge-opening, a support having a delivery-opening, a bar adapted to enter said support and limit the area of said opening, and spring supporting means for said bar, substantially as described.

7. In a device of the class specified, a casing, a movable goods-receptacle, means for discharging the goods therefrom, and a goods-receptacle-supporting device having a pivoted portion.

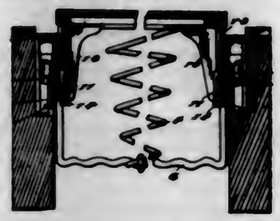
8. In a device of the class specified, a goods-receptacle having a discharge-opening, means for discharging goods therefrom, a pair of spaced supporting devices for the goods-receptacle, said supporting devices being adjustable laterally for receptacles of different width, means for locking said supporting devices in adjusted position, and means connected to the supporting devices for permitting reciprocating movement thereof.

9. In a device of the class specified, a goods-receptacle, means for discharging goods therefrom, standards for engaging the front of the receptacle and frames supported by the standards and adjustable laterally to accommodate receptacles of different width.

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**758,008. COT.** PARKER D. HEATHER, Pontiac, Mich.; Ella Heather, administratrix of said Parker D. Heather, deceased. Filed June 13, 1903. Serial No. 161,372. (No model.)

*Claim.*—In combination, a frame, coil-springs connected with and upheld by said frame, a support sustained by said springs, and means for directing the coil-springs when contracting and expanding, said means consisting of a socket-plate having parallel flanges curved toward each other at their outer edges and a bracket having a rib slidably mounted in the space formed between the flanges of the socket-plate and having a head at one end of the rib and an arm at the opposite end to positively limit the movements of the bracket in each direction, said slidable bracket having the aforesaid support attached thereto, substantially as described.



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**758,009. APPARATUS FOR RETAINING HEAT IN FOODS.** EDWARD C. KIRK, Pittsburg, Pa., assignor of one-half to Hyland C. Kirk, Pittsburg, Pa. Filed Jan. 14, 1904. Serial No. 189,013. (No model.)



*Claim.*—1. A double-walled heat-retaining apparatus, consisting of an outer cylinder or casing of suitable material, an inner cylinder of aluminium, a suitable packing between the walls of the outer and inner cylinders, and a heater situated in the bottom of the inner cylinder, said heater composed of a body of soapstone incased in aluminium, whereby the heat from the aluminium case is conducted to the aluminium cylinder, and radiated into the food-chamber.

2. A double-walled heat-retaining apparatus, consisting of an outer casing of suitable material, an inner cylinder of aluminium, a suitable packing between the walls of the cylinders, and a heater in the bottom of the inner cylinder, said heater composed of a body of soapstone and a cap or covering of aluminium.

3. A double-walled heat-retaining apparatus, consisting of an outer cylinder or casing of suitable material, an inner cylinder of aluminium, a suitable packing between the walls of the outer and inner cylinders, a heater situated in the bottom of the inner cylinder, said heater composed of a body of soapstone incased in aluminium, whereby the heat from the aluminium case is conducted to the aluminium cylinder and radiated into the food-chamber, and a food-rack for supporting dishes or vessels supported upon the heater.

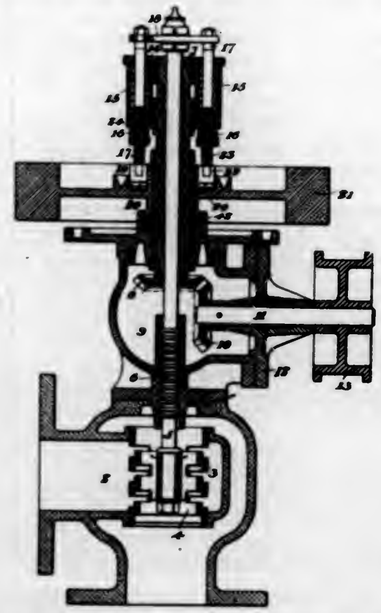
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**758,010. VALVE-GOVERNOR FOR ENGINES.** CORNELIUS KUHLEWIND, Knoxville, Pa., assignor to Kuhlewind Governor Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 3, 1902. Serial No. 114,281. (No model.)

*Claim.*—1. An engine-governor comprising a rotary momentum-disk, a rotary element, a valve connected to one of said parts, driving connections between one of these parts and the engine, a yielding driving connection between the rotary element and the disk, another detachable driving connection between the rotary element and the disk, and automatic mechanism for severing said latter driving connection as the speed is increased; substantially as described.

2. An engine-governor comprising a rotary momentum-disk, a rotary element, one of said parts being connected to the admission-valve and one of them having driving connections with the engine, a yielding driving connection between the rotary element and the disk arranged to shift the position of the rotary element and mechanism for adjusting the pressure of the yielding connection to regulate the speed; substantially as described.





3. An engine-governor having a rotary momentum-disk, a rotary element, one of said parts being connected to the admission-valve and one having driving connections with the engine, and a cam connection between the rotary element and the momentum-disk, said cam connection having spring-pressed blocks as a part thereof; substantially as described.

4. An engine-governor having a rotary momentum-disk, a rotary element connected to the valve, driving connections between the engine and one of said parts, and a cam connection between the rotary element and the disk, said cam connection including a pair of spring-pressed coacting wedge-blocks, one of which is arranged to cause movement of the rotary element; substantially as described.

5. An engine-governor comprising a rotary momentum-disk, a rotary element arranged to drive the same, said element being connected to the valve and having driving connections with the engine, a yielding driving connection between the element and the disk, another clutch-driving connection between the element and disk, and a centrifugal device arranged to sever the latter driving connection at a predetermined speed; substantially as described.

6. In an engine-governor, a rotary momentum-disk, a rotary element, driving connections between one of said parts and the engine, a valve connected to one of said parts, a yielding driving connection between the rotary element and the momentum-disk, and an automatic brake device for excess speed; substantially as described.

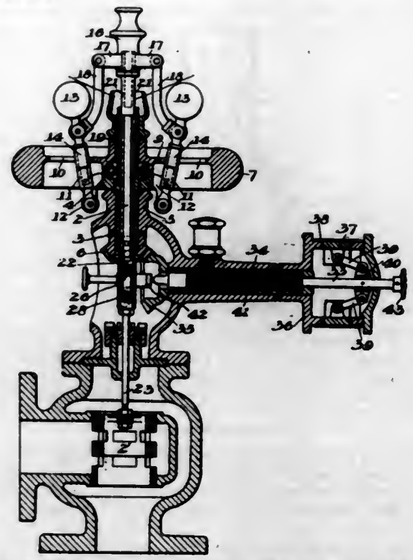
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**758,011. VALVE-GOVERNOR FOR ENGINES.** CORNELIUS KUHLEWIND, Knoxville, Pa., assignor to Kuhlewind Governor Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 10, 1903. Serial No. 165,024. (No model.)

*Claim.*—1. An engine-governor comprising a rotary momentum-disk, a rotary element, driving connections between one of said parts and a moving part of the engine, a supply-valve connected to one of said parts, and a cam connection between the momentum-disk and the rotating element arranged to shift the position of the valve; substantially as described.

2. An engine-governor comprising a rotary momentum-disk held in a fixed position relative to vertical movement, a rotary element, a supply-valve connected to one of said parts, and a connection between the momentum-disk and the rotary element arranged to shift the position of the valve; substantially as described.

3. An engine-governor comprising a rotary momentum-disk held against vertical movement, a rotary element, a supply-valve connected to one of said parts, driving connections between one of said parts and a moving part of the engine, and a cam connection between the momentum-disk and the rotary element; substantially as described.



4. An engine-governor comprising a rotary momentum-disk, a rotary element having centrifugal balls mounted thereon, driving connections between the rotary element and a moving part of the engine, a supply-valve connected to one of said parts, (the momentum-disk and rotary element,) and a cam connection between the momentum-disk and the ball-carriers; substantially as described.

5. An engine-governor comprising a rotary momentum-disk, a rotary element having centrifugal balls and connected to a two-part valve-stem, means for normally holding the two-part valve-stem with the ends abutting together, and a cam connection between the rotary elements and the momentum-disk; substantially as described.

6. An engine-governor comprising a rotary momentum-disk, a rotary element having centrifugal balls and connected to a two-part valve-stem, means for normally holding the two-part valve-stem with the ends abutting together, a cam connection between the rotary elements and the momentum-disk, and means for severing the connection between the two parts of the valve-stem; substantially as described.

7. An engine-governor having a driving-pulley with a yielding rim, connections between said rim and the valve-stem, and a spring arranged to actuate said connection and sever the connection between the valve-stem and the governor whenever the belt leaves the driving-pulley; substantially as described.

8. An engine-governor having a two-part valve-stem with the two parts in alinement, a yielding weight or spring device arranged to hold the ends of the valve-stem in butting engagement, and means for moving one part of the valve-stem away from the other part; substantially as described.

9. An engine-governor having a rotary momentum-disk with a cam-slot therein, a rotary element connected to the valve-stem and having balls carried upon links extending through the cam-slots of the momentum-disk, and connections between the rotary element and a moving part of the engine; substantially as described.

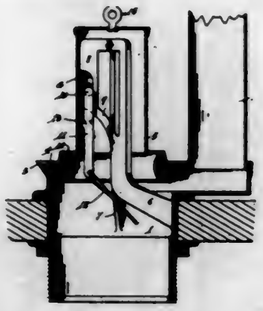
10. An engine-governor having a two-part valve-stem with the two parts in alinement, yielding means for holding the two parts of the stem in engagement, and a hand knock-off device arranged to quickly sever the connection between the two parts of the stem, and thereby close the valve; substantially as described.

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**758,012. FLUSH-VALVE.** ELON A. MARSH, Detroit, Mich. Filed Feb. 5, 1904. Serial No. 192,191. (No model.)

*Claim.*—1. In a flush-valve, in combination with an outflood-spud and a valve-seat at the top thereof, a valve seating thereon

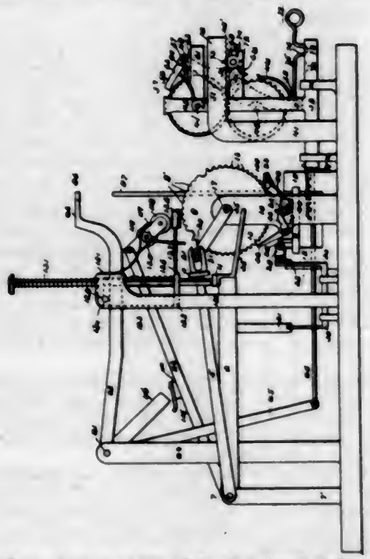
and provided with a hollow stem, a guide secured to the spud and projecting into the stem, a hanger suspended from said guide provided at its lower end with a tongued plate arranged obliquely to the axis of the spud, and with a catch arranged to engage under an edge of the valve-stem, substantially as described.



2. In a valve for flush-tanks, in combination with a discharge-pipe provided with a valve-seat, a valve arranged to seat thereon, a catch provided with means adapted to be actuated by the flowing water to swing the catch under a part of the valve-stem, substantially as described.

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758,013. ADDING OR SUBTRACTING MACHINE. JOSEPH H. MARTIN, Roanoke, Va., assignor, by direct and mesne assignments, to Roanoke Mathometer Company, Roanoke, Va., a Corporation of Virginia. Filed Aug. 1, 1901. Serial No. 70,563. (No model.)



*Claim.*—1. In a machine of the class described, the combination with digit-keys and a cipher-key, of a spacing-bar adapted to be moved on the operation of any of said keys, a movable carriage, a plurality of independent receiving-wheels thereon each adapted for rotary movement without effect upon any other, and means for spacing said carriage from the spacing-bar on the operation thereof by a key.

2. In a machine of the class described, the combination with digit-keys and a cipher-key, of a spacing-bar adapted to be moved on the operation of any of said keys, a movable carriage, a plurality of independent receiving-wheels thereon each adapted for rotary movement without effect upon any other, a lever-bar adapted for movement by the digit-keys, a counting member operated by said lever-bar, which is adapted to turn the receiving-wheels when in operative conjunction therewith, and mechanism for spacing the carriage by the operation of the spacing-bar to bring the receiving-wheels successively into operative conjunction with the counting member.

3. In a machine of the class described, the combination with digit-keys and a cipher-key, of a spacing-bar adapted for operation thereby, a movable carriage, receiving-wheels on said carriage, a rack on said carriage, means for holding the carriage wherever spaced, a spacing-lever operated by the spacing-bar and having a pin adapted to engage the teeth of the rack, and means for holding said spacing-lever normally out of engagement with the rack and for causing its engagement therewith on the return movement of the spacing-bar, and a means for retracting said bar.

4. In a machine of the class described, the combination with digit-keys and a cipher-key, of a spacing-bar operated thereby, a movable carriage, a plurality of independent receiving-wheels thereon each adapted for rotary movement without effect upon any other, a lever-bar adapted for movement by the digit-keys, a counting member operated by said lever-bar, which is adapted to turn one of the receiving-wheels when in operative conjunction therewith, mechanism cooperating directly with the carriage for holding the carriage wherever spaced, and mechanism cooperating directly with the carriage for spacing the carriage by the operation of the spacing-bar which is adapted to become active after the receiving-wheel has been turned by the counting member, to space the carriage and bring the next adjacent receiving-wheel in position for turning by the counting member.

5. In a machine of the class described, the combination with digit-keys and a cipher-key, of a spacing-bar adapted for operation thereby, a movable carriage, receiving-wheels on said carriage, a rack on said carriage, means for holding the carriage wherever spaced, a reciprocatable spacing-lever, a bell-joint operated by the spacing-bar and connected to the reciprocatable spacing-lever, said spacing-lever having a pin adapted to engage the teeth of the rack and being provided with a swell, and a shoulder on the machine on which the swell normally rests, whereby the spacing-lever is normally held out of engagement with the rack and permitted to engage with the rack and space the carriage on the return movement of the spacing-bar.

6. In a machine of the class described, the combination with a set of keys, of a movable carriage, a plurality of independent receiving-wheels on said carriage each adapted for rotary movement without effect upon any other, a pivoted U-shaped spring-actuated counting-bar, a ratchet on said U-shaped counting-bar, means for operating said U-shaped counting-bar from the keys according to their numerical values, means for holding the carriage wherever spaced, and means for spacing said carriage to bring the receiving-wheels successively into direct operative conjunction with the ratchet, whereby they may be directly turned by the ratchet on the movement of the counting-bar.

7. In a machine of the class described, the combination with digit-keys and a cipher-key, of a spacing-bar having pivoted arms, a lever-bar having pivoted arms and independent of the spacing-bar and adapted for operation by the digit-keys only in extent proportionate to their numerical values, springs for keeping said lever-bar and spacing-bar normally retracted, a movable carriage, receiving-wheels thereon adapted for independent turning, means for holding the carriage wherever spaced, a spacing-lever operated from the spacing-bar, a rack on the carriage adapted for engagement by the spacing-lever, a U-shaped pivoted counting-bar having projections, forks on the lever-bar operated by the keys which receive said projections, whereby the said U-shaped counting-bar is moved with the lever-bar, and a ratchet on the U-shaped bar which is placed in position to coact with the receiving-wheels as they are successively brought into position for engagement thereby by the spacing mechanism.

8. In a machine of the class described, the combination with a plurality of receiving-wheels each adapted for movement without effect on any other receiving-wheel, of a plurality of keys adapted for turning said receiving-wheels, independently, a distance in proportion to the numerical value of the keys, and a normally inoperative bar adapted to engage with any receiving-wheel after it has been turned the predetermined distance to prevent the further turning thereof.

9. In a machine of the class described, the combination with a set of keys, of a spacing-bar adapted for operation thereby, a movable carriage, independent receiving-wheels which are carried by the carriage, means for spacing the carriage by the operation of the spacing-bar and holding it where spaced, means for turning the receiving-wheels one at a time by the action of the keys according to the numerical value thereof, a pawl adapted to engage with any receiving-wheel after it has been turned, to prevent too far turning thereof by the impetus of the counting mechanism, and means for throwing said pawl into action from the spacing mechanism.



10. In a machine of the class described, the combination with a plurality of movable keys, of a lever-bar, a movable carriage, receiving-wheels thereon, each adapted for movement without effect on any other receiving-wheel, means for turning the receiving-wheels, one at a time, by the movement of the lever-bar, pins on the said keys which are adapted to engage the lever-bar on the depression of the keys, to actuate said bar, stop devices on the keys to limit their movement when depressed, said pins on the respective keys being disposed at varying distances from the lever-bar, whereby each key will be adapted to depress said lever-bar only in proportion to the numerical value of the key, to induce a proportional turning of the wheels to bring them into a predetermined position, and means for retaining the wheels in the positions to which they are respectively turned.

11. In a machine of the class described, a plurality of receiving-wheels independently rotatable without effect on each other bearing indicia and having cogs, independent springs for returning the wheels independently to normal position, stops to arrest the return motion of the wheels when normal position is reached and key connections for turning the wheels independently and successively.

12. In a machine of the class described, the combination with a plurality of receiving-wheels adapted for independent movement, of a set of operating-keys therefor, and a totalizing device comprising adding mechanism for operation by the receiving-wheels to take the record from the receiving-wheels, and a subtracting device adapted for operation by the receiving-wheels and for operating the adding device to subtract from the latter.

13. In a machine of the class described, the combination with a plurality of receiving-wheels adapted for independent movement, of a totalizing device comprising a plurality of index-wheels bearing indicia and constituting an adding-register, and a plurality of subtracting-wheels meshing with the adding-wheels and constituting therewith a subtracting-register, and means for causing the operation of either the adding or subtracting wheels by the receiving-wheels.

14. In a machine of the class described, the combination with a plurality of receiving-wheels adapted for independent movement, of a totalizing device comprising a pivoted frame, a plurality of index-wheels carried thereby bearing indicia and constituting an adding-register, and a plurality of subtracting-wheels meshing with the adding-wheels and carried by the pivoted frame, and means for shifting the pivoted frame and holding it where positioned, with either the index or subtracting wheels adapted to mesh with the receiving-wheels to cause the operation thereof by the said receiving-wheels

15. In a machine of the class described, the combination with a plurality of receiving-wheels adapted for independent movement, of independent springs for turning said receiving-wheels back to normal position, keys for operating the receiving-wheels, locking devices for securing said wheels against rotation by the springs where they are turned, means for simultaneously disengaging said locking mechanisms whereby the receiving-wheels may be retracted by their springs, and a totalizing device comprising a plurality of index-wheels bearing indicia which are adapted to be engaged by the receiving-wheels, whereby the said index-wheels will be turned by the receiving-wheels on the retraction thereof by the springs actuating the same.

16. In a machine of the class described, a totalizing mechanism comprising two sets of intergeared wheels, the individual wheels of each set being independent, transfer-levers having projections, two pawls on each transfer-lever, the one adapted for engagement with an index-wheel and the other for engagement with a corresponding subtracting-wheel, pins on the index-wheels which are adapted to engage with the projections on the transfer-levers whose pawls are arranged to engage the wheels of a higher denomination, means for causing either set of pawls to be inoperative while the other set is operative, and means for actuating said levers in succession, in opposition to the movement induced therein by the pins.

17. In a machine of the class described, a totalizing mechanism comprising a movable frame adapted to be held in two different positions, two sets of intergeared wheels carried by said frame, the individual wheels of each set being independent, transfer-levers having projections, two pawls on each transfer-lever, the one adapted for engagement with an index-wheel, and the other for engagement with a corresponding subtracting-wheel, pins on the index-wheels which are adapted to engage with the projections on the levers whose pawls are arranged to engage the adjoining wheels of a higher denomination, and independent disengaging-bars for the two sets of pawls, one bar being adapted to cause the disengagement of one set of pawls from their wheel when the frame is moved to one position, while the other set of pawls remains operative, and the other disengaging-bar being adapted, similarly, to disengage its set of pawls, while the other pawls remain operative, when the frame is moved to the other position.

18. In a machine of the class described, a totalizing device comprising a plurality of index-wheels having indicia and provided with pins, transfer-levers having pawls, said levers being adapted for engagement with the pins to set them and the pawls being adapted for engagement with the adjoining index-wheels, said pawls being provided with notches at different points, and springs having one portion permanently secured and their free portion adapted to engage either of the notches to hold the levers and pawls temporarily at the limits of their movements.

19. In a machine of the class described, a totalizing device comprising a movable carriage, a set of index-wheels having indicia and provided with pins, carried by the carriage, transfer-levers having pawls, said levers being adapted for engagement by the pins and the pawls adapted to engage the adjoining wheels, a rotary shaft having a flange for each transfer-lever, said flanges being arranged to wipe against the levers in succession, a pinion on said shaft, and a stationary rack with which the pinion meshes, whereby the movement of the carriage induces a rotary movement in the shaft and an independent shifting of the transfer-lever.

20. In a machine of the class described, the combination with a movable carriage and a totalizing device carried thereby, of an operating mechanism for shifting said carriage, and a resilient connection between the carriage and the operating mechanism.

21. In a machine of the class described, the combination with a movable carriage, and a totalizing device carried thereby, of an operating mechanism for moving the carriage, a spring connecting the carriage with said operating mechanism, and a bar attached to the operating mechanism and normally forming an abutment for the carriage, said carriage and bar being thus normally held in abutment with each other by the action of the spring, means for arresting the movement of the carriage so that it will thereafter be out of abutment with the bar and only operated by the spring, and another spring acting in opposition to the spring first named which is adapted to cause the return of the carriage to normal position through the intervention of the said bar.

22. In a machine of the class described, the combination with a movable carriage and totalizing device carried thereby, of a bar, a spring connecting the carriage with the bar, and a lock adapted to secure the carriage at a predetermined point after movement.

23. In a machine of the class described, the combination with a movable carriage and a totalizing device carried thereby, of an operating mechanism for moving the carriage, a spring connecting the carriage with said operating mechanism, and a bar connected to the operating mechanism and normally forming an abutment for the carriage, said carriage and bar being thus normally held in abutment with each other by the action of the spring, a spring-actuated lever adapted to engage and lock the carriage when it reaches a predetermined position, said lever having a tooth upon which the passing of the end of the bar permits the locking of the carriage thereby, and a spring acting in opposition to the spring first named which is adapted to cause the return of the carriage to normal position through the intervention of the bar.

24. In a machine of the class described, the combination with receiving-wheels, and keys adapted for operating them, of a movable carriage, totalizing-wheels carried thereby, operating mechanism for moving the carriage, a spring connecting the carriage with the said operating mechanism, said carriage being adapted to be moved to cause the engagement of the totalizing-wheels with the receiving-wheels, and a locking device serving to insure the proper engagement of the two sets of wheels, and means for causing the return of the carriage to normal position.

25. In a machine of the class described, the combination with receiving-wheels, and keys adapted for operating them, of a movable carriage, totalizing-wheels carried thereby, operating mechanism for moving the carriage, a spring connecting the carriage with said operating mechanism, a bar connected to the operating mechanism and normally forming an abutment for the carriage, said carriage and bar being thus normally held in abutment with each other by the action of the spring, a spring-actuated lever adapted to engage and lock the carriage when the totalizing-wheels are in engagement with the receiving-wheels, said lever having means for engaging the bar after it has separated from the carriage, said bar being adapted to push the lever out of engagement with the car-

riage on the return of the former to normal position, and means for returning the carriage to normal position.

26. In a machine of the class described, the combination with spring-actuated receiving-wheels and keys for operating said wheels independently, of independent ratchets for locking the wheels where turned, a movable carriage, totalizing-wheels carried thereby, means for moving the carriage to bring the totalizing-wheels into engagement with the receiving-wheels, means for locking the totalizing and receiving wheels in this engagement, and means for automatically unlocking the ratchets after the engagement aforesaid, whereby the receiving-wheels will retract automatically and impart a corresponding rotation to the totalizing-wheels.

27. In a machine of the class described, the combination with spring-retracted receiving-wheels, and keys for operating said wheels, independently, of independent ratchets for locking the wheels where turned, a movable carriage, totalizing-wheels carried thereby, a pivoted spring-retracted frame, an arm rigidly attached thereto, a bar moving with the said arm, a coil-spring connecting the said bar and carriage and keeping the end of the bar normally abutting the carriage, said totalizing-wheels being adapted for engagement with the receiving-wheels, a rod adapted for simultaneously disengaging the ratchets from the receiving-wheels, a second slidable rod engaging the aforesaid rod, means for locking the receiving and totalizing wheels into engagement, said pivoted spring-retracted frame being adapted on its initial movement to bring the totalizing-wheels and receiving-wheels into engagement with the bar abutting the movable carriage, and adapted by its further movement to separate the bar from the carriage and permit the locking of the totalizing and receiving wheels into engagement, and adapted on its further movement, permitted by the extension of the spring, to depress the rod last named to actuate the rod first named and thereby release the ratchets and allow the receiving-wheels to be retracted by their springs and turn the totalizing-wheels.

28. In a machine of the class described, the combination with a movable carriage and receiving-wheels carried thereby, of keys for operating the wheels and the carriage aforesaid, spring mechanism for returning the said carriage to normal position, when released, mechanism for locking said carriage where positioned, a totalizing-carriage movable toward and away from the receiving-wheels aforesaid and adapted, on its return movement, to release the locking mechanism of the first-named carriage, whereupon the spring mechanism will return the carriage first named to its normal position.

29. In a machine of the class described, the combination with a movable carriage, means for spacing the carriage, and means for returning it to normal position, of mechanism for locking and unlocking the carriage wherever positioned, consisting of a pivoted lever adapted to engage the carriage and lock it wherever positioned, a spring-retracted arm adapted to cause the disengagement of the pivoted lever from the carriage when operated, and a ratchet having an idle movement in one direction and adapted to positively engage and actuate the arm when moved in the other direction, thereby releasing the carriage.

30. In a machine of the class described, the combination with a movable carriage, means for spacing the carriage and means for returning it to normal position, of mechanism for locking and unlocking the carriage wherever positioned, consisting of a pivoted lever adapted to engage the carriage and lock it wherever positioned, means for moving said lever to cause its disengagement from the carriage, and a spring-actuated sustaining-lever adapted to engage the locking-lever after it has been raised and hold it disengaged from the carriage until the said sustaining-lever is tripped by the return of the carriage.

31. In a machine of the class described, the combination with a movable carriage, means for spacing the carriage and means for returning it to normal position, of mechanism for locking and unlocking the carriage wherever positioned consisting of a pivoted lever adapted to engage the carriage and lock it wherever positioned, a spring-retracted arm adapted to cause the disengagement of the lever from the carriage when operated, a ratchet having an idle movement in one direction and adapted to positively engage and actuate the arm when moved in the other direction, and a spring-actuated sustaining-lever adapted to engage the locking-lever after it has raised and hold it disengaged from the carriage until said sustaining-lever is tripped by the return of the carriage.

32. In a machine of the class described, the combination with a frame and receiving mechanism thereon, of a second frame hinged to the frame aforesaid, operating-keys carried by the second or hinged frame and normally adapted to cooperate with the recording mechanism aforesaid, said cooperation ceasing when the hinged frame is turned from normal position.

33. In a machine of the class described, the combination with a set of keys, of a movable carriage, receiving-wheels on said carriage, a pivoted U-shaped spring-actuated counting-bar, means for operating said counting-bar from the keys according to their numerical value, and a ratchet in said counting-bar, adapted to engage the said receiving-wheels at a predetermined point thereon, continuing the said engagement until the counting-bar begins its return to its normal position, the said ratchet being incapable of engaging the said receiving-wheels, except at one initial or predetermined point.

34. In a machine of the class described, the combination with digit-keys and a cipher-key, of a movable carriage, receiving-wheels carried by said carriage, a spacing-bar for spacing the carriage, actuated by any of the keys, a lever-bar adapted for movement by the digit-keys, a counting member operated by said lever-bar which is adapted to turn the receiving-wheels, one at a time, as spaced and brought into position for operation, in correspondence with the number of figures in the row to be registered, and means for retaining said carriage where spaced.

35. In a machine of the class described the combination with a movable carriage, and receiving-wheels carried thereby, of means for registering on the said receiving-wheels, or so many of them as are necessary, the row of figures to be recorded, a movable totalizing-carriage, a plurality of index and subtracting wheels thereon, the said totalizing-carriage being adapted for movement to and from the first-named carriage so that as many of the index or subtracting wheels are meshed with and engage the receiving-wheels as there have been receiving-wheels brought into operation, and means for conveying to the said index or subtracting wheels so engaged the numbers corresponding to the keys depressed in setting the receiving-wheels.

36. In a machine of the class described, a totalizing-carriage carrying a plurality of index-wheels, a corresponding number of subtracting-wheels meshing therewith, a set of transfer-levers, one less in number than the index-wheels, projections on the transfer-levers, pins on the index-wheels to engage the projections on the transfer-levers when the index-wheel carrying the pin is in a predetermined position, pawls on the transfer-levers adapted to engage the subtracting-wheel of the next higher denomination than that meshed with the index-wheel carrying the pin engaging said lever through its projection, all of these transfer mechanisms operating in succession so that if the pin on the index-wheel of the lowest denomination, engages the projection on the adjacent lever the said lever by its pawl engages the next highest subtracting-wheel and if this engagement brings the pin on the corresponding index-wheel into engagement with the next transfer-lever, the said lever engages, through its pawl, the next highest subtracting-wheel, and so on through the series.

37. In a machine of the class described, the combination of a plurality of finger-keys, a recording mechanism operated thereby, a mechanism for accumulating the several successive recordations of said recording mechanism, and means for bringing about the operative conjunction of the recording and accumulating mechanisms.

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**758,014. AUTOMOBILE-FENDER.** ANDREUS MITMAN, Lima, Ohio, assignor of one-half to Abraham Crider, Lima, Ohio. Filed July 1, 1903. Serial No. 163,926. (No model.)



*Claim.*—1. The combination with the front axle, front wheels, and movable connections carried by the axle and to which the wheels are attached, and the fender connected to the said movable connections, as set forth.

2. The combination with the front axle, the wheels and the movable connections carried by the axle and carrying the wheels, of the fender connected with the said movable connections, said fender comprising the side bars and the parallel cross-bars pivotally connected at their opposite ends to the side bars, as set forth.

3. The combination with the front axle and knuckles, of the fender connected with the said knuckles and adapted to move in unison with said knuckles and means for raising the fender, as set forth.

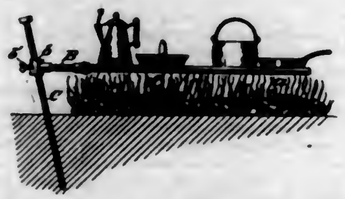
4. The combination with the front axle and knuckles, of the fender connected with the knuckles and movable in unison therewith, the fender being movable vertically with reference to the knuckles and axle, the lever for lifting the fender, the push-rod for operating the lever and means for locking the push-rod, as set forth.

5. The combination with the stub-axles carried by the knuckles, of the side bars of the fender connected to the said stub-axles and capable of a vertical movement thereon, the connecting cross-bars pivotally connected to the side bars of the fender, and means for holding the fender in any adjusted position, substantially as set forth.

6. A fender comprising parallel side bars, the parallel cross-bars pivotally connected to the side bars, together with means for connecting the rear end of the fender to the movable portions of the running-gear of an automobile, whereby the said fender can be swung laterally in unison with the front wheels of the vehicle, substantially as set forth.

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**758,015. CAMP-STOVE.** DENIS I. MILLER, Louisville, Ky., assignor of one-half to F. A. Bagert, Knoxville, Tenn. Filed Oct. 8, 1903. Serial No. 176,200. (No model.)



*Claim.*—1. A camp stove or range comprising a standard adapted to be driven into the ground and a frame, composed of an elongated loop adapted to support a number of utensils on or between its side bars and having a yoke at one end provided with a vertical opening adapted to adjustably engage the standard and support the frame thereon, substantially as described.

2. A camp stove or range comprising a standard adapted to be driven into the ground, and a frame formed of a single elongated metal loop having an arm and a yoke at the extremity of said arm provided with a vertical opening of larger diameter than the standard and adapted to surround the standard and support the frame thereon, substantially as and for the purpose described.

3. The herein-described camp stove or range comprising a standard, and a frame formed of tubing or piping bent into an elongated loop of a length sufficient to support several utensils in line, said frame having an arm at one end provided with a yoke on its extremity having a vertical opening through it and adapted to embrace the standard to support the frame thereon, and means for fastening the yoke to the standard to prevent the frame turning thereon, substantially as described.

4. The combination in a camp-stove of a standard, an elongated utensil-supporting frame composed of a single piece of pipe bent into a long oval loop, an arm secured thereto having at its outer end a metal block or yoke through which is a hole of greater diameter than the standard, and a thumb-screw tapped through the yoke and engaging the standard, all constructed as set forth.

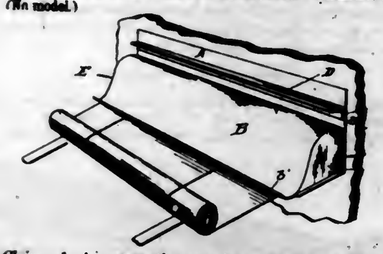
5. A camp-stove comprising a standard and an elongated frame formed of a single piece of pipe bent into an elongated loop with its sides parallel, an arm secured to one end of said frame and terminating in a metal block or yoke provided with a hole for the admission of the standard, and a thumb-screw adapted to fasten the yoke to the standard, all as shown and described.

6. A camp stove or range comprising a standard and a frame, said frame being composed of an elongated loop having a central longitudinal member, and means for detachably attaching said frame to the standard.

7. A camp-stove comprising a standard adapted to be driven into the ground, and a frame formed of an elongated metal loop having an arm at one end, a longitudinal central member intermediate the side members, and a yoke on the arm engaging the standard and supporting the frame thereon, substantially as described.



**758,016. AUTOMATIC COVER FOR AWNINGS.** WILLIAM R. MUDD, Cincinnati, Ohio. Filed July 29, 1903. Serial No. 165,639. (No model.)




*Claim.*—1. An automatic cover for awnings completely inclosing the same when rolled up comprising a back, a bottom, ends and a pivoted cover, said cover being hinged along its upper edge and being provided at its lower edge with an upwardly-curved portion, substantially as and for the purpose described.

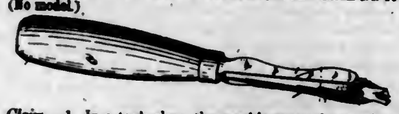
2. An automatic cover for awnings completely inclosing the same when rolled up, comprising a stationary member and a pivoted member, the stationary member forming the back and bottom of the cover and the pivoted member forming the ends and lid of the cover, said pivoted member being hinged along its upper edge and being provided at its lower edge with an upwardly-curved portion, substantially as and for the purpose described.

3. An automatic cover for awnings adapted to entirely close the same when rolled up, comprising a fixed member and the hinged cover, the fixed member forming the back and bottom and being provided with a substantially horizontal offset located above the hinge of the cover, and the hinged cover provided with end flanges, substantially as and for the purpose described.

4. An automatic cover for awnings adapted to entirely close the same when rolled up, comprising a fixed member and a pivoted cover, the fixed member forming the back and bottom and being provided with a substantially horizontal offset located above the hinge of the cover, the cover being hinged along its upper edge and being curved at its lower edge, substantially as described.

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**758,017. TACK-CLAW.** GRAHAM C. PARISH, Kingston, N. Y., assignor to the W. G. Browne Manufacturing Company, Kingston, N. Y., a Corporation of New York. Filed Feb. 3, 1904. Serial No. 191,823. (No model.)



*Claim.*—1. In a tack-claw, the combination of a shank, a handle therefor, and a downwardly-projected fulcrum thereon, and of a claw proper comprised of sheet metal bent so as to project at an angle to said shank and forwardly of said fulcrum, having its outer end slotted to engage a tack and provided with upwardly-projected side ribs adjacent to the bend therein, whereby the bent portion is relieved of the bending and breaking strains thereon.

2. In a tack-claw, the combination of a channeled sheet-metal shank, a handle therefor, and a downwardly-projected fulcrum thereon and a claw proper formed integrally with said shank and bent so as to project at an angle to said shank and forwardly of said fulcrum, the sides of said channeled shank extending across the bend therein to form upwardly-extended side ribs, adjacent thereto whereby the said bent portion is relieved of the bending and breaking strains thereon.

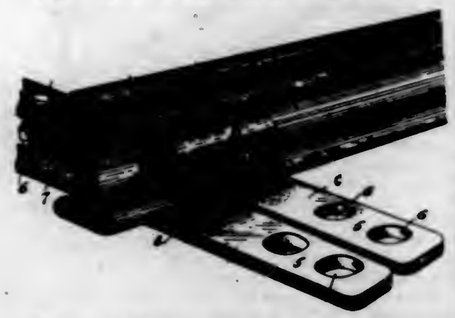
3. In a tack-claw the combination of a channeled sheet-metal shank, a handle therefor, and integral downwardly-projected side flanges thereon whereby said shank is reinforced throughout its entire length and a downwardly-projected fulcrum is provided therefor, and a claw proper formed integrally with said shank and bent so as to project at an angle to said shank and forwardly of said fulcrum the sides of said channeled shank extending across the bend therein to form upwardly-extended side ribs adjacent thereto whereby the said bent portion is relieved of the bending and breaking strains thereon.

4. In a tack-claw the combination of a channeled sheet-metal shank, a cylindrical tang integral therewith, a handle therefor and integral downwardly-projected side flanges thereon whereby said shank is reinforced throughout its entire length and a downwardly-projected fulcrum is provided therefor and a claw proper formed in-

tegrally with said shank and bent so as to project at an angle with said shank and forwardly of said fulcrum, the sides of said channeled shank extending across the bend therein to form upwardly-extended side ribs adjacent thereto whereby the said bent portion is relieved of the bending and breaking strains thereon

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758,018. **RAILWAY-CHAIR.** FRANCIS W. POOL, HAYTE, MONT., assignor of one-half to John Pool, Jesmond, Newcastle-upon-Tyne, England. Filed Oct. 31, 1903. Serial No. 177,873. (No model.)



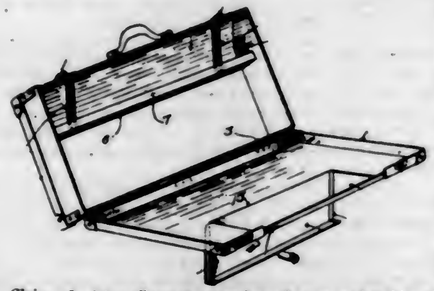
*Claim.*—1. A railway-chair, comprising a plurality of members, each member having two jaws spaced apart, one of said jaws being provided with a relatively large head portion, designed when the chair is employed for joining rails, to be wedged in between the side of the rail and a jaw of the opposite member of the chair, substantially as set forth.

2. A railway-chair, composed of a plurality of members, each member having two jaws formed thereon and spaced apart, a relatively large head portion formed on one of said jaws and extending transversely of the member, the construction being such that when the chair is assembled to secure the adjoining ends of the rails, the enlarged head of one member will lie between the jaws of an adjacent member and the side of the rail, substantially as set forth.

3. A railway-chair, comprising two members, each of said members having a small jaw or projection formed thereon, one of the faces of said jaw being inclined, and a relatively large jaw also formed on each member, the last-mentioned jaw having a relatively large head portion provided with an inclined face, the construction being such that when the chair is assembled to secure the adjoining ends of rails, the enlarged head portion will lie between the side of the rail and the smaller jaw of the adjoining member, the inclined face of said head portion fitting snugly against the inclined face of the aforesaid smaller jaw, substantially as set forth.

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758,019. **TRAVELING-CASE.** WILLIAM T. RICHARDS, Quincy, Mass. Filed Oct. 3, 1902. Renewed Sept. 26, 1903. Serial No. 174,602. (No model.)



*Claim.*—1. A traveling-case comprising the two sections hinged together at their bottom edges, opening away from each other, and having means, as usual, to hold said sections closed together, the open tray extending transversely with relation to the said sections, one of the sections having in its upper portion the opening giving access to the contents of the said tray, and the door for said opening movably connected with said section and having one member of the lock attached thereto, the other section having the other member of the lock attached thereto.

2. A traveling-case comprising the two sections hinged together at their bottom edges, opening away from each other, and having means, as usual, to hold said sections closed together, the tray hung within the top of the case, one of the sections having in its upper portion the opening giving access to the said tray, and the door for said opening movably connected with said section and having one member of the lock attached thereto, the other section having the other member of the lock attached thereto.

3. A traveling-case comprising the two sections hinged together at their bottom edges, opening away from each other, and having means, as usual, to hold said sections closed together, the tray hung within the top of the case, one of the sections having in its upper portion the opening giving access to the said tray, and the door for said opening movably connected with said section and having one member of the lock attached thereto, the other section having the other member of the lock attached thereto.

4. A traveling-case comprising the two sections hinged together at their bottom edges, opening away from each other, and having means, as usual, to hold said sections closed together, the tray hung within the top of the case, and capable of swinging transversely of the case, one of the sections having in its upper portion the opening giving access to the said tray, and the door for said opening movably connected with said section and having one member of the lock attached thereto, the other section having the other member of the lock attached thereto.

5. A traveling-case comprising sections hinged together to open and close as usual, having a collapsible tray suspended therein, provided with a supplemental opening located adjacent the tray and affording communication with the interior thereof, and having a cover for said opening, whereby by retracting said cover access may be had to said tray without opening the main case.

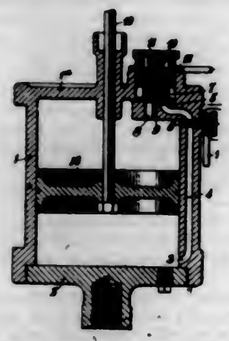
6. A traveling-case comprising sections hinged together to open and close as usual, having a hanging tray suspended therein, provided with a supplemental opening adjacent the tray and affording access thereto, the said hanging tray having a width considerably less than the depth of the case, and having a cover for said opening, whereby by retracting said cover access may be had to said tray without opening the main case.

7. A traveling-case comprising sections hinged together to open and close as usual, having a hanging tray suspended therein and an auxiliary opening formed in the main cover of the case allowing access to the interior of the said tray, the said auxiliary opening having a separately-movable cover constituted by a flap hinged to the main cover and forming a part thereof, substantially as described.

8. A traveling-case comprising sections hinged together to open and close as usual, having a hanging tray suspended therein, an auxiliary opening, for affording access to the tray, formed by cutting away a portion of the edge of the main cover so as to form a gap therein, the strengthening-strip bridging the said gap, and a separately-movable cover for the said opening, consisting of a flap conforming to the shape of the main cover, hinged thereto, and adapted to fill the gap therein, substantially as described.

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758,020. **SPEED-GOVERNOR.** CYRUS ROSEBRUGH, New York, N.Y., assignor to Westinghouse Machine Company, a Corporation of Pennsylvania. Original application filed June 23, 1900, Serial No. 21,604. Divided and this application filed Sept. 3, 1903. Serial No. 171,987. (No model.)



*Claim.*—1. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports opening into the by-pass from the cylinder, said ports being respectively provided with an automatic valve and a non-automatic valve.

2. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports of unequal size opening into said by-pass from the cylinder, said ports being respectively provided with an automatic valve and a non-automatic valve.

3. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports of unequal size opening into the cylinder, the larger port having an automatically-operating valve and the smaller port having a non-automatic valve.

4. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports of unequal size, the larger port having an automatic valve and the smaller port having a non-automatic valve.

5. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports between the cylinder and the by-pass, one of said ports being provided with a manually-operated adjusting-valve and the other being provided with a spring-seated automatic valve.

6. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports of unequal size opening into the by-pass from one end of the cylinder, a spring-seated valve for the larger port and a manually-adjustable, non-automatic valve for the smaller port.

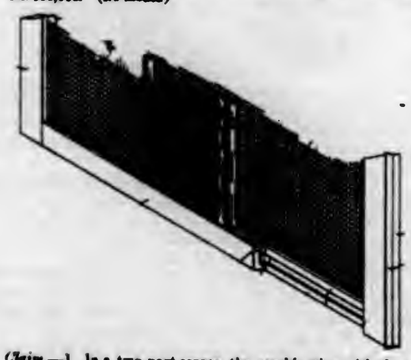
7. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston and two ports of unequal size opening into the by-pass at one end of the cylinder, an automatic valve for the larger port having an adjustable spring for normally holding it to its seat and a manually-adjustable, non-automatic valve for the smaller port.

8. A speed-governor comprising a cylinder and a piston, and having a by-pass around the piston for the dash-pot fluid and two controlling-valves one of which is seated by spring-pressure and unseated by fluid-pressure.



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758,021. **EXTENSION WINDOW-SCREEN.** GEORGE W. ROCKWELL, Horseheads, N. Y. Original application filed Oct. 8, 1903, Serial No. 176,223. Divided and this application filed Mar. 1, 1904. Serial No. 196,018. (No model.)



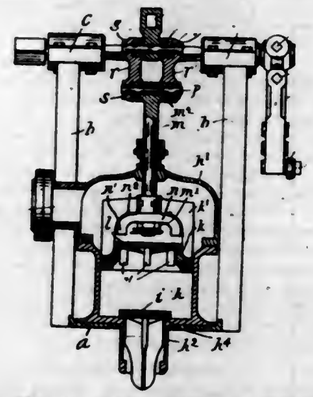
*Claim.*—1. In a two-part screen, the combination with the top, bottom and outer end rails and the wire-netting attached thereto, of an inner end rail formed of a sheet-metal strip folded lengthwise to embrace the edge of the netting and having a single portion overlying the face of the netting, the folded portion being bent at right angles to the single portion in the direction of the netting on the opposite screen-section and being cut shorter than the single portion to form a notch at each end, the shoulders of said notches abutting against the inner faces of the top and bottom rails as and for the purpose set forth.

2. In a two-part screen the combination with the top, bottom and outer end rails and the wire-netting attached thereto, of an inner end rail formed of sheet metal of right-angle cross-section, one limb of the angle overlying the face of the netting and the other limb turning toward the netting of the opposite screen-section, the inturned limb being cut shorter at each end with a right-angle cut rabbets on the inner sides of the top and bottom rails, in which the projecting ends of the inner rails and the edges of the netting are fastened, and strips on each rail covering the netting and filling the spaces between the rails formed by the rabbets, the inturned limb of the inner rail abutting against both adjacent rail-strips.

3. The combination with a pair of screen-sections adapted to slide the one upon the other, of an inner end rail comprising a metal angle-bar having one limb of the angle cut shorter than the other at both ends to form notches, said rail being secured to one section with its shorter limb turned toward the netting of the other section and with the ends of said limb abutting against and extending across the adjacent inner faces of the top and bottom rails of both sections.

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758,022. **SHIP-PUMP.** CHARLES H. SANBORN and WILLIAM F. RUSSELLS, Newburyport, Mass., assignors to Albert Russell & Sons Company, a Corporation of Massachusetts. Filed Dec. 24, 1903. Serial No. 186,422. (No model.)



*Claim.*—1. The combination in a pump of an operating-lever having a pair of bosses projecting from opposite sides thereof, said bosses having outer circular bearing-surfaces, a pair of oppositely-arranged links journaled at one end on said bearing-surfaces, a link-pin extending through and having a bearing in said lever and bosses, the axis of said pin being concentric with said outer bearing-surfaces, and the ends of said pin being fitted in and secured to said links, and a piston-rod pivotally connected to the opposite ends of said links, substantially as described.

2. In combination with a pump, an operating-lever and a piston-rod each having oppositely-arranged bosses, said bosses having outer circular bearing-surfaces, a pair of links journaled at their ends on said bearing-surfaces, a pair of link-pins respectively journaled in said lever and rod, and their corresponding bosses, the axial line of said pins being concentric with the outer bearing-surfaces of the bosses in which they are journaled, and the ends of said pins being fitted in and secured to said links, substantially as described.

3. In a lift-pump, a piston-head, having a port, a vertically-movable valve closing said port, and having depending guiding-lugs, a yoke connected to said head, a valve-stop comprising a horizontal portion, and two depending arms, a piston-rod passing through said yoke and the horizontal portion of said stop and connected thereto, said arms being arranged to engage the valve and prevent its upward movement when its guiding-lugs are partly withdrawn from said port, substantially as described.

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758,028. **TICKET-ISSUING MACHINE.** JOHN M. SIEBLER, Dayton, Ohio. Filed Apr. 20, 1903. Serial No. 153,437. (No model.)



*Claim.*—1. In a ticket-issuing machine, a ribbon of duplex tickets folded longitudinally to bring the matter indicated on one ticket in alinement with the similar matter indicated on the other ticket, said ribbon so folded being further folded laterally back and forth to form a tablet of duplex tickets, a knife to sever the tickets longitudinally as they are fed from the tablet, and means for feeding the tickets from said tablet.

2. In a ticket-issuing machine, a ribbon of duplex tickets folded

longitudinally, and laterally to provide a tablet of duplex tickets, means for feeding said duplex tickets from the tablet, and a knife to sever said tickets longitudinally so that individual tickets may be delivered to passengers and duplicates stored in a continuous ribbon within the machine.

3. In a ticket-issuing machine, a ribbon of duplex tickets folded longitudinally, and laterally to form a tablet, means for feeding said duplex tickets from the tablet, a tension device controlling the removal of the tickets, and a cutting-blade adapted to sever the tickets longitudinally and to separate and guide said tickets after the severance thereof.

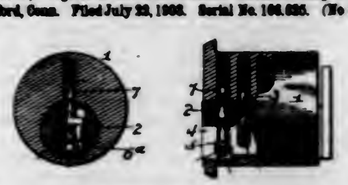
4. In a ticket-issuing machine, a ribbon of duplex tickets folded upon each other longitudinally, and then given a series of lateral or crosswise folds back and forth to form a tablet of duplex tickets, means for feeding the tickets in duplicate from said tablet, a cutter to sever the tickets longitudinally, and means for storing the duplicates of the issued tickets.

5. In a ticket-issuing machine, a ribbon of duplex tickets having a longitudinal fold and a series of cross-folds back and forth whereby a tablet is formed of said ribbon, means for feeding said ribbon from the tablet, tension devices to hold the ribbon taut, a cutter to sever the ribbon of duplex tickets longitudinally into two separate ribbons of tickets, from one of which the tickets to be delivered to passengers are detached, and the other of said ribbons constituting storage duplicates of said passenger-tickets.

6. In a machine for issuing tickets, a ribbon of duplex tickets folded first longitudinally, and then laterally or crosswise by a series of back-and-forth folds to form a tablet of united duplex tickets, means for feeding the tickets from the tablet, a cutter approximately the width of said duplex tickets and adapted to sever the connected edges thereof and to cause a separation of said tickets, a tension device adapted to hold the ribbon of duplex tickets taut, and a storage-reel for receiving the duplicate tickets.

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**758,024. PIN-TUMBLER LOCK.** WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed July 22, 1903. Serial No. 166,625. (No model.)



*Claim.*—1. The combination with a tumbler-case, plug and pin-tumblers carried by said plug, of a guard or curtain also carried by said plug and normally obstructing the key-slot in advance of the pin-tumblers, and arranged to engage the key below the bitted portion thereof, and a device actuated by said guard or curtain for locking the plug to the cylinder or tumbler-case and holding it so locked until the guard or curtain again assumes its normal position.

2. The combination with a tumbler-case, plug and pin-tumblers carried by said plug, of a guard or curtain normally in such a position that the plug may be fully revolved in the tumbler-case, but which, when moved by the insertion of a key or other instrument operates to lock the plug to the case, the said guard or curtain being located in advance of the pin-tumblers and engaging the key below the bitted portion of the latter.

3. In a pin-tumbler lock the combination with a plug and its case, pin-tumblers carried by the plug and a guard or curtain also carried by the plug and arranged to engage the key below the bitted edge of the latter, of a key provided with bittings on one edge to set the tumblers, and with an opening in its side to receive the guard or curtain when the key is fully inserted.

4. In a pin-tumbler lock the combination with a plug and its case, pin-tumblers carried by the plug and a guard or curtain also carried by the plug and arranged to engage the key at a point below the bitted edge thereof, of a key beveled at its front end to engage and set the tumblers by insertion, and also beveled on its side at its front end to engage and dislodge the guard or curtain.

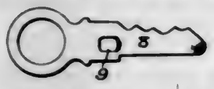
5. The combination of a tumbler-case, plug, pin-tumblers and a guard-tumbler carried by the plug, the said guard-tumbler normally obstructing the key-slot and located in advance of the pin-tumblers, the said guard moving in a direction transverse to the line of motion of the pin-tumblers and closing the keyway, and a key of less thickness than the diameter of the tumbler.

6. The combination with a tumbler-case, plug and pin-tumblers carried by the plug, of a guard carried by the plug and comprising a member adapted to enter a recess in the case, and a laterally-movable member sustaining said first-mentioned member, the said laterally-movable member normally obstructing the key-slot in the plug in advance of the pin-tumblers and adapted to engage the key below the bitted portion of the latter.

7. The combination with a tumbler-case, plug and pin-tumblers carried by the plug, of a guard carried by the plug and comprising a member adapted to be projected into a recess in the case and a plurality of loose members supporting said first-mentioned member, one of said loose members normally obstructing the key-slot in the plug in advance of the pin-tumblers and adapted to engage the key below the bitted portion of the latter.

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**758,025. KEY FOR PIN-TUMBLER LOCKS.** WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed July 22, 1903. Serial No. 166,626. (No model.)



*Claim.*—1. A flat key for a pin-tumbler lock provided with a bevel at its free end to engage and dislodge a curtain or guard, with bittings on its edge to engage and successively set the pin-tumblers and with a recessed section in its body or side to receive the guard or curtain.

2. A flat key for a pin-tumbler lock provided at its free end with a beveled upper edge and a beveled side, with bittings on its edge and with a recessed section in its body or side.

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**758,026. PIN-LOCK.** WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed Dec. 18, 1903. Serial No. 185,719. (No model.)



*Claim.*—1. In a pin-tumbler lock, the combination with a tumbler-case, plug, and pin-tumblers carried by said plug, of a guard or curtain composed of a plurality of parts carried by the plug, each part designed to be projected into a recess in the case when moved by the insertion of a key or other instrument.

2. In a pin-tumbler lock the combination with a tumbler-case, plug and pin-tumblers carried by the plug, of a guard or curtain carried by the plug and adapted to be projected into a recess in the case, and a guard-tumbler also adapted to be moved into a recess in the case by the movement of the guard or curtain.

3. In a pin-tumbler lock the combination with a tumbler-case, plug, and pin-tumbler, of a guard-tumbler carried by the plug and adapted to engage the case, and a guard or curtain obstructing the key-slot in the plug and connected to the guard-tumbler.

4. In a pin-tumbler lock the combination with a tumbler-case, plug and pin-tumblers, of a guard-tumbler carried by the plug and adapted to enter a recess in the case, and a plurality of guards or curtains normally obstructing the key-slot in the plug and connected to the guard-tumbler.

5. In a pin-tumbler lock the combination with a tumbler-case, a plug and pin-tumblers, of a guard-tumbler carried by the plug and adapted to enter a recess in the case a plurality of guards or curtains normally obstructing the key-slot in the plug and connected to the guard-tumbler, of a spring tending to hold the parts in their normal position.

6. In a pin-tumbler lock the combination with a tumbler-case, plug and pin-tumblers, of a guard-tumbler carried by the plug and adapted to enter a recess in the case, a plurality of guards or curtains normally obstructing the key-path in the plug and adapted when moved to be projected into recesses in case, and means connecting the guards or curtains and the guard-tumbler, whereby when either guard or curtain is moved the guard-tumbler will also move into its recess in the case.

7. In a pin-tumbler lock, the combination with a tumbler-case, a plug and pin-tumblers, of a guard-tumbler carried by the plug and

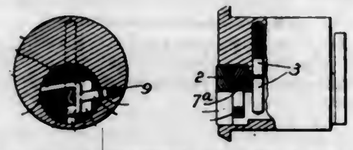


adapted to enter a recess in the case, a plurality of guards or curtains normally obstructing the key-path in the plug and adapted when moved to be projected into recesses in the case, means connecting the guards or curtains and the guard-tumbler, whereby when either guard or curtain is moved the guard-tumbler will also be moved into its recess in the case and a spring tending to hold the parts in their normal positions.

8. In a pin-tumbler lock, the combination with a case, a plug, and pin-tumblers, of a guard-tumbler carried by the plug and adapted to enter a recess in the case, a plurality of guards or curtains normally obstructing the key-path in the plug and adapted when moved to be projected into recesses in the case, a yoke or lever pivoted to the guard-tumbler and resting at its ends on shoulders formed on the guards or curtains and a spring tending to hold the parts in their normal positions.

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**758,027. PIN-LOCK.** WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Original application filed July 22, 1903, Serial No. 166,625. Divided and this application filed Dec. 18, 1903. Serial No. 185,720. (No model.)



*Claim.*—1. The combination with a tumbler-case, a plug, and pin-tumbler carried by said plug, of a substantially U-shaped guard or curtain carried by said plug, one member of said guard or curtain normally obstructing the key-slot, and arranged to engage a side face of the key, a pin or shank carried by said guard or curtain for locking the plug to the cylinder or case and holding it so locked until the guard or curtain again assumes its normal position and a spring tending to hold said guard or curtain in its normal position.

2. The combination with a tumbler-case, a plug, and pin-tumblers carried by said plug, of a substantially U-shaped guard or curtain carried by said plug, and provided with an integral shank or pin for engagement with the case, one member of said U-shaped guard or curtain normally obstructing the key-slot in advance of the pin-tumblers, and a spring tending to hold said guard or curtain in its normal position.

3. The combination with a tumbler-case, a plug and pin-tumblers carried by said plug, of a substantially U-shaped guard or curtain carried by said plug and provided with an integral shank, one of the members of said guard or curtain being shorter than the other and normally obstructing the key-slot in the plug in advance of the pin-tumblers, and a spring tending to hold said guard or curtain in its normal position.

4. The combination with a tumbler-case, a plug and pin-tumblers carried by said plug, of a guard or curtain substantially U shape and provided with an integral pin or shank, one member of said U-shaped guard or curtain being shorter than the other, the shorter member normally obstructing the key-slot in advance of the pin-tumblers, and a spring engaging the longer member and tending to hold said guard or curtain in its normal position.

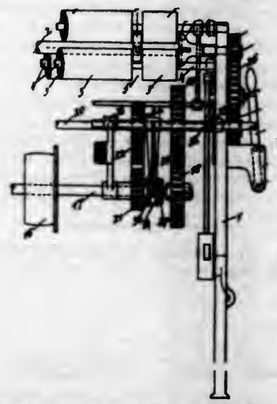
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**758,028. SPOOLER FOR MCQUITTE OR OTHER PILE-FABRIC LOOMS.** JAMES F. WALKER, Lowell, Mass., assignor to Crompton & Knowles Loom Works, a Corporation of Massachusetts. Filed July 23, 1903. Serial No. 166,715. (No model.)

*Claim.*—1. In a spooler for pile-yarn for pile-fabric looms, the combination with a spool having fixed end collars or heads and an adjustable and removable collar between said fixed end collars or heads, of a pressure-roll made in two or more parts, one part adjustable relatively to the other, to change the length of the roll, to correspond with the length of the spool, substantially as shown and described.

2. In a spooler for pile-yarn for pile-fabric looms, the combination with a spool having fixed end collars or heads and an adjustable and removable collar between said fixed end collars or heads, of a pressure-roll made in two or more parts, one part adjustable relatively to the other, and means for holding one part in adjusted position, to change the length of the roll to correspond with the length of the spool, substantially as shown and described.

3. In a spooler for pile-yarn for pile-fabric looms, the combination with a spool having fixed end collars or heads and an adjustable and removable collar between said fixed end collars or heads, of a pressure-roll made in two or more parts, one part adjustable relatively to the other, and means for holding one part in adjusted position, to change the length of the roll to correspond with the length of the spool, and a removable collar to fill in the space between the parts of the roll, substantially as shown and described.



4. In a spooler for pile-yarn for pile-fabric looms, the combination with a spool adjustable as to its winding-surface length, and a roll also adjustable as to its length, to correspond with the length of the spool, of a comb comprising a stationary bar, a movable bar carrying teeth and mounted on the stationary bar, said movable bar having slots, and holding-screws secured to the stationary bar and engaging the slots whereby the movable bar carrying the teeth may be adjusted the length of the slots on the stationary bar.

5. In a spooler for pile-yarn for pile-fabric looms, the combination with a spool having fixed end collars or heads and an adjustable and removable collar between said fixed end collars or heads, of a pressure-roll made in two or more parts, one part adjustable relatively to the other, to change the length of the roll, to correspond with the length of the spool, and a comb adjustable longitudinally with respect to the spool and roll to direct the yarns upon the yarn-receiving surface of the spool, substantially as shown and described.

6. In a spooler for pile-yarn for pile-fabric looms, the combination of the adjustable winding-spool and rolls therefor and a comb, and mechanism for driving the spool in one direction and for reversing the motion of the spool, said mechanism comprising a driving-shaft, two gears loosely mounted thereon, a clutch member disposed between said gears and rotatable with and slidable on said driving-shaft, a shaft carrying a disk for engagement with the spool and operative connections between the said shaft and the said two gears.

7. In a spooler for pile-yarn for pile-fabric looms, the combination of a spool adjustable as to the length of its yarn-surface, a roll adjustable in length to correspond to the adjusted length of the spool and comprising a central shaft, fixed or stationary ends secured to said shaft, a central part longitudinally movable on the shaft between the fixed or stationary ends, and a removable collar adapted to be secured about the central shaft between the fixed ends and the longitudinally-movable central part.

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**758,029. TIRE-PROTECTOR.** JACOB L. BROWN, Rahway, N. J., assignor of one-half to Benjamin King, Rahway, N. J. Filed Feb. 6, 1903. Serial No. 142,120. (No model.)



*Claim.*—1. A tire-protector comprising a pair of rings placed side by side of less diameter than the diameter of the tire and located on the opposite sides of said tire, strips arranged between and sustained by said rings, said strips being so interlaced as to present a solid alternately-overlapping mesh.

2. A tire-protector comprising a pair of rings placed side by side of less diameter than the diameter of the tire and located on opposite sides of said tire, strips connected with said rings and passing over and under said rings and extending across between the rings in concavo-convex form and interlaced between said rings, the interlaced strips having a greater diameter between the rings than the diameter of the rings, whereby the concave surface formed by the strips rests upon the convex surface of the tire.

3. A tire-protector comprising a pair of rings placed side by side of less diameter than the diameter of the tire and located on the opposite sides of said tire, two sets of strips connected with said rings and respectively extending diagonally across between the rings and being interlaced so that the strips of one set will alternately overlap the strips of the other set, as and for the purpose described.

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758,080. NASAL SHIELD. THOMAS CARRICK, Kansas City, Mo. Filed June 30, 1903. Serial No. 163,792. (No model.)



*Claim.*—1. In a nasal shield, the combination of two open-ended tubes, each provided with a diaphragm adapted to strain out the dust of the atmosphere, each of said tubes being also provided with an exteriorly-projecting plate, a bridge connecting the tubes, an absorbent pad surrounding each tube and in contact with its plate, a second plate surrounding each tube, in contact with the pad and opposed to the first-named plate, and a locking device mounted on the second plate and engaging the tube for holding the parts in the assembled position.

2. In a device of the class described, the combination of two tubular parts each provided with a diaphragm open to the filtering-passage of air, a bridge-piece connecting said parts, two opposing plates surrounding each tube, absorbent material held between the plates and protruding therefrom, and a locking device pivotally mounted on one of the plates and adapted to engage the tube whereby the parts are held in the assembled position.

3. In a device of the class described, the combination of two open-ended tubular parts, a bridge connecting said parts, two opposing plates mounted on each tubular part, absorbent pads held by the plates, and a pivoted device mounted on one of the plates and adapted to engage the tubular part whereby the elements are locked in the assembled position.

4. The combination of two tubular parts, a bridge connecting said parts, said bridge being slidable for purposes of adjustment absorbent pads mounted on the tubular parts, means for holding the pads in place, and a gauze diaphragm applied to each part for the purpose set forth.

5. The combination of two tubular parts, a plate surrounding each of said parts, a pad engaging each plate, another plate surrounding the tubular part on the opposite side of the pad, and a pivoted device mounted on one of the plates and adapted to engage the tube for locking the elements in the assembled position.

6. The combination of two slotted tubular parts, a bridge connecting said parts, a plate applied to each tubular part and made fast thereto, an absorbent pad applied to the plate around each tubular part, a second plate applied to each tubular part and engaging the pad opposite the first-named plate, and a pivoted locking device mounted on the second plate and adapted to engage a slot of the tubular part whereby the elements are locked in the assembled position.

7. In a nasal shield, the combination of two open-ended tubular parts, a bridge connecting said parts, said bridge being slidable for purposes of adjustment, an absorbent pad detachably applied to each tubular part, and a diaphragm also applied to each tubular part and arranged to strain the dust out of the atmosphere which passes through the tube.

8. The combination of two apertured plates, a bridge-piece connecting said plates, a tubular part provided with a surrounding plate, the tubular part being inserted in an opening in the apertured plate, an absorbent pad interposed between the two plates, and means for locking the parts in the assembled position.

9. The combination of two apertured plates each having an arm made fast thereto, a bridge slidably connected with the said arms, a tubular part applied to each apertured plate, and means applied to each tube for straining the dust out of the atmosphere as it passes therethrough.

10. The combination of an apertured plate, a short tube provided with a plate, the tube being inserted in an apertured plate, means applied to the tube for straining the dust out of the atmosphere as it passes therethrough, and means for locking the parts in operative relation.

11. The combination with an apertured plate provided with a pivoted locking device, a tubular part also provided with a plate and slotted to receive a locking device whereby the parts are held in the assembled relation, an absorbent pad surrounding the tube between the two plates, and means applied to the tube for straining the dust out of the atmosphere as it passes therethrough.

12. The combination of two apertured plates each provided with a forwardly-projecting arm and a pivoted locking device, a bridge adjustably connected with the said arms, a tube having a plate made fast thereto, one of the tubes being inserted in each apertured plate and slotted to engage the locking device, an absorbent pad placed between the two plates, and means applied to each tube for straining out the dust as the air passes therethrough.

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758,081. TELEPHONE DESK SET. HENRY P. CLAUSEN, Chicago, Ill., assignor to American Electric Telephone Company, Chicago, Ill., a Corporation of Illinois. Filed May 26, 1902. Serial No. 108,946. (No model.)



*Claim.*—1. A telephone desk set comprising a base, a transmitter, a mounting, a hollow standard mounted upon said base and inclosing said mounting, and a single clamping-screw inserted upwardly through said base and engaging the lower end of said mounting, said mounting thereby serving as a tie-rod to bind the different parts together.

2. A telephone desk set comprising a base, a mounting inclosed by a hollow or tubular standard, a transmitter and receiver fork or lever carried by said mounting, switch-springs inclosed by the standard and mounted on said mounting and operated by said fork or lever, and a fastening device applied to the base and the lower end of said mounting, the said mounting thereby serving as a tie-rod to bind the different parts together.

3. A telephone desk set comprising a base, a hollow standard, extending upwardly from said base, a mounting inclosed by said hollow standard, a transmitter and receiver fork or lever carried by said mounting, and a clamping-screw extending through the bottom of the said base and engaging the threaded opening in the lower end of said mounting, said mounting being provided at its upper end with a head providing a shoulder, and the said screw being adapted and arranged for clamping the said standard between said base and the shoulder provided by said head.

4. A telephone desk set comprising a base, a hollow standard mounted upon said base, a mounting in the form of a bar extending vertically within said standard, the upper end of said bar being provided with a head providing a shoulder, a transmitter, a receiver fork or lever carried by said mounting, switch-springs mounted on said mounting and inclosed within the standard and operated by said receiver fork or lever, suitable binding-posts also carried by said mounting, and a fastening device applied to the base and the lower end of said mounting, said fastening device constituting the sole means of clamping the said standard between the said head and base.

5. A telephone desk set comprising a suitable base, a standard mounted upon said base, a mounting, a transmitter, a receiver fork or lever carried by said mounting, switch-springs mounted upon said mounting and operated by said lever, suitable binding-posts carried by said mounting, the upper end of said mounting being provided with a head, and a single clamping-screw applied to the said base and the lower end of said mounting, said screw serving to clamp said standard between said base and head.

6. A telephone desk set comprising a base recessed to accommodate the telephone wires or cords, said base being also provided on its top with a socket, a tubular standard mounted in said socket, a mounting inclosed by said tubular standard and having its lower end provided with a threaded opening, and a clamping-screw extending upwardly through the bottom of the base and engaging said threaded opening.

7. A telephone desk set comprising a base, a tubular standard mounted upon said base, a mounting in the form of a bar inclosed within said tubular standard, the lower end of said bar being provided with a round or disk-like portion fitting the bore of said tubular standard and provided with a threaded socket, said mounting being provided at its upper end with a head, a transmitter pivoted to the upper end of said head, a receiver fork or lever pivoted to said mounting at a point immediately below said head, binding-posts and suitable contact-pieces secured to the said mounting, and a clamping-screw extending through the bottom of said base and engaging the said threaded opening in said round or disk-like portion at the lower end of said mounting, said screw serving to clamp said tubular standard between said base and head.

8. A telephone desk set comprising a suitable base, a tubular standard mounted thereon, a mounting inclosed by said standard and provided at its upper portion with a shoulder, a transmitter, a receiver fork or lever carried by said mounting, said receiver-fork being provided with a downwardly-extending arm, a flat spring secured to said mounting and having its upper end adapted to engage the lower end of said downwardly-extending lever-arm, contact-pieces arranged to engage the opposite sides of said downwardly-extending lever-arm, suitable binding-posts secured to said mounting, and a fastening device applied to said base, and constituting the sole means of clamping said standard between said base and the shoulder on the upper portion of said mounting.

9. A telephone desk set comprising a suitable base, a tubular standard, a strip or bar extending vertically in said standard, a transmitter and a hook-switch mounted upon the upper portion of said strip or bar, and a single fastening device applied to the lower end of said strip or bar, the said strip or bar thereby serving as a tie-rod to bind the different parts together.

10. A telephone desk set comprising a suitable base provided with a tubular standard, a mounting inclosed by said tubular standard, a switching device carried by said mounting and adapted to support a telephone-receiver, a transmitter also carried by said mounting, and a single fastening-screw inserted upwardly through the base and engaging the lower end of said mounting.

11. A telephone desk set, comprising a base provided with a hollow standard, a removable mounting inclosed by said standard, switch-springs carried by said mounting, a switch-hook carried by said mounting and adapted to operate said springs, said switch-hook being adapted to support a telephone-receiver, a transmitter carried by said mounting, and a single screw-threaded member constituting the sole means for maintaining the said mounting in its proper position relative to the base and standard.

12. In a telephone desk set, the combination of a base, a tubular standard mounted thereon, a mounting inclosed by said tubular standard and provided at its upper portion with a shoulder, a transmitter, a receiver fork or lever carried by said mounting, a clamping-screw extending upwardly through said base and engaging a threaded opening in the lower end of said mounting, and a pin extending through said clamping-screw and adapted to prevent end movement on the part of the latter relatively to said base, said screw serving to clamp the said standard between the said base and the shoulder on the upper end of said mounting.

13. In a telephone desk set, the combination of a plurality of members forming a structure for supporting a transmitter and a receiver fork or lever in a suitably-elevated position, and a single clamping-screw applied to the bottom of the said structure, and constituting the sole means of drawing and holding said members tightly together.

14. A desk telephone comprising a core having a head, a switch-hook mounted on the core, a transmitter mounted on the head, a base, a tube inclosing said core, and fastening means including said core for clamping said tube endwise between said head and base.

15. The combination of an upright structure, a transmitter and receiver hook mounted thereon, a base upon which the structure is mounted, a rubber ring wedge-shaped in cross-section, and a plate having a beveled edge for clamping the ring to the bottom of said base; and means for holding the different parts together, said means including a mounting and a screw, said mounting, when the screw is tightened, serving as a tie-rod to bind the parts together.

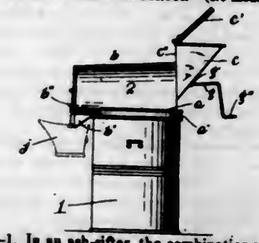
16. A telephone desk set, comprising a base, a hollow standard having its lower end removably mounted on said base, a mounting in said standard, a transmitter and a hook-switch carried by said mounting, and a screw for holding the base, standard and mounting firmly together, said screw extending upwardly through the base and engaging the lower end portion of the mounting, whereby the said screw is readily accessible from below.

17. A telephone desk set comprising a suitable base, a tubular standard having its lower end removably mounted on said base, a strip or bar extending vertically in said standard, a transmitter and a hook-switch mounted upon the upper portion of said strip or bar, and a single screw-threaded fastening device applied to the lower end of said strip or bar, the said strip or bar thereby serving as a tie-rod to bind the different parts together.

18. A telephone desk set provided with a hollow base, and provided also with a removable bottom plate having a beveled edge, together with a cushioning-ring encircling said plate and held in place by the beveled edge of the latter.

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758,082. ASH-SIFTER. JOSEPH P. HILL, Worcester, Mass. Filed Feb. 4, 1903. Serial No. 141,844. (No model.)



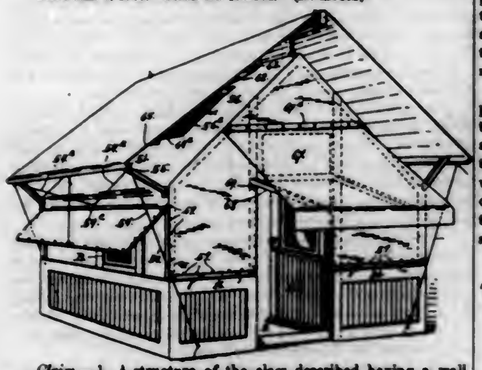
*Claim.*—1. In an ash-sifter, the combination with the external cylindrical case for the rotary sieve, the said sieve extending in an inclined position within the external case, and with its upper and lower ends open and supported on and secured to an inclined shaft through rings having hubs thereon mounted on the said shaft, the said cylindrical case having a receiving end and a discharge end, the said receiving end having a flaring open end and a circular opening provided on its inner side communicating with the upper end of said cylindrical case, the edge of the inner side around the said circular opening being turned over to reinforce the said opening and a flange secured in the said opening and extending into the upper part of the said sieve, the inner periphery of the upper of said supporting-rings of said sieve engaging the outer surface of the said flange and the outer edge of the said ring engaging the said turned-over portion around the central opening and being held in the said position and against lateral movement by the screw mounted in the lower of said hubs and engaging the said shaft.

2. In an ash-sifter, the combination of a cylindrical case supported on a circular base, the said base portion having a downwardly-extending flange provided thereon to engage the top of the receptacle and a central opening formed therein communicating with the interior of said receptacle, a receiving and discharge end, connected to the open ends of said case and formed integral with the said base portion, an inclined shaft having supporting-bearings in the said receiving and discharge ends and a rotary sieve having its upper and lower ends open and supported on and secured to the said shaft through rings attached to hubs mounted on the said shaft, said receiving end of the case having a circular opening adjacent the receiving end of the sieve, the walls of said circular opening being turned over to reinforce the said opening, a flange secured in the said opening and extending into the upper part of the said sieve, the inner periphery of the upper of said supporting-rings of said sieve

engaging the outer surface of the extended portion of said flange and the outer edge of said ring engaging the said turned-over portion around the central opening forming a dust-proof joint, the said ring being held against lateral movement by a screw mounted in the lower of said hubs and engaging the said shaft.

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**758,033. TENT-COTTAGE. ANDERSON M. HOLMES, Denver, Colo. Filed Jan. 7, 1903. Serial No. 138,171. (No model.)**



*Claim.*—1. A structure of the class described having a wall formed of two separated canvas parts leaving an intervening air-space for ventilation, the outer wall part having an opening below allowing the atmosphere to enter the ventilating-space, while the said space communicates above with the interior of the structure, the superficial area of the air-space between the canvas parts of the wall, being equal or approximately equal to the area of the wall.

2. A tent-cottage whose sides and ends below the eaves are composed of a lower wood section, and outside and inside canvas sections above the wood section, the canvas sections being separated to form a space open to the atmosphere between the wood section and the outer canvas section, the said space communicating at the top with the interior of the structure, the superficial area of the air-space between the canvas parts of the wall, being equal or approximately equal to the area of the wall.

3. A tent-cottage whose wall below the eaves is formed double with an intermediate ventilating-space open below to the atmosphere and above to the interior of the structure, the superficial area of the air-space between the canvas parts of the wall, being equal or approximately equal to the area of the wall.

4. A tent-cottage having a lower wood portion or base, the wall above the base being formed double leaving an intervening air-space open immediately above the base to the atmosphere and at the top to the interior of the structure, a portion of the outer wall being hinged at the eaves and adapted to be raised.

5. A tent-cottage composed of a framework, inner and outer canvas walls separated by an air-space, the lower part of the outer wall being formed of wood, and the upper part being hinged to swing outwardly, the air-space between the walls being open below to the atmosphere and communicating at the top with the interior of the cottage.

6. A tent-cottage composed of a framework, inner and outer walls separated by an air-space, the lower part of the outer wall being formed of rigid material as wood, and the upper part being hinged to swing outwardly.

7. A tent-cottage having a double canvas wall below the eaves, the two wall parts being separated by an air-space open below to the atmosphere and above to the interior of the cottage, the inner wall being arranged to be raised and lowered at will, substantially as described.

8. A tent-cottage composed of a frame and inner and outer walls, the lower part of the outer wall being composed of rigid material as wood and the upper part of the outer wall being hinged to allow it to swing outwardly, the inner part of the wall being provided with a window which is concealed when the hinged outer wall part is down.

9. A tent-cottage having the floor, sides and ends detachably connected, the framework having a wood base extending a suitable distance above the floor on the outside, an outer canvas covering forming the roof and side and end walls, the said covering being divided at the corners below the eaves, and an inner canvas wall below the eaves, a space being left between the two walls below the eaves, said space communicating with the atmosphere below and with the interior of the cottage above, substantially as described.

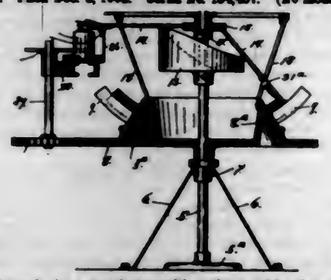
10. A tent-cottage provided with a framework for the fly or upper roof, the said framework consisting of an upper ridge-pole detachably connected with the lower ridge-pole and supported directly above the same; and two side frames hinged to the main framework at the eaves.

11. A tent-cottage provided with a framework for the fly or upper roof, the said framework consisting of an upper ridge-pole detachably connected with the lower ridge-pole and supported directly above the same; two side frames hinged to the main framework at the eaves, and a canvas covering for said fly-frame, and means connected with the hinged side frames for holding the canvas roof taut.

12. A tent-cottage provided with a framework for the fly or upper roof, the said framework consisting of an upper ridge-pole detachably connected with the lower ridge-pole and supported directly above the same; two side frames hinged to the main framework at the eaves, a canvas covering for said fly-frame, and means connected with the hinged side frames for holding the canvas taut, consisting of cords or wires connected with the hinged side parts at one extremity and at the opposite extremity with the main framework at suitable points below.

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**758,034. CAN-CAPPING MACHINE. JOHN T. WILSON, Denver, Colo. Filed Dec. 8, 1902. Serial No. 134,607. (No model.)**



*Claim.*—1. In a capping-machine, the combination of a rotary device, cap-receptacles mounted thereon, hinged arms also mounted on the rotary device in the plane of the receptacles and provided with magnets, there being a hinged magnet-arm for each cap-receptacle, means for actuating the rotary device, and means for controlling the arms whereby their magnets are caused to enter the receptacles and lift the caps therefrom preparatory to dropping them upon the cans.

2. In a can-capping machine, the combination with a carrier upon which the cans are mounted, of a rotary device actuated from the carrier, and carrying the can-caps, arms movably mounted on the rotary device and provided with magnets, and means for controlling the arms during the movement of the rotary device, whereby they are made to pick up the can-caps and lift them to position to drop upon the cans.

3. In a can-capping apparatus, the combination with a can carrier or conveyer, of a rotary device actuated from the conveyer and arranged to carry a supply of caps, magnet-arms movably mounted, means for controlling the arms during their rotation with the cap-carrying device whereby the said arms are caused to pick up the caps and lift them to position above the cans, and means for automatically detaching the caps from the said arms.

4. The combination with a can carrier or conveyer, of a can-cap-carrying wheel suitably journaled and actuated from the conveyer, can-cap receptacles mounted on the wheel, a number of magnet-arms, a device actuated from the wheel and moving in unison therewith, with which device the magnet-arms are movably connected, and means for controlling said arms whereby they are made to pick up can-caps and lift the caps to position above the cans on the carrier.

5. The combination of a wheel suitably journaled, can-cap-carrying receptacles mounted on said wheel, a hub whose axis is in line with the axis of the wheel, a connection between the hub and the wheel whereby the two parts rotate in unison, magnet-arms hinged or pivoted on the hub and arranged to move vertically in the planes of the cap-receptacles, the arms corresponding in number with the cap-receptacles and a cam upon which the magnet-arms rest and whereby their vertical movement is controlled as they rotate with the wheel and hub, and means for imparting the rotary movement to the last-named parts



6. In an apparatus of the class described, the combination of a vertical stationary shaft, a wheel journaled thereon and provided with can-cap receptacles, a hub journaled on the said shaft above the wheel and connected to rotate therewith, magnet-arms hinged on the hub and arranged to move in radial planes cutting the cap-receptacles, and a stationary cam interposed between the wheel and hub and upon which the arms rest whereby their vertical movement is controlled during rotation.

7. In a can-capping machine, the combination with a vertical stationary shaft, of a wheel journaled thereon, can-cap receptacles mounted on the wheel, a hub also journaled on the shaft above the first-named wheel, guide-arms connecting the wheel and hub, said arms being arranged in pairs, arms hinged on the second hub and passing between the pairs of guide-arms in the planes of the cap-receptacles, magnets applied to the extremities of the hinged arms and adapted to enter the cap-receptacles, and means interposed between the wheel and hub for controlling the vertical movement of the magnet-arms.

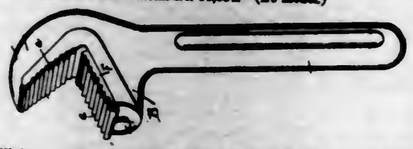
8. The combination with a stationary shaft, of a wheel journaled thereon, can-cap receptacles mounted on the wheel in a circular series, a hub also journaled on the shaft above the wheel, a series of radial arms hinged to the hub to permit vertical movement in the planes of the cap-receptacles, magnets applied to the outer extremities of the arms, and means for controlling the vertical movement of the arms whereby they are caused to enter the cap-receptacles and lift the caps as the wheel and hub rotate, and a suitable connection between the wheel and hub whereby they are caused to rotate in unison.

9. The combination of a wheel suitably journaled, can-cap receptacles mounted on the wheel and arranged in a circular series around the axis of the wheel, a hub suitably journaled and having its axis in line with the axis of the wheel, a connection between the hub and the wheel whereby the two parts rotate in unison, arms hinged to the hub and arranged to move vertically in radial planes passing through the cap-receptacles, a cam mounted between the wheel and the hub for controlling the vertical movement of the radial arms, magnets mounted on the arms, a spring also mounted on each arm in suitable proximity to the magnets, and means for placing each spring under tension and suddenly releasing it whereby its recoil action detaches a can-cap from the magnet at predetermined intervals.

10. The combination with a stationary shaft, of a gear mounted thereon, can-cap receptacles arranged in a circular series and mounted on the gear, a hub journaled on the shaft above the gear, guide-arms connecting the hub and gear, arms hinged to the hub and arranged to move in radial planes passing through the cap-receptacles, magnets attached to the outer extremities of the hinged arms the said last-named arms passing between the guide-arms connecting the gear and hub, a cam mounted on the shaft between the gear and the hub and upon which the radial arms rest, whereby the vertical movement is imparted to said arms during rotation, a spring mounted on each arm for detaching a cap from the magnet, a bracket engaged by each spring during the rotation of its arm, whereby the spring is placed under tension and suddenly released to detach the cap from the magnet, a carrier for the cans whereby they are brought into position to receive the caps, a star-wheel actuated by the cans, a shaft on which the star-wheel is made fast, and a gear also fast on the last-named shaft and meshing with the first-named gear whereby the cans moving with the carrier, rotate the last-named shaft.

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**758,035. WRENCH. WALTER H. W. BENCHER, Oil City, Pa. Filed Mar. 19, 1903. Serial No. 148,981. (No model.)**



*Claim.*—1. In a wrench, the combination of the two opposing jaws, a handle for turning the jaws, a gripping-piece mounted on one of said jaws and movable along the same on lines inclined to the opposing jaw, an adjustable stop for said movable gripping-piece mounted in its jaw and adapted, while so mounted, to permit the detachment of the movable gripping-piece and adjustable to either of several active positions to vary the limit of travel of the movable gripping-piece, substantially as set forth.

2. In a wrench, the combination of two opposing jaws, a handle for turning the same, a gripping-piece movably mounted on one of said jaws and having a stop-shoulder situated at an angle to the lines of movement of the gripping-piece, and a stop-screw mounted in the last said jaw and movable longitudinally on lines inclined to the path of the movable gripping-piece, and adapted, while in mounted position, either to stop the sliding piece at one or another point in its path or to permit the detachment of said sliding piece, substantially as set forth.

3. The combination of two opposing jaws, a handle for turning the same, a movable gripping-piece mounted on one of the said jaws, an adjustable stop mounted in the last said jaw and movable on lines inclined to the path of the said sliding piece, and shoulders on the sliding piece, one inside and the other outside of the adjustable stop, substantially as set forth.

4. In a wrench, the combination of two opposing jaws, a handle for turning the same, a sliding gripping-piece mounted on one of said jaws, a fixed stop for the inward movement of the sliding gripping-piece, and an adjusting-screw for said gripping-piece mounted in its jaw and adapted, while so mounted, to permit the detachment of the said gripping-piece and adjustable to move said gripping-piece to the fixed stop and there secure it, substantially as set forth.

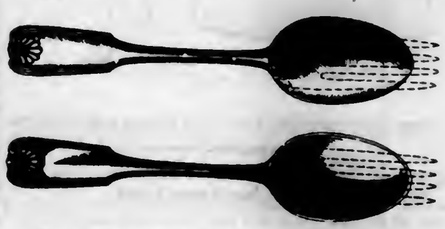
5. In a wrench, the combination of the two opposing jaws, a handle for the same, a sliding, gripping-piece having a depending rib seated in a groove in one of said jaws and movable longitudinally therein, said rib having a recess H, and an adjustable stop mounted in said jaw and adapted to be adjusted relative to the said notch H to vary the limit of travel of the moving gripping-piece, substantially as set forth.

6. In a wrench, the combination of the two opposing jaws, one of the same being provided with a groove, a handle for turning the jaws, a gripping-piece having a rib seated in the groove in the said jaw and removable longitudinally therefrom, said rib having a recess H, and an adjustable stop mounted in the said jaw and adapted to be adjusted relative to said notch H to vary the limit of travel of the gripping-piece, substantially as set forth.

# DESIGNS.

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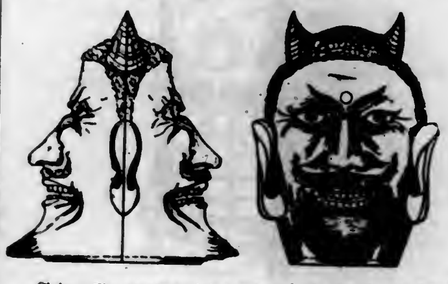
**36,879. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. GEORGE P. TILTON, Newburyport, Mass., assignor to Towle Manufacturing Company, Newburyport, Mass., a Corporation of Massachusetts. Filed July 17, 1903. Serial No. 116,009. Term of patent 14 years.**



*Claim.*—The ornamental design for the handle of a spoon, fork, or similar article, as shown.

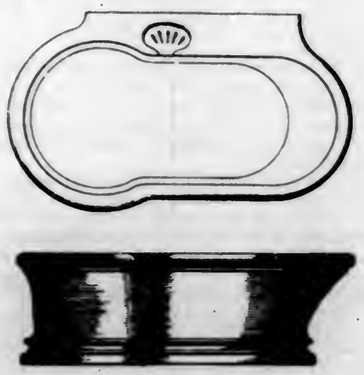
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**36,880. TOY BANK. ADAM C. WILLIAMS, Ravenna, Ohio. Filed Mar. 9, 1904. Serial No. 197,374. Term of patent 7 years.**



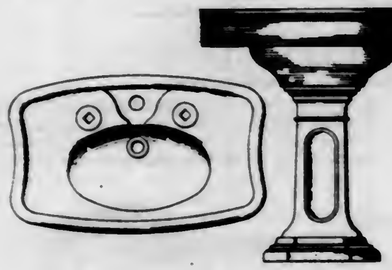
*Claim.*—The ornamental design for a toy bank as herein shown.

36,881. BATH-TUB. CHARLES WEBLAND, Trenton, N. J., assignor to Monument Pottery Company, Trenton, N. J., a Corporation of New Jersey. Filed Mar. 9, 1904. Serial No. 197,367. Term of patent 3½ years.



*Claim.*—The ornamental design for a bath-tub as herein shown.

36,882. LAVATORY. CHARLES WEBLAND, Trenton, N. J., assignor to Monument Pottery Company, Trenton, N. J., a Corporation of New Jersey. Filed Mar. 9, 1904. Serial No. 197,368. Term of patent 3½ years.



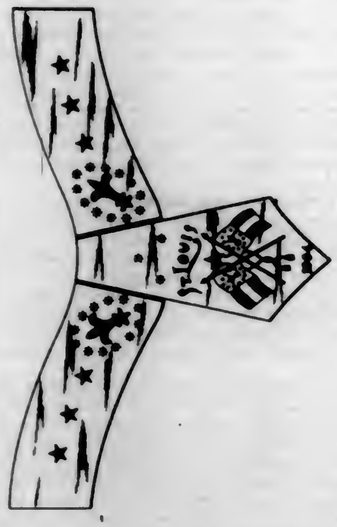
*Claim.*—The ornamental design for a lavatory as herein shown.

36,883. STOVE. PAUL H. PICKEN, Cleveland, Ohio. Filed Mar. 9, 1904. Serial No. 197,375. Term of patent 7 years.



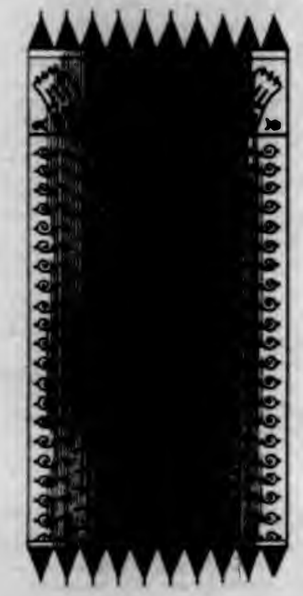
*Claim.*—The ornamental design for a stove, as shown.

36,884. COLLAR OR SIMILAR ARTICLE. ALEXANDER SCHWERIN, New York, N. Y. Filed Mar. 22, 1904. Serial No. 199,478. Term of patent 3½ years.



*Claim.*—The ornamental design for a collar or similar article, as herein shown.

36,885. HAMMOCK-BODY. ISAAC R. PALMER, Middletown, Conn. Filed Mar. 14, 1904. Serial No. 198,515. Term of patent 14 years.



*Claim.*—The ornamental design for a hammock-body substantially as herein illustrated.



# TRADE-MARKS

## REGISTERED APRIL 19, 1904.

42,390. SUITS FOR BOYS. SIEGEL COOPER COMPANY, New York, N. Y. Filed Mar. 16, 1904.



The representation of the figure of a boy in military uniform and cap and in the attitude of salute. Used since February 29, 1904.

42,391. WITHDRAWN.

42,392. CORSETS. BERDSEY & SOMERS, New York, N. Y. Filed Mar. 22, 1904.

MILITARY FORM

The words "MILITARY FORM." Used since August, 1900.

42,393. CERTAIN NAMED WOVEN FABRICS. HOOSAC FIBER CARPET CO., New York, N. Y. Filed Mar. 23, 1904.

HOFI

The word "HOFI." Used since November 1, 1903.

42,394. UPPER-LEATHER. VICTOR R. F. WALKER CO., Boston, Mass. Filed Feb. 25, 1904.

REKLAW

The word "REKLAW." Used since March 1, 1900.

42,395. LEATHER BOOTS AND SHOES. P. W. MINOR & SON, Batavia, N. Y. Filed Feb. 29, 1904.

TIGER

The word "TIGER." Used since June 23, 1891.

42,396. PRESSURE AND VACUUM GAGES. STANDARD GAUGE MANUFACTURING COMPANY, Syracuse, N. Y. Filed Mar. 7, 1904.



The representation of a square figure with the inch-marks at the upper right-hand corner. Used since 1899.

42,397. ROCK-DRILLING MACHINERY AND TOOLS. THE INGERSOLL-SERGEANT DRILL CO., New York, N. Y. Filed Dec. 23, 1903.

LITTLE JAP

The words "LITTLE JAP." Used since October 1, 1903.

42,398. CARRIAGE-MAKERS' HARDWARE. THE H. D. SMITH & CO., Plantsville, Conn. Filed Mar. 15, 1904.

S

The letter "S" and a circumscribing border or circle. Used since 1871.

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42,399. SMOKING-TOBACCO. WELLS-WHITEHEAD TOBACCO CO., Wilson, N. C. Filed Mar. 15, 1904.

COAXER

The word "COAXER." Used since March 7, 1904.

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42,400. MINERAL WATER. HENRY F. SCHEELER, Fort Wayne, Ind. Filed Nov. 12, 1903.




The representation of a shield, upon which appears, near the top thereof, the representation of an electric spark with radiations, upon which are printed the words "BLUE CAST." Immediately below is the oval representation of a landscape, with the figure of a boy standing in the foreground drinking from a glass, and in the background trees, and a spring gushing from a rock. Used since March 1, 1903.

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42,401. WHISKY. BELMONT DISTILLERY CO., Louisville, Ky. Filed Mar. 14, 1904.



The representation of a bell. Used since November, 1880.

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42,402. ABSINTHE. OSCAR LESLIE PERSON, Couvet, Switzerland. Filed Jan. 23, 1904.



The representation of a panel having a central figure composed of four substantially semicircular sides. Within the central figure is an ornamental substantially oblong-shaped shield or panel enlarged at the ends and sides. At either side of the central figure is a band, and panels are shown below and to the right and left of the central figure. Centered under the central figure is a vase or urn from which flames emerge. Resting upon the shield within the central figure is a ball or disk upon which a hat is shown, and from either side of the hat one-half of a streamer extends outwardly. The free space of the panel bears leaves and other ornamental devices. Used since 1887.

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42,403. COFFEE. DIRECT COFFEE COMPANY, Boston, Mass. Filed Feb. 26, 1904.

DIRECT

The word "DIRECT." Used since December 1, 1903.

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42,404. OLIVE-OIL. FERRO SANGUINETTI & CIE., Genoa, Italy. Filed Aug. 4, 1903.



The representation of a globe surrounded by clouds and surmounted by an eagle carrying an olive-branch in its open bill. In the center of the globe is a monogram formed by the letters and character "S & C." The lower part of the globe is represented as being covered by clouds, and on these clouds are the words "EL MUNDO." Used since 1897.

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42,405. WHEAT-FLOUR. ROYAL MILLING COMPANY, Great Falls, Mont. Filed Mar. 24, 1904.

BYAGEN

The word "BYAGEN." Used since March 1, 1904.

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42,406. RYE-MEAL, CORNMEAL, PEARL AND FLAKED HOMINY, AND GRITS. WELLS-ABBOTT-NIBBAR COMPANY, Schuyler, Nebr. Filed Mar. 5, 1904.

PURITAN

The word "PURITAN." Used since May 1, 1903.



42,407. RICE. MEHRATH BROKERAGE COMPANY, Kansas City, Mo. Filed Feb. 22, 1904.




The representation of a three-pointed solid-black banner with fringe at the bottom and a cord tassel attached at each point and suspended from a horizontal bar having a twisted cord and a cord tassel at each end and attached to a staff at the back side of the banner by means of a twisted cord connecting the staff to the ends of the horizontal bar, associated with the word "VICTORY." Used since January 1, 1904.

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42,408. BREAD. JOSEPH R. BLACKBURN, Columbus, Ohio. Filed Mar. 22, 1904.

MIKADO

The word "MIKADO." Used since March 1, 1904.

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42,409. BREAD, BISCUITS, AND CAKES MADE FROM BANANAS. WILLIAM ALFRED JONES, New York, N. Y. Filed Jan. 23, 1904.

BANA

The word "BANA." Used since December, 1903.

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42,410. ARTIFICIAL-FOOD PREPARATIONS. CHEMISCHE FABRIK VON HEYDEN, AKTIENGESELLSCHAFT, Radebeul, Germany. Filed Dec. 30, 1903.

Calodal

The word-symbol "CALODAL." Used since July 3, 1903

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42,411. POLISHES FOR LEATHER GOODS. WHITTEMORE BRO'S AND CO., Cambridge, Mass. Filed Feb. 15, 1904

BOSSOLA

The word "BOSSOLA." Used since 1903.

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42,412. AXLE-GREASE. WILLIAM H. LEY, Spokane, Wash. Filed Dec. 18, 1903.

42,412.



The representation of an ax appearing over the letter "L." Used since August 15, 1903.

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42,413. MEDICATED SALT. BOURLAND & STEVENS BROS., Decatur, Ill. Filed Feb. 15, 1904.



A circle within a circle surrounding a representation of a buck's head, also showing a portion of the deer or buck's neck and the horns extending from the head above and beyond the circle, and between the circles and below the right horn the word "BUCK" is associated. Used since May, 1903.

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42,414. MEDICATED SALT. BOURLAND & STEVENS BROS., Decatur, Ill. Filed Feb. 15, 1904.



A rectangular figure bearing the representation of an Arab on horseback with a gun in one hand and moving over a mountainous country. Used since October, 1903.

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42,415. REMEDY FOR A CERTAIN NAMED DISEASE. JACOB ROBSON, Mexico, Mexico. Filed Oct. 27, 1903.

SALAMBA

The word "SALAMBA." Used since July 1, 1903.

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42,416. CERTAIN NAMED REMEDIES. IOWA MEDICINE CO., Keokuk, Iowa. Filed Jan. 9, 1904.

KKK

The three capital letters "K K K." Used since March 1, 1900

42,417. LIQUID MEDICAL PREPARATION FOR THE TREATMENT OF CERTAIN NAMED DISEASES. ASMO REMEDY CO., Mount Morris, Ill. Filed Feb. 15, 1904.

Asmo

The word "ASMO." Used since January 1, 1904.

42,418. SLEEPING-DRAFT. MARGARET A. GEER, Richmond, Va. Filed Mar. 15, 1904.

BALMY SLEEP

The words "BALMY SLEEP." Used since 1884.

42,419. SYRUP OF GUAIACOL. DAVIS PHARMACEUTICAL COMPANY, New York, N. Y. Filed Feb. 16, 1904.




The word "GUAISOTOL" and the letters and abbreviation "D P Co" in monogram form on a black circular field with surrounding concentric circles. Used since January 11, 1904.

42,420. SALVES USED EXTERNALLY. ALBERT V. MEEUS, New York, N. Y. Filed Feb. 12, 1904.

Anti-Flamma

The hyphenated word "ANTI-FLAMMA." Used since March, 1902.

42,421. MEDICAL PASTES AND SALVES. WOLLWASCHEREI U. KÄMMEREI DÖHREN BEI HANNOVER, Döhren, Germany. Filed Feb. 5, 1904.

PRAEVALIDIN

The word "PRAEVALIDIN." Used since November, 1903.

42,422. CHEMICAL PREPARATIONS FOR SULFUR-BATHS. CHEMISCHE FABRIK VOSSELER A.-G., Vosselde, Germany. Filed Dec. 30, 1903.

Thiopinol

The word "THIOPINOL." Used since October 1, 1903.

42,423. SYNTHETIC OR ANILIN COLORS FOR PRINTING PURPOSES. CARL JÄGER, Düsseldorf-Derendorf, Germany. Filed Jan. 26, 1904.

*Typoline*

The word "TYPOLINE." Used since April 21, 1903.

42,424. FOUNTAIN-PENS. FRANCIS C. BROWN, New York, N. Y. Filed Mar. 17, 1904.

JUST

The word "JUST." Used since January 25, 1904.

42,425. PAPER-CLIPS. THE CORRUGATED & DIMPLED MANUFACTURING COMPANY, New York, N. Y. Filed Feb. 24, 1904.

GEM

The word "GEM." Used since March 1, 1892.

42,426. CUFF-HOLDERS. HENRY C. FRANK, New York, N. Y. Filed Mar. 18, 1904.

WIZARD

The word "WIZARD." Used since November 22, 1887.

42,427. NUT-CRACKERS. JAMES R. HASKINS, Hartford, Conn. Filed Mar. 17, 1904.

JAWBONE

The word "JAWBONE." Used since March 1, 1904.

42,428. AUTOMATIC PIANO-PLAYER AND SELF-PLAYING PIANO. KOELER & CAMPBELL, New York, N. Y. Filed Mar. 18, 1904.

IDEAL

The word-symbol "IDEAL." Used since March 15, 1904.



42,429. SEWING-MACHINES AND PARTS THEREOF. THE LIBBEY SEWING MACHINE COMPANY, Rockford and Chicago, Ill. Filed Mar. 16, 1904.




The words "NEW ROYAL" within a circular border. Used since September 12, 1882.

42,430. CORSET-BONES. JULIUS JABOWITZ, New York, N. Y. Filed Mar. 16, 1904.

WALOHN

The word "WALOHN." Used since September, 1901.

42,431. CERTAIN NAMED DRESS GOODS. JOY, LAMSON & CO., Boston, Mass., and New York, N. Y. Filed Mar. 14, 1904.




A monogram composed of the letters "J L CO." Used since January, 1889.

42,432. FLAX-FIBER PRODUCTS FOR CERTAIN NAMED PURPOSES. UNION FIBRE CO., Winona, Minn. Filed Mar. 25, 1904.

LINOFELT

The word "LINOFELT." Used since September 1, 1903.

42,433. SKIRTS FOR WOMEN. THE WEARWELL SKIRT CO., Boston, Mass. Filed Jan. 6, 1904.



The representation of the figure of a woman wearing a skirt or underskirt standing at one side of a space inclosed by a border-line. Used since December 1, 1903.

42,434. OVERGAITERS. A. R. LITTLE & Co., Lynn, Mass. Filed Mar. 28, 1904.

SOROSIS

The word "SOROSIS." Used since November 1, 1903.

42,435. SHOE-LACES. JULIUS ROSENBERG, New York, N. Y. Filed Mar. 26, 1904.

KOMILFAUT

The word "KOMILFAUT." Used since February 15, 1904.

42,436. LEATHER BOOTS AND SHOES. GEORGE R. KEITH COMPANY, Brockton, Mass. Filed Mar. 28, 1904.

TOR-PE-TOE

The hyphenated word "TOR-PE-TOR." Used since February 24, 1904.

42,437. FOOD FOR ANIMALS. THE SHAMROCK STOCK FOOD CO., Brooklyn, N. Y. Filed Mar. 17, 1904.



The representation of a shamrock. Used since March 20, 1903.

42,438. SMOKING-TOBACCO AND CIGARETTES MADE THEREOF. J. & F. BELL, LTD., Glasgow, Scotland. Filed Dec. 30, 1903.

THREE NUNS

The words "THREE NUNS." Used since December, 1898.

42,439. CERTAIN NAMED MALT LIQUORS. BARCLAY PERKINS & CO., LIMITED, London, England. Filed Mar. 16, 1904.

42,439.




The pictorial representation of Dr. Johnson arranged on a circular panel having at the top thereof a segmental border containing the abbreviation and figures "ESTAB'D 1781" and at the bottom a similar border containing the abbreviation and word "DR. JOHNSON." Used since August, 1903.

42,440. CERTAIN NAMED MALT LIQUORS. BARCLAY PERKINS & CO., LIMITED, London, England. Filed Mar. 16, 1904.




The representation of a shield bearing the letters, character, and abbreviation "B P & Co." Used since July, 1879.

42,441. LAGER-BEER. THE CUMBERLAND BREWING CO. OF ALLEGANY COUNTY, Cumberland, Md. Filed Mar. 14, 1904.




The representation of a brewer's kettle, in the center of which appears the monogram "C B Co." Used since January 1, 1891.

42,442. PERFUMES IN SOLID, LIQUID, AND POWDERED FORM. RICHARD HUDNUT, New York, N. Y. Filed Mar. 17, 1904.

LE RÊVE

The words "LE RÊVE." Used since February, 1904.

42,443. PERFUMES IN SOLID, LIQUID, AND POWDERED FORM. RICHARD HUDNUT, New York, N. Y. Filed Mar. 17, 1904.

CHRYSIS

The word "CHRYSIS." Used since February, 1904.

42,444. HAIR-TONIC. ABRAHAM KOPPELBERGER, Sioux City, Iowa. Filed Mar. 16, 1904.

SCALPORIA

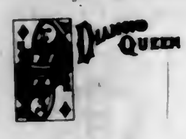
The word "SCALPORIA." Used since February 16, 1904.

42,445. COMPOUND FOR THE CURE OF ASTHMA. WILLIAMS AND COLE, Eden Valley, Minn. Filed Sept. 28, 1903.

No-Mo

The term "No-Mo." Used since June, 1903.

42,446. MEDICINE FOR THE CURE OF CERTAIN NAMED DISEASES. DULUTH MEDICINE COMPANY, Duluth, Minn. Filed Mar. 11, 1904.




The representation of a conventional queen of diamonds in association with the words "DIAMOND QUEEN." Used since February 11, 1904.

42,447. CERTAIN NAMED MEDICINE. L. W. LEITHEAD DRUG CO., Duluth, Minn. Filed Dec. 12, 1903.




The word "LEITH" in white letters arranged upon a background formed by a black or colored disk, within and near the margin of which disk appears a white line in form of a circle concentric with said disk. The final letter thereof is displayed as a capital. Used since December 8, 1902.

42,448. REMEDIES FOR THE CURE OF CERTAIN DISEASES. JOHN A. MOSSER, Superior, Wis. Filed Mar. 14, 1904.

Hy-Zon

The hyphenated word "HY-ZON." Used since May 15, 1900.

42,449. INTERNAL REMEDY FOR WORMS. PRATT FOOD COMPANY, Philadelphia, Pa. Filed Mar. 14, 1904.



42,449.



The representation of a seal having serrated edges, within the field of which is a square or rectangle having a shade or color contrasting with the field of the seal and separated therefrom by a narrow border of a shade or color contrasting with the field and square. Used since February 6, 1904.

42,450. CERTAIN NAMED MEDICINAL PREPARATIONS. LUTHER D. GARDNER, New York, N. Y. Filed Feb. 16, 1904.

LIQUID SUNSHINE

The words "LIQUID SUNSHINE." Used since January 18, 1904.

42,451. OINTMENTS AND OINTMENT BASES. SCHERING & GLATZ, New York, N. Y. Filed Mar. 17, 1904.

ENDERMOL

The word "ENDERMOL." Used since March 1, 1904.

42,452. CERTAIN NAMED MEDICINAL AND FOOD COMPOUNDS. C. F. BOEHRINGER & SOHNE, Waldhof, Germany. Filed Sept. 28, 1903.

FERRATOSE

The word-symbol "FERRATOSE." Used since June 1, 1899.

42,453. PORTLAND CEMENT. EMPIRE PORTLAND CEMENT CO., Warners, N. Y. Filed Mar. 26, 1904.



The representation of an entrance to a building or porch supported by columns on each side. Used since July 1, 1901.

42,454. RUBBER HOSE AND COTTON HOSE. BOWERS RUBBER COMPANY, San Francisco, Cal. Filed Jan. 12, 1904.

SHORTHORN

The words "SHORT HORN." Used since June, 1902.

42,455. RUBBER HOSE AND COTTON HOSE. BOWERS RUBBER COMPANY, San Francisco, Cal. Filed Jan. 12, 1904.

OWL

The word "OWL." Used since June, 1902.

42,456. RUBBER HOSE AND COTTON HOSE. BOWERS RUBBER COMPANY, San Francisco, Cal. Filed Jan. 12, 1904.



The representation of the head of a short-horn bull. Used since June, 1902.

42,457. RUBBER HOSE AND COTTON HOSE. BOWERS RUBBER COMPANY, San Francisco, Cal. Filed Jan. 12, 1904.



The representation of an owl. Used since June, 1902.

42,458. FISH-HOOKS AND FISHING-TACKLE. HENRY MILWARD & SONS, LIMITED, Redditch, England. Filed Mar. 4, 1904.

ARCHER

The word "ARCHER." Used since 1879.

42,459. CERTAIN NAMED NEEDLES AND PINS, BODKINS, AND CROCHET-HOOKS. HENRY MILWARD & SONS, LIMITED, Redditch, England. Filed Mar. 4, 1904.

ARCHER

The word "ARCHER." Used since 1879.

42,460. RAZORS. CARL FRIEDRICH ERB, Wald, Germany. Filed Oct. 5, 1903.

ATOR

The word-symbol "ATOR." Used since April 1, 1903.

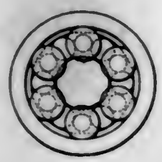
42,461. WITHDRAWN.

42,462. CERTAIN NAMED POWER-TRANSMITTING MACHINERY. DODGE MANUFACTURING COMPANY, Mishawaka, Ind. Filed Mar. 14, 1904.




The letter "D," inclosed within a diamond-shaped figure. Used since July 15, 1903.

42,463. BEARINGS FOR SHEAVES. DANIEL R. KEMPSTER, Boston, Mass. Filed Feb. 17, 1903.



A geometric design having an outer circular frame or border inclosing a series of circles in unbroken lines, which series of circles cover or partially cover two series of smaller circles in dotted or broken lines, and these two series of smaller circles are arranged within a ring-shaped space which is bordered by two circles concentric with the outer border and in broken lines. Used since January 1, 1901.

42,464. JOURNAL AND SHAFT BEARINGS FOR MACHINES. DANIEL R. KEMPSTER, Boston, Mass. Filed Feb. 17, 1903.



A geometric design having an annularly-arranged series of circles in unbroken lines, which series of circles is bordered or framed by an inner and an outer circular field formed by concentric circles in unbroken lines. This annularly-arranged series of circles cover and partially cover an annularly-arranged series of smaller circles in dotted and broken lines, the series of smaller circles being arranged upon a ring-shaped field bordered by an inner and an outer circle in broken lines. Used since January 1, 1901.

THE NORRIS PETERS CO.



# LABELS

## REGISTERED APRIL 19, 1904.

10,964.—*Title:* "BUSTER BROWN LEGGING." (For Leggings.) H. JACOB & SONS, New York, N. Y. Filed March 28, 1904.

10,965.—*Title:* "BUSTER BROWN'S." (For Rings.) E. & J. BASS, New York, N. Y. Filed March 26, 1904.

10,966.—*Title:* "OUR DOLLIES." (For Picture-Blocks.) NATIONAL NOVELTY CORPORATION, Pawtucket, R. I. Filed March 23, 1904.

10,967.—*Title:* "DOMESTIC PETS." (For Picture-Blocks.) NATIONAL NOVELTY CORPORATION, Pawtucket, R. I. Filed March 23, 1904.

10,968.—*Title:* "REISSMANN'S A. B. C. RULER." (For Rulers.) F. REISSMANN, Westpoint, N. Y. Filed March 24, 1904.

10,969.—*Title:* "REISSMANN'S PERFECTION MITRE SCALE." (For Rulers.) F. REISSMANN, Westpoint, N. Y. Filed March 29, 1904.

10,970.—*Title:* "CHOCO." (For Confectionery.) CHOCO CANDY COMPANY, Chicago, Ill. Filed March 29, 1904.

10,971.—*Title:* "HIGH LIFE." (For Smoking-Tobacco.) ROBT. HARRIS & BRO., Reidsville, N. C. Filed March 28, 1904.

10,972.—*Title:* "HONEY DEW." (For Smoking-Tobacco.) ROBT. HARRIS & BRO., Reidsville, N. C. Filed March 28, 1904.

10,973.—*Title:* "PRIDE OF REIDSVILLE." (For Smoking-Tobacco.) ROBT. HARRIS & BRO., Reidsville, N. C. Filed March 28, 1904.

10,974.—*Title:* "THE FAMOUS SUNBURY CREAMERY BUTTER." (For Butter.) THE SUNBURY CO-OPERATIVE CREAMERY CO., Sunbury, Ohio. Filed March 28, 1904.

10,975.—*Title:* "REGAL BRAND CONDENSED MILK." (For Condensed Milk.) UNITED STATES CONDENSED MILK CO., Deansboro, N. Y. Filed March 22, 1904.

10,976.—*Title:* "ORANGE DRIP SYRUP." (For Syrup.) SADIE C. LEONARD, Los Angeles, Cal. Filed March 29, 1904.

10,977.—*Title:* "SETTER." (For Whisky.) JOS. R. STONEBRAKER & CO., Baltimore, Md. Filed March 24, 1904.

10,978.—*Title:* "THE LA GRANGE." (For Mineral Water.) WM. H. THOMAS, Lagrange, Mo. Filed March 29, 1904.

10,979.—*Title:* "INO." (For a Beverage.) INO COMPANY, St. Louis, Mo. Filed March 17, 1904.

10,980.—*Title:* "EXTRA DRY GINGER ALE." (For Carbonated Beverages.) AMERICAN SODA FOUNTAIN COMPANY, Boston, Mass. Filed March 28, 1904.

10,981.—*Title:* "LIFE-MALT." (For Malt Extract.) NICHOLAS BIEYER, Jr., Milwaukee, Wis. Filed March 24, 1904.

10,982.—*Title:* "MOLTOZONE." (For Medicine.) MAX CARNOT, Yonkers, N. Y. Filed March 26, 1904.

10,983.—*Title:* "GUAISOTOL (DAVIS) THE ONLY PERMANENT SIRUP OF GUAIACOL." (For Medicine.) DAVIS PHARMACEUTICAL COMPANY, New York, N. Y. Filed March 28, 1904.

10,984.—*Title:* "X-O QUICK CURE." (For Medicine.) ALEXANDER CRICHTON, Castleton, Canada. Filed March 26, 1904.

10,985.—*Title:* "KING'S STOP A COUGH." (For Medicine.) CALIFORNIA CHEMICAL CO., Minneapolis, Minn. Filed March 28, 1904.

10,986.—*Title:* "ABSORBINE." (For a Veterinary Medicine.) W. F. YOUNG, Springfield, Mass. Filed March 23, 1904.

10,987.—*Title:* "BALM OF GILEAD." (For Ointment.) FRED A. WILLIAMS, Utica, N. Y. Filed March 26, 1904.

10,988.—*Title:* "EGYPTIAN SALVE." (For Salve.) WALTER WYMAN, Providence, R. I. Filed March 4, 1904.

10,989.—*Title:* "DR. BROOKS' FAULTLESS TOOTH POWDER." (For Tooth-Powder.) D. L. BROOKS, Chicago, Ill. Filed March 9, 1904.

# PRINTS

## REGISTERED APRIL 19, 1904.

960.—*Title:* "AN ADLER SERGE SUIT." (For Men's Apparel.) DAVID ADLER & SONS CLOTHING CO., Milwaukee, Wis. Filed March 24, 1904.

961.—*Title:* "ATTRACTIVE SUMMER FOOTWEAR FOR WOMEN." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed March 21, 1904.

962.—*Title:* "HARRIET HUBBARD AYER'S FACE CREAM." (For Face-Cream.) HARRIET AYER SEYMOUR, South Orange, N. J. Filed February 23, 1904.

963.—*Title:* "LITTLE TINGLER." (For Rubber Sponges.) ALFRED H. SMITH, New York, N. Y. Filed March 23, 1904.

964.—*Title:* "KLEANWELL TINGLE SPONGE." (For Rubber Sponges.) ALFRED H. SMITH, New York, N. Y. Filed March 23, 1904.

965.—*Title:* "ARABIAN CHOCOLATES." (For Candy.) THE GRAY LITHO. CO., New York, N. Y. Filed March 25, 1904.

966.—*Title:* "PURITY ITALIAN CHOCOLATES." (For Candy.) THE GRAY LITHO. CO., New York, N. Y. Filed March 25, 1904.

967.—*Title:* "SOCIETY CHOCOLATES." (For Candy.) THE GRAY LITHO. CO., New York, N. Y. Filed March 25, 1904.

968.—*Title:* "PURITAN CHOCOLATES." (For Candy.) THE GRAY LITHO. CO., New York, N. Y. Filed March 25, 1904.

969.—*Title:* "PURITY HEALTH CHOCOLATES." (For Candy.) THE GRAY LITHO. CO., New York, N. Y. Filed March 25, 1904.

970.—*Title:* "PURITY BON BONS AND CHOCOLATES." (For Candy.) THE GRAY LITHO. CO., New York, N. Y. Filed March 25, 1904.

971.—*Title:* "PRINCESS CHOCOLATES." (For Candy.) THE GRAY LITHO. Co., New York, N. Y. Filed March 28, 1904.

972.—*Title:* "ARCADIAN CHOCOLATES." (For Candy.) THE GRAY LITHOGRAPH Co., New York, N. Y. Filed March 26, 1904.

973.—*Title:* "FINEST CHOCOLATES." (For Candy.) THE GRAY LITHOGRAPH Co., New York, N. Y. Filed March 26, 1904.

974.—*Title:* "DUCHESS CHOCOLATES." (For Candy.) THE GRAY LITHOGRAPH Co., New York, N. Y. Filed March 26, 1904.

975.—*Title:* "PRINCESS ASSORTMENT CHOCOLATES." (For Candy.) THE GRAY LITHOGRAPH Co., New York, N. Y. Filed March 28, 1904.

976.—*Title:* "OUTING ASSORTED FINE CHOCOLATES." (For Candy.) THE GRAY LITHOGRAPH Co., New York, N. Y. Filed March 26, 1904.



# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE CLARK.

*Decided February 16, 1904.*

1. DRAWING—SUFFICIENT ILLUSTRATION.

Where it appears that sufficient parts and connections are shown to effect the operation described and that the specific structure of the parts forms no part of the invention and are stated to be of usual construction, *Held* that further illustration should not be required.

2. SAME—SAME—DIAGRAMMATIC VIEWS.

Where the invention relates to the arrangement of engines, tanks, receivers, and connecting pipes and valves all of known construction, diagrammatic illustration is probably clearer than views showing parts in detail.

3. SAME—ACTION ON MERITS.

Where the Examiner required additional illustration and refused action on the merits, stating that the operation could not be understood, and it appears that the operation intended by the applicant is clearly described and the apparatus sufficiently illustrated, *Held* that action on the merits should not have been suspended.

4. SAME—ADDITIONAL ILLUSTRATION—ACTION ON THE MERITS.

Where an opening referred to in the specification and certain reference-letters should be applied on the drawings, *Held* that as these changes are not essential to an understanding of the invention they may be made at any time before final action and do not warrant suspension of action on the merits.

ON PETITION.

POWER GENERATION AND STORAGE.

*Messrs. Knight Bros.* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner requiring additional illustration and refusing action on the merits.

The Examiner in his statement says:

It is not clearly seen nor understood how the compressed air passes into the low-pressure cylinder, since the drawing and specification do not disclose the same.

In the specification, page 1, after a reference to the high and low pressure cylinders it is stated that a receiver C or C′ is interposed, as usual, in the connection between such cylinders, and the drawing clearly shows the receivers and pipes connecting them with the cylinders, as stated. On page 2 it is stated that connections 16 16′ are provided between the air-supply and the engines, and the drawing shows pipes 16 16′ leading to the receivers C C′. On page 4 it is stated that at certain times the air is admitted to the receivers C C′ to increase the pressure in the low-pressure cylinders. It is clear that the applicant intends at certain times to mix air with the high-pressure exhaust in the receivers C C′ and to deliver the mixture to the low-pressure cylinder in the same manner that steam is usually delivered there. It is stated in the specification that the parts are of usual construction. It does not appear that their specific form is part of the invention or is necessary in order to understand the operation which the applicant describes.

The Examiner further objects to the drawing as a merely diagrammatic view of the plant, which does not show the three-way valves 12 12′, controlling the outlet from the pump to the atmosphere or the storage-tank. The objection to the drawing as diagrammatic is not well taken in the present case. The invention appears to relate to the arrangement of engines, tanks, and receivers of known construction and their connection by pipes and valves and is probably more clearly illustrated by the present diagrammatic drawing than would be possible by views showing the parts in detail. The outlets to the atmosphere from the three-way valves 12 12′ should be shown in Figure 1 before final action; but their appearance on the drawing is not essential to an understanding of the invention and does not warrant suspension of action upon the merits of the invention.

The Examiner also states:

The drawing shows hand-valves on the various pipes which would necessitate the presence of some one to watch the condition under which the device was operating. * * *
The device is substantially described as automatic, but this is not shown in the drawing.

The specification does not state that the device is automatic, but in the amendment of February 24, 1900, refers to the operation of the various valves by an attendant.

The Examiner also states:

The air-pumps and the position of their chests on the pumps and the position of the pumps with the steam-cylinders as now shown represent a third cylinder of a compound engine.

The pumps are shown with intakes and delivery-pipes leading to the air-tank. The engines are shown connected with the steam-supply pipe and without connections with the pumps or their chests. The drawing is clear, and there seems to be no reason for confusing these parts. The air-intakes to the pumps should be lettered and referred to in the specification; but this may be done at any time before final action.

The petition is granted.

## HARRISON v. SHOEMAKER.

*Decided February 20, 1904.*

1. INTERFERENCE—MOTION—TRANSMISSION.
Where the Examiner of Interferences transmitted a motion for dissolution brought two days after the time allowed by the rules, *Held* that such action of the Examiner of Interferences was not an abuse of discretion nor clearly erroneous and would not be disturbed, citing *Winter* v. *Slick* v. *Vollkommer*, (97 O. G., 1837.)

2. SAME—SAME—SAME.
Where the delay in bringing a motion for dissolution is slight and no testimony has been taken, it cannot be held that the affidavit of the attorney that he had been occupied with other matters demanding immediate attention which prevented earlier consideration of the case may not be considered sufficient excuse for transmitting the motion.

APPEAL on motion.

WIRELESS SIGNALING SYSTEM.

Application of Walton Harrison. Application of Harry Shoemaker.

*Mr. William L. Morris* for Harrison.
*Mr. Cornelius D. Ehret* for Shoemaker.

ALLEN, *Commissioner:*

This is an appeal by Shoemaker from the action of the Examiner of Interferences transmitting to the Primary Examiner a motion by Harrison to dissolve the above-entitled interference.

The motion was brought two days outside the twenty days within which such motions may be transmitted as a matter of course and, in excuse of the delay, is supported by the affidavit of the attorney for Harrison affirming that he, the attorney, had been occupied with other matters demanding immediate attention which prevented earlier consideration of this case. The Examiner of Interferences held that as no testimony had been taken and the delay was slight this affidavit was sufficient and granted the motion to transmit to the Primary Examiner, citing *Winter* v. *Slick* v. *Vollkommer*, (97 O. G., 1837.)

It does not appear that the action of the Examiner of Interferences was an abuse of discretion or was clearly erroneous. It will not, therefore, be disturbed. (*Winter* v. *Slick* v. *Vollkommer*, *supra*.) The contention of the appellant that the affidavit presented on behalf of the appellee does not show conclusively or even to a satisfactory extent that it was impossible to make the motion before the Examiner of Interferences within the twenty-day limit and that this affidavit cannot, therefore, be accepted as a proper showing under any circumstances cannot be allowed. The practice outlined as follows in *Arbetter* v. *Lewis* (99 O. G., 1383) applies here:

> When, however, as in the present case, no testimony has been taken and the delay in bringing the motion is slight, no such hardship can arise. If reasons exist why the interference should not be continued, it is for the interest of all concerned that all such reasons be considered at one time if possible. Hence the matter submitted in excuse of delay in bringing the motion to dissolve will not be so closely scrutinized as when presented at a later stage in the proceedings. No hard and fast rule can be laid down in these cases, but each one must be considered on its own merits. Reasons which would warrant the transmittal of a motion brought, as was the present one, before the interference has progressed to an advanced stage might not be sufficient if brought later.

The decision of the Examiner of Interferences is affirmed.

## HASKELL v. MINER v. BALL.

*Decided February 20, 1904.*

1. INTERFERENCE—BURDEN OF PROOF—JOINT APPLICATION—SOLE INVENTOR.
Where a junior party to an interference asks that he be made the senior party by reason of a prior application filed by him as joint inventor with another party, *Held* that his request will be denied, since a joint application and a sole application cannot constitute parts of one proceeding.

2. SAME—SAME—SAME—SAME.
A joint application is no proof that one of the parties is a sole inventor and cannot be used as the basis for a judgment in his favor in an interference, and therefore it cannot affect the burden of proof.

3. SAME—CONSTRUCTIVE REDUCTION TO PRACTICE—ALLOWABLE APPLICATION—JOINT APPLICATION.
A joint application cannot be accepted as constructive reduction to practice by a sole inventor who subsequently files a sole application, since to constitute constructive reduction to practice the application must be allowable.

APPEAL on motion.

PROCESS OF HULLING COTTON-SEED.

Application of Lewis W. Haskell. Application of Charles Miner. Application of William T. Ball.

*Mr. Fred E. Tasker* for Haskell.
*Messrs. Howson & Howson* for Miner.
*Messrs. Milo B. Stevens & Co.* for Ball.

ALLEN, *Commissioner:*

This is an appeal by Ball from the decision of the Primary Examiner granting a motion by Miner to shift the burden of proof in the above-entitled interference.

It appears that of the applications directly involved Miner's was first filed, Ball's second, and Haskell's third. In declaring the interference, however, Ball was given the benefit of the filing date of an earlier application filed by him as joint inventor with one Lea. By reason of that application Ball was made the senior party. The joint application of Ball and Lea was abandoned by an instrument in writing, it being stated that Ball was the sole inventor and that Lea merely had a financial interest in it and that the application was filed jointly through a misunderstanding of the law. The present sole application was filed at the time of the abandonment of the joint application. The question now presented for decision is whether Ball as a sole inventor can in this proceeding take advantage of the earlier joint application as a constructive reduction to practice by him and as fixing the burden of proof.

It is a settled principle that the senior party to an interference should be the one in favor of whom judgment should be rendered if no testimony is taken. It should appear, in so far as the Office records are concerned, that he is the first inventor. It is scarcely necessary to say that a joint application filed in this Office is not record evidence that one of the joint applicants is a sole inventor. On the contrary, the oath attached to that application indicates that he is not a sole inventor, and therefore it seems very clear that the joint application cannot be considered complete proof that he is the first and sole inventor.

The joint application undoubtedly indicates





that Ball had a conception of the invention therein disclosed at the time it was filed; but mere priority of conception does not warrant judgment of priority of invention. An abandoned application, for instance, proves conception, but does not constitute constructive reduction to practice.

The legal conclusion that the invention is completed or constructively reduced to practice when the application is filed applies only in the case of an allowable application. (*Porter* v. *Louden*, 73 O. G., 1551; *Carty* v. *Kellogg*, 74 O. G., 657; *Croskey* v. *Atterbury*, 76 O. G., 163.) No such conclusion attaches to an application which could never properly mature into a patent. The applicants Ball and Lea admitted that the joint application was not allowable, and it is very clear that it was not allowable if Ball's sole application is allowable. Joint applicants constitute a different entity from a sole applicant, and applications by them cannot be considered parts of the same proceeding. (*Ex parte Erne and Bridges*, 81 O. G., 2247.) There may even be an interference between a joint application and a sole application filed by one of the parties. (*Secor and Secor* v. *Knapp*, 63 O. G., 612.)

The Examiner was right in his conclusion that Ball should not be given the benefit of the date of the joint application in determining which party is *prima facie* the first inventor, and therefore his decision shifting the burden of proof is affirmed.

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## SPINDLER v. NATHAN AND BOLZE.

*Decided February 23, 1904.*

1. INTERFERENCE—TESTIMONY—EXTENSION OF TIME FOR TAKING.
Where a motion to extend time for taking testimony for the third time is supported only by the affidavit of the attorney to sickness and absence of some of the witnesses and absence of the inventor part of the time and, so far as appears, the testimony of the inventor and other witnesses might have been taken, but was not taken, *Held* that the motion was properly denied.

2. SAME—SAME—SAME.
Where some of the witnesses were sick and residing at widely-separated places, the desire to have all present at one time, so as to avoid trouble and expense, will not justify repeated extensions of time for taking testimony and the failure to take the depositions of those witnesses that were available.

APPEAL on motion.

PROCESS OF BREWING BEER.

Application of Charles Spindler. Application of Leopold Nathan and Hans Bolze.

*Messrs. Edgar Tate & Company* for Spindler.
*Messrs. Briesen & Knauth* for Nathan and Bolze.

ALLEN, *Commissioner:*

This is an appeal by Spindler from the action of the Examiner of Interferences denying his motion for extension of the times set for taking testimony.

The times fixed for taking testimony have been extended twice upon stipulation between the parties. The Examiner of Interferences in granting the second extension stated that further extensions would not be granted upon stipulation without sufficient excuse for the delay. Shortly before the expiration of the time fixed by the second stipulation for taking Spindler's testimony-in-chief Spindler filed the motion for still further extension of times, which was denied by the Examiner of Interferences. This motion was supported by the affidavit of the attorney stating that two of the witnesses for Spindler had been sick for the entire time in which testimony might have been taken, one in Germany and one in Arkansas, and that Spindler had been twice absent for some weeks from New York during this period and had not returned from the second absence when expected nor put himself in communication with his attorneys. The Examiner of Interferences found very properly that this showing was entirely inadequate.

It appears, further, upon this appeal that Spindler has four important witnesses besides himself. Two of these are sick, one in Germany and one in Arkansas, as stated before. A third is also sick now and in a hospital in New York. This emphasizes the impossibility of accepting as sufficient excuse for delay the appellant's contention that he has been waiting until all his witnesses can be present at one time, so as to save trouble and expense to all parties. This time might never arrive, and, indeed, the prospects thereof seem more remote now than before the extensions.

There has been ample time to secure the testimony of Spindler himself and, so far as appears, that of the third witness recently taken sick in New York and also that of the fourth witness mentioned in the affidavit filed upon the appeal. Throughout the time originally set for taking Spindler's testimony-in-chief and the two extensions thereof nothing seems to have been done where much might have been done. The desire to take the testimony of all the witnesses at one time will not excuse this delay.

The decision of the Examiner of Interferences denying Spindler's motion for further extension of the times set for taking testimony is affirmed.

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## NEWCOMB v. LEMP.

*Decided March 29, 1904.*

1. BRIEFS—SUPPRESSED WHEN FILED AFTER HEARING.
Where a brief is filed after the hearing and without permission, *Held* that it will not be received and considered. The rules as to the time of filing briefs should be complied with.

2. SAME—MUST BE FILED BEFORE HEARING.
All briefs must be filed before the hearing, and they cannot be filed at or after the hearing except upon the consent of the adverse party and upon obtaining the permission of the tribunal hearing the case.

ON PROTEST.

ART OF GENERATING STEAM OR VAPOR.

Patent granted to Edward C. Newcomb July 15, 1902, No. 704,907. Application of Herman Lemp.

*Messrs. Kenyon & Kenyon* for Newcomb.
*Mr. A. G. Davis* and *Messrs. Lyons & Bissing* for Lemp.

ALLEN, *Commissioner:*

This is a protest by counsel for Newcomb against the receipt of a supplemental brief on behalf of Lemp after the hearing.

It appears that Lemp appealed from the decision of the Primary Examiner on a motion for dissolution and did not file his brief until the day of the hearing. Counsel for Newcomb did not object to the receipt of that brief, with the understanding that they would be permitted to file a reply brief. Such permission was given, and the reply brief was filed. Lemp thereafter presented a brief in reply to Newcomb's reply brief, and Newcomb now asks that this last brief be suppressed. Lemp presented his last brief, suggesting that as he was the appellant he had the right to open and close the argument and that this applies to briefs as well as oral arguments. The suggestion is not well founded, for the rules of this Office, as well as the rules of the courts, make provision for only one brief on a side.

Counsel practicing before this Office have fallen into the habit of disregarding the rules as to the filing of briefs, and as a consequence much confusion results, and the tribunals of this Office, as well as opposing counsel, are put to much inconvenience. The rules specifically require that all briefs be filed before the hearing, and they cannot be filed at or after the hearing except upon the consent of the adverse party and upon obtaining the permission of the tribunal hearing the case.

On a hearing in a contested case before a tribunal of original jurisdiction briefs must be filed three days before the hearing. (Rule 163.) In the case of appeals the appellant must file his brief five days before the hearing and the appellee one day. (Rule 147.) In all cases briefs should be filed before the hearing. (Rule 136.)

The rules state that in contested cases printed briefs should be filed; but this has not been regarded as applying to interlocutory motions and appeals, in which case type-written briefs are received.

The supplemental brief on behalf of Lemp was not filed in accordance with the rules and will not be received and considered.

## DECISIONS OF THE U. S. COURTS.

### Court of Appeals of the District of Columbia.

GREENWOOD *v.* DOVER.

*Decided March 1, 1904.*

1. INTERFERENCE—ORIGINALITY OF INVENTION.

   *Held* that the evidence shows that Greenwood disclosed the invention to Dover and fails to show that Dover had a conception of it before the date of conception proved by Greenwood and that therefore Greenwood must be regarded as the first inventor.

2. SAME—SAME—NO REDUCTION TO PRACTICE.

   Where neither party proves actual reduction to practice of the invention, but the junior party, Greenwood, was the first to conceive the invention and disclose it to the senior party before his application was filed, *Held* that the junior party must be regarded as the first inventor.

3. SAME—WEIGHT OF TESTIMONY—WITNESS SKILLED IN ART.

   The testimony as to the making of a certain device given by a witness familiar with the art and interested in improvements therein and who therefore gave particular attention to the disclosure is entitled to much greater weight than that of one not interested in the business.

4. SAME—NO APPEAL AS TO REHEARING.

   The court will not entertain a reason of appeal founded upon a motion for rehearing in the Patent Office.

5. SAME—CHANGE IN EXHIBITS AFTER FILING—AFFIDAVITS NOT CONSIDERED BY COURT.

   The court will not consider affidavits filed either in the court or the Patent Office relating to changes that may have occurred in drawings, models, experimental machines, and like exhibits after they are introduced in evidence.

6. SAME—SAME—STRUCTURE SHOULD BE DESCRIBED BY WITNESSES.

   To guard against accidental changes in exhibits resulting from frequent handling, it would be prudent for the party offering them to have them particularly described in respect of appearance, construction, and operation at the time that he offers them in evidence.

*Mr. Wm. S. Hodges* and *Mr. Wilmarth H. Thurston* for the appellant.

*Mr. Horatio E. Bellows* for the appellee.

SHEPARD, *J.*:

This is an interference proceeding involving priority of invention of the improved pin-tongue and joint for brooches and like ornaments, described in the following issue:

> In a device of the character described, the combination of a pin having a hook-shaped portion at one end and inclosing a substantially cylindrical bore; a pivot secured at its middle part in said bore of the pin by pressure; a plate, and a cup mounted on the plate and arranged to loosely engage the ends of the pivot.

On account of joints long in use by manufacturers of jewelry, as well as several kinds of pins, patented and unpatented, the margin of invention was a narrow one, as is shown by the proceedings in the Patent Office upon the applications of the respective parties before allowance and declaration of interference.

Dover, the senior party, filed his application September 11, 1901, and in his preliminary statement alleges conception on or about July 1, 1900; first drawings about June 9, 1901; disclosure to others about July 1, 1901; model made about August 15, 1901; and actual reduction to practice about August 25, 1901.

Greenwood filed application February 1, 1902, and in his statement alleges, conception on or about July 4, 1899; completed drawings in July, 1899; disclosure to others about middle of July, 1899; and reduction to practice by the construction of a full-sized model or sample between July 4, 1899, and August 1, 1899.

This model or sample was exhibited in evidence, and the Examiner of Interferences considered it a successful reduction to practice, saying:

> It is crude, it is true, but nothing essential to a complete and operative device is omitted, and the Examiner is unable to perceive any valid reason for refusing to recognize it as a reduction to practice of the invention.

Finding that this had been made not later than January 1, 1901, he awarded priority to Greenwood, because Dover's date of disclosure was alleged to be July 1, 1901, and he could not find sufficient evidence of his conception before that date.

On appeal to the Examiners-in-Chief this decision was reversed and priority awarded to Dover.

They were of the opinion that the Greenwood exhibit was not a reduction to practice. It is thus described by them:

> This exhibit consists of a one-piece back and a pin-tongue which by means of a long pin acting as a pintle is pivoted to ears rigidly connected with the back. This long pin has a series of spiral ribs near its blunt end which form a shoulder or abutment that is larger than either of the holes in the ears. That portion of the pin which lies between this shoulder or abutment and the point is smaller than either of the aforesaid holes, or the hole through the pivot end of the pin-tongue and hence may turn loosely in all three of the holes through which it extends when it place.

The invention which required a tight grip of the pin-tongue upon the pintle or pivot so that the latter would turn at ease in the ears of the cup-joint, and retain its place therein without being headed over at the outer ends, was not conformed to by the operation of the exhibit as above described. In other words, if the bore of the pin-tongue was larger than the pivot it could not be said that the latter was secured in said bore by pressure.

Looking into the evidence, then, relating to conception and disclosure, they made this statement:

> The interferants and their attorneys appear to have disregarded this limitation of the issue since none of the witnesses in the case were called upon to testify and did not testify concerning any disclosure to them by either interferant of a pin device having as an essential feature thereof a pin-tongue rigidly secured by pressure to its pivot.

Upon this, the conclusion followed that each party was remitted to the date of his application for even a conception of the invention.

On further appeal to the Commissioner, this decision was affirmed.

Greenwood moved for a rehearing before the Examiners-in-Chief and filed a number of affidavits to show that when his exhibit model was introduced in evidence, the pivot was securely held in the bore of the pin-tongue by pressure, and that the same had been made loose and the grip of the pin-spring released by frequent and careless handling in removing the long pivot. The record shows no action taken upon the motion, and it was unnoticed in the Commissioner's decision.

Had this motion been formally overruled by the Commissioner and appealed from as a part of his final decision, we would not entertain a reason of appeal founded thereon any more than we would an error assigned in a case at law or in equity upon an order overruling a motion for new trial or for rehearing. For a stronger reason we will not consider affidavits filed either in this court, or the Patent Office relating to changes that may have occurred in drawings, models, experimental machines, and like exhibits. These matters must be wholly settled in the Patent Office. (*Blackford* v. *Wilder*, 104 O. G., 580; S. C. 21 App. D. C., 1, 13.)

If a party desires to have the details and exact condition of his exhibit ascertained and established at the time of its presentation, so as to guard against accidents that may thereafter result from frequent handling, it would be prudent to have it particularly described in respect of appearance, construction and operation at the time that he offers it in evidence.

It may be possible that the difference of opinion, heretofore noted, respecting the effect that should be given the Greenwood exhibit is to some extent due to material changes in its appearance and operation between the respective dates of its consideration. However this may be, we cannot accept this exhibit, in its present condition, as an actual reduction to practice of the invention of the issue.

Under all the facts and circumstances established by the evidence, the most that can be safely affirmed is, that at the time of the construction of the exhibit, Greenwood had a conception of that invention. And this notwithstanding it may be conceded to be true as claimed, that the evidence of neither party goes sufficiently into details to show the specific disclosure of a complete conception of the particular combination that constitutes the invention of the issue as framed in the Patent Office during the consideration of the rival applications.

The testimony, throughout, lays stress upon the new pin-tongue as the thing invented. Evidently it was that which each party thought he had invented. But it must be remembered therewith that the novel pin-tongue of the issue, with its hook-shaped portion at one end inclosing and firmly gripping with its spring-pressure the cylindrical pivot so that the latter can only turn with the movement of the pin, is the central, essential feature of the invention. The arrangement of the familiar cup attachment to the plate, and the loose engagement of the ends of the pivot therein, are necessary and obvious incidents of the construction and operation of the new pin.

Greenwood claims to have conceived the idea of this new pin, and to have made his rude exhibit in 1899, when he was engaged as a mechanic by a firm of manufacturing jewelers. In April, 1901, he opened a small shop in partnership with Howard P. Chase. Chase was not a mechanic but had been a jewelry salesman for many years.

Without undertaking to determine the precise date upon which conception of the invention should be awarded to Greenwood, it is made reasonably clear by the testimony of a competent and apparently disinterested witness that he had it between June 20 and July 1, 1901. This witness was Daniel H. Child, a traveling salesman for a manufacturer, who called upon the new firm in the course of his business. Greenwood desired the witness to manufacture his pin, and fully explained it to him with the aid of a drawing. The testimony of this witness is entitled to much greater weight than that of one not engaged in the business to whom a drawing is casually shown. He was familiar with the art, interested in improvements therein, and therefore gave particular attention to the disclosure. It was moreover fresh in his mind when he saw the Dover pin a few months later, and which he said was substantially the same as that which had been described to him.

In 1901 Dover was engaged in the manufacture of jewelry findings. In his preliminary statement he claims conception July 1, 1900, first drawing June 9, 1901, disclosure to others about July 1, 1901, construction and test of the new device on August 25, 1901. The evidence shows that he put the new product upon the market in October of the same year. It was admitted by Dover that he visited the shop of Greenwood and Chase about the last of August, 1901, to talk about some set-

tings that were mounted by them. He said that he told them of his new pin and drew it on a paper produced by Greenwood for the purpose; and that Greenwood remarked he had one in mind also, which he then drew on the same pad. This drawing, he said, was a *facsimile* of the drawing of Tilford's patented pin, and that he so informed the parties. He further said that Greenwood acknowledged the superiority of his (Dover's) device and asked him to send samples when manufactured. He also said that he took the drawings with him, and did not know what had become of them.

Greenwood's statement of this visit is substantially this: Date between 18th and 25th of August, 1901. Dover came in with Chase and was introduced by the latter. Witness said he wanted his pin-tongue made, and made a drawing of it which he explained in the presence of Chase. Dover said:

That is a grand, good idea—boys; and it is a new idea too. I will make it for you, and anything else you want.

That they walked into the workshop and there again discussed the pin-tongue, and witness drew it again on a wooden work-bench. The pin-tongue described and drawn by Dover was entirely different—

instead of the joint straddling the pin-tongue, the pin-tongue straddled the joint. [It had] a double lug to it, similar to B. A. Ballou's.

At the time of leaving, Dover picked up the paper with the drawings on it and said—"Do you want this?" Witness or Chase said—"No, go ahead and take it." Dover, "pushed it in his pocket and walked off."

Howard P. Chase testified substantially to the same effect. Mrs. Greenwood testified that she had to pass the parties on the way to the telephone and heard Dover say—"I think it is a very good thing, boys." She had previously testified to her knowledge of her husband's invention and of his model exhibit. Joseph Gallupo, a mechanic in the employ of Greenwood and Chase, saw Dover in the shop conversing with Greenwood and Chase for fifteen or twenty minutes. He did not hear the conversation, but saw the drawing on the bench. This drawing represented the pin-tongue which Dover subsequently manufactured. While the parties were at the bench he heard Greenwood say: "Look, that is what you ought to make." As they left the bench Greenwood said—"Get that out now."

Aside from the opposing evidence above recited, Dover's description of the device shown in Greenwood's drawing is in conflict with an inference reasonably deducible from other facts. There is other evidence showing beyond a reasonable doubt that Greenwood and Chase, before the interview with Dover, were familiar with the Tilford pin-tongues which were then upon the market. They had bought and used them in their manufacture of jewelry. Bills were produced showing their purchase on April 13, May 11, May 20 and June 3, 1901.

Under such conditions it is most unreasonable to believe that Greenwood undertook to impose upon Dover a drawing of the patented Tilford pin-tongue as his own invention, and to induce him to make the necessary tools for its manufacture. No possible motive can be assigned for such conduct. There was some other evidence offered by Greenwood, in rebuttal, tending to show the finding, under the oil-cloth covering of the work-bench, the drawing claimed to have been made during the interview with Dover; but in view of what has been said time will not be consumed with a consideration of its credibility or weight.

The fact that Dover received a disclosure of Greenwood's conception in the course of an interview looking to arrangements for its manufacture for commercial purposes, renders it necessary for him to prove with reasonable certainty that he had a prior conception of the same invention. (*Gallagher* v. *Hastings*, 21 App. D. C., 88, 99.)

Moreover, as Greenwood has been found to have had his conception at least as early as June 20, 1901, the burden is thrown upon Dover to prove a conception prior to that date. This, we are of the opinion, he has failed to do.

Of seven witnesses introduced to prove disclosure, three—Stone, King and Lawson—give dates ranging from June 29 to the early part of July, 1901; their testimony need not, therefore, be further discussed. Another, Morehouse, testified to making the tools for the manufacture of the device about the middle of August. One witness, Possner, said that Dover had often talked with him about pins and pin-tongues, and in the spring of 1901 had shown him an "offhand sketch" of one which was like the picture of Dover's new pin-tongue which he has since seen in street-car advertisements. He fixed the date as of the spring because he was sure that this occurred at a meeting of the whist party to which both belonged, and the party, or association suspended in May. Testimony undertaking to identify an invention of this character through the recollection of a rough sketch casually shown at a card party long before, is inherently weak. Moreover, the date given shows that it must have been a different invention, because Dover himself says that his earliest date of drawing was June 9 and of disclosure was July 1, 1901.

Charles I. Brown, testified that a drawing of the pin was shown him by Dover. In his direct examination, he said:

I think it was in the early summer. To the best of my judgment it was in the early summer.

On cross-examination, it was made to appear that the time might have been as late as August, and on redirect examination he declined to swear that he saw the drawings in June.

The last witness was George H. Tilford, the inventor of the Tilford pin-tongue. He testified that Dover came into the office of the Wolstenholme Company, in whose shop he was employed, in March, 1901, and showed him a drawing of a pin-tongue similar to that in the invention of the issue. He was positive as to the date on both direct and cross examination.

It is a circumstance of some significance also that no one of the drawings made for exhibition to these witnesses severally has been produced. Like those made in Greenwood's shop in August they have disappeared.

Dover was careful not to leave his drawings in the possession of others, but carelessly omitted to preserve them for subsequent use.

In this he fell short of the care which he subsequently exercised in attempting to protect his right to the invention after he began to prepare for its manufacture and introduction to the trade.

For the reasons given, we must reverse the decision appealed from and award priority to Greenwood.

It is so ordered, and further that this decision be certified to the Commissioner of Patents as the law directs. *Reversed.*





THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 109—No. 9. TUESDAY, APRIL 26, 1904. PRICE—$5 per year.

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| Designs | 11 | No. 36,886 to No. 36,896, inclusive. |
| Trade-Marks | 54 | No. 42,465 to No. 42,518, inclusive. |
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TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks, Labels, and Prints. | States. | Patents and Designs. | Trade-Marks, Labels, and Prints. |
|---|---|---|---|---|---|
| Alabama | 5 | | Nevada | | |
| Alaska Territory | | | New Hampshire | 2 | |
| Arizona Territory | 2 | | New Jersey | 34 | 2 |
| Arkansas | | | New Mexico Ter't'y | 1 | |
| California | 19 | 5 | New York | 109 | 14 |
| Colorado | 10 | | North Carolina | | 1 |
| Connecticut | 14 | | North Dakota | 1 | |
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| Florida | 3 | | Oregon | 2 | 1 |
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| Hawaii Territory | | | Porto Rico | | |
| Idaho | | | Rhode Island | 3 | 1 |
| Illinois | 60 | 3 | South Carolina | | 1 |
| Indian Territory | | | South Dakota | 4 | |
| Indiana | 18 | | Tennessee | 7 | 4 |
| Iowa | 11 | 1 | Texas | 8 | |
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| Louisiana | 4 | | Virginia | 2 | |
| Maine | 4 | 1 | Washington | 6 | |
| Maryland | 11 | 5 | West Virginia | 3 | |
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| Michigan | 11 | 1 | Wyoming | | |
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| Mississippi | 2 | | U. S. Navy | | |
| Missouri | 16 | 1 | | | |
| Montana | 1 | | Total to citizens of the United States | 528 | 82 |
| Nebraska | 4 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Prints. | Countries. | Patents and Designs. | Trade Marks and Prints. |
|---|---|---|---|---|---|
| Argentina | | | Netherlands | 1 | |
| Austria-Hungary | 3 | | Newfoundland | 1 | |
| Belgium | 2 | | New South Wales | | |
| Brazil | | | New Zealand | 2 | |
| British West Indies | | | Norway | | |
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| Cape Colony | | | Roumania | | |
| Chile | | | Russia | 2 | |
| China | | | San Salvador | | |
| Costa Rica | 1 | | Scotland | 1 | |
| Cuba | | | South Africa | | |
| Denmark | | | Spain | | |
| Ecuador | | | Sweden | 1 | |
| England | 7 | 2 | Switzerland | 1 | |
| France | 2 | | Transvaal, South Africa | | |
| Germany | 24 | 2 | Turkey | 1 | |
| India | | | Victoria | | |
| Ireland | | | Western Australia | | |
| Italy | 1 | | | | |
| Japan | | | Total to citizens of foreign countries | 55 | 4 |
| Java | | | | | |
| Mexico | | | | | |

### Foreign Patents.

RULE 29. The receipt of Letters Patent from a foreign government will not prevent the inventor from obtaining a patent in the United States, unless *the application on which the foreign patent was granted was filed more than twelve months prior to the filing of the application in this country, in which case no patent shall be granted in this country.*

### Access to Pending Applications.

RULE 18. Before any attorney, original or associate, will be allowed to inspect papers or take action of any kind, his power of attorney must be filed. But general powers given by a principal to an associate cannot be considered. In each application the written authorization must be filed. A power of attorney purporting to have been given to a firm or copartnership will not be recognized, either in favor of the firm or of any of its members, unless all its members shall be named in such power of attorney.

### Prohibiting Changes in Office Papers.

It is hereby ordered that no erasures be made or any note, interlineation, or other mark in pencil or otherwise, except by formal amendment duly signed, in the body or written portions of the specification or of any other paper filed in an application for patent.

It is further directed that no change be made by any person in any record of this Office without the written approval of the Commissioner of Patents.

Attorneys, employees of the Patent Office, and all others will be held to strict accountability for any violation of this order.

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business April 19, 1904.*

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears—Under one month.* | | | |
| 322 | XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels. | Apr. 5 | Apr. 6 | 175 |
| 159 | XXXIII. *DESIGNS, †TRADE-MARKS, ‡LABELS AND PRINTS, Optics, and Photography. | Mar. 24 | Apr. 2 | 138 |
| 182 | XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings. | Mar. 21 | Apr. 6 | 203 |
| 167 | V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music. | Mar. 21 | Apr. 5 | 240 |
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| 144 | XXIV. Sewing-Machines, Apparel, Tents, Umbrellas and Canes, and Toilet. | Mar. 21 | Mar. 29 | 273 |
| 179 | XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking. | Mar. 21 | Mar. 28 | 276 |
| 332 | X. Carriages and Wagons | Mar. 21 | Mar. 25 | 239 |
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| 327 | XVIII. Steam-Engineering, etc | Mar. 21 | Mar. 23 | 210 |
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| 306 | XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc. | Mar. 21 | Mar. 1 | 487 |
| 303 | XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making. | Mar. 19 | Apr. 5 | 248 |
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*Applications Under Examination*—Continued.

| Room No. | Divisions and subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| 175 | III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc. | Mar. 7 | Mar. 7 | 314 |
| 244 | XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc. | Mar. 5 | Mar. 23 | 278 |
| 147 | XXIX. Wood-Working Machines, Coopering and Roofing. | Mar. 3 | Mar. 22 | 266 |
| 154 | XI. Boots and Shoes, Harness, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips. | Mar. 3 | Feb. 10 | 355 |
| 307 | XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc. | Mar. 1 | Jan. 20 | 448 |
| 122 | XIX. Stoves and Furnaces and Steam-Boiler Furnaces. | Feb. 27 | Feb. 25 | 427 |
| 105 | XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways. | Feb. 26 | Feb. 4 | 284 |
| 382 | XXVIII. Pneumatics, Air and Gas Engines and Pumps. | Feb. 19 | Feb. 12 | 532 |
| | *Between two and three months.* | | | |
| 304 | XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock. | Feb. 13 | Feb. 9 | 464 |
| 138 | XXII. Fire-Arms, Ordnance, Navigation. | Feb. 11 | Jan. 23 | 367 |
| | *Between three and four months.* | | | |
| 107 | XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling. | Jan. 16 | Jan. 23 | 529 |

Total number of applications awaiting action.....11,872

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| *Under one month.* | | | |
| *Designs | Apr. 8 | Apr. 12 | 30 |
| †Trade-Marks | Mar. 26 | Apr. 19 | 44 |
| ‡Labels and Prints | Apr. 19 | Apr. 18 | 1 |

### Withdrawal After Payment of Final Fee.

RULE 165. * * * When the final fee has been paid upon an application for Letters Patent, and the case has received its date and number, it will not be withdrawn or suspended from issue on account of any mistake or change of purpose of the applicant or his attorney, nor for the purpose of enabling the inventor to procure a foreign patent. * * *

### Errors in Letters Patent.

RULE 170. * * * Mistakes not incurred through the fault of the Office, and not affording legal grounds for reissues, will not be corrected after the delivery of the Letters Patent to the patentee or his agent. * * *

### Patents to Assignees.

RULE 200. In every case where it is desired that the patent shall issue to an assignee, the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 36.) The date of the record is the date of the receipt of the assignment at the Office.

### Roster of Attorneys.

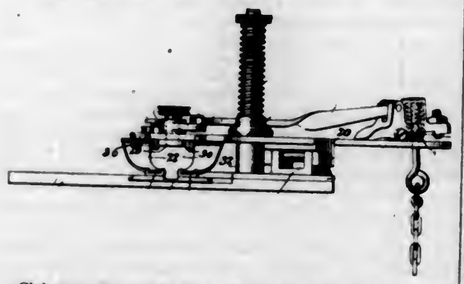
A "Roster of Attorneys," comprising an alphabetical list of such attorneys as had registered and were entitled to practice before the United States Patent Office January 20, 1904, is now ready for delivery. Price, 20 cents.



# PATENTS

## GRANTED APRIL 26, 1904.

**758,036. WORK-CLAMP FOR BUTTONHOLE-SEWING MACHINES.** EDWARD R. ALLEN, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Sept. 2, 1903. Serial No. 171,631. (No model.)



*Claim.*—1. In a work-clamp, the combination with clamping elements, a spring for closing the same together, and non-automatic means by which the clamp may be opened, of a spring-actuated rotary cam device for spreading the clamping elements after the force which opens the clamp has been released to permit the closing-spring to close the clamp; whereby the clamping elements will be closed on the work and then spread apart by a single movement.

2. In a work-clamp, the combination with spring-closed clamping elements, of a spring and connections for automatically spreading said clamping elements after the clamp has been closed, and a spring weaker than the last-named spring, for retracting the spread-apart clamping elements when the said elements have been relieved from the force of the spreading-spring.

3. In a work-clamp, the combination with clamping elements and a spring for closing the same on the work to hold the latter, of a spreading-spring weaker than the first-named spring, and a cam device operatively connected with said spreading-spring, whereby said clamping elements will be automatically spread after the clamp has been closed by its closing-spring.

4. In a work-clamp, the combination with clamping elements and a spring for closing the same, of a spreading-spring weaker than the said closing-spring, a spreading-cam device operatively connected with said spreading-spring, and a retracting-spring, weaker than said spreading-spring, operating in opposition to said spreading cam and spring.

5. In a work-clamp, the combination with clamping elements mounted for movements toward and from each other, of an automatic spreading device for said clamping elements, means for drawing said clamping elements toward each other after they have been spread, and an adjustable stop by which the inward positions of said clamping elements may be limited as may be desired.

6. In a work-clamp, the combination with clamping elements and an automatic spring-actuated rotary spreading device for the same, of adjusting means whereby the spreading movement may be regulated as may be desired.

7. In a work-clamp, the combination with a pivotally-mounted plate, of clamping-arms pivotally attached to said plate so as to be movable toward and from each other at their free ends, a spring for drawing said arms toward each other, a spreading-cam interposed between said arms, and a spring-actuated tilting block or lever carried by said pivotally-mounted plate and operatively connected with said cam to operate the same to cause the material to be spread after it has been clamped.

8. In a work-clamp, the combination with spring-closed clamping elements mounted for movements toward and from each other, of an automatically-operated rotary spreading device arranged between and acting directly on said clamping elements to force the same apart to spread the work after the said clamping elements have been closed to engage the material to be clamped.

9. In a work-clamp the combination with the base-plate 12, of the lower clamp-plate 13 attached thereto, the upper plate 21 pivotally mounted on said base-plate, clamping-arms pivotally mounted on said plate 21, a spring for drawing said arms toward each other, the rocker 27 having the arm 28 and cam 29, the tilting block or lever 36 mounted on said plate 21, the spring 35 for operating said block or lever, and the pitman connecting said block or lever with the said arm 28, and treadle connections for operating said tilting block or lever and said pivoted plate 21.

10. In a work-clamp, the combination with clamping elements, a spring for closing the clamp, and non-automatic means by which the clamp may be opened, of mechanism, acting independently of said spring, for spreading the clamping elements after the force which opens the clamp has been released to permit the spring to close the clamp; whereby the clamping elements will be successively closed on the work and spread apart by a single movement.

11. In a work-clamp, the combination with clamping elements and an automatic spring-actuated spreading device for the same, of adjusting means, independent of the clamping means, whereby the spreading movement may be regulated as may be desired.

12. In a work-clamp, the combination with clamping elements and treadle-actuated means for opening the clamp, of independently-acting means for successively closing the clamp and spreading the clamping elements by a single actuating movement, and a common connection between said clamp-closing and clamp-spreading means and the treadle device, whereby the closing and spreading actions take place when the treadle device is released.

13. In a work-clamp, the combination with clamping elements, and treadle-actuated means for opening the clamp, of independently-acting means for successively closing the clamp and spreading the clamping elements by a single actuating movement, and a common connection between said clamp-closing and clamp-spreading means and the treadle-actuated device; whereby the closing and spreading actions take place when the treadle-actuated device is released, said clamp-closing and clamp-spreading means being so constructed and arranged that the positive actuation of the treadle device acts to successively restore the same to initial position in the reverse order.

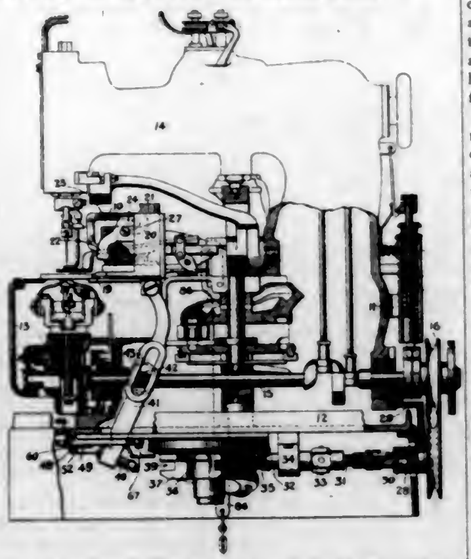
14. The combination with a work-clamp, and means for closing, means for opening, and spring-actuated means for spreading said clamp, of means through which the beginning of the spreading action of the said spring-actuated clamp-spreading means is restrained until the clamp is firmly closed upon the work.

15. The combination with a work-clamp and means for closing, means for opening, and spring-actuated means, operating independent of the closing means, for spreading said clamp, of means through which the beginning of the spreading action of the said spring-actuated clamp-spreading means is restrained until the clamp is firmly closed upon the work.

**758,037. BUTTONHOLE CUTTING AND STITCHING MACHINE.** EDWARD R. ALLEN, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Sept. 30, 1903. Serial No. 176,150. (No model.)

*Claim.*—1. In a buttonhole cutting and stitching machine, the combination with a laterally or horizontally movable buttonhole-cutting device, of a continuously-moving operating device for transferring said cutting device laterally or horizontally into and out of cutting position and for operating the cutter, said cutting device being normally disconnected from said operating device, and a coup-

ling mechanism for automatically connecting said cutting device with and disconnecting it from its said operating device.



2. In a buttonhole cutting and stitching machine, the combination with a continuously-rotating cutter-operating and cutter-transferring cam-wheel, of a buttonhole-cutting device normally disconnected from said cam-wheel, and a coupling mechanism for automatically connecting said cutter with and disconnecting it from said cam-wheel.

3. In a buttonhole cutting and stitching machine, the combination with a continuously-rotating shaft which is independent of the driving-shaft of the machine, of a cutter-operating cam device actuated from said independent shaft, a buttonhole-cutter normally disconnected from its operating cam device, and a coupling mechanism for automatically connecting said cutter with and disconnecting it from its operating cam device.

4. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a cam for moving said cutting device into and out of cutting position, a cam for imparting cutting movements to the cutter, and a single connection between said cams and said cutting device.

5. In a buttonhole cutting and stitching machine, the combination with a cam wheel or device comprising two cams, of a buttonhole-cutting device normally disconnected from its operating-cams, a single connection through which said cams may transfer said cutting device into and out of cutting position and operate the moving member of the cutting device, and a coupling mechanism for automatically connecting said cutting device with and disconnecting it from its operating-cams.

6. In a buttonhole cutting and stitching machine, the combination with stitch-forming devices, an operating-shaft therefor, a stationary work-frame, and a movable stitching-frame, of a buttonhole-cutting device mounted on said work-frame, a continuously-rotating cam device, for operating said cutting device, also mounted on said work-frame, and a cutter-operating shaft, separate from the stitching-mechanism shaft, geared to said cam device.

7. In a buttonhole cutting and stitching machine, the combination with a stationary work-frame and a movable stitching-frame, of a buttonhole-cutting device mounted on said work-frame, a cam device for operating said cutting device, also mounted on said work-frame, and an independent cutter-operating shaft geared to said cam device, said shaft being partly mounted on said stitching-frame and partly on said work-frame and being formed in two or more parts having a flexible or universal joint connection.

8. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a continuously-operating cam device from which said cutting device is normally disconnected, a pitman-lever for transferring the cutting device to and from cutting position and for operating the cutter, and an automatic coupling device for moving said pitman-lever into and out of operative engagement with said cam device.

9. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a continuously-operating cam device from which said cutting device is normally disconnected, a pitman-lever for transferring the cutting device to and from cutting position, and a coupling device for moving said pitman-lever into and out of operative engagement with said cam device, said coupling device comprising a continuously-reciprocating slide, actuated from said cam device, and coupling mechanism carried by said slide.

10. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a continuously-operating cam device from which said cutting device is normally disconnected, a pitman-lever for transferring the cutting device to and from cutting position, a coupling device for moving said pitman-lever into and out of operative engagement with said cam device, said coupling device comprising a continuously-reciprocating slide, actuated from said cam device, and coupling mechanism carried by said slide, and tripping mechanism for rendering said coupling mechanism operative and inoperative.

11. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a continuously-operating cam device from which said cutting device is normally disconnected, a pitman-lever for transferring the cutting device to and from cutting position, and a coupling device for moving said pitman-lever into and out of operative engagement with said cam device, said coupling device comprising a continuously-reciprocating slide actuated from said cam device, a spring-actuated coupling-lever mounted on said slide, and a spring-actuated retaining-lever for said coupling-lever also mounted on said slide, and a tripping-lever, under the control of the attendant, for tripping said retaining-lever when the said pitman-lever is to be coupled to said cam device.

12. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a continuously-operating cam device from which said cutting device is normally disconnected, a pitman-lever for transferring the cutting device to and from cutting position, a coupling device for moving said pitman-lever into and out of operative engagement with said cam device, said coupling device comprising a continuously-reciprocating slide actuated from said cam device, a spring-actuated retaining-lever for said coupling-lever also mounted on said slide, a tripping-lever under the control of the attendant, for tripping said retaining-lever when the said pitman-lever is to be coupled to said cam device, and a latch-lever for momentarily holding said tripping-lever inoperative, but which latch-lever is arranged to be engaged by said pitman-lever for releasing the tripping-lever.

13. In a buttonhole cutting and stitching machine, the combination with a continuously-rotating cam device, of a buttonhole-cutting device, a normally disconnected connection between said cam device and said cutting device, a coupling mechanism for operatively joining said normally disconnected connection with said cam device when the cutting device is to be operated, a tripping-lever for releasing said coupling mechanism when a buttonhole is to be cut, and a treadle-rod provided with means for operating said tripping-lever.

14. In a buttonhole cutting and stitching machine, the combination with a continuously-rotating cam device, of a buttonhole-cutting device, a normally disconnected connection between said cam device and said cutting device, a coupling mechanism for operatively joining said normally disconnected connection with said cam device when the cutting device is to be operated, a tripping-lever for releasing said coupling mechanism when a buttonhole is to be cut, and a treadle-rod provided with means for operating said tripping-lever, said means comprising an inclined lug on said treadle-rod coöperating with a spring-pressed dog with which said tripping-lever is provided.

15. In a buttonhole cutting and stitching machine, the combination with a work-frame and a stitching-frame, one of which is movable relative to the other, of a continuously-rotating cutter-operating shaft, a continuously-rotating cutter-operating cam device mounted on one of said frames and geared to said shaft, a buttonhole-cutting device movably mounted relative to the stitching devices and normally disconnected from said cutter-operating cam device, and a coupling mechanism for connecting and disconnecting said cutting device and cutter-actuating cam device.

16. In a buttonhole cutting and stitching machine, the combination with a work-frame and a stitching-frame, one of which is movable relative to the other, of a continuously-rotating cutter-operating shaft, a continuously-rotating cutter-operating cam device mounted on one of said frames and geared to said shaft, a buttonhole-cutting device movably mounted relative to the stitching devices and normally disconnected from said cutter-operating cam device, and a coupling mechanism for connecting and disconnecting said cutting device and cutter-actuating cam device, said cutter-operating shaft being supported partly by one of said frames and partly by the other, and comprising a plurality of parts having a flexible or universal joint connection.

17. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device comprising upper and lower cutting members rigidly connected vertically so as to be movable in unison toward and from the stitch-forming devices of the machine a continuously-rotating cutter-actuating cam device 37, a pitman-lever 41 for transferring the cutting device and for operating the cutter, and which pitman-lever is normally disconnected from said cutter-actuating cam device, a coupling mechanism serving to vibrate said pitman-lever on its fulcrum, for the purpose of moving the cutting device into and out of cutting position, and for operatively connecting said pitman-lever with the said cutter-actuating cam device for operating the cutter, and a tripping device by which a part of said coupling mechanism may be thrown into coupling position to engage said pitman-lever and thereby vibrate it on its fulcrum and move it into coupled connection with the said cutter-actuating cam device.

18. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device comprising upper and lower cutting members rigidly connected vertically so as to be movable in unison toward and from the stitch-forming devices of the machine, a continuously-rotating cutter-actuating cam device 37, a pitman-lever 41 for transferring the cutting device and for operating the cutter, and which pitman-lever is normally disconnected from said cutter-actuating cam device, a coupling mechanism serving to vibrate said pitman-lever on its fulcrum, for the purpose of moving the cutting device into and out of cutting position, and for operatively connecting said pitman-lever with the said cutter-actuating cam device for operating the cutter, and a tripping device by which a part of said coupling mechanism may be thrown into coupling position to engage said pitman-lever and thereby vibrate it on its fulcrum and move it into coupled connection with the said cutter-actuating cam device, said coupling mechanism comprising a continuously-reciprocating slide 46 operated from the cutter-actuating cam device, a spring-pressed coupling-lever 50, 51, mounted on said slide, and a spring-pressed retaining-lever 52, for said coupling-lever, also mounted on said slide.

19. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device comprising upper and lower cutting members rigidly connected vertically so as to be movable in unison toward and from the stitch-forming devices of the machine, a continuously-rotating cutter-actuating cam device 37, a pitman-lever 41 for transferring the cutting device and for operating the cutter, and which pitman-lever is normally disconnected from said cutter-actuating cam device, a coupling mechanism serving to vibrate said pitman-lever on its fulcrum, for the purpose of moving the cutting device into and out of cutting position, and for operatively connecting said pitman-lever with the said cutter-actuating cam device for operating the cutter, and a tripping device by which a part of said coupling mechanism may be thrown into coupling position to engage said pitman-lever and thereby vibrate it on its fulcrum and move it into coupled connection with the said cutter-actuating cam device, said coupling mechanism comprising a continuously-reciprocating slide 46 operated from the cutter-actuating cam device, a spring-pressed coupling-lever 50, 51, mounted on said slide, and a spring-pressed retaining-lever 52, for said coupling-lever, also mounted on said slide, and the said tripping device comprising a spring-pressed tripping-lever 62 mounted on a part which is stationary relative to said slide and provided with a hook 63, and the said coupling-lever being provided with a tailpiece 64 for coöperation with said hook when the said tripping-lever is in its operative position.

20. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device comprising upper and lower cutting members rigidly connected vertically so as to be movable in unison toward and from the stitch-forming devices of the machine, a continuously-rotating cutter-actuating cam device 37, a pitman-lever 41 for transferring the cutting device and for operating the cutter, and which pitman-lever is normally disconnected from said cutter-actuating cam device, a coupling mechanism serving to vibrate said pitman-lever on its fulcrum, for the purpose of moving the cutting device into and out of cutting position, and for operatively connecting said pitman-lever with the said cutter-actuating cam device for operating the cutter, a tripping device by which a part of said coupling mechanism may be thrown into coupling position to engage said pitman-lever and thereby vibrate it on its fulcrum and move it into coupled connection with the said cutter-actuating cam device, said coupling mechanism comprising a continuously-reciprocating slide 46 operated from the cutter-actuating cam device, a spring-pressed coupling-lever 50, 51, mounted on said slide, and a spring-pressed retaining-lever 52, for said coupling-lever, also mounted on said slide; and the said tripping device comprising a spring-pressed tripping-lever 62 mounted on a part which is stationary relative to said slide and provided with a hook 63, and the said coupling-lever being provided with a tailpiece 64 for coöperation with said hook when the said tripping-lever is in its operative position, and a treadle-rod having an inclined lug coöperating with a spring-pressed dog with which said tripping-lever is provided.

21. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a cam device for moving said cutting device into and out of cutting position and for operating the cutter, and a pitman-lever connecting said cam device with said cutting device; said pitman-lever, in imparting transferring and cutting movements to the cutting device, at a cutting operation, giving a continuous movement to the cutting member, first in a straight horizontal path, then in a slight downward curve, and then in a straight vertical path, reversing this continuous movement in restoring the parts to first position.

22. In a buttonhole cutting and stitching machine, the combination with a buttonhole-cutting device, of a cam device for moving said cutting device into and out of cutting position and for operating the cutter, and a single connection between said cam device and said cutting device; said single connection, in imparting transferring and cutting movements to the cutting device at the cutting operation, giving a continuous movement to the cutting member, first in a straight horizontal path, then in a slight downward curve, and then in a straight vertical path, reversing this continuous movement in restoring the parts to first position.



## 758,038. COMBINATION-TOOL FOR BORING AND TAPPING.

JOHN H. ALLENDORFER, borough of Westmont, and MOSES OWENS, Johnstown, Pa. Filed Sept. 5, 1902. Serial No. 122,184. (No model.)



*Claim.*—1. In a combination-tool for boring and tapping, a hollow stock provided with external longitudinal grooves, radial slots in said hollow stock and radially-adjustable threading-dies fitted therein, a mandrel tapering at its lower end and mounted within the axial opening of said hollow stock, splines on the tapering end of said mandrel coöperating with corresponding grooves near the inner edges of the threading-dies aforesaid, a rotatable internally-threaded sleeve mounted on said hollow stock, projections on said mandrel coöperating with said internal threads whereby the mandrel may be adjusted longitudinally by the revolution of said sleeve, vertical radial slots in said hollow stock through which said projections extend and are guided, a recess in the side of each of said radial slots for allowing a limited lateral movement of the projections aforesaid, a flat or stop surface at the ends of said internal threads whereby the said projections may be carried into the said recesses by the revolution of the sleeve, thereby unlocking the dies from the mandrel by the partial revolution of the latter.

2. In a combination-tool for boring and tapping, an internal mandrel provided with a tapering end for adjusting the threading-dies, the upper portion of said mandrel being provided with a transverse cylindrical hole in which are mounted two pins each composed

of a cylindrical piece flattened at its outer extremity for and in engagement with the internal threads of an adjusting-nut mounted upon a hollow stock or die-holder containing said mandrel.

3. In a combination-tool for boring and tapping, a series of adjustable threading-dies mounted on a hollow stock, a mandrel mounted within said hollow stock and provided with a tapering end in operative connection with said dies, a rotatable sleeve provided with interior screw-threads and mounted on said stock, said sleeve having at each end a flat collar formed of two separate semi-annular pieces the interior surfaces of which are fitted within corresponding circumferential grooves formed in the periphery of the stock aforesaid, pins mounted in and projecting from said mandrel and engaging with said screw-threads, whereby the threading-dies are adjusted by the revolution of said sleeve.

4. In a combination-tool for boring and tapping, a hollow stock, adjustable threading-dies mounted therein, a mandrel provided with a tapering end mounted within said hollow stock, said tapering end being arranged to cooperate with and adjust the threading-dies aforesaid, an adjustable stop mounted upon said stock; said stop being composed of a body portion and a screw-threaded stud adapted to move longitudinally therein, and means for adjusting said stud whereby the movement of said mandrel is limited as desired.

5. In a tool for boring and tapping, a series of threading-dies mounted upon a hollow stock, an internal adjusting-mandrel mounted therein, an adjustable stop mounted in said stock and cooperating with a projecting portion of said mandrel; said stop being composed of a body portion secured to said hollow stock, a screw-threaded stud provided with a longitudinal slot and adapted to move lengthwise within said body portion, a set-screw projecting within the slot aforesaid, and a nut for adjusting or setting the screw-threaded stud, whereby the longitudinal movement of the said mandrel is limited as desired.

6. In a tool for boring and tapping provided with a series of adjustable threading-dies mounted upon a hollow stock, a mandrel having a tapered end arranged to cooperate with and adjust the threading-dies aforesaid; an adjustable stop composed of a body portion removably secured to said hollow stock, a screw-threaded stud mounted on said body portion and provided with a longitudinal slot, a set-screw projecting within said slot, a circular nut threaded upon said stud and mounted within the framework of said body portion, said screw-threaded stud being located in the line of travel of a projection on said mandrel whereby the movement of the same may be limited as desired.

7. In a combination-tool for boring and tapping, a hollow stock provided with external longitudinal grooves, a series of adjustable threading-dies mounted within radial slots in said hollow stock, a mandrel mounted within said hollow stock and provided with a tapering end having splines or projections to cooperate with corresponding inclined grooves near the inner edges of said threading-dies, an internally-threaded rotatable sleeve mounted on said hollow stock and provided at each end with a flat collar formed of two separate semi-annular pieces the interior edges of which project within circumferential grooves cut in the periphery of the hollow stock aforesaid, the upper portion of said mandrel being provided with a transverse cylindrical hole in which are mounted two pins each composed of a cylindrical piece flattened at its outer extremity for engagement with the internal screw-threads of the sleeve aforesaid; an adjustable stop mounted upon said hollow stock and arranged in the line of travel of one of said pins whereby the adjustment of said dies is made as desired, by revolving said sleeve until said adjustable stop limits the movement of said mandrel.

8. In a combination-tool for boring and tapping, a hollow stock, a series of movable threading-dies mounted therein, an adjusting-mandrel provided with a tapering end having splines or projections cooperating with corresponding inclined grooves near the inner edges of said threading-dies, a transverse cylindrical hole in the upper portion of said mandrel in which are mounted two projecting pins, radial slots in said hollow stock in which said pins are adapted to move vertically, said radial slots being provided with recesses at one side for allowing a limited lateral movement of the pins aforesaid, whereby said mandrel is disengaged from the threading-dies allowing their withdrawal.

9. In a combination-tool for boring and tapping, a hollow stock, a series of adjustable threading-dies mounted therein; a mandrel located within the axial opening of said stock and having a tapering end provided with longitudinal splines or projections cooperating with corresponding inclined grooves near the inner edges of said threading-dies, transverse pins mounted in the upper portion of said mandrel, vertical radial slots in said hollow stock through which said pins project and are guided, recesses in the sides of each of said radial slots, whereby said mandrel is unlocked from the threading-dies when it is turned to bring said pins within said recesses.

10. In a combination-tool for boring and tapping, a hollow stock, a series of adjustable threading-dies mounted therein; a mandrel located within the axial opening of said stock and having a tapering end provided with longitudinal splines or projections for cooperating with corresponding inclined grooves near the inner edges of said threading-dies, transverse pins mounted in the upper portion of said mandrel, vertical radial slots in said hollow stock through which said pins project and are guided, recesses in the sides of each of said radial slots for allowing a limited lateral movement of the pins aforesaid therein, a rotatable sleeve mounted on said hollow stock and provided with internal screw-threads engaging the ends of the pins aforesaid, a flat surface at the lower ends of said threads adapted to carry the transverse pins laterally into the before-mentioned recesses thereby turning said mandrel through a fraction of a revolution and unlocking its splined end from the threading-dies aforesaid.

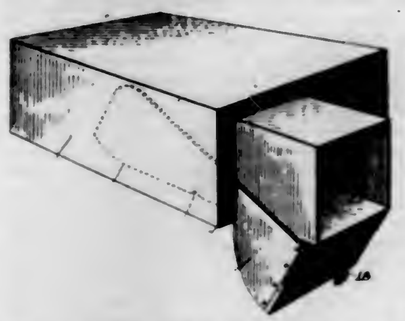
11. In a combination-tool for boring and tapping, a hollow stock or die-holder, with reaming-cutters projecting therefrom, an annular shell mounted upon said stock and provided with external longitudinal grooves having two sets of reaming-cutters mounted therein, one in advance of the other, and means for securing said shell upon said hollow stock.

12. In a combination-tool for boring and tapping, a hollow stock or die-holder, with reaming-cutters projecting therefrom, an annular shell removably secured upon said stock and provided with external longitudinal grooves having two sets of remaining-cutters mounted therein, one in advance of the other, said shell being also provided with internal longitudinal grooves that fit over the reaming-cutters which are mounted upon the exterior of the hollow stock or die-holder.

13. In a combination-tool for boring and tapping, a hollow stock provided with radial slots, an annular shell mounted upon said hollow stock and provided with radial slots registering with those of the hollow stock aforesaid, adjustable threading-dies located within said radial slots; a tapering mandrel mounted within the axial opening of said hollow stock in operative connection with the threading-dies aforesaid, external longitudinal grooves formed in said shell having two separate sets of reaming-cutters mounted therein, one in advance of the other, means for adjusting said mandrel and for securing said shell to the hollow stock aforesaid.

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**758,039. FILING-CABINET. HORACE W. ANDREWS, Brooklyn, N. Y. Filed Aug. 12, 1903. Serial No. 169,170. (No model.)**



*Claim.*—1. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, and two side extensions connected thereto and fitting said compartment but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge provided with a cut-away portion, the rear of said side extensions having a height at right angles to said cut-away portion equal to the height of said compartment.

2. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit said front portion when said extensions are removed partially from said casing to be moved out of line with the opening therein, a notch in the cut-away edge of a side extension, and a catch secured to said inclosing casing cooperating with said notch.



3. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto and fitting said compartment but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, and means for limiting the outward movement of said front portion and side extensions.

4. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit said front portion when removed partially from said casing to be moved out of line with the opening therein, and a catch to lock said front portion when it is in its inner position.

5. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, a stop for limiting the outward movement of said front portion, and a catch to lock the front portion when in its inner position.

6. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion adapted to close said compartment and to be moved forward without disturbing the contents thereof, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit said front portion when removed partially from said casing to be moved out of line with the opening therein, and a file-box fitting between said side extensions, but disconnected therefrom.

7. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion adapted to close said compartment and to be moved forward independent of the contents thereof, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, a file-box fitting between said side extensions but disconnected therefrom, and means for forcing said file-box outwardly.

8. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion adapted to close said compartment and to be moved forward independent of the contents thereof, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, a file-box fitting between said side extensions but disconnected therefrom, and a spring acting upon the rear of said file-box.

9. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, a file-box fitting between said side extensions, means for forcing said file-box outwardly, and a catch to limit the outward movement of said file-box.

10. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, a file-box fitting between said side extensions, means for forcing said file-box outwardly, and a catch to limit the outward movement of said file-box and also adapted to lock said front portion in its inner position.

11. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, provided with side extensions and adapted to drop away from the opening in said casing, means for forcing outwardly said file-box independently of said side extensions, and a stop to limit the outward movement thereof.

12. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion adapted to close said compartment and to be moved outwardly independently of the contents thereof, and two side extensions connected to said front portion but otherwise free and disconnected, each side extension having one edge perpendicular to the front portion and its other edge provided with a triangular cut-away portion to permit said front portion when said extensions are removed partially from said casing to drop below the opening therein.

13. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion adapted to close said compartment and to be moved outwardly independently of the contents thereof, two side extensions connected to said front portion but otherwise free and disconnected, and equal in height to the height of said compartment, each side extension having one edge perpendicular to the front portion and its other edge provided with a triangular cut-away portion which permits said front portion to be moved out of line with said compartment when said extensions are removed partially from said casing.

14. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected thereto, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit said front portion when said extensions are removed partially from said casing to drop below the opening therein, a notch in the under edge of a side extension, a catch secured to said inclosing casing to lock said notch, and a catch to lock the front portion when in its inner position.

15. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected to said front portion and fitting said compartment, each side extension having one edge perpendicular to the front portion and its other edge cut away to permit the front portion when removed partially from said casing to be moved out of line with the opening therein, means for limiting the outward movement of said front portion and side extensions, and a catch to lock the front portion when in its inner position.

16. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion, two side extensions connected to said front portion, a file-box fitting between said side extensions, and means permitting said front portion to drop below said compartment when said extensions are partially removed therefrom and form a support for the outer end of said file-box.

17. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front portion adapted to drop away from the opening in said casing, a file-box in said opening, and means for forcing outwardly said file-box to a position above and resting on said front portion.

18. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front plate adapted to close said compartment, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front plate and its other edge cut away to permit said front plate when removed partially from said casing to be moved out of line with the opening therein, the rear ends of said side extensions being constructed to continually engage the top and bottom of said compartment, and a file-box fitting between said extensions but disconnected therefrom.

19. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front plate adapted to close said compartment and to be moved forward without disturbing the contents of said compartment, two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the front plate and its other edge cut away to permit said front plate when said extensions are partially removed from said casing to be moved out of line with the opening therein, the rear ends of said side extensions being constructed to continually engage the top and bottom of said compartment.

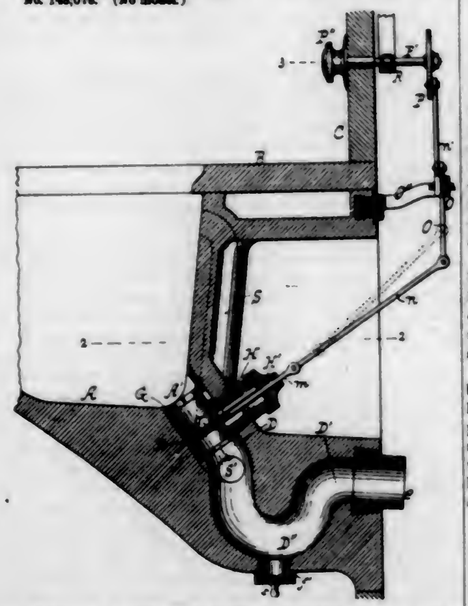
20. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front plate adapted to close said compartment, and two side extensions connected thereto but otherwise free and disconnected, each side extension having one edge perpendicular to the fropt plate and its other edge cut away to permit said front plate when said side extensions are removed partially from said casing to be moved out of line with the opening therein, said cut-away portion being cut on a straight line from a point near the center of said extension to a point near the rear end thereof which straight portion is adapted to rest upon the bottom of said compartment when said extension has been partially removed therefrom and said side extensions having a height at right angles to said straight portion at the rear end thereof equal to the height of said compartment.

21. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a plate adapted to close said compartment, two side extensions connected thereto but otherwise free and disconnected, each side extension being provided with a cut-away portion, the rear part of which is so constructed as to be supported throughout the greater length thereof by the bottom of said compartment and said side extension is further provided with a bearing-surface adapted to engage the upper side of said compartment when said side extensions are partially withdrawn from said compartment.

22. In a filing-cabinet provided with a compartment, the combination with an inclosing casing, of a front plate adapted to close said compartment, two side extensions connected thereto but otherwise free and disconnected, each side extension having a portion cut away from a point near the center of said side extension on a curve toward the front plate and in a straight line toward the rear end of said extension and each side extension having a height at right angles to the rear end of said straight portion equal to the height of said compartment.

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**758,040. WASTE CONTROL FOR PLUMBING-FIXTURES.** EDWARD L. ANGELL, New York, N. Y. Filed Mar. 16, 1903. Serial No. 148,078. (No model.)



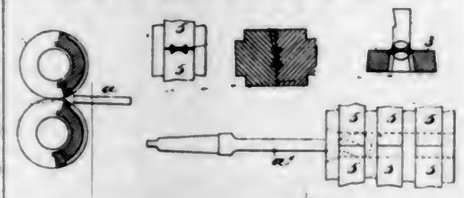
*Claim.*—1. A wash-basin or similar structure, having a waste-passage, a sliding outlet-valve fitted in said passage, a valve-stem, a valve-operating eccentric, a slide-rod, links connecting said rod to both the valve-stem and eccentric, a rock-shaft carrying said eccentric, and a handle on said shaft.

2. A valve for basins and analogous structures provided with a waste-outlet, comprising a sleeve, an opening in the side thereof, a flange at the edge of said opening extending upwardly thereupon but wholly within the geometrical outline of the sleeve, a valve-casing closed at its ends and having its lower end disposed within the flange of the outlet in the side of the sleeve and having its base flush with the inner wall of said sleeve whereby to secure the sleeve in position within said waste-outlet, a slot extending across the base of said valve-casing, guides upon its inner walls adjacent to the ends of said slot, a valve-seat in said sleeve registering with the slot and guides in the valve-casing, a gate-valve slidably disposed in said valve-casing and the guides therein, a cap inclosing the top of said valve-casing having an aperture therein, a stem extending from the top of the valve through the top of the casing, and mechanism connected to said valve-stem for reciprocating said valve, substantially as specified.

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**758,041. PROCESS OF FORMING TWIST-DRILLS.** ROBERT L. BARCLAY, New York, N. Y. Filed Feb. 23, 1903. Serial No. 145,508. (No model.)

*Claim.*—The herein-described method of forming a twist-drill, which consists in first rolling a heated steel billet to draw the metal and form the flutes and shank, then forging the said blank to compact the metal and size it, then removing the fin produced in forging, then twisting and hammering the blank, and finally straightening it by rolling, all of the said operations being effected during a single heating of the blank and in the order named, whereby each operation is adapted to the gradual hardening of the metal in cooling.



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**758,042. WOOD-CUTTING MACHINE.** ALDEN A. BARTLETT, San Francisco, Cal. Filed Sept. 24, 1903. Serial No. 174,530. (No model.)



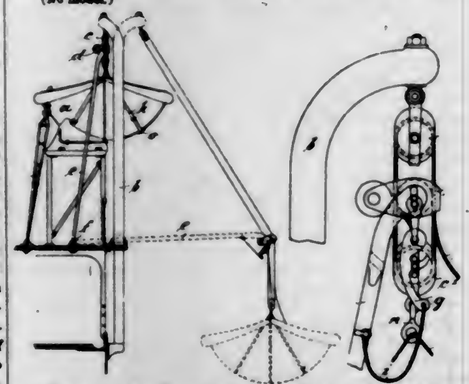
*Claim.*—1. In a machine for reducing wood to sawdust or pulp, the combination of a rotating cylinder, saw-teeth spirally disposed around the same, said saw-teeth having a base at right angles to the cutting portion whereby said saw-teeth may be secured to said cylinder, of a feed box or table disposed at an angle to said cutting-cylinder terminating in a wedge-shaped box extending substantially the length of and adjacent to the cutting-cylinder and adapted to direct the material against the cutting edges at an angle thereto, substantially as described.

2. In a machine for reducing wood to sawdust or pulp, the combination of a rotating cylinder having collars at its ends, said collars having projecting shoulders with spiral faces, and saw-teeth spirally disposed around said cylinder abutting against said shoulders and resting against the spiral faces of said shoulders, substantially as described.

3. In a machine for reducing wood to sawdust or pulp, the combination of a rotating cylinder having collars at its ends, said collars having projecting shoulders with spiral faces, saw-teeth spirally disposed around said cylinder and abutting against said shoulders and resting against the spiral faces of said shoulders, plates and screws to secure said saw-teeth to the cylinder, and spacing-strips to regulate the distance the teeth project beyond the securing-plates, substantially as described.

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**758,043. DEVICE FOR LOWERING LIFE-BOATS.** JULIUS F. BECKER, Elbing, Germany. Filed Jan. 18, 1904. Serial No. 189,570. (No model.)



*Claim.*—1. In a device for lowering life-boats, the combination of davits *b*, a pulley-block *c* suspended by each davit *b*, pulley-blocks *c'*, a boat suspended by the pulley-blocks *c'*, ropes *h* passing round the pulleys of each pair of blocks *c* and *c'*, booms *e* turnable around their ends *f* and inclined somewhat outward in the normal position of the boat, a sister-block *d* fixed to each boom, said sister-block being provided with pulleys for guiding the ropes *h* and hooks *g* for suspending the blocks *c'* to the sister-blocks *d*, substantially as described and for the purpose set forth.

2. In a device for lowering life-boats, the combination of davits *b*, a pulley-block *c* suspended by each davit *b*, pulley-blocks *c'*, a boat suspended by the pulley-blocks *c'*, ropes *h* passing round the pulleys of each pair of blocks *c* and *c'*, booms *e* turnable around their ends *f* and inclined somewhat outward in the normal position of the boat, a sister-block *d* fixed to each boom, said sister-block being provided with pulleys for guiding the ropes *h*, hooks *g* for suspending the blocks *c'* to the sister-blocks *d*, and means for automatically releasing said hooks during the swinging downward of the booms *e*, substantially as described for the purpose set forth.

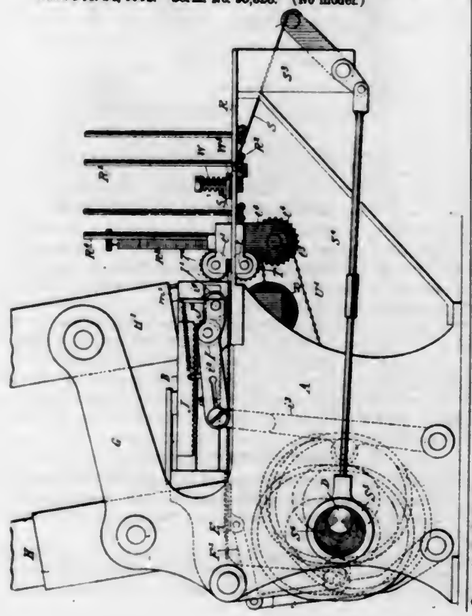
3. In a device for lowering life-boats, the combination of davits *b*, a pulley-block *c* suspended by each davit *b*, pulley-blocks *c'*, a boat suspended by the pulley-blocks *c'*, ropes *k* situated on both sides of the floor-head of the boat, hooks *n* for suspending the boat to the pulley-blocks *c*, said hooks being fixed to the ropes *k*, ropes *h* passing around the pulleys of each pair of blocks *c* and *c'*, booms *e* turnable around their ends *f* and inclined somewhat outward in the normal position of the boat, a sister-block *d* fixed to each boom, said sister-block being provided with pulleys for guiding the ropes *h* and hooks *g* for suspending the blocks *c'* to the sister-blocks *d*, substantially as described and for the purpose set forth.

4. In a device for lowering life-boats, the combination of davits *b*, a pulley-block *c* suspended to each davit *b*, pulley-blocks *c'*, ropes *h* passing round the pulleys of each pair of blocks *c* and *c'*, booms *e* turnable around the ends *f* and inclined somewhat outward in the normal position of the boat, a sister-block *d* fixed to each boom, said sister-block being provided with pulleys for guiding the ropes *h*, hooks *g* for suspending the blocks *c'* to the sister-blocks *d*, and a ladder *m* for fixing the boat in the normal position, substantially as described and for the purpose set forth.

5. In a device for lowering life-boats, the combination of davits *b*, a pulley-block *c* suspended by each davit *b*, pulley-blocks *c'*, a boat suspended by the pulley-blocks *c'*, ropes *h* passing around the pulleys of each pair of blocks *c* and *c'*, booms *e* turnable around their ends *f* and inclined somewhat outward in the normal position of the boat, a sister-block *d* fixed to each boom, said sister-block being provided with pulleys for guiding the ropes *h*, hooks *g* for suspending the blocks *c'* to the sister-blocks *d*, and ropes *i* fixed to the booms *e* and to the hooks *g*, substantially as described and for the purpose set forth.

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**758,044. ENVELOP FEEDING AND EJECTING MECHANISM FOR PRINTING-MACHINES.** CHARLES A. BELKNAP, Brooklyn, N. Y. Filed Feb. 24, 1902. Serial No. 95,328. (No model.)





*Claim.*—1. The combination of a platen or impression-bed, means for feeding stencil-cards thereto, means for feeding the articles to receive the imprint, to the platen, said feeding means being arranged at opposite sides of the platen and feeding toward the platen as a common point, means for impressing the stencil onto the articles, and means for moving the used stencil-cards directly away from the platen, transversely to the direction of the feed of the cards and the articles, substantially as described.

2. The combination of a platen or impression-bed, means for feeding stencil-cards thereto, means for feeding the articles to receive the imprint to the platen or impression-bed, means for impressing the stencil onto the articles, means for removing the stencil-cards from the printed articles, and means for removing the printed articles sidewise of the line of feed of the card-feeding means, substantially as described.

3. The combination of a platen or impression-bed, means for feeding stencil-cards thereto, means for separating and feeding from a stack the articles to receive the imprint to the platen or impression-bed, means for impressing the stencil onto the articles, and means for knocking the printed articles to one side of the line of the card-feeding means, substantially as described.

4. The combination, in an envelop-feeding mechanism, of means for separating and feeding envelops from a stack, feed-rolls for taking up the fed envelop, a platen onto which the envelop is fed, and means located near one end of the feed-rolls for ejecting the envelop laterally from the platen, substantially as described.

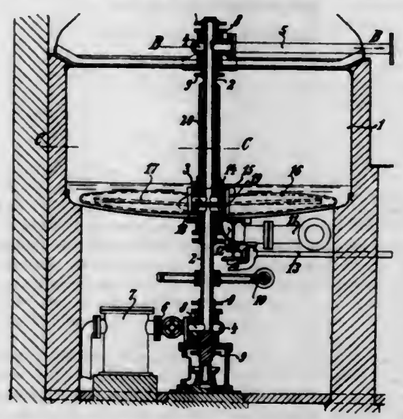
5. The combination of means for feeding envelops to a platen or impression-bed, a spring-actuated pivoted arm, a knocker located on and at angle to one end of the arm to one side of the line of feed, and means for straining the spring and to release the arm and knocker, substantially as set forth.

6. The combination, with a platen or impression-bed, and a stencil-card carrier, one of said parts being movable relatively to the other, of a spring-stop for the article to be printed acting when the movable part is moved away from the other to intercept the article and the movable part automatically retracting the stop when the cards are being fed, substantially as described.

7. The combination of a platen or impression-bed, timed means for feeding stencil-cards thereto, means for producing the impression through the stencil-cards, means for feeding the articles to be printed, to the platen, a suitably-driven cam timed relatively to the card-feeding means and the article-feeding means, and a knocker suitably actuated from said cam to discharge the printed article sidewise relatively to the line of feed, substantially as described.

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**758,045. APPARATUS FOR HEATING OR COOLING LIQUIDS.** GUSTAV BRASELMANN, Darmstadt, and FRITZ LÜNENMANN, Ruhrort, Germany. Filed July 31, 1903. Serial No. 167,680. (No model.)



*Claim.*—1. In a heating and cooling apparatus the combination with a container, of an agitator therein after the analogy of a ship's propeller comprising a number of blades and having within it a conduit making a complete circuit of each blade thereof; means to supply fluid to one end of said conduit; and means to exhaust from the other end of said conduit.

2. In a heating and cooling apparatus the combination with a container, of an agitator therein having hollow blades after the anal-

ogy of a ship's propeller each blade having a partition therein whereby a conduit is formed making a circuit of the blade; a hub supporting said blades and having chambers each in communication with one of the ends of the conduits in the several blades; and means to respectively supply and exhaust said chambers.

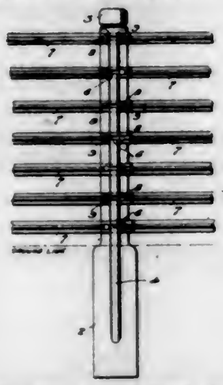
3. In a heating and cooling apparatus the combination with a container, of an agitator therein having blades after the analogy of a ship's propeller, comprising a number of blades and each blade having within it a conduit making a complete circuit thereof; a hub supporting said blades and having chambers in communication with the respective ends of the conduits in the several blades; a shaft supporting said hub and having conduits in communication with said chambers and leading respectively from a source of supply and to a point of exhaust; and means to rotate the shaft.

4. An agitator-blade comprising a hollow body of less thickness in one direction than in another, and having a working face to engage the material to be agitated said face being upon the side of the blade extending in the direction of the greatest thickness; a partition dividing the interior of the body into compartments, the partition uniting the walls of the blade in the direction of the least thickness, thereby making a compartment upon each of the respective sides of such partition and the wall constituting the working face comprising a wall to both of said compartments upon the same side of the blade; means of communication between a supply and an exhaust to the respective sides of the partition at one end; and means of communication between the sides of the partition at the other end.

5. In a device of the character specified, the combination of a shaft; channels in the shaft; openings at opposite sides of the shaft and at different distances from the end thereof; a hub mounted to rotate upon said shaft and having chambers in its inner perimeter registering with the respective openings of said channels; and a number of blades carried by the hub and occupying the same radial plane thereon, each blade having a channel surrounding it and commencing at one of the said chambers and ending at the other of said chambers, all of said channels commencing and ending respectively at the same chamber.

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758,046. **FENCE.** GEORGE BROMSON, Seattle, Wash. Filed Mar. 11, 1903. Serial No. 147,247. (No model.)



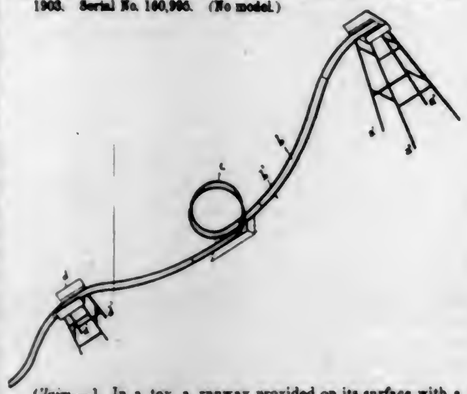
*Claim.*—1. In a fence, the combination with a post, the ribs provided with apertures, which apertures in one rib are located at a greater distance from the longitudinal center of the post than are the aperture in the adjoining rib, rails received in the apertures, fastening means secured on the end of the rail protruding through the aperture to prevent movement in one direction the ends of adjoining rails abutting each other to prevent movement thereof in the opposite direction.

2. In a fence, the combination with a post provided with apertures and inwardly-extending slots communicating with the apertures, of a series of ribbed rails, the adjacent ends of which overlap and are received in the apertures in the post, the rails being of larger area than the area of the slots, the ribs of the outmost rails received and fitting in the slots, and means for securing the adjacent ends of the rails together and also against longitudial movement.

3. In a fence, the combination with a post provided with apertures and inwardly-extending slots communicating therewith, of a plurality of ribbed and grooved rails, the adjacent ends of which overlap and are received in and protrude through the apertures in the post, the ribs of the underlapping rails received and fitting in the grooves in the overlapping rails and means for securing the rails against longitudinal movement.

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758,047. **TOY.** JULIUS CHEIN, New York, N. Y. Filed June 11, 1903. Serial No. 160,966. (No model.)

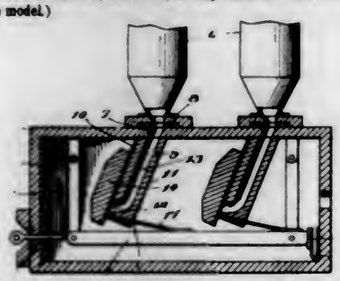


*Claim.*—1. In a toy, a runway provided on its surface with a pair of parallel grooves, and a car provided with wheels to move in such grooves, such runway being divided into sections and having tenons and sockets provided at the respective ends of the runway-sections, substantially as shown and described.

2. In a device of the character described, a runway provided on its surface with a pair of parallel tracks and a car provided with wheels engaging such tracks, such runway being divided into sections and having tenons and sockets provided at the respective ends of the runway-sections, substantially as shown and described.

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758,048. **WIND-CHEST FOR PIPE-ORGANS.** THEODORE CLAUDIUS, New Knoxville, Ohio. Filed July 14, 1902. Serial No. 115,576. (No model.)



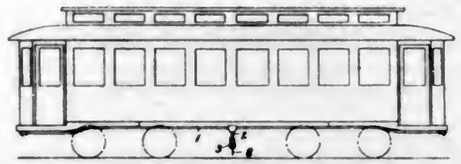
*Claim.*—A wind-chest for organs having openings in its top and having transverse pieces attached to and depending from the top of the chest at an acute angle thereto, each of said transverse pieces having an opening at its side adjacent to the top of the chest and a passage leading from the inner end of such opening upwardly through the transverse piece and registering with an opening in the top of the chest for the escape of wind, a valve hinged to each transverse piece above the opening and adapted to rest normally over the opening said transverse piece having perforations therethrough below the air-passage, a push-rod slidably engaged with the perforation of each cross-piece and disposed to engage and raise the valve, pivoted hangers depending from the top of the chest, cross-rods connected to the ends of the hangers and having the push-rods connected thereto, and spring-plates secured at one end to an end of the chest and having pads secured to their free ends, said free ends lying in paths of movement of the cross-rods and adapted for engagement by the ends thereof.

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758,049. **FLUID-PRESSURE BRAKE.** JOHN W. CLOUD, London, England, assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Aug. 29, 1903. Serial No. 171,248. (No model.)

*Claim.*—1. A valve device for fluid-pressure brakes, comprising a coupling-head connected to the train-pipe, a loosely-mounted valve, means for clamping the valve tightly over the orifice in the coupling-head and means adapted to be operated by engagement with an object along the track for releasing said clamping means.





2. A valve device for fluid-pressure brakes, comprising a coupling-head connected with the train-pipe and having an opening or orifice surrounded by a gasket, a pivotally-mounted valve having clamping mechanism for holding the valve against the gasket and a depending arm or lever adapted to engage an object along the track and release said clamping mechanism by a partial rotation of the valve.

3. A valve device for fluid-pressure brakes, comprising a coupling-head connected with the train-pipe and having an opening therein, a valve pivotally mounted concentric with said opening, a lever for rotating the valve, said lever and head being provided with interlocking projections and lugs for clamping the valve tightly over said opening.

4. A valve device for fluid-pressure brakes, comprising a head communicating with the train-pipe and having an opening therein, a valve and lever pivotally mounted over said opening, a clamping mechanism for holding said valve tightly against said opening when the lever is in its normal position, and means for releasing said valve when the lever is turned in either direction from its normal position.

5. A valve device for fluid-pressure brakes, comprising a head connected to the train-pipe and having an opening therein, an arm extending opposite said opening, a valve pivotally mounted on said arm, interlocking projections and lugs for clamping the valve-face against the opening when the valve is in its normal position and means for disengaging said projections and lugs when the valve is rotated in either direction from its normal position.

6. A valve device for fluid-pressure brakes, comprising a head connected to the train-pipe and having an opening therein, a valve loosely mounted over said opening, clamping mechanism for holding the valve closed against the opening when in its normal position, a yielding stop for maintaining the valve normally in its normal position, and means for rotating said valve in either direction from its normal position to release said clamping mechanism.

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758,050. **TEMPORARY BINDER.** JOHN F. CORDER, Chicago, Ill. Filed Nov. 23, 1900. Serial No. 37,438. (No model.)



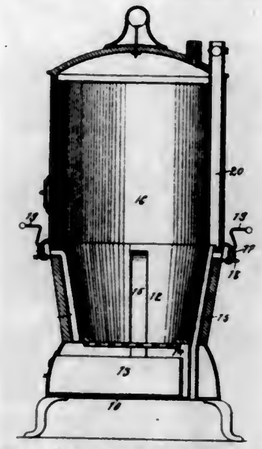
*Claim.*—1. In a temporary binder, the combination with an apertured base-plate, of axially screw-threaded thimbles permanently and rigidly secured in said apertures, a conical end on each which extends above the plate and acts to hold the contents of said binder free from the base-plate, interchangeable screw-threaded impaling-posts of various lengths adapted for engagement in each thimble and a clamping-plate slotted transversely to receive said posts.

2. A loose-leaf binder comprising a base-plate having apertures therein, a threaded thimble rigidly secured in each of said apertures and provided with an upward extension concentric therewith, said upward extension being conical and adapted to hold the contents of the binder out of contact with the base-plate, a post threaded at one end to engage in said thimbles and angular at the other end and a clamping-plate provided with transversely-opening slots adapted to receive said posts and means for locking said clamping-plate to the post.

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758,051. **STOVE OR FURNACE.** JAMES M. CROWDER and STATES R. CROWDER, Marion, Iowa. Filed Aug. 6, 1903. Serial No. 168,429. (No model.)

*Claim.*—1. In a stove or furnace, the combination of open-ended tubular air-heaters, a fuel and fire chamber, a drum having a flange at its bottom adjacent to the upper ends of the tubular heaters, an annular plate and means for adjusting said plate relative to the flange.




2. In a stove or furnace, open-ended tubular air-heaters located inside a fire-chamber and extended through said fire-chamber at their upper ends, a drum on top of the fire-chamber and a flange on the lower end of the drum, a ring-shaped plate around the fire-chamber below the said flange adjustable relative to the upper ends of the tubular air-heaters and double elbow-shaped holders fixed to the plate and extended through apertures in the flange, arranged and combined to operate in the manner set forth for the purposes stated.

3. An improved stove or furnace comprising a base, a grate, a fuel and fire chamber, a plurality of open-ended air heaters and circulators, a drum having a flange adjacent to the upper ends of the tubular heaters, a flue at the rear of the drum, an annular plate and means for adjusting said plate relative to the flange, arranged and combined to operate in the manner set forth for the purposes stated.

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758,052. **ADDING AND RECORDING MACHINE.** ADOLPHUS S. DENNIS, Cleveland, Ohio, assignor to the Bankers Adding Machine Co., Cleveland, Ohio, a Corporation. Filed Sept. 8, 1900. Serial No. 29,358. (No model.)

*Claim.*—1. In a typographical adding-machine, the combination of the adding-wheels having printing characters thereon, the key-levers and the selecting and operating mechanism connecting said levers with the adding-wheels, a laterally-sliding item-printing bar arranged above said printing adding-wheels, mechanism between said item-printing bar and each key-lever to give a varying movement to said bar, a laterally-movable total-striking hammer, and an item-printing hammer, substantially as described.

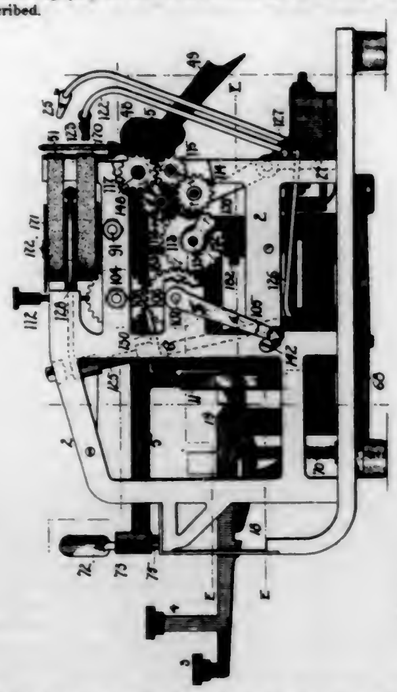
2. The combination of adding-wheels and an initial operating-wheel therefor, a series of selecting key-levers and mechanism operated thereby to rotate said operating-wheel varying distances, a stop for the adding-wheels, and independent means connecting each lever with said stop and to limit the rotation of the adding-wheel thus engaged, substantially as described.

3. The adding-wheels arranged side by side, a single initial operating-wheel rotatably and slidably mounted to engage any one of the adding-wheels at a time, ratchet mechanism to rotate said operating-wheel, a series of key-levers having operating-arms of varying lengths operatively connected with said ratchet mechanism and serving to turn the operating-wheel varying distances, a stop for said adding-wheels supported to slide with said operating-wheel, and separate operating mechanism connecting each lever with said stop to cause the movement of the operating and adding wheels to correspond to the movement of the lever actuated, substantially as described.

4. In a typographical adding-machine, the adding and printing mechanism, in combination with a laterally-slidable striking-hammer and means to set the hammer to the width of the columns added, and a line of mechanism to actuate said hammer, substantially as described.

5. In a typographical adding-machine, a set of recording-wheels, a laterally-slidable total-recording hammer, and means to set the ham-

mer to the width of the columns added, said means comprising a laterally-slidable frame carrying said hammer and width-determining mechanism engaging the last rotated recording-wheel, substantially as described.



6. In a typographical adding and recording machine, a total-recording hammer and a laterally-slidable support therefor, a shaft and means to rotate said shaft, and an arm actuated by said shaft and engaged with said support for the hammer to fix its position, substantially as described.

7. In a typographical adding-machine, the adding, recording and printing mechanism, and a series of key-levers connected therewith to print the items and total, in combination with paper-feed rollers and means connected therewith to feed the paper in opposite directions successively before and after the total is printed, substantially as described.

8. In a typographical adding-machine, the combination of the adding and total-printing wheels with an item-printing mechanism and a series of key-levers operatively connected therewith to print the items and to operate the adding and total-printing wheels, a movable carriage and paper-feed rollers mounted thereon, and a crank-controlled train of mechanism to strike off the total and return the adding and printing wheels to starting position and actuate said feed-rollers, substantially as described.

9. In a typographical adding-machine, the adding, recording and total-printing mechanism and separate item-printing mechanism, a series of key-levers and connections to actuate both said item and totalizing mechanism, a movable paper-carrier and feed, and a crank and train of gears and cam-operated mechanism to print the total, return the adding mechanism to starting position and feed the paper when the crank is rotated, substantially as described.

10. In a typographical adding-machine, the adding and total-printing wheels, separate item-printing mechanism, a series of key-levers to actuate said wheels and item-printing mechanism, a paper-carrier and feed-rollers therefor, separate hammers to print the items and total, means to set the totalizing-hammer in position to print only the number of columns added, means to return the adding and recording wheels to starting position after the total has been printed, and means to set and actuate said totalizing-hammer, to feed said paper, and to return the adding-wheels to starting position in a single continuous operation, substantially as described.

11. In a typographical adding-machine, the combination of the adding and printing wheels, a slidable item-printing type-bar, a series of key-levers and connecting mechanism to operate said wheels and type-bar, a total and an item striking hammer, a series of movable stops to limit the movement of said bar, and mechanism between said stops and key-levers whereby when a key-lever is depressed a corresponding stop is moved in the path of said bar, substantially as described.

12. In a typographical adding-machine, the adding and total-printing wheels, the slidable item type-bar, the item and total printing hammers, a series of key-levers corresponding to the characters on said bar, means connected therewith to rotate said wheels, a set of vertical movable bolts to limit the movement of said bar, and operative connections between said bolts and the key-levers, substantially as described.

13. The main frame and the slidable carriage thereon, drums at the sides of the carriage and a ribbon fixed thereto and running over said drums, in combination with a slidably-mounted initial operating-wheel for rotating the adding-wheels and an arm fixed to said ribbon and engaging said operating-wheel to slide it to working position corresponding to the position of the carriage, substantially as described.

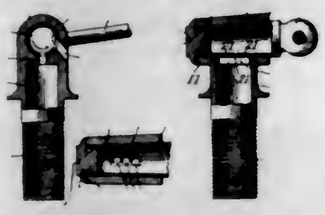
14. The initial operating-wheel slidably mounted, the carriage and a ribbon for moving the carriage, and an arm on said ribbon engaging said wheel, levers on the front of the carriage to fix the starting position to print, an a series of adding-wheels corresponding to said levers and arranged to be engaged by the initial operating-wheel, substantially as described.

15. The initial operating-wheel slidably mounted, the carriage and an arm operatively connected therewith engaging said wheel and determining its working position and a lever pivoted on said carriage to fix the column of initial operation, in combination with the type-bar for printing the items, a printing-hammer and a key-lever operatively connected with said type-bar and with said hammer to cause both said parts to act in immediate succession, substantially as described.

16. The carriage and means to fix the starting-point thereof, the initial operating-wheel and means operatively connecting the same with the carriage and adding-wheels arranged to mesh successively with said operating-wheel, in combination with a type-bar slidably mounted, the key-levers and means operatively connecting said levers with the carriage and with the initial operating-wheel and the type-bar, said means constructed to give varying movements to the said parts according to the value of the key-lever, substantially as described.

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**758,053. VALVE.** JOSEPH A. DESHARTEAU, Granby, Canada. Filed May 23, 1903. Serial No. 158,564. (No model.)



*Claim.*—1. In combination, a body having inlet and outlet ports, and a plug rotatably mounted within said body, said plug having an inlet, and a single row of outlets disposed progressively with respect to an element of its periphery, and so situated that all of the said outlets may register with said body outlet-port, when the body and plug inlets are in registry, and be closed one by one as the plug is rotated.

2. In combination, a body having a bore, transverse inlet and outlet ports communicating therewith, and a hollow plug rotatably mounted in said bore, said plug having a transverse inlet, and a plurality of transverse outlets disposed progressively with respect to an element of its periphery, and so situated that all of said outlets may register with said body outlet-port when the body and plug inlets are in registry, and be closed one by one as the plug is rotated.

3. In combination, a body having a conical bore, transverse inlet and outlet ports communicating therewith, a hollow plug rotatably mounted in said bore, a float rigidly attached to said plug, and a tank in which said float lies, said plug having a transverse inlet, and a plurality of transverse outlets disposed progressively with respect to an element of its periphery, and so situated that all of said outlets may register with said body outlet-port when the body and plug inlets are in registry, and be closed one by one as the plug is rotated.



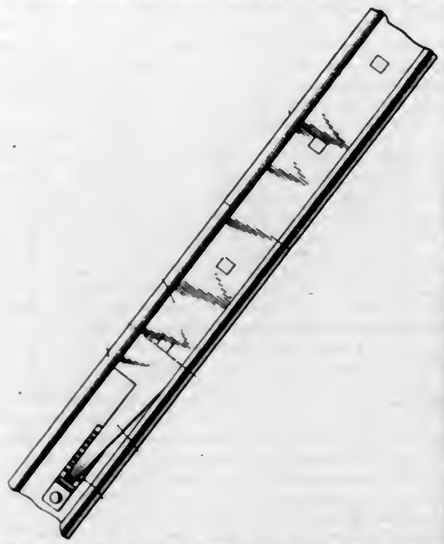
**758,054. FLEXIBLE DROP-LIGHT TUBING FOR GAS LAMPS AND BURNERS.** WILLIAM S. EDWARDS, Chicago, Ill. Filed Apr. 23, 1903. Serial No. 153,961. (No model.)



*Claim.*—As an article of manufacture, composite flexible drop-light tubing for portable gas lamps and burners composed of a tubular, vulcanized soft-rubber core A, a flexible tubular layer B, of fabric braided or woven textile material rendered impervious by suitable pliable cement and inclosing and forming a layer upon the tubular rubber core, and an outer tubular covering C, of woven textile material inclosing the said impervious tubular layer and forming the outer layer of the composite tubular structure.

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**758,055. RAIL-JOINT.** ELISHA F. EVANS and TRAVIS J. STRANGE, Argyle, Ga. Filed Dec. 4, 1903. Serial No. 183,822. (No model.)



*Claim.*—1. A rail-joint comprising rail-sections having openings therethrough, slots extending from opposite sides of the openings, plates lying at either side of the rails, pins carried by the plates and lying in the slots, means for preventing disengagement of the pins from the slots and means for preventing movement of the plates to disengage the pins from the slots.

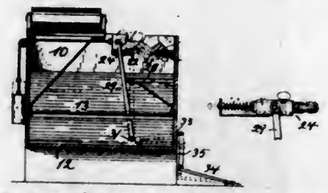
2. A rail-joint comprising rail-sections having openings therethrough, dovetailed slots extending from opposite sides of the openings, plates disposed at either side of the rails, dovetailed pins carried by the plates and lying in the slots, said plates being adapted for movement to disengage the pins from the slots, means for holding the plates at times against such movement.

3. In a rail-joint, the combination with rail-sections, having openings through the webs thereof and dovetailed slots extending laterally at opposite sides of the openings, of plates disposed at either side of the rails, pins carried by the plates and lying in engagement with the slots, said plates being movable upon the rails to bring the pins into the openings to permit of removal of the plates from the rails, and means for holding the plates at times against such movement.

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**758,056. VEGETABLE-WASHER.** JOHN F. FUGARI, Cincinnati, Ohio. Filed Jan. 17, 1903. Serial No. 139,367. (No model.)

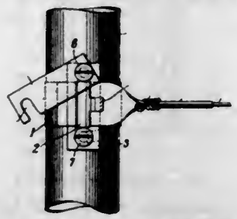
*Claim.*—1. In a vegetable-washer, the combination of a tank in which the vegetables receive a preliminary bath, two opposite rubbers between which the vegetables are to be cleaned thereafter, they being supported movably with reference to each other, mechanism whereby this movement is positively performed, means to supply water to obtain a simultaneous rinsing operation, a cock to control this water-supply and operative connection between it and the mechanism mentioned whereby operation of this latter causes also automatic operation of the cock.



2. A scouring and rinsing device for cleaning vegetables consisting of two hollow rinsing-heads supported opposite each other, means to supply water to them, perforations in their opposite faces to permit discharge of such water into the space between these heads and a scouring device attached to the under side of each one of these heads and projecting into the space between them.

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**758,057. GROUND CONNECTION FOR ELECTRIC CONDUCTORS.** FREDERICK P. FULLER, New York, and JOHN J. WALSH, Yonkers, N. Y. Filed Oct. 16, 1902. Serial No. 127,518. (No model.)



*Claim.*—1. In a device of the kind described, the combination of a conducting object, a flexible band encircling the same, a clamping device engaging the ends of the band, and a screw intermediate the clamping device and the conducting object to push the clamping device away from the conducting object to take up the slack in the band and engage both ends of the band more firmly, as set forth.

2. In a device of the kind described, the combination with a band adapted to encircle a conducting object, of a plate through which the ends of the band pass, a second plate on the first, and screws extending through said plates and bearing against the conducting object, as and for the purposes set forth.

3. In a device of the kind described, in combination, a band adapted to encircle a conducting object, a sleeve on said band for receiving a wire or conductor, a plate through which the ends of the band pass, a second plate superimposed on said first-mentioned plate, and screws extending through said plates and bearing against the conducting object, as and for the purposes set forth.

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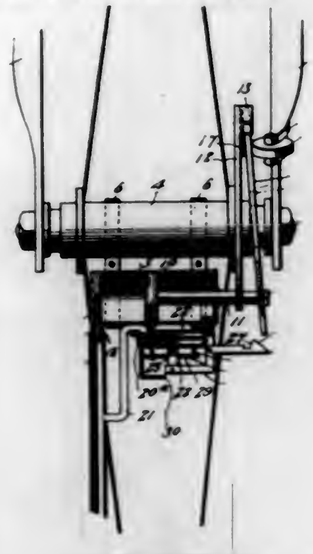
**758,058. TIRE-INFLATOR.** FERNANDO H. GEISLER, Dayton, Ohio. Filed Mar. 18, 1903. Serial No. 148,438. (No model.)

*Claim.*—1. In a pump for pneumatic tires, the combination with a wheel and a frame to which it is secured, of a pump-cylinder fixed to the wheel, a piston in the cylinder, a piston-rod extending beyond the end of the cylinder, a plate fixed to the wheel and formed with a guideway through which the piston-rod moves, a lever fulcrumed on the plate and engaging the piston-rod, a spring engaging the plate and lever to force the latter in one direction, and means on the frame engaging the lever to move the same against the force of the spring.

2. In a pump for pneumatic tires, the combination with a wheel and a frame to which it is secured, of a pump-cylinder fixed to the wheel, a piston in the cylinder, a piston-rod extending exteriorly to the cylinder, a plate fixed to the wheel and formed with a guideway through which the rod extends, a lever fulcrumed on the plate, a spring engaging the plate and lever to move the lever in one direction, operating means on the frame to move the lever against the force of the spring, a casing on the cylinder, a pipe connecting the casing to the tire, a diaphragm arranged within the casing, and a lever fulcrumed adjacent the casing and connected to the diaphragm and adapted to engage the first-named lever to hold the same out of the path of the operating means on the frame.

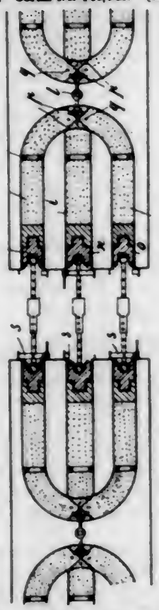
3. In a pump for pneumatic tires, the combination with a wheel

and a frame to which it is secured, of a pump-cylinder on the wheel, a piston in the cylinder, a lever fulcrumed on the wheel and connected to the piston, a spring to move said lever in one direction, and a fixed roller on the frame to engage the lever and swing the same on its fulcrum against the force of the spring.



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758,059. AUTOMATIC BRAKE-COUPLING FOR RAILWAY OR ELECTRIC CARS. KURT GNUCKE, Tegelort, near Berlin, Germany. Filed Mar. 4, 1903. Serial No. 146,048. (No model.)



*Claim.*—1. A draft and buffing device for coupling on railroad and electric cars, composed of a cylinder having an outer open end, a piston moving in the cylinder and adapted to act upon an elastic medium conveyed to the brake, means for confining the piston to the cylinder, and a coupling-head adapted to enter the cylinder, substantially as specified.

2. A fastening device for couplings on railway and electric cars, serving simultaneously as a draft and buffing device, comprising pistons moving in the cylinders for the brake medium in a buffing direction, said pistons having attached to them the piston-rods by means of ball-joints, substantially as specified.

3. A draft and buffing device for coupling on railway and electric cars, comprising pistons moving in the cylinders for the brake medium in a buffing direction, said pistons having attached to them the piston-rods by means of ball-joints, substantially as specified.

4. A draft and buffing device for railway and electric cars, comprising couplings being on both sides formed as pistons with ball-joints and the entire diameter of these couplings being made to correspond with the inner diameter of the respective cylinder for the brake medium, substantially as specified.

5. The combination of the receptacle for the brake medium, the buffing-box, the casing of the draw-bar, and the socket-joint of the coupling, all in one cylinder, substantially as specified.

6. The combination of a brake-piston, the head of the draw-bar, the buffer and the coupling-carrying member all in one piston, substantially as specified.

7. The combination of a rod serving as a draw-bar or piston-rod, buffing-rod and coupling-rod with a cylinder, serving as a receptacle for the brake medium, as a buffing-box, as a casing for the draw-bar and as a socket-joint of the coupling, and with a piston serving as a brake-piston, as a head of the draw-bar, as a buffer and joint of the coupling, substantially as specified.

8. The combination of two or more rods, serving as draw-bar or coupling-rod, buffing-rod and piston-rod with two or more cylinders, serving as receptacle for the brake medium, buffer-box, casing of the draw-bar and socket-joint of the coupling and with two or more pistons serving as brake-piston, head of the draw-bar, buffer and joint of the coupling, substantially as specified.

9. The combination with a tube having three arms, each arm serving as cylinder for the brake medium, buffer-box, casing of the draw-bar and socket-joint of the coupling, with three rods, each serving as draw-bar or coupling-rod, buffer-rod and piston-rod and with three pistons, each serving as brake-piston, head of the draw-bar, buffer and joint of the coupling, substantially as specified.

10. In combination with the rods serving as draw-bar or coupling-rod, buffer-rod and piston-rod and with the pistons, serving as brake member, buffer, draw-bar, joint of the coupling, of a locking device adapted to lock each piston independently of the others in its initial or end position, substantially as specified.

11. The combination of the cylinder of the brake medium with any kind of coupling on railway and electric cars, the coupling-carrying members being formed as pistons working in the buffing direction upon an elastic medium, said pistons being prevented to fall out from the cylinders when exposed to draft, the diameter of the entire coupling acting as piston corresponding to the inner diameter of the cylinders, substantially as specified.

12. The combination of the cylinder of the brake medium with any kind of coupling on railway and electric cars, said cylinder of the brake medium being directly connected with the coupling by means of the coupling-carrying member formed to a piston, the diameter of the entire coupling acting as piston corresponding to the inner diameter of the cylinder, substantially as specified.

13. The combination of the cylinder of the brake medium with any kind of coupling on railway and electric cars, said cylinder for the brake medium being directly connected with the coupling by means of the coupling-carrying member formed as piston and the diameter of the entire coupling acting as piston corresponding to the inner diameter of the cylinder, said cylinders and pistons being adapted to replace separate buffers and separate draw-bars, substantially as specified.

14. The combination of the cylinder of the brake medium with any kind of coupling and a means to lock the coupling-carrying member in the cylinder on one or the other side of the coupling, substantially as specified.

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758,060. STORE-SERVICE APPARATUS. EDWIN R. GILL, Independence, Mo. Filed July 26, 1895. Serial No. 557,182. (No model.)

*Claim.*—1. The combination of a change-maker and cash-carrier with an order-setting device.

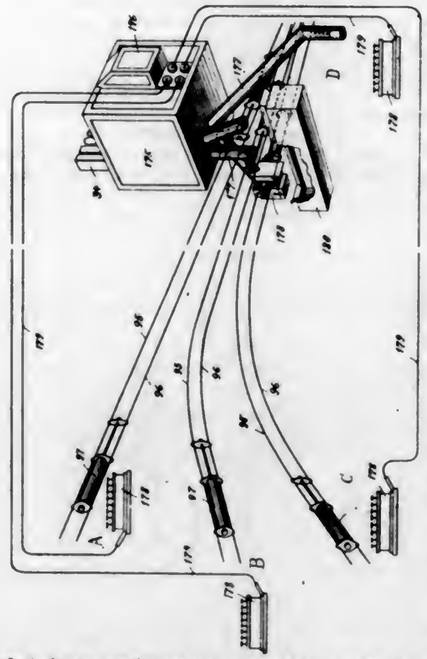
2. In combination with a number of ordering-stations and means for conveying change thereto, a change-selector, a change-depositor and an order-selector.

3. A change-maker and cash-carrying track and car; in combination with a car-starter operated automatically by the change-maker.

4. A change-recorder and an order-selector for a plurality of ordering-stations, in combination with a station type-selector operated simultaneously with said order-selector.



5. A recorder and motor mechanism therefor; in combination with a series of station instruments, an order-selector and operative connections between said order-selector and said motor mechanism



6. A change-recorder and order-selector for a plurality of ordering-stations; in combination with a station type-selector, operated by said order-selector.

7. An order-selector and a change-distributer for a number of stations; in combination with means for simultaneously operating said selector and distributer.

8. An order-selector and car-starter, in combination with means for simultaneously operating said selector and car-starter.

9. An order-selector and car-starter; in combination with means whereby said order-selector operates said car-starter.

10. A change-distributer and car-starter; in combination with means for simultaneously operating said change-distributer and car-starter.

11. A change-distributer for a number of stations in combination with an order-selector operating said distributer.

12. A change-selector and a number of selecting-operators; in combination with a number of order-setting devices and an order-selector.

13. A change-depositor and motor mechanism therefor; in combination with a number of station instruments for controlling said depositor and an order-selector operated by said motor mechanism, for connecting said station instruments to said change-depositor successively.

14. A change-depositor and a change-distributer; in combination with motor mechanism for operating said depositor and distributer.

15. A central instrument and motor mechanism therefor; in combination with a number of selecting-operators adapted to control said central instrument, and an order-selector, adapted to bring said selecting-operators successively into connection with said central instrument.

16. A central instrument and motor mechanism therefor; in combination with an order-selector and a number of station instruments connected therewith, each comprising a selecting-operator and an order-setting device.

17. A change-selector and cooperating motor mechanism; in combination with a number of selecting-operators and order-setting devices, and an order-selector operated by said motor mechanism for bringing said selecting-operators and order-setting devices successively into operative relation to said change-selector.

18. A motor, a motor mechanism, a car-starter and a motor-maintaining device arranged to operate said car-starter when thrown into inoperative position.

19. A central change-maker, a motor for operating the same, a number of station instruments and a circuit controlled at each station instrument for starting said motor.

20. A central change-maker, a motor for operating the same, a number of station instruments and a circuit controlled from each station instrument; in combination with a multiple switch moved by said motor and a number of motor-maintaining switches adapted to be successively brought into circuit with said motor, simultaneously with movement of said multiple switch.

21. A central change-maker, a motor for operating the same and a number of tracks and cars; in combination with a motor-maintaining device for each track, a car-starter adapted to be operated by the return of each motor-maintaining device, means for accomplishing such return, a circuit for normally operating each motor-maintaining mechanism and a multiple switch operated by said motor, adapted to close said circuits in succession, one at a time.

22. A central change-maker and a number of station instruments each comprising a number of money-switches; in combination with a money-magnet in the change-maker corresponding to each money-switch, and a multiple switch operated by movement of the change-maker for bringing said magnets into circuit with the money-switches at each station instrument successively.

23. In combination with a central electrically-operated change-maker, a station instrument comprising a pivoted motor-starting lever, a locking-piece cooperating therewith, means for depressing said lever, a switch, one side of which is attached to said locking-piece and automatic means for swinging the said locking-piece when released by depression of said lever and a shoulder on said locking-piece adapted to hold said lever when depressed.

24. In combination with a central electrically-operated change-maker, a station instrument comprising a primary setting-switch, a pivoted motor-starting lever, automatic means for closing said switch, adapted to be released by depression of said lever, a primary setting-magnet energized by a circuit through said switch, a secondary setting-switch adapted to be closed by said primary magnet, a secondary setting-magnet energized by a circuit through said secondary switch and acting when energized to open said primary switch.

25. In combination with a central electrically-operated change-maker, a station instrument comprising a primary setting-switch, a pivoted motor-starting lever, automatic means for closing said switch, adapted to be released by depression of said lever, a primary setting-magnet energized by circuit through said switch, a secondary setting-switch adapted to be closed by said primary magnet, a secondary setting-magnet energized by circuit through said secondary switch, and acting when energized to open said primary switch, means for releasing said motor-starting lever when the secondary setting-magnet is deënergized and means whereby the release of said lever opens the secondary setting-switch.

26. A central instrument, a generator and a series of cables for controlling said instrument; in combination with a series of station instruments comprising a primary and secondary setting-magnet adapted to be connected to said cables, and a multiple switch adapted to bring said cables successively into connection with said central instrument.

27. A series of station instruments, each comprising a primary and secondary setting-magnet, a central group of motor-maintaining devices, electrical connections between said maintaining devices and said primary magnets, a central recording mechanism and releasing-magnet therefor, and electrical connections between said releasing-magnet and said secondary magnets; in combination with a multiple switch, a temporary switch for closing circuit through each of said motor-maintaining devices successively, and a second temporary switch for closing a circuit through said record releasing-magnet.

28. In a change-maker comprising an order-selector for a plurality of ordering-stations, a rotary shaft carrying two projections at an angle to each other, a temporary switch, a motor-maintaining device in circuit therewith, a second temporary switch, a series of money-magnets in circuit therewith and means for bringing each of said switches successively against one and the other of said projections.

29. In a combined motor-maintaining device and car-starter, two maintaining terminals, a weighted lever pivoted so as to connect said terminals when released, a magnet and an armature controlled thereby for retaining said weighted lever, and a car-starting switch in the return path of said weighted lever; in combination with means for returning said lever with sufficient impetus to operate said car-starting switch.

30. In a car-starter, a starting-magnet and a starting-switch in circuit therewith; in combination with an armature operated by said magnet and adapted to maintain said circuit through said magnet.

31. A starting-magnet, a starting-switch and a starting-circuit through both; in combination with an armature operated by said magnet and adapted to maintain said circuit through said magnet, a series of cars and a multiple switch adapted to connect said cars successively to said starting-magnet.

32. In combination with a central change-distributing device and a distant station, a track and electric car thereon, means for conveying current to said car, an insulated conducting-section near the end of the track and means for supplying a starting-current to said insulated section.

33. A change-maker, a motor mechanism for operating the same, an inclined change-distributing chute, a substantially vertical shaft therefor, means whereby said motor mechanism is made to periodically impart rotation to said shaft, a number of ordering-stations and means for transferring money from said chute in its various positions to said stations respectively.

34. In an electrically-operated change-maker, and in combination with a track and an electrically-propelled car thereon, a maintaining-switch lever for the change-maker motive mechanism, a car-starting switch near the same, a weight having an extension attached to said lever and means for swinging said lever toward said motor-operating switch for its operation, substantially as described.

35. In a store-service apparatus, a central cash-distributer a track leading therefrom, a car on said track, a propelling electric motor therefor, a reversing-switch therefor, means for actuating said switch and means for causing mechanical engagement between said actuating means and a part of said car normally in motion with relation to the frame of the car when the car is running.

36. In a store-service apparatus, a central cash-distributer a track leading therefrom, a car on said track, a propelling electric motor, a reversing-switch therefor, means adapted to engage with a part of the car normally in motion with relation to the frame of the car when the car is running for driving said reversing-switch, and a magnet in circuit with said electric motor adapted to hold said driving means out of engagement.

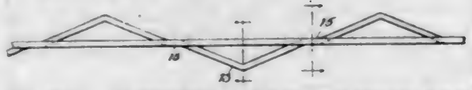
37. In a store-service apparatus, a central cash-distributer, a track leading therefrom, a car on said track, a propelling electric motor, a rotary reversing-switch therefor, a magnetic disk adapted to make frictional contact with a driving-wheel of the car, means for transmitting motion from said disk to said switch and a magnet in circuit with the motor for normally holding said disk away from said wheel.

38. In a device of the class described a double-acting switch adapted to close a circuit when thrown in one direction, and to momentarily close another switch when thrown in the opposite direction; a pivoted lever, a counterbalance-weight thereon and an extended projection on the counterbalance-weight adapted by its leverage to produce considerable rotary inertia when the lever is turned about its pivot and placed nearly over said pivot when the lever is stationary.

39. In a combined change-maker and car-starter, an electrically-driven motor for the change-maker, a maintaining-switch therefor, and a starting-switch for the car-starter adapted to be closed by return movement of the maintaining-switch.

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**758,061. BAR FOR STRENGTHENING CEMENT FLOORS OR CONCRETE.** JOHN F. GOLDING, New York, N. Y. Filed May 11, 1903. Serial No. 156,502. (No model.)



*Claim.*—1. A tension-bar for use in cement or concrete, formed with a single series of central cuts, the metal between said cuts lying in a single plane and being unstretched, and having the metal at the sides of said cuts stretched laterally to form bends or loops, substantially as and for the purpose described.

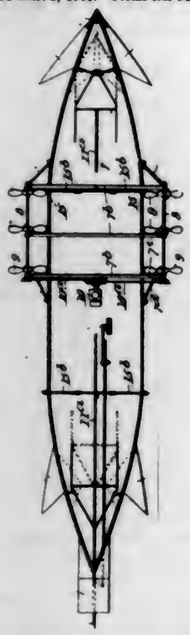
2. A tension-bar having a continuous, longitudinal straight portion, and formed with longitudinal cuts at one side of such straight portion, the metal beyond said cuts being bent alternately to each side of said straight portion to form loops, substantially as and for the purpose described.

3. In combination with a body of cement or concrete, a tension-bar embedded in said body and formed with longitudinal cuts in horizontal planes, the metal at the sides of said cuts being bent out horizontally to form loops and the edge of the bar being in a direction to oppose the strain imposed on or by said body, substantially as and for the purpose described.

4. In a floor the combination of a body of cement or concrete, and a tension-bar embedded in said body below the neutral plane of the floor, and arranged with its edges presented upward and downward and toward the plane of resistance of the floor, the bar being formed with a series of longitudinal cuts and having the metal at the sides of the cuts bent out laterally to form loops the openings of which are presented upward, substantially as and for the purpose described.

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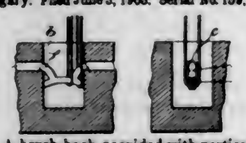
**758,062. AIR-SHIP.** DIRK GREEUW and RICHARD R. DE JONG, Chicago, Ill. Filed Mar. 2, 1903. Serial No. 145,694. (No model.)



*Claim.*—In an air-ship, the combination with a balloon and a car thereunder, of laterally-extending curved frames pivoted to the keel of the car, and swinging laterally and vertically and shaped to lie close to the bottom of the car and to sustain the ship out of contact with the ground when at rest, and rigid rods attached to the outer ends of the frames and extensible through the sides of the car

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**758,063. BRUSH.** CARL GRÜNBERG, Pomony, (Pressburg,) Austria-Hungary. Filed June 3, 1903. Serial No. 159,939. (No model.)



*Claim.*—1. A brush-back provided with vertical and horizontal communicating holes, and elastic tuft-retaining anchors adapted to be secured in said holes, substantially as specified.

2. A brush-back provided with parallel rows of vertical and horizontal communicating holes, elastic tuft-retaining anchors comprising a base part adapted to fit tightly in the vertical holes, upwardly-curved arms extending from the said base part and adapted to enter the horisontal holes, substantially as shown and described.

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**758,064. CASEIN COMPOSITION AND PROCESS OF PRODUCING SAME.** WILLIAM A. HALL, Bellows Falls, Vt., assignor to Casein Company of America, a Corporation of New Jersey. Filed Feb. 26, 1903. Serial No. 145,255. (No specimens.)

*Claim.*—1. A casein composition consisting of casein, in dry granular form, and the particles or granules of which are impregnated or coated with a solution of modified starch.

2. A casein composition consisting of alkalized casein, in dry granular form, and the particles or granules of which are impregnated or coated with a solution of modified starch.

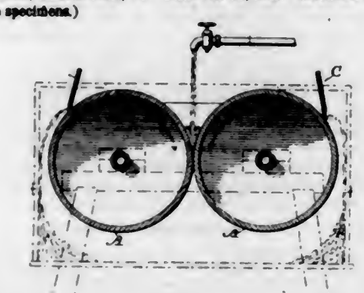
3. The herein-described process for producing a casein composition, for use as a binding or adhesive composition, consisting in mixing a solution of modified starch with dry granular casein during rapid agitation until the starch solution is absorbed by or thoroughly incorporated with the particles of casein.

4. The herein-described process for producing a casein composition, for use as a binding or adhesive composition, consisting in mixing a solution of modified starch with granular casein during rapid agitation until the starch is absorbed by or thoroughly incorporated with the particles of casein, and alkalizing the casein composition during the mixing process by incorporating an alkaline solution with the other ingredients.

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**758,065. PROCESS OF PRODUCING MILK-SUGAR.** WILLIAM A. HALL, Bellows Falls, Vt. Filed Feb. 28, 1903. Serial No. 145,571. (No specimens.)

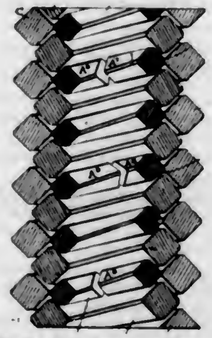


*Claim.*—1. The process of obtaining sugar from milk which consists in extracting the cream from the milk, precipitating the casein by means of a dilute acid, heating the whey, to precipitate the greater portion of the albumen therein, removing the precipitated albumen, then subjecting the whey in a thin film to the action of a heated metal surface to precipitate the remaining albumen, removing the condensed film from such heated surface before it is absolutely dry and before caramelization of the sugar has taken place, and finally separating the remaining albumen from the crude sugar.

2. The herein-described process of treating whey, in making milk-sugar, to coagulate the albumen, consisting in subjecting the whey to the action of heat at a temperature in excess of 212° Fahrenheit on a moving metal surface until the whey is condensed in a film on such surface, then removing the film of sugar condensed from the whey before it is fully dry, and then separating the coagulated albumen from the crude milk-sugar by dissolving the sugar and filtering the solution.

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**758,066. FRICTION DEVICE.** GEORGE L. HARVEY, Chicago, Ill. Filed Dec. 26, 1903. Serial No. 186,544. (No model.)



*Claim.*—1. In a friction device, outer and inner coiled members, each consisting of a series of coils, which are normally separated and brought into frictional engagement with each other when one or both of the members are compressed, one of said members being flattened at its adjacent bearing-surfaces, substantially as described.

2. In a friction device, an inner coiled member consisting of a series of coils, said coils being flattened at their adjacent bearing-surfaces, and a surrounding coiled member normally separated from the inner member and having a frictional engagement therewith, substantially as described.

3. In a friction device, an inner coiled member consisting of a series of coils, said coils being flattened at their adjacent bearing-surfaces, and a surrounding coiled member of less sectional area, substantially as described.

4. In a friction device, outer and inner coiled members, one of which consists of a series of coils, which coils are flattened at their adjacent bearing-surfaces, and one of said members being of greater sectional area than the other coiled member, substantially as described.

5. In a friction device, outer and inner coiled members which are normally separated, one of said members being composed of a series of coils, substantially as described.

6. In a friction device, outer and inner coiled members which are normally separated, one of said members being composed of a series of connected coils, substantially as described.

7. In a friction device, outer and inner coiled members each consisting of a series of coils, said members being normally separated and brought into frictional engagement with each other when one or both of the members are compressed, one of said members extending beyond the other, substantially as described.

8. In a friction device, outer and inner normally separated coiled members, each consisting of a series of connected coils, one of the coiled members being of a greater sectional area than the other, substantially as described.

9. In a friction device, outer and inner coiled members, and a trough-shaped friction member located between the two coiled members, and secured to one of said members, and brought into frictional engagement with both when the device is compressed, substantially as described.

10. In a friction device, inner and outer coiled members, and a device for preventing the creeping of the members with relation to each other, substantially as described.

11. In a friction device, inner and outer coiled members, one of said members being grooved and the other member being ribbed, the engagement of the grooved and ribbed parts preventing the creeping of the members with relation to each other, substantially as described.

12. In a friction device, an inner member consisting of a series of coils which are flattened at their adjacent bearing-surfaces, and an outer member, normally separated from that first named, and also consisting of a series of coils which are flattened at their adjacent bearing-surfaces, substantially as described.

13. In a friction device, a mainspring consisting of a series of coils, provided with friction-surfaces inclined to the central axis of the spring and normally separated flat bearing-surfaces at approximately right angles to said axis, and a friction-spring operating against the mainspring and of lighter cross-section, substantially as described.

14. In a friction device, a spring member consisting of a series of coils provided with flat bearing-surfaces at angles to the central axis of the device, and a frictional element engaging the said spring member and normally separated therefrom, the friction-surfaces of the frictional element being at angles to the aforesaid axis, substantially as described.

15. In a friction device, a spring member consisting of a series of coils provided with flat bearing-surfaces at angles to the central axis of the device, and a frictional element consisting of a coiled spring engaging the said spring member and normally separated therefrom, the friction-surfaces of the frictional element being at angles to the aforesaid axis, substantially as described.

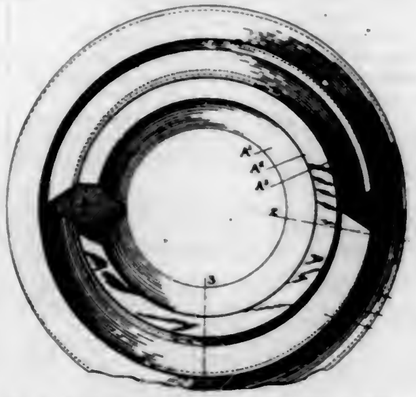
16. In a friction device, outer and inner coiled members which are normally separated, one of said members being flattened at its adjacent bearing-surfaces, and the outside diameter of the inner coiled member being greater than the inside diameter of the outer member, substantially as described.

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**758,067. FRICTION DEVICE.** GEORGE L. HARVEY, Chicago, Ill. Filed Dec. 26, 1903. Serial No. 186,545. (No model.)

*Claim.*—1. In a friction device, outer and inner spring members, one of said members being concentric with the axis of the coil and

the other non-concentric with respect to said axis, substantially as described.



2. In a friction device, outer and inner spring members, one of which is non-concentric with respect to the axis of the coil, substantially as described.

3. In a friction device, outer and inner spring members, one of which is non-concentric with respect to the axis of the coil, and both of which are normally separated but are brought into frictional engagement when the friction device is compressed, substantially as described.

4. In a friction device, outer and inner coiled members, the former of which is non-concentric with respect to the axis of the coil, substantially as described.

5. In a friction device, outer and inner coiled members, one of which is made up of a succession of coils, each of which is non-concentric with respect to the axis of the coils, substantially as described.

6. In a friction device, outer and inner compressible members, one of which is non-concentric with respect to the axis of the friction device, substantially as described.

7. In a friction device, an inner compressible member and an outer compressible coiled member which is non-concentric with respect to the action of the friction device, substantially as described.

8. In a friction device, an inner coiled member, the adjacent contacting surfaces of which are flattened, and an outer coiled member which is non-concentric with respect to the axis of the inner coil and which is normally separated therefrom, substantially as described.

9. In a friction device, inner and outer coiled members, which members are normally separated but are brought into frictional engagement upon compressing the device, the outer faces of one of said members being substantially parallel with the axis of the friction device, substantially as described.

10. In a friction device, inner and outer coiled members, the coils of one member being composed of triangular bars, and both of said members being normally separated, substantially as described.

11. In a friction device, inner and outer coiled members, one of which is made up of a succession of connected coils forming a continuous bar, and one of which members is non-concentric with respect to the axis of the friction device, substantially as described.

12. In a friction device, inner and outer coiled members, one of which is non-concentric with respect to the axis of the device, the adjacent contact-surfaces of the two members being flattened, substantially as described.

13. In a friction device, a spring made up of a succession of coils each of which is non-concentric with respect to the axis of the coils, the said spring being provided with means for holding the coils in proper alinement when the spring is closed, substantially as described.

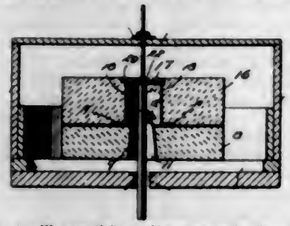
14. In a friction device, an outer coiled member, which is non-concentric with respect to the axis of the device, and an inner coiled member which is concentric with respect to the said axis, the whole arranged to cause increase of frictional surface between the two members as the device is compressed, substantially as described.

15. In a friction device, a coiled member which is non-concentric with respect to the axis of the member, and a second member for exerting frictional resistance to the first-named member, the whole arranged to cause increase of frictional surface between the two members as the device is compressed, substantially as described.

16. In a friction device, inner and outer coiled members which are disposed non-parallel with respect to each other, substantially as described.

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**758,068. CORN-GRINDER.** MARTIN H. HATFIELD, Hartiman, Tenn. Filed July 1, 1903. Serial No. 163,910. (No model.)



*Claim.*—1. A mill comprising a lower stone having a central tapering opening, a bushing engaged in the opening, tapering and projecting thereabove, a shaft passed freely through the bushing and out of contact therewith, said shaft having a reduced portion and a shoulder formed by the said reduced portion, a cover disposed over the upper end of the bushing and attached to the shaft, bearings for the shaft above and below the stone, an upper stone having a central cylindrical opening, a circular frame engaged in the upper portion of the cylindrical opening, the frame having perforations and depending arms at diametrically opposite points respectively, the lower ends of the arms being turned outwardly to form supports for the upper stone, and a bar passing through the perforations in the circular frame and having an opening in its central portion, the said bar being mounted upon the reduced portion of the shaft and against the shoulder formed by the said reduced portion.

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**758,069. VAULT OR SAFE.** HENRY D. HIBBARD and WALTER GARTON, Plainfield, N. J., assignors to Manganese Steel Safe Company, New York, N. Y., a Corporation of New Jersey. Filed Feb. 11, 1903. Renewed Sept. 22, 1903. Serial No. 174,230. (No model.)



*Claim.*—1. A safe or vault plate having one or more projections along its edge and at the inner side of such projection or projections a recess.

2. A safe or vault wall component having adjacent to its edge on the interior thereof a recess and on its exterior contiguous to its edge, a bead.

3. A safe or vault plate having a plurality of projections along its edge on the interior thereof, and at the inner side of such projections a longitudinally-extending recess.

4. A safe or vault plate having a plurality of projections along its edge on the interior thereof, and at the inner side of such projections a longitudinally-extending recess said plate having at its outer side a longitudinally-extending bead.

5. A safe or vault plate having one or more projections along its edge on the interior thereof, the inner end face of each being substantially flush with the wall-surface of the plate.

6. A safe or wall plate having interiorly-located projections adjacent to its edge and an ogee formation contiguous to such projections.

7. In a safe or vault, a pair of plates set edge to edge, each having one or more interiorly-located projections adjacent to its edge, the projection of one plate registering with that of its companion plate, and each of said plates having a recess adjacent to its projection, whereby the inner faces of such projections are substantially flush with the major part of the interior surfaces of the plates, and means for securing said projections together.

8. In a safe or vault, a pair of plates set edge to edge each having one or more interiorly-located projections adjacent to its edge, the projection of one plate registering with that of its companion



plate, and each of said plates having a recess adjacent to its projection, whereby the inner faces of such projections are substantially flush with the major part of the interior surfaces of the plates, and means for securing said projections together, said means comprising a shrunk-on link.

9. In a safe or vault, a pair of plates set edge to edge each having one or more interiorly-located projections adjacent to its edge, the projection of one plate registering with that of its companion plate, and each of said plates having a recess adjacent to its projection, whereby the inner faces of such projections are substantially flush with the major part of the interior surfaces of the plates, and means for securing said projections together, said means comprising a shrunk-on link, and means for maintaining the alinement of said plates relatively to each other.

10. In a safe or vault, a pair of plates set edge to edge each having one or more interiorly-located projections adjacent to its edge, the projection of one plate registering with that of its companion plate, and each of said plates having a recess adjacent to its projection, whereby the inner faces of such projections are substantially flush with the major part of the interior surfaces of the plates, and means for securing said projections together, said means comprising a shrunk-on link, and means for maintaining the alinement of said plates relatively to each other, said means comprising a key located in contiguous recesses formed in such projections.

11. In a safe or vault, a pair of plates set edge to edge each having an interiorly-located projection or projections adjacent to its edge, the projections of one plate registering with that of its companion plate, and having its end face substantially flush with the interior wall of such plate, and means for maintaining said plates in engagement.

12. In a safe or vault, a pair of plates set edge to edge, each having an interiorly-located projection or projections adjacent to its edge, the projection of one plate registering with that of its companion plate and having its end face substantially flush with the interior wall of such plate, means for maintaining such plates in engagement, and means for maintaining said plates in alinement.

13. In a safe or vault, a pair of plates set edge to edge, each of said plates having adjacent to its edge one or more inwardly-extending projections, the projections of one plate registering with those of the other, a link shrunk onto each set of registering projections, a tapered recess formed in each set of registering projections, and a wedge-shaped key located in such recess and adapted to have its ends overlap the link.

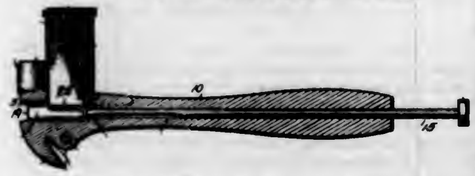
14. In a safe or vault a pair of plates set edge to edge, each of said plates having a plurality of projections, the projections of one plate registering with those of the other, and each of said plates having a longitudinally-extending recess at the inner sides of its projections; links located in said recesses and shrunk onto said projections, each set of projections having a tapered recess extending therethrough and a tapered key projecting into each of such recesses.

15. In a safe or vault a pair of plates set edge to edge each of said plates having adjacent to its edge one or more projections, the projections of one plate registering with those of another, means for clamping said plates together and means having a part projecting beyond such projections for maintaining the alinement of said plates.

16. In a safe or vault, a pair of plates set edge to edge, each of said plates having adjacent to its edge one or more projections, the projections of one plate registering with those of another, a link shrunk onto each set of registering projections, and means projecting beyond each set of projections for maintaining the alinement of the plates, said means having a part overlapping said link.

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**758,070. COMPOUND TOOL.** AUBREY O. HIGGENBOTH, Canton, Tex. Filed June 13, 1903. Serial No. 161,347. (No model.)



*Claim.*—1. An implement for use in building and repairing fences, consisting in a hammer having a longitudinal aperture through the handle and transversely through the head and with a lateral aperture in the handle member in the rear of the head and intersecting the longitudinal aperture, a plunger operating in said longitudinal aperture and a magazine for a plurality of staples and engaging said lateral aperture, and having a supporting-band encircling the hammer-head adjacent to its striking-face, substantially as described.

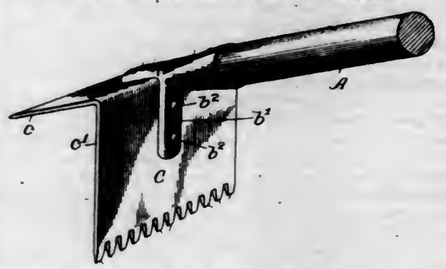
2. An implement for use in building and repairing fences, consisting in a hammer having a longitudinal aperture through the handle and transversely through the head and with a lateral aperture in the handle member in the rear of the head and intersecting the longitudinal aperture, a plunger operating in said longitudinal aperture and a magazine for a plurality of staples engaging said lateral aperture and provided with an internal web extending partially across the magazine and dividing the interior thereof into two compartments connected at one end, said web extending into said lateral aperture with its lower end bent slightly to one side, substantially as described.

3. An implement for use in building and repairing fences, consisting in a hammer having a longitudinal aperture through the handle and transversely through the head and with a lateral aperture in the handle member in the rear of the head and intersecting the longitudinal aperture, a plunger operating in said longitudinal aperture and a magazine for a plurality of staples engaging said lateral aperture, and having a supporting-band encircling the hammer-head adjacent to its striking-face, said magazine having an internal web extending partially across the magazine and dividing the interior into two compartments united at one end, substantially as described

4. An implement for use in building and repairing fences, consisting in a stock having a longitudinal aperture and with an intersecting lateral aperture wider than the longitudinal aperture and in which staples are adapted to be automatically reversed by gravity, a magazine for staples associated with said stock and from which the staples are fed by gravity into said transverse aperture, and having an interior partition extending into said lateral aperture and deflected to one side and adapted to guide the staples and retard one leg of each and cause them to be consecutively reversed as they pass into the longitudinal receptacle, and a plunger operating in said longitudinal aperture, substantially as described.

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**758,071. SIDEWALK-CLEANER.** THOMAS S. HILER, Chicago, Ill. Filed Dec. 26, 1902. Serial No. 136,574. (No model.)



*Claim.*—1. The combination with a handle, of two leaves meeting at an angle, rigidly secured to the end thereof, one of the leaves lying substantially in line with the handle and the other extending therefrom at an acute angle.

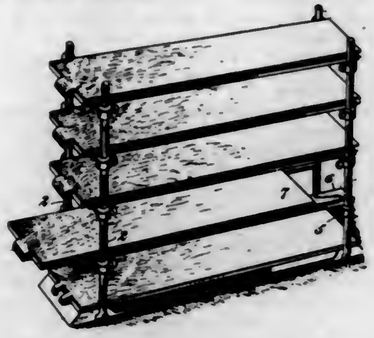
2. The combination with a handle, of a single imperforate rectangular plate bent approximately at its center to form two leaves, rigidly secured to the end thereof, one of the leaves lying substantially in line with the handle and the other extending therefrom at an acute angle.

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**758,072. CLOTHING-RACK.** JOHN A. HOCKERSMITH, Chamberlain, S. D. Filed Mar. 28, 1903. Serial No. 149,980. (No model.)

*Claim.*—A clothes-rack, comprising a rectangular frame having vertical corner-posts, the two posts at each end of the rack being united by an integral horizontal section to form U-shaped ends for the rack-frame, independent bracket-arms vertically adjustable on each standard, the bracket-arms on one leg of each U-shaped member extending toward the other leg of the same member, bracket-plates extending lengthwise of the rack and at right angles to said bracket-arms, said plates at their ends being rigidly secured to said arms, the bracket-plates thereby uniting into binding engagement with each other, the two sides of one U-shaped member to the corresponding sides of the other U-shaped member, said plates having

upturned flanges on their outer edges, longitudinally-slidable shelves supported upon opposite bracket-plates and received between the upturned flanges of said plates with each end of a shelf adapted to move in and out between the legs of one of the U-shaped members, a projecting integral handle at the end of each shelf, and a bottom for the rack, said bottom having on its under side transverse recesses of a depth to receive thereinto the transverse sections of the U-shaped members, said transverse sections being rigidly secured to said bottom and the lower shelf being adapted to slide in and out upon said bottom, as set forth.



758,073. NECKTIE-HOLDER. LOUIS HODECKER, Brooklyn, N. Y. Filed June 20, 1903. Serial No. 162,365. (No model.)

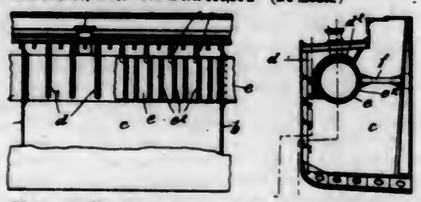


*Claim.*—1. A necktie-fastener, comprising a longitudinal curved frame 3 having an integral upwardly-extending loop 4 stamped or cut therefrom and bent backwardly and having a graduated eye smallest at the top, and an unobstructed slot 5 in the frame directly in front of and registering with the entire eye of the loop, to receive the head of the collar-button inserted through the eye of the loop, substantially as described.

2. A necktie-fastener, comprising a longitudinal curved frame 3 having an integral upwardly-extending loop 4 stamped or cut therefrom and bent backwardly and having a graduated eye smallest at the top, an unobstructed slot 5 in the frame directly in front of and registering with the entire eye of the loop, to receive the head of the collar-button inserted through the eye of the loop, and a forwardly-extending loop on the front of the frame below the loop 4 to receive the ends of a necktie, substantially as described.

3. A necktie-fastener, comprising a longitudinal curved frame 3 having openings at each end, an integrally-formed upwardly-extending loop 4 between said holes stamped or cut from the body of the frame, bent backwardly and having a graduated eye smallest at the top, and an unobstructed slot 5 in the frame between said openings in the ends of the frame and directly in front of and registering with the entire eye of the loop, to receive the head of the collar-button inserted through the eye of the loop, and a forwardly-extending loop on the front of the frame below the loop 4 to receive the ends of the necktie, substantially as described.

758,074. TANK-STEAMER. SAMUEL HOLMES, New York, N. Y. Filed Dec. 26, 1903. Serial No. 186,564. (No model.)



*Claim.*—1. The herein-described means for forming an alleyway in the sides of the hull of a tank-ship provided with transverse bulkheads, comprising knees placed between the side frames and the deck-beams and horizontal tubes placed in said knees and extending between said bulkheads, substantially as shown and described.

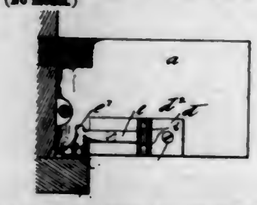
2. The herein-described means for forming horizontal alley-ways in tank-steamers provided with transverse bulkheads which consists in knees secured to the side frames and the deck-beams and provided in their inner edges with segmental recesses, and tubes secured in said recesses and extending between said bulkheads, substantially as shown and described.

3. A tank-steamer, the hull of which is provided with a central longitudinal and vertically-arranged partition, and transverse bulkheads in the longitudinal side tanks so formed, the opposite sides of the vessel being also provided with knees secured to the side frames and deck-beams, and horizontally-arranged tubes supported by said beams between said bulkheads, substantially as shown and described.

4. A tank-steamer, the hull of which is provided with a central longitudinal and vertically-arranged partition, and transverse bulkheads in the longitudinal side tanks so formed, the opposite sides of the vessel being also provided with knees secured to the side frames and deck-beams, and horizontally-arranged tubes supported by said beams between said bulkheads, and pressed in position, substantially as shown and described.

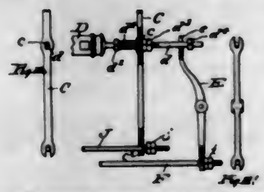
5. The herein-described means for converting a freight-steamer into a tanker, comprising transverse bulkheads secured in the side portions of the hull thereof, knees secured to the side frames and the deck-beams, and tubes secured to said knees and extending between said bulkheads, substantially as shown and described.

758,075. ANTIRATTLING DEVICE FOR WINDOW-SASHES. FRITZ HUSERTT, Weehawken, N. J. Filed May 29, 1903. Serial No. 159,233. (No model.)



*Claim.*—An antirattling device for window-sashes, consisting of a base-plate, lugs on the same, an arm, pivoted at one end to said lugs and provided with an offset plate made of wedge-shaped cross-section at the other or free end, and a handle above said wedge-shaped plate extending upwardly from said plate and outwardly at both sides of the same, substantially as set forth.

758,076. CONTROLLING MECHANISM FOR EXPLOSIVE-ENGINES. ROBERT JARDINE, Cleveland, Ohio, assignor to Berg Automobile Company, Cleveland, Ohio, a Corporation of New Jersey. Filed Apr. 24, 1903. Serial No. 154,108. (No model.)



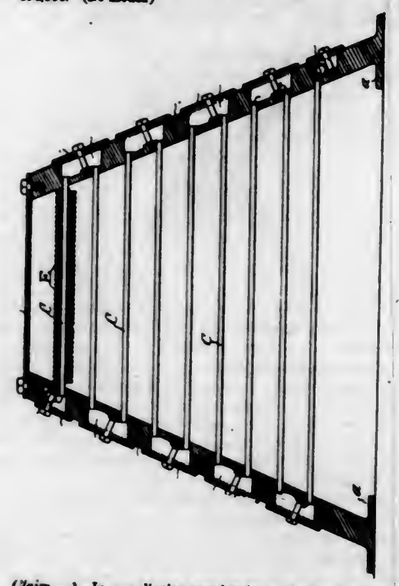
*Claim.*—1. In controlling mechanism for explosive-engines, the combination of means for controlling the admission of gas into the engine-cylinder, automatic means for governing such controlling means, means for limiting the action of the governor means, and means including a lever connected with said controlling means for actuating said controlling means independently of said governing and limiting means, to effect the maximum admission of gas into the engine's cylinder.

2. In controlling mechanism for explosive-engines, the combination of a throttling-valve, an automatically-operating governor connected to said valve by a lever, a handle together with means for fixing same in various predetermined positions, and a rod having sliding connection with said lever, provided with means arranged to limit the opening movement of said valve, and connected with said handle; the valve being so connected with said governor and limiting means as to permit of its movement independently thereof, and means for so moving said valve.

3. In controlling mechanism for explosive-engines, the combination of a throttling-valve and stem, a governor, a lever connected with said governor and having loose connection with said valve-stem such as will at the same time effect such stem's movement, a rod arranged to be fixed in various positions, having sliding connection with said lever and arranged to limit the valve-opening movement thereof, and an independent lever connected with said valve-stem and arranged to actuate same and said valve to effect the maximum admission of gas into the engine's cylinder.



758,077. RADIATING CONDENSING-COIL. ROBERT JARDINE, Cleveland, Ohio, assignor to Berg Automobile Company, Cleveland, Ohio, a Corporation of New Jersey. Filed Apr. 24, 1903. Serial No. 154,108. (No model.)



*Claim.*—1. In a radiating condensing-coil, the combination of lateral members provided with oppositely-disposed cavities, a series of rows of ducts connecting such oppositely-disposed cavities, each row consisting of a plurality of ducts, and connecting cavities lying in different planes, an outer opening in such cavities in alinement with said ducts whereby the latter may be removed therethrough, and a removable cover for closing such opening, said cavities and rows of ducts being arranged and connected in series.

2. In a radiating condensing-coil, the combination of lateral members provided with oppositely-disposed cavities intersecting their lateral faces, a series of rows of ducts connecting such oppositely-disposed cavities, each row consisting of a plurality of ducts, and connecting cavities lying in different planes, each duct arranged so as to be capable of removal through one of its respective cavities, and a removable cover for closing each cavity, said cavities and rows being arranged and connected in series.

3. In a radiating condensing-coil, the combination of lateral members provided with oppositely-disposed cavities, a series of rows of ducts connecting such oppositely-disposed cavities, each row connecting cavities lying in different planes, and consisting of a plurality of parallel ducts and provided with a plurality of transverse fins secured to each duct in said row, each such duct being capable of removal through one of its respective cavities, and a removable cover closing each cavity, said cavities and rows of ducts being all arranged and connected in series.

4. In a radiating condensing-coil, the combination of lateral members provided with oppositely-disposed cavities each intersected by an upper and a lower row of alined holes, a series of rows of ducts connecting such holes, such cavities and ducts being so disposed that the said ducts connect the upper row of holes in one cavity with the lower row of holes in the opposite cavity, each such duct being capable of removal through one of its respective cavities, and a removable cover closing the cavities, said cavities and rows of ducts being arranged and connected in series.

758,078. MEANS FOR STORING LIQUIDS. ROBERT JARDINE, Cleveland, Ohio, assignor to Berg Automobile Company, Cleveland, Ohio, a Corporation of New Jersey. Filed Aug. 5, 1903. Serial No. 168,281. (No model.)



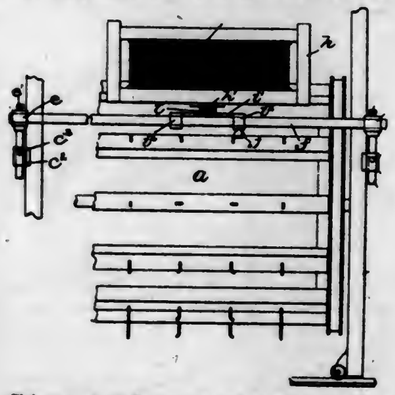
*Claim.*—1. In means for storing liquids, the combination of a storage-compartment provided with a charging-aperture, a second compartment connected with the first compartment intermediately of the top and bottom of the latter, and a duct connecting such two compartments independently of such first-mentioned connection, and provided with manually-operable means for opening and closing same.

2. In means for storing liquids, the combination of a storage-compartment provided with a charging-aperture, a second compartment connected with said first-named compartment intermediately of the top and bottom of the latter, and a duct connecting the bottom of said first-named compartment with said second compartment, and provided with manually-operable means for opening and closing such duct, said second-named compartment being provided with an outlet in its bottom.

3. In means for storing liquids, a vessel provided with a partition forming two compartments arranged with an opening to allow liquid to overflow from one to the other intermediately of the top and bottom; and with a duct for connecting said compartments independently of said overflow, said duct provided with means arranged to permanently connect said two compartments so as to allow a flow of liquid from one to the other, or to permanently disconnect such compartments so as to prevent such flow.

4. In means for storing liquids, a vessel provided with a partition extending from the bottom upwardly forming two compartments, and arranged to form an opening between the latter and near the top of the vessel, a duct extending from the bottom of the vessel on one side of said partition and communicating with the vessel upon the opposite side thereof, and manually-operated means for opening and closing said duct.

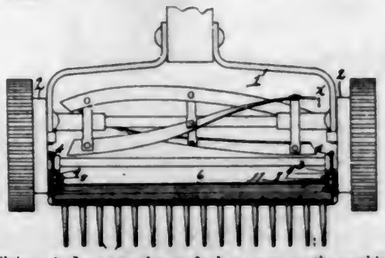
758,079. REEDING ATTACHMENT FOR DRESSER-REELS. ANDREW JOHNSON and JACOB F. GEB, Franklin, Mass., assignors to Murdock and Geb Company, Franklin, Mass., a Corporation of Massachusetts. Filed June 16, 1902. Serial No. 111,875. (No model.)



*Claim.*—1. A reeding attachment for dresser-reels, the same comprising a support fastened to the reel-carriage and having a vertically-adjustable slideway extending lengthwise of the reel, a slide on said way having a boss with a set-screw; and a reed-holder having a stud entering said boss, substantially as and for the purpose described.

2. The combination with a dresser-reel and its carriage, of adjustably-extensible arms attached to the carriage-uprights and having sockets at their outer ends; rods vertically adjustable in said sockets; a bar extending lengthwise of the reel and adjustably supported by said rods; a slide engaging said bar and having provisions for fixing it at different adjustments; and a reed-holder swiveled to said slide and having provisions for securing it thereto at different angular adjustments.

758,080. LAWN-MOWER ATTACHMENT. WALTER G. JOHNSON, Warren, Mass. Filed Jan. 9, 1904. Serial No. 188,401. (No model.)



*Claim.*—1. In an attachment for lawn-mowers, the combination with the casings of the gear-wheels each of which is provided with a rib, a grass-lifting attachment hinged with relation to the casings, lugs connected to the grass-lifting attachment and screws in said lugs bearing on the ribs substantially as described.

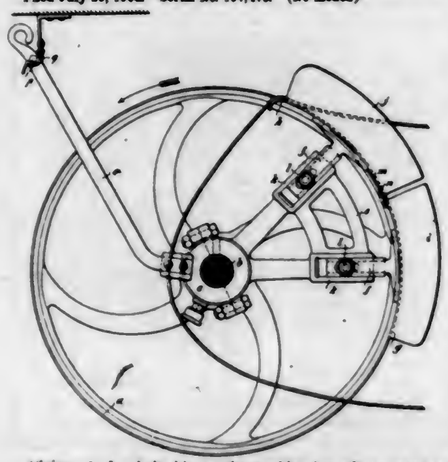
2. In combination with the gear-casings of a lawn-mower, a rake-like attachment pivotally mounted on the casings and means for adjusting the position of the attachment.

3. In an attachment for lawn-mowers, a head having teeth, the ends of the head being bent with relation to the main portion, lugs formed with the head, adjusting-screws threaded through the lugs and suitable bearings for the ends of the said screws, substantially as described.

4. In an attachment for lawn-mowers, a head having teeth, the ends of the head being bent with relation to the main portion, lugs formed with the head, adjusting-screws threaded through the lugs, means for connecting the ends of the head to the lawn-mower and ribs against which the ends of the adjusting-screws abut.

5. In a lawn-mower, suitable gear-casings, an attachment comprising a head and teeth, the ends of the head being bent and formed with slots, studs in the slots by which the head is pivotally connected to the lawn-mower, and eyes carried by the ends of the head and hooks for engaging the eyes.

758,081. BELT-SHIPPER FOR PULLEYS. EMANUEL KOTTMER, Zurich, Switzerland, assignor to Fritz Holmach, Zurich, Switzerland. Filed July 29, 1903. Serial No. 167,473. (No model.)



*Claim.*—1. In a belt-shipper, the combination, of a segment consisting of two parts joined by radial supporting-arms to a nave, rotatable on the shaft, with an oblique flange arranged on the tapered cylindrical surface of the segment, and means for preventing the nave of the shipper from shifting laterally and means for rotating the shipper on the shaft independently of the belt-pulley, substantially as set forth.

2. In a belt-shipper, the combination of a segment, consisting of two parts, each one having a radial arm, slidable radially in a guiding of radial arms of a nave, rotatable on the shaft, each part of the segment having a part of an oblique flange, arranged on the tapered cylindrical surface produced by the two segment parts, set-screws for adjusting the segment-part arms on the guidings of the nave-arms, a curved plate secured on the under side of one segment part, and set-screws for adjusting said plate on the other segment part, and means for preventing the nave of the shipper from shifting laterally and means for rotating the shipper on the shaft substantially as specified and shown in the drawings.

758,082. SWEEPING-BRUSH. GEORGE L. LANE, Happance, Ind. Filed Jan. 14, 1904. Serial No. 189,049. (No model.)



*Claim.*—1. A fiber sweeping-brush provided with fiber-spreading springs, substantially as hereinbefore specified.

2. A fiber sweeping-brush having rows of the fiber separated by spring-pressed spreaders to spread the fiber, substantially as hereinbefore specified.

3. A fiber sweeping-brush having rows of the fiber separated by spring-pressed spreaders in pairs and springs reacting against said spreaders to spread the fiber, substantially as hereinbefore specified.

4. A fiber sweeping-brush having rows of the fiber separated by spring-pressed spreaders in pairs and self-attached U-shaped springs reacting against said spreaders to spread the fiber, substantially as hereinbefore specified.

5. A fiber sweeping-brush having a head provided with rows of the fiber, loose spreaders between the rows, means for pivotally attaching said spreaders to said head, and springs reacting against said spreaders to spread the fiber, substantially as hereinbefore specified.

6. A fiber sweeping-brush having a head provided with rows of the fiber, loose spreaders between the rows, means for pivotally attaching said spreaders to said head, means for adjusting the spreaders toward the head to compensate for the wear of the fiber, and springs reacting against said spreaders to spread the fiber, substantially as hereinbefore specified.

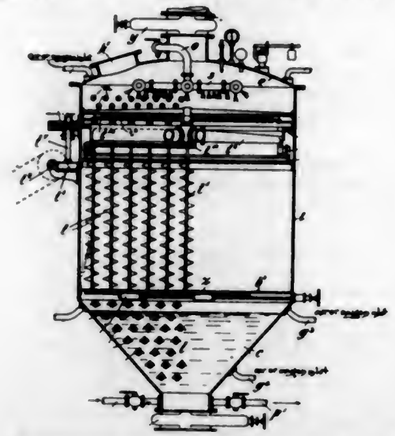
7. The combination, in a sweeping-brush, of a head provided with fiber in rows, spreaders between such rows of the fiber, springs reacting against said spreaders to spread the fiber, and a pair of pivoting and adjusting devices each comprising an L-shaped piece fixedly attached to the head and having a longitudinal slot in its perpendicular portion, a cross-bar provided with pivot-holes for the respective spreaders, and a central screw extending through said slot and said cross-bar, substantially as hereinbefore specified.

758,083. GRAIN-GERMINATING APPARATUS. VALENTIN LAPP, Leipsig, Germany. Filed May 29, 1901. Serial No. 62,310. (No model.)

*Claim.*—1. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into and leading it away from the space below said bottom; means for conducting the grain to the bottom; apertures in the latter adapted to let the grain pass into said space when empty; means for closing said apertures; means for letting the grain leave the said space, and means for introducing air into, and conducting the carbonic acid out of, the said vessel, substantially as described.

2. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; means for introducing air into said space; means for conducting the grain to the said bottom; apertures in the latter adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.





3. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; means for introducing air into said water; means for conducting the grain to the said bottom; apertures in the latter adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.

4. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; means for introducing liquid air into the vessel; means for conducting the grain to the said bottom; apertures in the latter adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.

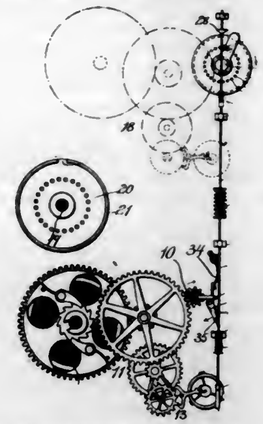
5. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; means for introducing air into the space below and into the space above the said bottom; means for conducting the grain to the said bottom; apertures in the latter adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.

6. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; cooling-pipes passing through said water; means for conducting the grain to the bottom; connections for leading air to said grain; apertures in said bottom adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.

7. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; cooling-pipes passing through said space as well as through the upper space of the vessel; means for conducting the grain to the bottom; connections for leading air to said grain; apertures in said bottom adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.

8. The combination, in a grain-germinating apparatus, of a closed vessel, a false bottom inside the same; means for introducing water into, and leading it away from, the space below said bottom; means for introducing air into said space; means for conducting the grain to said bottom; means for stirring the grain upon said bottom; apertures in the latter adapted to let the grain pass into the said space when empty; means for closing said apertures; means for letting the grain leave said space, and means for conducting away the carbonic acid, substantially as described.

758,084. ELECTRIC TIME-SWITCH. HENRY C. LITTLE, Boston, Mass. Filed Aug. 26, 1903. Serial No. 170,888. (No model.)



*Claim.*—1. In a switch-controlling apparatus, a switch member, an operating-train therefor having a balance, a timing-train, and a stop for said balance controlled by said timing-train.

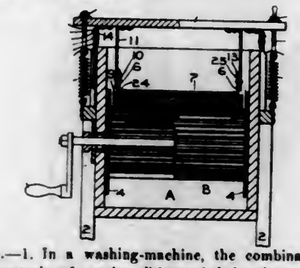
2. In a switch-controlling apparatus, a switch member, an operating-train therefor, a timing-train, and a compensating connection between said trains.

3. In a switch-controlling apparatus, a switch member, an operating-train therefor, a timing-train, a stop for said operating-train operated by the timing-train, and means for controlling said stop according to the position of the switch member.

4. In a switch-controlling apparatus, a switch member, an operating-train therefor, a stop for said train, a timing-train to operate the stop, a resilient connection between the timing-train and stop, and a stop-restraining trip operated by the operating-train.

5. In a switch-controlling apparatus, a timing-train, a wheel rotated thereby and having a flange formed with a gap, a member having a yielding catch adapted to automatically engage and be retained by said flange and to escape through the gap, a device operated by said train for actuating said member, and a switch controlled by said member.

758,085. CLOTHES-WASHING MACHINE. ROBERT LOUX and FRANK E. BUTTERFIELD, St. Paul, Minn. Filed Dec. 7, 1903. Serial No. 184,054. (No model.)



*Claim.*—1. In a washing-machine, the combination, with a clothes-receptacle, of a main roll journaled therein, a series of auxiliary rolls journaled in frames arranged above said main roll, a cross-bar arranged above said frames, straps secured to said cross-bar and pivotally supporting said frame, retractile springs connecting said cross-bar with the clothes-receptacle below, guides vertically slidable upon the sides of said receptacle, and a pivotal connection between said guides and cross-bar.

2. In a washing-machine, the combination, with a clothes-receptacle, and a main roll journaled therein, a series of auxiliary rolls slidably supported above said main roll, spring means for holding said auxiliary rolls in contact with said main roll, and flanges carried by the ends of said main roll, said flanges extending outwardly

parallel with the ends of said auxiliary rolls and to a point beyond the axes of said auxiliary rolls.

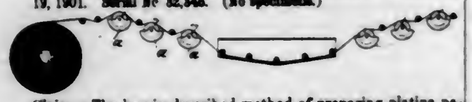
3. In a washing-machine, the combination with a clothes-receptacle, of a main roll therein, a series of auxiliary rolls journaled in frames arranged above said main roll, a cross-bar supported above said receptacle, straps secured to said cross-bar and pivotally supporting said frames, stops limiting the movement of said frames upon their pivots, retractile springs connecting said cross-bar with said receptacle, bars slidable upon the sides of said receptacle, and pivotally connected to said cross-bar, and stops limiting the movement of said cross-bar upon its supporting-pivots.

4. In a washing-machine, the combination with a clothes-receptacle, of a main roll journaled therein, a series of auxiliary rolls journaled in frames arranged above said main roll, a cross-bar arranged above said receptacle, downwardly-extending straps secured to said cross-bar and pivotally secured to said frame, retractile springs connecting said cross-bar and said receptacle, and slides supported upon the sides of said receptacle and pivotally connected with said cross-bar.

5. In a washing-machine, the combination with a clothes-receptacle, of a main roll journaled therein, a series of auxiliary rolls journaled in frames arranged above said main roll, disks secured upon the ends of said auxiliary rolls outside their frames, flanges upon the ends of said main roll extending outwardly beyond said disks, a cross-bar arranged above said receptacle, straps secured to said receptacle and pivotally supporting said frames, retractile springs connecting said cross-bar with said receptacle, and slides supported upon the sides of said receptacle and pivotally connected with said cross-bar.

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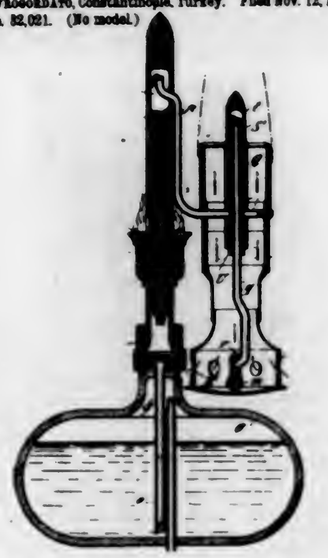
**758,086. METHOD OF PRODUCING PLATINA COPY-PAPER.** ANDREAS LUSS, Vienna, Austria-Hungary, assignor of one-half to Hugo Ritter Gabler von Adlersfeld, Vienna, Austria-Hungary. Filed Nov. 19, 1901. Serial No. 82,846. (No specimens.)



*Claim.*—The herein-described method of preparing platina paper for photographic purposes wherein the sensitive surface is composed of successively-applied layers of chemical substances which consists in first moistening the paper on one side only, then applying a chemical substance to the moistened side of the paper, spreading the said substance smoothly over the said side of the paper, then drying the whole, and then applying the successive layers of chemical substances in substantially the same manner, the drying operation being performed after one layer has been applied and before the application of a succeeding layer.

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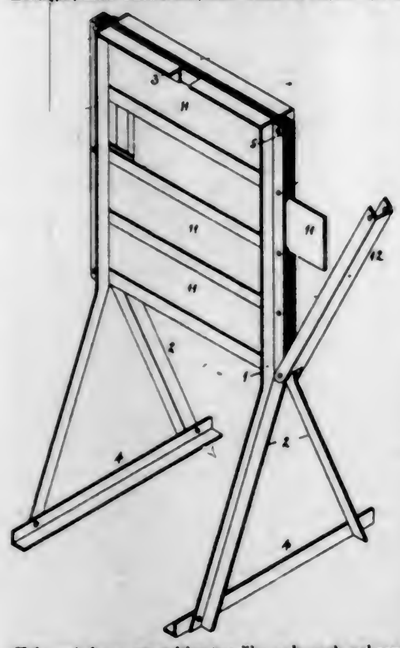
**758,087. HYDROCARBON-LIGHTING APPARATUS.** FRANÇOIS R. MAVROCORDATO, Constantinople, Turkey. Filed Nov. 12, 1901. Serial No. 82,021. (No model.)



*Claim.*—In a vapor-burner a suitable reservoir, an initial vaporizing-tube carried thereby, initial heating means in proximity to said tube, a burner-tube supported in proximity to said initial vaporizing-tube, a supplemental vaporizing-tube located centrally of said burner-tube and having a pipe connection with the initial vaporizing-tube, said supplemental tube having a closed upper end, a vapor-delivery pipe extending from said upper end downward through the tube to the lower part of the burner-tube and provided with a suitable injector-nozzle, means located within the main and supplemental vaporizing-tubes for subdividing the hydrocarbon flowing therefrom and adjustable means for admitting varying quantities of air to the lower end of the burner-tube, substantially as described.

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**758,088. FRAME FOR HOLDING SIGNS.** CURTIS G. MIXER, Muskegon, Mich. Filed Oct. 23, 1903. Serial No. 178,267. (No model.)



*Claim.*—A frame comprising two like ends, each end composed of two vertical angle-bars having continuations forming legs, a brace-bar connecting the lower ends of the legs, a series of three strips each connecting the two ends, the center strip being of less width than the two outside strips thereby forming a groove, a panel located in the groove, a channel-bar receiving the frame of one end and permanently connected thereto, a channel-bar having a pivotal connection with the frame of the other end and adapted to receive the frame of that end, and brace angle-bars located at the upper edge of the ends.

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**758,089. STANDARD.** ALEXANDER M. MOTLAR, Century, Fla. Filed Feb. 5, 1904. Serial No. 192,190. (No model.)



*Claim.*—1. The combination with a support, a standard pivoted between its ends to the support, a lock-brace engaging the lower end of the standard, and means for locking the lock-brace in the engagement aforesaid.



2. The combination with a support, a standard pivoted between its ends to the support, a lock-brace engaging the lower end of the standard, and a lock-dog engaging the lock-brace.

3. The combination with a support, a standard pivoted between its ends to the support, a pivoted lock-brace interlocking with the lower end of the standard, and a pivoted lock member engaging the lock-brace.

4. The combination with a support, a standard pivoted at its lower portion to the support, an arm projected from the standard at the point of pivotal support thereof, a lock-brace engaging the arm of the standard, and a lock member carried by the support and engaging the lock-brace to hold the said brace in engagement with the standard.

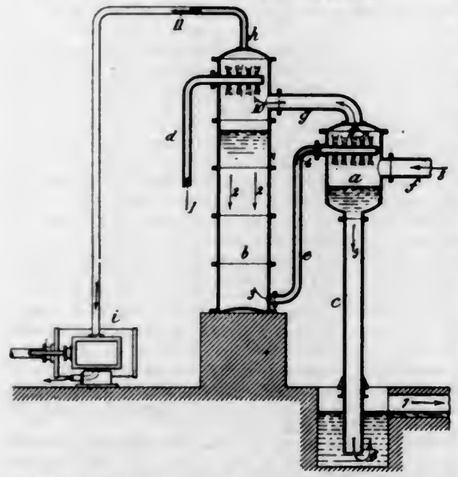
5. The combination with a support, a standard pivoted to the support at its lower portion and having its lower end extended to form an arm, a lock-brace pivoted adjacent its lower end to the support, an engaging extension projected from the lock-brace into engagement with the arm of the standard, and a lock-dog mounted upon the pivotal support of the standard and engaging the upper end of the lock-brace.

6. The combination with a support, a standard pivoted to the support, a lock-brace engaging said standard, a lock-dog engaging the lock-brace, and a tongue-and-groove connection between the meeting or engaging portions of the lock-brace and standard.

7. The combination with a support, a standard pivoted at its lower portion and having its lower end extended downwardly to form an arm, a lock-brace pivoted adjacent the standard and engaging the arm thereof, a lock-dog mounted upon the pivotal support of the standard and engaging the lock-brace, and a tongue-and-groove connection between the meeting or engaging portions of the lock-brace and the arm of the standard.

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**758,090. CONDENSER.** OTTO H. MUELLER, Berlin, Germany. Filed May 16, 1903. Serial No. 157,382. (No model.)



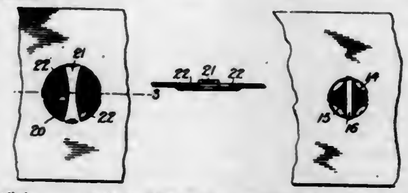
*Claim.*—1. In a condensing apparatus, the combination of a plurality of jet-condensers, the first having a steam-inlet opening, and a steam-outlet opening, and the second having a steam-inlet opening connected with the steam-outlet opening of the first, a jet device for connection with a cold-water supply and adapted to deliver a jet into the second condenser, and a jet device connected with the lower part of said second condenser, and adapted to deliver a jet into the first condenser, said condensers being otherwise unconnected, whereby the water passes through said condensers but once.

2. In a condensing apparatus, the combination of a plurality of jet-condensers, the first having a steam-inlet opening, and a steam-outlet opening, and the second having a steam-inlet opening connected with the steam-outlet opening of the first, a jet device for connection with a cold-water supply, and adapted to deliver a jet into the second condenser, a jet device connected with the lower part of said second condenser, and adapted to deliver a jet into the first condenser, said condensers being otherwise unconnected, whereby the water passes through said condensers but once, and an air-pump connected with said second condenser.

3. In a condensing apparatus, the combination of a plurality of jet-condensers arranged in series, each having a steam-inlet opening, and each having a water-inlet at its upper part and a water-outlet at its lower part, an air-pump connected to the last condenser, a jet device for each condenser adapted to discharge into same above its steam-inlet, a connecting steam-passage between each two condensers leading from the body of the one to the steam-inlet of the other, and a connecting water-passage between each two condensers leading from the water-outlet of the one to the water-inlet of the other, said condensers being unconnected except by such two passages, whereby the condensing-water is used but once.

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**758,091. COIN-MAILING CARD.** OSCAR MUSSMAN, New York, N. Y., assignor to Dennison Manufacturing Company, a Corporation of Massachusetts. Filed Aug. 31, 1903. Serial No. 171,315. (No model.)

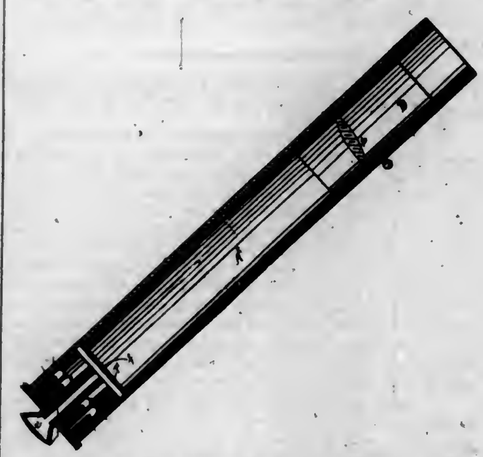


*Claim.*—1. A coin-mailing card having a circular pocket for the reception of a coin, the circular portion of the card forming the pocket being provided with two approximately diametrical slits and also with slits around portions of the circumference of the circle, whereby segmental portions of the said circular portion of the card are nearly separated from the portions of the card outside the circle, said segmental portions being deflected below the plane of the card but parallel thereto so as to form the bottom of the coin-pocket, and the portion between the two approximately diametrical slits being deflected above the plane of the card but parallel thereto so as to form a retaining-strip for holding the coin in the pocket.

2. A coin-mailing card having a circular pocket for the reception of a coin, the circular portion of the card forming the pocket being provided with two approximately diametrical slits, as 5 and 6, and also with slits, as 4, around portions of the circumference of the circle, whereby segmental portions, as 8, of the said circular portion of the card are nearly separated from the portions of the card outside the circle, said segmental portions being deflected below the plane of the card but parallel thereto so as to form the bottom of the coin-pocket, and the portion, as 7, between the two approximately diametrical slits being deflected above the plane of the card but parallel thereto, so as to form a retaining-strip for holding the coin in the pocket.

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**758,092. OPHTHALMOSCOPE.** CHARLES MCCORMICK, Chicago, Ill. Filed Nov. 13, 1903. Serial No. 180,992. (No model.)



*Claim.*—1. In an ophthalmoscope, the combination of a main tube open at one end, a slidable sleeve within the main tube at its

open end, a lens carried by the sliding sleeve, means for producing artificial light at the opposite end of and within the main tube, and a sight-tube within the circle of artificial lights, substantially as described.

2. In an opthalmoscope, the combination of a main tube open at one end, a slidable sleeve within the main tube at its open end, a lens carried by the sliding sleeve, means for producing artificial light at the opposite end of and within the main tube, a sight-tube within the circle of artificial lights, means for preventing the projection of the rays of artificial light toward the lens-tube, said means having therein a sight-hole forward of the sight-tube and rearward of the lens, substantially as described.

3. In an opthalmoscope, the combination of a main tube open at one end, a slidable sleeve within the main tube at its open end, a lens carried by the sliding sleeve, a light-carrier at the opposite end of the main tube, incandescent electric lights mounted on the carrier within the circle of the main tube, and a sight-tube within the circle of incandescent lights, substantially as described.

4. In an opthalmoscope, the combination of a main tube open at one end, a slidable sleeve within the main tube at its open end, a lens carried by the sliding sleeve, a light-carrier at the opposite end of the main tube, incandescent electric lights mounted on the carrier, a sight-tube within the circle of incandescent lights, a frosted glass having at its center a sight-hole and located in the main tube between the lens and the sight-tube, substantially as described.

5. In an ophthalmoscope, the combination of a main tube, an adjustable lens at one end of the tube, and means for producing artificial light at the opposite end of and within the main tube, substantially as described.

6. In an ophthalmoscope, the combination of a main tube, an adjustable lens at one end of the tube, a means for producing artificial light at the opposite end of and within the main tube, a sight-tube at the opposite end of the main tube to the adjustable lens, and a cross-partition located within the main tube and having a sight-hole therein to coact with the sight-tube, substantially as described.

7. In an ophthalmoscope, the combination of a main tube, an adjustable convex lens at one end of the main tube, incandescent lights at the opposite end of and within the main tube, a sight-tube within the incandescent lights, and a cross-partition located within the main tube forward of the sight-tube and having therein a sight-hole in central axial line with the sight-tube, substantially as described.

8. In an ophthalmoscope, the combination of a main tube, an adjustable lens at one end of the tube and set inclined, a means for producing artificial light at the opposite end of and within the main tube, a sight-tube at the opposite end of the main tube to the adjustable lens, and a cross-partition located within the main tube and having therein a sight-hole to coact with the sight-tube, substantially as described.

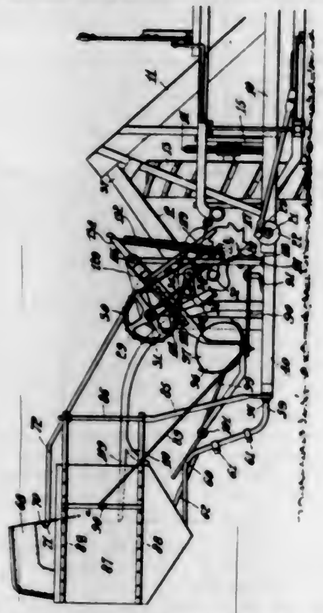
9. In an ophthalmoscope, the combination of a main tube, an adjustable convex lens at one end of the main tube and set inclined, incandescent lights at the opposite end of and within the main tube, a sight-tube within the incandescent lights, and a cross-partition located within the main tube forward of the sight-tube and having therein a sight-hole in central axial line therewith, substantially as described.

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**758,093. GRAIN-SHOCKING ATTACHMENT FOR BINDERS.** JAMES C. MCDOUGALL, Virden, Canada. Filed Mar. 14, 1903. Serial No. 147,757. (No model.)

*Claim.*—1. A grain-shocking attachment for self-binding harvesters, comprising a shock-forming receiver mounted to rotate on a horizontal axis, an oscillating carrier arranged to deliver the sheaves singly into said receiver from the table of the binder, means controlled by the oscillation of said sheaf-carrier for causing said receiver to be automatically rotated about its axis to set up the shock and subsequently returned to its normal position after a predetermined number of sheaves have been delivered to it by said carrier, a butter-plate pivoted on a vertical axis opposite the end of said receiver and adapted to strike and even the butts of the grain-sheaves, and a connection between said butter-plate and the operating mechanism for the receiver to cause the same to be swung back at each downward motion of the receiver, and swung forward into its normal position again at each return movement of the receiver.

2. A grain-shocking attachment for self-binding harvesters, comprising a rotatably-mounted shock-forming receiver adapted to support sheaves, means for causing the same to be periodically rotated through a sufficient arc to set up a shock upon the ground, a carrier adapted to receive the sheaves successively from the binder-table and deliver them one by one to said receiver, a pivoted lever-frame on which said carrier is pivotally mounted, and a crank on the knotter-shaft of the binder mechanically connected with said lever-frame whereby said carrier is caused to perform one complete cycle of movement for each revolution of the knotter-shaft.



3. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame secured to the frame of the harvester and projecting outwardly therefrom, a horizontal laterally-extending receiver-shaft having an upwardly-turned end, a bracket carried on said end, a shock-forming receiver carried on said bracket, means for periodically rotating said receiver through an arc of approximately a right angle, means for closing the forward open end of said receiver while the shock is being formed, means for delivering the sheaves successively into said receiver from the binder, a door on one side of said receiver, and means for automatically retaining said said door in open position when said receiver is raised.

4. In a grain-shocking attachment for self-binding harvesters, the combination of a shock-forming receiver, a horizontal shocker-frame extending laterally from the main frame of the binder, an oscillating receiver-shaft rotatably mounted on said frame, an upstanding supporting-bracket formed on the end of said shaft and on which said receiver is mounted, a rock-arm mounted on said shaft, a counter-shaft parallel to said receiver-shaft, a crank fixed thereto and in line with said rock-arm, a link connecting said crank with said rock-arm, and means for throwing said shaft temporarily into gear with the main operating-shaft of the harvester.

5. In a grain-shocking attachment for self-binding harvesters, the combination of a shock-forming receiver, a horizontal shocker-frame extending laterally from the main frame of the binder, an oscillating receiver-shaft rotatably mounted on said frame, an upstanding supporting-bracket formed on the end of said shaft and on which said receiver is mounted, a rock-arm mounted on said shaft, a counter-shaft parallel to said receiver-shaft, a crank fixed thereto and in line with said rock-arm, a link connecting said crank with said rock-arm, and means for throwing said counter-shaft temporarily into gear with the main operating-shaft of the harvester, in combination with a butter-plate mounted to swing on a vertical axis opposite the open front end of said receiver, and a link-and-lever connection between said butter-plate and said rock-arm, whereby the forward movement of said rock-arm and receiver causes said butter-plate to be swung forward, and vice versa, substantially as described.

6. In a grain-shocking attachment for self-binding harvesters, the combination of a shock-forming receiver, means for automatically oscillating the same periodically at the completion of each shock, a lever-frame 102 pivotally mounted on the frame of the machine, means for automatically oscillating said lever-frame from the knotter-shaft of the binder, a sheaf-carrier carried on the ends of a pair of swinging arms, said swinging arms being pivoted in the ends of said lever-frame, one of said swinging arms having an outwardly-projecting finger 108, and an overhanging arm 109 projecting from the frame and adapted to be engaged by said finger 108, whereby said sheaf-carrier is raised and tipped by the rising movement of said lever-frame to deliver the sheaf contained therein to said receiver, substantially as described.

7. A grain-shocking attachment for self-binding harvesters, comprising a horizontal laterally-projecting shocker-frame secured to the main frame of the harvester, a horizontal laterally-extending receiver-shaft journaled therein and having an upstanding end, a receiver mounted on said upstanding end, a rock-arm mounted on said shaft, a short counter-shaft 45 journaled to rotate in said shocker-frame parallel to said receiver-shaft, a bevel-gear loosely mounted on said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the machine and intermeshing with said first gear to keep it in continual operation during the operation of the harvester, clutch mechanism between said loose bevel-bear and the shaft on which it is mounted, a crank mounted on the other end of said counter-shaft, a link connecting said crank with said rock-arm, whereby to oscillate the latter backwardly and forwardly by the rotation of said crank, a sheaf-carrier adapted to reciprocate between the binder-table and the receiver to deliver the sheaves successively from the former to the latter, a ratchet-wheel, a pawl mechanism engaging said ratchet-wheel and operated by the reciprocation of said sheaf-carrier, a trip-bar 54 arranged to be engaged by said ratchet-wheel and oscillated thereby at each revolution thereof, and connections between said trip-bar and said clutch mechanism, whereby said counter-shaft is thrown temporarily into engagement with said loose bevel-gear once at each revolution of said ratchet-wheel, substantially as described.

8. A grain-shocking attachment for self-binding harvesters, comprising a horizontal laterally-projecting shocker-frame secured to the main frame of the harvester, a horizontal laterally-extending receiver-shaft journaled therein and having an upstanding end, a receiver mounted on said upstanding end, a rock-arm mounted on said shaft, a short counter-shaft 45 journaled to rotate in said shocker-frame parallel to said receiver-shaft, a bevel-gear loosely mounted on said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the machine and intermeshing with said first gear to keep it in continual operation during the operation of the harvester, clutch mechanism between said loose bevel-gear and the shaft on which it is mounted, a crank mounted on the other end of said counter-shaft, a link connecting said crank with said rock-arm, whereby to oscillate the latter backwardly and forwardly by the rotation of said crank, a sheaf-carrier adapted to reciprocate between the binder-table and the receiver to deliver the sheaves successively from the former to the latter, a ratchet-wheel, a pawl mechanism engaging said ratchet-wheel and operated by the reciprocation of said sheaf-carrier, a trip-bar 54 arranged to be engaged by said ratchet-wheel and oscillated thereby at each revolution thereof, connections between said trip-bar and said clutch mechanism, whereby said counter-shaft is thrown temporarily into engagement with said loose bevel-gear at each revolution of said ratchet-wheel, a butter-plate swinging on a vertical axis at the front open side of said receiver, a bell-crank lever pivoted to turn in the frame of the machine, a link connecting said butter-plate with one end of said bell-crank lever, and a second link connecting the other end of said bell-crank lever to said rock-arm, whereby said butter-plate is swung outwardly out of the way at each forward oscillation of the receiver, substantially as described.

9. In a grain-harvesting machine, the combination of a self-binder having a knotter-shaft extending from end to end of the machine, a crank-arm formed on each end of said knotter-shaft, a lever-frame 102 pivoted on elevated pintles at the front and rear ends of the binder-table and having slots therein, crank-pins on the ends of said crank-arms engaging in said slots, a shock-forming receiver, a sheaf-carrier having horizontal swinging arms secured to each end thereof, said swinging arms being pivoted in the laterally-projecting ends of said lever-frame, a projecting finger 108 formed on one of said swinging arms, means for engaging the said finger on the upward movement of said lever-frame to rotate said sheaf-carrier about its pivots in the end of said lever-frame, whereby said carrier is adapted to deliver the sheaf received from the binder-table into said receiver, means for periodically rotating said receiver about an eccentric axis to set up the shock of sheaves contained therein upon the ground, a door covering the upper side of said receiver and hinged at one side of the opening thereof, means for resiliently holding said door in closed position, and means for causing said door to be automatically opened when said receiver is raised to horizontal position and closed again when said receiver is rotated to set up the shock, substantially as described.

10. In a grain-shocking machine, the combination of a self-binder having a knotter-shaft extending from end to end of the machine, a crank-arm formed on each end of said knotter-shaft, a lever-frame 102 pivoted on elevated pintles at the front and rear ends of the binder-table and having slots therein, crank-pins on the ends of said crank-arms engaging in said slots, a shock-forming receiver, a sheaf-carrier having horizontal swinging arms secured to each end thereof, said swinging arms being pivoted in the laterally-projecting ends of said lever-frame, a projecting finger 108 formed on one of said swinging arms, means for engaging the said finger on the upward movement of said lever-frame to rotate said sheaf-carrier about its pivots in the end of said lever-frame, whereby said carrier is adapted to deliver the sheaf received from the binder-table into said receiver, and means for periodically rotating said receiver about an eccentric axis to set up the shock of sheaves contained therein upon the ground, substantially as described.

11. In a grain-shocking machine, the combination of a self-binder having a knotter-shaft extending from end to end of the machine, a crank-arm formed on each end of said knotter-shaft, a lever-frame 102 pivoted on elevated pintles at the front and rear ends of the binder-table and having slots therein, crank-pins on the ends of said crank-arms engaging in said slots, a shock-forming receiver, a sheaf-carrier having horizontal swinging arms secured to each end thereof, said swinging arms being pivoted in the laterally-projecting ends of said lever-frame, a projecting finger 108 formed on one of said swinging arms, means for engaging the said finger on the upward movement of said lever-frame to rotate said sheaf-carrier about its pivots in the end of said lever-frame, whereby said carrier is adapted to deliver the sheaf received from the binder-table into said receiver, means for periodically rotating said receiver about an eccentric axis to set up the shock of sheaves contained therein upon the ground, a door covering the upper side of said receiver and hinged at one side of the opening thereof, means for resiliently holding said door in closed position, and means for causing said door to be automatically opened when said receiver is raised to horizontal position and closed again when said receiver is rotated to set up the shock, substantially as described.

12. In a grain-shocking machine, the combination of a self-binder having a knotter-shaft extending from end to end of the machine, a crank-arm formed on each end of said knotter-shaft, a lever-frame 102 pivoted on elevated pintles at the front and rear ends of the binder-table and having slots therein, crank-pins on the ends of said crank-arms engaging in said slots, a shock-forming receiver, a sheaf-carrier having horizontal swinging arms secured to each end thereof, said swinging arms being pivoted in the laterally-projecting ends of said lever-frame, a projecting finger 108 formed on one of said swinging arms, means for engaging the said finger on the upward movement of said lever-frame to rotate said sheaf-carrier about its pivots in the end of said lever-frame, whereby said carrier is adapted to deliver the sheaf received from the binder-table into said receiver, means for periodically rotating said receiver about an eccentric axis to set up the shock of sheaves contained therein upon the ground, a door closing the upper side of said receiver and pivoted thereto at one side of the opening, a spring mounted on the pintle of said door and tending to hold it resiliently in closed position, a rearwardly-extending arm 70 secured to the free edge of said door, and a projecting arm adapted to be engaged by said arm 70 upon the return of the receiver to its normal raised position to open said door and to be disengaged by said arm 70 when said receiver is rotated forwardly to set up a shock, whereby to close said door, substantially as described.

13. In a grain-shocking machine, the combination of a self-binder having a knotter-shaft extending from end to end of the machine, a crank-arm formed on each end of said knotter-shaft, a lever-frame 102 pivoted on elevated pintles at the front and rear ends of the binder-table and having slots therein, crank-pins on the ends of said crank-arms engaging in said slots, a shock-forming receiver, a sheaf-carrier having horizontal swinging arms secured to each end thereof, said swinging arms being pivoted in the laterally-projecting ends of said lever-frame, a projecting finger 108 formed on one of said swinging arms, means for engaging the said finger on the upward movement of said lever-frame to rotate said sheaf-carrier about its pivots in the end of said lever-frame, whereby said carrier is adapted to deliver the sheaf received from the binder-table into said receiver, means for periodically rotating said receiver about an eccentric axis to set up the shock of sheaves contained therein upon the ground, a door covering the upper side of said receiver and hinged at one side of the opening thereof, means for resiliently holding said door in closed position, means for causing said door to be automatically opened when said receiver is raised to horizontal position and closed again when said receiver is rotated to set up the shock, a butter-plate swinging about a vertical axis and adapted to strike the butts of the sheaves, and means for forwardly and backwardly rotating said butter-plate with each forward and backward rotation of said receiver, whereby to strike and adjust the butts of

the sheaves while the shock is being formed and to clear said receiver while the shock is being set up.

14. In a grain-shocking machine, the combination of a self-binder having a knotter-shaft extending from end to end of the machine, a crank-arm formed on each end of said knotter-shaft, a lever-frame 102 pivoted on elevated pintles at the front and rear ends of the binder-table and having slots therein, crank-pins on the ends of said crank-arms engaging in said slots, a shock-forming receiver, a sheaf-carrier having horizontal swinging arms secured to each end thereof, said swinging arms being pivoted in the laterally-projecting ends of said lever-frame, a projecting finger 108 formed on one of said swinging arms, means for engaging the said finger on the upward movement of said lever-frame to rotate said sheaf-carrier about its pivots in the end of said lever-frame, whereby said carrier is adapted to deliver the sheaf received from the binder-table into said receiver, means for periodically rotating said receiver about an eccentric axis to set up the shock of sheaves contained therein upon the ground, a door covering the upper side of said receiver and hinged at one side of the opening thereof, means for resiliently holding said door in closed position, means for causing said door to be automatically opened when said receiver is raised to horizontal position and closed again when said receiver is rotated to set up the shock, a vertical post rising from the outer front side of the shocker-frame, and having a vertical pintle at its upper end, a butter-plate swinging on said pintle, a bell-crank lever pivotally mounted on the frame of the machine, a link connecting one arm of said bell-crank lever with said butter-plate, and a second link connecting the other arm of said bell-crank lever with the operating-shaft of said receiver, whereby they are caused to be simultaneously rotated forward and backward, substantially as described.

15. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame secured to the main frame of the harvester and extending laterally therefrom beneath the binder-table, a receiver-shaft rotatably mounted in said shocker-frame and extending in a lateral direction, a bent bracket-arm on the end of said shaft, a rock-arm secured on said receiver-shaft, a counter-shaft mounted in the shocker-frame and parallel to said receiver-shaft, a link connecting said rock-arm and said counter-shaft, whereby to cause said receiver-shaft to be oscillated on the rotation of said counter-shaft, said link having a sliding connection with one of the pieces which it connects, and a spring interposed between the piece and the link whereby to provide a yielding connection between said counter-shaft and rock-arm, substantially as described.

16. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame secured to the main frame of the harvester and extending laterally therefrom beneath the binder-table, a receiver-shaft rotatably mounted in said shocker-frame and extending in a lateral direction, a bent bracket-arm on the end of said shaft, a receiver mounted on said bracket-arm, a rock-arm secured on said receiver-shaft, a counter-shaft mounted in the shocker-frame and parallel to said receiver-shaft, a link connecting said rock-arm and said shaft, whereby to cause said receiver-shaft to be oscillated on the rotation of said counter-shaft, said link having a sliding connection with one of the pieces which it connects, a spring interposed between the piece and the link whereby to provide a yielding connection between said counter-shaft and rock-arm, and a tension-spring connecting said rock-arm to a point at the rear of the frame and adjustable to such a tension that when said receiver is loaded with a shock of grain it overbalances the tension of said spring and assists its forward motion, but when said shock has been set up, said spring overbalances the weight of said receiver and assists its return to normal position, substantially as described.

17. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame bolted to the main frame of the harvester beneath the binding-table thereof and extending laterally therefrom, a horizontal laterally-extending receiver-shaft journaled in said frame near the forward end thereof, a bracket-arm formed on the end of said shaft and rising above the level of the latter, a pyramid or cone shaped shock-forming receiver mounted on said bracket-arm and open at both ends and adapted to receive the sheaves and to be oscillated through approximately a right angle from the upright to the forward horizontal position, a rock-arm mounted on the shaft of said receiver and adapted to oscillate said shaft to operate the receiver, a short counter-shaft parallel to said receiver-shaft and journaled in said shocker-frame, a crank mounted on said counter-shaft opposite said rock-arm, a resilient link connection between said crank and rock-arm, a bevel-gear loosely mounted on the end of said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the harvester and engaging said first-mentioned gear, a clutch mechanism adapted to connect said first-mentioned gear to the shaft on which it is mounted, a trip mechanism adapted to operate said clutch mechanism, and means for automatically operating said trip mechanism to cause the engagement of said clutch mechanism after a predetermined number of sheaves have been delivered into said receiver and for disengaging said clutch mechanism after said counter-shaft has made one revolution, substantially as described.

18. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame bolted to the main frame of the harvester beneath the binding-table thereof and extending laterally therefrom, a horizontal laterally-extending receiver-shaft journaled in said frame near the forward end thereof, a bracket-arm formed on the end of said shaft and rising above the level of the latter, a pyramid or cone shaped shock-forming receiver mounted on said bracket-arm and open at both ends and adapted to receive the sheaves and to be oscillated through approximately a right angle from the upright to the forward horizontal position, a rock-arm mounted on the shaft of said receiver and adapted to oscillate said shaft to operate the receiver, a short counter-shaft parallel to said receiver-shaft and journaled in said shocker-frame, a crank mounted on said counter-shaft opposite said rock-arm, a resilient link connection between said crank and rock-arm, a bevel-gear loosely mounted on the end of said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the harvester and engaging said first-mentioned gear, a clutch mechanism adapted to connect said first-mentioned gear to the shaft on which it is mounted, a trip mechanism adapted to operate said clutch mechanism, means for automatically operating said trip mechanism to cause the engagement of said clutch mechanism after a predetermined number of sheaves have been delivered into said receiver and for disengaging said clutch mechanism after said counter-shaft has made one revolution, a butter-plate pivoted on a vertical axis and adapted to strike against the butts of the sheaves in the receiver and to form a closure for the lower end of said receiver, and mechanical connections between said butter-plate and the receiver-shaft, whereby said butter-plate is swung open upon the forward movement of said receiver and swung back on the backward movement of said receiver, substantially as described.

19. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame bolted to the main frame of the harvester beneath the binding-table thereof and extending laterally therefrom, a horizontal laterally-extending receiver-shaft journaled in said frame near the forward end thereof, a bracket-arm formed on the end of said shaft and rising above the level of the latter, a pyramid or cone shaped shock-forming receiver mounted on said bracket-arm and open at both ends and adapted to receive the sheaves and to be oscillated through approximately a right angle from the upright to the forward horizontal position, a rock-arm mounted on the shaft of said receiver and adapted to oscillate said shaft to operate the receiver, a short counter-shaft parallel to said receiver-shaft and journaled in said shocker-frame, a crank mounted on said counter-shaft opposite said rock-arm, a resilient link connection between said crank and rock-arm, a bevel-gear loosely mounted on the end of said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the harvester and engaging said first-mentioned gear, a pawl-block 50 keyed to said counter-shaft, a pawl 51 pivotally mounted thereon, a series of pins projecting from the rear face of said bevel-gear and adapted to be engaged by said pawl when the latter is permitted to fall into oblique position, a trip-lever 54 having an end adapted to engage an upstanding portion of said pawl to hold it in upright position out of engagement with said pins, and means for periodically raising said trip-lever to disengage said pawl and immediately dropping it again after a predetermined number of sheaves has been delivered to said receiver, whereby said counter-shaft is caused to perform one revolution and said receiver to be oscillated to set up the shock and returned to its original position, substantially as described.

20. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame bolted to the main frame of the harvester beneath the binding-table thereof and extending laterally therefrom, a horizontal laterally-extending receiver-shaft journaled in said frame near the forward end thereof, a bracket-arm formed on the end of said shaft and rising above the level of the latter, a pyramid or cone shaped shock-forming receiver mounted on said bracket-arm and open at both ends and adapted to receive the sheaves and to be oscillated through approximately a right angle from the upright to the forward horizontal position, a rock-arm mounted on the shaft of said receiver and adapted to oscillate said shaft to operate the receiver, a short counter-shaft parallel to said receiver-shaft and journaled in said shocker-frame, a crank mounted on said counter-shaft opposite said rock-arm, a resilient link connection between said crank and rock-arm, a bevel-gear loosely mounted on the end of said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the harvester and engaging said first-mentioned gear, a pawl-block 50 keyed to said counter-shaft, a pawl 51 pivotally mounted thereon, a series of pins projecting from the rear face of the said bevel-gear and adapted to be engaged by said pawl when the latter is permitted to fall into oblique position, a trip-lever 54 having an end adapted to engage an upstanding portion of said pawl to hold it in upright position out of engagement with said pins, a sheaf-carrier arranged to convey the sheaves successively from the binder-table to the receiver and deliver them to the latter, a lever-frame on which said sheaf-carrier is supported, a ratchet-wheel loosely mounted on the frame of the machine and having a projection adapted to engage and operate said trip-lever once at each revolution of said ratchet-wheel, and a pawl-rod pivotally connected to said lever-frame and engaging the teeth of said ratchet-wheel to advance the same by a predetermined portion of its revolution at each oscillation of said lever-frame, whereby to cause said clutch mechanism to be operated after the corresponding number of sheaves have been delivered to said receiver, substantially as described.

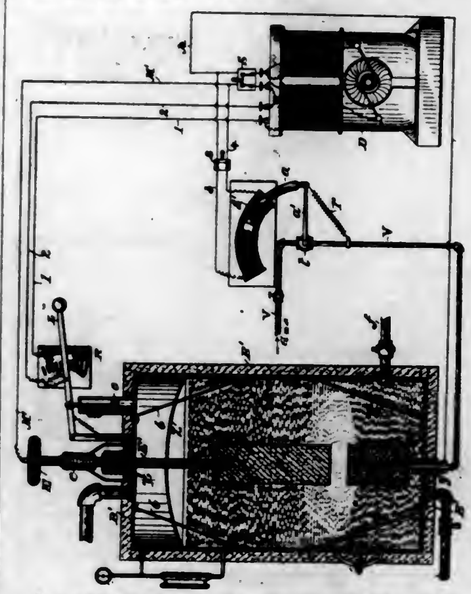
21. A grain-shocking attachment for self-binding harvesters, comprising a shocker-frame bolted to the main frame of the harvester beneath the binding-table thereof and extending laterally therefrom, a horizontal laterally-extending receiver-shaft journaled in said frame near the forward end thereof, a bracket-arm formed on the end of said shaft and rising above the level of the latter, a pyramid or cone shaped shock-forming receiver mounted on said bracket-arm and open at both ends and adapted to receive the sheaves and to be oscillated through approximately a right angle from the upright to the forward horizontal position, a rock-arm mounted to the shaft of said receiver and adapted to oscillate said shaft to operate the receiver, a short counter-shaft parallel to said receiver-shaft and journaled in said shocker-frame, a crank mounted on said counter-shaft opposite said rock-arm, a resilient link connection between said crank and rock-arm, a bevel-gear loosely mounted on the end of said counter-shaft, a second bevel-gear keyed to the main operating-shaft of the harvester and engaging said first-mentioned gear, a pawl-block 50 keyed to said counter-shaft, a pawl 51 pivotally mounted thereon, a series of pins projecting from the rear face of the said bevel-gear and adapted to be engaged by said pawl when the latter is permitted to fall into oblique position, a trip-lever 54 having an end adapted to engage an upstanding portion of said pawl to hold it in upright position out of engagement with said pins, a sheaf-carrier arranged to convey the sheaves successively from the binder-table to the receiver and deliver them to the latter, a lever-frame on which said sheaf-carrier is supported, a ratchet-wheel loosely mounted on the frame of the machine and having a projection adapted to engage and operate said trip-lever once at each revolution of said ratchet-wheel, and a pawl-rod pivotally connected to said lever-frame and engaging the teeth of said ratchet-wheel to advance the same by a predetermined portion of its revolution at each oscillation of said lever-frame, whereby to cause said clutch mechanism to be operated after the corresponding number of sheaves have been delivered to said receiver, substantially as described.

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**758,094. ELECTRIC STEAM AND VAPOR GENERATOR.** THOS W. NEELY, Marshall, Ill. Filed Apr. 23, 1901. Serial No. 57,131. (No model.)

*Claim.*—1. A steam-generator comprising a tightly-closed steam-resisting retaining-shell for the water and steam, two alined electrodes for the production of an electric arc both immersed in the water, and means for adjusting them toward each other substantially as and for the purpose described.

2. A steam-generator comprising a tightly-closed steam-resisting retaining-shell surrounded on all its external surfaces, including the bottom, with a heat-insulating material and containing within it two alined electrodes for the production of an arc, both immersed in the water, and means for adjusting one toward the other substantially as and for the purpose described.



3. A combined steam and vapor generator comprising a tightly-closed shell having two alined electrodes within for the production of an arc within a body of water, and to effect the decomposition of the water by electrolysis, means for supplying a combustible vapor or gas to said arc for admixture with the gases of the decomposed water and the burning of these added gases with production of heat and pressure substantially as described.

4. A combined steam and vapor generator comprising an inclosing shell having two alined electrodes within for the production of an arc, said electrodes being both immersed in the water, a dynamo, a supply-pipe for combustible vapor or gas extending through one of the electrodes, a regulating-valve for said supply-pipe having swinging arm, and spring, a curved solenoid-armature attached directly to said swinging arm and a curved helix for said armature placed in a shunt-circuit of the dynamo substantially as and for the purpose described.

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**758,095. PROCESS OF GENERATING STEAM.** THOMAS W. NEELY, Marshall, Ill. Filed May 2, 1901. Serial No. 58,505. (No specimens.)

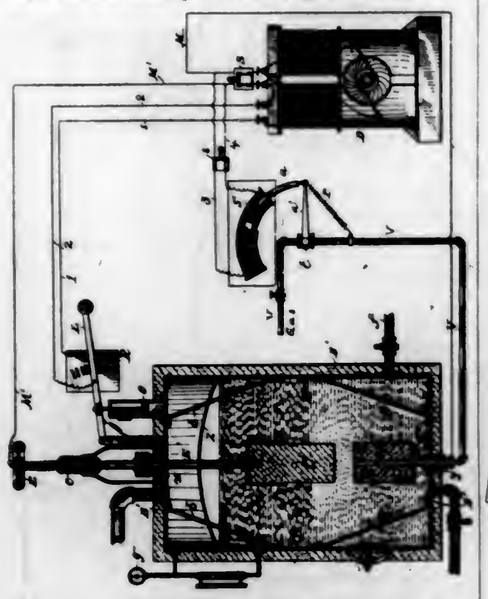
*Claim.*—1. The process of generating steam and supplementing its expansive power, which consists in passing an electrical current through electrodes immersed in water to form an electric arc with electrolysis of the water, admitting a combustible gas to the said electrodes to be combined with the water-gases by combustion and confining the resultant gaseous product to form pressure for motive power substantially as described.

2. The process of generating steam and supplementing its expansive power by an internal combustion of gases which consists in decomposing by an electric arc the water of a boiler into its constituent gases, retaining the same under pressure, introducing a combustible gas to the said separated water-gases for union therewith by combustion while still immersed in the surrounding water and controlling the feed of the combustible gas to said electrodes in an automatic way substantially as and for the purpose described.

3. The process of generating steam, and supplementing its expansive power, which consists in decomposing the water by electrolysis and burning an extraneous gas by combination with the disengaged constituent gases of the water, to produce heat and an expansion of the resultant vapors and gases and retaining such gases with the steam for motive power substantially as described.

4. The process of generating steam and supplementing its expansive power, which consists in establishing in the water of a boiler an electrical arc, introducing a combustible gas thereto, regulating automatically the electrical current to the arc, and regulating automatically the admission of the combustible gas to the electric arc

and retaining the steam and produced gases under pressure for motive power substantially as and for the purpose described.



758,096. SHAVING-PAPER HOLDER. WILLIAM P. NELSON, St. Louis, Mo. Filed July 15, 1903. Serial No. 165,687. (No model.)



*Claim.*—1. In a device of the class described, a base, a standard mounted thereon, a guard-pin positioned in the upper end of the standard, and a paper-receiving member rotatably carried by said guard-pin, substantially as specified.

2. In a device of the class described, a standard, a pin fixed in the upper end of said standard, a paper-carrying member rotatably positioned upon said pin, a guard carried by said pin which guard passes around and above the outer edge of the paper-carrying member, substantially as specified

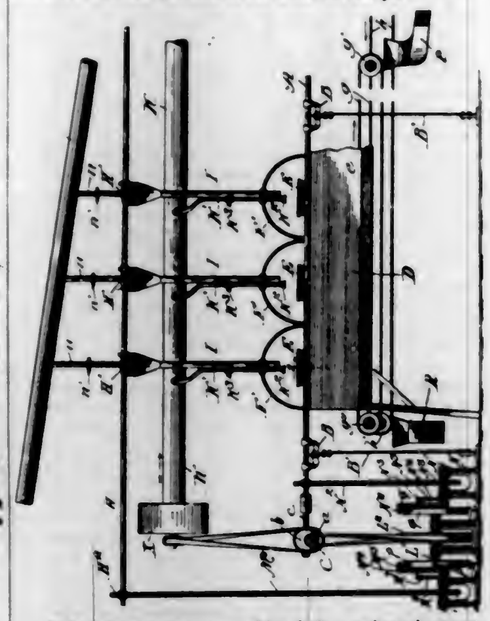
3. In a device of the class described, the combination of a standard, a rotatable disk mounted on the standard, arms radiating from the disk, and means for holding the paper on the disk, substantially as set forth.

4. In a device of the class described, the combination of a standard, a rotatable disk mounted on the standard, arms radiating from the disk and having downwardly-turned outward ends, and means for holding the paper on the disk, substantially as set forth.

758,097. DRY ORE-SEPARATOR. EDWARD W. NOAKES and WILLIAM H. NOAKES, Lagrange, Ill. Filed Apr. 16, 1903. Serial No. 153,916. (No model.)

*Claim.*—1. In a dry ore-separator, the combination of a pan for holding the ore, agitating mechanism for said pan, a stationary hood extending over said pan and means extending through said hood for directing an overhead air-blast into said pan.

2. In a dry ore-separator, the combination of a pan for holding the ore, means for agitating said pan, a stationary hood extending over said pan, an air-blast tube extending through said hood and provided with a discharge-opening in position to direct a blast of air from above into said pan, and an ore-feeder for said pan.



3. In a dry ore-separator, a drive-shaft, a reciprocal support operatively connected with the drive-shaft, an ore-holding pan pivotally mounted upon the support, intermittent pan upsetting and righting means operatively connected with the drive-shaft, and means for directing an air-blast into said pan.

4. In a dry ore-separator, a drive-shaft, a reciprocal support operatively connected with the drive-shaft, an ore-holding pan pivotally mounted upon the support, intermittent pan upsetting and righting means operatively connected with the drive-shaft, means for directing an air-blast into said pan, and an intermittingly-operating ore-feeder for the pan.

5. In a dry ore-separator, the combination of a pan for holding the ore having a roughened bottom and flaring sides terminating in inwardly-turned flanges cut away at the discharge end thereof, agitating mechanism for the pan, means for tilting the pan, and means for directing an air-blast into the pan.

6. In a dry ore-separator, the combination with a trough, of a pan supported over the trough for holding the ore, agitating mechanism for the pan, means for tilting the pan to discharge the concentrates into the trough, separate conveyers in the trough, a valve beneath the pan movable to deflect the concentrates and tailings separate to the respective conveyers, and means for directing an air-blast into the pan.

7. In a dry ore-separator, the combination of a pan for holding the ore, agitating mechanism for the pan, means for directing an air-blast into said pan, tilting mechanism for the pan, a discharge-chute for the concentrates, a discharge-chute for the tailings, conveyers extending from beneath the pan to said chutes, and a deflector movable to direct the concentrates and tailings separately to said conveyers.

8. In a dry ore-separator, the combination of a pan for holding the ore, means for directing an air-blast into the pan, agitating mechanism for the pan, a trough below the pan, discharge-conveyers in opposite sides of said trough, intermittingly-actuated tilting means for the pan, and an intermittingly-actuated deflector in the trough for directing the tailings and concentrates separately to said conveyers respectively.

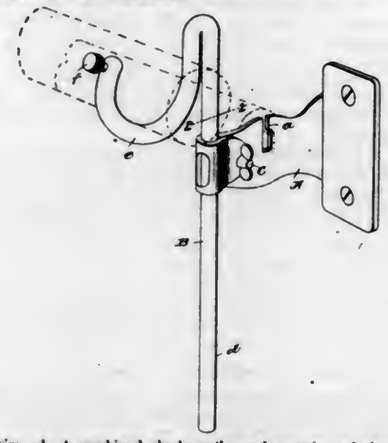
9. In a dry ore-separator, the combination with a shaft, of bearings for the shaft, a pan on said shaft for holding the ore, means for intermittingly rocking the shaft, agitating mechanism for the shaft, an intermittingly-operating ore-feed for the pan, and an air-blast tube discharging into the pan.

10. In a dry ore-separator, the combination with a shaft, of spring-standards for the shaft, a pan mounted on the shaft for holding the ore, means for rocking the shaft, agitating mechanism for the shaft, a trough below said pan open at its bottom portion and comprising sides and a longitudinal partition, a deflector-plate pivotally secured to the partition, connecting means between the pan and the deflector-plate to swing the plate when the shaft is rocked, an air-blast pipe discharging into the pan, and an ore-feed for the pan.

11. In a dry ore-separator, the combination with a pan mounted on a shaft for the ore, of means for tilting the pan, comprising a rock-shaft geared to said pan-carrying shaft, a constantly-rotating shaft carrying a projection, and a spring-returned arm on the said rock-shaft in the path of said projection.



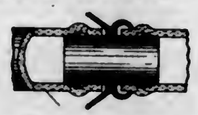
758,098. COMBINED SHADE-ROLLER AND CURTAIN-POLE HOLDER. WALTER A. NORDLING, Streator, Ill. Filed Nov. 7, 1903. Serial No. 180,195. (No model.)



*Claim.*—1. A combined shade-roller and curtain-pole holder comprising a bracket arranged to be connected in a horizontal position to a window-frame, and receive one end of a shade-roller, and having a vertically-disposed clamp, embodying a screw, at its outer end, and a pole-holder having a vertical portion adjustably fixed in and adjustable up and down in the vertically-disposed clamp of the bracket, and a pole-seat carried by said vertical portion.

2. A combined shade-roller and curtain-pole holder, comprising a bracket adapted to be connected to a window-frame or the like, and support a shade-roller, and having its outer portion bent backwardly upon its main portion to form a clamp, and also having a screw connecting said portions, and a pole-holder having an upright portion arranged and adjustably held in the clamp of the bracket, and a pole-seat on said portion.

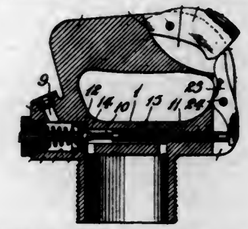
758,099. HOSE CONNECTION. FRANK H. PARADICE, Denver, Colo. Filed Feb. 3, 1903. Serial No. 141,778. (No model.)



*Claim.*—A hose-joiner complete in one article consisting of an inner tube with enlarged spigot ends for insertion into hose to be joined, and an outer portion or shell which will surround the hose to be joined; the edges of said portion forming circles which are greater in diameter than any other part of the joiner and set at an angle relative to the longitudinal side of the inner tube of from one to ninety degrees and being slotted, substantially as set forth.

758,100. HANDLE FOR PNEUMATIC TOOLS. CAID H. PECK, Waverly, N. Y., assignor to Imperial Pneumatic Tool Company, Athens, Pa., a Corporation of New York. Filed Jan. 16, 1904. Serial No 189,331. (No model.)

*Claim.*—1. In a pneumatic tool the combination with a head-block having an air-inlet duct therein, of a valve mounted in said head-block controlling said air-duct, a handle connected to said head-block, an operating-lever mounted in said handle and having a wedge-action cam-face, and an intermediate lever between the stem of said valve and said operating-lever, arranged to engage said cam-face and be operated by the wedge action thereof.



2. In a pneumatic tool the combination with a head-block having an air-inlet duct therein, of a valve mounted in said head-block controlling said air-duct, a handle connected to said head-block, an operating-lever mounted in said handle and having a wedge-action cam-face, and an intermediate lever between the stem of said valve and said operating-lever, arranged to engage said cam-face, the coacting ends of the said levers arranged to move in opposite directions when operated.

3. In a pneumatic tool the combination with a head-block having an opening for receiving a valve and stem, extending all the way therethrough from one side to the other, said opening adapted at one end to receive a valve-stem, and enlarged at the other end to form a valve-chamber, and having an air-inlet duct therein entering laterally from the exterior thereof into the valve-chamber end of the opening therein, of a valve arranged in said valve-chamber and having a stem fitted to the said opening in the head-block and valve-operating means engaging the protruding end of said valve-stem substantially as set forth.

4. In a pneumatic tool the combination with a head-block having an opening for receiving a valve and stem, extending all the way therethrough from one side to the other, said opening adapted at one end to receive a valve-stem, and enlarged at the other end to form a valve-chamber, and having an air-inlet duct therein entering laterally from the exterior thereof into the valve-chamber end of the opening therein, of a valve-seat removably fitted to said valve-chamber, a valve in said valve-chamber fitted to said valve-seat and having a valve-stem fitted to the said opening in the head-block, and valve-operating means engaging the protruding ends of said valve-stem substantially as set forth.

5. In a pneumatic tool the combination with a head-block having an air-inlet duct therein, of a puppet-valve for controlling admission through said inlet-duct, said puppet-valve having a guiding-stem and a tapered neck, said tapered neck fitted to a substantially cylindrical bore in the valve-seat, and valve-operating means for engaging the said valve-stem.

6. In a pneumatic tool the combination with a head-block having an air-inlet duct therein, of a puppet-valve for controlling admission through said inlet-duct, said puppet-valve having a front and rear stem guided in the said head-block, the outer ends of the guides for both said stems being open to the atmosphere.

758,101. CUFF-BUTTON. JOSEF PECHAR, New York, N. Y. Filed July 13, 1903. Serial No. 165,265. (No model.)

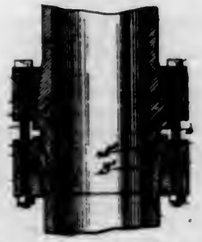


*Claim.*—A cuff-button composed of a pair of converging shanks, a central horn, and a pair of converging jaws that extend beyond the horn to form a pair of converging slots which merge into one another at the apex of the horn, and have a common inlet between the converging ends of the jaws, substantially as specified.

758,102. PIPE-COUPLING. SAMUEL H. POWERS, St. Joseph, Mo. Filed Mar. 28, 1903. Serial No. 149,980. (No model.)

*Claim.*—1. In a device of the character described, a female

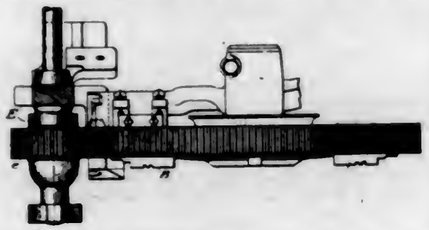
pipe member having the extremity of its walls inclined outwardly forming a conically-flaring seat and a conically-flaring exterior portion, and a male pipe member having a bore of uniform diameter, said member being provided with an integral, conically-tapered end adapted to slide frictionally within the seat of the female member, forming a double thickness of metal therewith, said male member being further provided with a conically-flaring portion adjacent said end and integral with the wall of the member, forming a double thickness of metal therewith; combined with a collar surrounding the flaring portion of the male member and riding frictionally thereon, a second collar surrounding the double thickness formed by the flaring portion of the female member and the tapered end of the male member and riding frictionally thereon, and means for securing the collars together.



2. In a device of the character described, a female pipe member having the extremity of its walls inclined outwardly forming a conically-flaring seat and a conically-flaring exterior portion, and a male pipe member having a bore of uniform diameter, said member being provided with an integral, conically-tapered end adapted to slide frictionally within the seat of the female member, forming a double thickness of metal therewith, said male member being further provided with a conically-flaring portion adjacent said end and integral with the wall of the member, forming a double thickness of metal therewith; combined with a collar of conical bore surrounding the flaring portion of the male member and riding frictionally thereon, a second collar of conical bore surrounding the double thickness formed by the flaring portion of the female member and the tapered end of the male member and riding frictionally thereon, and bolts connecting said collars together.

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**758,103. LINOTYPE-MACHINE. WILLIAM H. RANDALL, Brooklyn, N. Y., assignor to Mergenthaler Linotype Company, a Corporation of New York. Filed May 19, 1903. Serial No. 157,780. (No model.)**



*Claim.*—1. In a linotype-machine, a rotatable disk provided with a plurality of molds, in combination with an actuating-pinion, a shaft for driving the pinion, and intermediate clutch devices whereby the pinion may be released to permit the rotation of the disk independently of the shaft.

2. In a linotype-machine, a rotary disk provided with a plurality of molds, a driving-shaft, a pinion engaging the disk and movable axially, and coupling devices between the pinion and the shaft.

3. In a linotype-machine, a mold-disk adapted to carry a plurality of molds, a pinion engaging the disk and arranged to move axially, a driving-shaft, and a coupling device imparting motion from the shaft to the pinion, said parts adapted and arranged to permit the uncoupling of the pinion while it remains in engagement with the disk.

4. In a linotype-machine, a mold-carrying disk, a driving-pinion engaging the disk and provided with means for turning it manually, and power-driven devices for rotating the pinion, adapted to be disengaged to release the pinion while it remains in engagement with the disk.

5. In a linotype-machine, the mold-carrying disk, the driving-shaft, the sliding pinion, coupling devices between the pinion and shaft, and a spring to maintain the parts in operative connection.

6. In a linotype-machine, a rotary disk provided with a plurality of molds, in combination with manual devices for turning the same, to bring one mold or the other into action, and power-driven devices adapted to be thrown into and out of connection with said manual devices.

7. In a linotype-machine, the combination with a movable mold-carrier provided with a plurality of molds of different sizes and a power-operated means for moving said carrier, of a clutch by means of which solely said carrier and its driving means may be connected and disconnected and manually-operated means for adjusting said mold-carrier while it is disconnected from its operating means.

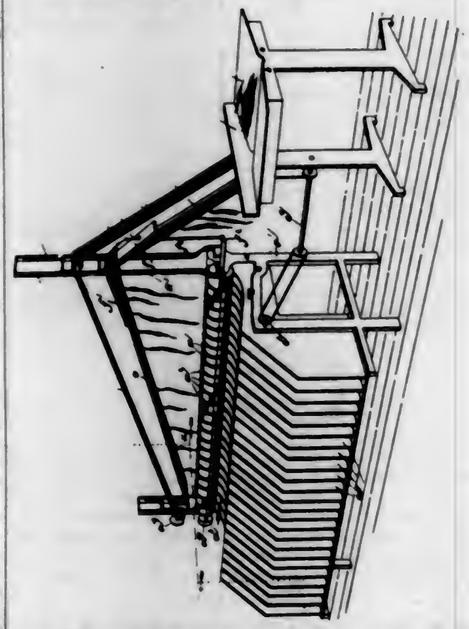
8. In a linotype-machine, the combination with a rotatable mold-carrier provided with a plurality of molds of different sizes, of power-operated means for rotating said carrier, a clutch by means of which solely said carrier and its rotating means may be connected and disconnected whereby the mold-carrier may be quickly adjusted to bring any desired mold into operative relation with the metal-injecting mechanism, and means for adjusting the mold-carrier when disconnected.

9. In a linotype-machine, the combination with a rotatable mold-carrier provided with a plurality of molds of different sizes, of power-operated means for rotating said carrier and a clutch by means of which solely said carrier and its rotating means may be connected and disconnected, whereby the mold-carrier may be quickly adjusted to bring any desired mold into operative relation with the metal-injecting mechanism.

10. In a linotype-machine, the combination with a rotatable mold-carrier, of a driving-pinion therefor, a spring-operated clutch normally connecting said pinion with power-operated mechanism, and a handle for throwing said clutch out of operation.

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**758,104. SORTING-MACHINE. EDWARD RETTICH, Germantown, and GEORGE REDGER, Cincinnati, Ohio. Filed Apr. 30, 1903. Serial No. 154,914. (No model.)**



*Claim.*—1. The combination with a pair of sizing-rolls, of a pair of endless belts adapted to travel with an edge of one in contact with an edge of the other to engage and carry the article to be sorted pendent over said rolls and at an inclination thereto, substantially as specified.

2. The combination with a pair of sizing-rolls, of a pair of endless belts adapted to travel in the same plane in proximity to each other, means to support said belts over said rolls at an inclination thereto and means on the adjacent edges of the respective belts to engage and releasably hold the article to be sorted suspended over said rolls while said belts travel on said supporting means, substantially as specified.

3. The combination with a pair of sizing-rolls, of a pair of endless belts and means to support said belts over said rolls at an inclination thereto, said belts being adapted to travel with an edge of one in contact with an edge of the other, a resilient material on the contacting edges of the respective belts to engage and releasably hold the articles to be sorted suspended over said rolls, while said belts travel on said supporting means, substantially as specified.

4. The combination with a pair of sizing-rolls, of a pair of endless belts and means to support said belts over said rolls at an inclination thereto, said belts being adapted to travel in the same plane in proximity to each other, brushes on the adjacent edges of the respective belts to engage and releasably hold the articles to be sorted suspended over said rolls, while said belts travel on said supporting means, substantially as specified.

5. The combination with a pair of sizing-rolls, of a pair of endless belts adapted to carry leaves by their stem ends, and means to adjust said ends uniformly while being carried by said belts, substantially as specified.

6. The combination with a pair of sizing-rolls, of a pair of endless belts adapted to carry leaves by their stem ends, carrier-guides for said belts, beaters pivoted to said guides to adjust said ends uniformly while being carried by said belts, and means to operate said beaters, substantially as specified.

7. In a machine such as described, a feed-table having a cover with a longitudinal opening therein, a pair of feed-rolls below said cover, the impinging portions of which are opposite said opening, and a pair of endless belts adapted to travel past the end of said rolls to receive and engage the leaves as they are passed by said rolls, substantially as specified.

8. In a machine such as described, a feed-table having a cover with a longitudinal opening therein, said cover being inclined downwardly toward said opening, and a pair of feed-rolls below said opening having their impinging portions opposite thereto, a pair of endless belts, and means to carry said belts convergingly past the ends of said rolls until they contact with each other to receive and engage the leaves as they are passed by said rolls, substantially as specified.

9. In a machine such as described, the combination with a pair of sizing-rolls having a series of grooves and a carrier adapted to releasably hold the article to be sorted pendent over said rolls, said carrier being supported in an inclined position to said rolls, of a series of partitions opposite the grooves in the rolls forming bins below said rolls to receive said articles as they are caught and passed by said rolls, substantially as specified.

10. In a machine such as described, the combination with a pair of sizing-rolls having a series of grooves and a carrier supported over and at an inclination to said rolls, of a series of partitions, one opposite each of said grooves, said partitions forming bins to receive the sorted articles from the sizing-rolls, substantially as specified.

11. In a machine such as described, the combination with a pair of sizing-rolls and a series of bins to receive the sorted articles, of two endless-belt conveyers in each of said bins, one of which extends under said rolls to receive the articles from said rolls and deliver them to the other conveyer, substantially as specified.

12. In a machine such as described, the combination with a pair of sizing-rolls having flattened portions on the surface thereof, of a carrier adapted to releasably hold the article to be sorted pendent over said rolls, said carrier being supported in an inclined position to said rolls, substantially as specified.

13. In a machine such as described, the combination with a pair of sizing-rolls having flattened portions on the surface thereof, a carrier supported at an inclination to said rolls, and a series of partitions, forming bins to receive the sorted articles from the sizing-rolls, substantially as specified.

14. In a machine such as described, the combination with a pair of sizing-rolls having a series of circumferential grooves and flattened portions on the surface between the same, and a carrier adapted to releasably hold the article to be sorted pendent over said rolls, said carrier being supported in an inclined position to said rolls, of a series of partitions forming bins below said rolls to receive said articles as they are caught and passed by said rolls, substantially as specified

15. In a machine such as described, the combination with a pair of sizing-rolls having a series of circumferential grooves and flattened portions on the surface between the same, and a carrier such as described, of a series of partitions, one for each of said grooves, said partitions forming bins to receive the sorted articles from the sizing-rolls, substantially as specified.

16. The combination with a pair of sizing-rolls and an article-carrier traveling at an inclination thereto, of means for varying the inclination of said article-carrier, substantially as specified.

17. The combination with sizing-rolls, and a carrier arranged at an inclination thereto, of means for regulating the degree of variation with which the articles are sorted, substantially as specified.

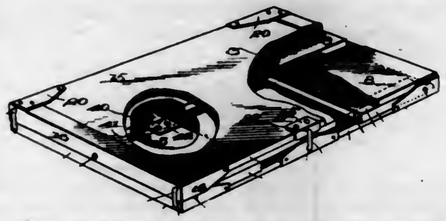
18. The combination with sizing-rolls, and a carrier arranged at an inclination thereto, of means for regulating the variation in successive lots of the sorted articles by varying the inclination of said carrier with said rolls, substantially as specified.

19. The combination with sizing-rolls and a carrier arranged at an inclination thereto, of means for varying the relation of said carrier to said rolls, substantially as and for the purpose specified.

20. The combination with sizing-rolls and an endless carrier, of supporting-rolls for said carrier and means for adjusting said supporting-rolls independently of each other, substantially as specified.

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**758,105. KNOCKDOWN BOX OR CRATE. JOHN F. REUL, Juneau, Wis. Filed July 21, 1903. Serial No. 166,446. (No model.)**



*Claim.*—1. A knockdown box or crate, comprising a bottom having flanges on its edges having bolt-sockets, sections hinged to the bottom adjacent opposite edges, guides on the ends thereof having bolt-sockets, the lower edges of said sections when turned up adapted to come squarely against the bottom, and the inner surfaces of said sections when turned down adapted to come flatly against the bottom, sections adapted when the first-mentioned sections are turned up to be slid into the guides on the ends thereof, and when said sections are turned down to lie flatly on top thereof, a cover having end flanges adapted to fit over the sections when the parts are set up and to fit over the flanges on the bottom when the parts are packed, and reciprocal rotatable spring-pressed bolts on the cover adapted when the parts are set up to engage the bolt-sockets in the guides, and when the parts are packed to engage the bolt-sockets in the flanges on the bottom, substantially as described.

2. A knockdown box or crate, comprising a bottom having flanges on its edges having bolt-sockets, sections hinged to the bottom adjacent opposite edges, guides on the end thereof having bolt-sockets, the lower edges of said sections when turned up adapted to come squarely against the bottom, and the inner surfaces of said sections when turned down adapted to come flatly against the bottom, sections adapted when the first-mentioned sections are turned up to be slid into the guides on the ends thereof and when said sections are turned down to lie flatly on top thereof, a cover having end flanges adapted to fit over the sections when the parts are set up and to fit over the flanges on the bottom when the parts are packed, stationary bolts on one end of the cover and reciprocal rotatable bolts on the other end, adapted when the parts are set up to engage the bolt-sockets in the guides and when the parts are packed to engage the bolt-sockets in the flanges on the bottom, substantially as described.

3. A knockdown box or crate, comprising a bottom having flanges on its edge having bolt-sockets, sections hinged to the bottom adjacent opposite edges and having sockets at each end on opposite sides thereof, guides on the ends of said sections having bolt-sockets, the lower edges of said sections when turned up adapted to come squarely against the bottom, and the inner surfaces of said sections when turned down adapted to come flatly against the bottom, sections having clamping-plates at each end adapted to engage the sockets on each end of the first-mentioned sections when said sections are slid into the guides thereon, said last-mentioned sections adapted to lie flatly on the first-mentioned sections when the parts are packed, a cover having end flanges adapted to fit over the sections when the parts are set up and to fit over the flanges on the bottom when the parts are packed, and reciprocal rotatable spring-pressed bolts on the cover adapted when the parts are set up to en-

gage the bolt-sockets in the guides and when the parts are packed to engage the bolt-sockets in the flanges on the bottom, substantially as described.

4. A knockdown box or crate, comprising a bottom having flanges on its edge having bolt-sockets, sections hinged to the bottom adjacent opposite edges and having sockets at each end on opposite sides thereof, guides on the ends of said sections having bolt-sockets, the lower edges of said sections when turned up adapted to come squarely against the bottom, and the inner surfaces of said sections when turned down adapted to come flatly against the bottom, sections having clamping-plates at each end adapted to engage the sockets on each end of the first-mentioned sections when said sections are slid into the guides thereon, said last-mentioned sections adapted to lie flatly on the first-mentioned sections when the parts are packed, a cover having end flanges adapted to fit over the sections when the parts are set up and to fit over the flanges on the bottom when the parts are packed, stationary bolts on one end of the cover and reciprocal rotatable bolts on the other end, adapted when the parts are set up to engage the bolt-sockets in the guides and when the parts are packed to engage the bolt-sockets in the flanges on the bottom, substantially as described.

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**758,106. TRANSMISSION OF ELECTRICAL IMPULSES.** JOHN S. RICHMOND, New York, N. Y. Filed Apr. 27, 1901. Serial No. 57,821. (No model.)



*Claim.*—1. In a system of electrical transmission, two conductors forming the sides of a metallic circuit, combined with means for maintaining zero potential at the meeting-points of the two conductors; substantially as described.

2. In a system of electrical transmission, two equal conductors forming the sides of a metallic circuit, combined with a ground connection for maintaining zero potential at the meeting-point of the two conductors; substantially as described.

3. In a system of electrical transmission, two equal conductors, forming the sides of a metallic circuit, combined with means for maintaining zero potential at the meeting-points of the two conductors, and means for creating impulses in the said conductors simultaneously equal at contiguous points but differing in this, that the impulses in one conductor are equally above as those in the other are below the maintained zero potential; substantially as described.

4. In a system of electrical transmission, equal contiguous insulated conductors equally insulated from and surrounded by a sheath repeatedly grounded, said conductors forming sides of a metallic circuit, the meeting-points of said conductors grounded whereby zero potential is maintained at that point and equal impulse-creating means located on opposite sides of the zero-points, said impulse-creating means simultaneously creating impulses in one conductor above and in the other conductor impulses equally below the zero potential; substantially as described.

5. In a system of electrical transmission, equal contiguous conductors insulated from each other and connected together to form a metallic circuit, a ground connection at the meeting-point of the conductors and equal generators included in said conductors equidistant electrically from the zero-point said generators being in series with each other in the circuit; substantially as described.

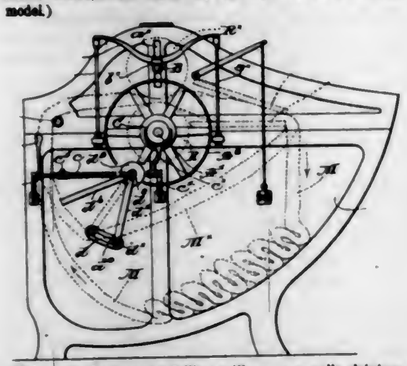
6. In a system of electrical transmission, equal contiguous conductors, forming the sides of a metallic circuit and an earth connection where said equal conductors meet, whereby zero potential is maintained at that point, combined with means for creating impulses simultaneously equal at contiguous points in the two conductors, respectively, but differing in this, that the impulses in one conductor are equally above as those in the other are below zero potential; substantially as described.

7. In a system of electrical transmission, equal insulated conductors forming sides of a metallic circuit, a ground surrounding said conductors, a ground connection at the meeting-point of said conductors whereby earth potential is maintained at that point, and means for creating impulses simultaneously equal at contiguous points in the said conductors one of said points being in one conductor and the other point in the other conductor, but differing in this that the impulses in one conductor are in potential as equally above as those in the other conductor are below said earth potential; substantially as described.

8. In a system of electrical transmission, equal contiguous insulated conductors equally insulated from and in similar proximity to a medium repeatedly grounded, said conductors forming sides of a metallic circuit and having their meeting-point grounded whereby zero potential is established at that point, electrical-impulse-generating apparatus so located in series in such circuit and so that the electrical medial point in such apparatus is electrically equidistant from zero-point of said circuit and other apparatus in series in such circuit so located that the electrical medial point in such other apparatus is electrically equidistant from zero-point of said circuit for utilizing the impulses generated; substantially as described.

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**758,107. STOP-MOTION FOR FULLING-MILLS.** JAMES P. RYAN, Enfield, N. H. Filed May 16, 1902. Serial No. 107,569. (No model.)



*Claim.*—1. In a rotary fulling-mill, squeeze-rolls, driving means therefor, including a shipper, and a stop-motion operated by or through the formation of a short loop of cloth between the delivery and inlet sides of the rolls, said stop-motion including a transverse, swinging bar below the squeeze-rolls, and a knock-off arm mounted on a rock-shaft and movable into position to throw the shipper when a short loop of cloth engages and swings the bar, the cloth normally traveling below the bar and wholly out of engagement therewith, and the rock-shaft, located above said bar and operatively connected therewith.

2. In a rotary fulling-mill, a casing, squeeze-rolls therein to act upon a plurality of "runs" of cloth traveling side by side, driving means for said rolls, including a shipper, and a stop-motion operated by or through the formation of a short loop in a cloth "run," said stop-motion including a transverse swinging bar within the casing below and at the inlet side of the rolls and normally out of the path of the runs when traveling properly, a knock-off arm to throw the shipper when a short loop of a "run" engages and lifts the bar, and connections between the knock-off arm and the bar located outside the casing.

3. In a rotary fulling-mill, a casing, squeeze-rolls therein adapted to act upon a plurality of "runs" of cloth traveling side by side, driving means for said rolls, including a clutch and its shipper, and a stop-motion operated by the formation of a short loop in a cloth "run" traveling through the rolls, said stop-motion including a bar extended transversely across the casing below the rolls and normally above the path of the cloth "runs," a rock-shaft mounted in the casing above said bar and having depending arms to the lower end of which the bar is secured, and a knock-off arm on the rock-shaft outside the casing, to throw the shipper and release the clutch when a short loop of cloth engages and raises the bar and thereby rocks the rock-shaft.

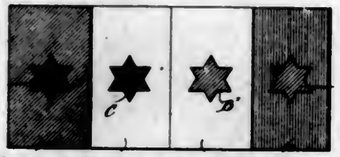
4. In a rotary fulling-mill, a casing having segmental slots in its sides below and at the inlet side of the squeeze-rolls, squeeze-rolls within the casing, driving means therefor, including a shipper, and a stop-motion including a bar extended across the casing and projecting out through the segmental slots, a rock-shaft mounted in the casing above the slots and having depending external arms attached to the projecting ends of the bar, and a knock-off arm on said rock-shaft and movable into position to operate the shaft when the bar is engaged and lifted by a short loop of cloth.

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**758,108. ART OF PLANOGRAPHIC PRINTING.** RALPH J. SACHER, New York, N. Y., assignor, by mesne assignments, to Jean A. Wetmore, New York, N. Y. Filed Feb. 23, 1897. Serial No. 624,624. (Specimens.)



*Claim.*—1. The process of producing printing-plates for printing purposes which consists of the following steps: first, coating aluminium with one or more surface layers of other metal or alloy; second, placing the design on the face of said surface layer; third, removing the surface layer at all points not covered by the design; fourth, treating the now exposed portions of aluminium in order to repel printers' ink with a non-corrosive.



2. The process of producing printing-plates for printing purposes which consists of the following steps: first, coating a base-plate with a surface layer of aluminium; second, coating this aluminium surface with one or more layers of other metal or alloy; third, placing a design on said metallic layer; fourth, removing said metallic layer at all points not covered by the design; fifth, treating the now exposed portions of aluminium in order to repel printers' ink with a non-corrosive.

3. The process of producing printing-plates for printing purposes which consists of the following steps: first, coating electrolytically aluminium with one or more surface layers of other metal or alloy; second, producing a design on the face of said surface layer; third, removing electrolytically said surface layer at all points not covered by the design; fourth, treating the now exposed portions of aluminium with a non-corrosive so as to repel printers' ink.

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**758,109. TOOTH-BRUSH.** HARRY E. SANDIFORD, New York, N. Y. Filed Oct. 1, 1903. Serial No. 175,272. (No model.)

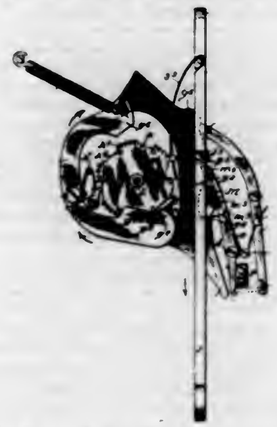


*Claim.*—1. A tooth-brush made in annular or ring form and having the central unobstructed passage-way through it and having its bristles extending parallel with the peripheral face of said ring, substantially as and for the purposes set forth.

2. In combination with an annular tooth-brush head having a central unobstructed passage through it and a threaded socket, formed in its periphery, and bristles extending from one face of the head parallel with its axial line, of a removable handle provided with a screw to fit said socket, substantially as shown and described.

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**758,110. AUTOMATIC VENDING-MACHINE.** ROBERT SCHLENK, Chicago, Ill. Filed June 19, 1903. Serial No. 162,161. (No model.)



*Claim.*—1. In a vending-machine having rotatably-mounted discharge devices, coin-controlled means for operating said devices, said means consisting of a pivotally-mounted plate, a wheel rotatable by said plate, a lever secured to said plate and adapted to be manually operated, and means for locking and for releasing said plate, said means consisting of pivoted levers adapted to hold a coin between two of their arms, and to have their other arms normally in locking engagement with said plate.

2. In a vending-machine having rotatably-mounted discharge devices, coin-controlled means for operating said devices, said means consisting of a wheel adapted to rotate in but one direction, of a pivoted plate adapted to rotate said wheel, a lever secured to said plate and manually operable and means for locking and releasing said plate, said means consisting of pivoted levers arranged with two of their arms opposite and spaced apart and adapted to hold by frictional engagement a coin, and having their other ends normally in engagement with portions of the said plate.

3. In a vending-machine, a rotatably-mounted wheel having inclined teeth in its periphery, means engaging said teeth to prevent the rotation of the wheel in but one direction, a pivotally-mounted plate adapted to rotate the said wheel and provided with shoulders, a lever secured to said plate and manually operated, levers pivotally mounted, and having portions engaging the shoulders on said plate to prevent the movement of the latter, said levers having other portions adapted to receive and hold a coin in frictional engagement, and means for returning the plate to its normal position.

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**758,111. GAS FIREPLACE-HEATER.** ALBERT B. SCHOFIELD, New York, N. Y. Filed Feb. 19, 1903. Serial No. 144,030. (No model.)



*Claim.*—1. A gas-heater comprising a suitable casing, a fire-chamber provided with a gas-burner, a skeleton front piece offset from the front of the casing, a translucent pocket containing fragments of translucent material seated in the offset skeleton front piece and a plate of colored translucent material interposed between the pocket and flame of the burner.

2. A gas-heater comprising a suitable casing, a fire-chamber provided with a gas-burner, a skeleton front plate offset from the front of the casing, a translucent pocket containing fragments of translucent material located in the offset skeleton front piece and a shield composed of translucent material interposed between the said pocket and flame of the burner.

3. A gas-heater comprising a suitable casing, a fire-chamber provided with a gas-burner, a skeleton front piece offset from the front of the casing and a removable translucent pocket containing fragments of translucent material located in said offset skeleton front piece.

4. A gas-heater comprising a suitable casing, a fire-chamber provided with a gas-burner, a removable skeleton front piece offset from the front of the casing and a translucent pocket containing fragments of translucent material located in said skeleton front piece.

5. A gas-heater comprising a suitable casing, a fire-chamber provided with a gas-burner, a removable skeleton front piece offset from the front of the casing and a removable translucent pocket containing fragments of translucent material located in said offset skeleton front piece.

6. A closed pocket for use in connection with heating devices for holding fragments of translucent material in position to modify light from the flame, the said pocket having imperforate walls of light-transmitting material.

7. A gas fireplace-heater comprising a casing fitted to enter the fireplace-opening, a fire-chamber within the casing provided with a

gas-burner, a heating-chamber located over the fire-chamber, the said heating-chamber being provided with an opening in its bottom directly over the fire-chamber and with an opening in its front for the passage of the hot air from the fire-chamber directly through the bottom of the heating-chamber and out at its front into the room and means for supporting a vessel directly in the path of the heated air and hot gases as they pass through the said heating-chamber.

8. A gas fireplace-heater comprising a casing fitted to enter the fireplace-opening, a fire-chamber provided with a gas-burner, a heating-chamber located above the fire-chamber and provided with an upwardly and outwardly slanting top, the said heating-chamber being in open communication with the fire-chamber and the casing being provided at its front with openings at the base of the fire-chamber and at the front of the heating-chamber.

9. A gas fireplace-heater comprising a casing fitted to enter the fireplace-opening, a fire-chamber provided with a gas-burner, a heating-chamber located above and in communication with the fire-chamber, openings in the front of the casing at the base of the fire-chamber and front of the heating-chamber and a door at the front of the heating-chamber to gain access to the floor of the chamber.

10. A gas fireplace-heater comprising a casing, fitted to enter a fireplace-opening and provided with an outwardly-extending flange across its top and down each side, a skeleton diaphragm dividing the interior casing into a fire-chamber and a heating-chamber, a gas-burner located in the heating-chamber and a skeleton front piece offset from the front of the heating-chamber and having the openings therein covered by translucent material for modifying the rays of light from the burner, the said casing being provided with air-inlet openings at the front of the base of the fire-chamber and with air-outlet openings at the front of the heating-chamber.

11. A gas fireplace-heater comprising a casing fitted to enter the fireplace-opening, a skeleton diaphragm dividing the interior of the casing into a fire-chamber and a heating-chamber, the front of the casing being provided with openings at the front of the heating-chamber and with a broad opening at the base of the fire-chamber, a skeleton front piece offset from the front of the fire-chamber and having the openings covered by translucent material and a removable reticulated base-piece fitted to cover the opening at the base of the fire-chamber.

12. A gas fireplace-heater comprising a casing fitted to enter a fireplace-opening, the said casing being provided with an upwardly-extending flange across its top and down its sides, a face-piece fitted to straddle the casing to form a closure between the flange on the casing and the margin of the fireplace-opening, a diaphragm dividing the interior of the casing into a fire-chamber and a heating-chamber, a gas-burner located in the fire-chamber, the front of the casing being provided with openings at the front of the heating-chamber for the discharge of the heated air and with an opening at the base of the fire-chamber for receiving air to be heated.

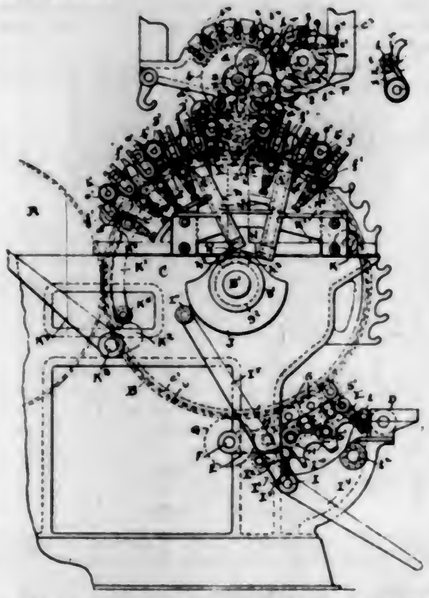
13. A gas-heater comprising a suitable casing, the front of the casing being left open at the base and the central portion of the front being extended downwardly into said open space, the said front of the casing being further provided with openings near the upper portion, a diaphragm dividing the interior of the casing into an upper heating-chamber and a lower fire-chamber, a gas-burner located within the fire-chamber, a gas-pipe leading from the burner through the said downwardly-extended central portion of the front of the casing and a removable reticulated base-piece arranged to cover the said opening at the base of the front and hide from view the pipe extending through the front of the casing.

14. A gas fireplace-heater comprising a casing fitted to enter a fireplace-opening, a fire-chamber provided with a gas-burner, a heating-chamber located above the fire-chamber and a skeleton front piece opposite the gas-burner chamber, the said front of the casing being provided with an opening intermediate of the skeleton front piece and heating-chamber for gaining access to the burners.

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**758,112. PRINTING-PRESS. Walter Scott, Plainfield, N. J. Filed Feb. 11, 1901. Serial No. 46,994. (No model.)**

*Claim.*—1. In a printing-press, the combination of a plate-cylinder, a plurality of form-inking rolls arranged circumferentially of the same, a plurality of superposed rolls driving the form-inking rolls by contact, a circumferential gear carried by the plate-cylinder of a diameter somewhat less than the pitch-line of the said cylinder, a plurality of intermediate gears mounted below the axial line of the form-inking rolls and driven by the said circumferential gear at a slower surface speed than the plate-cylinder, a gear, mounted on the end of each of the superposed rolls, of a smaller diameter than the diameter of the said superposed rolls, meshing with the intermediate gears aforesaid and driving the superposed rolls and through them the form-inking rolls at the same surface speed as the plate-cylinder, substantially as described.



2. In a printing-press, the combination of a plate-cylinder, a plurality of form-inking rolls arranged circumferentially of same, a plurality of superposed rolls driving the form-inking rolls by contact, a circumferential motion-transmission means carried within the pitch-line on the plate-cylinder, means for coacting therewith mounted below the axial line of the form-inking rolls and extending inside of the pitch-line of the said cylinder, and means, mounted on the ends of the superposed rolls, of a less diameter than the diameter of the said superposed rolls, for receiving motion from the coacting means substantially as described.

3. In a printing-press, the combination of a plate-cylinder adapted to carry a form or plate from which impressions are to be made, a plurality of form-inking rolls arranged circumferentially of the cylinder, a plurality of superposed and lengthwise-vibrating rolls driving said form-inking rolls by contact, and means for moving the rolls lengthwise in one direction only while the form-inking rolls contact with the form, substantially as described.

4. In a printing-press, the combination of a plate-cylinder adapted to carry a plate or form from which impressions are to be made, a plurality of form-inking rolls arranged circumferentially of the cylinder, a plurality of superposed and lengthwise-vibrating rolls driving said form-inking rolls by contact, a cam carried on the shaft of the plate-cylinder, a shaft mounted in the framework, a roller carried on the end of said shaft adapted to cooperate with the cam on the shaft of the plate-cylinder, two arms carried by the said shaft at its other end and at right angles to its axis, spools carried by the rolls aforesaid, and means carried by the arms of the shaft for cooperating with the spools to vibrate the rolls, the movement being in one direction only while the form-inking rolls contact with the form, substantially as described.

5. In a printing-press, the combination of a rock-shaft carrying a ductor-roll, an arm carried by said rock-shaft terminating in a contacting portion, a lever pivoted at one end, a second lever also pivoted at one end and resting on a portion of the first-mentioned lever and terminating in a portion adapted to contact with the contacting portion of the arm on the rock-shaft, and means for regulating the distance of the two contacting portions with relation to each other by regulating the relative position of the levers, substantially as described.

6. In a printing-press, the combination of a rock-shaft carrying a ductor-roll, an arm carried by said rock-shaft terminating in a contacting portion, a fountain-roll having a rotary motion, a lever pivoted at one end, a second lever also pivoted at one end and resting on a portion of the first-mentioned lever and terminating in a portion adapted to contact the contacting portion of the arm on the rock-shaft, and means operated by the rotation of the fountain-roll whereby the two contacting portions are kept in contact at predetermined intervals, substantially as described.

7. In a printing-press, the combination of a rock-shaft carrying a ductor-roll, an arm carried by said rock-shaft terminating in a contacting portion, a fountain-roll having a rotary motion, a lever pivoted at one end, a second lever also pivoted at one end and resting on a portion of the first-mentioned lever and terminating in a portion adapted to contact the contacting arm of the rock-shaft, means operated by the rotation of the fountain-roll whereby the two contacting portions are kept in contact at predetermined intervals, and adjustable means also operated by the rotation of the fountain-roll whereby the period or length of time of contact is regulated, substantially as described.

8. In a printing-press, the combination of a fountain-roll, means for rotating the fountain-roll, a rock-shaft carrying a ductor-roll, an arm carried by the rock-shaft terminating in a contacting portion, a friction-roller carried by the said arm, a cam on the shaft of the fountain-roll adapted to coact with the friction-roller so as to rock the rock-shaft carrying the ductor-roll, a second cam carried by the shaft of the fountain-roll, a pivoted lever adapted to rest with its free end on the second cam, a second pivoted lever adapted to rest on a portion of the first lever and terminating in a portion adapted to contact the contacting portion on the arm of the rock-shaft thereby regulating the period or length of time of contact or dwell of the ductor-roll against the fountain-roll, and cooperative means formed between the two levers whereby the relative position of the second lever with regard to the arm on the rock-shaft with which it contacts may be varied, substantially as described.

9. In a printing-press, the combination of an ink-distributing cylinder slidably mounted adjacent to the form-inking rolls and adapted to supply the latter with ink, means for imparting a predetermined number of revolutions to the cylinder in a given space of time, means for imparting a less, but variably-predetermined, number of endwise vibrations to the cylinder in the same space of time, and means for varying the number of vibrations of the cylinder relative to the number of revolutions, substantially as described.

10. In a printing-press, the combination of an ink-distributing cylinder, slidably mounted adjacent to the form-inking rolls and adapted to supply the latter with ink, means for imparting a predetermined number of revolutions to the cylinder in a given space of time, means for imparting a less, but variably-predetermined, number of endwise vibrations to the cylinder in the same space of time, and means for varying the number of vibrations of the cylinder relative to the number of revolutions, comprising a rotatable cam slidably mounted on a stud in the framework, a gear carried by said cam, a gear carried on the shaft of the cylinder meshing therewith and rotating the cam, a stationary friction-roller mounted in the framework adapted to coact with the cam to vibrate the same as it revolves, and cooperative means formed between the cam and the cylinder whereby the vibration of the cam is imparted to the cylinder, substantially as described.

11. In a printing-press, the combination of an ink-distributing cylinder slidably mounted adjacent to the form-inking rolls and adapted to supply the latter with ink, means for rotating the cylinder, a rotatable cam slidably mounted, means for rotating the cam from the cylinder, means whereby the rotation of the cam causes its vibration, and means for imparting the vibrations of the cam to the cylinder, substantially as described.

12. In a printing-press, the combination of a plate-cylinder, an ink-distributing surface on said cylinder, a set of form-inking rolls adapted to contact the form carried by said cylinder and adapted also to contact the ink-distributing surface, and an additional set of form-inking rolls adapted to contact the form after each impression prior to its contact with the first-mentioned set of inking-rolls, and adapted further not to contact the ink-distributing surface on the cylinder, substantially as described.

13. In a printing-press, the combination of a plate-cylinder, an ink-distributing surface on said cylinder, a set of form-inking rolls adapted to contact the form carried on the cylinder and adapted also to contact the ink-distributing surface, and means for contacting the form on the cylinder after each impression and prior to its contact with the form-inking rolls for the purpose of removing the paper fiber or dust on said form, and adapted further not to contact the ink-distributing surface on the cylinder so as not to transfer the said dust or fiber to the form-inking rolls substantially as described.

14. In a printing-press, the combination of a plate-cylinder, a circumferential gear carried by the cylinder, a cam mounted on the shaft of the said cylinder, a pair of arms pivoted on a rock-shaft, a plurality of form and distributing rolls carried by said arms, a train of gears driving the distributing-rolls contacting with the form-rolls, an intermediate gear on the rock-shaft in constant mesh with the circumferential gear on the cylinder and the train of gears driving the distributing-rolls, a second rock-shaft mounted below the arms pivoted to the first rock-shaft, a pair of arms carrying a friction-roll pivoted to two arms on the second rock-shaft, and a lever mounted on the second rock-shaft carrying a friction-roll cooperating with the cam on the shaft of the cylinder, for the purposes as set forth, substantially as described.

15. In a printing-press, the combination of a rock-shaft carrying a ductor-roll, an arm carried by said rock-shaft terminating in a contacting portion, a lever pivoted at one end, a second lever also pivoted at one end and resting on a portion of the first-mentioned lever and terminating in a portion adapted to contact the contacting portion of the arm on the rock-shaft, and means whereby the two contacting portions are kept in contact at predetermined intervals, substantially as described.

16. In a printing-press, the combination of a rock-shaft carrying a ductor-roll, an arm carried by said rock-shaft terminating in a contacting portion, a lever pivoted at one end, a second lever also pivoted at one end and resting on a portion of the first-mentioned lever and terminating in a portion adapted to contact the contacting arm of the rock-shaft, means whereby the two contacting portions are kept in contact at predetermined intervals, and adjustable means whereby the period or length of time of contact is regulated, substantially as described.

17. In a printing-press, the combination of a distributing-cylinder, a fountain whose roll has a rotary motion, a ductor-roll mounted on arms on a rock-shaft and caused to vibrate in contact with the distributing-cylinder and the fountain-roll, an arm on the rock-shaft whose end terminates in a contacting portion, a lever pivoted at one end and contacting with a rotating cam, a second lever pivoted at one end the other end contacting with the contacting portion of the arm on the rock-shaft, and an adjusting means for regulating the distance between the two arms whereby the time of contact between the fountain-roll and the ductor-roll can be regulated, substantially as described.

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**758,113. FRICTION-GEAR FOR MOTOR-CARS. Willy Seck, Aix-la-Chapelle, Germany, assignor to Emil Bergmann, Suhl, Thuringia, Germany. Filed Apr. 23, 1903. Serial No. 153,971. (No model.)**



*Claim.*—1. In a friction-gear for motor-cars, the combination of a driving-disk, a shaft pivotally mounted adjacent to said disk, a driven disk slidably mounted on said shaft, means for sliding said disk, a pivotally-mounted axle, driving-wheels on said pivotally-mounted axle, rigid connections between said axle and said first-named shaft, and means connecting with said shaft for driving said wheels.

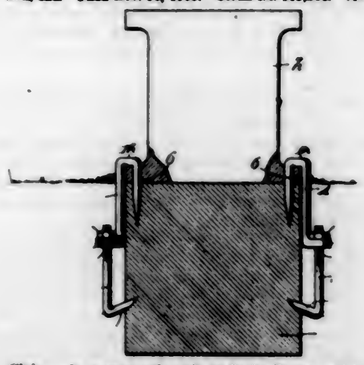
2. In a friction-gear for motor-cars, the combination of a driving-disk, a driven disk, means for reciprocating said driven disk, means for separating said disks and automatically locking said driven disk in adjusted position, comprising a spindle *o* parallel to the axle of the driven disk, a pedal-lever for rotating said spindle, levers mounted on said spindle, a swinging shaft on which the driven disk is mounted, rods connecting said spindle-levers with said swinging shaft, and a lever *t*, a ratchet-wheel adapted to be engaged by said lever, an operating-shaft on which said ratchet-wheel is rigidly mounted, a sprocket-wheel on said shaft, a second sprocket-wheel mounted adjacent to the spindle *o*, a chain passing around said sprocket-wheels, a guide *n* slidably mounted on said spindle and engaging with said chain by means of which it may be slid, and a grooved collar on said guide engaging with the disk *a* and adapted to move the same with said guide, substantially as described.

3. In a friction-gearing for motor-cars, the combination of a pivotally-mounted shaft, a driven gear slidably mounted on said shaft, a spindle mounted parallel to said shaft, means connecting between

said shaft and said spindle for swinging said shaft, a pedal-lever secured to said spindle for operating the same, means adjacent to said driven disk for sliding the same, a lever on said spindle for holding said means in adjusted position, and a brake on said shaft adapted to be operated by said spindle, substantially as described

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758,114. **ENGINE-BASE CLAMP.** CHARLES P. SHEETZER, Marion, Ind. Filed Nov. 30, 1903. Serial No. 183,308. (No model.)



*Claim.*—1. A connecting-clamp for bodies comprising two members adjustably connected and each having body-engaging means.

2. A connecting-clamp for bodies, comprising two members terminally and adjustably connected and having body-engaging means.

3. A clamp of the class described, having two members provided with terminal spurs, one member being adjustable on the other.

4. A clamp of the class described, comprising two members, one of which is provided with a terminal spur parallel with the body portion of its member, and the second member having a terminal spur and adjustably connected to the first member.

5. A clamp of the class described comprising two adjustably-coupled members one of which is provided with a spur parallel with the body portion thereof and a spur on the other member at a right angle to its body portion.

6. The combination with a base-block, and a body on the block having edge openings, of means for clamping the two bodies together comprising a sectional adjustable clamp having terminal spurs respectively arranged at right angles to each other.

7. The combination with a base-block, and a body on the block having an outwardly-disposed flange, of means for clamping the body and block together, comprising two members one of which engages the flange, a second member engaging the clamp and terminally connected to the first member and means on one of the members to adjust the other member.

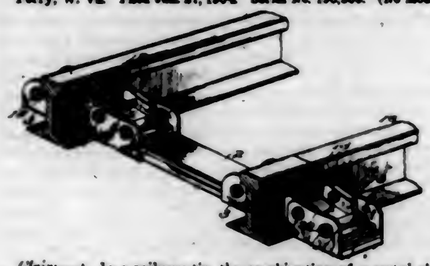
8. A clamp, having adjustably-coupled sections with terminal body-engaging means.

9. A clamp, having adjustably-coupled sections having independent body-engaging means.

10. A clamp having adjustably-coupled sections, one of which is provided with terminal means for engaging both bodies and a terminal engaging device on the other member for engaging the other body.

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758,115. **RAILWAY TIE AND FASTENING.** JOHN F. SMITH, Bolivar, W. Va., assignor of one-half to James G. Hurst, Harpers Ferry, W. Va. Filed Jan. 27, 1904. Serial No. 190,209. (No model.)



*Claim.*—1. In a railway-tie, the combination of a metal plate, rail-chairs secured to the ends of the metal plate, each comprising a bottom and side plates, the latter being cut away intermediate of their ends for reception of the rails and provided with corresponding openings to receive fastenings, a wooden plate supported by the metal plate and adapted to receive the rails, a pair of jaws or clamp members for each chair and arranged to receive the rails between them, keys to admit of adjustment and forcing of the jaws tight against opposite sides of the rail, and fastenings for securing said jaws or clamp members to the chairs when tightened, substantially as set forth.

2. In a railway-tie, the combination of a chair comprising side pieces cut away intermediate of their ends for reception of the rail and having corresponding openings to receive fastenings, a pair of jaws or clamp members for the chair, each having an outer or rear extension and vertical flanges and having a shoulder at the base of said outer extension, keys to engage over the outer extensions of the jaws and exert a pressure against the aforesaid shoulders to hold the jaws both from upward and outward displacement, and fastenings cooperating with the flanges of the jaws to secure them to the side pieces of the chair, substantially as set forth.

3. In a railway-tie, a metal plate, chairs comprising a bottom and side plates and embracing the end portions of the metal plate and secured thereto, the side plates of the chairs being cut away intermediate of their ends to receive the rails and provided with corresponding openings, jaws or clamp members fitted to the chairs, each comprising an outer or rear extension and vertical flanges, keys for forcing the jaws tight against opposite sides of the rails and securing them to the chairs against vertical and outward displacement, and fastenings passed through corresponding openings of the flanges of the jaws and the side plates of the chairs for securing the jaws in an adjusted position, substantially as set forth.

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758,116. **SUPERVISORY SIGNAL APPARATUS FOR TELEPHONE-SWITCHBOARDS.** EDWIN H. SMYTHE, Freeport, Ill., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 14, 1903. Serial No. 173,068. (No model.)



*Claim.*—1. The combination with a telephone-line and a substation-switch controlling its circuit, of a central-office relay having an armature responsive to said switch, a supervisory signal, a number of governing devices for said signal, each adapted to produce a distinctive indication thereof, and means controlled by the movements of said relay-armature for consecutively bringing the different governing devices into operative relation to said signal.

2. The combination with a telephone-line and a substation-switch controlling its circuit, of a link conductor and a central-office connection-switch for uniting the same with the line, a source of current, a relay in said link conductor having an armature responsive to the substation-switch during connection, a supervisory signal and a circuit therefor, commutators each adapted to modify the current through said supervisory signal to produce indications of distinct character, and step-by-step switching mechanism actuated in the consecutive movements of the supervisory-relay armature, adapted to bring said commutators one after another into operative relation to said signal.



3. The combination with a telephone-line and a substation-switch controlling its circuit, of a central-office supervisory relay and means for temporarily associating the same with the line to respond to said substation-switch, a visual supervisory signal, sources of current of different character adapted to produce distinctive indications of said signal, and step-by-step switching mechanism controlled by the consecutive responses of the supervisory relay adapted to bring said different sources of current one after another into operative relation to said signal, whereby distinct ringing, disconnect and recall signals are automatically given.

4. The combination with a telephone-line and a substation-switch controlling its circuit, a spring-jack for the line at the central office, a plug and plug-circuit for making connection therewith, a source of current, a relay in said plug-circuit adapted to respond to the substation-switch during connection, a signal, branch circuits in shunt of said signal, current-interrupters in a number of said branches, and electromagnetic switching mechanism made active in the closure of one branch for bringing another branch under the control of said supervisory relay.

5. The combination with a telephone-line and its substation-switch, of a central-office connecting-circuit adapted to be temporarily united therewith, means for signaling the substation, a central source of current, a supervisory relay associated with the connecting circuit and responsive to the substation-switch during a connection, a supervisory signal in a local circuit closed during a connection, a shunt of said supervisory signal, closed by said supervisory relay when excited, a relay *g* controlled by the initial excitement of said supervisory relay, and a second shunt, of different electrical character from the first, brought under the control of the supervisory relay in the response of the said relay *g* and adapted to be closed by said supervisory relay when the same is again inert, whereby the signal is caused to give distinctive indications at different stages in the operation of the system.

6. The combination with a telephone-line and its substation-switch, of a central-office connecting-circuit adapted to be temporarily united therewith, means for signaling the substation, a central-source of current, a supervisory relay in the connecting-circuit responsive to the substation-switch during connection, a supervisory signal in a local circuit closed during connection, a shunt of said supervisory signal closed at the front contact of said supervisory relay when the same is excited, a relay *g* controlled by the initial excitement of said supervisory relay, a second shunt containing an interrupter brought under the control of the back contact of said supervisory relay in the response of said relay *g*, a relay *i* in the last-mentioned shunt, and an alternative branch of the first-mentioned shunt containing a second interrupter, closed by said relay *i* when excited.

7. The combination with a telephone-line and a substation-switch controlling its circuit, of a supervisory signal, a number of governing devices for said signal, each adapted to produce a distinctive inclination thereof, and means controlled through the agency of said substation-switch for consecutively bringing the different governing devices into operative relation to said signal.

8. The combination with a telephone-line and a substation-switch controlling its circuit, of a link conductor and a central-office connection-switch for uniting the same with the line, a source of current, a relay in said link conductor having an armature responsive to the substation-switch, a supervisory signal and a circuit therefor, a shunt-circuit of the supervisory signal controlled by said armature, alternative branches of said shunt containing sources of current of different character adapted to produce distinctive indications of said signal, a relay arranged to close said branches alternatively as it is inert or excited, a circuit for said relay controlled in contacts of the aforesaid armature, a locking-circuit for said last-mentioned relay, an operator's supervisory key associated with the link conductor, and contacts of the supervisory key controlling said locking-circuit.

9. The combination with a telephone-line and its substation-switch, of a central-office connecting-circuit adapted to be temporarily united therewith, means for signaling the substation, a central source of current, a supervisory relay in the connecting-circuit responsive to the substation-switch during connection, a supervisory signal in a local circuit closed during connection, a shunt of said supervisory signal closed at the front contact of said supervisory relay when the same is excited, a relay *g* controlled by the initial excitement of said supervisory relay, a second shunt containing an interrupter brought under the control of the back contact of said supervisory relay in the response of said relay *g*, a relay *i* in the last-mentioned shunt, and an alternative branch of the first-mentioned shunt containing a second interrupter, closed by said relay *i* when excited, a locking-circuit for said relay *i*, an operator's supervisory key associated with the connecting-circuit, and contacts of said key controlling said locking-circuit.

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758,117. **STEREOSCOPIC APPARATUS.** HOMER C. SHOOK, Philadelphia, Pa. Filed June 22, 1903. Serial No. 162,594. (No model.)



*Claim.*—1. The combination in an X-ray stereoscopic apparatus, of two sources of radiation, a fluorescent screen, and a series of stops interposed between said screen and the source of radiation.

2. The combination in an X-ray stereoscopic apparatus, of two sources of radiation adjustable from and toward each other, a fluorescent screen, and a series of stops interposed between said screen and the source of radiation.

3. The combination in an X-ray stereoscopic apparatus, of two sources of radiation, a fluorescent screen and a screen of alternate transparent portions and portions impenetrable to the X-ray interposed between the source of radiation and the fluorescent screen and so adjusted as to give a stereoscopic effect by the parallax of binocular vision.

4. The combination in an X-ray stereoscopic apparatus, of two sources of radiation, a fluorescent screen and a series of stops interposed between such screen and the source of radiation, such stops being so arranged as to cut off from each image the rays which produce the opposite image.

5. The combination in an X-ray stereoscopic apparatus, of two sources of radiation, a fluorescent screen, and a screen formed of a series of wires of a substance impenetrable to the X-ray disposed so as to provide spaces of equal width between the same, such screen being interposed between the fluorescent screen and the source of radiation.

6. The combination in an X-ray stereoscopic apparatus, of two sources of radiation, a fluorescent screen, a series of stops disposed between said screen and the source of radiation, said stops serving to divide the images into a series of parallel lines, and means for viewing such images as they are displayed upon the fluorescent screen.

7. The combination in an X-ray stereoscopic apparatus, of two sources of radiation mounted so as to be movable toward and from each other, a portable stand or table for said sources of radiation, a fluorescent screen, a portable stand or table for the same, an adjustable screen comprising a series of stops carried by said table and interposed between the source of radiation and the fluorescent screen, and an adjustable viewing-screen comprising a series of stops also carried by said latter table.

8. The combination in an X-ray stereoscopic apparatus, of two sources of radiation comprising X-ray tubes, a mounting for said tubes whereby they may be moved toward and from each other simultaneously, a fluorescent screen, a series of stops interposed between said screen and the source of radiation, and a series of stops disposed between said screen and the point of vision so adjusted as to give a stereoscopic effect by the parallax of binocular vision.

9. The combination in an X-ray stereoscopic apparatus, of two X-ray tubes mounted so as to be adjustable from and toward each other, a fluorescent screen, a series of stops interposed between said screen and the source of radiation, means for adjusting said stops between those points, and an adjustable mounting for the fluorescent screen.

10. The combination in an X-ray stereoscopic apparatus, of two sources of radiation adjustable from and toward each other, a fluorescent screen adjustable from and toward the source of radiation, a series of stops interposed between the source of radiation and said screen and adjustable between the same, and a series of viewing-stops disposed beyond the screen and between the latter and the point of vision, said viewing-stops being adjustable from and toward the screen relatively to the adjustment of the stops interposed between the screen and the source of radiation, and serving to give a stereoscopic effect by the parallax of binocular vision.

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**758,118. SAND-BLAST. FRANCIS STICKEL, New York, N. Y. Filed May 29, 1903. Serial No. 159,364. (No model.)**



*Claim.*—1. In a sand-blast, a sand-receptacle, a pipe leading therefrom having a mixing-chamber, an air-supply leading to said receptacle and chamber, and means for controlling said supply whereby it may be directed only to the receptacle, or to the receptacle and such chamber.

2. In a sand-blast, a sand-receptacle, a pipe leading therefrom having a series of mixing-chambers, an air-supply leading to said receptacle and chambers, and means for controlling said supply whereby it may be directed only to the receptacle, to the receptacle and one of such chambers, or to the receptacle and all of such chambers.

3. In a sand-blast, a sand-receptacle, a pipe leading therefrom having two enlarged portions constituting mixing-chambers and a contracted portion intermediate such chambers, an air-supply having separate connections with said receptacle and each of said chambers, and means for controlling such supply.

4. In a sand-blast, a sand-receptacle, a pipe leading therefrom having two approximately horizontal portions and an intermediate vertical portion, the latter being enlarged at its ends to form mixing-chambers, an air-supply having branches leading to said receptacle and chambers, one of such latter branches having a nozzle vertically disposed in the plane of the vertical portion of said pipe and extending into the upper chamber thereof, and the other of such branches having a nozzle horizontally disposed in the plane of the lower horizontal portion of said pipe and extending into the lower chamber, and means for controlling such air-supply.

5. In a sand-blast, a sand-receptacle, a discharge-pipe leading therefrom having a series of mixing-chambers, an air-supply pipe having branches leading respectively to the receptacle and such chambers, and a cock in said supply-pipe having ports designed respectively to register with the branches leading to the receptacle and chambers, the relative arrangement of said ports permitting communication to be established with the receptacle alone, with the receptacle and one of said chambers, or with the receptacle and all of said chambers.

6. In a sand-blast, a sand-receptacle having an outlet, a discharge-pipe secured to said receptacle in alinement with said outlet, a valve within said receptacle designed to regulate said outlet, said valve having a passage, a tubular rod to which said valve is secured, means for adjusting said rod, and means for supplying air thereto.

7. In a sand-blast, a sand-receptacle having an outlet, a discharge-pipe secured to said receptacle, and a valve within said receptacle designed to project into said pipe, said valve having an air-passage, means for conducting air to said passage, and means for regulating said valve.

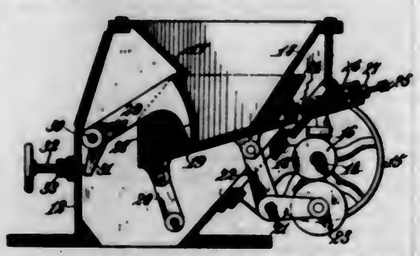
8. In a sand-blast, a sand-receptacle having an outlet, a discharge-pipe secured to said receptacle and having its adjacent end flared, a valve within said receptacle of approximately conical formation designed to project into said pipe, said valve having a central passage, an adjustable tubular rod within said receptacle secured to said valve and having its passage in alinement with the passage in the latter, said rod having inlet and outlet ports, means for adjusting said rod, and means for supplying fluid-pressure thereto.

9. In a sand-blast, a sand-receptacle having an outlet in its bottom and a chamber on its top, a vertically-movable tubular rod extending through said receptacle and chamber having a valve at its lower end designed to regulate said outlet, said valve having a passage-way, said rod being provided with an inlet-port at a point within said chamber, and outlet-ports at a point within said receptacle above the normal level of sand therein, means for raising and lowering said rod, and means for supplying fluid-pressure thereto.

10. In a sand-blast, the combination with the sand-receptacle having an outlet, a discharge-pipe leading therefrom, said pipe having enlarged portions forming mixing-chambers, and a tubular rod having inlet and outlet ports and carrying a valve designed to extend into said pipe and regulate said outlet, said valve having a passage-way, of a pressure-supply pipe having three branches leading respectively to said tubular rod and to said chambers, the nozzles of the branches leading to the chambers being extended into the latter, and a cock in said supply-pipe having ports designed respectively to register with said branches, whereby a partial turn will supply air to said rod, a further turn supply air to one of said chambers, and a still further turn supply air to the other of said chambers, the previously-created supplies being maintained during the establishment of communication with each of said chambers.

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**758,119. MECHANICAL FEEDING DEVICE. THOMAS L. STURTEVANT, Quincy, and THOMAS J. STURTEVANT, Wellesley, Mass. Filed Jan. 9, 1904. Serial No. 188,200. (No model.)**



*Claim.*—1. In a feeding device, the combination with an inclosing casing adapted to serve as a hopper, of a rotating shaft mounted on said casing and provided with a driving-pulley and an eccentric, a swinging pan or chute below the hopper portion of said casing, a link, 20, movably supporting one end of said pan or chute, a bell-crank rocker, 21, the upper arm of which is pivotally connected with said pan or chute and the lower arm of which is provided with a roller 23, a driving-shaft 14 provided with an eccentric 13, and a spring 24 acting on said pan or chute and serving to hold said roller in contact with said eccentric.

2. In a feeding device, the combination with an inclosing casing adapted to serve as a hopper, of a rotating shaft mounted on said casing and provided with a driving-pulley and an eccentric, a swinging pan or chute below the hopper portion of said casing, a link, 20, movably supporting one end of said pan or chute, a bell-crank rocker, 21, the upper arm of which is pivotally connected with said pan or chute and the lower arm of which is provided with a roller 23, a driving-shaft 14 provided with an eccentric 12, a spring 24 acting on said pan or chute and serving to hold said roller in contact with said eccentric, and an adjustable feed-gate for regulating the output of the said feeding device.

3. The combination with the casing 12 the upper portion of which is adapted to serve as a hopper, of a swinging pan or chute mounted in the said casing below the hopper portion thereof, a link by which one end of the said pan or chute is supported, a bell-crank rocker, 21, the upper arm of which is pivotally connected with said pan or chute and the lower arm of which is provided with a roller, 23, a driving-shaft provided with an eccentric and a spring bearing against one end of said pan or chute and serving to hold said roller against said eccentric, and means for regulating the stress of said spring.

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**758,120. SWITCH. HENRY TRUMBULL, Plainville, Conn., assignor to the Trumbull Electric Company, Plainville Conn., a Corporation of Connecticut. Filed July 18, 1903. Serial No. 166,208. (No model.)**



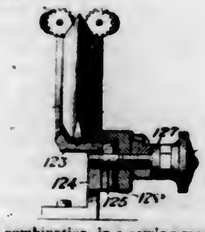
*Claim.*—1. A contact for switches comprising a binding-post section and a blade-engaging section formed from a single piece of material bent to shape, an insulating-base and screw for securing said binding-post section to the base and a nut arranged within the side walls of the binding-post section and adapted to be engaged by the screw, said nut having an extended lug upturned to form a stop.

2. In a switch-contact comprising a binding-post section and a blade-engaging section formed of a single piece of material bent to shape, an insulating-base, a screw for securing said binding-post section to the base and a nut cooperating with said screw and arranged between the side walls of the binding-post section and having an upturned lug forming a stop, said nut formed of a different material from that of the binding-post.

3. The combination of an insulating-base, a switch-contact including a binding-post section and a switch-blade section adapted to be engaged by the switch-blade, the two sections formed of a single piece of material bent to shape, the switch-blade section including inwardly and downwardly turned portions, a screw for securing said contact to said base, a nut to cooperate with the screw and having an upturned lug forming a step between the walls of the contact.

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**758,121. THREAD-HOLDING MECHANISM FOR SEWING-MACHINES. JOHN H. URSBACK and JOSEPH B. URSBACK, Philadelphia, Pa., assignors of one-half to John A. Hunter and Mary A. Hunter, Philadelphia, Pa. Original application filed Aug. 6, 1900, Serial No. 26,071. Divided and this application filed Dec. 6, 1902. Serial No. 134,090. (No model.)**



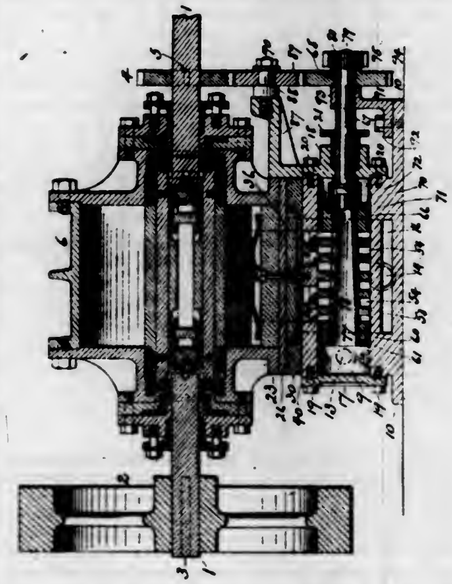
*Claim.*—1. The combination, in a sewing-machine, of a case or holder for containing the under-thread bobbin, a pair of parallel fixed rings forming a cage or holder for the bobbin-case, said parts being so arranged relatively as to permit the free passage around the bobbin-case of the loop of the thread, with means to support the bobbin-case centrally therein consisting of a rotatable disk between each ring and the bobbin-case; substantially as described.

2. The combination in a sewing-machine, of a case for containing the under-thread bobbin, a retaining cage or holder for said bobbin-case free from contact with the latter, an antifriction-roller serving to support the base of the bobbin-case, said cage being provided with a toothed and rotating element engaging with the upper portion of the bobbin-case, whereby the bobbin-case is held within its retaining cage or holder, free from both lateral and longitudinal movement, and without interference with the drawing of the loop of needle-thread around the same; substantially as described.

3. The combination in a sewing-machine, of a case for containing the under-thread bobbin, a retaining cage or holder for said case free from contact with the same but provided with toothed and rotating disks engaging with recesses at the upper portion of the bobbin-case, means to vertically support the base of the bobbin-case, without appreciable friction, within the cage or holder; and means to adjustably and removably support the cage or holder from the fixed frame of the machine.

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**758,122. CUT-OFF VALVE FOR STEAM-ENGINES. FRANK J. WATERS, Providence, R. I., assignor of two-thirds to Willis A. Drew, Frank E. Farnham, Arthur C. Farnham, and Alfred Harrison, Providence, R. I., James Cox, Cranston, R. I., and Henry J. Page, Warwick, R. I. Filed Sept. 10, 1903. Serial No. 172,644. (No model.)**



*Claim.*—1. In a steam-engine, the combination of a rotary valve having a bore and provided with ports through its side which are diagonally arranged, and a cut-off valve rotatably mounted in the bore of the rotary valve and having ports through its side which are diagonally arranged in a direction angular to the ports of the rotary valve but capable of progressive partial registration with the ports of the rotary valve, substantially as described.

2. In a steam-engine, the combination with a steam-chest having a tubular valve-seat, of the rotary valve 53 therein having discharging-ports 54, the tubular valve-stem 67, the chamber 69, having the flanges 70, 71, the annular internally-beveled shoulder 72 and the ports 73, the tapering cut-off valve 76 rotatably mounted in a tapering bore of the rotary valve, the flange 83 having the ports 86, the head 84 having the square aperture 85 through which the squared inner end of the valve-stem 79 passes, and the collar 81 having the beveled edge 82, all arranged and operating substantially as shown and for the purpose specified.

3. In a steam-engine, the combination of a tubular cut-off valve having one longitudinal port extending ninety degrees of the circumference of said valve, a rotary valve wherein said cut-off

valve is rotatably mounted and having two diametrically opposite longitudinal ports each extending ninety degrees of the circumference of said rotary valve, a tubular valve-seat wherein said rotary valve is rotatably mounted and having one longitudinal port extending ninety degrees of the circumference of said valve-seat, means adapted to rotate said rotary valve, and other means adapted to oscillate said cut-off valve, substantially as specified.

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758,123. **SAFETY-HARNESS FOR CHILDREN.** AUGUST WEIS, Karlsruhe, Germany, assignor to Frank Ulsamer, Gallipolis, Ohio. Filed July 29, 1902. Serial No. 117,483. (No model.)



*Claim.*—A safety-harness comprising a body-encircling band engaging the body in front beneath the armpits and in rear across the shoulders below the neck, shoulder-straps approximately parallel to each other attached to the upper edge of said band, the rear ends of said straps being attached at no great distance from the ends of the body-band which are connected across the back of the wearer and the front ends of said shoulder-straps being suitably spaced from each other and connected with the body-band below the armpits of the wearer, and securing-straps attached obliquely to the lower edge of the body-band intermediately between the front and rear ends of the shoulder-straps and exercising, when applied, a downward strain in a rearward direction upon the front portion of the harness.

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758,124. **HARNESS-HOOK.** BENJAMIN H. WILSON, Bethany, Mo. Filed Feb. 21, 1903. Serial No. 144,512. (No model.)



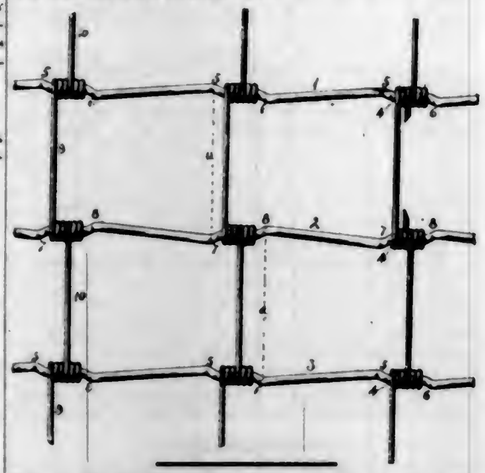
*Claim.*—In a harness-hook of the class described, an approximately circular hook, elliptical in cross-section and provided with ends spaced apart and beveled upon their inner sides, in combination with a disk seated in said hook and having a convex edge, thin plates adjacent to the sides of said disk and terminating peripherally within the perimeter of the hook, and means connecting said plates with the central disk, the latter and the plates adjacent thereto combining to form a rotary member which is provided with a recess having outwardly-curved end walls presenting an inlet of greater extent than the inlet-opening of the hook proper and combining with the beveled ends of said hook to facilitate the insertion of the check-strap.

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758,125. **WIRE FENCING.** CHARLES B. BAUMGARTNER, Chicago, Ill. Filed June 26, 1903. Serial No. 163,193. (No model.)

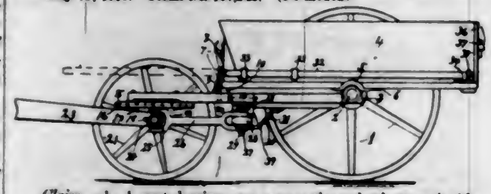
*Claim.*—1. A wire fencing composed of horizontal wires, each having two offsets in sections leaving short lengthwise sections, the two offsets extending at substantially the same angle from the short sections, and the offsets of each alternate horizontal wire extending oppositely to the offsets in the horizontal wires above and below it, and stay-wires connecting the short sections of the horizontal wires.

2. In a wire fence, a plurality of horizontal strand-wires, seats formed in said strand-wires, guards projecting in opposite directions from opposite ends of the seats, the guard at one end of each seat projecting upwardly and the guard at the other end of the seat projecting downwardly, both guards extending in parallel diagonal planes, and stay-wires coming from opposite directions, meeting in said seats and coiled around the seats.



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758,126. **CART.** HENRY A. BIENNOFF, St. Paul, Minn. Filed July 30, 1903. Serial No. 167,546. (No model.)



*Claim.*—1. A cart having one supporting-wheel at each side and one supporting-wheel in the front part of the framework, a whiffletree pivoted to the framework rearward of the front wheel, rods or links connecting the ends of the whiffletree with the ends of the axle of the front wheel, shafts or thills also connected with the front axle and segmental intermeshing guides secured on the framework and on the axle at both sides of the front wheel.

2. A dumping-cart having its box hinged on its main axle and being heaviest in front of the hinging-point, and a sliding bar carried in guiding-keepers upon the side of the box in such a manner that it may be extended beyond one end of the box and used as a lever in dumping the load and means to prevent accidental sliding of the bar when not in use.

3. A dumping-cart having its box hinged to the main axle, and the guiding-irons 5 fitting the upper rounding of the skeins when the box is in its normal position.

4. In a cart of the class described, the combination with a pair of carrier-wheels and an axle in same, of a pair of hounds extending forward from said axle and having secured to their front end dovetailed segmental plates 15, segmental bearings 17 fitting in the dovetailing, an axle secured in the bearings, a single supporting-wheel journaled upon the axle between the hounds, suitable means for hitching a horse to the front axle, a cross-bar between the hounds, braces 12 in rear thereof, a whiffletree pivoted to the cross-bar, and rods connecting its ends with the ends of the front axle.

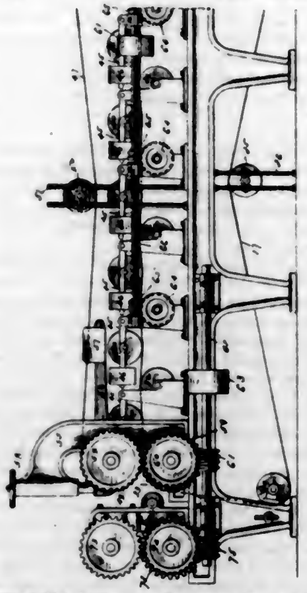
5. In a cart of the class described, the combination with a pair of carrier-wheels and an axle in same, of a pair of hounds extending forward from said axle and having secured to their front ends dovetailed segmental plates 15, segmental bearings 17 fitting in the dovetailing, an axle secured in the bearings, a single supporting-wheel journaled upon the axle between the hounds, suitable means for hitching a horse to the front axle, a cross-bar between the hounds, braces 12 in rear thereof, a whiffletree pivoted to the cross-bar, and rods connecting its ends with the ends of the front axle, and the brace 31 connecting the king-bolt of the whiffletree with the crossing of the braces 12, substantially as and for the purpose set forth.

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758,127. **PAPER-MACHINE.** ALFRED W. CASE and LAWRENCE W. CASE, Highland Park, Conn. Filed Aug. 18, 1903. Serial No. 169,908. (No model.)



*Claim.*—1. A paper-machine having traveling aprons, feed-rolls for moving the aprons, bed-rolls for supporting the aprons, squeeze-rolls bearing down upon the aprons between bed-rolls, press-rolls bearing down upon the aprons between bed-rolls, and weighted levers for forcing down the press-rolls, substantially as specified.



2. A paper-machine having traveling aprons, feed-rolls for moving the aprons, bed-rolls for supporting the aprons, squeeze-rolls bearing down upon the aprons between bed-rolls, press-rolls bearing down upon the aprons between bed-rolls, levers for forcing down the press-rolls, and weights arranged to increase the force of the levers toward the feed-rolls, substantially as specified.

3. A paper-machine having a perforated forming-table, an oscillating platen above the forming-table, traveling aprons, feed-rolls for moving the aprons, bed-rolls for supporting the aprons, squeeze-rolls bearing down upon the aprons between bed-rolls, press-rolls bearing down upon the aprons between bed-rolls, and weighted levers for forcing down the press-rolls, substantially as specified.

4. A paper-machine having a perforated forming-table, a forming-frame loosely resting upon the forming-table, an oscillating platen located in the frame and above the forming-table, traveling aprons, one of which passes between the platen and the forming-table, feed-rolls for moving the aprons, bed-rolls for supporting the aprons, squeeze-rolls bearing down upon the aprons between bed rolls, press-rolls bearing down upon the aprons between bed-rolls, and weighted levers for forcing down the press-rolls, substantially as specified.

5. A paper-machine having a perforated forming-table, adjustable wedges supporting the forming-table, an oscillating platen above the forming-table, traveling aprons one of which passes between the platen and the forming-table, feed-rolls for moving the aprons, bed-rolls for supporting the aprons, squeeze-rolls bearing down upon the aprons between bed-rolls, press-rolls bearing down upon the aprons between bed-rolls, and weighted levers for forcing down the press-rolls, substantially as specified.

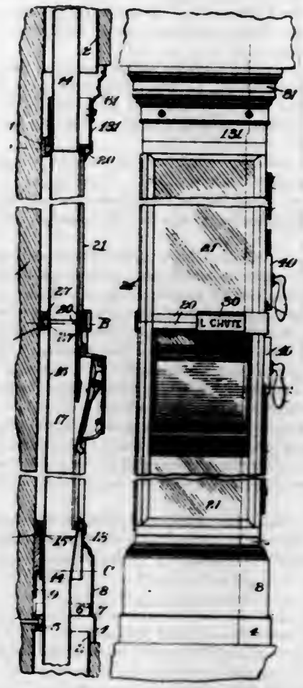
6. A paper-machine having a perforated forming-table, a forming-frame resting upon the table, an oscillating platen above the table, traveling aprons, one of which passes between the platen and the forming-table, feed-rolls for moving the aprons, and bed-rolls for supporting the aprons, substantially as specified.

7. A paper-machine having a perforated forming-table, a forming-frame resting upon the forming-table, means for adjusting the height of the forming-table, an endless apron traveling over the forming-table, a platen movable above the forming-table in the forming-frame, bars hinging the platen to a supporting-frame, a rocker-shaft with rocker-arms connected with the platen and a rocker-arm connected with a crank, feed-rolls for moving the apron, and bed-rolls for supporting the apron, substantially as specified.

8. A paper-machine having traveling aprons, feed-rolls for moving the aprons, bed-rolls for supporting the aprons, squeeze-rolls bearing down upon the aprons between bed-rolls, press-rolls bearing down upon the aprons between bed-rolls, weighted levers for forcing down the press-rolls, and cutter-cylinders, one of which has a cutting-blade and the other a cutting-bed, substantially as specified.

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758,128. **MAIL-CHUTE.** JOSEPH W. CUELER, Rochester, N. Y. Filed Sept. 14, 1903. Serial No. 173,070. (No model.)




*Claim.*—1. A mail-chute embodying a plurality of superposed tubular sections, and having a laterally-movable panel at one side.

2. A mail-chute embodying a plurality of superposed tubular sections and having a hinged panel for admitting access to the interior of the chute.

3. A mail-chute embodying a plurality of superposed tubular sections and having an independently-movable panel to permit access to the interior of the chute without removing adjacent chute-sections.

4. A mail-chute having an opening at one side to permit access to the interior thereof and a removable panel for closing the opening, the joint between the meeting edges of the panel and the chute opening toward the outer sides of the chute.

5. A mail-chute having an opening at one side to permit access to the interior thereof and a removable panel for closing the opening having portions projecting inwardly beyond the meeting edges of the panel and walls of the chute.

6. A mail-chute having an opening at one side to permit access to the interior thereof and a removable panel for closing the opening, the meeting edges of the panel and walls of the chute being removed from the corners of the chute and said panel having projecting portions extending inwardly beyond said meeting edges to prevent lodgment of mail-matter therein.

7. A mail-chute having an opening at one side to permit access to the interior thereof and a removable panel for closing the opening, the sides of said panel projecting inwardly beyond the adjacent walls of the chute.

8. A mail-chute having an opening at one side narrower than the chute to permit access to the interior thereof and a removable panel for closing the opening having its edges extending inwardly beyond the adjacent walls of the chute.

9. A mail-chute embodying a channel or body portion substantially rectangular in cross-section having an opening extending lengthwise thereof, and a door or panel hinged at one side of the

channel and devices for securing it, the joints at the edges of the panel being removed from the salient angles or corners of the section.

10. A mail-chute embodying the channel or body portion, open at the front and the metal frame hinged at the side of the opening embodying the inwardly-extending flanges and the glass panel secured between them and constituting a closure for said opening.

11. A mail-chute embodying the channel or body portion open at the front and having the flanges at the sides thereof and the metal door-frame hinged at the side of the opening embodying the inwardly-extending flanges, and the glass panel secured by the flanges in the frame, and held by them with its inner surface in substantially the plane of the flanges at the sides of the front opening in the channel.

12. A mail-chute embodying the channel or body portion open at one side and having the reinforcing-strips at the ends in combination with a door or panel hinged at the side of the opening and arranged to cover the latter and securing devices for the free edge of the door.

13. A mail-chute embodying the channel or body open at one side in combination with a door or closure hinged near the edge of said opening embodying the connected sheet-metal side pieces having inwardly-extending flanges and glass panel secured between said flanges.

14. A mail-chute embodying the channel or body open at one side having the flanges at the edges of said opening in combination with a door or closure embodying the side frames each provided with parallel flanges, and the glass panel secured between them, a portion of the door-frame extending between the flanges on the body.

15. A mail-chute embodying the channel or body open at one side, in combination with the hinged door or closure for the open side extending between the walls of the channel and serving to prevent the inward movement of the latter.

16. A mail-chute embodying a channel or body portion of sheet metal having the opening therein and the inwardly-extending flanges at the sides thereof, a frame hinged at one side of the opening having the glass panel therein and securing devices for the free edge of the frame.

17. A mail-chute embodying a plurality of superposed tubular sections open at one side and each provided with the panel hinged at the edge of the opening and locking devices for the free edge of said panel.

18. A mail-chute embodying a plurality of superposed tubular sections open at the side and each provided with the panel hinged at the edge of the opening and a plurality of locking devices for the free edge of the panel connected for simultaneous operation.

19. A mail-chute embodying a channel or body portion open at one side and having the inwardly-extending flanges at the sides of said opening and the removable panel for closing said opening and a plurality of locking devices for securing it.

20. A mail-chute embodying a channel or body portion open at one side and having the inwardly-extending flanges at the sides of said opening in combination with a removable panel for closing the opening hinged at one side thereof, and a plurality of locking devices for the free edge of said panel.

21. A mail-chute embodying the channel or body portion open at one side, and a door or closure hinged thereto and adapted to close said opening, in combination with a locking device for the door embodying a plurality of relatively movable engaging projections arranged on the door and body portion, respectively, the movable projections being connected for simultaneous operation.

22. A mail-chute having the opening at one side and a hinged door or closure therefor, in combination with a securing device for the door embodying relatively movable engaging members, means for retaining one of the members out of engaging position when the door is open and causing the automatic engagement of the parts when the door is closed.

23. A mail-chute having the opening at one side and a hinged door or closure therefor, in combination with a securing device for the door embodying a plurality of movable parts for securing the free edge of the door connected for simultaneous operation, means for retaining said parts out of engaging position and means, operating when the door is closed, to release said retaining device.

24. A mail-chute having the opening at one side, and a hinged door or closure therefor, in combination with a securing device for the door embodying a plurality of hook members connected for simultaneous operation, means for preventing the movement of said members to locked position and means for releasing said preventing means when the door is closed.

25. A mail-chute having the opening at one side and a hinged door or closure therefor, in combination with a securing device for the door embodying a plurality of projections, and a plurality of co-operating relatively movable plates having portions inclined relatively to the plane of movement of the projections and means for retaining the projections and plates out of locking position and means for restoring the parts to locking position when the door is closed.

26. A mail-chute having the opening at one side and a hinged door or closure therefor, in combination with a securing device for the door embodying a projection and a relatively movable locking member automatically movable to locking position and an automatic retaining device for holding the locking member out of engagement, with which the door cooperates when closed to release said member.

27. A mail-chute having an opening at one side and a hinged door or closure therefor, in combination with a door-securing device embodying a plurality of relatively movable engaging portions, connections between the movable portions for causing their simultaneous operation, and a key-lock for controlling the movement of the engaging portions.

28. A mail-chute having an opening at one side and a hinged door or closure therefor, in combination with a securing device for the door embodying the relatively movable cooperating portions on the door and chute, the bar connecting the movable parts, the pivoted disk connected therewith having the cut-away portion, the pivoted locking-disk having the cut-away portion and a removable key for operating the latter.

29. A mail-chute having an opening at one side and a hinged door or closure therefor, in combination with securing devices for the door embodying cooperating projections and a pivoted disk having a cut-away portion, a lock embodying a pivoted disk having cut-away portions cooperating with the former, and controlling its movement and a removable key for operating the last-mentioned disk.

30. A mail-chute having an opening at one side to permit access to the interior and a door or closure therefor, in combination with a securing device for the door embodying a movable member, a locking device therefor and a key for the locking device and detachable therefrom only when the locking device is in position to hold the movable member of the securing device in engaging position.

31. A mail-chute having an opening at one side to permit access to the interior and a door or closure therefor, in combination with a securing device for the door embodying an automatically-movable member, a catch for holding it out of engaging position adapted to be released by the door, a locking device for the member and a key for the locking device and detachable therefrom only when the locking device is in position to hold the movable member in engaging position.

32. A mail-chute having an opening at one side to permit access to the interior and a door or closure therefor, in combination with a securing device for the door embodying the movable member, securing devices for the movable member embodying relatively movable plates having the cooperating surfaces to permit their successive operation and a key for operating one of said plates and stops cooperating therewith to prevent the removal of the key when the movable member is in unlocked position.

33. A mail-chute having an opening to permit access to the interior thereof, and a door or closure therefor, in combination with securing devices for the door embodying a movable member, securing devices for the movable member consisting of two pivoted disks each having concentric and cut-away portions, a removable key for actuating one of said members and guards with which said key cooperates to prevent its removal excepting in one position.

34. A mail-chute having an opening to permit access to the interior thereof and a door or closure therefor, in combination with the locking-bar adapted to engage the door, the pivoted disk connected thereto having the cut-away portion, the locking-disk having the cut-away portion and adapted to cooperate with the first-mentioned one, the removable key for actuating the locking-disk and the guards for preventing the removal of the key save in one position.

35. A mail-chute embodying the channel or body portion having the headed projections thereon and the supporting-brackets having the undercut recesses with which said projections are adapted to engage.

36. A mail-chute embodying two superposed sections each having at their proximate ends laterally-extending headed projections in combination with a support provided with undercut recesses, into which the projections on the sections extend.

37. In a mail-chute, the combination with a lower chute-section and an upper chute-section resting thereon each having headed projections located near their proximate ends, of a support for the sections having the undercut recesses therein into which said projections extend to secure the chute-sections in position.

38. In a mail-chute, the combination with a lower chute-section and an upper chute-section resting thereon each having the headed projections located near their proximate ends, of a holding-bracket provided with undercut recesses in which the projections extend to secure the chute-sections in position.

39. In a mail-chute, the combination with the superposed chute-sections, of a holding-bracket and cooperating headed projections and undercut recesses between the adjacent ends of the chute-sections and the bracket.

40. In a mail-chute, the combination of a lower chute-section and an upper chute-section resting upon the latter, and guides arranged between the two sections for securing their alinement and permitting the removal of the upper section.

41. In a mail-chute, the combination of a support, a lower chute-section, an upper chute-section resting upon the latter and detachable guiding connections between the sections and the support permitting vertical movement of the sections independent of the support.

42. In a mail-chute, the combination with two sheet-metal chute-sections each having the reinforcing-strips at their proximate ends provided with the headed projections, of the stationary bracket having undercut grooves for receiving the projections on the strips and holding the sections in position.

43. In a mail-chute, the combination with a plurality of separable superposed tubular sections, of stationary brackets located at the adjacent ends of the sections and separable connections between the sections and brackets embodying headed projections and undercut recesses permitting the movement of the sections relative to the brackets in a vertical direction only.

44. In a mail-chute, the combination with a plurality of separable superposed tubular sections, having the laterally-extended headed projections at opposite ends, of the stationary brackets located at the adjacent ends of the sections having undercut grooves open at their upper ends with which the projections cooperate.

45. In a mail-chute, the combination with a tubular chute-section, of a bracket supporting said section, a tubular floor-section also supported on the bracket having a depending extending apron or flange and a molding-section adjustable vertically upon the apron.

46. In a mail-chute, the combination with a tubular chute-section, of a bracket with which its lower end engages, a tubular floor-section engaging the bracket, a molding-section adjustable vertically thereon and vertically-extending projections and flanges between the molding-section and bracket for preventing forward movement of the former.

47. In a mail-chute, the combination with a tubular chute-section, of a bracket with which its lower end engages, a tubular floor-section engaging the bracket, a molding-section vertically adjustable on the floor-section and a base-section supporting the latter.

48. In a mail-chute, the combination with a tubular chute-section, of a bracket with which its lower end engages, a tubular floor-section engaging the bracket, a molding-section vertically adjustable upon the floor-section and engaging the bracket to prevent forward movement and a base-section supporting the latter.

49. In a mail-chute, the combination with the bracket and a floor-section engaged therewith, of a molding-section extending over the floor-section and having flanges engaging the bracket and vertically adjustable relatively thereto.

50. In a mail-chute, the combination with a floor-section, and a bracket with which it engages having the projections, of the vertically-adjustable molding-section having flanges engaging the projections on the bracket.

51. In a mail-chute, the combination with the chute-section, a floor-section, a bracket with which both sections engage and having lateral extensions, of a molding-section having extensions engaging the bracket and vertically adjustable thereon and over the floor-section.

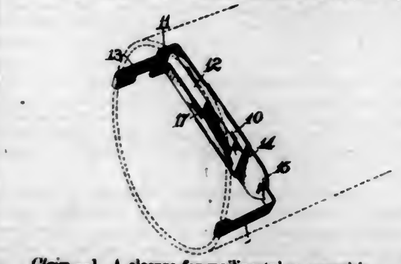
52. In a mail-chute, the combination with the bracket having the recesses and the extensions thereon, of a floor-section having projections engaging the bracket and the apron, the molding-section engaging the apron and projections engaging the bracket and a base-section with which the lower end of the molding engages.

53. In a mail-chute, the combination with a tubular chute-section, a bracket with which its end engages and a section embodying a vertically-extending flange engaged with said bracket and larger than the chute proper and a molding-section vertically adjustable upon said flange to finish the upper and lower ends of the chute between floors.

54. A mail-chute embodying a tubular conduit having mail-receiving apertures at different levels and a mail-receptacle at the lower end and a removable panel for permitting access to the interior of the chute.



## 758,129. CLOSURE FOR MAILING-TUBES. HARRY DEL MAR, New York, N. Y. Filed Aug. 8, 1903. Serial No. 168,440. (No model.)



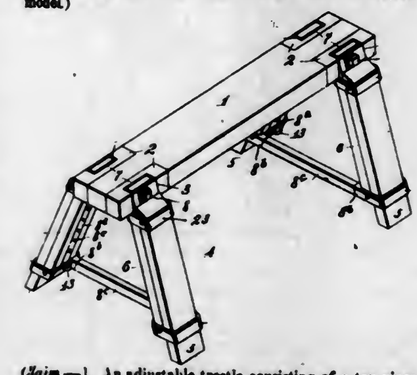

*Claim.*—1. A closure for mailing-tubes comprising a plurality of members slidable in relation to each other, means for guiding the sliding parts, and flexible tongues produced on the opposed ends of the members and adapted to be thrust through the sides of the mailing-tubes and folded over upon the tube.

2. A closure for mailing-tubes comprising a plurality of members extensible longitudinally in relation to each other, means for guiding the members, lips on the outer ends of the device adapted to abut with the walls of the mailing-tube, and flexible tongues produced on the end portions of the device and arranged to extend through the walls of the mailing-tube and be bent over upon the same.

3. A mailing-tube closure comprising a body portion, transverse arms on the body portion, said body portion being bent to form a channel, members arranged to slide in the channel in the body portion, and means for securing the ends of the members to a mailing-tube.

4. A mailing-tube closure comprising a circular body portion, said body portion being bent to form a diametrically-arranged channel, members arranged to slide in said channel, and means for securing the sliding members to the walls of a mailing-tube.

## 758,180. ADJUSTABLE TRESTLE. WILLIAM A. DRUMMOND, near Camargo, Okla. Filed June 9, 1903. Serial No. 160,684. (No model.)



*Claim.*—1. An adjustable trestle consisting of a top piece, rectangular castings mortised in the corners of the top piece and provided with recesses, supporting-legs consisting of stationary members and adjustable members suitably secured to the stationary members, metallic boxings surrounding the upper ends of the stationary members and adapted to fit into the recesses of the rectangular castings, and transverse bolts for securing the upper ends of the stationary members in the recesses of the castings.

2. An adjustable trestle consisting of a top piece, castings mortised in the corners of the top piece and provided with recesses, supporting-legs consisting of stationary members and adjustable members suitably secured to the stationary members, rectangular boxings surrounding the upper ends of the stationary members and adapted to fit into the recesses of the rectangular castings, suitable means for securing the stationary members in the recesses of the castings, loops secured to the lower ends of the stationary members and sur-

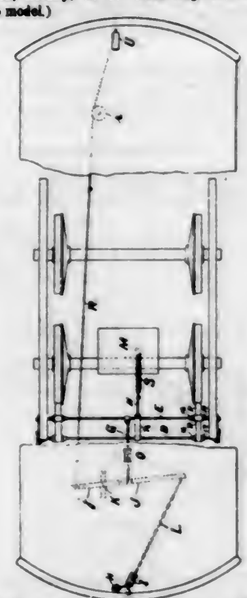
rounding the adjustable members, and loops secured to the upper ends of the adjustable members and embracing the stationary members, substantially as described.

3. An adjustable trestle consisting of a top piece, supporting-legs consisting of stationary members and adjustable members, the latter being provided with a series of slots, plates secured to the lower ends of the stationary members and provided with rectangular apertures and communicating concave recesses, loops secured to the lower ends of the stationary members and embracing the adjustable members, transverse locking-pins arranged in the loops, rectangular heads formed integral with the inner ends of the locking-pins and having upper rounded corners, collars formed integral with the heads and having convex sides adapted to fit in the concave recesses in the plates, expansion-springs for normally holding the heads in engagement with the slots in the adjustable members, and handles formed integral with the outer ends of the locking-pins, substantially as described.

4. A trestle consisting of a top piece, supporting-legs consisting of stationary members and adjustable members, slotted plates secured to the inner sides of the stationary members, loops secured to the adjustable members and embracing the stationary members, set-screws arranged in said loops and adapted to engage the slots in the plates secured to the stationary members, slotted plates secured to the inner sides of the adjustable members, loops secured to the lower ends of the stationary members and embracing the adjustable members, locking-pins adapted to automatically engage the slots in the plates secured to the inner sides of the adjustable members, sockets formed integral with the last-mentioned loops, braces secured at their opposite ends in said sockets, and pins extending from the inner sides of the adjustable members, substantially as described.

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**758,131. EMERGENCY-BRAKE FOR STREET-RAILWAY CARS.** PATRICK FLOOD, Albany, N. Y. Filed Aug. 27, 1903. Serial No. 170,936. (No model.)



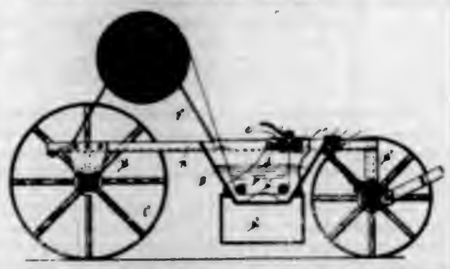
*Claim.*—1. In an emergency-brake for street-railway cars a car body and truck; a brake-shoe; a brake-arm in the form of a bell-crank lever secured thereto; a rod having a squared end engaging with a squared opening in swinging links on which rod said brake-arm is mounted; means for supporting said swinging links from the car-truck; a lever; a chain connecting said rod with said lever; a means for operating said lever from each end of the car, respectively; a spring connecting said rod with a support on the truck, substantially as described.

2. In an emergency-brake for street-railway cars; a car body and truck; a brake-shoe; a brake-arm in the form of a bell-crank lever secured thereto; two rods upon which said brake-arm is mounted; swinging links supporting said rods; a yoke connected to one of said rods; a block carrying a chain mounted on said yoke; a lever to which said chain is connected; a means for operating said lever from either end of the car; a spring mounted on the car-truck and attached to one of said rods, all substantially as described.

3. In an emergency-brake; a car body and truck, a brake-shoe; a brake-arm in the form of a bell-crank lever; a swinging frame supporting said arm; a pulley secured to the truck-frame; a chain passing over said pulley and around a sprocket on the end of a brake-rod; chains connecting said swinging frame with said first-mentioned chain; so arranged and connected up that by the operation of said brake-rod contact may be made or broken between the brake-shoe and the car-wheel.

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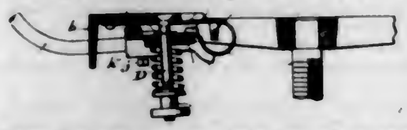
**758,132. MACHINE FOR SATURATING INSULATING MATERIAL.** GUY M. GEST, Cincinnati, Ohio. Filed Mar. 16, 1903. Renewed Mar. 21, 1904. Serial No. 199,189. (No model.)



*Claim.*—In a machine for saturating insulating material, a vehicle-frame, a tar saturating-tank on the front end, the frame being skeleton form in the rear thereof, V-shaped frame above the skeleton frame, a supply-roll interchangeably located in the apex of said V-frame, a fire-box suspended under said tar-tank, a removable frame in the tar-tank, saturating-rolls journaled in the lower part and delivery-rolls in the upper part of said detachable frame, substantially as specified.

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**758,133. SPRING-BACK CHAIR.** JOHN GILSON, Port Washington, Wis., assignor to Gilson Manufacturing Company, Port Washington, Wis. Filed Feb. 20, 1904. Serial No. 194,475. (No model.)



*Claim.*—1. A chair-seat attachment, a recurved spring-metal strap supported by the attachment, a chair-back-supporting plate hung on the under stretch of the strap, a bolt extending through said attachment, strap and plate; a plate-opposing spring, and a nut adjustable on the bolt to regulate tension of the spring.

2. A chair-seat attachment, a recurved spring-metal strap supported by the attachment, the bend of the strap being partly below the under stretch of same, a chair-back-supporting plate hung on the under stretch of the strap and extended parallel to the bend aforesaid, a bolt extending through said attachment, strap and plate; a plate-opposing spring, and a nut adjustable on the bolt to regulate tension of the spring.

3. A chair-seat attachment, a recurved spring-metal strap supported by the attachment, the bend of the strap being partly below the under stretch of same, a chair-back-supporting plate hung in connection with said under stretch of the strap and extended parallel to the bend aforesaid, strap-opposing lugs on the plate, a bolt extending through said attachment, strap and plate; a plate-opposing spring, and a nut adjustable on the bolt to regulate tension of the spring.

4. A chair-seat attachment, a recurved spring-metal strap supported by the attachment, the bend of the strap being partly below the under stretch of same, a plate having rearwardly-extended and bored side lugs connected by a bar under which the lower end of said strap is caught, said plate being extended parallel to the bend aforesaid, a bolt extending through said attachment, strap and plate; a plate-opposing spring, and a nut adjustable on the bolt to regulate tension of the spring.

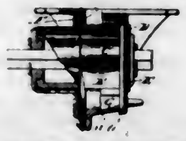
5. A chair-seat attachment having opposite inner lugs, a recurved spring-metal strap supported on said lugs, a chair-back-supporting plate hung on said under stretch of the strap, a bolt extending through said attachment, strap and plate; a plate-opposing spring, and a nut adjustable on the bolt to regulate tension of the spring.

6. A chair-seat spider having the rear arm thereof partly in the form of a plate and provided with inner opposite lateral lugs, a recurved spring-metal strap supported on the lugs and made fast at one end to said plate portion of the spider-arm, the bend of the strap being partly below the under stretch of same; a plate having rearwardly-extending and bored side lugs connected by a bar over the other end of said strap, said plate being extended parallel to the bend aforesaid; a bolt extending through said spider-arm, strap and plate; a plate-opposing spring, and a nut adjustable on the bolt to regulate tension of the spring.



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**758,134. FORCE-FEED SEEDING-MACHINE.** HENRY C. HAM, Liberty, Ind., assignor to Rude Brothers Manufacturing Company, Liberty, Ind. Filed Sept. 27, 1902. Serial No. 125,090. (No model.)



*Claim.*—1. In a force-feed seeding-machine, in combination with a grain-cup and cut-off, a combined rim and flute feed, the rim-feed being arranged to act, when the flute is pushed completely out of the grain-cup, substantially as and for the purpose described.

2. In combination with the grain-cup, cut-offs and fluted wheel, a rose-washer provided with a shallow flange sharply inclined to the vertical at its inner edge and having short ribs thereon, the gate of the cut-off terminating short of the inner end of the fluted wheel, substantially as and for the purpose described.

3. In a force-feed seeding-machine, the combination with the seed-cup, of a force-feed seed-wheel, a rotating rose-washer provided with an inwardly-projecting flange, with the inner edge thereof sharply inclined to the vertical and having ribs and a cut-off gate terminating short of the end of the feeding-wheel, substantially as and for the purpose described.

4. In a force-feed seeding-machine, the combination with the seed-cup, of a force-feed seed-wheel, a cut-off gate arranged to leave a space betwen it and the end of the feed-wheel, and a revolving washer provided with a flange sharply inclined to the vertical at its inner edge and having ribs thereon, substantially as and for the purpose described.

5. In a force-feed seeding-machine, the combination with the seed-cup, of a force-feed seed-wheel, a cut-off gate arranged to leave a space between it and the end of the feed-wheel, and a revolving washer provided with a flange inclined to the vertical at its inner edge and having ribs thereon, substantially as and for the purpose described.

6. In a force-feed seeding-machine, the combination with the seed-cup, of a force-feed seed-wheel, a cut-off gate arranged to leave a space between it and the inner end of the feed-wheel, said gate being flush with the lip of the cup, and a revolving washer provided with a flange inclined at its inner edge and having ribs thereon, substantially as and for the purpose described.

7. In a force-feed seeding-machine, the combination with the grain-cup, cut-offs, and force-feed wheel, of a revolving washer of a diameter of substantially the depth of the cup, the upper edge of said washer being entirely uncovered and being in the plane of the upper edge of the grain-cup, substantially as and for the purpose described.

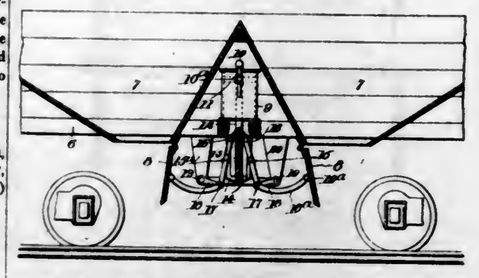
8. In combination with the grain-cup, cut-offs and force-feed wheel, a revolving washer suitably mounted in the grain-cup with its upper edge flush with the top thereof, said cup being provided with a tapering flange, which covers the outer edge of said washer toward the outlet of the cup, substantially as and for the purpose described.

9. In a force-feed seeding-machine, the combination with the seed-cup, of a force-feed seed-wheel, a cut-off gate arranged to leave a space between it and the inner end of the feed-wheel and being in the plane of the lip of the seed-cup, and a revolving washer provided with a flange inclined at its inner edge and having ribs thereon, said washer having its top uncovered, substantially as and for the purpose described.

10. In a force-feed seeding-machine, in combination with the seed-cup and lip thereof, and the force-feed seed-wheel and rose-washer, a cut-off gate terminating short of the inner end of the force-feed seed-wheel, its upper face being in the plane of the seed-cup lip, substantially as and for the purpose described.

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**758,135. DUMPING-CAR.** ALBERT D. HARRISON, Detroit, Mich. Filed Sept. 12, 1903. Serial No. 172,902. (No model.)



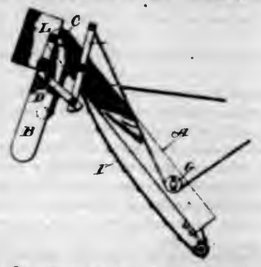
*Claim.*—1. The combination with a car having a discharge-door, of a compressed-air cylinder and its piston, a toggle one arm of which is connected to the door and the other arm of which has a fixed pivot on the car-frame, and a rigid connection between the elbow of the toggle and the piston-rod.

2. The combination with a car having a discharge-door, of a pressure-cylinder and its piston, a toggle connected to the door, and a thrust-bar pivoted to the toggle and having a sliding connection with the piston-rod.

3. The combination with a car having discharge-doors, of a pressure-cylinder and its piston between the same, struts projecting from the car between the cylinder and the doors, a brace between the struts, under the cylinder, having a guide for the piston-rod, toggles connected at their ends to the struts and the doors, and levers connecting the piston-rod and the toggles and having fulcrum projections resting on the brace when the doors are closed.

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**758,136. STRAW-STACKER.** JOHN C. HENDRICKS, Galesburg, Ill. Filed Jan. 8, 1903. Serial No. 138,271. (No model.)



*Claim.*—1. In a straw-stacker, the combination of a chute consisting of an inner section the outer end of which is adapted to be raised and lowered, an outer section jointed to the outer end of the inner section and adapted to be raised and lowered independently of the inner section, a lever fulcrumed to the inner section, a link connecting one end of the lever with the outer section and means engaging the other end of the lever for operating it, substantially as described.

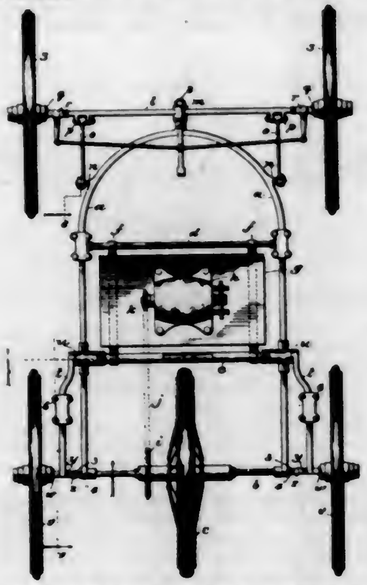
2. In a straw-stacker, the combination of a chute consisting of an inner section, the outer end of which is adapted to be raised and lowered, an outer section jointed to the outer end of the inner section and adapted to be raised and lowered independently thereof, a lever fulcrumed to the inner section, a link connecting one end of the lever with the outer section, a cable attached to the other end of the lever, and a pulley, carried by the inner section, over which the cable passes, substantially as described.

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**758,137. MOTOR-VEHICLE.** BOSS C. HICKS, Chicago, Ill., assignor to Center Drive Automobile Company, Chicago, Ill., a Corporation of South Dakota. Filed Oct. 21, 1901. Renewed Sept. 10, 1903. Serial No. 172,614. (No model.)

*Claim.*—1. In a vehicle of the class described, the combination of a main frame, a front and rear axle, both pivotally mounted in

the main frame and means for forming a substantially positive lateral and longitudinal connection between the main frame and the front and rear axles while permitting independent vertical movements of the main frame and the outer ends of the axles, substantially as described.



2. In a vehicle of the class described, the combination of a main frame, a front and a rear axle, both pivotally mounted in the main frame, means for forming a substantially positive lateral and longitudinal connection between the main frame and the ends of the front and rear axles while permitting independent vertical movements of the main frame and the outer ends of the axles, and means for yieldingly connecting the rear axle to the main frame back of the pivotal connections with such frame and permitting each end of the rear axle to move vertically independently of the other, substantially as described.

3. In a vehicle of the class described, the combination of a main frame, a non-rotatable spindle at the rear end of such frame rigidly attached thereto and forming a part thereof, a drive-wheel rotatably mounted upon such spindle, a front and a rear axle, outer supporting-wheels upon such axles, and means for forming a fixed lateral and transverse connection between the main frame and the ends of the front and rear axles while permitting independent vertical movement of the drive-wheel and outer supporting-wheels, substantially as described.

4. In a vehicle of the class described, the combination of a main frame, a front and a rear axle, means for forming a fixed lateral and transverse connection between the main frame and the ends of the axles while permitting independent vertical movements of the main frame and the outer ends of the axles, and means attached to the outer portions of the rear axle and to the front axle for supporting the box thereon, substantially as described.

5. In a vehicle of the class described, the combination of a main frame, a non-rotatable spindle at the rear end thereof rigidly attached thereto and forming a part of such frame, a driving-wheel rotatably mounted upon such spindle, means for supporting the driving-wheel actuating mechanism upon such main frame, a front axle, a two-part rear axle pivotally secured to the main frame, means for forming a fixed lateral and transverse connection between the main frame and the ends of the front and rear axles, and means attached to the axles for supporting the box thereon, substantially as described.

6. In a vehicle of the class described, the combination of a main frame, a drive-wheel rotatably mounted within such frame, a front and a rear axle, outer supporting-wheels upon such axles, means for holding the frame and the outer ends of the axles in fixed lateral and transverse relation to each other while permitting independent vertical movements of the drive-wheel and outer supporting-wheels, substantially as described.

7. In a vehicle of the class described, the combination of a main frame, a drive-wheel rotatably mounted in such frame, a front axle, a two-part rear axle, an upright inwardly-extending bracket upon each of the extreme rearward ends of the two-part axle, lugs upon the rear end of the main frame extending within such brackets, and means for slidably connecting the lugs and brackets, substantially as described.

8. In a vehicle of the class described, the combination of a main frame, a drive-wheel rotatably mounted in such frame, a front axle, a two-part rear axle, an upright inwardly-extending bracket upon each of the extreme rearward ends of the two-part axle, lugs upon the rear end of the main frame extending within such brackets and provided with perforations for admitting a perpendicular rod therethrough, rods extending vertically through and connecting the lugs in the bracket and the lugs on the main frame, and spring mechanism adapted to hold the lugs on the main frame in yielding connection with such brackets, substantially as described.

9. In a vehicle of the class described, the combination of a main frame, a front axle, provided with a horizontally-extending socket, and a horizontal pivot pin on the front portion of the main frame adapted to extend into and be held in position by such socket, substantially as described.

10. In a vehicle of the class described, the combination of a main frame, a front axle, provided with a horizontal socket, a laterally-extending pivot-pin on the front portion of the main frame adapted to extend into and be held in position by such socket, and link mechanism at each end of the front axle connecting it with the main frame, substantially as described.

11. In a vehicle of the class described, the combination of a main frame, a non-rotatable spindle at the rear end thereof and rigidly attached thereto, a driving-wheel rotatably mounted upon such spindle, outward transversely-extending lugs upon the main frame, a two-part rear axle pivotally attached to the main frame provided with upright inwardly-extending brackets adjacent to the lugs on the main frame, a perpendicular rod arranged within each bracket and extending through the lugs on the main frame, and spring mechanism arranged between the legs on the main frame and the brackets, substantially as described.

12. In a vehicle of the class described, the combination of a main frame, a front axle, front and rear supporting-wheels, a drive-wheel mounted at the rear end of the main frame between the rear supporting-wheels, and a rear axle pivotally mounted in and extending across the main frame forward of the drive-wheel and having rearwardly-extending end portions upon which the rear supporting-wheels are mounted, substantially as described.

13. In a vehicle of the class described, the combination of a main frame, a front axle, front and rear supporting-wheels, a drive-wheel mounted at the rear end of the main frame between the rear supporting-wheels, a two-part rear axle pivotally mounted in the main frame forward of the center of the rear supporting-wheels and having rearwardly-extending end portions upon which such rear supporting-wheels are mounted, and means for connecting the rearwardly-extending portions of such axle to the main frame back of the pivotal connections with such frame, substantially as described.

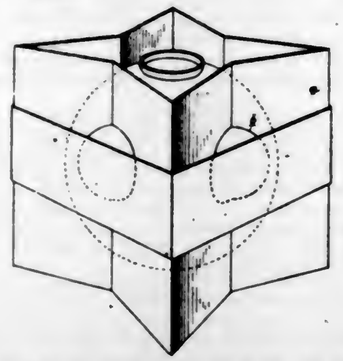
14. In a vehicle of the class described, the combination of a main frame, a front axle, front and rear supporting-wheels, a drive-wheel mounted in the rear end of the main frame between the rear supporting-wheels, a two-part rear axle pivotally mounted in the main frame forward of the center of the rear supporting-wheels and having rearwardly-extending end portions upon which such rear supporting-wheels are mounted, and means for forming a yielding connection between the rearwardly-extending portions of the axle and the main frame back of the pivotal connections with such frame, substantially as described.

15. In a vehicle of the class described, the combination of a main frame, a front axle pivotally mounted thereon, front and rear supporting-wheels, a drive-wheel mounted at the rear end of the main frame between the rear supporting-wheels, a rear axle pivotally mounted in the main frame forward of the center of the drive-wheel and having rearwardly-extending end portions upon which the rear supporting-wheels are mounted, and means for forming a yielding connection between the rearwardly-extending portions of the axle and the main frame back of the pivotal connections with such frame, substantially as described.

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**758,138. PACKING-BOX. JAMES J. HINDE, Sandusky, Ohio. Filed June 10, 1902. Serial No. 110,991. (No model.)**

*Claim.*—1. A packing-case for spheroidal bodies comprising a polygonal open-ended casing adapted to freely receive the articles to be packed therein and having an annular seat for said article on the inner face of one of its sides, and a surrounding band for holding said bearing side in an inwardly-bent form, whereby said seat is pressed against the contained article and will hold the latter from endwise movements.



2. A packing-case comprising a casing having a flat centrally-apertured side thereof bent at an angle inward to form an annular seat for the contained article and a surrounding band for holding said side in its bent form.

3. A packing-case comprising a polygonal casing having the sides thereof centrally apertured and bent inward to form annular seats for the contained article and an annular surrounding band for holding said sides in their bent form.

4. A packing-case comprising a quadrilateral open-ended casing having each of the sides thereof bent inward and partially cut away to form an annular seat for the contained article and a surrounding band for holding said sides in their bent form and covering said cut-away portions.

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**758,139. NEWSPAPER OR PERIODICAL. SHELLEY B. HUTCHINSON, Ypsilanti, Mich. Filed Dec. 22, 1903. Serial No. 186,317. (No model.)**



*Claim.*—1. A newspaper having a series of diagonal perforations across the corner of superposed leaves forming flaps or coupons of the corners, said flaps or coupons being turned down on the outside of the paper, whereby each may be separately removed without disturbing those beneath.

2. In a newspaper a series of superposed leaves or sheets each having a diagonal perforation across the same corner forming flaps or coupons, the flaps or coupons being folded over the front face of the paper, the flap or coupon on the inner leaf or sheet being on the outside and having printed matter upon the exposed or outer faces thereof.

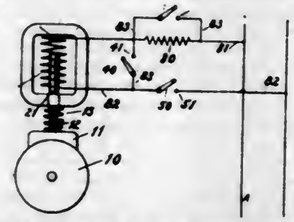
3. A newspaper composing a series of superposed sheets each having a diagonal perforation across the same corner forming flaps or coupons, said flaps or coupons being turned down the flap on the inner leaf being turned over those upon the leaves in front, and having printing thereon of different color from the remainder of the printing of the paper substantially as and for the purpose described.

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**758,140. MAGNETIC BRAKE. JOHN D. ILDER, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Sept. 2, 1903. Serial No. 171,649. (No model.)**



*Claim.*—1. An electromagnetic brake having means operated by the magnetic flux for effecting a slow action of the brake.




2. In an electromagnetic brake, an exciting-coil for moving the brake in one direction and electromagnetic means which upon the deënergizing of the coil permits of a gradual action of the brake in an opposite direction.

3. In an electromagnetic brake, an exciting-coil for releasing the brake, and electromagnetic means which upon the deënergizing of said coil permits of a gradual application of the brake.

4. In an electromagnetic brake, the combination of an exciting-coil and a magnetic circuit comprising a movable part which is connected with a brake, a source of current-supply for said exciting-coil which coil, when excited, produces magnetic influx in said magnetic circuit to operate said movable part, and means which, upon the deënergizing of said exciting-coil, tend to build up the decreasing magnetic flux produced by deënergizing said exciting-coil, whereby a gradual action of said part is obtained.

5. In an electromagnetic brake, the combination of a coil for operating the brake, and another coil for effecting a slow action of the brake.

6. In an electromagnetic brake, the combination of a coil for operating the brake, and another coil for effecting the slow action of the brake in either direction.

7. The combination in an electromagnetic brake of an electromagnet for operating the brake, said electromagnet comprising exciting-coils and a magnetic circuit which latter excites a current in one of the coils upon a cessation of current in another.

8. The combination in an electromagnetic brake, of an electromagnet for operating the brake, said electromagnet comprising exciting-coils and a magnetic circuit which includes a movable part, and which excites a current in one of the coils upon a cessation of current in another.

9. The combination in an electromagnetic brake, of an electromagnet for operating the brake, said electromagnet comprising exciting-coils and a magnetic circuit which latter excites a current in one of the coils upon a cessation of current in another, and means for controlling the circuit of said exciting-coils.

10. The combination in an electromagnetic brake, of an electromagnet comprising exciting-coils, and a movable part which is connected with the brake, said exciting-coils being adapted, one to withdraw the brake and another to retard the application of the brake.

11. The combination in an electromagnetic brake, of an electromagnet comprising exciting-coils, and a movable part which is connected with the brake, said exciting-coils being adapted, one to withdraw the brake and another to retard the application of the brake, and means for controlling the circuits of said exciting-coils.

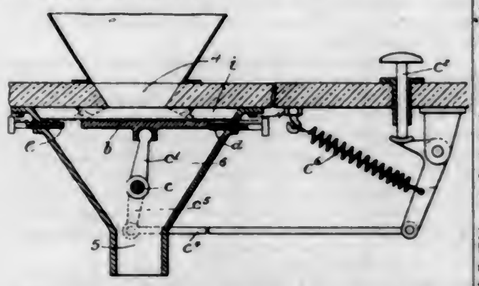
12. The combination in an electromagnetic brake, of means for moving the brake to apply it, and an electromagnet for moving the brake to withdraw it, said electromagnet comprising exciting-coils, which are adapted one to withdraw the brake and another to retard the application of the brake by said applying means.

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**758,141. TRACK-SANDING DEVICE. WASHINGTON H. KILBOURN, Greenfield, Mass., assignor of one-third to Archibald D. Flower, Greenfield, Mass. Filed Aug. 13, 1903. Serial No. 169,365. (No model.)**

*Claim.*—1. A track-sanding device comprising a vertical conduit having a sand-inlet at its upper portion, a sand-outlet at its lower portion, and an enlargement or chamber between said inlet and outlet, a longitudinally-movable sand-supporter located in said chamber and separated from the top of the chamber and from the said inlet by a space which permits the accumulation of a body of sand on the supporter below the inlet, and means for longitudinally reciprocating the supporter to discharge sand therefrom into the lower portion of the conduit, the supporter being formed and arranged to hold the accumulation of sand in position to close the said inlet.

2. A track-sanding device comprising a vertical conduit having a sand-inlet at its upper portion, a sand-outlet at its lower portion, and an enlargement or chamber between said inlet and outlet, a longitudinally-movable sand-supporter located in said chamber and separated from the top of the chamber and from said inlet by a space which permits the accumulation of a body of sand on the supporter below the inlet, said supporter being formed and arranged to hold the accumulation of sand in position to close the inlet, means for longitudinally reciprocating the supporter, said means having provisions for normally holding the supporter at one end of its movement, and an adjustable stop for varying the normal position of the supporter relatively to the inlet, whereby the supporter when in its normal position may either permit a continuous flow of sand by gravitation over one of its ends, or may entirely arrest the sand, and means for longitudinally reciprocating the supporter to cause the discharge of sand therefrom.



3. A track-sanding device comprising a vertical conduit having a sand-inlet at its upper portion, a sand-outlet at its lower portion, and an enlargement or chamber between said inlet and outlet, a longitudinally-movable sand-supporter located in said chamber and separated from the top of the chamber and from the said inlet by a space which permits the accumulation of a body of sand on the supporter below the inlet, a rock-shaft journaled in said conduit below the supporter and having an upwardly-projecting arm engaged with the supporter, and means for oscillating said rock-shaft and arm to reciprocate the supporter and cause a discharge of sand therefrom.

4. A track-sanding device comprising a movable sand-supporter, a rock-shaft journaled below said supporter and having an upwardly-projecting arm engaged with the supporter, means for oscillating said rock-shaft to cause a discharge of sand from the supporter, a conduit inclosing the supporter and separated from the upper side thereof, and means for preventing the supporter from tipping on said arm.

5. A track-sanding device comprising a sand-supporter movable endwise, a rock-shaft having an upwardly-projecting arm loosely engaged with the supporter and sustaining the weight thereof, and a conduit inclosing the supporter and having overhanging guides arranged to prevent the supporter from tipping out of place on the arm.

6. A track-sanding device comprising a vertical conduit having a sand-inlet at its upper portion, and a sand-outlet at its lower portion, a longitudinally-movable sand-supporter located in said chamber between the inlet and outlet, means for longitudinally reciprocating the supporter, and stops at opposite ends of the supporter to arrest and jar the latter.

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**758,142. POCKET OR OTHER KNIFE. ISRAEL KIMBEY, Toronto, Canada, assignor of one-half to Detroit Saw & Tool Works, Detroit, Mich., a Corporation of Michigan. Filed June 30, 1903. Serial No. 162,392. (No model.)**



*Claim.*—1. In a knife or similar article the combination of a handle comprising two metal sides having rocking connection between them; a blade pivotally connected to one side remote from the said connection; a flange or projection carried by the other side for engagement by the butt of the blade; and a spring separate from the handle engaging each side of the handle to hold the flange in yielding engagement with the said butt, substantially as described.

2. In a knife or similar article the combination of a handle comprising two metal sides having a rocking connection between them at one end; a blade pivotally connected to one side remote from the said connection; a flange or projection carried by the other side for engagement by the butt of the blade; and a spring separate from the handle engaging each side of the handle to hold the flange in yielding engagement with the said butt, substantially as described.

3. In a knife or similar article the combination of a handle comprising two metal sides; two blades pivotally connected one to each end of one side; a flange or projection carried by the other side at each end for engagement by the butts of the blades; and a spring separate from the handle engaging each side of the handle to hold the flanges in yielding engagement with the said butts, substantially as described.

4. In a knife or similar article the combination of a blade; a handle comprising two metal sides, the end of one side being provided with a round hole, and the end of the other with a slot and a projection designed to engage the butt of the blade; a rivet extending through the butt of the blade into the said hole and slot; a rocking connection between the other ends of the metal sides; and a spring separate from the handle engaging the sides intermediate the ends to hold the projection in yielding engagement with the said butt, substantially as described.

5. In a knife or similar article the combination of a handle comprising two metal sides having a rocking connection between them; a blade pivotally connected to one side remote from the said connection; a flange or projection carried by the other side for engagement by the butt of the blade; a curved flat spring arranged transversely in the space between the sides of the handle and suitably connected with the said sides to hold the flange in yielding engagement with the said butt, substantially as described.

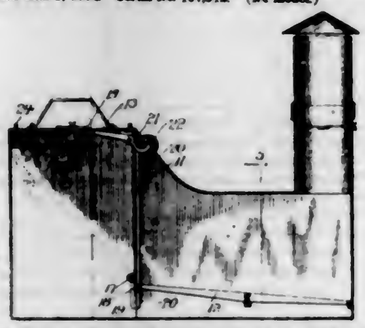
6. In a knife or similar article the combination of a handle comprising two metal sides having rocking connection between them; a blade pivotally connected to one side remote from the said connection; a flange or projection secured to and carried by the other side for engagement by the butt of the blade; and a spring separate from the handle engaging each side of the handle to hold the flange in yielding engagement with the said butt, substantially as described.

7. In a knife or similar article the combination of a handle comprising two metal sides hollowed on the inside, one having an internal lip near the front edge, and the other near the back; a curved flat spring engaging the said lips; a rocking connection between the sides; a blade pivoted at the end of one side; and a flange on the other side engaging the butt of the blade, substantially as described.

8. In a knife or similar article the combination of a handle comprising two metal sides having a rocking connection between them; a blade pivotally connected to one side remote from the said connection; a yoke embracing the handle at one end and secured to the other side to form a flange for engagement by the butt of the blade; and a spring separate from the handle engaging each side of the handle to hold the flange in yielding engagement with the said butt, substantially as described.

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**758,143. TANK-HEATER. HENRY D. MEYER, Lowell, Ind. Filed Jan. 2, 1904. Serial No. 187,512. (No model.)**

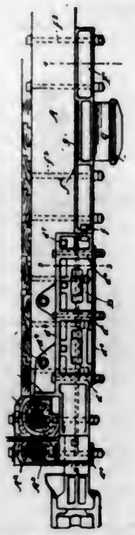


*Claim.*—1. A heater of the character described having a fire-box and a feeding and cleaning chamber, such compartments being separated by a partition pivoted at its lower end and swinging backwardly to an inclined position across the feeding and cleaning compartment.

2. In a heater of the character described, in combination, a casing having a draft and feed aperture and a smoke-flue through its upper wall, and a sliding sectional partition located between such apertures, its upper portion being capable of swinging backwardly to an inclined position across the feed-aperture.



**758,144. DRAFT-RIGGING FOR RAILWAY-CARS. WILLIAM H. MINER, Chicago, Ill., assignor to W. H. Miner Company, Chicago, Ill., a Corporation of Illinois. Filed May 9, 1903. Serial No. 156,339. (No model.)**



*Claim.*—1. In a tandem-spring draft-rigging, the combination with a draw-bar, draw-bar extension, springs, followers and side plates or stop-castings, of extension-anchors or filler-blocks secured to and abutting against the side plates or stop-castings and extending through and having a shouldered connection with the body-bolster or transom of the car and secured to the center sills of the car, said side plates or stop-castings and extension-anchors or filler-blocks having at their meeting ends abutting transverse flanges, and connecting-bolts extending through said transverse flanges, substantially as specified.

2. In a tandem-spring draft-rigging, the combination with a draw-bar, draw-bar extension, springs, followers and side plates or stop-castings, of extension-anchors or filler-blocks secured to and abutting against the side plates or stop-castings and extending through and having a shouldered connection with the body-bolster or transom of the car and secured to the center sills of the car, said side plates or stop-castings having webs or flanges fitting under the center sills of the car, said side plates or stop-castings and extension-anchors or filler-blocks having at their meeting ends abutting transverse flanges, and connecting-bolts extending through said transverse flanges, substantially as specified.

3. In a tandem-spring draft-rigging, the combination with a draw-bar, draw-bar extension, tandem springs, followers and side plates or stop-castings, of extension-anchors or filler-blocks connected to and abutting against the side plates or stop-castings, said side plates or stop-castings and extension-anchors or filler-blocks having at their meeting ends abutting transverse flanges, and connecting-bolts extending through said transverse flanges, substantially as specified.

4. In a tandem-spring draft-rigging, the combination with a draw-bar, draw-bar extension, tandem springs, followers and side plates or stop-castings, of extension-anchors or filler-blocks connected to and abutting against the side plates or stop-castings, and having a shouldered connection with the body-bolster or transom of the car, said side plates or stop-castings and extension-anchors or filler-blocks having at their meeting ends abutting transverse flanges, and connecting-bolts extending through said transverse flanges, substantially as specified.

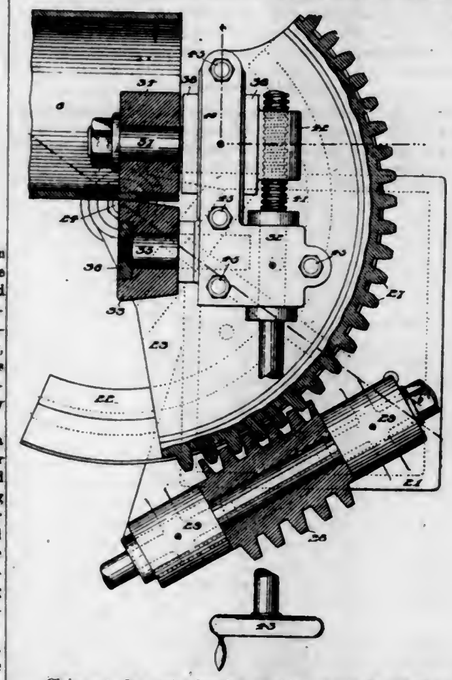
5. In a draft-rigging, the combination with the side plates or stop-castings, of extension-anchors or filler-blocks secured to and abutting against the rear ends thereof, said side plates and stop-castings and extension-anchors or filler-blocks having at their meeting ends interengaging hooks and abutting transverse flanges and connecting-bolts extending through said transverse flanges, substantially as specified.

6. In a draft-rigging, the combination with the side plates or stop-castings, of extension-anchors or filler-blocks secured to and abutting against the rear ends thereof and provided with shoulders engaging the body-bolster or transom under buffing strains on the draft-rigging, said side plates and stop-castings and extension-anchors or filler-blocks having at their meeting ends interengaging hooks and abutting transverse flanges and connecting-bolts extending through said transverse flanges, substantially as specified.

7. In a draft-rigging, the combination with the side plates or stop-castings, of extension-anchors or filler-blocks secured to and abutting against the rear ends thereof, said side plates or stop-castings having integral webs or flanges fitting under the center sills, said side plates and stop-castings and extension-anchors or filler-blocks having at their meeting ends interengaging hooks and abutting transverse flanges and connecting-bolts extending through said transverse flanges, substantially as specified.

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**758,145. MECHANISM FOR FLANGING THE ENDS OF TUBES. ANTON F. NORDENSKJÖLD, Pittsburg, Pa., assignor to Pittsburg Valve, Foundry and Construction Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Oct. 24, 1903. Serial No. 178,355. (No model.)**



*Claim.*—1. In a tube-flanging machine, means for rotating the tube, a pair of rolls between which the wall of the tube passes during rotation, a pivotally-supported carrier for the rolls, and means for moving the carrier pivotally.

2. In a tube-flanging machine, means for rotating the tube, a pair of rolls between which the wall of the tube passes during rotation, a pivotally-supported carrier for the rolls, means for adjusting the space between the rolls, and means for moving the carrier pivotally.

3. In a tube-flanging machine, a lathe construction, including the slide-rest, flanging-rollers, and a pivoted carrier for the rollers supported on the rest, the rollers capable of forming a flange on the end of the tube as the latter rotates and the carrier turns on its pivot.

4. In a tube-flanging machine, a lathe construction including the slide-rest, a plate thereon, a track on the plate, a carrier guided on the track, means on the carrier for engaging the tube and bending a flange thereon, and means for moving the carrier on the track.

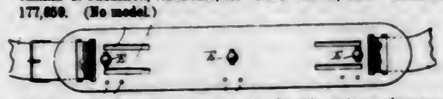
5. In a tube-flanging machine, a lathe construction including a slide-rest, an arc-shaped track thereon, a carrier thereon adapted to said track, gear-teeth on the arc of said carrier, and means cooperating with said teeth to cause said carrier to travel on the track, and means on the carrier for engaging the ends of the tube and flanging the same.

6. In a tube-flanging machine, means for rotating the tube, a

pair of rolls between which the wall of the tube passes during rotation, a pivotally-supported carrier for the rolls, means for moving the carrier pivotally, and means for heating the tube.

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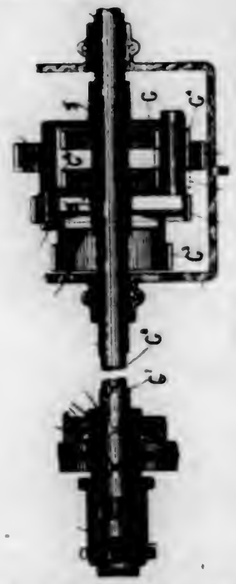
758,146. **SKIRT-SUPPORTER AND SHIRT-WAIST HOLDER.** CARRIE B. PETERSON, Knoxville, Ill. Filed Oct. 19, 1903. Serial No. 177,659. (No model.)



*Claim.*—A device of the class described having a base-plate provided near each of its ends with vertical slots leaving between them a vertical bar and with horizontal slots leaving between them a horizontal bar, a waistband passing through the vertical slots and held by the vertical bars, shoulder-straps passing through the horizontal slots and held by the horizontal bars, said shoulder-straps being continued from the shoulders and downward in front of the wearer, a single strap to which the front ends of the shoulder-straps are secured, said single strap having eyelets adapted to be engaged by a stud or studs on the corset-stay, and buttons carried by the base-plate and adapted to engage the garment or garments, substantially as described.

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758,147. **DRIVING MECHANISM.** HARRY M. POPE, Chicopee Falls, Mass., assignor to Electric Vehicle Company, Jersey City, N. J., a Corporation of New Jersey. Original application filed Oct. 26, 1899, Serial No. 734,816. Divided and this application filed Sept. 5, 1903. Serial No. 172,067. (No model.)



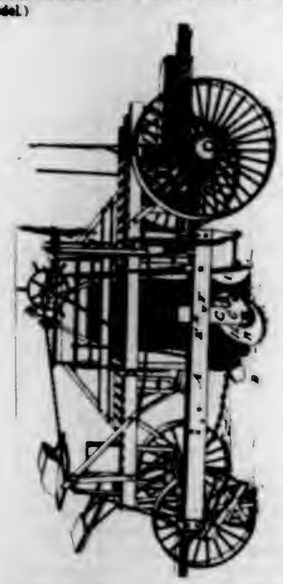
*Claim.*—1. In a motor-vehicle, the combination of a support having a bearing, a driving-wheel having its hub projected into the bearing with the bearing parts thereon, and a driving shaft or axle projected into the hub and having its end formed to engage a similar opening in the hub, substantially as shown and described.

2. In a motor-vehicle, the combination with a support having bearings and a driving mechanism, of driving-wheels each having its hub projected into the corresponding bearing with the bearing parts thereon, a tubular driving-shaft having its ends formed to engage said driving-wheels, and a supporting or stiffening bar extended from side to side of the vehicle through said tubular shaft and through the bearings and wholly supporting the driving mechanism, substantially as shown and described.

3. In a driving mechanism for vehicles, a driving-shaft comprising an inner stiffener-bar extending from one side bearing to the other, a tubular two-part driving member inclosing said stiffener-bar, and a balance-gear connecting the adjoining ends of said tubular shafts, and a plurality of gears of different sizes mounted directly upon said balance-gear casing.

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758,148. **ROAD-GRADING MACHINE.** ALLEN L. POWLISON, Erie, and ELIAS C. ERB, Hunter, N. D., assignors of one-third to David H. Houston, Hunter, N. D. Filed Dec. 18, 1903. Serial No. 185,764. (No model.)



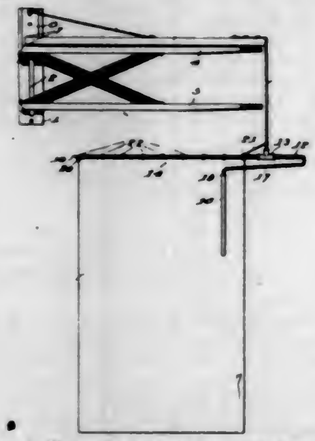
*Claim.*—1. In a grading-machine the combination of a rotary disk plow and a dirt-carrier.

2. In a grading-machine the combination of a plow-beam movably arranged to raise and lower, said beam carrying a rotary disk plow, and of an endless-apron dirt-carrier having its lower end adjustable to raise and lower.

3. In a grading-machine the combination of an endless-apron dirt-carrier having its lower end adjustably arranged to raise and lower, and a rotary disk plow adjustably arranged to raise and lower, said disk plow placed in a position where the said plow can deliver dirt upon the said carrier.

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758,149. **CURTAIN-EXHIBITOR.** PETER ROUSE, Jr., and HENRY ROUSE, Greenfield, Ohio. Filed Aug. 3, 1903. Serial No. 168,011. (No model.)



*Claim.*—1. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm supported above and movable



over said exhibitor-arms, a display-curtain, and a supporting-rod for said curtain carried by and movable with respect to said independent arm, whereby said display-curtain may be brought into position relatively to any one of the exhibitor-arms and extended or withdrawn from behind the curtain carried thereby, substantially as described.

2. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing horizontally over said exhibitor-arms and extending downward past their free ends, a rod supported by said independent arm below the supporting-arms of the exhibitor and movable horizontally with respect to said independent arm, and a display-curtain carried by said rod, substantially as described.

3. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing horizontally above the same and extending downward past their free ends, a rod mounted to slide horizontally in the lower end of said independent arm below the supporting-arms of the exhibitor, and a display-curtain carried by said rod, substantially as described.

4. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing horizontally above the same and extending downward past their free ends, a rod having a pivotal and sliding connection with said independent arm to move in a horizontal plane below the supporting-arms of the exhibitor, and a display-curtain carried by said rod, substantially as described.

5. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing horizontally above the same, extending down past their free ends, and provided with a guiding-sleeve at its lower end, a rod mounted to slide horizontally in said sleeve, and a display-curtain connected at one end to the sleeve and at the other end to the supporting-arm, substantially as described.

6. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing horizontally above the same and extending downward past the free ends thereof, its lower end being provided with a swiveling horizontal guide-sleeve, a rod mounted to slide longitudinally in said guide-sleeve, and a display-curtain carried by said rod and having its upper corners connected to the rod and arm respectively, substantially as described.

7. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing above the same and extending down past the free ends thereof, a rod mounted to slide horizontally in the lower end of said arm and provided at its inner end with a supporting and guiding head, and a display-curtain supported by said arm, substantially as described.

8. The combination, with the horizontally-swinging arms of a curtain-exhibitor, of an independent arm mounted to swing horizontally above the same and extending downward past their free ends, a rod mounted to slide horizontally in the lower end of said independent arm and provided with a display-curtain, said rod having an inward extension from its outer end, and a handle connected to said extension and located between the ends of the rod, substantially as described.

9. The combination, with the supporting-arms of a curtain-exhibitor, of an independent arm pivoted to swing above the same and extending downward past their free ends, its lower end being provided with a guide-sleeve, a rod mounted to slide horizontally in said guide-sleeve and provided with a handle connected to its outer end, and a display-curtain mounted on said rod between said guide-sleeve and the inner end of the rod, and connected to the rod and sleeve at its upper corners respectively, substantially as described.

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758,150. **STRAINER AND FILTER.** GUSTAVE A. W. SCHILLING, Denver, Colo., assignor to John P. Paulson and Andrew P. Thompson, Denver, Colo. Filed Dec. 30, 1903. Serial No. 187,174. (No model.)



*Claim.*—1. A strainer comprising a pair of hollow, semispherical sections, each having an exteriorly-threaded rim and an axial threaded aperture, around which the metal is formed into a wrench-receiving hub; an inlet-nipple which is screwed into the hub of one section; an outlet-nipple which is screwed into the hub of the other section, and unions which connect the nipples with a water-supply pipe; a band having wrench-receiving holes in its outer periphery, and an interior annular abutment on each side of which the band is interiorly threaded to receive the threaded rims of the sections, and a pair of screens each of which is clamped between one of the sections and the wall of the abutment, substantially as shown.

2. A strainer comprising a band having an interior, annular abutment on each side of which the band is interiorly threaded; a pair of semispherical hollow sections, each of which has an exteriorly-threaded rim which is screwed into one of the threaded portions of the band, and an axial threaded hole around which the metal is formed into a wrench-receiving hub; an inlet-nipple which is screwed into the hub of one section; an outlet-nipple which is screwed into the hub of the other section, and unions for connecting the nipples with a water-supply pipe; a pair of screens of different mesh, each of which is clamped between one of the sections and the annular abutment of the band, the coarser of said screens being at the inlet side of the strainer, and suitable washers against which the rims of the sections press to form a water-tight connection between the section and the band, substantially as shown.

3. A strainer comprising a pair of hollow semispherical sections, each of which is provided with an axial, threaded aperture, and with an exteriorly-threaded rim; a band having an interior, annular abutment, on each side of which the said band is interiorly threaded to receive the threaded rims of the hollow sections, and having spider-arms which extend across the opening in said band; a pair of screens of different mesh, each of which is clamped between one of the hollow sections and the annular abutment of the band; an inlet-nipple in the threaded hole of one section, and an outlet-nipple in the threaded hole of the other section and means for connecting the inlet and outlet nipples with a water-supply pipe, the coarser screen being next to the inlet, and being braced by the spider-arms to prevent bulging of the same under heavy water-pressure, substantially as shown.

4. A strainer comprising a pair of hollow semispherical sections, each having a threaded axial hole, around which the metal is formed into a wrench-receiving hub, and an exteriorly-threaded rim; a band for connecting the two sections, having an interior annular abutment, on each side of which the said band is interiorly threaded to receive the threaded rims of the hollow sections; recesses in one of the faces of the annular abutment and removable spider-arms whose ends are adapted to lie within the said recesses, a pair of screens of different mesh, each of which is clamped between one of the sections and the annular abutment of the band, the coarser of said screens being braced in one direction by the said spider-arms; a nipple which is screwed into the hub of one section and a corresponding nipple which is screwed into the hub of the other section and unions by which the nipples may be connected with a water-supply pipe, substantially as shown.

5. A strainer comprising a pair of hollow semispherical sections, each having an exteriorly-threaded rim, and a circular recess in the face of the rim; a band for connecting the two sections, having an interior, annular abutment, on each side of which the band is interiorly threaded to receive the threaded rims of the hollow sections; suitable washers which are interposed between the faces of the rims of the sections and the annular abutment of the band; a pair of screens of different mesh which lie in the circular recesses of the rims, an inlet in one section, and an outlet in the other section, and means for connecting the inlet and outlet with a water-supply pipe, substantially as shown.

6. A strainer comprising a pair of hollow, semispherical sections, each of which is provided with an exteriorly-threaded rim and with an axial threaded hole, the face of each of the said rims being provided with a circular depression which extends from its inner periphery to within a short distance of its outer threaded periphery, the said depression having an increasing depth toward its outer circumference; a band for connecting the hollow sections, having an interior annular abutment on each side of which the said band is interiorly threaded to receive the threaded rims of the sections, recesses in one face of the annular band, spider-arms, the ends of which fit within the said recesses; suitable washers which are interposed between the faces of the annular abutment and the ends of the sections; a coarse screen which lies in the circular depression of one of the sections and against the said spider-arms—and a screen of finer mesh which lies in the circular depression of the other section, the said screens being clamped against the washers by the edges formed

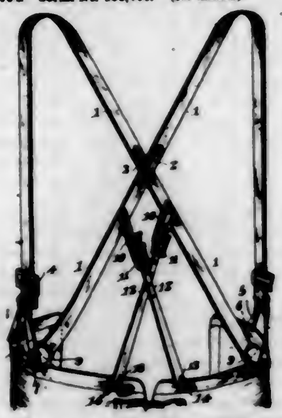
by the inner circumference of the circular depression; nipples which screw into the threaded holes of the sections, and unions on the said nipple, substantially as shown.

7. A strainer comprising a pair of hollow, semispherical sections having threaded rims, the said rims being provided with counterbores, which increase in depth toward their outer circumferences; a threaded band for connecting the two sections, having an interior annular abutment; washers which lie between the ends of the sections and the faces of the annular abutment; a coarse-mesh screen which lies in the counterbore of one of the sections; a screen of finer mesh which lies in the counterbore of the other section; the said screens being clamped against the washers by the edge formed by the inner circumference of the counterbore; an inlet-nipple in one of the sections, an outlet-nipple in the other section, and a faucet connected to the said inlet-nipple, substantially as shown.

8. In a strainer, the combination with a pair of hollow, semispherical sections which are connected by a threaded band having an interior annular abutment, with recesses in one of its faces, screens which lie within counterbores in the ends of said sections, an inlet in one section, and an outlet in the other section, of a removable spider, the ends of the arms of which lie within the recesses in the face of the annular abutment of the band, the said spider forming a brace for one of the screens, substantially as shown.

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**758,151. SUSPENDERS.** George W. Scott, Sadler, Tex. Filed Jan. 12, 1904. Serial No. 188,701. (No model.)



*Claim.*—1. Suspenders, comprising two main straps extending over the shoulders and crossed and slidably connected between their ends at the back, the front ends of the straps being provided with means for connecting them to the front of a pair of trousers at the center thereof, and the rear ends being provided with means for connecting them with the front of the trousers at the sides thereof, and means for connecting the intermediate portions of the straps with the back of the trousers, substantially as described.

2. Suspenders, comprising two main straps crossed at the back, and provided at their front and rear ends with means for connecting them with the front of a pair of trousers, and crossed supplemental rear straps or tabs connected with the main straps and provided with means for connecting them with the back of the trousers, substantially as described.

3. Suspenders, comprising two main straps crossed at the back, and provided at their front and rear ends with means for connecting them with the front buttons of a pair of trousers, and adjustable means crossed at the back of the suspenders for connecting the same with the back buttons of the trousers, substantially as described.

4. Suspenders, comprising two main straps crossed and slidably connected at the back, the front ends of the main strap being provided with tabs arranged in pairs for engaging the front buttons of a pair of trousers, and the rear ends of the straps being provided with means for connecting them with the outer front buttons of trousers, and supplemental rear straps or tabs for connecting the main straps with the rear buttons of the trousers, substantially as described.

5. Suspenders, comprising two main straps crossed and slidably connected at the back and provided with means for connecting their front and rear ends with the front buttons of a pair of trousers, loops connected with the rear portions of the main straps and provided with buckles, and supplemental back straps or tabs adjustably connected by the buckles and provided with means for engaging the rear buttons of a pair of trousers, substantially as described.

6. Suspenders, comprising two main straps crossed and loosely connected at the back and provided at their front and rear ends with means for connecting them with the front buttons of a pair of trousers, and crossed supplemental back straps or tabs for connecting the rear portions of the main straps with the back buttons of a pair of trousers, substantially as described.

7. Suspenders, comprising two main straps crossed and slidably connected at the back and provided at their ends with means for connecting them with the front of a garment, and supplemental attaching means for connecting the straps with the rear portion of a garment, substantially as described.

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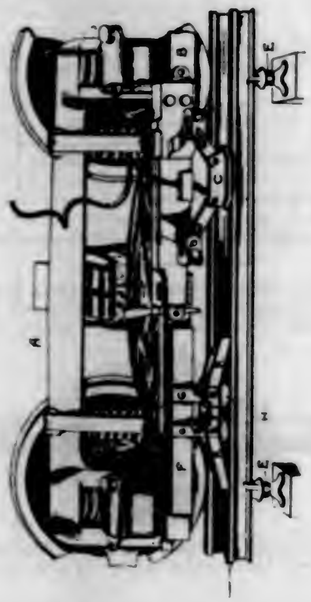
**758,152. OPENING ATTACHMENT FOR CANS OR VESSELS.** Seth L. Shelden, Ithaca, N. Y. Filed Mar. 16, 1903. Serial No. 148,105. (No model.)



*Claim.*—The combination with the body of a can or similar vessel, and the closure thereof, one of said elements having a circumferential groove provided with a perforation, of a releasing-strip seated in said groove and having a hook at its inner end which engages the perforation of said groove, whereby the inner end of said strip is detachably held, the other end of said strip projecting between the body and closure to the exterior of the can and seated in a groove formed in the exterior of the side of the can and extending obliquely to the plane of said circumferential groove, said end terminating in a finger-loop, the side of the can being also provided at its exterior with a groove corresponding to the shape of said finger-loop and communicating with the oblique groove, the finger-loop being seated in said groove to position said loop and the extremity of the releasing-strip beneath the surface of the side of the can-body and thereby not interfere with application of labels to the body.

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**758,153. ICE-CUTTER FOR THIRD-RAIL ELECTRIC RAILWAYS.** Samuel R. Stewart, Jr., Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 20, 1901. Serial No. 75,796. (No model.)





*Claim.*—1. The combination with a motor-truck for a third-rail electric railway, of two ice-breaking wheels having diagonal teeth adapted to engage the third rail, the teeth on one wheel running in a different direction from those on the other wheel.

2. The combination with a motor-truck, of a beam carrying a third-rail trolley-shoe, insulated hangers depending from said beam, and having upright slots, and one or more ice-breaking wheels having their journals received in said slots.

3. The combination with a motor-truck, of a beam carrying a third-rail trolley-shoe, insulated hangers depending from said beam independent of the means for attaching the trolley-shoe to said beam, and frames pivoted to said hangers and carrying scraping-blades.

4. The combination with a motor-truck for a third-rail electric railway, of ice-breaking wheels carried by said truck and having a vertical play relative to said truck, and a frame pivotally supported on said truck and carrying a blade set diagonally to the third rail.

5. The combination with a motor-truck for a third-rail electric railway, of hangers insulated from said truck, ice-breaking wheels journaled in said hangers and adapted to break the ice from the upper surface of the third rail, and pivotally-mounted scraping-blades adjacent to said wheels.

6. The combination with a motor-truck for a third-rail electric railway, of hangers insulated from said truck, ice-breaking wheels journaled in said hangers and having vertical play, frames pivoted on the journals of said wheels, and scraping-blades in said frames set diagonally to the third rail.

7. The combination with a motor-truck for a third-rail electric railway, of hangers carried by said truck, ice-breaking wheels journaled in said hangers said wheels having toothed peripheries adapted to engage the upper surface of the third rail, and scrapers adjacent to said wheels.

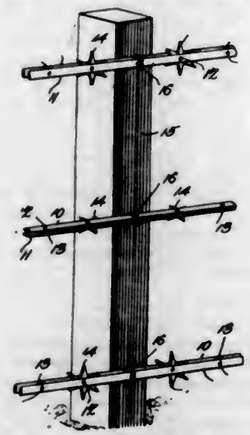
8. The combination with a motor-truck for a third-rail electric railway, of ice-breaking wheels supported from said truck said wheels having toothed peripheries adapted to engage the upper surface of the third rail, and scrapers for removing from the third rail the ice broken by the said wheels independent of the direction of movement of said truck.

9. The combination with a car-truck for a third-rail electric railway, of two ice-breaking wheels having diagonal teeth adapted to engage the entire upper surface of the third rail the teeth of one wheel running in a different direction from those on the other wheel, and scrapers for removing from said third rail the ice broken by said wheels independent of the direction of movement of the said truck.

10. As a means for removing ice or sleet from electric-railway third rails, a pressure-roller carried by the moving vehicle and traveling on the third rail, said roller having corrugations on its periphery at an angle to said periphery.

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**758,154. MATERIAL FOR FENCES.** Joseph Stickley, Mansbridge, S. D. Filed July 18, 1903. Serial No. 166,173. (No model.)



*Claim.*—A fence-runner comprising a pair of comparatively flat spaced strips having their adjacent faces convexed, a succession of fixed spacers carried by and located between the strips, a succession of rotatable spurs located between the strips and alternating with the spacers, and fixed pivot-pins piercing the strips and the spurs with their opposite ends flush with the outer faces of the strips, each spur being loose to rotate upon its pin, and the convexed faces of the strips fitting closely to the spurs to prevent undue lateral play thereof and permitting tilting of the spurs, whereby the latter are prevented from becoming wedged between the strips and thereby rendered non-rotatable.

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**758,155. HOSE-COUPLING.** George Strob, Detroit, Mich. Filed Mar. 18, 1903. Serial No. 148,286. (No model.)



*Claim.*—1. In a hose-coupling, the combination with a male member provided with coupling-lugs, of a female member formed with a head, an outwardly-projecting interrupted flange on said head, lugs on said head at one side of said flange, a coupling-sleeve sleeved on said head and provided with coupling-lugs at one end and with an inwardly-projecting flange at the opposite end having notches to engage the said lugs, an internally-screw-threaded adjusting-nut sleeved on said head to engage and move said sleeve and provided with an inwardly-extending flange to engage said lug at one side, and means secured to the head at the opposite side of said flange to hold said nut from longitudinal movement on the head.

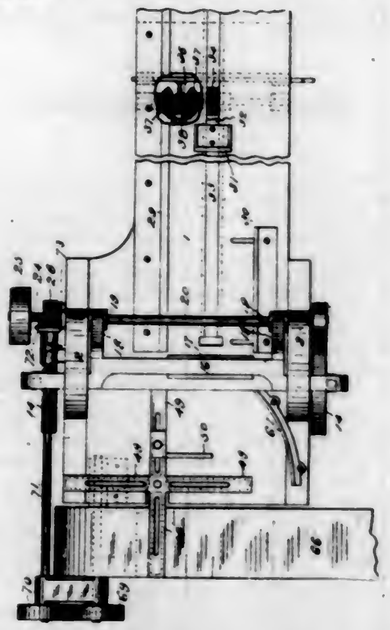
2. In a hose-coupling, the combination of a male member having a head formed at one end with a seat for a packing-ring, outwardly-extending lugs on said head one side of which form a portion of said seat and which are formed at the opposite side with a short incline at one end and a long reverse incline terminating in a stop, a female member having a bead formed with a seat for a packing-ring, an adjusting-nut on said female member, a coupling-sleeve engaging said nut and inwardly-projecting lugs on said sleeve having inner sides formed with long inclines extending in a direction opposite to the long inclines on the male member, whereby when the parts are turned to bring these long inclines into contact the lugs will be interlocked and the members firmly united.

3. In a hose-coupling, the combination of a female member provided with a nipple for the attachment of the hose, a head having a seat for the packing-ring, a tubular extension on said head projecting from said seat with its bore forming a continuation of the bore of the head, an interrupted flange projecting outward from said head, lugs at one side of said flange and integral therewith, ears on the head at a distance from said lugs and in line therewith, a coupling-sleeve on said head provided with inwardly-projecting coupling-lugs at one end and an inwardly-projecting flange at the opposite end having notches to engage the lugs on the head, and an internally-screw-threaded adjusting-nut to engage the sleeve and having an inwardly-projecting flange to extend between the lugs and ears on the head and hold the nut from longitudinal movement, said flange being notched to pass the ears in assembling, a clamp secured to said ears to secure the hose to the nipple, a packing-ring sleeved on said tubular extension, a male member formed with a head having a seat for a packing-ring and an enlarged bore to receive the tubular extension of the female member, outwardly-projecting coupling-lugs on said head, an annular rib on said head, a rib forming a stop connecting one end of each coupling-lug with the annular rib, ears on said head, a nipple to engage the hose, and a clamp secured to said ears to secure the hose to the nipple.

4. In a hose-coupling, the combination of a female member provided with a nipple for the attachment of the hose, a head having a seat for the packing-ring, a tubular extension on said head projecting from said seat with its bore forming a continuation of the bore of the head, an interrupted flange projecting outward from said head, lugs at one side of said flange and integral therewith, ears on the head at a distance from said lugs, a coupling-sleeve on said head provided with inwardly-projecting coupling-lugs at one end and an inwardly-projecting flange at the opposite end having notches to engage the lugs on the head, and an internally-screw-threaded adjusting-nut to engage the sleeve and having an inwardly-projecting flange to extend between the lugs and ears on the head and hold the nut from longitudinal movement, said flange being notched to pass the ears in assembling, a clamp secured to said ears to secure the hose to the nipple, a packing-ring sleeved on said tubular extension, a male member formed with a head having a seat for a packing-ring and an enlarged bore to receive the tubular extension of the

female member, outwardly-projecting coupling-lugs on said head, a stop on one end of each coupling-lug, ears on said head, a nipple to engage the hose and a clamp secured to said ears to secure the hose to the nipple.

## 758,156. MACHINE FOR CUTTING PADS OR TABLETS. Chas F. Taylor, Hartford, Conn. Filed July 31, 1903. Serial No. 167,684. (No model.)



*Claim.*—1. A machine for cutting pads or tablets having a table for supporting the blanks, a feed having a rectilinear movement and adapted to engage each and advance all of a pile of blanks on the table, a stop for determining the movement of the blanks, a cutter for dividing the blanks, a positive clamp for holding the blanks while the cutter is dividing the blanks, mechanism for operating the feed, and mechanism for operating the cutter and the clamp, substantially as specified.

2. A machine for cutting pads or tablets having a table for supporting the blanks, a feed having a rectilinear movement and adapted to engage each and advance all of a pile of blanks on the table, a movable stop for determining the movement of the blanks, a cutter for dividing the blanks, a positive clamp for holding the blanks while the cutter is dividing the blanks, mechanism for operating the feed, mechanism for operating the cutter and the clamp, and mechanism for moving the stop, substantially as specified.

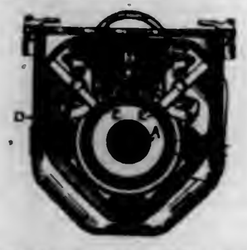
3. A machine for cutting pads or tablets having a table for supporting the blanks, a feed having a rectilinear movement and adapted to engage each and advance all of a pile of blanks on the table, a movable stop for determining the movement of the blanks, a cutter for dividing the blanks, a clamp for holding the blanks while the cutter is dividing the blanks, a carrier for removing the blanks, mechanism for operating the feed, mechanism for operating the cutter and clamp, mechanism for moving the stop and mechanism for moving the carrier, substantially as specified.

## 758,157. MEANS FOR PREVENTING ARCING BETWEEN COMMUTATOR-BRUSHES. Elihu Thomson, Swampscott, Mass., assignor to General Electric Company, a Corporation of New York. Filed May 29, 1903. Serial No. 158,229. (No model.)

*Claim.*—1. In combination, a commutator, brushes in operative relation therewith, and a barrier or barriers of non-conducting material in the space between the brushes.

2. In combination, a commutator, brushes therefor, and means for preventing sparking between the brushes comprising a shield or barrier of fused silica located between said brushes.

3. In combination, a commutator having its operative surface cylindrical, brushes engaging said cylindrical surface, and an arc-shaped shield or barrier of non-conducting material located between adjacent brushes of different material.



4. In a dynamo-electric machine, a field-producing member, an armature, a commutator, brushes therefor, and a shield or barrier interposed between adjacent brushes of different polarities, said field and said armature being so arranged that the field tends to force an arc between the brushes away from the armature and under the barrier.

5. In combination, a rotating commutator, brushes therefor, and means for preventing sparking between the brushes comprising a shield or barrier of a fused silica placed slightly in advance of each brush having reference to the direction of rotation of the commutator.

## 758,158. COMBINED SHADE-BRACKET AND CURTAIN-ROD HOLDER. John R. Vehrlen, Chicago, Ill. Filed Oct. 30, 1903. Serial No. 177,720. (No model.)



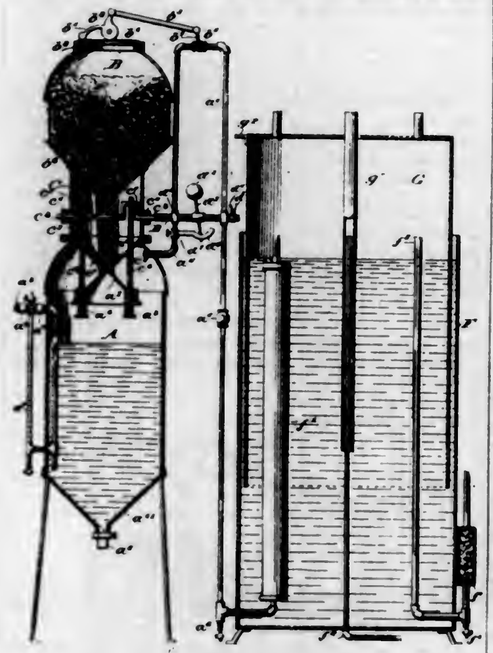
*Claim.*—A curtain-fixture comprising arms projecting at an angle from each other, the end of one arm being inturned to form a clamp member, a cooperating clamp member slidable on the inner side of said arm, means to operate said member, and a bracket projecting from the outer side of the other arm.

## 758,159. ACETYLENE-GAS GENERATOR. Frank R. Way, Wahoo, Nebr., assignor of one-half to John Stoen, Wahoo, Nebr. Filed July 1, 1903. Serial No. 163,974. (No model.)

*Claim.*—1. In an acetylene-gas apparatus, the combination of a gasometer of conventional type with a movable bell, a generator feeding granular carbid in measured quantities to the water in the generator-tank, said feeding of the carbid being accomplished by means of a flexible tube through which the carbid passes from the holder, and means for compressing and releasing the same, and a check-valve placed below the lower opening of said flexible tube and so operated that when the flexible tube is open the check-valve is closed, and when the flexible tube is closed the check-valve is open, said compression of the tube and opening and closing of the check-valve being accomplished automatically by means of a mechanism placed between the gasometer and generator and consisting essentially of a horizontal shaft, one end of which connects with the feed-controlling device within the generator, said shaft being journaled in bearings attached to the ascending and descending limbs of the pipe connecting the generator and gasometer, and having attached near its center a weight, and carrying near the end toward the gasometer two arms placed at an angle to each other and so designed that with the descent of the gas-bell a lug upon said gas-bell shall engage one of the arms, and with the assistance of the weight rotate the aforementioned shaft through one hundred and eighty degrees, and on the rising of the gas-bell the aforementioned lug shall engage the other arm and rotate the shaft in the opposite direction through one hundred and eighty degrees, restoring the parts to their original position, the rotation of the shaft imparting motion to a crank-shaft within the generator and controlling the feed of carbid in the same, all in combination and substantially as specified.

2. In an acetylene-gas apparatus, in combination, a gasometer with a movable bell, a generator with three superimposed chambers, the uppermost being the carbid-holder, and being provided with an opening for replenishing the supply of carbid, said opening being closed by means of a metal cap which is forced down against a packing by means of a cam, said cam having two arms or levers, one of which serves as a handle for operating the same, and the other connecting by means of a rod with a lever attached to the stem of a valve placed in the pipe connecting the generator and gasometer, the whole being so arranged that the cover of the carbid-holder cannot be removed without closing said valve, nor fastened in position again without opening the valve; the lower chamber of said generator adapted to contain water, and being provided with an inlet-pipe for filling, a water-gage and means for cleaning the same, an outlet-pipe for gas, and an opening at its most dependent portion for removing the slush; the middle chamber containing the device for controlling the feed of carbid from the carbid-holder, and having a funnel-shaped bottom, with an opening in communication with the generator-tank below, said opening being ordinarily closed by a conical check-valve; a pipe connecting the generator and gasometer, said pipe being shaped like an inverted U, having its descending limb the longest and provided at its most dependent portion with a drip-cock, said pipe also having journaled to it in a horizontal position a shaft, one end of which is in connection with a crank-shaft within the intermediate chamber of the generator, and the other end of which bears two arms inserted in a collar upon said shaft, at an angle to each other and at right angles to the axis of said shaft, said arms being so disposed that one of them will come in contact with a lug attached to the gas-bell, during its descent, and the other will come in contact with said lug during the ascent of the bell, said shaft also carrying near its center a metal collar to which is attached an arm bearing a weight at its free end, and another arm extending in the opposite direction and serving to limit the fall of the weight upon the other arm, all in combination and substantially as specified.

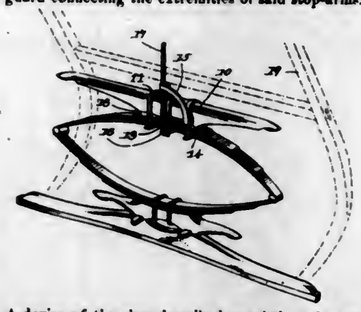




## 758,160. THILL-SUPPORT. Cullen D. White, Union City, Tenn. Filed Feb. 27, 1904. Serial No. 196,622. (No model.)

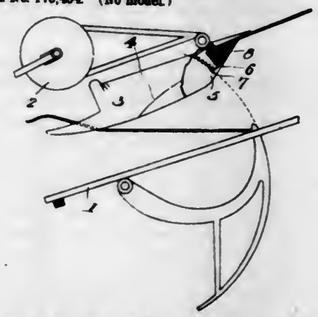
*Claim.*—1. A device of the class described, consisting of a bracket for detachable connection to the running-gear of a vehicle and having a vertical arm and a horizontal arm each with a lateral stop, and a stop-bar pivoted to said bracket and swinging across the path of the thills when elevated and supported alternately in its elevated and depressed positions by said arms and their lateral stops.

2. A device of the class described, consisting of a bracket for detachable connection to the running-gear of a vehicle and having a vertical arm and a horizontal arm each with a lateral stop, a stop-bar pivoted to said bracket and swinging across the path of the thills when elevated and supported alternately in its elevated and depressed positions by said arms and their lateral stops, and a segmental guard connecting the extremities of said stop-arms.



3. A device of the class described, consisting of a bracket for detachable connection to the running-gear of a vehicle and having a vertical arm and a horizontal arm each with a lateral stop, a stop-bar pivoted to said bracket and swinging across the path of the thills when elevated and supported alternately in its elevated and depressed positions by said arms and their lateral stops, and check-springs connected to said stop-arms to yieldably maintain said stop-bar in its two positions.

## 758,161. ATTACHMENT FOR GRAIN-BINDERS. James H. Williams and George B. Evans, Dodgeville, Wis. Filed Sept. 16, 1903. Serial No. 173,454. (No model.)



*Claim.*—1. In a grain-binder, a needle, and a cutter supported to engage the back of said needle between the side edges thereof.

2. In a grain-binder, a needle, a cutter having a blunt edge to engage the back of the needle between the side edges of the latter, and a sharp edge facing the point of the needle when the latter is retracted, and means for supporting said cutter close to the path of the needle.

3. In a grain-binder, a needle, a breastplate having a slot for the passage of said needle, and a cutting device secured in proximity to said slot, adjacent to the path of the needle and adapted to engage the back of the latter.

## 758,162. BUTTON FOR PLANTER CHECK-LINES. Wendelin Winkel, San Jose, Ill. Filed Feb. 8, 1904. Serial No. 192,803. (No model.)

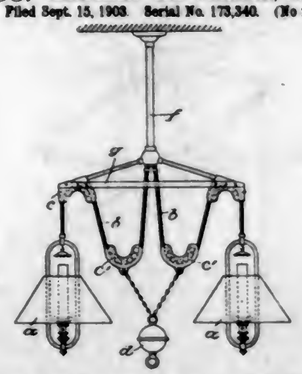


*Claim.*—1. A button for check-lines having its impacting-face square and having a passage extended outward through a side thereof, with its inner corner beveled, and having a reduced portion arranged at one side of the said passage for the check-line to wrap about, substantially as specified.

2. A button for check-lines comprising spaced parts having their outer ends square, passages in longitudinal alinement opening out-

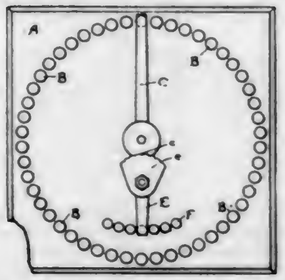
ward to corresponding sides of the said spaced parts and having inner diagonally-disposed corners beveled, and a connecting portion joining the said spaced parts and arranged opposite the inner ends of the said passages and in line therewith, substantially as specified.

758,163. CHANDELIER. EMIL WITKEMANN, Pforzheim, Germany. Filed Sept. 15, 1903. Serial No. 173,340. (No model.)



*Claim.*—A chandelier comprising a central fixed stem pulleys arranged at each side thereof, flexible pipe connections supported on the fixed stem and extending out over the pulleys lamps on the outer ends of the flexible pipe connections, movable pulleys on the said flexible pipe connections intermediate of their length and a weight with flexible connections to both of the movable pulleys substantially as described.

758,164. RHEOSTAT. WILLIAM C. YATES, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Aug. 16, 1901. Serial No. 72,228. (No model.)



*Claim.*—1. A rheostat provided with a circular range of contact-studs, resistance units between successive pairs, a brush-arm for successively engaging the studs throughout the circular path, a secondary range of greater resistance units, studs therefor, a brush-arm cooperating with the studs, and intermediate gearing by which movement of the first-mentioned arm over the contacts causes a step-by-step movement of the last-mentioned arm.

2. A rheostat provided with two ranges of contact-studs continuously connected in series relation, and means for operating the one having the larger resistance units intermittently during the operation of the other.

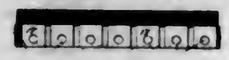
3. The combination of two rheostats provided with ranges of contacts between which resistance units of different sizes are connected, both said rheostats being connected continuously in series relation during the operation of the rheostat, an operating-handle, and means for cutting in successively the larger units once for each traverse of the entire range of smaller units.

4. In a rheostat, the combination with a resistance divided into two parts permanently connected in series, of a switch-arm for each part, a segment on one arm, and means for actuating said segment at the end of each revolution of the other arm.

5. In a rheostat, the combination with a resistance divided into two parts permanently connected in series, of a revoluble switch-arm for each part, a notched segment on one arm, and a pin on the other arm to engage with said segment at each revolution of said other arm.

6. In a rheostat, the combination with a resistance divided into two unequal parts, of a small number of contact-points connected with the larger part, and a large number of contact-points connected with the smaller part, a switch-arm for each part, and means for causing a step movement of the arm controlling the larger part at the end of a definite movement of the arm controlling the smaller part.

758,165. INSULATION. EDMUND E. BECHTOLD, Chicago, Ill. Filed June 22, 1903. Serial No. 162,470. (No model.)



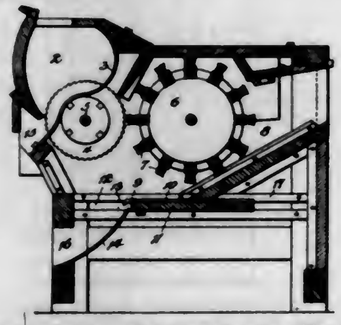
*Claim.*—1. As an improved article of manufacture, insulation comprising a piece bent to form an inner, an outer and an intermediate portion substantially in parallelism, the inner portion being provided with transverse slots, and a piece of insulating material located between the outer and intermediate portions, the said intermediate portion being provided with projections to engage the insulating material, substantially as described.

2. As an improved article of manufacture, insulation comprising a piece having a series of transverse slots and a number of openings arranged in two longitudinal and parallel rows, the said piece being bent longitudinally to form an inner, an outer and an intermediate portion substantially parallel with one another, and so that one of the rows of openings and the slots will be located in the inner portion and the other row of openings will be in the intermediate portion and will register with the first-named row, and insulating material located between the outer and intermediate portions, substantially as described.

3. As an improved article of manufacture, insulation comprising a piece bent to form an inner, an outer and an intermediate portion substantially parallel with one another, the inner portion being provided with transverse slots, and a piece of insulating material located between the outer and intermediate portions, the intermediate portion being provided with means to engage the insulating material, a protecting-strip located on the outer edge of the insulating material and comprising a piece bent to form an inner, an outer and an intermediate portion, the outer edge of the insulating material being located between the outer and intermediate portions of said strip and clamped thereby, substantially as described.

4. As an improved article of manufacture, insulation comprising a piece bent to form an inner, an outer and an intermediate portion substantially parallel with one another, the inner portion having a series of slots and a number of openings located between the slots, a piece of insulating material located between the outer and intermediate portions, substantially as described.

758,166. MOTE-BOARD FOR COTTON-GINS. CLEMENS G. BODUNGEN, Lagrange, Tex. Filed June 13, 1903. Serial No. 161,338. (No model.)



*Claim.*—1. In a cotton-gin, the combination with a frame or stand provided at the front with an opening, gin-saws, and a rotary brush-cylinder, of a mote-board comprising an approximately horizontal portion located beneath the brush-cylinder, and an inclined portion extending downward at the front of the horizontal portion to the said opening and closing the space at the bottom of the frame or stand and forming a chute, substantially as described.

2. In a cotton-gin, the combination with a frame or stand provided at the front with an opening, of a mote-board comprising an upper approximately horizontal portion, and an inclined portion extending downward from the horizontal portion to the said opening, and forming a chute and closing the space at the bottom of the frame or stand, substantially as described.



3. In a cotton-gin, the combination with a frame or stand provided with an opening, of a mote-board consisting of an upper portion, and an inclined portion extending from the upper portion to the opening to form a chute and to close the space at the bottom of the frame or stand, substantially as described.

4. In a cotton-gin, the combination with a frame or stand provided with an opening, of a mote-board constructed of flexible material and consisting of an upper approximately horizontal portion, and a curved front portion arranged at an inclination and extending downward to the opening to form a chute, substantially as described.

5. In a cotton-gin, the combination with a frame or stand having an opening, of a mote-board comprising an upper adjustable portion, and an inclined flexible apron extending from the adjustable portion to the opening, to form a chute and to close the space at the bottom of the frame or stand, substantially as described.

6. In a cotton-gin, the combination with a frame or stand having an opening and provided with ways, of an adjustable supporting-board arranged in the ways, and a mote-board constructed of flexible material, and consisting of an upper portion carried by the supporting-board, and an inclined portion extending therefrom to the said opening and forming a flexible apron, substantially as described.

7. In a cotton-gin, the combination with the gin saws, ribs, and brush-cylinder, of a mote-board comprising a rigid section, and a flexible apron or chute.

8. In a cotton-gin, an adjustable mote-board having at one end a flexible apron extension depending therefrom.

9. In a cotton-gin, the combination with the gin-stand having an opening at the front below the gin-saws, of a mote-board having an apron or chute communicating with the interior of the gin and discharging through the said opening.

10. In a cotton-gin, the combination with the gin saws, ribs, and brush-cylinder, of an adjustable mote-board having an apron or chute communicating respectively with the interior and exterior of the gin.

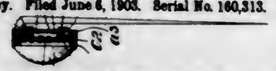
11. In a cotton-gin, the combination with the gin saws, ribs, and brush-cylinder, of an adjustable mote-board comprising an upper rigid portion adjustable toward and away from the front of the gin and provided with an apron or chute.

12. In a cotton-gin, the combination with the saws, gin-ribs, and brush-cylinder, of a mote-board partially closing the space below the saws and brush-cylinder, and having an apron or chute which communicates with the exterior of the stand.

13. In a cotton-gin, the combination with the saws, gin-ribs, and brush-cylinder, of a mote-board comprising a relatively rigid portion, and a flexible apron or chute extension.

14. In a cotton-gin, the combination with the saws, gin-ribs, and brush-cylinder, of a mote-board comprising a relatively rigid portion partially closing the space at the bottom of the saws and brush-cylinder, and an apron or chute fitted in the space between the said rigid portion and the front of the gin-stand, and communicating at its outer end with the exterior of said stand, for the purpose described.

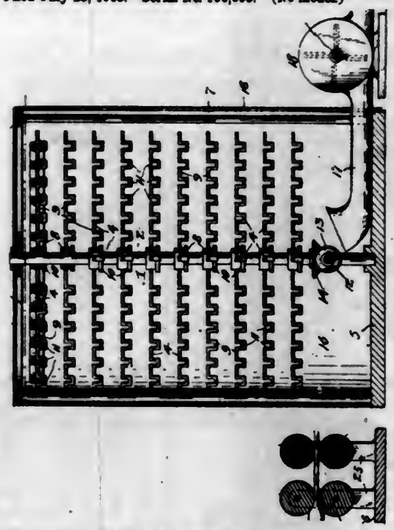
758,167. JEWELRY-MOUNTING. ALFRED A. BOISMAURE, New York, N. Y., assignor to the Boismaure Oscillating Jewelry Company, of New Jersey. Filed June 6, 1903. Serial No. 160,313. (No model.)



*Claim.*—1. In a device of the class described, a frame or support, a stationary, transparent, or translucent front member mounted therein; a vibratory member mounted therein rearwardly of the front member and resiliently connected with the frame or support by means of cylindrical devices connected with said frame or support, hollow cylindrical members connected with the vibratory member and inclosing said cylindrical devices, pins connected with the cylindrical devices and spiral springs mounted on said pins and connected with said cylindrical devices and said hollow cylindrical members, substantially as shown and described.

2. In a jewelry-mounting, an open annular body portion, a stationary front member mounted therein and consisting of a crystal or other transparent or translucent device, a transverse support at the back of the front member, and a vibratory member resiliently connected with said support and between the same and the front member.

758,168. HOSE-DRIER. CHARLES M. BOWMAN, Lebanon, Pa. Filed July 23, 1903. Serial No. 166,693. (No model.)



*Claim.*—1. A hose-drier, comprising a suitable frame, a shaft or upright mounted in said frame, hose-supporting shelves or frames upon said shaft, said shelves or frames being provided with means for spacing the coils of the hose, an inclosing casing for said frame, and means for supplying a drying medium to said casing, substantially as described.

2. A hose-drier, comprising a suitable frame, a vertical shaft mounted to rotate in said frame, hose-supporting shelves or frames upon said shaft, means for spacing the coils of the hose upon said shelves, a removable inclosing casing for said frame, means for rotating said frame, and means for supplying a drying medium to said casing, substantially as described.

3. A hose-drier, comprising a suitable frame, a vertical shaft mounted to rotate in said frame, hose-supporting shelves or frames revolubly mounted upon said shaft, means for spacing the coils of the spirally-wound hose upon said shelves, a removable inclosing casing for said frame, a drive-shaft, means for imparting motion to said vertical shaft from said drive-shaft, a blower for forcing a drying medium into said casing, and means for operating said blower from said drive-shaft, substantially as described.

4. In a hose-drier, a drying-rack provided with means for supporting the line of hose in a folded or compressed condition with the folds spaced apart, substantially as described.

5. In a hose-drier, the combination with a suitably-mounted shaft or upright, of hose-supporting shelves or frames having arms provided with means for spacing the coils of the spirally-wound hose, substantially as described.

6. In a hose-drier, the combination with a suitably-mounted shaft or upright of hose-supporting shelves or frames having radial arms provided with recesses or sockets adapted to receive the coils of the hose and to space the same, substantially as described.

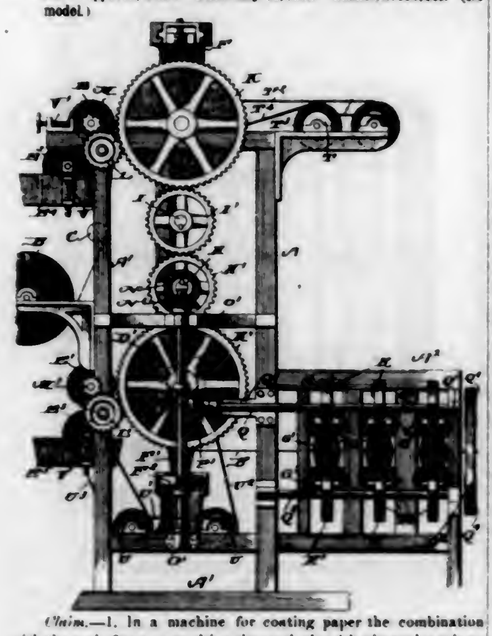
7. In a hose-drier, the combination with a suitably-mounted rotatable shaft, of hose-supporting shelves or frames revolubly mounted upon said shaft and having arms provided with recesses or sockets adapted to receive the coils of the hose and to space the same, substantially as described.

8. In a hose-drier, the combination with a suitably-mounted rotatable shaft, of hose-supporting shelves or frames, revolubly mounted upon said shaft and comprising hubs, and arms projecting radially from said hubs and bent to form recesses or sockets adapted to receive the coils of the hose and to space the same, substantially as described.

9. In a hose-drier, a drying-rack provided with supports for a coiled hose, said supports having means for spacing and supporting the coils of the hose in a folded or compressed condition, substantially as described.

10. In a hose-drier, a drying-rack provided with hose-supports having seats to receive the coils of hose in a folded or compressed condition, substantially as described.

**758,169. MACHINE FOR COATING PAPER.** MARTIN CASSIN, East Pepperell, Mass. Filed May 16, 1903. Serial No. 157,440. (No model.)



*Claim.*—1. In a machine for coating paper the combination with the main frame comprising the vertical and horizontal portions, the rotary drums arranged in the vertical portion, rotary brushes arranged adjacent the rotary drums, means for feeding the said rotary brushes, and the horizontally-reciprocating brushes arranged in the horizontal portion of the main frame, together with means for rotating the drums and rotary brushes, and means for reciprocating the horizontal brushes, as set forth.

2. In a machine of the kind described, the combination with the main frame, of the drums arranged therein, the rotary brushes, feed-rollers and fountains, transversely-reciprocating brushes arranged in pairs above and below the line of travel of the paper, means for rotating the drums, rotary brushes and feed-rolls together with means for reciprocating the transversely-movable brushes, substantially as described.

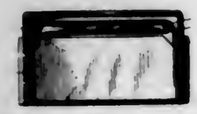
3. In a device of the kind described, the combination with the rotary drum and means for operating the same, a pair of cone-pulleys and belt connecting the same, means for operating the said pulleys from the rotary drum, a rotary brush, a fountain, and feed-roll rotating in the fountain, together with means for connecting the cone-pulleys with the feed-roll, as set forth.

4. In a device of the kind described, the combination with the upper and lower rotary drums, means for rotating the same, the rotary brushes adapted to apply color to the opposite faces of a sheet of paper passing around the drums, and the adjustable reciprocating brushes arranged above the upper drum and below the lower drum, substantially as specified.

5. In a device of the kind described, a horizontal brush, a box in which the head of said brush is adjustably held, said box having ribs upon the opposite side thereof, the grooved guides in which the ribbed box slides, together with means for reciprocating said box, substantially as described.

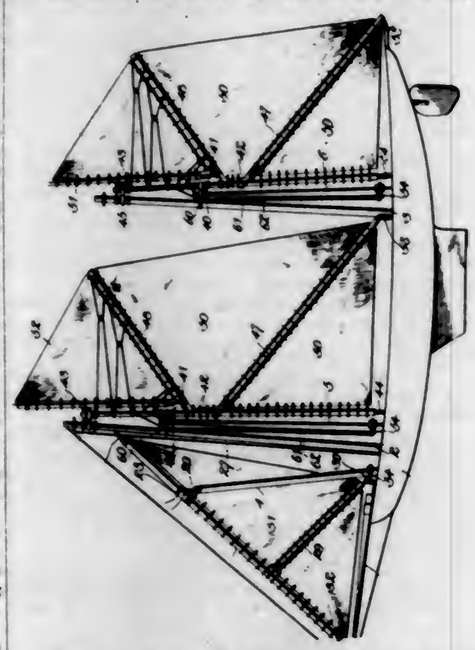
6. The combination with the main frame comprising the vertical and horizontal portion, of the paper-roll support, the upper and lower drums, the upper and lower fountains, the upper and lower feed-rolls, the upper and lower rotary brushes, upper and lower adjustable reciprocating brushes, the transversely-movable horizontal brushes arranged in pairs above and below the line of travel of the paper, means for rotating the drums and rotary brushes, and means for reciprocating the transversely-movable brushes, the upper and lower cone-pulleys, means connecting the said pulleys with the upper and lower drums, respectively, together with means for connecting the said pulleys with the upper and lower rolls, respectively, all of said parts being arranged and adapted to operate substantially as described.

**758,170. TRAVELING-CASE.** WILLIAM D. CHASE, Poughkeepsie, N. Y., assignor to the Poughkeepsie Art Pulp Company, Poughkeepsie, N. Y., a Corporation. Filed Dec. 17, 1903. Serial No. 185,510. (No model.)



*Claim.*—A body for traveling-cases and the like composed of inner and outer layers of sheet material, the upper edge of the outer layer forming a rim or support for the edge of a cover to rest upon, the upper edge of the inner layer extending above said rim and bent inward at an oblique angle to form a beveled portion and having its upper edge folded inwardly and downwardly, and an intermediate layer extending down between said inner and outer layers below the rim and projecting upwardly above the rim to form an outer lining for the said beveled portion of the inner layer, said upwardly-projecting portion of the intermediate layer being bent over and around the fold of the said beveled portion of the inner layer and having its free edge bent up between the oblique portion and fold, thus interlocking therewith to form a stiffened edge, substantially as described.

**758,171. RIG FOR SAILING VESSELS.** BYRON W. COLLINS, Evanston, Ill. Filed Dec. 19, 1902. Serial No. 136,941. (No model.)



*Claim.*—1. A fore-and-aft-rigged vessel having a sail-supporting arm connected to the luff or fore leech of the sail and adjustable to arranged the sail in a plane inclined with respect to the horizontal and outboard from the vessel to thereby permit the wind-pressure to exercise a lifting tendency on the sail.

2. In a sailing vessel, a sail-supporting means adjustable laterally, and means for directing said sail-support forward during lateral movement in either direction.

3. In a sailing vessel, a sail, a sail-supporting means adjustable to permit outboard movement of the foot of the sail, and means for automatically decreasing the height of the sail in proportion to the extent of outboard movement.

4. In a sailing vessel, a sail, a sail-supporting means adjustable to present the sail in the form of a plane inclined to the horizontal, and means for decreasing the height of the sail in proportion to the angle which it assumes.

5. A vessel-propelling means comprising a sail-supporting arm connected to the luff or fore leech of the sail and adjustable to leeward and in the form of a plane inclined upward in a direction opposite to that in which the wind is blowing, substantially as specified.

6. In a sailing vessel, a mast, a sail-carrying arm connected to the mast, and a pivoted sail-guiding lever connected to the arm and adjustable with respect to the mast.

7. In a sailing vessel, a fixed mast and a pivoted sail guiding and supporting lever adjustable both laterally and forwardly with respect to said mast.

8. In a sailing vessel, a fixed mast, and a pivoted sail guiding and supporting lever having its head movable in an angular plane both forwardly and laterally with respect to the mast.

9. In a fore-and-aft-rigged sailing vessel, a sail having its upper portion supported above the hull of the vessel, and means for adjusting the whole of the foot of the sail outboard.

10. In a fore-and-aft-rigged sailing vessel, a mast, a sail the upper portion of which is supported by the mast, and means for adjusting the foot of the sail wholly outboard.

11. In a fore-and-aft-rigged sailing vessel, a sail, and a sail-supporting means having a connection intermediate of the height of the sail and permitting adjustment of the sail at an angle to the horizontal.

12. In a fore-and-aft-rigged sailing vessel, a fixed mast, a sail of which the head is supported by the fixed mast, a pivoted guiding-lever having a connection intermediate of the height of the sail, and sheet connections at both ends of the foot of the sail for regulating the extent of outboard movement of said sail.

13. In a sailing vessel, a fixed mast, a pivoted sail-guiding lever, and a sail-carrying arm pivotally connecting the mast and lever, the connection with the mast being vertically adjustable.

14. In a sailing vessel, a fixed mast, a pivoted sail-guiding lever, a sail-carrying arm, a longitudinally-movable sleeve carried by the mast and pivotally connected to the arm, and a pivotal connection between the arm and the lever.

15. In a sailing vessel, a fixed mast, a pivoted sail-guiding lever, a sail-carrying arm having a pivotal connection with the lever, and a pair of pivotally-connected sleeves one carried by the arm and the other freely adjustable longitudinally of the fixed mast.

16. In a sailing vessel, a mast, a sail-guiding lever, a sail-carrying arm pivoted at a point intermediate of its length to the lever, a boom carried by the arm, and sheets connected to the lower ends of the arm and boom.

17. In a sailing vessel, a fixed mast, a pivoted sail-guiding lever, a sail-carrying arm having a pivotal connection with the mast, a lever and boom carried by the arm, and sheets connected to both the arm and the boom.

18. In a sailing vessel, a pivoted and freely-movable sail-carrying arm, a boom carried thereby, a gaff also carried by the arm, and halyards having a guiding device in alinement with the pivotal point of the arm.

19. In a sailing vessel, a pivoted sail-carrying arm, a block adjacent to the pivot-point, and halyards guided by said block.

20. In a sailing vessel, a sail-supporting lever, a sail-carrying arm pivotally connected therewith, a block in alinement with the pivot-point, a gaff carried by the arm, and throat and peak halyards connected to the gaff and extending through the block to fastening-points at the foot of the lever.

21. In a sailing vessel, a hull having a pit of which portions are inclined at an angle to both the keel-line and the athwartships plane, and a sail-carrying lever having its foot pivoted within the pit and guided by the walls thereof.

22. In a sailing vessel, a hull having a pit, the walls of which are arranged at an angle both to the line of the keel and the athwartships plane, and a sail-supporting lever pivoted within the pit and guided forward by contact with the walls thereof during lateral adjustment of said lever.

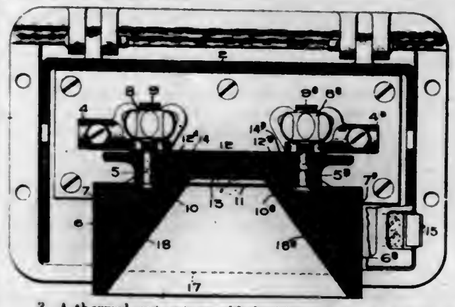
23. In a sailing vessel, a fixed mast, a sail guiding and supporting lever having its foot pivoted adjacent to the foot of the fixed mast, and a sail supported in part by the mast and in part by the lever.



**758,172. BLOW-OUT FUSE.** FRED R. COREY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 2, 1902. Serial No. 121,714. (No model.)

*Claim.*—1. A thermal cut-out provided with terminals for connection with an electric circuit, and plates of magnetic material at the sides of the fusible element adapted to be polarized by the current passing through said fusible element.

2. A thermal cut-out provided with a blow-out chute and pole-pieces mounted at the sides of the fusible element to be polarized by the current in said element.



3. A thermal cut-out provided with a blow-out chute, with plates of magnetic material at its sides polarized only by the field set up by the fuse-current.

4. A thermal cut-out comprising a fuse carrier or support, and plates of magnetic material at the sides of the fuse adapted to be polarized by the current passing through the same, said plates overlapping the fuse on the rear side.

5. A thermal cut-out provided with a magnetic blow-out adapted to be polarized by the field developed around the fusible element, the pole-pieces of said blow-out terminating in an air-gap at the rear of the fuse.

6. A thermal cut-out provided with a magnetic blow-out, and means for establishing a magnetic field principally on one side of the fusible element.

7. A thermal cut-out having a magnetic blow-out polarized by the current in the fusible element, the pole-pieces being so related to said element that the free poles are at one side of the same, whereby the magnetic field which expels the arc-gases follows up the arc-stream.

8. A thermal cut-out having a magnetic blow-out polarized by the current in the fusible element and a magnetic field at one side of the fuse, and a path of low reluctance in front of the fuse to direct the line of force.

9. A thermal cut-out having a magnetic blow-out polarized by the current in the fusible element and a magnetic field at one side of the fuse, and a magnetic shunt in front of the fuse to prevent the establishment of a field at that point.

10. A thermal cut-out having a magnetic blow-out polarized solely by the current in the fusible element, and iron plates forming pole-pieces for said blow-out having free poles at one side of the fuse and iron yokes on the other side laterally displaced from the center of the fusible element.

11. A thermal cut-out having a blow-out chute and a magnetic circuit of high permeability provided with free poles at one side of the fuse, and a low-resistance magnetic shunt in front of the fuse located outside the inner chute-walls.

12. A thermal cut-out having an arc-chute open to the atmosphere on one side of the fuse, a fuse-seat at one end of the same, and a removable breech-block to clamp the fuse and close one end of the chute.

13. A thermal cut-out having an arc-chute, iron plates polarized by the current in the fuse, a fuse-seat between the poles, and a removable breech-block to clamp the fuse.

14. A thermal cut-out having an arc-chute, iron plates polarized by the current in the fuse, a fuse-seat between the poles, and a breech-block to clamp the fuse made of insulating material and provided with metal ends to connect the fuse with the terminals.

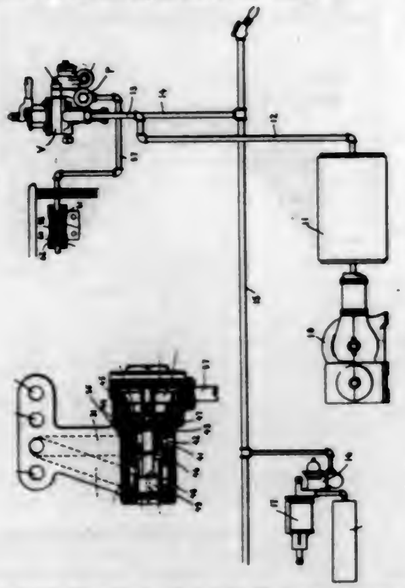
15. A thermal cut-out comprising an arc-chute, conducting-studs mounted thereon to receive the fuse, and clamps permanently fixed to the studs to secure the fuse-strip under pressure.

16. A thermal cut-out having an arc-chute and a blow-out polarized by the current in the fusible element, and a casing having an opening in the same direction as the chute, said casing having a laterally-movable cover.

**758,173. EMERGENCY-BRAKE.** FRED R. COREY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Oct. 14, 1903. Serial No. 177,043. (No model.)

*Claim.*—1. In combination, an automatic air-brake system, an engineer's valve, a source of compressed-fluid supply, and an emer-

gency device constructed and arranged to connect the train-pipe of said system to atmosphere to apply the brakes and simultaneously to cut off communication between the train-pipe and the source of supply without interfering with the connections between the engineer's valve and the braking devices of the system.



2. In combination, an automatic air-brake system, an engineer's valve, a source of compressed-fluid supply, an emergency device constructed and arranged to connect the train-pipe of said system to atmosphere to apply the brakes and simultaneously to cut off communication between the train-pipe and the source of supply without interfering with the communication between the engineer's valve and the train-pipe, and means for operating said emergency device.

3. In combination, an automatic air-brake system, an engineer's valve provided with a feed-valve for maintaining the pressure in the train-pipe of said system, an emergency device constructed and arranged to connect the train-pipe to atmosphere to apply the brakes and simultaneously to cut off communication between the feed-valve and the engineer's valve without interfering with the connections between the train-pipe and the engineer's valve.

4. In combination, an automatic air-brake system, an engineer's valve provided with a feed-valve for maintaining the pressure in the train-pipe of said system, an emergency device constructed and arranged to exhaust the train-pipe so as to apply the brakes and also to cut off communication between the feed-valve and the train-pipe without interfering with the communication between the engineer's valve and the train-pipe, and means for operating said emergency device.

5. In combination, an automatic air-brake system, an engineer's valve for controlling the application and release of the brakes of said system, a feed-valve for automatically maintaining the pressure in the train-pipe when the engineer's valve is in its running position, and an emergency device located between the engineer's valve and the feed-valve so as to control the passage-way leading from the feed-valve to the train-pipe, said emergency device being adapted to open said passage-way to the atmosphere to apply the brakes in case of an emergency and at the same time cut off the communication between said passage-way and the feed-valve.

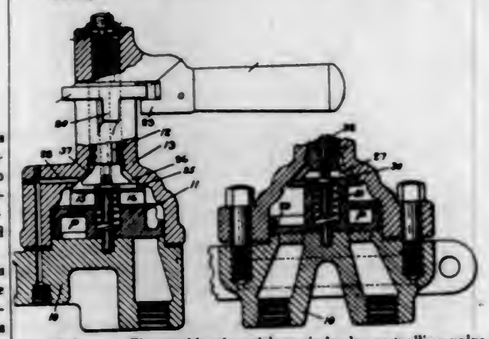
6. In combination, an automatic air-brake system, an engineer's valve for controlling the application and release of the brakes of said system, a feed-valve for automatically maintaining the pressure in the train-pipe when the engineer's valve is in its running position, an emergency device constructed and arranged to open communication between the train-pipe and the atmosphere and at the same time cut off communication between the feed-valve and the train-pipe without interfering with the communication between the train-pipe and the engineer's valve, a controlling-handle, and means for operating said emergency device when the controlling-handle is released by the operator.

7. In combination, an automatic air-brake system, an engineer's valve for controlling the application and release of the brakes of said system, a feed-valve for automatically maintaining the pressure in the train-pipe when the engineer's valve is in its running position, an emergency device constructed and arranged to open communication between the train-pipe and the atmosphere and at the same time to cut off communication between the feed-valve and the train-pipe without interfering with the communication between the train-pipe and the engineer's valve, a motor-controller, a controlling-handle therefor, and means for operating said emergency device when said controlling-handle is released by the operator.

8. In combination, an automatic air-brake system, an engineer's valve for controlling the application and release of the brakes of said system, a feed-valve for automatically maintaining the pressure in the train-pipe when the engineer's valve is in its running position, an emergency device constructed and arranged to open communication between the train-pipe and the atmosphere and at the same time cut off communication between the feed-valve and the engineer's valve without interfering with the connections between the engineer's valve and the braking devices, a motor-controller, an operating-handle therefor, a pilot-valve operatively connected with said emergency device, and means for operating said pilot-valve to cause the operation of the emergency device when said operating-handle is released by the operator.

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**758,174. AIR-BRAKE CONTROLLING-VALVE.** FRED R. COREY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Nov. 20, 1903. Serial No. 182,035. (No model.)



*Claim.*—1. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and operating mechanism for said auxiliary valve extending up through the stem of the main controlling-valve.

2. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve seated in the stem of the main controlling-valve and arranged to control a passage for the supply of air to a device independent of the air-brake system, and operating mechanism for the said auxiliary valve extending up through the stem of the said main controlling-valve.

3. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve, and means for rendering the said auxiliary valve inoperative to control the passage in which it is included when the operating-lever is removed from the stem of the controlling-valve.

4. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and means for rendering the said auxiliary valve inoperative to control said passage when the operating-lever is removed from the stem of the controlling-valve.

5. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve seated in the stem of the main controlling-valve, and means for rendering the said auxiliary valve inoperative to control the passage in which it is included when the operating-lever is removed from the stem of the controlling-valve.

6. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve



seated in the stem of the main controlling-valve and arranged to control a passage for the supply of air to a device independent of the air-brake system, and means for rendering the said auxiliary valve inoperative to control said passage when the operating-lever is removed from the stem of the controlling-valve.

7. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and a removable push-button on the end of the controlling-valve stem for operating the said auxiliary valve.

8. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve seated in the stem of the main controlling-valve and arranged to control a passage for the supply of air to a device independent of the air-brake system, and a removable push-button on the end of the controlling-valve stem for operating the said auxiliary valve.

9. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and means for rendering the said auxiliary valve inoperative to control said passage whenever the operating-lever is brought to the lap position.

10. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and means for closing said passage whenever the operating-lever is brought to the lap position.

11. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and another valve carried by the stem of the main controlling-valve for closing said passage when the operating-lever is brought to the lap position.

12. The combination with an air-brake controlling-valve having a stem adapted to receive an operating-lever, of an auxiliary valve arranged to control a passage for the supply of air to a device independent of the air-brake system, and operating mechanism for said auxiliary valve extending up through the stem of the said main controlling-handle and terminating in a push-button carried by the operating-lever.

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**758,175. INSULATOR.** SCOTT C. CUTTER, Oswego, Ill. Filed Dec. 11, 1902. Serial No. 134,783. (No model.)



*Claim.*—1. An insulator composed entirely of insulating material and having a corrugated back, a horizontal bore, and a vertical slot leading to said bore, the head of the insulator being rounded into said slot, the lower edges of said slot extending into said bore to form retention-pockets, substantially as described.

2. An insulator composed entirely of insulating material and having a corrugated back, a horizontal bore, a vertical slot leading to said bore the head of the insulator being rounded into said slot, the lower edges of said slot extending into said bore to form retention-pockets, and means whereby said insulator may be secured to a support, substantially as described.

3. An insulator having a body portion with a corrugated back, a hook portion, a slot between the end of the hook portion and the body portion, the lower edges of said slot extending into the bend of the hook portion to form pockets, the upper edge of said slot on the body portion being rounded, the other edge remaining to form a guide, and means whereby said insulator may be secured to a support.

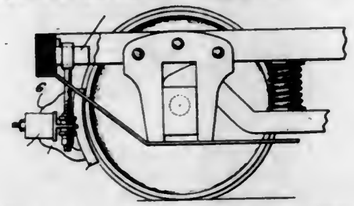
4. An insulator having a body portion with a corrugated back, a hook portion, a slot between the end of the hook portion and the body portion, the lower edges of said slot extending into the bend of the hook portion to form pockets, the upper edge of said slot on the body portion being rounded, the other edge remaining to form a guide, and a hole through said body portion whereby the insulator may be tied to a support, substantially as described.

5. An insulator composed entirely of insulating material and having a corrugated back, a horizontal bore, a vertical slot leading to said bore the head of the insulator being rounded into said slot, the lower edges of said slot extending into said bore to form retention-pockets, and holes through said insulator for receiving a wire, whereby the insulator may be tied to a support, substantially as described.

6. An insulator having a body portion 3, with a corrugated back 12, a hook portion 4, a vertical slot 2 between the end of the hook portion and the body portion, the lower edges 5 and 6 of said slot extending into the bend 1 of the hook portion to form retention-pockets 7 and 8, the head of the insulator 9 being rounded into said slot, the other edge 10 of the slot remaining to form a guide for the wire into said slot, and holes 11 11′ through said body portion for receiving wires whereby the insulator may be tied to a support, substantially as described.

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**758,176. BRAKE-HEAD FOR CAR-BRAKES.** JOHN H. GRAHAM, Boston, Mass., assignor to Burton Payne Gray, Newton, Mass. Filed May 5, 1902. Serial No. 105,921. (No model.)



*Claim.*—1. A brake-head adapted to support a brake-shoe, and having means to secure a hanger directly thereto, said means being situated on one side of the brake-head.

2. A brake-head, a brake-beam secured thereto and a hanger secured directly to the brake-head at its outer side.

3. A brake-head having means to secure a brake-beam to the back side thereof, and means to secure a hanger to the outer side thereof.

4. A brake-head having a supporting-flange projecting forwardly from the outer side thereof, said flange being adapted to be secured to a hanger.

5. In a brake apparatus, a brake-head having a supporting-flange projecting forwardly from the side thereof, and a hanger suspended from the car-truck and secured directly to the said flange, the construction being such that the point of connection between the hanger and the brake-head is substantially in the plane of the braking-surface.

6. In a brake apparatus, a truck-frame, a hanger suspended therefrom, and a brake-head connected directly to said hanger, the point of connection between the hanger and brake-head being situated at one side of the longitudinal plane of the car-wheel.

7. In combination in a brake mechanism, a brake-head provided with a laterally-extending flange; a hanger rigidly secured to said flange and loosely suspended from a spring-controlled beam mounted upon the car-truck; said beam; and said car-truck.

8. A brake-head adapted to support a brake-shoe and having a laterally-extended flange provided with an eye for the attachment of the brake-head to a hanger.

9. In a brake apparatus, a brake-head having a laterally-extending flange projecting from one side thereof, and a hanger supported by the car-truck and secured directly to the said flange.

10. In a brake apparatus, a truck-frame, a hanger suspended therefrom, and a brake-head having a laterally-extended flange to which the hanger is secured.

11. A brake-head adapted to support a brake-shoe and having a laterally-extending flange projecting therefrom which is adapted to have a hanger secured thereto, said flange being situated midway between the top and bottom of the head.

12. A brake-head having midway between its top and bottom a laterally-extending flange provided with an eye for the attachment of the brake-head to a hanger.

13. In combination in a brake mechanism, a brake-head provided with a laterally-extending flange; a hanger rigidly secured to said flange and loosely suspended from the car-truck: and said car-truck.

14. In combination in a brake mechanism, a brake-head and a vertical hanger therefor secured thereto in front of the brake-beam

and in immediate proximity to the shoe-face of said brake-head; said hanger being thereby adapted to transmit vertically and directly the frictional stresses; and said brake-beam.

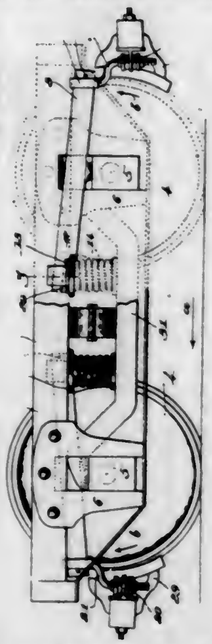
15. In combination in a brake mechanism, a brake-head and a hanger therefor rigidly secured thereto in front of the brake-beam and in immediate proximity to the shoe-face of said brake-head; and said brake-beam.

16. In combination in a brake mechanism, a brake-head and a hanger therefor rigidly secured thereto in immediate proximity to the shoe-face thereof and in front of the brake-beam, and loosely mounted upon the car-truck; said brake-beam; and said car-truck.

17. In combination in a brake mechanism, a brake-head and a hanger therefor rigidly secured thereto in immediate proximity to the shoe-face thereof and in front of the brake-beam, and yieldingly supported from the car-truck; said brake-beam; and said car-truck.

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**758,177. RAILWAY-BRAKE. JOHN H. GRAHAM, Boston, Mass., assignor to Burton Payne Gray, Newton, Mass. Filed May 5, 1903. Renewed Mar. 21, 1904. Serial No. 199,187. (No model.)**



*Claim.*—1. In a brake mechanism, a brake-head supporting a brake-shoe, means connected directly to one side of the head for supporting the latter, and means for varying the position of the brake-head vertically to compensate for varying loads.

2. In a brake mechanism, a truck-frame, a brake-head adapted to support a brake-shoe, a rocking brake-supporting member fulcrumed on the car-axle, and means to support the brake-head from one end of said brake-supporting member, the other end of said member being connected to the cap for the spring of the truck.

3. In a brake mechanism, a truck-frame having longitudinal wheel-pieces, springs supporting said wheel-pieces, caps secured to the wheel-pieces and in which the springs are seated, a brake-supporting bar fulcrumed intermediate its ends on the car-axle and having one end connected to one of said caps, and a brake-shoe suspended from the other end of said bar.

4. In a brake mechanism, a truck-frame having wheel-pieces, springs supporting said wheel-pieces, caps secured to the wheel-pieces and in which the springs are situated, a brake-supporting bar fulcrumed intermediate its ends on the car-axle and having one end connected to one of said caps, a hanger suspended from the other end of said bar, and a brake-head secured directly to said hanger.

5. In a brake mechanism, a rocker pivotally mounted on a car-axle, a brake-supporting member supported intermediate its ends on said rocker, means to secure one end of said member to the truck-frame, and means to support the brake-shoes from the other end of said member.

6. In a brake mechanism, a pivotally-mounted rocker carried by each end of a car-axle, a brake-supporting member supported intermediate its ends on each of said rockers, means to secure one end of each of said members to the truck-frame, and a brake-beam carrying brake-shoes supported from the other end of said members.

7. In a brake mechanism, a pivotally-mounted rocker at each end of a car-axle, a bar supported intermediate its ends on each of said rockers, said bars each having one end secured to the truck-frame and a hanger depending from the other end, a brake-head secured directly to each hanger, and a brake-beam uniting said brake-heads.

8. In a brake mechanism, a grooved bracket on the car-axle box, a rocker in said groove, a brake-supporting bar connected at one end to the truck and supported intermediate its ends on said rocker, and means to suspend a brake-head from the free end of said brake-supporting bar.

9. In a brake mechanism, a brake-head, a rigid hanger secured thereto, said hanger having an eye at its upper end and a supporting-arm secured to the truck-frame and passing through said eye.

10. In a brake apparatus, a brake-supporting arm, a rigid hanger slidably supported thereon and a brake-shoe suspended from said hanger, the connection between the hanger and arm being such that as the brake-shoe wears the point of connection between the hanger and arm varies.

11. In a brake apparatus, a brake-supporting arm, a hanger slidably mounted thereon and brake-shoes supported by the hanger.

12. In a brake apparatus, a brake-supporting arm connected to the truck at each side thereof, said arms being independent from each other and each arm being fulcrumed on the car-axle, and a brake-head suspended from the free end of each arm.

13. In a brake apparatus, a pair of brake-supporting arms fulcrumed on opposite ends of a car-axle, said arms being independent from each other, and a hanger supporting a brake-head suspended from the free end of each arm.

14. In a brake apparatus, a brake-supporting arm fulcrumed intermediate its ends on the car-axle, a hanger suspended therefrom, and a brake-shoe secured to the hanger, the connection between the hanger and arm being such that as the brake-shoe wears the point of suspension of the hanger varies.

15. In a brake apparatus, a pair of independent brake-supporting arms fulcrumed on opposite ends of a car-axle, and flexibly connected to the truck to permit both vertical and lateral play, and a hanger supporting a brake-shoe suspended from the free end of each arm.

16. In a brake apparatus, a brake-supporting arm fulcrumed intermediate its ends on the car-axle box and flexibly connected at its ends to the car-truck so as to be capable of swinging movement both vertically and laterally, a hanger suspended from the free end of said arm, and a brake-shoe supported by said hanger.

17. In a brake apparatus, a brake-supporting arm fulcrumed on the car-axle adjacent the car-wheel, a hanger suspended from said arm and a brake-head connected to the hanger, the point of connection between the hanger and brake-head being in the longitudinal plane of the arm.

18. In a brake apparatus, a pivoted brake-supporting arm, a hanger supported thereby, and a brake-head connected to the hanger, the point of connection between the hanger and brake-head being in line with the arm.

19. In a brake apparatus, a brake-supporting arm situated at one side of the plane of the car-wheel, a hanger supported by said arm, and a brake-head connected directly to the hanger, the point of connection between the hanger and the brake-head being in line with the arm.

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**758,178. FENCE-POST. FRANK HEDRICK, Leroy, Ill. Filed Dec. 17, 1903. Serial No. 185,568. (No model.)**

*Claim.*—1. In a fence-post, the combination with an upper primary section, of a lower secondary section composed of a plurality of bodies, a plurality of said bodies being superposed vertically and a number of the bodies arranged to project laterally therefrom, and a tie element extending around the secondary section and connected with the primary section.

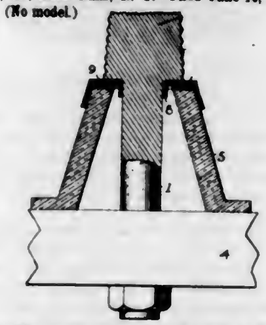
2. In a fence-post, the combination with an upper primary section, of a lower secondary section comprising a plurality of brick-like bodies, a plurality of said bodies being superposed vertically and a number of the bodies arranged to project horizontally therefrom, and a tie element extending longitudinally around the secondary section and connected with the primary section.





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**758,179. SUPPORTING-PIN FOR LINE-INSULATORS. JOHN D. HILLIARD, Jr., Glens Falls, N. Y. Filed June 16, 1903. Serial No. 161,681. (No model.)**



*Claim.*—1. The combination with an insulating-sleeve, of a metal bolt adapted to receive an insulator, said bolt passing through said sleeve and leaving an annular space between it and said sleeve, and a metal cap rigidly carried by said bolt and having a flange fitting over the outside of said sleeve to transmit the side thrust of the bolt to the outer surface of the sleeve.

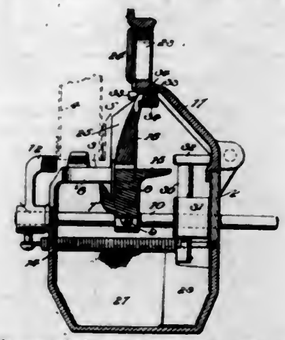
2. In an insulator, the combination with a metal bolt, adapted to receive an insulator and having a shoulder, of a sleeve of insulating material below said shoulder but not in contact with said bolt, an annular plate of metal fitting the bolt and lying between the shoulder and the top of the sleeve and provided with a downwardly-extending flange fitting the outside of said sleeve, and a washer of fiber or the like between said plate and sleeve.

3. The combination with an insulator-bolt, a support therefor and an insulating bell-shaped base surrounding but not in contact with said bolt and resting on said support, of a sheet-metal plate between said bolt and base, having an outer flange fitting the outside of said base and an inner flange fitting the shank of said bolt.

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**758,180. COIN-CONTROLLED VENDING-MACHINE. MAURICE HOFHEIMER, New York, N. Y., assignor to United States Vending Corporation, a Corporation of Maine. Filed Apr. 4, 1903. Serial No. 151,060. (No model.)**

*Claim.*—1. A coin-controlled vending-machine having a supporting-shelf formed with an opening, the width of the latter being slightly greater than that of the coin, a coin-guideway for directing a coin into such opening, an ejector comprising a spring-held rod, a plate carried thereby with its face normally in the same plane as such guideway, said plate fitting in said opening and having a support upon which the coin rests while being moved with the ejector longitudinally through the opening, and means movable with the ejector between which and the coin the article of merchandise is designed to fit, the retention of such coin on its support being dependent upon its engagement with such article of merchandise, as set forth.



2. A coin-controlled vending-machine having a supporting-shelf formed with an opening, a spring-held rod movable transversely to the shelf, a plate secured on such rod having a tooth beveled on its upper face forming a support for a coin, said plate fitting in and guided by said opening, and a finger carried by such rod and extending in line with said shelf, the article of merchandise being designed to fit between said finger and the plate, as set forth.

3. The combination with the casting having a supporting-shelf formed with an opening, of a spring-held rod movable transversely through the casting, a plate secured on such rod having a tooth beveled on its upper face, said plate fitting in and guided by said opening, a finger carried by such rod extended in line with said shelf, the space between said finger and plate being designed to accommodate the articles of merchandise, and a stop for limiting the return movement of said rod, as set forth.

4. The combination with the casting having a supporting-shelf formed with an opening and a beveled wall, the width of said opening being slightly greater than the diameter of the coin, of an ejector movable within and guided by such opening having a beveled tooth forming the support for a coin, a finger carried by the ejector in line with such shelf, the space between said finger and ejector being designed to accommodate the articles of merchandise, and a second casting pivotally secured to the first-mentioned casting and having a coin inlet and passage-way opening above said wall, as set forth.

5. The combination with the casting having a supporting-shelf formed with an opening and a beveled wall, of an ejector movable within such opening having a beveled tooth forming the support for a coin, and a finger carried by the ejector in line with said shelf, the space between said finger and ejector being designed to accommodate the articles of merchandise, a second casting pivotally secured to the first-mentioned casting and having a coin inlet and passage-way opening above said wall, and a supply-chute having a cross-piece opposite the lower portion of said beveled wall, as set forth.

6. In a coin-controlled vending-machine, a supporting-shelf having an opening, an ejector having an upright plate movable in said opening and a coin-support beneath but in line with such opening, the coin resting on such support being in engagement with the side edges of the opening while in contact with the article to be ejected and between such article and said plate, such coin being dependent upon such article for its retention on such support, as set forth.

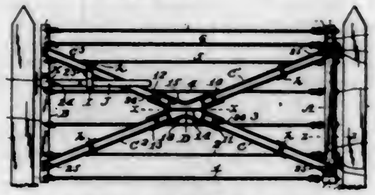
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**758,181. KNOCKDOWN GATE. CHARLES G. HUNTER, Lawrence, Ind. Filed July 15, 1903. Serial No. 165,542. (No model.)**

*Claim.*—1. A gate including a main bar, an end bar, trussed composite braces attached to the main and end bars and comprising a pair of opposing centerpieces having cooperating tie-bars detachably secured together, and diagonal bars attached to the centerpieces, and wires attached to the main bar and to the end bar.

2. A gate including a composite main bar comprising trunk-

plates and foot and head pieces secured thereto and having hinge parts attached thereto, and a flanged plate engaging the trunk-plates; an end bar, trussed diagonal bars secured to the main bar adjacently to the foot and head pieces thereof and also secured to the end bar, and horizontal wires secured to the end bar and having adjusting-screws secured to the flanged plate.



3. A gate including a main bar, an end bar, trussed composite braces attached to the main and end bars and comprising a pair of opposing centerpieces having each a tie-bar attached to the inner side thereof, said tie-bars being in engagement, a bolt securing said tie-bars together, and diagonal bars attached to the centerpieces, and wires attached to the main bar and to the end bar.

4. In a gate, the combination of a composite main bar comprising a pair of opposing trunk-plates, a foot-piece secured between the lower ends of the trunk-plates and having a hinge part attached thereto and also having a bolt-hole in the lower end thereof, a head-piece secured between the upper ends of the trunk-plates and having a hinge part attached thereto and having also a hole therein to receive an adjusting-screw of a horizontal wire, and a spacing-plate having flanges engaging the trunk-plates and extending from the foot-piece to the head-piece and having bolt-holes therein, an end bar, trussed diagonal braces, a horizontal wire connected to the end bar and also to the foot-piece, horizontal wires connected to the end bar and also to the spacing-plate, and a horizontal wire connected to the end bar and also to the head-piece.

5. In a gate, the combination of a main bar having a pair of trunk-plates, a foot-piece and a head-piece secured to the trunk-plates, a spacing-plate engaging the trunk-plates and having bolt-holes therein, frame members attached to the main bar and also to the end bar, adjusting-screws extending between the trunk-plates and through the holes in the spacing-plate, and horizontal wires connected to the adjusting-screws and also to the end bar.

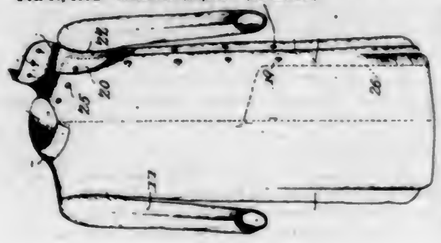
6. In a gate, the combination of a main bar, an end bar, trussed composite braces attached to the main and end bars and comprising a pair of centerpieces having arms provided with flanges and also having tie-bars attached thereto, a bolt securing the tie-bars together, and diagonal bars secured to the arms, horizontal wires connected to the main and end bars, a latch-hanger attached to the end bar, a latch-hanger secured to one of the diagonal bars, and a latch-bar mounted in the hangers.

7. In a gate, the combination of a main bar having a pair of trunk-plates and a perforate spacing-plate engaging the trunk-plates, adjusting-screws extending between the trunk-plates and cooperating with the perforate spacing-plate, a pair of trussed composite braces attached to the main and end bars, and horizontal wires connected to the end bar and also to the adjusting-screws.

8. In a gate, the combination of a main bar, an end bar, trussed composite braces attached to the main and end bars and comprising a pair of centerpieces having arms provided with flanges and also having cooperating tie-bars, and diagonal bars secured to the centerpieces, and horizontal wires connected to the end bar and provided with adjusting-screws cooperating with the main bar.

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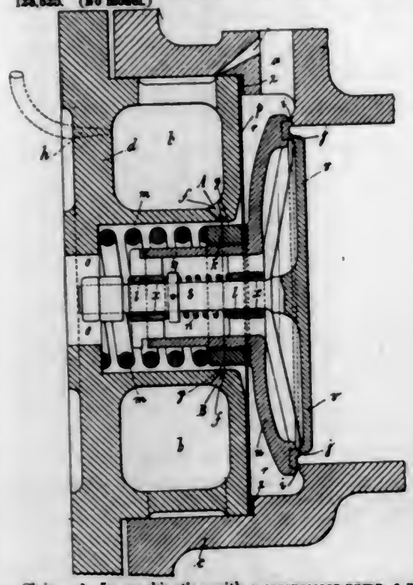
**758,182. STORM-COAT.** THOMAS A. JONES, Ridgway, Ill. Filed Feb. 17, 1904. Serial No. 194,062. (No model.)



*Claim.*—A storm-coat having one side of the front extended laterally over the other side, a flap extending along the top of the shoulder and along the juncture of the sleeve and the body of the garment and forming a pocket-like receptacle for the adjacent portion of said extended front, and a flap extending along the top of the shoulder and forming a cover for the contiguous portions of said extended front and of said receptacle-forming flap.

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**758,183. CONCENTRIC VALVE FOR COMPRESSOR-PUMPS.** ALBERT KRIEBAT, Berlin, Germany. Filed Oct. 24, 1902. Serial No. 128,625. (No model.)



*Claim.*—1. In combination with a compressor-pump, a pair of valves arranged within the end of the pump-cylinder partly within the admission-chamber, a diaphragm supporting the outlet-valve *u*, a sleeve connected to said valve having play (at *y*) inside the surrounding wall of the admission-chamber, bearing-eyes in the sleeve, a stem *s* forming part of the inlet-valve *v*, said stem extending through the said bearing-eyes and having play (at *x*) the valve *v* being seated concentrically within the valve *u*.

2. In combination with a compressor-pump, a pair of concentrically-seated valves arranged within the end of the pump-cylinder partly within the admission-chamber, a diaphragm supporting the outlet-valve *u*, a sleeve connected to said valve having play (at *y*) inside the surrounding wall of the admission-chamber, bearing-eyes in the sleeve, a stem *s* forming part of the inlet-valve *v*, said stem extending through the said bearing-eyes, by-pass jet-holes arranged in the wall of the admission-chamber and opening toward the sleeve of the valve *u*, passages establishing communication between the said by-pass jet-holes and the chamber behind the outlet-valve for the purpose as set forth.

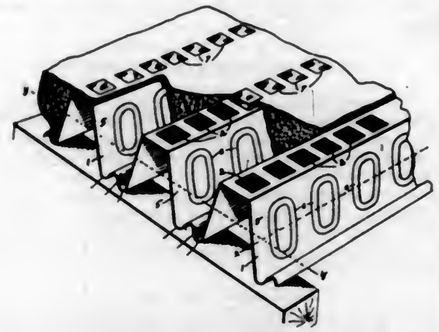
3. In combination with a compressor-pump, a pair of concentrically-seated valves arranged within the end of the pump-cylinder partly within the admission-chamber, a diaphragm supporting the outlet-valve *u*, a sleeve connected to said valve having play (at *y*) inside the surrounding wall of the admission-chamber, bearing-eyes in the sleeve, a stem *s* forming part of the inlet-valve *v*, said stem extending through the said bearing-eyes, by-pass jet-holes arranged in the wall of the admission-chamber and opening toward the sleeve of the valve *u*, passages establishing communication between the said by-pass jet-holes and the chamber behind the outlet-valve, a port forming a part of such passages and leading into a cooling-chamber, the inner wall of which surrounds the admission-chamber and is provided with the said by-pass jet-holes substantially as described.

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**758,184. SIDEWALK.** EDWARD A. LANGENBACH, Canton, Ohio, assignor to the Berger Manufacturing Company of Canton, Ohio, a Corporation. Filed June 15, 1903. Serial No. 161,466. (No model.)



*Claim.*—As an improved article of manufacture, a sheet of metal consisting of corrugated bottoms alternating with tops having holding-apertures for transparent or translucent blocks alternating open spaces below the block-holding apertures and the faces of the sheet between the closed bottoms and open tops provided with cement-holding ribs or corrugations, substantially as and for the purpose set forth.



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**758,185. STORM-CURTAIN FOR VEHICLE-TOPS.** DANIEL C. LAWLESS, Toledo, Ohio. Filed Sept. 11, 1903. Serial No. 172,976. (No model.)



*Claim.*—1. A storm-curtain for vehicle-tops comprising a piece of fabric of substantially the width of the open front of the vehicle-top, a plurality of rectangular frames secured to said piece of fabric, the fabric at the meeting edges of the frame serving as a hinge upon which the frames may be folded into parallel relation, means for detachably securing said frames in substantially the same plane, and means for detachably securing the curtain to a vehicle-top.

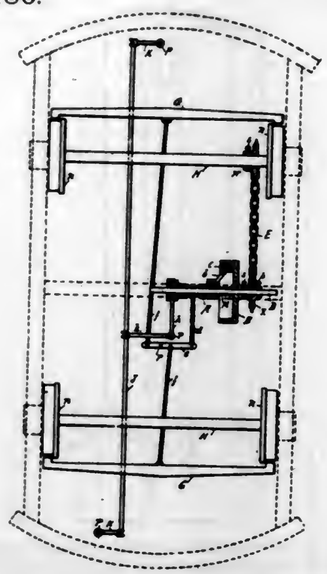
2. A storm-curtain for vehicles comprising in its construction a flexible fabric of substantially the width of the vehicle-top opening, side flaps secured thereto, rectangular frames secured to the curtain, the flexible material forming pivotal connections for the frames and flaps, whereby they may be folded side by side into parallel relation, means for detachably securing the side flaps to the vehicle-top, means for securing the upper edge of the curtain to the top of the front of a vehicle-top, and means for detachably securing the bottom of the curtain to the under side of the vehicle-top.

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**758,186. CAR-BRAKE.** MORTON MABREY, Battlecreek, Mich., assignor of one-half to Daniel D. Duggan, Battlecreek, Mich. Filed Dec. 26, 1902. Serial No. 136,542. (No model.)

*Claim.*—In a car-brake, the counter-shaft mounted between the trucks, sprocket wheels and chain arranged to rotate the same continuously from one of the axles, a friction-wheel secured to the counter-shaft having interior bearing-surfaces for arm-shoes both parallel and at right angles to its axis, a clutch-hub sliding freely upon the counter-shaft, having three pivoted radial arms with terminal shoes bearing within the interior flange of the friction-wheel, and also against the vertical inside face of same, a spring operating to separate the hub and wheel, and springs operating to draw the shoes together, a chain attached to the barrel of hub and connected to the brake-beams by lever and rod attachments, a groove in the hub and a pivoted yoke having a bell-crank-lever terminal engaging the same, a shifting rod passing longitudinally underneath the car connected to the yoke-lever of the clutch, and the cranks from brake-wheel shafts at either end of the car, the whole constructed and arranged as shown and described.

758,186.



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**758,187. TRACE-BUCKLE.** JOHN MERSEN, Oyens, Iowa. Filed Nov. 6, 1903. Serial No. 180,067. (No model.)



*Claim.*—1. In a combination trace-buckle, a frame having at one end a lateral tongue and at the other end an offset loop and provided with a transverse aperture adjacent to said tongue, a clamp-plate movably connected at one end with said loop and provided at the other end with an aperture for engagement with said lateral tongue, said plate being also provided with an inwardly-extending tongue disposed between said offset loop and the frame-aperture, and in longitudinal alinement with said lateral frame-carried tongue and a hame-trace bail extending through said frame-aperture and inclosing said clamp-plate to provide means for adjustably supporting the trace between said plate and frame.

2. In a combination trace-buckle, of a frame having at one end a lateral tongue and at the other end an offset loop and provided with a transverse aperture adjacent to said tongue, a clamp-plate having at one end a longitudinally-extended eye for movable engagement with said loop and at the other end a longitudinally-extended aperture for movable engagement with said frame-tongue and with a lateral tongue extending toward the adjacent face of said frame, and a hame-trace bail extending through said frame-aperture and inclosing said clamp-plate.

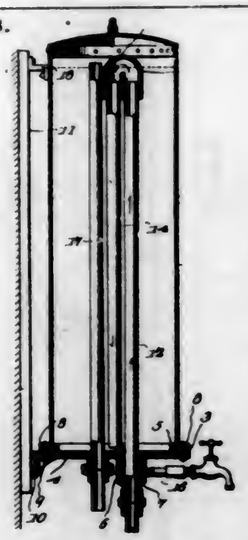
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**758,188. WATER-TANK.** JACOB MILLER, Wauseon, Ohio. Filed Dec. 26, 1903. Serial No. 186,740. (No model.)

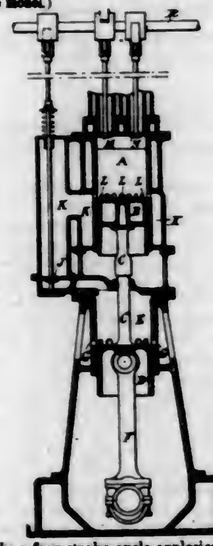
*Claim.*—1. The combination with a tank, of a supply-pipe extended upward in the tank and returned upon itself for delivering water adjacent to the bottom of the latter, said pipe being provided above the maximum water-level with a vent and having a constantly-open discharge end, and an overflow-pipe having its open receiving end arranged adjacent to the upper end of the tank.

2. The combination with a tank, of a supply-pipe extended upward in the tank and returned upon itself for delivering water adjacent to the bottom of the latter, said pipe having a vent-opening formed therethrough at a point above the maximum water-level and having a constantly-open discharge end, and an overflow-pipe extended upward through the bottom of the tank with its upper open end terminating on a plane below the plane of the vent-opening.

758,188.



758,189. EXPLOSION-ENGINE. KENRIC J. MCMULLEN and MARK H. ROBINSON, Rugby, England, assignors to Williams and Robinson, Limited, Rugby, England. Filed Aug. 27, 1903. Serial No. 170,982. (No model.)



*Claim.*—1. In a four-stroke cycle explosion-engine the combination with the working cylinder and piston of an air-cylinder and piston connections between the two pistons such that they move together, an air-reservoir, means for admitting air to the air-cylinder before each instroke of the working piston, a valve admitting air to the reservoir from the air-cylinder during the compression-stroke of the working piston and preventing the escape of air from the air-cylinder during the exhaust-stroke and means for admitting air from the reservoir into the working cylinder during the exhaust-stroke of the working piston.

2. In a four-stroke cycle explosion-engine the combination with the working cylinder and piston of an air-cylinder in line with the ordinary cylinder a piston in the air-cylinder a piston-rod connecting the two pistons, an air-reservoir, means for admitting air to the air-cylinder before each instroke of the working piston, a valve admitting air to the reservoir from the air-cylinder during the compression-stroke of the working piston and preventing the escape of air from the air-cylinder during the exhaust-stroke of the working piston and means for admitting air from the reservoir into the working cylinder during the exhaust-stroke of the working piston.

3. In a four-stroke cycle explosion-engine the combination with the working cylinder and piston of an air-cylinder and piston connections between the two pistons such that they move together, an air-reservoir, means for admitting air to the air-cylinder before each instroke of the working piston, a valve admitting air to the reservoir from the air-cylinder during the compression-stroke of the working piston and preventing the escape of air from the air-cylinder during the exhaust-stroke of the working piston and a port in the outer end of the working cylinder in communication with the reservoir.

4. In a four-stroke cycle explosion-engine the combination with the working cylinder and piston, of an air-cylinder in line with the ordinary cylinder, a piston in the air-cylinder, a piston-rod connecting the two pistons, an air-reservoir, means for admitting air to the air-cylinder before each instroke of the working piston, a valve admitting air to the reservoir from the air-cylinder during the compression-stroke of the working piston and preventing the escape of air from the air-cylinder during the exhaust-stroke of the working piston and a port in the outer end of the working cylinder in communication with the reservoir.

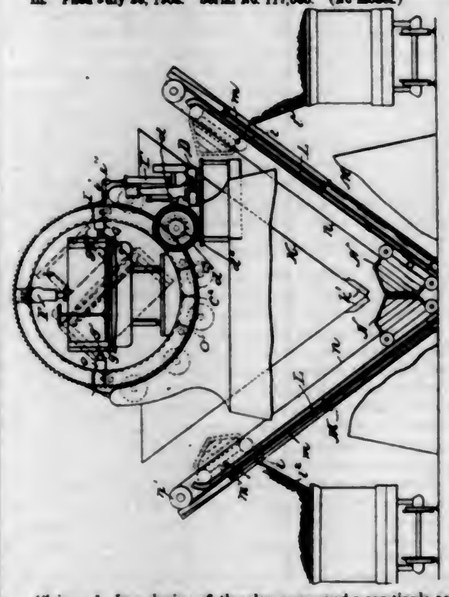
758,190. WHEEL-RIM. JOHN F. W. REITMEYER, Lyon, Mo. Filed Sept. 8, 1903. Serial No. 172,340. (No model.)



*Claim.*—1. A wheel having a hollow rim, the tread portion of which is inwardly thickened at the center and tapered upon its inner side transversely from a medial line toward the sides, and spoke-sockets formed in said thickened part of the rim, closed at their outer ends and opening at their inner ends into the space of the rim, substantially as specified.

2. In a wheel, a hollow rim, formed of integral inclosing walls, the tread portion of the rim having its middle portion thickened and transversely tapered from a medial line, and having sockets in the thickened part of the rim closed at their outer ends, and having openings in the inner wall of the rim in line with the sockets to cooperate therewith for reception of the outer ends of the spokes, substantially as set forth.

758,191. COALING-STATION. WILLIAM ROBERTSON, Chicago, Ill. Filed July 26, 1902. Serial No. 117,063. (No model.)



*Claim.*—1. In a device of the class described a car-tipple comprising annular end frame members, upper and lower and laterally-disposed beams connecting the same, fluid-operated jacks secured on the lateral beams and longitudinally-movable fluid-operated jacks carried on the upper beams, said jacks acting to positively lock the car in said tipple and means for rotating the tipple.

2. The combination with pedestals, of a cage comprising annular end frame members journaled therein, beams connecting said end frame members and disposed oppositely from each other, fluid-operated jacks secured on said beams above and laterally of the cage and acting to simultaneously and positively engage a car supported therein.

3. In a device of the class described, a cage comprising in combination annular end frame members bottom and top beams connecting the same, a track supported in the cage, jacks movable longitudinally thereof on the upper beams, lateral jacks acting with said movable jacks to positively lock a car on the track and bunkers below said cage adapted to receive the material from a car on the track.

4. The combination with a track-section, of upper and lateral members on each side thereof rigid with respect to the track-section, fluid-actuated jacks on said upper members and said lateral members acting to positively engage and lock the car on the track-section.

5. In a device of the class described the combination with a cylindric cage, of a longitudinal track-section therein, fluid-operated jacks adjustably secured above the track, similar jacks rigidly secured laterally of the track, pneumatic connections between all of said jacks and means for simultaneously actuating all of said jacks inwardly of the cage into positive holding engagement with a car on the track and means for rotating the cage with a car therein.

6. A cage of the class described comprising annular end frame members, longitudinal I-beams connecting said frame members, both at the bottom and top thereof and at each side of the same, pivotally-supported longitudinal T-rails therein and means for rotating the cage.

7. A cage of the class described comprising annular end members having a geared periphery, means for rotating the cage, longitudinal beams in the top of said cage forming a track, a truck movable therein, a hydraulic jack carried on said truck, a car-track in the lower portion of said cage, a pivotally-supported bar on each side thereof and lateral jacks adapted to engage the same and together with said upper jack lock a car in the cage.

8. The combination with a cylindric cage, of a track extending longitudinally of the cage and adapted to support a loaded car therein, fluid-operated jacks positioned in the cage to engage the car laterally and fluid-operated jacks movably supported in the top of the cage and adapted to engage the car from above and to rigidly hold the same upon its track, and pipes provided with controlling-valves connecting said jacks together and adapting the same to operate from a single source of pressure-supply, and means for rotating the cage with the car therein.

9. A cage of the class described comprising annular end members having a geared periphery, longitudinal I-beams rigidly securing said annular members together, two of said I-beams being located close together at the top of the cage, the lower flanges thereof forming a track, a truck at each end of the cage movable on said flanges, a depending hydraulic jack secured on each of said trucks and adjustable longitudinally of the cage thereby, a source of pressure-supply, and a pipe leading from said source to a point intermediate of said jacks and connected with each of said jacks with flexible connections.

10. The combination with a rotative cylindric cage, of a track-section therein adapted to support a car within the cage, fluid-operated means for engaging the car upon the track and laterally-disposed rails extending longitudinally of the car when in position on the track and pivotally supported at a point beneath the car, and hydraulic jacks rigidly secured on the sides of the cage and acting to force said rails into positive engagement with the car sides.

11. The combination with a rotative cage having a track-section therein adapted to support a car or the like, of adjustable fluid-operated jacks supported at the top of the cage and adapted to positively engage the top of the car, similar jacks rigidly secured at the sides of the cage, a rigid bar on each side of the cage connecting all the jacks on said side, an inwardly-curved bar rigidly secured thereon and pivoted below the car, a source of pressure-supply and pneumatic connections leading therefrom to said jacks and adapting the same to be simultaneously operated, and a valve in each jack adapted to be closed when the jacks are in engagement with the car and to remain closed until released by the operator.

12. The combination with supporting-pedestals, of rollers journaled thereon, a rotative cage journaled on said rollers and adapted to receive therein a loaded car or the like, means for simultaneously engaging the car laterally and from above thereby locking the car on the track, a movable truck in the top of said cage, means for rotating the cage, and one or more bunkers or pockets located beneath the cage and conveyers leading from said pockets.

13. In a coaling-station, supporting-pedestals, rollers journaled thereon, a rotative cage journaled on said rollers and adapted to receive and rigidly hold therein a loaded car or the like, a motor acting to rotate the cage with the car, a pneumatically-operated friction-brake for said cage, bunkers or pockets adapted to receive the material from the car when dumped and pneumatically-operated conveyers adapted to receive material from said pockets and deliver the same at predetermined points.

14. The combination in a coaling-station with a rotative cage, of a track-section therein adapted to support a loaded car within the cage, means for rigidly holding the car on said track-section, a motor acting to rotate the cage, pneumatically-operated brakes acting to control the rotation of the cage, a pocket below the cage having a hopper-bottom and one or more elevating-conveyers adapted to receive material from said pockets and to deliver the same laterally of the cage.

15. In a coaling-station, a rotative cage, a track-section therein adapted to support a loaded car within the cage to rotate therewith, pneumatically-operated means acting to secure the car upon the track, means for rotating the cage with the car therein, a pocket beneath the cage to receive the material from the car, and conveyers movable from beneath the pocket and adapted to deliver the material therefrom.

16. In a coaling-station the combination with supporting-pedestals, of a cylindric cage journaled thereon, inclined track-sections leading upwardly to said cage, a track-section within and rigidly secured to the cage and registering with said inclined section when the cage is in receiving position, means for rotating the cage with the car, pneumatically-operated hydraulic jack adisposed within the cage in position to rigidly lock the car to the cage during the rotation thereof, a pocket or bin beneath the cage and into which the contents of the car is dumped by the rotation of the cage, and conveyers adapted to receive material from said pocket.

17. In a coaling-station, supporting-pedestals, a rotative cage journaled thereon and adapted to receive and rigidly hold therein and rotate therewith a loaded car, dumping the contents therefrom, a bin or pocket beneath the cage adapted to receive the material from the car and elevating-conveyers adapted to receive materials from said bin or pocket and deliver the same automatically at a point disposed laterally of the car.

18. In a coaling-station the combination with a car-tipple of the class described and the receiving bin or pocket therefor, of tracks on each side of the bin-pocket, upwardly and laterally inclined tracks extending from beneath said pockets to points above said first-named tracks, a third rail intermediate of the inclined track-rails and having a downturned end at its upper extremity, elevator cars or cages on said tracks, a hinged wall on each of said tracks, a truck on said hinged wall adapted to run on said third or intermediate rail, pneumatically-operated means for moving said conveyer-cars along the track to the upper extremity thereof at which point the hinged wall swings open and an apron or chute-board secured below said inclined track at the point where the car is dumped and adapted to direct material from said cars to the receiving means on the first-named track.

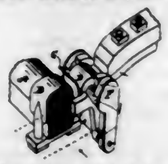
758,192. PRINTING PROCESS. MICHAEL RUDOLSTOFF, Gattschina, near St. Petersburg, Russia. Filed Feb. 5, 1904. Serial No. 192,174. (No specimens.)

*Claim.*—1. The process of inking engraved plates, which consists in transferring onto the engraved plate inks varying in fattiness, consistency, or shade, and in wiping all said inks simultaneously.

2. The process of inking engraved plates, which consists in transferring onto the engraved plate inks varying in fattiness, consistency or shade, by forms consisting of leather having surfaces roughened to various degrees corresponding to the various degrees of fattiness, consistency or shade, and in wiping all said inks simultaneously.

3. The process of inking engraved plates, which consists in transferring onto those parts of the plate which require no toning, ink containing little or no fat, and onto those parts of the plate which require toning ink having a higher degree of fattiness, and in so wiping said inks simultaneously that the ink containing less fat is more completely removed from the plate than the ink having a higher degree of fattiness.

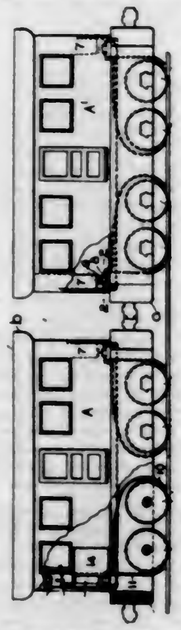
**758,193. THILL-COUPLING.** CHAUNCY A. SAGER, Elmonte, Cal., assignor to James T. Pollock, Los Angeles, Cal. Filed Apr. 7, 1902. Renewed Mar. 3, 1904. Serial No. 197,177. (No model.)



*Claim.*—1. A thill-coupling composed of a clip having forwardly and downwardly projecting arms, said arms having in the upper portion thereof an upwardly-opening recess therein adapted for the entry and retention of a bolt; a rod extending through the lower portion of the said arms; a spring rigidly affixed to said rod and extending upwardly and adapted to bear against the end of the thill-iron when in said coupling; catches on the ends of said rod exterior the said arms extending upwardly and adapted to prevent any longitudinal movement of a bolt in the recesses in said arms.

2. A thill-coupling composed of a clip having forwardly and downwardly projecting arms, said arms having a notch in the top thereof; a rod mounted in the downwardly-projecting portion of said arms; a stop-plate and catch affixed to said rod exterior the said arms; a spring affixed to said rod between said arms and adapted to bear against the thill-iron when in place in the coupling in combination with a thill having a bolt in the iron thereof adapted to slip into the notches of the arms of the clip.

**758,194. SANDING SYSTEM.** WILLIAM SCHAAKE, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Sept. 23, 1903. Serial No. 174,606. (No model.)



*Claim.*—1. In combination, a plurality of units coupled together to form a train, sanding devices on each unit adapted to deposit sand in front of the wheels of each unit for either direction of movement, and means located at any desired point on the train for controlling the operation of the sanding devices for one direction of movement without operating the sanding devices for the opposite direction of movement.

2. A pneumatic sanding device, and electrically-operated means for controlling said sanding device.

3. A locomotive equipped with a plurality of pneumatically-actuated sanding devices adapted to deposit sand in front of the driving-wheels of said locomotive for either direction of movement, and electromagnetically-actuated means for controlling the operation of said pneumatically-actuated sanding devices.

4. A locomotive equipped with a plurality of pneumatically-actuated sanding devices adapted to deposit sand in front of the driving-wheels of said locomotive for either direction of movement, and electrically-operated means for independently controlling the operation of the sanding devices which deposit sand in front of the wheels when the locomotive is moving in one direction and the sanding devices which deposit sand in front of the wheels when the locomotive is moving in the opposite direction.

5. In combination, a plurality of self-propelled vehicles coupled together to form a train, pneumatically-actuated sanding devices carried by each vehicle, electrically-operated means for controlling the operation of said sanding devices, and means located at any desired point on the vehicle or train for controlling the operation of said electromagnetically-actuated means.

6. In combination, a plurality of self-propelled vehicles coupled together to form a train, pneumatically-actuated sanding devices carried by each vehicle, electrically-operated means for controlling the operation of said sanding devices, and means located at any point on the vehicle or train for controlling the simultaneous operation of all the sanding devices which deposit sand in front of the wheels when the train is moving in one direction and for independently controlling the operation of all the devices which deposit sand in front of the wheels when the train is moving in the opposite direction.

7. In combination, a plurality of units coupled together to form a train, a pneumatically-actuated sanding device carried by one of said units, a source of compressed-fluid supply also carried by said unit, and means located on another of said units for controlling the admission of compressed fluid to each sanding device from said source of fluid-supply.

8. In combination, a plurality of units coupled together to form a train, a pneumatically-actuated sanding device carried by one of said units, electromagnetically-actuated means for controlling the operation of said sanding device, and means located on another unit of the train for controlling the operation of said electromagnetically-actuated means.

9. In combination, a plurality of units coupled together to form a train, pneumatically-actuated sanding devices carried by each of said units, electromagnetically-actuated valves for controlling the supply of compressed air to said pneumatic sanding devices, train-wires running throughout the train connected with the actuating-coils of said valves, and switches located at any desired point or points for controlling the energization of said train-wires.

10. In combination, a plurality of units coupled together to form a train, pneumatically-actuated sanding devices carried by each unit, said sanding devices being so constructed and arranged that they will deposit sand in front of the wheels of said unit in either direction of movement, a source of compressed-air supply carried by each unit, electromagnetically-actuated valves for controlling the supply of compressed air to said pneumatic sanding devices, and a switch or switches located at any desired point on the train for controlling the energization of the actuating-coils of said electromagnetically-actuated valves to cause the sand to be deposited on the track in front of said wheels as desired.

11. In combination with a fluid-pressure system, an electromagnetically-actuated valve comprising a solenoid, a core for said solenoid forming the valve, and a casing in which said valve operates, said casing having a passage-way leading therefrom through said solenoid whereby the fluid controlled by said valve may pass through the solenoid to cool the same when current is passing therethrough.

**758,195. MACHINE FOR CONTRACTING FERRULES, &c.** MAXIMILIAN C. SCHWEINERT, West Hoboken, N. J., and HENRY P. KRAFT, New York, N. Y., assignors to George H. F. Schrader, New York, N. Y. Filed Aug. 2, 1902. Serial No. 118,160. (No model.)



*Claim.*—1. In a machine for contracting ferrules and the like, the combination with a stationary standard, and jaws adapted to be moved radially inward to contract the ferrule, and outward to release the same, of a pivoted hand operating member having two positions of rest, and mechanism controlled by said member for imparting such movements to said jaws, said mechanism moving said jaws from their inactive positions to their active positions and returning them to said inactive positions during a single movement of said hand operating member from one position of rest to another.

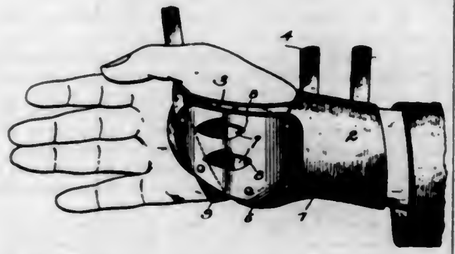
2. In a machine for contracting ferrules and the like, the combination with a stationary standard and jaws adapted to surround a ferrule and to be moved radially to contract the same at all points, of a pivoted hand operating member adapted to give said jaws their full normal ferrule-contracting movement, and a motion-transmitting connection between said member and each of said jaws transforming the rotary movement of said member in one direction into a reciprocating movement of said jaws throughout their full normal movement in alternate radial directions, whereby each of said jaws is moved inward to contract a ferrule, and then outward to restore the jaws to their original positions, by a single movement of said hand operating member in one direction.

3. In a machine for contracting ferrules and the like, the combination with a series of jaws adapted to surround a ferrule and to be moved radially to contract the same at all points and having faces which form together substantially a circle when the jaws are moved inward to their meeting-point so as to contract such ferrules without corrugating them, of an operating member adapted to give said jaws their full normal ferrule-contracting movement, and motion-transmitting connections between said member and each of said jaws transforming the movement of said member into a reciprocating movement of said jaws throughout their full normal movement in alternate radial directions, whereby each of said jaws is moved inward to their meeting-point and then outward, to contract a ferrule and then to restore the jaws to their original positions, by a single movement of said operating member.

4. In a machine for contracting ferrules and the like, the combination with a stationary standard A provided on its face with lugs F integral therewith and having a series of radial guide-passages between said lugs, of jaws H guided in said passages adapted to surround a ferrule and to be moved radially to contract the same at all points and having faces adapted to form together substantially a circle when the jaws are moved inward to their meeting-point so as to contract such ferrules without corrugating them, a face-plate D, a ring C between said standard and face-plate, a hand operating-lever E for said ring, and toggle-links L attached at opposite ends to said ring and said jaws, said links being free to swing past the dead-center equally in either direction to transform the rotary movement of the ring in one direction into a reciprocating movement of said jaws, and said links being of such length that as said hand-lever E is turned continuously in either direction each of said jaws is moved inward to their meeting-point and then drawn outward by said links to contract a ferrule and then to restore the jaws to their original position.

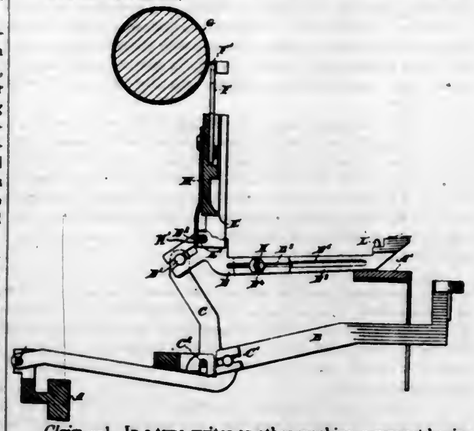


**758,196. CORN-HUSKER.** ROBERT N. THOMAS, Shenandoah, Iowa. Filed June 2, 1903. Serial No. 159,770. (No model.)



*Claim.*—A device of the class described comprising a flexible member consisting of a wristband and an approximately centrally disposed integral flap projecting substantially at right angles therefrom to overlie the palm, a plate attached to the flap and having an integral husk-engaging spur struck up therefrom, said plate being of concavo-convex form and arranged with its concaved face inward to conform to the curvature of the palm at the base of the thumb, oppositely-disposed cooperating straps and buckles associated with the opposite ends of the wristband, and a strap secured between its ends to the outer end of the flap between the same and the overlying plate.

**758,197. TYPE-BAR CONSTRUCTION.** FRANZ X. WAGNER, New York, N. Y., assignor to Underwood Typewriter Company, New York, N. Y., a Corporation of New Jersey. Filed Apr. 13, 1903. Serial No. 152,297. (No model.)



*Claim.*—1. In a type-writer or other machine, a support having keyhole-slots, a type-bar having an angular pivot arranged to enter said slots, and a movable cover-plate provided with teeth arranged to normally close the open ends of said slots.

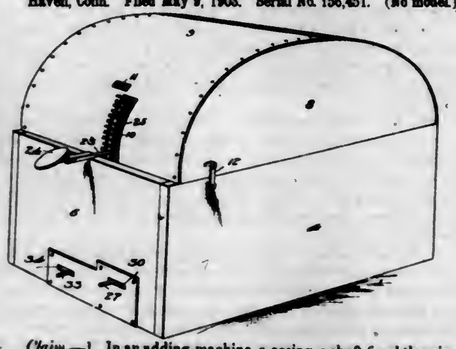
2. In a type-writer or other machine, a pivoted type-bar, the type of which is movable toward and from the pivot, in combination with a gage device consisting of two members, one of which is stationary while the other is connected with the type-bar, to control the adjustment of the type relatively to the pivot of the type-bar.

3. In a type-writer or other machine, a pivoted type-bar, the type of which is movable toward and from the pivot, in combination with a gage device consisting of a pin member and a guide member, one of said members being stationary while the other is connected with the type-bar, said members being adapted by their engagement to control the adjustment of the type relatively to the pivot of the type-bar.

4. In a type-writer or other machine, a type-bar consisting of two sections, a pivot-section and a type-section, one of said sections being provided with a groove and the other section having a laterally-projected, longitudinally-extending rib adapted to fit into said groove, said section being arranged to slide in the said groove for the purpose of adjustment.

5. In a type-writer or like machine, a type-bar consisting of two sections, a pivot-section and a type-section, one of said sections being provided with a groove and the other section having a laterally-projected, longitudinally-extending rib adapted to fit into said groove, said section being arranged to slide in the groove for the purpose of adjustment and means for locking the two sections together.

**758,198. ADDING-MACHINE.** THEODORE A. WHEELER, New Haven, Conn. Filed May 9, 1903. Serial No. 156,451. (No model.)



*Claim.*—1. In an adding-machine, a casing, a shaft fixed therein, a pair of adding-wheels rotatively sleeved vertically adjacent to each other on said shaft, each having peripheral numerals and teeth cor-

responding to the numerals standing in alinement from the opposite edges of the wheels, a bar crossing the toothed side of the wheel 15 pivoted at its front end and terminating at its free end in a dog at the toothed side of the wheel 16, means for supporting the free end of the bar, means operated by the rotation of the wheel 15 to impart to the free end of the bar a vertical and a lateral movement for engagement and disengagement of its dog with the teeth of the wheel 16 to pull the latter down at the rear, and a motor-bar on the sleeve of the wheel 15, adapted to engage the teeth thereof to pull it down at the front.

2. In a calculating-machine, a casing having a vertical slot, a shaft, a wheel having peripheral numerals and teeth corresponding to the numerals, a motor-bar on said shaft having its handle end projecting through the slot and controlled in its movements to engage and pull the wheel down the proper distance determined by the lower edge of said slot, a spring-arm at the slot along the teeth for holding the bar in engagement, means for locking and means for releasing the wheel after each partial rotation.

3. In a calculating-machine, a spring-retracted rotatable wheel having a peripheral series of numerals and an annular series of teeth at said numerals, a collar on the shaft of said wheel, and a motor or key bar having an inner end engaging the collar and permitting vertical movement of the key-bar to rotate the wheel after engagement with a tooth, said key-bar being also laterally movable to permit such engagement.

4. In a calculating-machine, a casing having a vertical slot, a fixed column of numerals from 0 to 10, at said slot, a separate slot at the upper end of said fixed column of numerals, a shaft, a wheel thereon provided with peripheral numerals and teeth corresponding with the numerals, the relation of the teeth to the vertical slot exposing one tooth for each numeral of the fixed column, a motor-bar on the shaft extending through said slot and adapted to engage the teeth, the relation of the two slots being such that the bottom of the vertical slot will determine the movement of the wheel to expose the proper numeral on its periphery at the slot above the fixed column of numerals.

5. In an adding-machine, a casing, a shaft therein, a rotatable wheel sleeved thereon, a disk fixed on said sleeve and provided with a plurality of pins, a spring coiled on and having one end fixed to the shaft, the other end of the spring engaging one of said disk-pins, the winding of the spring by the rotation of the wheel causing its retraction, and means automatically to disengage the free end of the spring successively from one pin to another during the rotation of the wheel whereby the winding and expansion of the spring is rendered partial during a complete revolution of the numeral-wheel.

6. In a calculating-machine, a casing having a vertical slot, a shaft, a wheel on said shaft having peripheral numerals and teeth corresponding to the numerals, a motor-bar on the shaft projecting through the slot and adapted to have a movement therein laterally into and out of engagement with the teeth and movable vertically in said slot to pull the wheel down, a stop to limit the descent of the bar, a spring 35 connecting the shaft and wheel-hub and against the action of which, the wheel is rotated, and means for locking and releasing the wheel after each pull-down of the motor-bar.

7. In a calculating-machine, a rotatable wheel having numerals, means for moving said wheel, a disk movable with the wheel and carrying a series of pins, a coiled spring fixed at its inner end and having its outer end adapted for successive engagement with said pins, and means effecting the disengagement of the spring end.

8. In a calculating-machine, a rotatable wheel having numerals, means for moving said wheel, a disk movable with the wheel, a coiled spring connected at one end with the disk, and a collar removably fixed to the wheel-shaft and to which the other end of the spring is attached.

9. In a calculating-machine, a rotatable wheel having numerals means for moving said wheel, a disk rotatable with the wheel and provided with a shoulder and a series of pins, a stop-arm in the path of the shoulder, a coiled spring fixed at its inner end and adapted to engage the pins of said disk, and an arm having an inclined shoulder extending into the path of the outer end of the spring to release it from the pin.

10. In an adding-machine, a casing, a shaft fixed therein, a pair of wheels 15 and 16 rotatively sleeved vertically side by side on said shaft, each having peripheral numerals and teeth corresponding to the numerals, standing from the outer side of the rims in opposite directions, a motor-bar on the wheel-sleeve engaging the teeth of the wheel 15 to pull it down at the front, a cam 60 and a disk 63 both fixed on the sleeve, a pivoted bar 58 at the toothed side of said wheel 15, extending over the cam and terminating in a dog 68 adapted to engage the teeth at the rear of the wheel 16, a tappet 62 on the disk and a tappet 64 on the bar for engagement to cooperate with the lifting function of the cam to move the dog to effect its engagement with the teeth of the wheel 16 to pull it down at the rear and a spring connected to said bar to force the dog out of engagement.

11. In an adding-machine, a casing, a shaft fixed therein, a pair of adding-wheels, rotatively sleeved adjacent to each other on said shaft, the rim of each having peripheral numerals, and teeth corresponding to the numerals standing in alinement from the opposite rim edges, the numerals on each wheel also standing in alinement, a motor-bar on the shaft of the wheels for engaging and pulling the wheel 15 down at the front, a stop to limit the downward movement of the bar and wheel, a lifting and falling bar for engaging and pulling down the wheel 16 at the rear, a stop for limiting the downward movment of said wheel and bar, and means for locking each wheel.

12. In a calculating-machine, a rotatable toothed wheel having numerals, a laterally and vertically movable tooth-engaging key-bar for moving said wheel, a second rotatable wheel having numerals, and means for partially rotating the second wheel upon a complete rotation of the first wheel including a device having a combined vertical and lateral movement.

13. In a calculating-machine, a toothed wheel having numerals, a laterally and vertically movable tooth-engaging key-bar for moving said wheel, a second wheel having numerals, and means for partially rotating the second wheel upon a complete rotation of the first wheel in a direction opposite to that of the latter including a spring-retracted bar pivoted to have a vertical and a lateral movement for engaging and disengaging the second wheel.

14. In an adding-machine, a shaft, a pair of wheels thereon in vertically-joining relation, each having peripheral numerals and teeth, the latter standing in opposite directions from the rim of each wheel a motor-bar engaging the wheel 15 at the front for rotating it forward, and means for partially rotating the wheel 16 backward, including a bar arranged across the diameter of the wheel 15, its free end extending to and crossing the rear of both wheels, and terminating in a dog for engaging the wheel 16, a cam on the shaft for lifting said bar, a disk fixed to rotate with the wheel 15, and having a tappet, and a tappet on the bar, the tappets and the cam having such relation as to cause the free end of the bar to be lifted in advance of the joint action of the tappets to move the bar laterally.

15. In an adding-machine, a casing, a shaft therein, a pair of wheels loose thereon in vertical joining relation, each having peripheral numerals and teeth standing parallel to the axis in opposite directions from the edge of the rim of each wheel, a motor-bar 23 for engaging the wheel 15 at the front for rotating it forward, a drop-bar 38 for engaging the wheel 16 for rotating it backward, means operated by the wheel 15 to release such engagement, a stop to limit the descent of the motor-bar, a stop to limit the descent of the drop-bar, means for limiting its range of movement a distance of one point, a retracting-spring for each wheel, a spring-dog for locking and releasing each wheel, the motor-bar and the spring-dogs each having a handle at the front for operating it.

16. In an adding-machine, a casing, a shaft therein, a pair of wheels loose thereon in vertical joining relation, each having peripheral numerals and teeth standing parallel to the axis in opposite directions from the edge of the rim of each wheel, the numerals of each wheel in alinement with the spaces between the teeth, means for operating the wheels in opposite directions and means for limiting such rotation so that every movement of the wheels for every addition will bring the teeth of both wheels in alinement and the numerals of each wheel in alinement with the spaces between the teeth and the extent of the movement of the dollar-wheel will be limited to the distance equal to two of its teeth.

17. In an adding-machine, a casing, a shaft therein, a pair of wheels loose thereon joining side by side each having peripheral numerals and teeth standing parallel to the axis in opposite directions from the edge of the rim of each wheel, the numerals of each wheel in alinement with the spaces between the teeth, a hand-operated bar extending through the front of the casing for engaging the teeth at the side of one of the wheels, to rotate it forward and a pivoted bar at the side of the same wheel extending rearward, and terminating at the rear of the wheels, means automatically operating said bar to rotate the other wheel by engagement with its teeth at its rear side, stops to limit and determine the range of movement of each wheel, and a column of numerals at the front cooperating with the numerals of both wheels to make the addition.

18. In a calculating-machine, a toothed wheel having numerals, and teeth, a laterally and vertically movable tooth-engaging key-bar for rotating it, a second toothed wheel having numerals, a spring-retracted bar having a tooth-engaging dog, an arm having a downward-inclined end for laterally moving the bar and a cam for vertically moving the bar.

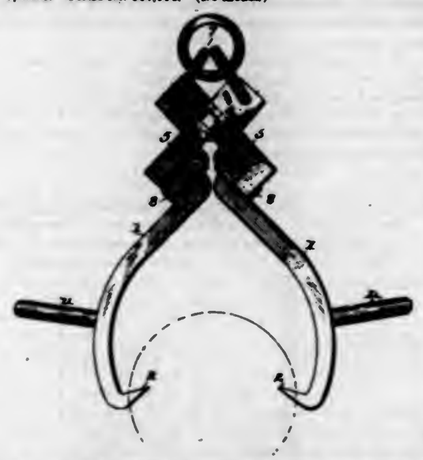
19. In a calculating-machine, a toothed wheel having numerals and teeth, a laterally and vertically movable tooth-engaging key-bar for rotating it, a second toothed wheel having numerals, a bar mounted at one end to have up-and-down and right-and-left movements, a tooth-engaging dog at the opposite end of the bar, a cam for imparting to the bar its vertical movement against spring action and a downward incline arranged to receive the fall of said bar to impart to it its lateral movement against spring action.

20. In an adding-machine, a pair of numeral-wheels joining vertically side by side on the same shaft and rotatable in reverse directions, a separate motor-bar for each wheel, one motor-bar the means for operating the other, each having a falling movement to engage and pull down its engaged wheel, the movement of one being by hand, that of the other being automatic.

21. In an adding-machine, a pair of numeral-wheels joining vertically side by side on the same shaft and rotatable in reverse directions, a disk having a tappet, and a cam both rotatable with the forward rotating wheel, a motor-bar for the latter wheel and a motor-bar for the rearward rotating wheel, the latter bar having a tappet coacting with the disk-tappet and having a pull-down spring at its rear end, for operation in the way described.

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758,199. **GRAPPLE.** TOBY ALEXANDER, Brookhaven, Miss., assignor of one-half to Gideon Alexander, New Orleans, La. Filed Aug. 3, 1903. Serial No. 167,906. (No model.)



*Claim.*—1. The improved grapple, comprising jaws pivoted together and provided with notches in their inner sides, hooks having bent shanks which are pivoted in said notches, and spring-detents engaging the said shanks and holding the hooks in normal position, substantially as shown and described.

2. The improved grapple, comprising jaws pivoted together and provided with notches in their inner sides, hooks having bent shanks which are pivoted in said notches and provided on their outer sides with shallow recesses, and spring-detents comprising conical plugs adapted to engage such recesses and adapted also to slide in recesses in the jaws, and springs arranged in rear of said plugs, substantially as shown and described.

3. In a grapple, the combination, with two jaws pivoted together, of hooks having their shanks bent at a right angle and pivoted to the said jaws, substantially as shown and described.

4. In a grapple, the combination, with jaws which are pivoted together, of hooks which are pivoted to said jaws, the pivotal axes of the jaws and hooks being approximately at a right angle to each other, substantially as shown and described.

5. In a grapple, the combination, with jaws pivoted flatwise upon each other and provided below their pivots with recesses in their inner sides, of hooks having right-angular shanks adapted to fit loosely in said recesses, and pivots passing through the said shanks, substantially as shown and described.

6. The improved grapple, comprising jaws which are pivoted together, and hooks pivoted thereto and provided with lateral projections adapted to serve as handles or contact-pieces, substantially as shown and described.

7. The combination, with the jaws pivoted together and provided with notches in their inner sides, of hooks having right-angular shanks adapted to fit and turn loosely in said notches, and pivoted therein and provided with lateral projections, and spring-detents adapted to lock the hooks in normal position, substantially as shown and described.

8. The combination, with jaws pivoted together, and provided with spring-detents, of hooks which are pivoted to said jaws and engaged by the detents, the hooks being provided with lateral projections subserving the purposes hereinbefore set forth

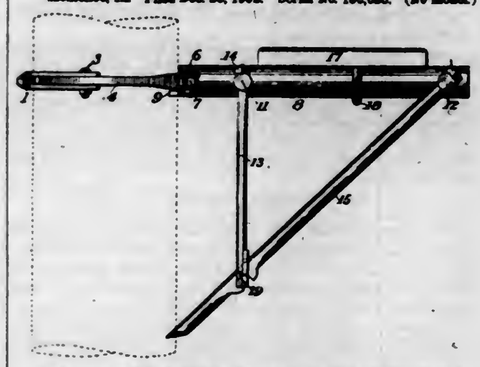
9. The combination, with jaws pivoted together, of hooks which are pivoted to said jaws, and means for holding the hooks in normal position or facing each other, said means being arranged for operation to release the hooks to permit their adjustment to other positions, substantially as shown and described.

10. A grapple comprising a pair of jaws pivoted together, and a pair of hooks pivoted to said jaws and arranged to swing laterally with respect to the plane of said jaws, substantially as set forth.

11. A grapple comprising a pair of jaws pivoted together between their ends, providing the upper and lower arms above and below the pivot, suspension devices connected with the upper arms of the jaws, and the hooks pivoted to the lower arms of the jaws at the inner edges of said arms, and swinging laterally with respect to the plane of the jaws, substantially as set forth.

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758,200. **TELEPHONE-CLIMBER'S SEAT.** JAMES R. BENNETT. Monmouth, Ill. Filed Dec. 30, 1902. Serial No. 136,026. (No model.)



*Claim.*—1. The combination of a telegraph or telephone climber's seat attachable to a pole at any height comprising fingers or tongs which hold the seat in place and which are capable of adjustment to any sized pole, the legs secured to the seat and entering the pole at an angle below the seat and the arms holding up said legs, and the legs said seat, substantially as described.

2. A telegraph or telephone climber's seat attachable to a pole at any height constructed with fingers or tongs capable of adjustment to any sized pole and fastened to staple-bolts which in turn pass through the seat-plate, the seat-plate being fastened to the front part of the seat by means of bolts, arms and legs held up by staple-bolts passing through the seat and fastened with taps, the legs going through the arms and entering the pole at an angle below the seat, substantially as described.

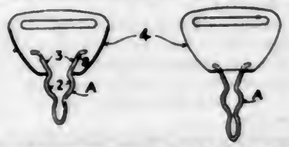
3. The combination with a seat attachable to a pole at any height, of fingers or tongs which hold the seat in place and which are capable of adjustment to any sized pole, a leg or legs secured to the seat and entering the pole at an angle below the seat, an arm or arms to hold up said leg or legs, stops at either side of the pole, fastened to the fingers or tongs and a leg or legs for supporting said seat or steps, substantially as described.

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758,201. **GARMENT-SUPPORTER.** FRANK S. BORDSFELD, San Francisco, Cal., assignor of one-half to William L. Spencer, San Francisco, Cal. Filed June 2, 1903. Serial No. 159,731. (No model.)

*Claim.*—1. In a garment-supporting attachment the combination with a casing having an opening, of a metallic loop having di-

vergent arms engaging the walls of said opening said loop made of spring metal and the angle of divergence of the arms being such that the loop will recede when the strain upon the parts is released.




2. In a garment-supporting attachment the combination with a casing having a guide-opening in one of its walls, of a loop slidable relative to the casing and projecting through said opening said loop having elastic arms engaging the walls of the opening and capable of expanding to automatically retract the loop relative to the casing when the strain upon the parts is released.

3. In a garment-supporting attachment the combination with a button or stud having a shank, of a hollow casing having a guide-opening in one of its walls, and a loop adapted to receive the head of the button and adapted to compress the shank thereof said loop having diverging spring-arms slidably engaging the walls of said opening and adapted, when the loop is detached from the button, to automatically retract the loop said arms receding within the casing, substantially as described.

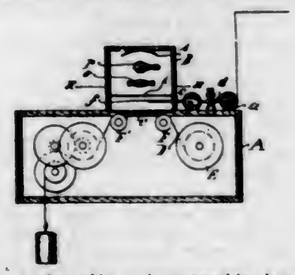
4. In a garment-supporting attachment and in combination with a button or stud having a shank, a casing having a guide-opening in one of its walls, and a loop normally retracted relative to the casing and having divergent arms engaging the walls of the opening and contractible thereby to close the loop and grip the shank of the button when the loop is drawn out and receives said button, said arms of elastic material capable of expansion to automatically retract the loop relative to the casing when the strain upon the loop is released.

5. In a garment-supporting attachment the combination with a casing having a guide-opening, of a loop having divergent spring-arms provided with latching means for engaging the walls of the opening when the loop is drawn outward relative to the casing and the loop is closed, said arms expanding and automatically retracting the loop relative to the casing when the latching means are disengaged from the walls of the opening in the casing and the strain upon the parts is released.

6. In a garment-supporting attachment the combination of a smooth-surfaced button over which the fabric is stretched, said button having a shank, a loop having a covering of yielding material said loop having spring-arms diverging outwardly, and a casing having a guide-opening for the loop said arms slidable relative to the walls of the opening and automatically retracting the loop and opening the same when the strain upon the parts is released said arms being retracted by the walls of the opening and the loop closed to grip the fabric when said loop is drawn outwardly relative to the casing.

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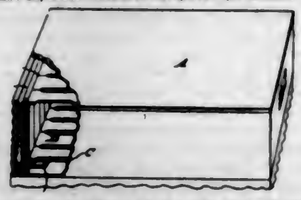
**758,202. TELEGRAPH-RECEIVER.** LUIGI CREDOVANI, Munich, Germany, assignor of one-half to Albert Silbermann, Berlin, Germany. Filed May 2, 1900. Serial No. 15,251. (No model.)




*Claim.*—A telegraphic receiver, comprising in combination, a chamber containing a source of light and a condensing-lens and provided with an exposing-aperture, a dark chamber provided with a corresponding aperture located below the said first aperture and containing a sensitized band traveling below said latter aperture through the focus of said lens, and electromagnet pairs having a common pivoted armature responding to the line-current impulses, which armature when at rest separates and covers said apertures, and when operated uncovers the same, whereupon the rays from the source of light act upon the sensitized band at intervals producing Morse signs all substantially as described.

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**758,203. BEEHIVE.** HAROLD DAVENEY, Sierra Madre, Cal. Filed June 19, 1903. Serial No. 162,233. (No model.)



*Claim.*—1. In a beehive a binder and rest for the honey-frames comprising a base having an upwardly-projecting ledge adapted to support the frame, said rest having a back adapted to bear against the frame, a pin at each end thereof at or near the junction of the base and back and means to support said pins.

2. In a beehive an L-shaped honey-frame binder and rest pivotally secured at or near the junction of the base and back thereof in the hive.

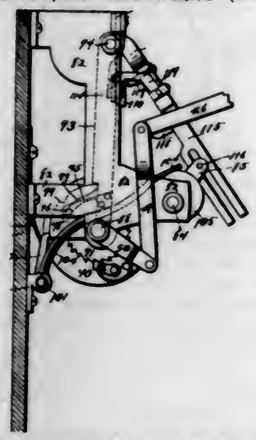
3. In a beehive the combination of two L-shaped honey-frame binders and rests having pivotal bolts at the ends thereof at or near the junction of the back and base, with supports secured to the hive to support said pivotal bolts.

4. In a beehive the combination of two L-shaped honey-frame binders and rests having pivotal bolts at the ends thereof at the junction of the base and back; with supports secured to the outer casing of the hive, said supports being adapted for the removal therefrom of said pivots.

5. In a beehive the combination of two L-shaped honey-frame binders and rests having pivotal bolts at the ends thereof at the junction of the base and back; with supports secured to the outer casing of the hive, said supports being adapted for the removal therefrom of said pivots; strips surrounding and extending from the oppositely-disposed pivots of said rests.

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**758,204. COIN-CONTROLLED MECHANISM FOR CIGAR-VENDING MACHINES.** CHARLES M. DODSON, Des Moines, Iowa, assignor to American Manufacturing Company, Des Moines, Iowa, a Corporation of Iowa. Filed Feb. 3, 1902. Serial No. 92,234. (No model.)



*Claim.*—1. In a coin-controlled mechanism for cigar-vending machines, a coin-holder and anvil, a rock-shaft, arranged for actuation in one direction by said coin-holder and anvil and spring-actuated in the opposite direction, means for connecting said rock shaft to a feeding device, locking mechanism engaging said rock shaft against the resilience of its spring, an actuating-arm arranged for engagement with a coin, and means for oscillating said actuating-arm.

2. In a coin-controlled mechanism for cigar-vending machines a coin-holder and anvil, a rock-shaft arranged for actuation in one direction by said coin-holder and anvil and spring-actuated in the



opposite direction, means for connecting said rock-shaft to a feeding device, locking mechanism engaging said rock-shaft against the resilience of its spring, an actuating-arm arranged for engagement with a coin, a crank-shaft arranged to engage and oscillate said actuating-arm and a cam on said crank-shaft arranged to release said locking mechanism.

3. In a coin-controlled mechanism for cigar-vending machines, a coin-holder and anvil, a rock-shaft arranged for actuation in one direction by said coin-holder and anvil and spring-actuated in the opposite direction, means for connecting said rock-shaft to a feeding device, spring-actuated locking mechanism engaging said rock-shaft against the resilience of its spring, an actuating-arm arranged for engagement with a coin, a crank-shaft arranged to engage and oscillate said actuating-arm and a cam on said crank-shaft arranged to release said locking mechanism.

4. In a coin-controlled mechanism for cigar-vending machines, a coin-holder and anvil, a coin-rest adjacent said coin-holder and anvil, a rock-shaft arranged for actuation in one direction by said coin-holder and anvil and spring-actuated in the opposite direction, means for connecting said rock-shaft to a feeding device, spring-actuated locking mechanism engaging said rock-shaft against the resilience of its spring, an actuating-arm arranged for engagement with a coin, a crank-shaft arranged to engage and oscillate said actuating-arm and a cam on said crank-shaft arranged to release said locking mechanism.

5. In a coin-controlled mechanism for cigar-vending machines, a coin-holder and anvil, a spring-held coin-rest adjacent said coin-holder and anvil, a rock-shaft arranged for actuation in one direction by said coin-holder and anvil and spring-actuated in the opposite direction, means for connecting said rock-shaft to a feeding device, spring-actuated locking mechanism engaging said rock-shaft against the resilience of its spring, an actuating-arm arranged for engagement with a coin, a crank-shaft arranged to engage and oscillate said actuating-arm and a cam on said crank-shaft arranged to release said locking mechanism.

6. In a coin-controlled mechanism for cigar-vending machines, a coin-holder and anvil, a spring-held coin-rest adjacent said coin-holder and anvil, a rock-shaft arranged for actuation in one direction by said coin-holder and anvil and spring-actuated in the opposite direction, means for connecting said rock-shaft to a feeding device, spring-actuated locking mechanism engaging said rock-shaft against the resilience of its spring, an actuating-arm arranged for engagement with a coin, a crank-shaft arranged to engage and oscillate said actuating-arm and a cam on said crank-shaft arranged to release said locking mechanism.

7. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin.

8. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil, to a feeding device, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin, together with a hook on said actuating-arm arranged to engage said coin-rest and separate it from the coin-holder and anvil.

9. In a coin-controlled mechanism for cigar-vending machines, coin-receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, locking mechanism arranged to engage said lever mechanism, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin, together with a hook on said actuating-arm arranged to engage said coin-rest and separate it from the coin-holder and anvil.

10. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin, together with a hook on said actuating-arm arranged to engage said coin-rest and separate it from the coin-holder and anvil, and cam mechanism arranged to release said locking mechanism.

11. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a magnet in said receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin.

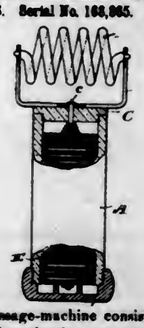
12. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a magnet in said receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin, together with a hook on said actuating-arm arranged to engage said coin-rest and separate it from the coin-holder and anvil.

13. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a magnet in said receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, locking mechanism arranged to engage said lever mechanism, a coin-rest adjacent said coin holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin, together with a hook on said actuating-arm arranged to engage said coin-rest and separate it from the coin-holder and anvil.

14. In a coin-controlled mechanism for cigar-vending machines, a coin-receiver, a magnet in said receiver, a latch therefor, a coin-guide below said receiver, a coin-holder and anvil mounted for oscillation with one end traversing the coin-guide, lever mechanism arranged to connect said coin-holder and anvil to a feeding device, a coin-rest adjacent said coin-holder and anvil, an actuating-arm mounted for oscillation and a punch on said arm arranged for engagement with a coin, together with a hook on said actuating-arm arranged to engage said coin-rest and separate it from the coin-holder and anvil, and cam mechanism arranged to release said locking mechanism.

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**758,205. MASSAGE-MACHINE.** JOHN GRAVES, Milwaukee, Wis. Filed Aug. 10, 1903. Serial No. 168,865. (No model.)




*Claim.*—1. A massage-machine consisting of a hollow handle, a battery, an electrical conducting-cap, a spiral roller and means for making a circuit from said cap through said battery to said roller substantially as set forth.

2. In a massage-machine, a spiral roller, a hollow handle therefor and fitted with a non-electrical conducting-lining, a battery contained in said handle, a non-electrical conducting-cap fitted on said handle and provided with an electrical conducting-wire and contact-point and means for forming an electrical circuit from said contact-point to said roller substantially as set forth.

3. In a manually-actuated massage-machine, a handle, a spiral roller adapted to be revolved upon bearings secured to the former substantially as set forth.

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**758,206. CRUDE-OIL BURNER.** CHARLES L. GRUNDELL and EDWIN W. TUCKER, San Francisco, Cal. Filed May 21, 1902. Renewed Sept. 19, 1903. Serial No. 173,781. (No model.)

*Claim.*—1. In a crude-oil burner, the combination with a fitting

having a transverse dividing-wall adapted to separate the oil and air, an outer tube screwed in the fitting and forming the shell of the casing, of a perforated plug removably secured in said dividing-wall, an inner tube adjustably secured in said plug and adapted to form a channel for the oil, a head on said tube having spiral grooves therein, the cap on the outer tube and the head coacting to give the vaporized oil and air a spiral twist and flaring exit.

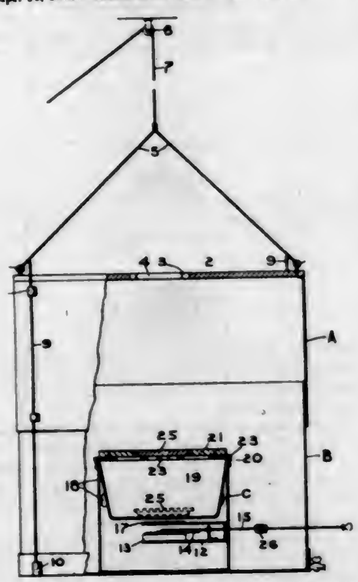


2. In a crude-oil burner the combination of a fitting having an internal dividing-wall; a tube screwed into the fitting, having a tip thereon forming the shell of the burner; an oil-conduit consisting of a hollow perforated plug screwed into the internal dividing-wall of the said fitting, having a tube capable of longitudinal adjustment screwed into the said plug, with a mixing-head thereon, filling the bore of the shell of the burner near the tip and having spiral grooves cut in its circumference, and holes radiating from its central bore in the path of said spiral grooves; supply-pipes connected with the said fitting on opposite sides of the dividing-wall therein; regulating-valves located on said supply-pipes adjacent the said fitting; throttle-valves located on said supply-pipes beyond the regulating-valves; means for causing said throttle-valves to act in unison; substantially as described.

3. In a crude-oil burner the combination of a fitting having an internal dividing-wall; a tube screwed into said fitting having a tip thereon, and forming the shell of the burner; an oil-conduit consisting of a hollow perforated plug screwed into the internal dividing-wall of the said fitting; a tube screwed into said plug, a head screwed on said tube and filling the bore of the shell of the burner near the tip, having spiral grooves cut in its circumference, escape-holes radiating from its central bore in the path of the spiral grooves; and a forward extension on said mixing-head projecting into the tip approximating in contour the internal bore of said tip; substantially as described.

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**758,207. BATH APPARATUS.** JONATHAN R. HAMILTON, Kingston, Minn., assignor of one-half to Walter Dixon, Kimball, Minn. Filed Apr. 10, 1903. Serial No. 151,943. (No model.)



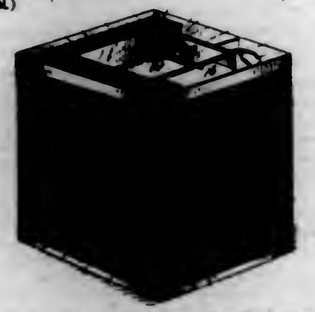

*Claim.*—1. In a bath apparatus of the class described, the combination with two telescoping cylinders, the upper cylinder being formed with a neck-opening, of a receptacle arranged within said cylinder, a pan closing the top of said receptacle, and heating means arranged within said receptacle.

2. In a bath apparatus of the class described, the combination with two telescoping cylinders, the top of the upper cylinder being formed with a neck-opening, of a receptacle within said cylinder, a water-pan removably supported in the top of said receptacle, and heating means supported in said receptacle below said pan.

3. In a bath apparatus of the class described, an open top, closed bottom, receptacle, a water-pan constructed to fit in the top of said receptacle and extending downwardly therein, heating means supported in said receptacle underneath said pan, and a seat removably supported in the top of said pan.

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**758,208. ANIMAL-TRAP.** JOSEPH B. HARIG, Baltimore, Md. Filed Feb. 26, 1903. Renewed Mar. 17, 1904. Serial No. 198,607. (No model.)



*Claim.*—1. In a device of the class described, an outer vessel having a runway and a lure device inaccessible therefrom, and a trap within and removable from the outer vessel, and to which the runway leads, substantially as described.

2. In a device of the class described, an outer vessel having a runway and a bait-receptacle, and a trap within the latter to which the runway leads, substantially as described.

3. In a device of the class described, an outer vessel having a runway, a bait-receptacle, a compartment within the latter, and a trap in said compartment to which the runway leads, substantially as described.

4. In a device of the class described, an outer vessel having a runway, a bait-receptacle, a compartment within the latter to which the runway leads, and a trap in and removable from said compartment, substantially as described.

5. In a device of the class described, an outer vessel having a runway and forming a bait-receptacle through which the runway extends, and a compartment within the outer vessel to which the runway leads, substantially as described.

6. In a device of the class described, an outer vessel having a runway and forming a bait-receptacle through which the runway extends, a compartment within the outer vessel to which the runway leads, and a trap in and removable from said compartment, substantially as described.

7. A trap having a runway, and a pivoted gravitating inclined gate, the latter having a rearwardly-extending device to close behind the animal while the gate is being raised thereby, substantially as described.

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**758,209. TIRE.** ARTHUR HENDEY, Jerome, Ariz. Filed Nov. 28, 1903. Serial No. 183,095. (No model.)



*Claim.*—1. In a tire, the combination with a flexible tube to be inflated, of a protective strip around the tread of said tube, lacing securing the strip thereon, a rubber coating around the strip and tube and inclosing the strip and inner tube.

2. In a tire, the combination with a flexible tube, to be inflated, of a rawhide strip wound spirally around the tube, and a rubber covering inclosing the latter.

3. In a tire, the combination with a flexible tube to be inflated, of a protective strip around the tread of said tube, a coating of rubber inclosing the strip and inner tube, a strip wound spirally around said coating and an outer covering thereon.

4. In a tire, the combination with a flexible tube to be inflated, of a protective strip around the tread of said tube, lacing securing the strip thereon, a rubber coating around the strip and tube, a strip wound spirally around said coating, and a covering of rubber over said winding.

5. In a tire, the combination with a flexible tube to be inflated, of a protective strip around the tread of said tube, a coating of rubber over the strip and tube, a strip wound spirally around said coating, another rubber coating inclosing the winding, a protective strip around the tread of said last-mentioned coating, a strip spirally wound around the protective strip, and an outer rubber covering inclosing the winding.



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**758,210. PRINTING APPARATUS.** JOHN J. A. JONES, Green Island, N. Y. Filed June 24, 1903. Serial No. 162,868. (No model.)



*Claim.*—1. In a printing apparatus, the combination with a base-plate; and type-supporting bars thereon; of types provided with side grooves arranged between said bars; and a key movably mounted upon one of said bars adapted to be projected from the bar to enter the side grooves in said types to lock the same in position.

2. In a printing apparatus, the combination with a base-plate; and type-supporting bars thereon, one adjustable toward another; of types provided with side grooves arranged between said bars; and a key movably mounted upon one of said bars adapted to be projected from the bar to enter the side grooves in said types to lock the same in position.

3. In a printing apparatus, the combination with a base-plate; and type-supporting bars thereon; of types provided with oppositely-located side grooves arranged between an intermediate bar and bars on opposite sides of the same; and a pair of keys each movably mounted on said intermediate bar adapted to be projected from opposite sides of the same into the side grooves in said types respectively to lock the same in position.

4. In a printing apparatus, the combination with a base-plate; and type-supporting bars thereon; of types provided with side grooves arranged between said bars; a key-plate mounted on one of said bars by means of pins inserted through diagonal slots in the key-plate, and adapted when projected beyond the side of the bar to enter the side grooves in the type to lock the same in position; means for imparting longitudinal movements to said key-plate whereby the same is projected laterally beyond the bar; and means for locking the key-plate against longitudinal movement.

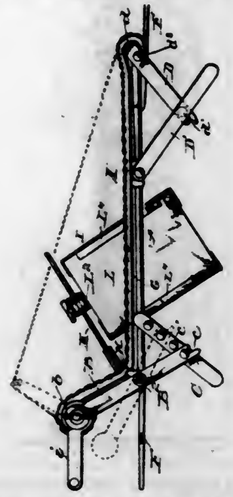
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**758,211. FOLDING AND CONVERTIBLE COT OR BED.** JOSHUA W. JOHNS, Harrisburg, Pa. Filed July 14, 1902. Serial No. 115,490. (No model.)

*Claim.*—1. In a structure such as described, the combination with the rectangular main frame, the head-section pivotally connected with one end thereof, and extended to form leg-braces and legs pivotally connected with the main frame, of a foot-frame pivotally connected with the main frame and having a cross-bar and extensions forming leg-braces and a suspended mattress supported at one end at the foot of the main frame and at the opposite end at the upper portion of the head-section; substantially as described.

2. In a structure such as described, the combination with the rectangular main frame, of the legs pivotally connected to said frame, the head-section pivotally connected to the main frame and having an extension pivotally and adjustably connected with the legs, whereby the head-section may be adjusted in position, the foot-frame pivotally connected to the main frame and its cooperating legs, a mattress connected at one end with the foot-frame, and adjusting mechanism for the mattress carried by the head-section to which the opposite end of the mattress is connected, whereby the mattress may be tensioned with the head-section at different inclinations; substantially as described.

3. In a structure such as described, the combination with the main frame having legs pivotally connected therewith, a head-section and a foot-frame pivotally connected with the said main frame and cooperating with the legs to position the same for supporting the main frame, stretcher-arms pivotally connected with the main frame and adapted to project beyond the same horizontally, cooperating projections and recesses on the stretcher-arms and legs whereby said arms may serve as extension-legs and a mattress carried by the main frame and head-section; substantially as described.



4. In a structure of the character described, the combination with the main frame, legs pivotally connected therewith and head-section and foot-frame for positioning said legs, of the stretcher-arms pivotally connected with the inner sides of the main frame and having a shoulder at one end and adapted to swing to form horizontal extensions beyond the main frame and stops or projections on the main frame with which the shoulders on the same cooperate for holding said arms against swinging upwardly beyond a horizontal position, whereby they may serve as handles for carrying the structure and its occupant; substantially as described.

5. In a structure such as described the combination with the main frame, adjustable legs for supporting the same, the head-section pivotally connected to the main frame and having an extension pivotally and adjustably connected with the legs, the foot-frame pivotally connected to the main frame and its cooperating legs, a mattress connected at one end with the foot-frame, an adjusting mechanism for the mattress carried by the head-section to which the opposite end of the mattress is connected, a swinging cross-bar pivotally connected with the main frame at the base of the head-section beneath which the mattress freely passes whereby the bend in the mattress is maintained at the base of the head-section with the head-section in any position of adjustment and the mattress may be tensioned as desired; substantially as described.

6. In a structure such as described, the combination with the main frame, legs adjustably connected therewith and the head-section adjustably connected with one end of said main frame, of a roller journaled in said head-section, clamping-screws for clamping said roller in its adjusted position, a suspension-mattress and means for removably connecting one end of said mattress with the foot end of the main frame and the opposite end of said mattress with said roller; substantially as described.

7. In a cot structure such as described, the combination with the main frame, legs adjustably connected therewith and a head-section adjustably connected with one end of said main frame, of a removable suspension-mattress having hooks secured thereto at opposite ends and adapted to engage respectively a cross-bar at the foot end of the main frame and a tensioning device at the upper end of the head-section; substantially as described.

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**758,212. WASHER-STAPLING MACHINE.** WILLIAM MAIER and GEORGE M. HOWE, Buffalo, N. Y., assignor to R. Hoffeld & Company, Buffalo, N.Y. Filed Apr. 23, 1900. Serial No. 13,662. (No model.)

*Claim.*—1. A machine for stapling washers and similar articles, comprising a stapling mechanism, an anvil, a plate vertically ad-

justable relatively to said anvil and provided with work-holding members located above and upon opposite sides of the anvil, in combination with a movably-mounted work-support located under the anvil and adapted to be operated to force the work against the said work-holding members with the ends thereof in contact with each other upon the anvil.



2. A machine for stapling washers and similar articles, comprising a stapling mechanism, a block having depressions, an anvil projecting from the front end of the block, a plate provided with work-holding members located above and upon opposite sides of the anvil and screws adjustably fitted in the depressions in the block for securing the plate to the block, substantially as set forth.

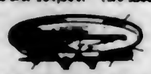
3. A washer-stapling machine having a stapling mechanism, a block, an anvil projecting laterally from the block, a plate attached to the block and having lateral washer-holding ears arranged above and upon opposite sides of the anvil and a vertically-adjustable support to receive the work mounted beneath the anvil, substantially as set forth.

4. In a machine for stapling washers and similar articles, a stapling mechanism, an anvil-block having longitudinally-extending top depressions, an anvil carried thereby, a plate provided with work-holding members located above and upon opposite sides of the anvil, and screws or like fastenings passing through the plate and the depressions in the block for adjustably securing the plates to the block, substantially as set forth.

5. A stapling-machine having an attachment for supporting strips in annular position while the ends are united by staples, comprising a block having three parallel top depressions, screws fitted in the two side depressions, a plate adjustably secured to the block by said screws and having horizontally-extending holding-ears and an anvil-bar secured to the middle depression and having a concaved clenching portion, as set forth.

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**758,218. ANIMAL-POKE.** JAMES P. MONTGOMERY, Wichita, Kans., assignor of one-fourth to O. Martinson, Wichita, Kans. Filed Dec. 31, 1903. Serial No. 187,369. (No model.)



*Claim.*—1. An animal-poke, comprising a body portion having a concave wire-receiving edge set at an angle and adapted to prevent a wire from passing over the animal-poke, and an attaching-pin, substantially as described.

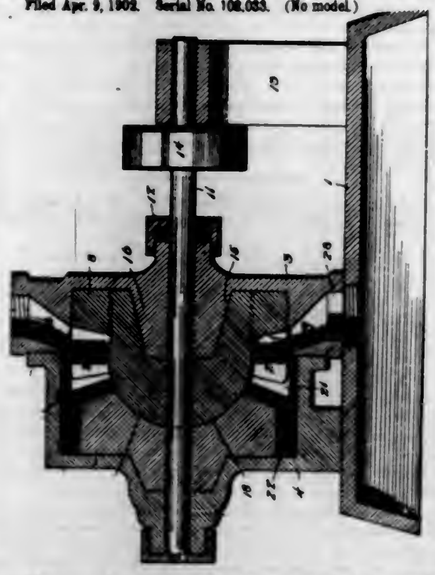
2. An animal-poke, comprising a body, consisting of a disk or plate having a projecting peripheral flange presenting a concave outer face and arranged at an inclination, and means for attaching the body portion to an animal, substantially as described.

3. An animal-poke, comprising a body portion consisting of a plate having an outwardly-projecting flange, and provided at its back with a projecting spur, and means for securing the body portion to an animal, substantially as described.

4. An animal-poke, comprising a disk or plate having wire-engaging means, an attaching-pin, and spurs located in rear of the pin, substantially as described.

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**758,214. ROTARY MOTOR.** JENS NIELSEN, Cedarfalls, Iowa. Filed Apr. 9, 1902. Serial No. 102,033. (No model.)

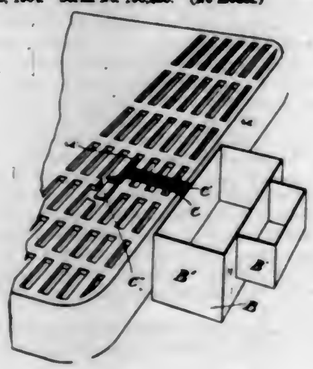


*Claim.*—1. In a machine of the class described, the combination with the casing, of a rotating piston consisting of separate driving and follower wheel members respectively, the driving-wheel member having at one side a beveled face, a central ball portion, and a series of impact-cogs projected laterally from said beveled face, and the follower-wheel member having a central concaved bearing-socket, a circular series of sockets or recesses receiving the cogs of the other wheel member, and an outer imperforate rim portion overhanging and covering the said sockets or recesses, said rim portion combining with the central ball portion of the driving-wheel member to completely close in both the outer and inner sides of the sockets or recesses receiving the cogs, substantially as set forth.

2. In a machine of the class described, the combination of the casing consisting of separate sections set at an angle to each other and respectively of different diameters, inlet and outlet connections with the casing-section of smaller diameter, and a rotating piston consisting of angularly-related driving and follower wheel members respectively mounted in the smaller and larger casing-sections and having cogged connection, the cogs being of an inwardly-tapering form from their outer ends and said follower-wheel member being provided with an outer rim portion overhanging the cogs when engaged therewith.

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**758,215. MATCH-SAFE.** SARAH GUHL, Pasadena, Cal. Filed Jan. 22, 1904. Serial No. 190,235. (No model.)



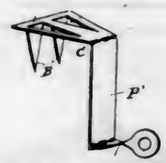


*Claim.*—1. A match-safe divided into two compartments; an arm secured to one of said compartments, said arm having the exposed portion thereof roughened and having side pieces secured upon the end thereof.

2. A match-safe divided into two compartments; an arm secured to one of said compartments, said arm having means for detachably securing said safe to a gas-range, said arm also having an igniting-surface upon which a match may be caused to ignite.

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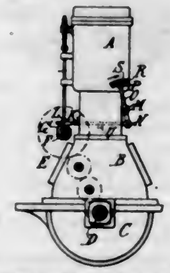
**758,216. CURTAIN-FIXTURE.** CHRISTIAN REISS and WILLIAM G. BRADBURY, New York, N. Y. Filed Apr. 10, 1903. Serial No. 152,061. (No model.)



*Claim.*—A curtain-fixture provided with a body adapted to rest on the face of the support the upper end of said body being formed with a widened offset, two downwardly-extending teeth or spurs punched out of the widened offset, and a forwardly-extending projection at the lower end of the curtain-fixture with a bend and a half-twist carrying a keeper, substantially as shown and described.

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**758,217. SPARKING-IGNITER MECHANISM.** CARL C. RIOTTE and EUGENE A. RIOTTE, New York, N. Y. Filed Apr. 15, 1901. Serial No. 55,860. (No model.)



*Claim.*—1. The combination with an igniter, of a cam for operating the same, transmitting mechanism between said cam and igniter, and an operating-arm O for moving said transmitting mechanism adapted to bear normally automatically and in all positions against a friction-plate R for holding said transmitting mechanism passive in any position to which it is moved and for permitting it to yield in case of backward movement of said cam.

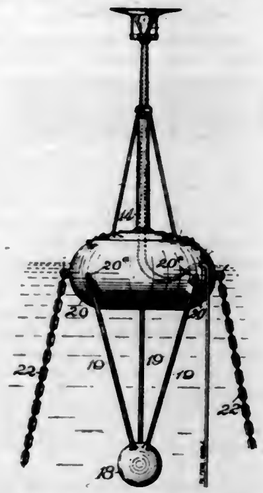
2. The combination with an igniter, of a cam for operating the same, means for transmitting the motion of said cam to said igniter, said means being movable radially of the axis of the cam and being also movable laterally of the axis of the cam and transversely of such radial movement, and an operating-arm O for moving said transmitting mechanism adapted to bear normally automatically and in all positions against a friction-plate R for holding said transmitting mechanism passive in any position to which it is moved and for permitting it to yield in case of backward movement of said cam.

3. The combination of a plurality of igniters, cams for operating the same, transmitting mechanisms between said cams and igniters, and a single operating-arm O for moving said transmitting mechanisms simultaneously and adapted to bear normally automatically and in all positions against a friction-plate R for holding said transmitting mechanisms passive in any position to which they are moved and permitting them to yield in case of backward movement of said cams.

4. The combination of a plurality of igniters, operating-cams therefor, igniter-rods H, adjusting-rods K between said cams and igniter-rods, a shaft M having arms N connected to said adjusting-rods and having an operating-arm O mounted to bear normally, automatically and in all positions, against a friction-plate R for holding said shaft M in any desired position, whereby the time of operation of said igniters may be varied simultaneously and said igniters may be held in corresponding positions of adjustment and immovable relatively to each other but so as to yield together in case of backward movement of said cams.

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**758,218. BUOY.** SOLOMON W. ROBERTS, Hurtsboro, Ala. Filed July 7, 1903. Serial No. 164,524. (No model.)



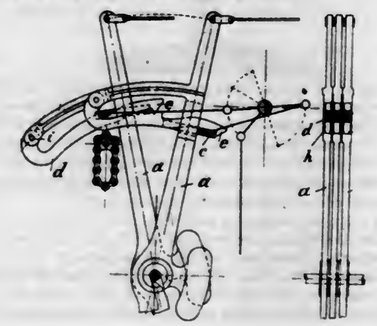
*Claim.*—1. A buoy comprising a body portion, a tubular post projecting from the top thereof, a lamp on the end of the post, wires arranged within the post, and projecting from the body portion, a weight suspended at a distance from the body portion and independent of and disposed opposite to the post, and securing means adapted to limit the turning of the buoy.

2. A buoy comprising a body portion, a hinged cover on the top of the body portion, a tubular post projecting from the cover and opening therein, wires within the body portion and the post adapted to project from the body portion, a lamp arranged on the end of the post, a reflector thereon arranged to allow the rays from the lamp to emanate at an acute angle to a horizontal plane, a weight oppositely disposed in relation to the post adapted to maintain the buoy in its perpendicular position, and chains secured to opposite sides of the body portion adapted to be connected to anchors and secure the buoy, said chains acting to limit the turning of the buoy.

3. A buoy comprising a body portion, a tubular post projecting from the top thereof and opening therein, a lamp arranged on the post, a weight disposed on the opposite side of the buoy and suspended from the body portion to maintain it in its perpendicular position, means for limiting the turning of the buoy and an approximately horizontal reflector arranged approximately horizontal above the lamp to reflect upon the water, but allowing the light to emerge at an acute angle to a horizontal plane.

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**758,219. MEANS FOR GUIDING THE JACKS IN CROMPTON DOBBY-LOOMS.** GEORG SCHWABE, Bielitz, Austria-Hungary. Filed Oct. 22, 1903. Serial No. 178,069. (No model.)



*Claim.*—1. In a loom, a heddle-frame lever having an arm and a slot, combined with a jack pivoted to the arm and engaging the slot, substantially as specified.

2. In a loom, a slotted lever having a forked arm, combined with a jack pivoted to said arm and engaging the lever-slot, substantially as specified.

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**758,220. ACCOUNT-BOOK. HERMAN SIEBEY, Mayville, N. Y. Filed Aug. 13, 1903. Serial No. 169,318. (No model.)**



*Claim.*—1. A book-cover, spacing-blocks fixed to the cover-back, stiff leaves therein secured to the blocks by flexible strips, means for removably securing bunches of ruled or other suitable paper to the stiff leaves, and intermediate leaves, said latter leaves having flexible connection with the spacing-blocks.

2. A book having a stiff leaf provided with holes, a bunch of paper provided at one end with a dovetail portion having a length approximating the width of the bunch, and a wire fastening surrounding said portion and passed through the holes and then bent down upon the leaf, said wire being flexible and independent of the bookbinding whereby the bunch may be detached and either replaced or another substituted and secured by the same fastening without injury to the book.

3. A book having a stiff leaf, bunches of paper secured on said leaf on opposite sides and at opposite edges, each of said edges being situated at the left when the leaf and tablets thereon are suitably disposed for writing.

4. A book having a stiff leaf, bunches of paper secured on said leaf and on opposite sides and at opposite edges, each of said edges being situated at the left when the leaf and tablets thereon are suitably disposed for writing, and intermediate leaves to keep the paper clean and in order.

5. The book having a leaf provided with a detachable bunch of paper comprising a plurality of sheets, and means for connecting the bunch to the leaf, said means consisting of flexible wire bent about the bunch and extended through the leaf, said wire being flexible and independent of the bookbinding whereby the bunch may be detached and either replaced or another substituted and secured by the same fastening without injury to the book.

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**758,221. CROSS-SECTION TESTER. HERBERT R. SMITH, Boston, Mass. Filed Feb. 27, 1903. Serial No. 145,339. (No model.)**



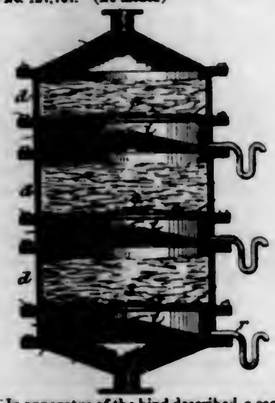
*Claim.*—1. A rail-tester comprising flexible non-elastic conforming means, and means to hold the same at the tread of the rail so that the conforming means when bent to indicate the configuration of the rail can be removed without disturbing the shape imparted thereto by application to the rail, and a templet to which the free ends of said legs are applicable to position them preparatory to drawing the shape of the cross-section of the tested rail.

2. A rail-tester comprising two flexible non-elastic legs, blocks with which severally one end of each of said legs is connected, leaving the other end thereof free, a hinge connecting said blocks at a point remote from the non-elastic legs, whereby when the tester is applied to the tread of a rail the legs may be bent around the tread to conform to the configuration thereof, and the blocks be then separated to enable the legs to be removed from the rail without changing the shape given to them by contact with the tread of the rail.

3. A rail-tester comprising two flexible non-elastic legs, a block or device with which one end of each of said legs is connected, leaving the other end thereof free, whereby when the tester is applied to the tread of a rail the legs may be bent around the tread to conform to the configuration thereof, and the blocks be then separated to enable the legs to be removed from the rail without changing the shape given to them by contact with the tread of the rail, and a templet to which the free ends of said legs are applied to position them preparatory to drawing the shape of the cross-section of the tested rail.

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**758,222. APPARATUS FOR THE FILTRATION OF GASES. GEORGE C. STONE, New York, N. Y., assignor to New Jersey Zinc Company, New York, N. Y., a Corporation of New Jersey. Filed Oct. 17, 1902. Serial No. 127,707. (No model.)**



*Claim.*—1. In apparatus of the kind described, a receptacle having a gas-inlet and a gas-outlet, said receptacle being subdivided into a series of communicating compartments or subdivisions, each of said compartments comprising a diaphragm, a screen above said diaphragm and loose material upon the several screens, the space between each diaphragm and screen constituting a liquid-reservoir, said space being provided with an outlet-pipe for said liquid, substantially as described.

2. In apparatus of the kind described, a receptacle having a gas-inlet and a gas-outlet, said receptacle being subdivided into a series of compartments or subdivisions, each of said compartments comprising a conical diaphragm having a central opening, a screen above said diaphragm and loose material upon the several screens, the space between each diaphragm and screen constituting a liquid-reservoir, said space being provided with an outlet-pipe, substantially as described.

3. In apparatus of the kind described, a receptacle having a gas-inlet and a gas-outlet, said receptacle being subdivided into a series of compartments or subdivisions, each of said compartments comprising a conical diaphragm having a central opening, a screen above said diaphragm, a deflecting-plate upon said screen immediately above the aperture in the diaphragm and loose material upon the several screens, the space between each diaphragm and screen constituting a liquid-reservoir, said space being provided with an outlet-pipe, substantially as described.

4. In apparatus of the kind described, a receptacle having a gas-inlet and a gas-outlet, and a series of intermediate subdivisions or compartments, each compartment consisting of a flanged lower section having a perforated diaphragm and a liquid-tap and a flanged upper section having a screen and loose material resting upon the screen, substantially as described.

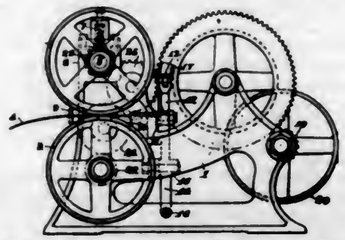
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**758,223. MEASURING AND CUTTING-OFF MACHINE. RICHARD THIEME, Cordova, Ala. Filed Jan. 23, 1904. Serial No. 190,972. (No model.)**

*Claim.*—1. In a measuring and cutting-off machine, in combination, feed-rolls, positive driving means therefor adapted to produce a dwell in the feed-rolls once during each cycle of operations, a cutter and means for operating it once during each cycle, and means for varying the proportions of the feeding movement and dwell of the feed-rolls.



2. In a measuring and cutting-off machine, in combination, means for feeding and means for cutting off the material, and means for actuating said mechanisms comprising an interrupted gear, and means for varying the proportions of the blank and toothed sectors thereof.



3. In a measuring and cutting-off machine, in combination, means for feeding and means for cutting off the material, and means for actuating said mechanisms comprising a member provided with means for actuating the feeding mechanism for a certain portion of its cycle, and means for actuating the cutting-off mechanism during the remainder of its cycle, and means for varying the proportion of said cycle during which the feed mechanism is actuated.

4. In a measuring and cutting-off machine, in combination, a cutter and means for operating it, feed-rolls, driving mechanism for said rolls comprising an interrupted gear having its face divided into two parts adjustable angularly upon each other to vary the proportions of toothed and blank sectors.

5. In a measuring and cutting-off machine, in combination, a cutter and means for operating it, feed-rolls, driving mechanism for said rolls comprising a gear having its face divided into a continuous section and an interrupted section, said interrupted section only, engaging the feed-roll-driving gears, and a driving-gear therefor engaging the continuous section.

6. In a measuring and cutting-off mechanism, in combination, a cutting-off mechanism, means for operating the same, feed-rolls, and driving mechanism for said feed-rolls comprising a gear-wheel having its face divided into a continuously-toothed section and two sections having interrupted sectors, said interrupted sections only, acting upon the feed-roll-driving mechanism, and one of said interrupted gear-sections comprising a ring adjustable angularly upon the other section.

7. In a measuring and cutting-off machine, in combination, feed-rolls, means for holding said rolls in yielding contact with the material being cut, guides for said material before and after it passes between the feed-rolls, a cutting-off device adjacent the latter of said guides, a measuring and driving gear connected with the feed-rolls to drive them, said gear having an interrupted sector adapted to produce a dwell in the feed-rolls, and also having a side face cam adapted to actuate the cutting-off mechanism during said dwell.

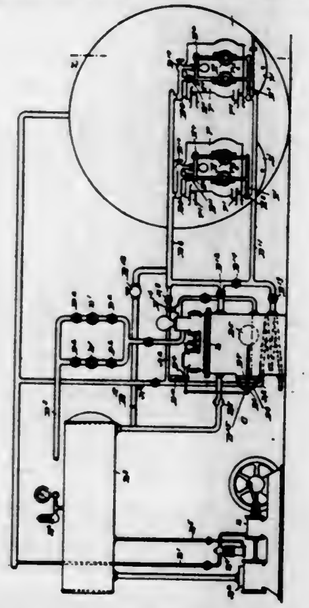
8. In a measuring and cutting-off machine, in combination, feed-rolls, means for holding said rolls in yielding contact with the material being cut, guides for said material before and after it passes between the feed-rolls, a cutting-off device adjacent the latter of said guides, a measuring and driving gear connected with the feed-rolls to drive them, said gear having an interrupted sector adjustable in amount and adapted to produce a dwell in the feed-rolls, and also having a side face cam adapted to actuate the cutting-off mechanism during said dwell.

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**758,224. OIL-BURNING SYSTEM. EDWIN W. TOOKER and CHARLES L. GRUNDELL, San Francisco, Cal. Filed June 26, 1902. Renewed Sept. 19, 1903. Serial No. 173,782. (No model.)**

*Claim.*—1. In an oil-burning system the combination with a steam-generator of an air-compressor, a receiving-tank therefor, and means for automatically maintaining a given pressure in said tank; a heater heated by steam from said generator, and adapted to contain fuel-oil under the pressure of air from the air-compressor, means for pumping oil from the source of supply through strainers arranged in parallel, whereby the flow may be diverted without stoppage, and means whereby a given oil-level is automatically maintained in the heater; distributing-pipes leading from the heater below the oil-level and from the air-compressor to the burners under the steam-generator; and distributing-pipes leading from the heater above the oil-level to special furnace-fronts, containing internal superheating-chambers exposed to the radiated heat from the furnaces, from which the air is led to the burners: substantially as described.

2. In an oil-burning system the combination with a steam-generator, of an air-compressor, a receiving-tank therefor, and means for maintaining a given pressure in said tank; a heater heated by steam from the said steam-generator, and adapted to contain fuel-oil under the pressure of the air from the air-compressor; a pump adapted to overbalance a loaded check-valve to supply the said heater from the source of the oil-supply; means for maintaining a given oil-level in the said heater, consisting of a float pivoted in the manhole-plate resting upon the oil, and suitably connected with the throttle controlling the action of said pump and an alarm mechanism, whereby the failure of said pump to perform its function will divert the steam to the alarm; distributing-pipes leading from the heater below the oil-level to the burners under the steam-generator; and distributing-pipes leading from the said heater above the oil-level to the said burners; means for letting steam into the air-supply pipe; and means for letting steam or air into the oil-distributing pipes between the heater and the burners; substantially as described.



3. In an oil-burning system the combination of a steam-generator; an air-compressor; and an air and oil heater; with a furnace-front consisting of a front hinged to the boiler-front, and having internal chambers subjected to the radiated heat of the furnace, openings therethrough, having oil-burners fixed therein; oil and air supply pipes swiveled on the axis of the hinge of said furnace-front, the oil passing direct to the burner and the air passing into and through the internal chambers of said furnace-front before entering the burner; substantially as described.

4. In an oil-burning system, the combination with a steam-generator, an oil-supply apparatus, an air-supply apparatus, of a furnace-front having internal chambers exposed to the action of the heat, said front being hinged, an air-pipe from the air-supply apparatus to said chambers and to the burners direct, an oil-pipe from the oil-supply apparatus which connects with the burners, said chambers connecting with the burners to supply air, and hinge-valves on said air and oil pipes whereby the supply of air and oil can be cut off.

5. In an oil-burning system, the combination with a furnace-front, burner-openings thereon, air-spaces in the furnace-front around said burner-openings, said spaces connected with the burners, of means whereby air under pressure is supplied to said burners through said spaces, means for supplying oil to said burners, means whereby said air is supplied directly to the burners, omitting the air-spaces and means whereby steam is supplied to the air-pipe.

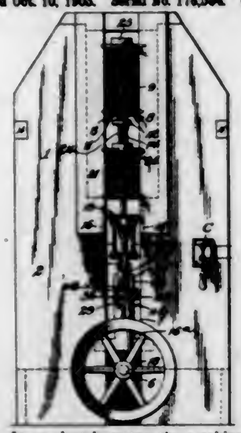
6. In combination with an oil-burning system, a furnace-front hinged to the boiler-front and having a plurality of burners projecting therethrough, internal chambers in the furnace-front being exposed to the heat of the furnace and through which air passes to the burners, of means for supplying oil to the burners, means for supply-

ing air to the chambers, and valved hinges on said supply means whereby the supply of oil and air can be cut off.

7. In combination with an oil-burning system, a heater, adapted to contain fuel-oil and having a manhole-plate near the oil-level; a float trunnioned in said manhole-plate, and having a hollow stem and trunnioned whereby the seepage into the float may be drawn off; substantially as described.

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**758,225. ELECTRIC MOTOR.** ALEXIS VANDERBECK, Rossland, Kans. Filed Oct. 10, 1903. Serial No. 176,584. (No model.)



*Claim.*—1. In an electric motor, the combination with electromagnets having unlike opposed poles; of an armature having one end movable between said poles and extended through one of the magnets to be polarized thereby, and means operated by said armature for cutting the magnets out of circuit.

2. In an electric motor, the combination with electromagnets, armatures operatively related thereto and a motor-shaft operatively connected to the armatures; of a source of electric energy, an oscillatory commutator for putting the magnets alternately in circuit with said source, and a rocker operated by the armatures to oscillate the commutator.

3. In an electric motor, the combination with electromagnets, armatures therefor and a motor-shaft operatively connected with the armatures; of an oscillatory commutator, and a rocker disposed to oscillate the commutator and having its opposite ends operatively connected to the armatures.

4. In an electric motor, the combination with electromagnets, armatures therefor and a motor-shaft operatively connected with the armatures; of a supporting-bracket, contact elements mounted thereon, an oscillatory commutator having terminal contact elements arranged to engage those mounted on the bracket, and a rocker operated by the armatures and disposed to alternately engage the opposite ends of the commutator to oscillate the same.

5. In an electric motor, the combination with electromagnets, armatures therefor, and a motor-shaft operatively connected with the armatures; of a bracket, fixed contacts, a medially-pivoted commutator and a medially-pivoted rocker, all mounted on the bracket, contact elements located at the ends of the commutator and disposed to engage the contact elements on the bracket, and means operatively connecting the opposite ends of the rockers with the armatures.

6. In an electric motor, the combination with a plurality of pairs of electromagnets, each pair having their unlike poles opposed; of armatures, each movable between the opposed poles of a pair of magnets, a motor-shaft operatively connected with the several armatures; and a commutator arranged to close a circuit through the several pairs of magnets in succession.

7. In an electric motor, the combination with a plurality of pairs of electromagnets, each pair having their unlike poles opposed; of armatures, each movable between the opposed poles of a pair of magnets, a motor-shaft operatively connected with the several armatures, and an oscillatory commutator operatively related to the armatures and arranged to close a circuit through the several pairs of magnets in succession.

8. In an electric motor, the combination with a plurality of pairs of electromagnets, each pair having its unlike poles opposed; of a plurality of armatures, each having one end movable between the opposed poles of a pair of magnets and arranged to be polarized by one of the magnets, an oscillatory commutator for closing a circuit through the several pairs of magnets in succession, and a rocker operated by the armatures to oscillate the commutator.

9. In an electric motor, the combination with a plurality of pairs of electromagnets having their unlike poles opposed; of a plurality of armatures, each of which constitutes the movable core of one magnet and has one end movable between the unlike poles of the pair of magnets with which it is associated, an oscillatory commutator for closing the circuit through the several pairs of magnets in succession, and a rocker disposed to oscillate the commutator and having its opposite ends operatively connected with different armatures.

10. In an electric motor, the combination with a frame, electromagnets mounted in the opposite sides thereof, armatures for said magnets and the motor-shafts operatively connected with the armatures; of a bracket carried by the frame, yielding supports carried by the brackets, contact-clips adjustably carried by said brackets, a medially-pivoted oscillatory commutator mounted in the bracket and having terminal contact-blades arranged to engage the clips, and means operated by the armatures for oscillating the commutator.

11. In an electric motor, the combination with magnets, armatures therefor and a motor-shaft operatively connected with the armatures; of a commutator operated by the armatures to close the circuit through the magnets in succession, and reversing mechanism associated with the commutator.

12. In an electric motor, the combination with magnets, armatures therefor, and a motor-shaft operatively connected with the armatures; of an oscillatory commutator, means operated by the armatures for oscillating the commutator, and independent means for moving the commutator to reverse the motor.

13. In an electric motor, the combination with magnets, armatures therefor, and a motor-shaft operatively connected with the armatures; of an oscillatory commutator operated by the armatures, and independent means for oscillating the commutator to effect the reversal of the motor.

14. In an electric motor, the combination with magnets, armatures therefor, and a motor-shaft operatively connected with the armatures; of an oscillatory commutator operated by the armatures, and independent means for oscillating the commutator to effect the reversal of the motor, said reversing means including crank-shafts operatively related to the opposite ends of the commutator and an operating element common to both crank-shafts.

15. In an electric motor, the combination with a plurality of pairs of electromagnets, each pair having unlike opposed poles, of a plurality of armatures, each having one end movable between the opposed poles of a pair of magnets and each extended through one magnet to be polarized thereby, and means operated by the armatures for closing a circuit through the several pairs of magnets in succession.

16. In an electric motor, the combination with electromagnets, armatures operatively related thereto, and a suitable source of electrical energy, of a commutator for putting the magnets alternately in circuit with said source of electrical energy, and a member operated by each of the armatures alternately to move the commutator.

17. In an electric motor, the combination with electromagnets, and armatures therefor, of suitable electrical connections, a commutator, and a rocker disposed to operate the commutator and connected to the armatures for operation thereby.

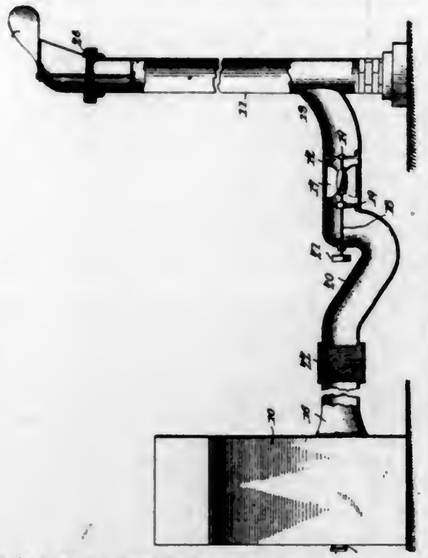
18. In an electric motor, the combination with a plurality of pairs of electromagnets, each pair having their unlike poles opposed of armatures, each movable between the opposed poles of a pair of magnets, a motor-shaft having operative connection with the several armatures, a commutator operatively related to the armatures and arranged to close a circuit through the several pairs of magnets in succession, and reversing mechanism associated with the commutator to reverse the position thereof.

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**758,226. MOTOR.** JAMES VINSON, Coal Springs, Ill. Filed Dec. 24, 1903. Serial No. 186,467. (No model.)

*Claim.*—1. In a motor, a closed air-chamber having air-inlets provided with covering-shields spaced from the walls of the chamber, an air-shaft leading from said air-chamber and formed of a horizontal section and a vertical section, a power-wheel formed of radiating screw-formed blades and mounted for rotation in said air-shaft, and means for transmitting motion from said power-wheel.

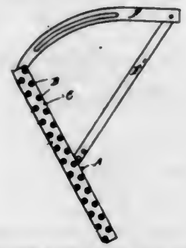
2. In a motor, a closed air-chamber having air-inlets, an air-shaft formed of a horizontal section and a vertical section and leading from said air-chamber, a power-wheel formed of radiating screw-formed blades upon a shaft mounted for rotation in said air-shaft, projecting through the wall thereof and provided with a drive-pulley exteriorly thereof, said air-shaft having a return-bend opposite said pulley.



3. In a motor, a closed air-chamber having air-inlets provided with covering-shields spaced from the walls of the chamber, an air-shaft leading from said chamber and formed of a horizontal section and a vertical section, said horizontal section having a return-bend, a hood mounted revolubly at the upper end of the vertical section of the air-shaft, a power-wheel mounted for rotation in the horizontal section of the air-shaft between the vertical section of the latter and the return-bend, a shaft for said power-wheel extending through one wall of the return-bend, a power-pulley upon said shaft between the walls of the return-bend, and a controlling-valve between the return-bend and the air-chamber.

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**758,227. APRON FOR MALT-TURNING MACHINES.** DANIEL D. WHEELER, Erie, Pa. Filed July 25, 1903. Serial No. 167,052. (No model.)



*Claim.*—1. The combination in an apron for malt-turning machines, of a frame, and an apron-body secured therein consisting of rows of horizontal members secured in said frame so as to leave openings between them, substantially as and for the purpose set forth.

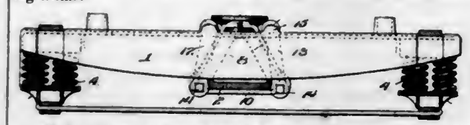
2. The combination in an apron for malt-turning machines of a rectangular frame, arms and braces thereon for attaching it to a malt-turning machine, and an apron-body consisting of rows of horizontal members secured in said frame so as to leave horizontal openings between them, substantially as and for the purpose set forth.

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**758,228. CENTER-BEARING FOR TRUCK-BOLSTERS.** CHARLES T. WESTLAKE, St. Louis, Mo., assignor, by mesne assignments, to American Steel Foundries, a Corporation of New Jersey. Filed June 21, 1897. Renewed Mar. 24, 1904. Serial No. 199,852. (No model.)



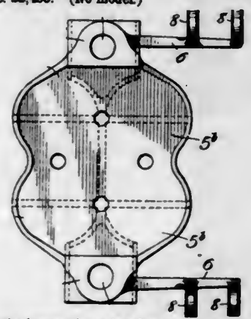
*Claim.*—1. In a center-bearing for trucks, the combination of the bolster supported at its ends on the truck-frame, a bearing-plate having a downwardly and outwardly flaring depending frame or basal projection straddling the bolster, parallel transverse pins journaled in fixed bearings on the upper side of the bolster, and depending links and hangers connected at their upper ends to the pins and at their lower ends to similar pins at opposite ends of the depending frame.



2. In a center-bearing for trucks, the combination of the bolster supported at its ends on springs seated on the truck-frame, a bearing-plate having a downwardly and outwardly flaring depending frame or basal projection, parallel pins journaled in fixed transverse bearings on the upper side of the bolster, similar pins at opposite ends of the depending frame, and links or hangers having an unyielding connection at their upper and lower ends with the pins.

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**758,229. TRUCK-FRAME FOR RAILWAY-CARS.** CHARLES T. WESTLAKE, St. Louis, Mo., assignor, by mesne assignments, to American Steel Foundries, a Corporation of New Jersey. Filed July 3, 1900. Serial No. 22,435. (No model.)



*Claim.*—An integral casting for a car-truck, comprising two vertical perforated pillars, a platform intermediate said pillars constituting a seat for four springs, an arched flange supporting said platform and bifurcated at its opposite ends to form the lower portions of said pillars, and a rigid bracket on each pillar provided with perforated ears for supporting the brake-beam hangers.

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**758,230. TRAIN-CONTROL SYSTEM.** HAROLD E. WHITE, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Nov. 20, 1902. Serial No. 132,158. (No model.)

*Claim.*—1. In a motor-control system, a pair of motors, permanent connections between the field of each motor of said pair and the armature of the other motor of the pair, and means for connecting said motor-armature and field combinations in series and in parallel, as desired.

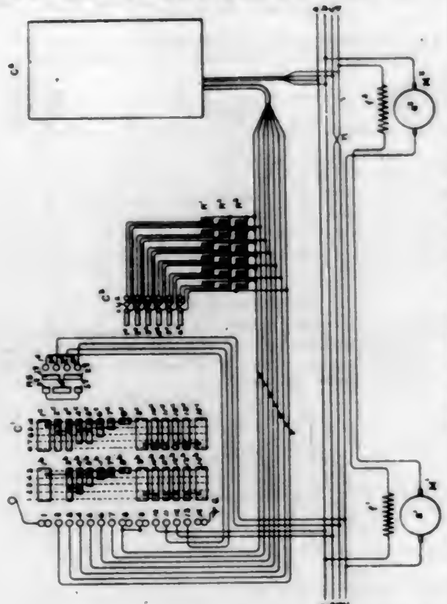
2. In a motor-control system, a pair of motors, permanent connections between the field of each motor of said pair and the armature of the other motor of the pair, and means for reversing the direction of current in one of said armature and field circuits.

3. In a motor-control system, a pair of motors, permanent connections between the field of each motor of said pair and the armature of the other motor of the pair, means for connecting said motor-armature and field combinations in series or in parallel as desired, and means for reversing the direction of current in one of said armature and field circuits.

4. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said motor-armature and field combinations are connected, and means for controlling the application of current to said train-wires.

5. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, three train-wires to which said armature and field combinations are connected, and a motor-controller connected to said train-wires.

6. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said motor-armature and field combinations are connected, and a controller for connecting said motor-armature and field combinations of each pair of motors in series or in parallel as desired.



7. In a train-control system, a plurality of pairs of motors connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said motor-armature and field combinations are connected, means for controlling the application of current to said train-wires, an adjustable resistance adapted to be connected to said train-wires, and means for adjusting said resistance proportionately to the number of pairs of motors on the train.

8. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said motor-armature and field combinations are connected, a controller for connecting said motor-armature and field combinations of each pair of motors in series or in parallel as desired, an adjustable resistance adapted to be connected to said train-wires, and an auxiliary controller for adjusting said resistance to correspond with the number of pairs of motors on the train.

9. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said motor-armature and field combinations are connected, a motor-controller connected with said train-wires, and an auxiliary controller adapted to decrease the resistance which is connected in series with said train-wires for corresponding positions of the motor-controller as the number of cars composing the train is increased.

10. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said armature and field combinations are connected, said train-wires being so arranged throughout the train that the direction of rotation of the motor-armatures of a single car will be reversed when the said car is turned end for end in making up the train.

11. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said armature and field combinations are connected, and couplings for said train-wires, one pair of said train-wires in each car and each coupling being crossed so as to maintain the same direction of movement of the car when said car is turned end for end in making up the train.

12. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said armature and field combinations are connected said train-wires being so arranged throughout the train that the direction of rotation of the motor-armatures on a single car will be reversed when the said car is turned end for end in making up the train, and a reversing-switch for reversing the connections of a single pair of train-wires to reverse the direction of rotation of all the motor-armatures on the train.

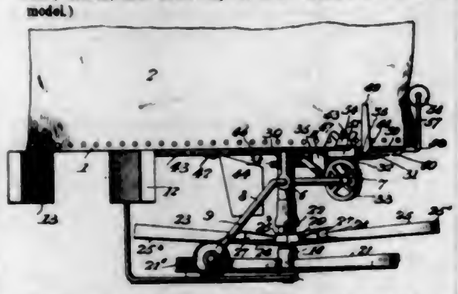
13. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said armature and field combinations are connected, couplings for said train-wires, one pair of said train-wires in each car and in each coupling being crossed so as to maintain the same direction of movement of the car when said car is turned end for end in making up the train, and a plurality of reversing-switches each of which is adapted to reverse the connections of a single pair of train-wires to reverse the direction of rotation of all the armatures of the motors connected to said train-wires.

14. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, three train-wires to which said armature and field combinations are connected, a motor-controller connected to said train-wires, and a reversing-switch adapted to reverse the connections of two of said train-wires to reverse the direction of rotation of all the motor-armatures on the train.

15. In a train-control system, a plurality of pairs of motors, connections between the field of each motor of each pair and the armature of the other motor of said pair, train-wires to which said motor-armature and field combinations are connected, a motor-controller connected with said train-wires and adapted to connect said armature and field combinations in series and in parallel as desired, and a reversing-switch adapted to reverse the connections of two of said train-wires to reverse the direction of rotation of all the motor-armatures on the train.

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**758,231. BROADCAST SEED-PLANTER.** SAMUEL R. ABBOTT, Goshen, Ind., CURTIS G. ABBOTT, Grayling, Mich., and JAMES C. ABBOTT, Goshen, Ind. Filed July 30, 1903. Serial No. 167,610. (No model.)



*Claim.*—1. In a device of the class described including a pair of seed-disks, the upper seed-disk having radially-extending ribs, V-shaped slots adjacent to said ribs, and upturned, propeller-shaped blades.

2. In a device of the class described, an upper seed-disk having a plurality of openings and a plurality of inclined propeller-shaped blades, and intermediately-disposed radiating ribs connected with said blades and of increasing height in an outward direction.

3. In a device of the class described, an upper seed-disk having a dished body provided with alternate V-shaped openings and upwardly-inclined propeller-shaped blades, braces for said blades, and radiating ribs disposed intermediate the slots and the blades, the latter coacting with said ribs to form seed-pockets.

4. In a device of the class described, the combination with a bottom board, of a base-plate comprising a segmental portion having a seed-opening, an obliquely-disposed bar having posts at the ends thereof, and an arm and a lug extending laterally from said obliquely-disposed bar, said base-plate constituting the main frame of the operative parts of the device.

5. In a device of the class described, the combination of a base-plate, a bar spaced therefrom, a seed-slide movable between said base-plate and bar and having an arm, a lever pivotally connected with an arm of the base-plate, a pivotal connection between said lever and the arm of the seed-slide, a slotted plate across which the lever extends, and a slide movable and adjustable in the slot of said plate and having a laterally-extending rib adapted for frictional engagement with the seed-slide-operating lever.

6. In a device of the class described, the combination of a bottom board, a seed-slide, a seed-slide-operating lever, and a supporting-yoke having a handle, said supporting-yoke being provided with an arm extending under the bottom board and having a shoulder forming a guide for the seed-slide-operating lever.

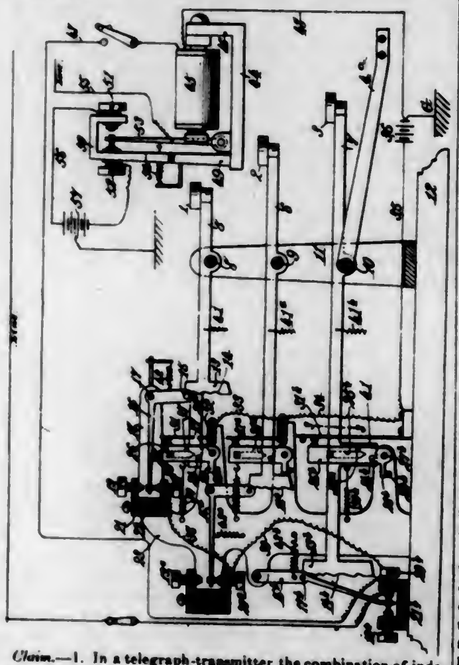
7. In a device of the class described having oppositely-revoluble upper and lower seed-disks, an upper seed-disk provided with slots and with upturned propeller-shaped blades adjacent to said slots and braces at the outer ends of the propeller-shaped blades to maintain the latter at the proper elevation.

8. In a device of the class described, including a pair of seed-disks, an upper seed-disk having radially-extending ribs, slots adjacent to said ribs, and upturned, propeller-shaped blades with their free edges elevated above the adjacent ribs.

9. In a device of the class described, including a pair of oppositely-revoluble seed-disks, an upper seed-disk having radially-extending ribs, slots adjacent to said ribs, and deflecting means projecting above the upper edges of said ribs to deflect seed passing from the source of supply through the slots in said upper disk.

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**758,232. TELEGRAPH-TRANSMITTER.** CHARLES ADAMS RANDALL, New York, N. Y. Filed Aug. 25, 1902. Serial No. 120,974. (No model.)



*Claim.*—1. In a telegraph-transmitter the combination of independent operative key-levers and independent circuit-closers for each key-lever, an electric circuit, a source of electric energy and suitable connections thereto, independent means for automatically closing the circuit upon the initial movement of either key-lever preparatory to sending the code impulses or currents corresponding to the lever used, means for transmitting the code signals or currents during the depression of the lever, and independent means for automatically breaking the circuit when the signals are sent and for keeping the independent circuit-closer of each particular lever open during the return of the key-lever to a normal position, substantially as described.

2. In a telegraph-transmitter, a vibrating lever, electric contacts between which said lever moves, an electric circuit including one of said contacts and said lever, a key-lever for automatically actuating said vibrating lever between said contacts to impress or transmit upon or over said circuit impulses representing the character indicated by said key-lever, independent means actuated by the depression of said key-lever for automatically closing said circuit at a second or auxiliary point prior to the transmission of the electric currents or impulses over the circuit, and an independent device for automatically breaking said circuit when said key-lever has been depressed, as and for the purpose set forth.

3. In a telegraph-transmitter, a vibrating lever, electric contacts between which said lever moves, an electric circuit including one of said contacts and said lever, a key-lever for automatically actuating said vibrating lever between said contacts to impress upon said circuit impulses representing the character indicated by said key-lever, separate and independent means controlled by the movement of said key-lever for automatically closing said circuit at a second or auxiliary point prior to the transmission of the electric currents or impulses over the circuit, means independent of the key-levers for automatically breaking said circuit when said key-lever has been depressed, and a relay in said circuit, as and for the purpose set forth.

4. In a telegraph-transmitter, a vibrating lever, electric contacts between which said lever moves, an electric circuit including one of said contacts and said lever, a key-lever having a segmental portion thereon provided with grooves or corrugations adapted to engage said vibrating lever for automatically actuating the same between said contacts to alternately make and break said circuit and to impress thereon or transmit thereover impulses representing the character indicated by said key-lever, and means acting independently of the key-levers for preventing the closing of said circuit during the return movement of said key-lever to its normal position, as and for the purpose set forth.

5. In a telegraph-transmitter, a vibrating lever, electric contacts between which said lever moves, an electric circuit including one of said contacts and said lever, a key-lever having a segmental portion thereon provided with grooves or corrugations adapted to engage said vibrating lever for automatically actuating the same between said contacts to alternately make and break said circuit and to impress thereon impulses representing the character indicated by said key-lever, independent means controlled by the movement of said key-lever for automatically closing said circuit at one point prior to the transmission of the electric currents or impulses over the circuit, and means acting independently of the key-lever for automatically breaking said circuit when said key-lever has been depressed and for maintaining the same open during the return of said key-lever to its normal position, as and for the purpose set forth.

6. In a telegraph-transmitter, a vibrating lever, electric contacts between which said lever moves, an electric circuit including one of said contacts and said lever, a key-lever having means thereon for automatically actuating said vibrating lever between said contacts to impress upon said circuit impulses representing the character indicated by said key-lever, a contact-spring and a contact-lever, both included in said circuit but normally separated from each other, means actuated by the depression of said key-lever for moving said contact-lever into engagement with said spring, and maintaining such contact during the movement of such key-lever, and independent means for automatically disengaging said contact-lever from said spring when said key-lever reaches the limit of its movement, as and for the purpose set forth.

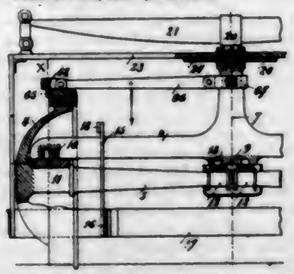
7. In a telegraph-transmitter, a vibrating lever, electric contacts between which said lever moves, an electric circuit including one of said contacts and said lever, a key-lever having means thereon for automatically actuating said vibrating lever between said contacts to impress upon said circuit impulses representing the character indicated by said key-lever, a contact-spring and a contact-lever, both included in said circuit but normally separated from each other, a pivotally-suspended bar on said contact-lever having a tapering lower end, a stop on said contact-lever for limiting the movement of said bar in one direction, a pin on said key-lever adapted, when said key-lever is depressed, to engage said bar and move said contact-lever into engagement with said contact-spring, and a spring acting upon said contact-lever for moving the same out of engagement with said contact-spring when said pin passes above said bar, as and for the purpose set forth.

8. In a telegraphic transmitter for transmitting the electric impulses or currents representing predetermined characters, signals, letters or symbols, means controlled by the movement of a key-lever for automatically closing the circuit, prior and preparatory to the actual transmission of the electric currents to be sent, means for automatically transmitting the said currents by the depression of a key-lever, and means acting independently of the key-lever for au-

tomatically breaking the circuit at each key of the transmitting device independently, directly the said currents or impulses have been transmitted by the depression of the key-lever, substantially as and for the purpose set forth.

9. In a Morse telegraph-transmitter, key-levers representing the Morse characters, said key-levers having segmental portions constructed to form a suitable circuit-breaker and a cam carried thereby, in combination with an independent auxiliary rocking lever, an insulated contact-spring, a swinging pawl and a stop-pin carried by said lever and provided with a retractile spring whereby upon depression of the key-lever the auxiliary lever is automatically moved and the contact-spring brought to bear upon the surface of the circuit-breaker during the upward movement of the same to a predetermined position when the lever is released and the contact-spring returned to its normal position out of contact with the circuit-breaker during its return to normal position, substantially as shown and for the purpose specified.

## 758,233. MOUNTING OF RAILWAY OR TRAMWAY ROLLING-STOCK. CHARLES T. M. V. DE BAINER, Versailles, France. Filed Apr. 7, 1903. Serial No. 151,466. (No model.)



*Claim.*—1. In railway and tramway vehicles, the combination of a vehicle-body, a cross-bar adapted to support one end of said body, said cross-bar having a central upwardly-extending column and a socket at the top of said column, two supporting-wheels each having a flange and each having a half-length axle extending therefrom and integral therewith, each of the said wheels and its axle being adapted to turn on said cross-bar about a vertical axis situated at the opposite side of the tread of said wheel from the flange, a cylindrical heel-piece, and a transverse suspension-spring, said spring supporting the vehicle-body at its ends and secured at its center to said heel-piece, said heel-piece lying transversely to said spring and being pivotally supported in said socket, said heel-piece being located above the center of gravity of said body, and said body being free to oscillate sidewise on said heel-piece.

2. In railway and tramway vehicles, the combination of a vehicle-body, a cross-bar adapted to support one end of said body, said cross-bar having a central upwardly-extending column and a socket at the top of said column, two supporting-wheels each having a flange and each having a half-length axle extending therefrom and integral therewith, bearings between the ends of said cross-bar and said axles and adjacent to said wheels, each of said bearings having a vertical spindle thereon pivoted in the end of said cross-bar, said vertical pivot being situated at the opposite side of the tread of each wheel from the flange, a cylindrical heel-piece, and a transverse suspension-spring, said spring supporting the vehicle-body at its ends and secured at its center to said heel-piece, said heel-piece lying transversely to said spring and being pivotally supported in said socket, said heel-piece being located above the center of gravity of said body, and said body being free to oscillate sidewise on said heel-piece.

3. In railway and tramway vehicles, the combination of a vehicle-body, a cross-bar adapted to support one end of said body on a horizontal pivot above its center of gravity, said body being free to oscillate sidewise on said pivot, two supporting-wheels each having a flange and each having a half-length axle extending therefrom and integral therewith, bearings between the ends of said cross-bar and said axles and adjacent to said wheels, each of said bearings having a vertical spindle thereon pivoting in the end of said cross-bar, said vertical pivot being situated at the opposite side of the tread of each wheel from the flange, said cross-bar having arcuate tracks on its underneath side, and bearing-blocks adapted to slide in said tracks and to receive the free ends of the respective axles.

4. In railway and tramway vehicles, the combination of a cross-bar, supporting-wheels whose axles are mounted on vertical pivots in the ends of said bar, a vehicle-body, a transverse suspension-spring pivoted to the middle of said bar at a point higher than the center of gravity of said body, a frame suspended on said spring and secured to said body, said spring and frame and body being free to oscillate in the direction of the length of the spring, cross-pieces on the under part of said frame, and vertical guides carried on said cross-pieces, said guides being located on either side of the said cross-bar and adapted to prevent any oscillation of the vehicle-body in a longitudinal direction.

5. In railway and tramway rolling-stock, the combination of two wheeled trucks, a body supported on said trucks by longitudinal horizontal pivots above its center of gravity, said body being free to oscillate sidewise on said pivots, said pivot being in each instance on a vertical line midway between the wheels of each pair, whereby the load is approximately equally distributed between the two individual wheels of each pair, and means enabling the wheels to automatically place themselves so that their axles are in the direction of the radius of the track.

6. In railway and tramway rolling-stock, the combination of two-wheeled trucks, a body supported on said trucks by longitudinal horizontal pivots above its center of gravity, said body being free to oscillate sidewise on said pivots, said pivot being in each instance on a vertical line midway between the wheels of each pair, whereby the load is approximately equally distributed between the two individual wheels of each pair, said supporting-wheels having flanges, and axles for said wheels, each of said axles being mounted on a vertical pivot and free to turn thereon within certain limits, said vertical pivot being situated at the opposite side of the tread of said wheels from the flanges.

7. In railway and tramway rolling-stock, the combination with two-wheeled trucks, a body supported on said trucks by longitudinal horizontal pivots above its center of gravity, said body being free to oscillate sidewise on said pivots, said pivot being in each instance on a vertical line midway between the wheels of each pair, whereby the load is approximately equally distributed between the two individual wheels of each pair, said supporting-wheels having flanges, and an individual axle for each of said wheels, each of said axles being mounted on a vertical pivot and free to turn thereon within certain limits, said vertical pivot being situated at the opposite side of the tread of said wheel from the flange.

8. In railway and tramway rolling-stock, the combination of trucks having supporting-wheels, a body mounted on said trucks on longitudinal horizontal pivots above its center of gravity, said body being free to oscillate sidewise on said pivots, said supporting-wheels having flanges, and axles for said wheels, each of said axles being mounted on a vertical pivot and free to turn thereon within certain limits, said vertical pivot being situated at the opposite side of the tread of said wheels from the flanges.

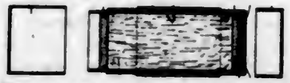
9. In railway and tramway rolling-stock, the combination of two-wheeled trucks, a body supported on said trucks by longitudinal horizontal pivots above its center of gravity, said body being free to oscillate sidewise on said pivots, said supporting-wheels having flanges, and an individual axle for each of said wheels, each of said axles being mounted on a vertical pivot and free to turn thereon within certain limits, said vertical pivot being situated at the opposite side of the tread of said wheel from the flange.

10. In railway and tramway vehicles, the combination of a vehicle-body, a cross-bar, said cross-bar having a centrally upwardly extending column and a socket at the top of said column, a cylindrical heel-piece pivoted and supported in said socket, said pivot being at a higher point than the center of gravity of said vehicle-body, a transverse suspension-spring secured at its middle to said heel-piece, a frame suspended from the ends of said spring and secured to said body, said body being free to oscillate sidewise on said heel-piece, cross-pieces on the lower part of said frame, vertical guides carried on said cross-pieces, said guides being located on either side of the said cross-bar and adapted to prevent any oscillation of the vehicle-body in a longitudinal direction, two supporting-wheels each having a flange and each having a half-length axle extending therefrom and integral therewith, bearings between the ends of said cross-bar and said axles and adjacent to said wheels, each of said bearings having a vertical spindle thereon pivoted in the end of said cross-bar, said vertical pivot being situated at the opposite side of the tread of each wheel from the flange, said cross-bar having arcuate tracks on its underneath side, and bearing-blocks adapted to slide in said tracks and receiving the free ends of the respective axles.



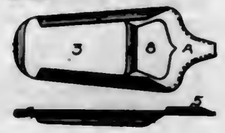
11. In railway and tramway vehicles, the combination of a vehicle-body, two-wheeled trucks supporting said body and each truck attached thereto by a longitudinal horizontal pivot located on a vertical line midway between the wheels of each pair, whereby the load is approximately equally divided between the two individual wheels of each pair, said supporting-wheels having flanges, and an individual axle for each of said wheels, each of said axles being mounted on a vertical pivot and free to turn thereon within certain limits, said vertical pivot being situated at the opposite side of the tread of said wheel from the flange.

## 758,234. CASE FOR USE WITH SOLIDIFIED PERFUMES OR THE LIKE. JEAN BARDIN, Brussels, Belgium. Filed Feb. 4, 1903. Serial No. 141,869. (No model.)



*Claim.*—The case *a* open at its ends, a cover *b* for the upper end, a second cover *c* for the lower end of said case, a glass tube *e* fitting in said case, the said tube being provided with a flange *f* at its lower end, a movable disk *g* closing the glass tube at its lower end and resting on said flange, a paraffin plug *p* resting on said movable disk and adapted to be pushed upward with the said disk and a second paraffin plug closing the glass tube at its upper part and adapted to be removed from the glass tube, substantially as and for the purpose described.

## 758,235. CAPPED-BOTTLE OPENER AND TEMPORARY CLOSURE. CHARLES CADY, Berkeley, Cal. Filed Jan. 6, 1904. Serial No. 187,902. (No model.)




*Claim.*—1. As a new article of manufacture a plate adapted as a temporary closure for bottles and to be disposed transversely over the mouth of a bottle, and having means for engaging the exterior of the neck to hold the plate in position, and means in conjunction with said plate for removing a bottle-sealing cap.

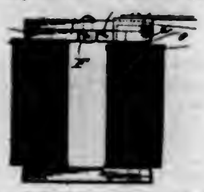
2. As an article of manufacture, a plate provided with means for removing metal sealing-caps from bottles and having opposed convergent lateral members to engage an external ledge or protuberance on the bottle-neck to afford a temporary closure for said bottle after the removal of the cap.

3. As a combined capped-bottle opener and closure, a plate having opposed transversely-curved lateral flanges, a rubber or like surfacing on said plate intermediate of said flanges, and means in conjunction with said plate for removing metal caps from bottles.

4. A bottle-stopple comprising a plate having means for engaging the external flange or ledge on the bottle-neck and adapted to be applied to the bottle in a direction transverse to the axis of the bottle.

5. As an article of manufacture, a plate having integral, rigid, lateral, convergent grip members to engage the outside of the neck of a bottle and a resilient packing secured permanently to the plate between said grip members and adapted to form a tight seal when the plate is engaged across the mouth of the bottle.

## 758,236. ELECTROMAGNET. HAROLD W. CHAMBERLAIN, Brunswick, Me. Filed Aug. 27, 1903. Serial No. 170,696. (No model.)



*Claim.*—1. A two-limbed electromagnet having an armature fulcrumed thereon in direct polar and magnetic contact therewith, and guiding means for the armature permitting it to be so fulcrumed during its entire movement, said magnet having one pole extending inward toward the other pole and situated under the inner side of the armature.

2. An electromagnet having one pole extending inward toward the other pole, in combination with an armature having a transverse extension adjusted to play in proximity to but out of contact with one of the poles, said armature being fulcrumed upon the magnet in direct polar and magnetic contact therewith, and guiding means for the armature operating to permit it to fulcrum on the magnet when energized and to maintain the armature extension in proper position during the entire movement of the armature.

3. An electromagnet having an armature fulcrumed thereon in direct polar and magnetic contact therewith, and a transverse extension-piece on the armature adjusted to play in proximity to but out of contact with one of the poles.

4. An electromagnet having one pole extended inward toward the other, an armature having a transverse extension-piece on its inner side which is adapted to play between the poles, and armature-guiding means acting during the entire movement of the armature to maintain it in such position that the armature extension will move in proximity to but out of contact with one of the poles.

5. An electromagnet having one pole extending toward the other, an armature provided with an extension on its under side adapted to play between the poles, said armature being fulcrumed on the magnet in direct polar contact therewith, armature-guiding means acting to hold the armature extension in proper adjustment, while permitting said armature to fulcrum on the magnet.

6. An electromagnet having an armature in direct polar contact therewith on a line extending transversely of the armature, said armature being mounted to turn about said line as a fulcrum, in combination with guiding means for the armature, said means comprising two pairs of ears, one pair fixed with relation to the armature and the other fixed with relation to the magnet, lugs connecting said ears, one pair of ears being slotted to allow the armature to rest directly on the magnet.

7. An electromagnet, an armature having polar contact with the magnet on a line, said armature being mounted to turn on said line as a fulcrum, armature-guiding means comprising two pairs of ears, one pair fixed with relation to the armature and the other pair fixed with relation to the magnet, and screws or pins uniting said ears, one pair of ears being slotted to allow the armature to rest directly on the magnet.

8. An electromagnet having one pole extending inward to form a pole-piece, an armature with its inner side resting in direct polar contact with and fulcrumed upon the magnet, and armature-guiding means comprising two pairs of ears, one pair fixed with relation to the armature and the other fixed with relation to the magnet, and screws or pins uniting said ears, one pair of ears being slotted to allow the armature to rest directly upon the magnet.

9. In an electromagnet, an armature with its inner side resting in direct polar contact with and fulcrumed upon the magnet, armature-guiding means comprising two pairs of ears fixed with relation to the magnet and armature respectively, one pair of ears being slotted transversely to the armature and the other pair having lugs extending through the slots, whereby the armature is held in adjustment but allowed to freely fulcrum on the magnet.

10. An electromagnet having one pole extending inward to form a pole-piece, an armature having its under side fulcrumed directly upon the magnet, an extension on the inner side of the armature, and guides to hold the armature in adjustment during its movement, whereby the extension is maintained in proximity to but out of contact with one of the poles, said guides comprising two pairs of ears fixed with relation to the magnet and armature respectively, one pair of ears being slotted transversely to the armature and the other pair having lugs passing through said slots.

11. An electromagnet having an armature fulcrumed in direct polar contact therewith, combined with armature-guiding means comprising two pairs of ears, one pair fixed with relation to the armature and the other with relation to the magnet, one pair having lugs situated concentrically with the fulcrum-line between the armature and magnet, and the other pair having slots extending transversely to the armature, and with which said lugs cooperate, whereby the armature is maintained in continuous non-rubbing contact with the magnet.

12. An electromagnet having an inwardly-extending pole, an armature fulcrumed upon the magnet in direct polar contact therewith, and guides to hold the armature in adjustment during its movement, said guides comprising two connecting parts, a screw adjust-

ably securing one of said parts to the armature, said part having a pair of ears extending downward overlapping the fulcrum-line, the other part being fixed to the magnet and having a pair of ears extending upward, parallel and adjacent to the other ears, two lugs set in one pair of ears concentrically with the fulcrum-line and entering slots in the other pair of ears, said slots extending somewhat above and below the same transversely to the armature, whereby the latter is held in adjustment, and permitted to fulcrum directly upon the magnet, during the entire movement of the armature.

13. An electromagnet having an armature fulcrumed thereon in direct polar contact therewith, and armature-guiding means comprising two pairs of ears, one pair fixed with relation to the armature and the other with relation to the magnet, and lugs carried by one pair of ears and received in holes in the other pair of ears larger than the lugs.

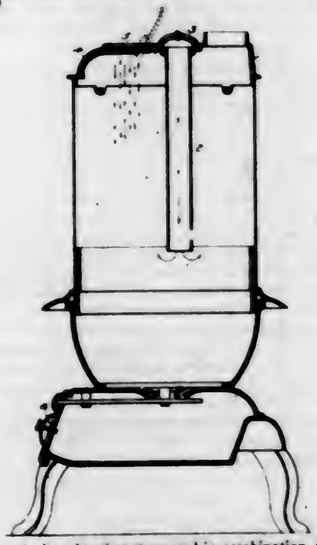
14. An electromagnet having an armature fulcrumed thereon in direct polar contact therewith, and a transverse extension-piece on the inner side of the armature and adjusted to play in proximity to but out of contact with one of the poles.

15. An electromagnet having an armature fulcrumed on one of its poles in direct magnetic contact therewith, and a transverse extension-piece on the inner side of the armature, said extension-piece being adjusted to play in proximity to, but out of contact with one of the poles.

16. A two-limbed electromagnet having an armature fulcrumed on one of its poles in direct polar and magnetic contact therewith, and guiding means for the armature permitting it to be so fulcrumed during its entire movement, one of the poles of the magnet extending inward toward the other pole.

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**758,237. HOT-BLAST AIR-FEEDING CENTER TUBE.** RICHARD A. COLTER, Peoria, Ill. Filed Jan. 4, 1904. Serial No. 187,644. (No model.)



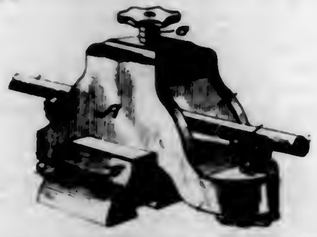
*Claim.*—1. In a heating-stove and in combination, a fire-pot, a grate, a valve-controlled air-feeding tube opening at the top of the fire-pot and a top-lift feed-door having undampered perforations whereby a controllable air-supply is delivered directly upon the fire-bed and a perpetual air-supply is delivered within the upper part of the combustion-chamber to prevent explosions.

2. In a heating-stove, and in combination, a fire-pot, a grate, a valve-controlled air-feeding tube opening at the top of the fire-pot, a top-lift feed-door having openings and a panel provided with perforations secured to the under side of the door as a cover for said openings.

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**758,238. ATTACHMENT FOR LATHE-MACHINES.** JOSEPH DESAULT, New London, Conn. Filed Nov. 1, 1902. Serial No. 130,711. (No model.)

*Claim.*—1. An attachment for lathes comprising a block provided with a longitudinal bore and having an arm at each end, a screw through each arm and a screw through the top intermediate the end screws, a bracket on the end of each screw and rollers in each bracket.

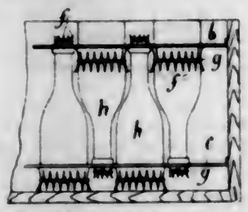


2. An attachment for lathes comprising a block provided with a longitudinal bore and having a laterally-extending depending arm at each end, the upper inner portions of said arms forming shoulders for engaging with a tool-block, a screw through each arm and a screw through the top of the block intermediate the end screws, a swiveling bracket on the inner end of each screw, and rollers in each bracket.

3. The combination with a tool-block, of a longitudinally-bored block arranged thereon, and having laterally-projecting depending arms, of a screw passing centrally through the top of the block and provided with a hand-wheel at its upper end, and a bracket at its lower end, the rollers journaled in the bracket, the screws passing through the arms and having hand-wheels at their lower ends, brackets at their upper ends, and rollers journaled in the brackets, for the purpose specified.

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**758,239. MEANS FOR PACKING BOTTLES, &c.** WILLY DOCART, Schiltigheim, Germany. Filed Oct. 20, 1902. Serial No. 127,975. (No model.)



*Claim.*—In a device for packing bottles or other breakable articles two sheets *b*, *c* with apertures *d*, *e* therein and tongues *f* projecting from said sheets and encircling said apertures, said tongues being surrounded by springing straps *g* and means for holding the two sheets in registering juxtaposition substantially as described.

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**758,240. EXTENSIBLE BELT OR GIRDLE.** GEORGE FARRELL, West Somerville, Mass., assignor to M. W. Carr & Company, West Somerville, Mass., a Firm. Filed June 20, 1903. Serial No. 162,344. (No model.)

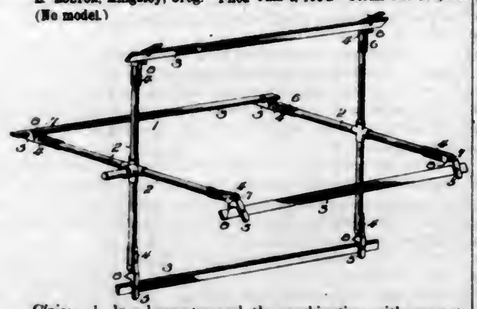


*Claim.*—1. A belt or girdle comprising a supporting-plate, slide-plates movable on the supporting-plate, keepers secured to the supporting-plate and acting to guide the slide-plates, and springs on the inner ends of the slide-plates arranged to project under the opposed slide-plate and adapted to be secured to the supporting-plate on the other end.

2. An extensible belt or girdle comprising a shield or cover-plate, a supporting-plate rigidly fastened to the back of the shield or cover-plate, said supporting-plate having inwardly-projecting keepers thereon, slide-plates movable through the keepers back and forth in relation to each other, a body portion connected to the outer ends of the slide-plates, means for limiting the movement of the slide-plates, and extensible springs crossing each other longitudinally of the spring-plate, each set of springs being attached to the inner end of a slide-plate and to the supporting-plate, as set forth.



**758,241. HARVESTER-REEL.** GEORGE J. FRIEND and EDWARD L. BOLTON, Kingsley, Oreg. Filed Jan. 4, 1904. Serial No. 187,706. (No model.)

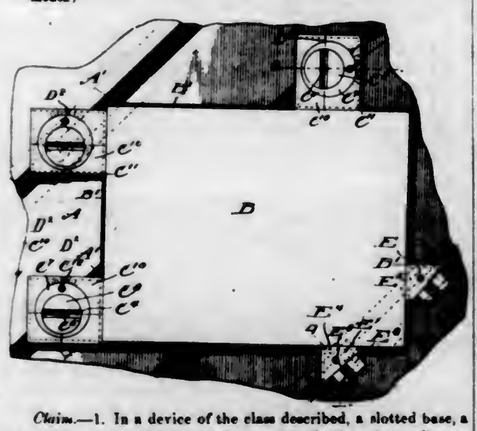


*Claim.*—1. In a harvester-reel, the combination, with supporting-arms, coupling members secured to the ends of said arms, hinge members carried by the coupling members aforesaid, lateral projections extended from the hinge members for engagement with the coupling members, and slats secured to the hinge members and pivotally supported thereby.

2. In a harvester-reel, the combination of supporting-arms, coupling members secured to the ends of said arms, hinge members pivoted to the coupling members, slats secured to the said hinge members, and a stop member projected from each of the hinge members for cooperation with the coupling members to limit the movement of the slats.

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**758,242. PLATE HOLDER AND ADJUSTER.** WILLIAM H. GOLDING, Boston, Mass. Filed Feb. 16, 1903. Serial No. 143,556. (No model.)



*Claim.*—1. In a device of the class described, a slotted base, a wedge-clamp comprising separate members having their adjacent faces inclined, an angular head upon one of said members having a plate-engaging flange extended over the base and provided with a wrench-socket, and a head upon the opposite member extended over the base and provided with a wrench-socket.

2. In a device of the class described, a base provided with a slot therein having inclined walls, a wedge-clamp comprising separate members having beveled outer faces and inclined inner faces adapted to contact with each other, an angular graduated head upon one of said members having a plate-engaging flange extended over the base and having a wrench-socket therein, and a graduated head upon the cooperating member having a transverse slot therein.

3. In a device of the class described, a slotted base, a printing-plate supported thereon, a plate-engaging device comprising a base-supported member having a portion projected laterally above said base, a cooperating relatively movable member in contact with the first-mentioned member and having a portion projected laterally above said base, means carried by one of said members for engaging said plate, and means for jointly adjusting and securing said members above the bottom of the slot in said base.

4. In a device of the class described, a base-plate provided with diagonally-disposed slots therein, a printing-plate, register-gages secured in said slots to engage one side and end of said plate, and clamps adjustably secured in said slots to engage the opposite side and end of said plate and comprising separate members having inclined contact-faces the faces upon the end and side clamps being disposed in diagonally opposite directions to a wall of the slot within which it is secured.

5. The combination with a slotted base, of a clamping device comprising two members each provided with a laterally-projecting flange and a divided wedge-shaped depending portion adapted to be suspended within the slot of the base by said flanges, and means for adjusting and for locking said members in their adjusted position.

6. In a device of the class described, a diagonally-slotted base, a wedge-clamp comprising separate members each having an inclined face extending longitudinally of the slot within the base and adapted to contact with each other, a contact-face carried by each member of the clamp within the slotted base, and a laterally-extended contact-plate carried by one member of the clamp upon the upper surface of said base and having its plate-engaging faces at an angle to each other.

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**758,243. PROCESS OF MATTING OR FELTING FIBERS TOGETHER.** GUSTAV GOLDMAN, Baltimore, Md. Filed Aug. 29, 1903. Serial No. 171,288. (No specimens.)

*Claim.*—1. The method of binding fibers together, which consists in introducing between the fibers a binding material or materials in dry form, and then treating said materials so as to make them an active binder.

2. The method of binding fibers together which consists in introducing between the fibers a dry finely-divided substance as a binder, and treating said finely-divided substance with another substance which will render it an active binder.

3. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material, and then treating said binding material with a solvent thereof, whereby it is rendered capable of actively binding the fibers together.

4. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material, and then treating said binding material with a solvent thereof, whereby it is rendered capable of actively binding the fibers together, and then driving off the solvent.

5. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with a substance capable of imparting moisture to said binding material, whereby it is rendered capable of actively binding the fibers together.

6. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material together with a substance capable of imparting moisture to said binding material, whereby it is rendered capable of actively binding the fibers together, and then driving off the moisture.

7. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material together with a hygroscopic substance, whereby moisture will be imparted to the binding material and it will be rendered capable of actively binding the fibers together.

8. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material together with a hygroscopic substance, whereby moisture will be imparted to the binding material and it will be rendered capable of actively binding the fibers together, and then driving off the moisture.

9. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material together with a deliquescent substance, whereby moisture will be imparted to the binding material and it will be rendered capable of actively binding the fibers together.

10. The method of treating fibers or fibrous material which consists in introducing between the fibers a dry finely-divided binding material together with a deliquescent substance, whereby moisture will be imparted to the binding material and it will be rendered capable of actively binding the fibers together, and then driving off the moisture.

11. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with a hygroscopic material, whereby moisture will be imparted to the gelatin and it will be rendered capable of actively binding the fibers together.

12. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin to-

gether with a deliquescent material, whereby moisture will be imparted to the gelatin and it will be rendered capable of actively binding the fibers together.

13. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with magnesium chlorid, whereby moisture will be imparted to the gelatin and it will be rendered capable of binding the fibers together.

14. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material, treating said binding material with a solvent thereof, and then subjecting the fibers to pressure.

15. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material, treating said binding material with a solvent thereof, and then subjecting the fibers to heat and pressure.

16. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with a substance capable of imparting moisture to said binding material and then subjecting the fibers to pressure.

17. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with a substance capable of imparting moisture to said binding material, and then subjecting the fibers to heat and pressure.

18. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with a hygroscopic substance, whereby moisture will be imparted to said binding material and it will be rendered capable of actively binding the fibers together, and then subjecting said fibers to pressure.

19. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with a hygroscopic substance, whereby moisture will be imparted to said binding material and it will be rendered capable of actively binding the fibers together, and then subjecting said fibers to heat and pressure.

20. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with a deliquescent substance, whereby moisture will be imparted to said binding material and it will be rendered capable of actively binding the fibers together, and then subjecting said fibers to pressure.

21. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with a deliquescent substance, whereby moisture will be imparted to said binding material and it will be rendered capable of actively binding the fibers together, and then subjecting said fibers to heat and pressure.

22. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with a hygroscopic material, whereby moisture will be imparted to the gelatin and it will be rendered capable of actively binding the fibers together, and then subjecting the fibers to pressure.

23. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with a hygroscopic material, whereby moisture will be imparted to the gelatin and it will be rendered capable of actively binding the fibers together, and then subjecting the fibers to heat and pressure.

24. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with a deliquescent material, whereby moisture will be imparted to the gelatin and it will be rendered capable of actively binding the fibers together, and then subjecting the fibers to pressure.

25. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with a deliquescent material, whereby moisture will be imparted to the gelatin and it will be rendered capable of actively binding the fibers together, and then subjecting the fibers to heat and pressure.

26. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with magnesium chlorid, whereby moisture will be imparted to the binding material and it will be rendered capable of binding the fibers together.

27. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with magnesium chlorid, whereby moisture will be imparted to the binding material and it will be rendered capable of binding the fibers together, and then subjecting the fibers to pressure.

28. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided binding material together with magnesium cholorid, whereby moisture will be imparted to the binding material and it will be rendered capable of binding the fibers together, and then subjecting the fibers to heat and pressure.

29. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with magnesium chlorid, whereby moisture will be imparted to the gelatin and it will be rendered capable of binding the fibers together, and then subjecting the fibers to pressure.

30. The method of treating fibers or fibrous material which consists in introducing between the fibers dry finely-divided gelatin together with magnesium chlorid, whereby moisture will be imparted to the gelatin and it will be rendered capable of binding the fibers together, and then subjecting the fibers to heat and pressure.

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**758,244. PROCESS OF FELTING OR MATTING FIBERS TOGETHER.** GUSTAV GOLDMAN, Baltimore, Md. Filed Sept. 26, 1903. Serial No. 174,815. (No specimens.)

*Claim.*—1. The method of treating fibers or fibrous materials which consists in introducing between the fibers a plurality of dry finely-divided materials and causing them to react so as to form a binding material whereby the fibers will be held together in a felted or matted mass.

2. The process of treating fibers or fibrous material which consists in introducing between the fibers a plurality of substances in dry finely-divided condition and then causing these substances to react upon each other and thus produce a new substance capable of binding the fibers together.

3. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and a salt of a metal both in powdered form, and then treating the same to form an insoluble metallic soap.

4. The process of treating fibers or fibrous material which consists in introducing between the fibers soda soap and a salt of a metal both in dry powdered form, and then bringing about the reaction between the soap and the salt to form an insoluble metallic soap.

5. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and alum both in powdered form, and then bringing about the reaction between the soap and the alum to form an aluminium soap.

6. The process of treating fibers or fibrous material which consists in introducing between the fibers a plurality of substances and then subjecting the same to heat whereby said substances are caused to react and form a new substance constituting a binder for the fibrous material.

7. The process of treating fibers or fibrous material which consists in introducing between the fibers a plurality of substances in powdered form capable of reacting upon each other to produce a new substance and then subjecting said substances to heat and pressure whereby a binding substance is formed and the fibers are effectively bound together.

8. The process of treating fibers or fibrous material which consists in introducing between the fibers a plurality of substances in powdered form capable of reacting so as to form a binding substance, and then subjecting said substances to heat and pressure in the presence of moisture whereby a binding substance is formed and the fibers are bound together.

9. The process of treating fibers and fibrous material which consists in introducing between the fibers a soluble soap and a salt of a metal both in powdered form, and then subjecting the same to heat whereby an insoluble metallic soap is formed which serves to bind the fibers together.

10. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and a salt of a metal both in powdered form, and then subjecting the same to heat and pressure whereby an insoluble waterproof soap is formed which serves to bind the fibers together.

11. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and a salt of a metal both in powdered form, and then subjecting the same to heat and pressure whereby an insoluble waterproof metallic soap is formed which serves to bind the fibers together in a felted mass.



12. The process of treating fibers or fibrous material which consists in introducing between the fibers a soda soap and a salt of a metal both in powdered form, and then subjecting the same to heat and pressure in the presence of moisture whereby an insoluble metallic soap is formed which serves to bind the fibers together.

13. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and alum both in powdered form, and then bringing about a reaction between the soap and the alum in the presence of heat and pressure whereby a metallic soap is formed which serves to bind the fibers together in a felted mass.

14. The process of treating fibers or fibrous material which consists in introducing between the fibers a soda soap and a salt of a metal both in powdered form and then bringing about the reaction between the soap and the salt in the presence of heat and pressure whereby a metallic waterproof soap is formed which serves to bind the fibers together in a felted mass.

15. The process of treating fibers or fibrous material which consists in introducing between the fibers soda soap and alum both in powdered form, and then bringing about the reaction between the soap and the alum in the presence of heat and pressure whereby an aluminium soap is formed which serves to bind the fibers together in a felted mass

16. The process of treating fibers or fibrous materials which consists in introducing between the fibers a plurality of substances and then causing said substances to react and form a new substance constituting a binder for the fibrous materials by subjecting said substances to the action of steam.

17. The process of treating fibers or fibrous materials which consists in introducing between the fibers a plurality of substances and then causing said substances to react and form a new substance constituting a binder for the fibrous materials by subjecting said substances to the action of steam and pressure.

18. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and the salt of a metal both in powdered form, and then subjecting the same to the action of steam whereby an insoluble metallic soap is formed that serves to bind the fibers together.

19. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and the salt of a metal, both in powdered form, and then subjecting the same to the action of steam and pressure, whereby an insoluble metallic soap is formed that serves to bind the fibers together.

20. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and alum both in powdered form, and then subjecting the same to the action of steam, whereby an aluminium soap is formed which serves to bind the fibers together in a felted mass.

21. The process of treating fibers or fibrous material which consists in introducing between the fibers a soluble soap and alum both in powdered form, and then subjecting the same to the action of steam and pressure, whereby an aluminium soap is formed which serves to bind the fibers together in a felted mass.

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**758,245. PROCESS OF UNITING OR MATTING FIBERS TOGETHER.** GUSTAV GOLDMAN, Baltimore, Md. Filed Nov. 28, 1903. Serial No. 183,057. (No specimens.)

*Claim.*—1. The process of binding fibers together which consists in introducing between the fibers a resin and a metallic oxid and then converting said resin and oxid into a resinate binding agent for the fibers.

2. The process of binding fibers together which consists in introducing between the fibers a resin and a metallic oxid in a dry finely-divided form, and then converting said resin and oxid into a resinate binding agent for the fibers.

3. The process of binding fibers together which consists in introducing a resin and a metallic oxid in a dry finely-divided form between the fibers, and then treating said resin and oxid with heat, thereby forming a resinate which actively binds the fibers together.

4. The process of binding fibers together which consists in introducing a resin and a metallic oxid in dry finely-divided form between the fibers, and then treating said resin and oxid with heat and with pressure, whereby a resinate is formed which actively binds the fibers together.

5. The process of binding fibers together which consists in introducing a resin and a metallic oxid in dry finely-divided form between the fibers, and then subjecting said resin and oxid to heat in the presence of pressure, whereby a resinate is formed which constitutes an active binding agent for the fibers.

6. The process of binding fibers together which consists in mechanically mixing a resin and a metallic oxid, then introducing said mixture between the fibers in dry finely-divided form, and then converting the mixture into a resinate which serves as an active binding agent for the fibers.

7. The process of binding fibers together which consists in mechanically mixing a resin and a metallic oxid, then introducing said mixture between the fibers in dry finely-divided form, then subjecting the mixture to heat, whereby a resinate is formed which serves as an active binder for the fibers.

8. The process of binding fibers together which consists in mixing a resin and a metallic oxid, then introducing said mixture between the fibers in dry finely-divided form, then treating the same with heat and with pressure, whereby a resinate is formed which actively binds the fibers together.

9. The process of binding fibers together which consists in mixing a resin and a metallic oxid, then introducing said mixture between the fibers in dry finely-divided form, then subjecting said mixture to the action of heat in the presence of pressure, whereby a resinate is formed which actively binds the fibers together.

10. The process of binding fibers together which consists in introducing between the fibers a resin and zinc oxid both in dry finely-divided form, and then converting said mixture into a zinc resinate which actively binds the fibers together.

11. The process of binding fibers together which consists in introducing a resin and zinc oxid in dry finely-divided form between the fibers and then subjecting the same to the action of heat, whereby a zinc resinate is formed which serves to actively bind the fibers together.

12. The process of binding fibers together which consists in introducing between the fibers a resin and zinc oxid each in dry finely-divided form, and then subjecting the same to heat and to pressure, whereby a zinc resinate is formed which serves to actively bind the fibers together.

13. The process of binding fibers together which consists in introducing a resin and zinc oxid between the fibers each in dry finely-divided form, and then subjecting the same to heat in the presence of pressure, whereby a zinc resinate is formed which serves to actively bind the fibers together.

14. The process of binding fibers together which consists in mixing a resin and zinc oxid, introducing the same in a dry finely-divided form between the fibers, and then converting the mixture into zinc resinate, whereby an active binder for the fibers is secured.

15. The process of binding fibers together which consists in mixing a resin and zinc oxid in dry form, then introducing this mixture in a finely-divided form between the fibers, then subjecting the mixture to the action of heat, whereby zinc resinate is formed which serves to actively bind the fibers together.

16. The process of binding fibers together which consists in mixing a resin and zinc oxid, then introducing the said mixture in dry finely-divided form between the fibers and then treating the same with heat and with pressure, whereby zinc resinate is formed which serves to actively bind the fibers together.

17. The process of binding fibers together which consists in mixing a resin and a metallic oxid, then introducing this mixture in a dry finely-divided form between the fibers, then subjecting the same to heat in the presence of pressure, whereby zinc resinate is formed which actively binds the fibers together.

18. The process of binding fibers together which consists in introducing between the fibers a resin and a metallic base, and then converting said resin and base into a resinate binding agent for the fibers.

19. The process of binding fibers together which consists in introducing between the fibers a resin and a metallic base in a dry finely-divided form, and then converting said resin and base into a resinate binding agent for the fibers.

20. The process of binding fibers together which consists in introducing a resin and a metallic base in a dry finely-divided form between the fibers, and then treating said resin and base with heat, thereby forming a resinate which actively binds the fibers together.

21. The process of binding fibers together which consists in introducing a resin and a metallic base in dry finely-divided form between the fibers, and then treating said resin and base with heat and with pressure, whereby a resinate is formed which actively binds the fibers together.

22. The process of binding fibers together which consists in introducing a resin and a metallic base in dry finely-divided form between the fibers, and then subjecting said resin and base to heat in

the presence of pressure, whereby a resinate is formed which constitutes an active binding agent for the fibers.

23. The process of binding fibers together which consists in mechanically mixing a resin and a metallic base, then introducing said mixture between the fibers in dry finely-divided form, and then converting the mixture into a resinate which serves as an active binding agent for the fibers.

24. The process of binding fibers together which consists in mechanically mixing a resin and a metallic base, then introducing said mixture between the fibers in dry finely-divided form, then subjecting the mixture to heat, whereby a resinate is formed which serves as an active binder for the fibers.

25. The process of binding fibers together which consists in mixing a resin and a metallic base, then introducing said mixture between the fibers in dry finely-divided form, then treating the same with heat and with pressure, whereby a resinate is formed which actively binds the fibers together.

26. The process of binding fibers together which consists in mixing a resin and a metallic base, then introducing said mixture between the fibers in dry finely-divided form, then subjecting said mixture to the action of heat in the presence of pressure, whereby a resinate is formed which actively binds the fibers together.

27. The process of binding fibers together which consists in introducing resin and zinc oxid, each in dry finely-divided form, between the fibers and then converting said resin and zinc oxid into a resinate binding agent.

28. The process of binding fibers together which consists in mixing resin and zinc oxid, introducing said mixture in dry finely-divided form between the fibers and then converting said resin and zinc oxid into a resinate binding agent.

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**758,246. PROCESS OF UNITING OR MATTING FIBERS TOGETHER. GUSTAV GOLDMAR, Baltimore, Md. Filed Nov. 26, 1903. Serial No. 183,058. (No specimens.)**

*Claim.*—1. The process of binding fibers together which consists in introducing a resinate in dry finely-divided form between the fibers, and then converting said resinate into an active binder for the fibers.

2. The process of binding fibers together which consists in introducing a resinate in dry finely-divided form between the fibers, and then subjecting the same to the action of heat, whereby the resinate is converted into an active binding agent for the fibers.

3. The process of binding fibers together which consists in introducing a resinate in dry finely-divided form between the fibers, and then subjecting the same to the action of heat and pressure, whereby the resinate is converted into an active binding agent for the fibers.

4. The process of binding fibers together which consists in introducing a resinate in dry finely-divided form between the fibers, and then subjecting the same to the action of heat in the presence of pressure, whereby the resinate is converted into an active binding agent for the fibers.

5. The process of binding fibers together which consists in introducing an insoluble resinate in a dry finely-divided form between the fibers and then converting said resinate into an active binder for the fibers.

6. The process of binding fibers together which consists in introducing an insoluble resinate in dry finely-divided form between the fibers, and then subjecting said resinate to the action of heat, whereby the same is converted into an active binder for the fibers.

7. The process of binding fibers together which consists in introducing an insoluble resinate in dry finely-divided form between the fibers, and then subjecting said resinate to the action of heat and of pressure, whereby the resinate is converted into an active binding agent for the fibers.

8. The process of binding fibers together which consists in introducing an insoluble resinate in dry finely-divided form between the fibers, and then subjecting said resinate to the action of heat in the presence of pressure, whereby the resinate is converted into an active binding agent for the fibers.

9. The process of binding fibers together which consists in introducing zinc resinate in dry finely-divided form between the fibers, and then converting said resinate into an active binding agent for the fibers.

10. The process of binding fibers together which consists in introducing zinc resinate in a dry finely-divided form, and then treating said zinc resinate with heat, whereby the same is converted into an active binding agent for the fibers.

11. The process of binding fibers together which consists in introducing zinc resinate in a dry finely-divided form between the fibers, and then treating said resinate with heat and with pressure, whereby the same is converted into an active binding agent for the fibers.

12. The process of binding fibers together which consists in introducing zinc resinate in a dry finely-divided form between the fibers, and then treating said resinate with heat in the presence of pressure, whereby the same is converted into an active binding agent for the fibers.

13. A fibrous mass the fibers of which are bound together by a zinc resinate.

14. A fibrous mass the fibers of which are bound together by an insolube resinate.

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**758,247. PROCESS OF UNITING OR MATTING FIBERS TOGETHER. GUSTAV GOLDMAR, Baltimore, Md. Filed Nov. 26, 1903. Serial No. 183,059. (No specimens.)**

*Claim.*—1. The method of binding fibers together which consists in introducing between the fibers resin in a dry form, and then converting said resin into an active binder for the fibers.

2. The method of binding fibers together which consists in introducing between the fibers resin in a dry finely-divided condition, and then subjecting the same to heat, thereby fusing the resin and converting it into an active binder for the fibers.

3. The method of binding fibers together which consists in introducing between the fibers resin and a tempering material both in a dry finely-divided condition, and then converting the resin together with the tempering material into an active binder for the fibers.

4. The method of binding fibers together which consists in introducing between the fibers resin and a tempering material both in a dry finely-divided form, and then subjecting the resin and tempering material to the action of heat, whereby they are converted into an active binding agent for the fibers.

5. The method of binding fibers together which consists in mixing dry finely-divided resin and a dry finely-divided tempering material, then introducing this mixture between the fibers, and then converting said mixture into an active binding agent for the fibers.

6. The method of binding fibers together which consists in mixing dry finely-divided resin and a dry finely-divided tempering material, then introducing this mixture between the fibers, and then subjecting the same to the action of heat, whereby the same is converted into an active binder for the fibers.

7. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided aluminium resinate, and then converting the same into an active binder for the fibers.

8. The method of binding fibers together which consists in mixing finely-divided resin and finely-divided aluminium resinate, then introducing this mixture between the fibers in a dry finely-divided state, and then converting the mixture into an active binder for the fibers.

9. The method of binding fibers together which consists in mixing finely-divided resin and finely-divided aluminium resinate, then introducing this mixture between the fibers in a dry finely-divided state, and then subjecting the same to the action of heat, whereby the same is converted into an active binder for the fibers.

10. The method of binding fibers together which consists in introducing dry finely-divided resin and dry finely-divided soap between the fibers, and then converting said soap and resin into an active binder for the fibers.

11. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided metallic soap, and then converting said resin and metallic soap into an active binding agent for the fibers.

12. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided insoluble soap, and then converting said resin and soap into an active binding agent for the fibers.

13. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided soap and then subjecting said resin and soap to the action of heat, whereby they are converted into an active binding agent for the fibers.

14. The method of binding fibers together which consists in introducing between the fibers resin and a dry finely-divided metallic soap, and then subjecting said resin and metallic soap to the action of heat, whereby they are converted into an active binding agent for the fibers.



15. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and a dry finely-divided insoluble metallic soap and subjecting said resin and insoluble soap to the action of heat, whereby they are converted into an active binding agent for the fibers.

16. The method of binding fibers together which consists in introducing between the fibers resin in a dry finely-divided condition, and then subjecting the same to heat and to pressure, whereby the same is converted into an active binder for the fibers.

17. The method of binding fibers together which consists in introducing between the fibers resin and a tempering material both in a dry finely-divided condition, and then subjecting the same to heat and to pressure, whereby the same is converted into an active binder for the fibers.

18. The method of binding fibers together which consists in mixing dry finely-divided resin and a dry finely-divided tempering material, then introducing this mixture between the fibers, then subjecting the same to the action of heat and to pressure, thereby converting said mixture into an active binding agent for the fibers.

19. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided aluminium resinate, and then subjecting the same to the action of heat, whereby the same is converted into an active binder for the fibers.

20. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided aluminium resinate, and then subjecting the same to the action of heat and of pressure, and thereby actively binding the fibers together.

21. The method of binding fibers together which consists in mixing powdered resin and powdered aluminium resinate, then introducing this mixture between the fibers in a dry finely-divided state, then subjecting the same to the action of heat and of pressure, whereby the same is converted into an active binder for the fibers.

22. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided soap, and then subjecting said resin and soap to the action of heat and of pressure, whereby they are converted into an active binding agent for the fibers.

23. The method of binding fibers together which consists in introducing between the fibers resin and a dry finely-divided metallic soap, then subjecting said resin and metallic soap to the action of heat and of pressure, whereby they are converted into an active binding agent for the fibers.

24. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and a dry finely-divided insoluble metallic soap, and then subjecting said resin and insoluble soap to the action of heat and of pressure, whereby they are converted into an active binding agent for the fibers.

25. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided soap, then introducing this mixture between the fibers, and then converting said soap and resin into an active binder for the fibers.

26. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided soap, then introducing this mixture between the fibers, and then converting said soap and resin into an active binder for the fibers by the action of heat.

27. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided soap, then introducing this mixture between the fibers, and then converting said soap and resin into an active binder for the fibers by the action of heat and of pressure.

28. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided metallic soap, then introducing this mixture between the fibers, and then converting said mixture into an active binding agent for the fibers.

29. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided metallic soap, then introducing this mixture between the fibers, and then converting said mixture into an active binding agent for the fibers by the action of heat.

30. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided metallic soap, then introducing this mixture between the fibers, and then converting said mixture into an active binding agent for the fibers by the action of heat and of pressure.

31. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided insoluble soap, then introducing said mixture between the fibers and then converting said mixture into an active binding agent for the fibers.

32. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided insoluble soap, then introducing said mixture between the fibers, and then converting said mixture into an active binding agent for the fibers by the action of heat.

33. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided insoluble soap, then introducing said mixture between the fibers, and then converting said mixture into an active binding agent for the fibers by the action of heat and of pressure.

34. The method of binding fibers together which consists in introducing between the fibers resin in a dry finely-divided condition, and then subjecting the same to heat in the presence of pressure, whereby the same is converted into an active binder for the fibers.

35. The method of binding fibers together which consists in mixing dry finely-divided resin and a dry finely-divided tempering material, then introducing this mixture between the fibers, then subjecting the same to the action of heat in the presence of pressure, thereby converting said mixture into an active binding agent for the fibers.

36. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided aluminium resinate, and then subjecting the same to the action of heat in the presence of pressure, and thereby actively binding the fibers together.

37. The method of binding fibers together which consists in mixing finely-divided resin and finely-divided aluminium resinate, then introducing this mixture between the fibers in a dry finely-divided state, then subjecting the same to the action of heat in the presence of pressure, whereby the same is converted into an active binder for the fibers.

38. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and dry finely-divided soap, and then subjecting said resin and soap to the action of heat in the presence of pressure, whereby they are converted into an active binding agent for the fibers.

39. The method of binding fibers together which consists in introducing between the fibers resin and a dry finely-divided metallic soap, then subjecting said resin and metallic soap to the action of heat in the presence of pressure, whereby they are converted into an active binding agent for the fibers.

40. The method of binding fibers together which consists in introducing between the fibers dry finely-divided resin and a dry finely-divided insoluble metallic soap, and then subjecting said resin and insoluble soap to the action of heat in the presence of pressure, whereby they are converted into an active binding agent for the fibers.

41. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided soap, then introducing this mixture between the fibers, and then converting said soap and resin into an active binder for the fibers by the action of heat in the presence of pressure.

42. The method of binding fibers together which consists in mixing dry finely-divided resin and dry finely-divided metallic soap, then introducing this mixture among the fibers and then converting said resin and metallic soap into an active binding agent for the fibers by the action of heat in the presence of pressure.

43. The method of binding fibers together which consist in mixing dry finely-divided resin and dry finely-divided insoluble soap, then introducing said mixture between the fibers, and then converting said mixture into an active binding agent for the fibres by the action of heat in the presence of pressure.

44. A fibrous mass, the fibers of which are bound together by resin tempered with aluminium resinate.

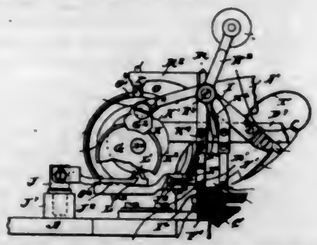
45. A fibrous mass, the fibers of which are bound together by a binder containing resin and an aluminium resinate.

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**758,248. MACHINE FOR UNITING LOOPED FABRICS. GEORGE O. HARRADEN and HOWARD H. HARRADEN, Kenosha, Wis., assignors of one-third to Chicago-Rockford Hosiery Company, Kenosha, Wis., a Corporation of Wisconsin. Filed Aug. 5, 1903. Serial No. 168,283. (No model.)**

*Claim.*—1. In a machine for uniting knit fabrics, in combination, fabric-impaling quills, a sewing-needle, a looper, a stitch-receiver, a loop-transferrer—for transferring each stitch-loop from the looper to the stitch-receiver—and means for supporting and operating all of said parts, substantially as and for the purpose specified.

2. In a machine for uniting knit fabrics, in combination, fabric-impaling quills having longitudinal grooves in the upper sides thereof, a sewing-needle adapted to travel back and forth in the grooves in the impaling-quills, a looper, a stitch-receiver, a loop-transferrer—for transferring each stitch-loop from the looper to the stitch-receiver—and means for supporting and operating all of such parts, substantially as and for the purpose specified.

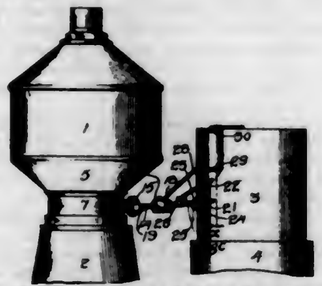


3. In a machine for uniting knit fabrics, in combination, fabric-impaling quills having longitudinal grooves in the upper sides thereof, a sewing-needle adapted to travel back and forth in the grooves in the impaling-quills, a looper, means for supporting such impaling-quills sewing-needle and looper, a stitch-receiver and a loop-transferrer—for transferring stitch-loops from the looper to the stitch-receiver—carriages for supporting such stitch-receiver and loop-transferrer, and means for operating all of said parts, substantially as and for the purpose specified.

4. In a machine for uniting knit fabrics, in combination, fabric-impaling quills, a sewing-needle, a looper, means for supporting such impaling-quills sewing-needle and looper, a stitch-receiver and a loop-transferrer—for transferring stitch-loops from the looper to the stitch-receiver—carriages for supporting such stitch-receiver and loop-transferrer, cams for driving such carriages, and means for operating such cams and other parts of said machine, substantially as and for the purpose specified.

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**758,249. CARBID-FEED FOR GAS-MACHINES.** JAMES T. HAYS and THOMAS C. HAYS, Emmitsburg, Md. Filed Oct. 1, 1903. Serial No. 176,374. (No model.)



*Claim.*—1. In an automatic carbid-feed, the combination with a movable gas-bell, and a carbid-holder having a discharge-opening, of a stationary carbid-supporting plate spaced from said discharge-opening and adapted to check the flow of carbid from the same, a shaft, an arm carried thereby, a sweep-bar carried by said arm and adapted to be oscillated across said carbid-supporting plate, stops for limiting the movement of said arm, a weighted lever upon said shaft, pivoted trip-fingers upon said lever, a rigid finger carried by said lever, and trips carried by said bell and adapted to depress said pivoted fingers in their downward movement and to elevate and pass under the same in their upward movement, said rigid finger being normally out of the path of said trips upon the bell and adapted to be actuated only by the upward movement of the trips should the lever fail to return to its normal position, substantially as described.

2. In a gas-machine, the combination with a gas-bell, and a carbid-holder having means for discharging its contents, of a lever for operating said means, a weight for holding said lever in its normal position, pivoted trip-fingers upon said lever, a rigid finger carried by said lever, trips carried by said gas-bell and adapted to depress said pivoted fingers in their downward movement and to elevate and pass under the same in their upward movement, said rigid finger being normally out of the path of the trips upon the bell and adapted to be actuated by the same only when the weight upon said lever fails to restore it to its normal position, substantially as described.

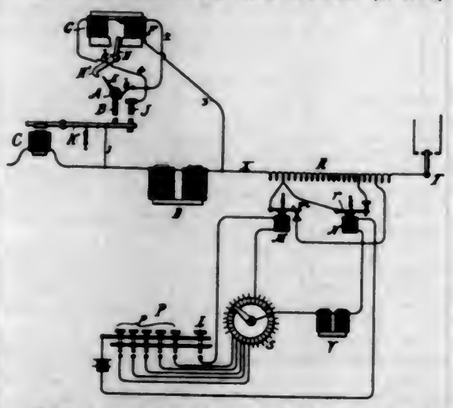
3. In an apparatus of the class described, the combination of a carbid-holder having a discharge-opening, a stationary carbid-supporting element spaced below said opening, an oscillating sweep having its pivot in a plane above the carbid-supporting element, said sweep being mounted to swing transversely under the discharge-opening, across and in a vertical plane above the carbid-supporting element, and in the arc which approaches the center of said supporting element and rises and recedes from the opposite sides thereof, whereby the sweep when moved in either direction first descends and approaches and then rises and recedes from the supporting element, for the purpose set forth.

4. In apparatus of the class described, the combination of a carbid-holder having a discharge-opening, a stationary carbid-supporting element spaced below said opening, an oscillating sweep having its pivot in a plane above the carbid-supporting element, said sweep being mounted to swing transversely above the discharge-opening, across and in a vertical plane above the carbid-supporting element and in an arc which approaches the center of the supporting element and rises and recedes from the opposite sides thereof, whereby the sweep when moving in either direction first descends and approaches and then rises and recedes from said supporting element, and means to normally support the sweep in an elevated position at one limit of the stroke thereof.

5. In a gas-machine, the combination with a gas-bell and a carbid-holder having means for discharging its contents, of a counterbalanced lever for operating said means, a pivoted finger upon said lever, a rigid finger carried by said lever, a trip carried by said gas-bell and adapted to depress said pivoted finger in its downward movement and to elevate and pass under the same in its upward movement, said rigid finger being normally out of the path of the trip upon the gas-bell and adapted to be actuated by the same only when said lever fails to return to its normal position, substantially as described

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**758,250. PRINTING-TELEGRAPH.** CLARENCE I. HEALY, Newark, N. J. Filed June 16, 1903. Serial No. 161,640. (No model.)



*Claim.*—1. In a printing-telegraph, a unison device consisting of an electromagnet, an armature-lever therefor, two stops for the armature-lever, one of which moves in proportion to the type-carrier, a detent for the type-carrier and means whereby the stop with which the armature-lever collides will determine the action of the detent.

2. In a printing-telegraph, a unison device consisting of an electromagnet, an armature-lever therefor, two stops for the armature-lever, one of which moves in proportion to the type-carrier, a detent for the type-carrier and means whereby the stop with which the armature-lever collides will determine the action of the detent, in combination with a transmitter including a spacing-key and means whereby said electromagnet is energized only upon the operation of the spacing-key.

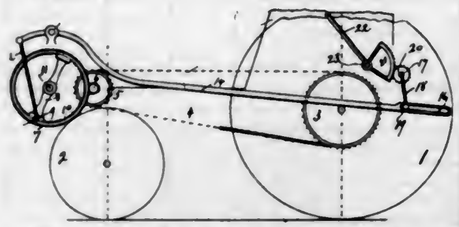
3. In a printing-telegraph, a unison device consisting of an electromagnet, an armature-lever therefor, two stops for the armature-lever, one of which moves in proportion to the type-carrier and serves as a stop only when the carrier is in the unison position, while the other is fixed, a detent for the type-carrier and means whereby said detent will be engaged when the lever limits on the fixed stop and released when the lever limits on the movable stop, substantially as described.

4. In a printing-telegraph, the combination of an electromagnet, an armature-lever therefor, two stops for the armature-lever, one of which moves in proportion to the type-carrier, a detent for the type-carrier, and a locking and an unlocking maguet for said detent whose circuits are respectively controlled by said stops, substantially as described.



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**758,251. PROPELLING-GEAR FOR TRICYCLES.** OTTO HEYNSOHN, San Carlos, Costa Rica. Filed Aug. 14, 1903. Serial No. 169,482. (No model.)



*Claim.*—1. In a hand-propelled vehicle, the combination of a hand-lever, a sector-gear rigid therewith, a pinion engaged by said sector-gear and rigid with a rock-shaft, a crank-lever connected to said rock-shaft and having its crank-arm extending therefrom, a transmitting-lever having a slot into which said crank-arm extends, and mechanism actuated by the transmitting-lever to rotate the drive-wheel.

2. In a vehicle driving-gear, the combination of a long transmitting-lever, fulcrumed near the front of the vehicle, and having driving means leading from the front of said lever to rear drive-wheels, a crank-lever engaging a slot in the rear of said transmitting-lever to oscillate the same, and means for oscillating said crank-lever.

3. In a vehicle driving-gear, the combination of a hand-lever having a sector-gear rigid therewith, a pinion engaged by said sector-gear, a rock-shaft driven by said pinion and having a crank-lever connected thereto, a transmitter-lever having a slot with which said crank-lever engages, and means by which the transmitter-lever conveys rotary motion to the drive-wheels.

4. In a vehicle driving-gear, a long transmitter-lever having its fulcrum near the front of the vehicle, a pitman and a clutch connected to said transmitter-levar and a driving-pinion actuated from said clutch, a driving-train leading from said pinion to the rear driving-wheels of the vehicle, a hand-lever near the rear of the vehicle, and connections from said hand-lever to the transmitter-lever by which the same is actuated.

5. In a vehicle driving-gear, the combination of a hand-lever having a sector-gear rigid therewith, a pinion engaged by said sector-gear, a crank-lever connected to said pinion, a transmitting-lever pivoted near the front of the vehicle and engaged by the crank of said crank-lever, a pitman connected to said transmitter-lever and a clutch connected to said pitman, and a pinion actuated from said clutch, and driving mechanism extending from the last-mentioned clutch to the drive-wheels.

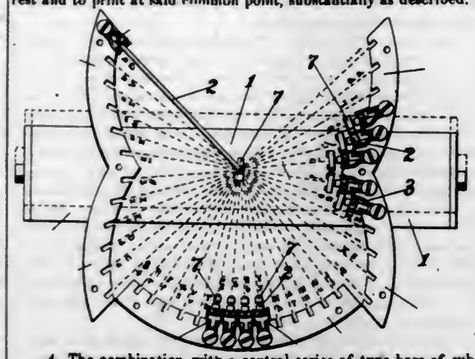
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**758,252. TYPE-WRITING MACHINE.** FREDERIC W. HILLARD, New York, N. Y. Filed Oct. 6, 1903. Serial No. 175,992. (No model.)

*Claim.*—1. The combination, with a plurality of type-bars mounted in a central series, of a side series at each end of said central series, comprising a plurality of type-bars of successively-varying lengths, with the longest bars in each of said side series longer than any bar in said central series and mounted at the ends of their respective series next adjacent to the said central series, substantially as described.

2. The combination, with a plurality of type-bars mounted in a central series, of a side series at each end of said central series, comprising a plurality of type-bars of successively-varying lengths, with the shortest bars in each of said side series shorter than any bar in said central series and mounted at the ends of their respective series farthest from the said central series, substantially as described.

3. The combination, with the type-bars, of a central series of type-heads thereon each bearing a plurality of characters, arranged to print at a common point and to lie side by side when at rest, and two series of type-heads, arranged the one in reverse order of the other, at each end of said central series, each bearing a plurality of characters, arranged to overlap and overreach each other when at rest and to print at said common point, substantially as described.



4. The combination, with a central series of type-bars of substantially uniform lengths, of two side series of type-bars at each end of said central series, the one on one side of the line of print and the other in reverse order on the opposite side, each comprising a plurality of type-bars of successively-varying lengths, with type-heads mounted obliquely thereon and each bearing a plurality of characters arranged to print at a common printing-point, and to lie, when at rest, overlapping and overreaching each other, the arrangement being such that the type-head which is mounted on any bar of a side series overreaches all of the type-heads in the series which are mounted on shorter bars and is overreached by all of the type-heads which are mounted on longer bars.

5. The combination, in a central series of type-bars, of type-heads thereon each bearing a plurality of characters arranged to print at a common printing-point, and to lie, when at rest, side by side at substantially uniform distances from said printing-point, and a side series of type-bars at each end of said central series, the type-heads on said side series each bearing a plurality of characters arranged to print at said printing-point, and to lie, when at rest, the one overlapping and overreaching the other, with the type-head on the type-bar, in each of the two said side series, which is pivoted next adjacent to the central series, lying the farthest in its series from the printing-point and farther therefrom than the type-heads in said central series, substantially as described.

6. The combination, in a central series of type-bars, of type-heads thereon each bearing a plurality of characters arranged to print at a common printing-point, and to lie, when at rest, side by side at substantially uniform distances from said printing-point, and a side series of type-bars at each end of said central series, the type-heads on said side series each bearing a plurality of characters arranged to print at said printing-point, and to lie, when at rest, the one overlapping and overreaching the other, with the type-head on the type-bar, in each of said side series, which is pivoted the most remote in its series from the central series, lying the nearest in its series to the printing-point and nearer thereto than the type-heads in said central series, substantially as described.

7. The combination, with a central series of type-bars, of two side series of type-bars, arranged the one in reverse order to the other, at both ends of said central series, the type-heads on the bars in the several side series each bearing a plurality of characters arranged to print at a common printing-point, and to lie, when at rest, the one lapped over the other at successively-varying distances from the printing-point, with the type-heads on the type-bars which are pivoted next adjacent to each other in the two side series at one end of said central series, lying, the nearest in their series to the printing-point, substantially as described.

8. The combination of a plurality of type-bars all of substantially uniform length and pivoted in a central series in the arc of a circle concentric with the printing-point, and a plurality of type-bars of successively-varying lengths pivoted in a series at each end of said central series, with the longest bar in each of the two last-mentioned series longer than the bars in said central series and pivoted at the ends of their respective series next adjacent to said central series, substantially as described.

9. The combination of a plurality of type-bars all of substantially uniform length and pivoted in a central series in the arc of a circle concentric with the printing-point, and a plurality of type-bars of successively-varying lengths pivoted in a series at each end of said central series, with the shortest bar in each of the two last-mentioned series shorter than the bars in said central series and pivoted at the ends of their respective series farthest from said central series, substantially as described.

10. The combination of a series of type-bars arranged to print at a common point and pivoted in the arc of a circle concentric with the printing-point, and two series of type-bars at one end of said first-mentioned series, mounted the one series on one side of the printing-line and the other series in reverse order on the opposite side of the printing-line, the type-bars in said two last-mentioned series being arranged to print at said common point and pivoted at successively-varying distances therefrom, and type-heads on said bars each bearing a plurality of characters, substantially as described.

11. The combination of a plurality of type-bars all of substantially uniform length and pivoted in a series in the arc of a circle concentric with the printing-point, and a series of type-bars of successively-varying lengths at each end of said first-mentioned series, the longest bar in each of the two last-mentioned series being longer than, and the shortest bar shorter than the bars of said first-mentioned series, substantially as described.

12. The combination of a plurality of type-bars all of substantially uniform length, pivoted in a series in the arc of a circle concentric with the printing-point, and a plurality of type-bars of successively-varying lengths pivoted in two series, the one series on one side of the printing-line and the other series in reverse order on the opposite side of the printing-line, at one end of said first-mentioned series, the longest bar in each of the two latter series being longer than, and the shortest bar shorter than the bars of said first-mentioned series.

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**758,253. COMPRESSING MECHANISM. WATSON M. HOLMES, Hoosick Falls, N. Y., assignor, by mesne assignments, to Planters Compress Company, a Corporation of Maine. Filed May 27, 1901. Serial No. 62,001. (No model.)**



*Claim.*—1. In a compressing apparatus, the combination with a compressing sleeve or chamber of a cap or head plate, said cap or head plate being composed of sections, and adjustable abutments for said head-plate sections, as and for the purpose set forth.

2. In an apparatus of the class described, a cap or head plate composed of sections, in combination with adjustable abutments arranged for bearing between the frame of the machine and outer ends of said sections, as and for the purpose set forth.

3. In an apparatus of the class described, a cap or head plate composed of sections, in combination with set-screws arranged to bear against the outer ends of said sections to adjustably support said sections against shifting or twisting strains, as and for the purpose set forth.

4. In an apparatus of the class described, a cap or head plate composed of sections, a supporting ring or plate, and adjustable abutments carried by said plate or ring and arranged to bear against said sections, as and for the purpose set forth.

5. In an apparatus of the class described, a cap or head plate composed of sections, a supporting ring or plate, and set-screws carried by said supporting ring or plate and arranged to bear against said sections, as and for the purpose set forth.

6. In an apparatus of the class described, a feed-hopper having its walls composed of adjustable sections whereby the feeding end of the hopper may be varied in size, as and for the purpose set forth.

7. In an apparatus of the class described, a feed-hopper having its walls composed of adjustable sections whereby the feeding end of the hopper may be varied in size, and means for adjusting the positions of said sections and retaining them in their adjusted positions, as and for the purpose set forth.

8. In an apparatus of the class described, a feed hopper or basket composed of an upper and a lower part, said lower part made up of sections and when assembled forming a support for said upper part, as and for the purpose set forth.

9. In an apparatus of the class described, a feed-hopper consisting of an upper and under portion, the under portion supporting the upper portion and having its walls consisting of adjustably-inclined sections, as and for the purpose set forth.

10. In an apparatus of the class described, a feed-hopper composed of an upper and a lower section, said lower section being sectional, said sections when assembled forming a support for said upper portion, lugs or projections respectively connected to said upper and lower portions, and adjustable connections between said portions, as and for the purpose set forth.

11. In an apparatus of the class described, a feed hopper or basket comprising an upper and a lower portion, said lower portion being sectional, ears or projections formed on said sections, coöperating projections carried by the upper portion of said hopper, bolts adjustably connecting said portions, and a spring interposed between said projections, as and for the purpose set forth.

12. In an apparatus of the class described, a feed hopper or basket composed of an upper and a lower portion, said lower portion being sectional, ears or projections formed in said sections, coöperating projections formed on said upper portion, limiting lugs or stops formed on said projections, and means for adjustably connecting said projections, as and for the purpose set forth.

13. In a compressing apparatus, a slotted cap or head plate, a sheave or pulley, a crank-arm eccentrically mounted thereon and in inclined relation with respect to the plane of rotation thereof, a feeder-arm connected to said crank-arm, and means for rotating said sheave or pulley, as and for the purpose set forth.

14. In an apparatus of the class described, a compressing apparatus including a slotted cap or head plate, sheaves or pulleys arranged in encircling relation with respect to said cap or head plate, a pin eccentrically mounted upon each of said sheaves or pulleys, a feeder-arm pivotally connected to each pin, and means for rotating said sheaves or pulleys, as and for the purpose set forth.

15. In an apparatus of the class described, a compressing mechanism, a basket or hopper having slots in the sides thereof, a series of pulleys or sheaves arranged in encircling relation with respect to said hopper, a crank-pin eccentrically mounted upon each sheave or pulley, a feeder-arm pivotally connected to each crank-pin, said feeder-arms operating through the slots in said hopper or basket, as and for the purpose set forth.

16. In an apparatus of the class described, a cap or head plate having radial feed slots or openings therethrough, feeder-arms having bent ends arranged to operate adjacent to the slots in said cap or head plate, operating sheaves or pulleys for said feeder-arms, said sheaves or pulleys provided with crank-pins to which said arms are pivotally connected, said crank-pins being in inclined relation with respect to the plane of rotation of said pulleys, and means for rotating said pulleys, as and for the purpose set forth.

17. In an apparatus of the class described, a slotted cap or head plate, a series of sheaves or pulleys arranged in encircling relation with respect to said cap or head plate, feeder-arms pivotally connected eccentrically to said sheaves or pulleys, means for driving one of said pulleys and a belt or band operating around all of said pulleys, as and for the purpose set forth.

18. In an apparatus of the class described, a slotted cap or head plate, a series of sheaves or pulleys arranged in encircling relation with respect to said cap or head plate, feeder-arms pivotally connected to said sheaves or pulleys eccentrically, means for driving one of said pulleys or sheaves, a belt or band operating around all of said sheaves or pulleys, and a tightener for said belt or band, as and for the purpose set forth.



19. In an apparatus of the class described, a sheave or pulley, a crank-pin mounted on said sheave or pulley in inclined relation, a sleeve loosely mounted upon said crank-pin, and a feeder-arm yieldingly pivoted to said sleeve, as and for the purpose set forth.

20. In an apparatus of the class described, a feed-hopper composed of an upper and a lower section, said lower section being sectional, there being hinged connections between the several sections of the lower portion and the upper portion, arranged to permit the several sections to be swung toward or from the center of the hopper, as and for the purpose set forth.

21. In an apparatus of the class described, a cap or head plate composed of independently-movable sections having feed-slots between the sections, in combination with means for bracing said sections against stresses in a plane perpendicular to the direction of compression, as and for the purpose set forth.

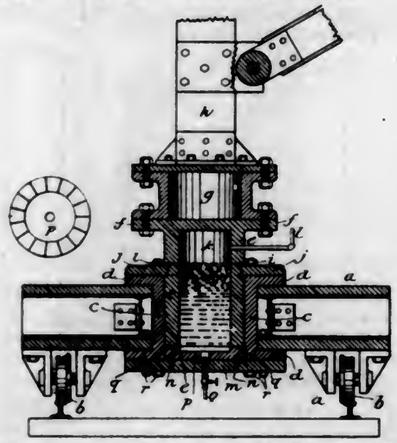
22. In an apparatus of the class described, a cap or head plate composed of sections, said sections being arranged with feed-openings between them extending to the center of the head-plate and opening into one another, supports for the sections, a pivotal connection between each said section and its support, and adjustable abutments arranged for bearing between the support and the ends of said sections, as and for the purpose set forth.

23. In an apparatus of the class described, a head-plate composed of sections, said sections being arranged with feed-spaces between them and being independently adjustable in position, one with respect to another, and means for securing the sections in position when so adjusted, as and for the purpose set forth.

24. In an apparatus of the class described, a head-plate having slots or openings for material to be fed through it, said head-plate being composed of sections independently adjustable in position one with respect to another, and means for securing the sections in position when adjusted, as and for the purpose set forth.

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**758,254. CRANE. CHARLES H. HOWLAND-SHERMAN, Baltimore, Md., assignor to the Howland-Sherman Manufacturing Company, Wilmington, Del., a Corporation of Delaware. Filed Dec. 17, 1902. Renewed Sept. 30, 1903. Serial No. 175,180. (No model.)**



*Claim.*—1. Combined in a crane, a fixed sleeve, a foot-step adapted to rotate and move vertically therein and provided with a circumferential groove, a step-bearing block for the foot-step, means for removably securing said step-bearing block, and means, in connection with said groove, for supporting the foot-step after the removal of the step-bearing block, substantially as set forth.

2. Combined in a crane, a fixed sleeve, a foot-step carried therein and provided with a circumferential groove, a removable step-bearing block for the foot-step, a plate bolted to the sleeve and carrying the step-bearing block, and means, in connection with said groove for supporting the foot-step when the step-bearing block has been removed, substantially as set forth.

3. Combined in a crane, a fixed sleeve, a foot-step rotatable therein and having a circumferential groove, a collar bolted to the sleeve surrounding the foot-step and extending into the groove, and a removable step-bearing block, substantially as set forth.

4. Combined in a crane, a fixed sleeve, a foot-step rotatably carried therein and having a circumferential groove, a collar fitting said groove and bolted to the upper end of the sleeve, a step-bearing block for the foot-step, and a plate removably attached to the lower end of the sleeve for supporting the step-bearing block, substantially as set forth.

5. Combined in a crane, a fixed sleeve, a foot-step rotatably carried therein, a step-bearing block for the foot-step, a plate removably attached to the lower end of the sleeve for supporting the step-bearing block, and a collar surrounding the foot-step beneath a shoulder thereon for upholding the weight of the crane when the step-bearing block is removed, substantially as set forth.

6. Combined in a crane, a fixed sleeve, a hollow foot-step rotatably carried therein, a removable step-bearing block, means for supporting and holding the step-bearing block against rotation, and means for admitting and withdrawing oil to and from the hollow foot-step and for cleaning it, substantially as set forth.

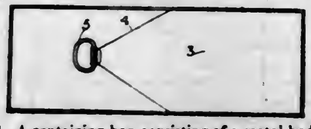
7. Combined in a crane, a fixed sleeve, a rotatable foot-step in said sleeve, a removable step-bearing block for the foot-step, and means, such as described, for sustaining the weight of the crane when the step-bearing block is removed, substantially as set forth.

8. Combined in a crane, a fixed sleeve, a rotatable foot-step in said sleeve, a removable step-bearing block for the foot-step, and a shoulder on said foot-step above the sleeve for supporting said foot-step when the step-bearing block is removed, substantially as set forth.

9. Combined in a crane, a fixed sleeve, a rotatable foot-step in said sleeve, a removable step-bearing block for the foot-step, a shoulder on said foot-step, and a collar bolted to said sleeve and surrounding the foot-step beneath the shoulder, substantially as set forth.

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**758,255. HERMETICALLY-SEALED METAL BOX. SAMUEL JACOBY, San Francisco, Cal. Filed Mar. 3, 1903. Serial No. 145,963. (No model.)**



*Claim.*—1. A containing-box consisting of a metal body, a plurality of covers extending from opposite ends of the body and having their inner ends overlapping, each of said covers soldered to the body and having an end extension unattached to the body and provided with finger-engaging extremities by which the covers may be ripped from the body successively and in opposite directions.

2. A containing device consisting of a metallic box, a cover soldered across one end and along the sides to the center, said cover having a convergent or central tongue and a ring upon its free end, said tongue unattached to said body, a second cover soldered upon the opposite end and sides to the junction with the first cover having a convergent tongue and ring, the inner portion of the outer cover being also soldered along the convergent tongue of the inner cover to hermetically seal the box and having the outer convergent portion left free whereby it may be upturned by a pull upon the ring to remove the outer cover, and an outer slip-cover inclosing the rip-covers and forming the cover of the box when the rip-covers are removed.

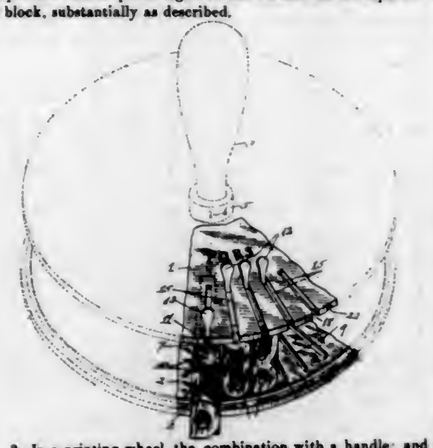
3. A containing device consisting of a rectangular metal box, a plurality of covers soldered to the top of the box from one end to the center and also across their overlapping portions to seal the box, convergent tongues having rings to form a hold for the removal of each cover successively, the tongue of the outer cover being left free, a depression in the inner cover in which said ring is embedded, and a supplemental slip-cover adapted to fit upon the top of the box.

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**758,256. PRINTING-WHEEL. JOHN J. A. JONES, Green Island, N. Y. Filed June 24, 1903. Serial No. 162,867. (No model.)**

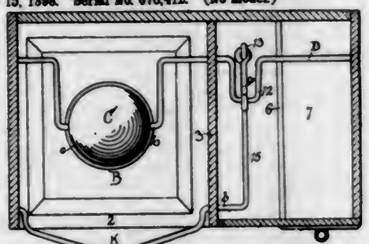
*Claim.*—1. In a printing-wheel, the combination with a handle; and a pair of disks mounted upon the handle in parallel planes; one of said disks being provided with a series of slots and with notches or grooves in its inner surface on opposite sides of the respective slots; of a series of printing-blocks interposed between said disks severally capable of reciprocating slide movements transversely of the periphery of the wheel; a spring-plate connected with each of said blocks having shoulders adapted to enter certain of said notches to lock the block in printing position; and a handle projecting outwardly through one of said slots whereby reciprocating slide movements can be imparted to the block.

2. In a printing-wheel, the combination with a handle; and a pair of disks mounted upon the handle in parallel planes; one of said disks having ribs formed on its inner side, and the other disk being provided with a series of slots in line with said ribs respectively, and with notches or grooves in its inner surface on opposite sides of the respective slots; of a series of printing-blocks interposed between said disks each provided with a groove adapted to receive one of said ribs; a spring-plate secured to each of said blocks having shoulders adapted to enter certain of said notches to lock the block in position; and a handle projecting exteriorly from said spring-plate through the slot in line with said rib whereby the spring-plate can be operated and reciprocating slide movements can be imparted to the block, substantially as described.



3. In a printing-wheel, the combination with a handle; and a pair of disks mounted upon the handle in parallel planes said disks being provided in their inner surfaces with oppositely-located circular grooves having tangential terminal portions extending to the edges of the respective disks; of a series of printing-blocks within the wheel, and a flexible slide-plate adapted to enter said grooves through said tangential terminals and to follow and occupy said grooves to close the periphery of the wheel, substantially as described.

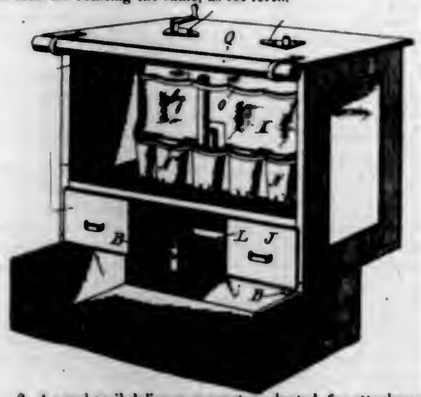
758,257. **INKSTAND.** CALVIN KELLER, Creighton, Nebr. Filed Feb. 15, 1898. Serial No. 670,412. (No model.)



*Claim.*—An ink-well comprising a housing formed by the combination with a base, of a back, and two sides, of a transverse partition secured to said back and base, an open-topped ink-well positioned upon one side within said housing, a shaft extending lengthwise across said housing above the top of said ink-well, said shaft being provided with one crank immediately above the top of the ink-well and a second crank extending in a like plane adjacent said first crank, an ink-well top secured to said first-mentioned crank, a bar depending from said last-mentioned crank, and a lever, as K, pivotally held within the forward end of said housing and provided with an extending stem secured to aforesaid bar arranged so that when said lever K is dipped downward the rearward end of said lever K is raised upward to carry upward said first-mentioned crank to raise the top of the ink-well, as and for the purpose set forth.

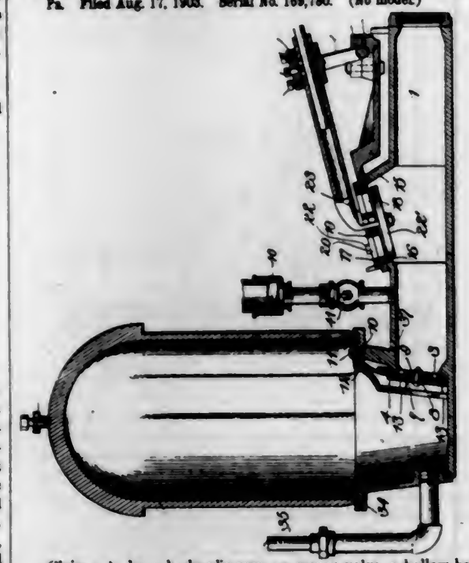
758,258. **RURAL MAIL-DELIVERY CASE.** ABEL M. KINDWALL, Albert City, Iowa. Filed Feb. 8, 1904. Serial No. 192,626. (No model.)

*Claim.*—1. A rural mail-delivery apparatus adapted for attachment to a wagon, comprising a casing, a top hinged thereto and means for fastening the swinging edge of said top, a partition in said casing, plates mounted thereon, plates upon the hinged top of the casing, reels journaled in said plates, canvas fastened to said reels, pockets formed upon said canvas and elastic loops about said pockets and above the same, and a crank adapted to fit over the tops of said reels for rotating the same, as set forth.



2. A rural mail-delivery apparatus adapted for attachment to a wagon, comprising a casing, a top hinged thereto and means for fastening the swinging edge of said top, a partition in said casing, plates mounted thereon, plates upon the hinged top of the casing, reels journaled in said plates, canvas fastened to said reels, pockets formed upon said canvas and elastic loops about said pockets and above the same, and a crank adapted to fit over the tops of said reels for rotating the same, the bottom of said casing being cut away, and drawers mounted upon either side of said cut-away portion, as set forth.

758,259. **HYDRAULIC RAM.** JAMES M. KLINE, Beavertown, Pa. Filed Aug. 17, 1903. Serial No. 169,780. (No model.)



*Claim.*—1. In a hydraulic ram, an escape-valve, a hollow bar carrying said valve, a pivotally-mounted arm having a clamping sleeve or collar for engaging said bar, a slidable weight for which said hollow bar forms a housing and in which it is longitudinally adjustable, and a set-screw carried by the sleeve or collar and extending through an opening in the bar to engage and lock the weight in adjusted position.

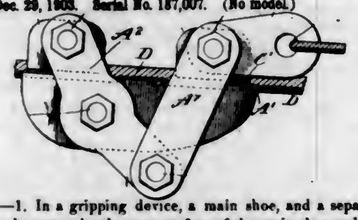
2. In a hydraulic ram, a water-chamber having an escape-valve opening, a ported cover-plate for the opening, an escape-valve adapted to seat against the under side of said plate, a pair of spaced bearing-boxes carried by the plate, an arm having trunnions adapted to said bearing-boxes, a sleeve or collar carried by the arm, a hollow bar clamped to said sleeve or collar and connected to the valve, a slidable weight adapted to said hollow bar and a clamping-screw for holding said weight in adjusted position.

3. In a hydraulic ram, a water-chamber having a top wall provided with openings for the escape of water, an upwardly-closing escape-valve adapted to seat against the inner surface of the said wall, a carrying-rod for said escape-valve, a ported regulating-disk held against the outer surface of the wall and adjustable thereon to vary the effective area of the escape-ports, both the regulating-disk and the upper wall having central openings for the passage of the escape-valve carrying-rod, and means for locking the regulating-disk in adjusted position.

4. In a hydraulic ram, a water-chamber, a detachable ported cover-plate forming the upper wall of the chamber, said plate being provided with a plurality of escape-ports and having an approximately central opening, an escape-valve adapted to seat against the inner face of the plate, a ported regulating-disk for adjusting the effective area of the escape-ports, said regulating-disk being arranged on the upper surface of the plate and being provided with a pair of diametrically-opposed arcuate slots and having a centrally-disposed opening alining with the opening of the cover-plate, guiding and locking bolts extending through the arcuate slots and tapped into the cover-plate, said bolts forming guides for the movement of the disk-valve, and an escape-valve carrying-bar extending loosely through the central openings of the disk-valve and cover-plate.

5. In a hydraulic ram, a box or casing divided into a water-chamber and an air-chamber, a ring arranged around the opening between the two chambers and forming a valve-seat, a flexible valve adapted to the seat and connected at its upper end to the wall of the air-chamber, a weight-plate secured to the lower portion of the valve and serving to hold the same in proper position, and an auxiliary plate having a plurality of studs or fingers and forming a cage for the valve, substantially as specified.

758,260. **GRIPPING DEVICE.** FRANK H. LAMB, Hoquiam, Wash. Filed Dec. 29, 1903. Serial No. 187,007. (No model.)



*Claim.*—1. In a gripping device, a main shoe, and a separate cooperating shoe opposite the contact-face of the main shoe and pivotally supported therefrom to travel toward and from the main shoe and longitudinally thereof.

2. In a gripping device, a main shoe, and separate cooperating shoes opposite the contact-face of the main shoe and pivotally supported thereon to travel toward the opposite ends of the main shoe.

3. In a gripping device, a main shoe, a lever pivoted thereon, a separate shoe pivoted at one end of the lever opposite the contact-face of the main shoe, an arm extending from the opposite end of the lever for operating the same, and a separate shoe pivoted to the free end of said arm.

4. In a gripping device, a main shoe, a lever pivoted thereon, a separate shoe pivoted at one end of the lever opposite the contact-face of the main shoe, an arm extending from the opposite end of the lever for operating the same, a separate shoe pivoted to the free end of the said arm, and a connecting-link carried by the free end of said arm.

5. In a gripping device, a main shoe, a lever pivoted upon one side thereof, a separate contacting shoe pivoted at one end of said lever opposite the contact-face at one end of the main shoe, a separate shoe at the opposite end of the main shoe, and an arm pivoted at one side of the last-mentioned separate shoe and to the free end of said lever.

6. In a gripping device, a main shoe, a lever pivoted thereon, an arm pivoted at one end of said lever, a cooperating shoe, means carried by the free end of the lever for contacting with said cooperating shoe, and a connection for imparting movement to the free end of said arm.

758,261. **GAS-LAMP.** ALBERT R. LOVETT, New York, N. Y. Filed May 26, 1903. Renewed Mar. 28, 1904. Serial No. 200,442. (No model.)



*Claim.*—1. A lamp comprising a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and supported upon said head, a central valve for admitting gas to the burners, said valve having a pendent hollow stem, a key upon said stem, a valve also carried by said stem for draining off accumulated water, a spider upon said head, a translucent globe supported thereby, a reflector, draft-drum and canopy, and means for supporting the same.



2. A gas-lamp comprising a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and supported upon said head, a central valve for admitting gas to the burners, said valve having a pendent hollow stem, a key upon said stem, a valve also carried by said stem between said key and said valve for draining off accumulated water, a spider on said head, a translucent globe supported thereon, a translucent reflector, draft-drum and canopy, and separately independent means for supporting the same.

3. The combination of a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and supported upon said head, a central valve for admitting gas to the burners, said valve having a pendent hollow stem, a key upon said stem, and a valve also carried by said stem for draining off accumulated water.

4. The combination of a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and supported upon said head, a central valve for admitting gas to the burners, said valve having a pendent hollow stem, a key upon said stem, and a valve also carried by said stem between said key and said valve for draining off accumulated water.

5. The combination of a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and attached to said head, a central hollow valve having ports for controlling the admission of gas to said burners, said valve having a pendent hollow stem, a head upon the lower end of said stem, said head having a port in communication with the hollow of said stem, and a valve in said head for draining accumulated water from said stem.

6. The combination of a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and attached to said head, a central hollow valve having ports for controlling the admission of gas to said burners, said valve having a pendent hollow stem, a head upon the lower end of said stem, said head having a port in communication with the hollow of said stem, and a valve in said head for draining accumulated water from said stem; said valve extending through said head transversely of said port, and having at one end a head whereby it may be turned and at the other end securing means.

7. The combination of a pendent stem, a head upon its lower end, a cluster of burners surrounding said stem and attached to said head, a central hollow valve having ports for controlling the admission of gas to said burners, said valve having a pendent hollow stem, a head upon the lower end of said stem, said head having a port in communication with the hollow of said stem, a valve in said head for draining off accumulated water, and a key fixed upon the last-mentioned head.

8. The combination of a pendent stem, a head upon its lower end, said head having a central passage, a cluster of burners surrounding said stem and attached to said head, a central conical valve fitting in said passage and having ports for controlling admis-

sion of gas to said burners, a depending hollow integral key-stem upon said valve, a shoulder formed upon said stem, the latter having a reduced portion below said shoulder, a cap-screw closing the lower end of the passage in said head and having a perforation through which the lower end of said stem passes, a compression-spring surrounding said stem between said valve and said cap-screw; a head upon the lower end of said stem, said head having a port in communication with the hollow of said stem, and a valve in said head for draining accumulated water from said stem.

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**758,262. CLAMP. PATRICK LYDEN, Burlington, N. J. Filed Oct. 1, 1903. Serial No. 175,380. (No model.)**



*Claim.*—1. In a clamp for stretching skins, a body, a hook thereon, a clamping member and a hook on the clamping member, whereby a lacing-cord passing through the hooks will hold the clamp locked, substantially as set forth.

2. In a clamp for stretching skins, a body having a hook thereon and a clamping member having a hook integral therewith and registering with the hook on the body, substantially as set forth.

3. A clamp for stretching skins, comprising a body having a front lip, ears and a hook oppositely directed to the lip, a clamping member having a lip and a hook to register with the hook on the body, said clamping member pivoted in the ears, substantially as set forth.

4. In a clamp for stretching skins, a body having a hook thereon situated at one side of the body and a clamping member having a hook situated at one side of said member, said hooks adapted to substantially register.

5. In a clamp for stretching skins, a body having an elongated hook and a clamping member also having an elongated hook, both hooks adapted to register and forming handles to open the clamp, substantially as set forth.

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**758,263. RIVETING-MACHINE. MANUEL C. MACHADO, Morro, Cal. Filed May 22, 1902. Serial No. 108,513. (No model.)**



*Claim.*—1. A riveting-machine, having a plunger and a horizontally-movable work-holder which is longitudinally adjustable toward and away from the plunger and means for supporting the work-holder in its adjustment.

2. A riveting-machine, having a plunger and a rotatably-mounted work-holder which is adjustable toward and away from the plunger and is also capable of rotatable adjustment to swing to opposite sides of the machine.

3. A riveting-machine, having a plunger, a horizontally-movable work-holder to coöperate with the plunger, and a longitudinally-adjustable screw-threaded stem alined longitudinally with the plunger and carrying the work-holder and supporting the same.

4. A riveting-machine, having a plunger, an adjustable screw-threaded stem alined longitudinally with the plunger, and a work-holder swiveled upon the stem.

5. A riveting-machine, having a plunger, a screw-threaded adjusting-stem alined longitudinally with the plunger, and a work-holder embodying an arm having its outer end provided with a lateral projection which is swiveled to the outer end of the stem, and a pair of laterally-projected jaws carried at the opposite inner end of the body and forming the work-holder proper, the inner end of the stem being swiveled to the inner jaw, and the outer side of the outer jaw being provided with an anvil to coöperate with the plunger.

6. A riveting-machine comprising a substantially U-shaped body having its opposite ends provided with transverse interiorly-screw-threaded and alined tubular bearings, a screw-threaded plunger working in one of the bearings and provided at its outer end with a hand-wheel, a screw-threaded stem working in the opposite bearing, and a work-holder embodying an arm lying substantially parallel with the stem, and provided with an outer lateral projection swiveled to the outer end of the stem, and a pair of holder-jaws projected laterally from the opposite end of the body, the inner jaw being swiveled to the inner end of the stem, and the outer jaw having an anvil provided upon its outer side.

7. In a riveting-machine, the combination with a frame, and a plunger, of an arm having a laterally-projecting perforated portion at one end and provided with a pair of laterally-projected jaws at the opposite end, the outer side of the outer jaw having an anvil formed thereon and being located opposite the plunger, and means connected with the frame and with the perforated portion for moving the arm toward and from the plunger, substantially as described.

8. A riveting-machine, having means for rotating the rivet during the riveting operation, and means for frictionally actuating the said means.

9. A riveting-machine having an endwise-movable and rotatable plunger provided with means for engaging a rivet to rotate the same, and means for frictionally actuating the said means, substantially as described.

10. A riveting-machine having an endwise-movable and rotatable plunger composed of separate sections, one of the sections being frictionally actuated and provided with a socket forming a rivet-engaging portion adapted to be partially embedded in a rivet, whereby the rivet is interlocked with the frictionally-actuated section for simultaneous rotation therewith, substantially as described.

11. A riveting-machine having an endwise-movable and rotatable plunger provided in its outer end with a socket which is smaller in diameter than the diameter of the head of a rivet to form a rivet-engaging portion, and means for frictionally actuating the rivet-engaging portion of the plunger, substantially as described.

12. A riveting-machine, having an endwise-movable and sectional rotatable plunger, the outer section of which is constructed to engage a rivet for simultaneous rotation therewith to force the rivet through the material, and the inner section being in frictional engagement with the outer section to permit the latter to be held against rotation during the upsetting of the rivet.

13. In a riveting-machine, the combination with an anvil, of an endwise-movable and sectional rotatable plunger provided at its outer end with means for engagement with a rivet, and also having a frictional engagement between the plunger-sections, whereby the outer plunger-section is capable of being held against rotation by the frictional engagement between the rivet and the anvil during the upsetting operation.

14. In a riveting-machine, the combination with an anvil, of an endwise-movable rotatable plunger formed in separate sections, one section being screw-threaded and provided with an operating device at one end and a tapered terminal at the other end, the other plunger-section being smooth and provided in its outer end with a socket and at its inner end with a socket having inwardly-beveled edges for frictional engagement with the tapered end of the screw-threaded section.

15. In a riveting-machine, the combination with a plunger, of a work-holder adjustable toward and away from the plunger and movable horizontally, and means for limiting the adjustment of the work-holder toward the plunger to prevent contact therewith.

16. In a riveting-machine, the combination with opposite-spaced members, one of which has a plunger, of a work-holder carried by the other member and adjustable toward and away from the plunger and movable horizontally, and also provided with a stop device for engagement with said other member for limiting the adjustment of the work-holder toward the plunger and to prevent contact therewith.

17. In a riveting-machine, the combination with opposite members, one of which has a plunger, and the other is provided with a screw-threaded bearing, of a work-holder having a laterally-projected arm, and a screw-threaded adjusting-stem swiveled upon the arm and working in the screw-threaded bearing, the distance between the inner side of the arm and the outer side of the work-holder being less than the distance between the outer end of the screw-threaded bearing and the plunger.



18. In a riveting-machine, the combination with a substantially U-shaped body, of a plunger transversely piercing one side of the body, an adjustable screw-threaded stem piercing the other side of the body, and a work-holder having its outer end provided with an arm which is swiveled upon the adjusting-screw, and its inner end being provided with a pair of laterally-projected work-holding jaws, the distance between the inner side of the arm and the opposite end of the work-holder being less than the distance between the first-mentioned member of the body and the outer side of the opposite portion of the body, whereby the arm forms a stop to prevent the work-holder from engaging the plunger.

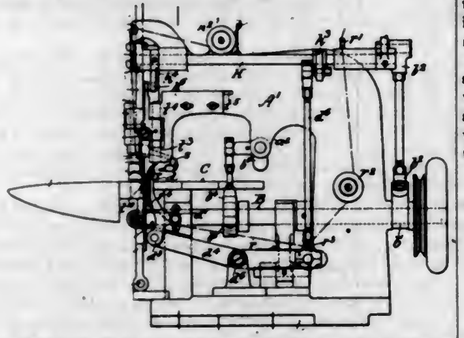
19. In a riveting-machine, the combination with a support, of a plunger, an adjustable work-holder, a screw-threaded adjusting-stem mounted upon the body and carrying the work-holder, and a removable finger-piece piercing a part of the work-holder and having a detachable engagement with the screw-threaded adjusting-stem.

20. In a riveting-machine, the combination with a support, of a plunger, an adjustable work-holder having a lateral arm, an adjustable screw-threaded stem, and a finger-piece having a smooth cylindrical portion piercing the arm of the work-holder to form a swiveled connection therewith, with the outer end of the stem screw-threaded and entering a screw-threaded socket in the outer end of the screw-threaded adjusting-stem.

21. In a riveting-machine, the combination with opposite members, of a plunger carried by one of the members and provided with a handle constructed to engage one side of the member to stop the plunger, a work-holder carried by the other member and adjustable toward and away from the plunger, and means to stop the adjustment of the work-holder before it contacts with the first-mentioned member.

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**758,264. OVERSEAMING AND WELTING SEWING-MACHINE. FRANK MALSCH, Camden, N. J., assignor to the Industrial Manufacturing Company, Camden, N. J., a Corporation of New Jersey. Filed May 23, 1901. Serial No. 62,237. (No model.)**



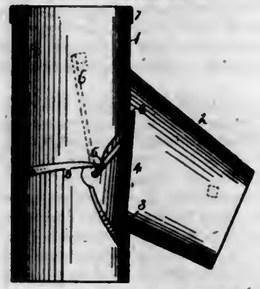
*Claim.*—1. In an overseam sewing-machine, having a reciprocating thread-carrying stitching-needle slanting with its upper end toward the rear of the machine its complemental actuating and feed mechanism and tongued presser-foot and throat-plate, the combination with a thread-carrying looper formed integral with a T-shaped lever adapted to move said looper upward and longitudinally in a vertical plane intersecting the line of travel of the slanting stitching-needle, of a loop-spreader and means for reciprocating the same in a horizontal plane above the cloth-plate, so that its free end passes in proximity and in front of the stitching-needle to engage the thread of the loops carried by the looper and convey the same over the top of the presser-foot, where it will be secured by the needle, substantially as and for the purposes set forth.

2. In an overseam sewing-machine, in combination with a suitable feeding device, a reciprocating thread-carrying stitching-needle slanting with its upper end toward the rear of the machine, a throat-plate and a presser-foot, a tongue on each of said throat-plate and presser-foot, of a thread-carrying looper moving in a vertical plane, a vibrating arm, whose free end is pivoted to the lower end of said looper, a link pivoted with one end to the machine-base and having its other end connected with an extension or lug of the said looper, and a loop-spreader operating in a horizontal plane above the cloth-plate, substantially as and for the purposes set forth.

3. In an overseam sewing-machine, in combination with a suitable feeding device, a reciprocating thread-carrying stitching-needle, a throat-plate and presser-foot, of a thread-carrying looper, a vibrating double-armed lever having its free end pivoted to the lower end of said looper, a link pivotally connected at one end to the machine-base and at its other to the said looper at a point above the connection with the said arm, a loop-spreader operating in a horizontal plane above the cloth-plate, a vertical shaft for said spreader and means for rocking said shaft, substantially as and for the purposes set forth.

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**758,265. CUT-OFF. ALFRED MARTIN, Rockford, Ill. Filed July 3, 1903. Serial No. 164,197. (No model.)**



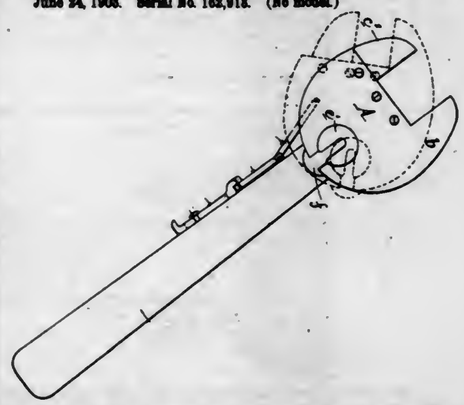
*Claim.*—1. A cut-off comprising a sheet-metal vertical section having a side opening, an overflow-section connected to the vertical section and covering the opening, a valve pivoted within the vertical section and a sheet-metal shield located within the vertical section having its upper end turned over the upper end of the vertical section.

2. A cut-off comprising a sheet-metal vertical section having a side opening, an overflow-section connected with the vertical section and covering the opening, a valve pivoted within the vertical section and a sheet-metal shield located within the vertical section having its upper end turned over the upper end of the vertical section and a portion of its lower end embracing the wall of the opening.

3. A cut-off comprising a sheet-metal vertical section having a side opening, a sheet-metal overflow-section tapering in its lengthwise direction and having its larger end located over the side opening and secured to the vertical section, and a valve pivoted within the vertical section and having a portion movable within the upper portion of the overflow-section.

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**758,266. WRENCH. CHARLES G. MOLIN, Warren, Pa. Filed June 24, 1903. Serial No. 162,918. (No model.)**



*Claim.*—1. In a wrench, the combination of a head having a stationary jaw extension, said head slotted on its under side and provided with a transverse opening; a movable jaw slidably mounted on said head and having a rack-bar guided in said transverse opening; an eccentric-pin having disk ends rotatively mounted in said head; a locking-bolt hinged to one of the disk ends and adapted to fit in an opening in the head to lock the pin, and to swing outward and serve as a handle for turning said pin; and a handle having a

toothed upper end mounted on the pin between said disk ends and adapted, by the rotation of said pin to engage and disengage said rack-bar.

2. In a wrench, the combination of a head having a fixed jaw extension, said head open on its under side and provided with a transverse opening; a movable jaw slidably mounted on the head and having a rack-bar guided in the transverse opening thereof; said rack-bar having a groove or channel in its side and said head having a pin to engage said groove or channel; a handle having a toothed upper end entering the lower end of the head; an eccentric-pin passing through the toothed end of the handle having disk ends rotatively mounted in said head; and a locking-bolt hinged to one of the disk ends and adapted to engage an opening in the head to lock the pin, said bolt being adapted to be turned outwardly from the head to serve as a handle for rotating the pin to cause the toothed end of the handle to be moved into and out of engagement with the rack-bar.

3. In a wrench, the combination of a head provided with a rigid jaw extension; a jaw slidable on the head relative to the rigid jaw, and provided with a rack-bar; a handle provided with a segmental toothed end; an eccentrically-mounted, rotatable pin upon which the handle is carried and by means of which the toothed portion thereof is moved into and out of engagement with the rack-bar; and a member hinged to the pin and adapted to swing outwardly from the head to form a handle for rotating the pin, said member adapted to be forced into locked engagement with the head to maintain the position of the pin and said head having an opening to receive said member.

4. In a wrench, the combination of the head; the fixed and movable jaws; said movable jaw having a rack-bar extension; the handle having a toothed head; the eccentrically-mounted rotatable pin and means including a slide-bar on the handle and a toggle-lever connection between the same and the head for moving said head about said pin and quickly opening and closing the jaws.

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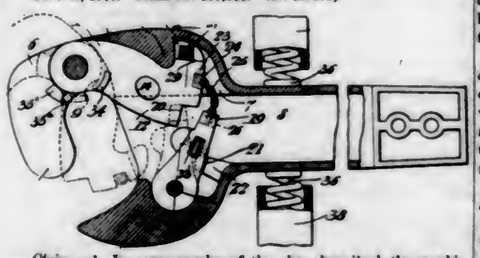
758,267. **SELF-CLEARING RAKE.** JOHN MORRISON, Jr., Troy, N. Y., assignor to John Morrison, Troy, N. Y. Filed Aug. 27, 1902. Serial No. 121,309. (No model.)



*Claim.*—The combination with a rake; of a spring-plate; an adjustable clip embracing and securing together the rake-handle and inner end of said spring-plate; a clearing-plate mounted on the outer end of said spring-plate; and a plate-operating member projecting above the rake-head, substantially as described.

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758,268. **CAR-COUPLING.** ALBERT A. MOSS, Newark, N. J. Filed Nov. 30, 1903. Serial No. 183,218. (No model.)



*Claim.*—1. In a car-coupler of the class described, the combination of a draw-head having a recess or chamber, of a pivoted angular knuckle, one end of which is adapted to swing into and out of said recess, a vertically-sliding dog pivoted within the chamber or recess and provided with a locking-lip adapted to engage the knuckle, and a flexible connection between the knuckle and the locking-lip of said dog.

2. In a car-coupler of the class described, the combination of a draw-head having a recess or chamber provided with a vertically-disposed rib, of a pivoted angular knuckle having terminal hooks adapted to engage said rib, a vertically-sliding locking-dog pivoted within the recess and adapted to engage the knuckle, means for setting the locking-dog, means for opening the knuckle and a flexible connection between the rear end of the knuckle and the locking-dog.

3. In a car-coupler of the class described, the combination of a draw-head having a recess or chamber provided with an inclined track, of a pivoted angular knuckle, one end of which is adapted to swing into and out of said recess, a locking-dog pivoted within the recess and slidable on the track for engagement with the knuckle, an inclined shoulder on the track for holding the locking-dog out of engagement with the knuckle and a flexible connection between said knuckle and locking-dog.

4. In a car-coupler of the class described, the combination of a draw-head having a recess or chamber, a pivoted angular knuckle, one end of which is adapted to swing into and out of said recess, a vertically-sliding dog pivoted within the recess and provided with a locking-lip adapted to engage the knuckle, a kicking device for opening the knuckle, a flexible connection between the knuckle and the locking-lip of the dog and a single lever for setting said sliding dog and operating the kicking device.

5. In a car-coupler of the class described the combination of a draw-head having a recess or chamber provided with a longitudinal strengthening-rib and a laterally-disposed projection, a pivoted angular knuckle adapted to swing into and out of said recess, said knuckle being provided with terminal hooks adapted to engage the lateral projection, a vertically-sliding locking-dog pivoted within the recess and adapted to engage the knuckle, means for setting the locking-dog, and a flexible connection between the locking-dog and the knuckle.

6. In a car-coupler of the class described, the combination of a draw-head having a recess or chamber, of a pivoted angular knuckle provided with coincident notches or recesses adapted to swing into and out of said recess or chamber, a vertically-sliding locking-dog pivoted within the recess and adapted to engage the notches in the knuckle for locking the same in the closed position, means for throwing the locking-dog out of engagement with the knuckle, means for opening the knuckle, and a flexible connection between the knuckle and the locking-dog.

7. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber the upper and lower walls of which are grooved or recessed, of a pivoted angular knuckle, provided with oppositely-disposed lugs adapted to engage said grooves, a vertically-sliding locking-dog pivoted within the recess and adapted to engage the knuckle, means for holding the locking-dog out of operable relation with the knuckle and means for automatically resetting said dog when the knuckle is opened.

8. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber, of a pivoted angular knuckle, one end of which is bifurcated to form a pair of hooked arms adapted to swing into and out of said recess, a cam-flange formed on one of said arms; a rearwardly-swinging and vertically-sliding locking-dog pivoted in the recess and having its free end in locking relation to said arms, a projection on the dog arranged in the path of the cam-flange and adapted to engage the same for elevating the dog, means for holding the dog out of operable relation with the knuckle and a flexible connection between the dog and the knuckle for automatically resetting the former when the latter is opened.

9. In a coupler of the class described, the combination with a draw-head having a recess or chamber, the upper and lower walls of which are grooved or recessed, a pivoted angular knuckle provided with oppositely-disposed lugs adapted to engage said grooves, a vertically-sliding locking-dog pivoted within the recess and adapted to engage the knuckle, means for releasing the locking-dog, and means for opening the knuckle.

10. In a coupler of the class described, the combination with a draw-head having a recess or chamber, of a pivoted angular knuckle, provided with coincident notches or recesses, a vertically-sliding dog pivoted in the recess and provided with a locking-lip adapted to engage the notches in said knuckle, means for releasing and opening the knuckle and a pair of centering-springs mounted in housings, one on each side of the draw-head.

11. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber provided with strengthening-ribs, a pivoted angular knuckle, one end of which is adapted to swing into and out of said recess, a locking-dog pivoted within the recess, a lock-set, a kicking device, an operating-lever having a roller-clevis secured thereto, and a flexible connection passing over the clevis and connecting the locking-dog and the kicking device.



12. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber, a pivoted angular knuckle having its front portion solid and its bifurcated rear portion provided with alined openings and adapted to swing into and out of said recess, there being a vertically-disposed opening formed in the draw-head adapted to receive a locking-pin for connecting the draw-head to a link-and-pin coupler.

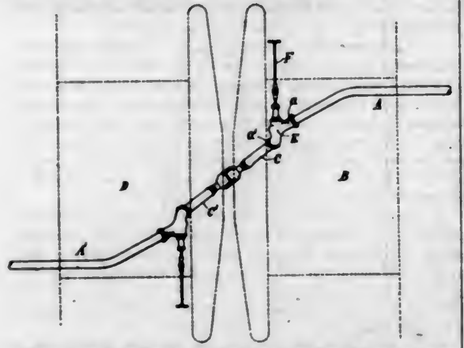
13. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber and provided with oppositely-disposed fixed jaws, ears or lugs formed on one of the fixed jaws, and an angular knuckle pivoted to said fixed jaw and provided with corresponding ears or lugs adapted to engage the lugs thereon for limiting the outward movement of the knuckle, said knuckle being provided with grooves or recesses adapted to receive the lugs on the fixed jaw for limiting the inward movement of said knuckle.

14. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber, a pivoted angular knuckle provided with terminal coincident notches or recesses, a vertically-sliding dog pivoted within the chamber or recess and provided with a locking-lip adapted to engage the notches in the knuckle, eyelets riveted to the knuckle and to locking-lip of the dog, respectively, a flexible connection between said eyelets, a socket formed in the locking-dog, a link seated within the socket for operating the dog, and a pin or rivet passing through the socket and engaging the link.

15. In a car-coupler of the class described, the combination with a draw-head having a recess or chamber provided with a vertically-disposed rib, ears or lugs on one of the fixed jaws, an angular knuckle pivoted to the draw-head and provided with corresponding ears or lugs for engagement with the lugs on the fixed jaw, said knuckle being provided with terminal hooks adapted to engage the rib when the knuckle is closed.

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758,269. **TRAIN-PIPE TERMINAL FOR CAR-HEATING SYSTEMS.** JAMES F. MCILROY, Albany, N. Y., assignor to Consolidated Car Heating Company, Albany, N.Y., a Corporation of West Virginia. Filed Feb. 4, 1904. Serial No. 191,984. (No model.)



*Claim.*—1. A train-pipe terminal for a car-heating system comprising, first, an end valve having its axis at right angles to the car and, second, two coupling branches, one placed at an angle between the axis of the valve and the longitudinal line of the car and the other turned downward at approximately a right angle to the axis of the valve, the former branch being adapted to connect with a diagonal end section of the train-pipe and the latter branch being adapted to communicate with a hose-pipe.

2. A train-pipe terminal for a car-heating system comprising, first, an end valve having its axis at right angles to the line of the car with an operating-handle F projecting in line with the axis of the valve and, second, two branches one a coupling branch a at an intermediate angle between the axis of the valve and the longitudinal line of the car and the other a branch a' turned downward and provided with a hose-coupling.

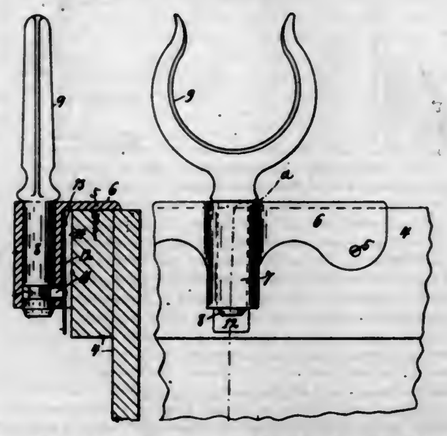
3. In a car-heating system the combination with a train-pipe lying along one side of the center of the car but turned inward toward the center of the car at its end of a terminal E comprising a combined valve and coupler having the diverging branches a and a' communicating respectively with the train-pipe and a coupling-hose, and provided also with an operating-handle F extending laterally beyond the edge of the car-platform.

4. A train-pipe terminal for a car-heating system, comprising a combined end valve and coupler having two branches, one a diagonal branch adapted to communicate with the train-pipe and the other a downward branch adapted to communicate with the hose, and having also a projecting valve-handle for operating the valve from the side of the car.

5. In a car-heating system, the combination with a train-pipe lying along one side of the center of a car but turned inwardly so as to terminate near the center of the car, a terminal for said train-pipe comprising a combined end valve and coupler having two diverging branches, one communicating with the train-pipe and the other provided with a hose-coupling, a hose communicating at its inner end with the latter branch of the said terminal and at its outer end provided with a coupler adapted to connect with a similar coupler on the corresponding hose of an adjacent car, and an operating-handle for the end valve extending therefrom toward the edge of the car-platform.

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758,270. **OAR-LOCK.** EDWARD F. MCINTYRE, St. Paul, Minn., assignor of one-half to Oscar Rosland, St. Paul, Minn. Filed May 7, 1903. Serial No. 156,011. (No model.)



*Claim.*—In an oar-lock, the combination with a frame or plate securable to the gunwale of a boat and having a socket extending downward at the inner side of the gunwale and provided with a vertical recess upon the side nearest the gunwale, an aperture from the recess into the socket, a spring-arm secured with one end in the upper part of the recess and having its free end projecting below the socket, to form a finger-catch, a tooth formed upon the spring-arm and projecting through the aperture into the socket, a fork having a cylindrical shank adapted to be inserted in the socket and having an annular groove for the tooth of the spring-arm to engage.

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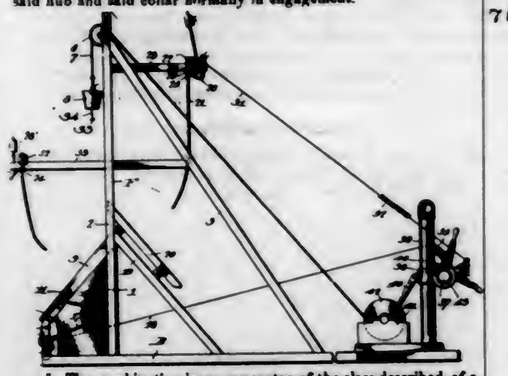
758,271. **AUTOMATIC BUCKET-DUMPING DEVICE.** JOHN MCKINNON, Prescott, Ariz. Filed May 18, 1903. Serial No. 157,679. (No model.)

*Claim.*—1. The combination in apparatus of the class described, of a supporting-frame, hoisting apparatus associated with said frame, an ore-bucket carried by said hoisting apparatus, a pivotally-mounted trip having a counterweight, a knob provided on the under surface of the ore-bucket and adapted to engage said trip, and resilient means for swinging said trip so as to engage with said knob.

2. The combination in an apparatus of the class described, of a supporting-frame, a hoisting apparatus associated with said frame, an ore-bucket carried by said hoisting apparatus and provided on its under surface with a knob, a transverse bar adjustably mounted in said supporting-frame, a pivoted trip suspended from said bar, and means for bringing said trip into engagement with said knob.

3. The combination in apparatus of the class described, of a supporting-frame, hoisting mechanism associated with said frame, an ore-bucket carried by said hoisting mechanism, a trip pivotally mounted in said support and adapted to empty said bucket, an operating-lever for said trip, a line connecting said operating-lever with said trip, and a spring-actuated catch adapted to engage with said operating-lever to lock it automatically against backward movement.

4. The combination in apparatus of the class described, of a supporting-frame, hoisting apparatus associated with said frame, an ore-bucket carried by said hoisting apparatus, a trip pivotally mounted on said support, a counterweight adjustably secured to said trip and adapted to counterbalance it, a pivoted operating-lever, a resilient connection between said operating-lever and said trip, a hub having a ratchet-face to which said operating-lever is attached, a stationary collar having a ratchet-face adapted to engage with the face of said hub, and a spring adapted to keep the ratchet-faces of said hub and said collar normally in engagement.



5. The combination in an apparatus of the class described, of a supporting-frame, a shaft-housing associated with said frame, said shaft-housing having a sloping top, a door hinged at the top of said housing and provided with vertical flanges forming sides, means for keeping said door normally closed, hoisting mechanism associated with said frame, an ore-bucket carried by said hoisting mechanism and adapted for movement within said shaft-housing, and a dumping device independent of the door adapted to deposit the contents of said ore-bucket on the door at the top of the housing.

6. The combination in apparatus of the class described, of a supporting-frame, a shaft-housing associated with said frame, hoisting mechanism associated with said frame, a bucket carried by said hoisting mechanism and adapted to move up and down in said housing, an inclined door at the top of said housing, a counterweight carried by said door to counterbalance the weight thereof, a spring adapted to keep said door normally closed, means connected with said door for opening it when desired, and means provided on said frame for emptying said bucket.

7. The combination in apparatus of the class described, of a supporting-frame, a shaft-housing associated with said frame, a door or cover for said housing set on an incline, hoisting apparatus associated with said frame, a bucket carried by said hoisting apparatus and adapted to move up and down in said housing, means for dumping the contents of said bucket on said door or cover, and a pivotally-mounted chute adapted to receive the contents of said bucket from said door or cover.

8. The combination in apparatus of the class described, of a supporting-frame, hoisting mechanism associated with said frame, an ore-bucket carried by said hoisting mechanism, means for dumping said bucket, a pivotally-mounted chute adapted to receive the contents of said bucket, a line having its ends attached one to each side of said chute, a winding-drum around which said line is passed, and means for rotating said drum to swing said chute laterally.

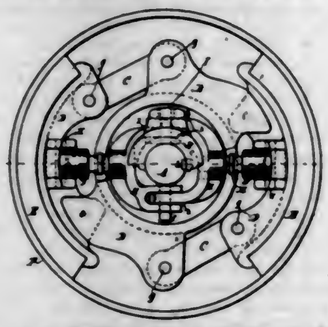
9. The combination in apparatus of the class described, of a supporting-frame, hoisting mechanism associated with said frame, an ore-bucket carried by said hoisting mechanism, a pivotally-mounted chute adapted to receive the contents of said bucket, a line having its ends attached one to each side of said chute, a winding-drum around which said line is passed, antifriction-rolls provided on said frame over which said line travels, and weights suspended from said line between said antifriction-rolls on either side of said winding drum.

10 The combination in apparatus of the class described, of a supporting-frame, hoisting mechanism associated with said frame, an ore-bucket carried by said hoisting mechanism, a pivoted chute adapted to receive the contents of said ore-bucket, a line attached one end at each side of said chute, a winding-drum around which said line is passed, and an idle drum rotatably mounted on a suitable pivot and adapted to be engaged by said line when said chute is swung far to either side of its normal position.

11. The combination in apparatus of the class described, of a supporting-frame, a shaft-housing associated with said frame, a hoisting mechanism carried by said frame, a bucket supported by said hoisting mechanism, means for dumping said bucket, an inclined door at the top of said housing upon which the contents of said bucket may be dumped, and a temporary chute inclined oppositely to said door and supported on said framework also adapted to receive the contents of said bucket when dumped.

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**758,272. FRICTION-CLUTCH. Moses C. Nixon, Fort Wayne, Ind. Filed Dec. 18, 1900. Serial No. 40,393. (No model.)**



*Claim.*—1. In a friction-clutch a driving-shaft; an annular rim sleeved on said shaft; and a driving-hub fast on the shaft, in combination with friction-shoes adapted to engage the inner surface of the rim; a link pivotally connected near one end of each friction-shoe and also pivotally connected to the said driving-hub; lugs formed on the driving-hub and between which the other ends of the friction-shoes are adapted to move; a toggle-joint lever pivoted at its outer ends to the friction-shoes; and means adapted to press the toggle-joint lever to expand the friction-shoes.

2. In a friction-clutch a driving-shaft; an annular rim sleeved on said shaft; and a driving-hub fast on the shaft in combination with friction-shoes adapted to engage the inner surface of the rim; a link pivotally connected to each friction-shoe and also pivotally connected to the said driving-hub; a toggle-joint lever adapted to engage the friction-shoes and the parts of which are forked to embrace the shaft and connected by suitable pivot-pins; and a sleeve provided with ears or projections each having a transverse oblong hole formed therein to engage one of the said pivot-pins.

3. In a friction-clutch a driving-shaft, and an annular rim sleeved on said shaft, in combination with a driving-hub fast on the shaft; friction-shoes adapted to engage the inner surface of the rim; links pivotally connecting one end of each shoe with the driving-hub; lugs formed on the driving-hub and between which the other ends of the friction-shoes are adapted to move; and means for expanding the said shoes.

4. In a friction-clutch a driving-shaft, and an annular rim sleeved on the shaft, in combination with a driving-hub fast on the shaft; friction-shoes adapted to engage the inner surface of the rim and suitably supported from the driving-hub; a toggle-joint lever adapted to engage the friction-shoes and the parts of which are forked to embrace the shaft and connected by suitable pivot-pins; and a sleeve provided with ears or projections each having a transverse oblong hole formed therein to engage one of the said pivot-pins.

5. In a friction-clutch a driving-shaft; an annular rim sleeved on said shaft; and a driving-hub fast on the shaft, in combination with friction-shoes adapted to engage the inner surface of the rim; links pivotally connected to each friction-shoe and also pivotally connected to the said driving-hub; a toggle-joint lever pivoted at its outer ends to the friction-shoes; and means adapted to press the toggle-joint lever in a direction substantially parallel with the axis to expand the friction-shoes.

6. In a friction-clutch a driving-shaft, and an annular rim sleeved on the shaft, in combination with a driving-hub fast on the shaft; friction-shoes adapted to engage the inner surface of the rim and suitably supported from the driving-hub; a toggle-joint lever adapted to engage the friction-shoes and the parts of which lever are forked to embrace the shaft, and having one prong of each of the forks slotted or notched; pivot-pins adapted to be engaged by the said notches or slots; and a sleeve provided with ears or projections each having a transverse oblong hole formed therein to engage one of the said pivot-pins.

7. In a friction-clutch a driving-shaft; an annular rim sleeved on said shaft; and a driving-hub fast on the shaft in combination with friction-shoes adapted to engage the inner surface of the rim; a link pivotally connected to each friction-shoe and also pivotally connected to the said driving-hub; lugs formed on the driving-hub and between which one end of the friction-shoe is adapted to move; a toggle-joint lever pivoted at its outer end to the friction-shoes; and suitable means adapted to operate the toggle-joint lever to expand the friction-shoes.

8. In a friction-clutch a driving-shaft, and an annular rim sleeved on the shaft in combination with a driving-hub fast on the shaft; friction-shoes adapted to engage the inner surface of the rim and suitably supported from the driving-hub; a toggle-joint lever adapted to operate the friction-shoes and the parts of which are forked to embrace the shaft and having one prong of each of the forks slotted or notched; pivot-pins adapted to engage the said notches or slots and suitable means to operate the toggle-joint lever to expand the friction-shoes.

9. In a friction-clutch a driving-shaft; and an annular rim sleeved on said shaft, in combination with a driving-hub fast on said shaft; friction-shoes adapted to engage the inner surface of the rim; a link pivotally connecting each shoe with the driving-hub; and means acting in a direction substantially parallel with the axis for expanding the friction-shoes.

10. In a friction-clutch, a driving-shaft; an annular rim sleeved on said shaft; in combination with friction-shoes adapted to engage the inner surface of the rim; a link pivotally connecting each friction-shoe with the said driving-hub; a toggle-joint lever adapted to expand the friction-shoes, the parts of said lever being forked to embrace the shaft, and having one prong of each of the forks slotted or notched; pivot-pins adapted to engage said notches or slots; and means for operating said toggle-joint lever, to expand the friction-shoes.

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**758,273. BOTTLE-CAP. Edwin Norton, New York, N. Y. Filed Dec. 14, 1903. Serial No. 185,011. (No model.)**



*Claim.*—1. The combination with a bottle, jar or other vessel having an external shoulder at its neck or mouth, of a cork or sealing disk, a cork-holder disk and a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference and a flat annular bearing-rim, and provided with an integral thumb-piece, a tongue extending across the annular bearing-rim and a tearing-strip marked off by scores or weakened lines extending across the depending crimping-flange and adapted to be separated by tearing along said scores or weakened lines by force applied through the thumb-piece, substantially as specified.

2. In a closure for bottles, jars or other vessels, the combination with a cork or sealing disk, of a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference and an annular bearing-rim and provided with a tearing-strip marked off by weakened lines and extending across the crimping-flange, a thumb-piece separated from said annular rim by a curved slit or cut and a tongue extending across the bearing-rim and uniting the thumb-piece and tearing-strip, said tearing-strip being adapted to be removed by tearing along its marginal weakened lines by force applied through the thumb-piece.

3. In a closure for bottles, jars or other vessels, the combination with a cork or sealing disk, of a cork-holder disk and a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference, an annular bearing-rim, and provided with a central circular thumb-piece, a tongue extending across the bearing-rim, and a tearing-strip extending across the crimping-flange and adapted to be separated by tearing along said scores or weakened lines by force applied through the thumb-piece, substantially as specified.

4. In a closure for bottles, jars or other vessels, the combination with a cork or sealing disk, of a cork-holder disk and a clamp-disk having a depending crimping-flange, an annular bearing-rim, and provided with a central circular thumb-piece, a tongue extending across the bearing-rim, and a tearing-strip extending across the crimping-flange, said thumb-piece having a raised or embossed central portion to stiffen the same and form a seat for the finger or thumb in grasping the same, substantially as specified.

5. In a closure for bottles, jars or other vessels, a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference, an annular bearing-rim, a tearing-strip extending across the crimping-flange, a tongue extending across the bearing-rim, and a central thumb-piece inside the bearing-rim, said tearing-strip being adapted to be removed by tearing along its marginal weakened lines by force applied through the thumb-piece, substantially as specified.

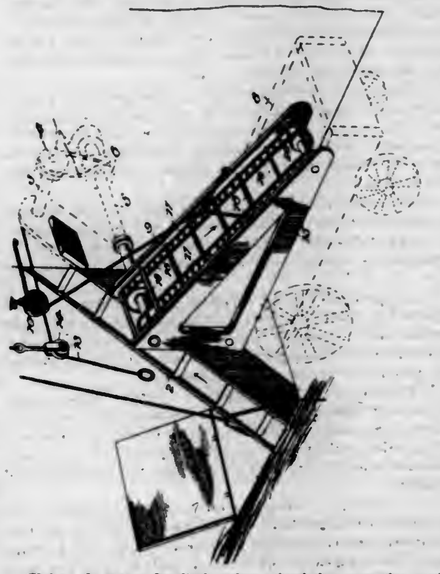
6. In a closure for bottles, jars or other vessels, a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference, an annular bearing-rim, a tearing-strip extending across the crimping-flange, a tongue extending across the bearing-rim, and a central thumb-piece inside the bearing-rim, said clamp-disk having a circular slit or cut around the thumb-piece, parallel slits or cuts at the edges of the tongue and scores or weakened lines bounding the tearing-strip, said tearing-strip being adapted to be removed by tearing along its marginal weakened lines by force applied through the thumb-piece, substantially as specified.

7. In a closure for bottles, jars or other vessels, a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference, an annular bearing-rim, a tearing-strip extending across the crimping-flange and a thumb-piece inside the bearing-rim for removing the tearing-strip, said tearing-strip being adapted to be removed by tearing along its marginal weakened lines by force applied through the thumb-piece, substantially as specified.

8. In a closure for bottles, jars or other vessels, a clamp-disk having a depending crimping-flange solid and continuous throughout its whole circumference, an annular bearing-rim, a tearing-strip extending across the crimping-flange and a thumb-piece inside the bearing-rim for removing the tearing-strip, the scores or weakened lines of the tearing-strip terminating at or near the point where the crimping-flange bends under the shoulder of the bottle-neck, said tearing-strip being adapted to be removed by tearing along its marginal weakened lines by force applied through the thumb-piece, substantially as specified.

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**758,274. UNLOADING DEVICE. Franklin G. Pace, Clarinda, Iowa. Filed July 30, 1903. Serial No. 167,625. (No model.)**

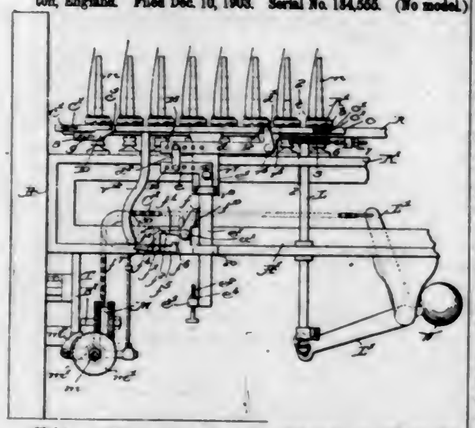


*Claim.*—In means for discharging a loaded wagon, the combination of a hopper for receiving the load, an elevator for conveying the load from the hopper to the required point, a shaft connected

with said elevator so as to derive motion therefrom, an approximately triangular-shaped frame comprising spaced side pieces, shafts connecting the said side pieces, sprocket-wheels applied to the said shafts, sprocket-chains supported by means of the said sprocket-wheels, drag-bars connecting the sprocket-chains, a weight connected with the frame to counterbalance and normally hold it up out of the way, and means for releasing the frame from the influence of the counterbalancing-weight to permit it to automatically descend upon the load, substantially as specified.

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**758,275. RING-SPINNING APPARATUS. GEORGE PALEY, Preston, England. Filed Dec. 10, 1903. Serial No. 184,565. (No model.)**



*Claim.*—1. In spinning or twisting apparatus, an annular support, a traveler in operative engagement therewith, and separate means to automatically vary the resistance of the traveler and thereby equalize the tension of the yarn, said means acting upon the traveler throughout its circular path of movement.

2. In spinning or twisting apparatus, an annular support, a traveler in operative engagement therewith, and separate means to automatically apply a brake to the traveler continuously throughout its path of movement.

3. In spinning or twisting apparatus, an annular support, a traveler in operative engagement therewith, and means operative independently of the pull of the yarn to vary the resistance of the traveler in accordance with variations in the diameter of the yarn-receiver or the yarn-load, said means acting continuously upon the traveler throughout its path of movement.

4. In spinning or twisting apparatus, an annular support, a traveler in operative engagement therewith, and separate means to increase or decrease the resistance of the traveler as the diameter of the yarn-receiver or yarn-load increases or diminishes, said means acting upon the traveler throughout its circular movement upon the annular support.

5. In spinning or twisting apparatus, a ring, a traveler in operative engagement therewith, and means to automatically and variably brake the traveler outside the ring throughout the path of movement of the traveler and thereby equalize the tension on the yarn.

6. In spinning or twisting apparatus, a ring having a double-flanged head, a traveler in operative engagement with the head, and concentric, annular means to coöperate with and vary the resistance of the traveler in accordance with variations in the diameter of the yarn-receiver or the yarn-load thereon.

7. In spinning or twisting apparatus, a support having an annular, laterally-enlarged head, a traveler straddling the head and in operative engagement therewith, and means to effect a graduated braking action on the traveler, to equalize the tension on the yarn, said means acting upon the traveler throughout its circular path of movement.

8. In spinning or twisting apparatus, a support having an annular, laterally-enlarged head, a traveler straddling the head and in operative engagement therewith, and means to apply a brake to the free end of the traveler outside the head and throughout the path of movement of the traveler.

9. In spinning or twisting apparatus, a ring, a traveler revoluble thereon, and means operative independently of the yarn to variably retard the movement of the traveler in accordance with the increase or decrease of the diameter of the yarn-receiver or the yarn load thereon, said means operating upon the traveler throughout the circular path of movement thereof.

10. In spinning or twisting apparatus, a ring, a traveler in operative engagement therewith, a concentric annular brake to coöperate with the traveler, and means to automatically govern the operation of the brake and its action upon the traveler.

11. In spinning or twisting apparatus, a ring, a traveler in operative engagement therewith, an annular brake to coöperate with the traveler throughout its path of movement and means to raise the brake against the traveler and to lower said brake as the diameter of the yarn-receiver or the yarn-load thereon increases or decreases.

12. In spinning or twisting apparatus, a ring, a traveler in operative engagement therewith, an annular brake mounted on the ring below the traveler, and means to raise and lower the brake to thereby increase or decrease the action thereof upon the traveler.

13. In spinning or twisting apparatus, a ring, a traveler in operative engagement therewith, an annular brake rotatively mounted on the exterior of the ring below the traveler, the brake being provided with a cam, and means to turn the brake and through the cam effect vertical movement of said brake to vary the action thereof upon the traveler.

14. In a spinning or twisting apparatus, a vertically-reciprocating ring-rail, a series of rings mounted thereon and each having a traveler in operative engagement therewith, and means to automatically brake the travelers throughout their circular paths of movement during a predetermined portion of the traverse of the ring-rail.

15. In a spinning or twisting apparatus, a vertically-reciprocating ring-rail, a series of rings mounted thereon and each having a traveler in operative engagement therewith, and means to brake the travelers throughout their circular paths of movement at the beginning of the rise of the ring-rail and gradually decrease such braking action as the rail approaches the top of its traverse, to thereby equalize the tension on the yarn.

16. In a spinning or twisting apparatus, a vertically-reciprocating ring-rail, a series of rings mounted thereon and each having a traveler in operative engagement therewith, and means to retard the movement of the travelers throughout their circular paths of movement at the bottom of the traverse of the ring-rail and gradually decrease such retardation as the rail rises, and to reverse the operation as the rail descends.

17. In a spinning or twisting apparatus, a vertically-reciprocating ring-rail, a series of rings mounted thereon and each having a traveler in operative engagement therewith, a concentric, annular brake for each traveler, and means to simultaneously operate the brakes during the traverse of the ring-rail, to gradually diminish their action as the rail rises and gradually increase their action as the rail descends.

18. In a spinning or twisting apparatus, a ring-rail, means to traverse it for the filling wind, a series of rings mounted on the rail and travelers in operative engagement with the rings, means to variably brake the travelers according to the movement of the ring-rail in its traverse, and a controlling device for such means to compensate for the "gain" of the traverse, the braking means for the travelers acting upon the same throughout their circular paths of movement.

19. In a spinning or twisting apparatus, a vertically-reciprocating ring-rail, a series of rings mounted thereon and each having a traveler in operative engagement therewith, a brake concentric with each ring, located below and to coöperate with the traveler thereon, and means to operate said brakes in unison to act upon the travelers with maximum or minimum effect as the diameter of the yarn loads increases or decreases, respectively.

20. In a spinning or twisting apparatus, a series of rotatable yarn-receivers, a ring-rail, a series of rings mounted thereon each provided with a traveler, means to traverse the ring-rail to lay the yarn with filling wind upon the yarn-receivers, individual traveler-brakes, and means to operate the brakes with maximum effect at the beginning of each rise of the rail and to reduce their effect to a minimum as the rise is completed, and conversely on the descent of the rail, to equalize the tension of the yarn throughout the traverse, the brakes acting upon the travelers throughout their circular paths of movement.

21. In a spinning or twisting apparatus, a ring-rail, a series of rings mounted thereon, each having a traveler in operative engagement therewith, a corresponding series of rotatable yarn-receivers, a circular brake concentric with each ring to coöperate with each traveler, and means to simultaneously increase or decrease the action of the brakes as the diameter of the yarn-receivers or the yarn loads thereon increases or decreases.

22. In a spinning or twisting apparatus, a reciprocating ring-rail, a series of rings thereon each having a traveler in operative engagement therewith, a brake for and to coöperate with each traveler, means to traverse the ring-rail and cause a "gain" thereof on each traverse, mechanism to apply the brakes at the beginning of the rise of the rail and to gradually diminish their action as the traverse continues, and to reverse such action as the rail descends, to equalize the tension on the yarn throughout the traverse, a device to set the brake mechanism at the bottom of each traverse and compensate for the "gain" of the rail, and means operated by winding down of the rail to automatically reset the brake mechanism and compensating device in readiness for a fresh operation of the apparatus.

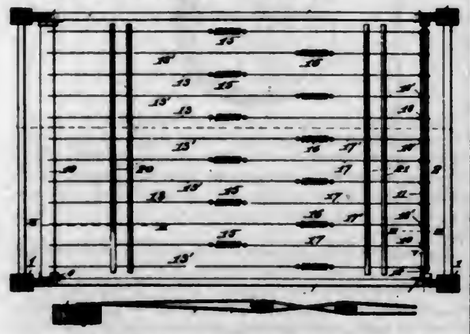
23. In a spinning or twisting apparatus, a reciprocating ring-rail, a series of rings thereon each having a traveler in operative engagement therewith, a brake for and to coöperate with each traveler, connections between and to operate the brakes simultaneously, a spring to act through said connections and apply the brakes with maximum effect when the rail is at the bottom of its traverse, means to traverse the ring-rail, and means to move the brakes in opposition to the spring as the rail rises, to gradually decrease the action of the brakes upon the travelers, the descent of the rail acting through said means to permit the spring to gradually increase the action of the brakes.

24. In a spinning or twisting apparatus, a ring-rail, a series of rings mounted thereon, a traveler in operative engagement with each ring, an annular brake mounted externally upon each ring below its traveler, means to turn the brakes simultaneously upon the rings, and means to raise the brakes against the outer portions of the travelers when said brakes are turned in one direction, to retard the movement of the travelers.

25. In a spinning or twisting apparatus, a series of rotatable yarn-receivers, a ring-rail provided with a corresponding series of rings and travelers, an annular brake for each traveler and concentric with its ring, connections between the brakes, and means to move the brakes simultaneously to engage the travelers outside the rings when the diameter of the yarn-receivers or their yarn loads increases, and to withdraw the brakes from the travelers when such diameter diminishes, to equalize the tension on the yarn irrespective of the diameter of the yarn-receivers or their yarn loads.

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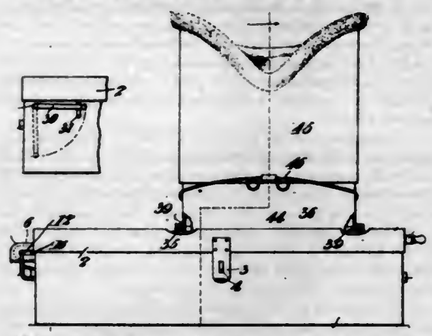
**758,276. BED-BOTTOM. JOHN G. PEACE, Micanopy, Fla. Filed Oct. 9, 1902. Serial No. 126,414. (No model.)**



*Claim.*—In a bed-bottom, the combination with the side rails of three approximately U-shaped brackets, two being secured to the side rails near one end of the bed and one being secured near the opposite end of the bed, an approximately L-shaped bracket secured near that end of the bed that is provided with only one U-shaped bracket, a pair of cross-bars, unbroken alternate long and short wires secured rigidly at one end to one of the cross-bars, another set of alternate long and short wires, coil-springs connected at one end to the second set of alternate long and short wires, said spring surrounding the other cross-bar but spaced therefrom, loops formed at the end of the coil-springs and through which the second set of alternate long and short wires pass, and a coil-spring connecting the free ends of the long and short wires of the opposite cross-bars.



**758,277. APPARATUS FOR DEVELOPING AND FIXING PHOTOGRAPHIC PLATES AND PRINTS. WILLIAM A. PETERS, Johnstown, Pa., assignor of two-fifths to Edward L. Cook, Johnstown, Pa. Filed Jan. 16, 1904. Serial No. 189,362. (No model.)**



*Claim.*—1. In a developing-machine, a developing-tray, a plate-carrier arranged in said tray, and means for raising and lowering said carrier in said tray, said means being adapted to hold said carrier horizontal at the bottom of the tray and substantially horizontal near the top of the tray, but being adapted to impart a tilt to the carrier intermediate of its upper and lower positions.

2. In a developing-machine, a developing-tray, inclined ways arranged in said tray, a plate-carrier having one end resting on said ways, and means engaging the other end of said carrier for raising and lowering the carrier in the tray.

3. In a developing-machine, a developing-tray, a movable carrier in said tray, a swinging hanger for said carrier, and means coöperating with said swinging hanger for raising and lowering said carrier in said tray and for imparting to said carrier a slight tilt during its movement from the bottom to the top of the tray.

4. In a developing-machine, a developing-tray, a plate-carrier disposed in said tray in a substantially horizontal plane, and means for raising said carrier in said tray from a horizontal position at the bottom to a horizontal position at the top and imparting to said carrier a slight tilt during its upward movement.

5. In a developing-machine, a developing-tray, inclined ways arranged in said tray, a carrier having one end resting on said ways, and a swinging hanger at the other end of said carrier upon which the carrier is pivotally supported.

6. In a developing-machine, a developing-tray having a plate-discharge passage at one end thereof, a plate-carrier movably supported in said tray, means for raising said carrier into the plane of said discharge-passage, and means for securing the carrier in that plane to permit the plate to slide from the carrier through said passage when the developing-tray is tilted.

7. In a developing-machine, a developing-tray having a plate-discharge passage at one end of said tray near the top thereof, a pocket formed beneath said passage to receive the developer when the tray is tilted to discharge a plate through said passage, and means for raising a plate in the developing-tray to the plane of the discharge-passage.

8. In apparatus of the character specified, a developing-tray having a plate-discharge passage at one end of said tray, inclined ways extending from the inner end of said discharge-passage to the bottom of said tray, a plate-carrier having one end resting on said ways, and means engaging the other end of said plate-carrier for raising it along said ways until it lies in the plane of the bottom of said discharge-passage.

9. In apparatus of the character specified, a developing-tray having a plate-discharge passage at one end thereof near the top, the floor of said passage being extended inward to form a pocket to receive the developer when the tray is tilted, and means for raising a plate in said developing-tray into the plane of the floor of said passage to permit it to slide out through said passage when the tray is tilted.

10. In apparatus of the character specified, a developing-tray having a plate-discharge opening in one end thereof near the top and having a horizontal shelf at the lower margin of said opening, a movable plate-carrier in said tray, and means for raising and lowering said carrier in the tray, said means being adapted to bring said carrier into alinement with said shelf.

11. In apparatus of the character specified, a developing-tray

having a plate-discharge passage in one end thereof, said discharge-passage having a floor including a pivoted section, and automatic means for keeping the pivoted floor-section of said passage normally raised to contact with the top of the passage.

12. In apparatus of the character specified, a developing-tray having a horizontally-disposed discharge-passage near the top of the tray, a closure member for said discharge-passage pivoted at the bottom of the discharge-passage and having the free end thereof provided with a downwardly-turned portion of greater depth than the passage, and means for keeping said closure member normally in operative position.

13. In apparatus of the character specified, a developing-tray having a horizontally-disposed discharge-passage, a closure member pivoted at the bottom of said discharge-passage and having the free end thereof disposed inward, said closure member having projecting studs upon the ends thereof, slides arranged at the sides of said passage and having cam-slots engaging the studs upon said closure, said slides having the ends thereof projected outside of said tray, and means for keeping said slides normally projected and thereby holding said closure member in operative position.

14. In apparatus of the character specified, a developing-tray, a cover secured upon said tray, a slide mounted in said cover, and means for observing the process of development removably secured upon said cover above said slide.

15. In apparatus of the character specified, a vision-tube comprising telescopically-connected sections, a closure in said tube, means for keeping said closure normally closed, and mechanism operated by pressure at the outer end of the tube for opening said closure.

16. In apparatus of the character specified, a vision-tube comprising telescopically-connected sections, one of said sections being fixed in position and the other movable thereon, an automatic closure member within said tube, and mechanism operated by the relative movement of said tube-sections for opening said closure.

17. In apparatus of the character specified, a vision-tube comprising a fixed lower section and an upper section movably mounted thereon, a closure member disposed in said movable upper section, means for keeping said closure normally closed, and connections between said closure and said lower section whereby the depression of the upper section will cause the opening of said closure.

18. In apparatus of the character specified, a vision-tube comprising telescopically-connected sections, means for keeping said tube normally extended, a closure in said tube, means for keeping said closure normally closed, and mechanism operated by the contraction of the vision-tube to open said closure.

19. In apparatus of the character specified, a tank, a pivoted closure member at the top of said tank, said closure member being of greater width than the tank and disposed obliquely across the tank when in operative position, and a developing-tray having a discharge-chute extending beyond the wall thereof, said discharge-chute being adapted to enter the top of said tank and open the closure therein.

20. In apparatus of the character specified, a developing-tray having a plate-discharge passage, an automatic closure for said passage, a chute surrounding said passage and being extended beyond the wall of the developing-tray, a tank adapted to fit over said chute, an automatic closure for said tank, said closure being adapted to open when the tank is fitted over said chute, and mechanism external to the developing-tray which is operated by fitting said tank over said chute to open the closure of the passage.

21. In apparatus of the character specified, a developing-tray, a carrier movably supported in said tray, means for securing said carrier in substantially horizontal position near the top of the tray, and means for supporting a negative just above said carrier and in the plane parallel therewith.

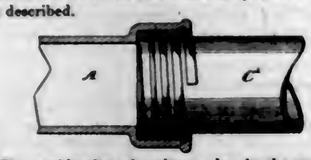
22. In apparatus of the character specified, a developing-tray, a carrier movably supported within said tray, means for securing the carrier in substantially horizontal position near the top of said tray, means for supporting a negative just above said carrier and parallel thereto, and means for cutting off or admitting light to said negative.

23. In apparatus of the character specified, a developing-tray, said developing-tray having an opening at the top, a carrier movably supported within said tray, means for securing said carrier in horizontal position near the top of said tray, and a negative-supporting frame removably secured in the opening at the top of said developing-tray.

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758,278. PIPE-JOINT. WILLIAM M. RAPP, Atlanta, Ga. Filed Oct. 31, 1901. Serial No. 80,595. (No model.)

*Claim.*—1. The combination of a pipe, a member provided on its end with an exterior screw-thread which tapers inwardly, and a packing of lead or other suitable material molded between said pipe and member and about the screw-thread upon the latter, substantially as described.




2. The combination of a pipe, a plug in the end thereof provided with an exterior screw-thread which tapers inwardly, and a packing of lead or other suitable material molded between said pipe and plug and about the screw-thread upon the latter, substantially as described.

3. The combination of a pipe, a member provided on its end with an exterior screw-thread which tapers inwardly, and a packing of lead or other suitable material molded between said pipe and member and about the screw-thread upon the latter, said pipe being provided with a recess B into which said packing keys, substantially as described.

4. The combination of a pipe, a plug in the end thereof provided with an exterior screw-thread which tapers inwardly, and a packing of lead or other suitable material molded between said pipe and plug and about the screw-thread upon the latter, said pipe being provided with a recess B into which said packing keys, substantially as described.

5. A plug, as C, provided with an exterior screw-thread which tapers inwardly, substantially as described.

6. A plug, as C, provided with an exterior screw-thread which tapers inwardly, and with means, as E, for engagement by a wrench or the like, substantially as described.

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758,279. PUNCHING-BAG. HARRY RHODES, Chicago, Ill. Filed Sept. 30, 1903. Serial No. 175,220. (No model.)




*Claim.*—1. In a punching-bag, the combination with a cover having an opening at one end, a rigid member within the cover having provisions for securing suspending means thereto, a separate rigid cooperating member lying without the cover, and independently-movable clamping means for removably uniting the two members and securing the same respectively against the inner and outer surfaces of the cover.

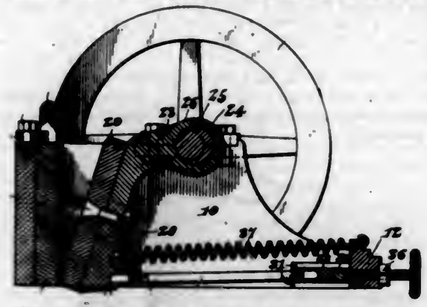
2. In a device of the character described, the combination with a punching-bag provided with an aperture in its upper end, a body provided with a hollow stem adapted to project through the aperture, a cap adapted to fit over the stem to clamp the casing between itself and the body, means carried by the stem to keep the cap down on the head, and a suspending means secured to the body.

3. In a device of the character described, the combination with a punching-bag, provided with an aperture in its upper end, a semispherical body provided with a threaded stem adapted to project through the aperture, a semispherical cap provided with an aperture through which projects the stem, a nut mounted on the stem, and a suspending-cord having a knot in its lower end to be received by the body.

4. In a punching-bag the combination with the cover, of a hollow semispherical member within the cover, a complementary member having provisions for securing suspending means thereto without the cover, a threaded stem on the inner member and an independent nut on the stem.



758,280. ROCK AND ORE CRUSHER. HOMER M. SACKETT, Telluride, Colo. Filed May 23, 1902. Serial No. 108,682. (No model.)




*Claim.*—1. In a crusher of the class described, the combination with a supporting-frame having oppositely-disposed seats, of a jaw-plate having a handle on its upper end, and provided with portions on its opposite side edges that detachably engage in the seats, and a turn-button mounted upon the frame between the seats and engaging over the top of the jaw-plate within the handle to hold said plate in place in said seats.

2. In a crusher of the class described, the combination with a frame comprising a boxing having seats in the upper portion of its opposing inner sides, said seats tapering to their lower ends and toward the inner faces of said sides, of a jaw-plate having tapering lugs that project from its side edges and detachably fit in the seats, said lugs conforming to the shape of said seats, and a turn-button rotatably mounted on the upper end of the boxing between the seats and movable over the upper edge of the jaw-plate.

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758,281. COMBUSTION STRUCTURE. GILES C. SAVAGE, Nashville, Tenn. Filed Apr. 9, 1903. Serial No. 151,853. (No model.)



*Claim.*—1. The herein-described air-feeding structure for combustion structures, consisting of a casing having a partition extending substantially parallel to the front and rear walls of said casing and dividing the same into the air-feeding conduits, one of said conduits having inlet for air for primary combustion and opening downwardly into the space below the bottom of the other conduit, and the other conduit opening near the top of the casing, a passage for admitting air to the latter conduit, said conduits being so disposed that air for supporting primary combustion is drawn downwardly and discharged into the ash-pit below the grate-bars and the air for supporting secondary combustion is discharged into the fire-pot above the burning mass of fuel, substantially as described.

2. The herein-described removable air-feeding structure for combustion structures, such as open grates, consisting of a box or casing having a partition extending substantially parallel to the front and rear walls of the box or casing and dividing the said box or casing into two air-feeding conduits, one of said conduits having an inlet for air for primary combustion and opening downwardly into the space below the bottom of the other conduit, and the other conduit opening near the top of the box, a passage for admitting air to said latter conduit, said conduits being so disposed that air for supporting primary combustion is drawn downwardly and discharged into the ash-pit below the grate-bars when the feeder is in place and the air for supporting secondary combustion is discharged into the fire-pot above the burning mass of fuel, substantially as described.

3. The herein-described improvement in combustion structures comprising a portable casing or box adapted to be placed in front of the grate, the front wall of said box or casing having an opening near its top adapted to receive air, and a partition dividing said box into two conduits, one extending downwardly and opening at a point below the grate of the combustion structure when the box or casing is in place, and the other conduit extending upwardly and opening into the fire-pot and adapted to discharge air into the products of combustion resulting from the primary combustion of the grate, substantially as described.

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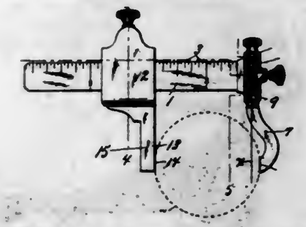
758,282. COMBINATION IMPLEMENT. BERNHARD P. SCHUBERT, Washington, D. C., assignor of one-half to Rudolph Simms, Washington, D. C. Filed June 20, 1903. Serial No. 162,414. (No model.)




*Claim.*—The combination with a pipe comprising a bowl, a stem and an enlarged portion to the stem whereby the pipe simulates a pistol; of an apertured plate embedded and secured within the enlarged portion, a cutting-lever pivoted to the plate, and a spring for controlling the movement thereof, said lever having the appearance of the trigger of a pistol.

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758,283. CALIPERS. FRANK SHAVER, Camillus, N. Y. Filed June 8, 1903. Serial No. 160,572. (No model.)




*Claim.*—1. In a caliper, the combination with a graduated bar, an arm rotatingly mounted on the bar with its axis at right angles to the bar and provided with a contact-face at one side of its axis, and a second arm slidably mounted on the bar and provided with opposite contact-faces separated from each other a distance equal to twice the distance between the contact-face of the first-named arm and its axis of rotation.

2. A caliper comprising a bar having a tubular head, an arm on the bar having opposite contact-faces, a second arm reversibly mounted in the head and having a contact-face located at one side of its axis of rotation a distance equal to one-half of the distance between the contact-faces of the first-named arm for the purpose described.

3. A caliper comprising a bar having a tubular head, a sliding block mounted on the bar and provided with an arm having opposite contact edges or faces, a second arm reversible in the tubular head and having a contact face or edge at one side of its axis of revolution and means for clamping the latter arm in position.

4. In a caliper, a support, a sliding block on the support having an arm provided with opposite contact edges, means for clamping the block to the support for holding the arm in position, a reversible arm mounted upon the support and provided with a single contact-face disposed so that when the latter arm is reversed the distance between the two positions of the contact-face is substantially equal to the distance between the contact edges of the first-named arm.

5. In a caliper, a bar having a tubular head, a rock-arm journaled in the tubular head and provided with a contact-face at one side of its axis, means for holding the arm in its adjusted position, a second arm mounted upon the bar and adjustable lengthwise thereof and provided with opposite contact-faces separated from each other a distance equal to substantially twice the distance of offset of the contact edge of the former arm from its axis of rotation and means for clamping the second arm in its adjusted position.

6. In a caliper, a bar having a tubular head, a sliding block mounted on the bar and provided with an arm having opposite contact-faces, a second arm journaled in the tubular head and provided with a contact-face disposed at one side of its axis of revolution a distance equal to substantially one-half of the distance between the opposite contact-faces of the first-named arm and means for clamping the second arm in position.

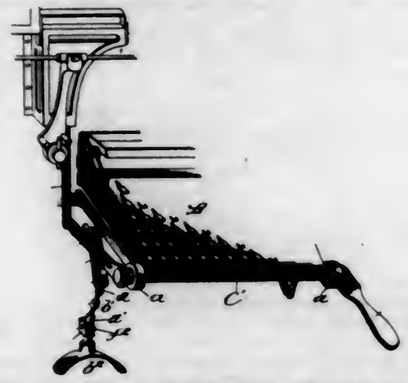
7. A caliper comprising a bar, two arms mounted on the bar, one arm having opposite parallel contact edges, and the other arm having a single contact-face, the latter arm being reversible on an axis parallel with said contact edges to present its contact-face toward or from the other arm.

8. A caliper having a slidable jaw and a rotatable jaw, both bars having contact-faces parallel with the axis of rotation of the rotatable jaw, whereby the same contact-face of the rotatable jaw may be presented toward or from the other jaw.

9. A caliper comprising a support and two measuring-jaws one being rotatable and the other slidable on the support, the sliding jaw having two contact-faces and the rotatable jaw having its axes of rotation parallel with said contact-faces and provided with a contact-face at one side of said axis a distance equal to half of the distance between the contact-faces of the slidable jaw, whereby when the rotatable jaw is reversed its contact-face occupies different positions, the distance between which is equal to the distance between the faces of the slidable jaw.

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**758,284. LINOTYPE-MACHINE ATTACHMENT. PATRICK SHEA, Chicago, Ill. Filed May 4, 1903. Serial No. 155,531. (No model.)**



*Claim.*—1. The combination with the assembler-block, and the upwardly-swinging rock-arm for elevating the same in a linotype-machine, of an actuating device, comprising a clamp secured to said arm, and a knee-engaging member equipped with a stem pivotally joined to said clamp, for the purpose set forth.

2. An actuating device for the purpose set forth, comprising a clamp for engaging the rock-arm linked to the assembler-block, and a rod joined thereto by a transverse pivot and equipped at its lower end with a curved knee-engaging member.

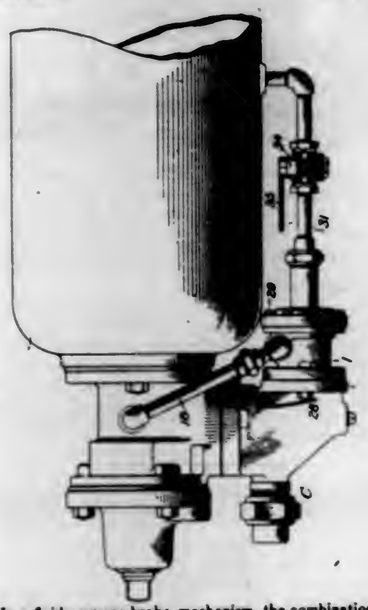
3. An actuating device for the purpose set forth, comprising a clamp for the rock-arm described, a link joined thereto by a transverse pivot, a curved knee-engaging member joined to said link by a transverse pivot, and stops for limiting the relative movements between said link and said knee-engaging member.

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**758,285. EQUILIBRIO INTERCEPTING-VALVE FOR AIR-BRAKE CONTROL. EDWARD G. SHORTT, Carthage, N. Y., assignor to International Air Brake Company, Jersey City, N. J., a Corporation of New Jersey. Filed July 1, 1902. Serial No. 113,905. (No model.)**

*Claim.*—1. In a fluid-pressure brake mechanism, an intercepting-valve for controlling the discharge of brake-pressure from the brake-cylinder, which valve is placed between two opposing pressures in the air-brake system and which provides that the release of braking pressure may be graduated to the needs of the case, and also that a running feed to the auxiliary reservoir may be had while the engineer's valve is in running position and brakes are set, said intercepting-valve being combined with pistons on opposite sides thereof, which have rods whose ends loosely engage each other.

2. In a fluid-pressure brake mechanism, the combination with the essential elements of the system, of an intercepting-valve controlling the outlet from the brake-cylinder and situated between the train-pipe or triple valve and the auxiliary reservoir so that it may be acted on by the train-pipe and auxiliary reservoir pressures, the object of the valve being to provide for the graduating release of braking pressure, and also an uninterrupted feed to reservoir while brakes are set, said intercepting-valve being combined with pistons on opposite sides thereof, which have rods whose ends loosely engage each other.



3. In a fluid-pressure brake mechanism, the combination with the essential elements of the system, of an intercepting-valve and its casing, a brake-cylinder discharge-passage entering said casing, which passage is controlled by the intercepting-valve, pistons arranged on opposite sides of said valve, and flexible diaphragms attached to said pistons, said diaphragm-provided pistons being placed between train-pipe pressure and auxiliary-reservoir pressure to which they are respectively exposed, in order that the variation in degree of the train-pipe pressure may control the opening and closing of the intercepting-valve and thus insure graduating release and permit a running feed to auxiliary reservoir with engineer's valve in running position and brakes set.

4. In a fluid-pressure brake mechanism, the combination with the essential elements of the system, of an intercepting-valve controlling the outlet from the brake-cylinder, pistons located on opposite sides of said valve, combined therewith in such a manner that their fluctuations will open and close the valve, said pistons being in equilibrium between opposing pressures, together with a spring device for normally keeping the valve seated.

5. In a fluid-pressure brake mechanism, a controlling-valve for regulating the quantity of the discharge of braking pressure from the brake-cylinder, pistons located on opposite sides of the valve and respectively exposed to train-pipe and reservoir pressure, the variation of which will cause the valve to open, flexible diaphragms attached to said pistons, and a spring device for normally effecting the closing of the valve when the pressures are in equilibrium.

6. In a fluid-pressure brake mechanism, the combination with the train-pipe, triple valve, brake-cylinder and auxiliary reservoir, of an intercepting-valve for controlling the discharge from the brake-cylinder, diaphragm-provided pistons located on opposite sides of this valve and having stems in endwise contact with each other and regulating the seating and unseating of the valve, one being exposed to train-pipe pressure and the other to auxiliary-reservoir pressure, all arranged and combined to allow an opening of the valve when the pressure on one side exceeds that on the other, and a closing thereof when the pressures are in equilibrium, together with a spring for the valve.

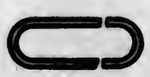


7. The combination with the essential elements of a fluid-pressure brake mechanism, of an intercepting-valve and its casing, a brake-cylinder discharge-passage entering said casing, pistons arranged on opposite sides of the valve, said pistons having rods in endwise contact with each other, diaphragms attached to the pistons and fixedly supported at the ends of the valve-casing, means for applying train-pipe pressure to one of the pistons and auxiliary-reservoir pressure to the other pistons, and a closing-spring for the valve, all combined and arranged to permit of graduating the discharge of braking pressure at the time of release, and also to permit a continuous feed to auxiliary reservoir while brakes are set.

8. In a fluid-pressure brake mechanism, the combination with the essential elements of the system, of an intercepting-valve controlling the outlet from the brake-cylinder, pistons located on the opposite sides of said valve, cylindrical guides for said pistons, diaphragms attached to the pistons and fixedly supported, stems or rods connected to the diaphragm-provided pistons, said rods being normally in contact loosely with each other and arranged so that if the train-pipe pressure exceeds the auxiliary-reservoir pressure the pistons will be so moved that the valve will be lifted from its seat, but so long as the auxiliary-reservoir pressure is equal to or greater than the train-pipe pressure, the valve will be kept on its seat and the escape of air from the brake-cylinder through the intercepting-valve will be prevented.

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**758,286. BELTING AND METHOD OF MAKING SAME. LOUIS P. WARNER, Rochester, N. Y. Filed May 13, 1902. Serial No. 107,115. (No model.)**



*Claim.*—1. An endless belt having an inner convolution entirely inclosed within an outer convolution, both the inner and outer convolutions formed by a continuous fabric.

2. An endless belt having an inner convolution entirely inclosed within an outer convolution or covering, both of said convolutions being formed in a continuous fabric with the end of its inner convolution terminating immediately adjacent the end of the outer convolution.

3. An endless belt comprising an inner convolution, and an outer convolution entirely inclosing the former and having its end located in proximity to the end of the inner convolutions, but at the outer side of an intervening layer of fabric.

4. An endless belt formed by a fabric braided in overlapping convolutions, the inner and outer ends of said convolutions terminating adjacent to each other, one at each side of an intervening layer of the fabric.

5. An endless belt formed by a fabric composed of strands braided into overlapping convolutions, the outer end thereof being terminated adjacent the end of the inner convolution, at the outer side of an intervening portion of the fabric and having the ends of its strands secured in said portion.

6. The method of making endless belts consisting of forming a braided core of the desired length, inserting one end of said core within the other and continuing the braiding over said core.

7. The method of making endless belts consisting in forming a core of a plurality of interlaced strands, inserting one end of said core between said strands and braiding them to completely inclose said core.

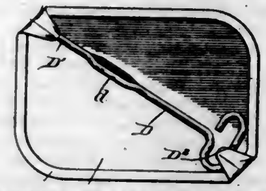
8. The method of making endless belts consisting in forming a tubular core of a plurality of braided strands, inserting the end of said core between said strands and braiding them over said core until the said end is reached, and finally securing the free ends of said strands.

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**758,287. KEY-CAN. THEODORE F. WHITMARSH, New York, N. Y. Filed Jan. 30, 1904. Serial No. 191,275. (No model.)**

*Claim.*—1. In a key-can, the combination with the body of the can, of a cover secured thereon, a plurality of tongues projecting from said cover and extending back over the adjacent portions of the cover, said tongues adapted to detachably retain a key upon the can prior to opening the latter and adapted to be engaged by the key to remove the cover from the can-body.

2. In a substantially rectangular key-can, the combination with the body of the can, of a cover secured thereon, tongues secured to diagonally opposite corners of said cover and extending backwardly over the adjacent portion of the cover, said tongues adapted to detachably retain a key upon the can prior to opening the latter, and adapted to be engaged by the key to remove the cover from the can-body.

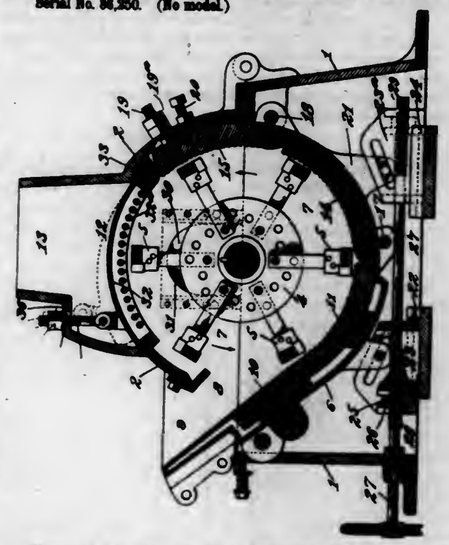


3. As an article of manufacture, a key-can comprising a can-body, a cover secured thereon, a plurality of tongues on said cover, a key for removing the cover from the body detachably secured to the can by said tongues.

4. As an article of manufacture, a substantially rectangular blank for a key-can cover having two diagonal corners rounded and tongues projecting from the other diagonal corners, said tongues being of a size and shape conforming to the metal covered by the rounded corners.

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**758,288. CRUSHER AND PULVERIZER. MILTON F. WILLIAMS, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Company, St. Louis, Mo., a Corporation of Missouri. Filed Dec. 17, 1901. Serial No. 86,250. (No model.)**



*Claim.*—1. In a machine of the character indicated, the combination with rotatable beaters, of a breaker-plate, an imperforate grinding-surface, and a perforated grinding-surface, said breaker-plate and said grinding-surfaces being arranged in the order named in the direction of travel of said beaters, whereby a beater commencing its travel in coöperative relation to said breaker-plate first passes said breaker-plate, then said imperforate grinding-surface and then said perforated grinding-surface, and a screen upon the outer side of said perforated grinding-surface and spaced therefrom, there being an exit-opening for tailings from the space between said perforated grinding-surface and screen; substantially as described.

2. In a machine of the character indicated, a casing provided with an operating-chamber having a peripheral grinding-surface provided with openings, rotatable beaters coöperating with said grinding-surface, and a screen upon the outer side of said grinding-surface and spaced therefrom, said grinding-surface and screen being pivotally adjustable; substantially as described.

3. In a machine of the character indicated, a plate, a grinding-plate having a part engaging a shoulder on said first-mentioned plate, a breaker-plate having an edge engaging the edge of said grinding-plate upon the side opposite said shoulder, whereby said breaker-plate locks said griading-plate in position, and means for securing said breaker-plate upon said first-mentioned plates; substantially as described.

4. In a machine of the character indicated, a plate having an opening therein, a grinding-plate having a lug entering said opening, and a breaker-plate secured to said first-mentioned plate and having an edge engaging said grinding-plate and locking the same in position; substantially as described.

5. In a machine of the character indicated, a plate having a shoulder, a grinding-plate supported upon said first-mentioned plate and engaging said shoulder, a beveled shoulder upon said first-mentioned plate, a breaker-plate between said shoulder and said grinding-plate and having an overhanging beveled edge engaging said grinding-plate, and means for securing said breaker-plate upon said first-mentioned plate; substantially as described.

6. In a machine of the character indicated, a plate having two openings therein, a grinding-plate having a lug entering one of said openings, an outwardly and upwardly beveled shoulder upon said first-mentioned plate and upon the side of its second opening opposite the said grinding-plate, a breaker-plate having outwardly and upwardly beveled opposite edges which respectively engage said shoulder and the edge of said grinding-plate, a perforated lug upon said breaker-plate extending through the second opening in said first-mentioned plate, and a wedge-key in the perforation of said lug; substantially as described.

7. In a machine of the character indicated, a frame, a casing-plate pivotally movable with relation thereto, a guard-plate spanning the space between said frame and casing-plate and abutting against said casing-plate, and means for yieldingly forcing said guard-plate against said casing-plate; substantially as described.

8. In a machine of the character indicated, a frame, a casing-plate movable with relation thereto, a guard-plate spanning the space between said frame and said casing-plate, a lip upon said guard-plate, a stud upon said frame and loosely passing through said lip, and a spring between said lip and a stop member upon said stud; substantially as described.

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758,289. HAT-PIN. WILHELMINA WITTROCKSLAGER, New York, N. Y. Filed Sept. 10, 1903. Serial No. 172,565. (No model.)



*Claim.*—1. A hat-pin having a bead rigid therewith and provided with couplers rigid with said head and projected laterally therefrom.

2. A hat-pin having oppositely-disposed, laterally-projecting couplers, one of which is male and the other female.

3. The combination of a plurality of hat-pins, each having oppositely-disposed, laterally-projecting couplers one of which is male and the other female, the one coupler of one of said pins being arranged to engage the mating coupler of the next to effect a combined structure comprising a number of separable pins extending alongside each other.

4. A hat-pin having a laterally-projecting head provided at its projecting end with a screw-thread.

5. A hat-pin having an elongated transverse head provided at its ends with screw-threads.

6. A hat-pin having oppositely-disposed laterally-projecting couplers, one of said couplers being provided with a male thread and the other of said couplers being provided with a female thread.

7. A pin provided with a transverse head rigid therewith, the ends of the said head being formed as couplers.

8. A pin having a transverse head rigid therewith, and provided at the ends of said head with couplers one of which is male and the other female.

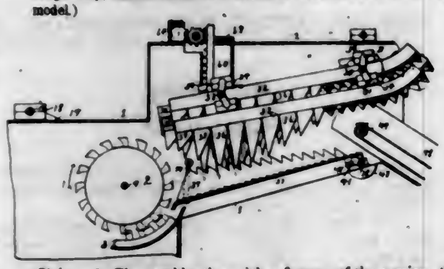
9. The combination of a plurality of hat-pins each having oppositely-disposed laterally-projecting complementary couplers, the one coupler of one of said pins arranged to engage the complementary coupler of the next to effect a combined structure comprising a number of separated pins lying parallel to one another and end pieces having one coupler only adapted to engage the free couplers at the ends of the series.

10. A series of hat-pins comprising one pin provided with oppositely-disposed laterally-projecting non-complementary couplers, and a plurality of pins provided with oppositely-disposed laterally-projecting complementary couplers, one of said complementary couplers adapted to engage with the said couplers on said first pin.

11. The combination of a pin provided with oppositely-disposed laterally-directed female-threaded couplers, a plurality of pins provided with oppositely-disposed laterally-directed male and female threaded couplers, the male couplers of said plurality of pins adapted to engage said couplers of said first pin and also the female couplers of said plurality of pins, and end pieces having male-threaded couplers adapted to engage said female couplers.

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758,290. FEEDER AND BAND-CUTTER. JOHN A. ANDERSON, Osage City, Kans. Filed June 16, 1903. Serial No. 161,711. (No model.)



*Claim.*—1. The combination with a frame; of the carrier; the hopper-bottom; the separator; the two shafts arranged in the frame having a series of corresponding cranks radiating therefrom in different directions; a knife-bar mounted on each pair of cranks provided with knives at their upper ends adjacent to the exit end of the carrier, and with feed-blades at their lower ends adjacent to the separator, said blades being of gradually-increasing length toward the separator; and suitable operative connections and driving mechanism therefor.

2. The combination with a frame; of the separator; the feeding apparatus; the pulley and belt and connections for driving the separator; the pulley and belt and connections for driving the feeding apparatus; the belt-tightener for each belt; and suitable operative connections whereby the second belt-tightener is governed by the pressure of the first-named belt against its tightener.

3. The combination with a frame; of the separator; the feeding apparatus; the pulley and belt and connections for driving the separator; means for driving the feeding apparatus; the belt-tightener for the belt, and suitable operative connections whereby the means for driving the feeding apparatus is governed by the pressure of the belt against its tightener.

4. The combination with a frame; of the separator, shaft, main driving-pulley therefor, and a belt and suitable driving mechanism therefor; the feeding apparatus, the shaft and driving-pulley therefor; and the drive-belt for said pulley and suitable means for operating the same; the arm carrying a pulley bearing against the drive-belt of the separator-pulley; the arm carrying a pulley bearing against the drive-belt of the feeding-apparatus pulley; and suitable operative connections whereby the pressure of the first-named belt against its pulley governs the pressure of the second-named pulley against its belt.

5. The combination with a frame; of the separator and driving mechanism therefor; the feeding apparatus and driving mechanism therefor; the carrier and driving mechanism therefor; the governing mechanism for controlling the feeding apparatus and carrier according to the resistance of the separator to its driving mechanism; the governor for governing the feeding apparatus and carrier according to the speed of the cylinder; and the governor for controlling the carrier according to the resistance of the feeding apparatus to its driving mechanism.

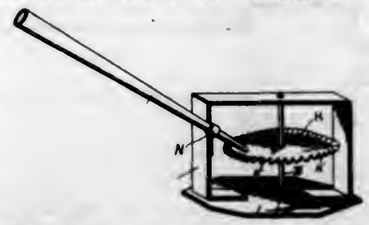


6. The combination with a frame; of the feeding apparatus and the driving-shaft therefor; the pulley loosely mounted on the shaft and suitable driving means therefor; the spring connection between the pulley and the shaft; the disk adjacent to the pulley; the carrier, and operative connections between the disk and the carrier whereby the carrier is operated by the disk; the belt on the pulley normally engaging the disk so as to cause it to revolve therewith; and suitable operative connections whereby as the tension on the spring connection is increased or diminished the belt is loosened or tightened on the disk.

7. The combination with a frame; of the feeding apparatus; the driving-shaft therefor; the pulley loosely mounted on the shaft, and suitable driving mechanism therefor; the spring connection between the pulley and the shaft; the disk adjacent to the pulley; the carrier operatively connected with the disk and adapted to be operated thereby; the belt secured to the pulley and adapted normally to engage the disk; the lever fulcrumed on the pulley, and connected at one end with the belt and at the other end with the shaft; whereby as the tension on the spring connection is increased or diminished the belt is loosened or tightened on the disk.

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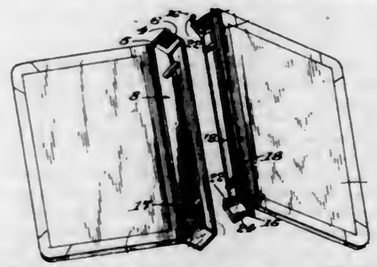
758,291. SPINNING-TOP. FRANK ASHLEY, Spokane, Wash. Filed Aug. 24, 1903. Serial No. 170,547. (No model.)



*Claim.*—A spinning-top comprising a base, a rectangular-outlined frame having angled ends fastened to the upper surface of said base, a pintle rising centrally from the base and intermediate the ends of said frame, a shaft having a winged wheel rotating therewith, one end of said shaft having a bearing upon said pintle at a slight distance above said base, the upper end of the shaft tapering and having a bearing in an indenture in the upper horizontally-disposed portion of the frame, an eye having a shank portion secured to the upright portion of said frame and a nozzle mounted in said eye at one edge of the frame, and outside the latter and held at an inclination to said wheel, as set forth.

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758,292. LOOSE-LEAF LEDGER. HENRY W. AYRES, Los Angeles, Cal. Filed Apr. 20, 1903. Serial No. 153,431. (No model.)



*Claim.*—1. Upper and lower supporting members slidable together, half-round posts carried by the respective members adapted to pair together when the supporting members are brought together, one of said supporting members being provided with a series of notches, a spring-catch fastened to the other member and adapted to engage with said notches, a pivoted latch adapted to lift said catch out of said notches, and means for supporting said latch in raised position.

2. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of the upper member being slidable over the end plates of the lower member, the end plates of the upper member being provided with a series of notches, spring-catches fastened to the end plates of the lower supporting member, said spring-catches being provided with lips which project through slots in the plates which support said spring-catches the lips of said catches adapted to engage with the aforesaid notches, and means extending beyond the edges of said end plates for manually releasing said catches.

3. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of the upper member being slidable over the end plates of the lower member, the end plates of the upper member being provided with a series of notches, spring-catches fastened to the end plates of the lower supporting member, said spring-catches being provided with lips which project through slots in the plates which support said spring-catches the lips of said catches adapted to engage with the aforesaid notches, and studs mounted on the respective end plates of the lower supporting members, said spring-catches being movable over the heads of their respective studs.

4. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of the upper member being slidable over the end plates of the lower member, the end plates of the upper member being provided with a series of notches, spring-catches fastened to the end plates of the lower supporting member, said spring-catches being provided with lips which project through slots in the plates which support said spring-catches the lips of said catches adapted to engage with the aforesaid notches, and studs mounted on the respective end plates of the lower supporting members, said spring-catches being provided with latches movable over the heads of their respective studs, and finger-buttons attached to the respective latches.

5. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of one member being slidable over the end plates of the other member, the end plates of one member being provided with series of seats, spring-catches carried by one member, said catches having lips adapted to project through cut-away portions of the end plates of the member carrying said catches, said lips adapted to engage the aforementioned seats, and catch-holding means for holding said lips out of engagement with said seats.

6. Upper and lower supporting members slidable together, half-round posts carried by the respective members and adapted to pair together when the two members are brought together, end plates carried by the respective members, the end plates of one member being slidable over the end plates of the other member, the end plates of one member being provided with series of seats, spring-catches carried by one member, said catches having lips adapted to project through cut-away portions of the end plates of the member carrying said catches, said lips adapted to engage the aforementioned seats, catch-holding means for holding said lips out of engagement with said seats, and means for manually throwing the latches into engagement with said holding means.

7. In a loose-leaf book, upper and lower supporting members slidable together, leaf-holding means between the members, one of said supporting members being provided with a series of notches, a spring-catch fastened to the other member and adapted to engage said notches, a pivoted latch adapted to lift said catch out of said notches, and a stud for supporting said latch in raised position

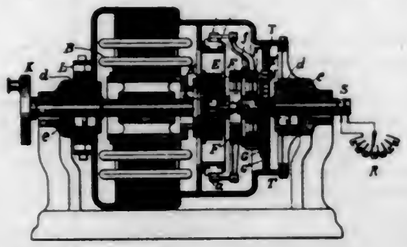
8. In a loose-leaf book, upper and lower supporting members slidable together, leaf-holding means between said members, one of said members being provided with a series of seats, a spring-catch carried by the other member and adapted to engage said seats, a latch having a lifting movement and a pivotal movement, said latch being adapted to lift said catch out of said seats, and means for supporting said latch in raised position.

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758,293. ELECTROMAGNETIC GEARING. EDWARD M. BENTLEY, Lawrence, N. Y. Filed Dec. 2, 1903. Serial No. 183,497. (No model.)

*Claim.*—1. The combination with a dynamo-electric machine having one member movable with respect to a magnetic field in the other member, of means for adjusting the effective rate of such relative movement comprising a pole-shifting device for rotating the

poles of the magnetic field simultaneously with the mechanical rotation



2. The combination with a dynamo-electric machine of a regulator acting to vary the effective rate of relative movement of field-magnet poles and armature comprising a pole-shifter for the field-magnet giving the poles a rotation adjustable for regulation and supplementary to the relative mechanical movement of field-magnet and armature.

3. A regulator for a dynamo-electric machine acting to vary the effective rate of relative movement of field-magnet poles and armature comprising a pole-shifter for the field-magnet giving the poles a rotation adjustable for regulation and supplementary to the relative mechanical movement of field-magnet and armature.

4. A regulator for a dynamo-electric machine acting to vary the effective rate of relative movement of field-magnet poles and armature comprising a continuously-running pole-shifter for the field-magnet operating at a rate adjustable for regulation and different from the rate of relative movement between field-magnet and armature.

5. A regulator for a dynamo-electric machine acting to vary the effective rate of relative movement of field-magnet poles and armature comprising a pole-shifter for the field-magnet and a motive device therefor giving it a rate adjustable for regulation and different from the rate of relative movement of field-magnet and armature.

6. The combination with a dynamo-electric machine having one member connected to driven and the other to driving mechanism of means for rendering a portion only of the slip effective for generation of current.

7. The combination with a dynamo-electric machine having one member connected to driven and the other to driving mechanism of means for rotating the magnetic field to produce an effective slip different from the actual slip.

8. The combination with a dynamo-electric machine having one member connected to driven and the other to driving mechanism of means for closing the armature-circuit on itself and means for giving the poles of the field-magnet a rotation supplementary to their mechanical rotation.

9. The combination with a dynamo-electric machine having one member connected to driven and the other to driving mechanism, a commutator for the field-magnet, brushes thereon and means for rotating the brushes to give the field-magnet poles a rotation supplementary to the mechanical rotation.

10. The combination with a dynamo-electric machine having both of its members rotatable, of means for rotating the field-magnet poles within the body of the field-magnet at a rate different from the rate of relative movement of the two members.

11. The combination with a dynamo-electric machine having both members rotatable, of driving mechanism connected to one member and driven mechanism connected to the other member, means for rendering a portion only of the slip effective for generation of current and a regulating device for adjusting the amount of current produced.

12. The combination with a dynamo-electric machine, of means for rendering a portion only of the relative movement of the two members effective for generation of current, and a regulator for adjusting the amount of current produced.

13. The combination with a dynamo-electric machine, of means for rendering a portion only of the relative movement of field-magnet and armature effective for current generation, electrical connections for putting the field-magnet in series with the armature and an adjustable resistance for regulating the current produced.

14. The combination with a dynamo-electric machine having both of its members rotatable, of a commutator for the field-magnet, a commutator for the armature, a driving connection between the brushes of both commutators and the shaft of the machine, and a resistance for regulating the generated current.

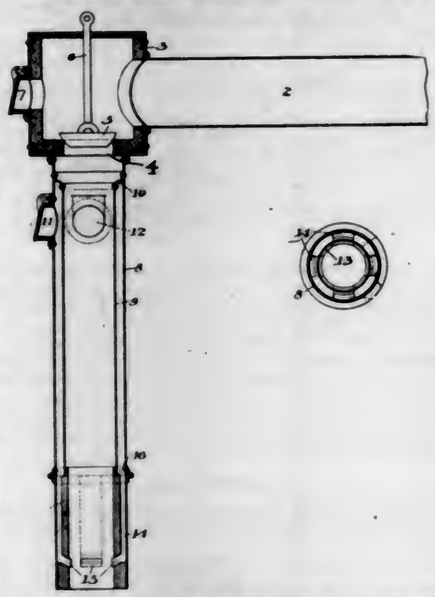
15. The combination with a dynamo-electric machine having both of its members rotatable, of a commutator for both members, commutator-brushes thereon, and differential gearing for rotating the brushes by the differential movement of the respective members, slip-ring connections for the rotating brushes and a regulating resistance connected in circuit through said slip-rings.

16. The combination with a dynamo-electric machine of a commutator for both field-magnet and armature, rotating brushes for both commutators and a driving connection between the brushes and the shaft of the machine.

17. The combination with driving and driven mechanism, of a dynamo-electric machine having one member connected to the former and the other to the latter mechanism, a short-circuiting connection for the dynamo, a commutator for both field-magnet and armature, rotating brushes for both commutators and a driving connection between the rotating brushes and the shaft of the machine

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**758,294. GAS-BURNING APPARATUS. WILLIAM H. BRADLEY, Bellevue, Pa. Filed June 18, 1903. Serial No. 162,087. (No model.)**



*Claim.*—1. A burner for hot gases comprising a valved flue, a burner extension leading therefrom and having an outer and an inner metallic shell with an air-chamber between them, a burner-brick within the end of the outer shell and at the end of the inner shell, and ports connecting the air-chambers to the interior of the hollow burner-brick; substantially as described.

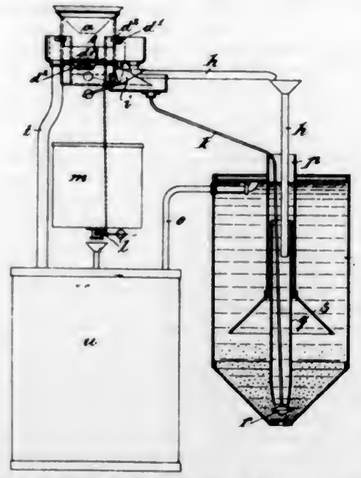
2. A burner for hot gases, comprising an outer shell, a hollow burner-brick within its end, an inner shell forming an annular air-chamber within the outer shell, an air-inlet, and supply-channels for the air leading through the hollow brick; substantially as described.

3. A burner for hot gas, comprising an outer metal shell, an inner metal shell enlarged at one end to form an annular air-chamber closed at said end, the inner shell being shorter than the outer and extending to a hollow burner-brick within the outer shell, said brick having air-ports to admit the heated air to mix with the gas within it; substantially as described.

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**758,295. APPARATUS FOR SOFTENING WATER. HALVOR BREDA, Berlin, Germany. Filed June 7, 1901. Serial No. 63,615. (No model.)**

*Claim.*—1. In an apparatus for softening water, the combination of an inlet-reservoir provided with an overflow-weir, with an adjustable reservoir provided with a partition situated behind said weir, a mixing-reservoir, a pipe connecting one compartment of the adjustable reservoir with this mixing-reservoir, a lime-saturater, a pipe connecting the lime-saturater with the mixing-reservoir, and a pipe connecting the other compartment of the adjustable reservoir with the lime-saturater, substantially as described and for the purpose set forth.



2. In an apparatus for softening water, the combination of an inlet-reservoir provided with an overflow-weir, an adjustable partition situated behind this weir and adapted to divide the water flowing over the same in two parts, a mixing-reservoir, means for leading one of these parts directly to the mixing-reservoir, a lime-saturater and means for leading the other part of the water through the lime-saturater into the mixing-reservoir, substantially as described and for the purpose set forth.

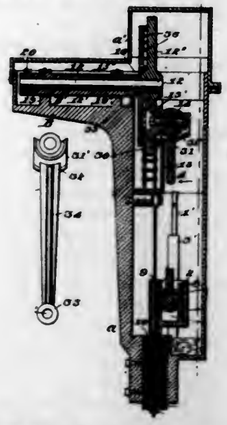
3. In an apparatus for softening water, the combination of an inlet-reservoir provided with an overflow-weir, an adjustable partition situated behind this weir and adapted to divide the water flowing over the same in two parts, a mixing-reservoir, means for leading one of these parts directly to the mixing-reservoir, a lime-saturater, means for dividing the other part of the water again in two parts, means for leading one of the latter parts of the water directly into the lime-saturater, a tilting vessel, means for leading the other one of the latter parts of the water into the tilting vessel, means for leading the water discharged from the tilting vessel into the lime-saturater, and means for leading the lime-water from the lime-saturater into the mixing-reservoir, substantially as described and for the purpose set forth.

4. In an apparatus for softening water, the combination of an inlet-reservoir provided with an overflow-weir, an adjustable partition situated behind this weir and adapted to divide the water flowing over the same in two parts, a mixing-reservoir, means for leading one of these parts directly to the mixing-reservoir, a lime-saturater, means for dividing the other part of the water again in two parts, means for leading one of the latter parts of the water directly into the lime-saturater, a tilting vessel, means for leading the other one of the latter parts of the water into the tilting vessel, means for leading the water discharged from the tilting vessel into the lime-saturater, means for leading the lime-water from the lime-saturater into the mixing-reservoir, a reservoir containing the soda solution, a valve connected to this reservoir, means connecting this valve with the tilting vessel and means for leading the soda solution to the mixing-reservoir, substantially as described and for the purpose set forth.

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**758,296. WINDMILL. WILLIAM P. BRETT, Decatur, Ill. Filed May 23, 1902. Serial No. 108,716. (No model.)**

*Claim.*—1. In a windmill, in combination an incasement constituting the main frame of the windmill-head, a lateral extension at the upper part of and forming a part of said incasement, a rotatable shaft mounted in said extension with a part projecting into the main or body part of the incasement, a crank portion made rigid with said projecting part, a reciprocating part below said crank portion, a pitman operatively mounted and adapted to actuate said reciprocating part upon the rotation of said shaft, a vertically-apertured pivot portion and an oil-reservoir arranged at the lower part of said incasement, and means whereby the bearings of said shaft, crank portion, pitman, and reciprocating part are automatically lubricated during the operation of the windmill.



2. In windmills, in combination an incasement constituting the main frame of a windmill-head, a lateral extension, a rotatable shaft mounted in said extension with a part projecting into the inclosure of the main or body part of said incasement, a crank portion secured to the inward-projecting part of said shaft, a reciprocating part below said crank portion and within the incasement, a pitman operatively connected to said crank portion and reciprocating part, an oil-reservoir within said incasement below said crank portion, a vertically-apertured pivotal anchorage portion at the lower part of the incasement, means whereby the bearing of said shaft and both bearings of the pitman are automatically lubricated from said reservoir during the operation of the windmill, and means whereby the surplus oil dripping from said pitman-bearings is deflected into said reservoir.

3. In windmills, in combination an incasement constituting the main frame of the windmill-head, a rotatable shaft mounted within the upper portion of the incasement and carrying a crank portion, a reciprocating part operatively mounted within the lower part of the incasement, a pitman pivoted, to a pin eccentric to said shaft, at its upper end and to said reciprocating part at its lower end, an oil-reservoir located within the lower portion of said incasement, means whereby the bearings of said shaft, pitman, and reciprocating part are automatically lubricated, during the operation of the windmill, with oil taken from said reservoir, and means whereby the surplus oil dripping from said bearings is caused to return to the reservoir.

4. In a windmill, in combination a rotatable member and a reciprocating part, mounted one above the other, a pitman operatively connected to said member and adapted to actuate said part, an oil-reservoir arranged below the operative range of the pitman connection with the said member, means whereby oil from the said reservoir is caused to lubricate the said pitman connection upon the rotation of the said member, and an oil-deflector mounted to move with the said pitman and adapted to conduct the oil that drips from the said connection back into the said reservoir.

5. In combination a rotatable member and a reciprocating part, mounted one above the other, a pitman operatively connected to said member and adapted to actuate said part, an oil-reservoir arranged below the operative range of the pitman connection with said member, means whereby lubricant taken from said reservoir is applied to the said pitman connection, and a deflecting part made integral with the said pitman and adapted to conduct the oil that drips from said pitman connection back into the said reservoir.

6. In a windmill, in combination a rotatable member and a reciprocating part, mounted with said member above said part, a pitman operatively pivoted to said member and part and adapted to reciprocate said part upon the rotation of said member, an oil-receptacle mounted below the operative range of said pitman connections, means for automatically lubricating said pitman connections with oil taken from said receptacle, and oil-deflectors mounted below said connections whereby the oil dripping therefrom is conducted into said receptacle.

7. In a windmill, in combination an incasement constituting the

main frame of the windmill-head, a rotatable member and a reciprocating part, mounted within said incasement with said member above said part, a pitman operatively connected near one end to said member and near the other end to said part, an oil-receptacle within the incasement below the operative range of the pitman connection to said member, an oil-elevating device actuated by said member and adapted to elevate oil from said receptacle to a position from which a portion of it will flow to the pitman connection adjacent to said member, and an oil-deflector mounted to move with said connection and adapted to conduct the surplus oil that drips therefrom into said receptacle.

8. In a windmill, in combination an incasement constituting the main frame of the windmill-head, a vertically-apertured anchorage portion rotatable with said head, a rotatable member operatively mounted at the upper part of the incasement and a reciprocating part operatively mounted part within said incasement and part extending through the vertical aperture of said pivot portion, a pitman operatively connected at one end to said member and at the other end to said reciprocating part, an oil-reservoir at the lower portion of said incasement, an oil-elevating device actuated by said member whereby oil is raised from said reservoir and caused to flow onto said member, pitman and the bearings thereof, and an oil-deflector below the pitman connections whereby the surplus oil flowing therefrom is caused to drain into said reservoir.

9. In a windmill, in combination an incasement constituting the main frame of the windmill-head, a rotatable member mounted within the upper part and a reciprocating part mounted within the lower part of said incasement, a pitman operatively connected to said member at one end and to said part at the other end, an oil-reservoir made integral with and inclosed by the lower portion of said incasement, a flexible oil-elevating device actuated by said member and adapted to raise oil from said reservoir and cause it to flow onto said member and pitman and the bearings thereof, and oil-deflecting devices arranged below said pitman connections whereby the surplus oil therefrom is conducted into said reservoir.

10. In a windmill, in combination a windmill-head, bearings mounted in said head, an incasement arranged to inclose said bearings, a rotatable member and a reciprocating part mounted, one above the other and mainly within the said incasement, a pitman operatively connected to and adapted to impart motion from said member to said part, an oil-reservoir inclosed at the lower portion of said windmill-head, means for conveying oil from said reservoir to all of said bearings during the operation of the windmill, and means whereby the surplus oil dripping from said bearings is caused to return to said reservoir.

11. In a windmill, in combination a windmill-head, bearings mounted in said head, an incasement arranged to inclose said bearings, power-transmitting mechanism mounted mainly within said incasement, a vertically-apertured anchorage portion adapted to rotate with the head, means in operative connection with said power-transmitting mechanism extending through the vertical aperture of said anchorage portion and adapted to actuate other mechanism therebelow, an oil-reservoir adjacent to said anchorage portion, means for applying oil from said reservoir to said bearings, and means for causing the surplus oil dripping from said bearings to return to said reservoir.

12. In a windmill, in combination a main frame or turn-table, substantially parallel bearings made integral with one another and removably secured to said frame, shafts mounted in said bearings, gears carried by said shafts and adapted to mesh together, a vertically-apertured anchorage portion constituting the pivot part of said main frame, and power-transmitting mechanism in operative connection with one of said gears and adapted to extend through the vertical aperture of said anchorage portion and actuate other mechanism therebelow.

13. In a windmill, in combination substantially parallel shaft-bearings made integral with cross and longitudinal alinement-bars and detachably secured to the main frame of the windmill-head, rotatable shafts journaled in said bearings, spur-gears mounted upon said shafts and meshing together, a crank portion mounted to rotate with one of said gears, and collars abutting against the ends of said bearings in such manner as to maintain the axial position of said shafts.

14. In a windmill, in combination spaced bearings for the wheel-shaft, a crank-shaft bearing substantially parallel to said spaced bearings, cross and longitudinal alinement-bars made integral with said bearings, a crank-shaft journaled in said crank-shaft bearing, a wheel-shaft journaled in said spaced bearings, gears upon said shafts operatively meshing together, a collar upon said crank-shaft coacting with the crank portion and bearing to maintain the axial position of the shaft, and collars upon the wheel-shaft abutting against the adjacent ends of said spaced bearings to maintain the axial position of the wheel-shaft.

15. In a windmill, in combination spaced bearings for the wheel-shaft, a crank-shaft bearing substantially parallel to and made integral with said spaced bearings, a crank-shaft, carrying a crank portion, and journaled and axially fixed in said crank-shaft bearing, a wheel-shaft journaled in said spaced bearings, collars abutting against the adjacent ends of said spaced bearings, gears meshing together and mounted to rotate with said shafts, and an incasement comprising a suitable anchorage and protecting-inclosure for said bearings, gears and crank portion.

16. In a windmill, in combination substantially parallel crank and wheel shaft bearings made integral and adapted to be removably attached to their anchorage, wheel and crank shafts rotatably mounted and axially fixed in said bearings, gears meshing together, and a crank portion carried by said shafts, and an incasement comprising a suitable anchorage and protecting-inclosure for said bearings, gears and crank portion.

17. In a windmill, in combination an incasement constituting the main frame of the windmill-head, a vertically-apertured pivotal anchorage portion at the lower part of said incasement, shaft-bearings removably mounted in said incasement, shafts carried by said bearings, gears secured to said shafts and adapted to mesh together, an oil-reservoir mounted in close proximity to said anchorage portion, power-transmitting mechanism in operative connection with one of said gears and adapted to extend through said anchorage portion and impart motion to other mechanism therebelow, means whereby the bearings of said shafts and the power-transmitting mechanism above said anchorage portion is caused to be automatically lubricated, and means whereby the surplus oil flowing from the bearings and mechanism above said reservoir is caused to drain therein.

18. In a windmill, in combination a rotatable member and a reciprocating part mounted, one above the other, a pitman operatively connected to said member and part and adapted to impart motion from one to the other, an oil-reservoir arranged below the operative range of the said pitman connections, means whereby oil is transferred from said reservoir to said pitman connections, and oil-deflectors mounted to move with said pitman and adapted to conduct the oil that drips from said connections into said reservoir.

19. In a windmill, in combination a main frame or turn-table, a vertically-apertured pivot portion, power-transmitting mechanism having a portion thereof adapted to extend operatively through the vertical aperture of the said pivot portion, gears operatively mounted and adapted to actuate the said power-transmitting mechanism, an oil-storage reservoir, means whereby the frictional parts of the said gears and of the part of the said mechanism that is above the said pivot portion are adapted to be automatically lubricated with oil from the said reservoir during their operation, and means whereby the surplus lubricant dripping from the said frictional parts is caused to return into the said reservoir.

20. In a windmill, in combination a main frame or turn-table, a vertically-apertured pivot portion, a power-transmitting member carried by said main frame and adapted to extend operatively through and actuate other mechanism below the said pivot portion, gears operatively mounted and adapted to actuate said power-transmitting member, an oil-reservoir carried by said main frame, means whereby said gears and the frictional parts of said member above the said pivot portion are automatically lubricated upon the rotation of the said gears, with lubricant from said reservoir, and an incasement portion adapted to inclose the said gears, reservoir and the part of the said member above the said pivot portion.

21. In a windmill, in combination an incasement constituting the main frame or turn-table and adapted to inclose all of the principal bearings and frictional parts of the power-transmitting mechanism of the windmill-head, a vertically-apertured pivot portion comprising a part of the lowermost section of the said incasement, an oil-reservoir opening upwardly in the lower portion of said incasement, means within the said incasement for automatically lubricating all of the said frictional parts during the operation of the windmill with lubricant taken from the said reservoir, and means for preventing the dripping of the lubricant into or through the said vertical aperture.

22. In a windmill, in combination an incasement comprising the main frame or turn-table of the windmill-head, a vertically-apertured portion comprising the anchorage and pivot part of the said turn-table, a motor-shaft, a vertically-arranged power-transmitting shaft extending operatively through the aperture of the said pivotal part and adapted by means of a suitable mechanism to be actuated by the said motor-shaft, an oil-reservoir carried by the said turn-table, and means whereby the main frictional parts operating in connection with the said shafts above the said anchorage portion are automatically lubricated with oil from said reservoir upon the rotation of the said motor-shaft.

23. In a windmill, in combination a main frame or turn-table, a motor-shaft, a vertically-apertured part comprising the anchorage and pivot portion of the said turn-table, an oil-storage reservoir, a power-transmitting device having a part thereof extending operatively through the vertical aperture of the said pivot portion, gears operatively mounted and adapted to transmit motion from the said motor-shaft to said device, means whereby the main frictional parts of the said motor-shaft, device and gears are automatically lubricated with oil from the said reservoir during their operation, and means whereby the surplus lubricant flowing from the said frictional parts is caused to return into the said reservoir.

24. In a windmill, in combination a main frame or turn-table, a motor-shaft, a vertically-apertured part comprising the anchorage portion of the said turn-table, an oil-storage reservoir, a power-transmitting device having a part thereof extending operatively through the vertical aperture of the said anchorage portion, gears operatively mounted and adapted to transmit motion from said shaft to said device, means whereby the main frictional parts of the said shaft, gears and device are automatically lubricated with oil from the said reservoir during their operation, means for returning the surplus lubricant, that drips from the said frictional parts, into the said reservoir, and an incasement portion adapted to coöperate with the said main frame to inclose the said frictional parts and reservoir.

25. In a windmill, in combination spaced bearings, rigid side bars made integral with and connecting said bearings, another bearing substantially parallel to the said spaced bearings, and rigid cross-bars made integral with and connecting the spaced bearings with the said other bearings.

26. In combination a main frame, a wheel-shaft, a crank-shaft, spaced bearings for the said wheel-shaft, another bearing substantially parallel to the said spaced bearings and adapted to carry the said crank-shaft, rigid connecting portions made integral with the said wheel and crank shaft bearings, and means whereby the said bearings are rigidly secured to the said main frame.

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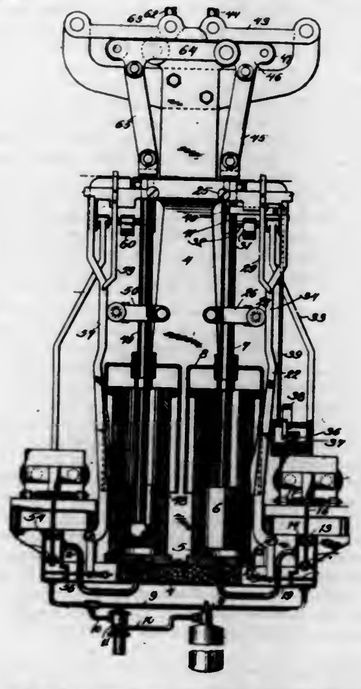
**758,297. RAILWAY SIGNAL APPARATUS.** CLARENCE W. COLEMAN, Westfield, N. J., assignor to the Hall Signal Company, a Corporation of Maine. Filed Apr. 4, 1902. Serial No. 101,327. (No model.)

*Claim.*—1. In a fluid-pressure signal apparatus, the combination of a signal; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by said fluid-pressure; and a retaining device to prevent return movement of the signal.

2. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means under electric control for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by said fluid-pressure; and a retaining device under electric control to prevent return movement of the signal.

3. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by said fluid-pressure; a retaining device to prevent return movement of the signal; and a track-circuit for controlling said valve-operating means and said retaining device.

4. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by said fluid-pressure; a retaining device to prevent return movement of the signal; and a signal-circuit for operating said valve-operating means and said retaining device.



5. In a fluid-pressure signal apparatus, the combination of a signal; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; and means for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

6. In a fluid-pressure signal apparatus, the combination of a signal; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; and train-operated means for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

7. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; and a track-circuit for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

8. In a fluid-pressure signal apparatus, the combination of a signal; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves whereby fluid-pressure may be supplied to and maintained in said chamber to

move the signal from one position to another and there maintain it by said fluid-pressure; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; and a retaining device to prevent return movement of the signal.

9. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means under electric control for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by said fluid-pressure; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; and a retaining device under electric control to prevent return movement of the signal.

10. In a fluid-pressure signal apparatus, the combination of a signal; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; and means for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

11. In a fluid-pressure signal apparatus, the combination of a signal; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; and train-operated means for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

12. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with said supply source; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal to safety against its normal bias and there maintain it by said fluid-pressure; and a retaining device to prevent return movement of the signal.

13. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal to safety against its normal bias and there maintain it by said fluid-pressure; a retaining device to prevent return movement of the signal; and a track-circuit for controlling said valve-operating means and said retaining device.

14. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal to safety against its normal bias and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; and means for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

15. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means under electric control for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal to safety against its normal bias and there maintain it by said fluid-pressure; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; and a retaining device under electric control to prevent return movement of the signal.

16. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger; a continuously-maintained fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal to safety against its normal bias and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; and train-operated means for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

17. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; and a magnet for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

18. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; a signal-circuit; and a magnet included in said circuit for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

19. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said supply source; supply and exhaust-valves for said chamber; means for opening the supply-valve whereby fluid-pressure may be admitted to said chamber to move the signal from one position to another and there maintain it by fluid-pressure; a retaining device to prevent return movement of the signal; means for automatically cutting off the fluid-pressure supply to said chamber upon a predetermined movement of the signal; a signal-circuit; and a magnet included in said circuit for releasing said retaining device and opening the exhaust-valve to permit a return movement of the signal.

20. In a fluid-pressure signal apparatus, the combination of a signal; an isolated fluid-pressure storage-tank; a fluid-pressure-applying chamber in operative connection with the signal and in communication with said storage-tank; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by said fluid-pressure; a retaining device to prevent return movement of the signal; and an automatic reducing-valve for said fluid-pressure-applying chamber.

21. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank; supply and exhaust valves for said chamber whereby gas may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by gas-pressure; means for operating said valves; and a retaining device to prevent return movement of the signal.

22. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank; supply and exhaust valves for said chamber whereby gas may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by gas-pressure; means for operating said valves; a retaining device to prevent return movement of the signal; and means for releasing said retaining device and opening said exhaust-valve to permit return movement of the signal.

23. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank; supply and exhaust valves for said chamber whereby gas may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by gas-pressure; means for operating said valves; a retaining device to prevent return movement of the signal; and means for releasing said retaining device and opening said exhaust-valve to permit return movement of the signal.

24. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank; pressure-reducing means for said chamber; supply and exhaust valves for said chamber whereby gas may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by gas-pressure; a retaining device to prevent return movement of the signal; and a signal-circuit for operating said supply and exhaust valves and said retaining device.

25. In a gas-pressure signal apparatus, the combination of a signal; a detachable and replaceable tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank; an automatic reducing-valve; supply and exhaust valves for said chamber whereby gas may be supplied to and maintained in said chamber to move the signal from one position to another and there maintain it by gas-pressure; means for operating said valves; and a retaining device to prevent return movement of the signal.

26. In a gas-pressure signal apparatus, the combination of home and distant signals; gas-pressure-applying apparatus for operating said signals separately; a source of liquefied gas for supplying gas to said gas-pressure-applying apparatus; and means operated upon a predetermined movement of the home signal for controlling the movement of the distant signal.

27. In a gas-pressure signal apparatus, the combination of home and distant signals on the same post; gas-pressure-applying apparatus for operating said signals separately; a detachable and replaceable tank for liquefied gas located in proximity to said post for supplying gas to said apparatus; and means operated upon a predetermined movement of the home signal for controlling the movement of the distant signal.

28. In a gas-pressure signal apparatus, the combination of home and distant signals on the same post; a source of liquefied gas; a separate gas-pressure-applying chamber for each signal and in controllable communication with said source of liquefied gas; and means operated upon a predetermined movement of the home signal and controlling the movement of the distant signal.

29. In a gas-pressure signal apparatus, the combination of home and distant signals; a source of liquefied gas; a separate gas-pressure-applying chamber for each signal and in controllable communication with said source of liquefied gas; supply and exhaust valves for each of said chambers; and means controlling the supply-valve of the distant signal and operated upon a predetermined movement of the home signal.

30. In a fluid-pressure signal apparatus, the combination of home and distant signals; a source of fluid-pressure supply for the distant signal; a fluid-pressure-applying chamber in operative connection with the distant signal and in communication with said supply source; supply and exhaust valves for said chamber whereby fluid-pressure may be supplied to said chamber to move the distant signal from one position to another; a retaining device to prevent return movement of said distant signal; a signal-circuit for controlling the operation of said supply and exhaust valves and said retaining device; and a circuit-controller in said signal-circuit under the control of said home signal whereby the movement of the distant signal to safety is prevented until the home signal has gone to safety.

31. In a gas-pressure signal apparatus, the combination of home and distant signals; a tank for liquefied gas for the distant signal; a gas-pressure-applying chamber in operative connection with the distant signal and in communication with said tank; supply and exhaust valves for said chamber whereby gas may be supplied to said chamber to move the distant signal from one position to another; a retaining device to prevent return movement of said distant signal; a signal-circuit for controlling the operation of said supply and exhaust valves and said retaining device; and a circuit-controller in said signal-circuit under the control of said home signal whereby the movement of the distant signal to safety is prevented until the home signal has gone to safety.

32. In a fluid-pressure signal apparatus, the combination of home and distant signals; a source of fluid-pressure supply for the distant signal; a fluid-pressure-applying chamber in operative connection with said distant signal and in communication with said supply source; supply and exhaust valves for said chamber; means for operating said valves whereby fluid-pressure may be supplied to and maintained in said chamber to move said distant signal from one position to another and there maintain it by said fluid-pressure; a retaining device to prevent return movement of said distant signal; electric means controlling the operation of said valves and said retaining device; and means operated by the movement of the home signal to safety for controlling the operation of said electric means, whereby the movement of the distant signal to safety is prevented until the home signal has gone to safety.

33. In a gas-pressure signal apparatus, the combination of home and distant signals; a tank for liquefied gas for the distant signal; a gas-pressure-applying chamber in operative connection with said distant signal and in communication with said tank; supply and exhaust valves for said chamber; means for operating said valves whereby gas may be supplied to and maintained in said chamber to move said distant signal from one position to another and there maintain it by said gas-pressure; a retaining device to prevent return movement of said distant signal; electric means controlling the operation of said valves and said retaining device; and means operated by the movement of the home signal to safety for controlling the operation of said electric means, whereby the movement of the distant signal to safety is prevented until the home signal has gone to safety.

34. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank, whereby gas may be supplied from said tank to said gas-pressure-applying chamber to move the signal to another position of indication; supply and exhaust valves for said chamber; means for operating said valves and means for cutting off the supply of gas to said chamber before the signal has completed its movement under gas-pressure, whereby the expansive power of the gas in said chamber may be utilized to complete the movement of the signal.

35. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank, whereby gas may be supplied from said tank to said gas-pressure-applying chamber to move the signal to another position of indication; supply and exhaust valves for said chamber; means for operating said valves, means for cutting off the supply of gas to said chamber before the signal has completed its movement under gas-pressure, whereby the expansive power of the gas in said chamber may be utilized to complete the movement of the signal; and a retaining device to prevent return movement of the signal.

36. In a gas-pressure signal apparatus, the combination of a signal; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank, whereby gas may be supplied from said tank to said gas-pressure-applying chamber to move the signal to another position of indication; supply and exhaust valves for said chamber; means for cutting off the supply of gas to said chamber before the signal has completed its movement under gas-pressure, whereby the expansive power of the gas in said chamber may be utilized to complete the movement of the signal; a retaining device to prevent return movement of the signal; and a signal-circuit for operating said supply and exhaust valves and said retaining device.

37. In a gas-pressure signal apparatus, the combination of a signal having a normal bias to one position of indication; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in controllable communication with said tank, whereby gas may be supplied from said tank to said gas-pressure-applying chamber to move the signal against its normal bias to another position of indication; supply and exhaust valves for said chamber; a cut-off valve normally biased to closed position; and a retaining device to hold said cut-off valve open and adapted to release the cut-off valve when the signal has made a predetermined movement under gas-pressure.

38. In a gas-pressure signal apparatus, the combination of a pivoted semaphore-signal having a normal bias to danger; a tank for liquefied gas; a gas-pressure-applying chamber in operative connection with said signal and in communication with said tank; supply and exhaust valves for said chamber, whereby gas may be supplied to said chamber and maintained therein to move the signal to safety and there maintain it by gas-pressure; a cut-off valve for said chamber; means for automatically closing the cut-off valve upon a predetermined movement of the signal against its normal bias; and electric devices to control the position of the supply and exhaust valves.

39. In a fluid-pressure signal apparatus, the combination of a signal; means for supplying fluid-pressure to operate the signal; a valve to cut off the fluid-supply; a pivoted member operating to open said valve; and locking means to hold the pivoted member.

40. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply; a pivoted member operating to open said valve; and locking means to hold the pivoted member, said locking means being released upon a predetermined movement of the signal.

41. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply and having a bias toward closed position; a pivoted member operating to open said valve; and a locking means to hold the pivoted member.

42. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply and having a bias toward closed position; a lever operating to open said valve; and a latch to hold the lever, said latch being released upon a predetermined movement of the signal.

43. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply; a pivoted member operating to open said valve and arranged to be actuated to open said valve upon a predetermined movement of the signal; and locking means to hold the pivoted member.

44. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply; a lever operating to open said valve and arranged to be actuated to open said valve upon a predetermined movement of the signal; and a latch to hold the lever, said latch being released upon a predetermined movement of the signal.

45. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply and having a bias toward closed position; a lever operating to open said valve, and arranged to be actuated to open said valve upon a predetermined movement of the signal; and a latch to hold the lever.

46. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve to cut off the fluid-supply and having a bias toward closed position; a pivoted member operating to open said valve, and arranged to be actuated to open said valve upon a predetermined movement of the signal; and locking means to hold the pivoted member, said locking means being released upon a predetermined movement of the signal.

47. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off-valve; a pivoted member operating to open said valve; locking means to hold the pivoted member; a supply-valve; and a magnet for operating said supply-valve.

48. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off-valve; a lever operating to open said valve; a latch to hold the lever; supply and exhaust ports; valve means controlling said ports; and a magnet for operating said valve means.

49. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off valve; a pivoted member operating to open said valve; locking means to hold the pivoted member, said locking means being released upon a predetermined movement of the signal; supply and exhaust valves on the same stem; and a magnet for operating said supply and exhaust valves.

50. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off valve having a bias toward closed position; a pivoted member operating to open said valve; locking means to hold the pivoted member, said locking means being released upon a predetermined movement of the signal; a supply-valve; and a magnet for operating said supply-valve.

51. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off valve; a pivoted member operating to open said valve and arranged to be actuated to open said valve upon a predetermined movement of the signal; locking means to hold the pivoted member, said locking means being released upon a predetermined movement of the signal, a supply-valve; and a magnet for operating said supply-valve.

52. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off valve having a bias toward closed position; a lever operating to open said valve, and arranged to be actuated to open said valve upon a predetermined movement of the signal; a latch to hold the lever, said latch being released upon a predetermined movement of the signal; a supply-valve; and a magnet for operating said supply-valve.

53. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off valve having a bias toward closed position; a lever operating to open said valve, and arranged to be actuated to open said valve upon a predetermined movement of the signal; and a latch to hold the lever, said latch being released upon a predetermined movement of the signal; supply and exhaust valves on the same stem; and a magnet for operating said supply and exhaust valves.

54. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a cut-off valve; a lever operating to open said valve; a latch to hold the lever; and a retaining device to hold the signal in one position.

55. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve having a bias toward closed position; and means controlled by a movement of the signal to cause said cut-off valve to open.

56. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve having a bias toward closed position; and means controlled by a movement of the signal to cause said cut-off valve to open and remain open while the supply-valve is closed

57. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve having a bias toward closed position; means controlled by a movement of the signal to cause said cut-off valve to open; and means to hold the cut-off valve open, said means being released upon a predetermined movement of the signal.

58. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger position; means for applying the fluid-pressure to move the signal to safety position; a cut-off valve; means to open said cut-off valve upon a movement of the signal to danger; a retaining device to hold the signal at safety; a supply-valve; and a magnet to cause said supply-valve to open and to cause the retaining device to be set.

59. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger position; means for applying the fluid-pressure to move the signal to safety position; a cut-off valve; means to open said cut-off valve upon a movement of the signal to danger; a retaining device to hold the signal at safety; a supply-valve; and a magnet operating when energized to cause supply-valve to open and to cause said retaining device to be set, and operating when deënergized to cause the said retaining device to be released.

60. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger position; means for applying the fluid-pressure to move the signal to safety position; a cut-off valve operating to close automatically; means for opening and holding open said cut-off valve upon a movement of the signal to danger, said means being released upon a movement of the signal to safety; a retaining device to hold the signal at safety; a supply-valve; and electric means controlling said supply-valve and said retaining device.

61. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger position; means for applying the fluid-pressure to move the signal to safety position; a cut-off valve operating to close automatically; means for opening and holding open said cut-off valve upon a movement of the signal to danger, said means being released upon a movement of the signal to safety; a retaining device to hold the signal at safety; a supply-valve; and a magnet controlling said supply-valve and said retaining device, said magnet operating when energized to cause the supply-valve to open and to cause the retaining device to be set, and operating when deënergized to cause the supply-valve to close and said retaining device to be released.

62. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger position; means for applying the fluid-pressure to move the signal to safety position; a cut-off valve operating to close automatically; a lever for opening said cut-off valve upon a movement of the signal to danger; a latch to hold the lever and arranged to be released upon a movement of the signal to safety; a retaining device to hold the signal at safety; a supply-valve; and electric means for controlling said supply-valve and said retaining device.

63. In a fluid-pressure signal apparatus, the combination of a signal having a normal bias to danger position; means for applying the fluid-pressure to move the signal to safety position; a cut-off valve operating to close automatically; a pivoted member for opening said cut-off valve upon a movement of the signal to danger; locking means to hold the pivoted member and arranged to be released upon a movement of the signal to safety; a retaining device to hold the signal at safety; a supply-valve; and a magnet controlling said supply-valve and said retaining device, said magnet operating when energized to open the supply-valve and set the retaining device and operating when deënergized to close the supply-valve and release the retaining device.

64. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source; a piston and piston-chamber in communication with said source and in operative connection with said signal; a cut-off valve operating to close automatically; a pivoted member operating to open said valve; locking means to hold said pivoted member when the valve is open; means carried by the piston-rod to move said lever so as to open said valve when the signal goes to danger, and arranged to release said locking means when the signal goes to safety; a supply-valve; and a magnet to operate the supply-valve.

65. In a gas-pressure signal apparatus, the combination of a signal; a liquefied-gas-supply source; a piston and piston-chamber in communication with said source and in operative connection with said signal; a cut-off valve operating to close automatically; a pivoted member operating to open said valve; locking means to hold said pivoted member when the valve is open; means carried by the piston-rod to move said pivoted member so as to open said valve when the signal goes to danger, and arranged to release said locking means when the signal goes to safety; a supply-valve; a magnet to operate the supply-valve; and a retaining device to hold the signal at safety.

66. In a gas-pressure signal apparatus, the combination of a signal; a liquefied-gas source; a piston and piston-chamber in communication with said source and in operative connection with said signal; a cut-off valve operating to close automatically; a pivoted member operating to open said valve; locking means to hold said pivoted member when the valve is open; means carried by the piston-rod to move said pivoted member so as to open said valve when the signal goes to danger; a supply-valve; a retaining device to hold the signal at safety; and electric means operating simultaneously to open said supply-valve and set said retaining device.

67. In a fluid-pressure signal apparatus, the combination of a signal; a fluid-pressure-supply source, a piston and piston-chamber in communication with said source and in operative connection with said signal; a cut-off valve operating to close automatically; a lever operating to open said valve; a latch to hold said lever when the valve is open; means carried by the piston-rod to move said lever so as to open said valve when the signal goes to danger, and arranged to release said latch when the signal goes to safety; a supply-valve, a retaining device to hold the signal at safety; and a magnet operating when energized to open the supply-valve and set the retaining device, and operating when deënergized to close the supply-valve and release the retaining device.

68. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position; and means controlled by a movement of the signal to restrain the closing of the cut-off valve until the signal has made a predetermined movement.

69. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position operating to close when the signal goes to safety; and means operating to open said cut-off valve and actuated by the movement of the signal to danger.

70. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position; means controlled by a movement of the signal to restrain the closing of the cut-off valve until the signal has made a predetermined movement; and a magnet to operate the supply-valve.

71. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position operating to close when the signal goes to safety; means operating to open said cut-off valve and actuated by the movement of the signal to danger; and a magnet to operate the supply-valve.

72. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position; means controlled by a movement of the signal to restrain the closing of the cut-off valve until the signal has made a predetermined movement; and a retaining device to hold the signal at one condition of indication.

73. In a fluid-pressure signal apparatus, the combination of a signal; a supply-valve; a cut-off valve operating to close automatically when the signal goes to safety; means operating to open said cut-off valve and actuated by the movement of the signal to danger; and a retaining device to hold the signal at safety.

74. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve having a bias toward closed position and operating to close automatically when the signal has made a predetermined movement; means controlled by a movement of the signal to restrain the closing of the cut-off valve until the signal has made such predetermined movement; a retaining device to hold the signal at one condition of indication; and a circuit operating when closed to cause the supply-valve to open and to cause the setting of the retaining device, and operating when deënergized to cause the supply-valve to close and to cause the release of the retaining device.

75. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve operating to close automatically when the signal has made a predetermined movement; means operating to open said cut-off valve and actuated by the movement of the signal to danger; a retaining device to hold the signal at safety; and a magnet operating when energized to cause the supply-valve to open and to cause the setting of the retaining device, and operating when deënergized to cause the supply-valve to close and to cause the release of the retaining device.

76. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position and operating to close when the signal goes to safety and to open when the signal goes to danger; and means controlling said cut-off valve and operated by movement of the signal.

77. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve biased toward closed position and operating to close when the signal goes to safety and to open when the signal goes to danger; means controlling said cut-off valve and operated by movement of the signal; and a retaining device to hold the signal at safety.

78. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a supply-valve; a cut-off valve operating to close when the signal goes to safety and to open when the signal goes to danger; means controlling said cut-off valve and operated by movement of the signal; a retaining device to hold the signal at safety; and train-controlled means operating to cause the supply-valve to open and to cause the setting of the retaining device.

79. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve for cutting off the supply of fluid-pressure when the signal goes to safety and having a bias toward closed position; and a pivoted member actuated by the movement of the signal to danger and operating to open said valve.

80. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve for cutting off the supply of fluid-pressure when the signal goes to safety and having a bias toward closed position; a pivoted member actuated by the movement of the signal to danger and operating to open said valve; and train-controlled means operating to effect the initial supply of fluid-pressure to put the signal to safety.

81. In a fluid-pressure signal apparatus, the combination of a signal; means for applying the fluid-pressure to operate the signal; a valve for cutting off the supply of fluid-pressure when the signal goes to safety and having a bias toward closed position; a pivoted member actuated by the movement of the signal to danger and operating to open said valve; and a locking device to hold said pivoted member and released when the signal goes to safety.

82. In a fluid-pressure signal apparatus, the combination of a

signal; means for applying the fluid-pressure to operate the signal; a valve for cutting off the supply of fluid-pressure and having a bias toward closed position; and means operated by movement of the signal and controlling said valve, whereby said valve is opened when the signal goes to danger and is closed when the signal goes to safety.

83. In a fluid-pressure signal apparatus, the combination of a signal; means for applyiug the fluid-pressure to operate the signal; a valve for cutting off the supply of fluid-pressure and having a bias toward closed position; and means operated by movement of the signal and controlling said valve, whereby said valve is opened when the signal goes to danger and is closed when the signal goes to safety; and train-controlled means operating to effect the initial supply of fluid-pressure to put the signal to safety.

84. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a supply-valve; a cut-off valve biased toward closed position; and means controlled by a movement of the signal to restrain the closing of the cut-off valve until the signal has made a predetermined movement.

85. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a supply-valve; a cut-off valve biased toward closed position, and operating to close when the signal goes to safety; and means operating to open said cut-off valve and actuated by the movement of the signal to danger.

86. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a supply-valve; a cut-off valve biased toward closed position and operating to close when the signal goes to safety and to open when the signal goes to danger; and means controlling said cut-off valve and operated by movement of the signal.

87. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a supply-valve; a cut-off valve operating to close when the signal has made a predetermined movement in one direction and to open when the signal has made a predetermined movement in another direction; and means controlling said cut-off valve and operated by movement of the signal; a retaining device to hold the signal in one position; and means operating to cause the supply-valve to open and the retaining device to be set.

88. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a valve for cutting off the supply of fluid-pressure when the signal goes to safety and having a bias toward closed position; and a pivoted member actuated by the movement of the signal to danger and operating to open said valve.

89. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a valve for cutting off the supply of fluid-pressure when the signal goes to safety and having a bias toward closed position; a pivoted member actuated by the movement of the signal to danger and operating to open said valve; and train-controlled means operating to effect the initial supply of fluid-pressure to put the signal to safety.

90. In a signal apparatus, the combination of a signal; storage means containing a supply of liquefied gas; means for applying the gas to operate the signal; a valve for cutting off the supply of fluid-pressure when the signal goes to safety and having a bias toward closed position; a pivoted member actuated by the movement of the signal to danger and operating to open said valve; and a locking device to hold said pivoted member and released when the signal goes to safety.

91. In a fluid-pressure mechanism the combination of a motor; an exhaust-port; a valve to cut off the fluid-supply; and means operated from the motor for controlling said valve, said means comprising a part connected with the motor and having a movement coincident therewith, and a second part moved by the first-mentioned part and coacting with said valve.

92. In a fluid-pressure mechanism, the combination of a motor; an exhaust-port; a valve to cut off the fluid-supply; and means operated from the motor for controlling said valve, said means comprising a part connected with the motor and having a movement coincident therewith, a pivoted lever operated by said part and in operative relation to said valve, and a second lever for holding the first-mentioned lever in one of the positions to which it has been moved.

93. In a fluid-pressure mechanism, the combination of a motor, an exhaust-port, a valve to cut off the supply of fluid-pressure; a pivoted lever in operative relation to said valve; means in engagement with said lever for operating it; a latching-lever for said pivoted lever; and a part connected with the motor for operating said means.

94. In a signal apparatus, the combination of a motor; an exhaust-port; a valve to cut off the fluid-supply; means operating from the motor for controlling said valve, said means comprising a part connected with the motor and having a movement coincident therewith, and a second part moved by the first-mentioned part and coacting with said valve; and a retaining device operating to hold the signal in one position.

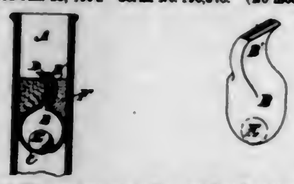
95. In a signal apparatus, the combination of a motor; an exhaust-port; a valve to cut off the fluid-supply; means operating from the motor for controlling said valve, said means comprising a part connected with the motor and having a movement coincident therewith, a pivoted lever operated by said part and in operative relation to said valve, and a second lever for holding the first-mentioned lever in one of the positions to which it has been moved; and a retaining device operating to hold the signal in one position.

96. In a signal apparatus, the combination of a motor; an exhaust-port; a valve to cut off the supply of fluid-pressure; a pivoted lever in operative relation to said valve; means in engagement with said lever for operating it; a latching-lever for said pivoted lever; a part connected with the motor for operating said means; and a retaining device operating to hold the signal in one position.

97. In a signal apparatus, the combination of a motor; an exhaust-port; a valve to cut off the fluid-supply; means operated from the motor for controlling said valve, said means comprising a part connected with the motor and having a movement coincident therewith, and a second part moved by the first-mentioned part and coacting with said valve; a supply-valve; a retaining device to hold the signal at safety; and electric means operating when energized to open the supply-valve and set the retaining device and operating when deënergized to close the supply-valve and release the retaining device.

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**758,298. NON-REFILLABLE BOTTLE.** DANIEL S. COOKE, Los Angeles, Cal., assignor of one-half to Charles J. Walter, Los Angeles, Cal. Filed Jan. 23, 1904. Serial No. 190,375. (No model.)

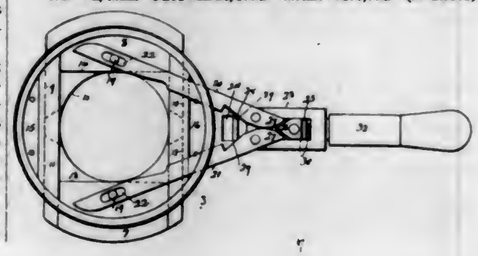


*Claim.*—1. The combination with a bottle of a non-refillable device consisting of a bulb in the neck of the bottle, said bulb having an aperture in the lower part thereof and a curved outlet at the other end thereof, said outlet extending almost across the transverse diameter of the neck of the bottle and being very narrow transversely; a valve in said bulb adapted to close the aperture in the bottom thereof when the bottle is in a vertical position.

2. The combination with a bottle of a non-refillable device adapted to fit into the neck of the bottle which device consists of a bulb having an aperture in the lower end thereof and a neck on the upper part thereof, said neck having a wide curved outlet therein, said outlet being very narrow transversely; a ball-valve in said bulb adapted to close the aperture in the bottom thereof when the bottle is in the vertical position.

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**758,299. FLAME-REGULATOR FOR LAMPS.** FRANK A. CORTH, Meriden, Conn. Filed Jan. 28, 1904. Serial No. 190,834. (No model.)





*Claim.*—1. A flame-regulator for lamps, comprising two shutters having inwardly-projecting overlapping arms, the meeting edges of the shutters arranged in the same plane.

2. A flame-regulator for lamps comprising two shutters having inwardly-projecting overlapping arms, the arms of one shutter offset whereby the meeting edges of the shutters will stand in the same plane.

3. In a flame-regulator for lamps the combination with the lamp and cap thereof, of two shutters and levers connected therewith for operating the same, said levers turning on pivots arranged outside the cap.

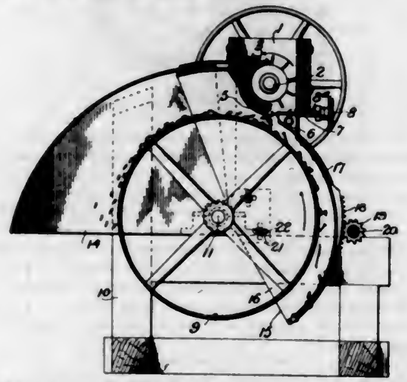
4. In a flame-regulator for lamps the combination with the lamp and cap thereof, of two transversely-movable shutters, levers for operating the same, said levers mounted on pivots outside the cap, and cams for turning the said levers substantially as described.

5. In a flame-regulator for lamps, the combination with the lamp and cap thereof, of two transversely-movable shutters, levers connected therewith and extending beyond said cap, a slide carrying cams for turning said levers, a screw projecting from said slide, and a handle engaging with said screw and adapted to turn the same whereby the slide is moved, substantially as described.

6. In a flame-regulator for lamps, the combination with the lamp-body and cap thereof having a flame-opening, transverse shutters arranged within said cap and having inwardly-projecting overlapping arms, an arm secured to one side of said cap, levers connected with said shutters and pivoted to said arms at a point beyond said cap, said levers formed with cam-surfaces, a slide mounted in said arm and carrying cams adapted to engage with the said arms at opposite sides of their pivots, a screw connected with said slide and extending rearward from said arm, and a handle swivelly connected with said arm and engaged with said screw, substantially as described.

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**758,300. MACHINE FOR CLEANING COTTON-SEED.** JOSEPH DAVIDSON, Atlanta, Ga., assignor to the Southern Cotton Oil Company, Jersey City, N. J., a Corporation of New Jersey. Filed June 25, 1903. Serial No. 163,059. (No model.)



*Claim.*—1. In a machine for cleaning cotton and similar seed, the combination of a feed device, a revolving drum, a surrounding case, means for adjusting the outlet from the feed to the drum, and means for regulating the size of the channel between the drum and casing in which the air-blast is generated.

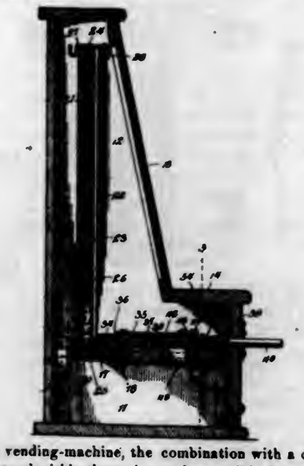
2. In a machine for cleaning cotton and other seed, a revolving drum in combination with a hopper, a revolving seed-distributer therein, means for adjusting the outlet from the hopper to the revolving drum, and means for regulating the size of the channel between the drum and its casing.

3. In a machine for cleaning cotton-seed and other similar material, the combination with a revolving drum, of a surrounding casing, means for regulating the feed of the seed to the drum, and means for regulating the size of the channel in which the air-blast is generated.

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**758,301. VENDING-MACHINE.** THOMAS M. DAY, Windfall, Ind., assignor of one-half to John W. Rifle, Windfall, Ind. Filed Apr. 15, 1902. Serial No. 102,988. (No model.)

*Claim.*—1. In a vending-machine, the combination with a casing, of a receptacle removably arranged within the casing and comprising side and end walls, a bottom and top connecting the end walls, said bottom constituting a part of the receptacle and removable therewith, said side walls terminating short of the bottom, and a plunger arranged within the casing and movable through the receptacle below the side walls thereof.



2. In a vending-machine, the combination with a casing, of a support arranged within the casing, a plunger slidably mounted upon the support, a box removably mounted upon the support and comprising side and end walls, and a top and bottom connecting the end walls and constituing a part of the removable box, said side walls terminating short of the bottom to provide alined openings in the opposite walls of the receptacle, said openings being disposed in alinement with the plunger.

3. In a vending-machine, the combination with a casing, of a support arranged within the casing and having a seat, a plunger slidably mounted upon the support in a plane above the seat, a box removably mounted upon the support and comprising side and end walls, and a top and bottom connecting the end walls, the bottom being located in the seat of the support and removable therefrom with the box, said side walls terminating short of the bottom to provide openings in the opposite walls of the receptacle, said openings being arranged in alinement with the plunge

4. In a vending-machine, the combination with a casing, of a platform located therein and having a depressed seat, a box removably arranged within the casing and having a bottom that rests in the seat, said box being also provided in its walls and just above the bottom with alined openings, a plunger slidably mounted upon the platform and movable through the front opening of the box, means for actuating the plunger, and a flexible keeper secured to the platform and projecting across the rear opening, said keeper constituting the rear wall of the seat in which the box rests and projecting across the rear opening of the box.

5. In a vending-machine, the combination with a casing, of a platform located therein and having a depressed seat in its rear end, a removable box having a bottom removable therewith that rests in the seat and is supported thereby, said box being provided in its front and rear walls and just above the bottom with alined openings, the rear opening being larger than the front opening, a plunger slidably mounted upon the platform and movable through the front opening, and means for actuating the plunger.

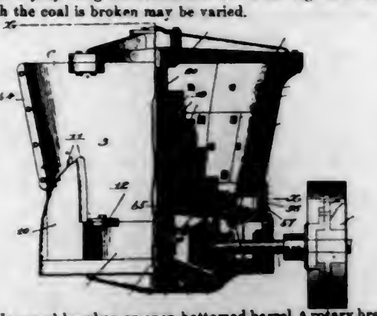
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**758,302. COAL-BREAKER.** EDWIN S. DECKER, Malden, Mass., assignor to Steel Cable Engineering Company, Boston, Mass., a Corporation of Maine. Filed Mar. 10, 1902. Serial No. 97,459. (No model.)

*Claim.*—1. In a coal-breaker, an open-bottomed barrel, a rotary breaker therein and a set of disintegrating-teeth carried by one of said parts at the discharge end of the breaker, said set being one of a plurality of interchangeable sets, and the teeth of each set having a different length from the teeth of the other sets, whereby by using different sets of teeth the degree of fineness to which the coal is broken may be varied.

2. In a coal-breaker, an open-ended barrel, a rotary breaker therein, means to hold the barrel and breaker against relative movement in an axial direction, and a set of disintegrating-teeth remov-

ably carried by one of said parts at the discharge end of the breaker, said set being one of a plurality of interchangeable sets and the teeth of each set having a different length from those of the other sets, whereby by using different sets of teeth the degree of fineness to which the coal is broken may be varied.



3. In a coal-breaker, an open-bottomed barrel, a rotary breaker therein, and a set of disintegrating-teeth carried by the barrel opposite the lower end of the breaker, said set being one of a plurality of interchangeable sets, the teeth of each of said sets having a different length from those of the other sets, whereby by employing different sets of teeth the degree of fineness of the disintegration may be regulated.

4. In a coal-breaker, an open-bottomed barrel, a rotary breaker therein having a general conical shape, and a set of disintegrating-teeth projecting from the inner face of the barrel at its lower end and cooperating with the base of the breaker, said set being one of a plurality of interchangeable sets, and the teeth of each set having a different length from those of the other sets.

5. In a coal-breaker, an open-ended barrel, a rotary breaker therein, said barrel having at its discharge end an annular groove in its inner face and a set of disintegrating-teeth removably sustained in said groove, said set being one of a plurality of interchangeable sets, and the teeth of each set having a different length from those of the other sets, whereby by employing different sets of teeth the degree of fineness of the disintegration may be regulated.

6. In a coal-breaker, a barrel, a rotary breaker therein, an annular groove in the interior of the barrel, a plurality of separate disintegrating-teeth sustained in said groove, a keyway leading to said groove and through which said teeth are inserted, and a key-tooth in said keyway.

7. In a coal-breaker, a sectional barrel open at both ends, a rotary breaker in said barrel, said barrel having an internal annular groove opposite the base of the breaker, a series of disintegrating-teeth removably supported in said groove, and a keyway extending through each section of the barrel and leading to the grooves, through which said teeth may be inserted.

8. In a coal-breaker, a sectional barrel open at both ends, a rotary breaker in said barrel, said barrel having an internal annular groove opposite the base of the breaker, a series of disintegrating-teeth removably supported in said groove, a keyway extending through each section of the barrel and leading to the grooves, through which said teeth may be inserted, one of said teeth being longer than the other and projecting into the keyway.

9. In a coal-breaker, an open-ended barrel, a rotary breaker therein, said barrel having an annular groove opposite the base of the breaker, a plurality of disintegrating-teeth removably supported in said groove, one of said teeth having an interlocking engagement with the barrel whereby said teeth are held against sidewise movement in the groove.

10. In a coal-breaker, a barrel having an annular wear-plate-receiving recess, wear-plates in said recess, an introduction-passage opening into the recess and through which the last wear-plate is inserted, and a closure-plate detachably secured in the introduction-passage.

11. In a coal-breaker, a barrel having an annular wear-plate-receiving recess in its inner face, and an introduction-passage opening into the recess, a plurality of wear-plates confined in said recess and forming the operative surface of the barrel, and a closure-plate detachably secured in the introduction-passage, the walls of the recess and the backs of the wear-plates having such a shape that when said plates are in mutual side contact they are prevented from moving sidewise in the groove.

12. In a coal-breaker, a barrel having a recess with polygonal walls, a plurality of wear-plates in said recess, each wear-plate having a flat back face to fit one of the flat sides of the recess, an introduction-passage opening into the recess and through which the last wear-plate is inserted, and a closure-plate detachably secured in the introduction-passage.

13. In a coal-breaker, a barrel comprising a base portion having vertical flanges, and a sectional hopper portion having ribs on each section thereof interlocking with the flanges on the base portion.

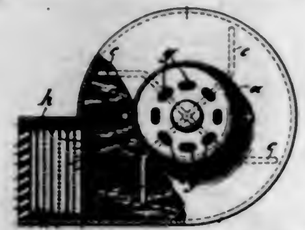
14. In a coal-breaker, a barrel comprising a base portion having a plurality of vertical holding-flanges, and a hopper portion having on its exterior a plurality of vertically-extending ribs to interlock with the flanges.

15. In a coal-breaker, a casing or shell having an end discharge, a shaft in said shell, a breaker on the shaft, a gear-wheel also on the shaft and situated between the breaker and above the discharge-opening, and a stationary circular shield between the breaker and gear to cover the gear, said shield being situated within the shell and of a size to leave an annular space between said shield and the walls of the shell through which the material is discharged.

16. In a coal-breaker, a casing or shell having an open discharge end and a spider extending across said end, a shaft journaled in said spider, a breaker on said shaft, a gear-wheel on the shaft below the breaker and above the spider, and a stationary circular shield covering the top of the gear and having depending flanges to inclose the sides of the gear, said flanges forming between them and the inner wall of the casing an annular space through which the material is discharged.

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**758,308. ELECTRIC HEATER. ERNST BUCHMANN, Berlin, Germany, assignor to Martin Petersen, Friedrichsgabekoog, Schleswig-Holstein, Germany. Filed Aug. 15, 1902. Serial No. 119,718. (No model.)**



*Claim.*—1. In combination, a cylindrical casing having an opening in the side and having a tangential opening, a fan rotating in said cylinder an electric motor driving said fan, and electric conducting-wires in said openings, substantially as described.

2. In combination, a cylindrical casing having an opening in one side and an integral projecting motor-casing on the other, a fan in said cylinder, a shaft carrying said fan and extending through said projecting motor-casing, said casing having openings leading to the outside air and to the interior of the cylinder, an electric motor in said casing, said cylinder having a tangential delivery-opening, and electric conducting-wires in said side and delivery openings, substantially as described.

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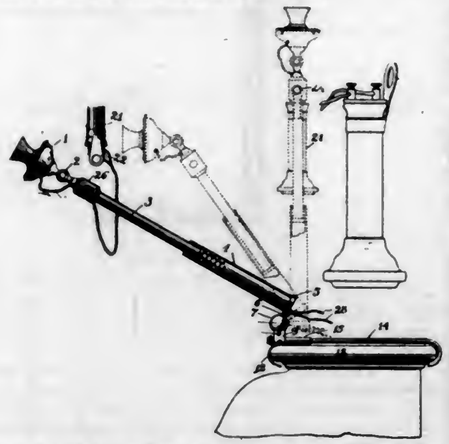
**758,304. OFFICE-DESK TELEPHONE. ALAN R. FERGUSON, New York, N. Y., assignor to Electro-Mechanical Specialty Company, New York, N. Y., a Corporation of New York. Filed Nov. 14, 1901. Serial No. 82,496. (No model.)**

*Claim.*—1. In a desk-telephone, the combination with a support and a staff having a swinging connection therewith, of a transmitter on the staff, a receiver-support mounted on the staff independently of the transmitter between the point at which the staff is supported and the point at which the transmitter is connected to the staff, a receiver, and means for suspending the vertically-positioned receiver in position on the receiver-support whatever the angular position of the staff with reference to the vertical.

2. In a desk-telephone, the combination with a transmitter, of a staff mounted upon a support, a universal joint so that said staff may be swung upon said support in a substantial arc in diverse directions to and from an upright position and a switch on said staff adapted to be operated by a receiver when said staff is in an upright position.

3. In a desk-telephone, the combination with a support, and a telescopic staff having a swinging connection therewith, of a transmitter on the staff, a receiver-support mounted on the staff independently of the transmitter between the point at which the staff is supported and the point at which the transmitter is connected to the staff, a receiver, and means for suspending the vertically-positioned receiver in position on the receiver-support whatever the angular position of the staff with reference to the vertical.





4. In a desk-telephone, the combination with a clamping-base, of an extensible staff mounted thereon by a universal joint, a transmitter mounted on one end of said staff, a movable switch carried by said staff, and a receiver adapted to operate said switch.

5. In a desk-telephone, the combination with a support, and a staff having a swinging connection therewith, of a transmitter on the staff, a receiver-support mounted on the staff independently of the transmitter between the point at which the staff is supported and the point at which the transmitter is connected to the staff, a receiver, and means for maintaining the receiver suspended from the receiver-support in a vertical position as the staff is swung from one position to another.

6. In a desk-telephone, the combination with a support, and a staff having a swinging connection therewith, of a transmitter hinged to the staff, a receiver-support mounted on the staff independently of the transmitter between the point at which the staff is supported and the point at which the transmitter is connected to the staff, a receiver, and means for maintaining the receiver suspended from the receiver-support in a vertical position as the staff is swung from one position to another.

7. In a desk-telephone, the combination with a support and a telescopic staff having a swinging connection therewith, of a transmitter hinged to the staff, a receiver-support mounted on the staff independently of the transmitter between the point at which the staff is supported and the point at which the transmitter is connected to the staff, a receiver, and means for maintaining the receiver suspended from the receiver-support in a vertical position as the staff is swung from one position to another.

8. A desk-telephone comprising a clamping-base and a socket upon said base, a staff provided with a solid ball held in said socket, a transmitter pivotally mounted upon the end of said staff and a switch having a movable receiver-hook carried on said staff.

9. In a desk-telephone, the combination with a solid ball mounted in opposite portions of a socket and provided with a stem working between said portions, of a telescopic staff mounted upon said stem and extending transversely thereof, a transmitter pivotally mounted upon said staff, and a switch having a movable receiver-hook carried by said staff.

10. In combination with a base having an integral clamping-bar, a guiding device, a longitudinally-adjustable clamping member working in said guiding device, means for drawing together said clamping member and a hollow telescopic staff connected by a universal joint to said base, and carrying a switch having a movable receiver-hook and having mounted at one end a transmitter.

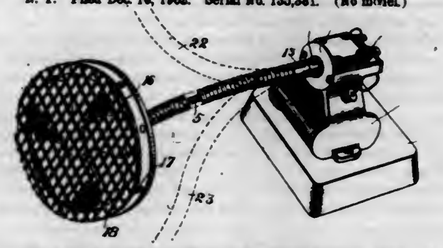
11. In combination, a base 12 having integral clamping-fingers 17 and a tubular guide 15, a tubular rod 14 adjustable in said guide, and provided with an integral crook 16; a screw threaded into said rod 14 and whose head engages with an upturned ear 20 provided upon said base; arms 9, 9 extending from the base 12 and having a screw for drawing the arms toward each other; shells 8 provided upon said arms; a hollow telescopic staff, a transmitter and a receiver-switch carried upon said staff, and connecting-wires led through the hollow of said staff.

12. In a desk-telephone, the combination with a support, and a staff having a universal swinging connection therewith, of a transmitter on the staff, a receiver-support mounted on the staff, a receiver, and means for suspending the vertically-positioned receiver in a vertical position on the receiver-support whatever the angular position of the staff with reference to the vertical.

13. In a desk-telephone, the combination with a support, and a staff having a universal swinging connection therewith, of a transmitter on the staff, a receiver-support mounted on the staff, a receiver, and means for maintaining the receiver suspended from the receiver-support in a vertical position as the staff is swung from one position to another and the free end thereof raised or lowered.

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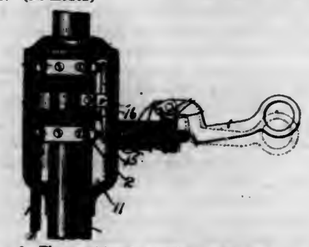
**758,305. ELECTRIC FAN. ALAN R. FERGUSON, New York, N. Y. Filed Dec. 16, 1902. Serial No. 135,381. (No model.)**



*Claim.*—The combination of an electric motor, a fan, a fan-guard, a flexible driving-shaft having a threaded socket at one end engaging with the threaded extension of the rotating element of the motor and a threaded stem at the other end adapted to enter and be secured in an opening in the hub of the fan, and a flexible tube-section inclosing said driving-shaft and inflexible under the application of a force as great as the weight of the fan and other supported parts whereby the fan upon adjustment is held in its adjusted position, said flexible tube-section having at one end a collar secured to the fixed part of the motor and at the other end a collar secured to the fan-guard.

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**758,306. ELECTRIC SWITCH. ALAN R. FERGUSON, New York, N. Y., assignor to Electro-Mechanical Specialty Company, New York, N. Y., a Corporation of New York. Filed Dec. 16, 1902. Serial No. 135,383. (No model.)**



*Claim.*—1. The combination with a staff having a swinging connection with its support, of a transmitter mounted thereon, a switching device mounted on the staff independently of the transmitter, a receiver-hook whose movements serve to make and break the circuits of the switching device, and means for maintaining a given condition of such switching device as the staff is swung from one position to another.

2. The combination with a staff having a swinging connection with its support, of a transmitter mounted thereon, a switching device mounted on the staff independently of the transmitter, an operating-lever for the switching device, a receiver-hook whose movements are transmitted to said lever, and means for maintaining a given condition of said lever as the staff is swung from one position to another.

3. The combination with a supporting member, of a switching device mounted thereon, an operating-lever for the switching device, a receiver-hook, a spring-pressed plunger interposed between said hook and said operating-lever, and means for maintaining a given

condition of said lever as the member is swung from one position to another.

4. The combination with a member having a swinging connection with its support, of a transmitter mounted thereon, a switching device also mounted thereon independently of the transmitter, and a receiver-hook operatively connected with the switching device and rotatably mounted with reference to said member.

5. The combination with a member, of a switching device mounted thereon, an operating-lever for the switch, a receiver-hook, a spring-pressed plunger interposed between said operating-lever and said hook, and a journal upon which said hook is mounted.

6. The combination with a signaling-circuit and a talking-circuit, of a lever pivoted intermediate its ends for closing one circuit and opening the other, and vice versa, a member upon which said switches are mounted, a movement-transmitting device interposed between said hook and said lever, and a journal upon which said hook is mounted.

7. The combination with a signaling-circuit and a talking-circuit, of a lever pivoted intermediate its ends for closing one circuit and opening the other, and vice versa, a member upon which said switches are mounted, a movement-transmitting device interposed between said hook and said lever, a journal upon which said hook is mounted, and a spring for elevating said hook upon the removal of the receiver.

8. The combination with a signaling-circuit switch and a talking-circuit switch, of a member upon which the switches are mounted, a double-arm lever for simultaneously opening one switch and closing the other, a receiver-hook, a spring-pressed plunger interposed between said lever and said hook, and a journal portion rotatable about the axis of said plunger and upon which said hook is mounted.

9. The combination with a signaling-circuit switch and a talking-circuit switch, of a member upon which the switches are mounted, a double-arm lever for simultaneously opening one switch and closing the other, a receiver-hook, a spring-pressed plunger interposed between said lever and said hook, a journal portion rotatable about the axis of said plunger and upon which said hook is mounted, and a spring normally pressing against said operating-lever to close the talking-circuit switch and open the signaling-circuit switch.

10. The combination with the switches of a telephone apparatus, of a swinging casing, a lateral projection thereon, a receiver-hook rotatably mounted on said projection and a movement-transmitting device interposed between the hook and the switches.

11. The combination with the switches of a telephone apparatus, of a swinging casing therefor, a journal mounted therein, a receiver-hook mounted on said journal and rotating relatively to said casing as the latter is swung, and an interposed plunger for operating the switches from the hook.

12. The combination with the switches of a telephone apparatus, of a swinging casing therefor, a journal mounted therein, a receiver-hook mounted on said journal and rotating relatively to said casing as the latter is swung, and an interposed spring-pressed plunger for operating the switches from the hook.

13. The combination with the switches of a telephone apparatus, of a casing therefor, a projection extending from said casing, a journal rotatably mounted in said projection, a receiver-hook mounted on said journal, and a spring-pressed plunger for transmitting the inward movement of said hook to operate said switches.

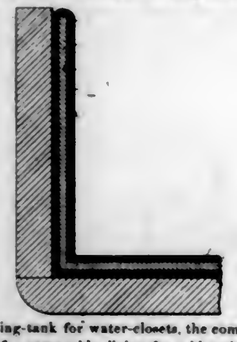
14. The combination with the switches of a telephone apparatus, of a casing therefor, a projection extending from said casing, a journal rotatably mounted in said projection and having an elongated peripheral slot, a receiver-hook mounted on said journal, a spring-pressed plunger for transmitting the inward movement of said hook to operate said switch, and a pin extending from said projection into said slot for preventing the outward movement of said journal.

15. The combination with a staff having a swinging connection with its support, of a transmitter mounted thereon, a switching device mounted on the staff between the point at which the staff is supported and the point at which the transmitter is connected to the staff, a receiver-hook whose movements serve to make and break the circuits of the switching device, and means for maintaining a given condition of the switching device as the staff is swung from one position to another.

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**758,307. FLUSHING-TANK. FREDERICK FINDEISEN, Chicago, Ill. Filed Aug. 10, 1903. Serial No. 168,361. (No model.)**

*Claim.*—1. In a flushing-tank for water-closets, the combination with a casing, of a lining for said casing comprising a metal core, a layer of fibrous material secured to the exterior and interior surfaces of said core, and a waterproof coating covering said fibrous material.



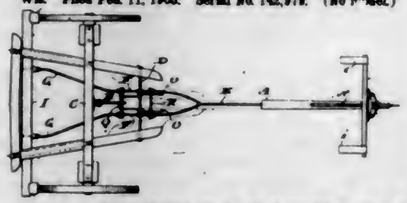
2. In a flushing-tank for water-closets, the combination with a wooden casing, of a removable lining for said casing comprising a core, a layer of fibrous material secured to the exterior and interior surfaces of said core, and a waterproof coating covering said fibrous material.

3. In a flushing-tank for water-closets, the combination with a wooden casing, of a removable lining for said casing comprising a metal core, a coating of adhesive substance upon said core, a layer of fibrous material secured to said core by the adhesive substance, and a waterproof coating covering said fibrous material.

4. In a flushing-tank for water-closets, the combination with a metal core, of a coating of adhesive substance upon said core, a layer of yielding fibrous material secured to the interior and exterior surfaces of said core by the adhesive substance, and a waterproof coating covering said fibrous material.

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**758,308. WAGON-BRAKE. VACLAV FINCOUST, Clarks Mills, Wis. Filed Feb. 11, 1903. Serial No. 142,979. (No model.)**



*Claim.*—1. The combination of the brake-beam loose in hangers, the pole, levers fulcrumed on the pivot-bolt of said pole, links connecting said brake-beam and levers, a rod in connection with said levers, a link in connection with the forward end of the rod, a ratchet-bar on the aforesaid pole engaged by the link, and a neck-yoke connected to said link.

2. The combination of the brake-beam loose in hangers, the pole, spring-controlled levers fulcrumed on the pivot-bolt of said pole, links connecting said brake-beam and levers, a rod in connection with said levers, a link in connection with the forward end of the rod, a ratchet-bar on the aforesaid pole engaged by the link, and a neck-yoke connected to said link.

3. The brake-beam loose in hangers, the pole, levers fulcrumed on the pivot-bolt of said pole and connected at their rear ends by a bolt, links connecting said brake-beam and bolt, a rod having rear branches thereof in connection with the forward ends of said levers, a link in connection with the forward end of the rod, a ratchet-bar on the aforesaid pole engaged by the link, a neck-yoke connected to said link, and a pivotal hook arranged to be engaged with the bolt aforesaid, the engagement of said hook and bolt serving to prevent setting of the brake.

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**758,309. BOX FOR CONTAINING TOOTH-POWDER. MORDECAI H. FLETCHER, Cincinnati, Ohio. Filed Sept. 18, 1903. Serial No. 173,699. (No model.)**

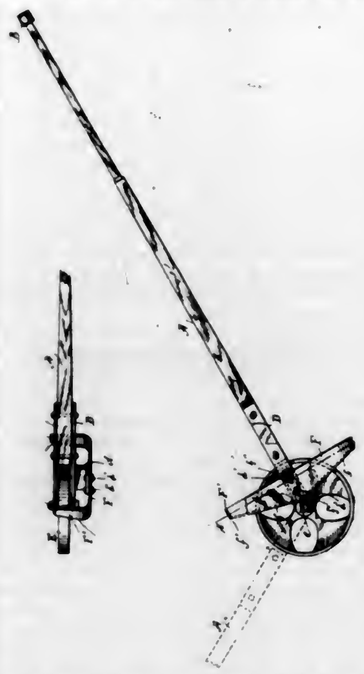




*Claim.*—In a package of the character indicated, the combination of the centrally-perforated cover, centrally-perforated packing-disk, centrally-perforated valve-disk with tongues thrown out on one side at opposite angles and adapted to rotatively engage the pad, in combination with a spindle having a terminal knob and shoulder, and inserted through the box-cover, the packing-disk and the valve-disk, and secured to the latter, substantially as and for the purpose set forth.

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**758,310. LAWN-EDGE TRIMMER. ARTHUR E. FULLER, Danvers, Mass. Filed July 11, 1903. Serial No. 165,134. (No model.)**



*Claim.*—1. A lawn-edge trimmer, consisting of a handle bar or frame and plates or straps secured to its lower end, and a wheel journaled thereon, in combination with a vertical cutter-blade F, secured at one side of said frame or bar, and having angular lifter or slicer blades F', F', at its ends, substantially as and for the purpose set forth.

2. A lawn-edge trimmer, consisting of a frame or bar, and a wheel journaled at its lower end, combined with a lateral bracket or projection *d*, secured to one side of said frame or bar, and a vertical cutter-blade F, secured to said bracket and having angular lifter or slicer blades F', F', at its ends, substantially as and for the purpose set forth.

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**758,311. METHOD OF FELTING OR MATTING FIBERS TOGETHER. GUSTAV GOLDMAN, Baltimore, Md. Filed Aug. 29, 1903. Serial No. 171,287. (No specimens.)**

*Claim.*—1. The method of binding fibers together, which consists in introducing between the fibers a dry finely-divided binding material, together with a substance containing water of crystallization, and then treating the same so as to cause the substance to part with its water of crystallization, whereby the binding material is rendered capable of actively binding the fibers together.

2. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with a substance containing water of crystallization, and subjecting said substances to heat, whereby the water of crystallization is set free and the binding material is rendered capable of actively binding the fibers together.

3. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with a substance containing water of crystallization, and then subjecting said fibers to heat and pressure, whereby the water of crystallization is set free and the binding material is rendered capable of actively binding the fibers together.

4. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with an efflorescent substance, and treating said efflorescent substance so as to cause it to part with its water of crystallization, whereby the binding material will be rendered capable of actively binding the fibers together.

5. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with an efflorescent substance, and then subjecting said efflorescent substance to heat, whereby it is caused to part with its water of crystallization and thereby rendering the binding material capable of actively binding the fibers together.

6. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with an efflorescent substance, and subsequently treating said efflorescent substance with steam, whereby it is caused to part with its water of crystallization thereby rendering the binding material capable of actively binding the fibers together, and then subjecting the fibers to heat and pressure.

7. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with crystalline sodium carbonate, and then treating the latter so as to cause it to part with its water of crystallization and thereby render the binding material capable of actively binding the fibers together.

8. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with crystalline sodium carbonate, and subsequently subjecting said sodium carbonate to the action of heat, whereby it is caused to part with its water of crystallization and render the binding material capable of actively binding the fibers together.

9. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with crystalline sodium carbonate, and subsequently treating the same with steam thereby rendering the binding material capable of actively binding the fibers together, and then subjecting the mass of fibers to heat and pressure.

10. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with a substance containing water of crystallization, and then subjecting the mass to heat and pressure in the presence of steam, thereby rendering the binding material capable of actively binding the fibers together.

11. The method of treating fibers or fibrous material, which consists in introducing between the fibers a dry finely-divided binding material together with crystalline sodium carbonate, and then subjecting the fibrous mass to heat and pressure in the presence of steam, thereby rendering the binding material capable of actively binding the fibers together.

12. The method of treating fibers or fibrous material, which consists in introducing between the fibers dry finely divided flour together with a substance containing water of crystallization, and then causing the latter to part with its water of crystallization, whereby the flour is rendered capable of actively binding the fibers together.

13. The method of treating fibers or fibrous material, which consists in introducing between the fibers flour together with a substance containing water of crystallization, and then subjecting the fibrous mass to heat and pressure, whereby the water of crystallization is set free and the flour is rendered capable of actively binding the fibers together.

14. The method of treating fibers or fibrous material which consists in introducing between the fibers flour together with a substance containing water of crystallization, and then subjecting the fibrous mass to heat and pressure in the presence of steam, whereby the flour is rendered capable of actively binding the fibers together.

15. The method of treating fibers or fibrous material, which consists in introducing between the fibers flour in a dry state together with an efflorescent substance, and then subjecting the fibers to heat and pressure, whereby the efflorescent substance is caused to part with its water of crystallization, thereby rendering the flour capable of actively binding the fibers together.

16. The method of treating fibers or fibrous material, which consists in introducing between the fibers dry flour and crystalline sodium carbonate, and then treating the latter so as to cause it to part with its water of crystallization, thereby rendering the flour capable of actively binding the fibers together.

17. The method of treating fibers or fibrous material, which consists in introducing between the fibers dry flour and crystalline sodium carbonate, and then subjecting the mass of fibers to heat and pressure, whereby the crystalline sodium carbonate is caused to part with its water of crystallization and thereby render the flour capable of actively binding the fibers together.

18. The method of treating fibers or fibrous material, which consists in introducing dry flour between the fibers together with crystalline sodium carbonate, and then subjecting the latter to heat, whereby it is caused to part with its water of crystallization, and thereby rendering the flour capable of actively binding the fibers together.

19. The method of treating fibers or fibrous material, which consists in introducing between the fibers dry flour and crystalline sodium carbonate, and then subjecting the mass of fibers to heat and pressure in the presence of steam, whereby the flour is rendered capable of actively binding the fibers together.

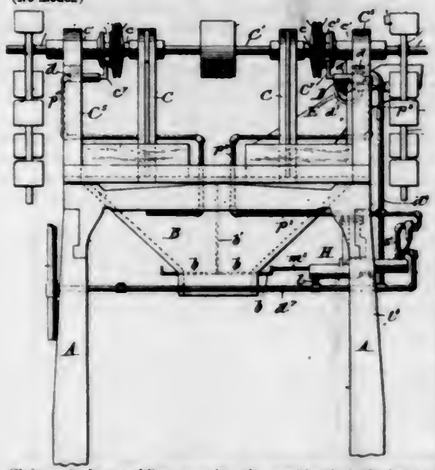
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758,312. **PHOTOGRAPHIC DEVELOPING-PAPER.** FRITZ GÜNTHER, Berlin, Germany, assignor to Chemische Fabrik auf Actien, (vorm. E. Schering,) Berlin, Germany. Filed Oct. 31, 1903. Serial No. 179,377. (No specimens.)

*Claim.*—Photographic developing-paper provided with a photosensitive layer and with a protective transparent and soluble coating for said layer, which coating is adapted to be dissolved and removed from the photosensitive layer in the photographic bath.

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758,313. **MOLDING-MACHINE.** FREDERICK W. HALL, Camden, N. J., assignor of one-half to J. W. PAXSON COMPANY, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Aug. 10, 1903. Serial No. 168,932. (No model.)



*Claim.*—1. In a molding-machine, the combination of a hopper or receptacle, a conveyer for delivering molding material thereto, means for operating said conveyer, fluid-operated devices for rendering said means inoperative when a desired quantity of molding material has been delivered to the hopper or receptacle and means carried by the conveyer for controlling said fluid-operated devices.

2. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering molding material to said hopper or receptacle, means for operating said conveyer, fluid-operated devices for rendering said means inoperative when the desired quantity of molding material has been delivered to the hopper or receptacle, means carried by the conveyer for controlling the admission of fluid to said devices and a dumping and starting device for discharging the contents of the hopper or receptacle and rendering said first-mentioned means again operative.

3. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering molding material to said hopper or receptacle, means for operating said conveyer, said means including a clutch, and devices controlled by the conveyer for separating the members of the clutch and rendering said means inoperative when the desired quantity of material has been delivered to the hopper or receptacle.

4. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering molding material to said hopper or receptacle, means for operating said conveyer, said means including a clutch, and devices controlled by the conveyer for separating the members of the clutch and rendering said means inoperative when the desired quantity of material has been delivered to the hopper or receptacle, and a dumping and starting device for discharging the contents of the hopper and for simultaneously therewith engaging the members of the clutch and rendering said means operative.

5. In a molding-machine, the combination with a hopper or receptacle for receiving molding material, a conveyer for delivering material thereto, means for operating said conveyer, devices for rendering said means operative or inoperative, tripping means carried by the conveyer for acting upon said devices to thereby render said means inoperative when a desired quantity of material has been placed in the hopper, and a dumping and starting device for discharging the contents of the hopper and simultaneously therewith acting upon said first-named devices for again putting said means into operation.

6. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering molding material thereto, means for operating said conveyer, a shifter-controlling device for rendering said means inoperative when the desired quantity of material has been delivered to the hopper or receptacle, and a trip-lug carried by the conveyer for acting upon the shifter-controlling device.

7. In a molding-machine, the combination of a hopper or receptacle for holding molding material, a conveyer for delivering material thereto, means for operating said conveyer, said means including a clutch, a clutch-shifter, a shifter-controlling device adjustably mounted with respect to the conveyer, and devices carried by the conveyer to act upon the shifter-controlling device and render said means inoperative when the desired quantity of molding material has been delivered to the hopper.

8. In a molding device, the combination of a hopper or receptacle for holding molding material, a conveyer for delivering material thereto, means for operating said conveyer, said means including a clutch, a clutch-shifter for determining the engagement or disengagement of the clutch members, a shifter-controlling device having a trip-head, a trip-lug carried by the conveyer for engagement with the trip-head for actuating the shifter-controlling device and disengaging the clutch members when the desired quantity of material has been delivered to the hopper or receptacle.

9. In a molding-machine, the combination of a hopper or receptacle for holding molding material, a conveyer for delivering material thereto, means for operating said conveyer including a clutch, a fluid-operated clutch-shifter for operating the clutch, a shifter-controlling valve and means carried by the conveyer for acting upon the shifter-controlling valve to admit pressure to the clutch-shifter and thereby operate the clutch when the desired quantity of material has been delivered to the hopper or receptacle.

10. In a molding-machine, the combination of a hopper or receptacle for holding molding material, a conveyer for delivering material thereto, means for operating the conveyer, a controlling device for stopping the operation of said means when the desired quantity of material has been delivered to the hopper or receptacle, means for permitting adjustment of the position of the controlling device with respect to the conveyer to determine the time of action of said controlling device, and devices carried by the conveyer for operating the controlling device.

11. In a molding-machine, the combination of a hopper for receiving molding material, a conveyer for delivering material thereto, means for operating said conveyer, devices for determining the action or inaction of said operating means, trip devices carried by the conveyer for acting upon said first-named devices to render said means inoperative, a slide for said hopper, and a fluid-operated dumping and starting device for operating the said slide and simultaneously therewith causing the said first-named devices to set in operation said means.

12. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering material thereto, means for automatically stopping the conveyer when the desired quantity of molding material has been delivered to the hopper or receptacle, a slide for dumping or discharging the contents of the hopper, and devices operative upon movement of the slide to set the conveyer in operation.



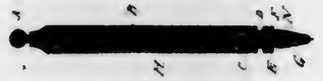
13. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering material thereto, means for automatically stopping the conveyer when the desired quantity of molding material has been delivered to the hopper or receptacle, a dumping and starting device comprising means for discharging the contents of the hopper, and fluid-controlled devices operative upon the dumping or discharge of the hopper to set the conveyer again in operation.

14. In a molding-machine, the combination of a hopper or receptacle for receiving molding material, a conveyer for delivering material thereto, means for automatically stopping the conveyer when the desired quantity of molding material has been delivered to the hopper or receptacle, a slide for dumping or discharging the contents of the hopper, a piston connected to said slide, a cylinder containing said piston, suitable inlet and exhaust ports in said cylinder, devices for controlling the admission and exhaust of air or other fluid to and from said cylinder, and means controlled by the said piston for setting the conveyer into operation.

15. In a molding-machine, the combination of a conveyer for supplying molding material, fluid-actuated means for stopping and starting the conveyer, a hopper to receive the material from the conveyer, a fluid-actuated dumping and starting device for dumping and discharging the material from the hopper, and an auxiliary valve controlled by the dumping and starting device for setting in operation the fluid-actuated means for starting the conveyer.

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758,314. **ELLIPSOGRAPH.** JOHN F. HANLON, Concord, N. H. Filed May 6, 1898. Serial No. 679,904. (No model.)



*Claim.*—1. An ellipsograph-point consisting of pin K having the head I, and stud J and grooved rotary wheel intermediate between the head and stud, substantially as described.

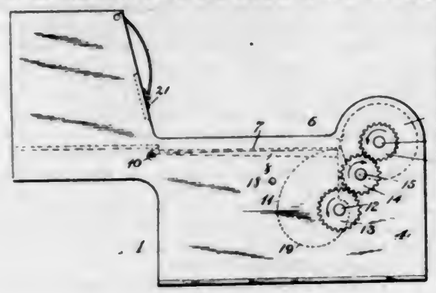
2. An ellipsograph-stylus carrier consisting of the casing B having the upper plug A and the lower plug C, the latter provided with the threaded hollow spindle N split at the end; the threaded washer E carrying the cap G and engaging the threads of the spindle, and the grooved rotary wheel D above the washer, substantially as described.

3. The combination of the ellipsograph-points each consisting of the pin K having the head I, stud J and intermediate grooved wheel; the stylus consisting of the casing having the plug C provided with the threaded spindle N the end of which is split, the marker therein, the grooved rotary wheel on the spindle-shank, the interiorly-threaded washer E engaging the threaded portion of the spindle and carrying the cap G, and the cord M engaging the grooved wheels of the stylus and points, substantially as described.

4. The combination of the stylus, consisting of the casing B having the upper plug A and lower plug C the latter provided with threaded hollow spindle N split at the end and carrying the marker, the interiorly-threaded washer E carrying the cap G and engaging the threads of the spindle, the grooved rotary wheel on the spindle above the washer, the points each consisting of the pin K having the head I stud J and intermediate grooved rotary wheel, and the cord M engaging said grooved wheels, substantially as described.

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758,315. **MACHINE FOR OPENING ENVELOPS.** ABRAM HESS, Lebanon, Pa. Filed Feb. 20, 1904. Serial No. 194,543. (No model.)



*Claim.*—1. A machine for opening envelops, provided with a revoluble cylinder, a knife supported on said cylinder, an envelop-supporting plate, means for supporting said plate at its outer end and constructed to lower and raise the plate at said end.

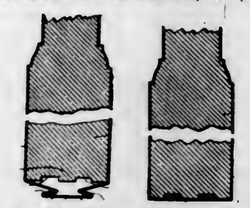
2. A machine for opening envelops provided with a revoluble cylinder, a knife supported on said cylinder, an envelop-supporting plate, and revoluble cams engaging said plate at its outer end and constructed to lower and raise the plate at said end.

3. A machine for opening envelops, provided with a knife revolubly supported, a plate on which the envelops are supported while being cut, and pivotally connected at one end to the frame, and revoluble supports for said plate constructed to lower and raise the free end of the plate.

4. A machine for opening envelops, provided with an envelop-receptacle, an envelop-supporting plate pivotally connected at one end to the frame, means for supporting said plate at its free end, and constructed to lower and raise the plate at said end, and a knife mounted on a revoluble cylinder for cutting envelops.

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758,316. **FIREPROOF DOOR.** FRANK A. HOWELL, New York, N. Y. Filed June 5, 1903. Serial No. 160,159. (No model.)



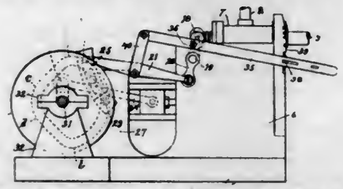
*Claim.*—1. In a fireproof door, the combination with a core or filler, of sheet-metal sections covering it, the contiguous edges of the sections being flanged, and an independent connecting-strip having flanged edges that engage the aforesaid flanged edges of the sections.

2. In a fireproof door, the combination with a core or filler having a grooved edge, of a sheet-metal plate overlapping the grooved edge, and a separate metallic strip having flanged edges that engage the said overlapping edges; the whole being united to form a smooth joint by the interlocking of the bent edges of the sections, the interlocking parts being seated in the groove of the edge.

3. In a fireproof door, the combination with a core or filler having a grooved edge, of sheet-metal plate covering the core and overlapping the edge, and an independent connecting metallic strip having flanged edges that engage the said overlapping edges, and are adapted to be seated in the groove of the edge of the core.

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758,317. **VALVE-GEAR FOR ENGINES.** OSWALD JACKSON, Carrollton, Ill. Filed May 14, 1902. Serial No. 107,280. (No model.)

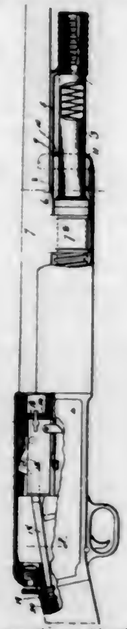


*Claim.*—In a valve-gear, a bed-plate, a vertical wall thereon, a valve-casing secured to the vertical wall, a rock-shaft passing through the vertical wall and having a crank on one end in connection with the valve-rod, a crank-shaft journaled through the vertical wall, a disk thereon, a link pivoted to the vertical wall and having a roller traveling in a cam-groove of the disk, a lever pivoted at one end to a crank on the other end of the rock-shaft and having its other end guided by the longitudinal groove of the link, a lever pivoted to the vertical wall and having a link connection with the first-named lever, and a notched bar on the vertical wall to retain the second-named lever in its adjustments.

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758,318. **AUTOMATIC FIREARM.** THOMAS C. JOHNSON, New Haven, Conn., assignor to Winchester Repeating Arms Co., New Haven, Conn., a Corporation. Filed Nov. 13, 1903. Serial No. 181,033. (No model.)

*Claim.*—1. In an automatic firearm, the combination with a recoiling barrel, of a sliding barrel-operating handle forming a part of the gun structure for manually moving the barrel rearward, the barrel being automatically movable back and forth independent of the handle.



2. In an automatic gun, the combination with a recoiling barrel, of a sliding handle forming a part of the gun structure and having a rearwardly-extending operating-bar for engaging with the barrel for manually moving the same rearwardly, the barrel being automatically movable back and forth independent of the handle.

3. In an automatic firearm, the combination with a recoiling barrel, of a tubular magazine, and a sliding barrel-operating handle mounted on the magazine for manually moving the barrel rearward, the automatic movement of the barrel being independent of the handle.

4. In an automatic firearm, the combination with a recoiling barrel, of a sliding handle forming a part of the gun structure for manually moving the barrel rearward, and means for holding the handle in its retired or normal position the barrel being automatically movable independent of the handle.

5. In an automatic firearm, the combination with a recoiling barrel, of a sliding handle forming a part of the gun structure for manually moving the barrel rearward, and a fore-stock tip which coacts with the sliding handle to normally hold it in its retired position.

6. In an automatic firearm, the combination with a recoiling barrel having an operating-shoulder formed on its under face, of a sliding handle forming a part of the gun structure and having a rearwardly-extending operating-bar for engaging with the said shoulder for moving the barrel rearward and opening the gun, the barrel being automatically movable rearward independent of the handle.

7. In an automatic firearm, the combination with a recoiling barrel formed with an operating-shoulder, of a tubular magazine, and a sliding barrel-operating handle mounted on the magazine and having a rearwardly-extending operating-bar for engagement with the said shoulder to move the barrel rearward and open the gun, the automatic movement of the barrel being independent of the handle.

8. In an automatic firearm, the combination with a recoiling barrel, of a tubular magazine, a fore-stock tip, and a sliding barrel-operating handle mounted on the magazine and having a rearwardly-extending operating-bar engaging the barrel for moving the same rearward and engaging with the tip for holding the handle in its retired position, the automatic movement of the barrel being independent of the handle.

9. In an automatic gun, the combination with a recoiling barrel, of a barrel extension laterally cut away on its right-hand side to form an ejection-opening and formed in its top with a locking-recess located near its rear end, a breech-block located in the said extension, a locking-block having its forward end pivotally connected with the breech-block and its rear end adapted to be lifted into the locking-recess in the barrel extension, means for operating the said locking-block, and a centering and supporting projection located upon the forward end of the breech-block and entering the barrel extension for centering the block and supporting the same at the time of firing against the downward thrust of the locking-block.

10. In an automatic gun, the combination with a recoiling barrel, of a barrel extension formed at its rear end with a cam-surface, a breech-block, a locking-block pivotally mounted therein and having its upper face formed with a cam-surface to coact with the said cam-surface of the barrel extension, a breech-block-operating rod pivotally connected with the locking-block, and a breech-block-closing spring coacting with the said rod, whereby the said cam surfaces coact to depress the locking-block to permit the same to enter the barrel extension when the gun is being closed.

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**758,319. BOTTLE-STOPPER.** GEORG KIRKEGAARD, New York, N. Y., assignor of one-half to Fridtjof Jebsen, New York, N. Y. Filed Dec. 16, 1903. Serial No. 185,336. (No model.)



*Claim.*—1. The combination with a bottle having an inwardly-inclined, annular, exterior surface below its mouth, of a metallic cap adapted to fit over the mouth of the bottle and having a flexible edge opposed to said surface, an open clamping-ring engaging said edge and an eccentric-wrench engaging the ends of the ring to force said edge against the annular surface and cause it to travel inwardly and downwardly along the same when the ring is contracted, substantially as described.

2. A bottle or jar stopper comprising a metallic cap containing a packing material and having a flexible edge bounded by a bead or flange; in combination with an open ring embracing the flexible edge above the flange and a wrench pivotally attached to one end of the ring and having an eccentric-opening embracing the other end, substantially as described.

3. In a bottle-stopper, the combination of a cap, an open tightening-ring, and an eccentric-wrench adapted to engage the ends of said ring, said wrench having yielding parts which prevent excessive pressure of the ring.

4. A bottle-stopper comprising a metallic cap having a flexible edge, an open ring embracing said edge, an eccentric-wrench engaging the ends of said ring, and seats in said wrench to receive the ends of the ring in the locked position.

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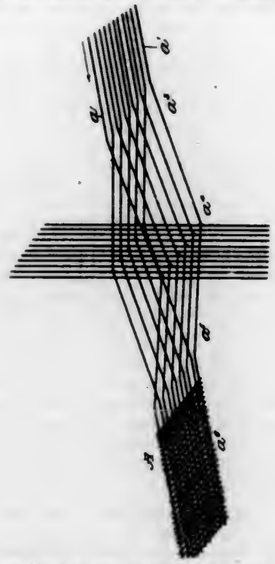
**758,320. LINE-MEASURE.** SAMUEL KLINE, Jersey City, N. J. Filed July 13, 1903. Serial No. 165,339. (No model.)

*Claim.*—1. A means for indicating and determining lineal measurement consisting of a comparatively long portion of material whereon the numbers designating the distances of the several division-points in the length thereof from a given datum-point are indicated by sectional markings extending longitudinally of the portion, each digit of said numbers being designated by a distinct section, the length whereof for the same digit is fixed, the lengths of the different significant digits being directly proportional to their respective numerical values, "0" being designated by a section longer than that for "9," and the numbers above "9" being designated by properly grouping these sections in longitudinally-extending series.

2. A means for indicating and determining linear measurement consisting of a comparatively long portion of material whereon the numbers designating the distances of the several division-points in the length thereof from a given datum-point are indicated by sectional markings extending longitudinally of the portion, each digit of said numbers being designated by a distinct section, the length whereof for the same digit is fixed, the lengths of the different significant digits being directly proportional to their respective numerical values, "0" being represented by a section longer than that for "9," and the numerals above "9" being designated by properly grouping the sections in longitudinally-extending series, and prefix guide-marks for the different sectional markings and groups thereof, for indicating the direction of reading.

3. A means for indicating and determining linear measurement consisting of a comparatively long portion of flexible material, whereon the numbers designating the distances of the several division-points in the length thereof from a given datum-point are indicated by sectional markings extending longitudinally of the portion, each digit of said numbers being designated by a distinct section, the length whereof for the same digit is fixed, the lengths of the different significant digits being directly proportional to their respective numerical values, "0" being represented by a section longer than that for "9," and the numerals above "9," being designated by properly grouping the sections in longitudinally-extending series.

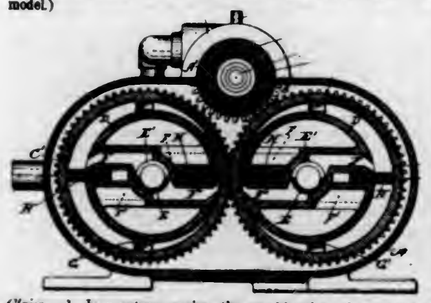




4. A woven fabric having associated therewith, an indicating and measuring means comprising a comparatively long portion of flexible material, whereon the numbers designating the distances of the several division-points in the length thereof from a given datum-point are indicated by sectional markings extending longitudinally of the portion, each digit of said numbers being designated by a distinct section, the length whereof for the same digit is fixed, the length of the different significant digits being directly proportional to their respective numerical values, "0" being represented by a section longer than that for "9," and the numerals above "9" being designated by properly grouping the sections in longitudinally-extending series.

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**758,321. ROTARY ENGINE.** MARGARET E. KNIGHT, South Framingham, Mass. Filed Oct. 21, 1903. Serial No. 177,927. (No model.)



*Claim.*—1. In a rotary engine, the combination of an exterior rotary cylinder upon fixed bearings, a rotary piston-hub eccentrically supported upon a hollow shaft within the cylinder, steam inlet and exhaust ports in the shaft and hub, and pistons which extend radially through the peripheral portion of the hub and which are independently supported in the said cylinder and are adapted to move laterally therein when the cylinder and hub revolve.

2. In a rotary engine, a rotary piston-hub and rotary circumjacent cylinder supported eccentrically to each other upon independent bearings, pistons disposed in radial slots in the hub and provided with independent supports capable of automatic movement laterally of the plane of the pistons, which supports engage the circumscribing cylinder and control its rotation, and ports and passages in the hub and its bearing to admit steam to and exhaust it from the chambers upon the respective sides of the pistons between the hub and cylinder.

3. In a rotary engine, a rotary cylinder, a rotary piston-hub therein, each upon fixed bearings eccentric one to the other, pistons with their outer edges in contact with the cylinder and adapted to move in radial slots in the hub, independent supports for the pistons, and engaging means between the supports and the cylinder which cause the latter to rotate with the pistons and to reciprocate the supports diametrically of the cylinder in a direction at right angles to the plane of the pistons, when the engine rotates.

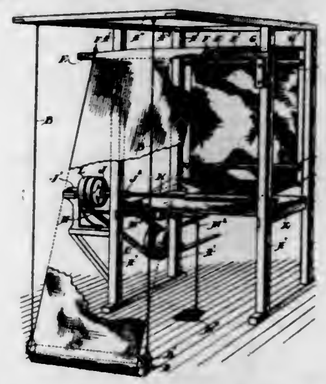
4. In a rotary engine, a rotary cylinder, a rotary piston-hub therein, each supported upon fixed bearings eccentric one to the other, radial pistons in slots in the hub, independent rings to support the pistons, splines and grooves to connect the rings and cylinder-heads, and longitudinal slots in the cylinder to receive the outer edges of the pistons and permit them to move in planes tangent to its interior curve of the cylinder.

5. In a rotary engine, a pair of cylinders connected to rotate in unison, a pair of rotary piston-hubs arranged in counter-eccentric positions in the respective cylinders, radial pistons in engagement with the interior of the cylinders and over which the hubs reciprocate when the engine rotates.

6. In a rotary engine, a rotary cylindrical valve, provided with serrations at its ends, an inclosing valve-case provided with ports of varying circumferential area, and means to adjust the valve in the direction of its axis to cause one or the other of its serrated ends to register with one of the ports in the case.

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**758,322. MACHINE FOR REROLLING CLOTH.** CHARLES KRAUSE, Detroit, Mich. Filed Nov. 19, 1903. Serial No. 181,818. (No model.)



*Claim.*—1. In a rewinding-machine, the combination with a winding-shaft and means for actuating the same, of a bar for supporting the roll to be rewound, and means whereby the bar is supported and permitted to move horizontally in any direction.

2. In a rewinding-machine, the combination with a winding-shaft and means for actuating the same, of a bar for supporting the roll to be rewound, and means engaging said bar to suspend the same and allow it to freely swing.

3. In a rewinding-machine, the combination with a winding-shaft and means for actuating said shaft, means for supporting and guiding the strip of material to be wound, a bar for supporting the roll of material to be rewound, and vertically-extending flexible means for supporting said bar attached to the ends thereof and secured to a suitable support at a distance above the roll.

4. In a rewinding-machine, the combination with a winding-shaft and means for actuating said shaft, of a bar for supporting the roll to be rewound and a flexible support to engage and support each end of said bar.

5. In a rewinding-machine, the combination with a winding-

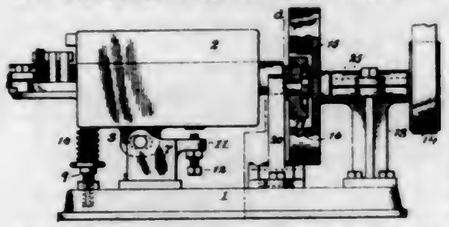
shaft and means for actuating said shaft, of means over which the strip of material to be wound is led to put a strain thereon, a bar for supporting the roll to be rewound, and ropes secured at their upper ends to a suitable support and at their lower ends, attached to the ends of said bar to suspend the same.

6. In a rewinding-machine, the combination with the frame, ropes secured to a support forward of the frame and near the upper end thereof, rings on the lower ends of said ropes, a bar for supporting the roll to be rewound adapted to engage said rings at its ends, means on the frame over which the strip from the roll is led to put a frictional strain thereon, a winding-shaft mounted in bearings on the frame, and means for actuating said shaft.

7. In a rewinding-machine, the combination with a frame thereof, of means for suspending the roll to be rewound at the forward side of the frame and free to swing, a supporting cross-bar on the frame near the upper end thereof provided with slots, studs having bolts extending through said slots and provided with nuts to engage the bar, rods extending across the frame at the rear side thereof over which the strip may be led vertically, rolls journaled in bearings on the frame adjacent to said rods, a driving-shaft provided with a socket mounted in bearings at the forward side of the frame, a tight and a loose pulley on said shaft, a longitudinally-movable shaft having a socket, a winding-shaft having squared ends to engage said sockets, means for preventing the longitudinally-movable shaft from moving longitudinally, a shifting-bar for shifting the belt on said pulleys, a spring for actuating said bar in one direction, and a treadle for actuating the same in the opposite direction.

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**758,323. FRICTION-GEAR.** DAVID L. LINDQUIST, Yonkers, N. Y. Filed Sept. 11, 1903. Serial No. 172,795. (No model.)



*Claim.*—1. A rotary pulley, a universal-joint support therefor, a movable friction-track and friction-gears between and in contact with said pulley and said track.

2. A rotary pulley, a universal-joint support therefor, a movable friction-track surrounding said pulley and friction-gears between and in contact with said pulley and said track.

3. A rotary pulley, a universal-joint support therefor, a movable friction-track, friction-gears between and in contact with said pulley and said track, and means for regulating frictional contact between said pulley and said gears.

4. A rotary pulley, a universal-joint support therefor, a movable friction-track, friction-gears between and in contact with said pulley and said track and means for causing elastic frictional contact between said pulley and said gears.

5. A rotary pulley, a universal-joint support therefor, a rotatable friction-track surrounding said pulley and friction-gears between and in contact with said pulley and said track.

6. A rotary pulley a universal-joint support therefor a rotatable friction-track surrounding said pulley, friction-gears between and in contact with said pulley and said track and means for maintaining said pulley in yielding frictional contact with said gears.

7. A rotary pulley, a universal-joint support therefor, a rotatable friction-track surrounding said pulley and two movable friction-rollers between and in contact with said pulley and said track; the said track being rotatable about an axis parallel to the prolonged axis of rotation of said pulley.

8. A rotary pulley, a universal-joint support therefor, a rotatable friction-track surrounding said pulley and two movable friction-rollers between and in contact with said pulley and said track; the said pulley-rollers and track having right cylindrical contact-surfaces and the said track being rotatable about an axis parallel to the prolonged axis of rotation of said pulley.

9. Two movable friction-rollers, a rotatable friction-track surrounding and in contact with both, a pulley in frictional contact with said rollers and a universally-swinging arm supporting said pulley.

10. Two movable friction-rollers, a rotatable friction-track surrounding and in contact with both, a pulley in frictional contact with said rollers, a universally-swinging arm supporting said pulley and means acting upon said arm for regulating the frictional contact of said pulley with said rollers.

11. Two movable friction-rollers, a rotatable friction-track surrounding and in contact with both, a rotary pulley and a pivoted support for said pulley; the said pulley being disposed in frictional contact with said rollers and the said support being movable on its pivot in a vertical plane.

12. Two movable friction-rollers, a rotatable friction-track surrounding and in contact with both, a rotary pulley and a movable support therefor; the said pulley resting by gravity above and in frictional contact with said rollers.

13. Two movable friction-rollers, a rotatable friction-track surrounding and in contact with both, a rotary pulley in contact with said rollers, a movable support for said pulley and means acting on said support for adjusting the frictional contact of said pulley and said rollers.

14. An electric motor, a pulley on the armature-shaft thereof, a pivot-support for said motor, two movably-supported friction-rollers in contact with said pulley and a rotatable friction-track surrounding and in contact with said rollers.

15. An electric motor, a pulley on the armature-shaft thereof, a pivot-support for said motor—the said motor preponderating on the pulley side—two movably-supported friction-rollers in contact with said pulley and having their axes below the axis thereof and a rotatable friction-track surrounding and in contact with said rollers.

16. An electric motor, a pulley on the armature-shaft thereof, a pivot-support for said motor, means for adjusting the extent of movement of said motor on said pivot, two movably-supported friction-rollers in contact with said pulley, and a rotatable friction-track surrounding and in contact with said rollers.

17. A rotatable circular friction-track, two movable friction-rollers surrounded by said track, a rotary pulley in frictional contact with both rollers, a movable support for said pulley and an adjustable spring connected to said pulley-support and operating to force said pulley between said rollers and thereby to move said rollers in relatively opposite directions into frictional contact with said track.

18. A rotatable friction-track, two movable friction-rollers surrounded by said track, a rotary pulley in frictional contact with both rollers a movable support for said pulley and two adjustable mutually-opposing springs connected to said pulley-support.

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**758,324. SUPPORT FOR ELECTRIC CONDUCTORS.** FRED C. LOCKE, Boston, Mass. Filed Jan. 24, 1903. Serial No. 140,375. (No model.)



*Claim.*—1. The combination with a span-wire, of a plurality of conductor-supports loosely strung thereon to permit them to move longitudinally of the wire when stringing them, and permanent connections between said supports and independent of said span-wire and of the conductor to be supported for preserving the spacing of the supports after they have been strung upon the wire.

2. The combination of the span-wire, of a plurality of conductor-supports each comprising a hook-shaped portion flat in cross-section and loosely fitting the span-wire and a lower portion bent or curved in cross-section, and permanent connections between said supports and independent of said span-wire and of the conductor to be supported for preserving the spacing of the supports after they have been strung upon the wire.

3. The combination with a span-wire, of a plurality of conductor-supports loosely strung thereon to permit them to move longitudinally of the wire when stringing them, and permanent connections between said supports and independent of said span-wire for preserving the spacing of the supports after they have been strung upon the wire, each of said supports having a permanent opening to admit a conductor and having a hook-shaped upper portion which is flat in cross-section to form an extended bearing on the span-wire and a lower portion for receiving a conductor, said lower portion being bent or curved in cross-section and having an opening to permit of the insertion of a conductor.

4. As an article of manufacture, a conductor-support formed of thin flat metal and comprising an upper or suspension portion flat in cross-section and bent to fit the upper side of a span-wire and extend below the same and formed with holes at a distance below its upper bend to permit of the insertion of a fastening device in a plane below such span-wire, the lower conductor-supporting portion being thin and curved in cross-section and formed with a permanent opening to permit of the lateral insertion of a conductor.



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**758,325. MANUFACTURE OF ENAMELED WARE.** THOMAS M. LUNAN, Newark, N. J., assignor to The Central Stamping Company, of New York, a Corporation of New York. Filed Mar. 28, 1903. Serial No. 150,040. (No specimens.)

*Claim.*—1. The herein-described process of enameling, which consists in coating the cleaned article with an enamel carrying metallic bodies and acid in character, then applying to said enameled surface a non-metallic hydroxid, and finally heating to flux and set the enamel.

2. The herein-described process of enameling, which consists in coating the cleaned article with an acid enamel of a character which will not attack the metal of which the article is made, and while still moist with a non-metallic hydroxid, and finally heating to flux and set the enamel.

3. The herein-described process of enameling which consists in coating the cleaned article with an acid enamel, and while still moist with a non-metallic hydroxid and finally heating to flux and set the enamel.

4. The herein-described process of enameling, which consists first in subjecting the cleaned article to the action of an oxidizing agent which will attack the metal of which the article is made, then applying a coating of acid enamel, then applying while the enamel is still moist a non-metallic hydroxid, and finally heating to flux and set the enamel.

5. The herein-described process of enameling which consists first, in subjecting the cleaned article to the action of an oxidizing agent which will attack the metal, then applying a coating of acid enamel, then applying to said coating a non-metallic hydroxid, and finally heating to flux and set the enamel.

6. The herein-described process of enameling which consists first, in subjecting the cleaned article to the action of a solution of potassium chlorate, then applying a coating of acid enamel, then applying to said coating a non-metallic hydroxid, and finally heating to flux and set the enamel.

7. The herein-described process of enameling, which consists in applying to the cleaned article an acid enamel, then applying a suitable agent to precipitate the metallic body or bodies carried by said enamel, and finally heating to flux and set the enamel.

8. The herein-described process of producing a single-coat mottled enamel, which consists in coating the cleaned article with an acid enamel, and then applying a suitable agent to precipitate the metallic constituents of said enamel as masses, throughout the whole body of the enamel, and finally heating to flux and set the enamel.

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**758,326. BUTTON-SEWING MACHINE.** ROBERT L. LYONS, Waltham, Mass., assignor to Union Button Sewing Machine Company, Boston, Mass., a Corporation of Massachusetts. Filed Nov. 16, 1903. Serial No. 181,318. (No model.)



*Claim.*—1. A button-sewing machine comprising means for supporting material and holding the same from lateral movement, means for supporting and moving a button laterally independently of such material-holding means, and stitch-forming means including a needle whereby the button may be attached to the material and the resistance of the material-holding means may be overcome by such attachment.

2. In a button-sewing machine, the combination with stitch-forming means including a needle, of means for changing the relative position of the button and the material, to which it is to be sewed, after the first downward movement of the needle to engage a portion of the needle-thread between the button and the material, and means for resisting the lateral movement of the material during such change of position, such resistance being adapted to be ultimately overcome by the attachment of the material to the button.

3. A button-sewing machine comprising stitch-forming mechanism including a needle, means for supporting and vibrating a button transversely of said needle, a support for the cloth having means for engaging and holding said cloth against lateral movement during the first vibration of said needle, whereby a portion of the needle-thread is engaged between the button and the cloth.

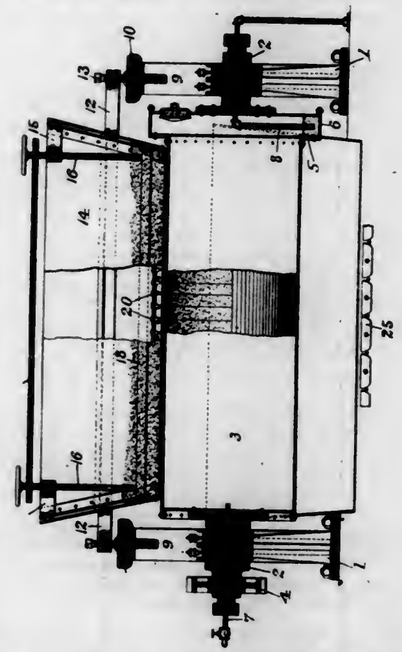
4. A button-sewing machine comprising stitch-forming means including a needle, a fixed cloth-supporting plate having cloth-engaging means adjacent to the path of the needle and adapted to resist the lateral movement of the cloth, and a button-clamp independently movable and adapted to vibrate a button laterally of said engaging means, and adapted to press a button carried by said clamp against cloth on said plate to effect the engagement of the cloth with such engaging means.

5. A button-sewing machine comprising a fixed cloth-plate having an opening one edge of which is adapted to engage cloth pressed thereagainst to resist the movement of the cloth in one lateral direction, and means for pressing a button against the cloth positioned above said opening, to effect the engagement of the cloth with such edge, and, for moving the button laterally.

6. The combination with the button-sewing machine having a throat-plate furnished with a needle-hole, and a cloth-plate positioned above the throat-plate and fixed against movement, said cloth-plate having an opening registering with the needle-hole of the throat-plate and having a rear cloth-engaging edge, of a button-clamp mounted to move laterally above said cloth-plate and adapted to press a button against cloth supported on said plate, for the purpose described.

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**758,327. DRIER.** WILLIAM R. MACKLIND, St. Louis, Mo. Filed Sept. 26, 1903. Serial No. 174,783. (No model.)



*Claim.*—1. In a drier, the combination with a heated rotating cylinder, of a hopper for supplying sludge to the same, and an adjustable bar for regulating the supply of sludge to the discharge-opening of the hopper; substantially as described.

2. In a drier, the combination with a heated rotating cylinder, of a hopper for supplying sludge to the same, an adjustable bar for regulating the supply of sludge to the discharge-opening of the hopper, and means for adjusting said bar in the hopper; substantially as described.

3. In a drier, the combination with a heated rotating cylinder, of a hopper for supplying sludge to the same, an adjustable bar for regulating the supply of sludge to the discharge-opening of the hopper, threaded rods by which said bar is supported, and a connection between said rods whereby they may be rotated in unison to adjust the bar in the hopper; substantially as described.

4. In a drier, the combination with a heated rotating cylinder, of a hopper for depositing sludge thereon, a frame in which said hopper is mounted, means for vertically adjusting the said frame which carries the hopper, and means for adjusting said hopper laterally; substantially as described.

5. In a drier, the combination with a heated rotating cylinder, of end castings in which the same is mounted, a hopper for depositing sludge on said cylinder, a frame in which said hopper is supported, saddles slidingly mounted on the end castings, set-screws for supporting the frame from said saddles, and means for adjusting said saddles horizontally; substantially as described.

6. In a drier, the combination with a hopper containing sludge to be dried, of a rotating cylinder arranged beneath the hopper for receiving said sludge, said cylinder having an enlarged head at one end forming a continuous circumferential drainage-pocket, and a vertical siphon leading from the bottom of said pocket and thence through the journal of the cylinder for draining said pocket; substantially as described.

7. In a drier, the combination with a heated rotating cylinder, of a hopper for depositing sludge thereon, and means for dividing said sludge into strips; substantially as described.

8. In a drier, the combination with a heated rotating cylinder, of a hopper for depositing sludge thereon, and a weighted needle-bar arranged adjacent the hopper, the ends of the needles engaging the cylinder to divide the sludge into strips; substantially as described.

9. In a drier, the combination with a heated rotating cylinder, of a hopper for depositing sludge thereon, means for dividing the sludge into strips before it is dried, a collecting-hopper for receiving the dried particles, and a scraping-blade for removing the dried particles from the cylinder; substantially as described.

10. In a drier, the combination with a heated rotating cylinder, of a hopper for distributing sludge thereon, means for dividing the sludge into strips before it is dried, a weighted scraping-blade for scraping the dried particles from the cylinder, and a collecting-hopper into which the dried particles are received; substantially as described.

11. In a drier, the combination with a heated rotating cylinder, of a water-jacketed hopper arranged thereabove, a device for controlling the supply of sludge to the discharge-opening through said hopper, and a plate secured to the rear wall of the hopper and coöperating with the cylinder to act as a dam to prevent the sludge from flowing in the wrong direction; substantially as described.

12. In a drier, the combination with a heated, rotating cylinder, of a hopper for depositing sludge thereon, a plate mounted on the rear wall of the hopper and engaging the cylinder to act as a dam to prevent the sludge from flowing backwardly on the cylinder, and a scraping-blade coöperating with the surface of the cylinder for removing the dried material therefrom; substantially as described.

13. In a drier, the combination with a heated rotating cylinder, of a hopper for depositing plastic material on the cylinder, and means for vertically adjusting said hopper for regulating the thickness of plastic material deposited on said cylinder; substantially as described.

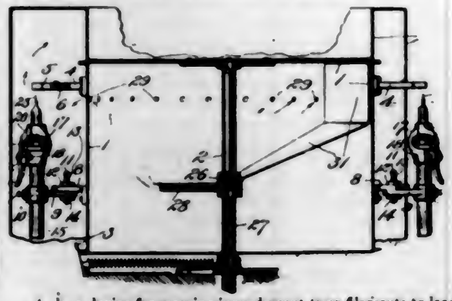
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**758,328. DEVICE FOR SECURING INCANDESCENT-LAMP FILAMENTS TO LEADING-IN WIRES.** ALBERT W. W. MILLER, South Orange, N. J., and GEORGE P. MCDONNELL, St. Louis, Mo., assignors to American Electric Company, East Orange, N. J., a Corporation of New Jersey. Filed July 3, 1903. Serial No. 164,116. (No model.)

*Claim.*—1. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a movable carrier, of relatively adjustable clamping devices mounted thereon for holding the filament and leading-in wires in position while they are being connected; substantially as described.

2. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a traveling carrier, of a plurality of pairs of relatively adjustable clamping devices arranged thereon for holding the filament and leading-in wires in position while they are being connected; substantially as described.

3. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a traveling carrier, of means for holding the carbon filament and leading-in wires in position while they are being connected, said means comprising independent relatively adjustable clamps; substantially as described.



4. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a rotatable carrier, of pairs of independent relatively adjustable clamping-jaws secured thereto for holding the carbon filament and leading-in wires in position while they are being connected; substantially as described.

5. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of clamping devices for holding the filament and the leading-in wires in position while they are being connected, one of said clamping devices being transversely adjustable with relation to the axes of the leading-in wire; substantially as described.

6. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of vertically-disposed clamping devices for holding the filament and the leading-in wires in position while they are being connected, one of said clamping devices being horizontally adjustable with relation to the other; substantially as described.

7. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of a pair of vertically-alined clamping devices, each of said devices being independently operable, and one of said devices being adjustable with respect to the other of said devices; substantially as described.

8. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of a spring-actuated clamping device for the filament, a spring-actuated clamping device for the leading-in wires, means for adjusting the latter device vertically and locking it in such position, and frictional devices for holding said device in laterally-adjusted position; substantially as described.

9. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of elongated spring-pressed clamping-jaws for holding the filament in position at any point within the range of said jaws, a companion clamping device, and means for laterally adjusting said clamping device for holding the leading-in wires in laterally-adjusted positions with respect to the clamping-jaws; substantially as described.

10. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of a clamp for the filament and a clamp for the stem carrying the leading-in wires, said latter clamp comprising spring-pressed jaws mounted upon a vertically-adjustable standard, and frictional means for holding said standard in laterally-adjustable positions; substantially as described.

11. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a support, of an apertured lug arranged thereon, an apertured companion lug, means for creating friction between said two lugs whereby the latter lug may be held in laterally-adjusted positions, an eye carried by said last-mentioned lug, a standard vertically adjustable in said eye, and spring-pressed jaws carried upon the upper end of the standard; substantially as described.

12. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a movable carrier, of relatively adjustable clamping devices mounted thereon for holding the filament and leading-in wires in position while they are being connected, and a shell forming a closed heating-chamber into which the clamping devices and their carried parts are received; substantially as described.

13. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a hollow rotatable carrier, a burner in said carrier, having escape-openings for the products of combustion, a shell encircling said carrier and forming a heating-chamber, and adjustable clamping devices mounted on the rotatable carrier for holding the filament and leading-in wires; substantially as described.



14. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a hollow rotatable carrier, a burner located therein, having escape-openings leading therefrom, a shell partially inclosing the carrier and forming a heating-chamber, and clamping devices on the carrier adapted to be moved into and out of the heating-chamber when the carrier is rotated; substantially as described.

15. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a rotatable hollow drum, of a stationary shell partially inclosing the same and forming a heating-chamber, burners within the drum, which drum is provided with escape-openings for the products of combustion, a deflector-plate in the drum for preventing escape of products of combustion through the openings opposite the portion not included within the heating-chamber, and clamping devices on the rotatable drum for holding the filament and leading-in wires in position while they are being connected; substantially as described.

16. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a rotatable circular drum formed hollow and having burners located therein, of a stationary encircling shell forming a heating-chamber open at one side to expose the clamping devices carried by the drum, and clamping devices on the drum for holding the filament and leading-in wires in position while they are being connected, said clamping devices being designed to travel through the heating-chamber; substantially as described.

17. In a device for securing incandescent-lamp filaments to leading-in wires, the combination with a pipe having burners extending from its upper end, a spindle projecting upwardly from the pipe, a hollow drum rotatably mounted on said spindle, a deflector-plate carried by the pipe, a stationary shell partially inclosing the periphery of the drum, and clamping devices mounted on the periphery of said drum; substantially as described.

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**758,329. RATCHET MECHANISM.** CHARLES R. MITCHELL, New Britain, Conn. Filed Oct. 7, 1903. Serial No. 176,048. (No model.)



*Claim.*—1. In a ratchet mechanism for screw-drivers and other tools, a driving part, a spindle rotatably connected therewith, a driven part, a pawl-carrying member rotatively mounted on said spindle, two oppositely-faced pawls carried by said pawl-carrying member, one of said pawls being arranged to couple said parts when the driver is rotated in one direction, the other pawl being arranged to couple said parts when the driver is rotated in the opposite direction, a connection between said pawl-carrying member and one of the said parts and means for operating said pawl-carrying member to free either of said pawls from the other part, whereby power may be transmitted from the driving part to the driven part to rotate it in one direction or the other, or to permit both of said pawls to simultaneously engage said other part to interlock the same against independent rotation.

2. In a ratchet mechanism for screw-drivers and other tools, a driving part, a driven part, said parts being rotatably connected, a pawl-carrying member carried by one of said parts and rotatable relatively thereto, oppositely-faced pawls on said member arranged to alternately or simultaneously engage the other device and means for holding said pawls in yielding engagement therewith, and means coöperating with said pawl-carrying member to tilt it to free the pawls on either side of said ratchet device from engagement, whereby power may be applied to the driven part to rotate it in one direction or the other, or to interlock said driving and driven parts.

3. In a ratchet mechanism for screw-drivers and other tools, a driving part, a driven part, said parts being rotatably connected with each other, a pawl-carrying member rotatably and loosely mounted upon said driven part, a spring between said driving part and pawl-carrying member to press the latter into yielding engagement with said driven part, oppositely-faced pawls carried by said member, a crown-ratchet on said driven part arranged to receive said pawls, means for tilting said member to hold one or the other of said oppositely-faced pawls out of engagement with said crown-ratchet, or to permit both sets of oppositely-faced pawls to engage said crown-ratchet, said member being itself in connection with the driving device at all times whereby the driven part may be coupled with the driving part when the latter is rotated in one direction or the other and freed therefrom when the direction of rotation of the driving part is reversed, or whereby the driving and driven parts may be interlocked against independent rotation.

4. In a ratchet mechanism for screw-drivers and other tools, a driving part, a driven part, a housing on the driving part, a spindle on the driven part projecting through said housing, a chamber within said housing and around said spindle, an annular tilting pawl-carrying member located within said chamber and loosely mounted on said spindle, slots in the wall of said housing and lugs projecting from the said member through said slots, means carried by said member for interlocking said driving and driven parts, or for connecting said parts when the driving part is rotated in one direction and disconnecting said parts when said driver is rotated in the opposite direction, and means for yieldingly pressing said member toward the driven part.

5. In a ratchet mechanism for screw-drivers and other tools, a driving part, a driven part, a housing carried by one of said parts, a spindle carried by the other part and rotatably connecting said driving and driven parts, a chamber within said housing and around said spindle, a tilting pawl-carrying member located within said chamber, means for holding said member from driving engagement relatively to one of the said parts when the driver is rotated in one direction, and for interlocking said parts to prevent the independent rotation of either, and a spring for yieldingly pressing said member into its engaging position.

6. In a ratchet mechanism for screw-drivers and other tools, a rotatable driving part, a driven part rotatably connected with said driving part, an annular pawl-carrying member intermediate said parts and means for holding said member against independent rotation relatively to the driving part, oppositely-faced pawls on said member on the lower side thereof and arranged to simultaneously or alternately engage with the driven part to interlock the driving and driven parts against independent rotation or to couple said parts when the driver is turned in one direction and uncouple said parts when the driver is turned in the opposite direction, a rotatable cam carried by one of the said parts and arranged to operate said member, and a spring to press said member toward said cam and into engagement with the driven part.

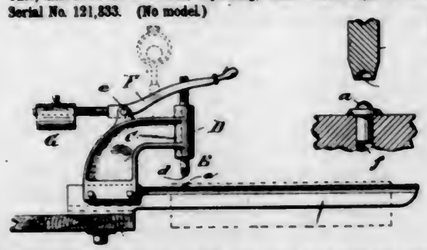
7. In a ratchet mechanism for screw-drivers and other tools, a rotatable driving part, a driven part rotatably connected therewith, a crown-ratchet on said driven part, the latter having bearings above and below said ratchet, a tilting pawl-carrying member having oppositely-faced pawls on one side arranged to simultaneously or alternately engage said crown-ratchet, a spring arranged to press said member toward said crown-ratchet and means to vary the position of the member to lock said parts against independent rotation or to couple said parts for rotation in one direction but not in a reverse direction, said member being always held against independent rotation relatively to the driving part.

8. In a ratchet mechanism for screw-drivers and other tools, a crown-ratchet, an annular pawl-carrying member to coact therewith carried by a spindle on said ratchet, oppositely-faced pawls carried by said member, and a controlling-cam for engaging said member to move the same and to hold either pawl out of its operative position or to allow both pawls to assume an operative position.

9. In a ratchet mechanism for screw-drivers and other tools, a rotatable driving part, a driven part rotatably connected to said driving part, a crown-ratchet on said driven part intermediate its length, a bearing above and below said ratchet, a movable pawl-carrying member adjacent to said ratchet, said member being incapable of rotation independently of the driving part, oppositely-arranged pawls on said member facing said ratchet device, and means to move said

member whereby either or both of said pawls engage said crown-ratchet and whereby the driving and driven parts may be coupled when the former is rotated in one direction only or in either direction.

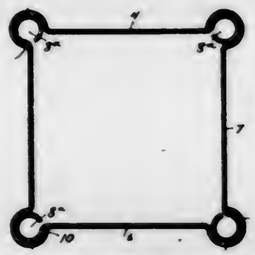
758,330. **MACHINE FOR UNITING THE JOINTS OF SHEET-METAL PIPES.** JOHN J. MULVANEY, Cincinnati, Ohio, assignor of three-fourths to Charles R. Babbitt and John L. Brown, Cincinnati, Ohio, and Howard A. Sutton, Wyoming, Ohio. Filed Sept. 2, 1902. Serial No. 121,833. (No model.)



*Claim.*—1. In a machine of the character described, the combination of a horizontal mandrel free at one end to permit one or more sections of sheet-metal tubing to be slipped over the same, a male die secured thereto and projecting therefrom, a vertically-reciprocating cross-head above and coacting with said mandrel, supports for said cross-head, and a female die, on the under side of said cross-head, arranged over said male die, substantially as described and for the purpose specified.

2. The herein-described machine consisting of the horizontal mandrel A, the cross-head $B^3$, the slotted guide-supports $C^3$ for said cross-head, means for vertically reciprocating said cross-head, the male die *a* secured to said mandrel and the female die $b^3$ formed in the under side of the cross-head, substantially as described.

758,331. **METALLIC COLUMN.** ENOCH OSTSTRAND, Jamestown, N. Y., assignor to Art Metal Construction Company, Jamestown, N. Y., a Corporation of New York. Filed Feb. 20, 1903. Serial No. 144,230. (No model.)



*Claim.*—1. A beam or column consisting of webs or plates having tubular margins of unequal diameter, the margin of the smaller inclosed within the larger tubular margin of another web or plate.

2. The combination with beams or pieces having webs provided with tubular margins, of other webs or tie-pieces engaging the tubular margins.

3. The combination of webs or pieces having tubular margins with other webs or pieces having tubular beads which engage the walls of said margins and afford air-spaces.

758,332. **FASTENING DEVICE.** RICHARD M. PASCOAST, Camden, N. J. Filed July 18, 1903. Serial No. 166,066. (No model.)



*Claim.*—1. A metallic fastening device, for assembled sheets of paper and envelops, having a base portion, a tongue, and two similar arms on opposite sides of the base portion and of less length than the length of the base and tongue; the depending portions of said arms being located some distance from the sides of the base portion so as to provide two open spaces between said base and arms, one space being on each side of the base, whereby a sheet or sheets of paper can be inserted within the open spaces, the metal of the base portion being adapted to be bent over on a line passing through the ends of the arms, and the ends of the arms forced into the crease formed in the paper by the process of bending.

2. A metallic fastening device for assembled sheets of paper or envelops consisting of a base portion, a tongue, and two arms located upon opposite sides of the base portion and of less length than the length of the base and tongue; the metal at the junction of the base and tongue being weaker than the metal of the base and tongue above and below to form a bending zone; and the depending portions of the arms being located some distance from the base portion to form open spaces for receiving the paper; and said base portion adapted to be bent over upon the tongue and at its junction with the tongue and clamp the paper and force the ends of the arms into the crease made in the paper by the act of bending.

3. A metallic fastening device for assembled sheets of paper and envelops consisting of a base portion, a tongue, and two arms on opposite sides of the base portion and located some distance therefrom to form open spaces between said arms and base portion; the metal at the junction of the base and tongue and at a point in line with the ends of the arms being weaker than the metal each side thereof to form a bending zone; and the said tongue at its extreme end curved or bent upwardly, whereby when the paper has been inserted in the open space, and the base bent over and pressed down, the extreme ends of the base and tongue will grip the paper thereby preventing a gaping of the applied device.

4. A metallic fastening device for assembled sheets of paper and envelops consisting of a base portion, a tongue, and two arms located some distance from and upon opposite sides of the base portion to form open spaces for a sheet or sheets of paper; the said arms being bent at D D upwardly so as to lie in a plane at one side of the plane of the base portion, whereby the sheets of paper may easily be inserted between the arms and the base portion.

5. A metallic fastening device for assembled sheets of paper, consisting of a base portion; a tongue and two arms located on each side and some distance from the base portion to form open spaces; the metal at the junction of the base and tongue in line with the ends of the arms being weakened, and the arms bent upward at the points D, D, where they join the base, to positions above the plane of the said base portion.

6. A sheet-metal fastening device for assembled sheets of paper, consisting of a base portion, a tongue, and two arms of less length than the base and tongue and located some distance from the base to form open spaces each side of the base; the metal at the junction of the base and tongue and in line with the ends of the arms being made weaker than the metal above and below; and the said arms being bent at D D; to lie in a plane above the plane of the base.

758,333. **BOLT.** FRANK P. PFLEGHAR, New Haven, Conn., assignor to the English & Mersick Co., New Haven, Conn., a Corporation. Filed Jan. 11, 1904. Serial No. 188,560. (No model.)

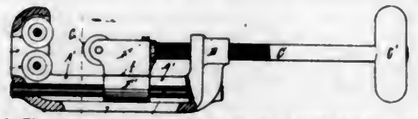


*Claim.*—1. A bolt comprising a plate, a housing secured thereto a slide extending through said housing and formed with a transverse recess, a knob secured to the housing but free to turn therein, said knob provided in its inner face with an eccentric roll-back to enter the said recess, and a spring-pin also mounted in said knob and extending into engagement with the said slide, substantially as described.

2. The combination with a bolt comprising a housing and a slide arranged therein and adapted to be projected therefrom, of a keeper comprising a strap and a spring-finger connected with said strap and extending beneath the strap forming a socket between it and the strap to receive said bolt, substantially as described.

758,334. **PIPE-CUTTER.** HENRY F. RENNER, Erie, Pa., assignor to Hollands Manufacturing Company, Erie, Pa., a Corporation. Filed Oct. 24, 1903. Serial No. 178,383. (No model.)

*Claim.*—1. The combination in a pipe-cutter, of a frame, a fixed jaw on said frame, rotary cutters mounted therein, a movable jaw, a rotary cutter mounted therein, a guide-rod operating as a guide for retaining the movable jaw in place on the frame, and a screw-threaded handle for operating the movable jaw, substantially as set forth.



2. The combination in a pipe-cutter, of a frame having a longitudinal recess therein and a longitudinal slot extending from the bottom of said recess through the frame, a fixed jaw on one end of the frame having a vertical slot therethrough, rotary cutters mounted in said slot, a movable jaw on said frame having a projection extending downward into the recess therein, a longitudinal guide-rod secured in the frame and passing through an opening in said projection, a rotary cutter mounted in said movable jaw, and a screw-threaded handle mounted in said frame for operating said movable jaw, substantially as set forth.

758,335. **CELLULOID COMPOUND.** ALBRECHT SCHMIDT, Höchst-on-the-Main, Germany, assignor to the Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation of Germany. Filed Jan. 12, 1900. Serial No. 1,185. (No specimens.)

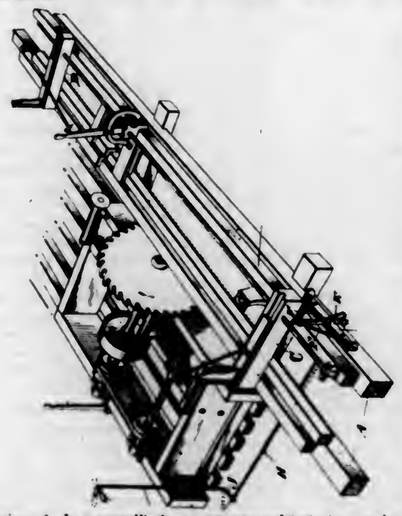
*Claim.*—As a new product, a celluloid-like compound composed of a mixture of nitrocellulose and a substance containing the group $R\diagup^{SO_3A}_{SO_3}$, wherein $R\diagup^{SO_3A}_{SO_3}$ means an alphyl-sulfonic group linked to A, an organic radical, substantially as described.

758,336. **PNEUMATIC-TIRE COVER.** GEORGE T. SHILTON and ALBERT SCHULTZE, Greymouth, Westland, New Zealand. Filed Aug. 25, 1903. Serial No. 170,662. (No model.)



*Claim.*—In covers for pneumatic tires, a base of canvas or fabric with wearing-surfaces of rubber on both sides, small tubes of vulcanized rubber secured to both edges of the canvas or fabric and extending throughout the circumference of the cover, and endless wires loosely threaded through the tubes, substantially as specified.

758,337. **HEAD-BLOCK SHIFTER FOR SAWMILLS.** JOHN T. SIMPSON, Loudon, Tenn. Filed Jan. 30, 1904. Serial No. 191,367. (No model.)



*Claim.*—1. In a sawmill, the combination with the log-carriage having a longitudinally-movable head-block, of a head-block shifter consisting of a stop adapted to be moved into and out of the path of travel of the head-block at will, substantially as described.

2. In a sawmill, the combination with the log-carriage having a longitudinally-movable head-block, of a head-block shifter consisting of a stop pivotally secured to a fixed support so as to move transversely to the carriage and capable of being thrown into and out of the path of travel of the head-block at will, substantially as described.

3. In a sawmill, the combination with the log-carriage having a longitudinally-movable head-block, of a head-block shifter consisting of a rod or bar secured between two braces which are pivoted to the side of the carriage-track so that said rod can be swung into position to engage and stop said head-block or into position to allow the latter to pass without obstruction, substantially as described.

4. In a sawmill, the combination with the log-carriage having a longitudinally-movable head-block, of a head-block shifter consisting of a stop adapted to be moved into and out of the path of travel of the head-block, and connections for moving and holding said stop in desired position, substantially as described.

5. In a sawmill, the combination with the log-carriage having a longitudinally-movable head-block, of a head-block shifter comprising a stop movable transversely to the carriage and capable of being thrown into or out of the path of travel of the head-block, and a lever and connections whereby said stop can be moved and held in desired position, substantially as described.

758,338. **ART OF PHOTOMECHANICAL PRINTING.** EMANUEL SPITZER, Munich, Germany. Filed Mar. 23, 1899. Serial No. 710,142. (No specimens.)

*Claim.*—1. The process of making printed pictures which consists in combining with the representation of the object to be pictured the representation of a fabric, and then photographing such combined picture.

2. The process of making printed pictures which consists in combining the representation of the object to be pictured and the representation of a fabric, then copying the combined picture photographically, and then transferring the resulting photograph to the printing-surface without the interposition of half-tone screens.

3. The process of making printed pictures which consists in combining the representation of the object to be pictured and the representation of a fabric, then copying the combined picture photographically, then transferring the resulting photograph to the printing-surface without the interposition of half-tone screens, and, finally, printing from such printing-surface.

4. The process which consists in first producing the desired picture on textile material, then copying the fabric bearing the picture photographically, and then transferring the photograph so produced to the printing-surface without the interposition of half-tone screens.

5. The process of making printed pictures which consists in first producing the desired picture on textile material, then copying said picture photographically, next transferring said photograph to the printing-surface without the interposition of half-tone screens, and, finally printing from the said printing-surface.

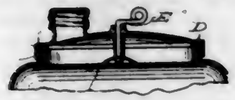
6. The process of making printed pictures which consists in first producing the desired picture in translucent colors on textile material, then copying said picture photographically, next transferring said photograph to the printing-surface without the interposition of half-tone screens, and, finally, printing from said printing-surface.

7. The process which consists in making a series of color-plates by combining the part of the representation for each color-plate with a textile fabric, then photographically copying the combined textile fabric and partial representation for each color-plate, and then transferring the resulting photographs to the color-plates.

8. The process which consists in making a series of color-plates by combining the part of the representation for each color-plate with a textile fabric, then photographically copying the combined textile fabric and partial representation for each color-plate, then transferring the resulting photographs to the color-plate, and, finally, printing *seriatim* from such color-plates.

9. The process which consists in making as many impressions from the outline plate or templet as color-plates are required, said impressions being made on plates covered with fabric, the parts of these color-plates which are not to come into effect being covered in suitable manner, and the said plates being then photographed and the photographs transferred to printing-plates in the ordinary manner after having been correspondingly treated, as color-plates.

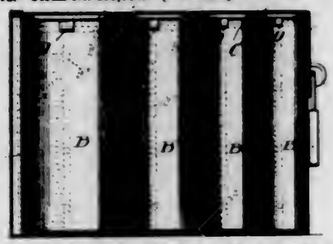
**758,339. FLASK.** HENRY STRUBEL, Chicago, Ill. Filed May 1, 1902. Renewed Aug. 5, 1903. Serial No. 168,366. (No model.)



*Claim.*—1. A coffee-flask having an elliptical neck of smaller dimensions than the body, an elliptical cap provided with an elliptical flange closely fitting over said neck, an elliptical shoulder in said cap adjacent said flange adapted to receive a washer, a crank-shaft passing centrally through said cap, a spring cross-arm at the lower end of said crank-shaft of greater length than the width of said neck and adapted to engage the shoulder formed in said flask below said neck to hold said cap firmly in place on said neck, substantially as described

2. A coffee-flask having an elliptical neck smaller than the body, an elliptical cap having a flange adapted to closely fit over said neck, suitable packing within said cap adapted to fit against the top of said neck, a shaft passing centrally through said cap, and a cross-arm rigidly attached to the lower end of said shaft of greater length than the width of the opening in said neck, said cross-arm being adapted to engage the shoulder beneath said neck thereby serving to clamp said cap in position.

**758,340. SAVINGS-BANK.** ROBERT J. THOMPSON, Chicago, Ill., assignor of one-half to Alexander H. Revell, Chicago, Ill. Filed Dec. 30, 1902. Serial No. 135,966. (No model.)



*Claim.*—1. In a savings-bank, the combination with a case, of a plurality of receptacles located within said case, said case having horizontal slots through the vertical wall thereof near its top registering with slots through the individual receptacles through which coins may be inserted, a plate located above and engaging the tops of said receptacles and thereby retaining the same in fixed relative positions with respect to each other and to the case, and projections depending from said plate into said receptacles and extending below the horizontal planes of the slots leading thereinto.

2. In a savings-bank, the combination with a case, of a plurality of receptacles located within said case, said case having horizontal slots through the vertical wall thereof near its top registering with slots through the individual receptacles, a single cover located above and closing the upper ends of said plurality of receptacles and engaging the vertical walls of said case, and means for locking said cover to said case.

3. In a savings-bank, the combination with a case, of a plurality of receptacles located within said case, said case having horizontal slots through the vertical wall thereof near its top registering with slots through the individual receptacles through which coins may be inserted, a plate located above and engaging the tops of said receptacles and thereby retaining the same in fixed relative positions with respect to each other and to the case, projections depending from said plate into said receptacles and extending below the horizontal planes of the slots leading thereinto, a single cover located above and closing the upper ends of said plurality of receptacles and engaging the vertical walls of said case, and means for locking said cover to said case.

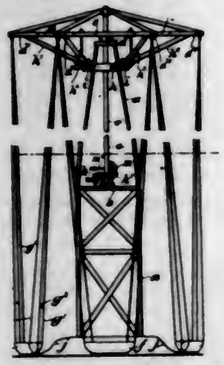
4. In a savings-bank, the combination with a case, of a plurality of receptacles located within said case, said case having horizontal slots through the vertical wall thereof near its top registering with openings communicating with the individual receptacles through which coins may be inserted, a plate located above the tops of said receptacles, and projections depending from said plate into the open upper ends of said receptacles and extending below the horizontal planes of the openings leading thereinto.

5. In a savings-bank, the combination with a case, of a plurality of receptacles located within said case, said case having horizontal slots through the vertical wall thereof near its top registering with openings leading into the individual receptacles through which coins may be inserted, a plate located above the tops of said receptacles, projections depending from said plate into the open upper ends of said receptacles and extending below the horizontal planes of the openings leading thereinto, a cover located above said plate and closing the upper end of said case, and means for locking said cover to said case.

6. In a savings-bank, the combination with a circular case, of a plurality of receptacles arranged in a circle within said case, said case having horizontal slots through the circular wall thereof registering with openings communicating with the individual receptacles through which coins may be inserted, a cover located above said receptacles and closing the upper end of said case, said cover having an opening therethrough communicating with the space within the case surrounded by the receptacles, and means for locking said cover to said case.

7. In a savings-bank, the combination with a circular case, of a plurality of vertical tubular receptacles located within said case and arranged in a circle with the outer surface of said receptacles in contact with the inner surface of said case, said case having horizontal slots through the circular wall thereof near its top registering with openings through the individual receptacles through which coins may be inserted, a plate located above the tops of said receptacles, projections depending from said plate into the open upper ends of said receptacles and extending below the horizontal planes of the openings leading thereinto, a cover located above said plate and closing the upper end of said case, and means for locking said cover to said case.

**758,341. AMUSEMENT APPARATUS.** HARRY G. TRAVER, New York, N. Y., and CHARLES W. NICHOLS, Newark, N. J., assignors to Traver Circle Swing Co., a Corporation of New York. Filed Oct. 3, 1902. Serial No. 126,735. (No model.)



*Claim.*—1. In an amusement apparatus, the combination with a tower, a vertical shaft journaled therein, a plurality of radially-projected arms actuated thereby, stays connecting said arms, and a driving mechanism rotating said shaft, of a plurality of cars, suspension-cables disposed on each side of and adjacent to each end of said cars respectively and means whereby the cables at the opposite ends of each car are pivotally connected to succeeding radial arms whereby said cars under the influence of centrifugal force are permitted to swing outwardly radially of said shaft and upwardly.

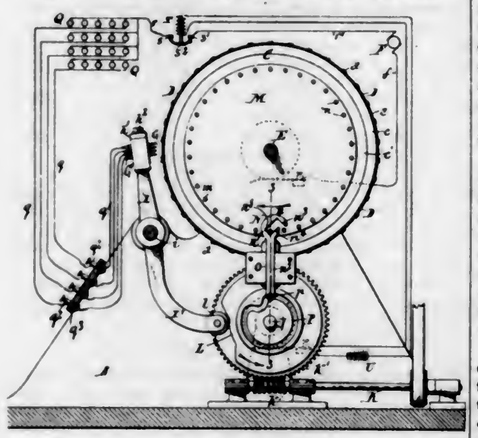
2. In an amusement apparatus, the combination with a tower, a vertical shaft journaled therein, a plurality of radially-projected arms actuated thereby, stays connecting said arms, a brake acting on said shaft and so set as to have limited braking capacity and a driving mechanism actuating said shaft, of a plurality of cars, suspension-cables disposed on each side of and adjacent to each end of said cars respectively, and means whereby the cables at the opposite ends of each car are pivotally connected to succeeding radial arms whereby said cars under the influence of centrifugal force are permitted to swing outwardly radially of said shaft and upwardly.

3. In an amusement apparatus, the combination with a tower, a vertical shaft journaled therein, a plurality of radially-projected arms actuated thereby, stays connecting said arms, a driving mechanism rotating said shaft, means whereby said shaft is permitted to rotate in one direction independently of said driving mechanism and a brake acting on said shaft and so set as to have limited braking capacity, of a plurality of cars, suspension-cables disposed on each side of and adjacent to each end of said cars respectively and means whereby the cables at the opposite ends of each car are pivotally connected to succeeding radial arms whereby said cars under the influence of centrifugal force are permitted to swing outwardly radially of said shaft and upwardly.

4. In an amusement apparatus, the combination with a tower, a vertical shaft journaled therein, a plurality of radially-projected arms actuated thereby, stays connecting said arms, and a driving mechanism rotating said shaft, of a plurality of cars, suspension-cables disposed on each side of and adjacent to each end of said cars respectively, means whereby the cables at the opposite ends of each car are pivotally connected to succeeding radial arms whereby said cars under the influence of centrifugal force are permitted to swing outwardly radially of said shaft and upwardly and spring-buffers disposed on the side of each car toward the tower.



**758,342. SWITCH MECHANISM FOR ELECTRIC SIGNS.** FRANK S. WARE, Buffalo, N. Y., assignor of one-half to Alfred W. Horn, Buffalo, N. Y. Filed July 14, 1902. Serial No. 115,434. (No model.)



*Claim.*—1. The combination of a rotary drum having a peripheral contact-surface forming one terminal of an electric circuit, an annular series of longitudinal guideways arranged on the periphery of the drum, perforated pattern-cards of insulating material each sliding at its opposite longitudinal edges in a pair of said ways for causing the card to rotate concentrically with the drum, and a plurality of contact-pins movable toward and from the periphery of the drum and forming the opposite terminal of said electric circuit, substantially as set forth.

2. The combination of a rotary cylindrical drum having a peripheral contact-surface forming one terminal of an electric circuit, an annular series of perforated pattern-cards mounted on the periphery of the drum and rotating concentrically therewith, contact-pins forming the opposite terminal of said electric circuit, and an oscillating carrier which supports said pins and whereby the latter are moved toward the contact-surface of the drum in the arc of a circle, thereby producing a rubbing contact between said pins and said surface, substantially as set forth.

3. The combination of a cylindrical drum provided on its periphery with a contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on the periphery of the drum, an oscillating carrier movable toward and from the drum and pattern-cards and provided with a seat and a clamping-plate over the seat, an insulating-bar arranged between the seat and plate of said carrier, and contact-pins mounted on said bar and forming the other terminal of the electric circuit, substantially as set forth.

4. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, a carrier movable toward and from said drum and pattern-cards, an insulating-bar mounted on said carrier and provided with internally-screw-threaded openings, externally-screw-threaded tubes engaging with said openings, contact-pins arranged in said tubes and forming the other terminal of the electric circuit, a collar arranged on each of said contacts-pins, and a spring arranged in each guide-tube between the bottom thereof and the collar on its contact-pin, substantially as set forth.

5. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, contact-pins adapted to engage with said drum and cards and forming the other terminal of the electric circuit, a rock-lever which supports said contact-pins or one of its arms and whereby the pins are moved toward and from the drum and cards, and a cam engaging with the other arm of the rock-lever, substantially as set forth.

6. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, contact-pins adapted to engage with said drum and cards and forming the other terminal of the electric circuit, an escapement-wheel turning with the drum and provided with an annular row of teeth, and a pallet movable transversely of the path of said teeth and having two inclined jaws which operate on said teeth for rotating said drum intermittently, substantially as set forth.

7. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, contact-pins adapted to engage with said drum and cards and forming the other terminal of the electric circuit, an escapement-wheel turning with the drum and provided with an annular row of teeth, and a pallet movable transversely of the path of said teeth and having two V-shaped jaws which operate successively on each tooth and one of said jaws being arranged in advance of the other, substantially as set forth.

8. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, contact-pins adapted to engage with said drum and cards and forming the other terminal of the electric circuit, an escapement-wheel turning with the drum and provided with an annular row of teeth, a pallet movable transversely of the path of said teeth and having two V-shaped jaws which operate successively on each tooth and one of said jaws being arranged in advance of the other, a slide carrying said pallet, and a cam which operates said slide, substantially as set forth.

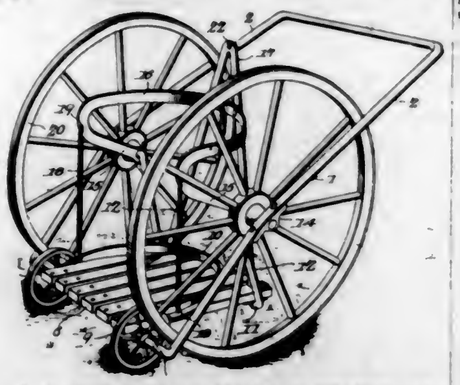
9. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, contact-pins adapted to engage with said drum and cards and forming the other terminal of the electric circuit, a rock-lever which supports said contact-pins on one of its arms and whereby the pins are moved toward and from the drum and cards, a counter-shaft provided with a cam engaging with the other arm of said rock-lever, an escapement-wheel turning with the drum and provided with an annular row of teeth, a reciprocating pallet operating on said teeth to propel said drum, and a cam mounted on said counter-shaft and actuating said slide, substantially as set forth.

10. The combination of a rotary drum provided with a peripheral contact-surface forming one terminal of an electric circuit, perforated pattern-cards mounted on said surface, contact-pins adapted to engage with said drum and cards and forming the other terminal of the electric circuit, a rock-lever which supports said contact-pins on one of its arms and whereby the pins are moved toward and from the drum and cards, a counter-shaft provided with a cam engaging with the other arm of said rock-lever, an escapement-wheel turning with the drum and provided with an annular row of teeth, a reciprocating pallet operating on said teeth to propel said drum, a cam mounted on said counter-shaft and actuating said slide, an electromagnetic switch which controls the circuit including said pins and contact-surface and which is arranged in a separate electric circuit terminating in two brushes, and a commutator arranged on the counter-shaft and adapted to connect and disconnect said brushes, substantially as set forth.

**758,343. GARBAGE-CART.** REUBEN D. WIRT, Philadelphia, Pa. Filed Dec. 8, 1903. Serial No. 184,332. (No model.)

*Claim.*—1. In a device of the class described, the combination with a main frame including side bars, of a drop-axle having horizontal spindles connected with the side bars, wheels mounted on the spindles, a supporting-frame engaging the spindles and serving as a bearing for the inner ends of the wheel-hubs, said hubs bearing at their outer ends against the bars, a platform sustained by the axle

and a brace carried by the platform and engaging the supporting-frame.



2. In a device of the class described, the combination with a main frame including side bars provided at their lower ends with bearings, of a main axle sustained by the frame, main wheels mounted on said axle, a secondary axle sustained by the lower bearings, secondary wheels having hubs mounted on the secondary axle and bearing at their outer ends against the lower bearings, and a platform supported by the secondary axle and serving as a bearing for the inner ends of said hubs.

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**758,344. WINDOW-SHADE-RETAINING DEVICE.** HUBERT WITTE, St. Louis, Mo., assignor to St. Louis Car Company, St. Louis, Mo. Filed Sept. 14, 1903. Serial No. 173,080. (No model.)



*Claim.*—1. In a shade-retaining device, the combination of a sleeve, bearing-bars at the ends of said sleeve, leaf-springs to bear against said bearing-bars, and pull-rods for compressing said leaf-springs, substantially as set forth.

2. In a shade-retaining device, the combination of a sleeve, bearing-bars at the ends of said sleeve, leaf-springs to bear against said bearing-bars, pull-rods for compressing said leaf-springs, and friction-shoes carried by said leaf-springs, substantially as set forth.

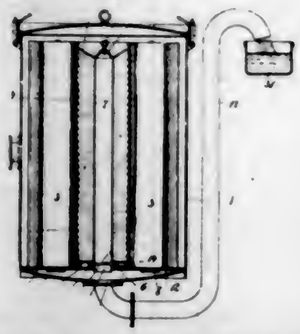
3. In a shade-retaining device, the combination of a sleeve, bearing-bars fitted to the ends of said sleeve and having diverging arms, lips carried by said bearing-bar arms, pull-rods operated in said sleeve, leaf-springs connected to said pull-rods and having their free ends seated between the lips of said bearing-bars, and friction shoes at the outer faces of said leaf-springs, substantially as set forth.

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**758,345. FILTER.** KARL ABRAHAM, Kiew, Russia. Filed Mar. 4, 1903. Serial No. 146,075. (No model.)

*Claim.*—1. In a filter, the combination, with a vessel having a bottom and supply and discharge pipes, of a filter proper removably supported on the bottom of the vessel, comprising a wall for the entrance of the liquid to be filtered having apertures and inclined projecting surfaces in proximity to the same, a perforated wall secured to said first-named wall for the exit of the filtered liquid, a bottom for the filter proper connecting the apertured wall with the perforated wall, and a filtering material interposed between the walls, substantially as set forth.

2. In a filter, the combination, with a vessel having a bottom and supply and discharge pipes, of a filter proper removably supported on the bottom of the vessel, comprising a wall for the entrance of the liquid to be filtered, consisting of a single piece of metal having apertures, and the metal between the apertures bent for forming inclined projecting surfaces in proximity to the same, a perforated wall secured to said first-named wall for the exit of the filtered liquid, a bottom for the filter proper connecting the apertured wall with the perforated wall, and a filtering material interposed between the walls, substantially as set forth.

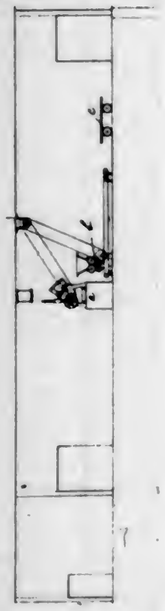


3. In a filter, the combination, with a vessel having supply and discharge pipes, of a filter proper removably supported on the bottom of the vessel, comprising a wall for the entrance of the liquid to be filtered having apertures and inclined projecting surfaces in proximity to the same, a perforated wall secured to said first-named wall for the exit of the filtered liquid, a bottom for the filter proper connecting the apertured wall with the perforated wall, a filtering material interposed between the walls, and a fabric in proximity to the wall for the exit of the filtered liquid for retaining the finer grades of filtering material, substantially as set forth.

4. In a filter, the combination, with a vessel having a bottom and supply and discharge pipes, of a plurality of filters proper, each removably supported on the bottom of the vessel and each comprising a wall for the entrance of the liquid to be filtered having apertures and inclined projecting surfaces in proximity to the same, a perforated wall secured to said first-named wall for the exit of the filtered liquid, a bottom for the filter proper connecting the apertured wall with the perforated wall, and a filtering material interposed between the walls, substantially as set forth.

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**758,346. PROCESS OF MAKING FLOUR NON-HYGROSCOPIC.** OCTAVE AVEDYK, Brussels, Belgium. Filed Aug. 3, 1900. Serial No. 25,732. (No specimens.)

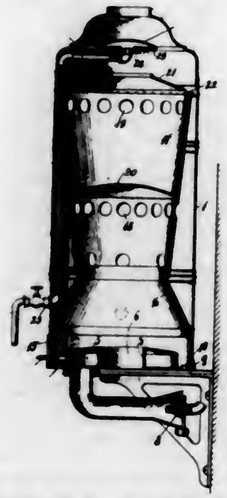




*Claim.*—The process of making non-hygroscopic flour which consists in first grinding the grain and removing offal; then soaking the ground and cleansed flour in water at moderate temperature to avoid cooking; then kneading to form a dough; then reducing the dough to sheets or films by passing the dough through rollers; then thoroughly desiccating the same, also at moderate temperature; and finally, regrinding the desiccated product to obtain an uncooked product unsusceptible to atmospheric influences, and having its fermentible properties unimpaired.

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**758,347. WATER-HEATER.** SAMUEL BERNSTEIN, New York, N. Y. Filed June 26, 1901. Serial No. 66,045. (No model.)



*Claim.*—1. In an instantaneous water-heater the combination with an upper part provided with suitable heating-surfaces and water supplying and discharging devices, of a base comprising an inner hollow portion constructed to form a burner for a mixture of air and gas, and an outer flange portion upon which said upper part of the heater is supported, said flange portion being constructed to form a receptacle in which the water of condensation is collected and evaporated.

2. In an instantaneous water-heater the combination with an upper part provided with suitable heating-surfaces and water supplying and discharging devices, of a base comprising an inner hollow portion constructed to form a burner for a mixture of air and gas, and an outer flange portion having an upturned lip within which said upper part of the heater is removably supported, said flange portion being constructed to form a receptacle in which the water of condensation is collected and evaporated.

3. In an instantaneous water-heater the combination with an upper part provided with suitable heating-surfaces and water supplying and discharging devices, of a base comprising an inner hollow portion constructed to form a burner for a mixture of air and gas, and an outer flange portion having at or near its periphery an upturned lip and at an intermediate portion a plurality of lipped air-passages between which and said upturned lip the upper part of the heater is adapted to be supported whereby a receptacle is formed, in which the water of condensation is collected and evaporated.

4. In an instantaneous water-heater the combination with an upper part provided with suitable heating-surfaces and water supplying and discharging devices, of a base comprising an inner hollow portion constructed to form a burner for a mixture of air and gas, and an outer flange portion integrally united with said inner hollow portion and having at or near its periphery an upturned lip and at an intermediate portion a plurality of lipped air-passages between which and said upturned lip the upper part of the heater is adapted to be removably supported whereby a receptacle is formed, in which the water of condensation is collected and evaporated.

5. In an instantaneous water-heater the combination with an upper part provided with suitable heating-surfaces and water supplying and discharging devices, of a base constructed to be mounted upon one or more wall-brackets, said base comprising an inner hollow annular portion having a central air-passage and constructed to form a burner for a mixture of air and gas, and an outer flange portion integrally united with said inner hollow portion below the top thereof and having at or near its periphery an upturned lip and at an intermediate portion a plurality of lipped air-passages between which and said upturned lip the upper part of the heater is adapted to be removably supported whereby a receptacle is formed in which the water of condensation is collected and evaporated.

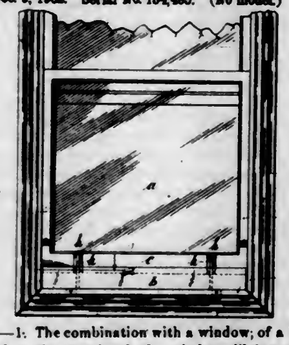
6. In an instantaneous water-heater, the combination with a burner, of an outer cylindrical casing arranged above said burner, an upwardly-tapering wall secured within the lower end of said casing, an upwardly-flaring wall mounted within said casing with its lower end overlapping the upper end of said upwardly-tapering wall, said upwardly-flaring wall being provided at an intermediate portion with a plurality of sets of openings, a transverse partition mounted within said upwardly-flaring wall between said sets of openings, means for distributing water upon the inner surface of both the outer casing and the upwardly-flaring wall, and a spout for discharging the heated water as it collects at the lower end of the casing.

7. In an instantaneous water-heater, the combination with a burner, of an outer cylindrical casing arranged above said burner, an upwardly-tapering wall secured within the lower end of said casing, an upwardly-flaring wall mounted within said casing with its lower end overlapping the upper end of said upwardly-tapering wall, said upwardly-flaring wall being provided with two sets of openings one set near the top and the other at an intermediate portion, a transverse partition having a serrated edge in contact with the inner surface of said upwardly-flaring wall between said sets of openings, an upwardly-tapering partition having a serrated edge in contact with the inner surface of the outer casing and a perforated channel or depression adjacent to the inner surface of the upwardly-flaring wall, means for distributing water on the upper surface of each of said partitions, and a spout for discharging the heated water as it collects at the lower end of the casing, substantially as described.

8. In an instantaneous water-heater, the combination with a burner forming the base of the heater, of an outer cylindrical casing removably mounted on said burner, an upwardly-tapering wall secured within the lower end of said casing, an upwardly-flaring wall removably mounted within said casing with its lower end overlapping the upper end of said upwardly-tapering wall, said upwardly-flaring wall being provided with two sets of openings, one set near the top and the other at an intermediate portion, a transverse partition having a serrated edge in contact with the inner surface of said upwardly-flaring wall between said sets of openings, a removable upwardly-tapering partition having a serrated edge in contact with the inner surface of the outer casing and a perforated channel or depression adjacent to the inner surface of the upwardly-flaring wall, a supply-pipe secured to the outer casing near the bottom thereof and passing up near the inner surface of the casing to a point above the top thereof, a transverse pipe threaded to the supply-pipe and carrying at its inner end a spray-nozzle adapted to distribute water on both of said partitions, a cover for inclosing said branch pipe and nozzle, and a spout for discharging the heated water as it collects at the lower end of the casing, substantially as described.

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**758,348. WINDOW ATTACHMENT.** LUDWIG K. BÖHM, Hoboken, N. J., assignor, by mesne assignments, to the Commercial Railway Equipment Company, New York, N. Y., a Corporation of New Jersey. Filed Dec. 9, 1902. Serial No. 134,485. (No model.)



*Claim.*—1. The combination with a window; of a board removably secured to the stop-bead of a window-sill between the stop-

beads on the sides of the frame, and means for holding the board in contact with the lower rail of the window-sash, whereby the sash may be raised and air prevented from entering beneath the lower rail.

2. In a device of the class described, the combination with a window, of a board removably secured to the window-sill and having a vertical groove therein, pins in the window-sill engaging the board to hold the latter to the former, and a strip on the bottom rail of the window-sash adapted to engage and slide in the groove in the board, whereby the window-sash may be raised or lowered and air prevented from entering beneath the lower rail of the sash.

3. In a device of the class described, the combination with a window, of a board removably secured to the stop-bead on the window-sill and having two vertical undercut grooves therein, pins mounted in the stop-bead and engaging the board, and strips secured to the bottom rail of the window-sash, said strips engaging the grooves in the board and having their sides diverging outwardly to correspond in shape to the grooves in the board, whereby the board is interlocked with the lower rail of the sash and the latter permitted to be raised or lowered.

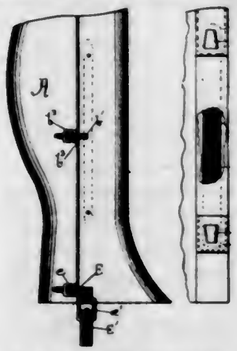
4. In a device of the class described, the combination with a window, of means to prevent a draft beneath the lower rail of the sash when the latter is raised comprising a board removably secured to the window-sill and disposed parallel with the sash and having an interlocking sliding engagement with the sash.

5. In a device of the class described, the combination with a window, of means to prevent a draft beneath the lower rail of the sash when the latter is opened, comprising two boards secured to the stop-bead on the window-sill between the stop-beads on the sides of the window-frame, pins mounted in the stop-bead of the window-sill and engaging the boards, one of said boards having an interlocking engagement with the lower rail of the window-sash and adapted to be carried thereby when the sash is raised.

6. The combination with a window having its lower sash provided with dovetail strips extending vertically on the lower rail thereof, of a board mounted on the window-sill contiguous to the lower rail of the sash and provided with dovetail grooves which are slidably engaged by the strips on the sash, tongues on the top of the board having openings therein, pins fitting in said opening and engaging the sash to lock the board to the sash, a second board in mutual contact with the first-mentioned board, and means to lock the last-mentioned board to the window-sill.

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**758,349. LEGGING. JOHN M. BRAUN, Chicago, Ill. Filed Jan 29, 1904. Serial No. 191,170. (No model.)**



*Claim.*—1. In a legging, the combination of a body portion terminating in inner and outer flaps or edges adapted to be superimposed one upon the other, sockets in one of the edges, and a jointed locking-bar secured to the other flap and adapted to have its ends forced outwardly into the sockets when in locked position and adapted to have its ends withdrawn from the sockets by the bending of the jointed locking-bar at its joint, substantially as described.

2. In a legging, the combination of a body portion terminating in inner and outer flaps or edges adapted to be superimposed one upon the other, sockets in one of the edges, a jointed locking-bar secured to the other flap and adapted to have its ends forced outwardly into the sockets when in locked position and adapted to have its ends withdrawn from the sockets by the bending of the jointed locking-bar at its joint, and a strap on one of the flaps adapted to be secured to the other flap for preventing the bending of the jointed locking-bar when in locked position, substantially as described.

3. In a legging, the combination of a body portion terminating in inner and outer flaps or edges, a reinforcing-bar on one of the flaps provided near its ends with sockets, a locking-bar on the opposite flap or edge consisting of two sections pivoted together and adapted to have their ends enter the sockets on the reinforcing-bar when the sections are in straightened or expanded relation and adapted to have the ends withdrawn therefrom when the sections are bent on their pivot in respect to one another, substantially as described.

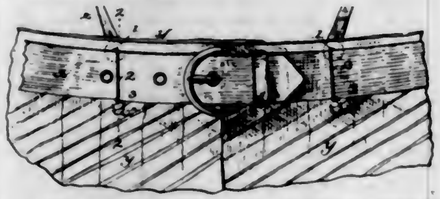
4. In a legging, the combination of a body portion terminating in inner and outer flaps or edges, a reinforcing-bar on one of the flaps provided near its ends with sockets, a locking-bar on the opposite flap or edge consisting of two sections pivoted together and adapted to have their ends enter the sockets on the reinforcing-bar when the sections are in straightened or expanded relation and adapted to have the ends withdrawn therefrom when the sections are bent on their pivot in respect to one another, and a strap secured at the pivotal point of the locking-bar and adapted to be secured to the opposite flap to prevent the locking-bar from being bent on its pivot when the strap is fastened thereby holding the ends of the locking-bar within the sockets, substantially as described.

5. In a legging, the combination of a body portion terminating in inner and outer flaps or edges adapted to be superimposed one upon another, a flat reinforcing-bar secured to the inner flap or edge, sockets near the ends of the flat reinforcing-bar, a flat locking-bar composed of two sections having their inner ends superimposed one upon another, a pivot passing through the two sections pivoting them together and allowing the outer ends of the sections to be thrust outwardly into the sockets when the sections are in straightened position and allowing the ends to be withdrawn from the sockets when the locking-bar is drawn back and the sections brought into angular relation with one another, substantially as described.

6. In a legging, the combination of a body portion terminating in inner and outer flaps or edges adapted to be superimposed one upon another, a flat reinforcing-bar secured to the inner flap or edge, sockets near the ends of the flat reinforcing-bar, a flat locking-bar composed of two sections having their inner ends superimposed one upon another, a pivot passing through the two sections pivoting them together and allowing the outer ends of the sections to be thrust outwardly into the sockets when the sections are in straightened position and allowing the ends to be withdrawn from the sockets when the locking-bar is drawn back and the sections brought into angular relation with one another, and a strap secured at the pivotal point of the locking-bar and adapted to be secured to the opposite flap to prevent the locking-bar from being bent on its pivot when the strap is fastened, thereby holding the ends of the locking-bar within the sockets, substantially as described.

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**758,350. BUTTON BELT-LOOP ATTACHMENT FOR GARMENTS. JEREMIAH D. BURNS, Washington, D. C. Filed June 29, 1903. Serial No. 163,645. (No model.)**



*Claim.*—1. The device for the purpose specified comprising a head and a bent shank having one end secured to the head and its opposite free pointed end bent or offset with the point extended beyond the offset whereby it is adapted to engage a fabric, said shank having also a portion intermediate said ends and parallel to said head.

2. A device for the purposes specified comprising a head and a bent shank attached thereto and having its free end bent twice practically at a right angle and formed with a terminal hook which is in a plane parallel to the head, substantially as described.

3. In a device for the purposes specified comprising a head, and a bent shank which is attached thereto, the same being elastic and easily flexible, and provided at its free end with an offset adapted to engage a fabric, substantially as described.

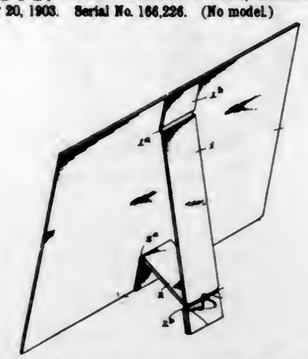


4. A device for the purposes specified comprising a head, and a bent wire shank which is attached thereto and provided with a coil located between its extended body and the head and having its lower end offset and adapted to engage the fabric, substantially as described.

5. The combination with a garment of the device described consisting of a head and a bent wire shank which is attached to said head and passes through the fabric of the garment and is extended on the outer side of the latter, its end being offset and reinserted through the fabric, substantially as described.

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**758,351. EASEL. HUTCHINS C. CADY, Columbus, Ohio. Filed July 20, 1903. Serial No. 166,226. (No model.)**

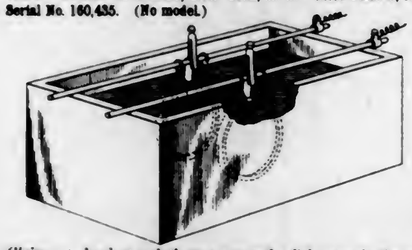


*Claim.*—1. In an easel of the character described, the combination with the member 1 comprising a strip of cardboard, said strip having a transverse depression on one of its faces near one end, of a member 2 comprising a strip of cardboard having transverse depressions on opposite sides of the center of its length and a cord for trying the lower end portion or member 1 in connection with the outer end portion of the member 2, substantially as specified.

2. In an easel of the character described, the combination with a member 1 comprising a strip of cardboard having a transverse depression $1^a$ formed in its upper portion and opposing notches $1^c$ in its lower portion, of a member 2 comprising a strip of cardboard having transverse depressions formed on opposite sides of the center of its length and notches at the ends of one of said depressions and a cord passing through the notched portions of said members 1 and 2 and tied about said members, substantially as specified.

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**758,352. APPARATUS FOR ELECTROPLATING SOUND-RECORDS. GEORGE K. CHENEY, New York, N. Y. Filed June 6, 1903 Serial No. 160,435. (No model.)**



*Claim.*—1. In electroplating apparatus for disk-records, the combination of the solution-tank, a disk-record, an annulus of non-conducting material having a tapered bore in which the disk-record is frictionally secured peripherally only, an electric circuit including the record-disk and means for suspending the annulus in the tank.

2. In electroplating apparatus, the combination of the solution-tank having circuit-rods extending across the same above the surface of the liquid, a disk-record, an annulus of non-conducting material having a tapered bore to receive the record-tablet and frictionally secure the same at points throughout its circumference, means for suspending the annulus in the solution and an electrical connection from the circuit-bar to the record-tablet.

3. In electroplating apparatus, the combination of the solution-tank having circuit-rods extending across the same above the surface of the liquid, a disk-record, an annulus of non-conducting material having a tapered bore to receive the record-tablet and frictionally secure the same throughout its circumference, S-hooks for suspending the annulus from the circuit-bar, and an electrical connection from said bar to the record-tablet.

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**758,353. LOCKING TURN-BUTTON. GEORGE W. COULSON, Sioux City, Iowa. Filed Dec. 22, 1903. Serial No. 186,194. (No model.)**



*Claim.*—1. A locking turn-button comprising a turnable member provided with a pivot extending in the same direction as said member, and a locking member eccentrically mounted upon said pivot.

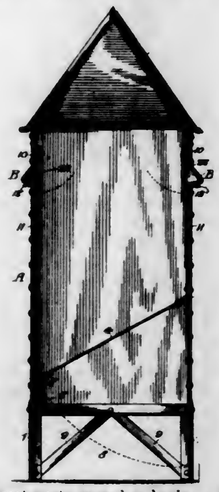
2. A locking turn-button comprising a turnable member provided with a pivot extending in the same direction as said member, and a disk eccentrically mounted upon said pivot and provided with an integral releasing-ear.

3. A locking turn-button comprising a turnable member carrying a pivot projecting beyond the body of the member, said pivot having its onter end disconnected and a locking member mounted upon said pivot.

4. A locking turn-button comprising a turnable member having a pivot integral therewith and projecting therefrom, and a locking member in the form of an eccentric mounted upon said pivot.

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**758,354. STREET WASTE-PAPER BOX. GEORGE C. J. ENGELLAND, Blue Island, Ill. Filed May 27, 1903. Serial No. 158,971. (No model.)**



*Claim.*—1. A street waste-paper box having a transversely-arranged oblong side opening, and a gravity-door for normally closing such opening hinged along its upper edge and having an outwardly and downwardly inclined face portion below the hinge and normally projecting out from such opening in the box, the door portion below the hinge being arranged to swing inwardly to permit matters to be introduced into the box.

2. A street waste-paper box having a transversely-oblong side opening, and a gravity-door for normally closing such opening hinged along its upper edge and formed with the reversely-inclined portions 18, 19, 20, the door portion below the hinge being arranged to swing inwardly and having its inclined portions 19 and 20 normally projecting out from its side opening.

3. A street waste-paper box having a transversely-oblong side opening, and a gravity-door for normally closing such opening constructed with an outwardly-extending portion 19, an inwardly-extending portion 20, and a downwardly-extending portion 21 which serves as a stop and which projects below the oblong side opening, the door being hinged at its upper edge and arranged to open inwardly.

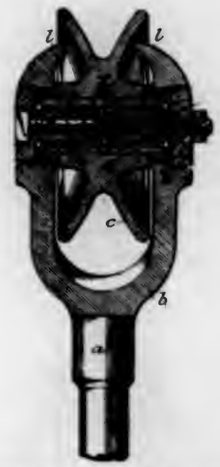
4. A street waste-paper box having a transversely-oblong side

opening, a door B for normally closing such opening hinged at its upper edge and arranged to swing inwardly, and a ledge 12 over which a portion of the door extends when the door is in normal position.

5. A sheet-metal street waste-paper box having braced legs, an inclined hinged bottom 4 hung to swing downwardly into vertical position between the braced legs, side openings, and inwardly-swinging doors for such openings hinged at their upper edges and normally projecting through and out from the side openings, and presenting downwardly and outwardly inclined faces.

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758,355. **TROLLEY-WHEEL.** JAMES S. FLETCHER and DONALD H. WATERS, Chicago, Ill. Filed Sept. 3, 1903. Serial No. 171,826. (No model.)




*Claim.*—1. The combination with a hub-bored trolley-wheel and end bearings to said hub, and a trolley-harp, of bearings interior to said bearings, a chamber between said bearings and a liquid metal in said chamber, substantially as specified.

2. The combination with a hub-bored trolley-wheel and end bearings in said hub, and a trolley-harp, of bearings interior to said hub-bearings, a chamber between and within said bearings and a liquid metal in said chamber, substantially as specified.

3. The combination with a hub-bored trolley-wheel and end bearings in said bore, a trolley-harp and bearings counter to and within said hub-bearings and a chamber between and within said bearings, of a liquid metal in said chamber, substantially as specified.

4. The combination with a hub-bored trolley-wheel with end bearings in said bore, and a trolley-harp, of bearings interior to said hub-bearings, a chamber between said bearings and a liquid metal in said chamber, substantially as specified.

5. The combination with a hub-bored trolley-wheel ball-races at the ends of its hub, of counterpart ball-races and balls to said races, of a chamber and a liquid metal in said chamber intermediate said balls, substantially as specified.

6. The combination with a hub-bored trolley-wheel, a ball-race and balls thereto, of a counterpart ball-race a chamber within the bore of said hub, a liquid metal therein, and means to confine said metal, a trolley-harp and means to connect said wheel and harp, substantially as specified.

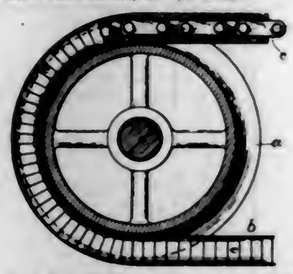
7. The combination with a hub-bored trolley-wheel, a ball-race thereto, a counterpart ball-race, a chamber between said ball-races and a trolley-harp, of a liquid metal in said chamber and means to operatively connect said harp and wheel, substantially as specified.

8. The combination with a hub-bored trolley-wheel, a trolley-harp and a chamber in said hub, of bearings for said wheel on said harp, a liquid metal in said chamber, a chambered bolt with axis coincident with axis of said hub, said bolt-chamber connected with said metal-chamber, a nut in said bolt and a single element to close said bolt-chamber and lock said nut, substantially as specified.

9. The combination with a hub-bored trolley-wheel, a tube in said wheel-hub having ball-races at its ends, and balls in said races, of a trolley-harp with bored arms, disks in said bores, tubular extensions on said disks with ball-races in the angles made by said disks and tubular extensions, a chamber between said disks, in said tube, and a liquid metal in said chamber, substantially as specified

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758,356. **DRIVING-BELT.** ANDY FRITZ, Portland, Oreg. Filed Apr. 18, 1902. Serial No. 103,640. (No model.)



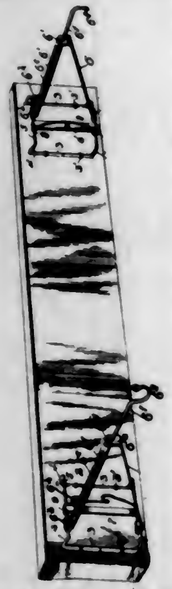

*Claim.*—1. A driving-belt, comprising a jointed link chain, and a continuous friction-covering therefor, consisting of a plurality of perforated disks *c*, made of an elastic material, abutting closely, end to end, and completely incasing the chain, substantially as described.

2. A driving-belt, comprising a jointed link chain, and a continuous friction-covering therefor, consisting of a plurality of perforated disks *c*, made of an elastic material, abutting closely, end to end, and completely incasing the chain; the outer edges of the chain-links being rounded, to prevent the wear of the eyes of the disks, substantially as described.

3. A driving-belt, comprising a link chain; the links being connected by transverse rivet-pins, so as to facilitate the connecting and adjustment of the chain, as required; and a continuous friction-covering for said chain, consisting of a plurality of perforated disks, made of an elastic material, abutting closely, end to end, and completely incasing the chain, substantially as described.

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758,357. **BRACKET FOR SHADE AND CURTAIN FIXTURES.** PATRICK GALLAGHER, Allegheny, Pa. Filed Jan. 28, 1904. Serial No. 191,009. (No model.)



*Claim.*—1. A device of the type specified comprising brackets formed with a pair of vertical rods for securement to a support, and horizontal rods carried thereby and extending outwardly therefrom, and fixtures having their ends formed to embrace said horizontal rods.

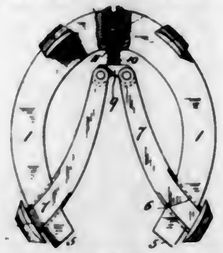


2. A device of the type specified comprising brackets formed with a pair of vertical rods for securement to a support and horizontal rods spaced from said vertical rods, and fixtures having their ends engaged over said horizontal rods.

3. A device of the type specified formed of a single piece of material into substantially rectangular form, embracing horizontal rods spaced from the vertical rods and fixtures having eyes at their one ends and spring-hooks at their other ends to engage said horizontal rods.

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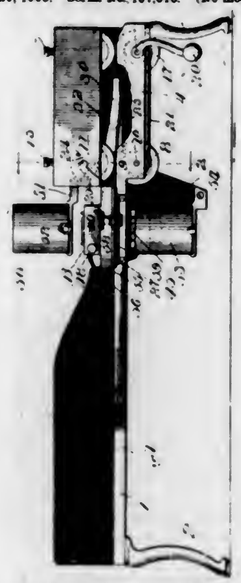
758,358. **HORSESHOE.** JOHN GROENING, Iron River, Wis. Filed July 27, 1903. Serial No. 167,160. (No model.)



*Claim.*—A horseshoe having two opposite upwardly-projecting front stationary lugs, a bar adapted to slide diagonally through the heel portion of each side and in the plane of the shoe between the said sides, a lug projecting upward from the bar at its outer end, the said bars being opposite to each other and hinged at their inner ends to a cross-bar, a hole formed part way through and in the plane of the front portion of the shoe from its inner edge, a screw-threaded shank projecting from the cross-bar and adapted to slide through the said hole, a circular recess concentric with the said hole and opening from the shoe at its front edge, and a nut adapted to be rotated on the said shank within the recess, and to engage the inner end of the recess, substantially as described.

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758,359. **ENVELOP-SEALING MACHINE.** JOSEPH L. HARRINGTON and JOSEPH J. SCHERMACK, Chicago, Ill., assignors to Thexton Electric Envelope Sealer Co., Chicago, Ill., a Corporation of Illinois. Filed Dec. 29, 1903. Serial No. 187,010. (No model.)



*Claim.*—1. In an envelop-sealer, a moistening device having a wick, and an independent tank or reservoir mounted above the level of the wick and provided with means for permitting the liquid to drop on said wick, substantially as described.

2. In a device of the class specified, the combination of a tank or reservoir, a moistening device having a wick adapted to receive liquid from said tank or reservoir, and a second tank or reservoir located substantially below the moistening device, the wick from the latter being extended down to said second-mentioned tank or reservoir, substantially as described.

3. In a device of the class specified, a moistening device having separated and elevated moistening-surfaces, and means for pressing the article to be moistened into the space between said surfaces, substantially as described.

4. In a device of the class specified, a moistening device whose moistening-pad has an undulating or irregular surface and an abutment projecting into the space between the undulations or irregularities of said surface, substantially as described.

5. In a device of the class specified, a moistening device having a moistening-pad, said moistening device being provided with means for depressing the surface of the moistening-pad at intervals, and being also constructed with an abutment projecting into said depression in said pad, substantially as described.

6. In a device of the class specified, a moistening device comprising a moistening-pad, means for holding the same and engaging the edges thereof, means for holding a portion of the pad between its edges in a depressed position, means for supporting the intermediate portions of the pad in an elevated position, and a cover or top having a rib projecting into the space between said elevated portions, substantially as described.

7. In a device of the class specified, a moistening device comprising a bottom having elevated ribs at intervals from one another, a retainer having longitudinally-extending prongs arranged lengthwise of said ribs, one of said prongs being between said ribs and the others outside thereof, a wick engaged by the ribs on the bottom and also by said prongs so that the outer edges of the wick are held depressed by the outer prongs and the middle portion of the wick is held depressed by the middle prong, the intermediate portions of the wick being held in an elevated position by said ribs, and a cover having a rib arranged lengthwise of and above said middle prong, whereby it projects into the space between the elevated portions of the wick, substantially as described.

8. In a device of the class specified, a moistening device comprising a bottom or base piece 33 having longitudinally-extending ribs 43, 43, a wick-retainer 32 having prongs 39, 40 and 41, a top 31 having a depending rib or projection 37, and means for detachably holding the said parts together, substantially as described.

9. In a device of the class specified, a moistening device comprising a base or bottom 33 having ribs 43, 43, a wick-retainer 32 having prongs 39, 40 and 41, a wick 45 engaged by the prongs of said retainer 32, a top piece 31 having a rib 37 above the central prong 40, and screws 48 and 49 for detachably holding the pieces 33 and 31 together, the retainer 32 being provided with a flange 42 whereby its prongs are held in engagement with the wick, substantially as described.

10. In a device of the class specified, a moistening device having a moistening-pad and an abutment arranged opposite the same for pressing the article to be moistened against the pad, said pad having an exposed extension, and a tank or reservoir mounted above the level of said extension and adapted to supply the same with liquid, substantially as described.

11. In a device of the class specified, a moistening device comprising bottom and top pieces, a moistening-pad arranged between the same, and an extension of said pad above said top piece, substantially as described.

12. In a device of the class specified, a moistening device comprising bottom and top pieces, a moistening-pad arranged between the same, an extension of said pad above said top piece, and means for supplying said extension with liquid, substantially as described.

13. In a device of the class specified, a moistening device comprising a moistening-box containing a wick, said box having side apertures through which the article to be moistened can pass and also having its top provided with apertures, and an extension of said wick arranged across the top, substantially as described.

14. In a device of the class specified, a moistening device comprising a moistening-box containing a wick, said box having side apertures through which the article to be moistened can pass and also having its top provided with apertures, an extension of said wick arranged across the top, and a tank or reservoir arranged to supply liquid to said wick extension, substantially as described.

15. In a device of the class specified, a moistening device comprising a box having openings through which the article to be moistened can pass, a wick arranged within said box, said wick having

an undulating or irregular surface and the top of the box being provided with a projection extending into the space between the undulations or irregularities of the wick, an extension for said wick extended across the top of the box, and a tank or reservoir arranged to supply liquid to said extension, substantially as described.

16. In a device of the class specified, the combination of a moistening device provided with a wick having an extension, and a tank or reservoir to which said extension is extended and in which a portion of the same is confined, substantially as described.

17. In a device of the class specified, a moistening device provided with a wick having an extension, a portion of which is exposed, and a couple of tanks or reservoirs one arranged above the general level of the moistening device and adapted to supply liquid thereto and the other arranged below the moistening device, the said extension of the wick being extended to said second tank or reservoir, and a portion of the same confined therein, substantially as described.

18. In a device of the class specified, a moistening device comprising a box having openings in its sides for the entry and exit of the article to be moistened, and also having a wick inclosed by the walls and top of the box and located between said side openings.

19. In a device of the class specified, a moistening device comprising a box having openings in its sides for the entry and exit of the article to be moistened, and also having a wick inclosed by the walls and top of the box and located between said side openings, and means on the top of the box for pressing said article against the wick.

20. In a device of the class specified, a moistening device having an inclined section of wick adapted to receive liquid, and another portion of wick to be used for moistening purposes connected with the first-mentioned portion at the upper end thereof, whereby the surplus liquid will run away from the moistening portion.

21. In a device of the class specified, a moistening device having a lip 31ª.

22. In a device of the class specified, a moistening device comprising a box consisting of pieces 31, 32 and 33 whereof the piece 31 is provided with apertures 35, ribs 34, 34, and 37, and a tailpiece 38 and the piece 32 is constructed with a flange 42 and prongs 39, 40 and 41, and the piece 33 is constructed with ribs 43, 43 and a flange 44, screws 48 and 49 and a wick 45 extended between the prongs of the piece 32 and the ribs 43, 43, thence between the flange 42, and an overhang on the piece 31, and thence over the top of the latter, substantially as described.

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**758,360. AIR OR GAS LIFT FOR FLUIDS. WALTER B. HARRIS, Indianapolis, Ind. Filed July 6, 1903. Serial No. 164,358. (No model.)**

*Claim.*—1. An air or gas lift for fluids including an air-tight casing, an ejector that tends to draw up fluid from below and to force the fluid above it out of the casing, and means for introducing compressed air or gas into the casing upon the body of fluid therein to cooperate with said ejector.

2. An air or gas lift for fluids including an air-tight casing, means for introducing compressed air or gas into the casing, a delivery-tube within said casing, an ejector entering said delivery-tube that tends to draw up fluid in said tube below the ejector and to force the fluid above the ejector out of the casing, and a compressed-air pipe leading to said ejector.

3. An air or gas lift for fluids including a compressed-air-supply pipe, a fluid-delivery tube, and an ejector connecting the two, said ejector having its fluid-inlet appreciably below the point where the compressed air enters the delivery-tube so that a column of fluid will be maintained in the ejector to resist the escape of the compressed air through the fluid-inlet.

4. An air or gas lift for fluids including a delivery-tube, a compressed-air pipe and an ejector connecting the compressed-air pipe with the delivery-tube, said ejector having an outlet passage-way connecting with the delivery-tube, a compressed-air passage-way leading from the compressed-air pipe and that is partially parallel with the outlet passage-way, an inlet passage-way leading to the outlet passage-way, and a partition between the compressed-air passage-way and the inlet passage-way extending to the outlet passage-way so that the latter part of the compressed-air passage-way is parallel with the latter part of the inlet passage-way, and all parts of said ejector being formed integral.

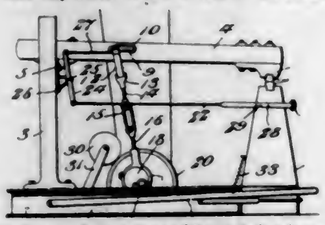
5. An air or gas lift for fluids including an air-tight casing, a series of ejectors within the casing arranged one below the other at intervals, means for conveying compressed air to the ejectors, a delivery-tube leading from each ejector to the one above it and from the upper ejector out of the casing, and means for introducing compressed air or gas into the casing to press down upon the body of fluid therein to cooperate with said ejectors.



6. An air or gas lift for fluids including an air-tight casing, a comparatively short cylinder in the casing of smaller diameter than the casing and with its upper end opening into the casing to act as a receiving-chamber for the fluid, and means for elevating the fluid first into said cylinder and then from said cylinder out of the casing, and means for introducing compressed air or gas into the upper end of the casing so it will press down upon the fluid in the cylinder and also pass the cylinder.

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**758,361. POWER-HAMMER. HENRY W. HAYNORS, Mason City, Iowa. Filed July 1, 1903. Serial No. 163,941. (No model.)**



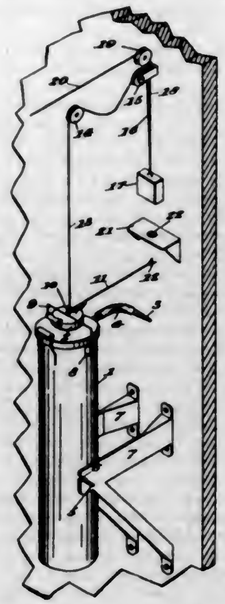
*Claim.*—A power-hammer comprising a bed or base, an anvil mounted thereon, a lip formed on the anvil, an upright frame upon the base, a bracket on the frame, a helve pivotally mounted on the frame and provided with a slot, a pin adjustable in said slot, a harp-shaped spring or yoke embracing the helve and connected with the opposite ends of said pin, a driving-shaft, a cam thereon, a strap encircling the cam, a turnbuckle connection between said strap and the yoke, a rod having a series of notches in one end adapted to engage the lip of the anvil and connected at its opposite end to a lever fulcrumed intermediate of its length to the bracket on the frame and a link connecting the lever to the yoke.

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**758,362. FIRE-EXTINGUISHING APPARATUS. EDWARD W. HICKS, Cynthiana, Ky. Filed Dec. 23, 1903. Serial No. 186,406. (No model.)**



*Claim.*—1. A fire-extinguishing device comprising a vessel pivotally supported below its center of gravity and adapted, when released, to swing pivotally and discharge its contents, a detent device supported for movement above the vessel and, when lowered, adapted for engagement with the vessel to hold the same out of discharging position and, when raised, to release said vessel, and means, controlled by thermal changes, for operating said detent device.



2. A fire-extinguishing device comprising a vessel pivotally supported below its center of gravity and adapted, when released, to swing pivotally and discharge its contents, said vessel having at opposite sides eyes, a bail having ends engageable in said eyes to hold the vessel against pivotal movement, a link whereon the bail is supported, and means, controlled by thermal changes, for operating the bail.

3. A fire-extinguishing device comprising a vessel pivotally supported below its center of gravity and adapted, when released, to swing pivotally and discharge its contents, a detent device supported for movement above the vessel and, when lowered, adapted for engagement with the vessel to hold the same out of discharging position and, when raised, to release said vessel, means, controlled by thermal changes, for operating said detent device, and an alarm device actuated simultaneously with the operation of the detent device.

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**758,363. TELEPHONE-RECEIVER. MILLER R. HUTCHISON, Norwood, N. J., assignor, by mesne assignments, to Hutchison Acoustic Company, a Corporation of New York. Filed Nov. 25, 1903. Serial No. 182,715. (No model.)**

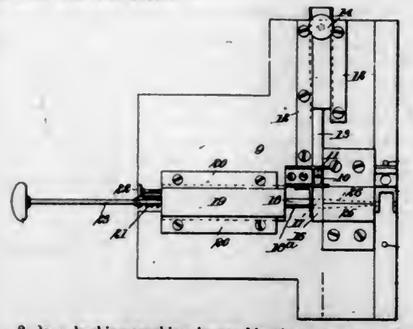


*Claim.*—In a telephone-receiver, the combination of a casing in two parts connected together by a screw-thread, a magnet in one part and a diaphragm in the other, a scale on the outside of one part and an index on the other whereby the distance between the pole or poles of the magnet and the diaphragm can be determined by the position of the index with respect to the scale, and automatically-acting detents whereby the two parts are held at any point of the scale to which they may be adjusted.

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**758,364. MACHINE FOR FORMING AND SETTING BUSHINGS. JACOB JACOBSEN, Chicago, Ill. Filed Sept. 10, 1903. Serial No. 172,604. (No model.)**

*Claim.*—1. In a machine of the class stated, in combination, a die or former and means to feed the material thereto, acting to shape the material to a bushing, and means to discharge the same from the die into a hole to be bushed.



2. In a bushing-machine, in combination, a magazine for the blanks, a die or former adapted to shape blanks to the form desired, a passage connecting the magazine and die, a feeder working in the passage and carrying the blanks from the magazine to the die, and means to discharge the bushing from the die into the hole to be bushed.

3. In a bushing-machine, in combination, a magazine for blanks, a circular die having a passage thereto from the magazine, a feeder working in the passage and forcing blanks successively into the die, and means to discharge the bushing from the die into the hole to be bushed.

4. In a bushing-machine, in combination, a blank-magazine, a circular former, a passage connecting the magazine and former and entering the latter tangentially, a feeder working in the passage and acting to feed blanks in succession from the magazine to the former, and means to discharge the bushing from the former into the hole to be bushed.

5. In a bushing-machine, in combination, a tubular die or former open at one end and having a side opening, means to feed a blank through the side opening into the die and shape the same therein, and means to discharge the same from the end of the die into the hole to be bushed.

6. In a bushing-machine, in combination, a tubular die or former open at the ends and at one side, means to feed blanks successively through the side opening and shape the same in the die, and an ejector working through the end opening.

7. In a machine for making bushings, in combination, a magazine for blanks, a passage across the mouth thereof, a former at the end of the passage, a feeder slidable in the passage and adapted to force a blank into the former, and an ejector working in the former.

8. In a bushing-machine, the combination with a die and means to feed blanks thereinto, of a tube into one end of which the die opens, and the other end of which is adapted to register with the hole to be bushed, and an ejector working through the die and tube.

9. In a bushing-machine, the combination with a die and means to feed blanks thereinto, of a tapering tube registering at its larger end with the die, and adapted to register at its smaller end with the hole to be bushed, a tubular ejector working through the die and into the said tapering tube, and a rod working through the ejector and said tube, to discharge bushings from the latter into said hole.

10. In a machine for forming and setting bushings, the combination with a tubular die open at opposite ends, and means to feed blanks thereinto, of a tapering tube registering with one end of the die, and leading to the hole to be bushed, and an ejector at the other end of the die, slidable through the die and tube.

11. In a bushing-machine, the combination with a forming-die, of a tapering tube leading therefrom, and a split tubular ejector working in the die and tube.

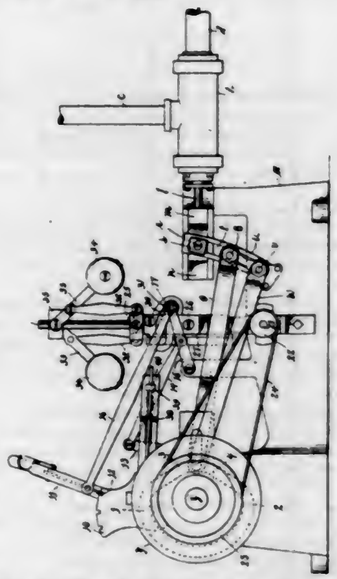
12. In a bushing-machine, the combination with a tapering tube, adapted to register at its smaller end with the hole to be bushed, and into the larger end of which a bushing-blank may be inserted, of an ejector slidable through the tube.

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**758,365. VALVE-GEAR FOR ENGINES. OSWALD JACKSON, Carrollton, Ill. Filed Jan. 6, 1902. Serial No. 88,503. (No model.)**

*Claim.*—1. In a valve-gear, the combination of a valve-casing, a valve therein for regulating the channels leading to and from the cylinder, valve-operating mechanism, a crank-shaft, mechanism car-

ried by the crank-shaft and adapted to operate on the valve-operating mechanism and cause an actuation of said valve-operating mechanism, mechanism for reversing the movement of the valve-operating mechanism in order to cause a reversal of rotation of the engine, a governor-shaft, a connection between the governor-shaft and the crank-shaft, whereby the rotation of the crank-shaft is imparted to the governor-shaft, mechanism rotatable with the governor-shaft, governor-weights pivotally connected to said mechanism, means for adjusting said weights either upwardly or downwardly in order to raise or lower the same, and a connection between the governor mechanism and the valve-operating mechanism, said connection adapted, when the speed of the engine rises above or falls below a normal speed and when the engine is running in either direction, to so operate on the valve-operating mechanism as to regulate the speed of the engine.



2. In a valve-gear, the combination of a valve-casing, a valve therein for regulating the channels leading to and from the cylinder, valve-operating mechanism, a crank-shaft, mechanism carried by the crank-shaft and adapted to operate on the valve-operating mechanism and cause an actuation thereof, mechanism for reversing the movement of the valve-operating mechanism in order to cause a reversal of rotation of the engine, a governor-shaft, a connection between the governor-shaft and the crank-shaft whereby the rotation of the crank-shaft is imparted to the governor-shaft, mechanism rotatable with the governor-shaft, governor-weights pivotally connected to said mechanism, means for adjusting the weights either upwardly or downwardly in order to raise or lower the same, means for counteracting the weight of the governor-weights when said weights are in their raised position, and a connection between the governor mechanism and the valve-operating mechanism, said connection adapted, when the speed of the engine rises above or falls below a normal speed and when the engine is running in either direction, to so operate on the valve-operating mechanism as to regulate the speed of the engine.

3. In a valve-gear, the combination of a valve-casing, a valve therein for regulating the channels leading to and from the cylinder, valve-operating mechanism, a crank-shaft, mechanism carried by the crank-shaft and adapted to operate on the valve-operating mechanism and cause an actuation thereof, mechanism for reversing the movement of the valve-operating mechanism in order to cause a reversal of the rotation of the engine, a governor-shaft, a connection between the governor-shaft and the crank-shaft whereby the rotation of the crank-shaft is imparted to the governor-shaft, mechanism rotatable with the governor-shaft, governor-weights pivotally connected to said mechanism, means for adjusting the weights either upwardly or downwardly in order to raise or lower the same, adjustable means for counteracting the weight of the governor-weights when said weights are in their raised position, and a connection between the governor mechanism and the valve-operating mechanism, said connection adapted, when the speed of the engine rises above or falls below a normal speed and when the engine is running in either direction, to so operate on the valve-operating mechanism as to regulate the speed of the engine.

4. In a valve-gear, the combination of a valve-casing, a valve therein for regulating the channels leading to and from the cylinder, valve-operating mechanism, a crank-shaft, mechanism carried by the crank-shaft and adapted to operate on the valve-operating mechanism and cause an actuation thereof, mechanism for reversing the movement of the valve-operating mechanism in order to cause a reversal of rotation of the engine, a governor-shaft, a connection between said shaft and the crank-shaft whereby the rotation of the crank-shaft is imparted to the governor-shaft, mechanism rotatable with and slidable on the governor-shaft, said mechanism carrying a segmentally-slotted portion, governor-weights pivotally connected to said mechanism, a lever, a link having one end pivotally connected to the lever and its opposite end provided with a projection extending into the slot of the segmentally-slotted portion, and adapted when the lever is operated in one direction to raise the governor-weights, and when operated in the opposite direction to lower said weights, and a connection between the governor mechanism and the valve-operating mechanism, said connection adapted when the speed of the engine rises above or falls below a normal speed and when the engine is running in either direction to so operate on the valve-operating mechanism as to regulate the speed of the engine.

5. In a valve-gear, the combination of a valve-casing, a valve therein for regulating the channels leading to and from the cylinder, valve-operating mechanism, a crank-shaft, mechanism carried by the crank-shaft and adapted to operate on the valve-operating mechanism and cause an actuation of said valve-operating mechanism, mechanism for reversing the movement of the valve-operating mechanism in order to cause a reversal of rotation of the engine, a governor-shaft, a connection between said shaft and the crank-shaft, whereby the rotation of the crank-shaft is imparted to the governor-shaft, mechanism rotatable with and slidable on the governor-shaft, said mechanism carrying a segmentally-slotted portion, governor-weights pivotally connected to said mechanism, a notched segment, said segment provided with a segmental slot, a pin extending from the fixed part and entering said slot, a lug extending from a fixed part, a lug extending from the segment, a rod passing through said lugs, a coiled spring surrounding the rod, and confined between the lug extending from the fixed part and the head of the rod, a lever working over the notched segment and provided with a dog adapted to engage any of the notches, a link having one end connected to the lever and its opposite end provided with a projection extending into the slot of the segmentally-slotted portion of the slidable mechanism of the governor-shaft, and adapted when the lever is operated in one direction to raise the governor-weights, and when operated in the opposite direction to lower said weights, and a connection between the governor mechanism and the valve-operating mechanism, said connection adapted, when the speed of the engine rises above or falls below a normal speed and when the engine is running in either direction, to so operate on the valve-operating mechanism as to regulate the speed of the engine.

6. In a valve-gear, the combination of a valve-casing, a valve therein for regulating the channels leading to and from the cylinder, said valve provided with a projecting valve-rod, a segmentally-slotted plate having a pivotal connection with the valve-rod and movable on said pivot transversely of the plane of the valve-rod, an intermediate pivot extending from the segmentally-slotted plate, a valve-operating arm pivotally connected to one end of the segmentally-slotted plate, a crank-shaft, mechanism on the crank-shaft for reciprocating the valve-operating arm, a radius-bar having one end pivotally connected to the intermediate pivot of the segmentally-slotted plate, and having its opposite end pivoted and provided with a projecting arm, a governor-shaft, a connection between said shaft and the crank-shaft whereby the rotation of said crank-shaft is imparted to the governor-shaft, mechanism rotatable with and slidable on the governor-shaft, said mechanism carrying a segmentally-slotted portion, governor-weights pivotally connected to said mechanism, a lever, a link having one end pivotally connected to the lever and its opposite end provided with a projection extending into the slot of the segmentally-slotted portion of the slidable mechanism of the governor-shaft, and adapted when the lever is operated in one direction to raise the governor-weights, and when operated in the opposite direction to lower said weights, and a connection between said link and the radius-bar.



7. In a valve-gear, a valve-working mechanism, a hand operating means for adjusting the valve-working mechanism, said hand operating means being yieldably mounted, and a governor having connection with the hand operating means for moving the said hand operating means in its mounting and thereby automatically adjust the valve-working mechanism.

8. In a valve-gear, a valve-working mechanism, a pivoted notched segment under spring-pressure, an adjusting-lever working in conjunction with the notched segment and having control over the operation of the valve-working mechanism, and a governor having connection with the adjusting-lever for moving said lever with the notched segment and thereby automatically adjusting the valve-working mechanism.

9. In a valve-gear, a valve-working mechanism, a hand operating means for adjusting the valve-working mechanism, a governor-shaft, a rigid head and a slidable head thereon, governor weight-arms pivoted to the rigid head and having link connection with the slidable head, a connection between the hand operating means and the slidable head for changing the position of the governor-weights with relation to the rigid head so that when the engine is running in one direction the governor-weights are below the rigid head when the engine is running in the other direction the governor-weights are above the rigid head, said operating means being influenced by the governor to automatically adjust the valve-working mechanism.

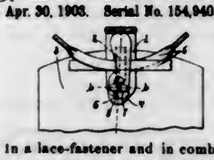
10. In a valve-gear, a valve-working mechanism comprising a crank-shaft, a swinging arm receiving longitudinal movement from the crank-shaft at one end, a link pivoted to the other end of the arm, a bell-crank lever having a stationary pivot and one arm pivoted to the link, and a valve-rod having a sliding connection with the link; in combination with a hand operating means comprising a hand-lever, a yielding notched segment engaged by the hand-lever, a lever having a fixed pivot, and rods connecting said lever with the hand-lever and the other arm of the bell-crank lever; and a governor mechanism comprising a shaft, a movable and fixed head thereon, weight-arms pivoted to the fixed head and having a link connection with the movable head, and a plate carried by the movable head having connection with the lever and the hand operating means.

11. In a valve-gear, a valve-working mechanism, a hand operating means for adjusting the valve-working mechanism comprising a hand-lever in connection with the valve-working mechanism, a notched segment engaged by the lever, said notched segment being pivotally mounted, means for determining the normal position of the notched segment with pressure, and a governor mechanism in connection with the hand operating means for moving the segment out of its normal position to automatically adjust the valve-working mechanism.

12. In a valve-gear, a valve-working mechanism, a hand operating means for adjusting the valve-working mechanism comprising a hand-lever in connection with the valve-working mechanism, a notched segment engaged by the lever, said notched segment being pivotally mounted, a spring for determining the normal position of the notched segment, and a governor mechanism in connection with the hand operating means and adapted to have the weights thereof suspended when the engine is running in one direction and elevated when the engine is running in the other direction, and means for automatically increasing the tension of the spring when the governor-weights are elevated.

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758,366. LACE-FASTENER. Clarence O. Johnson, Albany, N. Y. Filed Apr. 30, 1903. Serial No. 154,940. (No model.)

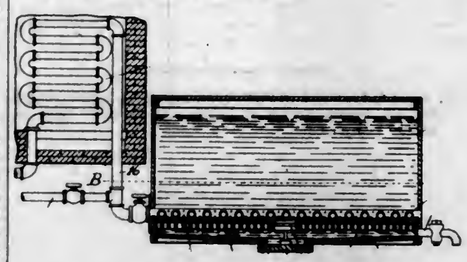


*Claim.*—1. In a lace-fastener and in combination, a base, and two clamping members extending from the same end portion thereof, located on opposite sides of the base and movable relatively thereto toward and from the same, substantially as described.

2. A lace-fastener comprising a base consisting of a main part engaged with a face of the support for the fastener, and a spring-arm for engaging the opposite face of said support, a clamping member for detachably securing the lace to the base, said clamping member having one end pivoted to the base and its other end provided with a slot, and a locking member journaled in the base and provided with a head movable through the slot in the clamping member and having a face for engaging an outer face of said clamping member and thereby holding the clamping member in operative position substantially as and for the purpose set forth.

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758,367. APPARATUS FOR EXTRACTING METALS BY CHEMICAL PROCESS. Thomas B. Joseph, San Francisco, Cal. Filed Sept. 2, 1903. Serial No. 171,648. (No model.)

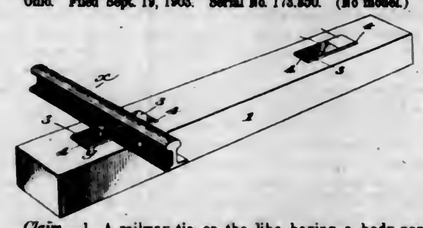


*Claim.*—1. An apparatus for extracting metals by chemical process comprising a tank provided with a filter-bottom, and a perforated pipe placed within the tank above and near the filter-bottom and connected with an air-compressor, said perforations being directed upward with a slight inclination only to drive the slimes upwardly, substantially as described

2. An apparatus for extracting metals by a chemical process comprising a tank provided with filter-bottom, a pipe or header adapted to supply air, lateral parallel branches from said pipe, said pipe and branches extending across and near the bottom within the tank and being provided with perforations arranged to discharge small streams of air upwardly with only a slight inclination to drive the slimes upward, substantially as described.

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758,368. RAILWAY CROSS-TIE. Edward S. Keefer, Cincinnati, Ohio, assignor of nine-twentieths to Lee Bamberger, Cincinnati, Ohio. Filed Sept. 19, 1903. Serial No. 173,850. (No model.)



*Claim.*—1. A railway-tie or the like having a body portion formed from molded plastic material provided near each end with a recess open at the upper surface of the tie and adapted to receive rail-holding means, each recess having undercut walls at opposite ends, and rail-holding means held in the recesses and comprising a wooden block held in each recess and having at opposite ends beveled surfaces corresponding in inclination with and engaged with and fitted against the opposite undercut end walls of the respective recess in which it is held to hold the rail-holding means in position therein.

2. A railway-tie or the like having a body portion formed from molded plastic material provided with a recess open at the surface of the tie and having undercut ends and a plurality of wooden blocks each having at one end a surface conforming to and fitting an undercut end of said recess, the other ends of the respective blocks being adjacent to each other and means between the adjacent ends of the blocks for holding said blocks in position with said surfaces engaged with the ends of the recess

3. A railway-tie or the like having a body portion formed from molded plastic material provided with a recess open at one surface of the tie and having undercut ends, wooden blocks insertible in the recess and each having a surface conforming to and fitting an undercut end of the recess, the vertical surfaces of said blocks being adjacent to each other but spaced apart and a locking-block removably held in the space intervening the first-named blocks.

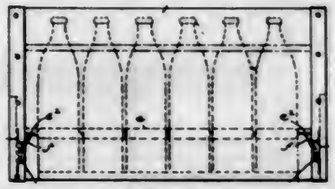
4. A railway-tie or the like having a body portion provided with a recess open at one surface of the tie and having undercut ends,

said body portion being also provided with an opening leading from the center of the bottom of said recess to the under side of the body portion, blocks insertible in the recess and each having a surface conforming to and fitting an end of the recess, the adjacent surfaces of the blocks being spaced apart and a locking-block removably held in the space intervening the first-named blocks.

5. A railway-tie comprising a body portion having a recess the ends of which are undercut, said body portion being also provided with an opening leading from the central part of the bottom of said recess to the bottom of the tie for the insertion of a tool for removal of rail-holding means from the recess.

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**758,389. BOX OR CONTAINER FOR BOTTLED BEVERAGES.** PHILIP D. LAIBLE, Newark, N. J. Filed Jan. 21, 1903. Serial No. 90,062. (No model.)



*Claim.*—1. In a box for bottled beverages, the combination of a bottom or tray portion in which the bottles can be stood, a separable carrying portion having upright walls adapted to pass down over said tray, leaf-springs secured at their lower ends to the inner walls of the carrying portion and having straight free ends projecting upward, the outer walls of the tray portion being recessed to receive said ends, vertical strips dividing the tray into bottle-compartments and having their ends twisted into horizontal position and projecting into said recesses of the outer walls of the tray and forming stops for the locking-springs, and means for releasing said springs from said stops.

2. In a box for bottled beverages, having a bottom or tray portion and a separable upper or carrying portion adapted to telescopically receive said tray, of spring-catches each comprising a vertically-disposed leaf-spring fastened at one end to one of said portions and normally abutting at the other end against a stop on the other portion, and a releaser adapted to slide vertically between said box portions, having arms extending between said springs and box portion having the stops to crowd the said springs away from said stops, and a handle portion projecting to be grasped by the hand.

3. In a box or container for bottled beverages, having a body part with spring-catches *f*, thereon and a bottom *d*, with coöperating stops *g*, the combination with said catches of a releaser *h*, adapted to slide vertically in a recessed way at the inner side of the body portion and having arms projecting across said spring-catches and guides *i*, for forcing said arms against the catches as the releaser is slid, the body part of the box having a hand-opening for lifting and through which the releaser can be operated.

4. A separable beer-box, comprising a bottom or tray *d*, having low walls and cross-strips for holding bottles upright, the end walls having stops at their outer sides formed by the ends of the longitudinal cross-strips projecting through, and a body part with upright walls adapted to come down over and inclose said bottom or tray *d*, spring-catches *f*, on the inner sides of said walls adapted to engage the said stops on the bottom or tray, and a releaser *h*, for forcing said catches out of engagement with the stops when it is desired to disconnect the parts of the box.

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**758,370. CATCH OR CLUTCH FOR PRINTERS' PLATES.** JAMES L. LEE, Chicago, Ill., assignor to the Challenge Machinery Co., Chicago, Ill., a Corporation of Illinois. Filed Dec. 16, 1902. Serial No. 135,808. (No model.)



*Claim.*—1. In a catch or clutch for printers' plates the combination of two relatively movable members one of which is provided with a hook for engaging the edge of a printer's plate, fitted together and having their outer faces which are perpendicular to the type-surface parallel but their contiguous faces between said parallel faces formed on an angle to said parallel faces whereby their relative movement will cause them to wedge between printers' blocks substantially as set forth.

2. In a catch or clutch for printers' plates the combination of two relatively movable members pivoted together one of which is provided with a hook for engaging the edge of a printer's plate, the outer faces of said members being parallel but their inner faces formed at an angle to said parallel faces, substantially as set forth.

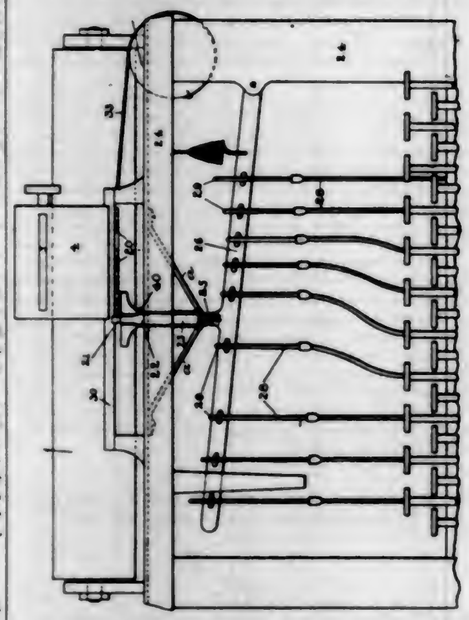
3. In a catch or clutch for printers' plates the combination of two relatively movable members one of which is provided with a hook for engaging the edge of a printer's plate, the outer faces of said members being parallel but their contiguous faces formed at an angle to said outer faces, the other one of said members having its end reduced in thickness from its upper edge downwardly, substantially as set forth.

4. A catch or clutch for printers' plates comprising two relatively movable members one of which is provided with a hook for engaging the edge of a printer's plate, the outer faces of said members being parallel but their contiguous faces formed at an angle to said parallel faces and a pivot connecting said members together at the upper edge thereof, substantially as set forth.

5. A catch or clutch for printers' plates comprising two relatively movable members one of which is provided at its upper edge with a hook for engaging a printer's plate and at its lower edge on the same side with a downwardly-projecting portion whereby said member will tend to lean away from the direction in which said hook faces, the outer faces of said members being parallel but their inner faces formed at an angle to said outer faces and a pivot connecting said members together, substantially as set forth.

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**758,371. ADDING ATTACHMENT FOR TYPE-WRITERS.** JOHN W. MAGNER, St. Louis, Mo., assignor to Levy Maybaum, Newark, N. J. Filed Aug. 22, 1901. Serial No. 72,994. (No model.)



*Claim.*—1. The combination with a type-writer, of a lever operatively connected to each of the numeral-key levers so as to be moved predetermined distances by them respectively, an adding device and means for transmitting motion from said levers to said adding device, said means comprising a hook connected to said first-mentioned lever and a series of hooks for coöperating therewith successively, said series of hooks being connected to the respective numeral-wheels, substantially as described.

2. The combination with a type-writer, of a lever operatively connected to the numeral-key levers, a register, and intermediate devices for transmitting motion from said levers to said register, said intermediate devices being arranged to be rendered inoperative and comprising band-hooks operatively connected to the numeral-wheels and adapted to coöperate successively with a hook adapted to be actuated by the numeral-key levers, substantially as described.

3. The combination with a type-writer, of a lever operatively connected to the numeral-key levers, a register comprising a series of numeral-wheels, and intermediate devices for transmitting motion from said lever to said register, said intermediate devices comprising a series of hooks operatively connected to the respective numeral-wheels and a hook connected to said lever and arranged to interlock normally with each of said series of hooks but being movable to clear them, substantially as described.

4. The combination with a type-writer, of a lever operatively connected to each of the numeral-key levers to be moved different distances by them respectively, a register having a series of numeral-wheels, and intermediate devices for transmitting motion from said lever to said register, said intermediate devices comprising a series of hooks operatively connected to the respective numeral-wheels and a hook connected to said lever and arranged to interlock with each of said series of hooks, successively, substantially as described.

5. The combination with a type-writer, of an adding device arranged to be actuated by the numeral-key levers of the type-writer, racks mounted upon the type-writer frame and upon the adding device respectively, and a shaft fixed to the frame of the type-writer and carrying gear-wheels meshing with said racks, the rack on the type-writer frame being adjustable relatively thereto, substantially as described.

6. The combination with a type-writer, of an adding device arranged to be actuated by the numeral-key levers of the type-writer, racks mounted upon the type-writer frame and upon the adding device respectively, the rack upon the type-writer frame being adjustable relatively thereto, and a shaft fixed to the frame of the type-writer and carrying gear-wheels meshing with said racks, the gear-wheel meshing with the rack on the adding device being of larger size than the gear-wheel on the type-writer frame, substantially as described.

7. The combination with a type-writer, of an adding device arranged to be actuated by the numeral-key levers of the type-writer, racks mounted upon the type-writer frame and upon the adding device respectively, the rack upon the type-writer frame being adjustable relatively thereto, and a shaft fixed to the frame of the type-writer and carrying gear-wheels meshing with said racks and a spring for retracting said adding device, substantially as described.

8. The combination with a type-writer, of an adding device arranged to be actuated by the numeral-key levers of the type-writer, the frame of the type-writer being provided with a detent adapted to coöperate with a rack on said adding device to prevent the accidental return of the adding device when the paper-carrier is lifted out of engagement therewith, substantially as described.

9. The combination with a type-writer, of a lever operatively connected to the numeral-key levers, a register comprising a series of numeral-wheels, and intermediate devices for transmitting motion from said lever to said register, said intermediate devices comprising a series of hooks operatively connected to the respective numeral-wheels and a hook connected to said lever and arranged to interlock normally with each of said series of hooks but being movable to clear them, and means for moving the hook connecting said lever out of the plane of the series of hooks so as to render it inoperative, substantially as described.

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**758,372. ADJUSTABLE PROTECTIVE FRAME.** AUGUSTUS L. C. MARSH, Plainfield, N. J. Filed July 24, 1903. Serial No. 166,808. (No model.)

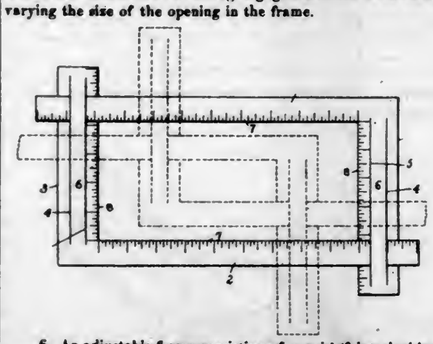
*Claim.*—1. A protective device of the class specified, comprising an adjustable frame made up of frame-pieces in frictional sliding engagement with each other for varying the size of the opening in the frame.

2. A protective device of the class specified, comprising an adjustable frame made up of complementary frame-pieces one of which is adjustable in two directions relatively to the other for varying the size of the opening in the frame.

3. An adjustable frame consisting of frame-pieces in frictional sliding engagement with each other in two directions transverse to each other for varying the size of the opening in the frame.

4. An adjustable frame consisting of interlocking strips of sheet material in sliding engagement with each other for varying the size of the opening in the frame.

5. An adjustable frame consisting of strips of sheet material slitted and interlocked in sliding engagement with each other for varying the size of the opening in the frame.



6. An adjustable frame consisting of a pair of interlocking angular frame-pieces of sheet material in sliding engagement with each other for varying the size of the opening in the frame.

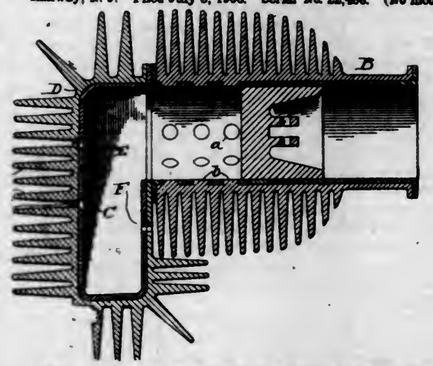
7. An adjustable frame consisting of a pair of interchangeable rectangular frame-pieces of sheet material slidingly interlocked for varying the size of the opening in the frame one arm of each rectangular frame-piece being slitted along substantially parallel lines and expanded depthwise to form a guideway for the other arm of the other frame-piece.

8. An adjustable frame consisting of frame-pieces in frictional sliding engagement with each other for varying the size of the opening in the frame, and means for holding said frame-pieces in any adjusted position.

9. An adjustable frame consisting of a pair of interchangeable rectangular frame-pieces of sheet material slidingly interlocked for varying the size of the opening in the frame, and sliding holding means on said frame for locking the frame-pieces in any adjusted position.

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**758,373. MEANS FOR COOLING CYLINDERS OF EXPLOSIVE-ENGINES.** FRANK H. MARSH, Newark, and CHARLES W. NICHOLS, Rahway, N. J. Filed July 5, 1900. Serial No. 22,483. (No model.)



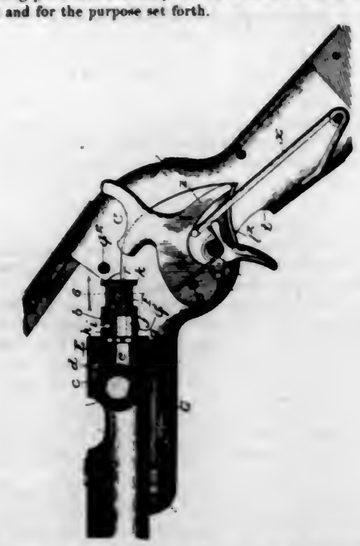
*Claim.*—1. In means for cooling cylinders of explosive-engines the combination with a cylinder-casting having apertures extending therethrough, of a plurality of ribs exterior to said cylinder and plugs seated in said apertures and in communication with said ribs, said ribs and said plugs being of higher conductivity than said cylinder-casting, substantially as described.

2. In means for cooling cylinders of explosive-engines, the combination with a cylinder-casting having apertures extending therethrough, of a plurality of circumferential ribs exterior to said cylinder and antifriction-plugs integral therewith seated in said apertures and flush with the inner face of said cylinder, said ribs and said plugs being of higher conductivity than said cylinder-casting, substantially as described.

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**758,374. TOY GUN.** JOHN B. MASON, Chicago, Ill., assignor to the Chicago Toy Novelty Company, Chicago, Ill., a Corporation of Illinois. Filed Dec. 1, 1902. Serial No. 133,475. (No model.)

*Claim.*—1. In a toy gun, the combination of a barrel provided in its breech with an anvil, a ball-holding pocket in front of said anvil, and a ball-insertion opening adjacent to said pocket, means at the breech for exploding a cap against the anvil, and a swinging cover extending over said opening to close it when the parts of the gun are in condition for firing, and retained against removal from such closing position while the parts are in said condition, substantially as and for the purpose set forth.



2. In a toy gun, the combination of a barrel provided in its breech with an anvil, a ball-holding pocket in front of said anvil and a ball-insertion opening adjacent to said pocket, a hammer and trigger at the breech for exploding a cap against the anvil, and a movable cover for said opening in the path, when open, of said hammer, substantially as and for the purpose set forth.

3. In a toy gun, the combination of a barrel provided in its breech with an anvil, a ball-holding pocket in front of said anvil and a ball-insertion opening adjacent to said pocket, a hammer and trigger at the breech for exploding a cap against the anvil, and a swinging cover for said opening in the path, when open, of the said hammer, and movable, in opening, against the hammer to cock the same, substantially as and for the purpose set forth.

4. In a toy gun, the combination of a barrel provided in its breech with a ball-holding pocket, a ball-insertion opening adjacent to said pocket and a cap-insertion opening, an anvil in the breech between the said pocket and cap-insertion opening, a cap-exploding plunger in the breech in rear of said anvil, a breech-casing in which the barrel is mounted, means in said casing for actuating the plunger to explode a cap inserted against the anvil, a breech-housing pivotally connected with the breech-casing to open and close the said ball-insertion opening.

5. In a toy gun, the combination with a barrel provided in its breech with a ball-holding pocket, an anvil and cap-exploding plunger, of a breech-casing in which the barrel is mounted, a hammer and trigger mounted in said breech-casing, a stock, a breech-housing, on the stock, having a hammer-opening, and pivoted to the breech-casing to open and close, whereby in its opening movement it engages said hammer to cock it, substantially as set forth.

6. In a toy gun, the combination of a barrel-breech casing, a shaft in said breech-casing, a trigger on said shaft, a hammer pivoted in said breech-casing, having a backward-extending spring engaging the arm *z*, a breech-housing pivotally connected with the breech-casing to swing from operative position into the folded position parallel with said breech-casing, a hammer-spring *x* in said breech-housing, and a stop *x'* for said spring, all constructed to operate substantially as and for the purpose set forth.

7. In a toy gun, the combination of a barrel provided in its breech with a ball-holding pocket, an anvil, a cap-exploding plunger, and a ball-insertion opening, a breech-casing in which the barrel is mounted, means in the breech-casing for actuating the plunger to explode an inserted cap, a stock, a breech-housing on the stock pivotally connected with said breech-casing, and a guard projection on the breech-housing operating to open and close the ball-insertion opening, substantially as set forth.

8. In a toy gun, the combination of a barrel, a breech-casing for the barrel, a shaft in said breech-casing, a trigger mounted on said shaft, a stock, and a breech-housing on the stock pivoted upon said shaft, substantially as and for the purpose set forth.

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**758,375. UNDERGARMENT. GEORGE A. MATTERN, Berkeley, Cal. Filed Jan. 18, 1904. Serial No. 189,452. (No model.)**

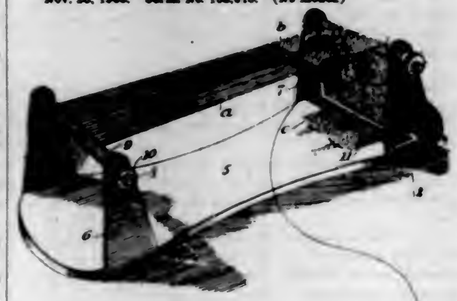


*Claim.*—1. A knitted undergarment of the union-suit type, composed of sleeve, trunk and leg pieces of knit goods each piece having the elastic phase of the goods in the direction of its circumference, and an abdominal piece of knit goods having the elastic phase of the goods in the direction of the width of said piece, at substantially right angles to the direction of the elastic phase of the other pieces of the garment, said abdominal piece intervening between and uniting the trunk and leg pieces and entirely encircling the garment with its back portion crossing the waist region approximately horizontally and its front portion curving downwardly in substantially the groin-lines from the hips to the point of the abdomen.

2. A knitted undergarment of the union-suit type, composed of sleeve, trunk and leg pieces of knit goods each piece having the elastic phase of the goods in the direction of its circumference, and an abdominal piece of knit goods having the elastic phase of the goods in the direction of the width of said piece, at substantially right angles to the direction of the elastic phase of the other pieces of the garment, said abdominal piece intervening between and uniting the trunk and leg pieces and entirely encircling the garment with its back portion relatively wide and crossing the waist region approximately horizontally, and its front portion relatively narrow and curving downwardly with converging edges in substantially the groin-lines from the hips to the point of the abdomen.

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**758,376. BEAD-LOOM. HENRY B. MEEK, Nadeau, Kans. Filed Nov. 25, 1903. Serial No. 182,615. (No model.)**





*Claim.*—1. A loom comprising a base portion, standards secured thereto, means carried by said standards for retaining threads upon which the beads are to be strung, and a clamping-rod journaled in certain of said standards and designed to clamp the finished beadwork to the base, substantially as set forth.

2. The loom herein described, comprising a base portion, standards extending upward from said base portion, rods carried by and extending between the said standards, one end of each rod extending beyond one of the standards, and being threaded to receive a nut, nuts turning on the extended ends of the rods and by which the standards may be adjusted toward each other, coil-springs wound on the rods between the standards and adapted to be compressed by means of the said nuts, and a clamp below one of the said rods and consisting of a crank-rod having its arms journaled in the standards and its wrist portion arranged to clamp the finished work against the base, substantially as set forth.

3. A loom comprising a base or support, standards projecting therefrom and adapted at their free ends to be drawn together by a tightening means, a rod extending between the free ends of the standards and projecting through and beyond one of the standards and having such projection or extension threaded, a nut on the threaded extension and a coil-spring on the rod between the standards, substantially as set forth.

4. The combination in a loom with a base portion or support, and means above the same for retaining threads upon which to string beads, of a clamp below the thread-retaining means and consisting of a crank-rod having its arms journaled, and its connecting or wrist portion arranged to hold the finished work, substantially as set forth.

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**758,377. PUMP-CYLINDER. JACOB H. MILLER, Medway, Ohio. Filed June 20, 1903. Serial No. 162,430. (No model.)**

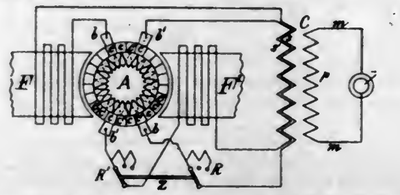


*Claim.*—1. A pump-cylinder comprising a barrel, interiorly threaded at its lower end and having an interior annular flange above said threaded portion, a smaller cylinder exteriorly and interiorly threaded adjacent its upper end, said cylinder being threaded into the lower end of the barrel, a valve-seat threaded into the upper end of the smaller cylinder, said seat having a beveled flanged portion, a washer fitting within the flange of the barrel and between the flange of the valve-seat and the end of the smaller cylinder, a washer arranged on said valve-seat, and a disk valve bearing on said washer and having depending wings working through said seat.

2. A pump-cylinder comprising upper and lower sections, the lower section being threaded into the upper section, the said lower section having a reduced non-threaded end portion, an annular flange formed in the upper section adapted to contact with the reduced end of the lower section, a washer resting on said reduced end of the lower section and fitting within the flange of the upper section, a valve-seat arranged in the upper end of the lower section and bearing on the washer and a valve adapted to coact with the valve-seat.

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**758,378. ALTERNATING-CURRENT MOTOR. RALPH MCNEILL, New York, N. Y., assignor to Arthur O. Granger, Philadelphia, Pa. Filed Dec. 4, 1902. Serial No. 133,825. (No model.)**



*Claim.*—1. The combination of a plurality of independent energizing-circuits, and a plurality of independent armature-circuits, the latter being each adapted to successively make contact with each of said energizing-circuits without being at any time short-circuited upon itself and to always be in contact with at least one of the energizing-circuits, substantially as described.

2. The combination of a plurality of independent energizing-circuits, and a plurality of independent armature-circuits, the latter being displaced geometrically with respect to each other to prevent the formation of short circuits, and each adapted to always be in contact with at least one of the energizing-circuits, substantially as described.

3. The combination of a plurality of independent energizing-circuits, a plurality of independent armature-circuits, and sets of contact-segments for said armature-circuits, said segments being so arranged that each armature-circuit is at all times in contact with at least one energizing-circuit, said contact being through but one set of segments, substantially as described.

4. The combination of a plurality of independent energizing-circuits, a plurality of independent armature-circuits, the latter being displaced geometrically with respect to each other to prevent the formation of short circuits, and each adapted to always be in contact with at least one of the energizing-circuits, and supply-mains from independent transformer secondaries connected to said energizing-circuits, substantially as described.

5. In an alternating-current motor, the combination with the alternating-current field and energizing circuits, of a plurality of independent armature-circuits, the latter being displaced geometrically with respect to each other to prevent the formation of short circuits, and each adapted to always be in contact with at least one of the energizing-circuits, and means for maintaining a coincidence in phase between the magnetism of the field and that of the armature, substantially as described.

6. In an alternating-current motor, the combination with the alternating-current field and energizing circuits, of a plurality of independent armature-circuits, the latter being displaced geometrically with respect to each other to prevent the formation of short circuits, and each adapted to always be in contact with at least one of the energizing-circuits, and means for advancing the phase of the field-circuit with respect to that of the armature-circuit, substantially as described.

7. In an alternating-current motor, the combination of a field-circuit, a plurality of independent energizing-circuits induced by said field-circuit, a plurality of independent armature-circuits, and means whereby each of said armature-circuits is always connected to one or more of the energizing-circuits, substantially as described.

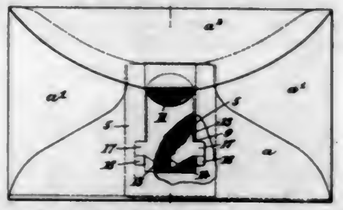
8. In an alternating-current motor, the combination of a field-circuit, a plurality of independent energizing-circuits induced by said field-circuit, a plurality of independent armature-circuits, and means whereby each of said armature-circuits is always connected to one or more of the energizing-circuits, without being short-circuited upon itself, substantially as described.

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**758,379. SAFETY-FASTENER FOR ENVELOPS OR OTHER CONTAINERS. JONATHAN NOSEWORTHY, St. Johns, Newfoundland. Filed Oct. 19, 1903. Serial No. 177,605. (No model.)**

*Claim.*—1. An envelop having end and back flaps provided with coinciding slots, a pocket inside the envelop on the back thereof,

said pocket having slots and a tongue which passes through the coinciding slots of the several flaps serving to hold the flaps together, and a key on the sealing-flap, said key being divided or slitted and provided with wings, the key being insertible into the pocket through the slots of the envelop-flaps, and the wings of said key being spread into interlocking engagement with the slots of the pocket.



2. An envelop having end and bottom flaps each flap being provided with a slot, said slots being all arranged to coincide with each other when the flaps are in folded position, a pocket inside the envelop on the back thereof, said pocket having slots on its side edges, and at its upper end having a tongue passing out through the coinciding slots of the several flaps serving to fold the flaps together, and a key on the sealing-flap, said key being longitudinally slitted and provided with wings, the key being insertible from the outside of the envelop into the pocket through the coinciding slots in the envelop-flaps and also serving to hold the flaps together, and the wings of said key being spread into interlocking engagement with the slots of the pocket.

3. An envelop having end and back flaps provided with coinciding slots, a pocket inside the envelop on the back thereof, said pocket having a tongue which passes through the coinciding slots of the several flaps serving to hold the flaps together, and a key on the sealing-flap, said key being divided or slitted and provided with wings, the key being insertible into the pocket through the coinciding slots of the flaps, and the wings of said key being spread into interlocking engagement with the pocket.

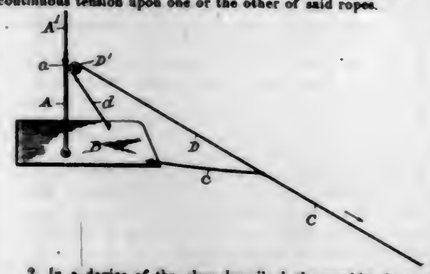
4. An envelop having end and bottom flaps provided with coinciding slots, a pocket on the back flap formed from a blank having an elongated central section with a curved slit extending across its upper end and integral side sections creased on parallel longitudinal lines and designed to be folded in direction of each other into lapping engagement with one side of said central section to form said blank into the pocket, said creases each having near its lower ends a slot to form openings in the side edges of the pocket and a longitudinal key on the sealing-flap of the envelop adapted to cooperate with said pocket, said key being longitudinally slitted and having wings on its sides at its outer ends, said wings being provided on their outer side with lips adapted to be folded into overlapping engagement with the wings, the longitudinal slit in the key permitting its sides to be sprung edgewise overlapping each other to reduce the width of the key to permit the same with its wings to easily enter said pocket on the bottom flap of the envelop, the resiliency of the sides of the key forcing said wings outwardly and causing them together with their lips to enter the slots in the side edges of the pocket when said slots have been reached, said lips when passed through the walls of the pocket to the outside thereof being permitted to unfold by their own resiliency to form projections on said wings to prevent them from being withdrawn from the slots in the pocket.

5. An envelop having end and bottom flaps each flap being provided with a slot, said slots being all arranged to register with each other when the flaps are in folded position, said bottom flap being also provided with a pocket, said pocket having slots on its side edges, and at its upper end having a slot coinciding with the registering slots of the several flaps, and a key on the sealing-flap, said key being longitudinally slitted and provided with wings, the key being insertible from the outside of the envelop into the pocket through the registering slots in the several flaps and the coinciding slot at the upper end of the pocket, the wings of said key being adapted to spread into interlocking engagement with the slots in the side edges of the pocket.

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**758,380. EXCAVATING-SHOVEL.** JOHN W. PAGE, Chicago, Ill. Filed Dec. 17, 1903. Serial No. 185,494. (No model.)

*Claim.*—1. In a device of the class described, the combination with a suitable shovel, of a supporting member for the same pivoted thereto behind the center of gravity thereof, a rope adapted to exert an upward pull on said shovel, a rope adapted to exert a substantial horizontal pull on said shovel, and means for maintaining continuous tension upon one or the other of said ropes.




2. In a device of the class described, the combination with a suitable shovel, of a supporting member therefor pivoted thereto at a point behind the center of gravity thereof, a pulley attached to said supporting member above said shovel, a holding-rope running over said pulley and secured to said shovel, a hauling-rope also secured to said shovel, and a main hauling-rope connected to the ends of said first-named ropes.

3. In a device of the class described, the combination with a suitable shovel, of a bail pivoted to the shovel behind the center of gravity thereof, a main hauling-rope having two branches, one of said branches being attached directly to the shovel and the other running over a suitable pulley above the shovel and being also attached thereto.

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**758,381. FOUNTAIN LETTERING-PEN.** OCTAVE PAYEART, New York, N. Y. Filed Sept. 14, 1903. Serial No. 173,131. (No model.)



*Claim.*—1. A pen with nibs which are each semicircular in shape on its transverse section at the point, the said nibs terminating in a marking-surface which is a circular plane.

2. A pen with rigid nibs which terminate in a circular plane marking-surface, said circular plane marking-surface being beveled to an angle of forty-five degrees with the longitudinal axis of the pen.

3. The combination in a fountain lettering-pen, of a pen-body with rigid nibs ending in a flat, beveled, circular marking-surface and an ink-holding device of sheet metal, fitted to the under side of the pen-body, with two flat opposing sides and flat bottom, the sides fitted over and close to the exterior edges of the pen-body and hinged at their upper ends on pinions extending outwardly from the said pen-body and with their lower ends extending above the top of the pen-body and connected across and over the top of the pen-body by a set-screw and with the lower edge of the bottom part fitted closely into a transverse notch in the said pen-body; all in combination and for the purposes herein set forth.

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**758,382. MIRROR.** LOUIS B. PRAHAR, New York, N. Y. Filed Dec. 10, 1903. Serial No. 184,554. (No model.)



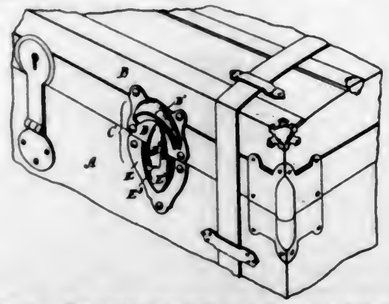
*Claim.*—1. In mirrors, a contractile frame, a reflector, a protective disk-like plate of rigid material at the back of the reflector and extending beyond the margin of the reflector, which frame engages the margin of the protective plate and the outer face of the reflector, said protective plate relieving the reflector from marginal strain, as described.

2. In mirrors, a fragile reflector, a protective circular metal plate at the rear of the reflector, a backing for the two elements, and a contractile frame having a channel which receives the marginal portion of all of the elements, the protective plate taking all of the edge tension due to the adjustment of the frame upon the elements inclosed thereby, as described.



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**758,383. DOWEL-PIN AND LIFT FOR TRUNKS.** OTTO RANGNOW, Philadelphia, Pa. Filed Jan. 13, 1904. Serial No. 188,920. (No model.)

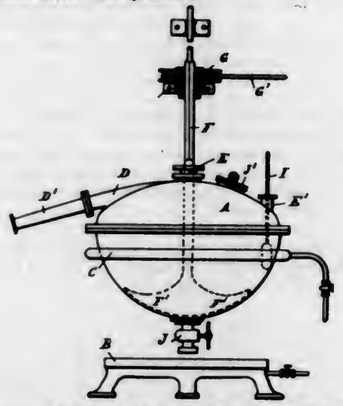


*Claim.*—1. The combination of an upper plate, a dowel-pin, said dowel-pin having its lower portion reduced in size thereby forming a shoulder on said dowel-pin, a lower plate having an enlarged portion forming a socket, said enlarged portion having a recess formed therein adapted to receive the portion of said dowel-pin above the shoulder, and the reduced portion of said dowel-pin adapted to enter the lower portion of said socket, substantially as described.

2. The combination of an upper plate, a dowel-pin carried by said upper plate, a lower plate having a socket formed therein to receive said dowel-pin, flanges $E^4$ formed on said lower plate, a back plate held between said flanges, a deflected portion F on said back plate adapted to direct said dowel-pin into said socket, substantially as described.

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**758,384. METHOD OF PREPARING EXTRACT OF COFFEE.** FREDERICK J. REICHERT, Hornsey, England. Filed May 24, 1902. Serial No. 108,839. (No specimens.)



*Claim.*—1. The herein-described method of preparing coffee extract which consists in heating the coffee-berries to a light-brown color, in which the aroma is retained and certain substances of the berries are rendered insoluble, then grinding the berries and exhausting the same with water to form a liquid extract and evaporating the liquid extract to a consistency suitable for roasting, and finally drying and then roasting the evaporated extract, substantially as set forth.

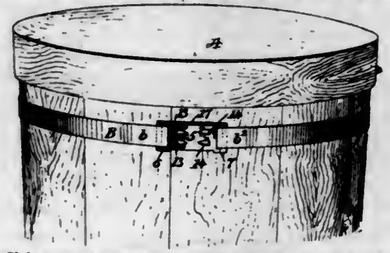
2. The herein-described method of preparing coffee extract which consists in heating the coffee-berries to a light-brown color, in which the aroma is retained and certain substances of the berries are rendered insoluble, then grinding the berries and successively exhausting the same with boiling water, then decanting and evaporating the liquid extract to a consistency suitable for roasting, then drying the evaporated liquid extract and finally roasting the same, substantially as set forth.

3. The herein-described method of preparing coffee extract which consists in heating the coffee-berries to a light-brown color, in which the aroma is retained and certain substances of the berries are rendered insoluble, then grinding the berries and exhausting the same with water, collecting the distillates therefrom and treating the same with methylated chloroform, and returning the same to said extract, evaporating the liquid extract and driving off the methylated chloroform therefrom and finally drying and roasting the extract, substantially as set forth.

4. The herein-described method of preparing coffee extract which consists in making a liquid extract from ground, dried, coffee, heated to a light-brown color, then evaporating such liquid extract to dryness and then roasting the same, substantially as set forth.

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**758,385. CLAMP FOR HOOPS, BANDS, &c.** WILLIAM P. RICE, Lowell, Ohio. Filed July 28, 1903. Serial No. 167,315. (No model.)



*Claim.*—1. The combination with a band, of a device for connecting the ends thereof, said device comprising a plate having enlarged end portions, said end portions being each provided with a slot designed to permit the passage of the ends of the band, and teeth formed on the body of the plate and adapted to penetrate the ends of the band passing through said slots, the construction being such that said ends may be firmly connected, and a bearing-plate adapted to be interposed between the band and a cask or the like to which the band is secured, substantially as set forth.

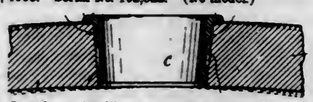
2. The combination with a band, of a device for connecting the ends thereof to form a hoop, said device comprising a plate having slots formed transversely of the end portions thereof to permit the passage therethrough of the free ends of the band, a plurality of teeth arranged adjacent to each of said slots and designed to penetrate the material of the ends of the band for securing the same, and a bearing-plate adapted to engage with the plate and slide over the portions of the band engaged by the teeth, substantially as set forth.

3. A device of the class described, comprising a plate having enlarged end portions, a slot formed transversely of said end portions, said slot being designed to permit the passage of the end of a band, teeth formed from the material of the plate and adapted to penetrate the material of the ends of the band for connecting said ends with the plate, and a bearing-plate formed with flanges adapted to engage with and fit over the relatively narrow longitudinal edge portions of the main plate and to cover the portions of the teeth extending through the band, substantially as set forth.

4. The combination with a cask, bale, or the like, of an adjustable clamping-hoop therefor, said hoop comprising a band portion, a clamping-plate provided with a plurality of teeth designed to connect the ends of the band portion, and a bearing-plate adapted to be interposed intermediate the clamping-plate and the cask, substantially as set forth.

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**758,386. BUNG-BUSHING.** GEORGE H. RICKE, Cincinnati, Ohio, assignor of two-thirds to Joseph Zimmermann, Cincinnati, Ohio. Filed June 20, 1903. Serial No. 162,322. (No model.)



*Claim.*—In a bung-bushing, an annulus, carrying at its periphery two sets of screw-threads one set of screw-threads at the upper part of the annulus and the other set at the lower part of the annulus, each set of said screw-threads entirely encircling said annulus, in combination with a cut-away portion without screw-threads, lying

between the two sets of screw-threads, substantially as and for the purposes set forth.

758,387. COMPOUND METAL INGOT. RICHARD ROWLEY, Clearfield, Pa. Filed Oct. 27, 1903. Serial No. 178,761. (No model.)

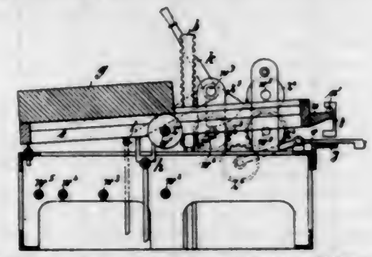


*Claim.*—1. In combination, a muck-bar having opposed flanges on its opposite edges; with a muck-bar having its sides shaped to fit against the inner faces of the flanges on the other bar, said second bar being of a size conforming to and filling the space between the flanges on the first bar and forming when laid thereon a solid pile, substantially as described.

2. In combination, flat muck-bars each having flanges on its opposite edges, the inner faces of said flanges being beveled and their outer edges flush with the edges of the bar; with coacting flat muck-bars each having its sides beveled to fit against the inner faces of the flanges on the first bars, said coacting bars conforming in size to and filling the space between the flanges on the first bars and forming with the first bars a solid pile, substantially as described.

3. In a solid pile, the combination of opposite channeled bars A, B, each having beveled flanges E, E, on their outer edges, and opposed bars C, D, arranged between said first bars and having their side edges beveled to fit the inner beveled surfaces of said flanges, said bars forming a solid pile when placed together, substantially as described

758,388. AUTOMATIC SHIFTING-WEIGHT SCALE. CARL SCHENCK, Darmstadt, Germany. Filed July 25, 1903. Serial No. 167,019. (No model.)



*Claim.*—1. The combination of a scale-beam, a shifting weight carried by said beam, means for shifting said weight along the beam, a second weight connected to the scale-beam opposite the load, means for releasing the second weight when the point of equilibrium is attained, escapement mechanism, and an engagement mechanism for the escapement mechanism operated by the movement of the second weight for causing the retarding of the shifting weight by the escapement mechanism.

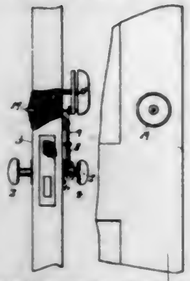
2. The combination of a pivoted scale-beam, a shifting weight on said beam, driving mechanism for actuating said shifting weight, means for releasing the driving mechanism to permit the shifting of the weight relative to the beam, an escapement mechanism including a pendulum, and an escapement-wheel, a connection between the weight-operating mechanism and the escapement mechanism, and means for operating the escapement mechanism to cause the latter to retard the movement of the shifting weight.

3. The combination of a scale-beam, a shifting weight thereon, means for shifting said weight along the beam with a relatively quick movement, means for reducing the speed of movement of the weight before it has reached the limit of its movement, and means for checking entirely the movement of the weight.

4. The combination of a scale-beam, a shifting weight thereon, said weight having a serrated or toothed surface, a gear-wheel engaging with the toothed surface of the weight, means for imparting motion to the gear-wheel to cause the movement of the weight, and means for reducing the speed of movement of the weight before it has reached the limit of its movement along said beam.

5. The combination of a scale-beam, a shifting weight thereon, means for imparting movement to said weight, and means for reducing the speed of movement of the weight, said latter means including an escapement mechanism, and a second weight for assisting in putting the escapement mechanism into operation, substantially as set forth.

758,389. BURGLAR-ALARM. ALBERT F. SCHIFFLING, Indianapolis, Ind. Filed Dec. 3, 1903. Serial No. 183,658. (No model.)



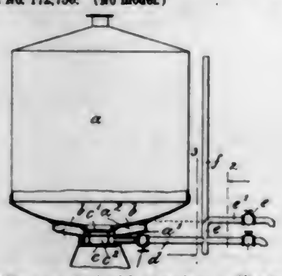
*Claim.*—1. In an alarm, the combination with a door-bell having a projecting push-bar for releasing the ringing mechanism of said bell, of a cam adapted to be secured to a door-knob, a lever situated to extend from said door-knob to said push-bar of said bell and fulcrumed at a point intermediate its ends so as to move in a plane at right angles with the plane of rotation of the knob of the door, said lever arranged to be operatively engaged by said cam on said door-knob and operatively connected to said push-bar.

2. In an alarm, the combination with a door-bell having a projecting push-bar for releasing the ringing mechanism of said bell, of a cam adapted to be secured to a door-knob, a lever operatively connected at one end to said push-bar and at its opposite end to said cam, and an extensible piece on the cam end of said lever arranged to be moved into position to contact said cams.

3. In an alarm, the combination with a door-bell having a projecting push-bar for releasing the ringing mechanism of said bell, a door-knob clamp, rollers pivotally mounted in said clamp, a lever situated to extend from said door-knob to said push-bar of said bell, said lever provided with a forked end adapted to contact the end of said push-bar, and an extensible end said extensible end arranged to be moved into position between said rollers to depress said extensible end of said lever when the door-knob is turned.

4. In an alarm, the combination with a door-bell having a projecting push-bar for releasing the ringing mechanism of said bell, a door-knob clamp, rollers pivotally mounted on said clamp, a lever situated to extend from said door-knob to said push-bar of said bell, said lever provided with a fork adapted to contact the projecting end of said push-bar, and having mounted on its opposite end an extensible sleeve, a sleeve-catch and a sliding sleeve mounted on said sleeve-receiving end of said lever, said sleeve provided with a longitudinally-extending slot as described substantially as and for the purpose set forth.

758,390. FILTER. OTTO SELG, New York, N. Y. Filed Sept. 11, 1903. Serial No. 172,736. (No model.)

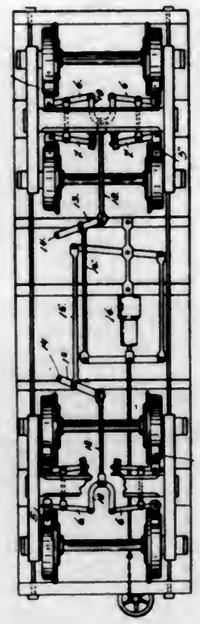


*Claim.*—A filter provided with a strainer, a filtering-chamber below the same, a discharge-pipe communicating with the bottom of said chamber, a U-shaped trap communicating with the discharge-pipe and having two legs of unequal length, one of said legs constituting a stand-pipe, and the second leg extending first upward and then sidewise to form a second discharge-pipe, substantially as specified.





758,391. CAR-BRAKE MECHANISM. JOHN SHELTON, Denver, Colo. Filed July 31, 1903. Serial No. 167,774. (No model.)



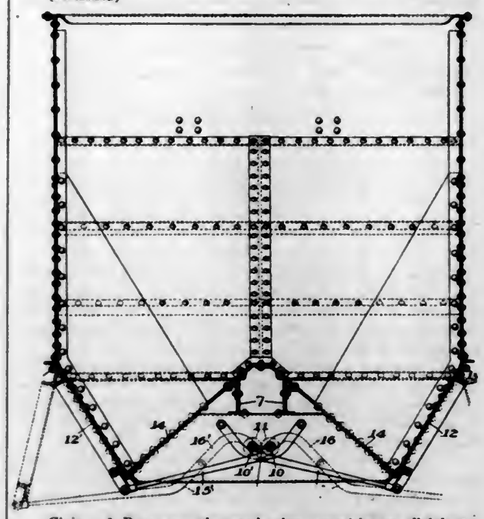
*Claim.*—1. In a car-brake mechanism, the combination with the brake-heads, of horizontal dead-levers at the inner end of the truck, horizontal live-levers at the outer end of the truck, said levers being connected to the brake-heads, a rod connecting each pair of levers composed of one live-lever and one dead-lever on each side of the car, and a rod connected to the inner ends of the live-levers and passing toward the center of the car between the fixed ends of the dead-levers; and an inclined lever connected at its upper end to the body of the car, and at its lower end to said rod, and a brake-rod connected to the inclined lever intermediate of its extremities, substantially as specified.

2. In car-brake mechanism the combination with the brake-heads, of horizontal live and dead levers connected with the brake-heads and extending inwardly transversely toward the center of the car, a rod connecting each pair of levers composed of one live-lever and one dead-lever on each side of the car, a yoke connected with the inner extremities of the live-levers of each truck, a rod connected with the yoke, an inclined lever connected with the said rod remote from the yoke, and a brake-rod connected with the inclined lever.

3. In a car-brake mechanism, the combination with the brake-heads, of horizontal dead-levers at the inner end of the truck, horizontal live-levers at the outer end of the truck; rods connecting the central portions of each pair of levers composed of one live-lever and one dead-lever on each side of the car; a yoke connected with the inner extremities of the live-levers; a rod connected to the yoke and extending toward the center of the car between the fixed ends of the dead-levers; and an inclined lever connected at its upper end to the body of the car, and at its lower end to said rod, and a brake-rod connected to the inclined lever intermediate of its extremities; substantially as specified.

4. In car-brake mechanism, the combination with the brake heads, of horizontally-disposed live and dead levers connected with the brake-heads and extending transversely toward the center of the car, a rod connecting said levers, a depending bracket with which the inner extremity of each dead-lever is connected, a yoke connecting the inner extremities of the live-levers of each truck, a longitudinal rod connected with the yoke, an inclined lever whose lower extremity is connected with the said rod remote from the yoke, the upper extremity of said rod being connected with the body of the car, and a brake-rod connected with the inclined lever intermediate its extremities.

758,392. DOOR MECHANISM FOR CARS. JOHN F. STREIB, Avalon, Pa., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Aug. 12, 1903. Serial No. 169,279. (No model.)



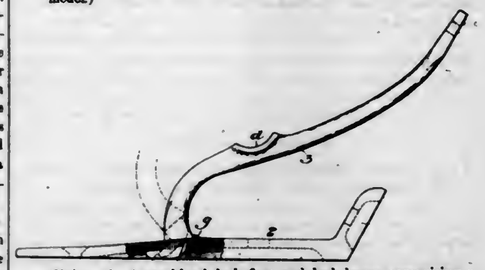
*Claim.*—1. Door-operating mechanism comprising parallel shafts journaled on car-frame at the middle portion of the width thereof, crank-arms extending respectively from each shaft across the other shaft, and links connecting each door with the crank-arm of its adjacent shaft; substantially as described.

2. Door-operating mechanism comprising a shaft under the car-body, a crank-arm extending away from the door when the door is closed, and a link extending from the arm under the shaft to the door and adapted to be moved below the shaft in opening the door; substantially as described.

3. Door-operating mechanism for cars comprising two parallel shafts journaled longitudinally beneath the car-body substantially in the center thereof and geared together, crank-arms on said shafts connected to the doors and an operating-shaft geared to one of said parallel shafts; substantially as described.

4. Door-operating mechanism for cars comprising two parallel shafts journaled longitudinally side by side beneath the middle portion of the car-body and geared together, a crank-arm on each of said shafts connected to the door on the same side of the car-body with said shaft, and an operating-shaft geared to one of said parallel shafts, substantially as described.

758,393. COMBINED DASH-FOOT AND DASH-BRACE. HENRY C. SWAN, Cleveland, Ohio. Filed Jan. 2, 1904. Serial No. 187,406. (No model.)



*Claim.*—1. A combined dash-foot and dash-brace comprising a dash-foot portion adapted to be secured to the vehicle-body, and a separate dash-brace portion having interlocking engagement with the dash-foot; substantially as described.

2. A combined dash-foot and dash-brace comprising a dash-foot portion adapted to be secured to the vehicle-body and having a recess and a separate dash-brace having a hook adapted to take into said recess; substantially as described.

3. A combined dash-foot and dash-brace comprising a dash-foot portion having a recess, and adapted to be secured to the vehicle-body, and a separate dash-brace having a hook adapted to take into the recess in the dash-foot and provided with a shoulder to engage the dash foot; substantially as described.

## 758,394. LOCK. JOHN SHOUP, Turtlecreek, Pa. Filed Nov. 30, 1903. Serial No. 183,231. (No model.)



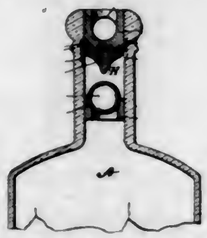
*Claim.*—1. In a lock, a lock-bolt, having a notch in one edge, means normally engaging in said notch to hold the lock-bolt against movement, an escutcheon-plate, and means extending through the escutcheon-plate for actuating the locking means of the lock-bolt, substantially as described.

2. In a lock, a lock-bolt, means engaging said bolt when the latter is in the lock position to hold the same against retraction, an escutcheon-plate, and means extending into the escutcheon-plate and operative under pressure to disengage the locking means of the lock-bolt, substantially as described.

3. In a lock, a lock-bolt, an escutcheon-plate, a locking means for said bolt, means for securing said plate in position, and means for actuating said locking means, said last-named means projecting through the plate and having its outer end constructed similarly to the adjacent ends of said plate and securing means.

4. In a lock, a locking-bolt, an escutcheon-plate, means for locking said bolt against movement, means for securing said plate in position, and a blind means projecting through said plate and engaging said bolt-locking means.

## 758,395. NON-REFILLABLE BOTTLE. CHARLES A. TAYLOR, Winchester, Ill. Filed Sept. 10, 1903. Serial No. 172,664. (No model.)



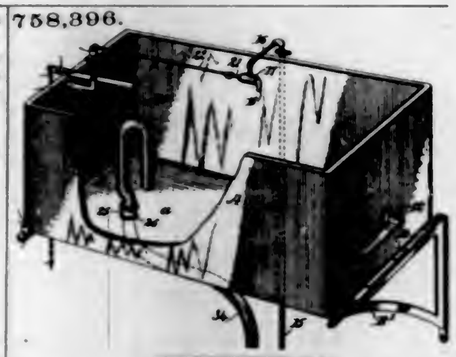
*Claim.*—1. In a non-refillable bottle, the combination of a ring or collar, a ball-valve seated therein, a plug fitting the mouth of the bottle and having a discharging-passage, and a swinging plate pivoted to said plug for limiting the movement of the ball-valve.

2. In a non-refillable bottle, the combination with the bottle-neck having grooves, a plug having a discharge-passage, a plate pivoted to said plug, a pin for pivoting the plate to the plug and having bent ends fitting the grooves in the neck of the bottle, and a ball-valve below said pivoted plate and a valve-seat for the ball-valve.

## 758,396. FLUSHING-TANK. BENJAMIN WALKER, Jr., Austin, Tex. Filed June 17, 1903. Serial No. 161,331. (No model.)

*Claim.*—A flushing-tank having a pivotal or hinged support at one end and a spring-support at the opposite end, which spring-support tends to raise the end carried thereby, a water-supply pipe, an inlet-valve attached to the supply-pipe, the stem of the valve having sliding movement in the casing of the valve, a connecting-rod pivotally attached to the valve-stem and to the hinged or pivotally-supported end of the tank, a cup located at the bottom portion of the tank within the stem, having a shank extending through the bottom, a flexible flushing-tube connected with the shank of the said cup, a siphon loosely mounted in the cup, having a flange which normally closes the said cup, and means for operating the said siphon from the exterior of the tank, as described.

## 758,396.



## 758,397. SHIFTING SEGMENTAL BUSHING FOR CRANK-BEARINGS. LOUIS T. WEISS, New York, N. Y. Filed Aug. 5, 1903. Serial No. 168,307. (No model.)

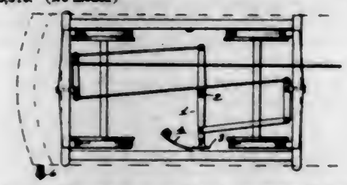


*Claim.*—1. In a device for the purpose specified, the combination with a shouldered journal having a part with a bearing embracing and continuously rotating about said journal, of the rotatable bushing made up of a plurality of segments interposed between said journal and bearing part, said bushing being embraced endwise between shoulders on the journal and having lubricant-spaces between the lateral edges of its segments.

2. In a device for the purpose specified, the combination with the shaft, provided with the crank and shouldered crank-pin, and a connecting-rod having a head with a bearing to embrace said crank-pin, of the rotatable bushing 7, composed of a plurality of segments embracing internally the crank-pin within said bearing and being externally embraced by the bearing in the head, and said bushing having a plurality of lubricant-spaces and fitting snugly endwise between the embracing shoulders on the crank.

3. In a device for the purpose specified, the combination with a shouldered journal having a part with a bearing embracing and continuously rotating about said journal, of a rotatable segmental bushing having a cylindrical form both internally and externally, said bushing being embraced endwise between the shoulders on the journal and being disposed in the annular space between the journal and the bearing.

## 758,398. SIGNAL OPERATED BY CAR-BRAKE BEAMS. SAMUEL N. WILCOXSON, Collinwood, Ohio. Filed Jan. 13, 1904. Serial No. 188,816. (No model.)



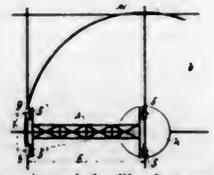
*Claim.*—1. The combination with a street-car and "dead" brake-lever, of contact-plates secured to said lever but insulated therefrom, spring-contacts adapted to engage therewith when the lever is swung to set the brakes, and secured to a relatively stationary portion of the car, but insulated therefrom, and an electric circuit having its terminals in said plates and spring-contacts and a signal-lamp in said circuit, substantially as described.

2. The combination with the operating brake-lever of a car, of insulated contact-plates thereon, corresponding spring-contacts secured to a relatively stationary portion of the car, and a lamp-circuit and lamp, substantially as described.

3. The combination with the operating brake-lever of a car, of insulated contact-plates thereon, corresponding spring-contacts secured to a relatively stationary portion of the car, and separated into a plural number of sections insulated from one another, and a lamp-circuit and lamps, the terminals of which are located in said plates and spring-contact sections.



## 758,399. TRACK OR THE LIKE FOR CRANES. RICHARD WILKE, Brunswick, Germany. Filed Mar. 24, 1903. Serial No. 149,394. (No model.)



*Claim.*—1. In tracks and the like for cranes and the like, a plurality of angle-tracks, and means to turn the inner wheels of the crane.

2. In tracks and the like for cranes and the like, a plurality of angle-tracks, and an element to turn the inner wheels of the crane, the center of said element being located on a line drawn through the angles of said tracks.

3. In tracks and the like for cranes and the like, a plurality of angle-tracks, and a rotatable element to turn the inner wheels of the crane, the center of said element being located on a line drawn through the angles of intersection of said tracks.

4. In tracks and the like for cranes and the like, a plurality of angle-tracks, and a pivoted element to turn the inner wheels of the crane, the fulcrum of said pivoted element being located on a line drawn through the angles of intersection of said tracks.

5. In tracks and the like for cranes and the like, a plurality of angle-tracks, means to turn the inner wheels of the crane, and means to compensate for lateral movement of the crane.

6. In tracks and the like for cranes and the like, a plurality of angle-tracks, an element to turn the inner wheels of the crane, the center of said element being located on a line drawn through the angle of intersection of said tracks, and means to compensate for lateral movement of the crane.

7. In tracks and the like for cranes and the like, a plurality of angle-tracks, a rotatable element to turn the inner wheels of the crane, the center of said rotatable element being located on a line drawn through the angles of intersection of said tracks, and means to compensate for lateral movement of the crane.

8. In tracks and the like for cranes and the like, a plurality of angle-tracks, a pivoted element to turn the inner wheels of the crane, the fulcrum of said pivoted element being located on a line drawn through the angles of intersection of said tracks, and means to compensate for lateral movement of the crane.

9. In tracks and the like for cranes and the like, a plurality of angle-tracks, and arc-shaped tracks combined with said angle-tracks to aid in turning the crane and to compensate for lateral movement thereof.

10. In tracks and the like for cranes and the like, a plurality of angle-tracks, laterally-movable arc-shaped track-sections combined with said angle-tracks to aid in turning the crane and to compensate for lateral movement thereof.

11. In tracks and the like for cranes and the like, a plurality of angle-tracks, arc-shaped track-sections combined with said angle-tracks to aid in turning the crane, and movable track-sections located between the angle-tracks and the arc-shaped sections.

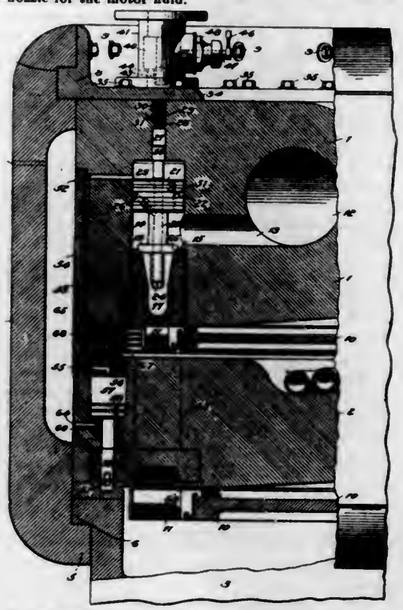
12. In tracks and the like for cranes and the like, a plurality of angle-tracks, arc-shaped tracks combined with said angle-tracks to turn the outer wheels of the crane and to compensate for lateral movement thereof, and means to turn the inner wheels of the crane.

13. In tracks and the like for cranes and the like, a plurality of angle-tracks, means to turn the outer wheels of the crane, and means independent of said first-mentioned means to turn the inner wheels of the crane.

14. In tracks and the like for cranes and the like, a plurality of angle-tracks, means to turn the outer wheels of the crane and to compensate for lateral movement thereof, and means independent of said first-mentioned means to turn the inner wheels of the crane.

## 758,400. GOVERNING MECHANISM FOR TURBINES. JAMES WILKINSON, Birmingham, Ala., assignor to The Wilkinson Steam Turbine Company, Birmingham, Ala., a Corporation of Alabama. Filed Feb. 23, 1904. Serial No. 194,853. (No model.)

*Claim.*—1. In a turbine, a supply-head, a valve-cylinder therein, a piston-valve in said cylinder and a plug closing the lower end of said cylinder and having a passage therethrough serving as a supply-nozzle for the motor fluid.



2. In a turbine, a wheel-compartment, a supply-head therefor, a cylinder therein, a plug serving as a head for the lower end of said cylinder, a nozzle-passage for the motor fluid leading from said cylinder through said plug, and a piston-valve in said cylinder to control said motor fluid.

3. In a turbine, a stationary element, a cylinder therein, a passage admitting motor fluid thereto, a valve in said cylinder controlling the admission of motor fluid to a nozzle-passage, and a plug serving as a seat for said valve and comprising the intermediate portion in said nozzle-passage.

4. In a turbine, a fluid-induction nozzle formed in a stationary element, a valve therefor, and a detachable element forming a seat for said valve and the admission and curved portion of said nozzle.

5. In a turbine, a fluid-induction nozzle formed in a stationary element, a piston-valve therefor, a cylinder for said valve, and a detachable element forming a lower head for said cylinder and the admission and curved portion of said induction-nozzle.

6. In a turbine, a fluid-induction nozzle leading through a stationary element constituting a supply-head for a wheel-compartment, a cylinder bored from below into said element, means to supply motor fluid to said cylinder, a valve therein, and a plug inserted into the lower end of said cylinder and provided with a curved passage therethrough and a seat for said valve at the inlet end of said passage, and a passage, forming the delivery end of said nozzle, which leads through said element and with which the passage in said plug is normally in alinement.

7. In a multiple-stage turbine, supply and stage valves controlling the flow of motor fluid through the turbine, means to operate said supply-valve, fluid-pressure means under the control of said supply-valve to move said stage-valve in one direction, and a steam-jacket pressure to move said valve in the opposite direction.

8. In a multiple-stage turbine, supply and stage valves, and fluid-pressure means to operate said stage-valves comprising a fluid-pressure under the control of said supply-valves, and an opposing pressure derived from a fluid-chamber utilized to superheat the turbine.

9. In a multiple-stage turbine, supply and stage valves, a movable piston to operate said stage-valve, means to admit fluid-pressure under the control of a supply-valve to move said piston in one direction, a steam-jacket, and means to admit the pressure from said jacket to oppose said first-mentioned pressure.

10. In a multiple-stage turbine, series of supply and stage valves, a governing means for said supply-valves, fluid-pressure means con-

trolled by said supply-valves to operate said stage-valves, a compartment supplied with fluid-pressure, and a series of passages leading therefrom to admit pressure to operate said stage-valves when said first-mentioned operating pressure is reduced or cut off.

11. In a turbine wherein the motor fluid is fractionally expanded, a plurality of wheel-compartments, one or more nozzles between compartments, a valve or valves for said nozzles, a constant pressure from a compartment independent of said wheel-compartments which tends to move said valve or valves to an open or closed position, and means, under the control of a governing mechanism, to regulate a fluid-pressure adapted to move said valve or valves in opposition to said constant compartment-pressure.

12. In a multiple-stage turbine, wheel-compartments, stage-valves, fluid-pressure motors to operate said valves, a compartment, independent of said wheel-compartments, which supplies one of the operating pressures to said motors, and means, under the control of supply-valves, to cut on or off the other operating pressure to said motors.

13. In a turbine operating by stage expansion, wheel-compartments, nozzle-passages and valves therefor admitting the motor fluid to the several compartments, governor-controlled piston-valves supplying motor fluid to the turbine, piston-actuated valves between compartments, cylinders for said pistons, a steam-jacket surrounding a wheel-compartment, means to admit the jacket-pressure to one end of said cylinders and a passage, leading from the other end of each cylinder to a supply-valve cylinder, in which a high or low pressure is maintained according to the position of said supply-valve.

14. In a turbine, a motor-fluid-supply valve, a cylinder within which said valve moves pressure-tight, a passage leading longitudinally through said valve, a secondary governor-controlled valve to close said passage, and means to admit the motor fluid to both ends of said cylinder.

15. In a turbine, a piston-actuated valve reciprocating in a cylinder and controlling the admission of motor fluid to a nozzle-passage, a passage leading from below the valve to the upper end of said cylinder, a smaller passage admitting the motor-fluid pressure above said piston-valve, and a secondary valve to control the movement of said piston-valve by opening or closing said first passage.

16. In a turbine, a piston-actuated valve, a nozzle to which pressure is admitted under the control of said valve, and means to utilize the suction action of the fluid stream in said nozzle to assist in opening said valve.

17. In a turbine, a piston-actuated valve a nozzle to which pressure is admitted under the control of said valve, and means to utilize the suction action of the fluid stream in said nozzle to move said valve to its closed position.

18. In a turbine, a nozzle-passage, a piston-actuated valve controlling the flow of motor fluid therethrough, and means to utilize the ejector or suction action of the fluid stream to assist in opening and closing said valve.

19. In a turbine, a supply-head for a wheel-compartment, a chamber forming a cylinder therein, a piston-valve movable within said cylinder, a nozzle-passage opened or closed by said valve, an extension depending from said valve and disposed within said nozzle-passage, a passage leading through said piston and extension, a governor-controlled secondary valve to open or close said latter passage, and means to admit motor-fluid pressure above said piston-valve.

20. In a turbine, a stationary element, a compound cylinder formed therein, a pressure-actuated supply-valve movable in one cylinder, and a governor-controlled secondary valve in the other cylinder which controls the pressure above said supply-valve and causes it to move to an open or closed position.

21. In a turbine, a stationary element, a nozzle-passage leading therethrough, a valve controlling the flow of motor fluid through said passage and a secondary controller-valve which seats on said supply-valve.

22. In a turbine, a reciprocating motor-fluid-supply valve, a secondary valve controlling fluid-pressure means to operate said supply-valve and seated thereon and movable therewith.

23. In a turbine, a reciprocating motor-fluid-supply valve, fluid-pressure means to actuate said valve and a secondary valve, which controls said fluid-pressure means to open or close said supply-valve, and seats upon said supply-valve in one of its operating positions.

24. In a turbine, a nozzle-passage, a reciprocating valve therefor, and a secondary valve seated upon and movable with said supply-valve toward its closed position, and independent thereof as it moves to its open position, said secondary valve controlling pressure means to operate said supply-valve.

25. In a turbine, the combination with a motor-fluid valve, a casing provided with two connecting-chambers in one of which a piston for operating said valve moves, a permanently open restricted passage by which the same pressure is caused to exist on each side of said piston, a passage forming an exhausting-conduit and open to the pressures existing above and below said piston-valve, and a secondary valve in the other of said chambers which moves under the control of a governing mechanism to open and close said exhausting-conduit.

26. In a turbine, the combination with a main valve operated by a piston, of a casing having two connecting-chambers, one of which constitutes a cylinder for said piston, means to admit the pressure below said piston to the cylinder above it, a secondary piston-actuated valve movable in said other chamber, and a passage, leading through said main piston and valve, which is closed by said secondary valve to cause said main valve to move toward and assume a closed position and is opened by said secondary valve to cause the main valve to move toward and assume an open position.

27. In a turbine, the combination with a main valve operated by a piston, of a cylinder therefor exposed to a high pressure below said piston, means to provide for a limited flow of said high pressure to the cylinder above said piston and a passage adapted to discharge said pressure above said piston at a point below said main valve when the latter is open, and means to close said latter passage when said main valve is closed.

28. In a turbine, a valve operated by a piston, a casing having a cylinder for said piston which is exposed at one end to the motor-fluid pressure, means to effect a restricted circulation of motor fluid whereby it passes from below said piston to the chamber above it and thence to a point below said valve, and means to interrupt to flow of said pressure from the chamber above said piston when it is desired to close the valve.

29. In a turbine, a main valve operated by a piston, a cynader therefor, a port admitting motor-fluid pressure below said piston and a restricted passage admitting it above said piston, a passage leading through said piston and valve and subjected at its lower end to the suction action of the motor-fluid stream when said valve is open, and a secondary valve to close said suction-passage and assist the pressure admitted above said piston in moving the latter toward its valve-closed position.

30. In a turbine, a main and a secondary valve both of which are operated by pistons, a casing having two chambers therein serving as cylinders for said pistons, the cylinder for said secondary valve opening into said main-valve chamber, a restricted passage through which the motor-fluid pressure existing below said main-valve piston is admitted above it, a passage leading through said main valve and piston by which the pressure above said piston is wholly or partially exhausted and which is opened and closed by said secondary valve, and means to admit a controller-pressure to one end of said secondary-valve cylinder while the other end is open to the pressure existing above the main-valve piston.

31. In a governing mechanism for motors, a controller-chamber through which a continuously-flowing stream of fluid passes and enters a normally open passage, a plurality of controller-fluid conduits for a plurality of motor-fluid valves, and means to change the course of said stream to control the operation of said valves.

32. In a fluid-pressure-governing mechanism for motor-fluid valves for turbines, a pivoted movable controller-nozzle, and a stream of fluid-pressure which acts under the direction of said nozzle to control the operation of said valves.

33. In a motor, a plurality of fluid-pressure-actuated valves for the motor fluid, a plurality of conduits for the valve-actuating fluid, and means utilizing the impact effect of a continuously-flowing stream of fluid to severally control the operation of said valves.

34. In a motor, a plurality of fluid-pressure-controlled valves for the motor fluid, a plurality of conduits for the controller fluid, and fluid-impact means under the control of a governor-nozzle to successively raise the pressure in said conduits and control the operation of said valves.

35. In a motor, a plurality of motor-fluid nozzles, fluid-actuated valves therefor, a plurality of separate passages for valve-controlling fluid, means, responsive to the pressure in said passages, which control the operation of said valves, and a governor-nozzle controlling the operation of said means.

36. In a motor, a plurality of motor-fluid nozzles, fluid-actuated valves therefor, a plurality of separate passages for valve-controlling fluid-pressure, secondary valves, actuated by said controlling fluid, which control the operation of said first-mentioned valves, and a governor-nozzle utilizing a stream of fluid-pressure to control the operation of said secondary valves.

37. In a motor, a fluid-induction nozzle, a main valve, a secondary piston-valve controlling fluid-pressure operating means for said main valve, a fluid-conduit one end of which is closed by said piston-valve and means, utilizing a continuously-flowing stream, to vary the pressure in said conduit.

38. In a motor, a plurality of fluid-induction nozzles, a plurality of main valves for said nozzles, secondary piston-valves controlling fluid-pressure means to operate said main valves, a plurality of fluid-conduits which terminate in cylinders for said piston-valves, and a governor-nozzle to control, by fluid-pressure means, the operation of said secondary valves.

39. In a motor, a plurality of fluid-pressure-controlled valves, and a plurality of conduits for the valve-controlling fluid formed by contiguous channeled strips and passages communicating with the channels of the several strips.

40. In a motor, a plurality of fluid-pressure-controlled valves, a controller-chamber and a plurality of conduits for the valve-controlling fluid formed by superimposed channeled strips, each of said channels leading from said controller-chamber to a passage which admits the pressure therein to a valve-controlling means.

41. In a turbine, a supply-head, a channel therein, and a plurality of longitudinally-grooved strips disposed therein and forming conduits which lead from a source of controller-pressure to a plurality of valves.

42. In a turbine, a supply-head, a plurality of longitudinally-grooved strips of varying length secured thereto and forming conduits which lead successively to the several motor-fluid-supply valves.

43. In a turbine, a supply-head, a plurality of longitudinally-grooved strips of varying length, a shouldered channel in said head in which said strips are secured, and a plurality of passages each of which communicates with a channel and with a valve-cylinder.

44. In a turbine, a supply-head, a channel therein, a plurality of contiguous strips forming conduits disposed in said channel, and means to secure said strips in position comprising a flanged ring engaging a groove in a shell around the turbine and bolted to said head.

45. In a turbine, a fluid-controller chamber, a normally open passage leading therefrom, a plurality of individual conduits for valve-controlling fluid opening into said chamber which are formed by contiguous grooved strips, and a controller-nozzle which delivers a fluid stream into said chamber and by its position determines the potential of the pressure in said conduits.

46. In a turbine, a fluid-pressure-controller chamber, a plurality of adjacent passages leading therefrom, one of which is normally open, and the others of which are normally closed at their outer ends and formed by channel-ways between contiguous strips whose ends enter said chamber, and a movable controller-nozzle which directs a flowing stream of fluid into part of said passages, which stream, in passing out through said normally open passage, acts with an ejector effect to exhaust the pressure from so many of said closed passages as are not exposed to the direct action of said stream.

47. In a turbine, an induction-passage, a motor-fluid-supply valve operated by a piston, a chamber for said piston, a pressure-controlling passage leading through said piston and opening into said induction-passage below said valve, and a secondary valve to open and close said pressure-controlling passage.

48. In a turbine, a motor-fluid valve, a chamber therefor, a passage leading through said valve, means to permit a restricted flow of pressure into the chamber above said valve, and a secondary valve to open and close said passage through the main valve.

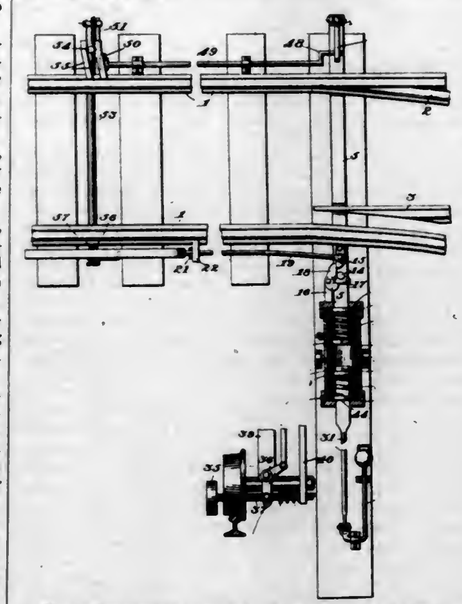
49. In a motor, a plurality of contiguous strips between which conduits are formed, a plurality of valves whose operation is controlled by the fluid-pressure in said conduits, and means to control the admission of fluid-pressure to said conduits.

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**758,401. AUTOMATIC RAILWAY-SWITCH.** URBAN A. WOODBURY, Burlington, Vt. Filed Oct. 22, 1903. Serial No. 178,007. (No model.)

*Claim.*—1. The combination with a railway-switch, of automatic means adapted and arranged to be operated by a train to close the same, and means to normally maintain said automatic means inoperative so that the ordinary operation of switching can be carried on as usual.

2. The combination with a railway-switch, and means whereby the same may be operated manually as usual, of a spring adapted and arranged to close the switch independently of said means, a device to normally maintain said spring inoperative, means adapted and arranged to be struck by an approaching train to release said device, and means whereby the open switch can yield without releasing said device when a train runs through it from the heel, substantially as set forth.



3. A railway-switch provided with means whereby it may be manually opened and closed as usual, in combination with a spring arranged to be released by a train to close the switch, if the same has been wrongfully left open, and means whereby the switch can yield in either direction without releasing said spring when a train runs through it from the heel, substantially as set forth.

4. The combination with a railway-switch, of automatic mechanism adapted and arranged to be operated by a train to close the same, and means whereby the switch can yield in either direction without setting off the automatic mechanism when a train runs through it from the heel, substantially as set forth.

5. In a railway-switch, the combination with a switch-rod and a switch-lever, of means normally connecting said rod and lever, whereby the switch may be manually thrown in either direction in the ordinary way, of a spring adapted and arranged to move said rod relatively to said lever in a direction to close the switch when the connection between said rod and lever is broken, and means adapted and arranged to be operated by an approaching train to break said connection and cause said spring to act to close the switch, substantially as set forth.

6. In a railway-switch, the combination with a switch-rod and a switch-lever, of a spring adapted and arranged to move said rod relatively to said lever in a direction to close the switch, a latch device adapted and arranged to connect said switch rod and lever and maintain said spring energized whereby the switch can be positively thrown in either direction by means of the lever, means to normally hold said latch device in operative position, and a trip adapted and arranged to be actuated by an approaching train to release said means and thereby permit said spring to act to close the switch, substantially as set forth.

7. In a railway-switch, the combination with a switch-rod and a switch-lever, of a spring adapted and arranged to move said rod relatively to said lever in a direction to close the switch, means to normally hold said rod and lever connected against the force of the spring so that the switch may be thrown manually in either direction in the ordinary way, of a trip-rod connected to said means and extending alongside the track, means to hold said trip-rod against longitudinal movement and thereby maintain the connection between said switch rod and lever, and a trip adapted and arranged to be operated by a train approaching the switch to release said trip-rod and thereby break the connection between said switch rod

and lever and permit said spring to act to close the switch, substantially as set forth.

8. In a railway-switch, the combination with a switch-rod and a switch-lever, of a cylinder connected to said lever and in which said rod is slidably mounted, a spring interposed between said rod and said cylinder and adapted to move said rod relatively to said cylinder in a direction to close the switch, a latch pivoted to said cylinder and adapted to engage a projection on said switch-rod to hold the same against movement by said spring, means to normally hold said latch in engagement with said projection and a trip adapted and arranged to be operated by a train approaching the switch to release said latch and permit said spring to act to close the switch, substantially as set forth

9. In a railway-switch, the combination with a switch-rod and a switch-lever, of a cylinder connected to said lever and in which said rod is slidably mounted, a spring interposed between said rod and cylinder and adapted to move said rod relatively to said cylinder in a direction to close the switch, a latch pivoted to said cylinder and adapted to engage a projection on said switch-rod to hold the same against movement by said spring, a trip-rod connected to said latch and extending alongside the track, means to hold said rod against longitudinal movement and thereby maintain said latch in engagement with said projection, whereby said spring is energized, and a trip adapted and arranged to be actuated by a train approaching the switch, to release said trip-rod from said holding means, whereby said latch is released and the switch is moved by said spring to close the switch, substantially as set forth.

10. In a railway-switch, the combination with a switch-rod having a head on its free end, of a cylinder in one end of which the head of said rod is slidably mounted, a switch-lever connected to the other end of said cylinder, a spring interposed between said head and the cylinder, and adapted to move said rod in said cylinder to close the switch, a pivoted latch carried by said cylinder and a projection on said rod with which said latch is adapted to engage to hold said rod against movement by said spring, a trip-rod connected to said latch and extending alongside the track, means to normally hold said trip-rod in position to keep said latch and projection in engagement, and a trip adapted and arranged to be actuated by an approaching train to release said trip-rod and latch and thereby permit said spring to act to close the switch, substantially as set forth.

11. In a railway-switch, the combination of a switch-rod, a switch-lever and a latch device to normally connect the same, a spring adapted and arranged to move said switch-rod relatively to said lever to close the switch when said latch device is released, a trip-rod extending alongside the track and connected to said latch device, a stationary bracket having a vertical slot therein open at the lower end and through which said trip-rod is adapted to pass, means on said trip-rod to engage one face of said bracket when said trip-rod is in said slot whereby said trip-rod is held against longitudinal movement and said latch device is held in position to connect said switch rod and lever, a trip normally supported above the end of said trip-rod adjacent to said bracket, said trip being adapted and arranged to be operated by a train approaching the switch to drive said trip-rod out of said slot, release said latch device and permit said spring to act to close the switch.

12. In a railway-switch, the combination with a switch-rod having a head on its free end, of a cylinder in one end of which said head is slidably mounted, a switch-lever connected to the other end of said cylinder a spring interposed between said head and said cylinder and adapted to move said rod in said cylinder in a direction to close the switch, a latch pivoted on said cylinder, a projection on said rod with which said latch is adapted to engage to hold said rod against movement by said spring, a dog pivoted to said rod and adapted to engage said latch to hold the same in engagement with said projection, a trip-rod pivoted to said dog and extending alongside the track, a stationary bracket having a slot therein open at the lower end and through which said trip-rod is adapted to pass, means on said trip-rod adapted to engage the face of said bracket, when said trip-rod is in said slot, and to prevent longitudinal movement of said rod, whereby said dog and latch and said latch and projection are held in engagement, respectively, a trip normally supported above the end of said trip-rod adjacent to said bracket, and adapted and arranged to be depressed by a train approaching the switch, to drive said trip-rod out of said slot, whereby said dog releases said latch and said spring is permitted to act to move the switch-rod and close the switch, substantially as set forth.

13. A railway-switch rod provided with means whereby it may be manually shifted in either direction in the usual way, in combination with a spring arranged to move said rod in one direction independently of said manual means, means to hold said rod against movement by said spring, a trip arranged to be struck by a train to release said rod from said holding means, and connections between said rod and said trip whereby the latter will be moved to an inoperative position whenever said rod is shifted in one direction by said manual means, substantially as set forth.

14. The combination with a railway-switch provided with means whereby it may be manually operated in the usual way, of a spring arranged to close said switch independently of said manual means, means to normally prevent the operation of said spring, a trip arranged to be struck by a train to release said spring and connections between said switch and said trip whereby the latter will be moved to an inoperative position when the switch is closed by said manual means, substantially as set forth.

15. In a railway-switch, the combination of a switch-rod and a switch-lever, of a spring adapted and arranged to move said rod relatively to said lever in a direction to close the switch, means to normally hold said rod and lever connected against the force of said spring so that the switch may be thrown manually in either direction in the usual way, a trip adapted and arranged to be operated by a train approaching the switch to break the connection between said rod and lever and permit said spring to act to close the switch, a support for said trip mounted to reciprocate in a direction substantially parallel to the movement of said switch-rod and connections between said support and said switch-rod whereby when the switch is closed the trip is moved to inoperative position, substantially as set forth.

16. In a railway-switch, the combination of a switch-rod and a switch-lever, of a spring adapted and arranged to move said rod relatively to said lever in a direction to close the switch, means to normally hold said rod and lever connected against the force of said spring so that the switch may be thrown manually in either direction in the usual way, a bar mounted to slide parallel to said switch-rod, a trip pivoted to one end of said bar and arranged to be struck by a train approaching the switch when the latter is open and thereby break the connection between said switch rod and lever and permit said spring to act to close the switch, connections between said switch-rod and said bar whereby they move synchronously and means to partially rotate said bar during such movement, whereby when the switch is closed the trip will be moved laterally and depressed substantially as and for the purpose set forth.

17. In a railway-switch, the combination of a switch-rod and a switch-lever, a latch device to normally connect said rod and lever so that the switch can be thrown normally in either direction in the usual way, a spring adapted and arranged to move said rod relatively to said lever in a direction to close the switch when the connection between said rod and lever is broken, a trip-rod connected to said latch device and extending alongside the track, means to normally hold said rod against longitudinal movement, a bar slidably mounted parallel to said switch-rod, a trip pivotally carried by said bar and adapted and arranged to be actuated by a train approaching the switch when the latter is open to release said trip-rod and thereby disengage said latch device and permit said spring to act to close the switch, connections between said switch-rod and said bar whereby the latter will move said trip laterally away from said trip-rod when the switch is closed, and means to simultaneously rotate said bar during such movement whereby said trip will also be depressed out of position to be actuated by the train, substantially as set forth.

18. In a railway-switch, the combination of a switch-rod and a switch-lever, a cylinder to which said lever is connected and in which one end of said rod is slidably mounted, a spring in said cylinder adapted and arranged to move said rod relatively to said lever in a direction to close the switch, a latch device carried by said cylinder and adapted to hold said rod against movement by said spring, a bar mounted to reciprocate in a direction parallel to the movement of said switch-rod, a trip pivotally carried on one end of said bar and adapted to be struck by a train approaching the switch when the latter is open, means arranged to be operated by said trip to release said latch device and permit said spring to close the switch, a lever carried by the other end of said switch-rod, a lever swiveled to the other end of said bar, a shaft having a crank on each end engaging said levers respectively, whereby said bar will be reciprocated synchronously with said switch-rod, a projection on said bar and stationary cam devices adapted and arranged to engage said projection and partially rotate said bar during each reciprocatory movement, whereby when the switch is closed said trip will be removed out of position to engage said latch-releasing means and whereby said trip will also be depressed out of position to be engaged by the train, substantially as set forth.

19. In a railway-switch, the combination with a switch-rod and a switch-lever normally connected so that switching can be carried on in the usual way, of means whereby the connection between said rod and lever may be broken and the open switch be automatically closed, by a train approaching said switch on the point side, means whereby said rod can move relatively to said lever without breaking the connection between said rod and lever when the switch-rails are cammed in either direction by the wheels of a train running through it from the heel side, substantially as set forth.

20. In a railway-switch, the combination with a switch-rod and a switch-lever, a latch device to hold said rod and lever normally connected, whereby switching can be carried on in the usual way, a spring adapted and arranged to move said rod relatively to said lever when said latch device is released, a trip adapted and arranged to be actuated by an approaching train to release said latch device and permit said spring to act to throw the switch, a second spring interposed between said rod and lever of sufficient strength so as not to yield in the ordinary operation of switching, but which will yield to permit said rod to move relatively to said lever when the switch-rails are cammed over by the wheels of a train passing through it from the heel side, substantially as set forth.

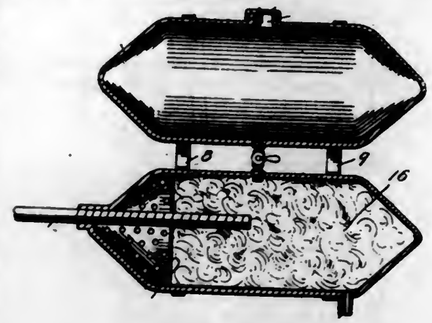
21. In a railway-switch, the combination with a switch-rod, of a cylinder surrounding the free end of said rod, a spring adapted and arranged to force said rod into said cylinder, a stop to limit the withdrawal of said rod from said cylinder a switch-lever, a bar connected thereto and having its free end within said cylinder, two collars slidably mounted on said bar within said cylinder, a coil-spring interposed between said collars, stops on said bar to limit the movement of said collars by said spring, an internal flange on said cylinder engaging the innermost of said collars on its side nearest the end of said bar, a latch device carried on said cylinder and adapted to engage said switch-rod to prevent relative movement between said rod and cylinder, a trip-rod adapted to normally maintain said latch device in operative position, and a trip adapted and arranged to be operated by an approaching train to release said trip-rod, disengage said latch and permit said switch-rod to move to throw the switch, said coil-spring being adapted to yield only when the switch-rails are cammed over by a train passing the incorrectly-set switch from the heel side thereof, substantially as set forth.

22. In a railway-switch, the combination of a switch-rod having a head on its free end, a cylinder in one end of which said head is slidably mounted, a spring interposed between said head and the adjacent end of the cylinder, a stop on said rod engaging said end of the cylinder and limiting the outward movement of said rod from said cylinder, a switch-lever, a bar connected thereto at one end and having its other end within said cylinder, two collars slidably mounted on said bar within said cylinder, a coil-spring interposed between said collars, stops on said bar to limit the movement of said collars by said spring, an internal flange on said cylinder engaging that one of said collars nearest the end of said bar and on the side of said collar nearest that end, a latch pivoted on said cylinder, a lever also pivoted on said cylinder and adapted to be engaged by one arm of said latch, a projection on said switch-rod, adapted to be engaged by said lever, a dog pivoted to said switch-rod and adapted to engage the other arm of said latch, means to normally hold said parts engaged and means adapted and arranged to be operated by a train approaching the switch to release said holding means, whereby the switch rod and lever are normally connected so that switching may be performed in the usual way, whereby the switch will be automatically closed by an approaching train on the main track if inadvertently left open, and whereby the switch-rod and cylinder can move relatively to the switch-lever and its connecting-bar when the switch has been incorrectly set and a train runs through it from the heel, whether it were set for the main line or the siding, substantially as set forth.

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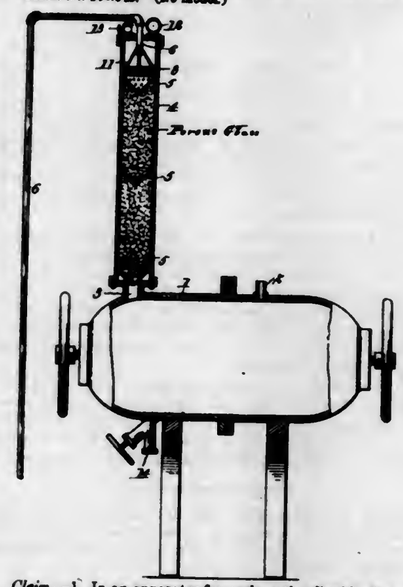
**758,402. EXHAUST-MUFFLER.** CATHERINE E. YACKEL, Junius, N. Y. Filed Nov. 7, 1903. Serial No. 180,225. (No model.)

*Claim.*—A muffler comprising upper and lower chambers having a valved connecting-pipe communicating with the lower chamber through its upper portion, said upper chamber being adapted to hold a liquid, the lower chamber having perforations through one end and having a transverse foraminous partition adjacent to said perforated end, an exhaust-pipe passed through the perforated end of the lower chamber and through the partition and a filling of absorbent material between the partition and the opposite end of the chamber and surrounding the exhaust-pipe.




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**758,408. APPARATUS FOR CARBONATING LIQUIDS.** JOHN F. YOUNGBLOOD and DAVID YOUNGBLOOD, Troy, Ala. Filed Mar. 26, 1903. Serial No. 149,645. (No model.)




*Claim.*—1. In an apparatus for carbonating liquids, the combination with a cylinder having an inlet for gas and an inlet for liquid, of a carbonating-dome attached to the liquid-inlet and in communication with the cylinder, said dome being provided with inverted-cone-shaped perforated partitions, and a liquid diffusing and filtering honeycombed material between the partitions, whereby the downflowing liquid will be directed by the partitions from the walls of the dome toward the center thereof and the honeycombed material will filter and diffuse the liquid for intimate contact therewith of the gas passing from the cylinder up through the dome, substantially as described.

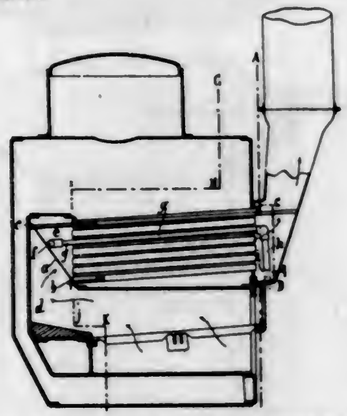
2. In an apparatus for carbonating liquids, a carbonating-dome provided with perforated partitions separated by a liquid diffusing and filtering material, and having at its upper portion a liquid-supply pipe formed with a spiral channel through which the liquid is delivered to the dome in a spirally-directed flow, and a spray device comprising blades against which the liquid is directed in a spirally-directed course or flow for spraying and distributing the liquid within the upper portion of the dome above the filtering material, substantially as described.

3. In an apparatus for carbonating liquids, a carbonating-dome containing a liquid diffusing and filtering material and provided within its upper portion with a rotatable spraying device, and a liquid

supply pipe formed with a spiral channel for spirally directing the liquid against the rotatable sprayer for rotating the same to spray the liquid within the upper portion of the dome above the filtering material, substantially as described.

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**758,404. COMBUSTION APPARATUS FOR FURNACES.** VINCENZO ZANETTI, Genoa, Italy. Filed Nov. 28, 1903. Serial No. 183,958. (No model.)



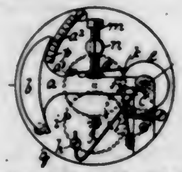
*Claim.*—1. A steam-boiler furnace having located in the passage-way between the fire-box and the smoke-stack a reticulated wire diaphragm through which the gases have to pass, said diaphragm-wires being superficially coated with refractory material to protect the wires and maintain incandescence substantially as and for the purposes described.

2. A steam-boiler furnace having located in the passage-way between the fire-box and the smoke-stack a reticulated wire diaphragm, through which the gases have to pass, said diaphragm-wires being superficially coated with refractory material to protect the wires and maintain incandescence, and a perforated air-inlet pipe located immediately adjacent to the reticulated diaphragm to burn the unconsumed particles and keep the diaphragm from clogging substantially as described.

3. A reticulated and incandescing diaphragm for a steam-boiler furnace, composed of a network of wire having a superficial coating of refractory mineral ingredients combined with a cementing-binder to maintain the adhesion of the coating and the complete covering and protection of the wires substantially as described.

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**758,405. PEDOMETER.** OTTO BARTH, New York, N. Y., and EDMOND KUHN, East Orange, N. J., assignors to Gustav Bunzl and Ernest Bunzl, New York, N. Y. Filed Aug. 20, 1903. Serial No. 170,315. (No model.)



*Claim.*—1. A pedometer comprising a pendulum provided with a pointer and a flange, a scale for the pointer, and a micrometer or set-screw for the flange.

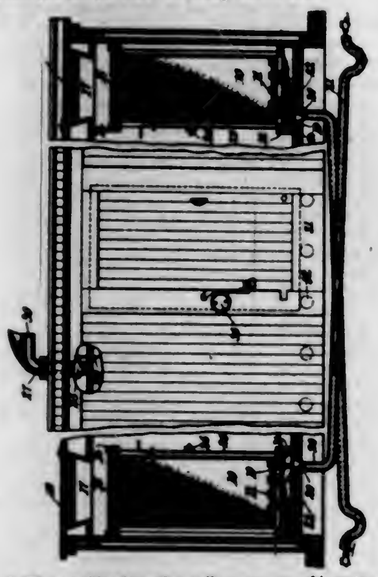
2. A pedometer having a pendulum the arm of which is stamped or formed from sheet metal with a pointer and a flange, the flange being bent to coact with a stop or set-screw.

3. A pedometer having a pendulum the arm of which is stamped or formed from sheet metal with a pointer and flanges, the latter being bent to form a stop and a pawl or spring attachment respectively.

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**758,406. REFRIGERATOR-CAR.** JULIAN S. BASHAW, Gainesville, Fla. Filed Sept. 11, 1903. Serial No. 172,732. (No model.)

*Claim.*—1. The combination of a railway-car, a refrigerator-tank in each end thereof, drip-pipes passing through the car-bottom respectively below the refrigerator-tanks and extending past each other respectively to the opposite ends of the car, and air-circulating pipes passed through the drip-pipes and leading from the atmosphere into the car below the refrigerator-boxes.

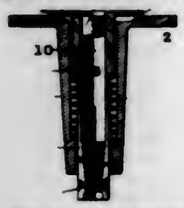


2. The combination of a railway-car, a refrigerator-tank in each end thereof, drip-pipes passing through the car-bottom respectively below the refrigerator-tanks and extending past each other respectively to the opposite ends of the car, air-circulating pipes passed through the drip-pipes and leading from the atmosphere into the car below the refrigerator-boxes, the said drip-pipes having traps therein, and means controlling the air-flow through the air-pipes.

3. The combination of a railway-car having an opening in the top thereof, a removable closure for said opening, a tank located in the car below the opening, a removable closure for the top of the tank, a valve commanding a drip-outlet from the lower part of the tank and a valve-actuating means connected to the valve and extending upward outside of the tank adjacent to the upper end thereof and to the opening in the top of the car for the purpose specified.

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**758,407. BENCH-DOG.** JAMES H. BELSER, Marlboro, Mass. Filed Jan. 21, 1904. Serial No. 189,903. (No model.)



*Claim.*—1. In a bench-dog the combination of a casing provided with a flange having a recess, a hollow shank provided with a dog at its upper end and at its lower end with a series of radial slots and a taper-choked bore, a bolt within the bore of the shank having a corresponding taper for extending the radial sections of the shank, and a spring interposed between the shank and the casing.

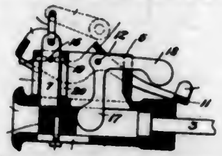
2. In a bench-dog the combination of a casing having an angular recess, a hollow shank movable therein having a portion thereof angularly shaped in cross-section and a dog at the top thereof having a series of engaging faces and a locking-bolt within the shank and concentric therewith, the shank adapted to be rotated in the casing.



3. In a bench-dog the combination of a casing, a hollow shank adapted to rotate therein having multiple-faced engaging faces, said shank adapted to be rotated to present any one of the faces toward the work and a locking-bolt within the shank and concentric therewith.

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**758,408. AUTOMATIC CAR-COUPLING.** LEOPOLD BOTTENSTEIN, Pittsburg, Pa. Filed Oct. 15, 1903. Serial No. 177,168. (No model.)



*Claim.*—1. In a car-coupler, the combination of a draw-head, a vertically-movable coupling-pin, a lever connected therewith, a hollow sliding supporting-block provided with a filler of light material, and a lever adapted to move the block forward, substantially as set forth.

2. In a car-coupler, the combination of a draw-head, a vertically-movable coupling-pin, a lever connected therewith, a hollow sliding supporting-block provided with an inserted bearing substance, and a lever adapted to move the block forward underneath the pin, substantially as set forth.

3. In a car-coupler, the combination of a draw-head, a vertically-movable coupling-pin, a lever connected therewith, a coupling-link rectangular in cross-section, adapted to engage the inner sides of the draw-head and to be prevented from turning, a hollow sliding supporting-block for the pin having an inserted bearing adapted to be moved backwardly from underneath the pin by the link when inserted, and a lever adapted to move the block forward underneath the pin, substantially as set forth.

4. A car-coupler consisting of a draw-head, a vertically-movable coupling-pin therein, a pivoted frame connected with the coupling-pin, a sliding supporting-block, and a pivoted counterweighted lever adapted to move the block underneath the pin, substantially as set forth.

5. A car-coupler consisting of a draw-head having an upwardly-extending housing, a coupling-pin vertically mounted in the front of the housing and draw-head, a pivoted frame mounted in the housing having a slotted engagement with the pin, a sliding supporting-block, and a pivoted counterweighted lever for the block, substantially as set forth.

6. A car-coupler consisting of a draw-head having an upwardly-extending housing, a coupling-pin vertically mounted in the front of the housing and draw-head, a pivoted frame mounted in the housing having a slotted engagement with the pin, a sliding supporting-block, and a pivoted counterweighted lever for the block, with means for depressing the pivoted frame, substantially as set forth.

7. A car-coupler consisting of a draw-head having an upwardly-extending housing, a coupling-pin vertically mounted in the front of the housing and draw-head, a pivoted frame mounted in the housing having a slotted engagement with the pin, a sliding supporting-block, and a pivoted counterweighted lever for the block, with independent levers for raising the pin and for depressing the pivoted frame and block-lever, substantially as set forth.

8. In a car-coupler, the combination of a draw-head, a vertically-movable coupling-pin, a lever connected therewith, a coupling-link rectangular in cross-section, having intermediate cross-bearing portions and adapted to engage the inner walls of the draw-head, a sliding supporting-block for the coupling-pin adapted to be moved backwardly by the link when entering, and an independent lever adapted to move the block forward, substantially as set forth.

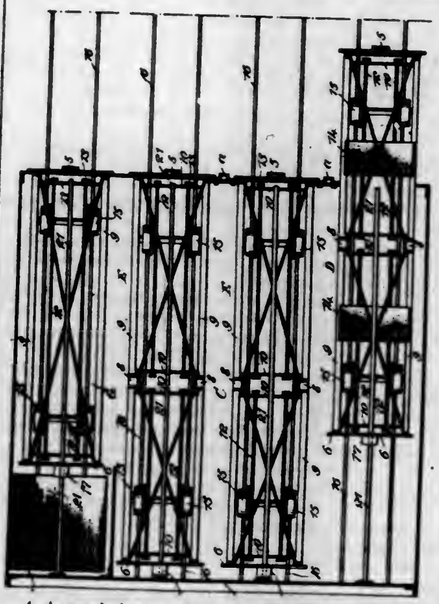
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**758,409. CORE-DRYING OVEN.** WILLIAM J. BREEN, Mahwah, N. J. Filed Aug. 19, 1903. Serial No. 170,002. (No model.)

*Claim.*—1. A core-drying oven having a plurality of independent slidable racks movable side by side within a heating-chamber, and means for coupling said racks for simultaneous movement.

2. A core-drying oven having a heating-chamber, a plurality of racks each slidable side by side within said heating-chamber, means for guiding the racks individually in their sliding movement, and means for coupling certain of said racks for conjoint sliding movement in the heating-chamber.

3. A core-drying oven having a heating-chamber, a plurality of independent wheeled racks each having removable shelves, and means for coupling certain of said racks in side-by-side relation and adapting them for conjoint sliding movement in the oven-chamber.



4. A core-drying oven having a heating-chamber and a removable front, a plurality of traveling racks each provided with means for closing a door-opening on the withdrawal and inward movement of said rack, and means for coupling said racks for conjoint movement within the oven-chamber.

5. A core-drying oven having a heating-chamber, a plurality of slidable racks each having closure-plates disposed for closing the door-opening on the endwise movement of the rack, means for closing the spaces between the front closure-plates of the racks, and means for coupling the racks for conjoint movement in the oven-chamber.

6. A core-drying oven having a heating-chamber, a slidable rack provided at its ends with vertical closure-plates, a trolley-rail, a trolley-arm fixed to one of said closure-plates, and a spring-pressed shoe carried by said trolley-arm and riding on said rail.

7. A core-drying oven having a heating-chamber, a slidable rack, an elevated trolley-rail, a trolley-yoke fixed to the rack, a vertically-movable hanger slidable in said yoke and carrying a shoe which rides on the trolley-rail, and a spring acting to normally press the shoe downwardly on the trolley-rail.

8. A core-drying oven having a heating-chamber, a rack slidably mounted within said chamber, pairs of longitudinal rods mounted in tiers detachably on the rack, and shelves fitted removably on said rods.

9. In a core-drying oven, a rack comprising a frame, cross-bars fixed to said frame, pairs of longitudinal rods mounted shiftably and detachably on the cross-bars, and shelves each confined against displacement on one pair of rods.

10. In a core-drying oven, a rack comprising a skeleton frame, notched bars fixed to said frame, a plurality of rods mounted detachably on said notched bars, and shelves supported removably by said rods.

11. In a core-drying oven, a slidable rack comprising a skeleton frame, cross-bars attached to said frame, longitudinal rods fitted removably to said cross-bars, and shelves supported removably by said rods.

12. In a core-drying oven, a slidable rack comprising a skeleton frame, notched cross-bars secured to said frame, and horizontal rods fitted removably to said notched cross-bars and held against longitudinal movement thereby within the rack-frame.

13. A core-drying oven having a heating-chamber, a plurality of individual racks mounted individually for slidable movement in said heating-chamber, each rack having removable work-support.

ing devices, and means for coupling certain of said racks for conjoint movement in the heating-chamber.

14. A core-drying oven having a heating-chamber, a plurality of drying-racks mounted independently for slidable movement in said chamber, each rack having removable work-holding devices, end plates carried by each rack for closing the opening of the oven-chamber in which the rack is adapted to slide, means for coupling certain of said racks for conjoint movement in the heating-chamber, and means for closing the spaces between the end plates on the front of the racks when they are coupled for simultaneous movement.

15. A core-drying oven having a heating-chamber, a plurality of individual racks arranged side by side and slidable in said heating-chamber, each rack being provided with removable work-supporting devices, and means for coupling the racks for conjoint movement.

16. A core-drying oven having a heating-chamber, a plurality of individual racks, and means for coupling the racks arranged side by side for conjoint movement.

17. A core-drying oven having a heating-chamber, a plurality of individual racks adapted for slidable movement separately within said oven-chamber, and coupling devices at the front and rear ends of said racks for uniting them for conjoint movement.

18. A core-drying oven having a heating-chamber, a plurality of individual racks disposed for traveling movement therein, each rack having closure-plates at its respective ends, and coupling devices mounted on said closure-plates and disposed for mutual coöperation in adapting the racks for conjoint movement.

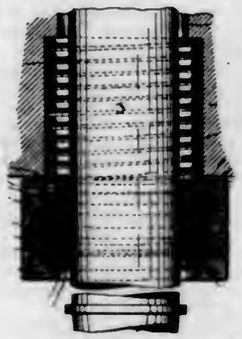
19. A core-drying oven having a heating-chamber, a plurality of racks slidable therein and provided with closure-plates, filling-plates disposed for engagement with the closure-plates at the front ends of the racks, and clamping devices for holding the filling-plates rigidly to said racks.

20. A core-drying oven having a heating-chamber, a plurality of racks movable therein and provided at the rear ends with closure-plates, coupling-plates supported by certain closure-plates of the racks and adapted for engagement with other closure-plates of other racks, and means for operating said coupling-plates.

21. A core-drying oven having a plurality of racks provided with closure-plates, guides on certain of said closure-plates, keepers on other closure-plates, coupling-plates slidable in said guides and adjustable into engagement with the keepers, and means for operating said coupling-plates.

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758,410. **PACKING-CUP.** ROBERT BURNSIDE, Montreal, Canada. Filed Dec. 16, 1903. Serial No. 185,347. (No model.)



*Claim.*—1. In combination, a gland adapted to be attached to a cylinder-head and adapted to have a piston-rod pass therethrough, a vibration-cup, means for supporting the same within said gland, said vibration-cup having an enlarged diameter with a forwardly-projecting shoulder, a base-ring formed in sections and of a restricted inner diameter seating upon said shoulder, packing-rings seating upon said base-ring within said cup, and a follower-ring adapted to retain said packing-rings.

2. In combination, a gland adapted to be attached to the outer side of a cylinder-head and adapted to have a piston-rod pass therethrough, a vibration-cup supported therein and having an enlarged inner diameter with an inwardly-projecting shoulder, a base-ring formed in sections and having a restricted diameter seating upon said shoulder, packing-rings seating upon said base-ring, a follower-ring made in sections and adapted to retain said packing-rings, and a yoke-ring of enlarged diameter encircling the sections of said follower-ring.

3. In combination, a gland, a piston-rod passing therethrough and having a collar of enlarged diameter, a vibration-cup carried within said gland and having an enlarged inner diameter adapted to pass over said collar and having an inwardly-projecting shoulder, a base-ring formed in sections seating upon said shoulder and having a restricted inner diameter, packing-rings seating upon said base-ring, a follower-ring made in sections and having a restricted diameter, and a laterally-projecting flange, a yoke-ring encircling the body of said follower-ring, a cylinder-head having a counterbored recess therein, and a spring received within said recess and thrusting against said follower-ring.

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758,411. **GAS-BURNER.** CHARLES A. CAMPBELL, New York, N. Y. Filed Oct. 6, 1903. Serial No. 175,867. (No model.)



*Claim.*—1. The combination with a gas-burner, comprising a burner-tube, a mantle and its support, an orificed chimney, and an orificed chimney-support, of a hood or cup inclosing the burner-tube and extending upward to inclose the lower portion of the mantle, said hood or cup being flared outward toward the orifices in the chimney, said chimney being suddenly enlarged opposite said flared top of the cup, the orifices in the chimney being located at that point, for the purpose specified.

2. In a gas-burner, a mixing-chamber having air and gas inlets at its lower portion, a contracted or neck portion above said mixing-chamber, a burner-tube surmounting said neck portion, a shield surrounding said burner-tube, said shield being contracted at its bottom into peripheral engagement with the lower end of said burner-tube to form a chamber with a closed bottom around said tube, said shield extending upwardly in parallelism with the burner-tube to a point near its top and terminating in an annular outward flare, a foraminated chimney-support surrounding said neck portion, and a chimney upon said support said chimney being provided with a contracted portion at its lower end having vertical walls extending upwardly to the flared portion at the top of said shield, the chimney having a right-angled offset at that point to prevent a contraction of the air-passage opposite said flared portion of the shield, the chimney being also provided with air-inlet openings at the lower end of its enlarged portion, and the lower portion of the mantle being surrounded by the flared portion of the shield.

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758,412. **ORE-CONCENTRATOR.** WILLIAM L. CARD, Denver, and FRANK S. CARD, Canon City, Colo. Filed Aug. 18, 1902. Serial No. 120,045. (No model.)

*Claim.*—1. In an ore-concentrator, the combination of a concentrating-table having longitudinally-disposed channels adapted to discharge concentrates at one end, said channels having a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, and means for imparting a longitudinal concentrate-discharging vibration to the table, substantially as and for the purposes specified.





2. In an ore-concentrator, the combination of a concentrating-table having a plurality of longitudinally-disposed elevations which taper both horizontally and vertically and are disposed to form intervening longitudinally-disposed channels which have a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, and means for imparting to the table a longitudinal vibration, substantially as and for the purposes specified.

3. In an ore-concentrator, the combination of a transversely-inclined concentrating-table having a plurality of longitudinally-disposed rectilinearly-extending concentrating depressions or channels adapted to discharge concentrates at one end, which channels have a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, and which both shoal and narrow longitudinally of the table, and means for imparting a differential longitudinal vibration to the table, substantially as and for the purposes specified.

4. In an ore-concentrator, the combination of a concentrating-table having a plurality of longitudinally-disposed rectilinearly-extending concentrating depressions or channels adapted to discharge concentrates at one end, said channels having a transverse section formed by the meeting at an obtuse angle of a gentle and an abrupt incline, which channels shoal longitudinally of the table, and means for imparting a longitudinal concentrate-discharging vibration to the table, substantially as and for the purposes specified.

5. In an ore-concentrator, the combination of a concentrating-table having a plurality of longitudinally-disposed rectilinearly-extending concentrating depressions or channels adapted to discharge concentrates at one end, which channels both shoal and narrow in the same direction longitudinally of the table and have a transverse section formed by the meeting at an obtuse angle of a gentle and an abrupt incline, and means for imparting a longitudinal concentrate-discharging vibration to the table, substantially as and for the purposes specified.

6. In an ore-concentrator, the combination of a concentrating-table having a plurality of longitudinally-disposed rectilinearly-extending concentrating channels or depressions which are deeper at the tail side than at the feed side and which shallow laterally from the deeper side to the plane of the table and both narrow and shoal in the same direction longitudinally of the table, and means for imparting a longitudinal concentrate-discharging vibration to the table, substantially as and for the purposes specified.

7. In an ore-concentrator, the combination of a concentrating table having a plurality of longitudinally-disposed rectilinearly-extending concentrating channels or depressions adapted to discharge concentrates at one end, said channels having a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, and which channels or depressions shoal and narrow in the same direction longitudinally of the table, said channels successively increasing in depth from the feed side toward the tailings side of the table, and means for imparting a longitudinal concentrate-discharging vibration to the table, substantially as and for the purposes specified.

8. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating-channels substantially parallel to the line of vibration of the table, said channels having the cross-section due to the meeting at an obtuse angle of a gentle and an abrupt incline, and said channels deeper at the tail side than at the feed side of the table, and means for imparting a vibration to the table, substantially as and for the purposes specified.

9. In an ore-concentrator, the combination of a transversely-inclined concentrating-table having a plurality of longitudinally-disposed concentrating channels or depressions which narrow or contract longitudinally of the table and which are separated by plane areas, means for imparting a longitudinal vibration to the table in the line of the channels, and means for supplying dressing-water to the table, substantially as and for the purposes specified.

10. In an ore-concentrator, the combination of a transversely-inclined concentrating-table having a plurality of longitudinally-disposed concentrating depressions or channels which shoal and narrow or contract longitudinally of the table and which are separated by plane areas which narrow in reverse direction to the channels, means for imparting to the table a longitudinal vibration in the line of the channels, and means for supplying dressing-water to the table, substantially as and for the purposes specified.

11. In an ore-concentrator, the combination of a transversely-inclined concentrating-table having a plurality of longitudinally-disposed concentrating channels or depressions which narrow or contract longitudinally of the table and are separated by plane areas which narrow in reverse direction to the channels, said channels having a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, means for imparting a longitudinal vibration to the table in the line of the channels, and means for supplying dressing-water to the table, substantially as and for the purposes specified.

12. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating channels or depressions disposed parallel to the longitudinal axis of the table, the feed side of the table being inclined at an oblique angle thereto and diverging from the rear end of the table, a feed device adapted to deliver on a line parallel with the diverging edge of the feed side of the table, and means for imparting longitudinal vibration to the table, substantially as and for the purposes specified.

13. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating channels or depressions which shoal and narrow in the same direction and are disposed parallel to the longitudinal axis of the table, the feed side of the table being inclined at an oblique angle to the longitudinal axis of the table and diverging from the rear end thereof, a feed device adapted to deliver on a line parallel with the diverging edge of the feed side of the table, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

14. In an ore-concentrator, the combination with a table having a plurality of concentrating depressions or channels which narrow longitudinally, the cross-section of the channels formed by a gentle and an abrupt incline which meet at an obtuse angle, said channels being disposed parallel to the longitudinal axis of the table, the feed side of the table being inclined at an oblique angle to the longitudinal axis of the table and diverging from the rear end thereof, of a feed device adapted to deliver on a line parallel with the diverging edge of the feed side of the table, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

15. In an ore-concentrator, the combination of a table having a plurality of concentrating depressions or channels which narrow and shoal in the same direction, the cross-section of the channels being formed by a gentle and an abrupt incline which meet at an obtuse angle, the upper or feed side of the table being double inclined, the intersection of said inclines being intermediate of the ends of the table, the channels being disposed parallel to the longitudinal axis of the table, a feed device adapted to deliver on a line parallel with the diverging edge of the feed side of the table, and means for imparting longitudinal vibration to the table, substantially as and for the purposes specified.

16. In an ore-concentrator, the combination of a concentrating-table, a feeder having a bottom inclined downwardly from the feed-outlet, and means for actuating the concentrating-table, substantially as and for the purposes specified.

17. In an ore-concentrator, the combination of a concentrating-table, a feeder having a bottom inclined downwardly from the feed-outlet, and means for independently actuating the concentrating-table and feeder, substantially as and for the purposes specified.

18. In an ore-concentrator, the combination of a concentrating-table, a feeder having a bottom inclined downwardly from the feed outlet, means for adjustably supporting said feeder, and means for independently actuating the concentrating-table and feeder, substantially as and for the purposes specified.

19. In an ore-concentrator, the combination of a concentrating-table having its feed side adjacent to the rear end inclined at an oblique angle to the longitudinal axis of the table and diverging from the rear of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof and arranged adjacent to and parallel with the said inclined feed side of the table, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

20. In an ore-concentrator, the combination of a concentrating-table having its feed side adjacent to the rear end inclined at an oblique angle to the longitudinal axis of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof and arranged adjacent to and parallel with the said inclined feed side of the table, and means for independently actuating the concentrating-table and the feeder, substantially as and for the purposes specified.

21. In an ore-concentrator, the combination of a concentrating-table having its feed side adjacent to the rear end inclined at an oblique angle to the longitudinal axis of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof and arranged adjacent to and parallel with the said inclined feed side of the table, means for adjustably supporting said feeder, and means for actuating the concentrating-table and feeder, substantially as and for the purposes specified.

22. In an ore-concentrator, the combination of a concentrating-table, a feeder having converging sides and a bottom inclined downwardly from the feed-outlet, said feeder arranged with its outlet side at an oblique angle to the longitudinal axis of the table and divergent outwardly from the head end of the table, and means for actuating the concentrating-table and feeder, substantially as and for the purposes specified.

23. In an ore-concentrator, the combination of a concentrating-table, a feeder having converging sides and a bottom inclined downwardly from the feed-outlet, said feeder arranged with its outlet side at an oblique angle to the longitudinal axis of the table and divergent outwardly from the head end of the table, means for adjustably supporting said feeder, and means for actuating the concentrating-table and feeder, substantially as and for the purposes specified.

24. In an ore-concentrator, the combination of a concentrating-table, a feeder having converging sides and a bottom inclined downwardly from the feed-outlet, said feeder arranged with its outlet side at an oblique angle to the longitudinal axis of the table, means for adjustably supporting said feeder, and means for reversely vibrating the table and the feeder, substantially as and for the purposes specified.

25. In an ore-concentrator, the combination with a concentrating-table of increased width intermediate of its ends, of a feeder having a bottom inclined downwardly from the feed-outlet and sides which converge from the feed end thereof, said feeder arranged parallel with the diverging side of the table adjacent to the feed end thereof, and means for actuating the concentrating-table and feeder, substantially as and for the purposes specified.

26. In an ore-concentrator, the combination with a concentrating-table of increased width intermediate of its ends, said concentrating-table having longitudinally-disposed concentrating depressions or channels deeper at one side than at the other and which channels shoal longitudinally, of a feeder having converging sides and a bottom inclined downwardly from the feed-outlet, said feeder arranged with its outlet side at an oblique angle to the longitudinal axis of the table, and means for actuating the concentrating-table and the feeder, substantially as and for the purposes specified.

27. In an ore-concentrator, the combination with a concentrating-table of increased width intermediate of its ends and provided with concentrating depressions or channels which shoal and narrow longitudinally, of a feeder having converging sides and a bottom inclined downwardly from the feed-outlet, said feeder arranged adjacent to the feed side of the table and with its outlet side at an oblique angle to the longitudinal axis of the table, and means for actuating said concentrating-table and feeder, substantially as and for the purposes specified.

28. In an ore-concentrator, the combination with a concentrating-table of increased width intermediate of its ends and having concentrating depressions or channels which are deeper on one side than on the other, which channels both narrow and shoal longitudinally, of a feeder having converging sides and a bottom which inclines downwardly from the feed-outlet, said feeder arranged adjacent to the feed side of the table with its feed-outlet on a line which intersects the longitudinal axis of the table at an oblique angle at the rear, and means for actuating said concentrating-table and feeder, substantially as and for the purposes specified.

29. In an ore-concentrator, the combination with a concentrating-table of increased width intermediate of its ends and having concentrating channels or depressions which both narrow and shoal longitudinally, of a feeder having converging sides and a bottom inclined downwardly from the feed-outlet, said feeder arranged adjacent to the feed side of the table with its feed-outlet on a line which intersects the longitudinal axis of the table at an oblique angle at the rear, means for adjustably supporting said feeder and means for actuating the feeder and the concentrating-table, substantially as and for the purposes specified.

30. In an ore-concentrator, the combination with a table having longitudinal frame-timbers, of a tilting frame comprising parallel track-rods and cross-arms which connect the track-rods, a subframe having longitudinal frame-timbers, the longitudinal frame-timbers of the table, the track-rods and the longitudinal timbers of the subframe being all in substantially the same vertical planes, which planes are equidistant from the plane of the axes of said table, tilting frame and subframe, and transversely-sliding wedges or inclines, which are supported on the subframe and support the track-rods, substantially as and for the purposes specified.

31. In an ore-concentrator, the combination with a concentrating-table, of a tilting frame comprised of parallel track-rods and cross-arms which connect the track-rods, the table having slide-bearings on the track-rods, pillow-blocks for the cross-arms of the tilting frame, said pillow-blocks located in a vertical plane coincident with the longitudinal axes of the tilting frame and table, and transversely-sliding wedges or inclines which support the track-rods of the tilting frame, substantially as and for the purposes specified.

32. In an ore-concentrator, the combination with a concentrating-table, of a tilting frame therefor comprising parallel track-rods and cross-arms which connect the track-rods, the table having sliding bearings on the track-rods, transversely-sliding wedges or inclines which support the parallel track-rods of the tilting frame, and a draw-bar for actuating the table, the longitudinal axes of concentrating-table, tilting frame and draw-bar being in the same vertical plane, substantially as and for the purposes specified.

33. In an ore-concentrator, the combination with an ore-concentrating table, of a draw-bar, an actuating-spring, a buffer-spring, and an adjustable washer or spring-seat, substantially as and for the purposes specified.

34. In an ore-concentrator, the combination with an ore-concentrating table, and its actuating devices, of heavy rubber washers interposed between the table and its actuating devices, substantially as and for the purposes specified.

35. In an ore-concentrator, the combination of a concentrating-table having a plurality of depressions or channels constituted of a gentle and an abrupt incline uniting at an obtuse angle, said channels separated by intermediate plane portions which lie in the plane of the table, and means for actuating said table, substantially as and for the purposes specified.

36. In an ore-concentrator, the combination of a concentrating-table having a concentrating-surface comprised of a plurality of longitudinally-disposed channels or depressions made up of gentle and abrupt inclines which meet at an obtuse angle, which channels shoal and narrow longitudinally and are separated by intermediate plane surfaces, and means for actuating said table, substantially as and for the purposes specified.

37. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating depressions or channels which are made up of a gentle and an abrupt incline which meet at an obtuse angle and which shoal longitudinally, said channels or depressions separated by plane portions which lie in the plane of the table, and means for actuating said table, substantially as and for the purposes specified.

38. In an ore-concentrator, the combination of a concentrating-table having longitudinally-disposed depressions or channels adapted to freely discharge concentrates at one end, said channels having a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, said channels or depressions separated by intermediate plane portions which lie in the plane of the table, and means for imparting a longitudinal vibration to the table in the line of the channels, substantially as and for the purposes specified.

39. In an ore-concentrator, the combination of a table having longitudinally-disposed depressions or channels adapted to freely discharge concentrates at one end, said channels having a transverse section formed by the union at an obtuse angle of a gentle and an abrupt incline, which channels shoal longitudinally and are separated by intermediate plane surfaces, and means for imparting a longitudinal vibration to the table in the line of the channels, substantially as and for the purposes specified.

40. In an ore-concentrator, the combination of a table having longitudinally-disposed depressions or channels adapted to freely discharge concentrates at one end, said channels having the cross-section produced by the meeting at an obtuse angle of a gentle and an abrupt incline, which channels narrow and shoal in the same direction and are separated by intermediate plane areas which lie in the plane of the table, and means for imparting a longitudinal vibration to the table in the line of the channels, substantially as and for the purposes specified.

41. In an ore-concentrator, the combination of a concentrating-table having longitudinally-disposed concentrating channels or depressions adapted to freely discharge the concentrates at one end, which channels narrow and shoal longitudinally of the table and have a transverse section formed by a gentle and an abrupt incline which meet at an obtuse angle, said channels separated by intermediate plane areas which narrow in a direction the reverse of the channels, and means for imparting a longitudinal vibration to the table in the line of the channels, substantially as and for the purposes specified.

42. In an ore-concentrator, the combination of a concentrating-table, a feeder having sides which converge from the feed end of the feeder and a bottom downwardly inclined from the feed-outlet thereof, means for adjusting the lateral inclination of the concentrating-table, means for supporting the feeder independently of the table or its adjusting mechanism, and means for actuating the concentrating-table, substantially as and for the purposes specified.

43. In an ore-concentrator, the combination of a concentrating-table, a feeder having its bottom inclined downwardly from the feed-outlet, means for supporting the feeder independently of the table, means for independently and reversely reciprocating the table and feeder, substantially as and for the purposes specified.

44. In an ore-concentrator, the combination of a concentrating-table, a feeder having sides which converge from the feed end of the feeder and a bottom downwardly inclined from the feed-outlet, means for varying the relative heights of the ends of the feeder, and means for actuating the concentrating-table and the feeder, substantially as and for the purposes specified.

45. In a concentrator, the combination of a concentrating-table, a feeder having a bottom downwardly inclined from the feed-outlet, means for varying the relative heights of the ends of the feeder, and means for reversely reciprocating the table and the feeder, substantially as and for the purposes specified.

46. In an ore-concentrator, the combination with a concentrating-table having its upper or feed side double-inclined, the inclines intersecting at a point intermediate of the ends of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof and arranged parallel with the rear incline of the feed side of the table, and means for actuating the table and the feeder, substantially as and for the purposes specified.

47. In an ore-concentrator, the combination of an ore-concentrating table having a plurality of concentrating channels or depressions disposed parallel to the longitudinal axis of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof and arranged adjacent to the upper or feed side of the table on a line which intersects the longitudinal axis of the table at an oblique angle at the rear of the table, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

48. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating channels or depressions disposed parallel to the longitudinal axis of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof and arranged adjacent to the upper or feed side of the table on a line which intersects the longitudinal axis of the table at an oblique angle at the rear of the table, and means for independently reciprocating the table and the feeder, substantially as and for the purposes specified.

49. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating channels or depressions disposed parallel to the longitudinal axis of the table, a feeder having a bottom inclined downwardly from the feed-outlet thereof, and arranged adjacent to the upper or feed side of the table on a line which intersects the longitudinal axis of the table at an oblique angle at the rear of the table, means for adjustably supporting said feeder, and means for independently actuating said table and said feeder, substantially as and for the purposes specified.

50. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating depressions or channels disposed parallel to the longitudinal axis of the table, the feed or upper side of the table being double-inclined, the intersection of said inclines being intermediate of the ends of the table, a feed device adapted to deliver on a line parallel with the rear incline of the feed side of the table and divergent outwardly from the head end of the table, and means for imparting longitudinal vibration to the table, substantially as and for the purposes specified.

51. In an ore-concentrator, the combination of a concentrating-table having a plurality of concentrating depressions or channels which shoal and narrow in the same direction, the cross-section of the channels being formed by a gentle and an abrupt incline which meet at an obtuse angle, the channels disposed parallel to the longitudinal axis of the table and adapted to freely discharge the concentrates at one end, and means for imparting a longitudinal vibration to the table in the line of the channels, substantially as and for the purposes specified.

52. In an ore-concentrator, the combination of a concentrating-table having longitudinally-disposed concentrating-channels adapted to freely discharge the concentrates at one end, said channels having a transverse section formed by a gentle incline and an abrupt incline which meet at an obtuse angle, and means for imparting longitudinal vibration to the table in the line of the channels, substantially as and for the purposes specified.

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**758,418. CONCENTRATOR.** WILLIAM I. CARD and FRANK S. CARD, Denver, Colo. Filed Mar. 2, 1903. Serial No. 145,717. (No model.)



*Claim.*—1. A concentrator-table having concentrating-channels which widen from the rear end of the table toward the front end thereof, and means for actuating the table, said table being adapted

to retain sufficient pulp thereon to permit stratification, substantially as and for the purposes specified.

2. A concentrator-table having concentrating-channels which both widen and deepen from the rear end of the table toward the front end thereof, and means for actuating the table, said table being adapted to retain sufficient pulp thereon to permit stratification, substantially as and for the purposes specified.

3. A concentrator-table having concentrating-channels which widen progressively from the rear or feed end of the table toward the front end thereof, which channels have a transverse section formed by the meeting at an obtuse angle of a gentle and an abrupt incline, said table being adapted to retain sufficient pulp thereon to permit stratification, and means for actuating the table, substantially as and for the purposes specified.

4. A concentrator-table having concentrating-channels which widen and deepen progressively from the rear or feed end of the table toward the forward end thereof, which channels have a transverse section formed by the meeting at an obtuse angle of a gentle and an abrupt incline, said table being adapted to retain sufficient pulp thereon to permit stratification, and means for actuating the table, substantially as and for the purposes specified.

5. A concentrator-table having concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, and means for actuating the table, substantially as and for the purposes specified.

6. A concentrator-table having concentrating-channels which narrow and shallow from an intermediate point in the length of the table toward both ends thereof, and means for actuating the table, substantially as and for the purposes specified.

7. A concentrator-table, having concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, the cross-section of said channels being formed by a gentle incline and an abrupt incline which meet at an obtuse angle, and means for actuating the table, substantially as and for the purposes specified.

8. A concentrator-table, having concentrating-channels which narrow and shallow from an intermediate point in the length of the table toward both ends thereof, the cross-section of said channels being formed by a gentle incline and an abrupt incline which meet at an obtuse angle, and means for actuating the table, substantially as and for the purposes specified.

9. A concentrator-table having concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, said channels being separated by intervening plane surfaces, and means for actuating the table, substantially as and for the purposes specified.

10. A concentrator-table having concentrating-channels which narrow and shallow from an intermediate point in the length of the table toward both ends thereof, said channels separated by intervening plane surfaces, and means for actuating the table, substantially as and for the purposes specified.

11. A concentrator-table having concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, which channels have a transverse section formed by the meeting at an obtuse angle of a gentle incline and an abrupt incline, said channels separated by intervening plane surfaces, and means for actuating the table, substantially as and for the purposes specified

12. The combination with a concentrator-table, of baffle-buttons arranged in the "middlings" zone of the table, and means for actuating the table, substantially as and for the purposes specified.

13. The combination with a concentrator-table having longitudinally-disposed channels and intervening plane surfaces, of baffle-buttons arranged on the table between the channels, and means for actuating the table, substantially as and for the purposes specified.

14. The combination with a concentrator-table and its subframe, of a fixed track-rod, an adjustable track-rod, an anchor-link for the adjustable track-rod, inclined shoes for the adjustable track-rod, and wedges for elevating the adjustable track-rod, substantially as and for the purposes specified.

15. The combination with a concentrator-table and its subframe, of a fixed track-rod, an adjustable track-rod, an anchor-link for the adjustable track-rod, wedges for elevating the adjustable track-rod, a coupling-rod for connecting said wedges, and rack-and-pinion mechanism for actuating the wedges, substantially as and for the purposes specified.

16. A concentrator-table having concentrating-channels which deepen from the heel or feed end of the table toward the toe or discharge end, said channels adapted to discharge at one end, and said table adapted to retain sufficient pulp thereon to permit stratification, and means for imparting a longitudinal concentrate-discharging vibration to the table, substantially as and for the purposes specified.

17. A concentrator-table having longitudinally-disposed concentrating-channels which are deeper at a point intermediate their lengths than at their ends, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

18. A concentrator-table having longitudinally-disposed concentrating-channels which deepen from their rear ends toward their front ends, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

19. A concentrator-table having longitudinally-disposed concentrating-channels which shallow from an intermediate point in the length of the table toward both ends thereof, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

20. A concentrator-table having longitudinally-disposed concentrating-channels which progressively shallow from a point intermediate their ends toward both ends thereof, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

21. A concentrator-table having longitudinally-disposed concentrating-channels which widen from their rear ends toward their front ends, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

22. A concentrator-table having longitudinally-disposed concentrating-channels which both widen and deepen from their rear ends toward their front ends, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

23. A concentrator-table having longitudinally-disposed concentrating-channels which narrow from a point intermediate their ends toward both ends thereof, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

24. A concentrator-table having longitudinally-disposed concentrating-channels which narrow and shallow from a point intermediate their ends toward both ends thereof, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

25. A concentrator-table having longitudinally-disposed concentrating-channels which narrow and shallow from a point intermediate their ends toward both ends thereof, said channels having a cross-section formed by a gentle incline and an abrupt incline which meet at an obtuse angle, and means for actuating the table, substantially as and for the purposes specified.

26. A concentrator-table having longitudinally-disposed concentrating-channels which both widen and deepen from their rear ends toward their front ends, said channels having a cross-section formed by a gentle incline and an abrupt incline which meet at an obtuse angle, and means for actuating the table, substantially as and for the purposes specified.

27. A concentrator-table having rectilinear channels which widen from the rear end of the table toward the front end thereof, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.

28. A concentrating-table having rectilinear channels which both widen and deepen from the rear end of the table toward the front end thereof, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.

29. A concentrator-table having rectilinear channels which widen progressively from the rear end of the table toward the front end thereof, said channels adapted to discharge concentrates at one end, and having a transverse section formed by the meeting at an obtuse angle of a gentle and an abrupt incline, and means for actuating the table, substantially as and for the purposes specified.

30. A concentrator-table, having rectilinear concentrating-channels which widen and deepen progressively from the rear end of the table toward the front end thereof, said channels having a transverse section formed by the meeting at an obtuse angle of a gentle and an abrupt incline, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.

31. A concentrator-table, having rectilinear concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.



32. A concentrator-table, having rectilinear concentrating-channels which narrow and shallow from an intermediate point in the length of the table toward both ends thereof, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.

33. A concentrator-table, having rectilinear concentrating-channels, which narrow from an intermediate point in the length of the table toward both ends thereof, the cross-section of said channels being formed by a gentle and an abrupt incline which meet at an obtuse angle, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.

34. A concentrator-table, having rectilinear concentrating-channels which narrow and shallow from an intermediate point in the length of the table toward both ends thereof, the cross-section of said channels formed by a gentle incline and an abrupt incline which meet at an obtuse angle, said channels adapted to discharge at one end, and means for actuating the table, substantially as and for the purposes specified.

35. A concentrator-table, having rectilinear concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, said channels adapted to discharge concentrates at one end, said channels being separated by intervening plane surfaces, and means for actuating the table, substantially as and for the purposes specified

36. A concentrator-table, having rectilinear concentrating-channels which narrow and shallow from an intermediate point in the length of the table toward both ends thereof, said channels adapted to discharge concentrates at one end, said channels separated by intervening plane surfaces, and means for actuating said table, substantially as and for the purposes specified.

37. A concentrator-table, having rectilinear concentrating-channels which narrow from an intermediate point in the length of the table toward both ends thereof, which channels have a transverse section formed by the meeting at an obtuse angle of a gentle incline and an abrupt incline, said channels adapted to discharge concentrates at one end, said channels being separated by intervening plane surfaces, and means for actuating the table, substantially as and for the purposes specified.

38. The combination with a concentrator-table, of baffle-buttons arranged within the "middlings" zone thereof, and at an angle to the longitudinal axis of the table, and means for imparting to the table a longitudinal vibration, substantially as and for the purposes specified.

39. The combination with a concentrator-table, of baffle-buttons arranged transversely thereof and at an angle to the longitudinal axis of the table, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

40. A concentrator-table having rectilinear concentrating-channels which increase in depth from the rear end of the table toward the front end thereof, said channels adapted to discharge concentrates at one end, and means for actuating the table, substantially as and for the purposes specified.

41. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which are deeper at a point intermediate their length than at their ends, said channels adapted to discharge concentrates at one end, and means for longitudinally vibrating said table, substantially as and for the purposes specified.

42. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which deepen from their rear ends toward their front ends, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

43. A concentrating-table, having longitudinally-disposed rectilinear concentrating-channels which shallow from an intermediate point in the length of the table toward both ends thereof, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

44. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which progressively shallow from a point intermediate their ends toward both ends thereof, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

45. A concentrator-table having longitudinally-disposed rectilinear concentrating-channels which widen from their rear ends toward their front ends, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

46. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which both widen and deepen from their rear ends toward their front ends, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

47. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which narrow from a point intermediate of their ends toward both ends thereof, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

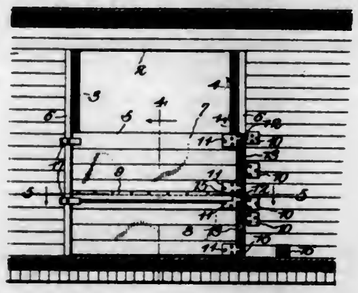
48. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which narrow and shallow from a point intermediate their ends toward both ends thereof, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

49. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which narrow and shallow from a point intermediate their ends toward both ends thereof, said channels having a cross-section formed by the meeting of an obtuse angle of a gentle incline and an abrupt incline, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

50. A concentrator-table, having longitudinally-disposed rectilinear concentrating-channels which both widen and deepen from their rear ends toward their front ends, said channels having a cross-section formed by the meeting at an obtuse angle of a gentle incline and an abrupt incline, said channels adapted to discharge concentrates at one end, and means for imparting a longitudinal vibration to the table, substantially as and for the purposes specified.

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**758,414. GRAIN-CAR DOOR.** WILLIAM L. CARSON, Winfield, Kans., assignor of one-third to Thomas Ed. Fulton, Kildare, Okla. Filed Sept. 30, 1903. Serial No. 175,185. (No model.)



*Claim.*—1. The combination with a car, of a door and its casing, supporting-brackets sustained upon the interior of the car, hinge members attached to the door and casing, a pivoting-rod extending through said members, the latter being relatively disposed to permit bodily upward movement of the door to seat upon the brackets, locking members carried by the door, and devices carried by the car and adapted for engagement by the locking members for securing the door in either its open or closed position.

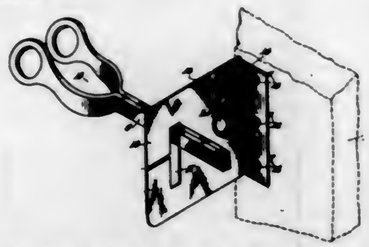
2. The combination with a car having a doorway, of a door comprising a pair of sections disposed vertically one above the other, hinge members carried by the respective door-sections and car, and a pivoting-rod extending through said members, the latter being relatively disposed to permit bodily upward movement of the doors as a whole or a corresponding movement of the upper section independently of the lower section.

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**758,415. TELEPHONE INSTRUMENT.** ALBERT C. CHRISTOPHER, Chicago, Ill., assignor to Kellogg Switchboard & Supply Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 3, 1904. Serial No. 191,775. (No model.)

*Claim.*—1. In a subscriber's telephone set, the combination with

a support, of a hook-switch having a vibrating lever upon the projecting end of which the receiver is adapted to be suspended, a cover for the set adapted to close over said switch and having a notch in one of its side edges to accommodate the said lever, and an escutcheon-plate for the said notch formed of a single member and having an opening to receive the vibrating end of said lever, substantially as described.



2. In a subscriber's telephone set, the combination with a support, of a hook-switch having a vibrating lever upon the projecting end of which the receiver is adapted to be suspended, a cover for the set adapted to close over said switch and having a notch in one of its side edges to accommodate the said lever, and an escutcheon-plate for the notch formed of a single member, secured to the support and having an opening to receive the vibrating end of said lever, substantially as described.

3. In a subscriber's telephone set, the combination with a support, of a hook-switch having a vibrating lever upon the projecting end of which the receiver is adapted to be suspended, a cover for the set adapted to close over said switch and having a notch in one of its side edges to accommodate the said lever, and an escutcheon-plate formed of a single integral member carried by the support and having an opening to receive the vibrating end of said lever, substantially as described.

4. In a subscriber's telephone set, the combination with a support, of a hook-switch having a vibrating lever upon the projecting end of which the receiver is adapted to be suspended, a cover for the set adapted to close over said switch and having a notch in one of its side edges to accommodate the said lever, and an escutcheon-plate for said notch consisting of a member secured to the support and having a slot to receive the vibrating end of said lever, whereby the said lever is supported and guided thereby upon both sides at all times, substantially as described.

5. In a subscriber's telephone set, the combination with a support, of a hook-switch carried by the support and having a vibrating lever upon the projecting end of which the telephone-receiver is adapted to be suspended, a box-like cover adapted to fit over the contacts of said switch and other associated parts to inclose the same, said cover having a notch in one of its edges to permit the same to be closed over the said lever and to permit the vibration of the lever when the box is closed, and a member independent of the cover to close said notch when the cover is closed and provided with an opening or slot through which the said lever passes, substantially as described.

6. In a subscriber's telephone set, the combination with a support, of a hook-switch carried by the support and having a vibrating lever upon the projecting end of which the telephone-receiver is adapted to be suspended, a box-like cover hinged at one edge to the support and adapted to fit over the contacts of said switch and other associated parts to inclose the same, said cover having a notch formed in one of its edges to permit the same to be closed over the said lever and to permit the vibration of the lever when the box is closed, and a member mounted on the support independently of the cover to close said notch when the cover is closed and provided with a slot through which the said lever passes, substantially as described.

7. In a subscriber's telephone set, the combination with a support, of a hook-switch carried by the support and having a vibrating lever upon the projecting end of which the telephone-receiver is adapted to be suspended, a box-like cover hinged at one edge to the support and adapted to fit over the contacts of said switch and other associated parts to inclose the same, said cover having a notch formed in one of its edges to permit the same to be closed over the said lever and to permit the vibration of the lever when the box is closed, and a member mounted on the support independently of the cover to close said notch when the cover is closed and provided with a slot through which the said lever passes, said member having an aperture through which the receiver-cord is adapted to pass from the receiver of the set to its binding-posts inclosed by the cover, substantially as described.

8. In a subscriber's telephone set, the combination with a backboard, of a hook-switch carried thereby and having a vibrating lever upon the projecting end of which the telephone-receiver of the set is adapted to be suspended when not in use, a box-like cover adapted to fit over the contacts of said switch and other associated parts of the set to normally inclose the same, said cover having a notch in one of its side edges to permit the same to be closed over the said lever and to permit the vibration of the lever when the cover is closed, and an escutcheon-plate for said notch consisting of a sheet-metal plate having its inner edge bent at an angle by which it is secured to the support and serving to close the notch when the cover is closed, said plate having a slot formed therein to receive said vibrating lever and to at all times support and guide the same upon both sides, substantially as described.

9. In a subscriber's telephone set, the combination with a support, of a hook-switch having a vibrating lever upon the projecting end of which the receiver is adapted to be suspended, a cover for the set adapted to close over said switch and having a notch in one of its side edges to accommodate the said lever, and an escutcheon-plate for the said notch carried by the support and having an opening to receive the vibrating end of said lever, said plate having a slit cut from the edge of the plate to the said opening whereby the edges adjacent the slit may be sprung apart to permit the passage of the lever into the said opening, substantially as described.

10. In a subscriber's telephone-box, the combination with a support, of a box inclosing working parts of the set, said box having a notch or aperture through one side of the same, a hook-switch within the box having a vibrating lever projecting through said notch or aperture, the receiver of the set being adapted to be hung upon the outer end of said lever when not in use, and an escutcheon-plate for said notch or aperture having a slot through which the said lever extends and in which it vibrates, said plate having a slit cut from the said slot to the outer edge of the plate whereby the contiguous edges of the slit may be sprung apart to permit the passage of the hook-lever into the said slot, substantially as described.

11. In a subscriber's telephone set, the combination with a support, of a hook-switch carried thereby and having a vibrating lever upon the projecting end of which the telephone-receiver of the set is adapted to be suspended when not in use, a box-like cover adapted to fit over the contacts of said switch and their associated parts to normally inclose the same, said cover having a notch in one of its side edges to permit the same to be closed over the said lever as well as to permit the vibration of the lever when the cover is closed, and a sheet-metal escutcheon-plate for said notch secured to the support and serving to close the notch when the cover is closed, said plate having a slot formed therein to receive said vibrating lever whereby said lever is supported and guided upon both sides at all times, a transverse slit cut across the portion of said plate forming the outer side wall of said slot whereby the opposite edges at the slit may be sprung apart to permit the passage of the said vibrating lever into the slot, substantially as described.

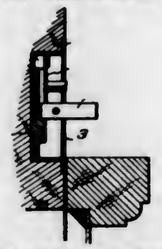
12. In a subscriber's telephone set, the combination with a support, of a hook-switch carried thereby and having a horizontally-disposed vibrating lever upon the projecting end of which the telephone-receiver of the set is adapted to be suspended when not in use, a box-like cover adapted to fit over the contacts of the switch and the associated parts of the set to normally inclose the same, said cover having a notch in one of its vertical side edges to permit the same to be closed over the said lever, an escutcheon-plate for said notch consisting of a single sheet-metal plate having its inner end bent at right angles and serving as a means for securing the same to its support, the body portion of said plate extending outwardly from the support and serving to close and conceal the notch in the cover when the latter is in normal position, said plate having a vertical slot formed therein near its outer edge to receive said vibrating lever, the inner and outer edges of said slot forming supports and guides for both sides of said lever, the surrounding wall of said slot being severed to permit the adjacent edges of the severed portion to be sprung apart to admit the said lever into the slot, substantially as described.

13. In a subscriber's telephone set, the combination with a support, of a hook-switch carried thereby and having a horizontally-disposed vibrating lever upon the projecting end of which the telephone-receiver of the set is adapted to be suspended when not in use, a box-like cover adapted to fit over the contacts of the switch and the associated parts of the set to normally inclose the same, said cover having a notch in one of its vertical side edges to permit the same to be closed over the said lever, and an escutcheon-plate for said notch consisting of a single sheet-metal plate having its inner end bent at right angles and serving as a means for securing the same to its support, the body portion of said plate extending outwardly from the support and serving to close and conceal the notch in the cover when the latter is in normal position, said plate having a vertical slot formed therein near its outer edge to receive said vibrating lever, the inner and outer edges of said slot forming supports and guides for both sides of said lever, the surrounding wall of said slot being severed to permit the adjacent edges of the severed portion to be sprung apart to admit the said lever into the slot, said escutcheon-plate also having an aperture therein through which the receiver-cord is adapted to pass from the receiver of the set to its binding-posts within the cover, said aperture being provided with an insulating-bushing, substantially as described.

14. In a subscriber's telephone set, the combination with a support, of a hook-switch having a vibrating lever upon the projecting end of which the receiver is adapted to be suspended, a cover for the set adapted to close over said switch and having a notch in one of its side edges to accommodate the said lever, an escutcheon-plate for the said notch independent of the cover carried by the support and having a slot to receive the vibrating end of said lever, and means to permit opening the side walls of the plate surrounding the said slot to allow the passage of the hook-lever into the said slot, substantially as described.



**758,416. SASH-FASTENER. FREDERICK B. CLAPP, Kenosha, Wis. Filed Dec. 8, 1903. Serial No. 184,308. (No model.)**

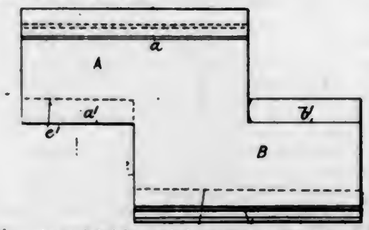


*Claim.*—1. In a sash-fastener, the combination with a casing having a supporting-lug therein; of a locking-bar pivoted within the casing and adapted to project therefrom and bear upon the lug, and a holding-strip within the casing and adapted to bear upon the locking-bar and hold it in extended position.

2. In a sash-fastener, the combination with a casing having a supporting-lug therein; of a locking-bar pivoted within the casing and adapted to project therefrom and bear upon the supporting-lug, a spring holding-strip secured within the casing and adapted to bear upon the locking-bar and hold it in projected position, and a releasing-stem projecting from the holding-strip.

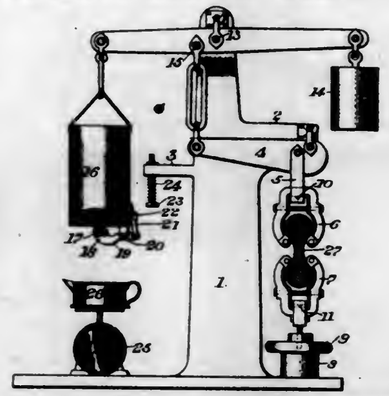
3. In a sash-fastener, the combination with a casing having supporting means therein; of a pivoted locking-bar adapted to bear upon the supporting means and to project from the casing, and a holding device adapted to automatically lock the bar in projected position.

**758,417. BRICK FOR THE CONSTRUCTION OF ARCHES. SIDNEY H. CLARKE, Minehead, England. Filed Nov. 20, 1903. Serial No. 181,961. (No model.)**




*Claim.*—An arch-brick consisting of two main parts partially superposed the one upon the other and united throughout the corresponding portion of the length of each, the said parts extending lengthwise beyond one another in opposite directions, the longitudinal jointing faces being disposed in planes radial to the axis of the arch whereof the brick forms an element, and the side faces of the brick being curved to radii respectively corresponding to the radius of the said arch, substantially as specified.

**758,418. TESTING-MACHINE. WILLIAM R. COCK, Plainfield N. J., assignor of one-half to Frederick A. Richie, Philadelphia, Pa. Filed Sept. 26, 1903. Serial No. 174,727. (No model.)**



*Claim.*—1. In a testing-machine, a receptacle for containing shot having an aperture, a closure for said aperture, means for locking said closure and means on said machine supported independently of said receptacle for operating said closure.

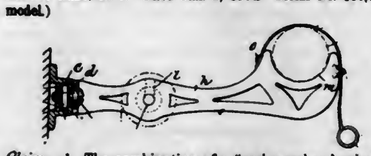
2. In a testing-machine, a receptacle for containing shot having an aperture, a cup-lever adapted to close said aperture pivotally attached to said receptacle and a portion supported independently of said receptacle for engaging said lever and thereby closing said aperture.

3. In a testing-machine, a receptacle for containing shot having an aperture, a cup-lever adapted to close said aperture pivotally attached to said receptacle and resilient means supported independently of said receptacle for engaging said lever and closing said aperture.

4. In a testing-machine, a shot-receptacle having an aperture, a cup-lever pivotally attached to said receptacle and adapted to close said aperture, and means on said receptacle engageable with said cup-lever for maintaining it in operative relation with said aperture.

5. In a testing-machine, a shot-receptacle having an aperture, a cup-lever pivotally attached to said receptacle and adapted to close said aperture, a dog pivoted to and forming a part of said lever, and a projection on said receptacle adapted to engagement with said dog, whereby said cup-lever is maintained in operative relation with said aperture.

**758,419. COMBINED SHADE-ROLLER BRACKET AND CURTAIN-POLE SUPPORT. DANIEL J. COOKE, Paterson, N. J., assignor of two-thirds to Joseph White, Paterson, N. J., and Henry R. Goodman, Dundee Lake, N. J. Filed Jan. 2, 1904. Serial No. 187,497. (No model.)**



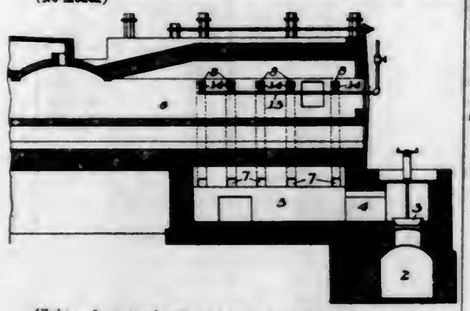

*Claim.*—1. The combination of a fixed member having a horizontal slot therein and, on the reverse side thereof, two opposed ribs coacting with the slotted portion of said member as guides and forming with said slotted portion opposed grooves, a nut arranged in said grooves, an adjustable member having an offset portion, and a screw penetrating said offset portion of the adjustable member and the slot of the fixed member and carrying said nut, substantially as described.

2. The combination of a fixed member, an adjustable member, means for adjustably securing the adjustable member to the fixed

member, said adjustable member having a recess for the reception of a curtain-pole, a strap carried by said adjustable member and extending over said recess, and a threaded device carried by said adjustable member and adapted to be screwed up tight against said strap to clamp the same tight over the pole, substantially as described.

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758,420. **GAS-BURNER FOR FURNACES.** NAPOLEON CÔTÉ, Montreal, Canada, assignor to H. L. Dixon Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed May 9, 1903. Serial No. 156,425. (No model.)



*Claim.*—1. A combustion-chamber having a gas-burner opening into it, said burner having a gas-chamber with an elongated opening, a separate air-chamber having a slotted outlet opening into the combustion-chamber substantially parallel with the gas-outlet, and a pipe leading from a source of air under pressure to the air-chamber; substantially as described.

2. A combustion-chamber having a gas-burner opening into it, said burner having a gas-chamber with an elongated opening, a separate air-chamber at least partially surrounding the gas-chamber and having a slotted outlet opening into the combustion-chamber substantially parallel with the gas-outlet, and a pipe leading from a source of air under pressure to the air-chamber; substantially as described.

3. A combustion-chamber having a gas-burner opening into it, said burner having a central gas-chamber with an outlet, a separate air-box having a slotted opening surrounding said outlet and opening into the combustion-chamber and a pipe connecting a source of air under pressure to said air-box; substantially as described.

4. A combustion-chamber having a gas-burner opening into it, said burner having a central gas-chamber with an outlet, a separate air box or chamber surrounding the gas-chamber and having a slotted opening surrounding said outlet and opening into the combustion-chamber and a pipe connecting a source of air under pressure to said air-box; substantially as described.

5. A furnace having a gas-flue in its wall and connected to an inwardly-projecting gas-burner having an elongated slot, an air-chamber having a separate outlet at least partially surrounding the gas-outlet and opening into the furnace and a pipe connecting the air-chamber to a blower or other source of air under pressure; substantially as described.

6. A furnace having a series of vertical gas-flues in its wall, gas-burners having central gas-chambers connected to said flues and provided with surrounding air-chambers with slotted outlets surrounding the gas-outlets and an air-pipe connecting the air-chambers to a source of air under pressure; substantially as described.

7. A combustion-chamber having a gas-burner opening into it, said burner having a gas-chamber with an opening or openings, a separate air-chamber having a slotted outlet opening into the combustion-chamber substantially parallel with the gas-outlet, and a pipe leading from a source of air under pressure to the air-chamber; substantially as described.

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758,421. **RAILWAY BRIDLE-ROD.** ARCHIBALD H. F. COTTRELL, Springfield, Mo., assignor of two-thirds to Orval J. Andrews and Herbert A. Knight, Springfield, Mo. Filed July 25, 1903. Serial No. 167,066. (No model.)



*Claim.*—1. Combination of an adjustable bridle-rod having notches for engaging movable plates, and holes and slots for receiving bolts combined with movable plates having notches for engaging the bridle-rod, holes and slots for receiving and adjusting connecting-bolts, and connecting-bolts provided with nuts and locking-washers for holding the same in position shown and described for the purpose specified.

2. An adjustable bridle-rod consisting of a main part or rod provided with notches for engaging sliding plates, and holes and slots for receiving adjusting-bolts, combined with adjustable sliding plates near each end, said plates being provided with notches for engaging the main rod, and holes, and slots for adjusting-bolts, and bolts for securing the parts in the desired positions substantially as shown and described.

3. The combination in a bridle-rod of a main rod, and two movable attachments or parts, one near each end for adjusting the width of switch-points of railway-rails, said movable parts having slots, and holes for bolts and bolts provided with locks for securing the same in position, substantially as shown and described.

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758,422. **DENTAL-MATRIX RETAINER.** WILLIAM CRENSHAW, Atlanta, Ga. Filed Apr. 25, 1903. Serial No. 154,283. (No model.)



*Claim.*—1. A combined dental-matrix retainer and aliner comprising two members, one slidable upon the other, each carrying a projecting arm unincloced at its upper end and free to receive a flexible member, means for forcing the arms apart, a flexible member attached to the arms, and means for retaining the flexible member in engagement with the arms when they are forced apart, substantially as described.

2. A combined dental matrix, retainer and aliner, comprising two members, one slidable upon the other, each carrying a projecting arm, a flexible member connecting the same and constructed to be attached to said arms and bear against adjacent teeth, means for forcing apart said arms and tensioning said connecting member, and means for maintaining the members against rotation, substantially as described.

3. A dental matrix, retainer and aliner, comprising two members, one slidable within the other, a flexible member, each slidable member carrying a tapered arm slotted along its longitudinal axis to present points of attachment for the flexible member, and means for tensioning said flexible member, substantially as described.

4. A combined dental matrix, retainer and aliner, comprising two members, each carrying a projecting arm and having a slot in its base portion, the slots being constructed to receive a retaining member to hold the members in adjustable operative position, a flexible member connecting said arms and constructed to be attached thereto, and means for tensioning said connecting member, substantially as described.

5. A combined dental matrix, retainer and aliner, comprising two members, one slidable upon the other, each carrying a projecting arm, and one of the members carrying a pin registering and sliding in a slot in the other member, a flexible member connecting said slidable members and constructed to be attached to the arms thereof, and means for tensioning said connecting member, substantially as described.

6. A combined dental matrix, retainer and aliner, comprising two members, one slidable upon the other, each carrying a projecting arm and each having a slot in its base portion, a flexible member connecting said arms, and a member arranged to tension said connecting member, substantially as described.

7. A combined dental matrix, retainer and aliner, comprising two members, each carrying a projecting arm and having a slot in its base portion, a flexible member connecting said arms constructed to be attached thereto, a screw-threaded member constructed to tension said connecting member, means for actuating the same, and a retaining member operating to hold the parts in adjustable operative position, substantially as described.

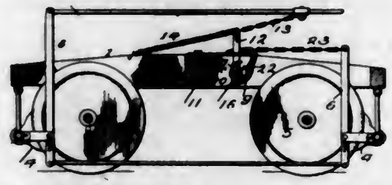
8. A combined dental matrix, retainer and aliner, comprising two members each carrying a projecting arm and each having a slot in its base portion, a flexible member connecting said arms, constructed to be attached thereto, a screw-threaded member arranged to tension said connecting member, means for actuating said screw-threaded member, and a pin held at any point in the slot in said base portion constructed to hold the parts in adjustable operative position, substantially as described.



9. A combined dental matrix, retainer and aliner, comprising two members each carrying a tapered projecting arm, slotted along its longitudinal axis to receive a connecting member and each having in its base portion a slot constructed to receive a retaining member, a flexible member connecting said arms and constructed with one edge thereof longer than the other, with a portion of the bearing-face thereof crimped and adapted to approximate the contour of a tooth, and provided with loops on the ends thereof and adapted readily to be attached to and removed from the said arms, a screw-threaded member arranged to tension said connecting member, means for actuating said screw-threaded member, and a pin constructed to retain the parts in adjustable operative position, substantially as described.

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758,423. **SLACK-ADJUSTER FOR CAR-BRAKES.** EDWARD E. CROWELL, Waterville, Me., assignor of one-half to J. H. Kelleher, Portland, Me. Filed Aug. 20, 1903. Serial No. 170,198. (No model.)



*Claim.*—1. In slack-adjusting mechanism, the combination with brake-beams and brake-levers carried thereby, a take-up lever operable by the brake-setting means, means for holding the take-up lever in an ascertained position, a ratchet-wheel disposed adjacent the take-up lever for actuation thereby, a compensating pulley connected to one of the brake-levers, and a pinion adapted for actuation by the take-up lever for causing rotation of the compensating pulley, and means for preventing backward rotation of the compensating pulley.

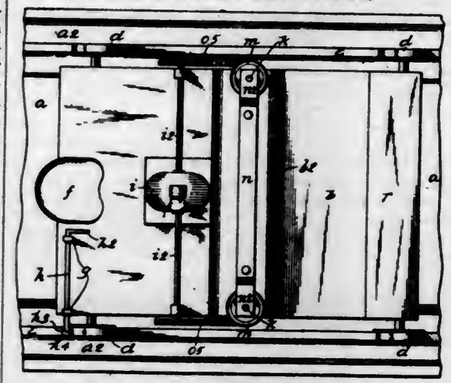
2. In slack-adjusting mechanism, the combination with brake-beams and brake-levers carried thereby, an operating-bar connected to one of the aforesaid brake-levers for actuation thereof to set the brakes, a take-up lever connected to the operating-bar for actuation under abnormal conditions, spring means for holding the take-up lever in a normal position, a ratchet-wheel disposed adjacent the take-up lever for actuation thereby, a toothed compensating pulley connected to one of the brake-levers and adapted to take up slack in the connections, a pinion rotatable by the ratchet-wheels under actuation of the take-up lever and disposed in meshing relation with the compensating pulley so as to cause revolution of the latter, and means for preventing backward movement of the compensating pulley.

3. In slack-adjusting mechanism, the combination with brake-beams and brake-levers carried thereby, an operating-bar, a take-up lever connected to the operating-bar for actuation under abnormal conditions, spring means for holding the take-up lever in an ascertained position, a shaft constituting the pivot means for the take-up lever, a ratchet-wheel mounted upon the said shaft for actuation by the take-up lever to cause revolution of the shaft, a toothed pinion keyed to the shaft, a compensating pulley disposed adjacent the aforesaid pinion and provided with teeth in meshing relation with the said pinion, connecting means between the said compensating pulley and one of the brake-levers, whereby actuation of the take-up lever will cause rotation of the compensating pulley and thereby taking up any slack in the connecting means aforesaid.

4. In a slack-adjusting mechanism, the combination with brake-beams and brake-levers thereon, an operating-bar, a bracket, a shaft mounted in said bracket, a take-up lever pivoted to the said shaft, a ratchet-wheel mounted upon the shaft aforesaid for actuation by the take-up lever to rotate the shaft, a toothed pinion keyed to the shaft, a compensating pulley mounted upon the bracket and provided with an annular recess upon one side thereof, the outermost portions being toothed so as to mesh with the teeth upon the pinion, connecting means between the compensating pulley and one of the brake-levers, secondary connecting means between the take-up lever and the operating-bar of the brake mechanism for actuation of the take-up lever under abnormal conditions, a spring for holding the take-up lever in an ascertained position and a pawl disposed upon the bracket and adapted to engage the ratchet-wheel to prevent backward rotation thereof.

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758,424. **MACHINE FOR USE IN CONSTRUCTING AND REPAIRING BOWLING-ALLEYS.** JOSEPH F. DARRELL, New York, N. Y. Filed Apr. 11, 1903. Serial No. 152,206. (No model.)



*Claim.*—The herein-described apparatus for use in constructing and repairing bowling-alleys, consisting of a truck-frame provided at its opposite ends with axles having wheels adapted to travel on tracks or ways placed in the gutters, said frame being also provided with a central transverse raised portion, vertical tubular bearings mounted in said raised portion, adjustable supports mounted in said bearings transversely of the truck-frame, a planer mounted in said supports, and a motor mounted on the truck-frame and geared in connection with the planer, substantially as shown and described.

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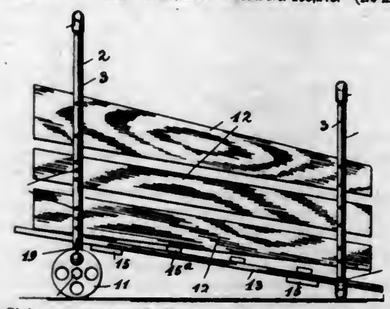
758,425. **CHECK-PUNCH.** THOMAS K. DAVISON, Jamestown, N. Y. Filed Sept. 9, 1903. Serial No. 172,497. (No model.)



*Claim.*—A check-punch comprising a lower die member, an upper die member, consisting of resilient radial arms, a spacing-washer arranged between the die members and forming a guide against which the edge of a check is to be placed, a plate on the upper die member and bearing upon the resilient arms, and means for securing the several members together.

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758,426. **STOCK-LOADING DEVICE.** WILLIAM DAWSON, Union county, S. D. Filed Dec. 15, 1903. Serial No. 185,273. (No model.)



*Claim.*—1. A portable live-stock chute, comprising two end frames composed of pipe-sections and couplings, the lower cross-piece of one of said end frames having oscillatory movement, side bars connecting said end frames, a swinging gangway pivotally mounted upon said oscillatory cross-piece, and a transverse rod adjustably mounted in the other of said end frames for supporting said gangway.

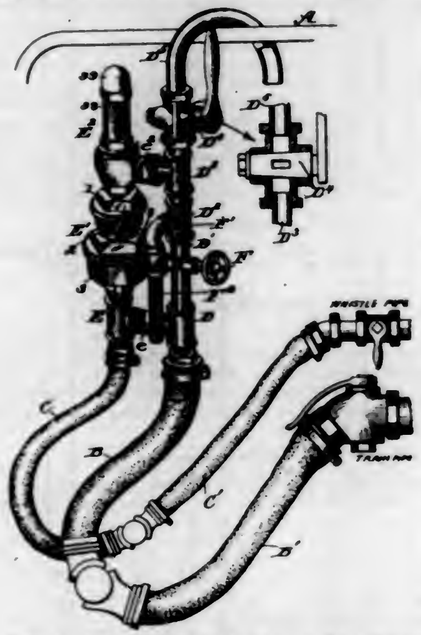
2. A portable live-stock chute, comprising end frames composed of pipe-sections, each frame comprising vertical side pipe-sections, an upper horizontal top pipe-section connecting the upper ends of said side pipe-sections, a bottom horizontal pipe-section connecting the lower ends of the side pipe-sections, the bottom pipe-section of one end frame having oscillatory movement, T-shaped couplings con-

necting the ends of the bottom pipe-section of the other end frame to the lower ends of the vertical side pipe-sections of said frame, stub-axles fitted upon said couplings, supporting-wheels mounted upon said stub-axles, side rails connecting the side pipe-sections of the frames, a rod or bar vertically adjustable upon the wheel-supported end frame above said T-couplings, and a swinging gangway connected at one end to said oscillatory bottom pipe-section of one frame and adapted to rest at its opposite end upon said adjustable rod or bar, substantially as described.

3. In a device of the class described, a frame member composed of vertical side pipe-sections suitably connected at their upper ends, T-couplings upon the lower ends of said pipe-sections, said couplings having the sockets of their cross-piece respectively inwardly and outwardly directed, a bottom transverse pipe-section fitted in the inwardly-directed sockets of the couplings, stub-axles fitted in the outwardly-directed sockets of the couplings, and supporting-wheels upon said axles, substantially as described.

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758,427. **TRAIN-PIPE-TESTING DEVICE FOR AIR-BRAKES.** WILLIAM S. DE CAMP, Chillicothe, Ohio. Filed Jan. 19, 1904. Serial No. 189,682. (No model.)




*Claim.*—1. A testing device for an air-brake and signal system, consisting of a valve mechanism constructed to connect the air-brake pipe and whistle-pipe at their rear ends, by which the signal-whistle is operated through the air-brake pipe when both are in operative condition, and a rear signal-whistle located in that portion of the device directly connecting with the air-brake pipe to signal danger in backing up the train substantially as described.

2. A testing device for an air-brake and signal system, consisting of a valve mechanism constructed to connect the air-brake pipe and whistle-pipe at their rear ends, by which the signal-whistle is operated through the air-brake pipe when both are in operative condition, the connection for the air-brake pipe being extended in the form of a hooked pipe provided with a releasing-valve for applying the brakes, said hooked pipe subserving the double function of a discharge for the air and means for hanging up the testing device substantially as described.

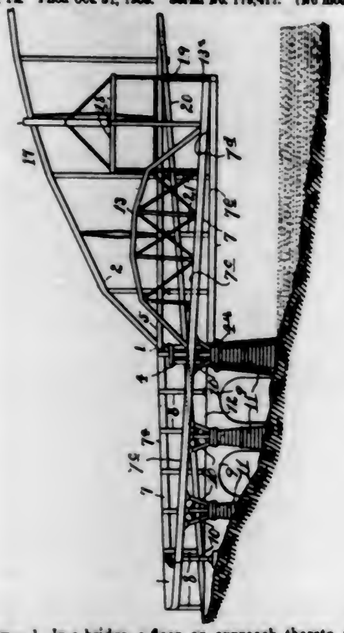
3. A testing device for an air-brake and signal system, consisting of a valve mechanism connecting the air-brake pipe and whistle-pipe at their rear ends, said valve mechanism comprising a pressure-valve to be operated by an increased pressure and a pneumatically-operated discharge-valve for the whistle-pipe substantially as shown and described.

4. A testing device for an air-brake and signal system, consisting of a valve mechanism connecting the air-brake pipe and whistle-pipe at their rear ends, by which the signal-whistle is operated through the air-brake pipe when both are in operative condition, said valve mechanism comprising a pressure-valve to be operated by an increased pressure and a pneumatically-operated discharge-valve for the whistle-pipe, said discharge-valve being arranged to sound the whistle twice, once in applying the pressure and once again in releasing pressure substantially as described.

5. In a testing device of the kind described, the combination with a pressure-valve arranged to open as described and a pneumatically-operated discharge-valve comprising a casing with outlet-vents and a bottom with a hole through it, a spring-held piston with attached valve-stem and valve, said valve-stem having a passage-way for air to transmit air to the discharge-vents when the valve opens substantially as described.

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758,428. **BRIDGE CONSTRUCTION.** WALTER R. DIEHL, Pittsburg, Pa. Filed Oct. 31, 1903. Serial No. 179,417. (No model.)



*Claim.*—1. In a bridge, a floor, an approach thereto, said approach being composed of reverse planes, said planes being vertically at oblique angles to the floor of said bridge.

2. In a bridge, the floor-level of which is above the adjacent shore, a main deck extending across the bridge, an auxiliary deck supported either entirely or in part from the bridge proper and communicating with the shore and a system of planes connecting said decks.

3. In a bridge, the floor-level of which is above the adjacent shore, a main deck extending across the bridge, an auxiliary deck supported beneath said main deck either entirely or in part from the bridge proper and communicating with the shore, a system of substantially straight planes connecting said decks together and cross connections between said planes.

4. In a bridge, a main deck above the level of the adjacent shore and extending across the bridge, an auxiliary deck supported entirely or in part from said bridge under said main deck and communicating with the adjacent shore and systems of reversing planes leading from said main deck to said auxiliary deck, the river ends of said planes being supported over the water substantially as and for the purpose described.

5. In a bridge, a main deck above the level of the adjacent shore and extending across the bridge, an auxiliary deck located under said main deck and supported entirely or in part from said bridge and a system of planes leading from said main deck to said auxiliary deck and supported at its river end from the bridge, substantially as and for the purpose described.



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758,429. **SAWMILL SET-WORKS.** WALTER R. DILLARD, Petersburg, Va. Filed Aug. 31, 1903. Serial No. 171,436. (No model.)



*Claim.*—1. The combination in sawmill set-works, of a set-beam, a set-shaft, a ratchet-wheel mounted on the set-shaft, a pawl to control the movement of said ratchet-wheel, a member disposed transversely of the set-beam and adapted for a limited longitudinal movement independent of the set-beam, means for imparting longitudinal movement to said member, and mechanism operated by said member during its movement independent of the set-beam to disengage the pawl from the ratchet-wheel.

2. The combination in sawmill set-works, of a set-beam, a set-shaft, a ratchet-wheel mounted on the set-shaft, pawls to control the movement of said ratchet-wheel, a rack-bar arranged transversely of the set-beam and adapted for a limited movement independent of the set-beam, a pinion engaging said rack-bar, means for imparting rotation to said pinion, and mechanism operated by the rack-bar before movement is imparted to the set-beam to disengage the pawls and ratchet-wheel.

3. The combination in sawmill set-works, of a set-beam, a set-shaft, a ratchet-wheel mounted on said shaft, pawls to control the movement of said ratchet-wheel, a rack-bar arranged transversely of said set-beam for a slight movement independent of the set-beam, a pinion engaging said bar, means for rotating said pinion, a rock-shaft, connections between said bar and said shaft whereby the independent movement of the bar will rock the shaft, and means provided on the rock-shaft for disengaging the pawls from the ratchet-wheel.

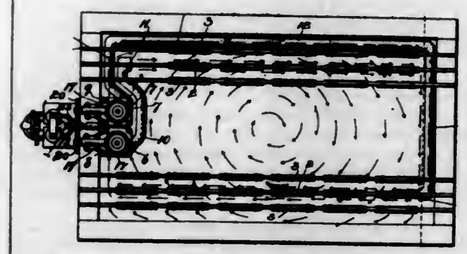
4. The combination with the carriage of a sawmill for sawing light timber of set-works mounted on the carriage, set-works-operating mechanism also mounted on the carriage and comprising a friction-disk supported beneath the carriage, a shiftable member supported on the sawmill-frame beneath the carriage and in front of said disk, and a foot-rig for pushing said shiftable member into contact with said disk.

5. A foot-rig for actuating set-works in sawmills for sawing light timber comprising a pivoted foot-lever, a pusher-rod pivotally connected with said lever, a spring to keep said pusher-rod normally in inoperative position, and a member arranged longitudinally of the sawmill beneath the sawmill-carriage in front of the mechanism for operating the set-works and adapted to be pressed into frictional contact with the mechanism for operating the set-works to impart movement thereto when the foot-lever is depressed.

6. The combination with the carriage of a sawmill for sawing light timber, of sawmill set-works mounted on the carriage, operating mechanism for the set-works also mounted on the carriage and comprising a friction-disk supported beneath the carriage, a pair of lapped bars pivotally connected and arranged on the sawmill-frame beneath the carriage in front of said disk, a pivoted foot-lever and a pusher-rod held normally in retracted position by means of a spring and pivotally connected to one of said bars and to said foot-lever.

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758,430. **APPARATUS FOR CIRCULATING LIQUIDS IN TANKS.** GEORGE R. DUNTON, New York, N. Y. Filed Sept. 15, 1903. Serial No. 173,273. (No model.)



*Claim.*—1. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a receptacle provided with means for producing a circulation of liquids around said receptacle in a substantially horizontal plane, and from the top downward, substantially as described.

2. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a receptacle provided with pipes connected with suitable pumps, said pipes provided with nozzles designed to discharge liquid lengthwise of the said receptacle, substantially as described.

3. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with a suction device, having pipes provided with nozzles, one of said nozzles being diagonally disposed in relation to the other, substantially as described.

4. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with pipes connected to a suitable pump, one of said pipes provided with a nozzle arranged to discharge liquid on one side lengthwise of the tank and the other pipe provided with a nozzle arranged to discharge liquid on the opposite side and lengthwise of the tank, substantially as described.

5. An apparatus for producing continual and definite agitation and circulation of liquids comprising a tank provided with a suction device, having pipes each provided with a nozzle, said nozzles arranged at different points at the top of the tank just below the level of the liquid therein, adapted to discharge liquid lengthwise of the said tank, one of said nozzles designed to accelerate the movement of the liquid produced by the other nozzle substantially as described.

6. An apparatus for producing continual and definite agitation and circulation of liquids comprising a tank, anodes and cathodes therein arranged lengthwise thereof, a pump provided with pipes having nozzles, one of said nozzles designed to discharge liquid at one end of the tank lengthwise of said anodes and cathodes and the other to discharge liquid at the opposite end of the tank lengthwise of said anodes and cathodes, substantially as described.

7. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a receptacle provided with pipes at the top thereof each connected to a suitable pump and each provided with a nozzle, said nozzles being located at different points in said receptacle and designed to discharge liquid in a substantially horizontal plane along the walls and toward the middle of said receptacle, substantially as described.

8. An apparatus for producing continual and definite agitation and circulation of the liquids composing an electrolytic bath, comprising a tank, pumps at the top of the tank having pipes and discharge-nozzles in the same horizontal plane, and one of said nozzles arranged in advance of and accelerating the movement of the liquid produced by the other nozzle, substantially as described.

9. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with a suction device at the upper portion thereof having pipes provided with nozzles arranged to discharge liquid in a substantially horizontal plane entirely around and just below the level of the liquid in said tank, substantially as described.

10. An apparatus for producing continual and definite agitation

and circulation of the liquids composing an electrolytic bath, comprising a tank, a centrifugal pump having a suction-pipe, a casing at the upper end of said suction-pipe having outlet-pipes leading therefrom to different points near the top of the tank, one of said outlet-pipes arranged in advance of the other for the purpose of accelerating the movement of the liquid in said tank, a turbine-wheel located in said casing, a shaft upon which the turbine-wheel is journaled, a gear-wheel on the upper end of said shaft, a gear-wheel on a horizontal shaft meshing therewith, and means for imparting motion to said horizontal shaft, substantially as described.

11. An apparatus for producing continual and definite agitation and circulation of liquids comprising a tank provided with a suction device at the upper portion thereof having pipes provided with nozzles, one of said nozzles being diagonally disposed in relation to the other, substantially as described.

12. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with a suction device at the upper portion thereof having pipes each provided with a nozzle, one of said nozzles arranged in advance of and designed to accelerate the movement of the liquid produced by the other nozzle, substantially as described.

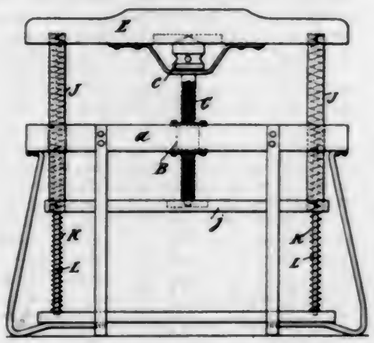
13. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a receptacle with a suction device at the upper portion thereof, pipes connected to said suction device provided with nozzles, said nozzles being located at different points in said receptacle, and one of said nozzles designed to accelerate the movement of the liquid produced by the other nozzle, substantially as described.

14. An apparatus for producing continual and definite agitation and circulation of liquids comprising a receptacle provided with a suction device provided with pipes, one of said pipes extending along the side and one end of said receptacle and provided with a nozzle designed to discharge liquid lengthwise thereof, and the other pipe extending along the opposite end of said receptacle and provided with a nozzle designed to discharge liquid lengthwise of said receptacle, one of said nozzles designed to accelerate the movement of liquid produced by the other nozzle, substantially as described.

15. An apparatus for producing continual and definite agitation and circulation of liquids comprising a receptacle provided with nozzles extending in substantially parallel directions and connected with suitable pumps, said nozzles designed to discharge liquid into said receptacle, substantially as described.

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**758,431. TRESTLE SCREW-JACK. HENRI BOBLINE, Paris, France. Filed Apr. 7, 1903. Serial No. 151,469. (No model.)**



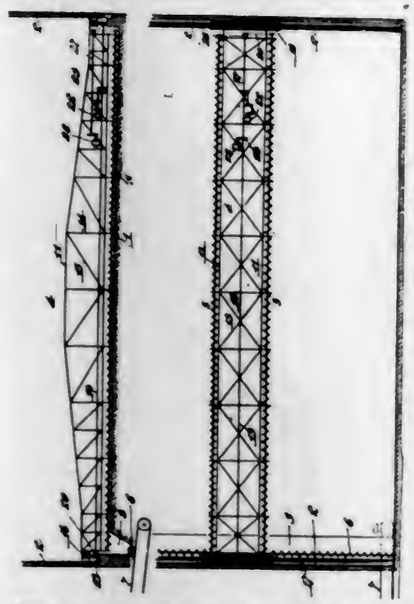
*Claim.*—1. A trestle screw-jack, comprising a trestle, screws mounted at both ends of the trestle, nuts for the screws, a support carried by each screw which can turn independently of said support, and a cross-bar mounted in said support, substantially as described.

2. A trestle screw-jack, comprising a trestle, screws mounted at both ends, nuts for the screws, a forked support rotatably mounted in the top of each screw and a cross-bar in the forked supports, substantially as described.

3. A trestle screw-jack, comprising a trestle, a cross-bar, screw-and-nut means for raising the bar from the trestle, and springs between the trestle and bar adapted to be compressed upon the lowering of the bar, substantially as described.

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**758,432. STOCK-HOUSE CONVEYER. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Jan. 9, 1903. Serial No. 138,429. (No model.)**



*Claim.*—1. Apparatus for removing material in bulk from stock-houses, having substantially flat bottoms, comprising in combination a pair of bodily-movable main conveyers feeding in the same direction and extending parallel with and closely adjacent to the bottom, so as to directly move the material thereon, and an auxiliary conveyer for receiving material from the main conveyers, substantially as and for the purposes set forth.

2. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a pair of main conveyers feeding in the same direction and extending parallel with and closely adjacent to the bottom, so as to directly move the material thereon, means for moving the main conveyer longitudinally of the stock-house, and an auxiliary conveyer extending longitudinally of the stock-house for receiving material from the main conveyers, substantially as and for the purposes set forth.

3. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bodily-movable bridge braced against vertical strains, a main conveyer carried by the bridge and engaging material on said bottoms, and an auxiliary conveyer receiving material removed by the main conveyer, substantially as and for the purposes set forth.

4. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge braced against vertical strains, means for moving the bridge longitudinally of the stock-house, a main conveyer carried by the bridge and engaging material on said bottoms, and an auxiliary conveyer extending longitudinally of the stock-house for receiving material removed by the main conveyer, substantially as and for the purposes set forth.

5. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge, means for moving the bridge longitudinally of the stock-house, a pair of main conveyers carried by the bridge, feeding in the same direction and extending parallel with and closely adjacent to the bottom to directly move the material thereon, and an auxiliary conveyer extending longitudinally of the stock-house, for receiving material removed by the main conveyers, substantially as and for the purposes set forth.

6. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge braced against vertical strains, a motor for bodily adjusting the same, a main conveyer carried by the bridge and engaging material on said bottoms, a separate motor carried by the bridge for operating the main conveyer, and an auxiliary conveyer receiving material removed by the main conveyer, substantially as and for the purposes set forth.

7. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge, an electric motor carried by the bridge for bodily adjusting the same longitudinally of the stock-house, a main conveyer carried by the bridge, and engaging material on said bottoms, an independent motor carried by the bridge for operating the main conveyer, and an auxiliary conveyer extending longitudinally of the stock-house for receiving material removed by the main conveyer, substantially as and for the purposes set forth.

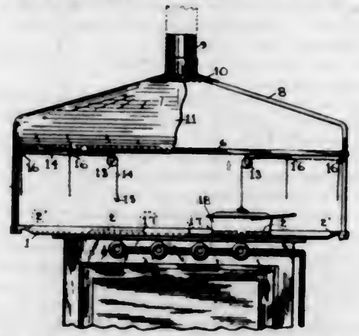
8. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge braced against vertical strains, a main conveyer carried by the bridge, means for adjusting the bridge longitudinally of the stock-house, and an auxiliary conveyer mounted in a pit extending longitudinally at the side of the stock-house and receiving material removed by the main conveyer, substantially as and for the purposes set forth.

9. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge, a main conveyer carried by the bridge, two independent motors carried by the bridge for adjusting the same longitudinally of the stock-house and for operating the main conveyer respectively, and an auxiliary conveyer mounted in a pit at the side of the stock-house for receiving material removed by the main conveyer, substantially as and for the purposes set forth.

10. Apparatus for removing material in bulk from stock-houses having substantially flat bottoms, comprising in combination a bridge, a pair of main conveyers carried by the bridge, independent motors carried by the bridge for adjusting the bridge longitudinally of the stock-house and for operating the main conveyers respectively, and an auxiliary conveyer mounted in a pit at the side of the stock-house for receiving material removed by the main conveyers, substantially as and for the purposes set forth.

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**758,433. GAS-STOVE. EDWARD FLANNIGAIN, St. Louis, Mo., assignor of one-half to Charles T. Noland, St. Louis, Mo. Filed Nov. 23, 1903. Serial No. 182,433. (No model.)**



*Claim.*—1. The improvement in gas-stoves, consisting of a plate flanged about its outer edges, and provided with circular flanged openings corresponding with the burners of the stove, vertical pipe-sections mounted at the corners of the plate, a frame provided with transverse bars and mounted upon the tops of the pipe-sections, a flue-pipe, and other pipe-sections extending from the top of the frame to the base of the flue-pipe, substantially as described.

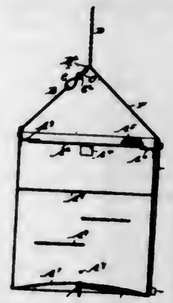
2. The improvement in gas-stoves, consisting of a plate flanged about its outer edges, and provided with circular flanged openings corresponding with the burners of the stove, vertical pipe-sections mounted at the corners of the plate, a frame provided with transverse bars and mounted upon the tops of the pipe-sections, a flue-pipe, other pipe-sections extending from the top of the frame to the base of the flue-pipe, pulleys mounted upon the transverse bars, chains adapted to extend over the pulleys to the outer side of the frame, and hooks mounted upon the inner ends of the chains, substantially as described.

3. The improvement in gas-stoves, consisting of a plate flanged about its outer edges and provided with circular flanged openings corresponding with the burners of the stove, a hood mounted above said plate, a flue leading from said hood, transverse bars carried by said hood, pulleys mounted upon said bars, chains running over said pulleys, said chains being adapted to connect with the covers of the cooking utensils, substantially as described.

4. The improvement in gas-stoves, consisting of a plate flanged about its outer edges and provided with circular flanged openings corresponding with the burners of the stove, vertical sections mounted at the corners of the plate, a frame provided with transverse bars mounted upon the tops of the corner-sections, a flue-pipe exteading upwardly from said frame, pulleys mounted upon the transverse bars, chains running over said pulleys, cooking-receptacles mounted over the burners, flanges depending from said receptacles around the upturned flanges of said plate, and covers for said cooking-receptacles, said covers being attached to the chains, substantially as described.

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**758,434. CHUM-DELIVERING APPARATUS. FERDINAND E. FORSTER, New York, N. Y. Filed Nov. 18, 1903. Serial No. 181,587. (No model.)**



*Claim.*—1. In an apparatus of the character set forth, a receptacle, a suspension connection attached thereto and arranged to maintain said receptacle temporarily in an upright position, and separable means between said receptacle and connection whereby a sudden lifting movement of said connection reverses said receptacle.

2. In an apparatus of the character set forth, a receptacle, a suspension connection attached to the bottom of said receptacle and extending loosely up one side thereof, separable means between the upper portion of said receptacle and said connection above said receptacle, for holding the latter temporarily upright, whereby a sudden lifting movement of said connection separates said means and permits the reversal of said receptacle.

3. In an apparatus of the character set forth, a receptacle, a suspension connection attached to the bottom of said receptacle and extending loosely up one side thereof, separable means between the upper portion of said receptacle and said connection above said receptacle, for holding the latter temporarily upright whereby a sudden lifting movement of said connection separates said means and permits the reversal of said receptacle, and a weighted cover hinged to said receptacle and arranged to lie in the closed position by gravity when said receptacle is in the upright position, and to open by gravity when said receptacle is reversed.

4. In an apparatus of the character set forth, a receptacle, a suspension connection therefor, a spring-loop attached to said connection, a hook secured to the upper portion of said receptacle, and adapted to engage said loop, a cord forming a continuation of said connection and extending therefrom to the lower portion of said receptacle, the said cord serving to maintain the receptacle in an upright position when said hook and loop are engaged and said cord serving to reverse said receptacle when such engagement is broken by a sudden lifting movement of said suspension connection.

5. In an apparatus of the character set forth, a receptacle, a suspension connection attached thereto and arranged to maintain said receptacle temporarily in an upright position, separable means between said receptacle and connection whereby a sudden lifting movement of said connection reverses said receptacle, and a weight suspended from the lower portion of said receptacle serving to aid in its submergence and as ballast therefor.

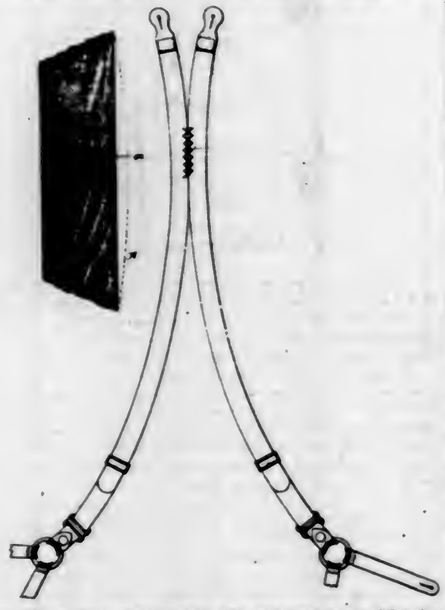
6. A receptacle having a perforated bottom, a cover smaller than the open top of said receptacle and partially closing it when said receptacle is in an upright position, a weight secured to said cover and serving by gravity to hold it in the closed condition when said receptacle is upright and to hold it in an open condition when said receptacle is reversed, and means for submerging said receptacle and reversing it while submerged.

7. A receptacle having a perforated bottom, a cover partially closing the open top of said receptacle and arranged to be held in the closed condition by gravity when said receptacle is in the upright position, and in the open condition when said receptacle is reversed, bars extending transversely of the interior of said receptacle for preventing the sudden escape of the contents when reversed, and means for submerging said receptacle and reversing it while submerged.

8. In an apparatus of the character set forth, a receptacle, a suspension-chain attached thereto and arranged to maintain said receptacle temporarily in an upright position when submerged, separable means between said receptacle and chain whereby a sudden lifting movement of said chain reverses said receptacle, and distinctive links at intervals in said chain to aid in determining the depth at which said receptacle is submerged.

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**758,435. ELASTIC FABRIC.** HENRY J. GAISMAN, New York, N. Y. Filed Nov. 2, 1901. Serial No. 80,838. (No model.)



*Claim.*—1. As a new article of manufacture, a curved flat elastic fabric of greater length than width, having elastic strands extending longitudinally thereof substantially side by side, an elastic strand on one side of the median line of the fabric serving to impart the curve to the fabric, substantially as described.

2. As a new article of manufacture a curved flat elastic fabric of greater length than width having elastic strands extending longitudinally thereof substantially side by side, elastic strands on one side of the median line of the fabric serving to impart the curve to the fabric, substantially as described.

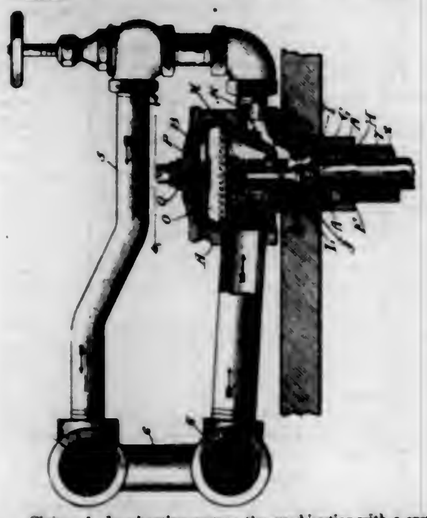
3. As a new article of manufacture, a curved flat elastic fabric of greater length than width having elastic strands extending longitudinally substantially on the same plane, elastic strands on one side of the median line of the fabric being under greater tension and thus pulling with greater force than a strand on the opposite side of said line, substantially as described.

4. As a new article of manufacture, an elastic strip having substantially plane faces on opposite sides, and of greater length than width, and provided with elastic strands extending longitudinally of the strip side by side on substantially the same plane transversely of the strip, a strand having a greater cross-section than another, to cause the strip to assume a curved form between its ends, substantially as described.

5. As a new article of manufacture, an elastic strip having substantially plane faces on opposite sides, and of greater length than width, and provided with elastic strands extending longitudinally of the strip side by side on substantially the same plane transversely of the strip, a strand on one side of the median line of the strip having greater cross-section than a strand on the opposite side of said line, the intermediate strands having less cross-section than the first-mentioned strand, substantially as described.

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**758,436. LOW-PRESSURE HEATING SYSTEM.** ROBERT H. GOLD, Shelby, Ind. Filed Aug. 24, 1903. Serial No. 170,639. (No model.)



*Claim.*—1. In a heating system, the combination with a system of radiating-pipes open at one end to the atmosphere, of means for supplying a heating medium thereto, and means located within a compartment communicating with the radiating-pipes for controlling the supply of said heating medium to the radiating system, said means being actuated by the temperature of the heating medium within the radiating-pipes.

2. In a heating system, the combination with a radiating system open at one end to the atmosphere, of means for supplying a heating medium thereto, and thermostatic means located beyond the radiating system and within the compartment communicating with the radiating system for controlling such supply.

3. In a car-heating system, the combination with a radiating system open at one end to the atmosphere located within a car, of a feed-pipe for supplying a heating medium to said system, a discharge-pipe for the discharge of water of condensation, said discharge-pipe connecting with the radiating system and surrounding the feed-pipe, and means for controlling the feed of the heating medium from the feed-pipe to the radiating system, said means comprising a valve and a valve-operating device actuated by the temperature of the heating medium at a given point within the radiating system.

4. In a car-heating system open at one end to the atmosphere, the combination with a train-pipe, of a feed-pipe leading from the train-pipe, a radiating system connected with said feed-pipe, a drip-pipe leading from the radiating system and surrounding the feed-pipe, and means for controlling the feed of the heating medium from the feed-pipe to the radiating system, said means comprising a valve and a thermostatic valve-actuating device exposed within the radiating system.

5. The combination with a heating-circuit comprising a radiator and means for supplying a heating medium thereto, of means for controlling the admission of the heating medium to said circuit, and thermostatic means located within a chamber in said circuit, and at a point beyond the radiator, arranged to automatically operate said controlling means, said chamber being in open communication with the atmosphere.

6. The combination with a heating-circuit open at one end to the atmosphere comprising a radiator and means for supplying a heating medium thereto, of means for controlling the admission of said heating medium to said radiator, and a thermostatic device located within a chamber in said circuit at a point beyond the radiator and arranged to automatically operate said controlling means.



7. The combination with a radiator open at one end to the atmosphere, of a casing provided with a chamber communicating with the supply end of said radiator and also provided with a chamber communicating with the discharge end of said radiator, of means for closing direct communication between said chambers, a thermostatic device located in said last-named chamber, a valve located in said first-named chamber and arranged to control the flow of a heating medium into said radiator, and a rigid connection between the valve and the thermostatic device, whereby the valve shall be operated by the thermostatic device.

8. In a heating system, the combination with a system of circulating-pipes open to the atmosphere at one end, of means arranged adjacent to the inlet end of said system to control the inflow of a heating medium into said system, and thermostatic means for operating said controlling means, but located within a compartment adjacent to and communicating with the discharge end of said system.

9. In a car-heating system open at one end to the atmosphere, the combination with a car, of a system of radiating-pipes arranged within said car to heat the same, a train-pipe arranged to supply a heating medium to said radiating-pipes, a valve interposed between the train-pipe and the radiating-pipes, a discharge-pipe leading from the radiating-pipes to the atmosphere, and thermostatic valve-operating mechanism located between the radiating-pipes and the free end of the discharge-pipe, and within a compartment communicating with the radiating-pipes, said operating mechanism being adapted to be actuated by the condition of the heating medium within said compartment, and being arranged to automatically operate said valve.

10. In a car-heating system, the combination with a car, of a radiator located within the car, a train-pipe arranged to supply steam to the radiator, a valve interposed between the train-pipe and radiator to control the flow of steam into the radiator, a fluid-conduit leading from the radiator and open to the atmosphere, and a thermostatic device located within said conduit and connected with said valve.

11. In a heating system, an automatic controlling device comprising a casing provided with an inlet-chamber, said inlet-chamber being provided with ports adapted to be connected with a source of supply and with a radiating system in open communication with the atmosphere, said casing being also provided with an outlet-chamber, said outlet-chamber being provided with ports adapted to connect with the discharge end of a radiating system and with the atmosphere, respectively, a valve mounted within said inlet-chamber and arranged to control the flow of a heating medium therethrough, a thermostatic device mounted within said outlet-chamber, connections between said thermostatic device and said valve, whereby said valve will be automatically operated by said thermostatic device, and means for preventing the flow of the heating medium directly from the inlet-chamber to the outlet-chamber.

12. In a device of the class described, the combination with a radiator opening to the atmosphere and with a source of supply, of a casing which is interposed between the radiator and the source of supply and is also interposed between the radiator and its outlet to the atmosphere, said casing being provided with an inlet-chamber connecting with the source of supply and with the inlet end of the radiator, and with an outlet-chamber connecting with the discharge end of the radiator and with the atmosphere, of a valve mounted within the inlet-chamber so as to control the flow of the heating medium therethrough, a thermostatically-operating device mounted within the outlet-chamber and arranged to operate said valve, and means for preventing the flow of a heating medium directly from the inlet-chamber to the outlet-chamber, said means comprising a collar mounted upon the stem of said valve, and a packing-washer also mounted upon the stem of said valve, between said collar and that wall of the inlet-chamber through which the valve-stem passes, all so arranged that the opening of said valve will tightly clamp said washer between said collar and said wall of the inlet-chamber.

13. In a heating system open at one end to the atmosphere, the combination with a radiator, of means for supplying a heating medium thereto, and means for controlling such supply, said controlling means being actuated by thermostatic conditions within said system at a location adjacent to, and in free communication with, the outer atmosphere.

14. In a car-heating system, the combination with a car, of a radiator located within said car and discharging to the outer atmosphere, of a train-pipe containing steam at high pressure and arranged to supply steam to said radiator, valve mechanism interposed between the train-pipe and the radiator to control the flow of steam from the train-pipe to the radiator, and a controlling device inclosed within said system and connected with said valve mechanism so as to automatically operate the same, said controlling device being adapted to be operated by thermostatic conditions within said system at a location adjacent to, and in free communication with, the outer atmosphere.

15. In an apparatus of the class described, the combination with a supply-pipe adapted to contain a heating medium at high pressure, of a radiating system open at one end to the atmosphere, a feed-valve arranged to control the flow of the high-pressure heating medium into the radiating system, a thermostatic controlling apparatus located within the radiating system adjacent to the open end thereof and operated by thermostatic conditions in the radiating system at said location, and connections, between said controlling apparatus and the feed-valve, whereby the flow of the high-pressure heating medium through the feed-valve is controlled by the automatic action of said controlling apparatus.

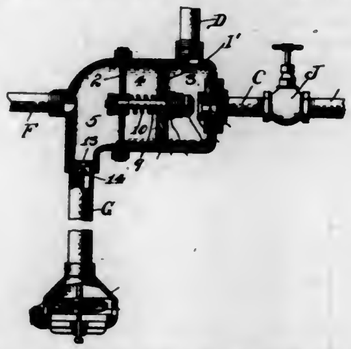
16. The combination with a system of radiating-pipes in free communication with the atmosphere, of a valve for controlling the supply of a heating medium thereto, a thermostat exposed within said system and connections between said thermostat and said valve whereby said valve is operated by said thermostat.

17. The combination with a car of a system of radiating-pipes in free communication with the atmosphere and arranged to heat said car, a train-pipe arranged to supply a heating medium to said system of radiating-pipes, a valve arranged to control the flow of said heating medium from the train-pipe into said radiating-pipes, a thermostat exposed within said system of radiating-pipes and connections between said thermostat and said valve whereby said valve is actuated by the operation of said thermostat.

18. The combination with a train of cars, of a train-pipe, means for supplying a heating medium at high pressure to said train-pipe, an independent system of radiating-pipes in free communication with the atmosphere located in each car, a valve connected with each of said radiating systems, and arranged to control the flow of the heating medium from the train-pipe to each of said radiating systems, respectively, a thermostat exposed within each of said radiating systems and connections between each thermostat and its corresponding valve so arranged that each valve is actuated by the operation of its corresponding thermostat.

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**758,437. AUTOMATIC SUPPLY-REGULATOR.** ROBERT H. GOLD, Shelby, Ind. Filed Jan. 26, 1904. Serial No. 190,706. (No model.)

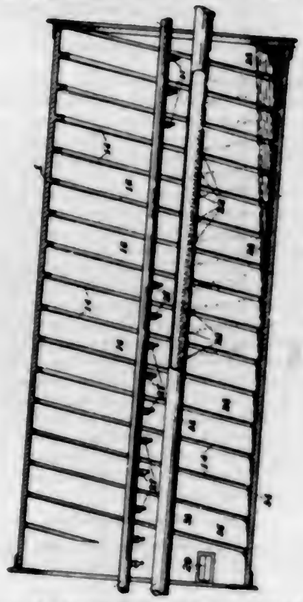



*Claim.*—1. In a heating system, the combination with a system of radiating-pipes leading at one end to the atmosphere, of a valve, arranged at the other or inlet end of the radiating-pipes to control the flow of the heating medium into said pipes, a thermostatic trap arranged to automatically open and close the outlet from the discharge end of the pipes to the atmosphere, and a diaphragm-motor mounted within a chamber communicating with said pipes adjacent to the outlet end thereof, said diaphragm-motor being arranged to automatically operate said inlet-valve.

2. In a heating system, the combination with a system of radiating-pipes communicating at their discharge end with the atmosphere, and provided with an inlet-chamber communicating with their inlet end, of means for supplying a heating medium to said radiating-pipes through said inlet-chamber, a valve mounted in said inlet-chamber and arranged to control the flow of the heating medium there-

through, a thermostatic trap arranged to control the opening from the discharge end of said pipes to the atmosphere, a diaphragm-motor arranged within a chamber communicating with the radiating-pipes adjacent to the discharge end thereof, and connections between said diaphragm-motor and said valve, all so arranged that when actuated by pressure within said circulating system, adjacent to the discharge end thereof, said diaphragm-motor will move said valve in a direction to shut off the flow of the heating medium into the inlet end of said radiating system.

758,438. CONCENTRATOR. LOUIS C. GRAUPNER, San Francisco, Cal. Filed Aug. 20, 1902. Serial No. 120,426. (No model.)

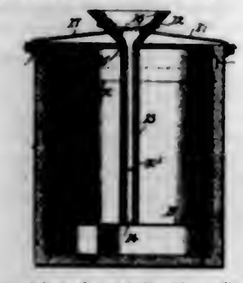


*Claim.*—1. In a mineral-concentrating apparatus, a hollow revoluble cylinder set in a sloping position, shallow helical riffles on the interior surface of said cylinder, gradually diminishing in height throughout the entire length from the lower end to the upper end thereof, an inclined pipe in the cylinder for distributing ore therein, perforated in its lower half, and an inclined pipe passing through the cylinder from the upper to the lower end, for distributing a water-supply therein, having a series of adjustable cocks by which the water-supply can be distributively regulated, substantially as specified.

2. In a mineral-concentrating apparatus, a hollow revoluble cylinder set in a sloping position, a series of continuous shallow helical flanges constituting riffles on the interior surface of the cylinder, gradually diminishing in height from the extreme lower to the upper end of the cylinder, an annular retaining wall or flange at the extreme lower end of the cylinder, higher than the riffles, to form a dam to hold a pool of water in the lower half of the cylinder, an inclined pipe in the cylinder for distributing ore therein, passing from the upper to the lower end, perforated in its lower half over said dam portion, and an inclined pipe passing through the cylinder from the upper to the lower end thereof, for distributing a water-supply therein, having a series of adjustable cocks by which the water-supply can be distributively regulated, substantially as specified.

3. In a mineral-concentrating apparatus, a hollow revoluble cylinder set in a sloping position, a series of continuous shallow helical flanges constituting riffles on the interior surface of the cylinder, gradually diminishing in height from the extreme lower to the upper end of the cylinder, an annular retaining wall or flange at the extreme lower end of the cylinder, higher than the riffles, to form a dam to hold a pool of water in the lower half of the cylinder, of diminishing depth from the retaining-wall upward, an inclined pipe in said cylinder for distributing ore therein, passing from the upper end to the lower end, perforated in its lower half over said dam portion, and an inclined pipe passing through the cylinder from the upper to the lower end thereof, for distributing a water-supply therein, having a series of adjustable cocks by which the water-supply can be distributively regulated, substantially as specified.

758,439. INKSTAND. GEORGE A. GRIGGS, Billings, Mont. Filed Dec. 29, 1903. Serial No. 186,906. (No model.)



*Claim.*—1. An inkstand, consisting of a well open at the top, an ink-receiving chamber mounted to slide in the well and normally extending from about the top thereof to a point short of the bottom thereof, open at its bottom and closed at its top, and a funnel provided with a tubular shank, which tubular shank extends from the top of the said chamber to the bottom thereof, as described.

2. An inkstand, consisting of a well open at the top and closed at the bottom, a reversible ink-chamber mounted to slide in the said well, being removable therefrom and of less depth than the depth of the well, the said chamber being open at the bottom and closed at the top, said top being normally held about the top of the ink-well and a funnel introduced at the top of the said chamber, which funnel is provided with a feed-tube extending from the top to the bottom of the ink-chamber, the bore of the said feed-tube being gradually contracted at its bottom end, as set forth.

3. An inkstand, consisting of a well open at the top and closed at the bottom, a reversible ink-chamber mounted to slide in the said well, being removable therefrom and of less depth than the depth of the well, the said chamber being open at the bottom and closed at the top, a funnel introduced at the top of the said chamber, which funnel is provided with a feed-tube extending from the top to the bottom of the ink-chamber, the bore of the said feed-tube extending from the top to the bottom of the ink-chamber, and being gradually contracted at its bottom end, and a spring having bearing on the funnel and yieldingly supporting the ink-chamber in an approximately constant position, as specified.

4. In an inkstand, a well provided with an annular groove in its inner face near its upper end and exterior lugs extending from opposite sides of the well, which well is closed at its bottom and open at its top, an ink-chamber closed at the top and open at the bottom, being removably mounted to slide in the well, the said ink-chamber being of less depth than the depth of the well and normally held with its top at the top of the well, a funnel located at the upper end of the said ink-chamber, which funnel has an inwardly-curving annular rib at its upper edge, a feed-tube connected with the funnel and extending the length of the said ink-chamber, the bore of the feed-tube being gradually contracted at its lower end, and a spring designed to exert a lifting tendency on the said ink-chamber, the terminals of which spring are fitted for removable engagement with the lugs on the well, as set forth.

758,440. ADJUSTABLE TRUSS. MAURICE O'R. HALLOWELL, Conshohocken, Pa., assignor to J. Ellwood Lee Company, Conshohocken, Pa., a Corporation of Pennsylvania. Filed Nov. 17, 1903. Serial No. 181,396. (No model.)



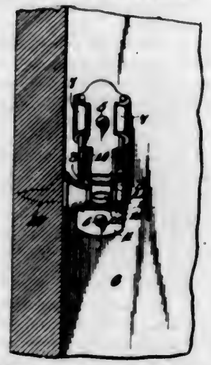
*Claim.*—1. A truss, comprising a spring and a pad, a cover-plate having a plain surface, a plate secured to the under side of said cover-plate having downwardly-projecting lugs at one end and a circular recess, a plate with a similar recess hinged on said lugs, a single screw passing through the cover-plate and taking into the free end of the hinged plate and a rod with a ball at its end fitted into said circular recesses, substantially as described.

2. A truss, having a spring and a pad, a socket secured to the spring and slotted through part of its wall, a bifurcated plug, adapted to fit into said socket, a screw passing through the slit in the socket and threaded into one bifurcation, whereby the bifurcations can be spread apart to clamp the plug in the socket, substantially as described.

3. A truss, comprising a pad, a clamp and a ball-ended rod adapted to be rotated completely within said clamp, in combination with a slotted socket and spring, a bifurcated plug fitting said socket and a screw to expand the plug in the socket, and a pivotal clamp connecting the extremity of the plug and ball-ended rod, substantially as described.



758,441. LATCH. HARRY HARDEN, London, Ohio. Filed Oct. 14, 1903. Serial No. 177,018. (No model.)



*Claim.*—1. A latch comprising a latch-plate provided at opposite sides of its outer face with outwardly-projecting lugs having portions extending inwardly over the plate, a pivotally-mounted engaging member connected with the plate, and a spring bearing against the engaging member and provided with opposite sides located within the lugs of the latch-plate, whereby the spring is removable without detaching the plate, substantially as described.

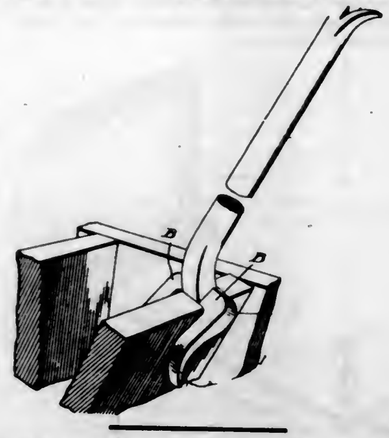
2. A device of the class described comprising a latch-plate provided at opposite sides of its outer face near one end with a pair of projecting lugs having engaging portions extending inward over the plate, the latter being also provided with perforated ears extending from the latch-plate near the opposite end thereof, an engaging member arranged approximately at right angles to the plate and pivoted at one end between the ears and provided between its ends with an engaging portion, and a spring having its sides interlocked with the lugs, whereby it is connected with the latch-plate, said spring being in engagement with the pivoted member, substantially as described.

3. In a device of the class described, a keeper consisting of a screw provided at one end with a head, a tapering circular washer arranged on the screw and provided with a spur for holding it against rotation, and a roller arranged on the screw between the head thereof and the small end of the washer and forming a continuation of the same, substantially as described.

758,442. TOOL FOR REMOVING FLOORS, CEILINGS, SIDINGS, &c. WILLIAM O. HARMON, San Marcos, Tex., assignor of one-half to Alexander H. Quarles, Washington, D. C. Filed Dec. 17, 1903. Serial No. 185,578. (No model.)

*Claim.*—1. A device for removing flooring, siding, &c., consisting of a tool having a forked end, the upper edges of the arms of the forked portions being convexed and their under edges being convexed at their fulcrum-points, whereby when the arms are placed underneath a board and pressure applied to the handle, the fulcrum-point travels backward and a laterally-pulling force may be imparted to the board being loosened, as set forth.

2. A device for loosening boards of flooring, siding, &c., comprising a tool having a forked end, the arms of which are angular and flat upon their upper surfaces adjacent to the angled portions, the upper edges of said arms being convexed adjacent to their free ends and convexed at their fulcrum-points, whereby when said arms are placed underneath a board, and pressure applied to the handle, the fulcrum-point travels backward and a laterally-pulling force may be imparted to the board being loosened, as shown and described.



758,443. ILLUMINATING VAULT-COVER. JOHN T. HARROP, Garfield, N. J. Filed Dec. 8, 1903. Serial No. 184,266. (No model.)



*Claim.*—1. In a vault or similar light, a lens or bull's-eye, which is substantially cylindrical in form and the outer suface of which is provided in the opposite sides thereof with vertically-arranged grooves forming corresponding ribs, and short transverse ribs arranged in horizontal planes and crossing said grooves, said transverse ribs being deeper than said grooves, substantially as shown and described.

2. In a vault or similar light, a lens or bull's-eye, which is substantially cylindrical in form and the outer surface of which is provided in the opposite sides thereof with vertically-arranged grooves forming corresponding ribs, and short transverse ribs arranged in horizontal planes and crossing said grooves, said transverse ribs being deeper than said grooves, and the bottom transverse ribs being flat on their under sides, substantially as shown and described.

3. In a vault or similar light, a lens or bull's-eye, which is substantially cylindrical in form and the outer surface of which is provided in the opposite sides thereof with vertically-arranged grooves forming corresponding ribs, and short transverse ribs arranged in horizontal planes and crossing said grooves, said transverse ribs being deeper than said grooves, and the bottom transverse ribs being flat on their under sides, said lens or bull's-eye being provided in the bottoms thereof with recesses which extend upwardly, substantially as shown and described.

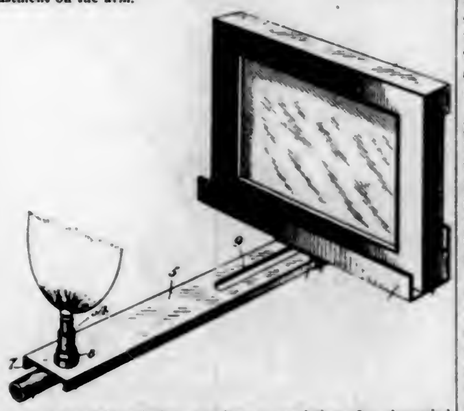
4. A vault or similar light, comprising a plurality of lenses or bull's-eyes set into a bed or support of cement reinforced with metal, said lenses or bull's-eyes being approximately cylindrical in form and being of a depth greater than their transverse diameters, said lenses or bull's-eyes being also provided in the opposite sides thereof with vertically-arranged grooves and short transverse ribs arranged in horizontal planes and crossing said grooves, and of greater width than the depth of said grooves, the bottom transverse ribs being flat on their under sides, substantially as shown and described.

758,444. GAS-LIGHT NEGATIVE-PRINTING ATTACHMENT. GEORGE W. HARSE, New York, N. Y. Filed Oct. 2, 1903. Serial No. 175,480. (No model.)

*Claim.*—1. A gas-light printing attachment of the class described, having an arm provided with means for supporting the same on a gas-fixture, a holder arranged transversely of the arm and fitted slidably thereon, and means for clamping the holder at a desired point of adjustment on the arm.

2. A gas-light printing attachment consisting of an arm, a holder arranged transversely across the arm and fitted slidably thereto, a friction-spring carried by the holder, and means for clamping the holder adjustably to said arm.

3. A gas-light printing attachment, consisting of an arm having means for application to a burner, a holder slidably mounted on the arm and constructed to receive printing-frames of different sizes, means carried by the holder for clamping a printing-frame firmly thereto, and means for securing the holder at a desired point of adjustment on the arm.

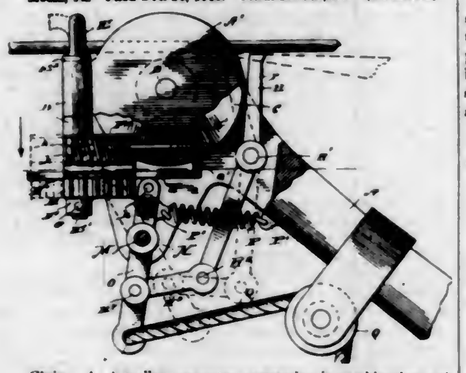


4. A gas-light printing attachment, consisting of a channeled arm having means for application to a gas-burner, a guide-boxing embracing the channeled arm, a holder movable with said boxing, and means for clamping the boxing and holder at a desired point of adjustment on the arm.

5. A gas-light printing attachment, consisting of a channeled bar having means for attachment to a burner and a longitudinal slot, a guide-boxing embracing the channeled bar and slidable thereon, said boxing having a nut, a holder attached to the boxing and movable therewith on said arm, and a clamping-screw passing through said slotted arm and having threaded engagement with the nut of the guide-boxing.

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**758,445. TROLLEY-HEAD. PETER D. HEAN and JOHN J. EGAN, Media, Pa. Filed Dec. 26, 1903. Serial No. 186,657. (No model.)**



*Claim.*—1. A trolley apparatus comprising in combination with a trolley-head, guard members journaled in suitable bearings upon the trolley-head and provided with hooked ends, segment-gears fixed to said members, a rack-bar having teeth in mesh with said gears, a spring-actuated lever mechanism connected to said rack, whereby as the rack is moved in one direction, the guards are opened, and the reverse direction, closed, as set forth.

2. A trolley mechanism comprising a trolley-head, guard members journaled in suitable bearings upon said head, tripping mechanism and means intermediate the same and said guard members to automatically open the guard members, and means for closing the same, as set forth.

3. A trolley apparatus comprising in combination with a trolley-head, guard members journaled in suitable bearings upon the trolley-head and having hooked ends normally held in positions to hold the trolley-head from jumping from the line-wire, a pivotal trip-lever with its free end positioned in advance of the trolley-head, and connections between said lever and the guard members for automatically opening the same to allow the trolley to be withdrawn from the line-wire, and means for closing the guard members, as set forth.

4. In combination with a trolley-head, guard members journaled in suitable bearings upon said head and having hooked ends adapted to normally hold the trolley-head from jumping from the line-wire, a pivotally-mounted trip-lever with its free end in advance of the trolley-head, reciprocating mechanism for opening and closing said guard member, and lever and link connections between said mechanism and the trip-lever, as set forth.

5. A trolley apparatus comprising in combination with a trolley-head, guard members journaled in suitable bearings upon said head and having hooked ends normally held to prevent the trolley from jumping from the line-wire, segment-gears keyed to the shank portions of said guard members, a reciprocal rack having teeth upon its opposite faces which are in mesh with the segment-gears, a lever pivotally mounted upon the trolley-head and having pivotal connection with said rack, and spring mechanism for holding the guard members closed, as set forth.

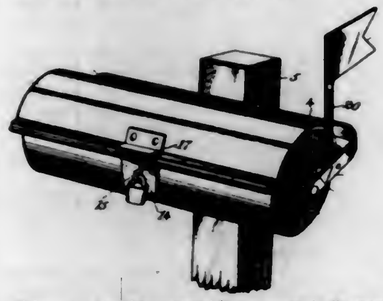
6. A trolley apparatus comprising in combination with a trolley-head, guard members journaled in suitable bearings thereon, and having hooked ends, segment-gears keyed to the shank portions of said members, a reciprocal rack-bar having teeth upon its opposite faces in mesh with said gears, a housing carried by said rack-bar, a spring mounted in said housing, a bolt fixed at one end to the trolley-head and passing into said housing, and having a head against which one end of the spring bears, a pivotal lever mounted upon the trolley-head and having pivotal connection with said rack, and rope connection with said lever, as set forth.

7. A trolley apparatus comprising in combination with a trolley-head, a pole supporting the same, a sheave mounted in said head, guard members journaled in the trolley-head having hooked ends adapted to hold said sheave from jumping from the trolley-line wire, segment-gears keyed to the shank portions of the guard members, a reciprocable rack having teeth upon its opposite faces in mesh with the teeth of said segment-gears, a pin mounted in the opposite walls of the trolley-head, a lever pivotally mounted upon said pin having pivotal connection at one end with said rack, a spring mechanism for normally holding the guard members closed, a pulley mounted upon the trolley-pole, and a rope passing about said pulley and connected to the end of said pivotal lever, as set forth.

8. In combination with a trolley head and pole supporting the same, a sheave journaled in said head, guard members journaled in the head having hooked ends, segment-gears keyed to the shank portions of said guards, a reciprocal rack having longitudinal grooves in its opposite faces adapted to receive the marginal edges of the slot of a plate forming a portion of the trolley-head, and lever mechanism connected to said rack-bar for actuating the same, as set forth.

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**758,446. MAIL-BOX. ALBERT M. HOSE, St. Paul, Nebr. Filed Jan. 2, 1904. Serial No. 187,457. (No model.)**



*Claim.*—1. A mail-box comprising an eccentrically-mounted rotary body, a lid having swinging relation to said body, arms having swinging connection with the lid and pivotal connection with the ends of the body and a spring-clip for engaging one of said arms to hold the lid open.

2. A mail-box comprising a transversely-curved body portion, fixed arms in which said body is eccentrically mounted, a transversely-curved lid having swinging connection with said arms, means for holding the lid yieldingly open, and connections between the lid and body whereby the body is rotated by swinging motion of the lid.



3. A mail-box comprising a body portion mounted to rotate, a lid mounted to swing relatively to the body, arms having swinging connection with the lid and pivotally connected with the ends of the body rearward of the bearing-points of said body, and a spring-clip secured to the inner side of the body for engaging with one of said arms to hold the box in open position.

4. A mail-box comprising an eccentrically-mounted body, fixed arms in which the body has its bearings, a lid having swinging connection with said arms, connections between the lid and body whereby said body is rotated by swinging movement of the lid, a flag, fingers extended forward from the lower end of the flagstaff, and a pin projecting from one end of the box-body for engaging between said fingers.

5. A mail-box comprising a rotary body portion, a swinging lid therefor, having its ends projected beyond the ends of the body and turned downward and also having its front and rear edges extended outward from the body and turned downward, tubular lugs on the ends of the body and having reduced portions supporting arms having perforations to receive said reduced portions, bolts passing through the lugs, and means for causing rotary movement of the body during the swinging movement of the lid.

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**758,447. LAVATORY OR SHAMPOOING BOWL. MINNIE HOUSHOLDER, Chicago, Ill. Filed Nov. 27, 1903. Serial No. 182,718. (No model.)**



*Claim.*—A slab of the character described for washstands, the same having an enlarged opening therein, the edge portion of the slab surrounding said opening being arranged to overlie the upper edge of a bowl, and the side and front edges of the slab having a peripheral portion extending upwardly therefrom, the forward portion of the slab centrally of the opening therein being recessed from its forward edge to a point relatively close to the edge thereof surrounding said opening, and the peripheral upwardly-extending portion of the slab terminating at said recess whereby a smooth flat resting-surface is provided for the forehead of a user, the recess affording space for the reception of the face of the user.

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**758,448. TOY ELEVATED-RAILROAD TRACK. HARRY C. IVES, Bridgeport, Conn. Filed Jan. 13, 1904. Serial No. 188,823. (No model.)**



*Claim.*—1. A toy railroad-track formed of sections, each section comprising rails and sleepers, and a plate to support and engage the sleepers, and hold the ends of the adjoining rails together.

2. A toy railroad-track formed in sections, each comprising rails and sleepers, a plate bearing ways to engage the sleepers and hold the ends of the adjoining rails together.

3. A toy railroad-track formed in sections, each comprising rails and sleepers supporting the same, a plate bearing ways arranged at a slight angle, and adapted to engage the sleepers and draw the abutting ends of the rails together.

4. In a toy railroad-track the combination with two sections, each comprising rails and sleepers, the latter bearing distended flanges, of a detachable supporting-plate bearing ways on two sides so proportioned and disposed as to engage the sleepers and draw the same and rails toward each other.

5. In a toy railroad-track, the combination with two sections comprising rails and sleepers, the latter bearing distended flanges, of a binding and supporting plate, having ways on two sides to engage the sleepers and draw the rails together, and a stop on the end of the plate against which the ends of the sleepers abut when properly assembled.

6. The combination of a toy railroad-track formed in sections comprising rails and sleepers, of a single plate to support and unite the respective sections together, and means for elevating the plate and track.

7. In a toy railroad-track, the combination of a series of sections comprising rails and sleepers, plates to engage the sleepers and hold and support the same, a post attached beneath the plate to elevate the same.

8. The combination of a toy railroad-track, comprising sections formed of rails and sleepers, a detachable plate to engage the sleepers to hold and support the same in position, a post secured to the plate to elevate the track, and a heavy base member secured to the bottom of the post to retain the same in a vertical position.

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**758,449. CLAMP OR STOP-COCK FOR FLEXIBLE TUBES. ORRIN L. JERALDS, New Rochelle, N. Y. Filed Nov. 13, 1903. Serial No. 181,047. (No model.)**



*Claim.*—1. A clamp or stop-cock for flexible tubes, having a frame or body comprising two reaches adapted to have a flexible tube passed between them and shaped to compress it when they are moved toward each other, one of the said reaches being furnished with two laterally-arranged arms, and the other with a finger-piece pivotally mounted upon it and adapted to engage with the said arms for holding the two reaches in their tube-compressing positions.

2. A clamp or stop-cock for flexible tubes, having a frame or body comprising two reaches adapted to have a flexible tube passed between them and shaped to compress it when they are moved toward each other, and one reach having two laterally-arranged arms formed with clearance-openings the rear walls of which are provided with teeth, and the other reach being furnished with a finger-piece located at its free end and having arms adapted to be engaged with the said teeth for holding the two reaches in their tube-compressing positions.

3. In a clamp or stop-cock for flexible tubes, the combination with a frame made from a single piece of sheet metal and comprising an upper reach, a lower reach and a spring-bow between them, the lower reach being formed with two upwardly-extending arms having clearance-openings the rear walls of which are provided with ratchet-teeth, and the upper reach being formed with a downwardly-extending compression-arm; of a finger-piece located upon the free end of the upper reach and formed with depending pawl-like arms furnished with lugs entering the said clearance-slots and adapted to engage with the said teeth.

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**758,450. PROCESS OF PREPARING HIGHLY-DILUTED SOLUTIONS. EMIL JOSEPH, Berlin, Germany. Filed Apr. 16, 1903. Serial No. 153,960. (No specimens.)**

*Claim.*—1. A process for quickly preparing highly-diluted solutions of such substances, which are little soluble in water, consisting in dissolving these substances in an appropriate solvent, adding to the solution thus obtained an indifferent salt soluble in the solvent and having a higher specific gravity than water, and pouring the mixture into a great quantity of water, substantially as described.

2. A process for quickly preparing highly-diluted solutions of such substances, which are little soluble in water, consisting in dissolving these substances in an appropriate solvent, adding to the solution thus obtained an indifferent salt soluble in the solvent and having a higher specific gravity than water, and pouring the mixture into a great quantity of water, said water containing a substance chemically indifferent with regard to the substance to be dissolved but easily decomposed by the solvent mentioned above and developing after decomposition an indifferent gas, substantially as described.

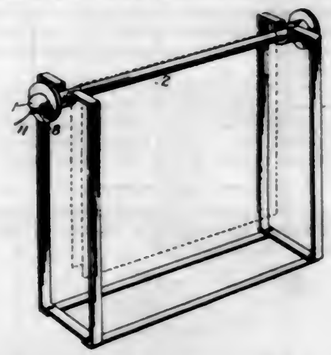
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**758,451. CLOTHES-DRIER. JULIUS JUDELSON, New York, N. Y. Filed Feb. 1, 1904. Serial No. 191,584. (No model.)**

*Claim.*—1. In a clothes-drier, a drier-frame comprising two uprights, a tubular bar supported by said uprights upon which the clothes are hung said bar having one open end and perforations in the under side of said bar.

2. In a clothes-drier the combination of the drier-frame and a hanger-bar secured therein, said hanger-bar comprising a tube having perforations increasing progressively in size from one end to the

other, and being provided with a partially-cut-away head at one end and a closed head at the opposite end, substantially as described.

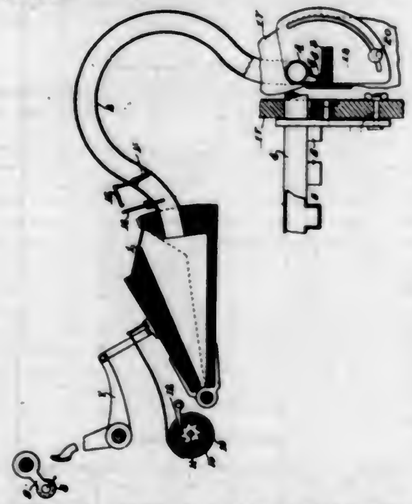


758,452. LOCK. VALENTINE B. KERR, Milton, Pa., assignor of one-half to West Branch Novelty Company, Milton, Pa. Filed Feb. 8, 1904. Serial No. 192,627. (No model.)



*Claim.*—A lock having a housing consisting of a single piece of metal a portion of which is bent into rectangular form to constitute the outer half of the housing, a guide-slot being formed in the outer end or face-plate and also in the inner part, and the inner portion of the housing being formed from the said piece of metal bent inwardly parallel with the direction of said guide-slots and provided with a key-pin, the whole being tapered in form, combined with a locking-bolt passed through said guiding-slots and provided with a notch and spring which are acted upon by the inner edges or rim of the metal in which the inner guide-slot is formed.

758,453. PNEUMATIC SHEET-FEEDER. ALEXANDER LAGERMAN, Jönköping, Sweden. Filed Jan. 31, 1903. Serial No. 141,284. (No model.)



*Claim.*—1. A pneumatic sheet-feeding mechanism having a mouthpiece with a substantially flat face, and said mouthpiece pivotally mounted with the pivotal axis in the same plane with the said face, whereby the latter may be adjusted on its pivot to an angle with the surface of the sheet to be separated proportional to the stiffness of said sheet.

2. A sheet-feeding mechanism, having an air-exhausting means, means for regulating the force of the exhaust to suit the character of the sheets to be fed, a mouthpiece mounted adjustably so that it may be set with its face at any desired angle with the surface of the sheet to be lifted, and a conduit connecting said mouthpiece with the air-exhausting means.

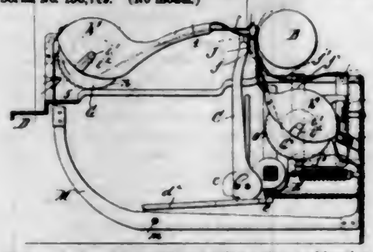
3. A sheet-feeding mechanism, comprising an air-exhausting means, a pipe 4 provided with a plurality of mouthpieces 5, journals 6 about which said pipe and mouthpieces may turn in adjusting the angle the faces of mouthpieces are to make with the sheet to be lifted, the pivotal axis lying in the same plane with the faces of the mouthpieces and alined with that margin of the said faces which are farthest back from the edge of the sheet, and a conduit 2 connecting said mouthpieces with the exhausting means.

758,454. CLOCK-CASE. ALBERON M. LAKE, Meriden, Conn. Filed Feb. 26, 1904. Serial No. 195,408. (No model.)



*Claim.*—In a clock-case, the combination of the clock-case body with a band and rim secured in the front thereof, the said band having openings 14, the glass, and the bezel-ring having the series of prongs projecting rearwardly from its base or flange, some of the said prongs being in engagement with the metal at the rear wall of the said openings.

758,455. RIBBON-FEED MECHANISM FOR TYPE-WRITING MACHINES. ERNST G. LATTA, Friendship, N. Y. Filed Apr. 2, 1903. Serial No. 150,719. (No model.)



*Claim.*—1. In a type-writing machine, the combination with the platen, and type-bars pivoted beneath the platen, of a ribbon-spool arranged below the plane of the platen and in rear of the type-bars, a second ribbon-spool mounted in front of the platen, a ribbon connecting said spools, a guide for holding the ribbon out of the path of the type-bars, and means cooperating with one of said spools for moving the same laterally to feed the ribbon lengthwise, substantially as set forth.

2. In a type-writing machine, the combination with the platen, and type-bars pivoted below the platen, of a ribbon-spool arranged below the plane of the platen and in rear of the type-bars, a second ribbon-spool arranged in front of the platen, a ribbon connecting said spools, a guide for holding the ribbon out of the path of the type-bars, and means for rocking said spools to move said ribbon crosswise past the printing-point of the platen, substantially as set forth.

3. In a type-writing machine, the combination with the platen, and type-bars pivoted beneath the platen, of a ribbon-spool arranged below the platen and in rear of the type-bars, a second ribbon-spool mounted in front of the platen, a ribbon connecting said spools, a guide for holding the ribbon out of the path of the type-bars, and mechanism for rocking said spools to feed the ribbon lengthwise and move it crosswise past the printing-point of the platen, substantially as set forth.

4. In a type-writing machine, the combination with the platen, and type-bars pivoted beneath the platen, of a ribbon-spool arranged below the platen and in rear of the type-bars, a second ribbon-spool arranged in front of the platen, a ribbon connecting said spools, a spool-carrier on which said spools are mounted, and having a guide which connects the spools and holds the ribbon out of the path of the type-bars, substantially as set forth.

5. In a type-writing machine, the combination with the platen, and type-bars pivoted beneath the platen, of a pair of ribbon-spools, a ribbon connecting the spools, and a detachable spool-carrier on which said spools are mounted one in front of and one in rear of the printing-point of the platen, substantially as set forth.

6. In a type-writing machine, the combination with a platen, and type-bars pivoted beneath the platen, of a ribbon-spool arranged below the plane of the platen and in rear of the type-bars, a second ribbon-spool arranged in front of the platen, a ribbon connecting said spools, and mechanism for automatically moving the ribbon crosswise past the printing-point and vibrating it toward and from said printing-point, substantially as set forth.

7. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier arranged between the platen and type-bars, spools mounted on said carrier, one in front of and one in rear of the printing-point of the platen, a ribbon connecting said spools, said spool-carrier having a covered ribbon-guide for holding the ribbon out of the path of the type-bars, substantially as set forth.

8. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier arranged between the platen and type-bars, said spool-carrier having yielding sides provided with bearings, spools journaled in said bearings, and a ribbon connecting said spools, substantially as set forth.

9. In a type-writing machine, the combination with the platen, and type-bars, of ribbon-spools mounted one in front and one in rear of the printing-point, and a curved ribbon-guide extending rearwardly from the front spool over the type-bars and downwardly in front of the platen to the rear spool, substantially as set forth.

10. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier arranged between the platen and type-bars and pivotally supported in the machine, ribbon-spools mounted on said carrier, a ribbon connecting said spools, and means for oscillating said spool-carrier on its pivots, substantially as set forth.

11. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivotally mounted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, means for oscillating said spool-carrier, and means for moving said ribbon lengthwise, substantially as set forth.

12. In a type-writing machine, the combination with the platen, and type-bars, of a ribbon-spool carrier pivotally mounted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, means for oscillating said spool-carrier, and means cooperating with one of said spools whereby the oscillation of the carrier rotates said spool, substantially as set forth.

13. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivotally mounted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, means for oscillating said carrier, and means adapted to engage one of said spools in the oscillation of the carrier to rotate said spool, substantially as set forth.

14. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivoted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, power-operated means for oscillating said carrier, and a pawl adapted to engage teeth on one of said spools for rotating the latter, substantially as set forth.

15. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivoted between the platen and type-bars, a spool journaled on said carrier, and provided at its opposite ends with ratchet-teeth, and a double-acting pawl which engages the ratchet-teeth at opposite ends of the spool alternately, substantially as set forth.

16. In a type-writing machine, the combination with the platen, and type-bars, of a pair of ribbon-spools each provided with ratchet-teeth, a carrier on which said spools are mounted to rotate, a stationary pawl for each of said spools, means for moving said spools relative to said pawls to rotate the spools, and a reversing device carrying said pawls and which is movable to place either of said pawls in operative relation with its spool, substantially as set forth.

17. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivotally mounted, spools mounted on said carrier and each provided with ratchet-teeth, a stationary pawl for each of said spools, a reversing device carrying said pawls and which is movable to place either of said pawls into operative relation with its spool, substantially as set forth.

18. In a type-writing machine, the combination with the platen, and type-bars pivoted beneath the platen, of a spool-carrier detachably mounted in the machine, spools journaled on said carrier in front and rear of the printing-point of the platen and each provided with ratchet-teeth, a reversing-lever pivoted beneath said type-bars, pawls connected to the opposite ends of said lever, said lever being adapted to move one of said pawls into operative relation with its spool and the other of said pawls out of operation with its spool, and means for holding said lever in different positions, substantially as set forth.

19. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivotally mounted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, a toothed segment connected to said spool-carrier, a power-driven shaft geared to said segment to oscillate said carrier, and means for rotating one of said spools, substantially as set forth.

20. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivoted between said platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, a vibrator for said ribbon, and means for moving said vibrator to carry the ribbon toward and from the printing-point of the platen, substantially as set forth.

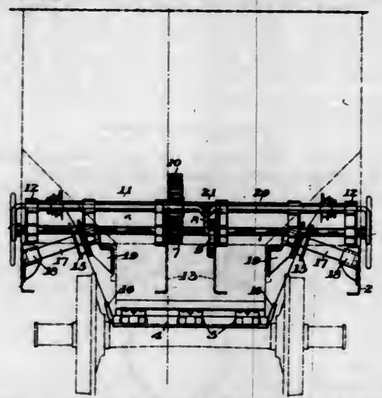
21. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivoted between said platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, a vibrator for said ribbon, and means for moving said vibrator to carry the ribbon toward and from the printing-point of the platen, substantially as set forth.

22. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivoted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, a ribbon-vibrator mounted independently of said carrier, and means for operating said vibrator, substantially as set forth.

23. In a type-writing machine, the combination with the platen, and type-bars, of a spool-carrier pivoted between the platen and type-bars, spools mounted on said carrier, a ribbon connecting said spools, a pivoted vibrator for said ribbon, the vibrator oscillating in a plane substantially at right angles to the plane of movement of the spool-carrier, substantially as set forth.

24. In a type-writing machine, the combination with the platen, type-bars and means for actuating the type-bars, of a pivoted spool-carrier, means actuated by the power-operated device which moves the platen for oscillating said spool-carrier, a universal bar actuated by the operating means for the type-bars, and a ribbon-vibrator actuated by said universal bar, substantially as set forth.

758,456. CAR-DOOR MECHANISM. CHARLES A. LINDSTRÖM, Allegheny, Pa., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed July 22, 1903. Serial No. 166,533. (No model.)



*Claim.*—1. Car-door mechanism comprising a chain-shaft extending transversely of the car, chains attached thereto and passing over inclined guide-pulleys to the door, and intermediately-located, power-transmitting gearing on said chain-shaft; substantially as described.

2. Car-door mechanism comprising a transverse chain-shaft, chains connecting the door with the ends of said shaft, a secondary power-shaft having an intermediate retaining-ratchet, and a pinion on said secondary shaft for transmitting power to the middle of said chain-shaft; substantially as described.

3. Car-door mechanism comprising a transverse chain-shaft,

chains connecting said door to the ends of said shaft, a gear near the center of said shaft, a secondary power-shaft, an intermediate retaining-ratchet and a pinion on said power-shaft, said pinion meshing with said chain-shaft gear; substantially as described.

4. In a car-door mechanism, a power-shaft, an intermediate ratchet on said shaft and a toggle-locked retaining-pawl adapted to engage said ratchet; substantially as described.

5. Car-door mechanism comprising in combination with an operating-shaft, a locking-pawl at the middle portion thereof, and a crank-shaft extending from side to side of the car and connected with the pawl; substantially as described.

6. Car-door mechanism having a locking ratchet and pawl, a crank-shaft for the pawl, a link between the crank and pawl, an operating-handle and a stop, said parts being arranged relatively to each other so that when the pawl is engaged the link shall be at or past its dead-center; substantially as described.

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758,457. **CENTRIFUGAL MACHINE.** JAMES W. MACFARLANE, Kingston, Scotland. Filed Nov. 6, 1903. Serial No. 180,099. (No model.)



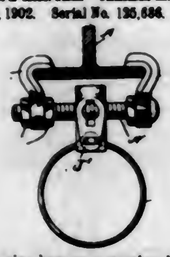
*Claim.*—1. In centrifugal machines, an elastic buffer-bearing for the machine-spindles, consisting of an annular conoidal rubber buffer, the elements of the surfaces of which when produced pass outside of the center of oscillation of the spindle, combined with a counterpart conoidal collar on the spindle and a seating in the framing, substantially as described.

2. In centrifugal machines, an elastic buffer-bearing for the machine-spindle, consisting of a rubber buffer, in a plurality of parts, having as a whole an annular conoidal form, the elements of the surfaces of which when produced pass outside of the center of oscillation of the spindle, combined with a counterpart conoidal collar on the spindle and a seating in the framing, substantially as described.

3. In centrifugal machines, an elastic buffer-bearing for the machine-spindles, consisting of an annular conoidal rubber buffer, the elements of the surfaces of which when produced pass outside of the center of oscillation of the spindle, combined with a counterpart conoidal collar on the spindle and a seating in the framing, and angles of the inner and outer conoidal surfaces of the buffer, and of the counterpart surface of the seating, differing from each other so that the thickness of the buffer varies throughout, substantially as described.

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758,458. **PIPE-HANGER.** CHARLES MACTAGGART, Philadelphia, Pa. Filed Oct. 2, 1902. Serial No. 125,686. (No model.)



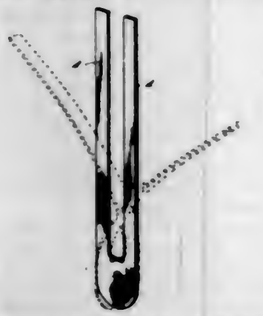
*Claim.*—1. In a pipe-hanger, a member having elongated openings, at each side, a portion of said openings being circular and threaded, the said openings being adapted to receive a flat or round bar and means for suspending the member.

2. In a pipe-hanger, a member having elongated openings, at each side, a portion of said openings being circular and threaded, the said openings being adapted to receive a flat or round bar, means for attaching a pipe-support to the member and means for supporting the member.

3. In a pipe-hanger, a member having a threaded aperture in its top, said member being hollow and having side apertures of elongated contour, a portion of said apertures being circular and the walls of the circular portion being threaded, the said apertures adapted to receive circular or angular bars.

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758,459. **PLACKET-CLOSER.** DEWITT A. MOOR, Louisville, Ky., assignor to Frederick W. Taylor, Louisville, Ky. Filed Apr. 21, 1902. Serial No. 103,966. (No model.)



*Claim.*—1. A placket-closer comprising a pair of parallel spring-arms, and a flat web rigidly securing said arms together at one end, the arms being left free at the other faces of said arms and web lying in the same plane, one of said arms being designed to be attached to one wall of a placket and the other to the opposite wall thereof.

2. A placket-closer comprising a pair of spring-arms rigidly secured together at one end and free at the other, said arms being spaced apart and lying edgewise with respect to each other and with their flat faces in the same vertical planes, one arm being designed to be secured to one wall of a placket and the other to the opposite wall thereof.

3. A placket-closer comprising a pair of parallel, flat spring-arms, and a relatively large web rigidly securing one end of the pair of arms together, one arm being designed to be secured to one wall of the placket and the other to the opposite wall thereof.

4. A placket-closer comprising a pair of spring-arms, and means rigidly securing the same together at one end and spacing the arms apart, each of said arms being formed of comparatively thin flat material.

5. A placket-closer comprising comparatively thin, flat spring-arms, and means rigidly securing the lower ends of said arms together with the flat faces thereof lying in the same vertical plane, the arms being arranged edgewise with respect to each other, whereby said arms will be retained against edgewise movement while left free to be sprung laterally.

6. A placket-closer comprising a pair of spring-arms and a web clamped about said arms and securing the same rigidly together at one end, one of the arms being designed to be secured to one wall of a placket and the other to the opposite wall thereof.

7. A placket-closer comprising a pair of spring-arms, and a relatively wide comparatively strong web rigidly securing said arms together, and spacing the same apart, one of said arms being designed to be secured to one wall of a placket and the other to the opposite wall thereof.

8. A placket-closer comprising a pair of normally parallel, flat spring-arms arranged edgewise with respect to each other, and a web rigidly securing said arms together, the flat faces of said arms and web lying in the same plane.

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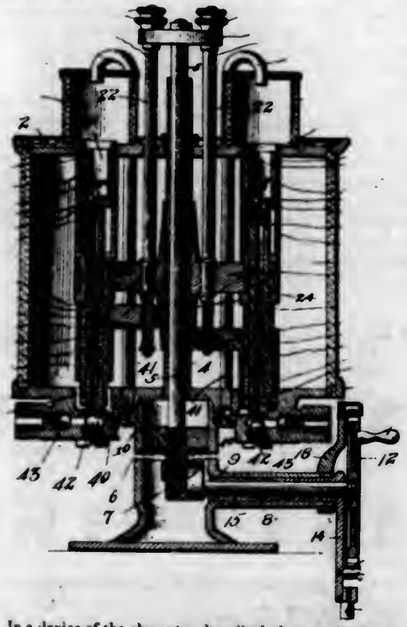
758,460. **AUTOMATIC FORCE SIGHT-FEED PUMP FOR LUBRICATORS.** GRANT C. MCCUNE, Chicago, Ill. Filed Apr. 27, 1903. Serial No. 154,500. (No model.)

*Claim.*—1. An oil-chamber having an oil-receiving cavity, a plunger to operate in said cavity to force oil therefrom, means to operate the plunger, and an element, carried by and adjustable on the plunger and coacting therewith and with the cavity to vary and predetermine the quantity of oil forced from the cavity by the effective portion of the stroke of the plunger, substantially as described.

2. An oil-chamber having an oil-receiving cavity forming a cylinder, a passage leading from said cavity, a tubular guide extending through said cavity and having a closed end and an intersecting passage 28, a tubular plunger operating on said tubular guide and



in said cavity to force oil from the cavity through said first-mentioned passage, a hollow piston in the enlarged upper portion of said tubular plunger carried by said tubular guide and adapted to receive oil from said first-mentioned passage, and having a valved passage communicating with the interior of said enlarged portion, whereby the oil forced by the plunger from the receiving-cavity is also forced by said hollow piston through the tubular guide, substantially as described.



3. In a device of the character described, the combination with an oil-chamber, having one or more cavities or openings formed in the bottom of the same, and adapted to contain oil, one or more reciprocating plungers adapted to work in said cavities to force the oil from the same, pumping mechanism arranged on the upper ends of said plungers and adapted to be operated thereby, means for conducting the oil forced from said cavities to said pumping mechanism and means for conducting the oil from said pumping mechanism to the place of use, substantially as described.

4. In a device of the character described, the combination with an oil-chamber having one or more cavities formed in the bottom of the same and adapted to contain oil, of tubular guide-standards projecting upwardly from said cavities, plungers adapted to reciprocate upon said standards to force the oil from said cavities, pump-cylinders carried by the upper ends of said plungers and adapted to reciprocate therewith, hollow pistons arranged upon the upper ends of said tubular standards and adapted to operate in conjunction with said cylinders, valved passages through said pistons, valved passages adapted to conduct the oil forced out of said cavities to said hollow pump-pistons, ports formed in the upper ends of said tubular standards, through which said oil is forced by said pistons into said standards, and valved passages formed at the lower ends of and communicating with said tubular standards, whereby the oil is conducted to place of use, substantially as described.

5. In a device of the character described, the combination with an oil-chamber having one or more cavities formed in the bottom of the same, one or more reciprocating plungers adapted to work in said cavities to force the oil from the same, means for independently moving any one of said plungers out of working position, pumping mechanism carried and operated by said plungers, valved passages adapted to conduct the oil forced from said cavities to said pump mechanism, and means for reciprocating said plungers.

6. In a device of the character described, the combination with an oil-chamber having one or more cavities formed in the bottom of the same, one or more reciprocating plungers adapted to work in said cavities to force the oil from the same, means for adjusting said plungers to force more or less oil out of said cavities, pumping mechanism carried and operated by said plungers, valved passages adapted to conduct the oil forced from said cavities to said pumping mechanism, valved passages for conducting the oil from said pumping mechanism to service-pipes, and means for reciprocating said plungers, substantially as described.

7. In a device of the character described, the combination of an oil-chamber having one or more cavities formed in the bottom of the same, one or more reciprocating two-part plungers, adapted to work in said cavities to force the oil from the same, pumping mechanisms carried and operated by said plungers, valved passages adapted to conduct the oil forced from said cavities to said pumping mechanisms, valved passages for conducting the oil from said pumping mechanisms to service-pipes, vertically-reciprocating cross-heads adapted to carry the respective parts of said plungers, a vertically-reciprocating connecting-rod carrying at its upper end a cross-head, and operating-rods connected to and carried by said cross-heads and connected to the plungers and arranged to adjust the parts of the latter to force more or less oil from said cavities or to move said plungers entirely out of operation, and means for actuating said connecting-rod, substantially as described.

8. In a device of the character described, the combination with an oil-chamber having one or more cavities formed in the bottom of the same and adapted to contain oil, of one or more reciprocating plungers adapted to work in said cavities to force oil from the same, pumping mechanisms carried and operated by said plungers for forcing the oil delivered from said cavities to service-pipes, a vertically-reciprocating cross-head adapted to carry said plungers, a vertically-reciprocating connecting-rod carrying at its upper end a cross-head, operating-rods adapted to connect said cross-heads, a suitably-mounted crank-shaft connected to and adapted to operate said rod, a ratchet-wheel carried by the opposite end of said crank-shaft, a suitably-mounted swinging arm carrying a pawl which is adapted to engage and turn said ratchet-wheel and crank-shaft, means for oscillating said arm, and means for preventing a retrograde movement of said ratchet-wheel, substantially as described.

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758,461. **TRACK-GAGE.** ANDREW P. NICHOLS, Tacoma, Wash. Filed Sept. 8, 1903. Serial No. 172,328. (No model.)



*Claim.*—1. In a track-gage, the combination with devices adapted to engage the rails, of an adjustable toggle connection between said devices.

2. In a track-gage, the combination with claws or devices adapted to engage the rails, of an adjustable toggle device for changing the distance between said devices, and means for keeping said devices in alinement.

3. In a track-gage, the combination with devices adapted to engage the rails, of a toggle device for changing the distance between said devices, and means for indicating the distance therebetween.

4. In a track-gage, the combination with a claw adapted to engage both sides of a rail, of an adjustable plate adapted to change the width of said claw, substantially as described.

5. In a track-gage, the combination with claws adapted to engage the rails, of a sliding connection between said claws, and a toggle device for controlling said sliding connection.

6. In a track-gage, the combination with claws adapted to engage the rails, of a connection between said claws, a toggle for controlling said sliding connection, and means for indicating the distance between said claws.

7. In a track-gage, the combination with claws adapted to engage the rails, of a toggle connection between said claws, and a hand-operated screw mechanism whereby said sliding connection is controlled and operated.

8. In a track-gage, the combination with claws adapted to engage the rails, an adjustable connection between said claws, of a pair of dovetailed pieces adapted to slide with respect to each other, and having an index thereon whereby the distance between said claws may be shown, said pieces being connected to opposite members of said connection.

9. In a track-tool, the combination of a claw adapted to engage a fixed rail and having a broad surface along both sides of said rail, of a claw adapted to engage the movable rail and having a nar-

now surface along both sides of said rail, and of means whereby said claws are drawn toward each other or are forced apart.

10. In a track-tool, the combination of claws adapted to engage both the inner and outer sides of the rails; with plates adapted to reduce the width of said claws, substantially as described.

11. In combination, opposite sleeves, the intermediate nuts, links connecting the sleeves and nuts, and forming a toggle, a double-ended screw engaging said nuts, and rail-engaging devices attached to said sleeves, substantially as described.

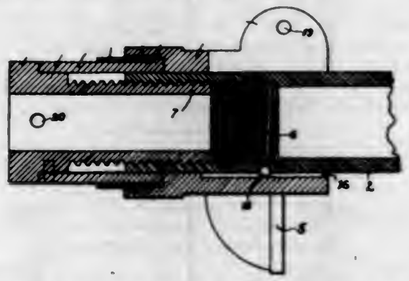
12. In combination, a rod, sleeves movable thereon, nuts at opposite sides of said rod, links pivotally connecting the sleeves and nuts forming a toggle; a double-ended screw engaging said nuts, and opposite rail-engaging devices, connected to said sleeves, substantially as described.

13. In combination with a rail-engaging claw having a recess in its face above the rail, a series of plates hinged in said recess, and adapted to be turned down to reduce the width of the claw-grip substantially as described.

14. In a track-tool, the combination of a claw adapted to engage the inner and outer sides of the rails, and having a recess, plates in said recess adapted to be turned into position to engage one side of the rails to narrow the grip of said claw, and a spring adapted to hold said plates in either position, substantially as described.

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758,462. TRACK-CLAW. ANDREW P. NICHOLS, Seattle, Wash. Filed Feb. 6, 1904. Serial No. 192,378. (No model.)



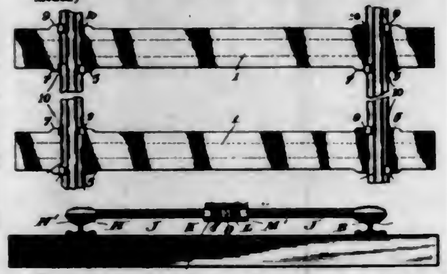
*Claim.*—1. In a track-tool, the combination with a gage-bar adapted to span between the rails the ends of said gage-bar being hollow and tapped within with a screw-thread, of a casting secured to said gage-bar and having lugs thereon adapted to engage the inner side of the rail-head, a casting sliding on said gage-bar and having lugs thereon adapted to engage the outer side of the rail-head, and a screw-threaded piece screwing into the end of said gage-bar and provided with a sleeve extending over said gage-bar and engaging said sliding casting whereby the distance between the lugs on said fixed casting and on said sliding casting may be adjusted.

2. In a track-tool, the combination with a gage-bar adapted to span between the rails the ends of said gage-bar being hollow and tapped within with a screw-thread, of a casting secured to said gage-bar and having lugs thereon adapted to engage the inner side of the rail-head, a casting sliding on said gage-bar and having lugs thereon adapted to engage the outer side of the rail-head, a screw-threaded socket in the outer end of said sliding casting, a screw-threaded piece screwing into the end of said gage-bar and provided with a sleeve extending over said gage-bar and entering the socket in said sliding casting, said sleeve having a flange on the end thereof, and a screw-threaded sleeve passing over said sleeve and screwing into said socket and against said flange whereby when said screw-threaded piece is turned to screw into or out of said gage-bar said flange will force said sliding casting toward or away from said fixed casting.

3. In a track-tool, the combination with a gage-bar adapted to span between the rails the end of said gage-bar being hollow and tapped within with a screw-thread, of a casting secured to said gage-bar and having lugs thereon adapted to engage the inner side of the rail-head, a casting sliding on said gage-bar and having lugs thereon adapted to engage the outer side of the rail-head, a pin secured to said gage-bar and adapted to engage a slot in said sliding bar whereby said sliding bar is prevented from turning on said gage-bar, a screw-threaded socket in the outer end of the said sliding casting, a screw-threaded piece screwing into the end of said gage-bar and provided with a sleeve extending over said gage-bar and entering the socket in said sliding casting, said sleeve having a flange on the end thereof, and a screw-threaded sleeve passing over said sleeve and screwing into said socket and against said flange whereby when said screw-threaded piece is turned to screw into or out of said gage-bar said flange will force said sliding casting toward or away from said fixed casting, a part of said sliding casting being split and being provided with ears on each side of said split and with a screw therein whereby said sliding casting may be clamped to said gage-bar.

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758,463. RAILWAY-TIE. WILLIAM A. NICHOLS and JOHN F. NEFF, Belmont, Ohio. Filed Oct. 10, 1903. Serial No. 176,507. (No model.)



*Claim.*—1. A railway-tie, comprising a box or inverted-trough shaped metal portion, and a wooden portion inclosed thereby at its sides, top and ends, with its lower surface resting upon and supported solely upon the ground, the tie thus formed being transversely grooved at points where the rails are supported.

2. A railway-tie, comprising a wooden core surrounded on its sides, top and ends with metal, the tie thus formed transversely grooved, wooden blocks located in said grooves, the blocks adapted to receive the rails thereon, and means extending between the blocks and edges of the grooves for clamping the blocks and rails.

3. A railway-tie comprising a wooden core surrounded on all sides but the bottom with metal, the wood and metal flush or approximately flush on the lower surface so that both wood and metal are supported on the road-bed, the tie having transverse grooves on its upper surface, the sides of the metal portion being thickened at the ends of the grooves, wooden blocks of less width than the width of the grooves, located in said grooves, and fastening means for clamping the blocks and rails to the tie thus formed.

4. A railway-tie comprising an outer shell of metal entirely open at the bottom and a wooden core which fills the outer shell adapted to rest at the bottom upon the road-bed and adapted to sustain the rails thereon.

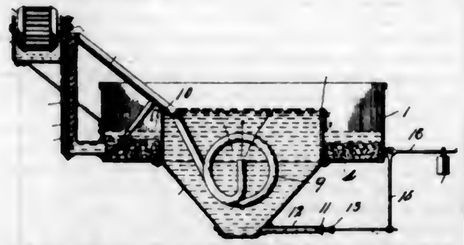
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758,464. MINERAL-SEPARATOR. HOMER L. ORR, Greeley, Colo. Filed Sept. 1, 1903. Serial No. 171,486. (No model.)

*Claim.*—1. In a mineral-separator, a receiving-tank, a wheel therein operated by inflowing water, a separating-tank and a filtering-tank communicating as described, a pipe having a pump located therein operated by said wheel for returning filtered oil to the receiving-tank from the filtering-tank, and a counterbalanced valve located in the separating-tank operated by excess pressure in said separating-tank to dispose of the unfiltered residue, combined substantially as described.

2. In an apparatus as described a receiving-tank a water-wheel therein operated by the incoming water and having blades or paddles disposed so as to pass the fine material and throw off the coarser material from the inflow from the sluice-box; a filtering-tank, a separating-tank, each said tanks communicating with the receiving-tank, and means for returning filtered liquid to the receiving-tank, substantially as described.





3. In a mineral-separator the combination of a receiving-tank, a separating-tank, a filtering-tank, a pipe or vessel connecting the filtering-tank and the receiving-tank having therein a shaft provided with spiral blades, and means located in the receiving-tank and driven by the inflowing water for operating said shaft to return the filtered liquid to the receiving-tank, substantially as described, and a feed-pipe from the receiving-tank to the separating-tank.

4. The combination of a receiving-tank, a filtering-tank and a separating-tank, a water-wheel in the receiving-tank adapted to separate to a predetermined degree from the inflowing water the mineral and other substances to be separated, a pipe or vessel connecting the filtering-tank and the receiving-tank having therein a shaft provided with spiral blades for returning the filtered liquid from the filtering-tank to the receiving-tank, said shaft being suitably connected to and driven by said wheel, and an outlet from the receiving-tank to the separating-tank.

5. In a mineral-separator, a receiving-tank, a wheel therein operated by inflowing water, a separating-tank and a filtering-tank, a pipe connecting the filtering-tank with the receiving-tank and having therein a shaft with spiral blades and means operated by said wheel for operating said shaft to return the filtered oil to the receiving-tank, an inflow-pipe from the receiving-tank to the separating-tank, having a coil therein and a mouth for projecting the inflowing water and material to the separating-tank, and a counterbalanced valve located in the separating-tank operated by excess pressure therein to dispose of the unfiltered residue.

6. The combination in a mineral-separator, of a receiving-tank, a separating-tank, an outlet-pipe from the receiving-tank extending into the separating-tank and having a coil at its lower end, a filtering-tank having communication with the receiving-tank, and a pipe extending from the outlet-pipe into the filtering-tank forming a siphon, whereby the material to be separated is fed from the receiving to the separating tank, and the filtered separating agent returned to the receiving-tank for repeated use, and a valve in the separating-tank for disposing of the unfiltered residue.

7. The combination in a mineral-separator, of a receiving-tank, a separating-tank, an outlet from the receiving-tank extending into the separating-tank, a filtering-tank having communication with the receiving-tank, and a pipe extending from the outlet-pipe into the filtering-tank forming a siphon; whereby material to be separated is fed from the receiving to the separating tank and the filtered separating agent retured to the receiving-tank.

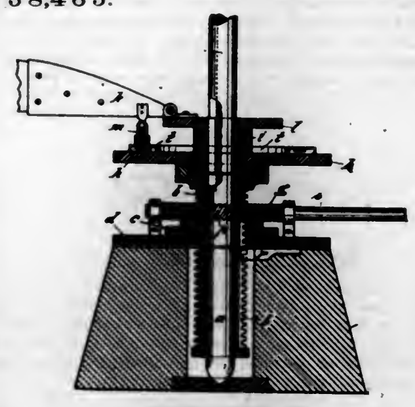
8. In an apparatus as described, a receiving-tank having a pipe leading from the receiving-tank and provided with a coil near its end for projecting the inflowing material into a separating-tank; said separating-tank, and a filtering-tank, a pipe connecting the filtering and receiving tanks a shaft journaled therein, blades on said shaft as described and a gear-wheel; a water-wheel in the receiving-tank, a gear-wheel on its shaft engaging the gear-wheel on the pump-shaft, whereby the pump is operated to return filtered liquid from the filtering-tank to the receiving-tank, and means for disposing of the unfiltered residue from the separating-tank, all combined substantially as described.

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758,465. HORIZONTAL WATER-WHEEL. ERNST ORTWEIN, Ludwigshafen-on-the-Rhine, Germany. Filed Dec. 1, 1903. Serial No. 183,369. (No model.)

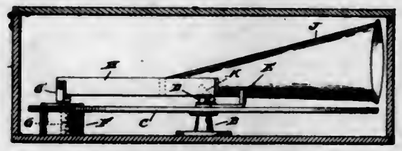
*Claim.*—The combination with a vertical spindle *a* of the sleeve *b*, the worm-wheel *g*, the worm *p*, the carrier-plate *h*, the cam-path *t*, the nave *i*, plate *l* secured thereto and the blades *k* hinged to the plate and having carrier-bowls *m* bearing on the carrier-plate *h* and the cam-path *t* substantially as and for the purpose set forth.

758,465.



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758,466. TALKING-MACHINE. EDWARD T. PALMER, Philadelphia, Pa., assignor to George C. Holden, Philadelphia, Pa. Filed Mar. 30, 1903. Serial No. 150,128. (No model.)



*Claim.*—1. In a phonographic machine, the combination of a disk record mounted so as to rotate upon a vertical spindle, a crank for turning the same, a block located stationary beyond the periphery of the disk, a pin fitting loosely within a vertical hole in the block, the upper end of the pin being bifurcated, an arm, one end of which is pivoted between the prongs of the bifurcated end of the pin so that said arm will swing vertically, the outer end of the arm being bifurcated, a horn, the smaller end of which is held between the prongs of the bifurcated end of the arm, a removable needle secured at the outer end of one of the prongs of the arm at an angle and adapted to rest upon the record, as specified.

2. In a phonographic machine, a case, a base secured to the bottom of the case, a spindle extending up vertically from the base, a disk record secured so as to revolve upon said spindle, a thumb-screw threaded upon the upper end of the spindle for securing the record in place, a crank connected to the center of the record for turning the same, a block secured to the bottom of the case outside the periphery of the record, a pin fitting vertically within the block so as to turn within the same, the upper end of the pin being bifurcated, a wooden arm, one end of which extends between the prongs of the bifurcated end of the pin, pointed screws threaded through the prongs, and into each side of the arm so as to pivot the same, the outer end of the arm being bifurcated, a paper horn, the smaller end of which is thrust and held between the prongs of the arm, a needle-socket secured at an angle in the outer end of one of the prongs of the arm, a needle fitting in the socket and resting upon the record, and a set-screw for securing the needle in the socket, as specified.

3. A sound-reproducing machine comprising a swinging fork adapted to receive and transmit sound-vibrations, and a horn carried by said fork and adapted to receive and transmit sound-vibrations transmitted to said fork, as specified.

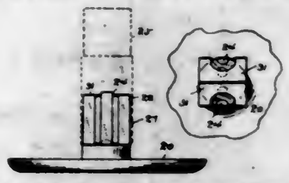
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758,467. MATCH-BOX HOLDER. EDMUND A. PARKER, Meriden, Conn. Filed Dec. 1, 1903. Serial No. 183,370. (No model.)

*Claim.*—1. A holder for a plurality of match-boxes consisting of a strip of metal the center of which forms an attaching-plate, the sides being bent equally upward from the attaching-plate, then equally inward and then downward, the ends lying parallel and in proximity to each other, forming springs between which portions of two box-covers are gripped.

2. A holder for match-boxes consisting of a strip of metal the center of which forms an attaching-plate, the sides being bent up-

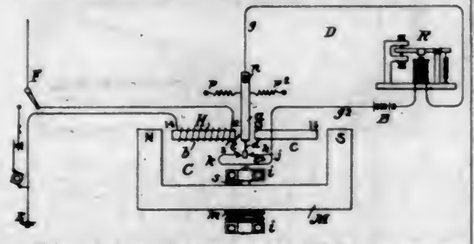
ward from the attaching-plate, then inward and then downward, the ends lying parallel and contiguous to each other forming springs, and horizontal locking-lips struck out from the portion of the strip constituting the top of the holder, said lips being arranged to engage the end of a match-box to retain it in place on the holder.



3. In a match-box holder the combination with a base, of a holder formed from a strip of metal bent to form a plate for attachment to the base, then upward therefrom to form springs to engage a box-cover, then horizontally to form a support for the lower end of a match-box, and provided with a horizontal locking-lip above the plane of said support to engage the end of a box.

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**758,468. ALTERNATING-CURRENT SIGNAL-RECEIVING APPARATUS.** GREENLEAF W. PICKARD, Amesbury, Mass., assignor to American Telephone and Telegraph Company, a Corporation of New York. Filed Feb. 29, 1904. Serial No. 195,518. (No model.)



*Claim.*—1. A receiving apparatus for high-frequency currents or impulses, comprising two pole-pieces or magnetic cores; means for establishing in them simultaneously-opposed and cyclically-changing magnetizations; means actuated by and responsive to said high-frequency currents or impulses for accelerating the magnetic change in one of said pole-pieces; and an armature mounted with its free end held normally in a position intermediate between said pole-pieces, and adapted to oscillate toward one or the other as either may become the stronger; substantially as described.

2. In a signaling system operating with high-frequency alternating currents or impulses, a receiving apparatus consisting of two pole-pieces or magnetic cores with confronting ends; means for producing a constantly-changing field of force in the space between said ends by subjecting said pole-pieces to opposed and cyclically changing or reversing magnetizations; means actuated by and responsive to the normal high-frequency currents or impulses of said system for decreasing the magnetic lag in one of said pole-pieces; and a pivoted iron armature with its free end normally held resiliently in an intermediate position within the said field of force, and adapted to swing toward one pole-piece or the other, in accordance with the conjoint action of the changing field of force, and the said currents or impulses; substantially as described.

3. In a signaling system operating with high-frequency changing or alternating currents or current impulses, an electromagnetic receiving instrument, consisting of two iron pole-pieces or cores with juxtaposed and confronting ends; means for producing a constantly-changing field of force in the space between said confronting ends by subjecting said pole-pieces to a cyclically-changing magnetic flux; an electromagnetic coil or winding surrounding one of said pole-pieces, adapted to be connected in the circuit-conductor of said currents or impulses, and acting to decrease the magnetic lag in said pole-piece; and an iron armature held resiliently when at rest in an intermediate position between the juxtaposed ends of said pole-pieces, and adapted in operation to swing toward one or the other; substantially as and for the purposes set forth.

4. An electromagnetic receiving instrument or relay for high-frequency currents or impulses, consisting of two iron cores or pole-pieces with juxtaposed ends with an intervening armature-space; a magnet mounted to revolve in inductive proximity to said pole-pieces and adapted to subject the same to a cyclically changing or reversing magnetization and thereby to establish a correspondingly-changing and gradually-reversing field of force in said armature-space; a magnetizing coil or winding surrounding one of said pole-pieces connected or adapted to be connected in the circuit-conductor of said high-frequency currents, to accelerate the magnetic change of said pole-piece; and an iron armature having its free end extended into said armature-space, and adapted to oscillate therein, in accordance with the unequal magnetizations of said pole-pieces; substantially as described.

5. In a system of electromagnetic wave signaling, the combination substantially as hereinbefore described, in a receiving-station apparatus, of a grounded aerial conductor or antenna; two iron cores or pole-pieces with ends juxtaposed and an interposed armature-space; an inducing-magnet in inductive proximity to said pole-pieces and adapted to revolve past them and thereby to induce in each a cyclically rising, falling and reversing opposed magnetization, and a correspondingly-changing field in said armature-space; an electromagnetic helix or winding surrounding one of said pole-pieces and in the circuit of said antenna; and an iron armature mounted between said pole-pieces to oscillate in the said interposed space in accordance with the currents or wave impulses circulating in said winding.

6. In a relay, the combination of two iron pole-pieces with adjacent or confronting ends and an armature-space between said ends; a pivoted armature having its free end held at the middle of said space, and adapted to swing toward either pole; an electromagnetic coil encompassing one of said pole-pieces; and a magnet adapted to revolve round or past the other ends of said pole-pieces and to induce opposite and cyclically-changing magnetizations in said pole-pieces respectively; substantially as described.

7. A relay adapted to be operated by high-frequency alternating-currents or current impulses, consisting of two iron cores or pole-pieces having juxtaposed ends with an intervening armature-space; an inducing-magnet adapted to rotate or revolve past the other ends of said cores in such wise that when one of its poles is in inductive relation to either core, its other pole shall be in like inductive relation to the other core; a pivoted iron armature mounted to oscillate between limiting or contact stops in said armature-space, and normally held resiliently in an intermediate position; and an electromagnetic coil round one of said cores; substantially as described.

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**758,469. DANCING DOLL.** YOUNG F. PIPPICK, Hymer, Kans. Filed Oct. 28, 1903. Serial No. 178,846. (No model.)



*Claim.*—A dancing toy consisting of a frame having a box on one end thereof, a platform pivoted at an intermediate point to the frame and having one end extending into the box, the end of the platform extending into the box having a block raised therefrom, a shaft extending through the box and carrying a star-wheel to engage the upper end of the block, an elastic hanger secured to the top of the box and projecting upwardly therefrom over the platform, and a jointed figure suspended from the upper end of the elastic hanger, the lower extremities of the figure continually resting on the platform in advance of the pivotal point of the latter.

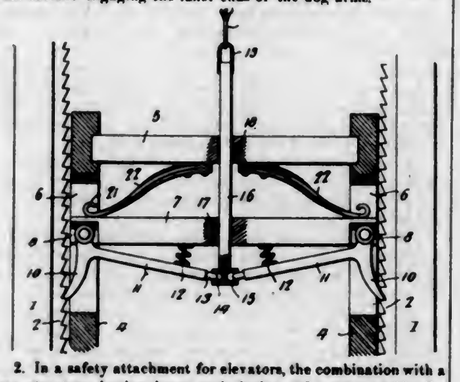
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**758,470. SAFETY DEVICE FOR ELEVATORS.** CHARLES H. POLLOCK, Corinth, Miss. Filed Feb. 20, 1904. Serial No. 194,579. (No model.)

*Claim.*—1. In a safety attachment for elevators, the combination with a frame structure having inner opposing racks, of a car



movably disposed between the racks and having slide-standards rising therefrom and connected at their upper extremities by a cross-head, an actuating-beam slidably mounted in the standards below the cross-head, springs secured to the said head and bearing on the slidable beam, dogs pivotally connected to the opposite extremities of the slidable beam to engage the racks and having inwardly-extending spring-engaging arms, and a lifting-bar movably extending through the cross-head and slidable beam and having the lower terminal thereof engaging the inner ends of the dog-arms.



2. In a safety attachment for elevators, the combination with a frame structure having inner rack devices, of a car movably disposed between the car devices provided with standards arranged adjacent to said racks and connected at their upper ends by a cross-beam, an actuating slide-beam movable in the standards below the cross-beam, dogs at its opposite ends having inwardly-projecting arms, a lifting-bar slidably mounted in the cross-beam and slidable beam, the inner ends of the dog-arms engaging the lower ends of said bar, and resilient means interposed between the cross-beam and slidable beam.

3. In a safety attachment for elevators, the combination with a frame structure having inner opposed racks, a car slidably mounted between the racks and having standards connected at their upper extremities by a cross-beam and also provided with slots below said beam, an actuating-beam having the opposite ends movably extending into said slots, springs attached to the cross-beam and depending over and loosely engaging the slidable beam, a bar movably extending through the said beams and adapted to have a lifting-cable attached to the upper extremity thereof, the lower end of said bar being provided with oppositely-disposed sockets, dogs pivotally held by the opposite ends of the slidable beam and provided with inwardly-extending arms, the terminals of the arms loosely extending into the sockets of the bar, and springs interposed between said arms and the slidable beam to normally throw the dogs outwardly.

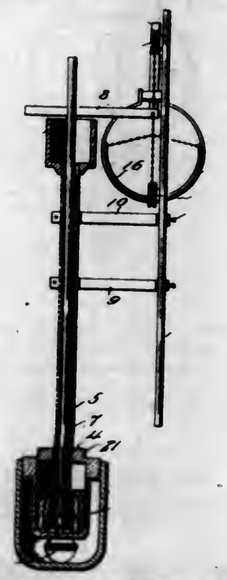
4. In a safety attachment for elevators, the combination with a frame structure having inner oppositely-disposed racks, a car slidably mounted between the racks and having standards connected at their upper extremities by a cross-beam and also formed with vertical slots below said beam, an actuating slide-beam having reduced terminals vertically movable in said slots, springs attached at their upper ends to the cross-beam and having their lower ends engaging the terminals of the actuating-beam, dogs pivotally supported by and depending from the terminals of the actuating-beam and having inwardly-projecting arms, springs interposed between the said arms and actuating-beam to hold said arms normally at downward angles of inclination, and a bar vertically movable through the centers of the said beams and having a lower head with oppositely-disposed sockets in which the inner ends of the dog-arms loosely extend, the upper end of the bar being adapted to have the lifting-cable attached thereto.

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**758,471. DAMPER-REGULATOR.** EDWARD A. PRAHL, Philadelphia, Pa. Filed Jan. 28, 1903. Serial No. 140,909. (No model.)

*Claim.*—1. In a draft-regulator, the combination with a receptacle adapted to contain mercury, of an elongated tube forming an outlet from said receptacle, an elongated rod adapted to be movably floated in said tube and spaced sufficiently from the latter to permit the passage of mercury between it and the tube, a damper, and a connection between the damper and rod.

2. In a draft-regulator, the combination with a receptacle adapted to contain mercury, of an elongated tube forming an outlet from said receptacle, an elongated rod adapted to be movably floated in said tube and spaced sufficiently from the latter to permit the passage of mercury between it and the tube, an arm carried by the said rod, a vertically-adjustable rod connected to one side of the tube and carrying pulleys, a damper, and a flexible connection secured to the damper and passing over the said pulleys and attached to the rod in the tube.



3. In a draft-regulator, the combination with a steam-boiler furnace, including a smoke-flue and damper for the latter, of a receptacle connected to the boiler and having an expansible liquid therein supporting a volatile material, an elongated tube forming an outlet from said receptacle, an elongated rod adapted to be movably floated in said tube and spaced sufficiently from the latter to permit the passage of mercury between it and said tube, a damper, and a connection between said damper and rod.

4. In a draft-regulator, the combination with a steam-boiler and furnace, of a damper associated with the smoke-flue of the furnace, a casing having a restricted stem secured to the boiler, and a cup provided with a receptacle adapted to contain mercury, an elongated tube attached to and forming an outlet from said receptacle, a receptacle on the upper end of the tube, an elongated rod movably floated in said tube and spaced sufficiently from the latter to permit the passage of mercury between it and the tube, and a connection between said damper and rod.

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**758,472. BREAD-TOASTER.** RADFORD M. REAMS, McMinnville, Tenn. Filed Aug. 4, 1903. Serial No. 168,149. (No model.)



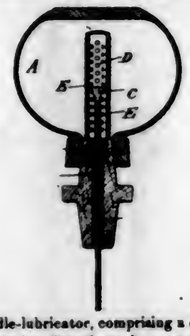
*Claim.*—1. An implement for toasting bread, comprising a rim-piece provided on its inner surface between its edges with a groove and near its edges with holes, a perforated metallic diaphragm resting in said groove, and woven-wire supports secured to the upper and lower portions of said rim-piece by passing the wire thereof through said holes, substantially as described.

2. In implements for toasting bread, the combination, with a rim-piece provided on its inner surface between its edges with a groove and near its edges with holes, a perforated metallic diaphragm resting in said groove and woven-wire supports secured to the upper and the lower portions of said rim-piece by passing the wire thereof through said holes, of inwardly and outwardly sliding handles consisting of two U-shaped metal pieces inserted through

holes on opposite sides of the rim-piece and having their inner arms connected by sliding joints formed by bending the ends of each around the arms of the other, substantially as described.

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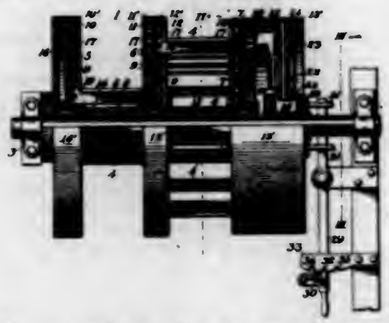
758,473. NEEDLE-LUBRICATOR. HERBERT C. REED, Roosendaal, Netherlands. Filed Aug. 10, 1903. Serial No. 169,088. (No model.)




*Claim.*—A needle-lubricator, comprising a container, a stopper, a central tubular opening therethrough, a needle passing through said opening into the container, a perforated support surrounding said needle, and a filtering material of textile fabric covering the perforated support and separating the needle from the container, substantially as described.

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758,474. SPEED-CHANGING MECHANISM. CHARLES J. REED, Philadelphia, Pa., assignor to Reed-Merrill Electric Co., a Corporation of Pennsylvania. Filed Sept. 15, 1903. Serial No. 173,356. (No model.)



*Claim.*—1. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft, and three adjusting-disks fixed on said tube, as set forth.

2. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft, and three adjusting-disks having spiral grooves and fixed on said tube, as set forth.

3. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft, three adjusting-disks having spiral grooves and fixed on said tube, and means for rotating said tube on said shaft, as set forth.

4. A pulley having plural drums, each drum having movable rim-sections, three adjusting-disks revolubly supported on the pulley-shaft, and four guiding-plates rigidly connected to said shaft, as set forth.

5. A pulley having plural drums, each drum having movable rim-sections, three spirally-grooved adjusting-disks revolubly supported on the pulley-shaft, and four guiding-plates rigidly connected to said shaft and having slots crossing said spiral grooves, as set forth.

6. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft and carrying three adjusting-disks, and guiding-plates rigidly connected to said shaft, the guiding-plates of each drum being carried on the ends of a sleeve revolubly supported on said tube between two of said adjusting-disks, as set forth.

7. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly supported on the pulley-shaft and carrying three adjusting-disks, and guiding-plates rigidly connected to said shaft, the guiding-plates of each drum being carried on the ends of a sleeve revolubly supported on said tube between two of said adjusting-disks and the adjacent guiding-plates of the two drums being rigidly connected together at their peripheries, as set forth.

8. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft and carrying three adjusting-disks having spiral grooves which engage the ends of each rim-section, guiding-plates having substantially radial guide-slots for said rim-sections, the guiding-plates of each drum being carried on the ends of a sleeve revolubly supported on said tube between two of said adjusting-disks and the adjacent guiding-plates of the two drums being rigidly connected together at their peripheries, and a plate fixed on the pulley-shaft and rigidly connected at its periphery to one of said guiding-plates, as set forth.

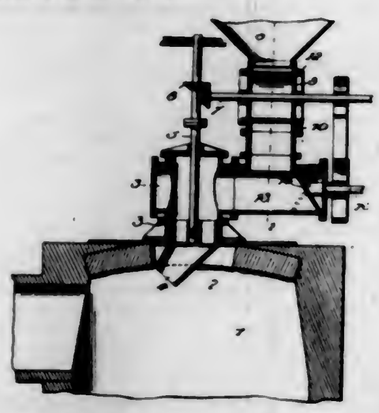
9. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft, and a disk having adjusting-grooves in its opposite faces and fixed on said tube, as set forth.

10. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft, a disk having adjusting-grooves in its opposite faces and fixed on said tube, and means for rotating said tube on said shaft, as set forth.

11. A pulley having plural drums, each drum having movable rim-sections, a tube revolubly mounted on the pulley-shaft, a disk having adjusting-grooves in its opposite faces and fixed on said tube, and guiding-plates rigidly connected at their peripheries and inclosing said adjusting-disk, as set forth.

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758,475. GAS-PRODUCER. JOSEF EMILEAUX, Wilkinsburg, Pa., assignor to Alexander Laughlin, Sewickley, Pa. Filed June 2, 1903. Serial No. 159,767. (No model.)



*Claim.*—1. In a gas-producer having a charging-opening and a casing thereover, a fuel-reservoir out of line with such casing, a horizontally-disposed fuel-receiving chamber opening into said casing, a second casing connecting said chamber to said reservoir, an obliquely-arranged disk positioned within said chamber to one side of the plane of the opening of said second casing into said receiving-chamber, and means for rotating the disk, as set forth.

2. In a gas-producer having a charging-opening and a casing thereover, a fuel-reservoir out of line with such casing, a horizontally-disposed fuel-receiving chamber opening into said casing, a second casing connecting said chamber to said reservoir, a valve in such second casing for supplying fuel from the hopper to said chamber, an obliquely-arranged disk positioned within said chamber to one side of the plane of the opening of said second casing into said receiving-chamber, and means for rotating the disk, as set forth.

3. In a gas-producer having a charging-opening and a casing thereover, a fuel-reservoir out of line with such casing, a horizontally-disposed fuel-receiving chamber opening into said casing, a second casing connecting said chamber to said reservoir, a valve in such second casing for periodically supplying fuel from the hopper to said chamber, an obliquely-arranged disk positioned within said chamber to one side of the plane of the opening of said second casing into said receiving-chamber, and a rotary shaft for said disk extended outwardly through one end of the chamber, as set forth.

4. In a gas-producer having a charging-opening and a casing thereover, a fuel-reservoir out of line with such casing, a horizontally-disposed fuel-receiving chamber opening into said casing, a second casing connecting said chamber to said reservoir, a rotary valve in such second casing for supplying fuel from the hopper to said chamber, a rotary obliquely-set disk within said chamber, and actuating means connecting said valve and disk, as set forth.

5. In a gas-producer having a charging-opening and a casing thereover, a fuel-reservoir out of line with such casing, a horizontally-disposed fuel-receiving chamber opening into said casing, a second casing connecting said chamber to said reservoir, a rotary valve for intermittently supplying fuel from the hopper to the receiving-chamber, a shaft for such valve, a rotary obliquely-set disk within such receiving-chamber, a shaft for such disk, and a connection between such shafts, as set forth.

6. In a gas-producer having a charging-opening and a casing thereover, a fuel-reservoir out of line with such casing, a horizontally-disposed fuel-receiving chamber opening into said casing, a second casing connecting said chamber to said reservoir, a valve in such second casing for supplying fuel from the hopper to said chamber, a shaft therefor, an obliquely-arranged disk positioned within said chamber to one side of the plane of the opening of said second casing into said receiving-chamber, a rotary shaft for said disk extended outwardly through one end of the chamber, and actuating means connecting the shafts of the valve and pusher, as set forth.

7. In a gas-producer having a charging-opening and a stationary casing thereover having a central opening, a fuel-discharge spout mounted in said central opening and extended diagonally through said charging-opening, a sectional shaft connected to said spout, and means for actuating such shaft, as set forth.

8. In a gas-producer having a charging-opening at the center of its top, a casing mounted on said top having a central opening, a fuel-chamber opening into said casing at right angles to said central opening, means for forcing fuel from said chamber, a spout having its upper portion fitted in said central opening, the lower portion of said spout being extended obliquely through the opening in the top of the producer, and means for rotating said spout, as set forth.

9. In a gas-producer having a charging-opening, and a casing thereover, in combination, a fuel-reservoir out of line with such opening, a fuel-receiving chamber forming a right-angular communication between the reservoir and said casing, a rotary valve for feeding fuel from the reservoir to said chamber, a shaft therefor, a rotary pusher within the chamber, a shaft therefor, a connection between said shafts, a rotary discharge-spout extended through the charging-opening, and a shaft connected thereto and geared to the shaft of the rotary valve, as set forth.

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758,476. CLAMP. RUDOLF RÖSSLER, Leipsig, Germany. Filed July 7, 1903. Serial No. 164,566. (No model.)




*Claim.*—1. A suspension-clamp comprising two jaws, and a pair of links attached to the said jaws for connecting them together, said links arranged in an angular manner with respect to one another.

2. A suspension-clamp comprising a fixed and a movable jaw said movable jaw provided with prongs, and a pair of links attached to the said jaws for connecting them together, said links arranged in an angular manner with respect to one another.

3. A suspension-clamp comprising a fixed and a movable jaw, said fixed jaw of greater length than said movable jaw, and a pair of links attached to the upper portion of said jaws and adapted to connect the jaws together, said jaws arranged in an angular manner with respect to each other.

4. A suspension-clamp comprising a fixed and a movable jaw, said fixed jaw of greater length than said movable jaw, a pair of links attached to the upper portion of said jaws and adapted to connect the jaws together, said jaws arranged in an angular manner with respect to each other, and prongs carried by said movable jaw.

5. A suspension-clamp comprising a pair of jaws, and a pair of links for connecting said jaws together, said links at their ends extending through the said jaws.

6. A suspension-clamp comprising a fixed and a movable jaw, said fixed jaw of greater length than said movable jaw, and a pair of links extending through the jaws and adapted to connect them together, said links arranged in an angular manner with respect to each other.

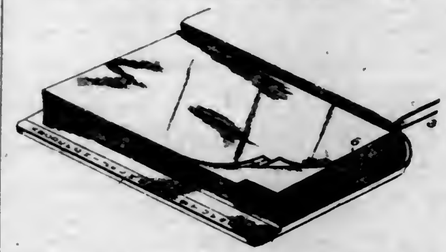
7. A suspension-clamp comprising a fixed and a movable jaw, said fixed jaw of greater length than said movable jaw, a pair of links extending through the jaws and adapted to connect them together, said links arranged in an angular manner with respect to each other, and prongs carried by the movable jaw.

8. A suspension-clamp comprising a fixed and a movable jaw, said fixed jaw of greater length than said movable jaw, a pair of links extending through the jaws and adapted to connect them together, said links arranged in an angular manner with respect to each other, and a tension device suitably connected to said elongated jaw.

9. A suspension-clamp comprising a fixed and a movable jaw, said fixed jaw of greater length than said movable jaw, a pair of links extending through the jaws and adapted to connect them together, said links arranged in an angular manner with respect to each other, prongs carried by the movable jaw, and a tension device suitably connected to said elongated jaw.

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758,477. INDEX. HERBERT M. RUDASILL, Glenwood Springs Colo. Filed Aug. 24, 1903. Serial No. 170,630. (No model.)



*Claim.*—1. A book or bound volume having sections of its leaves cut or removed along their edges, the extent of the cut or removal of the several sections being graduated, each section having an index applied directly thereto within the width thereof, a cover for the book or volume having its outer edges projected beyond those of the several sections, an index affixed to one of such projected edges corresponding to the index of the several sections but facing in the opposite direction thereto, and means for forming a space between the index of the cover and that of the sections.

2. A book or bound volume having sections of its leaves cut or removed along their edges, the extent of the cut or removal of the several sections being graduated, each section having an index applied directly thereto within the width thereof, a cover for the book or volume having its outer edges projected beyond those of the several sections, and an index affixed to one of such projected edges corresponding to the index of the several sections but facing in the opposite direction thereto, such cover being constructed to provide a vertical space between its index and that of the sections.

3. A book or bound volume having sections of its leaves cut or removed along their edges, the extent of the cut or removal of the several sections being graduated, each section having an index applied directly thereto within the width thereof, and a cover for the book or volume having its outer edges projected beyond those of the several sections, one of such edges having its projected portion reduced in thickness and provided with an index corresponding to the index of the several sections but facing in the opposite direction thereto, a space being between such index and the inner wall of the reduced portion, for the purpose set forth.

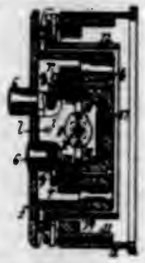
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758,478. ELECTRIC SWITCH. JOSEPH H. RUBY, Nutley, N. J. Filed June 25, 1903. Serial No. 163,111. (No model.)

*Claim.*—1. A switch-support comprising a swinging projecting lug and a second lug seated or fitted in the first lug.

2. A switch-support comprising a lug having an offset and a swinging adjustable lug seated in the offset.

3. A switch-support comprising a swinging projecting lug and a second lug seated or fitted in the first lug, said second lug being tapped for the reception of an adjusting-screw



4. A switch-support comprising a swinging projecting lug and a second lug seated or fitted in the first lug, said second lug being tapped for the reception of cover securing and adjusting screws.

5. A switch comprising a lever, a contact-actuator moved by the lever, push-buttons for the lever, guide-pins for and projecting rearwardly from the buttons, and tubular guides for maintaining rectangular movement of the pins, said push-buttons and lever having a loose connection and said guides arranged at the rear of said loose connection.

6. A switch comprising blades bent to form a hollow pintle portion and a base-plate in which the pintle portions are mounted.

7. A switch comprising blades bent to form a hollow pintle portion and a base-plate in which the pintle portions are mounted and in which they have been suitably expanded to secure firm contact or friction and prevent displacement.

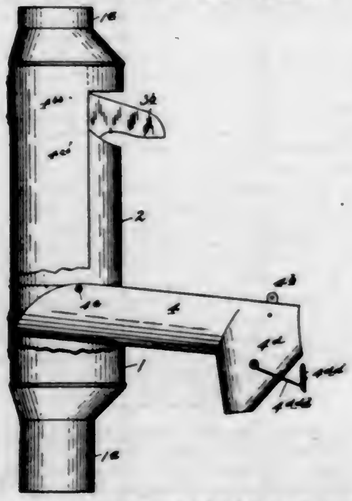
8. A switch comprising single blades, each of which has a hooked end, separate posts for each of the blades, a rock-shaft having an insulated hub and arms for connecting the blades and hub, and a base-plate acting as a fulcrum for the forward end of the blades, said fulcrumed ends of the blades being substantially circular and freely movable in said base-plate.

9. A switch comprising an insulating-shell and a sheath, said sheath being composed of two sections with pin-and-slot connection so as to be adjustable or extensible for varying the size of the sheath.

10. A switch comprising an insulating-shell and a sheath, said sheath being composed of two sections with pin-and-slot connection so as to be adjustable or extensible for varying the size of the sheath, said sheath being of less depth than the space occupied by the switch so as to have a part of the insulating-shell project beyond the sheath.

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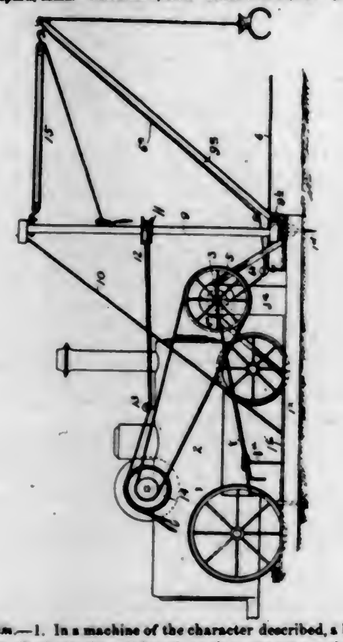
758,479. **RAIN-WATER CUT-OFF.** JOHN J. SANDVIG, Wilmot, S. D. Filed Jan. 26, 1904. Serial No. 190,694. (No model.)



*Claim.*—A device of the character described, having arranged therein, a filter having a gauze-bottomed spout extension, and a hinged trough member, with its inner end movable into alinement with said filter and having its outer end provided with a chute or spout adapted to either house said spout extension or to be removed therefrom as in directing the water-flow into a pail or like receptacle and receive the overflow water from said spout extension when thus removed.

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758,480. **LAND-CLEARING MACHINE.** WILLIAM M. SEYMOUR, Brookpark, Minn. Filed Jan. 6, 1904. Serial No. 187,975. (No model.)



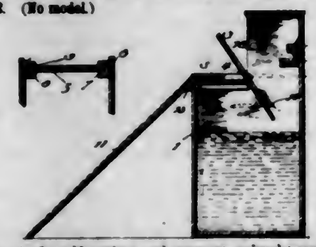
*Claim.*—1. In a machine of the character described, a base having longitudinal wheel-receiving channels or grooves and equipped with rods or guards secured to said base at their ends, parallel with said grooves.

2. In a machine of the character described, a base having lateral hinged or folding sections provided with anchoring-stakes adapted to be driven into the surface or ground.

3. In a machine of the character described, a suitably mounted and actuated shaft carrying a fixed pulley, winding-drums loose upon said shaft and equipped with clutches adapted to laterally engage said fixed pulley, manually-actuated means for effecting such engagement of said clutches, a motor suitably arranged with relation to said shaft, cables connected to and coiled upon said winding-drums, an upright shaft, with its swinging beam, pivotally mounted in position and carrying a horizontal pulley, additional cables oppositely actuating said horizontal pulley and connected to additional actuating drums or pulleys of said motor, with their drum-actuated end portions adapted to be manually tightened around said drums or pulleys.

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758,481. **SELF-SETTING AND EVER-SET ANIMAL-TRAP.** LEWIS H. SIMON, Elkins, W. Va. Filed Apr. 18, 1903. Serial No. 153,252. (No model.)



*Claim.*—1. In self-setting and ever-set animal-traps, provided with a dumping-door and a drowning-pool, a detachable false door



under the forward half of the dumping-door, said false door resting upon and being detachably held in place by three strips made fast in horizontal positions across and near the top edges of the front and side inner surfaces of the trap-walls; the front strip being plain; one of the side strips being provided with a longitudinal groove, adapted to engage one end of said false door, and the other side strip being provided with a longitudinal shoulder in its inner upper corner, adapted to accommodate the other end of said false door, substantially as described.

2. In self-setting and ever-set animal-traps, provided with a dumping-door, a drowning-pool, a detachable false door beneath the forward half of the dumping-door and strips for said false door to rest upon, turn-buttons to hold said false door detachably in place, substantially as described.

3. In self-setting and ever-set animal-traps, provided with a dumping-door, a drowning-pool, and a detachable false door beneath the forward half of the dumping-door, strips for said false door to rest upon, one of said strips extending horizontally half-way across the inner side-wall surface of the trap near its top edge, and provided with a longitudinal groove, adapted to engage one end of said false door, substantially as described.

4. In self-setting and ever-set animal-traps, provided with a dumping-door, a drowning-pool, and a detachable false door beneath the forward half of the dumping-door, strips for said false door to rest upon, one of said strips extending horizontally half-way across the inner side-wall surface of the trap-body near its upper edge, and provided with a longitudinal shoulder along its upper inner corner, to accommodate one end of the false door, and means for clamping said end therein, substantially as described.

5. In self-setting and ever-set animal-traps, the combination of a hollow body, a drowning-pool within the lower part of said hollow body, a hooded top on said hollow body, a dumping-door tapering backwardly through its rear half and mounted horizontally within the top of said hollow body upon side pintles, a detachable false door under the forward half of said dumping-door resting upon and held in place by three inner strips, the front strip being plain, one side strip being provided with a longitudinal central groove to engage one end of the false door and the other side strip being provided with a longitudinal groove shoulder along its upper inner corner and turn-buttons on the upper side of said shoulder to engage and hold the other end of said false door, a catch sunk into the inner side wall of said hooded top to prevent said dumping-door from being tilted too far over, a bait-hook and a bait-pan mounted within said hooded top upon the rear wall thereof above said dumping-door, rough-surfaced slabs extending slantingly upward from the trap-base to the dumping-door in front and on each side and having pinned niche-and-shoulder connection with outer strips around the front and side edges outside of said dumping-door and handles on the sides of the trap-body, substantially as described.

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758,482. **HANDLE.** EDWARD F. SMITH, Newfield, Me. Filed Feb. 11, 1902. Renewed Mar. 31, 1904. Serial No. 200,954. (No model.)



*Claim.*—1. A handle for tools, implements and like articles, comprising a shank having lugs at its inner face at or near the ends thereof, and clamping devices adjustable on the shank and engaging the article, to draw the latter tight against the lugs, to clamp the handle in place, as set forth.

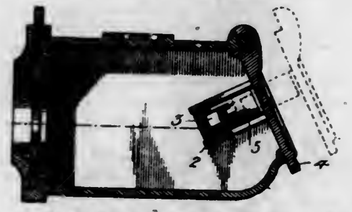
2. A handle for tools, implements and like articles, comprising a handle proper, having a shank formed with extensions at its ends, and clamping devices held on the said extensions to clamp the handle in position on the article, as set forth.

3. A handle for tools, implements and like articles, comprising a handle proper, having a shank formed with extensions at its ends, and clamping devices held on the said extensions to clamp the handle in position on the article, each clamping device consisting of an eye and a bolt thereon, engaging the corresponding extension, as set forth.

4. A handle for tools, implements and like articles, comprising a handle proper, having extensions at its ends, each extension being formed with spaced lugs for engagement with one side of the article, and eyes held to slide between a pair of lugs and adapted to engage the article, each eye having a bolt engaging the extension, as set forth.

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758,483. **CAR-AXLE BOX.** JAMES SPURR, Lima, Ohio. Filed Jan. 27, 1904. Serial No. 190,883. (No model.)



*Claim.*—1. The combination with an axle-box having guide-ribs therein, and retaining-lugs interposed between the ribs; of a closure, and oppositely-arranged apertured spring-strips secured to the closure and adapted to automatically engage the lugs.

2. The combination with an axle-box having guide-ribs therein; of a closure, spring-strips extending from the closure and slidably mounted between the ribs, and means for locking the strips to the blocks.

3. The combination with an axle-box having lugs therein with rounded ends; of a removable closure, and oppositely-disposed apertured spring-strips extending from the closure and adapted to engage the lugs.

4. The combination with an axle-box having retaining-lugs with rounded ends, and guides adjacent the lugs; of a removable closure, and oppositely-disposed apertured spring-strips extending from the closure and adapted to project between the guides and engage the lugs.

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758,484. **FEED-WATER HEATER.** THOMAS Y. STEWART, St. Paul, Minn., assignor of one-half to Ronald Stewart, St. Paul, Minn. Filed July 27, 1903. Serial No. 167,156. (No model.)

*Claim.*—1. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of upright corrugated plates arranged in said chamber and providing zigzag passages in which the water passing through said chamber is deflected from one plate to another, substantially as described.

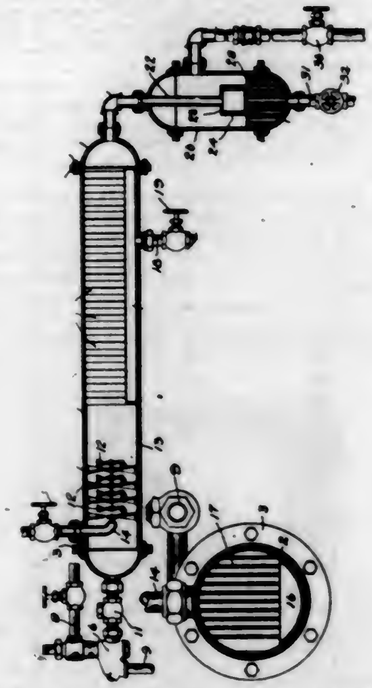
2. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of upright corrugated plates arranged in said chamber and providing zigzag passages in which the water passing through said chamber is deflected from one plate to another, and a space below said plates for the collection of sediment.

3. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of upright corrugated plates arranged in said chamber and providing zigzag passages in which the water passing through said chamber is deflected from one plate to another, and a removable trough arranged in said chamber below said plates, substantially as described.

4. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of upright corrugated plates arranged in said chamber and providing zigzag passages in which the water passing through said chamber is deflected from one plate to another, of a dead-water-settlings chamber below said plates and a suitable waste-pipe connected with said settlings-chamber.

5. In a feed-water heater and purifier, the combination, in a separating-chamber, of a series of corrugated copper plates and a series of corrugated zinc plates alternately arranged in said cham-

ber and providing zigzag passages for the water passing through said chamber, substantially as described.



6. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of corrugated plates arranged in said chamber and providing zigzag passages for the water passing through said chamber, and a series of spiral baffle-plates arranged in said chamber between the inlet-pipe and said corrugated plates, substantially as described.

7. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of upright corrugated plates arranged in said chamber and providing zigzag passages in which the water passing through said chamber is deflected from one plate to another, and a suitable steam-pipe connected with said chamber between the inlet-opening and said corrugated plates.

8. In a feed-water heater and purifier, the combination, with a separating-chamber, of a series of corrugated plates arranged in said chamber and providing zigzag passages for the water passing through said chamber, a series of spiral baffle-plates, and a steam-pipe connected with said chamber, substantially as described.

9. In a feed-water heater and purifier, the combination, with the separating-chamber provided with the zigzag separating-plates, of the auxiliary chamber, the pipe extending into said auxiliary chamber, the head secured upon said pipe and provided with a series of openings, and the screens arranged over said openings.

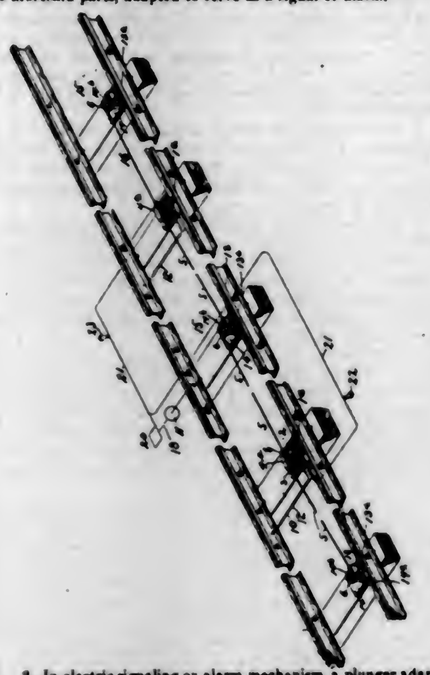
10. In a feed-water heater and purifier, the combination, with a suitable chamber, of a series of zinc plates having serrated lower edges arranged in the bottom of said chamber with narrow spaces between them, for the purpose set forth.

11. In a feed-water heater and purifier, the combination, with the auxiliary chamber 20 provided with a series of zinc plates 28 having serrated lower edges and arranged in the bottom of said chamber with narrow spaces between them, and a waste-pipe 31 and valve 32, substantially as described.

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**758,485. RAILROAD SIGNAL OR ALARM. ROBERT F. STUART, Logansport, Ind. Filed Oct. 14, 1903. Serial No. 177,015. (No model.)**

*Claim.*—1. In electric signaling or alarm mechanism, a plunger adapted to be actuated by a moving part on a track-rail, a sliding member or part adapted to have movement at right angles to, and be engaged by, said plunger, means connected to said sliding member and adapted to be subsequently actuated as relates to the actuation of said plunger and sliding member, for effecting the temporary holding of said plunger, and means electrically connected to the aforesaid parts, adapted to serve as a signal or alarm.



2. In electric signaling or alarm mechanism, a plunger adapted to be actuated by a moving part on a track-rail and comprising an automatically-yielding member, a sliding part or member adapted to have movement at right angles to said plunger and having an arm adapted to be engaged by said yielding member, means connected to said sliding member, adapted to be subsequently actuated as relates to the actuation of said plunger for effecting the temporary holding of said plunger, and means electrically connected to the aforesaid parts, adapted to serve as a signal or alarm.

3. In electric signaling or alarm mechanism, a plunger adapted to be actuated by a moving part on a track-rail and comprising an automatically-yielding member, a sliding part or member having movement at right angles to said plunger and having an arm adapted to be engaged by said yielding member, means connected to said sliding member, adapted to be subsequently actuated as relates to the actuation of said plunger for effecting the temporary holding of said plunger, means for carrying the arm of said sliding member out of alinement with said plunger, means for restoring said arm of said slide to its initial position, into alinement again with said plunger, and means electrically connected to the aforesaid parts, adapted to serve as a signal or alarm.

4. In electric signaling or alarm mechanism, a plunger adapted to be actuated by a moving part on a track-rail, a sliding part or member having an arm and movement at right angles to said plunger, said arm being adapted to be engaged by said plunger, means connected to said sliding member or part, adapted to be subsequently actuated as relates to the actuation of said plunger, for the temporary holding of said plunger, means for carrying the arm of said sliding member out of alinement with said plunger, means for restoring said sliding member, with its arm, to their initial position, again into alinement with said plunger, means for tripping the plunger temporary holding means, and means electrically connected to the aforesaid parts, adapted to serve as a signal or alarm.

5. In electric signaling or alarm mechanism, a plunger adapted to be actuated by a moving part on a track-rail, a dog having a shoulder engaging a notch in said plunger, means for actuating said dog comprising a slide having an arm movable at right angles to, and adapted to contact with, said plunger, and means for controlling said dog-actuating means from the track-rail.

6. In electric signaling or alarm mechanism, a plunger adapted to be actuated from the track-rail, a dog having a shoulder engaging a notch in said plunger, spring-pressed levers connected to said dog, a slide having an arm movable at right angles to, and adapted to contact with, said plunger and having means for actuating said levers, and means adapted to control said slide from the track-rail.

7. In electric signaling and alarm mechanism, a plunger adapted to be actuated from the track-rail, a dog having a shoulder engaging a notch in said plunger, spring-pressed levers connected to said dog, a slide having an arm movable at right angles to, and adapted to contact with, said plunger, said slide also having pendent projections or lugs engaging said levers, and means adapted to actuate said slide from the track-rail.

8. In electric signaling and alarm mechanism, a plunger adapted to be actuated from the track-rail, a dog having a shoulder engaging a notch in said plunger, spring-pressed levers connected to said dog and having upturned end portions, a slide having pendent projections engaging said ends, additional plungers also actuated from the track-rail, wires connected to said slide and to eccentrics actuated by said additional plungers.

9. In electric signaling or alarm mechanism, plungers arranged upon opposite sides of a railroad-crossing, sliding members, each having an arm arranged in alinement with a plunger, dogs for effecting the temporary holding of said plungers, spring-pressed levers for carrying each plunger, a third plunger arranged intermediately of the first-referred-to plungers, means connecting an eccentric actuated by the latter plunger with said sliding members, two other plungers arranged beyond said first-referred-to plungers, means effecting connection between the last-referred-to plungers and said first-referred-to plungers, and means electrically connected to the aforesaid parts, adapted to serve as a signal or alarm, said plungers all adapted to be actuated or controlled from the track-rail.

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**758,486. PRINTING-ROLLER. BENJAMIN J. SOOS, Washington, D. C. Filed June 6, 1903. Serial No. 160,401. (No model.)**



*Claim.*—1. A printing-roller adapted to be mounted upon a shaft or spindle and comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges abutting, forming a continuous printing-surface, and a filling or lining of suitable firm material within said cylinder, said filling having an axial opening conforming to the shaft upon which the roller is to be mounted.

2. A printing-roller adapted to be mounted upon a shaft or spindle and comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges abutting, forming a continuous printing-surface, and a filling or lining of hardened plastic material within said cylinder, said filling having an axial opening conforming to the shaft upon which the roller is to be mounted.

3. A printing-roller adapted to be mounted upon a shaft or spindle and comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges secured together by a butt-joint, forming a continuous printing-surface, and a filling or lining of suitable firm material within said cylinder, said filling having an axial opening conforming to the shaft upon which the roller is to be mounted.

4. A printing-roller adapted to be mounted upon a shaft or spindle and comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges secured together by a butt-joint, forming a continuous printing-surface, and a filling or lining of hardened plastic material within said cylinder, said filling having an axial opening conforming to the shaft upon which the roller is to be mounted.

5. A printing-roller adapted to be mounted upon a shaft or spindle comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges abutting to form a continuous printing-surface, a metal seam-cover and retaining-strip within the cylinder secured to the abutting ends of the cylinder and covering the joint or seam between said ends, and a filling of suitable firm material within said cylinder, said filling having an axial opening conforming to the shaft upon which the roller is to be mounted.

6. A printing-roller adapted to be mounted upon a shaft or spindle comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges abutting to form a continuous printing-surface, a metal seam-cover and retaining-strip within the cylinder secured to the abutting ends of the cylinder and covering the joint or seam between said ends, and a filling of hardened plastic material within said cylinder, said filling having an axial opening conforming to the shaft upon which the roller is to be mounted.

7. The combination with a shaft or spindle of a printing-roller mounted thereon and comprising a photo-engraved metal plate bent into the form of a cylinder and having its meeting edges secured together by a butt-joint, and a filling of suitable firm material between said shaft and cylinder, forming a support and backing for the latter.

8. The combination with a shaft or spindle of a printing-roller mounted thereon and comprising a photo-engraved metal plate bent into the form of a cylinder and having its meeting edges abutting, and a filling of hardened plastic material between said shaft and cylinder, forming a support and backing for the latter.

9. A printing-roller comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges abutting, a metal seam-cover and retaining-strip, within the cylinder, secured to the abutting ends of the cylinder, and covering the joint or seam between said ends, and a filling of suitable firm material within the cylinder, forming a support and backing for the same.

10. A printing-roller comprising a photo-engraved metal plate bent into cylindrical form and having its meeting edges abutting, a metal seam-cover and retaining-strip within the cylinder, secured to the abutting ends of the cylinder, and covering the joint or seam between said ends, and a filling of hardened plastic material within the cylinder, forming a support and backing for the same.

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**758,487. RAIN-COAT. BERTRAND R. TERWILLIGER, Lincoln University, Pa. Filed Sept. 8, 1903. Serial No. 172,313. (No model.)**




*Claim.*—1. A garment of the class described, having triangular flaps at its lower edge, and means to secure the flaps in upturned position to form drain-gutters.

2. A garment of the class described, having upturned triangular flaps forming drain-gutters extending from back to front, and discharging at the centers of the sides of the garment.

3. A rain-coat split, as at 2, and formed with triangular flaps at its lower edges adapted to be upturned to form drain-gutters to discharge at the centers of the sides of the coat, and means to secure said flaps when thus upturned, said securing means enabling the flaps to be detached therefrom at will.

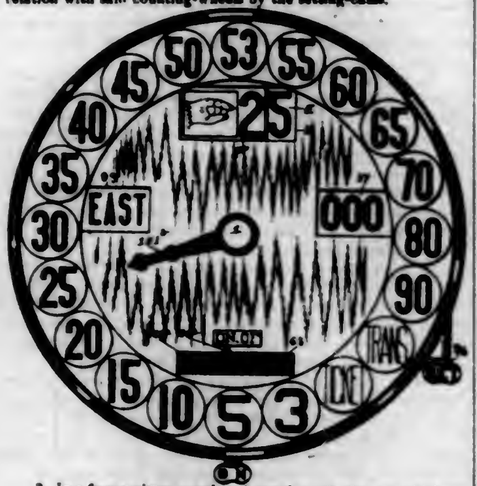
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**758,488. FARE-REGISTER. HIRAM TYLER, Dayton, Ohio, assignor to the Ohmer Fare Register Co., Dayton, Ohio. Filed Jan. 13, 1903. Serial No. 138,872. (No model.)**

*Claim.*—1. In a fare-register, a dial upon which the various fares are indicated, a hand adapted to be brought into positions to indicate said fares, a shaft to which said hand is fixed, and a series of setting-cams fixed to said shaft.

2. In a fare-register, a dial upon which the various fares are indicated, a hand adapted to be brought into positions to indicate said fares, a shaft to which said hand is fixed, a series of setting-cams fixed

to said shaft, a series of counting-wheels upon which various fares are recorded as per the dial, and mechanism adapted to actuate said counting-wheels, the said mechanism being first placed in operative relation with said counting-wheels by the setting-cams.




3. In a fare-register, a series of counting-wheels upon which are recorded all the cash fares, mechanism for actuating said counting-wheels, a fare-indicator to exhibit the fares recorded on said counting-wheels, mechanism for actuating said fare-indicator, a series of setting-cams controlling the positions of said actuating mechanisms, a common shaft upon which said cams are mounted, and a parallel shaft with means thereon through which said cam-shaft is operated.

4. In a fare-register, a series of counting-wheels upon which the tickets are recorded, a series of counting-wheels upon which the transfers are recorded, mechanism for actuating each set of said counting-wheels, fare-indicators to exhibit the tickets and transfers as recorded, means for actuating said fare-indicators, setting-cams to bring into operative relation said counting-wheels, fare-indicators and their respective mechanisms, said cams being upon a common operating-shaft, and a separate parallel shaft geared to said cam-shaft and through which said cam-shaft is actuated.

5. In a fare-register, a series of counting-wheels upon which the cash fares alone are recorded, a fare-indicator to exhibit the fares so recorded, a series of setting-cams, a common shaft upon which said cams are mounted, a separate parallel shaft by which said cam-shaft is operated, mechanism adapted to be brought into operative relation with said counting-wheels and fare-indicator by said cams, and means for operating said mechanism to record and indicate the cash fares.

6. In a fare-register, a series of counting-wheels upon which the tickets alone are recorded, a series of counting-wheels upon which transfers alone are recorded, fare-indicators to exhibit the tickets and transfers as recorded, a series of setting-cams, a common shaft upon which said cams are mounted, an auxiliary shaft geared to said cam-shaft and by which it is operated, actuating mechanism adapted to be brought into operative relation with said counting-wheels and fare-indicators by said cams, and means for imparting the necessary movement to said mechanism to record and indicate the tickets and transfers.

7. In a fare-register, a series of counting-wheels upon which the cash fares alone are recorded, a fare-indicator to exhibit the cash fares as recorded, mechanism adapted to actuate said counting-wheels and fare-indicator, a series of setting-cams controlling the positions of the actuating mechanism, a shaft upon which said cams are fixed, an auxiliary shaft geared to said cam-shaft, and means for transmitting movement through said auxiliary shaft to record and indicate the cash fares.

8. In a fare-register, a dial upon which the various fares are shown, a hand adapted to be brought into positions to indicate said fares, a series of counting-wheels upon which the cash fares alone are recorded, setting-cams mounted upon a shaft to which the hand is secured, an auxiliary shaft geared to said cam-shaft and by which it is operated, and actuating mechanism for said counting-wheels, the said mechanism being controlled in its positions by the setting-cams.

9. In a fare-indicator, a series of counting-wheels upon which the total of the cash fares alone is recorded, a series of counting-wheels upon which the total of the tickets alone is recorded, a series of counting-wheels upon which the total of the transfers alone is recorded, a series of counting-wheels upon which the grand total of all the fares is recorded, a movable frame upon which said counting-wheels are supported, means for elevating and lowering said frame and counting-wheels, and devices actuated through the elevating movement of said frame to impart movement to the series of counting-wheels upon which the grand total of all the fares is recorded.

10. In a fare-register, a series of counting-wheels upon which is recorded the grand total of all the different fares recorded, a movable frame upon which said wheels are supported, means for elevating and lowering said frame, and means actuated through the elevating movement of said frame to impart movement to said wheels.

11. In a fare-register, a series of counting-wheels upon which is recorded the total of the cash fares, a series of counting-wheels upon which is recorded the total tickets, a series of counting-wheels upon which is recorded the total transfers, a series of counting-wheels upon which is recorded the grand total of all the fares, a movable frame upon which said several series of wheels are supported, means for actuating said frame and the several series of counting-wheels, devices for actuating the counting-wheels upon which the grand total of all the fares is recorded, said devices being operative during the movement of said frame, separate sets of actuating mechanisms for the total cash fares, the tickets and the transfer counting-wheels, setting mechanism adapted to bring the total-cash-fare counting-wheels, the total-ticket counting-wheels, and the total-transfer counting-wheels, and their respective actuating mechanisms into operative relation prior to the elevation of said counting-wheels, and means for imparting movement to said actuating mechanisms.

12. In a fare-register, a dial upon which the various fares are inscribed, a main shaft, a hand or pointer upon said shaft to point to the various fares upon the dial, a series of setting-cams upon said shaft, different combinations each of which operates in connection with a specific fare, said combinations being set by the setting-cams, and means for actuating said mechanisms after the same has been set by said cams.

13. In a fare-register, a dial upon which the various fares are inscribed, a main shaft, a hand or pointer upon said shaft, a series of setting-cams upon said shaft, the hand or pointer and the setting-cams being movable concurrently, the one to point to the desired fare on the dial, and the other to set the mechanism of the register to record the particular fare shown upon the dial, and means for actuating the mechanism of the register after the same has been set for the desired fare.

14. In a fare-register, a dial in front of the register and upon which are inscribed the fares of the various classes, a pointer movable over the face of said dial to indicate the fares recorded, counting-wheels upon which are recorded the fares as indicated upon the dial, fare-indicators to exhibit the specific fare recorded on said counting-wheels and indicated upon said dial, setting-cams to set the mechanism which actuates said counting-wheels and said fare-indicators, a common shaft upon which said cams and the dial-pointer are mounted, and an auxiliary shaft geared to said common shaft and from which it is operated to set the cams in the desired positions for recording and indicating the specific fares.

15. In a fare-register, a dial upon which are inscribed the fares of the various classes, a dial or pointer movable over the face of said dial to indicate each specific fare prior to the recording thereof, setting-cams to actuate the mechanism of the register to move the same to operative positions, the said setting-cams and the dial-hand being movable simultaneously, counting-wheels upon which the fares of the various classes as shown upon the dial are recorded, specific indicators to exhibit each fare as shown upon the dial and as recorded upon the counting-wheels, an auxiliary shaft geared to the shaft upon which the dial-hand and the setting-cams are mounted and through which said dial-hand and cams are simultaneously actuated to the desired positions, and means for actuating the mechanism of the register after the dial-hand and the cams have been set to the desired positions.

16. In a fare-register, counting-wheels for recording the different classifications of fares, a frame upon which said counting-wheels are mounted, lifting devices upon the main shaft for actuating said frame to raise the counting-wheels, an auxiliary shaft, gearing interposed between said shafts for actuating said lifting devices, and operating means for imparting movement to said gearing.

17. In a fare-register, counting-wheels for recording the different groups of fares, a movable frame upon which said counting-wheels are mounted, lifting-cams on the main shaft through which said frame and the counting-wheels are moved, spur-wheels on the main shaft to which said lifting-cams are fixed, a main driving spur-wheel on said shaft, an operating-lever upon said shaft, an auxiliary shaft, and transmission-gears on said auxiliary shaft, said transmission-gears being actuated through the operating-lever and the main driving spur-wheel to impart movement to the lifting-cams.



18. In a fare-register, counting-wheels upon which the various fares are recorded, fare-indicators upon which the fares recorded are indicated, means adapted to actuate said counting-wheels and fare-indicators, levers to which said actuating means are coupled, setting-cams adapted to set said levers to the desired positions, and operating-cams acting upon said levers after their setting movements have been obtained.

19. In a fare-register, counting-wheels upon which the fares are recorded, fare-indicators upon which the fares recorded are indicated, gearing adapted to actuate said counting-wheels and fare-indicators, levers to which said gearing is connected, setting-cams adapted to set said levers to the desired positions, and operating-cams acting upon said levers after their setting movements are obtained, and whereby the counting-wheels and fare-indicators are simultaneously actuated.

20. In a fare-register, a dial upon which the fares to be registered are exhibited, means to indicate upon said dial what fare is to be registered, segment-gears, cams adapted to operate said segment-gears in connection with the means for exhibiting the fare on the dial, a series of counting-wheels, means for taking a statement of the fares recorded on said counting-wheels, and means to effect an engagement and a disengagement between the counting-wheels and their segment-gears.

21. In a fare-register, a dial having inscribed thereon the various fares registrable, a pointer adapted to indicate on said dial each fare to be registered, a series of setting-cams to set the desired fare to be registered, said cams and pointer being movable at the same time, a series of counting-wheels upon which the total cash fares are recorded, a fare-indicator upon which the fare is to be registered is indicated subsequently to the indication of said fare upon the dial, and actuating mechanisms for said counting-wheels and said fare-indicator, said actuating mechanisms being brought into a position to be operated by the movement of the setting-cams and the pointer.

22. In a fare-register, a dial having inscribed thereon the various fares registrable, a pointer to indicate on said dial the fares to be registered, setting mechanism adapted to select the fare to be registered, a common operative shaft upon which said pointer and said setting mechanism are mounted, said setting mechanism and the poister being movable simultaneously, a member exterior to the register through which said setting mechanism and the pointer are actuated.

23. In a fare-register, a dial having inscribed thereon the various fares registrable, a pointer to indicate on said dial each fare to be registered, setting mechanism adapted to set the desired fare to be registered, a common operative shaft upon which said pointer and said setting mechanism are mounted, the said setting mechanism and the pointer being movable at one and at the same time, an actuating member adapted to operate or move said setting mechanism and said pointer, and means for arresting the movement of said actuating member.

24. In a fare-register, a dial upon which the various fares are registrable, a pointer to indicate on said dial each fare to be registered, a series of setting-cams through which the mechanism of the register is selected for operation, a common shaft upon which said pointer and said cams are mounted, said setting-cams and pointer being movable concurrently, sets of counting-wheels upon which the total cash fares, the total tickets, the total transfers, and a grand total of all the fares are recordable, and means for taking a statement from said counting-wheels showing the totals of the fares registered.

25. In a fare-register, a dial having inscribed thereon the various fares registrable, a pointer to indicate on said dial the fares to be registered, sets of counting-wheels upon which the various classifications of fares are recorded, fare-indicators upon which the specific fares of the various classification are indicated, mechanisms through which said counting-wheels and said fare-indicators are operated, setting mechanism adapted to bring into operative positions said mechanisms through which the counting-wheels and the fare-indicators are operated, said setting mechanism and the pointer being mounted upon a common shaft and movable at the same time.

26. In a fare-register, a series of fare-indicators upon which the different fares are exhibited, each of said indicators having its own spur-pinion, a series of gears adapted to actuate said indicators through engagement with their respective pinions, a pivotal frame upon which said gears are mounted, levers having a pivotal connection with each of said gears, setting mechanism adapted to actuate said levers to bring the desired gear in operative relation with its respective pinion on a fare-indicator, means for actuating the pivotal frame to bring the selected gear in mesh with its respective pinion, and means for actuating the lever connected to such gear to cause the desired rotation of a fare-indicator.

27. In a fare-indicator, a combination of setting-cams, a combination of levers arranged in the paths of said setting-cams, a series of segment-gears flexibly connected to said levers and which are affected by the setting movements of said levers through the combination of cams, a pivotal frame upon which said segment-gears are mounted, a series of fare-indicators each of which has a pinion adapted to engage with a respective segment-gear, a cam adapted to actuate said frame to cause an engagement of a segment-gear with one of said pinions after said segment-gear has been moved in a proper position to enable such engagement, a lifting-cam for each of the levers, all of said cams being mounted on a common shaft.

28. In a fare-register, a series of fare-indicators each of which has a driving-pinion, a series of gears adapted to actuate said fare-indicators through said pinions, a series of setting-cams, a series of link-and-lever connections interposed between said setting-cams and said gearing and through which said gearing is moved by the setting-cams to operative positions relatively to the pinions, a main shaft upon which said setting-cams are mounted, means for effecting an engagement between said gears and their respective pinions after the setting-cams have moved said gears to a proper position a lifting-cam adapted to actuate each of said gears after such engagement has been effected, and an operating device through which said lifting-cams are actuated.

29. In a fare-register, a series of counting-wheels upon which the total cash fares are recorded, a fare-indicator upon which the cash fares are recorded, levers, segment-gears flexibly connected to said levers and adapted, when brought into operative relation with the counting-wheels and the fare-indicator, to impart movement to the same, setting mechanism adapted to move said segment-gears into operative positions through said levers, and means for actuating said levers after they receive their setting movements and whereby movement is imparted to the counting-wheels and the fare-indicator.

30. In a fare-register, a series of counting-wheels upon which the tickets are recorded, a series of counting-wheels upon which the transfers are recorded, segment-gears adapted to impart movement to said counting-wheels, a lever to which said segment-gears are flexibly connected, a setting-cam adapted to set said lever and therewith the segment-gears, means for elevating the counting-wheels to a position to be engaged by their segment-gears when the latter have been set, and means for actuating the lever to impart movement to the counting-wheels.

31. In a fare-register, counting-wheels upon which the tickets are recorded, counting-wheels upon which the transfers are recorded, indicators upon which said tickets and transfers are exhibited, a lever, segment-gears adapted to impart movement to the ticket-counting wheels, the transfer counting-wheels and the fare-indicators, setting mechanism adapted to move said lever and therewith the segment-gears into operative relation with the counting-wheels and the fare-indicators, an actuating-cam adapted to impart movement to said lever after it receives its setting movement, means for moving the counting-wheels and the indicators in gear with their actuating-segments after the latter have received their setting movements, and means for actuating the lifting-cam of said lever to impart movement to the counting-wheels and the indicators.

32. In a fare-register, a dial upon which the various fares are inscribed, counting-wheels upon which the different classes of fares are recorded, fare-indicators upon which each specific fare is exhibited, mechanisms for actuating the counting-wheel mechanism, and the fare-indicator mechanism, a shaft, a pointer and setting-cams fixed upon said shaft and movable simultaneously therewith; the pointer to indicate upon the dial each fare to be registered, and the setting-cams to move the actuating mechanisms of the counting-wheels and the fare-indicators into operative positions, and operating mechanism through which the fares are recorded and indicated.

33. In a fare-register, a dial upon which the fares are inscribed, a series of counting-wheels upon which the fares are recorded, fare-indicators upon which the fares are indicated, a passenger-indicator, setting mechanism adapted to indicate upon the dial the fare to be

registered and indicated, a main shaft upon which said setting mechanism is mounted, actuating means interposed between said main shaft and the passenger-indicator, and operating devices to simultaneously impart movements to the counting-wheel driving mechanism, the fare-indicator driving mechanism and the passenger-indicator driving mechanism.

34. In a fare-indicator, indicators upon which the fares are exhibited, mechanism for actuating said indicators, setting mechanism through which the fare to be indicated is selected and the mechanism for actuating the indicator of the selected fare is set, a movable frame upon which the actuating mechanism of said fare-indicator is mounted, retaining-pawls controlling the positions of the fare-indicators, a flash adapted to move over the face of the fare-indicators and to disappear upon each complete operation of said indicators, a series of cams, one of which is adapted to actuate the frame which supports the actuating mechanism of the fare-indicators, another of which controls the retaining-pawls of the fare-indicators, and another of which controls the mechanism through which the flash is operated, a common shaft upon which said cams and the setting mechanism are mounted, an auxiliary shaft, and driving mechanism interposed between said auxiliary shaft and said cams and through which said cams are actuated.

35. In a fare-register, a dial upon which is inscribed the various fares, counting-wheels upon which the total cash fares are separately recorded, the total tickets are separately recorded, the total transfers are separately recorded, and a grand total of all the fares is separately recorded, a separate set of actuating mechanism operating in connection with each separate set of counting-wheels, setting mechanism adapted to simultaneously indicate upon the dial the fare to be recorded, and to select the actuating mechanism of that specific set of counting-wheels, a main shaft upon which said setting mechanism is mounted and through which said setting mechanism is actuated, means upon said shaft for actuating the selected counting-wheel mechanism, an auxiliary shaft, driving mechanism through which motion is transmitted from said auxiliary shaft to the mechanism upon the main shaft which actuates the selected counting-wheel mechanism, and operating devices mounted upon the main shaft and through which motion is transmitted to the driving mechanism upon the auxiliary shaft.

36. In a fare-register, a dial upon which are inscribed the various fares, counting-wheels upon which the total cash fares are separately recorded, the total tickets are separately recorded, and the total transfers are separately recorded, a fare-indicator operating in connection with each set of counting-wheels, actuating mechanism operating in connection with each set of counting-wheels and each fare-indicator, setting mechanism adapted to simultaneously indicate upon the dial a fare to be recorded and to select the desired actuating mechanisms of that set of counting-wheels and that fare-indicator, a main shaft upon which said setting mechanism is mounted and through which said setting mechanism is operated means upon said shaft for actuating the selected counting-wheel mechanism and fare-indicator mechanism, an auxiliary shaft, driving mechanism upon said auxiliary shaft and through which motion is imparted to the mechanism upon the main shaft which actuates the selected counting-wheel mechanism and fare-indicator mechanism, and operating devices mounted upon the main shaft and through which motion is transmitted to the driving mechanism upon the auxiliary shaft.

37. In a fare-register, a dial upon which are inscribed the various fares, counting-wheels upon which the total cash fares are separately recorded, the total tickets are separately recorded, and the total transfers are separately recorded, a fare-indicator operating in connection with each set of counting-wheels, actuating mechanism operating in connection with each set of counting-wheels and each fare-indicator, setting mechanism adapted to simultaneously indicate upon the dial a fare to be recorded and to select the desired actuating mechanisms of that set of counting-wheels and that fare-indicator, a main shaft upon which said setting mechanism is mounted and through which said setting mechanism is operated, means upon said shaft for actuating the selected counting-wheel mechanism and fare-indicator mechanism, an auxiliary shaft, driving mechanism upon said auxiliary shaft and through which motion is imparted to the mechanism upon the main shaft which actuates the selected counting-wheel mechanism and fare-indicator mechanism, operating devices mounted upon the main shaft and through which motion is transmitted to the driving mechanism upon the auxiliary shaft, and means for compelling a complete movement of said operating devices.

38. In a fare-indicator, a dial upon which are inscribed the various fares, counting-wheels upon which the total cash fares are separately recorded, the total tickets are separately recorded, and the total transfers are separately recorded, a fare-indicator operating in connection with each set of counting-wheels, means for preventing an overthrow of said fare-indicators, actuating mechanism operating in connection with each set of counting-wheels and each fare-indicator, setting mechanism adapted to simultaneously indicate upon the dial a fare to be recorded and to select the desired actuating mechanisms of that set of counting-wheels and that fare-indicator, a passenger-indicator, a main shaft upon which said setting mechanism is mounted and through which said setting mechanism is operated, means interposed between said shaft and the passenger-indicator for imparting movement to the latter, means upon said shaft for actuating the selected counting-wheel mechanism and fare-indicator mechanism, an auxiliary shaft, driving mechanism upon said auxiliary shaft and through which motion is imparted to the mechanism upon the main shaft which actuates the selected counting-wheel mechanism and fare-indicator mechanism, and to the mechanism through which movement is imparted to the passenger-indicators.

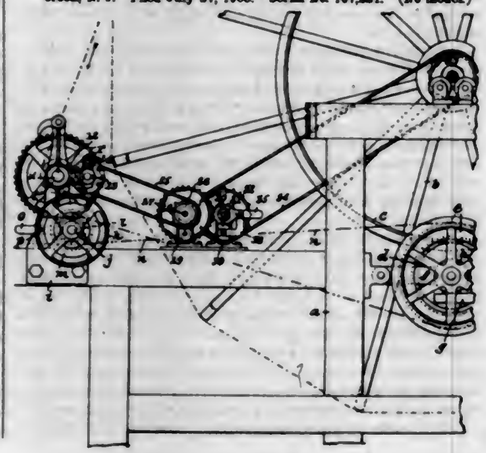
39. In a fare-register, setting mechanism adapted to simultaneously select and indicate a fare to be registered, a main shaft upon which said setting mechanism is rigidly mounted, driving mechanism for the selected fare loosely mounted upon said main shaft, operating devices loosely mounted upon said main shaft, an auxiliary shaft, and a series of transmission-gears which receive motion from the operating devices on the main shaft and transmit it to the driving mechanism on the main shaft through which the selected fare mechanism is actuated.

40. In a fare-register, counting-wheels upon which the various classifications of fares are recorded, fare-indicators upon which the specific fares are exhibited, setting mechanism adapted to select the fare to be recorded and indicated, actuating mechanisms adapted to impart movements to the devices which are set by the setting mechanism, the said actuating mechanism and the said setting mechanism being mounted upon the main shaft, passenger-indicators, actuating mechanism therefor interposed between said main shaft and said passenger-indicators, operating devices loosely mounted on said main shaft, an auxiliary shaft, and a series of transmission-gears on said auxiliary shaft which receive motion from the operating mechanism and transmit motion simultaneously to the mechanism which actuates the selected counting-wheel and fare-indicator, and to the actuating mechanism of the passenger-indicators.

41. In a fare-register, a dial upon which are inscribed the various fares, setting mechanism by means of which the fare to be recorded is selected and indicated, a shaft upon which said setting mechanism is mounted, an operating member projecting from the register-casing and geared to said shaft, and whereby the setting mechanism is actuated, means upon said main shaft through which the selected mechanism is actuated, operating devices loosely mounted upon said shaft, an auxiliary shaft, and a series of transmission-gears on said shaft, the said gears being actuated by the operating mechanism to transmit movements to the actuating mechanism through which the selected fare is recorded.

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**758,489. BEAMING MECHANISM. HENRY VAN WINKLE, Paterson, N. J. Filed July 27, 1903. Serial No. 167,231. (No model.)**



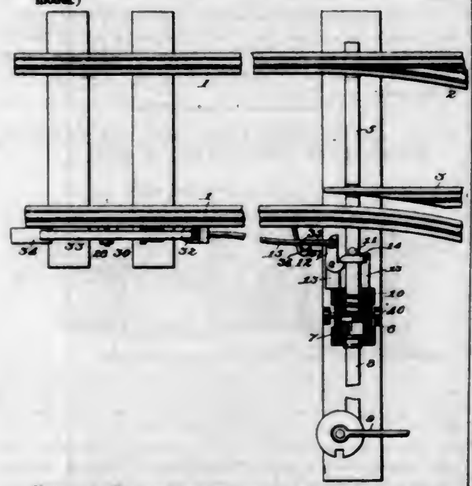
*Claim.*—1. In a beaming-machine, the combination, with the beam and a suitable support, of a beam-holding means journaled in said support and movable therein longitudinally of the beam, a screw, a nut-carrying device having its nut engaging the screw, said device being arranged in a portion of the support and fixed therein against movement longitudinally of the screw, and an arm having a bearing on a part of the beam-holding means and sustaining the screw, said nut-carrying device and the screw being adapted to effect the traverse of said beam-holding means and one of them being for this purpose rotary, substantially as described.

2. In a beaming-machine, the combination of a beam-holding means, the same being movable longitudinally of the beam, a non-rotary screw movable therewith, a nut engageable with the screw, a rotary device arranged concentrically of the screw and carrying the nut, means for limiting said device against movement longitudinally of the screw, and means for adjusting said nut in said device to and from the screw, substantially as described.

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**758,490. AUTOMATIC RAILWAY-SWITCH. URBAN A. WOODBURY, Burlington, Vt. Filed Nov. 2, 1903. Serial No. 179,430. (No model.)**



*Claim.*—1. The combination with a railway-switch, of automatic means adapted and arranged to be operated by a train to close the same, means to normally maintain said automatic means out of operation, said last-mentioned means being constructed to yield when a train runs through the open switch from the heel side thereof, substantially as set forth.

2. The combination with a railway-switch, of a spring adapted and arranged to close the same, a latch to normally maintain said spring energized, a rod to normally maintain said latch in operative position, a trip device adapted and arranged to be operated by a train to release said rod, and a spring to permit said rod to yield when a train on the main line passes through the open switch from the heel side thereof, substantially as set forth.

3. In a railway-switch, the combination with a switch-rod and a switch-lever, of a spring adapted and arranged to move the rod relatively to the lever, a latch to normally hold said rod and lever connected and said spring compressed, a trip device arranged to be operated by a train, and connections between said latch and said trip device comprising a yielding element to permit relative movement of said rod and lever when a train runs through the open switch from the heel side thereof, substantially as set forth.

4. In a railway-switch, the combination with a switch-rod and a switch-lever, of a spring adapted and arranged to move said rod relatively to said lever, a latch to normally connect said rod and lever and hold said spring energized, a trip-rod connected to said latch, means to normally hold said trip-rod against longitudinal movement and thereby cause said latch to maintain the connection between the switch rod and lever, a trip adapted and arranged to be operated by an approaching train to release said trip-rod from said means, and a spring adapted and arranged to permit said trip-rod to yield longitudinally when a train runs through the open switch from the heel side thereof, substantially as set forth.

5. The combination with a railway-switch, and means whereby the same may be operated manually as usual, of a spring adapted and arranged to close the switch independently of said means, a latch to normally maintain said spring inoperative, a trip adapted and arranged to be struck by an approaching train, a trip-rod connected to said latch at one end, means adjacent to the other end of said trip-rod to normally hold it against longitudinal movement, said trip being adapted and arranged to release said trip-rod from said holding means, and a spring to permit said trip-rod to yield when a train runs through the open switch from the heel side thereof, substantially as set forth.

6. In a railway-switch, the combination with a switch-rod and a lever whereby the same may be operated manually as usual, of a cylinder rigidly connected to said lever and inclosing the end of said rod, a spring interposed between a head on said rod and the adjacent end of the cylinder, a latch device adapted and arranged to engage a projection on said rod and maintain said spring compressed, a trip-rod to hold said latch device in engagement with said projection, means to hold said trip-rod against movement by said spring, a trip adapted and arranged to be operated by a train to release said trip-rod from said holding means, and a spring to permit said trip-rod to yield when a train runs through the open switch from the heel side thereof, substantially as described.

7. In a railway-switch, the combination with a switch-rod and a switch-lever, of a cylinder to which said lever is rigidly connected and to which said rod is yieldingly connected, means to rigidly connect said rod and cylinder, a trip device adapted and arranged to be operated by a train, and connections between said trip device and means comprising a yielding element to permit said switch-rod to yield when a train runs through the open switch from the heel side thereof, substantially as set forth.

8. In a railway-switch, the combination of a switch-rod having a head on the end thereof, a longitudinally-movable cylinder in which said head is slidably mounted, a spring interposed between said head and the end of said cylinder, a switch-lever rigidly connected to the other end of said cylinder, a projection on said rod, a latch pivoted on said cylinder and adapted to engage said projection to keep said spring compressed, a trip-rod and means to hold the same against longitudinal movement to maintain said latch in operative position, a trip adapted and arranged to be operated by a train to release said trip-rod from said holding means, and a spring to permit said trip-rod to yield and release said latch when a train runs through the open switch from the heel side thereof, substantially as set forth.

9. In a railway-switch, the combination of a switch-rod and a switch-lever, a spring adapted and arranged to move said rod relatively to said lever, a latch positively connected to said lever and adapted and arranged to engage a projection on said rod to maintain said spring energized, a dog pivotally mounted on said rod and adapted to engage said latch, a trip-rod connected to said latch, means to hold said trip-rod against longitudinal movement, a trip adapted and arranged to be operated by a train to release said trip-rod and thereby permit said dog and latch to release said spring, said latch being adapted and arranged to be maintained in operative position by said projection when the switch-rod is moved by a train running from the siding onto the main line through the closed switch, substantially as set forth.

10. The combination with a railway-switch and a switch-lever, of a spring to close said switch independently of said lever, a latch to normally maintain said spring energized, a trip adapted to be struck by a train, a lever pivotally mounted adjacent one of the main-line rails and carrying said trip on one end thereof, a longitudinally-movable member pivotally connected to the other end of said lever, a trip-rod having one end connected to said latch, means on said member to engage the other end of said trip-rod, said trip being adapted and arranged to release said trip-rod from said member when struck by a train, a spring to normally hold said member against longitudinal movement, and a cam to cause said trip-rod to move longitudinally when the switch is thrown by said switch-lever, whereby said trip will be moved to inoperative position when the switch is manually closed and replaced in operative position when the switch is manually opened, substantially as set forth.

11. The combination with a railway-switch and a switch-lever, of automatic means to close said switch independently of said lever, a latch to normally maintain said means inoperative, a trip-rod connected to said latch at one end and extending alongside one of the main-line rails, a longitudinally-movable member having means to engage the other end of said trip-rod, a spring to hold said member against longitudinal movement, a lever pivoted adjacent to said main-line rail and having one end pivotally connected to said mem-

ber, a trip pivotally mounted on the other end of said lever, one end thereof being arranged to release said trip-rod from said member when struck by a train, the other end of said trip being counterweighted, an inclined cam-surface under said counterweighted end, and an inclined cam-surface arranged to engage means on said trip-rod and cause the same to move longitudinally when the switch is thrown by said switch-lever, whereby said trip will be moved out of position to release said trip-rod and also lowered out of position to be struck by a train whenever the switch is manually closed and will be replaced in operative position whenever the switch is manually opened, substantially as set forth.

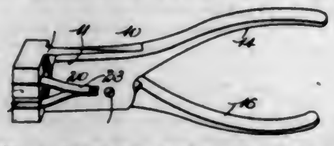
12. The combination with a railway-switch and a switch-lever, of a spring to close said switch independently of said lever, a latch to normally maintain said spring energized, a trip-rod connected to said latch at one end, and having lateral projections near the other end, a longitudinally-movable member having on one end two downwardly-projecting lugs between which said trip-rod is adapted to pass and be held by said lateral projections against longitudinal movement, a lever pivoted adjacent to one of the main-line rails and having one end connected to said longitudinally-movable member, a collar on said member, a cylinder in which said collar is slidably mounted, a spring surrounding said member in said cylinder and pressing against said collar to hold said member against longitudinal movement and thereby maintain said lever substantially upright, a trip pivotally supported on the other end of said lever and having one end adapted to pass through a slot in said member immediately over the end of said trip-rod, whereby when said trip is struck by a train said trip-rod will be released from said member, a counterweight on the other end of said trip, an inclined cam-surface under said counterweighted end of said trip, and an inclined cam-surface adapted and arranged to engage means on said trip-rod to move the same longitudinally when the switch is thrown by the switch-lever, whereby the trip will be withdrawn from over the trip-rod and depressed out of the way of the train whenever the switch is manually closed and replaced and raised whenever the switch is manually opened, substantially as set forth.

11. The combination with a railway-switch and a switch-lever, of automatic means to close said switch independently of said lever, a latch to maintain said means energized, a trip-rod connected with said latch, a lever pivoted adjacent to one of the main-line rails to one end of which said trip-rod is detachably connected, a trip pivotally supported on the other end of said lever and adapted, when struck by a train, to break the connection between said lever and trip-rod, a spring to hold said trip-rod against longitudinal movement and thereby normally maintain said lever substantially upright, an inclined cam-surface arranged to engage means on said trip-rod and move the same longitudinally when the switch is closed manually, whereby said trip will be moved out of operative position, and a short parallel cam-surface arranged to engage the other side of said means on the trip-rod to give the same an initial longitudinal movement in the opposite direction when the switch is manually opened, said last-mentioned cam-surface not extending far enough to prevent the longitudinal movement of said trip-rod when the connection between said trip-rod and said lever is broken and the switch automatically closed, substantially as set forth.

14. In a railway-switch, the combination of a switch-rod having a head on one end, a longitudinally-movable cylinder in which said head is slidably mounted, a coil-spring surrounding said rod between said head and the end of the cylinder, a switch-lever rigidly connected to said cylinder, a lever pivoted on said cylinder, a projection on said rod adapted to be engaged by said lever, a latch pivoted on said cylinder and adapted to engage said lever, a trip-rod connected to said latch at one end and having lateral projections near the other end, a longitudinally-movable member having on one end downwardly-projecting lugs adapted to engage said projections, a lever pivoted adjacent to one of the main-line rails and having one arm connected to the other end of said longitudinally-movable member, a spring to normally prevent longitudinal movement of said member and maintain said lever substantially upright, a trip pivotally mounted on the other arm of said lever and having one end adapted to slide in an upwardly and horizontally extending slot in said member and to release said trip-rod from said member when said trip is struck by a train, the other end of said trip being formed into a counterweight, an inclined cam-surface under said counterweighted end, an antifriction-roller on said trip-rod and parallel cam-surfaces arranged to engage said roller on opposite sides thereof, one of said surfaces extending only for a portion of the path of travel of said roller, whereby when the switch is manually closed the trip will be moved backward and downward out of operative position and when the switch is opened again the trip will be moved forward and raised to operative position, whereby the switch will be automatically closed when the trip is struck by a train and whereby said trip-rod and latch can yield when a train runs through the open switch from the heel side thereof, substantially as set forth.

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**758,491. EMBOSSING-PUNCH. Robert Woodman, Malden, Mass. Filed June 1, 1903. Serial No. 159,490. (No model.)**

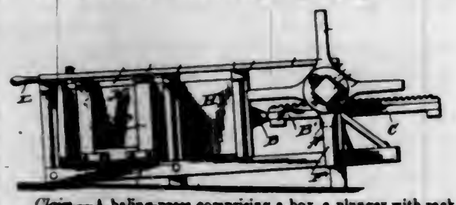


*Claim.*—1. An embossing-punch comprising in its construction a pair of jaws pivoted one to the other, a male and a female die, a flat bifurcated spring fast at its free ends to said male and female dies, respectively, and means to detachably attach said dies to said jaws.

2. An embossing-tool comprising in its construction a pair of jaws, a male and a female die, a flat V-bifurcated spring, the free ends thereof fast, respectively, to said male and female dies and the bifurcated portions thereof located upon opposite sides, respectively, of said jaws.

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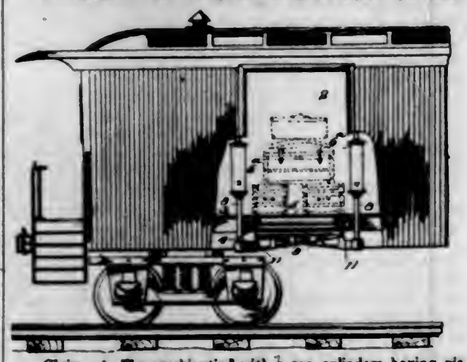
**758,492. BALING-PRESS. John J. York, Mountville, Ga. Filed Nov. 16, 1903. Serial No. 181,347. (No model.)**



*Claim.*—A baling-press comprising a box, a plunger with rack-and-pinion means for driving the same, the sides of the box being hinged at their lower ends and beams mounted upon cross-pieces of the press-frame, spaces intervening between the same and the opposite sides of the press-box, a hinged door adapted to swing down upon the free swinging edges of the side doors, clamping members comprising two pieces pivoted together and having shouldered portions designed to engage over the ends of said strips, and a button carried by one of said strips and adapted to lock the pieces of the clamping members in alinement, said ends of the clamping members adapted to engage under the beams, as set forth.

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**758,498. CAR-LOADING APPARATUS. Edward R. Abbey, Decorah, Iowa. Filed Dec. 8, 1903. Serial No. 184,384. (No model.)**



*Claim.*—1. The combination with a car, cylinders having pistons and rods, supports at the lower ends of the rods, said supports being adapted to be turned to or from the car, and a truck adapted to be rolled from the car to the supports, substantially as described.



2. The combination with a car, supports adapted to be turned to or from the car, mechanism for raising and lowering the supports to or from the floor of the car, and a truck adapted to be rolled from the car to the supports.

3. The combination with a car, supports, cylinders, pistons and rods, the supports being pivotally connected to the rods that said supports may be turned outwardly from or lie parallel with the car, a truck within the car and forming a part of the floor thereof, said truck adapted to be rolled onto the supports when the latter are positioned outwardly from the car, and means for raising and lowering the supports, substantially as described.

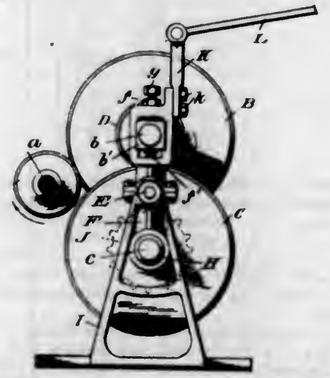
4. In an apparatus of the class described, the combination with a car having a truck therein which forms a part of the car-floor, of supports mounted to be turned to or from the car, each support being cut away at or near one end to bear against an abutment when said supports are turned outwardly from the car to receive the truck, and mechanism for raising and lowering the supports, substantially as described.

5. In an apparatus of the class described, the combination with a car having a truck therein, of supports pivoted to the car, said supports being positioned under the car when out of use and extended outwardly from the car and in alinement with the truck when the said truck is to be removed, and mechanism for operating the supports.

6. In an apparatus of the class described, the combination with a car having a door, of vertically-reciprocating rods carried by the car, pivotally-mounted supports on the rods, said supports adapted to be turned under the car when out of use, and extended outwardly from and positioned opposite the door when loading or unloading the car, and mechanism for raising and lowering the rods and supports, substantially as described.

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**758,494. FRICTIONAL REVERSING-GEAR. Alfred Adamson, Lynn, Mass. Filed May 19, 1903. Serial No. 157,845. (No model.)**



*Claim.*—1. In reversing-gearing, the combination with driving means, of a pair of reversing gear-wheels and means so connecting same as to rotate one of said wheels by, and in the opposite direction to the direction of rotation of, said other wheel, and means for simultaneously throwing one of said gear-wheels into and the other out of engagement with the driving means.

2. In reversing-gearing, the combination with driving means, of a pair of reversing gear-wheels, conjointly movable in parallel planes, means so connecting said gear-wheels as to rotate one of said wheels by, and in the opposite direction to the direction of rotation of, said other wheel, and means for simultaneously throwing one of said wheels into and the other out of engagement with the driving means.

3. In reversing-gearing, the combination with a pair of driving-wheels, of a pair of reversing gear-wheels, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, and means for simultaneously throwing one of said geared wheels into and the other out of engagement with their respective driving-wheels.

4. In reversing-gearing, the combination with driving means, of a pair of reversing gear-wheels, conjointly movable in parallel planes adjacent said driving means, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, and means for throwing one of said geared wheels into and the other out of engagement with the driving means.

5. In reversing-gearing, the combination with the pair of driving-wheels, of a pair of reversing gear-wheels, conjointly movable in parallel planes, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, and means for simultaneously throwing one of said geared wheels into and the other out of engagement with their respective driving-wheels.

6. In reversing-gearing, the combination with the driving means, of a pair of reversing gear-wheels, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, and means for simultaneously throwing one of said wheels into and the other out of engagement with the driving means, comprising an arm connecting the respective shafts of said wheels, for holding said wheels always in gear, and means for operating said arm.

7. In reversing-gearing, the combination with the driving means, of a pair of reversing gear-wheels, conjointly movable in parallel planes, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, and means for simultaneously throwing one of said wheels into and the other out of engagement with the driving means, comprising an arm connecting the respective shafts of said wheels, for holding said wheels always in gear, and means for operating said arm.

8. In reversing-gearing, the combination with the driving means, of a pair of geared wheels conjointly movable in parallel planes, and means for simultaneously throwing one of said wheels into and the other out of engagement with said driving means, comprising an arm and cooperating means adjustably connecting the respective shafts of said wheels, for holding said wheels always in gear, and means for operating said arm.

9. In reversing-gearing, the combination with driving means, of a pair of gear-wheels and gearing therebetween adapted to rotate said gear-wheels in opposite directions, and means for simultaneously throwing one of said gear-wheels into and the other out of engagement with the driving means, comprising an arm connecting the respective shafts of said gear-wheels, for holding said wheels always in gear and conjointly movable in parallel planes, and means for operating said arm.

10. In reversing-gearing, the combination with the driving means, of a pair of reversing gear-wheels, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, a pair of pivoted arms connecting the respective shafts of said wheels for supporting and holding said wheels geared, and means for rotating said pair of arms on their axis for simultaneously throwing one of said wheels into and the other out of engagement with the driving means.

11. In reversing-gearing, the combination with a pair of driving-wheels, of a pair of gear-wheels and gearing therebetween adapted to rotate said gear-wheels in opposite directions, a pair of pivoted arms connecting the respective shafts of said gear-wheels for supporting and holding said wheels geared, and means for rotating said pair of arms on their axis for simultaneously throwing one of said gear-wheels into and the other out of engagement with their respective driving-wheels.

12. In reversing-gearing, the combination with the driving means, of a pair of reversing gear-wheels, a pinion carried by one of said reversing-wheels and meshing with the other for rotating said geared wheels in opposite directions, and means for simultaneously throwing one of said geared wheels toward and the other away from the driving means a limited distance for holding both of said geared reversing-wheels out of engagement with the driving means.

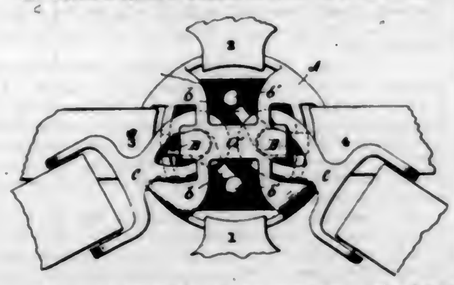
13. In reversing-gearing, the combination with the driving means, of a pair of reversing gear-wheels conjointly movable in parallel planes, a pinion carried by one of said reversing-gears and meshing with the other for rotating said geared wheels in opposite directions, and means for simultaneously throwing one of said geared wheels toward and the other away from the driving means a limited distance, for holding both of said reversing-wheels out of engagement with the driving means.

14. In reversing-gearing, the combination with the driving means, of a centrally-pivoted arm adjacent thereto, a pair of reversing gear-wheels mounted in the respective ends of said arm, gearing directly connecting, said reversing gear-wheels adapted to rotate said gear-wheels in opposite directions, and means for operating said arm a limited distance on its pivotal axis for throwing one of said re-

versing-wheels toward and the other away from the driving means and holding both of said reversing gear-wheels out of engagement with said driving means.

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758,495. TRACE-END SUPPORTER. DAVID M. ALLEN, Urbana, Ill. Filed Nov. 28, 1903. Serial No. 183,977. (No model.)

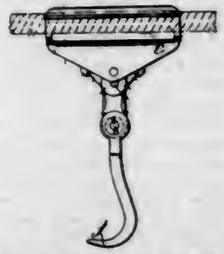


*Claim.*—1. A trace-end supporter comprising a casing formed to be attached to the harness parts on the back of the harness and having side openings with spring-mounted catches pivoted therein, each of said catches being formed with upwardly-tapered top surfaces from its pivot to its engaging point and with an arm extending off to one side from said engaging point to a convenient position for use in operating said catch against the spring, substantially as set forth.

2. A trace-end supporter comprising the casing A having a transverse part *a'* and provided with openings in its sides and formed to be attached to the back of the harness, the bottom plate A', the spring *a* mounted on said plate, the spring-hooks B pivoted on each side of said casing and formed with upwardly-tapered tops adapted to rest near the transverse part *a'* of said casing, and the handles *b'* extending to one side of said hooks for operating the same against the spring, substantially as set forth.

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758,496. ROPE OR CABLE GRIP FOR HAULAGE PURPOSES. JOSEPH ASPINALL, Bolton, England. Filed May 29, 1903. Serial No. 159,270. (No model.)



*Claim.*—1. A rope or cable grip for haulage purposes comprising an open-sided jaw forming one portion of the grip, a chamber at the lower part of said jaw, having located therein a jaw normally resting on the bottom of the chamber, a pivoted lever in contact with the loose jaw provided at one end with two arms for operating the loose jaw and at the other end with a hook substantially as and for the purposes described.

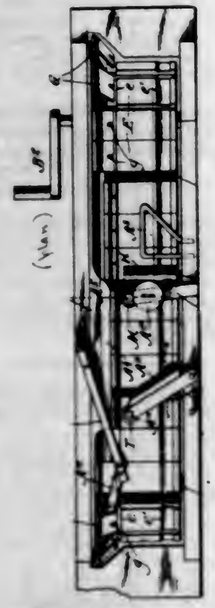
2. A rope or cable grip for haulage purposes comprising in combination an open-sided jaw, a loose jaw arranged in a chamber therein, a pivoted lever provided with arms designed to come in contact with the loose jaw, slotted arms attached to the loose jaw and a connecting-hook attached to the lever for operating the loose jaw substantially as described.

3. A rope or cable grip for haulage purposes comprising an open-sided jaw forming one portion of the grip, a chamber at the lower part of said jaw, having located therein a jaw normally resting on the bottom of the chamber, slotted arms formed on the loose jaw embracing a pin passed through the lower portion of the open-sided jaw, guiding-pieces formed on the loose jaw on either side of the pin and a pivoted lever in contact with the loose jaw provided at one end with two arms for operating the loose jaw and at the other end with a hook substantially as and for the purposes described.

4. A rope or cable grip for haulage purposes comprising an open-sided jaw forming one portion of the grip, a chamber at the lower part of said jaw having located therein a jaw normally resting on the bottom of the chamber, a pivoted lever in contact with the loose jaw provided at one end with a cam-shaped surface for operating the loose jaw and at the other end with a hook substantially as and for the purposes described.

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758,497. MACHINE FOR AUTOMATICALLY SEALING ENVELOPS. LUCIEN C. BABCOCK, New York, N. Y. Filed June 18, 1903. Serial No. 162,068. (No model.)



*Claim.*—1. A machine for closing and sealing envelops comprising an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith, adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms and provisions for opening the envelop moistening the gummed surface of the flap, closing the envelop and pressing the flap firmly upon the body, combined substantially as herein specified.

2. In a machine for closing and sealing envelops, an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms and provisions by the offset *e* on the platforms and the movement of the side pieces past such offset for deflecting a portion of the envelop so as to induce a rise of the flap, in combination with each other and with means for preventing the rising of the body of the envelop thereby insuring the open condition of the envelop ready for the succeeding operations, all substantially as herein specified.

3. In a machine for closing and sealing envelops, an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms and provisions by the offset *e* on the platforms and the movement of the side pieces past such offset for deflecting a portion of the envelop so as to induce a rise of the flap, in combination with each other and with means for preventing the rising of the body of the envelop, and means M for moistening the gummed inner face of the flap while thus held open, all substantially as herein specified.

4. In a machine for closing and sealing envelops, an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms and provisions by the offset *e* on the platforms and the movement of the side pieces past such offset for deflecting a portion of the envelop so as to induce a rise of the flap, in combination with each other and with means for preventing the rising of the body of the envelop, and means M for moistening the gummed inner face of the flap while thus held open, and provisions for subsequently raising the envelop-body into contact with the so-moistened flap and pressing the surfaces firmly together, all substantially as herein specified.

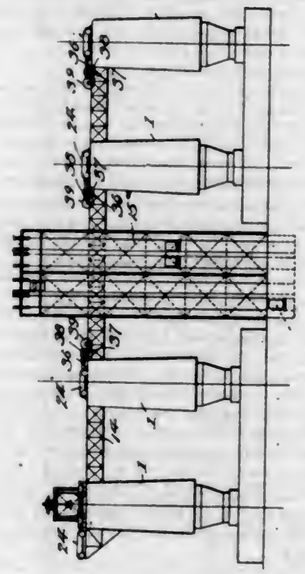
5. In a machine for closing and sealing envelops, an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms and provisions by the offset *e* on the platforms and the movement of the side pieces past such offset for deflecting a portion of the envelop so as to induce a rise of the flap, in combination with each other and with means for preventing the rising of the body of the envelop, and means M for moistening the gummed inner face of the flap while thus held open, and provisions for subsequently raising the envelop-body into contact with the so-moistened flap and pressing the surface firmly together, and means for detaching the closed envelop and a wiping device P arranged to wipe the faces of the side pieces ready for the succeeding operation, all substantially as herein specified.

6. A machine for closing and sealing envelops comprising an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms, and provisions by the offset *e* on the platforms and the movement of the side pieces past such offset for deflecting a portion of the envelop so as to induce a rise of the flap, in combination with the tank $A^{14}$, discharge-passage $a^{14}$, wetting-roller M, and controlling means K for regulating at will the supply of water thereto, all substantially as herein specified.

7. A machine for closing and sealing envelops comprising an endless belt and means for moving it, small rigid platforms fixed thereto and moved therewith adapted to receive the envelops and carry them along therewith, hinged side pieces carried with such platforms, and provisions by the offset *e* on the platforms and the movement of the side pieces past such offset for deflecting a portion of the envelop so as to induce a rise of the flap, in combination with the tank $A^{14}$, discharge-passage $a^{14}$, wetting-roller M, and controlling means K for regulating at will the supply of water thereto, and with the drain-spout $A^{15}$ and the feed-roller intermediately between the supply-passage $a^{14}$ and the wetting-roller, all arranged for joint operation substantially as herein specified.

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758,498. CHARGING APPARATUS FOR BLAST-FURNACES. KNUTE BACKLUND and BIRGER F. BURMAN, Baltimore, Md. Filed July 1, 1903. Serial No. 163,915. (No model.)



*Claim.*—1. A charging-machine for furnaces comprising a movable truck; a stock-chamber thereon, an inlet to the stock-chamber, and an automatically-operated closure for said inlet.

2. In a charging-machine for furnaces, the combination with a movable truck; of a stock-chamber thereon having an outlet in the bottom thereof and an inlet, a distributing-bell within said outlet and adapted to support the stock-chamber, an automatically-operated closure for the inlet, and means for imparting vertical movement to said bell and chamber.

3. A charging-machine for furnaces comprising a movable truck, a stock-chamber thereon having an outlet in the bottom thereof, a hopper having an outlet, means for normally closing said outlet, and a distributing-bell within the outlet of the stock-chamber and movable therewith in a vertical plane.

4. A furnace-charging machine comprising a movable truck, a vertically-movable distributing-bell mounted thereon, and a stock-chamber supported upon the bell and having an outlet normally closed thereby and an inlet, and an automatically-operated closure for the inlet.

5. A charging-machine for furnaces comprising a movable truck, a vertically-movable distributing-bell suspended thereon, a stock-chamber supported by the bell and having an outlet normally closed thereby, and a normally closed inlet to the stock-chamber.

6. In a charging-machine for blast-furnaces, the combination with a movable truck; of a vertically-movable distributing-bell suspended thereon, a stock-chamber supported by the bell and having an outlet normally closed thereby, a hopper opening into the stock-chamber, and a bell normally closing the outlet of the hopper.

7. A charging-machine for blast-furnaces comprising a movable truck, a vertically-movable distributing-bell suspended thereon, a stock-chamber supported by the bell and having an outlet normally closed thereby, a hopper opening into the stock-chamber, a bell within the outlet of the hopper, and means for holding said bell normally in closing position.

8. In a charging-machine for blast-furnaces, the combination with a movable truck; of a vertically-movable distributing-bell, a stock-chamber supported thereby and having an outlet normally closed by the bell, a hopper having an outlet into the stock-chamber, and a counterbalanced bell within said outlet and normally closing the same.

9. In a furnace-charging machine of the character described, the combination with a movable truck; of a vertically-movable distributing-bell suspended thereon, a stock-chamber mounted upon and supported by the bell, said chamber having an outlet normally closed by said bell, a hopper having an outlet opening into the chamber, a weighted lever fulcrumed upon the hopper, a bell normally closing the outlet of the hopper, and a connection between said bell and the weighted lever.

10. In a furnace-charging machine, the combination with a movable truck; of a vertically-movable distributing-bell suspended thereon, a detachable ring inclosing and extending from the bell, a stock-chamber supported by the bell and having an outlet normally closed thereby, a hopper having an outlet opening into the stock-chamber, a counterbalanced bell normally closing said outlet, and means for imparting vertical movement to the distributing-bell.

11. A furnace-charging machine comprising a movable truck, a frame supported thereby, a vertically-movable distributing-bell suspended from the frame, a stock-chamber within the frame and supported by the bell, said chamber having an inlet, an automatically-operated closure for the inlet, and explosion-doors to said chamber.

12. A furnace-charging machine of the character described comprising a movable truck, a frame supported thereby, a vertically-movable distributing-bell depending from said frame, a stock-chamber within the frame and supported by the bell, said chamber having an inlet, an automatically-operated closure for the inlet, and an explosion-door to said chamber.

13. A furnace-charging machine comprising a movable truck, a frame supported thereby, a vertically-movable distributing-bell supported by the frame, a stock-chamber within the frame and supported by the distributing-bell, a hopper opening into the stock-chamber, a counterbalanced bell normally closing the outlet of the hopper, and an explosion-door to the stock-chamber.

14. A furnace-charging machine comprising a movable truck, a frame supported thereby, a vertically-movable rod depending from the frame, a distributing-bell connected to said rod, a stock-chamber within the frame and mounted upon the bell, a hopper having an outlet into the stock-chamber, a bell loosely mounted upon the rod and normally closing said outlet, a weighted lever, and a tubular

connection between the lever and bell, said connection inclosing the rod of the distributing-bell.

15. A furnace-charging machine comprising a movable truck, a frame supported thereby, a vertically-movable rod depending from the frame, a distributing-bell pivoted to the rod, a frusto-conical ring extension to said bell, a stock-chamber supported by the bell, a hopper having an outlet into the stock-chamber, and a counterbalanced bell normally closing said outlet.

16. A furnace-charging machine comprising a movable truck, a frame supported thereby, a vertically-movable rod depending from the frame, a distributing-bell connected to the rod, a vertically-movable stock-chamber supported by the bell, guide-strips thereon, and guide-rollers mounted upon the truck and engaging the strips.

17. A machine for charging furnaces comprising a movable truck, a frame supported thereby, a vertically-movable distributing-bell supported by the frame, a vertically-movable stock-chamber within the frame and supported by said bell, said chamber having an outlet normally closed by the bell, a hopper having an outlet into the stock-chamber, a counterbalanced bell normally closing said outlet, headed rods extending from the stock-chamber, and buffer-springs upon the frame and adapted to limit the movement of the rod

18. A furnace-charging machine comprising a movable truck, a frame supported thereby, a gear journaled upon the frame, a vertically-movable threaded rod engaged by the gear, a bell pivoted to the rod, a stock-chamber supported, and having an outlet normally closed, by the bell, guide-strips upon the stock-chamber, guide-rollers upon the truck and engaging said strips, and means for rotating the gear for imparting vertical movement to the bell and stock-chamber.

19. In a furnace-charging machine, the combination with a movable truck having a frame thereon, a revoluble gear upon the frame, and means for rotating the gear; of a threaded rod engaging the gear and depending therefrom, a distributing-bell connected to said rod, a stock-chamber supported by the bell and having an outlet normally closed thereby, explosion-doors to said stock-chamber, a hopper having an outlet into said chamber, a counterbalanced bell normally closing the outlet, rods extending from the stock-chamber, buffer-springs therefor, guide-bars upon the stock-chamber, and guide-rollers therefor.

20. The combination with a furnace having a cylindrical seat arranged in the inlet end thereof; of a charging-machine comprising a movable truck, a vertically-movable bell supported thereby, a stock-chamber supported by the bell and having an outlet normally closed thereby, and an inlet, an automatically-operated closure for the inlet, and means for imparting vertical movement to the bell and stock-chamber and depositing said chamber upon the seat.

21. The combination with a blast-furnace having a tubular seat in the inlet end thereof; of a movable furnace-charging machine adapted to extend over said inlet and comprising a truck, a distributing-bell suspended thereon, a stock-chamber supported by the bell and having an outlet normally closed thereby, means for depositing the stock-chamber upon the seat and opening the outlet thereof, a normally closed hopper opening into the stock-chamber, and an explosion-door to said chamber.

22. The combination with a furnace having a detachable tubular seat in the inlet end thereof and extending therefrom; of a furnace-charging machine adapted to extend over said inlet and comprising a movable truck, a distributing-bell supported thereon, a stock-chamber supported by the bell and having an outlet normally closed thereby, means for imparting vertical movement to the bell and stock-chamber and for projecting the bell into the furnace, a hopper having an outlet into the stock-chamber, a counterbalanced bell normally closing said outlet, and an explosion-door to the stock-chamber.

23. The combination with a furnace having a removable tubular seat in the tunnel-head thereof; of a movable truck adapted to extend over the seat of the furnace, a distributing-bell supported by said truck, a stock-chamber supported by the bell and having an outlet normally closed thereby, means for imparting vertical movement to the bell and stock-chamber, whereby said chamber is deposited upon the seat and the bell projected into the tunnel-head, and a normally closed hopper projecting into the stock-chamber.

24. The combination with furnaces having a bridge connection therebetween, and seats projecting into the tunnel-heads of the furnaces; of a furnace-charging machine movably mounted upon the bridge and adapted to extend over any one of the seats, said machine comprising a truck, a frame supported thereby, a distributing-bell suspended from the frame, a stock-chamber supported by the bell and having an outlet normally closed thereby, a normally closed hopper projecting into the stock-chamber, and means for imparting vertical movement to the bell and hopper, whereby said chamber may be deposited upon the seat of a furnace and the bell projected into the tunnel-head of said furnace.

25. The herein-described apparatus for charging blast-furnaces comprising a bridge adapted to extend over a series of furnaces, a stock-conveyer at a point intermediate the ends of the bridge, and a movable furnace-charging machine adapted to receive stock from the conveyer and comprising a truck, a bell suspended therefrom, a stock-chamber supported by the bell and having an outlet normally closed thereby, a hopper having an outlet into the stock-chamber, a counterbalanced bell normally closing said outlet, and a chute for directing stock from the conveyer to the hopper.

26. The combination with a series of furnaces, having tubular seats extending into the tunnel-heads thereof, a bridge connection between the furnaces, and a stock-conveyer at a point intermediate the ends of the bridge; of a furnace-charging machine adapted to extend over any one of the seats and comprising a movable truck, a distributing-bell supported thereby, a stock-chamber supported by the bell and having an outlet normally closed thereby, a hopper having an outlet into the stock-chamber, a bell normally closing the outlet, a chute for directing stock from the conveyer to the hopper, and means for imparting vertical movement to the distributing-bell and the stock-chamber, whereby said chamber may be deposited upon one of the seats and the bell projected into the tunnel-head thereof.

27. The combination with a series of furnaces having tubular seats extending into the tunnel-heads thereof, means outside the furnaces for normally closing the tunnel-heads, and bridge connections between the furnaces; of a furnace-charging machine adapted to extend over any one of the tunnel-heads and comprising a movable truck, a distributing-bell supported thereby, a stock-chamber supported by the bell and having an outlet normally closed thereby, a normally closed hopper projecting into the stock-chamber, and means for imparting vertical movement to the bell and stock-chamber, whereby said chamber is deposited upon the seat and the bell projected into the tunnel-head.

28. The combination with the rails of furnaces having inlets, tubular seats extending into the inlets, and bridge connections between the furnaces; of inclined recessed rails adjacent the inlets, seals extending thereover and each comprising a body, wheels journaled within the body and mounted upon the rails, a flange extending from the body and adapted to normally inclose the inlet adjacent thereto, and means for removing the seals from the seats.

29. The combination with a furnace having an inlet; of rails adjacent the inlet and having depressed portions, a seal extending over the rails and comprising a body, wheels journaled therein and mounted on the rails and adapted to be seated in the recessed portion thereof, a flange extending from the body and adapted to inclose and seal the inlet, an explosion-door upon the seal, and means for removing the seal from the inlet.

30. The combination with a furnace having an inlet, and inclined rails adjacent the inlet; of a seal comprising a body, wheels journaled therein and mounted upon the rails, said wheels being normally seated in recesses in said rails, a flange extending from the body and normally inclosing the inlet and adapted to seal the same, and buffers for limiting the movement of the wheels upon the rails.

31. The combination with a furnace having an inlet, a tubular seat extending into the inlet, and a bridge; of a movable seal normally closing the inlet and comprising a body, wheels journaled therein, inclined rails forming bearings for the wheels, a flange extending from the body and normally bearing upon the seat to seal the inlet, and a movable charging-machine adapted to contact with and displace the seal upon the inlet.

32. The combination with a furnace having an inlet, a tubular seat extending into the inlet, inclined rails adjacent the inlet and having recesses, and a bridge; of a seal mounted upon the rails and comprising a body, wheels journaled therein and bearing upon the rails, a flange extending from the seal and normally bearing upon the seat and sealing the inlet, buffers for limiting the movement of the seal, and a movable charging-machine mounted upon the bridge and adapted to contact with the seal and remove it from the inlet.

33. A blast-furnace having a clear inlet end, a tubular seat projecting into said end, parallel annular flanges at one end of the seat and outside the furnace, and webs interposed between and integral with the flanges.

34. A furnace-charging machine comprising a movable stock-chamber having an inlet, and an outlet, a distributing-bell within the outlet, an adjusting-rod extending therefrom, and a closure for the inlet slidably mounted upon the rod.

35. A furnace-charging machine comprising a movable stock-chamber having an inlet and an outlet, a distributing-bell within the outlet, an adjusting-rod projecting from the bell, and a counterbalanced closure within the inlet and slidably mounted upon the rod.

36. A furnace-charging machine comprising a truck, rollers thereon, a vertically-movable stock-chamber within the truck, and guide-strips thereon engaging the rollers.

37. A charging-machine for furnaces comprising a movable truck, rollers thereon, a vertically-movable stock-chamber within the truck, guides thereon engaging the rollers, and means for adjusting the stock-chamber vertically within the truck.

38. A furnace-charging machine comprising a movable truck, a vertically-movable stock-chamber therein having an outlet, guides for the stock-chamber, a distributing-bell within the outlet, and stock-chamber supporting and adjusting devices connected to the bell.

39. A furnace-charging machine comprising a movable truck, a vertically-movable stock-chamber within the truck and having an outlet, guides for the stock-chamber, a distributing-bell within and normally closing the outlet, stock-chamber supporting and adjusting devices connected to the bell, and cushion devices connected to the truck and stock-chamber.

40. A furnace-charging machine comprising a movable truck, a vertically-adjustable stock-chamber therein having a normally closed outlet, rods extending from the stock-chamber, and buffer-springs inclosing the rods and mounted on the truck.

41. A furnace-charging machine comprising a movable truck, a vertically-adjustable stock-chamber therein having an inlet and an outlet, a distributing-bell within and normally closing the outlet, a detachable ring supported by and forming a continuation of the bell, and stock-chamber supporting and adjusting devices connected to the bell.

42. The combination with a furnace having an inlet, and inclined rails adjacent the inlet; of a seal movably mounted upon the rails and normally seated upon and closing the inlet, and buffer-springs for limiting the movement of the seal upon the rails.

43. The combination with a furnace having an inlet, and inclined rails adjacent the inlet, said rails having recesses; of a buffer-spring at one end of each rail, a seal comprising a body, wheels journaled therein and mounted upon the rails, said wheels being normally seated in the recesses, whereby the seal is seated upon the inlet, and means for binding the seal in closing position.

44. The combination with a furnace having an inlet, and inclined rails adjacent the inlet; of a seal movably mounted upon the rails and adapted to be automatically seated upon and close the inlet, buffer-springs for limiting the movement of the seal upon the rails, a roller journaled upon the seal, and a movable charging-machine adapted to contact with the roller and remove the seal from the inlet.

45. The combination with a furnace having an inlet, and stationary rails secured to the furnace at opposite sides of the inlet; of a seal comprising a body, wheels journaled within the body and mounted at all times upon the rails, and means for automatically moving the seal longitudinally upon the rails and into position over the inlet.

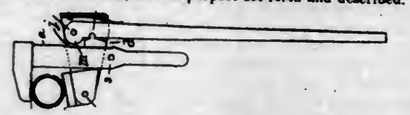
46. The combination with a furnace having an inlet, and stationary rails secured upon the furnace at opposite sides of the inlet; of a seat comprising a body, integral casings, wheels journaled within the casings and mounted at all times upon the rails, means for automatically moving the seal longitudinally upon the rails and into position upon the inlet, and buffers for limiting the movement of the seal.

47. The combination with a furnace having an inlet, and stationary rails adjacent the inlet; of a seal comprising a body, casings integral therewith, wheels journaled within the casings and mounted at all times upon the rails, explosion-doors upon the body, a flange extending from the body and adapted to normally inclose the inlet and seal the same, and means for automatically moving the seals longitudinally from the rails and into position upon the inlet.

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**758,499. WRENCH.** CARL F. BEACH, Battlecreek, Mich. Filed July 22, 1903. Serial No. 166,511. (No model.)

*Claim.*—1. In a wrench, the combination with a head and stock, of upwardly-inclined teeth upon the rear edge of said stock and a terminating handle member, a pin passing through said stock between said handle member and the serrated portion, a sheath encompassing said stock, a jaw supported within the free ends of said sheath and together therewith adapted to slide on said stock and engage said head, a handle pivotally secured within the curve of said sheath, a spring secured within the curve of said sheath and adapted to bear against said handle, and means for locking said handle with said stock, for the purpose set forth and described.



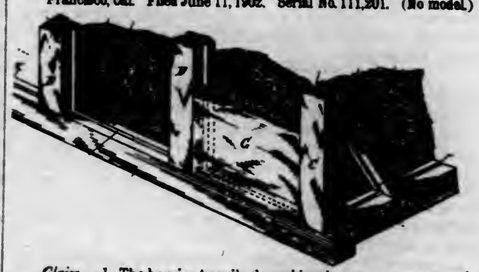
2. In a wrench, the combination with a head and stock, of upwardly-inclined teeth upon the rear edge of said stock and a terminating handle member, a pin passing through said stock between said handle member and the serrated portion, a sheath encompassing said stock, a jaw supported within the free ends of said sheath and together therewith adapted to slide on said stock between said head and pin members, a handle pivotally secured within the curve of said sheath, a spring secured within the curve of said sheath and adapted to bear against said handle, a pawl jointedly operative from said handle below the pivot thereof and adapted to engage the teeth of said stock, and means for disengaging said pawl for the purpose set forth and described.

3. In a wrench, the combination with a head and stock, of upwardly-inclined teeth upon the rear edge of said stock and a terminating handle member, a pin passing through said stock between said handle member and the serrated portion, a sheath encompassing said stock, a jaw supported within the free ends of said sheath and together therewith adapted to slide on said stock between said head and pin members, a handle pivotally secured within the curve of said sheath, a spring secured within the curve of said sheath and adapted to bear against said handle, a pawl jointedly operative from said handle below the pivot thereof, the upper end of said handle adapted to bear against the rear edge of said stock to adjust said pawl in its contact therewith, substantially as shown and for the purpose set forth and described.

4. In a wrench, the combination with a head and stock, of upwardly-inclined teeth upon the rear edge of said stock and a terminating tapering handle member, a pin disposed between said handle member and the teeth portion, a sheath encompassing said stock and adapted to play between said head and pin, said sheath comprising a strap with tapering rounded ends bent to form a loop with a rectangular curve, the upper edges of the open members being in the same plane and disposed downwardly from the curved portion, a jaw comprising diametrically-opposed flanges adapted to rest upon said sheath and a centrally-disposed shank supported between the free ends thereof, said jaw together with said sheath adapted to slide upon said stock and engage with said head, a handle pivotally secured within the curve of said sheath, a spring secured within the curve of said sheath and bearing against said handle, a pawl jointedly operative below the pivot of said handle and adapted to engage the teeth of said stock, and means for locking or unlocking said pawl substantially as shown, and for the purpose set forth and described.

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**758,500. BUILDING CONSTRUCTION.** GUSTAV A. BEHRND, San Francisco, Cal. Filed June 11, 1902. Serial No. 111,201. (No model.)



*Claim.*—1. The herein-described combination, arrangement, and disposition of parts, in a building, comprising an outwardly-exposed skeleton frame, a network of metal lath stretched behind and secured to the several parts of said frame, a filling of cement, concrete, or plaster worked in the outer face of said network and keyed to said frame parts, said filling being confined within said frame so as

not to overlap or cover the exterior surface of the same, and a coat of mortar or plaster on the opposite or interior face of the lathing; substantially as specified.

2. In a building, a wall comprising a frame, lathing upon the interior thereof, a normally plastic filling within the frame, the inner face of which filling engages with the lathing and the exterior of which is confined within the frame so as not to overlap or cover the exterior surface of the same, and a key for holding the filling within the frame, substantially as described.

3. In a building, a wall comprising a frame the members of which are grooved longitudinally, lathing upon the interior thereof, and a normally plastic filling within the frame, the inner face of said filling engaging with the lathing, and its edges with said grooves, substantially as described.

4. In a building, a wall comprising a frame, lathing upon the interior thereof, and a normally plastic filling within the frame, the inner face of which filling engages with the lathing and the exterior face of which does not extend out to the outer face of said frame, substantially as described.

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**758,501. PROCESS OF REPRODUCING MULTICOLOR PICTURES, &c. ARTON VON BENDT, Orange, N. J. Filed July 20, 1903. Serial No. 166,310. (No specimens.)**



*Claim.*—1. The process herein described of preparing printing-surfaces for reproducing multicolored pictures and the like, consisting in first making a tracing of the picture to be reproduced, coating a transparent plate with an opaque gelatinous compound to form a background, outlining the picture on said coating and removing the coating from between the outlines, filling the space thus formed with a transparent gelatinous compound, placing the plate upon the tracing and painting with anilin colors the transparent coating in imitation of the original, and finally removing the printing-surface thus produced from the transparent plate.

2. The process herein described of preparing printing-surfaces for reproducing multicolored pictures and the like, consisting in first making a tracing of the picture to be reproduced, coating a transparent plate with an opaque gelatinous compound to form a background, outlining the picture on said coating and removing the coating from between the outlines, filling the space thus formed with a transparent gelatinous compound, placing the plate upon the tracing and painting with anilin colors the transparent coating in imitation of the original, puncturing that portion of the transparent coating that is designed to receive the dark, strong colors with minute perforations, filling up said perforations with the dark, strong colors, and finally removing the printing-surface thus produced from the transparent plate.

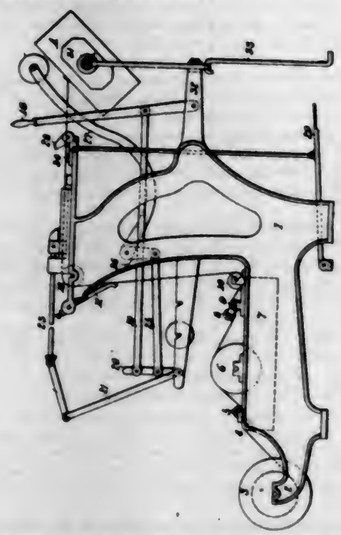
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**758,502. BOX-COVERING MACHINE. HENRY B. BLACKISTON, Auburn, Me., assignor of one-half to Harry I. Jordan, Auburn, Me. Filed July 29, 1903. Serial No. 167,383. (No model.)**

*Claim.*—1. In a box-covering machine, a rotatable block adapted to receive the box to be covered, means for feeding the paper upon said box, means for rotating said block, a rubber adapted to have a reciprocating movement transversely of said box over the side and bottom thereof and means for imparting a reciprocating movement to said rubber.

2. In a box-covering machine, a rotatable block adapted to receive the box to be covered, means for feeding the paper upon said box, means for rotating said block, a rubber adapted to have a reciprocating movement transversely of said box over the side thereof and an auxiliary rubber pivotally secured to the former and adapted to pass at each reciprocation beyond the side and against the bottom of the box.

3. In a box-covering machine, a rotatable block adapted to receive the box to be covered, means for feeding the paper upon said box, means for rotating said block, a rubber adapted to have a reciprocating movement transversely of said box over the side thereof and a spring-controlled auxiliary rubber pivotally secured to the former and adapted to pass at each reciprocation beyond the side and against the bottom of the box.



4. In a box-covering machine, a rotatable block adapted to receive the box to be covered, means for feeding the paper upon said box, means for rotating said block, a series of pairs of rolls adapted to strike in the edge of the paper which projects beyond the open edge of the box and means for reciprocating each pair simultaneously and successively into and out of action as the box is rotated.

5. In a box-covering machine, a rotatable block adapted to receive a box to be covered, means for feeding the paper upon said box, means for rotating said block, a rubber adapted to have a reciprocating movement transversely of said box over the side and bottom thereof, and means for imparting a reciprocating motion to said rubber, in combination with a series of sets of rolls adapted to strike in the edge of the paper which projects beyond the open edge of the box and means for imparting a reciprocating and rotary motion to said rolls, whereby they are brought successively into and out of action.

6. In a box-covering machine, a rotatable block adapted to receive the box to be covered, a rubber adapted to have a reciprocating movement transversely of said box over the side and bottom thereof and means for imparting a reciprocating movement to said rubber.

7. In a box-covering machine, a rotatable block adapted to receive the box to be covered, a rubber adapted to have a reciprocating movement transversely of said box over the side thereof and an auxiliary rubber pivotally secured to the former and adapted to pass at each reciprocation beyond the side and against the bottom of the box.

8. In a box-covering machine, a rotatable block adapted to receive the box to be covered, a rubber adapted to have a reciprocating movement transversely of said box over the side thereof and a spring-controlled auxiliary rubber pivotally secured to the former and adapted to pass at each reciprocation beyond the side and against the bottom of the box.

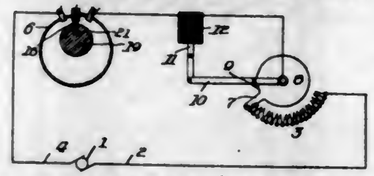
9. In a box-covering machine, a rotatable block adapted to receive the box to be covered, a series of sets of clamping-rolls adapted to strike in the edge of the paper which projects beyond the open edge of the box and means for opening and closing each set of clamping-rolls successively as the box is rotated.

10. In a box-covering machine, a rotatable block adapted to receive a box to be covered, a rubber adapted to have a reciprocating movement transversely of said box over the side and bottom thereof, and means for imparting a reciprocating motion to said rubber, in combination with a series of pairs of clamping-rolls adapted to strike in the edge of the paper which projects beyond the open edge of the box, means for imparting a reciprocating and rotary motion to each pair of rolls simultaneously and means for opening and closing each pair of rolls successively as the box is rotated, whereby they are brought successively into and out of action.



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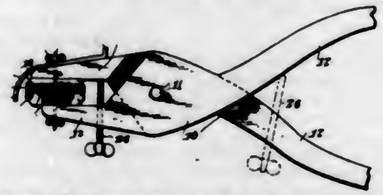
**758,503. PROCESS OF FORMING VESSELS FROM SHEET METAL. HERMANN G. BLEVINS and JAMES R. WHITTAKER, Newcastle, Pa. Filed July 1, 1903. Serial No. 163,673. (No specimens.)**



*Claim.*—The herein-described process for forming vessels from sheet metal consisting in securing the ends of the material to be welded in overlapped position upon an insulating support, mechanically securing a perfect contact between the end portions, connecting said portions adjacent the joint with the terminals of an electrical supply-circuit having a variable resistance therein and retaining the current at a fixed strength by automatically reducing the resistance of the circuit upon the increase of the resistance of the material due to heating, and then forcing said ends together while heated by the current, substantially as described.

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**758,504. SEAT-SHAPING IMPLEMENT. JAMES P. BOLDING, Terrell, Tex. Filed June 3, 1903. Serial No. 159,954. (No model.)**



*Claim.*—1. In a seat-shaping implement, the combination with supports movable toward and from each other and having coacting faces, of a die carried by one of the faces, said die projecting beyond the same and toward the other face, and a stop for limiting the movement of the supports toward each other and preventing the engagement of the die with the opposing face.

2. In a seat-shaping implement, the combination with supports movable toward and from each other, of a plurality of coacting male and female dies carried respectively by the supports and projecting beyond different sides of the same, said dies being arranged to form a notch in one face of an article placed therebetween.

3. In a seat-shaping implement, the combination with supports movable toward and from each other, of a plurality of coacting male and female dies carried respectively by the supports and projecting beyond different sides of the same, said dies being arranged to form a notch in one face of an article placed therebetween, and means for limiting the movement of the supports toward each other.

4. In a seat-shaping implement, the combination with supports movable toward and from each other, of carriers revolubly mounted on the supports and having outstanding projections, coacting male and female dies of different contours located on the inner faces of the supports, and means for limiting the movement of the supports toward each other and preventing the dies being brought together.

5. In a seat-shaping implement, the combination with supports movable toward and from each other and having coacting faces, of a die carried by one of the faces and projecting beyond the same and toward the other face, a stop for limiting the movement of the supports toward each other and preventing the engagement of the die with the opposing face, and a positioning device carried by one of the supports and coacting with the die to properly position the article with respect thereto.

6. In a seat-shaping implement, the combination with coacting jaws having seat-forming means, of a pronged positioning device movable longitudinally on one of the jaws and having its prongs located on one side of the same, and means for securing the device against movement.

7. In a seat-shaping implement, the combination with coacting jaws having seat-forming means, of a positioning device movable longitudinally on the outer face of one of the jaws, said device having a pronged end projecting from the free end of the jaw and having a longitudinally-disposed slot, and a holding device secured to the jaw and passing through the slot.

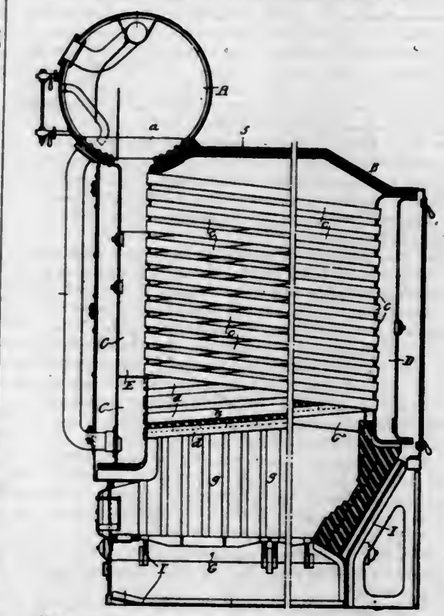
8. In a seat-shaping implement, the combination with jaws movable toward and from each other, of a male die carried by one jaw, a flattened face forming a part of the other jaw and arranged to coact with the male die, and a female die detachably mounted on the said flattened face of the jaw opposite the male die and coacting with the male die.

9. In a seat-shaping implement, the combination with jaws movable toward and from each other, of a revolubly male die carried by the inner face of one jaw and arranged to coact with the inner face of the other jaw, a female die revolubly mounted on said coacting face, a positioning device for the article, and a common fastener for securing the positioning device and the female die in place upon the jaw.

10. In a seat-shaping implement, the combination with coacting jaws, of a male die carried by one jaw, a female die detachably mounted on the other jaw, said male die coacting with the female die and with the jaw when said female die is detached, and an adjustable stop for limiting the movement of the jaws toward each other.

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**758,505. STEAM-GENERATOR. EMIL A. BRINER, Philadelphia, Pa. Filed Aug. 3, 1903. Serial No. 168,026. (No model.)**



*Claim.*—1. The combination in a steam-generator, of a header, circulating-tubes entering the same, stays supporting portions of said header, and a diaphragm dividing the header into chambers and having portions placed adjacent to and extending around the stays, substantially as described.

2. The combination in a steam-generator, of a header, a series of stay-bolts extending between portions of said header and a diaphragm or diaphragms extending between opposite faces of the header, said diaphragm having through it openings for the passage of the stay-bolts, substantially as described.

3. The combination in a steam-generator, of a header, a series of stay-bolts extending between portions of said header, and a diaphragm or diaphragms extending between opposite faces of the header, said diaphragm or diaphragms lying in a plane or series of planes substantially parallel to the length of the stay-bolts, and

having through them openings for the passage of the stay-bolts, substantially as described.

4. The combination in a steam-generator of a header, circulating-tubes entering the same, stays extending between and supporting opposite portions of the header, with a diaphragm formed of a series of plates, each of which has a portion parallel with the plate adjacent thereto, said parallel portions inclosing and being curved around certain of the stays, substantially as described.

5. The combination in a steam-generator, of a header, and a diaphragm extending between opposite faces thereof said diaphragm being formed of a series of plates of which each has a portion parallel to a portion of the plate adjacent thereto, substantially as described.

6. The combination in a steam-generator, of a steam-drum, a header connected thereto, a number of groups of circulating-tubes connected to said headers, said groups being formed of a number of series of tubes, partitions in the header separating the openings of one group of the tubes from those of another, and diaphragms separating the openings of the tubes of one series from those of another, substantially as described.

7. The combination in a steam-generator, of a steam-drum, a header connected thereto having a number of groups of water-tubes entering it, each of said groups being composed of a number of series of tubes, partitions in the header separating one group of tubes from another, a partition dividing the header into upper and lower chambers in such a manner that certain of the series of tubes are in connection with one of the chambers and those of another series are in connection with the other chamber, substantially as described.

8. The combination in a steam-generator of a number of series of tubes divided into a plurality of groups, a furnace, and substantially vertical baffle-walls extending between said series of tubes, the combustion-chamber of said furnace having a substantially horizontal partition between it and the tubes the same being provided with an opening at one side thereof, said baffle-walls and the partition being arranged relatively to one another so that the products of combustion will escape from one side of the furnace to the tubes and will be directed transversely over the top of said furnace to the opposite side thereof, substantially as described.

9. The combination in a steam-generator, of a front header, a series of rear headers placed one above the other, with water-tubes connecting said headers, certain of said tubes having their rear ends connected in the same horizontal plane to a single header, and their other ends connected to the front header in a different plane, substantially as described.

10. The combination in a steam-generator, of a front header and a series of rear headers, with vertical series of water-tubes connecting said front header with the rear headers, all the tubes of each series entering the front header, and each tube of a series entering a different one of the rear headers, substantially as described.

11. The combination in a steam-generator, of a front header, a steam-drum connected thereto, a substantially vertical partition in the front header dividing it into chambers, a series of rear headers formed into a plurality of groups, and a series of water-tubes extending from each group to the different chambers of the front header, substantially as described.

12. The combination in a steam-generator of a steam-drum, a header connected thereto, a number of groups of circulating-tubes connected to said header and all opening substantially in the same plane, said groups being each formed of a number of series of tubes, a partition in the header separating the openings of one group of tubes from those of another group and serving to produce independent circulation from the steam-drum through each group, substantially as described.

13. The combination in a steam-generator of a steam-drum, a header connected thereto, a series of horizontally-placed rear headers arranged one above the other, water-tubes from each of said rear headers to the front header, certain of said water-tubes being inclined upwardly, the others being inclined downwardly from their respective rear headers, with a partition or partitions in the front header placed to separate the spaces entered by the downwardly-inclined tubes from those entered by the upwardly-inclined tubes, substantially as described.

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**758,506. SECTIONAL CASE. ORRAL O. BOSS, Montgomery, Ala. Filed Feb. 6, 1903. Serial No. 142,222. (No model.)**

*Claim.*—1. A bookcase or the like having a section whose upper and lower side edges are rabbeted to receive the side edges of the bottom or shelf, each of the said side edges of the section being provided with a groove, and rails, each comprising a vertical member secured to a side edge of the bottom or shelf and projecting above and below the same, and a horizontal member secured to the lower edge of a side of the section, as set forth.



2. A bookcase or the like having a section whose upper and lower edges are rabbeted to receive the side edges of the bottom or shelf, each of the said side edges of the section being provided with a groove, and rails, each comprising a vertical member secured to a side edge of the bottom or shelf and projecting above and below the same, and a horizontal member secured to the lower edge of a side of the section, one end of the rail being flattened and the other end provided with an inwardly-extending flange, as set forth.

3. A bookcase or like article having a unit provided with transverse rails for uniting the sides with the shelf of the unit, each rail having a vertical member secured to the shelf projecting beyond the top and bottom faces of the shelf, for the upper projecting portion to engage grooves in the sides of the unit, and for the lower projecting portion to engage grooves in the sides of the next unit, a horizontal member extending integrally outward from the said vertical member, to engage portions of the bottoms of the sides, an inwardly-extending flange at the rear end of the rail, abutting against the back of the unit and that of the next following unit, and an integral rest on the inner face of the rail and at the front end thereof, for engagement by the shelf, as set forth.

4. A bookcase or the like, comprising a plurality of sections arranged one upon the other and having their upper and lower side edges rabbeted and grooved or recessed, each section being provided with side rails, each rail having a vertical member secured to the bottom of the section and projecting above and below the same and entering the recesses or grooves of the side edges of adjacent sections, and a horizontal member extending between adjacent edges of the sections and secured to one of said edges, as set forth.

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**758,507. GARMENT-FASTENER. BLANCHE M. BURR, South Framingham, Mass. Filed Sept. 30, 1903. Serial No. 175,198. (No model.)**



*Claim.*—1. A fastener of the character described comprising a strip having a headed hook at one end, a lateral extension at the other end, an inverted-V-shaped arm integral with said extension, and a laterally-extending end to said arm normally parallel with the first-mentioned extension.

2. A garment-fastener comprising a strip having a headed hook at one end, a lateral extension at the other end and in the same plane with the hook, and an inverted-V-shaped arm integral with the extension and in the same plane therewith, the apex of said arm being spaced from the head but adjacent thereto.



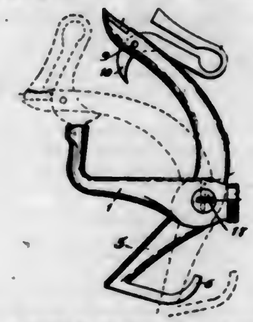
**758,508. WHEEL-WRENCH. JESSE H. CHAPPELL, Wyaconda, Mo. Filed Apr. 29, 1903. Serial No. 154,867. (No model.)**



*Claim.*—A device of the class described comprising a handle and a nut-engaging jaw, comprising two yielding members and an interposed sleeve terminally engaging the yielding jaw members and immovably engaging the handle, and means for adjusting the yielding jaw members with relation to each other.

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**758,509. COMBINED HAT, COAT, AND UMBRELLA RACK. WILLIAM R. CLARK, Cincinnati, Ohio. Filed June 5, 1903. Serial No. 160,231. (No model.)**



*Claim.*—1. A device of the character as described consisting of a hook, a ball pivoted to said hook, a supplemental ball pivoted to the first said ball and adapted to impinge an article between itself and the first said ball and a means for holding the parts in locked position with relation to each other.

2. A device of the character as described consisting of a hook, a ball pivoted to said hook, a supplemental ball pivoted to the first said ball and adapted to impinge an article between itself and the first said ball and having a depending shank adapted to come in contact with the hook and a means for holding the parts in locked position.

3. A device of the character as described consisting of a hook, a ball pivoted to said hook, a supplemental ball pivoted to the first said ball, the ends of the said balls adapted to be brought together and a means for holding the parts in locked position with relation to each other.

4. A device of the character as described consisting of a hook, a ball pivoted to said hook, a supplemental ball pivoted to the first said ball and having a depending shank adapted to come in contact with the hook, the ends of said balls adapted to be brought together and a means for holding the parts in locked position with relation to each other.

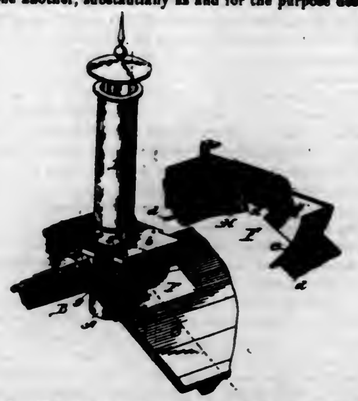
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**758,510. CHIMNEY. PAUL DICKINSON, Chicago, Ill. Filed Aug. 4, 1903. Serial No. 168,282. (No model.)**

*Claim.*—1. In combination with a chimney of the character set forth, a sectional roof-plate conforming to a roof-apex to straddle the same, and an adjustable connection between the chimney and roof-plate maintaining closure of the roof-opening at any angle of adjustment of the chimney on said plate.

2. In combination with a chimney of the character set forth, a roof-plate formed of hinged sections to straddle a roof-apex about the chimney-opening therein and having an upward-projecting sectional shield, and a downward-projecting shield extending about the chimney, said chimney and roof-plate being fastened together and relatively adjustable with said shields overlapping one another, substantially as and for the purpose described.

3. In combination with a chimney of the character set forth a roof-plate formed of hinged sections to straddle a roof-apex about the chimney-opening therein and having an upward-projecting sectional shield, a flange extending about the chimney and a shield depending from said flange, said chimney and roof-plate being fastened together and relatively adjustable with said shields overlapping one another, substantially as and for the purpose described.



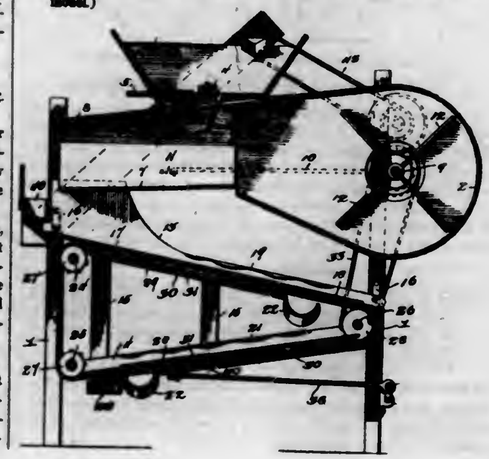
4. In combination with a chimney of the character set forth, a roof-plate formed of hinged sections to straddle a roof-apex about the chimney-opening therein and having an upward-projecting sectional shield, mutually overlapping end-closed curved beaks joining the roof-plate sections across the roof-apex beyond the sides of said shield and a downward-projecting shield extending about the chimney, said chimney and roof-plate being fastened together and relatively adjustable with said shields overlapping one another, substantially as and for the purpose described.

5. In combination with a chimney of the character set forth, a roof-plate formed of hinged sections to straddle a roof-apex about the chimney-opening therein and having an upward-projecting sectional shield mutually overlapping end-closed curved beaks joining the roof-plate sections across the roof-apex beyond the sides of said shield, a flange extending about the chimney and a shield depending from said flange, said chimney and roof-plate being fastened together and relatively adjustable with said shields overlapping one another, substantially as and for the purpose described.

6. In combination with a chimney of the character set forth, a roof-plate formed of two three-sided sections each having flanges crossing their inner edges with their ends overlapping one another across the roof-apex and pivotally connected together, said flanges forming an upward-projecting shield, mutually overlapping end-closed curved beaks joining the roof-plate sections adjacent to the pivotal connections of said flanges, a flange extending about the chimney, and a shield depending from said flange, said chimney and roof-plate being adjustably pivoted and bolted together and said shields overlapping one another, substantially as and for the purpose described.

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**758,511. FANNING-MILL FOR CLEANING GRAIN, &c. JOHN L. DOUB, Meyersville, Md. Filed May 1, 1903. Serial No. 155,148. (No model.)**



*Claim.*—1. In a fanning-mill, a hopper, a transversely-reciprocating screen beneath the hopper, and a fan located at one side of said screen, in combination with a longitudinally-reciprocating frame, comprising screens inclined at an angle to each other; oppositely-inclined discharge-spouts, and a runway formed below each screen adapted to receive traveling scrapers for simultaneously cleaning the under side of each screen to prevent the clogging of said screens.

2. In a fanning-mill, a hopper; a transversely-reciprocating screen located beneath the hopper, and a fan located at one side of said screen, in combination with a reciprocating screen-frame, suspended beneath said screen, and having screens inclined at an angle to each other, a runway formed below each screen, sprocket-wheels, endless sprocket-chains provided with transverse scrapers, and means for operating said sprocket-wheels and chains, whereby the transverse scrapers are caused to travel through both runways and simultaneously clean the under side of each screen during the reciprocation of said screen-frame.

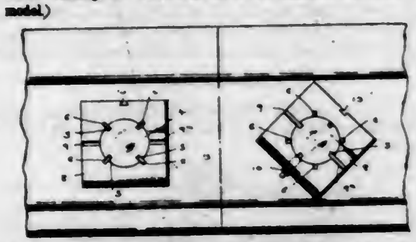
3. In a fanning-mill, a hopper, a transversely-reciprocating screen beneath the hopper, and a fan at one side of said screen, in combination with a reciprocating screen-frame, having screens located at an angle to each other, and located beneath the reciprocating screen, the upper one of the screens on the screen-frame having a grating at its discharge end; an inclined trough beneath said discharge end, and troughs beneath the discharge end of the second screen of the screen-frame; and means for operating the several aforesaid movable parts, as herein set forth.

4. In a fanning-mill, a hopper, a transversely-reciprocating screen beneath the hopper, and a fan at one side of said screen, in combination with a reciprocating screen-frame beneath said screen, and having screens inclined at an angle to each other, yielding flexible strips, located adjacent to said inclined screens, and serving as baffles to retard the flow of grain; and means for operating the several aforesaid movable parts, as herein set forth.

5. In a fanning-mill, a hopper, a transversely-reciprocating screen beneath the hopper; and a fan adjacent to said screen, in combination with a reciprocating screen-frame, located beneath said screen, and having screens located at an angle to each other, an inclined trough beneath the lower end of the upper one of said screens, inclined troughs beneath the lower end of the lower one of said screens, and endless traveling mechanism carrying transverse scrapers bearing on the under side of said screens, yielding flexible baffle-strips located adjacent to the outer surface of said screens to retard the flow of grain, and means for operating the several named movable parts, as herein set forth.

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**758,512. NUT-LOCK.** James A. Douglas and James Bartleson, Yates Landing, Ill. Filed Jan. 16, 1903. Serial No. 139,340. (No model.)



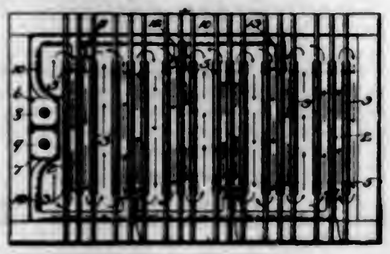
*Claim.*—The combination of a bolt provided with a series of longitudinal grooves, a nut threaded on the bolt and having wedge-shaped grooves in the faces thereof, arranged in diametrical alinement to coincide with the grooves in the bolt, the nut also having a wedge-shaped groove in one edge, and wedge-shaped pins insertible in the wedge-shaped grooves and having their inner ends arranged to respectively engage the grooves of the bolt and a part of the structure against which the nut is applied.

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**758,513. APPARATUS FOR CIRCULATING LIQUIDS IN TANKS.** George R. Dunton, New York, N. Y. Original application filed Sept. 15, 1903, Serial No. 173,373. Divided and this application filed Nov. 25, 1903. Serial No. 182,904. (No model.)

*Claim.*—1. An apparatus for producing continual and definite agitation and circulation of liquids in tanks or other receptacles comprising pipes extending along opposite sides of said tank having alternately-disposed nozzles designed to discharge liquid toward the center of the tank, substantially as described.

2. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with pipes on its opposite sides and extending along the upper portion thereof, said pipes having alternately-disposed nozzles in the same horizontal plane, designed to discharge liquid in a direction toward the center of the tank, substantially as described.



3. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with pipes extending along the upper portion of the same on opposite sides thereof, said pipes having nozzles arranged in alternate order designed to discharge liquid in a direction toward the center of the tank, substantially as described.

4. An apparatus for producing continual and definite agitation and circulation of the liquids composing an electrolytic bath, comprising a tank, pumps provided with suction-pipes, and pipes having alternately-disposed nozzles at the top of the tank, substantially as described.

5. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank having a series of sets of anodes and cathodes arranged transversely of the same, pipes extending along each side and at the upper portion of the tank each pipe provided with a number of nozzles designed to discharge liquid at the opposite ends of the alternate sets of anodes and cathodes, substantially as described.

6. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with pipes on opposite sides thereof, connected to a suitable pump and provided with a series of alternately-disposed nozzles of varying sizes, substantially as described.

7. An apparatus for producing continual and definite agitation and circulation of liquids, comprising a tank provided with a number of sets of anodes and cathodes arranged transversely thereof, pipes on opposite sides of said tank connected to a suitable pump and designed to discharge liquid at the opposite ends of the alternate sets of anodes and cathodes, substantially as described.

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**758,514. COMBINATION-LATHE.** John B. Ehrlich, Indianapolis, Ind. Filed Mar. 12, 1903. Serial No. 147,429. (No model.)

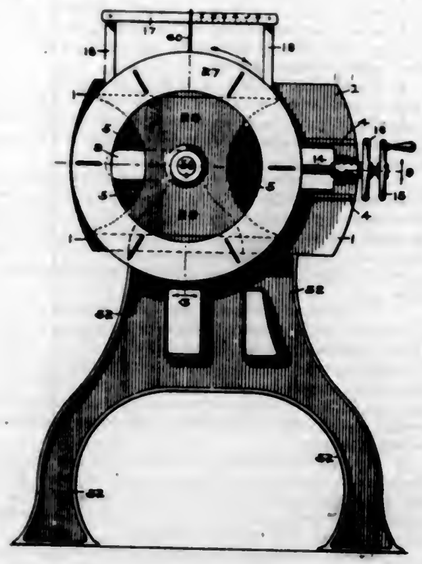
*Claim.*—1. In a lathe of the variety shown, a stationary back provided with a slot, a disk provided with a slot that registers with the slot in the back and is adjustably secured to the back, a plurality of rotating members slidably secured together which engage with and are guided by the disk, a driving-shaft passing through the back, disk and inner rotating member, means rigidly secured to the shaft which slidably engages with the outer rotating member, and means engaging with the back and disk and adapted to shift said disk and rotating members to and from the shaft.

2. In a lathe of the variety shown, a stationary back provided with a slot, a disk provided with a slot that registers with the slot in the back and adjustably secured to said back, a plurality of rotating rings slidably secured together which ride on and are guided by the disk, means engaging with the back and disk for moving the latter on the former, a driving-shaft extending through the slots in the back and disk, means on the shaft which slidably engages with the outer ring as and for the purposes set forth.

3. In a lathe of the variety shown, a stationary back, a disk adjustably secured to the back, a plurality of rotating members slidably secured together of which one engages with and is guided by said disk, a driving-shaft, a driving-plate on the shaft which slidably engages with the outer rotating member and adapted to impart rotary movement to the members, means engaging with the stationary back and disk for moving the latter on the former, a graduating-scale secured to the stationary back, an indicator-arm secured to the disk and extending across the face of the scale and adapted to record the amount of lateral movement of the disk.



758,514.



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**758,515. JAR-CLOSURE.** William B. Fehr, Washington, Pa. Filed June 1, 1903. Serial No. 159,398. (No model.)



*Claim.*—1. In a jar closure the combination with the neck having threads thereon, of a glass cap having a depressed center and a groove for carrying packing, and a metal strap provided with a depressed portion engaging the top of the cap, inturned spurs to hold the strap on the cap, and depending studs arranged to engage the threads of th neck.

2. In a jar closure the combination of a neck provided with oppositely disposed partial threads with an open space between their ends, of a glass cap provided with a central depressed portion, an annular groove for containing packing, and an undercut outer rim, a metallic strap engaging the depressed top of the cap, having spurs sprung over and engaging the rim of the cap, and inturned lugs to engage the threads on the neck, substantially as described.

3. In a jar closure the combination with a threaded jar neck and a cap having a depressed central portion and an overhung rim, of a strap comprising a sheet metal bar provided on each end with upwardly hooked spurs to engage the cap and with a pair of lugs to engage the threads on the jar neck, and a depressed center to engage the cap.

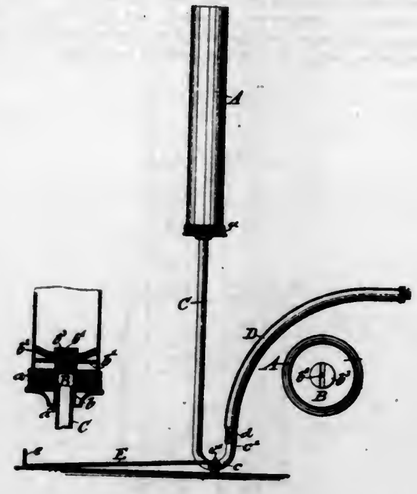
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**758,516. AIR-PUMP.** John R. Fisher, New York, N. Y. Filed May 15, 1901. Renewed Sept. 10, 1903. Serial No. 172,571. (No model.)

*Claim.*—1. In an air-pump, the combination, with a handle-section, of a tubular piston-rod located in the same and provided at its outer end with a backwardly-turned portion located beyond the side of the handle-section, and a flexible connecting-tube connected with said backwardly-turned portion and adapted to lie alongside said handle-section, substantially as set forth.

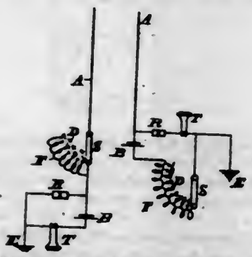
2. In an air-pump, the combination, with a handle-section, of a tubular piston-rod located in the same and provided at its outer end with a backwardly-turned portion located beyond the side of the handle-section, a flexible connecting-tube connected with said portion and adapted to lie alongside said handle-section, and a foot-piece pivoted to said piston and having its outer end bent into a clamp of approximately the size of the tube, substantially as set forth.

3. In an air-pump, the combination, with a handle-section, of a tubular piston-rod located in the same and provided at its outer end with a backwardly-turned portion located beyond the side of the handle-section, a flexible connecting-tube connected with said portion and adapted to lie alongside said handle-section, and a foot-piece pivoted to said piston and having its outer end bent into a clamp of approximately the size of the tube, said foot-piece being pivoted to said piston eccentrically to the connection of the flexible tube with the same, substantially as set forth.



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**758,517. ART OF WIRELESS TELEGRAPHY.** Lee de Forest, New York, N. Y. Filed Sept. 21, 1903. Serial No. 173,570. (No specimens.)



*Claim.*—1. The method of determining the distance to a sending wireless-signaling station which consists in employing a damping or choking influence of regulable amount in the receiving apparatus to thereby reduce the intensity of the signals received to a standard of comparison and in comparing the amount of the damping influence required with results obtained under known conditions and distances.

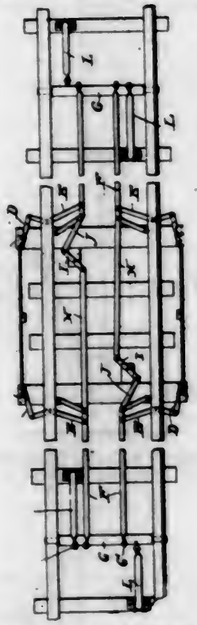
2. The method of determining the distance to a sending wireless-signaling station which consists in varying the percentage of the energy received which is communicated to the translating or indicating instrument and in comparing the percentage required to produce a standard effect with the percentages required to produce the same effect under known conditions.

3. The method of determining the distance to a sending wireless-signaling station which consists in employing a regulable resistance to dampen or choke down the energy received until a standard indication is produced upon an indicating instrument and in comparing the amount of resistance required for this purpose with the amount required to produce the same effect under known conditions.

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**758,518. AUTOMATIC RAILWAY-GATE.** Joshua P. Fowler, Philadelphia, Pa. Filed May 16, 1903. Serial No. 157,496. (No model.)

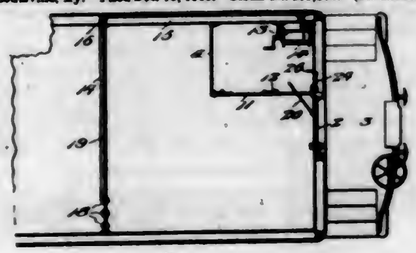
*Claim.*—1. In an automatic railroad-gate, gates pivoted upon each side of the railroad-track and normally extending across the same, crank-arms secured to the spindle of each of the gates, bell-crank levers connected to the crank-arms, longitudinal bars to which the other ends of the bell-crank levers are connected, rock-shafts journaled transversely of the rails at a distance each side of the crossing, arms secured to the rock-shafts to which the other ends of the longitudinal bars are connected, means extending between the opposite longitudinal bars so as to cause one of the bars to move in the opposite direction to the bar directly operated upon, means whereby the approaching train will rock the nearest rock-shaft so as to swing the gates across the roadway, and means whereby the other rock-shaft upon the other side of the roadway will be rocked to return the gates to their normal position, as specified.



2. In an automatic railroad-gate, swinging gates pivoted upon each side of the railroad-rails and normally extending across the railway-track, crank-arms connected to the spindles of the gates, bell-crank levers connected at one end to the crank-arms, longitudinal bars to which the other ends of the bell-crank levers are connected, means interposed between the members of each pair of longitudinal bars so as to reverse the movement of the opposite bar when one is operated, two rock-shafts journaled transversely of the rails, and one located at a distance each side of the crossing, crank-arms formed with the rock-shaft to which the other ends of the longitudinal bars are connected, inclined bars pivoted at their lower ends to a stationary point, crank-arms formed with the rock-shafts, links connecting said crank-arms with the other end of the inclined bars, as and for the purpose specified.

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**758,519. ATTACHMENT FOR CARS. FREAD FRADDRASHA, Louisville, Ky. Filed Dec. 19, 1903. Serial No. 185,236. (No model.)**



*Claim.*—1. The combination with a car, having a door opening thereinto, of a metal guard-inclosure located adjacent to said door, and a slide-bolt concealed within the car structure and solely operative from within the said inclosure to engage the door and lock the latter against opening movement.

2. The combination with a car, having a door opening thereinto, of a metal guard-inclosure adjacent to the door, and a closing means for the door pivotally connected to the latter operative from within the closure and movable to lock the door closed after it has been opened.

3. The combination with a car, having a door opening thereinto, of a guard-inclosure adjacent to the door, a rod pivotally attached to the lower portion of the door and freely shiftable through the adjacent wall of the inclosure and adapted to be located within the latter to prevent opening movement of the door, and means for locking the rod against movement and controllable from within the guard-inclosure.

4. The combination with a car, having a door opening thereinto, of a guard-inclosure located adjacent to the door and provided with a turret extending upwardly through and above the top of the car, the inclosure and turret having closable port-holes, means operative from within the inclosure to shut and lock the door closed, and an imprisoning-partition transversely movable across the car and also operative from within the inclosure to form an imprisoning-cell at one end of the car.

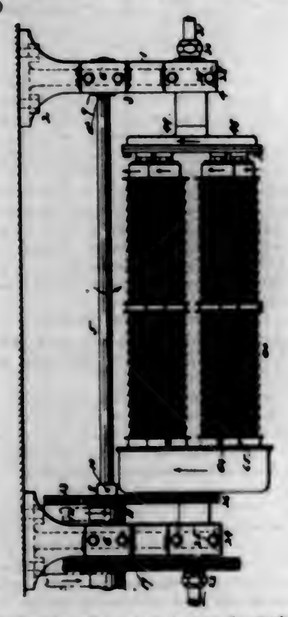
5. The combination with a car, having a door, of a guard-inclosure within the car in proximity to the door, means operative from within the inclosure to shut and lock the door closed, and a collapsible imprisoning-partition movable transversely across the car and also operative from within the inclosure.

6. The combination with a car, of a metal guard-inclosure therein, and an imprisoning-partition shiftable transversely across the car at a distance from and operative from within the inclosure to form a cell in the car.

7. The combination with a car, having a door opening thereinto, of a metal guard-inclosure adjacent to the door, a slide-bolt concealed within the structure of the car and arranged to engage the door, said bolt being operative from within the inclosure, and a closing means pivotally attached to the door and movable through one wall of the guard-inclosure.

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**758,520. THREAD-DRESSING MACHINE. GEORGE A. FREDENBURGH, Pawtucket, R. I. Filed Dec. 1, 1902. Serial No. 133,515. (No model.)**



*Claim.*—1. In a thread-dressing machine, the combination of a rotatable shaft properly mounted and driven by power, a gear on said shaft, two hollow shafts arranged in line and mounted in proper supports, two disks fixed at one end of each of said hollow shafts and provided with a steam-chamber between them, a gear on one of said hollow shafts engageable with the first-named gear, a series of fixed tubular perforated shafts extending between the steam-chambers, a series of ironers rotatably mounted on said perforated shafts and means adapted to rotate all the ironers of the series, substantially as set forth.

2. In a thread-dressing machine, the combination of a rotatable shaft properly mounted and driven by power, a gear on said shaft, two hollow shafts arranged in line and mounted in proper supports, two disks fixed at one end of each of said hollow shafts and provided with a steam-chamber between them, a gear on one of said hollow shafts engageable with the first-named gear, a series of fixed tubular perforated shafts extending between the steam-chambers, rotatable ironers mounted on said perforated shafts, ball-bearing devices between said ironers and their accompanying perforated shafts, and means adapted to rotate all the ironers of said series, substantially as set forth.

3. In a thread-dressing machine, the combination of a rotatable shaft mounted in journal-bearings of the machine-frame, a pulley made fast on said shaft, a belt receiving power to rotate said pulley, a gear fixed upon said shaft, a second gear loosely mounted on said shaft, a second pulley made fast upon the hub of second-mentioned gear, a belt receiving power to rotate the last-mentioned pulley, two hollow shafts coaxially mounted in journal-bearings of the machine-frame, a gear fixed on one of said hollow shafts and engageable with the first-mentioned fixed gear; two disks fixed upon one end of each of said hollow shafts and provided with a steam-chamber between them, a series of fixed tubular perforated shafts extending between the steam-chambers, a series of ironers rotatably mounted upon said perforated shafts, respectively, each of said ironers having its peripheral portion formed into a series of cone-shaped integral sections, and each section provided with a V-shaped groove spirally arranged, a gear fixed at one end of each of said ironers, a disk loosely mounted on the hub of a journal-bearing of the machine-frame and having internal gear-teeth to engage each gear of said ironers, a gear fixed upon the hub of said disk and engageable with the second-mentioned loose gear, substantially as shown and described.

4. In a thread-dressing machine, the combination of two journal-bearings of the machine-frame one of said bearings having an integral projecting hub, with two hollow shafts coaxially mounted in said journal-bearings, two disks fixed upon one end of each of said hollow shafts and provided with a steam-chamber between them, a series of fixed tubular perforated shafts extending between the steam-chambers, a series of ironers loosely mounted on said perforated shafts and having their ends internally screw-threaded and concentrically beveled, screw-plugs engageable with the screw-threaded ends of said ironers and concentrically beveled, a series of balls located in the channel formed by said bevels of the ironer ends and screw-plugs and bearing on said perforated shafts, a gear fixed upon one end of each of said ironers, an internal gear loosely mounted on the hub of one of said journal-bearings of the machine-frame and arranged to engage the gears on said ironers, a gear fixed upon the hub of said internal gear and adapted to receive power to rotate the same, a second gear fixed upon one of said hollow shafts and adapted to receive power to rotate said disks, substantially as described.

5. In a thread-dressing machine, the combination of a shaft, two brush-cylinders mounted loosely on said shaft, each of which brush-cylinders has at its inner end a half-annular flange, so arranged that one of said flanges abuts the other and they together form a complete circle, a gear fixed at the outer end of said brush-cylinders, and a second gear receiving power to rotate last said gear, substantially as specified.

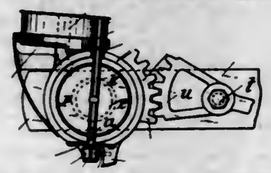
6. In a thread-dressing machine, the combination of a fixed tubular perforated shaft, two ironers loosely mounted on said shaft, each of which ironers has at its inner end a half-annular flange, so arranged that one of said flanges abuts the other and they together form a complete circle, a gear fixed at the outer end of said ironers, and a second gear receiving power to rotate last said gear, substantially as specified.

7. In a thread-dressing machine, the combination of two hollow shafts arranged in line with each other and mounted in proper supports, two disks rigidly secured upon one end of each of said hollow shafts and provided with a steam-chamber between them, a series of fixed tubular perforated shafts extending between the steam-chambers, means to rotate said disks, an ironer rotatably mounted on each of said perforated tubular shafts and having its outer surface formed with a series of conically-shaped integral sections whose surfaces incline in one direction and each section of the series provided with a spiral groove, and means to rotate all the ironers in the same direction, substantially as shown and for the purpose specified.

8. In a thread-dressing machine, the combination of two hollow shafts arranged coaxial with each other and mounted in proper supports, two disks made fast upon the end of each of said hollow shafts and provided with a steam-chamber between them, a series of fixed tubular perforated shafts extending between the steam-chambers, means to rotate said disks, a hollow ironer mounted loosely on each of said tubular shafts, said ironer having a series of conically-shaped integral sections whose surfaces are provided with a groove spirally arranged, the groove of one ironer being arranged in the reverse order to that of the next adjacent ironer, a series of balls properly mounted in each end of the ironers and arranged to contact with the exterior surface of the said tubular shafts, and means to rotate each and all of the said ironers at the same speed and in the same direction, substantially as described.

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**758,521. PHONOGRAPH. PAUL GÄHLER, Leipzig-Gohlis, Germany. Filed Mar. 30, 1903. Serial No. 150,286. (No model.)**



*Claim.*—1. A device in connection with gramophones, phonographs or the like, for automatically releasing and clamping a membrane-pin in the holder, comprising the combination of a pin-chute above the pin-holder, a rotary drum above the chute to bring a pin over the same when rotated a part of a revolution, an oscillatory ring mounted on the neck of the sounding-box and means in connection with the same for releasing the pin in the holder on one movement of its oscillation, and for rotating the said pin-drum one step on the backward oscillation, and for preventing the fresh pin supplied from falling out at the end of the holder until it is properly clamped by the said return movement substantially as described.

2. In a device of the class specified, the combination of a pin-chute mounted above the pin-holder, a clamping-ring having radially-extending arm on the pin-holder to clamp the pin, a rotary pin-carrying drum mounted above the chute, and an oscillatory ring mounted on the neck of the sounding-box, said ring having an arm to operate the clamping-ring in both directions when oscillated, and a pawl device operated by said ring to bring a fresh pin over the chute and means in connection with said ring for preventing the fresh pin from falling out at the end of the holder before it is properly clamped in the manner and for the purpose substantially as described.

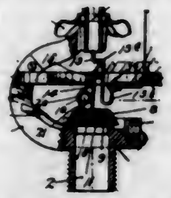
3. In a device of the class specified, the combination of a pin-chute *a* mounted above the pin-holder, a clamping-ring *b* having radially-extending arm *d* to clamp the pin in the holder, a pin-drum mounted above the chute and having the pins arranged therein in proximity to its periphery, a ratchet-wheel fast on said drum, a ring *g* mounted on the neck of the sounding-board, an arm *q* on the same to engage and operate the arm *d* of the clamping-ring backward and forward at each oscillation of the said ring, a spring-pawl adapted to engage the teeth of the drum ratchet-wheel and a cam or lug on the said ring *g* to operate said spring-pawl on the movement of the ring, a horizontally-extending foot to said arm *q* to extend under the mouth of the holder when the ring is being oscillated and a spring *e* mounted on the said clamping-ring and extending below the mouth of the holder in the manner and for the purpose substantially as described.

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**758,522. AUTOMATIC SPRINKLER. CHARLES B. GARRETT, Minneapolis, Minn., assignor of one-half to Emma G. Garrett, Minneapolis, Minn. Filed Apr. 18, 1902. Serial No. 103,493. (No model.)**

*Claim.*—1. In an automatic sprinkler, the combination with a sprinkler-head having a water-delivery orifice, of a stopper normally closing said orifice, a toggle-acting spring-strut normally holding said stopper in position, means for adjusting or varying the tension tending to buckle the said toggle-acting strut, and a fusible strut

normally resisting the buckling action of said toggle-acting strut and holding the same in working position, substantially as described.



2. In an automatic sprinkler, the combination with a sprinkler-head having a water-delivery orifice, of a stopper normally closing said orifice, means for holding said stopper in working position, said means comprising sections 13 and 14, the former having the shoulder $13^a$, spring extension $13^b$ and prong $13^c$, and the latter having the thrust-screw 16, and a fusible strut normally pressed between said prong $13^c$ and a portion of said sprinkler-head, substantially as described.

3. The combination with a sprinkler-head having a water-delivery orifice and an upwardly-curved yoke terminating above said orifice, of a horizontally-extended yoke or thrust-bracket secured to the former yoke, a cap or stopper for normally closing said orifice, a toggle-acting spring-strut reacting on said cap or stopper and on the upper end of the former noted yoke, and a fusible strut reacting between said spring-strut and the extended portion of said horizontally-extended yoke, substantially as described.

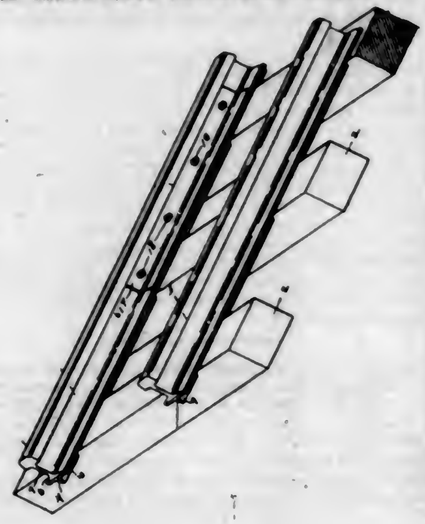
4. The combination with a sprinkler-head having a water-delivery orifice, of a stopper normally closing said orifice, a toggle-acting strut normally holding said stopper in position, a sleeve or guide carried by one of the strut members, and circuit connections involving a fusible wire passed through said sleeve or guide, substantially as described.

5. The combination with a sprinkler-head having a water-delivery orifice, of a stopper normally closing said orifice, a toggle-acting strut normally holding said stopper in working position, a sleeve detachably secured to one of the strut members by spring finger or clamp, and circuit connections involving a fusible-wire section passed through said sleeve and adapted to be severed thereby when the strut is tripped, substantially as described.

6. The combination with a sprinkler-head having a water-delivery orifice, of a stopper normally closing the same, a toggle-acting strut normally holding said stopper in working position, a sleeve carried by one of said strut members and a circuit connection subject to the action of said sleeve when said strut is tripped, substantially as described.

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**758,528. RAILROAD-TRACK.** WILLIAM GOLDER, Wilkinsburg, Pa. Filed Nov. 19, 1903. Serial No. 181,918. (No model.)



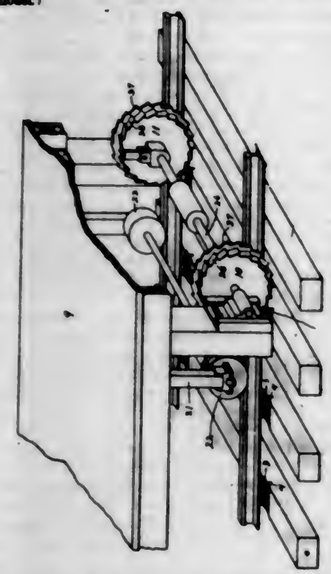
*Claim.*—1. The combination with the rails, of a series of cross-ties having transverse grooves or kerfs in their upper faces, and rail-supporting base-bars having longitudinally-depending strengthening-ribs seated in the kerfs of the cross-ties and upwardly-projecting shoulders on their outer edges to receive the outer thrust of the rails resting on the base-bars, the rail-supporting bars extending continuously under the rails.

2. The combination with the rails, of a series of cross-ties having transverse grooves or kerfs formed therein, and supporting base-bars seated on the cross-ties and having upwardly-extending shoulders on their outer edges to receive the outward thrust of the rails resting on the base-bars, the rail-supporting bars extending continuously under the rail.

3. The combination with the rails, of a series of cross-ties having transversely-extending grooves formed therein, and supporting base-bars provided with depending strengthening-ribs seated in the grooves of the cross-ties, the joints of the base-bars being out of line with the joints of the rails, and the joints of the base-bars being formed within the cross-ties.

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**758,524. METHOD OF FORMING RAILROAD-TRACKS.** WILLIAM GOLDER, Wilkinsburg, Pa. Filed Jan. 8, 1903. Serial No. 138,966. (No model.)



*Claim.*—1. The method of laying railroad-tracks, consisting in cutting seats for the rail structures in the ties along the sides of the rails and through the guidance of the rails and bringing the parts into proper alinement and securing the rail structures in the seats so formed in the ties.

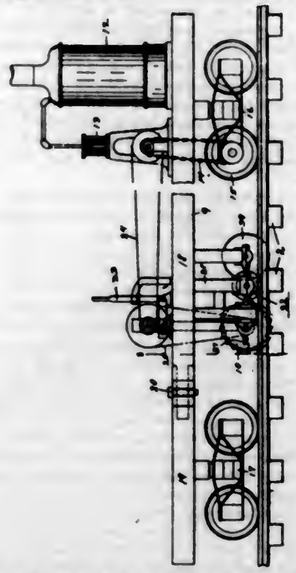
2. The method of laying railroad-tracks, consisting in shifting the rails or ties sidewise with relation to each other, cutting seats for the rail structures for the ties along the sides of the rails and through the guidance of the rails, and then shifting the rails or ties with relation to each other to bring the rail-seats under the rail structures, and securing the rail structures to the ties.

3. The method of laying railroad-tracks, consisting in cutting temporary seats in the ties along the sides of the rails and through the guidance of the rails, shifting the rails onto the temporary seats so provided on the ties, and then cutting permanent seats for the rails through the guidance of the rails in their temporary position and bringing the rails to their permanent seats and securing them to the ties.

4. The method of laying railroad-tracks, consisting in cutting seats for rail structures in the ties along the sides of the rails and through the guidance of the rails, then placing reinforcing base-bars in the seats and then shifting the rails or ties with relation to each other to bring the base-bars under the rails and securing the rails to the ties.



**758,525. APPARATUS FOR FORMING SEATS IN RAILROAD-TIES.** WILLIAM GOLDER, Wilkinsburg, Pa. Filed Jan. 8, 1903. Serial No. 138,967. (No model.)



*Claim.*—1. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a supporting-frame formed of a car provided with trucks and a body portion formed of two sections pivoted between the trucks, a guiding-frame between the trucks engaging the rails and cutting mechanism guided by said frame and formed to cut seats in the cross-ties.

2. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a supporting-frame formed of a car provided with trucks and a body portion formed of two sections pivoted between the trucks, a guiding-frame between the trucks engaging the rail and cutting mechanism guided by said frame, power apparatus mounted on the car-body and connections therefrom to the cutting mechanism, and connections from said power apparatus to drive the car.

3. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a supporting-frame formed of a car provided with trucks and a body portion formed of two sections pivoted between the trucks, a guiding-frame between the trucks provided with a guiding-wheel for the cutting mechanism having flanges engaging the rail, and cutting mechanism guided by said frame.

4. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a supporting-frame formed of a car provided with trucks and a body portion formed of two sections pivoted between the trucks, a guiding-frame between the trucks provided with one guiding-wheel for the cutting mechanism having flanges engaging the rail, and cutting mechanism guided by said frame, and another wheel provided with a plain face resting on the rail.

5. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a car carrying a depending frame, having a guide-wheel engaging the rail and having vertical guideways thereon, bearings mounted in said vertical guideways and a rotary cutter-shaft mounted in said bearings and carrying rotary cutters formed to cut the seats in the cross-ties.

6. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a car carrying a depending frame, having a guide-wheel engaging the rail and having vertical guideways thereon, bearings mounted in said vertical guideways and a rotary cutter-shaft mounted in said bearings and carrying rotary cutters formed to cut the seats in the cross-ties, said guideways being laterally adjustable on said frame.

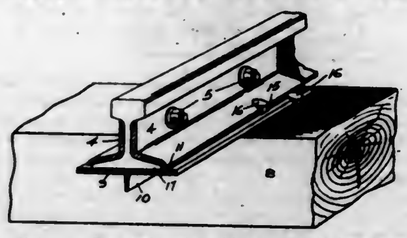
7. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a car carrying a depending frame, having a guide-wheel engaging the rail and having vertical guideways thereon, bearings mounted in said vertical guideways, a rotary cutter-shaft mounted in said bearings and carrying rotary cutters formed to cut the seats in the cross-ties, and adjustable stops at the base of said guideways to regulate the height of the cutter-shaft.

8. In apparatus for forming seats in cross-ties, the combination with the rails and cross-ties, of a supporting-frame and guiding mechanism carried thereby and engaging with the rail, and a marker carried by said frame to form continuous marks on the ties for the adjustment of the rails thereto.

9. In apparatus for cutting seats in cross-ties, the combination with the rails and cross-ties, of a car provided with a depending frame having a guide-wheel engaging with the rail, a cutter-shaft mounted to slide on said frame, a motor, an intermediate shaft connected to said cutter-shaft by means of straps, and power connections from the motor through said intermediate shaft to the cutter-shaft, and a lever for raising the cutter-shaft.

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**758,526. RAIL-JOINT BRIDGE-PIECE.** WILLIAM GOLDER, Wilkinsburg, Pa. Filed Oct. 12, 1903. Serial No. 176,692. (No model.)



*Claim.*—1. The combination with the rails, of ties adjacent to and supporting the rails at the joint and having deep kerfs or grooves formed therein, and a supporting bridge-piece having an upwardly-extending shoulder along its outer edge to receive the outward thrust of the rail-flange, and a thin depending supporting-rib extending for the full length of the bridge-piece and having its end portions seated in the grooves formed in the ties.

2. The combination with the rails, of ties adjacent to the joint and supporting the same and having deep kerfs or grooves formed therein, and a supporting bridge-piece having an upwardly-extending shoulder along its outer edge to receive the outward thrust of the rail, and a depending supporting-rib extending for the full length of the bridge-piece and seated in the kerfs of the ties, and an angle-bar secured on each side of said rails and connecting the same.

3. The combination with the rails, of ties adjacent to the joint and supporting the same, having deep kerfs or grooves formed therein, and a supporting bridge-piece having an upwardly-extending shoulder along its outer edge to receive the outward thrust of the rail, and a thin depending supporting-rib extending for the full length of the bridge-piece and seated in the grooves of the ties, and angle-bars connecting the rails, the outer angle-bars extending over the upwardly-extending shoulder of the bridge-piece.

4. The combination with the rails, of ties adjacent to the joint and supporting the same, having deep kerfs or grooves formed therein, a supporting bridge-piece having an upwardly-extending shoulder along its outer edge to receive the outward thrust of the rail, and a thin depending supporting-rib extending for the full length of the bridge-piece and seated in the grooves of the ties, and angle-bars connecting the rails, such angle-bars extending over the upwardly-extending shoulder of the bridge-piece, and the bridge-piece and outer angle-bar having corresponding notches formed therein to receive the spikes.

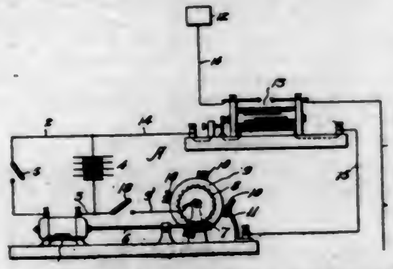
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**758,527. SIGNALING AND OPERATING SYSTEM.** HEDLEY C. W. GRAHAM, Rochester, N. Y. Filed July 9, 1903. Serial No. 164,853. (No model.)

*Claim.*—1. In a system for operating controlling means from a distant point by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, and a controlling-circuit governed by said element and containing an operating device, a trip controlling the action of said device, means for automatically actuating the operating device upon its release by the trip, and means for restricting the speed or force of action of the operating device, substantially as described.

2. In a system for operating controlling means from a distant

point by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, and a controlling-circuit governed by said element and containing an operating device, a trip controlling the action of said device, means for automatically actuating the operating device upon its release by the trip, and means comprising a fluid-retarded member for restricting the speed or force of action of the operating device, substantially as described.



3. In a system for operating controlling means from a distant point by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, and a controlling-circuit governed by said element and containing an operating device, a trip controlling the action of said device, means for automatically actuating the operating device upon its release by the trip, and means comprising a cushion for retarding the speed or force of said operating device, said cushion consisting of a vessel containing a fluid, and a piston therein connected to the said operating device and having a passage for the escape of the fluid past the same, substantially as described.

4. In a system for operating controlling means from a distant point by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, and a controlling-circuit governed by said element and containing an operating device, a weight for operating the same, a trip device controlled by the receiving-circuit for normally detaining the operating device and permitting it to be moved by the weight when retracted, and a cushion restraining the movement of the operating device under the action of the weight, substantially as described.

5. In a system for operating controlling means from a distant point by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, and a controlling-circuit governed by said element and containing an operating device, a weight for operating the same, a trip device controlled by the receiving-circuit for normally detaining the operating device and permitting it to be moved by the weight when retracted, a fluid-containing vessel, a piston therein provided with a passage for the flow of the fluid past the same, and a connection between the piston and operating device whereby the piston retards the movement of the operating device under the action of the weight, substantially as described.

6. In a system for operating controlling means from a distant point, by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, and a controlling-circuit governed by said element and containing an operating device, an armature forming a detent normally holding the said device against movement, and an electromagnet controlling said armature, substantially as described.

7. In a system for operating controlling means from a distant point by etheric waves, the combination of a transmitting-circuit containing a transmitting device, a receiving-circuit having an element influenced by the etheric waves from said transmitting device, a normally closed controlling-circuit containing an operating device, and means governed by the influencing element in the receiving-circuit for opening the controlling-circuit and affecting the action of the operating device, substantially as described.

8. In a system for operating controlling means from a distant point by etheric waves, the combination with a suitable receiving-circuit, and a controlling element actuated thereby, of a transmitting element for influencing said receiving-circuit, the same comprising motor and transmitting circuits, the said circuits having a common battery and one containing an electromotor and the other a transmitter, a coacting induction-coil and a make-and-break device actuated by the motor, substantially as described.

9. In a system for operating controlling means from a distant point by etheric waves, the combination with a suitable receiving-circuit, and a controlling element actuated thereby, of transmitting mechanism comprising motor and transmitting circuits having a common source of electric supply with means for cutting out either circuit, a motor in the said motor-circuit, a transmitter in the said transmitting-circuit, an induction-coil coacting with said transmitter, and a make-and-break device actuated by the said motor, substantially as described.

10. In a system for operating controlling means from a distant point by etheric waves, the combination with a suitable transmitting-circuit, of a receiving-circuit containing a receiver, a coherer connected thereto, and an alarm device controlled by said coherer, said alarm device being provided with a switch element, and a controller governed by said switch element, substantially as described.

11. In a system for operating controlling means from a distant point by etheric waves, the combination with a suitable transmitter, of a receiver comprising a receiving-circuit having a source of electric supply, a transmitter, a coherer, a decoherer, and an alarm device connected with the receiver and decoherer and provided with a switch element, and a controlling-circuit governed by said switch element and containing a controlling device.

12. In a system for operating controlling means from a distant point by etheric waves, the combination with a transmitter and a receiver the latter being provided with a combined alarm device and controlling-switch, of a controlling-circuit made and broken by said combined alarm and switch device and containing a controlling element for operating the moving parts, said element being thrown into operation upon the energizing of said switch device.

13. In a system for operating controlling means from a distant point by etheric waves, the combination with a transmitter and a receiver, the latter being provided with a controlling-switch, of a controlling-circuit, governed by said switch and containing an electromagnet, an armature actuated by said electromagnet and having a portion forming a detent, and a controlling element held inactive by said detent and released upon the movement of said switch to actuate a part, substantially as described.

14. In a system for operating controlling means from a distant point by etheric waves, the combination with a transmitter and a receiver, the latter being provided with a switch device, of a controlling-circuit normally closed by said switch device, an electromagnet in said circuit, an armature-detent normally attracted by said electromagnet, and a weighted lever normally restrained by said detent and adapted to be closed thereby upon the breaking of said circuit.

15. In a system for operating controlling means from a distant point by etheric waves, the combination with a transmitter, and a receiver, the latter being provided with a switch device, of a controlling-circuit normally closed by said switch device, an electromagnet in said circuit, an armature-detent governed by said magnet, a weighted lever normally held inactive by said detent and adapted when the switch is actuated to be released thereby, and a cushioning element for restraining the movement of said lever when released, substantially as described.

16. In a system for operating the brake mechanism of trains by etheric waves, the combination with a brake-controlling element of wave transmitting, receiving and controlling mechanism for actuating said element.

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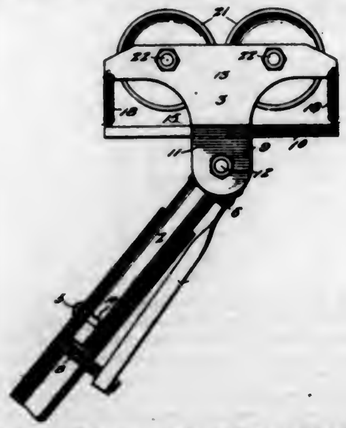
**758,528. CURRENT-COLLECTOR.** John E. Greenwood, Utica, N. Y. Filed May 16, 1903. Serial No. 157,471. (No model.)

*Claim.*—1. In a device of the character described, the combination with a trolley-pole, of a shaft movably mounted on the trolley-pole, a pole-cap mounted on the shaft, a harp mounted on the pole-cap, and trolley-wheels carried by the harp.

2. In a device of the character described, the combination with a trolley-pole, of a shaft mounted thereon to have an oscillating movement, a pole-cap mounted upon the shaft to have a vertical movement, a harp mounted upon the pole-cap to have a horizontal movement, means connecting the pole-cap and harp to limit the movement of the latter and retain it in its normal position, and trolley-wheels journaled in the harp.

3. In a device of the character described, the combination with a trolley-pole, of a shaft mounted thereon to have an oscillating movement, means for limiting the movement of the shaft, a pole-cap mounted upon the shaft to have a vertical movement, a harp mounted upon the pole-cap to have a horizontal movement, means connecting the pole-cap and harp to limit the movement of the latter and retain it in its normal position, and trolley-wheels journaled on the harp.





4. In a device of the character described, the combination with a trolley-pole, of a shaft provided with an annular groove and fitted within the pole, means carried by the pole and fitting within the groove to retain the shaft in applied position, a stud carried by the pole, a spring connected to the stud and shaft to permit of the latter having a limited oscillating movement, a pole-cap mounted upon the shaft, a harp carried by the pole-cap, and trolley-wheels journaled upon the harp.

5. In a device of the character described, the combination with a trolley-pole, of a shaft provided with an annular groove and an enlarged head, means carried by the trolley-pole and fitting within the groove to retain the pole in applied position, a stud provided with a bifurcated end and carried by the trolley-pole, a leaf-spring having one end thereof connected to said head and the other end fitted into the slot of said bifurcation, a pole-cap mounted upon said head, a harp mounted upon the pole-cap, and trolley-wheels journaled upon the harp.

6. In a device of the character described, the combination with a trolley-pole, of a shaft provided with an enlarged head and an annular groove, means carried by the trolley-pole and fitting within said groove to retain the pole in applied position, a stud provided with a bifurcated end and carried by the trolley-pole, a leaf-spring having one end thereof connected to said head and the other end fitted within the slot of said bifurcation, a pole-cap mounted upon said head to have a vertical movement, a harp mounted upon the pole-cap to have a horizontal movement, and trolley-wheels journaled on the harp.

7. In a device of the character described, the combination with a trolley-pole, of a shaft movably mounted on the trolley-pole, means to limit the movement of the shaft, a pole-cap mounted on the shaft, a harp movably mounted on the pole-cap, means to limit the movement of and retain the harp in its normal position, and trolley-wheels carried by the harp.

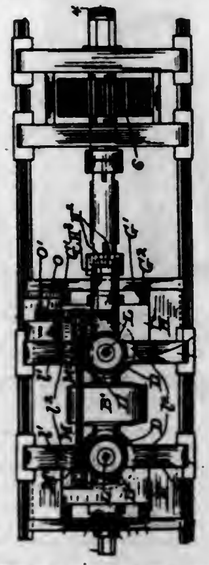
8. In a device of the character described, the combination with a trolley-pole, of a shaft movably mounted on the trolley-pole, spring means to limit the movement of the shaft, a harp movably mounted on the shaft, spring means to limit the movement of the harp, and trolley-wheels carried by the harp.

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**758,529. MANUFACTURE OF FLANGED METAL BARS OR BEAMS AND STRUCTURAL WORK.** Henry Grey, New York, N. Y., assignor to American Universal Mill Company, New York, N. Y., a Corporation of West Virginia. Filed Sept. 29, 1902. Serial No. 125,316. (No model.)

*Claim.*—1. The improved process of making shapes of the class described which consists in taking a blank the thickness of the web of which bears substantially the same relation to the mean thickness of each of the flanges thereof as these respective dimensions bear to each other in the finished shape, subjecting said blank to a series of rolling operations and maintaining during said operations the aforesaid relation between the web and flanges.

2. The improved process of making shapes of the class described which consists in taking a blank the thickness of the web of which bears substantially the same relation to the mean thickness of each of the flanges thereof as these respective dimensions bear to each other in the finished shape, subjecting said blank to a series of rolling operations and maintaining during said operations the aforesaid relation between the web and flanges and also maintaining the width of the flanges substantially the same from pass to pass.



3. An improvement in the art of making a flanged bar or beam, consisting in providing a blank having a web between flanges, with the ratio which the mean thickness of each flange bears to the thickness of the web corresponding or approximately corresponding with the ratio which the mean thickness of the said flange, when finished and as it is to exist in the bar or beam to which the said blank is to be reduced, bears to the thickness of the web of the said product, and successively passing the blank between rolls arranged to operate upon opposite sides respectively of the web and upon the inner sides of the flanges and simultaneously between rolls arranged to operate upon the outer sides of the flanges; relatively readjusting the last-mentioned rolls and the first-mentioned rolls between successive passes of the blank to reduce the passage-forming space between the rolls, and, during the said readjustment, inwardly shifting each roll employed in operating upon the outer side of a flange a distance which bears, to the distance which the space between the web-reducing rolls is shortened, the same or approximately the same ratio which the mean thickness of the flange in the finished product bears to the thickness of the web of the said product.

4. The process of rolling a flanged bar or beam, having a web and flanges, consisting in forming a blank having a web and flanges, and rolling the flanges and web simultaneously on opposite sides and thereby reducing the mean thickness of each flange and the thickness of the web substantially in the proportion which the thickness of the said flange and the thickness of the web bear to each other in the blank.

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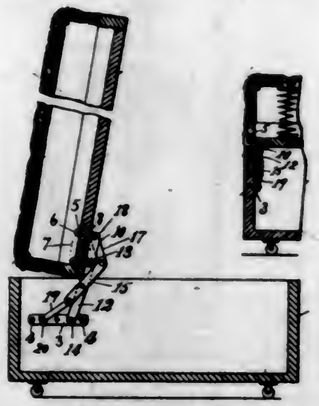
**758,530. BOX-COUCH HINGE.** Charles W. Gross, San Francisco, Cal. Filed July 7, 1902. Serial No. 114,542. (No model.)

*Claim.*—1. In a hinge, the combination of the top and bottom plates, the bar directly connecting said plates pivotally, the bar pivoted to said former bar, and links pivotally connecting the ends of said latter bar with said plates, substantially as described.

2. In a hinge, the combination of the top and bottom plates, the bar pivotally connected with the rear end of the top plate and with the front end of the bottom plate, the bar extending obliquely across and pivoted to the first-named bar, the link pivotally connecting the front end of said latter bar with the front end of the top plate, and the link pivotally connecting the rear end with the bottom plate, substantially as described.

3. The combination with a box and its lid, of an opening mech-

anism for said lid, having a rigid lever or arm, the ends of which are pivotally connected with said box and lid respectively, a second arm or lever pivotally connected with the lid at one side of the pivotal connection of said rigid arm or lever with said lid, a third arm or lever pivotally connected with the box, and a connecting means to which the free ends of said second and third arms or levers are pivoted said connecting means being also pivoted to said rigid arm or lever



4. The combination with a box and its lid, of a rigid lever pivoted at one end within the box and at the other end to said lid, a second arm or lever pivoted at one end to said lid at one side of the pivotal connection of said rigid arm or lever with said lid, a third arm or lever pivotally connected at its lower end with the box at one side of the pivotal connection of said rigid arm or lever with said box, and a link or lever pivoted to said second and third levers and to said rigid arm or lever at different places in its length.

5. A lid-opening mechanism having a rigid lever or arm provided at its upper end with means for attaching it pivotally to the lid and at its lower end provided with a pivot to engage a fixed support, and a system of levers, the upper end of one member of which is provided with means for pivotally attaching it to said lid and the lower end of another member of which is provided with means for pivotally attaching it to a fixed support, said system of levers also having a member which is pivoted to both members thereof before mentioned and is also pivoted to said rigid arm or lever, for the purposes set forth.

6. The combination with a box and its lid, of an opening mechanism for said lid, said opening mechanism having a rigid arm or lever the lower end of which is pivoted within the box to a fixed support and the upper end of which is pivotally attached to said lid, and a jointed system of levers comprising a member having one of its ends pivotally connected with said lid in advance of the pivotal connection of said rigid arm or lever with said lid, another member pivotally connected, within the box to a fixed support, at one side of the lower end of said rigid arm or lever, and a third member pivotally connected to the free ends of the before-mentioned members and pivoted to said rigid arm or lever between the same.

7. In a lid-opening mechanism for box-couches, the combination with a rigid arm or lever having means at its ends for pivotally connecting said ends with the box and lid respectively, a second arm or lever having means at one end for pivotally connecting it with said lid, a third arm or lever having means at one end for pivotally connecting it with the box, said second and third arms or levers being arranged on opposite sides of said rigid arm or lever, and a link pivoted between its ends to said rigid arm or lever and having its ends pivoted to said second and third arms or levers.

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**758,531. PIANO.** WILLIAM C. HAMILTON, Pittsburg, Pa. Filed June 26, 1903. Serial No. 163,274. (No model.)

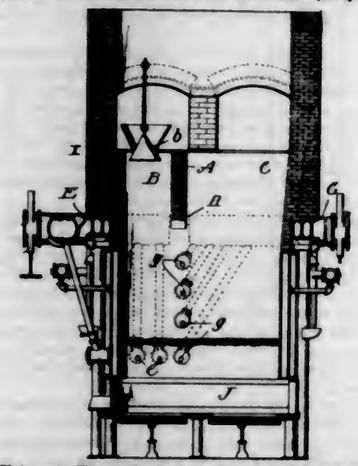
*Claim.*—1. In a device of the character described, the combination of a piano-casing, a sounding-board, a string-plate upon which the strings are secured, vertical posts at the rear of said casing upon which said sounding-board is mounted, said sounding-board extending a portion only of the height of said casing, a supplemental sounding-board mounted on said posts at the rear of and extending only a portion of the height of the first-mentioned board, thereby forming a space between said sounding-boards, said space communicating with the interior of the casing, and a sound-deflector consisting of a curved plate secured to the upper lid of said casing, said lid being secured to said casing, substantially as and for the purpose described.



2. In a piano, the combination with the casing, vertical posts therein, a sounding-board mounted in front of the posts, said board leaving an open space between it and the upper portion of the casing, and a secondary sounding-board mounted at the rear of said posts, said board being mounted opposite the said space, and extending downwardly a portion only of the length of the first-named board, whereby a passage in communication with the interior of the casing is formed, substantially as described.

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**758,532. PROCESS OF TREATING ORES.** WILLIAM F. HANNER, Deming, N. Mex., assignor of one-half to Walter J. Browning, Deming, N. Mex. Filed Dec. 27, 1901. Serial No. 87,479. (No specimens.)



*Claim.*—1. The method of treating metalliferous ores which consists in supplying solid fuel and ore to a furnace in separate, vertical strata, supplying oxygen to the fuel and ore mixture, leading the resultant gases through the ore separated from the fuel and there supplying to the ore additional oxygen in excess of that required to oxidize the ore, and then bringing the ore thus treated into contact with the incandescent fuel, substantially as described.

2. The method of treating metalliferous ores which consists in supplying solid fuel and ore to a furnace in separate, vertical strata, thereafter intermixing the ore with the fuel, supplying oxygen to the fuel intermixed with the material under treatment and leading the resultant gases through the ore and there supplying additional oxygen in regulated quantities to oxidize the ore, varied to suit the ore treated, and then bringing the ore thus treated into contact with the incandescent fuel, substantially as described.

3. The method of treating metalliferous ores, which consists in supplying solid fuel and ore to a furnace in separate strata, supplying oxygen to the fuel, leading the resultant gases into contact with the ore and there supplying additional oxygen in excess of that required to oxidize the ore, and then bringing the ore thus treated into the area of fuel combustion, substantially as described.

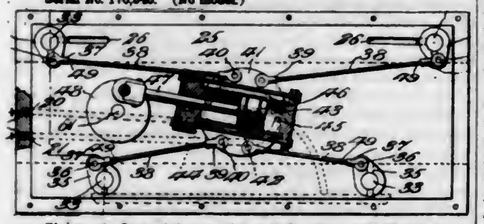
4. The method of treating metalliferous ores, which consists in supplying solid fuel and ore to a furnace in such manner that they shall not be admixed, supplying oxygen to the fuel for purposes of combustion, leading the resultant gases into the ore area and there supplying oxygen in amount sufficient to burn such gases and oxidize any sulfur and other impurities in the ore, and then feeding the ore, thus prepared, into the zone of fuel combustion for subjection to the reducing action thereof, substantially as described.

5. The method of treating metalliferous ores, which consists in supplying solid fuel and ore to a furnace through separate compartments merging together in the body portion of the furnace, supplying oxygen to the fuel beneath the fuel-compartment, and leading the resultant gases into the ore area in the body portion, supplying to such gases in contact with the ore an additional supply of oxygen sufficient to burn the same, and an excess of oxygen sufficient to oxidize any sulfur, or other impurities in the ore, then feeding the ore, thus roasted, into the zone of fuel combustion, and subjecting the same to the reducing action thereof, and withdrawing the fused metal from the furnace, substantially as described.



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**758,533. ENGINE FOR MINING-MACHINES.** JAMES HENMAN, Middleton, W. Va., assignor of one-half to Thomas S. Haymond, John Prunty, and George R. Coburn, Middleton, W. Va. Filed Aug. 21, 1903. Serial No. 170,245. (No model.)



*Claim.*—1. In a mining-machine of the class set forth, the combination with a main piston-chamber, a piston therein having a stem projecting forwardly therefrom to receive an implement, ports in the opposite sides of the chamber controlling the inlet and exhaust in relation to the chamber, valves in the said ports, a chest on the chamber, and an oscillating controller having means adjustably connected to the valve and provided with a cylinder and piston operative by the motive agent to alternately open and close opposite sets of inlet and exhaust valves.

2. In a mining-machine of the class set forth, the combination of a main piston-chamber having a piston therein provided with a stem, an implement carried by the stem, inlet and exhaust valves in opposite sides of the chamber controlling-ports, an oscillating controller attached to the valve and having a cylinder thereon with a piston mounted therein, means for supplying and exhausting a motive agent from and to the opposite extremities of the cylinder on the controller, and a chest mounted over the said chamber and controller.

3. In a mining-machine, the combination of a main piston-chamber having a piston therein provided with an elongated stem, pairs of ports being formed in the opposite side walls of the chamber for inlet and exhaust purposes, an implement carried by the stem, rotatable valves in the said ports, an oscillating controller connected to the valves for operating the pairs of the latter unitedly in alternation, and a chest disposed over the chamber and controller.

4. In a mining-machine, the combination with a chamber having opposite ports with valves therein, the said valve-ports being arranged in pairs, a controller oscillatingly mounted on the chamber and consisting of a disk with pairs of rods attached to opposite portions thereof and to the said valves, the said disk having a cylinder secured thereon and provided with a piston operative by the motive agent to alternately open and close the opposite pairs of valves, and a chest disposed over the chamber and controller.

5. In a mining-machine of the class set forth, the combination with a main piston-chamber having a piston therein with a tool-holding stem projecting therefrom, the opposite side walls of the chamber having inlet and outlet ports therein and the top of the chamber formed with inlet-grooves, and an exhaust-groove communicating with the common exhaust of the machine, a chest disposed over the chamber and the said grooves, an oscillating controller having a cylinder thereon with the opposite ends of which the said grooves are adapted to communicate, a piston in the cylinder, a motion-disk to which said piston is connected, valves in the ports, and connecting devices between the valves and the controller.

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**758,534. WITHDRAWN.**

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**758,535. EMBROIDERY HOOP OR RING.** WILLIAM H. HOWDEN, Denver, Colo., assignor of one-half to George F. Cutter, St. Louis, Mo. Filed Sept. 12, 1903. Serial No. 173,008. (No model.)



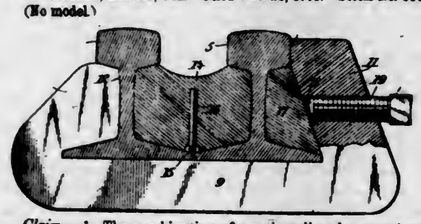
*Claim.*—1. An embroidery-holder comprising an outer hoop or ring and an inner hoop or ring, the latter having a recess formed in its outer wall, and a cord movable in said recess and of a size to project normally beyond the same, the upper part of the recess being curved to fit the cord, and its lower part being elongated to leave a space below the cord when the parts are assembled.

2. An embroidery-holder comprising an outer hoop or ring, an inner coöperating hoop or ring having a recess in its outer wall, and a cord movable in said recess, the upper part of the recess being curved to fit the cord which normally protrudes beyond the recess, the outer part of the ring above the cord and adjacent the recess having a downwardly-projecting edge adapted to engage the cord and prevent it from moving in response to an upward pull.

3. An embroidery-holder comprising outer and inner coöperating hoops or rings, the inner member having a recess in its outer wall, and a cord movable therein, the upper part of the recess being curved to fit the cord and its lower part being shaped to leave a space below the cord, whereby the latter is allowed to move in response to a downward pull, the size of the cord being such as to allow it to normally protrude beyond the recess before the outer coöperating hoop is applied, the outer part of the ring above the cord and adjacent the recess having a downwardly-projecting part adapted to engage the cord and prevent it from moving in response to an upward pull.

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**758,536. GUARD-RAIL CLAMP.** PATRICK E. KELLY and JOHN W. RIORDAN, El Paso, Tex. Filed Dec. 21, 1903. Serial No. 186,082. (No model.)



*Claim.*—1. The combination of a main rail and a guard-rail, of a device for securing the guard-rail to the main rail, comprising a clamping member designed to extend beneath the rails and connect the same, gage-blocks interposed between the rails, means connecting said gage-blocks, and means for securing the clamp against movement.

2. The combination of a plurality of rails, gage or filling blocks arranged between said rails, a block arranged outside of one of said rails, a clamp designed to extend beneath said rails, said clamp having inclined wings at the ends thereof adapted to bear against the outer faces of said rails, and means for securing the clamp to the rails, said means bearing on said last-named block.

3. The combination with a plurality of rails, of a clamping member for securing said rails, said clamping member comprising a base portion designed to extend beneath the rails, an inclined side wing adapted to bear against the web of one of said rails, a second inclined wing adapted to bear against the side of the tread of a second of said rails, and means for securing the clamp against movement.

4. A device of the class described, comprising a clamping member having side wings adapted to bear against the outer faces of the track-rails, one of said side wings having a bore extending laterally therethrough, a wedge adapted to be inserted between the bored wing and the side of a rail, and a screw having the shank portion thereof threaded in the bore, said shank portion bearing against the wedge to secure the same in position.

5. The combination of a main rail and a guard-rail, a plurality of gage or filling blocks interposed between said rails, and a rod connecting said blocks, said rod having upwardly-turned end portions designed to pass vertically into said blocks.

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758,537. **FERTILIZER-DISTRIBUTER.** JOSEPH S. KEMP, Newark Valley, N. Y. Filed May 27, 1902. Serial No. 109,226. (No model.)

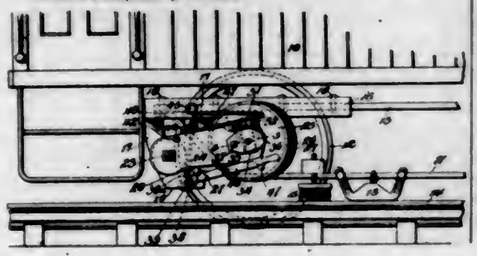


*Claim.*—1. In a fertilizer-distributer, the combination of a body, a beater, gear mechanism for feeding the material in the body to the beater, which gear mechanism contains a shaft carrying a pinion and a driving gear-wheel capable of movement toward and from said pinion, a longitudinally-movable rod for moving said gear-wheel toward and from said pinion, an engaging spring arranged to move said rod in the proper direction to engage said gear-wheel with said pinion; a releasing-lever adapted to move the rod in the proper direction for disengaging said gear-wheel from said pinion, and a releasable latch for holding the rod against the pressure of the spring, substantially as set forth.

2. In a fertilizer-distributer, the combination of a body, a beater, gear mechanism for feeding the material in the body to the beater and containing a worm-shaft having a driving-pinion and a driving gear-disk capable of movement toward and from said pinion, a longitudinally-movable rod for moving said gear-disk toward and from said pinion, an engaging spring arranged to move said rod in the proper direction to engage said disk-gear with said pinion, a releasing-lever connected with the front end of said rod for moving the latter in the opposite direction to disengage said gear-disk from said pinion, and a releasable latch adapted to hold the rod against the pressure of the spring when the gear-disk is disengaged from said pinion, substantially as set forth.

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758,538. **RAIL-CLEARER.** HOMER C. KING, Elgin, Ill., assignor of one-half to Harmon P. Vedder, Elgin, Ill. Filed June 30, 1903. Serial No. 163,812. (No model.)



*Claim.*—1. In a rail-clearer, the combination with a rail-clearing member movable into and out of engagement with a rail, of means for yieldingly urging the member into engagement with the rail, and mechanism for increasing the tension of said yielding means upon the member when the member moves to such engagement.

2. In a rail-clearer, the combination with a rail-clearing member movable into and out of engagement with a rail, of means for yieldingly urging the member into engagement with the rail, and mechanism for decreasing the tension of said yielding means upon the member when said member moves out of such engagement.

3. In a rail-clearer, the combination with a clearing member, of means for yieldingly urging the member into engagement with the rail, said yielding means exerting greater pressure upon the clearing member when the same is in engagement with the rail than when out of such engagement.

4. In a rail-clearer, the combination with a clearing member, of means for yieldingly urging the member into engagement with the rail, said yielding means exerting greater pressure upon the clearing member when the same is in engagement with the rail than when out of such engagement, and mechanism for varying said pressure as the member is moved into or out of its engagement.

5. In a rail-clearer, the combination with a clearing member, of means for yieldingly urging the member into engagement with the rail, said yielding means exerting greater pressure on the clearing member when the same is in engagement with the rail than when out of such engagement, and mechanism for moving the member and varying the pressure accordingly as the member is moved into and out of its engagement.

6. In a rail-clearer, the combination with a clearing member movable into and out of engagement with the rail, of a spring for urging the member into engagement with the rail, and means for increasing the tension of the spring upon the member when said member moves to such engagement.

7. In a rail-clearer, the combination with a clearing member movable into and out of engagement with the rail, of a spring for yieldingly urging the member into engagement with the rail, means for moving the member, and a connection between the moving means and the spring for increasing the tension of the latter upon the member when it is moved into engagement with the rail.

8. In a rail-clearer, the combination with a movable clearing member, of means for moving the member, and mechanism for automatically locking the moving means when the member is in its operative and inoperative relations with respect to the rail.

9. In a rail-clearer, the combination with a movable clearing member, of a spring for moving the member into engagement with the rail, a device for holding the member against the tension of the spring, and a connection between the holding device and spring, said connection constituting locking means for securing the device against movement.

10. In a rail-clearer, the combination with a clearing member, of a spring for urging the member into engagement with the rail, a lever, and a crank connected to the lever and having a connection with the spring.

11. In a rail-clearer, the combination with a clearing member, of a spring for moving the member, a crank-shaft, and a connection between the crank-shaft and the spring.

12. In a rail-clearer, the combination with a swinging clearing member, of a spring for urging the member into engagement with the rail, a rock-shaft having a crank, a link connection between the crank and spring, and a lever attached to the rock-shaft.

13. In a rail-clearer, the combination with a clearing member, of a spring for urging the member into engagement with a rail, a rock-shaft having a connection with the spring, a lever attached to the rock-shaft, and means for limiting the movement of the lever.

14. In a rail-clearer, the combination with a supporting-frame, of a carrier-frame hinged to the supporting-frame, a clearing-wheel journaled upon the carrier-frame, a spring mounted on the frame for urging the same downwardly, a rock-shaft having a crank, a link connection between the crank and the spring, a lever attached to the rock-shaft, and stops mounted on the carrier-frame to limit the movement of the lever.

15. In a rail-clearer, the combination with a clearing member movable into and out of engagement with a rail, of a cam for moving the clearer.

16. In a rail-clearer, the combination with a swinging carrier-frame, of a clearing-wheel revolubly mounted on the frame, a rock-shaft, and a cam carried by the rock-shaft and engaging the carrier-frame to move the same.

17. In a rail-clearer, the combination with a clearing member, of a rock-shaft, a cam carried by the rock-shaft and engaging the member, and means for actuating the shaft.

18. In a rail-clearer, the combination with a carrier member, of a spring for urging the member in one direction, means for moving the member in another direction, and an actuating device having connections with the moving means and with the spring.

19. In a rail-clearer, the combination with a clearing member, of a spring for urging the member in one direction, a rock-shaft having cams that engage the member to move the same in an opposite direction, and a crank connection between the rock-shaft and the spring.

20. In a rail-clearer, the combination with a supporting-frame, of a carrier-frame hinged to the supporting-frame, a clearer-wheel journaled upon the carrier-frame and coacting with the rail, a shaft journaled upon the supporting-frame beneath the carrier-frame, cams attached to the shaft and engaging the under side of the carrier-frame, a lever for moving the shaft, a spring mounted upon the carrier-frame, and a crank connection between the shaft and the spring.

21. In a rail-clearer, the combination with a supporting-frame, of means for securing the frame to a truck, a carrier-frame mounted on the supporting-frame, and disposed diagonally thereto, and a clearing-wheel journaled upon the carrier-frame.

22. In a rail-clearer, the combination with a frame, of means for securing the frame to a truck, a bracket constituting a part of the frame and located in angular relation to the remainder of the same, a carrier-frame hinged to the bracket, and a clearing-wheel mounted on the carrier-frame and disposed diagonally to the rail.

23. In a rail-clearer, the combination with a frame having angularly-disposed bars, of means for securing the bars to a car-truck, a carrier-frame movably mounted on the supporting-frame and in angular relation thereto, and a clearer journaled upon the carrier-frame.

24. In a rail-clearer, a wheel, and a hardened metallic tire fitted on the wheel and provided with a plurality of annular cutting edges.

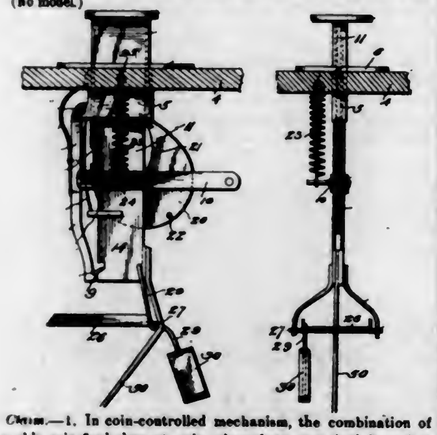
25. In a rail-clearer, the combination with a carrier-frame, of boxings mounted in the frame, a wheel loosely journaled in the boxings and disposed diagonally to the rail to be cleared, and means for taking up the wear of the boxings.

26. In a rail-clearer, the combination with a carrier-frame, of a clearing-wheel having an axle journaled in the frame, and means bearing against one end of the axle and constituting a thrust-bearing therefor.

27. In a rail-clearer, the combination with a carrier-frame, of a clearer-wheel having an axle journaled in the frame, a plate attached to the frame, and a screw threaded through the plate and bearing against the end of the axle.

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758,539. **COIN-CONTROLLED VENDING-MACHINE.** OTTO KRETER, San Antonio, Tex. Filed Sept. 29, 1903. Serial No. 175,096. (No model.)



*Claim.*—1. In coin-controlled mechanism, the combination of a movable coin-feed element, coin-released means to lock it against movement, and yielding means, actuated by the weight of a coin in the coin-feed element, to obstruct the passage of a coin therethrough until the coin-feed element is moved.

2. In coin-controlled mechanism, the combination of a movable coin-feed element, a spring to move it in one direction, a spring-pressed stop to lock it against movement in the reverse direction, and yielding means, actuated by the weight of a coin in the coin-feed element, to arrest a coin in the coin-feed element and position the coin to operate and release the spring-pressed stop, and thereby permit movement of the coin-feed element against the tension of its spring.

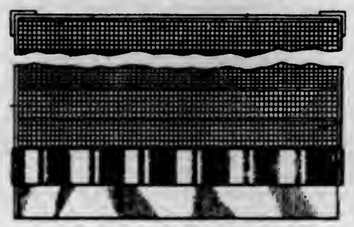
3. In coin-controlled mechanism, the combination of a movable coin-feed element, coin-released means to lock it against movement, yielding means, actuated by the weight of a coin in the coin-feed element, to obstruct the passage of a coin therethrough until the coin-feed element is moved, a revoluble vending element, and a stop-by-step mechanism, operated by the movable coin-feed element, to rotate the vending element.

4. In coin-controlled mechanism, the combination of a longitudinally-slidable coin-feed element, coin-released means to lock it against movement, and gravitating means, overbalanced by the weight of a coin in the coin-feed element to obstruct the passage of a coin therethrough until the coin-feed element is moved.

5. In coin-controlled mechanism, the combination of a vertically-movable coin-feed element, a spring to raise it, a spring-pressed stop to lock it against downward movement, and a gravitating valve element in the coin-feed element, to arrest a coin dropped therein, and position the coin to operate and release the spring-pressed stop and thereby permit downward movement of the coin-feed element.

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758,540. **PRINTER'S GALLEY.** JAMES L. LEE, Chicago, Ill. Filed Sept. 10, 1901. Serial No. 74,951. (No model.)



*Claim.*—1. A printer's galley provided with a wall adjustable in a direction transversely of said wall, and flexible and extensible in a direction longitudinally of said wall but inflexible transversely in a plane parallel with the surface of the galley, substantially as set forth.

2. A printer's galley having an adjustable wall consisting of a tortuous strip capable of endwise extension and contraction, substantially as set forth.

3. A printer's galley having a tortuous strip extending thereacross and adjustably secured thereto for supporting the types or slugs therein, substantially as set forth.

4. A printer's galley, having a tortuous strip extending thereacross and provided with a clamp or clip engaging the side wall of the galley, substantially as set forth.

5. A printer's galley, having a tortuous strip extending thereacross and provided at each end with an upwardly-extending clip or clamp embracing the side walls, substantially as set forth.

6. An adjustable end wall for a printer's galley, consisting of a tortuous strip of flexible material, having a clamp or clip at the end thereof for engaging the side wall of the galley, substantially as set forth.

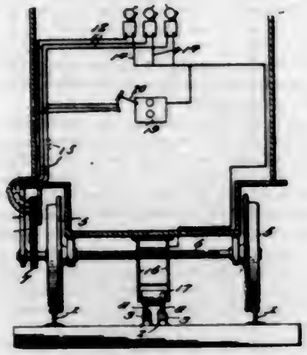
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758,541. **BLOCK-SIGNALING APPARATUS.** JOHN A. LEHR, North York, Pa. Filed Feb. 18, 1903. Serial No. 143,915. (No model.)

*Claim.*—1. In an apparatus of the character described, the combination with a contact-roller; of a rotary switch-plate electrically connected with the wheels of a car, parallel concentric non-overlapping flanges upon said plate, contacts, one of which is at all times in position upon one of the flanges, an alarm electrically connected to each contact, and an electrical connection between said alarms and the contact-roller.

2. In an apparatus of the character described, the combination with a rail, and parallel conductor-rails; of a rotary car-axle, a wheel thereon mounted on the rail, a contact-roller mounted on the conductor-rails, a gear secured to the car-axle, a rotary switch-plate having teeth meshing with the gear, curved flanges upon one face of the plate and concentric therewith, said flanges being at different distances from the periphery of the plate and having non-

overlapping ends, contacts, one of which is at all times in position upon one of the flanges, alarms, electrical connections between the alarms and contacts, all but one of said connections including a battery, a telephone electrically connected to the contacts and roller, and means for throwing said telephone or the alarms into or out of circuit.



3. The combination with the rails of a track, parallel overlapping conductor-rails therebetween, and means for placing a rail of the track in circuit with a conductor-rail: of means upon a car for establishing a circuit between said track and conductor-rails, said means comprising hangers adapted to be secured to, but insulated from a car, a roller journaled therebetween and adapted to bear upon the conductor-rails, a switch-plate electrically connected with but adapted to revolve slower than the axle of a car, curved flanges upon one face of the switch-plate and at different distances from the periphery thereof, said flanges having non-overlapping ends, a contact for each flange, an alarm electrically connected with each flange, and an electrical connection between the alarms and the roller, whereby when two cars are brought into position upon one conductor-rail a circuit is established therebetween through the rails of the track and the conductor-rail.

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**758,542. CAR-BOLSTER.** CHARLES A. LINDSTRÖM, Allegheny, Pa., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Jan. 6, 1903. Serial No. 138,095. (No model.)



*Claim.*—1. A bolster having parallel sides, and top and bottom flanges, of Z-bar cross-section, with the top flanges extending inwardly, a top cover-plate secured to the top flanges and having its upper surface flush with the upper edges of the sides, and a bottom cover-plate.

2. A bolster, having sides, and top and bottom flanges, constructed of two straight and parallel Z-bar sections, a top cover-plate, a bottom cover-plate, and vertically-arranged stiffeners or separators between the sides.

3. A bolster, having sides, and top and bottom flanges, constructed of two straight and parallel Z-bar sections, a top cover-plate sunk between the sides to the level of the upper edges of the sides; a bottom cover-plate, and vertically-arranged stiffeners or separators between the sides.

4. A bolster, having sides, and top and bottom flanges, constructed of two straight and parallel Z-bars, and vertically-arranged stiffeners or separators between said sides.

5. A bolster, having its body formed of parallel sides with inwardly-projecting flanges at the top and outwardly-projecting flanges at the bottom, said sides being free from other flanges, and a central longitudinal strengthening cover-plate secured to said top flanges.

6. A bolster, having its body formed of parallel sides with inwardly-projecting flanges at the top and outwardly-projecting flanges at the bottom, said sides being free from other flanges, and a central longitudinal strengthening cover-plate secured to said top flanges between the sides and having its top surface flush or level with the top edges of the sides.

**758,543. NON-REFILLABLE BOTTLE.** GEORGE W. LOVEJOY, Tehachapi, Cal., assignor of one-half to Louis F. Kreiselen, Tehachapi, Cal. Filed July 9, 1903. Serial No. 164,600. (No model.)

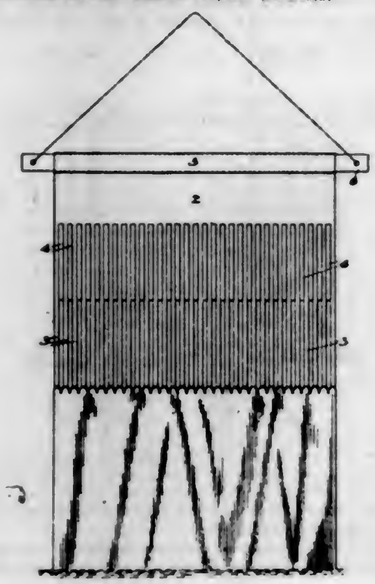


*Claim.*—1. In a non-refillable bottle, the combination with the bottle-neck having recesses of a cork fitting in said neck and having vertical and inclined passages, a rod fitting in the vertical passage, a pair of arms pivoted to the lower end of said rod and passing through the inclined passages of the cork and having their outer ends engaging the recesses of the neck of the bottle and a cap below said first-named cork.

2. In a non-refillable bottle, the combination with the bottle-neck having recesses of a cork fitting in said neck, and having vertical and inclined passages, a rod fitting in the vertical passage, a pair of arms pivoted to the lower end of said rod and passing through the inclined passages of the cork and having their outer ends engaging the recesses in the outer end of the neck of the bottle and a cap below the first-named cork having a valve, mounted therein.

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**758,544. BAIT FOR DRAWING GLASS.** JOHN H. LUDEMA, Allegheny, Pa., assignor to James A. Chambers, trustee, Pittsburg, Pa. Filed Mar. 16, 1903. Serial No. 147,975. (No model.)



*Claim.*—1. A bait for drawing glass, consisting of a metal sheet having a series of prongs or strips depending from its lower end; substantially as described.

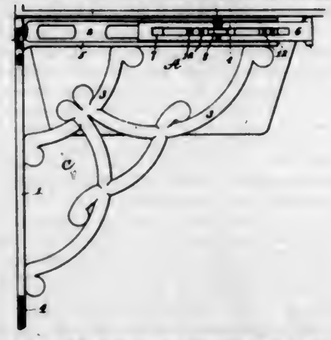
2. A bait for drawing glass, consisting of a metal sheet having integral separated prongs or strips depending from its lower end; substantially as described.

3. A glass-bait, consisting of a metal sheet having its lower portion slotted into strips, part of said strips being bent upwardly into inoperative position; substantially as described.



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**758,545. SINK-BRACKET.** JOHN J. MAHONEY, Chattanooga, Tenn. Filed Jan. 23, 1904. Serial No. 190,295. (No model.)



*Claim.*—1. In a sink-bracket, the combination of a horizontal, channeled arm, a supplemental arm resting in the channel of said channeled arm and having at its free end a lateral extension, the meeting faces of said arms having interengaging teeth, and mechanism for binding said arms, substantially as described.

2. In a sink-bracket, the combination of a horizontal, channeled arm, a supplemental arm resting in the channel of said channeled arm and having at its free end a lateral extension, the meeting faces of said arms having interengaging teeth, a lug, and a cotter for binding said arms, substantially as described.

3. In a sink-bracket, the combination of a horizontal, channeled arm, a lug standing in said channel, a supplemental, slotted arm resting in the channel of said channeled arm and surrounding said lug and having at its free end a lateral extension, the meeting faces of said arms having interengaging teeth, and a cotter for binding said arms, substantially as described.

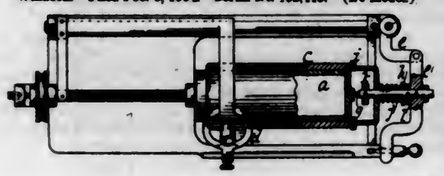
4. In a sink-bracket, the combination of a horizontal, channeled arm, a supplemental arm resting in the channel of said channeled arm and having at its free end a lateral extension rising to the height of the upper face of said channeled arm, a lug, and a cotter for binding said arms, substantially as described.

5. In a sink-bracket, the combination of a horizontal, channeled arm, a supplemental arm resting in the channel of said channeled arm and having at its free end a lateral extension rising to the height of the upper face of said channeled arm, the meeting faces of said arms having interengaging teeth, a lug, and a cotter for binding said arms, substantially as described.

6. In a sink-bracket, the combination of a horizontal, channeled arm, a lug standing in said channel, a supplemental, slotted arm resting in the channel of said channeled arm and surrounding said lug and having at its free end a lateral extension rising to the height of the upper face of said channeled arm, and a cotter for binding said arms, substantially as described.

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**758,546. MEANS FOR SLIDING AND HOLDING PHONOGRAPHIC RECORDS ON MANDRELS.** JOSEPH A. MANAHAN and SIEGFRIED WALDECK, New York, N. Y.; said Manahan assignor to said Waldeck. Filed Feb. 6, 1904. Serial No. 192,415. (No model.)



*Claim.*—1. Means for holding or sliding phonographic records in place and comprising a center for a cylinder, and a rotary yielding or spring-pressed cap for the record.

2. Means for holding or sliding phonographic records in place and comprising a center, a rotary yielding cap and a washer for preventing the cap coming off the center.

3. A center, a rotary cap, a spring for the cap, a rotary washer to which the spring is engaged and a second washer against which the rotary washer sits or rotates.

4. A center, a rotary yielding or spring-pressed cap on the center, and a locking or holding arm for the center, said arm being composed of jointed sections.

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**758,547. CLIP.** DILLON B. MAPOTHER, Louisville, Ky. Filed May 13, 1902. Serial No. 107,116. (No model.)



*Claim.*—1. A clip or sealing device for bags, envelops, covers and other articles having a fold, comprising front and rear spring clamping members of approximately equal length, connected together and adapted to securely clamp the article inserted between the members, the connecting portions of the members forming saddles to rest upon the top edge of the article, and an upwardly-extending spring retaining means on one of the members, adapted to be sprung in place underneath the fold and to clamp said fold against the part from which it is projected, as set forth.

2. A clip or sealing device for bags, envelops, covers and other articles having a fold, comprising front and rear registering spring clamping members connected together and adapted to securely clamp the article inserted between the members, the connecting portions of said members forming saddles to rest upon the top edge of the article, upwardly-opening spring retaining means on one of the members, said means being adapted to be sprung in place underneath the fold, and an integral locking means on the clip, to pierce the material of the article inserted between the clamping members, as set forth.

3. A clip or sealing device for bags, envelops, covers and other articles having a fold, comprising front and rear registering spring clamping members connected together and adapted to securely clamp the article inserted between the members, the connecting portion of the members forming saddles to rest upon the upper edge of the article, and upwardly-opening spring-hooks on one of the members, adapted to be sprung in place underneath the fold, as set forth.

4. A clip or sealing device for bags, envelops, covers and other articles, comprising front and rear spring clamping members, of which the rear member is made U shape and the front clamping member is similarly shaped and divided, the ends of the divided parts of the front member terminating in upwardly-opening hooks for engaging the under side of the fold, as set forth.

5. A clip or sealing device for bags, envelops, covers and other articles, comprising front and rear spring clamping members, of which the rear member is made U shape and the front clamping member is similarly shaped and divided, the ends of the divided parts of the front member terminating in upwardly-opening hooks, engaging the fold, and the said hooks having sharpened portions for piercing the material of the bag, as set forth.

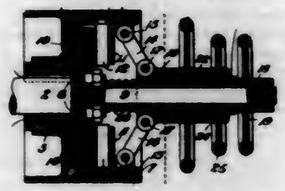
6. A clip made of an integral length of spring-wire, said wire being formed into U-shaped clamping members for engaging the exterior of a folded body, one of said members having its ends bent to form upwardly-opening hooks for engaging the interior of said folded body and clamp the fold against the parts from which the hooks extend.

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**758,548. CLUTCH-PULLEY.** GEORGE A. MEDLIN, Evergreen, Pa. Filed Apr. 24, 1903. Serial No. 154,114. (No model.)

*Claim.*—In a friction-clutch, in combination, a driving-shaft, a bushing secured thereto, a guide-shaft having an integrally-formed end plate said end plate being secured to the bushing, guide-bearings for the friction-shoes extending laterally from the end plate and integral therewith, clutch-shoes slidingly mounted in said guide-bearings, a pulley loosely mounted on said bushing and provided with a clutch-face adapted to be engaged by said shoes, a ring slidingly mounted on the guide-shaft, toggle-levers jointed to the clutch-shoes and to said ring, a threaded bushing loosely journaled on the guide-shaft and provided with a hand-wheel, an adjusting-nut also

provided with a hand-wheel screwed on said bushing and adapted to bear against and move said ring to operate the clutch, and a locking-nut provided with a hand-wheel also screwed on said bushing and adapted to bear against and prevent longitudinal motion of the adjusting-nut; substantially as described.

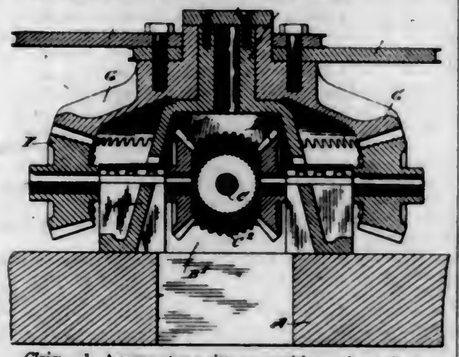


758,549. SHAFT-COLLAR. CHARLES H. MELICK, Gloversville, N. Y. Filed May 2, 1903. Serial No. 155,264. (No model.)



*Claim.*—A shaft-collar consisting of two longitudinally-divided parts adapted to fit around a shaft, a tapered threaded portion formed on one of the parts and an internally-threaded convex wall formed on the other part, the last-named part having its sections connected by tongue and mortise secured by a pin, substantially as described

758,550. POWER-TRANSMITTER. WILLIAM H. MERRITT and JOHN C. WALL, Geneseo, N. Y.; said Wall assignor to said Merritt. Filed May 5, 1903. Serial No. 156,722. (No model.)



*Claim.*—1. A power-transmitter comprising a frame having a chamber formed therein, a driven shaft, extending within said chamber, a master-wheel, a stud on the top of the frame above the chamber and on which the master-wheel is mounted to rotate, means for transmitting power from the driven shaft to the master-wheel on opposite sides of the latter, and eccentrics mounted on the hub of the master-wheel and secured thereto, as set forth.

2. A power-transmitter comprising a frame having a central chamber, a driven shaft journaled in said frame, a gear-wheel carried by said shaft, auxiliary shafts at angles to the driven shaft, two gear-wheels carried by each of said shafts, of which the inner gear-wheel is in mesh with the driven-shaft gear-wheel, and a master gear-wheel mounted to turn above the said chamber and in mesh with the outer gear-wheels on the auxiliary shafts, as set forth.

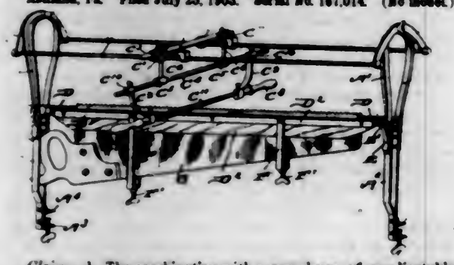
3. A power-transmitter comprising a driven shaft, a gear-wheel carried by said shaft, auxiliary shafts at angles to the driven shaft, two gear-wheels carried by each of said shafts, of which the inner gear-wheel is in mesh with the driven-shaft gear-wheel, a master gear-wheel in mesh with the outer gear-wheels on the auxiliary shafts, and eccentrics secured on the master-wheel, diametrically on opposite sides of the center of the master-wheel, as set forth.

4. A power-transmitter comprising a frame having a central chamber, a stud extending from the top of the chamber, a driven shaft journaled in the said frame, a gear-wheel carried by the shaft inside of the said chamber, bevel gear-wheels in mesh with the said driven-shaft gear-wheel, on opposite sides thereof, auxiliary shafts journaled in the said frame and extending at right angles to the driven shaft, the said auxiliary shafts carrying said bevel gear-wheels on their inner ends, gear-wheels on the outer ends of the said auxiliary shafts, and a master gear-wheel, mounted to turn on the said stud and in mesh with the said gear-wheels on the outer ends of the said auxiliary shafts, as set forth.

5. A power-transmitter comprising a frame having a central chamber, a stud extending from the top of the chamber, a driven shaft journaled in the said frame, a gear-wheel carried by said shaft inside of the said chamber, bevel gear-wheels in mesh with the said driven-shaft gear-wheel, on opposite sides thereof, auxiliary shafts journaled in the said frame and extending at right angles to the driven shaft, the said auxiliary shafts carrying said bevel gear-wheels on their inner ends, gear-wheels on the outer ends of the said auxiliary shafts, a master gear-wheel, mounted to turn on the said stud and in mesh with the said gear-wheels on the outer ends of the said auxiliary shafts, and solid eccentrics secured on the said master gear-wheel and arranged diametrically on opposite sides of the center of the master gear-wheel, as set forth.

6. A power-transmitter, comprising a frame having a central chamber, a stud extending from the top of the frame above the chamber, a driven shaft journaled in the frame, a gear-wheel carried by said shaft within the said chamber, a master gear-wheel having a hub mounted to turn on the said stud, means for driving the master gear-wheel from the gear-wheel on the driven shaft, eccentrics secured to the master-wheel, and a cap secured on the top of the stud and extending over the outer end of the hub of the master gear-wheel, as set forth.

758,551. SAW-CLAMP AND FILE-GUIDE. HIRAM W. MERWIN, Ashland, Pa. Filed July 25, 1903. Serial No. 167,014. (No model.)



*Claim.*—1. The combination with a saw-clamp, of an adjustable frame comprising parallel bars arranged above said clamp, a sliding plate on each bar of said frame, rods carrying sleeves depending from said plates, a bar sliding in said sleeve, handles adjustably connected to said bar said handles being adapted to hold a file, and means for securing the sliding plates in position with reference to each other.

2. The combination with a saw-clamp, of brackets carrying said clamp, curved bars pivoted to said brackets, means for clamping the bars to the brackets, parallel bars connecting the ends of the curved bars, and means for holding a file at an angle to said saw-clamp, said means being slidably held to the parallel bars.

3. A device of the kind described comprising brackets, a saw-clamp arranged between said brackets, bars secured to the brackets, means for adjusting the inclination of said bars, straight parallel bars connecting the ends of the bars secured to the brackets, a plate adjustably carried by each of said bars, means for locking said plates in their adjusted position with reference to each other, sleeves dependent from said plates, a bar sliding in said sleeves, and handles adjustably carried by said sliding bar, said handles being adapted to hold a file.

4. In a device of the kind described, a frame comprising parallel bars, plates adjustably mounted on said bars, a slotted bar connecting said plates and permitting their independent adjustment, means for locking the slotted bar at an angle to the parallel bars, dependent sleeves arranged below the plates, a bar slidingly held in said sleeves, said sliding bar being parallel with the slotted bar, and means carried by the sliding bar for holding a file.

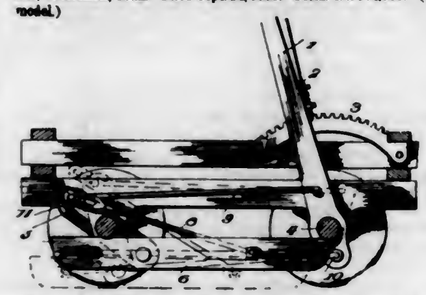
5. A device of the kind described comprising an adjustable frame having parallel bars, plates adapted to slide on said bars, a bar adjustably pivoted to and resting transversely across said plates, means for slidably holding a bar below and parallel to the pivoted bar mentioned, and means for securing a file below the sliding bar.

6. A device of the kind described comprising two horseshoe-shaped brackets, means for securing said brackets to the edge of a bench, a clamp arranged horizontally between and supported at the ends by the brackets, said clamp being adapted to hold a saw-blade, U-shaped hangers depending from said clamp, thumb-screws working in the bow portion of said hangers and adapted to support the back of a saw, and means carried by the upper part of the brackets for adjustably holding a file slidably above and transverse to the saw-clamp.

7. A device of the kind described comprising brackets, means for holding a saw arranged between said brackets, a frame pivoted to the brackets and having parallel bars, plates sliding on said bars, rods depending from said plates, and having sleeves at their lower ends, a bar sliding in said sleeves, handles having sockets, each socket having an upwardly-extending arm, and means for adjustably securing said arms to the sliding bar.



758,552. SWITCH-OPERATING MECHANISM. JOHN H. MILLER, Christiana, Tenn. Filed Sept. 24, 1903. Serial No. 174,501. (No model.)



*Claim.*—1. In a device of the character described, an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, and a link connecting one end of the shoe to the pivoted arm at a point above the fulcrum thereof, substantially as set forth.

2. In a device of the character described, the combination, of an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, and a link connected to one end of the shoe and to the pivoted arm at a point above the fulcrum thereof, the said link having a sliding connection with the pivoted arm, substantially as specified.

3. In a device of the character described, the combination, of an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link connected to one end of the shoe, and a pin-and-slot connection between the said link and the pivoted arm at a point above the fulcrum of the latter, substantially as specified.

4. In a device of the character described, in combination with an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link pivoted to one end of the shoe and to the pivoted arm at a point above its fulcrum, and an operating-lever operatively connected to the pivoted arm, substantially as specified.

5. In a device of the character described, an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link connecting one end of the shoe with the pivoted arm at a point above its fulcrum, a pivoted lever, and link connections connecting the pivoted lever to the pivoted arm and the shoe carried thereby, substantially as specified.

6. In a device of the character described, the combination, with an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link connecting one end of the shoe and the upper end of the pivoted arm, an operating-lever, and links connecting respectively the upper end of the pivoted arm and the lever above its fulcrum and the shoe and the lever at a point below the fulcrum of the latter, substantially as described.

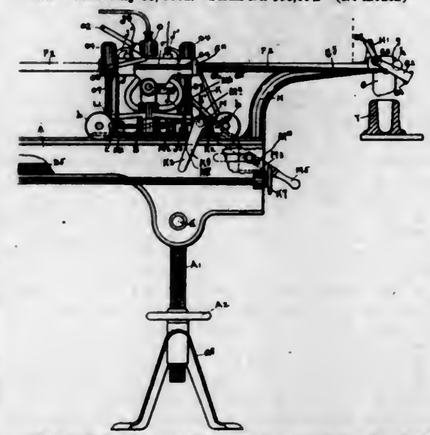
7. In a device of the character described, in combination with a pivoted arm, a shoe pivoted to the lower end of the arm, a link connecting one end of the shoe to the upper end of the pivoted arm, a link connecting the opposite end of the shoe to the lever below its fulcrum, and another link connecting the upper end of the pivoted arm to the lever above its fulcrum.

8. In a device of the class described, the combination, with an arm pivoted intermediate its ends, a pivoted operating-lever, a link connecting the arm and operating-lever at points above the fulcrums thereof, and a shoe supported by the pivoted arm at a point below its fulcrum.

9. In a device of the class described, the combination, with an arm pivoted intermediate its ends, a pivoted operating-lever, a link connecting the pivoted arm and operating-lever at points above the fulcrums thereof, a shoe supported by the pivoted arm at a point below its fulcrum, and means connecting the shoe and the operating-lever at a point beneath the fulcrum of the latter.

10. In a device of the class described, the combination, with an arm pivoted intermediate its ends, a pivoted operating-lever, a link connecting the pivoted arm and operating-lever at points above the fulcrums thereof, a shoe supported by the pivoted arm at a point below its fulcrum, and a link connecting the lever at a point below its fulcrum to the shoe supported by the pivoted arm.

758,553. GLASS-GATHERING MACHINE. LEO MILLER, Tiffin, Ohio. Filed July 18, 1902. Serial No. 116,094. (No model.)



*Claim.*—1. In a machine for gathering glass, a hollow gathering-head, and means whereby the air therein may be exhausted to cause the glass to enter therein and whereby compressed air may be conveyed thereto to expel the glass in combination with means for bringing the head into operative connection with the glass.

2. In a machine for gathering glass, a gathering-head having a receptacle and supplied with means for admitting compressed air to or rarefying air in a receptacle in the head and provided with a movable catch which is floated up by the molten glass admitted to the said receptacle, air-valves, and mechanism released by said catch for operating the said valves.

3. In a machine for gathering glass, a movable carriage, a gathering device carried thereon, and means for operating the carriage comprising a cylinder, a piston therein, a rack operated thereby, a pinion driven by the rack, a gear-wheel secured to the pinion, and a fixed rack on which the gear-wheel travels.

4. In a machine for gathering glass, a gathering-head having a receptacle therein, a cut-off carried thereby and adapted to sever the glass in the receptacle from the surplus gather, and means including a tripping-catch for controlling the operation of the cut-off.

5. In a machine for gathering glass, a tilting gathering-head having a receptacle therein, a cut-off for the receptacle, a tripping-catch, and means released upon the tripping of the catch and operated on the ascent of the head from the glass for operating the cut-off.

6. In a machine for gathering glass, a tilting gathering-head having a receptacle, a cut-off for the receptacle, a spring-controlled rod connected to the cut-off, a catch governing said rod, a shoe adapted, when the head tilts to enter the glass, to seat itself so that, when the head tilts back, the cut-off will be operated.

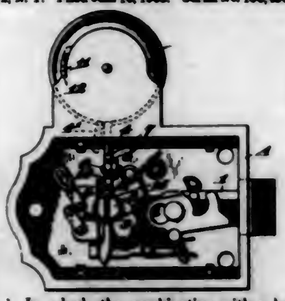
7. In a machine for gathering glass, a bed, a carriage movable thereon, a gathering-head, a rotatable carrier therefor, a piston on the carriage, a rack operated by the piston, a rack on the carriage, gearing connecting said racks, and a pinion engaging the movable rack and driving the rotatable carrier.

8. In a machine for gathering glass, a bed, a carriage thereon,

a cylinder on the carriage, a piston, in the cylinder and carrying a rack, a rack on the bed, gearing connecting the said racks, a gathering-head carried by the carriage and having a receptacle, valves for controlling the exhaustion of air from, and the admission of compressed air to, the receptacle and for controlling the alternate admission of compressed air to opposite sides of the piston, and means for automatically controlling the valves.

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**758,554. ALARM-LOCK.** OTTO MILLER and PHILIP KUHNDIGER, New York, N. Y. Filed Jan. 10, 1903. Serial No. 138,460. (No model.)



*Claim.*—1. In a lock, the combination with a keyway, and a slidable collar therein in the path of the key upon its initial entrance to the lock, of a bell which is caused to sound by the movement of said collar before the lock mechanism is reached, the bell capable of movement on its support, whereby it may be thrown at will in or out of operative adjustment.

2. The combination with a lock and alarm, said alarm having a push-rod, and a rocker-cam, of a movable tumbler in position to be operated by the key of the lock and when moved thereby adapted to actuate the push-rod by causing the rocker-cam to act thereon.

3. The combination with an alarm and lock, of a rocker-cam in position to sound the alarm, means adapted to be actuated by the key to operate the rocker-cam, a sliding push-rod operated thereby and means for returning the rocker-cam to its normal position.

4. The combination with a lock and alarm, of a keyway, a collar having sliding connection therewith and carrying a tumbler, a rocker-cam adapted to be engaged by the tumbler, a push-rod in position to be operated thereby to cause the sounding of the alarm, and means for returning the rocker-cam to its normal position.

5. The combination with a lock, and alarm, the latter having a movable push-rod capable of being moved bodily into two different positions, of a rocker-cam in alinement with said rod when the latter is in its operative position, a tumbler, said tumbler in position to be rocked by a key when inserted in the lock whereby to rock the cam and slide the rod and thereby cause the alarm to sound.

6. The combination with a lock and alarm, of a push-rod connected with the alarm, a rocker-cam in position to actuate the rod when the cam is rocked, means adapted to be operated by a key when inserted in the lock to cause the cam to rock and actuate the rod and thereby cause the alarm to sound.

7. The combination with a lock and alarm, of a push-rod connected with the alarm, a rocker-cam in position to actuate the rod when the cam is rocked, means adapted to be operated by a key when inserted in the lock to cause the cam to rock and actuate the rod and thereby cause the alarm to sound, and means for causing the cam to resume its normal position.

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**758,555. CONSTRUCTION OF FLOORS, PARTITIONS, OR THE LIKE.** VALENTINE MOSELEY, Weehawken, N. J. Filed June 26, 1903. Serial No. 163,282. (No model.)



*Claim.*—1. A building structure comprising spaced supporting-irons provided in their sides with hooks, and a metal lath extending between adjacent supporting-irons and having apertured flanges hooked onto the hooks, as set forth.

2. A building structure comprising spaced supporting-irons, having supporting means on both sides, and metal laths, each extending between adjacent supporting-irons and provided on opposite sides with means for engaging the supporting means of said irons, as set forth.

3. A building structure comprising spaced supporting-irons, provided with struck-up hooks extending on both sides, and metal laths, each having on opposite sides upturned means for hooking onto the said hooks of adjacent supporting-irons, as set forth.

4. A building structure comprising spaced supporting-irons, each provided with struck-up hooks extending alternately on the sides of the supporting-irons, and a metal lath extending from one supporting-iron to the next one and having upturned apertured flanges fitting the sides of the supporting-irons and hooking onto the said hooks, as set forth.

5. A fireproof floor comprising spaced supporting-irons, arranged transversely and having beveled ends resting on the bottom flanges of the floor-beams, and a sheet-metal lath extending from one supporting-iron to the next following one and having apertured flanges at its sides engaging hooks on the said adjacent supporting-irons, as set forth.

6. A fireproof floor comprising spaced supporting-irons, arranged transversely and resting at their ends on the bottom flanges of the floor-beams, and a sheet-metal lath extending from one supporting-iron to the next following one and supported at both sides from the said adjacent supporting-irons, the said sheet-metal lath having apertured upturned flanges at its sides, engaging hooks on the sides of the supporting-irons, as set forth.

7. A building structure comprising spaced supporting means provided with hooks, and a sheet-metal lath having flanges at the sides, the flanges being apertured for engagement with said supporting-hooks, as set forth.

8. A building structure of the class described, provided with a supporting-iron having struck-up hooks on both sides, the hooks extending alternately on opposite sides, as set forth.

9. A building structure of the class described, having supporting-hooks, and a sheet-metal lath having upturned flanges at the sides, the flanges being apertured for engagement with said hooks as set forth.

10. A sheet-metal lath having an arched body and upturned flanges on the arched sides of the body, the flanges being cut or gored and provided with apertures as set forth.

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**758,556. FLEXIBLE JOINT.** THOMAS W. MORAN, Louisville, Ky., assignor to Moran Flexible Steam Joint Company, Louisville, Ky., a Corporation of Kentucky. Filed Jan. 18, 1904. Serial No. 189,480. (No model.)



*Claim.*—The flexible rotary joint, consisting of the rotary member having a shouldered portion for attachment to a cylinder, a spherical journal member, an annular concave bearing-band connecting the members, said spherical journal member having an extension, and a cap for the connection of the waste-pipe and the supply, substantially as specified.

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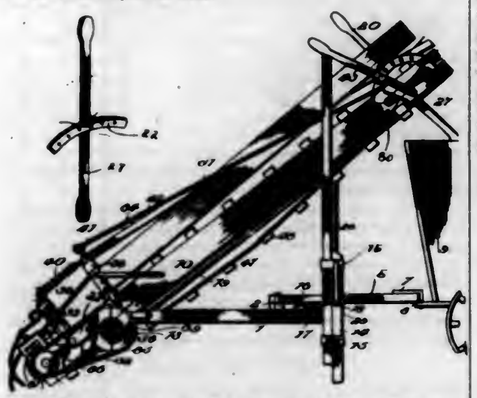
**758,557. HAY-LOADER.** EDWARD C. MCCONVILL, Omaha, Nebr. Filed July 14, 1903. Serial No. 165,456. (No model.)

*Claim.*—1. In a hay-loader or the like, a laterally-movable pole or tongue, elevating means for raising and lowering the frame carrying the said pole or tongue, and holding means for securing the pole or tongue in a given position and connected with the elevating means for simultaneous operation therewith, substantially as described.

2. In a hay-loader or the like, a laterally-movable pole or tongue, elevating means for raising and lowering the frame carrying the said pole or tongue, laterally-movable devices at the sides of the pole or tongue, and independent connections between the said laterally-movable devices and opposite parts of the elevating means, substantially as and for the purpose described.



3. In combination with a hay-loader or the like, a pivoted pole or tongue, a keeper for limiting the swinging movements of said pole and assisting in holding it in place, rods or bars located at opposite sides of the pole and slidably mounted in the vertical or end portions of the keeper, and means for simultaneously moving said rods in opposite directions either to release or to fix the position of the pole, substantially as set forth.



4. In combination, a laterally-movable pole or tongue, oppositely-disposed rods or bars adapted to have their inner ends bear against opposite sides of the said pole, levers of approximately bell-crank form connected with the said rods, and means for simultaneously actuating said levers, substantially as specified.

5. In combination, a laterally-movable pole or tongue, holding means at the sides of the pole, levers of approximately bell-crank form having one member connected with the respective elements of the said holding means, vertically-movable bars having loose connection with the other member of the aforementioned levers, and actuating means for the said bars, substantially as set forth.

6. In combination, a laterally-movable pole or tongue, a keeper for limiting the movements thereof, rods or bars having their inner ends slidably related with reference to the end portions of said keeper and adapted to bear against opposite sides of the said pole, vertically-movable bars operatively connected with the said rods to effect a longitudinal movement thereof, means connecting the said bars for simultaneous action, and operating means applied to one of the bars, substantially as set forth.

7. In combination, a pivoted pole or tongue, rods or analogous devices located at opposite sides of the said pole, vertically-movable push-bars, bell-crank levers or the like connecting the push-bars with the aforesaid rods, a rock-shaft having crank-arms connected with the push-bars to effect a simultaneous movement thereof, and means for operating the push-bars, substantially as specified.

8. In combination, a pivoted pole or tongue, a keeper therefor, oppositely-extending rods having their inner ends slidably mounted in the end portions of the keeper and bent to engage with opposite sides of the pole, vertically-movable push-bars, bell-crank levers connecting the push-bars with the aforesaid rods, a rock-shaft having crank-arms connected by links with the push-bars, and means for operating one of the push-bars, substantially as set forth.

9. In a hay-loader, the combination with the frame and a rake pivotally connected to the frame, of a bracket applied to the rake-head, a bell-crank lever mounted upon the frame of the loader, a bolt passing loosely through the said bracket and having a stop to engage therewith and having pivotal connection with the horizontal arm of the bell-crank lever, a spring mounted upon the bolt and confined between a stop thereof and the aforesaid bracket, and an operating-lever attached to the vertical arm of the bell-crank lever, substantially as and for the purpose specified.

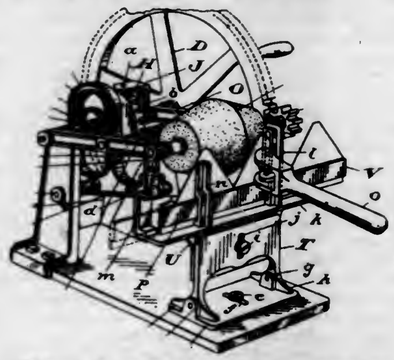
10. In a hay-loader, the combination of short bars having pivotal connection with the loader-frame, an elevator, a roller forming a support for the lower portion of the elevator, yieldable mountings for the said roller applied to the pivotal bars, a rake attached to the pivotal bars and movable therewith, an operating-lever, and a spring-and-stop connection between the rake-head and loader-frame and connected with the operating-lever, substantially as described.

11. In a hay-loader, the combination of short bars having pivotal connection with the loader-frame, a roller, yieldable mountings for said roller applied to the pivoted bars, an elevator having its lower portion supported by means of the said roller, a rake carried by the pivoted bars, an elevated cross-bar attached to the loader-frame, a spring-and-stop connection between the rake-head and elevated cross-bar, and compressors attached to the elevated cross-bar and passing between the rake and the elevator, substantially as described.

12. In a hay-loader, the combination of short bars having pivotal connection with the loader-frame, a roller, yieldable mountings for said roller applied to the pivoted bars, an elevator having its lower portion supported by means of the said roller, a rake carried by the pivoted bars, an elevated cross-bar attached to the loader-frame, a spring-and-stop connection between the rake-head and elevated cross-bar, compressors attached to the elevated cross-bar and passing between the rake-teeth and the elevator, and spaced bars attached to the said elevated cross-bar and overlying the elevator, substantially as described.

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**758,558. GRINDING-MACHINE FOR GRINDING HARVESTER-KNIVES OR OTHER TOOLS.** MOSES C. NIXON, Fort Wayne, Ind. Filed Aug. 1, 1901. Serial No. 70,485. (No model.)



*Claim.*—1. In a grinding-machine the combination of a suitably-journaled driving-shaft; a sleeve loose thereon; means for forming at will a driving connection between the shaft and the sleeve; a cam fast on the said sleeve; a lever pivoted on the frame of the machine and adapted to be oscillated by the said cam; arms suitably pivoted at one end; means whereby the oscillatory movement of the lever is conveyed to the said arms; a grinding-wheel journaled on the said arms; means for rotating the said wheel from the driving-shaft; a lock-wheel fast on the aforesaid sleeve; and means for locking the said wheel to some stationary part.

2. In a grinding-machine the combination of a suitably-journaled driving-shaft; a sleeve loose thereon; means for forming at will a driving connection between the shaft and the sleeve; a cam fast on the said sleeve; a bell-crank lever pivoted on the frame of the machine and having one arm slotted for engagement by the said cam; arms suitably pivoted at one end; a link pivotally connected with the other arm of the bell-crank lever and with the said arms; a grinding-wheel journaled on the said arms; means for rotating the said wheel from the driving-shaft; a lock-wheel fast on the aforesaid sleeve; and means for locking the said wheel to some stationary part.

3. In a grinding-machine the combination of a driving-shaft; a sleeve loose thereon; a pin forming a driving connection between the sleeve and shaft; a cam fast on the said sleeve; a lever pivoted on the frame of the machine and adapted to be oscillated by the said cam; arms suitably pivoted at one end; means whereby the oscillatory movement of the lever is conveyed to the said arms; a grinding-wheel journaled on the said arms; means for rotating the said grinding-wheel from the driving-shaft; a lock-wheel fast on the aforesaid sleeve and having holes or notches formed therein; and a bracket with a hole therein extending from some stationary part in proximity to the lock-wheel so that a pin may be inserted through the hole into one of the holes or notches in the lock-wheel.

4. In a grinding-machine the combination of a driving-shaft; a sleeve loose thereon; a pin forming a driving connection between the sleeve and shaft; a cam fast on the said sleeve; a bell-crank lever pivoted on the frame of the machine and having one arm having holes formed therein for engagement by the said cam; arms suitably pivoted at one end; a link pivotally connected with the other arm of the bell-crank lever and with the said arms; a grinding-

wheel journaled on the said arms; means for rotating the said grinding-wheel from the driving-shaft; a lock-wheel fast on the aforesaid sleeve and having holes or notches formed therein; and a bracket with a hole therein extending from some stationary part in proximity to the lock-wheel so that a pin may be inserted through the hole into one of the holes or notches in the lock-wheel.

5. In a grinding-machine the knife-frame U provided with the horizontal portion *k*, the clamping-lug *m* engaging the back of the knife V, the clamping-lug *n* engaging the front of the knife; and the clamping-lug *l* extending up in front of the knife and bent down to engage the back of the knife, in combination with the cam-lever *o* pivoted on the front of the clamping-lug *l*.

6. In a grinding-machine the knife-frame U provided with the horizontal portion *k*, the clamping-lug *m* engaging the back of the knife and cut away to admit the rib of the eye of the knife; the clamping-lug *n* engaging the front of the knife; and the clamping-lug *l* extending up in front of the knife and bent down to engage the back of the knife above the continuous part thereof, in combination with the cam-lever *o* pivoted on the front part of the clamping-lug *l*.

7. In a grinding-machine the knife-frame U provided with the horizontal portion *k*; means connected with the horizontal portion *k* near one end to support both the front and back of the knife; and the clamping-lug *l* extending up in front of the knife near the other end of the said horizontal portion and bent down to engage the back of the knife.

8. In a grinding-machine the combination of a suitably-journaled driving-shaft; a cam having a driving connection therewith; a bell-crank lever pivoted on the frame of the machine and having one arm slotted for engagement by the said cam; arms suitably pivoted at one end; a link pivotally connected with the other arm of the bell-crank lever and with the said arms; a grinding-wheel journaled on the said arms; and means for rotating the said wheel from the driving-shaft.

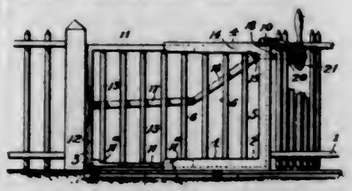
9. In a grinding-machine the combination of a suitably-journaled driving-shaft; a cam having a driving connection therewith; a bell-crank lever pivoted on the frame of the machine and having one arm slotted for engagement by the said cam; arms suitably pivoted at one end; a link having an adjustable pivotal connection with the other arm of the bell-crank lever and with the said arms; a grinding-wheel journaled on the said arms; and means for rotating the said wheel from the driving-shaft.

10. In a grinding-machine, the combination of a suitably-journaled driving-shaft; a cam having a driving connection therewith; a bell-crank lever pivoted on the frame of the machine, and having one arm slotted for engagement by the said cam; arms suitably pivoted at one end, and suitable connections between the bell-crank lever, and the said arm; a grinding-wheel journaled on the said arms; and means for rotating the said wheel.

11. In a driving-machine, the combination of a suitably-journaled driving-shaft; a cam loose thereon; means for forming at will, a driving connection between the shaft and cam; a lever pivoted on the frame of the machine, and adapted to be oscillated by the said cam; arms suitably pivoted at one end; means whereby the oscillating movement is conveyed to said arms; a grinding-wheel journaled on the said arms; means for rotating the said wheel from the driving-shaft; a lock-wheel attached to said cam; and means for locking the said wheel to some stationary part.

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**758,559. GATE.** PAUL OPPENHEIM, New York, N. Y. Filed June 6, 1903. Serial No. 160,376. (No model.)



*Claim.*—1. In a sliding gate, a main gate slidingly supported and comprising upper and lower channeled bars with vertical bars connecting the same, a supplemental gate having upper and lower horizontal bars sliding in the channels of said channeled bars, means for limiting the movement of the supplemental gate in relation to the main gate, and operating means connected with said supplemental gate substantially as described.

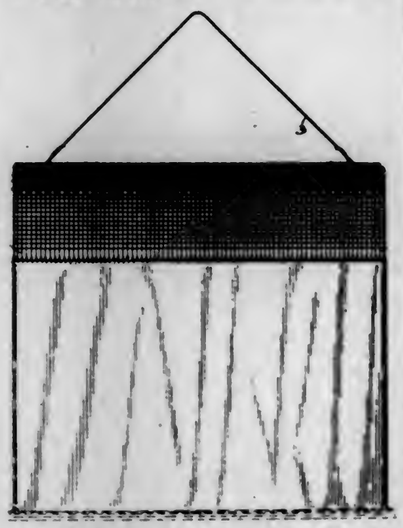
2. In a sliding gate, a main gate comprising upper and lower channeled bars, a vertical channeled bar connecting said bars at one end, vertical bars connecting the flanges of the upper and lower bars at one side of the gate, a supplemental gate having top and bottom bars sliding in the channels, a stop for limiting the movement of the supplemental gate in relation to the main gate, a crank-arm carried by a shaft mounted in stationary bearings, and a link connecting the crank-arm with the front end of the supplemental gate, substantially as described.

3. In combination, a track having a groove or guideway, a main gate-section comprising upper and lower channeled bars suitably connected and having the channels facing each other, a guide from the lower bar engaging said guideway, a supplemental gate-section sliding in said channels, a guide on the outer end of said supplemental section engaging said guideway, means for limiting the movement of the supplemental gate in relation to the main gate, and operating means connected with the supplemental gate-section, substantially as described.

4. In combination, a main gate-section sliding supported, a supplemental gate-section slidingly connected with the main gate-section, a crank-shaft journaled in a stationary bearing, a link connecting the crank with the supplemental gate-section, a rock-shaft connected to said crank-shaft by a universal joint and extending to a distance from and at an angle to said crank-shaft, a bevel-gear on the distant end of said shaft and a hand-operated bevel-gear meshing with the gear on the shaft, substantially as described.

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**758,560. BAIT FOR DRAWING GLASS.** ROGER S. PRAIN, Pittsburg, Pa., assignor to Window Glass Machine Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Jan. 30, 1903. Serial No. 139,829. (No model.)



*Claim.*—1. A bait for drawing glass having a series of separated points or pins depending from its lower end; substantially as described.

2. A bait for drawing glass consisting of wire fabric having vertical wires depending below the fabric and arranged to enter the bath; substantially as described.

3. A bait for drawing glass having a depending series of separated points or pins, the end pins projecting down below the intermediate pins; substantially as described.

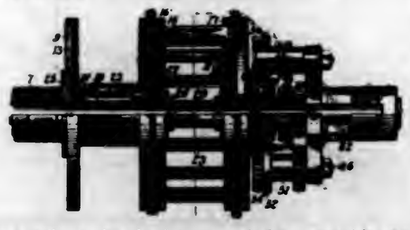
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**758,561. SPEED-CHANGING MECHANISM.** CHARLES J. REED, Philadelphia, Pa. Filed Dec. 2, 1903. Serial No. 183,490. (No model.)

*Claim.*—1. A pulley having plural drums, each drum comprising movable rim-sections, guides for said rim-sections, and adjusting devices engaging the ends of each rim-section, as set forth.

2. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guides for said rim-sections, and disks having adjusting devices engaging the ends of each rim-section, said disks being revoluble with reference to said plates, as set forth.





3. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guide-slots for said rim-sections, and disks having spiral ways engaging the ends of each rim-section, said disks being revoluble with reference to said plates, as set forth.

4. A pulley having plural drums, each drum comprising movable rim-sections, guides for said rim-sections, adjusting devices engaging the ends of each rim-section, and means for simultaneously operating the adjusting devices of both drums and thereby contracting one drum and expanding the other drum, as set forth.

5. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guides for said rim-sections, disks having adjusting devices engaging the ends of each rim-section, said disks being revoluble with reference to said plates, and means for simultaneously rotating said disks with reference to said plates and thereby contracting one drum and expanding the other drum, as set forth.

6. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guide-slots for said rim-sections, disks having spiral ways engaging the ends of each rim-section, said disks being revoluble with reference to said plates, and means for simultaneously rotating said disks with reference to said plates and thereby contracting one drum and expanding the other drum, as set forth.

7. In a pulley having plural drums and movable rim-sections, three adjusting-disks having spiral ways and rigidly secured together, as set forth.

8. In a pulley having plural drums and movable rim-sections, three adjusting-disks having spiral ways and rigidly secured on the pulley-shaft, as set forth.

9. In a pulley having plural drums and movable rim-sections, four plates having substantially radial guideways for said rim-sections, said plates being rigidly connected together and revolubly supported on the pulley-shaft, as set forth.

10. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guides for said rim-sections, disks having adjusting devices engaging the ends of each rim-section, said disks and plates being relatively revoluble, and sleeves mounted on the pulley-shaft between the fixed members of each drum and carrying the revoluble members of each drum, as set forth.

11. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guides for said rim-sections, disks having adjusting devices engaging the ends of each rim-section, said disks and plates being relatively revoluble, sleeves mounted on the pulley-shaft between the fixed members of each drum and carrying the revoluble members of each drum, and means for rigidly connecting the adjacent revoluble members of each drum, as set forth.

12. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guides for said rim-sections, disks having adjusting devices engaging the ends of each rim-section, said disks and plates being relatively revoluble, sleeves mounted on the pulley-shaft between said disks and carrying the guiding-plates, and means for rigidly connecting the adjacent similar members of each drum, as set forth.

13. A pulley having plural drums, each drum having movable rim-sections, plates having guideways for said rim-sections, the adjacent guiding-plates of each drum being rigidly connected at their peripheries, and means for adjusting the rim-sections, as set forth.

14. A pulley having plural drums, each drum having movable rim-sections, two adjacent plates having guide-slots and rigidly connected at their peripheries, and an adjusting-disk fixed on the pulley-shaft between the guiding-plates, as set forth.

15. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guideways for said rim-sections, and disks having adjusting devices engaging the ends of each rim-section, said disks and plates being relatively revoluble, and means for rigidly connecting the adjacent revoluble members of each drum at their peripheries, as set forth.

16. A pulley having plural drums, each drum comprising movable rim-sections, plates having substantially radial guideways for said rim-sections, and disks having adjusting devices engaging the ends of each rim-section, said disks and plates being relatively revoluble, and means for rigidly connecting the adjacent gulding-plates of each drum at their peripheries, as set forth.

17. A pulley having plural drums, each drum having movable rim-sections, plates having guideways for said rim-sections, and three adjusting-disks fixed on the pulley-shaft, as set forth.

18. A pulley having plural drums, each drum having movable rim-sections, three spirally-grooved adjusting-disks fixed on the pulley-shaft, four slotted guiding-plates revolubly supported on said shaft, and means for rotating said guiding-plates on said shaft, as set forth.

19. A pulley having plural drums, each drum having movable rim-sections, three spirally-grooved adjusting-disks fixed on the pulley-shaft, and four guiding-plates revolubly supported on said shaft and having slots crossing the spiral grooves of said adjusting-disks, as set forth.

20. A pulley having plural drums, each drum comprising movable rim-sections, adjusting-disks fixed on the pulley-shaft and having spiral ways which engage the ends of each rim-section, and guiding-plates having substantially radial guide-slots for said rim-sections, the guiding-plates of each drum being carried on the ends of a sleeve revolubly supported on the pulley-shaft between said adjusting-disks, as set forth.

21. A pulley having plural drums, each drum comprising movable rim-sections, adjusting-disks fixed to the pulley-shaft and having spiral ways which engage the ends of each rim-section, and guiding-plates having substantially radial guide-slots for said rim-sections, the guiding-plates of each drum being carried on the ends of a sleeve revolubly supported on the pulley-shaft between said adjusting-disks, and the adjacent guiding-plates of the two drums being rigidly connected together at their peripheries, as set forth.

22. An expansible pulley comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, and means for operating said revoluble member, comprising a gear which is connected thereto and which is loose on the pulley-shaft, a second gear which is attached to the pulley-shaft, a movable control member, and two gears carried by said member, one of which is adapted to engage with said revoluble gear and the other with said fixed gear, two of said engaging gears being of different diameters, as set forth.

23. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, and means for operating said revoluble member, comprising a gear which is connected thereto and which is loose on the pulley-shaft, a second gear which is fixed on the pulley-shaft, a movable control member, and two gears carried by said member one of which is adapted to mesh with said revoluble gear and the other with said fixed gear, two of said meshing gears having a different number of teeth, as set forth.

24. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, and means for operating said revoluble member, comprising a gear which is connected thereto and which is loose on the pulley-shaft, two gears which are fixed on the pulley-shaft, a movable control member, and two sets of gears carried by said member either of which is adapted to mesh with said revoluble gear and one of said fixed gears, two of the gears which are thrown into mesh by a movement of said control member in either direction being of different diameter and the gears which alternately mesh with said fixed gears also being of different diameter, as set forth.

25. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, and means for operating said revoluble member, comprising a gear which is connected thereto and which is loose on the pulley-shaft, two gears which are fixed on the pulley-shaft, a movable control member, and two sets of gears carried by said member either of which is adapted to mesh with said revoluble

gear and one of said fixed gears, two of the gears which are thrown into mesh by a movement of said control member in either direction having a different number of teeth and the gears which alternately mesh with said fixed gears having a different number of teeth, as set forth.

26. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, a clutch for locking said revoluble member to the shaft, and means for opening said clutch and rotating said revoluble member, as set forth.

27. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, a clutch for locking said revoluble member to the shaft, and a movable control member carrying means for opening said clutch and rotating said revoluble member, as set forth.

28. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, rock-arms carrying the pulley-shaft, and means for rotating said revoluble member, as set forth.

29. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, rock-arms carrying the pulley-shaft, a control-lever having means for rotating said revoluble member, and a detent for said lever carried by one of said rock-arms, as set forth.

30. An expansible pulley, comprising movable rim-sections, a guiding member and an adjustable member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, a rock-shaft having rock-arms which carry the pulley-shaft, and control mechanism carrying devices for rotating said revoluble member in one direction when thrown to one position and in the other direction when thrown to another position, as set forth.

31. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, a rock-shaft having rock-arms which carry the pulley-shaft, control mechanism journaled on said rock-shaft and carrying devices for rotating said revoluble member in one direction when thrown to one position and in the other direction when thrown to another position, and means for holding said mechanism in position, as set forth.

32. An expansible pulley, comprising movable rim-sections, a guiding member and an adjusting member for said rim-sections, one of said members being fixed and the other revoluble with reference to the pulley-shaft, a rock-shaft having rock-arms which carry the pulley-shaft, control mechanism journaled on said rock-shaft and carrying devices for rotating said revoluble member in one direction when thrown to one position and in the other direction when thrown to another position, means for holding said mechanism in position, and fixed stops for limiting the movement of said mechanism in either direction and throwing it to its inoperative position, as set forth.

33. A speed-changing mechanism, comprising a driving-pulley, a driven pulley, an intermediate double pulley, one drum of which is belted to said driving-pulley and the other to said driven pulley, means for simultaneously contracting one drum and expanding the other drum of said double pulley, and movable bearings for said double pulley, as set forth.

34. A speed-changing mechanism, comprising a driving-pulley, a driven pulley, an intermediate double pulley, one drum of which is belted to said driving-pulley and the other to said driven pulley, means for simultaneously contracting one drum and expanding the other drum of said double pulley, a reciprocating frame supporting said double pulley, and adjustable means for limiting the travel of said frame, as set forth.

35. A speed-changing mechanism, comprising a driving-pulley, a driven pulley, an intermediate double pulley, one drum of which is belted to said driving-pulley and the other to said driven pulley, means for simultaneously contracting one drum and expanding the other drum of said double pulley, and rock-arms carrying bearings for said double pulley, as set forth.

36. A pulley having at least three drums, each drum comprising movable rim-sections, and means for simultaneously moving the rim-sections of the end drums and adjacent drums in opposite radial directions, as set forth.

**758,562. CARPET-STRETCHER.** WILLIAM REICHLE, Springfield, Ill. Filed June 3, 1903. Serial No. 159,954. (No model.)

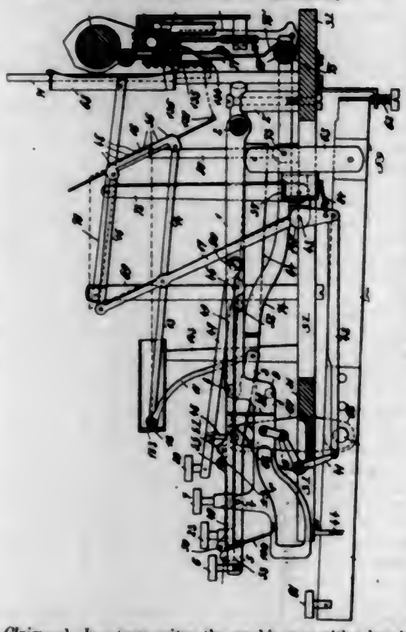


*Claim.*—1. In a carpet-stretcher, the combination of a main frame, a winch mounted on said frame and having a drum and hubs, the diameter of said drum being twice the diameter of said hubs, draw-bars slidable on said frame and connecting devices connecting said draw-bars with said winch in such manner that one of said draw-bars will travel twice the distance that the other travels for each revolution of the winch, as set forth.

2. In a carpet-stretcher, the combination of a main frame, a winch mounted on said frame and having a drum and hubs, the diameter of said drum being twice the diameter of said hubs, draw-bars slidable on said frame, connecting devices connecting said draw-bar with said winch and means for simultaneously retracting said draw-bars, as set forth.

3. In a carpet-stretcher, the combination of a main frame consisting of sections having a hinge connection, an extension-frame slidable on one section of the main frame, separately-adjustable extension-bars slidable on the other section of said frame, means for clamping said extension-frame and extension-bars, a winch mounted on said extension-frame, draw-bars slidable on the main frame, connecting devices connecting said draw-bars with said winch, and means for retracting said draw-bars, as set forth.

**758,568. TYPE-WRITER.** EDUARD REMER, Berlin, Germany, assignor to Grove, Hornberg and Company, Berlin, Germany, a Firm. Filed Aug. 8, 1901. Serial No. 71,336. (No model.)



*Claim.*—1. In a type-writer, the combination with a key-lever, of a plurality of keys, a type-carrier provided with a plurality of types, a striking-lever, means for connecting the type-carrier with the striking-lever, means for positively connecting the key-lever with the striking-lever, and means arranged between the said key-lever and said keys and carried by said key-lever for transmitting the movement of either of said keys to said key-lever and said type-



carrier for bringing the respective type into the right position and striking it against the paper-roll, substantially as set forth.

2. In a type-writer, the combination with a key-lever, of a plurality of keys, a type-carrier provided with a plurality of types, a type-disposing device connected positively with said keys, the said device being arranged between said keys and said key-lever and carried by the latter, and means for transmitting the movement of said type-disposing device on depressing either of said keys to said type-carrier for bringing the respective type into the right position and striking it against the paper-roll, substantially as set forth.

3. In a type-writer, the combination with a key-lever, of a plurality of keys, a type-disposing device connected positively with said keys and carried by said key-lever, a type-carrier provided with a plurality of types, a striking-lever, a link parallelogram, two opposite sides of which being formed by said type-carrier and said striking-lever, means for positively connecting said type-disposing device with said link parallelogram for bringing either type into the right position on depressing the respective key, and means for positively connecting said key-lever with said striking-lever, so as to strike the type adjusted against the paper-roll, substantially as set forth.

4. In a type-writer, the combination with a key-lever, of a plurality of keys, a striking-lever, a type-carrier provided with a plurality of types, means for connecting said type-carrier with said striking-lever, and means carried by said key-lever for transmitting the movement of either of said keys to said key-lever, said striking-lever and said type-carrier for striking the respective type against the paper-roll, substantially as set forth.

5. In a type-writer, the combination with a key-lever, of a plurality of keys, a striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with a plurality of types and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, means carried by said key-lever for transmitting the movement of either of said keys to said key-lever and to the other arm of said two-armed lever for bringing the respective type into the right position, and means for transmitting the movement of said key-lever to said striking-lever for striking the type against the paper-roll, substantially as set forth.

6. In a type-writer, the combination with a key-lever, of a plurality of keys, a plurality of subsidiary key-levers arranged between said keys and said key-lever and carried by the latter, means for connecting the same positively, a striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with a plurality of types and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a rod linked with the other arm of said two-armed lever and with one of said subsidiary key-levers, and means for transmitting the movement of said key-lever to said striking-lever, so that on depressing either of said keys the respective type is brought into the right position and caused to strike against the paper-roll, substantially as set forth.

7. In a type-writer, the combination with a key-lever, of four keys, a plurality of subsidiary key-levers arranged between said keys and said key-lever and carried by the latter, means for restricting the movements of same with respect to each other, a frame arranged to be raised and lowered, a striking-lever mounted on said frame to swing, means for returning said striking-lever to the original position, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with eight types in two groups of four each and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a rod linked with the other arm of said two-armed lever and with one of said subsidiary key-levers, and means for transmitting the movement of said key-lever to said striking-lever, so that on depressing either of said keys the respective type of either the upper or the lower group is brought into the right position, while said frame is at rest or raised respectively, and caused to strike against the paper-roll, substantially as set forth.

8. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, means for returning said striking-lever to the original position, means for raising and lowering said striking-lever, a type-carrier provided with eight types in two groups of four each, means for connecting said type-carrier with said striking-lever, and means carried by said key-lever for transmitting the movement of either of said keys to said key-lever, said type-carrier and said striking-lever for bringing the respective type of either the upper or the lower group into the right position and striking it against the paper-roll, while said striking-lever is at rest or raised respectively, substantially as set forth.

9. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, means for returning said striking-lever to the original position, means for raising and lowering said striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with eight types in two groups of four each and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, means carried by said key-lever for transmitting the movement of either of said keys to said key-lever and to the other arm of said two-armed lever for bringing the respective type of either the upper or the lower group into the proper position, while said striking-lever is at rest or raised respectively, and means for transmitting the movement of said key-lever to said striking-lever for striking the type against the paper-roll, substantially as set forth.

10. In a type-writer, the combination with a key-lever, of four keys, a plurality of subsidiary key-levers arranged between said keys and said key-lever and carried by the latter, means for restricting the movement of same, a striking-lever, a spring for returning said striking-lever into the original position, means for raising and lowering said striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with eight types in two groups of four each and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a rod linked with the other arm of said two-armed lever and with one of said subsidiary key-levers, and means for transmitting the movement of said key-lever to said striking-lever, so that on depressing either of said keys the respective type of either the upper or the lower group is brought into the right position and caused to strike against the paper-roll, while said striking-lever is at rest or raised respectively, substantially as set forth.

11. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, a spring for returning said striking-lever to the original position, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with four types and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a two-armed subsidiary key-lever, mounted on said key-lever to swing between two stops and carrying on the front arm the front key and on the rear arm the rear key, a rod linked with the other arm of said two-armed lever and with the rear arm of said two-armed subsidiary key-lever, so that on depressing said front or rear key said type-carrier is lowered or raised respectively and the uppermost or lowermost type respectively brought into the right position for printing, means carried by said key-lever for transmitting the movement of the second and the third key to said rod, so that on depressing said second or third key the second or third type respectively is brought into the right position for printing, and means for transmitting the movement of said key-lever to said striking-lever for striking the respective type against the paper-roll, substantially as set forth.

12. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, a spring for returning said striking-lever to the original position, means for raising and lowering said striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with an upper and a lower group of four types each and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a two-armed subsidiary key-lever mounted on said key-lever to swing between two stops and carrying on the front arm the front key and on the rear arm the rear key, a rod linked with the other arm of said two-armed lever and with the rear arm of said two-armed subsidiary key-lever, so that on depressing said front or rear key said type-carrier is lowered or raised respectively and the uppermost or lowermost type respectively of either group brought into the right position for printing, means carried by said key-lever for transmitting the movement of the second and the third key to said rod, so that on depressing said second or third key the second or third type respectively of either group is brought into the right position for printing, and means for transmitting the movement of said key-lever to said striking-lever for striking the respective type against the paper-roll, substantially as set forth.

13. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, a spring for returning said striking-lever to the original position, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with four types and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a two-armed first subsidiary key-lever mounted on said

key-lever to swing between two stops and carrying on the front arm the front key and on the rear arm the rear key, a rod linked with the other arm of said two-armed lever and with the rear arm of said first subsidiary key-lever, so that on depressing said front or rear key said type-carrier is lowered or raised respectively and the uppermost or the lowermost type respectively brought into the right position for printing, a one-armed second subsidiary key-lever mounted on said key-lever and carrying the second key and also two stops, of which usually the one rests on the front arm and the other stop is at a certain height above the rear arm of said first subsidiary key-lever, so that on depressing said second key said second subsidiary key-lever takes along with it by the one stop the front arm of said first subsidiary key-lever, until the rear arm of the latter strikes against the other stop, when the second type will be brought into the right position for printing, means carried by said key-lever for transmitting the movement of the third key to the third type for bringing same into the right position for printing, and means for transmitting the movement of said key-lever to said striking-lever for striking the respective type against the paper-roll, substantially as set forth.

14. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, a spring for returning said striking-lever to the original position, means for raising and lowering said striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with an upper and a lower group of four types each and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a two-armed first subsidiary key-lever mounted on said key-lever to swing between two stops and carrying on the front arm the front key and on the rear arm the rear key, a rod linked with the other arm of said two-armed lever and with the rear arm of said first subsidiary key-lever, so that on depressing said front or rear key said type-carrier is lowered or raised respectively and the uppermost or lowermost type respectively of either group brought into the right position for printing, a one-armed second subsidiary key-lever mounted on said key-lever and carrying the second key and also two stops, of which usually the one rests on the front arm and the other stop is at a certain height above the rear arm of said first subsidiary key-lever so that on depressing said second key said second subsidiary key-lever takes along with it by the one stop the front arm of said first subsidiary key-lever, until the other arm of the latter strikes against the other stop, when the second type of either group will be brought into the right position for printing, means carried by said key-lever for transmitting the movement of the third key to the third type of either group for bringing same into the right position for printing, and means for transmitting the movement of said key-lever to said striking-lever for striking the respective type against the paper-roll, substantially as set forth.

15. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, a spring for returning said striking-lever to the original position, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with four types and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a two-armed first subsidiary key-lever mounted on said key-lever to swing between two stops and carrying on the front arm the front key and on the rear arm the rear key, a rod linked with the other arm of said two-armed lever and with the rear arm of said first subsidiary key-lever, so that on depressing said front or rear key said type-carrier is lowered or raised respectively and the uppermost or lowermost type respectively brought into the right position for printing, a one-armed second subsidiary key-lever mounted on said key-lever and carrying the second key and also two stops, of which usually the one rests on the front arm and the other stop is at a certain height above the rear arm of said first subsidiary key-lever, so that on depressing said second key said second subsidiary key-lever takes along with it by the one stop the front arm of said first subsidiary key-lever, until the rear arm of the latter strikes against the other stop, when the second type will be brought into the right position for printing, a one-armed third subsidiary key-lever mounted on said key-lever and carrying the third key-lever and provided with a slot, the upper end of which usually rests on the pivot of said first subsidiary key-lever, so that on depressing said third key said third subsidiary key-lever takes along with it said key-lever by the pivot of said first subsidiary key-lever, while the third type is in the right position for printing, and means for transmitting the movement of said key-lever to said striking-lever for striking the respective type against the paper-roll, substantially as set forth.

16. In a type-writer, the combination with a key-lever, of four keys, a striking-lever, a spring for returning said striking-lever to the original position, means for raising and lowering said striking-lever, a two-armed lever mounted on said striking-lever to swing, a type-carrier provided with an upper and a lower group of four types each and linked to the one arm of said two-armed lever, a link linked with said striking-lever and with said type-carrier, whereby a parallelogram is formed, a two-armed first subsidiary key-lever mounted on said key-lever to swing between two stops and carrying on the front arm the front key and on the rear arm the rear key, a rod linked with the other arm of said two-armed lever and with the rear arm of said first subsidiary key-lever, so that on depressing said front or rear key said type-carrier is lowered or raised respectively and the uppermost or lowermost type respectively by either group brought into the right position for printing, a one-armed second subsidiary key-lever mounted on said key-lever and carrying the second key and also two stops, of which usually the one rests on the front arm and the other stop is at a certain height above the rear arm of said first subsidiary key-lever, so that on depressing said second key said second subsidiary key-lever takes along with it by the one stop the front arm of said first subsidiary key-lever, until the other arm of the latter strikes against the other stop, when the second type of either group will be brought into the right position for printing, a one-armed third subsidiary key-lever mounted on said key-lever and carrying the third key and provided with a slot, the upper end of which usually rests on the pivot of said first subsidiary key-lever, so that on depressing said third key said third subsidiary key-lever takes along with it said key lever by the pivot of said first subsidiary key-lever, while the third type of either group is in the right position for printing, and means for transmitting the movement of said key-lever to said striking-lever for striking the respective type against the paper-roll, substantially as set forth.

17. In a type-writer, the combination with a key-lever, of a plurality of keys, a type-disposing device arranged between said keys and said key-lever and carried by the latter, a striking-lever provided with a downward-projecting arm, a spring affixed to the base-plate for returning said striking-lever to the original position, means for raising and lowering the fulcrum of said striking-lever, a two-armed lever mounted on said striking-lever to swing, a rod linked with the front arm of said two-armed lever and with said type-disposing device, a type-carrier provided with an upper and a lower group of a plurality of types each and linked with the rear arm of said two-armed lever, a link linked with said striking-lever and said type-carrier, whereby a parallelogram is formed, a bell-crank lever mounted on the base-plate to rock, a link linked with said key-lever and with the one arm of said bell-crank lever, and a rod connecting the other arm of said bell-crank lever with said arm of said striking-lever, so that on depressing either of said keys the respective type of either the upper or lower group is brought into the right position for printing and struck against the paper-roll, while the fulcrum of said striking-lever is at rest or raised respectively, substantially as set forth.

18. In a type-writer, the combination with a key-lever, of a plurality of keys, means carried by said key-lever for connecting same with said keys, a horizontal arc-shaped lever mounted under the base-plate to swing around a cross center line, a raising-key and means for transmitting its movement to said arc-shaped lever, adjustable means for supporting said arc-shaped lever, two vertical links linked with the sides of said arc-shaped lever and carrying between them a bridge, two levers mounted on the base-plate to swing around a cross center line in the same vertical plane as the fulcrums of said arc-shaped lever and linked with said two vertical links whereby a parallelogram is formed, a striking-lever mounted on said bridge, so that on depressing and releasing said raising-key said striking-lever is raised and lowered respectively, a spring affixed to the base-plate for returning said striking-lever to the original position, a two-armed lever mounted on said striking-lever to swing, the front arm of which is connected with said means connecting the key-lever and the keys, a type-carrier carrying a plurality of types, the number of which is double that of said keys, and linked with the rear arm of said two-armed lever, a link linked with said striking-lever and type-carrier, whereby a parallelogram is formed with said striking-lever, so that on depressing either of said keys the respective type of either the upper or the lower group is caused to strike against the paper-roll, while said bridge is at rest or raised respectively, substantially as set forth.

19. In a type-writer, the combination with a key-lever, of a plurality of keys, means carried by said key-lever for connecting same with said keys, a horizontal arc-shaped lever mounted under the base-plate to swing around a cross center line, adjustable means for supporting said arc-shaped lever, two vertical links linked with the sides of said arc-shaped lever and carrying between them a bridge, two levers mounted on the base-plate to swing around a cross center line in the same vertical plane as the fulcrums of said arc-shaped lever and linked with said two vertical links, whereby a parallelogram is formed, a striking-lever mounted on said bridge, a two-armed key-lever pivoted near the fulcrums of said arc shaped lever, the longer front arm carrying a key and the shorter rear arm gripping under said arc-shaped lever, so that on depressing and releasing said key said striking-lever is raised and lowered respectively, a two-armed lever mounted on said striking-lever to swing, the front arm of which is connected with said means connecting the key-lever and the keys, a type-carrier carrying a plurality of types, the number of which is double that of said keys, and linked with the rear arm of said two-armed lever, a link linked with said striking-lever and type-carrier, whereby a parallelogram is formed, and means for connecting said key-lever with said striking-lever, so that on depressing either of said keys the respective type of either the upper or the lower group is caused to strike against the paper-roll, while said bridge is at rest or raised respectively, substantially as set forth.

20. In a type-writer, the combination with a key-lever, of a plurality of keys, a type-disposing device carried by said key-lever for connecting same with said keys, a horizontal arc-shaped lever mounted under the base-plate to swing around a cross center line, a raising-key and means for transmitting its movement to said arc-shaped lever, adjustable means for supporting the latter, two vertical links linked with the sides of said arc-shaped lever and carrying between them a bridge, two levers mounted on the base-plate to swing around a cross center line in the same vertical plane as the fulcrums of said arc-shaped lever and linked with said two vertical links, whereby a parallelogram is formed, a striking-lever mounted on said bridge, a type-carrier connected with said striking-lever, means for connecting said striking-lever with said type-disposing device, two vertical studs mounted on the base-plate near the paper-roll, a type-guiding frame arranged on said vertical studs to slide, two supports affixed on the base-plate, two levers mounted on said supports and linked with said type-guiding frame, two vertical links connecting these levers with said parallelogram, so that on depressing and releasing said raising-key said striking-lever with type-carrier and said type-guiding frame are simultaneously raised and lowered respectively, substantially as set forth.

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**758,564. SKIRT-BRAID.** Joseph W. Schloss, New York, N. Y. Filed May 5, 1903. Serial No. 155,755. (No specimens.)



*Claim.*—1. An article of manufacture, consisting of a skirt facing or protector comprising a fabric formed of a plurality of sections or stripes integrally connected together and arranged in succession from edge to edge of the fabric, said sections or stripes being of successively-graduated thicknesses and the threads of the whole structure being braided together and thereby obliquely arranged therein to permit of distortion without folding or wrinkling when applied to the skirt.

2. A skirt-braid having a number of longitudinal stripes or sections integrally formed with one another and being of successively-different thicknesses, said braid having a continuous curvature throughout its length, substantially as described.

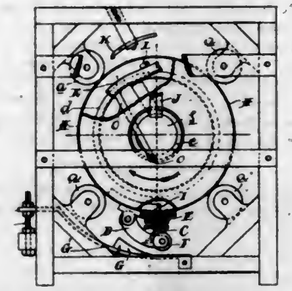
3. A skirt-braid having a number of longitudinal stripes or sections integrally formed with one another and being of successively-increasing thicknesses, said braid having a continuous curvature throughout its length, the thickest portion being along the convex edge.

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**758,565. ORE-CONCENTRATOR.** John Shirr, Detroit, Mich. Filed Aug. 15, 1903. Serial No. 169,571. (No model.)

*Claim.*—1. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum having a cylindrical chamber on the bottom of which the material is carried in its passage through the drum, a variable cut-off mounted in a longitudinal slit in the cylindrical wall of said chamber, a collecting-pan stationarily suspended above the bottom of the chamber and means for actuating the cut-off and retarding or advancing its action.

2. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum having its ends partially closed to retain a quantity of water therein and formed with a cylindrical portion on the bottom of which the material is carried in its passage through the drum and constituting its concentrating-chamber, a cut-off mounted in a longitudinal slit in the cylindrical wall of said chamber, a collecting-pan stationarily suspended above the bottom of the chamber and means for actuating the cut-off and regulating its depth of penetration.



3. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum having a cylindrical portion constituting the concentrating-chamber for the material to be treated, a cut-off mounted in a longitudinal slit in the cylindrical wall of the chamber, a collecting-pan stationarily suspended within said chamber above the bottom thereof, an arm hinged to the outer wall of the drum and carrying the cut-off, and stationary inclines adapted to actuate said arm and cut-off, said cut-off being curved with the axis thereof at the pivot of the arm.

4. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum having a cylindrical portion constituting the concentrating-chamber, a cut-off slidingly mounted in a longitudinal slit in the cylindrical wall of said chamber, a collecting-pan for the concentrate stationarily suspended within said chamber above the bottom thereof, an arm pivotally secured upon the outer wall of the concentrating-chamber and carrying the cut-off and inclines stationarily secured in position to actuate said arm and cut-off, said cut-off being curved on a radius having its center at the pivot of the arm.

5. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum having a cylindrical portion constituting the concentrating-chamber, a cut-off slidingly mounted in a longitudinal slit in the cylindrical wall of said chamber, a collecting-pan stationarily suspended above the bottom of the chamber and means for actuating the cut-off and regulating its depth of penetration.

6. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum having a cylindrical concentrating-chamber provided with a cut-off slidingly mounted in a longitudinal slit in the cylindrical wall of the chamber, an arm pivotally secured upon the drum and carrying said cut-off, said cut-off being curved on a radius with the pivot of the arm and passing through a stuffing-box, an incline adapted to actuate said arm to project said cut-off into the chamber, a curved support pivotally secured to the frame upon which said incline is adjustably mounted, a regulating-screw for adjusting said lever, and a collecting-pan stationarily mounted within the concentrating-chamber and means for withdrawing the cut-off to its normal position.

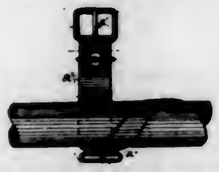
7. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum mounted in said frame upon a horizontal axis and comprising an outer shell composed of a cylindrical front portion constituting the concentrating-chamber and a tapering rear portion forming at the junction with the front portion an annular shoulder, two inner tapering shells within the tapering portion of the outer shell and projecting freely within the same into the cylindrical portion of the outer shell, the shell adjacent thereto being imperforate and carrying a conveyer-screw and the innermost shell being perforate and tapering inversely thereto, a sluiceway or feed-spout extending through an opening in the front end of the drum into the front end of the perforate shell and means for collecting and removing the concentrate from the concentrating-chamber.

8. In an ore-concentrator, the combination with a supporting-frame, of a revolving drum mounted in said frame upon a horizontal axis and provided with inlet and outlet openings in its opposite ends

respectively, said drum comprising an outer shell composed of a cylindrical front portion and of a tapering rear portion, the cylindrical front portion forming a concentrating-chamber and provided with means for collecting and removing the concentrate, two inner shells extending freely within the tapering portion of the outer shell, the one adjacent thereto being correspondingly tapering and provided upon its outer face with a conveyer-screw and the innermost one being tapered inversely thereto and perforated its whole length, a sluiceway or feed-spout extending through the opening in the front end of the drum into the front end of the innermost shell, and two sets of scoops, one in the rear end of the innermost shell and leading to the outlet from the drum and the other in the surrounding space between the other shells and corresponding therewith, the inlet and outlet in the drum being suitably restricted for submerging the material in water during its passage through the drum.

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758,566. **SHAFT-CARRIER OR THILL-TUG.** DAVID B. SHIRK, Elizabethtown, Pa. Filed May 16, 1902. Serial No. 107,619. (No model.)

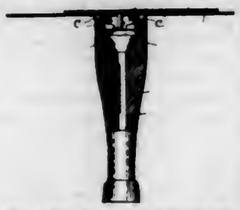


*Claim.*—1. A shaft-carrier composed of a metal strap comprising an upper-end buckle, and a straight portion and, curving centrally to one side, a lower-end folded-over portion with a diagonal open space between said straight and folded-over portions, and having a strap-retaining eye near the buckle end of said straight portion, with a belly-band-strap-securing eye underneath said folded over portion at the side curving end thereof, substantially as described and for the purpose hereinbefore set forth.

2. In a shaft-carrier or thill-tug, a metal strap having a straight portion with a buckle at its upper end and a side coil at its lower end with a diagonal open space between the coiled and straight portions with a loop provided for securing a belly-band strap, substantially as described and for the purpose hereinbefore set forth.

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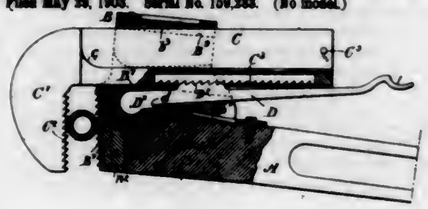
758,567. **TOY.** ARTHUR M. SIEBERLIST, Philadelphia, Pa. Filed June 19, 1903. Serial No. 162,135. (No model.)



*Claim.*—In a toy, a tube having an enlarged end and an enlarged opening in the flared end forming an extension of the tube-opening, the tube having its end notched, the said notches communicating with the enlarged opening, a disk fitted on and attached to the enlarged end and the notches forming parts for the escape of air, a shaft journaled in the disk and depending into the enlarged opening, an indicator on the outer end of the shaft, a disk having blades struck therefrom, secured on the depending end of the shaft.

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758,568. **WRENCH.** WILLIAM R. SNEDIKER, Camden, N. J. Filed May 29, 1903. Serial No. 159,283. (No model.)



*Claim.*—1. In a wrench the combination of a fixed head, a movable head, a sliding bar carrying said movable head, a projection on either side of said sliding bar, shoulders formed on the interior of the fixed head, said shoulders forming a fulcrum and guides for said sliding bar, and a toggle-pawl acting between said fixed head and said sliding bar substantially as described.

2. In a wrench the combination of a fixed head, a sliding bar carrying the movable head, shoulders formed in said fixed head adapted to engage projections on either side of said sliding bar, a spring to hold said sliding bar down on said shoulders, a toggle-pawl, and a spring adapted to hold said toggle-pawl in engagement with said sliding bar, substantially as described.

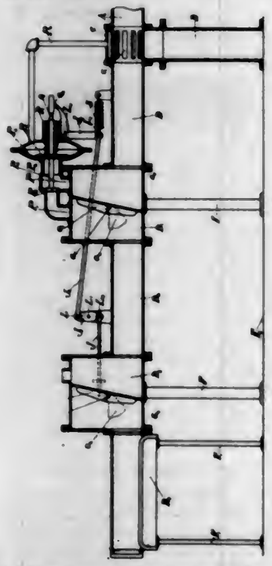
3. In a wrench the combination of a fixed head, a movable head, a sliding bar carrying said movable head, projections on either side of said sliding bar, shoulders in the fixed head to receive said projections, a spring to act upon the upper surface of said sliding bar, shoulders formed in said fixed head to limit the movement of said spring, a toggle-pawl carried by said fixed head, and a spring adapted to hold said toggle-pawl in engagement with said sliding bar, substantially as described.

4. In a wrench the combination of a fixed head, a movable head, a sliding bar carrying said movable head, a projection on either side of said sliding bar, shoulders formed on the interior of the fixed head, said shoulders forming a fulcrum and guides for said sliding bar, a toggle-pawl pivoted in said fixed head adjacent to said fulcrum so that said sliding bar can rock on said fulcrum without changing the relation between the toggle-pawl and the sliding bar, substantially as described.

5. In a wrench the combination of a fixed head, a movable head, a sliding bar carrying said movable head, a projection on either side of said sliding bar, shoulders formed on the interior of the fixed head, said shoulders forming a fulcrum and guides for said sliding bar, and a toggle-pawl having a shoulder engaged by a spring in the fixed head, said spring adapted to hold said toggle-pawl in position and also to keep the same in engagement with said sliding bar, substantially as described.

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758,569. **PNEUMATIC-DESPATCH APPARATUS.** CHARLES P. STODDARD, Boston, Mass., assignor to American Pneumatic Service Company, Dover, Del., a Corporation of Delaware. Filed May 7, 1903. Serial No. 156,990. (No model.)



*Claim.*—1. In an apparatus of the character described, a terminal, and valves located in said terminal and adapted to be opened for the passage of the carrier by the carrier and having their greater area located out of the line of travel of the carrier and in the same plane as the smaller area.

2. In an apparatus of the character described, a terminal, valves located in said terminal and adapted to be opened for the passage



of the carrier by the carrier and having their greater area located out of the line of travel of the carrier and in the same plane as the smaller area, and means for closing said valves after the passage of the carrier.

3. In an apparatus of the character described, a terminal, and unbalanced valves located in said terminal and adapted to be opened for the passage of the carrier by the carrier and having their greater area located out of the line of travel of the carrier and in the same plane as the smaller area.

4. In an apparatus of the character described, a terminal, unbalanced valves in said terminal and adapted to be opened for the passage of the carrier by the carrier and having their greater area located out of the line of travel of the carrier and in the same plane as the smaller area, and means for closing said valves after the passage of the carrier.

5. In an apparatus of the character described, a terminal, a valve located in said terminal and adapted to be opened for the passage of the carrier by the carrier, means for closing said valve after the passage of the carrier, a passage around said valve for the compressed air ahead of the carrier, a relief-valve normally closing said passage and adapted to be opened by the air compressed by the carrier, means for holding said relief-valve open, and mechanism for releasing said relief-valve to allow the same to close on the passage of the carrier from the terminal.

6. In an apparatus of the character described, a terminal, a valve located in said terminal and adapted to be opened for the passage of the carrier by the carrier, a passage around said valve for the compressed air ahead of the carrier, a relief-valve normally closing said passage and adapted to be opened by the air compressed ahead of the carrier, yielding means for holding said relief-valve closed, means for holding said relief-valve open, a second valve in the terminal located in the line of travel of the carrier and adapted to be opened for the passage of the carrier by the carrier, means for closing said second valve after the passage of the carrier, and mechanism operated by the movement of said second valve for releasing said relief-valve to allow the same to close on the passage of the carrier from the terminal.

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758,570. **CURTAIN-HOLDER.** JOHN D. TIEKEN, Piper City, Ill. Filed Aug. 21, 1903. Serial No. 170,250. (No model.)



*Claim.*—1. In a device of the character described a curtain having its upper edge suitably fastened to the frame, a rod adapted to hang at the bottom of said curtain and upon which said curtain is adapted to be rolled, spring-loops on the ends of said rod and pendants secured at the upper portion of said frame having knobs adapted to engage said loops.

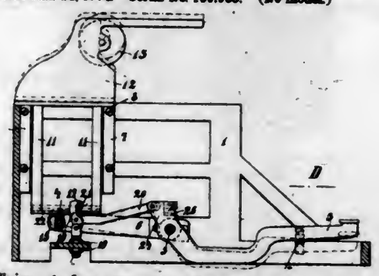
2. In a device of the character described a curtain having its upper edge suitably fastened to the frame, a rod adapted to hang at the bottom of said curtain and upon which said curtain is adapted to be rolled, spring-loops on the end of said rod and cords secured at the upper portion of said frame having knobs adapted to engage said loops.

3. In a device of the character described a curtain having its upper edge suitably fastened to the frame, a rod adapted to hang at the bottom of said curtain and upon which said curtain is adapted to be rolled, a pair of spring-fingers forming a loop attached to the ends of said rod and pendants secured at the upper portion of said frame having knobs adapted to engage said loops.

4. In a device of the character described a curtain having its upper edge suitably fastened to the frame, a rod adapted to hang at the bottom of said curtain and upon which said curtain is adapted to be rolled, a pair of spring-fingers forming a loop attached to the ends of said rod and cords secured at the upper portion of said frame having knobs adapted to engage said loops.

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758,571. **TYPE-WRITER.** CARL WASMUTH, Stettin, Germany. Filed Jan. 21, 1904. Serial No. 189,965. (No model.)



*Claim.*—1. In a type-writer, the combination with a frame for supporting the carriage and the platen, of means for guiding said frame vertically, a vertical locking-lever mounted on the machine-frame to turn, said frame having a part over which said vertical locking-lever can engage, a horizontal shaft mounted in the machine-frame to turn, two levers fastened on said horizontal shaft on the rear side and adapted to raise said frame, a first shift-key lever fastened on said horizontal shaft on the front side, a second shift-key lever loose on said horizontal shaft near said first shift-key lever and arranged for taking along with it the latter on being depressed and having a short arm, and a rod pivotally connecting said locking-lever with the short arm of said second shift-key lever.

2. In a type-writer, the combination with a frame for supporting the carriage and the platen, of means for guiding said frame vertically, two vertical locking-levers mounted on the machine-frame to turn, said frame having two parts over which said two vertical locking-levers can engage, a horizontal shaft mounted in the machine-frame to turn, two levers fastened on said horizontal shaft on the rear side and adapted to raise said frame, a first shift-key lever fastened on said horizontal shaft on one end on the front, a second shift-key lever loose on said horizontal shaft near said first shift-key lever and arranged for taking along with it the latter on being depressed and having a short arm, a rod pivotally connecting the one of said two vertical locking-levers with the short arm of said second shift-key lever, a short lever loose on the other end of said horizontal shaft, a part rigidly connecting said short lever with the short arm of said second shift-key lever, and a rod pivotally connecting the other of said two locking-levers with said short lever.

3. In a type-writer, the combination with a frame for supporting the carriage and the platen, of means for guiding said frame vertically, two vertical supports secured in the machine-frame and adjustable longitudinally, two vertical locking-levers mounted to turn on said two vertical supports, said frame having two parts over which said two vertical locking-levers can engage, a horizontal shaft mounted in the machine-frame to turn, two levers fastened on said horizontal shaft on the rear side and adapted to raise said frame, a first shift-key lever fastened on said horizontal shaft on one end on the front, a second shift-key lever loose on said horizontal shaft near said first shift-key lever and arranged for taking along with it the latter on being depressed and having a short arm, a rod pivotally connecting the one of said two vertical locking-levers with the short arm of said second shift-key lever, a short lever loose on the other end of said horizontal shaft, a part rigidly connecting said short lever with the short arm of said second shift-key lever, and a rod pivotally connecting the other of said two locking-levers with said short lever.

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758,572. **OIL-PRESS MAT.** ROBERT F. WEBB, New Orleans, La. Original application filed Sept. 10, 1901, Serial No. 74,906. Divided and this application filed June 26, 1902. Serial No. 113,261. (No model.)

*Claim.*—1. An oil-press cloth, consisting of warp-threads and weft-threads, the warp-threads being composed of hard, stiff, coarse and long animal hair, and the weft-threads being made of hard, stiff, coarse and long animal hair mixed with soft, pliable and long animal hair, said warp-threads being greatly in excess per square inch of the weft-threads, and in close proximity to each other so as to cover and protect said weft-threads, the warp-threads forming the selvage consisting of soft, pliable hair.

2. An oil-press mat or cloth consisting of warp-threads and weft-threads made of long animal hair, the warp-threads at the selvage being of soft hair, and the warp-threads in the body of the mat or cloth having coarse strong hair.



3. An oil-press cloth or mat consisting of hair warp-threads and hair weft-threads, the warp-threads in the body of the mat having hard, coarse and long animal hair, and the warp-threads at the selvage being of soft pliable hair, said weft-threads being thicker than the warp-threads.

4. An oil-press mat or cloth consisting of hair warp-threads and hair weft-threads, the warp-threads forming the selvage consisting of soft pliable hair.

5. An oil-press mat or cloth, consisting of hair warp-threads and hair weft-threads, the warp-threads greatly exceeding the weft-threads in number per square inch, and said warp-threads being of hair which is hard, coarse and strong except at the selvage, said selvage warp-threads having soft, pliable hair.

6. An oil-press mat consisting of warp-threads and weft-threads made of long animal hair, said weft-threads being composed of hair of medium grade, and the warp-threads forming the selvage being of soft pliable hair, said warp-threads exceeding the weft-threads in number per square inch.

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758,573. **OIL-PRESS MAT.** ROBERT F. WEEK, New Orleans, La. Original application filed Sept. 10, 1901, Serial No. 74,906. Divided and this application filed June 26, 1902. Serial No. 113,264. (No model.)

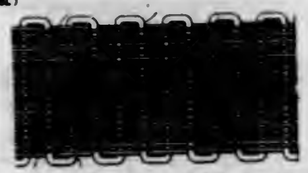


*Claim.*—1. An oil-press mat or cloth consisting of warp-threads and weft-threads made of long animal hair, said warp-threads being composed of soft, pliable hair, the warp-threads at the middle of the mat being made of longer hair than the warp-threads at the selvage, and the weft-threads made of hair of medium grade, the selvage of the mat being formed by said warp-threads of soft, short pliable hair.

2. An oil-press cloth consisting of warp-threads and weft-threads made of long animal hair, said warp-threads being composed exclusively of soft, pliable hair, the warp-threads at the middle of the cloth being made of longer hair than the warp-threads at the selvage, and the weft-threads having hard, stiff and coarse hair mixed with soft, pliable hair, the selvage of the mat being formed by said warp-threads of soft pliable hair.

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758,574. **OIL-PRESS MAT.** ROBERT F. WEEK, New Orleans, La. Original application filed Sept. 10, 1901, Serial No. 74,906. Divided and this application filed June 26, 1902. Serial No. 113,265. (No model.)



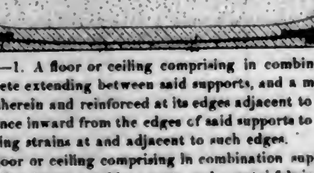
*Claim.*—1. An oil-press mat or cloth made entirely of long animal hair and consisting of warp and weft threads, said weft-threads being composed exclusively of soft, pliable hair and the warp-threads greatly exceeding the weft-threads in number per square inch.

2. An oil-press mat consisting of warp-threads and weft-threads both composed of long animal hair, said warp-threads consisting of hard, stiff and coarse hair mixed with soft pliable hair, and the weft-threads consisting of soft pliable hair; said warp-threads exceeding in number per square inch the weft-threads, and arranged in close proximity to each other so as to conceal and protect the weft-threads; the warp-threads forming the selvage consisting of soft pliable hair, and said weft-threads of soft pliable hair being thicker than the warp-threads.

3. An oil-press mat consisting of hair warp-threads and hair weft-threads, the warp-threads being composed of hard, stiff and coarse hair mixed with soft, pliable hair, and the weft-threads being composed of soft, pliable hair, the selvage of the mat being formed by warp-threads of soft, pliable hair.

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758,575. **OIL-PRESS MAT.** ROBERT F. WEEK, New Orleans, La. Original application filed Sept. 10, 1901, Serial No. 74,906. Divided and this application filed June 26, 1902. Serial No. 113,266. (No model.)



*Claim.*—An oil-press mat or cloth consisting of warp-threads and weft-threads, each composed exclusively of long hair derived from animals' tails and manes, which hair is soft and pliable; the warp-threads exceeding the weft-threads in number per square inch, and the weft-threads being thicker than the warp-threads.

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758,576. **FENCE-BRACE.** ABNER W. WHALEY, Morocco, Ind. Filed Apr. 17, 1903. Serial No. 153,086. (No model.)



*Claim.*—1. A brace of the class described, adapted for interposition between a fence-post and stretcher member and having means for engagement with said parts, said brace being bent laterally in a horizontal plane adjacent to its point of engagement with the post and extended thence in substantially parallel relation with the longitudinal axis of the fence, whereby a weaver traveling on the latter may pass the post and work freely between the same and the stretcher.

2. A brace of the class described, adapted for interposition between a fence-post and stretcher member and having a socketed head for engagement with the latter and a sharpened end for engaging the former, said brace being bent laterally in a horizontal plane adjacent to its point of engagement with the post and extended thence in substantially parallel relation with the longitudinal axis of the fence, whereby a weaver traveling on the latter may pass the post and work freely between the same and the stretcher.

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758,577. **FLOOR OR CEILING.** WILLIAM H. WIGHT, New York, N. Y. Filed Mar. 13, 1903. Serial No. 147,693. (No model.)



*Claim.*—1. A floor or ceiling comprising in combination supports, concrete extending between said supports, and a metal fabric embedded therein and reinforced at its edges adjacent to and a sufficient distance inward from the edges of said supports to effectively resist shearing strains at and adjacent to such edges.

2. A floor or ceiling comprising in combination supports, concrete extending between said supports, and a metal fabric embedded therein and bent upwardly and back at an edge adjacent to one of said supports to provide a double reinforce to effectively resist shearing strains at such edge.

3. A floor or ceiling comprising in combination supports, concrete extending between said supports, and a metal fabric embedded therein and reinforced at its edges adjacent to said supports to effectively resist shearing strains at such edges, said fabric being in a single sheet extending the entire length of said supports.

4. A floor or ceiling comprising in combination supports, concrete extending between said supports, and a metal fabric embedded therein, said fabric being in a single sheet extending the entire length of said supports and being bent back at an edge adjacent to one of said supports to effectively resist shearing strains at such edge and to fit exactly the width of said bay.

5. A floor or ceiling comprising in combination, a pair of I-beams forming a comparatively long and narrow bay between them, concrete extending between said beams, and a metal reinforce embedded therein consisting of a fabric formed in a comparatively long sheet of approximately the width of said bay so as to permit the ready setting in place of a large area of fabric and to form a large area of flooring in substantially one continuous structure, said sheet resting on the lower flanges of said beams and being bent back horizontally at an edge adjacent to one of said flanges to effectively resist shearing strains at such edge and to fit exactly the width of said bay.

6. A floor or ceiling comprising in combination, a pair of supports forming a comparatively long and narrow bay between them, concrete extending between said supports, and a metal reinforce embedded therein consisting of a fabric formed in a comparatively long sheet of approximately the width of said bay so as to permit the ready setting in place of a large area of fabric and to form a large area of flooring in substantially one continuous structure, and said sheet of fabric being reinforced at its edges adjacent to said supports to effectively resist shearing strains at such edges.

7. A floor or ceiling comprising in combination I-beams, concrete extending between said beams, and a metal fabric resting on the lower flanges of said beams and embedded in said concrete, said fabric being bent upward and backward at an edge adjacent to one of said beams to effectively resist shearing strains at such edge.

8. A floor or ceiling comprising in combination I-beams, concrete extending between said beams, a metal fabric resting on the lower flanges of said beams and embedded in said concrete, said fabric being reinforced at its edges adjacent to said beams to effectively resist shearing strains at such edges, and means for supporting said fabric from the tops of said beams.

9. A floor or ceiling comprising in combination I-beams, concrete extending between said beams, a metal fabric resting on the lower flanges of said beams and embedded in said concrete, said fabric being reinforced at its edges adjacent to said beams to effectively resist shearing strains at such edges, and stays extending over the tops of said beams and attached to the fabrics at each side of said beams.

10. A floor or ceiling comprising in combination supports, concrete extending between said supports, and sheets of metal fabric separated from each other vertically and embedded in said concrete and having their meshes staggered relatively to each other, at least one of said sheets being reinforced at its edges adjacent to said supports to effectively resist shearing strains at such edges.

11. A floor or ceiling comprising in combination floor-supports, a permanent centering, concrete extending between said floor-supports and resting on said centering, and a reinforce embedded in said concrete.

12. A floor or ceiling comprising in combination floor-supports, a permanent centering of fine-mesh fabric, concrete extending between said floor-supports and resting on said centering, and a reinforce embedded in said concrete.

13. A floor or ceiling comprising in combination I-beams, a permanent centering supported from the lower flanges of said I-beams, concrete extending between said floor-supports and resting on said centering, and a reinforce embedded in said concrete and consisting of a fabric formed in a comparatively long sheet of approximately the width of the bay between said I-beams so as to permit the ready setting in place of a large area of fabric and to form a large area of flooring in substantially one continuous structure.

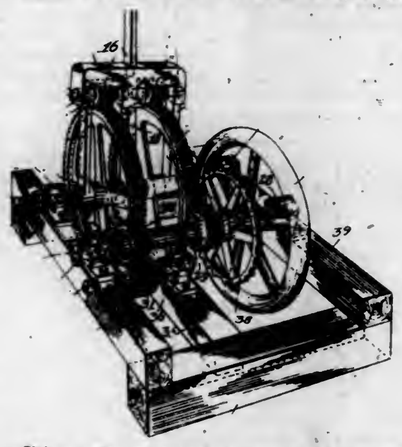
14. A floor or ceiling comprising in combination floor-supports, a permanent centering, concrete extending between said floor-supports and resting on said centering, transverse bars extending between said supports, and a reinforcing fabric embedded in said concrete resting on said transverse bars and drawn down taut between said transverse bars.

15. A floor or ceiling comprising in combination floor-supports, a permanent centering, a reinforcing fabric supported above said centering, and connected thereto so as to draw said fabric down taut and to sustain said centering, and concrete extending between said floor-supports, resting on said centering and embedding said reinforcing fabric.

16. In combination with a floor or ceiling, a centering comprising supporting-bars, a flexible floor-supporting portion resting directly on and supported by said bars, and additional means between said bars for supporting said flexible portion intermediate the bars.

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758,578. **MECHANICAL MOVEMENT.** FRANK A. YOKUM, Seattle, Wash. Filed Mar. 21, 1903. Serial No. 148,906. (No model.)




*Claim.*—1. In a mechanical movement of the nature indicated; a driver comprising rotatably-mounted power-transmitting wheels, a reciprocally-rotative carrier mounted concentric with said wheels, driving-wheels rotatably mounted on said carrier in engagement with said transmitting-wheels, and transposable means to lock said driving-wheels from rotation in one direction.

2. In a mechanical movement, a pair of power-wheels, an oscillatory carrier common to both wheels, means for transmitting motion from the carrier to the wheels, and means carried by the carrier and acting in conjunction with the transmitting means whereby the power-wheels may be operated independently or simultaneously.

3. In a mechanical movement of the nature indicated; the combination of a rotatably-mounted power-transmitting wheel, a reciprocally-rotative carrier mounted concentric with said wheel, an axle rotatably mounted in said carrier, a driving-wheel fixed to said axle in engagement with said transmitting-wheel, an axle-locking roller disposed longitudinally said axle in contact therewith, there being oppositely-disposed seats for said roller opening to said axle and formed with the back side walls extending upwardly and curving toward said axle.

4. In a motor of the nature indicated; a driver comprising rotatably-mounted power-transmitting wheels, a reciprocally-rotative carrier mounted concentric with said wheels, driving-wheels engaged with said transmitting-wheels, independently-rotatable driving-wheel axles journaled on said carrier, an axle-locking roller for each of said axles, there being oppositely-disposed seats for said rollers formed in the wall of the bore of the axle-journals and comprising recesses formed with semicircular bases adapted to removably receive said rollers in contact with said axles and upwardly-extending back side walls curving inwardly toward said axles.

5. In a motor of the nature indicated, a driver comprising a shaft 12, power-transmitting wheels 11 rotatably mounted on said shaft, a reciprocative carrier 17 rotatably mounted on said shaft, driving-wheels 16 engaged with said transmitting-wheels, axles for the driving-wheels journaled on said carrier, there being oppositely-disposed roller-receiving seats 25 in the walls of the bores of the journals of said axles, and axle-locking rollers 24 removably fitting in said seats.

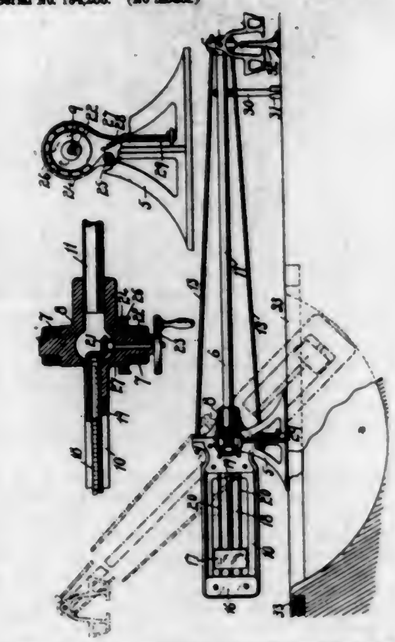
6. In a motor of the nature indicated; a driver comprising a supported shaft, power-transmitting wheels comprising spur-gears rotatively mounted on said shaft, driving-wheels comprising spur-pinions engaged with the teeth of said transmitting-wheels, a reciprocal-carrier comprising a head having notches adapted to receive said pinions and having apertures in the end walls and radially-dis-

posed arms secured to said head and having bearings at the inner ends on said shaft, an axle for each of said driving-wheels rotatably mounted in said apertures, there being oppositely-disposed roller-seats in the walls of the outer of said apertures each formed with a semicircular base and an upwardly-extending back side wall curving toward said aperture, and an axle-locking roller for each pair of said seats.

7. A motor of the nature indicated, comprising rotatably-mounted power-transmitting wheels, a reciprocally-rotative carrier mounted concentric with said wheels, driving-wheels independently rotatably mounted on said carrier in engagement with said transmitting-wheels, transposable means to lock said driving-wheels from rotation in one direction, a rotatably-mounted main shaft, a pinion fixed on said shaft in engagement with one of said power-transmitting wheels, a second pinion fixed on said main shaft and a rotatably-mounted intermediate pinion engaged with said second pinion and with the other transmitting-wheel.

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**758,579. SWING. GEORGE P. ARMSTRONG, Woodridge, N. J., assignor to Frederick W. Spencer, New York, N. Y. Filed Dec. 8, 1903. Serial No. 184,253. (No model.)**



*Claim.*—1. In a swing which consists of a lever of the first class, provided with an adjustable weight at one end, and a seat at the other, adjusting mechanism for such weight operated by means passing through the axle of the lever.

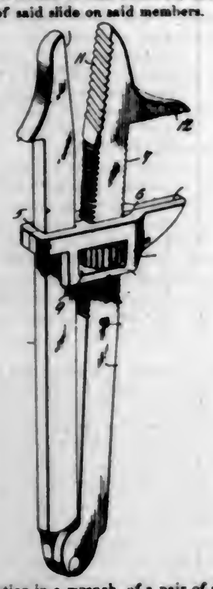
2. In a swing which consists of a lever of the first class, provided with an adjustable weight at one end and a seat at the other end, means whereby the said weight may be adjusted by hand applying mechanism located at the journal of the said lever.

3. In a swing which consists of a lever of the first class, provided with a weight at one end and a seat at the other, of a friction-brake engaging the said lever at its axle, to stop the travel of the lever at any point of its course, substantially as described.

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**758,580. WRENCH. JAMES S. BARCLAY, Marion, Ind. Filed July 13, 1903. Serial No. 166,374. (No model.)**

*Claim.*—1. The combination in a wrench of a pair of members pivoted at one end and having diverging jaws at their free ends, one of said members being threaded intermediate of its ends and provided beyond the threaded portion with a lateral projection adapted to form a jaw, a slide having eyes to permit the passage of said pivoted members, and a lateral projection forming a jaw adapted to cooperate with the jaw formed by the lateral projection on one of said members, a nut rotatably carried by said slide and in engagement with the threads on one of said members, and means for limiting the movement of said slide on said members.



2. The combination in a wrench, of a pair of members pivoted at one end and having their free ends beveled to form diverging jaws and the pivoted ends adapted to serve as a handle, one of said members having a lateral projection also adapted to form a jaw, a slide mounted on both of said pivoted members and provided with a lateral projection adapted to form a jaw to cooperate with the jaw formed by the lateral projection on one of the pivoted members, said slide being adapted when moved toward the free end of said pivoted members to draw said members together and to approximate the jaws formed by the projection on one of said members and the projection on the slide, and means for adjusting the position of the slide on said members.

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**758,581. DUST-PROOF JOURNAL FOR CULTIVATOR-WHEELS. NATHANIEL S. BARGER, St. Joseph, Mo. Original application filed May 16, 1903, Serial No. 157,567. Divided and this application filed Oct. 15, 1903. Serial No. 177,106. (No model.)**



*Claim.*—1. The combination of a wheel, an open-ended sleeve secured centrally therein, a journal-box rigidly mounted in said sleeve said box being closed at its outer end and open at its inner end and provided with an outward-extending continuous radial flange at said inner end, a supporting-standard, a spindle thereon fitting within the journal-box, a dust-guard and retaining-yoke secured to the supporting-standard and formed with a groove in its under side to receive the upper part of the radial flange of the journal-box.

2. The combination of a wheel, an open-ended sleeve secured centrally therein, a journal-box rigidly mounted in said sleeve said box being closed at its outer end and open at its inner end and provided with an outward-extending continuous radial flange at said inner end, a dust-guard and retaining-yoke adapted to receive the upper portion of the flange of the journal-box and to be vertically adjusted on the supporting-standard.

3. The combination of a wheel, a journal-box secured thereto and provided with an outward-extending continuous radial flange at its inner end, a dust-guard and retaining-yoke formed with a groove in its under side and adapted to receive the upper half of said radial flange, and means for securing said dust-guard to the wheel-standard.

4. The combination of a wheel, an open-ended sleeve secured centrally therein, a journal-box rigidly mounted in said sleeve and closed at its outer end and open at its inner end, an outward-extending continuous radial flange being formed thereon at said inner end, a supporting-standard, a spindle thereon fitting within the journal-box, a semicircular dust-guard and retaining-yoke secured to the supporting-standard and formed with a groove in its under side to receive the upper part of the radial flange of the journal-box, and means for detachably securing said dust-guard to the supporting-standard.

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**758,582. DUST-PROOF JOURNAL FOR CULTIVATOR-DISKS. NATHANIEL S. BARGER, St. Joseph, Mo. Original application filed May 16, 1903, Serial No. 157,567. Divided and this application filed Oct. 15, 1903. Serial No. 177,107. (No model.)**



*Claim.*—1. The combination of a cultivator-disk, a spindle secured rigidly at one of its ends to said disk, a journal-box loosely mounted on said spindle, a dust-cap secured rigidly to the free end of the spindle and embracing one end of the journal-box, a bearing-block embracing the upper part of the journal-box and formed with a dust-excluding flange covering the inner end of the journal-box, a supporting-arm and means for clamping together the journal-box, bearing-block and supporting-arm.

2. The combination of a cultivator-disk, a hub secured to the center thereof, a spindle rigidly secured in said hub, a journal-box loosely mounted on said spindle and abutting against the inner end of the hub a dust-cap on the free end of the spindle and provided with a dust-excluding flange which covers the outer end of the journal-box, a bearing-block embracing the upper part of the journal-box and formed with a dust-excluding flange which covers the joint between the hub and the journal-box, a supporting-arm and a clamping-yoke adapted to secure together the journal-box, bearing-block and supporting-arm.

3. The combination of a cultivator-disk, a hub secured to the center thereof, a spindle rigidly secured at one of its ends in said hub, a journal-box loosely mounted on said spindle, a dust-cap detachably secured to the outer end of the spindle and provided with a dust-excluding flange covering the outer end of the journal-box, a bearing-block embracing the upper part of the journal-box and provided with a dust-excluding flange covering the joint between the journal-box and the hub said box being formed with a circular series of serrations on its upper surface, a supporting-arm formed with a corresponding series of serrations, and a clamping-yoke adapted to secure together the journal-box, bearing-block and supporting-arm.

4. The combination of a cultivator-disk, a hub secured to the center thereof, a spindle secured at one of its ends in said hub, a journal-box loosely mounted on said spindle, a dust-cap detachably secured to the outer end of the spindle and provided with an inward-extending annular dust-excluding flange embracing and covering the outer end of the journal-box, a bearing-block embracing the upper part of the journal-box and provided with an inward-extending dust-excluding flange covering the joint between the journal-box and the hub, a supporting-arm, a ring-like clamping-yoke extending around the journal-box and formed with a threaded stem extending through the bearing-block and supporting-arm, and a nut screwed on the end of said stem whereby the journal-box and bearing-block may be clamped to the supporting-arm.

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**758,583. MATCH-PACKAGE. JAMES A. R. CRISWELL, New York, N. Y. Original application filed Dec. 18, 1903, Serial No. 185,676. Divided and this application filed Mar. 29, 1904. Serial No. 200,538. (No model.)**



*Claim.*—1. A device of the character described, comprising a single piece of flexible material bent or folded upon itself having its outer ends free and forming a book-like case or cover with two opposed backs or parts, a match-retaining device clamping and holding the matches individually, the said retaining device being shorter than the cover-backs and secured permanently and rigidly to the inner faces thereof adjacent to the fold to permit said backs to be spread apart or flexed to permit the removal of the matches.



2. A device of the character described, comprising a single piece of flexible material bent or folded upon itself and having its outer ends free and forming a book-like case or cover with two opposed backs or parts, a match-retaining device consisting of a corrugated strip forming individual cells which clamp and hold the matches individually, the said retaining device being shorter than the cover-backs and secured permanently and rigidly to the inner faces thereof adjacent to the fold to permit said backs to be spread apart or flexed to permit the removal of the matches.

3. A device of the character described, comprising a single piece of flexible material bent or folded upon itself and having it outer ends free and forming a book-like case or cover with two opposed backs or parts, a match-retaining device having backing or reinforcing strips and a corrugated strip secured between these reinforcing-strips to provide individual cells adapted to individually clamp and hold each match, the said retaining device being shorter than the cover-backs and secured permanently and rigidly to the inner faces thereof adjacent to the fold to permit said backs to be spread apart or flexed to permit the removal of the matches.

4. As a new article of manufacture, a match-holding package comprising a single rectangular piece of flexible material bent or folded upon itself at one part only to form a book-like case or cover with two opposed backs or parts of substantially equal length and normally held in substantially parallel relation or in a closed position, a match-retaining device having backing or reinforcing strips and a corrugated strip secured between these reinforcing-strips to provide individual cells for the matches adapted to individually clamp and hold each match, the said retaining device being relatively shorter than the backs and secured permanently to the inner faces thereof adjacent to the fold to permit said backs to be spread apart or flexed to permit the removal of the matches and to normally retain the backs in a closed position or close to the matches, and a match-striking surface on the case adjacent to the fold.

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**758,584. COMPENSATING DEVICE. WILLIAM Y. CRUIKSHANK, Freeland, Pa., assignor of one-half to John C. Cruikshank and James K. Cruikshank, Freeland, Pa. Filed Oct. 1, 1903. Serial No. 176,314. (No model.)**

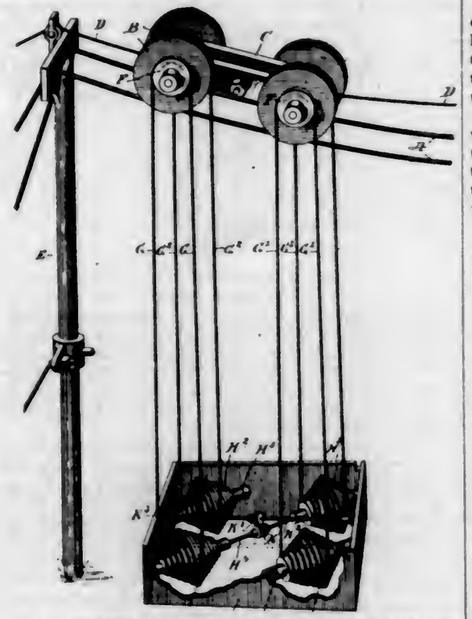
*Claim.*—1. A compensating device for a platform suspended from a carriage traveling over suspension-cables, consisting of a pulley on the carriage and rotating with the carriage-wheels, a rope extending over the pulley, and a compensating drum journaled in the platform-support and around which winds the said rope, as set forth.

2. A compensating device for a platform suspended from a carriage traveling over suspension-cables, consisting of a pulley on the carriage and rotating with the carriage-wheels, a rope extending over the pulley, and a compensating drum journaled in the platform-support and around which winds the said rope, the said compensating drum being disposed diagonally and in the form of a double cone, grooved spirally at its peripheral face, as set forth.

3. A compensating device for a platform suspended from a carriage traveling over suspension-cables, consisting of a plurality of compensating drums journaled in the platform-support, and ropes passing around the compensating drums and over pulleys on the carriage, and rotating in unison with each other and with the carriage-wheels, as set forth.

4. A compensating device for a platform suspended from a carriage traveling over suspension-cables, consisting of a plurality of compensating drums journaled in the platform-support, and ropes passing around the compensating drums and over pulleys on the carriage, and rotating in unison with each other and with the carriage-

wheels, the said compensating drums being disposed diagonally, as set forth.



5. A compensating device for a platform suspended from a carriage traveling over suspension-cables, consisting of a plurality of compensating drums journaled in the platform-support, ropes passing around the compensating drums and over pulleys on the carriage, and rotating in unison with each other and with the carriage-wheels, a platform slidable transversely on its support, and a gearing actuated from one of the drum-shafts and connected with the platform, to shift the latter transversely, as set forth.

6. A compensating device for a platform suspended from a carriage traveling over suspension-cables, consisting of a plurality of compensating drums journaled in the platform-support, ropes passing around the compensating drums and over pulleys on the carriage, and rotating in unison with each other and with the carriage-wheels, a platform slidable transversely on its support, a gearing actuated from one of the drum-shafts and connected with the platform, to shift the latter transversely, the said gearing consisting of a shaft extending longitudinally and journaled in the platform-support, a gearing connecting one of the drum-shafts with the said longitudinal shaft, pinions on the longitudinal shaft, and racks on the said platform, extending transversely and in mesh with the said pinions, as set forth.

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**758,585. CORSET-STAY.** CLARA H. CUNNINGHAM, Washington, D. C., assignor of one-half to Joseph R. Edson, Washington, D. C. Filed Oct. 28, 1903. Serial No. 178,317. (No model.)



*Claim.*—1. A corset fastening stay or busk having a portion thereof, above the waist-line, inclined or deflected, laterally.

2. A corset fastening stay or busk having a portion thereof, above the waist-line, inclined or deflected, laterally, in the direction of its opposite stay.

3. A corset fastening stay or busk having a portion thereof below the waist-line, extended downward in a right line, and that portion above said line inclined or deflected upward out of a right line, laterally.

4. Corset busks or fastening-stays, each having below the waist-line a downward-extended right-line edge, and extended or deflected above that line in a laterally-inclined direction, said busks or stays having their upper inclined portions adapted to initially cross each other and finally to form a central outward and forward upper edge peak in the front portion of the corset.

5. Corset busks or stays, each having below the waist-line a downward right-line edge, and deflected above that line upward, laterally, and having fastenings for effecting connection therebetween, said upper deflected portions crossing each other in their initial position and peaked at their upper uniting edges outward and upward, about centrally of the upper edge of the corset.

6. In a corset, corset busks or stays, each having below the waist-line a downward right-line edge, and deflected above that line upward, laterally, and having fastenings for effecting connection therebetween, said upper deflected portions crossing each other in their initial position and peaked at their upper uniting edges outward and upward, about centrally of the upper edge of the corset.

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**758,586. RAIL-JOINT.** GEORGE W. DICKEY, Chicago, Ill. Filed July 22, 1903. Serial No. 166,571. (No model.)



*Claim.*—1. In a rail-joint, the combination of two railway-rails having their free ends meeting and arranged in continuation each of the other, sleeper mechanism upon which such railway-rails rest, an anchor-bar arranged below such sleeper mechanism in engagement with the under side thereof, and mechanism connecting the anchor-bar to the railway-rails for holding the railway-rails and anchor-bars rigidly in engagement with the sleeper mechanism and in rigid relation to each other, substantially as described.

2. In a rail-joint, the combination of a pair of railway-rails arranged in continuation each of the other and with their ends meeting, a plurality of railway-ties upon which such rails rest, an anchor-bar arranged under such railway-ties in engagement with the under side thereof, and mechanism extending from the anchor-bar to the base-flanges of the rails connecting such parts and holding them in rigid engagement with the upper and lower sides of the ties, respectively, substantially as described.

3. In a rail-joint, the combination of a plurality of railway-ties, a pair of railway-rails laid thereon each in continuation of the other with their meeting ends above one of such ties, an anchor bar or plate passed under a plurality of such ties and in engagement with the lower side thereof, and clamp mechanism securing the base-flanges of the railway-rails and anchor-bar together and holding them in fixed engagement with the upper and lower sides of the ties, respectively, substantially as described.

4. In a rail-joint, the combination of a plurality of railway-ties, a pair of rails laid thereon each in continuation of the other and with their ends meeting, an anchor-bar having its lower outer edges beveled and passed below a plurality of such ties or sleepers, and clamp mechanism engaging the beveled surfaces of the base-flanges of the rails and the anchor-bar to secure and hold such parts in position, substantially as described.

5. In a rail-joint, the combination of a plurality of railway ties or sleepers, a pair of railway-rails laid thereon each in continuation of the other and with their free ends meeting, angle-plates securing the adjacent ends of the railway-rails together, an anchor-bar provided with a beveled lower surface passed below three of such railway-ties, clamp mechanism engaging the beveled surface of the base-flanges of the railway-rails and anchor-bar, and bolt mechanism for securing such clamps to the base of the rails and anchor-bar, substantially as described.

6. In a rail-joint, the combination of a pair of railway-rails, angle-bars connecting the ends thereof, sleepers upon which such railway-rails are mounted, an anchor-bar arranged below such sleepers in engagement with the under side thereof, clamps extending from the railway-rails to the anchor-bar for holding them in rigid engagement with the upper and lower surfaces of the sleepers, respectively, and means for holding such clamps in engagement with the railway-rails and anchor-bar, substantially as described.

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**758,587. COIN-CONTROLLED VENDING-MACHINE.** WILLIAM T. DREW, New York, N. Y., assignor of one-half to James F. Reid, New York, N. Y. Filed Dec. 9, 1902. Serial No. 134,565. (No model.)



*Claim.*—1. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, and means to open and close said valve comprising a wheel or carriage, a non-rotative member carried by said carriage, means to impart to said carriage rotary and rectilineal movements to open the valve and a rectilineal movement only in a reverse direction to close the valve.

2. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a wheel or carriage engaging said worm, a non-rotative yoke carried by said carriage and connected to said valve, and means actuated by the rotation of the coin-receptacle to impart rotary and rectilineal movements to said carriage on said worm.

3. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a pinion free to rotate about the journal of said worm and actuated by the rotation of the coin-receptacle, a frame connected to said pinion, a wheel or carriage carried by said frame and operatively connected to said gas-inlet valve and to said worm, substantially as described.

4. In a coin-controlled vending apparatus the combination of two independently-rotatable members having provision for rotative connection by a coin, a gas-inlet valve, a worm, a frame supporting a wheel or carriage which engages said worm, means for positively rotating said frame and advancing said wheel on the worm, and a non-rotative yoke carried by said wheel whereby said valve may be opened upon the rotation of the coin-receptacle.



5. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a wheel or carriage engaging said worm, means actuated by the rotation of the coin-receptacle to impart rotary and rectilineal movements to said carriage on said worm, a band loosely mounted on said carriage and adapted to partake only of the rectilineal movements of the carriage and a suitable connection between said band and the gas-inlet valve whereby said valve may be opened upon the rotation of the coin-receptacle.

6. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a wheel or carriage engaging said worm and connected to said gas-inlet valve by a non-rotative member, means actuated by the rotation of the coin-receptacle to impart rotary and rectilineal movements to said carriage on said worm and means actuated by the meter registering mechanism for rotating said worm to reverse the rectilineal movement of said carriage.

7. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a wheel or carriage engaging said worm, means actuated by the rotation of the coin-receptacle to impart rotary and rectilineal movements to said carriage on said worm, a rock-shaft, an arm connecting the rock-shaft with said valve and an arm mounted on said rock-shaft adapted to be controlled by the rectilineal movement of said carriage whereby the opening of the valve is effected by the rotation of the coin-receptacle.

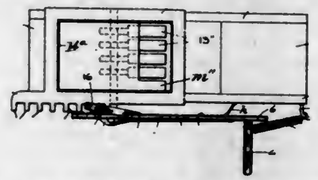
8. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a pinion free to rotate about the journal of said worm and actuated by the rotation of the coin-receptacle, a frame connected to said pinion, a wheel or carriage carried by said frame and operatively connected to said worm, a band loosely mounted on the periphery of said wheel and having a suitable connection with said gas-inlet valve.

9. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a rock-shaft having a connection to said valve, an arm having a shoulder thereon and secured to said shaft, a wheel carrying a non-rotative yoke, a projecting pin on said yoke adapted to engage said arm and shoulder and means to impart to said carriage rotary and rectilineal movements to open the valve and a rectilineal movement only in a reverse direction to close the valve.

10. In a coin-controlled vending apparatus the combination of a rotative coin-receptacle, a gas-inlet valve, a worm, a wheel or carriage engaging said worm and connected to said gas-inlet valve, a pinion intermediate the coin-receptacle and said worm and mounted loosely on the journal of said worm whereby rotary and rectilineal movements may be imparted to said carriage on said worm upon the rotation of the coin-receptacle, a gear-wheel secured to said worm and means actuated by the meter registering mechanism to rotate said worm during the consumption of gas to thereby effect the closing of the gas-inlet valve.

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**758,588. CIGAR-VENDING MACHINE.** THEODORE ERICKSON and JOHN J. FAGAN, Charlevoix, Mich. Filed Feb. 3, 1903. Serial No. 141,686. (No model.)



*Claim.*—1. A vending-machine comprising a movable cellular holder adapted to receive a single article in each compartment thereof, a stationary plate beneath said holder, a series of drops each alining with one row of cells, a shaft, means for giving said shaft a step-by-step rotative movement, and a series of notched disks on said shaft normally holding said drops up and by their rotation successively releasing said drops.

2. A vending-machine comprising a movable cellular holder adapted to receive a single article in each compartment thereof, a stationary plate beneath said holder, a series of drops each alining with one row of cells, a shaft, means for giving said shaft a step-by-step rotative movement, and a series of notched disks on said shaft normally holding said drops up and by their rotation successively

releasing said drops, and means for moving said rack forward one space at each complete rotation of said shaft.

3. A vending-machine comprising a movable cellular holder adapted to receive a single article in each compartment thereof, a stationary plate beneath said holder, a series of drops each alining with one row of cells, a shaft, means for giving said shaft a step-by-step rotative movement, and a series of notched disks on said shaft normally holding said drops up and by their rotation successively releasing said drops, a toothed rack on said holder, and a finger engaging the teeth of the rack to advance it one space at each revolution of the shaft.

4. In a vending-machine, the combination with a movable cellular holder, a stationary plate adapted to support the contents of said cells, a series of drops each acting as a continuation of said plate for a particular row of cells, means for successively releasing said drops, and means for intermittently advancing said holder.

5. In a vending-machine, the combination with a movable cellular bottomless holder, a separate stationary support for the articles therein, and individual drops for the longitudinal rows of compartments in said holder, of means for releasing said drops singly and successively and means for intermittently advancing the holder by single compartment spaces after the delivery of all the articles in a transverse row of compartments.

6. A holder for vending-machines, comprising a frame having cells formed by cross-bars, and a rack attached to said frame.

7. A holder for vending-machines comprising a frame having a rack attached thereto and a movable structure adapted to fit in said frame, having cells formed by cross-bars.

8. The combination with a holder for vending-machines, comprising a frame having a rack attached and a removable cellular structure adapted to fit in said frame, of means for singly delivering the contents of the compartments in a transverse row, and means for then advancing the holder one space.

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**758,589. LIGHT-CONTROLLING SYSTEM.** HARRY FALTERMAYER, Philadelphia, Pa., assignor of one-half to William J. Caskey, Philadelphia, Pa. Filed Oct. 2, 1903. Serial No. 175,492. (No model.)



*Claim.*—1. The combination of a switch including a plurality of contacts, a plurality of current-receiving devices connected to the switch, a plurality of pieces for said switch constructed to coact with the contacts thereof to permit only predetermined ones of said receiving devices to be supplied with current, and means for selecting certain of said pieces and presenting the same to the switch, substantially as described.

2. The combination of a switch including a plurality of contacts, a plurality of current-receiving devices connected to the switch, a series of plates of insulating material having openings placed to coact with predetermined ones of said switch-contacts to permit certain of the receiving devices in connection therewith to receive current, and means for causing others than successive ones of said plates to be presented to the switch, substantially as described.

3. The combination of a switch including a plurality of contacts, a plurality of current-receiving devices connected to said switch, a plurality of plates for the switch having openings placed to coact with certain predetermined ones of said contacts to permit the receiving devices in connection therewith to receive current, and selecting mechanism operative upon the plates to cause any predetermined succession of the same to be presented to the switch, substantially as described.

4. The combination of a switch including a plurality of contacts, a series of current-receiving devices connected to the switch, a series of perforated plates coacting with said contacts, mechanism including means for moving the perforated plates and mechanism for stopping said plate-moving means at irregular intervals, substantially as described.

5. The combination of a switch including a plurality of contacts, a series of current-receiving devices connected to the switch, a series of perforated plates coacting with said contacts for determining the ones of said devices to be supplied with current, a master-switch and means governed by said master-switch for automatically presenting any one of said plates to the said first switch, substantially as described.

6. The combination of a switch including a plurality of contacts, a series of current-receiving devices connected to said switch, a series of perforated plates coacting with said contacts for determining the ones of said devices to be supplied with current, a master-switch and means governed by said master-switch for automatically presenting any one of said plates to the said first switch, with means for automatically operating said first switch, substantially as described.

7. The combination of a switch having connected to it a plurality of current-receiving devices, perforated plates for said switch, means on the switch coacting with the perforations of said plates, means for presenting said plates to the switch in irregular order, and means for determining the order of such presentation of the plates, substantially as described.

8. The combination of a switch having connected to it a plurality of current-receiving devices, perforated plates coacting with said switch for permitting current to flow to certain ones only of said devices, means for presenting different ones of said plates to the switch, with other means for controlling the action of said switch, said latter means also having a plurality of conductors and being adapted to receive perforated plates, substantially as described.

9. The combination of a switch having connected to it a plurality of current-receiving devices, perforated plates coacting with said switch for permitting current to flow only to certain ones of said devices, means for presenting different ones of said plates to the switch, with other means for controlling the action of said switch, said controlling means including a master-switch having a plurality of contacts adapted to receive perforated plates, substantially as described.

10. The combination of a switch having a plurality of contacts, a controller having magnets connected to said contacts, movable contacts controlled by said magnets, a circuit including a motor controlled by the movable contacts, perforated plates movable by the motor and an automatic switch for the reception of said plates, with means for actuating said latter switch, substantially as described.

11. A master-switch, a motor having means whereby its starting is caused to be controlled by said switch, a series of controlling-plates movable by the motor, a switch constructed to receive said plates, with means for stopping the motor when a predetermined one of said plates is presented to the said switch, substantially as described.

12. A master-switch, a motor having means whereby its starting is caused to be controlled by said switch, a series of controlling-plates movable by the motor, a switch constructed to receive said plates, with means for stopping the motor when a predetermined one of said plates is presented to the second switch and means for automatically operating said latter switch while the motor is out of operation, substantially as described.

13. A switch having a plurality of contacts, a series of current-receiving devices connected to the switch, and a plate or plates having openings for the passage of predetermined ones of said switch-contacts, with mechanism including a plate-selecting device and electrical operating means therefor, for presenting any one of said plates to said switch, substantially as described.

14. A switch including a plurality of contacts, a series of current-receiving devices connected to said switch and a plate or plates having openings for the passage of predetermined ones of said switch-contacts, with means for automatically presenting said plates to the switch, a mechanism coacting with the plates for controlling said presenting means and a device for causing operation of said mechanism, substantially as described.

15. A switch including a plurality of projecting contacts, a series of current-receiving devices connected with the switch, a plate or plates having openings for the passage of certain of the switch-contacts, with a motor for moving said plates through the switch, a controller for said motor and a master-switch for governing said controller, substantially as described.

16. A switch including a plurality of projecting contacts, a series of current-receiving devices connected to the said switch and a plate or plates having openings for the passage of predetermined ones of said switch-contacts, with a motor for presenting any one of said plates to the switch, mechanism for controlling said motor, said mechanism including a master-switch and a controller operated therefrom having means for breaking the motor-circuit when a predetermined one of the plates is presented to the first switch, substantially as described.

17. The combination of a switch, a plurality of current-receiving devices connected thereto, a controller connected to said switch, a motor, a master-switch having connections to the controller, and a series of controlling-plates, each having portions common to the controller and to the said first switch, substantially as described.

18. The combination of a master-switch, a controller, a second switch having a plurality of current-receiving devices connected to it, a series of controlling-plates for said second switch for determining the one of said devices to receive current, a series of movable contacts on the controller operated by the master-switch and placed to coact with the controlling-plates and means in connection with said movable contacts for stopping the motor when a predetermined one of the controlling-plates is presented to the second switch, substantially as described.

19. In a system for controlling the operation of current-receiving devices, the combination of a master-switch, a second switch, a series of controlling-plates for the second switch, a motor for moving said plates through the switch and a controller having a plurality of series of movable contacts governed by the master-switch, a plurality of contact-pieces each common to one series of the movable contacts, with means operated by the movable contacts and the contact-pieces for stopping the motor when a predetermined one of the controlling-plates is presented to the second switch, substantially as described.

20. The combination of a switch, having connected to it a plurality of independent current-receiving devices, a series of controlling-plates for the switch for determining the ones of said devices to receive current, a motor, a controller therefor also constructed to receive said controlling-plates, with means for causing operation of the controller and of the motor and a device for stopping the motor when a predetermined plate is in the switch, substantially as described.

21. The combination of a switch having connected to it a plurality of independent current-receiving devices, a series of controlling-plates for the switch for determining which of said devices is to receive current, a motor, a controller therefor also constructed to receive said controlling-plates, means for causing operation of the controller and of the motor and an automatic switch operated by the controller for stopping the motor when a predetermined plate is presented to the switch, substantially as described.

22. In a controlling system the combination of a switch including a plurality of contacts and having connected to it a plurality of current-receiving devices, a series of controlling-plates, means for automatically presenting said plates to the contacts of the switch, a master-switch and mechanism controlled thereby for stopping said presenting-means with a predetermined plate in the switch, with a device on said switch having means for completing the circuit between said contacts and the current-receiving devices before the current for said devices is permitted to flow, substantially as described

23. The combination of a switch including on one of its elements a plurality of pins and on the other element a metallic plate, a plurality of current-receiving devices connected to the switch, a series of controlling-plates for the switch having openings for the passage of the pins and means for moving said plates, with a device for stopping the plates and mechanism for causing said device to operate at predetermined irregular times, substantially as described.

24. The combination of a switch including a plurality of pins and a contact or contacts therefor, a plurality of current-receiving devices connected to the switch, a series of controlling-plates for the switch having openings for the passage of the pins, means for moving the series of plates through the switch, a master-switch, movable contacts in circuit therewith, a device connected thereto for stopping such movement and means for closing the switch, substantially as described.

25. The combination in a light-controlling system, of a master-switch having connected to it a controller, controlling-plates coacting with said switch for actuating said controller, a second series of the controller-plates connected together, an automatic switch having parts coacting with the plates of said connected series, and means operated by the said controller for presenting a predetermined one of said latter plates to the automatic switch, substantially as described.

26. The combination of a master-switch, an automatic switch, controlling-plates for said two switches, means for presenting a predetermined controlling-plate to the automatic switch, said means including a controller having a contact-piece and movable arms coacting with the controlling-plates and placed to engage the contact-piece to cause operation of the automatic switch, substantially as described.

27. The combination of a master-switch, controlling-plates therefor, an automatic switch, a series of current-receiving devices connected thereto, a series of controlling-plates for the automatic switch, and a controller actuated by the master-switch having means for closing the automatic switch after there has been presented to said automatic switch a predetermined one of said series of controlling-plates, substantially as described.

28. The combination with a master-switch, of an automatic switch and controlling-plates for the switches, of a controller constructed to receive said controlling-plates, said controller having a contact-piece and a plurality of movable contacts placed to coact therewith each having a magnet connected to the master-switch, a motor, with means for starting and stopping the said motor and means for operating the automatic switch, substantially as described.

29. The combination with a master-switch, an automatic switch, a motor and controlling-plates for the switches, of a controller constructed to receive the controlling-plates, said controller having a contact-roller and a plurality of movable contacts placed to permit the passage of the controlling-plates between them and said contact-roller, a magnet operative on each of the movable contacts to cause it to move toward the roller, with means for starting and stopping the motor and means for operating the automatic switch, substantially as described.

30. The combination of a master-switch, an automatic switch, controlling-plates for the automatic switch, means for moving the said plates through the said automatic switch, with a controller having means for starting and stopping the motor, said controller including a circuit provided with means for operating the automatic switch when a predetermined one of the contact-plates is presented to it, substantially as described.

31. The combination of a master-switch, an automatic switch having a plurality of contacts, a controller energized from said master-switch, and controllig-plates having two sets of perforations, one set being adapted to coact with the controller and the other set being placed to coact with the automatic switch, substantially as described.

32. The combination of a master-switch, an automatic switch having a plurality of contacts, a controller having movable contacts provided with magnets energized from said master-switch, a relatively fixed contact on the controller, and controlling-plates having two sets of perforations, one set being adapted to coact with the movable contacts of the controller and the other set being placed to receive the contacts of the automatic switch, substantially as described.

33. The combination of a master-switch, an automatic switch controlling-plates for said two switches, means for presenting a predetermined controlling-plate to the automatic switch, said means including a controller having a contact-piece and movable arms coacting with the controlling-plates and placed to engage the contact piece to cause operation of the automatic switch, one of the two members comprised by the contact-piece and the movable arms having means whereby it may be moved toward the other, substantially as described.

34. The combination of a master-switch, an automatic switch,

controlling-plates for said two switches, means for presenting a predetermined controlling-plate to the automatic switch, said means including a controller having a contact-piece and movable arms coacting with the controlling-plates and placed to engage the contact-piece to cause operation of the automatic switch, one of the two members comprised by the contact-piece and the movable arms being free to move bodily toward the other and having a magnet operated from said controller for so moving it, substantially as described.

35. The combination of a master-switch, an automatic switch, controlling-plates for said two switches, means including a motor for presenting a predetermined plate to the automatic switch, a controller having a contact-piece and a series of movable arms placed to engage the same through openings in said controlling-plates, means for moving certain of said arms and means for bodily moving one of the two members comprised by the contact-piece and the series of arms, toward one another, substantially as described.

36. The combination of a number of current-receiving devices, a series of governing devices whereby the flow of current to said receiving devices is determined, electrical means for operating said governing devices and a current-controller for said electrical means, having as elements a series of contacts independently adjustable to operate said controller, substantially as described.

37. A series of movable contacts, a multiple-contact switch in circuit therewith, a motor, a series of contact-plates movable thereby, means in circuit with the movable contacts for stopping the motor, and a second multiple-contact switch constructed to coact with the contact-plates, substantially as described.

38. A series of movable contacts, a multiple-contact switch in circuit therewith, a motor, a series of contact-plates movable thereby, means in circuit with the movable contacts for stopping the motor, a second multiple-contact switch constructed to coact with the contact-plates and means for automatically actuating said second switch after the motor is stopped, substantially as described.

39. A series of movable contacts, a multiple-contact switch in circuit therewith, a motor, a series of contact-plates movable thereby, means in circuit with the movable contacts for stopping the motor, a second multiple-contact switch constructed to coact with the contact-plates and means also in circuit with the movable contacts for actuating said second switch, substantially as described.

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758,590. **HANDLE FOR VESSELS.** THOMAS W. FORSTER, Detroit, Mich., assignor of one-half to Buhl Stamping Company, Detroit, Mich. Filed Nov. 17, 1902. Serial No. 131,631. (No model.)



*Claim.*—1. A handle for vessels consisting of a tubular grip part, a pair of strut parts, the strut parts being provided with cup-shaped cavities, and the grip part being united to the strut parts by turning the ends of the tube in, over the walls of the cup, substantially as described.

2. In a handle for vessels, the combination of a tubular grip part, a strut part provided with a cup-shaped terminal, the grip and strut parts being secured together by inserting the terminal of the strut in the end of the tubular grip and bending the ends of the grip part in to engage the terminal of the strut part, substantially as described.

3. In a handle for vessels, the combination of a tubular grip part, a strut part provided with a terminal adapted to engage in the cavity of the tube, a strengthening-tube inserted in the grip part, the ends of the grip being turned in to engage the terminal of the strut, substantially as described.

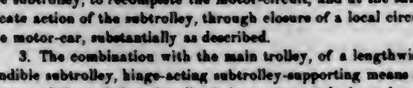
4. In a handle for vessels, the combination of a tubular grip part, a strut provided with a cup-shaped terminal, the grip and strut parts being secured together by inserting the terminal of the strut in the end of the tubular grip, the strut contacting the lower edge of the end of said grip and bending the upper part of the end of said grip part in to engage the upper part of the terminal of the strut part.

5. In a handle for vessels, the combination of a tubular grip part provided with a bead near its end, a strut provided with a terminal adapted to engage within the grip part, the grip and strut parts being secured together by inserting the terminal of the strut in the end of the tubular part so that it shall bear against said bead, and bending the end of said grip part in to engage the terminal of the strut part.

6. In a handle for vessels, the combination of a tubular grip part, a strut part provided with a terminal adapted to engage in the cavity of the tube, a strengthening-tube inserted in the grip part, the terminal of the strut part arranged to come against the end of the strengthening-tube, the end of the grip being turned over to engage the terminal of the strut.

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758,591. **FENCE-POST.** JOHN B. GOODRY, Belleville, Mich., assignor of one-half to Howard I. Post and Frank W. Helthory, Belleville, Mich. Filed Dec. 26, 1903. Serial No. 186,656. (No model.)



*Claim.*—1. A fence-post molded from plastic material and rectangular in cross-section, two endless links embedded longitudinally therein, one of said links being wholly arranged within the other and said links being disposed in planes at right angles to one another and at right angles to the sides of the post, substantially as described.

2. A fence-post comprising a post molded from plastic material, two endless links embedded longitudinally therein, one of said links being wholly arranged within the other and said links being disposed in planes at right angles to one another and to the sides of the post, and fastenings consisting of wire loops passing around both members of one of said links and twisted at their ends to embrace the fence, substantially as described.

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758,592. **SAFETY-TROLLEY.** WILLIAM M. GRUBER and WILLIAM C. FINK, Springdale, Pa., assignors of one-fourth to Henry G. G. Fink, Springdale, Pa. Filed Nov. 5, 1903. Serial No. 179,926. (No model.)



*Claim.*—1. The combination with the main trolley, of a lengthwise-extendible subtrolley, and means operating upon extending action of the subtrolley, to recomplete the motor-circuit, substantially as described.

2. The combination with the main trolley, of a lengthwise-extendible subtrolley, and means operating upon extending action of the subtrolley, to recomplete the motor-circuit, and at the same indicate action of the subtrolley, through closure of a local circuit on the motor-car, substantially as described.

3. The combination with the main trolley, of a lengthwise-extendible subtrolley, hinge-acting subtrolley-supporting means at the lower end thereof, the subtrolley being constructed of a series of telescoping sections under spring-pressure when telescoped, means operating, in normal position of the subtrolley, for holding its sections telescoped, and means operating upon extending action of the subtrolley, to recomplete the motor-circuit, and at the same time indicate action of the subtrolley through closure of a local circuit on the motor-car, substantially as described.

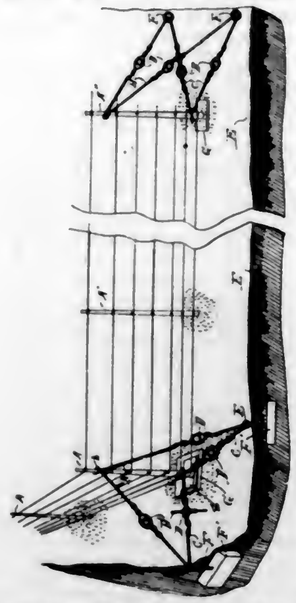
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758,593. **FENCE.** ISAAC HAWN, Hannibal, N. Y. Filed Aug. 5, 1903. Serial No. 168,379. (No model.)

*Claim.*—1. In combination with a wire fence and adjustable fence-posts, two anchor-blocks set in the ground some distance from and forming an angle with said post, a double wire extending from



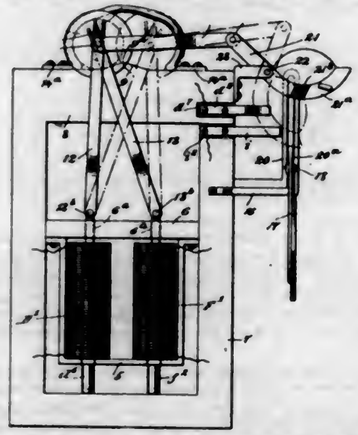
the bottom of the post, and like wires extending from near the top of the post to each of the anchor-blocks, and open thimbles between said wires, substantially as and for the purpose set forth.



2. In combination with a wire fence, adjustable posts, a protecting-block under said posts, anchor blocks some distance from said posts, a double wire extending from the bottom of the posts, and a like wire extending from near the top of the posts to each of said anchor-blocks, and an open thimble between each pair of wires, substantially as and for the purpose set forth.

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758,594. **ELECTRIC RAILWAY-SIGNAL.** WILLIAM S. JACKSON, Roboken, N. J., assignor of one-half to David Young, Newark, N. J. Filed June 30, 1902. Serial No. 113,772. (No model.)



*Claim.*—1. An electric block-signal system having independent setting and return circuits each having a trolley-controlled circuit-closer and a pair of magnets connected in series, the magnets of the respective circuits being grouped in pairs adjacent to the points of entrance to and departure from a block, entrance and departure semaphores movable by gravity normally to safety positions, and setting devices each including a shoe arranged to ride on one of the semaphores across the path thereof and also including means controllable by the pair of magnets in the respective circuits for moving the semaphore-shoe in both directions on the entrance of a car into the block and its departure therefrom.

2. An electric block-signal having independent normally open setting and return circuits each having a trolley-controlled circuit-closer and a pair of magnets connected in series, the magnets of the respective circuits being grouped in pairs adjacent to the points of entrance to and departure from a block, entrance and departure semaphores movable by gravity to safety positions, setting devices controllable by the magnets of the respective circuits and coöperating with the semaphores, and circuit-breakers disposed in the respective circuits in the path of the semaphores.

3. In a block-signaling system for electric railways, the combination of a primary circuit having an entrance-contact and magnets disposed in series, a circuit-maker in said primary circuit, a secondary circuit also having a series of magnets and a departure-contact, signaling setting devices in coöperative relation to the magnets of both circuits, and a light-circuit having normally separated contacts disposed in the path of certain moving parts of one of the signaling setting devices to be closed automatically thereby, one of said signaling setting devices being arranged to engage with the circuit-maker of the primary circuit and to automatically interrupt the latter when the signal shall have been set to one position.

4. In an electric signal, the combination with a gravity-semaphore, of an actuating-lever therefor provided with a shoe arranged to ride on the semaphore in a path across the plane of movement thereof and positively move it to a displayed position, coöperating devices for actuating said lever and locking it in either of two positions and electrically-controlled means for actuating one of said coöperating devices.

5. In a block-signaling system for electric railways, the combination with a movable semaphore, of an actuating-lever therefor, a cam-track, a shiftable member arranged to traverse the cam-track and having operative connection with said actuating-lever, and magnets included in different circuits and having their cores connected with intermediate devices with said shiftable member.

6. In a block-signaling system for electric railways, the combination with a movable semaphore, of an actuating-lever therefor, a shiftable member connected with said actuating-lever, means for temporarily confining the shiftable member in either of its adjustable positions, and electrically-controlled mechanism for automatically moving the shiftable member back and forth on the entrance and departure of a car or train into and from a block.

7. In a block-signaling system for electric railways, the combination with a movable semaphore, of an actuating and circuit-closer lever arranged to engage with said semaphore, a light-circuit having contacts disposed in the path of said lever, a shiftable member linked to said lever, and other circuits having magnets arranged to impart movement to the shiftable member, one of said circuits having a circuit-maker disposed in the path of the lever and adapted to automatically engage therewith.

8. In a block-signaling system for electric railways, the combination with a pivoted semaphore, of an actuating-lever having a curved arm arranged to ride against said semaphore, a cam-track, a rolling shiftable member fitted to said cam-track and linked to said lever, magnets included in different circuits, and links connecting the cores of said levers with the shiftable member.

9. A block-signaling system for electric railways, comprising a primary circuit having a series of magnets, and a normally closed circuit-maker, a secondary circuit having a like series of magnets, entrance and departure contacts for the respective circuits, movable semaphores, adjacent to the magnets of both circuits, actuating-levers for controlling said semaphores, shiftable members having operative connection with the magnets of both circuits and with said actuating-levers, and a light-circuit including suitable signals and circuit-breakers, the latter being disposed in the path of one of the semaphore-actuating levers, the circuit-maker of the primary circuit being also disposed for engagement with one of said semaphore-actuating levers.

10. In an electric railway-signal, the combination of a semaphore pivoted at a point intermediate of its length, and having a short arm, a guide in which said arm of the semaphore is arranged to play, a lever movable on an axis at right angles to that of the semaphore, a shoe movable with the lever across the path of the semaphore and arranged to ride directly on the short arm thereof, and electrically-controlled means for moving said lever.

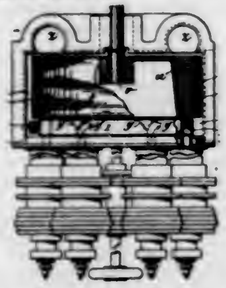
11. In an electric railway-signal, the combination of a pivoted gravity-semaphore, a lever movable on an axis located at right angles to the axis of movement of the semaphore, a shoe movable with the lever across the path of the semaphore and arranged to ride di-

rectly on said semaphore for moving the latter positively to a displayed position, and electrically-controlled means for actuating said lever.

12. In an electric railway-signal, the combination of a pivoted gravity-semaphore, a lever movable on an axis located at right angles to the axis of movement of the semaphore, said lever being provided at one end with a curved shoe which is movable across the path of, and disposed to ride directly upon, the semaphore, and electrically-controlled means for actuating said lever and the shoe thereof.

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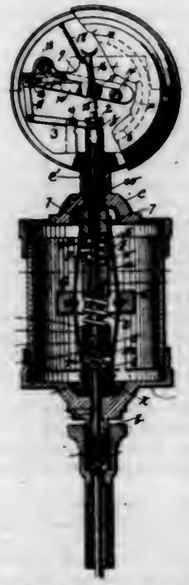
758,595. **REVERSIBLE TURBINE.** CHARLES F. DE KIERZKOWSKI-STEUART, London, England. Original application filed Dec. 6, 1902, Serial No. 134,308. Divided and this application filed Nov. 27, 1903. Serial No. 183,703. (No model.)



*Claim.*—In a turbine-engine the combination with a deflecting device for the jet and means for moving said device to point the jet in either direction, of a reversible turbine-wheel comprising an inner and outer shell and an annular channel closely spaced with intersecting wires, substantially as described.

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758,596. **SPEED-INDICATOR.** GEORGE H. MOORE and MURRAY O'NEILL, New York, N. Y., assignors of one-third to William W. Currier, New York, N. Y. Filed Aug. 12, 1903. Serial No. 169,168. (No model.)



*Claim.*—1. The combination with an upright rotatory shaft having suitable supporting-bearings, a coiled spring surrounding said shaft and fixedly seated thereon, a sleeve capable of lengthwise movement on said shaft; one or more differentiated coiled springs also surrounding said shaft and interposed between said fixed spring and said sleeve, and centrifugally-weighted springs coupling said fixed seat and sleeve, whereby said weights effect compression of the springs progressively as the rotatory motion of the shaft varies.

2. The combination with an upright rotatory shaft having a coiled spring surrounding said shaft and fixedly seated thereon, a sleeve capable of lengthwise movement on said shaft, one or more differentiated coiled springs also surrounding said shaft and interposed between said fixedly-seated spring and said sleeve, centrifugally-weighted springs coupling said fixed seat and sleeve, whereby said weights effect compression of the springs progressively as the rotatory motion of the shaft varies, a rotatory index-finger and a registering-scale, and means connecting said sleeve and finger for rotating the finger by the movements of the sleeve.

3. The combination with an upright rotatory shaft having suitable supporting-bearings, a coiled spring surrounding said shaft and fixedly seated thereon, a slidable collar on said shaft and resting on said spring, a slidable sleeve on said shaft above said collar, a coiled spring intermediate of said collar and sleeve and differentiated in respect of its power relatively to said first-mentioned spring, and centrifugally-weighted springs coupling said fixed seat and sleeve whereby said weights effect compression of the springs progressively.

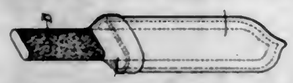
4. The combination with an upright rotating shaft having suitable supporting-bearings, a coiled spring surrounding said shaft and fixedly seated thereon, a slidable collar on said shaft and resting on said spring, a slidable sleeve on said shaft coupled at one end with said collar, another slidable collar on said shaft coupled with the other end of said sleeve, a coiled spring on the shaft between these two collars, another slidable sleeve on said shaft above the uppermost collar, a coiled spring intermediate of said uppermost collar and the sleeve above, and centrifugally-weighted springs coupling said fixed spring-seat and the uppermost sleeve whereby said weights effect compression of the several springs progressively.

5. The combination of the upright rotatory shaft *i* having suitable supporting-bearings, hub *j* fixedly secured on said shaft, spring *m* coiled on said shaft and resting on hub *j*, slidable collar *p* on said shaft and resting on spring *m*, coiled spring *v'* on said shaft above collar *p*, sliding sleeve *w* resting on spring *v'* and centrifugally-weighted springs 5 coupling hub *j* and sleeve *w*, said coiled springs being differentiated relatively to each other in respect of their power.

6. The combination of the upright rotatory shaft *i* having suitable supporting-bearings, hub *j* fixedly secured on said shaft, spring *m* coiled on said shaft and resting on hub *j*, slidable collar *p* on said shaft and resting on spring *m*, sleeve *n* coupled to collar *p*, coiled spring *s* on said shaft and resting on collar *p*, sliding collar *u* coupled to the upper end of sleeve *n*, coiled spring *v'* on said shaft and resting on collar *u*, sliding sleeve *w* on said shaft and resting on spring *v'*, and centrifugally-weighted springs 5 coupling hub *j* and sleeve *w*, said coiled springs being differentiated relatively to each other in respect of their power.

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758,597. **VACCINE-POINT.** HARRY K. MULFORD, Philadelphia, Pa. Filed Apr. 16, 1903. Serial No. 153,173. (No model.)



*Claim.*—1. As a new article of manufacture, a vaccine-point having a surface etched so that it will be wet by a liquid, substantially as and for the purposes set forth.

2. As a new article of manufacture, a scarifying-point composed of a mineral substance having a portion of its surface etched so that it will be wet by a liquid, and a capsule also composed of a mineral substance and open only at one end, for receiving one end of said scarifying-point, with aseptic sealing material between the capsule and the body of the scarifying-point, substantially as described.

3. In combination with a vaccine-point, a shell of the character described formed of glass tubing flattened throughout its extent and open at one end only, said shell being hermetically closed at all points save its open end, the outer end and the greater part of the untreated portion of the vaccine-point being inclosed by the shell, with sealing material inserted in the open end of the shell and around the untreated portion of the point, substantially as described.

4. In combination with a vaccine-point, a shell of the character described formed of glass tubing flattened throughout its extent and open at one end only, said shell being hermetically closed at all points save its open end, the outer end and the greater portion of the untreated portion of the vaccine-point being inclosed by the shell



and around the untreated portion of the point, substantially as described.

5. In combination with a glass vaccine-point, a shell of the character described formed of glass tubing and open at one end only, said shell being hermetically closed at all points save at its open end, the outer end and the greater part of the untreated portion of the glass vaccine-point being inclosed by the shell, with a sealing material inserted in the open end of the shell and around the untreated portion of the point, substantially as described.

6. In combination with a vaccine-point, a shell of the character described, of a length slightly less than said point formed of glass tubing flattened throughout its extent and open at one end only, said shell being tapered at its closed end and hermetically closed at all points save its open end, the treated end and the greater part of the untreated portion of the vaccine-point being inclosed by the shell and a sealing material inserted in the open end of the shell and around the untreated portion of the point, substantially as and for the purpose described.

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758,598. **TRANSMISSION OF ELECTRICAL IMPULSES.** JOHN S. RICHMOND, New York, N. Y. Original application filed Apr. 27, 1901, Serial No. 57,321. Divided and this application filed Sept. 16, 1903. Serial No. 173,430. (No model.)



*Claim.*—1. The hereinbefore-described improvement in the art of electrical transmission which consists in producing in adjacent conductors electrical impulses simultaneously equal at contiguous points but differing in this that the potential of the one is above and that of the other equally below the maintained zero potential; substantially as and for the purposes set forth.

2. The described improvement in the art of electrical transmission which consists in the transmission through contiguous conductors capable, under similar electrical conditions, of similar capacity effects, of electrical impulses simultaneously equal at contiguous points and simultaneously varied in equal ratio as regards the two conductors, but differing in this: that, simultaneously and at contiguous points, the potential established in one of the conductors is above while that in the other is equally below the potential of the medium surrounding the conductors; substantially as described.

3. The hereinbefore-described improvement in the art of electrical transmission which consists in maintaining zero potential at the meeting-point of adjacent conductors, and simultaneously producing in said conductors electrical impulses simultaneously equal at contiguous points but differing in this that the potential in the one conductor is above and that in the other equally below the maintained zero potential; substantially as described.

4. The described improvement in the art of electrical transmission which consists in the transmission through contiguous conductors forming parts of a single circuit, of impulses inaugurated by transmitting istrumentalities common to the two transmission mediums, said impulses differing in this: that, simultaneously and at contiguous points, the potential established in one of the conductors is above while that in the other is equally below maintained zero potential; substantially as described.

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758,599. **PRINTING-PLATE.** RALPH J. SACHERS, New York, N. Y., assignor, by mesne assignments, to Aluminum Compound Plate Company, New York, N. Y., a Corporation of West Virginia. Original application filed Feb. 23, 1897, Serial No. 624,624. Divided and this application filed Sept. 22, 1899. Serial No. 731,322. (No model.)



*Claim.*—1. A plate for planographic printing purposes, the non-printing parts of the face of which consist of aluminium, and the printing parts of which consist of said aluminium covered with one or more layers of other metal or alloy.

2. A plate for printing purposes, the face of which is substantially plane, the non-printing parts consisting of aluminium treated with a non-corrosive so as to repel printing-ink, and the printing parts consisting of said aluminium covered with one or more layers of other metal or alloy.

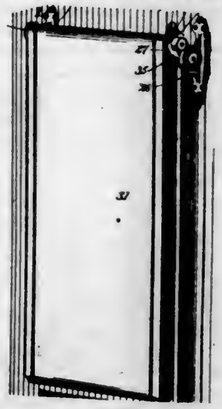
3. A plate for printing purposes, the ink-retaining parts of which consist of any suitable metal or alloy and the ink-repelling parts consist of aluminium.

4. A plate for printing purposes, the printing parts of which consist of any suitable metal or alloy and the non-printing parts consist of metallic aluminium treated with a non-corrosive to repel printing-ink.

5. A plate for printing purposes consisting of a metallic base having the ink-retaining parts of its face formed of one or more layers of any suitable metal or alloy and the ink-repelling parts of a layer of aluminium.

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758,600. **TOWEL-RACK.** SVEN A. A. STENBERG, San Francisco, Cal., assignor of forty-nine one-hundredths to William R. Cumback, San Francisco, Cal. Filed May 26, 1903. Serial No. 158,831. (No model.)



*Claim.*—1. A towel-rack, comprising supporting-brackets, a pair of rollers mounted in the brackets and to which the ends of a towel are adapted to be secured with a portion thereof hanging from said rollers, and differential gearing between the said rollers, as and for the purpose set forth.

2. A towel-rack, comprising supporting-brackets, a pair of rollers mounted in the brackets and to which the ends of a towel are adapted to be secured with a portion thereof hanging from said rollers, and differential gearing between the rollers and comprising a drum on the spindle of each roller, and a band having its ends secured to said drums to wind in opposite directions thereon and upon itself, as set forth.

3. A towel-rack comprising a pair of rollers, motion-transmitting devices between the two, and means for reversing the position of said devices.

4. A towel-rack comprising a pair of rollers, motion-transmitting devices between the two, constituted of drums carried at one end of the rollers, and a flexible strip fastened at one end to the periphery of one drum and wound upon the same, and thence carried beneath and over the periphery of the other drum, with its remaining end secured to the latter, and means for reversing the position of said devices.

5. A towel-rack comprising supporting-brackets, a pair of rollers removably held therein, a towel of suitable length attached at one end to one roller and wound thereupon to the desired extent, leaving free hanging portions, and having its other end carried upwardly and attached to the other roller, motion-transmitting devices between the two rollers, whereby as further portions of the towel are caused to be unwound from the one roller, a corresponding proportion of the same is taken up by the other roller, and means for reversing the position of said devices.

6. A towel-rack comprising supporting-brackets, a pair of removable rollers mounted therein, having squared journals or spindles at one end, detachable members fitted to said spindles, beyond the contiguous supporting-bracket, drums detachably fitted to said members, and a flexible strip fastened at one end to the periphery of one drum and wound upon the same, and thence carried beneath and over the periphery of the other drum, with its remaining end fastened to the latter.

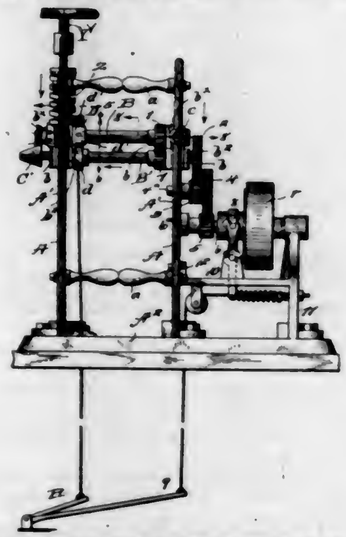
7. A towel-rack comprising supporting-brackets, a pair of removable rollers mounted therein, having squared journals or spindles at one end, detachable members fitted to said spindles beyond

the contiguous supporting-bracket, drums detachably fitted to said members, a flexible strip fastened at one end to the periphery of one drum and wound upon the same, and thence carried beneath and over the periphery of the other drum, with its remaining end fastened thereto, and means for reversing the position of said devices on removal of the rollers from the brackets.

8. A towel-rack comprising the brackets 1 and 9, the first having the vertical notches 6 and 8, and the second the slots 13 and 14, and the intermediate opening 15, the movable rollers supported in said notches and slots, said rollers having squared spindles at one end, the members 23 on said spindles, the drums on said members, the flexible strip fastened at one end to the periphery of one drum and wound upon the same, and thence carried beneath and over the periphery of the other drum, with its remaining end fastened to the latter, the yoke fitted to said members and mounted to turn on the adjacent bracket, and means on this bracket for engaging said yoke as either end thereof is turned uppermost to reverse the position of the said members and the drums and connecting-strip.

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**758,601. STITCH SEPARATING AND INDENTING MACHINE.** FREDERICK J. TROW and HARRY G. WOLF, Philadelphia, Pa., assignors of one-third to George M. Gross, Philadelphia, Pa. Filed June 13, 1903. Serial No. 161,332. (No model.)



*Claim.*—In a stitch separating and indenting machine, the combination of the parallel standards having the guideways, the lower removable bearing-boxes in said guideways, the upper removable bearing-boxes in said guideways resting upon the lower bearing-boxes, the upper and lower parallel shafts in said bearing-boxes situated closely together, the stitch-indenting and feed wheels upon said shafts, the uniform intermeshing spur gear-wheels upon said shafts, and a transverse cam-lever pivoted upon the lower shaft, and adapted to engage the upper shaft to raise the same, substantially as specified.

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**758,602. DETACHABLE BUTTON.** ALEXANDER H. BROWSLEY, Onehunga, New Zealand. Filed Mar. 19, 1903. Renewed Mar. 22, 1904. Serial No. 199,423. (No model.)



*Claim.*—1. A detachable button, comprising a button-head provided with one member of a two-part fastener, a disk provided with another member of said fastener, said last-mentioned member being free to swing relatively to said disk for the purpose of engaging and disengaging said first-mentioned fastening member, a second disk provided with a slot for engaging said swinging member, and means for connecting said disks together so as to permit relative movements between the same.

2. A detachable button, comprising a button-head provided with one member of a two-part fastener, a disk provided with the other member of said fastener, said last-mentioned member being free to swing relatively to said disk for the purpose of engaging and disengaging said first-mentioned fastening member, a second disk provided with a slot for engaging said swinging member, means for connecting said disks together so as to permit relative movements between the same, and guide mechanism for maintaining said disks in a predetermined relation notwithstanding said movements.

3. A detachable button, comprising a button-head provided with one member of a two-part fastener, a disk provided with the other member of said fastener, said last-mentioned member being free to swing relatively to said disk for the purpose of engaging and disengaging said first-mentioned fastening member, a second disk provided with a slot for engaging said swinging member, means for connecting said disks together so as to permit relative movements between the same, and a locking device for normally maintaining said disks in a predetermined relative position.

4. A detachable button, comprising a button-head provided with one member of a two-part fastener, a disk provided with the other member of said fastener, said last-mentioned member being free to swing relatively to said disk for the purpose of engaging and disengaging said first-mentioned fastening member, a second disk provided with a slot for engaging said swinging member, means for connecting said disks together so as to permit relative movements between the same, guide mechanism for maintaining said disks in a predetermined relation notwithstanding said movements, and a locking device for normally maintaining said disks in a predetermined relative position.

5. A detachable button, comprising a button-head provided with an eye, a disk provided with a hasp pivotally mounted thereon for the purpose of detachably engaging said eye, and also provided with a slot for engaging said hasp, a second disk journaled upon said first-mentioned disk and provided with an arc-shaped slot for temporarily securing said hasp when said disks are moved into certain positions relatively to each other, and a fastening device for normally securing said disks together in one of said predetermined relative positions.

6. A detachable button, comprising a button-head provided with an eye, a disk provided with a slot, a hasp pivotally mounted upon said disk and provided with a head and neck capable of passing through said slot, and a member revolubly connected with said disk and provided with a slot having wide and narrow portions, said wide portion being free to admit said head and said narrow portion being too narrow to admit the head.

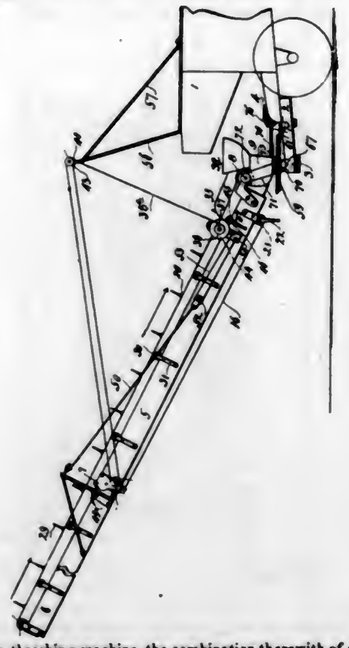
7. A detachable button, comprising a button-head provided with an eye, a disk provided with a head, a hasp pivotally mounted upon said disk and provided with a head and neck capable of passing through said slot, a member revolubly connected with said disk and provided with a slot, having wide and narrow portions, said wide portion being free to admit said head and said narrow portion being too narrow to admit the head, and a fastening device for normally securing said disks together in a predetermined relative position.

8. A detachable button, comprising a button-head provided with an eye, a disk provided with a slot, a hasp pivotally mounted upon said disk and provided with a head and neck capable of passing through said slot, a revoluble member connected with said disk and provided with a slot having wide and narrow portions, said wide portion being free to admit said head and said narrow portion being too narrow to admit the head, a fastening device for normally securing said disks together in a predetermined relative position, said revoluble member being provided with a milled edge to facilitate its movements relatively to said disk, and guiding mechanism for maintaining said disk and said revoluble member in a predetermined working relation.

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**758,603. THRESHING-MACHINE.** WILLIAM COLWELL, Chillicothe, Ill. Filed Dec. 20, 1902. Serial No. 136,062. (No model.)

*Claim.*—1. In a threshing-machine, the combination therewith, of a carrier-frame formed of two hinged sections, means for folding the sections upon each other, the inner section supported upon a table adapted to be automatically swung, a fixed bottom or partition for a portion of such carrier and a slidable bottom connected with means whereby it may be extended beyond the end of the fixed bottom, and an endless under-draft drag extending from the receiving end of the carrier to the outer end thereof, substantially as specified.



2. In a threshing-machine, the combination therewith of a carrier-frame mounted at its receiving end upon a table adapted to be automatically swung, an outer run of the carrier hinged to the main body thereof and means for folding or unfolding such outer run, an endless under-draft drag extending from the receiving end of the carrier to the forward end of the outer run thereof, a stationary bottom for the inner end of the carrier and an extensible bottom slidably arranged in the carrier-frame beneath the stationary bottom and adapted to have a slidable relation with the walls of the outer run of such carrier, all substantially as described.

3. In a threshing-machine, the combination therewith of a carrier-frame formed of two hinged sections, the inner sections supported upon a frame adapted to be automatically swung, gearing carried by such inner section and means on the outer section adapted to have connection with such gearing for folding and unfolding the outer section, an endless under-draft drag extending from the receiving end to the outer end of such carrier consisting of a series of belts supporting transversely-carried slats from which extend suitable fingers, a fixed bottom for the inner section, and a sliding bottom capable of longitudinal movement upon cleats of the inner and outer sections, whereby the position of the outer end of the carrier-bottom may be varied, substantially as described.

4. In a threshing-machine, the combination therewith of a carrier-frame supported at its inner end upon means adapted to be automatically swung, an endless under-draft drag extending from the receiving end of the carrier to the outer or the free end thereof consisting of a series of belts carrying transverse slats from which extend suitable fingers, the slats of the carrier during its forward movement movable upon cleats within the carrier, a fixed bottom arranged below and substantially parallel with the lower run of the carrier and extending from its receiving end to a suitable point in its length, and a supplemental bottom slidably supported upon cleats and longitudinally movable beneath the fixed bottom whereby the position of the outer end of the carrier-bottom in advance of the fixed bottom may be varied, substantially for the purpose described.

5. In a threshing-machine, the combination therewith of a carrier-frame swingably supported for vertical movement to a hopper-support, means for automatically swinging such hopper-support, a fixed bottom for such carrier-frame extending only a portion of the length thereof, cleats longitudinally arranged upon the sides of such carrier and the length thereof, a slidable bottom longitudinally movable upon the lower cleats, an endless under-acting carrier extending from the hopper to the free end of the frame-carrying fingers movable above and adjacent to the fixed bottom of such carrier and in its forward movement movable upon the upper longitudinal cleats of the frame, substantially as described.

6. In a threshing-machine, the combination therewith of a carrier-frame having its inner end pivoted for vertical movement to a hopper-support, devices for swinging such hopper-support, a casing for the carrier from the hopper-support, to a suitable point in its length and an endless under-acting carrier extending from the hopper-support to the free end of the carrier-frame, with said carrier movable upon longitudinal cleats in the carrier-frame and the upper run of such endless carrier supported upon rollers, a bottom arranged directly below and substantially parallel with the lower run of the carrier and having an under-acting outer slidable adjustable section and means for moving said section for varying the position of the outer end of such bottom, substantially as described.

7. In a threshing-machine, the combination of a carrier-frame of two hinged sections, a vertically and horizontally swingable support for such frame, a bottom for such carrier of two sections, one of which is fixed, the other section longitudinally movable beneath the fixed section and as an extension thereof, and means for sliding the movable section for varying the position of its outer free end, substantially as described.

8. In a threshing-machine, the combination therewith, of a carrier-frame formed of two hinged sections mounted for vertical and horizontal movement upon such thresher, means for folding the sections upon each other, a fixed bottom for such carrier-frame extending a portion of its length, a longitudinally slidable and adjustable bottom section beneath the fixed bottom and adapted to be extended in advance thereof for varying the position of the outer free end of the carrier-bottom and suitable gearing to which the slidable bottom has a fixed connection for moving such sliding bottom within the carrier-frame, substantially as specified.

9. In a threshing-machine, the combination therewith of a carrier-frame swingably supported to the thresher, a pivoted evener supported by the thresher and connecting devices between such evener and carrier-frame and gearing supported by such carrier for actuating the aforesaid devices for raising and lowering such frame, substantially as described.

10. In a threshing-machine, the combination of a carrier-frame, having a swingable connection with the thresher, the support 59 mounted upon the table 60, the shaft 62, a segmental gear attached to the frame 59, power devices and connections between such power devices and the segmental gear of the support 59 for swinging the latter, substantially as described.

11. In a threshing-machine, the combination of a carrier-frame having a swingable connection with such thresher, an under-acting carrier in the frame, the shaft 62 means rotating thereon and actuated by suitable power devices for swinging the carrier-frame, the bevel-gear 63, shafts 66 and 67 having gears meshing with the bevel 63, power connections with the shaft 66, and driving connections between the shaft 67 and the under-acting carrier of the carrier-frame, all substantially for the purpose set forth.

12. In a threshing-machine, the combination therewith of a drag pivotally attached to the thresher, an evener disposed above the thresher-body and pivoted on its support, gearing, and devices attached to the drag and evener adapted to be actuated by the gearing to facilitate in the raising and lowering of the drag, substantially as specified.

13. In a threshing-machine, the combination therewith of a drag pivotally attached to the thresher, sheave-wheels attached to the body of the drag, an evener disposed above the thresher-body and pivoted on its support, sheave-wheels upon the opposite ends of the evener, gearing, and cables having one end secured to the opposite ends of the evener, extending around the sheave-wheels on the drag to and around the sheave-wheels on the evener and their opposite ends connected with aforesaid gearing, as and for the purposes set forth.

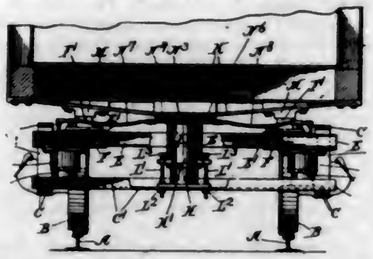
14. In a device of the class described, the combination of the carrier-frame, the endless carrier thereon, the boot or hopper at the lower end, the bottom having a stationary section below the carrier, a supplemental support supported below the carrier-frame, the longitudinally-slidable bottom section supported on the said supplemental support, and the adjusting devices connected to the lower end of the slidable bottom section, substantially as set forth.

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**758,604. AIR-CUSHION FOR CARS.** MURILLO DOWNER, Chicago, Ill. Filed July 27, 1903. Serial No. 167,061. (No model.)

*Claim.*—1. In an air-cushion device for cars, the combination

of a centrally-placed cylinder and plunger connecting the car and the truck and a floating bolster supporting the sides of the car



2. In an air-cushion device for cars, the combination of a centrally-placed cylinder and plunger connecting the car and the truck, with an air-supply device therefor and a floating bolster supporting the sides of the car.

3. In an air-cushion device for cars, the combination of a centrally-placed cylinder and plunger connecting the car and the truck, with an air-supply device and an air-discharge device therefor and a floating bolster supporting the sides of the car.

4. In an air-cushion device for cars, the combination of a centrally-placed cylinder and plunger connecting the car and the truck, with an air-supply device and an air-discharge device therefor, and means for preventing the excessive rise of the car and a floating bolster supporting the sides of the car.

5. In an air-cushion device for cars, the combination of a car and truck, with a cylinder on one and a plunger on the other coacting, and an air-cushion within the cylinder and a floating bolster between car and truck with supporting air-cushions.

6. In an air-cushion device for cars, the combination of a car and truck, with a cylinder on one and a plunger on the other coacting, an air-cushion within the cylinder, and means for preventing the car from abnormally rising and a floating bolster between car and truck with supporting air-cushions.

7. In an air-cushion device for cars, the combination of a car and truck, with a cylinder on one and a plunger on the other coacting, an air-cushion within the cylinder, and means for preventing an excess of air in the cylinder and a floating bolster between car and truck with supporting air-cushions.

8. In an air-cushion device for cars, the combination of a car and truck, with a cylinder on one and a plunger on the other coacting, an air-cushion within the cylinder, and a discharge-valve connected with the cylinder to discharge the air therefrom and a floating bolster between car and truck with supporting air-cushions.

9. In an air-cushion device for cars, the combination of a car and truck, with a cylinder on one and a plunger on the other coacting, an air-cushion within the cylinder, a discharge-valve connected with the cylinder to discharge the air therefrom, and means for automatically opening said valve when the car has reached a predetermined elevation and a floating bolster between car and truck with supporting air-cushions.

10. In an air-cushion device for cars, the combination of a truck, with a floating bolster, an air-cushion between the bolster and the truck, and a direct connection between the truck and the car intermediate between the ends of the bolster.

11. In an air-cushion device for cars, the combination of a truck, with a floating bolster, an air-cushion between the bolster and the truck, and an air-cushioned direct connection between the truck and the car intermediate between the ends of the bolster.

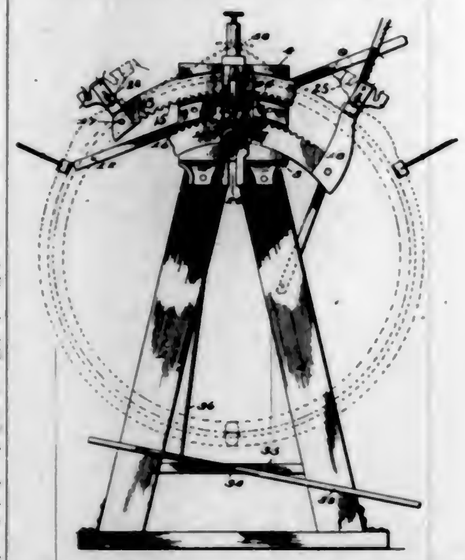
12. In an air-cushion device for cars, the combination of a truck, with a floating bolster, an air-cushion between the two, and bearings for the car toward the ends of the bolster.

13. In an air-cushion device for cars, the combination of a truck, with a floating bolster, an air-cushion between the two, bearings for the car toward the ends of the bolster, and a central connection between the car and the truck.

14. In an air-cushion device for cars, the combination of a truck, with a floating bolster, an air-cushion between the two, bearings for the car toward the ends of the bolster, and a central pivotal connection between the car and the truck.

15. In an air-cushion device for cars, the combination of a truck, with a floating bolster, an air-cushion between the two, bearings for the car toward the ends of the bolster, a central pivotal connection between the car and the truck, and an air-cushion associated with such connection.

**758,605. MECHANISM FOR SECURING RUBBER TIRES TO FELLIES.** JOSEPH R. PLACE and NATHAN A. KEYS, Burlington, Iowa. Filed Apr. 14, 1903. Serial No. 152,912. (No model.)



*Claim.*—1. In a mechanism of the class described, the combination with a suitable support of a slidably-mounted arm thereon, a clamp carried thereby, a lug extending between the members of said clamp, and auxiliary clamping-jaws pivotally mounted between the members of said clamp, each of said jaws being formed with a notch adapted to surround said lug, substantially as described.

2. In a mechanism of the class described, the combination with a support, of slidably-mounted arms thereon, a clamp carried by each of said arms, said auxiliary clamping-jaws pivotally carried by each of said clamps, each of the clamps being formed with a transverse groove therein, substantially as described.

3. In a mechanism of the class described, the combination with a suitable support, of slidably-mounted arms thereon, a clamp carried by each of said arms, auxiliary clamping-jaws pivotally carried by each of said clamps, and means for gripping the tire being operated upon for preventing longitudinal movement of the rubber of a tire with respect to its metallic core, substantially as described.

4. In a mechanism of the class described, the combination with a suitable support, and slidably-mounted arms thereon, of a clamp carried by each of said arms comprising gripping members, a pin connecting said members and retaining the same against lateral movement relative to each other, and a bolt extending through one of said members and threaded into the other, and auxiliary jaws pivotally carried by said pin, substantially as described.

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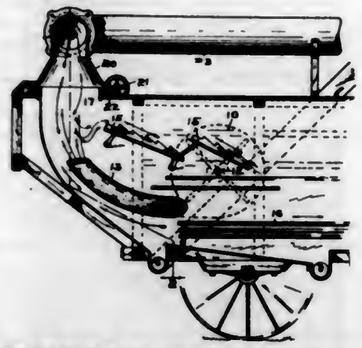
**758,606. PNEUMATIC STRAW-STACKER.** JAMES A. WALSH and EUGENE DEWEY, Indianapolis, Ind. Filed Aug. 17, 1903. Serial No. 169,790. (No model.)

*Claim.*—1. The combination, with a threshing-machine, of blast-producing mechanism embodying an air-duct arranged to discharge substantially vertically within the main body of the separator and below and slightly to the rear of the discharge end of the raker-fingers and in line with the entrance to a material-conveying duct, and said material-conveying duct mounted on the top of the separator with its entrance directly above the discharge end of the raker-fingers, whereby the straw discharged from said raker-fingers will fall directly into the blast from said air-duct and be carried upwardly by said blast directly into said material-conveying duct, substantially as set forth.

2. The combination, with a threshing-machine, of fans, and ducts leading from said fans into each side of the interior of the separator and arranged to direct an air-blast past the ends of the straw-rakers of the thresher and into a discharge-duct above said rakers, substantially as set forth.



3. In a threshing-machine, blast-creating mechanism embodying fans positioned in advance of the delivery end of the raker-fingers, and discharge-outlets leading from said fans into each side of the separator and terminating at a point beyond the said delivery end of the raker-fingers within the body of the separator and in a line with the main discharge-chute, substantially as shown and described.



4. The combination, with a threshing-machine, of a pneumatic stacker embodying blast mechanism discharging substantially vertically to the material-conveying duct, said duct consisting of a rotary stump or base portion and a trunk or chute mounted to swivel upon a substantially horizontal axis upon said stump or base portion whereby said duct as a whole may be swung from side to side and said trunk or chute portion rotated to be elevated and lowered vertically.

5. The combination, with a threshing-machine, of blast-creating mechanism discharging into a duct comprising a stump or neck, and a main delivery trunk or chute mounted thereon by an annular connection or joint extending in a vertical plane, and means for swinging said trunk or chute in a vertical radius from its outer or working position to its reclining or resting position on the thresher-roof.

6. The combination, with a threshing-machine, of a pneumatic stacker comprising a blast mechanism, and a duct having its stump or base portion and its main trunk or chute united by a substantially vertical annular joint.

7. In a pneumatic stacker, the combination, of the stump or base portion mounted to rotate on the top of the separator and the trunk or chute attached to said stump by a substantially vertical annular joint embodying a flange, a ring, and a gear-ring positioned between said flange and ring, substantially as shown and described.

8. In a pneumatic stacker, the combination, of the discharge-duct mounted on a rotary base by a substantially vertical annular joint composed of a flange, a ring and a gear-ring positioned therebetween, and means for engaging with and operating said gear-ring, substantially as and for the purpose set forth.

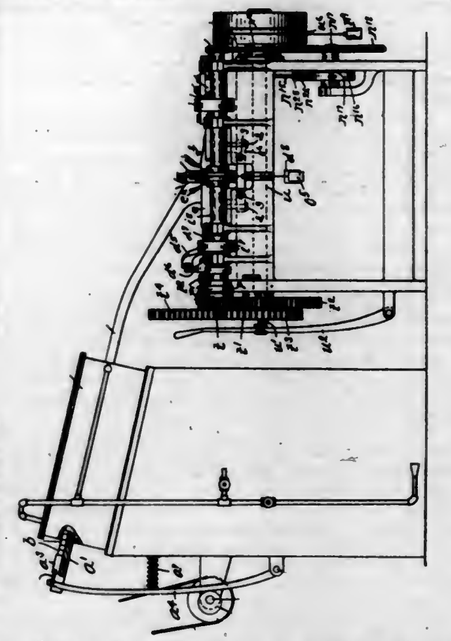
9. The combination, with a threshing-machine, of blast-creating mechanism, a material-discharge duct, and deflector-guides adjoining said discharge-duct in the upper part of the separator for directing the blast from said blast-creating mechanism to said discharge-duct, all substantially as shown and described.

10. The combination, with a threshing-machine, of blast-creating mechanism, a material-discharger the base portion whereof is horizontally rotatable, a trunk portion mounted to swivel in a substantially perpendicular plane upon said base portion, means for rotating said base portion, and means for swiveling said trunk portion, substantially as set forth.

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**758,607. MACHINE FOR MAKING HORSESHOE-CALKS.** JOHN H. VINTON, Boston, Mass., assignor of two-thirds to William W. Potter, Brookline, Mass., and James T. Minchin, Malden, Mass. Filed Jan. 19, 1903. Serial No. 139,521. (No model.)

*Claim.*—1. In a machine for making toe-calks, the combination of a bed-plate, spur-forming devices located at the front edge thereof comprising side-forming devices and an end-forming tool, means for delivering a blank upon said bed-plate, a horizontally-movable plunger which engages the rear end of the blank, means for operating said plunger to slide the blank longitudinally along on said bed-plate until its forward end projects therefrom into the path of engagement of the spur-forming devices, and to hold said blank against rearward movement while the end-forming tool operates, and means for engaging the sides of the blank to hold it in fixed position on the bed-plate while the spur-forming devices operate and form the spur, substantially as described.



2. In a machine for making toe-calks, the combination of a bed-plate, spur-forming devices located at the front edge thereof, comprising side-forming devices and an end-forming tool, means for delivering a blank upon said bed-plate, a blank moving, holding and ejecting plunger which engages the end of the blank, means for operating said plunger to slide the blank longitudinally along on said bed-plate until its forward end projects therefrom into the path of engagement of the spur-forming devices and to hold said blank against rearward movement while the end-forming tool operates and to finally eject the finished toe-calk, and means for engaging the sides of the blank for holding it in fixed position on the bed-plate while the spur-forming devices operate and form the spur, substantially as described.

3. In a machine for making toe-calks, the combination with means for holding the blank in fixed position while the spur is being formed, of a pair of movable side-forming devices for the spur, a toggle-lever connected at one end to one of said devices, a movable support to which the other end of said toggle-lever is connected, means for moving said support inwardly on each operation of the toggle-lever for several successive operations thereof, and then restoring said support to its normal position, substantially as described.

4. In a machine for making toe-calks, the combination with means for holding the blank in fixed position while the spur is being formed, of a pair of movable side-forming devices for the spur, a toggle-lever connected at one end to one of said devices, a movable support to which the other end of said toggle-lever is connected, a wedge located back of said support, means for operating said toggle-lever and means for advancing said wedge on each operation of the toggle-lever for several successive operations, and then restoring the wedge to its normal position, substantially as described.

5. In a machine for making toe-calks, the combination with means for holding the blank in fixed position while the spur is being formed, of a pair of sliding side-forming tools for the spur, a toggle-lever connected at one end to one of said tools, a horizontally-movable support to which the other end of said toggle-lever is connected, a vertically-movable wedge located back of said support, means for advancing the wedge on each successive operation of the toggle-lever for several successive operations thereof, and for then retreating said wedge to its normal position, and an eccentric, the strap of which is connected to said toggle-lever, substantially as described.

6. In a machine for making toe-calks, the combination of a bed-plate, a pair of sliding spur-forming tools located at the front edge thereof, toggle-levers connected with said tools and an intermittingly-operating shaft for operating said toggle-levers, means for feeding the blank forward into the path of engagement with said spur-forming tools, means for holding the blank in its forward position while the forming-tools operate, and a continuously-operating shaft for operating said feeding and blank-holding devices, substantially as described.

7. In a machine for making toe-calks, the combination with means for holding the blank in a fixed position while the spur is being formed, of a pair of side-forming devices for the spur, means for operating them successively, an oscillating end-swaging tool and means for operating it successively, alternately with relation to the side-forming devices, said tool being normally so disposed in front of the blank as to direct the finished toe-calk downward when the latter is thrust into engagement with it, and means for moving said finished toe-calk forward into engagement with said tool to eject it, substantially as described.

8. In a machine for making toe-calks, the combination with means for holding a blank in fixed position while the spur is being formed, of a pair of sliding side-forming devices for the spur, means for operating them successively, an oscillating end-swaging tool, and means for operating it successively, alternately with relation to the side-forming devices a support for said swaging-tool, and means for adjusting it in and out, substantially as described.

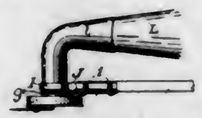
9. In a machine for making toe-calks, the combination with means for holding a blank in fixed position, and a continuously-operating shaft for said means, of a pair of sliding side-forming devices toggle-levers connected thereto, eccentrics, the straps of which are connected to said toggle-levers, and an intermittingly-operated shaft upon which said eccentrics are mounted, substantially as described.

10. In a machine for making toe-calks, the combination of spur-forming devices and an intermittingly-operated shaft therefor, of blank-holding mechanism, and means for operating it while said shaft is at rest, substantially as described.

11. In a machine for making toe-calks, the combination of spur-forming devices and an intermittingly-operated shaft therefor, of blank feeding and ejecting mechanism, and blank-holding mechanism, and means for operating said mechanisms, while said shaft is at rest, substantially as described.

# REISSUES.

**12,213. REPRODUCER-SUPPORT FOR GRAMOPHONES.** ELDRIDGE R. JOHNSON, Philadelphia, Pa., assignor to the Victor Talking Machine Company, a Corporation of New Jersey. Filed Dec. 26, 1903. Serial No. 186,758. Original No. 742,666, dated Oct. 27, 1903.



*Claim.*—1. In a talking-machine, a reproducer-arm provided with independent means for supporting the communicating ends of the sound-box and amplifying-horn, said means being independent of the sound-passage establishing communication between said sound-box and horn.

2. In a talking-machine, the combination with the reproducer-arm, of a support adapted to receive and hold the sound-box in position, and means for receiving the end of the amplifying-horn and for holding the same in position and in operative relation to the sound-box, said support and means being independent of the sound-passage establishing communication between said sound-box and horn.

3. In a talking-machine, a reproducer-arm provided with means independent of each other for supporting the communicating ends of sound-box and amplifying-horn, one of said means operatively engaging both the sound-box and horn when assembled, said means being independent of the sound-passage establishing communication between said sound-box and horn.

4. In a talking-machine, the combination with the reproducer-arm, of means secured to the free end of said arm and adapted to hold the sound-box in position, and means for holding the small end of the amplifying-horn in position about a portion of said sound-box.

5. In a talking-machine, a reproducer-arm, a sound-box, a horn, said sound-box entering a portion of said horn, means for holding said sound-box in position, and means for holding said horn in position, and for holding said sound-box and horn in engagement with each other, said means being independent of the sound-passage establishing communication between said sound-box and horn.

6. In a talking-machine, the combination with the reproducer-arm, of an annular support secured to the free end of said arm, and adapted to receive and hold the sound-box in position, and means also attached to the free end of said arm for holding the amplifying-horn in position and for clamping the same to the sound-box.

7. In a talking-machine, a reproducer-arm, a sound-box, a horn having a compressible portion carried thereby, a sound-box engaging said portion, means for holding said sound-box in position, and means for compressing the compressible portion of said horn into contact with said sound-box.

8. In a talking-machine, the combination with the reproducer-arm, of a plate secured thereon having an opening therein to receive the tubular portion of the sound-box and a clamp also carried by said arm adapted to hold the small end of the amplifying-horn in position and to clamp the same to the tubular portion of the sound-box.

9. In a talking-machine, the combination with the reproducer-arm, of a plate secured to the free end thereof and comprising a ring adapted to receive and hold the tubular portion of a sound-box in position, and an adjustable clamp also carried by said arm for holding the small end of the amplifying-horn in position and for clamping the same to the tubular portion of the sound-box.

10. In a talking-machine, the combination with the reproducer-arm, of a ring secured thereto for receiving the tubular portion of a sound-box, a band also secured to said arm and means for contracting said band.

11. In a talking-machine, the combination with the reproducer-arm and reproducer, of a ring secured thereto and adapted to receive the tubular portion of a sound-box, a band also attached to said arm and a thumb-screw for contracting said band.

12. In a talking-machine, the combination with the reproducer-arm and reproducer, of a plate secured to the free end of the arm having its end projecting beyond the same, the said end being provided with a circular opening to hold the tubular portion of the reproducer, a spring-band also secured to said arm, and means for contracting said spring-band.

13. In a talking-machine, the combination with the reproducer-arm and reproducer, of a plate secured to the free end of the arm having its end projecting beyond the same, the said end being provided with a circular opening to hold the tubular portion of the reproducer and being split to form clamping-sections, a spring-band also secured to said arm and means for clamping said spring-band.

14. In a talking-machine, the combination with the reproducer-arm and reproducer, of a horn and flexible connection with said horn and reproducer, a plate secured to the free end of the arm, having its end projecting beyond the same, said end being provided with a circular opening to hold the tubular portion of the reproducer, a spring-band also secured to said arm and means for clamping said spring-band about said flexible connection and tubular portion of the reproducer.

15. In a talking-machine, the combination with the reproducer-arm and reproducer, of a horn, a flexible connection between said horn and reproducer, a plate secured to the free end of the arm having its end projecting beyond the same, the said end being provided with a circular opening to hold the tubular portion of the reproducer and being split to form spring clamping-sections, a spring-band also secured to said arm, and means for clamping said spring-band about said flexible connection and tubular portion of the reproducer.

**12,214. PROCESS OF OBTAINING TIN BY ELECTROLYSIS.** ERNEST QUINTAINE, Argentouil, France. Filed Apr. 20, 1903. Serial No. 153,575. Original No. 699,012, dated Apr. 29, 1902.

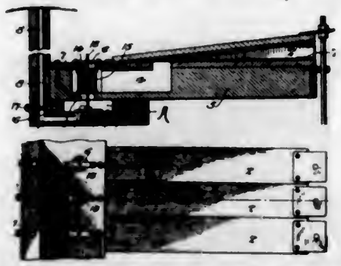
*Claim.*—1. The process of separating tin electrolytically from tin-scrap, which consists in suspending the scrap, as the anode, in a bath containing an aqueous solution of acid nitrate of tin to which have been added a salt of ammonia for neutralization, suspending a suitable cathode in the bath, and finally passing the electric current through the anode, bath and cathode, substantially as described.

2. The process of separating tin electrolytically from tin-scrap, as the anode, in a bath containing an aqueous solution of acid nitrate of tin to which have been added sulfate of ammonia for neutralization suspending a suitable cathode in a bath, and finally passing the electric current through the anode, bath and cathode, substantially as described.



3. The process of separating tin electrolytically from scrap-tin, which consists in suspending the scrap, as the anode, in a bath composed of an aqueous solution of acid nitrate of tin to which have been added a salt of ammonia and chlorid of tin, suspending a suitable cathode in the bath, and finally passing the electric current through the anode, bath and cathode, substantially as described.

**12,215. AUTOMATICALLY-OPERATED MUSICAL INSTRUMENT.** HERBERT R. SHARPS, Chicago, Ill., assignor, by mesne assignments, to the Cable Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 29, 1904. Serial No. 191,225. Original No. 696,762, dated Apr. 1, 1902.



*Claim.*—1. In a pneumatically-operated musical instrument, the combination with an exhaust-chamber and diaphragms in the bottom of said chamber which control the operation of the primary valve mechanism, of air-supply ducts whose lower mouths are beneath said diaphragms and whose upper extremities are beneath the paper containing the sound-producing characters, exhaust-ducts communicating between said exhaust-chamber and said air-supply ducts, and screws extending across the air-supply ducts, designed to close said exhaust-ducts for regulating the effective caliber thereof, and whereby the supply of air beneath said diaphragms may be controlled, substantially as described.

2. In a pneumatically-operated musical instrument, the combination with an exhaust-chamber and diaphragms in the bottom of said chamber which control the operation of the primary valve mechanism, of air-supply ducts whose lower mouths are beneath said diaphragms, and whose upper extremities are beneath the paper containing the sound-producing characters, exhaust-ducts between said exhaust-chamber and said air-supply ducts, and screws passed through the walls of said air-supply ducts and across the same so as to register with the mouths of said exhaust-ducts, whereby a portion of each of said air-supply ducts is designed to serve as an exhaust-duct at predetermined times, substantially as described.

3. In a pneumatically-operated musical instrument, the combination with an exhaust-chamber and diaphragms in the bottom of said chamber which control the operation of the primary valve mechanism, of air-supply ducts whose lower mouths are beneath said diaphragms, and whose upper extremities are beneath the paper containing the sound-producing characters, exhaust-ducts communicating with said exhaust-chamber and air-supply ducts, and means traversing said air-supply ducts for controlling the effective caliber of said exhaust-ducts, whereby the portions of said air-supply ducts beneath said controlling means are designed at times to serve as an exhaust-duct, and also whereby the atmospheric pressure upon said diaphragms may be regulated, substantially as described.

4. In a pneumatically-operated musical instrument, the combination with an exhaust-chamber, and diaphragms in the bottom of said chamber which control the operation of the primary valve mechanism, of air-supply ducts whose mouths at one end are beneath said diaphragms, and whose mouths at the opposite end are in position to be closed by the paper containing the sound-producing characters; exhaust-ducts communicating between said exhaust-chamber and said air-supply ducts, having each a portion leading from the exhaust-chamber, which, continued in the same direction, penetrates the board containing the same at a surface of said board at the side of the pneumatic action at which said air-supply ducts lead to said paper, and screws set in through such surface in said direction, seating endwise in said portions of the ducts respectively.

# DESIGNS.

**36,886. BADGE.** FRANK C. FANE, Colorado Springs, Colo. Filed Mar. 24, 1904. Serial No. 199,879. Term of patent 3½ years.



*Claim.*—The ornamental design for a badge, as shown.

**36,887. BADGE.** NATHANIEL M. KIRSHNER, Buffalo, N. Y. Filed Mar. 21, 1904. Serial No. 199,295. Term of patent 3½ years.



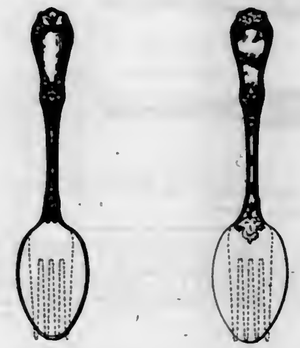
*Claim.*—The ornamental design for a badge, as shown.

**36,888. BADGE OR SIMILAR ARTICLE.** ALFRED SCHICKERLING, New York, N. Y., assignor to Schickerling Brothers and Company, New York, N. Y., a Firm. Filed Apr. 17, 1903. Serial No. 153,146. Term of patent 7 years.



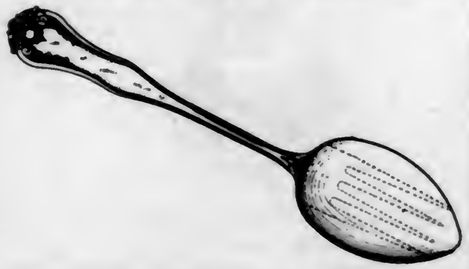
*Claim.*—The ornamental design for a badge or similar article, as shown.

**36,889. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES.** WILLIAM C. CODMAN, Providence, R. I., assignor to Gorham Manufacturing Company, Providence, R. I. Filed Mar. 28, 1904. Serial No. 200,444. Term of patent 7 years.



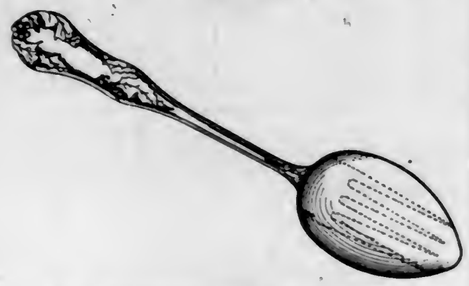
*Claim.*—The ornamental design for the handle of a spoon, fork, or similar article, as shown.

36,890. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. GEORGE P. ITTIG, Bridgeport, Conn., assignor to the R. H. H. Smith Silver Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Mar. 23, 1904. Serial No. 199,646. Term of patent 7 years.



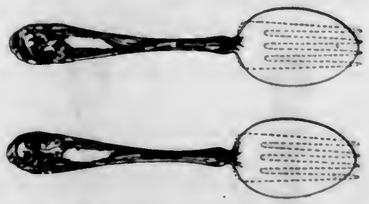
*Claim.*—The ornamental design for the handle of a spoon, fork, or similar article, as shown

36,891. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. GEORGE P. ITTIG, Bridgeport, Conn., assignor to the R. H. H. Smith Silver Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Mar. 23, 1904. Serial No. 199,647. Term of patent 7 years.



*Claim.*—The ornamental design for the handle of a spoon, fork, or similar article, as shown.

36,892. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. JACOB ROTHLISBERGER, Niagara Falls, N. Y., assignor to Oneida Community, Limited, Kenwood, N. Y., a Corporation of New York. Filed Mar. 18, 1904. Serial No. 198,847. Term of patent 7 years.



*Claim.*—The ornamental design for a handle for spoons, forks, or similar articles, as shown.

36,893. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. JACOB ROTHLISBERGER, Niagara Falls, N. Y., assignor to Oneida Community, Limited, Kenwood, N. Y., a Corporation of New York. Filed Mar. 18, 1904. Serial No. 198,848. Term of patent 7 years.

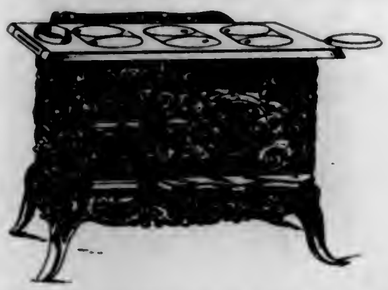


36,893



*Claim.*—The ornamental design for a handle for spoons, forks, or similar articles, as shown.

36,894. COOKING RANGE OR STOVE. CLEAVER M. LIPHART, Richmond, Va., assignor to Atlanta Stove Works, Atlanta, Ga. Filed Mar. 22, 1904. Serial No. 199,483. Term of patent 14 years.



*Claim.*—The ornamental design for a cooking range or stove, as shown.

36,895. TRIMMING FOR LADIES' UNDERWEAR. THOMAS KERWIN and JOHN MCGINLEY, Philadelphia, Pa., assignors to Friedberger Manufacturing Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Mar. 22, 1904. Serial No. 199,482. Term of patent 3½ years.



*Claim.*—The ornamental design for trimming for ladies' underwear, as shown.

36,896. STOCK. FLORIDA SOLLER, New York, N. Y. Filed Mar. 31, 1904. Serial No. 201,000. Term of patent 3½ years.




*Claim.*—The ornamental design for a stock, as shown.



# TRADE-MARKS

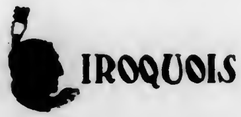
## REGISTERED APRIL 26, 1904.

42,465. THEATRICAL COSTUMES. LESTER D. GARDNER, New York, N. Y. Filed Mar. 25, 1904.

**RADIUM**

The word "RADIUM." Used since January 25, 1904.

42,466. LADIES' DRESS-WAISTS AND SUITS. FRANK WITCH COMPANY, Buffalo, N. Y. Filed Feb. 23, 1904.




The representation of an Indian head and the word "IROQUOIS." Used since December 3, 1903.

42,467. KNITTED OVERSHIRTS AND KNITTED SWEATERS. MARSHALL S. ELY, New York, N. Y. Filed Jan. 16, 1904.




The word "MERCURY" and a representation of the god Mercury. Used since November 12, 1903.

42,468. LEATHER BOOTS AND SHOES. MIDDLESEX SHOE CO., Boston, Mass. Filed Mar. 18, 1904.



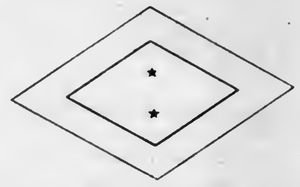

A representation of the Western Hemisphere bearing the words "SHOES FOR ALL SECTIONS" and a representation of an eagle. The words "NORTH," "SOUTH," "EAST," and "WEST" appear at the appropriate quarters of the hemisphere. Used since February 18, 1904.

42,469. LEATHER BOOTS AND SHOES. MOORE-SHAFER SHOE MANUFACTURING CO., Brockport, N. Y. Filed Mar. 24, 1904.

**THE ULTRA**

The words "THE ULTRA." Used since January 1, 1899.

42,470. RUBBER BOOTS, RUBBER SHOES, AND RUBBER SANDALS. BENTLEY & OLMSTED COMPANY, Des Moines, Iowa. Filed Dec. 15, 1903.



The representation of a relatively large diamond-shaped figure and a relatively small diamond-shaped figure within the large one, and also the representation of two stars arranged within the smaller diamond-shaped figure. Used since March 20, 1903.

42,471. RUBBER BELTING. GORHAM RUBBER COMPANY, San Francisco, Cal. Filed Mar. 19, 1903.

**AMAZON**

The word "AMAZON." Used since January 1, 1900.

42,472. RUBBER PACKING. GORHAM RUBBER COMPANY, San Francisco, Cal. Filed Mar. 19, 1903.

**FEARLESS**

The word "FEARLESS." Used since January 1, 1900.

42,473. RUBBER PACKING. GORHAM RUBBER COMPANY, San Francisco, Cal. Filed Mar. 19, 1903.

**KING**

The word "KING." Used since January 1, 1900.

42,474. RUBBER PACKING. GORHAM RUBBER COMPANY, San Francisco, Cal. Filed Mar. 19, 1903.

QUEEN

The word "QUEEN." Used since January 1, 1900.

42,475. PREMIUM STAMPS. THE SPERRY AND HUTCHINSON COMPANY, New York, N. Y. Filed Feb. 27, 1904.

"S. & H."

The letters and character "S. & H." inclosed in quotation-marks and with a period after each letter, the whole inclosed in a figure consisting of two parallel double lines of equal length closed at each end by double straight lines forming the two equal sides of an isosceles triangle. Used since December 1, 1903.

42,476. BRIER PIPES. E. DROUINGAND & SON, London, England, and St. Claude, France. Filed Mar. 28, 1904.

The representation of the flower of a thistle flanked by leaves Used since June 6, 1894.

42,477. LAUNDRY SOAP. THE LENOX SPRAYER AND CHEMICAL CO., Pittsfield, Mass. Filed Mar. 17, 1904.

PLEASE

The word "PLEASE." Used since December, 1903.

42,478. TOILET CREAM. ERNEST M. KANE, Codeyville, Kans. Filed Mar. 22, 1904.

KKK

The three letters "K K K." Used since 1897.

42,479. TOILET-PAPER. SCOTT PAPER CO., Philadelphia, Pa. Filed Feb. 25, 1904.

SELMOR

The word-symbol "SELMOR." Used since August 1, 1903.

42,480. TOILET-PAPER. SCOTT PAPER CO., Philadelphia, Pa. Filed Mar. 2, 1904.

PURITEEN

The word-symbol "PURITEEN." Used since August 1, 1903.

42,481. CERTAIN NAMED MEDICINES. GREENVILLE MEDICINE COMPANY, Greenville, S. C. Filed Feb. 27, 1904.

VULCAN

The representation of a bent arm with clenched hand holding a hammer, associated with the word "VULCAN" and sprays of leaves crossed, surrounded by a rectangular border-line. Used since October 1, 1903.

42,482. MEDICINE FOR THE CURE OF CERTAIN NAMED DISEASES. THE SNEEZO COMPANY, Rensselaer, N. Y. Filed Feb. 25, 1904.

SNEEZO

The word "SNEEZO." Used since January 15, 1904.

42,483. DYSPEPSIA REMEDIES. UNDERWOOD & JUDD, Gardner, Mass. Filed Feb. 29, 1904.

Cracker

The word "CRACKER." Used since February 12, 1904.

42,484. REMEDY FOR PNEUMONIA. GOWAN MEDICAL COMPANY, Durham, N. C. Filed Feb. 20, 1904.

Gowan

The name "GOWAN," the facsimile signature of the given name of Gowan Dusenbery, the president of the corporation. Used since November 9, 1903.



42,485. ANTISEPTIC AND DISINFECTING PREPARATIONS. JEYES' SANITARY COMPOUNDS COMPANY, LIMITED, London, England. Filed Feb. 1, 1904.

CYLLIN

The word "CYLLIN," being represented as resting upon a body of water, with a conventional illustration of the sun rising above the horizon, the whole being surrounded by a circle. Used since July 21, 1903.

42,486. CERTAIN NAMED CHEMICALS. CHEMISCH-TECHNISCHES UND HYGIENISCHES INSTITUT, DR. POPP & DR. BECKER, Frankfort-on-the-Main, Germany. Filed Mar. 22, 1904.

*Erodin*

The word "ERODIN." Used since April, 1897.

42,487. CERTAIN NAMED CHEMICAL SUBSTANCES. KNOLL & CO., Ludwigshafen-on-the-Rhine, Germany. Filed Mar. 26, 1904.

Styracol

The word-symbol "STYRACOL." Used since May 6, 1895.

42,488. CIGARS. E. A. KLINE & CO., New York, N. Y. Filed Mar. 22, 1904.

EL SYMPHONIE

The words "EL SYMPHONIE." Used since July 1, 1895.

42,489. CIGARS. E. A. KLINE & CO., New York, N. Y. Filed Mar. 22, 1904.

RIGOLETTO

The word "RIGOLETTO." Used since January 1, 1904.

42,490. CONFECTIONERY. THE BELLE MEAD SWEETSMAKERS, Hopewell, N. J. Filed Mar. 4, 1904.

BELLE MEAD

The words "BELLE MEAD." Used since January 24, 1901.

42,491. CONFECTIONERY. DENIS ARNOULD, New York, N. Y. Filed Mar. 2, 1904.

KNICKERBOCKER

The word "KNICKERBOCKER." Used since September, 1893.

42,492. COFFEE. DIRECT COFFEE COMPANY, Boston, Mass. Filed Feb. 26, 1904.




The representation of a dock with ships being unloaded by stevedores, the stevedores being represented as transferring the goods from the ships to freight-cars side-tracked on the dock. In the background is a representation of the rising sun with the word "DIRECT" appearing thereon. Used since December 1, 1903.

42,493. WHEAT-FLOUR. RIVES MILLING COMPANY, Rives, Tenn. Filed Jan. 5, 1904.



The representation of rolls upon a plate with a fork stuck into one of them, the fork being held by a human hand above the same and heat emanating from said rolls. Used since 1898.

42,494. PREPARED AND MIXED FOOD FOR STOCK AND POULTRY. GEORGE M. THOMAS, Hagerstown, Md. Filed Mar. 16, 1904.

42,494.

CROWN



The word "CROWN" and the representation of an outdoor scene or pasture with trees and a fence in the background and a horse and colt, a cow and a calf, a sheep and a hog in the foreground. Used since January 1, 1904.

42,495. LEATHER-POLISHES. WHITTEMORE BRO'S and Co., Cambridge, Mass. Filed Mar. 23, 1904.

GILT EDGE

The words "GILT EDGE." Used since January 29, 1885.

42,496. CERTAIN NAMED LUBRICATING COMPOUNDS. O. F. ZURN COMPANY, Philadelphia, Pa. Filed Apr. 2, 1904.

ECONOMY

The word "ECONOMY." Used since September, 1883.

42,497. CERTAIN NAMED LUBRICATING COMPOUNDS. O. F. ZURN COMPANY, Philadelphia, Pa. Filed Apr. 2, 1904.

ROYAL

The word "ROYAL." Used since September, 1883.

42,498. LUBRICATING OILS AND GREASES. O. F. ZURN COMPANY, Philadelphia, Pa. Filed Apr. 2, 1904.

INVICTA

The word "INVICTA." Used since August, 1900.

42,499. LUBRICATING OILS AND GREASES. O. F. ZURN COMPANY, Philadelphia, Pa. Filed Apr. 2, 1904.

42,499.

VOLANTA

The word "VOLANTA." Used since June 21, 1899.

42,500. RAZORS. KRAUT & DONNAL, Chicago, Ill. Filed Mar. 11, 1904.

BARBERS TIP



The representation of a hand holding a coin in the attitude or position of offering a tip, associated with the words "BARBERS TIP." Used since September 1, 1903.

42,501. COOKING UTENSILS MADE OF ALUMINIUM AND ALUMINIUM ALLOYS. THE ALUMINUM COOKING UTENSIL COMPANY, Pittsburg, Pa. Filed Jan. 4, 1904.

WEAREVER

The word "WEAREVER." Used since November 1, 1903.

42,502. TALKING-MACHINES, PARTS AND SUPPLIES THEREFOR, AND RECORDS. UNIVERSAL TALKING MACHINE MANUFACTURING Co., New York, N. Y. Filed Feb. 5, 1904.

UNIVERSAL

The word "UNIVERSAL." Used since January, 1898.

42,503. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

REGAL

The word "REGAL." Used since October 29, 1898.

42,504. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

*LIBERTY*

The word "LIBERTY." Used since March 30, 1896.



42,505. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

*Beacon*

The word "BEACON." Used since December 21, 1899.

42,506. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

Commonwealth

The word "COMMONWEALTH." Used since October 22, 1902

42,507. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

HONEYMOON

The word "HONEYMOON." Used since November 30, 1901.

42,508. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

ORIENT

The word "ORIENT." Used since February 18, 1903.

42,509. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

PATHFINDER

The word "PATHFINDER." Used since August 4, 1903.

42,510. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

*Electro*

The word "ELECTRO." Used since January 9, 1903.

42,511. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

MONITOR

The word "MONITOR." Used since May 13, 1898.

42,512. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

GULF QUEEN

The words "GULF QUEEN." Used since January 7, 1902.

42,513. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

Knickerbocker

The word "KNICKERBOCKER." Used since March 19, 1902.

42,514. SEWING-MACHINES AND ATTACHMENTS. THE DAVIS SEWING MACHINE Co., Dayton, Ohio. Filed Apr. 2, 1904.

KEYSTONE

The word "KEYSTONE." Used since March 10, 1904.

42,515. SEWING-MACHINES, ATTACHMENTS, AND PARTS THEREOF. THE SINGER MANUFACTURING Co., New York, N. Y. Filed Dec. 19, 1903.




A monogram composed of the letters and abbreviation "S M Co," the upper portion of the letter "S" overlying the word "THE." Used since March, 1893.

42,516. SHAFT-HANGERS. STANDARD PRESSED STEEL Co., Philadelphia, Pa. Filed Mar. 5, 1904.

AMERICAN PIONEER

The words "AMERICAN PIONEER." Used since January 16 1904.

42,517. CERTAIN NAMED LOGGING-TOOLS. CHAMPION TOOL & HANDLE WORKS, Evart, Mich. Filed Feb. 15, 1904.

CHAMPION.

The word "CHAMPION." Used since January 1, 1885.

42,518. TRIMMINGS AND HARDWARE FOR CARRIAGE-TOPS. CRANDAL STOUT & CO., Binghamton, N. Y. Filed Feb. 23, 1904.

PIONEER C.S.& CO.

The letters, character, and abbreviation "C. S. & Co." inclosed in a diamond and associated with the word "PIONEER." Used since 1898.

PHOTO-LITH. THE NORRIS PETERS CO. WASHINGTON, D. C.



# LABELS

## REGISTERED APRIL 26, 1904.

10,990.—*Title:* "SWANSDOWN PREPARED TABLE SALT." (For Table-Salt.) S. S. PIERCE Co., Boston, Mass. Filed April 1, 1904.

10,991.—*Title:* "GRAPE NUT BREAD." (For Bread.) KOPP & MORDAN, Chicago, Ill. Filed April 1, 1904.

10,992.—*Title:* "HARMONY BRAND." (For Canned Salmon.) ROBERT D. HUME, Wedderburn and Goldbeach, Oreg., and San Francisco, Cal. Filed March 17, 1904.

10,993.—*Title:* "SUGAR GLEN." (For Molasses.) C. E. COE, Memphis, Tenn. Filed April 4, 1904.

10,994.—*Title:* "CHICKASAW PLANTATION." (For Molasses.), C. E. COE, Memphis, Tenn. Filed April 4, 1904.

10,995.—*Title:* "PARAISO MINERAL WATER." (For Mineral Water.) A. E. SCAMELL, San Francisco, Cal. Filed March 31, 1904.

10,996.—*Title:* "PINEAPPLE SODA." (For Carbonated Beverages.) AMERICAN SODA FOUNTAIN COMPANY, Boston, Mass. Filed March 31, 1904.

10,997.—*Title:* "MALTINATTE." (For Beverages.) ALBERT L. SAAKE, Brooklyn, N. Y. Filed April 5, 1904.

10,998.—*Title:* "WEDDERBURN RYE." (For Rye Whisky.) JOHN WEDDERBURN, Baltimore, Md. Filed April 2, 1904.

10,999.—*Title:* "COMMERCIAL SEAL." (For Cigars.) A. C. HENSCHEL & Co., Chicago, Ill. Filed March 5, 1904.

11,000.—*Title:* "DR. WHITE'S SPECIALTY FOR DIPHTHERIA." (For Medicine.) WILLIAM WHITE, Adamsville, R. I. Filed December 10, 1903.

11,001.—*Title:* "GOLD COIN FOOT REMEDY." (For Live-Stock Medicine.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,002.—*Title:* "GOLD COIN GERM KILLER." (For Live-Stock Medicine.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,003.—*Title:* "GOLD COIN SCIENTIFIC HEAVE CURE." (For Live-Stock Medicine.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,004.—*Title:* "GOLD COIN WORM POWDER." (For Live-Stock Medicine.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,005.—*Title:* "GOLD COIN EGG-A-DAY POULTRY FOOD." (For Poultry-Food.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,006.—*Title:* "GOLD COIN SPECIAL HORSE TONIC." (For Horse-Tonic.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,007.—*Title:* "GOLD COIN QUICK CURE CONDITION POWDER." (For Condition-Powders for Live Stock.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,008.—*Title:* "GOLD COIN HOG FATTENER." (For Hog-Fattening Foods.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,009.—*Title:* "GOLD COIN CATTLE FATTENER." (For Fattening-Foods for Cattle.) GOLD COIN STOCK FOOD COMPANY, St. Paul, Minn. Filed March 22, 1904.

11,010.—*Title:* "LOUISIANA PURCHASE SOUVENIR PUZZLE." (For Puzzles.) LINWOOD F. JORDAN, Portland, Me. Filed April 22, 1903.

11,011.—*Title:* "REGINA." (For Music-Boxes.) REGIN MUSIC BOX Co., Rahway, N. J., and New York, N. Y. Filed April 5, 1902.

# PRINTS

## REGISTERED APRIL 26, 1904.

977.—*Title:* "ONTOSTAY." (For Hat-Pins.) JULES UHRY, New York, N. Y. Filed April 2, 1904.

978.—*Title:* "FAULTLESS DAY SHIRTS." (For Day-Shirts.) E. ROSENFELD & Co., Baltimore, Md. Filed March 18, 1904.

979.—*Title:* "FAULTLESS NIGHT SHIRTS." (For Night-Shirts.) E. ROSENFELD & Co., Baltimore, Md. Filed March 18, 1904.

980.—*Title:* "FAULTLESS PAJAMAS." (For Pajamas.) E. ROSENFELD & Co., Baltimore, Md. Filed March 18, 1904.

981.—*Title:* "DON'T SUFFER AND CUSS BUY YOUR SHOES FROM US." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed April 5, 1904.

982.—*Title:* "NEW STYLES ALWAYS ON HAND." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed April 5, 1904.

983.—*Title:* "OUR CUSTOMERS SMILE." (For Shoes.) ORAN MCCORMICK, Boston, Mass. Filed April 5, 1904.

984.—*Title:* "THE BEER TO WHICH THE SOUTH POINTS WITH PRIDE." (For Beer.) CHATTANOOGA BREWING Co., Chattanooga, Tenn. Filed April 4, 1904.

985.—*Title:* "EXTRA PALE." (For Bottled Beer.) WM. J. LEMP BREWING Co., St. Louis, Mo. Filed March 24, 1904.

986.—*Title:* "POOLE PIANOS." (For Pianos.) WILLIAM H. POOLE, Boston, Mass. Filed March 31, 1904.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE NICKEL AND CRANE.

*Decided December 22, 1903.*

1. DESIGNS—PATENTABILITY—TELEPHONE-STANDARD—CHANGES FOR MECHANICAL FUNCTION.

Where a standard old in another art was adapted as a telephone desk-standard and there was added to it an arm for supporting the telephone-receiver and such changes were made as to adapt it to its new use, *Held* that the changes were not for the purpose of ornament, but to perform the mechanical functions desired, and that therefore they do not make the device patentable as a design.

2. SAME—SAME—CHANGES NOT MADE FOR ORNAMENT—NEW FUNCTION.

Where the changes in an old device do not and were not intended to increase the beauty of the device, but merely to adapt it to perform new functions when used for a new purpose, *Held* that if there is invention present meriting patent protection it is a mechanical invention and not a design invention.

3. SAME—DOUBLE USE—APPEARANCE.

A design cannot be made the subject of a second patent merely because it has been put to a new use, since the question of use does not enter into consideration in designs. They relate solely to the matter of appearance.

APPEAL from Examiners-in-Chief.

DESIGN FOR TELEPHONE DESK-STANDARDS.

*Mr. George P. Barton* and *Messrs. Barton & Tanner* for the appellants.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief affirming the rejection by the Primary Examiner of a claim to a design for telephone desk-standards.

The standard claimed is that which is now in ordinary use, including the movable forked arm for supporting the telephone-receiver.

The references cited are Dauthendey, January 27, 1874, No. 146,880; Eckert *et al.*, April 10, 1883, No. 275,611; Daleiden, August 23, 1892, No. 481,225; Gharky, April 17, 1900, No. 32,527, (design.)

The Primary Examiner based his rejection upon two grounds:

First. That the device is not a single unitary article of manufacture, but is a machine made up of movable parts, and,

Second. That the changes in shape from prior devices are not such as called for the exercise of invention, but are the result of mere mechanical skill.

The Examiners-in-Chief were of the opinion that the Examiner was wrong as to the first ground, but right as to the second.

The patent to Dauthendey shows a standard substantially like that claimed by these appellants The slight difference in the shape of the vertical portion is clearly not sufficient to patentably distinguish them. That standard is not used for a telephone; but that fact is immaterial, since a design cannot be made the subject of a second patent merely because it has been put to a new use. The question of use does not enter into consideration in designs, since they relate solely to the matter of appearance. They are patentable only when they have a new and ornamental appearance. As said in *Young* v. *Clipper*, (121 Fed. Rep., 560:)

> A design is patentable for its appearance, and the use of it consists in exhibition and contemplation of it.

The addition by these appellants of an arm for supporting the telephone-receiver and the change in the shape of the upper end of Dauthendey's standard are changes made solely for the purpose of performing the mechanical functions desired and not for the purpose of ornament. They do not and were not intended to increase the beauty of the standard, but merely to adapt it to perform new functions which are expected of it when used as a telephone-standard.

Since the differences from the prior devices do not add to the beauty of the device, but merely adapt it to perform new functions, they do not patentably distinguish them as designs. If they involve novelty and the exercise of the inventive faculty, they must be placed in the class of mechanical inventions, which must be protected under section 4886 of the Revised Statutes, and not in the class of designs.

In *Rowe* v. *Blodgett & Clapp Co.* (112 Fed. Rep., 61) the Court of Appeals of the Second Circuit said:

> I decide this case upon the broader ground that patents for designs are intended to apply to matters of ornament, in which the utility depends upon the pleasing effect imparted to the eye, and not upon any new function. The advantage claimed by complainant for the increased flat surface afforded by the curved line, which is the essential feature of his patent, is to enhance the mechanical utility of the calk by thus making a stouter shoulder, which would not so readily become bruised out of shape, and which, therefore, could be more easily removed with a wrench, when worn, from the shoe. It is significant, in this connection, that the patentee first applied for this essential feature of downward-projecting curved lines on the sides of the base, as a mechanical invention, which application was rejected, and that he then attempted to cover the same feature by a design patent. Design patents refer to appearance, not utility. Their object is to encourage works of art and decoration which appeal to the eye, to the esthetic emotions, to the beautiful.

In *Royal Metal Company* v. *Art Metal Works* (121 Fed. Rep., 128) the circuit court said:

> The principal things are the downward dip in front, which appears to have been old, and the shape of the triangular front

pieces to produce it by the angular attachments to the bands. This effect is mechanical. Design patents cover appearances only. A monopoly of operating devices can be secured only by a mechanical patent.

In *Marvel* v. *Pearl* (114 Fed. Rep., 946) the circuit court said in reference to a design patent upon a syringe:

The design patent sued on in this cause is another instance of a perversion of the statute. Patents for designs are intended to apply to matters of ornament, in which the utility depends upon the pleasing effect imparted to the eye, and not upon any new function. (*Rowe* v. *Blodgett & Clapp Co.*, Nov. 14, 1901, 50 C. C. A., 120; 112 Fed. Rep., 61.)

In *Eaton* v. *Lewis* (115 Fed. Rep., 635) the circuit court said in reference to a design for a belt-fastener:

The projecting points at the middle of the sides of the fasteners of each of these patents serve to mark where to place the fasteners equally upon the ends of the belting to be joined; but that advantage is mechanical, and not esthetic.

The thought stated in *ex parte Knothe* (102 O. G., 1294) applies to this case:

A new and ornamental design will be found in an article of manufacture when there can be found in such article a new appearance created by inventive process and serving the purpose of embellishment. Such new appearance may be superficially applied or it may rest more or less deeply in the structure of the parts, but it must be a creation of inventive genius, accomplishing the purpose of ornament and not used for its functional value. It will be found, weighed, and valued by the test of ornament. It will not be found in those articles whose visible forms are only modeled to develop function.

The following statements made in *ex parte Hartshorn* (104 O. G., 1395) are directly applicable to the facts of the present case:

A design may properly be placed upon a device having mechanical utility; but the design itself is not founded upon such utility. The function of the design is to appeal to the esthetic taste or, as stated by the court, to produce "pleasure or admiration in its contemplation." A device or article of manufacture has its mechanical utility irrespective of the fact that it is embellished with a design.

There does not appear to be in this case anything present created by invention and placed upon this article of manufacture for the purpose of ornamentation. The subject-matter of a design patent is wholly wanting from this case. The construction shown is created for the accomplishment of a mechanical result, and while it would have been possible to place upon this article some ornamental design for its embellishment the construction presented here seems void of any such design, which if present would have been the subject-matter contemplated by section 4929 of the Revised Statutes.

Attention is called in appellants' brief to the recent decision of Judge Ray in the second circuit in *Bradley* v. *Eccles*, (122 Fed. Rep., 871.) The case cited is without force, since it has been reversed upon appeal by the Circuit Court of Appeals of the Second Circuit. The opinion in this case by Judge Lacombe has not yet been reported, but in it he says:

But such a trivial variance is not sufficient to support a patent. As was said by the Court of Appeals in the Sixth Circuit: "The difference in the curve at the bottom of the frame for electrical machines is one which would suggest itself to any workman, and does not involve that exercise of the inventive genius which is as necessary to support a design as a mechanical patent." (*Westinghouse E. & M. Co.* v. *Triumph Electric Co.*, 97 Fed. Rep., 99.)

It must be held that these appellants have not produced any ornamental design by the exercise of invention which entitles them to a patent.

The decision of the Examiners-in-Chief is affirmed.

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## EX PARTE WARMAN AND WINTER.

*Decided February 26, 1904.*

REOPENING CASES—REJECTION—APPEAL.

Where after appeal to the Commissioner the case is remanded to the Examiner to consider new references and the claims are amended in view of those references, but are rejected, *Held* that the applicants' remedy is by appeal to the Examiners-in-Chief and not by petition to the Commissioner.

ON PETITION.

RIVETS.

Application of John I. Warman and Carl Winter.

*Mr. Harry Lea Dodson* for the applicants.

ALLEN, *Commissioner:*

This is a petition for an action on the merits of an appeal in the above-entitled application which was taken July 1, 1903.

On September 15, 1903, this application was remanded to the Examiner for the citation of further references, and a decision on the merits was not rendered at that time.

The records show that the Examiner cited new references and that the applicants have canceled the claims then in the application with the view of avoiding the rejection.

New references having been cited and new claims having been presented, this application should first be appealed to the Examiners-in-Chief when it is in condition for such appeal. The application is not now in condition for appeal, for the reason that but one rejection has been rendered by the Examiner. A second appeal may be taken to the Examiners-in-Chief without the payment of a fee, as the applicants have "once paid the fee." (Sec. 4909, R. S.)

The petition is denied.

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## EX PARTE WHITNEY.

*Decided March 7, 1904.*

SUSPENSION OF ACTION—EXTENSION OF TIME FIXED BY STATUTE.

The Office has no authority to grant a request for a suspension of action, which amounts to a request to extend the year allowed the applicant by law within which to act.

ON PETITION.

ELECTRIC LADDER.

*Mr. B. Singer* for the applicant.

ALLEN, *Commissioner:*

This is a petition that all proceedings in this case be suspended until the applicant can procure the dismissal of a certain suit which from the papers filed in the case appears to have been brought for the purpose of determining the question of ownership of the invention covered by the above application.

An examination of the record discloses that the last official action preceding this petition was that of March 23, 1903, in which the claims were rejected. Under the law the applicant can himself defer action in the case as a matter of right until March 23, 1904, so that this petition seeks to have proceedings stayed beyond this date. Section 4894 of the Revised Statutes provides that:

All applications for patents shall be completed and prepared for examination within one year after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within one year after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

A similar request to this was passed upon in *ex parte Bauercamper*, (99 O. G., 448,) in which it was said:

* * * the period of ninety days extends over the statutory limit within which the application must be prosecuted in order to save it from abandonment.





It is therefore seen that the request for this extension amounts to a request for the Commissioner to set aside the plain provision of a statute. This he has no authority to do.

The petition is not only objectionable in asking an indefinite suspension, but requests suspension beyond the year in which action must be taken as required by the statute. In such cases the Commissioner has no authority to grant the petition, and it is therefore denied.

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# DECISIONS OF THE U. S. COURTS.

## Court of Appeals of the District of Columbia.

### FLORA v. POWRIE.

*Decided February 2, 1904.*

1. INTERFERENCE—PRIORITY OF INVENTION.

*Held* that the evidence on behalf of Flora is not sufficient to sustain the *onus* of proof upon him due to his later filing date, and therefore the decision adjudging Powrie the first inventor affirmed.

2. SAME—SAME—CONCURRENT DECISIONS OF PATENT OFFICE NOT DISTURBED.

Where the record shows that the facts of the case have been fully and carefully examined by the tribunals of the Patent Office, resulting in a concurrence of decision thereon, *Held* that it is the established rule that the court will not reverse that decision unless it clearly appears that the decision was against the weight of evidence. It will not be reversed on a matter of doubt.

3. SAME—SAME—EVIDENCE—PROCESS NOT PROVED BY ARTICLE.

Where the inventor Flora testifies that he made certain screens in evidence by the process of the issue, but the screens themselves do not show how they were made, and the only corroborating witnesses testify that the screens were made, but do not know how they were made, *Held* that Flora has not established the fact that he performed the process of the issue.

4. SAME—SAME—SAME—USE OF MICROSCOPE BY PATENT OFFICE.

Where certain screens in evidence are said by the inventor to have been made by the process of the issue, but an examination of those screens with a microscope by the tribunals of the Patent Office indicates that they were not made by that process, *Held* sufficient to determine the matter against him in view of the *onus* upon him of proving his case.

5. EVIDENCE—EXAMINATION OF EXHIBITS WITH MICROSCOPE.

Where exhibits are introduced in evidence and it is not pretended that everything on those exhibits is discernible to the naked eye, *Held* that an examination of the exhibits by the aid of a microscope is legally admissible. To hold otherwise would even precludea judge with defective eyesight the right to use his spectacles.

6. SAME—SAME—RESULT PRESUMED TO BE CORRECT.

The results of the use of the microscope are admissible as evidence and are presumed to be correct until shown to the contrary, upon the same principle that the results of the working of many other scientific instruments are presumed to be correct.

7. EXAMINATION OF APPLICATIONS—TESTS AND EXPERIMENTS—DUTY OF PATENT OFFICE.

It is the duty of the Patent Office to make all proper tests and experiments with regard to matters involved in claims to inventions relating to science and the useful arts to establish the truth as between the parties and as between the parties and the public. (Sec. 4890, R. S.)

*Mr. Douglas Dyrenforth* and *Mr. W. W. Dudley* for the appellant.

*Mr. Louis K. Gillson* for the appellee.

ALVEY, *C. J.:*

This appeal is from the Patent Office in a matter of interference, and the subject-matter of the issue is as to the method or process of making photographic multicolored screens for use in what is called colored photography; the object being the production of a picture of the object photographed in all its natural colors. The interference is declared as between the application of Ellsworth E. Flora, filed January 13, 1902, and the application of John H. Powrie, filed October 25, 1901. It thus appears that Powrie is the senior party of record, and that the *onus* of proof to show priority of invention is upon Flora, the junior party of record. The issue of interference is stated in fifteen paragraphs or sections, and is as follows:

1. The herein-described method of producing heliochromic effects, consisting in successively exposing different portions of a sensitized surface to actinic rays, and developing and dyeing the exposed portions.

2. The herein-described method of producing heliochromic effects, consisting in successively exposing different portions of a sensitized surface to actinic rays, and developing and dyeing the exposed portions; the surface being resensitized intermediate of the exposures.

3. The herein-described method of making heliochromic screens, consisting in successively photographing and dyeing juxtaposed bands in a common plane on a sensitized plate.

4. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized coating of a transparent medium to the action of light through a transparency provided with opaque lines, figures or dots to render parts of said coating insoluble and others soluble, and then coloring the insoluble parts and setting the color.

5. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized coating of a transparent medium to the action of light through a transparency provided with opaque lines, figures or dots to render parts of said coating insoluble and others soluble, then coloring the insoluble parts by absorption therein of the coloring material and then setting the color.

6. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized coating of a transparent medium to the action of light through a transparency provided with opaque lines, figures or dots, to render parts of said coating insoluble and others soluble, then cleaning the medium of the soluble sensitized material, then coloring the remaining insoluble material and setting the color.

7. The method of producing a photographic color-screen, which consists in rendering insoluble, in lines, figures or dots, the sensitized material on a transparent medium by subjection to light, and then coloring said lines, figures or dots and setting the color.

8. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized surface coating of a transparent medium at different parts by successive operations to the action of light, and after each said operation coloring and mordanting the newly-remaining insoluble portions of the coating.

9. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized surface coating of a transparent medium at certain parts to the action of light, then cleaning the medium of the remaining soluble material and coloring and mordanting the insoluble parts, again coating the transparent medium between said insoluble colored parts with suitably-sensitized material, subjecting parts of the newly-sensitized surface to the action of light, coloring and mordanting, repeating said operations for each color desired.

10. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized surface coating of a transparent medium at certain parts to the action of light, then cleaning the medium of the remaining soluble parts, then applying one coloring-matter to the insoluble parts and mordanting the same, again coating said transparent medium between said insoluble colored parts with suitable sensitized material, subjecting parts of the newly-sensitized surface to the action of light, then cleaning the medium of the remaining soluble material, then applying another and different coloring-matter to be absorbed by the then new insoluble surface and mordanting the same, again coating said transparent medium between said colored parts with suitable sensitized material, and then when the same is rendered insoluble applying thereto a still different coloring-matter to be absorbed by the new insoluble surface and mordanting the same.

11. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized surface coating of a transparent medium to light through a plate of transparent material, provided with opaque lines, dots or figures, the relative positions of the plate and said medium being changed with each operation, and intermediate of said operations coloring and mordanting.

12. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized surface coating of a transparent medium at certain parts to the action of light, then cleaning the medium of the remaining soluble sensitized parts, then applying one coloring-matter to the insoluble parts and mordanting the same, again coating said transparent medium between said insoluble colored parts with sensitized material, subjecting parts of the newly-sensitized surface to the action of light, then cleaning the medium of the remaining soluble sensitized material, then applying another and different coloring-matter to be absorbed by the new insoluble surface and

mordanting the same, again coating the transparent medium between the then colored parts with sensitized material to produce a third new insoluble surface and applying thereto a still different coloring-matter to be absorbed by the then new insoluble surface and mordanting the same, and finally coating the colored surface with transparent protecting material.

13. The method of producing a photographic color-screen, which consists in providing a transparent plate having opaque lines, figures or dots thereon, separated by clear spaces, the opaque and clear portions of the plate being so arranged that one occupies twice the area of the other, subjecting the suitably-sensitized surface coating of a transparent medium to the action of light through said plate, cleaning said medium of the remaining soluble material and coloring and mordanting the then remaining insoluble material, again coating the transparent medium between said colored parts with sensitized material and repeating said operations by printing through the said plate in a different position and then coloring, employing a different color in each coloring operation.

14. The method of producing a photographic color-screen, which consists in subjecting the suitably-sensitized surface coating of a transparent medium at parallel parts by successive operations to the action of light through a line, opaque screen, and after each said operation coloring and mordanting the insoluble portions of the coating.

15. The method of producing a lined photographic color-screen, which consists in providing a transparent plate having parallel opaque lines with spaces between them one-half the width of the lines, subjecting the suitably-sensitized surface coating of a transparent medium to the action of light through said plate, coloring and mordanting the then insoluble material, again coating the transparent medium between said colored parts with sensitized material, subjecting it to light through the opaque-lined plate in another position and coloring and mordanting the then new insoluble material, and repeating said operations by printing through the opaque-lined plate in different positions, and then coloring, until the surface of the transparent medium is completed, employing a different color in each coloring operation.

According to the preliminary statement of Flora, his conception, disclosure, and reduction to practice of the invention, all occurred on or about May 1, 1897. There was no drawing or model made. But he alleges that he first embodied the invention in a full-sized photographic screen, which was completed about the 1st of May, 1897, and that such screen was first successfully operated in Chicago in the spring and summer of the year 1897. That in the spring or summer of that year he made a number of photographic multicolored screens by the method set forth in the declaration of interference. That on or about the 22d day of January, 1900, he wrote a description of the method of making multicolored screens, in accordance with the invention set forth in the declaration of interference, which description, with a description of other proposed improvements, was on or about the 17th day of March, 1900, given by the appellant to the president of the International Color Photo Company, of which appellant was superintendent, to be delivered to the board of directors of that company; a copy of which description has been preserved by appellant.

Powrie, the senior party, in his preliminary statement alleges, that his conception and disclosure of the invention occurred on the 6th day of October, 1899. No model or drawing was made. But that completion and use of a screen were effected by August 12, 1900; and that reduction to practice was effected November 29, 1900.

A large volume of evidence was taken by the parties, and it would appear that the case was the subject of a very elaborate and critical examination before the tribunals of the Patent Office, all of whom concurred in one conclusion. The case is essentially one of fact, and the facts of the case have been most fully reviewed by all the tribunals before whom it has been heard, and they all concur in the conclusion, and for very much the same reasons, that Powrie is entitled to priority of invention. The *onus* of proof being upon Flora, as the junior party of record, the Examiner of Interferences, the Board of Examiners-in-Chief, and the Commissioner, all in succession, concur in holding that Flora had failed to establish priority, and that priority of invention should be awarded to Powrie on his record title to priority, as the senior party of record.

We have examined with care the voluminous record before us, and also the opinions of the tribunals of the Patent Office, and we are far from being satisfied that there is error in the conclusion reached by the tribunals below. The rule is an established one, and prevails in the Patent Office as well as in other courts, and that is, where the Board of Examiners-in-Chief affirm the decision of the Preliminary Examiner, or the Examiner of Interferences, the Commissioner of Patents will not reverse the Board on any mere question of fact, unless the decision be clearly against the weight of evidence. (*Hazelip* v. *Richardson*, 10 O. G., 747, 1876; *Walker on Patents*, sec. 132.) And so on appeals to this court, the rule is established that where the Commissioner concurs in and affirms the decision of the Examiners-in-Chief on matters of fact, this court will not reverse that decision, unless it clearly appears that the decision was against the weight of evidence. It will not be reversed on any mere question of doubt whether it be correct or not. Therefore, where the court can see that the facts of the case have been fully and carefully examined by the tribunals of the Patent Office, resulting in a concurrence of decision thereon, it is deemed entirely unnecessary to restate and reiterate the facts gone over by the tribunals below, with a repetition of their conclusions, unless it clearly appears that a different result should have been reached in the court below. Of course, where matters of law are involved a different principle applies.

The *onus* being upon Flora, his case must be first examined, as the case of Powrie stands good on his record dates, until overcome by testimony produced on the part of Flora.

Flora claims to have conceived the invention and reduced the same to practice on the 1st day of May, 1897. In support of this allegation he has produced certain screens which he claims to have made by the process described in the issue. But there is really no certain reliable corroborative evidence to show how these screens were made, and the evidence would seem to refute the testimony of Flora, the claimant. McDonough, in whose laboratory the screens are said to have been made, is dead, and the only witnesses called to testify as to these screens are Banning and Sheridan; but neither of these witnesses pretend to know how the screens were made. There is nothing on the face of the screens themselves to show how they were made, or that they were made by the process described in the issue of interference. They have been subjected to a microscopic test or examination and that would seem to negative the fact as





alleged by Flora, or at least to throw doubt upon the pretense that the screens were made by the process described in the issue.

In his preliminary statement, as we have seen, Flora alleges that he reduced to writing a complete description of his invention and which was by him delivered to the president of the International Color Photo Company; and the testimony shows that the president of that company was D. K. Tripp. This president of that company would therefore appear to have been an important witness for Flora, and he is living, and competent as a witness. But he was not called as a witness and did not testify. In case of doubt in regard to the paper delivered to him, and as to the disposition thereof, his testimony would seem to be most essential. And as Flora alleged the making of the paper, and the delivery of it to Tripp, and he relies upon it to establish a material fact in his case, it was incumbent upon him not only to prove the writing of the paper, but the time and circumstances of the making thereof, and if lost or destroyed, to prove the contents by competent means.

Instead of producing the best evidence of the paper, and when it was written, Flora offered in evidence three papers or documents, differing in appearance, but similar in language. These documents are marked, "Flora Proposed Improvements," "Copy Flora Proposed Improvements," and "Tripp's Copy Flora Proposed Improvements." Each of these three papers or documents is in reality made up of three independent papers. But neither of them is identified as the original paper written by Flora himself and delivered to Tripp. As stated by the Commissioner, the first part, composed of pages marked 1 to 8, inclusive, consists of a series of suggestions by Flora of "Proposed improvements in different departments of the laboratory." The second paper is composed of pages marked 1 and 2, and is headed "The optical lantern or stereopticon." The third paper is composed of pages marked 1, 2 and 3, and is headed "Method of making ruled or stippled screens by photography." This last paper contains a description of the invention of the issue. At the end of the first paper, marked Exhibit Flora Proposed Improvements, Flora's signature appears, but neither of the other two parts appears to have been signed by Flora. The party for whom the original papers is alleged to have been made and to whom it was delivered, was not called as a witness to testify; nor are the papers produced identified with what is alleged to have been the original paper delivered to Tripp. Flora himself testified, it is true, that the document exhibited is one of the originals, there having been three copies made, but this is not substantiated by the other witnesses. We gather from the testimony of Mrs. Bessey, the type-writer, and a witness for Flora, what these papers produced in evidence are, and how they came into existence.

Referring to exhibit "Flora Proposed Improvements," under the division or head "Method of making ruled or stippled screens by photography," she is asked:

Do you remember writing that? Ans. Yes, I remember.
Ques. 26. Do you, in a general way, remember what follows that heading? Ans. A description of the process.
Ques. 27. Please look over carefully the matter following the heading and state, if you now remember writing that at the time you mention in 1900, as you stated it in the latter part of March or the first part of April? Ans. Yes; I remember writing this subject-matter at that time.
Ques. 19. Did you make either of these copies which are before you, and referred to in your last answer? Ans. I think not.
Ques. 20. What do you think these copies are? Ans. I think they are reproductions of my copy.

She further testified, on cross-examination, as to what she understood of the copy that she made of the original paper, and in answer to cross-question 62, she said:

There are several things about the paper that impressed themselves upon my mind at the time I wrote it. One was the evolution of the work. The word stippled was a new one to me, a line that was one three-hundredths of an inch seemed very small, and there were several things in the description that reminded me of the spectrum which I studied at that time. I couldn't give a description of the process. I don't understand it now. I was taking quantities of work at the time, and of course I didn't stop to understand everything I wrote. The work was all familiar to me as I looked it over.

The other witnesses upon the subject of definite disclosure of the process of the invention of the issue, are not more clear and definite in their recollection than Mrs. Bessey. Indeed, the only satisfactory description of the process is that contained in the last three pages of the third paper or copy of the proposed improvements, under the head "Method of making ruled or stippled screens by photography." But it is impossible to determine from the evidence in the record before us, when those last three pages were written, or when they were added to the preceding parts of the document.

Douglass, one of the witnesses examined and re-examined by both parties, and whose testimony is somewhat conflicting, states that he prepared part of the original report on the proposed improvements in 1900 or early in 1901, and that he has no recollection of having seen at that time that part of the copy of the paper which contains the description of the process in issue in this interference. And Banning, the patent attorney, connected with the International Color Photo Company as director and attorney, and appearing as a witness for Flora, in answer to cross-question 59, which inquired of him:

As a director or as counsel, did you advise the patenting of this invention in the name of Flora?

He replied:

No, for as I have already stated, I never saw the account of the invention contained in the exhibits that have been shown me until the latter part of December, 1901, and, as I have already stated, I did not, at the time Mr. Flora showed me his screens, and plates, and pictures in 1897, understand the details of the process by which they were made. The machinery that Mr. Tripp had built and on which he had Mr. Flora working was for ruling straight lines on the glass plates or screens. As counsel I prepared applications as instructed by Mr. Tripp.

Mr. Sheridan, another witness for Flora, testified substantially to the same effect. In answer to question 33, which inquired of him whether Flora had ever described to him the method he employed in producing the screens shown him in 1897, said:

He did not in detail. He merely told me it was produced by photography, as far as I can remember; and he showed me a screen which he said had been produced by photography.

If the paper alleged to have been prepared by Flora and delivered to Tripp, in March, 1900, to be

considered by the board of directors of the International Color Photo Company, including Mr. Banning, and who was the counsel of the company, did in fact contain the description of the process of producing the screens described in the issue, it is somewhat difficult to conceive how it is that Mr. Banning knows nothing of it; or how it happened that the description of the process was not placed in the hands of the attorney for examination, and, if favorably considered, that an application was not prepared for the Patent Office. But no explanation of these matters is shown; and the application finally made to the Patent Office was not filed until more than three months after the application by Powrie was filed. These facts are not without significance, and they are not clearly explained as they should be. Tripp, possibly, if he had been examined as a witness might have given an explanation, but he was not called as a witness in the case.

When the case was before the Examiner of Interferences for investigation, as to the rights of the parties to priority of invention, he, in the exercise of his right and duty as Examiner, (the nature of the subject-matter manifestly required it,) resorted to the use of the microscope as a means for the examination of the screens exhibited by Flora, to ascertain whether they were made by the process as defined in the issue of interference. The result of this examination was quite at variance with the process described by Flora and as defined in the issue.

The result of the examination by the microscope is stated by the Examiner in his opinion, and he states it thus:

> The Examiner has made a careful microscopical examination of each of the several exhibits referred to, and finds not only that the colors are in many instances superposed, but that in each exhibit, without exception, there is a thick stratum of uncolored transparent gelatin, the depth of which is markedly out of all proportion to that of the colored part. By scratching the gelatin its uncolored base is clearly seen, and an examination of a section of the film of Flora stippled screen "BaC," Flora mica screen, and plate No. 23, of the screens in evidence as Flora Exhibit, "Later Stippled Screen D," both when attached to the carrying-plate and when separated therefrom, reveals this characteristic, and shows that the dye has not penetrated the gelatin to any appreciable extent, but is merely superficial. The demonstration to this effect found in the brief on behalf of Powrie, is confirmed in every instance. It is inconceivable that these plates could have been made by the method alleged and yet reveal the peculiarities so antagonistic to the theory of their production. The Examiner is impressed with the conviction that they were not made by the process in question. These characteristics exhibited are more nearly in accord with what would appear to be the natural result, had they been made by the process described in McDonough's patent, No. 471,186, March 22, 1892, in evidence as Powrie's Exhibit McDonough Patent.

This is the result of the microscopic examination by the Examiner of Interferences; and the Commissioner, in his opinion, says, that—

> a mere inspection of these plates with the aid of the microscope is sufficient to raise a grave doubt as to the fact that the plates referred to were made by the process of the issue.

The examination of the exhibits of Flora by the aid of the microscope, bringing the tribunals of the Patent Office to the conclusion that there was grave doubt as to whether the exhibits were made by the process described in the issue of interference, was sufficient of itself to turn the scale against Flora; for the *onus* of proof being upon him, any rational doubt as to the existence of rightful claim to priority on his part, at once determines the matter against him, unless that doubt be overcome by clear and decisive proof.

But objection is raised on the part of Flora to the use of the microscope in the examination of the screens and plates exhibited in the case. It is urged in argument that such an examination was not legally admissible by the Examiner of Interferences, and that the result of his examination by such means could not have credence allowed it by either the Examiners-in-Chief or the Commissioner of Patents, or this court on appeal. But we are not of that opinion.

The microscope is an optical scientifical instrument by which objects are so magnified that details invisible or indistinct to the naked eye are clearly seen. It has in modern times become one of the most important instruments for the cultivation and development of many departments of science; and every department of science in which it can be employed has the instrument so constructed as to be suitably adapted to the work in which it is used. It may be true as contended, that every person has not sufficient skill in its use to employ it with perfect accuracy. But the Examiners in the Patent Office are selected and appointed in respect to their skill and qualifications to make examinations and comparisons of claims to inventions, and of the priority of such claims, and this necessarily involves skill and knowledge of no small degree. We must suppose, therefore, such Examiners to have the requisite skill and knowledge to understand the use, and the manner of using, so important an instrument in their work as the microscope. The Patent Office is provided with the most approved scientific instruments with which to test matters involved in claims to inventions relating to science and the useful arts; and it is the duty of the Examiners to make all proper tests and experiments to establish the truth as between the parties, and as between the parties and the public. (Rev. Stats. U. S., sec. 4890.) The results of the use of the microscope are admissible as evidence, and are presumed to be correct until shown to the contrary, upon the same principle that the results of the working of many other scientifical instruments are presumed to be correct. In stating this principle, Taylor, in his work on evidence, (vol. 1, p. 135, sec. 148,) says:

> For example, a jury would be advised, in the absence of evidence to the contrary, to rely on the general correctness of a watch or a clock, which had been consulted for the purpose of fixing the time when a certain event happened. So, a thermometer would be regarded as a sufficiently safe indication of the heat of any liquid in which it had been immersed, and a pedometer might be used as evidence of the distance between two places which had been traversed by the wearer. Blood stains are every day detected by means of known chemical tests. So, aneroids, anemometers, and a variety of other ingenious contrivances for detecting different matters, will occasionally play an important part as furnishing presumptive proof in courts of justice.

Upon the principle upon which this microscopical examination is sought to be excluded in this case, a magnifying-glass could not be applied by court or jury to detect the different colors of ink in which a paper may be written or signed, or to detect a forgery; and if an instrument cannot be read because of defective eyesight, or because of bad writing, a judge would not be allowed to aid himself in deciphering the instrument by the use of spectacles. It is not pretended here that everything on the screens or plates are discernible to the naked eye; they were therefore proper subjects-matter for the use of the microscope, as without the use of that instrument the screens could not be read. If either of the parties was discontented with the result of the microscopical examination that was made, he could have had the matter subjected to further tests either before the Examiners-in-Chief or the Commissioner, on appeal. But that was not attempted.

Our conclusion is, with the several tribunals of the Patent Office, that Powrie is entitled to stand upon his record date of the 25th day of October, 1901, to establish constructive reduction to practice. That Flora, being the junior party with the *onus* of proof upon him, has failed to overcome the *prima facie* case in favor of Powrie, and that the latter is entitled to priority of invention as against Flora; and therefore priority must be awarded to Powrie, and the decision of the Commissioner be affirmed. It is therefore directed that the proceedings and this decision be certified to the Commissioner of Patents to be entered of record in the Patent Office, in accordance with law. *Decision affirmed.*



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OF THE

## COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS

IN THE MATTER OF

## PATENTS, TRADE-MARKS, ETC.

OFFICIAL GAZETTE—MARCH–APRIL, 1904.

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# DIGEST OF DECISIONS

OF THE

## COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS

IN THE MATTER OF

## PATENTS, TRADE-MARKS, ETC.

OFFICIAL GAZETTE—MARCH–APRIL, 1904.

# DIGEST OF DECISIONS.

[Decisions of the United States courts are indicated by an asterisk (*).]

## ABANDONED APPLICATIONS.

1. MISTAKE IN ATTORNEYS' RECORDS—DATE OF ACTION.
Where it appears that through a clerical error the attorneys' records indicated that the year allowed by law for action expired at a later date than the actual date and the error was not discovered until an amendment was filed supposedly within the year, but actually after that time, *Held* that the application is abandoned. [*Ex parte* Raymond, 1008.

2. SAME—DELAY NOT UNAVOIDABLE.
Where the applicant postpones action until what he supposes is the latter part of the time allowed him and he then discovers that there was a mistake in his records and the time has already expired, *Held* that although the mistake may have been unavoidable the delay was not unavoidable, and the case is abandoned. [Id.

## ABANDONMENT.

(See Abandoned Applications; Trade-Marks, 5.)

SUSPENSION OF ACTION—EXTENSION OF TIME FIXED BY STATUTE.
The Office has no authority to grant a request for a suspension of action, which amounts to a request to extend the year allowed the applicant by law within which to act.
[*Ex parte* Whitney, 2442.

## ABANDONMENT OF APPLICATIONS.

(See Division of Applications, 3.)

## ACCESS TO PENDING APPLICATIONS.

(See Interference, 31, 32.)

1. COPIES OF APPLICATIONS NOT FURNISHED—REQUEST BY INVENTOR AFTER ASSIGNMENT.
After an inventor has assigned his entire interest in his invention and the assignee has asserted his right to prosecute the application, copies of the application will not be furnished to parties having no interest in the invention at the mere request of the inventor.
[*In re* Duncan & Duncan, 805.

2. SAME—RULE OF SECRECY—OWNER OF INVENTION.
The rule that applications will be preserved in secrecy is intended primarily for the benefit of the owner of the invention, and his rights will be safeguarded by the Office in so far as possible. [Id.

3. SAME—RIGHTS OF INVENTOR—SHOWING OF REASONS.
The inventor or his agent will be permitted to see his application after assignment upon the consent of the assignee or upon showing good reason for wishing to see it, such as to enable him to prepare foreign applications or to draw proper lines of division between it and some other application.
[Id.

4. APPLICATION—PETITION TO INSPECT.
Where a party in interference testifying in his own behalf refers to his earlier application not in interference and its subject-matter, *Held* that the petition of his opponent to inspect said application will be granted. [*In re* Patterson, 1070.

5. COPY OF APPLICATION FURNISHED—CERTIFICATE OF COURT.
Where a party has brought suit on a patent for infringement and testifies in regard to another application for patent relating to the same invention and the judge trying the case certifies that a copy of the application would be admitted in evidence, *Held* that a petition for a copy by the defendant will be granted. [*In re* Deitsch, 1885.

## ACTION ON THE MERITS.

(See Drawings, 4, 5; Rejection of Cases, 3.)

## AFFIDAVITS.

(See Appeal to the Court of Appeals of the District of Columbia, 2; Interference, 55, 56, 60, 61; Petition to the Commissioner of Patents.)

## AMENDMENTS.

(See Designs, 7, 8; Petition to the Commissioner of Patents; Rejection of Cases.)

## APPEAL.

(See Appeal to the Commissioner of Patents; Appeal to the Court of Appeals of the District of Columbia; Appeal to the Examiners-in-Chief; Limit of Appeal; Mandamus.)

## APPEAL TO THE COMMISSIONER OF PATENTS.

(See Interference, 33.)

FAVORABLE DECISION ON PATENTABILITY.
Where after decision by the Examiners-in-Chief holding the issues patentable B. contends that they are not, in fact, patentable unless amended, *Held* that the affirmative decision of the Examiners-in-Chief upon the patentability of the issues is final and will not be reviewed on appeal.
[Brown *v.* Lindmark, 1071.

## APPEAL TO THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

(See Interference, 67; Mandamus, 2.)

1. NO APPEAL AS TO REHEARING.
The court will not entertain a reason of appeal founded upon a motion for rehearing in the Patent Office.
[*Greenwood *v.* Dover, 2172.

2. CHANGE IN EXHIBITS AFTER FILING—AFFIDAVITS NOT CONSIDERED BY COURT.
The court will not consider affidavits filed either in the court or the Patent Office relating to changes that may have occurred in drawings, models, experimental machines, and like exhibits after they are introduced in evidence. [*Id.

## APPEAL TO THE COURTS.

(See Interference, 54.)

## APPEAL TO THE EXAMINERS-IN-CHIEF.

(See Appeal to the Commissioner of Patents; Division of Applications, 2, 3, 9, 10, 11, 12, 14; Mandamus; Petition to the Commissioner of Patents; Reissues; Reopening of Rejected Cases.)

1. APPEAL REGULAR IN FORM—DUTY OF EXAMINER.
Where an appeal is filed regular in form, it is the duty of the Examiner to answer the appeal by furnishing the Examiners-in-Chief the statement provided for in Rule 135.
[*United States, *ex rel.* Steinmetz, *v.* Allen, Commissioner of Patents, 549.

2. REQUIREMENT TO DIVIDE APPLICATION—MERITS DISTINGUISHED.
*Held* that a requirement by the Primary Examiner for division is appealable to the Examiners-in-Chief, although a distinction can be made between his ruling upon that question and one on the merits, if we regard the merits to mean invention, novelty, or the like. [*Id.

3. REOPENING CASES—REJECTION—APPEAL.
Where after appeal to the Commissioner the case is remanded to the Examiner to consider new references and the claims are amended in view of those references, but are rejected, *Held* that the applicants' remedy is by appeal to the Examiners-in-Chief and not by petition to the Commissioner.
[*Ex parte* Warman and Winter, 2442.

## APPLICANT AND PATENTEE.

(See Interference, 7, 9, 39, 43, 44.)

APPLICATIONS.

(See Abandoned Applications; Abandonment; Access to Pending Applications; Delay in Filing Applications; Division of Applications; Drawings; Interference, 12, 57, 58, 59; Reissues; Rejection of Cases.)

INCOMPLETE—DRAWINGS DESCRIBED, BUT NOT FURNISHED.
Where only one sheet of drawings, including one figure, is filed with the application and the specification describes four figures, and this discrepancy is not discovered until the case is examined upon its merits, *Held* that the application must be regarded as incomplete until the date when the additional drawings are furnished. [*Ex parte* Ehrendriech, 275.

ASSIGNMENTS.

(See Access to Pending Applications; Trade-Marks, 1.)

BLUE-PRINTS.

(See Interference, 51.)

BRIEFS.

1. SUPPRESSED WHEN FILED AFTER HEARING.
Where a brief is filed after the hearing and without permission, *Held* that it will not be received and considered. The rules as to the time of filing briefs should be complied with. [Newcomb *v.* Lemp, 2171.

2. MUST BE FILED BEFORE HEARING.
All briefs must be filed before the hearing, and they cannot be filed at or after the hearing except upon the consent of the adverse party and upon obtaining the permission of the tribunal hearing the case. [Id.

BURDEN OF PROOF.

(See Interference, 7, 9, 12, 13, 42, 57, 58, 59.)

CERTIFICATE OF DEPOSIT IN PAYMENT OF FEES.

TRANSFER FROM ONE CASE TO ANOTHER.
Where payment is made to a subtreasurer by one party on account of patent fees and a certificate of deposit is received, *Held* that the certificate will not be received as payment by a different party in a different application except upon the consent of the person in whose name it was issued. *Held*, further, that it is effective after receipt by the Office as of the date of the consent to its use in the case and not as of the date of the payment to the subtreasurer. [*Ex parte* Avery, 806.

CERTIFIED COPIES.

(See Access to Pending Applications, 5.)

CLAIMS.

(See Reissues.)

COMMISSIONER OF PATENTS.

(See Appeal to the Commissioner of Patents; Mandamus; Petition to the Commissioner of Patents; Writ of Error.)

CONSTRUCTION OF RULES.

(See Appeal to Examiners-in-Chief, 1; Division of Applications, 4, 5, 6, 7; Interference, 28, 37, 38, 39; Reopening of Rejected Cases; Writ of Error.)

RULE 41 OF PATENT OFFICE INVALID—DIVISION BETWEEN PROCESS AND APPARATUS.
Rule 41 of the Patent Office in so far as it requires a division between claims for a process and claims for an apparatus, if they are related and dependent inventions, is invalid. [* *Ex parte* Frasch, 554.

CONSTRUCTION OF STATUTES.

(See Division of Applications, 2; Interference, 36.)

CONTRACTS.

(See Interference, 6.)

COPIES OF PENDING APPLICATIONS.

(See Access to Pending Applications.)

COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

(See Mandamus, 2; Writ of Error.)

DATE OF DECISION.

(See Limit of Appeal, 4, 5.)

DECISION OF THE EXAMINER OF INTERFERENCES.

(See Interference, 28.)

DECISIONS OF THE EXAMINERS-IN-CHIEF.

(See Appeal to the Commissioner of Patents; Interference, 31.)

DELAY.

(See Abandoned Applications, 2; Interference, 16.)

DELAY IN FILING APPLICATION.

(See Interference, 16, 17.)

UNEXPLAINED DELAY IN APPLYING FOR PATENT—CLAIM DISCREDITED.
Unexplained delay in applying for a patent is a circumstance of considerable significance when considered in connection with other circumstances tending to discredit the applicant's claims. [* Sendelbach *v.* Gillette, 276.

DELAY IN MAKING MOTION.

(See Interference, 25, 26, 27.)

DESIGNS.

1. ANTICIPATION—HOSE-SUPPORTER.
*Held* that the appellant's design for a hose-supporter is lacking in patentable novelty in view of his own prior patent and also in view of patents granted to others upon devices differing from the appellant's only in mechanical details. [* *In re* Freeman, 1339.

2. PATENTABILITY—DIFFERENCES IN DETAILS—SUBSTANTIAL DIFFERENCES NECESSARY.
The change or omission or addition of a few minor details would not justify the multiplication of design patents even though the designs may readily be distinguished from each other by one or more features. Substantial differences are required to render one device patentable over another as a design. [*Id.

3. SAME—TESTED BY ORNAMENT—MECHANICAL DIFFERENCES IMMATERIAL.
The novelty of a design must be judged by the test of ornament, and while the final merit of ornamentation may depend upon the harmonious blending of small details mechanical differences which may make a vast difference in the operativeness of the devices may make no appreciable difference between the devices as designs. [*Id.

4. SAME—MECHANICAL AND DESIGN INVENTIONS DISTINGUISHED.
The test of patentable novelty in the case of mechanical inventions and in the case of designs is different, owing to the different nature of the two things. Detail is of little consequence in designs, and it may be all important in mechanical inventions. [*Id.

5. DRAWING—DESCRIPTION UNNECESSARY AND CONFUSING.
A picture of the design serves to convey a greatly more adequate idea of the design than any verbal description could possibly do, and in the presence of the picture a superadded verbal description is generally useless and oftentimes confusing. [*Id.





6. SAME—SAME—DESCRIPTION OMITTED.
The ruling that the descriptive material in the specification of design cases should be reduced to a minimum or omitted *Held* to be the dictate of reason, common sense, and common experience. [*Id.

7. FINAL REJECTION—AMENDMENT TO SPECIFICATION.
Where in a design case the claim is rejected and the applicant is required to cancel unnecessary description in the specification and he files an amendment canceling the description and asking for reconsideration of the claim, *Held* that the case is in condition for final rejection. [*Ex parte* Segelhorst, 1887.

8. SAME—SAME—CLAIM NOT AMENDED.
An amendment to the specification in a design case canceling unnecessary description does not change the invention claimed and does not introduce any new elements for consideration upon the question of patentability of the claim. It is not, in effect, an amendment of the claim. [Id.

9. PATENTABILITY—TELEPHONE-STANDARD—CHANGES FOR MECHANICAL FUNCTION.
Where a standard old in another art was adapted as a telephone desk-standard and there was added to it an arm for supporting the telephone-receiver and such changes were made as to adapt it to its new use, *Held* that the changes were not for the purpose of ornament, but to perform the mechanical functions desired, and that therefore they do not make the device patentable as a design. [*Ex parte* Nickel and Crane, 2441.

10. SAME—CHANGES NOT MADE FOR ORNAMENT—NEW FUNCTION.
Where the changes in an old device do not and were not intended to increase the beauty of the device, but merely to adapt it to perform new functions when used for a new purpose, *Held* that if there is invention present meriting patent protection it is a mechanical invention and not a design invention. [Id.

11. DOUBLE USE—APPEARANCE.
A design cannot be made the subject of a second patent merely because it has been put to a new use, since the question of use does not enter into consideration in designs. They relate solely to the matter of appearance. [Id.

DILIGENCE.

(See Interference, 14, 15, 16, 17, 18, 19, 20, 21, 45, 46.)

DISCLOSURE OF INVENTION.

(See Interference, 4, 5, 41.)

DIVISION OF APPLICATIONS.

(See Appeal to Examiners-in-Chief, 2; Construction of Rules; Mandamus.)

1. CAR-SEAT AND HAND-STRAP.
*Held* that division was properly required between claims to the mechanism of a car-seat whereby it can be moved back and forth and a claim to a hand-strap attached to the back of the seat. [*Ex parte* Pickles, 275.

2. REQUIREMENT FOR IS REJECTION.
Where the unity of the inventions claimed by the petitioner is not denied, he has the right to join them in one application, and where the Primary Examiner in such case denies that right *Held* that the Examiner's action is a rejection of the application and entitles petitioner to an appeal to the Examiners-in-Chief under section 4909, Revised Statutes.
[*United States, *ex rel.* Steinmetz, *v.* Allen, Commissioner of Patents, 549.

3. APPEALABLE RULING—FINAL ACTION.
Where the ruling is such that the applicant must yield and give up the right claimed, or if he does not yield he will not be heard at all and may subsequently be regarded as having abandoned his application, *Held* that such ruling must be considered as final and appealable. [*Id.

4. RULE 41 INVALID—BETWEEN PROCESS AND APPARATUS.
The provision in Rule 41 of the Rules of Practice of the Patent Office which compels the separation of claims for a process and claims for its apparatus is invalid, because it precludes the exercise of any judgment, however related or connected they may be. [*Id.

5. STATUTORY RIGHT TO JOIN INVENTIONS—RELATED INVENTIONS.
The statute gives the right to join inventions in one application in cases where the inventions are related, and it cannot be denied by a hard and fixed rule which prevents such joinder in all cases. [*Id.

6. PROCESS AND APPARATUS MAY BE RELATED.
Process and apparatus may be related and may approach each other so nearly that it will be difficult to distinguish the process from the function of the apparatus. [*Id.

7. DISCRETION OF PATENT OFFICE—REVIEW BY COURTS.
Without a hard and fixed rule the action of the Patent Office upon the question of dividing applications for patents can be accommodated to the character of invention and discretion can be exercised, and when exercised the courts will not review it except in cases of clear abuse. [*Id.

8. DIVISIONAL APPLICATION—REQUIREMENT BY OFFICE—DOUBTS RESOLVED IN FAVOR OF APPLICANT.
Where an applicant divides his application upon a requirement of the Office and after one division has become a patent some question is raised whether there is a proper line of division and whether the second case should not be rejected upon the patent, *Held* that any and all doubts should be resolved in favor of the applicant. The Office should not by contradictory rulings deprive the applicant of substantial rights. [*Ex parte* Davis, 1068.

9. REJECTION—APPEAL TO EXAMINERS-IN-CHIEF.
A requirement for division of an application is to be regarded as a rejection and is appealable to the Examiners-in-Chief in the first instance. [*Ex parte* Frasch, 1338.

10. APPEAL TO EXAMINERS-IN-CHIEF.
The decision *Steinmetz* v. *Allen* has announced no new principle controlling the determination of the question whether inventions are independent and should be divided, but has merely announced that the question is appealable to the Examiners-in-Chief in the first instance. [Id.

11. RELATED AND DEPENDENT INVENTIONS—VALIDITY OF CLAIMS NOT INVOLVED.
In determining whether or not division should be required the question to be decided is not whether the claims would be sustained as valid if granted in one patent, but is whether the inventions claimed are related and dependent. [Id.

12. INDEPENDENT INVENTIONS—PATENT VALID—DISCRETION OF PATENT OFFICE.
The courts sustain patents covering two or more independent inventions; but it does not follow that this Office must permit independent inventions to be claimed in one patent. The question of division is a matter left largely to the discretion of the Patent Office. [Id.

13. BEAN-HARVESTING MACHINE—INDEPENDENT INVENTIONS.
*Held* that a cutter and gatherer, a bundle forming and discharging device, and a conveyer, each of which is used in a bean-harvesting machine, are independent inventions, and division was properly required between the claims covering the same. [*Ex parte* Baer, 1609.

14. PETITION—APPEAL.
Petition from the Examiner's requirement for division of an application dismissed, since it is appealable in the first instance to the Examiners-in-Chief. [*Ex parte* Emerson, 1609.

15. ACTION ON MERITS NOT MADE—PRACTICE.
Where division is required, it must be settled before the Office will examine the merits of each separate claim to determine the question of patentability. An examination of two or more independent inventions will not be made in one case. [*Ex parte* Pickles, 1888.

DOUBLE USE.

(See Designs, 11.)

DRAWINGS.

(See Appeal to the Court of Appeals of the District of Columbia, 2; Applications, 1; Interference, 15; Rejection of Cases, 2.)

1. UNNECESSARY FIGURE—ILLUSTRATION OF PRIOR ART.
Where an applicant showed in one figure of his drawings what he considered the prior art, *Held* that the figure and the description of it should be canceled. [*Ex parte* Elliott, 1337.

2. SUFFICIENT ILLUSTRATION.
Where it appears that sufficient parts and connections are shown to effect the operation described and that the specific structure of the parts forms no part of the invention and are stated to be of usual construction, *Held* that further illustration should not be required. [*Ex parte* Clark, 2169.

3. SAME—DIAGRAMMATIC VIEWS.
Where the invention relates to the arrangement of engines, tanks, receivers, and connecting pipes and valves all of known construction, diagrammatic illustration is probably clearer than views showing parts in detail. [Id.

4. ACTION ON MERITS.
Where the Examiner required additional illustration and refused action on the merits, stating that the operation could not be understood, and it appears that the operation intended by the applicant is clearly described and the apparatus sufficiently illustrated, *Held* that action on the merits should not have been suspended. [Id.

5. ADDITIONAL ILLUSTRATION—ACTION ON THE MERITS.
Where an opening referred to in the specification and certain reference-letters should be applied on the drawings, *Held* that as these changes are not essential to an understanding of the invention they may be made at any time before final action and do not warrant suspension of action on the merits. [Id.

ESTOPPEL.

(See Interference, 48.)

EVIDENCE.

(See Interference, 50, 51, 52, 53.)

EXAMINATION OF APPLICATIONS.

(See Abandonment; Appeal to the Commissioner of Patents; Division of Application, 15; Drawings; Interference, 33, 72; Petition to Commissioner of Patents; Reissues; Rejection of Cases.)

EXAMINER OF INTERFERENCES.

(See Interference, 2, 55.)

EXAMINERS.

(See Appeal to Examiners-in-Chief, 1; Interference, 38; Petition to the Commissioner of Patents.)

EXHIBITS.

(See Appeal to the Court of Appeals of the District of Columbia, 2; Interference, 65, 68, 69, 70, 71, 72.)

EXPERIMENTAL USE.

(See Appeal to the Court of Appeals of the District of Columbia, 2; Interference, 23.)

FINAL FEES.

(See Certificate of Deposit in Payment of Fees.)

FOREIGN APPLICATIONS.

(See Interference, 35, 36.)

FORFEITED APPLICATIONS.

(See Interference, 42.)

FORMER DECISIONS.

(See Interference, 11.)

INCOMPLETE APPLICATIONS.

(See Applications.)

INFRINGEMENT.

(See Interference, 29, 30.)

INTERFERENCE.

(See Access to Pending Applications, 4; Appeal to the Court of Appeals of the District of Columbia; Delay in Filing Application; Limit of Appeal; Trade-Marks, 5.)

1. LIMIT OF APPEAL—EXTENSION OF TIME SET.
Where the defeated party to an interference resided abroad and the limit of appeal set was too short to enable his attorney to obtain instructions from him, *Held* that the Examiner of Interferences properly extended the limit of appeal.
[Wilderman *v.* Simm, 275.

2. SAME—SAME—MATTER FOR EXAMINER'S DISCRETION.
The time within which an appeal must be taken from his decision rests largely within the discretion of the Examiner of Interferences, it being required merely that under all the circumstances of the case such time must be reasonable.
[Id.

3. PRIORITY OF INVENTION.
*Held* that Sendelbach was the original and first inventor of the subject-matter in controversy and that the patent was properly issued to him. [*Sendelbach *v.* Gillette, 276.

4. ORIGINALITY OF INVENTION—DISCLOSURE INSUFFICIENT.
Where Gillette claims to have disclosed the invention to Sendelbach, but it does not appear that the disclosure was of such special character as to the combination of parts as to have enabled a mechanic of ordinary ingenuity and skill in that particular trade or calling to have constructed and put the improvement in successful operation, *Held* that Sendelbach must be regarded as an independent inventor. [*Id.

5. SAME—DISCLOSURE MUST BE COMPLETE.
Where a party claims to have conceived the invention and disclosed it to another, who reduced it to practice, the disclosure in order to be effectual must be shown to have been full and clear as to all the essential elements of the invention and such as was sufficient in itself to enable the party to whom the disclosure was made to give the invention practical form and effect without the exercise of invention on his part. [*Id.

6. INVENTOR DEPRIVED OF RIGHTS BY CONTRACT.
An inventor cannot be deprived of the right to his invention where he has used due diligence in the assertion of his right except by express contract or by a course of conduct that fairly gives rise to an implication of an intention to part with or dispose of the right, and a presumption to that effect is not lightly to be made. [*Id.

7. BURDEN OF PROOF—APPLICANT AGAINST PATENTEE.
Where an applicant for patent is in interference with a previously-granted patent, the burden is upon the applicant to prove his case beyond a reasonable doubt. [*Id.

8. PRIORITY OF INVENTION.
*Held* that Talbot was not in possession of the invention before Monell made it, and therefore the decision of the Commissioner in favor of Monell affirmed. [*Talbot *v.* Monell, 280.

9. BURDEN OF PROOF—PATENTEE AGAINST APPLICANT—UNANIMOUS DECISIONS.
Where an applicant is in interference with a patentee and the unanimous decisions of the tribunals of the Patent Office are against him, *Held* that when he reaches the court he has the double burden of proving his case beyond a reasonable doubt. [*Id.

10. PRIORITY OF INVENTION—CONDUCT DISCREDITING CLAIM.
Where Talbot claims to have been in possession of the invention for ten years, but made no effort to patent it, although he patented other processes, and where he ridiculed Monell's process as impractical and after the grant of Monell's patent he copied it and secured an interference, *Held* that his claim as the prior inventor is discredited. [*Id.

11. PRIORITY OF INVENTION.
The decision of the Commissioner of Patents awarding priority of invention to Monell and James affirmed.
[*Talbot *v.* Monell and James, 554.

12. BURDEN OF PROOF—SOLE APPLICANT—PRIOR JOINT APPLICATION.
Where two parties file an application as joint inventors and upon discovering that it was a mistake one of them files an application as sole inventor and is placed in interference with a third party, *Held* that the sole applicant can derive no benefit from the earlier joint application in determining the burden of proof in the interference.
[Arnold *v.* Vaughen and Cabot *v.* Arnold and Fisher, 805.

13. SAME—SAME—JUDGMENT WITHOUT TESTIMONY.
The burden of proof in any proceeding rests on the party against whom judgment would be rendered if no evidence were adduced on either side. A party cannot be adjudged the first and sole inventor merely because he filed a prior application as joint inventor with another party. [Id.

14. PRIORITY OF INVENTION—LACK OF DILIGENCE.
*Held* that Paul was the first to conceive the invention, but was the last to reduce to practice, and that he was not exercising diligence when Johnson entered the field and filed his application, and that therefore Johnson is to be regarded as the first inventor. [*Paul *v.* Johnson, 807.

15. LACK OF DILIGENCE—MAKING OF DRAWINGS.
Where during the time between his conception and his reduction to practice Paul had drawings of the invention made, but put them to no use and locked them up in his desk, *Held* not to constitute diligence in adapting and perfecting the invention. [*Id.

16. SAME—EXCUSE FOR DELAY—SICKNESS OF INVENTOR.
Where sickness is alleged as the excuse for delay in reducing to practice or filing an application, *Held* that it must constitute a continued disability such as would excuse diligence during the entire period when diligence was required to be exercised. [*Id.

17. SAME—FAILURE TO FILE APPLICATION.
Where Paul had a conception of the invention so complete and definite in 1891 that he could have given the necessary information from which an application for patent could have been prepared, *Held* that there was no reason or necessity for delaying the application until 1896 and that his delay shows a lack of diligence. [*Id.





18. SAME—APPLICATIONS UPON OTHER INVENTIONS.
Where during the period of delay when Paul says he was unable to do anything it appears that he filed applications relating to other inventions, *Held* that his claim that the delay was unavoidable is not sustained. [*Id.

19. FIRST TO REDUCE TO PRACTICE—PRIMA FACIE RIGHT TO PATENT.
It is a fundamental principle of patent law that the first to reduce to practice is *prima facie* the first inventor and entitled to a patent, and he can be deprived of that right only by showing that some one else was first to conceive the invention and exercised diligence thereafter in perfecting it. [*Id.

20. NO DILIGENCE BY FIRST TO REDUCE TO PRACTICE NECESSARY.
There is no requirement of law for the exercise of diligence on the part of the first to reduce to practice, and no lack of diligence can be imputed to him, since he was, in fact, the first to give the invention to the public by a reduction to practice. The comparative diligence of the parties is not material.
[*Id.

21. PRIORITY OF INVENTION.
*Held* that Thomas was the last to conceive the invention, but the first to reduce to practice, and that Trissell was not exercising diligence when Thomas entered the field, and that therefore Thomas is to be regarded as the first inventor.
[*Trissell *v.* Thomas, 809.

22. SAME—REDUCTION TO PRACTICE.
Where it appears that Thomas constructed a hay-loader and the testimony is ample and satisfactory to show that the device was successfully tested and operated during three successive hay-making seasons, *Held* that the device is a reduction to practice notwithstanding the fact that another device was subsequently constructed embodying an improvement not necessarily connected at all with the invention of the issue, even though it be admitted that the second device was a better one than the first. [*Id.

23. SAME—SAME—LENGTH OF TIME CONSUMED IN MAKING TESTS—NO UNFAVORABLE INFERENCE.
From the length of time taken for the tests of a hay-loader—three successive years in the hay-making seasons of the year—no inference can be deduced unfavorable to the inventor. On the contrary, considering the nature of the device and the purpose for which it was intended and that the best possible test was that which could be made in the outward operation of the machine in the field in the work for which it was intended, his care and diligence are rather to be commended, in view of the fact that there were no rivals in the field so far as he knew and there being no testimony to show fraud, suppression, concealment, or improper action of any kind.
[*Id.

24. MOTION TO DISSOLVE—TRANSMISSION.
Where a motion for dissolution was brought twenty-three days after the expiration of the twenty days allowed by Rule 122 and the reason given for delay is that the reference on which the motion is based was not found until after the expiration of the time allowed by the rule and it does not appear that the reference was not found in its expected place or that any attempt had been made to find the reference within the time allowed by the rule, *Held* that the Examiner of Interferences properly refused to transmit the motion.
[Sturgis *v.* Hopewell, 1067.

25. SAME—SAME—DELAY IN BRINGING MOTION.
A motion to dissolve an interference will not be transmitted to the Primary Examiner after the twenty days fixed by the rule merely because no testimony has been taken. Good reasons must be shown for the delay. (*Arbetter* v. *Lewis*, 99 O. G., 1383, distinguished.) [Id.

26. SAME—SAME.
The transmission of motions for dissolution brought after the twenty days allowed by Rule 122, but before testimony is taken, without satisfactory showing of reasons for delay would nullify the provisions of the rule in this respect. [Id.

27. SAME—SAME—UNAVOIDABLE DELAY.
Motions to dissolve generally involve delay, which is often useless and vexatious. It is desirable that they be brought as soon as possible, and twenty days seems to be sufficient time for that purpose when not prevented by circumstances of a compelling nature. [Id.

28. SAME—SAME—RULE 126—DECISION OF EXAMINER OF INTERFERENCES NOT DISTURBED EXCEPT WHERE ABUSE OF DISCRETION.
Rule 126 provides sufficiently for the consideration of matters which might have been made the basis of motion under Rule 122, but which were not so presented, and the action of the Examiner of Interferences transmitting or refusing to transmit a motion brought after the twenty days allowed by the rule will not be disturbed except where there has been an abuse of discretion or his action is clearly erroneous.
[Id.

29. SUSPENSION—INFRINGEMENT SUIT PENDING.
Where one of the parties to the interference is a patentee and he has brought suit in the courts against the other party for infringement, *Held* that the pendency of such suit is no reason for suspending the interference until its conclusion.
[McBride *v.* Kemp, 1069.

30. SAME—INTERFERENCE MUST PROCEED REGULARLY.
An interference is the only proceeding provided by law for directly determining which of two claimants is the first inventor, and such interference must proceed in a regular and orderly way without regard to any collateral investigation of that matter in a suit pending in the courts. [Id.

31. APPLICATION—PETITION TO INSPECT.
A party in interference cannot by referring to his application not in interference take advantage of allegations of fact and at the same time invoke the rule of secrecy to deprive his opponent of the means of controverting those facts or discrediting him. [*In re* Patterson, 1070.

32. SAME—RIGHT TO INSPECT.
Where a party in interference refers to his application not in interference to establish allegations of fact, the right of his opponent to inspect this application exists without regard to any supposed identity of its subject and that of the case in interference. [Id.

33. MOTION—RETURN TO PRIMARY EXAMINER.
Where the issues are the claims of both parties and have been held patentable by the Examiners-in-Chief upon appeal on motion to dissolve and it appears from B.'s preliminary statement that he cannot prevail over L.'s record date, *Held* that the Examiner of Interferences properly denied B.'s motion to return the case to Primary Examiner for the consideration of interference in fact and re-formation of the issues in connection with the decision of the Examiners-in-Chief.
[Brown *v.* Lindmark, 1071.

34. SAME—JUDGMENT ON RECORD.
Where L. moved for judgment on the record and B. moved that L.'s motion be dismissed, *Held* that the Examiner of Interferences properly denied B.'s motion, as L. had the right of appeal from the decision on his motion for judgment.
[Id.

35. SAME—SAME—FOREIGN APPLICATION—JUDGMENT NOT DELAYED TO TAKE TESTIMONY.
Where the senior party moves for judgment on the record and his record date is prior to the date of introduction of the invention into this country set up in the preliminary statement of his opponent, *Held* that judgment will not be delayed solely that the junior party may take testimony concerning a foreign application which in the opinion of the Office cannot affect the result. [Id.

36. TESTIMONY—ACT OF MARCH 3, 1903.
Where B.'s preliminary statement goes back of L.'s record date only by reference to foreign applications and B.'s domestic application was filed prior to the act of March 3, 1903, *Held* that judgment will not be delayed solely that B. may take testimony concerning the foreign applications. (*Stiff* v. *Galbraith*, 107 O. G., 2532, distinguished.) [Id.

37. REQUEST FOR SUSPENSION UNDER RULE 128—CONSIDERATION OF NEW REFERENCES—PRACTICE.
Where an Examiner requests a suspension of the interference under Rule 128 for the purpose of considering the pertinency of a new reference and the interference is transmitted to him for that purpose, the Examiner should set a day for hearing upon a question of patentability, and after the hearing if he is of the opinion that the claims are not patentable in view of the references a decision should be rendered dissolving the interference upon that ground and limit of appeal set. If no appeal is taken and the decision becomes final, the application should be then considered *ex parte* and the claims corresponding to the counts of the issue should be rejected.
[*Ex parte* Struble, 1335.

38. MOTION TO REMAND TO THE PRIMARY EXAMINER—PATENTABILITY OF THE ISSUE IN ANOTHER INTERFERENCE.
Where the Examiner under the provisions of Rule 128 requested that the interference be remanded to him for consideration in connection with a newly-discovered reference, *Held* that this is no ground to remand another interference to him without his request, since the subject-matter of the interference is presumably different.
[Parkin and Parkin *v.* Riotte, 1335.

39. SAME—PATENTABILITY—APPLICANT AGAINST PATENTEE.
Where an applicant in interference with a patentee asks that the case be transmitted to the Examiner to consider whether the claims are patentable, *Held* that to refuse his request is no hardship, since he may avoid a continuation of the interference by following the provisions of Rule 125.
[Id.

40. PRIORITY OF INVENTION—ORIGINALITY.
*Held* upon a consideration of the evidence that Russell was the original and first inventor of the device in controversy, and therefore the decision must be in his favor.
[Russell *v.* Asencio, 1605.

41. SAME—SAME.
Where Asencio's assignee and principal witness claims that Asencio disclosed the invention to him, but it appears that he did not reduce it to practice or file an application until after he heard of Russell's work upon the same lines and until after Russell, with his financial assistance, had made and tested the device and, with his consent, had filed an application which was assigned to Asencio, *Held* that Russell must be regarded as the inventor. [Id.

42. BURDEN OF PROOF—FORFEITED APPLICATION—CHRISTENSEN *v.* NOYES DISTINGUISHED.
Where Asencio's assignee was the one who furnished the money for Russell's experiments and paid for Russell's application for patent, but refused to pay the final fee and let the application become forfeited and then induced Asencio to file an application for and secure a patent upon the same invention, while Russell's case was forfeited, *Held* that the burden of proof is upon Asencio to show that he was the first inventor. (*Christensen* v. *Noyes* distinguished.) [Id.

43. Applicant Against Patentee—Issue Unpatentable—Priority Not Decided.
Where in an interference between an applicant and a patentee it appears that the claims are not patentable to the applicant, *Held* that the question of priority of invention should not be decided; but the interference should be sent to the Primary Examiner to consider the question of dissolution. [Hall *v.* Weber, 1607.

44. Dissolution—Applicant Against Patentee.
Where an interference is declared between an applicant and a patentee and the applicant urges that the claim of the issue is not patentable to himself, *Held* that the Office will enter into no controversy with him, but will accept his admission and dissolve the interference. [Lipe *v.* Miller, 1608.

45. Priority of Invention—Lack of Diligence.
*Held* that Liberman although first to conceive the invention was the last to reduce it to practice and did not exercise diligence in perfecting it, and that therefore the decision in favor of Williams as the first inventor is right.
[*Liberman *v.* Williams, 1610.

46. Same—Same—Work on Other Inventions.
Where Liberman did not reduce the invention to practice for nine months after his conception and during that time deliberately and intentionally put it aside while he worked upon other inventions in the same art, *Held* that he was lacking in diligence. [*Id.

47. Successive Interferences Between Same Cases Condemned.
A single interference between the same parties upon the same applications should be sufficient ordinarily, and a second interference should be necessary only under very exceptional circumstances. [Sarfert *v.* Meyer, 1885.

48. Same—Estoppel.
Where an interference was decided in favor of S. because of limitations in the issue, it being suggested that M. was the first inventor of the broad invention, and where in view of that suggestion a second interference was declared and was decided in favor of S., *Held* that M. is not entitled to present other claims and contest a third interference. He is estopped, since upon entering the second interference he should have asserted all claims to the common invention which he wished to contest with S. [Id.

49. Amendment of Issue After Decision Not Permitted.
After an interference has proceeded to a decision upon the question of priority of invention it is too late to amend the issue or add a new count, since that would make it necessary to take new testimony, as in a new interference. [Id.

50. Priority of Invention.
*Held* that the evidence establishes the fact that Fullman reduced the invention to practice before Herman's date of conception and reduction to practice, and therefore the decision awarding priority of invention to Fullman must be affirmed. [*Herman *v.* Fullman, 1888.

51. Reduction to Practice.
Where the evidence shows beyond question that Fullman made a full-sized blue-print machine embodying the invention in March, 1901, and the witnesses testify that it was operated to see how it would work and that blue-prints were actually made by it and distributed during April, *Held* that the machine must be regarded as a reduction to practice. [*Id.

52. Preliminary Statement—Evidence at Variance With Statement.
Where the evidence on behalf of a party to an interference shows that the invention was made at a date later than that alleged in the preliminary statement, *Held* that the evidence is not to be disregarded because of the variance from the statement. [*Id.

53. Same—Same—Dates Later Than Alleged—Technical Objection.
Where the dates proved are later than those alleged in the preliminary statement no harm or prejudice is caused to the opposing party, and since it is a general rule that no attention will be paid to technical objections which have caused no substantial injury, *Held* that the evidence will not be disregarded. [*Id.

54. Priority Alone Decided on Appeal—Right to Claim Res Adjudicata.
On an appeal to the court relating to priority of invention the question whether one party's application furnishes a basis for the claims of the issue will not be considered, since it is rendered *res adjudicata* by the declaration of the interference. The only question to be determined is priority of invention. [*Id.

55. Motion—Transmission.
Where the Examiner of Interferences transmitted a motion for dissolution brought two days after the time allowed by the rules, *Held* that such action of the Examiner of Interferences was not an abuse of discretion nor clearly erroneous and would not be disturbed, citing *Winter* v. *Slick* v. *Vollkommer*, (97 O. G., 1837.) [Harrison *v.* Shoemaker, 2170.

56. Same—Same.
Where the delay in bringing a motion for dissolution is slight and no testimony has been taken, it cannot be held that the affidavit of the attorney that he had been occupied with other matters demanding immediate attention which prevented earlier consideration of the case may not be considered sufficient excuse for transmitting the motion. [Id.

57. Burden of Proof—Joint Application—Sole Inventor.
Where a junior party to an interference asks that he be made the senior party by reason of a prior application filed by him as joint inventor with another party, *Held* that his request will be denied, since a joint application and a sole application cannot constitute parts of one proceeding.
[Haskell *v.* Miner *v.* Ball, 2170.

58. Same—Same—Same.
A joint application is no proof that one of the parties is a sole inventor and cannot be used as the basis for a judgment in his favor in an interference, and therefore it cannot affect the burden of proof. [Id.

59. Constructive Reduction to Practice—Allowable Application—Joint Application.
A joint application cannot be accepted as constructive reduction to practice by a sole inventor who subsequently files a sole application, since to constitute constructive reduction to practice the application must be allowable. [Id.

60. Testimony—Extension of Time for Taking.
Where a motion to extend time for taking testimony for the third time is supported only by the affidavit of the attorney to sickness and absence of some of the witnesses and absence of the inventor part of the time and, so far as appears, the testimony of the inventor and other witnesses might have been taken, but was not taken, *Held* that the motion was properly denied. [Spindler *v.* Nathan and Bolze, 2171.

61. Same—Same.
Where some of the witnesses were sick and residing at widely-separated places, the desire to have all present at one time, so as to avoid trouble and expense, will not justify repeated extensions of time for taking testimony and the failure to take the depositions of those witnesses that were available. [Id.

62. Originality of Invention.
*Held* that the evidence shows that Greenwood disclosed the invention to Dover and fails to show that Dover had a conception of it before the date of conception proved by Greenwood and that therefore Greenwood must be regarded as the first inventor. [*Greenwood *v.* Dover, 2172.

63. Same—No Reduction to Practice.
Where neither party proves actual reduction to practice of the invention, but the junior party, Greenwood, was the first to conceive the invention and disclose it to the senior party before his application was filed, *Held* that the junior party must be regarded as the first inventor. [*Id.

64. Weight of Testimony—Witness Skilled in Art.
The testimony as to the making of a certain device given by a witness familiar with the art and interested in improvements therein and who therefore gave particular attention to the disclosure is entitled to much greater weight than that of one not interested in the business. [*Id.

65. Same—Structure Should Be Described by Witnesses.
To guard against accidental changes in exhibits resulting from frequent handling, it would be prudent for the party offering them to have them particularly described in respect of appearance, construction, and operation at the time that he offers them in evidence. [*Id.

66. Priority of Invention.
*Held* that the evidence on behalf of Flora is not sufficient to sustain the *onus* of proof upon him due to his later filing date, and therefore the decision adjudging Powrie the first inventor affirmed. [*Flora *v.* Powrie, 2443.

67. Same—Concurrent Decisions of Patent Office Not Disturbed.
Where the record shows that the facts of the case have been fully and carefully examined by the tribunals of the Patent Office, resulting in a concurrence of decision thereon, *Held* that it is the established rule that the court will not reverse that decision unless it clearly appears that the decision was against the weight of evidence. It will not be reversed on a matter of doubt. [*Id.

68. Same—Evidence—Process Not Proved by Article.
Where the inventor Flora testifies that he made certain screens in evidence by the process of the issue, but the screens themselves do not show how they were made, and the only corroborating witnesses testify that the screens were made, but do not know how they were made, *Held* that Flora has not established the fact that he performed the process of the issue. [*Id.

69. Same—Same—Use of Microscope by Patent Office.
Where certain screens in evidence are said by the inventor to have been made by the process of the issue, but an examination of those screens with a microscope by the tribunals of the Patent Office indicates that they were not made by that process, *Held* sufficient to determine the matter against him in view of the *onus* upon him of proving his case. [*Id.

70. Evidence—Examination of Exhibits With Microscope.
Where exhibits are introduced in evidence and it is not pretended that everything on those exhibits is discernible to the naked eye, *Held* that an examination of the exhibits by the aid of a microscope is legally admissible. To hold otherwise would even preclude a judge with defective eyesight the right to use his spectacles. [*Id.



71. Same—Same—Result Presumed to be Correct.
The results of the use of the microscope are admissible as evidence and are presumed to be correct until shown to the contrary, upon the same principle that the results of the working of many other scientific instruments are presumed to be correct. [*Id.

72. Examination of Applications—Tests and Experiments—Duty of Patent Office.
It is the duty of the Patent Office to make all proper tests and experiments with regard to matters involved in claims to inventions relating to science and the useful arts to establish the truth as between the parties and as between the parties and the public. (Sec. 4890, R. S.) [*Id.

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JOINT APPLICATIONS.

(See Interference, 12, 13, 57, 58, 59.)

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JUDGMENT ON THE RECORD.

(See Interference, 34, 35, 36.)

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JURISDICTION OF THE SUPREME COURT OF THE UNITED STATES.

(See Writ of Error.)

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LIMIT OF APPEAL

(See Interference, 1, 2.)

1. Motion to Extend—Verified Showing Required.
Where a motion is made to extend the limit of appeal and it is not supported by a verified showing of the reasons for delay, *Held* that it will be dismissed.
[Kletzker and Goesel *v.* Dodson, 1396.

2. Same—Rules Must Be Strictly Complied With.
The right of appeal does not stand upon the same footing as the right to a hearing and decision in the first instance, and ordinarily the rules must be strictly complied with to have a decision reviewed by an appellate tribunal. [Id.

3. Stay—Petition to Commissioner.
The filing of a petition that the Commissioner exercise his supervisory authority to dissolve the interference will not stay the limit of appeal from a decision as to priority of invention. [Id.

4. Date of Decision Controls.
Where an action is required to be taken within a certain time after a decision, *Held* that the date of the decision and not the date of the receipt of notice governs. [Id.

5. Extension Not Granted Where Useless—Particular Circumstances Considered.
Where the case of the defeated party is supported only by the testimony of one of the joint inventors, it is clear that he cannot prevail on appeal. *Held*, therefore, that to extend the limit of appeal would serve no useful purpose, would result in expense and delay, and would be unjust to the opposing party. [Id.

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MANDAMUS.

1. To Commissioner of Patents—Appeal to Examiners-in-Chief—Division of Application.
Where the Commissioner of Patents refused to direct the Primary Examiner to forward to the Examiners-in-Chief an appeal from his ruling that process and apparatus claims should be divided and presented separately, *Held* that a mandamus will lie to compel him to forward the appeal.
[*United States, *ex rel.* Steinmetz, *v.* Allen, Commissioner of Patents, 549.

2. To Court of Appeals to Hear Appeal from Patent Office—Division of Application—Appeal to Examiners-in-Chief.
Petition for a mandamus to the court of appeals to hear and determine an appeal from a decision of the Commissioner of Patents requiring division of an application for patent *dismissed*, since the remedy was not by appeal to the court, but by mandamus to compel the allowance of an appeal from the Primary Examiner to the Examiners-in-Chief upon the question of division. [**Ex parte* Frasch, 554.

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MECHANICAL INVENTION.

(See Designs, 4.)

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MISTAKE.

(See Abandoned Applications.)

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MODEL.

(See Appeal to the Court of Appeals of the District of Columbia, 2.)

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MOTION TO DISSOLVE INTERFERENCE.

(See Interference, 24, 25, 26, 27, 28, 55, 56.)

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MOTION TO REMAND INTERFERENCE.

(See Interference, 38, 39.)

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PATENTABILITY.

(See Appeal to the Commissioner of Patents.)

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PETITION TO THE COMMISSIONER OF PATENTS.

(See Appeal to the Examiners-in-Chief, 3; Limit of Appeal, 3.)

1. Recommendation by the Examiners-in-Chief—Case Referred to the Primary Examiner.
Where the Examiners-in-Chief award priority to an applicant in interference, but state reasons why they do not regard the issue to be patentable, and the Primary Examiner agrees with the Examiners-in-Chief and rejects the claims, but after amendments and affidavits becomes convinced that the claims are allowable, *Held* that the case should not be referred to the Commissioner for decision. (*Snider* v. *Bunnell*, 103 O. G., 890, distinguished.) [*Ex parte* Allen, 1071.

2. Same—Same.
The Primary Examiner is a tribunal created by law to pass upon questions of patentability in the first instance, and his favorable decision will not generally be reviewed. The exception to this rule which is directed in the case of *Snider* v. *Bunnell* does not extend to a favorable conclusion of the Primary Examiner based on amendments and affidavits filed subsequent to an adverse recommendation of the Examiners-in-Chief. [Id.

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PRELIMINARY STATEMENTS.

(See Interference, 35, 52, 53.)

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PRIORITY OF INVENTION.

(See Delay in Filing Application; Interference, 3, 8, 10, 11, 14, 19, 20, 21, 22, 23, 40, 41, 43, 45, 46, 50, 51, 52, 53, 54, 62, 66, 67, 68, 69, 70, 71, 72.)

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PROCESS AND APPARATUS.

(See Construction of Rules; Division of Applications, 4, 5, 6, 7.)

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REDUCTION TO PRACTICE.

(See Interference, 19, 20, 22, 23, 41, 45, 46, 50, 51, 52, 59, 63.)

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REFERENCES.

(See Interference, 37, 38.)

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REHEARING.

(See Appeal to the Court of Appeals of the District of Columbia, 1.)

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REISSUES.

No New Examination Necessary—Report of Examiner Accepted.
Where in preparing a reissue application the original claims of the patent were not included through inadvertence, *Held* they may, upon a satisfactory showing, be inserted after decision by the Examiners-in-Chief if no new examination is rendered necessary. [*Ex parte* Gilmer, 1337.

REJECTED CASES.

(See Appeal to the Examiners-in-Chief, 3.)

REJECTION OF CASES.

(See Designs, 7, 8; Division of Applications, 2, 9, 10, 11, 12.)

1. FINAL REJECTION—REASONABLE RIGHT OF AMENDMENT—PRACTICE.
Where the application covers a complicated machine and includes many claims and the applicant in apparent good faith amends every claim in the effort to make them allowable, *Held* that the Examiner should not finally reject the claims in the second action in the case on the ground that they are not changed. The applicant should have a reasonable opportunity to get his claims into allowable condition. [*Ex parte* Stuart, 1068.

2. FINAL REJECTION—OBJECTIONS TO DRAWING.
Where one of the figures of the drawing, showing an unimportant detail, was objected to in the same action in which the claims were rejected on references, *Held* that a subsequent amendment overcoming this objection and requesting a second action upon the claims places the case in condition for final rejection. [*Ex parte* Marks, 1608.

3. SAME—FORMAL OBJECTION—SUSPENSION OF ACTION.
Where the invention is understood and action upon the merits is given, *Held* that the presentation of an amendment overcoming some formal objection constitutes no reason for suspending further action upon the merits until the applicant is notified of the effect of the formal amendment. [Id.

REJECTION OF CLAIMS.

(See Petition to the Commissioner of Patents.)

REOPENING OF REJECTED CLAIMS.

(See Appeal to the Examiners-in-Chief, 3.)

AFTER APPEAL TO THE EXAMINERS-IN-CHIEF—RULE 142.
Upon petition to the Commissioner the application may be reopened upon a satisfactory showing after decision by the Examiners-in-Chief. [*Ex parte* Gilmer, 1337.

RES ADJUDICATA.

(See Interference, 54.)

RULES OF PRACTICE OF THE UNITED STATES PATENT OFFICE.

(See Writ of Error.)

SICKNESS.

(See Interference, 16.)

SUITS FOR INFRINGEMENT.

(See Interference, 30.)

SUSPENSION OF EXAMINATION.

(See Abandonment; Rejection of Cases, 3.)

TESTIMONY.

(See Interference, 35, 36, 49, 56, 60, 61, 64.)

TRADE-MARKS.

1. ASSIGNMENTS—MUST IDENTIFY CASE.
Assignments of trade-marks will not be recorded unless they identify same application or registration.
[*In re* Laundry Blue Company, 806.

2. APPLICANT'S SURNAME—SALIENT FEATURE.
The word "Van Horn" associated with a ram's forehead with horns *Held* not registrable as a trade-mark, since the salient feature of the mark is the surname of one of the applicants. [*Ex parte* Van Horn & Sawtell, 1009.

3. SAME—RELATIVE OBSCURITY OF NAME.
An applicant's name cannot be included as feature of a registered trade-mark unless it is reduced to a position of relative obscurity. [Id.

4. "YALE"—GEOGRAPHICAL WORD—PROPER NAME.
*Held* that the word "Yale" has a geographical significance, and being a common surname is not such an arbitrary word as would make it the sole property of any one individual, and its registration as a trade-mark should be refused. (*Ex parte Peats*, 96 O. G., 1649.) [Id.

5. INTERFERENCE—ABANDONMENT BY REGISTRANT.
Where an applicant for registration of a trade-mark which has been registered by another files affidavits making out a *prima facie* case of abandonment of the mark by the registrant, *Held* that an interference should be declared to determine the question of abandonment and the present ownership of the mark. [*Ex parte* Gill Brothers Company, 1895.

6. "ENGELHARD"—SURNAME NOT REGISTRABLE.
The ordinary surname "Engelhard" written in ordinary copy-book script upon a picture of a cloud-bank *Held* not registrable as a trade-mark.
[*Ex parte* A. Engelhard & Sons Company, 1896.

7. NAME OF APPLICANT.
The statute prohibits the registration of a mark which is merely the name of the applicant, and therefore where the name is included in a mark presented it cannot be registered unless the other elements of the mark remove it from the inhibition of the statute. [Id.

8. SAME—ACCESSORIES WITH NAME—REGISTRABILITY.
The inhibition against the registration of mere names is not to be avoided by insignificant details of form and by the use of accessories of moderate importance, but only by those which rise into such relative importance as to so dwarf the mere name as to render it of minor importance in the whole effect produced upon the mind of the observer. [Id.

9 SAME—NAME MUST BE NON-ESSENTIAL.
The spirit of the statute requires the reduction of the name element in the mark to be carried so far that the name becomes a negligible or non-essential factor in the whole effect produced, so that if the rest of the mark should remain and the name should be changed it would not present a substantially different appearance. [Id.

10. SAME—TEST OF REGISTRABILITY—INFRINGEMENT BY MERE NAME.
The form of mark presented must be regarded as merely the name of the applicant where the mere name printed in the ordinary way by a rival merchant upon the same class of goods would create confusion—in other words, where the mere name would infringe. [Id.

11. SAME—SUBSTITUTE FOR NAMES—PERVERSION OF TRADE-MARK.
Trade-marks are primarily intended to be indexes of origin substituted for the name of the maker, and therefore to attempt to insert among the characteristics of trade-marks those names which it was the primary purpose of trade-marks to supplant is a tendency in the wrong direction and a perverted use of the trade-mark. [Id.

12. SAME—NAMES SHOULD BE EXCLUDED.
If names were entirely excluded from trade-marks and were then placed in proximity to them upon the goods as used, the right separation of the registrable and non-registrable elements would be best made. [Id.

13. SAME—UNFAIR COMPETITION.
The protection to be given to the mere name will be derived from the principles governing unfair competition and not from the technical ground of trade-mark. [Id.

WITNESSES.

(See Interference, 51, 60, 61, 64, 65.)

WRIT OF ERROR.

JURISDICTION—VALIDITY OF AUTHORITY UNDER UNITED STATES—RULES OF PATENT OFFICE.
Where the Commissioner with the approval of the Secretary of the Interior and acting under the authority of the statute makes a rule of procedure and that rule constitutes in part the powers of the Primary Examiner and Commissioner in the action complained of and the plaintiff assails the validity of that rule, *Held* that there is drawn in question the validity of an authority exercised under the United States and that the Supreme Court has jurisdiction to review the judgment of the court of appeals by writ of error.
[*United States, *ex rel.* Steinmetz, *v.* Allen, Commissioner of Patents, 549.

# ALPHABETICAL LIST OF PATENTEES

FOR THE

# MONTHS OF MARCH AND APRIL, 1904.

[Claims and drawings of Designs do not appear in the Monthly Volumes. Separate indexes for Designs, Trade-Marks, Labels, Prints, and Disclaimers, follow this.]

| Name, residence, and invention. | No. | Date. | Monthly volume. Specification. | Monthly volume. Drawing. | Official Gazette. Volume. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Abbey, Edward R., Decorah, Iowa. Car-loading apparatus | 758,493 | Apr. 26 | 4557 | 979 | 109 | 2378 |
| Abbott, Curson G. (See Abbott, Samuel B., C. G., and J. C.) | | | | | | |
| Abbott, James C. (See Abbott, Samuel B., C. G., and J. C.) | | | | | | |
| Abbott, Samuel B., Goshen, Ind., C. G. Abbott, Grayling, Mich., and J. C. Abbott, Goshen, Ind. Broadcast seed-planter | 758,231 | Apr. 26 | 4023 | 873, 874 | 109 | 2358 |
| Abel, Julius, Mannheim, and A. Lüttringhaus, assignors to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Blue-sulfur dye and making same | 755,428 | Mar. 22 | 4324 | ..... | 109 | 993 |
| Abercrombie, John A. (See Brown, David, assignor.) | | | | | | |
| Abercrombie, William R., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Binder for sewing-machines | 758,884 | Mar. 8 | 1243 | 280 | 109 | 289 |
| Ablett, Harold E., London, England. Drawing and designing apparatus | 757,246 | Apr. 12 | 2053 | 448 | 109 | 1797 |
| Abolt, John A., assignor of one-half to J. K. Sloan, Eldon, Iowa. Wrench | 754,881 | Mar. 15 | 3228 | 703 | 109 | 740 |
| Abraham, Karl, Kiew, Russia. Filter | 758,345 | Apr. 26 | 4274 | 918 | 109 | 2314 |
| Abraham, Lawrence, New York, N. Y. Terminal for parcel-conveyers | 756,551 | Apr. 5 | 698 | 150, 151 | 109 | 1490 |
| Abraham, Lawrence, Brooklyn, N. Y. Vehicle | 756,807 | Apr. 12 | 1183 | 263 | 109 | 1613 |
| Abrams, Charles. (See Rankin and Abrams.) | | | | | | |
| Ach, Fritz, deceased; M. C. Massie, Washington, D. C., administrator, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Germany. Preparing xanthin derivatives | 757,328 | Apr. 12 | 2230 | ..... | 109 | 1834 |
| Ach, Fritz, deceased; M. C. Massie, Washington, D. C., administrator, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Germany. Making xanthin derivatives | 757,329 | Apr. 12 | 2235 | ..... | 109 | 1835 |
| Ach, Fritz, deceased; M. C. Massie, Washington, D. C., administrator, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Germany. Alkoxy-caffein and making same | 757,330 | Apr. 12 | 2236 | ..... | 109 | 1835 |
| Ackerman, Albert C., Pittsburg, Pa. Rotary engine | 754,163 | Mar. 8 | 1901 | 423 | 109 | 436 |
| Actien-Gesellschaft Görlitzer Maschinenbau-Anstalt und Eisengiesserei. (See Neumann, Hugo A. J., assignor.) | | | | | | |
| Adam, Andrew, Kendallville, Ind. Fence-post | 753,347 | Mar. 1 | 237 | 54 | 109 | 54 |
| Adam, Joseph. (See Beauregard, Stanislas, assignor.) | | | | | | |
| Adams, Abraham L., Bridgeport, Conn. Folder for cloth strips | 756,451 | Apr. 5 | 526 | 110 | 109 | 1455 |
| Adams, Edward E., New York, N. Y. Bottle-closure | 756,770 | Apr. 5 | 1100 | 243 | 109 | 1578 |
| Adams, Frederick R., San Francisco, Cal. Collapsible paper box | 756,311 | Apr. 5 | 234 | 49 | 109 | 1394 |
| Adams, Henry C. (See Uhlig, Richard W., assignor.) | | | | | | |
| Adams, Isaac D., Nashua, N. H. Shingle-holder | 753,531 | Mar. 1 | 607 | 138 | 109 | 132 |
| Adams-Randall, Charles, New York, N. Y. Telegraph-transmitter | 758,232 | Apr. 26 | 4026 | 874 | 109 | 2259 |
| Adams, Robert, London, England. Window-sash | 756,552 | Apr. 5 | 700 | 151 | 109 | 1491 |
| Adams, Robert P., assignor to I. McAllister and W. Ross, Jamestown, N. Y. Lumber-sorter's toe-cap | 756,198 | Apr. 5 | 1 | 1 | 109 | 1343 |
| Adams and Westlake Company. (See Kerber, Louis H. W., assignor.) | | | | | | |
| Adamson, Alfred, Lynn, Mass. Frictional reversing-gear | 758,494 | Apr. 26 | 4559 | 980 | 109 | 2379 |
| Adamson, William L., Philadelphia, Pa. Electrically-operated stopping means at railway danger-signals | 754,406 | Mar. 15 | 2301 | 523 | 109 | 557 |
| Adamson, William L., Philadelphia, Pa. Means for stopping railway-trains at danger-signals | 757,711 | Apr. 19 | 3008 | 653 | 109 | 2018 |
| Addington, Abraham, Cedarville, Cal. Buckle | 754,731 | Mar. 15 | 3048 | 665 | 109 | 700 |
| Addy, Benjamin, Leeds, England. Cooling or refrigerating apparatus | 755,429 | Mar. 22 | 4326 | 956 | 109 | 993 |
| Adelsperger, Dow L. (See Deards, Copenhaver, and Adelsperger.) | | | | | | |
| Adlerfeld, Hugo R. G. von. (See Lurz, Andreas, assignor.) | | | | | | |
| Adrian Wire Fence Company (See Sturtevant, Orange S., assignor.) | | | | | | |
| Adrian Wire Fence Company. (See Tiffany, George S., assignor.) | | | | | | |
| Adsit, George, assignor to Benjamin Eastwood Company, Paterson, N. J. Quilling-machine | 757,061 | Apr. 12 | 1726 | 375 | 109 | 1735 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Dr'g. | Vol. | Page. |
| Adt, Leo F., Troy, N. Y. Eyeglasses | 756,312 | Apr. 5 | 235 | 49 | 109 | 1394 |
| Aeolian Company. (See Pain, Robert W., assignor.) | | | | | | |
| Aero-Pulverizer Company. (See Tench, George H., assignor.) | | | | | | |
| Aero-Pulverizer Company. (See Wheildon, William M., assignor.) | | | | | | |
| Agatine Shoe Hook and Eyelet Company. (See Pupke, Eberhard L., assignor.) | | | | | | |
| Ahern, John T., *et al.* (See Morris, John O., assignor.) | | | | | | |
| Aiken, Edward L. (See Lees and Aiken.) | | | | | | |
| Aiken, Robert H., Jerome, Ariz. Ter. Converting mattes | 753,557 | Mar. 22 | 4543 | ..... | 109 | 1040 |
| Aikens, William J. (See Scott, James S., assignor.) | | | | | | |
| Aiman, Fred B. (See Conner, James B., assignor.) | | | | | | |
| Ainsley, David L., Lemont, Pa. Automatic brake | 754,184 | Mar. 8 | 1903 | 424 | 109 | 436 |
| Akers, Earl C., Port Huron, Mich., and R. Ross, Sarnia, Canada. Overflow device for sinks | 757,871 | Apr. 19 | 3315 | 718 | 109 | 2085 |
| Akers, Frederick I. E., Chicago, Ill. Dumping-vehicle | 755,268 | Mar. 22 | 4024 | 802 | 109 | 928 |
| Akers, John H., Washington, D. C. Electric-railway plow | 754,822 | Mar. 15 | 3229 | 703 | 109 | 740 |
| Akin, John H., Ames, Iowa. Fence-barb | 756,318 | Apr. 5 | 237 | 49 | 109 | 1305 |
| Aktiebolaget L. M. Ericsson & Co. (See Ericsson, Lars M., assignor.) | | | | | | |
| Albee, George M., Worcester, Mass. Holder for hitching-weights | 753,835 | Mar. 8 | 1945 | 280 | 109 | 289 |
| Albee, Harry C., Portland, Oreg. Seine-hauling apparatus | 754,833 | Mar. 15 | 3231 | 704 | 109 | 741 |
| Alberger Company. (See Smith, Harry J., assignor.) | | | | | | |
| Albert Russell & Sons Company. (See Sanborn and Runnells, assignors.) | | | | | | |
| Albrecht, Francis J., Pittsburg, Pa. Oven-front | 754,085 | Mar. 8 | 1630 | 363 | 109 | 375 |
| Albrecht, Herman S. (See Schoellhorn and Albrecht.) | | | | | | |
| Albrecht, Nunnally H., Columbus, Ga. Rod-packing | 754,834 | Mar. 15 | 3233 | 704 | 109 | 741 |
| Albright, Edward A., *et al.* (See Twining, William A., assignor.) | | | | | | |
| Aldridge, James G. W. (See Fiddes, Walter W., assignor.) | | | | | | |
| Alexander, Arch. (See Junkin and Alexander.) | | | | | | |
| Alexander, Edwin C., *et al.* (See Richardson, Wheeler, assignor.) | | | | | | |
| Alexander, Gideon. (See Alexander, Tony, assignor.) | | | | | | |
| Alexander, Jesse, Brooklyn, N. Y., assignor of one-half to A. Letts, Los Angeles, Cal. Type-writing-machine aliner | 754,271 | Mar. 8 | 2073 | 459 | 109 | 471 |
| Alexander, Jesse, Brooklyn, N. Y., assignor of one-half to A. Letts, Los Angeles, Cal. Type-writer line-spacing mechanism | 755,881 | Mar. 29 | 5113 | 1134 | 109 | 1187 |
| Alexander, Jesse, Brooklyn, N. Y., assignor of one-half to A. Letts, Los Angeles, Cal. Type-writer carriage-feeding mechanism | 756,199 | Apr. 5 | 2 | 1 | 109 | 1343 |
| Alexander, Jesse, Brooklyn, N. Y., assignor of one-half to A. Letts, Los Angeles, Cal. Type-writing-machine ribbon-movement | 756,808 | Apr. 12 | 1184 | 263<br>264 | 109 | 1613 |
| Alexander, Jesse, Brooklyn, assignor of one-half to E. Nilson, New York, and J. A. Lafrentz, Brooklyn, N. Y. Type-writer alining mechanism | 753,348 | Mar. 1 | 238 | 54 | 109 | 54 |
| Alexander, Jesse, Brooklyn, assignor of one-half to B. and R. Cronson and S. H. Siegel, New York, N. Y. Type-writer aliner | 753,651 | Mar. 1 | 827 | 186 | 109 | 180 |
| Alexander, John W. (See Ihrer, Alexander, Barr, and Ochiltree.) | | | | | | |
| Alexander, Julius M., *et al.* (See Hathaway, James F., assignor.) | | | | | | |
| Alexander, Magnus W., Lynn, Mass., assignor to General Electric Company. Controller for electric motors | 755,731 | Mar. 29 | 4908 | 1092<br>1098 | 109 | 1137 |
| Alexander, Tony, Brookhaven, Miss., assignor of one-half to G. Alexander, New Orleans, La. Grapple | 756,199 | Apr. 26 | 3065 | 860 | 109 | 2247 |
| Alfred Peats Company. (See Moog, Philip H., assignor.) | | | | | | |
| Algonquin Electric Brake Corporation. (See Spiller, Harry A., assignor.) | | | | | | |
| Allderdice, Winslow, Warren, Ohio. Pipe-mandrel | 757,872 | Apr. 19 | 3316 | 718 | 109 | 2085 |
| Allen, Bona, Jr., Buford, Ga. Tanning-wheel | 756,553 | Apr. 5 | 701 | 152 | 109 | 1491 |
| Allen, Bona, Jr., Buford, Ga. Tanning-drum | 756,554 | Apr. 5 | 704 | 152 | 109 | 1491 |
| Allen, Boyd W., Boston, Mass. Junction-box for electric wires in buildings | 754,111 | Mar. 8 | 1780 | 395 | 109 | 409 |
| Allen, Charles, El Paso, Tex. Automatic silt and sand separator | 754,732 | Mar. 15 | 3049 | 665 | 109 | 700 |
| Allen, Charles, El Paso, Tex. Automatic ore and slime separator | 754,911 | Mar. 15 | 3376 | 738 | 109 | 772 |
| Allen, Charles, El Paso, Tex. Automatic ore and pulp sampler | 754,912 | Mar. 15 | 3379 | 739 | 109 | 772 |
| Allen, Charles D., Oklahoma, Okla. Ter. Display rack or case | 757,643 | Apr. 19 | 2967 | 629 | 109 | 1902 |
| Allen, David M., Urbana, Ill. Trace-end supporter | 756,495 | Apr. 26 | 4561 | 990 | 109 | 2380 |
| Allen, Edward B., Elizabeth, N. J., assignor to Singer Manufacturing Company. Thread-controlling device for sewing-machines | 757,171 | Apr. 12 | 1914 | 418<br>419 | 109 | 1768 |
| Allen, Edward B., Elizabeth, N. J., assignor to Singer Manufacturing Company. Work-clamp for buttonhole-sewing machines | 756,086 | Apr. 26 | 3647 | 789 | 109 | 2177 |
| Allen, Edward B., Elizabeth, N. J., assignor to Singer Manufacturing Company. Buttonhole cutting and stitching machine | 756,087 | Apr. 26 | 3650 | 789<br>790 | 109 | 2177 |
| Allen, Edwin T., Detroit, Mich. Burial-vault | 755,966 | Mar. 29 | 5418 | 1197 | 109 | 1252 |
| Allen, Everett P., Chicago, Ill. Valve | 757,873 | Apr. 19 | 3317 | 719 | 109 | 2085 |
| Allen, Golden F., Walthamston, England. Folding hammock-stand | 757,496 | Apr. 19 | 2435 | 531 | 109 | 1893 |
| Allen, James H., Coal Valley, assignor of three-eighths to C. A. Rankin, McKeesport, Pa. Mine or pit car | 755,342 | Mar. 22 | 4169 | 921 | 109 | 959 |
| Allen, James W., St. Louis, Mo. Lamp for canes, umbrella-sticks, or the like | 754,631 | Mar. 15 | 2940 | 690 | 109 | 653 |
| Allen, Mathew S. (See Sturgis and Allen.) | | | | | | |
| Allen, Patrick A., Toledo, Ohio. Water-closet | 754,733 | Mar. 15 | 3051 | 666 | 109 | 701 |
| Allendorfer, John H., borough of Westmont, and M. Owens, Johnstown, Pa. Combination-tool for boring and tapping | 756,086 | Apr. 26 | 3656 | 791 | 109 | 2179 |
| Allington, William E., Saginaw, Mich. Separating dust from dust-laden air | 755,430 | Mar. 22 | 4327 | 956<br>957 | 109 | 903 |
| Allis, Thomas V., Bridgeport, Conn. Reducing metal bars into sheets | 757,366 | Apr. 12 | 2347 | 511<br>512 | 109 | 1857 |
| Allison, Walter H., assignor to National Fibre Company, San Francisco, Cal. Decorticating-machine | 753,652 | Mar. 1 | 829 | 186 | 109 | 181 |
| Allman, Eugene H., Mobile, Ala. Means for removing sand-bars | 753,217 | Mar. 1 | 1 | 1 | 109 | 3 |
| Allmendinger, G. Frank. (See Stevenson, John H., assignor.) | | | | | | |
| Allyn, Gurdon R., *et al.* (See Weber, Theodore T., assignor.) | | | | | | |
| Alma Button Company of Baltimore City. (See Bryant, Charles A., assignor.) | | | | | | |
| Alma Button Company of Baltimore City. (See Kerngood, Herman, assignor.) | | | | | | |
| Alpin, Ralph, Tarrytown, N. Y. Clothes-line hanger | 753,218 | Mar. 1 | 3 | 1 | 109 | 3 |
| Alsdorff, Francis. (See Heynsohn, Otto, assignor.) | | | | | | |
| Altermatt, George J., Philadelphia, Pa. Toy | 757,247 | Apr. 12 | 2055 | 448 | 109 | 1797 |
| Altheimer, Louis S., St. Louis, Mo. Wearing-apparel | 754,734 | Mar. 15 | 3054 | 666 | 109 | 702 |
| Altick, William B., Lancaster, Pa. Telephone-cabinet | 756,091 | Mar. 29 | 5612 | 1220 | 109 | 1906 |
| Altick, William B., Lancaster, Pa. Cabinet | 756,555 | Apr. 5 | 705 | 158<br>158 | 109 | 1492 |
| Aluminum Compound Plate Company. (See Sachers, Ralph J., assignor.) | | | | | | |
| Amburn, Otis F., assignor of one-half to O. P. Gibson, Oklahoma, Okla. Ter. Collar and necktie retainer | 753,784 | Mar. 1 | 1108 | 250 | 109 | 289 |



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| American Arithmometer Campany. (See Jackson, Albert C., assignor.) | | | | | | |
| American Automatic Switch Company. (See Collins, Roy V., assignor.) | | | | | | |
| American Ball-Bearing Company. (See Baker, Walter C., assignor.) | | | | | | |
| American Bell and Chime Company. (See Schippers, Frank, assignor.) | | | | | | |
| American & British Manufacturing Company. (See Bevans, William H., assignor.) | | | | | | |
| American Can Company. (See Larkin, Bernard H., assignor.) | | | | | | |
| American Car & Foundry Company. (See Ames, Lyon, and Russell, assignors.) | | | | | | |
| American Coin Register Company. (See Ellis and Powell, assignors.) | | | | | | |
| American Electric Company. (See Miller and McDonnell, assignors.) | | | | | | |
| American Electric Telephone Company. (See Carliss, Albert, assignor.) | | | | | | |
| American Electric Telephone Company. (See Clausen, Henry P., assignor.) | | | | | | |
| American Electrical Heater Company. (See Schneider, George J., assignor.) | | | | | | |
| American Engineering Company. (See Green, Francis J., assignor.) | | | | | | |
| American Equipment Company. (See McCarroll, Samuel H., assignor.) | | | | | | |
| American Fuel Oil Burner Manufacturing Company. (See Van Horn, William H., assignor.) | | | | | | |
| American Gas Machine Company. (See Hanson, Hans C., assignor.) | | | | | | |
| American Locomotive Company. (See Dalton and Cole, assignors.) | | | | | | |
| American Manufacturing Company. (See Dodson, Charles M., assignor.) | | | | | | |
| American Mechanical Cashier Company. (See Dement, Isaac S., assignor.) | | | | | | |
| American Mechanical Cashier Company. (See Dement and Hull, assignors.) | | | | | | |
| American Ordnance Company. (See Tasker, Vernon C., assignor.) | | | | | | |
| American Pianograph Company. (See Cornwall, George R., assignor.) | | | | | | |
| American Plow Company. (See Jarmin, James B., assignor.) | | | | | | |
| American Pneumatic Service Company. (See Stoddard, Charles F., assignor.) | | | | | | |
| American Pulley Company. (See Brinley, Charles A., assignor.) | | | | | | |
| American Restoring Company. (See Brahen, Philip J., assignor.) | | | | | | |
| American Seeding Machine Company. (See Oates, George P., assignor.) | | | | | | |
| American Shearer Manufacturing Company. (See Priest, Joseph K., assignor.) | | | | | | |
| American Sheet Steel Co. (See Ely, Anderson, and Slick, assignors.) | | | | | | |
| American Sheet Steel Co. (See McMurtry, George G., assignor.) | | | | | | |
| American Sheet and Tin Plate Company. (See Bennett, Charles W., assignor.) | | | | | | |
| American Soda-Fountain Company. (See Lippincott, Fisher H., assignor.) | | | | | | |
| American Steel-Body Double-Bolster Co. (See Floyd and Howard, assignors.) | | | | | | |
| American Steel Foundries. (See Westlake, Charles T., assignor.) | | | | | | |
| American Steel & Wire Company. (See Ross, John H., assignor.) | | | | | | |
| American Stove Company. (See Blackford, Atwell J., assignor.) | | | | | | |
| American Sugar Beet Implement Company. (See Dysle, Charles A., assignor.) | | | | | | |
| American Telephone and Telegraph Company. (See Pickard, Greenleaf W., assignor.) | | | | | | |
| American Telephone and Telegraph Company. (See Rorty, Malcolm C., assignor.) | | | | | | |
| American Telephone and Telegraph Company. (See Stryker, Burdett, assignor.) | | | | | | |
| American Tool Works Company. (See Laur and Robinson, assignors.) | | | | | | |
| American Truss Fence Company. (See Brock, Levi M., assignor.) | | | | | | |
| American Universal Mill Company. (See Grey, Henry, assignor.) | | | | | | |
| American Valve and Meter Company. (See Anderson, Frank C., assignor.) | | | | | | |
| American Waltham Watch Company. (See Ohlson, Olof, assignor.) | | | | | | |
| American Wrapping and Box Machine Company. (See McGirr, Theodore G. and J. B., assignors.) | | | | | | |
| Amerling, Harmon B., *et al.* (See Pannepacker, Abraham C., assignor.) | | | | | | |
| Amerling, Henry W., *et al.* (See Pannepacker, Abraham C., assignor.) | | | | | | |
| Ames, John M., J. P. Lyon, and G. E. Russell, New York, N. Y., assignors to American Car & Foundry Company, St. Louis, Mo. Hopper-bottom car | 753,653 | Mar. 1 | 831 | 186<br>187 | 109 | 181 |
| Ammerman, William M., assignor to E. J. Toof, New Haven, Conn. Tension and thread controlling mechanism for sewing-machines | 756,314 | Apr. 5 | 239 | 49 | 109 | 1395 |
| Anderson, Alfred, Cambridge, assignor to T. W. Carter, Boston, Mass. Roll for music-controllers | 757,874 | Apr. 19 | 3319 | 719 | 109 | 2086 |
| Anderson, Augustus L. (See Burt, Anderson, and Groesman.) | | | | | | |
| Anderson, Augustus L. (See Kinsey and Anderson.) | | | | | | |
| Anderson, Charles A., Rockford, Ill. Miter-box | 757,538 | Apr. 19 | 2957 | 584 | 109 | 1942 |
| Anderson, Ernest A., Jamestown, N. Y. Couch-spring | 754,885 | Mar. 15 | 3235 | 705 | 109 | 742 |
| Anderson Foundry & Machine Works. (See Randall and Vanneman, assignors.) | | | | | | |
| Anderson, Frank C., assignor of one-half to American Valve and Meter Company, Cincinnati, Ohio. Switch connection | 756,771 | Apr. 5 | 1102 | 244 | 109 | 1578 |
| Anderson, Fred S. (See Chessman, Henry C., assignor.) | | | | | | |
| Anderson, Frederick F., assignor to L. Kohn, Oakland, Cal. Detachable heel for boots or shoes | 753,532 | Mar. 1 | 809 | 188 | 109 | 133 |
| Anderson, Gustaf A., Kansas City, Kans. Fire-extinguisher | 754,087 | Mar. 8 | 1634 | 364 | 109 | 376 |
| Anderson, Gustaf A., Kansas City, Kans. Hose-nozzle | 755,601 | Mar. 29 | 4639 | 1081 | 109 | 1075 |
| Anderson, Harry H. (See Ely, Anderson, and Slick.) | | | | | | |
| Anderson, Harvey S., Hillsboro, Ohio. Bridle-bit | 754,632 | Mar. 15 | 2842 | 620 | 109 | 654 |
| Anderson, James, Liberty Center, Ohio. Bottle-filling apparatus | 754,951 | Mar. 15 | 3463 | 758 | 109 | 792 |
| Anderson, James C., Jersey City, N. J., assignor to Varley Duplex Magnet Company. Electrical conductor and coil | 753,461 | Mar. 1 | 452 | 106 | 109 | 99 |
| Anderson, John, assignor to Draper Company, Hopedale, Mass. Molding apparatus | 753,951 | Mar. 8 | 1477 | 331<br>332 | 109 | 341 |
| Anderson, John A., Osage City, Kans. Feeder and band-cutter | 758,290 | Apr. 26 | 4153 | 897<br>898 | 109 | 2286 |
| Anderson, John H., Littlefalls, Minn. Bob-sled | 753,654 | Mar. 1 | 833 | 188 | 109 | 182 |
| Anderson, Samuel. (See Bailie and Anderson.) | | | | | | |
| Anderson, Samuel H., Vandergrift, Pa. Spring bed-bottom | 755,967 | Mar. 29 | 5490 | 1197 | 109 | 1252 |
| Anderson, Ulrica C., Bayard, Nebr. Dish-washer | 755,832 | Mar. 29 | 5115 | 1133 | 109 | 1184 |
| Anderson, Walter H., New York, N. Y. Runner attachment for automobiles | 756,556 | Apr. 5 | 706 | 158 | 109 | 1492 |
| Andresen, Christian, assignor to Lock Safety Pin Company, St. Louis, Mo. Safety-pin | 755,097 | Mar. 22 | 3711 | 815 | 109 | 864 |
| Andresen, Christian, assignor to Lock Safety Pin Company, St. Louis, Mo. Safety-pin | 756,809 | Apr. 12 | 1188 | 264 | 109 | 1614 |
| Andresen, Christian, assignor to Lock Safety Pin Company, St. Louis, Mo. Safety-pin | 756,810 | Apr. 12 | 1189 | 264 | 109 | 1614 |
| Andresen, Christian, assignor to Interlocking Hook and Eye Manufacturing Company, St. Louis, Mo. Hook and eye | 755,603 | Mar. 29 | 4642 | 1081 | 109 | 1075 |
| Andresen, Christian, assignor to Interlocking Hook and Eye Manufacturing Company, St. Louis, Mo. Hook and eye | 755,608 | Mar. 29 | 4643 | 1081 | 109 | 1076 |
| Andrew, Harve T., Memphis, Mo. Window curtain and shade holder | 754,531 | Mar. 15 | 2959 | 577 | 109 | 617 |
| Andrews, Edwin C., Penn Yan, N. Y. Suction-box for paper-making machines | 754,086 | Mar. 8 | 1631 | 363 | 109 | 375 |
| Andrews, Emery, deceased, Kennebunk, Me.; P. I. and H. E. Andrews, executors. Roving-can | 757,082 | Apr. 12 | 1729 | 375<br>376 | 109 | 1726 |
| Andrews, Harry E., *et al.*, executors. (See Andrews, Emery.) | | | | | | |
| Andrews, Herbert L. (See Schustek, Daniel, assignor.) | | | | | | |
| Andrews, Horace W., Brooklyn, N. Y. Filing-cabinet | 758,039 | Apr. 26 | 3660 | 791 | 109 | 2180 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Andrews, James, Cathcart, Scotland. Vapor-generator | 756,998 | Mar. 29 | 5490 | 1197, 1196 | 109 | 1208 |
| Andrews, Matthew, Cleveland, Ohio. Apparatus for scraping ore from wings of vessels. | 757,856 | Apr. 19 | 3008 | 713 | 109 | 2079 |
| Andrews, Orval J., *et al.* (See Cottrall, Archibald H. F., assignor.) | | | | | | |
| Andrews, Paul L., *et al.*, executors. (See Andrews, Emery.) | | | | | | |
| Andrews, Wallace C., New York, N. Y. Apparatus for supplying cities with steam | 753,617 | Mar. 1 | 1205 | 371, 372 | 109 | 959 |
| Andrews, Wallace C., deceased; G. C. St. John, New York, N. Y., executor. Variator | 753,754 | Mar. 1 | 1089 | 293, 294 | 109 | 221 |
| Andrus, Frank M. (See Pike and Andrus.) | | | | | | |
| Andrus, George S., Globe, Ariz. Ter. Wrench | 757,644 | Apr. 19 | 3666 | 699 | 109 | 1998 |
| Angell, Edward L., New York, N. Y. Waste control for plumbing-fixtures | 756,040 | Apr. 26 | 3963 | 798 | 109 | 2188 |
| Angerer, Victor. (See Wharton and Angerer.) | | | | | | |
| Ansley, Frank, Spokane, Wash. Spinning-top | 756,391 | Apr. 26 | 4157 | 896 | 109 | 2287 |
| Anthony, Frederick A., Hackensack, N. J. Flexible photographic film | 754,735 | Mar. 15 | 3054 | 697 | 109 | 708 |
| Anthony, Mark O., assignor to himself, H. C. Traute, and J. R. Nolan, New York, N. Y. Packing-box | 757,591 | Apr. 19 | 3776 | 697 | 109 | 1997 |
| Anthony, Richard A., New York, N. Y. Photographic film | 754,736 | Mar. 15 | 3055 | 697 | 109 | 708 |
| Anthony Shield Company. (See Pienkowsky, Charles A., assignor.) | | | | | | |
| Anton, John, Monongahela, Pa. Miner's lamp | 756,151 | Mar. 29 | 5714 | 1261 | 109 | 1315 |
| Anselewitz, Abraham, New York, N. Y. Stem-winding watch | 754,407 | Mar. 15 | 2998 | 588 | 109 | 587 |
| Appelman, Erastus W., Clermont, Iowa. Fire-escape | 755,889 | Mar. 29 | 5116 | 1133 | 109 | 1184 |
| Apple, Vincent G., Dayton, Ohio. Automatic friction-governor | 754,165 | Mar. 8 | 1904 | 494 | 109 | 437 |
| Apple, Vincent G., Dayton, Ohio. Automatically-governed driving-wheel | 756,428 | Apr. 5 | 397 | 110 | 109 | 1455 |
| Arbogast, Charles V. (See Arbogast, John I., C. V., F. J., P. R., and F. L.) | | | | | | |
| Arbogast, Francis J. (See Arbogast, John I., C. V., F. J., P. R., and F. L.) | | | | | | |
| Arbogast, Frederick L. (See Arbogast, John I., C. V., F. J., P. R., and F. L.) | | | | | | |
| Arbogast, John I., C. V., F. J., P. R., and F. L., Pittsburg, Pa. Glass-reheating furnace | 756,557 | Apr. 5 | 709 | 153 | 109 | 1498 |
| Arbogast, John I., C. V., F. J., F. L., and P. R., Pittsburg, Pa. Manufacturing glassware | 756,558 | Apr. 5 | 711 | 154 | 109 | 1498 |
| Arbogast, Philip R. (See Arbogast, John I., C. V., F. J., P. R., and F. L.) | | | | | | |
| Arce, Santiago, Buenos Aires, Argentina. Shearing-tool | 757,499 | Apr. 19 | 3495 | 581, 582 | 109 | 1808 |
| Archer, James, Manchester, assignor to Three-Speed Gear Syndicate, Ltd., Lenton, Nottingham, England. Variable gearing for velocipedes or road motor-vehicles | 753,785 | Mar. 1 | 1104 | 350, 351 | 109 | 299 |
| Arendt, Otto, Newark, N. J. Pump-valve | 754,186 | Mar. 8 | 1908 | 494 | 109 | 437 |
| Arens, August, assignor to P. & F. Corbin, New Britain, Conn. Sash-fastener | 756,559 | Apr. 5 | 713 | 154 | 109 | 1498 |
| Arens, August, and E. L. Teich, assignors to P. & F. Corbin, New Britain, Conn. Sash-bolt | 756,488 | Apr. 5 | 530 | 110 | 109 | 1455 |
| Armour & Company. (See Nichols, Jesse W., assignor.) | | | | | | |
| Armstrong, Charles J. (See Zilker, Tidmarsh, and Armstrong.) | | | | | | |
| Armstrong, George P., Woodridge, N. J., assignor to F. W. Spencer, New York, N. Y. Swing | 758,579 | Apr. 26 | 4737 | 1019 | 109 | 2416 |
| Arnold, Jacob F., Massillon, Ohio. Table-leg attachment | 757,712 | Apr. 19 | 3009 | 654 | 109 | 2019 |
| Arnold, John P., Colfax, Ill. Explosive compound | 757,713 | Apr. 19 | 3010 | ..... | 109 | 2019 |
| Arnold, William A., Fort Smith, Ark. Folding bedstead and chest | 757,490 | Apr. 19 | 3497 | 582, 583 | 109 | 1808 |
| Aron, Hermann, Charlottenburg, Germany. Coin-freed gas-meter | 755,206 | Mar. 22 | 3909 | 863, 864 | 109 | 904 |
| Arper, George W., Oakland, Cal. Hydrocarbon-burner | 754,112 | Mar. 8 | 1781 | 305 | 109 | 409 |
| Art Metal Construction Company. (See Ohnstrand, Enoch, assignor.) | | | | | | |
| Ash, Horace W., Cambridge, Mass., assignor to Warren Brothers Company, Charleston, W. Va. Still for crude bituminous material | 757,257 | Apr. 19 | 2949 | 512 | 109 | 1656 |
| Ash, Lewis, and H. B. Stewart, Hassel, Mont. Wrench | 754,088 | Mar. 15 | 2943 | 621 | 109 | 654 |
| Ashley, Charles H., San Francisco, Cal. Folding pedestal | 756,927 | Apr. 19 | 1415 | 315, 316 | 109 | 1660 |
| Ashton, John, assignor of one-half to F. R. Clayton, St. Louis, Mo. Automatic gate | 755,894 | Mar. 29 | 5117 | 1134 | 109 | 1184 |
| Ashworth, Fred N. (See Ashworth, John and F. N.) | | | | | | |
| Ashworth, John and F. N., Somerville, Mass. Covered elastic band | 754,229 | Mar. 22 | 3493 | 768 | 109 | 513 |
| Aspinall, Joseph, Bolton, England. Rope or cable grip for haulage purposes | 758,496 | Apr. 26 | 4569 | 960 | 109 | 2280 |
| Astfalck, Wiland, Tegel, near Berlin, Germany. Hydraulic apparatus | 754,113 | Mar. 8 | 1782 | 306, 307, 308 | 109 | 409 |
| Astrom, Karl P., Newark, N. J., assignor to M. H. Treadwell & Company, New York, N. Y. Dumping-car | 755,207 | Mar. 22 | 3919 | 864 | 109 | 904 |
| Astrup, William, Cleveland, Ohio. Awning | 756,464 | Apr. 5 | 581 | 111 | 109 | 1456 |
| Atha, Charles G., Partick, assignor of one-half to William Beardmore and Company, Limited, Glasgow county, Scotland. Reversing-valve for regenerative furnaces, &c. | 754,373 | Mar. 8 | 2075 | 460 | 109 | 471 |
| Atkins, George J., Tottenham, England. Apparatus for generating acetylene gas | 753,818 | Mar. 1 | 1208 | 373 | 109 | 259 |
| Atkins, George J., Tottenham, England. Electrode | 753,819 | Mar. 1 | 1209 | 373 | 109 | 259 |
| Atkins, George J., Tottenham, England. Preparing electrodes | 754,114 | Mar. 8 | 1787 | ..... | 109 | 410 |
| Atkinson, Frank H. (See Hughes, Robert M., assignor.) | | | | | | |
| Aton, Rue, Independence, Kans. Window-shade adjuster | 755,885 | Mar. 29 | 5119 | 1134 | 109 | 1185 |
| Attwooll, William J., *et al.* (See Zufall, Jacob F., assignor.) | | | | | | |
| Atwood, George F., Hoboken, N. J., assignor to Western Electric Company, Chicago, Ill. Bending tubes | 757,598 | Apr. 19 | 3777 | 607 | 109 | 1967 |
| Atwood, George F., Hoboken, N. J., assignor to Western Electric Company, Chicago, Ill. Machine for bending tubes | 757,598 | Apr. 19 | 3778 | 607, 608 | 109 | 1968 |
| Atwood-Morrison Company. (See Bradley, Edward E., assignor.) | | | | | | |
| Auld, John, Hamden, N. Y. Bottle | 757,714 | Apr. 19 | 3011 | 654 | 109 | 2019 |
| Aull, Jerome J., assignor to Lunkenheimer Company, Cincinnati, Ohio. Lubricator | 754,737 | Mar. 15 | 3056 | 697 | 109 | 708 |
| Aumund, Heinrich, Cologne, Germany, assignor to C. W. Hunt Company, West New Brighton, N. Y. Hoisting mechanism | 754,187 | Mar. 8 | 1907 | 495 | 109 | 437 |
| Austen, Edward J., St. Louis, Mo. Scenographic apparatus | 754,553 | Mar. 15 | 2951 | 578 | 109 | 616 |
| Austen, Edward J., St. Louis, Mo., and H. A. Bradwell, Coney Island, N. Y. Scenographic apparatus | 754,552 | Mar. 15 | 2950 | 577 | 109 | 617 |
| Austin, Cornelius N., Cadyville, N. Y. Shield for shoes | 756,560 | Apr. 5 | 714 | 154 | 109 | 1494 |
| Austin, Joseph N., and M. D. Farnam, assignors to Syracuse Machine Company, Syracuse, N. Y. Cutting apparatus | 755,431 | Mar. 22 | 4329 | 967 | 109 | 998 |
| Austin, Sallie, New York, N. Y. Combined wardrobe and bed | 753,462 | Mar. 1 | 453 | 105 | 109 | 99 |
| Austin, Thomas L., Erie, Pa. Drawing-board | 753,463 | Mar. 1 | 455 | 106, 107 | 109 | 99 |
| Automatic Car Ventilator Company. (See Harrington, Curtis J., assignor.) | | | | | | |
| Automatic Heat Regulator Company. (See Leib, Daniel N., assignor.) | | | | | | |
| Automatic Pressure Feed Lubricator Company. (See Roberts, Dugald H., assignor.) | | | | | | |
| Automatic Racking Machine Company. (See Colby, Harry W., assignor.) | | | | | | |
| Automatic Switch Company of Baltimore City. (See Whittingham, George H., assignor.) | | | | | | |
| Automatic Valve Company. (See Chaplin, Manley J., assignor.) | | | | | | |
| Avedyk, Octave, Brussels, Belgium. Making flour non-hygroscopic | 758,346 | Apr. 26 | 4977 | 919 | 109 | 2314 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Avery Manufacturing Company. (See Watson, Frank C., assignor.) | | | | | | |
| Aylsworth, Jonas W., East Orange, N. J. Propulsion of electric automobiles | 757,715 | Apr. 19 | 3012 | 654, 655 | 109 | 2019 |
| Ayres, Henry W., Los Angeles, Cal. Loose-leaf ledger | 758,292 | Apr. 26 | 4158 | 898 | 109 | 2287 |
| B. A. Moody Hydro-Carbon Burner Company. (See Moody, Benjamin A., assignor.) | | | | | | |
| Babbitt, Charles E., *et al.* (See Mulvaney, John J., assignor.) | | | | | | |
| Babbitt, Mary J., Jackson, Mich. Means for removing jar-stoppers | 755,208 | Mar. 22 | 3914 | 565 | 109 | 905 |
| Babcock, Garrison, Chicago, Ill. Lightning-arrester | 757,388 | Apr. 12 | 2350 | 512 | 109 | 1658 |
| Babcock, Lucien C., New York, N. Y. Machine for automatically sealing envelops | 758,497 | Apr. 26 | 4563 | 980, 981 | 109 | 2280 |
| Babcock, Orvill C., Saginaw, Mich. Plow | 757,539 | Apr. 19 | 2668 | 584 | 109 | 1942 |
| Babcock, W. I. (See Gunnell, Elias, assignor.) | | | | | | |
| Babin, Robert M., Waterbury, Conn. Paring implement | 755,604 | Mar. 29 | 4645 | 1032 | 109 | 1076 |
| Babson, Charles, Gloucester, Mass. Neckwear | 754,188 | Mar. 8 | 1908 | 495 | 109 | 437 |
| Bache, William H., Boundbrook, N. J. Sheet for roof-covering | 754,273 | Mar. 8 | 2077 | 460 | 109 | 472 |
| Backlund, Knute, and B. F. Burman, Baltimore, Md. Charging apparatus for blast-furnaces | 758,498 | Apr. 26 | 4567 | 981, 982 | 109 | 2281 |
| Bacon, Burwell R., Frankfort, Ky. Lock-faucet | 753,349 | Mar. 1 | 239 | 55 | 109 | 54 |
| Bacon, Ebenezer S., Detroit, Mich. Pottery-kiln | 756,561 | Apr. 5 | 715 | 154 | 109 | 1494 |
| Bacon, Martin J., San Francisco, Cal. Seam-ripper | 753,655 | Mar. 1 | 886 | 188 | 109 | 182 |
| Badische Anilin & Soda Fabrik. (See Abel and Lüttringhaus, assignors.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Bally, Oscar, assignor.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Bohn, René, assignor.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Dorrer, August, assignor.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Julius and Fussenegger, assignors.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Knietsch, Seidel, and Meiser, assignors.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Weitz, Heinrich, assignor.) | | | | | | |
| Badische Anilin & Soda Fabrik. (See Wolf, Hermann, assignor.) | | | | | | |
| Badische Maschinenfabrik & Eisengiesserei, vormals G. Sebold and Sebold & Neff. (See Beeg, Hans, assignor.) | | | | | | |
| Bagnall, Alfred E. (See Beale and Bagnall.) | | | | | | |
| Bailey, Albert W., Janesville, Wis. Hay-loader | 753,219 | Mar. 1 | 4 | 1, 2 | 109 | 3 |
| Bailey, Benjamin F., Ogden, Mich. Fence-weaving machine | 756,928 | Apr. 12 | 1417 | 316 | 109 | 1661 |
| Bailey, Jefferson, Auburn, R. I. Non-refillable bottle | 756,200 | Apr. 5 | 6 | 1 | 109 | 1344 |
| Bailey, Newton C., Tampa, Fla. Ship-builder's clamp | 754,115 | Mar. 8 | 1788 | 898 | 109 | 411 |
| Bailie, Thomas J., and S. Anderson, Ottawa, Canada. Cattle-guard | 753,220 | Mar. 1 | 7 | 2 | 109 | 4 |
| Bain, Eugene C., East Radford, assignor of one-fifth to W. J. Wall, Christiansburg, Va. Grain-drill | 756,315 | Apr. 5 | 240 | 50 | 109 | 1395 |
| Bainbridge, William, Banning, Pa. Oil-can fastener | 755,432 | Mar. 22 | 4330 | 957 | 109 | 994 |
| Baird, Clarence D., assignor of one-half to J. F. Roy and J. Jones, Alexandria, Tenn. Calculating and recording machine | 754,896 | Mar. 15 | 3287 | 705, 706, 707 | 109 | 742 |
| Baker, Frank. (See Thompson, Frederick V., assignor.) | | | | | | |
| Baker, Frederick H. (See Baker, Shevlin, and Baker.) | | | | | | |
| Baker, Hugh C., Jr., New York, N. Y. Construction of manholes for conduits. (Reissue) | 12,205 | Mar. 22 | 4626 | 1027 | 109 | 1059 |
| Baker, James H., Pittsburg, Pa. Forging apparatus | 755,433 | Mar. 22 | 4332 | 958, 959 | 109 | 994 |
| Baker, James H., G. F. Shevlin, and F. H. Baker, assignors to Baker and Shevlin Company, Saratoga Springs, N. Y. Wood-pulp grinder | 755,989 | Mar. 29 | 5422 | 1198 | 109 | 1253 |
| Baker, Louis J., and R. E. French, Lascruces, N. Mex. Ter. Show-case | 758,656 | Mar. 1 | 837 | 189 | 109 | 188 |
| Baker, Milton L., Edgemont, Pa. Fertilizer-distributer | 754,408 | Mar. 15 | 2995 | 594 | 109 | 557 |
| Baker, Robert, Hamilton, Canada. Apparatus for burning soft coal | 758,586 | Mar. 8 | 1946 | 980 | 109 | 280 |
| Baker and Shevlin Company. (See Baker, Shevlin, and Baker, assignors.) | | | | | | |
| Baker, Thomas W. (See Wilson and Baker.) | | | | | | |
| Baker-Vawter Company. (See Shoemaker, George A., assignor.) | | | | | | |
| Baker, Walter C., assignor to American Ball-Bearing Company, Cleveland, Ohio. Anti-friction-bearing | 753,880 | Mar. 1 | 1211 | 272 | 109 | 260 |
| Baldwin, Chalkley B., assignor to S. W. Evans & Son, Philadelphia, Pa. Umbrella-gear | 756,562 | Apr. 5 | 717 | 155 | 109 | 1494 |
| Baldwin, Cyrus W., deceased; M. E. Baldwin, Yonkers, N. Y., executrix, assignor to Otis Elevator Company, East Orange, N. J. Safety device for elevators | 756,511 | Apr. 12 | 1190 | 264, 265 | 109 | 1615 |
| Baldwin, Henry S., Lynn, Mass., assignor, by mesne assignments, to Morton Trust Company, trustee. Motor-vehicle | 756,152 | Mar. 29 | 5714 | 1261 | 109 | 1315 |
| Baldwin, James E., East Williston, N. Y. Thermostatic gas-detecting means | 754,584 | Mar. 15 | 2963 | 578, 579 | 109 | 618 |
| Baldwin, Mary E., executrix. (See Baldwin, Cyrus W.) | | | | | | |
| Baldwin, Rollin A., South Norwalk, Conn., assignor to Baldwin and Rowland Switch Company. Electromagnetic railway-switch | 756,316 | Apr. 5 | 244 | 50 | 109 | 1396 |
| Baldwin and Rowland Switch Company. (See Baldwin, Rollin A., assignor.) | | | | | | |
| Ball, Henry P., New York, N. Y., assignor of one-half to S. Insull, Chicago, Ill. Music-sheet | 757,010 | Apr. 12 | 1595 | 347 | 109 | 1697 |
| Ball, Philip D., St. Louis, Mo. Refrigerator-car | 754,039 | Mar. 8 | 1937 | 864 | 109 | 377 |
| Ball, Philip D., St. Louis, Mo., and C. L. Wakefield, Dallas, Tex. Governing mechanism | 754,038 | Mar. 8 | 1936 | 864 | 109 | 377 |
| Ball and Socket Fastener Company. (See Richardson, William S., assignor.) | | | | | | |
| Ball and Socket Manufacturing Company. (See Richardson, William S., assignor.) | | | | | | |
| Ball, Warren J., and R. Cole, Salem, Ohio; said Ball assignor to said Cole. Chain-link | 756,563 | Apr. 5 | 717 | 155 | 109 | 1494 |
| Balluff, Henry E. (See Schebler, Theodore N., assignor.) | | | | | | |
| Bally, Oscar, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Anthracene dye and making same | 753,657 | Mar. 1 | 843 | ..... | 109 | 184 |
| Bamberger, Lee. (See Keefer, Edward S., assignor.) | | | | | | |
| Bamford, John W., assignor of one-half to J. H. Smith, Pascoag, R. I. Bearing | 756,564 | Apr. 5 | 718 | 155 | 109 | 1494 |
| Bancroft, Harold J. (See Manderson, John, assignor.) | | | | | | |
| Bange, Charles T. M. V. de, Versailles, France. Mounting of railway or tramway rolling-stock | 758,283 | Apr. 26 | 4931 | 874, 875, 876 | 109 | 2280 |
| Bankers Adding Machine Co. (See Dennis, Adolphus S., assignor.) | | | | | | |
| Banks, Lewis E. W., Camden, N. J. Window-sash attachment | 754,274 | Mar. 8 | 2078 | 461 | 109 | 472 |
| Bannihr, Caesar R., New York, N. Y. Garment-fastener | 756,901 | Apr. 5 | 6 | 2 | 109 | 1344 |
| Barbe, Louis E., Paris, France. Apparatus for washing, disinfecting, and drying | 757,011 | Apr. 12 | 1597 | 348 | 109 | 1698 |
| Barbee, Thomas M., assignor of three-fourths to S. P. Vogt and L. V. Brown, Corydon, Ind. Heating-stove | 754,275 | Mar. 8 | 2080 | 461 | 109 | 472 |
| Barber, George D., Worcester, Mass. Envelop-fastener | 757,716 | Apr. 19 | 3014 | 655 | 109 | 2020 |
| Barber, Howard M., Stonington, Conn., assignor to C. B. Cottrell & Sons Company, New York, N. Y. Sheet-delivery mechanism for printing-machines | 757,948 | Apr. 12 | 2056 | 448, 449 | 109 | 1798 |
| Barber, Thomas W., Westminster, England. Tube for boilers | 755,558 | Mar. 22 | 4545 | 1011 | 109 | 1040 |
| Barclay, James S., Marion, Ind. Wrench | 758,560 | Apr. 26 | 4728 | 1019 | 109 | 2416 |
| Barclay, John C., New York, N. Y. Rheostat | 753,583 | Mar. 1 | 611 | 139 | 109 | 188 |
| Barclay, Phalauris K., St. Louis, Mo. Rein-holder | 755,990 | Mar. 29 | 5425 | 1199 | 109 | 1254 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Barclay, Robert L., New York, N. Y. Forming twist-drills | 756,041 | Apr. 26 | 3064 | 798 | 109 | 2182 |
| Barcus, Luther C., Sidney, Ill. Monkey-wrench | 753,287 | Mar. 8 | 1247 | 281 | 109 | 990 |
| Bardelli, Joseph, Springfield, Mass. Machine for covering paper boxes | 756,612 | Apr. 19 | 1198 | 266 267 | 109 | 1615 |
| Bardin, Jean, Brussels, Belgium. Case for use with solidified perfumes or the like | 756,284 | Apr. 26 | 4086 | 877 | 109 | 2261 |
| Bardsley, Joseph, Montclair, N. J. Door check and closer | 753,286 | Mar. 8 | 1248 | 281 | 109 | 990 |
| Bardwell, Arthur F., assignor to F. A. Bardwell, Boston, Mass. Voting-machine | 753,986 | Mar. 29 | 5130 | 1134 1135 | 109 | 1185 |
| Bardwell, Frederick A. (See Bardwell, Arthur F., assignor.) | | | | | | |
| Barger, Nathaniel S., St. Joseph, Mo. Dust-proof journal for cultivator-wheels | 756,561 | Apr. 26 | 4730 | 1019 | 109 | 2416 |
| Barger, Nathaniel S., St. Joseph, Mo. Dust-proof journal for cultivator-disks | 756,562 | Apr. 26 | 4731 | 1020 | 109 | 2417 |
| Barker, Enoch W., Oakland, Cal. Educational device | 756,287 | Mar. 29 | 5130 | 1135 | 109 | 1189 |
| Barker, Joel C. (See Hinrichs and Barker.) | | | | | | |
| Barker, Louis H. (See Burns, Peter J., assignor.) | | | | | | |
| Barker, Ralph E., Lynn, Mass., assignor to General Electric Company. Electric motor | 755,738 | Mar. 29 | 4910 | 1098 | 109 | 1136 |
| Barnard, Charles S., Bridgeport, Conn. Automatic sash-lock | 757,249 | Apr. 12 | 2060 | 450 | 109 | 1799 |
| Barnes, Amos, Detroit, assignor of two-thirds to W. Barnes, Pontiac, Mich. Railway-rail joint | 754,913 | Mar. 15 | 3390 | 730 | 109 | 773 |
| Barnes, Burr F., Jersey City, N. J. Tilting bin | 755,605 | Mar. 29 | 4646 | 1038 | 109 | 1076 |
| Barnes, David W., Brooklyn, N. Y. Plectrum for stringed instruments | 753,584 | Mar. 1 | 612 | 139 | 109 | 133 |
| Barner, Robert, *et al.* (See Maher, Michael M., assignor.) | | | | | | |
| Barnes, William. (See Barnes, Amos, assignor.) | | | | | | |
| Barnes, William H. (See Kengla, William S., assignor.) | | | | | | |
| Barnett, Barnard B., Spartanburg, S. C. Wagon-brake | 757,068 | Apr. 12 | 1730 | 376 | 109 | 1795 |
| Barnett, Charles M. (See Coke, Wilbur A., assignor.) | | | | | | |
| Barney & Smith Car Company. (See Tesseyman, Henry, assignor.) | | | | | | |
| Barnhurst, William, Dallas, Tex. Trolley-wire finder | 753,289 | Mar. 8 | 1251 | 281 | 109 | 990 |
| Baron, Robert. (See McCullough, Blaney, and Baron.) | | | | | | |
| Barr, James F. (See Ihrer, Alexander, Barr, and Ochiltree.) | | | | | | |
| Barratt, Edward W., Wood Green, England. Machine for rolling and cutting candy | 755,343 | Mar. 22 | 4170 | 921 922 | 109 | 959 |
| Barrett, James, New York, N. Y. Bearing for elevator-carriage rollers | 755,344 | Mar. 22 | 4173 | 922 | 109 | 960 |
| Barrett, Roy, Palmyra, N. Y. Radiator | 756,208 | Apr. 5 | 8 | 2 | 109 | 1344 |
| Barron, Walter J., Brooklyn, assignor to Densmore Typewriter Company, Syracuse, N. Y. Type-writing machine | 757,431 | Apr. 19 | 2430 | 582 583 | 109 | 1804 |
| Barrow, Thomas, assignor to Pedrick and Ayer Company, Plainfield, N. J. Motor | 755,732 | Mar. 29 | 4912 | 1094 | 109 | 1136 |
| Barrow, Thomas, assignor to Pedrick and Ayer Company, Plainfield, N. J. Valve-operating mechanism | 755,734 | Mar. 29 | 4915 | 1095 | 109 | 1136 |
| Barry, Cornelius J. (See Miller and Barry.) | | | | | | |
| Barry, Josephine H., executrix. (See Busch, Gull, and Barry.) | | | | | | |
| Barry, Thomas H., Empire, Oreg. Wrench | 756,565 | Apr. 5 | 719 | 155 | 109 | 1495 |
| Barry, Thomas J., deceased. (See Busch, Gull, and Barry.) | | | | | | |
| Barstad, Albert L. and O. L., Stavanger, Norway. Means for holding eggs during transit | 755,434 | Mar. 22 | 4335 | 959 | 109 | 995 |
| Barstad, Olaf L. (See Barstad, Albert L. and O. L.) | | | | | | |
| Bartel, Otto, New York, N. Y., and E. Kuhn, East Orange, N. J., assignors to G. and E. Bunzl, New York, N. Y. Pedometer | 756,405 | Apr. 26 | 4363 | 942 | 109 | 2336 |
| Bartels, Arthur C. (See Hunter, Homer, assignor.) | | | | | | |
| Barth, Carl G., Bethlehem, H. L. Gantt and F. W. Taylor, South Bethlehem, Pa. Slide-rule | 753,840 | Mar. 8 | 1253 | 282 283 | 109 | 991 |
| Barthel, Gustav, Dresden, Germany. Mechanical piano-player | 755,098 | Mar. 22 | 3713 | 815 | 109 | 864 |
| Barthel, Oliver E., Detroit, Mich. Muffler | 756,208 | Apr. 5 | 10 | 2, 3 | 109 | 1345 |
| Bartleson, James. (See Douglas and Bartleson.) | | | | | | |
| Bartlett, Alden A., San Francisco, Cal. Wood-cutting machine | 756,042 | Apr. 26 | 3665 | 798 | 109 | 2182 |
| Bartlett, Charles O., *et al.* (See Twining, William O., assignor.) | | | | | | |
| Bartlett, Frederick H. (See Jewett, Benjamin J., assignor.) | | | | | | |
| Barton, Charles H., H. E. Henrichsen, J. S. Cousins, and C. L. Matthews, Houston, Tex. Hydrocarbon-burner | 756,317 | Apr. 5 | 946 | 51 | 109 | 1396 |
| Barton, Edward J., Wewoka, Ind. Ter. Milk-pail | 756,318 | Apr. 5 | 948 | 51 | 109 | 1396 |
| Barton, Henry J. (See La Bud and Barton.) | | | | | | |
| Barton, Robert W., Chicago, Ill. Steam-boiler | 754,627 | Mar. 15 | 3357 | 706 | 109 | 746 |
| Bartsch, Edwin, San Francisco, Cal. Syringe | 754,276 | Mar. 8 | 2061 | 461 | 109 | 472 |
| Bash, David W., Buda, Ill. Combined swing and fan | 753,841 | Mar. 8 | 1253 | 283 | 109 | 992 |
| Bashaw, Julian S., Gainesville, Fla. Refrigerator-car | 756,406 | Apr. 26 | 4363 | 949 | 109 | 2336 |
| Basola, Antonio, New York, N. Y. Proportional dividers | 753,221 | Mar. 1 | 10 | 2 | 109 | 4 |
| Bassett, J. Colby, *et al.*, trustees. (See Tichon, Joseph E., assignor.) | | | | | | |
| Bassett, Richard, Dover, N. J. Seedbox | 757,645 | Apr. 19 | 2669 | 629 | 109 | 1902 |
| Bates, Charles. (See Bates, Lafayette, assignor.) | | | | | | |
| Bates, Eddo V., Lowell, Mass. Card-feeding mechanism | 754,189 | Mar. 8 | 1909 | 425 | 109 | 438 |
| Bates, Franklin P., Indianapolis, Ind. Machine for rolling wheels | 757,426 | Apr. 19 | 2444 | 533 534 | 109 | 1805 |
| Bates, Joel F., Urbana, Ohio. Tank and heater | 754,886 | Mar. 15 | 3358 | 706 | 109 | 746 |
| Bates, Lafayette, assignor of one-third to C. Bates, Mattoon, Ill. Power device for transfer-tables | 756,773 | Apr. 5 | 1104 | 244 | 109 | 1579 |
| Bauer, Ernest, Chicago, Ill. Belt-pulley | 754,980 | Mar. 29 | 3484 | 762 | 109 | 813 |
| Bauman, William J. (See Mills, Irwin H., assignor.) | | | | | | |
| Baumgarten, Herman. (See Reinle and Baumgarten.) | | | | | | |
| Baumgartner, Charles B., Chicago, Ill. Wire fencing | 756,195 | Apr. 26 | 3696 | 881 | 109 | 2216 |
| Baumgartner, Peter J. (See Moser, Jacob A., assignor.) | | | | | | |
| Baxter, John F. (See Rubicam and Baxter.) | | | | | | |
| Bayley, Harry E., Indianapolis, assignor of one-half to W. S. Holcombe, Bedford, Ind. Differential gearing | 754,914 | Mar. 15 | 3369 | 730 | 109 | 776 |
| Baynes, Frederick W., London, assignor to P. Eckhaus, West Kensington, England. Cash-till | 754,961 | Mar. 22 | 3484 | 762 | 109 | 813 |
| Beach, Carl F., Battlecreek, Mich. Wrench | 756,490 | Apr. 26 | 4574 | 968 | 109 | 2268 |
| Beach, Edward S., Brookline, Mass., assignor to Tyler Hinged Last Company, Charleston, W. Va., and Brockton, Mass. Divided last | 755,350 | Mar. 22 | 4545 | 1011 | 109 | 1040 |
| Beach, Henry H., *et al.* (See Brightwell, Amazon W., assignor.) | | | | | | |
| Beal, Alpha R., Pittsburg, Pa. Price or money weight-scale | 753,288 | Mar. 1 | 11 | 2, 3 | 109 | 5 |
| Beal, Francis R., Northville, Mich. Register | 753,585 | Mar. 1 | 612 | 139 140 | 109 | 133 |
| Beal, William C., assignor of one-half to J. J. Rutishauser and L. G. Hirth, Fernandina, Fla. Non-refillable bottle | 756,778 | Apr. 5 | 1105 | 244 | 109 | 1579 |
| Beale, Bertram R., and A. E. Bagnall, London, England. Coin-freed mechanism for gas or other fluid meters | 753,638 | Mar. 1 | 844 | 189 190 | 109 | 184 |
| Beam, George W., Robinson, Ill. Grain-harvester elevator | 755,986 | Mar. 29 | 5131 | 1135 1136 | 109 | 1189 |
| Beam, John A., Baden, Canada. Threshing-machine | 753,250 | Mar. 1 | 241 | 55 | 109 | 54 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Bean, Joseph S., West Norwich, Vt. Thill-tug | 757,717 | Apr. 19 | 3015 | 655 | 109 | 2020 |
| Bean, William H., Birmingham, assignor of one-half to H. C. Mead, Bessemer, Ala. Portable valve-seat planer | 753,796 | Mar. 1 | 1107 | 251 | 109 | 239 |
| Beard, Percy M., Hardinsburg, Ky. Hat-case | 757,250 | Apr. 12 | 2061 | 450 | 109 | 1799 |
| Beatty, Franklin E., Mount Airy, assignor of one-half to D. D. Yeakel, Chestnut Hill, Pa. Brake-adjuster | 756,092 | Mar. 29 | 5614 | 1239 | 109 | 1293 |
| Beauregard, Stanislas, assignor to J. Adam, Montreal, Canada. Hand-tacker | 755,589 | Mar. 29 | 5136 | 1136 | 109 | 1190 |
| Becher, James A., Mishawaka, Ind. Engine | 754,277 | Mar. 8 | 2063 | 462 | 109 | 473 |
| Becht, Herman W., Cincinnati, Ohio. Reducing-mill | 757,433 | Apr. 19 | 2447 | 534 | 109 | 1806 |
| Bechtel, Charles W. (See Stewart, William G., assignor.) | | | | | | |
| Bechtold, Adolph and A. C., New York, N. Y. Changeable exhibitor | 754,190 | Mar. 8 | 1912 | 426 | 109 | 438 |
| Bechtold, August C. (See Bechtold, Adolph and A. C.) | | | | | | |
| Bechtold, Edmund E., Chicago, Ill. Insulation | 758,165 | Apr. 26 | 3894 | 846 | 109 | 2228 |
| Beck, George W. (See Grapewine, Charles E., assignor.) | | | | | | |
| Beck, Michael, Minneapolis, Minn. Long-distance telephone system | 756,613 | Apr. 12 | 1198 | 267 | 109 | 1616 |
| Beck, Raymond. (See Keffer, Edwin, assignor.) | | | | | | |
| Becker, Julius F., Elbing, Germany. Device for lowering life-boats | 758,043 | Apr. 26 | 3667 | 798 | 109 | 2182 |
| Becker, William J., Milwaukee, Wis. Pneumatic switch and signal apparatus | 756,929 | Apr. 12 | 1419 | 316 317 | 109 | 1661 |
| Beckwith, Harvey, Oakland, Cal. Traction-engine | 754,409 | Mar. 15 | 2396 | 524 525 | 109 | 558 |
| Bedworth, John A., assignor to F. S. Webster Company, Boston, Mass. Ribbon-spool | 754,116 | Mar. 8 | 1788 | 398 | 109 | 411 |
| Bedworth, John A., assignor to F. S. Webster Company, Boston, Mass. Ribbon-spool for type-writing machines | 754,117 | Mar. 8 | 1790 | 398 | 109 | 411 |
| Beebe, Joseph E., Harlan, Iowa. Neck-yoke center | 757,594 | Apr. 19 | 2780 | 606 | 109 | 1968 |
| Beecher, Walter H. W., Oil City, Pa. Wrench | 758,085 | Apr. 19 | 3644 | 788 | 109 | 2157 |
| Beeg, Hans, assignor to Badische Maschinenfabrik & Eisengiesserei, vormals G. Sebold and Sebold & Neff, Durlach, Germany. Match-box-filling machine | 753,223 | Mar. 1 | 14 | 3, 4 | 109 | 5 |
| Beehler, Charles W., St. Louis, Mo. Box-fastener | 757,172 | Apr. 12 | 1920 | 419 | 109 | 1769 |
| Beekman, Rose C., Independence, Kans. Washing-machine | 756,204 | Apr. 5 | 13 | 3 | 109 | 1345 |
| Beeler, Gertrude, San Antonio, Tex. Hip-form and stocking-supporter | 756,455 | Apr. 5 | 532 | 111 | 109 | 1456 |
| Beerwald, Harry, New York, N. Y. Waistband | 756,566 | Apr. 5 | 721 | 156 | 109 | 1496 |
| Beerwald, Harry, New York, N. Y. Waistband | 756,567 | Apr. 5 | 722 | 156 | 109 | 1496 |
| Beeton, John, and J. Wardall, Hucknall, Torkard, England. File or carrier for miners' pick-blades or like tools | 756,093 | Mar. 29 | 5616 | 1239 | 109 | 1294 |
| Beeser, Louis and M. J., Pittsburg, Pa. Railway construction | 756,814 | Apr. 12 | 1201 | 268 | 109 | 1617 |
| Beeser, Louis and M. J., Pittsburg, Pa. Railway construction | 756,815 | Apr. 12 | 1202 | 268 | 109 | 1617 |
| Beeser, Louis and M. J., Pittsburg, Pa. Railway construction | 756,816 | Apr. 12 | 1203 | 268 | 109 | 1617 |
| Beeser, Louis and M. J., Pittsburg, Pa. Railway construction | 756,817 | Apr. 12 | 1204 | 268 | 109 | 1617 |
| Beeser, Michael J. (See Beeser, Louis and M. J.) | | | | | | |
| Behn-Eschenburg, Hans H. C. (See Huber and Behn-Eschenburg.) | | | | | | |
| Behnke, Otto, assignor to F. Krupp, Essen-on-the-Ruhr, Germany. Recoil-carriage for ordnance | 756,205 | Apr. 5 | 14 | 3, 4 | 109 | 1346 |
| Behrens, Charles, *et al.* (See Piper, Herbert H., assignor.) | | | | | | |
| Behrens, Henry J., *et al.* (See Piper, Herbert H., assignor.) | | | | | | |
| Behrnd, Gustav A., San Francisco, Cal. Building construction | 758,500 | Apr. 26 | 4576 | 968 | 109 | 2283 |
| Beidler, George C., Oklahoma, Okla. Ter. Camera | 753,351 | Mar. 1 | 244 | 55 | 109 | 55 |
| Beil, Jacob C., Youngstown, Ohio. Fruit-peeler | 754,191 | Mar. 8 | 1914 | 426 | 109 | 438 |
| Beinhauer, Hugo, Bielefeld, Germany. Apparatus for tightening socket-pipe connections | 753,464 | Mar. 1 | 456 | 107 | 109 | 100 |
| Beiknap, Charles A., Brooklyn, N. Y. Envelop feeding and ejecting mechanism for printing-machines | 758,044 | Apr. 26 | 3668 | 794 795 | 109 | 2183 |
| Bell, Alexander G., Washington, D. C. Aerial vehicle | 757,012 | Apr. 12 | 1599 | 348 | 109 | 1698 |
| Bell, Angeline R., Knightstown, Ind. Sash-lifter for car-windows | 754,684 | Mar. 15 | 2845 | 621 | 109 | 654 |
| Bell, Harvey H., Nevada, Iowa. Gate | 754,585 | Mar. 15 | 2665 | 579 | 109 | 618 |
| Bell, Stewart S. (See Kinsley and Bell.) | | | | | | |
| Bell, Willard J., Newaygo, Mich. Vibrating screen | 754,839 | Mar. 15 | 3260 | 708 709 | 109 | 746 |
| Belle, Philias, Montreal, Canada. Stiffener-bath | 756,319 | Apr. 5 | 248 | 51, 52 | 109 | 1397 |
| Belser, James H., Marlboro, Mass. Bench-dog | 758,407 | Apr. 26 | 4365 | 943 | 109 | 2238 |
| Bemis, Wallace L., Brockton, Mass. Eyeglasses | 756,456 | Apr. 5 | 534 | 111 | 109 | 1456 |
| Bender, William H., Brooklyn, N. Y. Advertising novelty | 756,206 | Apr. 5 | 15 | 4, 5 | 109 | 1346 |
| Benesch, Emil M., Denver, Colo. Electric time-alarm | 754,410 | Mar. 15 | 2400 | 525 | 109 | 559 |
| Benjamin Eastwood Company. (See Adsit, George, assignor.) | | | | | | |
| Benjamin, Joseph P., Kankakee, Ill. Support for tiles, mirrors, &c | 758,849 | Mar. 8 | 1964 | 283 | 109 | 298 |
| Benner, George K. (See Nicodemus, Henry B., assignor.) | | | | | | |
| Bennett, Charles W., Elwood, Ind., assignor to American Sheet and Tin Plate Company, Pittsburg, Pa. Sheet-folding machine | 755,435 | Mar. 22 | 4336 | 959 960 961 | 109 | 995 |
| Bennett, Ernest H., East Orange, N. J. Heating apparatus | 755,269 | Mar. 22 | 4026 | 893 | 109 | 929 |
| Bennett, George L., Chicago, Ill. Anesthetic-vapor inhaler | 757,013 | Apr. 12 | 1601 | 348 | 109 | 1698 |
| Bennett, Harwell L., Westerville, Ohio. Corn-harvester | 755,591 | Mar. 22 | 4605 | 1023 1024 | 109 | 1054 |
| Bennett, James E., Momence, Ill. Base-ball catcher | 755,209 | Mar. 22 | 3915 | 865 866 | 109 | 905 |
| Bennett, James E., Momence, Ill. Telephone-climber's seat | 758,200 | Apr. 26 | 3967 | 880 | 109 | 2247 |
| Bennett, Marcus A., *et al.* (See Legge, Joshua D., assignor.) | | | | | | |
| Bennett, William B., Grand Rapids, Mich. Clamp | 754,962 | Mar. 22 | 3486 | 762 | 109 | 813 |
| Bennetta, Benjamin H., Tacoma, Wash. Copper-pouring spoon | 753,465 | Mar. 1 | 459 | 107 | 109 | 100 |
| Benroth, Albert. (See Justus, Charles W., assignor.) | | | | | | |
| Benson, Hezekiah A., Bridgeport, Conn. Rotary engine | 756,568 | Apr. 5 | 728 | 156 | 109 | 1495 |
| Bent, Frank R., Hartford, Conn. Suppository-molding machine | 756,457 | Apr. 5 | 535 | 111 | 109 | 1456 |
| Bent, George P., Chicago, Ill. Piano-protector | 755,845 | Mar. 22 | 4175 | 922 | 109 | 961 |
| Bentel, Lewis O., assignor of two-thirds to J. M. Petty and W. A. Caven, Pittsburg, Pa. Manufacturing tubes | 755,436 | Mar. 22 | 4339 | 961 | 109 | 995 |
| Bentley, Edward M., Lawrence, N. Y. Electromagnetic gearing | 758,298 | Apr. 26 | 4162 | 896 | 109 | 2227 |
| Benton, George E., East Hampton, N. Y. Cutting-shears | 756,818 | Apr. 19 | 1205 | 269 | 109 | 1618 |
| Bentote, Joseph R., London, England. Night light or lamp | 753,962 | Mar. 8 | 1462 | 332 | 109 | 342 |
| Berchtold, Joseph, Hesperia, Cal. Tobacco-pipe | 754,840 | Mar. 15 | 3261 | 709 | 109 | 747 |
| Berg Automobile Company. (See Jardine, Robert, assignor.) | | | | | | |
| Bergemann, Henry C., Annan, Scotland. Gas-engine | 756,458 | Apr. 5 | 536 | 113 118 | 109 | 1457 |
| Berger, George. (See Rettich and Berger.) | | | | | | |
| Berger Manufacturing Company. (See Langenbach, Edward A., assignor.) | | | | | | |
| Berghoefer, Charles, Chicago, Ill. Conveyer system | 755,606 | Mar. 29 | 4647 | 1082 1083 | 109 | 1076 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Berglund, Henrik, Stockholm, Sweden. Rotary engine | 754,411 | Mar. 15 | 3401 | 585 | 109 | 559 |
| Berglund, Johan E., San Francisco, Cal. Musical instrument | 757,251 | Apr. 12 | 9069 | 450 | 109 | 1799 |
| Berglund, Otto R. P., and B. O. W. Hesselman, Stockholm, Sweden. Friction-gearing | 757,014 | Apr. 12 | 1603 | 349 | 109 | 1696 |
| Bergmann, Emil. (See Seck, Willy, assignor.) | | | | | | |
| Bernard, Oscar, assignor, by mesne assignments, of one-fourth to A. H. Manning, San Francisco, Cal. Machine for cutting bread | 754,040 | Mar. 8 | 1638 | 364 365 | 100 | 377 |
| Bernard, William A., assignor to William Schollhorn Company, New Haven, Conn. Pliers | 753,224 | Mar. 1 | 17 | 4 | 109 | 6 |
| Bernert, George, *et al.* (See Merkel, George, assignor.) | | | | | | |
| Bernert, Jacob, *et al.* (See Merkel, George, assignor.) | | | | | | |
| Bernheim, Samuel, New York, N. Y. Gas-fixture | 755,346 | Mar. 22 | 4176 | 922 | 109 | 961 |
| Bernstein, Samuel, New York, N. Y. Water-heater | 756,347 | Apr. 26 | 4378 | 919 | 109 | 2215 |
| Berquist, Eric, *et al.* (See Magnuson, August, assignor.) | | | | | | |
| Berquist, John E., *et al.* (See Magnuson, August, assignor.) | | | | | | |
| Berrigan, John J., Orange, N. J., assignor to De Laval Separator Company. Centrifugal cream-separator | 756,380 | Apr. 5 | 251 | 52 | 109 | 1397 |
| Berthoud, Henri, Neuchatel, Switzerland. Contact device for electrically-propelled railways | 753,586 | Mar. 1 | 618 | 140 | 109 | 135 |
| Bertram, Lawrence A., Allegheny, Pa. Water-gage | 754,928 | Mar. 22 | 3467 | 763 | 109 | 814 |
| Bertrand, Charles A., Longcotee, Ind. Trace-holder | 755,099 | Mar. 22 | 3714 | 815 | 109 | 864 |
| Bérubé, Joseph-Cajétan, St. Damase, Canada. Self-propelled vehicle | 754,635 | Mar. 15 | 2546 | 621 | 109 | 655 |
| Bessonet, George C., Channing, Tex. Tooth-cleaning implement | 754,841 | Mar. 15 | 3262 | 709 | 109 | 747 |
| Best, Edward, Superior, Wis. Car-replacer | 754,915 | Mar. 15 | 3363 | 740 | 109 | 778 |
| Bethlehem Steel Company. (See Meigs and Gathmann, assignors.) | | | | | | |
| Bethlehem Steel Company. (See Meigs and Hammar, assignors.) | | | | | | |
| Bethlehem Steel Company. (See Meigs and Jakobsson, assignors.) | | | | | | |
| Bettendorf, Heinrich, and J. M. Bier, Frankfort-on-the-Main, Germany. Type-writing machine | 754,964 | Mar. 22 | 3489 | 763 764 | 109 | 814 |
| Betts, William C., Seymour, Ind. Ice-cream cutter or scraper | 753,843 | Mar. 8 | 1365 | 293 | 109 | 398 |
| Betz, Charles, and P. Seibel, St. Louis, Mo. Dough-cooking machine | 754,378 | Mar. 8 | 2084 | 468 | 109 | 473 |
| Beury, Julia A., Beury, W. Va. Egg-poacher | 755,437 | Mar. 22 | 4342 | 962 | 109 | 996 |
| Beust, Anton von, Orange, N. J. Reproducing multicolor pictures, &c | 756,501 | Apr. 26 | 4578 | 983 | 109 | 2284 |
| Bevans, William H., Bridgeport, Conn., assignor to American & British Manufacturing Company, New York, N. Y. Subcaliber attachment | 754,419 | Mar. 15 | 3408 | 586 | 109 | 559 |
| Bevier, Henry R., Grand Rapids, Mich. Variable-speed and reversing gear | 754,726 | Mar. 15 | 3057 | 667 | 109 | 708 |
| Beyer, Alois, Chicago, Ill. Watchman's clock | 753,100 | Mar. 22 | 3715 | 816 | 109 | 864 |
| Bezer, Henry, Westfield, N. J. Railway signaling system | 754,362 | Mar. 8 | 2267 | 497 498 | 109 | 508 |
| Bezer, Henry, Westfield, N. J. Railway signaling system | 754,363 | Mar. 8 | 2268 | 499 500 501 | 109 | 508 |
| Bicalky, Charles H., Oneida, N. Y. Wheel | 756,819 | Apr. 19 | 1908 | 369 | 109 | 1618 |
| Bickford, Harold D. and R. C., Waterville, Me. Plate-box | 757,540 | Apr. 19 | 2669 | 585 | 109 | 1948 |
| Bickford, Ralph C. (See Bickford, Harold D. and R. C.) | | | | | | |
| Bidtel, Ernst, Milwaukee, Wis. Magnesia cement composition | 757,256 | Apr. 12 | 2068 | | 109 | 1799 |
| Bidwell, George A., Pittsfield, Mass. Acetylene-gas generator | 757,875 | Apr. 19 | 3323 | 719 720 | 109 | 2066 |
| Bienenstock, David J., Brooklyn, N. Y. Drinking-fountain | 753,436 | Mar. 22 | 4343 | 963 | 109 | 996 |
| Bienhoff, Henry A., St. Paul, Minn. Cart | 756,126 | Apr. 26 | 2468 | 851 | 109 | 2216 |
| Bier, Julius M. (See Bettendorf and Bier.) | | | | | | |
| Bietenholz, Alfred, Lüssum-Blumenthal, Germany. Drawing-frame for textile fibers | 755,347 | Mar. 22 | 4178 | 938 | 109 | 961 |
| Bif, Auguste H., Boisguillaume, near Rouen, France. Portable machine capable of bending or molding sheet-zinc | 753,844 | Mar. 8 | 1366 | 294 | 109 | 398 |
| Bigelow, John, Minneapolis, Minn. Filled-bag-sewing machine | 756,569 | Apr. 5 | 726 | 157 | 109 | 1416 |
| Bijur, Joseph, New York, N. Y. Making storage-battery plates | 757,718 | Apr. 19 | 3016 | 655 | 109 | 2080 |
| Bijur, Joseph, New York, N. Y. Apparatus for casting battery-plates | 757,719 | Apr. 19 | 3017 | 656 | 109 | 2080 |
| Bijur, Joseph, New York, N. Y. Casting-machine | 757,720 | Apr. 19 | 3019 | 656 657 657 | 109 | 2080 |
| Bijur, Joseph, New York, N. Y. Apparatus for casting open-work structures | 757,721 | Apr. 19 | 3022 | 658 659 | 109 | 2081 |
| Billin, Charles E., Chicago, Ill. Steam-hammer | 754,696 | Mar. 15 | 2948 | 632 | 109 | 655 |
| Billmyer, Byron B., Wardensville, W. Va. Folding back-rest | 754,526 | Mar. 15 | 2957 | 579 | 109 | 619 |
| Bills, Walter, South Melbourne, Victoria, Australia. Coiler for wire-weaving machines | 754,118 | Mar. 8 | 1791 | 399 | 109 | 412 |
| Bird, Percival D., Louisville, Ky. Game | 757,434 | Apr. 19 | 2449 | 585 | 109 | 1806 |
| Birkeland, Kristian, Christiania, Norway. Electromagnetic gun | 754,697 | Mar. 15 | 2950 | 632 634 | 109 | 655 |
| Bischoff, Frederick F., Chicago, Ill. Door-hanger | 755,607 | Mar. 29 | 4649 | 1033 | 109 | 1077 |
| Bissell, Orlando H., Washington, D. C. Station-indicator | 755,736 | Mar. 29 | 4915 | 1095 | 109 | 1139 |
| Bitner, Harry, Berwyn, Ill. Elevator-door | 756,321 | Apr. 5 | 252 | 52 | 109 | 1397 |
| Bitner, Harry, Berwyn, assignor to I. Pieser and C. G. Livingston, Chicago, Ill. Flap-folder for carton-machines | 756,570 | Apr. 5 | 729 | 157 158 | 109 | 1496 |
| Björncrantz, Franz P., Grand Rapids, Mich. Comb-cleaner | 753,235 | Mar. 1 | 18 | 4 | 109 | 6 |
| Blackford, Atwell J., Cleveland, Ohio, assignor to American Stove Company, Jersey City, N. J. Wickless blue-flame oil-stove | 757,876 | Apr. 19 | 3324 | 720 | 109 | 2067 |
| Blackinton, Henry B., assignor of one-half to H. I. Jordan, Auburn, Me. Box-covering machine | 758,508 | Apr. 26 | 4579 | 983 984 | 109 | 2284 |
| Blackketter, Charles F., Minneapolis, Minn. Wind-engine | 755,101 | Mar. 22 | 3718 | 816 | 109 | 865 |
| Blackwelder, John W. (See Martin, Anthony S., assignor.) | | | | | | |
| Blair, J. T., *et al.* (See Welsh, Elmer E., assignor.) | | | | | | |
| Blais, Henry L., Herkimer, N. Y. Collar-button and tie | 754,842 | Mar. 15 | 2264 | 710 | 109 | 747 |
| Blake, George A., New Bedford, Mass. Holder for tank-floats | 754,965 | Mar. 22 | 3491 | 764 | 109 | 814 |
| Blakeslee, Manley H. (See Jarvis and Blakeslee.) | | | | | | |
| Blakeslee, Manley H., assignor to Jarvis Typewriter & Tabulator Company, Buffalo, N. Y. Tabulating mechanism for type-writing machines | 755,608 | Mar. 29 | 4650 | 1033 | 109 | 1077 |
| Blanc, Alfred, assignor to A. Schwob, New York, N. Y. Stem winding and setting watch | 756,450 | Apr. 5 | 540 | 113 | 109 | 1458 |
| Blanding, Francis, Brockton, Mass. Safety device for elevators | 755,736 | Mar. 29 | 4917 | 1095 | 109 | 1139 |
| Blaney, James H., Fenaghvale, Canada. Straining attachment for milk-cans | 755,609 | Mar. 29 | 4653 | 1034 | 109 | 1078 |
| Blaney, Thomas. (See McCullough, Blaney, and Baron.) | | | | | | |
| Blank, George, *et al.* (See Gross, Peter J., assignor.) | | | | | | |
| Blashill, Arthur E., London, Canada. Wire-fence-weaving machine | 757,646 | Apr. 19 | 2990 | 680 | 109 | 1998 |
| Blaskopf, Henry, New York, N. Y. Guide for sewing-machine hemmers | 755,348 | Mar. 22 | 4179 | 938 | 109 | 961 |
| Bleco, John H., Brooklyn, assignor to A. B. Levy, New York, N. Y. Straight-air automatically-acting brake | 757,015 | Apr. 12 | 1603 | 349 | 109 | 1699 |
| Bleco, John H., assignor to A. B. Levy, New York, N. Y. Triple valve for air-brake systems | 757,016 | Apr. 12 | 1605 | 349 | 109 | 1699 |



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|---|---|---|---|---|---|---|
| Blevins, Hermann G., and J. E. Whittaker, Newcastle, Pa. Forming vessels from sheet metal | 758,508 | Apr. 26 | 4582 | 984 | 109 | 2285 |
| Blickle, Alice A., Allegheny, Pa. Combination-tool | 754,789 | Mar. 15 | 3059 | 668 | 109 | 708 |
| Block, Francis L., Sidney, Ill. Wheel-cultivator | 755,737 | Mar. 29 | 4919 | 1095 1096 | 109 | 1139 |
| Blondel, André, Paris, France. Electric-arc lamp | 756,460 | Apr. 5 | 541 | 113 114 | 109 | 1458 |
| Blossom, Francis, and W. A. Haller, New York, N. Y. Measuring apparatus | 757,017 | Apr. 12 | 1606 | 350 | 109 | 1700 |
| Blower, Leon, New York, N. Y. Automatic switch-shifter | 756,820 | Apr. 12 | 1208 | 269 | 109 | 1618 |
| Blue, Edgar, and O. Herndon, Garvin, Ind. Ter. Bottle | 757,647 | Apr. 19 | 2997 | 680 | 109 | 1994 |
| Blum, Frank J., Chicago, Ill. Ash-chute for furnaces | 757,435 | Apr. 19 | 2450 | 585 | 109 | 1896 |
| Blum, Joseph, Baltimore, Md. Telephone attachment | 754,041 | Mar. 8 | 1640 | 365 | 109 | 377 |
| Blundell, Charles R., *et al.* (See Pratt, Thomas J., assignor.) | | | | | | |
| Bock, Henry, Lodi, N. J., assignor to H. W. Boettger, New York, N. Y. Finishing fabrics | 754,843 | Mar. 15 | 2264 | 710 | 109 | 747 |
| Bodungen, Clemens G., Lagrange, Tex. Mote-board for cotton-gins | 756,166 | Apr. 26 | 2896 | 846 | 109 | 2222 |
| Boedefeld, Franz S., San Francisco, Cal. Hat-fastener | 754,916 | Mar. 15 | 3265 | 740 | 109 | 778 |
| Boedefeld, Franz S., assignor of one-half to W. L. Spencer, San Francisco, Cal. Garment-supporter | 758,201 | Apr. 26 | 3908 | 861 | 109 | 2247 |
| Boehm, Otto, Baltimore, Md. Grooving-machine | 757,084 | Apr. 12 | 1732 | 376 377 378 | 109 | 1727 |
| Boehringer & Soehne, C. F. (See Ach, Fritz, assignor.) | | | | | | |
| Boersig, John H., Yorkville, Ind. Sanctuary-taper | 756,822 | Apr. 5 | 254 | 53 | 109 | 1398 |
| Boettger, Henry W. (See Bock, Henry, assignor.) | | | | | | |
| Boggs, Taylor, Chillicothe, Ohio. Corn-harvester | 755,210 | Mar. 22 | 3916 | 906 | 109 | 905 |
| Böhm, Ludwig K., Hoboken, N. J., assignor, by mesne assignments, to Commercial Railway Equipment Company, New York, N. Y. Window attachment | 758,846 | Apr. 26 | 4281 | 920 | 109 | 2215 |
| Bohn, Gottfried J., assignor of one-half to F. Maulbetsch, Toledo, Ohio. Baker's peel | 754,042 | Mar. 8 | 1641 | 365 | 109 | 377 |
| Bohn, René, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Anthracene derivative and making same | 758,659 | Mar. 1 | 846 | ..... | 109 | 184 |
| Bohn, René, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Black dye and making same | 756,571 | Apr. 5 | 732 | ..... | 109 | 1497 |
| Boice, Augustin. (See Wheeler, James F., assignor.) | | | | | | |
| Boillot, Louis F. (See Voindrot and Boillot.) | | | | | | |
| Boismaure, Alfred A., New York, N. Y., assignor to Boismaure Oscillating Jewelry Company, of New Jersey. Jewelry-mounting | 758,167 | Apr. 26 | 3899 | 846 | 109 | 2223 |
| Boismaure Oscillating Jewelry Company. (See Boismaure, Alfred A., assignor.) | | | | | | |
| Boisvert, Dona, Providence, R. I. Electric semaphore | 757,722 | Apr. 19 | 3030 | 659 660 | 109 | 2022 |
| Bolding, James P., Terrell, Iowa. Seat-shaping implement | 758,504 | Apr. 26 | 4563 | 965 | 109 | 2285 |
| Bole, William A., Pittsburg, Pa., assignor to Westinghouse Machine Company. Electrical generating system | 757,436 | Apr. 19 | 2451 | 585 | 109 | 1896 |
| Bolens, Harry W., Port Washington, Wis. Seat-spider | 754,413 | Mar. 15 | 2404 | 536 | 109 | 559 |
| Bolens, Harry W., Port Washington, Wis. Type-writer's chair, piano-stool, &c | 755,991 | Mar. 29 | 5496 | 1199 | 109 | 1954 |
| Bolens, Harry W., and C. J. Travers, Port Washington, Wis., assignors to Gilson Manufacturing Company. Sheet-metal chair-iron | 755,560 | Mar. 22 | 4547 | 1012 | 109 | 1040 |
| Bollman, George W., Pittsburg, Pa., assignor to Otis Elevator Company, East Orange, N. J. Hoisting equipment | 756,821 | Apr. 12 | 1209 | 270 | 109 | 1619 |
| Bolton, Edward L. (See Frieed and Bolton.) | | | | | | |
| Bolton, John B., Easthampton, Mass. Leno-motion for loom-dobbies | 757,085 | Apr. 12 | 1736 | 378 | 109 | 1727 |
| Bond, Hiram A., West Springfield, assignor, by mesne assignments, to National Loom and Wire Company, Incorporated, Springfield, Mass. Beating-up motion for looms | 754,198 | Mar. 8 | 1915 | 496 | 109 | 438 |
| Bonnet, Joseph P., Boston, Mass. Hair-waving device | 754,264 | Mar. 8 | 2296 | 501 | 109 | 519 |
| Bonneteau, Pierre, Paris, France. Stopper for preventing the refilling of vessels | 755,439 | Mar. 22 | 4344 | 962 | 109 | 996 |
| Bonschur, Herman E., Philadelphia, Pa. Pliers | 755,440 | Mar. 22 | 4345 | 962 | 109 | 996 |
| Bonson, William W., Dubuque, Iowa. Combined boiler and furnace | 756,822 | Apr. 12 | 1210 | 270 271 | 109 | 1619 |
| Book, Charles. (See Lewis and Book.) | | | | | | |
| Booth, Charles E., assignor to United States Clothes Pin Company, Montpelier, Vt. Wire-spring machine | 756,823 | Apr. 12 | 1213 | 271 272 | 109 | 1619 |
| Booth, George A. (See Young, Frank C., assignor.) | | | | | | |
| Bordewisch, Edward, and O. C. Worries, assignors of one-third to E. Bordewisch, Dayton, Ohio. Adjustable wrench | 754,740 | Mar. 15 | 3060 | 668 | 109 | 708 |
| Bordner, William R., Canton, Ohio. Fence-post | 758,467 | Mar. 1 | 461 | 108 | 109 | 101 |
| Borduas, Hyacinthe O., assignor of one-half to T. L. Provost, Haverhill, Mass. Micrometer-callipers | 756,461 | Apr. 5 | 543 | 114 | 109 | 1458 |
| Boring, Thomas T., and F. Fritchey, Huntingdon, Pa. Hinge | 755,211 | Mar. 22 | 3918 | 866 | 109 | 906 |
| Bornman, Henry L., Indianapolis, Ind. Paint-dipping machine | 755,349 | Mar. 22 | 4180 | 923 924 | 109 | 962 |
| Bosch, Frank B., Philadelphia, Pa. Hose | 757,877 | Apr. 19 | 3328 | 721 | 109 | 2068 |
| Boschke, Albert, San Francisco, Cal. Dredge | 757,173 | Apr. 12 | 1921 | 420 421 | 109 | 1760 |
| Bose, Jagadis C., Calcutta, India, assignor of one-half to S. C. Bull, Cambridge, Mass. Detector for electrical disturbances | 755,840 | Mar. 29 | 5137 | 1136 | 109 | 1191 |
| Bosenbury, William C., assignor to Starr Piano Company, Richmond, Ind. Pedal-action for grand pianos | 755,102 | Mar. 22 | 3719 | 817 | 109 | 866 |
| Boss, Martin P., San Francisco, Cal. Stamp-mill | 756,774 | Apr. 5 | 1107 | 245 | 109 | 1579 |
| Bossert Electric Construction Company. (See Bossert, William F., assignor.) | | | | | | |
| Bossert, William F., assignor to Bossert Electric Construction Company, Utica, N. Y. Outlet-box for interior conduits | 754,414 | Mar. 15 | 2406 | 537 | 109 | 560 |
| Boshard, Rudolph, Los Angeles, Cal. Street, station, program, or advertising indicator | 757,086 | Apr. 12 | 1733 | 378 379 380 | 109 | 1727 |
| Bossingham, John E., and F. Emling, Oswego, N. Y. Water-tube boiler | 754,415 | Mar. 15 | 2407 | 537 | 109 | 560 |
| Bostel, Frederick J., Westminster, London, England. Fire-grate or fireplace | 757,595 | Apr. 19 | 2781 | 608 | 109 | 1968 |
| Boston Bottle Wiring and Labeling Company. (See Cassidy and Doherty, assignors.) | | | | | | |
| Boston Spinning Ring Company. (See Hayden, Joel, assignor.) | | | | | | |
| Bostwick, Joseph M., Janesville, Wis. Display-rack for ribbons, &c | 756,462 | Apr. 5 | 546 | 114 | 109 | 1459 |
| Bosworth, Charles B., Somerville, assignor to Star Brass Manufacturing Company, Boston, Mass. Blow-off valve | 756,463 | Apr. 5 | 547 | 114 | 109 | 1459 |
| Bosworth, Percy B., Akron, Ohio. Induction-valve | 756,572 | Apr. 5 | 732 | 156 | 109 | 1497 |
| Botkowski, Boris, assignor to De La Vergne Refrigerating Machine Company, New York, N. Y. Igniting device for explosive-engines | 753,236 | Mar. 1 | 18 | 4 | 109 | 6 |
| Bottenstein, Leopold, Pittsburg, Pa. Automatic car-coupling | 756,406 | Apr. 26 | 4285 | 943 | 109 | 2239 |
| Boulanger, Emile, St. Louis, Mo. Drum-snare brace | 756,980 | Apr. 12 | 1427 | 317 | 109 | 1662 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Bounds, Perry M., Columbus, Ohio. Fence | 758,227 | Mar. 1 | 21 | 5 | 109 | 7 |
| Bourke, Robert E. (See Wittekind and Bourke.) | | | | | | |
| Bouton, Georges. (See Dion and Bouton.) | | | | | | |
| Bovill, William, Chicago, Ill. Fountain-pen | 754,416 | Mar. 15 | 2408 | 527 | 109 | 561 |
| Bower, Adolphus L., Lima, Ohio. Radiator-valve | 757,087 | Apr. 12 | 1747 | 360 | 109 | 1780 |
| Bower, Harry A., Boston, Mass. Snare-drum | 755,510 | Mar. 29 | 4654 | 1054 | 109 | 1078 |
| Bower, John A., Pittsburg, Pa. Shipping-package | 754,537 | Mar. 15 | 2068 | 579 | 109 | 619 |
| Bower, Robert F., Lima, Ohio. Roller-bearing | 755,992 | Mar. 29 | 5428 | {1199 {1200 | 109 | 1254 |
| Bowers, John S. (See Cochran, William R., Jr., assignor.) | | | | | | |
| Bowlin, Henry L., Columbus, Miss. Lamp-burner | 758,359 | Mar. 1 | 946 | 55 | 109 | 55 |
| Bowman, Albert T. (See Herman, Charles W., assignor.) | | | | | | |
| Bowman, Charles M., Lebanon, Pa. Hose-drier | 758,168 | Apr. 26 | 3900 | {846 {847 | 109 | 2233 |
| Boyce, Mary H., Grand Haven, Mich. Garment-supporter | 756,464 | Apr. 5 | 550 | 115 | 109 | 1460 |
| Boyd, Gaston S., assignor of one-third to H. S. Boyd, Russell, Iowa. Automatic corn-planter and marker | 756,153 | Mar. 29 | 5716 | 1268 | 109 | 1315 |
| Boyd, Herbert S. (See Boyd, Gaston S., assignor.) | | | | | | |
| Boyd, James D., *et al.* (See Broome, Henry, assignor.) | | | | | | |
| Boyd, Stephen L., Kosciusko, assignor of one-half to W. A. Campbell, Hesterville, Miss. Ironing-board | 755,108 | Mar. 22 | 3721 | 817 | 109 | 866 |
| Boyer, George W., Desoto, Mo. Eaves-trough cleaner | 758,560 | Mar. 1 | 846 | 190 | 109 | 184 |
| Boyer, George W., Desoto, Mo. Cistern | 757,358 | Apr. 12 | 2065 | 451 | 109 | 1799 |
| Boynton Furnace Company. (See Kniffin, George G., assignor.) | | | | | | |
| Brachhausen, Gustav A., assignor to Regina Music Box Company, Rahway, N. J. Carriage-feed device for music-boxes | 757,018 | Apr. 12 | 1610 | {850 {851 | 109 | 1700 |
| Bradbury, William G. (See Reiss and Bradbury.) | | | | | | |
| Brader, John A., Allentown, Pa. Track-brake for cars | 754,844 | Mar. 15 | 2365 | 710 | 109 | 747 |
| Bradfield, Herbert H., *et al.* (See Gilmour and Lindsay, assignors.) | | | | | | |
| Bradford, Chester, Indianapolis, Ind. Overflow-vent device for elevators | 756,907 | Apr. 5 | 24 | 5 | 109 | 1348 |
| Bradford, Chester, Indianapolis, Ind. Bagging attachment for grain-elevators | 756,981 | Apr. 12 | 1428 | 318 | 109 | 1668 |
| Bradley, Carl D. (See Eliel and La Burt, assignors.) | | | | | | |
| Bradley, Edward E., assignor to Atwood-Morrison Company, Stonington, Conn. Rewinding-machine | 755,212 | Mar. 22 | 3019 | 867 | 109 | 906 |
| Bradley, Edward E., assignor to Atwood-Morrison Company, Stonington, Conn. Spindle-driving mechanism | 756,465 | Apr. 5 | 551 | 115 | 109 | 1460 |
| Bradley, George L., Pataha, Wash. Plow | 753,468 | Mar. 1 | 462 | 108 | 109 | 101 |
| Bradley, William E., assignor to Nichols and Shepard Company, Battlecreek, Mich. Chaffer for threshing-machines | 755,441 | Mar. 22 | 4347 | 963 | 109 | 997 |
| Bradley, William H., Portland, Oreg. Bicycle attachment | 754,043 | Mar. 8 | 1642 | 365 | 109 | 378 |
| Bradley, William H., Bellevue, Pa. Gas-burning apparatus | 758,294 | Apr. 26 | 4165 | 899 | 109 | 2286 |
| Bradwell, Herbert A. (See Austen and Bradwell.) | | | | | | |
| Brady, John D. (See Kellogg and Brady.) | | | | | | |
| Brady, Thomas H., New Britain, Conn. Sister-hook | 755,841 | Mar. 29 | 5141 | 1137 | 109 | 1192 |
| Brahen, Philip J., assignor to American Restoring Company, Hartford, Conn. Stone-cleaning composition and making same | 754,417 | Mar. 15 | 2409 | ..... | 109 | 561 |
| Braly, Hugh L., Clarendon, Tex. Road-grader | 756,323 | Apr. 5 | 265 | 58 | 109 | 1396 |
| Braselmann, Gustav, Darmstadt, and F. Lünsemann, Ruhrort, Germany. Apparatus for heating or cooling liquids | 758,045 | Apr. 26 | 3671 | {795 {796 | 109 | 2188 |
| Brauer, George, Sacramento, Cal. Ratchet-wrench | 757,878 | Apr. 19 | 3329 | 721 | 109 | 2066 |
| Braun, Henry. (See Cable, Daniel J., assignor.) | | | | | | |
| Braun, John M., Chicago, Ill. Legging | 756,340 | Apr. 26 | 4288 | 920 | 109 | 2316 |
| Bravi-Bertini, Carlo, Perth Amboy, N. J. Disinfecting attachment for telephones | 758,466 | Mar. 1 | 460 | 108 | 109 | 101 |
| Bray, John W., Leeds, England. Atmospheric burner for incandescent gas-lighting | 755,218 | Mar. 22 | 3980 | 867 | 109 | 906 |
| Bray & Kates. (See Kates, Anthony T., assignor.) | | | | | | |
| Breakell, Thomas, Wirksworth, near Derby, England. Apparatus for grinding or crushing | 758,537 | Mar. 1 | 690 | 140 | 109 | 135 |
| Breckenridge, John G., Springfield, Ohio. Candy-pulling machine | 758,358 | Mar. 1 | 247 | 56 | 109 | 56 |
| Breda, Halvor, Berlin, Germany. Apparatus for softening water | 758,295 | Apr. 26 | 4166 | 899 | 109 | 2286 |
| Bredemeier, Edward W., Chicago, Ill. Sample-card book | 757,269 | Apr. 19 | 2353 | 512 | 109 | 1859 |
| Breen, William J., Mahwah, N. J. Core-drying oven | 758,409 | Apr. 26 | 4087 | {943 {944 | 109 | 2230 |
| Brehm, Daniel, assignor to A. F. Wendel, Hazelton, Pa. Curtain-pole | 753,821 | Mar. 1 | 1212 | 273 | 109 | 260 |
| Brehm, Daniel, assignor of one-half to A. F. Wendel, Hazleton, Pa. Curtain-pole | 754,917 | Mar. 15 | 2365 | 740 | 109 | 778 |
| Bremner, David F., Jr., Chicago, Ill. Machine for wrapping packages | 753,661 | Mar. 1 | 847 | {190 {191 {198 {198 | 109 | 184 |
| Brennan, Patrick H., Syracuse, N. Y. Gas-engine | 754,418 | Mar. 15 | 2410 | {587 {588 | 109 | 561 |
| Brennan, Patrick H., Syracuse, N. Y. Transmission-gear | 754,638 | Mar. 15 | 2856 | {624 {625 | 109 | 656 |
| Brenner, Joachim, Gainfarn, Austria-Hungary. Dyeing wood | 755,998 | Mar. 29 | 5430 | ..... | 109 | 1255 |
| Brent, Charles D., Cromwell, Otago, New Zealand. Fastener for shoes | 755,370 | Mar. 22 | 4027 | 898 | 109 | 929 |
| Bresemann, August, Chicago, Ill. Supporting-roller for embossing-machines | 753,662 | Mar. 1 | 855 | 198 | 109 | 185 |
| Bretney, Eugene. (See Walsh and Bretney.) | | | | | | |
| Bretney, Eugene and H. R., Indianapolis, Ind. Mechanical stoker | 755,611 | Mar. 29 | 4657 | {1084 {1085 | 109 | 1079 |
| Bretney, Harry R. (See Bretney, Eugene and H. R.) | | | | | | |
| Brett, William P., Decatur, Ill. Windmill-pitman and means for its automatic lubrication | 756,775 | Apr. 5 | 1109 | 245 | 109 | 1580 |
| Brett, William P., Decatur, Ill. Windmill | 758,206 | Apr. 26 | 4168 | {899 {900 | 109 | 2280 |
| Breunig, Herman, New York, N. Y. Non-refillable bottle | 756,334 | Apr. 5 | 257 | 54 | 109 | 1399 |
| Brewer, Charles A., Chicago, Ill. Storage and display receptacle | 756,466 | Apr. 5 | 558 | 115 | 109 | 1460 |
| Brewer, George W. (See Sumner, Brewer, and Gibson.) | | | | | | |
| Brewington, Henry S., assignor of one-half to R. Robinson, Baltimore, Md. Can-closure | 756,573 | Apr. 5 | 735 | 156 | 109 | 1497 |
| Brickell, Eli F., assignor of one-third to A. G. Nelson, Bradford, Pa. Automatic coupling | 755,442 | Mar. 29 | 4348 | 968 | 109 | 997 |
| Briden, Samuel J., Brooklyn, N. Y., assignor to Mergenthaler Linotype Company. Linotype-machine | 757,648 | Apr. 19 | 2898 | {630 {631 | 109 | 1905 |
| Bridgeport Brass Company. (See Stapley, William S., assignor.) | | | | | | |
| Bridgers, Hall R., assignor of one-half to R. H. Speight, Jr., Morganton, N. C. Chicken-coop | 758,228 | Mar. 1 | 22 | 5 | 109 | 7 |
| Bridgman, John C., London, Ohio. Combined shaft-support and antirattler | 757,859 | Apr. 19 | 3294 | 714 | 109 | 2079 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Brigham, Charles F. (See Haskell and Brigham.) | | | | | | |
| Brightwell, Amazon W., Owen, Ind., assignor of three-fifths to G. J. Ott and H. H. Beach, Louisville, Ky. Folding table | 758,668 | Mar. 1 | 857 | 194 | 109 | 186 |
| Brill, George M., and W. H. Heulings, Jr., assignors to J. A. Brill, Philadelphia, Pa. Car-frame | 755,850 | Mar. 22 | 4182 | 984 | 109 | 962 |
| Brill, John A. (See Brill and Heulings, assignors.) | | | | | | |
| Brill, John A. (See Pickles, Charles K., assignor.) | | | | | | |
| Brindle, Thomas, and M. O. Steere, Pawtucket, R. I. Let-off for looms | 755,104 | Mar. 22 | 3723 | 818 | 109 | 866 |
| Briner, Emil A., Philadelphia, Pa. Steam-generator | 758,505 | Apr. 26 | 4585 | {965 {966 | 109 | 2385 |
| Brinley, Charles A., Philadelphia, Pa., assignor to American Pulley Company. Sheet-metal pulley | 757,088 | Apr. 12 | 1749 | 380 | 109 | 1780 |
| Brinser, Daniel G., Elizabethtown, Pa. Car-door | 755,443 | Mar. 22 | 4350 | 964 | 109 | 998 |
| Brintzinghoffer, Charles P., Howard, Kans. Fastening device for drill-bits or the like | 754,741 | Mar. 15 | 2061 | 668 | 109 | 704 |
| Briscoe, Benjamin. (See Puddefoot and Briscoe.) | | | | | | |
| Briscoe Manufacturing Company. (See McCausland, David, assignor.) | | | | | | |
| Briscoe Manufacturing Company. (See Puddefoot and Briscoe, assignors.) | | | | | | |
| Bristow, Frederick, East Orange, N. J. Letter and document distributer | 758,538 | Mar. 1 | 621 | 141 | 109 | 186 |
| British American Power Company. (See O'Neall, James M., assignor.) | | | | | | |
| Britton, Robb, Clifton, assignor to Frank H. Fleer & Company, Philadelphia, Pa. Vending-machine | 755,154 | Mar. 29 | 5717 | 1269 | 109 | 1316 |
| Broadwell, Edward C., assignor to J. A. Lyons, Chicago, Ill., and S. A. Starring, Springfield, Ohio. Extracting gold from rebellious ores | 753,823 | Mar. 1 | 1214 | ..... | 109 | 260 |
| Brock, Lawrence E., Celina, Ohio. Telephone selecting device | 756,824 | Apr. 12 | 1218 | {272 {273 | 109 | 1631 |
| Brock, Levi M., assignor to American Truss Fence Company, Pekin, Ill. Wire fabric | 757,254 | Apr. 12 | 2066 | 451 | 109 | 1800 |
| Brockman, Rudolph. (See Helle and Brockman.) | | | | | | |
| Brockway, Richard W., and F. J. Meckensturm, Moodus, Conn. Gasolene-engine muffler | 753,845 | Mar. 8 | 1267 | {284 {285 | 109 | 298 |
| Bromley & Sons, John. (See Hanson, Charles H. L., assignor.) | | | | | | |
| Bronson, George, Seattle, Wash. Fence | 758,046 | Apr. 26 | 3673 | 796 | 109 | 2184 |
| Brooke, Robert G., Macclesfield, England. Feed-water regulator | 756,574 | Apr. 5 | 736 | {158 {159 {160 {161 | 109 | 1497 |
| Brooke, Tom W., *et al.* (See Copeman, Thorn, assignor.) | | | | | | |
| Brooker, Charles F., Ansonia, assignor to Coe Brass Manufacturing Company, Torrington, Conn. Rod-casting machine | 756,325 | Apr. 5 | 258 | 54 | 109 | 1399 |
| Brooks, Albert E., Lowell, Mass., assignor to T. C. Entwistle Company, Portland, Me. Expansion-comb for warping, beaming, or other machines | 755,738 | Mar. 29 | 4922 | 1096 | 109 | 1140 |
| Brooks, John C., Charleston, Ill. Plastic fence-post | 754,119 | Mar. 8 | 1722 | 360 | 109 | 412 |
| Brooks, Margaret C. (See Troupe and Brooks.) | | | | | | |
| Broome, George W. (See Reese and Broome.) | | | | | | |
| Broome, Henry, assignor of seven-twelfths to H. C. Pauly and J. D. Boyd, Springfield, Ohio. Pipe-coupling | 755,994 | Mar. 29 | 5431 | 1200 | 109 | 1255 |
| Broome, William H., Brooklyn, N. Y. Strainer for drive-wells | 753,846 | Mar. 8 | 1269 | 285 | 109 | 294 |
| Brophy, John P., assignor to Cleveland Machine Screw Company, Cleveland, Ohio. Turret mechanism for automatic lathes | 756,467 | Apr. 5 | 554 | {115 {116 | 109 | 1461 |
| Brossoit, James J., Granite, Mont. Machine for repairing drills | 755,351 | Mar. 22 | 4184 | {924 {925 | 109 | 963 |
| Brothers, William, Prestwich, England. Manufacture of plaster-of-paris | 757,649 | Apr. 19 | 2899 | ..... | 109 | 1905 |
| Broughton, Pulaski B. (See Tinker, Julien E., assignor.) | | | | | | |
| Brouyette, Charles D., Chicago, Ill., assignor of one-half to F. Karr, Holland, Mich. Spring bed-bottom | 754,120 | Mar. 8 | 1723 | 399 | 109 | 412 |
| Brower, John, San Francisco, Cal. Apparatus for making blocks for building or like purposes | 754,639 | Mar. 15 | 2362 | {635 {636 | 109 | 658 |
| Brower, John, San Francisco, Cal. Making blocks for building or like purposes | 754,640 | Mar. 15 | 2365 | 636 | 109 | 658 |
| Brown, Augustus. (See Smith and Brown.) | | | | | | |
| Brown, Charles E., Allegheny, Pa. Dog for lathes | 757,255 | Apr. 12 | 2066 | 451 | 109 | 1800 |
| Brown, Charles F., trustee. (See Reeve, Sidney A., assignor.) | | | | | | |
| Brown, Charles F., Chattanooga, Tenn. Hose-nozzle holder | 755,995 | Mar. 29 | 5433 | 1201 | 109 | 1255 |
| Brown, Charles W., *et al.* (See Dewey, Luman R., assignor.) | | | | | | |
| Brown, David, assignor of one-half to J. A. Abercrombie, Lawrence, Mass. Hand-threading shuttle | 755,561 | Mar. 22 | 4549 | 1012 | 109 | 1041 |
| Brown, Edmond W., New York, N. Y. Bed-covering | 757,256 | Apr. 12 | 2067 | 452 | 109 | 1800 |
| Brown, Francis G., Sheffield, Ala. Strainer | 755,358 | Mar. 22 | 4187 | 995 | 109 | 964 |
| Brown, Frank R. (See Shelain, Frank G., assignor.) | | | | | | |
| Brown, George C., Fort Gaines, Ga. Plumb and level | 753,354 | Mar. 1 | 248 | 56 | 109 | 56 |
| Brown, George E., assignor of one-half to J. H. Wright, Jr., Selma, Cal. Pad or tree-protector | 757,437 | Apr. 19 | 2453 | 536 | 109 | 1897 |
| Brown, George W., Melbourne, assignor of one-half to G. M. Norton, Coburg, Victoria, Australia. Air-feeding device for furnaces | 753,664 | Mar. 1 | 858 | 194 | 109 | 186 |
| Brown, Harry W., Boston, Mass., assignor to General Electric Company. Maximum-demand indicator | 755,789 | Mar. 29 | 4924 | 1097 | 109 | 1140 |
| Brown, Henry, Chicago, Ill. Drover's whip | 757,089 | Apr. 12 | 1750 | 380 | 109 | 1781 |
| Brown, Henry H., assignor to Wonder Manufacturing Company, Washington Court-House, Ohio. Stove | 755,105 | Mar. 22 | 3724 | 818 | 109 | 867 |
| Brown, Henry T., Wilkinsburg, Pa. Car-brake | 754,198 | Mar. 8 | 1917 | 427 | 109 | 439 |
| Brown, Herbert E. and M. L., Goldthwaite, Tex. Car-brake | 754,419 | Mar. 15 | 2413 | 528 | 109 | 562 |
| Brown, Herman E., Chicago, Ill. Window | 753,665 | Mar. 1 | 859 | 195 | 109 | 186 |
| Brown, Jacob L., assignor of one-half to B. King, Rahway, N. J. Tire-protector | 756,089 | Apr. 19 | 2628 | 765 | 109 | 2158 |
| Brown, James A., Warren, Ohio. Telephone-receiver support | 757,257 | Apr. 12 | 2070 | 452 | 109 | 1801 |
| Brown, John L., *et al.* (See Mulvaney, John J., assignor.) | | | | | | |
| Brown, Levi V., *et al.* (See Barbee, Thomas M., assignor.) | | | | | | |
| Brown, Louisa M., Central City, S. D. Pocket | 757,879 | Apr. 19 | 3330 | 721 | 109 | 2066 |
| Brown, Luther, Platte county, Mo. Horse hay-rake | 757,258 | Apr. 12 | 2071 | 452 | 109 | 1801 |
| Brown, Luther, Platte county, Mo. Horse hay-rake | 757,259 | Apr. 12 | 2073 | 453 | 109 | 1801 |
| Brown Manufacturing Company. (See Brown, Uri H., assignor.) | | | | | | |
| Brown, Marcus L. (See Brown, Herbert E. and M. L.) | | | | | | |
| Brown, Michael, Gatesville, Tex. Press | 753,539 | Mar. 1 | 628 | 141 | 109 | 186 |
| Brown, Mik, Renner, Tex. Grinding attachment | 757,260 | Apr. 12 | 2074 | 453 | 109 | 1801 |
| Brown, Monroe C., Austin, Tex. Seed-cotton distributer | 756,776 | Apr. 5 | 1114 | {245 {246 | 109 | 1582 |
| Brown, Nathan L., *et al.* (See Gray and Lehmann, assignors.) (Reissue.) | | | | | | |
| Brown, Roy W., Amsterdam, N. Y. Electric rheostat | 757,880 | Apr. 19 | 3331 | {721 {722 | 109 | 2066 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Dr'g. | Vol. | Page. |
| Brown and Sharpe Manufacturing Company. (See Parker, John, assignor.) | | | | | | |
| Brown, Summers, London, England. Rotary stencil-printing apparatus | 753,469 | Mar. 1 | 464 | 109 | 109 | 101 |
| Brown, Uri H., assignor to Brown Manufacturing Company, Zanesville, Ohio. Cultivator | 753,214 | Mar. 22 | 3921 | 867<br>868 | 109 | 907 |
| Brown, Walter E., Carrollton, Mo. Cabinet for brick ice-cream | 756,094 | Mar. 29 | 5618 | 1239 | 109 | 1294 |
| Brown, Watt T., Lock No. 3, and W. C. Watson, Ragland, Ala. Railway-rail connection | 755,444 | Mar. 22 | 4352 | 964 | 109 | 998 |
| Brown, William I., St. Paul, Minn. Shock-squeezing device | 755,106 | Mar. 22 | 3796 | 818 | 109 | 867 |
| Brown, William O., assignor to National Hydrocarbon Car Company, Chicago, Ill. Power-transmission gear | 757,261 | Apr. 12 | 2075 | 453<br>454 | 109 | 1802 |
| Brown-Winstanley Manufacturing Company. (See Twitchell, Charles R., assignor.) | | | | | | |
| Browning, Robert D., Orange, Va. Grain-drill | 756,095 | Mar. 29 | 5619 | 1240 | 109 | 1294 |
| Browning, Victor R., Lakewood, Ohio. Crane and supporting structure therefor | 756,932 | Apr. 12 | 1430 | 318 | 109 | 1663 |
| Browning, Walter J. (See Hannes, William F., assignor.) | | | | | | |
| Brownley, Alexander H., Onehunga, New Zealand. Detachable button | 758,602 | Apr. 26 | 4774 | 1027 | 109 | 2426 |
| Bruck, Henry, New York, N. Y. Puzzle-lock | 753,355 | Mar. 1 | 250 | 56 | 109 | 56 |
| Brück, Tony, New York, N. Y. Railway-signal | 753,666 | Mar. 1 | 865 | 196 | 109 | 187 |
| Brune, Samuel O., Mine Centre, Canada. Relief-valve | 755,996 | Mar. 29 | 5434 | 1201 | 109 | 1255 |
| Brunt, William H., assignor of one-third to D. J. Cable, Pittsburg, Pa. Megaphone attachment for passenger-cars | 754,918 | Mar. 15 | 3387 | 740 | 109 | 774 |
| Brush, Alanson P., Detroit, Mich. Means for cylinder lubrication of internal-combustion engines | 754,121 | Mar. 8 | 1794 | 399<br>400 | 109 | 412 |
| Brusselet, Victor A., Paris, France. Typographically printing curves | 751,044 | Mar. 8 | 1643 | 366 | 109 | 378 |
| Bryan, Edgar J., assignor of one-half to A. W. Miller, Riverside, Cal. Hand-truck | 756,096 | Mar. 29 | 5621 | 1240 | 109 | 1295 |
| Bryan, William W., Angola, Ind. Hot-air furnace | 757,174 | Apr. 12 | 1998 | 421<br>422 | 109 | 1771 |
| Bryant, Charles A., Wakefield, Mass., assignor to Alma Button Company of Baltimore City. Garment-fastener | 753,847 | Mar. 8 | 1270 | 285 | 109 | 294 |
| Bryant Electric Company. (See Goodridge, Gilbert W., assignor.) | | | | | | |
| Bryant, Henry, Aransas Pass, Tex. Gas-burner | 756,155 | Mar. 29 | 5719 | 1263 | 109 | 1316 |
| Bryant, John W., Minneapolis, Minn. Window-weight | 755,107 | Mar. 22 | 3727 | 818 | 109 | 868 |
| Bryant, Reuben R., assignor of one-half to G. W. Corns, Detroit, Mich. Smoke-consumer | 756,983 | Apr. 12 | 1433 | 319 | 109 | 1664 |
| Bryda, Henry, Woonsocket, R. I. Lock | 753,667 | Mar. 1 | 867 | 196 | 109 | 188 |
| Bryden, John, Colfax, Wash. Picture-hanging device | 757,262 | Apr. 12 | 2080 | 454 | 109 | 1803 |
| Buchanan, John J., assignor to Waterbury Buckle Co., Waterbury, Conn. Garment-supporter | 754,194 | Mar. 8 | 1919 | 427 | 109 | 439 |
| Buck, Harold W., Niagara Falls, N. Y., assignor to General Electric Company. System of electrical distribution | 755,740 | Mar. 29 | 4926 | 1097 | 109 | 1141 |
| Buckelew, Annie, Lancaster, Cal. Combination waist attachment and skirt-supporter | 754,742 | Mar. 15 | 3063 | 668 | 109 | 704 |
| Buckelew, Annie, Lancaster, Cal. Safety-pin | 754,743 | Mar. 15 | 3064 | 669 | 109 | 704 |
| Buckingham, Edward L., Brookings, S. D., assignor of one-half to J. M. Keith and H. D. Hall, Des Moines, Iowa. Thill-support | 755,997 | Mar. 29 | 5436 | 1201 | 109 | 1255 |
| Buckley, Minnie E., St. Louis, Mo. Pad | 756,575 | Apr. 5 | 741 | 161 | 109 | 1499 |
| Bucklin, James P., Providence, R. I. Tumbling-machine | 754,122 | Mar. 8 | 1795 | 400 | 109 | 412 |
| Bucklin, Lewis A., Nashua, Iowa. Barber's memorandum and cash-drawer | 756,825 | Apr. 12 | 1223 | 273 | 109 | 1621 |
| Bucsko, Louis, Monaco, assignor to Phœnix Glass Company, Pittsburg, Pa. Glass-mold-operating apparatus | 754,966 | Mar. 22 | 3492 | 764 | 109 | 815 |
| Bügler, Wilhelm, Degerlach, near Stuttgart, Germany. Weighing device | 756,208 | Apr. 5 | 25 | 6 | 109 | 1348 |
| Buhl Stamping Company. (See Forster, Thomas W., assignor.) | | | | | | |
| Buhoup, Harry C., Chicago, Ill. Car-truck | 754,045 | Mar. 8 | 1644 | 366<br>367 | 109 | 378 |
| Buhoup, Harry C., Chicago, Ill., assignor to McConway & Torley Company, Pittsburg, Pa. Lock mechanism for vertical-plane couplings | 756,826 | Apr. 12 | 1223 | 273 | 109 | 1621 |
| Buice, Orral O., Montgomery, Ala. Sectional case | 758,506 | Apr. 26 | 4588 | 966 | 109 | 2386 |
| Bull, Sara C. (See Bose, Jagadis C., assignor.) | | | | | | |
| Bullard, James H., Springfield, Mass. Insulator-pin | 754,123 | Mar. 8 | 1797 | 400 | 109 | 413 |
| Bullard, James H., Springfield, Mass. Heat-radiating device | 754,195 | Mar. 8 | 1919 | 427 | 109 | 439 |
| Bulmer, William B., assignor of one-fourth to H. Slater, Windsor, Ontario, Canada. Tea-kettle | 754,046 | Mar. 8 | 1649 | 367 | 109 | 379 |
| Bulock, Charles O., assignor to National Electric Company, Milwaukee, Wis. Brush-holder | 753,356 | Mar. 1 | 250 | 57 | 109 | 57 |
| Bump, James G., Brad, Tex. Horse-breaking device | 753,848 | Mar 8 | 1271 | 285 | 109 | 294 |
| Bunzl, Ernest, *et al.* (See Bartel and Kuhn, assignors.) | | | | | | |
| Bunzl, Gustav, *et al.* (See Bartel and Kuhn, assignors.) | | | | | | |
| Burckett, Charles H. and M. M., Glenridge, N. J.; said Charles H. Burckett assignor to said M. M. Burckett. Cocoa confection and making same | 755,562 | Mar. 22 | 4551 | ..... | 109 | 1041 |
| Burckett, Mary M. (See Burckett, Charles H. and M. M.) | | | | | | |
| Burdett, Frank, Gravenhurst, assignor to G. Stevenson and H. B. Howson, Toronto, Canada. Artificial fishing-bait | 755,612 | Mar. 29 | 4659 | 1035 | 109 | 1079 |
| Burdick, Charles L., Wood Green, England, and H. Pervilhac, Villeurbanne, France. Stenciling | 757,436 | Apr. 19 | 2454 | 536 | 109 | 1897 |
| Burdon, David P., assignor of two-thirds to S. P. Holmes and G. Muller, Jacksonville, Fla. Electric motor | 754,194 | Mar. 8 | 1798 | 400<br>401 | 109 | 413 |
| Bureau Can and Manufacturing Company. (See Rehfuss, John G. and M. O., assignors.) | | | | | | |
| Bureau Can and Manufacturing Company of Delaware. (See Rehfuss, John G. and M. O., assignors.) | | | | | | |
| Burger, Franz, and H. M. Williams, Fort Wayne, Ind.; said Burger assignor of one-half to said Williams. Locomotive-tank condenser | 753,357 | Mar. 1 | 252 | 57 | 109 | 57 |
| Burgess, George L., Goodland, Ind. Bill-file | 753,849 | Mar. 8 | 1273 | 286 | 109 | 294 |
| Burgett, John W., Guttenberg, N. J. Suspenders | 754,641 | Mar. 15 | 2968 | 627 | 109 | 659 |
| Burgum, William C., assignor of one-half to J. W. Housberg, Pittsburg, Pa. Rail-joint | 753,470 | Mar. 1 | 466 | 109 | 109 | 102 |
| Burke, Charles G., Brooklyn, N. Y., assignor of twenty-one thirtieths to J. Q. A. Whittemore, Boston, Mass. Code-index | 756,209 | Apr. 5 | 26 | 6 | 109 | 1348 |
| Burke, Charles G., Brooklyn, N. Y., assignor of seven-tenths to J. Q. A. Whittemore, Boston, Mass. Code-index | 756,468 | Apr. 5 | 557 | 116 | 109 | 1461 |
| Burke, James J., Hartford, Conn. Reducing-valve | 757,861 | Apr. 19 | 3334 | 722 | 109 | 2089 |
| Burke, John C., Middlesboro, Ky. Astronomical clock | 754,845 | Mar. 15 | 3267 | 711<br>712<br>713 | 109 | 748 |
| Burke, William, East Stroudsburg, Pa. Machine for working old paper-stock | 753,540 | Mar. 1 | 624 | 141 | 109 | 137 |
| Burkhardt, Franklin P., assignor to Warder, Bushnell & Glessner Company, Chicago, Ill. Pitman connection for mowing-machines | 754,536 | Mar. 15 | 2969 | 580 | 109 | 619 |
| Burkhardt, Franklin P., assignor to Warder, Bushnell & Glessner Company, Chicago, Ill. Grinder for harrow-disks | 756,827 | Apr. 12 | 1226 | 274 | 109 | 1622 |
| Burkhardt, Franklin P., Chicago, Ill., assignor to Warder, Bushnell & Glessner Company, Springfield, Ohio, and Chicago, Ill. Sickle-grinder | 756,828 | Apr. 12 | 1226 | 274 | 109 | 1622 |
| Burkhardt, John F., San Antonio, Tex. Gate | 753,371 | Mar. 22 | 4088 | 893 | 109 | 929 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Dr'g. | Vol. | Page. |
| Burland, Edward G., Watsonville, Cal. Adjustable canopy | 757,175 | Apr. 12 | 1980 | 422 | 109 | 1772 |
| Burman, Birger F. (See Backlund and Burman.) | | | | | | |
| Burner, William L., Columbus, Ohio. Sifting machine or screen | 755,445 | Mar. 22 | 4353 | 964 | 109 | 998 |
| Burnham, Alexander C., New York, N. Y. Automatic inkstand | 754,967 | Mar. 22 | 3498 | 764 | 109 | 815 |
| Burnham, Charles S. (See Cruickshank and Burnham.) | | | | | | |
| Burnham, George E., Central Falls, R. I. Changeable sign | 755,272 | Mar. 22 | 4029 | 894 | 109 | 929 |
| Burns, Jeremiah D., Washington, D. C. Button belt-loop attachment for garments | 758,350 | Apr. 26 | 4285 | 920<br>921 | 109 | 2316 |
| Burns, P. C., *et al.* (See Clausen, Henry P., assignor.) | | | | | | |
| Burns, P. C., *et al.* (See Setter, Michael, assignor.) | | | | | | |
| Burns, Peter J., Elizabeth, assignor of one-half to L. H. Barker, Jersey City, N. J. Protecting metals | 756,984 | Apr. 12 | 1435 | ..... | 109 | 1664 |
| Burns, Timothy J., and F. O. Casteel, Pittsburg, Pa.; said Casteel assignor to said Burns. Cuspidor | 758,229 | Mar. 1 | 24 | 5 | 109 | 7 |
| Burnside, Robert, Montreal, Canada. Packing-cup | 758,410 | Apr. 26 | 4362 | 944 | 109 | 2340 |
| Burr, Blanche M., South Framingham, Mass. Garment-fastener | 758,507 | Apr. 26 | 4590 | 967 | 109 | 2386 |
| Burr, Gustav, Chicago, Ill. Glove-turner | 754,599 | Mar. 15 | 2971 | 590 | 109 | 619 |
| Burr, Jesse T., Glenville, Ohio. Water-heating and steam-generating device | 757,208 | Apr. 12 | 2061 | 454 | 109 | 1803 |
| Burroughs, William B., Baltimore, Md. Net for holding live fish | 756,097 | Mar. 29 | 5625 | 1240 | 109 | 1297 |
| Burrow, Walter B., Norfolk, Va. Converter for making steel, &c | 755,215 | Mar. 22 | 3924 | 868<br>869 | 109 | 907 |
| Burrow, Walter B., Norfolk, Va. Apparatus for casting metals in vacuums | 755,842 | Mar. 29 | 5142 | 1137 | 109 | 1192 |
| Burrow, Walter B., Norfolk, Va. Treating and manufacturing steel | 757,808 | Apr. 19 | 3195 | 694 | 109 | 2059 |
| Burrows, Frank E., *et al.* (See Gallagher, George S., assignor.) | | | | | | |
| Burrows, William R., Newark, N. J., assignor to General Electric Company. Perforating glass bulbs | 756,985 | Apr. 12 | 1435 | 319 | 109 | 1664 |
| Burry, John, Ridgefield Park, N. J., assignor to Stock Quotation Telegraph Company, New York, N. Y. Roll-holder | 754,490 | Mar. 15 | 2414 | 528<br>529 | 109 | 562 |
| Burt, James H., *et al.* (See Kinsey and Anderson, assignors.) | | | | | | |
| Burt, James H., Springfield, Mass., A. L. Anderson, Brooklyn, N. Y., and R. C. Grossman, Jersey City, N. J., assignors to said Burt, P. S. Kinsey, Newark, N. J., and W. Kinsey, New York, N. Y. Shoe-tree | 754,047 | Mar. 8 | 1649 | 367 | 109 | 379 |
| Burt, Martin C., Chicago, Ill. Telephone | 754,968 | Mar. 22 | 3495 | 765 | 109 | 815 |
| Burt, Martin C., Chicago, Ill. Storage battery | 754,969 | Mar. 22 | 3496 | 765 | 109 | 816 |
| Burton, Charles S., Oakpark, Ill., assignor to E. Tyden, Hastings, Mich. Pedestal-table lock | 754,196 | Mar. 8 | 1921 | 427<br>428 | 109 | 440 |
| Burton, Charles S., Oakpark, assignor to M. Clark, Chicago, Ill. Pneumatic motor for automatic musical instruments | 756,469 | Apr. 5 | 562 | 116<br>117 | 109 | 1462 |
| Busch, August A., R. Gull, and T. J. Barry, deceased, (J. H. Barry, executrix,) St. Louis, Mo. Pasteurizer | 755,108 | Mar. 22 | 3728 | 819 | 109 | 868 |
| Bushnell, Alvah, Jr., Philadelphia, Pa. Envelop | 754,048 | Mar. 8 | 1652 | 368 | 109 | 380 |
| Bushnell, Alvah, Jr., Philadelphia, Pa. Envelop or expanding wallet | 757,596 | Apr. 19 | 2782 | 609 | 109 | 1909 |
| Bussenius, Otto, New York, N. Y. Bath-tub | 755,109 | Mar. 22 | 3730 | 820 | 109 | 868 |
| Butcher, Charles, Cambridge, Mass. Post-hole digger | 754,431 | Mar. 15 | 2416 | 529 | 109 | 563 |
| Butcher, James M., St. Louis, Mo., assignor, by mesne assignments, to World's Fair Novelty Company. Spinning-top | 755,446 | Mar. 22 | 4354 | 964 | 109 | 998 |
| Butin, Louis M. A., Paris, France. Pump or motor | 755,353 | Mar. 22 | 4186 | 925 | 109 | 964 |
| Butler, Frank L., Schenectady, N. Y., assignor to General Electric Company. System of motor control | 757,019 | Apr. 12 | 1616 | 351 | 109 | 1701 |
| Butler, Hard. (See Clary, John A., assignor.) | | | | | | |
| Butler, Henry S., Des Moines, Iowa. Automatic register for cars | 755,592 | Mar. 22 | 4607 | 1094 | 109 | 1055 |
| Butler, James M., Bernice, La. Fertiliser-distributer | 757,020 | Apr. 12 | 1618 | 352 | 109 | 1702 |
| Butler, Joseph F. (See Holtmann and Butler.) | | | | | | |
| Butler, Thomas P., Wantagh, N. Y. Rotary engine | 756,210 | Apr. 5 | 30 | 7 | 109 | 1349 |
| Butler, William. (See Miller and Butler.) | | | | | | |
| Butler, William A., San Francisco, Cal. Windmill | 753,541 | Mar. 1 | 625 | 142 | 109 | 187 |
| Butterfield, Frank E. (See Loux and Butterfield.) | | | | | | |
| Butterfield, William R. (See Siegel, Richard G., assignor.) | | | | | | |
| Butters, Charles, Berkeley, Cal. Precipitating metals from solutions | 756,211 | Apr. 5 | 34 | ..... | 109 | 1350 |
| Butterworth, Charles C., Philadelphia, Pa., assignor to H. W. Butterworth & Sons Company. Drying-cylinder for textile machinery | 755,354 | Mar. 22 | 4189 | 926 | 109 | 964 |
| Butterworth, Thomas C., San Francisco, Cal. Hitching-post | 757,882 | Apr. 19 | 3336 | 722 | 109 | 2090 |
| Bybee, Addison. (See Shiek, Daniel W., assignor.) | | | | | | |
| Byers, Orin G., Baltimore, Md. Memorandum-holder for telephones | 756,470 | Apr. 5 | 563 | 117 | 109 | 1462 |
| Byington, Joseph N., Walnut Grove, Minn. Scissors or shears | 757,021 | Apr. 12 | 1620 | 352 | 109 | 1702 |
| Bystrom, John, Chicago, Ill. Extension-hanger for lamps | 758,350 | Mar. 8 | 1275 | 286 | 109 | 295 |
| Bystrom, John, Chicago, Ill. Extension-hanger for lamps | 758,351 | Mar. 8 | 1277 | 286 | 109 | 295 |
| C. B. Cottrell & Sons Company. (See Barber, Howard M., assignor.) | | | | | | |
| C. B. Cottrell & Sons Company. (See Cottrell, Edgar H., assignor.) | | | | | | |
| C. W. Hunt Company. (See Aumund, Heinrich, assignor.) | | | | | | |
| Cable Company. (See Cooper, William F., Jr., assignor.) | | | | | | |
| Cable Company. (See Cooper and Sharpe, assignors.) | | | | | | |
| Cable Company. (See Sharpe, Herbert E., assignor.) (Reissue.) | | | | | | |
| Cable, Daniel J. (See Brunt, William H., assignor.) | | | | | | |
| Cable, Daniel J., Pittsburg, assignor of one-half to H. Braun, Allegheny, Pa. Coin-holder | 756,226 | Apr. 5 | 261 | 55 | 109 | 1400 |
| Cable, Davis J., Lima, Ohio. Electric railway | 757,264 | Apr. 12 | 2082 | 454 | 109 | 1803 |
| Cadwallader, Charles, Ridgeville, Ind. Door-fastening device | 756,829 | Apr. 12 | 1230 | 274<br>275 | 109 | 1623 |
| Cady, Charles, Berkeley, Cal. Capped-bottle opener and temporary closure | 758,235 | Apr. 26 | 4037 | 877 | 109 | 2261 |
| Cady, Hutchins C., Columbus, Ohio. Easel | 758,351 | Apr. 26 | 4287 | 921 | 109 | 2317 |
| Cahill, George F., Holyoke, Mass. System for illuminating fields so that games may be played at night | 755,447 | Mar. 22 | 4355 | 965<br>966 | 109 | 999 |
| Cain, George E. (See Meyrick, Joseph, Jr., assignor.) | | | | | | |
| Calcutt, Reginald B., Chicago, Ill. Hose | 753,230 | Mar. 1 | 25 | 6 | 109 | 8 |
| Calderwood, Alexander C., Gloversville, N. Y. Trolley | 753,542 | Mar. 1 | 626 | 142 | 109 | 187 |
| Caldwell, Clarence W., Portage, Ohio. Rod-packing | 757,597 | Apr. 19 | 2784 | 609 | 109 | 1909 |
| Caldwell, Yancey Q., *et al.* (See Hartell, Frederick G., assignor.) | | | | | | |
| Caldwell, Yancey Q., Paris, and L. M. Martin, Martin, Tenn., assignors of one-third to F. G. Hartell, Chicago, Ill. Check-controlled apparatus | 753,823 | Mar. 1 | 1215 | 273<br>274 | 109 | 961 |
| Caldwell, Yancey Q., Paris, and L. M. Martin, Martin, Tenn., assignors of one-third to F. G. Hartell, Chicago, Ill. Vending-machine | 753,824 | Mar. 1 | 1221 | 274<br>275 | 109 | 961 |
| Caley, Charles J., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Adjustable key | 756,830 | Apr. 12 | 1232 | 275 | 109 | 1623 |
| Calkins, Lillian, assignor of one-half to M. B. Draper, Grand Rapids, Mich. Stocking | 757,390 | Apr. 12 | 2354 | 513 | 109 | 1859 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Caloric King Furnace Company. (See Mylin and White, assignors.) | | | | | | |
| Cameron, Arthur, assignor to National Drill and Manufacturing Company, Chicago, Ill. Machine for making and repairing roads | 753,231 | Mar. 1 | 27 | 6,7 | 109 | 8 |
| Cameron, Arthur, assignor to National Drill and Manufacturing Company, Chicago, Ill. Dumping-wagon | 753,232 | Mar. 1 | 31 | 7,8 | 109 | 9 |
| Cameron, Julia E. (See Coryell, Edwin M., assignor.) | | | | | | |
| Cameron, Malcolm G., Thomas, Ala. Combined pulverizer and roller | 753,953 | Mar. 8 | 1498 | 332 | 109 | 342 |
| Camp, Edmond N., Moreland, Ga. Cultivator attachment | 756,576 | Apr. 5 | 742 | 161 | 109 | 1499 |
| Camp, Joseph E., Washington, Ill. Portable grain-dump | 756,577 | Apr. 5 | 743 | 161, 162 | 109 | 1499 |
| Camp, Joseph E., Washington, Ill. Portable grain-dump | 756,578 | Apr. 5 | 745 | 162 | 109 | 1500 |
| Campbell, Andrew C., assignor to E. J. Manville Machine Company, Waterbury, Conn. Machine for forming balls | 756,212 | Apr. 5 | 35 | 8,9 | 109 | 1350 |
| Campbell, Benjamin F., assignor of one-half to J. E. Coates, Little Rock, Ark. Lubricating device | 755,741 | Mar. 29 | 4927 | 1097 | 109 | 1141 |
| Campbell, Charles A., New York, N. Y. Gas-burner | 756,411 | Apr. 26 | 4306 | 944 | 109 | 2340 |
| Campbell, John S., London, England. Lock | 757,265 | Apr. 12 | 3083 | 455 | 109 | 1808 |
| Campbell, Joseph H., New York, N. Y. Milk product resembling butter and making same | 755,843 | Mar. 29 | 5144 | 1137 | 109 | 1198 |
| Campbell, Thomas J., Economy, Pa. Paddle-wheel | 753,358 | Mar. 1 | 253 | 57, 58 | 109 | 57 |
| Campbell, W. A. (See Boyd, Stephen L., assignor.) | | | | | | |
| Canclini, Charles, Stockton, Cal. Ore-car | 757,860 | Apr. 19 | 3295 | 714 | 109 | 2080 |
| Canda Brothers. (See Smyser, Louis B., assignor.) | | | | | | |
| Canellopoulos, Jean, Paris, France. Self-igniting incandescent gas-burner | 755,448 | Mar. 22 | 4361 | 966 | 109 | 999 |
| Canfield, Charles S. (See Smith, Cyrus E., assignor.) | | | | | | |
| Canister Manufacturing Company. (See Woods, Charles C., assignor.) | | | | | | |
| Canton Hard Rubber Company. (See Keplinger, Claude J., assignor.) | | | | | | |
| Capewell, George J., Hartford, Conn. Metallic button | 754,125 | Mar. 8 | 1801 | 401 | 109 | 414 |
| Cappelen, F. W., *et al.* (See Gerdes, Henry A., assignor.) | | | | | | |
| Cappon, Thomas W., Ossining, N. Y. Cementing material and making same | 757,868 | Apr. 19 | 3338 | ..... | 109 | 2090 |
| Carbaugh, Conrad A., Plumrun, Pa. Rail chair and joint | 755,449 | Mar. 22 | 4369 | 966 | 109 | 1000 |
| Card, Frank S. (See Card, William L. and F. S.) | | | | | | |
| Card, William L., Denver, and F. S. Card, Canon City, Colo. Ore-concentrator | 758,412 | Apr. 26 | 4394 | 945, 946 | 109 | 2340 |
| Card, William L. and F. S., Denver, Colo. Concentrator | 758,413 | Apr. 26 | 4406 | 946, 947 | 109 | 2343 |
| Carence, Thomas, Kansas City, Mo. Nasal shield | 758,080 | Apr. 19 | 3629 | 785 | 109 | 2154 |
| Carey, Charles P., Wollaston, Mass. Carpet-beating machine | 754,540 | Mar. 15 | 3672 | 580 | 109 | 620 |
| Carey, Dennis E., South Lawrence, Mass. Doffer for spinning and twisting frames | 755,450 | Mar. 22 | 4363 | 966, 967 | 109 | 1000 |
| Carey, James D., Cleveland, Ohio. Construction of joists, girders, or the like | 756,471 | Apr. 5 | 565 | 117 | 109 | 1462 |
| Carkeek, William, Butte, Mont. Apparatus for distributing ore-pulp to concentrating-tables | 756,327 | Apr. 5 | 264 | 55 | 109 | 1400 |
| Carlin, George H., Lewistown, Ill. Driving-reins | 757,596 | Apr. 19 | 2785 | 609 | 109 | 1960 |
| Carliss, Albert, assignor to American Electric Telephone Company, Chicago, Ill. Electrical annunciator | 756,777 | Apr. 5 | 1117 | 246 | 109 | 1582 |
| Carlsen, Gustav, Port Richmond, N. Y. Hammer or sledge | 755,355 | Mar. 22 | 4190 | 926 | 109 | 964 |
| Carlson, Charles A., Chicago, Ill. Filling device for bottles | 755,600 | Mar. 29 | 4623 | 1026 | 109 | 1058 |
| Carlson, Gabriel, Springfield, Mass. Delivery-apron for confectionery-coating machines | 755,451 | Mar. 22 | 4365 | 967 | 109 | 1001 |
| Carlson, John. (See Manula and Carlson.) | | | | | | |
| Carnes, George E., St. Louis, Mo. Emergency-brake | 756,579 | Apr. 5 | 747 | 163 | 109 | 1501 |
| Carnes, George E., St. Louis, Mo. Combined pipe and nut wrench | 757,861 | Apr. 19 | 3296 | 714 | 109 | 2081 |
| Carney, John, Salem, W. Va., assignor of one-half to M. McDermott, Martins Ferry, Ohio. Rope-grab | 753,233 | Mar. 1 | 33 | 8 | 109 | 9 |
| Carpenter, Charles H., Decatur, assignor to Globe Coal Mfg. Co., South Bend, Ind. Composition fuel | 756,996 | Apr. 12 | 1437 | ..... | 109 | 1665 |
| Carpenter, Charles W., *et al.* (See Read, George F., assignor.) | | | | | | |
| Carpenter, James, Brooklyn, N. Y. Wheel | 756,472 | Apr. 5 | 566 | 117 | 109 | 1462 |
| Carpenter, Walter W., Brooklyn, N. Y. Apparatus for making hair-brushes | 753,234 | Mar. 1 | 34 | 8 | 109 | 10 |
| Carpenter, William H. (See Smith, Carpenter, and Weidknecht.) | | | | | | |
| Carr & Company, M. W. (See Farrell, George, assignor.) | | | | | | |
| Carrier, Charles W., Desplaines, Ill. Water-cooler for internal-combustion engines | 757,022 | Apr. 12 | 1621 | 352, 353 | 109 | 1708 |
| Carrier, James W., Peoria, assignor to F. C. Hitchcock, Princeville, Ill. Ice-cream freezer | 755,216 | Mar. 22 | 3996 | 869 | 109 | 908 |
| Carroll, Philip F., *et al.* (See Dietz, Christian F., assignor.) | | | | | | |
| Carroll, Sidney C., administrator. (See Morton, Wilson.) | | | | | | |
| Carroll, Thomas, Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J. Cash-register | 754,049 | Mar. 8 | 1653 | 368, 369 | 109 | 380 |
| Carroll, Thomas, assignor to National Cash Register Company, Dayton, Ohio. Cash-register | 755,356 | Mar. 22 | 4191 | 926 | 109 | 965 |
| Carson, James M., Manchester, England. Cash registering and checking apparatus | 758,235 | Mar. 1 | 35 | 8, 9, 10 | 109 | 10 |
| Carson, William L., Winfield, Kans., assignor of one-third to T. E. Fulton, Kildare, Okla. Ter. Grain-car door | 758,414 | Apr. 26 | 4414 | 948 | 109 | 2345 |
| Carstens, Henry E., Davenport, Iowa. Washing-machine | 755,742 | Mar. 29 | 4929 | 1097 | 109 | 1141 |
| Carter, Charles M., Sultan, Wash. Concentrating sluice-box | 757,176 | Apr. 12 | 1981 | 422 | 109 | 1772 |
| Carter, Joseph A., McMechen, W. Va. Mowing-machine | 755,844 | Mar. 29 | 5147 | 1137, 1138 | 109 | 1198 |
| Carter, Thomas W. (See Anderson, Alfred, assignor.) | | | | | | |
| Cary, Francis B., Baltimore, Md. Bottle-closing device | 754,126 | Mar. 8 | 1802 | 401 | 109 | 414 |
| Cary, Frank. (See Hawkins and Cary.) | | | | | | |
| Casaday, William L., South Bend, Ind. Seeder and planter | 755,613 | Mar. 29 | 4650 | 1085, 1086, 1086 | 109 | 1079 |
| Casaday, William L., South Bend, Ind. Gang-plow | 755,614 | Mar. 29 | 4662 | 1087, 1088 | 109 | 1080 |
| Case, Alfred W., Highland Park, Conn. Pressure-blower | 757,267 | Apr. 12 | 2080 | 455 | 109 | 1804 |
| Case, Alfred W. and L. W., Highland Park, Conn. Paper-machine | 756,197 | Apr. 26 | 3880 | 881, 882 | 109 | 2216 |
| Case, Amos, Perry, Iowa. Implement for use in replacing car-axle brasses | 757,266 | Apr. 12 | 2087 | 455 | 109 | 1804 |
| Case, Frank E., Schenectady, N. Y., assignor to General Electric Company. Removable contact-finger tip | 758,743 | Mar. 29 | 4981 | 1098 | 109 | 1142 |
| Case, Frank E., Schenectady, N. Y., assignor to General Electric Company. Controller | 758,744 | Mar. 29 | 4982 | 1098 | 109 | 1142 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Case, Lawrence W. (See Case, Alfred W. and L. W.) | | | | | | |
| Case, Raymond S., Unionville, Conn. Package and closure therefor | 753,543 | Mar. 1 | 628 | 142 | 109 | 138 |
| Case, Warren H., Mount Vernon, Ohio. Railway-joint fastening | 754,279 | Mar. 8 | 2086 | 463 | 109 | 473 |
| Casein Company of America. (See Hall, William A., assignor.) | | | | | | |
| Casey, John, Casey, Minn. Antikicker for cows | 753,859 | Mar. 1 | 254 | 59 | 109 | 58 |
| Cashin, Martin, East Pepperell, Mass. Machine for coating paper | 758,169 | Apr. 26 | 3902 | 847, 848 | 109 | 2234 |
| Caskey, William J. (See Faltermayer, Harry, assignor.) | | | | | | |
| Cassel, Anna H. (See McLaughlin, Mary, assignor.) | | | | | | |
| Cassidy, Linnie I., assignor to W. E. Cassidy, Lexington, Ky. Corset-stay | 757,268 | Apr. 12 | 2090 | 456 | 109 | 1804 |
| Cassidy, Patrick F., and N. F. Doherty, assignors to Boston Bottle Wiring and Labeling Company, Boston, Mass. Label-affixing machine | 756,580 | Apr. 5 | 749 | 163 | 109 | 1501 |
| Cassidy, William A., Fort Worth, Tex. Window-screen | 753,544 | Mar. 1 | 630 | 143 | 109 | 138 |
| Cassidy, William E. (See Cassidy, Linnie I., assignor.) | | | | | | |
| Casteel, Frederick O. (See Burns and Casteel.) | | | | | | |
| Casteel, George W., Texarkana, Tex. Variable-speed governor | 757,269 | Apr. 12 | 2091 | 456 | 109 | 1805 |
| Castens, Henry W. C. von, New York, N. Y. Rotary fan attachment for sewing-machines | 757,723 | Apr. 19 | 3034 | 660 | 109 | 2086 |
| Casterline, Edwin D., assignor to Single-Sheet Paper Company, Los Angeles, and Interlock Paper Company, San Francisco, Cal. Paper-folding machine. (Reissue) | 12,204 | Mar. 15 | 3480 | 761 | 109 | 796 |
| Castlebery, Harrison D. (See Parker and Castlebery.) | | | | | | |
| Caswell, George W., New Britain, Conn. Lock | 754,280 | Mar. 8 | 2087 | 463 | 109 | 474 |
| Caven, W. A., *et al.* (See Bentel, Lewis O., assignor.) | | | | | | |
| Cavender, Waldo S., Willard, Ill. Spark and cinder arrester | 757,270 | Apr. 12 | 2093 | 456 | 109 | 1805 |
| Cavett, Samuel S. (See Cavett, William A. and S. S.) | | | | | | |
| Cavett, William A. and S. S., Kirksville, Mo. Horse hay-rake | 758,892 | Mar. 8 | 1279 | 267 | 109 | 296 |
| Cawley, Patrick J., Syracuse, N. Y. Bottle-filling machine | 758,236 | Mar. 1 | 38 | 10, 11 | 109 | 10 |
| Celluloid Company. (See Sillcocks, Warren S., assignor.) | | | | | | |
| Center Drive Automobile Company. (See Hicks, Bohn C., assignor.) | | | | | | |
| Central Ohio Buggy Co. (See Crise, Lewis, assignor.) | | | | | | |
| Central Stamping Company. (See Lunan, Thomas M., assignor.) | | | | | | |
| Century Camera Company. (See Locke, Harvey W., assignor.) | | | | | | |
| Cerebotani, Luigi, Munich, assignor of one-half to A. Silbermann, Berlin, Germany. Telegraph-receiver | 758,202 | Apr. 26 | 3970 | 861 | 109 | 2248 |
| Chaize, Jacques. (See Chaize, Nicolas and J.) | | | | | | |
| Chaize, Nicolas and J., St. Etienne, France. Shedding apparatus for looms | 754,846 | Mar. 15 | 3271 | 713 | 109 | 748 |
| Challenge Machinery Co. (See Lee, James L., assignor.) | | | | | | |
| Chamberlain, Harold W., Brunswick, Me. Electromagnet | 758,236 | Apr. 26 | 4038 | 877 | 109 | 2261 |
| Chamberlain, James H. D., Springfield, Mass., and D. E. Chism, Stafford Springs, Conn., assignors to Independent Store Service Company, Springfield, Mass. Cash-carrier apparatus | 754,422 | Mar. 15 | 3417 | 529 | 109 | 568 |
| Chamberlin, Charles E., assignor to Joseph N. Smith & Co., Detroit, Mich. Rein-holder | 756,581 | Apr. 5 | 753 | 164 | 109 | 1502 |
| Chamberlin, Eugene, Brooklyn, N. Y. Car-seat | 753,545 | Mar. 1 | 632 | 143 | 109 | 138 |
| Chambers, Edgar, Meriden, Conn. Tempering and coloring apparatus | 755,998 | Mar. 29 | 5438 | 1201 | 109 | 1256 |
| Chambers, James A., trustee. (See Lubbers, John H., assignor.) | | | | | | |
| Champion Shoe Machinery Company. (See Corcoran, George L., assignor.) | | | | | | |
| Champlin, G. A. (See Younger, Joshua M., assignor.) | | | | | | |
| Chandler, Charles F., Orange, N. J. Engine | 754,744 | Mar. 15 | 3065 | 669 | 109 | 704 |
| Chaplin, Manley J., assignor to Automatic Valve Company, Seattle, Wash. Valve | 756,582 | Apr. 5 | 754 | 164 | 109 | 1502 |
| Chappee, Birnie G., Detroit, Mich. Index | 753,546 | Mar. 1 | 634 | 143 | 109 | 139 |
| Chappell, Jesse H., Wyaconda, Mo. Wheel-wrench | 758,508 | Apr. 26 | 4590 | 987 | 109 | 2387 |
| Chappuis, Julien, Bienne, Switzerland. Rail-support | 754,197 | Mar. 8 | 1924 | 428 | 109 | 441 |
| Chaquette, Ephraiem, New Rochelle, N. Y. Smokeless boiler | 758,360 | Mar. 1 | 255 | 58 | 109 | 58 |
| Charlebois, Edwin G., Watertown, N. Y. Sheet-metal siding | 754,541 | Mar. 15 | 3673 | 590 | 109 | 620 |
| Charles, Albion P. (See Guy, Charles, assignor.) | | | | | | |
| Charlton, Thomas E., Cleveland, Ohio. Gas-burner | 756,583 | Apr. 5 | 754 | 164 | 109 | 1502 |
| Charron, Ferdinand, and L. Girardot, Paris, France. Clasp | 754,919 | Mar. 15 | 3389 | 741 | 109 | 774 |
| Chase, Charles D., San Francisco, Cal., and E. P. Dole, Honolulu, Hawaii. Non-refillable bottle | 756,584 | Apr. 5 | 756 | 164 | 109 | 1503 |
| Chase, Frank H., assignor of one-half to H. A. Dubis, Chicago, Ill. Pencil-sharpener | 757,090 | Apr. 12 | 1751 | 381 | 109 | 1731 |
| Chase, Frank H., assignor of one-half to H. A. Dubis, Chicago, Ill. Pencil-sharpener | 757,091 | Apr. 12 | 1752 | 381 | 109 | 1731 |
| Chase, Henry M., Holyoke, Mass. Power-pump | 753,361 | Mar. 1 | 256 | 58 | 109 | 58 |
| Chase, William D., assignor to Poughkeepsie Art Pulp Company, Poughkeepsie, N. Y. Traveling-case | 758,170 | Apr. 26 | 3904 | 848 | 109 | 2234 |
| Chatterton, William E., Melrose, Mass. Combination-case | 755,615 | Mar. 29 | 4668 | 1088 | 109 | 1082 |
| Chausse, Wilfrid, New York, N. Y. Means for cleaning the third rails of electrical railways | 757,650 | Apr. 19 | 2900 | 631 | 109 | 1995 |
| Chavannes, Ferdinand B. de, Marseilles, France. Railway signaling | 758,863 | Mar. 8 | 1281 | 297, 298 | 109 | 296 |
| Cheatham, Almo L., assignor of three-fourths to R. V. Cheatham, Louisville, Ky. Signal apparatus for trolley-railways | 756,156 | Mar. 29 | 5720 | 1263 | 109 | 1317 |
| Cheatham, Robert V. (See Cheatham, Almo L., assignor.) | | | | | | |
| Cheever, Edgar H., Oceanside, Cal. Adjustable A-harrow | 756,195 | Mar. 29 | 5781 | 1277 | 109 | 1328 |
| Chein, Julius, New York, N. Y. Toy | 758,047 | Apr. 26 | 3874 | 796 | 109 | 2184 |
| Chelmicki, Wladislaw von, Zydowo, Germany. Device for unloading and distributing earth, manure, &c., from wagons | 755,452 | Mar. 22 | 4360 | 967 | 109 | 1002 |
| Chemische Fabrik auf Actien, (vorm. E. Schering.) (See Gunther, Fritz, assignor.) | | | | | | |
| Chemische Fabrik auf Actien (vorm. E. Schering) *et al.* (See Wichmann, Georg, assignor.) | | | | | | |
| Cheney, George K., New York, N. Y. Apparatus for electroplating sound-records | 758,352 | Apr. 26 | 4288 | 921 | 109 | 2317 |
| Cherry, Frank W., and H. F. Radke, San Francisco, Cal. Electric time-switch | 755,845 | Mar. 29 | 5151 | 1138 | 109 | 1194 |
| Cherry, John T., Plymouth, and E. H. Clive, Devonport, England. Electric-trolley head | 755,999 | Mar. 29 | 5440 | 1202 | 109 | 1256 |
| Chesebrough, Robert A., New York, N. Y. Composition for laying dust | 755,357 | Mar. 22 | 4193 | ..... | 109 | 965 |
| Cheesman, Henry C., assignor of one-tenth to F. S. Anderson, Richmond, Ind. Adjustable plant support and holder | 754,542 | Mar. 15 | 3674 | 581 | 109 | 620 |
| Cheyne, Frederick H., Indianapolis, Ind. Speed-differentiating device | 755,616 | Mar. 29 | 4671 | 1088, 1089 | 109 | 1082 |
| Cheyney, Algernon R., Philadelphia, Pa. Retarding device for electric-circuit breakers | 755,358 | Mar. 22 | 4193 | 927 | 109 | 965 |
| Chicago Lubricator Company. (See Edwards, Frank W., assignor.) | | | | | | |
| Chicago Railway Equipment Company. (See Lipschutz, Arthur, assignor.) | | | | | | |
| Chicago-Rockford Hosiery Company. (See Harbaugh, George O. and H. E., assignors.) | | | | | | |
| Chicago Toy Novelty Company. (See Mason, John B., assignor.) | | | | | | |
| Chickering, Kenton, Oil City, Pa. Pipe-wrench | 755,846 | Mar. 29 | 5152 | 1139 | 109 | 1194 |
| Child, James J., *et al.* (See Palmer, Stephen, assignor.) | | | | | | |
| Childs, Frank H., Stroud, Okla. Ter. Bedstead brace-clamp | 758,363 | Mar. 1 | 258 | 59 | 109 | 58 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Chisholm, James W. (See Faller, Ernest A., assignor.) | | | | | | |
| Chism, David E. (See Chamberlain and Chism.) | | | | | | |
| Chism, David E., Stafford Springs, Conn., assignor to Independent Store Service Company, Springfield, Mass. Box for cash-carriers | 754,423 | Mar. 15 | 3494 | 530 | 109 | 565 |
| Chism, David E., Stafford Springs, Conn., assignor to Independent Store Service Company, Springfield, Mass. Cash-carrier apparatus | 754,424 | Mar. 15 | 3498 | 530 | 109 | 566 |
| Chrestensen, Amdy, Cohoes, N. Y. Rail-joint | 753,854 | Mar. 8 | 1283 | 226 | 109 | 297 |
| Christensen, Niels A., Milwaukee, Wis. Electric machine | 753,954 | Mar. 8 | 1464 | {332 333} | 109 | 342 |
| Christianson, John, Cedarfalls, Iowa. Shovel and foot protector | 754,543 | Mar. 15 | 3676 | 561 | 109 | 630 |
| Christie Engineering Company. (See Gibbens and Christie, assignors.) | | | | | | |
| Christie, Evi W. (See Gibbens and Christie.) | | | | | | |
| Christmas, Adolph F., Pittsburg, assignor of two-thirds to F. R. McFeatters, Wilkinsburg, Pa. Reciprocating electric motor | 757,991 | Apr. 19 | 3546 | 766 | 109 | 2136 |
| Christopher, Albert C., assignor to Kellogg Switchboard & Supply Company, Chicago, Ill. Telephone instrument | 758,415 | Apr. 26 | 4415 | 948 | 109 | 2345 |
| Christrup, Herman E. (See Marple, George L., assignor.) | | | | | | |
| Christy, Samuel B., Berkeley, Cal. Recovery of gold and silver from cyanid solutions | 756,388 | Apr. 5 | 265 | 55, 56 | 109 | 1400 |
| Church, Albert M., Chicago, and E. S. Church, Oakpark, Ill.; said E. S. Church assignor to said Albert M. Church. Watch-holder | 753,363 | Mar. 1 | 260 | 59 | 109 | 59 |
| Church, Benjamin S., New York, N. Y., assignor to J. K. Lanning, trustee, Boston, Mass. Expansible-fluid turbine | 753,855 | Mar. 8 | 1284 | {289 290} | 109 | 297 |
| Church, Edwin S. (See Church, Albert M. and E. S.) | | | | | | |
| Church, Nathan E., Schenectady, N. Y., assignor to General Electric Company. Synchronizing device | 756,987 | Apr. 12 | 1436 | 319 | 109 | 1665 |
| Church, Walter A., Binghamton, N. Y. Push-button switch | 757,541 | Apr. 19 | 3670 | 585 | 109 | 1943 |
| Churchill, Thomas C., Poquoson, Va. Variable-speed transmission-gearing | 753,856 | Mar. 8 | 1286 | 226 | 109 | 298 |
| Claflin, Charles R. B., Winthrop, Mass. Derrick | 753,257 | Mar. 1 | 43 | 11 | 109 | 13 |
| Clagett, Thomas F. B., Washington, D. C. Rein-holder | 755,373 | Mar. 22 | 4051 | 894 | 109 | 959 |
| Clapp, Frederick B., Kenosha, Wis. Sash-fastener | 756,416 | Apr. 26 | 4419 | 949 | 109 | 2347 |
| Clapp, Mortimer A., Poughkeepsie, N. Y. Molder's flask | 753,471 | Mar. 1 | 467 | 110 | 109 | 102 |
| Clark, Albert B., Terryville, Conn. Cord-holder | 755,374 | Mar. 22 | 4032 | 894 | 109 | 960 |
| Clark, Daniel, Powassan, Canada. Wagon-box | 757,023 | Apr. 12 | 1622 | 353 | 109 | 1709 |
| Clark, Edward, assignor of one-half to F. F. Stapf, Dunkirk, N. Y. Eyeglass-mounting | 753,364 | Mar. 1 | 262 | 59 | 109 | 59 |
| Clark, Edward B., assignor of part to Imperial Machine Company and S. B. Whinery, Pittsburg, Pa. Attachment for linotype-machines | 754,970 | Mar. 22 | 3490 | {766 767} | 109 | 815 |
| Clark, Frederick B., assignor of one-half to E. S. Weed, Stamford, Conn. Packed joint | 757,998 | Apr. 19 | 3548 | 766 | 109 | 2136 |
| Clark, George H., Boston, assignor of one-half to E. C. Wright, Campello, Mass. Hoof-pad | 753,955 | Mar. 8 | 1467 | 224 | 109 | 343 |
| Clark, Jabez F., Denver, Colo. Horseshoe | 753,698 | Mar. 1 | 866 | 196 | 109 | 188 |
| Clark, Jabez F., Denver, Colo. Self-loading cart | 753,699 | Mar. 1 | 899 | {196 197} | 109 | 188 |
| Clark, James H., assignor to J. H. Clark Company, Portage, Wis. Audible alarm for air-braking systems | 754,847 | Mar. 15 | 3672 | 713 | 109 | 749 |
| Clark, James P., Newark, N. J., assignor to R. Neumann Hardware Company. Key | 756,585 | Apr. 5 | 759 | 165 | 109 | 1503 |
| Clark, John M., Whitestone, N. Y. Steam-engine | 755,453 | Mar. 22 | 4370 | 968 | 109 | 1002 |
| Clark, Louis G., Helena, Mont. Catapult | 754,745 | Mar. 15 | 3066 | 669 | 109 | 705 |
| Clark, Melville. (See Burton, Charles S., assignor.) | | | | | | |
| Clark, Shelton C., assignor of one-half to J. F. and A. R. Lewis, Beatrice, Nebr. Automatic stock-watering machine | 754,848 | Mar. 15 | 3674 | 714 | 109 | 749 |
| Clark, Walter L., Everett, assignor to J. Duncan & Company, Boston, Mass. Switch for overhead trolley-tracks | 754,127 | Mar. 8 | 1808 | 402 | 109 | 414 |
| Clark, William H., Erie, Pa., assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J. Adding-machine | 754,544 | Mar. 15 | 3677 | 561 | 109 | 630 |
| Clark, William R., Cincinnati, Ohio. Combined hat, coat, and umbrella rack | 756,509 | Apr. 26 | 4591 | 967 | 109 | 2387 |
| Clarke, John, trustee. (See Field, Millard F., assignor.) | | | | | | |
| Clarke, Peete B., New York, N. Y. Cut-off-operating engine and valve mechanism | 756,881 | Apr. 12 | 1233 | {275 276} | 109 | 1624 |
| Clarke, Sidney H., Minehead, England. Brick for the construction of arches | 758,417 | Apr. 26 | 4420 | 949 | 109 | 2347 |
| Clarke, William C., New York, N. Y., assignor to Gilbert & Barker Manufacturing Company, Springfield, Mass. Heat-transmitting device | 756,389 | Apr. 5 | 272 | 56 | 109 | 1401 |
| Clarkson, Alfred, Fall River, Mass. Adjustable pipe-supporting bracket | 753,847 | Mar. 29 | 5154 | 1139 | 109 | 1194 |
| Clarkson, William S., Livingston, Mont. Exhaust-nozzle | 754,746 | Mar. 15 | 3068 | 670 | 109 | 705 |
| Clary, John A., assignor of one-third to H. Butler, Fort Worth, Tex. Checkrein attachment | 757,092 | Apr. 12 | 1753 | 381 | 109 | 1732 |
| Clasper, Walter, McKeesport, Pa. Manufacture of sheet-iron | 756,473 | Apr. 5 | 566 | 118 | 109 | 1463 |
| Clasper, Walter, McKeesport, Pa. Apparatus for the manufacture of sheet-iron | 756,474 | Apr. 5 | 571 | 119 | 109 | 1463 |
| Clasper, Walter, McKeesport, Pa. Furnace | 756,475 | Apr. 5 | 573 | 119 | 109 | 1463 |
| Clausen, Henry P., Chicago, Ill., assignor to American Electric Telephone Company. Relay | 753,956 | Mar. 8 | 1466 | 334 | 109 | 344 |
| Clausen, Henry P., assignor to American Electric Telephone Company, Chicago, Ill. Telephone desk set | 756,081 | Apr. 19 | 3631 | {785 786} | 109 | 2154 |
| Clausen, Henry P., assignor to P. C. Burns and J. G. Ihmsen, Chicago, Ill. Thermal cut-out | 757,894 | Apr. 19 | 3540 | 728 | 109 | 2091 |
| Clausing, Theodore, New Knoxville, Ohio. Wind-chest for pipe-organs | 758,048 | Apr. 26 | 3673 | 727 | 109 | 2184 |
| Clay, Francis W. H., Pittsburg, Pa. Bottle-closure | 755,375 | Mar. 22 | 4033 | 894 | 109 | 960 |
| Clay, Francis W. H., Pittsburg, Pa. Bottle-closure | 755,376 | Mar. 22 | 4035 | 895 | 109 | 960 |
| Clayton, Frank R. (See Ashton, John, assignor.) | | | | | | |
| Clayton, William H. (See Dukes and Clayton.) | | | | | | |
| Clear, Charles, St. Louis, Mo. Clinker-tongs | 753,454 | Mar. 22 | 4371 | 968 | 109 | 1002 |
| Clemens, Burley, Moundsville, W. Va. Bottle-closure | 756,586 | Apr. 5 | 760 | 165 | 109 | 1503 |
| Clement, Charles C., Boston, Mass. Marking and lettering pen | 757,054 | Apr. 12 | 1623 | 353 | 109 | 1708 |
| Clergy, Louis J., and H. Morrow, Belt, Mont. Camp-stove | 756,390 | Apr. 5 | 273 | 56 | 109 | 1401 |
| Cleveland, Charles E., Fond du Lac, Wis. Lumber-feeding machine | 755,745 | Mar. 29 | 4935 | {1098 1099} | 109 | 1143 |
| Cleveland, Francis D., Winchester, Mass. Forming can-bodies | 756,882 | Apr. 12 | 1236 | 276 | 109 | 1624 |
| Cleveland Machine Screw Company. (See Brophy, John P., assignor.) | | | | | | |
| Cleveland Pulley Company. (See Moore and Deming, assignors.) | | | | | | |
| Cleveland, William N., Dover, Ky. Device for preventing shaft motion in vehicles | 754,642 | Mar. 15 | 2870 | 627 | 109 | 659 |
| Cleves, Anna, Omaha, Nebr. Garment-fastener | 756,617 | Mar. 29 | 4673 | 1089 | 109 | 1093 |
| Clewell, Charles W., Canton, Ohio. Trap-valve | 754,747 | Mar. 15 | 3070 | 670 | 109 | 706 |
| Climo, Jonathan B., London, assignor of two-thirds to A. McPhaden and H. McKelvey, Nakusp, Canada. Rail-joint | 755,848 | Mar. 29 | 5155 | 1139 | 109 | 1194 |
| Cline, James P., Charity, Mo. Hand or foot power machine | 754,849 | Mar. 15 | 3680 | 714 | 109 | 751 |
| Clingman, George F., Chicago, Ill. Metal post | 754,198 | Mar. 8 | 1926 | 426 | 109 | 441 |
| Clive, Edward H. (See Cherry and Clive.) | | | | | | |
| Cloherty, Richard J., Cincinnati, Ohio. Fishpole-keep | 754,971 | Mar. 22 | 3502 | 767 | 109 | 816 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Cloud, Jeremiah S. (See Gaskill, Marion L., assignor.) | | | | | | |
| Cloud, John W., London, England, assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Fluid-pressure brake | 758,049 | Apr. 26 | 3676 | 797 | 109 | 2184 |
| Clow, George S., Columbus, Ohio. Machine for tenoning and boring implement-handles | 755,359 | Mar. 22 | 4195 | {927 928} | 109 | 966 |
| Cloyd, Henry C., Union City, Ind. Driving mechanism for traction-engines | 758,670 | Mar. 1 | 872 | 197 | 109 | 189 |
| Cloyd, Oliver H., assignor to T. E. Gaines, Kansas City, Mo. Cultivator | 757,802 | Apr. 19 | 3300 | 715 | 109 | 2081 |
| Cluss, Otto E., St. Louis, Mo. Window | 754,425 | Mar. 15 | 2480 | 531 | 109 | 567 |
| Coates, John, Hemet, Cal. Power-transmitter | 757,599 | Apr. 19 | 2786 | 609 | 109 | 1969 |
| Coates, John E. (See Campbell, Benjamin F., assignor.) | | | | | | |
| Coburn, George B., *et al.* (See Heenan, James, assignor.) | | | | | | |
| Coburn, Raymond C., Upper Sandusky, Ohio. Laundry apparatus | 755,455 | Mar. 22 | 4372 | 968 | 109 | 1002 |
| Cochran, Charles C. (See Gantz, Samuel, assignor.) | | | | | | |
| Cochran, William, Paterson, N. J. Jacquard-machine | 753,547 | Mar. 1 | 635 | 144 | 109 | 139 |
| Cochran, William R., Jr., Delphos, Ohio, assignor of two-thirds to J. S. Bowers, Decatur, Ind. Window-screen | 753,238 | Mar. 1 | 46 | 12 | 109 | 13 |
| Cochrane, James A., Cincinnati, Iowa. Antiseptic tooth-brush holder | 757,885 | Apr. 19 | 3342 | 723 | 109 | 2091 |
| Cochrane, William B., Chicago, Ill. Liquid-dispensing apparatus | 757,886 | Apr. 19 | 3343 | 723 | 109 | 2091 |
| Cock, William R., Plainfield, N. J., assignor of one-half to F. A. Riehle, Philadelphia, Pa. Testing-machine | 758,418 | Apr. 26 | 4421 | 949 | 109 | 2347 |
| Cockburn, Sidney M., London, England. Device for removing steam from the heating-surfaces of steam-generators | 755,217 | Mar. 22 | 3927 | {869 870} | 109 | 908 |
| Cocker, John, and C. Dean, Philadelphia, Pa. Electric stop-motion for warping-machines | 754,748 | Mar. 15 | 3072 | 671 | 109 | 706 |
| Cockrell, Judson, Fargo, N. D. Heating-stove | 756,587 | Apr. 5 | 761 | 165 | 109 | 1503 |
| Coe Brass Manufacturing Company. (See Brooker, Charles F., assignor.) | | | | | | |
| Coe, Walter H., Providence, R. I. Glider's tool | 754,408 | Mar. 8 | 2882 | 590 | 109 | 537 |
| Coffman, Joseph, Liberty, Ind. Grain-carrier | 756,988 | Apr. 12 | 1440 | 319 | 109 | 1665 |
| Cogburn, William S., Paris, Tex. Computing-yardstick | 755,746 | Mar. 29 | 4937 | 1099 | 109 | 1144 |
| Coger, Walter, Bisbee, Ariz. Ter. Automatic cut-off for glass-tube water-gages | 755,456 | Mar. 22 | 4374 | 969 | 109 | 1003 |
| Cogswell, Henry. (See Fellows, Hugh W., assignor.) | | | | | | |
| Cohn, Max G. (See Vallendar, Otto, assignor.) | | | | | | |
| Coile, Henry P., Knoxville, Tenn. Bath-tub | 755,747 | Mar. 29 | 4939 | 1099 | 109 | 1144 |
| Coin, Louis, Tassain la Demi-Lune, France. Jacquard mechanism for looms | 755,457 | Mar. 22 | 4375 | {969 970} | 109 | 1003 |
| Coke, John H., Black Diamond, Wash. Gas-holder | 757,867 | Apr. 19 | 3346 | 724 | 109 | 2092 |
| Coke, Wilbur A., assignor of one-half to C. M. Barnett, Norfolk, Va. Non-refillable bottle | 757,891 | Apr. 12 | 2354 | 518 | 109 | 1859 |
| Colahan, Charles, Chicago, Ill. Grain-binder | 755,748 | Mar. 29 | 4940 | {1099 1100} | 109 | 1144 |
| Colburn, Irving W., Toledo, Ohio. Glass-working machine | 754,426 | Mar. 15 | 2483 | {531 532} | 109 | 567 |
| Colburn, Leslie H., Franklin, Pa. Vertical shaper | 755,849 | Mar. 29 | 5156 | {1139 1140} | 109 | 1196 |
| Colby, Harry W., assignor to Automatic Racking Machine Company, Chicago, Ill. Apparatus for racking beer | 755,618 | Mar. 29 | 4674 | {1141 1040} | 109 | 1093 |
| Colby, Harry W., assignor to Automatic Racking Machine Company, Chicago, Ill. Bottling-machine | 755,619 | Mar. 29 | 4680 | {1040 1041 1042} | 109 | 1095 |
| Cole, Albert L., Auburndale, Mass. Lacing-button | 757,025 | Apr. 12 | 1625 | 354 | 109 | 1708 |
| Cole, Blon. (See Todd, William O., assignor.) | | | | | | |
| Cole, Christopher O., Whatcom, Wash. Automatic pipe-coupling | 757,868 | Apr. 19 | 3349 | 724 | 109 | 2092 |
| Cole, Francis J. (See Dalton and Cole.) | | | | | | |
| Cole, Frederick W. (See Fewkes, Ernest E., assignor.) | | | | | | |
| Cole, Frederick W., Newton, assignor to United States Fire and Police Telegraph Company, Boston, Mass. Electromechanical gong | 757,271 | Apr. 12 | 2094 | 456 | 109 | 1805 |
| Cole, J. N., *et al.* (See Stouffer, Hiram C., assignor.) | | | | | | |
| Cole, Jacob S., Allegheny, Pa. Automatic controlling device | 755,563 | Mar. 22 | 4552 | 1013 | 109 | 1042 |
| Cole, Richard. (See Ball and Cole.) | | | | | | |
| Coleman, Clarence W. (See Coleman, Clyde J., assignor.) | | | | | | |
| Coleman, Clarence W., Westfield, N. J., assignor to Hall Signal Company. Railway signal apparatus | 758,297 | Apr. 26 | 4178 | 900 | 109 | 2291 |
| Coleman, Clyde J., assignor, by mesne assignments, to C. W. Coleman, Chicago, Ill. Refrigeration system and apparatus | 757,892 | Apr. 12 | 2356 | 518 | 109 | 1859 |
| Coleman, Clyde J., assignor, by mesne assignments, to C. W. Coleman, Chicago, Ill. Refrigeration system | 757,893 | Apr. 12 | 2358 | 518 | 109 | 1860 |
| Coleman, Dorr O., and A. Shepard, Southington, Conn.; said Shepard assignor to said Coleman. Vending-machine | 757,993 | Apr. 19 | 3549 | 768 | 109 | 2136 |
| Coleman, Lucius E., Santa Ana, Cal. Hydrocarbon-burner | 753,825 | Mar. 1 | 1225 | 276 | 109 | 263 |
| Coleman, Matthew W. (See Sonendriker, Edward T., assignor.) | | | | | | |
| Collins, Byron W., Evanston, Ill. Rig for sailing vessels | 758,171 | Apr. 26 | 3905 | {848 849} | 109 | 2234 |
| Collins, Roy V., assignor to American Automatic Switch Company, New York, N. Y. Mechanical movement | 754,050 | Mar. 8 | 1658 | 369 | 109 | 381 |
| Collinson, Frank J., Galva, Ill. Lubricator | 754,972 | Mar. 22 | 3503 | 767 | 109 | 817 |
| Collis, Austin W., Brentwood, Cal. Threshing-machine | 754,850 | Mar. 15 | 3989 | 715 | 109 | 751 |
| Colman, Howard D., Rockford, Ill. Knot-tying implement | 755,110 | Mar. 22 | 3731 | {820 821} | 109 | 868 |
| Colquhoun, Edward. (See McGowan, Mont M., assignor.) | | | | | | |
| Colthar, William U., assignor to J. C. Gleason and J. B. Von Schriltz, Springfield, Ohio. Electromagnetic signal | 758,365 | Mar. 1 | 268 | 59, 60 | 109 | 59 |
| Colton, George H., Hiram, Ohio. Support for radiators or the like | 756,111 | Mar. 29 | 3786 | 821 | 109 | 860 |
| Coltrin, Robert B., Jackson, Mich. Cement-mold | 757,093 | Apr. 12 | 1764 | 381 | 109 | 1732 |
| Coltrin, Robert B., Jackson, Mich. Cement-molding apparatus | 757,094 | Apr. 12 | 1767 | 382 | 109 | 1732 |
| Columbia Jewelry Company. (See Viano, Felix, assignor.) | | | | | | |
| Columbia Pottery and Manufacturing Company. (See Kulow, William, assignor.) | | | | | | |
| Colwell, William, Chillicothe, Ill. Threshing-machine | 758,608 | Apr. 26 | 4776 | 1038 | 109 | 2496 |
| Commercial Construction Company *et al.* (See Sindingchristensen, Frederik, assignor.) | | | | | | |
| Commercial Railway Equipment Company. (See Böhm, Ludwig K., assignor.) | | | | | | |
| Commoss, Joseph T., New York, N. Y. Stencil | 754,261 | Mar. 8 | 2090 | 464 | 109 | 474 |
| Comp, Nelson, Hartford, Conn. Shoe-lace holder | 754,851 | Mar. 15 | 3984 | 715 | 109 | 752 |
| Compagnie Générale de Phonographes, Cinématographes et Appareils de Précision. (See Ivatts, Ernest E., assignor.) | | | | | | |
| Compton, Melvin D., New York, N. Y. Wave-motor | 756,833 | Apr. 12 | 1267 | 276 | 109 | 1624 |
| Conard, Waldo, Willcockson, Ark. Bottle | 756,989 | Apr. 12 | 1441 | 320 | 109 | 1665 |
| Conde, Joseph, Philadelphia, Pa. Bottle-stopper | 755,360 | Mar. 22 | 4197 | 928 | 109 | 966 |

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|---|---|---|---|---|---|---|
| Condit, Sears B., Jr. (See Elden, Leonard L., assignor.) | | | | | | |
| Condon, Daniel E., San Francisco, Cal. Elevator | 755,361 | Mar. 22 | 4198 | 928, 929 | 109 | 967 |
| Cone, Dorwin W., Toledo, Ohio, and D. N. Perry, Wyandotte, Mich. Engine-governor | 755,564 | Mar. 22 | 4535 | 1013 | 109 | 1042 |
| Coney, James D. (See Olmstead and Coney.) | | | | | | |
| Coney, James D., and W. H. Olmstead, Detroit, Mich. Garment-hanger | 756,598 | Apr. 5 | 762 | 165 | 109 | 1504 |
| Conger, Charles A., Oakland, Cal. Shoe-lace fastener | 756,940 | Apr. 12 | 1443 | 330 | 109 | 1666 |
| Conklin, Roy, Toledo, Ohio. Self-filling fountain-pen | 756,778 | Apr. 5 | 1122 | 246 | 109 | 1563 |
| Conkling, Nannie B. (See Lee and Conkling.) | | | | | | |
| Conly, Le Roy G., assignor of one-half to P. M. Landis, Rochester, N. Y. Attachment for printers' chases | 753,671 | Mar. 1 | 873 | 198 | 109 | 190 |
| Connecticut Web Company. (See Neuberger, Louis, assignor.) | | | | | | |
| Connell, Smith A., Sr., assignor of one-half to Smith A. Connell, Jr., East Las Vegas, N. Mex. Ter. Surgical knife | 756,213 | Apr. 5 | 38 | 9 | 109 | 1351 |
| Connelly, John T., Manchester, England. Self-acting mule and twiner | 754,973 | Mar. 22 | 3505 | 767 | 109 | 817 |
| Conner, George F., Port Huron, Mich. Corn husker and shredder | 756,096 | Mar. 29 | 5026 | 1941, 1942 | 109 | 1297 |
| Conner, James B., assignor of one-half to F. B. Alman, Pendleton, Ind. Belt-stretcher | 757,272 | Apr. 12 | 2097 | 457 | 109 | 1806 |
| Conner, Merritt S., Chicago, Ill. Spring-jack for telephone-switchboards | 756,231 | Apr. 5 | 274 | 57 | 109 | 1401 |
| Conners, William J. (See Kimball and Conners.) | | | | | | |
| Connolly, Henry J., and W. D. Montgomery, Salem, W. Va. Drilling-tool joint | 756,476 | Apr. 5 | 574 | 120 | 109 | 1463 |
| Conover, William W., Toronto, Canada. Watch-regulator | 756,589 | Apr. 5 | 763 | 166 | 109 | 1504 |
| Conrad, Frank, Edgewood Park, Pa., assignor to Westinghouse Electric & Manufacturing Company. Prepayment electrical measuring instrument | 757,489 | Apr. 19 | 2455 | 536, 537 | 109 | 1897 |
| Conrath, George A., Blairsville, Pa., assignor to Penn Enamel-Ware Co. Device for ramming sand cores | 755,690 | Mar. 29 | 4667 | 1042 | 109 | 1096 |
| Conroy, Frank M., Fonda, Iowa. Farm-gate | 756,332 | Apr. 5 | 275 | 57 | 109 | 1402 |
| Conroy, George L. (See Douglas and Conroy.) | | | | | | |
| Consolidated Car Heating Company. (See McElroy, James F., assignor.) | | | | | | |
| Consolidated Fastener Company. (See Devine, William P., assignor.) | | | | | | |
| Consolidated Wireless Telegraph and Telephone Company *et al.* (See Shoemaker, Harry, assignor.) | | | | | | |
| Continental Paper Bag Company. (See Pippert, Willis, assignor.) | | | | | | |
| Conway, Llewellyn L., assignor of one-half to Louisville Soap Company, Louisville, Ky. Machine for stamping soap, &c | 755,362 | Mar. 22 | 4201 | 929, 930 | 109 | 968 |
| Cook, Adolphus H., and C. R., Almira, and W. H. Hood, Hagerman, Canada. Fence-post | 757,026 | Apr. 12 | 1696 | 354 | 109 | 1708 |
| Cook, Benjamin W., Ingersoll, Mich. Clevis | 753,366 | Mar. 1 | 266 | 60 | 109 | 60 |
| Cook, Chester R. (See Cook and Hood.) | | | | | | |
| Cook, Edgar H., New York, N. Y. Weighing-machine | 753,548 | Mar. 1 | 687 | 144, 145 | 109 | 140 |
| Cook, Edward L. (See Peters, William A., assignor.) | | | | | | |
| Cook, Eliza D. (See Kinsley, William S., assignor.) | | | | | | |
| Cook, Thomas J., Searles, Ala. Cable-grip | 757,724 | Apr. 19 | 3087 | 660 | 109 | 2084 |
| Cooke, Daniel J., assignor of two-thirds to J. White, Paterson, and H. E. Goodman, Dundee Lake, N. J. Combined shade-roller bracket and curtain-pole support | 758,419 | Apr. 26 | 4423 | 950 | 109 | 2347 |
| Cooke, Daniel S., assignor of one-half to C. J. Walter, Los Angeles, Cal. Non-refillable bottle | 758,298 | Apr. 26 | 4185 | 901 | 109 | 2296 |
| Cooke, Robert W., Condon, Oreg. Brake-lever attachment | 753,549 | Mar. 1 | 645 | 146 | 109 | 142 |
| Cooley, George T., Oronogo, assignor of one-half to G. H. Elmore, Joplin, Mo. Jig-tank | 755,749 | Mar. 29 | 4943 | 1100 | 109 | 1145 |
| Cooley, William H., Brockport, N. Y. Brake for vehicles | 756,000 | Mar. 29 | 5443 | 1205, 1206 | 109 | 1257 |
| Coombs, Minnie B. (See Coombs and O'Connell, assignors.) | | | | | | |
| Coombs, William M., and C. C. O'Connell; said Coombs assignor to M. B. Coombs, San Francisco, Cal. Cigar cutter and lighter | 753,672 | Mar. 1 | 877 | 198 | 109 | 190 |
| Cooney, John M., Racine, Wis., assignor to Mergenthaler Linotype Company. Linotype-machine | 756,477 | Apr. 5 | 575 | 120 | 109 | 1464 |
| Cooper, Francis E., Waterloo, England. Paving-block | 756,283 | Apr. 5 | 279 | 58 | 109 | 1408 |
| Cooper, Madison, Minneapolis, Minn. Cold-storage apparatus | 754,749 | Mar. 15 | 3074 | 671, 672 | 109 | 707 |
| Cooper, Michael. (See Magui and Cooper.) | | | | | | |
| Cooper, Thomas, Kidderminster, England, assignor to Crompton and Knowles Loom Works, Worcester, Mass. Stop-motion for winding-machines | 756,001 | Mar. 29 | 5452 | 1208 | 109 | 1260 |
| Cooper, William F., Jr., Chicago, Ill., assignor to Cable Company. Pedal-stop action for automatic piano-players | 754,750 | Mar. 15 | 3077 | 672 | 109 | 707 |
| Cooper, William F., Jr., and H. E. Sharpe, Chicago, Ill., assignors to Cable Company. Winding device for automatic musical-instrument motors | 757,095 | Apr. 12 | 1760 | 362 | 109 | 1733 |
| Cope, Bert. (See Cornelius, Egbert, assignor.) | | | | | | |
| Copeland, William, Strong City, Kans. Washbench | 755,621 | Mar. 29 | 4668 | 1042, 1043 | 109 | 1096 |
| Copeman, Thorn, Essex, assignor of two-thirds to T. W. Brooke, Windsor, and J. Waite, McGregor, Canada. Ladder and scaffold support | 754,427 | Mar. 15 | 2441 | 532 | 109 | 568 |
| Copenhaver, William E. (See Deards, Copenhaver, and Adelsperger.) | | | | | | |
| Copley, Ariel B., Des Moines, Iowa. Portable and adjustable stock-chute | 753,553 | Mar. 1 | 1227 | 278 | 109 | 966 |
| Coppens, Peter J., Grand Rapids, Mich. Heating-stove | 756,277 | Mar. 22 | 4057 | 895 | 109 | 980 |
| Corbett, George H. (See Relyea, Charles H. W., assignor.) | | | | | | |
| Corbin Motor Vehicle Corporation. (See Jones, James H., assignor.) | | | | | | |
| Corcoran, George L., assignor to Champion Shoe Machinery Company, St. Louis, Mo. Shuttle-actuating mechanism for sewing-machines | 757,725 | Apr. 19 | 3088 | 660, 661 | 109 | 2084 |
| Cordes, John F., Chicago, Ill. Temporary binder | 758,080 | Apr. 26 | 3677 | 797 | 109 | 2185 |
| Corey, Fred B., Schenectady, N. Y. Steam-pump | 753,367 | Mar. 1 | 267 | 60, 61 | 109 | 60 |
| Corey, Fred B., Schenectady, N. Y., assignor to General Electric Company. Emergency-brake | 755,750 | Mar. 29 | 4944 | 1100 | 109 | 1145 |
| Corey, Fred B., Schenectady, N. Y., assignor to General Electric Company. Motorman's or engineer's valve | 755,751 | Mar. 29 | 4949 | 1101, 1102 | 109 | 1146 |
| Corey, Fred B., Schenectady, N. Y., assignor to General Electric Company. Blow-out fuse | 756,172 | Apr. 26 | 3910 | 849, 850 | 109 | 2235 |
| Corey, Fred B., Schenectady, N. Y., assignor to General Electric Company. Emergency-brake | 756,173 | Apr. 26 | 3912 | 850 | 109 | 2235 |
| Corey, Fred B., Schenectady, N. Y., assignor to General Electric Company. Air-brake controlling-valve | 756,174 | Apr. 26 | 3917 | 851 | 109 | 2236 |
| Corkrey, William E., Brainerd, Minn. Tool for trimming screw-threads | 753,686 | Mar. 1 | 1228 | 276 | 109 | 963 |
| Cornelius, Egbert, assignor of one-half to B. Cope, Orrville, Ohio. Expansive reamer | 756,590 | Apr. 5 | 764 | 166 | 109 | 1504 |
| Cornell, Oliver D., Hartford, Conn. Gas-burner | 757,651 | Apr. 19 | 2908 | 631 | 109 | 1995 |
| Cornell, William N., Massena, N. Y. Utilizing waste products from the manufacture of paper | 756,214 | Apr. 5 | 39 | 10 | 109 | 1351 |
| Cornitius, Ernst, Waco, Tex. Harness-fastener | 757,273 | Apr. 12 | 2098 | 457 | 109 | 1806 |



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|---|---|---|---|---|---|---|
| Corns, George W. (See Bryant, Reuben R., assignor.) | | | | | | |
| Cornwall, George R., Rye, assignor to American Planograph Company, New York, N. Y. Planographic printing | 758,368 | Mar. 1 | 269 | 61, 62 | 109 | 61 |
| Correll, Albert T., Bradenville, Pa. Locking-latch for doors of coal-cars | 753,857 | Mar. 8 | 1291 | 290 | 109 | 298 |
| Corrodi, Albert. (See Fisher and Corrodi.) | | | | | | |
| Cortis, Frank A., Meriden, Conn. Flame-regulator for lamps | 758,299 | Apr. 26 | 4186 | 901 | 109 | 2296 |
| Cory, Wilbur G., New Haven, Conn. Coupling-stirrup and centering device for railway-cars | 755,622 | Mar. 29 | 4689 | 1043 | 109 | 1097 |
| Coryell, Edwin M., Mount Vernon, assignor to J. E. Cameron, New York, N. Y. Vertical-plunger sinking pump | 753,550 | Mar. 1 | 646 | 146 | 109 | 142 |
| Cosmos Chemical Company. (See Muller-Jacobs, Armand, assignor.) | | | | | | |
| Cosper, William P., Chicago, Ill. Ventilator | 755,565 | Mar. 22 | 4558 | 1014 | 109 | 1043 |
| Côté, Henry, Woonsocket, R. I., assignor to Draper Company, Hopedale, Mass. Loom-shuttle | 753,957 | Mar. 8 | 1492 | 334 | 109 | 345 |
| Côté, Napoleon, Montreal, Canada, assignor to H. L. Dixon Company, Pittsburg, Pa. Gas-burner for furnaces | 758,420 | Apr. 26 | 4423 | 950 | 109 | 2348 |
| Cottle, Thomas M., Montcalm, Tex. Device for exterminating insects on plants | 755,363 | Mar. 22 | 4202 | 930 | 109 | 968 |
| Cottrall, Archibald H. F., assignor of two-thirds to O. J. Andrews and H. A. Knight, Springfield, Mo. Railway bridle-rod | 758,421 | Apr. 26 | 4424 | 950 | 109 | 2348 |
| Cottrell, Edgar H., Stonington, Conn., assignor to C. B. Cottrell & Sons Company, New York, N. Y. Machinery for cutting and folding paper or other fabrics | 757,274 | Apr. 12 | 2099 | 457, 458 | 109 | 1806 |
| Couch, Levi J., Springfield, Mass. Drop-curtain block | 756,157 | Mar. 29 | 5723 | 1263, 1264 | 109 | 1317 |
| Couch, Levi J., Springfield, Mass. Wire-rope clamp | 756,158 | Mar. 29 | 5724 | 1264 | 109 | 1317 |
| Coulson, George W., Sioux City, Iowa. Locking turn-button | 758,353 | Apr. 26 | 4280 | 921 | 109 | 2317 |
| Coulthard, Alfred. (See Jolliffe and Coulthard.) | | | | | | |
| Courtney, Millard F., *et al.* (See Walter, Edward, assignor.) | | | | | | |
| Courville, Joseph, assignor to Farrand & Votey Organ Company, Detroit, Mich. Self-playing attachment for musical instruments | 755,364 | Mar. 22 | 4204 | 980, 981 | 109 | 968 |
| Courville, Joseph, assignor to Farrand Organ Company, Detroit, Mich. Key-striker for piano-players | 757,689 | Apr. 19 | 3355 | 725 | 109 | 2094 |
| Cousins, Jullious S. (See Barton, Henricksen, Cousins, and Matthews.) | | | | | | |
| Covel Manufacturing Company. (See Schofield, Henry P., assignor.) | | | | | | |
| Covel, Nathan E., *et al.* (See Kimball, Fred M., assignor.) | | | | | | |
| Coventry, Theodore. (See Ford-Smith and Coventry.) | | | | | | |
| Cowing, John P., Cleveland, Ohio. Conical roller-bearing | 754,751 | Mar. 15 | 3078 | 672 | 109 | 708 |
| Cowley, James T., Boston, Mass. Machine for compressing fibrous materials | 756,099 | Mar. 29 | 5631 | 1242, 1243, 1244 | 109 | 1298 |
| Cox and Brother, George S. (See Cox, George S., assignor.) | | | | | | |
| Cox, George S., Fitzwatertown, assignor to G. S. Cox and Brother, Philadelphia, Pa. Woven interlining for skirts | 756,215 | Apr. 5 | 41 | 10 | 109 | 1351 |
| Cox, George S., Fitzwatertown, assignor to G. S. Cox and Brother, Philadelphia, Pa. Loom | 756,334 | Apr. 5 | 280 | 58, 59 | 109 | 1403 |
| Cox, Will D., Marshfield, Ohio. Miner's drill | 755,458 | Mar. 22 | 4379 | 970 | 109 | 1008 |
| Crabtree, Frederick H., Anaconda, Mont. Pneumatic massage apparatus | 757,177 | Apr. 12 | 1933 | 423 | 109 | 1772 |
| Crafft, James D., *et al.* (See Hanstine, Harry S., assignor.) | | | | | | |
| Crago, Felix H., Billings, Mont. Current-motor | 756,335 | Apr. 5 | 284 | 59 | 109 | 1404 |
| Craig, Sanford D., G. E. Kelly, and W. Turner, Laharpe, Kans. Roasting-furnace | 754,199 | Mar. 8 | 1227 | 429 | 109 | 441 |
| Cram, Thomas, Detroit, Mich. Portable desk | 753,858 | Mar. 8 | 1292 | 291 | 109 | 298 |
| Cramer, Anthony F., assignor to F. Goebel, Detroit, Mich. Bottle holding and carrying device | 756,591 | Apr. 5 | 765 | 166 | 109 | 1504 |
| Crandall, Nathan W., Meriden, assignor to Russell & Erwin Mfg. Co., New Britain, Conn. Bell | 753,369 | Mar. 1 | 271 | 62 | 109 | 61 |
| Crans, Walter F. (See Wallace, Samuel J., assignor.) | | | | | | |
| Crapp, Thomas S., and R. C. Finch, Indianapolis, Ind. Brick-mold | 757,726 | Apr. 19 | 3040 | 661 | 109 | 2085 |
| Craven, Austin O., Jonestown, Miss. Clothes-pin | 755,318 | Mar. 22 | 3929 | 870 | 109 | 908 |
| Craven, Charles H., Newcastle, Pa. Plumb and level | 753,551 | Mar. 1 | 647 | 146 | 109 | 142 |
| Craven, Thomas W., Fairfield, Cal. Toy air-rifle | 754,051 | Mar. 8 | 1664 | 869, 870 | 109 | 388 |
| Craw, Frank C., assignor of one-half to W. N. Craw, South Norwalk, Conn. Hat-trimming machine | 757,542 | Apr. 19 | 2672 | 585, 586 | 109 | 1943 |
| Craw, William N. (See Craw, Frank C., assignor.) | | | | | | |
| Crawford, Lyter H., Dallas, Tex. Dental handpiece | 756,336 | Apr. 5 | 285 | 59, 60 | 109 | 1404 |
| Crawford, Theron C., London, England. Golf-ball | 757,600 | Apr. 19 | 2788 | 610 | 109 | 1970 |
| Crawford, Thomas, Philadelphia, Pa. School companion | 754,852 | Mar. 15 | 3284 | 716 | 109 | 752 |
| Creamery Package Mfg. Co. (See Valerius, Theodore L., assignor.) | | | | | | |
| Creigh, Alfred E., Ronceverte, W. Va. Apparatus for feeding fine fuel and air to furnaces | 753,673 | Mar. 1 | 878 | 198, 199 | 109 | 191 |
| Crenshaw, William, Atlanta, Ga. Dental-matrix retainer | 758,422 | Apr. 26 | 4425 | 951 | 109 | 2348 |
| Cressman, Krauth H., assignor of one-tenth to C. F. Zimmerman, Naper, Nebr. Bottle-closure | 755,628 | Mar. 29 | 4691 | 1043 | 109 | 1097 |
| Creveling, John L., New York, N. Y. Means for electrical distribution | 754,429 | Mar. 15 | 2445 | 533 | 109 | 569 |
| Creveling, John L., New York, N. Y., assignor to Safety Car Heating & Lighting Company. Lamp | 754,428 | Mar. 15 | 2442 | 533 | 109 | 568 |
| Crewe, David. (See Wright, William, assignor.) | | | | | | |
| Crider, Abraham. (See Miesse, Americus, assignor.) | | | | | | |
| Crippen, George F., Ypsilanti, Mich. Bean-picking machine | 753,370 | Mar. 1 | 272 | 62, 63 | 109 | 62 |
| Crise, Lewis, assignor of one-half to Central Ohio Buggy Co., Upper Sandusky, Ohio. Vehicle-body loop | 753,472 | Mar. 1 | 468 | 110 | 109 | 102 |
| Crisler, Joseph L., Perth, Kans. Coupling | 755,850 | Mar. 29 | 5159 | 1141 | 109 | 1195 |
| Criswell, James A. E., New York, N. Y. Match-package | 758,588 | Apr. 26 | 4782 | 1020 | 109 | 2417 |
| Crocker, Hannah, Plainfield, N. J. Bedclothes-holder | 754,430 | Mar. 15 | 2449 | 534 | 109 | 570 |
| Crocker-Wheeler Company. (See Dunn, Gano S., assignor.) | | | | | | |
| Crompton and Knowles Loom Works. (See Cooper, Thomas, assignor.) | | | | | | |
| Crompton & Knowles Loom Works. (See Ryon, Eppa H., assignor.) | | | | | | |
| Crompton & Knowles Loom Works. (See Walker, James F., assignor.) | | | | | | |
| Cronson, Bernard, *et al.* (See Alexander, Jesse, assignor.) | | | | | | |
| Cronson, Reuben, *et al.* (See Alexander, Jesse, assignor.) | | | | | | |
| Cross, Albert J., Richmond, Canada. Upholstering for caskets | 753,674 | Mar. 1 | 881 | 199 | 109 | 191 |
| Cross, William A., Chicago, Ill. Vertically-moving door | 757,178 | Apr. 12 | 1935 | 423 | 109 | 1772 |
| Cross, William A., Chicago, Ill. Vertically-moving door | 757,179 | Apr. 12 | 1936 | 423 | 109 | 1773 |
| Crossman, Martin R., Boston, Mass. Fountain-pen | 757,543 | Apr. 19 | 2679 | 586 | 109 | 1945 |
| Crowe, John D., Webster, Ind. Plow attachment | 755,624 | Mar. 29 | 4692 | 1044 | 109 | 1097 |
| Crowell, Edward E., Waterville, assignor of one-half to J. H. Kelleher, Portland, Me. Slack-adjuster for car-brakes | 758,423 | Apr. 26 | 4426 | 951 | 109 | 2349 |
| Crowley, James M., Carl Junction, Mo. Pump | 754,431 | Mar. 15 | 2450 | 534 | 109 | 570 |

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|---|---|---|---|---|---|---|
| Crowley, John, Jacksonville, Fla. Making horseshoes | 757,975 | Apr. 12 | 2108 | 459 | 109 | 1807 |
| Crowley, John J. (See Heron and Crowley.) | | | | | | |
| Crowley, John R., Savannah, Ga. Wheel-lathe | 758,675 | Mar. 1 | 868 | 200 | 109 | 191 |
| Crowner, James M. and S. R., Marion, Iowa. Stove or furnace | 756,051 | Apr. 26 | 3679 | 798 | 109 | 2185 |
| Crowner, States R. (See Crowner, James M. and S. R.) | | | | | | |
| Crowther, Matthias, West Pittston, Pa. Self-regulating oil-cup | 758,899 | Mar. 8 | 1298 | 291 | 109 | 899 |
| Croxford, John S., Newport, Me. Game-table | 757,440 | Apr. 19 | 2486 | 537 | 109 | 1606 |
| Cruger, Ellis E., Stevensville, Mont. Autoharp | 757,890 | Apr. 19 | 3357 | 725 | 109 | 2004 |
| Cruickshank, James, New York, N. Y., and C. S. Burnham, Philadelphia, Pa.; said Burnham assignor to said Cruickshank. Safety appliance for elevators | 754,438 | Mar. 15 | 2458 | 584 585 | 109 | 571 |
| Cruikshank, James K., *et al.* (See Cruikshank, William Y., assignor.) | | | | | | |
| Cruikshank, John C., *et al.* (See Cruikshank, William Y., assignor.) | | | | | | |
| Cruikshank, William Y., assignor of one-half to N. Maley, Freeland, Pa. Manufacture of artificial-fuel blocks | 758,978 | Mar. 29 | 4089 | | 109 | 981 |
| Cruikshank, William Y., assignor of one-half to J. C. and J. K. Cruikshank, Freeland, Pa. Compensating device | 758,564 | Apr. 26 | 4784 | 1080 1081 | 109 | 2417 |
| Crumb, George H., Bloomfield, Mo. Mop-holder | 756,100 | Mar. 29 | 3640 | 1245 | 109 | 1299 |
| Crumbaugh, Beverly C., *et al.* (See Parsons, Robert L., assignor.) | | | | | | |
| Crumbly, Henry L. (See Wilson and Crumbly.) | | | | | | |
| Crump, Samuel, Poughkeepsie, N. Y. Machine for cleaning printers' rollers | 758,908 | Mar. 8 | 1498 | 334 | 109 | 845 |
| Crump, Samuel, Poughkeepsie, N. Y. Making printers' rollers | 758,909 | Mar. 8 | 1498 | 335 | 109 | 845 |
| Crump, Samuel, Poughkeepsie, N. Y. Machine for cleaning printers' rollers | 758,910 | Mar. 8 | 1498 | 335 | 109 | 846 |
| Crunican, Alphonsus M., London township, county of Middlesex, Canada. Air-motor or windmill | 756,816 | Apr. 5 | 43 | 10 11 12 | 109 | 1351 |
| Cruthers, John, Naco, Ariz. Ter. Draft attachment for harness | 755,459 | Mar. 22 | 4381 | 970 | 109 | 1004 |
| Cuddy, Thomas F., Lawrence, Mass. Pulley-shaft | 754,058 | Mar. 8 | 1666 | 370 | 109 | 393 |
| Cull, James B., *et al.* (See Gerdes, Henry A., assignor.) | | | | | | |
| Culter, Richard A., Peoria, Ill. Hot-blast air-feeding center tube | 758,287 | Apr. 26 | 4041 | 877 | 109 | 2 [illegible] |
| Cumback, William E. (See Stenberg, Sven A. A., assignor.) | | | | | | |
| Cuming & Company, M. A. (See Cuming, Mari A., assignor.) | | | | | | |
| Cuming, Mari A., assignor to M. A. Cuming & Company, New York, N. Y. Hat-shaping machine | 755,265 | Mar. 22 | 4308 | 961 | 109 | 969 |
| Cuningham, John H., Syracuse, N. Y. Automatic cut-off for water-gages | 754,200 | Mar. 8 | 1699 | 430 | 109 | 442 |
| Cunning, James, Indianapolis, Ind. Mold for marking meat products | 755,119 | Mar. 22 | 3736 | 821 | 109 | 869 |
| Cunningham, Alexander Y., assignor to D. F. Briggs Company, Attleboro, Mass. Locket | 758,479 | Mar. 1 | 470 | 110 | 109 | 102 |
| Cunningham, Clara H., assignor of one-half to J. R. Edson, Washington, D. C. Corset-stay | 758,565 | Apr. 26 | 4736 | 1081 | 109 | 2418 |
| Curd, Calvin W., Bowling Green, Ky. Automatic railway-gate | 758,676 | Mar. 1 | 868 | 200 | 109 | 192 |
| Curlee, Meridith P., McKenzie, Ala. Post-hole borer | 758,880 | Mar. 1 | 47 | 12 | 109 | 13 |
| Currey, Enos P., Wellington, Kans. Listing-plow | 755,118 | Mar. 22 | 3739 | 821 | 109 | 869 |
| Currier, William W. (See Moore and O'Neill, assignors.) | | | | | | |
| Curry, John A., Keywest, Fla. Double or compound capstan | 754,974 | Mar. 22 | 3506 | 768 | 109 | 817 |
| Curtain Supply Company. (See Paterson, James W., assignor.) | | | | | | |
| Curtis, David F., Butte, Mont. Writing-tablet | 755,685 | Mar. 29 | 4698 | 1044 | 109 | 1087 |
| Curtis, Charles G., New York, N. Y. Steam-boiler | 754,198 | Mar. 8 | 1606 | 408 | 109 | 415 |
| Curtiss, Dorothy W., Brooklyn, N. Y. Garment-protector | 758,474 | Mar. 1 | 471 | 110 | 109 | 103 |
| Curtiss, J. Guernsey, Rochester, N. Y. Golf-club | 758,677 | Mar. 1 | 868 | 200 | 109 | 192 |
| Cushman, Leslie H., Lakewood, N. J. Electric alarm-clock | 758,240 | Mar. 1 | 48 | 12 | 109 | 13 |
| Cusson, Georges. (See Renault and Cusson.) | | | | | | |
| Cutler-Hammer Manufacturing Company. (See Wiegand, Henry J., assignor.) | | | | | | |
| Cutler, Joseph W., Rochester, N. Y. Mail-chute | 758,126 | Apr. 26 | 3688 | 832 833 | 109 | 2217 |
| Cutter Electrical and Manufacturing Company. (See Scott, William M., assignor.) | | | | | | |
| Cutter, George F. (See Howden, William N., assignor.) | | | | | | |
| Cutter, Scott C., Oswego, Ill. Insulator | 758,175 | Apr. 26 | 3680 | 851 | 109 | 2207 |
| Cyanid-Gesellschaft mit Beschränkter Haftung. (See Erlwein, Georg, assignor.) | | | | | | |
| Czerweny, Franz, Deutschlandsberg, near Gratz, Austria-Hungary. Appliance for isolating match-sticks | 757,180 | Apr. 12 | 1987 | 423 | 109 | 1773 |
| D. F. Briggs Company. (See Cunningham, Alexander Y., assignor.) | | | | | | |
| D'Angelo, Rosario, Oswego, N. Y. Ironing-machine | 755,739 | Mar. 29 | 4955 | 1102 | 109 | 1147 |
| D'Ayguesvives, Jean. (See Romain and D'Ayguesvives.) | | | | | | |
| D'Estes, Carlo, Homestead, and J. B. Kram, Allegheny, Pa. Cell-board for reed-organs | 755,468 | Mar. 22 | 4367 | 972 | 109 | 1005 |
| D'Huyvetters, August, Paterson, N. J. Weft-stop-motion mechanism for looms | 758,464 | Mar. 22 | 4366 | 972 | 109 | 1005 |
| D'Isepo, Giuseppe A., Passaic, N. J. Portable mortising chain cutter | 754,753 | Mar. 15 | 2089 | 573 | 109 | 706 |
| Dagrett, William A., Vineland, N. J. Trolley for electric cars | 758,558 | Mar. 1 | 648 | 146 | 109 | 142 |
| Dahill, Edward F., and J. R. Goddard, New Bedford, Mass. Machine for raising or lowering ladders | 754,998 | Mar. 8 | 2091 | 464 | 109 | 474 |
| Daily, Irvin J., assignor to Henricks Novelty Company, Indianapolis, Ind. Pulley-driving mechanism | 757,891 | Apr. 19 | 3357 | 725 | 109 | 2004 |
| Daily, John W., Boston, Mass. Pendulum | 758,475 | Mar. 1 | 472 | 111 | 109 | 103 |
| Dale, John H., New York, N. Y. Cluster-socket | 757,441 | Apr 19 | 2460 | 537 | 109 | 1606 |
| Daley, Frederick, Binghamton, N. Y. Luggage-carrier | 757,888 | Apr. 19 | 3359 | 725 | 109 | 2005 |
| Daley, John B. (See Proctor and Daley.) | | | | | | |
| Dallmeyer, Thomas R., county of Middlesex, England. Photographic lens | 756,779 | Apr. 5 | 1123 | 247 | 109 | 1583 |
| Dalton, William, and F. J. Cole, Schenectady, assignors to American Locomotive Company, New York, N. Y. Electric locomotive | 755,460 | Mar. 22 | 4368 | 971 | 109 | 1004 |
| Daly, Michael J., assignor of one-half to W. T. Wallace, Pittsburg, Pa. Elevator-operating mechanism | 757,181 | Apr. 12 | 1989 | 424 | 109 | 1774 |
| Daizell, Joseph N., Pittsburg, Pa. Envelop | 756,002 | Mar. 29 | 5455 | 1204 | 109 | 1260 |
| Damm, Fredrich C., Guthrie, Okla. Ter. Fountain | 755,114 | Mar. 22 | 3741 | 822 | 109 | 870 |
| Damm, Theodore, Warren, Pa. Bending device | 758,558 | Mar. 1 | 650 | 147 | 109 | 143 |
| Dancyger, Simon, Dayton, Ohio. Pin | 757,096 | Apr. 12 | 1782 | 388 | 109 | 1734 |
| Dannenberg, Adolph, Chicago, Ill. Knockdown expansible shelf structure | 758,678 | Mar. 1 | 867 | 200 201 | 109 | 192 |
| Danner, Balzer, Whiteplains, N. Y. Barrel-soaking apparatus | 755,686 | Mar. 29 | 4695 | 1044 | 109 | 1088 |
| Dansiger, Karl, Zawodze, near Kattowitz, Germany. Separating iron pyrites from zinc-blende | 754,643 | Mar. 15 | 2071 | | 109 | 669 |
| Darling, George, Fall River, Mass. Fastener for blinds, shutters, doors, or the like | 755,697 | Mar. 29 | 4697 | 1045 | 109 | 1088 |
| Darling, James D., assignor of one-half to R. M. Popham, Philadelphia, Pa. Manufacturing alloys of copper and iron | 755,461 | Mar. 22 | 4365 | | 109 | 1005 |
| Darling, John, Rutherglen, assignor to Darling's Patent Automatic Coupling, Limited, Glasgow, Scotland. Automatically coupling or uncoupling railway carriages, wagons, or similar vehicles | 756,217 | Apr. 5 | 49 | 13 | 109 | 1353 |
| Darling's Patent Automatic Coupling. (See Darling, John, assignor.) | | | | | | |
| Darrell, Joseph F., New York, N. Y. Machine for use in constructing and repairing bowling alleys | 758,494 | Apr. 26 | 4430 | 951 | 109 | 2049 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Darrough, Rufus C. (See Park, Henry J., assignor.) | | | | | | |
| Daudelin, Jean B., Fall River, Mass. Self-threading shuttle | 756,592 | Apr. 5 | 767 | 166 | 109 | 1505 |
| Daughters, Philip O., Highland, Ohio. Wire-stretcher | 757,893 | Apr. 19 | 3361 | 726 | 109 | 2005 |
| Dávalos, Pedro, Havana, Cuba. Envelop | 754,201 | Mar. 8 | 1931 | 430 | 109 | 442 |
| Davenes, Harold, Sierra Madre, Cal. Beehive | 758,208 | Apr. 26 | 3971 | 861 | 109 | 2248 |
| Davey, William F., Elmira, N. Y., assignor to National Cash Register Company, Jersey City, N. J. Cash-register | 756,218 | Apr. 5 | 50 | 12 | 109 | 1353 |
| David C. Cook Publishing Company. (See Smith, Chris N., assignor.) | | | | | | |
| Davidson, Frank B., Brooklyn, N. Y., assignor to Howe and Davidson Company. Paper box | 756,478 | Apr. 5 | 577 | 120 121 | 109 | 1464 |
| Davidson, Isaac S., Kansas City, Mo. Tool-handle | 753,241 | Mar. 1 | 49 | 13 | 109 | 13 |
| Davidson, James L., Los Angeles, Cal. Pocket sewing-awl | 755,628 | Mar. 29 | 4699 | 1045 | 109 | 1088 |
| Davidson, John M., Beaumont, Tex. Producing briquets | 756,593 | Apr. 5 | 768 | | 109 | 1505 |
| Davidson, Joseph, Atlanta, Ga., assignor to Southern Cotton Oil Company, Jersey City, N. J. Machine for cleaning cotton-seed | 758,300 | Apr. 26 | 4188 | 901 902 | 109 | 2297 |
| Davidson Rubber Company. (See Turner, Charles L., assignor.) | | | | | | |
| Davidson, Samuel. (See Malone and Davidson.) | | | | | | |
| Davidson, Samuel C., Belfast, Ireland. Furnace | 757,442 | Apr. 19 | 2462 | 537 538 | 109 | 1899 |
| Davis, Bethuel M., Chicago, Ill., assignor, by mesne assignments, to C. F. Travis, Owosso, Mich. Coin-detector for coin-actuated devices | 753,961 | Mar. 8 | 1499 | 335 | 109 | 346 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Sulky lister-plow | 757,994 | Apr. 19 | 3551 | 769 | 109 | 2137 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Draft device | 757,995 | Apr. 19 | 3553 | 770 | 109 | 2137 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Sulky-plow | 757,996 | Apr. 19 | 3554 | 770 | 109 | 2137 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Lister | 757,997 | Apr. 19 | 3555 | 770 | 109 | 2137 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Lister plow and planter | 757,998 | Apr. 19 | 3556 | 770 | 109 | 2138 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Lister plow and planter | 757,999 | Apr. 19 | 3557 | 771 | 109 | 2138 |
| Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Sulky lister plow and planter | 758,000 | Apr. 19 | 3557 | 771 | 109 | 2138 |
| Davis, Charles E., assignor to Goodman Manufacturing Company, Chicago, Ill. Truck | 754,545 | Mar. 15 | 2079 | 582 | 109 | 621 |
| Davis, Corbin E., St. Louis, Mo. Safety block-switch for railways | 756,101 | Mar. 29 | 5640 | 1245 1246 | 109 | 1299 |
| Davis, Edward, West Berkeley, Cal. Door-closer for baling-presses | 754,853 | Mar. 15 | 2286 | 716 | 109 | 752 |
| Davis, Eliza T., Pensacola, Fla. Tube-cleaner | 754,854 | Mar. 15 | 2287 | 716 | 109 | 752 |
| Davis & Furber Machine Company. (See Goodwin, Lyman O., assignor.) | | | | | | |
| Davis & Furber Machine Company. (See La Fountain, Maxim, Jr., assignor.) | | | | | | |
| Davis, John C., Reinbeck, Iowa. Adjustable dental impression-cup | 758,679 | Mar. 1 | 869 | 201 | 109 | 193 |
| Davis, John C., Carwile, Okla. Ter. Hog-trough | 755,758 | Mar. 29 | 4966 | 1102 | 109 | 1147 |
| Davis, John S., Montgomery, Ala. Rotary engine | 757,894 | Apr. 19 | 3363 | 726 | 109 | 2005 |
| Davis, Joshua M., *et al.* (See Winans, Wesley G., assignor.) | | | | | | |
| Davis, Leonard D., Erie, Pa. Annealing steel | 755,629 | Mar. 29 | 4701 | | 109 | 1089 |
| Davis, Leslie L., *et al.* (See Miller, Roy C., assignor.) | | | | | | |
| Davis, Loyola, Omaha, Nebr. Skirt-chart | 758,680 | Mar. 1 | 890 | 202 | 109 | 193 |
| Davis-McGregor Manufacturing Company. (See Davis, Spurgeon J., assignor.) | | | | | | |
| Davis, Robert C., Columbus, Ohio. Apparatus for exhausting air from fruit-cans | 757,895 | Apr. 19 | 3364 | 727 | 109 | 2006 |
| Davis & Roesch Temperature Controlling Company. (See Haywood, Daniel H., assignor.) | | | | | | |
| Davis, Royal E., assignor to Draper Company, Hopedale, Mass. Molding-machine | 756,102 | Mar. 29 | 5644 | 1246 | 109 | 1300 |
| Davis, Solomon, New York, N. Y. Securing strips of wood, &c., to iron beams | 754,855 | Mar. 15 | 2288 | 716 | 109 | 753 |
| Davis, Spurgeon J., Cathlamet, Wash., assignor to Davis-McGregor Manufacturing Company, Portland, Oreg. Friction clutch mechanism | 754,644 | Mar. 15 | 2272 | 627 | 109 | 659 |
| Davis, William. (See Fillman and Davis.) | | | | | | |
| Davis, William J., Washington, D. C. Hip-roof-framing square | 756,594 | Apr. 5 | 769 | 167 | 109 | 1509 |
| Davison, George, Jr., New York, N. Y. Felted fabric and producing same | 755,219 | Mar. 22 | 3980 | 870 | 109 | 908 |
| Davison, Thomas K., Jamestown, N. Y. Check-punch | 758,425 | Apr. 26 | 4431 | 952 | 109 | 2345 |
| Daw, George W., *et al.* (See Palmer, Stephen, assignor.) | | | | | | |
| Dawson, Josiah A., Okarche, Okla. Ter. Label | 753,371 | Mar. 1 | 277 | 63 | 109 | 63 |
| Dawson, William, Union county, S. D. Stock-loading device | 758,426 | Apr. 26 | 4432 | 952 | 109 | 2349 |
| Day, Albert. (See Day, Charles H. and A.) | | | | | | |
| Day, Charles H. and A., Leeds, England. Machinery for forming or making paper bags | 755,754 | Mar. 29 | 4958 | 1103 1104 | 109 | 1147 |
| Day, George H., Des Moines, Iowa. Bookbinding | 758,962 | Mar. 8 | 1503 | 335 | 109 | 347 |
| Day, Thomas M., assignor of one-half to J. W. Rifle, Windfall, Ind. Vending-machine | 758,301 | Apr. 26 | 4189 | 902 | 109 | 2297 |
| Dayton Manufacturing Company. (See Kirby, John, Jr., assignor.) | | | | | | |
| De Camp, William S., Chillicothe, Ohio. Train-pipe-testing device for air-brakes | 758,427 | Apr. 26 | 4433 | 952 953 | 109 | 2350 |
| De Champ, Obed, Everett, Mass. Rotary engine | 754,283 | Mar. 8 | 2092 | 464 465 | 109 | 475 |
| De Forest, Lee, New York, N. Y. Wireless telegraphy | 758,517 | Apr. 26 | 4604 | 991 | 109 | 2389 |
| De Jong, Richard R. (See Greeuw and De Jong.) | | | | | | |
| De La Vergne Refrigerating Machine Company. (See Botkowski, Boris, assignor.) | | | | | | |
| De Lamarter, William D., Elisabeth, N. J., and J. A. Macdonald, Flushing, assignors to Waclark Wire Company, New York, N. Y. Wire-drawing apparatus | 756,008 | Mar. 29 | 5456 | 1204 | 109 | 1261 |
| De Laval Separator Company. (See Berrigan, John J., assignor.) | | | | | | |
| De los Monteros, Manuel E., Mexico, Mexico. Wheel-fender | 754,331 | Mar. 8 | 2177 | 483 | 109 | 492 |
| De Sachet, Harriette M., Somerville, Mass. Cooking vessel | 757,281 | Apr. 12 | 2117 | 462 | 109 | 1810 |
| De Selms, Omar C., Attica, Ind. Instruction-sheet | 756,836 | Apr. 12 | 1943 | 277 | 109 | 1625 |
| De Vilbiss, Allen, Jr., Toledo, Ohio. Wrench | 753,374 | Mar. 1 | 282 | 64 | 109 | 64 |
| De Voll, Charles H., San Francisco, Cal., assignor, by mesne assignments, to H. S. Howland, New York, N. Y. Burglar-alarm | 753,244 | Mar. 1 | 54 | 14 | 109 | 14 |
| De Yoe, Adam C. (See Howell and De Yoe.) | | | | | | |
| Deady, John, Jr., Ware, Mass. Coal-elevator | 754,546 | Mar. 15 | 2081 | 582 | 109 | 621 |
| Dean, Cyrus S., Buffalo, N. Y. Air-compressor | 753,787 | Mar. 1 | 1107 | 251 | 109 | 239 |
| Dean, James L., *et al.* (See Stobie, William H., assignor.) | | | | | | |
| Dean, William W., assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Bell | 755,630 | Mar. 29 | 4702 | 1045 | 109 | 1089 |
| Dearda, William C., W. E. Copenhaver, and D. L. Adelsperger, assignors to Foos Manufacturing Company, Springfield, Ohio. Grinding-mill | 757,097 | Apr. 12 | 1783 | 383 | 109 | 1784 |
| Dearing, David M., Jackson, Mich. Mechanically-propelled vehicle | 754,975 | Mar. 22 | 3507 | 768 | 109 | 818 |
| Decksbach, Henry E., Cincinnati, Ohio. Rotary pump | 755,631 | Mar. 29 | 4704 | 1045 1046 | 109 | 1090 |
| Decker, Charles E. (See French and Decker.) | | | | | | |
| Decker, Edwin S., Malden, assignor to Steel Cable Engineering Company, Boston, Mass. Coal-breaker | 758,302 | Apr. 26 | 4192 | 902 903 | 109 | 2297 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Deckert, Joseph O., Philadelphia, Pa., assignor to William Mann Company. Binder | 756,159 | Mar. 29 | 5735 | 1264 | 109 | 1318 |
| Deeley, Samuel, Converse, assignor of one-half to J. Stohn, Arcadia, Ind. Sheet-glass machine | 754,788 | Mar. 15 | 3079 | 673 | 109 | 708 |
| Deem, Arthur S., Reading, Pa. Trolley | 753,554 | Mar. 1 | 651 | 147 | 109 | 143 |
| Deemer, John J., Chester, Pa. Converting crude iron into malleable iron or steel | 757,276 | Apr. 12 | 2105 | 459 | 109 | 1807 |
| Deiser, Albert A., Chicago, Ill. Wrapping-paper-folding machine | 755,462 | Mar. 22 | 4396 | 971, 972 | 109 | 1005 |
| Deitrick, Charles F., Berwick, Pa. Metal-cutting shears | 753,661 | Mar. 1 | 808 | 208, 209 | 109 | 198 |
| Dekker, George. (See Vanderlinden, William, assignor.) | | | | | | |
| Del Mar, Harry, New York, N. Y. Closure for mailing-tubes | 756,129 | Apr. 26 | 3680 | 888 | 109 | 2219 |
| Delaney, Michael G., assignor to E. A. Newell, S. W. Smith, and R. E. Fitz Gerald, Ogdensburg, N. Y. Non-refillable bottle | 754,365 | Mar. 8 | 2807 | 501 | 109 | 519 |
| Delaney, Thomas H., Norwich, Conn. Hydrocarbon-burner | 757,097 | Apr. 12 | 1628 | 354 | 109 | 1704 |
| Dement, Isaac S., East Orange, N. J., assignor to American Mechanical Cashier Company, New York, N. Y. Mechanical cashier | 755,279 | Mar. 22 | 4089 | 895, 896 | 109 | 981 |
| Dement, Isaac S., East Orange, N. J., and F. J. Hull, Brooklyn, N. Y., assignors, by mesne assignments, to American Mechanical Cashier Company. Keyboard mechanism for mechanical cashiers, registers, and recorders | 757,601 | Apr. 19 | 3758 | 810 | 109 | 1970 |
| Deming, Robert. (See Moore and Deming.) | | | | | | |
| Dempcy, Ralph H., assignor to Tate Jones & Co., Incorporated, Pittsburg, Pa. Mechanism for feeding | 755,689 | Mar. 29 | 4706 | 1046 | 109 | 1090 |
| Dempster, John T. H., Schenectady, N. Y., assignor to General Electric Company. Spark-gap for Roentgen-ray apparatus | 756,941 | Apr. 12 | 1445 | 320 | 109 | 1666 |
| Denault, Joseph, New London, Conn. Attachment for lathe-machines | 758,356 | Apr. 26 | 4042 | 878 | 109 | 2262 |
| Denguine, Anatole, and S. Levinsohn, Geneva, Switzerland. Making condensation products from dicarbo acids and bromated phtalic acids with naphtols | 753,373 | Mar. 1 | 377 | ..... | 109 | 62 |
| Denison, Julian F., New Haven, Conn. Vaporizer for explosive-engines | 756,854 | Apr. 12 | 1288 | 276 | 109 | 1694 |
| Denn, Charles. (See Cocker and Denn.) | | | | | | |
| Dennis, Adolphus S., assignor to Bankers Adding Machine Co., Cleveland, Ohio. Adding and recording machine | 756,068 | Apr. 26 | 3680 | 798, 799, 800 | 109 | 2185 |
| Dennison Manufacturing Company. (See Mussinan, Oscar, assignor.) | | | | | | |
| Dennison, Wilburn N., Camden, N. J., assignor to Victor Talking Machine Company. Combined regulator and brake for talking-machines | 755,851 | Mar. 29 | 5161 | 1141, 1142 | 109 | 1196 |
| Dennison, Wilburn N., Camden, N. J., assignor to Victor Talking Machine Company. Multispeed device for talking-machine motors | 755,852 | Mar. 29 | 5168 | 1142 | 109 | 1196 |
| Densmore Typewriter Company. (See Barron, Walter J., assignor.) | | | | | | |
| Depew, John C., Chicago, Ill. Mounting hoppers for dump-cars | 757,277 | Apr. 12 | 2107 | 459, 460 | 109 | 1807 |
| Depew, John C., Chicago, Ill. Hopper for dump-cars | 757,278 | Apr. 12 | 2109 | 460 | 109 | 1808 |
| Depew, John C., Chicago, Ill. Dump-car | 757,279 | Apr. 12 | 2113 | 461 | 109 | 1809 |
| Depew, John C., Chicago, Ill. Truck | 757,280 | Apr. 12 | 2115 | 461 | 109 | 1810 |
| Deppe, William P., Cincinnati, Ohio. Journal | 753,943 | Mar. 1 | 50 | 12 | 109 | 14 |
| Derby, John H., Brookline, Mass., assignor to Eastern Fire Protection Company. Automatic valve for fire-extinguishers | 756,885 | Apr. 19 | 1940 | 277 | 109 | 1685 |
| Derbyshire, William H., Chambersburg, Pa. Hydraulic machine and valve therefor | 756,895 | Apr. 5 | 770 | 167, 168 | 109 | 1505 |
| Derdeyn, Roman, Vicksburg, Miss. Cotton-seed delinter | 753,373 | Mar. 1 | 379 | 63 | 109 | 63 |
| Derham, Charles H., Corunna, Mich. Beet blocker and cultivator | 754,594 | Mar. 8 | 3096 | 465 | 109 | 475 |
| Derham, Samuel G., Cincinnati, Ohio. Filtering material | 754,058 | Mar. 8 | 1667 | 270 | 109 | 264 |
| Déri, Max, Vienna, Austria-Hungary, assignor to Stanley Electric Manufacturing Company. Electric-power-transmission system | 755,853 | Mar. 29 | 5165 | 1142, 1143 | 109 | 1197 |
| Derrig, Michael, Mapleton, N. D. Barrel-holder | 756,387 | Apr. 5 | 289 | 60 | 109 | 1405 |
| Desmarteau, Joseph A., Granby, Canada. Valve | 758,058 | Apr. 26 | 3687 | 801 | 109 | 2186 |
| Desmond, John, assignor to William Powell Co., Cincinnati, Ohio. Throttle-valve | 754,547 | Mar. 15 | 3088 | 589 | 109 | 688 |
| Destombes, Jean B. L., Tourcoing, France. Purifying feed-water | 753,660 | Mar. 8 | 1294 | 291 | 109 | 299 |
| Detrick, Myron H., Sterling, Ill. Vehicle-axle | 758,260 | Mar. 22 | 4041 | 896 | 109 | 988 |
| Detroit Saw & Tool Works. (See Kinney, Israel, assignor.) | | | | | | |
| Dettmar, Georg, assignor to Society of Electricitäts Actien-Gesellschaft vorm. W. Lahmeyer & Co., Frankfort-on-the-Main, Germany. Velocity-meter | 753,943 | Mar. 1 | 50 | 12, 14 | 109 | 14 |
| Deutsch, Adolph S., *et al.* (See Sweeny, Thomas J., assignor.) | | | | | | |
| Devereux, Washington, *et al.* (See McDevitt, William, assignor.) | | | | | | |
| Devey, Matthew H., Philadelphia, Pa. Submarine preserving and antifouling composition | 754,054 | Mar. 8 | 1666 | ..... | 109 | 264 |
| Devine, William P., Boston, Mass., assignor to Consolidated Fastener Company, Portland, Me. Assembling, forming, and setting mechanism | 756,887 | Apr. 12 | 1244 | 278 | 109 | 1636 |
| Dewey, Luman R., Alliance, Nebr., assignor of three-fourths to D. Yondorf, C. W. Brown, and J. M. Shultheiss, Chicago, Ill. Locking device for journal-box lids | 753,662 | Mar. 1 | 894 | 208 | 109 | 194 |
| Dexter, Talbot C., Pearl River, N. Y. Paper-feeding machine | 754,902 | Mar. 8 | 1988 | 430, 431, 432 | 109 | 443 |
| Dexter, Talbot C., Pearl River, N. Y. Paper-feeding machine | 754,904 | Mar. 8 | 1989 | 432, 433 | 109 | 444 |
| Dexter, Talbot C., Pearl River, N. Y. Paper-feeding machine | 754,905 | Mar. 8 | 1945 | 433, 434 | 109 | 445 |
| Deyherle, Frederick C. (See Weber and Deyherle.) | | | | | | |
| Deyherle, William M. (See Weber and Deyherle.) | | | | | | |
| Dhale, Elizabeth M., Oakland, Cal. Dress or corset spring | 756,506 | Apr. 5 | 771 | 168 | 109 | 1506 |
| Diamond Match Company. (See Wright, Jacob P., assignor.) | | | | | | |
| Dick, Robert C., Whitsett, assignor to H. A. Reams, Durham, N. C. Tobacco-clamp | 754,985 | Mar. 8 | 3098 | 465 | 109 | 476 |
| Dicke, Hugo, assignor to J. E. Goldschmid, Frankfort-on-the-Main, Germany. Welding apparatus | 752,975 | Mar. 1 | 288 | 64, 65 | 109 | 64 |
| Dickey, George W., Chicago, Ill. Rail-joint | 758,566 | Apr. 26 | 4738 | 1021 | 109 | 2418 |
| Dickinson, Frank, Springport, Mich. Sparker | 754,986 | Mar. 8 | 3099 | 466 | 109 | 476 |
| Dickinson, George F., Jr., Morristown, N. J. Attachment for window-shades | 756,597 | Apr. 5 | 773 | 168 | 109 | 1506 |
| Dickinson, Paul, Winetka, Ill. Smoke-stack. (Reissue) | 12,210 | Apr. 5 | 1178 | 261, 262 | 109 | 1506 |
| Dickinson, Paul, Chicago, Ill. Chimney | 758,510 | Apr. 26 | 4598 | 967 | 109 | 2387 |
| Diebold, Charles J., Cleveland, Ohio. Mine-curtain raiser | 756,508 | Apr. 5 | 775 | 168, 169 | 109 | 1506 |
| Dieckhoff, Hans H. J., Hamburg, Germany. Floating dock | 755,854 | Mar. 29 | 5168 | 1143 | 109 | 1197 |
| Dieckmann, Carl F., assignor to Spencer Lens Company, Buffalo, N. Y. Fine adjustment for microscopes | 754,954 | Mar. 15 | 3470 | 750 | 109 | 798 |
| Diehl, Walter R., Pittsburg, Pa. Bridge construction | 758,436 | Apr. 26 | 4436 | 953 | 109 | 2350 |
| Diers, Henry W., River Falls, Wis. Bread and cake closet | 757,282 | Apr. 12 | 2116 | 462 | 109 | 1810 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Dieterle, John M., St. Louis, Mo. Bung-mallet | 755,633 | Mar. 29 | 4707 | 1046 | 109 | 1090 |
| Dietmann, Wilhelm, Slotergemeente, Netherlands, assignor, by mesne assignments, to J. H. G. Stuurman, Jr., Brooklyn, N. Y. Cutting-machine | 754,055 | Mar. 8 | 1669 | 370, 371 | 109 | 384 |
| Dietz, August S., New York, N. Y., assignor, by mesne assignments, to F. Tolhurst. Pyrographic apparatus | 754,129 | Mar. 8 | 1811 | 403 | 109 | 416 |
| Dietz, Christian F., assignor of two-thirds to A. Junge, Chicago, and P. F. Carroll, Joliet, Ill. Layer-cake-trimming machine | 754,548 | Mar. 15 | 2685 | 583 | 109 | 622 |
| Dietz, Christian F., assignor of two-thirds to A. Junge, Chicago, and P. F. Carroll, Joliet, Ill. Cream-roll-forming machine | 754,549 | Mar. 15 | 2686 | 583 | 109 | 622 |
| Dietz, Conrad. (See Dietz, John, assignor.) | | | | | | |
| Dietz, Conrad, Cincinnati, Ohio. Washing-machine | 757,896 | Apr. 19 | 3966 | 727 | 109 | 2096 |
| Dietz, John, assignor to C. Dietz, Cincinnati, Ohio. Gearing | 755,634 | Mar. 29 | 4708 | 1047 | 109 | 1090 |
| Diffenderfer, Morris F. (See Lump and Diffenderfer.) | | | | | | |
| Dildine, Ernest L. and J. C., Cameron, Mo. Bridge | 757,804 | Apr. 19 | 3196 | 604 | 109 | 2059 |
| Dildine, James C. (See Dildine, Ernest L. and J. C.) | | | | | | |
| Dilhan, Joseph, and E. de Mersanne, San Francisco, Cal. Electric time-switch | 755,281 | Mar. 22 | 4042 | 896, 897 | 109 | 982 |
| Dill, Frank P., Blendon township, Franklin county, Ohio. Grain-drill | 755,686 | Mar. 29 | 4712 | 1048 | 109 | 1091 |
| Dillard, Walter E., Petersburg, Va. Sawmill set-works | 758,429 | Apr. 26 | 4438 | 954 | 109 | 2351 |
| Dillig, George and H. P., Millvale, Pa. Transmission mechanism | 755,635 | Mar. 29 | 4710 | 1047 | 109 | 1091 |
| Dillig, Henry P. (See Dillig, George and H. P.) | | | | | | |
| Dillon, Washington M., Sterling, Ill. Wire fence | 755,637 | Mar. 29 | 4713 | 1048 | 109 | 1092 |
| Dings, Myron, Milwaukee, Wis. Electromagnetic separator | 755,282 | Mar. 22 | 4046 | 897 | 109 | 983 |
| Dinwiddie, Frank, Kansas City, Mo. Plow | 757,443 | Apr. 19 | 2464 | 588, 589 | 109 | 1899 |
| Dion, Albert de, and G. Bouton, Puteaux, France. Pressure-indicator | 754,287 | Mar. 8 | 2100 | 466 | 109 | 476 |
| Dittenhaver, W. E., *et al.* (See Green, John D., assignor.) | | | | | | |
| Dixon, Albert S., Los Angeles, Cal. Nursing appliance | 753,688 | Mar. 1 | 896 | 204 | 109 | 194 |
| Dixon, Edward T., Sr., assignor of one-half to M. W. Quirk, Jr., Milwaukee, Wis. Lacing device | 758,001 | Apr. 19 | 3560 | 771 | 109 | 2139 |
| Dixon, Ezra, Bristol, R. I. Top-roll saddle | 754,288 | Mar. 8 | 2102 | 467 | 109 | 477 |
| Dixon, Ezra, Bristol, R. I. Top-roll saddle | 754,289 | Mar. 8 | 2103 | 467 | 109 | 477 |
| Dixon, Ezra, Bristol, R. I. Top-roll saddle | 757,727 | Apr. 19 | 3040 | 661 | 109 | 2025 |
| Dixon, Jonas F., and T. J. Ridgway, Carthage, Mo. Bed-spring | 757,008 | Apr. 12 | 1766 | 383, 384 | 109 | 1734 |
| Dixon, Robert M., East Orange, N. J., assignor to Safety Car Heating & Lighting Company. Globe for lamps | 755,283 | Mar. 22 | 4048 | 897 | 109 | 983 |
| Dixon, Robert M., East Orange, N. J., assignor to Safety Car Heating & Lighting Company. End train-pipe valve | 756,284 | Mar. 22 | 4049 | 898 | 109 | 984 |
| Dixon, Walter. (See Hamilton, Jonathan R., assignor.) | | | | | | |
| Doane, Samuel E., Cleveland, assignor to Fostoria Bulb and Bottle Company, Fostoria, Ohio. Globe-holder for arc-lamps | 755,855 | Mar. 29 | 5169 | 1144 | 109 | 1197 |
| Dobbs, La Fayette G., Watertown, S. D. Closet-seat | 756,599 | Apr. 5 | 776 | 169 | 109 | 1506 |
| Dobrodenka, Frank. (See Dobrodenka, Joseph and F.) | | | | | | |
| Dobrodenka, Joseph and F., Milwaukee, Wis. Extension-table | 757,544 | Apr. 19 | 2680 | 586 | 109 | 1945 |
| Dockstader, Preston C., Colorado Springs, Colo. Transportation-ticket system | 755,688 | Mar. 29 | 4714 | 1048 | 109 | 1092 |
| Dodge Coal Storage Company. (See Dodge, James M., assignor.) | | | | | | |
| Dodge, James M., Philadelphia, Pa. Belt conveyer | 756,600 | Apr. 5 | 777 | 169 | 109 | 1507 |
| Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Storage apparatus | 755,566 | Mar. 22 | 4559 | 1014 | 109 | 1043 |
| Dodge, Philip T., Brooklyn, N. Y., assignor to Mergenthaler Linotype Company. Linotype-machine | 757,099 | Apr. 12 | 1768 | 384 | 109 | 1735 |
| Dodge, Robert W., Kansas City, Mo. Heating stove or furnace | 757,602 | Apr. 19 | 2791 | 611 | 109 | 1971 |
| Dodson, Charles M., assignor to American Manufacturing Company, Des Moines, Iowa. Coin-controlled mechanism for cigar-vending machines | 758,204 | Apr. 26 | 3972 | 661, 662 | 109 | 2248 |
| Doebbel, Gustav A., Altona, Germany. Smoke-consuming apparatus | 755,290 | Mar. 22 | 3932 | 870 | 109 | 909 |
| Doherty, Neil F. (See Cassidy and Doherty.) | | | | | | |
| Dokkenwadel, F. G., *et al.* (See Tallner, Jacob, assignor.) | | | | | | |
| Dolbier, Charles G., Newark, N. J. Towel or other rack | 754,976 | Mar. 22 | 3508 | 768 | 109 | 818 |
| Dole, Edmund P. (See Chase and Dole.) | | | | | | |
| Doll, Bernard H., Cumberland, Md. Machine for doubling metal plates | 754,483 | Mar. 15 | 2461 | 535 | 109 | 572 |
| Dolph, Fred E., and S. R. Knapp, Battlecreek, Mich. Incubator | 755,689 | Mar. 29 | 4717 | 1048, 1049 | 109 | 1092 |
| Donahoe, Hedley J., Chicago, Ill. Fence-post | 758,008 | Apr. 19 | 3561 | 771 | 109 | 2139 |
| Donahue, James M., Santa Rosa, Cal. Superheater for oil-burners | 757,182 | Apr. 12 | 1940 | 494 | 109 | 1774 |
| Donâne, Charles, Lyons, France. Automatically-closing cock or faucet | 753,964 | Mar. 8 | 1507 | 336 | 109 | 347 |
| Donnelly, William E. (See Twining, William A., assignor.) | | | | | | |
| Dopheide, Frank E., Palmyra, Ill. Jar-closure | 754,977 | Mar. 22 | 3509 | 769 | 109 | 818 |
| Doppel, John M., New York, N. Y. Refrigerator | 756,004 | Mar. 29 | 5458 | 1204 | 109 | 1961 |
| Doran, Joseph. (See Naylor and Doran.) | | | | | | |
| Doremus, Charles A., New York, N. Y. Manufacturing hydrofluoric acid | 754,978 | Mar. 22 | 3511 | ..... | 109 | 818 |
| Doremus, Willard D., Washington, D. C. Bottle-stopper | 756,601 | Apr. 5 | 778 | 169 | 109 | 1507 |
| Dorman, William S., New York, N. Y. Bottle-seal | 753,245 | Mar. 1 | 55 | 15 | 109 | 15 |
| Dorn, Max, St. Louis, Mo. Transom side bearing | 754,979 | Mar. 22 | 3512 | 769 | 109 | 818 |
| Dornblaser, Arthur S. (See Munson and Dornblaser.) | | | | | | |
| Dorney, Daniel D., Allentown, Pa. Keyhole-guard | 755,115 | Mar. 22 | 3742 | 822 | 109 | 870 |
| Dorr, Henry R., Rutland, Vt. Fuel | 753,246 | Mar. 1 | 57 | ..... | 109 | 15 |
| Dorrer, August, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Red-violet azo dye | 754,856 | Mar. 15 | 3289 | ..... | 109 | 753 |
| Doscher, William C., New York, N. Y. Cigarette | 753,968 | Mar. 8 | 1505 | 336 | 109 | 347 |
| Doss, Andrew J., assignor to J. E. Jones, Switchback, W. Va. Coke-puller | 757,283 | Apr. 12 | 2119 | 462 | 109 | 1811 |
| Doss, Andrew J., assignor to J. E. Jones, Switchback, W. Va. Loading-machine | 757,284 | Apr. 12 | 2120 | 462, 463, 464, 465 | 109 | 1811 |
| Doten, Henry A., Burlington, Vt. Fountain-brush | 756,103 | Mar. 29 | 5646 | 1246 | 109 | 1300 |
| Doten, Henry A., Burlington, assignor of one-half to C. A. Hanks, Bristol, Vt. Knock-down box | 756,898 | Apr. 5 | 291 | 60 | 109 | 1406 |
| Doty, Frank L., Calliope, Iowa. Rope-clamp | 756,104 | Mar. 29 | 5647 | 1246 | 109 | 1301 |
| Doub, John L., Meyersville, Md. Fanning-mill for cleaning grain, &c | 758,511 | Apr. 26 | 4594 | 988 | 109 | 2387 |
| Douds, Byron J., Canton, Ohio. Truss for rupture | 753,684 | Mar. 1 | 898 | 204 | 109 | 195 |
| Dougherty, William M., St. Joseph, Mo. Balloting-machine | 756,602 | Apr. 5 | 780 | 170 | 109 | 1507 |
| Douglas, James A., and J. Bartleson, Yates Landing, Ill. Nut-lock | 758,512 | Apr. 26 | 4596 | 988 | 109 | 2388 |
| Douglas, Thomas, and G. L. Conroy, London, England. Condenser | 753,555 | Mar. 1 | 632 | 147 | 109 | 143 |
| Douglas, William C., Raleigh, N. C. Apparatus for distilling wood | 753,376 | Mar. 1 | 284 | 65 | 109 | 64 |
| Dover, George W., Cranston, R. I. Scarf-pin | 755,856 | Mar. 29 | 5170 | 1144 | 109 | 1198 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Drg. | Vol. | Page. |
| Dover, George W., Cranston, R. I. Scarf-pin | 755,857 | Mar. 29 | 5171 | 1144 | 109 | 1198 |
| Dow, Fred F., Fredericton, Canada. Vapor-burner | 756,008 | Apr. 5 | 782 | 170 | 109 | 1508 |
| Dow, Wallace L., Sioux Falls, S. D., assignor to Miracle Pressed Stone Company. Machine for molding building blocks or stones | 753,377 | Mar. 1 | 287 | 65, 66 | 109 | 65 |
| Dowd, John C., New York, N. Y. Hand-mirror or other toilet article | 753,476 | Mar. 1 | 474 | 111 | 109 | 108 |
| Down, William R., Reading, Pa. Composite drill | 756,389 | Apr. 5 | 292 | 60 | 109 | 1406 |
| Downer, Murillo, Chicago, Ill. Air-cushion for cars | 758,604 | Apr. 26 | 4780 | {1028 {1029 | 109 | 2427 |
| Downman, Robert H. (See Shaw, Albert L., assignor.) | | | | | | |
| Doyle, Patrick J., Spencer, Mass. Liquid-measure | 755,465 | Mar. 22 | 4390 | 972 | 109 | 1006 |
| Drake, Chester T., Chicago, Ill. Machine for excavating rock | 753,477 | Mar. 1 | 474 | 111 | 109 | 108 |
| Drake, Edwin R., De Land, Fla. Suspensory bandage | 756,005 | Mar. 29 | 5460 | 1204 | 109 | 1201 |
| Drake, Harry R., assignor to International Egg Carrier and Paper Company, Newark, N. Y. Egg-tray | 755,640 | Mar. 29 | 4719 | 1049 | 109 | 1098 |
| Draper, Clare H., assignor to Draper Company, Hopedale, Mass. Warp stop-motion for looms | 754,290 | Mar. 8 | 2104 | 467 | 109 | 477 |
| Draper Company. (See Anderson, John, assignor.) | | | | | | |
| Draper Company. (See Côté, Henry, assignor.) | | | | | | |
| Draper Company. (See Davis, Royal E., assignor.) | | | | | | |
| Draper Company. (See Draper, Clare H., assignor.) | | | | | | |
| Draper Company. (See Edwards, John C., assignor.) | | | | | | |
| Draper Company. (See Haynes, William, assignor.) | | | | | | |
| Draper Company. (See Rhoades, Alonzo E., assignor.) | | | | | | |
| Draper Company. (See Stimpson, Edward S., assignor.) | | | | | | |
| Draper Company. (See Warren, Charles H., assignor.) | | | | | | |
| Draper, James W., *et al.* (See Zufall, Jacob F., assignor.) | | | | | | |
| Draper, Mabel B. (See Calkins, Lillian, assignor.) | | | | | | |
| Dreés, Albertine, Newark, N. J. Hair-waver | 756,888 | Apr. 12 | 1245 | 278 | 109 | 1626 |
| Dreger, Edward F., Oakland, Cal. Bowling-alley dresser | 756,780 | Apr. 5 | 1196 | 247 | 109 | 1584 |
| Dreiss, Edward, San Antonio, Tex. Food composition | 753,665 | Mar. 1 | 899 | ..... | 109 | 195 |
| Dressel, Frederick W., assignor to Dressel Railway Lamp Works, New York, N. Y. Signal-lantern | 757,188 | Apr. 12 | 1941 | 424 | 109 | 1774 |
| Dressel Railway Lamp Works. (See Dressel, Frederick W., assignor.) | | | | | | |
| Drew, William T., assignor of one-half to J. F. Reid, New York, N. Y. Coin-controlled vending-machine | 758,587 | Apr. 26 | 4739 | {1021 {1022 | 109 | 2419 |
| Drew, Willis A., *et al.* (See Waters, Frank J., assignor.) | | | | | | |
| Dreyer, William D., Cleveland, Ohio. Floor-joist hanger | 755,116 | Mar. 22 | 3744 | 822 | 109 | 870 |
| Driver, Carolyn, *et al.* (See Zar-Adusht-Hanish, Ottoman, assignor.) | | | | | | |
| Drouvé, Gerhard F. (See Lovell, Albert K., assignor.) | | | | | | |
| Drozeski, Julius R., Erie, Pa. Ceiling-plate | 756,479 | Apr. 5 | 579 | 121 | 109 | 1464 |
| Drum, George E. (See Smith and Drum.) | | | | | | |
| Drummond, William A., near Camargo, Okla. Ter. Adjustable trestle | 758,130 | Apr. 26 | 3840 | 834 | 109 | 2219 |
| Dryden, William W. (See Fritz and Dryden.) | | | | | | |
| Du Clos, George H., Brooklyn, N. Y., assignor to Pleasure Park Amusement Company. Amusement apparatus | 757,286 | Apr. 12 | 2134 | 466 | 109 | 1813 |
| Dubia, Harry A. (See Chase, Frank H., assignor.) | | | | | | |
| Duc, Henry A., Jr., Charleston, S. C. Apparatus for condensing steam | 753,247 | Mar. 1 | 58 | 15 | 109 | 15 |
| Ducart, Willy, Schiltigheim, Germany. Means for packing bottles, &c. | 758,229 | Apr. 26 | 4043 | 878 | 109 | 2262 |
| Duchemin, Paul, Thury-Harcourt, France. Support for slates or tiles on roofs | 757,285 | Apr. 12 | 2134 | 465 | 109 | 1813 |
| Duck, Joseph G., assignor of one-half to J. G. Thompson, Milwaukee, Wis. Steam-trap | 753,861 | Mar. 8 | 1296 | 292 | 109 | 399 |
| Duck, Joseph G., assignor of one-half to J. G. Thompson, Milwaukee, Wis. Steam-separator | 756,942 | Apr. 12 | 1446 | 321 | 109 | 1667 |
| Duck, Joseph G., assignor of one-half to J. G. Thompson, Milwaukee, Wis. Steam-separator | 756,943 | Apr. 12 | 1449 | 321 | 109 | 1667 |
| Ducretet, Eugène, Paris, France. Wireless-telegraph receiving system | 756,319 | Apr. 5 | 55 | 13 | 109 | 1354 |
| Dudley, Arthur L. (See Dudley, George W. and A. L.) | | | | | | |
| Dudley, George W. and A. L., Staunton, Va., assignors to Numerograph Manufacturing Company, Charleston, W. Va. Recording and adding mechine | 756,340 | Apr. 5 | 294 | 61 | 109 | 1406 |
| Dudley, S. E., *et al.* (See Holliday, Henry C., assignor.) | | | | | | |
| Dudly, Albert, Sr., Menominee, Mich. Nail-extractor | 754,754 | Mar. 15 | 3068 | 674 | 109 | 709 |
| Duff, John T., Harmarville, assignor of one-half to J. McNaugher, Allegheny, Pa. Making bells | 753,248 | Mar. 1 | 62 | 15 | 109 | 16 |
| Dufty, Thomas L., Chicago, Ill. Automatic gate | 756,781 | Apr. 5 | 1139 | 248 | 109 | 1584 |
| Dufty, Arthur, Troy, N. Y. Game and amusement apparatus | 756,341 | Apr. 5 | 298 | 62 | 109 | 1407 |
| Dufur, Douglas S., The Dalles, Oreg. Envelop or card feeding device | 754,434 | Mar. 15 | 2468 | {586 {587 | 109 | 573 |
| Dufur, Douglas S., The Dalles, Oreg. Feeding device for type-writers | 754,435 | Mar. 15 | 2467 | {587 {588 | 109 | 574 |
| Duggan, Daniel D. (See Mabrey, Morton, assignor.) | | | | | | |
| Duggan, Lee, Rocky Mount, N. C. Artificial leg | 757,287 | Apr. 12 | 2136 | 467 | 109 | 1814 |
| Dulsenberg, Edward G., Honolulu, Hawaii. Atomizer for liquid fuel | 757,100 | Apr. 12 | 1769 | 384 | 109 | 1735 |
| Dukes, Harry S., and W. H. Clayton, assignors to Dukes Typewriter Company, Little Rock, Ark. Type-writing machine | 753,786 | Mar. 1 | 1108 | {252 {253 {254 {255 {256 | 109 | 239 |
| Dukes, Harry S., and W. H. Clayton, assignors to Dukes Typewriter Company, Little Rock, Ark. Work-handling mechanism for type-writing machines | 753,789 | Mar. 1 | 1135 | {256 {257 | 109 | 245 |
| Dukes Typewriter Company. (See Dukes and Clayton, assignors.) | | | | | | |
| Dulaney, William H., Leakey, Tex. Wagon-box fastener | 753,378 | Mar. 1 | 290 | 66 | 109 | 66 |
| Dulin, Charles E., Glens Falls, assignor to Union Bag & Paper Company, Sandy Hill, N. Y. Centrifugal screen | 756,342 | Apr. 5 | 299 | 62 | 109 | 1407 |
| Dumm, Lee J., Columbus, Ohio. Apparatus for the manufacture of concrete bricks, &c. | 753,249 | Mar. 1 | 63 | 16, 17 | 109 | 16 |
| Dunbar, Wallace R., Everett, Mass. Exercising device | 756,480 | Apr. 5 | 580 | 121 | 109 | 1464 |
| Duncan & Company, J. (See Clark, Walter L., assignor.) | | | | | | |
| Duncan, Thomas, Lafayette, Ind. Electric meter | 753,556 | Mar. 1 | 653 | 147 | 109 | 144 |
| Duncombe, Tyrrell H., St. Thomas, Canada. Ball-bearing | 754,436 | Mar. 15 | 2472 | 586 | 109 | 573 |
| Dundon, John H., Youngstown, Ohio. Ratchet-wrench | 755,466 | Mar. 22 | 4391 | 973 | 109 | 1006 |
| Dungan, Michael M., Homer, Ill. Gate | 755,868 | Mar. 29 | 5173 | {1144 {1145 | 109 | 1198 |
| Dunham, Clayton A., Marshalltown, Iowa. Steam-trap | 753,557 | Mar. 1 | 656 | 148 | 109 | 145 |
| Dunham, Harry A., Asheville, N. C. Bedstead-fastener | 755,265 | Mar. 22 | 4049 | 898 | 109 | 984 |
| Dunkle, David E., Corning, N. Y. Fountain-brush | 757,597 | Apr. 19 | 2367 | 727 | 109 | 2096 |
| Dunn, Dennis, assignor of one-half to J. H. Prosser, Mahanoy City, Pa. Air-brake | 756,604 | Apr. 5 | 785 | 170 | 109 | 1508 |
| Dunn, Frederick W., assignor of one-half to N. McPhedran, G. L. Whitney, J. H. Frank, and H. J. Finkle, Woodstock, Canada. Manufacture of artificial stone | 754,550 | Mar. 15 | 2687 | 588 | 109 | 623 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| Dunn, Gano S., East Orange, assignor to Crocker-Wheeler Company, Ampere, N. J. System of speed regulation for motor-driven machinery | 754,980 | Mar. 22 | 3518 | {769 {770 | 109 | 819 |
| Dunn, George F., Brockton, Mass. Return-ball megaphone | 755,117 | Mar. 22 | 3744 | 822 | 109 | 871 |
| Dunton, George E., New York, N. Y. Apparatus for circulating liquids in tanks | 758,480 | Apr. 26 | 4490 | 954 | 109 | 2351 |
| Dunton, George E., New York, N. Y. Apparatus for circulating liquids in tanks | 758,513 | Apr. 26 | 4597 | 966 | 109 | 2386 |
| Duplex Envelope and Printing Company. (See Jones, Archer G., assignor.) | | | | | | |
| Dupont, Joseph, West Derry, N. H. Pneumatic tire | 754,645 | Mar. 15 | 2874 | 627 | 109 | 660 |
| Dupuis, Jean, Montpellier, France. Chain | 756,481 | Apr. 5 | 581 | {121 {122 | 109 | 1464 |
| Dupuy, Adam C. A., New Orleans, La. Cane cutting and stripping machine | 753,558 | Mar. 1 | 659 | 148 | 109 | 145 |
| Durden, Washington L., Peterman, assignor of one-half to J. J. King, Consul, and C. F. Hannon, Montgomery, Ala. Nut-lock | 753,696 | Mar. 1 | 900 | 204 | 109 | 195 |
| Durr, Otto, Buffalo, N. Y. Show-case construction | 755,593 | Mar. 22 | 4608 | 1024 | 109 | 1055 |
| Durst, William, Brooklyn, N. Y. Curtain-ring | 756,482 | Apr. 5 | 581 | 122 | 109 | 1465 |
| Duryea, William C., Blawenburg, N. J. Mechanical movement adapted to grain-binders | 753,559 | Mar. 1 | 662 | 148 | 109 | 146 |
| Duvall, Stephen A., Penrith, W. Va. Emergency car-brake | 754,551 | Mar. 15 | 2689 | 584 | 109 | 623 |
| Dynes, John H., Cleveland, Ohio. Advertising device | 755,221 | Mar. 22 | 3993 | 871 | 109 | 909 |
| Dysle, Charles A., Los Angeles, Cal., assignor to American Sugar Beet Implement Company, Butte, Mont. Beet-puller | 755,118 | Mar. 22 | 3746 | 822 | 109 | 871 |
| Dysterud, Emil, Monterey, Mexico. Current-regulator | 756,605 | Apr. 5 | 786 | 171 | 109 | 1509 |
| E. Goldman & Company. (See Wright, Walter B., assignor.) | | | | | | |
| E. Horton & Son Company. (See Rockwell and Horton, assignors.) | | | | | | |
| E. J. Manville Machine Company. (See Campbell, Andrew C., assignor.) | | | | | | |
| E. & T. Fairbanks & Company. (See Romig, Robert W., assignor.) | | | | | | |
| Eagon, Harvey, Newcomerstown, Ohio. Weather-strip | 754,857 | Mar. 15 | 3291 | 717 | 109 | 753 |
| Earl, Spencer D., Norristown, assignor of one-half to F. Herbert, Philadelphia, Pa. Fan | 753,587 | Mar. 1 | 901 | 204 | 109 | 195 |
| Earle, George H., Jr., Bryn Mawr, and G. B. Shainline, Wayne, Pa. Hydraulic ram | 753,560 | Mar. 1 | 664 | 149 | 109 | 147 |
| Earle, George H., Jr., Bryn Mawr, and G. B. Shainline, Wayne, Pa. Hydraulic ram | 755,467 | Mar. 22 | 4393 | 973 | 109 | 1006 |
| Eastern Fire Protection Company. (See Derby, John H., assignor.) | | | | | | |
| Eastmoore, Thomas, assignor of one-half to M. M. Freed, Jacksonville, Fla. Rotary motor | 756,606 | Apr. 5 | 788 | 171 | 109 | 1509 |
| Easton, John W., Chicago, Ill. Butter-mold | 754,056 | Mar. 8 | 1671 | 371 | 109 | 384 |
| Easton, Walter S., Elkiick, Pa. Shot-feed apparatus for drilling-machines | 753,379 | Mar. 1 | 291 | 66 | 109 | 66 |
| Eastwood, Arthur C., Cleveland, Ohio. Magnetic clutch | 754,291 | Mar. 8 | 2108 | 468 | 109 | 478 |
| Eastwood, Arthur C., Cleveland, Ohio. Rheostat | 755,468 | Mar. 22 | 4395 | {973 {974 | 109 | 1007 |
| Eastwood, Arthur C., Cleveland, Ohio. Electric controller | 757,898 | Apr. 19 | 3369 | 798 | 109 | 2096 |
| Eaves, Elam. (See Tonge and Eaves.) | | | | | | |
| Eberhard, Charles W., Chicago, Ill. Mechanism for holding electrotype-plates | 757,603 | Apr. 19 | 2794 | 611 | 109 | 1971 |
| Eberhardt, William C., Sayre, Pa. Metallic rod-packing | 754,981 | Mar. 22 | 3518 | 770 | 109 | 819 |
| Ebinger, David A., Columbus, Ohio. Furnace | 753,250 | Mar. 1 | 65 | 17 | 109 | 16 |
| Eccles, Alfred L., Trenton, N. J. Sad-iron | 755,567 | Mar. 22 | 4561 | 1015 | 109 | 1044 |
| Eck, Joseph, Dusseldorf, Germany. Device for producing on textile fabrics a silky luster | 755,469 | Mar. 22 | 4397 | 974 | 109 | 1007 |
| Eckart, Edmund, New Rochelle, N. Y. Can | 755,119 | Mar. 22 | 3747 | 823 | 109 | 871 |
| Ecker, Louis, assignor to H. Ecker & Sons, Chicago, Ill. Attachment for buttonhole-sewing machines | 756,483 | Apr. 5 | 582 | {122 {123 | 109 | 1465 |
| Ecker & Sons, H. (See Ecker, Louis, assignor.) | | | | | | |
| Eckert, Kunigunde. (See Herbst, Anton, assignor.) | | | | | | |
| Eckhaus, Philip. (See Baynes, Frederick W., assignor.) | | | | | | |
| Eckmann, Ernst, Berlin, assignor to M. Petersen, Friedrichsgabekoog, Schleswig-Holstein, Germany. Electric heater | 758,208 | Apr. 26 | 4196 | 908 | 109 | 2298 |
| Eddy, William L., Star, Tex. Cultivator | 754,130 | Mar. 8 | 1813 | 408 | 109 | 417 |
| Edeline, Henri, Paris, France. Trestle screw-jack | 758,481 | Apr. 26 | 4443 | 955 | 109 | 2352 |
| Edgar, Lottie E., Pittsburg, Pa. Comb | 754,306 | Mar. 8 | 1962 | 434 | 109 | 447 |
| Edgar, Lottie E., Pittsburg, Pa. Chatelaine-bag | 754,307 | Mar. 8 | 1963 | 435 | 109 | 447 |
| Edge, Horace L. and W., New York, N. Y., assignors to Williams Wire Hinging Machine Company. Staple-making machine | 755,755 | Mar. 29 | 4963 | {1104 {1105 | 109 | 1148 |
| Edge, William. (See Edge, Horace L. and W.) | | | | | | |
| Edgerton, George L., Raeford, N. C. Plow | 753,478 | Mar. 1 | 477 | 112 | 109 | 104 |
| Edgington, George H., Waterloo, Iowa. Music-leaf turner | 756,944 | Apr. 12 | 1451 | 322 | 109 | 1668 |
| Edison Storage Battery Company. (See Edison, Thomas A., assignor.) | | | | | | |
| Edison, Thomas A., Llewellyn Park, N. J. Compressing-dies | 754,755 | Mar. 15 | 3084 | 674 | 109 | 709 |
| Edison, Thomas A., Llewellyn Park, N. J. Separating ores from magnetic gangue | 754,756 | Mar. 15 | 3086 | 674 | 109 | 709 |
| Edison, Thomas A., Llewellyn Park, N. J. Stock-house conveyer | 758,422 | Apr. 26 | 4445 | {955 {956 | 109 | 2352 |
| Edison, Thomas A., Llewellyn Park, assignor to Edison Storage Battery Company, Orange, N. J. Storage-battery tray | 754,858 | Mar. 15 | 3292 | 717 | 109 | 753 |
| Edison, Thomas A., Llewellyn Park, assignor to Edison Storage Battery Company, Orange, N. J. Reversible galvanic battery | 754,859 | Mar. 15 | 3294 | 717 | 109 | 754 |
| Edmonds, George S., Albany, N. Y. Fire-door for locomotives | 757,545 | Apr. 19 | 2662 | 587 | 109 | 1945 |
| Edmonds, Jay D., assignor to Edmonds-Metzel Manufacturing Company, Chicago, Ill. Lock | 756,839 | Apr. 12 | 1947 | 278 | 109 | 1626 |
| Edmonds-Metzel Manufacturing Company. (See Edmonds, Jay D., assignor.) | | | | | | |
| Edmonds-Metzel Manufacturing Company. (See Metzel, William E., assignor.) | | | | | | |
| Edmunds, Charles P., Philadelphia, Pa. Game apparatus | 758,561 | Mar. 1 | 666 | 149 | 109 | 147 |
| Edmunds Henry. (See Gramm, Carl, assignor.) | | | | | | |
| Edson, Joseph R. (See Cunningham, Clara H., assignor.) | | | | | | |
| Edwards, Bertram F., San Francisco, Cal. Safety attachment for gas-cocks | 757,692 | Apr. 19 | 2908 | 639 | 109 | 1996 |
| Edwards, Daniel W., assignor to Greenlee Brothers & Company, Chicago, Ill. Machine for sawing mining-timbers | 753,688 | Mar. 1 | 902 | {305 {306 {307 | 109 | 195 |
| Edwards, Frank W., Logansport, Ind., assignor to Chicago Lubricator Company, Chicago, Ill. Auxiliary sight-feed for lubricators | 755,120 | Mar. 22 | 3748 | {823 {824 | 109 | 871 |
| Edwards, Jennie A., San Francisco, Cal. Heating device | 754,982 | Mar. 22 | 3520 | 770 | 109 | 820 |
| Edwards, John C., Brookline, Mass., assignor to Draper Company, Portland, Me., and Hopedale, Mass. Clamping device for heddle bars or supports | 753,380 | Mar. 1 | 293 | 67 | 109 | 66 |
| Edwards, Victor E., assignor to Morgan Construction Company, Worcester, Mass. Feed device for gas-producers | 756,945 | Apr. 12 | 1453 | 322 | 109 | 1668 |
| Edwards, Victor E., assignor to Morgan Construction Company, Worcester, Mass. Feeding mechanism for billet-heating furnaces | 756,946 | Apr. 12 | 1457 | 322 | 109 | 1669 |
| Edwards, Victor E., assignor to Morgan Construction Company, Worcester, Mass. Apparatus for cutting metal bars | 757,604 | Apr. 19 | 2795 | 611 | 109 | 1971 |
| Edwards, William S., Chicago, Ill. Flexible drop-light tubing for gas lamps and burners | 758,054 | Apr. 26 | 3686 | 801 | 109 | 2187 |
| Egan, John J. (See Hean and Egan.) | | | | | | |
| Egge, Frederick, assignor to Smith & Egge Manufacturing Company, Bridgeport, Conn. Machine for cutting out sheet-metal blanks for chain-links | 757,093 | Apr. 12 | 1630 | {354 {355 | 109 | 1704 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Egge, Frederick, assignor to Smith & Egge Manufacturing Company, Bridgeport, Conn. Machine for making sheet-metal chain | 757,029 | Apr. 12 | 1633 | 355, 356 | 109 | 1705 |
| Eggleston, Charles H., C. F. Hardy, and V. Lepper; said Eggleston assignor to E. J. Kirby, Marshall, Mich. Vending-machine | 756,947 | Apr. 12 | 1459 | 328 | 109 | 1669 |
| Ehlers, Louis H. (See Kliesewetter and Ehlers.) | | | | | | |
| Ehrlich, John B., Indianapolis, Ind. Combination-lathe | 756,514 | Apr. 26 | 4509 | 989, 990 | 109 | 2288 |
| Eick, Otto, Baltimore, Md. Bottle-closure | 756,343 | Apr. 5 | 302 | 62 | 109 | 1406 |
| Eickemeyer, Carl, *et al.*, executors. (See Eickemeyer, Rudolf.) | | | | | | |
| Eickemeyer, Mary T., *et al.*, executors. (See Eickemeyer, Rudolf.) | | | | | | |
| Eickemeyer, Rudolf, deceased, Yonkers, N. Y.; R., Jr., C., and M. T. Eickemeyer, executors. Means for variably operating and controlling electric motors | 757,394 | Apr. 12 | 2961 | 514, 515 | 109 | 1861 |
| Eigen, Benno vom, assignor to A. Goertz & Co., Newark, N. J. Box | 753,381 | Mar. 1 | 206 | 67 | 109 | 67 |
| Ekström, Arthur W., Stockholm, Sweden. Heater for water | 755,366 | Mar. 22 | 4207 | 981, 982 | 109 | 969 |
| Ekvall, Peter, Boston, Mass. Abrading device | 753,251 | Mar. 1 | 67 | 17 | 109 | 17 |
| Elden, Leonard L., Boston, assignor of one-half to S. B. Condit, Jr., Somerville, Mass. Circuit-breaker | 756,344 | Apr. 5 | 304 | 63 | 109 | 1408 |
| Elden, Leonard L., Dorchester, assignor of one-half to S. B. Condit, Jr., Somerville, Mass. Circuit-breaker | 756,782 | Apr. 5 | 1130 | 248 | 109 | 1585 |
| Elderkin, Charles W., assignor of one-half to E. D. Elderkin, Butte, Mont. Stovepipe-holder | 755,641 | Mar. 29 | 4721 | 1050 | 109 | 1008 |
| Elderkin, Edwin D. (See Elderkin, Charles W., assignor.) | | | | | | |
| Eldridge, Reuben C., Niagara Falls, Canada. Snap-hook | 756,607 | Apr. 5 | 789 | 172 | 109 | 1509 |
| Electric and Dental Specialty Company. (See Price, Weston A., assignor.) | | | | | | |
| Electric Specialty Co. (See Kimbark, Daniel A., assignor.) | | | | | | |
| Electric Storage Battery Co. (See Madden, Albert F., assignor.) | | | | | | |
| Electric Thermo-Vibra Co. (See Ward, Arthur, assignor.) | | | | | | |
| Electric Vehicle Company. (See Pope, Harry M., assignor.) | | | | | | |
| Electric Vehicle Company. (See Ward, George A., assignor.) | | | | | | |
| Electro-Mechanical Specialty Company. (See Fergusson, Alan R., assignor.) | | | | | | |
| Elftman, Arthur H., *et al.* (See Gerdes, Henry A., assignor.) | | | | | | |
| Eliel, Albert L., Parlin, N. J. Closure for grain-receptacles | 755,859 | Mar. 29 | 5173 | 1145 | 109 | 1198 |
| Eliel, Albert L., Parlin, N. J., and J. La Burt, New York, N. Y., assignors to themselves, and C. D. Bradley, Parlin, N. J. Wrench | 758,808 | Mar. 8 | 1299 | 292 | 109 | 800 |
| Elieson, Chalmsonovitz P., Paris, France. Electric accumulator-plate | 755,642 | Mar. 29 | 4721 | 1050 | 109 | 1008 |
| Elieson, Chalmsonovitz P., Paris, France. Making electric accumulator-plates | 755,643 | Mar. 29 | 4722 | 1050 | 109 | 1008 |
| Ellicott, Charles E., and J. B. Norris, Baltimore, Md. Interchangeable hand and motive power mechanism | 754,757 | Mar. 15 | 3087 | 674 | 109 | 710 |
| Ellinwood, Augustus E., Akron, Ohio. Machine for inserting transverse wires in solid-rubber tires | 754,559 | Mar. 15 | 2990 | 584, 585 | 109 | 694 |
| Elliot, Henry, Jr., St. Louis, Mo. Adjustable switch-rod | 755,471 | Mar. 22 | 4400 | 975 | 109 | 1008 |
| Elliott Company. (See Elliott, Sterling, assignor.) | | | | | | |
| Elliott, David W., and J. B. Ruby, Newcastle, Pa. Air-pipe-coupling pressure-relief valve | 756,484 | Apr. 5 | 585 | 123 | 109 | 1465 |
| Elliott-Fisher Company. (See Jarman, Alfred R., assignor.) | | | | | | |
| Elliott-Fisher Company. (See Smith, John A., assignor.) | | | | | | |
| Elliott, Mary J., Port Huron, Mich. Corset | 755,470 | Mar. 22 | 4399 | 974 | 109 | 1008 |
| Elliott, Sterling, Boston, Mass. Feed-water heater | 755,366 | Mar. 22 | 4050 | 898 | 109 | 984 |
| Elliott, Sterling, assignor to Elliott Company, Boston, Mass. Apparatus for folding and wrapping pamphlets | 757,798 | Apr. 19 | 3041 | 661, 662, 663 | 109 | 2085 |
| Elliott, William S., Pittsburg, Pa. Superheating apparatus | 756,840 | Apr. 12 | 1949 | 278, 279 | 109 | 1627 |
| Ellis, Charles S., and F. D. Powell, assignors to American Coin Register Company, Chicago, Ill. Automatic register for coin-controlled machines | 754,553 | Mar. 15 | 2996 | 586 | 109 | 694 |
| Ellis, Halcolm, Attleboro, Mass. Type-writing machine | 754,366 | Mar. 8 | 2296 | 501, 502 | 109 | 519 |
| Elliston, Charles T., Clinton, Mo. Draft-evener | 756,841 | Apr. 12 | 1952 | 279 | 109 | 1627 |
| Elmore, Guy H. (See Cooley, George T., assignor.) | | | | | | |
| Elsenrath, A. (See Kuhn, Jacob, assignor.) | | | | | | |
| Elstun, John W., Indianapolis, Ind. Belt-joint | 756,220 | Apr. 5 | 56 | 13 | 109 | 1355 |
| Elterich, Marie. (See Elterich, Paul O., assignor.) | | | | | | |
| Elterich, Paul O., assignor to M. Elterich, New York, N. Y. Sight for shotguns | 754,920 | Mar. 15 | 3090 | 741 | 109 | 775 |
| Elwell, Franklin H., Chicago, Ill. Annunciator | 756,608 | Apr. 5 | 791 | 173 | 109 | 1510 |
| Ely, Sumner B., Allegheny, H. H. Anderson and W. W. Slick, Pittsburg, Pa., assignors to American Sheet Steel Co., New York, N. Y. Adjusting mechanism for sheet-mills | 758,008 | Apr. 19 | 3562 | 772 | 109 | 2139 |
| Emerson, Isaiah W., Milford, Mass. Fireproof window frame and sash | 754,437 | Mar. 15 | 2973 | 538, 539 | 109 | 576 |
| Emerson Manufacturing Company. (See Wilson, George, assignor.) | | | | | | |
| Emert, John H., Averyville, Ill. Draft-equalizer | 753,398 | Mar. 1 | 207 | 67 | 109 | 67 |
| Emert, William S., Peoria, Ill. Draft-equalizer | 757,296 | Apr. 12 | 2137 | 467 | 109 | 1814 |
| Emery, Charles P., assignor of one-half to E. W. Townsley, Madisonville, Ohio. Farm-gate | 754,758 | Mar. 15 | 3089 | 675 | 109 | 710 |
| Emery, Fredrick H., Scranton, Pa. Coal-separator | 755,479 | Mar. 22 | 4401 | 975 | 109 | 1008 |
| Emling, Frank. (See Bossingham and Emling.) | | | | | | |
| Emmerling, Ernst A., New York, N. Y. Stamp-affixer and envelop-sealer | 753,965 | Mar. 8 | 1508 | 336 | 109 | 848 |
| Emmerton, Charles S. (See Wear, Charles, assignor.) | | | | | | |
| Emmet, William L. R., Schenectady, N. Y., assignor to General Electric Company. Elastic-fluid turbine | 754,292 | Mar. 8 | 2111 | 468, 469 | 109 | 479 |
| Emmet, William L. R., Schenectady, N. Y., assignor to General Electric Company. Elastic-fluid turbine | 755,756 | Mar. 29 | 4969 | 1105, 1106 | 109 | 1149 |
| Emmons, Fannie S., Richmond, Ind. Device for removing water from the hair | 756,849 | Apr. 12 | 1953 | 279 | 109 | 1628 |
| Emmons, Grosvenor B. (See Mills, Francis A., assignor.) | | | | | | |
| Empire Pipe Bending and Supply Company. (See Layton, Richardson C., assignor.) | | | | | | |
| Engberg, Ephraim O., Salt Lake City, Utah. Machine for trimming and applying shade goods | 754,750 | Mar. 15 | 3091 | 675 | 109 | 711 |
| Engel, Stephen L., New York, N. Y. Combined suspenders and belt | 757,800 | Apr. 19 | 3373 | 730 | 109 | 2097 |
| Engelland, George C. J., Blue Island, Ill. Street waste-paper box | 758,354 | Apr. 26 | 4591 | 992 | 109 | 2317 |
| Engels, Ernst W., Düsseldorf, Germany. Treating plumbiferous ores | 755,223 | Mar. 22 | 3984 | | 109 | 909 |
| Engels, Johann C., Barmen, Germany. Eyelet | 757,605 | Apr. 19 | 2797 | 619 | 109 | 1972 |
| Engert, F. A. (See Miller, Denis L., assignor.) | | | | | | |
| Engler, Richard A., Dubuque, Iowa. Megaplex relay | 757,184 | Apr. 12 | 1943 | 435 | 109 | 1775 |
| Englert, Charles, Jr. (See Yawman, Frederick G., assignor.) | | | | | | |
| English, John E. (See Hintz, Reinhart O., assignor.) | | | | | | |
| English, John R. (See Peake and English.) | | | | | | |
| English & Mersick Co. (See Pfleghar, Frank P., assignor.) | | | | | | |
| English, William M., and A. H. Ten Broeck, San Francisco, Cal. Antiseptic attachment for telephone-mouthpieces | 754,057 | Mar. 8 | 1573 | 371 | 109 | 865 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| English, William M., and A. H. Ten Broeck, San Francisco, Cal. Antiseptic telephone-mouthpiece | 754,646 | Mar. 15 | 2976 | 628 | 109 | 660 |
| Englund, Philip, Chico, Cal. Illuminator for sewing-machines | 757,900 | Apr. 19 | 3373 | 729 | 109 | 2097 |
| Enos, Frank M., *et al.*, executors. (See Tripp, James S.) | | | | | | |
| Enquist, Axel F., San Francisco, Cal. Device for adjusting windows | 758,479 | Mar. 1 | 479 | 112 | 109 | 105 |
| Entrekin, Joseph H., Craig, Nebr. Axle | 757,444 | Apr. 19 | 2466 | 589 | 109 | 1699 |
| Epes, Theodorick P., Blackstone, Va. Tellurian | 756,345 | Apr. 5 | 300 | 63, 64 | 109 | 1409 |
| Erb, Elias C. (See Powlison and Erb.) | | | | | | |
| Erb, Frederick H., Jr., Lafayette, Ind. Dog-collar | 755,473 | Mar. 29 | 4403 | 975 | 109 | 1009 |
| Erickson, Theodore, and J. J. Fagan, Charlevoix, Mich. Cigar-vending machine | 758,588 | Apr. 26 | 4742 | 1022 | 109 | 2419 |
| Ericsson, Lars M., assignor to Aktiebolaget L. M. Ericsson & Co., Stockholm, Sweden. Jack-field for telephones | 753,562 | Mar. 1 | 667 | 149 | 109 | 147 |
| Ericsson, Lars M., assignor to Aktiebolaget L. M. Ericsson & Co., Stockholm, Sweden. Portable or table telephone instrument | 753,563 | Mar. 1 | 667 | 149, 150 | 109 | 147 |
| Erk, Martin J., Binghamton, N. Y. Acetylene-gas generator | 756,221 | Apr. 5 | 57 | 13 | 109 | 1355 |
| Erlwein, Georg, assignor to Cyanid-Gesellschaft mit Beschränkter Haftung, Berlin, Germany. Manufacture of cyanamid salts | 757,185 | Apr. 12 | 1946 | 425 | 109 | 1776 |
| Erwood, John, Chicago, Ill. Warehouse-door | 756,609 | Apr. 5 | 793 | 172 | 109 | 1510 |
| Essig, Harry E., Canton, Ohio, assignor to Essig Pivot Window Company, Pittsburg, Pa. Window | 756,006 | Mar. 29 | 5461 | 1205 | 109 | 1262 |
| Essig, Ozia A., Canton, Ohio. Window-curtain attachment | 754,554 | Mar. 15 | 2998 | 586 | 109 | 625 |
| Essig Pivot Window Company. (See Essig, Harry E., assignor.) | | | | | | |
| Esson, Arthur C., New York, N. Y. Copy-holder | 754,988 | Mar. 22 | 3521 | 771 | 109 | 880 |
| Ette, Charles G., St. Louis, Mo. Brake-shoe and producing same | 754,921 | Mar. 15 | 3091 | 741 | 109 | 775 |
| Etter, Henry M., Marion, Pa. Pump-head | 756,105 | Mar. 29 | 5648 | 1247 | 109 | 1301 |
| Eustice, Daniel L., Galena, Ill. Machine for manufacturing cans | 753,966 | Mar. 8 | 1509 | 336, 337 | 109 | 848 |
| Eustis, John P., Newton, Mass. Means for mounting mirrors, pictures, &c., in metallic frames | 758,967 | Mar. 8 | 1512 | 337 | 109 | 849 |
| Evans, Elisha F., and T. J. Strange, Argyle, Ga. Rail-joint | 756,055 | Apr. 26 | 3689 | 801 | 109 | 2187 |
| Evans, George B. (See Williams and Evans.) | | | | | | |
| Evans, George B., and J. H. Williams, Dodgeville, Wis. Lock-nut | 754,438 | Mar. 15 | 2977 | 589 | 109 | 576 |
| Evans, James, Harrisburg, Pa. Pin-retainer | 757,729 | Apr. 19 | 3045 | 664 | 109 | 2025 |
| Evans, Joseph B., Selma, Ala. Steam-turbine | 755,474 | Mar. 22 | 4404 | 975 | 109 | 1009 |
| Evans & Son, S. W. (See Baldwin, Chalkley B., assignor.) | | | | | | |
| Evans, William W., Salt Lake City, Utah. Brush | 756,222 | Apr. 5 | 61 | 14 | 109 | 1356 |
| Eveland, Samuel S., Philadelphia, Pa. Antifriction end-thrust device | 755,287 | Mar. 22 | 4051 | 898, 899 | 109 | 984 |
| Evensen, Anton, Chicago, Ill., assignor of one-half to C. R. Hannan, Council Bluffs, Iowa. Valve mechanism for explosive-engines | 756,160 | Mar. 29 | 5726 | 1265 | 109 | 1318 |
| Everett, Robert L., Scottsbluff, Nebr. Power-generating apparatus | 757,289 | Apr. 12 | 2138 | 467, 468 | 109 | 1814 |
| Everette, Willis E., Tacoma, Wash. Making cyanids and nitrates | 754,647 | Mar. 15 | 2977 | | 109 | 660 |
| Evoy, Laurence. (See Stouffer, Hiram A., assignor.) | | | | | | |
| Ewart, David, Ottawa, Canada. Metallic furring-clip | 757,863 | Apr. 19 | 3302 | 715 | 109 | 2061 |
| Ewing, Thomas H., assignor of two-thirds to W. J. Stewart and W. J. Sharon, Wichita, Kans. Animal-poke | 757,101 | Apr. 12 | 1770 | 384 | 109 | 1735 |
| Exline, Marcus P., Dallas, Tex. Temporary binder | 756,106 | Mar. 29 | 5649 | 1247 | 109 | 1301 |
| F. H. Smith Manufacturing Co. (See Smith and Sasseman, assignors.) | | | | | | |
| F. S. Webster Company. (See Bedworth, John A., assignor.) | | | | | | |
| Faber, John P., assignor, by mesne assignments, to Faber Sulky Co., Rochester, N. Y. Speed-wagon | 753,089 | Mar. 1 | 916 | 207 | 109 | 198 |
| Faber Sulky Co. (See Faber, John P., assignor.) | | | | | | |
| Fabian, William J., Evanston, Ill. Voucher-check | 753,480 | Mar. 1 | 480 | 112 | 109 | 105 |
| Fagan, John J. (See Erickson and Fagan.) | | | | | | |
| Fagerström, Ernst E. F., Sundbyberg, Sweden. Steam-turbine | 754,439 | Mar. 15 | 2478 | 589 | 109 | 576 |
| Fagerström, Ernst E. F., Sundbyberg, Sweden. Detachable blade for steam-turbines | 754,964 | Mar. 22 | 3522 | 771 | 109 | 880 |
| Fahlbeck, Pontus E. (See Franzén, Frans A., assignor.) | | | | | | |
| Fahrig, Ernst, Philadelphia, Pa. Treating low-grade ores and tailings by electrolysis | 756,223 | Apr. 5 | 62 | 14 | 109 | 1356 |
| Fahrzeugfabrik Eisenach. (See Rothe, Ernst K., assignor.) | | | | | | |
| Fairbanks, James G., and G. L. Sauer, Marion, Ohio. Locomotive-crane | 755,644 | Mar. 29 | 4724 | 1051 | 109 | 1094 |
| Fairhurst, William S., assignor of one-half to J. J. Riley, Brooklyn, N. Y. Unloading device for air-compressors | 757,901 | Apr. 19 | 3375 | 729 | 109 | 2098 |
| Fairweather, Wallace. (See Morton, Gavin, assignor.) | | | | | | |
| Falcone, Agazio, Florence, Italy. Electric-telegraph apparatus | 753,090 | Mar. 1 | 916 | 207 | 109 | 198 |
| Falding, Frederic J., New York, N. Y. Roasting or desulfurizing furnace | 756,485 | Apr. 5 | 586 | 123, 124, 125, 126, 127 | 109 | 1466 |
| Falen, William M., Wakefield, Kans. Mail-sack holder | 756,610 | Apr. 5 | 796 | 176 | 109 | 1511 |
| Falk Company. (See Falk, Herman W., assignor.) | | | | | | |
| Falk, Herman W., assignor to Falk Company, Milwaukee, Wis. Means for operating hydrocarbon-burners for metallurgical furnaces | 757,606 | Apr. 19 | 2798 | 612 | 109 | 1972 |
| Falkenwalde, Oscar, assignor of one-half to J. S. Williams, Baltimore, Md. Gaseous-fuel burner | 757,395 | Apr. 12 | 2368 | 515 | 109 | 1862 |
| Faller, Ernest A., assignor of one-half to J. W. Chisholm, New York, N. Y. Signaling apparatus | 757,080 | Apr. 12 | 1638 | 356, 357 | 109 | 1706 |
| Faller, Ernest A., assignor of one-half to J. W. Chisholm, New York, N. Y. Semi-automatic telephone-exchange | 757,081 | Apr. 12 | 1646 | 357, 358 | 109 | 1708 |
| Faltermayer, Harry, assignor of one-half to W. J. Caskey, Philadelphia, Pa. Light-controlling system | 758,589 | Apr. 26 | 4745 | 1023 | 109 | 2420 |
| Fancher, Rosman I., Cincinnati, Ohio. Apparatus for scalding and washing fruits and vegetables | 757,186 | Apr. 12 | 1948 | 425, 426 | 109 | 1776 |
| Farbenfabriken of Elberfeld Co. (See Schmidt, Robert E., assignor.) | | | | | | |
| Farbenfabriken of Elberfeld Co. (See Schmidt and Tust, assignors.) | | | | | | |
| Farbwerke, vorm. Meister, Lucius & Brüning. (See Gullbransson, Gillis, assignor.) | | | | | | |
| Farbwerke, vorm. Meister, Lucius & Brüning. (See Hepp and Wolpert, assignors.) | | | | | | |
| Farbwerke, vorm. Meister, Lucius & Brüning. (See Moest, Martin, assignor.) | | | | | | |
| Farbwerke, vorm. Meister, Lucius & Brüning. (See Schmidt, Albrecht, assignor.) | | | | | | |
| Fargo, Enoch J., *et al.* (See Penn, William E., assignor.) | | | | | | |
| Fargo, Frank B., *et al.* (See Penn, William E., assignor.) | | | | | | |
| Farmer, Arthur J., Detroit, Mich. Device for applying liquids to the scalp | 753,968 | Mar. 8 | 1514 | 337 | 109 | 849 |
| Farmer, John P., assignor to A. F. Fiegel, Portland, Oreg. Atomizer | 756,161 | Mar. 29 | 5731 | 1266 | 109 | 1319 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Farnam, Milan D. (See Austin and Farnam.) | | | | | | |
| Farnham, Arthur C., *et al.* (See Waters, Frank J., assignor.) | | | | | | |
| Farnham, Frank E., *et al.* (See Waters, Frank J., assignor.) | | | | | | |
| Farrand Organ Company. (See Courville, Joseph, assignor.) | | | | | | |
| Farrand Organ Company. (See Whitehead, Aura E., assignor.) | | | | | | |
| Farrand & Votey Organ Company. (See Courville, Joseph, assignor.) | | | | | | |
| Farrell, George, assignor to M. W. Carr & Company, West Somerville, Mass. Extensible belt or girdle | 758,340 | Apr. 26 | 4044 | 878 | 109 | 2208 |
| Farrell, Michael, Chicago, Ill. Faucet | 756,346 | Apr. 5 | 813 | 64 | 109 | 1410 |
| Farwell, Scott M., Hanover, Ill., assignor of one-half to S. R. Jeffers, Lone Wolf, Okla. Ter. Washing-machine | 756,347 | Apr. 5 | 813 | 64, 65 | 109 | 1410 |
| Faschian, Herman, assignor of one-half to P. Roppen, San Francisco, Cal. Folding or cabinet bed | 756,162 | Mar. 29 | 5732 | 1266 | 109 | 1319 |
| Fatic, Henry, Middletown, Ind., assignor, by mesne assignments, to Swanitz Company, Chicago, Ill. Adjustable wheel-flange. (Reissue) | 12,713 | Apr. 12 | 2431 | 530 | 109 | 1676 |
| Faulkner, Joseph A., Williamsville, Mo. Washboard | 755,960 | Mar. 29 | 5174 | 1145 | 109 | 1190 |
| Fawkes, Wilbert C., Minneapolis, Minn. Washing-machine | 756,224 | Apr. 5 | 65 | 14 | 109 | 1366 |
| Fee, Thomas, Brooklyn, N. Y. Pipe-hanger | 758,969 | Mar. 8 | 1515 | 337 | 109 | 349 |
| Fehr, William, and J. Kaufmann, Philadelphia, Pa.; said Fehr assignor to Steel Heddle Manufacturing Company. Heddle-bar fastening | 754,860 | Mar. 15 | 3295 | 718 | 109 | 754 |
| Felbel, Jacob. (See Gabrielson, Carl, assignor.) | | | | | | |
| Feller, Joseph E., Brooklyn, N. Y. Electric signal | 754,308 | Mar. 8 | 1954 | 436 | 109 | 447 |
| Fellows, Hugh W., assignor of one-half to H. Cogswell, Los Angeles, Cal. Automatic feed for steam-boilers | 756,948 | Apr. 12 | 1460 | 323 | 109 | 1669 |
| Felten & Guilleaume Carlswerk Actien-Gesellschaft. (See Hardingham, George G. M., assignor.) | | | | | | |
| Felthousen, Harriet E., Jersey City, N. J. Cushion for douche-pans | 756,007 | Mar. 29 | 5463 | 1205 | 109 | 1262 |
| Fenn, William B., Washington, Pa. Sectional molded vessel | 755,823 | Mar. 22 | 3985 | 871 | 109 | 909 |
| Fenn, William B., Washington, Pa. Jar-closure | 758,515 | Apr. 26 | 4601 | 990 | 109 | 2389 |
| Fenner, George P., New London, Conn. Delivery-track for printing-presses | 756,008 | Mar. 29 | 5464 | 1205, 1206 | 109 | 1262 |
| Ferguson, Forrest, St. Louis, Mo. Necktie-securing device | 757,730 | Apr. 19 | 3046 | 664 | 109 | 2026 |
| Ferguson, Jay S., South Sharon, Pa. Wire-rod-cleaning machine | 754,309 | Mar. 8 | 1957 | 436 | 109 | 448 |
| Ferguson, Robert B., Los Angeles, Cal. Spirit-level | 756,949 | Apr. 12 | 1463 | 323 | 109 | 1670 |
| Fergusson, Alan R., New York, N. Y. Electric fan | 758,305 | Apr. 26 | 4200 | 903 | 109 | 2299 |
| Fergusson, Alan R., assignor to Electro-Mechanical Specialty Company, New York, N. Y. Office-desk telephone | 758,304 | Apr. 26 | 4197 | 903 | 109 | 2298 |
| Fergusson, Alan R., assignor to Electro-Mechanical Specialty Company, New York, N. Y. Electric switch | 758,306 | Apr. 26 | 4200 | 904 | 109 | 2299 |
| Fernald, Granville, Washington, D. C., assignor to G. S. Fernald, St. Paul, Minn. Machine for cutting trenches through asphaltic pavements | 755,645 | Mar. 29 | 4726 | 1051 | 109 | 1095 |
| Fernald, Gustavus S. (See Fernald, Granville, assignor.) | | | | | | |
| Ferris, Henry L., assignor to Hunt, Helm, Ferris & Company, Harvard, Ill. Hanger and track therefor | 758,481 | Mar. 1 | 481 | 112 | 109 | 105 |
| Ferris, Henry L., assignor to Hunt, Helm, Ferris & Company, Harvard, Ill. Springhinge | 757,607 | Apr. 19 | 2803 | 612 | 109 | 1973 |
| Ferry, William M., Park City, Utah. Heating and ventilating apparatus | 754,393 | Mar. 8 | 2116 | 469 | 109 | 480 |
| Fertilizer Bag Manufacturing Co. (See Flowers, Willis P., assignor.) | | | | | | |
| Fesenfeld, Herman, Hoquiam, Wash. Barrel-tap | 754,760 | Mar. 15 | 3004 | 676 | 109 | 711 |
| Fessenden, Anson D. (See Lancey and Smith, assignors.) | | | | | | |
| Fessenden, Anson D. (See Smith, Charles W., assignor.) | | | | | | |
| Fessenden, Reginald A., Manteo, N. C., assignor to National Electric Signaling Company, Pittsburg, Pa. Wireless signaling | 753,963 | Mar. 8 | 1300 | 292, 293 | 109 | 300 |
| Fessenden, Reginald A., Fortress Monroe, Va., assignor to National Electric Signaling Company, Pittsburg, Pa. Signaling by electromagnetic waves | 753,864 | Mar. 8 | 1302 | 293 | 109 | 301 |
| Fessenden, Reginald A., Fort Monroe, Va., assignor to National Electric Signaling Company, Pittsburg, Pa. Signaling by electromagnetic waves | 754,058 | Mar. 8 | 1673 | 372 | 109 | 365 |
| Fetzer, William, Middletown, Ohio. Disk-scraper | 756,107 | Mar. 29 | 5651 | 1247 | 109 | 1302 |
| Fewings, Frederick J., Duluth, Minn. Car or engine replacer | 757,606 | Apr. 19 | 2804 | 613 | 109 | 1973 |
| Fewkes, Ernest E., assignor of one-half to F. W. Cole, Newton, Mass. Static electric machine | 755,367 | Mar. 22 | 4200 | 982, 983 | 109 | 969 |
| Fiddes, Walter W., Bristol, assignor of one-half to J. G. W. Aldridge, Westminster, England. Gas-retort charger and discharger | 756,225 | Apr. 5 | 67 | 15 | 109 | 1357 |
| Fiego, Alexander J. R., Lynn, Mass., assignor to General Electric Company. Multiple-rate meter | 755,757 | Mar. 29 | 4974 | 1106, 1107 | 109 | 1150 |
| Fiel, Isaac. (See Westwood, Amos, assignor.) | | | | | | |
| Field, David D., Stockbridge, Mass. Bank check, draft, &c | 756,611 | Apr. 5 | 797 | 173 | 109 | 1511 |
| Field, Frederick F., Providence, R. I. Faucet-valve | 757,731 | Apr. 19 | 3047 | 664 | 109 | 2026 |
| Field, Marcellus S., Boston, Mass. Post-office furniture | 753,865 | Mar. 8 | 1303 | 293 | 109 | 301 |
| Field, Millard F., assignor to J. Clarke, trustee, Boston, Mass. Warp-drawing machine. | 755,861 | Mar. 29 | 5176 | 1145, 1146 | 109 | 1199 |
| Field, Stephen D., Stockbridge, Mass. Multiplex telegraphy | 755,646 | Mar. 29 | 4728 | 1051, 1052 | 109 | 1095 |
| Field, Stephen D., Stockbridge, Mass. Multiplex telegraphy | 755,647 | Mar. 29 | 4734 | 1053 | 109 | 1096 |
| Fillman, John E., and W. Davis, Meno, Okla. Ter. Coupling for doubletrees | 755,475 | Mar. 22 | 4405 | 976 | 109 | 1009 |
| Finch, Robert C. (See Crapp and Finch.) | | | | | | |
| Findeisen, Frederick, Chicago, Ill. Flushing-tank | 758,307 | Apr. 26 | 4204 | 904 | 109 | 2300 |
| Fingoust, Vaclav, Clarks Mills, Wis. Wagon-brake | 758,308 | Apr. 26 | 4206 | 904 | 109 | 2300 |
| Fink, Henry G. G. (See Gruner and Fink, assignors.) | | | | | | |
| Fink, William C. (See Gruner and Fink.) | | | | | | |
| Finke, F. H. (See Sheldon, Lainer A., assignor.) | | | | | | |
| Finkle, Henry J., *et al.* (See Dunn, Frederick W., assignor.) | | | | | | |
| Finley, Henry C., Chicago, Ill. Delivery or shipping receptacle | 756,612 | Apr. 5 | 796 | 173 | 109 | 1511 |
| Finley, Henry C., Chicago, Ill. Shipping-package | 756,613 | Apr. 5 | 799 | 173 | 109 | 1512 |
| Finley, William H. (See Robinson, Eugene M., assignor.) | | | | | | |
| Finnegan, John, Philadelphia, Pa., assignor to Philadelphia Hardware and Malleable Iron Works. Hot-air register | 755,476 | Mar. 22 | 4407 | 976 | 109 | 1009 |
| Firestone Tire & Rubber Company. (See Ludington, George A., assignor.) | | | | | | |
| Fischer, Christian A., Grand Forks, N. D. Car-replacer | 757,902 | Apr. 19 | 3077 | 730 | 109 | 2008 |
| Fishel, Henry W., New York, N. Y. Clasp-pin | 757,089 | Apr. 12 | 1656 | 358 | 109 | 1710 |
| Fisher, Frederick C., Bristol, England. Electrical apparatus for therapeutic purposes | 755,121 | Mar. 22 | 3730 | 824 | 109 | 872 |
| Fisher, George F., North Tonawanda, N. Y. Building construction | 755,122 | Mar. 22 | 3731 | 824 | 109 | 872 |
| Fisher, Jacob, and A. Corrodi, Columbus, Ohio. Horseshoe | 757,445 | Apr. 19 | 2467 | 539 | 109 | 1900 |
| Fisher, John, St. Paul, Minn., assignor of one-half to Reynolds Manufacturing Company, West Toledo, Ohio. Martingale-ring | 755,868 | Mar. 29 | 5179 | 1146 | 109 | 1199 |
| Fisher, John E., New York, N. Y. Air-pump | 758,516 | Apr. 26 | 4608 | 991 | 109 | 2360 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Fisher, Ozias L. (See Holston and Fisher.) | | | | | | |
| Fisher, Ozias L., Whitepine, and W. W. Holston, Morristown, Tenn. Rail-joint | 756,296 | Apr. 5 | 69 | 15 | 109 | 1357 |
| Fisher, William C., assignor to Russell Manufacturing Company, Middletown, Conn. Loom for weaving cartridge-belt fabrics | 757,109 | Apr. 12 | 1772 | 385 | 109 | 1736 |
| Fisher, William H. (See Palmer, Richard P., assignor.) | | | | | | |
| Fisk, Charles H., Richmond, Ind., assignor to Fisk & Jay. Lawn-shears | 756,227 | Apr. 5 | 70 | 16 | 109 | 1357 |
| Fisk & Jay. (See Fisk, Charles H., assignor.) | | | | | | |
| Fisk, Pliny H., Clay, Iowa. Electrical telephone apparatus | 757,609 | Apr. 19 | 2807 | 613, 614, 615 | 109 | 1974 |
| Fiske, Henry G., New York, N. Y., assignor, by mesne assignments, to Morton Trust Company, trustee. Tire | 754,648 | Mar. 15 | 2878 | 626 | 109 | 661 |
| Fitch, Thomas W., Jr., Sewickley, Pa. Coal-tipple structure | 757,732 | Apr. 19 | 3048 | 664, 665 | 109 | 2026 |
| Fitz, Amos G., Auburn, Me. Last | 755,266 | Mar. 22 | 4052 | 899 | 109 | 924 |
| Fitz Gerald, James L., Newport, R. I. Gasolene-motor | 756,011 | Mar. 29 | 5468 | 1206 | 109 | 1263 |
| Fitz Gerald, Richard E., *et al.* (See Delaney, Michael G., assignor.) | | | | | | |
| Flagler, Emory, Lockport, N. Y., assignor of one-half to R. E. Flagler, Wilmington, Del. Hanger | 754,367 | Mar. 8 | 2299 | 502 | 109 | 519 |
| Flagler, Roy E. (See Flagler, Emory, assignor.) | | | | | | |
| Flanagan, Joseph F. (See Lovell, Thomas D., assignor.) | | | | | | |
| Flanders, Louis H., Wilkinsburg, Pa., assignor to Westinghouse Machine Company. Secondary battery | 757,446 | Apr. 19 | 2468 | 540 | 109 | 1900 |
| Flanery, Thomas, and N. Whitehill, assignors to Hennepin County Barrel Co., Minneapolis, Minn. Machine for tightening the bilge-hoops upon barrels | 756,788 | Apr. 5 | 1183 | 248, 249 | 109 | 1585 |
| Flanery, Thomas, and N. Whitehill, assignors to Hennepin County Barrel Co., Minneapolis, Minn. Machine for tightening the head-hoops upon barrels | 756,784 | Apr. 5 | 1185 | 249, 250 | 109 | 1586 |
| Flannigain, Edward, assignor of one-half to C. T. Noland, St. Louis, Mo. Gas-stove | 758,433 | Apr. 26 | 4447 | 956 | 109 | 2353 |
| Fleckenstein, Leonard S., Easton, Md. Crane | 757,290 | Apr. 12 | 2141 | 468 | 109 | 1815 |
| Fiegel, A. F. (See Farmer, John P., assignor.) | | | | | | |
| Fiegle, Martin, Minneapolis, Minn. Fish-hook | 756,009 | Mar. 29 | 5465 | 1206 | 109 | 1263 |
| Fleming, Andrew, Brooklyn, N. Y. Adjustable support | 756,486 | Apr. 5 | 590 | 127 | 109 | 1466 |
| Fleming, John A., assignor to Marconi's Wireless Telegraph Company, Limited, London, England. Device for wireless telegraphy | 756,004 | Apr. 19 | 3564 | 772 | 109 | 2140 |
| Fleming, John A., assignor to Marconi's Wireless Telegraph Company, Limited, London, England. Apparatus employed in wireless telegraphy | 756,005 | Apr. 19 | 3570 | 773 | 109 | 2141 |
| Fleshutz, Herman D., Coudersport, Pa. Printing-press grip-finger | 755,863 | Mar. 29 | 5180 | 1147 | 109 | 1200 |
| Fletcher, Addison C., New York, N. Y. Nut-lock | 756,010 | Mar. 29 | 5466 | 1206 | 109 | 1263 |
| Fletcher, James S., and D. H. Waters, Chicago, Ill. Trolley-wheel | 756,355 | Apr. 26 | 4222 | 922 | 109 | 2318 |
| Fletcher, Mordecai H., Cincinnati, Ohio. Box for containing tooth-powder | 758,309 | Apr. 26 | 4207 | 905 | 109 | 2300 |
| Flint, Charles F. V., Frederiksberg, Denmark. Wash apparatus | 755,477 | Mar. 22 | 4408 | 977 | 109 | 1010 |
| Flint, William S. (See Harrah and Flint.) | | | | | | |
| Flo, Iver I. (See Logan and Flo.) | | | | | | |
| Flood, Patrick, Albany, N. Y. Emergency-brake for street-railway cars | 758,131 | Apr. 26 | 3842 | 884 | 109 | 2290 |
| Flora, Ellsworth E., assignor to T. J. Lovett, Chicago, Ill. Oil-stove | 755,864 | Mar. 29 | 5181 | 1147 | 109 | 1200 |
| Flower, Archibald D. (See Kilbourn, Washington H., assignor.) | | | | | | |
| Flowers, Willis P., assignor to Fertilizer Bag Manufacturing Co., Scranton, Pa. Odor-proof bag | 757,610 | Apr. 19 | 2817 | 615 | 109 | 1975 |
| Floyd, George G., and C. H. Howard, assignors to American Steel-Body Double-Bolster Co., St. Louis, Mo. Car body-bolster | 755,289 | Mar. 22 | 4054 | 899 | 109 | 925 |
| Floyd, George G., and C. H. Howard, assignors to American Steel-Body Double-Bolster Co., St. Louis, Mo. Car body-bolster | 755,290 | Mar. 22 | 4055 | 899 | 109 | 925 |
| Flugstad, John M. and P. M., Corvallis, Mont. Acetylene-gas generator | 758,091 | Mar. 1 | 918 | 208 | 109 | 198 |
| Flugstad, Peter M. (See Flugstad, John M. and P. M.) | | | | | | |
| Flygare, Christine J. T., Minneapolis, Minn. Baking apparatus | 755,123 | Mar. 22 | 3733 | 825 | 109 | 873 |
| Flyte, Joseph A., Sioux Falls, S. D. Leveling mechanism for vehicles | 754,985 | Mar. 22 | 3523 | 771 | 109 | 690 |
| Fogal, William T., Emsworth, Pa. Pasteurizer | 756,012 | Mar. 29 | 5469 | 1207 | 109 | 1263 |
| Foglesong, Ida J., St. Paul, Minn. Horse-blanket | 754,294 | Mar. 8 | 2120 | 470 | 109 | 481 |
| Foglesong, Washington, Dayton, Ohio. Coal-mining machine | 755,291 | Mar. 22 | 4057 | 900 | 109 | 925 |
| Fogliano, Domenico, New York, N. Y. Corset | 757,291 | Apr. 12 | 2143 | 468 | 109 | 1816 |
| Folger, Harry S. (See Kern and Johnson, assignors.) | | | | | | |
| Folmer & Schwing Manufacturing Company. (See Folmer, William F., assignor.) | | | | | | |
| Folmer, William F., New York, N. Y., assignor to Folmer & Schwing Manufacturing Company, of New York. Camera | 756,614 | Apr. 5 | 801 | 174 | 109 | 1512 |
| Foltz, Irving E., Rockford, Ill. Shaving-mug | 754,761 | Mar. 15 | 3096 | 676 | 109 | 712 |
| Foos Manufacturing Company. (See Deards, Copenhaven, and Adelsperger, assignors.) | | | | | | |
| Foot, William H., Wilkinsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Brush-holder for electrical machines | 753,866 | Mar. 8 | 1305 | 293, 294 | 109 | 302 |
| Forcke, Carl, assignor to Hannoversche Cakesfabrik H. Bahlsen, Hanover, Germany. Contrivance for making hollow pastry or rolls | 754,131 | Mar. 8 | 1814 | 403, 404 | 109 | 417 |
| Ford, Andrew F., assignor of one-half to W. Schluting, Colfax, Wash. Rotary engine | 753,790 | Mar. 1 | 1143 | 257 | 109 | 246 |
| Ford, Darden, Homer, La. Sliding chord-bar for autoharps | 758,667 | Mar. 8 | 1306 | 294 | 109 | 308 |
| Ford-Smith, William D., and T. Coventry, Salford, England. Clutch mechanism | 757,805 | Apr. 19 | 3198 | 695 | 109 | 2060 |
| Ford, Thomas P., New York, N. Y. Controlling device for maintaining steady pressure | 757,908 | Apr. 19 | 3078 | 730 | 109 | 2009 |
| Foreman, Samuel E., and R. T. Lightfoot, Paducah, Ky. Water-filter | 754,296 | Mar. 8 | 2122 | 470 | 109 | 481 |
| Forman, Archibald C. (See Hendrickson, James G., assignor.) | | | | | | |
| Fornander, Alfred, New York, N. Y. Folding safety-razor | 756,615 | Apr. 5 | 806 | 174 | 109 | 1513 |
| Fornander, Alfred, assignor of one-half to A. Schulte, New York, N. Y. Windmill | 756,616 | Apr. 5 | 807 | 174 | 109 | 1513 |
| Forney, Charles, *et al.* (See Rote, Charles V., assignor.) | | | | | | |
| Forney, John A., Reading, Pa. Pick for musical instruments | 756,348 | Apr. 5 | 315 | 65 | 109 | 1410 |
| Forsberg, John C., La Crosse, Wis. Window-shade hanger | 753,866 | Mar. 8 | 1309 | 294 | 109 | 303 |
| Forster, Ferdinand E., New York, N. Y. Churn-delivering apparatus | 756,434 | Apr. 26 | 4448 | 957 | 109 | 2353 |
| Forster, John W. L. (See McCollum, James H. K., assignor.) | | | | | | |
| Forster, Thomas W., assignor of one-half to Buhl Stamping Company, Detroit, Mich. Handle for vessels | 756,590 | Apr. 26 | 4752 | 1088 | 109 | 2422 |
| Fort, Guy E. (See Warren, Albert P., assignor.) | | | | | | |
| Fort, Joseph, Wellston, Ohio. Bit-stock | 754,295 | Mar. 8 | 2121 | 470 | 109 | 481 |
| Forwood, Francis A. (See Webb, Edward D., assignor.) | | | | | | |
| Foshee, Mason, Chapman, Ala. Conveyer | 753,482 | Mar. 1 | 482 | 113 | 109 | 106 |
| Foster, Alfred W., assignor to Foster Brush Manufacturing Company, Washington, D. C. Nap-restoring device | 753,970 | Mar. 8 | 1516 | 338 | 109 | 340 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Foster Brush Manufacturing Company. (See Foster, Alfred W., assignor.) | | | | | | |
| Foster, J. W., *et al.* (See Holliday, Henry C., assignor.) | | | | | | |
| Foster, John J. (See Powers, Walter J., assignor.) | | | | | | |
| Foster Machine Company. (See McKean, John O., assignor.) | | | | | | |
| Fostoria Bulb and Bottle Company. (See Doane, Samuel E., assignor.) | | | | | | |
| Foulks, Charles E., Covington, Ky. Race-track barrier | 754,966 | Mar. 22 | 3395 | 772 | 109 | 821 |
| Foust, Charles W., Los Angeles, Cal. Clapboard-marking gage | 755,758 | Mar. 29 | 4976 | 1107 | 109 | 1150 |
| Fowler, Edwin. (See Palmer, Herbert R., assignor.) | | | | | | |
| Fowler, Joshua P., Philadelphia, Pa. Automatic railway-gate | 758,518 | Apr. 26 | 4605 | 991 | 109 | 2389 |
| Fox, Charles K. (See Webster, Harold A., assignor.) | | | | | | |
| Fox, George E., Pittsburg, Pa. Wrench | 753,869 | Mar. 8 | 1310 | 295 | 109 | 308 |
| Fox, Henry C., Louisville, Ky. Sad-iron | 754,987 | Mar. 22 | 3396 | 772 | 109 | 821 |
| Fox, Ivan, Lansdowne, Pa. Bow-spring | 755,124 | Mar. 22 | 3753 | 895 | 109 | 872 |
| Fox, Ivan, Lansdowne, Pa. Eyeglasses | 756,228 | Apr. 5 | 72 | 16 | 109 | 1358 |
| Fox, Thomas J., Memphis, Tenn. Hitching-post | 753,971 | Mar. 8 | 1517 | 338 | 109 | 350 |
| Fraley, George B., assignor to E. S. Galbraith, Philadelphia, Pa. Apparatus for producing motive power from liquid gas | 756,785 | Apr. 5 | 1137 | 250, 251 | 109 | 1587 |
| Fraley, Samuel P., Chicago, Ill. Broom-binding machine | 757,108 | Apr. 12 | 1773 | 385, 386, 387, 388, 389 | 109 | 1736 |
| Främbs and Freudenberg. (See Kuthe, Eugen, assignor.) | | | | | | |
| Frank, Edward H., and H. E. Storer, Centralia, Ill. Torpedo-fork | 753,602 | Mar. 1 | 921 | 208 | 109 | 199 |
| Frank H. Fleer & Company. (See Britton, Robb, assignor.) | | | | | | |
| Frank, Jacob H., *et al.* (See Dunn, Frederick W., assignor.) | | | | | | |
| Frank, Louis A., Chicago, Ill. Lock | 757,733 | Apr. 19 | 3050 | 665 | 109 | 2027 |
| Frank, Oskar, assignor to L. J. Lennox and Michigan Storage Battery Co., Detroit, Mich. Preparing electrodes for storage-battery cells | 753,288 | Mar. 1 | 299 | | 109 | 68 |
| Franklin, Kalman, Fort Wayne, Ind. Paper-pad holder | 756,013 | Mar. 29 | 5471 | 1207 | 109 | 1264 |
| Franzén, Frans A., assignor of one-half to P. E. Fahlbeck, Lund, Sweden. Rotary engine | 756,759 | Mar. 29 | 4977 | 1107, 1108 | 109 | 1150 |
| Fraser, Arthur C., *et al.* (See Lovell, Charles W., assignor.) | | | | | | |
| Fraser, Edwin, and E. J. Hoyt, New York, N. Y. Oil-burning apparatus | 756,865 | Mar. 29 | 5164 | 1147 | 109 | 1201 |
| Fraser, George H., *et al.* (See Lovell, Charles W., assignor.) | | | | | | |
| Fraser, John, and A. G. Mather, Milwaukee, Wis. Driving mechanism for sieve bolting-machines | 756,950 | Apr. 12 | 1465 | 324 | 109 | 1670 |
| Frayer, Lee A., assignor, by mesne assignments, to Oscar Lear Automobile Company, Columbus, Ohio. Transmission-gear | 756,349 | Apr. 5 | 316 | 65 | 109 | 1411 |
| Frazee, Arthur M., Hebron, Ohio. Track-oiling device | 756,617 | Apr. 5 | 810 | 175 | 109 | 1514 |
| Frazier, Perry, Dubois, Nebr. Breech-loading firearm | 753,384 | Mar. 1 | 301 | 67, 68 | 109 | 68 |
| Freadreazea, Fread, Louisville, Ky. Attachment for cars | 758,519 | Apr. 26 | 4607 | 992 | 109 | 2390 |
| Fred, Mason K., Pleasanton, Tex. Automatic fire-alarm | 754,555 | Mar. 15 | 2701 | 587 | 109 | 625 |
| Fredeen, Frank, Taylors Falls, Minn. Combined grain thresher and separator | 757,904 | Apr. 19 | 3381 | 731, 732 | 109 | 2100 |
| Fredeen, Frank, Taylors Falls, Minn. Grain-screen | 757,905 | Apr. 19 | 3385 | 732, 733 | 109 | 2100 |
| Fredenburgh, George A., Pawtucket, R. I. Twisting-head for thread-dressing machines | 756,487 | Apr. 5 | 592 | 128 | 109 | 1467 |
| Fredenburgh, George A., Pawtucket, R. I. Thread-dressing machine | 758,520 | Apr. 26 | 4609 | 992, 993 | 109 | 2390 |
| Free, William C., Chicago, Ill. Sewing-machine cabinet | 755,208 | Mar. 22 | 4059 | 900 | 109 | 936 |
| Freed, Mathew M. (See Eastmoore, Thomas, assignor.) | | | | | | |
| Freeland, Gus, Denver, Colo. Ratchet-wrench | 755,569 | Mar. 22 | 4565 | 1015 | 109 | 1044 |
| Freeman, Dobbin Fireproofing Company. (See Nicholson, James H., assignor.) | | | | | | |
| Freeman, Joseph W., Manchester, Ohio. Grave-vault | 755,866 | Mar. 29 | 5186 | 1148 | 109 | 1301 |
| Freese, Frank G., Philadelphia, Pa. Gas-heater | 756,108 | Mar. 29 | 5632 | 1247 | 109 | 1302 |
| French, Leroy W., and C. E. Decker, Holton, Kans. Pad-holder | 753,698 | Mar. 1 | 922 | 209 | 109 | 199 |
| French, Ralph E. (See Baker and French.) | | | | | | |
| Fresning, John E., Belmont, assignor to S. M. Howes Company, Boston, Mass. Damper | 753,870 | Mar. 8 | 1311 | 295 | 109 | 308 |
| Frettz, George H., Springfield, Mass. Electric railway | 757,906 | Apr. 19 | 3387 | 733 | 109 | 2101 |
| Freund, Frederick S., *et al.* (See Scott, William H., assignor.) | | | | | | |
| Frey, Frederick, *et al.* (See Gross, Peter J., assignor.) | | | | | | |
| Freysleben, Gustave, San Diego, Cal. Meat-press | 754,297 | Mar. 8 | 3123 | 471 | 109 | 482 |
| Friedberg, William, New York, N. Y. Alarm device | 755,125 | Mar. 22 | 3753 | 895 | 109 | 873 |
| Friedland, Max, Kansas City, Mo. Rocking-chair with air apparatus | 757,447 | Apr. 19 | 3469 | 540 | 109 | 1900 |
| Friedmann, Alfred, Shreveport, La. Bottle | 753,564 | Mar. 1 | 668 | 150 | 109 | 147 |
| Friend, George J., and E. L. Bolton, Kingsley, Oreg. Harvester-reel | 758,241 | Apr. 26 | 4045 | 878 | 109 | 2263 |
| Friend, Roger B., Oakland, assignor to Interlock Paper Company, San Francisco, Cal. Machine for handling material | 756,951 | Apr. 12 | 1466 | 324 | 109 | 1671 |
| Fries, John W., Winston-Salem, N. C. Apparatus for oxidizing and drying textile material | 757,104 | Apr. 12 | 1780 | 390 | 109 | 1737 |
| Friesdorf, Eduard, Düren, Germany. Apparatus for separating oil and grease from water | 757,448 | Apr. 19 | 3471 | 540 | 109 | 1900 |
| Friestedt, Luther P., Chicago, Ill. Sheet-piling | 756,618 | Apr. 5 | 811 | 175 | 109 | 1514 |
| Friez, Julien P., Baltimore, Md. Rain-gage | 756,109 | Mar. 29 | 5633 | 1248 | 109 | 1302 |
| Friskey, Arthur W. (See Lorenz, August H., assignor.) | | | | | | |
| Fritchey, Frank. (See Boring and Fritchey.) | | | | | | |
| Fritsche, Max, Carlstadt, N. J., assignor to R. Mayer & Co., New York, N. Y. Bronzing-machine | 756,786 | Apr. 5 | 1139 | 251, 252 | 109 | 1588 |
| Fritz, Andy, Portland, Oreg. Driving-belt | 758,356 | Apr. 26 | 4293 | 922 | 109 | 2318 |
| Fritz, Friedrich, Trieste, Austria-Hungary. Tooth-brush with washing device | 757,907 | Apr. 19 | 3389 | 733, 734 | 109 | 2101 |
| Fritz, Johannes C. G., New York, N. Y. Window-cleaner | 756,229 | Apr. 5 | 74 | 16 | 109 | 1358 |
| Fritz, Louis, and W. W. Dryden, assignors of one-third to G. Shmidlweiser, Philadelphia, Pa. Combined moistening and sealing device for envelops or the like | 754,968 | Mar. 22 | 3398 | 772 | 109 | 821 |
| Fromm, John F. (See McMahon, Joseph P., assignor.) | | | | | | |
| Frost, George W., Columbus, Ohio. Storage-battery grid | 757,396 | Apr. 12 | 2270 | 516 | 109 | 1802 |
| Frost, Leonard L., Highland, Kans. Tally device | 757,908 | Apr. 19 | 3390 | 734 | 109 | 2101 |
| Frost, Robert T., Dows, Iowa. Building-block | 757,023 | Apr. 12 | 1657 | 368 | 109 | 1711 |
| Fry, George, Berwick-upon-Tweed, England. Production of resinous substances | 754,398 | Mar. 8 | 2124 | | 109 | 482 |
| Fry, George A. (See Rogers and Fry.) | | | | | | |
| Frye, James, Toronto, Canada. Broiler | 757,864 | Apr. 19 | 3808 | 715 | 109 | 2088 |
| Frye, James, Toronto, Canada. Window | 757,865 | Apr. 19 | 3808 | 716 | 109 | 2088 |
| Fryer, William J., New York, N. Y. Street-lamp | 754,989 | Mar. 22 | 3589 | 773 | 109 | 822 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Fuchs, Paul, Berlin, assignor to Treude and Metz, Lasaphe, Westphalia, Germany. Mechanism for walking dolls or other toy figures going on rolls | 754,861 | Mar. 15 | 3397 | 718 | 109 | 755 |
| Fugazzi, John F., Cincinnati, Ohio. Vegetable-washer | 758,056 | Apr. 26 | 3690 | 801 | 109 | 2187 |
| Fulghum, Elisha J., Traverse City, Mich. Making floor-boards | 753,791 | Mar. 1 | 1145 | 258 | 109 | 246 |
| Fulkerson, George W., Hagerstown, Ind. Gas or gasolene engine | 753,483 | Mar. 1 | 485 | 113, 114 | 109 | 106 |
| Fuller, Arthur E., Danvers, Mass. Lawn-edge trimmer | 758,310 | Apr. 26 | 4208 | 905 | 109 | 2301 |
| Fuller, Charles T., Olean, N. Y. Gas-burner | 753,871 | Mar. 8 | 1312 | 295 | 109 | 308 |
| Fuller, Frederick P., New York, and J. J. Walsh, Yonkers, N. Y. Ground connection for electric conductors | 758,057 | Apr. 26 | 3692 | 802 | 109 | 2187 |
| Fuller, George, Washington, D. C. Oil-burning branding implement | 754,869 | Mar. 15 | 3397 | 718 | 109 | 755 |
| Fuller, Lynn C. (See Young and Fuller.) | | | | | | |
| Fuller, Vivian B., Indianapolis, Ind. Automatic winding door-bell | 755,568 | Mar. 22 | 4563 | 1015 | 109 | 1044 |
| Fulton, Creed M., *et al.* (See Morris, John O., assignor.) | | | | | | |
| Fulton, Thomas E. (See Carson, William L., assignor.) | | | | | | |
| Fulton, Weston M., Knoxville, Tenn. Storage tank or receptacle | 754,132 | Mar. 8 | 1315 | 404 | 109 | 417 |
| Funk, George H. (See Stickler, Oliver E., assignor.) | | | | | | |
| Furbershaw, George C., Washington, D. C. Banjo | 754,059 | Mar. 8 | 1675 | 372 | 109 | 385 |
| Fürst, Frank, New York, N. Y. Fruit-press | 755,196 | Mar. 22 | 3756 | 895 | 109 | 873 |
| Fussenegger, Ernst. (See Julius and Fussenegger.) | | | | | | |
| Fyrberg, Andrew, Worcester, Mass. Firearm | 754,210 | Mar. 8 | 1961 | 436 | 109 | 448 |
| Gäbler, Paul, Leipzig-Gohlis, Germany. Phonograph | 758,521 | Apr. 26 | 4612 | 993 | 109 | 2391 |
| Gabrielson, Carl, Worcester, Mass., assignor to L. C. Smith and Bros. Typewriter Company, Syracuse, N. Y. Type-writing machine | 753,972 | Mar. 8 | 1518 | 338 | 109 | 350 |
| Gabrielson, Carl, Greenville, N. J., assignor to J. Felbel, New York, N. Y. Type-writing machine | 754,922 | Mar. 15 | 3393 | 741, 742 | 109 | 775 |
| Gadfield, Charles E., Wellington, Ohio. Boring-machine | 757,734 | Apr. 19 | 3053 | 666 | 109 | 2027 |
| Gage, Frank E., Dayton, Ohio, assignor to Veneer Barrel Machine Co., Chicago, Ill. Barrel | 754,923 | Mar. 15 | 3396 | 742 | 109 | 776 |
| Gaines, Thomas E. (See Cloyd, Oliver H., assignor.) | | | | | | |
| Gaisman, Henry J., New York, N. Y. Elastic fabric | 758,435 | Apr. 26 | 4450 | 957 | 109 | 2354 |
| Galbraith, Elizabeth S. (See Fraley, George B., assignor.) | | | | | | |
| Gale, Frederick, Lancefield, Victoria, assignor of one-third to T. A. Parks, Romsey, Australia. Toy gun | 757,292 | Apr. 12 | 2145 | 469 | 109 | 1816 |
| Gale, James R. C., Sutton, England. Free reed | 756,952 | Apr. 12 | 1468 | 324 | 109 | 1671 |
| Gale, William L., Louisville, Ky. Smoke-conveyer | 757,546 | Apr. 19 | 2683 | 587 | 109 | 1946 |
| Gallagher, George S., assignor to himself, R. L. Joseph, and F. E. Burrows, New York, N. Y. Electric printing-machine | 753,873 | Mar. 8 | 1313 | 296 | 109 | 308 |
| Gallagher, Joseph D., Glenridge, N. J. Brake-shoe | 754,440 | Mar. 15 | 3479 | 539, 540 | 109 | 576 |
| Gallagher, Patrick, Allegheny, Pa. Bracket for shade and curtain fixtures | 758,337 | Apr. 26 | 4295 | 922 | 109 | 2318 |
| Galloway, Samuel J., Hillsboro, Oreg. Saw swaging and filing gage | 753,565 | Mar. 1 | 669 | 150 | 109 | 148 |
| Gally, Merritt, Brooklyn, N. Y. Telephone-repeater | 753,352 | Mar. 1 | 68 | 18 | 109 | 17 |
| Galway, John J., assignor of one-half to K. McDonald, Duluth, Minn. Set-works | 753,973 | Mar. 8 | 1520 | 339 | 109 | 351 |
| Gancher, Rebecca. (See Kodama, Nobyoshi H., assignor.) | | | | | | |
| Gannon, Georg E. (See Hawkins and Gannon.) | | | | | | |
| Gantt, Henry L. (See Barth, Gantt, and Taylor.) | | | | | | |
| Gantz, Samuel, assignor of one-half to C. C. Cochran, Hagerstown, Md. Dumping-cart | 757,293 | Apr. 12 | 2146 | 469 | 109 | 1816 |
| Garbutt, Frank A., Los Angeles, Cal. Hose-mender | 756,350 | Apr. 5 | 318 | 66 | 109 | 1411 |
| Garchey, Louis A., Paris, France. Manufacture of glass stone | 753,694 | Mar. 1 | 984 | | 109 | 900 |
| Garchey, Louis A., Paris, France. Manufacture of glass stone | 753,695 | Mar. 1 | 985 | 209 | 109 | 900 |
| Garlick, Charles, Geneva, N. Y. Heating apparatus | 756,351 | Apr. 5 | 321 | 66 | 109 | 1412 |
| Garrett, Charles B., assignor of one-half to E. G. Garrett, Minneapolis, Minn. Automatic sprinkler | 758,592 | Apr. 26 | 4614 | 994 | 109 | 2391 |
| Garrett, Emma G. (See Garrett, Charles B., assignor.) | | | | | | |
| Gartland, Francis X., Philadelphia, Pa. Eyeglasses | 756,488 | Apr. 5 | 594 | 128 | 109 | 1467 |
| Gartling, George. (See Hahn, John, assignor.) | | | | | | |
| Gaskill, Marion L., assignor of one-half to J. S. Cloud, Columbus, Ohio. Screw lifting-jack | 756,489 | Apr. 5 | 595 | 128 | 109 | 1467 |
| Gaston, Walter. (See Hibbard and Gaston.) | | | | | | |
| Gaston, William C., *et al.* (See Walter, Edward, assignor.) | | | | | | |
| Gates, Gideon W., David City, Nebr. Vending-machine | 755,648 | Mar. 29 | 4736 | 1058 | 109 | 1097 |
| Gates, Lafayette M., Muscatine, Iowa. System of heating buildings or dwellings | 753,358 | Mar. 1 | 70 | 18 | 109 | 17 |
| Gathmann, Emil. (See Meigs and Gathmann.) | | | | | | |
| Gathmann, Louis, Washinton, D. C. Apparatus for distilling petroleum | 755,760 | Mar. 29 | 4980 | 1108, 1109 | 109 | 1151 |
| Gaul, Andrew, Jr., New York, N. Y. Bottle-closure | 753,354 | Mar. 1 | 72 | 18 | 109 | 18 |
| Gaulin, Auguste, Paris, France. Treating milk or similar liquids | 753,702 | Mar. 1 | 1146 | 258 | 109 | 246 |
| Gaulin, Auguste, Paris, France. System of intimately mixing milk | 756,963 | Apr. 12 | 1469 | 324, 325 | 109 | 1671 |
| Gay, Joseph H., and W. D. Quigley, Newark, N. J. Adjusting device for leather-splitting machines | 755,761 | Mar. 29 | 4985 | 1109 | 109 | 1153 |
| Gayley, James, New York, N. Y. Extracting moisture from air for blast-furnaces and converters | 756,110 | Mar. 29 | 5655 | 1248 | 109 | 1302 |
| Gaylord, Leonard B., Newton Center, Mass. Automoblie | 756,619 | Apr. 5 | 812 | 175 | 109 | 1514 |
| Gaylord, Robert L., Clyo, Ga. Turpentine-box | 757,294 | Apr. 12 | 2148 | 469 | 109 | 1817 |
| Gaylord, Solomon S., Newark, N. J. Corset | 756,111 | Mar. 29 | 5657 | 1249 | 109 | 1303 |
| Geb, Jacob F. (See Johnson and Geb.) | | | | | | |
| Geddes, Charles A., assignor of one-half to C. Hamm, Philadelphia, Pa. Soda-water apparatus | 753,566 | Mar. 1 | 671 | 151 | 109 | 148 |
| Gee, James, *et al.* (See Waters, Frank J., assignor.) | | | | | | |
| Geery, James, Wisdom, Mont. Hay-rake attachment | 754,990 | Mar. 22 | 3580 | 773 | 109 | 822 |
| Gehring, Marie V., *et al.* (See Midgley, Frederick W., assignor.) | | | | | | |
| Gehring, Marie V., *et al.* (See Shoemaker, Harry, assignor.) | | | | | | |
| Gehring, Marie V. (See Woodward and Shoemaker, assignors.) | | | | | | |
| Géhrung, Julien A., St. Louis, Mo. Electric selective system | 755,127 | Mar. 22 | 3757 | 896 | 109 | 874 |
| Geier, William G., New York, N. Y. Camera-support | 756,649 | Mar. 29 | 4739 | 1058 | 109 | 1097 |
| Geiger, Charles E., assignor to Geiger, Koop & Fiske and J. E. Turney, Louisville, Ky. Filtering apparatus | 753,606 | Mar. 1 | 927 | 210 | 109 | 200 |
| Geiger, Koop & Fiske *et al.* (See Geiger, Charles E., assignor.) | | | | | | |
| Geisenhöner, Henry, Schenectady, N. Y., assignor to General Electric Company. Magnet-coil spool | 756,954 | Apr. 12 | 1471 | 325 | 109 | 1672 |
| Geisler, Fernando H., Dayton, Ohio. Tire-inflator | 758,058 | Apr. 26 | 3693 | 802 | 109 | 2187 |
| Gell, John, London, England. Perforator | 755,224 | Mar. 22 | 3937 | 871, 872 | 109 | 910 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Geltz, Albert H., and L. L. Hosack, Alliance, Ohio, assignors to C. B. McLean, Pittsburg, Pa. Triple-valve piston and connection | 755,570 | Mar. 22 | 4567 | 1016 | 109 | 1045 |
| Gem City Stove Co. (See Gummer, August M., assignor.) | | | | | | |
| General Chemical Company. (See White, John F., assignor.) | | | | | | |
| General Electric Company. (See Alexander, Magnus W., assignor.) | | | | | | |
| General Electric Company. (See Barker, Ralph E., assignor.) | | | | | | |
| General Electric Company. (See Brown, Harry W., assignor.) | | | | | | |
| General Electric Company. (See Buck, Harold W., assignor.) | | | | | | |
| General Electric Company. (See Burrows, William R., assignor.) | | | | | | |
| General Electric Company. (See Butler, Frank L., assignor.) | | | | | | |
| General Electric Company. (See Case, Frank E., assignor.) | | | | | | |
| General Electric Company. (See Church, Nathan E., assignor.) | | | | | | |
| General Electric Company. (See Corey, Fred B., assignor.) | | | | | | |
| General Electric Company. (See Dempster, John T. H., assignor.) | | | | | | |
| General Electric Company. (See Emmet, William L. R., assignor.) | | | | | | |
| General Electric Company. (See Fiege, Alexander J. R., assignor.) | | | | | | |
| General Electric Company. (See Geisenhöner, Henry, assignor.) | | | | | | |
| General Electric Company. (See Hall, Walter A., assignor.) | | | | | | |
| General Electric Company. (See Hamilton and Ver Planck, assignors.) | | | | | | |
| General Electric Company. (See Hewlett, Edward M., assignor.) | | | | | | |
| General Electric Company. (See Holden, Frank, assignor.) | | | | | | |
| General Electric Company. (See Holladay, Lewis L., assignor.) | | | | | | |
| General Electric Company. (See Howell, John W., assignor.) | | | | | | |
| General Electric Company. (See Miller, David, assignor.) | | | | | | |
| General Electric Company. (See Potter, William B., assignor.) | | | | | | |
| General Electric Company. (See Pratt, William H., assignor.) | | | | | | |
| General Electric Company. (See Reist and Henshaw, assignors.) | | | | | | |
| General Electric Company. (See Rypinski, Maurice C., assignor.) | | | | | | |
| General Electric Company. (See Sargent, Howard R., assignor.) | | | | | | |
| General Electric Company. (See Schaake, William, assignor.) | | | | | | |
| General Electric Company. (See Schmidt, Louis M., assignor.) | | | | | | |
| General Electric Company. (See Steinmetz, Charles P., assignor.) | | | | | | |
| General Electric Company. (See Stewart, Samuel B., Jr., assignor.) | | | | | | |
| General Electric Company. (See Thomson, David P., assignor.) | | | | | | |
| General Electric Company. (See Thomson, Elihu, assignor.) | | | | | | |
| General Electric Company. (See Troy, Matthew O., assignor.) | | | | | | |
| General Electric Company. (See Watmough, Pendleton G., Jr., assignor.) | | | | | | |
| General Electric Company. (See White, Harold E., assignor.) | | | | | | |
| General Electric Company. (See White, Roger S., assignor.) | | | | | | |
| General Electric Company. (See Whittlesey, George P., assignor.) | | | | | | |
| General Electric Company. (See Wood and Robinson, assignors.) | | | | | | |
| General Electric Company. (See Woodbridge, Jonathan E., assignor.) | | | | | | |
| General Electric Company. (See Yates, William C., assignor.) | | | | | | |
| General Electric Company. (See Yates and Zimmer, assignors.) | | | | | | |
| General Electric Company. (See Zani, Arnaldo P., assignor.) | | | | | | |
| General Incandescent Arc Light Company. (See Wellman, Harold R., assignor.) | | | | | | |
| Gent, John R. (See Green and Gent.) | | | | | | |
| Geo. E. Keith Company. (See Shaw, Nathaniel G., assignor.) | | | | | | |
| Geo. W. Stafford Company. (See Patten, Alonzo R., assignor.) | | | | | | |
| George A. McKeel & Company. (See McKeel, George A., assignor.) | | | | | | |
| George, Harry, *et al.* (See Zar-Adusht-Hanish, Ottoman, assignor.) | | | | | | |
| George, Henry H., Jr., Richmond, Va. Car-placing attachment for power-excavators | 737,449 | Apr. 19 | 2473 | 540 | 109 | 1901 |
| George, Henry H., Jr., Richmond, Va. Car-placing attachment for excavators | 737,450 | Apr. 19 | 2474 | 541 | 109 | 1901 |
| George, Jerome R., assignor to Morgan Construction Company, Worcester, Mass. Shaft-coupling | 757,735 | Apr. 19 | 3055 | 666 | 109 | 2027 |
| George, Samuel E., and J. R. Norris, New York, N. Y. Non-refillable bottle | 736,943 | Apr. 12 | 1955 | 379 | 109 | 1686 |
| George, William H., Dexter, Iowa. Wrench for cylinder-teeth | 736,998 | Mar. 22 | 4063 | 901 | 109 | 987 |
| Gerdes, Henry A., assignor of fifty-five one-hundredths to F. W. Cappelen, A. H. Eiftman, and J. B. Cull, Minneapolis, Minn. Maturing Portland or other hydraulic cements | 753,265 | Mar. 1 | 304 | ..... | 109 | 69 |
| Gerhardt, William, Brunswick, Mo. Computing-scale | 736,352 | Apr. 5 | 324 | 67 | 109 | 1412 |
| Geritz, Claus P. (See Meyer and Geritz.) | | | | | | |
| Geriach, Frank W. and F. A., and F. W. Moore, Kenton, Ohio. Spike-puller | 753,266 | Mar. 1 | 305 | 68 | 109 | 69 |
| Geriach, Fred A. (See Geriach and Moore.) | | | | | | |
| Geriach, Oscar, Iola, Kans. Gas-separator | 757,084 | Apr. 12 | 1656 | 359 | 109 | 1711 |
| Germain, Frederick L., Buffalo, N. Y. Bedclothes-holder | 737,451 | Apr. 19 | 2476 | 541 | 109 | 1901 |
| Germain, Peter J., Quincy, Mass. Bottle | 757,105 | Apr. 12 | 1788 | 390 | 109 | 1737 |
| Germanson, Julius M., Milwaukee, Wis. Chair-seat spider | 756,955 | Apr. 12 | 1472 | 325 | 109 | 1672 |
| Gervais, Wainright B., Chicago, Ill. Rolling shutter | 757,103 | Apr. 12 | 1788 | 390 | 109 | 1737 |
| Gesellschaft zur Verwertung Landwirtschaftlicher Produkte, G. M. B. H. (See Reinle and Baumgarten, assignors.) | | | | | | |
| Gesner, George W., New York, assignor to H. C. Gesner, Brooklyn, N. Y. Metallurgical apparatus | 755,867 | Mar. 29 | 5187 | 1146 | 109 | 1901 |
| Gesner, Harleston C. (See Gesner, George W., assignor.) | | | | | | |
| Gessner, Ernst, Aue, Germany. Cloth-holding device | 754,649 | Mar. 15 | 2660 | 598<br>599<br>600 | 109 | 661 |
| Gest, Guy M., Cincinnati, Ohio. Bracket-block for conduit-manholes | 756,844 | Apr. 12 | 1957 | 390 | 109 | 1686 |
| Gest, Guy M., Cincinnati, Ohio. Machine for saturating insulating material | 758,128 | Apr. 26 | 3644 | 824 | 109 | 2230 |
| Geucke, Kurt, Tegelort, near Berlin, Germany. Automatic brake-coupling for railway or electric cars | 758,059 | Apr. 26 | 3695 | 808<br>809 | 109 | 2186 |
| Ghegan, John J., Newark, N. J. Multiplex telegraphy | 757,736 | Apr. 19 | 3056 | 666<br>667 | 109 | 2028 |
| Ghiglieri, William, assignor to Universal Nut-Lock Company, Stockton, Cal. Nut-lock | 756,680 | Apr. 5 | 814 | 175 | 109 | 1515 |
| Gibbens, William J., New Orleans, La., and E. W. Christie, Valley Cottage, N. Y., assignors to Christie Engineering Company, Limited, New Orleans, La. Extracting sucrose | 757,295 | Apr. 19 | 2148 | 470<br>471 | 109 | 1817 |
| Gibbens, William J., New Orleans, La., and E. W. Christie, Valley Cottage, N. Y., assignors to Christie Engineering Company, Limited, New Orleans, La. Apparatus for extracting sucrose from sugar-cane | 757,296 | Apr. 19 | 2150 | 471<br>472<br>473 | 109 | 1818 |
| Gibbs, George, New York, N. Y. Railway-car frame | 756,952 | Apr. 5 | 325 | 67 | 109 | 1413 |
| Gibbs, George, New York, N. Y. Safety device for electric-railway systems | 757,107 | Apr. 19 | 1788 | 391 | 109 | 1737 |
| Gibbs, James E., Bridgewater, Va., assignor of one-half to G. A. Horn, Newark, N. Y. Spring-motor | 758,573 | Mar. 8 | 1316 | 296 | 109 | 804 |
| Gibson, Frank H., assignor to Gibson Jar Company, Bridgeton, N. J. Jar and closure therefor | 754,060 | Mar. 8 | 1677 | 372 | 109 | 896 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Gibson Jar Company. (See Gibson, Frank H., assignor.) | | | | | | |
| Gibson, John K. (See Sumner, Brewer, and Gibson.) | | | | | | |
| Gibson, Oscar P. (See Amburn, Otis F., assignor.) | | | | | | |
| Gibson, William, Vandergrift, Pa. Cooling-rack for galvanizing plants | 753,255 | Mar. 1 | 73 | 18,19 | 109 | 18 |
| Giersiepen, Albert, Remscheid, Germany. Disinfecting apparatus | 757,806 | Apr. 19 | 3199 | 695 | 109 | 2060 |
| Giesen, Aurel, Krefeld, Germany. Suspenders | 756,490 | Apr. 5 | 597 | 128 | 109 | 1468 |
| Gigler, Mihal, Reserve township, Allegheny county, Pa. Elevator | 757,108 | Apr. 12 | 1785 | 391 | 109 | 1738 |
| Gilbert, Adam F., Farmersville, Ohio. Combined window-curtain and shade-roller holder | 757,547 | Apr. 19 | 2685 | 587 | 109 | 1946 |
| Gilbert & Barker Manufacturing Company. (See Clarke, William C., assignor.) | | | | | | |
| Gilbert, James R., Kissimee, Fla. Rail-joint | 753,874 | Mar. 8 | 1317 | 297 | 109 | 804 |
| Gilchrist, Ruth A., Wilkesbarre, Pa. Preserve-jar and cap therefor | 756,956 | Apr. 12 | 1475 | 325 | 109 | 1673 |
| Gildemeyer, Charles A., Philadelphia, Pa. Liquid-dispensing apparatus | 757,611 | Apr. 19 | 2819 | 615<br>616 | 109 | 1976 |
| Giles, William T., Shamokin, Pa. Stuffing-box | 753,567 | Mar. 1 | 673 | 151 | 109 | 148 |
| Gilfillan, Easington N., Chicago, Ill. Coin counting and packaging machine | 757,612 | Apr. 19 | 2821 | 616 | 109 | 1976 |
| Gill, Edwin R., New York, N. Y. Electric-socket support | 754,702 | Mar. 15 | 3097 | 676 | 109 | 712 |
| Gill, Edwin R., Independence, Mo. Store-service apparatus | 758,060 | Apr. 26 | 3699 | 803<br>804<br>805<br>806<br>807 | 109 | 2188 |
| Gill, Edwin R., New York, N. Y., assignor to Invention Developing Company. System of alternating-current distribution | 754,133 | Mar. 8 | 1816 | 404<br>405 | 109 | 417 |
| Gill, Joseph H. (See Reis and Gill.) | | | | | | |
| Gillaspy, John T., Union, assignor of one-third to C. W. Michael and W. Sullivan, Sumter, Oreg. Mowing-machine | 753,697 | Mar. 1 | 931 | 210 | 109 | 201 |
| Gilliland, Theodore F., Bluffton, Ind. Portable power-dam | 757,909 | Apr. 19 | 3393 | 734<br>735 | 109 | 2102 |
| Gilliland, William E., Coatsburg, Ill. Nut-wrench | 757,613 | Apr. 19 | 2824 | 616 | 109 | 1977 |
| Gillis, Cyrus W., Andalusia, Ala. Bird-trap | 755,762 | Mar. 29 | 4987 | 1109 | 109 | 1153 |
| Gilman, Charles S. (See Hanna and Gilman.) | | | | | | |
| Gilmer, George O., New Orleans, La., assignor, by mesne assignments, to Illinois Investment Company. Apparatus for the destructive distillation of wood. (Reissue) | 12,208 | Mar. 22 | 4634 | 1029 | 109 | 1060 |
| Gilmour, John, Owensboro, Ky. Freight-transfer for warehouses or factories | 755,478 | Mar. 22 | 4409 | 977 | 109 | 1010 |
| Gilmour, William, and A. Lindsay, Montreal, assignors of one-half to C. A. Myers and H. H. Bradfield, Morrisburg, Canada. Tempering or hardening cast-iron | 755,763 | Mar. 29 | 4988 | 1110 | 109 | 1153 |
| Gilson, John, assignor to Gilson Manufacturing Company, Port Washington, Wis. Spring-back chair | 758,133 | Apr. 26 | 3845 | 835 | 109 | 2220 |
| Gilson Manufacturing Company. (See Bolens and Travers, assignors.) | | | | | | |
| Gilson Manufacturing Company. (See Gilson, John, assignor.) | | | | | | |
| Gin, Gustave, Paris, France. Electrical manufacture of iron alloys | 753,875 | Mar. 8 | 1319 | 297 | 109 | 804 |
| Girard, Emile, Marseilles, France. Apparatus for inflating tires | 753,568 | Mar. 1 | 674 | 151 | 109 | 149 |
| Girardot, L'once. (See Charron and Girardot.) | | | | | | |
| Girtanner, Alice. (See Girtanner, Frederick and A.) | | | | | | |
| Girtanner, Frederick and A., New York, N. Y., assignors to United States Mining & Trading Co. Smokeless self-cleaning grate | 757,187 | Apr. 12 | 1951 | 426 | 109 | 1777 |
| Gisevius, Bogdan, Berlin, Germany. Making printing-plates | 755,225 | Mar. 22 | 3989 | 872 | 109 | 910 |
| Glasby, De Cloise, Minneapolis, Minn. Gas-engine | 753,876 | Mar. 8 | 1320 | 297<br>298 | 109 | 805 |
| Glauber, Joseph H., Cleveland, Ohio. Basin-cock fastener | 753,974 | Mar. 8 | 1522 | 339 | 109 | 851 |
| Gleason, John C., *et al.* (See Colthar, William U., assignor.) | | | | | | |
| Gleason, John C., assignor of one-half to J. B. Von Schrilitz, Springfield, Ohio. Electric train order and signaling system | 753,387 | Mar. 1 | 306 | 68,69 | 109 | 69 |
| Gleeson, Thomas W., Boston, and R. Hamilton, Milton, Mass. Telephone or telegraph system | 754,211 | Mar. 8 | 1963 | 437<br>438 | 109 | 449 |
| Globe Coal Mfg. Co. (See Carpenter, Charles H., assignor.) | | | | | | |
| Goddard, Frank M., Davenport, Iowa. Cradle | 756,230 | Apr. 5 | 76 | 17 | 109 | 1359 |
| Goddard, James R. (See Dahill and Goddard.) | | | | | | |
| Goebel, Fritz. (See Cramer, Anthony F., assignor.) | | | | | | |
| Goertz & Co., Aug. (See Eigen, Benno vom, assignor.) | | | | | | |
| Goetz, Leander, Hagerstown, Md. Window-screen | 755,294 | Mar. 22 | 4064 | 901 | 109 | 987 |
| Goforth, Charles F., Wichita, Kans. Ruffler for sewing-machines | 756,787 | Apr. 5 | 1142 | 252 | 109 | 1586 |
| Gohn, Alfred A., Warren, Pa. Gas-mixer | 753,975 | Mar. 8 | 1523 | 340 | 109 | 851 |
| Gold, Edward E., New York, N. Y. Steam-valve for train-pipes | 756,491 | Apr. 5 | 598 | 129 | 109 | 1468 |
| Gold, Edward E., New York, N. Y. Steam-valve for train-pipes | 756,492 | Apr. 5 | 600 | 129 | 109 | 1468 |
| Gold, Egbert H., Shelby, Ind. Low-pressure heating system | 758,436 | Apr. 26 | 4451 | 957 | 109 | 2354 |
| Gold, Egbert H., Shelby, Ind. Automatic supply-regulator | 758,437 | Apr. 26 | 4455 | 958 | 109 | 2355 |
| Goldan, Sydney O., New York, N. Y. Inhaler | 756,354 | Apr. 5 | 328 | 68 | 109 | 1414 |
| Goldie, William, Wilkinsburg, Pa. Railway-track | 758,523 | Apr. 26 | 4616 | 994 | 109 | 2392 |
| Goldie, William, Wilkinsburg, Pa. Forming railway-tracks | 758,524 | Apr. 26 | 4618 | 995 | 109 | 2392 |
| Goldie, William, Wilkinsburg, Pa. Apparatus for forming seats in railway-ties | 758,525 | Apr. 26 | 4621 | 995<br>996 | 109 | 2393 |
| Goldie, William, Wilkinsburg, Pa. Rail-joint bridge-piece | 758,526 | Apr. 26 | 4624 | 996 | 109 | 2393 |
| Golding, John F., New York, N. Y. Bar for strengthening cement floors or concrete | 758,061 | Apr. 26 | 3716 | 807 | 109 | 2190 |
| Golding, William H., Boston, Mass. Plate holder and adjuster | 758,242 | Apr. 26 | 4046 | 879 | 109 | 2263 |
| Goldman, Gustav, Baltimore, Md. Matting or felting fibers together | 758,243 | Apr. 26 | 4048 | ..... | 109 | 2263 |
| Goldman, Gustav, Baltimore, Md. Felting or matting fibers together | 758,244 | Apr. 26 | 4052 | ..... | 109 | 2264 |
| Goldman, Gustav, Baltimore, Md. Uniting or matting fibers together | 758,245 | Apr. 26 | 4055 | ..... | 109 | 2265 |
| Goldman, Gustav, Baltimore, Md. Uniting or matting fibers together | 758,246 | Apr. 26 | 4057 | ..... | 109 | 2266 |
| Goldman, Gustav, Baltimore, Md. Uniting or matting fibers together | 758,247 | Apr. 26 | 4058 | ..... | 109 | 2266 |
| Goldman, Gustav, Baltimore, Md. Felting or matting fibers together | 758,311 | Apr. 26 | 4209 | ..... | 109 | 2301 |
| Goldschmid, Jacob E. (See Dicke, Hugo, assignor.) | | | | | | |
| Goldschmidt, Robert, Tajkovitz, and J. Hasek, Smichov, Austria-Hungary. Manufacture of starch | 755,479 | Mar. 22 | 4410 | ..... | 109 | 1010 |
| Goldsmith, Edwin M., Philadelphia, Pa. Pencil-sharpener, &c. | 755,480 | Mar. 22 | 4411 | 977 | 109 | 1010 |
| Goldsmith, Edwin M., Philadelphia, Pa. Soap and soap-holder | 757,397 | Apr. 12 | 2371 | 516 | 109 | 1802 |
| Goldsmith, Samuel J., Chicago, Ill. Skirt-hanger | 754,763 | Mar. 15 | 3098 | 677 | 109 | 712 |
| Gonzenbach, Ernest, Milwaukee, Wis. Automatic stop-valve | 756,845 | Apr. 12 | 1958 | 280 | 109 | 1629 |
| Goodale, Thomas, Wadena, Minn. Pneumatic straw-stacker | 757,188 | Apr. 12 | 1952 | 426 | 109 | 1777 |
| Goodall, Howard W., Philadelphia, Pa., assignor to Mulconroy Company. Rod-packing | 756,621 | Apr. 5 | 816 | 176 | 109 | 1515 |
| Goodman, Henry E., *et al.* (See Cooke, Daniel J., assignor.) | | | | | | |
| Goodman, Job C., and F. J. Wurtele, Evanston, Wyo. Book-carriage | 753,484 | Mar. 1 | 490 | 115 | 109 | 108 |
| Goodman Manufacturing Company. (See Davis, Charles E., assignor.) | | | | | | |
| Goodrich, Fred, assignor to Taplin Manufacturing Company, New Britain, Conn. Bottle stopper and opener | 757,548 | Apr. 19 | 2687 | 588 | 109 | 1946 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Goodridge, Gilbert W., assignor to Bryant Electric Company, Bridgeport, Conn. Electrical plug and receptacle | 754,863 | Mar. 15 | 3299 | 719 | 109 | 756 |
| Goodwin, Harry L., assignor of one-half to C. N. Lavery, Kansas City, Mo. Telephone-receiver support | 754,556 | Mar. 15 | 2702 | 587 | 109 | 625 |
| Goodwin, Lyman O., assignor to Davis & Furber Machine Company, North Andover, Mass. Machine for winding yarn | 756,014 | Mar. 29 | 5472 | 1207, 1208 | 109 | 1264 |
| Goos, Louis, Jr., Atlantic City, N. J. Steam-engine | 757,452 | Apr. 19 | 3477 | 542 | 109 | 1902 |
| Goosmann, Justus C., Chicago, Ill. Refrigerating-machine | 757,297 | Apr. 12 | 2157 | 473 | 109 | 1819 |
| Gordon, Arthur R., *et al.* (See Green, John D., assignor.) | | | | | | |
| Gordon, William G. (See James, Edward, assignor.) | | | | | | |
| Gore, Willis K., Chicago, Ill. Tile for wall-finish | 756,622 | Apr. 5 | 817 | 176 | 109 | 1515 |
| Gorham Manufacturing Company. (See Hansen, Charles E., assignor.) | | | | | | |
| Gorman, Frank, Cleveland, Ohio. Furnace | 753,798 | Mar. 1 | 1147 | 258, 259 | 109 | 247 |
| Gorton, Adelos, Philadelphia, Pa. Spool-holder for sewing-machines | 756,163 | Mar. 29 | 5733 | 1206 | 109 | 1319 |
| Goss, Charles E. (See Goss, George W. and C. E.) | | | | | | |
| Goss, George F. (See Plympton, Washington F., assignor.) | | | | | | |
| Goss, George W. and C. E., Baltimore, assignors to Roderick Lean Manufacturing Company, Mansfield, Ohio. Cultivator | 757,398 | Apr. 12 | 2373 | 516, 517 | 109 | 1863 |
| Goss, William C., Omaha, Nebr. Book-leaf fastener | 753,976 | Mar. 8 | 1524 | 340 | 109 | 352 |
| Gossett, William, Falls City, Nebr. Brake for cars | 757,910 | Apr. 19 | 3394 | 735 | 109 | 2102 |
| Gottlebe, Ernst H. H., Magdeburg, Germany. Paddle-wheel for vessels | 754,991 | Mar. 22 | 3531 | 773 | 109 | 822 |
| Gottshalk, John B., assignor to J. Orr, Philadelphia, Pa. Expansion-bolt | 754,764 | Mar. 15 | 3099 | 677 | 109 | 712 |
| Gould, Charles M. (See Turbayne, William A., assignor.) | | | | | | |
| Gould Coupler Company. (See Richards, Willard F., assignor.) | | | | | | |
| Gould, John F., Port Richmond, assignor to Muralo Company, New Brighton, N. Y. Device or means for advertising and exhibiting paints, wall-finishes, or the like | 757,549 | Apr. 19 | 2687 | 588 | 109 | 1947 |
| Goulet, Louis, *et al.* (See Lamoureux, Edmond, assignor.) | | | | | | |
| Goundry, John B., assignor of one-half to H. I. Post and F. W. Nelthorp, Belleville, Mich. Fence-post | 758,391 | Apr. 26 | 4753 | 1024 | 109 | 2422 |
| Gra, Hernando B., assignor to Gra and Leysaht, Alleyton, Tex. Umbrella and sunshade | 753,877 | Mar. 8 | 1324 | 298 | 109 | 305 |
| Gra and Leysaht. (See Gra, Hernando B., assignor.) | | | | | | |
| Grabner, Charles A., Warsaw, Ind. Exercising apparatus | 754,992 | Mar. 22 | 3532 | 774 | 109 | 823 |
| Grabs, Virgil T., King, N. C. Sectional or knockdown kitchen-safe | 756,355 | Apr. 5 | 339 | 68 | 109 | 1414 |
| Graessle, Lizzie C., San Jose, Cal. Combined table and bed | 754,212 | Mar. 8 | 1973 | 438 | 109 | 450 |
| Graf, Robert R., assignor of two-thirds to W. B. Krause and Potthast Brothers, Baltimore, Md. Refrigerator | 757,911 | Apr. 19 | 3395 | 736 | 109 | 2103 |
| Graham, Hedley C. W., Rochester, N. Y. Signaling and operating system | 758,527 | Apr. 26 | 4626 | 996 | 109 | 2393 |
| Graham, Joel C., Marseilles, Ill., assignor to Howe and Davidson Company, East Orange, N. J. Sector-shaped carton | 756,494 | Apr. 5 | 603 | 130 | 109 | 1460 |
| Graham, John, Philadelphia, Pa. Hydrocarbon-burner | 756,498 | Apr. 5 | 602 | 130 | 109 | 1469 |
| Graham, John C. (See Maingault and Graham.) | | | | | | |
| Graham, John H., Boston, assignor to B. P. Gray, Newton, Mass. Brake-head for car-brakes | 758,176 | Apr. 26 | 3922 | 851, 852 | 109 | 2237 |
| Graham, John H., Boston, assignor to B. P. Gray, Newton, Mass. Railway-brake | 758,177 | Apr. 26 | 3924 | 852 | 109 | 2238 |
| Graham, Levi P., Decatur, Ill. Mechanical sorter for seed-corn | 753,594 | Mar. 22 | 4610 | 1024 | 109 | 1055 |
| Graham, Levi P., Decatur, Ill. Corn-planter | 757,399 | Apr. 12 | 2376 | 517 | 109 | 1864 |
| Graham, William S., assignor to Parlin & Orendorff Company, Canton, Ill. Drive-gear for corn-planters | 755,595 | Mar. 22 | 4612 | 1025 | 109 | 1056 |
| Gramling, Oscar C., Hanson, Fla. Bean-huller | 754,998 | Mar. 22 | 3533 | 774 | 109 | 823 |
| Gramm, Carl, Frankfort-on-the-Main, Germany, assignor, by mesne assignments, to H. Edmunds, London. Apparatus for the manufacture of slag cement | 757,085 | Apr. 12 | 1659 | 359 | 109 | 1711 |
| Grammont, Alexandre, Pont de Cheruy, France. Electrogoniometer | 756,846 | Apr. 12 | 1261 | 280, 281 | 109 | 1629 |
| Granada, Jacques H. de, and R. Keene, New York, N. Y. Nail-puller | 754,202 | Mar. 8 | 1332 | 430 | 109 | 442 |
| Granberg, Ole, Blair, Wis. Circular saw | 754,134 | Mar. 8 | 1319 | 405 | 109 | 418 |
| Granger, A. O. (See Mills, Walter, assignor.) | | | | | | |
| Granger, Adolphus, and W. Hilzinger, Royaloak, Mich. Wrench | 755,650 | Mar. 29 | 4740 | 1054 | 109 | 1098 |
| Granger, Arthur O. (See McNeill, Ralph, assignor.) | | | | | | |
| Grant, Frank. (See Grant, Sidney A., assignor.) | | | | | | |
| Grant, H. M., *et al.* (See Tollner, Jacob, assignor.) | | | | | | |
| Grant, Richard, New York, N. Y. Pressing-iron | 755,128 | Mar. 22 | 3760 | 826 | 109 | 874 |
| Grant, Sidney A. (See Skiff and Grant.) | | | | | | |
| Grant, Sidney A., Springfield, assignor of one-third to F. Grant, Westfield, Mass. Envelop-machine | 753,256 | Mar. 1 | 75 | 19, 20 | 109 | 18 |
| Grantz, A. N. (See Larsen, Nels, assignor.) | | | | | | |
| Grapewine, Charles E., assignor to G. W. Beck, Los Angeles, Cal. Powder dredger or shaker | 757,912 | Apr. 19 | 3397 | 736 | 109 | 2103 |
| Grasselli Chemical Company. (See Libme, Iens P., assignor.) | | | | | | |
| Graupner, Louis C., San Francisco, Cal. Concentrator | 758,438 | Apr. 26 | 4457 | 958 | 109 | 2356 |
| Graves, Charles L., Minneapolis, Minn., assignor of one-half to A. C. Mequier, Milbank, S. D. Fire-escape | 756,623 | Apr. 5 | 818 | 176 | 109 | 1516 |
| Graves, John, Milwaukee, Wis. Massage-machine | 758,205 | Apr. 26 | 3978 | 862, 863 | 109 | 2249 |
| Graves, John N., Cumby, Tex. Rotary harrow | 755,651 | Mar. 29 | 4741 | 1054 | 109 | 1098 |
| Graves, Norman F., Alma, Ill. Mowing-machine | 755,226 | Mar. 22 | 3941 | 872 | 109 | 910 |
| Gray, Burton P. (See Graham, John H., assignor.) | | | | | | |
| Gray, Frank, Chicago, Ill., assignor to J. J. Howden Company, Muskegon, Mich. Fusible link | 756,847 | Apr. 12 | 1266 | 281 | 109 | 1630 |
| Gray, Henry W., Jr. (See Hoshor, Joseph C., assignor.) | | | | | | |
| Gray, James. (See Sanford, George W., assignor.) | | | | | | |
| Gray, John A., and F. Lehmann, assignors to said Gray, J. R. Smith, and N. L. Brown, Allegheny, Pa. Non-explosive oil-can. (Reissue) | 12,801 | Mar. 1 | 1240 | 279 | 109 | 266 |
| Gray, John B., Central Falls, R. I. Haircloth-loom | 755,571 | Mar. 22 | 4568 | 1016, 1017 | 109 | 1045 |
| Gray Telephone Pay Station Company. (See Long, George A., assignor.) | | | | | | |
| Gray, Thomas B., Silverlake, Kans. Mail-delivery box | 754,441 | Mar. 15 | 2480 | 540 | 109 | 577 |
| Gray, William B., Glenanne, Ireland. Machine for treating fibrous plants | 754,994 | Mar. 22 | 3534 | 774 | 109 | 823 |
| Green, Almon B., Lyons, Ohio. Wrench | 756,496 | Apr. 5 | 605 | 130 | 109 | 1469 |
| Green, Francis J., assignor to American Engineering Company, Detroit, Mich. Wireless telegraphy | 758,006 | Apr. 19 | 3572 | 773, 774 | 109 | 2142 |
| Green, George A., *et al.* (See Pratte, Charles A., assignor.) | | | | | | |
| Green, Irving W., Detroit, Mich. Progressive-score tally | 754,449 | Mar. 15 | 2481 | 540 | 109 | 577 |
| Green, James E. (See Robinson and Green.) | | | | | | |
| Green, James R., Winston-Salem, and J. A. Hill, Brown Mountain, N. C. Cigarette-former | 755,129 | Mar. 22 | 3761 | 826 | 109 | 875 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Green, John D., assignor of one-half to G. L. Mills, A. R. Gordon, and W. E. Dittenhaver, Toledo, Ohio. Burner | 757,653 | Apr. 19 | 2904 | 632 | 109 | 1906 |
| Green, William M., Evanston, and J. R. Gent, Chicago, Ill. Slide-feeding device for picture-projecting apparatus | 757,787 | Apr. 19 | 3061 | 667, 668 | 109 | 2029 |
| Greenbury, David, Morayfield, Queensland, Australia. Coupling | 755,652 | Mar. 29 | 4743 | 1054, 1055 | 109 | 1098 |
| Greene, Alfred, assignor of one-half to R. A. Kiefer, Milwaukee, Wis. Folding receptacle | 754,995 | Mar. 22 | 3536 | 775 | 109 | 823 |
| Greene, Oda P., Oregon, Mo. Stove | 754,557 | Mar. 15 | 2708 | 587 | 109 | 626 |
| Greenleaf, George E., and H. R. Kennedy, Plainfield, assignors to Niles-Bement-Pond Company, Jersey City, N. J. Speed-changer | 753,878 | Mar. 8 | 1326 | 298, 299 | 109 | 306 |
| Greenlee Brothers & Company. (See Edwards, Daniel W., assignor.) | | | | | | |
| Greenwood, John E., Utica, N. Y. Current-collector | 758,528 | Apr. 26 | 4629 | 997 | 109 | 2394 |
| Greenwood, Thomas H., Worcester, Mass. Tension device for spindle-driving bands | 754,061 | Mar. 8 | 1678 | 373 | 109 | 386 |
| Greeuw, Dirk, and R. R. De Jong, Chicago, Ill. Air-ship | 758,062 | Apr. 26 | 3717 | 807, 808 | 109 | 2190 |
| Gregory, Stephen, Trinidad, Colo. Draft appliance for vehicle-shafts | 754,368 | Mar. 8 | 2300 | 503 | 109 | 520 |
| Gregory, Willis D., Pittsburg, Pa. Electromagnet | 753,879 | Mar. 8 | 1328 | 299 | 109 | 307 |
| Grellner, Christopher J. (See Spencer and Grellner.) | | | | | | |
| Greth, John C. W., assignor to Wm. B. Scaife & Sons Company, Pittsburg, Pa. Water-purifying apparatus | 753,880 | Mar. 8 | 1330 | 299 | 109 | 307 |
| Greve, Herzberg and Company. (See Runge, Eduard, assignor.) | | | | | | |
| Greves, Abbie E., New York, N. Y. Scholar's companion | 754,558 | Mar. 15 | 2704 | 587 | 109 | 626 |
| Grey, Henry, assignor to American Universal Mill Company, New York, N. Y. Manufacture of flanged metal bars or beams and structural work | 758,529 | Apr. 26 | 4631 | 997 | 109 | 2395 |
| Gridley, Wilmer D., New York, N. Y. Flower-pot support | 753,485 | Mar. 1 | 492 | 115 | 109 | 108 |
| Griesche, Gustav, Berkeley, Cal. Rotary turbine-engine | 755,481 | Mar. 22 | 4412 | 978 | 109 | 1011 |
| Griffen, Stephen M., Summit, N. J. Tailor's measure | 754,765 | Mar. 15 | 3100 | 677 | 109 | 713 |
| Griffin, John J., Washington, D. C. Producing chemical compounds | 757,096 | Apr. 12 | 1660 | 359 | 109 | 1711 |
| Griffith, Daniel, Butte, Mont. Sale-recorder | 757,913 | Apr. 19 | 3397 | 736 | 109 | 2103 |
| Griffiths, Leonard L., New York, N. Y. Valve | 754,299 | Mar. 8 | 2128 | 471, 472 | 109 | 482 |
| Griggs, George A., Billings, Mont. Inkstand | 758,439 | Apr. 26 | 4459 | 959 | 109 | 2356 |
| Grimes, Curtis C., Kansas City, Mo. Railway-tie | 757,037 | Apr. 12 | 1662 | 360 | 109 | 1712 |
| Grimm, Frederick E., Utica, N. Y. Match composition | 755,653 | Mar. 29 | 4744 | ..... | 109 | 1099 |
| Gripe, William H. (See Martin, James M., assignor.) | | | | | | |
| Groenning, John, Iron River, Wis. Horseshoe | 758,358 | Apr. 26 | 4296 | 923 | 109 | 2319 |
| Groff, Aaron, Oakbottom, Pa. Lamp-holder attachment for vehicles | 757,914 | Apr. 19 | 3401 | 737 | 109 | 2104 |
| Grogan, Galen, Murray, Ky. Vehicle-top support | 754,650 | Mar. 15 | 2984 | 630 | 109 | 662 |
| Grosch, John C. (See Stinson, William J., assignor.) | | | | | | |
| Groseclose, John A. (See McVey, George E., assignor.) | | | | | | |
| Gross, Charles W., San Francisco, Cal. Box-couch hinge | 758,530 | Apr. 26 | 4636 | 998 | 109 | 2395 |
| Gross, George M. (See Thon and Wolf, assignors.) | | | | | | |
| Gross, Peter J., assignor of two-thirds to F. Frey and G. Blank, Brooklyn, N. Y. Mechanism for operating valves of tanks for water-closets | 757,738 | Apr. 19 | 3072 | 669 | 109 | 2081 |
| Grosslaub, Bruno and P., Hainichen, Germany. Loom-shuttle | 756,164 | Mar. 29 | 5734 | 1206, 1207 | 109 | 1320 |
| Grosslaub, Paul. (See Grosslaub, Bruno and P.) | | | | | | |
| Grossman, Rudolph C. (See Burt, Anderson, and Grossman.) | | | | | | |
| Grove, George, Cumberland, Md. Machine for separating metal sheets | 757,453 | Apr. 19 | 2478 | 542 | 109 | 1902 |
| Grove, George, Cumberland, Md. Separating metal sheets | 757,454 | Apr. 19 | 2480 | 543 | 109 | 1902 |
| Groves, Arthur, Sr., Ladue, Mo. Rotary engine | 753,388 | Mar. 1 | 309 | 69, 70 | 109 | 70 |
| Grubitz, Louis J., assignor of one-half to H. P. Wehrenbrecht, St. Louis, Mo. Heating-tank | 754,135 | Mar. 8 | 1320 | 405 | 109 | 418 |
| Grundell, Charles L. (See Tucker and Grundell.) | | | | | | |
| Grundell, Charles L., and E. W. Tucker, San Francisco, Cal. Crude-oil burner | 758,206 | Apr. 26 | 3979 | 863 | 109 | 2249 |
| Grüneberg, Carl, Pozsony, (Pressburg.) Austria-Hungary. Brush | 758,063 | Apr. 26 | 3718 | 808 | 109 | 2190 |
| Gruner, William M., and W. C. Fink, assignors of one-fourth to H. G. G. Fink, Springdale, Pa. Safety-trolley | 758,592 | Apr. 26 | 4755 | 1024 | 109 | 2422 |
| Gschwind, Leon, Akron, Ohio. Shut-off valve | 756,624 | Apr. 5 | 820 | 177 | 109 | 1516 |
| Guelff, Elisée, Hazelhurst, Pa. Kitchen-cabinet | 757,400 | Apr. 12 | 2378 | 517, 518 | 109 | 1864 |
| Guenther, Fred, Springvalley, Ill. Implement for detaching boards from structures | 757,915 | Apr. 19 | 3402 | 737 | 109 | 2104 |
| Guest, Theodore M., assignor of one-half to G. P. Sommerville, Moravia, N. Y. Fruit or vegetable peeler | 757,550 | Apr. 19 | 2690 | 588 | 109 | 1947 |
| Guest, Theodore M., assignor of one-half to G. P. Sommerville, Moravia, N. Y. Fruit or vegetable peeler | 757,551 | Apr. 19 | 2690 | 588 | 109 | 1947 |
| Guest, William H. J., New York, N. Y. Show-case | 754,443 | Mar. 15 | 2483 | 540 | 109 | 577 |
| Guhl, Eugen. (See Tuerck, Robert, assignor.) | | | | | | |
| Guignon, Henry A., Corry, Pa. Gas-stove | 754,651 | Mar. 15 | 2985 | 630 | 109 | 663 |
| Guild, Henry M., deceased, Erie, Pa.; N. J. Maxwell, executor, assignor, by mesne assignments, to C. A. Tyrrell, New York, N. Y. Syringe | 757,654 | Apr. 19 | 2906 | 632 | 109 | 1997 |
| Guild, Leo, New York, N. Y. Jewel-setting | 755,654 | Mar. 29 | 4744 | 1055 | 109 | 1099 |
| Guinan, John, Brooklyn, N. Y. Guard for razors | 757,655 | Apr. 19 | 2907 | 632 | 109 | 1997 |
| Guinan, John, Woodhaven, N. Y. Razor | 757,656 | Apr. 19 | 2909 | 633 | 109 | 1997 |
| Guindon, Arthur, Montreal, Canada. Rotary engine | 757,455 | Apr. 19 | 2481 | 543, 544 | 109 | 1902 |
| Gull, Rudolf. (See Busch, Gull, and Barry.) | | | | | | |
| Gullbransson, Gillis, assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Blue-red lake and making same | 757,109 | Apr. 12 | 1786 | ..... | 109 | 1738 |
| Gummer, August M., assignor to Gem City Stove Co., Dayton, Ohio. Gas-mixer | 757,916 | Apr. 19 | 3404 | 737 | 109 | 2105 |
| Gummerson, Thomas E., Crestone, Colo. Railway-switch | 754,864 | Mar. 15 | 3300 | 719 | 109 | 756 |
| Gumz, Richard, Berlin, Germany. Zither | 755,572 | Mar. 22 | 4572 | 1017 | 109 | 1046 |
| Gunn, Charles D., Amery, assignor of one-half to L. Soderberg, Fredric, Wis. Meat-tenderer | 756,356 | Apr. 5 | 331 | 68 | 109 | 1414 |
| Gunn, Charles H., San Jose, Cal. Clothes-washing device | 754,924 | Mar. 15 | 3397 | 742 | 109 | 776 |
| Gunnell, Elias, assignor of one-half to W. I. Babcock, Chicago, Ill. Pneumatic hammer | 756,857 | Apr. 5 | 332 | 69 | 109 | 1415 |
| Günther, Fritz, assignor to Chemische Fabrik auf Actien, (vorm. E. Schering,) Berlin, Germany. Photographic developing-paper | 758,312 | Apr. 26 | 4211 | 905 | 109 | 2302 |
| Gurtner, Adolf A., Bern, Switzerland. Photographic plate | 753,977 | Mar. 8 | 1534 | 340 | 109 | 352 |
| Guth, Frederick, Lincoln, Ill. Music-leaf turner | 756,848 | Apr. 12 | 1268 | 282 | 109 | 1630 |
| Gutzeit, Wilhelm, Charlottenburg, Germany. Manufactured plate for ceiling constructions | 756,015 | Mar. 29 | 5477 | 1208 | 109 | 1265 |
| Guy, Charles, assignor of one-half to A. P. Charles, Iola, Kans. Bag-fastener | 753,978 | Mar. 8 | 1535 | 340 | 109 | 352 |
| Gwynes, George B., Americus, Ga. Plow-point | 756,849 | Apr. 12 | 1270 | 282 | 109 | 1630 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| H. C. White Co. (See White and Mallison, assignors.) | | | | | | |
| H. L. Dixon Company. (See Côté, Napoleon, assignor.) | | | | | | |
| H. W. Butterworth & Sons Company. (See Butterworth, Charles C., assignor.) | | | | | | |
| Haas, Harold M., Cincinnati, Ohio. Washboard | 754,300 | Mar. 8 | 2131 | 473 | 109 | 488 |
| Haas, Isaac H., Atlanta, Ga. Spring-bed | 753,698 | Mar. 1 | 983 | 211 | 109 | 201 |
| Hacker, Emanuel M., assignor to Style Manufacturing Co., New York, N. Y. Hat | 754,313 | Mar. 8 | 1974 | 498 | 109 | 450 |
| Hackerd, Henry H., Manson, Ind. Kiln-door | 754,559 | Mar. 15 | 2706 | 568 | 109 | 696 |
| Hacking, Henry H. (See Hacking, William H. and H. H.) | | | | | | |
| Hacking, William H. and H. H., Bury, England. Weft-replenishing mechanism for looms | 754,560 | Mar. 15 | 2707 | 568, 569 | 109 | 696 |
| Hadaller, Joseph and M., Effingham, Ill. Milk-cooler | 753,699 | Mar. 1 | 933 | 211 | 109 | 201 |
| Hadaller, Maria. (See Hadaller, Joseph and M.) | | | | | | |
| Hadfield, Robert A., Sheffield, England. Manufacture of hardened-steel projectiles or other articles | 754,201 | Mar. 8 | 2128 | ------ | 109 | 483 |
| Hadley, Joshua A., Brazil, Ind. Banana-crate | 754,444 | Mar. 15 | 2465 | 541 | 109 | 578 |
| Hadley, Joshua A., Brazil, Ind., and E. B. Putnam, Carbondale, Ill. Miner's lamp | 757,189 | Apr. 12 | 1953 | 427 | 109 | 1777 |
| Haefele, Hannah B., Milwaukee, Wis. Toy block | 756,625 | Apr. 5 | 821 | 177 | 109 | 1516 |
| Hafer, John W., Bellefonte, Pa. Rail-joint coupling | 755,764 | Mar. 29 | 4990 | 1110 | 109 | 1154 |
| Hagan, Charles. (See Hagan, Louis T. and C.) | | | | | | |
| Hagan, Louis T. and C., Winchester, Ky. Valve-gear for explosive-engines | 757,917 | Apr. 19 | 3406 | 737 | 109 | 2105 |
| Hagar, Frank D., assignor to Hagar Shoe Machinery Company, Boston, Mass. Loose-nailing machine | 755,227 | Mar. 22 | 3042 | 873 | 109 | 911 |
| Hagar, George H., Denver, Colo. Device for displaying and vending cigars | 753,987 | Mar. 1 | 1239 | 276 | 109 | 263 |
| Hagar Shoe Machinery Company. (See Hagar, Frank D., assignor.) | | | | | | |
| Hager, Robert, assignor, by mesne assignments, of one-half to J. J. Hauer, St. Louis, Mo. Fire-kindler | 754,062 | Mar. 8 | 1679 | 373 | 109 | 385 |
| Hahn, John, assignor of one-fourth to G. Gartling, Los Angeles, Cal. Pump | 753,898 | Mar. 1 | 1231 | 277 | 109 | 263 |
| Hahn, Paul, Niederlahnstein, Germany. Machine for mercerizing yarn | 755,765 | Mar. 29 | 4992 | 1110, 1111 | 109 | 1154 |
| Haigh, Joseph, Wetmore, Kans. Trunk-protector | 754,302 | Mar. 8 | 2133 | 473 | 109 | 488 |
| Haiman, Elias, Cleveland, Ohio. Swingletree or doubletree | 757,966 | Apr. 19 | 3305 | 716 | 109 | 2082 |
| Haines, Enoch, Lakewood, Ohio. Horticultural implement | 757,739 | Apr. 19 | 3074 | 669 | 109 | 2081 |
| Halden, Joseph, Manchester, England. Apparatus for removing surplus moisture from photoprints, &c | 757,456 | Apr. 19 | 2486 | 545 | 109 | 1904 |
| Haliday, James B., Washington, D. C. Shutter-fastener | 757,998 | Apr. 12 | 2159 | 473 | 109 | 1820 |
| Hall, Bicknell, assignor to Heuber-Hodgman Printing Press Company, Taunton, Mass. Mechanical movement | 753,389 | Mar. 1 | 313 | 71 | 109 | 71 |
| Hall, Chester P., Chicago, Ill. Automatic elevator-retarding device | 753,569 | Mar. 1 | 675 | 152 | 109 | 149 |
| Hall, Chester P., Chicago, Ill. Automatic elevator-retarding device | 753,570 | Mar. 1 | 676 | 152 | 109 | 149 |
| Hall, Edwin A., Hydepark, Mass. Air and gas regulating apparatus | 754,308 | Mar. 8 | 2135 | 473 | 109 | 484 |
| Hall, Frederick W., Camden, N. J., assignor of one-half to J. W. Paxson Company, Philadelphia, Pa. Molding-machine | 756,313 | Apr. 26 | 4812 | 905, 906 | 109 | 2302 |
| Hall, H. D., *et al.* (See Buckingham, Edward L., assignor.) | | | | | | |
| Hall, Hardin Q., Louisville, Ky. Car-replacer | 757,399 | Apr. 12 | 2160 | 474 | 109 | 1820 |
| Hall, Jesse T., Chicago, Ill. Uterine supporter | 756,165 | Mar. 29 | 5785 | 1267 | 109 | 1320 |
| Hall, John B. (See Martin, James F., assignor.) | | | | | | |
| Hall, Mournin N., and L. D. Mohler, McPherson, Kans. Clothes-drainer | 756,112 | Mar. 29 | 5659 | 1249 | 109 | 1308 |
| Hall Signal Company. (See Coleman, Clarence W., assignor.) | | | | | | |
| Hall Signal Company. (See Mosher, Asa H., assignor.) | | | | | | |
| Hall, Thrasher, assignor of one-half to G. Rueckholdt, St. Louis, Mo. Shelving | 753,979 | Mar. 8 | 1596 | 341 | 109 | 352 |
| Hall, Walter A., Lynn, Mass., assignor to General Electric Company. Transformer | 755,766 | Mar. 29 | 4995 | 1111 | 109 | 1155 |
| Hall, William A., Bellows Falls, Vt. Producing milk-sugar | 756,065 | Apr. 26 | 5730 | 808 | 109 | 2191 |
| Hall, William A., Bellows Falls, Vt., assignor to Casein Company of America. Casein composition and producing same | 756,064 | Apr. 26 | 5719 | ------ | 109 | 2190 |
| Halldorson, Thorgils, Mountain, N. D. Motor-sled | 754,996 | Mar. 22 | 3540 | 775 | 109 | 824 |
| Hallé Automatic Fire Arms Syndicate. (See Hallé, Clifford R. S. J., assignor.) | | | | | | |
| Hallé, Clifford R. S. J., assignor to Hallé Automatic Fire Arms Syndicate, Limited, London, England. Automatic firearm | 753,700 | Mar. 1 | 984 | 211, 212 | 109 | 201 |
| Hallé, Clifford R. S. J., Hampton Wick, assignor to Hallé Automatic Fire Arms Syndicate, Limited, London, England. Recoil-operated firearm | 755,482 | Mar. 22 | 4414 | 978, 979 | 109 | 1011 |
| Haller, Winfield A. (See Blossom and Haller.) | | | | | | |
| Hallowell, Maurice G., assignor to J. Ellwood Lee Company, Conshohocken, Pa. Adjustable truss | 756,440 | Apr. 26 | 4460 | 959 | 109 | 2356 |
| Ham, Henry C., assignor to Rude Brothers Manufacturing Company, Liberty, Ind. Force-feed seeding-machine | 753,134 | Apr. 26 | 3846 | 825 | 109 | 2221 |
| Hamachek, Frank, Kewaunee, Wis. Feed-cutter | 757,614 | Apr. 19 | 2935 | 617, 618 | 109 | 1977 |
| Hamann, Carl H. O., Bergedorf, near Hamburg, Germany. Machine having rotating pistons | 753,390 | Mar. 1 | 316 | 71, 72 | 109 | 71 |
| Hamblin, Stephen M., Readville, Mass. Machine for wrapping candy kisses, &c | 753,571 | Mar. 1 | 680 | 153 | 109 | 150 |
| Hamell, Frank, Augres, Mich. Preserving fish | 756,626 | Apr. 5 | 822 | ------ | 109 | 1517 |
| Hamilton, Alexander, Alhambra, Cal. Gate for fruit-chutes | 755,488 | Mar. 22 | 4418 | 979 | 109 | 1012 |
| Hamilton, Brace H., and W. E. Ver Planck, Lynn, Mass., assignors to General Electric Company. Bucket-wheel for steam-turbines | 755,767 | Mar. 29 | 4997 | 1111 | 109 | 1156 |
| Hamilton, Jonathan R., Kingston, assignor of one-half to W. Dixon, Kimball, Minn. Bath apparatus | 758,207 | Apr. 26 | 3980 | 868 | 109 | 2250 |
| Hamilton, Robert. (See Gleeson and Hamilton.) | | | | | | |
| Hamilton, Robert, Milton, Mass. Telephone system | 755,868 | Mar. 29 | 5189 | 1149 | 109 | 1208 |
| Hamilton, William C., Pittsburg, Pa. Piano | 758,531 | Apr. 26 | 4687 | 998 | 109 | 2306 |
| Hamilton, William E., Columbus, Ohio. Electrical-wire station | 756,850 | Apr. 12 | 1971 | 388 | 109 | 1630 |
| Hamm, Charles. (See Geddes, Charles A., assignor.) | | | | | | |
| Hammack, Martin V., *et al.* (See Miller, Roy C., assignor.) | | | | | | |
| Hammar, Sigard A. S. (See Meigs and Hammar.) | | | | | | |
| Hammerle, Franz, Melrose, Mass. Upright-piano action | 757,657 | Apr. 19 | 2911 | 633 | 109 | 1998 |
| Hammond, Charles M., *et al.* (See Horrall, William A., assignor.) | | | | | | |
| Hamon, Augustin, Neuilly-sur-Seine, France. Apparatus for casting cylinders for phonographs or the like | 757,667 | Apr. 19 | 3006 | 716, 717 | 109 | 2082 |
| Hampton, Thomas, West Elizabeth, Pa. Kiln | 755,655 | Mar. 29 | 4745 | 1055, 1056, 1057 | 109 | 1099 |
| Hamrick, Porter S., Whitewater, Wis. Rule | 754,445 | Mar. 15 | 2465 | 541 | 109 | 578 |
| Hancock, John W., Mattoon, Ill. Nut-lock | 757,457 | Apr. 19 | 2489 | 545 | 109 | 1904 |
| Hangi, Karl P., New York, N. Y. Rotary fluid-motor | 757,300 | Apr. 12 | 2168 | 474 | 109 | 1820 |
| Hanks, Clinton A. (See Doten, Henry A., assignor.) | | | | | | |
| Hanlon, John F., Concord, N. H. Ellipsograph | 756,314 | Apr. 26 | 4816 | 906 | 109 | 2303 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hanlon, John H., Somerville, assignor of one-half to W. J. Hanlon, Fitchburg, Mass. Track-sanding device | 753,794 | Mar. 1 | 1149 | 259 | 109 | 247 |
| Hanlon, Marquis D., Wilkinsburg, assignor to Union Switch and Signal Company, Swissvale, Pa. Railway semaphore-signal | 755,656 | Mar. 29 | 4748 | 1057 | 109 | 1099 |
| Hanlon, William J. (See Hanlon, John H., assignor.) | | | | | | |
| Hanmer, Everett, Interlochen, Mich. Stovepipe-fastener | 753,701 | Mar. 1 | 936 | 212 | 109 | 202 |
| Hanna, Jacob, and C. S. Gilman, Rivera, Cal. Electric safety system for railways | 756,957 | Apr. 12 | 1477 | 326 | 109 | 1673 |
| Hannah, Edgar J., Greencastle, Mo. Double-acting force-pump | 756,113 | Mar. 29 | 5660 | 1249 | 109 | 1308 |
| Hannan, Charles R. (See Evensen, Anton, assignor.) | | | | | | |
| Hannan, George R., and J. C. Rodehaver, San Francisco, Cal. String-cutter | 755,869 | Mar. 29 | 5193 | 1149 | 109 | 1202 |
| Hannes, William F., assignor of one-half to W. J. Browning, Deming, N. Mex. Ter. Treating ores | 758,532 | Apr. 26 | 4638 | 998 | 109 | 2296 |
| Hannon, Charles F., *et al.* (See Durden, Washington L., assignor.) | | | | | | |
| Hannoversche Cakesfabrik H. Bahlsen. (See Forcke, Carl, assignor.) | | | | | | |
| Hano, Philip. (See Sheldon, Edward P., assignor.) | | | | | | |
| Hansen, Charles E., assignor to Gorham Manufacturing Company, Incorporated, Providence, R. I. Clasp for articles of jewelry | 758,486 | Mar. 1 | 493 | 115 | 109 | 108 |
| Hansen-Ellehammer, Jacob C., Copenhagen, Denmark. Coin-collecting box or receptacle | 755,768 | Mar. 29 | 4998 | 1111 | 109 | 1156 |
| Hansen, John M., Pittsburg, Pa. Triple-hopper coke-car | 758,257 | Mar. 1 | 82 | 21, 22 | 109 | 20 |
| Hansen, John M., Pittsburg, Pa. Railway-car underframe | 757,110 | Apr. 12 | 1787 | 391, 392 | 109 | 1738 |
| Hansen, John M., Pittsburg, Pa. Metallic railway-tie | 757,111 | Apr. 12 | 1790 | 392 | 109 | 1739 |
| Hanson, Charles H. L., assignor to J. Bromley & Sons, Philadelphia, Pa. Woven fabric | 758,702 | Mar. 1 | 937 | 212 | 109 | 202 |
| Hanson, Hans C., assignor to American Gas Machine Company, Albert Lea, Minn. Gas-generator | 757,615 | Apr. 19 | 2934 | 618 | 109 | 1979 |
| Hanson, James L., Chicago, Ill. Loose-leaf binder | 754,766 | Mar. 15 | 3101 | 677 | 109 | 718 |
| Hanson, John A., and A. F. Lambert, Davenport, Wash. Insulator | 756,627 | Apr. 5 | 823 | 177 | 109 | 1517 |
| Hanstine, Harry S., Pittsburg, assignor of two-thirds to J. D. Crafft and L. E. Montgomery, Oakmont, Pa. Vise | 757,918 | Apr. 19 | 3408 | 738 | 109 | 2105 |
| Happe, William C., Davenport, Iowa. Saw-cover | 757,740 | Apr. 19 | 3055 | 669 | 109 | 2082 |
| Happle, John, Cleveland, N. Y. Level, plumb, and inclinometer | 756,628 | Apr. 5 | 824 | 177 | 109 | 1517 |
| Harbaugh, George O. and H. E., assignors of one-third to Chicago-Rockford Hosiery Company, Kenosha, Wis. Machine for uniting looped fabrics | 758,248 | Apr. 26 | 4063 | 879, 880 | 109 | 2267 |
| Harbaugh, Howard E. (See Harbaugh, George O. and H. E.) | | | | | | |
| Harbour, George W., assignor to A. S. Newcomb, Worcester, Mass. Seat for bath-tubs | 754,369 | Mar. 8 | 2302 | 503 | 109 | 520 |
| Hardegen, Paul, Berlin, Germany. Casing for telephones or microphones | 753,391 | Mar. 1 | 318 | 72 | 109 | 72 |
| Harden, Harry, London, Ohio. Latch | 758,441 | Apr. 26 | 4461 | 959 | 109 | 2357 |
| Hardingham, George G. M., London, England, assignor to Felten & Guilleaume Carlswerk Actien-Gesellschaft, Mülheim-on-the-Rhine, Germany. Providing cables or other flexible bodies with solid ends | 754,997 | Mar. 22 | 3542 | 776 | 109 | 825 |
| Hardy, Colin F. (See Eggleston, Hardy, and Lepper.) | | | | | | |
| Hardy, John F., Chicago, Ill. Carpet-sweeper | 756,358 | Apr. 5 | 836 | 69 | 109 | 1415 |
| Hardy, John F., Chicago, Ill. Carpet-sweeper | 756,359 | Apr. 5 | 843 | 70 | 109 | 1417 |
| Harger, Charles G., Jr., Rochester, N. Y. Fastener | 756,496 | Apr. 5 | 606 | 131 | 109 | 1470 |
| Hargrove, William, Montreal, Canada, assignor to J. A. Harriss, New York, N. Y. Clothes-horse | 755,484 | Mar. 22 | 4419 | 979 | 109 | 1012 |
| Harig, Joseph B., Baltimore, Md. Animal-trap | 758,208 | Apr. 26 | 3981 | 864 | 109 | 2250 |
| Haring, William N., Nyack, N. Y. Combination press and butter-mold | 757,301 | Apr. 12 | 2164 | 475 | 109 | 1821 |
| Harker, Charles O., Sioux City, Iowa. Door-locked controller for elevators | 753,572 | Mar. 1 | 684 | 153, 154 | 109 | 150 |
| Harlan, Martin C., Stuart, Iowa. Animal-trap | 757,401 | Apr. 12 | 2379 | 518 | 109 | 1965 |
| Harley, Bertron G., Wyncote, Pa. Machine-belting and making same | 757,919 | Apr. 19 | 3410 | 738 | 109 | 2106 |
| Harmany, Arthur R., Marietta, Ohio. Curtain-pole | 754,136 | Mar. 8 | 1821 | 406 | 109 | 418 |
| Harmon, John D. (See Luethy, Fredrick C., assignor.) | | | | | | |
| Harmon, Martin, Bloomington, Ill. Potato-bug machine | 755,769 | Mar. 29 | 4999 | 1112 | 109 | 1156 |
| Harmon, William O., San Marcos, Tex., assignor of one-half to A. H. Quarles, Washington, D. C. Tool for removing floors, ceilings, sidings, &c | 758,442 | Apr. 26 | 4463 | 959 | 109 | 2357 |
| Harper, John H., Butler, Pa. Shoe-blacking stand | 754,998 | Mar. 22 | 3543 | 776 | 109 | 825 |
| Harper Manufacturing Company. (See Hodge, John, assignor.) | | | | | | |
| Harraes, Johann, Chicago, Ill. Optical appliance | 756,958 | Apr. 12 | 1480 | 326 | 109 | 1674 |
| Harrah, Harford F., and W. S. Flint, Pendleton, Oreg. Mowing-machine attachment | 756,360 | Apr. 5 | 349 | 70 | 109 | 1418 |
| Harrington, Curtis J., assignor to Automatic Car Ventilator Company, New York, N. Y. Ventilating device | 755,485 | Mar. 22 | 4420 | 980 | 109 | 1012 |
| Harrington, David, assignor of one-half to F. E. Laughlin, Dallas, Tex. Apparatus for cooking by superheated steam | 755,486 | Mar. 22 | 4421 | 980 | 109 | 1013 |
| Harrington, Joseph L., and J. J. Schermack, assignors to Thexton Electric Envelope Sealer Co., Chicago, Ill. Envelop-sealing machine | 758,359 | Apr. 26 | 4297 | 928 | 109 | 2319 |
| Harrington, Samuel S., Springfield, Mass. Toilet-paper holder | 755,657 | Mar. 29 | 4749 | 1057 | 109 | 1100 |
| Harris, Alfred E., London, England. Atmospheric gas-burner | 754,561 | Mar. 15 | 2708 | 569 | 109 | 696 |
| Harris, Charles T., Annex, Va. Gate | 756,231 | Apr. 5 | 77 | 17 | 109 | 1359 |
| Harris, Frank D., Keo, Ark. Wrench | 753,708 | Mar. 1 | 939 | 213 | 109 | 203 |
| Harris, John B., Nashville, Tenn. Smoke-consuming furnace | 754,999 | Mar. 22 | 3544 | 776, 777 | 109 | 825 |
| Harris, Thomas D., assignor of one-half to E. L. Moffitt, Ashboro, N. C. Manufacturing wheels | 754,304 | Mar. 8 | 2138 | 473, 474 | 109 | 485 |
| Harris, Walter B., Indianapolis, Ind. Air or gas lift for fluids | 758,360 | Apr. 26 | 4301 | 923, 924 | 109 | 2320 |
| Harris, William E., Pittsburg, assignor of one-half to J. F. Klapka, Allegheny, Pa. Traction-wheel | 754,214 | Mar. 8 | 1975 | 439 | 109 | 451 |
| Harrison, Albert D., Detroit, Mich. Dumping-car | 758,135 | Apr. 26 | 3848 | 835 | 109 | 2221 |
| Harrison, Alfred, *et al.* (See Waters, Frank J., assignor.) | | | | | | |
| Harrison, Arthur H. (See Reddick, Joseph G., assignor.) | | | | | | |
| Harrison Bros. & Co. (See Schanche, Herman G., assignor.) | | | | | | |
| Harrison, Julian R., Barnwell, S. C. Wrench | 754,137 | Mar. 8 | 1822 | 406 | 109 | 418 |
| Harrison, Newton, assignor of one-half to W. H. Laird, New York, N. Y. Electric-current regulator | 757,302 | Apr. 12 | 2170 | 476 | 109 | 1823 |
| Harrison, William, Grand Rapids, Mich. Device for erecting buildings out of plastic material | 756,629 | Apr. 5 | 826 | 178, 179 | 109 | 1517 |
| Harriss, John A. (See Hargrove, William, assignor.) | | | | | | |
| Harriss, Langdon, and W. H. Kendall, Waco, Tex. Touch-regulating attachment for pianos | 756,015 | Mar. 29 | 5479 | 1209 | 109 | 1265 |
| Harrold, Amos, Newark, Ohio. Traction-engine wheel | 755,770 | Mar. 29 | 5000 | 1112 | 109 | 1156 |
| Harrop, John T., Garfield, N. J. Illuminating vault-cover | 758,443 | Apr. 26 | 4464 | 960 | 109 | 2357 |
| Harse, George W., New York, N. Y. Gas-light negative-printing attachment | 758,444 | Apr. 26 | 4466 | 960 | 109 | 2357 |
| Hart, Archibald, Dunblane, Scotland. Pen | 757,868 | Apr. 19 | 3309 | 717 | 109 | 2083 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hart, Gerald W., assignor to Hart Manufacturing Company, Hartford, Conn. Electric switch | 753,258 | Mar. 1 | 85 | 22 | 109 | 21 |
| Hart, Gerald W., West Hartford, assignor to Hart Manufacturing Company, Hartford, Conn. Electric snap-switch | 753,881 | Mar. 8 | 1331 | 300 | 109 | 307 |
| Hart & Hegeman Manufacturing Company. (See Peck, Ashley P., assignor.) | | | | | | |
| Hart Manufacturing Company. (See Hart, Gerald W., assignor.) | | | | | | |
| Hart, William J., Mount Vernon, assignor of one-half to C. F. Splitdorf, New York, N. Y. Electric sparking igniter for explosive-engines | 753,795 | Mar. 1 | 1151 | 259 | 109 | 247 |
| Hartell, Frederick G. (See Caldwell and Martin, assignors.) | | | | | | |
| Hartell, Frederick G., Chicago, Ill. Coin-detector | 757,741 | Apr. 19 | 3076 | 670 | 109 | 2082 |
| Hartell, Frederick G., Chicago, Ill., assignor of two-thirds to Y. Q. Caldwell, Paris, and L. M. Martin, Martin, Tenn. Vending-machine | 758,007 | Apr. 19 | 3580 | 775 | 109 | 2144 |
| Hartford, Moses E., *et al.* (See Mitchell, James C., assignor.) | | | | | | |
| Hartman, Frank O., Mansfield, Ohio. Automatic magnetic circuit-breaker | 753,704 | Mar. 1 | 940 | 213, 214 | 109 | 208 |
| Hartman, John K. (See Leeking and Hartman.) | | | | | | |
| Hartman, Samuel, Hartford, Conn. Hook for supporting tenting-cloth | 755,658 | Mar. 29 | 4750 | 1057 | 109 | 1100 |
| Hartshorn, Andrew L. and G. C., Fort Worth, Tex. Combination davenport and couch | 753,487 | Mar. 1 | 494 | 116 | 109 | 108 |
| Hartshorn, Guy C. (See Hartshorn, Andrew L. and G. C.) | | | | | | |
| Hartweg, Gottlieb, District of Highlands, Ky. Capstan | 756,851 | Apr. 12 | 1273 | 283 | 109 | 1631 |
| Hartzell, William, Philadelphia, Pa. Time-damper mechanism | 754,446 | Mar. 15 | 2466 | 541 | 109 | 578 |
| Harvey, George L., Chicago, Ill. Friction device | 758,066 | Apr. 26 | 3731 | 808, 809 | 109 | 2191 |
| Harvey, George L., Chicago, Ill. Friction device | 758,067 | Apr. 26 | 3734 | 809 | 109 | 2191 |
| Hasch, Frederick W., Cecil, Ohio. Sieve | 754,865 | Mar. 15 | 3908 | 719 | 109 | 756 |
| Hasek, Jan. (See Goldschmidt and Hasek.) | | | | | | |
| Haskell, Henry L., Ludington, Mich., and C. F. Brigham, Sheboygan, Wis. Billiard or pool ball | 753,392 | Mar. 1 | 319 | 72 | 109 | 72 |
| Hass, Herman J. (See Shultz, Hass, and Thorden.) | | | | | | |
| Hatfield, Martin H., Harriman, Tenn. Corn-grinder | 758,068 | Apr. 26 | 3727 | 810 | 109 | 2192 |
| Hathaway, James F., assignor of two-thirds to F. B. Mulgrew and J. M. Alexander, San Francisco, Cal. Electric water-heater | 755,659 | Mar. 29 | 4750 | 1058 | 109 | 1100 |
| Hathorn, Henry W., Mason City, Iowa. Power-hammer | 758,391 | Apr. 26 | 4308 | 994 | 109 | 2230 |
| Hatter, George B., assignor of one-half to G. Rahnner, Brooklyn, N. Y. Curtain-fixture | 756,361 | Apr. 5 | 350 | 71 | 109 | 1418 |
| Hauer, Joseph J. (See Hager, Robert, assignor.) | | | | | | |
| Hauser, Friedrich. (See Vilim and Hauser.) | | | | | | |
| Hawes, H. C., *et al.* (See Reinmiller, William C., assignor.) | | | | | | |
| Hawke, James H., Martinsburg, Ohio. Smoke-consuming furnace | 753,259 | Mar. 1 | 86 | 22 | 109 | 21 |
| Hawkins, Charles E., East Pittsburg, and F. Cary, Wilkinsburg, Pa. Wrench | 754,093 | Mar. 8 | 1680 | 373 | 109 | 367 |
| Hawkins, Charles G., assignor of one-half to R. W. Swanston, Des Moines, Iowa. Animal-trap | 757,036 | Apr. 12 | 1663 | 360 | 109 | 1712 |
| Hawkins, Fred L., Gardner, Mass. Lubricating device. (Reissue) | 12,909 | Mar. 22 | 4637 | 1030 | 109 | 1061 |
| Hawkins, Harry, *et al.* (See Hayes, Edward W., assignor.) | | | | | | |
| Hawkins, J. W., *et al.* (See Hayes, Edward W., assignor.) | | | | | | |
| Hawkins, John D., Colorado Springs, and G. E. Gannon, Colorado City, Colo. Barrel-filter | 756,862 | Apr. 12 | 1275 | 284 | 109 | 1631 |
| Hawkins, Roy, Fonda, Iowa. Hay and shocked-grain loader | 757,303 | Apr. 19 | 2172 | 476 | 109 | 1824 |
| Hawkins, Theodore L., Lincoln, Nebr. Feed-bag | 754,305 | Mar. 8 | 2140 | 474 | 109 | 485 |
| Haws, Isaac, Hannibal, N. Y. Fence | 758,593 | Apr. 26 | 4756 | 1024 | 109 | 2422 |
| Haycraft, John L., Linneus, Mo. Hotel-register desk | 757,920 | Apr. 19 | 3411 | 738 | 109 | 2106 |
| Haycraft, John L., Linneus, Mo. Blotter attachment for desks | 757,921 | Apr. 19 | 3412 | 739 | 109 | 2106 |
| Hayden, Joel, Scituate, R. I., assignor, by mesne assignments, to Boston Spinning Ring Company, Portland, Me. Yarn-spinning apparatus | 756,166 | Mar. 29 | 5737 | 1267 | 109 | 1320 |
| Hayes, Edward W., assignor of one-half to J. W. Hawkins, W. J. Holland, Birmingham, Ala., and H. Hawkins, New York, N. Y. Cotton gin and condenser | 753,488 | Mar. 1 | 497 | 115, 117 | 109 | 109 |
| Hayes, John F., Richmond, Va. Folding wardrobe | 753,393 | Mar. 1 | 320 | 73 | 109 | 72 |
| Haymond, Thomas S., *et al.* (See Heenan, James, assignor.) | | | | | | |
| Haynes, William, Atlanta, Ga., assignor to Draper Company, Portland, Me. Cut signal or indicator for looms | 753,960 | Mar. 8 | 1326 | 341 | 109 | 353 |
| Hays, James T. and T. C., Emmitsburg, Md. Carbid-feed for gas-machines | 756,349 | Apr. 26 | 4066 | 880 | 109 | 2268 |
| Hays, Thomas C. (See Hays, James T. and T. C.) | | | | | | |
| Hayward, Morris A., Columbus, Ohio. Flooring end joint | 754,215 | Mar. 8 | 1976 | 439 | 109 | 451 |
| Haywood, Daniel H., New York, N. Y. Device for supporting fountain-pens | 755,870 | Mar. 29 | 5196 | 1149 | 109 | 1208 |
| Haywood, Daniel H., assignor to Davis & Roesch Temperature Controlling Company, New York, N. Y. Thermostat | 755,487 | Mar. 22 | 4422 | 980 | 109 | 1013 |
| Hazard, Charles C., Washington Court-House, Ohio. Physician's examining and treating couch or table | 757,807 | Apr. 19 | 3200 | 695 | 109 | 2000 |
| Hazelrigg, Ross, Cottagegrove, Oreg. Rotary engine | 756,362 | Apr. 5 | 351 | 71, 73 | 109 | 1419 |
| Heacker, Herman, San Diego, Cal. Bake-oven | 754,866 | Mar. 15 | 3904 | 720 | 109 | 757 |
| Healy, Clarence L., Newark, N. J. Printing-telegraph | 758,250 | Apr. 26 | 4068 | 881 | 109 | 2268 |
| Healy, Edgar O., Chicago, assignor of one-half to G. Van Schaick, Highland Park, Ill. Apparatus for producing scenic effects | 754,867 | Mar. 15 | 3906 | 720 | 109 | 757 |
| Healy, Robert. (See Livesey, James, assignor.) | | | | | | |
| Hean, Peter D., and J. J. Egan, Media, Pa. Trolley-head | 758,445 | Apr. 26 | 4467 | 960, 961 | 109 | 2358 |
| Heany, John A., Philadelphia, Pa., assignor to Teter-Heany Developing Company, Charleston, W. Va. Fire and water proof insulating-covering for metallic surfaces | 754,866 | Mar. 15 | 3905 | 721 | 109 | 757 |
| Heap, David P. (See Robertson and Heap.) | | | | | | |
| Heard, John D., New Holland, Ga. Plow attachment | 755,295 | Mar. 22 | 4066 | 901 | 109 | 987 |
| Hearttagen, John, Allentown, Pa. Speed-cone | 754,307 | Mar. 8 | 2142 | 475 | 109 | 485 |
| Hearttagen, Mary E., Allentown, Pa. Soap and brush holder | 754,30 | Mar. 8 | 2141 | 474 | 109 | 485 |
| Heath, Elroy N., assignor of one-half to J. F. Parker, Wakefield, Mass. Card-holding device | 753,892 | Mar. 8 | 1333 | 300 | 109 | 308 |
| Heath, Forrest A., Jersey City, N. J. Shoe-former | 755,488 | Mar. 22 | 4425 | 981 | 109 | 1013 |
| Heath, William E., Baltimore, Md., assignor to Standard Bottle-Cap Corporation, Wilmington, Del. Sealing device | 756,232 | Apr. 5 | 78 | 17 | 109 | 1359 |
| Heath, William E., Baltimore, Md., assignor to Standard Bottle-Cap Corporation, Wilmington, Del. Sealing device | 756,233 | Apr. 5 | 80 | 18 | 109 | 1360 |
| Heath, William E., Baltimore, Md., assignor to Standard Bottle-Cap Corporation, Wilmington, Del. Milk-jar cap | 756,234 | Apr. 5 | 83 | 18 | 109 | 1360 |
| Heather, Effie, administratrix. (See Heather, Parker D.) | | | | | | |
| Heather, Parker D., deceased, Pontiac, Mich.; E. Heather, administratrix. Cot | 758,008 | Apr. 19 | 3583 | 775, 776 | 109 | 2144 |
| Heaton, William, Woodley, near Stockport, England. Shoe-nailing machine | 755,489 | Mar. 22 | 4425 | 981 | 109 | 1014 |
| Heberer, Adam, Alameda, Cal. Adjustable wrench | 753,499 | Mar. 1 | 508 | 117 | 109 | 111 |
| Hector, William, Chicago, Ill. Anchor | 753,394 | Mar. 1 | 322 | 73 | 109 | 72 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hedberg, Chancey C., Des Moines, Iowa. Valve device | 755,000 | Mar. 22 | 3546 | 777 | 109 | 826 |
| Hedgeland, Frederick W., Chicago, Ill. Guard for the striking devices of piano-players | 756,858 | Apr. 12 | 1276 | 284 | 109 | 1632 |
| Hedlund, Per J., Stockholm, Sweden. Steam-turbine | 754,447 | Mar. 15 | 2488 | 541 | 109 | 579 |
| Hedrick, Frank, Leroy, Ill. Fence-post | 758,178 | Apr. 26 | 3927 | 852 | 109 | 2238 |
| Hedrick, Jesse E., Lanham, W. Va. Nut-lock | 754,767 | Mar. 15 | 3108 | 678 | 109 | 718 |
| Heenan, James, assignor of one-half to T. S. Haymond, J. Prunty, and G. B. Coburn, Middleton, W. Va. Engine for mining-machines | 758,533 | Apr. 26 | 4640 | 999 | 109 | 2397 |
| Heeter, Charles M., Butler, Pa. Oil-well packer | 754,138 | Mar. 8 | 1823 | 406 | 109 | 418 |
| Hegemann, Wilhelm, Frankfort-on-the-Main, Germany. Stove for heating smoothing-irons or the like | 757,742 | Apr. 19 | 3079 | 670, 671 | 109 | 2082 |
| Heidt, Jesse C., Baileys Mills, Ga. Tide-water trunk or flood-gate | 754,308 | Mar. 8 | 2144 | 475 | 109 | 486 |
| Heilig, Herschel M., Tecumseh, and M. H. Reed, Bluesprings, assignors to said Heilig and H. Scilley, Leavitt, Nebr. Beet-harvester | 757,190 | Apr. 12 | 1954 | 427 | 109 | 1778 |
| Heilig, Herschel M., Tecumseh, and M. H. Reed, Bluesprings, assignors to said Heilig and H. Scilley, Leavitt, Nebr. Beet-harvester | 757,425 | Apr. 12 | 2425 | 528, 529 | 109 | 1875 |
| Heilrath, Christian, and S. M. Taber, Sacramento, Cal. Check-hook | 757,304 | Apr. 12 | 2174 | 476 | 109 | 1823 |
| Helm, Josef, Offenbach, Germany. Platen printing-press | 757,458 | Apr. 19 | 2490 | 545, 546 | 109 | 1904 |
| Heissenberger, John, New York, N. Y. Coin-operated apparatus | 755,180 | Mar. 22 | 3762 | 826, 827 | 109 | 875 |
| Hele-Shaw, Henry S., Liverpool, and R. B. Helliwell, Waterloo, England. Wheel for vehicles | 755,181 | Mar. 22 | 3765 | 827, 828 | 109 | 875 |
| Helfers, John G., Donnellson, Ill. Speed-governor | 756,363 | Apr. 5 | 354 | 72 | 109 | 1419 |
| Helle, Warren W., and R. Brockman, Hinsdale, Ill. Compound tool | 756,854 | Apr. 12 | 1277 | 284 | 109 | 1632 |
| Helliwell, Robert B. (See Hele-Shaw and Helliwell.) | | | | | | |
| Helm, John, St. Louis, Mo. Trench-digger | 757,459 | Apr. 19 | 2494 | 547 | 109 | 1904 |
| Helm, Thomas A., Salt Lake City, Utah. Apparatus for treating ore | 755,871 | Mar. 29 | 5198 | 1149, 1150 | 109 | 1204 |
| Hemenway, Justin S., River Falls, Wis. Air-pump | 756,630 | Apr. 5 | 829 | 179 | 109 | 1518 |
| Henderson, Arthur S., assignor of one-half to J. B. Malcomb, Loudon, Tenn. Bag-holding cabinet | 755,001 | Mar. 22 | 3547 | 778 | 109 | 826 |
| Henderson, James T., New York, N. Y. Hat-receptacle for auditoriums | 757,305 | Apr. 12 | 2176 | 477 | 109 | 1824 |
| Hendey, Arthur, Jerome, Ariz. Ter. Tire | 758,209 | Apr. 26 | 3963 | 864 | 109 | 2250 |
| Hendricks, John C., Galesburg, Ill. Straw-stacker | 758,136 | Apr. 26 | 3849 | 835, 836 | 109 | 2221 |
| Hendrickson, James G., assignor of one-half to A. C. Forman, Bayonne, N. J. Vending-machine | 756,788 | Apr. 5 | 1143 | 252, 253 | 109 | 1588 |
| Henkel, Jewett A., Bedford City, Va. Cleaning millstones | 755,132 | Mar. 22 | 3767 | 828 | 109 | 876 |
| Henley, Micajah C., Richmond, Ind. Coliseum-chair | 755,133 | Mar. 22 | 3767 | 829 | 109 | 876 |
| Henneman, Arthur. (See Stewart, William J., assignor.) | | | | | | |
| Hennepin County Barrel Co. (See Flanery and Whiteshill, assignors.) | | | | | | |
| Hennessey, John J., *et al.* (See Moore, Peter N., assignor.) | | | | | | |
| Henrichsen, Henry E. (See Barton, Henrichsen, Cousins, and Matthews.) | | | | | | |
| Henricks Novelty Company. (See Daily, Irvin J., assignor.) | | | | | | |
| Henry, James M. (See Miller, John S., assignor.) | | | | | | |
| Henry, John, Grand Forks, N. D. Pneumatic stacker | 754,448 | Mar. 15 | 2489 | 542 | 109 | 579 |
| Henry, Thomas L. (See Millard and Henry.) | | | | | | |
| Henry, William P., Central City, Ky. Pivotal running-gear | 756,497 | Apr. 5 | 607 | 131 | 109 | 1470 |
| Henshaw, Arthur W. (See Reist and Henshaw.) | | | | | | |
| Henson, John S., Zanesfield, Ohio. Car-coupling | 756,855 | Apr. 12 | 1278 | 284, 285 | 109 | 1632 |
| Hentgen, Theodor, New York, N. Y. Carbonated-liquid-dispensing apparatus | 754,216 | Mar. 8 | 1977 | 439 | 109 | 451 |
| Hepburn, Melvin, assignor to Marlin Firearms Company, New Haven, Conn. Take-down gun | 755,660 | Mar. 29 | 4751 | 1058 | 109 | 1100 |
| Hepp, Eduard, Frankfort-on-the-Main, and E. Wolpert, assignors to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Making anthraquinone dyes | 754,768 | Mar. 15 | 3104 | ..... | 109 | 718 |
| Herbert, Charles, Philadelphia, Pa. Book stand or support | 756,631 | Apr. 5 | 832 | 180 | 109 | 1518 |
| Herbert, Frank. (See Earl, Spencer D., assignor.) | | | | | | |
| Herbst, Anna, administratrix. (See Herbst, Anton.) | | | | | | |
| Herbst, Anton, deceased, New York; A. Herbst, administratrix, assignor of one-half to K. Eckert, Brooklyn, N. Y. Bowling-alley | 757,922 | Apr. 19 | 3414 | 739 | 109 | 2107 |
| Herder, Philip, Jr., Cleveland, Ohio. Step-ladder | 757,616 | Apr. 19 | 2885 | 619 | 109 | 1979 |
| Herdle, Frederick J., Chicago, Ill. Printing-press | 757,460 | Apr. 19 | 2496 | 547, 548, 549, 550 | 109 | 1905 |
| Herdle, Frederick J., Chicago, Ill. Means for securing impression-surfaces to printing-rollers | 757,461 | Apr. 19 | 2504 | 550 | 109 | 1906 |
| Herman, Charles, Institute, Wis. Attachment for mowing-machines | 756,114 | Mar. 29 | 5662 | 1249 | 109 | 1304 |
| Herman, Charles W., assignor of one-half to A. T. Bowman, Canton, Ohio. Gage-table and conveyer | 756,959 | Apr. 12 | 1482 | 327 | 109 | 1674 |
| Hermance, Louis M., Poughkeepsie, N. Y. Fishing-reel | 756,364 | Apr. 5 | 356 | 72, 73 | 109 | 1420 |
| Herndon, Quintus. (See Blue and Herndon.) | | | | | | |
| Heron, Christopher, Galena, Ill. Wrench | 756,196 | Mar. 29 | 5788 | 1277 | 109 | 1329 |
| Heron, James T., and J. J. Crowley, New Bedford, Mass. Car-fender | 755,872 | Mar. 29 | 5199 | 1150 | 109 | 1204 |
| Herreshoff, John B. F., Brooklyn, N. Y. Velocity-regulator for fluids in motion | 757,089 | Apr. 12 | 1665 | 360 | 109 | 1713 |
| Herrick, George I., Wheaton, Ill. Protractor-tape | 756,632 | Apr. 5 | 833 | 180 | 109 | 1518 |
| Herrick, George I., Wheaton, Ill. Surveyor's pin | 756,633 | Apr. 5 | 834 | 180 | 109 | 1519 |
| Herrick, George I., Wheaton, Ill. Tape-holder | 756,634 | Apr. 5 | 835 | 180 | 109 | 1519 |
| Herriott, John E., assignor of one-half to A. G. Lauthers, Kansas City, Kans. Coffee-roaster | 757,743 | Apr. 19 | 3080 | 671 | 109 | 2033 |
| Herrmann, Emil, Downers Grove, Ill. Binder | 755,002 | Mar. 22 | 3550 | 778 | 109 | 827 |
| Herron, James A., Eskridge, Kans. Lister attachment | 754,449 | Mar. 15 | 2490 | 542 | 109 | 579 |
| Hersey Manufacturing Company. (See Tilden, James A., assignor.) | | | | | | |
| Herz, Adolf, Vienna, Austria-Hungary. Portable bath or sack for washing or bathing purposes | 754,217 | Mar. 8 | 1979 | 440 | 109 | 452 |
| Hess, Abram, Lebanon, Pa. Machine for moistening and sealing envelops | 756,635 | Apr. 5 | 836 | 181 | 109 | 1519 |
| Hess, Abram, Lebanon, Pa. Machine for opening envelops | 758,315 | Apr. 26 | 4218 | 906, 907 | 109 | 2303 |
| Hess, Henry K., Philadelphia, Pa. Steam-propelled vehicle | 757,808 | Apr. 19 | 3201 | 695, 696 | 109 | 2061 |
| Hess, Hugo G., Cincinnati, Ohio. Christmas-tree candle-holder | 757,869 | Apr. 19 | 3309 | 717 | 109 | 2068 |
| Hesselman, Bror O. W. (See Bergiund and Hesselman.) | | | | | | |
| Hett, John E., Berlin, Canada. Time-controlling mechanism for phonographs | 756,017 | Mar. 29 | 5483 | 1209 | 109 | 1265 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hettinger, Carl F., Boston, Mass. Cooling-tower | 758,373 | Mar. 1 | 666 | 154 | 109 | 151 |
| Heubach, Emil, Edison Park, Ill. Map | 754,450 | Mar. 15 | 2408 | 542 | 109 | 580 |
| Heulings, William H., Jr. (See Brill and Heulings.) | | | | | | |
| Hewett, Elisha. (See Nettleton, George E., assignor.) | | | | | | |
| Hewlett, Edward M., Schenectady, N. Y. Telescopic sight | 753,574 | Mar. 1 | 669 | 154, 155 | 109 | 151 |
| Hewlett, Edward M., Schenectady, N. Y., assignor to General Electric Company. Electric switch or circuit-breaker | 755,771 | Mar. 29 | 5001 | 1112, 1113 | 109 | 1157 |
| Hewlett, Edward M., Schenectady, N. Y., assignor to General Electric Company. Switch | 755,772 | Mar. 29 | 5006 | 1113 | 109 | 1158 |
| Hewlett, Edward M., Schenectady, N. Y., assignor to General Electric Company. Controlling electric boosters | 756,167 | Mar. 29 | 5738 | 1268 | 109 | 1320 |
| Hewlett, Edward M., Schenectady, N. Y., assignor to General Electric Company. Rotary-converter system | 756,960 | Apr. 12 | 1485 | 327 | 109 | 1674 |
| Heynsohn, Otto, San Carlos, Costa Rica. Propelling-gear for tricycles | 758,251 | Apr. 26 | 4070 | 881 | 109 | 2269 |
| Heynsohn, Otto, San Carlos, assignor of one-half to F. Alsdorff, Punta Arenas, Costa Rica. Dry-house | 755,134 | Mar. 22 | 3769 | 829 | 109 | 876 |
| Heyssel, Frederick W. E., Piagah, Mo. Extension-brace | 757,306 | Apr. 12 | 2178 | 477 | 109 | 1824 |
| Hiatt, Dan O., Greenlawn, N. Y. Sash-holder | 755,490 | Mar. 22 | 4429 | 992 | 109 | 1014 |
| Hibbard, Charles B., Grand Rapids, Mich. Non-refillable bottle | 756,636 | Apr. 5 | 837 | 181 | 109 | 1530 |
| Hibbard, Henry D., and W. Gaston, Plainfield, N. J., assignors to Manganese Steel Safe Company, New York, N. Y. Vault or safe | 758,069 | Apr. 26 | 3727 | 810 | 109 | 2192 |
| Hickmott, Robert. (See Roumiguiere, Alphonse, assignor.) | | | | | | |
| Hicks, John C., assignor to Center Drive Automobile Company, Chicago, Ill. Motor-vehicle | 758,137 | Apr. 26 | 3850 | 836 | 109 | 2221 |
| Hicks, Edward W., Cynthiana, Ky. Fire-extinguishing apparatus | 758,269 | Apr. 26 | 4304 | 984 | 109 | 2330 |
| Hicks-Judd Company. (See Huning, John W., assignor.) | | | | | | |
| Higgins, Henry B., Denver, Colo. Separable hinge for screens | 754,769 | Mar. 15 | 3105 | 678 | 109 | 714 |
| Higgins, Henry B., Denver, Colo. Separable hinge for screens | 754,770 | Mar. 15 | 3106 | 678 | 109 | 714 |
| Higgins, Henry B., Denver, Colo. Hanger for half-sized screens | 754,771 | Mar. 15 | 3107 | 678 | 109 | 714 |
| High, Samuel Y., Kansas City, Mo. Box-forming machine | 757,870 | Apr. 19 | 3311 | 717, 718 | 109 | 2093 |
| Highsmith, Aubrey O., Canton, Tex. Compound tool | 758,070 | Apr. 26 | 3730 | 810 | 109 | 2192 |
| Hilbert, Hermann, Heufeld, Germany. Making glue and gelatin from bones | 757,658 | Apr. 19 | 2913 | | 109 | 1998 |
| Hildreth, Ned E., Lansing, Mich. Igniter mechanism for explosive-engines | 756,961 | Apr. 12 | 1487 | 328 | 109 | 1675 |
| Hildreth, William O. (See McKay and Hildreth.) | | | | | | |
| Hiles, Thomas S., Chicago, Ill. Sidewalk-cleaner | 758,071 | Apr. 26 | 3732 | 810 | 109 | 2193 |
| Hilger, Eduard, Aix-la-Chapelle, Germany. Wrest-plate | 754,869 | Mar. 15 | 3309 | 721 | 109 | 758 |
| Hill, Arthur. (See Rogers, Christopher L., assignor.) | | | | | | |
| Hill, Bradbury, Osage, Iowa. Copy-holder | 753,490 | Mar. 1 | 505 | 117 | 109 | 111 |
| Hill, Charles E., Millington, Mich. Mop-wringer | 754,870 | Mar. 15 | 3310 | 721 | 109 | 758 |
| Hill, Chauncy H., Hopkins, Minn. Band-cutter and feeder | 755,051 | Mar. 29 | 4753 | 1058 | 109 | 1101 |
| Hill, Edward E., Chicago, Ill. Garbage-crematory | 755,092 | Mar. 29 | 4756 | 1059 | 109 | 1102 |
| Hill Electrical Manufacturing Company. (See Hill, Harry M., assignor.) | | | | | | |
| Hill, Gran W., Alexandria, Mo. Grain-separator | 757,307 | Apr. 12 | 2178 | 477, 478, 479, 480, 481 | 109 | 1824 |
| Hill, Harry M., assignor to Hill Electrical Manufacturing Company, St. Louis, Mo. Electrical water-heater | 754,451 | Mar. 15 | 2408 | 543 | 109 | 580 |
| Hill, Jacob A. (See Green and Hill.) | | | | | | |
| Hill, John E., Center Harbor, N. H. Fish-mouth opener | 755,668 | Mar. 29 | 4759 | 1059 | 109 | 1108 |
| Hill, Joseph P., Worcester, Mass. Ash-sifter | 758,082 | Apr. 19 | 3635 | 786 | 109 | 2155 |
| Hill, Samuel W., Ross township, Allegheny county, Pa. Bridge construction | 757,588 | Apr. 19 | 2991 | 589 | 109 | 1947 |
| Hill, Samuel W., Pittsburg, Pa. Arch-bridge construction | 757,553 | Apr. 19 | 2968 | 589 | 109 | 1948 |
| Hill, Thomas L. (See Noble, Richard D., assignor.) | | | | | | |
| Hill, Walter, Wallingford, Conn. Braiding-machine | 755,008 | Mar. 22 | 3551 | 778, 779 | 109 | 827 |
| Hillard, Frederic W., New York, N. Y. Type-writing machine | 758,252 | Apr. 26 | 4071 | 881, 882 | 109 | 2269 |
| Hiller, Gustav, Zittau, Germany. Cash-indicator | 756,018 | Mar. 29 | 5484 | 1210 | 109 | 1265 |
| Hilliard, John D., Jr., Glens Falls, N. Y. Supporting-pin for line-insulators | 758,179 | Apr. 26 | 3988 | 853 | 109 | 2239 |
| Hills, Albert C., London, England. Vehicle-tire | 757,988 | Apr. 19 | 3415 | 730 | 109 | 2107 |
| Hilzinger, William. (See Granger and Hilzinger.) | | | | | | |
| Himmelwright, Abraham L. A., New York, N. Y., assignor to New Jersey Wire Cloth Company, Trenton, N. J. Fireproof covering for columns or the like | 754,064 | Mar. 8 | 1681 | 373 | 109 | 387 |
| Hinde, James J., Sandusky, Ohio. Packing-box | 758,126 | Apr. 26 | 3953 | 836 | 109 | 2222 |
| Hinrichs, Charles F., and J. C. Barker, Poplarbluff, Mo. Engine-cylinder | 755,873 | Mar. 29 | 5001 | 1150 | 109 | 1204 |
| Hinson, James A., Chicago, Ill. Draft-rigging | 755,296 | Mar. 22 | 4067 | 901 | 109 | 988 |
| Hintz, Reinhart C., assignor of one-half to J. E. English, Massillon, Ohio. Rail-bender | 754,582 | Mar. 15 | 2709 | 589 | 109 | 827 |
| Hirner, Emil A., Allentown, Pa. Pattern-switch for knitting-machines | 758,220 | Mar. 1 | 87 | 23 | 109 | 23 |
| Hirsch, Hiram H., Philadelphia, Pa. Bedstead-fastener | 757,994 | Apr. 19 | 3416 | 730 | 109 | 2107 |
| Hirsch, Morris, New York, N. Y. Folding box | 756,019 | Mar. 29 | 5486 | 1210, 1211 | 109 | 1266 |
| Hirth, Louis G., *et al.* (See Beal, William C., assignor.) | | | | | | |
| Hissem, Thomas J., Richmond, Ind. Harp | 757,462 | Apr. 19 | 2506 | 550 | 109 | 1906 |
| Hitchcock, Frank C. (See Carrier, James W., assignor.) | | | | | | |
| Hobbs, Davis D. (See Murray, John J., assignor.) | | | | | | |
| Hockersmith, John A., Chamberlain, S. D. Clothing-rack | 758,072 | Apr. 26 | 3732 | 811 | 109 | 2193 |
| Hodecker, Louis, Brooklyn, N. Y. Necktie-holder | 758,073 | Apr. 26 | 3733 | 811 | 109 | 2194 |
| Hodge, John, Chester, Pa., assignor to Harper Manufacturing Company. Rod-packing | 754,065 | Mar. 8 | 1682 | 374 | 109 | 387 |
| Hodge, John, Chester, Pa., assignor to Harper Manufacturing Company. Rod-packing | 754,139 | Mar. 8 | 1695 | 406 | 109 | 419 |
| Hoe, Robert, *et al.* (See Read, George F., assignor.) | | | | | | |
| Hoe, Robert. (See Spalckhaver, William, assignor.) | | | | | | |
| Hoe, Robert. (See White, Joseph, assignor.) | | | | | | |
| Hoegh, Hans J., Princess Bay, N. Y. Belt-shifter | 756,090 | Mar. 29 | 5488 | 1211 | 109 | 1266 |
| Hoelsche, Edmond C., Chicago, Ill. Machine for stamping or shaping plastic clay, shale, &c., into various patterns or articles | 753,961 | Mar. 8 | 1529 | 341 | 109 | 353 |
| Hoerr, Emanuel S., Kansas City, Mo. Firearm | 755,778 | Mar. 29 | 5007 | 1113 | 109 | 1158 |
| Hoes, Albert M., St. Paul, Nebr. Mail-box | 758,446 | Apr. 26 | 4470 | 961 | 109 | 2356 |
| Hoff, Edwin H., assignor of one-half to L. L. La Mere, Mosinee, Wis. Sawing-machine | 756,789 | Apr. 5 | 1145 | 253 | 109 | 1586 |
| Hoffeld & Company, R. (See Maier and Howe, assignors.) | | | | | | |
| Hoffken, Jerry G., Hampton, Minn. Washing-machine | 756,856 | Apr. 12 | 1279 | 285 | 109 | 1632 |
| Hoffman, Addison F., Pittsburg, Pa. Building-block | 753,491 | Mar. 1 | 507 | 118 | 109 | 112 |
| Hoffman, Jacob, Sidney, N. J. Swather attachment for mowing-machines | 753,868 | Mar. 8 | 1535 | 300, 301 | 109 | 306 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hoffman, Ross J., Bradford, Pa. Gas-meter | 756,365 | Apr. 5 | 358 | 73 | 109 | 1430 |
| Hoffman, Ross J., Bradford, Pa. Meter | 756,366 | Apr. 5 | 359 | 73 | 109 | 1430 |
| Hoffmann, Alfred W., assignor to New York Metal Specialty Manufacturing Co., New York, N. Y. Candle and shade holder | 755,664 | Mar. 29 | 4760 | 1059 | 109 | 1108 |
| Hoffmann, Ernst G., London, England. Telescopic joint for shafting, &c | 754,066 | Mar. 8 | 1684 | 374 | 109 | 387 |
| Hofheimer, Maurice, New York, N. Y., assignor to United States Vending Corporation. Coin-controlled vending-machine | 758,180 | Apr. 26 | 3999 | 853 | 109 | 2239 |
| Hofmann, Peter, Greenfield, Iowa. Thresher and separator | 753,705 | Mar. 1 | 947 | 214 | 109 | 204 |
| Hogan, Denis F., St. Louis, Mo. Dust-collector | 755,874 | Mar. 29 | 5208 | 1150, 1151 | 109 | 1204 |
| Hogan, James T., Jersey City, N. J., assignor to National Machine Company, Mamaroneck, N. Y. Thread-cutting device for sewing-machines | 757,468 | Apr. 19 | 2508 | 550 | 109 | 1907 |
| Holbrook, F. A. (See Jordan, William T., assignor.) | | | | | | |
| Holbrook, Percy, assignor to Weber Railway Joint Manufacturing Company, New York, N. Y. Rail-joint | 753,395 | Mar. 1 | 323 | 73 | 109 | 73 |
| Holcombe, William S. (See Bayley, Harry E., assignor.) | | | | | | |
| Holdaway, Arthur E., London, England. Safety oil-lamp | 757,040 | Apr. 12 | 1667 | 361 | 109 | 1718 |
| Holden, Frank, London, England, assignor to General Electric Company. Electric clock | 755,774 | Mar. 29 | 5008 | 1114 | 109 | 1158 |
| Holden, George C. (See Palmer, Edward T., assignor.) | | | | | | |
| Holladay, John M., Holladay, Va. Saw-filer | 753,575 | Mar. 1 | 691 | 155 | 109 | 152 |
| Holladay, Lewis L., Lynn, Mass., assignor to General Electric Company. System of electrical distribution | 755,775 | Mar. 29 | 5011 | 1114 | 109 | 1159 |
| Holland, George H., Springfield, Ill. Water-column for steam-boilers | 755,875 | Mar. 29 | 5205 | 1151 | 109 | 1205 |
| Holland Manufacturing Company. (See Renner, Henry F., assignor.) | | | | | | |
| Holland, Stanley R., St. Louis, Mo. Prepared roofing | 753,992 | Mar. 8 | 1534 | 341 | 109 | 354 |
| Holland, W. J., *et al.* (See Hayes, Edward W., assignor.) | | | | | | |
| Hollenbeck, Frank A., Wheeling, W. Va. Breakdown firearm | 753,492 | Mar. 1 | 508 | 118 | 109 | 112 |
| Holliday, Henry C., assignor of two-thirds to S. E. Dudley and J. W. Foster, Hermanville, Miss. Nut-lock | 754,309 | Mar. 8 | 2147 | 475 | 109 | 486 |
| Hollingsworth, William N., *et al.* (See McDevitt, William, assignor.) | | | | | | |
| Hollis, Charles, Wolfboro, N. H. Crib | 754,140 | Mar. 8 | 1826 | 407 | 109 | 419 |
| Holman, Daniel H., Moscow, Idaho. Sight for gun-barrels | 755,665 | Mar. 29 | 4762 | 1060 | 109 | 1108 |
| Holman, Thomas H., Akron, Ohio. Vehicle-gear | 755,491 | Mar. 22 | 4430 | 992 | 109 | 1014 |
| Holmes, Alba L., Grand Rapids, Mich. Adjustable joint for water and steam pipes | 757,112 | Apr. 12 | 1795 | 393 | 109 | 1740 |
| Holmes and Edwards Silver Company. (See Warner, William A., assignor.) | | | | | | |
| Holmes, Anderson M., Denver, Colo. Tent-cottage | 758,083 | Apr. 19 | 3637 | 786, 787 | 109 | 2156 |
| Holmes, Samuel, New York, N. Y. Tank-steamer | 758,074 | Apr. 26 | 3734 | 811 | 109 | 2194 |
| Holmes, Samuel P., *et al.* (See Burdon, David P., assignor.) | | | | | | |
| Holmes, Watson M. (See Shaw, William W., assignor.) | | | | | | |
| Holmes, Watson M., Hoosick Falls, N. Y., assignor, by mesne assignments, to Planters Compress Company. Fluid system for presses or the like | 753,261 | Mar. 1 | 91 | 23 | 109 | 23 |
| Holmes, Watson M., Hoosick Falls, N. Y., assignor, by mesne assignments, to Planters Compress Company. Compressing mechanism | 758,258 | Apr. 26 | 4075 | 882 | 109 | 2270 |
| Holston, William W. (See Fisher and Holston.) | | | | | | |
| Holston, William W., Morristown, and O. L. Fisher, Whitepine, Tenn. Railway-tie | 755,004 | Mar. 22 | 3557 | 779 | 109 | 828 |
| Holthaus, Bernard, Oldenburg, Germany. Harvester | 754,926 | Mar. 15 | 2899 | 743 | 109 | 777 |
| Holtmann, Charles, and J. F. Butler, Pittsburg, Pa. Device for preventing railway collisions | 757,191 | Apr. 12 | 1956 | 427 | 109 | 1778 |
| Holwick, Daniel L., administrator. (See Shoemaker, Charles F.) | | | | | | |
| Holzach, Fritz. (See Kottusch, Emanuel, assignor.) | | | | | | |
| Holzer, Wilhelm, Darmstadt, Germany. Machine for weighing wagons, &c | 753,864 | Mar. 8 | 1538 | 301 | 109 | 309 |
| Holzwarth, Hans, assignor to Hooven, Owens, Rentschler Company, Hamilton, Ohio. Governor for engines | 754,563 | Mar. 15 | 2710 | 589, 590 | 109 | 827 |
| Homan & Company. (See Leavenworth, Seth H., assignor.) | | | | | | |
| Honess, Edwin, Cleveland, Ohio. Regulator | 757,113 | Apr. 12 | 1794 | 393 | 109 | 1740 |
| Hong, Louis K., Sisseton, S. D. Speed-governor | 755,776 | Mar. 29 | 5012 | 1114, 1115 | 109 | 1159 |
| Hood, Hiram Q., Carthage, Mo. Mail-shears | 755,492 | Mar. 22 | 4431 | 993 | 109 | 1014 |
| Hood, William H. (See Cook and Hood.) | | | | | | |
| Hooper, William N., and T. J. Sunday, Conroe, Tex. Railway joint and chair | 756,968 | Apr. 12 | 1490 | 328 | 109 | 1675 |
| Hoops, Frank A., Pittsburg, Pa. Bottle-seal | 755,573 | Mar. 22 | 4578 | 1017 | 109 | 1046 |
| Hooven, Owens, Rentschler Company. (See Holzwarth, Hans, assignor.) | | | | | | |
| Hoover, Frank K., and A. J. Mason, Chicago, Ill. Trolley-hook for manipulating self-loading grabs | 754,652 | Mar. 15 | 2686 | 630, 631, 632 | 109 | 668 |
| Hoover, Herbert W., Newport News, Va. Steering-gear | 753,576 | Mar. 1 | 694 | 155 | 109 | 152 |
| Hoover, Samuel B., assignor of one-half to H. F. Warner, Roca, Nebr. Railway-tie | 755,498 | Mar. 22 | 4432 | 993 | 109 | 1015 |
| Hoover, William H. (See Miller, Richard, assignor.) | | | | | | |
| Hopewell, Charles F., Cambridge, Mass., assignor to Uni Signal Company. Electric switch | 757,925 | Apr. 19 | 3418 | 740 | 109 | 2107 |
| Hopfelt, Robert, Berlin, Germany. Electric-arc lamp | 757,659 | Apr. 19 | 2914 | 633 | 109 | 1998 |
| Hopkins, Charles E., Worcester, Mass., assignor of one-half to F. Wesel, Brooklyn, N. Y. Stereotype-casting machine | 757,114 | Apr. 12 | 1796 | 393, 394 | 109 | 1741 |
| Hopkins, Evan H., South Kensington, London, England. Obtaining zinc | 754,141 | Mar. 8 | 1827 | 407 | 109 | 420 |
| Hopkins, John H., Punxsutawney, Pa. Pile-driver | 757,926 | Apr. 19 | 3422 | 740 | 109 | 2109 |
| Hopkins, John I., Chicago, Ill. Ice-tank | 754,772 | Mar. 15 | 3109 | 679 | 109 | 714 |
| Horan, John J., New York, N. Y. Rotary engine | 753,902 | Mar. 1 | 93 | 23, 24 | 109 | 23 |
| Horine, Hanniel M., Chicago, Ill. Cooking utensil | 754,310 | Mar. 8 | 2148 | 476 | 109 | 486 |
| Horlacher, Adam S., Indianapolis, Ind. Heddle-movement for hand-operated looms | 756,285 | Apr. 5 | 84 | 18, 19 | 109 | 1360 |
| Horlacher, Adam S., Indianapolis, Ind. Manufacturing weft for rugs | 756,286 | Apr. 5 | 88 | 19 | 109 | 1361 |
| Horlacher, Adam S., Indianapolis, Ind. Spool-rack | 756,790 | Apr. 5 | 1146 | 254 | 109 | 1589 |
| Horn, Alfred W. (See Wahl, Frank S., assignor.) | | | | | | |
| Horn, George A. (See Gibbs, James E., assignor.) | | | | | | |
| Horn, Josiah F., Hazelton, Pa. Refrigerator | 755,876 | Mar. 29 | 5206 | 1151 | 109 | 1205 |
| Hornbostel, Ernest A., Jr., Des Moines, Iowa. Governor for hydropneumatic engines | 756,791 | Apr. 5 | 1148 | 254 | 109 | 1589 |
| Horne, George A., Syracuse, N. Y. Safety device for firearms | 754,564 | Mar. 15 | 2712 | 590 | 109 | 827 |
| Hornich, William, Jr., Rochester, N. Y. Shell and covering therefor for badges, buttons, mirrors, &c | 757,744 | Apr. 19 | 3062 | 671 | 109 | 2063 |
| Hornsteiner, Rudolf, Prague, Austria-Hungary. Machine for producing cylindrical tubes and tube-like paper objects, &c | 755,494 | Mar. 22 | 4433 | 993, 994, 995 | 109 | 1015 |
| Horrall, William A., assignor of one-half to C. M. Hammond and J. B. Pasquier, Indianapolis, Ind. Mail-bag catcher | 756,498 | Apr. 5 | 608 | 131 | 109 | 1470 |
| Horry, William S., assignor to Union Carbide Company, Niagara Falls, N. Y. Producing carbid | 757,617 | Apr. 19 | 2686 | 619 | 109 | 1979 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Horry, William S., assignor to Union Carbide Company, Niagara Falls, N. Y. Electric heating | 757,618 | Apr. 19 | 2839 | 619 | 109 | 1980 |
| Horry, William S., assignor to Union Carbide Company, Niagara Falls, N. Y. Electric heating | 757,619 | Apr. 19 | 2843 | 620 | 109 | 1982 |
| Horry, William S., assignor to Union Carbide Company, Niagara Falls, N. Y. Electric heating | 757,620 | Apr. 19 | 2846 | 620 | 109 | 1982 |
| Horry, William S., and E. F. Price, assignors to Union Carbide Company, Niagara Falls, N. Y. Electric furnace | 757,621 | Apr. 19 | 2849 | 620 / 621 | 109 | 1983 |
| Horton, Sidney E. (See Rockwell and Horton.) | | | | | | |
| Horton, William G., assignor to B. Kirkwood, San Francisco, Cal. Fire-escape | 755,606 | Mar. 29 | 4763 | 1066 | 109 | 1103 |
| Horváth, Eugen. (See Novák, Eugen, assignor.) | | | | | | |
| Hosack, Lee L. (See Geltz and Hosack.) | | | | | | |
| Hosfeld, Samuel, Philadelphia, Pa. Muscle-developing finger-band | 757,041 | Apr. 12 | 1667 | 361 | 109 | 1713 |
| Hoshor, Joseph C., Paterson, N. J. Railway-track fastener | 757,116 | Apr. 12 | 1801 | 394 | 109 | 1741 |
| Hoshor, Joseph C., Paterson, N. J., assignor, by mesne assignments, to H. W. Gray, Jr., Boston, Mass. Convertible roller-bearing | 757,115 | Apr. 12 | 1798 | 394 | 109 | 1741 |
| Hough, Azel C., South Butler, N. Y. Coloring-machine | 757,554 | Apr. 19 | 2695 | 589 | 109 | 1948 |
| Hough, John B., Erving, Mass. Joint for chair-seat sections or similar purposes | 754,067 | Mar. 8 | 1685 | 374 | 109 | 388 |
| Hough, William G., Jacobs Creek, Pa. Postal money-carrier | 754,218 | Mar. 8 | 1980 | 440 | 109 | 452 |
| Houghten, Arthur T. (See Linendoll and Houghten.) | | | | | | |
| Houghton, Lewis T., Worcester, Mass. Thread-guide support for spinning or twisting machines | 753,577 | Mar. 1 | 695 | 156 | 109 | 152 |
| Houghton, Stephen C., San Francisco, Cal. Telephone | 753,498 | Mar. 1 | 512 | 118 | 109 | 113 |
| Houghton, Stephen C., San Francisco, Cal. Tip or terminal for electric wires | 757,192 | Apr. 12 | 1960 | 428 | 109 | 1778 |
| Houghton, Stephen C., San Francisco, Cal. Binding-post | 757,809 | Apr. 19 | 3204 | 696 | 109 | 2061 |
| Houghton, Thomas J., Graniteville, Vt. Railway-switch | 755,495 | Mar. 22 | 4435 | 985 | 109 | 1015 |
| Housberg, John W. (See Burgum, William C., assignor.) | | | | | | |
| House, Joseph A., near Thurston, Md. Sawing-machine | 757,745 | Apr. 19 | 3083 | 672 | 109 | 2083 |
| Houseman, Harry A., assignor to Standard Machine Company, Philadelphia, Pa. Straight-knitting machine | 755,135 | Mar. 22 | 3770 | 830 / 831 / 832 | 109 | 877 |
| Housholder, Minnie, Chicago, Ill. Lavatory or shampooing bowl | 756,447 | Apr. 26 | 4472 | 961 | 109 | 2350 |
| Houston, Abraham L., Bellaire, Ohio. Grate and flue therefor | 753,268 | Mar. 1 | 96 | 24 | 109 | 24 |
| Houston, David H. (See Powlison and Erb, assignors.) | | | | | | |
| Hovey, Charles C., Bainbridge, N. Y. Apparatus for canning food | 756,687 | Apr. 5 | 839 | 181 / 182 | 109 | 1520 |
| Howard, Clarence H. (See Floyd and Howard.) | | | | | | |
| Howard, Edgar F., Stillmore, Ga. Monkey-wrench | 753,306 | Mar. 1 | 324 | 73 | 109 | 73 |
| Howard, Frank S., Lombard, Ill. Device for attaching flexible materials to roofs and sides of buildings | 757,198 | Apr. 12 | 1960 | 428 | 109 | 1779 |
| Howard, George W., New London, Conn. Sash-cord fastener | 755,130 | Mar. 22 | 3781 | 832 | 109 | 879 |
| Howard, James B., Atlantic City, N. J. Hub-guard for wheels | 753,264 | Mar. 1 | 96 | 25 | 109 | 24 |
| Howard, James B., Atlantic City, N. J. Wheel-guard | 753,265 | Mar. 1 | 97 | 25 | 109 | 24 |
| Howden Company, J. J. (See Gray, Frank, assignor.) | | | | | | |
| Howden, William N., Denver, Colo., assignor of one-half to G. F. Cutter, St. Louis, Mo. Embroidery hoop or ring | 758,535 | Apr. 26 | 4644 | 1000 | 109 | 2397 |
| Howe, Charles H., Leominster, Mass. Comb | 756,367 | Apr. 5 | 361 | 73 | 109 | 1420 |
| Howe and Davidson Company. (See Davidson, Frank B., assignor.) | | | | | | |
| Howe and Davidson Company. (See Graham, Joel C., assignor.) | | | | | | |
| Howe, George M. (See Maier and Howe.) | | | | | | |
| Howe, Harry, Toledo, Ohio. Car-fender | 757,746 | Apr. 19 | 3084 | 673 | 109 | 2084 |
| Howe, Orwin E., Washington, D. C. Sash holder and lock | 754,428 | Mar. 15 | 2495 | 543 | 109 | 580 |
| Howell, Charles B., and A. C. De Yoe, Campbell Hall, N. Y. Can | 756,686 | Apr. 5 | 841 | 182 | 109 | 1520 |
| Howell, Charles W., Jr., Newark, N. J., assignor to Underwood Typewriter Company, New York, N. Y. Type-bar segment for type-writers | 753,397 | Mar. 1 | 325 | 74 | 109 | 73 |
| Howell, David H. (See Jacquemin, Eugene, assignor.) | | | | | | |
| Howell, Edward, assignor of one-half to J. C. Sill, Murphysboro, Ill. Wrench | 757,747 | Apr. 19 | 3086 | 673 | 109 | 2084 |
| Howell, Frank A., New York, N. Y. Fireproof door | 758,316 | Apr. 26 | 4219 | 907 | 109 | 2303 |
| Howell, Frank C., Bridgehampton, N. Y. Fruit-picker | 753,895 | Mar. 8 | 1340 | 301 | 109 | 309 |
| Howell, John W., Newark, N. J., assignor to General Electric Company. Tube-coating machine | 755,777 | Mar. 29 | 5014 | 1115 | 109 | 1159 |
| Howell, John W., Newark, N. J., assignor to General Electric Company. Photometric apparatus | 756,963 | Apr. 12 | 1490 | 328 / 329 | 109 | 1675 |
| Howland, Henry S. (See De Voll, Charles H., assignor.) | | | | | | |
| Howland, Matthew M., Providence, R. I. Hook | 757,117 | Apr. 12 | 1803 | 394 / 395 | 109 | 1742 |
| Howland-Sherman, Charles H., Baltimore, Md., assignor to Howland-Sherman Manufacturing Company, Wilmington, Del., and Baltimore, Md. Connecting-rod or pitman | 754,653 | Mar. 15 | 2891 | 632 | 109 | 664 |
| Howland-Sherman, Charles H., Baltimore, Md., assignor to Howland-Sherman Manufacturing Company, Wilmington, Del. Crane | 758,254 | Apr. 26 | 4080 | 883 | 109 | 2271 |
| Howland-Sherman, Charles H., Washington, D. C., assignor to Howland-Sherman Manufacturing Company, Wilmington, Del., and Baltimore, Md. Angular pedestal | 754,871 | Mar. 15 | 3311 | 721 / 722 | 109 | 758 |
| Howland-Sherman Manufacturing Company. (See Howland-Sherman, Charles H., assignor.) | | | | | | |
| Howson, Harry B., *et al.* (See Burdett, Frank, assignor.) | | | | | | |
| Howson & Howson, trustees. (See Northrop, Walter, assignor.) | | | | | | |
| Hoxie, George L., assignor of one-half to A. W. Smith, Adrian, Mich. Wire-clamping device | 755,006 | Mar. 22 | 3559 | 780 | 109 | 829 |
| Hoy, Henry A., Bolton, England. Bogie-truck for rolling-stock | 757,927 | Apr. 19 | 3424 | 741 | 109 | 2109 |
| Hoyle, Harrison B., Worcester, Mass. Spinning-ring | 757,748 | Apr. 19 | 3087 | 672 | 109 | 2084 |
| Hoyt, Edward J. (See Fraser and Hoyt.) | | | | | | |
| Hoyt, James A., Scotia, N. Y. Mop-wringer | 755,778 | Mar. 29 | 5015 | 1115 | 109 | 1160 |
| Hrauda, Carl L., Crouch End, England. Combined book-marker and leaf-holder | 756,115 | Mar. 29 | 5064 | 1250 | 109 | 1304 |
| Hubbard, Orril L., Waukesha, Wis., assignor of one-half to J. J. McMahon, Lake Villa, Ill. Puzzle | 753,206 | Mar. 1 | 99 | 25 | 109 | 25 |
| Hubbell, James E. (See Wilcox, William P., assignor.) | | | | | | |
| Hubbell, Orra, Indianapolis, Ind. Cooking retort or kettle | 757,555 | Apr. 19 | 2008 | 500 | 109 | 1949 |
| Huber-Hodgman Printing Press Company. (See Hall, Bicknell, assignor.) | | | | | | |
| Huber, Rudolf A. E., and H. H. C. Behn-Eschenburg, Zurich, assignors to Maschinenfabrik Oerlikon, Oerlikon, Switzerland. Electric railway | 754,565 | Mar. 15 | 2714 | 590 | 109 | 628 |
| Hubert, Henry, New York, N. Y. Bung-lock | 757,118 | Apr. 12 | 1804 | 395 | 109 | 1742 |
| Huberti, Fritz, Weehawken, N. J. Antirattling device for window-sashes | 758,075 | Apr. 26 | 3736 | 811 | 109 | 2194 |
| Hudson, Charles R., Warren, Ind. Measuring apparatus | 757,810 | Apr. 19 | 3206 | 696 | 109 | 2061 |
| Huefner, John F., New York, N. Y. Making a salve | 753,267 | Mar. 1 | 101 | ------ | 109 | 25 |
| Huening, Henry J., Chicago, Ill. Sectional filing-cabinet | 757,194 | Apr. 12 | 1962 | 428 | 109 | 1779 |
| Huff, Henry H., Boston, Mass. Rod-grasping arm or handle | 757,195 | Apr. 12 | 1964 | 428 | 109 | 1779 |



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|---|---|---|---|---|---|---|
| Huff, Henry H., Boston, Mass., assignor to Huff Locomotive Appliance Company, Kittery, Me. Furnace-door | 755,007 | Mar. 22 | 3561 | 780 | 109 | 829 |
| Huff Locomotive Appliance Company. (See Huff, Henry H., assignor.) | | | | | | |
| Huffman, H. G., *et al.* (See Stouffer, Hiram C., assignor.) | | | | | | |
| Hughes, George A., Atoka, Ky. Storm-apron | 757,749 | Apr. 19 | 3089 | 673 | 109 | 2084 |
| Hughes, Robert M., assignor of one-half to F. H. Atkinson, Cadiz, Ohio. Fluid-pressure cut-off and alarm | 757,119 | Apr. 12 | 1805 | 395 | 109 | 1742 |
| Hughes, Samuel, Summerville, S. C. Pulverizing-machine | 756,904 | Apr. 12 | 1495 | 329 | 109 | 1677 |
| Hughes, Wallace B., assignor of one-third to J. Samuels, Dallas, Tex. Wire fence | 757,928 | Apr. 19 | 3426 | 741 | 109 | 2110 |
| Huhsman, August W., Staunton, Ill. Hose, rod, or pipe coupling | 757,929 | Apr. 19 | 3428 | 742 | 109 | 2110 |
| Huibregtse, Low, Oostburg, Wis. Cheese-cutter | 756,499 | Apr. 5 | 610 | 132 | 109 | 1471 |
| Hulbert, John L., and I. L. Park, Holland Patent, N. Y. Milking-machine | 754,453 | Mar. 15 | 2496 | 543 | 109 | 581 |
| Hulett, George H. (See Seaver and Hulett.) | | | | | | |
| Hulin, Paul L., Clavaux, par Rioupéroux, France. Treating matters in fusion | 754,566 | Mar. 15 | 2716 | 591 | 109 | 628 |
| Hull, Foster J. (See Dement and Hull.) | | | | | | |
| Hull, Mathew R., assignor to Rex Buggy Company, Connersville, Ind. Storm-shield for vehicles | 756,021 | Mar. 29 | 5490 | 1211 | 109 | 1267 |
| Hullings, George F., Washington, D. C. Drying and stretching frame for lace curtains | 757,930 | Apr. 19 | 3431 | 742 | 109 | 2111 |
| Hulquist, Andrew D., assignor to J. S. McDonald, Chicago, Ill. Combined sectional post and lock | 755,008 | Mar. 22 | 3562 | 781 | 109 | 829 |
| Hümbell, Joseph. (See Koch and Hümbell.) | | | | | | |
| Hummel, Franklin P., Bellevue, Ohio. Steam-engine | 757,750 | Apr. 19 | 3090 | 673 | 109 | 2085 |
| Hunkins, William S., Merriam Park, Minn. Garment-supporter | 756,237 | Apr. 5 | 90 | 19 | 109 | 1361 |
| Hunt, Edward W. (See Rothwell-Jackson and Hunt.) | | | | | | |
| Hunt, Emory C., Belle Plaine, assignor of one-half to C. W. E. Snyder, Benton county, Iowa. Cleat for electric wiring | 753,398 | Mar. 1 | 326 | 74 | 109 | 74 |
| Hunt, Emory C., Belle Plaine, assignor of one-half to C. W. E. Snyder, Benton county, Iowa. Combination bracket and knob for electric conductors | 753,399 | Mar. 1 | 328 | 74 | 109 | 74 |
| Hunt, Helm, Ferris & Company. (See Ferris, Henry L., assignor.) | | | | | | |
| Hunt, Henry D., Ebenfield, Fla. Stanchion and strip for loading lumber, poles, &c., upon flat-cars | 755,877 | Mar. 29 | 5207 | 1152 | 109 | 1265 |
| Hunt, Ozello R., assignor to Simmons Manufacturing Company, Kenosha, Wis. Leaf-support for sofa-beds | 754,142 | Mar. 8 | 1829 | 407 | 109 | 420 |
| Hunt, Robert W., Chicago, Ill. Ingot-perfecting machine | 755,365 | Mar. 22 | 4214 | 933 | 109 | 970 |
| Hunt, Robert W., Chicago, Ill. Apparatus for perfecting ingots | 755,496 | Mar. 22 | 4436 | 985 | 109 | 1016 |
| Hunt, Silas A., Chicago, Ill. Sostenuto device for stringed instruments | 757,308 | Apr. 12 | 2201 | 481 | 109 | 1828 |
| Hunter, Charles G., Lawrence, Ind. Knockdown gate | 758,181 | Apr. 26 | 3931 | 853 | 109 | 2289 |
| Hunter, George D., Bloomington, Ind. Stone-sawing machine | 753,268 | Mar. 1 | 101 | 25 | 109 | 25 |
| Hunter, George D., Bloomington, Ind. Stone-sawing machine | 753,269 | Mar. 1 | 103 | 26 | 109 | 25 |
| Hunter, George D., Bloomington, Ind. Stone-sawing machine | 753,270 | Mar. 1 | 105 | 26 | 109 | 26 |
| Hunter, George D., Bloomington, Ind. Stone-sawing machine | 755,667 | Mar. 29 | 4765 | 1061 | 109 | 1104 |
| Hunter, Homer, Fort Collins, assignor of one-half to A. C. Bartels, Denver, Colo. Beet-transplanter | 754,370 | Mar. 8 | 2303 | 503 | 109 | 520 |
| Hunter, John A., *et al.* (See Ursbruck, John H. and J. B., assignors.) | | | | | | |
| Hunter, Mary A., *et al.* (See Ursbruck, John H. and J. B., assignors.) | | | | | | |
| Hunter, Stuart A., Newton, Kans. Barrel-head securer | 757,309 | Apr. 12 | 2203 | 481 | 109 | 1828 |
| Hunter, William Y., Middelburg, Transvaal. Tent | 755,369 | Mar. 22 | 4222 | 933 / 934 | 109 | 972 |
| Huntley Manufacturing Company. (See Smith, F. Marion, assignor.) | | | | | | |
| Hurdle, Julian A., New York, N. Y. Tubular or hollow body | 756,368 | Apr. 5 | 361 | 74 | 109 | 1420 |
| Hurst, James G. (See Smith, John F., assignor.) | | | | | | |
| Hurwitz, Hermann, and A. Schapiro, Berlin, Germany. Blue-burner | 756,369 | Apr. 5 | 362 | 74 | 109 | 1421 |
| Hurxthal, Joseph H., Thompsonville, Conn. Mirror-support | 755,668 | Mar. 29 | 4767 | 1061 | 109 | 1104 |
| Husing, John W., assignor to Hicks-Judd Company, San Francisco, Cal. Loose-leaf binder | 757,660 | Apr. 19 | 2915 | 633 | 109 | 1998 |
| Hussey, John R., Indianapolis, Ind. Removable door | 753,578 | Mar. 1 | 697 | 156 | 109 | 153 |
| Hutchings, Charles E., assignor, by mesne assignments, to Rochester Optical Company, Rochester, N. Y. Lens-carriage-securing means | 754,872 | Mar. 15 | 3312 | 722 | 109 | 758 |
| Hutchings, Herbert H., Chester, Pa. Electrician's tool | 756,857 | Apr. 12 | 1981 | 285 | 109 | 1632 |
| Hutchins, Arthur W., Providence, R. I. Automatic circuit-breaker for electric time or other switches | 755,297 | Mar. 22 | 4069 | 902 | 109 | 988 |
| Hutchins, Fredrick F. (See Peterson and Hutchins.) | | | | | | |
| Hutchinson, Shelley B., Ypsilanti, Mich. Newspaper or periodical | 758,139 | Apr. 26 | 3854 | 837 | 109 | 2223 |
| Hutchison Acoustic Company. (See Hutchison, Miller R., assignor.) | | | | | | |
| Hutchison, Joseph C., Philadelphia, Pa. Machine for making pies | 756,639 | Apr. 5 | 842 | 182 | 109 | 1521 |
| Hutchison, Miller R., New York, N. Y., assignor, by mesne assignments, to Hutchison Acoustic Company. Current-selector for charging secondary batteries | 755,669 | Mar. 29 | 4768 | 1061 | 109 | 1105 |
| Hutchison, Miller R., Norwood, N. J., assignor, by mesne assignments, to Hutchison Acoustic Company. Telephone-receiver | 758,363 | Apr. 26 | 4305 | 924 | 109 | 2321 |
| Hutin, Maurice, and M. Leblanc, Paris, France, assignors, by mesne assignments, to G. Westinghouse, Pittsburg, Pa. Alternating-current transformation | 754,871 | Mar. 8 | 2304 | 503 | 109 | 520 |
| Hutin, Maurice, and M. Leblanc, Paris, France, assignors, by mesne assignments, to G. Westinghouse, Pittsburg, Pa. System of alternating-current transformation | 754,872 | Mar. 8 | 2306 | 504 | 109 | 521 |
| Hutton, Joy T., Bronson, Mich. Automatic stop and waste cock | 753,271 | Mar. 1 | 106 | 26 | 109 | 26 |
| Hyatt, Benjaman S., Vinita, Ind. Ter. Windmill | 755,497 | Mar. 22 | 4438 | 986 | 109 | 1015 |
| Hyatt, Harry. (See Wight and Hyatt.) | | | | | | |
| Hyde, S. L. G., *et al.* (See Scott, William H., assignor.) | | | | | | |
| Hyde, Theophilus R., Jr., and E. D. Simons, assignors to Scovill Manufacturing Company, Waterbury, Conn. Snap-fastener | 757,196 | Apr. 12 | 1965 | 429 | 109 | 1779 |
| Hyde, Thomas G., London, assignor to G. H. Whitehead, New Eltham, England. Means for facilitating interleaving sheets | 754,311 | Mar. 8 | 2149 | 476 | 109 | 486 |
| Hydraulic Press Brick Company. (See Miles, Frank W., assignor.) | | | | | | |
| Ideal Opening Die Company. (See Maxwell, Singleton A., assignor.) | | | | | | |
| Iden, Walter J., Coventry, England. Steering-gear for motor-cars | 754,068 | Mar. 8 | 1686 | 374 / 375 | 109 | 388 |
| Igel, Augusta J., Kansas City, Mo. Umbrella-carrier | 755,009 | Mar. 22 | 3565 | 781 | 109 | 830 |
| Ihlder, John D., Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J. Magnetic brake | 756,140 | Apr. 26 | 3855 | 837 | 109 | 2223 |
| Ihmsen, J. G., *et al.* (See Clausen, Henry P., assignor.) | | | | | | |
| Ihmsen, J. G., *et al.* (See Setter, Michael, assignor.) | | | | | | |
| Ihrer, Frederick C., J. W. Alexander, J. F. Barr, and J. M. Ochiltree, Burlington, Iowa. Apparatus for molding soap | 753,706 | Mar. 1 | 948 | 215 | 109 | 205 |
| Illemann, Robert, London, assignor to F. M. H. Jones, Kentish Town, county of London, England. Fireproof building block or slab | 753,707 | Mar. 1 | 949 | 215 | 109 | 205 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Illinois Investment Company. (See Gilmer, George O., assignor.) (Reissue.) | | | | | | |
| Immell, Omer F., Blair, Wis. Latch | 757,464 | Apr. 19 | 2510 | 551 | 109 | 1907 |
| Imperial Corporation. (See Powers and Jewell, assignors.) | | | | | | |
| Imperial Machine Company *et al.* (See Clark, Edward B., assignor.) | | | | | | |
| Imperial Pneumatic Tool Company. (See Peck, Caid H., assignor.) | | | | | | |
| Imperial Pneumatic Tool Company. (See Peck, Clarence W., assignor.) | | | | | | |
| Independent Store Service Company. (See Chamberlain and Chism, assignors.) | | | | | | |
| Independent Store Service Company. (See Chism, David E., assignor.) | | | | | | |
| Industrial Manufacturing Company. (See Malsch, Frank, assignor.) | | | | | | |
| Ingersoll-Sergeant Drill Company. (See Sergeant, Henry C., assignor.) | | | | | | |
| Ingraham, Henry C., Moodus, Conn. Thill-coupling. (Reissue) | 12,206 | Mar. 22 | 4628 | 1027 | 109 | 1059 |
| Ingram, Nathan D., New York, N. Y. Comb | 757,042 | Apr. 12 | 1669 | 361 | 109 | 1713 |
| Ingwersen, Edward J., Lyons, Iowa. Knockdown feed-trough | 758,400 | Mar. 1 | 329 | 74 | 109 | 74 |
| Inman, Horace, Amsterdam, N. Y. Tube-making machine | 756,500 | Apr. 5 | 611 | 132<br>133 | 109 | 1471 |
| Insull, Samuel. (See Ball, Henry P., assignor.) | | | | | | |
| Interlock Paper Company *et al.* (See Casterline, Edwin D., assignor.) (Reissue.) | | | | | | |
| Interlock Paper Company. (See Friend, Roger B., assignor.) | | | | | | |
| Interlocking Hook and Eye Manufacturing Company. (See Andresen, Christian, assignor.) | | | | | | |
| International Air Brake Company. (See Shortt, Edward G., assignor.) | | | | | | |
| International Business Exchange. (See Saliger, Alois B., assignor.) | | | | | | |
| International Egg Carrier and Paper Company. (See Drake, Harry R., assignor.) | | | | | | |
| International Fence & Fire Proofing Company. (See Kyle, Robert C., assignor.) | | | | | | |
| International Harvester Company. (See Johnston, Edward A., assignor.) | | | | | | |
| International Harvester Company. (See Pitkin, Julian H., assignor.) | | | | | | |
| International Harvester Company. (See Pridmore, John W., assignor.) | | | | | | |
| International Harvester Company. (See Reinhardt, Albert, assignor.) | | | | | | |
| International Harvester Company. (See Steward, John F., assignor.) | | | | | | |
| International Steam Pump Company. (See Scott, Clarence N., assignor.) | | | | | | |
| International Ventilator and Deflector Company. (See Withers, Charles A., assignor.) | | | | | | |
| International Wireless Telegraph Company *et al.* (See Midgley, Frederick W., assignor.) | | | | | | |
| International Wireless Telegraph Company *et al.* (See Shoemaker, Harry, assignor.) | | | | | | |
| Invention Developing Company. (See Gill, Edwin R., assignor.) | | | | | | |
| Ireland, Arthur, Roy, Utah. Combined beet thinning and cultivating machine | 755,298 | Mar. 22 | 4072 | 902 | 109 | 989 |
| Irish, Perry M., Booneville, assignor of one-fourth to Mrs. J. E. Reilly, Christine, Cal. Drag-saw handle | 754,312 | Mar. 8 | 2150 | 476 | 109 | 487 |
| Irons, Charley E., Lima, Ohio. Anchor | 756,640 | Apr. 5 | 843 | 182<br>183 | 109 | 1521 |
| Irvine, James C. (See Long and Irvine.) | | | | | | |
| Irving, Charles C., Essexville, Mich. Beet-harvesting machine | 755,010 | Mar. 22 | 3566 | 781<br>782 | 109 | 830 |
| Irving, James B., Covington, Ky. Fire-escape | 756,641 | Apr. 5 | 844 | 183 | 109 | 1521 |
| Irwin, Herbert E., Galesburg, Ill. Elastic-tread horseshoe | 755,779 | Mar. 29 | 3017 | 1115 | 109 | 1160 |
| Irwin, Herbert E., Galesburg, assignor to Irwin Rubber Company, Chicago, Ill. Vehicle-tire | 753,401 | Mar. 1 | 331 | 75 | 109 | 74 |
| Irwin, James F., Philadelphia, Pa. Safety-envelop | 757,310 | Apr. 12 | 2204 | 482 | 109 | 1828 |
| Irwin Rubber Company. (See Irwin, Herbert E., assignor.) | | | | | | |
| Isham, Edward S. (See Wellman, Harold R., assignor.) | | | | | | |
| Iskiyan, Victor. (See Schmidt and Iskiyan.) | | | | | | |
| Ivatts, Ernest A., assignor to Compagnie Générale de Phonographes, Cinématographes et Appareils de Précision, Paris, France. Phonograph, &c. | 754,313 | Mar. 8 | 2152 | 476 | 109 | 487 |
| Ives, Harry C., Bridgeport, Conn. Toy elevated-railway track | 758,448 | Apr. 26 | 4472 | 961 | 109 | 2350 |
| Ivy, Sanford V., Butler, Tex. Boll-weevil catcher | 754,873 | Mar. 15 | 3314 | 722<br>723 | 109 | 750 |
| J. Ellwood Lee Company. (See Hallowell, Maurice O., assignor.) | | | | | | |
| J. Ellwood Lee Company. (See Lee, John E., assignor.) | | | | | | |
| J. Stevens Arms & Tool Company. (See Mossberg, Oscar F., assignor.) | | | | | | |
| J. A. Fay & Egan Company. (See Spencer, Harry S., assignor.) | | | | | | |
| J. E. Porter Company. (See Jacobs, William F., assignor.) | | | | | | |
| J. H. Clark Company. (See Clark, James H., assignor.) | | | | | | |
| J. W. Paxson Company. (See Hall, Frederick W., assignor.) | | | | | | |
| Jack, George R., Lockeford, Cal. Rodent-killing machine | 756,370 | Apr. 5 | 363 | 74 | 109 | 1421 |
| Jackman, Daniel H., Maywood, Ill. Carrier for pneumatic tubes | 755,878 | Mar. 29 | 3309 | 1152 | 109 | 1206 |
| Jackson, Albert C., Harriman, Tenn., assignor to American Arithmometer Company, St. Louis, Mo. Calculating-machine | 756,168 | Mar. 29 | 3740 | 1208 | 109 | 1321 |
| Jackson, Bessie F., New York, N. Y. Shade-roller | 756,326 | Apr. 5 | 90 | 19 | 109 | 1361 |
| Jackson, Isaac, Glossop, England. Belt-fastener | 754,567 | Mar. 15 | 2720 | 591 | 109 | 628 |
| Jackson, Oswald, Carrollton, Ill. Valve-gear for engines | 756,317 | Apr. 26 | 4220 | 907 | 109 | 2308 |
| Jackson, Oswald, Carrollton, Ill. Valve-gear for engines | 758,365 | Apr. 26 | 4309 | 925<br>926 | 109 | 2321 |
| Jackson, William S., Hoboken, assignor of one-half to D. Young, Newark, N. J. Electric railway-signal | 758,594 | Apr. 26 | 4737 | 1025 | 109 | 2423 |
| Jacob, Anna L., Lucknow, India. Lady's toilet-table and traveling trunk combined | 757,661 | Apr. 19 | 2916 | 634 | 109 | 1998 |
| Jacobs, Johan R., The Hague, Netherlands. Projectile | 758,372 | Mar. 1 | 107 | 27 | 109 | 26 |
| Jacobs, John H., Chicago, Ill. Ruler | 758,886 | Mar. 8 | 1341 | 302 | 109 | 310 |
| Jacobs, John J., Chicago, Ill. Combined stage and circus-ring | 755,879 | Mar. 29 | 3211 | 1152 | 109 | 1206 |
| Jacobs, Solomon R., New York, N. Y. Cloth-cutter | 756,501 | Apr. 5 | 514 | 133 | 109 | 1471 |
| Jacobs, William F., assignor to J. E. Porter Company, Ottawa, Ill. Baling-press | 753,402 | Mar. 1 | 335 | 75, 76 | 109 | 75 |
| Jacobsen, Jacob, Chicago, Ill. Machine for forming and setting bushings | 758,364 | Apr. 26 | 4307 | 925 | 109 | 2321 |
| Jacobson, Samuel H., New York, N. Y., assignor to National Ventilating Company, Newark, N. J. Ventilator | 757,465 | Apr. 19 | 2511 | 551 | 109 | 1907 |
| Jacoby, Samuel, San Francisco, Cal. Hermetically-sealed metal box | 758,255 | Apr. 26 | 4081 | 883 | 109 | 2271 |
| Jacquemin, Eugene, assignor of one-fourth to D. H. Howell, Minneapolis, Minn. Dust-guard | 757,466 | Apr. 19 | 2513 | 551 | 109 | 1908 |
| Jakobsson, Herman G. (See Meigs and Jakobsson.) | | | | | | |
| James, Edward, Pittsburg, assignor of one-half to W. G. Gordon, Edgewood borough, Allegheny county, Pa. Metallic packing | 753,494 | Mar. 1 | 314 | 119 | 109 | 113 |
| James, Henry F., Franklin, Pa. Winding or hoisting drum | 757,622 | Apr. 19 | 2951 | 621 | 109 | 1984 |
| James Keith & Blackman Company. (See Mantell and Prim, assignors.) | | | | | | |
| James, Willard C., Cucamonga, Cal. Apartment-house | 756,371 | Apr. 5 | 364 | 75, 76 | 109 | 1421 |
| Jamison, Nehemiah, Mansfield, Ohio. Nut-lock | 753,273 | Mar. 1 | 108 | 27 | 109 | 27 |
| Jansson, Johan A., Stockholm, Sweden. Automatic let-off motion for looms | 755,011 | Mar. 22 | 3567 | 782 | 109 | 831 |
| Jardine, Robert, assignor to Berg Automobile Company, Cleveland, Ohio. Controlling mechanism for explosive-engines | 758,076 | Apr. 26 | 3737 | 812 | 109 | 2194 |
| Jardine, Robert, assignor to Berg Automobile Company, Cleveland, Ohio. Radiating condensing-coil | 758,077 | Apr. 26 | 3738 | 812 | 109 | 2195 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Jardine, Robert, assignor to Berg Automobile Company, Cleveland, Ohio. Means for storing liquids | 758,078 | Apr. 26 | 3740 | 812 | 109 | 2195 |
| Jarman, Alfred R., Hackensack, N. J., assignor, by mesne assignments, to Elliott-Fisher Company. Type-writing machine | 754,454 | Mar. 15 | 2498 | 544 | 109 | 581 |
| Jarmin, James B., assignor to American Plow Company, Madison, Wis. Plow | 757,120 | Apr. 12 | 1807 | 395<br>396<br>397 | 109 | 1742 |
| Jarvis, Albert, and W. H. Lane, Berkley, Va. Tool attachment | 756,197 | Mar. 29 | 3734 | 1276 | 109 | 1339 |
| Jarvis, Harold, and M. H. Blakeslee, Buffalo, N. Y.; said Blakeslee assignor to said Jarvis. Type-writing and tabulating machine | 753,796 | Mar. 1 | 1152 | 259<br>260 | 109 | 247 |
| Jarvis Typewriter & Tabulator Company. (See Blakeslee, Manley H., assignor.) | | | | | | |
| Jas, François, Paris, France. Apparatus for the purification of gas | 754,773 | Mar. 15 | 3111 | 679 | 109 | 715 |
| Jas, François, Paris, France. Carbureter | 754,774 | Mar. 15 | 3112 | 679 | 109 | 715 |
| Jas. H. Smith & Co. (See Smith and Brown, assignors.) | | | | | | |
| Jebsen, Fridtjof. (See Kirkegaard, Georg, assignor.) | | | | | | |
| Jeffers, S. R. (See Farwell, Scott M., assignor.) | | | | | | |
| Jeffrey, Harry, Allegheny, Pa. Combination-die for forging-machines | 757,197 | Apr. 12 | 1967 | 429 | 109 | 1780 |
| Jeffries, Van Oran, assignor of one-half to J. Strader, Columbus, Ohio. Running-gear for vehicles | 755,228 | Mar. 22 | 3944 | 873 | 109 | 911 |
| Jeitles, Edwin J. (See Roedel, Clarence H., assignor.) | | | | | | |
| Jenkins, Charles D. (See Jenkins, Charles H., assignor.) | | | | | | |
| Jenkins, Charles H., Somerville, assignor to C. D. Jenkins, Winchester, Mass. Manufacture of cast glass pipes | 756,022 | Mar. 29 | 3492 | 1212 | 109 | 1267 |
| Jenness, Peter, Philadelphia, Pa. Gas or internal-combustion engine governor | 757,311 | Apr. 12 | 2205 | 482 | 109 | 1828 |
| Jensen, Christian, Philadelphia, assignor of one-half to B. O. Miller, Sunbury, Pa. Laundry-tub water-indicator | 756,642 | Apr. 5 | 845 | 183 | 109 | 1522 |
| Jepson, James T., Leeds, England. Railway-wagon | 757,981 | Apr. 19 | 3432 | 742<br>743<br>744 | 109 | 2111 |
| Jeralds, Orrin L., New Rochelle, N. Y. Clamp or stop-cock for flexible tubes | 758,449 | Apr. 26 | 4474 | 962 | 109 | 2359 |
| Jeschke, Charles W. (See Jeschke, Edward and C. W.) | | | | | | |
| Jeschke, Edward, Bellevue, and C. W. Jeschke, Lorain, Ohio. Tile-ditching machine | 755,012 | Mar. 22 | 3568 | 782 | 109 | 831 |
| Jester, John, St. Joseph, Mo. Air cooler and filter | 756,643 | Apr. 5 | 846 | 183 | 109 | 1522 |
| Jewell, Major R. (See Powers and Jewell.) | | | | | | |
| Jewett, Benjamin J., assignor of one-half to F. H. Bartlett, Brooklyn, N. Y. Mechanism for removing ice from electric conductors | 756,502 | Apr. 5 | 615 | 133 | 109 | 1472 |
| Joannidi, Christos, Constantinople, Turkey. Dental impression-tray | 755,670 | Mar. 29 | 4769 | 1062 | 109 | 1105 |
| Joerissen, Carl A., and H. R. Livingston, Washington, D. C. Polychrome type-writer | 758,797 | Mar. 1 | 1154 | 260<br>261 | 109 | 248 |
| Johanneck, Joseph, Wabasso, Minn. Straw-rack for grain-separators | 754,874 | Mar. 15 | 3315 | 723 | 109 | 759 |
| Johannesen, Carl H. (See Lundgren and Johannesen.) | | | | | | |
| Johannsen, Palmer E., Carson, Iowa. Interest-table | 758,887 | Mar. 8 | 1343 | 302<br>303 | 109 | 310 |
| John F. McCanna Company. (See McCanna, John F., assignor.) | | | | | | |
| John F. McCanna Company. (See McCanna and Markle, assignors.) | | | | | | |
| John S. Metcalf Co. (See Metcalf, John S., assignor.) | | | | | | |
| Johns-Pratt Company. (See Sachs, Joseph, assignor.) | | | | | | |
| Johnson, Albert E., Northfield, Minn. Hoisting-wagon | 758,888 | Mar. 8 | 1344 | 303<br>304 | 109 | 310 |
| Johnson, Arthur N., Baltimore, Md. Hydraulic pressure-testing apparatus | 756,644 | Apr. 5 | 847 | 184 | 109 | 1522 |
| Johnson, August, San Francisco, Cal. Oil-burner | 756,880 | Mar. 29 | 3740 | 1208 | 109 | 1321 |
| Johnson, August, and J. F. Geb, assignors to Murdock and Geb Company, Franklin, Mass. Reeding attachment for dresser-reels | 758,079 | Apr. 26 | 3741 | 813 | 109 | 2195 |
| Johnson, Charles, assignor to C. A. Smith, Minneapolis, Minn. Machine for making wire-fence-reel heads | 758,858 | Apr. 12 | 1293 | 286<br>287 | 109 | 1633 |
| Johnson, Charles W., and J. K. Olsison, Minneapolis, Minn. Hat-rack | 756,023 | Mar. 29 | 3493 | 1212 | 109 | 1267 |
| Johnson, Clarence O., Albany, N. Y. Lace-fastener | 758,366 | Apr. 26 | 4315 | 926 | 109 | 2322 |
| Johnson, Eldridge R., Philadelphia, Pa., assignor to Victor Talking Machine Company. Sound-box for talking-machines | 753,274 | Mar. 1 | 110 | 27 | 109 | 27 |
| Johnson, Eldridge R., Philadelphia, Pa., assignor to Victor Talking Machine Company. Reproducer-support for gramophones. (Reissue) | 12,213 | Apr. 26 | 4791 | 1081 | 109 | 2430 |
| Johnson, Frank, New York, N. Y. Loom for weaving wire fabrics | 757,121 | Apr. 12 | 1813 | 307<br>308 | 109 | 1743 |
| Johnson, Frederick L., Wallingford, Conn. Whistle | 754,314 | Mar. 8 | 2152 | 477 | 109 | 487 |
| Johnson, James D., Cloverdale, Va. Windmill | 756,372 | Apr. 5 | 873 | 76 | 109 | 1423 |
| Johnson, James L., Fort Madison, Iowa. Disk chuck | 753,275 | Mar. 1 | 112 | 27 | 109 | 27 |
| Johnson, James W., *et al.* (See Whitaker, Richard, assignor.) | | | | | | |
| Johnson, John A. (See Mack, Charles, assignor.) | | | | | | |
| Johnson, John W., and L. Lock, Upper Sandusky, Ohio. Preparing rice or like cereal food products. (Reissue) | 12,211 | Apr. 5 | 1180 | | 109 | 1596 |
| Johnson, Lafayette W., Jerome Junction, Ariz. Ter. Hoisting device for live stock | 754,775 | Mar. 15 | 3114 | 680 | 109 | 716 |
| Johnson, Mary E. (See Ringqvist, Otto W., assignor.) | | | | | | |
| Johnson, Mary E., executrix. (See Mossberg, Oscar F., assignor.) | | | | | | |
| Johnson, Montgomery H., Utica, N. Y. Trolley-catcher | 756,859 | Apr. 12 | 1285 | 287 | 109 | 1633 |
| Johnson, Robert W., *et al.* (See Whitaker, Richard, assignor.) | | | | | | |
| Johnson, Simon C., Dekalb, Ill. Ladder-hanger | 754,776 | Mar. 15 | 3117 | 680 | 109 | 716 |
| Johnson, Sinclair J., Montclair, N. J. Operating mechanism for dumping-cars | 755,671 | Mar. 29 | 4772 | 1062 | 109 | 1105 |
| Johnson, Thomas C., assignor to Winchester Repeating Arms Co., New Haven, Conn. Automatic firearm | 758,318 | Apr. 26 | 4222 | 907 | 109 | 2308 |
| Johnson, Thomas R., Jeannette, Pa. Illuminated kaleidoscope | 754,143 | Mar. 8 | 1330 | 407<br>408 | 109 | 421 |
| Johnson, Walter G., Warren, Mass. Skirt or garment supporter | 755,881 | Mar. 29 | 3214 | 1153 | 109 | 1207 |
| Johnson, Walter G., Warren, Mass. Lawn-mower attachment | 756,080 | Apr. 26 | 3742 | 813 | 109 | 2196 |
| Johnson, Walter J. O. (See Kern and Johnson.) | | | | | | |
| Johnson, William H., T. A. Savage, and A. T. Newell, Kansas City, Mo.; said Savage assignor to said Johnson and Newell. Car-coupling | 756,645 | Apr. 5 | 850 | 184 | 109 | 1522 |
| Johnson, William R., Freeport, Ill. Wrench | 754,069 | Mar. 8 | 1698 | 375 | 109 | 388 |
| Johnson, Wilson P., Columbus, Ohio. Mantle-support | 757,556 | Apr. 12 | 2098 | 500 | 109 | 1949 |
| Johnston, Allen, Ottumwa, Iowa. Machine for manufacturing balls from sheet metal | 756,965 | Apr. 12 | 1497 | 330<br>331 | 109 | 1677 |
| Johnston, Edward A., assignor to International Harvester Company, Chicago, Ill. Tongue-truck for harvesters | 754,568 | Mar. 15 | 2723 | 592 | 109 | 629 |
| Johnston, Frank W., *et al.* (See Weber, Theodore T., assignor.) | | | | | | |
| Johnston, George A. (See Taylor, John L., assignor.) | | | | | | |
| Johnston, Oman E., Bellevue, Ohio. Hub for vehicle-wheels | 756,508 | Apr. 5 | 616 | 134 | 109 | 1473 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Jollcoeur, Godfroid, Augusta, Me. Picker mechanism for looms | 757,043 | Apr. 12 | 1669 | 361<br>362 | 109 | 1714 |
| Jolliffe, Charles H., St. Helens, and A. Coulthard, Workington, England. Rotary engine. | 756,646 | Apr. 5 | 863 | 184<br>185<br>186 | 109 | 1528 |
| Jones, Archer G., assignor to Duplex Envelope and Printing Company, Richmond, Va. Twin envelop | 754,373 | Mar. 8 | 2308 | 504 | 109 | 521 |
| Jones, Belden D., assignor to Jones Car Door Company, Chicago, Ill. Door-guard | 754,219 | Mar. 8 | 1961 | 440 | 109 | 432 |
| Jones Car Door Company. (See Jones, Belden D., assignor.) | | | | | | |
| Jones, Charles E., Windsor, Mo. Whiffletree-hook | 758,706 | Mar. 1 | 951 | 216 | 109 | 205 |
| Jones, Charles E., Windsor, Mo. Whiffletree-hook | 755,892 | Mar. 29 | 5215 | 1153 | 109 | 1207 |
| Jones, Charles J., Yellowstone Park, Wyo. Windmill | 757,044 | Apr. 12 | 1671 | 362 | 109 | 1714 |
| Jones, Frederick M. H. (See Illemann, Robert, assignor.) | | | | | | |
| Jones, George H., Salem, Oreg. Base for poles or posts | 758,709 | Mar. 1 | 962 | 216 | 109 | 205 |
| Jones, George H., Chicago, Ill. Panel-board for electric distribution | 756,966 | Apr. 12 | 1501 | 331 | 109 | 1678 |
| Jones, Harriett, Waukesha, Wis. Body-hanger for vehicles | 757,628 | Apr. 19 | 2862 | 621 | 109 | 1984 |
| Jones, Hugh, Edwardsdale, Pa. Car-brake | 755,893 | Mar. 29 | 5216 | 1154 | 109 | 1207 |
| Jones, Hugh L., Osceola, Mo. Box-fastener | 758,899 | Mar. 8 | 1347 | 304 | 109 | 311 |
| Jones, James, *et al.* (See Baird, Clarence D., assignor.) | | | | | | |
| Jones, James A., Plymouth, Ind. Machine for cleaning blackboard-erasers | 754,220 | Mar. 8 | 1982 | 440<br>441 | 109 | 432 |
| Jones, James B., Ardmore, Ind. Ter. Washboard | 755,672 | Mar. 29 | 4776 | 1063 | 109 | 1106 |
| Jones, James E. (See Doss, Andrew J., assignor.) | | | | | | |
| Jones, James E., Switchback, W. Va. Coke-puller | 757,312 | Apr. 12 | 2206 | 482 | 109 | 1829 |
| Jones, James H., Bristol, assignor to Corbin Motor Vehicle Corporation, New Britain, Conn. Engine-valve | 754,569 | Mar. 15 | 2726 | 593 | 109 | 629 |
| Jones, Jesse R., Jackson, Miss. Cultivator | 753,983 | Mar. 8 | 1334 | 342 | 109 | 355 |
| Jones, John J. A., Green Island, N. Y. Printing apparatus | 758,210 | Apr. 26 | 3984 | 864 | 109 | 2251 |
| Jones, John J. A., Green Island, N. Y. Printing-wheel | 758,256 | Apr. 26 | 4082 | 883 | 109 | 2271 |
| Jones, John M. (See Sumner, Brewer, and Gibson, assignors.) | | | | | | |
| Jones, Joshua W., Harrisburg, Pa. Folding and convertible cot or bed | 758,211 | Apr. 26 | 3985 | 865 | 109 | 2251 |
| Jones, Louis A., Cambridge, assignor to F. N. Tait, Melrose, Mass. Binder-frame | 754,070 | Mar. 8 | 1680 | 375<br>376 | 109 | 380 |
| Jones, O. D. (See Shafer, John C., assignor.) | | | | | | |
| Jones, R. M. (See Pruyn, Marcellus, assignor.) | | | | | | |
| Jones, Richard M., Bevier, Mo. Machine for driving fence-posts | 755,673 | Mar. 29 | 4777 | 1063 | 109 | 1106 |
| Jones, Sallie, Glasgow, Ky. Magnifying attachment for sewing-machines | 756,024 | Mar. 29 | 5494 | 1212 | 109 | 1368 |
| Jones, Thomas A., Ridgway, Ill. Storm-coat | 758,182 | Apr. 26 | 3988 | 853 | 109 | 2240 |
| Jones, William A., Branch, Pa. Shaft-fastener | 757,932 | Apr. 19 | 3437 | 744 | 109 | 2112 |
| Jones, William E., Ellisville, Miss. Eight-wheeled wagon | 756,647 | Apr. 5 | 854 | 186 | 109 | 1524 |
| Jones, Willis, Chicago, Ill. Tie-plate | 757,467 | Apr. 19 | 2515 | 552 | 109 | 1908 |
| Jones, Willis S., Chicago, Ill. Tie-plate for railways | 754,654 | Mar. 15 | 2868 | 632 | 109 | 664 |
| Jordan, Harry I. (See Blackinton, Henry B., assignor.) | | | | | | |
| Jordan, William T., assignor of one-half to F. A. Holbrook, Chicago, Ill. Blackboard-machine | 753,829 | Mar. 1 | 1234 | 277 | 109 | 265 |
| Jory, Joseph H. (See Jory, William J. and J. H.) | | | | | | |
| Jory, William J. and J. H., San Francisco, Cal. Electrolytic deposition apparatus | 757,557 | Apr. 19 | 2699 | 590 | 109 | 1949 |
| Joseph, Adolph, *et al.* (See Royle, Samuel, assignor.) | | | | | | |
| Joseph, Emil, Berlin, Germany. Preparing highly-diluted solutions | 758,450 | Apr. 26 | 4475 | ..... | 109 | 2359 |
| Joseph N. Smith & Co. (See Chamberlin, Charles E., assignor.) | | | | | | |
| Joseph, Rupert L., *et al.* (See Gallagher, George S., assignor.) | | | | | | |
| Joseph, Thomas B., San Francisco, Cal. Apparatus for extracting metals by chemical process | 758,367 | Apr. 26 | 4316 | 927 | 109 | 2223 |
| Joyce, Michael, Salt Lake City, Utah. Sad-iron | 757,198 | Apr. 12 | 1909 | 429 | 109 | 1780 |
| Joyce, William, New York, N. Y. Vent apparatus for oil or other cans | 756,373 | Apr. 5 | 375 | 76 | 109 | 1424 |
| Joynt, James, St. Louis, Mo. Flexible metallic pipe-coupling for railway-cars | 757,313 | Apr. 12 | 2208 | 482 | 109 | 1829 |
| Judelson, Julius, New York, N. Y. Clothes-drier | 758,451 | Apr. 26 | 4476 | 902 | 109 | 2359 |
| Judge, Franklin. (See Quentell and Judge.) | | | | | | |
| Judson, Horace H., Stratford, Conn., assignor to Nonpareil Cork Manufacturing Company, New York, N. Y. Non-conducting wall | 755,137 | Mar. 22 | 3782 | 833 | 109 | 879 |
| Judson L. Thomson Manufacturing Company. (See Maenche, Albert T., assignor.) | | | | | | |
| Julian, William J., Charles City, Iowa. Disk-sharpener | 754,455 | Mar. 15 | 2500 | 544 | 109 | 561 |
| Julius, Paul, and E. Fussenegger, Ludwigshafen-on-the-Rhine, Germany, assignors to Badische Anilin & Soda Fabrik. Azo dye and making same | 754,315 | Mar. 8 | 2153 | ..... | 109 | 487 |
| Junge, August, *et al.* (See Dietz, Christian F., assignor.) | | | | | | |
| Junkin, John P., and A. Alexander, Pheba, Miss. Belt-fastener | 757,662 | Apr. 19 | 2917 | 634 | 109 | 1999 |
| Justus, Charles W., Lima, assignor of one-half to A. Benroth, Bluffton, Ohio. Land-anchor | 756,374 | Apr. 5 | 376 | 77 | 109 | 1424 |
| Kabureck, George, Jersey City, N. J. Window | 758,579 | Mar. 1 | 701 | 157 | 109 | 154 |
| Kabureck, George, Jersey City, N. J. Pivoted sash | 754,655 | Mar. 15 | 2905 | 632<br>633 | 109 | 665 |
| Kade, Charles F., assignor to M. Winter Lumber Company, Sheboygan, Wis. Kitchen-cabinet | 754,570 | Mar. 15 | 2727 | 593 | 109 | 630 |
| Kade, Charles F., assignor to A. F. Winter, Sheboygan, Wis. Bracket | 756,648 | Apr. 5 | 856 | 186 | 109 | 1524 |
| Kadel, Benjamin F., Rock Falls, and H. F. Rodemeyer, assignors to Sterling Manufacturing Company, Sterling, Ill. Hay-loader | 757,122 | Apr. 12 | 1816 | 398<br>399 | 109 | 1744 |
| Kaiser, John, Seneca Falls, N. Y. Aerial apparatus | 758,169 | Mar. 29 | 5741 | 1269 | 109 | 1321 |
| Kaiser, Joseph, Columbus, Ohio. Hat-fastener | 754,316 | Mar. 8 | 2154 | 477 | 109 | 487 |
| Kalsling, William, assignor to Kellogg Switchboard & Supply Company, Chicago, Ill. Machine for marking transmitter-fronts or the like | 756,649 | Apr. 5 | 857 | 187<br>188 | 109 | 1524 |
| Kalbach, Stanley, Wildwood, N. J. Electric-light-circuit protector | 756,025 | Mar. 29 | 5496 | 1212 | 109 | 1368 |
| Kail, Nicolaus, Denver, Colo. Saw-filing machine | 757,663 | Apr. 19 | 2918 | 634<br>635 | 109 | 1999 |
| Kaltenegger, Ferdinand, Brixen, and N. L. von Liburnau, Weidlingau, Austria-Hungary. Dissolving gases in liquids for the purpose of keeping alive aquatic animals and water-plants | 754,317 | Mar. 8 | 2156 | 477 | 109 | 488 |
| Kampfe, Frederick. (See Kampfe, Otto, assignor.) | | | | | | |
| Kampfe, Otto, New York, assignor of one-half to F. Kampfe, Brooklyn, N. Y. Lawn-rake | 757,123 | Apr. 12 | 1819 | 399 | 109 | 1745 |
| Kampfe, Otto, New York, assignor of one-half to F. Kampfe, Brooklyn, N. Y. Driven-well point | 757,124 | Apr. 12 | 1819 | 399 | 109 | 1745 |
| Kanalz, Julius, Parkersburg, W. Va. Ice-table | 754,144 | Mar. 8 | 1853 | 408 | 109 | 421 |
| Kaphingst, George. (See Seith and Kaphingst.) | | | | | | |
| Karns, William E., Parkers Landing, Pa. Electrical railway danger-signal | 757,125 | Apr. 12 | 1820 | 399<br>400 | 109 | 1745 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Drg. | Vol. | Page. |
| Karpen & Bros., S. (See Streich, Frank, assignor.) | | | | | | |
| Karpen & Bros., S. (See Streich and Ruehs, assignors.) | | | | | | |
| Karr, Francis. (See Brouyette, Charles D., assignor.) | | | | | | |
| Kary, Frank, assignor of one-half to C. Morlock, Chicago, Ill. Portable bowling-alley | 754,456 | Mar. 15 | 2501 | 544 | 109 | 582 |
| Kasson, Mahlon O., Sandy Hill, N. Y., assignor to Union Bag and Paper Company. Pulp-grinder | 754,071 | Mar. 8 | 1691 | 376 | 109 | 389 |
| Kates, Anthony T., assignor to Bray & Kates, Arlington Heights, Ill. Attaching hoops to milk-can breasts | 753,580 | Mar. 1 | 704 | 158 | 109 | 154 |
| Kates, Anthony T., assignor to Bray & Kates, Arlington Heights, Ill. Sheet-metal can | 753,581 | Mar. 1 | 706 | 158 | 109 | 154 |
| Kathol, William, Vallsburg, N. J. Filter | 756,375 | Apr. 5 | 377 | 77 | 109 | 1424 |
| Kaufman, Jonas, Newcastle, Pa. Electric-lamp guard | 757,314 | Apr. 12 | 2209 | 483 | 109 | 1830 |
| Kaufmann, Jacob. (See Fehr and Kaufmann.) | | | | | | |
| Kaye, Edward, Monaca, Pa. Illuminated indicator | 756,860 | Apr. 12 | 1296 | 287 | 109 | 1634 |
| Keables, Charles F., Indianola, Iowa. Balance-weight for braces | 757,315 | Apr. 12 | 2210 | 483 | 109 | 1830 |
| Keane, Thomas H. (See Rievaldt, William, assignor.) | | | | | | |
| Keating, Daniel A., assignor of one-half to C. D. S. Miller, Bridgeport, Conn. Conveyer system | 756,170 | Mar. 29 | 5745 | 1269 | 109 | 1822 |
| Keats, John, Bagnall, assignor to Phoenix Boot Machinery Company, Limited, Street, England. Boot or shoe | 753,495 | Mar. 1 | 515 | 119 | 109 | 113 |
| Keefer, Edward S., assignor of nine-twentieths to L. Bamberger, Cincinnati, Ohio. Railway cross-tie | 758,368 | Apr. 26 | 4317 | 927 | 109 | 2323 |
| Keeler, F. B., *et al.* (See Kempton, Benjamin S., assignor.) | | | | | | |
| Keene, Richard. (See Granada and Keene.) | | | | | | |
| Keener, Charles F., Grafton, W. Va. Rail-joint | 757,316 | Apr. 12 | 2211 | 483 | 109 | 1830 |
| Keener, Frederick, Worth, Mich. Potato-bug gatherer and destroyer | 756,650 | Apr. 5 | 864 | 188<br>189 | 109 | 1526 |
| Keffer, Edwin, Madison, Ill., assignor of one-half to R. Beck, St. Louis, Mo. Wagon-reach | 754,318 | Mar. 8 | 2157 | 477 | 109 | 488 |
| Kegrize, Frank M., Philadelphia, Pa. Fountain-pen | 756,376 | Apr. 5 | 379 | 77 | 109 | 1425 |
| Kegrize, Frank M., Philadelphia, Pa. Fountain-pen | 757,664 | Apr. 19 | 2924 | 635 | 109 | 2000 |
| Keifer, Harold N., Topeka, Kans. Lightning-arrester | 753,582 | Mar. 1 | 707 | 158 | 109 | 154 |
| Keil, Henry F., Bronxville, N. Y. Hinge for card-tables | 758,710 | Mar. 1 | 954 | 216 | 109 | 205 |
| Keil, Henry F., Bronxville, N. Y. Latch | 754,319 | Mar. 8 | 2158 | 478 | 109 | 488 |
| Keil, Henry F., Bronxville, N. Y. Bracket-supported receptacle | 756,504 | Apr. 5 | 617 | 184 | 109 | 1472 |
| Keith, Jesse M., *et al.* (See Buckingham, Edward L., assignor.) | | | | | | |
| Kelleher, D. M., *et al.* (See Kempton, Benjamin S., assignor.) | | | | | | |
| Kelleher, J. H. (See Crowell, Edward E., assignor.) | | | | | | |
| Kellemen, Henry F., assignor to Utica Drop Forge & Tool Company, Utica, N. Y. Pliers. | 756,505 | Apr. 5 | 618 | 184 | 109 | 1472 |
| Keller, Calvin, Creighton, Nebr. Inkstand | 758,257 | Apr. 26 | 4084 | 863<br>884 | 109 | 2272 |
| Keller, Charles A., Paris, France. Electric furnace | 754,656 | Mar. 15 | 2907 | 633 | 109 | 665 |
| Keller, George, Gilman, Ill. Hoof and shoe expander | 756,967 | Apr. 12 | 1504 | 331 | 109 | 1679 |
| Keller, James D., Detroit, Mich. Horse-boot | 756,792 | Apr. 5 | 1149 | 254 | 109 | 1590 |
| Keller, Julius. (See Tynan and Mostiller, assignors.) | | | | | | |
| Keller, Manna. (See Mishler, Sylvester S., assignor.) | | | | | | |
| Kellett, Patrick C., Brooklyn, N. Y. Thermometer-case | 753,711 | Mar. 1 | 955 | 216 | 109 | 205 |
| Kelley, Michel J. (See Tyrrell, Herbert H., assignor.) | | | | | | |
| Kellogg, Edwin M., Madison, Wis., assignor of one-half to W. C. Thompson, Chicago, Ill. Grain-harvester | 757,126 | Apr. 12 | 1823 | 400 | 109 | 1745 |
| Kellogg, Edwin M., St. Paul, Minn., assignor of one-half to W. C. Thompson, Chicago, Ill. Cord-knotter | 757,127 | Apr. 12 | 1825 | 401 | 109 | 1746 |
| Kellogg, Edwin M., St. Paul, Minn., assignor of one-half to W. C. Thompson, Chicago, Ill. Harvester and binder | 757,128 | Apr. 12 | 1833 | 401<br>402 | 109 | 1749 |
| Kellogg, George W., Grand Forks, N. D. Car-door | 758,496 | Mar. 1 | 516 | 119<br>120 | 109 | 113 |
| Kellogg, Henry E. (See Swain, George F., assignor.) | | | | | | |
| Kellogg, Henry E., and G. F. Swain, Harvey, Ill. Combined car brake and starter | 757,811 | Apr. 19 | 3208 | 697 | 109 | 2061 |
| Kellogg, James A., and J. D. Brady, Pittsburg, Pa.; said Brady assignor to said Kellogg. Indicator | 753,796 | Mar. 1 | 1156 | 261 | 109 | 248 |
| Kellogg Switchboard & Supply Company. (See Christopher, Albert C., assignor.) | | | | | | |
| Kellogg Switchboard and Supply Company. (See Dean, William W., assignor.) | | | | | | |
| Kellogg Switchboard & Supply Company. (See Kaisling, William, assignor.) | | | | | | |
| Kellond, Robert A., and J. C. Morrison, Chicago, Ill. Machine for manufacturing peat into blocks for fuel | 755,674 | Mar. 29 | 4778 | 1063<br>1064 | 109 | 1107 |
| Kelly, Francis T., Philadelphia, Pa. Rail connection for drawbridges | 756,651 | Apr. 5 | 867 | 189 | 109 | 1527 |
| Kelly, Guy E. (See Craig, Kelly, and Turner.) | | | | | | |
| Kelly, John F. (See Maddock and Kelly.) | | | | | | |
| Kelly, John F., Trenton, N. J., assignor to Thomas Maddock's Sons Company. Lavatory-basin | 756,239 | Apr. 5 | 92 | 20 | 109 | 1362 |
| Kelly, John J. (See Seager and Kelly.) | | | | | | |
| Kelly, Patrick E., and J. W. Riordan, El Paso, Tex. Guard-rail clamp | 758,536 | Apr. 26 | 4645 | 1000 | 109 | 2297 |
| Kemp, Joseph S., Newark Valley, N. Y. Fertilizer-distributer | 758,537 | Apr. 26 | 4646 | 1000 | 109 | 2298 |
| Kempton, Benjamin S., Paton, assignor of part to L. A. Rothe, C. F. Linnan, F. B. Keeler, Pocahontas county, and D. M. Kelleher, Polk county, Iowa. Machine for loading bound grain on wagons | 755,138 | Mar. 22 | 3783 | 833 | 109 | 879 |
| Kendall, William H. (See Harris and Kendall.) | | | | | | |
| Kengla, William S., assignor of one-half to W. H. Barnes, Tucson, Ariz. Ter. Oil mixer and burner | 756,116 | Mar. 29 | 5665 | 1250 | 109 | 1804 |
| Kenisell, John E., assignor of one-half to C. C. Lowry, Detroit, Mich. Machine for mixing concrete, &c | 754,927 | Mar. 15 | 3401 | 748 | 109 | 777 |
| Kennard, George W., Staunton, Va. Lock for screw or bolt heads | 753,408 | Mar. 1 | 337 | 76 | 109 | 75 |
| Kennedy, Henry R. (See Greenleaf and Kennedy.) | | | | | | |
| Kennedy, Jean A., Detroit, Mich. Shirt-waist | 756,940 | Apr. 5 | 98 | 20 | 109 | 1362 |
| Kennedy, John V., *et al.* (See Sweeny, Thomas J., assignor.) | | | | | | |
| Kennedy, Michael A., assignor to Tredair Rubber Company, Boston, Mass. Vehicle-tire | 757,199 | Apr. 12 | 1970 | 430 | 109 | 1780 |
| Kennedy, Robert. (See Lawrence and Kennedy.) | | | | | | |
| Kent, Henry B., New Brunswick, N. J. Powder-box | 755,299 | Mar. 22 | 4074 | 902 | 109 | 939 |
| Kent, James W. (See Small, Frank E., assignor.) | | | | | | |
| Kenworthy, John W., assignor of one-half to A. W. Plummer, Maxwell, Nebr. Hay-stacker | 757,624 | Apr. 19 | 2853 | 621<br>622 | 109 | 1984 |
| Kenyon, A. T., *et al.* (See Reinmiller, William C., assignor.) | | | | | | |
| Keplinger, Claude J., assignor to Canton Hard Rubber Company, Canton, Ohio. Brake-handle | 757,468 | Apr. 19 | 2618 | 552 | 109 | 1909 |
| Kepp, Ferdinand, Brooklyn, N. Y. Metallurgical furnace | 758,712 | Mar. 1 | 956 | 217 | 109 | 906 |
| Kepp, Ferdinand, Brooklyn, N. Y. Gear-molding machine | 754,777 | Mar. 15 | 3118 | 680<br>681 | 109 | 717 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Kerber, Louis H. W., Chicago, Ill., assignor to Adams and Westlake Company, of Illinois. Electric-lamp support for convertible signal-lanterns | 756,117 | Mar. 29 | 5666 | 1250 | 109 | 1304 |
| Kern, Benjamin F., and W. J. O. Johnson; said Johnson assignor to H. S. Folger, Chicago, Ill. Means for making rubber type | 756,052 | Apr. 5 | 969 | 189<br>190 | 100 | 1527 |
| Kerngood, Herman, Baltimore, Md., assignor to Alma Button Company of Baltimore City. Machine for attaching buttons | 755,884 | Mar. 29 | 5219 | 1154<br>1155 | 109 | 1208 |
| Kerr, Benjamin F. (See Talcott and Kerr.) | | | | | | |
| Kerr, Charles V., Rutherford, N. J. Compound steam-turbine | 756,341 | Apr. 5 | 94 | 20, 21 | 109 | 1302 |
| Kerr, Colwell D. (See Kerr, John W. and C. D.) | | | | | | |
| Kerr, John F., *et al.* (See Pratt, Thomas J., assignor.) | | | | | | |
| Kerr, John W. and C. D., Plateau City, Colo. Harrow | 755,139 | Mar. 22 | 3786 | 884 | 109 | 880 |
| Kerr, Valentine B., assignor of one-half to West Branch Novelty Company, Milton, Pa. Lock | 756,452 | Apr. 26 | 4477 | 962 | 109 | 2360 |
| Kershner, Bertram M., Pittsburg, Pa. Electric railway-signal | 755,140 | Mar. 22 | 3787 | 834 | 109 | 880 |
| Kessler, Charles, Troy, Ohio. Mouthpiece for pipes or cigar-holders | 755,370 | Mar. 22 | 4223 | 984 | 109 | 973 |
| Kessler, Warren S., Albion, Mich. Automobile lifting-truck | 754,571 | Mar. 15 | 2728 | 594 | 109 | 630 |
| Kessler, William H., Passaic, N. J. Reversible pulley mechanism | 755,865 | Mar. 29 | 5523 | 1155 | 109 | 1209 |
| Kessler, William H., Passaic, N. J. Mechanism for transmitting and controlling power and motion | 757,751 | Apr. 19 | 3002 | 673<br>674 | 109 | 2085 |
| Kettle, Stephen, assignor of two-thirds to S. E. Kettle, Chicago, and H. W. Scott, North Chicago, Ill. Atomizer | 757,200 | Apr. 12 | 1972 | 430 | 109 | 1781 |
| Kettle, Stephen E., *et al.* (See Kettle, Stephen, assignor.) | | | | | | |
| Keyes, Atwood B., Ayer, Mass. Board for building purposes | 757,812 | Apr. 19 | 3210 | 897 | 109 | 2062 |
| Keyes, Erasmus L., Hopedale, Ill. Sweeping-machine | 755,596 | Mar. 22 | 4614 | 1025 | 109 | 1056 |
| Keys, Nathan A. (See Place and Keys.) | | | | | | |
| Khell, John, Fond du Lac, Wis. Plow | 754,572 | Mar. 15 | 2729 | 594 | 109 | 630 |
| Kidder, William N., Providence, R. I. Artificial tooth-crown | 756,506 | Apr. 5 | 619 | 134 | 109 | 1473 |
| Kidwell, Harry C., Washington, D. C., assignor to Pullman Automatic Ventilator Company, York, Pa. Window-ventilator | 757,201 | Apr. 12 | 1974 | 430 | 109 | 1781 |
| Kiefer, Robert A. (See Greene, Alfred, assignor.) | | | | | | |
| Kierzkowski-Steuart, Charles F. de, London, England. Reversible turbine | 756,595 | Apr. 26 | 4753 | 1025 | 109 | 2424 |
| Kiesewetter, Otto, and L. H. Ehlers, Secaucus, N. J. Guide for sewing-machines | 754,280 | Mar. 8 | 2159 | 478 | 109 | 488 |
| Kiffe, Hermann H., New York, N. Y. Fishing-reel | 756,653 | Apr. 5 | 872 | 190 | 109 | 1528 |
| Kilbourn, Washington H., assignor of one-third to A. D. Flower, Greenfield, Mass. Track-sanding device | 756,141 | Apr. 26 | 3857 | 837 | 109 | 2223 |
| Killen, Frank W., Wilmerding, Pa. Hose-coupling | 757,758 | Apr. 19 | 3095 | 674 | 109 | 2086 |
| Kilpatrick, James A., Niles, Ohio. Trolley-wheel retainer | 754,778 | Mar. 15 | 3125 | 681 | 109 | 718 |
| Kim, George M., Allegheny, Pa. Bed-couch | 754,145 | Mar. 8 | 1833 | 408<br>409 | 109 | 421 |
| Kimball, Almon A., and W. J. Conners, Scanlon, Minn. Railway-frog | 754,975 | Mar. 15 | 3316 | 723 | 109 | 759 |
| Kimball, Frank J. (See Richardson and Kimball.) | | | | | | |
| Kimball, Fred M., Boston, assignor to C. N. Lovell, Melrose, and N. E. Covel, Boston, Mass. Attachment for jacket-kettles, &c. | 754,779 | Mar. 15 | 3126 | 681 | 109 | 718 |
| Kimball, George W., Newton, N. H. Burnishing-wheel | 753,497 | Mar. 1 | 517 | 120 | 109 | 114 |
| Kimbark, Daniel A., assignor to Electric Specialty Co., Chicago, Ill. Lamp socket and plug | 753,376 | Mar. 1 | 113 | 26 | 109 | 26 |
| Kimber, Walter E., Johannesburg, Transvaal. Chuck for rock-drilling machines | 756,377 | Apr. 5 | 381 | 78 | 109 | 1425 |
| Kindsvater, John H., Manhattan, Kans. Combined header and stacker | 754,780 | Mar. 15 | 3128 | 682<br>683 | 109 | 719 |
| Kindsvater, John H., Ellis, Kans. Hoisting mechanism for stackers | 754,781 | Mar. 15 | 3138 | 683<br>684 | 109 | 720 |
| Kindwall, Abel M., Albert City, Iowa. Rural mail-delivery case | 758,358 | Apr. 26 | 4085 | 864 | 109 | 2272 |
| King, Arthur, assignor to Middletown Car Works, Middletown, Pa. Dump-car | 757,758 | Apr. 19 | 3096 | 674<br>675 | 109 | 2086 |
| King, Benjamin. (See Brown, Jacob L., assignor.) | | | | | | |
| King, George I., Middletown, Pa. Underframing for railway-cars | 753,568 | Mar. 1 | 708 | 159 | 109 | 155 |
| King, Homer C., assignor of one-half to H. P. Vedder, Elgin, Ill. Rail-clearer | 758,536 | Apr. 26 | 4648 | 1001 | 109 | 2298 |
| King, John H., Garrity, Ala. Milk-pail | 753,964 | Mar. 8 | 1536 | 342 | 109 | 355 |
| King, John J., *et al.* (See Durden, Washington L., assignor.) | | | | | | |
| King, Joseph G., Port Arthur, Canada. Grain-car door | 756,654 | Apr. 5 | 873 | 190 | 109 | 1528 |
| Kinman, Robert L., Williamstown, Ky. Book-holder | 757,302 | Apr. 12 | 1976 | 430 | 109 | 1781 |
| Kinnear Manufacturing Company. (See McCloud, Edward H., assignor.) | | | | | | |
| Kinney, Edward, Holyoke, Mass. Cutter for linoleum or the like | 757,317 | Apr. 12 | 2212 | 483 | 109 | 1830 |
| Kinney, Israel, Toronto, Canada, assignor of one-half to Detroit Saw & Tool Works, Detroit, Mich. Pocket or other knife | 758,142 | Apr. 26 | 3859 | 837 | 109 | 2224 |
| Kinney, John D., Villa Rica, Ga. Seed-planter and fertilizer-distributer | 757,813 | Apr. 19 | 3212 | 697<br>698 | 109 | 2062 |
| Kinsey, Isaac, Dayton, Ohio. Frame for vapor-stoves | 753,498 | Mar. 1 | 519 | 120 | 109 | 114 |
| Kinsey, Peter S., *et al.* (See Burt, Anderson, and Grossman, assignors.) | | | | | | |
| Kinsey, Peter S., Newark, N. J., and A. L. Anderson, Brooklyn, assignors to said Kinsey, W. Kinsey, New York, N. Y., and J. H. Burt, Springfield, Mass. Shoe-holder | 754,073 | Mar. 8 | 1698 | 376 | 109 | 389 |
| Kinsey, Walter, *et al.* (See Burt, Anderson, and Grossman, assignors.) | | | | | | |
| Kinsey, Walter, *et al.* (See Kinsey and Anderson, assignors.) | | | | | | |
| Kinsley, William S., assignor of one-half to E. D. Cook, Reading, Mass. Safety appliance for banks | 754,073 | Mar. 8 | 1695 | 376<br>377 | 109 | 390 |
| Kinsley, William S., and S. S. Bell, Reading, Mass. Insulator | 756,096 | Mar. 29 | 5496 | 1213 | 109 | 1208 |
| Kintzing, William F. (See McKnight, John W., assignor.) | | | | | | |
| Kirby, E. J. (See Eggleston, Hardy, and Lepper, assignors.) | | | | | | |
| Kirby, John, Jr., assignor to Dayton Manufacturing Company, Dayton, Ohio. Fixture for hanging sash | 753,965 | Mar. 8 | 1538 | 343 | 109 | 355 |
| Kirby, John, Jr., assignor to Dayton Manufacturing Company, Dayton, Ohio. Curtain-fixture | 755,675 | Mar. 29 | 4783 | 1064 | 109 | 1107 |
| Kirchman, William, Centerville, Iowa. Wheel construction | 758,013 | Mar. 22 | 3571 | 783 | 109 | 882 |
| Kirk, Edward C., assignor of one-half to H. C. Kirk, Pittsburg, Pa. Apparatus for retaining heat in foods | 758,009 | Apr. 19 | 3584 | 776 | 109 | 2144 |
| Kirk, Hyland C. (See Kirk, Edward C., assignor.) | | | | | | |
| Kirkegaard, Georg, assignor of one-half to F. Jebsen, New York, N. Y. Bottle-stopper | 758,319 | Apr. 26 | 4325 | 908 | 109 | 2304 |
| Kirksey, John G., assignor of one-fourth to H. L. Shanuon, Carthage, Mo. Pump | 756,968 | Apr. 12 | 1505 | 332 | 109 | 1679 |
| Kirkwood, Benjamin. (See Horton, William G., assignor.) | | | | | | |
| Kirstein, Henry E., Rochester, N. Y. Eyeglasses | 755,014 | Mar. 22 | 3573 | 783 | 109 | 882 |
| Kissam, Daniel S., Orange, N. J. Match-safe | 754,231 | Mar. 8 | 1984 | 441 | 109 | 453 |
| Kistler, Libbie F. (See Symonds, Henry, assignor.) | | | | | | |
| Kitchen, John G. A., and L. P. Perkins, Lancaster, England. Steam-generator | 757,695 | Apr. 19 | 3655 | 688 | 109 | 1964 |
| Kitsee, Isidor, Philadelphia, Pa. Telephonic relay or repeater | 754,457 | Mar. 15 | 2502 | 545 | 109 | 562 |
| Kitto, Thomas J., Joplin, Mo. Railway cross-tie | 754,458 | Mar. 15 | 2504 | 545 | 109 | 562 |
| Klaiber, Maximilian. (See McColl and Klaiber.) | | | | | | |
| Klampe, Albert F., Allendorf, Iowa. Corn-husking machine | 756,655 | Apr. 5 | 875 | 191 | 109 | 1529 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Klapka, Joseph F. (See Harris, William E., assignor.) | | | | | | |
| Klärle, Christian, Frankfort-on-the-Main, Germany. Means for lowering loads applicable as life-saving apparatus | 753,499 | Mar. 1 | 520 | 120 | 109 | 114 |
| Klein, Charles J., New York, N. Y. Push-button | 757,208 | Apr. 12 | 1977 | 431 | 109 | 1782 |
| Klein, Ernest F. O., Buffalo, N. Y. Watch-mainspring | 753,584 | Mar. 1 | 710 | 159 | 109 | 155 |
| Kleinsmith, Elmer B., New York, N. Y. Buttoner | 756,027 | Mar. 29 | 5499 | 1213 | 109 | 1269 |
| Kline, James M., Beavertown, Pa. Hydraulic ram | 758,259 | Apr. 26 | 4086 | 884<br>885 | 109 | 2272 |
| Kline, Samuel, Jersey City, N. J. Line-measure | 758,320 | Apr. 26 | 4228 | 908 | 109 | 2304 |
| Klingelfuss, Friedrich, Basle, Switzerland. Coil for electromagnets or other purposes | 755,229 | Mar. 22 | 3946 | 873 | 109 | 912 |
| Kloman, Andrew C., assignor of one-fifth to W. M. Scott, Saxton, Pa. Retort coke-oven | 757,469 | Apr. 19 | 2518 | 552<br>553 | 109 | 1900 |
| Kloman, Anthony C., assignor of one-half to J. Scott, Pittsburg, Pa. Retort for making gas and coke | 754,459 | Mar. 15 | 2506 | 545 | 109 | 582 |
| Knapp, Jeremiah R., assignor of one-half to S. C. Tyler, Norwalk, Ohio. Game | 757,470 | Apr. 19 | 2520 | 553 | 109 | 1909 |
| Knapp, John D. C., Minneapolis, Minn. Seal-lock | 757,814 | Apr. 19 | 3214 | 698 | 109 | 2063 |
| Knapp, Roland W., Minneapolis, Minn. Steam-condenser | 758,404 | Mar. 1 | 339 | 76, 77 | 109 | 76 |
| Knapp, Shurman R. (See Dolph and Knapp.) | | | | | | |
| Kneale, William C., Indianapolis, Ind., assignor to National Malleable Castings Company, Cleveland, Ohio. Stove-top | 754,146 | Mar. 8 | 1834 | 409 | 109 | 422 |
| Kneisly, Daniel W., assignor of two-thirds to G. H. and F. J. Kramer, Dayton, Ohio. Labeling-machine | 754,460 | Mar. 15 | 2507 | 546<br>547 | 109 | 583 |
| Knickerbocker Trunk Company. (See Seaman, Alonzo D., assignor.) | | | | | | |
| Knietsch, Rudolf, P. Seidel, and G. W. Meiser, assignors to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Making indoxyl and derivatives | 756,171 | Mar. 29 | 5747 | ..... | 109 | 1322 |
| Kniffin, George G., Bayonne, N. J., assignor to Boynton Furnace Company, New York, N. Y. Grate | 757,471 | Apr. 19 | 2522 | 553 | 109 | 1910 |
| Knight, Herbert A., *et al.* (See Cottrall, Archibald H. F., assignor.) | | | | | | |
| Knight, Margaret E., South Framingham, Mass. Rotary engine | 756,118 | Mar. 29 | 5668 | 1250 | 109 | 1305 |
| Knight, Stephen S., Newmarket, Tenn. Fence | 758,321 | Apr. 26 | 4230 | 908<br>909 | 109 | 2305 |
| Knipe, Oliver C., Norristown, Pa. Ball-bearing | 756,939 | Apr. 12 | 1509 | 332 | 109 | 1679 |
| Knipe, William A., Haverhill, Mass. Cementing-machine | 755,871 | Mar. 22 | 4224 | 984 | 109 | 973 |
| Knode, Oliver T., Richmond, Ind. Harmonica-holder | 754,074 | Mar. 8 | 1697 | 377 | 109 | 391 |
| Knöllner, Richard, Magdeburg, Germany. Apparatus for cleaning bottle baskets or cases | 753,713 | Mar. 1 | 960 | 217 | 109 | 207 |
| Knopf, Carl, New York, N. Y. Stair-mat | 753,500 | Mar. 1 | 521 | 121 | 109 | 114 |
| Knowlton, Gerry E., Boone, Iowa. Window support and lock | 756,507 | Apr. 5 | 620 | 135 | 109 | 1473 |
| Knowlton, William N. (See Townsend, William W., assignor.) | 755,780 | Mar. 29 | 5018 | 1116 | 109 | 1160 |
| Koch, George, East Sandy, Pa. Book-handle | 753,585 | Mar. 1 | 711 | 159 | 109 | 155 |
| Koch, Johann J., and J. Hümbeli, Wohlen, Switzerland; said Hümbeli assignor to said Koch. Cook-stove | 756,378 | Apr. 5 | 382 | 78 | 109 | 1425 |
| Kodama, Nobyoshi H., assignor of one-half to R. Gancher, New York, N. Y. Automatic adding or subtracting apparatus | 758,586 | Mar. 1 | 712 | 160 | 109 | 156 |
| Koehler, Frank G., St. Louis, Mo. Fastener for car-axle boxes | 755,886 | Mar. 29 | 5226 | 1155 | 109 | 1210 |
| Koehler, Frank G., St. Louis, Mo. Car-truck | 755,887 | Mar. 29 | 5227 | 1155 | 109 | 1210 |
| Koenig, William J., New York, N. Y. Hair-clamp | 757,204 | Apr. 12 | 1979 | 431 | 109 | 1782 |
| Koeniger, Joseph, Cologne, Germany. Manufacturing ore bricks | 755,372 | Mar. 22 | 4225 | ..... | 109 | 973 |
| Koeppen, William F., Marion, Ind. Drilling-machine | 754,321 | Mar. 8 | 2160 | 478 | 109 | 488 |
| Kohn, Louis. (See Anderson, Frederick F., assignor.) | | | | | | |
| Kohn, William, Brooklyn, N. Y. Gas-burner | 754,075 | Mar. 8 | 1699 | 377 | 109 | 391 |
| Kolf, Max, assignor, by mesne assignments, of one-half to Kolf Screen Co., St. Louis, Mo. Adjustable window-screen | 755,676 | Mar. 29 | 4784 | 1064<br>1065 | 109 | 1108 |
| Kolf Screen Co. (See Kolf, Max, assignor.) | | | | | | |
| König, Albert, assignor to Firm of C. Zeiss, Jena, Germany. Low-power telescope | 754,076 | Mar. 8 | 1701 | 378 | 109 | 391 |
| Königstein, Gabor, assignor of one-half to J. Silverman, San Francisco, Cal. Telephone attachment | 756,508 | Apr. 5 | 622 | 135 | 109 | 1473 |
| Koontz, Louis K., assignor to Martin Hardscog Manufacturing Company, Limited, Allegheny, Pa. Coal and rock drilling machine | 756,028 | Mar. 29 | 5499 | 1213 | 109 | 1269 |
| Korach, Louis F. (See Schramek, Peter P., assignor.) | | | | | | |
| Korfhage, John W., Denver, Colo. Gold-separator | 757,205 | Apr. 12 | 1980 | 431 | 109 | 1782 |
| Kosters, Clements B., Buffalo, N. Y. Shoe-holder | 755,015 | Mar. 22 | 3574 | 784 | 109 | 832 |
| Kottmann, Kaspar, Zurich, Switzerland. Electrically-driven machine for sawing logs, &c | 757,626 | Apr. 19 | 2856 | 622<br>623 | 109 | 1985 |
| Kottusch, Emanuel, assignor to F. Holzach, Zurich, Switzerland. Belt-shipper for pulleys | 758,081 | Apr. 26 | 3743 | 813<br>814 | 109 | 2196 |
| Kouba, Anton V., Milligan, Nebr. Fermenting honey | 754,461 | Mar. 15 | 2512 | ..... | 109 | 584 |
| Kovačević, Milan, Allegheny, Pa. Advertising-cabinet | 753,587 | Mar. 1 | 714 | 160 | 109 | 156 |
| Kovács, Lajos and M., San Francisco, Cal. Pick and point | 757,206 | Apr. 12 | 1981 | 432 | 109 | 1782 |
| Kovács, Mihály. (See Kovács, Lajos and M.) | | | | | | |
| Kowalski, Josef von, and I. Moscicki, Freiburg, Switzerland. Apparatus for electrical production of nitrogen or other compounds | 754,147 | Mar. 8 | 1835 | 409 | 109 | 422 |
| Koyl, Charles H., New York, N. Y. Coal-separating apparatus | 755,016 | Mar. 22 | 3576 | 784<br>785 | 109 | 833 |
| Kozminski, Samuel, assignor to Vesta, Fabrik Automatischer Gasmesser G. M. B. H., Charlottenburg, Germany. Dry gas-meter | 757,627 | Apr. 19 | 2858 | 623 | 109 | 1985 |
| Krabach, Frank X., Fort Wayne, Ind. Newspaper-rack | 756,509 | Apr. 5 | 624 | 135 | 109 | 1473 |
| Kraetsch, Paul J., Des Moines, Iowa. Smoke-consuming furnace | 756,379 | Apr. 5 | 384 | 78, 79 | 109 | 1426 |
| Kraft, Henry P. (See Schweinert and Kraft.) | | | | | | |
| Krakow, Henry O., Dubuque, Iowa. Water-closet | 754,573 | Mar. 15 | 2732 | 595 | 109 | 631 |
| Kram, John B. (See D'Estes and Kram.) | | | | | | |
| Kramer, Frank J., *et al.* (See Kneisly, Daniel W., assignor.) | | | | | | |
| Kramer, George H., *et al.* (See Kneisly, Daniel W., assignor.) | | | | | | |
| Kramer, Hans von, Bath, England. Electric resistance | 756,119 | Mar. 29 | 5669 | 1251 | 109 | 1305 |
| Krantz, Hubert, New York, N. Y. Conduit for electrical conductors | 753,714 | Mar. 1 | 961 | 217 | 109 | 207 |
| Krantz, Hubert, Brooklyn, N. Y. Electrical switch mechanism | 755,141 | Mar. 22 | 3791 | 835 | 109 | 881 |
| Kratoville, Charles P., Riverhead, N. Y. Commercial package for cigars | 756,656 | Apr. 5 | 877 | 191 | 109 | 1529 |
| Krause, Charles, Detroit, Mich. Machine for rerolling cloth | 758,322 | Apr. 26 | 4232 | 909 | 109 | 2305 |
| Krause, Friedrich, Hoboken, N. J. Apparatus for setting diamonds for industrial purposes | 757,318 | Apr. 12 | 2213 | 484 | 109 | 1831 |
| Krause, William B., *et al.* (See Graf, Robert R., assignor.) | | | | | | |
| Krebs, Arthur, assignor to Société Anonyme des Anciens Etablissements Panhard et Levassor, Paris, France. Apparatus for controlling the speed of motor-car engines | 757,815 | Apr. 19 | 3217 | 698<br>699 | 109 | 2063 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Krebs, Emil, Elwood, Ind. Lamp-burner attachment | 758,405 | Mar. 1 | 340 | 77 | 109 | 76 |
| Krekelen, Louis F. (See Lovejoy, George W., assignor.) | | | | | | |
| Krentler-Arnold Hinge Last Company. (See Krentler, Edwin O., assignor.) | | | | | | |
| Krentler Brothers Company. (See Pym, Charles F., assignor.) | | | | | | |
| Krentler, Edwin O., assignor to Krentler-Arnold Hinge Last Company, Detroit, Mich. Last-support | 754,405 | Mar. 8 | 2384 | 520 | 109 | 537 |
| Kreter, Otto, San Antonio, Tex. Coin-controlled vending-machine | 758,539 | Apr. 26 | 4651 | 1001 | 109 | 2099 |
| Kretschmer, Albert E., Lebanon, Kans. Window-shade cabinet | 755,017 | Mar. 22 | 3579 | 785 | 109 | 833 |
| Krieger, Gustavus, Brooklyn, N. Y. Ankle-supporting shoe | 757,816 | Apr. 19 | 3219 | 699 | 109 | 2064 |
| Krienitz, Alfred J., assignor of two-thirds to H. G. Ruenzel and E. H. Mundt, Milwaukee, Wis. Garment-clasp | 754,462 | Mar. 15 | 2513 | 548 | 109 | 584 |
| Krogh, Carl A. (See Krogh, Ferdinand W. and C. A.) | | | | | | |
| Krogh, Ferdinand W. and C. A., San Francisco, Cal. Pump | 758,966 | Mar. 8 | 1539 | 343 | 109 | 356 |
| Krohn, John, Barberton, Ohio, assignor to National Drill and Manufacturing Company, Chicago, Ill. Machine for making and repairing roads | 753,277 | Mar. 1 | 116 | 28 | 109 | 28 |
| Kroll, Philip J., New York, N. Y. Massage-machine | 754,468 | Mar. 15 | 2515 | 548 | 109 | 584 |
| Krone, Johannes, assignor to F. Krupp, Aktiengesellschaft, Essen-on-the-Ruhr, Germany. Pivot-gun | 757,129 | Apr. 12 | 1840 | 402 | 109 | 1751 |
| Krum, Charles L. (See Pearne and Krum.) | | | | | | |
| Krupp, Aktiengesellschaft, Fried. (See Krone, Johannes, assignor.) | | | | | | |
| Krupp, Fried. (See Behnke, Otto, assignor.) | | | | | | |
| Krupp, Fried. (See Lauber, Otto, assignor.) | | | | | | |
| Krupp, Fried. (See Melaun, Franz, assignor.) | | | | | | |
| Krupp, Fried. (See Wieser, Karl, assignor.) | | | | | | |
| Krus, Charles P., Chicago, Ill. Fish-hook | 755,677 | Mar. 29 | 4785 | 1065 | 109 | 1108 |
| Krÿszat, Albert, Berlin, Germany. Concentric valve for compressor-pumps | 758,188 | Apr. 26 | 3984 | 854 | 109 | 2240 |
| Kuhlemann, Friedrich, Budapest, Austria-Hungary. Hollow india-rubber article used as a toy | 754,148 | Mar. 8 | 1387 | 410 | 109 | 422 |
| Kuhlewind, Cornelius, Knoxville, assignor to Kuhlewind Governor Company, Pittsburg, Pa. Valve-governor for engines | 758,010 | Apr. 19 | 3585 | 776, 777 | 109 | 2144 |
| Kuhlewind, Cornelius, Knoxville, assignor to Kuhlewind Governor Company, Pittsburg, Pa. Valve-governor for engines | 758,011 | Apr. 19 | 3587 | 777, 778 | 109 | 2145 |
| Kuhlewind Governor Company. (See Kuhlewind, Cornelius, assignor.) | | | | | | |
| Kuhn, Edmond. (See Bartel and Kuhn.) | | | | | | |
| Kuhn, Jacob, Pittsburg, assignor of one-fourth to A. Eisenrath, Allegheny, Pa. Wrench | 757,207 | Apr. 12 | 1968 | 432 | 109 | 1783 |
| Kuhn, Robert, assignor to United Electric Heating Co., Detroit, Mich. Electric heater | 756,343 | Apr. 5 | 100 | 21 | 109 | 1363 |
| Kühne, Paul, New York, N. Y. Machine for making metallic lathing | 754,077 | Mar. 8 | 1702 | 378, 379 | 109 | 391 |
| Kull, Bertha, Avalon, Pa. Corset | 755,866 | Mar. 29 | 5228 | 1156 | 109 | 1211 |
| Kulow, William, assignor to Columbia Pottery and Manufacturing Company, Kokomo, Ind. Water-closet | 756,496 | Mar. 22 | 4440 | 986 | 109 | 1017 |
| Kunkle, Daniel, Greensburg, Pa. Washer | 753,589 | Mar. 1 | 716 | 160 | 109 | 156 |
| Kunzinger, Philip. (See Miller and Kunzinger.) | | | | | | |
| Kursheedt Manufacturing Company. (See Waltzfelder, Albert S., assignor.) | | | | | | |
| Kuthe, Eugen, Fröbeln, assignor to Främbs and Freudenberg, Schweidnitz, Germany. Belt-shifter | 755,678 | Mar. 29 | 4787 | 1065 | 109 | 1108 |
| Kyle, Edmund M., North Belle Vernon, Pa. Double-reciprocating-dasher churn | 755,373 | Mar. 22 | 4226 | 934 | 109 | 973 |
| Kyle, Robert C., assignor to International Fence & Fire Proofing Company, Columbus, Ohio. Fireproof floor construction | 754,574 | Mar. 15 | 2734 | 595 | 109 | 631 |
| L. Schreiber & Sons Company. (See Schreiber, Charles C., assignor.) | | | | | | |
| L. A. Thompson Scenic Railway Company. (See Thompson, La Marcus A., assignor.) | | | | | | |
| L. C. Smith and Bros. Typewriter Company. (See Gabrielson, Carl, assignor.) | | | | | | |
| La Bud, August C., and H. J. Barton, Oakbar, Cal. Gold-separator | 754,657 | Mar. 15 | 2908 | 633 | 109 | 665 |
| La Burt, John. (See Ellel and La Burt.) | | | | | | |
| La Dow, Charles, Albany, N. Y. Vehicle-body hanger | 754,149 | Mar. 8 | 1688 | 410 | 109 | 423 |
| La Fountain, Maxim, Jr., Lawrence, assignor to Davis & Furber Machine Company, North Andover, Mass. Napping-machine | 756,089 | Mar. 29 | 5501 | 1213, 1214 | 109 | 1360 |
| La Mere, Louis L. (See Hoff, Edwin H., assignor.) | | | | | | |
| La Touche, James N. D., Berhampur, Bengal, India. Indicator for type-writers | 755,502 | Mar. 22 | 4445 | 988 | 109 | 1017 |
| Laas, Edward, Elgin, and H. H. Sponenburg, Wadsworth, Ill. Railway-rail stay | 757,754 | Apr. 19 | 3099 | 675 | 109 | 2087 |
| Lafrentz, Julius A., *et al.* (See Alexander, Jesse, assignor.) | | | | | | |
| Lagarde, Jules, Clermont-Ferrand, France. Type setting or composing machine | 757,819 | Apr. 19 | 3215 | 484, 485 | 109 | 1881 |
| Lagerman, Alexander, Jönköping, Sweden. Pneumatic sheet-feeder | 758,453 | Apr. 26 | 4478 | 902 | 109 | 2360 |
| Laible, Philip D., Newark, N. J. Bottle-washing machine | 755,018 | Mar. 22 | 3580 | 785, 786 | 109 | 833 |
| Laible, Philip D., Newark, N. J. Box or container for bottled beverages | 758,360 | Apr. 26 | 4319 | 927 | 109 | 2234 |
| Laird, William H. (See Harrison, Newton, assignor.) | | | | | | |
| Laitner, Edward A., Detroit, Mich. Brush | 756,343 | Apr. 5 | 101 | 22 | 109 | 1363 |
| Lake, Simon, Bridgeport, Conn. Ballast-compartment for submarine boats | 754,222 | Mar. 8 | 1965 | 442 | 109 | 453 |
| Lake, Simon, Bridgeport, Conn. Sighting or observing tube for vessels | 754,464 | Mar. 15 | 2517 | 548, 549 | 109 | 584 |
| Lake, Simon, Bridgeport, Conn. Storage-battery construction | 755,142 | Mar. 22 | 3798 | 885 | 109 | 882 |
| Lake, Simon, Bridgeport, Conn. Submarine boat | 756,080 | Mar. 29 | 5508 | 1214 | 109 | 1270 |
| Lakin, Robert B. (See Pinch, Frank, assignor.) | | | | | | |
| Lally, Michael, North Lawrence, Ohio. Mail-bag crane | 753,501 | Mar. 1 | 521 | 121 | 109 | 114 |
| Lamb, Frank H., Hoquiam, Wash. Gripping device | 758,200 | Apr. 26 | 4089 | 895 | 109 | 2273 |
| Lamb, George L., Nappanee, Ind. Sweeping-brush | 758,082 | Apr. 26 | 3744 | 814 | 109 | 2196 |
| Lamb, Isaac W., assignor to Perry Glove and Mitten Company, Perry, Mich. Knitting-machine | 753,715 | Mar. 1 | 961 | 218 | 109 | 207 |
| Lambert, Albert F. (See Hanson and Lambert.) | | | | | | |
| Lambert, Isidor. (See Ouillé, Adrien, assignor.) | | | | | | |
| Lamoureux, Edmond, Woonsocket, assignor of two-thirds to L. Goulet and E. Marcotte, Manville, R. I. Float-detecting shuttle | 754,658 | Mar. 15 | 2908 | 634 | 109 | 665 |
| Lancey, Roswell A., and C. W. Smith, assignors to A. D. Fessenden, Townsend, Mass. Barrel-finishing machine | 755,374 | Mar. 22 | 4228 | 935 | 109 | 974 |
| Landauer, Nathan E. (See Valentine, Joseph M. and E., assignors.) | | | | | | |
| Landers, Frary and Clark. (See Munson, Samuel R., assignor.) | | | | | | |
| Landers, John D., Winnipeg, Canada. Train-signal | 755,143 | Mar. 22 | 3796 | 885 | 109 | 882 |
| Landis, Percy M. (See Conly, Le Roy G., assignor.) | | | | | | |
| Landreth, Annie B., Bristol Pa. Fountain-brush | 757,698 | Apr. 19 | 3959 | 628 | 109 | 1996 |
| Landsing, Jang, Brooklyn, N. Y. Electric rail-bond | 755,880 | Mar. 29 | 5229 | 1156 | 109 | 1211 |
| Lane, Almeron M., Meriden, Conn. Clock-case | 758,454 | Apr. 26 | 4479 | 903 | 109 | 2360 |
| Lane, Annie M., Lakeside, Cal. Plant-protector | 757,045 | Apr. 12 | 1673 | 362 | 109 | 1714 |
| Lane, Frank, Carthage, and O. E. Oakes, Joplin, Mo. Steam-engine | 756,657 | Apr. 5 | 878 | 192 | 109 | 1529 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lane, George. (See Lane, William J. and G.) | | | | | | |
| Lane, George, Poughkeepsie, N. Y. Store-service ladder | 755,499 | Mar. 22 | 4441 | 966, 967 | 109 | 1017 |
| Lane, William H. (See Jarvis and Lane.) | | | | | | |
| Lane, William J. and G., Poughkeepsie, N. Y. Motor-vehicle | 753,589 | Mar. 1 | 717 | 161 | 109 | 156 |
| Lane, William J. and G., Poughkeepsie, N. Y. Motor-vehicle | 753,590 | Mar. 1 | 718 | 161 | 109 | 157 |
| Laney, George C., Kamas, Utah. Gate-opener | 754,876 | Mar. 15 | 3318 | 723, 724 | 109 | 759 |
| Laney, Thomas C., Toledo, and C. S. Longnecker, Delta, Ohio. Electric signaling device | 755,890 | Mar. 29 | 5231 | 1156 | 109 | 1211 |
| Laney, Zachariah D. (See Witt and Laney.) | | | | | | |
| Lang, Richard, McKeesport, Pa. Splice-bar for lock rail-joints | 756,380 | Apr. 5 | 386 | 79 | 109 | 1426 |
| Lange, Friedrich. (See Wundsch and Lange.) | | | | | | |
| Lange, Henry G., Chicago, Ill. Candy-flatting machine | 757,472 | Apr. 19 | 2523 | 553 | 109 | 1910 |
| Lange, Louis, New York, N. Y. Vehicle-wheel | 756,658 | Apr. 5 | 880 | 192 | 109 | 1530 |
| Langell, Edward J. and F. A., New Baltimore, Mich. Heat-radiating drum | 756,970 | Apr. 12 | 1510 | 333 | 109 | 1679 |
| Langell, Frank A. (See Langell, Edward J. and F. A.) | | | | | | |
| Langenbach, Edward A., assignor to Berger Manufacturing Company, Canton, Ohio. Sidewalk | 758,184 | Apr. 26 | 3996 | 854 | 109 | 2240 |
| Langerfeld, Arthur, Scranton, Pa. Separating lump material | 753,591 | Mar. 1 | 720 | 161, 162 | 109 | 157 |
| Langerfeld, Arthur, Scranton, Pa. Separator | 753,592 | Mar. 1 | 723 | 162 | 109 | 157 |
| Langford, Noah, Tidwell, Tex. Combined cotton chopper and cultivator | 753,890 | Mar. 8 | 1349 | 804, 805 | 109 | 311 |
| Langill Fountain Pen and Brush Company. (See Langill, John E., assignor.) | | | | | | |
| Langill, John E., New York, N. Y., assignor to Langill Fountain Pen and Brush Company, Jersey City, N. J. Fountain marking device | 753,598 | Mar. 1 | 727 | 162 | 109 | 158 |
| Lanier, Howard S., Danville, Va. Overalls | 755,781 | Mar. 29 | 5019 | 1116 | 109 | 1160 |
| Lanius, Kinsey, Denver, Colo., assignor, by mesne assignments, to E. Roscoe, Philadelphia, Pa. Amalgamator and concentrator | 755,230 | Mar. 22 | 3947 | 874, 875 | 109 | 912 |
| Lanman, Henry A., Columbus, Ohio. Fifth-wheel construction | 755,231 | Mar. 22 | 3951 | 875 | 109 | 913 |
| Lanning, James K., trustee. (See Church, Benjamin S., assignor.) | | | | | | |
| Lapointe, Stanislas S., Hartford, Conn. Alarm for refrigerator drip-pans | 753,799 | Mar. 1 | 1159 | 261, 262 | 109 | 249 |
| Laporte, George, St. Félix de Valois, Canada. Acetylene-gas generator | 757,402 | Apr. 12 | 2381 | 518 | 109 | 1865 |
| Lapp, John F. (See Miller, Harry G., assignor.) | | | | | | |
| Lapp, Valentin, Lindenau, near Leipzig, Germany. Steeping grain | 755,144 | Mar. 22 | 3796 | 836 | 109 | 882 |
| Lapp, Valentin, Leipzig, Germany. Grain-germinating apparatus | 758,083 | Apr. 26 | 3745 | 814 | 109 | 2196 |
| Largie, Peter, Granby, Canada. Molding apparatus | 755,574 | Mar. 22 | 4575 | 1018 | 109 | 1046 |
| Larkin, Bernard H., Austin, Ill., assignor to American Can Company, Jersey City, N. J. Sheet-metal band for pipe-coverings or other like purposes | 755,679 | Mar. 29 | 4788 | 1065 | 109 | 1108 |
| Larrabee, James O., Oakland, Cal. Umbrella-rib connection | 755,500 | Mar. 22 | 4443 | 987 | 109 | 1017 |
| Larsen, Nels, assignor of one-half to A. N. Grantz, St. Paul, Minn. Fire-escape | 755,501 | Mar. 22 | 4444 | 987 | 109 | 1017 |
| Larson, Louis, assignor of one-half to H. J. Woods, Muskegon, Mich. Glass-bottom boat | 756,244 | Apr. 5 | 102 | 22 | 109 | 1363 |
| Laszczynski, Stanislaw, Kielce, Russia. Electrolytically extracting copper and zinc from ores | 757,817 | Apr. 19 | 3221 | 699 | 109 | 2064 |
| Latta, Emmit G., Friendship, N. Y. Ribbon-feed mechanism for type-writing machines | 758,455 | Apr. 26 | 4480 | 963 | 109 | 2360 |
| Lau, William H. (See Reid and Lau.) | | | | | | |
| Laub, Henry C. (See Pettingell, George D., assignor.) | | | | | | |
| Laub, Nicholaus, assignor of one-half to L. Wundhammer, Los Angeles, Cal. Reversible mountain-climber | 754,577 | Mar. 15 | 2747 | 598 | 109 | 633 |
| Lauber, Otto, assignor to F. Krupp, Essen-on-the-Ruhr, Germany. Recoil-gun with special devices for protecting the slide-tracks from dust | 756,120 | Mar. 29 | 5670 | 1251 | 109 | 1305 |
| Lauber, Otto, Holsterhausen-Essen-on-the-Ruhr, assignor to F. Krupp, Essen-on-the-Ruhr, Germany. Recoil-gun with special devices for protecting the slide-tracks from dust | 756,172 | Mar. 29 | 5749 | 1270 | 109 | 1322 |
| Laubecher, Alexander, assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Hemmer attachment for sewing-machines | 758,891 | Mar. 8 | 1353 | 305 | 109 | 312 |
| Laubecher, Alexander, assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Ruffling mechanism for sewing-machines | 754,928 | Mar. 15 | 3402 | 744 | 109 | 778 |
| Lauder, George M., Glasgow, Scotland. Acetylene-gas burner | 755,503 | Mar. 22 | 4447 | 988 | 109 | 1018 |
| Laughlin, Alexander. (See Reuleaux, Josef, assignor.) | | | | | | |
| Laughlin, Finis E. (See Harrington, David, assignor.) | | | | | | |
| Laughlin, William J., Waunakee, Wis. Optometer | 754,223 | Mar. 8 | 1967 | 442, 443 | 109 | 453 |
| Laur, Charles F., Cincinnati, Ohio, and A. E. Robinson, Covington, Ky., assignors to American Tool Works Company, Cincinnati, Ohio. Variable-speed mechanism | 755,504 | Mar. 22 | 4448 | 988 | 109 | 1018 |
| Laursen, Martin, Rochester, Minn. Saw-vise | 757,320 | Apr. 12 | 2221 | 485 | 109 | 1832 |
| Lauthers, Alexander G. (See Herriott, John E., assignor.) | | | | | | |
| Lavallée, Olivier, Boston, Mass. Spectacle-temple | 753,594 | Mar. 1 | 729 | 163 | 109 | 158 |
| Lavender, J. F. (See Nowels, David C., assignor.) | | | | | | |
| Lavery, Charles N. (See Goodwin, Harry L., assignor.) | | | | | | |
| Lavigne, Joseph P., Detroit, Mich. Turret-lathe | 756,659 | Apr. 5 | 882 | 193, 194 | 109 | 1530 |
| Lawler, James J., Mount Vernon, N. Y. Fitting | 757,130 | Apr. 12 | 1842 | 402 | 109 | 1751 |
| Lawler, Miles J., Parnell, Iowa. Gearing | 755,505 | Mar. 22 | 4452 | 989 | 109 | 1019 |
| Lawless, Daniel C., Toledo, Ohio. Storm-curtain for vehicle-tops | 758,185 | Apr. 26 | 3937 | 854 | 109 | 2241 |
| Lawrence, George H., Middletown, N. Y. Window-sash | 754,575 | Mar. 15 | 2737 | 595 | 109 | 632 |
| Lawrence, Robert S., assignor to M. M. Makeever, Boston, Mass. Carbureter | 756,381 | Apr. 5 | 388 | 79 | 109 | 1426 |
| Lawrence, W. E., *et al.* (See Olson, Hans O., assignor.) | | | | | | |
| Lawrence, William H., and R. Kennedy, Glasgow, Scotland. Milking apparatus | 756,245 | Apr. 5 | 103 | 22, 23 | 109 | 1364 |
| Lawther, Alfred B., Syracuse, N. Y., assignor to F. O. Swanneil, Chicago, Ill. Apparatus for treating oil-cake | 754,576 | Mar. 15 | 2738 | 596, 597, 578 | 109 | 632 |
| Lay, Frank R., Indianapolis, Ind. Broom | 757,818 | Apr. 19 | 3223 | 699 | 109 | 2065 |
| Layton, Richardon C., assignor to Empire Pipe Bending and Supply Company, New York, N. Y. Lattice-work structure | 756,861 | Apr. 12 | 1287 | 287 | 109 | 1634 |
| Lazarus, John R., Shoenersville, Pa. Grain-separator | 756,121 | Mar. 29 | 5671 | 1251, 1252 | 109 | 1306 |
| Le Fevre, Zephire J., Los Gatos, Cal. Diaphragm for sound-producing instruments | 755,506 | Mar. 22 | 4453 | 989 | 109 | 1019 |
| Le Grand, Augustus L., West Pittston, Pa. Bucket conveyer | 756,510 | Apr. 5 | 626 | 136 | 109 | 1474 |
| Le Roy, Myron D., and G. P. Ross, Walkerton, Ind. Thill attachment | 753,968 | Mar. 8 | 1541 | 344 | 109 | 356 |
| Le Sueur, Ernest A., Ottawa, Canada. Extraction of copper from comminuted mineral mixtures | 755,302 | Mar. 22 | 4078 | ..... | 109 | 940 |
| Learned, Waldo A., Watertown, Mass. Insulated pipe-joint | 753,595 | Mar. 1 | 729 | 163 | 109 | 158 |
| Leathers, John E., Fitzwilliam Depot, N. H. Ax | 755,891 | Mar. 29 | 5232 | 1156, 1157 | 109 | 1211 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Leavenworth, Seth H., assignor to Homan & Company, Cincinnati, Ohio. Candle-molding machine | 755,892 | Mar. 29 | 5283 | 1157 | 109 | 1212 |
| Lebach, Elias, assignor to Salubrita, Gesellschaft mit Beschränkter Haftung, Cologne, Germany. Portable bin for dust or refuse | 755,145 | Mar. 22 | 3797 | 886 | 109 | 882 |
| Leblanc, Maurice. (See Hutin and Leblanc.) | | | | | | |
| Lebret, Adriaan. (See Voemaer and Lebret.) | | | | | | |
| Leclere, André, Paris, assignor to Société Anonyme pour la Production et l'Emploi de la Vapeur Surchauffée, Châlon-sur-Saône, France. System of economical production of superheated steam | 755,898 | Mar. 29 | 5237 | 1158 | 109 | 1212 |
| Lee, Charles H., Southampton, N. Y. Self-clearing propeller | 756,051 | Mar. 29 | 5504 | 1214 | 109 | 1270 |
| Lee, James L., Chicago, Ill. Printer's galley | 758,540 | Apr. 26 | 4654 | 1008 | 109 | 2599 |
| Lee, James L., assignor to Challenge Machinery Co., Chicago, Ill. Catch or clutch for printers' plates | 758,370 | Apr. 26 | 4321 | 908 | 109 | 2594 |
| Lee, Jane H., and N. B. Conkling, St. Louis, Mo. Dress-shield | 754,877 | Mar. 15 | 3330 | 794 | 109 | 760 |
| Lee, John E., assignor to J. Ellwood Lee Company, Conshohocken, Pa. Fastening device for truss-pads | 756,122 | Mar. 29 | 5676 | 1252 | 109 | 1306 |
| Lee, Thomas A., Troy, N. Y. Flue construction for boilers | 756,246 | Apr. 5 | 107 | 23 | 109 | 1364 |
| Leeking, Harry D., and J. K. Hartman, Lancaster, Pa. Railway cross-tie | 753,502 | Mar. 1 | 528 | {121 122 | 109 | 115 |
| Lees, Ernest J., Warren, Pa., and E. L. Aiken, East Orange, N. J. Hanger for speed-changers | 758,406 | Mar. 1 | 341 | 77, 78 | 109 | 76 |
| Legg, Roland H., Carthage, Mo. Sewing-machine attachment | 753,987 | Mar. 8 | 1540 | 344 | 109 | 356 |
| Legge, Joshua D., Hancock, assignor of one-half to M. A. Bennett and M. R. Millins, East Nassau, N. Y. Device for preventing rails of railway-tracks from spreading | 756,247 | Apr. 5 | 108 | 23 | 109 | 1365 |
| Legge, Joshua D., Hancock, assignor of one-half to M. A. Bennett and M. R. Millins, East Nassau, N. Y. Means for preventing rails of railway-tracks from creeping | 756,248 | Apr. 5 | 110 | 24 | 109 | 1365 |
| Lehman, Otto A., Hoboken, N. J. Pocket-book | 757,755 | Apr. 19 | 3100 | 675 | 109 | 2087 |
| Lehmann, Frederic. (See Gray and Lehmann.) (Reissue.) | | | | | | |
| Lehner, Alfred, Zurich, Switzerland. Apparatus for weighing and sorting skeins of yarn | 756,892 | Apr. 12 | 1288 | 288 | 109 | 1634 |
| Lehr, John A., North York, Pa. Block-signaling apparatus | 758,541 | Apr. 26 | 4655 | 1009 | 109 | 2599 |
| Lehrer, Harry, New York, N. Y. Combination bed, sofa, and chair | 754,150 | Mar. 8 | 1840 | {410 411 | 109 | 423 |
| Leib, Daniel N., assignor to Automatic Heat Regulator Company, Elkhart, Ind. Automatic electric heat-regulator | 754,465 | Mar. 15 | 2519 | 549 | 109 | 585 |
| Leibman, Charles A., assignor to E. P. Reichheim and Company, New York, N. Y. Ingot-mold | 757,208 | Apr. 12 | 1984 | 432 | 109 | 1783 |
| Leick, Horace F., and M. J. O'Donnell, Cleveland, Ohio. Measuring device | 755,300 | Mar. 22 | 4073 | 908 | 109 | 989 |
| Leigh, Charles, assignor of one-half to E. Seufer, Evansville, Ind. Plant-protector | 754,222 | Mar. 8 | 2102 | 479 | 109 | 489 |
| Leightham, Joseph, assignor of one-half to J. Nolde, Reading, Pa. Rope-clamping device | 755,019 | Mar. 22 | 3368 | 787 | 109 | 834 |
| Leightham, Joseph, assignor of one-half to J. Nolde, Reading, Pa. Combined railway-tie and rail-fastening | 756,660 | Apr. 5 | 898 | 194 | 109 | 1531 |
| Leighton, James H., assignor of one-half to H. S. Sumner, Akron, Ohio. Glass-faced brick or building-block | 756,971 | Apr. 12 | 1511 | 333 | 109 | 1689 |
| Lemaster, Henry H., *et al.* (See Robburts, George W., assignor.) | | | | | | |
| Lemaster, Mike C., *et al.* (See Robburts, George W., assignor.) | | | | | | |
| Lemb, William, New York, N. Y. Baker's oven | 755,507 | Mar. 22 | 4454 | 989 | 109 | 1019 |
| Lemieux, Louis, assignor to C. Ramsey, New York, N. Y. Pedal-mounting | 755,301 | Mar. 22 | 4076 | 908 | 109 | 989 |
| Lemke, August, Detroit, Mich. Rotary motor for flue-cleaners | 754,965 | Mar. 15 | 3471 | 790 | 109 | 798 |
| Lemm, Hiram, Storm Lake, Iowa. Adjustable hoe and plant-fender | 753,890 | Mar. 1 | 1235 | 277 | 109 | 265 |
| Lemm, Irving A., Victoria, Canada. Boat-chock | 756,661 | Apr. 5 | 899 | 195 | 109 | 1531 |
| Lemon, Elmer E., assignor of one-half to C. March, Millersburg, Ohio. Hoof-pad | 757,473 | Apr. 19 | 2526 | 554 | 109 | 1911 |
| Lenderoth, William, New York, N. Y. Composition of matter | 753,497 | Mar. 1 | 349 | | 109 | 70 |
| Lenglez, Emile, Mons, Belgium. Carbureter for hydrocarbon-motors | 756,949 | Apr. 5 | 112 | 24 | 109 | 1365 |
| Lennox, Levi J., *et al.* (See Frank, Oskar, assignor.) | | | | | | |
| Lent, Orlando D., Peekskill, N. Y. Rail-clamp | 755,020 | Mar. 22 | 3584 | 787 | 109 | 834 |
| Lentz, David H., Joliet, Ill. Rolling-mill | 758,408 | Mar. 1 | 343 | 78, 79 | 109 | 77 |
| Lentz, David H., Joliet, Ill. Renewing traction-rails | 758,409 | Mar. 1 | 347 | 79, 80 | 109 | 77 |
| Lenzen, Bertram, assignor of one-half to G. C. Rueckert, Providence, R. I. Display-tray | 755,021 | Mar. 22 | 3585 | 787 | 109 | 835 |
| Leonard, Elroy, Lenox, W. Va. Hand turning-tool | 757,131 | Apr. 12 | 1843 | 408 | 109 | 1782 |
| Leonard, George L., Pasadena, Cal. Carbon resistance and producing and adjusting same | 753,716 | Mar. 1 | 965 | 219 | 109 | 208 |
| Leonard, John T., New York, N. Y. Sheet-metal revolving window | 755,292 | Mar. 22 | 3952 | 875 | 109 | 913 |
| Lepape, Hippolyte, Paris, France. Internal-combustion engine for cycles | 754,989 | Mar. 15 | 3405 | 745 | 109 | 778 |
| Lepper, Van Antwerp. (See Eggleston, Hardy, and Lepper.) | | | | | | |
| Lerch, Marshall E., Lawsonham, Pa. Fence-post | 753,892 | Mar. 8 | 1354 | 305 | 109 | 312 |
| Lerchner, Lester F., Charlottenburg, Germany. Washbowl or spittoon | 756,250 | Apr. 5 | 113 | 24 | 109 | 1366 |
| Leslie, John F., South Bend, Ind. Wire-joint | 756,251 | Apr. 5 | 114 | 24 | 109 | 1366 |
| Lester, James F., Atlanta, Ga., assignor to himself, and C. Smith, trustees, New York, N. Y. Boiler-furnace | 756,382 | Apr. 5 | 891 | 80 | 109 | 1427 |
| Lester, Joseph B., Norwich, Conn. Saw-set | 756,662 | Apr. 5 | 891 | 195 | 109 | 1531 |
| Letchworth, Ogden P., assignor to United Hame Company, Buffalo, N. Y. Hame and trace connector | 755,894 | Mar. 29 | 5286 | 1158 | 109 | 1212 |
| Letts, Arthur. (See Alexander, Jesse, assignor.) | | | | | | |
| Leuthesser, Fred W., Chicago, Ill. Valve for radiators | 756,383 | Apr. 5 | 893 | 80 | 109 | 1427 |
| Levanseler, Frank E., Chicago, Ill. Coin-controlled vending-machine | 757,221 | Apr. 12 | 2222 | {485 486 | 109 | 1632 |
| Leveen, Samuel, Anderson, Ind. Advertising waste-paper box | 757,408 | Apr. 12 | 2383 | 519 | 109 | 1866 |
| Levenberg, Samuel P., New York, N. Y. Telephone repeater and system | 754,224 | Mar. 8 | 1992 | 443 | 109 | 455 |
| Lever, Joseph F., Braddock, Pa. Metallic tie and rail fastener | 757,404 | Apr. 12 | 2386 | 519 | 109 | 1866 |
| Levey, Wilber H., Woodstock, Ill. Portable dark room | 754,659 | Mar. 15 | 2900 | 634 | 109 | 666 |
| Levinsohn, Samuel. (See Denguine and Levinsohn.) | | | | | | |
| Levy, Abraham B. (See Bloco, John H., assignor.) | | | | | | |
| Lewis, A. R., *et al.* (See Clark, Shelton C., assignor.) | | | | | | |
| Lewis, Albert. (See Lewis, Shirley S. and A.) | | | | | | |
| Lewis, Albert H., assignor of three-fourths to A. G. Quimby, J. C. Shields, and A. E. Spear, Uhrichsville, Ohio. Mine-door | 756,863 | Apr. 12 | 1290 | {288 289 | 109 | 1635 |
| Lewis, Charles H., and C. Book, Harpster, Ohio. Fence-post | 756,082 | Mar. 29 | 5508 | 1214 | 109 | 1270 |
| Lewis, Edgar M., Moundsville, W. Va. Fastening and suspension device | 754,823 | Mar. 8 | 2163 | 479 | 109 | 489 |
| Lewis, Edward R., Springfield, Mass. Device for aiding combustion in boiler-furnaces | 754,151 | Mar. 8 | 1842 | 411 | 109 | 423 |
| Lewis Gas Engine and Machine Company. (See Lewis, Shirley S. and A., assignors.) | | | | | | |
| Lewis, J. F., *et al.* (See Clark, Shelton C., assignor.) | | | | | | |
| Lewis, Joseph E., assignor to Whitlock Coil Pipe Company, Hartford, Conn. Feed-water heater | 757,665 | Apr. 19 | 2926 | {685 686 | 109 | 2000 |
| Lewis, Lester L. (See Mitchell and Lewis.) | | | | | | |
| Lewis, Marcellus B., Enterprise, Miss. Plant-protector | 756,128 | Mar. 29 | 5677 | 1253 | 109 | 1307 |
| Lewis, Samuel W., Brooklyn, N. Y. Waste mechanism for washbasins, baths, &c. | 756,668 | Apr. 5 | 892 | 195 | 109 | 1531 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lewis, Shirley S. and A., Syracuse, N. Y., assignors to Lewis Gas Engine and Machine Company. Explosive-engine | 754,466 | Mar. 15 | 2521 | 550 | 109 | 585 |
| Lewis, William E., Owosso, Mich. Rotary plant-chopper | 756,384 | Apr. 5 | 395 | 80 | 109 | 1428 |
| Leyner, John G., Denver, Colo. Ejecting rock-cuttings from holes in rock while drilling them | 756,972 | Apr. 12 | 1512 | 333 | 109 | 1680 |
| Lhota, Theodor, Vienna, Austria-Hungary. Phonograph | 757,322 | Apr. 12 | 2224 | 486 | 109 | 1832 |
| Libbey Glass Company. (See Richardson, Solon O., Jr., assignor.) | | | | | | |
| Liberty Bell Company. (See Rockwell, Edward D., assignor.) | | | | | | |
| Liburnau, Norbert L. von. (See Kaltenegger and Liburnau.) | | | | | | |
| Lichtenberger, Max, assignor to L. Wertheimber, New York, N. Y. Preparing wood and the product thereof | 754,782 | Mar. 15 | 3142 | ------ | 109 | 721 |
| Lieb, Johann, Cologne, Germany. Producing pit-coal or coke briquets | 756,124 | Mar. 29 | 5679 | ------ | 109 | 1307 |
| Liebau, Gustav, Maurer, N. J. Fireproof construction | 754,783 | Mar. 15 | 3143 | 685 | 109 | 721 |
| Lienekampf, Otto, and W. Nauck, Leipzig, Germany. Photographic developing apparatus | 757,323 | Apr. 12 | 2225 | 486 | 109 | 1832 |
| Lightfoot, Richard T. (See Foreman and Lightfoot.) | | | | | | |
| Lihme, Iens P., assignor to Grasselli Chemical Company, Cleveland, Ohio. Preserved wood and preparing same | 756,173 | Mar. 29 | 5749 | 1270 | 109 | 1322 |
| Lilly, William C. (See Wilke, Ferdinand, assignor.) | | | | | | |
| Limbeck, Zdenko von, Vienna, Austria-Hungary. Fish-tail propeller | 753,717 | Mar. 1 | 967 | 219 | 109 | 208 |
| Lincoln, Alice G., administratrix. (See Lincoln, Frederick.) | | | | | | |
| Lincoln, Frederick, deceased, Warren, Mass.; A. G. Lincoln, administratrix. Compound engine | 755,508 | Mar. 22 | 4455 | 990 | 109 | 1019 |
| Lindall, John, Boston, Mass. Electrical contact device | 755,782 | Mar. 29 | 5020 | 1116 | 109 | 1161 |
| Lindauer, Julius, Paris, France. Corset-attachment blouse-extender | 755,233 | Mar. 22 | 3958 | {875 876 | 109 | 913 |
| Lindeman, Frederick J., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Winding for electrical machines | 753,278 | Mar. 1 | 117 | 29 | 109 | 29 |
| Lindenberg, Herman, West Hoboken, N. J. Apparatus for treating yarn | 754,784 | Mar. 15 | 3145 | 685 | 109 | 721 |
| Lindley, William H. (See Tuttle, Lindley, and Tuttle.) | | | | | | |
| Lindner, Frank H., Bayonne, N. J. Oscillating-piston engine | 756,664 | Apr. 5 | 894 | {195 196 197 | 109 | 1532 |
| Lindquist, David L., Yonkers, N. Y. Friction-gear | 758,323 | Apr. 26 | 4234 | 910 | 109 | 2306 |
| Lindsay, Alexander. (See Gilmour and Lindsay.) | | | | | | |
| Lindsay, Franklin, Peoria, Ill. Garment-pressing machine | 753,596 | Mar. 1 | 731 | 163 | 109 | 159 |
| Lindström, Charles A., Allegheny, assignor to Pressed Steel Car Company, Pittsburg, Pa. Car-door mechanism | 758,456 | Apr. 26 | 4485 | 964 | 109 | 2361 |
| Lindström, Charles A., Allegheny, assignor to Pressed Steel Car Company, Pittsburg, Pa. Car-bolster | 758,542 | Apr. 26 | 4657 | {1002 1008 | 109 | 2400 |
| Lindström, Charles A., and A. Stucki, Allegheny, assignors to Pressed Steel Car Company, Pittsburg, Pa. Steel-frame box-car | 755,022 | Mar. 22 | 3585 | {787 788 | 109 | 835 |
| Linendoll, Orin J., and A. T. Houghten, assignors to Union Specialty Co., Detroit, Mich. Combined automatic shower and vapor bath adjustable frame | 757,933 | Apr. 19 | 3438 | 745 | 109 | 2112 |
| Linhard, George and P., Sublett, Mo. Car-fender | 755,509 | Mar. 22 | 4458 | 990 | 109 | 1020 |
| Linhard, Philip. (See Linhard, George and P.) | | | | | | |
| Linn, George E., Springfield, Ohio. Machine for equipping vehicle-wheels with rubber tires | 755,895 | Mar. 29 | 5239 | 1158 | 109 | 1213 |
| Linnan, Chas. F., *et al.* (See Kempton, Benjamin S., assignor.) | | | | | | |
| Linsley, Albert I., Bedford, Ohio. Nut-lock | 755,146 | Mar. 22 | 3798 | 836 | 109 | 882 |
| Linthicum, David H., Pittsburg, Kans. Continuous baling-press | 755,896 | Mar. 29 | 5240 | 1159 | 109 | 1213 |
| Lipp, Albert E., Haddonfield, N. J. Multiple-view back for cameras | 758,279 | Mar. 1 | 119 | 29 | 109 | 29 |
| Lippelt, Hans, New York, N. Y. Electrical induction-machine | 756,798 | Apr. 5 | 1151 | {254 255 256 | 109 | 1590 |
| Lippincott, Fisher H., Philadelphia, Pa., assignor to American Soda-Fountain Company, Jersey City, N. J. Soda-water apparatus | 758,718 | Mar. 1 | 968 | {219 220 | 109 | 208 |
| Lippy, David. (See Patten and Lippy.) | | | | | | |
| Lipschutz, Arthur, St. Louis, Mo., assignor to Chicago Railway Equipment Company, Chicago, Ill. Brake-beam | 754,785 | Mar. 15 | 3149 | 686 | 109 | 722 |
| Lispenard, George, New York, and E. C. Truyter, West New Brighton, assignors to Nordlinger, Charlton Fire Works Company, New York, N. Y. Machine for making fuses | 757,580 | Apr. 19 | 2758 | {602 608 | 109 | 1963 |
| Litaker, Thomas F., assignor of one-half to B. L. Umberger, Concord, N. C. Fire-alarm | 757,934 | Apr. 19 | 3439 | 745 | 109 | 2112 |
| Litchfield, Paul W., Akron, Ohio. Vehicle-tire | 755,147 | Mar. 22 | 3799 | 837 | 109 | 883 |
| Little, Albert A., Lima, Ohio. Stove | 757,046 | Apr. 12 | 1674 | 363 | 109 | 1715 |
| Little, Henry C., Boston, Mass. Electric time-switch | 757,324 | Apr. 12 | 2226 | 487 | 109 | 1832 |
| Little-Pritzkow, Malle, New York, N. Y. Combined skirt and waist holder | 758,084 | Apr. 26 | 3748 | 815 | 109 | 2197 |
| Livesey, James, assignor to himself and R. Healy, Fall River, Mass. Apparatus for testing the insulation of the coils of electromagnets | 757,756 | Apr. 19 | 3101 | 675 | 109 | 2087 |
| Livingston, Charles G., *et al.* (See Bitner, Harry, assignor.) | | | | | | |
| Livingston, Harry R. (See Joerissen and Livingston.) | | | | | | |
| Livingston, Jay, St. Louis, Mo. Electric lock | 756,665 | Apr. 5 | 905 | 197 | 109 | 1536 |
| Lloyd, William D., Fiskville, assignor of one-half to E. L. Steck, Austin, Tex. Weeding-machine | 756,864 | Apr. 12 | 1293 | 289 | 109 | 1635 |
| Lloyd, William G., Chicago, Ill. Periodical-holder | 756,125 | Mar. 29 | 5679 | 1253 | 109 | 1307 |
| Lobet, John B., Toledo, Ohio. Grinding and polishing machine | 757,325 | Apr. 12 | 2227 | 487 | 109 | 1833 |
| Lock, Lee. (See Johnson and Lock.) (Reissue.) | 754,878 | Mar. 15 | 3321 | 724 | 109 | 760 |
| Lock Safety Pin Company. (See Andresen, Christian, assignor.) | | | | | | |
| Locke, Eugene O., *et al.* (See Powell, William G., assignor.) | | | | | | |
| Locke, Fred C., Boston, Mass. Support for electric conductors | 758,324 | Apr. 26 | 4236 | 910 | 109 | 2306 |
| Locke, Harvey W., assignor to Century Camera Company, Rochester, N. Y. Camera-bed | 753,800 | Mar. 1 | 1160 | 262 | 109 | 249 |
| Locke, Harvey W., assignor to Century Camera Company, Rochester, N. Y. Swing-back for photographic cameras | 755,680 | Mar. 29 | 4789 | 1066 | 109 | 1109 |
| Locke, William H., Jr., *et al.* (See Sindingchristensen, Frederik, assignor.) | | | | | | |
| Locke, William S., Cincinnati, Ohio. Vaginal syringe | 756,252 | Apr. 5 | 115 | 25 | 109 | 1366 |
| Lockhart, Sidney A., Syracuse, Nebr. Carbureter | 757,935 | Apr. 19 | 3441 | 745 | 109 | 2113 |
| Lockwood, Edwin F., Bellevue, Ky. Sheet-metal-edging machine | 754,786 | Mar. 15 | 3150 | 686 | 109 | 722 |
| Lockwood, Perkins S., Madrid, N. Y. Sleigh-knee | 754,225 | Mar. 8 | 1996 | 443 | 109 | 456 |
| Loew, Charles H., Cleveland, Ohio. Apparatus for washing filtering material | 756,973 | Apr. 12 | 1518 | 334 | 109 | 1680 |
| Logan, Lavalette L., Robertsdale, Pa. Car-handling apparatus | 753,719 | Mar. 1 | 970 | 220 | 109 | 209 |
| Logan, Nels, and I. I. Flo, Albert Lea, Minn. Corn-harvester | 755,375 | Mar. 22 | 4232 | {936 937 | 109 | 974 |
| Logan, Robert R., New York, N. Y. Race-track appliance | 755,148 | Mar. 22 | 3800 | 837 | 109 | 883 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lohner, Ludwig. (See Porsche and Lohner.) | | | | | | |
| Lombard, Nathaniel, Brookline, assignor to N. Lombard Improved Governor Company, Boston, Mass. Relief-valve | 754,467 | Mar. 15 | 2522 | 550, 551 | 109 | 585 |
| Lombard, Nathaniel, Worcester, Mass., assignor to N. Lombard Improved Governor Company, Waterville, Me. Safety-valve | 754,468 | Mar. 15 | 2527 | 551 | 109 | 587 |
| Lombard, Nathaniel, Worcester, Mass., assignor to N. Lombard Improved Governor Company, Waterville, Me. Governor | 754,469 | Mar. 15 | 2530 | 552, 553 | 109 | 588 |
| Lombardi, Frank, Brooklyn, N. Y. Electric lock | 755,907 | Mar. 29 | 3242 | 1159 | 109 | 1214 |
| Lombardo, Michele, Mason City, Iowa. Banana-crate | 753,410 | Mar. 1 | 350 | 80 | 109 | 78 |
| Lonergan, William H. (See Rathbun and Lonergan.) (Reissue.) | | | | | | |
| Long & Allstatter Company. (See Long, John M. W., assignor.) | | | | | | |
| Long, Charles E., Brannockstown, Ireland. Salt-receptacle | 753,507 | Mar. 1 | 738 | 163, 164 | 109 | 159 |
| Long, Charles E., Brannockstown, Ireland, and J. C. Irvine, Hampstead, England. Lock | 754,236 | Mar. 8 | 1997 | 444 | 109 | 456 |
| Long, George A., assignor to Gray Telephone Pay Station Company, Hartford, Conn. Telephone toll apparatus | 753,411 | Mar. 1 | 351 | 80, 81 | 109 | 78 |
| Long, George A., assignor to Gray Telephone Pay Station Company, Hartford, Conn. Telephone toll apparatus | 753,412 | Mar. 1 | 355 | 82 | 109 | 79 |
| Long, Jacob, St. Paul, Kans. Match-box | 753,989 | Mar. 8 | 1542 | 344 | 109 | 357 |
| Long, James A., Spokane, Wash. Sash-fastener | 757,209 | Apr. 12 | 1985 | 432 | 109 | 1788 |
| Long, John M. W., assignor to Long & Allstatter Company, Hamilton, Ohio. Draft-equalizer | 755,149 | Mar. 22 | 3801 | 837 | 109 | 883 |
| Long, Timothy, Cleveland, Ohio. Hoisting and conveying apparatus | 755,681 | Mar. 29 | 4790 | 1066, 1067 | 109 | 1109 |
| Longnecker, Charles S. (See Laney and Longnecker.) | | | | | | |
| Look, John C., Tudor, Cal. Mop or brush holder | 756,365 | Apr. 5 | 396 | 81 | 109 | 1426 |
| Löpprich, Martin, Homestead, Pa. Rail-joint | 757,936 | Apr. 19 | 3443 | 746 | 109 | 2113 |
| Lorain Steel Company. (See Stiff, Henry C., assignor.) | | | | | | |
| Lorenz, August H., assignor, by mesne assignments, to A. W. Friskey, Chicago, Ill. Loose-leaf binder-frame | 754,324 | Mar. 8 | 2164 | 479 | 109 | 489 |
| Loss, Henrik V., assignor to C. T. Schoen, Philadelphia, Pa. Making car-wheels | 757,819 | Apr. 19 | 3325 | 700 | 109 | 2065 |
| Lott, William C., Chicago, Ill. Washing-machine | 756,253 | Apr. 5 | 117 | 25 | 109 | 1367 |
| Lotz, Augustus, assignor to Pacific Metal Works, San Francisco, Cal. Wire-solder-rolling machine | 754,325 | Mar. 8 | 2167 | 480 | 109 | 490 |
| Lough, William E., Farmington, W. Va. Gage and marker | 757,132 | Apr. 12 | 1845 | 408 | 109 | 1752 |
| Louis, Robert J., *et al.* (See Powers, James, assignor.) | | | | | | |
| Louisville Soap Company. (See Conway, Llewellyn L., assignor.) | | | | | | |
| Loux, Robert, and F. E. Butterfield, St. Paul, Minn. Clothes-washing machine | 758,065 | Apr. 26 | 3749 | 815 | 109 | 2197 |
| Love, Henry M., Utica, N. Y. Harrow | 756,254 | Apr. 5 | 119 | 25 | 109 | 1367 |
| Love, Henry M., Utica, N. Y. Harrow | 756,255 | Apr. 5 | 123 | 25 | 109 | 1369 |
| Love, Thomas J., Lincoln, Ill. Corn-cutter | 755,510 | Mar. 22 | 4459 | 991 | 109 | 1080 |
| Lovejoy, George W., assignor of one-half to L. F. Krekeler, Tehachipa, Cal. Non-refillable bottle | 758,543 | Apr. 26 | 4628 | 1008 | 109 | 2400 |
| Lovell, Albert K., New York, N. Y., assignor to G. F. Drouvé, Bridgeport, Conn. Window frame and sash | 758,808 | Mar. 8 | 1355 | 305, 306 | 109 | 313 |
| Lovell, Charles W., assignor to A. C. and G. H. Fraser, Brooklyn, N. Y. Machine for rounding, backing, and lining books | 758,413 | Mar. 1 | 357 | 82, 83, 84, 85 | 109 | 79 |
| Lovell, Clarence N., *et al.* (See Kimball, Fred M., assignor.) | | | | | | |
| Lovell, Thomas D., Beverly, assignor of one-half to J. F. Flanagan, Boston, Mass. Electric railway | 756,511 | Apr. 5 | 628 | 136 | 109 | 1474 |
| Lovett, Albert E., New York, N. Y. Gas-lamp | 758,951 | Apr. 26 | 4000 | 895 | 109 | 2273 |
| Lovett, Thomas J. (See Flora, Ellsworth E., assignor.) | | | | | | |
| Low, Abbot A. (See Tuck and Wassmann, assignors.) | | | | | | |
| Low, Abbot A., Horseshoe, N. Y. Igniter for explosive-engines | 753,280 | Mar. 1 | 121 | 29 | 109 | 80 |
| Lowell Machine Shop. (See Whitaker, Channing, assignor.) | | | | | | |
| Lower, Warren W., Keystone, W. Va. Vent for steam-radiators | 756,794 | Apr. 5 | 1157 | 257 | 109 | 1591 |
| Lower, Warren W., Keystone, W. Va. Radiator-vent | 756,795 | Apr. 5 | 1159 | 257 | 109 | 1592 |
| Lowry, Clarence C. (See Kenisell, John E., assignor.) | | | | | | |
| Lowry, George A., Chicago, Ill. Spinnaker-sail | 757,474 | Apr. 19 | 2526 | 554 | 109 | 1911 |
| Lowry, George A., Boston, Mass., assignor to Planters Compress Company. Baling fibrous material | 755,507 | Mar. 22 | 4615 | 1025 | 109 | 1057 |
| Lowry, Thomas J., Mountainy, N. C. Cotton-chopper | 754,797 | Mar. 15 | 3154 | 686, 687 | 109 | 723 |
| Loxit Company. (See Rathbun and Lonergan, assignors.) (Reissue.) | | | | | | |
| Lubbers, John H., Allegheny, assignor to J. A. Chambers, trustee, Pittsburg, Pa. Bait for drawing glass | 758,544 | Apr. 26 | 4659 | 1008 | 109 | 2400 |
| Luce, George D., New Orleans, La. Topper and stripper for cane-harvesters | 754,788 | Mar. 15 | 3157 | 687 | 109 | 723 |
| Lucke, Charles E., New York, N. Y. Method of combustion | 755,376 | Mar. 22 | 4284 | 987 | 109 | 975 |
| Lucke, Charles E., New York, N. Y. Burning liquid or gaseous fuels | 755,377 | Mar. 22 | 4286 | 987 | 109 | 975 |
| Lüddeckens, Otto, Breslau, Germany. Signaling apparatus | 754,152 | Mar. 8 | 1843 | 411 | 109 | 434 |
| Ludenborff, Heinrich, Berlin, Germany. Lubricator | 755,806 | Mar. 29 | 5243 | 1159 | 109 | 1214 |
| Ludington, George A., assignor to Firestone Tire & Rubber Company, Akron, Ohio. Vulcanizing tires in continuous lengths | 754,078 | Mar. 8 | 1704 | 379, 380 | 109 | 392 |
| Ludlow, Samuel W., Covington, Ky. Non-refillable bottle | 753,804 | Mar. 8 | 1359 | 306 | 109 | 313 |
| Ludowici, Wilhelm, Tockgrim, Germany. Means for covering the valleys of tile roofs | 754,578 | Mar. 15 | 2749 | 599 | 109 | 633 |
| Lueckert, August, St. Louis, Mo. Electric fire-alarm | 755,788 | Mar. 29 | 5028 | 1116 | 109 | 1162 |
| Luethy, Fredrick C., assignor of one-half to J. D. Harmon, Chicago, Ill. Ink-well | 755,023 | Mar. 22 | 3568 | 788 | 109 | 885 |
| Luger, Georg, Charlottenburg, Germany. Recoil-loading small-arm | 753,414 | Mar. 1 | 366 | 85, 86, 87 | 109 | 80 |
| Lühne, Johann, Aix-la-Chapelle, Germany. Apparatus for operating on finely-divided fluids or solid materials | 757,737 | Apr. 19 | 3108 | 676 | 109 | 2037 |
| Luke, James, Eskridge, Kans. Drill or pump rod grapple | 754,579 | Mar. 15 | 2751 | 599 | 109 | 634 |
| Lukes, William, Newark, N. J. Paper clip or holder | 757,987 | Apr. 19 | 3444 | 746 | 109 | 2113 |
| Lump, John, and M. F. Diffenderfer, Landisville, Pa. Insect-trap | 758,806 | Mar. 8 | 1360 | 306 | 109 | 313 |
| Lunan, Thomas M., Newark, N. J., assignor to Central Stamping Company, of New York. Manufacture of enameled ware | 758,925 | Apr. 26 | 4236 | | 109 | 2307 |
| Lundgren, Erick A., and C. H. Johannesen, St. Paul, Minn. Grass-twine-feeding machine. | 754,374 | Mar. 8 | 2309 | 504, 505 | 109 | 521 |
| Lunkenheimer Company. (See Aull, Jerome J., assignor.) | | | | | | |
| Lünnemann, Fritz. (See Braselmann and Lünnemann.) | | | | | | |
| Lurz, Andreas, assignor of one-half to H. R. G. von Adlersfeld, Vienna, Austria-Hungary. Producing platina copy-paper | 758,085 | Apr. 26 | 3751 | 815 | 109 | 2196 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lustig, Albert, Corsicana, Tex. Vest and drawers holder | 756,666 | Apr. 5 | 906 | 196 | 109 | 1537 |
| Luthringer, Thiebaud, Lyons, France. Waterproofing tissues | 757,326 | Apr. 12 | 2229 | 487 | 109 | 1833 |
| Lütje, Julius, Altona, Germany. Method of and apparatus for impregnating parts of the body with medicaments | 753,990 | Mar. 8 | 1544 | 345 | 109 | 357 |
| Lüttringhaus, Arthur. (See Abel and Lüttringhaus.) | | | | | | |
| Lutz & Schramm Company. (See Riddlebaugh, John, assignor.) | | | | | | |
| Lyden, Patrick, Burlington, N. J. Clamp | 758,262 | Apr. 26 | 4093 | 885 | 109 | 2274 |
| Lyke, Nathaniel, Jamestown, N. Y. Washboard attachment | 756,386 | Apr. 5 | 397 | 81 | 109 | 1428 |
| Lykke, Christian, New Rochelle, N. Y. Line-holder | 757,820 | Apr. 19 | 3226 | 700 | 109 | 2065 |
| Lyle, Nathan A., Kremlin, Okla. Ter. Burglar-alarm | 754,470 | Mar. 15 | 2535 | 553 | 109 | 590 |
| Lynam, Joseph E., San Jose, Cal. Fruit or berry box | 757,558 | Apr. 19 | 2702 | 590 | 109 | 1949 |
| Lynch, Embry W. (See Lynch, Victor T. and E. W.) | | | | | | |
| Lynch, James C., Chicago, Ill. Combined bureau and wall trunk | 755,682 | Mar. 29 | 4792 | 1067 | 109 | 1109 |
| Lynch, Victor T. and E. W., Columbus, Ga. Clothes-pounder | 754,879 | Mar. 15 | 3323 | 725 | 109 | 761 |
| Lynde, Alvah. (See Spencer and Lynde.) | | | | | | |
| Lyndon, Lamar, New York, assignor to National Battery Company, Buffalo, N. Y. Rheostat | 754,660 | Mar. 15 | 2901 | 634 | 109 | 666 |
| Lyndon, Lamar, New York, N. Y., assignor to National Battery Company, Jersey City, N. J., and Buffalo, N. Y. Booster apparatus | 757,405 | Apr. 12 | 2388 | 519 | 109 | 1866 |
| Lyndon, Lamar, New York, N. Y., assignor to National Battery Company, Jersey City, N. J., and Buffalo, N. Y. Booster apparatus | 757,406 | Apr. 12 | 2389 | 520 | 109 | 1866 |
| Lyon, Charles D., St. Louis, Mo. Rack | 753,598 | Mar. 1 | 733 | 164 | 109 | 159 |
| Lyon, Daniel J., Greenwich, Conn. Governor-valve | 754,880 | Mar. 15 | 3324 | 725 | 109 | 761 |
| Lyon, Joseph P. (See Ames, Lyon, and Russell.) | | | | | | |
| Lyon, Wallace C., Hyattsville, Md. Making concrete piles | 754,375 | Mar. 8 | 2312 | 505 | 109 | 522 |
| Lyon, Wallace C., Hyattsville, Md. Apparatus for use in making concrete piles | 754,376 | Mar. 8 | 2313 | 505 | 109 | 523 |
| Lyon, William T., Portland, Oreg. Dental appliance | 757,988 | Apr. 19 | 3445 | 746 | 109 | 2113 |
| Lyons, John A., *et al.* (See Broadwell, Edward C., assignor.) | | | | | | |
| Lyons, Robert L., Waltham, assignor to Union Button Sewing Machine Company, Boston, Mass. Button-sewing machine | 758,326 | Apr. 26 | 4239 | 911 | 109 | 2307 |
| Lyster, Frank, Philadelphia, Pa. Ventilating sash-bar | 755,784 | Mar. 29 | 5025 | 1117 | 109 | 1162 |
| M. Winter Lumber Company. (See Kade, Charles F., assignor.) | | | | | | |
| M. H. Treadwell & Company. (See Astrom, Karl P., assignor.) | | | | | | |
| Mabrey, John, *et al.* (See Piper, Herbert H., assignor.) | | | | | | |
| Mabrey, Morton, assignor of one-half to D. D. Duggan, Battlecreek, Mich. Car-brake | 758,186 | Apr. 26 | 3939 | 854, 855 | 109 | 2241 |
| MacArthur, Christopher, and F. Smith, Woolston, England. Rotary engine | 754,153 | Mar. 8 | 1844 | 411, 412 | 109 | 424 |
| MacGregor, Henry S., deceased; R. J. MacGregor, Cleveland, Ohio, administratrix. Book-sewing bench | 756,256 | Apr. 5 | 127 | 26 | 109 | 1370 |
| MacGregor, Rose J., administratrix. (See MacGregor, Henry S.) | | | | | | |
| MacKenzie, Alexander W. (See Ross and MacKenzie.) | | | | | | |
| MacKenzie, George W., assignor of five-sixths to R. H. Marks, R. E. Mills, Beaver, and R. H. M. MacKenzie, Pittsburg, Pa. Check-controlled game apparatus | 754,377 | Mar. 8 | 2315 | 505, 506 | 109 | 523 |
| MacKenzie, Robert H. M., *et al.* (See MacKenzie, George W., assignor.) | | | | | | |
| MacKinnon, Falkland R. A., assignor of one-half to J. Schnabel, Grand Rapids, Wis. Wagon stake or standard | 755,024 | Mar. 22 | 3590 | 788 | 109 | 885 |
| MacLaughlin, John B., Vancouver, Canada. Grain-door for cars | 755,511 | Mar. 22 | 4461 | 991 | 109 | 1020 |
| MacMillan, William, assignor of one-half to E. Winkler, New York, N. Y. Electric vibrator | 755,577 | Mar. 22 | 4580 | 1019 | 109 | 1048 |
| MacTaggart, Charles, Philadelphia, Pa. Pipe-hanger | 758,458 | Apr. 26 | 4488 | 965 | 109 | 2362 |
| Macardle, John S., Dundalk, Ireland. Air-purifier | 757,475 | Apr. 19 | 2529 | 554, 555 | 109 | 1912 |
| Macdonald, James A. (See De Lamarter and Macdonald.) | | | | | | |
| Macdonald, William J., Detroit, Mich. Circulating system for steam-boilers | 753,991 | Mar. 8 | 1544 | 345 | 109 | 357 |
| Macfarlane, Alexander T., Rochester, England. Basic refractory material | 757,821 | Apr. 19 | 3226 | ..... | 109 | 2065 |
| Macfarlane, James W., Glasgow, Scotland. Speed-governor | 755,575 | Mar. 22 | 4576 | 1018 | 109 | 1047 |
| Macfarlane, James W., Kingston, Scotland. Centrifugal machine | 758,457 | Apr. 26 | 4486 | 964 | 109 | 2362 |
| Machado, Manuel C., Morro, Cal. Riveting-machine | 756,263 | Apr. 26 | 4094 | 886 | 109 | 2274 |
| Machlett, Robert, New York, N. Y. Spiral vacuum-tube for therapeutic purposes | 754,079 | Mar. 8 | 1708 | 380 | 109 | 392 |
| Mack, Charles, assignor of one-fourth to J. A. Johnson, Butte, Mont. Last | 756,667 | Apr. 5 | 908 | 198 | 109 | 1537 |
| Mack, William H., Messmore, Pa. Nut-lock | 753,415 | Mar. 1 | 373 | 87 | 109 | 81 |
| Mackie, Henry A., assignor of one-half to E. E. Wood, New Orleans, La. Apparatus for the distillation of wood and production of charcoal | 757,989 | Apr. 19 | 3447 | 746 | 109 | 2114 |
| Macklind, William R., St. Louis, Mo. Drier | 758,327 | Apr. 26 | 4242 | 911, 912 | 109 | 2307 |
| Macmillan, George. (See Ramage and Macmillan.) | | | | | | |
| Macon, Jacob H., Jr., Tampa, Fla. Sewing-machine motor | 757,629 | Apr. 19 | 2960 | 624 | 109 | 1986 |
| Macphail, James, Blue Island, assignor to McCormick Harvesting Machine Company, Chicago, Ill. Harvester attachment for mowing-machines | 756,865 | Apr. 12 | 1296 | 289 | 109 | 1636 |
| Macwilliam, Hugh G., New Rochelle, N. Y. Suspenders | 755,026 | Mar. 22 | 3592 | 789 | 109 | 836 |
| Madden, Albert F., Newark, N. J., assignor, by mesne assignments, to Electric Storage Battery Co., Philadelphia, Pa. Apparatus for making grids for secondary-battery plates | 757,210 | Apr. 12 | 1986 | 433 | 109 | 1784 |
| Madden, Daniel, and W. A. Thompson, Chepstowe, Canada; said Madden assignor to said Thompson. Bag-holder | 754,580 | Mar. 15 | 2752 | 599 | 109 | 634 |
| Madden, John, *et al.* (See Royle, Samuel, assignor.) | | | | | | |
| Madden, Patrick J., Chicago, Ill. Washbasin | 755,308 | Mar. 22 | 4080 | 903 | 109 | 940 |
| Maddock, Harry S., and J. F. Kelly, Trenton, N. J., assignors to Thomas Maddock's Sons Company. Lavatory-basin | 756,257 | Apr. 5 | 128 | 26 | 109 | 1370 |
| Maenche, Albert T., Waltham, Mass., assignor to Judson L. Thomson Manufacturing Company. Rivet-setting machine | 753,281 | Mar. 1 | 123 | 29, 30 | 109 | 80 |
| Maeulen, Albert, Denver, Colo. Oil-burner | 754,661 | Mar. 15 | 2903 | 635 | 109 | 666 |
| Magaldi, Emilio, La Briche Saint Denis, France. Belt-chain | 756,866 | Apr. 12 | 1299 | 290 | 109 | 1636 |
| Magness John W., St. Louis, Mo., assignor to L. Maybaum, Newark, N. J. Adding attachment for type-writers | 758,371 | Apr. 26 | 4322 | 928 | 109 | 2294 |
| Magness, William T., Spartanburg, S. C. Cracker-case | 754,396 | Mar. 8 | 2168 | 480 | 109 | 490 |
| Magneto Electric Company. (See Pitrat, Claude R., assignor.) | | | | | | |
| Magniez, Ernest P. F., Amiens, France. Cooling apparatus | 757,822 | Apr. 19 | 3227 | 700, 701 | 109 | 2065 |
| Magnus af Ekström, Fredrik K., Stockholm, Sweden. Manufacturing linoleum carpets | 754,581 | Mar. 15 | 2753 | 599 | 109 | 634 |
| Magnuson, August, assignor of one-half to J. E. and E. Berquist, Ishpeming, Mich. Wrench | 753,720 | Mar. 1 | 975 | 220 | 109 | 210 |
| Magul, Abel, and M. Cooper, New York, N. Y. Portable wardrobe | 753,721 | Mar. 1 | 975 | 221 | 109 | 210 |
| Mahana, John B., Tacoma, Wash. Braking mechanism | 754,327 | Mar. 8 | 2169 | 480, 481 | 109 | 491 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Maher, Michael M., assignor of two-thirds to R. Barner and J. C. Woodward, Kittanning, Pa. Glass-melting furnace | 757,666 | Apr. 19 | 2928 | 536 | 109 | 2000 |
| Mahoney, Daniel H., Vincennes, Ind. Excavating and loading machine | 753,282 | Mar. 1 | 125 | 30 | 109 | 31 |
| Mahoney, John J., Chattanooga, Tenn. Sink-bracket | 758,545 | Apr. 26 | 4660 | 1008 | 109 | 2401 |
| Mahoney, Timothy, San Francisco, Cal. Electric-railway system | 755,899 | Mar. 29 | 5244 | {1159 {1160 | 109 | 1214 |
| Maidhof, Henry S., New York, N. Y. Embossing-machine | 757,758 | Apr. 19 | 3104 | 676 | 109 | 2038 |
| Maidhof, Henry S., New York, N. Y. Rotary support for embossing-machine platens | 757,759 | Apr. 19 | 3105 | 676 | 109 | 2038 |
| Maier, William, and G. M. Howe, assignors to R. Hoffeld & Company, Buffalo, N. Y. Washer-stapling machine | 758,212 | Apr. 26 | 3988 | 865 | 109 | 2251 |
| Main, William B., Chicago, Ill. Display device | 758,900 | Mar. 30 | 5246 | 1160 | 109 | 1214 |
| Maingault, William P., and J. C. Graham, Memphis, Tenn. Vaporizing device for lubricants | 756,126 | Mar. 29 | 5681 | 1253 | 109 | 1307 |
| Mainguet, Edward A., Evangeline, La. Buckle | 756,668 | Apr. 5 | 909 | 198 | 109 | 1537 |
| Major, Alphonse, New York, N. Y. Water-supply | 755,150 | Mar. 22 | 3802 | 838 | 109 | 884 |
| Makeever, Madison M. (See Lawrence, Robert S., assignor.) | | | | | | |
| Malcolm, Charles P., Owosso, Mich. Vehicle running-gear | 757,476 | Apr. 19 | 2332 | 536 | 109 | 1912 |
| Malcolm, Walter R., Albany, N. Y. Lubricator | 756,857 | Apr. 12 | 1299 | 290 | 109 | 1636 |
| Malcomb, J. B. (See Henderson, Arthur S., assignor.) | | | | | | |
| Maley, Nixon. (See Cruikshank, William Y., assignor.) | | | | | | |
| Mallin, Isaac H., Chicago, Ill. Manifolding device | 756,258 | Apr. 5 | 130 | 26 | 109 | 1371 |
| Mallison, Alvin H. (See White and Mallison.) | | | | | | |
| Mally, Roman, Vienna, Austria-Hungary. Beerwort-distributer | 755,901 | Mar. 29 | 5247 | 1160 | 109 | 1214 |
| Malone, Charles H., Acme, Tex. Cement-plaster kettle | 756,669 | Apr. 5 | 910 | 198 | 109 | 1538 |
| Malone, John F., and S. Davidson, Buffalo, N. Y. Macaroni-press | 756,259 | Apr. 5 | 133 | 26, 27 | 109 | 1371 |
| Maloney, George W., Barr, Colo. Spoke-socket | 757,047 | Apr. 12 | 1676 | 363 | 109 | 1715 |
| Malsch, Frank, assignor to Industrial Manufacturing Company, Camden, N. J. Over-seaming and welting sewing-machine | 758,264 | Apr. 26 | 4097 | {886 {887 | 109 | 2275 |
| Manahan, Joseph A., New York, N. Y. Mouthpiece or stem for smokers' articles | 757,760 | Apr. 19 | 3107 | 676 | 109 | 2038 |
| Manahan, Joseph A., and S. Waldeck, New York, N. Y.; said Manahan assignor to said Waldeck. Means for sliding and holding phonographic records on mandrels | 758,546 | Apr. 26 | 4661 | 1004 | 109 | 2401 |
| Manderson, John, assignor of one-half to H. J. Bancroft, Seattle, Wash. Sharpening attachment for band-cutters and feeders | 757,823 | Apr. 19 | 3230 | 701 | 109 | 2066 |
| Manganese Steel Safe Company. (See Hibbard and Gaston, assignors.) | | | | | | |
| Maniachi, Alexander V., Melbourne, Victoria, Australia. Stove for heating irons, &c | 756,083 | Mar. 29 | 5508 | 1215 | 109 | 1270 |
| Mankey, Frederick, Williamsport, Pa. Mirror-support | 753,896 | Mar. 8 | 1361 | 307 | 109 | 314 |
| Mann, John H., West Union, W. Va. Machine for making lampblack | 754,471 | Mar. 15 | 2536 | 553 | 109 | 590 |
| Mann, William I., Pittsburg, Pa. Elevating and lowering device for blast-furnace bells | 757,211 | Apr. 12 | 1999 | 433 | 109 | 1784 |
| Mannerback, William A. (See McDonough, Edward F., assignor.) | | | | | | |
| Manning, Arthur H. (See Bernard, Oscar, assignor.) | | | | | | |
| Mansfield, Albert K., Salem, Ohio. Valve for blowing-engines and air-compressors | 756,868 | Apr. 12 | 1301 | 290 | 109 | 1636 |
| Mansfield, Albert K., Salem, Ohio. Valve | 756,869 | Apr. 12 | 1303 | 291 | 109 | 1637 |
| Mansfield, George L., Chicago, Ill. Combined switch lamp and target | 753,785 | Mar. 29 | 5027 | 1117 | 109 | 1162 |
| Mantell, Louis, London, and W. J. Prim, Wimbledon, assignors to James Keith & Blackman Company, Limited, London, England. Cold-air chamber or refrigerator | 754,328 | Mar. 8 | 2173 | {481 {482 | 109 | 491 |
| Manula, Erik, and J. Carlson, Astoria, Oreg. Fish-cleaning machine | 753,722 | Mar. 1 | 977 | 221 | 109 | 211 |
| Many, Frank B. (See Warner, Charles F., assignor.) | | | | | | |
| Maples, Cassius, Laurens, N. Y. Neck-yoke | 755,512 | Mar. 22 | 4462 | 991 | 109 | 1021 |
| Mapother, Dillon E., Louisville, Ky. Clip | 758,547 | Apr. 26 | 4662 | 1004 | 109 | 2401 |
| March, Charles. (See Lemon, Elmer E., assignor.) | | | | | | |
| Marchand, Frank D., Cambridge, Mass. Shutter-worker | 754,662 | Mar. 15 | 2906 | 635 | 109 | 667 |
| Marcher, Frank A., Los Angeles, Cal. Lapidist's facet-cutting instrument | 753,992 | Mar. 8 | 1546 | {345 {346 | 109 | 357 |
| Marconi, Guglielmo, assignor to Marconi's Wireless Telegraph Company, Limited, London, England. Wireless-telegraph system | 757,559 | Apr. 19 | 2704 | 591 | 109 | 1950 |
| Marconi's Wireless Telegraph Company. (See Fleming, John A., assignor.) | | | | | | |
| Marconi's Wireless Telegraph Company. (See Marconi, Guglielmo, assignor.) | | | | | | |
| Marcotte, Emanuel, *et al.* (See Lamoureux, Edmond, assignor.) | | | | | | |
| Marcus, Hermann, Cologne, Germany. Apparatus for conveying materials | 757,477 | Apr. 19 | 2584 | {556 {557 | 109 | 1913 |
| Markle, John R. (See McCanna and Markle.) | | | | | | |
| Marks, Melbourne A., Jr., Brookline, Mass. Electric-railway switch | 756,870 | Apr. 12 | 1304 | {291 {292 | 109 | 1637 |
| Marks, Robert H., *et al.* (See MacKenzie, George W., assignor.) | | | | | | |
| Marlin Firearms Company. (See Hepburn, Melvin, assignor.) | | | | | | |
| Marple, George L., assignor of one-half to H. E. Christrup, St. Louis, Mo. Bed | 757,327 | Apr. 12 | 2429 | 488 | 109 | 1833 |
| Marr, Walter L., Detroit, Mich. Steering-gear for automobiles | 756,670 | Apr. 5 | 911 | 199 | 109 | 1538 |
| Marsh, Augustus L. C., Plainfield, N. J. Adjustable protective frame | 758,372 | Apr. 26 | 4325 | 929 | 109 | 2325 |
| Marsh, Edwin T., Rochester, N. Y. Fire-escape | 756,513 | Apr. 5 | 630 | {136 {137 | 109 | 1475 |
| Marsh, Elon A., Detroit, Mich. Flush-valve | 756,012 | Apr. 19 | 3590 | 778 | 109 | 2145 |
| Marsh, Frank H., Newark, and C. W. Nichols, Rahway, N. J. Means for cooling cylinders of explosive-engines | 758,373 | Apr. 26 | 4327 | 929 | 109 | 2325 |
| Marsh, William H., San Antonio, Tex. Acetylene-gas torch | 754,473 | Mar. 15 | 2536 | 554 | 109 | 591 |
| Marshall, Edmund B., Rome, Ga. Holder for dental bite-takers | 757,138 | Apr. 12 | 1846 | 408 | 109 | 1732 |
| Marshall, Gilbert A., *et al.* (See Mitchell, James C., assignor.) | | | | | | |
| Marshall, James, Fall River, Mass. Automatic dyeing apparatus | 757,478 | Apr. 19 | 2337 | 557 | 109 | 1913 |
| Marshall, John W., Chloride, N. Mex. Ter. Support for cooking utensils | 754,592 | Mar. 15 | 2754 | 600 | 109 | 635 |
| Marshall, Norman, Newton, assignor to Marshall Sanders Company, Boston, Mass. Electric switch | 754,378 | Mar. 8 | 2317 | 506 | 109 | 523 |
| Marshall, Norman, Newton, assignor to Marshall Sanders Company, Boston, Mass. Electric switch | 754,379 | Mar. 8 | 2320 | 506 | 109 | 524 |
| Marshall, Norman, Newton, assignor to Marshall Sanders Company, Boston, Mass. Electric switch | 754,380 | Mar. 8 | 2321 | 507 | 109 | 524 |
| Marshall Sanders Company. (See Marshall, Norman, assignor.) | | | | | | |
| Marshutz, Siegfried G., Los Angeles, Cal. Spectacles | 756,871 | Apr. 12 | 1307 | 292 | 109 | 1638 |
| Marsteller, Steller A. (See Patton and Marsteller.) | | | | | | |
| Martin, Alfred, Rockford, Ill. Cut-off | 758,265 | Apr. 26 | 4099 | 887 | 109 | 2275 |
| Martin, Anthony S., assignor of one-half to J. W. Blackwelder, Maiden, N. C. Combined ticket stamp and punch | 756,387 | Apr. 5 | 398 | 81 | 109 | 1428 |
| Martin, Bernard S. D. S., McPherson, Kans. Storm-curtain for vehicles | 754,980 | Mar. 15 | 3407 | 745 | 109 | 779 |
| Martin, Charles. (See Vogelsang, August A., assignor.) | | | | | | |
| Martin, Frederick S., Pittsburg, Pa., assignor to R. D. Nuttall Company. Trolley-base | 757,894 | Apr. 19 | 3231 | 701 | 109 | 2066 |
| Martin Hardsoog Manufacturing Company. (See Koontz, Louis K., assignor.) | | | | | | |
| Martin, Herman W., Ilion, N. Y. Multiple motor | 756,513 | Apr. 5 | 639 | 137 | 109 | 1475 |
| Martin, James F., assignor to J. B. Hall, Philadelphia, Pa. Hair-crimper | 753,416 | Mar. 1 | 374 | 88 | 109 | 82 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Martin, James F., assignor to J. B. Hall, Philadelphia, Pa. Bending-machine | 753,801 | Mar. 1 | 1162 | 262 | 109 | 249 |
| Martin, James M., assignor of one-half to W. H. Gripe, Guthrie, Okla. Ter. Drill | 753,503 | Mar. 1 | 525 | 122 | 109 | 115 |
| Martin, John A., Chester, W. Va. Horseshoe | 754,789 | Mar. 15 | 3158 | 687 | 109 | 724 |
| Martin, Joseph H., assignor to Roanoke Mathometer Company, Roanoke, Va. Adding or subtracting machine | 758,013 | Apr. 19 | 3591 | {778 {779 | 109 | 2146 |
| Martin, Louis M. (See Caldwell and Martin.) | | | | | | |
| Martin, Louis M., *et al.* (See Hartell, Frederick G., assignor.) | | | | | | |
| Martin, W. B. (See Martin, Ward B., assignor.) | | | | | | |
| Martin, Ward B., Geneva, Ohio, assignor, by mesne assignments, to W. B. Martin. Measuring device | 755,902 | Mar. 29 | 5248 | 1161 | 109 | 1215 |
| Martin, William L., Middletown, assignor to Silver City Plate Company, Meriden, Conn. Metallic dish | 755,786 | Mar. 29 | 5029 | 1117 | 109 | 1163 |
| Martin, William W., Salem, Oreg. Dioptrical chart | 754,663 | Mar. 15 | 2908 | 635 | 109 | 667 |
| Martinsen, Adf E. (See Sanguinetti, Percy A., assignor.) | | | | | | |
| Martinson, O. (See Montgomery, James P., assignor.) | | | | | | |
| Maschinenfabrik Oerlikon. (See Huber and Behn-Eschenburg, assignors.) | | | | | | |
| Masik, Emil, Vienna, Austria-Hungary. Device for preventing the creeping or wandering of the rails of railways | 754,881 | Mar. 15 | 3325 | 725 | 109 | 761 |
| Mason, Arthur J. (See Hoover and Mason.) | | | | | | |
| Mason, Clyde S., Buffalo, N. Y. Coke-oven-door hoist | 757,134 | Apr. 12 | 1848 | 404 | 109 | 1753 |
| Mason, Harry R., Chicago, Ill., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Valve mechanism | 757,479 | Apr. 19 | 2338 | {557 {558 | 109 | 1913 |
| Mason, Isaac, New York, N. Y. Combined sign and bird-house | 753,599 | Mar. 1 | 735 | 164 | 109 | 160 |
| Mason, John B., Chicago, Ill. Toy gun | 754,583 | Mar. 15 | 2755 | 600 | 109 | 635 |
| Mason, John B., assignor to Chicago Toy Novelty Company, Chicago, Ill. Toy gun | 758,374 | Apr. 26 | 4328 | 929 | 109 | 2325 |
| Mason Machine Works. (See Meats, John T., assignor.) | | | | | | |
| Massenez, Otto, Wiesbaden, Germany. Manufacturing steel | 754,154 | Mar. 8 | 1845 | ..... | 109 | 424 |
| Massie, Mitford C., administrator. (See Ach, Fritz.) | | | | | | |
| Matcham, Charles A., Allentown, Pa. Combined rotary kiln and drier | 755,513 | Mar. 22 | 4464 | {991 {992 | 109 | 1021 |
| Mather, Allan G. (See Fraser and Mather.) | | | | | | |
| Mather, Thomas E., Minneapolis, Minn. Liquid-measuring apparatus | 753,283 | Mar. 1 | 127 | 31 | 109 | 31 |
| Mathesius, Alexander H., Brooklyn, N. Y. Guide-wheel | 754,478 | Mar. 15 | 2539 | 554 | 109 | 591 |
| Mathesius, Walter, Hörde, Germany. Delivering apparatus for yarn-skeins | 754,584 | Mar. 15 | 2757 | {600 {601 | 109 | 635 |
| Matheson, William M., assignor to United States Watch Company, Waltham, Mass. Stem-winding watch | 755,908 | Mar. 29 | 5251 | 1161 | 109 | 1215 |
| Mathews, John M., St. Louis, Mo. Device for preventing incrustation of steam-boilers | 755,027 | Mar. 22 | 3592 | 789 | 109 | 836 |
| Mattern, George A., Berkeley, Cal. Undergarment | 758,875 | Apr. 26 | 4331 | 980 | 109 | 2326 |
| Mattes, Matthias. (See Rate and Mattes.) | | | | | | |
| Matthews, Cranmer L. (See Barton, Henrichsen, Cousins, and Matthews.) | | | | | | |
| Matthews, John J., Maldon, Victoria, Australia. Acetylene-generating apparatus | 756,671 | Apr. 5 | 912 | 199 | 109 | 1538 |
| Mattingly, Alexander R. (See Price, Stephen B., assignor.) | | | | | | |
| Maul, Alfred, Dresden, Germany. Rocket apparatus for taking photographs | 757,825 | Apr. 19 | 3233 | 702 | 109 | 2066 |
| Maul, Christian, Chicago, Ill. Tank-filling alarm | 753,600 | Mar. 1 | 736 | 164 | 109 | 160 |
| Maulbetsch, Fred. (See Bohn, Gottfried J., assignor.) | | | | | | |
| Mauran, Joseph R., Los Angeles, Cal. Portable dusting-frame | 753,993 | Mar. 8 | 1551 | 346 | 109 | 359 |
| Mavrogordato, François E., Constantinople, Turkey. Hydrocarbon-lighting apparatus | 758,087 | Apr. 26 | 3752 | 816 | 109 | 2198 |
| Maxey, Augustus G., Owensboro, Ky. Portable scaffold | 756,084 | Mar. 29 | 5509 | 1215 | 109 | 1271 |
| Maxim, Hiram P., Pittsburg, Pa. Traction-strap | 753,285 | Mar. 1 | 182 | 32 | 109 | 32 |
| Maxim, Hiram P., Pittsburg, Pa. Vehicle-brake | 757,940 | Apr. 19 | 3448 | 747 | 109 | 2114 |
| Maxim, Hiram P., Pittsburg, Pa. Motor-vehicle running-gear | 757,941 | Apr. 19 | 3450 | 747 | 109 | 2115 |
| Maxim, Hiram P., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Electrically-propelled vehicle | 753,284 | Mar. 1 | 180 | 31 | 109 | 32 |
| Maxim, Howard F., Bethel, Me. Automatic apparatus for extinguishing fire | 753,897 | Mar. 8 | 1362 | {307 {308 | 109 | 314 |
| Maxim, Hudson, New York, N. Y. Smokeless-powder rod or grain and making same | 753,994 | Mar. 8 | 1552 | {346 {347 | 109 | 359 |
| Maxwell, Elmer T., Wooster, Ohio. Corn-shock loader | 754,585 | Mar. 15 | 2757 | 601 | 109 | 636 |
| Maxwell, Elmer T., Wooster, Ohio. Loading apparatus | 754,586 | Mar. 15 | 2759 | {601 {602 | 109 | 636 |
| Maxwell, George W., San Francisco, Cal. Game apparatus | 756,514 | Apr. 5 | 635 | 137 | 109 | 1476 |
| Maxwell, Norman J., executor. (See Guild, Henry M.) | | | | | | |
| Maxwell, Singleton A., Atlanta, Ga., assignor to Ideal Opening Die Company. Die-opening mechanism | 755,028 | Mar. 22 | 3593 | {789 {790 | 109 | 836 |
| May, William B., Denver, Colo. Means for converting reciprocatory into rotary motion | 756,388 | Apr. 5 | 399 | 82 | 109 | 1429 |
| Mayall, Lewis A., Philadelphia, Pa. Mechanism for feeding thin flat flexible blanks | 757,667 | Apr. 19 | 2980 | 637 | 109 | 2001 |
| Maybaum, Levy. (See Magness, John W., assignor.) | | | | | | |
| Maybaum, Levy, Newark, N. J. Carriage-spacing attachment for writing-machines | 754,155 | Mar. 8 | 1847 | {412 {413 | 109 | 424 |
| Mayer & Co., Robert. (See Fritsche, Max, assignor.) | | | | | | |
| Mayhall, Larken, Sultan, Wash. Fish-culture tank | 757,407 | Apr. 12 | 2391 | 590 | 109 | 1867 |
| Maynes, Hyla F. (See Thompson and Maynes.) | | | | | | |
| Maynes, Hyla F., Corning, N. Y. Bicycle-gearing | 754,587 | Mar. 15 | 2761 | 602 | 109 | 636 |
| Mayor, William A., Everett, Mass. Fountain attachment for washboilers | 754,790 | Mar. 15 | 3159 | 688 | 109 | 724 |
| Mays, Charles. (See Mays, Joseph A. and C.) | | | | | | |
| Mays, Joseph A. and C., Philadelphia, Pa. Brake | 753,898 | Mar. 8 | 1366 | 308 | 109 | 315 |
| McAllister, George A., Gibbsboro, N. J. Machine for filling vessels with fluid materials | 753,606 | Mar. 1 | 742 | 166 | 109 | 161 |
| McAllister, Irene, *et al.* (See Adams, Robert P., assignor.) | | | | | | |
| McHee, Richard B., Ardmore, Ind. Ter. Penholder | 753,607 | Mar. 1 | 745 | 167 | 109 | 162 |
| McBerty, Frank R. (See Scribner and McBerty.) | | | | | | |
| McBerty, Frank R., Evanston, assignor to Western Electric Company, Chicago, Ill. Toll apparatus for telephone-exchanges | 753,908 | Mar. 8 | 1375 | 310 | 109 | 317 |
| McBerty, Frank R., Evanston, assignor to Western Electric Company, Chicago, Ill. Service-meter for telephone-lines | 755,908 | Mar. 22 | 4091 | 905 | 109 | 941 |
| McBride, Patrick L., Lowell, Mass. Feeding mechanism for carding-machines | 754,494 | Mar. 15 | 2561 | 558 | 109 | 596 |
| McCabe, William L., Seattle, Wash. Portable conveyer | 754,334 | Mar. 8 | 2180 | 488 | 109 | 498 |
| McCabe, William L., Seattle, Wash. Portable conveyer | 754,335 | Mar. 8 | 2183 | {494 {495 {496 | 109 | 494 |
| McCadden, George, St. Cloud, Minn. Carbureter for internal-combustion engines | 756,879 | Apr. 12 | 1890 | 394 | 109 | 1640 |
| McCahill, Edmond D., Chicago, Ill. Gas-burner attachment | 757,492 | Apr. 19 | 2544 | 559 | 109 | 1915 |
| McCance, David, Lockport, N. Y. Polishing-machine | 757,768 | Apr. 19 | 3112 | 678 | 109 | 2039 |
| McCandlish, Albert, George Lane, Bredbury, England. Portable testing and comparing instrument for electric incandescent lamps | 756,976 | Apr. 12 | 1582 | 334 | 109 | 1681 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| McCanna, John F., assignor to John F. McCanna Company, Chicago, Ill. Apparatus for force-feed lubrication | 754,486 | Mar. 15 | 2566 | 550 | 109 | 596 |
| McCanna, John F., and J. R. Markle, assignors to John F. McCanna Company, Chicago, Ill. Lubricating-pump | 754,485 | Mar. 15 | 2563 | 558 | 109 | 596 |
| McCarroll, Charles T., Ottumwa, Iowa. Cream-separator | 757,609 | Apr. 19 | 2934 | 637 | 109 | 2002 |
| McCarroll, Samuel H., assignor, by mesne assignments, to American Equipment Company, Providence, R. I. Elevator safety appliance | 756,685 | Apr. 5 | 937 | {205 206 | 109 | 1543 |
| McCarthy, Louis, Boston, Mass. Insulator | 756,181 | Mar. 29 | 5762 | 1272 | 109 | 1325 |
| McCausland, David, assignor to Briscoe Manufacturing Company, Detroit, Mich. Wheel guard or fender | 756,302 | Apr. 5 | 406 | 84 | 109 | 1430 |
| McCausland, David, assignor to Briscoe Manufacturing Company, Detroit, Mich. Wheel guard or fender | 756,303 | Apr. 5 | 407 | 84 | 109 | 1430 |
| McClarin, Charles T., Williamsport, Pa. Stovepipe-fastener | 756,206 | Apr. 5 | 147 | 30 | 109 | 1374 |
| McClellan, William D., McHenry, Miss. Mail-bag catcher | 753,289 | Mar. 1 | 186 | 42 | 109 | 33 |
| McClenahan, Jacob C., Wilmington, Del. Manufacturing stone | 757,483 | Apr. 19 | 2545 | 559 | 109 | 1915 |
| McCloskey, Alfred C., Philadelphia, Pa. Electrically-heated soldering-iron | 757,670 | Apr. 19 | 2986 | 688 | 109 | 2002 |
| McCloud, Edward H., assignor to Kinnear Manufacturing Company, Columbus, Ohio. Fireproof blind | 754,002 | Mar. 8 | 1567 | 350 | 109 | 302 |
| McColl, Irving G., New York, and M. Klaiber, Brooklyn, N. Y. Photographic flash-light apparatus | 754,487 | Mar. 15 | 2573 | 530 | 109 | 597 |
| McCollor, Claud, Herman, Minn. Belt-removing device for threshing-engines | 754,488 | Mar. 15 | 2576 | 560 | 109 | 598 |
| McCollum, James H. K., assignor of one-half to J. W. L. Forster, Toronto, Canada. Governor-valve for turbine-engines | 754,489 | Mar. 15 | 2577 | 560 | 109 | 599 |
| McConvill, Edward C., Omaha, Nebr. Hay-loader | 756,557 | Apr. 26 | 4678 | {1009 1010 | 109 | 2404 |
| McConway & Torley Company. (See Buhoup, Harry C., assignor.) | | | | | | |
| McCord, Alvin C., Chicago, Ill. Car-bolster | 753,289 | Mar. 1 | 137 | 33 | 109 | 34 |
| McCormick, Charles, Chicago, Ill. Opthalmoscope | 756,092 | Apr. 26 | 3758 | 817 | 109 | 2199 |
| McCormick Harvesting Machine Company. (See Macphail, James, assignor.) | | | | | | |
| McCormick, John F., near Churubusco, Ind. Device for chalking lines | 754,157 | Mar. 8 | 1854 | 413 | 109 | 426 |
| McCormick, Theodore C., Patterson, Mo. Sawing-machine | 755,916 | Mar. 29 | 5398 | 1168 | 109 | 1224 |
| McCowen, William A. (See Stadel, John M., assignor.) | | | | | | |
| McCoy, Elmus M., Selma, La. Weed-destroying attachment for locomotives | 753,606 | Mar. 1 | 746 | 167 | 109 | 162 |
| McCroskey, Philip S., Logan, Kans. Cheese-cutting apparatus | 757,335 | Apr. 12 | 2249 | 490 | 109 | 1838 |
| McCulloh, Thomas G., *et al.* (See O'Brien, Arthur, assignor.) | | | | | | |
| McCullough, Phelam, T. Blaney, and R. Baron, Liverpool, England. Safety device for trolley-poles | 757,630 | Apr. 19 | 2862 | 624 | 109 | 1986 |
| McCune, Grant C., Chicago, Ill. Automatic force sight-feed pump for lubricators | 758,460 | Apr. 26 | 4490 | 965 | 109 | 2302 |
| McCurdy, William O., Oakdale, La. Suspenders | 755,524 | Mar. 22 | 4467 | 997 | 109 | 1087 |
| McDannold, Alexander, St. Louis, Mo. Surgical chair | 754,388 | Mar. 8 | 2326 | 508 | 109 | 525 |
| McDermott, Matthew. (See Carney, John, assignor.) | | | | | | |
| McDevitt, William, assignor of two-thirds to W. Devereux and W. W. Hollingsworth, Philadelphia, Pa. Means for protecting live parts of electric switches or the like | 757,630 | Apr. 19 | 2941 | 708 | 109 | 2068 |
| McDivitt, Edward L., Belvidere, Ill. Pencil-sharpener | 755,917 | Mar. 29 | 5398 | 1168 | 109 | 1224 |
| McDonald, Daniel, Bruce Mines, Canada. Digging and loading machine | 754,592 | Mar. 15 | 2769 | {603 604 | 109 | 638 |
| McDonald, J. S. (See Hulquist, Andrew D., assignor.) | | | | | | |
| McDonald, James T., Little Rock, Ark. Cotton-picker | 756,394 | Apr. 5 | 408 | 84, 85 | 109 | 1431 |
| McDonald, Kenneth. (See Galway, John J., assignor.) | | | | | | |
| McDonald, Norman A., Newaygo, Mich. Cabinet | 755,698 | Mar. 29 | 4808 | 1069 | 109 | 1112 |
| McDonald, Thomas, and W. McKee, Youngstown, Ohio. Conveyer | 754,229 | Mar. 8 | 2001 | {444 445 | 109 | 457 |
| McDonnell, George P. (See Miller and McDonnell.) | | | | | | |
| McDonough, Edward F., assignor of one-half to W. A. Mannerback, Reading, Pa. Knife or fork cleaner | 753,609 | Mar. 1 | 747 | 167 | 109 | 162 |
| McDonough, William S., Ouray, assignor of one-half to T. H. Woods, Ouray county, Colo. Stamp-battery guide | 755,525 | Mar. 22 | 4486 | 997 | 109 | 1087 |
| McDougall, James C., Virden, Canada. Grain-shocking attachment for binders | 756,093 | Apr. 26 | 3760 | {817 818 819 | 109 | 2200 |
| McDowell, John G., Pittsburg, Pa. Cleaning and coating pipes | 753,610 | Mar. 1 | 748 | ..... | 109 | 163 |
| McElroy, James F., assignor to Consolidated Car Heating Company, Albany, N. Y. Armature-winding | 753,422 | Mar. 1 | 368 | 89, 90 | 109 | 88 |
| McElroy, James F., assignor to Consolidated Car Heating Company, Albany, N. Y. Train-pipe terminal for car-heating systems | 758,209 | Apr. 26 | 4106 | 868 | 109 | 2277 |
| McElwain, James J., and E. A. Young, Allegheny, Pa. Drilling and automatic centering device | 757,950 | Apr. 19 | 3465 | 750 | 109 | 2119 |
| McEwing, James P., Drayton, Canada. Traction-wheel | 756,395 | Apr. 5 | 410 | 85 | 109 | 1431 |
| McFadden, Frank, Vanatta, Ohio. Fire-alarm | 756,696 | Apr. 5 | 940 | 206 | 109 | 1544 |
| McFadden, George, New York, N. Y. Support for striking-bags | 755,689 | Mar. 29 | 4804 | 1070 | 109 | 1112 |
| McFarland, Thomas W., Chicago, Ill. Machine for drying paper-board | 758,904 | Mar. 8 | 1377 | 311 | 109 | 318 |
| McFarland, Thomas W., Jackson, Mo. Kraut-dispensing barrel | 757,951 | Apr. 19 | 3467 | 750 | 109 | 2119 |
| McFarlane, James, Allegheny, Pa. Cable-clip | 754,864 | Mar. 15 | 3334 | 729 | 109 | 768 |
| McFeatters, Frank R. (See Christmas, Adolph F., assignor.) | | | | | | |
| McGee, Joseph A., Big Spring, Ind. Reversible explosive-engine | 756,687 | Apr. 5 | 941 | {206 207 | 109 | 1544 |
| McGill, George W., Riverdale-on-Hudson, N. Y. Spring-clip | 753,611 | Mar. 1 | 749 | 167 | 109 | 163 |
| McGill, George W., Riverdale-on-Hudson, N. Y. Combined button and button-fastening | 753,612 | Mar. 1 | 751 | 168 | 109 | 163 |
| McGill, George W., Riverdale-on-Hudson, N. Y. Spring-clip | 753,613 | Mar. 1 | 752 | 168 | 109 | 163 |
| McGill, George W., Riverdale-on-Hudson, N. Y. Spring-clip | 753,614 | Mar. 1 | 755 | 168 | 109 | 164 |
| McGill, Joshua D., Vanwert, Ohio. Railway-track securer | 756,267 | Apr. 5 | 148 | 31 | 109 | 1375 |
| McGirr, Joseph B. (See McGirr, Theodore G. and J. B.) | | | | | | |
| McGirr, Theodore G., New York, and J. B. McGirr, Brooklyn; said Theodore G. McGirr assignor to American Wrapping and Box Machine Company, New York, N. Y. Paper-feeding device | 757,484 | Apr. 19 | 2547 | 560 | 109 | 1915 |
| McGowan, Mont M., assignor of one-half to E. Colquhoun, Grand Rapids, Mich. Skirt-gage | 756,043 | Mar. 29 | 5523 | 1218 | 109 | 1274 |
| McGowan, Patrick T., Avoca, Pa. Third rail for electric railways | 757,138 | Apr. 12 | 1854 | 405 | 109 | 1754 |
| McGrath, John T., Port Huron, Mich. Motor | 757,485 | Apr. 19 | 2550 | 560 | 109 | 1916 |
| McGregor, Allan L., Duluth, Minn. Car-coupling | 756,268 | Apr. 5 | 149 | 31 | 109 | 1375 |
| McGuiggan, Thomas A. (See Noey and McGuiggan.) | | | | | | |
| McGuire, Peter J., Blairsville, Pa. Wall structure | 754,364 | Mar. 8 | 2327 | 509 | 109 | 525 |
| McGuirk, Joseph J., Albany, N. Y. Ticket-holding device | 758,514 | Mar. 1 | 566 | 130 | 109 | 123 |
| McIlhenny, Edward A., New Iberia, La. Sprinkler-cap bottle-closure | 757,216 | Apr. 12 | 1998 | 435 | 109 | 1786 |
| McIlwaine-Richards Company. (See Simcox, Thomas W., assignor.) | | | | | | |
| McIndoe, George F. and J. W., Boston, assignors of one-third to A. E. Whitney, Winchester, Mass. Producing intaglio printing-forms on cylindrical surfaces | 753,290 | Mar. 1 | 138 | ..... | 109 | 34 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| McIndoe, George F. and J. W., Boston, assignors to A. E. Whitney, Winchester, Mass. Producing intaglio printing-forms on cylindrical surfaces | 753,291 | Mar. 1 | 140 | ..... | 109 | 34 |
| McIndoe, James W. (See McIndoe, George F. and J. W.) | | | | | | |
| McIntire, Hervey H., South Bend, Ind. Photographic-printing machine | 754,083 | Mar. 8 | 1718 | 382 | 109 | 394 |
| McIntire, Walter E., Boston, Mass. Packing for plungers | 756,880 | Apr. 12 | 1322 | 295 | 109 | 1640 |
| McIntosh, John, Alexandria, Canada. Carriage-pole | 753,423 | Mar. 1 | 387 | 90 | 109 | 84 |
| McIntyre, Edward F., assignor of one-half to O. Roslund, St. Paul, Minn. Oar-lock | 758,270 | Apr. 26 | 4107 | 888 | 109 | 2277 |
| McIntyre, Jeanie M., Jersey City, N. J. Powder-container | 754,230 | Mar. 8 | 2002 | 445 | 109 | 457 |
| McJunkin, Joseph L., Birmingham, Ala. Steam-valve | 756,688 | Apr. 5 | 945 | 208 | 109 | 1544 |
| McKain, Harry L., Allegheny, Pa. Machine for manufacturing artificial flowers, vines, &c | 754,084 | Mar. 8 | 1719 | 383 | 109 | 395 |
| McKay, David J. (See McKay, John F. and D. J.) | | | | | | |
| McKay, Gordon, Newport, R. I., and W. O. Hildreth, Lawrence, Mass. Centrifugal pump | 755,690 | Mar. 29 | 4805 | 1070 | 109 | 1112 |
| McKay, John F. and D. J., Bowie, La. Tension-regulator for overhead cables | 757,952 | Apr. 19 | 3469 | 751 | 109 | 2119 |
| McKeag, Charles E. (See Renshaw, Joseph H., assignor.) | | | | | | |
| McKean, John O., assignor to Foster Machine Company, Westfield, Mass. Controlled shipping device | 753,724 | Mar. 1 | 979 | 222 | 109 | 211 |
| McKee, Robert A., Pittsburg, Pa., assignor to Westinghouse Machine Company. Throttle-valve | 757,486 | Apr. 19 | 2552 | 560 | 109 | 1916 |
| McKee, Willis. (See McDonald and McKee.) | | | | | | |
| McKeel & Co., George A. (See McKeel, George A., assignor.) | | | | | | |
| McKeel, George A., assignor to George A. McKeel & Company, Limited, Jackson, Mich. Metal-covered vehicle-hub | 754,490 | Mar. 15 | 2579 | 560 | 109 | 599 |
| McKeel, George A., Jackson, Mich., assignor to G. A. McKeel & Co., Ltd. Vehicle-hub casing | 756,044 | Mar. 29 | 5524 | 1218 | 109 | 1274 |
| McKeen, Thomas L., Easton, Pa. Friction draft-gear for railway-cars | 754,593 | Mar. 15 | 2771 | 604 | 109 | 638 |
| McKeen, Thomas L., Easton, Pa. Friction draft-gear for railway-cars | 754,594 | Mar. 15 | 2773 | 604 | 109 | 639 |
| McKelvey, Hugh, *et al.* (See Climo, Jonathan B., assignor.) | | | | | | |
| McKenzie, Dougal J., Chicago, Ill. Furnace | 754,792 | Mar. 15 | 3161 | 688 | 109 | 725 |
| McKercher, George, Jackson, Mich. Pipe-wrench | 753,725 | Mar. 1 | 981 | 222 | 109 | 211 |
| McKiel, James. (See Saling and McKiel.) | | | | | | |
| McKinnon, John, Prescott, Ariz. Ter. Automatic bucket-dumping device | 758,271 | Apr. 26 | 4108 | 889 | 109 | 2277 |
| McKinsey, Noble S., and A. R. Nelson, Susanville, Cal. Telephone selective system | 755,691 | Mar. 29 | 4809 | {1070 1071 | 109 | 1113 |
| McKnight, John W., assignor of one-fourth to W. F. Kintzing, Hanover, Pa. Regenerative gas-burner | 754,595 | Mar. 15 | 2775 | 604 | 109 | 639 |
| McLaughlin, Clarence G. and H. H., Columbus, Ohio. Lawn-swing | 753,726 | Mar. 1 | 982 | 223 | 109 | 212 |
| McLaughlin, George A., Pittsburg, Pa. Roller-coaster | 757,487 | Apr. 19 | 2555 | {560 561 | 109 | 1916 |
| McLaughlin, Harold H. (See McLaughlin, Clarence G. and H. H.) | | | | | | |
| McLaughlin, Mary, assignor of one-half to A. H. Cassel, Philadelphia, Pa. Sad-iron | 757,139 | Apr. 12 | 1854 | 405 | 109 | 1754 |
| McLaury, Willis C., Harpersfield, N. Y. Overalls | 756,396 | Apr. 5 | 412 | 86 | 109 | 1432 |
| McLean, Albert E., Toronto, Canada. Car-fender | 755,788 | Mar. 29 | 5082 | 1118 | 109 | 1163 |
| McLean, C. B. (See Geltz and Hosack, assignors.) | | | | | | |
| McLean, Duncan J., Bridgeburg, Canada. Package-fastener | 753,727 | Mar. 1 | 984 | 223 | 109 | 212 |
| McLeod, Michael, Isom, Ga. Fertilizer-distributer | 755,160 | Mar. 22 | 3819 | 844 | 109 | 887 |
| McMahon, Daniel J., Taunton, Mass. Wire-drawing machine | 757,671 | Apr. 19 | 2938 | 638 | 109 | 2003 |
| McMahon, John J. (See Hubbard, Orril L., assignor.) | | | | | | |
| McMahon, Joseph P., assignor of one-half to J. F. Fromm, Rochester, N. Y. Nut-lock | 756,269 | Apr. 5 | 150 | 31 | 109 | 1375 |
| McMillan, John L., Syracuse, N. Y. Loose-leaf binder | 757,336 | Apr. 12 | 2252 | {490 491 | 109 | 1838 |
| McMullen, Kenric J., and M. H. Robinson, assignors to Willans and Robinson, Limited, Rugby, England. Explosion-engine | 758,189 | Apr. 26 | 3942 | 855 | 109 | 2242 |
| McMunn, Samuel W. (See Poor, George H., assignor.) | | | | | | |
| McMurray, Frank B., Pidcock, Ga. Folding wagon-body | 753,292 | Mar. 1 | 141 | 33 | 109 | 34 |
| McMurtry, George G., New York, N. Y., assignor to American Sheet Steel Co., Pittsburg, Pa. Cooling-rack for bars | 753,293 | Mar. 1 | 142 | 34, 35 | 109 | 35 |
| McMurtry, William J. (See Venables, John H., assignor.) | | | | | | |
| McNab, William J., Omaha, Nebr. Display-rack | 756,689 | Apr. 5 | 947 | 208 | 109 | 1545 |
| McNamara, H. H., *et al.* (See Olson, Hans O., assignor.) | | | | | | |
| McNamara, Martha, New York, N. Y. Drain-pipe attachment for refrigerators | 756,397 | Apr. 5 | 413 | 86 | 109 | 1432 |
| McNaugher, Joseph. (See Duff, John T., assignor.) | | | | | | |
| McNeill, Ralph, New York, N. Y., assignor to A. O. Granger, Philadelphia, Pa. Alternating-current motor | 758,378 | Apr. 26 | 4834 | {930 931 | 109 | 2327 |
| McPhaden, Alexander, *et al.* (See Climo, Jonathan B., assignor.) | | | | | | |
| McPhedran, Neil, *et al.* (See Dunn, Frederick W., assignor.) | | | | | | |
| McVey, George E., Spratts, assignor of three-fourths to J. A. Groseclose, Marion, Va. Stirrup | 756,270 | Apr. 5 | 152 | 31 | 109 | 1375 |
| McVittie, Alexander. (See Sheldon, Mark A., assignor.) | | | | | | |
| Mead, Arthur, Bridgeton, Me. Reversing mechanism | 757,331 | Apr. 12 | 2241 | 488 | 109 | 1835 |
| Mead, H. C. (See Bean, William H., assignor.) | | | | | | |
| Meats, John T., assignor to Mason Machine Works, Taunton, Mass. Friction let-off mechanism for looms | 758,899 | Mar. 8 | 1367 | {308 309 | 109 | 315 |
| Meckensturm, Francis J. (See Brockway and Meckensturm.) | | | | | | |
| Medlin, George A., Evergreen, Pa. Clutch-pulley | 758,548 | Apr. 26 | 4064 | 1004 | 109 | 2401 |
| Meehan, James, Covington, Ky., assignor to Ross-Mehan Foundry Company, Chattanooga, Tenn. Car-coupling | 756,174 | Mar. 29 | 5751 | 1270 | 109 | 1323 |
| Mees, Henry B., Nadeau, Kans. Bead-loom | 758,376 | Apr. 26 | 4332 | 930 | 109 | 2326 |
| Megquier, A. C. (See Graves, Charles L., assignor.) | | | | | | |
| Mehner, Hermann, Steglitz, near Berlin, Germany. Making nitrogen compounds from atmospheric nitrogen | 754,474 | Mar. 15 | 2545 | 554 | 109 | 592 |
| Meier, Edward D. (See Quinn, John C., assignor.) | | | | | | |
| Meigs, John F., and E. Gathmann, assignors to Bethlehem Steel Company, South Bethlehem, Pa. Explosive projectile | 753,504 | Mar. 1 | 526 | {122 123 | 109 | 115 |
| Meigs, John F., and H. G. Jakobsson, assignors to Bethlehem Steel Company, South Bethlehem, Pa. Gun-sight | 753,505 | Mar. 1 | 526 | {123 124 | 109 | 116 |
| Meigs, John F., and S. A. S. Hammar, assignors to Bethlehem Steel Company, South Bethlehem, Pa. Firing mechanism for breech-loading guns | 755,514 | Mar. 22 | 4465 | {992 993 | 109 | 1022 |
| Meinema, Albert, Chicago, Ill. Telephony | 757,326 | Apr. 19 | 3235 | 702 | 109 | 2067 |
| Meinwieser, George B., Batavia, N. Y. Support for hammocks | 756,672 | Apr. 5 | 914 | 200 | 109 | 1539 |
| Meiser, Georg W. (See Knietsch, Seidel, and Meiser.) | | | | | | |
| Meisselbach, August F. and W., Jr., Newark, N. J. Pocket-scale | 756,175 | Mar. 29 | 5754 | 1271 | 109 | 1323 |
| Meisselbach, William, Jr. (See Meisselbach, August F. and W., Jr.) | | | | | | |
| Meissner, Otto W., assignor to Rodger Ballast Car Company, Chicago, Ill. Dump-car | 753,506 | Mar. 1 | 531 | 124 | 109 | 117 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Meissner, Otto W., assignor to Rodger Ballast Car Company, Chicago, Ill. Dump-car | 754,475 | Mar. 15 | 2549 | 554 | 109 | 593 |
| Melaun, Franz, Charlottenburg, assignor to F. Krupp, Essen-on-the-Ruhr, Germany. Manufacture of disk wheels of metal | 757,135 | Apr. 12 | 1850 | 404 | 109 | 1753 |
| Melcher, John, Appleton, Wis. Hoisting and carrying machine | 756,872 | Apr. 12 | 1310 | 292 / 293 | 109 | 1638 |
| Melius, Charles H., Gloversville, N. Y. Shaft-collar | 758,549 | Apr. 26 | 4065 | 1004 | 109 | 2402 |
| Meilin, Carl J., Richmond, Va. Compound engine | 756,673 | Apr. 5 | 916 | 200 | 109 | 1539 |
| Mellor, Thomas, Philadelphia, Pa. Composition of matter for washing and bleaching | 754,588 | Mar. 15 | 2765 | ..... | 109 | 637 |
| Menard, Philip P. (See Smith, Frederick H., assignor.) | | | | | | |
| Menefee, George W., Berkeley, Cal. Windlass | 757,668 | Apr. 19 | 2932 | 637 | 109 | 2001 |
| Mensen, John, Oyens, Iowa. Trace-buckle | 758,187 | Apr. 26 | 3940 | 855 | 109 | 2241 |
| Mensing, Anthony R., Chicago, Ill. Permanent memorandum for household use | 753,601 | Mar. 1 | 737 | 165 | 109 | 160 |
| Mentzer, John P., Chicago, Ill. Temporary binder | 754,791 | Mar. 15 | 3160 | 688 | 109 | 724 |
| Mercadier, Julien H., Louvres, France. Automatic commutator | 757,942 | Apr. 19 | 3452 | 747 | 109 | 2115 |
| Mercer, Frederick D., Hampstead, England. Traveling belt or apron | 753,905 | Mar. 8 | 1556 | 347 / 348 | 109 | 359 |
| Merchant, Hanna V. P., *et al.* (See Saunders, David H., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Briden, Samuel J., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Cooney, John M., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Dodge, Philip T., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Middleton, Winton G., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Randall, William H., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Scott, Daniel D., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Speechley, William R., assignor.) | | | | | | |
| Meriam, Marshall, Pepperell, Mass. Machine for cutting sheets | 757,560 | Apr. 19 | 2706 | 591 / 592 | 109 | 1950 |
| Merkel, George, assignor of two-thirds to G. and J. Bernert, Richfield, Wis. Grain-blower | 754,476 | Mar. 15 | 2551 | 555 | 109 | 594 |
| Merralls, William A., San Francisco, Cal. Stamp-mill | 753,602 | Mar. 1 | 738 | 165 | 109 | 160 |
| Merralls, William A., San Francisco, Cal. Stamp-mill | 756,873 | Apr. 12 | 1312 | 293 | 109 | 1639 |
| Merrick, Frank A., Johnstown, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Armature winding or coil | 755,029 | Mar. 22 | 3597 | 790 | 109 | 887 |
| Merritt, William H., and J. C. Wall, Genesee, N. Y.; said Wall assignor to said Merritt. Power-transmitter | 758,550 | Apr. 26 | 4666 | 1005 | 109 | 2402 |
| Mersanne, Ernest de. (See Dilham and Mersanne.) | | | | | | |
| Merwine, Hiram W., Ashland, Pa. Saw-clamp and file-guide | 758,551 | Apr. 26 | 4667 | 1005 | 109 | 2402 |
| Meserole, Abraham V., New York, N. Y. Storage battery | 757,943 | Apr. 19 | 3453 | 748 | 109 | 2116 |
| Mesinger, Frederick, New York, N. Y. Saddle | 755,904 | Mar. 29 | 5253 | 1161 | 109 | 1216 |
| Messersmith, Hiram, Muncie, Ind. Combination letter-box, door-bell, and name-plate | 754,664 | Mar. 15 | 2910 | 636 | 109 | 668 |
| Metcalf, Jefferson D., assignor of one-half to W. E. Wisner, Darrington, Miss. Churn | 754,882 | Mar. 15 | 3326 | 726 | 109 | 701 |
| Metcalf, John S., assignor to John S. Metcalf Co., Chicago, Ill. Steel-concrete construction, &c. | 753,603 | Mar. 1 | 738 | 165 | 109 | 161 |
| Metzel, William E., assignor to Edmonds-Metzel Manufacturing Company, Chicago, Ill. Lock | 756,874 | Apr. 12 | 1314 | 293 | 109 | 1639 |
| Meuschel, August, Montreal, Canada. Electric-traction system for railways | 755,905 | Mar. 29 | 5254 | 1162 | 109 | 1216 |
| Meyer, August, Jersey City, and C. P. Geritz, Kingsland, N. J. Automatic brake-applying device for railways | 754,665 | Mar. 15 | 2911 | 636 | 109 | 668 |
| Meyer, Conrad. (See Stoltzenburg, Frederick, assignor.) | | | | | | |
| Meyer, Henry D., Lowell, Ind. Tank-heater | 758,143 | Apr. 26 | 3861 | 838 | 109 | 2224 |
| Meyer, Hermann, New York, N. Y. Automatic piano-player | 756,674 | Apr. 5 | 917 | 200 / 201 | 109 | 1539 |
| Meyer, Johann H., Magdeburg, Germany. Counting system for telephones | 755,515 | Mar. 22 | 4468 | 993 / 994 | 109 | 1022 |
| Meyer, L. and A. B. (See Rink, William E., assignor.) | | | | | | |
| Meyer, Philip, Bardonia, N. Y. Self-lubricating axle | 756,675 | Apr. 5 | 922 | 202 | 109 | 1540 |
| Meyercord, Herman A., Chicago, Ill. Multiple-grip fastener | 757,944 | Apr. 19 | 3455 | 748 | 109 | 2116 |
| Meygret, Achille, Paris, France. Protective sheath or envelop for storage-battery plates | 756,176 | Mar. 29 | 5756 | ..... | 109 | 1324 |
| Meyrick, Joseph, Jr., assignor of one-half to G. E. Cain, Louisville, Ky. Butter-separator | 754,981 | Mar. 15 | 3410 | 746 | 109 | 779 |
| Michael, Charles W., *et al.* (See Gillaspy, John T., assignor.) | | | | | | |
| Michael, Christopher, assignor of one-half to W. Webb, Calumet, Mich. Stair-carpet rod and fastener | 756,875 | Apr. 12 | 1315 | 293 | 109 | 1639 |
| Michelin, Edouard, Clermont-Ferrand, France. Lever for manipulating the covers of pneumatic tires | 756,515 | Apr. 5 | 698 | 138 | 109 | 1476 |
| Michigan Storage Battery Co. *et al.* (See Frank, Oskar, assignor.) | | | | | | |
| Middleton, Melbourne F., Camden, N. J. Box | 757,827 | Apr. 19 | 3237 | 702 | 109 | 2067 |
| Middleton, Peter C., and W. S. H. Smith, Croydon, England. Band or strap brake | 757,480 | Apr. 19 | 2540 | 558 / 559 | 109 | 1914 |
| Middleton, Winton G., Phœnix, Ariz. Ter., assignor to Mergenthaler Linotype Company. Matrix for linotype-machines | 753,604 | Mar. 1 | 739 | 165 | 109 | 161 |
| Middletown Car Works. (See King, Arthur, assignor.) | | | | | | |
| Midgley, Frederick W., assignor to International Wireless Telegraph Company and M. Gehring, Philadelphia, Pa. Wave-responsive device | 756,676 | Apr. 5 | 923 | 202 | 109 | 1540 |
| Miers, Charles F., Ager, Cal. Shoe-lace fastener | 755,080 | Mar. 22 | 3599 | 790 | 109 | 888 |
| Miesse, Americus, assignor of one-half to A. Crider, Lima, Ohio. Automobile-fender | 756,014 | Apr. 19 | 3601 | 779 | 109 | 2148 |
| Mikkelsen, Charles H., Geddes, S. D. Windmill | 754,477 | Mar. 15 | 2552 | 555 | 109 | 594 |
| Miksch, Aaron J., Chicago, Ill. Pump | 753,507 | Mar. 1 | 533 | 124 | 109 | 117 |
| Milburn, Guy, Baltimore, Md. Automatic electric cut-out | 756,516 | Apr. 5 | 640 | 138 | 109 | 1476 |
| Miles, Frank W., assignor to Hydraulic Press Brick Company, St. Louis, Mo. Brick-stamping machine | 756,677 | Apr. 5 | 925 | 202 | 109 | 1540 |
| Mill, Anton, assignor of one-half of C. Roos, Cincinnati, Ohio. Drill | 756,678 | Apr. 5 | 926 | 203 | 109 | 1541 |
| Millard, Reuben O., and T. L. Henry, Catawissa, Pa. Rail-joint | 755,151 | Mar. 22 | 3808 | 838 | 109 | 884 |
| Millard, Thomas Z., Ottumwa, and P. H. Palmer, Bloomfield, Iowa; said Millard assignor to said Palmer. Light-measuring instrument | 753,508 | Mar. 1 | 534 | 124 | 109 | 118 |
| Miller, Aaron, Altoona, Pa. Curtain-pole | 757,048 | Apr. 12 | 1676 | 363 | 109 | 1715 |
| Miller, Albert W. (See Bryan, Edgar J., assignor.) | | | | | | |
| Miller, Albert W. W., South Orange, N. J., and G. P. McDonnell, St. Louis, Mo., assignors to American Electric Company, East Orange, N. J. Device for securing incandescent-lamp filaments to leading-in wires | 758,328 | Apr. 26 | 4344 | 912 | 109 | 2308 |
| Miller, Anna G., Muskegon, Mich. Hook and eye | 756,876 | Apr. 12 | 1316 | 294 | 109 | 1639 |
| Miller, Burt O. (See Jensen, Christian, assignor.) | | | | | | |
| Miller, Camillus, Sunflower, Pa. Siphon | 756,517 | Apr. 5 | 641 | 138 | 109 | 1477 |
| Miller, Clarence D. S. (See Keating, Daniel A., assignor.) | | | | | | |
| Miller, Corwin F., Walcottville, Ind. Adjustable float for fishing | 755,668 | Mar. 29 | 4798 | 1067 | 109 | 1110 |
| Miller David, Schenectady, N. Y., assignor to General Electric Company. End-play device for rotary machines | 755,787 | Mar. 29 | 5030 | 1118 | 109 | 1166 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Miller, David D., Middletown, Conn. Picker-motion for looms | 757,828 | Apr. 19 | 3239 | 708 | 109 | 2068 |
| Miller, Denis L., Louisville, Ky., assignor of one-half to F. A. Engert, Knoxville, Tenn. Camp-stove | 758,015 | Apr. 19 | 3602 | 780 | 109 | 2149 |
| Miller, Edward C., Allegheny, Pa. Wrench | 756,679 | Apr. 5 | 928 | 203 | 109 | 1541 |
| Miller, Eli, Canton, Ohio. Cultivator | 755,906 | Mar. 29 | 5266 | 1163 | 109 | 1219 |
| Miller, Frank O., Holley, N. Y. Shipping-crate | 756,877 | Apr. 12 | 1318 | 294 | 109 | 1640 |
| Miller, George, Holstein, and W. Butler, Shelby, Mich. Shipping-crate | 756,960 | Apr. 5 | 135 | 27 | 109 | 1372 |
| Miller, Hans A., Selby, Cal. Domestic boiler | 753,900 | Mar. 8 | 1370 | 309 | 109 | 316 |
| Miller, Harry, and G. L. Riedel, Philadelphia, Pa. Fifth-wheel for vehicles | 755,516 | Mar. 22 | 4473 | 994 | 109 | 1024 |
| Miller, Harry G., assignor to J. F. Lapp, Denver, Colo. Station-indicator | 756,680 | Apr. 5 | 929 | 203 / 204 | 109 | 1541 |
| Miller, Jacob, Wauseon, Ohio. Water-tank | 758,188 | Apr. 26 | 3941 | 855 | 109 | 2241 |
| Miller, Jacob H., Medway, Ohio. Pump-cylinder | 758,377 | Apr. 26 | 4333 | 930 | 109 | 2327 |
| Miller, James B., Kent, Ohio. Lock | 755,907 | Mar. 29 | 5267 | 1163 | 109 | 1219 |
| Miller, James B., Kent, Ohio. Lock | 755,908 | Mar. 29 | 5269 | 1163 / 1164 | 109 | 1219 |
| Miller, James B., Kent, Ohio. Lock | 755,909 | Mar. 29 | 5272 | 1164 | 109 | 1220 |
| Miller, Jay J. (See Van Auken and Miller.) | | | | | | |
| Miller, John A., Avondale, Colo. Wire-fence tool | 757,213 | Apr. 12 | 1992 | 434 | 109 | 1785 |
| Miller, John H., Sharpsville, Pa. Apparatus for preparing cereal food products | 757,945 | Apr. 19 | 3457 | 748 | 109 | 2116 |
| Miller, John H., Christiana, Tenn. Switch-operating mechanism | 758,552 | Apr. 26 | 4669 | 1005 / 1006 | 109 | 2403 |
| Miller, John S., assignor of one-third to J. M. Henry, Fort Wayne, Ind. Stave-column | 756,261 | Apr. 5 | 138 | 27 | 109 | 1372 |
| Miller, Joseph B., Sedalia, Mo. Garment-stretcher | 754,478 | Mar. 15 | 2553 | 556 | 109 | 594 |
| Miller, Joseph B., Kansas City, Mo. Padlock | 754,479 | Mar. 15 | 2555 | 556 | 109 | 595 |
| Miller, Lawrence E., and C. J. Barry, Chicago, Ill. Polishing and buffing machine | 755,031 | Mar. 22 | 3600 | 790 / 791 | 109 | 888 |
| Miller, Leo, Tiffin, Ohio. Glass-gathering machine | 758,553 | Apr. 26 | 4671 | 1006 / 1007 / 1008 | 109 | 2403 |
| Miller, Major, Clyman, Wis. Armor for vehicle-tires | 756,127 | Mar. 29 | 5692 | 1254 | 109 | 1308 |
| Miller, Otto, and P. Kunzinger, New York, N. Y. Alarm-lock | 758,554 | Apr. 26 | 4674 | 1008 | 109 | 2404 |
| Miller, Reuben, Jr., Pittsburg, Pa. Induction-coil | 754,666 | Mar. 15 | 2914 | 636 | 109 | 668 |
| Miller, Richard, assignor to W. H. Hoover, New Berlin, Ohio. Harness-tree | 755,304 | Mar. 22 | 4092 | 903 | 109 | 940 |
| Miller, Robert, Reedbrake, Ala. Scissors-swage | 753,723 | Mar. 1 | 978 | 222 | 109 | 211 |
| Miller, Roy C., Norfolk, assignor of one-half to M. V. Hammack, Jacksondale, G. L. Smith, Newport News, and L. L. Davis, Portsmouth, Va. Means for storing, displaying, and measuring goods | 756,128 | Mar. 29 | 5684 | 1254 | 109 | 1308 |
| Miller Signal Company. (See Price, Jonathan D., assignor.) | | | | | | |
| Miller, Webb. (See White and Miller.) | | | | | | |
| Miller, William, Thomasville, assignor of one-half to L. F. Patterson, Bainbridge, Ga. Brick-handling truck | 753,901 | Mar. 8 | 1372 | 309 / 310 | 109 | 316 |
| Miller, William A., Elizabeth, N. J. Valve | 756,035 | Mar. 29 | 5511 | 1215 | 109 | 1271 |
| Milliken, Bailey T., Epperson, Ky. Bed or cushion | 754,329 | Mar. 8 | 2174 | 482 | 109 | 492 |
| Millins, Melvin R., *et al.* (See Legge, Joshua D., assignor.) | | | | | | |
| Mills, Anson, Washington, D. C. Seamless woven cartridge-belt | 756,177 | Mar. 29 | 5757 | 1271 | 109 | 1324 |
| Mills, Anson, Washington, D. C. Cartridge-belt | 756,178 | Mar. 29 | 5758 | 1271 | 109 | 1324 |
| Mills, Francis A., Lawrence, assignor of one-half to G. B. Emmons, Methuen, Mass. Shuttle lock for looms | 755,910 | Mar. 29 | 5275 | 1164 / 1165 | 109 | 1220 |
| Mills, Francis A., Lawrence, assignor of one-half to G. B. Emmons, Methuen, Mass. Shuttle-lock for looms | 755,911 | Mar. 29 | 5278 | 1165 | 109 | 1221 |
| Mills, Francis A., Lawrence, assignor of one-half to G. B. Emmons, Methuen, Mass. Shuttle-lock for looms | 756,036 | Mar. 29 | 5513 | 1216 | 109 | 1271 |
| Mills, George L., *et al.* (See Green, John D., assignor.) | | | | | | |
| Mills, Irwin H., Cincinnati, Ohio, assignor to W. J. Bauman, Dayton, Ky. Tympan feed-gage for printing presses | 757,212 | Apr. 12 | 1991 | 434 | 109 | 1785 |
| Mills, Martin A., Exira, Iowa. Brooder | 754,330 | Mar. 8 | 2175 | 482 | 109 | 492 |
| Mills, R. E., *et al.* (See MacKenzie, George W., assignor.) | | | | | | |
| Mills, Thomas C., London, England. Machine for removing hairs from fur skins | 754,381 | Mar. 8 | 2323 | 507 / 508 | 109 | 524 |
| Mills, Thomas C., London, England. Machine for removing hairs from fur skins | 754,382 | Mar. 8 | 2325 | 508 | 109 | 524 |
| Mills, Walter, London, England, assignor to A. O. Granger, Cartersville, Ga. Making lead salts | 754,667 | Mar. 15 | 2915 | ..... | 109 | 669 |
| Mills, Walter, London, England, assignor to A. O. Granger, Cartersville, Ga. Making ammonium nitrate | 754,668 | Mar. 15 | 2916 | ..... | 109 | 669 |
| Mills, Walter, London, England, assignor to A. O. Granger, Cartersville, Ga. Making nitric acid | 755,378 | Mar. 22 | 4239 | ..... | 109 | 976 |
| Mills, Walter, London, England, assignor to A. O. Granger, Cartersville, Ga. Making fluorids and silicates | 755,379 | Mar. 22 | 4240 | ..... | 109 | 976 |
| Milne, William A., Brown's Corners, Canada. Treating peat immediately prior to compression | 756,129 | Mar. 29 | 5686 | 1254 | 109 | 1308 |
| Milne, William A., Brown's Corners, Canada. Temperature and moisture regulating apparatus | 756,130 | Mar. 29 | 5687 | 1255 | 109 | 1309 |
| Minchin, James T., *et al.* (See Vinton, John H., assignor.) | | | | | | |
| Minck, Henry, Jersey City, N. J. Picture-hanger | 753,605 | Mar. 1 | 741 | 166 | 109 | 161 |
| Miner, Louis H., assignor to C. Wolcott, Haverhill, Mass. Sewer-inlet grating | 757,049 | Apr. 12 | 1678 | 364 | 109 | 1715 |
| Miner, William C., Traverse City, Mich. Railway-signal | 757,332 | Apr. 12 | 2242 | 488 | 109 | 1896 |
| Miner, William H., *et al.* (See Moore, Peter N., assignor.) | | | | | | |
| Miner, William H., assignor to W. H. Miner Company, Chicago, Ill. Tandem-spring draft-rigging | 754,669 | Mar. 15 | 2917 | 637 | 109 | 669 |
| Miner, William H., assignor to W. H. Miner Company, Chicago, Ill. Friction draft-rigging for railway-cars | 754,670 | Mar. 15 | 2918 | 637 | 109 | 669 |
| Miner, William H., assignor to W. H. Miner Company, Chicago, Ill. Tandem-spring friction draft-rigging | 754,671 | Mar. 15 | 2921 | 638 | 109 | 670 |
| Miner, William H., assignor to W. H. Miner Company, Chicago, Ill. Draft-rigging for railway-cars | 758,144 | Apr. 26 | 3862 | 838 | 109 | 2225 |
| Minshall, Charles. (See Sendelbach, Edward, assignor.) (Reissue.) | | | | | | |
| Minto, George W., Ginter, Pa. Rope-haulage socket | 754,589 | Mar. 15 | 2765 | 602 | 109 | 637 |
| Minzy, Irving A., Brockton, Mass. Shoe-top form | 756,878 | Apr. 12 | 1319 | 294 | 109 | 1640 |
| Miracle Pressed Stone Company. (See Dow, Wallace L., assignor.) | | | | | | |
| Mishler, Sylvester S., David City, assignor of one-half to M. Keller, Octavia, Nebr. Concave for threshing-machines | 755,152 | Mar. 22 | 3804 | 838 | 109 | 884 |
| Missner, Max, Chemnitz, Germany. Fastening the jackets of double-walled vessels | 755,684 | Mar. 29 | 4795 | 1068 | 109 | 1110 |
| Mitchell, Charles E., New Britain, Conn. Ratchet mechanism | 758,329 | Apr. 26 | 4248 | 912 / 913 | 109 | 2309 |
| Mitchell, Frank E., Oshkosh, Wis. Megaphone | 753,417 | Mar. 1 | 375 | 88 | 109 | 82 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Mitchell, Henry C., Andover, Mass. Rotary steam-engine | 754,672 | Mar. 15 | 2934 | 698 | 109 | 671 |
| Mitchell, Henry L. (See Torrens, Clifford H., assignor.) | | | | | | |
| Mitchell, James C., assignor of three-fourths to M. E. Hartford and G. A. Marshall, Lancaster, N. H. Nut-lock | 754,590 | Mar. 15 | 2766 | 608 | 109 | 637 |
| Mitchell, James G., Charleroi, Pa. Attachment for athletic shoes | 754,673 | Mar. 15 | 2925 | 689 | 109 | 671 |
| Mitchell, Reuben A., and L. L. Lewis, assignors to Oil City Gas Engine Starter Company, Oil City, Pa. Steam-generator | 757,050 | Apr. 12 | 1679 | 364 | 109 | 1716 |
| Mitchell, Thomas J., assignor of one-half to F. Nelson, Rustburg, Va. Resawing-machine | 757,946 | Apr. 19 | 3458 | 749 | 109 | 2117 |
| Mitchell, William C., Manchester, England. Reversing means for machine-tools, &c. | 755,517 | Mar. 22 | 4474 | 994<br>995 | 109 | 1024 |
| Mixer, Curtis G., Muskegon, Mich. Frame for holding signs | 758,068 | Apr. 26 | 3753 | 816 | 109 | 2198 |
| Miyabara, Jiro, Tokio, Japan. Water-tube boiler | 756,179 | Mar. 29 | 5759 | 1271<br>1272 | 109 | 1324 |
| Moellenbrock, Frank, Dissen, Mo. Box-fastener | 753,996 | Mar. 8 | 1557 | 348 | 109 | 359 |
| Moeslein, Valentine, Weehawken, N. J. Construction of floors, partitions, or the like | 758,555 | Apr. 26 | 4676 | 1009 | 109 | 2404 |
| Moest, Martin, assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Oxidizing organic compounds | 757,136 | Apr. 12 | 1851 | ..... | 109 | 1754 |
| Moffitt, Emmett L. (See Harris, Thomas D., assignor.) | | | | | | |
| Mohler, Levi D. (See Hall and Mohler.) | | | | | | |
| Moldenhauer, Frederich W., Oconomowoc, Wis. Weighing apparatus | 756,681 | Apr. 5 | 933 | 204 | 109 | 1542 |
| Molin, Charles G., Warren, Pa. Wrench | 758,266 | Apr. 26 | 4100 | 887 | 109 | 2275 |
| Moncrieff, Robert W., Newport Pagnell, England. Apparatus for spinning and doubling | 755,153 | Mar. 22 | 3805 | 838<br>839 | 109 | 884 |
| Monoline Composing Company. (See Scudder, Wilbur S., assignor.) | | | | | | |
| Monroe, Will K., Cleveland, Ohio. Clam-shell bucket | 755,912 | Mar. 29 | 5288 | 1165<br>1166 | 109 | 1222 |
| Montel, Leo, New York, N. Y. Lamp | 755,685 | Mar. 29 | 4796 | 1068 | 109 | 1110 |
| Montgomerie y Agramonte, Clarence H., Mexico, Mexico. Gas-retort | 756,518 | Apr. 5 | 643 | 138<br>139 | 109 | 1477 |
| Montgomery, James P., assignor of one-fourth to O. Martinson, Wichita, Kans. Animal-poke | 758,213 | Apr. 26 | 3990 | 866 | 109 | 2252 |
| Montgomery, James W., Ochlochnee, Ga. Washing-machine | 757,829 | Apr. 19 | 3240 | 708 | 109 | 2068 |
| Montgomery, John W., Nimrod, Tex. Wire-stretcher | 756,369 | Apr. 5 | 401 | 82 | 109 | 1429 |
| Montgomery, Joseph, Fort Worth, Tex. Binder | 755,380 | Mar. 22 | 4941 | 987 | 109 | 976 |
| Montgomery, Lewis E., *et al.* (See Hanstine, Harry S., assignor.) | | | | | | |
| Montgomery, Thomas J., Youngstown, Ohio. Wheelbarrow | 756,202 | Apr. 5 | 138 | 27 | 109 | 1373 |
| Montgomery, Walter R., Shreveport, La. Folding table | 757,481 | Apr. 19 | 2541 | 559 | 109 | 1914 |
| Montgomery, Wells D. (See Connolly and Montgomery.) | | | | | | |
| Moody, Benjamin A., West Roxbury, Mass., assignor to B. A. Moody Hydro-Carbon Burner Company, Portland, Me. Hydrocarbon-burner | 756,796 | Apr. 5 | 1160 | 257 | 109 | 1502 |
| Moog, Philip H., New York, N. Y., assignor to Alfred Peats Company. Combined sample carrier and display-rack | 754,227 | Mar. 8 | 1998 | 444 | 109 | 456 |
| Moon, Charles R., Muncie, Ind. Clutch | 756,390 | Apr. 5 | 402 | 82, 83 | 109 | 1429 |
| Moon, Charles R., Muncie, Ind. Feeding-hopper | 756,974 | Apr. 12 | 1520 | 334 | 109 | 1681 |
| Moon, Charles R., Muncie, Ind. Chuck | 757,561 | Apr. 19 | 2710 | 592 | 109 | 1951 |
| Moon, Dewitt A., assignor to F. W. Taylor, Louisville, Ky. Placket-closer | 758,459 | Apr. 26 | 4489 | 965 | 109 | 2302 |
| Moon, George A., *et al.* (See Thompson, Frank M., assignor.) | | | | | | |
| Mooney, Thomas E., Schenectady, N. Y. Gage for sand-boxes | 757,947 | Apr. 19 | 3459 | 749 | 109 | 2117 |
| Mooney, Thomas H., Dayton, Ohio. Apparatus for grinding tile | 754,501 | Mar. 15 | 2767 | 608 | 109 | 638 |
| Moore, Arthur L., and R. Deming, assignors to Cleveland Pulley Company, Cleveland, Ohio. Pulley | 756,391 | Apr. 5 | 404 | 83 | 109 | 1430 |
| Moore, Arthur S., Notting Hill, London, England. Lamp-suspender | 756,253 | Apr. 5 | 140 | 28 | 109 | 1373 |
| Moore, Daniel M., Newark, N. J. Apparatus for wireless transmission of energy | 755,032 | Mar. 22 | 3603 | 791 | 109 | 839 |
| Moore, Daniel M., Newark, N. J. Peaked-wave wireless transmission | 755,305 | Mar. 22 | 4083 | 904 | 109 | 940 |
| Moore, Daniel M., Newark, N. J. Electric tube-lighting | 755,306 | Mar. 22 | 4085 | 904 | 109 | 940 |
| Moore, Daniel M., Newark, N. J. Electric tube-lamp | 755,307 | Mar. 22 | 4089 | 904 | 109 | 941 |
| Moore, Edward Y., Cleveland, Ohio. Hoist | 757,333 | Apr. 12 | 2244 | 489 | 109 | 1836 |
| Moore, Edwin A., Philadelphia, Pa. Coke quenching and bleaching apparatus | 755,154 | Mar. 22 | 3807 | 839<br>840<br>841 | 109 | 884 |
| Moore, Edwin A., Philadelphia, Pa. Quenching and bleaching coke | 755,155 | Mar. 22 | 3810 | 841<br>842 | 109 | 885 |
| Moore, Frank W. (See Gerlach and Moore.) | | | | | | |
| Moore, George, Shippingport, Pa. Wrench | 755,518 | Mar. 22 | 4477 | 995 | 109 | 1025 |
| Moore, George N., and M. O'Neill, assignors of one-third to W. W. Currier, New York, N. Y. Speed-indicator | 758,596 | Apr. 26 | 4763 | 1025 | 109 | 2424 |
| Moore, George T., Washington, D. C. Preparing for distribution organisms which fix atmospheric nitrogen | 755,519 | Mar. 22 | 4478 | ..... | 109 | 1026 |
| Moore, John C., Lower Edmonton, England. Door-check | 753,997 | Mar. 8 | 1559 | 348 | 109 | 360 |
| Moore, John C., Lower Edmonton, England. Door-spring | 753,998 | Mar. 8 | 1559 | 348 | 109 | 360 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Friction draft-gear for railway-cars | 754,674 | Mar. 15 | 2926 | 639 | 109 | 671 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Friction draft-rigging for railway-cars | 754,675 | Mar. 15 | 2929 | 639<br>640 | 109 | 672 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Tandem friction spring draft-rigging for railway-cars | 754,676 | Mar. 15 | 2932 | 640 | 109 | 673 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Friction spring draft-gear for railway-cars | 754,677 | Mar. 15 | 2935 | 640<br>641 | 109 | 673 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Friction spring draft-rigging for railway-cars | 754,678 | Mar. 15 | 2937 | 641 | 109 | 674 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Friction spring draft-rigging for railway-cars | 754,679 | Mar. 15 | 2939 | 641<br>642 | 109 | 674 |
| Moore, Peter N., assignor to J. J. Hennessey, Milwaukee, Wis., and W. H. Miner, Chicago, Ill. Friction draft-gear for railway-cars | 754,982 | Mar. 15 | 3412 | 746 | 109 | 780 |
| Moore, Robert A., Toronto, Canada. Running-gear for vehicles | 754,680 | Mar. 15 | 2941 | 642 | 109 | 675 |
| Moore, Samuel E., assignor of one-half to I. H. Van Eaton, Ada, Ind. Ter. Grocer's cabinet | 755,156 | Mar. 22 | 3812 | 842 | 109 | 886 |
| Moore, Walter T. (See Simmons and Moore.) | | | | | | |
| Moran, Elijah F., Choice, Minn. Draft-equalizer | 757,761 | Apr. 19 | 3108 | 677 | 109 | 2089 |
| Moran Flexible Steam Joint Company. (See Moran, Thomas W., assignor.) | | | | | | |
| Moran, John D., St. Paul, Minn. Excavating-machine | 754,480 | Mar. 15 | 2558 | 556<br>557 | 109 | 596 |
| Moran, Thomas F., Philadelphia, Pa. Device for cutting asphalt | 755,157 | Mar. 22 | 3813 | 843 | 109 | 886 |
| Moran, Thomas W., assignor to Moran Flexible Steam Joint Company, Louisville, Ky. Flexible joint | 758,556 | Apr. 26 | 4677 | 1009 | 109 | 2404 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Morehouse, George. (See Patten and Lippy, assignors.) | | | | | | |
| Morgan, Arthur C., Detroit, Mich. Scenic pleasure-railway | 755,158 | Mar. 22 | 3814 | 843 | 109 | 886 |
| Morgan Construction Company. (See Edwards, Victor E., assignor.) | | | | | | |
| Morgan Construction Company. (See George, Jerome R., assignor.) | | | | | | |
| Morgan, Edmund C., assignor, by mesne assignments, to Morgan Electric Machine Company of West Virginia, Chicago, Ill. Combined third and traction rail for electric railways and switching systems embodying same | 753,802 | Mar. 1 | 1163 | 262 | 109 | 250 |
| Morgan, Edmund C., Chicago, Ill., assignor to Morgan Electric Machine Company, East Chicago, Ind. Combined third and traction rail for electric railways | 753,803 | Mar. 1 | 1165 | 263 | 109 | 250 |
| Morgan Electric Machine Company. (See Morgan, Edmund C., assignor.) | | | | | | |
| Morgan Electric Machine Company of West Virginia. (See Morgan, Edmund C., assignor.) | | | | | | |
| Morgan Engineering Company. (See Taylor, Clarence L., assignor.) | | | | | | |
| Morgan, Thomas R. (See Wellman, Seaver, and Morgan.) | | | | | | |
| Morison, Donald B., Hartlepool, England. Stamping apparatus for crushing ores, &c. | 755,686 | Mar. 29 | 4798 | 1068<br>1069 | 109 | 1111 |
| Morison, Donald B., Hartlepool, England. Mortar-box for stamp-mills | 755,913 | Mar. 29 | 5284 | 1166 | 109 | 1222 |
| Morison, Donald B., Hartlepool, England. Piston-ring | 757,214 | Apr. 12 | 1995 | 434 | 109 | 1785 |
| Morlock, Albert. (See Morrison and Morlock.) | | | | | | |
| Morlock, Charles. (See Kary, Frank, assignor.) | | | | | | |
| Morris, Jesse T., assignor of one-half to W. N. White, Portsmouth, Va. Wrench | 755,520 | Mar. 22 | 4480 | 995 | 109 | 1026 |
| Morris, John O., Richmond, Va., assignor of twenty-nine fortieths to C. M. Fulton, Washington, D. C., J. T. Ahern, Manchester, and J. A. Traylor, Richmond, Va. Register | 753,418 | Mar. 1 | 376 | 88 | 109 | 82 |
| Morrison, Angus, Philadelphia, Pa., and A. Morlock, New York, N. Y. Press-rack | 756,037 | Mar. 29 | 5513 | 1216 | 109 | 1272 |
| Morrison, Angus, Philadelphia, Pa., and A. Morlock, New York, N. Y. Press-rack | 756,038 | Mar. 29 | 5516 | 1216 | 109 | 1272 |
| Morrison, James D., Reinbeck, Iowa. Building-block | 753,286 | Mar. 1 | 133 | 32 | 109 | 33 |
| Morrison, John, Jr., assignor to John Morrison, Troy, N. Y. Self-clearing rake | 758,267 | Apr. 26 | 4102 | 887 | 109 | 2276 |
| Morrison, John C. (See Kellond and Morrison.) | | | | | | |
| Morrow, Henry. (See Clergy and Morrow.) | | | | | | |
| Morrow, Oliver A., Whitehall, Ill. Mechanical movement | 756,131 | Mar. 29 | 5689 | 1255 | 109 | 1309 |
| Morrow, William V., Los Angeles, Cal. Bevel | 753,419 | Mar. 1 | 379 | 88 | 109 | 83 |
| Morse Chain Company. (See Morse, Everett F., assignor.) | | | | | | |
| Morse, Everett F., assignor to Morse Chain Company, Trumansburg, N. Y. Drive-chain | 757,762 | Apr. 19 | 3109 | 677<br>678 | 109 | 2089 |
| Morse, George W. (See Wakefield and Morse.) | | | | | | |
| Morse, Orville M., Jackson, Mich. Game-board | 755,576 | Mar. 22 | 4577 | 1018 | 109 | 1047 |
| Morse, Walter G., Waterbury, Conn. Means for adjusting lamps | 755,914 | Mar. 29 | 5285 | 1167 | 109 | 1223 |
| Morse, William M., Chicago, Ill., assignor of two-thirds to L. R. and E. R. Speare, Boston, Mass. Apparatus for making chip-soap or the like | 755,915 | Mar. 29 | 5287 | 1167<br>1168 | 109 | 1223 |
| Mortimer, William G., Toorak, Victoria, Australia. Appliance for cleaning tins, pots, and other vessels or utensils | 755,521 | Mar. 22 | 4482 | 996 | 109 | 1026 |
| Morton, Gavin, Darvel, assignor of one-half to W. Fairweather, Glasgow, Scotland. Apparatus for the manufacture of tufted fabrics | 754,883 | Mar. 15 | 3328 | 726<br>727<br>728 | 109 | 762 |
| Morton, Henry E. (See Morton, Matthew and H. E.) | | | | | | |
| Morton, Matthew and H. E., Muskegon Heights, Mich. Slotting-machine | 757,502 | Apr. 19 | 2713 | 592<br>593<br>594 | 109 | 1952 |
| Morton Trust Company, trustee. (See Baldwin, Henry S., assignor.) | | | | | | |
| Morton Trust Company, trustee. (See Fiske, Henry G., assignor.) | | | | | | |
| Morton, Wilson, deceased; S. C. Carroll, administrator, assignor to United States Sales Book Company, Chicago, Ill. Self-sealing manifolding writing-sheet | 755,159 | Mar. 22 | 3817 | 843<br>844 | 109 | 887 |
| Moscicki, Ignaz. (See Kowalski and Moscicki.) | | | | | | |
| Moscovitz, Caroline. (See Moscovitz, Maer and C.) | | | | | | |
| Moscovitz, Maer and C., Greatfalls, Mont. Artificial fuel | 756,682 | Apr. 5 | 934 | ..... | 109 | 1542 |
| Moser, Carlotta E., Erie, Pa. Finger-nail buffer | 754,481 | Mar. 15 | 2559 | 557 | 109 | 595 |
| Moser, Jacob A., assignor of one-half to P. J. Baumgartner, Berne, Ind. Tension-reel for cables | 756,683 | Apr. 5 | 935 | 204<br>205 | 109 | 1542 |
| Mosher, Asa H., Westfield, N. J., assignor to Hall Signal Company. Controlling-valve | 753,999 | Mar. 8 | 1560 | 349 | 109 | 360 |
| Moss, Albert A., Newark, N. J. Car-coupling | 758,268 | Apr. 26 | 4103 | 888 | 109 | 2276 |
| Mossberg, Oscar F., assignor to M. E. Johnson, executrix, Fitchburg, Mass. Hinge-pin for breakdown guns | 754,060 | Mar. 8 | 1709 | 380 | 109 | 392 |
| Mossberg, Oscar F., assignor to J. Stevens Arms & Tool Company, Chicopee Falls, Mass. Breech-loading firearm | 756,099 | Mar. 29 | 5517 | 1217 | 109 | 1273 |
| Mostiller, Harry C. (See Tynan and Mostiller.) | | | | | | |
| Motherwell, David M., Chicago, Ill., assignor to Whitman & Barnes Manufacturing Co., Akron, Ohio. Traveling carrier | 756,264 | Apr. 5 | 140 | 28, 29 | 109 | 1373 |
| Motherwell, David M., Chicago, Ill., assignor to Whitman & Barnes Manufacturing Co., Akron, Ohio. Automatic clutch for carriers | 756,265 | Apr. 5 | 144 | 29, 30 | 109 | 1374 |
| Mott, Guy L., Halifax, Canada. Puzzle | 753,420 | Mar. 1 | 380 | 89 | 109 | 83 |
| Mott, Mae E., New York, N. Y. Ink-distributer | 754,332 | Mar. 8 | 2179 | 483 | 109 | 492 |
| Moulton, Katherine R., Lynn, Mass. Desk-cover | 756,040 | Mar. 29 | 5519 | 1217 | 109 | 1273 |
| Mower, George A., London, England. Radiator | 753,156 | Mar. 8 | 1853 | 413 | 109 | 426 |
| Mowry, Albert L., St. John, Canada. Lock-nut | 753,421 | Mar. 1 | 381 | 89 | 109 | 83 |
| Moyer, Harvey A., Syracuse, N. Y. Dump-wagon | 754,228 | Mar. 8 | 1999 | 444 | 109 | 456 |
| Moylan, Alexander M., Century, Fla. Standard | 758,089 | Apr. 26 | 3754 | 816 | 109 | 2198 |
| Mudd, William R., Cincinnati, Ohio. Automatic cover for awnings | 758,016 | Apr. 19 | 3604 | 780 | 109 | 2149 |
| Mueller, Henry M., L. A., and J. A., White Lake, S. D. Windrower | 756,041 | Mar. 29 | 5521 | 1217 | 109 | 1273 |
| Mueller, John A. (See Mueller, Henry M., L. A., and J. A.) | | | | | | |
| Mueller, Ludwig A. (See Mueller, Henry M., L. A., and J. A.) | | | | | | |
| Mueller, Otto H., Berlin, Germany. Condenser | 758,090 | Apr. 26 | 3755 | 817 | 109 | 2199 |
| Mulberger, Henry. (See Willitz, Herman C., assignor.) | | | | | | |
| Mulconroy Company. (See Goodall, Howard W., assignor.) | | | | | | |
| Mulford, Harry K., Philadelphia, Pa. Vaccine-point | 758,597 | Apr. 26 | 4765 | 1026 | 109 | 2424 |
| Mulgrew, Felix B., *et al.* (See Hathaway, James F., assignor.) | | | | | | |
| Müller, Albert, New York, N. Y. Battery-stopper | 754,081 | Mar. 8 | 1710 | 381 | 109 | 392 |
| Müller, Eugen K., Zurich, Switzerland. Electromagnetic device | 754,681 | Mar. 15 | 2942 | 642 | 109 | 673 |
| Muller, Gustave, *et al.* (See Burdon, David P., assignor.) | | | | | | |
| Müller, Hermann, Barmen, Germany. Separable button | 755,522 | Mar. 22 | 4483 | 996 | 109 | 1026 |
| Müller-Jacobs, Armand, Richmond Hill, N. Y., assignor to Cosmos Chemical Company. Varnish | 756,975 | Apr. 12 | 1521 | ..... | 109 | 1681 |
| Müller-Jacobs, Armand, Richmond Hill, N. Y., assignor to Cosmos Chemical Company. Sizing | 757,948 | Apr. 19 | 3460 | ..... | 109 | 2117 |
| Mulvaney, John J., assignor of three-fourths to C. E. Babbitt, J. L. Brown, Cincinnati, and H. A. Sutton, Wyoming, Ohio. Machine for uniting the joints of sheet-metal pipes | 758,330 | Apr. 26 | 4250 | 913 | 109 | 2310 |
| Mulveny, John, Fall River, Mass. Fire-box for cooking-stoves | 754,482 | Mar. 15 | 2560 | 557 | 109 | 595 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Mulvey, John A., New York, N. Y. Lead-pencil | 754,333 | Mar. 8 | 2179 | 483 | 109 | 492 |
| Mumford, Joseph A., Roslyn, N. Y. Steam-boiler | 753,902 | Mar. 8 | 1373 | 310 | 109 | 317 |
| Mundt, Albert R., Chesterfield township, Macomb county, assignor of one-half to G. W. Tucker, Chesterfield, Mich. Beet-blocking machine | 754,682 | Mar. 15 | 3944 | 642 643 | 109 | 675 |
| Mundt, Edward H., *et al.* (See Krienitz, Alfred J., assignor.) | | | | | | |
| Munns, Charles K., Corning, Iowa. Electrotherapeutic device | 753,509 | Mar. 1 | 535 | 125 | 109 | 118 |
| Munro, Alexander, Stockport, England. Reservoir-pen or the like | 754,000 | Mar. 8 | 1502 | 349 | 109 | 361 |
| Munro, David L., Auburndale, Mass. Puzzle | 753,851 | Mar. 1 | 1236 | 277 | 109 | 905 |
| Munro, James H., New York, N. Y., assignor of one-half to J. M. Van Orden, Newark, N. J. Tile and tile-setting | 753,287 | Mar. 1 | 134 | 32 | 109 | 33 |
| Munro, James H., assignor of one-half to J. M. Van Orden, Newark, N. J. Roofing | 756,180 | Mar. 29 | 5760 | 1272 | 109 | 1325 |
| Munro, James H., assignor of one-half to J. M. Van Orden, Newark, N. J. Flashing | 756,684 | Apr. 5 | 936 | 205 | 109 | 1543 |
| Munro, John S., Memphis, Tenn. Feeding mechanism for cotton-seed linters | 757,137 | Apr. 12 | 1852 | 405 | 109 | 1754 |
| Munson, Alvin W., and A. S. Dornblaser, Hagerstown, Md. Carpet-winder | 756,132 | Mar. 29 | 5690 | 1255 | 109 | 1309 |
| Munson, Samuel R., assignor to Landers, Frary and Clark, New Britain, Conn. Spring-balance | 753,025 | Mar. 22 | 3591 | 788 | 109 | 896 |
| Muralo Company. (See Gould, John F., assignor.) | | | | | | |
| Murch, Maynard H., Jr., Cleveland, Ohio. Emergency car-seat | 757,334 | Apr. 12 | 2247 | 490 | 109 | 1837 |
| Murdick, Everett C., assignor to National Sweeper Company, Marion, Ind. Carpet-sweeper | 756,042 | Mar. 29 | 5523 | 1217 | 109 | 1274 |
| Murdock and Geb Company. (See Johnson and Geb, assignors.) | | | | | | |
| Murdock, George J., Newark, N. J. Gas-engine | 753,510 | Mar. 1 | 537 | 125 126 | 109 | 118 |
| Murdock, George J., Newark, N. J. Sparking device for gas-engines | 753,511 | Mar. 1 | 544 | 126 127 | 109 | 119 |
| Murphy, Edward E., Chelsea, Mass., assignor to Puffer Manufacturing Company. Water-heater | 757,563 | Apr. 19 | 2716 | 594 | 109 | 1952 |
| Murphy, James L. (See Tabor and Murphy.) | | | | | | |
| Murray, John J., assignor of one-half to D. D. Hobbs, Cleveland, Ohio. Explosive-engine | 757,215 | Apr. 12 | 1997 | 435 | 109 | 1785 |
| Murrell, Napoleon L., *et al.* (See Richardson, Wheeler, assignor.) | | | | | | |
| Mussinan, Oscar, New York, N. Y., assignor to Dennison Manufacturing Company. Coin-mailing card | 758,091 | Apr. 26 | 3757 | 817 | 109 | 2199 |
| Mustgrove, Charles H., Colorado Springs, Colo. Harness-rack | 754,483 | Mar. 15 | 2560 | 557 | 109 | 595 |
| Mutel, Marcel, Paris, France. Regulating device for engines | 754,001 | Mar. 8 | 1565 | 349 350 | 109 | 361 |
| Muzzy, William H., Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J. Cash-register | 753,513 | Mar. 1 | 549 | 127 128 129 | 109 | 120 |
| Muzzy, William H., Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J. Cash-register | 753,513 | Mar. 1 | 558 | 129 130 | 109 | 122 |
| Muzzy, William H., Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J., and Dayton, Ohio. Cash-register | 754,062 | Mar. 8 | 1711 | 381 382 | 109 | 393 |
| Myers, Charles A., *et al.* (See Gilmour and Lindsay, assignors.) | | | | | | |
| Myers, David M., New York, N. Y. Furnace for burning tan or like fuel | 754,933 | Mar. 15 | 3414 | 746 747 | 109 | 780 |
| Myers, Louis, Hartford, Conn., assignor to Underwood Typewriter Company, New York, N. Y. Type-bar bearing | 755,033 | Mar. 22 | 3604 | 791 | 109 | 899 |
| Myzatt, Otis A., New York, N. Y. Retort incandescent light | 755,687 | Mar. 29 | 4801 | 1069 | 109 | 1112 |
| Mylin, Amos H., Lancaster, Pa., and L. B. White, Jersey City, N. J., assignors to Caloric King Furnace Company, Brooklyn, N. Y. Furnace | 737,949 | Apr. 19 | 3461 | 749 750 | 109 | 2117 |
| Mylor, Benjamin, Gex, Ky. Seed-drill attachment | 755,523 | Mar. 22 | 4484 | 996 997 | 109 | 1027 |
| N. Lombard Improved Governor Company. (See Lombard, Nathaniel, assignor.) | | | | | | |
| Naef, Paul, New York, N. Y. Producing gas | 753,294 | Mar. 1 | 146 | 35 | 109 | 36 |
| Naef, Paul, New York, N. Y. Making gas | 753,295 | Mar. 1 | 149 | 35 | 109 | 36 |
| Naef, Paul, New York, N. Y. Apparatus for making gas | 753,296 | Mar. 1 | 152 | 35 | 109 | 36 |
| Naef, Paul, New York, N. Y. Apparatus for treating solids, such as ores, liquids, or gases | 756,371 | Apr. 5 | 153 | 32 | 109 | 1376 |
| Nagel, John P., Chicago, Ill. Lamp | 756,977 | Apr. 12 | 1594 | 335 | 109 | 1681 |
| Nairn, Michael B., Kirkcaldy, Scotland. Apparatus for the manufacture of mosaic linoleum floor-cloth or the like | 754,085 | Mar. 8 | 1720 | 383 384 | 109 | 395 |
| Napier, William D., Paisley, Scotland. Bunker, bin, or the like | 756,133 | Mar. 29 | 5601 | 1255 1256 | 109 | 1310 |
| National Automatic Tool Co. (See Nutting, Frederick J., assignor.) | | | | | | |
| National Battery Company. (See Lyndon, Lamar, assignor.) | | | | | | |
| National Cash Register Company. (See Carroll, Thomas, assignor.) | | | | | | |
| National Cash Register Company. (See Clark, William H., assignor.) | | | | | | |
| National Cash Register Company. (See Davey, William F., assignor.) | | | | | | |
| National Cash Register Company. (See Muzzy, William H., assignor.) | | | | | | |
| National Cash Register Company. (See Parkhurst, Edward B., assignor.) | | | | | | |
| National Drill and Manufacturing Company. (See Cameron, Arthur, assignor.) | | | | | | |
| National Drill and Manufacturing Company. (See Krohn, John, assignor.) | | | | | | |
| National Electric Company. (See Bulock, Charles O., assignor.) | | | | | | |
| National Electric Signaling Company. (See Fessenden, Reginald A., assignor.) | | | | | | |
| National Fibre Company. (See Allison, Walter H., assignor.) | | | | | | |
| National Hydrocarbon Car Company. (See Brown, William O., assignor.) | | | | | | |
| National Loom and Wire Company. (See Bond, Hiram A., assignor.) | | | | | | |
| National Machine Company. (See Hogan, James T., assignor.) | | | | | | |
| National Malleable Castings Company. (See Kneale, William C., assignor.) | | | | | | |
| National Malleable Castings Company. (See Stephenson, John W., assignor.) | | | | | | |
| National Malleable Castings Company. (See Tower, Clinton A., assignor.) | | | | | | |
| National Non-Refillable Bottle Company. (See Okey, George B., assignor.) | | | | | | |
| National Sweeper Company. (See Murdick, Everett C., assignor.) | | | | | | |
| National Ventilating Company. (See Jacobson, Samuel H., assignor.) | | | | | | |
| Natural Body Brace Company. (See Rash, Howard C., assignor.) | | | | | | |
| Nauck, Willy. (See Lienekampf and Nauck.) | | | | | | |
| Naylor, George W., Sr., Catskill, N. Y., and J. Doran, Jersey City, N. J. Election-booth | 756,398 | Apr. 5 | 416 | 86 | 109 | 1432 |
| Neahr, Jacob E., Melrose, Mass. Match-receptacle | 753,397 | Mar. 1 | 155 | 36 | 109 | 37 |
| Neal, Marshall M. (See White and Neal.) | | | | | | |
| Neeley, George S., St. Louis, Mo. Glass water-gage for steam-boilers | 756,134 | Mar. 29 | 5602 | 1256 | 109 | 1310 |
| Neely, Thomas W., Marshall, Ill. Electric steam and vapor generator | 758,094 | Apr. 26 | 3769 | 819 | 109 | 2203 |
| Neely, Thomas W., Marshall, Ill. Generating steam | 758,095 | Apr. 26 | 3772 | 819 | 109 | 2203 |
| Neer, Adam, St. Paris, Ohio. Corn-harvester | 754,491 | Mar. 15 | 2580 | 560 561 | 109 | 599 |
| Neff, John F. (See Nichols and Neff.) | | | | | | |
| Neffeler, Edward B., Aberdeen, S. D. Hip-adjuster | 757,140 | Apr. 12 | 1855 | 406 | 109 | 1755 |
| Nefzger, Christian C., Lima, Iowa. Combination game-counter | 754,003 | Mar. 8 | 1569 | 351 | 109 | 362 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Nehls, August T. F., Südende, Germany. Pneumatic hand-hammer | 755,381 | Mar. 22 | 4243 | 938 | 109 | 976 |
| Nehring, Ulrich, assignor to Scientific Lens Co., New York, N. Y. Lens | 756,881 | Apr. 12 | 1323 | 295 | 109 | 1641 |
| Nehse, Friedrich H. E. C., Dusseldorf, Germany. Furnace-grate | 753,298 | Mar. 1 | 156 | 36 | 109 | 37 |
| Neidenbach, Franz, assignor of one-half to K. Zellner, Flume, Austria-Hungary. Floor or like brush | 757,831 | Apr. 19 | 3242 | 708 | 109 | 2068 |
| Neidl, Frank, Los Angeles, Cal. Combination hanging basket and pot | 754,683 | Mar. 15 | 2947 | 643 | 109 | 676 |
| Neil, Pryor L., Boise, Idaho. Mail-bag for railway service | 756,135 | Mar. 29 | 5693 | 1256 | 109 | 1310 |
| Nein, Milford H., Mount Penn, Pa. Hat-napping machine | 753,804 | Mar. 1 | 1167 | 263 | 109 | 251 |
| Nelson, Albert H., Lewiston, Me. Lamp-wick | 753,299 | Mar. 1 | 158 | 36 | 109 | 37 |
| Nelson, Anton R. (See McKinsey and Nelson.) | | | | | | |
| Nelson, August G. (See Brickell, Eli F., assignor.) | | | | | | |
| Nelson, Charles R., Chicago, Ill. Creasing-machine | 756,882 | Apr. 12 | 1326 | 295 | 109 | 1641 |
| Nelson, Ernest B., Burchinal, Iowa. Conveyer | 755,526 | Mar. 22 | 4489 | 997 998 | 109 | 1028 |
| Nelson, Frank. (See Mitchell, Thomas J., assignor.) | | | | | | |
| Nelson, George A., Providence, R. I. Gas-detector | 754,506 | Mar. 15 | 2776 | 605 | 109 | 639 |
| Nelson, Nels O., Chicago, Ill. Shunt-controller for electric machines | 756,045 | Mar. 29 | 5525 | 1218 | 109 | 1275 |
| Nelson, William P., St. Louis, Mo. Shaving-paper holder | 758,096 | Apr. 26 | 3774 | 819 | 109 | 2204 |
| Nelthorp, Frank W., *et al.* (See Goundry, John B., assignor.) | | | | | | |
| Nesbitt, William, Toronto, Canada. Casing-turner | 754,507 | Mar. 15 | 2777 | 605 | 109 | 640 |
| Nettl, Anton, Prague, Austria-Hungary. Making adhesives | 757,337 | Apr. 12 | 2254 | ..... | 109 | 1839 |
| Nettleton, George E., assignor of one-half to E. Hewett, New Haven, Conn. Clinical-thermometer holder | 754,231 | Mar. 8 | 2004 | 446 | 109 | 457 |
| Neuberger, Ignatz, Saaz, Austria-Hungary Tobacco-pipe | 755,527 | Mar. 22 | 4491 | 998 | 109 | 1028 |
| Neuberger, Louis, assignor to Connecticut Web Company, Bridgeport, Conn. Suspender-buckle | 753,424 | Mar. 1 | 390 | 90 | 109 | 85 |
| Neumann, Hugo A. J., assignor to Actien-Gesellschaft Görlitzer Maschinenbau-Anstalt und Eisengiesserei, Görlitz, Germany. Piston-rod | 754,798 | Mar. 15 | 3162 | 689 | 109 | 725 |
| New England Electric Manufacturing Company. (See Proctor and Daley, assignors.) | | | | | | |
| New Haven Clock Company. (See Porter, Wilson E., assignor.) | | | | | | |
| New Jersey Wire Cloth Company. (See Himmelwright, Abraham L. A., assignor.) | | | | | | |
| New Jersey Zinc Company. (See Stone, George C., assignor.) | | | | | | |
| New York Metal Specialty Manufacturing Co. (See Hoffmann, Alfred W., assignor.) | | | | | | |
| Newcomb, Abner S. (See Harbour, George W., assignor.) | | | | | | |
| Newell, Arthur T. (See Johnson, Savage, and Newell.) | | | | | | |
| Newell, Edgar A., *et al.* (See Delaney, Michael G., assignor.) | | | | | | |
| Newman, Abraham A., Chicago, Ill. Marking watchmen's-clock dials | 753,615 | Mar. 1 | 756 | 168 | 109 | 164 |
| Newton, Charles C., assignor to Newton Machine Tool Works, Incorporated, Philadelphia, Pa. Insertible saw-tooth for metal-saws | 757,958 | Apr. 19 | 3472 | 751 | 109 | 2120 |
| Newton, Edward S., Fond du Lac, Wis. Means for adjusting engine-valves | 757,217 | Apr. 12 | 2000 | 435 | 109 | 1786 |
| Newton, Lewis W. (See Pierce and Newton.) | | | | | | |
| Newton Machine Tool Works. (See Newton, Charles C., assignor.) | | | | | | |
| Newton, William N., Barnesville, Ga. Drill | 755,528 | Mar. 22 | 4492 | 998 | 109 | 1028 |
| Nichol, John C., Montreal, Canada. Boat | 757,832 | Apr. 19 | 3243 | 704 | 109 | 2069 |
| Nichols, Andrew P., Tacoma, Wash. Track-gage | 758,461 | Apr. 26 | 4493 | 966 | 109 | 2363 |
| Nichols, Andrew P., Seattle, Wash. Track-claw | 758,462 | Apr. 26 | 4495 | 966 | 109 | 2364 |
| Nichols, Charles H., St. Louis, Mo. Flash-light apparatus | 756,399 | Apr. 5 | 419 | 87 | 109 | 1433 |
| Nichols, Charles W. (See Marsh and Nichols.) | | | | | | |
| Nichols, Charles W. (See Traver and Nichols.) | | | | | | |
| Nichols, Eben L., Cincinnati, Ohio. Street-indicating mechanism for vehicles | 756,136 | Mar. 29 | 5694 | 1256 1257 | 109 | 1310 |
| Nichols, Henry G., Irvington, N. Y. Traverse quadrant | 754,086 | Mar. 8 | 1725 | 385 | 109 | 396 |
| Nichols, Jesse W., assignor to Armour & Company, Chicago, Ill. Pail | 755,234 | Mar. 22 | 3955 | 876 | 109 | 914 |
| Nichols, Josiah T., Portsmouth, Va. Butcher's chopping-block | 757,488 | Apr. 19 | 2556 | 561 | 109 | 1917 |
| Nichols and Shepard Company. (See Bradley, William E., assignor.) | | | | | | |
| Nichols, William A., Sr., and J. F. Neff, Belmont, Ohio. Railway-tie | 755,692 | Mar. 29 | 4825 | 1071 | 109 | 1120 |
| Nichols, William A., and J. F. Neff, Belmont, Ohio. Railway-tie | 758,463 | Apr. 26 | 4497 | 966 | 109 | 2364 |
| Nicholson, Alonzo L., Rockwell City, Iowa. Wrench and clamp combined | 755,578 | Mar. 22 | 4583 | 1019 | 109 | 1048 |
| Nicholson, James H., assignor to Freeman, Dobbin Fireproofing Company, New York, N. Y. Wall-furring | 757,489 | Apr. 19 | 2557 | 561 | 109 | 1917 |
| Nicholson, Thomas, Chicago, Ill. Conveyer or chute for infilling material | 753,616 | Mar. 1 | 757 | 169 | 109 | 164 |
| Nickels, Matthew, assignor of one-half to F. P. Wagner, Philadelphia, Pa. Burglar and fire alarm | 757,490 | Apr. 19 | 2558 | 562 | 109 | 1917 |
| Nicodemus, Henry B., assignor to G. K. Benner, Allegheny, Pa. Gas-engine attachment for steam-engines | 754,385 | Mar. 8 | 2328 | 509 | 109 | 525 |
| Niederlander, Nicholas F., St. Louis, Mo., assignor to Westinghouse Automatic Air & Steam Coupler Company, East St. Louis, Ill. Operating device for train-pipe cocks | 755,918 | Mar. 29 | 5294 | 1169 | 109 | 1224 |
| Niehoff, Hermann A., Carlyle, Ill. Register | 754,084 | Mar. 15 | 2948 | 643 | 109 | 676 |
| Nielsen, Herman, assignor to Reciprocating Rotary Engine Company, New York, N. Y. Rotary engine | 755,161 | Mar. 22 | 3821 | 845 | 109 | 888 |
| Nielsen, Jens, Cedarfalls, Iowa. Rotary motor | 758,214 | Apr. 26 | 3991 | 866 867 | 109 | 2252 |
| Nighbert, Thomas, Elrod, Ind. Wire-reeling machine | 754,336 | Mar. 8 | 2186 | 486 | 109 | 495 |
| Nikiforoff, Alexander, Moscow, Russia. Manufacture of the benzols and their homologues | 755,309 | Mar. 22 | 4096 | 905 | 109 | 943 |
| Niles-Bement-Pond Company. (See Greenleaf and Kennedy, assignors.) | | | | | | |
| Niles-Bement-Pond Company. (See O'Brien, Archibald M., assignor.) | | | | | | |
| Niles, Glenn H., New York, N. Y. Mechanical movement | 755,919 | Mar. 29 | 5295 | 1169 | 109 | 1225 |
| Nilson, Eric, *et al.* (See Alexander, Jesse, assignor.) | | | | | | |
| Niloré, Léon, Château-Renault, France. Protector for pneumatic tires | 755,310 | Mar. 22 | 4102 | 906 | 109 | 943 |
| Nirdlinger, Clarence D., St. Louis, Mo. Vehicle-tire filler | 757,631 | Apr. 19 | 2864 | ..... | 109 | 1966 |
| Nirdlinger, Max, Philadelphia, Pa. Apparatus for the manufacture of vehicle-tires | 753,300 | Mar. 1 | 158 | 36 | 109 | 37 |
| Nivois, Victor. (See Petrillo, Joseph, assignor.) | | | | | | |
| Nixon, Moses C., Fort Wayne, Ind. Friction-clutch | 758,272 | Apr. 26 | 4113 | 890 | 109 | 2278 |
| Nixon, Moses C., Fort Wayne, Ind. Grinding-machine for grinding harvester-knives or other tools | 758,558 | Apr. 26 | 4682 | 1010 | 109 | 2405 |
| Noakes, Edward W. and W. H., Lagrange, Ill. Dry ore-separator | 758,097 | Apr. 26 | 3775 | 820 | 109 | 2204 |
| Noakes, William H. (See Noakes, Edward W. and W. H.) | | | | | | |
| Noble, Donald, assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Feeding mechanism for sewing-machines | 754,984 | Mar. 15 | 3416 | 747 748 | 109 | 780 |
| Noble, Richard D., Sausalito, assignor of one-half to T. L. Hill, San Francisco, Cal. Music-stand | 757,408 | Apr. 12 | 2393 | 520 | 109 | 1867 |
| Noble, Saxton W. A., Westminster, assignor to W. G. Armstrong, Whitworth and Company, Limited, Newcastle-upon-Tyne, England. Ammunition-hoist | 756,272 | Apr. 5 | 157 | 32 | 109 | 1376 |
| Noel, Sylvester D., Indianapolis, Ind. Metal boat | 753,425 | Mar. 1 | 391 | 91 | 109 | 86 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Noey, John, Braddock, and T. A. McGuiggan, Brinton, Pa. Apparatus for feeding neutralizing agents to steam-boilers | 757,426 | Apr. 12 | 2429 | 529 | 109 | 1875 |
| Nolan, Francis A., St. Paul, Minn. Trolley-replacer | 753,617 | Mar. 1 | 760 | 169 | 109 | 165 |
| Nolan, John R., *et al.* (See Anthony, Mark O., assignor.) | | | | | | |
| Nolan, William F., Bessemer, Ala. Door-stop | 757,051 | Apr. 12 | 1681 | 364 | 109 | 1716 |
| Noland, Charles T. (See Flannigain, Edward, assignor.) | | | | | | |
| Nolde, Jacob. (See Leightham, Joseph, assignor.) | | | | | | |
| Nolting, Philipp, Bielefeld, Germany. Ambulant watering apparatus | 757,338 | Apr. 12 | 2255 | 491 | 109 | 1880 |
| Nonpareil Cork Manufacturing Company. (See Judson, Horace H., assignor.) | | | | | | |
| Nordenskjöld, Anton F., assignor to Pittsburg Valve, Foundry and Construction Company, Pittsburg, Pa. Mechanism for flanging the ends of tubes | 758,145 | Apr. 26 | 3864 | 838<br>839 | 109 | 2225 |
| Nordling, Walter A., Streator, Ill. Combined shade-roller and curtain-pole holder | 758,098 | Apr. 26 | 3778 | 821 | 109 | 2205 |
| Nordlinger, Charlton Fire Works Company. (See Lispenard and Truyter, assignors.) | | | | | | |
| Nordt, John C., West Hoboken, N. J. Safety-catch for breastpins | 754,794 | Mar. 15 | 3163 | 689 | 109 | 725 |
| Norquist, John H., Moline, Ill., assignor to Williams, White & Company. Power-hammer | 753,618 | Mar. 1 | 762 | 169 | 109 | 165 |
| Norrington, Henry H. (See Petroskey, John H., assignor.) | | | | | | |
| Norris, Charles P., Chambersburg, Pa., assignor of one-third to G. L. Snider, Washington, D. C. Hernia-truss | 754,386 | Mar. 8 | 2380 | 509 | 109 | 525 |
| Norris, John B. (See Ellicott and Norris.) | | | | | | |
| Norris, Joseph R. (See George and Norris.) | | | | | | |
| North, Charles H., assignor to North Electric Company, Cleveland, Ohio. Ringing and listening key | 754,935 | Mar. 15 | 3420 | 748 | 109 | 781 |
| North Electric Company. (See North, Charles H., assignor.) | | | | | | |
| Northall, William H., Elwood, Ind. Electric headlight | 757,564 | Apr. 19 | 2718 | 504<br>505 | 109 | 1953 |
| Northrop, Walter, Toronto, Canada, assignor to Howson & Howson, trustees, Philadelphia, Pa. Automatic weighing apparatus | 755,084 | Mar. 22 | 3605 | 791 | 109 | 839 |
| Northrup, Herbert E., *et al.* (See Palmer, Stephen, assignor.) | | | | | | |
| Norton, Edwin, New York, N. Y. Bottle-cap | 758,273 | Apr. 26 | 4115 | 900 | 109 | 2279 |
| Norton, George M. (See Brown, George W., assignor.) | | | | | | |
| Norton, Robert P., St. Thomas, N. D. Can-opener | 755,789 | Mar. 29 | 5035 | 1118 | 109 | 1164 |
| Norwood, George Winthrop, assignor, by mesne assignments, to himself, and J. S. Richardson, Boston, Mass. Strip-delivering apparatus | 757,565 | Apr. 19 | 2721 | 595 | 109 | 1954 |
| Noseworthy, Jonathan, St. Johns, Newfoundland. Safety-fastener for envelops or other containers | 758,370 | Apr. 26 | 4337 | 981 | 109 | 2327 |
| Nott Fire Engine Company. (See Penney, Herbert E., assignor.) | | | | | | |
| Novák, Eugen, Szabadka, assignor of one-half to E. Horváth, Budapest, Austria-Hungary. Combined knuckle-duster and revolver | 756,182 | Mar. 29 | 5763 | 1272 | 109 | 1325 |
| Novotny, Frank, St. Paul, Minn. Shell-ejector mechanism for guns | 754,508 | Mar. 15 | 2778 | 605<br>606 | 109 | 640 |
| Novotny, Frank, St. Paul, Minn. Gun | 754,509 | Mar. 15 | 2781 | 606 | 109 | 641 |
| Nowels, David C., assignor of one-half to J. F. Lavender, Rockwell City, Iowa. Lacing-string fastener | 756,690 | Apr. 5 | 948 | 209 | 109 | 1545 |
| Noyer, Joseph N., Gould City, Wash. Wrench | 757,764 | Apr. 19 | 3113 | 678<br>679 | 109 | 2040 |
| Noyes, Orlando S., Philadelphia, Pa. Water-motor | 755,790 | Mar. 29 | 5036 | 1119 | 109 | 1164 |
| Nutting, Frederick J., assignor to National Automatic Tool Co., Dayton, Ohio. Automatic multiple drilling-machine | 753,905 | Mar. 8 | 1380 | 311<br>312<br>313 | 109 | 318 |
| Nyce, John M., Easton, Pa. Receptacle of the ladle type | 753,728 | Mar. 1 | 986 | 223 | 109 | 213 |
| Nye, Jason J., Brookfield, Vt. Telephone call attachment | 756,188 | Mar. 29 | 5764 | 1273 | 109 | 1325 |
| O'Brien, Archibald M., Philadelphia, Pa., assignor to Niles-Bement-Pond Company, Jersey City, N. J. Fluid-press | 755,085 | Mar. 22 | 3609 | 792 | 109 | 840 |
| O'Brien, Arthur, assignor to A. H. Rugg and T. G. McCulloh, Chicago, Ill. Automatic siphon-valve | 755,086 | Mar. 22 | 3610 | 792 | 109 | 841 |
| O'Connell, Charles C. (See Coombs and O'Connell.) | | | | | | |
| O'Connor, Walter W., East Pittsburg, Pa. Antifriction-bearing | 753,619 | Mar. 1 | 764 | 170 | 109 | 166 |
| O'Donnell, Hugh, Pittsburg, and W. C. South, Berwyn, Pa. Camera | 755,295 | Mar. 22 | 3956 | 876 | 109 | 914 |
| O'Donnell, Martin J. (See Leick and O'Donnell.) | | | | | | |
| O'Kane, William A., Leavenworth, Kans. Combination bag holder or rack and printing device | 755,698 | Mar. 29 | 4896 | 1072 | 109 | 1120 |
| O'Keefe, William H., Lockport, N. Y. Combined table and desk | 756,883 | Apr. 12 | 1327 | 296 | 109 | 1642 |
| O'Loughlin, James, *et al.* (See Sharp, Harry E., assignor.) | | | | | | |
| O'Neall, James M., Dallas, Tex., assignor to British American Power Company. Apparatus for refining crude petroleum | 754,667 | Mar. 15 | 2953 | 644 | 109 | 677 |
| O'Neill, Franklin P., Boston, Mass. Mail-carrier | 754,795 | Mar. 15 | 3165 | 689 | 109 | 725 |
| O'Neill, John W., Chicago, Ill. Surgical instrument for hemorrhoids | 755,921 | Mar. 29 | 5298 | 1169 | 109 | 1225 |
| O'Neill, Murray. (See Moore and O'Neill.) | | | | | | |
| O'Shaughnessy, Thomas, San Jose, Cal. Latch | 755,923 | Mar. 29 | 5303 | 1171 | 109 | 1227 |
| O'Shaughnessy, Thomas, San Jose, Cal. Wrench attachment | 755,924 | Mar. 29 | 5305 | 1171 | 109 | 1227 |
| Oakes, Oliver E. (See Lane and Oakes.) | | | | | | |
| Oakley, Jesse R., Braddock, Pa. Metal-tongs | 757,339 | Apr. 12 | 2256 | 491<br>492 | 109 | 1839 |
| Oates, George P., Springfield, Ohio, assignor to American Seeding Machine Company, Jersey City, N. J. Seeding attachment for corn-planters | 753,729 | Mar. 1 | 987 | 223<br>224 | 109 | 213 |
| Oberdorfer, Fidel, Heidenheim-on-the-Brenz, Germany. Mustache-band | 753,906 | Mar. 8 | 1388 | 313 | 109 | 320 |
| Oberlaender, Gustav, New York, N. Y. Self-igniting burner | 757,218 | Apr. 12 | 2001 | 435 | 109 | 1786 |
| Oberlaender, Gustav, New York, N. Y. Igniting attachment for burners | 757,219 | Apr. 12 | 2003 | 436 | 109 | 1787 |
| Obermeir, Wolfgong, Lostlake, Wis. Automatic dropper | 753,907 | Mar. 8 | 1388 | 313 | 109 | 320 |
| Obiols, Frank, assignor of one-half to J. D. Vargas, Winnemucca, Nev. Lock-nut | 753,301 | Mar. 1 | 161 | 37 | 109 | 38 |
| Obry, Ludwig, Triest, Austria-Hungary. Automatic firing device for ordnance | 754,886 | Mar. 15 | 3336 | 729 | 109 | 763 |
| Ochiltree, John M. (See Ihrer, Alexander, Barr, and Ochiltree.) | | | | | | |
| Oelkers, Henry. (See Smith, Carpenter, and Weidknecht, assignors.) | | | | | | |
| Oettinger, Adolph J. (See White, James H., assignor.) | | | | | | |
| Offermains, John J., *et al.* (See Wehrle, Joseph, assignor.) | | | | | | |
| Ogden, George W., Prosperity, W. Va. Sash-balance | 753,908 | Mar. 8 | 1389 | 313 | 109 | 320 |
| Ogle, Mary L., Covington, Ky. Mail-box | 753,202 | Mar. 1 | 102 | 37 | 109 | 38 |
| Oglesby, William T., Keokuk, Iowa. Cream-separator | 756,273 | Apr. 5 | 158 | 32 | 109 | 1377 |
| Ohlson, Olof, assignor to American Waltham Watch Company, Waltham, Mass. Ornamentation of exposed winding-wheels of watch-movements | 754,600 | Mar. 15 | 2782 | 606 | 109 | 641 |
| Ohmer Fare Register Co. (See Tyler, Hiram, assignor.) | | | | | | |
| Ohnstrand, Enoch, assignor to Art Metal Construction Company, Jamestown, N. Y. Door or like frame | 754,402 | Mar. 15 | 2586 | 561 | 109 | 601 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Ohnstrand, Enoch, assignor to Art Metal Construction Company, Jamestown, N. Y. Metallic column | 758,331 | Apr. 26 | 4252 | 913 | 109 | 2310 |
| Oil City Gas Engine Starter Company. (See Mitchell and Lewis, assignors.) | | | | | | |
| Okey, George B., assignor to National Non-Refillable Bottle Company, Indianapolis, Ind. Stopper for preventing refilling bottles | 754,685 | Mar. 15 | 2950 | 644 | 109 | 677 |
| Okey, George B., assignor to Okey Rural Mail Box Company, Indianapolis, Ind. Mail-box carrier | 754,686 | Mar. 15 | 2951 | 644 | 109 | 677 |
| Okey Rural Mail Box Company. (See Okey, George B., assignor.) | | | | | | |
| Olaison, John K. (See Johnson and Olaison.) | | | | | | |
| Olin, Clarence G., Windsor, Ohio. Bridle-bit | 757,954 | Apr. 19 | 3473 | 751 | 109 | 2120 |
| Olin, Franklin W., Alton, Ill. Shell-head-feeding apparatus | 755,920 | Mar. 29 | 5297 | 1169 | 109 | 1225 |
| Oliver, Charles, Woolwich, England. Device for testing electric currents | 755,382 | Mar. 22 | 4246 | 938 | 109 | 977 |
| Oliver Chilled Plow Works. (See Davis, Calvin R., assignor.) | | | | | | |
| Oliver Mill Company. (See Thame, James, assignor.) | | | | | | |
| Olmstead, William H. (See Coney and Olmstead.) | | | | | | |
| Olmstead, William H., and J. D. Coney, Detroit, Mich. Garment-hanger | 756,978 | Apr. 12 | 1526 | 335 | 109 | 1682 |
| Olson, Gustav A., Albert Lea, Minn. Shock-compressor | 754,004 | Mar. 8 | 1570 | 351 | 109 | 362 |
| Olson, Hans O., Two Harbors, assignor of one-half to W. E. Lawrence and H. H. McNamara, Duluth, Minn. Bolt-heading machine | 757,409 | Apr. 12 | 2394 | 520<br>521 | 109 | 1867 |
| Olson, John A., Minneapolis, Minn., assignor to Temperature Annunciator Company. Fire-alarm or temperature-annunciator | 754,005 | Mar. 8 | 1572 | 351 | 109 | 363 |
| Olson, Peter O., South Chicago, Ill. Transfer-spout for grain, ore, or the like | 756,519 | Apr. 5 | 644 | 139 | 109 | 1477 |
| Olsson, Maria, Rock Island, Ill. Combination collar-fastener | 755,162 | Mar. 22 | 3823 | 845 | 109 | 888 |
| Onstott, James L., *et al.* (See Sharpneck, William S., assignor.) | | | | | | |
| Oothoudt, Howard H., and W. F. Stahl, Toledo, Ohio. Telephone-support | 757,340 | Apr. 12 | 2257 | 492 | 109 | 1840 |
| Opalla, Arthur, Chicago, Ill. Loose-leaf binder | 753,805 | Mar. 1 | 1169 | 268 | 109 | 251 |
| Oppenheim, Paul, New York, N. Y. Gate | 758,559 | Apr. 26 | 4685 | 1010 | 109 | 2406 |
| Ordway, Charles, New York, N. Y. Vacuum evaporating apparatus | 755,529 | Mar. 22 | 4493 | 998<br>999 | 109 | 1028 |
| Orleans, Peter, Dusseldorf, Germany. Garment-fastening | 755,087 | Mar. 22 | 3612 | 792 | 109 | 841 |
| Ormond, Thomas F., Huntsville, Ala. Baling-press | 754,498 | Mar. 15 | 2587 | 561<br>562 | 109 | 601 |
| Orr, Homer L., Greeley, Colo. Mineral-separator | 758,464 | Apr. 26 | 4498 | 966<br>967 | 109 | 2364 |
| Orr, John. (See Gottshalk, John B., assignor.) | | | | | | |
| Orth, Peter A., Menno, S. D. Tongs or clamp | 753,620 | Mar. 1 | 764 | 170 | 109 | 166 |
| Ortwein, Ernst, Ludwigshafen-on-the-Rhine, Germany. Horizontal water-wheel | 758,465 | Apr. 26 | 4500 | 967 | 109 | 2365 |
| Osborn, Francis C., *et al.* (See Vaughn, Wilbur J., assignor.) | | | | | | |
| Osborn, William H., Louisville, Ky. Water-closet | 755,922 | Mar. 29 | 5300 | 1170 | 109 | 1226 |
| Osborne, John W., Winchester, Ill. Insulator | 757,765 | Apr. 19 | 3115 | 679 | 109 | 2040 |
| Osburn, Emory W., Rochester, N. Y. Mixing and kneading machine | 753,621 | Mar. 1 | 766 | 170 | 109 | 166 |
| Oscar Lear Automobile Company. (See Frayer, Lee A., assignor.) | | | | | | |
| Osten, James H., White City, Kans., assignor of two-thirds to R. G. Osten and J. Walker. Road grading and scraping machine | 754,087 | Mar. 8 | 1729 | 385 | 109 | 396 |
| Osten, Robert G., *et al.* (See Osten, James H., assignor.) | | | | | | |
| Osterle, Fredrick, Pittsburg, Pa. Sewer-trap | 756,046 | Mar. 29 | 5526 | 1218 | 109 | 1275 |
| Ostrander, Joseph H., Ticonderoga, N. Y. Centrifugal machine | 754,796 | Mar. 15 | 3166 | 689<br>690 | 109 | 725 |
| Ostrander, Joseph H., Ticonderoga, N. Y. Felt-spreader | 754,797 | Mar. 15 | 3167 | 690 | 109 | 726 |
| Otis Elevator Company. (See Baldwin, Cyrus W., assignor.) | | | | | | |
| Otis Elevator Company. (See Bollman, George W., assignor.) | | | | | | |
| Otis Elevator Company. (See Ihlder, John D., assignor.) | | | | | | |
| Otis Elevator Company. (See Sundh, August, assignor.) | | | | | | |
| Ott, Annie M., Denver, Colo. Skirt-supporter | 757,672 | Apr. 19 | 2942 | 638 | 109 | 2003 |
| Ott, Frederick, Woonsocket, R. I. Warping-machine | 757,491 | Apr. 19 | 2560 | 562 | 109 | 1918 |
| Ott, George J., *et al.* (See Brightwell, Amazon W., assignor.) | | | | | | |
| Otto, August F., Philadelphia, Pa. Dumping-wagon | 756,400 | Apr. 5 | 421 | 87 | 109 | 1433 |
| Oullié, Adrien, assignor to himself and I. Lambert, Paris, France. Non-refillable bottle | 757,955 | Apr. 19 | 3473 | 751<br>752 | 109 | 2121 |
| Ousey, Louisa, South Wimbledon, England. Hair-pin | 756,691 | Apr. 5 | 949 | 209 | 109 | 1545 |
| Owen, Boyd M., Wilkesbarre, Pa. Invalid rocking-chair | 754,088 | Mar. 8 | 1732 | 386 | 109 | 397 |
| Owen, Oscar L., assignor to Whitin Machine Works, Incorporated, Whitinsville, Mass. Shedding mechanism for looms | 757,141 | Apr. 12 | 1856 | 406 | 109 | 1755 |
| Owen, William B., *et al.* (See Powell, William G., assignor.) | | | | | | |
| Owen, Willis H., Catawba Island, Ohio. Spraying-spar | 758,730 | Mar. 1 | 989 | 224 | 109 | 213 |
| Owens, Moses. (See Allendorfer and Owens.) | | | | | | |
| Ozias, Orange O., Dayton, Ohio. Spring-balance scale | 756,274 | Apr. 5 | 159 | 33 | 109 | 1377 |
| Ozon Maatschappy, Systeem A. Vosmaer. (See Vosmaer and Lebret, assignors.) | | | | | | |
| P. Reilly & Son. (See Pell, Charles H., assignor.) | | | | | | |
| P. & F. Corbin. (See Arens, August, assignor.) | | | | | | |
| P. & F. Corbin. (See Arens and Teich, assignors.) | | | | | | |
| Pace, Franklin G., Clarinda, Iowa. Unloading device | 758,274 | Apr. 26 | 4117 | 890<br>891 | 109 | 2270 |
| Pacific Metal Works. (See Lotz, Augustus, assignor.) | | | | | | |
| Pack, John W., Berkeley, Cal. Blast-furnace | 754,337 | Mar. 8 | 2188 | 486 | 109 | 495 |
| Packer, Charles L., Wilton Junction, Iowa. Wire-reeling apparatus | 754,006 | Mar. 8 | 1574 | 351 | 109 | 363 |
| Padgett, Benjamin F., Laurel, Miss. Lumber-wagon | 754,601 | Mar. 15 | 2783 | 607 | 109 | 641 |
| Page, Calvin S., Des Moines, Iowa. Washing-machine | 755,579 | Mar. 22 | 4584 | 1019 | 109 | 1049 |
| Page, Frank W. (See Partridge, Allen R., assignor.) | | | | | | |
| Page, Henry J., *et al.* (See Waters, Frank J., assignor.) | | | | | | |
| Page, John W., Chicago, Ill. Excavating-shovel | 758,380 | Apr. 26 | 4339 | 981 | 109 | 2328 |
| Page, William B., Dixon, Ill. Machine for washing vessels or receptacles | 754,494 | Mar. 15 | 2590 | 562 | 109 | 601 |
| Page, William H., Burlington, N. J. Cuff-holder | 755,888 | Mar. 22 | 4248 | 938 | 109 | 977 |
| Pain, Robert W., assignor to Aeolian Company, New York, N. Y. Means for regulating the expression of mechanical musical instruments | 754,886 | Mar. 15 | 3337 | 729<br>730 | 109 | 763 |
| Paine, Robert T., Union, N. J. Sculptor's copying-machine | 757,833 | Apr. 19 | 3244 | 704 | 109 | 2069 |
| Painter, Simeon R., Terre Haute, Ind. Valve and valve-seat | 755,925 | Mar. 29 | 5305 | 1171 | 109 | 1227 |
| Paley, George, Preston, England. Ring-spinning apparatus | 758,275 | Apr. 26 | 4119 | 891 | 109 | 2280 |
| Palmer, Albert E., Norvell, Mich. Clamping device for glue-presses | 755,384 | Mar. 22 | 4249 | 938<br>939 | 109 | 978 |
| Palmer, Charles M., New London, N. C. Wood-distillation apparatus | 754,232 | Mar. 8 | 2005 | 446 | 109 | 457 |
| Palmer, Charles W., St. Louis, Mo. Mail-box | 755,088 | Mar. 22 | 3613 | 792 | 109 | 841 |
| Palmer, Edward T., assignor to G. C. Holden, Philadelphia, Pa. Talking-machine | 758,466 | Apr. 26 | 4501 | 967 | 109 | 2365 |
| Palmer, Fremont D., Norwich, Conn. Hinged support for window-sash | 755,311 | Mar. 22 | 4108 | 906 | 109 | 944 |
| Palmer, George L., Washington, D. C. Tabulating attachment for type-writers or analogous machines | 755,926 | Mar. 29 | 5307 | 1171 | 109 | 1227 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Palmer, Harry A., Erie, Pa. Vehicle-wheel tire | 753,426 | Mar. 1 | 302 | 91 | 100 | 86 |
| Palmer, Herbert R., assignor of one-half to E. Fowler, Cleveland, Ohio. Explosive-engine | 757,632 | Apr. 19 | 2965 | 624 | 109 | 1986 |
| Palmer, Isaac E., Middletown, Conn. Hammock | 756,380 | Apr. 5 | 646 | 139 | 109 | 1478 |
| Palmer, Phil H. (See Millard and Palmer.) | | | | | | |
| Palmer, Philip C., Kansas City, Mo. Frictional locking-hinge | 757,492 | Apr. 19 | 2562 | 562 | 109 | 1918 |
| Palmer, Richard P., Bondhill, assignor to W. H. Fisher, Cincinnati, Ohio. Folding tripod | 757,766 | Apr. 19 | 3115 | 679 | 109 | 2040 |
| Palmer, Stephen, assignor to M. M. Waterman, J. K. P. Pine, J. J. Child, H. E. Northrup, and G. W. Daw, Troy, N. Y. Flexible tube | 754,936 | Mar. 15 | 3422 | 748 | 109 | 782 |
| Palmer, William, Jr., Rincon, N. Mex. Ter. Relay-magnet | 757,341 | Apr. 12 | 2258 | 492 | 109 | 1840 |
| Pancoast, Richard M., Camden, N. J. Fastening device | 758,332 | Apr. 26 | 4253 | 914 | 109 | 2310 |
| Pannepacker, Abraham C., Philadelphia, assignor of two-thirds to H. B. and H. W. Amerling, Germantown, Pa. Coal-wagon | 753,806 | Mar. 1 | 1172 | 263 264 | 109 | 252 |
| Pappenhagen, Charles L., assignor to B. L. Singley, Meadville, Pa. Stereoscope | 756,692 | Apr. 5 | 931 | 209 | 109 | 1545 |
| Pappenhagen, Charles L., assignor to B. L. Singley, Meadville, Pa. Stereoscope | 757,052 | Apr. 12 | 1682 | 365 | 109 | 1716 |
| Paradice, Frank H., Denver, Colo. Hose connection | 758,099 | Apr. 26 | 3779 | 821 | 109 | 2305 |
| Pardoe, William A., Dewsbury, England. Jacquard | 757,342 | Apr. 12 | 2260 | 493 | 109 | 1840 |
| Pareis, Josef, Vienna, Austria-Hungary. Tobacco-pipe | 754,338 | Mar. 8 | 2189 | 486 | 109 | 495 |
| Parfitt, Alfred, Topeka, Kans. Steam-boiler | 755,530 | Mar. 22 | 4495 | 999 | 109 | 1029 |
| Parish, Graham C., assignor to W. G. Browne Manufacturing Company, Kingston, N. Y. Tack-claw | 758,017 | Apr. 19 | 3605 | 780 | 109 | 2149 |
| Park, Henry J., Angleton, assignor, by mesne assignments, of one-half to R. C. Darrough, Houston, Tex. Pump | 755,236 | Mar. 22 | 3958 | 877 | 109 | 914 |
| Park, Ira L. (See Hulbert and Park.) | | | | | | |
| Park, Warren G., Avon, Ill. Mold for cement blocks | 753,303 | Mar. 1 | 164 | 37 | 109 | 38 |
| Parke, Davis & Company. (See Ryan, Frank G., assignor.) | | | | | | |
| Parker Bros. (See Smith, Eldridge J., assignor.) | | | | | | |
| Parker, Edmund A., Meriden, Conn. Match-box holder | 758,467 | Apr. 26 | 4502 | 998 | 109 | 2305 |
| Parker, Edward, Bristol, England. Duplicating or counter-check appliance | 753,163 | Mar. 22 | 3824 | 845 846 | 109 | 888 |
| Parker, Emer H., Evanston, Ill. Bottle-filling machine | 754,602 | Mar. 15 | 2784 | 607 | 109 | 642 |
| Parker, Frank B., Robinson, Kans. Oil-can | 755,927 | Mar. 29 | 3309 | 1172 | 109 | 1228 |
| Parker, James F. (See Heath, Elroy N., assignor.) | | | | | | |
| Parker, John, assignor to Brown and Sharpe Manufacturing Company, Providence, R. I. Variable-speed mechanism | 754,339 | Mar. 8 | 2190 | 487 | 109 | 495 |
| Parker, Lewis A., and H. D. Castlebery, Leavenworth, Wash. Combined steam and water valve | 753,427 | Mar. 1 | 304 | 91 | 109 | 86 |
| Parker, Theodore E., *et al.*, trustees. (See Tichon, Joseph E., assignor.) | | | | | | |
| Parkhurst, Edward B., Woburn, Mass., assignor to National Cash Register Company, Dayton, Ohio. Cash-register | 753,385 | Mar. 22 | 4250 | 939 940 | 109 | 978 |
| Parks, Thomas A. (See Gale, Frederick, assignor.) | | | | | | |
| Parlin & Orendorff Company. (See Graham, William S., assignor.) | | | | | | |
| Parmelee, Wilbur F., Kalamazoo, Mich. Coasting-sled | 754,987 | Mar. 15 | 3342 | 730 | 109 | 764 |
| Parr, Richard V., Craigsville, Va. Bag-holder | 756,098 | Apr. 5 | 904 | 209 | 109 | 1546 |
| Parrish, Ezekiel L., Crockett, Tex. Safety-stirrup | 755,531 | Mar. 22 | 4496 | 999 | 109 | 1029 |
| Parrish, Stephen E., Ithaca, Mich. Show-case | 755,589 | Mar. 22 | 4585 | 1020 | 109 | 1049 |
| Parry, William A., Cambridge, Mass. Disintegrating-machine | 753,304 | Mar. 1 | 166 | 37, 38 | 109 | 39 |
| Parry, William W., Plymouth, Pa. Snow-guard for roofs | 756,884 | Apr. 12 | 1328 | 296 | 109 | 1642 |
| Parson, Hillman A., Republic, Iowa. Bolt-holder | 757,142 | Apr. 12 | 1857 | 406 | 109 | 1735 |
| Parsons, George G., Madera, Cal. Necktie-band holder | 754,007 | Mar. 8 | 1576 | 352 | 109 | 364 |
| Parsons, George W., assignor to Parsons-Hawkeye Manufacturing Co., Newton, Iowa. Knife for band-cutters and feeders | 754,008 | Mar. 8 | 1577 | 352 | 109 | 364 |
| Parsons-Hawkeye Manufacturing Co. (See Parsons, George W., assignor.) | | | | | | |
| Parsons, Robert L., assignor of one-half to T. M. Traughber and B. C. Crumbaugh, Olmstead, Ky. Grain-binding harvester | 754,009 | Mar. 8 | 1578 | 352 353 | 109 | 364 |
| Parsons, Winslow R., Chicago, Ill. Ruffling attachment for sewing-machines | 756,885 | Apr. 12 | 1329 | 296 297 | 109 | 1642 |
| Partheymueller, John, New York, N. Y. Show-case | 754,253 | Mar. 8 | 2098 | 446 | 109 | 458 |
| Partridge, Allen R., assignor of one-half to F. W. Page, San Francisco, Cal. Smelting ores | 757,220 | Apr. 12 | 2004 | 436 | 109 | 1787 |
| Partridge, Allen R., assignor of one-half to F. W. Page, San Francisco, Cal. Smelting-furnace | 757,221 | Apr. 12 | 2005 | 436 | 109 | 1787 |
| Partridge, Allen R., assignor of one-half to F. W. Page, San Francisco, Cal. Hearth for smelting-furnaces | 757,222 | Apr. 12 | 2006 | 436 | 109 | 1787 |
| Pasquier, John B., *et al.* (See Horrall, William A., assignor.) | | | | | | |
| Passarelli, Ferdinando, New York, N. Y. Preserving fruit | 754,340 | Mar. 8 | 2192 | 488 | 109 | 496 |
| Passino, Edward J., Middletown, N. Y. Door-check | 755,386 | Mar. 22 | 4259 | 940 941 | 109 | 979 |
| Patent Development Company of America. (See Swan and Rose, assignors.) | | | | | | |
| Paterson, James W., assignor to Curtain Supply Company, Chicago, Ill. Curtain-fixture | 754,404 | Mar. 8 | 2382 | 530 | 109 | 537 |
| Patten, Alonzo R., Hyde Park, assignor to Geo. W. Stafford Company, Readville, Mass. Power-shipping and brake mechanism for looms | 753,307 | Mar. 1 | 1174 | 264 | 109 | 252 |
| Patten, Alonzo R., Hyde Park, assignor to Geo. W. Stafford Company, Readville, Mass. Shedding mechanism for looms | 753,308 | Mar. 1 | 1176 | 264 265 | 109 | 253 |
| Patten, Estella G., Chicago, Ill. Adjustable and collapsible support | 755,039 | Mar. 22 | 3614 | 798 | 109 | 842 |
| Patten, John, New York, N. Y. Vapor-absorber | 756,521 | Apr. 5 | 647 | 139 140 | 109 | 1478 |
| Patten, Lorenzo D., and D. Lippy, assignors of one-third to G. Morehouse, Mansfield, Ohio. Mechanical toy | 757,834 | Apr. 19 | 3247 | 704 | 109 | 2069 |
| Patterson, Earl L., Beavertalls, Pa. Driving mechanism for washing-machines | 753,909 | Mar. 8 | 1390 | 314 | 109 | 320 |
| Patterson, John H., Aldershot, England. Rifle-holder for mounted troops | 757,348 | Apr. 12 | 2002 | 493 | 109 | 1841 |
| Patterson, John W., Madisonville, Ky. Wagon-bolster | 755,332 | Mar. 22 | 4497 | 1000 | 109 | 1029 |
| Patterson, L. F. (See Miller, William, assignor.) | | | | | | |
| Patterson, Robert, assignor of one-half to J. L. Whalen, Rochester, N. Y. Eye-extractor for fruits or vegetables | 757,835 | Apr. 19 | 3247 | 705 | 109 | 2070 |
| Patterson, Rufus L., New York, N. Y. Measuring and weighing mechanism | 754,987 | Mar. 15 | 3423 | 748 749 | 109 | 782 |
| Patton, George J., and S. A. Marsteller, Nokesville, Va. Mower | 755,583 | Mar. 22 | 4498 | 1000 | 109 | 1030 |
| Paul, Conrad, Pittsburg, Pa. Account-register and desk-slide | 755,397 | Mar. 22 | 4260 | 941 | 109 | 980 |
| Paul, William L., Davis, N. C. Whistle attachment for gas-engines | 757,673 | Apr. 19 | 2944 | 639 | 109 | 2003 |
| Paulson, John P., *et al.* (See Schilling, Gustave A. W., assignor.) | | | | | | |
| Paulson, Niel, assignor of one-half to A. H. Sisson, Newark, Ohio. Car-platform | 754,668 | Mar. 15 | 2956 | 645 | 109 | 678 |
| Pauly, Henry C., *et al.* (See Broome, Henry, assignor.) | | | | | | |
| Pautasso, Jean A., Geneva, Switzerland. Photographic camera | 757,896 | Apr. 19 | 3249 | 705 | 109 | 2070 |
| Pawling, Harry J., New Columbia, Pa. Coal-oil-lamp burner | 757,674 | Apr. 19 | 2945 | 639 | 109 | 2004 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Payne, Fred S., Boston, Mass. Electric signaling device for elevators | 756,275 | Apr. 5 | 160 | 33 | 109 | 1377 |
| Payne, Robert E., New York, N. Y. Vending apparatus | 757,956 | Apr. 19 | 3475 | 752 | 109 | 2121 |
| Payzant, Octave, New York, N. Y. Fountain lettering-pen | 758,361 | Apr. 26 | 4340 | 932 | 109 | 2328 |
| Peace, John G., Micanopy, Fla. Bed-bottom | 758,276 | Apr. 26 | 4124 | 891 | 109 | 2281 |
| Peach, Orange P., Rushton, Mich. Excavator | 755,237 | Mar. 22 | 3960 | 877 | 109 | 915 |
| Peacock, John L., Buffalo, N. Y. Mechanism for operating car-brakes | 754,608 | Mar. 15 | 2787 | 606 | 109 | 642 |
| Peake, Henry C., and J. R. English, Walsall Wood, near Walsall, England. Machinery for cutting coal or other minerals | 755,238 | Mar. 22 | 3961 | 877 878 | 109 | 915 |
| Pearne Electric and Manufacturing Company. (See Pearne and Krum, assignors.) | | | | | | |
| Pearne, Frank D., and C. L. Krum, assignors to Pearne Electric and Manufacturing Company, Chicago, Ill. Electrical selective apparatus | 754,689 | Mar. 15 | 2957 | 646 | 109 | 678 |
| Pearson, John. (See Pearson, Swain, assignor.) | | | | | | |
| Pearson, John, Northwood, N. D. Horse-detacher | 753,910 | Mar. 8 | 1391 | 314 | 109 | 321 |
| Pearson, Swain, assignor of one-half to J. Pearson, Rock Island, Ill. Buggy-boot holder | 753,428 | Mar. 1 | 395 | 92 | 109 | 86 |
| Pease, Edward L., Darlington, England. Structural arrangement applicable to flooring, roofing, &c | 754,888 | Mar. 15 | 3344 | 730 | 109 | 765 |
| Pease, Harrison, Giles, Nebr. Pitman connection | 755,164 | Mar. 22 | 3827 | 846 | 109 | 888 |
| Pease, Roger S., assignor to Window Glass Machine Company, Pittsburg, Pa. Bait for drawing glass | 758,560 | Apr. 26 | 4686 | 1010 | 109 | 2406 |
| Péchy, Gáspár von, Torna, Austria-Hungary. Lock | 756,276 | Apr. 5 | 167 | 34 | 109 | 1379 |
| Peck, Albert B., Knoxville, Tenn. Arm-rest | 755,040 | Mar. 22 | 3617 | 798 | 109 | 842 |
| Peck, Ashley P., Milwaukee, Wis., assignor to Hart & Hegeman Manufacturing Company, Hartford, Conn. Electric switch | 755,165 | Mar. 22 | 3828 | 846 | 109 | 889 |
| Peck, Cald H., Waverly, N. Y., assignor to Imperial Pneumatic Tool Company, Athens, Pa. Handle for pneumatic tools | 758,100 | Apr. 26 | 3780 | 821 | 109 | 2305 |
| Peck, Charles, Philadelphia, Pa. Bib or faucet | 754,889 | Mar. 15 | 3345 | 731 | 109 | 765 |
| Peck, Clarence W., Painted Post, N. Y., assignor to Imperial Pneumatic Tool Company, Athens, Pa. Pneumatic tool | 754,956 | Mar. 15 | 3473 | 760 | 109 | 794 |
| Peck, Walter E., New York, N. Y. Letter-copying machine | 756,522 | Apr. 5 | 650 | 140 | 109 | 1478 |
| Peck, Walter E., New York, N. Y. Letter-copying machine | 756,797 | Apr. 5 | 1162 | 258 | 109 | 1592 |
| Peckham, James M., Fall River, Mass. Picker-check for looms | 753,515 | Mar. 1 | 569 | 130 | 109 | 124 |
| Pederson, Lars, Manitowoc, Wis. Cabinet | 757,957 | Apr. 19 | 3477 | 752 753 | 109 | 2121 |
| Pedrick and Ayer Company. (See Barrow, Thomas, assignor.) | | | | | | |
| Peel, John, Drayton, Canada. Legging | 755,694 | Mar. 29 | 4827 | 1072 | 109 | 1120 |
| Pejchar, Josef, New York, N. Y. Cuff-button | 756,047 | Mar. 29 | 5527 | 1219 | 109 | 1275 |
| Pejchar, Josef, New York, N. Y. Cuff-button | 758,101 | Apr. 26 | 3781 | 821 | 109 | 2305 |
| Pell, Charles H., Newark, N. J., assignor to P. Reilly & Son. Rawhide-splitting machine | 754,841 | Mar. 8 | 2198 | 488 | 109 | 496 |
| Pelstring, George J., Cincinnati, Ohio, and H. G. Pelstring, Covington, Ky., assignors, by mesne assignments, to Victor Safe & Lock Co., Cincinnati, Ohio. Grinding-machine | 753,911 | Mar. 8 | 1393 | 314 315 | 109 | 321 |
| Pelstring, Henry G. (See Pelstring, George J. and H. G.) | | | | | | |
| Pelton, Charles H. (See Smith and Pelton.) | | | | | | |
| Pelton, George M., Chagrin Falls, Ohio. Electrodynamic generator | 753,429 | Mar. 1 | 396 | 92 | 109 | 86 |
| Pelzer, William, New York, N. Y. Door check and closer | 754,690 | Mar. 15 | 2961 | 646 647 | 109 | 679 |
| Penn Enamel-Ware Co. (See Conrath, George A., assignor.) | | | | | | |
| Penn, William E., assignor to F. B. and E. J. Fargo, Lakemills, Wis. Horse-collar-blocking machine | 755,239 | Mar. 22 | 3965 | 879 880 | 109 | 916 |
| Penn, William E., assignor to F. B. and E. J. Fargo, Lakemills, Wis. Horse-collar-blocking machine | 755,534 | Mar. 22 | 4501 | 1001 1002 | 109 | 1030 |
| Penney, Herbert E., assignor to Nott Fire Engine Company, Minneapolis, Minn. Steam-generator | 756,694 | Apr. 5 | 955 | 210 | 109 | 1547 |
| Penney, Herbert E., assignor to W. S. Nott Company, Minneapolis, Minn. Water-heating apparatus | 756,886 | Apr. 12 | 1337 | 297 | 109 | 1643 |
| Pennock, Ambrose M., assignor of one-half to W. J. Thornehill, Bourbon, Mo. Brake-shoe holder | 754,604 | Mar. 15 | 2789 | 608 | 109 | 643 |
| Peno, Joseph, Oswego, N. Y. Work-bench clamp | 756,187 | Mar. 29 | 5696 | 1257 | 109 | 1311 |
| Penrose, Hallack A., *et al.* (See Schmitt, Edward D., assignor.) | | | | | | |
| Penrose, Richard A., Philadelphia, Pa. Molding apparatus | 754,495 | Mar. 15 | 2592 | 563 | 109 | 602 |
| Percival, Isaac W., St. Louis, Mo., assignor, by mesne assignments, to Westinghouse Electric & Manufacturing Company, Pittsburg, Pa. Electric-arc lamp | 757,958 | Apr. 19 | 3478 | 753 | 109 | 2122 |
| Percy, Clarence, Jr., Wakefield, La. Gear-lock | 753,912 | Mar. 8 | 1395 | 315 | 109 | 321 |
| Perkins, Charles G., Hartford, Conn. Handle for rotary snap electric switches | 756,979 | Apr. 12 | 1527 | 335 | 109 | 1682 |
| Perkins, Clarence M., St. Louis, Mo. Non-conducting handle | 756,401 | Apr. 5 | 423 | 87 | 109 | 1434 |
| Perkins, John B., Revere, Mass. Feed-water regulator | 757,837 | Apr. 19 | 3253 | 705 706 | 109 | 2071 |
| Perkins, Josiah P., Indianapolis, Ind. Ice-cream freezer | 753,622 | Mar. 1 | 768 | 171 | 109 | 166 |
| Perkins, Ludlow P. (See Kitchen and Perkins.) | | | | | | |
| Perks, George W., Springfield, Ohio. Machine for filling and assembling slide-boxes | 755,312 | Mar. 22 | 4104 | 906 907 | 109 | 944 |
| Perry, David N. (See Cone and Perry.) | | | | | | |
| Perry Glove and Mitten Company. (See Lamb, Isaac W., assignor.) | | | | | | |
| Perry, Ira D., Chicago, Ill., assignor, by mesne assignments, to C. D. Stevens, Muskegon, Mich. Savings-bank | 753,305 | Mar. 1 | 167 | 38 | 109 | 39 |
| Pervilhac, Henry. (See Burdick and Pervilhac.) | | | | | | |
| Peterman, Bert, Dallas, Tex. Coffee-urn | 755,041 | Mar. 22 | 3618 | 794 | 109 | 842 |
| Peters, William A., assignor of two-fifths to E. L. Cook, Johnstown, Pa. Apparatus for carrying and changing photographic plates | 756,402 | Apr. 5 | 425 | 88 | 109 | 1434 |
| Peters, William A., assignor of two-fifths to E. L. Cook, Johnstown, Pa. Apparatus for developing and fixing photographic plates and prints | 758,277 | Apr. 26 | 4126 | 892 | 109 | 2281 |
| Petersen, Arnold A., Muscatine, Iowa. Tooth-brush attachment | 756,188 | Mar. 29 | 5698 | 1257 | 109 | 1312 |
| Petersen, Charles, San Francisco, Cal. Automatic gun | 754,691 | Mar. 15 | 2966 | 647 648 | 109 | 681 |
| Petersen, Martin. (See Eckmann, Ernst, assignor.) | | | | | | |
| Peterson, Carrie B., Knoxville, Ill. Skirt-supporter and shirt-waist holder | 758,146 | Apr. 26 | 3866 | 839 | 109 | 2226 |
| Peterson, Jeremiah M., Canisteo, and F. F. Hutchins, assignors of one-third to D. L. Wettlin, Hornellsville, N. Y. Non-refillable bottle | 753,306 | Mar. 1 | 169 | 38 | 109 | 39 |
| Peterson, John, Caldwell, N. Y. Heat-regulator | 755,928 | Mar. 29 | 5310 | 1172 | 109 | 1228 |
| Peterson, William, Sheboygan, Wis. Liquid-distributer | 756,695 | Apr. 5 | 957 | 210 | 109 | 1547 |
| Petrillo, Joseph, assignor to V. Nivols, Brooklyn, N. Y. Stop-watch | 755,313 | Mar. 22 | 4106 | 907 | 109 | 945 |
| Petroskey, John H., Detroit, assignor to H. H. Norrington, West Bay City, Mich. Manifolding device | 756,139 | Mar. 29 | 5699 | 1257 | 109 | 1312 |
| Pettingell, George D., Jefferson, assignor of one-half to H. C. Laub, Denison, Iowa. Flexible metal pipe-coupling for connecting the air and steam pipes of railway-cars | 757,493 | Apr. 19 | 2563 | 563 | 109 | 1918 |
| Petty, John M., *et al.* (See Bentel, Lewis O., assignor.) | | | | | | |
| Peucker, Heinrich E., Dresden, Germany. Manufacture of rulers | 757,675 | Apr. 19 | 2946 | 639 | 109 | 2004 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Pfeffer, Nicholas, Ripley, Ohio. Wagon-brake | 757,959 | Apr. 19 | 3480 | 753 754 | 109 | 2122 |
| Pfeiffer, Adolf, Hedelfingen, Germany. Apparatus for feeding gas-retorts | 756,696 | Apr. 5 | 958 | 211 | 109 | 1548 |
| Pfleger, Otto A., Newburgh, N. Y. Drying-line holder | 754,089 | Mar. 8 | 1733 | 336 | 109 | 397 |
| Pfleghar, Frank P., assignor to English & Mersick Co., New Haven, Conn. Curtain-fastener | 757,838 | Apr. 19 | 3256 | 706 | 109 | 2071 |
| Pfleghar, Frank P., assignor to English & Mersick Co., New Haven, Conn. Bolt | 758,333 | Apr. 26 | 4253 | 914 | 109 | 2310 |
| Philadelphia Hardware and Malleable Iron Works. (See Finnegan, John, assignor.) | | | | | | |
| Philippe, Emile, Geneva, Switzerland. Stop-watch | 754,798 | Mar. 15 | 3168 | 690 691 | 109 | 726 |
| Phillips, Charles H., Malden, Mass. Flushing-tank | 755,166 | Mar. 22 | 3830 | 847 | 109 | 899 |
| Phillips, Hiram W., Quincy, Mass. Pile-driving apparatus | 757,900 | Apr. 19 | 3483 | 754 755 | 109 | 2123 |
| Phillips, James J., Womelsdorf, assignor of one-half to C. Scott, Coalton, W. Va. Railway tie and chair | 753,307 | Mar. 1 | 171 | 39 | 109 | 40 |
| Phillips, John E., assignor to Phillips Pressed Steel Company, Joliet, Ill. Valved bung for barrels or similar receptacles | 753,308 | Mar. 1 | 172 | 39 | 109 | 40 |
| Phillips, John M., Carrick, Pa. Bumper and coupling for mine-cars | 753,623 | Mar. 1 | 709 | 171 | 109 | 167 |
| Phillips, Paul J., Chicago, Ill. Steam-cooker | 755,042 | Mar. 22 | 3619 | 794 | 109 | 843 |
| Phillips Pressed Steel Company. (See Phillips, John E., assignor.) | | | | | | |
| Phillips, William P., assignor of one-half to M. Scott, Jacksonville, Fla. Carbureter | 755,167 | Mar. 22 | 3835 | 847 | 109 | 899 |
| Philo, C. L. (See Philo, Edgar W., assignor.) | | | | | | |
| Philo, Edgar W., assignor to C. L. Philo, Salem, N. Y. Incubator | 756,277 | Apr. 5 | 168 | 34 | 109 | 1379 |
| Philp, John, New York, N. Y. Heat-circulator for boiler-tubes | 754,342 | Mar. 8 | 2194 | 488 | 109 | 406 |
| Philp, John, New York, N. Y. Sounding apparatus | 756,987 | Apr. 12 | 1338 | 297 298 | 109 | 1644 |
| Phoenix Boat Machinery Company. (See Keats, John, assignor.) | | | | | | |
| Phoenix Glass Company. (See Bucsko, Louis, assignor.) | | | | | | |
| Phronimos, Demosthenes, Washington, D. C. Wind-motor | 756,278 | Apr. 5 | 170 | 34 | 109 | 1380 |
| Pickard, George A., Altrincham, England. Apparatus for storing or carrying anglers' artificial flies | 753,309 | Mar. 1 | 174 | 39 | 109 | 40 |
| Pickard, Greenleaf W., Amesbury, Mass., assignor to American Telephone and Telegraph Company. Alternating-current signal-receiving apparatus | 758,468 | Apr. 26 | 4504 | 908 | 109 | 2306 |
| Pickett, Charles E., Bayonne, N. J. Drying and calcining kiln | 753,624 | Mar. 1 | 770 | 171 172 | 109 | 167 |
| Pickles, Charles K., assignor to J. A. Brill, Philadelphia, Pa. Street-car | 755,314 | Mar. 22 | 4110 | 907 908 | 109 | 945 |
| Pidgin, Charles F., Boston, Mass. Apparatus for recording statistical data | 755,168 | Mar. 22 | 3837 | 847 | 109 | 899 |
| Pidgin, Charles F., Boston, Mass. Apparatus for compiling statistics | 755,695 | Mar. 29 | 4828 | 1072 1073 | 109 | 1120 |
| Pienkowsky, Charles A., assignor to Anthony Shield Company, Chicago, Ill. Dress-shield | 754,234 | Mar. 8 | 2009 | 446 | 109 | 458 |
| Pieper, Harry F., New York, N. Y. Automatic power cut-out for electric railways | 756,523 | Apr. 5 | 653 | 140 | 109 | 1480 |
| Pierce, Erastus E., and L. W. Newton, assignors to Standard Horse Nail Company, New Brighton, Pa. Machine for feeding and sorting nail-blanks | 757,676 | Apr. 19 | 2947 | 639 640 641 642 643 | 109 | 2004 |
| Pierce, Theodore S., Detroit, Mich. Making paving-brick | 756,798 | Apr. 5 | 1165 | ..... | 109 | 1503 |
| Pierre, Olen, Husser, La. Well-bucket | 755,535 | Mar. 22 | 4508 | 1002 | 109 | 1031 |
| Pieser, Isaac, *et al.* (See Bitner, Harry, assignor.) | | | | | | |
| Pike, George W. and F. M. Andrus, Newburg, Ohio. Folding stool | 753,043 | Mar. 22 | 3621 | 794 | 109 | 843 |
| Pilling, Luther, Danielson, Conn. Lug-strap for loom picker-sticks | 756,048 | Mar. 29 | 5528 | 1219 | 109 | 1275 |
| Pinch, Frank, Oswego, assignor of one-half to R. B. Lakin, Sidney, N. Y. Rod-packing | 753,731 | Mar. 1 | 990 | 224 | 109 | 214 |
| Pine, James K. P., *et al.* (See Palmer, Stephen, assignor.) | | | | | | |
| Pinkham, Delmar D., Longview, Tex. Screen | 754,799 | Mar. 15 | 3170 | 691 | 109 | 726 |
| Pinkham, Delmar D., Longview, Tex. Screen | 754,800 | Mar. 15 | 3172 | 692 | 109 | 727 |
| Pinnick, Young F., Hymer, Kans. Dancing doll | 758,469 | Apr. 26 | 4507 | 968 | 109 | 2306 |
| Piper, Herbert H., assignor of five-sixths to R. Reehan, P. Snider, and H. J. Behrens, Jackson, Mo. Wagon-brake | 753,732 | Mar. 1 | 991 | 225 | 109 | 214 |
| Piper, Herbert H., assignor of four-fifths to J. Mabrey, P. Snider, H. J. and C. Behrens, Jackson, Mo. Wagon-brake | 753,733 | Mar. 1 | 992 | 225 | 109 | 214 |
| Piper, John, Kampsville, Ill. Work-holder for sawing-machines | 754,343 | Mar. 8 | 2195 | 488 489 | 109 | 407 |
| Pippert, Willis, assignor to Continental Paper Bag Company, Rumford Falls, Me. Paper-bag-feeding apparatus | 756,279 | Apr. 5 | 172 | 35, 36 | 109 | 1381 |
| Pitel, Conrad M., Meriden, Conn. Extension-fixture for incandescent electric lamps | 754,255 | Mar. 8 | 2010 | 447 | 109 | 459 |
| Pitel, Conrad M., Meriden, Conn. Switch for incandescent electric lamps | 756,049 | Mar. 29 | 5530 | 1219 | 109 | 1276 |
| Pitel, Conrad M., Meriden, Conn. Coupling for incandescent electric hanging or suspension lamps | 756,050 | Mar. 29 | 5532 | 1219 | 109 | 1276 |
| Pitkin, Julian H., assignor to International Harvester Company, Chicago, Ill. Spreading-roll for corn huskers and shredders | 754,158 | Mar. 8 | 1855 | 414 | 109 | 427 |
| Pitrat, Claude R., assignor to Magneto Electric Company, Incorporated, Amsterdam, N. Y. Rheostat | 754,692 | Mar. 15 | 3972 | 648 | 109 | 682 |
| Pitt, Miles, Indianapolis, Ind. Water-faucet | 754,344 | Mar. 8 | 2198 | 489 | 109 | 407 |
| Pitts, Joseph A. (See Samuels, Jacob, assignor.) | | | | | | |
| Pittsburg Valve, Foundry and Construction Company. (See Nordenskjöld, Anton F., assignor.) | | | | | | |
| Place, Joseph R., and N. A. Keys, Burlington, Iowa. Mechanism for securing rubber tires to felllies | 758,605 | Apr. 26 | 4782 | 1069 | 109 | 2428 |
| Plaissetty, Achille M., Paris, France. Manufacture of threads for incandescent mantles or illuminating-bodies | 756,888 | Apr. 12 | 1342 | 298 | 109 | 1645 |
| Planters Compress Company. (See Holmes, Watson M., assignor.) | | | | | | |
| Planters Compress Company. (See Lowry, George A., assignor.) | | | | | | |
| Platt, Corwin H., Cleveland, Ohio. Adding-machine | 756,280 | Apr. 5 | 176 | 36 | 109 | 1381 |
| Platt, Cyrus W., Windfall, Ind. Metallic cross-tie | 754,698 | Mar. 15 | 3974 | 648 | 109 | 683 |
| Pleasure Park Amusement Company. (See Du Clos, George H., assignor.) | | | | | | |
| Plowman, Albert E., New York, N. Y., assignor to Scovill Manufacturing Company, Waterbury, Conn. Snap-fastener | 756,408 | Apr. 5 | 430 | 88 | 109 | 1435 |
| Plummer, A. W. (See Kenworthy, John W., assignor.) | | | | | | |
| Plunkett, Michael H., Baltimore, Md. Steam-generator | 756,051 | Mar. 29 | 5533 | 1220 1221 | 109 | 1277 |
| Plunkett, Michael H., Baltimore, Md. Steam-generator | 756,052 | Mar. 29 | 5536 | 1221 | 109 | 1277 |
| Plympton, Washington F., Clearfield, assignor of one-half to G. F. Goss, Wallaceton, Pa. Magazine-firearm | 756,889 | Apr. 12 | 1344 | 298 299 | 109 | 1645 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Pneumatic Elevator and Weigher Company. (See Sharpe, Joseph K., Jr., assignor.) | | | | | | |
| Pocock, Stephen H., Hamilton, Canada. Cash-register | 755,929 | Mar. 29 | 5311 | 1172 1173 | 109 | 1228 |
| Pohlman, William, Middletown, N. Y. Expansion boring-tool | 757,494 | Apr. 19 | 2565 | 563 | 109 | 1919 |
| Pohorzeleck, Arno, Oschatz, Germany. Basket-making machine | 757,344 | Apr. 12 | 2262 | 494 | 109 | 1841 |
| Poirier, Octave A., Gladstone, Minn. Cleaner for disk drills | 756,697 | Apr. 5 | 959 | 211 | 109 | 1548 |
| Poirier, Octave A., Gladstone, Minn. Bearing for disk drills | 756,698 | Apr. 5 | 960 | 211 | 109 | 1548 |
| Poirier, Octave A., Gladstone, Minn. Attachment for disk drills | 756,699 | Apr. 5 | 962 | 212 | 109 | 1549 |
| Poirier, Octave A., Gladstone, Minn. Bearing for disk drills | 756,700 | Apr. 5 | 963 | 212 | 109 | 1549 |
| Pokorný, Ferdinand, Moravská-Ostrava, Austria-Hungary. Apparatus for raising or sinking vessels in lock-chambers | 755,536 | Mar. 22 | 4509 | 1003 | 109 | 1081 |
| Polk, James A., Terrell, Tex. Vehicle-wheel | 757,677 | Apr. 19 | 2956 | 643 | 109 | 2006 |
| Pollard, Edward T., London, England. Automatic weighing-machine | 756,281 | Apr. 5 | 178 | 36, 37 | 109 | 1382 |
| Pollock, Charles N., Corinth, Miss. Safety device for elevators | 758,470 | Apr. 26 | 4507 | 969 | 109 | 2306 |
| Pollock, J. T. (See Sutherland, Emil, assignor.) | | | | | | |
| Pollock, James T. (See Sager, Chauncy A., assignor.) | | | | | | |
| Polte, Eugen, Magdeburg-Sudenburg, Germany. Making hollow metal articles | 756,404 | Apr. 5 | 431 | 89 | 109 | 1435 |
| Pomero, Paolo, Philadelphia, Pa. Mechanical piano | 757,566 | Apr. 19 | 2723 | 595 596 | 109 | 1954 |
| Pomeroy, Silas H. (See Voigtmann and Pomeroy.) | | | | | | |
| Pomroy, Sanford, Byron, Minn. Cistern-top | 754,801 | Mar. 15 | 3178 | 692 | 109 | 727 |
| Pond, William, Liberty, Ill. Folding crate | 756,890 | Apr. 12 | 1349 | 300 | 109 | 1646 |
| Pool, Francis W., Havre, Mont., assignor of one-half to J. Pool, Jesmond, Newcastle-upon-Tyne, England. Railway-chair | 758,018 | Apr. 19 | 3607 | 780 | 109 | 2150 |
| Pool, John. (See Pool, Francis W., assignor.) | | | | | | |
| Poor, George H., assignor to S. W. McMunn, Chicago, Ill. Sectional core for making concrete piles | 757,767 | Apr. 19 | 3121 | 680 | 109 | 2042 |
| Pope, Charles L., Ely, Nev. Fastener for clip-bands | 756,701 | Apr. 5 | 964 | 212 | 109 | 1549 |
| Pope, Harry M., Chicopee Falls, Mass., assignor to Electric Vehicle Company, Jersey City, N. J. Driving mechanism | 758,147 | Apr. 26 | 3867 | 840 | 109 | 2226 |
| Popham, Richard M. (See Darling, James D., assignor.) | | | | | | |
| Poppe, Emil O., Kirchberg, Germany. Device for removing garbage | 754,890 | Mar. 15 | 3346 | 731 | 109 | 765 |
| Porsche, Ferdinand, and L. Lohner, Vienna IX., Austria-Hungary. Steering device for motor-vehicles | 754,802 | Mar. 15 | 3174 | 692 | 109 | 727 |
| Porsche, Ferdinand, and L. Lohner, Vienna, Austria-Hungary. Coil for dynamo-electric machines | 755,537 | Mar. 22 | 4510 | 1004 | 109 | 1082 |
| Porteous, William, Avondale, Ohio. Milling-machine | 756,405 | Apr. 5 | 433 | 89, 90 | 109 | 1435 |
| Porter, Albert B., Evanston, Ill. Hydrometer-guard | 756,702 | Apr. 5 | 965 | 213 | 109 | 1550 |
| Porter, Harrison B., Buda, Tex. Cultivator | 755,538 | Mar. 22 | 4511 | 1004 | 109 | 1082 |
| Porter, Wilson E., assignor to New Haven Clock Company, New Haven, Conn. Winding mechanism for clocks | 756,703 | Apr. 5 | 967 | 213 | 109 | 1550 |
| Post, Angelica E., Boston, Mass. Electric pocket-lamp | 754,694 | Mar. 15 | 2976 | 648 | 109 | 683 |
| Post, Howard I., *et al.* (See Goundry, John B., assignor.) | | | | | | |
| Postal Typewriter Company. (See Quentell and Judge, assignors.) | | | | | | |
| Posternak, Swigel, Mendon, France. Organic phosphorus compound and making same | 754,803 | Mar. 15 | 3175 | ..... | 109 | 728 |
| Potter, Charles W., Denver, Colo. Limiting device for electric circuits | 754,496 | Mar. 15 | 2504 | 564 | 109 | 602 |
| Potter, George M. (See Raquett, Joseph G., assignor.) | | | | | | |
| Potter, Henry N., New Rochelle, N. Y., assignor to G. Westinghouse, Pittsburg, Pa. Rotatory electric tube-furnace | 756,891 | Apr. 12 | 1350 | 300 | 109 | 1646 |
| Potter, John A., New York, N. Y. Treating ores, mattes, &c | 754,159 | Mar. 8 | 1856 | 414 | 109 | 427 |
| Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Means for closing field-circuits of rotary converters | 755,791 | Mar. 29 | 5038 | 1119 | 109 | 1165 |
| Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Electric railway | 756,980 | Apr. 12 | 1329 | 336 | 109 | 1682 |
| Potter, William W., *et al.* (See Vinton, John H., assignor.) | | | | | | |
| Potthast Brothers *et al.* (See Graf, Robert R., assignor.) | | | | | | |
| Poughkeepsie Art Pulp Company. (See Chase, William D., assignor.) | | | | | | |
| Powell, Frank D. (See Ellis and Powell.) | | | | | | |
| Powell, William, Liverpool, England. Vulcanized wood and vulcanizing same | 755,240 | Mar. 22 | 3970 | ..... | 109 | 917 |
| Powell, William G., Tallahassee, assignor to E. O. Locke and W. B. Owen, Duval county, Fla. Cash-register | 757,223 | Apr. 12 | 2009 | 437 | 109 | 1787 |
| Powers, James, assignor to R. J. Louis and H. B. Thearle, New York, N. Y. Automatic photographic apparatus | 754,090 | Mar. 8 | 1734 | 386 387 | 109 | 397 |
| Powers, James H., administrator. (See Powers, Walter J.) | | | | | | |
| Powers, Samuel H., St. Joseph, Mo. Pipe-coupling | 758,102 | Apr. 26 | 3782 | 822 | 109 | 2305 |
| Powers, Timothy B., and M. R. Jewell, assignors, by mesne assignments, to Imperial Corporation, New York, N. Y. Automatic playing apparatus for musical instruments | 753,809 | Mar. 1 | 1178 | 265 266 267 | 109 | 253 |
| Powers, Walter J., deceased; J. H. Powers, Detroit, Mich., administrator, assignor to J. J. Foster, Windsor, Ontario, Canada. Ventilating device for water-closets | 754,695 | Mar. 15 | 2978 | 649 | 109 | 684 |
| Powers, Wilbur F., Camden, N. J. Life-boat-launching apparatus | 755,241 | Mar. 22 | 3971 | 880 | 109 | 917 |
| Powlison, Allen L., Erie, and E. C. Erb, assignors of one-third to D. H. Houston, Hunter, N. D. Road-grading machine | 758,148 | Apr. 26 | 3868 | 840 | 109 | 2226 |
| Prade, Julien, Waco, Tex. Ice-cream freezer | 756,704 | Apr. 5 | 968 | 213 | 109 | 1550 |
| Prahar, Louis B., New York, N. Y. Mirror | 758,382 | Apr. 26 | 4341 | 932 | 109 | 2328 |
| Prahl, Edward A., Philadelphia, Pa. Damper-regulator | 758,471 | Apr. 26 | 4509 | 969 | 109 | 2307 |
| Prankard, Charles J., Jr., Troy, N. Y. Cutting-machine | 755,696 | Mar. 29 | 4832 | 1074 | 109 | 1121 |
| Pratt, Charles A., Oakpark, Ill. Speed-regulating magnetic clutch | 754,804 | Mar. 15 | 3177 | 692 693 | 109 | 728 |
| Pratt, Thomas J., assignor to J. F. Kerr, J. E. Shaw, and C. R. Blundell, Paterson, N. J. Canteen | 753,516 | Mar. 1 | 570 | 131 | 109 | 124 |
| Pratt, William H., Lynn, Mass., assignor to General Electric Company. Inertia-damper for electric measuring instruments | 755,792 | Mar. 29 | 5039 | 1119 | 109 | 1165 |
| Pratte, Charles A., assignor of two-thirds to E. T. Smith and G. A. Green, Denver, Colo. Pneumatic sander for car-trucks | 755,539 | Mar. 22 | 4513 | 1004 | 109 | 1082 |
| Prentice, George W., Providence, R. I. Lacing-loop | 757,678 | Apr. 19 | 2957 | 643 | 109 | 2007 |
| Prentice, George W., Providence, R. I. Lacing-loop | 757,679 | Apr. 19 | 2958 | 643 | 109 | 2007 |
| Prentice, John P., Barberton, Ohio, assignor to Stirling Company, Jersey City, N. J. Cutter-head for flue-cleaners | 755,930 | Mar. 29 | 5318 | 1173 | 109 | 1229 |
| Prescott, De Witt C., Chicago, Ill., assignor of three-fourths to S. K., L. L., and E. L. Prescott, Marinette, Wis. Sawmill set-works | 757,224 | Apr. 12 | 2011 | 437 | 109 | 1788 |
| Prescott, Edward L., *et al.* (See Prescott, De Witt C., assignor.) | | | | | | |
| Prescott, Henry A. (See Prescott, Thomas D., J. C., and H. A.) | | | | | | |
| Prescott, James C. (See Prescott, Thomas D., J. C., and H. A.) | | | | | | |
| Prescott, Loren L., *et al.* (See Prescott, De Witt C., assignor.) | | | | | | |
| Prescott, Sumner K., *et al.* (See Prescott, De Witt C., assignor.) | | | | | | |
| Prescott, Thomas D., J. C., and H. A., Philadelphia, Pa. Rotary engine | 753,735 | Mar. 1 | 994 | 226 | 109 | 214 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Pressed Prism Plate Glass Company. (See Wadsworth, Frank L. O., assignor.) | | | | | | |
| Pressed Steel Car Company. (See Lindström, Charles A., assignor.) | | | | | | |
| Pressed Steel Car Company. (See Lindström and Stucki, assignors.) | | | | | | |
| Pressed Steel Car Company. (See Rapley, Frederick H., assignor.) | | | | | | |
| Pressed Steel Car Company. (See Streib, John F., assignor.) | | | | | | |
| Prest, John E., Worcester, Mass. Yarn-guide-holding mechanism | 753,625 | Mar. 1 | 772 | 172 | 109 | 167 |
| Prevost, Henri E., *et al.* (See Prevost, Magnus, assignor.) | | | | | | |
| Prevost, Magnus, assignor of seven-tenths to H. E. Prevost and L. F. Roger, Haverhill, Mass. Buffing-roll | 755,398 | Mar. 22 | 4261 | 941 | 109 | 980 |
| Price, Edgar F. (See Horry and Price.) | | | | | | |
| Price, Edgar F., assignor to Union Carbide Company, Niagara Falls, N. Y. Electric heating | 757,633 | Apr. 19 | 2867 | 625 | 109 | 1987 |
| Price, Edgar F., assignor to Union Carbide Company, Niagara Falls, N. Y. Electric-resistance furnace | 757,634 | Apr. 19 | 2870 | 625 | 109 | 1988 |
| Price, Harry G., South Bend, Ind. Combined brush and mop holder | 755,540 | Mar. 22 | 4514 | 1005 | 109 | 1033 |
| Price, Jonathan D., Aurora, assignor to Miller Signal Company, Chicago, Ill. Signal apparatus | 757,708 | Apr. 19 | 3125 | 680, 681 | 109 | 2043 |
| Price, Stephen B., assignor of one-half to A. R. Mattingly, Eagle Mills, Ky. Car-coupling | 754,387 | Mar. 8 | 2333 | 510 | 109 | 526 |
| Price, Weston A., assignor to Electric and Dental Specialty Company, Cleveland, Ohio. Composition of matter | 753,310 | Mar. 1 | 176 | ------ | 109 | 41 |
| Price, William G., New York, N. Y. Car-truck | 753,626 | Mar. 1 | 774 | 172 | 109 | 168 |
| Price, William G., New York, N. Y. Brake-rigging | 757,345 | Apr. 12 | 2264 | 494, 495 | 109 | 1841 |
| Price, William G., Kingston, N. Y. Truck | 753,627 | Mar. 1 | 777 | 173 | 109 | 169 |
| Priddat, Ernst F., Chicago, Ill. Tie | 754,605 | Mar. 15 | 2790 | 608 | 109 | 643 |
| Priddat, Ernst F., Chicago, Ill. Tie-fastener | 754,606 | Mar. 15 | 2792 | 609 | 109 | 643 |
| Prikmore, John W., assignor to International Harvester Company, Chicago, Ill. Tread for traction-wheels | 757,635 | Apr. 19 | 2872 | 625 | 109 | 1988 |
| Pries, Herman. (See Williamson and Pries.) | | | | | | |
| Priest, Joseph K., assignor to American Shearer Manufacturing Company, Nashua, N. H. Shearing and clipping device | 755,169 | Mar. 22 | 3840 | 847 | 109 | 800 |
| Prieto, Manuel, Mexico, Mexico. Machine for cleaning fiber | 753,628 | Mar. 1 | 779 | 173, 174 | 109 | 169 |
| Prieto, Manuel, Mexico, Mexico. Machine for cleaning fibers | 753,736 | Mar. 1 | 996 | 226, 227 | 109 | 215 |
| Prieto, Manuel, Mexico, Mexico. Machine for disintegrating fibrous plants | 755,981 | Mar. 29 | 5319 | 1174 | 109 | 1229 |
| Prim, William J. (See Mantell and Prim.) | | | | | | |
| Prince, Samuel F., Jr., Reading, Pa. Locomotive-boiler | 754,497 | Mar. 15 | 2597 | 564 | 109 | 608 |
| Pring, John R., Tecumseh, Okla. Ter. Whiffletree-coupling | 755,541 | Mar. 22 | 4515 | 1005 | 109 | 1033 |
| Pritchard, Charles L., Aurora, Ill. Commercial paper | 754,010 | Mar. 8 | 1581 | 353 | 109 | 365 |
| Probasco, Abraham B., near Lebanon, Ohio. Splicing-tool | 755,542 | Mar. 22 | 4517 | 1005 | 109 | 1033 |
| Prochaska, Frank J., Park River, N. D. Ventilator | 754,805 | Mar. 15 | 3181 | 698 | 109 | 729 |
| Proctor, Guy H., and J. B. Daley, assignors to New England Electric Manufacturing Company, Somerville, Mass. Electric-incandescent-lamp socket | 755,097 | Mar. 29 | 4835 | 1075 | 109 | 1122 |
| Prosser, James H. (See Dunn, Dennis, assignor.) | | | | | | |
| Prosser, James H., Mahanoy City, Pa. Lighting attachment | 753,517 | Mar. 1 | 571 | 131 | 109 | 124 |
| Prött, Carl H., Rheydt, Germany. Commutator for telephonic or other circuits | 754,011 | Mar. 8 | 1582 | 353, 354 | 109 | 365 |
| Prouty, Chester, Ridgway, Pa. Chucking machinery | 753,430 | Mar. 1 | 397 | 93, 94 | 109 | 87 |
| Prouvot, Georges, Roubaix, France. Wool burring and picking machine | 754,296 | Mar. 8 | 2013 | 447, 478 | 109 | 460 |
| Provost, Theodore L. (See Borduas, Hyacinthe O., assignor.) | | | | | | |
| Prunty, John, *et al.* (See Heenan, James, assignor.) | | | | | | |
| Pruyn, Marcellus, assignor of one-half to R. M. Jones, Florin, Cal. Cultivator | 755,982 | Mar. 29 | 5322 | 1174 | 109 | 1230 |
| Pryor, Reginald C., Houghton, Mich. Pneumatic piano attachment | 754,498 | Mar. 15 | 2598 | 564, 565 | 109 | 608 |
| Psiaki, Alcibiades G., New York, N. Y. Cigarette or cigar box | 757,225 | Apr. 12 | 2013 | 437 | 109 | 1789 |
| Puckett, John E., Richmond, Va. Car-stake | 756,705 | Apr. 5 | 970 | 213 | 109 | 1551 |
| Puddefoot, Charles, and B. Briscoe, assignors to Briscoe Manufacturing Company, Detroit, Mich. Pail | 756,406 | Apr. 5 | 437 | 90 | 109 | 1436 |
| Puffer Manufacturing Company. (See Murphy, Edward E., assignor.) | | | | | | |
| Pullman Automatic Ventilator Company. (See Kidwell, Harry C., assignor.) | | | | | | |
| Pupke, Eberhard L., East Orange, assignor to Agatine Shoe Hook and Eyelet Company, Newark, N. J. Setting-machine | 753,431 | Mar. 1 | 402 | 94 | 109 | 87 |
| Pusey, Joshua, Lima, assignor of one-half to C. D. Williams, Philadelphia, Pa. Suspenders | 755,543 | Mar. 22 | 4518 | 1005 | 109 | 1033 |
| Pusterla, Attilio, New York, N. Y. Pleasure-waterway | 753,311 | Mar. 1 | 176 | 40 | 109 | 41 |
| Putnam, Edward B. (See Hadley and Putnam.) | | | | | | |
| Pyburn, Thomas L., assignor of one-half to C. K. Watkins, Dunlap, Tenn. Ratchet-drill | 755,983 | Mar. 29 | 5324 | 1174, 1175 | 109 | 1231 |
| Pyle, George W. (See White and Pyle.) | | | | | | |
| Pym, Charles F., Essex, Canada, assignor of one-half to Krentler Brothers Company, Detroit, Mich. Lasting-jack | 755,544 | Mar. 22 | 4520 | 1006 | 109 | 1034 |
| Qualley, John O., Adams, Minn. Belt-adjuster for harvesters | 755,315 | Mar. 22 | 4112 | 908 | 109 | 945 |
| Quarles, Alexander H. (See Harmon, William O., assignor.) | | | | | | |
| Quarnberg, Andrew A., Vancouver, Wash. Fruit-drier | 753,737 | Mar. 1 | 999 | 227, 228 | 109 | 215 |
| Quee, Sarah, Pasadena, Cal. Match-safe | 758,215 | Apr. 26 | 3994 | 867 | 109 | 2252 |
| Quelch, Joseph A., New York, N. Y. Bird-cage | 754,806 | Mar. 15 | 3183 | 694 | 109 | 730 |
| Quentell, William P., New York, N. Y. Adding-machine | 756,706 | Apr. 5 | 971 | 214 | 109 | 1551 |
| Quentell, William P., New York, and F. Judge, Brooklyn, assignors to Postal Typewriter Company, New York, N. Y. Type-writing machine | 755,545 | Mar. 22 | 4522 | 1006, 1007 | 109 | 1034 |
| Quickel, Allen E. (See Quickel, Edwin G. and A. E.) | | | | | | |
| Quickel, Edwin G. and A. E., York, Pa. Weeder-tooth | 753,312 | Mar. 1 | 178 | 40 | 109 | 41 |
| Quigley, Matthew T., Newark, N. J. Valved-pipe coupling | 756,068 | Mar. 29 | 5586 | 1221, 1222 | 109 | 1278 |
| Quigley, William D. (See Gay and Quigley.) | | | | | | |
| Quimby, Albert G., *et al.* (See Lewis, Albert H., assignor.) | | | | | | |
| Quinlan, John J., Charlestown, Mass. Toy | 757,567 | Apr. 19 | 2736 | 506, 507 | 109 | 1955 |
| Quinn, John C., assignor to E. D. Meier, New York, N. Y. Strainer | 756,992 | Apr. 12 | 1353 | 300 | 109 | 1647 |
| Quinn, Patrick F., and G. Soyllan, New York, N. Y. Match-box | 754,091 | Mar. 8 | 1744 | 387 | 109 | 399 |
| Quintaine, Ernest, Argenteuil, France. Obtaining tin by electrolysis. (Reissue) | 12,214 | Apr. 26 | 4703 | ------ | 109 | 2490 |
| Quirk, Michael W., Jr. (See Dixon, Edward T., Sr., assignor.) | | | | | | |
| R. Neumann Hardware Company. (See Clark, James P., assignor.) | | | | | | |
| R. D. Nuttall Company. (See Martin, Frederick S., assignor.) | | | | | | |
| Radke, Henry F. (See Cherry and Radke.) | | | | | | |
| Rafield, Myers S., Colorado Springs, Colo. Box-pull | 755,044 | Mar. 22 | 3622 | 795 | 109 | 843 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Rahnner, George. (See Hatter, George B., assigner.) | | | | | | |
| Rahskopf, Joseph, Lawrence, Kans. Furnace | 755,045 | Mar. 22 | 3623 | 795 | 109 | 843 |
| Rak, Alois, Cesky Brod, Austria-Hungary. Diffusion-battery | 755,546 | Mar. 22 | 4525 | 1007 | 109 | 1035 |
| Ramage, Alexander G., Leith, and G. Macmillan, Corstorphine, Scotland. Spring-wheel for vehicles | 758,432 | Mar. 1 | 404 | 94 | 109 | 88 |
| Rameau, Claude L., Paris, France. Machine for grinding lenses | 757,053 | Apr. 12 | 1688 | 365 | 109 | 1716 |
| Ramsay, James, and T. E. Riddle, Erith, assignors to Vickers, Sons & Maxim, Limited, Westminster, England. Feed device for cartridge-belt-filling machines | 754,345 | Mar. 8 | 2199 | 489 | 109 | 497 |
| Ramsay, William B., Hickory, N. C. Electric signal for railways | 757,346 | Apr. 12 | 2267 | 495 | 109 | 1842 |
| Ramsey, Charles. (See Lemieux, Louis, assignor.) | | | | | | |
| Randall, Charles W., Lockport, N. Y. Sash-lock | 756,799 | Apr. 5 | 1165 | 258 | 109 | 1593 |
| Randall, Clinton F., and W. C. Vanneman, assignors to Anderson Foundry & Machine Works, Anderson, Ind. Brick-machine | 757,961 | Apr. 19 | 3484 | 755 | 109 | 2123 |
| Randall, Victor E., Battlecreek, Mich. Fence-post | 753,913 | Mar. 8 | 1397 | 315 | 109 | 322 |
| Randall, Victor E., Burlington, Mich. Fence-post | 757,962 | Apr. 19 | 3486 | 755 | 109 | 2123 |
| Randall, William H., Brooklyn, N. Y., assignor to Mergenthaler Linotype Company, Linotype-machine | 758,103 | Apr. 26 | 3783 | 822 | 109 | 2206 |
| Randolph, John H., Baton Rouge, La. Horse-rake | 754,499 | Mar. 15 | 2601 | 565 | 109 | 604 |
| Ranger, Joseph G., Jr., Salem, Nebr. Wheel | 755,316 | Mar. 22 | 4113 | 908 | 109 | 945 |
| Rangnow, Otto, Philadelphia, Pa. Dowel-pin and lift for trunks | 758,383 | Apr. 26 | 4342 | 932 | 109 | 2329 |
| Rankin, Austin H., and C. Abrams, Madison, Ill. Wrench | 756,407 | Apr. 5 | 438 | 90 | 109 | 1436 |
| Rankin, C. A. (See Allen, James H., assignor.) | | | | | | |
| Rankin, George L., Greenville, Pa. Hot-water heating system | 756,292 | Apr. 5 | 180 | 37 | 109 | 1382 |
| Rapley, Frederick H., New York, N. Y., assignor to Pressed Steel Car Company, Pittsburg, Pa. Passenger-car | 756,707 | Apr. 5 | 973 | 214, 215 | 109 | 1552 |
| Rapp, William M., Atlanta, Ga. Pipe-joint | 758,278 | Apr. 26 | 4132 | 892 | 109 | 2282 |
| Raquett, Joseph G., assignor of one-half to G. M. Potter, Cleveland, Ohio. Detonator | 755,984 | Mar. 29 | 5326 | 1175 | 109 | 1231 |
| Rash, Howard C., assignor to Natural Body Brace Company, Salina, Kans. Combined body-brace and corset | 755,547 | Mar. 22 | 4523 | 1007, 1008 | 109 | 1036 |
| Rashkin, Joseph, New York, N. Y. Door for elevator-wells | 756,524 | Apr. 5 | 655 | 141 | 109 | 1480 |
| Rate, Robert G., and M. Mattes, Iowa City, Iowa; said Mattes assignor to said Rate. Glove | 754,160 | Mar. 8 | 1859 | 414, 415 | 109 | 427 |
| Rathbone, Sard & Co. (See Van Buren, Jafew S., assignor.) | | | | | | |
| Rathbun, Henry E., and W. H. Lonergan, assignors, by mesne assignments, to Loxit Company, Providence, R. I. Sash-balance. (Reissue) | 12,202 | Mar. 8 | 2385 | 521 | 109 | 538 |
| Ratzer, John, New York, N. Y. Feed-bag for horses | 754,696 | Mar. 15 | 2980 | 649 | 109 | 684 |
| Rausch, Bernhard, Newark, N. J. Stove-polishing brush | 754,237 | Mar. 8 | 2017 | 448 | 109 | 460 |
| Rawson, Edward, Moscow, Idaho. Planer | 757,963 | Apr. 19 | 3487 | 756, 757 | 109 | 2124 |
| Ray, Eugene J., Winchester, Mass. Photographic apparatus | 756,708 | Apr. 5 | 976 | 215 | 109 | 1552 |
| Ray, Thomas H., Somerville, Mass. Separator | 753,313 | Mar. 1 | 179 | 40 | 109 | 42 |
| Ray, Thomas L., Fort Worth, Tex. Mouse-trap | 754,891 | Mar. 15 | 3347 | 731 | 109 | 765 |
| Raymer, Albert R., Beaver, Pa. Cleaning and restoring boilers to service condition | 757,839 | Apr. 19 | 3257 | 706 | 109 | 2072 |
| Reach, Emile, assignor to O. Schmidt, Jersey City, N. J. Combination bridge and tail-piece | 754,938 | Mar. 15 | 3428 | 750 | 109 | 782 |
| Read, George F., assignor to R. Hoe and C. W. Carpenter, New York, N. Y. Printing-machine | 753,914 | Mar. 8 | 1398 | 315, 316, 317 | 109 | 322 |
| Read, Perlin M., Philadelphia, Pa. Bracket | 755,581 | Mar. 22 | 4586 | 1020 | 109 | 1049 |
| Read, William A., Liverpool, England. Apparatus for the manufacture of metal canisters | 755,242 | Mar. 22 | 3974 | 881 | 109 | 917 |
| Reams, Henry A. (See Dick, Robert C., assignor.) | | | | | | |
| Reams, Joseph M., Seattle, Wash. Wrench | 754,012 | Mar. 8 | 1587 | 354 | 109 | 366 |
| Reams, Radford M., McMinnville, Tenn. Bread-toaster | 758,472 | Apr. 26 | 4511 | 909 | 109 | 2267 |
| Rearick, Charles B., St. Louis, Mo. Steam-boiler | 754,697 | Mar. 15 | 2982 | 649 | 109 | 684 |
| Reciprocating Rotary Engine Company. (See Nielsen, Herman, assignor.) | | | | | | |
| Recknagel, Christian F., New Britain, Conn. Ice-creeper | 754,500 | Mar. 15 | 2603 | 566 | 109 | 604 |
| Reddick, Joseph G., Portland, Oreg. Non-refillable stopper for bottles | 754,606 | Mar. 15 | 2794 | 609 | 109 | 644 |
| Reddick, Joseph G., Portland, Oreg., assignor of one-half to A. H. Harrison, Seattle, Wash. Non-refillable stopper for bottles | 754,607 | Mar. 15 | 2795 | 609 | 109 | 644 |
| Reece, Earl J., Washington, D. C. Universal joint | 757,709 | Apr. 19 | 3135 | 681 | 109 | 2046 |
| Reed, Adam, St. Joseph, Mo. Electric-sole shoe | 757,495 | Apr. 19 | 2567 | 563 | 109 | 1919 |
| Reed, Charles J., Philadelphia, Pa. Speed-changing mechanism | 758,561 | Apr. 26 | 4687 | 1011 | 109 | 2406 |
| Reed, Charles J., Philadelphia, Pa., assignor to Reed-Morrill Electric Co. Speed-changing mechanism | 758,474 | Apr. 26 | 4513 | 970 | 109 | 2268 |
| Reed, Ernest C., Raamsdonk, Netherlands. Needle-lubricator | 758,473 | Apr. 26 | 4512 | 969 | 109 | 2268 |
| Reed, George T., assignor of one-half to H. Slingluff, Baltimore, Md. Jar-closure | 756,283 | Apr. 5 | 181 | 37 | 109 | 1383 |
| Reed, Harvey, assignor of one-third to W. M. Stone, Minneapolis, Minn. Call or alarm device for hotels or other buildings | 756,408 | Apr. 5 | 440 | 91 | 109 | 1436 |
| Reed, James S., Pittsburg, Pa. Swaging apparatus | 755,698 | Mar. 29 | 4837 | 1075, 1076 | 109 | 1122 |
| Reed, John E., Bessemer, Mich. Snow-bicycle | 755,170 | Mar. 22 | 3842 | 848 | 109 | 891 |
| Reed, Meriman H. (See Heilig and Reed.) | | | | | | |
| Reed-Morrill Electric Co. (See Reed, Charles J., assignor.) | | | | | | |
| Reed, Ralph L., Springfield, Ill. Card game | 755,243 | Mar. 22 | 3976 | 882 | 109 | 918 |
| Reed, Walter F., Camden, S. C. Clutch mechanism for mowing-machines | 755,985 | Mar. 29 | 5328 | 1175 | 109 | 1232 |
| Reed, William A., Chelsea, Mass. Wax-applying roll or brush | 757,496 | Apr. 19 | 2569 | 564 | 109 | 1920 |
| Reed, William S., Leominster, assignor to J. A. Tirrell, trustee, Boston, Mass. Amusement apparatus | 754,698 | Mar. 15 | 2983 | 650 | 109 | 685 |
| Reehan, Richard, *et al.* (See Piper, Herbert H., assignor.) | | | | | | |
| Reep, Louis A., Hardy, Iowa. Draft-equalizer | 756,525 | Apr. 5 | 656 | 141 | 109 | 1480 |
| Reese, Benjamin C., and G. W. Broome, Pavo, Ga. Plow | 755,548 | Mar. 22 | 4529 | 1008 | 109 | 1036 |
| Reeve, Sidney A., Worcester, assignor to C. F. Brown, trustee, Reading, Mass. Superheating system | 753,433 | Mar. 1 | 404 | 95 | 109 | 88 |
| Reeve, Sidney A., Worcester, assignor to C. F. Brown, trustee, Reading, Mass. Superheating steam | 753,738 | Mar. 1 | 1001 | 228 | 109 | 216 |
| Reeve, Sidney A., Worcester, assignor to C. F. Brown, trustee, Reading, Mass. Compressor-valve | 755,317 | Mar. 22 | 4114 | 909 | 109 | 946 |
| Reeve, Sidney A., Worcester, assignor to C. F. Brown, trustee, Reading, Mass. Combined engine and compressor | 757,410 | Apr. 12 | 2396 | 521 | 109 | 1868 |
| Reeve, Sidney A., Worcester, assignor to C. F. Brown, trustee, Reading, Mass. Valve-gear | 757,411 | Apr. 12 | 2398 | 521, 522 | 109 | 1868 |
| Reeves, Edwin A., New Haven, Conn., assignor, by mesne assignments, to E. Weibel, Paterson, N. J., and J. J. Weibel, Brooklyn, N. Y. Overflow-alarm | 753,518 | Mar. 1 | 573 | 131 | 109 | 125 |
| Reeves, Milton O., assignor to Reeves Pulley Company, Columbus, Ind. Link belt | 754,238 | Mar. 8 | 2018 | 449 | 109 | 460 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Reeves Pulley Company. (See Reeves, Milton O., assignor.) | | | | | | |
| Regina Music Box Company. (See Brachhausen, Gustav A., assignor.) | | | | | | |
| Rehfuss, John G. and M. O., Philadelphia, Pa. Apparatus for soldering cans | 754,939 | Mar. 15 | 3429 | 750 | 109 | 783 |
| Rehfuss, John G. and M. O., Philadelphia, Pa. Can-making machine | 754,940 | Mar. 15 | 3433 | 750, 751, 752, 753, 754 | 109 | 784 |
| Rehfuss, John G. and M. O., Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company. Can-soldering machine | 754,699 | Mar. 15 | 2985 | 650, 651 | 109 | 685 |
| Rehfuss, John G. and M. O., Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company. Machine for putting tops and bottoms on cans | 754,700 | Mar. 15 | 2990 | 651, 652 | 109 | 687 |
| Rehfuss, John G. and M. O., Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company of Delaware. Can-making machine | 754,701 | Mar. 15 | 2994 | 652, 653, 654 | 109 | 688 |
| Rehfuss, John G. and M. O., Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company of Delaware. Apparatus for fluxing cans | 754,702 | Mar. 15 | 2998 | 654, 655 | 109 | 689 |
| Rehfuss, John G. and M. O., Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company of Delaware. Apparatus for heating cans preparatory to their being fluxed and soldered | 754,703 | Mar. 15 | 3002 | 655 | 109 | 690 |
| Rehfuss, John G. and M. O., Philadelphia, Pa., assignors to Bureau Can and Manufacturing Company of Delaware. Pneumatic means for removing can tops and bottoms from forming-dies | 754,704 | Mar. 15 | 3001 | 656 | 109 | 691 |
| Rehfuss, Martin O. (See Rehfuss, John G. and M. O.) | | | | | | |
| Rehmenklau, Rudolph W. O., assignor of one-half to J. F. Williamson, Minneapolis, Minn. Antifriction-bearing for water-wheels | 754,388 | Mar. 8 | 2335 | 510 | 109 | 527 |
| Reichenau, Ernst von, Düsseldorf-Oberkassel, Germany. Ammunition-shell | 754,013 | Mar. 8 | 1589 | 354 | 109 | 366 |
| Reichenbach, Fritz, Charlottenburg, Germany. Fly-wheel for quick-running internal-combustion engines | 757,696 | Apr. 19 | 2873 | 626 | 109 | 1999 |
| Reichert, Frederick J., Hornsey, England. Preparing extract of coffee | 758,384 | Apr. 26 | 4343 | 932 | 109 | 2329 |
| Reichheim and Company, E. P. (See Leibman, Charles A., assignor.) | | | | | | |
| Reichle, William, Springfield, Ill. Carpet-stretcher | 758,502 | Apr. 26 | 4692 | 1012 | 109 | 2408 |
| Reichmann, Joseph, Chicago, Ill. Fluid-pressure brake apparatus. (Reissue) | 12,907 | Mar. 22 | 4629 | 1028, 1029 | 109 | 1059 |
| Reid, James F. (See Drew, William T., assignor.) | | | | | | |
| Reid, James H., Newark, N. J. Gas-battery | 757,637 | Apr. 19 | 2874 | 626 | 109 | 1999 |
| Reid, William E., and W. H. Lau, Detroit, Mich. Hose-lining | 756,140 | Mar. 29 | 5701 | 1256 | 109 | 1312 |
| Reilly, John J., Louisville, Ky. Flexible pipe-coupling | 757,143 | Apr. 12 | 1860 | 406, 407 | 109 | 1756 |
| Reilly, Mrs. James E. (See Irish, Perry M., assignor.) | | | | | | |
| Reinhardt, Albert, Chicago, Ill., assignor to International Harvester Company. Grain-deck for harvesters | 754,609 | Mar. 15 | 2796 | 609, 610 | 109 | 644 |
| Reinhold, Herman, Davenport, Iowa. Ice-cutting machine | 753,519 | Mar. 1 | 573 | 131 | 109 | 125 |
| Reinicke, Paul, Köthen, Germany. Horizontal pulp-strainer | 754,161 | Mar. 8 | 1861 | 415 | 109 | 427 |
| Reininger, Richard, Newark, N. J. Carpet-fastener | 757,226 | Apr. 12 | 2014 | 438 | 109 | 1789 |
| Reinle, Otto, and H. Baumgarten, Vienna, Austria-Hungary, assignors to Gesellschaft zur Verwertung Landwirtschaftlicher Produkte, G. M. B. H., Berlin, Germany. Machinery for manufacturing potato-flour by means of rolls | 755,389 | Mar. 22 | 4268 | 941 | 109 | 980 |
| Reinmiller, William C., assignor to A. T. Kenyon and H. C. Hawes, Atlanta, Ill. Fence | 754,389 | Mar. 8 | 2337 | 510 | 109 | 527 |
| Reis, Jared M. B., Tug River, W. Va., and J. H. Gill, Newcastle, Pa. Doubling apparatus | 756,054 | Mar. 29 | 5540 | 1222 | 109 | 1278 |
| Reiss, Christian, and W. G. Bradbury, New York, N. Y. Curtain-fixture | 758,216 | Apr. 26 | 3994 | 867 | 109 | 2253 |
| Reist, Henry G., and A. W. Henshaw, Schenectady, N. Y., assignors to General Electric Company. Starting device for induction-motors | 755,798 | Mar. 29 | 5041 | 1120 | 109 | 1165 |
| Reizenstein, Emile, Waltham, Mass. Substitute for tiling | 757,840 | Apr. 19 | 3260 | 706 | 109 | 2072 |
| Relyea, Charles H. W., assignor of one-half to G. H. Corbett, North Adams, Mich. Wrench | 753,915 | Mar. 8 | 1405 | 317 | 109 | 394 |
| Renault, Anthime, Chateauroux, and G. Cusson, St. Genou, France. Bolting-mill | 757,227 | Apr. 12 | 2016 | 438, 439 | 109 | 1789 |
| Renner, Henry F., assignor to Hollands Manufacturing Company, Erie, Pa. Pipe-cutter | 758,334 | Apr. 26 | 4256 | 914 | 109 | 2310 |
| Renner, William E. Sebring, Ohio. Making turnbuckles | 756,141 | Mar. 29 | 5702 | 1258 | 109 | 1312 |
| Reno, Jesse W., New York, N. Y. Tunnel construction | 754,807 | Mar. 15 | 3183 | 694 | 109 | 1999 |
| Renouf, Edward A., Wellsville, Ohio. Monkey-wrench | 754,846 | Mar. 8 | 2300 | 490 | 109 | 497 |
| Renshaw, Joseph H., Cincinnati, assignor of one-half to C. E. McKeag, Lockland, Ohio. Protractor and its accompaniments | 757,568 | Apr. 19 | 3728 | 597 | 109 | 1965 |
| Renshaw, William. (See Sullivan and Renshaw.) | | | | | | |
| Renthe-Fink, Agnes A. von, Jena, Germany. Holder for forming ornamental articles | 753,629 | Mar. 1 | 782 | 174 | 109 | 170 |
| Reschke, August, Kiel, Germany. Expanding and spreading tool | 756,142 | Mar. 29 | 5703 | 1258 | 109 | 1312 |
| Resek, Simon, Cleveland, Ohio. Stop-cock | 756,526 | Apr. 5 | 657 | 141 | 109 | 1481 |
| Rethmeyer, John F. W., Lyon, Mo. Wheel-rim | 758,190 | Apr. 26 | 3944 | 856 | 109 | 2249 |
| Rettich, Edward, Germantown, and G. Berger, Cincinnati, Ohio. Sorting-machine | 758,104 | Apr. 26 | 3785 | 822, 823 | 109 | 2206 |
| Rettich, Victor A., New York, N. Y. Gas-burner for heating and incandescent gas-lighting | 756,893 | Apr. 12 | 1855 | 301 | 109 | 1647 |
| Rettig, Karl, Spandau, Germany. Dropping-stopper | 755,549 | Mar. 22 | 4532 | 1008 | 109 | 1057 |
| Reul, John F., Juneau, Wis. Knockdown box or crate | 758,105 | Apr. 26 | 3788 | 823 | 109 | 2207 |
| Reuleaux, Josef, Wilkinsburg, assignor to A. Laughlin, Sewickley, Pa. Gas-producer | 758,473 | Apr. 26 | 4515 | 970 | 109 | 2308 |
| Revell, Alexander H. (See Thompson, Robert J., assignor.) | | | | | | |
| Rex Buggy Company. (See Hull, Mathew R., assignor.) | | | | | | |
| Reynaud, Georges, Paris, France. Manufacture of dextrin | 755,390 | Mar. 22 | 4264 | 942 | 109 | 981 |
| Reynolds, Edwin, Milwaukee, Wis. Blowing-engine | 754,162 | Mar. 8 | 1863 | 415, 416 | 109 | 428 |
| Reynolds, Harry S., New Haven, Conn. Artificial bait | 756,527 | Apr. 5 | 658 | 142 | 109 | 1481 |
| Reynolds Manufacturing Company. (See Fisher, John, assignor.) | | | | | | |
| Reynolds, Oliver B., Brockton, Mass. End-gate | 757,680 | Apr. 19 | 2959 | 644 | 109 | 2007 |
| Reynolds, Robert R., New York, N. Y. Larding or salting device | 754,501 | Mar. 15 | 2604 | 566 | 109 | 605 |
| Reynolds, William S., Dayton, Oreg. Broom-moistener | 754,705 | Mar. 15 | 3005 | 656 | 109 | 691 |
| Rheutan, Abram A., Worcester, Mass. Envelop-fastener | 754,239 | Mar. 8 | 2019 | 449 | 109 | 461 |
| Rhoades, Alonzo E., assignor to Draper Company, Hopedale, Mass. Clock mechanism for warping-machines | 756,800 | Apr. 5 | 1167 | 258 | 109 | 1503 |
| Rhodes, Charles M., Steubenville, Ohio. Clutch | 755,550 | Mar. 22 | 4533 | 1009 | 109 | 1057 |
| Rhodes, Harry, Chicago, Ill. Punching-bag | 758,279 | Apr. 26 | 4133 | 893 | 109 | 2282 |
| Rhodes, Louis B., Blairsville, Pa. Protractor-rule | 756,065 | Mar. 29 | 5541 | 1223 | 109 | 1279 |
| Ricau, James H., New Orleans, La. Table-tennis | 755,936 | Mar. 29 | 5330 | 1176 | 109 | 1232 |
| Rice, William P., Lowell, Ohio. Clamp for hoops, bands, &c | 758,385 | Apr. 26 | 4346 | 933 | 109 | 2329 |
| Rich, Frederick S., Canton, Ohio. Sharpening device | 753,630 | Mar. 1 | 784 | 175 | 109 | 170 |



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|---|---|---|---|---|---|---|
| Richards, Willard F., Buffalo, N. Y. Vehicle frame and spring construction | 754,610 | Mar. 15 | 2798 | 610, 611 | 109 | 645 |
| Richards, Willard F., Buffalo, assignor to Gould Coupler Company, New York, N. Y. Car-coupling | 754,706 | Mar. 15 | 3007 | 656 | 109 | 691 |
| Richards, William T., Quincy, Mass. Traveling-case | 758,019 | Apr. 19 | 3608 | 781 | 109 | 2150 |
| Richardson, Charles G., Springfield, Vt. Taper attachment for turret-lathes | 757,681 | Apr. 19 | 2962 | 644 | 109 | 2008 |
| Richardson, Earl H., North Ontario, and F. J. Kimball, Los Angeles, Cal. Fruit cleaner and grader | 755,937 | Mar. 29 | 5331 | 1176, 1177 | 109 | 1233 |
| Richardson, John S. (See Norwood, George, assignor.) | | | | | | |
| Richardson, Robert, Glasgow, Scotland. Air-pump for steam-engines | 755,988 | Mar. 29 | 5335 | 1177 | 109 | 1233 |
| Richardson, Solon O., Jr., Toledo, Ohio. Glass-furnace | 756,409 | Apr. 5 | 441 | 91, 92 | 109 | 1437 |
| Richardson, Solon O., Jr., Toledo, Ohio. Furnace | 756,894 | Apr. 12 | 1357 | 301, 302 | 109 | 1648 |
| Richardson, Solon O., Jr., Toledo, Ohio. Manufacturing glass articles | 756,895 | Apr. 12 | 1360 | 302, 303 | 109 | 1648 |
| Richardson, Solon O., Jr., Toledo, Ohio. Ladle and mold | 757,412 | Apr. 12 | 2401 | 522 | 109 | 1869 |
| Richardson, Solon O., Jr., assignor to Libbey Glass Company, Toledo, Ohio. Manufacturing glassware | 756,284 | Apr. 5 | 182 | 37 | 109 | 1383 |
| Richardson, Wheeler, assignor of two-thirds to N. L. Murrell and E. C. Alexander, Elizabethton, Tenn. Folding door | 755,551 | Mar. 22 | 4535 | 1009, 1010 | 109 | 1088 |
| Richardson, William G., Milwaukee, Wis. Mixing-machine | 757,144 | Apr. 12 | 1862 | 407 | 109 | 1756 |
| Richardson, William S., Boston, Mass., assignor to Ball and Socket Fastener Company, Portsmouth, N. H. Socket member | 755,582 | Mar. 22 | 4587 | 1020 | 109 | 1050 |
| Richardson, William S., Boston, Mass., assignor to Ball & Socket Manufacturing Company, Cheshire, Conn., and Boston, Mass. Fastener socket member | 756,184 | Mar. 29 | 5765 | 1273 | 109 | 1325 |
| Richmond, George W., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Shunt resistance | 753,916 | Mar. 8 | 1406 | 317 | 109 | 324 |
| Richmond, John S., New York, N. Y. Transmission of electrical impulses | 758,106 | Apr. 26 | 3790 | 823 | 109 | 2208 |
| Richmond, John S., New York, N. Y. Transmission of electrical impulses | 758,598 | Apr. 26 | 4766 | 1026 | 109 | 2425 |
| Richter, Felix, Borsdorf, near Leipzig, Germany. Portable crosscut-saw | 757,770 | Apr. 19 | 3137 | 682 | 109 | 2016 |
| Richter, Friedrich A., Rudolstadt, Germany. Spring-motor | 755,939 | Mar. 29 | 5335 | 1177 | 109 | 1233 |
| Richter, Hans, Nuremberg, Germany. Gas-engine | 754,163 | Mar. 8 | 1866 | 416 | 109 | 428 |
| Rickard, Hannah V., Bayonne, N. J. Hat-fastener | 753,314 | Mar. 1 | 181 | 41 | 109 | 42 |
| Ricke, George H., assignor of two-thirds to J. Zimmermann, Cincinnati, Ohio. Bung-bushing | 758,386 | Apr. 26 | 4347 | 933 | 109 | 2329 |
| Ricksecker, Alva C. (See Smith, Frank L., assignor.) | | | | | | |
| Riddell, Joseph. (See Riddell, William A. and J.) | | | | | | |
| Riddell, William A. and J., Sharon, Pa. Device for separating flue-dust from gas | 755,244 | Mar. 22 | 3977 | 862, 863 | 109 | 918 |
| Riddle, Robert N., Uwchland, Pa., assignor to Warner Chemical Company, Carteret, N. J. Making vanillin | 754,164 | Mar. 8 | 1867 | ..... | 109 | 429 |
| Riddle, Thomas E. (See Ramsay and Riddle.) | | | | | | |
| Riddlebaugh, John, Sharpsburg, assignor to Lutz & Schramm Company, Allegheny, Pa. Sorting-machine | 754,390 | Mar. 8 | 2338 | 511 | 109 | 527 |
| Rider, Granville S., Elmhurst, assignor of one-fourth to L. Taussig, New York, N. Y. Oil vaporizer and burner | 756,410 | Apr. 5 | 444 | 92 | 109 | 1437 |
| Rider, Herbert E., New York, N. Y. Steam-generator | 757,413 | Apr. 12 | 2403 | 523 | 109 | 1869 |
| Ridgway, Thomas J. (See Dixon and Ridgway.) | | | | | | |
| Riedel, George L. (See Miller and Riedel.) | | | | | | |
| Riegels, Olaf L. A., Hövik, near Christiania, Norway. Lubricator | 755,945 | Mar. 22 | 3978 | 888 | 109 | 918 |
| Riehle, Frederick A. (See Cock, William R., assignor.) | | | | | | |
| Rieman, John F., Goshen, Ind. Nut-lock | 756,709 | Apr. 5 | 978 | 216 | 109 | 1553 |
| Rievaldt, William, assignor of one-half to T. H. Keane, Cleveland, Ohio. Bolt-threading head | 758,739 | Mar. 1 | 1004 | 228, 229 | 109 | 216 |
| Riffe, John W. (See Day, Thomas M., assignor.) | | | | | | |
| Rile, William J., assignor to E. L. Shipman, New York, N. Y. Temporary binder | 757,682 | Apr. 19 | 2963 | 645 | 109 | 2006 |
| Riley, John J. (See Fairhurst, William S., assignor.) | | | | | | |
| Riley, Robert G., Seattle, Wash. Submarine dredging and sluicing device | 754,611 | Mar. 15 | 2800 | 611 | 109 | 645 |
| Rimmington, Walter J., Toronto, Canada. Woven-wire mattress | 756,143 | Mar. 29 | 5704 | 1258 | 109 | 1313 |
| Rinehart, William L., Milwaukee, Wis. Envelop-machine | 756,981 | Apr. 12 | 1581 | 336, 337 | 109 | 1668 |
| Ringnell, Per A., Salem, Ohio. Clothes-drier | 757,497 | Apr. 19 | 2571 | 564 | 109 | 1920 |
| Ringqvist, Otto W., assignor to M. E. Johnson, Fitchburg, Mass. Cartridge-ejector for breakdown guns | 754,092 | Mar. 8 | 1745 | 388 | 109 | 400 |
| Ringstrom, Charles J., Chicago, Ill. Automatic blocking, releasing, and dumping system for tram-cars | 753,917 | Mar. 8 | 1408 | 317, 318 | 109 | 325 |
| Rink, William E., Hilton, assignor to L. and A. B. Meyer, Newark, N. J. Hose-supporter | 754,347 | Mar. 8 | 2202 | 490 | 109 | 498 |
| Riordan, John W. (See Kelly and Riordan.) | | | | | | |
| Riotte, Carl C. and E. A., New York, N. Y. Sparking-igniter mechanism | 758,217 | Apr. 26 | 3995 | 868 | 109 | 2253 |
| Riotte, Eugene A. (See Riotte, Carl C. and E. A.) | | | | | | |
| Ripley, Daniel A., assignor to United States Glass Company, Pittsburg, Pa. Manufacture of glass articles of circular cross-section | 754,165 | Mar. 8 | 1868 | 416 | 109 | 429 |
| Ristine Company. (See Rowell, Benton C., assignor.) | | | | | | |
| Ritter, Frederic W., Jr., Washington Grove, Md. Draft and buffing mechanism | 757,841 | Apr. 19 | 3261 | 707 | 109 | 2072 |
| Roake, John S., Brooklyn, N. Y. Soap-holder | 757,638 | Apr. 19 | 2876 | 626 | 109 | 1999 |
| Roanoke Mathometer Company. (See Martin, Joseph H., assignor.) | | | | | | |
| Robb, David W., Amherst, Canada. Steam-boiler | 755,046 | Mar. 22 | 3624 | 795 | 109 | 844 |
| Robbins, Alfred L., Oakpark, Ill. Bracket for universal stands or supports | 757,498 | Apr. 19 | 2572 | 564 | 109 | 1920 |
| Robbins, Silas, Omaha, Nebr. Fishing-tackle | 754,892 | Mar. 15 | 3348 | 731 | 109 | 765 |
| Robburts, George W., assignor of one-half to M. C. and H. H. Lemaster, Granbury, Tex. Baling-press | 754,093 | Mar. 8 | 1747 | 388 | 109 | 400 |
| Robert, Samuel, New York, N. Y. Match-case | 754,707 | Mar. 15 | 3009 | 657 | 109 | 691 |
| Roberti, Josef H., Maastricht, Netherlands. Machinery for separating impurities from granular or like substances | 756,285 | Apr. 5 | 184 | 38 | 109 | 1383 |
| Roberts, Albert G., Peterborough, Canada. Car-fender | 756,411 | Apr. 5 | 446 | 92 | 109 | 1438 |
| Roberts, Anderson P. and W. M., Columbia, Tenn. Pneumatic stacker | 755,940 | Mar. 29 | 5338 | 1178 | 109 | 1234 |
| Roberts, Dugald H., Detroit, Mich., assignor to Automatic Pressure Feed Lubricator Company, Los Angeles, Cal. Pressure sight-feed lubricator | 756,286 | Apr. 5 | 185 | 38 | 109 | 1383 |
| Roberts, Henry, Omaha, Nebr. Metallic packing | 758,810 | Mar. 1 | 1189 | 267 | 109 | 256 |
| Roberts, Henry P., New York, N. Y. Siphon | 755,941 | Mar. 29 | 5342 | 1178 | 109 | 1235 |
| Roberts, James T., assignor of one-half to S. O. Roberts, Claremont, Colo. Weather-strip for windows | 755,552 | Mar. 22 | 4537 | 1010 | 109 | 1088 |
| Roberts, Lewis A., Carbondale, Pa. Mixing and kneading machine | 756,144 | Mar. 29 | 5704 | 1259 | 109 | 1313 |
| Roberts, Samuel O. (See Roberts, James T., assignor.) | | | | | | |
| Roberts, Solomon W., Hurtsboro, Ala. Buoy | 758,218 | Apr. 26 | 3998 | 868 | 109 | 2253 |
| Roberts, William M. (See Roberts, Anderson P. and W. M.) | | | | | | |
| Robertson, Alexander R., Pass Christian, Miss. Bottle-seal | 755,047 | Mar. 22 | 3626 | 796 | 109 | 844 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Drg. | Vol. | Page. |
| Robertson, Elisa E., New York, N. Y. Bed attachment | 755,699 | Mar. 29 | 4841 | 1076, 1077 | 109 | 1123 |
| Robertson, John, London, England. Single-trigger mechanism for drop-down guns | 756,896 | Apr. 12 | 1363 | 303, 304 | 109 | 1649 |
| Robertson, John A., assignor, by mesne assignments, to Rochester Optical Company, Rochester, N. Y. Photographic view-finder | 754,908 | Mar. 15 | 3349 | 732 | 109 | 766 |
| Robertson, William, Chicago, Ill. Coaling-station | 758,191 | Apr. 26 | 3945 | 856, 857 | 109 | 2242 |
| Robertson, William A., Alameda, and D. P. Heap, San Francisco, Cal.; said Heap assignor to said Robertson. Acetylene-gas generator | 754,808 | Mar. 15 | 3187 | 695 | 109 | 730 |
| Robinson, Albert E. (See Laur and Robinson.) | | | | | | |
| Robinson, Arthur D., St. Louis, Mo. Apparatus for drying eggs | 757,347 | Apr. 12 | 2270 | 495, 496 | 109 | 1843 |
| Robinson, Cyrus, Edgewood Park, Pa., assignor to Westinghouse Machine Company. Oil-pumping apparatus | 757,499 | Apr. 19 | 2574 | 565 | 109 | 1993 |
| Robinson, Cyrus, New York, N. Y., assignor to Westinghouse Machine Company. Speed-governor | 758,020 | Apr. 19 | 3610 | 781 | 109 | 2150 |
| Robinson, Eugene M., Chicago, assignor to himself, and W. H. Finley, Winnetka, Ill. Variable-power lifting-jack | 756,982 | Apr. 12 | 1533 | 337, 338 | 109 | 1663 |
| Robinson, Frank M., Allentown, Pa. Pencil-sharpener | 756,287 | Apr. 5 | 187 | 38 | 109 | 1384 |
| Robinson, Freeman C., and J. E. Green, Council Bluffs, Iowa. Burglar-alarm | 754,391 | Mar. 8 | 2341 | 511 | 109 | 527 |
| Robinson, Glenn A., Genesco, Ill. Hog-ringer | 757,054 | Apr. 12 | 1685 | 366 | 109 | 1717 |
| Robinson, Mark H. (See McMullen and Robinson.) | | | | | | |
| Robinson, Ralph. (See Brewington, Henry S., assignor.) | | | | | | |
| Robinson, Ralph C. (See Wood and Robinson.) | | | | | | |
| Robinson, Willard E., Malden, Mass. Soap-receptacle | 755,700 | Mar. 29 | 4843 | 1077 | 109 | 1123 |
| Roby, George L., assignor to Stoddard Manufacturing Company, Dayton, Ohio. Hay-tedder | 754,166 | Mar. 8 | 1869 | 417 | 109 | 429 |
| Roby, George L., assignor to Stoddard Manufacturing Company, Dayton, Ohio. Grain-drill | 754,167 | Mar. 8 | 1874 | 417, 418 | 109 | 430 |
| Roby, Luther E., Peoria, Ill. Grain-drill | 757,771 | Apr. 19 | 3138 | 682, 683 | 109 | 2046 |
| Rochester Optical Company. (See Hutchings, Charles E., assignor.) | | | | | | |
| Rochester Optical Company. (See Robertson, John A., assignor.) | | | | | | |
| Rockstadt, Abraham, Mount Morris, Wis. Bob-sleigh attachment | 755,942 | Mar. 29 | 5343 | 1179 | 109 | 1235 |
| Rockstroh, Wilhelm M., Klein-Sedlitz, near Pirna, Germany. Printing-block | 753,740 | Mar. 1 | 1006 | 220 | 109 | 216 |
| Rockstroh, Wilhelm M., Klein-Sedlitz, near Pirna, Germany. Platen printing-press | 756,802 | Apr. 5 | 1170 | 259, 260 | 109 | 1592 |
| Rockstroh, Wilhelm M., Heidenau, near Dresden, Germany. Safety device for presses | 756,801 | Apr. 5 | 1169 | 258, 259 | 109 | 1592 |
| Rockwell, Edward D., assignor to Liberty Bell Company, Bristol, Conn. Fish-line reel | 757,964 | Apr. 19 | 3491 | 757 | 109 | 2124 |
| Rockwell, George W., Horseheads, N. Y. Extension window-screen | 758,021 | Apr. 19 | 3612 | 781 | 109 | 2151 |
| Rockwell, Joseph H., Providence, R. I. Folding music-rack | 754,502 | Mar. 15 | 2605 | 566 | 109 | 605 |
| Rockwell, Olin S., Enfield, and S. E. Horton, assignors to E. Horton & Son Company, Windsor Locks, Conn. Chuck | 755,246 | Mar. 22 | 3960 | 883 | 109 | 918 |
| Rodé-Stucky, Charles, La Chaux-de-Fonds, Switzerland. Stem winding and setting mechanism for watches | 754,171 | Mar. 8 | 1881 | 419 | 109 | 431 |
| Rodehaver, Jesse C. (See Hannan and Rodehaver.) | | | | | | |
| Rodemeyer, Henry F. (See Kadel and Rodemeyer.) | | | | | | |
| Roden, Samuel A., New Brighton, Pa. Jar-fastener | 757,683 | Apr. 19 | 2964 | 645 | 109 | 2008 |
| Rodenberg, Milton S., New York, N. Y. Expansive bracelet | 757,772 | Apr. 19 | 3142 | 683 | 109 | 2047 |
| Roder, Edwin G., Chester, Pa. Selvage-forming attachment for looms | 754,240 | Mar. 8 | 2021 | 449 | 109 | 461 |
| Roderick Lean Manufacturing Company. (See Goss, George W. and C. E., assignors.) | | | | | | |
| Rodger Ballast Car Company. (See Meissner, Otto W., assignor.) | | | | | | |
| Rodocker, Ananias, Massillon, Ohio. Cultivator attachment | 756,983 | Apr. 12 | 1537 | 338 | 109 | 1684 |
| Roedel, Clarence H., assignor to E. J. Jeitles, Philadelphia, Pa. Apparatus for producing artificial fountains without water | 756,528 | Apr. 5 | 659 | 142 | 109 | 1481 |
| Roehrich, Frank N., Brooklyn, N. Y. Electric fan | 757,773 | Apr. 19 | 3143 | 683, 684 | 109 | 2048 |
| Roehrich, Frank N., New York, N. Y. Fan | 757,774 | Apr. 19 | 3146 | 684 | 109 | 2049 |
| Roenigk, Albert E., Wilkinsburg, Pa. Cutting and trimming machine | 757,228 | Apr. 12 | 2018 | 439 | 109 | 1790 |
| Roger, Louis F., *et al.* (See Prevost, Magnus, assignor.) | | | | | | |
| Rogers, Charles, Pittsburg, Pa. Cam-movement for valves | 758,631 | Mar. 1 | 786 | 175 | 109 | 171 |
| Rogers, Christopher L., East Cleveland, assignor, by mesne assignments, of one-half to A. Hill, Cleveland, Ohio. Tool for cutting buttonholes | 756,808 | Apr. 5 | 1171 | 260 | 109 | 1594 |
| Rogers, Frank, New York, N. Y. Can-capping machine | 757,842 | Apr. 19 | 3264 | 707 | 109 | 2073 |
| Rogers, Ion E., and G. A. Fry, Columbus, Ohio. Journal-box | 757,145 | Apr. 12 | 1866 | 407 | 109 | 1757 |
| Rogers, Myrtle M., Chicago, Ill. Upholstery | 757,414 | Apr. 12 | 2405 | 523 | 109 | 1870 |
| Roll, Henry F., St. Louis, Mo. Parcel-attaching device | 754,241 | Mar. 8 | 2022 | 449 | 109 | 461 |
| Rollason, Arthur, Long Eaton, England. Gas-motor engine | 757,415 | Apr. 12 | 2406 | 524, 525 | 109 | 1870 |
| Rollins, John L., Norman, Okla. Ter. Cotton-separator | 755,701 | Mar. 29 | 4844 | 1077 | 109 | 1124 |
| Romain, Adolphe, and J. D'Ayguesvives, Paris, France. Support for incandescent electric lamps | 756,412 | Apr. 5 | 448 | 92, 93 | 109 | 1438 |
| Romig, Robert W., Pittsburg, Pa., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Ingredient-scale | 756,710 | Apr. 5 | 979 | 216 | 109 | 1553 |
| Romunder, Hermann, Bloomsbury, N. J. Frame or sash for windows | 753,315 | Mar. 1 | 181 | 41 | 109 | 42 |
| Romünder, Hermann, Milwaukee, Wis. Flexible sliding panel or front for articles of furniture or other purposes | 756,298 | Apr. 5 | 188 | 39 | 109 | 1384 |
| Roos, Christian. (See Mill, Anton, assignor.) | | | | | | |
| Root, Charles H., Cleveland, Ohio. Fender | 755,794 | Mar. 29 | 5045 | 1121 | 109 | 1167 |
| Root, Edgar A., and C. M. Wallace, Huntington, W. Va. Self-adjusting wheel | 754,804 | Mar. 15 | 3351 | 732 | 109 | 766 |
| Root, Gustaf, Tilly Foster, N. Y. Bread-slicer | 756,413 | Apr. 5 | 450 | 93 | 109 | 1439 |
| Root, Henry, San Francisco, Cal. Fire-barrier wall, partition, &c. | 755,171 | Mar. 22 | 3843 | 848 | 109 | 891 |
| Roppen, Peter. (See Faschian, Herman, assignor.) | | | | | | |
| Rorabeck, Ernest, Springfield, Mass. Cutting-nippers | 756,056 | Mar. 29 | 5343 | 1223 | 109 | 1279 |
| Rorty, Malcolm C., Boston, Mass., assignor to American Telephone and Telegraph Company. Polarized relay | 753,918 | Mar. 8 | 1413 | 319 | 109 | 326 |
| Roscoe, Edith. (See Lanius, Kinsey, assignor.) | | | | | | |
| Rose, Allen W. (See Swan and Rose.) | | | | | | |
| Rose, Frank S., Newark, N. J. Type-writing machine | 754,242 | Mar. 8 | 2023 | 450 | 109 | 461 |
| Rose, George L., Pasadena, Cal. Steam-generator | 757,639 | Apr. 19 | 2877 | 627 | 109 | 1990 |
| Rose, Israel M., Philadelphia, Pa. Grinding or sharpening device | 757,843 | Apr. 19 | 3268 | 708 | 109 | 2074 |
| Rose, James A., Prairie City, Ill. Sidewalk on street-crossings | 754,805 | Mar. 15 | 3352 | 732 | 109 | 766 |
| Rose, Samuel S., Amador City, Cal. Gas-compressor for ice-machines | 756,529 | Apr. 5 | 661 | 142 | 109 | 1482 |
| Rosenbaum, Walter A., New York, N. Y. Letter-press | 756,530 | Apr. 5 | 662 | 142 | 109 | 1482 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Rosenbluth, Edwin M., Philadelphia, Pa. Acetylene-gas generator | 753,632 | Mar. 1 | 788 | 176 | 109 | 171 |
| Rosenfeld, Henry, New York, N. Y. Electric-railway shoe | 755,391 | Mar. 22 | 4265 | 942 | 109 | 981 |
| Roslund, Oscar. (See McIntyre, Edward F., assignor.) | | | | | | |
| Ross, George P. (See Le Roy and Ross.) | | | | | | |
| Ross, Henry I. M., Dunedin, New Zealand. Double-current ventilator | 757,348 | Apr. 12 | 2272 | 496 | 109 | 1843 |
| Ross, James, and A. W. MacKenzie, Edinburgh, Scotland. Bush or liner for casks and means for attaching same | 754,708 | Mar. 15 | 3010 | 657 | 109 | 692 |
| Ross, John F., Toronto, Canada. Machine for bordering calendars or similar sheets | 754,941 | Mar. 15 | 3443 | 755 | 109 | 787 |
| Ross, John H., assignor to American Steel & Wire Company, San Francisco, Cal. Spring-knotting machine | 756,531 | Apr. 5 | 664 | 143 | 109 | 1482 |
| Ross, John H., assignor to American Steel & Wire Company, San Francisco, Cal. Spring-dowel-forming machine | 756,532 | Apr. 5 | 666 | 143, 144 | 109 | 1483 |
| Ross-Meehan Foundry Company. (See Meehan, James, assignor.) | | | | | | |
| Ross, Robert. (See Akers and Ross.) | | | | | | |
| Ross, Robert M., Allegheny, Pa. Heater and purifier | 754,014 | Mar. 8 | 1590 | 355 | 109 | 366 |
| Ross, Warren, *et al.* (See Adams, Robert P., assignor.) | | | | | | |
| Rossiter, William W., New York, N. Y. Fan for disinfecting purposes | 757,684 | Apr. 19 | 2966 | 645 | 109 | 2009 |
| Rössler, Rudolf, Leipzig, Germany. Clamp | 758,476 | Apr. 26 | 4517 | 970 | 109 | 2369 |
| Rote, Charles V., assignor of two-thirds to P. E. Shee, Lancaster, and C. Forney, Harrisburg, Pa. Track-sander | 757,416 | Apr. 12 | 2408 | 525 | 109 | 1871 |
| Roth, Frank W., West Hoboken, N. J. Line-eye attachment for fishpoles | 754,094 | Mar. 8 | 1749 | 388 | 109 | 401 |
| Rothe, Ernst K., assignor to Fahrzeugfabrik Eisenach, Eisenach, Germany. Fluid-brake for recoil-guns | 754,896 | Mar. 15 | 3352 | 732 | 109 | 766 |
| Rothe, L. A., *et al* (See Kempton, Benjamin S., assignor.) | | | | | | |
| Rothschild, Sidney, New York, N. Y. Compound engine | 757,965 | Apr. 19 | 3493 | 757, 758 | 109 | 2125 |
| Rothwell-Jackson, Charles L., and E. W. Hunt, Bolton, England. Machine for dyeing textile fabrics | 757,055 | Apr. 12 | 1686 | 366 | 109 | 1717 |
| Rothwell, William R., Philadelphia, Pa. Fountain-pen | 757,500 | Apr. 19 | 2575 | 565 | 109 | 1921 |
| Rouaix, Gaston, Paris, France. Too-great-speed alarm | 757,640 | Apr. 19 | 2881 | 627, 628 | 109 | 1991 |
| Roumiguiere, Alphonse, assignor of one-half to R. Hickmott, San Francisco, Cal. Artichoke-trimmer | 757,229 | Apr. 12 | 2020 | 439 | 109 | 1790 |
| Roush, Henry. (See Roush, Peter, Jr., and H.) | | | | | | |
| Roush, Peter, Jr., and H., Greenfield, Ohio. Curtain-exhibitor | 758,149 | Apr. 26 | 3869 | 840 | 109 | 2226 |
| Rouze, John L., Degraff, Ohio. Stock-car | 757,349 | Apr. 12 | 2273 | 496, 497 | 109 | 1843 |
| Rowan, Frederick J., Glasgow, Scotland. Steam-boiler | 754,348 | Mar. 8 | 2203 | 490, 491 | 109 | 498 |
| Rowe, George B., Moore, Okla. Ter. Shears | 753,919 | Mar. 8 | 1416 | 319 | 109 | 326 |
| Rowe, George B., Moore, Okla. Ter. Press | 757,501 | Apr. 19 | 2576 | 565, 566 | 109 | 1921 |
| Rowe, William G., administrator. (See Tirrell, Jacob P.) | | | | | | |
| Rowell, Benton C., assignor to Ristine Company, Chicago, Ill. Rail-joint | 753,434 | Mar. 1 | 406 | 95 | 109 | 88 |
| Rowland, Calvin, assignor to Rowland Manufacturing Company, Denver, Colo. Separable hinge for screens | 754,809 | Mar. 15 | 3189 | 695 | 109 | 731 |
| Rowland, Calvin, assignor to Rowland Manufacturing Company, Denver, Colo. Separable hinge for screens | 754,810 | Mar. 15 | 3191 | 695 | 109 | 731 |
| Rowland, Horace B., Philadelphia, Pa. Hood or injector for car-ventilators | 756,057 | Mar. 29 | 5343 | 1223 | 109 | 1279 |
| Rowland Manufacturing Company. (See Rowland, Calvin, assignor.) | | | | | | |
| Rowley, Richard, Clearfield, Pa. Compound metal ingot | 758,387 | Apr. 26 | 4348 | 933 | 109 | 2330 |
| Roy, John F., *et al.* (See Baird, Clarence D., assignor.) | | | | | | |
| Royle, John J., Irlam, near Manchester, England. Apparatus for regulating the flow of fluids | 757,502 | Apr. 19 | 2582 | 567 | 109 | 1922 |
| Royle, Samuel, Southsea, assignor of two-thirds to J. Madden and A. Joseph, London, England. Machine for sewing corsets | 757,906 | Apr. 19 | 3496 | 758 | 109 | 2126 |
| Royle, Vernon, Paterson, N. J. Clamp for routing-machines | 756,058 | Mar. 29 | 5344 | 1223 | 109 | 1279 |
| Rubicam, John H., and J. F. Baxter, Cambridge, Ohio; said Rubicam assignor to said Baxter. Hook-rack | 754,508 | Mar. 15 | 2607 | 566 | 109 | 605 |
| Ruby, John B. (See Elliott and Ruby.) | | | | | | |
| Rudasill, Herbert M., Glenwood Springs, Colo. Index | 758,477 | Apr. 26 | 4518 | 970 | 109 | 2369 |
| Rude Brothers Manufacturing Company. (See Ham, Henry C., assignor.) | | | | | | |
| Rudometoff, Michael, Gattschina, near St. Petersburg, Russia. Printing process | 758,192 | Apr. 26 | 3949 | ..... | 109 | 2243 |
| Rueckert, George C. (See Lenzen, Bertram, assignor.) | | | | | | |
| Rueckholdt, George. (See Hall, Thrasher, assignor.) | | | | | | |
| Ruedy, John, Denver, Colo. Concentrator | 757,350 | Apr. 12 | 2275 | 497 | 109 | 1843 |
| Ruehs, Charles L. (See Streich and Ruehs.) | | | | | | |
| Ruehs, Charles L., and F. Streich, Chicago, Ill., assignors to Universal Automatic Carving Machine Company. Automatic carving-machine | 757,280 | Apr. 12 | 2021 | 439, 440 | 109 | 1790 |
| Ruenzel, Henry G., *et al.* (See Krienitz, Alfred J., assignor.) | | | | | | |
| Rugg, Arthur H., *et al.* (See O'Brien, Arthur, assignor.) | | | | | | |
| Rugh, Harry O., assignor to Western Telegraphone Company, Chicago, Ill. Telegraph system | 757,503 | Apr. 19 | 2584 | 567 | 109 | 1922 |
| Rugh, Harry O., assignor to Western Telegraphone Company, Chicago, Ill. Telegraph system | 757,504 | Apr. 19 | 2585 | 567 | 109 | 1924 |
| Rugh, Harry O., assignor to Western Telegraphone Company, Chicago, Ill. Telegraphy | 757,505 | Apr. 19 | 2590 | 568 | 109 | 1925 |
| Rukenbrod, Robert P., Turtlecreek, Pa. Electric controller for alternating currents | 756,711 | Apr. 5 | 981 | 216, 217 | 109 | 1553 |
| Rumberg, Peter S., Norway, Mich. Steam-cooker | 755,392 | Mar. 22 | 4266 | 942 | 109 | 981 |
| Rundle, William, Johannesburg, Transvaal. Nut-lock | 757,775 | Apr. 19 | 3148 | 684 | 109 | 2049 |
| Runge, Eduard, assignor to Greve, Herzberg and Company, Berlin, Germany. Type-writer | 758,563 | Apr. 26 | 4694 | 1012, 1013, 1014 | 109 | 2408 |
| Runge, Walter C., London, assignor to Talkophone Syndicate, Limited, Westminster, England. Graphophone, phonograph, or the like | 756,289 | Apr. 5 | 192 | 39, 40 | 109 | 1385 |
| Runnells, William F. (See Sanborn and Runnells.) | | | | | | |
| Rusby, Joseph H., Nutley, N. J. Electric switch | 758,478 | Apr. 26 | 4520 | 971 | 109 | 2369 |
| Rush, Martin V., Anderson, Ind. Vehicle-tire | 753,920 | Mar. 8 | 1419 | 319 | 109 | 327 |
| Russell, Edwin L., Cleveland, Ohio. Steering connection for motor-vehicles | 753,316 | Mar. 1 | 182 | 41 | 109 | 42 |
| Russell, Edwin L., Dallas, Texas. Driving and steering mechanism for motor-vehicles | 753,317 | Mar. 1 | 184 | 42 | 109 | 43 |
| Russell & Erwin Manufacturing Company. (See Caley, Charles J., assignor.) | | | | | | |
| Russell & Erwin Manufacturing Company. (See Voight, Henry G., assignor.) | | | | | | |
| Russell & Erwin Mfg. Co. (See Crandall, Nathan W., assignor.) | | | | | | |
| Russell, Frank J., New York, N. Y. Electric connection | 755,393 | Mar. 22 | 4267 | 943 | 109 | 981 |
| Russell, George E. (See Ames, Lyon, and Russell.) | | | | | | |
| Russell, James L., Boston, Mass. Automatic circuit-closer | 755,048 | Mar. 22 | 3627 | 796 | 109 | 844 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Russell Manufacturing Company. (See Fisher, William C., assignor.) | | | | | | |
| Russell, Nola F., Chicago, Ill. Combination walking-stick and stool | 757,776 | Apr. 19 | 3150 | 685 | 109 | 2049 |
| Russell, Richard, Stephen, Minn. Ditching and grading machine | 757,417 | Apr. 12 | 2412 | 526 | 109 | 1872 |
| Russell, Theodore L., Emlenton, Pa. Nut-lock | 756,145 | Mar. 29 | 3706 | 1250 | 109 | 1313 |
| Russell, William G., Russell, Kans. Slope-stake attachment for engineers' transits | 754,897 | Mar. 15 | 3354 | 733 | 109 | 766 |
| Rutishauser, John J., *et al.* (See Beal, William C., assignor.) | | | | | | |
| Rutledge, Miriam, Grand Forks, N. D. Seat for water-closets | 756,807 | Apr. 12 | 1365 | 304 | 109 | 1649 |
| Ryan, Daniel D., Renault, Ill. Door-check | 755,795 | Mar. 29 | 5046 | 1121 | 109 | 1167 |
| Ryan, Frank G., assignor to Parke, Davis & Company, Detroit, Mich. Device for storing and administering serums | 754,015 | Mar. 8 | 1591 | 355 | 109 | 367 |
| Ryan, James P., Enfield, N. H. Stop-motion for fulling-mills | 758,107 | Apr. 26 | 3708 | 824 | 109 | 2208 |
| Ryan, Pearl M., Atlanta, Ga. Pocket utensil | 755,172 | Mar. 22 | 3844 | 848 | 109 | 891 |
| Ryon, Eppa H., assignor to Crompton & Knowles Loom Works, Worcester, Mass. Swivel-loom | 753,741 | Mar. 1 | 1007 | 229 / 230 | 109 | 217 |
| Rypinski, Maurice C., Schenectady, N. Y., assignor to General Electric Company. Means for protecting electrical measuring instruments | 757,056 | Apr. 12 | 1687 | 367 | 109 | 1717 |
| S. M. Howes Company. (See Frenning, John E., assignor.) | | | | | | |
| Saam, Henry, Mohawk, Mich. Governor for air-compressors | 753,683 | Mar. 1 | 791 | 176 | 109 | 173 |
| Sachers, Ralph J., assignor, by mesne assignments, to J. A. Wetmore, New York, N. Y. Planographic printing | 758,108 | Apr. 26 | 3794 | 824 | 109 | 2208 |
| Sachers, Ralph J., assignor, by mesne assignments, to Aluminum Compound Plate Company, New York, N. Y. Printing-plate | 758,599 | Apr. 26 | 4769 | 1026 | 109 | 2425 |
| Sachs, Joseph, assignor to Johns-Pratt Company, Hartford, Conn. Insulating and suspending device | 757,418 | Apr. 12 | 2412 | 526 | 109 | 1872 |
| Sack, Lawrence, Farwell, Nebr. Plow | 756,414 | Apr. 5 | 452 | 93, 94 | 109 | 1439 |
| Sackett, Homer M., Telluride, Colo. Loading apparatus for tramways | 757,777 | Apr. 19 | 3151 | 685 | 109 | 2050 |
| Sackett, Homer M., Telluride, Colo. Rock and ore crusher | 758,280 | Apr. 26 | 4134 | 903 | 109 | 2283 |
| Safety Car Heating & Lighting Company. (See Creveling, John L., assignor.) | | | | | | |
| Safety Car Heating & Lighting Company. (See Dixon, Robert M., assignor.) | | | | | | |
| Safety Car Heating & Lighting Company. (See Towne, Joseph M., assignor.) | | | | | | |
| Sager, Chauncy A., Elmonte, assignor to J. T. Pollock, Los Angeles, Cal. Thill-coupling | 758,198 | Apr. 26 | 3951 | 857 | 109 | 2244 |
| Sahlin, Axel, Millom, England. Gas-fired boiler | 754,005 | Mar. 8 | 1750 | 389 | 109 | 401 |
| Sahulka, Johann, Vienna, Austria-Hungary. Electropneumatic system of driving | 755,173 | Mar. 22 | 3845 | 849 / 850 | 109 | 892 |
| Saint Chamas, Albert de, Chicago, Ill. Envelop-clasp | 756,712 | Apr. 5 | 982 | 217 | 109 | 1554 |
| Saliger, Alois B., assignor to International Business Exchange, New York, N. Y. Stenographic type-writing machine | 753,318 | Mar. 1 | 186 | 42 | 109 | 43 |
| Saling, Thomas W., and J. McKiel, Marshall, Tex. Car-door | 755,049 | Mar. 22 | 3629 | 796 | 109 | 845 |
| Salom, Pedro G., Philadelphia, Pa. Manufacture of sulfuric acid | 755,247 | Mar. 22 | 3982 | 884 | 109 | 919 |
| Saltar, John, Jr., Philadelphia, Pa. Gas-retort charger | 756,050 | Mar. 29 | 5516 | 1224 | 109 | 1280 |
| Salubrita, Gesellschaft mit Beschränkter Haftung. (See Lebach, Elias, assignor.) | | | | | | |
| Samuel, Leopold S., Newark, N. J. Soap cake | 754,243 | Mar. 8 | 2027 | 450 | 109 | 462 |
| Samuels, Jacob, Chicago, Ill., assignor of one-third to J. A. Pitts, Kenosha, Wis. Insect-catcher | 756,415 | Apr. 5 | 454 | 94 | 109 | 1439 |
| Samuels, Joe. (See Hughes, Wallace B., assignor.) | | | | | | |
| Samuelson, Alfred L., Osseo, Wis. Cultivator | 756,898 | Apr. 12 | 1366 | 304 | 109 | 1649 |
| Sanborn, Charles H., and W. F. Runnells, Newburyport, Mass., assignors to Albert Russell & Sons Company. Ship-pump | 758,022 | Apr. 19 | 3613 | 781 / 782 | 109 | 2151 |
| Sanborn, Cora A., Chicago, Ill. Device for grooving or tapping rubber or other sap-yielding trees | 755,948 | Mar. 22 | 3983 | 884 | 109 | 920 |
| Sanborn, James G., assignor of one-half to W. H. Stevens, Portland, Me. Grain-car door | 753,811 | Mar. 1 | 1190 | 268 | 109 | 256 |
| Sancier, Samuel A. (See Suhr, Herman G., assignor.) | | | | | | |
| Sander, John A., Newark, N. J. Meat-chopper | 756,713 | Apr. 5 | 984 | 217 / 218 | 109 | 1554 |
| Sanders, James E., Dalton, Ga. Threshing and separating machine | 755,943 | Mar. 29 | 5344 | 1179 | 109 | 1236 |
| Sanderson, James G., Scranton, Pa. Gas-producer | 755,702 | Mar. 29 | 4847 | 1077 / 1078 | 109 | 1134 |
| Sanderson, John F., Libertyville, Ill. Threshing-machine and machine used for analogous purposes | 753,921 | Mar. 8 | 1490 | 320 | 109 | 327 |
| Sanderson, Richard P. C., Norfolk, Va., assignor to Star Brass Manufacturing Company, Boston, Mass. Relief-valve for locomotive-engine cylinders | 757,146 | Apr. 12 | 1868 | 408 | 109 | 1737 |
| Sandiford, Harry E., New York, N. Y. Tooth-brush | 758,109 | Apr. 26 | 3706 | 824 | 109 | 2209 |
| Sands, Edward L., Webb City, Mo. Safety-pin | 757,351 | Apr. 12 | 2279 | 498 | 109 | 1844 |
| Sandvig, John J., Wilmot, S. D. Rain-water cut-off | 758,479 | Apr. 26 | 4321 | 971 | 109 | 2370 |
| Sanford, George W., assignor of one-third to J. Gray, Thomaston, Conn. Vehicle-wheel | 754,244 | Mar. 8 | 2028 | 451 | 109 | 462 |
| Sanger, Chester H. (See Terjesen, Isaac H., assignor.) | | | | | | |
| Sanger, Eugene M., Boston, Mass. Bearing for vertical shafts | 755,703 | Mar. 29 | 4848 | 1078 | 109 | 1125 |
| Sanger, Eugene M., Boston, Mass. Bearing for vertical shafts | 755,704 | Mar. 29 | 4850 | 1078 | 109 | 1125 |
| Sanguineti, Jules M., Lille, France. Manufacture of whisky, gin, or other spirits | 757,352 | Apr. 12 | 2279 | ..... | 109 | 1844 |
| Sanguinetti, Percy A., assignor to A. E. Martinsen, New York, N. Y. Vehicle-wheel | 754,504 | Mar. 15 | 2908 | 567 | 109 | 606 |
| Sankey, Charles L., Yonkers, N. Y. Hose-nozzle | 753,634 | Mar. 1 | 792 | 177 | 109 | 173 |
| Sargent & Company. (See Shaw, John H., assignor.) | | | | | | |
| Sargent, Howard R., Schenectady, N. Y., assignor to General Electric Company. Fusible cut-out | 755,796 | Mar. 29 | 5047 | 1121 | 109 | 1167 |
| Sargent, Howard R., Schenectady, N. Y., assignor to General Electric Company. Arc-lamp hanger | 755,797 | Mar. 29 | 5050 | 1121 / 1122 | 109 | 1168 |
| Sasseman, David C. (See Smith and Sasseman.) | | | | | | |
| Sauer, George L. (See Fairbanks and Sauer.) | | | | | | |
| Saunders, Augusta T., *et al.* (See Saunders, David H., assignor.) | | | | | | |
| Saunders, David H., assignor to H. V. P. Merchant and A. T. Saunders, Gloucester, Mass. Printing-press | 757,967 | Apr. 19 | 3497 | 758 / 759 | 109 | 2126 |
| Saunders, Delbert W., Maquoketa, Iowa. Well-drilling machine | 753,319 | Mar. 1 | 188 | 43, 44 | 109 | 44 |
| Saunders, Henry J. (See Saunders, Lewis E., assignor.) | | | | | | |
| Saunders, Lewis E., assignor of one-third to H. J. Saunders, Perth, Western Australia, Australia. Self-grip and draw-off attachment for vessels | 757,641 | Apr. 19 | 2882 | 628 | 109 | 1901 |
| Savage, Edward S., Brooklyn, N. Y. Powder-can | 757,231 | Apr. 12 | 2026 | 441 | 109 | 1792 |
| Savage, Giles C., Nashville, Tenn. Combustion structure | 758,281 | Apr. 26 | 4136 | 903 | 109 | 2283 |
| Savage, Thomas A. (See Johnson, Savage, and Newell.) | | | | | | |
| Savelsberg, Adolf, Ramsbeck, Germany. Desulfurizing lead ores | 755,598 | Mar. 22 | 4619 | 1026 | 109 | 1057 |
| Savorgnan, Cora A. S. di B. (See Savorgnan, Detalmo di B., assignor.) | | | | | | |
| Savorgnan, Detalmo di B., assignor to C. A. S. di B. Savorgnan, Rome, Italy. Machine for registering mail-matter | 756,714 | Apr. 5 | 985 | 218 / 219 / 220 / 221 / 222 | 109 | 1554 |
| Sayer, Robert C., Bristol, England. Wheel | 756,290 | Apr. 5 | 198 | 40, 41 | 109 | 1385 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Saylor, Charles, Cody, Wyo. Clover-hulling attachment for threshing-machines | 754,612 | Mar. 15 | 2802 | 611 | 109 | 646 |
| Saylor, John F., *et al.* (See Winans, Wesley G., assignor.) | | | | | | |
| Sayre, Edward W., assignor to himself, L. C. and T. S. Sayre, Cape May, N. J. Lawn-mower | 757,353 | Apr. 12 | 2281 | 498 | 109 | 1845 |
| Sayre, Louis C., *et al.* (See Sayre, Edward W., assignor.) | | | | | | |
| Sayre, Thomas S., *et al.* (See Sayre, Edward W., assignor.) | | | | | | |
| Sayrs, William C., Wilmington, Ohio. Automatic railway-switch | 754,392 | Mar. 8 | 2342 | 512 | 109 | 528 |
| Scadding, Charles A., Buffalo, N. Y. Toy | 754,709 | Mar. 15 | 3011 | 657 | 109 | 692 |
| Scalfe, Jefferson H., Camilla, Ga. Auger | 755,394 | Mar. 22 | 4271 | 943 | 109 | 982 |
| Schaaf, Frank A., Cleveland, Ohio. Car-fender | 756,060 | Mar. 29 | 5548 | 1225 | 109 | 1280 |
| Schaake, William, Schenectady, N. Y., assignor to General Electric Company. Sanding system | 758,194 | Apr. 26 | 3952 | 858 | 109 | 2244 |
| Schaeffer, Arthur, Berlin, Germany. Safety-fastener | 755,174 | Mar. 22 | 3852 | 850 | 109 | 893 |
| Schafer, Marcus A., New York, N. Y. Vehicle-brake | 756,899 | Apr. 12 | 1367 | 305 | 109 | 1650 |
| Schanche, Herman G., assignor to Harrison Bros. & Co., Incorporated, Philadelphia, Pa. Chemical absorption apparatus | 755,705 | Mar. 29 | 4851 | 1078 | 109 | 1125 |
| Schandoney, Peter V., Sacramento, Cal. Draft-equalizer | 757,282 | Apr. 12 | 2027 | 441 | 109 | 1792 |
| Schandoney, Peter V., Sacramento, Cal. Draft-equalizer | 757,283 | Apr. 12 | 2029 | 441 | 109 | 1792 |
| Schantz, Edwin M., Zimmerman, Ohio. Marking-machine | 758,435 | Mar. 1 | 407 | 95, 96 | 109 | 89 |
| Schapiro, Aisik. (See Hurwitz and Schapiro.) | | | | | | |
| Schauer, Sherman C., Cincinnati, Ohio. Friction-clutch | 756,185 | Mar. 29 | 5768 | 1273 | 109 | 1326 |
| Schebler, Theodore N., assignor of one-half to H. E. Balluff, Davenport, Iowa. Skirt-supporter | 755,798 | Mar. 29 | 5051 | 1122 | 109 | 1169 |
| Scheidler, John, Coldwater, Mich. Fence-post | 753,922 | Mar. 8 | 1422 | 320 | 109 | 328 |
| Scheidler, John, Coldwater, Mich. Fence-post | 753,923 | Mar. 8 | 1423 | 320 | 109 | 328 |
| Schell, Martin, Rochester, N. Y. Focusing device for cameras | 757,968 | Apr. 19 | 3500 | 759 / 760 | 109 | 2126 |
| Schellenbach, Florence, Cleveland, Tenn. Stool | 755,706 | Mar. 29 | 4852 | 1079 | 109 | 1126 |
| Scheller, Richard, Hamburg, Germany. Musical instrument | 757,354 | Apr. 12 | 2282 | 498 | 109 | 1845 |
| Schellhamer, William O., Salina, Colo. Ironing-table | 754,898 | Mar. 15 | 3356 | 733 | 109 | 767 |
| Schenck, Carl, Darmstadt, Germany. Automatic shifting-weight scale | 758,388 | Apr. 26 | 4350 | 934 | 109 | 2330 |
| Schenk, Frederick J., Monticello, Ill. Harness | 757,642 | Apr. 19 | 2886 | 628 | 109 | 1902 |
| Scheppener, Charles, *et al.* (See Wehrle, Joseph, assignor.) | | | | | | |
| Scherer, John, Elreno, Okla. Ter. Harrow attachment for plows | 758,635 | Mar. 1 | 793 | 177 | 109 | 173 |
| Schermack, Joseph J. (See Harrington and Schermack.) | | | | | | |
| Schetzel, Marx P., Oakland, Cal. Propelling apparatus for vessels | 754,710 | Mar. 15 | 3012 | 657 | 109 | 692 |
| Scheuer, Ralph, New York, N. Y. Buckle | 758,320 | Mar. 1 | 196 | 44 | 109 | 45 |
| Schielke, Herman, Cleveland, Ohio. Corner-clamp for securing glass plates together | 754,245 | Mar. 8 | 2028 | 451 | 109 | 462 |
| Schifling, Albert F., Indianapolis, Ind. Burglar-alarm | 758,389 | Apr. 26 | 4351 | 934 | 109 | 2330 |
| Schilling, Gustave A. W., assignor to J. P. Paulson and A. P. Thompson, Denver, Colo. Strainer and filter | 758,150 | Apr. 26 | 3871 | 841 | 109 | 2227 |
| Schimek, Richard. (See Zacsek, Stefan, assignor.) | | | | | | |
| Schippers, Frank, assignor to American Bell and Chime Company, New York, N. Y. Pneumatic musical apparatus | 755,944 | Mar. 29 | 5346 | 1179 / 1180 | 109 | 1236 |
| Schirp, Paul, Barmen, Germany. Apparatus for dyeing, &c | 755,050 | Mar. 22 | 3631 | 796 | 109 | 845 |
| Schlechter, Adolf, Allegheny, Pa. Theater building | 754,711 | Mar. 15 | 3013 | 658 | 109 | 692 |
| Schlemm, Robert, Chicago, Ill. Automatic vending-machine | 758,110 | Apr. 26 | 3797 | 824 / 825 | 109 | 2209 |
| Schlichter, Isaac, Philadelphia, Pa. Bale or package cover | 754,811 | Mar. 15 | 3192 | 695 | 109 | 731 |
| Schloss, Joseph W., New York, N. Y. Skirt-braid | 758,564 | Apr. 26 | 4704 | 1015 | 109 | 2411 |
| Schlueter, Max L., Oakland, Cal. Power-transmitting apparatus | 755,799 | Mar. 29 | 5053 | 1122 / 1123 | 109 | 1169 |
| Schluting, William. (See Ford, Andrew F., assignor.) | | | | | | |
| Schmaltz, Michael, Duluth, Minn. Log loading and skidding machine | 757,234 | Apr. 12 | 2030 | 442 | 109 | 1793 |
| Schmaltz, Michael, Duluth, Minn. Derrick-car | 757,235 | Apr. 12 | 2033 | 443 | 109 | 1793 |
| Schmick, Henry J., Hamburg, Pa. Radiohelical cam-gearing | 755,051 | Mar. 22 | 3632 | 797 | 109 | 845 |
| Schmidt, Albrecht, assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Celluloid compound | 758,335 | Apr. 26 | 4257 | ..... | 109 | 2311 |
| Schmidt, Carl G. A., Jr., Columbus, Ohio. Drive-chain | 755,707 | Mar. 29 | 4854 | 1079 | 109 | 1126 |
| Schmidt, George A., Chicago, Ill. Soap and making same | 755,945 | Mar. 29 | 5348 | ..... | 109 | 1296 |
| Schmidt, Henry, and V. Iskiyan, Collegepoint, N. Y. Combination-tool | 754,812 | Mar. 15 | 3193 | 696 | 109 | 732 |
| Schmidt, Henry A., Phœbus, Va. Blind-fastener | 755,052 | Mar. 22 | 3634 | 797 / 798 | 109 | 846 |
| Schmidt, Joseph F., Newark, N. J. Horse-stall | 756,716 | Apr. 5 | 1006 | 223 | 109 | 1557 |
| Schmidt, Karl, Cöthen, Germany. Safety apparatus for motor-cars of all kinds | 753,486 | Mar. 1 | 412 | 96 | 109 | 89 |
| Schmidt, Louis M., Lynn, Mass., assignor to General Electric Company. Transformer | 755,800 | Mar. 29 | 5055 | 1123 | 109 | 1169 |
| Schmidt, Oscar. (See Reach, Emile, assignor.) | | | | | | |
| Schmidt, Robert E., Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y. 1-5-nitroanthraquinone-sulfonic acid | 757,057 | Apr. 12 | 1688 | ..... | 109 | 1717 |
| Schmidt, Robert E., Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y. 1-8-nitroanthraquinone-sulfonic acid | 757,058 | Apr. 12 | 1689 | ..... | 109 | 1718 |
| Schmidt, Robert E., Elberfeld, and P. Tust, Vohwinkel, Germany, assignors to Farbenfabriken of Elberfeld Co., New York, N. Y. Making alpha-oxyanthraquinone | 755,801 | Mar. 29 | 5056 | ..... | 109 | 1170 |
| Schmieder, Paul, Lipine, Germany. Furnace for producing zinc | 757,050 | Apr. 12 | 1690 | 367 | 109 | 1718 |
| Schmitt, Edward D., assignor to H. A. Penrose, Baltimore, Md., and L. B. Schram, New York, N. Y. Bottle-seal | 756,715 | Apr. 5 | 1004 | 222 | 109 | 1556 |
| Schmitt, Frank, Philadelphia, Pa. System for preventing collisions, accidents, &c., by railway-trains | 753,636 | Mar. 1 | 795 | 177 | 109 | 173 |
| Schmitt, Phillip, Parker, S. D. Clamp for hay-racks | 757,147 | Apr. 12 | 1870 | 408 | 109 | 1758 |
| Schmitz, Frank H., New York, N. Y. High or low pressure signal-alarm | 755,708 | Mar. 29 | 4855 | 1079 | 109 | 1126 |
| Schmucker, Frank X., Morris, Ill. Pole-climber | 754,016 | Mar. 8 | 1593 | 355 | 109 | 367 |
| Schnabel, John. (See MacKinnon, Falkland R. A., assignor.) | | | | | | |
| Schneider, Adolph, Chicago, Ill. Machine for bottling liquids | 754,017 | Mar. 8 | 1594 | 355 / 356 | 109 | 368 |
| Schneider, Anna M., Sacramento, Cal. Toilet kit | 753,520 | Mar. 1 | 576 | 132 | 109 | 125 |
| Schneider, Charles, Sr., New Comerstown, Ohio. Axle-nut | 757,506 | Apr. 19 | 2593 | 568 | 109 | 1926 |
| Schneider, Charles P. E., Le Creuzot, France. Locally softening or annealing hardened-steel plates | 755,709 | Mar. 29 | 4856 | 1079 | 109 | 1126 |
| Schneider, George J., assignor to American Electrical Heater Company, Detroit, Mich. Electric sad-iron | 754,018 | Mar. 8 | 1600 | 356 | 109 | 369 |
| Schneider, Gottleib, Bluffton, Ind. Lubricator | 755,802 | Mar. 20 | 5057 | 1123 | 109 | 1170 |
| Schneider, Joseph J., Chicago, Ill. Coffin | 754,712 | Mar. 15 | 3015 | 658 | 109 | 693 |
| Schnettler, Joseph, St. Louis, Mo. Screen-door frame | 753,637 | Mar. 1 | 796 | 178 | 109 | 174 |
| Schoch, Leonard E., Chicago, Ill. Garment-supporter | 754,813 | Mar. 15 | 3195 | 696 | 109 | 732 |
| Schoellhorn, August, and H. S. Albrecht, St. Louis, Mo. Pulverizing-machine | 757,969 | Apr. 19 | 3503 | 760 | 109 | 2127 |
| Schoen, Carl, New York, N. Y. Swivel-loom | 753,521 | Mar. 1 | 578 | 132 | 109 | 126 |

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|---|---|---|---|---|---|---|
| Schoen, Charles T. (See Loss, Henrik V., assignor.) | | | | | | |
| Schoenmehl, Charles B., assignor to Waterbury Battery Company, Waterbury, Conn. Galvanic battery | 757,355 | Apr. 12 | 2283 | 498 | 109 | 1845 |
| Schoenner, Georg, Nuremberg, Germany. Compasses | 755,306 | Mar. 22 | 4271 | 943 | 109 | 982 |
| Schoenner, Georg, Nuremberg, Germany. Compasses | 755,306 | Mar. 22 | 4272 | 944 | 109 | 982 |
| Schofield, Albert B., New York, N. Y. Gas fireplace-heater | 756,111 | Apr. 26 | 3799 | 825 | 109 | 2200 |
| Schofield, Henry P., assignor to Covel Manufacturing Company, Chicago, Ill. Saw-guide | 755,318 | Mar. 22 | 4116 | 909 | 109 | 946 |
| Schofield, Henry P., assignor to Covel Manufacturing Company, Chicago, Ill. Saw-sharpening machine | 755,319 | Mar. 22 | 4117 | 910 | 109 | 946 |
| Schools, Harry J., Lebanon, Pa. Hose-drier | 756,717 | Apr. 5 | 1008 | 223 | 109 | 1557 |
| Schossow, Frederick A., Detroit, Mich. Automatic flushing-valve | 756,294 | Apr. 5 | 196 | 42 | 109 | 1386 |
| Schott, William, Flint, Mich. Device for lifting the frames of railway-trucks | 757,507 | Apr. 19 | 2395 | 568 | 109 | 1926 |
| Schrader, George H. F. (See Schweinert and Kraft, assignors.) | | | | | | |
| Schrader, John R., Buffalo, N. Y. Air-brake mechanism | 756,533 | Apr. 5 | 669 | 144 / 145 | 109 | 1484 |
| Schrader, Richard, Sierakowo, Germany. Separating starch by centrifugal action | 757,778 | Apr. 19 | 3154 | 685 | 109 | 2050 |
| Schram, Louis B., *et al.* (See Schmitt, Edward D., assignor.) | | | | | | |
| Schramek, Peter P., assignor of one-half to L. F. Korach, St. Louis, Mo. Cloth measuring and examining machine | 756,146 | Mar. 29 | 5707 | 1250 / 1260 | 109 | 1313 |
| Schramm, Otto, New York, N. Y. Horseshoe | 758,638 | Mar. 1 | 797 | 178 | 109 | 174 |
| Schreiber, Charles C., assignor to L. Schreiber & Sons Company, Cincinnati, Ohio. Elevator-gate | 755,307 | Mar. 22 | 4273 | 944 | 109 | 982 |
| Schreurs, Garrett W., Muscatine, Iowa. Shell grader and separator | 755,710 | Mar. 29 | 4858 | 1080 | 109 | 1127 |
| Schriefer, Edward G., Cincinnati, Ohio. Extensible case | 754,814 | Mar. 15 | 3196 | 696 / 697 | 109 | 732 |
| Schriefer, Edward G., Cincinnati, Ohio. Extensible case | 754,815 | Mar. 15 | 3199 | 697 | 109 | 733 |
| Schriefer, Edward G., Cincinnati, Ohio. Adjustable shelf-support | 754,816 | Mar. 15 | 3202 | 697 / 698 | 109 | 734 |
| Schriefer, Edward G., Cincinnati, Ohio. Adjustable shelf-support | 754,817 | Mar. 15 | 3203 | 698 | 109 | 734 |
| Schriltz, James B. von, *et al.* (See Colthar, William U., assignor.) | | | | | | |
| Schriltz, James B. von. (See Gleason, John C., assignor.) | | | | | | |
| Schröder, Andrew F. W., Fontanelle, Iowa. Salt-box for animals | 756,416 | Apr. 5 | 455 | 94 | 109 | 1440 |
| Schubert, Bernhard F., assignor of one-half to R. Simms, Washington, D. C. Combination implement | 758,282 | Apr. 26 | 4138 | 894 | 109 | 2283 |
| Schubert, Georg M., Chemnitz, Germany. Differential high and low pressure gage | 755,175 | Mar. 22 | 3853 | 850 / 851 | 109 | 893 |
| Schulte, Anthony. (See Fornander, Alfred assignor.) | | | | | | |
| Schultze, Albert. (See Shilton and Schultze.) | | | | | | |
| Schureman, Jacob L., Jr., Chicago, Ill. Gramophone attachment for music-boxes | 755,946 | Mar. 29 | 5350 | 1181 | 109 | 1237 |
| Schureman, Jacob L., Jr., Chicago, Ill. Circuit-controller | 756,534 | Apr. 5 | 675 | 145 | 109 | 1485 |
| Schustek, Daniel, assignor to H. L. Andrews, Chicago, Ill. Organ | 754,713 | Mar. 15 | 3017 | 659 | 109 | 608 |
| Schuster, Henry H., St. Louis, Mo. Folding wardrobe | 754,613 | Mar. 15 | 2803 | 611 | 109 | 646 |
| Schuster, Herman, Columbus, Nebr. Corn-husking implement | 758,689 | Mar. 1 | 798 | 178 | 109 | 174 |
| Schuster, Neal M., Kirksville, Mo. Trimming-machine | 754,818 | Mar. 15 | 3206 | 698 / 699 | 109 | 735 |
| Schutt, Duny A., Peru, Ind. Lamp-socket | 758,321 | Mar. 1 | 197 | 44 | 109 | 46 |
| Schutz, Joseph M., Minneapolis, Minn. Diluent for medical compounds | 757,419 | Apr. 12 | 2414 | ..... | 109 | 1872 |
| Schutz, Joseph M., assignor to Schutz-O'Neill Company, Minneapolis, Minn. Gyrating sifter | 756,298 | Apr. 5 | 200 | 42 | 109 | 1387 |
| Schutz-O'Neill Company. (See Schutz, Joseph M., assignor.) | | | | | | |
| Schwabe, Georg, Bielitz, Austria-Hungary. Means for guiding the jacks in Crompton dobby-looms | 758,219 | Apr. 26 | 3999 | 808 | 109 | 2253 |
| Schwanbeck Brothers. (See Schwanbeck, Gustave A., assignor.) | | | | | | |
| Schwanbeck, Gustave A., assignor to Schwanbeck Brothers, Detroit, Mich. Case | 754,957 | Mar. 15 | 3473 | 760 | 109 | 795 |
| Schwartz, Carl, München-Gladbach, Germany. Bobbin-winder | 755,398 | Mar. 22 | 4275 | 944 | 109 | 983 |
| Schwartz, Edward H., Chicago, Ill. Feed-water heater | 756,417 | Apr. 5 | 458 | 94 | 109 | 1440 |
| Schweinert, Maximilian C., West Hoboken, N. J., and H. P. Kraft, assignors to G. H. F. Schrader, New York, N. Y. Machine for contracting ferrules, &c. | 758,193 | Apr. 26 | 3955 | 856 | 109 | 2244 |
| Schweiter, Jean, Horgen, Switzerland. Scouring-machine for woven fabrics | 757,148 | Apr. 12 | 1870 | 408 | 109 | 1758 |
| Schwob, Adolphe. (See Blanc, Alfred, assignor.) | | | | | | |
| Scidmore, Louis A., Eau Claire, Wis. Thill or tongue support | 758,742 | Mar. 1 | 1013 | 220 | 109 | 217 |
| Scientific Lens Co. (See Nehring, Ulrich, assignor.) | | | | | | |
| Scilley, Hugh, *et al.* (See Heilig and Reed, assignors.) | | | | | | |
| Scott, Benjamin S., Ewell, Va. Fish-hook | 754,349 | Mar. 8 | 2205 | 491 | 109 | 498 |
| Scott, Clarence N., Buffalo, assignor to International Steam Pump Company, New York, N. Y. Shaft-coupling | 755,068 | Mar. 22 | 3685 | 796 | 109 | 846 |
| Scott, Crawford. (See Phillips, James J., assignor.) | | | | | | |
| Scott, Daniel D., Boston, Mass., assignor to Mergenthaler Linotype Company. Linotype-machine | 757,685 | Apr. 19 | 2907 | 645 | 109 | 2009 |
| Scott, Frederick D., Montreal, Canada. Combined box and cutter for goods in ribbon form | 757,844 | Apr. 19 | 3269 | 708 | 109 | 2074 |
| Scott, George W., Sadler, Tex. Suspenders | 758,151 | Apr. 26 | 3874 | 841 | 109 | 2228 |
| Scott, Herbert W., *et al.* (See Kettle, Stephen, assignor.) | | | | | | |
| Scott, James. (See Kloman, Anthony C., assignor.) | | | | | | |
| Scott, James A., and W. F. Taylor, Chicago, Ill. Computing-machine | 757,508 | Apr. 19 | 2597 | 569 | 109 | 1927 |
| Scott, James S., assignor of one-third to W. J. Aikens, Brantford, Canada. Hot-water cooler | 756,061 | Mar. 29 | 5550 | 1223 | 109 | 1281 |
| Scott, James W. (See Taylor and Scott.) | | | | | | |
| Scott, Marcus. (See Phillips, William P., assignor.) | | | | | | |
| Scott, Walter, Plainfield, N. J. Printing and folding machine | 758,640 | Mar. 1 | 799 | 178 / 179 | 109 | 174 |
| Scott, Walter, Plainfield, N. J. Printing-press | 758,112 | Apr. 26 | 3802 | 825 / 826 | 109 | 2210 |
| Scott, William H., assignor to J. C. Wands, St. Louis, Mo. Air-brake controller | 754,246 | Mar. 8 | 2080 | 451 / 452 | 109 | 462 |
| Scott, William H., assignor to J. C. Wands, St. Louis, Mo. Air-brake controller | 754,308 | Mar. 8 | 2346 | 512 / 513 | 109 | 529 |
| Scott, William H., assignor of two-thirds to S. L. G. Hyde and F. S. Freund, St. Louis, Mo. Dough-break | 754,006 | Mar. 8 | 1731 | 389 / 390 | 109 | 401 |
| Scott, William M. (See Kloman, Andrew C., assignor.) | | | | | | |
| Scott, William M., Saxton, Pa. Retort coke-oven | 757,500 | Apr. 19 | 2599 | 569 / 570 | 109 | 1927 |
| Scott, William M., Philadelphia, Pa., assignor to Cutter Electrical and Manufacturing Company. Automatic circuit-breaker | 754,505 | Mar. 15 | 2610 | 567 / 568 | 109 | 606 |



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|---|---|---|---|---|---|---|
| Scovill Manufacturing Company. (See Hyde and Simons, assignors.) | | | | | | |
| Scovill Manufacturing Company. (See Plowman, Albert E., assignor.) | | | | | | |
| Scovill Manufacturing Company. (See Simons, Ernest D., assignor.) | | | | | | |
| Scribner, Charles E., Chicago, and F. R. McBerty, Evanston, assignors to Western Electric Company, Chicago, Ill. Service-meter for telephone-lines | 755,054 | Mar. 22 | 3636 | 798 | 109 | 846 |
| Scriven, Jeremiah A., New York, N. Y. Garment | 753,322 | Mar. 1 | 198 | 45 | 109 | 46 |
| Scudder, Heyward, Boston, Mass. Holder for card-indexing cards | 757,686 | Apr. 19 | 2909 | 646 | 109 | 2009 |
| Scudder, Wilbur S., Brooklyn, N. Y., assignor to Monoline Composing Company, Washington, D. C. Line-casting machine | 754,614 | Mar. 15 | 2805 | 612 / 613 | 109 | 646 |
| Seager, James H., and J. J. Kelly, Flushing, N. Y. Flush-tank apparatus | 754,247 | Mar. 8 | 2081 | 452 | 109 | 463 |
| Seals, James T., Hazleton, Ind. Pipe-coupling | 755,249 | Mar. 22 | 3986 | 884 | 109 | 920 |
| Seaman, Alonzo D., Milwaukee, Wis., assignor to Knickerbocker Trunk Company, New York, N. Y. Wardrobe-trunk | 753,743 | Mar. 1 | 1014 | 230 | 109 | 218 |
| Seaman, Alonzo D., Milwaukee, Wis., assignor to Knickerbocker Trunk Company, New York, N. Y. Wardrobe-trunk | 753,744 | Mar. 1 | 1015 | 230 | 109 | 218 |
| Seaman, Elizabeth C. (See Tracey, John, assignor.) | | | | | | |
| Searle, Will Z., Petoskey, Mich. Eyeglass attachment for suspending supplemental eyeglasses | 756,984 | Apr. 12 | 1538 | 339 | 109 | 1684 |
| Sears, Willard T., Harrisburg, Pa. Pneumatic tool | 757,970 | Apr. 19 | 3508 | 760 | 109 | 2127 |
| Seaver, John W. (See Wellman, Seaver, and Morgan.) | | | | | | |
| Seaver, John W., and G. H. Hulett, assignors to Wellman-Seaver-Morgan Company, Cleveland, Ohio. Discharging device for dump-cars | 754,899 | Mar. 15 | 3357 | 733 / 734 | 109 | 767 |
| Sebastian, Charles E., and H. Stoebe, New York, N. Y. Leaf-raiser for books | 757,779 | Apr. 19 | 3156 | 685 | 109 | 2050 |
| Sebring, Walter A., Blissfield, Mich. Gate-latch | 753,323 | Mar. 1 | 199 | 45 | 109 | 46 |
| Seck, Willy, Aix-la-Chapelle, assignor to E. Bergmann, Suhl, Thuringia, Germany. Friction-gear for motor-cars | 758,113 | Apr. 26 | 3807 | 827 | 109 | 2211 |
| Sedgwick, Hiram G., New York, N. Y. Air-valve for safety train-stops | 757,571 | Apr. 19 | 2735 | 598 | 109 | 1957 |
| Sedlmair, Fritz, Munich, Germany. Band-fastener | 754,714 | Mar. 15 | 3020 | 659 | 109 | 664 |
| Seelye, Walter K., Dubuque, Iowa. Apparatus for heating air | 755,320 | Mar. 22 | 4119 | 910 | 109 | 947 |
| Seibel, Phillip. (See Betz and Seibel.) | | | | | | |
| Seidel, Paul. (See Knietsch, Seidel, and Meiser.) | | | | | | |
| Seifert, Hermann O., Kings Valley, Oreg. Animal-leader | 755,250 | Mar. 22 | 3968 | 885 | 109 | 920 |
| Seith, Karl F., Offerle, Kans. Pitman | 754,506 | Mar. 15 | 2617 | 568 | 109 | 608 |
| Seith, Paul, and G. Kaphingst, Appleton, Wis. Blackboard-eraser | 754,900 | Mar. 15 | 3358 | 734 | 109 | 767 |
| Seitz, Edward, Peoria, Ill. Vapor-lamp | 757,780 | Apr. 19 | 3157 | 686 | 109 | 2051 |
| Selden, Charles W., Richmond, Va. Show-case | 754,507 | Mar. 15 | 2618 | 568 | 109 | 608 |
| Selg, Otto, New York, N. Y. Filter | 758,390 | Apr. 26 | 4353 | 935 | 109 | 2330 |
| Sellars, Albert H., Indianapolis, Ind. Ticket-case | 756,985 | Apr. 12 | 1539 | 339 | 109 | 1684 |
| Sellon, Henry, Fort Bridger, Wyo. Horse-collar | 753,437 | Mar. 1 | 412 | 90 | 109 | 89 |
| Sendelbach, Edward, assignor of one-half to C. Minshall, Terre Haute, Ind. Vehicle-hub. (Reissue) | 12,203 | Mar. 8 | 2388 | 521 / 522 | 109 | 538 |
| Senderling, Martin L., Jersey City, N. J. Clasp | 756,535 | Apr. 5 | 676 | 145 | 109 | 1485 |
| Sengiar, Joseph S., St. Louis, Mo. Weather-strip | 754,819 | Mar. 15 | 3308 | 699 | 109 | 736 |
| Sergeant, Henry C., Westfield, N. J., assignor to Ingersoll-Sergeant Drill Company, New York, N. Y. Compressor for air or other gaseous bodies | 754,901 | Mar. 15 | 3358 | 734 | 109 | 767 |
| Sessions, Albert L., Bristol, Conn. Roller-frame | 755,055 | Mar. 22 | 3640 | 799 | 109 | 847 |
| Sessions, Albert L., Bristol, Conn. Roller-frame | 755,056 | Mar. 22 | 3641 | 799 | 109 | 847 |
| Setter, Michael, assignor to P. C. Burns and J. G. Ihmsen, Chicago, Ill. Thermal cut-out | 757,971 | Apr. 19 | 3506 | 761 | 109 | 2127 |
| Setter, Michael, assignor to P. C. Burns and J. G. Ihmsen, Chicago, Ill. Thermal cut-out | 757,972 | Apr. 19 | 3508 | 761 | 109 | 2128 |
| Seufer, Ernst. (See Leigh, Charles, assignor.) | | | | | | |
| Severin, Heinrich, Achern, Germany. Glass-blowing machine | 757,356 | Apr. 12 | 2285 | 499 | 109 | 1846 |
| Sewell, William H., Belfast, Ireland. Tire for vehicles | 755,711 | Mar. 29 | 4859 | 1080 | 109 | 1127 |
| Sewell, William H., Belfast, Ireland. Tire for vehicle-wheels | 755,712 | Mar. 29 | 4861 | 1080 | 109 | 1128 |
| Sexton, Arthur E., assignor to Single-Sheet Paper Company, Los Angeles, Cal. Toilet-paper holder | 756,804 | Apr. 5 | 1173 | 260 / 261 | 109 | 1595 |
| Sexton, Earl, New York, N. Y. Stenographer's note-book and copy-holder | 756,147 | Mar. 29 | 5709 | 1260 | 109 | 1314 |
| Seybold, Charles, Dayton, Ohio. Friction-clutch | 757,236 | Apr. 12 | 2034 | 443 | 109 | 1794 |
| Seymour, James M., Jr., Newark, N. J. Heating system | 755,176 | Mar. 22 | 3854 | 851 | 109 | 893 |
| Seymour, William M., Brookpark, Minn. Land-clearing machine | 758,480 | Apr. 26 | 4523 | 972 | 109 | 2370 |
| Seyster, Arthur M., Hiawatha, Kans. Rope-holding device | 756,418 | Apr. 5 | 460 | 95 | 109 | 1441 |
| Shafer, Frank, Camillus, N. Y. Calipers | 758,283 | Apr. 26 | 4138 | 894 | 109 | 2283 |
| Shafer, John C., assignor of one-half to O. D. Jones, Edina, Mo. Hay-stacker | 755,057 | Mar. 22 | 3642 | 799 | 109 | 848 |
| Shaffer, David L., Pittsburg, Pa. Stay-bolt | 757,973 | Apr. 19 | 3509 | 761 | 109 | 2129 |
| Shainline, George B. (See Earle and Shainline.) | | | | | | |
| Shambaugh, Charles E., Lafayette, Ind. Gas-engine cooler | 755,399 | Mar. 22 | 4275 | 944 | 109 | 983 |
| Shanahan, Philip, Chicago, Ill. Suction and friction foot for ladders or the like | 755,713 | Mar. 29 | 4862 | 1081 | 109 | 1128 |
| Shane, Aurelia B., Chicago, Ill. Bedstead attachment | 754,615 | Mar. 15 | 2809 | 613 | 109 | 647 |
| Shanklin, John R., Charleston, W. Va. Steam-heating system | 753,324 | Mar. 1 | 201 | 45 | 109 | 47 |
| Shannon, Hiram L. (See Kirksey, John G., assignor.) | | | | | | |
| Shannon, Woodford, Louisville, Ky. Bed-bottom | 754,097 | Mar. 8 | 1757 | 391 | 109 | 408 |
| Sharon, W. J., *et al.* (See Ewing, Thomas H., assignor.) | | | | | | |
| Sharood, Charles K., St. Paul, Minn. Shoe | 753,745 | Mar. 1 | 1017 | 231 | 109 | 218 |
| Sharp, Frank H., Howard, N. Y. Draft attachment for vehicles | 754,902 | Mar. 15 | 3359 | 734 / 735 | 109 | 767 |
| Sharp, Frank P., New Iberia, La. Collar | 756,293 | Apr. 5 | 208 | 43 | 109 | 1388 |
| Sharp, Harry E., Hartford, Conn. Pencil-pocket | 755,400 | Mar. 22 | 4276 | 945 | 109 | 983 |
| Sharp, Harry E., assignor of two-thirds to G. Ulrich, Hartford, and J. O'Loughlin, New Britain, Conn. Plaster-board | 757,060 | Apr. 12 | 1691 | 367 | 109 | 1718 |
| Sharp, John F. (See Whitfield, Mark M., assignor.) | | | | | | |
| Sharpe, Joseph K., Jr., assignor to Pneumatic Elevator and Weigher Company, Indianapolis, Ind. Centrifugal elevator | 755,401 | Mar. 22 | 4277 | 945 | 109 | 984 |
| Sharpe, Joseph K., Jr., assignor to Pneumatic Elevator and Weigher Company, Indianapolis, Ind. Separating-head for centrifugal or pneumatic elevators | 755,714 | Mar. 29 | 4863 | 1081 | 109 | 1128 |
| Sharpneck, William S., assignor of two-thirds to J. L. Onstott and F. C. Vehmeyer, Chicago, Ill. Roller-bearing | 755,177 | Mar. 22 | 3857 | 852 | 109 | 894 |
| Sharps, Herbert E. (See Cooper and Sharps.) | | | | | | |
| Sharps, Herbert E., assignor, by mesne assignments, to Cable Company, Chicago, Ill. Automatically-operated musical instrument. (Reissue) | 12,215 | Apr. 26 | 4794 | 1081 | 109 | 2431 |
| Shaull, Grove D. and J. H., Charlotte, Mich. Tubular auger | 754,350 | Mar. 8 | 2206 | 492 | 109 | 498 |
| Shaull, James H. (See Shaull, Grove D. and J. H.) | | | | | | |
| Shaw, Albert L., Whitecastle, assignor of three-fifths to R. H. Downman, New Orleans, La. Stave-shaping machine | 753,322 | Mar. 1 | 580 | 132 / 133 | 109 | 126 |
| Shaw, Charles H., Denver, Colo. Pneumatic hammer | 753,438 | Mar. 1 | 413 | 97 | 109 | 90 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Shaw, J. Ernest, *et al.* (See Pratt, Thomas J., assignor.) | | | | | | |
| Shaw, John H., assignor to Sargent & Company, New Haven, Conn. Door-stop | 755,056 | Mar. 22 | 3644 | 800 | 109 | 848 |
| Shaw, John W., Lawrence, Kans. Cotton-picking machine | 755,059 | Mar. 22 | 3645 | 800 | 109 | 849 |
| Shaw, Nathaniel G., assignor of one-half to Geo. E. Keith Company, Brockton, Mass. Lasting uppers | 755,583 | Mar. 22 | 4566 | 1021 | 109 | 1050 |
| Shaw, Nathaniel H., Boston, Mass. Time gas-lighting mechanism | 755,060 | Mar. 22 | 3648 | 801 | 109 | 849 |
| Shaw, William W., assignor of one-half to W. M. Holmes, Hoosick Falls, N. Y. Fork-head for hay-tedders | 756,092 | Mar. 29 | 5532 | 1225 | 109 | 1281 |
| Shea, Patrick, Chicago, Ill. Linotype-machine attachment | 758,264 | Apr. 26 | 4140 | 894 | 109 | 2284 |
| Shea, Thomas A., assignor to G. B. Sloan, Jr., Oswego, N. Y. Semielliptic spring | 754,715 | Mar. 15 | 3021 | 660 | 109 | 694 |
| Shea, Thomas A., assignor to G. B. Sloan, Jr., Oswego, N. Y. Coil-spring controller | 757,781 | Apr. 19 | 3150 | 686 | 109 | 2051 |
| Shedlock, Alfred, Jersey City, N. J. Adhesive-supplying mechanism | 756,900 | Apr. 12 | 1367 | 305 | 109 | 1650 |
| Shee, Parke E., *et al.* (See Rote, Charles V., assignor.) | | | | | | |
| Shelain, Frank G., assignor of one-half to F. R. Brown, Rockford, Ill. Mechanism for transversely severing webs of knit fabrics | 753,812 | Mar. 1 | 1192 | 266, 269 | 109 | 257 |
| Shelby, Samuel L., Salem, Ky. Grist-mill | 754,908 | Mar. 15 | 3361 | 735 | 109 | 766 |
| Sheldon, Edward P., Brooklyn, assignor to P. Hano, New York, N. Y. Numbering-machine | 756,068 | Mar. 29 | 5555 | 1226 | 109 | 1282 |
| Sheldon, Lainer A., assignor of one-half to F. H. Finke, Lincoln, Nebr. Railway-rail joint | 755,402 | Mar. 22 | 4279 | 945, 946 | 109 | 984 |
| Sheldon, Mark A., assignor of one-third to A. McVittie, Detroit, Mich. Match-machine | 757,572 | Apr. 19 | 2736 | 509 | 109 | 1957 |
| Sheldon, Seth L., Ithaca, N. Y. Opening attachment for cans or vessels | 758,102 | Apr. 26 | 3876 | 841 | 109 | 2228 |
| Shelton, John, Denver, Colo. Dump-car | 754,351 | Mar. 8 | 2208 | 492, 493 | 109 | 499 |
| Shelton, John, Denver, Colo. Car-brake mechanism | 758,391 | Apr. 26 | 4354 | 935 | 109 | 2331 |
| Sheneman, Jackson, Bronson, Mich. Cement-furnace | 755,947 | Mar. 29 | 5352 | 1161, 1188 | 109 | 1237 |
| Shepard, Amos. (See Coleman and Shepard.) | | | | | | |
| Shepard, Charles H., New York, assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine | 755,061 | Mar. 22 | 3650 | 801 | 109 | 850 |
| Shepherd, Charles, New York, N. Y. Panel | 758,541 | Mar. 1 | 802 | 179 | 109 | 176 |
| Shepherd, Frank D., Salt Lake City, Utah. Steam-turbine | 755,062 | Mar. 22 | 3653 | 802 | 109 | 851 |
| Shepherd, Gilbert C., Brooklyn, N. Y. Ledger-index | 757,510 | Apr. 19 | 2001 | 370 | 109 | 1928 |
| Shepherd, Warren J., Denver, assignor of two-thirds to G. Stickney, Lyons, Colo. Illuminated-timepiece holder | 755,584 | Mar. 22 | 4560 | 1021 | 109 | 1050 |
| Sherman, Charles T., St. Louis, Mo. Key-holder | 756,064 | Mar. 29 | 5557 | 1226 | 109 | 1282 |
| Sherman, Roger I., Lexington, Mass. Glass jar | 754,168 | Mar. 8 | 1876 | 418 | 109 | 430 |
| Sherrard, Joseph A., Boston, Mass. Bottle-tap. (Reissue) | 12,300 | Mar. 1 | 1238 | 278, 279 | 109 | 266 |
| Shertzer, Charles P., Marion, Ind. Engine-base clamp | 758,114 | Apr. 26 | 3808 | 827 | 109 | 2212 |
| Sherwood, Absalom F., Peekskill, N. Y. Safety-tire | 756,536 | Apr. 5 | 677 | 145 | 109 | 1485 |
| Sherwood, Earl, Honesdale, Pa. Car-fender | 757,845 | Apr. 19 | 3271 | 708 | 109 | 2074 |
| Shevlin, George F. (See Baker, Shevlin, and Baker.) | | | | | | |
| Shiek, Daniel W., Chicago, Ill., assignor to A. Bybee, Milford, Utah. Mechanical movement | 757,511 | Apr. 19 | 2604 | 570, 571 | 109 | 1928 |
| Shields, Alexander G., L'Anse, Mich. Hame-tug fastener | 754,716 | Mar. 15 | 3023 | 660 | 109 | 694 |
| Shields, James C., *et al.* (See Lewis, Albert H., assignor.) | | | | | | |
| Shier, John, Detroit, Mich. Ore-concentrator | 758,505 | Apr. 26 | 4705 | 1015 | 109 | 2411 |
| Shilton, George T., and A. Schultze, Greymouth, Westland, New Zealand. Pneumatic-tire cover | 758,336 | Apr. 26 | 4259 | 915 | 109 | 2311 |
| Shipman, Edward L. (See Rile, William J., assignor.) | | | | | | |
| Shirk, Daniel W. (See Shirk, Oliver D. and D. W.) | | | | | | |
| Shirk, David B., Elizabethtown, Pa. Shaft-carrier or thill-tug | 758,566 | Apr. 26 | 4708 | 1015 | 109 | 2412 |
| Shirk, Oliver D. and D. W., Minatare, Nebr. Push-rake | 757,061 | Apr. 12 | 1602 | 367, 368 | 109 | 1718 |
| Shmidheiser, Godfrey. (See Fritz and Dryden, assignors.) | | | | | | |
| Shockey, Willis G., Chicago, Ill. Pin-clasp | 755,063 | Mar. 22 | 3657 | 803 | 109 | 851 |
| Shoemaker, Charles F., deceased; D. L. Holwick, Canton, Ohio, administrator. Spring-head-pinning machine | 755,005 | Mar. 22 | 3558 | 780 | 109 | 829 |
| Shoemaker, Clinton E., Forest City, Iowa. Automatic fly-brush for screen-doors | 756,420 | Apr. 5 | 466 | 96 | 109 | 1442 |
| Shoemaker, George A., assignor to Baker-Vawter Company, Chicago, Ill. Temporary binder | 756,901 | Apr. 12 | 1372 | 305 | 109 | 1651 |
| Shoemaker, George A., assignor to Baker-Vawter Company, Chicago, Ill. Punching-machine | 756,902 | Apr. 12 | 1372 | 306 | 109 | 1651 |
| Shoemaker, Harry. (See Woodward and Shoemaker.) | | | | | | |
| Shoemaker, Harry, assignor to M. V. Gehring, Philadelphia, Pa. Wireless signaling system | 756,720 | Apr. 5 | 1011 | 224 | 109 | 1558 |
| Shoemaker, Harry, assignor to M. V. Gehring and Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Wireless signaling system | 754,904 | Mar. 15 | 3363 | 735 | 109 | 768 |
| Shoemaker, Harry, assignor to International Wireless Telegraph Company and M. V. Gehring, Philadelphia, Pa. Wireless signaling system | 756,718 | Apr. 5 | 1009 | 224 | 109 | 1557 |
| Shoemaker, Harry, assignor to International Wireless Telegraph Company and M. V. Gehring, Philadelphia, Pa. Signaling system | 756,719 | Apr. 5 | 1010 | 224 | 109 | 1558 |
| Shoemaker, Ivan H., *et al.* (See Sturgis, Herbert M., assignor.) | | | | | | |
| Shoemaker, Lockert N., Greenfield, Ohio. Convertible chair | 756,419 | Apr. 5 | 462 | 95, 96 | 109 | 1441 |
| Shoosmith, Harry, Ormiston, Erith, England. Apparatus for discharging loose cargo from vessels | 755,064 | Mar. 22 | 3659 | 803 | 109 | 852 |
| Short, Sidney H., London, England, assignor to Westinghouse Electric & Manufacturing Company. Electric-arc-rupturing device | 757,782 | Apr. 19 | 3161 | 686 | 109 | 2051 |
| Shorts, Clair D., Fern, Pa. Stuffing-box | 754,820 | Mar. 15 | 3210 | 700 | 109 | 736 |
| Shortt, Edward G., Carthage, N. Y., assignor to International Air Brake Company, Jersey City, N. J. Compound air-brake mechanism | 756,065 | Mar. 29 | 5558 | 1227 | 109 | 1282 |
| Shortt, Edward G., Carthage, N. Y., assignor to International Air Brake Company, Jersey City, N. J. Equilibrio intercepting-valve for air-brake control | 758,285 | Apr. 26 | 4141 | 894, 895 | 109 | 2284 |
| Shoup, Saxton C., Fostoria, Ohio. Domestic boiler | 754,717 | Mar. 15 | 3024 | 660 | 109 | 695 |
| Shultheiss, John M., *et al.* (See Dewey, Luman R., assignor.) | | | | | | |
| Shultz, Albert B., H. J. Hass, and C. Thorden, assignors to E. R. Thomas Motor Company, Buffalo, N. Y. Variable-speed gearing | 754,908 | Mar. 15 | 3364 | 736 | 109 | 769 |
| Shultz, Charles A., Portland, Oreg. Bolting-sleeve cleaner | 754,821 | Mar. 15 | 3211 | 700 | 109 | 736 |
| Shuman, Frank, Philadelphia, Pa. Removable pile for forming concrete piling | 756,805 | Apr. 5 | 1176 | 261 | 109 | 1565 |
| Shute, Edmund H., Chicago, Ill. Safety-lock for gas-fixtures | 756,066 | Mar. 29 | 5563 | 1228 | 109 | 1283 |
| Siebel, John E., Chicago, Ill. Apparatus for sterilizing, heating, and boiling liquids | 753,994 | Mar. 8 | 1495 | 320, 321 | 109 | 328 |
| Siebelist, Arthur M., Philadelphia, Pa. Toy | 758,567 | Apr. 26 | 4709 | 1016 | 109 | 2412 |
| Sieberth, David R. H., Christiania, Norway. Multicolor and text printing press | 755,948 | Mar. 29 | 5356 | 1162, 1188 | 109 | 1238 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page |
|---|---|---|---|---|---|---|
| Siebler, John M., Dayton, Ohio. Ticket-issuing machine | 758,023 | Apr. 19 | 3615 | 782, 783 | 109 | 2151 |
| Siegel, Richard G., assignor of one-half to W. R. Butterfield, Somerville, Mass. Clamping device | 756,067 | Mar. 29 | 5564 | 1228 | 109 | 1283 |
| Siegel, Solomon H., *et al.* (See Alexander, Jesse, assignor.) | | | | | | |
| Siegfried, Robert, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Electric railway-motor | 758,925 | Mar. 8 | 1427 | 321, 322 | 109 | 329 |
| Silbermann, Albert. (See Cerebotani, Luigi, assignor.) | | | | | | |
| Sill, James C. (See Howell, Edward, assignor.) | | | | | | |
| Sillcocks, Warren S., assignor to Celluloid Company, New York, N. Y. Fabric | 754,098 | Mar. 8 | 1758 | 391 | 109 | 408 |
| Silver City Plate Company. (See Martin, William L., assignor.) | | | | | | |
| Silverberg, Jacob, Pittsburg, Pa. Heater | 756,721 | Apr. 5 | 1014 | 224 | 109 | 1559 |
| Silverman, Joseph. (See Königstein, Gabor, assignor.) | | | | | | |
| Silvis, Harry J., assignor of one-half to Z. T. Silvis, Greensburg, Pa. Separator | 754,894 | Mar. 8 | 2349 | 513 | 109 | 529 |
| Silvis, Z. T. (See Silvis, Harry J., assignor.) | | | | | | |
| Simcox, Thomas W., assignor to McIlwaine-Richards Company, Noblesville, Ind. Leg-fastening for bath-tubs, &c | 757,974 | Apr. 19 | 3511 | 761 | 109 | 2129 |
| Simecek, Vaclav, Praha, Tex. Car-coupling | 754,852 | Mar. 8 | 2210 | 493 | 109 | 499 |
| Simmons, Charles B., Bristol, Conn. Draw-knife | 756,068 | Mar. 29 | 5566 | 1228 | 109 | 1284 |
| Simmons, George W., Yellow River, Ga. Plow | 755,178 | Mar. 22 | 3658 | 852 | 109 | 874 |
| Simmons, Gideon B., and J. R. Whorton, Dallas, Tex. Corn or cotton planter | 756,722 | Apr. 5 | 1016 | 225 | 109 | 1559 |
| Simmons, Le Roy J., Albany, N. Y. Seal for bags, &c | 754,099 | Mar. 8 | 1759 | 391 | 109 | 408 |
| Simmons Manufacturing Company. (See Hunt, Ozelio R., assignor.) | | | | | | |
| Simmons, Samuel T., and W. T. Moore, Columbus, Ohio. Reversible transmitter | 754,822 | Mar. 15 | 3212 | 700 | 109 | 736 |
| Simms, Rudolph. (See Schubert, Bernhard F., assignor.) | | | | | | |
| Simon, Gottlieb H., Kiel, Wis. Milk-vat | 757,569 | Apr. 19 | 2731 | 597 | 109 | 1956 |
| Simon, Lewis H., Elkins, W. Va. Self-setting and ever-set animal-trap | 758,481 | Apr. 26 | 4524 | 972 | 109 | 2370 |
| Simonds, Frank A., Grand Rapids, Mich. Steam-separator | 756,537 | Apr. 5 | 678 | 146 | 109 | 1486 |
| Simons, Ernest D. (See Hyde and Simons.) | | | | | | |
| Simons, Ernest D., assignor to Scovill Manufacturing Company, Waterbury, Conn. Snap-fastener | 757,237 | Apr. 12 | 2036 | 444 | 109 | 1794 |
| Simpson, Andrew, Linlithgow, Scotland. Fitting for vessels in which flower-bulbs are grown | 754,248 | Mar. 8 | 2033 | 452, 453 | 109 | 463 |
| Simpson, Horatio S., assignor of one-half to W. B. Wood, Mankato, Kans. Reversible glove | 756,986 | Apr. 12 | 1540 | 339 | 109 | 1685 |
| Simpson, John T., London, Tenn. Head-block shifter for sawmills | 758,337 | Apr. 26 | 4200 | 915 | 109 | 2311 |
| Simpson, John W. (See Spencer and Simpson.) | | | | | | |
| Simpson, Leslie W., Betteravia, Cal. Wire twister and splicer | 756,148 | Mar. 29 | 5711 | 1260 | 109 | 1314 |
| Simpson, Sydney W., Camperdown, Great Yarmouth, England. Feed-water heater | 757,846 | Apr. 19 | 3273 | 709 | 109 | 2075 |
| Simpson, T. H. (See Thornburgh, William, assignor.) | | | | | | |
| Simpson, Thomas H. (See Thornburgh, William, assignor.) | | | | | | |
| Simpson, William D., Columbia, S. C. Device for the opening or shifting of track-switches | 754,169 | Mar. 8 | 1878 | 418, 419 | 109 | 431 |
| Sinclair, Duncan S., Wiarton, Canada. Shaft-coupling | 753,439 | Mar. 1 | 416 | 97 | 109 | 90 |
| Sindlingchristensen, Frederik, assignor to Commercial Construction Company, New York, N. Y., and W. L. Locke, Jr. Electric-arc lamp | 757,847 | Apr. 19 | 3274 | 709 | 109 | 2075 |
| Singer Manufacturing Company. (See Allen, Edward B., assignor.) | | | | | | |
| Single-Sheet Paper Company *et al.* (See Casterline, Edwin D., assignor.) (Reissue.) | | | | | | |
| Single-Sheet Paper Company. (See Sexton, Arthur E., assignor.) | | | | | | |
| Singley, B. L. (See Pappenhagen, Charles L., assignor.) | | | | | | |
| Sinks, Frank W., Detroit, Mich. Blank-book | 756,421 | Apr. 5 | 466 | 96 | 109 | 1442 |
| Sipe, William H., Frankford, Pa. Drum-holder | 755,403 | Mar. 22 | 4280 | 946 | 109 | 985 |
| Sisson, Albert H. (See Paulson, Niel, assignor.) | | | | | | |
| Sixbey, Herman, Mayville, N. Y. Account-book | 758,220 | Apr. 26 | 4000 | 868 | 109 | 2254 |
| Skelton, Frederick, Martins Ferry, Ohio. Making shovels | 757,788 | Apr. 19 | 3162 | 686 | 109 | 2052 |
| Skiff, Charles W., Westfield, and S. A. Grant, assignors to United States Music Machine Company, Springfield, Mass. Phonographic apparatus | 754,508 | Mar. 15 | 2620 | 568, 569 | 109 | 609 |
| Skilton, John W., Daytona, Fla. Hinge | 757,784 | Apr. 19 | 3163 | 687 | 109 | 2052 |
| Skinner, Ternay R., Dubois, Pa. Dividers | 754,906 | Mar. 15 | 3360 | 736 | 109 | 770 |
| Skirrow, John F., East Orange, N. J. Spring-jack for telegraph-switchboards | 757,785 | Apr. 19 | 3164 | 687 | 109 | 2052 |
| Skoog, Carl F., Chicago, Ill. Work-holding device | 756,723 | Apr. 5 | 1017 | 225 | 109 | 1559 |
| Slater, Harry. (See Bulmer, William B., assignor.) | | | | | | |
| Slaysman, Alexander, Baltimore, Md. Machine for producing body-seams in sheet-metal cans | 757,238 | Apr. 12 | 2037 | 444, 445 | 109 | 1794 |
| Slee, William, St. Louis, Mo. Dynamo brush-holder | 757,357 | Apr. 12 | 2287 | 499 | 109 | 1846 |
| Slick, William W. (See Ely, Anderson, and Slick.) | | | | | | |
| Sliga, John, Cleveland, Ohio. Door-lock | 758,642 | Mar. 1 | 804 | 179 | 109 | 176 |
| Slingluff, Horace. (See Reed, George T., assignor.) | | | | | | |
| Sloan, George B., Jr. (See Shea, Thomas A., assignor.) | | | | | | |
| Sloan, Joshua K. (See Abolt, John A., assignor.) | | | | | | |
| Small, Frank E., assignor of one-half to J. W. Kent, Brooklyn, N. Y. T-square | 756,987 | Apr. 12 | 1541 | 339 | 109 | 1685 |
| Small, Fred K., Lisbon Falls, Me. Ironing-board attachment | 755,065 | Mar. 22 | 3661 | 804 | 109 | 852 |
| Small, Frederick E., Boston, Mass. Metallic packing for piston-rods | 757,062 | Apr. 12 | 1694 | 368 | 109 | 1719 |
| Smelser, Horatio, Ashton, Nebr. Means for holding cars on sidings | 755,949 | Mar. 29 | 5358 | 1188 | 109 | 1239 |
| Smiley, Charley A., Erie, Pa. Coin-actuated vending-machine | 754,616 | Mar. 15 | 2810 | 613 | 109 | 647 |
| Smith, Alba P., Jr., Brockton, Mass. Ball-bearing spacer | 756,069 | Mar. 29 | 5567 | 1229 | 109 | 1284 |
| Smith, Albert W., Cleveland, Ohio. Making chloroform | 758,325 | Mar. 1 | 208 | ------ | 109 | 47 |
| Smith, Alfred W. (See Hoxie, George L., assignor.) | | | | | | |
| Smith, Benjamin S., Paisley, Scotland. Machine for trimming the surface of pile carpets | 755,803 | Mar. 29 | 5059 | 1123, 1124 | 109 | 1170 |
| Smith, Charles A. (See Johnson, Charles, assignor.) | | | | | | |
| Smith, Charles W. (See Lancey and Smith.) | | | | | | |
| Smith, Charles W., assignor to A. D. Feesenden, Townsend, Mass. Machine for planing or smoothing surfaces of curved or irregular objects | 755,321 | Mar. 22 | 4122 | 911, 912 | 109 | 947 |
| Smith, Chris N., assignor to D. C. Cook Publishing Company, Elgin, Ill. Preparing color-plates for printing | 753,746 | Mar. 1 | 1018 | 231 | 109 | 219 |
| Smith, Cuyler, *et al.*, trustees. (See Lester, James F., assignor.) | | | | | | |
| Smith, Cyrus E., assignor of one-half to C. S. Canfield, Fall River, Mass. Trolley | 757,786 | Apr. 19 | 3165 | 687 | 109 | 2053 |
| Smith, E. Tyler, *et al.* (See Pratte, Charles A., assignor.) | | | | | | |
| Smith, Eddie R., *et al.* (See Thompson, Frank M., assignor.) | | | | | | |
| Smith, Edward A., New York, N. Y. Automatic coasting-cycle | 754,823 | Mar. 15 | 3213 | 700, 701 | 109 | 736 |
| Smith, Edward F., Newfield, Me. Handle | 758,482 | Apr. 26 | 4526 | 972 | 109 | 2371 |
| Smith, Edward M., W. H. Carpenter, and E. B. Weidknecht; said Smith and Carpenter assignors of one-half to H. Oelkers, Peoria, Ill. Tube-scraper | 754,952 | Mar. 15 | 3465 | 759 | 109 | 792 |
| Smith & Egge Manufacturing Company. (See Egge, Frederick, assignor.) | | | | | | |
| Smith, Eldridge J., Washington, D. C., assignor to Parker Bros., Inc., Salem, Mass. Toy pistol | 756,988 | Apr. 12 | 1543 | 340 | 109 | 1685 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Smith, Emerson R., Oneida, N. Y. Drill-chuck | 755,322 | Mar. 22 | 4126 | 912 | 109 | 948 |
| Smith, Ernst G., Columbia, Pa. Reversing-gear | 757,061 | Apr. 12 | 1696 | 368, 369 | 109 | 1719 |
| Smith, F. Marion, Nashville, Mich., assignor to Huntley Manufacturing Company, Silvercreek, N. Y. Grain-separator | 754,617 | Mar. 15 | 2811 | 614 | 109 | 647 |
| Smith, Frank. (See MacArthur and Smith.) | | | | | | |
| Smith, Frank L., assignor of one-half to A. C. Ricksecker, Chicago, Ill. Gate-valve-reseating machine | 753,747 | Mar. 1 | 1019 | 231 | 109 | 219 |
| Smith, Franklin C., New Bedford, Mass. Ball-cock for tanks | 756,536 | Apr. 5 | 679 | 146 | 109 | 1486 |
| Smith, Fred H., Oakpark, and D. C. Sasseman, assignors to F. H. Smith Manufacturing Co., Chicago, Ill. Knife-sharpener | 755,590 | Mar. 22 | 4622 | 1026 | 109 | 1058 |
| Smith, Frederick H., assignor to P. P. Menard, Chicago, Ill. Water-still | 755,179 | Mar. 22 | 3960 | 852 | 109 | 894 |
| Smith, George, Plainfield, N. J. Drilling-machine | 757,239 | Apr. 12 | 2039 | 445 | 109 | 1794 |
| Smith, George C., St. Kilda, near Melbourne, Victoria, Australia. Screw for metal, wood, &c., and means for operating same | 755,804 | Mar. 29 | 5060 | 1124 | 109 | 1171 |
| Smith, George W., Union City, Ind. Mail-box | 753,563 | Mar. 1 | 588 | 134 | 109 | 128 |
| Smith, Godfrey L., *et al.* (See Miller, Roy C., assignor.) | | | | | | |
| Smith, Harris B., assignor to J. D. Toomey, Bridgeport, Conn. Garbage-crematory | 757,149 | Apr. 12 | 1872 | 409 | 109 | 1758 |
| Smith, Harry, and W. Wright, Franklin, Pa. Wall-packer for oil-wells | 755,180 | Mar. 22 | 3861 | 852 | 109 | 894 |
| Smith, Harry B., Brooklyn, N. Y., assignor of three-fourths to J. S. Stokes, Morristown, N. J., P. S. Smith, Philadelphia, Pa., and W. S. Smith, Pawtucket, R. I. Box-covering machine | 753,594 | Mar. 1 | 589 | 134 | 109 | 128 |
| Smith, Harry J., assignor to Alberger Company, Buffalo, N. Y. Electric igniter for gas-engines | 757,064 | Apr. 12 | 1699 | 369 | 109 | 1720 |
| Smith, Harry W., Worcester, Mass. Loom | 755,715 | Mar. 29 | 4864 | 1081, 1082 | 109 | 1128 |
| Smith, Henry C., assignor to Smith-Warren Company, Boston, Mass. Metal window-frame | 755,585 | Mar. 22 | 4591 | 1021, 1022 | 109 | 1050 |
| Smith, Herbert E., Boston, Mass. Cross-section tester | 758,221 | Apr. 26 | 4001 | 869 | 109 | 2254 |
| Smith, Herman E. (See Stolte and Smith.) | | | | | | |
| Smith, J. R., *et al.* (See Gray and Lehmann, assignors.) (Reissue.) | | | | | | |
| Smith, James D., Kansas City, assignor to F. W. Wood, Jackson county, Mo. Automatic note-sheet guide mechanism | 755,950 | Mar. 29 | 5361 | 1184 | 109 | 1239 |
| Smith, James D., Kansas City, assignor to F. W. Wood, Jackson county, Mo. Note-sheet feed mechanism for musical-instrument players | 756,070 | Mar. 29 | 5568 | 1229 | 109 | 1284 |
| Smith, James E., Flatbush, N. Y. Fire-escape | 753,326 | Mar. 1 | 204 | 45, 46 | 109 | 47 |
| Smith, James H. (See Bamford, John W., assignor.) | | | | | | |
| Smith, James H., Chicago, and A. Brown, Elgin, assignors to Jas. H. Smith & Co., Chicago, Ill. Plate-holder | 756,422 | Apr. 5 | 467 | 97 | 109 | 1442 |
| Smith, James M., Sharon, Pa. Feed-water purifier | 754,907 | Mar. 15 | 3370 | 737 | 109 | 770 |
| Smith, James P. (See Smith, John E. and J. P.) | | | | | | |
| Smith, John A., Cleveland, Ohio, assignor to Elliott-Fisher Company, New York, N. Y. Type-arm bearing for type-writing machines | 755,404 | Mar. 22 | 4282 | 946 | 109 | 985 |
| Smith, John E., Etna, Pa. Toilet appliance | 755,181 | Mar. 22 | 3862 | 853 | 109 | 893 |
| Smith, John E. and J. P., Homer, La. Bed-partition | 754,358 | Mar. 8 | 2211 | 493, 494 | 109 | 499 |
| Smith, John F., Bolivar, assignor of one-half to J. G. Hurst, Harpers Ferry, W. Va. Railway tie and fastening | 758,115 | Apr. 26 | 3809 | 827 | 109 | 2212 |
| Smith, John W., Ottawa, Canada. Auxiliary car-coupling | 755,805 | Mar. 29 | 5061 | 1124 | 109 | 1171 |
| Smith, John W., Shirley, W. Va. Rail-joint | 756,493 | Apr. 5 | 469 | 97 | 109 | 1443 |
| Smith, Joseph, San Francisco, Cal. Treating ores | 755,951 | Mar. 29 | 5363 | ------ | 109 | 1239 |
| Smith, Joseph R., Waterbury, Conn., assignor to United States Fastener Company, Portland, Me., and Boston, Mass. Ball-and-socket fastener | 758,525 | Mar. 1 | 591 | 134 | 109 | 129 |
| Smith, Lizzie J., Newark, N. J. Finger-nail polisher | 756,071 | Mar. 29 | 5569 | 1229 | 109 | 1284 |
| Smith, Louis W., Anacortes, Wash. Washing-machine | 755,323 | Mar. 22 | 4137 | 912, 913 | 109 | 949 |
| Smith, Needham, Pearsall, Tex. Insect-destroyer | 753,996 | Mar. 8 | 1430 | 322 | 109 | 330 |
| Smith, Nicholas A., and C. H. Pelton, Grand Rapids, Mich. Tapping device | 754,618 | Mar. 15 | 2814 | 614 | 109 | 648 |
| Smith, Philip S., *et al.* (See Smith, Harry B., assignor.) | | | | | | |
| Smith, Robert P., and G. E. Drum, Philadelphia, Pa. Mercerizing apparatus | 755,716 | Mar. 29 | 4869 | 1082, 1083 | 109 | 1129 |
| Smith, Sidney W., *et al.* (See Delaney, Michael G., assignor.) | | | | | | |
| Smith, Thomas B., Handsworth, England. Inverted incandescent gas-lamp | 754,354 | Mar. 8 | 2212 | 494 | 109 | 500 |
| Smith, Uzziel P., Chicago, Ill. Machine for making pneumatic tires | 753,813 | Mar. 1 | 1196 | 269, 270 | 109 | 257 |
| Smith, W. Scott, *et al.* (See Smith, Harry B., assignor.) | | | | | | |
| Smith, Walter J. B., Providence, R. I. Friction device for impulse-motors | 755,962 | Mar. 29 | 5364 | 1184 | 109 | 1239 |
| Smith-Warren Company. (See Smith, Henry C., assignor.) | | | | | | |
| Smith, Watson R., Jackson, Mich. Wire clip for cushion-spring work | 757,420 | Apr. 12 | 2418 | 526 | 109 | 1873 |
| Smith, William C., Merrimac, Mass. Piston-ring | 757,065 | Apr. 12 | 1701 | 369 | 109 | 1721 |
| Smith, William H., Pawtucket, R. I. Friction-coupling | 755,953 | Mar. 29 | 5365 | 1184 | 109 | 1240 |
| Smith, William R., Buffalo, N. Y. Power-transmitting device | 755,065 | Mar. 22 | 3662 | 804 | 109 | 853 |
| Smith, William R., Buffalo, N. Y. Power-transmitting device | 755,067 | Mar. 22 | 3664 | 804 | 109 | 853 |
| Smith, William S. H. (See Middleton and Smith.) | | | | | | |
| Smithson, Alexander J., Portland, Oreg. Hydrocarbon-burner | 755,717 | Mar. 29 | 4873 | 1083, 1084 | 109 | 1130 |
| Smyser, Louis B., Elizabeth, N. J., assignor, by mesne assignments, to Canda Brothers, New York, N. Y. Means for attaching suction-tubes and inlet-valves to explosive or internal-combustion engines | 753,814 | Mar. 1 | 1200 | 270 | 109 | 258 |
| Smyth, George H., Colorado Springs, Colo. Trestle-frame | 755,182 | Mar. 22 | 3863 | 853 | 109 | 895 |
| Smythe, Edwin H., Freeport, assignor to Western Electric Company, Chicago, Ill. Switching apparatus for telephone-exchanges | 753,927 | Mar. 8 | 1431 | 322 | 109 | 330 |
| Smythe, Edwin H., Freeport, assignor to Western Electric Company, Chicago, Ill. Secrecy system for telephone-switchboards | 756,424 | Apr. 5 | 470 | 97 | 109 | 1443 |
| Smythe, Edwin H., Freeport, assignor to Western Electric Company, Chicago, Ill. Supervisory signal apparatus for telephone-switchboards | 758,116 | Apr. 26 | 3811 | 827 | 109 | 2212 |
| Sneddon, James P., Barberton, Ohio, assignor to Stirling Company, Chicago, Ill. Forming boiler-headers | 755,718 | Mar. 29 | 4876 | 1084 | 109 | 1131 |
| Sneddon, James P., Barberton, Ohio, assignor to Stirling Company, Chicago, Ill. Superheater | 757,570 | Apr. 19 | 2783 | 507, 508 | 109 | 1956 |
| Snedeker, James W., Adrian, Mich. Wire-fabric loom | 755,719 | Mar. 29 | 4878 | 1084, 1085, 1086, 1087, 1088 | 109 | 1131 |
| Snedeker, William E., Camden, N. J. Wrench | 758,548 | Apr. 26 | 4710 | 1016 | 109 | 2412 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sneed, Henry L., *et al.* (See Walter, Edward, assignor.) | | | | | | |
| Snell, George D., Denver, Colo. Soap-lock | 755,553 | Mar. 22 | 4588 | 1010 | 109 | 1089 |
| Snell, William T., Octave, Ariz. Ter. Pipe or bar cutter | 757,975 | Apr. 19 | 3512 | 702 | 109 | 2129 |
| Snider, George L. (See Norris, Charles P., assignor.) | | | | | | |
| Snider, John C., Crippiecreek, Colo. Combined pipe and nut wrench | 754,509 | Mar. 15 | 2623 | 569 | 109 | 609 |
| Snider, Pleasant, *et al.* (See Piper, Herbert H., assignor.) | | | | | | |
| Snodgrass, John C., Steubenville, Ohio. Insulator | 756,794 | Apr. 5 | 1018 | 226 | 109 | 1559 |
| Snook, Homer C., Philadelphia, Pa. Stereoscopic apparatus | 758,117 | Apr. 26 | 3814 | 828 | 109 | 2213 |
| Snow, Arthur E., assignor, by mesne assignments, to Syracuse Time Recorder Company, Syracuse, N. Y. Time-recorder | 757,150 | Apr. 12 | 1874 | 409, 410 | 109 | 1759 |
| Snow, Levi T., New Haven, and A. A. Warner, New Britain, Conn.; said Warner assignor to said Snow. Food-chopper | 754,249 | Mar. 8 | 2034 | 453 | 109 | 463 |
| Snyder, Charles F., administrator. (See Stillwell, Henry C.) | | | | | | |
| Snyder, Charles W. E. (See Hunt, Emory C., assignor.) | | | | | | |
| Snyder, John F., New York, N. Y. Automatic brake-shoe for baby-carriages | 754,510 | Mar. 15 | 2624 | 569 | 109 | 610 |
| Snyder, John S., Meyersdale, Pa. Coke-drawer's lamp | 753,748 | Mar. 1 | 1022 | 232 | 109 | 220 |
| Soblik, Maximilian, Dusseldorf, Germany. Pneumatic type-writer with open-pipe system | 757,066 | Apr. 12 | 1702 | 370 | 109 | 1720 |
| Société Anonyme des Anciens Etablissements Panhard et Levassor. (See Krebs, Arthur, assignor.) | | | | | | |
| Société Anonyme pour la Production et l'Emploi de la Vapeur Surchauffée. (See Leclere, André, assignor.) | | | | | | |
| Société Chimique des Usines du Rhone, (Anciennement Gilliard, P. Monnet et Cartier,) *et al.* (See Wichmann, Georg, assignor.) | | | | | | |
| Society of Electricitäts Actien-Gesellschaft vorm. W. Lahmeyer & Co. (See Dettmar, Georg, assignor.) | | | | | | |
| Soden, Albert N., Trenton, N. J. Electric lamp and socket | 755,954 | Mar. 29 | 5370 | 1185 | 109 | 1242 |
| Soderberg, Louis. (See Gunn, Charles D., assignor.) | | | | | | |
| Soley, William H., Philadelphia, Pa., assignor of one-half to Thos. H. Dallett Co. Pneumatic tool | 754,019 | Mar. 8 | 1601 | 356, 357 | 109 | 369 |
| Soley, William H., Philadelphia, Pa., assignor of one-half to Thos. H. Dallett Co. Pneumatic tool | 755,324 | Mar. 22 | 4129 | 913 | 109 | 949 |
| Solomon, George S., Bisbee, Ariz. Ter. Plate-lifter | 754,250 | Mar. 8 | 2037 | 453 | 109 | 464 |
| Sommer, Joseph W. (See Sommer, Peter, P. W., and J. W.) | | | | | | |
| Sommer, Joseph W., Peoria, Ill. Wire fencing | 756,540 | Apr. 5 | 683 | 146 | 109 | 1487 |
| Sommer, Peter, P. W., and J. W., Peoria, Ill. Stretcher | 756,539 | Apr. 5 | 681 | 146 | 109 | 1486 |
| Sommer, Peter W. (See Sommer, Peter, P. W., and J. W.) | | | | | | |
| Sommerville, Grant P. (See Guest, Theodore M., assignor.) | | | | | | |
| Sonendriker, Edward T., assignor of one-half to M. W. Coleman, Golden, Tex. Feeding attachment for pneumatic conveyers | 753,928 | Mar. 8 | 1436 | 322 | 109 | 331 |
| Sonnenfeld, Max, New York, N. Y. Watch-protector | 756,072 | Mar. 29 | 5570 | 1229 | 109 | 1285 |
| Sooysmith, Charles, New York, N. Y. Constructing foundations, tunnels, &c | 755,955 | Mar. 29 | 5372 | 1185 | 109 | 1242 |
| Sooysmith, Charles, New York, N. Y. Constructing tunnels, shafts, or other excavations. | 755,956 | Mar. 29 | 5375 | 1185, 1186 | 109 | 1243 |
| Sorensen, Peter, Brooklyn, N. Y. Electric switch | 756,541 | Apr. 5 | 684 | 147 | 109 | 1487 |
| Sorrentino, Ercole, Bradford, Pa. Heating-cup | 755,405 | Mar. 22 | 4284 | 946 | 109 | 985 |
| Soutar, George, East Pittsburg, Pa. Hose-coupling | 755,325 | Mar. 22 | 4130 | 913 | 109 | 949 |
| South, William C. (See O'Donnell and South.) | | | | | | |
| Southard, Abraham M. and C. L., Denver, Colo. Sash-lock | 754,355 | Mar. 8 | 2214 | 494 | 109 | 500 |
| Southard, Clarence L. (See Southard, Abraham M. and C. L.) | | | | | | |
| Southern Cotton Oil Company. (See Davidson, Joseph, assignor.) | | | | | | |
| Soylian, George. (See Quinn and Soylian.) | | | | | | |
| Spacie, Thomas, Globe, Ariz. Ter. Skate | 757,240 | Apr. 12 | 2042 | 446 | 109 | 1795 |
| Spalckhaver, William, assignor to R. Hoe, New York, N. Y. Sheet-delivery mechanism | 755,068 | Mar. 22 | 3666 | 805 | 109 | 853 |
| Spanjer, Henry J. (See Spanjer, William H. and H. J.) | | | | | | |
| Spanjer, William H. and H. J., Newark, N. J. Folding seat | 755,183 | Mar. 22 | 3866 | 853 | 109 | 895 |
| Spear, Arthur E., *et al.* (See Lewis, Albert H., assignor.) | | | | | | |
| Spear, Fannie G. and R. O., Quincy, Ill. Skirt-holder | 756,149 | Mar. 29 | 5712 | 1261 | 109 | 1314 |
| Spear, Royal O. (See Spear, Fannie G. and R. O.) | | | | | | |
| Speare, Edward R., *et al.* (See Morse, William M., assignor.) | | | | | | |
| Speare, Lewis R., *et al.* (See Morse, William M., assignor.) | | | | | | |
| Speechley, William R., Broadheath, England, assignor to Mergenthaler Linotype Company, New York, N. Y. Means for producing notches in linotypes or slugs as they are cast in linotype-machines | 754,619 | Mar. 15 | 2816 | 615 | 109 | 648 |
| Speer, Robert G., St. Louis, Mo. Oil-burner | 757,421 | Apr. 12 | 2417 | 527 | 109 | 1873 |
| Speight, Richard H., Jr. (See Bridgers, Hall R., assignor.) | | | | | | |
| Speigle, Vern, Brokensword, Ohio. Sewing appliance | 754,356 | Mar. 8 | 2215 | 495 | 109 | 500 |
| Speir, Allison H., Kissimmee, Fla. Car-stake | 753,643 | Mar. 1 | 806 | 180 | 109 | 176 |
| Spence, Howard, Manchester, England. Making sulfate of aluminium | 754,824 | Mar. 15 | 3215 | ------ | 109 | 737 |
| Spencer, Charles H., Kendall, Kans. Gate-fastener | 754,357 | Mar. 8 | 2216 | 495 | 109 | 500 |
| Spencer, Charlie F., Alexandria Bay, N. Y. Coupling for sectional conveyer-spouts | 757,573 | Apr. 19 | 2744 | 599 | 109 | 1900 |
| Spencer, Frederick W. (See Armstrong, George P., assignor.) | | | | | | |
| Spencer, George M., and C. J. Grellner, St. Louis, Mo. Fluid-pressure brake | 754,908 | Mar. 15 | 3371 | 737 | 109 | 770 |
| Spencer, George W., and A. Lynde, Atlantic City, N. J. Speaking figure | 754,825 | Mar. 15 | 3218 | 701 | 109 | 737 |
| Spencer, Harry M., Dunmore, Pa. Coal separator and washer | 753,440 | Mar. 1 | 418 | 97, 98 | 109 | 91 |
| Spencer, Harry S., Norwood, assignor to J. A. Fay & Egan Company, Cincinnati, Ohio. Hollow-chisel mortising-machine | 756,725 | Apr. 5 | 1019 | 226 | 109 | 1559 |
| Spencer, Ira H., Hartford, Conn. Motor | 753,644 | Mar. 1 | 807 | 180, 181 | 109 | 176 |
| Spencer, Ira H., Hartford, and J. W. Simpson, Waterbury, Conn. Fluid-pump | 756,908 | Apr. 12 | 1873 | 306 | 109 | 1651 |
| Spencer Lens Company. (See Dieckmann, Carl F., assignor.) | | | | | | |
| Spencer, William L. (See Boedefeld, Franz S., assignor.) | | | | | | |
| Spengler, Franz, Berlin, Germany. Bearing for balls rolling on two rails | 755,406 | Mar. 22 | 4285 | 947 | 109 | 985 |
| Spery, Charles F., assignor of two-thirds to L. A. Weyburn, Rockford, Ill. Nut-lock | 755,806 | Mar. 29 | 5062 | 1124 | 109 | 1171 |
| Spillane, William T., Redlake Falls, Minn. Broom-holder | 756,294 | Apr. 5 | 204 | 43 | 109 | 1398 |
| Spiller, Harry A., assignor, by mesne assignments, to Algonquin Electric Brake Corporation, Boston, Mass. Railway-brake | 753,929 | Mar. 8 | 1437 | 323 | 109 | 331 |
| Spitzer, Emanuel, Munich, Germany. Photomechanical printing | 758,338 | Apr. 26 | 4261 | ------ | 109 | 2311 |
| Splitdorf, Charles F. (See Hart, William J., assignor.) | | | | | | |
| Spohn, William W., Dale township, McLean county, Ill. Clamp for fastening snaps to leather lines | 754,358 | Mar. 8 | 2217 | 495 | 109 | 501 |
| Sponenburg, Hiram H. (See Laas and Sponenburg.) | | | | | | |
| Sprague, Joseph W., Poncho Springs, Colo. Wolf-trap | 754,511 | Mar. 15 | 2625 | 569 | 109 | 610 |
| Sprague, Lawrence W., Greenville, Mich. Voting-table and ballot-box | 753,596 | Mar. 1 | 592 | 184, 185 | 109 | 129 |
| Springer, Calvin J., Somerville, Mass. Electric apparatus for measuring and recording intervals of time | 754,080 | Mar. 8 | 1608 | 357 | 109 | 370 |
| Springer, Thomas H., Washington, D. C. Centrifugal liquid-separator | 754,909 | Mar. 15 | 3372 | 737 | 109 | 771 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sprotte, Edward, St. Louis, Mo. Tuning attachment for stringed instruments | 753,327 | Mar. 1 | 206 | 46 | 109 | 47 |
| Spurr, James, Lima, Ohio. Car-axle box | 758,483 | Apr. 26 | 4527 | 973 | 109 | 2371 |
| St. Clair, George W., Lexington, Ky. Sulky | 757,575 | Apr. 19 | 2749 | 600 | 109 | 1961 |
| St. Hilaire, Napoléon J., Gardner, Mass. Self-locking hinge | 753,443 | Mar. 1 | 421 | 99 | 109 | 91 |
| St. John, Gamaliel C., executor. (See Andrews, Wallace C.) | | | | | | |
| St. Louis Car Company. (See Witte, Hubert, assignor.) | | | | | | |
| St. Pierre, Auguste, Rivière Trois Pistoles, Canada. Tie-plate | 754,025 | Mar. 8 | 1613 | 350 | 109 | 372 |
| Stacy, James N., Portland, Oreg. Machine for sealing envelops and mailable matter and affixing stamps thereto | 757,574 | Apr. 19 | 2744 | 600 | 109 | 1960 |
| Stadel, John M., assignor of one-half to W. A. McCowen, Wilmington, Del. Gas-engine. | 753,527 | Mar. 1 | 506 | 135<br>136<br>137 | 109 | 130 |
| Stafford, James M., Petersburg, Ind. Fire-escape | 753,930 | Mar. 8 | 1440 | 323 | 109 | 332 |
| Stagg, Thomas D., Selby, England. Wheel | 755,099 | Mar. 22 | 3068 | 805 | 109 | 854 |
| Stahl, William F. (See Oothoudt and Stahl.) | | | | | | |
| Staley, Albert P. (See Staley, David F., assignor.) | | | | | | |
| Staley, David F., assignor of one-half to A. P. Staley, Highpoint, N. C. Pallet-jewel-setting device | 755,070 | Mar. 22 | 3070 | 806 | 109 | 854 |
| Standard Bottle-Cap Corporation. (See Heath, William E., assignor.) | | | | | | |
| Standard Horse Nail Company. (See Pierce and Newton, assignors.) | | | | | | |
| Standard Machine Company. (See Houseman, Harry A., assignor.) | | | | | | |
| Stanger, David, Glassboro, N. J. Game-board | 757,976 | Apr. 19 | 3513 | 762 | 109 | 2129 |
| Stanley Electric Manufacturing Company. (See Déri, Max, assignor.) | | | | | | |
| Stanley Rule & Level Company. (See Traut, Justus A., assignor.) | | | | | | |
| Stanton, Frank. (See Zumwalt and Stanton.) | | | | | | |
| Stanwood, James B., Cincinnati, Ohio. Valve-gearing for steam-engines | 754,690 | Mar. 15 | 2818 | 615 | 109 | 649 |
| Stapf, Frank F. (See Clark, Edward, assignor.) | | | | | | |
| Staples, David H., Skowhegan, Me. Fluid-pressure coupling for air-brake valves | 754,021 | Mar. 8 | 1605 | 358 | 109 | 370 |
| Staples, John M., Philadelphia, Pa. Rail-joint | 753,441 | Mar. 1 | 419 | 98 | 109 | 91 |
| Stapley, William S., assignor to Bridgeport Brass Company, Bridgeport, Conn. Sheet-metal faucet-spout | 753,749 | Mar. 1 | 1023 | 232 | 109 | 230 |
| Star Brass Manufacturing Company. (See Bosworth, Charles B., assignor.) | | | | | | |
| Star Brass Manufacturing Company. (See Sanderson, Richard P. C., assignor.) | | | | | | |
| Starkie, Ridley, Burnley, England. Weft-replenishing mechanism for looms for weaving | 755,720 | Mar. 29 | 4887 | 1088<br>1089 | 109 | 1133 |
| Starr Piano Company. (See Bosenbury, William C., assignor.) | | | | | | |
| Starring, Sarah A., *et al.* (See Broadwell, Edward C., assignor.) | | | | | | |
| Staton, John W., Rockwood, Tex. Portable water-heater and steam-cooker | 757,358 | Apr. 12 | 2280 | 499 | 109 | 1847 |
| Staudinger, Emil C., New Orleans, La. Spout | 753,750 | Mar. 1 | 1024 | 232 | 109 | 230 |
| Steber, Bernard T., Utica, N. Y. Knitting-machine | 753,645 | Mar. 1 | 810 | 181<br>182 | 109 | 177 |
| Steck, E. L. (See Lloyd, William D., assignor.) | | | | | | |
| Steedman, George F., St. Louis, Mo. Overhead-track system | 754,396 | Mar. 8 | 2356 | 515 | 109 | 531 |
| Steel Cable Engineering Company. (See Decker, Edwin S., assignor.) | | | | | | |
| Steel-Concrete Construction Co. (See Weber, Carl, assignor.) | | | | | | |
| Steel Heddle Manufacturing Company. (See Fehr and Kaufmann, assignors.) | | | | | | |
| Steele, John A., Minneapolis, Minn. Thill-coupling | 756,796 | Apr. 5 | 1023 | 227 | 109 | 1561 |
| Steen, John. (See Way, Frank E., assignor.) | | | | | | |
| Steere, Merrill O. (See Brindle and Steere.) | | | | | | |
| Steger, Virge, Bonham, Tex. Artificial stone | 756,296 | Apr. 5 | 906 | ..... | 109 | 1386 |
| Steidl, Raymond, Mattoon, Ill. Bucket or pail fastener | 757,848 | Apr. 19 | 3276 | 709 | 109 | 2075 |
| Stein, Paul H., Bristol, Conn. Socket member | 755,407 | Mar. 22 | 4285 | 947 | 109 | 986 |
| Steinberger, Louis, New York, N. Y. Rail | 755,386 | Mar. 22 | 4131 | 914 | 109 | 949 |
| Steinberger, Louis, New York, N. Y. Track structure | 755,227 | Mar. 22 | 4134 | 914 | 109 | 951 |
| Steiner, Rosa, Vienna, Austria-Hungary. Button for garments | 757,576 | Apr. 19 | 2751 | 601 | 109 | 1902 |
| Steinmetz, Charles P., Schenectady, N. Y., assignor to General Electric Company. Electric lamp | 754,251 | Mar. 8 | 2088 | 454 | 109 | 464 |
| Steinmetz, Charles P., Schenectady, N. Y., assignor to General Electric Company. Braking system | 755,807 | Mar. 29 | 5063 | 1125 | 109 | 1171 |
| Steinmitz, Sebastian, Scranton, Pa. Steam-trap | 755,251 | Mar. 22 | 3988 | 885 | 109 | 990 |
| Stenberg, Sven A. A., assignor of forty-nine one-hundredths to W. E. Cumback, San Francisco, Cal. Towel-rack | 758,600 | Apr. 26 | 4770 | 1026<br>1027 | 109 | 2425 |
| Stene, Christopher J., Ashby, Minn. Axle-lubricator | 755,957 | Mar. 29 | 5377 | 1186 | 109 | 1243 |
| Stengel, George W., Amelia, Va. Combination stove-lid and cooking-utensil lifter | 756,727 | Apr. 5 | 1024 | 227 | 109 | 1561 |
| Stephan, Ferdinand, Hildesheim, Germany. Rotary engine | 756,904 | Apr. 12 | 1376 | 307 | 109 | 1652 |
| Stephens, William, Montesano, Wash. Raker saw-gage | 756,425 | Apr. 5 | 472 | 97 | 109 | 1443 |
| Stephenson, Frank T. F., Detroit, Mich. Sulfo-iodin compound of hydrocarbon | 755,808 | Mar. 29 | 5066 | ..... | 109 | 1171 |
| Stephenson, John J., Winters, Cal. Cooler | 758,408 | Mar. 22 | 4286 | 947 | 109 | 986 |
| Stephenson, John W., Toledo, assignor to National Malleable Castings Company, Cleveland, Ohio. Journal-box | 754,170 | Mar. 8 | 1880 | 419 | 109 | 431 |
| Sterling, Charles I., South Norwalk, Conn. Hat-holder | 755,184 | Mar. 22 | 3867 | 853<br>854 | 109 | 896 |
| Sterling Manufacturing Company. (See Kadel and Rodemeyer, assignors.) | | | | | | |
| Stern, Philip R., New York, N. Y. Riding-saddle | 753,751 | Mar. 1 | 1025 | 232 | 109 | 221 |
| Stevens, C. D. (See Perry, Ira D., assignor.) | | | | | | |
| Stevens, Fred P., St. Louis, Mo. Photographic-printing machine | 754,252 | Mar. 8 | 2040 | 454 | 109 | 465 |
| Stevens, George F., Northwood, N. H. Hair-clipper | 757,359 | Apr. 12 | 2290 | 499 | 109 | 1847 |
| Stevens, Lawrence L., Los Angeles, Cal. Combined potato slicer and grater | 757,360 | Apr. 12 | 2291 | 500 | 109 | 1847 |
| Stevens, William H. (See Sanborn, James G., assignor.) | | | | | | |
| Stevenson, George, *et al.* (See Burdett, Frank, assignor.) | | | | | | |
| Stevenson, John H., assignor of one-half to G. F. Allmendinger, Ann Arbor, Mich. Shredder for wheat or other grain | 753,981 | Mar. 8 | 1449 | 323<br>324 | 109 | 332 |
| Stevenson, William M., Indian Orchard, Mass. Woven fabric | 756,150 | Mar. 29 | 5712 | 1261 | 109 | 1315 |
| Steward, John F., assignor to International Harvester Company, Chicago, Ill. Headboard for harvesters | 754,718 | Mar. 15 | 3025 | 661 | 109 | 695 |
| Steward, John F., assignor to International Harvester Company, Chicago, Ill. Butt-adjuster for harvesters | 754,719 | Mar. 15 | 3026 | 661 | 109 | 695 |
| Stewart, Andrew B., Brooklyn, N. Y. Means for attaching blankets to cylinders of printing-presses | 754,253 | Mar. 8 | 2044 | 454 | 109 | 465 |
| Stewart, Charles E., McHenry, Miss. Railway-car | 757,427 | Apr. 12 | 2480 | 529 | 109 | 1876 |
| Stewart, Hiram B. (See Ash and Stewart.) | | | | | | |
| Stewart, John D., Laporte, Ind. Combined dray-seat and truck | 753,442 | Mar. 1 | 420 | 98 | 109 | 91 |
| Stewart, John H., Navasota, Tex. Cotton-chopper and weeder | 756,186 | Mar. 29 | 5769 | 1274 | 109 | 1326 |
| Stewart, Matthew A., New York, N. Y. Fire-grate attachment | 757,067 | Apr. 19 | 1708 | 370 | 109 | 1790 |
| Stewart, Ronald. (See Stewart, Thomas Y., assignor.) | | | | | | |
| Stewart, Samuel B., Jr., Schenectady, N. Y., assignor to General Electric Company. Ice-cutter for third-rail electric railways | 758,158 | Apr. 26 | 3877 | 843 | 109 | 2228 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Stewart, Thomas Y., assignor of one-half to R. Stewart, St. Paul, Minn. Feed-water heater | 758,484 | Apr. 26 | 4528 | 973 | 109 | 2371 |
| Stewart-Wallace, John S., Red Hill, Knock, Ireland. Appliance for cleansing the surfaces of floors or the like | 754,254 | Mar. 8 | 2046 | 455 | 109 | 466 |
| Stewart, Will J., *et al.* (See Ewing, Thomas H., assignor.) | | | | | | |
| Stewart, William G., Philadelphia, Pa. Machinery for the production of textile webs | 753,752 | Mar. 1 | 1026 | 233 | 109 | 221 |
| Stewart, William G., Excelsior Springs, assignor of one-half to C. W. Bechtel, Kansas City, Mo. Threshing-machine | 756,728 | Apr. 5 | 1025 | 227<br>228 | 109 | 1561 |
| Stewart, William J., assignor of one-half to A. Henneman, St. Louis, Mo. Horseshoe-creeper | 754,022 | Mar. 8 | 1607 | 358 | 109 | 370 |
| Sticker, Francis, New York, N. Y. Sand-blast | 758,118 | Apr. 26 | 3816 | 828 | 109 | 2214 |
| Stickler, Oliver E., assignor of one-half to G. H. Funk, Olympia, Wash. Saw-set | 756,187 | Mar. 29 | 5772 | 1274 | 109 | 1327 |
| Stickley, Joseph, Mansbridge, S. D. Material for fences | 758,154 | Apr. 26 | 3879 | 842 | 109 | 2229 |
| Stickney, Allison M., assignor to Wellman Sole Cutting Machine Company, Medford, Mass. Knife-carrier for machines for cutting irregular forms | 753,444 | Mar. 1 | 423 | 99 | 109 | 92 |
| Stickney, George. (See Shepherd, Warren J., assignor.) | | | | | | |
| Stier, Henry, Allegheny, Pa. Hair-pin | 756,426 | Apr. 5 | 474 | 98 | 109 | 1443 |
| Stiff, Henry C., Johnstown, Pa., assignor to Lorain Steel Company. Spring-switch | 756,729 | Apr. 5 | 1032 | 228 | 109 | 1563 |
| Stillman, Francis H., New York, N. Y. Hydraulic jack | 757,512 | Apr. 19 | 2607 | 572 | 109 | 1929 |
| Stilson, Christopher N., New York, N. Y. Bicycle | 754,720 | Mar. 15 | 3028 | 661<br>662 | 109 | 696 |
| Stilwell, Henry C., deceased; C. F. Snyder, Dayton, Ohio, administrator. Computing-scale | 754,395 | Mar. 8 | 2350 | 513<br>514 | 109 | 530 |
| Stimps, Henry F., Chicago, Ill. Spinner | 756,542 | Apr. 5 | 686 | 147<br>148 | 109 | 1487 |
| Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Filling-fork for looms | 754,023 | Mar. 8 | 1608 | 358 | 109 | 370 |
| Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Filling-replenishing loom | 754,024 | Mar. 8 | 1608 | 358<br>359 | 109 | 371 |
| Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Filling-feeder for automatic looms | 755,252 | Mar. 22 | 3990 | 885 | 109 | 921 |
| Stimpson, Edwin B., New York, N. Y. Creasing-press | 755,409 | Mar. 22 | 4288 | 948 | 109 | 986 |
| Stinson, William J., assignor to J. C. Grosch, London, Canada. Acetylene-gas generator | 757,577 | Apr. 19 | 2752 | 601 | 109 | 1962 |
| Stirling Company. (See Prentice, John P., assignor.) | | | | | | |
| Stirling Company. (See Sneddon, James P., assignor.) | | | | | | |
| Stites, Townsend, Philadelphia, Pa., assignor to Welsbach Light Company, Gloucester City, N. J. Mantle-support | 753,328 | Mar. 1 | 207 | 46 | 109 | 48 |
| Stobie, Robert, *et al.* (See Stobie, William H., assignor.) | | | | | | |
| Stobie, William H., assignor of two-thirds to J. L. Dean and R. Stobie, Waterville, Me. Guide-roller | 753,753 | Mar. 1 | 1028 | 233 | 109 | 221 |
| Stock Quotation Telegraph Company. (See Burry, John, assignor.) | | | | | | |
| Stockall, James J., Jr., London, England. Workman's time-recorder | 755,958 | Mar. 29 | 5378 | 1186<br>1187 | 109 | 1244 |
| Stoddard, Charles F., Boston, Mass., assignor to American Pneumatic Service Company, Dover, Del. Pneumatic-despatch apparatus | 758,569 | Apr. 26 | 4711 | 1016 | 109 | 2412 |
| Stoddard Manufacturing Company. (See Roby, George L., assignor.) | | | | | | |
| Stoebe, Herman. (See Sebastian and Stoebe.) | | | | | | |
| Stoelting, Christian H., Chicago, Ill. Barometer | 756,905 | Apr. 12 | 1377 | 307 | 109 | 1652 |
| Stoffer, Friederich, Hamburg, Germany. Rendering leather durable and waterproof | 757,361 | Apr. 12 | 2298 | ..... | 109 | 1847 |
| Stohlmann, William H., Gilmore, Nebr. Steam-engine | 755,410 | Mar. 22 | 4289 | 948 | 109 | 986 |
| Stohn, John. (See Deeley, Samuel, assignor.) | | | | | | |
| Stoke, Flora E., Reynoldsville, Pa. Lace-fastener | 757,977 | Apr. 19 | 3515 | 762 | 109 | 2130 |
| Stokes, J. Stogdell, *et al.* (See Smith, Harry B., assignor.) | | | | | | |
| Stolte, Clemens A., and H. E. Smith, Indianapolis, Ind.; said Stolte assignor to said Smith. Match-strip | 756,806 | Apr. 5 | 1177 | 261 | 109 | 1596 |
| Stoltzenburg, Frederick, assignor of one-fourth to C. Meyer, St. Louis, Mo. Brake | 756,188 | Mar. 29 | 5773 | 1275 | 109 | 1327 |
| Stone, George C., assignor to New Jersey Zinc Company, New York, N. Y. Apparatus for the filtration of gases | 758,222 | Apr. 26 | 4008 | 869 | 109 | 2254 |
| Stone, John E., Blossom, Tex. Bedstead | 755,071 | Mar. 22 | 3071 | 806 | 109 | 855 |
| Stone, Nathaniel B., Outlook, Wash. Hair-curler | 757,241 | Apr. 12 | 2044 | 446 | 109 | 1795 |
| Stone, Stonewall W. J., Hannah, S. C. Plow | 755,959 | Mar. 29 | 5380 | 1187 | 109 | 1244 |
| Stone, William M. (See Reed, Harvey, assignor.) | | | | | | |
| Stonehouse, Anthony, Larimore, N. D. Attachment for bank-ledgers | 755,721 | Mar. 29 | 4891 | 1089 | 109 | 1133 |
| Stoolfire, Charles, Coyle, Okla. Ter. Stack-climber | 755,809 | Mar. 29 | 5067 | 1125 | 109 | 1172 |
| Storer, Henry E. (See Frank and Storer.) | | | | | | |
| Storey, Imie E., Amsterdam, N. Y. Rheostat | 757,687 | Apr. 19 | 2969 | 646 | 109 | 2010 |
| Stouffer, Hiram A., assignor of one-half to L. Evoy, Chatham, Ill. Brick-machine | 756,906 | Apr. 12 | 1379 | 308 | 109 | 1653 |
| Stouffer, Hiram C., Mineralridge, assignor of two-thirds to J. N. Cole and H. G. Huffman, Youngstown, Ohio. Pump | 755,072 | Mar. 22 | 3073 | 806 | 109 | 855 |
| Stout, George H., and L. A. Turner, Denver, Colo. Window-screen | 757,688 | Apr. 19 | 2971 | 646 | 109 | 2010 |
| Stover, Emory E., Bigelow, Minn. Fly-exit for screens | 753,932 | Mar. 8 | 1443 | 324 | 109 | 333 |
| Stow, Eli H., Binghamton, N. Y. Automatic gas igniting and extinguishing apparatus | 757,242 | Apr. 12 | 2045 | 446 | 109 | 1796 |
| Strader, Ernest J., Decatur, Ill. Carpet-stretcher | 755,960 | Mar. 29 | 5381 | 1187 | 109 | 1244 |
| Strader, James. (See Jeffries, Van Oran, assignor.) | | | | | | |
| Straker, Sidney, London, England. Steam-generator | 756,073 | Mar. 29 | 5371 | 1230 | 109 | 1285 |
| Strang, Albert E., Canton, Ohio. Combination collar and cuff button | 757,978 | Apr. 19 | 3516 | 763 | 109 | 2130 |
| Strange, Travis J. (See Evans and Strange.) | | | | | | |
| Stransky & Co. (See Thiele, Albert H., assignor.) | | | | | | |
| Strasburger, Frank C. H., Chicago, Ill. Bottle-washing machine | 756,427 | Apr. 5 | 475 | 98, 99 | 109 | 1444 |
| Strasburger, Frank C. H., Chicago, Ill. Bottle-filling machine | 756,428 | Apr. 5 | 478 | 99 | 109 | 1444 |
| Strathmann, William H., Chicago, Ill. Seeder for poultry-yards | 756,907 | Apr. 12 | 1381 | 308 | 109 | 1653 |
| Strattner, Frederick, Salisbury, Md. Boiler-tube joint | 756,429 | Apr. 5 | 481 | 100 | 109 | 1445 |
| Stratton, Cora M., administratrix. (See Stratton, William H.) | | | | | | |
| Stratton, James M., Brooklyn, N. Y. Artificial horizon for use of mariners | 753,445 | Mar. 1 | 428 | 99<br>100 | 109 | 92 |
| Stratton, William H., deceased, Hartford, Conn.; C. M. Stratton, administratrix. Valve. | 753,755 | Mar. 1 | 1032 | 235 | 109 | 222 |
| Straub, Francis J., Pittsburg, Pa. Apparatus for producing optical illusions | 754,100 | Mar. 8 | 1760 | 391 | 109 | 408 |
| Strauch, Albert T., New York, N. Y. Pianissimo device for grand-piano actions | 757,689 | Apr. 19 | 2973 | 647 | 109 | 2010 |
| Strauss, Harry S., Derby, Conn. Key attachment for pianos | 753,756 | Mar. 1 | 1033 | 235 | 109 | 222 |
| Strauss, Maurice M., Chicago, Ill. Garment-holder | 756,074 | Mar. 29 | 5573 | 1230 | 109 | 1285 |
| Strehl, Gustave and J., La Crosse, Wis. Bushing | 754,512 | Mar. 15 | 2627 | 570 | 109 | 610 |
| Strehl, John. (See Strehl, Gustave and J.) | | | | | | |
| Streib, John F., Avalon, assignor to Pressed Steel Car Company, Pittsburg, Pa. Door mechanism for cars | 758,392 | Apr. 26 | 4355 | 935<br>936 | 109 | 2331 |
| Streich, Frank. (See Ruehs and Streich.) | | | | | | |
| Streich, Frank, assignor to S. Karpen & Bros., Chicago, Ill. Automatic carving-machine | 757,151 | Apr. 12 | 1981 | 410<br>411 | 109 | 1760 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| Streich, Frank, assignor to S. Karpen & Bros., Chicago, Ill. Automatic carving-machine. | 757,243 | Apr. 12 | 2047 | 446, 447 | 109 | 1796 |
| Streich, Frank, and C. L. Ruehs, assignors to S. Karpen & Bros., Chicago, Ill. Automatic carving-machine | 757,152 | Apr. 12 | 1864 | 411 | 109 | 1761 |
| Streuli, Louis, Zurich, Switzerland. Cement-plate press | 755,253 | Mar. 22 | 3002 | 885, 886 | 109 | 921 |
| Stricker, Gertrude, Baker, Kans. Garment-hook | 755,411 | Mar. 22 | 4291 | 949 | 109 | 987 |
| Stroh, George, Syracuse, N. Y. Making metal castings | 755,722 | Mar. 29 | 4898 | 1069 | 109 | 1134 |
| Stroh, George, Detroit, Mich. Hose-coupling | 758,155 | Apr. 26 | 3890 | 842 | 109 | 2229 |
| Stromberg, Charles A., Chelsea, Mass. Drum | 754,101 | Mar. 8 | 1761 | 398 | 109 | 403 |
| Stromberg, Charles A., Chelsea, Mass. Snare-tightening device for drums | 756,730 | Apr. 5 | 1063 | 229 | 109 | 1564 |
| Strout, Henry F., *et al.*, trustees. (See Tichon, Joseph E., assignor.) | | | | | | |
| Struben, Henry, Chicago, Ill. Flask | 758,339 | Apr. 26 | 4262 | 915 | 109 | 2312 |
| Struhs, Frank, Grand Rapids, Mich. Ventilating-pipe for sewer systems | 755,254 | Mar. 22 | 3996 | 886 | 109 | 922 |
| Stryker, Burdett, Washington, D. C., assignor to American Telephone and Telegraph Company. Selective signaling for polystation telephone-circuits | 756,296 | Apr. 5 | 206 | 43 | 109 | 1388 |
| Stuart, Arthur A., Elgin, Ill. Kneading device | 754,096 | Mar. 8 | 1614 | 359 | 109 | 372 |
| Stuart, Robert F., Logansport, Ind. Railway signal or alarm | 758,485 | Apr. 26 | 4531 | 973, 974 | 109 | 2372 |
| Stucki, Arnold. (See Lindström and Stucki.) | | | | | | |
| Sturgis, Herbert M., assignor of two-thirds to I. H. Shoemaker and F. E. Wear, Kansas City, Mo. Automatic drop-fixture | 755,338 | Mar. 22 | 4137 | 914, 915 | 109 | 962 |
| Sturgis, Herbert M., assignor of two-thirds to I. H. Shoemaker and F. E. Wear, Kansas City, Mo. Automatic drop-fixture | 755,339 | Mar. 22 | 4140 | 915, 916 | 109 | 962 |
| Sturgis, Nelson H., and M. S. Allen, Guthrie, Okla. Ter. Mail-box | 757,513 | Apr. 19 | 2608 | 572 | 109 | 1929 |
| Sturtevant, Charles A., Plainfield, N. J., assignor to Welvant Manufacturing Company, of New York. Side-register for sheet-folding or other machines | 753,983 | Mar. 8 | 1445 | 324 | 109 | 333 |
| Sturtevant Mill Company. (See Sturtevant, Thomas L. and T. J., assignors.) | | | | | | |
| Sturtevant, Orange S., Adrian, Mich. Dies for joining intersecting wires | 755,961 | Mar. 29 | 5382 | 1188 | 109 | 1244 |
| Sturtevant, Orange S., assignor to Adrian Wire Fence Company, Adrian, Mich. Dies for tying intersecting wires | 755,185 | Mar. 22 | 3869 | 854 | 109 | 896 |
| Sturtevant, Thomas J. (See Sturtevant, Thomas L. and T. J.) | | | | | | |
| Sturtevant, Thomas L., Quincy, and T. J. Sturtevant, Wellesley, Mass. Double carbureter for explosive-engines | 755,074 | Mar. 22 | 3678 | 807 | 109 | 857 |
| Sturtevant, Thomas L., Quincy, and T. J. Sturtevant, Wellesley, Mass. Mechanical feeding device | 758,119 | Apr. 26 | 3818 | 828, 829 | 109 | 2214 |
| Sturtevant, Thomas L., Newton, and T. J. Sturtevant, Quincy, Mass., assignors to Sturtevant Mill Company, Portland, Me., and Boston, Mass. Screen | 755,073 | Mar. 22 | 3675 | 806, 807 | 109 | 856 |
| Sturtevant, Thomas L., Quincy, and T. J. Sturtevant, Newton Center, Mass., assignors to Sturtevant Mill Company, Portland, Me., and Boston, Mass. Shaking-screen | 755,330 | Mar. 22 | 4141 | 916 | 109 | 963 |
| Sturtz, John D., Youngwood, Pa. Packing-gland for throttle-stems | 756,731 | Apr. 5 | 1085 | 229, 230 | 109 | 1564 |
| Stutsman, Martin P., Cumberland, Ind. Dowel-machine | 755,255 | Mar. 22 | 3997 | 887 | 109 | 922 |
| Stutzman, Frank, Williamsport, Pa. Cutter-head | 753,528 | Mar. 1 | 601 | 137 | 109 | 131 |
| Stuurman, John H. G. (See Dietmann, Wilhelm, assignor.) | | | | | | |
| Style Manufacturing Co. (See Hacker, Emanuel M., assignor.) | | | | | | |
| Such, Benjamin J., Washington, D. C. Printing-roller | 758,486 | Apr. 26 | 4538 | 974 | 109 | 2373 |
| Suhr, Herman G., assignor of one-half to S. A. Sancier, New York, N. Y. Flagpole | 756,999 | Apr. 12 | 1545 | 340 | 109 | 1666 |
| Sullivan, Albert W., and W. Renshaw, Chicago, Ill. Structural beam for railway-cars | 753,964 | Mar. 8 | 1448 | 325 | 109 | 334 |
| Sullivan, Daniel, St. Louis, Mo. Coin-controlled dispensing apparatus | 757,690 | Apr. 19 | 2975 | 647 | 109 | 2011 |
| Sullivan, John F., Chicopee, Mass. Spring-bed | 754,255 | Mar. 8 | 2047 | 455 | 109 | 466 |
| Sullivan, Maurice, New York, N. Y. Pipe-covering | 754,256 | Mar. 8 | 2048 | 455 | 109 | 466 |
| Sullivan, Michael J. (See Sullivan, William T. and M. J.) | | | | | | |
| Sullivan Printing Works Company. (See Sullivan, William T. and M. J., assignors.) | | | | | | |
| Sullivan, William, *et al.* (See Gillaspy, John T., assignor.) | | | | | | |
| Sullivan, William T. and M. J., assignors to Sullivan Printing Works Company, Cincinnati, Ohio. Advertising-card | 755,962 | Mar. 29 | 5383 | 1188 | 109 | 1245 |
| Sullivan, William T. and M. J., assignors to Sullivan Printing Works Company, Cincinnati, Ohio. Advertising-card | 755,963 | Mar. 29 | 5384 | 1188 | 109 | 1245 |
| Summa, Victor M., New York, N. Y. Dump-car | 755,412 | Mar. 22 | 4208 | 949, 950 | 109 | 987 |
| Summers, William, Chicago, Ill. Furnace | 755,186 | Mar. 22 | 3871 | 854 | 109 | 896 |
| Sumner, Hilon S. (See Leighton, James H., assignor.) | | | | | | |
| Sumner, Lawson, Colorado Springs, Colo. Coin counting and delivery machine | 757,362 | Apr. 12 | 2294 | 500, 501 | 109 | 1847 |
| Sumner, William A., G. W. Brewer, and J. K. Gibson: said Sumner assignor of one-half to J. M. Jones, Clay Center, Nebr. Rural mail-delivery system | 757,787 | Apr. 19 | 3167 | 687, 688 | 109 | 2053 |
| Sunday, Thomas J. (See Hooper and Sunday.) | | | | | | |
| Sundh, August, Yonkers, N. Y., assignor to Otis Elevator Company. Hoisting-gear for elevators | 757,786 | Apr. 19 | 3169 | 688 | 109 | 2053 |
| Sundh, August, Yonkers, N. Y., assignor to Otis Elevator Company. Elevator brake mechanism | 757,789 | Apr. 19 | 3170 | 688, 689 | 109 | 2054 |
| Surplus, Charles W., Chicago, Ill. Reicing-platform | 755,075 | Mar. 22 | 3681 | 807 | 109 | 857 |
| Sutcliffe, Adam. (See Swift, John P., assignor.) | | | | | | |
| Sutherland, Emil, assignor to J. T. Pollock, Los Angeles, Cal. Lawn-sprinkler | 754,172 | Mar. 8 | 1861 | 419, 420 | 109 | 431 |
| Sutherland, Thomas, assignor of three-fourths to G. R. Zickrick, Hutchinson, Minn. Wire fabric | 757,244 | Apr. 12 | 2060 | 447 | 109 | 1796 |
| Sutton, Howard A., *et al.* (See Mulvaney, John J., assignor.) | | | | | | |
| Swain, George F. (See Kellogg and Swain.) | | | | | | |
| Swain, George F., assignor of one-half to H. E. Kellogg, Harvey, Ill. Carbureter for gas-engines | 756,908 | Apr. 12 | 1363 | 308 | 109 | 1653 |
| Swan, Alfred F., Bayonne, N. J., and A. W. Rose, assignors of one-half to Patent Development Company of America, New York, N. Y. Dry battery | 757,422 | Apr. 12 | 2419 | 527 | 109 | 1873 |
| Swan, Henry C., Cleveland, Ohio. Seat-lock | 754,173 | Mar. 8 | 1884 | 420 | 109 | 432 |
| Swan, Henry C., Cleveland, Ohio. Body-hanger for vehicles | 756,075 | Mar. 29 | 5574 | 1230 | 109 | 1286 |
| Swan, Henry C., Cleveland, Ohio. Seat-iron for carriage-tops | 757,363 | Apr. 12 | 2299 | 501, 502 | 109 | 1849 |
| Swan, Henry C., Cleveland, Ohio. Combined dash-foot and dash-brace | 758,398 | Apr. 26 | 4356 | 987 | 109 | 2331 |
| Swan, Thomas, Flint, Mich. Foot-rest for seats | 757,245 | Apr. 12 | 2051 | 447 | 109 | 1797 |
| Swanitz Company. (See Fatic, Henry, assignor.) (Reissue.) | | | | | | |
| Swannell, Frederick O. (See Lawther, Alfred B., assignor.) | | | | | | |
| Swanson, Albert V., Minot, N. D. Vehicle-pole tip | 755,964 | Mar. 29 | 5384 | 1188 | 109 | 1245 |
| Swanston, R. W. (See Hawkins, Charles G., assignor.) | | | | | | |
| Swartwout, Willis B., Milwaukee, Wis. Drying attachment for boilers | 753,446 | Mar. 1 | 425 | 100 | 109 | 92 |
| Sweeny, Thomas J., assignor to J. V. Kennedy and A. S. Deutsch, Cleveland, Ohio. Injector for steam-boilers | 757,849 | Apr. 19 | 3277 | 709 | 109 | 2076 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Drg. | Vol. | Page. |
| Swenson, Henry A., St. Paul, Minn. Drafting implement | 754,513 | Mar. 15 | 2628 | 570 | 109 | 610 |
| Swift, Edward A. (See Swift, Francis E. and E. A.) | | | | | | |
| Swift, Francis E. and E. A., Washington, Iowa. Brick-pallet and truck | 757,068 | Apr. 12 | 1705 | 370 | 109 | 1721 |
| Swift, John P., assignor of three-fourths to A. Sutcliffe, Pawtucket, R. I. Braiding-machine | 757,423 | Apr. 12 | 2420 | 527, 528 | 109 | 1874 |
| Swigart, William H., Lucas, Ohio. Road-bed construction for railways | 755,810 | Mar. 29 | 5069 | 1125 | 109 | 1172 |
| Swihart, James A. (See Yocum and Swihart.) | | | | | | |
| Swinehart, James A., Akron, Ohio. Tire for vehicle-wheels | 753,646 | Mar. 1 | 817 | 183 | 109 | 177 |
| Symonds, Henry, Longbeach, assignor to L. F. Kistler, Los Angeles, Cal. Acetylene-gas burner | 755,965 | Mar. 29 | 5385 | 1189 | 109 | 1245 |
| Syracuse Machine Company. (See Austin and Farnam, assignors.) | | | | | | |
| Syracuse Time Recorder Company. (See Snow, Arthur E., assignor.) | | | | | | |
| Szucs, John, Turtlecreek, Pa. Lock | 758,394 | Apr. 26 | 4357 | 937 | 109 | 2332 |
| T. C. Entwistle Company. (See Brooks, Albert E., assignor.) | | | | | | |
| Taber, Samuel M. (See Heilrath and Taber.) | | | | | | |
| Tabor, Joseph A., and J. L. Murphy, Scranton, Miss. Extension-casket | 756,297 | Apr. 5 | 211 | 43 | 109 | 1389 |
| Tache, Simon, Cleveland, Ohio. Hot-water furnace | 756,909 | Apr. 12 | 1388 | 308 | 109 | 1654 |
| Tagatz, Henry A. (See Trebert, Louis, assignor.) | | | | | | |
| Tainsh, William A., Portland, Me. Suspensory bandage | 757,153 | Apr. 12 | 1887 | 412 | 109 | 1762 |
| Tait, Florence N. (See Jones, Louis A., assignor.) | | | | | | |
| Talcott, Frank T., and B. F. Kerr, Ashtabula, Ohio. Self-winding electric clock | 753,757 | Mar. 1 | 1085 | 235 | 109 | 222 |
| Talkophone Syndicate. (See Runge, Walter C., assignor.) | | | | | | |
| Taplin Manufacturing Company. (See Goodrich, Fred, assignor.) | | | | | | |
| Tappan, Dewitt, Rochester, N. Y. Tool-handle | 756,732 | Apr. 5 | 1087 | 230 | 109 | 1564 |
| Tasker, Vernon C., Bridgeport, Conn., assignor to American Ordnance Company, Norfolk, Va. Auxiliary barrel for breech-loading guns | 757,790 | Apr. 19 | 3174 | 689 | 109 | 2055 |
| Tate, John B., Altoona, Pa. Flexible stay-bolt | 753,329 | Mar. 1 | 208 | 47 | 109 | 48 |
| Tate Jones & Co. (See Dempcy, Ralph H., assignor.) | | | | | | |
| Tate, Robert H., Portland, Oreg. Support for bicycle handle-bars | 757,154 | Apr. 12 | 1888 | 412 | 109 | 1762 |
| Tate, William, Greensboro, N. C. Heating and condensing feed-pump | 754,826 | Mar. 15 | 3220 | 701 | 109 | 788 |
| Tatters, Christopher and J., Eaglelake, Tex. Acetylene-gas generator | 753,447 | Mar. 1 | 426 | 100 | 109 | 92 |
| Tatters, John. (See Tatters, Christopher and J.) | | | | | | |
| Tattersall, Henry P., Hale, England. Photographic camera | 757,691 | Apr. 19 | 2976 | 647 | 109 | 2011 |
| Tatterson, Arthur P., assignor of one-half to G. W. Tatterson, Stockton, Cal. Forking, elevating, and conveying machine | 756,910 | Apr. 12 | 1389 | 309 | 109 | 1654 |
| Tatterson, George W. (See Tatterson, Arthur P., assignor.) | | | | | | |
| Taussig, Leo. (See Rider, Granville S., assignor.) | | | | | | |
| Taylor, Charles A., Winchester, Ill. Non-refillable bottle | 758,395 | Apr. 26 | 4359 | 937 | 109 | 2332 |
| Taylor, Charles F., Hartford, Conn. Machine for cutting pads or tablets | 758,156 | Apr. 26 | 3882 | 842, 843 | 109 | 2230 |
| Taylor, Charles M., Jr., Philadelphia, Pa. Means for making butter | 755,256 | Mar. 22 | 3998 | 887 | 109 | 922 |
| Taylor, Clarence L., assignor to Morgan Engineering Company, Alliance, Ohio. Ingot-crane | 754,910 | Mar. 15 | 3374 | 737, 738 | 109 | 771 |
| Taylor, Frederick W. (See Barth, Gantt, and Taylor.) | | | | | | |
| Taylor, Frederick W. (See Moon, Dewitt A., assignor.) | | | | | | |
| Taylor, George W., Boston, Mass., and J. W. Scott, Warren, Me. Attachment for card-ing-machines | 754,514 | Mar. 15 | 2629 | 570, 571 | 109 | 611 |
| Taylor, Henry H., Bridgeport, Conn. Fastener for ladies' belts | 753,611 | Mar. 29 | 5070 | 1126 | 109 | 1172 |
| Taylor, Herbert M., Hamilton, Canada. Incandescent electric lamp | 753,985 | Mar. 8 | 1449 | 325 | 109 | 334 |
| Taylor, Huston, St. Paul, Minn. Fountain-pen-filling device | 756,076 | Mar. 29 | 5575 | 1231 | 109 | 1286 |
| Taylor, John L., assignor of one-half to G. A. Johnston, Ottawa, Canada. Combined scoop and weighing apparatus | 755,966 | Mar. 29 | 5386 | 1189 | 109 | 1245 |
| Taylor, John W., Winchester, Ill. Music-leaf turner | 753,758 | Mar. 1 | 1037 | 226 | 109 | 223 |
| Taylor, Thomas B. (See Ward, Charles H., assignor.) | | | | | | |
| Taylor, Thomas P., Bridgeport, Conn. Stocking-supporter | 755,812 | Mar. 29 | 5071 | 1126 | 109 | 1173 |
| Taylor, Vernal S., Cambridge, Mass. Liquid-dispensing apparatus | 755,728 | Mar. 29 | 4894 | 1089, 1090 | 109 | 1134 |
| Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Pin-tumbler lock | 758,024 | Apr. 19 | 3618 | 783 | 109 | 2152 |
| Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Key for pin-tumbler locks | 758,025 | Apr. 19 | 3620 | 783 | 109 | 2152 |
| Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Pin-lock | 758,026 | Apr. 19 | 3622 | 784 | 109 | 2152 |
| Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Pin-lock | 758,027 | Apr. 19 | 3623 | 784 | 109 | 2153 |
| Taylor, William F. (See Scott and Taylor.) | | | | | | |
| Teague, Frederic, Oakland, Cal. Dental bridge | 753,529 | Mar. 1 | 608 | 137 | 109 | 131 |
| Teahen, James M., Detroit, Mich. Stop and waste cock | 754,515 | Mar. 15 | 2633 | 571 | 109 | 612 |
| Teel, Franklin L., Logan, Iowa. Metallic railway-tie | 756,733 | Apr. 5 | 1083 | 230 | 109 | 1564 |
| Teich, Ernest L. (See Arens and Teich.) | | | | | | |
| Temperature Annunciator Company. (See Olson, John A., assignor.) | | | | | | |
| Temple, Fred W., Canova, S. D. Tension device | 754,516 | Mar. 15 | 2634 | 572 | 109 | 612 |
| Ten Broeck, Arthur H. (See English and Ten Broeck.) | | | | | | |
| Ten Eyck, Frank E., Auburn, N. Y. Pump | 753,530 | Mar. 1 | 604 | 138 | 109 | 131 |
| Tench, George H., Hazleton, Pa., assignor, by mesne assignments, to Aero Pulverizer Company, Jersey City, N. J. Feeding mechanism for granular material | 756,298 | Apr. 5 | 213 | 44 | 109 | 1389 |
| Tenney, Frederick, Goole, England. Venetian-window-blind clip | 757,155 | Apr. 12 | 1891 | 412, 413 | 109 | 1762 |
| Terjesen, Isaac H., assignor of one-half to C. H. Sanger, Boston, Mass. Bank | 755,257 | Mar. 22 | 3999 | 887 | 109 | 923 |
| Terry, Nellie C., Watertown, N. Y. Garment-hanger | 753,448 | Mar. 1 | 427 | 100 | 109 | 93 |
| Terry, Stephen J., Lawton, Pa. Pole | 755,413 | Mar. 22 | 4208 | 950 | 109 | 988 |
| Terwilleger, Bertrand E., Lincoln University, Pa. Rain-coat | 758,487 | Apr. 26 | 4535 | 974 | 109 | 2373 |
| Tesseyman, Henry, assignor to Barney & Smith Car Company, Dayton, Ohio. Car-truck | 754,027 | Mar. 8 | 1616 | 360 | 109 | 372 |
| Tessmer, John A., Providence, R. I. Apparel-belt | 756,734 | Apr. 5 | 1039 | 230, 231 | 109 | 1565 |
| Teter-Heany Developing Company. (See Heany, John A., assignor.) | | | | | | |
| Thalen, Gustav, Brooklyn, N. Y. Elevator | 756,735 | Apr. 5 | 1040 | 231 | 109 | 1565 |
| Thame, James, assignor to Oliver Mill Company, Limited, London, England. Impact ore-pulverizer | 757,069 | Apr. 12 | 1706 | 370 | 109 | 1721 |
| Thearle, Harry B., *et al.* (See Powers, James, assignor.) | | | | | | |
| Thexton Electric Envelope Sealer Co. (See Harrington and Schermack, assignors.) | | | | | | |
| Thiele, Albert H., assignor to Stransky & Co., New York, N. Y. Cooking utensil | 755,967 | Mar. 29 | 5387 | 1189 | 109 | 1246 |
| Thiele, Henry P., Newark, N. J. Safety gas-cock | 755,331 | Mar. 22 | 4145 | 916 | 109 | 954 |
| Thiele, Henry P., Newark, N. J. Safety gas-cock | 755,332 | Mar. 22 | 4147 | 917 | 109 | 954 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Drg. | Vol. | Page. |
| Thielenhaus, Ewald. (See Thielenhaus and Vollmann.) | | | | | | |
| Thielenhaus, Friedrich W. and E., and C. Vollmann, Elberfeld, Germany. Time gas-lighting mechanism | 753,330 | Mar. 1 | 209 | 47 | 109 | 48 |
| Thirsk, Richard, Cordova, Ala. Measuring and cutting-off machine | 758,228 | Apr. 26 | 4004 | 809 | 109 | 2254 |
| Tholin, Charles F., Rockford, Ill. Cabinet | 756,911 | Apr. 12 | 1391 | 309 | 109 | 1655 |
| Thoma, Charles, Jr., Carlstadt, N. J. Music-leaf turner | 757,979 | Apr. 19 | 3518 | 763 | 109 | 2130 |
| Thomas, Charles L., assignor to W. S. Shuler and Thomas Spring Company, Amsterdam, N. Y. Seat-spring for vehicles | 755,813 | Mar. 29 | 5072 | 1126 | 109 | 1173 |
| Thomas, Charles L., assignor to W. S. Shuler Spring Company, Amsterdam, N. Y. Wagon-spring | 757,578 | Apr. 19 | 2755 | 602 | 109 | 1962 |
| Thomas, Edward G., Cambridge, Mass. Electrical connection | 753,750 | Mar. 1 | 1088 | 236 | 109 | 223 |
| Thomas, Edward G., Waltham, Mass. Rail-bonding construction | 757,070 | Apr. 12 | 1707 | 371 | 109 | 1721 |
| Thomas, Frank A., and L. F. Thompson, Rockford, Minn. Front-axle coupling | 756,430 | Apr. 5 | 482 | 100 | 109 | 1445 |
| Thomas, John A., Mellville, Fla. Hammer | 757,071 | Apr. 12 | 1708 | 371 | 109 | 1721 |
| Thomas, John H., assignor to Thomas Manufacturing Company, Springfield, Ohio. Hay-loader | 757,156 | Apr. 12 | 1892 | 413 | 109 | 1763 |
| Thomas Maddock's Sons Company. (See Kelly, John F., assignor.) | | | | | | |
| Thomas Maddock's Sons Company. (See Maddock and Kelly, assignors.) | | | | | | |
| Thomas Manufacturing Company. (See Thomas, John H., assignor.) | | | | | | |
| Thomas Motor Company, E. R. (See Shultz, Hass, and Thorden, assignors.) | | | | | | |
| Thomas, Robert N., Shenandoah, Iowa. Corn-husker | 758,196 | Apr. 26 | 3957 | 858 | 109 | 2245 |
| Thomas, William, Geraldine, New Zealand. Printing | 754,257 | Mar. 8 | 2050 | ----- | 109 | 467 |
| Thomas, William B., Jr., Germantown, Pa. Cleat | 755,258 | Mar. 22 | 4001 | 887<br>888 | 109 | 923 |
| Thomas, William B., Towns, Ga. Artificial fuel and producing same | 756,180 | Mar. 29 | 5774 | ----- | 109 | 1327 |
| Thompson, Andrew P., *et al.* (See Schilling, Gustave A. W., assignor.) | | | | | | |
| Thompson, Charles S., Elizabeth, N. J., and H. F. Maynes, Corning, N. Y. Bicycle-gear-ing | 754,621 | Mar. 15 | 2820 | 615<br>616 | 109 | 649 |
| Thompson, David W., Chicago, Ill. Electric clock | 754,622 | Mar. 15 | 2824 | 616<br>617 | 109 | 650 |
| Thompson, Ellis E., Cedar Rapids, Iowa. Safe | 754,623 | Mar. 15 | 2828 | 617 | 109 | 650 |
| Thompson, Frank, assignor to United Supply & Manufacturing Company, Chicago, Ill. Machine for loading rails | 756,736 | Apr. 5 | 1043 | 232 | 109 | 1565 |
| Thompson, Frank H. (See Thompson, Samuel R., assignor.) | | | | | | |
| Thompson, Frank M., assignor of two-thirds to G. A. Moon and E. R. Smith, East Liverpool, Ohio. Line-chalking device | 754,827 | Mar. 15 | 3221 | 701 | 109 | 738 |
| Thompson, Frederick V., assignor of one-half to F. Baker, Philadelphia, Pa. Block-system emergency apparatus | 757,692 | Apr. 19 | 2978 | 648 | 109 | 2011 |
| Thompson, Hugh L., Waterbury, Conn. Sanitary attachment for telephones | 756,543 | Apr. 5 | 668 | 148 | 109 | 1488 |
| Thompson, Hugh L., Waterbury, Conn. Antiseptic attachment for telephones | 757,850 | Apr. 19 | 3279 | 710 | 109 | 2076 |
| Thompson, John G. (See Duck, Joseph G., assignor.) | | | | | | |
| Thompson, La Marcus A., assignor to L. A. Thompson Scenic Railway Company, New York, N. Y. Amusement apparatus | 753,449 | Mar. 1 | 428 | 101 | 109 | 98 |
| Thompson, Letitia V., New York, N. Y. Baby-carriage | 754,102 | Mar. 8 | 1762 | 392 | 109 | 404 |
| Thompson, Levi F. (See Thomas and Thompson.) | | | | | | |
| Thompson, Nelson W., Erskineville, Oreg. Harrow-jack | 754,174 | Mar. 8 | 1885 | 420 | 109 | 433 |
| Thompson, Robert J., assignor of one-half to A. H. Revell, Chicago, Ill. Savings-bank | 758,340 | Apr. 26 | 4263 | 915<br>916 | 109 | 2312 |
| Thompson, Samuel R., East Lexington, assignor of one-half to F. H. Thompson, Arlington, Mass. Boiler-furnace | 755,076 | Mar. 22 | 3682 | 808 | 109 | 857 |
| Thompson, Samuel R., East Lexington, assignor of one-half to F. H. Thompson, Arlington, Mass. Boiler-furnace | 755,077 | Mar. 22 | 3683 | 808 | 109 | 858 |
| Thompson, Thomas E., Ethel, Miss. Cultivator | 756,077 | Mar. 29 | 5276 | 1231 | 109 | 1286 |
| Thompson, William A. (See Madden and Thompson.) | | | | | | |
| Thompson, William C. (See Kellogg, Edwin M., assignor.) | | | | | | |
| Thoms, Charles F., assignor of one-half to D. Wright, Highlandtown, Md. Clutch mechanism | 754,828 | Mar. 15 | 3223 | 702 | 109 | 739 |
| Thoms, Hermann F. M., Steglitz, assignor to H. O. Wendt, Bremen, Germany. Providing cigars with smoke-improving portions at the pointed ends | 757,514 | Apr. 19 | 2610 | ----- | 109 | 1929 |
| Thomson, Beatrice E. R., Burlington, Vt. Shoe-lace or shoestring holder | 754,517 | Mar. 15 | 2636 | 572 | 109 | 612 |
| Thomson, David P., Rugby, England, assignor to General Electric Company. Coupling electric motors | 755,814 | Mar. 29 | 5074 | 1126<br>1127 | 109 | 1173 |
| Thomson, Elihu, Swampscott, Mass., assignor to General Electric Company. Electric-arc lamp | 755,815 | Mar. 29 | 5077 | 1127 | 109 | 1174 |
| Thomson, Elihu, Swampscott, Mass., assignor to General Electric Company. Means for preventing arcing between commutator-brushes | 758,157 | Apr. 26 | 3884 | 843 | 109 | 2230 |
| Thomson, John, Brooklyn, N. Y. Water-meter | 756,431 | Apr. 5 | 488 | 100<br>101 | 109 | 1445 |
| Thon, Frederick J., and H. G. Wolf, assignors of one-third to G. M. Gross, Philadelphia, Pa. Stitch separating and indenting machine | 758,601 | Apr. 26 | 4773 | 1027 | 109 | 2426 |
| Thorden, Carl. (See Shultz, Hass, and Thorden.) | | | | | | |
| Thornburgh, William, Vermillion, Ohio, assignor to T. H. Simpson, Detroit, Mich. Railway-car-coupling attachment | 754,942 | Mar. 15 | 3449 | 755 | 109 | 789 |
| Thornburgh, William, assignor, by mesne assignments, to T. H. Simpson, Detroit, Mich. Draft-rigging | 754,908 | Mar. 15 | 3477 | 761 | 109 | 795 |
| Thornehill, William J. (See Pennock, Ambrose M., assignor.) | | | | | | |
| Thornley, William H., Reading, Pa. Hydrocarbon-burner | 754,103 | Mar. 8 | 1764 | 392 | 109 | 404 |
| Thornton, Julia H., Plainfield, N. J. Corset | 755,968 | Mar. 29 | 5389 | 1190 | 109 | 1246 |
| Thornton, William, Chattanooga, Tenn. Gearing | 756,737 | Apr. 5 | 1045 | 232 | 109 | 1566 |
| Thorsen, John, Chicago, Ill. Combined lighting and alarm device | 757,364 | Apr. 12 | 2201 | 502 | 109 | 1849 |
| Thorson, Olious B., near Thor, Iowa. Steam or gas engine | 753,647 | Mar. 1 | 818 | 183 | 109 | 178 |
| Thos. H. Dallett Co. (See Soley, William H., assignor.) | | | | | | |
| Thrasher, Samuel P., New Haven, Conn. Clock-dial | 755,969 | Mar. 29 | 5390 | 1190 | 109 | 1246 |
| Three-Speed Gear Syndicate. (See Archer, James, assignor.) | | | | | | |
| Thuemling, Julius, Chicago, Ill. Device for protecting coils for beer-coolers | 753,450 | Mar. 1 | 430 | 101 | 109 | 98 |
| Tibbits, Joseph R., Delmar, N. Y. Steam-sleigh | 756,078 | Mar. 29 | 5278 | 1231<br>1232 | 109 | 1286 |
| Tichon, Joseph E., assignor to T. E. Parker, New Bedford, H. F. Strout and J. C. Bassett, Boston, Mass., trustees. Brazing cast-iron | 756,079 | Mar. 29 | 5279 | ----- | 109 | 1287 |
| Tichon, Joseph E., assignor to T. E. Parker, New Bedford, H. F. Strout and J. C. Bassett, Boston, Mass., trustees. Brazing compound | 756,080 | Mar. 29 | 5280 | ----- | 109 | 1287 |
| Tidmarsh, Albert L. (See Zilker, Tidmarsh, and Armstrong.) | | | | | | |
| Tieken, John D., Piper City, Ill. Curtain-holder | 758,570 | Apr. 26 | 4713 | 1016 | 109 | 2413 |
| Tiffany, George S., Brooklyn, N. Y., assignor of one-half to J. Van Inwagen, Chicago, Ill. Electric clock | 754,397 | Mar. 8 | 2350 | 515 | 109 | 532 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| Tiffany, George S., Brooklyn, N. Y., assignor of one-half to J. Van Inwagen, Chicago, Ill. Torsional pendulum for clocks | 754,398 | Mar. 8 | 2365 | 516 | 109 | 533 |
| Tiffany, George S., Tecumseh, assignor, by mesne assignments, to Adrian Wire Fence Company, Adrian, Mich. Dies | 755,187 | Mar. 22 | 3872 | 855 | 109 | 896 |
| Tilden, James A., Hydepark, assignor to Hersey Manufacturing Company, South Boston, Mass. Meter | 756,299 | Apr. 5 | 214 | 44 | 109 | 1390 |
| Tillson, William H., Quincy, Ill. Attachment for overshoes | 757,365 | Apr. 12 | 2302 | 502<br>503 | 109 | 1849 |
| Timby, Theodore R., Brooklyn, N. Y. Roasting coffee | 754,943 | Mar. 15 | 3451 | 756 | 109 | 789 |
| Tingley, Egbert M., Wilkinsburg, assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Phase regulation | 757,515 | Apr. 19 | 2612 | 572 | 109 | 1930 |
| Tingley, Egbert M., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Phase-angle-adjusting means | 757,516 | Apr. 19 | 2615 | 573 | 109 | 1930 |
| Tingley, Egbert M., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Phase-angle adjustment | 757,517 | Apr. 19 | 2616 | 573 | 109 | 1931 |
| Tingley, Egbert M., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. Phase-angle adjustment | 757,518 | Apr. 19 | 2619 | 573 | 109 | 1931 |
| Tinker, Julien E., assignor of one-half to P. B. Broughton, Bradford, Pa. Pipe-coupling | 754,258 | Mar. 8 | 2051 | 455 | 109 | 467 |
| Tinkham, Francis M., Springfield, Mass. Couch-bed construction | 753,760 | Mar. 1 | 1040 | 236 | 109 | 223 |
| Tirrell, Jacob P., deceased, Boston, Mass.; W. G. Rowe, administrator. Oil-gas generator and burner | 757,980 | Apr. 19 | 3521 | 763<br>764 | 109 | 2130 |
| Tirrell, James A., trustee. (See Reed, William S., assignor.) | | | | | | |
| Todd, William O., Crab Orchard, assignor of one-half to B. Cole, Lincoln, Nebr. Printing-press | 756,432 | Apr. 5 | 485 | 101 | 109 | 1446 |
| Tokheim, John J., Cedar Rapids, Iowa. Faucet attachment | 757,072 | Apr. 12 | 1709 | 371 | 109 | 1721 |
| Tolhurst, Edward T., London, and W. Wilson, London township, Canada. Incubator and brooder | 756,990 | Apr. 12 | 1546 | 340 | 109 | 1686 |
| Tolhurst, Frederick. (See Dietz, August S., assignor.) | | | | | | |
| Tolliner, Jacob, assignor to F. G. Dokkenwadel and H. M. Grant, New York, N. Y. Blasting compound | 757,698 | Apr. 19 | 2981 | ----- | 109 | 2012 |
| Toltz, Max, St. Paul, Minn. Brake for passenger-cars | 754,829 | Mar. 15 | 3224 | 702 | 109 | 739 |
| Tomlinson, George E., Pekin, Ill. Car-coupling | 755,414 | Mar. 22 | 4299 | 950<br>951 | 109 | 988 |
| Tomlinson, Joseph, Cedar Rapids, Iowa. Bridge | 755,724 | Mar. 29 | 4806 | 1090 | 100 | 1134 |
| Tonge, Alfred J., Chequerbent, near Bolton, J. Tonge, Jr., Westhoughton, near Bolton, and E. Eaves, Stockport, England. Hydraulic press for mining purposes | 756,738 | Apr. 5 | 1046 | 232<br>233 | 109 | 1567 |
| Tonge, James, Jr. (See Tonge and Eaves.) | | | | | | |
| Tonnoffski, George L., Raleigh, N. C. Target | 756,433 | Apr. 5 | 487 | 102 | 109 | 1446 |
| Toof, Edwin J. (See Ammerman, William M., assignor.) | | | | | | |
| Tooker, Edmund C., Larchmont, N. Y. Hose-supporter | 755,188 | Mar. 22 | 3873 | 855 | 100 | 897 |
| Toole, John H., Chicago, Ill. Cushion-tire | 755,259 | Mar. 22 | 4001 | 888 | 109 | 923 |
| Toomey, Jeremiah D. (See Smith, Harris B., assignor.) | | | | | | |
| Torney, James H., Buffalo, N. Y. Foldable conveyer | 755,333 | Mar. 22 | 4148 | 917<br>918 | 109 | 954 |
| Torrance, Charles E., Northampton, Mass. Calendering-machine | 753,761 | Mar. 1 | 1041 | 236<br>237<br>238<br>239 | 109 | 224 |
| Torrens, Clifford H., assignor of one-half to H. L. Mitchell, Bangor, Me. Stove attachment | 754,028 | Mar. 8 | 1618 | 360 | 109 | 373 |
| Torrey, Lewis H., Worcester, Mass. Suspension-hook | 754,518 | Mar. 15 | 2636 | 572 | 109 | 612 |
| Tower, Clinton A., Cleveland, Ohio, assignor to National Malleable Castings Company. Car-coupling | 757,366 | Apr. 12 | 2304 | 503 | 109 | 1850 |
| Tower, Daniel W., Grand Rapids, Mich. Latch | 754,721 | Mar. 15 | 3032 | 662 | 109 | 697 |
| Towne, Joseph M., East Orange, N. J., assignor to Safety Car Heating & Lighting Company. Automatic steam-trap | 757,694 | Apr. 19 | 2981 | 648 | 109 | 2012 |
| Towne, Lorin W., Keene, N. H. Wheeled vehicle or machine | 754,722 | Mar. 15 | 3034 | 662 | 109 | 697 |
| Townsend, David, Philadelphia, Pa. Unit-record | 756,739 | Apr. 5 | 1049 | 233 | 109 | 1567 |
| Townsend, Frederick B., assignor to W. H. Miner Company, Chicago, Ill. Combined friction and direct-acting spring draft-rigging for railway-cars | 757,579 | Apr. 19 | 2756 | 602 | 109 | 1963 |
| Townsend, George G., Frostburg, Md. Leveling instrument | 754,723 | Mar. 15 | 3036 | 662 | 109 | 697 |
| Townsend, William W., Rutland, Vt., assignor of three-fourths to W. N. Knowlton, Melrose, Mass. Surgical or obstetrical sheet | 756,544 | Apr. 5 | 689 | 148 | 109 | 1488 |
| Townsley, Everett W. (See Emery, Charles P., assignor.) | | | | | | |
| Tracey, John, Brooklyn, assignor to E. C. Seaman, New York, N. Y. Watering-pot | 756,190 | Mar. 29 | 5774 | 1275 | 109 | 1327 |
| Tracy Manufacturing Company. (See Turck, Frederick M., assignor.) | | | | | | |
| Trammell, Erasmus R., Lakeland, Fla. Safety attachment for car-couplings | 755,816 | Mar. 29 | 5079 | 1127 | 109 | 1174 |
| Trantom, William, New Brighton, England. Purifying brine | 755,415 | Mar. 22 | 4300 | ----- | 109 | 989 |
| Trapp, Susanna B., New York, N. Y. Safety apparatus for elevators | 755,189 | Mar. 22 | 3874 | 855 | 109 | 897 |
| Traughber, Thomas M., *et al.* (See Parsons, Robert L., assignor.) | | | | | | |
| Traut, Justus A., assignor to Stanley Rule & Level Company, New Britain, Conn. Miter-box | 754,624 | Mar. 15 | 2829 | 617 | 109 | 651 |
| Traut, Justus A., assignor to Stanley Rule & Level Company, New Britain, Conn. Miter-box | 754,625 | Mar. 15 | 2830 | 617 | 109 | 651 |
| Traute, Henry C., *et al.* (See Anthony, Mark O., assignor.) | | | | | | |
| Traver Circle Swing Co. (See Traver and Nichols, assignors.) | | | | | | |
| Traver, Harry G., New York, N. Y., and C. W. Nichols, Newark, N. J., assignors to Traver Circle Swing Co. Amusement apparatus | 758,341 | Apr. 26 | 4265 | 916 | 109 | 2312 |
| Travers, Charles J. (See Bolens and Travers.) | | | | | | |
| Travis, Clarence F. (See Davis, Bethuel M., assignor.) | | | | | | |
| Traylor, John A., *et al.* (See Morris, John O., assignor.) | | | | | | |
| Trayssac, Firmin J., Angels Camp, Cal. Machine for preparing blasting charges | 754,830 | Mar. 15 | 3226 | 702<br>703 | 109 | 740 |
| Trebert, Louis, assignor of one-half to H. A. Tagatz, Beaver, Wis. Railway-gate | 757,367 | Apr. 12 | 2307 | 504 | 109 | 1850 |
| Tredair Rubber Company. (See Kennedy, Michael A., assignor.) | | | | | | |
| Treude and Metz. (See Fuchs, Paul, assignor.) | | | | | | |
| Tripp, Henry C., Auburn, N. Y. Dump-wagon | 756,912 | Apr. 12 | 1393 | 309<br>310 | 109 | 1655 |
| Tripp, James S., deceased; L. J. Tripp and F. M. Enos, Rochester, N. Y., executors. Hook and holder for extension-ladders | 755,190 | Mar. 22 | 3879 | 856 | 109 | 898 |
| Tripp, Lucy J., *et al.*, executors. (See Tripp, James S.) | | | | | | |
| Tropp, Paul, Berlin, Germany. Lock | 756,434 | Apr. 5 | 489 | 102<br>103 | 109 | 1447 |
| Tropp, Paul, Berlin, Germany. Lock | 756,435 | Apr. 5 | 491 | 103 | 109 | 1447 |
| Troupe, Samuel L., and M. C. Brooks, Philadelphia, Pa.; said Brooks assignor to said Troupe. Hat pin or fastener | 754,519 | Mar. 15 | 2637 | 572 | 109 | 612 |
| Trowbridge, John, Cambridge, Mass. Telephony | 756,436 | Apr. 5 | 492 | 103 | 109 | 1447 |

*Alphabetical list of patentees for March and April*—Continued.

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| Trowbridge, John, Cambridge, Mass. Telephone | 756,437 | Apr. 5 | 408 | 104 | 109 | 1441 |
| Troy, Daniel W., New York, N. Y. Selecting electrical impulses | 755,586 | Mar. 22 | 4594 | 1022 | 109 | 1058 |
| Troy, Matthew O., Lynn, Mass., assignor to General Electric Company. Electric condenser | 756,901 | Apr. 12 | 1552 | 341 | 109 | 1688 |
| Truax, John, Longbranch, N. J. Construction of bulkheads | 757,368 | Apr. 12 | 2300 | 504<br>505 | 109 | 1851 |
| Trudeau, Levi, Toledo, Ohio. Wrench | 754,520 | Mar. 15 | 3638 | 573 | 109 | 612 |
| Truitt, Harry W., New Bethlehem, Pa. Vulcanizer | 756,913 | Apr. 12 | 1395 | 310 | 109 | 1656 |
| Trum, Emanuel J., New York, N. Y. Easel-support | 756,740 | Apr. 5 | 1050 | 234 | 109 | 1567 |
| Trumbull, Drayton E., Fremont, Nebr. Bit-stock | 755,078 | Mar. 22 | 3684 | 808 | 109 | 858 |
| Trumbull Electric Company. (See Trumbull, Henry, assignor.) | | | | | | |
| Trumbull, Henry, assignor to Trumbull Electric Company, Plainville, Conn. Switch | 758,120 | Apr. 26 | 3819 | 829 | 109 | 2215 |
| Trump, Edward N., Syracuse, N. Y. Hydraulic main | 754,104 | Mar. 8 | 1767 | 393 | 109 | 405 |
| Truyter, Edward C. (See Lispenard and Truyter.) | | | | | | |
| Tuck, Nelson L. and W. W., Brooklyn, N. Y. Fuel injector for oil-engines | 755,079 | Mar. 22 | 3687 | 809 | 109 | 858 |
| Tuck, William W. (See Tuck, Nelson L. and W. W.) | | | | | | |
| Tuck, William W., Richmond Hill, and A. Wassmann, Astoria, assignors to A. A. Low, Horseshoe, N. Y. Hydrocarbon-vapor engine | 753,331 | Mar. 1 | 210 | 47, 48 | 109 | 48 |
| Tucker, Edwin W. (See Grundell and Tucker.) | | | | | | |
| Tucker, Edwin W., and C. L. Grundell, San Francisco, Cal. Oil-burning system | 758,224 | Apr. 26 | 4006 | 869<br>870 | 109 | 2255 |
| Tucker, George W. (See Mundt, Albert R., assignor.) | | | | | | |
| Tucker, Louis W., Seymour, Conn. Folding bracket | 754,105 | Mar. 8 | 1773 | 398 | 109 | 407 |
| Tucker, William D., Anderson, Ind. Hydrocarbon-burner | 756,914 | Apr. 12 | 1396 | 310 | 109 | 1656 |
| Tuckfield, Charles, East Molesey, England. Mechanism for converting reciprocating into rotary motion, and vice versa | 755,416 | Mar. 22 | 4302 | 951 | 109 | 980 |
| Tuerck, Robert, assignor to E. Guhl, Zurich, Switzerland. Clock striking mechanism | 755,260 | Mar. 22 | 4004 | 888<br>889 | 109 | 924 |
| Tull, George T. (See Tull, Robert M. and G. T.) | | | | | | |
| Tull, Robert M. and G. T., Windsor, Ill. Punch | 753,936 | Mar. 8 | 1450 | 325 | 109 | 334 |
| Tunsberg, Frederick F., Philadelphia, Pa. Valve | 755,834 | Mar. 22 | 4153 | 918 | 109 | 955 |
| Tuor, Joseph B., St. Paul, Minn. Glass-protecting attachment for faucets | 756,915 | Apr. 12 | 1397 | 310 | 109 | 1656 |
| Turbayne, William A., Buffalo, assignor to C. M. Gould, New York, N. Y. Electric lighting and power system | 757,695 | Apr. 19 | 2983 | 648 | 109 | 2013 |
| Turck, Frederick M., assignor to Tracy Manufacturing Company, New York, N. Y. Manifolding sales-recording book | 755,080 | Mar. 22 | 3687 | 809 | 109 | 859 |
| Turnbull, George A., Chicago, Ill. Fireproof building construction | 757,519 | Apr. 19 | 2620 | 573<br>574 | 109 | 1981 |
| Turnbull, Thomas O., Kawhia, near Auckland, New Zealand. Device for carrying children | 755,554 | Mar. 22 | 4339 | 1010 | 109 | 1039 |
| Turnbull, Werd W., Columbus, Ohio. Candy cutting and shaping machine | 756,741 | Apr. 5 | 1052 | 234 | 109 | 1568 |
| Turner, Charles L., Winthrop, assignor to Davidson Rubber Company, Boston, Mass. Valve | 753,332 | Mar. 1 | 212 | 48 | 109 | 49 |
| Turner, Charles L., Winthrop, Mass., assignor to Davidson Rubber Company. Atomizer | 757,157 | Apr. 12 | 1804 | 413 | 109 | 1763 |
| Turner, Howard A., Minneapolis, Minn. Air-agitator for refrigerator-cars | 757,581 | Apr. 19 | 2761 | 603<br>604 | 109 | 1964 |
| Turner, Lucius A. (See Stout and Turner.) | | | | | | |
| Turner, William. (See Craig, Kelly, and Turner.) | | | | | | |
| Turner, William D., Providence, R. I. Micrometer-caliper attachment | 754,106 | Mar. 8 | 1774 | 394 | 109 | 408 |
| Turney, John E., *et al.* (See Geiger, Charles E., assignor.) | | | | | | |
| Turrill, William G., Boston, Mass. Toy | 757,158 | Apr. 12 | 1895 | 414 | 109 | 1763 |
| Tussing, Samuel C., Leipsic, Ohio. Automatic switch | 756,081 | Mar. 29 | 5581 | 1232 | 109 | 1287 |
| Tust, Paul. (See Schmidt and Tust.) | | | | | | |
| Tuttle, Arthur C., *et al.*, executors. (See Tuttle, Edward A.) | | | | | | |
| Tuttle, Daniel M., W. H. Lindley, and W. H. Tuttle, Canastota, N. Y. Electrical igniting mechanism for explosive-engines | 755,817 | Mar. 29 | 5060 | 1128 | 109 | 1174 |
| Tuttle, Edward A., deceased, New York, N. Y.; A. C. and H. B. Tuttle, executors. Hot-air heating-furnace | 757,520 | Apr. 19 | 2623 | 574 | 109 | 1982 |
| Tuttle, Edward A., deceased, New York, N. Y.; A. C. and H. B. Tuttle, executors. Hot-air furnace | 757,521 | Apr. 19 | 2626 | 575 | 109 | 1983 |
| Tuttle, Herbert B., *et al.*, executors. (See Tuttle, Edward A.) | | | | | | |
| Tuttle, William H. (See Tuttle, Lindley, and Tuttle.) | | | | | | |
| Twining, William A., assignor to W. E. Donnelly, Cleveland, Ohio. Fruit-jar wrench | 755,081 | Mar. 22 | 3690 | 810 | 109 | 859 |
| Twining, William A., assignor of one-half to E. A. Albright and C. O. Bartlett, Cleveland, Ohio. Gear-cutting machine | 757,606 | Apr. 19 | 2965 | 649 | 109 | 2013 |
| Twitchell, Charles R., Dayton Heights, assignor to Brown-Winstanley Manufacturing Company, Los Angeles, Cal. Motor-vehicle | 756,992 | Apr. 12 | 1553 | 341 | 109 | 1688 |
| Tyden, Emil. (See Burton, Charles S., assignor.) | | | | | | |
| Tyden, Emil, Hastings, Mich. Pedestal-table lock | 754,899 | Mar. 8 | 2367 | 516 | 109 | 534 |
| Tyler Hinged Last Company. (See Beach, Edward S., assignor.) | | | | | | |
| Tyler, Hiram, assignor to Ohmer Fare Register Co., Dayton, Ohio. Fare-register | 758,488 | Apr. 26 | 4586 | 974<br>975<br>976<br>977 | 109 | 2273 |
| Tyler, Samuel C. (See Knapp, Jeremiah R., assignor.) | | | | | | |
| Tynan, Joseph E., Paterson, N. J. Belt-driven twisting-machine | 755,261 | Mar. 22 | 4007 | 889 | 109 | 924 |
| Tynan, Joseph J., and H. C. Mostiller, assignors to J. Keller, Philadelphia, Pa. Pneumatic calking-tool | 754,175 | Mar. 8 | 1887 | 421 | 109 | 433 |
| Tyrrell, Charles A. (See Guild, Henry M., assignor.) | | | | | | |
| Tyrrell, Herbert H., assignor of one-half to M. J. Kelley, Swain, N. Y. Household-tool | 757,961 | Apr. 19 | 3523 | 764 | 109 | 2131 |
| Tyssowska, Zell N., Chicago, Ill. Tool for pyrographic work | 754,944 | Mar. 15 | 3452 | 756 | 109 | 789 |
| Ubellar, James L., Kankakee, Ill. Suspender attachment | 757,073 | Apr. 12 | 1712 | 371 | 109 | 1722 |
| Uhl, John H., Unionville, Mich. Machine for blocking sugar-beets | 758,451 | Mar. 1 | 431 | 101 | 109 | 94 |
| Uhl, Joseph F. L., Toledo, Ohio. Cushioned foot for metal furniture | 758,702 | Mar. 1 | 1046 | 230 | 109 | 225 |
| Uhlenhart, William L., Portland, Oreg. Illuminating-buoy for fishing purposes | 756,438 | Apr. 5 | 508 | 104 | 109 | 1440 |
| Uhlig, Richard W., Rutherford, assignor to H. C. Adams, Hackensack, N. J. Typewriting machine | 757,982 | Apr. 19 | 3524 | 764<br>765 | 109 | 2131 |
| Uhrig, Benjamin F. (See Uhrig, Frederick P. and B. F.) | | | | | | |
| Uhrig, Frederick P. and B. F., St. Johns, Oreg. Rotary engine | 753,763 | Mar. 1 | 1045 | 239<br>240 | 109 | 225 |
| Uhtbrock, Frederick, New York, N. Y. Railway-switch | 753,987 | Mar. 8 | 1451 | 325 | 109 | 334 |
| Ulrich, George, *et al.* (See Sharp, Harry E., assignor.) | | | | | | |
| Ulsamer, Frank. (See Weis, August, assignor.) | | | | | | |
| Ulses, William, Los Angeles, Cal. Scraping-plane | 755,587 | Mar. 22 | 4600 | 1022 | 109 | 1063 |
| Umberger, B. L. (See Litaker, Thomas F., assignor.) | | | | | | |
| Umsted, Clifton T., Fort Scott, Kans. Tire-tightener | 757,697 | Apr. 19 | 2988 | 649 | 109 | 2014 |



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| Underwood, Robert L., Fostoria, Ohio. Ventilating building-block | 756,800 | Apr. 5 | 216 | 44, 45 | 109 | 1891 |
| Underwood Typewriter Company. (See Howell, Charles W., Jr., assignor.) | | | | | | |
| Underwood Typewriter Company. (See Myers, Louis, assignor.) | | | | | | |
| Underwood Typewriter Company. (See Wagner, Franz X., assignor.) | | | | | | |
| Uni Signal Company. (See Hopewell, Charles F., assignor.) | | | | | | |
| Union Bag & Paper Company. (See Dulin, Charles E., assignor.) | | | | | | |
| Union Bag and Paper Company. (See Kasson, Mahlon O., assignor.) | | | | | | |
| Union Button Sewing Machine Company. (See Lyons, Robert L., assignor.) | | | | | | |
| Union Carbide Company. (See Horry, William S., assignor.) | | | | | | |
| Union Carbide Company. (See Horry and Price, assignors.) | | | | | | |
| Union Carbide Company. (See Price, Edgar F., assignor.) | | | | | | |
| Union Specialty Co. (See Linendoll and Houghten, assignors.) | | | | | | |
| Union Switch and Signal Company. (See Hanlon, Marquis D., assignor.) | | | | | | |
| United Electric Heating Co. (See Kuhn, Robert, assignor.) | | | | | | |
| United Hame Company. (See Letchworth, Ogden P., assignor.) | | | | | | |
| United States Clothes Pin Company. (See Booth, Charles E., assignor.) | | | | | | |
| United States Fastener Company. (See Smith, Joseph R., assignor.) | | | | | | |
| United States Fire and Police Telegraph Company. (See Cole, Frederick W., assignor.) | | | | | | |
| United States Glass Company. (See Ripley, Daniel A., assignor.) | | | | | | |
| United States Mining & Trading Co. (See Girtanner, Frederick and A., assignors.) | | | | | | |
| United States Music Machine Company. (See Skiff and Grant, assignors.) | | | | | | |
| United States Sales Book Company. (See Morton, Wilson, assignor.) | | | | | | |
| United States Vending Corporation. (See Hofheimer, Maurice, assignor.) | | | | | | |
| United States Watch Company. (See Matheson, William M., assignor.) | | | | | | |
| United Supply & Manufacturing Company. (See Thompson, Frank, assignor.) | | | | | | |
| Unitype Company. (See Watson, James A., assignor.) | | | | | | |
| Universal Automatic Carving Machine Company. (See Ruehs and Streich, assignors.) | | | | | | |
| Universal Compound Company. (See Zaisser, William, assignor.) | | | | | | |
| Universal Nut Lock Company. (See Ghiglieri, William, assignor.) | | | | | | |
| Universal Winding Company. (See Wardwell, Simon W., assignor.) | | | | | | |
| Unzicker, Hermann, Chicago, Ill., assignor to C. C. Worthington, Irvington, N. Y. Valve mechanism for pumps | 753,963 | Apr. 12 | 1554 | 341 | 109 | 1688 |
| Ursbruck, John H. and J. B., assignors of one-half to J. A. and M. A. Hunter, Philadelphia, Pa. Thread-holding mechanism for sewing-machines | 758,121 | Apr. 26 | 3821 | 829 | 109 | 2215 |
| Ursbruck, Joseph B. (See Ursbruck, John H. and J. B.) | | | | | | |
| Utica Drop Forge & Tool Company. (See Kellemen, Henry F., assignor.) | | | | | | |
| Vacuum Dyeing Machine Company. (See Willard, James A., assignor.) | | | | | | |
| Vahjen, Johann C., New York, assignor to J. H. Vahjen, Brooklyn, N. Y. Cash-register | 756,082 | Mar. 29 | 5584 | 1233<br>1234 | 109 | 1288 |
| Vahjen, Johann C., New York, assignor to J. H. Vahjen, Brooklyn, N. Y. Cash-register | 756,083 | Mar. 29 | 5593 | 1235<br>1236 | 109 | 1289 |
| Vahjen, John H. (See Vahjen, Johann C., assignor.) | | | | | | |
| Vaile, Percy A., Auckland, New Zealand. Boot or shoe for athletic purposes | 757,968 | Apr. 19 | 3535 | 765 | 109 | 2133 |
| Vale, Eli C., East Carmel, Ohio. Separable link | 754,521 | Mar. 15 | 2639 | 573 | 109 | 613 |
| Valentine, Edward. (See Valentine, Joseph M. and E.) | | | | | | |
| Valentine, Joseph M. and E., assignors of one-half to N. E. Landauer, Lincoln, Ill. Horse-power for baling-presses | 756,084 | Mar. 29 | 5598 | 1236 | 109 | 1290 |
| Valerius, Theodore L., Fort Atkinson, Wis., assignor to Creamery Package Mfg. Co., Chicago, Ill. Continuous pasteurizer | 755,191 | Mar. 22 | 3880 | 856<br>857 | 109 | 898 |
| Valerius, Theodore L., Fort Atkinson, Wis., assignor to Creamery Package Manufacturing Company, Chicago, Ill. Self-filling heater or cooler | 755,192 | Mar. 22 | 3887 | 857 | 109 | 900 |
| Valerius, Theodore L., Fort Atkinson, Wis., assignor to Creamery Package Manufacturing Company, Chicago, Ill. Rotary heater or cooler | 755,198 | Mar. 22 | 3889 | 857<br>858 | 109 | 901 |
| Valiquet, Louis P., New York, N. Y., assignor to Victor Talking Machine Company. Friction-brake | 757,159 | Apr. 12 | 1896 | 414 | 109 | 1763 |
| Valleen, Rose L., Seattle, Wash. Lamp-chimney | 756,994 | Apr. 12 | 1568 | 342 | 109 | 1689 |
| Vallendar, Otto, Charlottenburg, Germany, assignor to M. G. Cohn, New York, N. Y. Side-comb | 756,545 | Apr. 5 | 690 | 148 | 109 | 1488 |
| Van Auken, Melvin G., and J. J. Miller, Battlecreek, Mich. Window-screen | 756,085 | Mar. 29 | 5602 | 1237 | 109 | 1291 |
| Van Benthuysen, Robert, Newark, N. J. Combined hydrometer and syringe | 756,546 | Apr. 5 | 691 | 149 | 109 | 1488 |
| Van Brunt, Willard A., Horicon, Wis. Pressure-regulating mechanism for drills | 753,452 | Mar. 1 | 433 | 102 | 109 | 94 |
| Van Buren, Jafew S., Albany, N. Y., assignor to Rathbone, Sard & Co. Stove attachment | 754,259 | Mar. 8 | 2052 | 456 | 109 | 467 |
| Van der Hegge-Zijnen, Bernardus A. J., Hanover, Germany. Apparatus for stopping railway-trains from the line and for signaling purposes | 754,359 | Mar. 8 | 2218 | 495 | 109 | 501 |
| Van Doren, Chester J., Iola, Kans. Cement-kiln-cleaning machine | 757,522 | Apr. 19 | 2628 | 575<br>576 | 109 | 1983 |
| Van Eaton, I. H. (See Moore, Samuel E., assignor.) | | | | | | |
| Van Horn, William H., assignor to American Fuel Oil Burner Manufacturing Company, St. Louis, Mo. Fuel-oil burner | 756,742 | Apr. 5 | 1054 | 234 | 109 | 1568 |
| Van Husan, Edward C., *et al.* (See Vaughn, Wilbur J., assignor.) | | | | | | |
| Van Inwagen, James. (See Tiffany, George S., assignor.) | | | | | | |
| Van Orden, John M. (See Munro, James H., assignor.) | | | | | | |
| Van Putten, Leonard, Holland, Mich. Puzzle | 754,724 | Mar. 15 | 3037 | 663 | 109 | 698 |
| Van Schaick, Gerard. (See Healy, Edgar O., assignor.) | | | | | | |
| Van Winkle, Abraham, Newark, N. J. Fumigator | 756,916 | Apr. 12 | 1398 | 311 | 109 | 1656 |
| Van Winkle, Henry, Paterson, N. J. Beaming mechanism | 758,489 | Apr. 26 | 4548 | 978 | 109 | 2276 |
| Vance, Sidney F., Salmon, assignor of one-half to L. D. Woodard, Elkhart, Tex. Spring-tooth for cultivators and harrows | 756,995 | Apr. 12 | 1559 | 342 | 109 | 1689 |
| Vance, Sidney F., Salmon, assignor of one-half to L. D. Woodard, Elkhart, Tex. Cultivator | 756,996 | Apr. 12 | 1560 | 342 | 109 | 1690 |
| Vanderbeck, Alexis, Roseland, Kans. Electric motor | 758,225 | Apr. 26 | 4009 | 870 | 109 | 2256 |
| Vanderbilt, Cornelius, New York, N. Y. Railway-car | 753,988 | Mar. 8 | 1452 | 326 | 109 | 335 |
| Vanderlinden, William, assignor of one-half to G. Dekker, Lansing, Ill. Bending-machine | 755,588 | Mar. 22 | 4601 | 1022<br>1023 | 109 | 1058 |
| Vanderlip, Louis C., Elkhart, Ind. Envelop | 753,333 | Mar. 1 | 214 | 48 | 109 | 49 |
| Vanderman, William, Willimantic, Conn. Pipe fitting and testing apparatus | 755,082 | Mar. 22 | 3691 | 810 | 109 | 859 |
| Vanderveen, Henry. (See Wilder and Vanderveen.) | | | | | | |
| Vandervoort, Addison, Belleville, Canada. Lawn-sprinkler | 757,160 | Apr. 12 | 1897 | 414 | 109 | 1764 |
| Vandewerker, Warren R., Clark, S. D. Crank-movement for well-drills | 755,068 | Mar. 22 | 3694 | 810 | 109 | 860 |
| Vanneman, Franklin M., Sidell, Ill. Refrigerator | 753,764 | Mar. 1 | 1051 | 240 | 109 | 226 |
| Vanneman, William C. (See Randall and Vanneman.) | | | | | | |
| Van't Woud, Victor C., New York, N. Y. Bath-spray | 757,791 | Apr. 19 | 3176 | 689 | 109 | 2055 |
| Vanvactor, David E., Argos, Ind. Device for securing furniture-joints in position | 756,997 | Apr. 12 | 1561 | 342 | 109 | 1690 |
| Vargas, John D. (See Obiols, Frank, assignor.) | | | | | | |
| Varley Duplex Magnet Company. (See Anderson, James C., assignor.) | | | | | | |
| Varley Duplex Magnet Company. (See Varley, Richard, assignor.) | | | | | | |
| Varley, Richard, Providence, R. I., assignor to Varley Duplex Magnet Company. Induction-coil | 757,523 | Apr. 19 | 2630 | 576 | 109 | 1983 |

*Alphabetical list of patentees for March and April*—Continued.

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|---|---|---|---|---|---|---|
| Varley, Richard, Providence, R. I., assignor to Varley Duplex Magnet Company, Induction-coil | 757,594 | Apr. 19 | 2632 | 577 | 109 | 1984 |
| Varley, Richard, Providence, R. I., assignor to Varley Duplex Magnet Company. Induction-coil | 757,595 | Apr. 19 | 2634 | 577 | 109 | 1984 |
| Varley, Richard, Providence, R. I., assignor to Varley Duplex Magnet Company. Lock-nut | 757,596 | Apr. 19 | 2637 | 577 | 109 | 1984 |
| Varley, Richard, Providence, R. I., assignor to Varley Duplex Magnet Company. Vibrator for induction-coils | 757,597 | Apr. 19 | 2638 | 578 | 109 | 1985 |
| Varley, Richard, Providence, R. I., assignor to Varley Duplex Magnet Company. Circuit-controller for induction-coils | 757,792 | Apr. 19 | 3177 | 690 | 109 | 2055 |
| Vaughan, James M., Owensboro, Ky. Attachment for vehicle-steps | 758,334 | Mar. 1 | 215 | 48 | 109 | 49 |
| Vaughn, Charles A., Seitzland, Pa. Air-heating system | 757,074 | Apr. 12 | 1712 | 372 | 109 | 1722 |
| Vaughn, Ella, New Orleans, La. Bustle | 757,369 | Apr. 12 | 2311 | 505 | 109 | 1852 |
| Vaughn, James L., Pikeville, Tenn. Umbrella | 754,089 | Mar. 8 | 1619 | 360 | 109 | 373 |
| Vaughn, Wilbur J., assignor of two-thirds to F. C. Osborn and E. C. Van Husan, Detroit, Mich. Air-brake | 755,335 | Mar. 22 | 4154 | 918 | 109 | 965 |
| Vedder, Harmon P. (See King, Homer C., assignor.) | | | | | | |
| Vehmeyer, Frederick C., *et al.* (See Sharpneck, William S., assignor.) | | | | | | |
| Venable, George L., New Brunswick, N. J. Alarm attachment for linotype-machines | 754,080 | Mar. 8 | 1620 | 361 | 109 | 373 |
| Venable, Joseph G., Sr., Petersburg, Ind. Spring bed-bottom | 754,200 | Mar. 8 | 2003 | 456 | 109 | 467 |
| Venables, John H., assignor to W. J. McMurtry, Toronto, Canada. Brick-making machine | 755,818 | Mar. 29 | 5061 | {1128 {1129 | 100 | 1175 |
| Veneer Barrel Machine Co. (See Gage, Frank E., assignor.) | | | | | | |
| Ver Planck, William E. (See Hamilton and Ver Planck.) | | | | | | |
| Verkler, John E., Chicago, Ill. Combined shade-bracket and curtain-rod holder | 758,158 | Apr. 26 | 3865 | 844 | 109 | 2220 |
| Vermehren, Johannes, Hellerup, Denmark. Calculating-machine | 755,084 | Mar. 22 | 3905 | 810 | 109 | 860 |
| Verrecchio, Giovanni, Newark, N. J. Musical instrument | 756,743 | Apr. 5 | 1065 | 235 | 109 | 1568 |
| Vesta, Fabrik Automatischer Gasmesser G. M. B. H. (See Kozminski, Samuel, assignor.) | | | | | | |
| Viano, Felix, West Somerville, assignor to Columbia Jewelry Company, North Cambridge, Mass. Frame for bags, &c. | 755,085 | Mar. 22 | 3906 | 811 | 109 | 860 |
| Vicars, John, Jr. (See Vicars, Thomas and J., Jr.) | | | | | | |
| Vicars, Thomas and J., Jr., Earlestown, England. Traveling oven | 755,194 | Mar. 22 | 3892 | {858 {859 | 109 | 901 |
| Vickers, George M., Jr., Bala, Pa. Adjustable hook for hand-trucks | 757,798 | Apr. 19 | 3179 | 690 | 109 | 2056 |
| Vickers Sons & Maxim, Limited. (See Ramsay and Riddle, assignors.) | | | | | | |
| Vickery, George A., Lexington, Mass. Brush | 756,998 | Apr. 12 | 1563 | 343 | 109 | 1690 |
| Victor Safe & Lock Co. (See Pelstring, George J. and H. G., assignors.) | | | | | | |
| Victor Talking Machine Company. (See Dennison, Wilburn N., assignor.) | | | | | | |
| Victor Talking Machine Company. (See Johnson, Eldridge R., assignor.) | | | | | | |
| Victor Talking Machine Company. (See Valiquet, Louis P., assignor.) | | | | | | |
| Viens, Thelesphore, Minneapolis, Minn. Bed-bottom | 756,744 | Apr. 5 | 1057 | 235 | 109 | 1569 |
| Vilim, Jan, Prague, Austria-Hungary, and F. Hauser, Naefels, Switzerland; said Hauser assignor to said Vilim. Photographic half-tone for book-printing and lithography | 755,417 | Mar. 22 | 4308 | ..... | 109 | 989 |
| Villmow, John A. H., Milwaukee, Wis. Trunk | 757,528 | Apr. 19 | 2639 | 578 | 109 | 1985 |
| Villmar, Carl, Zellerfeld, Germany. Making monobenzoyl arbutin | 757,370 | Apr. 12 | 2312 | ..... | 109 | 1852 |
| Viner, Martha H., Buffalo, N. Y. Strainer | 758,909 | Mar. 8 | 1454 | 327 | 109 | 335 |
| Vinson, James, Creal Springs, Ill. Motor | 758,226 | Apr. 26 | 4013 | 870 | 109 | 2256 |
| Vinton, John H., Boston, assignor of two-thirds to W. W. Potter, Brookline, and J. T. Minchin, Malden, Mass. Machine for making horseshoe-calks | 758,607 | Apr. 26 | 4787 | {1030 {1031 | 109 | 2429 |
| Vogelsang, August A., Dresden, Germany, assignor to C. Martin, Nottingham, England. Apparatus for electrically bleaching materials | 756,745 | Apr. 5 | 1058 | {235 {236 | 109 | 1569 |
| Vogt, Sam P., *et al.* (See Barbee, Thomas M., assignor.) | | | | | | |
| Vohl, Louis, St. Louis, Mo. Shoe | 757,424 | Apr. 12 | 2424 | 528 | 109 | 1874 |
| Voight, Henry G., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Lock | 755,195 | Mar. 22 | 3894 | 859 | 109 | 901 |
| Voight, Henry G., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Lock and latch | 757,529 | Apr. 19 | 2641 | {578 {579 | 109 | 1985 |
| Voigtmann, Frank, Chicago, Ill., and S. H. Pomeroy, New York, N. Y. Antiheat-radiating window | 753,765 | Mar. 1 | 1052 | {240 {241 | 109 | 226 |
| Voindrot, Louis F., Chagny, and L. F. Boillot, Voinay, near Pommard, France. Filter | 753,453 | Mar. 1 | 435 | 102 | 109 | 95 |
| Völler, Karl, Dusseldorf, Germany. Recoil-brake for guns | 755,418 | Mar. 29 | 4304 | {951 {952 | 109 | 990 |
| Vollmann, Carl. (See Thielenhaus and Vollmann.) | | | | | | |
| Vollmann, Carl W., Montreal, Canada. Freezing-tank | 754,522 | Mar. 15 | 3640 | 573 | 109 | 613 |
| Voorhees, Walter J., Saginaw, Mich. Musical instrument and covering same | 755,086 | Mar. 22 | 3907 | 811 | 109 | 860 |
| Vosmaer, Alexander, Nieuwersluis, Amsterdam, and A. Lebret, Utrecht, assignors to Ozon Maatschappij Systeem A. Vosmaer, Amsterdam, Netherlands. Ozonizer | 754,261 | Mar. 8 | 2054 | 456 | 109 | 468 |
| Vrooman, Warren F., North Madison, Ohio. Siphon-gaged liquid-measure | 756,439 | Apr. 5 | 506 | 104 | 109 | 1450 |
| W. G. Armstrong, Whitworth & Company. (See Noble, Saxton W. A., assignor.) | | | | | | |
| W. G. Browne Manufacturing Company. (See Parish, Graham C., assignor.) | | | | | | |
| W. H. Miner Company. (See Miner, William H., assignor.) | | | | | | |
| W. H. Miner Company. (See Townsend, Frederick B., assignor.) | | | | | | |
| W. S. Nott Company. (See Penney, Herbert E., assignor.) | | | | | | |
| W. S. Shuler Spring Company. (See Thomas, Charles L., assignor.) | | | | | | |
| W. S. Shuler and Thomas Spring Company. (See Thomas, Charles L., assignor.) | | | | | | |
| Wachwitz, Heinrich, Hersbruck, near Nuremberg, Germany, assignor to Wachwitz Patents Syndicate, Limited, London, England. Welding steel plates, &c., to sheets of aluminium and aluminium-plated other metals | 757,582 | Apr. 19 | 2763 | ..... | 109 | 1965 |
| Wachwitz Patents Syndicate. (See Wachwitz, Heinrich, assignor.) | | | | | | |
| Waclark Wire Company. (See De Lamarter and Macdonald, assignors.) | | | | | | |
| Waddell, Montgomery, New York, N. Y. Composition for razor-strops | 755,589 | Mar. 22 | 4604 | ..... | 109 | 1054 |
| Wadsworth, Frank L. O., Williams Bay, Wis., assignor to Pressed Prism Plate Glass Company. Illuminating structure | 755,196 | Mar. 22 | 3896 | 860 | 109 | 901 |
| Wadsworth, Frank L. O., Allegheny, Pa., assignor to Pressed Prism Plate Glass Company. Illuminating structure | 755,197 | Mar. 22 | 3898 | 860 | 109 | 902 |
| Wagner, Chapin, Indianapolis, Ind. Disk plow | 757,371 | Apr. 12 | 2313 | {505 {506 | 109 | 1852 |
| Wagner, Frank P. (See Nickels, Matthew, assignor.) | | | | | | |
| Wagner, Franz X., assignor to Underwood Typewriter Company, New York, N. Y. Type-bar construction | 758,197 | Apr. 26 | 3958 | 859 | 109 | 2245 |
| Wagner, Peter, North Braddock, Pa. Steel car | 754,725 | Mar. 15 | 3088 | 663 | 109 | 698 |
| Wahl, Frank S., assignor of one-half to A. W. Horn, Buffalo, N. Y. Switch mechanism for electric signs | 758,342 | Apr. 26 | 4268 | {916 {917 | 109 | 2313 |
| Waid, James M., Uniondale, Ind. Tag or label holder | 756,301 | Apr. 5 | 218 | 45 | 109 | 1391 |
| Waidenschlager, Quirin M., Seifriedsburg, Germany. Apparatus for warming keyboards of organs | 757,075 | Apr. 12 | 1713 | 372 | 109 | 1722 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Waite, Guy B., New York, N. Y. Fireproof building structure | 755,336 | Mar. 22 | 4158 | 919 | 109 | 957 |
| Waite, Joseph, *et al.* (See Copeman, Thorn, assignor.) | | | | | | |
| Waitzfelder, Albert S., assignor to Kursheedt Manufacturing Company, New York, N. Y. Ornamental fabric | 757,851 | Apr. 19 | 3280 | 710 | 109 | 2076 |
| Wakefield, Charles L. (See Bail and Wakefield.) | | | | | | |
| Wakefield, Edwin A., and G. W. Morse, Mechanic Falls, Me. Trolley-pole | 756,547 | Apr. 5 | 692 | 149 | 109 | 1469 |
| Walberg, Gust, Minneapolis, Minn. Railway-tie | 754,176 | Mar. 8 | 1891 | {421 {422 | 109 | 434 |
| Waldeck, Siegfried. (See Manahan and Waldeck.) | | | | | | |
| Walden, Henry A., Boone, Iowa. Smoke-stack for locomotive-engine houses | 756,440 | Apr. 5 | 506 | 105 | 109 | 1450 |
| Walker, Benjamin, Jr., Austin, Tex. Flushing-tank | 758,396 | Apr. 26 | 4359 | 937 | 109 | 2332 |
| Walker, Clinton L., Minneapolis, Minn. Timber-estimating device | 753,940 | Mar. 8 | 1455 | 327 | 109 | 335 |
| Walker, Edwin, Erie, Pa. Cigar-tip cutter | 753,941 | Mar. 8 | 1456 | {327 {328 | 109 | 336 |
| Walker, Edwin, Erie, Pa. Bottle-tap | 757,794 | Apr. 19 | 3180 | 690 | 109 | 2056 |
| Walker, James F., Lowell, Mass., assignor to Crompton & Knowles Loom Works. Spooler for moquette or other pile-fabric looms | 758,028 | Apr. 19 | 3625 | 784 | 109 | 2153 |
| Walker, John, *et al.* (See Osten, James H., assignor.) | | | | | | |
| Walker, Oakley S., Worcester, Mass. Grinding-machine | 756,802 | Apr. 5 | 218 | 45 | 109 | 1391 |
| Walker, Owen M., Willow, Ind. Rake | 757,795 | Apr. 19 | 3181 | 690 | 109 | 2056 |
| Walker, William R., Fort Smith, Ark. Apparatus for sawing wood | 756,917 | Apr. 12 | 1400 | 311 | 109 | 1657 |
| Wall, Enos A., Salt Lake City, Utah. Ore-crushing mill | 755,725 | Mar. 29 | 4897 | 1090 | 109 | 1135 |
| Wall, John C. (See Merritt and Wall.) | | | | | | |
| Wall, William J. (See Bain, Eugene C., assignor.) | | | | | | |
| Wallace, Charles M. (See Root and Wallace.) | | | | | | |
| Wallace, John W., Brooklyn, N. Y. Tank | 755,971 | Mar. 29 | 5392 | 1191 | 109 | 1247 |
| Wallace, Luther, Southport, Ind. Device for holding paint-buckets in permanent position on the roofs of buildings | 753,942 | Mar. 8 | 1458 | 328 | 109 | 336 |
| Wallace, Robert V., Alki, Wash. Land-roller | 757,583 | Apr. 19 | 2763 | 604 | 109 | 1965 |
| Wallace, Samuel J., Goshen, assignor of one-half to W. F. Crans, Circleville, N. Y. Well-brake | 756,751 | Apr. 5 | 1069 | 238 | 109 | 1572 |
| Wallace, W. T. (See Daly, Michael J., assignor.) | | | | | | |
| Walsh, James A., Helena, Mont. Envelop | 753,943 | Mar. 8 | 1459 | 328 | 109 | 336 |
| Walsh, James A., and E. Bretney, Indianapolis, Ind. Pneumatic straw-stacker | 758,606 | Apr. 26 | 4784 | {1029 {1030 | 109 | 2428 |
| Walsh, John H., Mason City, Nebr. Dust-collector | 755,262 | Mar. 22 | 4012 | {889 {890 | 109 | 925 |
| Walsh, John J. (See Fuller and Walsh.) | | | | | | |
| Walter, Charles J. (See Cooke, Daniel S., assignor.) | | | | | | |
| Walter, Edward, assignor of three-fourths to W. C. Gaston, H. L. Sneed, and M. F. Courtney, Keytesville, Mo. Buggy-top attachment | 757,161 | Apr. 12 | 1901 | 415 | 109 | 1765 |
| Walters, Calvin H., Springfield, Mo. Cotton-chopper | 755,337 | Mar. 22 | 4160 | 919 | 109 | 957 |
| Walton, Joseph O., Boston, Mass. Block and tackle | 756,746 | Apr. 5 | 1063 | 237 | 109 | 1570 |
| Walton, Joseph O., Boston, Mass. Self-locking tackle-block | 756,747 | Apr. 5 | 1064 | 237 | 109 | 1571 |
| Wands, John C. (See Scott, William H., assignor.) | | | | | | |
| Wands, John C., St. Louis, Mo. Air-brake controller | 753,648 | Mar. 1 | 822 | {183 {184 | 109 | 179 |
| Wands, John C., St. Louis, Mo. Air-brake controller | 753,649 | Mar. 1 | 824 | {184 {185 | 109 | 179 |
| Wands, John C., St. Louis, Mo. Air-brake controller | 753,650 | Mar. 1 | 825 | 185 | 109 | 179 |
| Wands, John C., St. Louis, Mo. Rocker side-bearing truck | 753,766 | Mar. 1 | 1055 | 241 | 109 | 227 |
| Wands, John C., St. Louis, Mo. Roller side-bearing truck | 753,767 | Mar. 1 | 1056 | 241 | 109 | 227 |
| Wang, Edvard J., Christiania, Norway. Harvesting-machine | 753,768 | Mar. 1 | 1057 | 242 | 109 | 227 |
| Ward, Arthur, assignor to Electric Thermo-Vibra Co., Philadelphia, Pa. Massage apparatus | 756,441 | Apr. 5 | 507 | 105 | 109 | 1450 |
| Ward, Arthur P., New York, N. Y. Toy | 753,335 | Mar. 1 | 216 | 49 | 109 | 49 |
| Ward, Charles H., assignor to T. B. Taylor, Jackson, Mich. Fishing hook and gaff | 755,726 | Mar. 29 | 4900 | 1091 | 109 | 1135 |
| Ward, George A., New York, N. Y., assignor to Electric Vehicle Company, Jersey City, N. J. Positioning apparatus for vehicles | 755,087 | Mar. 22 | 3698 | {811 {812 | 109 | 861 |
| Wardall, James. (See Beeton and Wardall.) | | | | | | |
| Warder, Bushnell & Glessner Company. (See Burkhardt, Franklin P., assignor.) | | | | | | |
| Wardwell, Simon W., Providence, R. I., assignor to Universal Winding Company, Portland, Me. Stop-motion device | 756,803 | Apr. 5 | 221 | 46 | 109 | 1392 |
| Ware, Thomas F., Steamboat Springs, Nev. Window-frame | 755,419 | Mar. 22 | 4307 | 953 | 109 | 989 |
| Warner, Alonzo A. (See Snow and Warner.) | | | | | | |
| Warner, Charles F., assignor to F. B. Many, Cleveland, Ohio. Vapor-torch | 756,748 | Apr. 5 | 1066 | 237 | 109 | 1571 |
| Warner, Charles W., Melrose, Mass. Hay-tedder | 757,372 | Apr. 12 | 2314 | 506 | 109 | 1852 |
| Warner Chemical Company. (See Riddle, Robert N., assignor.) | | | | | | |
| Warner, Haskel F. (See Hoover, Samuel B., assignor.) | | | | | | |
| Warner, Henry H., Tacoma, Wash. Letter-box | 757,696 | Apr. 19 | 2990 | 650 | 109 | 2014 |
| Warner, Louis P., Rochester, N. Y. Belting and making same | 758,286 | Apr. 26 | 4145 | {895 {896 | 109 | 2285 |
| Warner, Martin, Summit Mines, Pa. Rail-joint | 757,964 | Apr. 19 | 3536 | 766 | 109 | 2133 |
| Warner, William A., assignor to Holmes and Edwards Silver Company, Bridgeport, Conn. Inlaying blanks for flat-metal tableware | 755,727 | Mar. 29 | 4901 | 1091 | 109 | 1136 |
| Warren, Albert P., assignor of one-half to G. E. Fort, Adairville, Ky. Furnace for burning dirt | 756,191 | Mar. 29 | 5775 | {1275 {1276 | 109 | 1327 |
| Warren Brothers Company. (See Ash, Horace W., assignor.) | | | | | | |
| Warren, Charles H., Atlanta, Ga., assignor to Draper Company, Hopedale, Mass. Warp stop-motion for looms | 756,442 | Apr. 5 | 510 | 105 | 109 | 1451 |
| Washburn, Edwin C., Minneapolis, Minn. Draft-rigging for cars | 753,454 | Mar. 1 | 436 | {102 {103 | 109 | 95 |
| Washburn, Edwin C., Minneapolis, Minn. Draft-coupling for cars | 756,918 | Apr. 12 | 1401 | {311 {312 | 109 | 1657 |
| Washburn, Edwin C., Minneapolis, Minn. Draft-rigging | 756,919 | Apr. 12 | 1403 | {312 {313 | 109 | 1657 |
| Washburn, Edwin C., Minneapolis, Minn. Metallic truck-bolster | 756,920 | Apr. 12 | 1406 | 313 | 109 | 1658 |
| Washburn, Edwin C., Minneapolis, Minn. Lateral-motion car-truck | 757,852 | Apr. 19 | 3281 | {710 {711 | 109 | 2076 |
| Wasmuth, Carl, Stettin, Germany. Type-writer | 758,571 | Apr 26 | 4714 | 1017 | 109 | 2413 |
| Wassmann, August. (See Tuck and Wassmann.) | | | | | | |
| Waterbury Battery Company. (See Schoenmehl, Charles B., assignor.) | | | | | | |
| Waterbury Buckle Co. (See Buchanan, John J., assignor.) | | | | | | |
| Waterhouse, John, New York, N. Y. Air-heater | 754,726 | Mar. 15 | 3089 | 662 | 109 | 698 |
| Waterman, Marcus M., *et al.* (See Palmer, Stephen, assignor.) | | | | | | |
| Waters, Austin K., Albion, Pa. Draft-equalizer | 756,921 | Apr. 12 | 1407 | 313 | 109 | 1659 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Waters, Donald H. (See Fletcher and Waters.) | | | | | | |
| Waters, Frank J., assignor of two-thirds to W. A. Drew, F. E. and A. C. Farnham, A. Harrison, Providence, J. Gee, Cranston, and H. J. Page, Warwick, R. I. Cut-off valve for steam-engines | 758,122 | Apr. 26 | 3822 | 829, 830 | 109 | 2215 |
| Waters, William L., Milwaukee, Wis. Transformer-case | 753,944 | Mar. 8 | 1460 | 328, 329 | 109 | 337 |
| Watkins, Clinton K. (See Pyburn, Thomas L., assignor.) | | | | | | |
| Watkins, William, Monessen, Pa. Rail-joint | 754,727 | Mar. 15 | 3041 | 664 | 109 | 699 |
| Watmough, Pendleton G., Jr., Schenectady, N. Y., assignor to General Electric Company. Induction-motor | 755,819 | Mar. 29 | 5083 | 1129 | 109 | 1175 |
| Watson, Frank C., Des Moines, Iowa, assignor to Avery Manufacturing Company, Peoria, Ill. Traction-engine | 757,985 | Apr. 19 | 3598 | 766 | 109 | 2133 |
| Watson, James A., Washington, D. C., assignor, by mesne assignments, to Unitype Company, Manchester, Conn. Justifying device for composing-machines | 753,396 | Mar. 1 | 217 | 49 | 109 | 50 |
| Watson, William C. (See Brown and Watson.) | | | | | | |
| Watts, David H., Jr., Philadelphia, Pa. Partition for buildings, &c | 756,749 | Apr. 5 | 1067 | 237, 238 | 109 | 1571 |
| Way, Frank E., assignor of one-half to J. Steen, Wahoo, Nebr. Acetylene-gas generator | 758,150 | Apr. 26 | 3886 | 844 | 109 | 2220 |
| Way, John G., Jackson, Mich. Harness-terret | 754,177 | Mar. 8 | 1892 | 422 | 109 | 434 |
| Wayne, Alfred, Handsworth, England. Writing-machine | 755,420 | Mar. 22 | 4308 | 953 | 109 | 990 |
| Wear, Charles, Danvers, assignor to C. S. Emmerton, Peabody, Mass. Wheel-weeder | 757,706 | Apr. 19 | 3182 | 691 | 109 | 2056 |
| Wear, F. E., *et al.* (See Sturgis, Herbert M., assignor.) | | | | | | |
| Weathered, Charles B., Cranford, N. J. Greenhouse or other glazed structure | 757,986 | Apr. 19 | 3539 | 766 | 109 | 2134 |
| Weaver, Brenton B., Glace Bay, Canada. Vehicle-wheel | 755,421 | Mar. 22 | 4311 | 953, 954 | 109 | 990 |
| Weaver, Henry N. and J. E., Lancaster, Pa. Fifth-wheel | 756,750 | Apr. 5 | 1068 | 238 | 109 | 1571 |
| Weaver, John A., Greeley, Colo. Whip holder and stretcher | 755,555 | Mar. 22 | 4540 | 1011 | 109 | 1039 |
| Weaver, Joseph E. (See Weaver, Henry N. and J. E.) | | | | | | |
| Webb, Edward D., assignor of one-half to F. A. Forwood, Chester, Pa. Implement for truing the ends of tubing | 755,198 | Mar. 22 | 3901 | 861 | 109 | 902 |
| Webb, Walter. (See Michael, Christopher, assignor.) | | | | | | |
| Webber, Wesley, New York, N. Y. Coin-controlled apparatus | 757,539 | Apr. 19 | 2044 | 579 | 109 | 1936 |
| Weber, Carl, assignor to Steel-Concrete Construction Co., Chicago, Ill. Mold for metal-concrete construction | 754,626 | Mar. 15 | 2882 | 618 | 109 | 651 |
| Weber, Frederick C., Chicago, Ill. Cleansing and improving the quality of iron or steel | 754,262 | Mar. 8 | 3055 | ------ | 109 | 468 |
| Weber, George A., assignor to Weber Railway Joint Manufacturing Company, New York, N. Y. Rail-joint | 756,443 | Apr. 5 | 513 | 105, 107 | 109 | 1432 |
| Weber, John, assignor to Whitehead & Hoag Company, Newark, N. J. Easel | 754,945 | Mar. 15 | 3454 | 756 | 109 | 790 |
| Weber Railway Joint Manufacturing Company. (See Holbrook, Percy, assignor.) | | | | | | |
| Weber Railway Joint Manufacturing Company. (See Weber, George A., assignor.) | | | | | | |
| Weber, Theodore T., assignor of two-thirds to G. R. Allyn and F. W. Johnston, Buffalo, N. Y. Carbureter | 754,178 | Mar. 8 | 1894 | 422 | 109 | 435 |
| Weber, William J., F. C. and W. M. Deyherle, St. Louis, Mo. Antifriction-bearing | 755,088 | Mar. 22 | 3700 | 812 | 109 | 861 |
| Webster, Charles B., Fall River, Mass. Loom-shuttle | 753,337 | Mar. 1 | 219 | 49 | 109 | 50 |
| Webster, Frank L., Waialua, Hawaii. Sling | 756,304 | Apr. 5 | 222 | 46 | 109 | 1392 |
| Webster, George W., deceased, Chicago, Ill.; M. L. Webster, executrix. Roll-paper holder | 757,373 | Apr. 12 | 2318 | 507 | 109 | 1853 |
| Webster, Harold A., assignor of one-half to C. K. Fox, Haverhill, Mass. Seam for sewed articles | 757,374 | Apr. 12 | 2319 | 507 | 109 | 1853 |
| Webster, Marie L., executrix. (See Webster, George W.) | | | | | | |
| Wedge, Utley, Ardmore, Pa. Preparing iron pyrites for desulfurization | 757,531 | Apr. 19 | 3646 | ------ | 109 | 1937 |
| Weed, Edgar S. (See Clark, Frederick B., assignor.) | | | | | | |
| Week, Edmund R., Spokane, Wash. Centrifugal ore-concentrator | 757,690 | Apr. 19 | 3991 | 650 | 109 | 2015 |
| Weeks, Edward M., Washington, D. C. Overflow-alarm | 756,999 | Apr. 12 | 1565 | 343 | 109 | 1691 |
| Weems, David G., Bonanza, Colo. Wave-motor | 755,728 | Mar. 29 | 4902 | 1091 | 109 | 1136 |
| Wehrenbrecht, Henry P. (See Grubitz, Louis J., assignor.) | | | | | | |
| Wehrle, Joseph, assignor to himself, J. J. Offermains, Wampum, and C. Scheppner, Chenton, Pa. Steam-boiler | 754,360 | Mar. 8 | 2220 | 496 | 109 | 501 |
| Weibel, Emil, *et al.* (See Reeves, Edwin A., assignor.) | | | | | | |
| Weibel, John J., *et al.* (See Reeves, Edwin A., assignor.) | | | | | | |
| Weichelt, Carl, Moscow, Russia. Supply-nozzle for turbines | 753,709 | Mar. 1 | 1059 | 242 | 109 | 228 |
| Weidinger, William G. G., Chicago, Ill. Pliers-jaws | 753,456 | Mar. 1 | 443 | 103, 104 | 109 | 97 |
| Weidknecht, Edward B. (See Smith, Carpenter, and Weidknecht.) | | | | | | |
| Weiler, Johann J., Mörchingen, Germany. Independently-rotating wheel | 756,086 | Mar. 29 | 5604 | 1237 | 109 | 1291 |
| Weis, August, Karlsruhe, Germany, assignor to F. Ulsamer, Gallipolis, Ohio. Safety-harness for children | 758,123 | Apr. 26 | 3826 | 830 | 109 | 2216 |
| Weiss, Louis T., New York, N. Y. Shifting segmental bushing for crank-bearings | 758,397 | Apr. 26 | 4361 | 938 | 109 | 2332 |
| Weissbrod, Willis H., Greenfield, Mass. Scoring device for golf-players | 753,457 | Mar. 1 | 444 | 104 | 109 | 97 |
| Weisser, Theodor, Neustadt, Germany. Metronome | 753,945 | Mar. 8 | 1462 | 329 | 109 | 337 |
| Wells, John E., Victoria, Ill. Fan attachment for swings | 753,832 | Mar. 1 | 1296 | 278 | 109 | 263 |
| Weller, Calvin G., Idaho Springs, Colo. Ore-concentrator | 756,316 | Apr. 5 | 223 | 46 | 109 | 1392 |
| Welles, Edward B., Asheville, N. C. Whiffletree-hook | 755,970 | Mar. 29 | 5301 | 1190 | 109 | 1246 |
| Wellman, Charles H. (See Wellman, Seaver, and Morgan.) | | | | | | |
| Wellman, Harold R., assignor to General Incandescent Arc Light Company, New York, N. Y. Deflector for fan-motors | 753,199 | Mar. 22 | 3902 | 861 | 109 | 902 |
| Wellman, Harold R., assignor of one-third to E. S. Isham, New York, N. Y. Electric elevator | 756,444 | Apr. 5 | 514 | 107 | 109 | 1432 |
| Wellman, Samuel T. and C. H., J. W. Seaver, and T. R. Morgan, assignors to Wellman-Seaver-Morgan Company, Cleveland, Ohio. Machine for charging coke-ovens | 754,263 | Mar. 8 | 2058 | 457 | 109 | 468 |
| Wellman-Seaver-Morgan Company. (See Seaver and Hulett, assignors.) | | | | | | |
| Wellman-Seaver-Morgan Company. (See Wellman, Seaver, and Morgan, assignors.) | | | | | | |
| Wellman Sole Cutting Machine Company. (See Stickney, Allison M., assignor.) | | | | | | |
| Wells, Arthur E., New York, N. Y. Spirometer | 757,397 | Apr. 19 | 3183 | 691 | 109 | 2057 |
| Welsbach Light Company. (See Stites, Townsend, assignor.) | | | | | | |
| Welsh, Elmer E., Lawrence, Kans., assignor to J. T. Blair and R. Wray, trustee. Spike-extractor | 757,162 | Apr. 12 | 1902 | 415 | 109 | 1765 |
| Welsh, Pierre V. W., New York, N. Y. Photograph-machine | 756,087 | Mar. 29 | 5605 | 1237 | 109 | 1291 |
| Weltz, Heinrich, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Anthracene dye and making same | 754,264 | Mar. 8 | 2061 | ------ | 109 | 469 |
| Welvant Manufacturing Company. (See Sturtevant, Charles A., assignor.) | | | | | | |
| Wendel, A. F. (See Brehm, Daniel, assignor.) | | | | | | |
| Wendel, John A., Milwaukee, Wis. Match composition | 754,265 | Mar. 8 | 2063 | ------ | 109 | 469 |
| Wendt, Hermann O. (See Thoms, Hermann F. M., assignor.) | | | | | | |
| Werk, Robert F., New Orleans, La. Oil-press mat | 758,572 | Apr. 26 | 4715 | 1017 | 109 | 2413 |





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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Werk, Robert F., New Orleans, La. Oil-press mat | 758,573 | Apr. 26 | 4717 | 1017 | 109 | 2414 |
| Werk, Robert F., New Orleans, La. Oil-press mat | 758,574 | Apr. 26 | 4718 | 1017 | 109 | 2414 |
| Werk, Robert F., New Orleans, La. Oil-press mat | 758,575 | Apr. 26 | 4719 | 1018 | 109 | 2414 |
| Werner, Julius, Neumünster, Germany. Suspension device for stable-beams | 755,200 | Mar. 22 | 3903 | 861 | 109 | 902 |
| Wersel, Frank B., Jr., Mount Lookout, Ohio. Sofa-bed | 755,089 | Mar. 22 | 3701 | 812, 813 | 109 | 861 |
| Wersel, Frank B., Jr., Mount Lookout, Ohio. Sofa-bed | 755,090 | Mar. 22 | 3702 | 813 | 109 | 861 |
| Wertheimber, Louis. (See Lichtenberger, Max, assignor.) | | | | | | |
| Wertheimer, Bernhard, Karlsruhe, Germany. Machine for manufacturing cigars | 757,584 | Apr. 19 | 2764 | 604 | 109 | 1965 |
| Weschler, Daniel D., Erie, Pa. Apron for malt-turning machines | 758,227 | Apr. 26 | 4014 | 871 | 109 | 2257 |
| Wesel, Ferdinand. (See Hopkins, Charles E., assignor.) | | | | | | |
| Wessels, Charles, New York, N. Y. Cigar-butt former | 756,752 | Apr. 5 | 1070 | 238 | 109 | 1572 |
| Wessinger, Henry J., Duluth, Minn. Back-pressure valve | 756,300 | Apr. 5 | 224 | 46, 47 | 109 | 1392 |
| West, Arnold J., Aberdeen, Wash. Tilting bin and sample-display device | 754,523 | Mar. 15 | 2641 | 573 | 109 | 613 |
| West Branch Novelty Company. (See Kerr, Valentine B., assignor.) | | | | | | |
| West, Frank B., Colfax, Iowa. Carbonator | 757,375 | Apr. 12 | 2321 | 507 | 109 | 1853 |
| West, Louis G. M., Baltimore, Md. Steam-boiler furnace | 755,972 | Mar. 29 | 5394 | 1191 | 109 | 1247 |
| West, Robert S., assignor of one-half to E. B. Wren, Talladega, Ala. Ventilator | 755,973 | Mar. 29 | 5396 | 1192 | 109 | 1247 |
| Western Electric Company. (See Atwood, George F., assignor.) | 754,946 | Mar. 15 | 3455 | 757 | 109 | 790 |
| Western Electric Company. (See McBerty, Frank R., assignor.) | | | | | | |
| Western Electric Company. (See Scribner and McBerty, assignors.) | | | | | | |
| Western Electric Company. (See Smythe, Edwin H., assignor.) | | | | | | |
| Western Telegraphone Company. (See Rugh, Harry O., assignor.) | | | | | | |
| Westinghouse Air Brake Company. (See Cloud, John W., assignor.) | | | | | | |
| Westinghouse Air Brake Company. (See Mason, Harry R., assignor.) | | | | | | |
| Westinghouse Automatic Air & Steam Coupler Company. (See Niederlander, Nicholas F., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Co. (See Woods, Granville T. and L., assignors.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Conrad, Frank, assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Foot, William H., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Lindiman, Frederick J., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Maxim, Hiram P., assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Merrick, Frank A., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Percival, Isaac W., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Richmond, George W., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Short, Sidney H., assignor.) | | | | | | |
| Westinghouse Electric & Manufacturing Company. (See Siegfried, Robert, assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Tingley, Egbert M., assignor.) | | | | | | |
| Westinghouse, George. (See Hutin and Leblanc, assignors.) | | | | | | |
| Westinghouse, George. (See Potter, Henry N., assignor.) | | | | | | |
| Westinghouse, George, Pittsburg, Pa., assignor to Westinghouse Machine Company. Vertical fluid-pressure turbine | 754,400 | Mar. 8 | 2368 | 516 | 109 | 534 |
| Westinghouse Machine Company. (See Bole, William A., assignor.) | | | | | | |
| Westinghouse Machine Company. (See Flanders, Louis H., assignor.) | | | | | | |
| Westinghouse Machine Company. (See McKee, Robert A, assignor.) | | | | | | |
| Westinghouse Machine Company. (See Robinson, Cyrus, assignor.) | | | | | | |
| Westinghouse Machine Company. (See Westinghouse, George, assignor.) | | | | | | |
| Westlake, Charles T., St. Louis, Mo., assignor, by mesne assignments, to American Steel Foundries. Center-bearing for truck-bolsters | 758,228 | Apr. 26 | 4015 | 871, 872 | 109 | 2257 |
| Westlake, Charles T., St. Louis, Mo., assignor, by mesne assignments, to American Steel Foundries. Truck-frame for railway-cars | 758,229 | Apr. 26 | 4016 | 872 | 109 | 2257 |
| Weston, Lon, Brockton, Mass. Last | 755,820 | Mar. 29 | 5085 | 1120 | 109 | 1176 |
| Westpfal, Frederick, New York, N. Y. Safety-pin | 757,700 | Apr. 19 | 2992 | 650 | 109 | 2015 |
| Westwood, Amos, Oakland, assignor of one-half to I. Fiel, San Francisco, Cal. Adjustable heel for shoes | 754,947 | Mar. 15 | 3458 | 757 | 109 | 791 |
| Wetherby, Henry, New York, N. Y. Skirt-adjuster | 757,076 | Apr. 12 | 1714 | 372 | 109 | 1723 |
| Wethington, John R., Alvaretta, Okla. Ter. Fence-building machine | 755,821 | Mar. 29 | 5085 | 1120 | 109 | 1176 |
| Wetmore, Jean A. (See Sachers, Ralph J., assignor.) | | | | | | |
| Wettlin, Dora L. (See Peterson and Hutchins, assignors.) | | | | | | |
| Weyburn, Lewis A. (See Spery, Charles F., assignor.) | | | | | | |
| Whalen, James L. (See Patterson, Robert, assignor.) | | | | | | |
| Whaley, Abner W., Morocco, Ind. Fence-brace | 758,576 | Apr. 26 | 4720 | 1018 | 109 | 2414 |
| Wharton, Samuel E., Everett, Wash. Game apparatus | 758,946 | Mar. 8 | 1463 | 329, 330 | 109 | 337 |
| Wharton, William, Jr., Philadelphia, and V. Angerer, Ridley Park, assignors to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Railway-switch | 756,088 | Mar. 29 | 5608 | 1238 | 109 | 1292 |
| Wheeler, James F., Perry township, Marion county, assignor of one-half to A. Boice, Indianapolis, Ind. Shock-former | 753,770 | Mar. 1 | 1060 | 242, 243, 244 | 109 | 228 |
| Wheeler, Samuel D., and H. V. Whittle, Fowlstown, Ga. Stump-extractor | 754,524 | Mar. 15 | 2648 | 574 | 109 | 613 |
| Wheeler, Theodore A., New Haven, Conn. Adding-machine | 758,198 | Apr. 26 | 3959 | 859 | 109 | 2245 |
| Wheeler, Warren F., Stoneham, Mass. Snow-plow | 757,163 | Apr. 12 | 1904 | 415 | 109 | 1766 |
| Wheeler & Wilson Manufacturing Company. (See Abercrombie, William R., assignor.) | | | | | | |
| Wheeler & Wilson Manufacturing Company. (See Laubscher, Alexander, assignor.) | | | | | | |
| Wheeler & Wilson Manufacturing Company. (See Noble, Donald, assignor.) | | | | | | |
| Wheildon, William M., Boston, Mass., assignor to Aero-Pulverizer Company, Jersey City, N. J. Apparatus for feeding material | 756,307 | Apr. 5 | 225 | 47 | 109 | 1393 |
| Wheless, Thomas M., St. Louis, Mo. Garment-supporter | 757,701 | Apr. 19 | 2993 | 650 | 109 | 2015 |
| Whetham, Charles, Ruskin, Canada. Photographic-printing frame | 754,266 | Mar. 8 | 2063 | 457, 458 | 109 | 469 |
| Whinery, Samuel B., *et al.* (See Clark, Edward B., assignor.) | | | | | | |
| Whippey, Frederick C., assignor to Whippey Process & Engraving Co., Cincinnati, Ohio. Making printing-surfaces | 756,758 | Apr. 5 | 1071 | 239 | 109 | 1572 |
| Whippey Process & Engraving Co. (See Whippey, Frederick C., assignor.) | | | | | | |
| Whipple, Frank B., Geneseo, N. Y. Fishing apparatus | 757,077 | Apr. 12 | 1716 | 372 | 109 | 1723 |
| Whisenhunt, James S., Epley, Miss. Ash-pan for locomotives | 755,974 | Mar. 29 | 5397 | 1192 | 109 | 1248 |
| Whitaker, Channing, Tyngsboro, assignor to Lowell Machine Shop, Lowell, Mass. Stop-motion for twisting-frames | 753,338 | Mar. 1 | 220 | 50 | 109 | 50 |
| Whitaker, Richard, assignor of two-thirds to R. W. and J. W. Johnson, New Brunswick, N. J. Ground joint | 757,376 | Apr. 12 | 2325 | 508 | 109 | 1854 |
| Whitcher, Charles H., Ipswich, Mass. Thread-presenting mechanism for knitting-machines | 755,975 | Mar. 29 | 5399 | 1192, 1193 | 109 | 1248 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| White, Arthur E., and W. Miller, Chicago, Ill.; said Miller assignor of one-half to said White. Reclining cot or lounge | 753,815 | Mar. 1 | 1201 | 270 | 109 | 356 |
| White, Cullen D., Union City, Tenn. Thill-support | 756,160 | Apr. 26 | 3689 | 844 | 109 | 2231 |
| White, Emory C., Montclair, N. J. Printing on inflatable articles | 755,976 | Mar. 29 | 5408 | ..... | 109 | 1248 |
| White, George, Jersey City, N. J. Time-recorder | 754,401 | Mar. 8 | 2271 | 517, 518, 519 | 109 | 535 |
| White, Harold E., Schenectady, N. Y., assignor to General Electric Company. Train-control system | 758,230 | Apr. 26 | 4017 | 872, 873 | 109 | 2257 |
| White, Harry W., Youngstown, Ohio. Boiler | 756,754 | Apr. 5 | 1078 | 239 | 109 | 1572 |
| White, Hawley C., and A. H. Mallison, North Bennington, Vt., assignors to H. C. White Co. Photographic-printing apparatus | 753,455 | Mar. 1 | 436 | 108 | 109 | 96 |
| White, Hawley C., and A. H. Mallison, North Bennington, Vt., assignors to H. C. White Co. Photographic-printing apparatus | 757,796 | Apr. 19 | 3188 | 691 | 109 | 2057 |
| White, James, Cleveland, Ohio. Cooling device for explosive-engines | 754,728 | Mar. 15 | 3042 | 664 | 109 | 690 |
| White, James D., London, England. Printing-telegraph receiver | 757,377 | Apr. 12 | 2895 | 508 | 109 | 1854 |
| White, James H., assignor to A. J. Oettinger, Boston, Mass. Detachable shoulder-rest for violins or other instruments | 755,977 | Mar. 29 | 5408 | 1198 | 109 | 1248 |
| White, James K., Mansfield, Ohio. Grain-separator | 754,720 | Mar. 15 | 3043 | 664 | 109 | 690 |
| White, James K., and G. W. Pyle, Mansfield, Ohio. Grain-separator | 755,978 | Mar. 29 | 5405 | 1194 | 109 | 1249 |
| White, John, Edinburgh, Scotland. Pulp-beating engine | 757,585 | Apr. 19 | 2766 | 605 | 109 | 1965 |
| White, John C., Marysville, Cal. Draper | 756,548 | Apr. 5 | 694 | 149 | 109 | 1480 |
| White, John F., Buffalo, assignor to General Chemical Company, New York, N. Y. Manufacturing sodium sulfid | 755,901 | Mar. 22 | 3908 | ..... | 109 | 902 |
| White, John H., Englewood, N. J. Artificial straw | 754,948 | Mar. 15 | 3459 | 757 | 109 | 791 |
| White, Joseph, *et al.* (See Cooke, Daniel J., assignor.) | | | | | | |
| White, Joseph, assignor to R. Hoe, New York, N. Y. Printing-machine | 753,947 | Mar. 8 | 1465 | 330 | 109 | 337 |
| White, Lewis B. (See Mylin and White.) | | | | | | |
| White, Orvando D., Chicago, Ill. Spring | 755,729 | Mar. 29 | 4904 | 1092 | 109 | 1137 |
| White, Roger S., Philadelphia, Pa., assignor to General Electric Company. Demand-meter | 757,000 | Apr. 12 | 1567 | 343 | 109 | 1691 |
| White, Thomas S., West Frankfort, and M. M. Neal, Benton, Ill. Railway-gate | 755,968 | Mar. 22 | 4015 | 890 | 109 | 906 |
| White, William N. (See Morris, Jesse T., assignor.) | | | | | | |
| Whitehead, Aura E., assignor to Farrand Organ Company, Detroit, Mich. Adjustable pedal for mechanical piano-players | 756,755 | Apr. 5 | 1074 | 239 | 109 | 1573 |
| Whitehead, Gilbert H. (See Hyde, Thomas G., assignor.) | | | | | | |
| Whitehead & Hoag Company. (See Weber, John, assignor.) | | | | | | |
| Whitehill, Nels. (See Flanery and Whitehill.) | | | | | | |
| Whitely, William N., Springfield, Ohio. Grain-harvesting machine | 757,001 | Apr. 12 | 1569 | 343, 344 | 109 | 1692 |
| Whitfield, Mark M., assignor to J. F. Sharp, Loraine, Ohio. Automatic railway-switch | 754,627 | Mar. 15 | 2884 | 619 | 109 | 552 |
| Whitin Machine Works. (See Owen, Oscar L., assignor.) | | | | | | |
| Whitlock Coil Pipe Company. (See Lewis, Joseph E., assignor.) | | | | | | |
| Whitman & Barnes Manufacturing Co. (See Motherwell, David M., assignor.) | | | | | | |
| Whitman, Emerson, Lynn, Mass. Battery-cell | 757,164 | Apr. 12 | 1905 | 416 | 109 | 1766 |
| Whitman, Ezra B. (See Williams and Whitman.) | | | | | | |
| Whitmarsh, Theodore F., New York, N. Y. Key-can | 758,287 | Apr. 26 | 4146 | 896 | 109 | 2285 |
| Whitmer, John C., Lordsburg, Cal. Driving mechanism for pumps | 753,771 | Mar. 1 | 1064 | 244 | 109 | 229 |
| Whitney, Arthur E. (See McIndoe, George F. and J. W., assignors.) | | | | | | |
| Whitney, Arthur E. (See Whitney, Robert F., assignor.) | | | | | | |
| Whitney, Fred B., Waukegan, Ill. Binder and file for pamphlets, books, ledgers, &c. | 754,628 | Mar. 15 | 2836 | 619 | 109 | 552 |
| Whitney, George E., Bridgeport, Conn., assignor to Whitney Motor Wagon Company, Kittery, Me. Flash-boiler | 755,908 | Mar. 22 | 3904 | 861, 862 | 109 | 908 |
| Whitney, George L., *et al.* (See Dunn, Frederick W., assignor.) | | | | | | |
| Whitney, Linwood G., New York, N. Y. Manifold sales-book | 754,361 | Mar. 8 | 2223 | 496 | 109 | 502 |
| Whitney, Linwood G., New York, N. Y. Manifolding sales-book | 756,308 | Apr. 5 | 227 | 47, 48 | 109 | 1398 |
| Whitney Motor Wagon Company. (See Whitney, George E., assignor.) | | | | | | |
| Whitney, Robert F., assignor of one-half to A. E. Whitney, Winchester, Mass. Hide-working and unhairing machine | 754,525 | Mar. 15 | 2844 | 574, 575 | 109 | 614 |
| Whittaker, James E. (See Blevins and Whittaker.) | | | | | | |
| Whittemore, John Q. A. (See Burke, Charles G., assignor.) | | | | | | |
| Whittingham, George H., New York, N. Y., assignor to Automatic Switch Company of Baltimore City, Electric switch | 757,858 | Apr. 19 | 3288 | 711, 712 | 109 | 2077 |
| Whittle, Henry V. (See Wheeler and Whittle.) | | | | | | |
| Whittlesey, George P., Washington, D. C., assignor to General Electric Company. Train-control system | 755,822 | Mar. 29 | 5087 | 1130 | 109 | 1176 |
| Whorton, John R. (See Simmons and Whorton.) | | | | | | |
| Wichmann, Georg, assignor to Chemische Fabrik auf Actien, (vorm. E. Schering,) Berlin, Germany, and Société Chimique des Usines du Rhone, (Anciennement Gilliard, P. Monnet et Cartier,) St. Fons, near Lyons, France. Making ortho-oxy-carbon acids | 757,702 | Apr. 19 | 2904 | ..... | 109 | 2015 |
| Wickersham, Nathan R., West Bethlehem, Pa. Eye-shade | 757,854 | Apr. 19 | 3286 | 712 | 109 | 2078 |
| Widdop, Thomas, Mountainview, Wyo. Washstand | 753,330 | Mar. 1 | 222 | 50, 51 | 109 | 51 |
| Wiegand, Henry J., assignor to Cutler-Hammer Manufacturing Company, Milwaukee, Wis. Rheostat | 756,445 | Apr. 5 | 516 | 107 | 109 | 1452 |
| Wiekamp, John H., Mishawaka, Ind. Cutting apparatus for mowing-machines | 757,586 | Apr. 19 | 2767 | 605 | 109 | 1966 |
| Wienke, Ferdinand, Odin, Ill. Plow | 757,955 | Apr. 19 | 3289 | 712 | 109 | 2078 |
| Wieringa, Samuel, Watseka, Ill. Sap-evaporator | 756,549 | Apr. 5 | 696 | 150 | 109 | 1490 |
| Wieser, Karl, Rüttenscheid, near Essen-on-the-Ruhr, assignor to F. Krupp, Essen-on-the-Ruhr, Germany. Percussion-fuse for exploding shells | 757,165 | Apr. 12 | 1905 | 416 | 109 | 1766 |
| Wiesner, Frederick E., Washington, D. C. Door-securer | 754,367 | Mar. 8 | 2057 | 458 | 109 | 460 |
| Wight, James M., and H. Hyatt, Cleveland, Ohio. Gas-producer | 753,340 | Mar. 1 | 223 | 51 | 109 | 51 |
| Wight, James M., and H. Hyatt, Cleveland, Ohio. Valve for regenerative furnaces | 757,002 | Apr. 12 | 1573 | 344 | 109 | 1692 |
| Wight, William N., New York, N. Y. Reinforced beams, &c., and grillage therefor | 756,309 | Apr. 5 | 220 | 48 | 109 | 1394 |
| Wight, William N., New York, N. Y. Floor or ceiling | 758,577 | Apr. 26 | 4721 | 1018 | 109 | 2414 |
| Wigzell, Eustace E., London, England. Instrument for taking soundings | 753,948 | Mar. 8 | 1472 | 330, 331 | 109 | 340 |
| Wilcher, Asa, Everett, Mass. Attachment for bedsteads | 755,864 | Mar. 22 | 4018 | 890, 891 | 109 | 907 |
| Wilcox, Elijah A., New York, N. Y. Display-cabinet | 757,008 | Apr. 12 | 1575 | 345 | 109 | 1693 |
| Wilcox, John T., Carlstadt, N. J. Hair-dressing device | 754,949 | Mar. 15 | 3461 | 758 | 109 | 791 |
| Wilcox, William P., assignor of one-half to J. E. Hubbell, Syracuse, N. Y. Axle | 753,816 | Mar. 1 | 1204 | 270 | 109 | 356 |
| Wilcoxson, Samuel N., Collingwood, Ohio. Signal operated by car-brake beams | 758,398 | Apr. 26 | 4368 | 968 | 109 | 2333 |
| Wild, William E., Denver, Colo. Rock-breaker | 757,004 | Apr. 12 | 1577 | 345 | 109 | 1693 |
| Wilde, Daniel, Washington, Iowa. Sash-lock | 757,856 | Apr. 19 | 2890 | 712 | 109 | 2079 |
| Wilde, Karl A., Hamburg, Germany. Electromagnetic rail-brake | 755,908 | Mar. 22 | 3905 | 862 | 109 | 908 |
| Wilder, Orlin J., and H. Vanderveen, Grand Rapids, Mich. Roof for buildings | 756,756 | Apr. 5 | 1076 | 239 | 109 | 1573 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Wilder, William H., Gardner, Mass. Igniter for oil-stoves | 757,708 | Apr. 19 | 2995 | 651 | 109 | 2015 |
| Wiles, Edwin B., Chicago, Ill. Tool-hanger | 757,967 | Apr. 19 | 3541 | 766 | 109 | 2134 |
| Wilfong, Isaac N., Jr., Philadelphia, Pa. Combined air-compressor and storage-tank | 755,556 | Mar. 22 | 4542 | 1011 | 109 | 1040 |
| Wilhelm Telephone Manufacturing Company. (See Wilhelm, Walter L., assignor.) | | | | | | |
| Wilhelm, Walter L., assignor to Wilhelm Telephone Manufacturing Company, Buffalo, N. Y. Telephone-transmitter | 757,799 | Apr. 19 | 3185 | 692 | 109 | 2057 |
| Wilke, Ferdinand, assignor of one-half to W. C. Lilly, Akron, Ohio. Automatic gas-valve | 755,265 | Mar. 22 | 4019 | 891 | 109 | 927 |
| Wilke, Richard, Brunswick, Germany. Track or the like for cranes | 758,399 | Apr. 26 | 4363 | 938, 939, 940 | 109 | 2333 |
| Wilkens, John D., Chicago, Ill. Third-rail electric-railway system | 756,757 | Apr. 5 | 1078 | 240 | 109 | 1573 |
| Wilkinson, James, Philadelphia, Pa. Oil-can | 755,388 | Mar. 22 | 4162 | 930 | 109 | 958 |
| Wilkinson, James, Birmingham, Ala., assignor to Wilkinson Steam Turbine Company. Governing mechanism for turbines | 753,772 | Mar. 1 | 1065 | 244, 245 | 109 | 229 |
| Wilkinson, James, Birmingham, Ala., assignor to Wilkinson Steam Turbine Company. Governing mechanism for turbines | 753,773 | Mar. 1 | 1076 | 246 | 109 | 232 |
| Wilkinson, James, Birmingham, Ala., assignor to Wilkinson Steam Turbine Company. Governing means for elastic-fluid turbines | 753,774 | Mar. 1 | 1082 | 246, 247 | 109 | 233 |
| Wilkinson, James, assignor to Wilkinson Steam Turbine Company, Birmingham, Ala. Governing mechanism for turbines | 758,400 | Apr. 26 | 4366 | 940 | 109 | 2333 |
| Wilkinson Steam Turbine Company. (See Wilkinson, James, assignor.) | | | | | | |
| Will, Hugh, Ava, Ill. Winding-indicator for clocks | 756,446 | Apr. 5 | 519 | 108 | 109 | 1453 |
| Willans and Robinson. (See McMullen and Robinson, assignors.) | | | | | | |
| Willard, Charles A., St. Louis, Mo. Safety-guard on electrical cars | 753,341 | Mar. 1 | 225 | 51, 52 | 109 | 51 |
| Willard, James A., assignor to Vacuum Dyeing Machine Company, Chattanooga, Tenn. Apparatus for dyeing | 755,422 | Mar. 22 | 4312 | 954 | 109 | 990 |
| Willebrandis, George W., Detroit, Mich. Railway-crossing | 755,730 | Mar. 29 | 4905 | 1092 | 109 | 1137 |
| Willets, William C., Minneapolis, Minn. Folding leg for furniture | 756,922 | Apr. 12 | 1409 | 314 | 109 | 1659 |
| William Beardmore and Company. (See Atha, Charles G., assignor.) | | | | | | |
| William Mann Company. (See Deckert, Joseph O., assignor.) | | | | | | |
| William Powell Co. (See Desmond, John, assignor.) | | | | | | |
| William Scholihorn Company. (See Bernard, William A., assignor.) | | | | | | |
| William Wharton, Jr., & Company, Incorporated. (See Wharton and Angerer, assignors.) | | | | | | |
| Williams, Charles D. (See Pusey, Joshua, assignor.) | | | | | | |
| Williams, Charles J., East Greenwich, England. Multicylinder expansion-engine | 757,582 | Apr. 19 | 2648 | 579, 580, 581 | 109 | 1987 |
| Williams, Frank, Troy, Pa. Valve-gear | 754,950 | Mar. 15 | 3462 | 758 | 109 | 791 |
| Williams, Henry M. (See Burger and Williams.) | | | | | | |
| Williams, J. Savage. (See Falkenwalde, Oscar, assignor.) | | | | | | |
| Williams, James H. (See Evans and Williams.) | | | | | | |
| Williams, James H., and G. B. Evans, Dodgeville, Wis. Attachment for grain-binders | 756,161 | Apr. 26 | 3891 | 845 | 109 | 2231 |
| Williams, John C., Kansas City, Mo. Air-compressor | 757,704 | Apr. 19 | 2996 | 651 | 109 | 2015 |
| Williams, Joseph A., assignor to Williams Telephone & Supply Company, Cleveland, Ohio. Telephone-transmitter | 755,091 | Mar. 22 | 3703 | 813 | 109 | 862 |
| Williams, Joseph J., Oklahoma, Okla. Ter. Wind-motor | 757,800 | Apr. 19 | 3187 | 692, 693 | 109 | 2058 |
| Williams, King R., Richmond, Ind. Copy-holder | 754,526 | Mar. 15 | 2648 | 575 | 109 | 615 |
| Williams, Milton F., assignor to Williams Patent Crusher & Pulverizer Company, St. Louis, Mo. Shredding-machine or the like | 757,705 | Apr. 19 | 2998 | 651 | 109 | 2016 |
| Williams, Milton F., assignor to Williams Patent Crusher & Pulverizer Company, St. Louis, Mo. Crusher and pulverizer | 758,288 | Apr. 26 | 4148 | 896, 897 | 109 | 2285 |
| Williams, Orin, Des Moines, Iowa. Rotary engine | 754,081 | Mar. 8 | 1621 | 361, 362 | 109 | 378 |
| Williams Patent Crusher & Pulverizer Company. (See Williams, Milton F., assignor.) | | | | | | |
| Williams, Roger B., Jr., and E. B. Whitman, New York, N. Y. Liquid-distributing system | 754,730 | Mar. 15 | 3045 | 665 | 109 | 699 |
| Williams, Roger B., Jr., and E. B. Whitman, New York, N. Y. Liquid-distributing system | 754,953 | Mar. 15 | 3467 | 759 | 109 | 798 |
| Williams Telephone & Supply Company. (See Williams, Joseph A., assignor.) | | | | | | |
| Williams, White & Company. (See Norquist, John H., assignor.) | | | | | | |
| Williams Wire Hinging Machine Company. (See Edge, Horace L. and W., assignors.) | | | | | | |
| Williamson, Charles A., New Cumberland, Pa. Rocker-shoe | 755,423 | Mar. 22 | 4316 | 955 | 109 | 991 |
| Williamson, Henry C., and H. Pries, Michigan City, Ind. Draft-rigging | 754,527 | Mar. 15 | 2651 | 575 | 109 | 615 |
| Williamson, Henry C., and H. Pries, Michigan City, Ind. Draft-rigging | 754,528 | Mar. 15 | 2653 | 575, 576 | 109 | 616 |
| Williamson, Jas. F. (See Rehmenklau, Rudolph W. O., assignor.) | | | | | | |
| Williamson, Russell B., Clifton Springs, N. Y. Spraying device | 755,823 | Mar. 29 | 5090 | 1131 | 109 | 1176 |
| Willitz, Herman C., Janesville, assignor of one-half to H. Mulberger, Watertown, Wis. Line-wire clamp | 755,092 | Mar. 22 | 3704 | 813 | 109 | 862 |
| Willmann, Joseph, Chicago, Ill. Apparatus for heating or sterilizing liquids | 753,310 | Apr. 5 | 233 | 48 | 109 | 1394 |
| Willmon, Jeremy C., Los Angeles, Cal. Instrument for the construction of equivalent geometrical figures | 753,458 | Mar. 1 | 445 | 104 | 109 | 97 |
| Wilmore, John T., Denver, Colo. Can-capping machine | 758,034 | Apr. 19 | 3641 | 787, 788 | 109 | 2156 |
| Wilmsen, Bernhard. (See Wundsch and Lange, assignors.) | | | | | | |
| Wilson, Albert M., Cherokee, Iowa. Hose-supporter | 755,979 | Mar. 29 | 5407 | 1195 | 109 | 1249 |
| Wilson, Benjamin H., Bethany, Mo. Harness-hook | 758,124 | Apr. 26 | 3827 | 831 | 109 | 2216 |
| Wilson, Charles M., St. Louis, Mo. Trolley | 756,550 | Apr. 5 | 697 | 150 | 109 | 1490 |
| Wilson, Charles R., San Francisco, Cal. Treating fruits | 757,706 | Apr. 19 | 3000 | 652 | 109 | 2016 |
| Wilson, Ewing L., Peck, Idaho. Combined letter-sheet and envelop | 757,005 | Apr. 12 | 1579 | 345 | 109 | 1694 |
| Wilson, George, assignor to Emerson Manufacturing Company, Rockford, Ill. Cutter-bar alinement | 753,459 | Mar. 1 | 445 | 104 | 109 | 97 |
| Wilson, George, assignor to Emerson Manufacturing Company, Rockford, Ill. Divider for harvesting-machines | 757,587 | Apr. 19 | 2770 | 606 | 109 | 1966 |
| Wilson-Haffenden, James, East Croydon, England. Garment adjuster or holder | 758,775 | Mar. 1 | 1068 | 247 | 109 | 235 |
| Wilson, Henry, and H. L. Crumbly, Richland, Ga. Sugar-cane crusher | 757,988 | Apr. 19 | 3542 | 767 | 109 | 2134 |
| Wilson, James H., Lowell, Mass. Shoe-polisher | 755,980 | Mar. 29 | 5408 | 1195 | 109 | 1250 |
| Wilson, Walter G., Westminster, England. Motor-car | 757,583 | Apr. 19 | 2651 | 581 | 109 | 1938 |
| Wilson, Walter S., Conneaut Lake, Pa. Barn-door hanger | 756,089 | Mar. 29 | 5609 | 1238 | 109 | 1296 |
| Wilson, William. (See Tolhurst and Wilson.) | | | | | | |
| Wilson, William, London township, and T. W. Baker, London, Canada. Packing case or crate | 753,342 | Mar. 1 | 227 | 52 | 109 | 52 |
| Wilson, William, London township, and T. W. Baker, London, Canada. Tray for holding eggs or fruit | 753,343 | Mar. 1 | 229 | 52, 53 | 109 | 52 |
| Wilson, William H., Groesbeck, Tex. Plow | 755,424 | Mar. 22 | 4317 | 955 | 109 | 299 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Dr'g. | Vol. | Page. |
| Wilt, Charles T. (See Wilt, Elmer E. and C. T.) | | | | | | |
| Wilt, Elmer E. and C. T., Chicago, Ill. Spring retaining-clip | 753,266 | Mar. 22 | 4021 | 801 | 109 | 927 |
| Wilt, Race N., Chicago, Ill. Combined envelop and sheet of paper | 757,801 | Apr. 19 | 3191 | 693 | 109 | 2068 |
| Wiltsey, Alvah, New York, N. Y. Shirt-waist holder and skirt-supporter | 754,179 | Mar. 8 | 1906 | 422 | 109 | 435 |
| Wimmer, Alexander W., Chicago, Ill. Automatic dental plugger | 755,425 | Mar. 22 | 4319 | 955 | 109 | 992 |
| Winans, Edwin, New York, N. Y. Power-transmitting machinery | 755,590 | Mar. 22 | 4604 | 1023 | 109 | 1054 |
| Winans, Wesley G., assignor of one-half to J. M. Davis and J. F. Saylor, Spokane, Wash. Display-stand | 756,756 | Apr. 5 | 1080 | 240 | 109 | 1574 |
| Winchester Repeating Arms Co. (See Johnson, Thomas C., assignor.) | | | | | | |
| Window Glass Machine Company. (See Pease, Roger S., assignor.) | | | | | | |
| Wineland, George, *et al.* (See Wineland, John, assignor.) | | | | | | |
| Wineland, John, assignor of three-fourths to G., S., and J. F. Wineland, Athens, Ill. Mine-shaft door | 754,268 | Mar. 8 | 2006 | 456 | 109 | 470 |
| Wineland, John F., *et al.* (See Wineland, John, assignor.) | | | | | | |
| Wineland, Seth, *et al.* (See Wineland, John, assignor.) | | | | | | |
| Wing, Centennial W., Bayard, Fla. Game apparatus | 753,949 | Mar. 8 | 1474 | 331 | 109 | 340 |
| Winkel, Wendelin, San Jose, Ill. Button for planter check-lines | 758,169 | Apr. 26 | 3892 | 845 | 109 | 2231 |
| Winkler, Egbert. (See MacMillan, William, assignor.) | | | | | | |
| Winter, Arthur F. (See Kade, Charles F., assignor.) | | | | | | |
| Wintsch, Karl, Jr., Newark, N. J. Bone-holding device | 757,166 | Apr. 12 | 1907 | 416 | 109 | 1766 |
| Wirt, Reuben D., Philadelphia, Pa. Garbage-cart | 758,343 | Apr. 26 | 4271 | 917 | 109 | 2313 |
| Wise, George W., Glenfield, Pa. Shoe-fastener | 753,776 | Mar. 1 | 1090 | 247 | 109 | 285 |
| Wiseman, Daniel E., Spokane, Wash. Fault-locator for electric cables | 754,402 | Mar. 8 | 2370 | {519 590 | 109 | 536 |
| Wiskott, Max, Breslau, Germany. Picture-frame | 755,987 | Mar. 22 | 4022 | 891 | 109 | 928 |
| Wismer, Isaiah. (See Wismer, Levi and I.) | | | | | | |
| Wismer, Levi and I., Redman, Mich. Feed-water heater | 755,981 | Mar. 29 | 5409 | 1195 | 109 | 1250 |
| Wisner, William E. (See Metcalf, Jefferson D., assignor.) | | | | | | |
| Wisnewski, Stanislaus, Warsaw, N. D. Lock | 757,566 | Apr. 19 | 2770 | 606 | 109 | 1966 |
| Witham, George S., Millinocket, Me. Paper-winding machine | 753,344 | Mar. 1 | 230 | 53 | 109 | 52 |
| Withers, Charles A., Augusta, Ga., assignor to International Ventilator and Deflector Company, Washington, D. C. Ventilator | 757,534 | Apr. 19 | 2623 | 582 | 109 | 1988 |
| Witkowicz, Wladimir, Kiew, Russia. Multiple evaporating apparatus | 753,777 | Mar. 1 | 1091 | {247 248 | 109 | 285 |
| Witman, Arthur C., Columbus, Ohio. Gas-stove | 754,180 | Mar. 8 | 1906 | 423 | 109 | 435 |
| Witt, James W. M., Cedar Bluff, and Z. D. Laney, Blanch, Ala. Photographic case for tombstones | 754,269 | Mar. 8 | 2070 | 459 | 109 | 470 |
| Witte, Hubert, assignor to St. Louis Car Company, St. Louis, Mo. Street-car window | 755,988 | Mar. 29 | 5411 | {1195 1196 | 109 | 1250 |
| Witte, Hubert, assignor to St. Louis Car Company, St. Louis, Mo. Window-shade-retaining device | 758,344 | Apr. 26 | 4273 | 917 | 109 | 2314 |
| Wittekind, Henry, and R. E. Bourke, Chicago, Ill. Sheet-metal studding | 754,370 | Mar. 8 | 2071 | 459 | 109 | 470 |
| Wittigschlager, Wilhelmina, New York, N. Y. Hat-pin | 758,289 | Apr. 26 | 4152 | 897 | 109 | 2286 |
| Witzenmann, Emil, Pforzheim, Germany. Coupling for the pipes of railway-cars | 755,304 | Mar. 22 | 3907 | {862 863 | 109 | 908 |
| Witzenmann, Emil, Pforzheim, Germany. Chandelier | 758,168 | Apr. 26 | 3893 | 845 | 109 | 2232 |
| Wix, Monroe C., Milburn, Ky. Fence-post | 757,989 | Apr. 19 | 3544 | 767 | 109 | 2135 |
| Wm. B. Scaife & Sons Company. (See Greth, John C. W., assignor.) | | | | | | |
| Wobeser, Theodor von, Hamburg, Germany. Door-handle shield | 756,447 | Apr. 5 | 821 | 108 | 109 | 1454 |
| Wodal, Michael A., Camden, N. J. Brake | 757,006 | Apr. 12 | 1580 | 346 | 109 | 1694 |
| Woertink, William, Estelline, S. D. Animal-cleaning machine | 756,448 | Apr. 5 | 821 | 108 | 109 | 1454 |
| Wolcott, Charles. (See Miner, Louis H., assignor.) | | | | | | |
| Wolf, Harry G. (See Thon and Wolf.) | | | | | | |
| Wolf, Hermann, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Composition of matter and producing same | 756,759 | Apr. 5 | 1081 | ..... | 109 | 1574 |
| Wolf, Juleus C., Lansing, Mich. Seating-bench | 758,778 | Mar. 1 | 1098 | 248 | 109 | 286 |
| Wolf, Mark T., Washington, Pa. Wire-rope cutter | 756,760 | Apr. 5 | 1083 | 240 | 109 | 1574 |
| Wolfe, Andrew C., Pittsburg, Pa. Automatic releasing device for safety-trolleys | 753,945 | Mar. 1 | 232 | 53 | 109 | 53 |
| Wolpert, Ernst. (See Hepp and Wolpert.) | | | | | | |
| Woltz, Michael, Wilkins township, Allegheny county, Pa. Emergency caf-brake | 754,181 | Mar. 8 | 1900 | 423 | 109 | 436 |
| Wolverton, Frank L., Luxora, Ark. Doubletree | 756,923 | Apr. 12 | 1411 | 314 | 109 | 1659 |
| Wolvin, Augustus B., Duluth, Minn. Ship construction | 754,107 | Mar. 8 | 1775 | 394 | 109 | 408 |
| Wonder Manufacturing Company. (See Brown, Henry H., assignor.) | | | | | | |
| Wood, Elmer E. (See Mackie, Henry A., assignor.) | | | | | | |
| Wood, Franklin H., Wilkinsburg, Pa. Hair-parting device | 754,182 | Mar. 8 | 1900 | 423 | 109 | 436 |
| Wood, Fred W. (See Smith, James D., assignor.) | | | | | | |
| Wood, Howard I., and R. C. Robinson, Schenectady, N. Y., assignors to General Electric Company. Lamp-terminal | 757,007 | Apr. 12 | 1581 | 346 | 109 | 1694 |
| Wood, James J., Fort Wayne, Ind. Bending-machine | 757,078 | Apr. 12 | 1717 | 373 | 109 | 1734 |
| Wood, James J., Fort Wayne, Ind. Electric-arc lamp | 757,079 | Apr. 12 | 1720 | {373 374 | 109 | 1734 |
| Wood, James M., Washington Court-House, Ohio. Combined table and desk | 756,761 | Apr. 5 | 1084 | 241 | 109 | 1574 |
| Wood, Jerome I., Philadelphia, Pa. Propeller | 758,496 | Mar. 22 | 4328 | 955 | 109 | 992 |
| Wood, John D., St. Louis, Mo. Bag-fastener | 756,924 | Apr. 12 | 1412 | 314 | 109 | 1660 |
| Wood, John D., St. Louis, Mo. Dress-suit case | 756,925 | Apr. 12 | 1413 | 315 | 109 | 1660 |
| Wood, Louis M., Topeka, Kans. Ventilator | 756,762 | Apr. 5 | 1085 | 241 | 109 | 1574 |
| Wood, Robert W., Madison, Wis. Color photograph and making same | 758,988 | Mar. 29 | 5412 | 1196 | 109 | 1250 |
| Wood, Thomas M., Stamford, Conn. Non-refillable bottle | 757,707 | Apr. 19 | 3001 | 652 | 109 | 2017 |
| Wood, W. B. (See Simpson, Horatio S., assignor.) | | | | | | |
| Woodard, Albert S., Mansfield, Ohio. Binding | 757,990 | Apr. 19 | 3544 | 767 | 109 | 2136 |
| Woodard, Lorenzo D. (See Vance, Sidney F., assignor.) | | | | | | |
| Woodbridge, Jonathan E., Schenectady, N. Y., assignor to General Electric Company. Means for starting alternating-current dynamo-electric machines | 755,894 | Mar. 29 | 5090 | 1131 | 109 | 1177 |
| Woodbury, George E., San Francisco, Cal. Ore-concentrator | 757,008 | Apr. 12 | 1582 | 346 | 109 | 1694 |
| Woodbury, Urban A., Burlington, Vt. Automatic railway-switch | 756,401 | Apr. 26 | 4373 | 940 | 109 | 2335 |
| Woodbury, Urban A., Burlington, Vt. Automatic railway-switch | 758,490 | Apr. 26 | 4550 | 978 | 109 | 2377 |
| Woodley, Whitford W., Elizabeth City, N. C. Implement for fastening belts | 757,589 | Apr. 19 | 2772 | 606 | 109 | 1967 |
| Woodman, George E., London, England. Glove | 753,779 | Mar. 1 | 1094 | 248 | 109 | 286 |
| Woodman, Robert, Malden, Mass. Embossing-punch | 756,491 | Apr. 26 | 4555 | 978 | 109 | 2378 |
| Woods, Charles C., assignor to Canister Manufacturing Company, Easton, Pa. Cover for packing vessels | 757,167 | Apr. 12 | 1908 | 416 | 109 | 1767 |
| Woods, Granville T. and L., New York, N. Y., assignors to Westinghouse Electric & Manufacturing Co. Railway-brake apparatus | 755,825 | Mar. 29 | 5092 | 1131 | 109 | 1177 |
| Woods, Henry J. (See Larson, Louis, assignor.) | | | | | | |
| Woods, James D., Toronto, Canada. Garter-clip | 756,198 | Mar. 29 | 5776 | 1276 | 109 | 1327 |



*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Dr'g. | Vol. | Page. |
| Woods, Lyates. (See Woods, Granville T. and L.) | | | | | | |
| Woods, Thomas H. (See McDonough, William S., assignor.) | | | | | | |
| Woods, William, Spencer, Ind. Water filter and purifier | 753,780 | Mar. 1 | 1095 | 248 | 109 | 286 |
| Woods, William W., Springfield, Mo. Heater | 756,763 | Apr. 5 | 1087 | 241 | 109 | 1575 |
| Woodson, Robert S., Boulder, Colo. Welding compound | 755,626 | Mar. 29 | 5104 | ..... | 109 | 1182 |
| Woodward, Albert E., Nashua, N. H., and H. Shoemaker, assignors to M. V. Gehring, Philadelphia, Pa. Wave-responsive device | 757,802 | Apr. 19 | 3193 | 694 | 109 | 2059 |
| Woodward, Charles R., Nottingham, England. Knitting-machine needle | 757,878 | Apr. 12 | 2333 | 509 | 109 | 1854 |
| Woodward, J. C., *et al.* (See Maher, Michael M., assignor.) | | | | | | |
| Woodward, Stephen, Franklin Falls, N. H. Knitting-machine needle | 757,708 | Apr. 19 | 3003 | 652 | 109 | 2017 |
| Worcester, Ira D., Pittsburg, Pa. Toy | 755,339 | Mar. 22 | 4163 | 920 | 109 | 958 |
| Worcester, Ira D., Pittsburg, Pa. Toy | 755,984 | Mar. 29 | 5414 | 1196 | 109 | 1251 |
| World's Fair Novelty Company. (See Butcher, James M., assignor.) | | | | | | |
| Worrell, Joseph L., Philadelphia, Pa. Meat-slicing machine | 756,449 | Apr. 5 | 823 | 109 | 109 | 1454 |
| Worth, John D. (See Worth, William O. and J. D.) | | | | | | |
| Worth, William O. and J. D., Chicago, Ill. Frictional power-transmitting device | 757,379 | Apr. 12 | 2334 | 509 | 109 | 1855 |
| Worth, William O. and J. D., Chicago, Ill. Power installation for self-propelled vehicles | 757,380 | Apr. 12 | 2338 | 510 | 109 | 1855 |
| Worthington, Charles C. (See Unzicker, Herman, assignor.) | | | | | | |
| Worthington, Charles C., Dunnfield, N. J. Steam-engine | 757,009 | Apr. 12 | 1586 | 347 | 109 | 1695 |
| Wovries, Otto C. (See Bordewisch and Wovries.) | | | | | | |
| Wraith, Harry, Bradford, England. Exercising attachment for musical instruments | 757,168 | Apr. 12 | 1909 | 417 | 109 | 1767 |
| Wray, Robert, trustee, *et al.* (See Welsh, Elmer E., assignor.) | | | | | | |
| Wren, E. B. (See West, Robert S., assignor.) | | | | | | |
| Wright, Abner B., Gilbert Station, Iowa. Valve | 754,032 | Mar. 8 | 1626 | 362 | 109 | 374 |
| Wright, Charles A., Atchison, Kans. Windmill | 753,460 | Mar. 1 | 447 | {105 106 | 109 | 98 |
| Wright, David. (See Thoms, Charles F., assignor.) | | | | | | |
| Wright, Ellery C. (See Clark, George H., assignor.) | | | | | | |
| Wright, J. H., Jr. (See Brown, George E., assignor.) | | | | | | |
| Wright, Jacob D., Worcester, Mass. Automatic check and release mechanism | 757,381 | Apr. 12 | 2340 | 510 | 109 | 1856 |
| Wright, Jacob P., New Haven, Conn., assignor to Diamond Match Company, Chicago, Ill. Match-making machine | 756,198 | Mar. 29 | 5777 | {1276 1277 | 109 | 1328 |
| Wright, John, St. Heliers Bay, near Auckland, New Zealand. Wire-fencing standard and batten | 755,427 | Mar. 22 | 4323 | 956 | 109 | 992 |
| Wright, Norman A., Pontiac, Mich. Vaporizer for hydrocarbon-engines | 755,093 | Mar. 22 | 3705 | 814 | 109 | 862 |
| Wright, Walter B., assignor to E. Goldman & Company, Chicago, Ill. Bottle-soaking apparatus | 757,535 | Apr. 19 | 2656 | {582 583 | 109 | 1939 |
| Wright, William. (See Smith and Wright.) | | | | | | |
| Wright, William, New Wandsworth, England, assignor of one-half to D. Crewe, Pahiatua, Wellington, New Zealand. Feed-water heater | 755,094 | Mar. 22 | 3707 | 814 | 109 | 863 |
| Wright, William A., New York, N. Y. Garment-supporter for men | 756,764 | Apr. 5 | 1089 | 241 | 109 | 1575 |
| Wundhammer, Ludwig. (See Laub, Nicholaus, assignor.) | 754,108 | Mar. 8 | 1777 | 394 | 109 | 408 |
| Wundrack, Otto, Chicago, Ill. Furnace | 757,536 | Apr. 19 | 2662 | 583 | 109 | 1940 |
| Wundsch, Paul, and F. Lange, Berlin, Germany, assignors of one-half to B. Wilmsen, Philadelphia, Pa. Ornament | 753,781 | Mar. 1 | 1097 | 249 | 109 | 287 |
| Wurtele, Fred J. (See Goodman and Wurtele.) | | | | | | |
| Wyckoff, Seamans & Benedict. (See Shepard, Charles H., assignor.) | | | | | | |
| Wyland, George C., Williamsport, Pa. Metal fastening device | 758,950 | Mar. 8 | 1476 | 331 | 109 | 341 |
| Xevers, Zachariah, Santa Cruz, Cal. Automatic feeding device and fixtures | 756,765 | Apr. 5 | 1091 | 242 | 109 | 1575 |
| Yackel, Catherine E., Junius, N. Y. Exhaust-muffler | 758,402 | Apr. 26 | 4378 | 941 | 109 | 2337 |
| Yale, Edward J., North Attleboro, Mass. Machine for forming collar-buttons | 757,080 | Apr. 12 | 1723 | {374 375 | 109 | 1725 |
| Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.) | | | | | | |
| Yankie, James M., Washington Court-House, Ohio. Carriage-curtain fastening | 756,090 | Mar. 29 | 5611 | 1238 | 109 | 1293 |
| Yantis, Noah W. and S., Assumption, Ill. Purifier for steam-boilers | 757,382 | Apr. 12 | 2342 | 510 | 109 | 1856 |
| Yantis, Solomon. (See Yantis, Noah W. and S.) | | | | | | |
| Yates, Alfred, Milton, Wis. Feeder for corn-husking machines | 753,346 | Mar. 1 | 235 | 54 | 109 | 53 |
| Yates, William C., Schenectady, N. Y., assignor to General Electric Company. Rheostat | 755,828 | Mar. 29 | 5107 | 1132 | 109 | 1182 |
| Yates, William C., Schenectady, N. Y., assignor to General Electric Company. Rheostat | 758,164 | Apr. 26 | 3893 | 845 | 109 | 2232 |
| Yates, William C., and P. Zimmer, Schenectady, N. Y., assignors to General Electric Company. Rheostat | 755,827 | Mar. 29 | 5104 | 1132 | 109 | 1182 |
| Yawman, Frederick G., assignor of one-half to C. Englert, Jr., Rochester, N. Y. Ventilator | 755,095 | Mar. 22 | 3708 | 814 | 109 | 863 |
| Yeakel, D. Dawson. (See Beatty, Franklin E., assignor.) | | | | | | |
| Yeomans, Edward, Chicago, Ill. Automatic sewage-ejector | 757,169 | Apr. 12 | 1910 | {417 418 | 109 | 1767 |
| Yocum, Elra A., and J. A. Swihart, Lima, Ohio. Pumping-jack | 756,766 | Apr. 5 | 1094 | 242 | 109 | 1576 |
| Yoerger, George, Brooklyn, N. Y. Exercising apparatus | 757,709 | Apr. 19 | 3004 | 652 | 109 | 2017 |
| Yoho, John F., Seattle, Wash. Fan and mirror attachment for rocking-chairs | 757,857 | Apr. 19 | 3291 | 718 | 109 | 2079 |
| Yokoum, Frank A., Seattle, Wash. Mechanical movement | 758,578 | Apr. 26 | 4725 | 1019 | 109 | 2415 |
| Yondorf, David, *et al.* (See Dewey, Luman R., assignor.) | | | | | | |
| York, John J., Mountville, Ga. Baling-press | 758,492 | Apr. 26 | 4556 | 979 | 109 | 2378 |
| Yorke, Eugene H., Portland, Me. Fluid-mixer | 756,450 | Apr. 5 | 824 | {109 110 | 109 | 1454 |
| Young, David. (See Jackson, William S., assignor.) | | | | | | |
| Young, Elmer A. (See McElwain and Young.) | | | | | | |
| Young, Ernest A., and L. C. Fuller, Hardwick, Vt.; said Fuller assignor to said Young. Valve attachment for oil-cans | 757,170 | Apr. 12 | 1913 | 418 | 109 | 1768 |
| Young, Frank C., New Haven, Conn. Device for teaching penmanship | 753,782 | Mar. 1 | 1099 | 249 | 109 | 287 |
| Young, Frank C., assignor of one-half to G. A. Booth, New Haven, Conn. Device for teaching penmanship | 757,383 | Apr. 12 | 2344 | 511 | 109 | 1856 |
| Young, James E., Wayland, N. Y. Combined lock and latch | 753,783 | Mar. 1 | 1100 | {249 250 | 109 | 288 |
| Young, Joseph A., New York, N. Y. Door check and closure | 754,629 | Mar. 15 | 2887 | {619 620 | 109 | 653 |
| Young, Joseph H., Northampton, Mass. Skeining or winding cylinder | 755,096 | Mar. 22 | 3709 | {814 815 | 109 | 863 |
| Young, Peter, Rockfalls, Iowa. Tail-holder for cows | 754,033 | Mar. 8 | 1628 | 362 | 109 | 374 |
| Young, Samuel M., New York, N. Y. Signaling for electric railways | 757,537 | Apr. 19 | 2664 | 584 | 109 | 1941 |
| Youngblood, David. (See Youngblood, John F. and D.) | 757,384 | Apr. 12 | 2345 | 511 | 109 | 1857 |
| Youngblood, John F. and D., Troy, Ala. Apparatus for carbonating liquids | 758,403 | Apr. 26 | 4379 | 941 | 109 | 2337 |
| Younger, Joshua M., Oakland, Cal., assignor of one-half to G. A. Champlin, Sioux City, Iowa. Oil-burner | 755,340 | Mar. 22 | 4164 | 920 | 109 | 958 |

*Alphabetical list of patentees for March and April*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Youngken, John H., Virginia City, Mont. Runner and propelling attachment for bicycles or other vehicles | 756,767 | Apr. 5 | 1095 | 242 | 109 | 1577 |
| Zacsek, Stefan, assignor to R. Schimek, New York, N. Y. Brush | 755,965 | Mar. 29 | 5417 | 1196 | 109 | 1251 |
| Zahn, Oswald F., Los Angeles, Cal. Fireproofing and insulating structure | 754,109 | Mar. 8 | 1778 | 395 | 109 | 409 |
| Zaisser, William, assignor to Universal Compound Company, New York, N. Y. Wall-facing for dampproofing | 756,986 | Apr. 12 | 1414 | 315 | 109 | 1660 |
| Zalinski, Edmund L., New York, N. Y. Reflector | 756,194 | Mar. 29 | 5780 | 1277 | 109 | 1328 |
| Zanetti, Vincenzo, Genoa, Italy. Combustion apparatus for furnaces | 755,899 | Mar. 29 | 5109 | 1133 | 109 | 1183 |
| Zani, Arnaldo P., Milan, Italy, assignor to General Electric Company. Controlling induction-motors | 758,404 | Apr. 26 | 4381 | 941 | 109 | 2338 |
| Zar-Adusht-Hanish, Ottoman, assignor of two-thirds to H. George and C. Driver, Chicago, Ill. Massage device | 754,985 | Mar. 15 | 3398 | 743 | 109 | 776 |
| Zeidler, Paul M., New York, N. Y. Piano construction | 755,341 | Mar. 22 | 4166 | 920 921 | 109 | 959 |
| Zellner, Karl. (See Neidenbach, Franz, assignor.) | | | | | | |
| Zeiss, Firm of Carl. (See König, Albert, assignor.) | | | | | | |
| Zellers, Claude M., Cleveland, Ohio. Combined guide and guard for overfeed wires | 754,589 | Mar. 15 | 2654 | 576 | 109 | 616 |
| Zenker, Charles F., New York, N. Y. Cigar-band | 754,110 | Mar. 8 | 1779 | 396 | 109 | 409 |
| Zerbe, Aaron, Zerbe, Pa. Means for retarding and steering vessels | 757,385 | Apr. 12 | 2346 | 511 | 109 | 1857 |
| Zickrick, Gus R. (See Sutherland, Thomas, assignor.) | | | | | | |
| Ziegler, Charles F., Bloomington, Ill. Welt-cleaner and blacking-spreader | 756,768 | Apr. 5 | 1097 | 243 | 109 | 1577 |
| Zilker, Andrew J., A. L. Tidmarsh, and C. J. Armstrong, Austin, Tex. Drier-rack | 754,530 | Mar. 15 | 2656 | 576 | 109 | 616 |
| Zilker, Andrew J., A. L. Tidmarsh, and C. J. Armstrong, Austin, Tex. Elevating brick-car | 757,710 | Apr. 19 | 3005 | 653 | 109 | 2018 |
| Zimmer, Paul. (See Yates and Zimmer.) | | | | | | |
| Zimmerman, Charles F. (See Cressman, Krauth H., assignor.) | | | | | | |
| Zimmermann, Joseph. (See Ricke, George H., assignor.) | | | | | | |
| Zindel, Barnhardt, Green Bay, Wis. Pressure-regulator | 757,590 | Apr. 19 | 2773 | 606 | 109 | 1967 |
| Ziprick, Herman C., Kansas City, Kans. Beef-intestine wringer | 754,630 | Mar. 15 | 2839 | 620 | 109 | 653 |
| Zoanetto, Joseph, New York, N. Y. Water-gage | 754,084 | Mar. 8 | 1629 | 362 | 109 | 375 |
| Zufall, Jacob F., assignor of two-thirds to W. J. Attwooll and J. W. Draper, Alden, Iowa. Buckle for connecting checkreins with driving-lines | 755,205 | Mar. 22 | 3908 | 863 | 109 | 904 |
| Zumwalt, Joseph C., and F. Stanton, Clay Center, Nebr. Sliding hanger for doors, &c. | 756,769 | Apr. 5 | 1098 | 243 | 109 | 1578 |
| Zwiebel, Josef, New Ulm, Germany. Tub for electric baths | 755,830 | Mar. 29 | 5112 | 1133 | 109 | 1183 |

# ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

| Name, residence, and design. | No. | Date. | Official Gazette. | |
|---|---|---|---|---|
| | | | Volume. | Page. |
| Ahrenfeldt, Charles J., New York, N. Y. Cup or similar article | 36,837 | Mar. 8 | 109 | 539 |
| Ahrenfeldt, Charles J., New York, N. Y. Teapot or similar article | 36,838 | Mar. 8 | 109 | 540 |
| Ahrenfeldt, Charles J., New York, N. Y. Plate or similar article | 36,839 | Mar. 8 | 109 | 540 |
| Ahrenfeldt, Charles J., New York, N. Y. Plate or similar article | 36,840 | Mar. 8 | 109 | 540 |
| Ahrenfeldt, Charles J., New York, N. Y. Plate or similar article | 36,841 | Mar. 8 | 109 | 540 |
| Ahrenfeldt, Charles J., New York, N. Y. Plate or similar article | 36,842 | Mar. 8 | 109 | 540 |
| American Cut Glass Co. (See Anderson, William C., assignor.) | | | | |
| American Silver Company. (See Large, Samuel J., assignor.) | | | | |
| Anderson, William C., assignor to American Cut Glass Co., Lansing, Mich. Cut-glass vessel | 36,836 | Mar. 8 | 109 | 539 |
| Anderson, William C., Lansing, assignor to American Cut Glass Co., Detroit, Mich. Cut-glass vessel | 36,865 | Apr. 5 | 109 | 1597 |
| Aronson, Louis V., Newark, N. J. Clock-case | 36,856 | Mar. 22 | 109 | 1601 |
| Aronson, Louis V., Newark, N. J. Statuette | 36,858 | Mar. 29 | 109 | 1329 |
| Aronson, Louis V., Newark, N. J. Clock-case | 36,864 | Apr. 5 | 109 | 1596 |
| Aronson, Louis V., Newark, N. J. Paper-weight | 36,872 | Apr. 12 | 109 | 1877 |
| Aronson, Louis V., Newark, N. J. Paper-weight | 36,873 | Apr. 12 | 109 | 1877 |
| Aronson, Louis V., Newark, N. J. Paper-weight | 36,874 | Apr. 12 | 109 | 1877 |
| Atlanta Stove Works. (See Liphart, Cleaner M., assignor.) | | | | |
| Barker, Samuel N., Kalamazoo, Mich. Playing-card | 36,844 | Mar. 8 | 109 | 541 |
| Barker, Samuel N., Kalamazoo, Mich. Playing-card | 36,845 | Mar. 8 | 109 | 541 |
| Brainard, Ellerson L., Danbury, Conn. Jewel-casket or similar article | 36,833 | Mar. 8 | 109 | 539 |
| Broadbent, Felippe A., Baltimore, Md. Mantel | 36,851 | Mar. 15 | 109 | 797 |
| Brooks, Wilson, Chicago, Ill. Grave marker or head-piece | 36,862 | Mar. 29 | 109 | 1330 |
| Cluiee, John, Wallingford, assignor to International Silver Company, Meriden, Conn. Handle for spoons, forks, or similar articles | 36,834 | Mar. 8 | 109 | 539 |
| Codman, William C., assignor to Gorham Manufacturing Company, Providence, R. I. Handle for spoons, forks, or similar articles | 36,889 | Apr. 26 | 109 | 2431 |
| Court, Charles S. (See Crees and Court.) | | | | |
| Crees, Eustace, and C. S. Court, Providence, R. I., assignors to Watson and Newell Company. Handle for spoons, forks, or similar articles | 36,826 | Mar. 1 | 109 | 267 |
| Crees, Eustace, and C. S. Court, Providence, R. I., assignors to Watson and Newell Company. Handle for spoons, forks, or similar articles | 36,827 | Mar. 1 | 109 | 267 |
| Crees, Eustace, and C. S. Court, Providence, R. I., assignors to Watson and Newell Company. Handle for spoons, forks, or similar articles | 36,828 | Mar. 1 | 109 | 267 |
| E. H. H. Smith Silver Company. (See Ittig, George P., assignor.) | | | | |
| Fane, Frank C., Colorado Springs, Colo. Badge | 36,886 | Apr. 26 | 109 | 2431 |
| Fenn, William B., Washington, Pa. Cruet | 36,876 | Apr. 12 | 109 | 1877 |
| Ficken, Paul H., Cleveland, Ohio. Stove | 36,888 | Apr. 19 | 109 | 2158 |
| Freund, Zdenko, Newark, N. J., assignor to Kerr and Thiery, of New Jersey and New York, N. Y. Back for hand-mirrors or similar articles | 36,871 | Apr. 12 | 109 | 1876 |
| Friedberger Manufacturing Company. (See Kerwin and McGinley, assignors.) | | | | |
| Gleason, Marshall W., New York, N. Y. Glass shade | 36,867 | Apr. 5 | 109 | 1597 |
| Gleason, Marshall W., New York, N. Y. Glass globe | 36,868 | Apr. 5 | 109 | 1597 |
| Gorham Manufacturing Company. (See Codman, William C., assignor.) | | | | |
| Hama, Jean, New York, N. Y. Watch-chain | 36,825 | Mar. 1 | 109 | 266 |
| Hartman, Charles A., Denver, Colo. Picture-frame mat | 36,846 | Mar. 8 | 109 | 541 |
| Hawkins, James, Philadelphia, Pa. Fishbone-tongs | 36,857 | Mar. 22 | 109 | 1061 |
| Homan Silver Plate Company. (See Leavenworth, Seth H., assignor.) | | | | |
| Humphrey, Alfred H., Kalamazoo, Mich. Base for gas-lamps | 36,860 | Mar. 29 | 109 | 1330 |
| Humphrey, Alfred H., Kalamazoo, Mich. Gas-lamp | 36,861 | Mar. 29 | 109 | 1330 |
| International Silver Company. (See Cluiee, John, assignor.) | | | | |
| Ittig, George P., assignor to E. H. H. Smith Silver Company, Bridgeport, Conn. Handle for spoons, forks, or similar articles | 36,890 | Apr. 26 | 109 | 2432 |
| Ittig, George P., assignor to E. H. H. Smith Silver Company, Bridgeport, Conn. Handle for spoons, forks, or similar articles | 36,891 | Apr. 26 | 109 | 2432 |
| Kendall, David W., Grand Rapids, Mich. Chair | 36,870 | Apr. 5 | 109 | 1596 |
| Kerwin, Thomas, and J. McGinley, assignors to Friedberger Manufacturing Company, Philadelphia, Pa. Trimming for ladies' underwear | 36,895 | Apr. 26 | 109 | 2432 |
| Kirshner, Nathaniel M., Buffalo, N. Y. Badge | 36,887 | Apr. 26 | 109 | 2431 |
| La Pierre, Frank H. (See Turton, William, assignor.) | | | | |
| Large, Samuel J., assignor to American Silver Company, Bristol, Conn. Handle for spoons or similar articles | 36,835 | Mar. 8 | 109 | 539 |
| Leavenworth, Seth H., assignor to Homan Silver Plate Company, Cincinnati, Ohio. Mounting for metal dishes | 36,859 | Mar. 29 | 109 | 1330 |
| Levi, Joseph, New York, N. Y. Braid | 36,863 | Mar. 29 | 109 | 1330 |
| Liphart, Cleaner M., Richmond, Va., assignor to Atlanta Stove Works, Atlanta, Ga. Cooking range or stove | 36,894 | Apr. 26 | 109 | 2432 |
| Maddock, James, Alsager, England, assignor to Maddock & Miller. Dish | 36,880 | Mar. 1 | 109 | 267 |
| Maddock & Miller. (See Maddock, James, assignor.) | | | | |
| McGinley, John. (See Kerwin and McGinley.) | | | | |
| McLewee, William S., Yardley, Pa. Globe for gas-lights | 36,869 | Apr. 5 | 109 | 1598 |
| Monument Pottery Company. (See Weelana, Charles, assignor.) | | | | |
| National Cash Register Company. (See Ringold, Edwin, assignor.) | | | | |
| Nostitz, Hans P. von, New York, N. Y. Braid | 38,847 | Mar. 8 | 109 | 541 |
| Ohio Cut Glass Company. (See Singleton, Thomas, assignor.) | | | | |
| Oneida Community. (See Rothlisberger, Jacob, assignor.) | | | | |
| Pairpoint Corporation. (See Steffin, Albert, assignor.) | | | | |
| Palmer, Isaac E., Middletown, Conn. Hammock-body | 36,885 | Apr. 19 | 109 | 2158 |
| Rhoads, William M., Denver, Colo. Book-cover | 36,850 | Mar. 15 | 109 | 797 |
| Rice, Louis W., New York, N. Y. Mug | 36,853 | Mar. 15 | 109 | 798 |
| Rice, Louis W., New York, N. Y. Paper-knife | 36,854 | Mar. 15 | 109 | 798 |

*Alphabetical list of patentees of designs for March and April*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Ringold, Edwin, Boston, Mass., assignor to National Cash Register Company, Jersey City, N. J. Cash-register cabinet or casing | 36,831 | Mar. 1 | 109 | 267 |
| Rothlisberger, Jacob, Niagara Falls, assignor to Oneida Community, Limited, Kenwood, N. Y. Handle for spoons, forks, or similar articles | 36,802 | Apr. 26 | 109 | 2432 |
| Rothlisberger, Jacob, Niagara Falls, assignor to Oneida Community, Limited, Kenwood, N. Y. Handle for spoons, forks, or similar articles | 36,803 | Apr. 26 | 109 | 2432 |
| Schickerling, Alfred, assignor to Schickerling Brothers and Company, New York, N. Y. Badge or similar article | 36,808 | Apr. 26 | 109 | 2431 |
| Schickerling Brothers and Company. (See Schickerling, Alfred, assignor.) | | | | |
| Schweriner, Alexander, New York, N. Y. Collar or similar article | 36,884 | Apr. 19 | 109 | 2156 |
| Seeger, Carl H., Manitowoc, Wis. Dental-tool handle | 36,878 | Apr. 12 | 109 | 1878 |
| Singleton, Thomas, Bowling Green, Ohio, assignor to Ohio Cut Glass Company. Cut-glass dish | 36,866 | Apr. 5 | 109 | 1597 |
| Sollee, Florida, New York, N. Y. Stock | 36,806 | Apr. 26 | 109 | 2432 |
| Steffin, Albert, assignor to Pairpoint Corporation, New Bedford, Mass. Open-work border for metallic tableware | 36,829 | Mar. 1 | 109 | 267 |
| Steffin, Albert, assignor to Pairpoint Corporation, New Bedford, Mass. Metallic border for tableware | 36,849 | Mar. 15 | 109 | 797 |
| Steffin, Albert, assignor to Pairpoint Corporation, New Bedford, Mass. Candlestick | 36,875 | Apr. 12 | 109 | 1877 |
| Steffin, Albert, assignor to Pairpoint Corporation, New Bedford, Mass. Coffee-pot | 36,877 | Apr. 12 | 109 | 1878 |
| Straker, Joseph E., Jr., Attleboro, Mass., assignor to Watson and Newell Company. Handle for spoons, forks, or similar articles | 36,852 | Mar. 15 | 109 | 798 |
| Tilton, George P., assignor to Towle Manufacturing Company, Newburyport, Mass. Handle for spoons, forks, or similar articles | 36,879 | Apr. 19 | 109 | 2157 |
| Tonnemann, Max, Jersey City, N. J. Souvenir-plate | 36,843 | Mar. 8 | 109 | 540 |
| Towle Manufacturing Company. (See Tilton, George P., assignor.) | | | | |
| Turton, William, Kearney, assignor to F. H. La Pierre, East Orange, N. J. Hat-pin head | 36,848 | Mar. 15 | 109 | 797 |
| Turton, William, Kearney, assignor to F. H. La Pierre, East Orange, N. J. Hat-pin head | 36,855 | Mar. 22 | 109 | 1061 |
| Watson and Newell Company. (See Crees and Court, assignors.) | | | | |
| Watson and Newell Company. (See Straker, Joseph E., Jr., assignor.) | | | | |
| Weelans, Charles, assignor to Monument Pottery Company, Trenton, N. J. Bath-tub | 36,881 | Apr. 19 | 109 | 2158 |
| Weelans, Charles, assignor to Monument Pottery Company, Trenton, N. J. Lavatory | 36,882 | Apr. 19 | 109 | 2158 |
| Williams, Adam C., Ravenna, Ohio. Toy bank | 36,880 | Apr. 19 | 109 | 2157 |
| Wolff, Elzy M., Mansfield, Ohio. Monument | 36,832 | Mar. 1 | 109 | 268 |

# ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

| Name, residence, and title. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Abbott Alkaloidal Co., Chicago, Ill. Medicines for regulating or controlling the flow of blood | 42,333 | Apr. 5 | 109 | 1601 |
| Acme Tea Co., Philadelphia, Pa. Canned vegetables and canned fruits | 42,301 | Mar. 29 | 109 | 1332 |
| Alpoil Company, Kingston, N. Y. Medicine for cure of certain named diseases | 42,243 | Mar. 15 | 109 | 801 |
| Alter & McCaffrey Co., Cincinnati, Ohio. Leather boots and shoes | 42,288 | Mar. 29 | 109 | 1331 |
| Aluminum Cooking Utensil Company, Pittsburg, Pa. Cooking utensils made of aluminium and aluminium alloys | 42,501 | Apr. 26 | 109 | 2436 |
| American Glue Company, Boston, Mass. Gelatin for use in ice-cream and similar confections | 42,207 | Mar. 8 | 109 | 544 |
| American Wood Working Machinery Company, Williamsport, Pa., and New York, N. Y. Sawing machinery | 42,310 | Mar. 29 | 109 | 1332 |
| Amsinck & Co., G., New York, N. Y. Coffee | 42,325 | Apr. 5 | 109 | 1600 |
| Arnould, Denis, New York, N. Y. Confectionery | 42,491 | Apr. 26 | 109 | 2435 |
| Asmo Remedy Co., Mount Morris, Ill. Liquid medical preparation for the treatment of certain named diseases | 42,417 | Apr. 19 | 109 | 2162 |
| Baker, Madison M., Boston, Mass. Leather boots and shoes | 42,364 | Apr. 12 | 109 | 1880 |
| Bancroft, Sidney, New York, N. Y. Liquid compound for use in cutting, boring, and drawing of metals | 42,379 | Apr. 12 | 109 | 1882 |
| Barbee Wire & Iron Works, Lafayette, Ind. Calf-weaners | 42,282 | Mar. 22 | 109 | 1064 |
| Barber Asphalt Paving Company, Philadelphia, Pa. Refined asphalts for certain named purposes | 42,307 | Mar. 29 | 109 | 1332 |
| Barclay Perkins & Co., Limited, London, England. Certain named malt liquors | 42,439 | Apr. 19 | 109 | 2163 |
| Barclay Perkins & Co., Limited, London, England. Certain named malt liquors | 42,440 | Apr. 19 | 109 | 2164 |
| Barker, Brown & Co., Huntington, Ind. Leather shoes for men and boys | 42,368 | Apr. 12 | 109 | 1881 |
| Bass, E. & J., New York, N. Y. Imitation tortoise-shell hair-pins, hair-combs, and hair ornaments | 42,259 | Mar. 22 | 109 | 1062 |
| Beckert, Ernst, Chemnitz, Germany. Certain named knitting-machine appliances | 42,283 | Mar. 22 | 109 | 1064 |
| Belle Mead Sweetsmakers, Hopewell, N. J. Confectionery | 42,490 | Apr. 26 | 109 | 2435 |
| Belmont Distillery Co., Louisville, Ky. Whisky | 42,401 | Apr. 19 | 109 | 2160 |
| Bentley & Olmsted Company, Des Moines, Iowa. Rubber boots, rubber shoes, and rubber sandals | 42,470 | Apr. 26 | 109 | 2433 |
| Birdsey & Somers, New York, N. Y. Corsets | 42,392 | Apr. 19 | 109 | 2159 |
| Blackburn, Joseph E., Columbus, Ohio. Bread | 42,408 | Apr. 19 | 109 | 2161 |
| Blood & Co., John, Philadelphia, Pa. Hosiery | 42,363 | Apr. 12 | 109 | 1880 |
| Blumenthal Bros. & Co., Philadelphia, Pa. Overcoats, ulsters, and raincoats | 42,204 | Mar. 8 | 109 | 543 |
| Blumer, Arthur, La Varenne, France. Bottle-stoppers | 42,223 | Mar. 8 | 109 | 545 |
| Bodie, Louis, Fremont, Ohio. Catarrh and cough medicines | 42,215 | Mar. 8 | 109 | 544 |
| Boehringer & Soehne, C. F., Waldhof, Germany. Certain named medicinal and food compounds | 42,452 | Apr. 19 | 109 | 2165 |
| Booklovers Library, Camden, N. J., and Philadelphia, Pa. Certain named furniture | 42,255 | Mar. 15 | 109 | 802 |
| Boss Mfg. Co., Kewanee, Ill. Gloves and mittens | 42,198 | Mar. 8 | 109 | 543 |
| Boss Mfg. Co., Kewanee, Ill. Gloves and mittens | 42,199 | Mar. 8 | 109 | 543 |
| Boss Mfg. Co., Kewanee, Ill. Gloves and mittens | 42,200 | Mar. 8 | 109 | 543 |
| Boss Mfg. Co., Kewanee, Ill. Gloves and mittens | 42,201 | Mar. 8 | 109 | 543 |
| Boss Mfg. Co., Kewanee, Ill. Husking devices and implements | 42,225 | Mar. 8 | 109 | 546 |
| Bourland & Stevens Bros., Decatur, Ill. Medicated salt | 42,413 | Apr. 19 | 109 | 2161 |
| Bourland & Stevens Bros., Decatur, Ill. Medicated salt | 42,414 | Apr. 19 | 109 | 2161 |
| Bowers Rubber Company, San Francisco, Cal. Rubber hose and cotton hose | 42,454 | Apr. 19 | 109 | 2165 |
| Bowers Rubber Company, San Francisco, Cal. Rubber hose and cotton hose | 42,455 | Apr. 19 | 109 | 2165 |
| Bowers Rubber Company, San Francisco, Cal. Rubber hose and cotton hose | 42,456 | Apr. 19 | 109 | 2165 |
| Bowers Rubber Company, San Francisco, Cal. Rubber hose and cotton hose | 42,457 | Apr. 19 | 109 | 2165 |
| Bradford Dyers' Association, Limited, Bradford, England. Cotton and wool goods and linings | 42,360 | Apr. 12 | 109 | 1880 |
| Bradford Dyers' Association, Limited, Bradford, England. Dress pieces and linings of silk | 42,361 | Apr. 12 | 109 | 1880 |
| Brown & Allen, Atlanta, Ga. Lotion for cure of certain named diseases | 42,172 | Mar. 1 | 109 | 270 |
| Brown, Francis C., New York, N. Y. Fountain-pens | 42,424 | Apr. 19 | 109 | 2162 |
| Buddenbohn, Charles L., Baltimore, Md. Salve | 42,248 | Mar. 15 | 109 | 801 |
| Burford, Solomon R., Sardis, Miss. Liquid medicine for certain named diseases | 42,168 | Mar. 1 | 109 | 270 |
| Burton Bros. & Co., New York, N. Y. Linings | 42,159 | Mar. 1 | 109 | 269 |
| Burton Bros. & Co., New York, N. Y. Linings | 42,160 | Mar. 1 | 109 | 269 |
| Burton Bros. & Co., New York, N. Y. Linings | 42,290 | Mar. 29 | 109 | 1331 |
| Butler, Annie S., London, England. Paper-powder books | 42,171 | Mar. 1 | 109 | 270 |
| California Citrus Products Co., National City, Cal. Juice of the grape-fruit | 42,324 | Apr. 5 | 109 | 1600 |
| Campbell, Charles E., New York, N. Y. Remedy for diseases of the blood and skin | 42,331 | Apr. 5 | 109 | 1601 |
| Capewell Horse Nail Co., Hartford, Conn. Horse-nails | 42,190 | Mar. 1 | 109 | 272 |
| Capewell Horse Nail Co., Hartford, Conn. Blued horse-nails | 42,191 | Mar. 1 | 109 | 272 |
| Carle, Robert W., New York, N. Y. Disinfectants, germicides, and deodorizers | 42,166 | Mar. 1 | 109 | 270 |
| Champion Tool & Handle Works, Evart, Mich. Certain named logging-tools | 42,517 | Apr. 26 | 109 | 2438 |
| Chemisch-Technisches und Hygienisches Institut, Dr. Popp & Dr. Becker, Frankfort-on-the-Main, Germany. Certain named chemical | 42,486 | Apr. 26 | 109 | 2435 |
| Chemische Fabrik Vechelde A.-G., Vechelde, Germany. Chemical preparations for sulfur-baths | 42,422 | Apr. 19 | 109 | 2162 |
| Chemische Fabrik von Heyden, Aktiengesellschaft, Radebeul, Germany. Artificial-food preparations | 42,410 | Apr. 19 | 109 | 2161 |
| Clark Mile-End Spool Cotton Co., East Newark, N. J. Darning-cotton and crochet-cotton | 42,196 | Mar. 8 | 109 | 542 |
| Clark Mile-End Spool Cotton Co., East Newark, N. J. Cotton thread | 42,197 | Mar. 8 | 109 | 543 |
| Claussen, Claus J., Clinton, Iowa. Shredded citron | 42,388 | Apr. 12 | 109 | 1882 |
| Colgate & Co., New York, N. Y. Perfumery | 42,374 | Apr. 12 | 109 | 1881 |
| Colgate & Co., New York, N. Y. Toilet soap | 42,375 | Apr. 12 | 109 | 1881 |
| Colmont, Valette et Cie., Vve. E., Paris, France. Certain named optical goods | 42,219 | Mar. 8 | 109 | 545 |
| Conradi & Friedemann, Limbach, near Chemnitz, Germany. Certain named underwear | 42,315 | Apr. 5 | 109 | 1599 |
| Cortland Welding Compound Co., Cortland, N. Y. Chemical welding compound | 42,340 | Apr. 5 | 109 | 1602 |
| Costikyan, Lemuel H., New York, N. Y. Coffee | 42,206 | Mar. 8 | 109 | 543 |
| Crandal Stone & Co., Binghamton, N. Y. Trimmings and hardware for carriage-tops | 42,518 | Apr. 26 | 109 | 2438 |
| Craw, Geo. R. (See Frost and Craw.) | | | | |
| Cudahy Packing Company, Chicago, Ill., and South Omaha, Nebr. Lard and lard compounds | 42,304 | Mar. 29 | 109 | 1332 |
| Cumberland Brewing Co. of Allegany County, Cumberland, Md. Lager-beer | 42,441 | Apr. 19 | 109 | 2164 |
| Cushman & Denison Manufacturing Company, New York, N. Y. Paper-clips | 42,425 | Apr. 19 | 109 | 2162 |

*Alphabetical list of registrants of trade-marks for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Davidson Rubber Co., Boston, Mass. Rubber nipples | 42,228 | Mar. 8 | 109 | 545 |
| Davis Pharmaceutical Company, New York, N. Y. Syrup of guaiacol | 42,419 | Apr. 19 | 109 | 2162 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,503 | Apr. 26 | 109 | 2436 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,504 | Apr. 26 | 109 | 2436 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,505 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,506 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,507 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,508 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,509 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,510 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,511 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,512 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,513 | Apr. 26 | 109 | 2437 |
| Davis Sewing Machine Co., Dayton, Ohio. Sewing-machines and attachments | 42,514 | Apr. 26 | 109 | 2437 |
| Dawson, Peter, Dufftown and Glasgow, Scotland. Scotch whisky | 42,277 | Mar. 22 | 109 | 1063 |
| Dean, Henry S., London, England. Books made of textile fabric | 42,227 | Mar. 15 | 109 | 799 |
| Dean, Henry S., London, England. Books made of textile fabric | 42,228 | Mar. 15 | 109 | 799 |
| Degulngand & Son, E., London, England, and St. Claude, France. Brier pipes | 42,476 | Apr. 26 | 109 | 2434 |
| Deutschberger, Rose, Hartford, Conn. Tooth-wash and tooth-powder | 42,373 | Apr. 12 | 109 | 1881 |
| Direct Coffee Company, Boston, Mass. Coffee | 42,473 | Apr. 19 | 109 | 2160 |
| Direct Coffee Company, Boston, Mass. Coffee | 42,492 | Apr. 26 | 109 | 2435 |
| Dodge Manufacturing Company, Mishawaka, Ind. Certain named power-transmitting machinery | 42,462 | Apr. 19 | 109 | 2166 |
| Dolan Mercantile Company, Atchison, Kans. Tea | 42,300 | Mar. 29 | 109 | 1333 |
| Dr. Richards Dyspepsia Tablet Association, New York, N. Y. Medicines for cure of female complaints | 42,344 | Mar. 15 | 109 | 801 |
| Dreyfus, Leo, New York, N. Y. Medicinal tonic | 42,296 | Mar. 29 | 109 | 1331 |
| Duluth Medicine Company, Duluth, Minn. Medicine for the cure of certain named diseases | 42,446 | Apr. 19 | 109 | 2164 |
| Einstein, Julius, New York, N. Y. Shoe-laces | 42,435 | Apr. 19 | 109 | 2163 |
| Ely, Marshall S., New York, N. Y. Knitted overshirts and knitted sweaters | 42,467 | Apr. 26 | 109 | 2433 |
| Empire Portland Cement Co., Warners, N. Y. Portland cement | 42,453 | Apr. 19 | 109 | 2163 |
| Ern, Carl F., Wald, Germany. Razors | 42,460 | Apr. 19 | 109 | 2166 |
| Estorge Drug Co., New Iberia, La. Tonic or remedy for fever and ague | 42,327 | Apr. 5 | 109 | 1600 |
| F. A. Weck Co., San Francisco, Cal. Laxative medicine put up in concrete form | 42,214 | Mar. 8 | 109 | 544 |
| F. B. Q. Clothing Co., New York, N. Y. Certain named ready-made clothing | 42,302 | Mar. 8 | 109 | 543 |
| F. B. Q. Clothing Co., New York, N. Y. Certain named clothing | 42,362 | Mar. 22 | 109 | 1062 |
| Farbenfabriken of Elberfeld Co., New York, N. Y. Photographic papers | 42,319 | Apr. 5 | 109 | 1599 |
| Fisk, Stephen M., Oklahoma, Okla. Ter. Certain named veterinary medicines | 42,294 | Mar. 29 | 109 | 1331 |
| Frank, Henry C., New York, N. Y. Cuff-holders | 42,456 | Apr. 19 | 109 | 2162 |
| Frank Winch Company, Buffalo, N. Y. Ladies' dress-waists and suits | 42,466 | Apr. 26 | 109 | 2433 |
| Frost, Peter L., and G. R. Craw, Chicago, Ill. Razor-strops | 42,396 | Apr. 12 | 109 | 1880 |
| Fuller, Guy H., Columbus, Ohio. Medicinally-prepared tablets for certain named diseases | 42,334 | Apr. 5 | 109 | 1601 |
| Fuller & Jones, New York, N. Y. Lubricants soluble in water | 42,184 | Mar. 1 | 109 | 272 |
| G. & H. Barnett Company, Philadelphia, Pa. Files and rasps | 42,256 | Mar. 15 | 109 | 802 |
| Gardner, Lester D., New York, N. Y. Prepared colors for printing and painting | 42,339 | Apr. 5 | 109 | 1601 |
| Gardner, Lester D., New York, N. Y. Certain named medicinal preparations | 42,450 | Apr. 19 | 109 | 2163 |
| Gardner, Lester D., New York, N. Y. Theatrical costumes | 42,465 | Apr. 26 | 109 | 2433 |
| Gaus, William, Wheeling, W. Va. Headache-powders | 42,371 | Apr. 12 | 109 | 1881 |
| Gavitt, Harry E., Topeka, Kans. Playing-cards | 42,358 | Apr. 12 | 109 | 1879 |
| Geo. Ballantine & Son, Glasgow, Scotland. Whisky | 42,176 | Mar. 1 | 109 | 271 |
| George E. Keith Company, Brockton, Mass. Leather boots and shoes | 42,436 | Apr. 19 | 109 | 2163 |
| Gerson, Louis J., Philadelphia, Pa. Bronchial lozenges or throat-tablets | 42,187 | Mar. 1 | 109 | 270 |
| Gilluly & Bard, Port Allegany, Pa. Paint | 43,360 | Apr. 12 | 109 | 1880 |
| Goodyear Rubber Company, St. Paul, Minn. Rubber boots and shoes | 42,365 | Apr. 12 | 109 | 1880 |
| Gorham Rubber Company, San Francisco, Cal. Rubber belting | 42,471 | Apr. 26 | 109 | 2433 |
| Gorham Rubber Company, San Francisco, Cal. Rubber packing | 42,472 | Apr. 26 | 109 | 2433 |
| Gorham Rubber Company, San Francisco, Cal. Rubber packing | 42,473 | Apr. 26 | 109 | 2433 |
| Gorham Rubber Company, San Francisco, Cal. Rubber packing | 42,474 | Apr. 26 | 109 | 2434 |
| Gowan Medical Company, Durham, N. C. Remedy for pneumonia | 42,494 | Apr. 26 | 109 | 2434 |
| Grasser, Joseph M., Toledo, Ohio. Certain named articles of fiber-composition | 42,257 | Mar. 15 | 109 | 802 |
| Graton and Knight Manufacturing Company, Worcester, Mass. Leather belting | 42,347 | Apr. 5 | 109 | 1602 |
| Green & Co., C. E., Manchester, N. H., and Boston, Mass. Leather boots and shoes | 42,264 | Mar. 22 | 109 | 1062 |
| Green & Co., C. E., Manchester, N. H., and Boston, Mass. Leather boots and shoes | 42,265 | Mar. 22 | 109 | 1062 |
| Greenville Medicine Company, Greenville, S. C. Certain named medicines | 42,461 | Apr. 26 | 109 | 2434 |
| Gruber Almanack Co., Hagerstown, Md. Almanacs | 42,198 | Mar. 8 | 109 | 543 |
| Gruber Almanack Co., Hagerstown, Md. Almanacs | 42,198 | Mar. 8 | 109 | 543 |
| H. D. Smith & Co., Plantsville, Conn. Carriage-makers' hardware | 42,398 | Apr. 19 | 109 | 2159 |
| H. K. Mulford Co., Philadelphia, Pa. Predigested beef | 42,303 | Mar. 29 | 109 | 1332 |
| H. & W. Company, Newark, N. J. Children's underwaists | 42,239 | Mar. 15 | 109 | 799 |
| Hamilton, James E., Hartford, Conn. Nut-crackers | 42,457 | Apr. 19 | 109 | 2162 |
| Hansen's Empire Fur Factory, Milwaukee, Wis. Fur coats, jackets, robes, and wraps | 42,316 | Apr. 5 | 109 | 1599 |
| Hardtmuth, L. & C., Vienna and Budweis, Austria-Hungary, and London, England. Lead-pencils | 42,354 | Apr. 12 | 109 | 1879 |
| Harting, George L., Philadelphia, Pa. Fruit jellies and preserves | 42,254 | Mar. 15 | 109 | 800 |
| Hartmann Trunk Company, Racine, Wis. Certain named receptacles | 42,252 | Mar. 15 | 109 | 801 |
| Heineken, Christian W., Jersey City, N. J. Certain named toilet preparation | 42,338 | Apr. 5 | 109 | 1601 |
| Henry Milward & Sons, Limited, Redditch, England. Fish-hooks and fishing-tackle | 42,458 | Apr. 19 | 109 | 2165 |
| Henry Milward & Sons, Limited, Redditch, England. Certain named needles and pins, bodkins, and crochet-hooks | 42,459 | Apr. 19 | 109 | 2166 |
| Hilbert & Co., A. J., Milwaukee, Wis. Perfumery extracts and essences and toilet waters | 42,213 | Mar. 8 | 109 | 544 |
| Hiram Walker & Sons, Limited, Walkerville, Canada, and Detroit, Mich. Whisky | 42,395 | Apr. 12 | 109 | 1882 |
| Hodges Fiber Carpet Co., New York, N. Y. Certain named woven fabrics | 42,393 | Apr. 19 | 109 | 2159 |
| Hoffmann-La Roche & Co., F., Basle, Switzerland. Remedy for cutaneous diseases | 42,295 | Mar. 29 | 109 | 1331 |
| Holland, Stanley R., St. Louis, Mo. Prepared roofing | 42,279 | Mar. 22 | 109 | 1064 |
| Horsch, Jacob, Mexico, Mexico. Remedy for a certain named disease | 42,415 | Apr. 19 | 109 | 2161 |
| Houston, James A., Boston, Mass. Corsets | 42,382 | Apr. 12 | 109 | 1880 |
| Hudnut, Richard, New York, N. Y. Perfumes in solid, liquid, and powdered form | 42,448 | Apr. 19 | 109 | 2164 |
| Hudnut, Richard, New York, N. Y. Perfumes in solid, liquid, and powdered form | 42,443 | Apr. 19 | 109 | 2164 |
| Hume & Freeman, Olney, Ill. Liniment | 42,337 | Apr. 5 | 109 | 1601 |
| Illinois Sewing Machine Company, Rockford and Chicago, Ill. Sewing-machines and parts thereof | 42,439 | Apr. 19 | 109 | 2163 |
| Immunene Mfg. Co., Providence, R. I. Disinfectants and disease preventives | 42,185 | Mar. 1 | 109 | 270 |
| Ingersoll-Sergeant Drill Co., New York, N. Y. Stone-channelers | 42,297 | Mar. 29 | 109 | 1061 |
| Ingersoll-Sergeant Drill Co., New York, N. Y. Rock-drilling machinery and tools | 42,397 | Apr. 19 | 109 | 2159 |
| International Harvester Company of America, Chicago, Ill. Ropes, cords, twine fiber, twine, and binder-twine | 42,258 | Mar. 15 | 109 | 803 |



*Alphabetical list of registrants of trade-marks for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Iowa Medicine Co., Keokuk, Iowa. Extracts and essences | 42,177 | Mar. 1 | 109 | 271 |
| Iowa Medicine Co., Keokuk, Iowa. Certain named remedies | 42,416 | Apr. 19 | 109 | 2161 |
| Ireland Bros., Limited, Belfast, Ireland. Table and household linens and other linen fabrics | 42,313 | Apr. 5 | 109 | 1599 |
| J. & F. Bell, Ltd., Glasgow, Scotland. Smoking-tobacco and cigarettes made therefrom | 42,438 | Apr. 19 | 109 | 2163 |
| J. H. Williams and Company, Brooklyn, N. Y. Pipe-wrenches and pipe-vises | 42,226 | Mar. 8 | 109 | 546 |
| J. P. Eustis Manufacturing Co., Boston, Mass. Certain named receptacles for bath-rooms and lavatories | 42,224 | Mar. 8 | 109 | 545 |
| J. S. McCormick Co., Pittsburg, Pa. Foundry-facings | 42,185 | Mar. 1 | 109 | 272 |
| J. S. McCormick Co., Pittsburg, Pa. Foundry-facings | 42,186 | Mar. 1 | 109 | 272 |
| Jäger, Carl, Dusseldorf, Germany. Certain named chemicals | 42,175 | Mar. 1 | 109 | 271 |
| Jäger, Carl, Düsseldorf-Derendorf, Germany. Synthetic or anilin colors for printing purposes | 42,423 | Apr. 19 | 109 | 2162 |
| James, Julia A., Evergreen, Colo. Remedy for certain named diseases | 42,329 | Apr. 5 | 109 | 1601 |
| Janowitz, Julius, New York, N. Y. Corset-bones | 42,430 | Apr. 19 | 109 | 2163 |
| Jewell Belting Co., Hartford, Conn. Belting | 42,163 | Mar. 1 | 109 | 270 |
| Jeyes' Sanitary Compounds Company, Limited, London, England. Antiseptic and disinfecting preparations | 42,485 | Apr. 26 | 109 | 2435 |
| Jonas Brook & Bros., Ltd., Meltham, England. Sewing-thread | 42,162 | Mar. 1 | 109 | 270 |
| Jones, Frank G., Boston, Mass. Leather boots and shoes and leather for same | 42,366 | Apr. 12 | 109 | 1880 |
| Jones, Frank G., Boston, Mass. Leather boots and shoes and leather for same | 42,367 | Apr. 12 | 109 | 1880 |
| Jones, William A., New York, N. Y. Bread, biscuits, and cakes made from bananas | 42,400 | Apr. 19 | 109 | 2161 |
| Joy, Langdon & Co., Boston, Mass., and New York, N. Y. Certain named dress goods | 42,421 | Apr. 19 | 109 | 2163 |
| Kane, Ernest M., Coffeyville, Kans. Toilet cream | 42,478 | Apr. 26 | 109 | 2434 |
| Kansas Milling & Export Co., Kansas City, Mo. Wheat-flour | 42,208 | Mar. 8 | 109 | 544 |
| Kansas Milling & Export Co., Kansas City, Mo. Wheat-flour | 42,209 | Mar. 8 | 109 | 544 |
| Kempster, Daniel E., Boston, Mass. Bearings for sheaves | 42,463 | Apr. 19 | 109 | 2166 |
| Kempster, Daniel E., Boston, Mass. Journal and shaft bearings for machines | 42,464 | Apr. 19 | 109 | 2166 |
| Kentucky Refining Co., Louisville, Ky. Cotton-seed oil | 42,236 | Mar. 15 | 109 | 800 |
| Kentucky Refining Co., Louisville, Ky. Cotton-seed oil | 42,237 | Mar. 15 | 109 | 800 |
| Kentucky Refining Co., Louisville, Ky. Butter-oil | 42,271 | Mar. 22 | 109 | 1063 |
| Kentucky Refining Co., Louisville, Ky. Butter-oil | 42,272 | Mar. 22 | 109 | 1063 |
| Kentucky Refining Co., Louisville, Ky. Cotton-seed oil | 42,273 | Mar. 22 | 109 | 1063 |
| Kentucky Refining Co., Louisville, Ky. Cotton-seed oil | 42,274 | Mar. 22 | 109 | 1063 |
| Kentucky Refining Co., Louisville, Ky. Cotton-seed oil | 42,275 | Mar. 22 | 109 | 1063 |
| Kentucky Refining Co., Louisville, Ky. Cotton-seed oil | 42,276 | Mar. 22 | 109 | 1063 |
| King, Leander D., Boston, Mass. Veterinary remedy | 42,369 | Apr. 12 | 109 | 1881 |
| Kline & Co., E. A., New York, N. Y. Cigars | 42,488 | Apr. 26 | 109 | 2435 |
| Kline & Co., E. A., New York, N. Y. Cigars | 42,489 | Apr. 26 | 109 | 2435 |
| Knickerbocker Company, Jackson, Mich. Tables and appliances for playing certain named games | 42,251 | Mar. 15 | 109 | 801 |
| Knoll & Co., Ludwigshafen-on-the-Rhine, Germany. Certain named chemical substances | 42,487 | Apr. 26 | 109 | 2435 |
| Kohler & Campbell, New York, N. Y. Self-playing pianos and piano-players | 42,356 | Apr. 12 | 109 | 1879 |
| Kohler & Campbell, New York, N. Y. Automatic piano-players and self-playing pianos | 42,428 | Apr. 19 | 109 | 2162 |
| Kohn & Baer, New York, N. Y. Fur garments, muffs, fur scarfs, and fur trimmings | 42,299 | Mar. 29 | 109 | 1331 |
| Köhn & Pellnitz, Campe, Germany. Paints and colors | 42,306 | Mar. 29 | 109 | 1332 |
| Koppelberger, Abraham, Sioux City, Iowa. Hair-tonic | 42,444 | Apr. 19 | 109 | 2164 |
| Kraut & Dohnal, Chicago, Ill. Razors | 42,500 | Apr. 26 | 109 | 2436 |
| L. A. Becker Company, Chicago, Ill. Soda-water fountains | 42,344 | Apr. 5 | 109 | 1602 |
| L. A. Becker Company, Chicago, Ill. Soda-water fountains | 42,345 | Apr. 5 | 109 | 1602 |
| L. W. Leithhead Drug Co., Duluth, Minn. Certain named medicine | 42,447 | Apr. 19 | 109 | 2164 |
| Landers, Frary and Clark, New Britain, Conn. Coffee and spice mills | 42,284 | Mar. 22 | 109 | 1064 |
| Landers, Frary and Clark, New Britain, Conn. Certain named knife-cleaning machines | 42,285 | Mar. 22 | 109 | 1064 |
| Landers, Frary and Clark, New Britain, Conn. Combined lard-press, fruit-press, and sausage-stuffer | 42,343 | Apr. 5 | 109 | 1602 |
| Lanman & Kemp, New York, N. Y. Remedy for expelling worms from the system | 42,169 | Mar. 1 | 109 | 270 |
| Lanman & Kemp, New York, N. Y. Extract of witch-hazel or hamamelis | 42,170 | Mar. 1 | 109 | 270 |
| Lanman & Kemp, New York, N. Y. Pills | 42,241 | Mar. 15 | 109 | 800 |
| Le Compte and Gayle Co., Frankfort, Ky. Remedy for certain named diseases | 42,330 | Apr. 5 | 109 | 1601 |
| Lenox Sprayer and Chemical Co., Pittsfield, Mass. Laundry soap | 42,477 | Apr. 26 | 109 | 2434 |
| Ley, William N., Spokane, Wash. Axle-grease | 42,412 | Apr. 19 | 109 | 2161 |
| Linen Underwear Company, Greenwich, N. Y. Linen shirts and drawers | 42,308 | Mar. 8 | 109 | 548 |
| Little & Co., A. E., Lynn, Mass. Overgaiters | 42,434 | Apr. 19 | 109 | 2163 |
| Marchesini Brothers, New York, N. Y. Olive-oils | 42,320 | Apr. 5 | 109 | 1600 |
| Marchesini Brothers, New York, N. Y. Olive-oils | 42,321 | Apr. 5 | 109 | 1600 |
| Marchesini Brothers, New York, N. Y. Olive-oils | 42,322 | Apr. 5 | 109 | 1600 |
| Marshall, Frank J., New York, N. Y. Writing-paper and envelops | 42,164 | Mar. 1 | 109 | 270 |
| Mayne, Caroline, New York, N. Y. Pile remedy | 42,346 | Mar. 15 | 109 | 801 |
| McCord-Stewart Company, Atlanta, Ga. Baking-powder and soda | 42,381 | Apr. 12 | 109 | 1882 |
| Meinrath Brokerage Company, Kansas City, Mo. Rice | 42,407 | Apr. 19 | 109 | 2161 |
| Mentz, Albert V., New York, N. Y. Salves used externally | 42,420 | Apr. 19 | 109 | 2162 |
| Middlesex Shoe Co., Boston, Mass. Leather boots and shoes | 42,468 | Apr. 26 | 109 | 2433 |
| Minor & Son, P. W., Batavia, N. Y. Leather boots and shoes | 42,395 | Apr. 19 | 109 | 2159 |
| Monger, John A., Superior, Wis. Remedies for the cure of certain diseases | 42,448 | Apr. 19 | 109 | 2164 |
| Moore-Shafer Shoe Manufacturing Co., Brockport, N. Y. Leather boots and shoes | 42,469 | Apr. 26 | 109 | 2433 |
| Mortimer, George, Boston, Mass. Liquid specific for female complaints | 42,217 | Mar. 8 | 109 | 545 |
| Mortimer, George, Boston, Mass. Medicated adhesive plasters | 42,218 | Mar. 8 | 109 | 545 |
| Mount and Mount, Indianapolis, Ind. Hair grower and restorer | 42,372 | Apr. 12 | 109 | 1881 |
| National Hammock Co., New York, N. Y. Woven hammocks | 42,358 | Apr. 12 | 109 | 1879 |
| National Sweeper Company, Marion, Ind. Carpet-sweepers | 42,253 | Mar. 15 | 109 | 802 |
| National Sweeper Company, Marion, Ind. Carpet-sweepers | 42,254 | Mar. 15 | 109 | 802 |
| National Wire Mattress Co., Waterbury, Conn. Spring-beds | 42,342 | Apr. 5 | 109 | 1602 |
| National X-Ray Reflector Company, Chicago, Ill. Glass reflectors | 42,221 | Mar. 8 | 109 | 545 |
| Novelty Manufacturing Company, Jackson, Mich. Certain named auxiliary heaters and parts accessory thereto | 42,388 | Apr. 12 | 109 | 1882 |
| O. F. Zurn Company, Philadelphia, Pa. Certain named lubricating compounds | 42,496 | Apr. 26 | 109 | 2436 |
| O. F. Zurn Company, Philadelphia, Pa. Certain named lubricating compounds | 42,497 | Apr. 26 | 109 | 2436 |
| O. F. Zurn Company, Philadelphia, Pa. Lubricating oils and greases | 42,498 | Apr. 26 | 109 | 2436 |
| O. F. Zurn Company, Philadelphia, Pa. Lubricating oils and greases | 42,499 | Apr. 26 | 109 | 2436 |
| Ohio Match Company, Wadsworth, Ohio. Friction-matches | 43,232 | Mar. 15 | 109 | 799 |
| Oppenheimer's Sons, Lewis, Philadelphia, Pa. Men's suspenders | 42,156 | Mar. 1 | 109 | 269 |
| P. H. Hofmann & Company, Chicago, Ill. Butter | 42,340 | Apr. 5 | 109 | 1602 |
| Pape, Herman, New York, N. Y. Metal-polish and stove-polish | 42,210 | Mar. 8 | 109 | 544 |
| Parker Bros., Salem, Mass. Games played with cards | 42,350 | Apr. 12 | 109 | 1879 |
| Parker Bros., Salem, Mass. Games played with cards | 42,351 | Apr. 12 | 109 | 1879 |
| Parker Bros., Salem, Mass. Games played with cards | 42,352 | Apr. 12 | 109 | 1879 |
| Patterson & Cross, Chicago, Ill. Dried fruits | 42,302 | Mar. 29 | 109 | 1332 |
| Pernod, Oscar L., Couvet, Switzerland. Absinthe | 42,402 | Apr. 19 | 109 | 2160 |

*Alphabetical list of registrants of trade-marks for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Phipps, George, St. Paul, Minn. Medicine for diseases of the internal organs | 42,345 | Mar. 15 | 109 | 801 |
| Platt, Clarence H., Brooklyn, N. Y. Medicine for rheumatism | 42,348 | Apr. 5 | 109 | 1602 |
| Plummer, Frederick G., London, England. Dentifrices | 42,360 | Mar. 22 | 109 | 1063 |
| Poladura, Alejandro P., New Orleans, La. Cigars | 42,384 | Apr. 12 | 109 | 1882 |
| Pratt Food Company, Philadelphia, Pa. Internal remedy for worms | 42,449 | Apr. 19 | 109 | 2164 |
| Price, Berthold, St. Louis, Mo. Window-shades and window-shade fabrics | 42,157 | Mar. 1 | 109 | 269 |
| Puigdengolas, Esteban, Barcelona, Spain. Playing-cards | 42,296 | Mar. 29 | 109 | 1331 |
| Puigdengolas, Esteban, Barcelona, Spain. Playing-cards | 42,298 | Mar. 29 | 109 | 1331 |
| Quee, Margaret A., Richmond, Va. Sleeping-draft | 42,418 | Apr. 19 | 109 | 2163 |
| Reichard & Scheuber Mfg. Co., New York, N. Y. Safety-razors | 42,187 | Mar. 1 | 109 | 272 |
| Reichard & Scheuber Mfg. Co., New York, N. Y. Safety-razors | 42,188 | Mar. 1 | 109 | 272 |
| Reinschild, Carl, New York, N. Y. Disinfectant | 42,250 | Mar. 15 | 109 | 801 |
| Richards, Nancy D., New Philadelphia, Ohio. Compound for prevention and cure of sweating of the axilla | 42,173 | Mar. 1 | 109 | 271 |
| Rives Milling Company, Rives, Tenn. Wheat-flour | 42,493 | Apr. 26 | 109 | 2435 |
| Roberts, Joseph S., Hillsboro, Ill. Tooth-paste, tooth-powder, and liquid mouth-wash | 42,368 | Mar. 22 | 109 | 1062 |
| Rodemann & Dorn, Newark, N. J. Toy furniture | 42,357 | Apr. 12 | 109 | 1879 |
| Rodney, John L., Wellington, Kans. Yeast | 42,382 | Apr. 12 | 109 | 1882 |
| Rogers, Amos, Ottawa, Canada. Medicinal tablets for certain named diseases | 42,366 | Mar. 22 | 109 | 1062 |
| Royal Milling Company, Great Falls, Mont. Wheat-flour | 42,405 | Apr. 19 | 109 | 2160 |
| Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y. Carriage-bolts | 42,281 | Mar. 22 | 109 | 1064 |
| S. Hamill Company, Keokuk, Iowa. Canned and bottled fruits and vegetables | 42,180 | Mar. 1 | 109 | 271 |
| Sander, Charles, Philadelphia, Pa. Teneriffe-lace constructors | 42,308 | Mar. 29 | 109 | 1332 |
| Sanford Manufacturing Company, Chicago, Ill. Ink | 42,278 | Mar. 22 | 109 | 1063 |
| Sanguinetti & Cie., Ferro, Genoa, Italy. Olive-oil | 42,323 | Apr. 5 | 109 | 1600 |
| Sanguinetti & Cie., Ferro, Genoa, Italy. Olive-oil | 42,404 | Apr. 19 | 109 | 2160 |
| Schaefer Chemical Company, Portland, Me., and Boston, Mass. Antiseptic emollient | 42,249 | Mar. 15 | 109 | 801 |
| Schering & Glatz, New York, N. Y. Ointments and ointment bases | 42,451 | Apr. 19 | 109 | 2165 |
| Schneider, Henry F., Fort Wayne, Ind. Mineral water | 42,400 | Apr. 19 | 109 | 2160 |
| Schoettel, E. A. & A. G., New York, N. Y. Sound-magnifying horns | 42,355 | Apr. 12 | 109 | 1879 |
| Schreier, William H., Rochester, N. Y. Infants' and children's leather shoes | 42,263 | Mar. 22 | 109 | 1062 |
| Schutte, Louis, Philadelphia, Pa. Valves and swing-joints | 42,346 | Apr. 5 | 109 | 1602 |
| Schwanhäusser, Gustav, Nuremberg, Germany. Certain named pencils and crayons | 42,291 | Mar. 29 | 109 | 1331 |
| Scott Paper Co., Philadelphia, Pa. Toilet-paper | 42,479 | Apr. 26 | 109 | 2434 |
| Scott Paper Co., Philadelphia, Pa. Toilet-paper | 42,480 | Apr. 26 | 109 | 2434 |
| Seabury, Benjamin H., Tacoma, Wash. Antifriction and Babbitt metals | 42,389 | Apr. 12 | 109 | 1882 |
| Seabury & Johnson, East Orange, N. J., and New York, N. Y. Sanitary napkins | 42,174 | Mar. 1 | 109 | 271 |
| Shamrock Stock Food Co., Brooklyn, N. Y. Food for animals | 42,437 | Apr. 19 | 109 | 2163 |
| Shepard & Co., Otis, Pittsburg, Pa. Canned vegetables and canned fruits | 42,317 | Apr. 5 | 109 | 1599 |
| Shilling, Alfred J., Chicago, Ill. Cones used as a remedy for certain named diseases | 42,247 | Mar. 15 | 109 | 801 |
| Shimanovsky, Richard F., Milwaukee, Wis. Herb tea | 42,326 | Apr. 5 | 109 | 1600 |
| Shuster & Baer Aktiengesellschaft, Berlin, Germany. Stoves and their parts | 42,280 | Mar. 22 | 109 | 1064 |
| Siegel Cooper Company, New York, N. Y. Suits for boys | 42,390 | Apr. 19 | 109 | 2159 |
| Singer Manufacturing Co., New York, N. Y. Sewing-machines, attachments, and parts thereof | 42,515 | Apr. 26 | 109 | 2437 |
| Slack & Griggs, Harper City, Kans. Medical compound for correction of foot troubles | 42,216 | Mar. 8 | 109 | 545 |
| Smith, Hogg & Co., New York, N. Y. Cotton and partly-cotton fabrics | 42,311 | Apr. 5 | 109 | 1599 |
| Smith, Hogg & Co., New York, N. Y. Blankets and like protective coverings | 42,359 | Apr. 12 | 109 | 1880 |
| Sneezo Company, Rensselaer, N. Y. Medicine for the cure of certain named diseases | 42,482 | Apr. 26 | 109 | 2434 |
| Société Anonyme des Chocolats au Lait F. L. Cailler, Broc, Switzerland. Chocolates | 42,179 | Mar. 1 | 109 | 271 |
| Sperry and Hutchinson Company, New York, N. Y. Premium stamps | 42,475 | Apr. 26 | 109 | 2434 |
| Spiegel, Morris, Albany, N. Y. Liniment for external use | 42,370 | Apr. 12 | 109 | 1881 |
| Standard Gauge Manufacturing Company, Syracuse, N. Y. Pressure and vacuum gages | 42,396 | Apr. 19 | 109 | 2159 |
| Standard Pressed Steel Co., Philadelphia, Pa. Shaft-hangers | 42,516 | Apr. 26 | 109 | 2437 |
| Standard Soap Company, San Francisco, Cal. Scouring-soap | 42,211 | Mar. 8 | 109 | 544 |
| Stewart Silk Company, Easton, Pa., and New York, N. Y. Silks | 42,360 | Mar. 22 | 109 | 1062 |
| Strickland, Pady D., Waycross, Ga. Liquid proprietary medicines | 42,326 | Apr. 5 | 109 | 1600 |
| Swartley, Harry M., Keywest, Fla. Castor-oil | 42,270 | Mar. 22 | 109 | 1063 |
| T. M. Sinclair & Co., Limited, Cedar Rapids, Iowa. Certain named meats | 42,318 | Apr. 5 | 109 | 1599 |
| T. M. Sinclair & Co., Limited, Cedar Rapids, Iowa. Lard | 42,319 | Apr. 5 | 109 | 1600 |
| Tarrant Company, New York, N. Y. Remedy for dyspepsia, indigestion, and other stomach troubles | 42,296 | Mar. 29 | 109 | 1331 |
| Thomas, George M., Hagerstown, Md. Prepared and mixed food for stock and poultry | 42,494 | Apr. 26 | 109 | 2435 |
| Toke Point Oyster Co., Tacoma, Wash. Oysters in canned and bulk form | 42,235 | Mar. 15 | 109 | 800 |
| Underwood & Judd, Gardner, Mass. Dyspepsia remedies | 42,483 | Apr. 26 | 109 | 2434 |
| Union Fibre Co., Winona, Minn. Flax-fiber products for certain named purposes | 42,432 | Apr. 19 | 109 | 2163 |
| United Lead Company, New York, N. Y. White and red lead | 42,305 | Mar. 29 | 109 | 1332 |
| United Shoe Machinery Company, Paterson, N. J., and Boston, Mass. Machines for certain named purposes | 42,286 | Mar. 22 | 109 | 1064 |
| Universal Talking Machine Manufacturing Co., New York, N. Y. Talking-machines, parts and supplies therefor, and records | 42,502 | Apr. 26 | 109 | 2436 |
| Urfit Company, Cincinnati, Ohio. Leather boots and shoes | 42,205 | Mar. 8 | 109 | 543 |
| Victor R. F. Walker Co., Boston, Mass. Upper-leather | 42,394 | Apr. 19 | 109 | 2159 |
| Victor Talking Machine Co., Camden, N. J. Talking-machines, parts and supplies therefor, and records | 42,220 | Mar. 8 | 109 | 545 |
| Vinolia Co., Limited, London, England. Certain named soaps | 42,376 | Apr. 12 | 109 | 1881 |
| Virginia Portland Cement Co., New York, N. Y. Portland cement | 42,341 | Apr. 5 | 109 | 1602 |
| W. E. Wroe & Company, Chicago, Ill. Bond-paper | 42,194 | Mar. 8 | 109 | 542 |
| W. H. Hutchinson & Son, Chicago, Ill. Certain named beverage | 42,233 | Mar. 15 | 109 | 800 |
| Washaway Manufacturing Co., New Bedford, Mass. Washing fluid | 42,212 | Mar. 8 | 109 | 544 |
| Washburn, Crosby Company, Minneapolis, Minn. Wheat-flour | 42,181 | Mar. 1 | 109 | 271 |
| Washburn, Crosby Company, Minneapolis, Minn. Wheat-flour | 42,182 | Mar. 1 | 109 | 271 |
| Wearwell Skirt Co., Boston, Mass. Skirts for women | 42,433 | Apr. 19 | 109 | 2163 |
| Webb & Co., L. M., Ewing, Ill. Antiseptic oil | 42,335 | Apr. 5 | 109 | 1601 |
| Weiffenbach Mfg. Co., Chicago, Ill. Razor-strops | 42,189 | Mar. 1 | 109 | 272 |
| Wells-Abbott-Nieman Company, Schuyler, Nebr. Rye-meal, cornmeal, pearl and flaked hominy, and grits | 42,406 | Apr. 19 | 109 | 2160 |
| Wells-Whitehead Tobacco Co., Wilson, N. C. Smoking-tobacco | 42,399 | Apr. 19 | 109 | 2160 |
| West Coast Stock Food Co., Pasadena, Cal. Stock-foods or condition-powders | 42,236 | Mar. 15 | 109 | 800 |
| Weum-Watt Company, Fargo, N. D. Workingmen's shirts, overalls, and coats | 42,361 | Mar. 22 | 109 | 1062 |
| Wheatley & Bates, Limited, Sheffield, England. Hop-ale | 42,399 | Mar. 29 | 109 | 1332 |
| Wheeler, Henry L., New York, N. Y. Local anesthetic for the painless extraction of teeth | 42,240 | Mar. 15 | 109 | 800 |
| Whitcher, Frank W., Boston, Mass. Hammers | 42,387 | Apr. 12 | 109 | 1882 |
| Whitener, James O., Hepsibah, W. Va. Dandruff cure and hair-restorer | 42,367 | Mar. 22 | 109 | 1062 |
| Whitlatch, Russell W., New York, N. Y. Remedy for certain named diseases | 42,242 | Mar. 15 | 109 | 801 |
| Whittemore Bros. and Co., Cambridge, Mass. Leather-polish | 42,183 | Mar. 1 | 109 | 272 |
| Whittemore Bro's and Co., Cambridge, Mass. Polish for shoes and leather goods | 42,377 | Apr. 12 | 109 | 1881 |



*Alphabetical list of registrants of trade-marks for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Whittemore Bro's and Co., Cambridge, Mass. Polishes for leather goods | 42,378 | Apr. 12 | 109 | 1881 |
| Whittemore Bro's and Co., Cambridge, Mass. Polishes for leather goods | 42,411 | Apr. 19 | 109 | 2161 |
| Whittemore Bro's and Co., Cambridge, Mass. Leather-polishes | 42,495 | Apr. 26 | 109 | 2436 |
| Williams and Cole, Eden Valley, Minn. Compound for the cure of asthma | 42,445 | Apr. 19 | 109 | 2164 |
| Williams, Franklin, New York, N. Y. Pipe couplings or unions | 42,309 | Mar. 29 | 109 | 1332 |
| Willis & Co., Grinnell, New York, N. Y. Cotton piece goods | 42,161 | Mar. 1 | 109 | 269 |
| Willis & Co., Grinnell, New York, N. Y. Cotton piece goods | 42,195 | Mar. 8 | 109 | 542 |
| Willis & Co., Grinnell, New York, N. Y. Cotton piece goods | 42,230 | Mar. 15 | 109 | 799 |
| Willis & Co., Grinnell, New York, N. Y. Cotton piece goods | 42,231 | Mar. 15 | 109 | 799 |
| Willis & Co., Grinnell, New York, N. Y. Cotton piece goods | 42,314 | Apr. 5 | 109 | 1599 |
| Wollwäscherei u. Kämmerei Döhren bei Hannover, Döhren, Germany. Medical pastes and salves | 42,421 | Apr. 19 | 109 | 2162 |
| Wood, Albert F., Detroit, Mich. Lotions, creams, cosmetics, and pastes | 42,297 | Mar. 29 | 109 | 1331 |
| Woodruff, Charles E., Dodge, Nebr. Insect-powders and liquid vermin-exterminators | 42,239 | Mar. 15 | 109 | 800 |
| Wristen, Louis H., Gail, Tex. Liniment for external application | 42,336 | Apr. 5 | 109 | 1601 |

# ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

| Name, residence, and title. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Aboussleman, Joseph M., New York, N. Y. "Marsalina the 20th Century Hair & Skin Tonic." (For a Toilet Preparation) | 10,781 | Mar. 1 | 109 | 273 |
| Aboussleman, Joseph M., New York, N. Y. "Persian Rose Pomade." (For a Toilet Preparation) | 10,782 | Mar. 1 | 109 | 273 |
| American Condensed Milk Co., Ltd., Jackson, Mich. "Home." (For Condensed Milk and Evaporated Cream) | 10,862 | Mar. 22 | 109 | 1065 |
| American Fine Art Co., Milwaukee, Wis. "Nu-Trex Flaked Wheat Food." (For Cereal Food) | 10,687 | Mar. 15 | 109 | 808 |
| American Hog Cholera Cure Co., Minneapolis, Minn. "Hedeval." (For Hog-Cholera Cure) | 10,786 | Mar. 1 | 109 | 273 |
| American Lithographic Co., New York, N. Y. "Royal Iris." (For Cigars) | 10,828 | Mar. 15 | 109 | 808 |
| American Lithographic Co., New York, N. Y. "Royal Iris." (For Cigars) | 10,829 | Mar. 15 | 109 | 808 |
| American Soda Fountain Company, Boston, Mass. "Extra Dry Ginger Ale." (For Carbonated Beverages) | 10,980 | Apr. 19 | 109 | 2167 |
| American Soda Fountain Company, Boston, Mass. "Pineapple Soda." (For Carbonated Beverages) | 10,996 | Apr. 26 | 109 | 2439 |
| Anti-Uric Co., Peoria, Ill. "Anti-Uric." (For Medicine) | 10,890 | Mar. 29 | 109 | 1333 |
| Armour Packing Co., Kansas City, Kans. "Preferred Ham." (For Ham) | 10,854 | Mar. 22 | 109 | 1065 |
| Arnold & Co., J. E., Denton, Tex. "Jumbo Brazing Compound." (For Brazing Compound) | 10,962 | Apr. 12 | 109 | 1888 |
| Arnsburger, Frederick H., Stockton, Cal. "Crown." (For Creamery-Butter) | 10,787 | Mar. 1 | 109 | 273 |
| Bass, E. & J., New York, N. Y. "Buster Brown's Ring." (For Rings) | 10,965 | Apr. 19 | 109 | 2167 |
| Bean, James W., Hydepark, Mass. "Bean's Condition Powders for Horses and Cattle." (For Condition-Powders) | 10,815 | Mar. 8 | 109 | 547 |
| Beech-Nut Packing Company, Canajoharie, N. Y. "Beech-Nut Sliced Beef." (For Sliced Beef) | 10,907 | Mar. 29 | 109 | 1333 |
| Beech-Nut Packing Company, Canajoharie, N. Y. "Beech-Nut Sliced Bacon." (For Sliced Bacon) | 10,908 | Mar. 29 | 109 | 1333 |
| Biever, Nicholas, Jr., Milwaukee, Wis. "The Beer You Like." (For Lager-Beer) | 10,924 | Apr. 5 | 109 | 1608 |
| Biever, Nicholas, Jr., Milwaukee, Wis. "Life-Malt." (For Malt Extract) | 10,981 | Apr. 19 | 109 | 2167 |
| Bluff City Bottling Co., Memphis, Tenn. "Coan & Harbin's Koke." (For a Beverage) | 10,863 | Mar. 22 | 109 | 1065 |
| Brooks, D. L., Chicago, Ill. "Dr. Brooks' Faultless Tooth Powder." (For Tooth-Powder) | 10,989 | Apr. 19 | 109 | 2167 |
| Buckeye Chair Co., Ravenna, Ohio. "Good Chairs." (For Chairs) | 10,839 | Mar. 15 | 109 | 808 |
| Burkhardt, Rudolph, New York, N. Y. "Boneset and Wild Cherry Expectorant." (For Medicine) | 10,783 | Mar. 1 | 109 | 273 |
| California Chemical Co., Minneapolis, Minn. "King's Stop a Cough." (For Medicine) | 10,985 | Apr. 19 | 109 | 2167 |
| Carnot, Max, Yonkers, N. Y. "Moltozone." (For Medicine) | 10,982 | Apr. 19 | 109 | 2167 |
| Central Lithograph Co., Cleveland, Ohio. "Flor Fina Cigarros." (For Cigars) | 10,878 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Habana Cigarros." (For Cigars) | 10,879 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Exquisitos Cigarros." (For Cigars) | 10,880 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Puros Fino Cigarros." (For Cigars) | 10,881 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Fino Cigar." (For Cigars) | 10,882 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Fino Cigar." (For Cigars) | 10,883 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Flor Fina Cigarros." (For Cigars) | 10,884 | Mar. 22 | 109 | 1065 |
| Central Lithograph Co., Cleveland, Ohio. "Flor Fina Cigars." (For Cigars) | 10,894 | Mar. 29 | 109 | 1333 |
| Central Lithograph Co., Cleveland, Ohio. "Puros Cigar." (For Cigars) | 10,895 | Mar. 29 | 109 | 1333 |
| Central Lithograph Co., Cleveland, Ohio. "Flor Fina Cigarros." (For Cigars) | 10,896 | Mar. 29 | 109 | 1333 |
| Central Lithograph Co., Cleveland, Ohio. "Primeros Cigars." (For Cigars) | 10,949 | Apr. 12 | 109 | 1888 |
| Central Lithograph Company, Cleveland, Ohio. "Exquisitos Cigarros." (For Cigars) | 10,897 | Mar. 29 | 109 | 1333 |
| Central Lithograph Company, Cleveland, Ohio. "Flor Fina Cigarros." (For Cigars) | 10,945 | Apr. 12 | 109 | 1888 |
| Central Lithograph Company, Cleveland, Ohio. "Habana Cigars." (For Cigars) | 10,946 | Apr. 12 | 109 | 1888 |
| Central Lithograph Company, Cleveland, Ohio. "Extra Fina Cigar." (For Cigars) | 10,947 | Apr. 12 | 109 | 1888 |
| Central Lithograph Company, Cleveland, Ohio. "Puros Cigarros." (For Cigars) | 10,948 | Apr. 12 | 109 | 1888 |
| Central Lithograph Company, Cleveland, Ohio. "Puros Cigarros." (For Cigars) | 10,950 | Apr. 12 | 109 | 1888 |
| Choco Candy Company, Chicago, Ill. "Choco." (For Confectionery) | 10,970 | Apr. 19 | 109 | 2167 |
| Clark, Charles H., Westfield, Mass. "Anti Whalebone." (For Whips) | 10,910 | Apr. 5 | 109 | 1608 |
| Clifford, Edward B., Homestead, Pa. "Ki-Ki." (For Medicine) | 10,915 | Apr. 5 | 109 | 1608 |
| Coe, C. E., Memphis, Tenn. "Sugar Glen." (For Molasses) | 10,993 | Apr. 26 | 109 | 2439 |
| Coe, C. E., Memphis, Tenn. "Chickasaw Plantation." (For Molasses) | 10,994 | Apr. 26 | 109 | 2439 |
| Congress Hotel Company, Chicago, Ill. "Congress Hotel Co. Annex Bourbon." (For Whisky) | 10,867 | Mar. 22 | 109 | 1065 |
| Crichton, Alexander, Castleton, Canada. "Grippura (Germ-Destroyer)." (For a Medicine) | 10,784 | Mar. 1 | 109 | 273 |
| Crichton, Alexander, Castleton, Canada. "Grippura (Germ Destroyer)." (For Medicine) | 10,916 | Apr. 5 | 109 | 1608 |
| Crichton, Alexander, Castleton, Canada. "X-o Quick Cure." (For Medicine) | 10,984 | Apr. 19 | 109 | 2167 |
| Davis Pharmaceutical Company, New York, N. Y. "Guaisotol (Davis) The Only Permanent Sirup of Guaiacol." (For Medicine) | 10,988 | Apr. 19 | 109 | 2167 |
| Denton, Lewis G., Schenectady, N. Y. "Do-No." (For Medicine) | 10,809 | Mar. 8 | 109 | 547 |
| Denton, Lewis G., Schenectady, N. Y. "Just-as-Sure." (For Medicine) | 10,893 | Mar. 29 | 109 | 1333 |
| Ekman-Stow Co., Oroville, Cal. "E. & S. Brand of Pure California Olive Oil." (For Olive-Oil) | 10,925 | Apr. 5 | 109 | 1608 |
| Enterprise Soap Works, Nashville, Tenn. "Dr. Grey's Almond Cream Toilet Soap." (For Toilet Soap) | 10,940 | Apr. 12 | 109 | 1888 |
| Enterprise Soap Works, Nashville, Tenn. "Dr. Grey's Almond Cream Toilet Soap." (For Toilet Soap) | 10,941 | Apr. 12 | 109 | 1888 |
| Eshleman, Flora V., Philadelphia, Pa. "Archon." (For Cigars) | 10,951 | Apr. 12 | 109 | 1888 |
| Faxon, William H., Buffalo, N. Y. "Butters." (For Crackers) | 10,906 | Mar. 29 | 109 | 1333 |
| Flanagan, George, St. Louis, Mo. "Salvator Salve." (For Salve) | 10,811 | Mar. 8 | 109 | 547 |
| Friedgen, Charles, New York, N. Y. "Violet Emollient Skin Tonic and Massage Cream." (For Emollient Preparation) | 10,812 | Mar. 8 | 109 | 547 |
| Garden City Sand Company, Chicago, Ill. "All Stone." (For Wall-Plaster) | 10,913 | Apr. 5 | 109 | 1608 |
| Gehring, Gustave P., Philadelphia, Pa. "Elixir of Radium." (For Medicine) | 10,919 | Apr. 5 | 109 | 1608 |
| Gerhard & Boehning, Cincinnati, Ohio. "Radium." (For Soap) | 10,986 | Apr. 5 | 109 | 1608 |
| Gerke, P. A., Toledo, Ohio. "The Whistler." (For Cigars) | 10,900 | Mar. 29 | 109 | 1333 |
| Gilliland Baking Powder Co., Cameron, Mo. "Simon Pure." (For Baking-Powder) | 10,816 | Mar. 8 | 109 | 547 |
| Gilt Edge Cereal Co., Marcellus, Mich. "Gilt Edge Cereal." (For Cereal Coffee) | 10,902 | Mar. 29 | 109 | 1333 |

*Alphabetical list of registrants of labels for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Foot Remedy." (For Live-Stock Medicine) | 11,001 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Germ Killer." (For Live-Stock Medicine) | 11,002 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Scientific Heave Cure." (For Live-Stock Medicine) | 11,003 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Worm Powder." (For Live-Stock Medicine) | 11,004 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Egg-a-Day Poultry Food." (For Poultry-Food) | 11,005 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Special Horse Tonic." (For Horse-Tonic) | 11,006 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Quick Cure Condition Powder." (For Condition-Powders for Live Stock) | 11,007 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Hog Fattener." (For Hog-Fattening Foods) | 11,008 | Apr. 26 | 109 | 2439 |
| Gold Coin Stock Food Company, St. Paul, Minn. "Gold Coin Cattle Fattener." (For Fattening-Foods for Cattle) | 11,009 | Apr. 26 | 109 | 2439 |
| Golovine, L., New York, N. Y. "Zembra." (For Cigars) | 10,792 | Apr. 12 | 109 | 1883 |
| Grand Rapids Cigar Box Co., Grand Rapids, Mich. "John Lord." (For Cigars) | 10,792 | Mar. 1 | 109 | 273 |
| Gravier, Henry, New York, N. Y. "White Star." (For Gin) | 10,881 | Mar. 15 | 109 | 803 |
| H. C. Fueller Drug Co., Grafton, W. Va. "Roach Rest." (For Roach-Powder) | 10,920 | Apr. 5 | 109 | 1603 |
| Hall, John B., Philadelphia, Pa. "The Magic Curler." (For Hair-Curlers) | 10,822 | Mar. 15 | 109 | 803 |
| Harden & Co., Acheson, New York, N. Y. "Shamrock Flaxette." (For Handkerchiefs) | 10,821 | Mar. 15 | 109 | 803 |
| Harris & Bro., Robt., Reidsville, N. C. "High Life." (For Smoking-Tobacco) | 10,971 | Apr. 19 | 109 | 2167 |
| Harris & Bro., Robt., Reidsville, N. C. "Honey Dew." (For Smoking-Tobacco) | 10,972 | Apr. 19 | 109 | 2167 |
| Harris & Bro., Robt., Reidsville, N. C. "Pride of Reidsville." (For Smoking-Tobacco) | 10,973 | Apr. 19 | 109 | 2167 |
| Harrisburg Shoe Mfg. Co., Harrisburg, Pa. "Never Slip Rubberized Soles." (For Shoe-Soles) | 10,842 | Mar. 22 | 109 | 1065 |
| Henschel & Co., A. C., Chicago, Ill. "Commercial Seal." (For Cigars) | 10,999 | Apr. 26 | 109 | 2439 |
| Henschel Mfg. Co., C. B., Milwaukee, Wis. "Virginia Chinquapin." (For Cigars) | 10,802 | Mar. 8 | 109 | 547 |
| Hickox, James M., Two Harbors, Mich. "Dr. Hickox's Malarial Capsules." (For Medicine) | 10,918 | Apr. 5 | 109 | 1603 |
| Hill, Leah P., Salt Lake City, Utah. "Mme La Forgue's Crème des Roses." (For Cold-Cream) | 10,990 | Apr. 12 | 109 | 1883 |
| Hofmeister, Flora, Racine, Wis. "Hofmeister Placket." (For Ladies' Clothing) | 10,987 | Apr. 12 | 109 | 1883 |
| Howard Chemical Company, New York, N. Y. "Scale Off Boiler Compound." (For a Boiler-Compound Powder) | 10,793 | Mar. 1 | 109 | 273 |
| Howland, Frank P., Cortland, N. Y. "Dr. Howland's Anti-Rheumatic." (For Medicine) | 10,805 | Mar. 8 | 109 | 547 |
| Hume, Robert D., Wedderburn and Goldbeach, Oreg., and San Francisco, Cal. "Polaris Brand." (For Canned Salmon) | 10,960 | Apr. 12 | 109 | 1883 |
| Hume, Robert D., Wedderburn and Goldbeach, Oreg., and San Francisco, Cal. "Harmony Brand." (For Canned Salmon) | 10,998 | Apr. 26 | 109 | 2439 |
| Hunter, John B., Zanesville, Ohio. "Gold Bond, Knox, Dust, Fill, Medal, Plate Shoes." (For Shoes) | 10,799 | Mar. 8 | 109 | 547 |
| Hutchinson, S. B., Ypsilanti, Mich. "Discount." (For Newspapers, Periodicals, Magazines, Pamphlets, &c) | 10,819 | Mar. 15 | 109 | 803 |
| Ingham, Daniel P., Knoxville, Pa. "Mapo." (For Syrup) | 10,884 | Mar. 15 | 109 | 803 |
| Ino Company, St. Louis, Mo. "Ino." (For a Beverage) | 10,979 | Apr. 19 | 109 | 2167 |
| International Harvester Company of America, Chicago, Ill. "Pure Sisal Twine." (For Twine) | 10,912 | Apr. 5 | 109 | 1603 |
| Ireland, H. I., Philadelphia, Pa. "Roelofette." (For Hats) | 10,780 | Mar. 1 | 109 | 273 |
| Iroquois Brewing Company, Buffalo, N. Y. "Bohemian." (For Lager-Beer) | 10,923 | Apr. 5 | 109 | 1603 |
| Jacob & Sons, H., New York, N. Y. "Buster Brown Leggings." (For Leggings) | 10,964 | Apr. 19 | 109 | 2167 |
| Jordan, Linwood F., Portland, Me. "Louisiana Purchase Souvenir Puzzle." (For Puzzles) | 11,010 | Apr. 26 | 109 | 2439 |
| Josephine Crème Company, New York, N. Y. "Crème Josephine." (For Toilet Preparation) | 10,988 | Apr. 12 | 109 | 1883 |
| Kampe & Sacksteder Drug Co., Appleton, Wis. "Heath's Telulah Headache Capsules." (For Headache-Capsules) | 10,808 | Mar. 29 | 109 | 1333 |
| Keefer, Horace A., Chicago, Ill. "Radium Mantle." (For Gas-Mantles) | 10,963 | Apr. 12 | 109 | 1883 |
| Knapp, Albert T., Medford, Mass. "Three Minute Plum Pudding." (For a Food Preparation) | 10,888 | Mar. 15 | 109 | 803 |
| Kopp & Mordan, Chicago, Ill. "Grape Nut Bread." (For Bread) | 10,991 | Apr. 26 | 109 | 2439 |
| L. Martin Company, New York, N. Y. "'Old Standard Germantown' Lamp-Black." (For Lampblacks and Colors) | 10,843 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "Germantown Black." (For Lampblacks and Colors) | 10,844 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "Torch Black or Commercial Black." (For Lampblacks and Colors) | 10,845 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "'Eagle Germantown' Lamp Black." (For Lampblacks and Colors) | 10,846 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "'Extra Double Refined Superior Coach Painters' Lamp Black." (For Lampblacks and Colors) | 10,847 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "'Sign Painters' Spirit Lamp Black." (For Lampblacks and Colors) | 10,848 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "'Golden Star Spirit' Lamp Black." (For Lampblacks and Colors) | 10,849 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "'Extra Car Painters' Lamp Black." (For Lampblacks and Colors) | 10,850 | Mar. 22 | 109 | 1065 |
| L. Martin Company, New York, N. Y. "'Extra Curriers' Velvet' Lamp-Black." (For Lampblacks and Colors) | 10,851 | Mar. 22 | 109 | 1065 |
| Leitze, George L., Buffalo, N. Y. "Electric Cleansing Flux Paste." (For Flux Paste) | 10,961 | Apr. 12 | 109 | 1883 |
| Leonard, Sadie C., Los Angeles, Cal. "Orange Drip Syrup." (For Syrup) | 10,976 | Apr. 19 | 109 | 2167 |
| Lexington Roller Mills Co., Lexington, Ky. "Idol." (For Flour) | 10,958 | Apr. 12 | 109 | 1883 |
| Lexington Roller Mills Co., Lexington, Ky. "Apex." (For Flour) | 10,959 | Apr. 12 | 109 | 1883 |
| Lubarsky, Abram, New York, N. Y. "Bu Ko." (For Tea) | 10,922 | Apr. 5 | 109 | 1603 |
| Luebert, A. Gustav, Philadelphia, Pa. "Luebert's Nox 'Em, Nox 'Em Quick." (For Insecticides) | 10,814 | Mar. 8 | 109 | 547 |
| Mae Mfg. Co., New York, N. Y. "English May Flower Lotion." (For Toilet Preparation) | 10,889 | Mar 29 | 109 | 1333 |
| Maelion, Lucile, Portland, Oreg. "Wonder Worker Remedies." (For Medicine) | 10,948 | Apr. 12 | 109 | 1883 |
| Mahon, John M., Gloucester City, N. J. "Johnny Mack Mahon's Rattle Snake Oil." (For Medicine) | 10,887 | Mar. 22 | 109 | 1065 |
| Malkan, Phillip, Chicago, Ill. "P M Best 10 Year Old Maryland Rye Whiskey." (For Whisky) | 10,866 | Mar. 22 | 109 | 1065 |
| Mann Edge Tool Co., Lewistown, Pa. "The XX Axe." (For Axes and Edge-Tools) | 10,795 | Mar. 1 | 109 | 273 |
| Mann Edge Tool Co., Lewistown, Pa. "Colonial." (For Axes and Edge-Tools) | 10,796 | Mar. 1 | 109 | 273 |
| Mann Edge Tool Co., Lewistown, Pa. "Bald Eagle." (For Axes and Edge-Tools) | 10,797 | Mar. 1 | 109 | 273 |
| Mann Edge Tool Co., Lewistown, Pa. "Red Top." (For Axes and Edge-Tools) | 10,798 | Mar. 1 | 109 | 273 |
| Mann, James H., Lewistown, Pa. "Mann's Superior." (For Axes) | 10,794 | Mar. 1 | 109 | 273 |
| March, Jasper G., Chestertown, N. Y. "March's Hair Health." (For Hair and Scalp Cleanser) | 10,823 | Mar. 15 | 109 | 803 |
| Marchiony, Italo, New York, N. Y. "Ice Cups." (For Biscuit-Cups for Holding Ice-Cream) | 10,617 | Mar. 8 | 109 | 547 |
| Masters & Co., Chas. A., Boston, Mass. "Yale." (For Apparel) | 10,909 | Mar. 29 | 109 | 1333 |



*Alphabetical list of registrants of labels for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| McIntyre, Patrick, Asheville, N. C. "Fifteen Years Old Manasses 1861 Pure Rye Whiskey." (For Whisky) | 10,791 | Mar. 1 | 109 | 273 |
| McIntyre, Patrick, Asheville, N. C. "Tarbelle Whiskey." (For Whisky) | 10,832 | Mar. 15 | 109 | 803 |
| Merritt & Son, C. H., Danbury, Conn. "Justice, Unity, Equity, Hand Made in America." (For Hats.) | 10,929 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "Not Made by a Trust." (For Hats) | 10,930 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "By Industry We Thrive." (For Hats) | 10,931 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "United We Hold, Divided We Fall." (For Hats) | 10,932 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "Honest Labor, Fair Honest Wages." (For Hats) | 10,933 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "Union Gives Strength, America." (For Hats) | 10,934 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "Skilled Labor of America." (For Hats) | 10,935 | Apr. 12 | 109 | 1883 |
| Merritt & Son, C. H., Danbury, Conn. "Hand United to Hand Labor Conquers All." (For Hats) | 10,936 | Apr. 12 | 109 | 1883 |
| Milliken, Tomlinson Co., Portland, Me. "Khedive." (For Tea) | 10,789 | Mar. 1 | 109 | 273 |
| Milliken, Tomlinson Co., Portland, Me. "Shamrock." (For Tea) | 10,790 | Mar. 1 | 109 | 273 |
| Muirhead, A. L., Central City, Nebr. "Protazote." (For Medicine) | 10,914 | Apr. 5 | 109 | 1603 |
| National Novelty Corporation, Pawtucket, R. I. "Our Dollies." (For Picture-Blocks) | 10,966 | Apr. 19 | 109 | 2167 |
| National Novelty Corporation, Pawtucket, R. I. "Domestic Pets." (For Picture-Blocks) | 10,967 | Apr. 19 | 109 | 2167 |
| Natural Food Co., Niagara Falls, N. Y. "Triscuit." (For Bread) | 10,855 | Mar. 22 | 109 | 1065 |
| New York Importation Co., New York, N. Y. "Lochinvar Old Highland Scotch." (For Whisky) | 10,833 | Mar. 15 | 109 | 803 |
| Niagara Fruit Jelly Co., Buffalo, N. Y. "Colonial Jelly." (For a Jelly Powder) | 10,957 | Apr. 12 | 109 | 1883 |
| Omaha Packing Co., Chicago, Ill., South Omaha, Nebr., St. Joseph and Kansas City, Mo. "Underwood Sugar Cured Meats." (For Canned and Other Meats) | 10,788 | Mar. 1 | 109 | 273 |
| Ontario Biscuit Company, Buffalo, N. Y. "Jersey Butters." (For Biscuits) | 10,856 | Mar. 22 | 109 | 1065 |
| Ontario Biscuit Company, Buffalo, N. Y. "Ontario Soda Biscuit." (For Biscuits) | 10,857 | Mar. 22 | 109 | 1065 |
| Park & Tilford, New York, N. Y. "Flor de Astor." (For Cigars) | 10,830 | Mar. 15 | 109 | 803 |
| Paul Brothers, Philadelphia, Pa. "P. B. Shoe Superior Quality Style." (For Shoes) | 10,841 | Mar. 22 | 109 | 1065 |
| Peter, D., Vevey, Switzerland. "Peter's The Original Milk-Chocolate." (For Milk Chocolate) | 10,955 | Apr. 12 | 109 | 1883 |
| Peter, D., Vevey, Switzerland. "Peter's The Original Milk-Chocolate." (For Milk Chocolate) | 10,956 | Apr. 12 | 109 | 1883 |
| Peters, Augustus D., Toledo, Ohio. "Peter's Face Hardener." (For a Toilet Preparation) | 10,885 | Mar. 22 | 109 | 1066 |
| Posada, Jose A., Havana, Cuba. "Newton." (For Cigars) | 10,901 | Mar. 29 | 109 | 1333 |
| Post, C. W., Washington, D. C. "The Sentry Box." (For Newspaper Articles) | 10,779 | Mar. 1 | 109 | 273 |
| Preservaline Manufacturing Company, New York, N. Y., and Chicago, Ill. "'XXX' Preservaline." (For a Preservative and Colorant) | 10,852 | Mar. 22 | 109 | 1065 |
| Quinn, Edward, Alexandria, Va. "Bluemont Whiskey." (For Whisky) | 10,801 | Mar. 8 | 109 | 547 |
| Regina Music Box Co., Rahway, N. J., and New York, N. Y. "Regina." (For Music-Boxes) | 11,011 | Apr. 26 | 109 | 2439 |
| Reighter, Frank C., Chicago, Ill. "Nigridine." (For Medicine) | 10,785 | Mar. 1 | 109 | 273 |
| Reissmann, F., Westpoint, N. Y. "Reissmann's A. B. C. Ruler." (For Rulers) | 10,968 | Apr. 19 | 109 | 2167 |
| Reissmann, F., Westpoint, N. Y. "Reissmann's Perfection Mitre Scale." (For Rulers) | 10,969 | Apr. 19 | 109 | 2167 |
| Reith, Emma, Kansas City, Mo. "Cuti Balm." (For a Lotion) | 10,825 | Mar. 15 | 109 | 803 |
| Richardson, Will S., Marietta, Ohio. "Richardson's Tolu-Pine." (For Medicine) | 10,944 | Apr. 12 | 109 | 1883 |
| Rochester Nonrust Tinware Co., Rochester, N. Y. "Non Rustin." (For Sheet-Metal Ware) | 10,818 | Mar. 8 | 109 | 547 |
| S. S. Pierce Co., Boston, Mass. "Swansdown Prepared Table Salt." (For Table-Salt) | 10,990 | Apr. 26 | 109 | 2439 |
| Saake, Albert L., Brooklyn, N. Y. "Maltinatte." (For Beverages) | 10,997 | Apr. 26 | 109 | 2439 |
| Sayer & Co., George, Cognac, France. "'American Club' Brandy." (For Cognac) | 10,865 | Mar. 22 | 109 | 1065 |
| Scamell, A. E., San Francisco, Cal. "Paraiso Mineral Water." (For Mineral Water) | 10,995 | Apr. 26 | 109 | 2439 |
| Schallinger, Carl, Hutchinson, Minn. "Premium Brand." (For Butter) | 10,858 | Mar. 22 | 109 | 1065 |
| Schallinger, Carl, Hutchinson, Minn. "Premium Brand." (For Butter) | 10,859 | Mar. 22 | 109 | 1065 |
| Schallinger, Carl, Hutchinson, Minn. "Premium Brand." (For Butter) | 10,860 | Mar. 22 | 109 | 1065 |
| Schmidt, August J., New York, N. Y. "The Merchant Prince." (For Cigars) | 10,827 | Mar. 15 | 109 | 803 |
| Schmidt & Co., New York, N. Y. "Jackfull." (For Cigars) | 10,804 | Mar. 8 | 109 | 547 |
| Schmidt & Co., New York, N. Y. "Factory Bunch." (For Cigars) | 10,805 | Mar. 8 | 109 | 547 |
| Schmidt & Co., New York, N. Y. "Prosperity." (For Cigars) | 10,806 | Mar. 8 | 109 | 547 |
| Schmidt & Co., New York, N. Y. "Hot Cake." (For Cigars) | 10,807 | Mar. 8 | 109 | 547 |
| Schmidt & Co., New York, N. Y. "Prairie Blossom." (For Cigars) | 10,868 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "La Fama Cubana De Tabacos." (For Cigars) | 10,869 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Race King." (For Cigars) | 10,870 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Vista Hermosa." (For Cigars) | 10,871 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Gold Share." (For Cigars) | 10,872 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Country Trade." (For Cigars) | 10,873 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Dividend Payer." (For Cigars) | 10,874 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Sall and Rall." (For Cigars) | 10,875 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Plains Monarch." (For Cigars) | 10,876 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Startwell." (For Cigars) | 10,877 | Mar. 22 | 109 | 1065 |
| Schmidt & Co., New York, N. Y. "Cuban Gold." (For Cigars) | 10,898 | Mar. 29 | 109 | 1333 |
| Schmidt & Co., New York, N. Y. "Graino." (For Cigars) | 10,899 | Mar. 29 | 109 | 1333 |
| Schmidt & Co., New York, N. Y. "Stock Cigar." (For Cigars) | 10,953 | Apr. 12 | 109 | 1883 |
| Scotch Embrocation Co., Pasadena, Cal. "Welsh's Embro." (For a Liniment) | 10,826 | Mar. 15 | 109 | 803 |
| Scott Paper Co., Philadelphia, Pa. "Zatan." (For Toilet-Paper) | 10,911 | Apr. 5 | 109 | 1603 |
| Scott Paper Co., Philadelphia, Pa. "Tufiber." (For Toilet-Paper) | 10,942 | Apr. 12 | 109 | 1883 |
| Slater Manufacturing Company, Ironton, Ohio. "Slater's Lemon Lotion." (For Toilet Preparation) | 10,813 | Mar. 8 | 109 | 547 |
| Sloat, George V., Jr., Southampton, N. Y. "Sloat's Distemper Cure." (For Medicine) | 10,888 | Mar. 22 | 109 | 1066 |
| Smith, Conrad G., Cumberland, Md. "Smith's Tender Joint Shoe." (For Shoes) | 10,820 | Mar. 15 | 109 | 803 |
| Smith, G. Clinton, Syracuse, N. Y. "Hermits Friend Rheumatic Remedy." (For Medicine) | 10,917 | Apr. 5 | 109 | 1603 |
| Sonntag, Charles H., Tacoma, Wash. "Toke Point Perfecto." (For Cigars) | 10,803 | Mar. 8 | 109 | 547 |
| Sperry & Hutchinson Co., New York, N. Y. "'Green Trading Stamp Brand for Groceries." (For Groceries) | 10,853 | Mar. 22 | 109 | 1065 |
| Staak, Frank, Jr., Carroll, Iowa. "Staak's Sweet Clover Chocolates." (For Candy) | 10,905 | Mar. 29 | 109 | 1333 |
| Stonebraker & Co., Jos. R., Baltimore, Md. "Tarpon Maryland Rye Whiskey." (For Whisky) | 10,954 | Apr. 12 | 109 | 1883 |
| Stonebraker & Co., Jos. R., Baltimore, Md. "Setter." (For Whisky) | 10,977 | Apr. 19 | 109 | 2167 |
| Stricker & Co., Henry H., Baltimore, Md. "Stricker's Paste." (For Paste) | 10,927 | Apr. 5 | 109 | 1603 |
| Suffolk Chemical Co., Boston, Mass. "The Lightning Fire Extinguisher." (For Fire-Extinguishers) | 10,840 | Mar. 15 | 109 | 803 |
| Sunbury Co-operative Creamery Co., Sunbury, Ohio. "The Famous Sunbury Creamery Butter." (For Butter) | 10,974 | Apr. 19 | 109 | 2167 |
| Szymanski, John, Milwaukee, Wis. "Kosciuszko." (For Cigars) | 10,921 | Apr. 5 | 109 | 1603 |
| Thomas, William H., Lagrange, Mo. "Wyaconda Mineral Springs." (For Mineral Water) | 10,800 | Mar. 8 | 109 | 547 |
| Thomas, Wm. H., Lagrange, Mo. "The La Grange." (For Mineral Water) | 10,978 | Apr. 19 | 109 | 2167 |
| United States Condensed Milk Co., Deansboro, N. Y. "Wyoming Condensed Milk." (For Condensed Milk) | 10,835 | Mar. 15 | 109 | 803 |
| United States Condensed Milk Co., Deansboro, N. Y. "Purity Brand Condensed Milk." (For Condensed Milk) | 10,836 | Mar. 15 | 109 | 803 |
| United States Condensed Milk Co., Deansboro, N. Y. "Regal Brand Condensed Milk." (For Condensed Milk) | 10,975 | Apr. 19 | 109 | 2167 |
| Uric-Arthrin Mfg. Co., Peoria, Ill. "Uric Arthrin." (For Medicine) | 10,891 | Mar. 29 | 109 | 1333 |

*Alphabetical list of registrants of labels for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Warren's Sons, James D., Buffalo, N. Y. "Lafayette." (For Flour) | 10,926 | Apr. 5 | 109 | 1608 |
| Weaver & Co., C. H., Chicago, Ill. "Weaver 'Quartettes.'" (For Butter) | 10,861 | Mar. 22 | 109 | 1065 |
| Weaver Conger Company, Groton, N. Y. "Smoker's Teeth Powder." (For Tooth-Powder) | 10,894 | Mar. 15 | 109 | 808 |
| Wedderburn, John, Baltimore, Md. "Wedderburn Rye." (For Rye Whisky) | 10,998 | Apr. 26 | 109 | 2439 |
| Westchester Drug Co., Port Chester, N. Y. "Scalpia." (For Dandruff Cure) | 10,886 | Mar. 22 | 109 | 1066 |
| White, William, Adamsville, R. I. "Dr. White's Specialty for Diphtheria." (For Medicine) | 11,000 | Apr. 26 | 109 | 2439 |
| Whitehouse, Jennie, New York, N. Y. "Red Rose." (For Tea) | 10,908 | Mar. 29 | 109 | 1333 |
| Williams, Fred A., Utica, N. Y. "Balm of Gilead." (For Ointment) | 10,987 | Apr. 19 | 109 | 2167 |
| Wilmanns, Adolf, Milwaukee, Wis. "Red and White." (For Beer) | 10,864 | Mar. 22 | 109 | 1065 |
| Wilmanns, Adolph, Milwaukee, Wis. "Schuster's Malt and Hop Tonic." (For Malt and Hop Tonics) | 10,904 | Mar. 29 | 109 | 1333 |
| Wood, James A., Providence, R. I. "Exotic Balm." (For Liniment) | 10,810 | Mar. 8 | 109 | 547 |
| Wyman, Walter, Providence, R. I. "Egyptian Salve." (For Salve) | 10,986 | Apr. 19 | 109 | 2167 |
| Young, W. F., Springfield, Mass. "Absorbine." (For a Veterinary Medicine) | 10,985 | Apr. 19 | 109 | 2167 |

# PRINTS.

| Name, residence, and title. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Allegheny Card Co., Allegheny, Pa. "Base Ball Card Game." (For a Game) | 948 | Apr. 5 | 109 | 1608 |
| Altine Chemical Co., San Francisco, Cal. "Bacritine." (For Medicine) | 945 | Mar. 29 | 109 | 1333 |
| American Lithograph Company, New York, N. Y. "Globe Starch." (For Starch) | 957 | Apr. 12 | 109 | 1884 |
| Armour Packing Co., Kansas City, Kans. "Gold Band Ham and Bacon." (For Ham and Bacon) | 911 | Mar. 1 | 109 | 273 |
| Athlophoros Co., New Haven, Conn. "Athlophoros." (For Medicine) | 918 | Mar. 1 | 109 | 273 |
| Athlophoros Co., New Haven, Conn. "Athlophoros." (For a Medicine) | 927 | Mar. 15 | 109 | 808 |
| Atlas Hosiery Mills, Philadelphia, Pa. "Atlas Hosiery Mills." (For Hosiery) | 915 | Mar. 8 | 109 | 547 |
| Both, W. C., Chicago, Ill. "Men's Apparel." (For Men's Apparel) | 934 | Mar. 22 | 109 | 1066 |
| Brown Shoe Co., St. Louis, Mo. "Blue Ribbon Shoes." (For Shoes) | 942 | Mar. 29 | 109 | 1333 |
| C. A. Edgarton Mfg. Co., Shirley, Mass. "Ball Bearing Garters." (For Garters) | 950 | Apr. 12 | 109 | 1883 |
| Centaur Co., New York, N. Y. "Castoria." (For a Medicine) | 954 | Apr. 12 | 109 | 1884 |
| Chattanooga Brewing Co., Chattanooga, Tenn. "The Beer to Which the South Points With Pride." (For Beer) | 984 | Apr. 26 | 109 | 2439 |
| Cincinnati, Dayton, and Toledo Traction Co., Cincinnati, Ohio. "C. D. & T." (For Electric Cars) | 932 | Mar. 15 | 109 | 808 |
| Citizens Wholesale Supply Co., Columbus, Ohio. "Golden Rule Hair Restorative." (For a Hair-Restorative) | 929 | Mar. 15 | 109 | 808 |
| Daggett & Ramsdell, New York, N. Y. "The Touch of Time." (For Cold-Cream) | 955 | Apr. 12 | 109 | 1884 |
| David Adler & Sons Clothing Co., Milwaukee, Wis. "Overcoat Fashions for Spring." (For Men's Spring Apparel) | 910 | Mar. 1 | 109 | 273 |
| David Adler & Sons Clothing Co., Milwaukee, Wis. "An Adler Serge Suit." (For Men's Apparel) | 960 | Apr. 19 | 109 | 2167 |
| Ely-Walker Dry Goods Company, St. Louis, Mo. "'This is the Best' Topsy Hosiery." (For Hosiery) | 941 | Mar. 29 | 109 | 1333 |
| Emerson Drug Co., Baltimore, Md. "Bromo-Seltzer." (For Bromo-Seltzer) | 926 | Mar. 15 | 109 | 808 |
| Gray Litho. Co., New York, N. Y. "Arabian Chocolates." (For Candy) | 965 | Apr. 19 | 109 | 2167 |
| Gray Litho. Co., New York, N. Y. "Purity Italian Chocolates." (For Candy) | 966 | Apr. 19 | 109 | 2167 |
| Gray Litho. Co., New York, N. Y. "Society Chocolates." (For Candy) | 967 | Apr. 19 | 109 | 2167 |
| Gray Litho. Co., New York, N. Y. "Puritan Chocolates." (For Candy) | 968 | Apr. 19 | 109 | 2167 |
| Gray Litho. Co., New York, N. Y. "Purity Health Chocolates." (For Candy) | 969 | Apr. 19 | 109 | 2167 |
| Gray Litho. Co., New York, N. Y. "Purity Bon Bons and Chocolates." (For Candy) | 970 | Apr. 19 | 109 | 2167 |
| Gray Litho. Co., New York, N. Y. "Princess Chocolates." (For Candy) | 971 | Apr. 19 | 109 | 2168 |
| Gray Lithograph Co., New York, N. Y. "It Stands at the Head." (For Sewing-Machines) | 947 | Mar. 29 | 109 | 1333 |
| Gray Lithograph Co., New York, N. Y. "Arcadian Chocolates." (For Candy) | 972 | Apr. 19 | 109 | 2168 |
| Gray Lithograph Co., New York, N. Y. "Finest Chocolates." (For Candy) | 973 | Apr. 19 | 109 | 2168 |
| Gray Lithograph Co., New York, N. Y. "Duchess Chocolates." (For Candy) | 974 | Apr. 19 | 109 | 2168 |
| Gray Lithograph Co., New York, N. Y. "Princess Assortment Chocolates." (For Candy) | 975 | Apr. 19 | 109 | 2168 |
| Gray Lithograph Co., New York, N. Y. "Outing Assorted Fine Chocolates." (For Candy) | 976 | Apr. 19 | 109 | 2168 |
| Harris & Bro., Robert, Reidsville, N C. "Pride of Reidsville." (For Smoking-Tobacco) | 925 | Mar. 15 | 109 | 808 |
| Hays, Levi & Co., New York, N. Y. "Men's Apparel." (For Men's Apparel) | 935 | Mar. 22 | 109 | 1066 |
| Lawrence & Bullen, Ltd., London, England. "Hunting Scenes." (For Wall-Paper) | 921 | Mar. 8 | 109 | 547 |
| McCormick, Oran, Boston, Mass. "It is Not Always the Man With the Balls Who Can Juggle Them." (For Shoes) | 916 | Mar. 8 | 109 | 547 |
| McCormick, Oran, Boston, Mass. "Shoes for the Children." (For Shoes) | 917 | Mar. 8 | 109 | 547 |
| McCormick, Oran, Boston, Mass. "Our Easter Opening." (For Shoes) | 918 | Mar. 8 | 109 | 547 |
| McCormick, Oran, Boston, Mass. "We Hatch Out Our Own Ideas in Footwear." (For Shoes) | 919 | Mar. 8 | 109 | 547 |
| McCormick, Oran, Boston, Mass. "Non-Aqua." (For Shoes) | 924 | Mar. 15 | 109 | 808 |
| McCormick, Oran, Boston, Mass. "Artistic Footwear for Women." (For Footwear) | 937 | Mar. 22 | 109 | 1066 |
| McCormick, Oran, Boston, Mass. "Our Spring Styles." (For Shoes) | 951 | Apr. 12 | 109 | 1884 |
| McCormick, Oran, Boston, Mass. "Birds of a Feather." (For Shoes) | 952 | Apr. 12 | 109 | 1884 |
| McCormick, Oran, Boston, Mass. "Our Shoes Will Bear the Closest Scrutiny." (For Shoes) | 953 | Apr. 12 | 109 | 1884 |
| McCormick, Oran, Boston, Mass. "Attractive Summer Footwear for Women." (For Shoes) | 961 | Apr. 19 | 109 | 2167 |
| McCormick, Oran, Boston, Mass. "Dont Suffer and Cuss Buy Your Shoes from Us." (For Shoes) | 981 | Apr. 26 | 109 | 2439 |
| McCormick, Oran, Boston, Mass. "New Styles Always on Hand." (For Shoes) | 982 | Apr. 26 | 109 | 2439 |
| McCormick, Oran, Boston, Mass. "Our Customers Smile." (For Shoes) | 983 | Apr. 26 | 109 | 2439 |
| McLean, David M., Chicago, Ill. "The Flour Barrel of the World." (For Flour) | 912 | Mar. 1 | 109 | 273 |
| Meyer-Both Co., Chicago, Ill. "Ladies' Apparel." (For Ladies' Apparel) | 936 | Mar. 22 | 109 | 1066 |
| National Business Opportunities Co., New York, N. Y. "Reliance." (For Hat-Fasteners) | 949 | Apr 12 | 109 | 1883 |
| Ozomulsion Co., New York, N. Y. "Ozomulsion." (For Medicine) | 928 | Mar. 15 | 109 | 808 |
| Poole, William H., Boston, Mass. "Poole Pianos." (For Pianos) | 986 | Apr. 26 | 109 | 2439 |
| Radcliffe Shoe Co., Boston, Mass., and Norway, Me. "Radcliffe Shoe." (For Shoes) | 938 | Mar. 22 | 109 | 1066 |
| Roach, Charles A., St. Paul, Minn. "Egg Chocolates." (For Candy) | 939 | Mar. 22 | 109 | 1066 |
| Roach, Charles A., St. Paul, Minn. "The American Girl." (For Candy) | 940 | Mar. 22 | 109 | 1066 |
| Roach, Charles A., St. Paul, Minn. "The Queen." (For Candy) | 943 | Mar. 29 | 109 | 1333 |
| Romünder, Hermann, Milwaukee, Wis. "The Romünder 'Comfort' Passenger Car." (For Passenger-Cars) | 933 | Mar. 15 | 109 | 808 |
| Romünder, Hermann, Milwaukee, Wis. "The Romünder 'Comfort' Passenger Car." (For Passenger-Cars) | 959 | Apr. 12 | 109 | 1884 |
| Rosenfeld & Co., E., Baltimore, Md. "Faultless Day Shirts." (For Day-Shirts) | 978 | Apr. 26 | 109 | 2439 |
| Rosenfeld & Co., E., Baltimore, Md. "Faultless Night Shirts." (For Night-Shirts) | 979 | Apr. 26 | 109 | 2439 |
| Rosenfeld & Co., E., Baltimore, Md. "Faultless Pajamas." (For Pajamas) | 980 | Apr. 26 | 109 | 2439 |
| Rucker & Witten Tobacco Co., Martinsville, Va. "Natural Leaf." (For Tobacco) | 920 | Mar. 8 | 109 | 547 |
| Selter & Kappes, New York, N. Y. "In Every Man's Pocket." (For Cigars) | 956 | Apr. 12 | 109 | 1884 |
| Seymour, Harriet A., South Orange, N. J. "Harriet Hubbard Ayer's Face Cream." (For Face-Cream) | 962 | Apr. 19 | 109 | 2167 |
| Singer Manufacturing Co., New York, N. Y. "All Nations Use the Singer." (For Sewing-Machines) | 931 | Mar. 15 | 109 | 808 |
| Smith, Alfred H., New York, N. Y. "Little Tingler." (For Rubber Sponges) | 963 | Apr. 19 | 109 | 2167 |
| Smith, Alfred H., New York, N. Y. "Kleanwell Tingle Sponge." (For Rubber Sponges) | 964 | Apr. 19 | 109 | 2167 |
| Smith, Frank J., Northport, N. Y. "Foxy Grandpa's Multiplier." (For a Multiplier) | 922 | Mar. 15 | 109 | 808 |
| Taylor Bros. Co., Rochester, N. Y. "Taylor's Clinical Tubes." (For Clinical Thermometers) | 946 | Mar. 29 | 109 | 1333 |
| U. S. Coffee, Tea & Spice Co., Denver, Colo. "Dollar Brand." (For Coffee) | 944 | Mar. 29 | 109 | 1333 |
| Uhry, Jules, New York, N. Y. "Ontostay." (For Hat-Pins) | 977 | Apr. 26 | 109 | 2439 |

*Alphabetical list of registrants of prints for March and April*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| United States Playing Card Company, Cincinnati, Ohio. "Bicycle Playing Cards, New Automobile Designs." (For Playing-Cards) | 908 | Mar. 1 | 109 | 273 |
| United States Playing Card Company, Cincinnati, Ohio. "Bicycle Playing Cards, New Automobile Designs." (For Playing-Cards) | 909 | Mar. 1 | 109 | 273 |
| Victor Talking Machine Co., Camden, N. J. "The Victor Jewel Premium Machine." (For Talking-Machines and Accessories) | 980 | Mar. 15 | 109 | 808 |
| Wise, George W., Cincinnati, Ohio. "Eyelene." (For Medicine) | 914 | Mar. 1 | 109 | 273 |
| Wm. J. Lemp Brewing Co., St. Louis, Mo. "Extra Pale." (For Bottled Beer) | 985 | Apr. 26 | 109 | 2439 |
| Wold, Torris, Chicago, Ill. "Plant of Modern Automatic Can Making Machinery." (For Can-Making Machinery) | 907 | Mar. 1 | 109 | 273 |
| Zalinoff, Gregori, New York, N. Y. "Russian Overland Tea Co." (For Teas) | 958 | Apr. 12 | 109 | 1884 |

## DISCLAIMERS.

| Name, residence, and invention. | No. | Filed. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Scott, James, Pittsburg, Pa.; disclaimer filed by assignees. Bosh-plate for furnaces | 452,618 | Mar. 15, 1904 | 109 | 811 |
| Smith, William Robert, New York, N. Y. Automatic weighing-scale | 375,101 | Apr. 9, 1904 | 109 | 1891 |

## ALPHABETICAL LIST OF INVENTIONS.

| Invention. | Name. | No. | Date. | Monthly volume. Specification. | Drawing. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|---|---|
| Abrading device | P. Ekvall | 758,251 | Mar. 1 | 67 | 17 | 109 | 17 |
| Absorption apparatus. Chemical | H. G. Schanche | 755,706 | Mar. 29 | 4851 | 1078 | 109 | 1125 |
| Account-register and desk-slide | C. Paul | 755,887 | Mar. 22 | 4260 | 941 | 109 | 980 |
| Acetylene-generating apparatus | J. J. Matthews | 756,671 | Apr. 5 | 912 | 199 | 109 | 1538 |
| Acid. Making nitric | W. Mills | 755,378 | Mar. 22 | 4289 | ..... | 109 | 976 |
| Acid. Manufacture of sulfuric | P. G. Salom | 755,247 | Mar. 22 | 3962 | 884 | 109 | 919 |
| Acid. Manufacturing hydrofluoric | C. A. Doremus | 754,978 | Mar. 22 | 3511 | ..... | 109 | 818 |
| Acid. 1-5-nitroanthraquinone-sulfonic | R. E. Schmidt | 757,057 | Apr. 12 | 1688 | ..... | 109 | 1717 |
| Acid. 1-8-nitroanthraquinone-sulfonic | R. E. Schmidt | 757,058 | Apr. 12 | 1689 | ..... | 109 | 1718 |
| Acids and bromated phtalic acids with naphtols. Making condensation products from dicarbo | A. Denguine and S. Levinsohn | 758,372 | Mar. 1 | 277 | ..... | 109 | 63 |
| Acids. Making ortho-oxy-carbon | G. Wichmann | 757,702 | Apr. 19 | 2994 | ..... | 109 | 2015 |
| Adding and recording machine | A. S. Dennis | 758,052 | Apr. 26 | 3680 | 798, 799, 800 | 109 | 2185 |
| Adding and subtracting apparatus. Automatic | N. H. Kodama | 753,586 | Mar. 1 | 712 | 160 | 109 | 156 |
| Adding-machine | W. H. Clark | 754,544 | Mar. 15 | 2677 | 581 | 109 | 620 |
| Adding-machine | C. H. Platt | 756,280 | Apr. 5 | 176 | 36 | 109 | 1381 |
| Adding-machine | W. P. Quentell | 756,706 | Apr. 5 | 971 | 214 | 109 | 1551 |
| Adding-machine | T. A. Wheeler | 758,198 | Apr. 26 | 3959 | 859 | 109 | 2245 |
| Adding or subtracting machine | J. H. Martin | 758,013 | Apr. 19 | 3591 | 778, 779 | 109 | 2146 |
| Adhesive-supplying mechanism | A. Shedlock | 756,000 | Apr. 12 | 1367 | 305 | 109 | 1650 |
| Adhesives. Making | A. Nettl | 757,337 | Apr. 12 | 2254 | ..... | 109 | 1889 |
| Adjustable key | C. J. Caley | 756,830 | Apr. 12 | 1232 | 275 | 109 | 1623 |
| Adjustable protective frame | A. L. C. Marsh | 758,372 | Apr. 26 | 4325 | 929 | 109 | 2325 |
| Adjustable wrench | A. Heberer | 753,489 | Mar. 1 | 502 | 117 | 109 | 111 |
| Adjustable wrench | E. Bordewisch and O. C. Wovries | 754,740 | Mar. 15 | 3060 | 668 | 109 | 703 |
| Advertising and exhibiting paints, wall-finishes, &c. Device or means for | J. F. Gould | 757,549 | Apr. 19 | 2687 | 588 | 109 | 1947 |
| Advertising-cabinet | M. Kovačević | 753,587 | Mar. 1 | 714 | 160 | 109 | 156 |
| Advertising-card | W. T. and M. J. Sullivan | 755,962 | Mar. 29 | 5383 | 1188 | 109 | 1245 |
| Advertising-card | W. T. and M. J. Sullivan | 755,963 | Mar. 29 | 5384 | 1188 | 109 | 1245 |
| Advertising device | J. H. Dynes | 755,221 | Mar. 22 | 3933 | 871 | 109 | 909 |
| Advertising novelty | W. H. Bender | 756,206 | Apr. 5 | 15 | 4,5 | 109 | 1346 |
| Advertising waste-paper box | S. Leveen | 757,403 | Apr. 12 | 2385 | 519 | 109 | 1866 |
| Aerial apparatus | J. Kaiser | 756,169 | Mar. 29 | 5741 | 1269 | 109 | 1821 |
| Aerial vehicle | A. G. Bell | 757,012 | Apr. 12 | 1599 | 348 | 109 | 1698 |
| Air and gas regulating apparatus | E. A. Hall | 754,303 | Mar. 8 | 2135 | 473 | 109 | 484 |
| Air-brake | W. J. Vaughn | 755,335 | Mar. 22 | 4154 | 918 | 109 | 965 |
| Air-brake | D. Dunn | 756,504 | Apr. 5 | 785 | 170 | 109 | 1508 |
| Air-brake | J. H. Bleoo | 757,015 | Apr. 12 | 1603 | 349 | 109 | 1699 |
| Air-brake controller | J. C. Wands | 753,648 | Mar. 1 | 822 | 183, 184 | 109 | 179 |
| Air-brake controller | J. C. Wands | 753,649 | Mar. 1 | 824 | 184, 185 | 109 | 179 |
| Air-brake controller | J. C. Wands | 753,650 | Mar. 1 | 825 | 185 | 109 | 179 |
| Air-brake controller | W. H. Scott | 754,246 | Mar. 8 | 2030 | 451, 452 | 109 | 462 |
| Air-brake controller | W. H. Scott | 754,398 | Mar. 8 | 2346 | 512, 513 | 109 | 529 |
| Air-brake mechanism | J. R. Schrader | 756,533 | Apr. 5 | 660 | 144, 145 | 109 | 1484 |
| Air-brake mechanism. Compound | E. G. Shortt | 756,065 | Mar. 29 | 5558 | 1227 | 109 | 1282 |
| Air-brake train-pipe-testing device | W. S. De Camp | 758,427 | Apr. 26 | 4433 | 952, 953 | 109 | 2350 |
| Air-braking systems. Audible alarm for | J. H. Clark | 754,847 | Mar. 15 | 3272 | 713 | 109 | 749 |
| Air-compressor | C. S. Dean | 753,787 | Mar. 1 | 1107 | 251 | 109 | 239 |
| Air-compressor | J. C. Williams | 757,704 | Apr. 19 | 2996 | 651 | 109 | 2015 |
| Air-compressor and storage-tank. Combined | I. N. Wilfong, Jr | 755,556 | Mar. 22 | 4542 | 1011 | 109 | 1040 |
| Air-compressor governor | H. Saam | 753,633 | Mar. 1 | 791 | 176 | 109 | 173 |
| Air-compressor unloading device | W. S. Fairhurst | 757,901 | Apr. 19 | 3375 | 729 | 109 | 2098 |
| Air cooler and filter | J. Jester | 756,643 | Apr. 5 | 846 | 183 | 109 | 1522 |
| Air-heater | J. Waterhouse | 754,726 | Mar. 15 | 3089 | 668 | 109 | 698 |
| Air-heating system | C. A. Vaughn | 757,074 | Apr. 12 | 1712 | 372 | 109 | 1722 |
| Air-motor or windmill | A. M. Crunican | 756,216 | Apr. 5 | 43 | 10, 11, 12 | 109 | 1351 |
| Air or other gaseous bodies. Compressor for | H. C. Sergeant | 754,901 | Mar. 15 | 3358 | 734 | 109 | 767 |
| Air-purifier | J. S. Macardle | 757,475 | Apr. 19 | 2529 | 554, 555 | 109 | 1912 |
| Air-ship | D. Greeuw and R. R. De Jong | 758,062 | Apr. 26 | 3717 | 807, 808 | 109 | 2190 |
| Alarm: *See* Burglar-alarm. Burglar or fire alarm. Electric time-alarm. Fire-alarm. High or low pressure signal-alarm. Overflow-alarm. Refrigerator drip-pan alarm. Tank-filling alarm. Too-great-speed alarm. | | | | | | | |
| Alarm device | W. Friedberg | 755,125 | Mar. 22 | 3755 | 885 | 109 | 878 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Alarm-lock | O. Miller and P. Kunzinger | 758,554 | Apr. 26 | 4674 | 1008 | 109 | 2404 |
| Alkoxy-caffein and making same | F. Ach | 757,330 | Apr. 12 | 2238 | ..... | 109 | 1835 |
| Alloys. Electrical manufacture of iron | G. Gin | 753,875 | Mar. 8 | 1319 | 297 | 109 | 804 |
| Alloys of copper and iron. Manufacturing | J. D. Darling | 755,461 | Mar. 22 | 4385 | ..... | 109 | 1005 |
| Alpha-oxyanthraquinone. Making | R. E. Schmidt and P. Tust | 755,801 | Mar. 29 | 5056 | ..... | 109 | 1170 |
| Aluminium sulfate. Making | H. Spence | 754,824 | Mar. 15 | 3815 | ..... | 109 | 737 |
| Amalgamator and concentrator | K. Lanius | 755,280 | Mar. 22 | 3947 | {874 / 875} | 109 | 912 |
| Ammonium nitrate. Making | W. Mills | 754,668 | Mar. 15 | 3916 | ..... | 109 | 660 |
| Ammunition-hoist | S. W. A. Noble | 756,872 | Apr. 5 | 157 | 82 | 109 | 1376 |
| Amusement apparatus | L. A. Thompson | 753,449 | Mar. 1 | 498 | 101 | 109 | 98 |
| Amusement apparatus | W. S. Reed | 754,698 | Mar. 15 | 3983 | 650 | 109 | 665 |
| Amusement apparatus | G. H. Du Clos | 757,286 | Apr. 12 | 2134 | 466 | 109 | 1813 |
| Amusement apparatus | H. G. Traver and C. W. Nichols | 758,341 | Apr. 26 | 4265 | 916 | 109 | 2312 |
| Amusement apparatus | W. Hector | 753,304 | Mar. 1 | 322 | 73 | 109 | 72 |
| Anchor | C. E. Irons | 756,640 | Apr. 5 | 843 | {182 / 183} | 109 | 1521 |
| Anchor. Land | C. W. Justus | 758,374 | Apr. 5 | 376 | 77 | 109 | 1424 |
| Angiers' artificial flies. Apparatus for storing or carrying | G. A. Pickard | 753,309 | Mar. 1 | 174 | 39 | 109 | 40 |
| Animal-cleaning machine | W. Woertink | 756,448 | Apr. 5 | 521 | 108 | 109 | 1454 |
| Animal leader | H. O. Seifert | 755,250 | Mar. 22 | 3988 | 885 | 109 | 990 |
| Animal-trap | C. G. Hawkins | 757,088 | Apr. 12 | 1663 | 360 | 109 | 1712 |
| Animal-trap | M. C. Harlan | 757,401 | Apr. 12 | 2379 | 518 | 109 | 1805 |
| Animal-trap | J. B. Harig | 758,208 | Apr. 26 | 3981 | 864 | 109 | 2250 |
| Animal-trap. Self-setting and ever-set | L. H. Simon | 758,481 | Apr. 26 | 4584 | 972 | 109 | 2370 |
| Annealing steel | L. D. Davis | 755,629 | Mar. 29 | 4701 | ..... | 109 | 1089 |
| Annunciator | F. H. Elwell | 756,608 | Apr. 5 | 791 | 172 | 109 | 1510 |
| Annunciator. Electrical | A. Carliss | 756,777 | Apr. 5 | 1117 | 246 | 109 | 1582 |
| Anthracene derivative and making same | R. Bohn | 753,659 | Mar. 1 | 846 | ..... | 109 | 184 |
| Antifriction end-thrust device | S. S. Eveland | 755,287 | Mar. 22 | 4051 | {898 / 899} | 109 | 934 |
| Antiseptic attachment for telephone-mouthpieces | W. M. English and A. H. Ten Broeck | 754,057 | Mar. 8 | 1672 | 371 | 109 | 395 |
| Antiseptic attachment. Telephone | H. L. Thompson | 757,850 | Apr. 19 | 3279 | 710 | 109 | 2076 |
| Antiseptic telephone-mouthpiece | W. M. English and A. H. Ten Broeck | 754,646 | Mar. 15 | 3876 | 828 | 109 | 660 |
| Apartment-house | W. C. James | 756,371 | Apr. 5 | 364 | 75, 76 | 109 | 1421 |
| Apparel. Wearing | L. S. Altheimer | 754,734 | Mar. 15 | 3954 | 666 | 109 | 702 |
| Apron. Storm | G. A. Hughes | 757,749 | Apr. 19 | 3089 | 673 | 109 | 2084 |
| Arm-rest | A. B. Peck | 755,040 | Mar. 22 | 3617 | 798 | 109 | 842 |
| Armature-winding | J. F. McElroy | 753,422 | Mar. 1 | 383 | 89, 90 | 109 | 82 |
| Armature winding or coil | F. A. Merrick | 755,029 | Mar. 22 | 3597 | 790 | 109 | 837 |
| Artichoke-trimmer | A. Roumiguiere | 757,229 | Apr. 12 | 2080 | 439 | 109 | 1790 |
| Asphalt-cutting device | T. F. Moran | 755,157 | Mar. 22 | 3813 | 843 | 109 | 886 |
| Assembling, forming, and setting mechanism | W. P. Devine | 756,837 | Apr. 12 | 1344 | 278 | 109 | 1626 |
| Atomizer | J. P. Farmer | 756,161 | Mar. 29 | 5731 | 1266 | 109 | 1319 |
| Atomizer | C. L. Turner | 757,157 | Apr. 12 | 1894 | 413 | 109 | 1763 |
| Atomizer | S. Kettle | 757,200 | Apr. 12 | 1973 | 430 | 109 | 1780 |
| Auger | J. H. Scaife | 755,304 | Mar. 22 | 4271 | 943 | 109 | 962 |
| Auger. Tubular | G. D. and J. H. Shaull | 754,350 | Mar. 8 | 2206 | 492 | 109 | 498 |
| Autoharp | E. E. Cruger | 757,890 | Apr. 19 | 3357 | 725 | 109 | 2094 |
| Autoharp sliding chord-bar | D. Ford | 753,857 | Mar. 8 | 1306 | 294 | 109 | 802 |
| Automatic brake | D. L. Ainsley | 754,184 | Mar. 8 | 1908 | 424 | 109 | 436 |
| Automatic coupling | E. F. Brickell | 755,442 | Mar. 22 | 4348 | 963 | 109 | 997 |
| Automatic dropper | W. Obermeir | 753,907 | Mar. 8 | 1388 | 313 | 109 | 820 |
| Automatic gate | J. Ashton | 755,854 | Mar. 29 | 5117 | 1134 | 109 | 1184 |
| Automatic gate | T. I. Duffy | 756,781 | Apr. 5 | 1128 | 248 | 109 | 1584 |
| Automatic sprinkler | C. B. Garrett | 758,522 | Apr. 26 | 4614 | 994 | 109 | 2391 |
| Automatic supply-regulator | E. H. Gold | 758,437 | Apr. 26 | 4453 | 968 | 109 | 2355 |
| Automatic switch | S. C. Tussing | 756,081 | Mar. 29 | 5581 | 1232 | 109 | 1297 |
| Automobile | L. B. Gaylor | 756,619 | Apr. 5 | 812 | 175 | 109 | 1514 |
| Automobile-fender | A. Miesse | 758,014 | Apr. 19 | 3601 | 779 | 109 | 2148 |
| Automobile lifting-truck | W. S. Kessler | 754,571 | Mar. 15 | 3798 | 594 | 109 | 680 |
| Automobile runner attachment | W. H. Anderson | 756,556 | Apr. 5 | 706 | 153 | 109 | 1492 |
| Automobile steering-gear | W. L. Marr | 756,670 | Apr. 5 | 911 | 199 | 109 | 1586 |
| Automobiles. Propulsion of electric | J. W. Aylsworth | 757,715 | Apr. 19 | 3012 | {654 / 655} | 109 | 2019 |
| Awl. Pocket sewing | J. L. Davidson | 753,698 | Mar. 29 | 4699 | 1045 | 109 | 1098 |
| Awning | W. Astrup | 754,454 | Apr. 5 | 581 | 111 | 109 | 1456 |
| Awning-cover. Automatic | W. R. Mudd | 758,016 | Apr. 19 | 3604 | 780 | 109 | 2149 |
| Ax | J. E. Leathers | 755,891 | Mar. 29 | 5232 | {1156 / 1157} | 109 | 1211 |
| Axle | W. P. Wilcox | 753,816 | Mar. 1 | 1204 | 270 | 109 | 258 |
| Axle | J. H. Entrekin | 757,444 | Apr. 19 | 2466 | 539 | 109 | 1800 |
| Axle box. Car | J. Spurr | 758,488 | Apr. 26 | 4527 | 973 | 109 | 2371 |
| Axle-box fastener. Car | F. G. Koehler | 755,895 | Mar. 29 | 5226 | 1155 | 109 | 1210 |
| Axle brasses. Implement for replacing car | A. Case | 757,396 | Apr. 12 | 2087 | 455 | 109 | 1804 |
| Axle coupling. Front | F. A. Thomas and L. F. Thompson | 756,430 | Apr. 5 | 482 | 100 | 109 | 1445 |
| Axle-lubricator | C. J. Stene | 755,967 | Mar. 29 | 5377 | 1186 | 109 | 1243 |
| Axle. Self-lubricating | P. Meyer | 756,675 | Apr. 5 | 922 | 202 | 109 | 1540 |
| Axle. Vehicle | M. H. Detrick | 755,280 | Mar. 22 | 4041 | 896 | 109 | 932 |
| Back-rest. Folding | B. B. Billmyer | 754,536 | Mar. 15 | 2967 | 579 | 109 | 619 |
| Badges, buttons, mirrors, &c. Shell and covering therefor for | W. Hornich, Jr. | 757,744 | Apr. 19 | 3062 | 671 | 109 | 2033 |
| Bag: *See* Chatelaine-bag. Feed-bag. Mail-bag. Odor-proof bag. Punching-bag. | | | | | | | |
| Bag-fastener | C. Guy | 753,978 | Mar. 8 | 1525 | 340 | 109 | 352 |
| Bag-fastener | J. D. Wood | 756,924 | Apr. 12 | 1412 | 314 | 109 | 1600 |
| Bag-holder | D. Madden and W. A. Thompson | 754,580 | Mar. 15 | 2732 | 590 | 109 | 634 |
| Bag-holder | R. V. Parr | 756,698 | Apr. 5 | 954 | 209 | 109 | 1546 |
| Bag holder or rack and printing device. Combination | W. A. O'Kane | 755,598 | Mar. 29 | 4826 | 1079 | 109 | 1130 |
| Bag-holding cabinet | A. S. Henderson | 755,001 | Mar. 22 | 3547 | 778 | 109 | 826 |
| Bags, &c. Frame for | F. Viano | 755,085 | Mar. 22 | 3996 | 811 | 109 | 860 |
| Bait. Artificial | H. S. Reynolds | 756,527 | Apr. 5 | 658 | 142 | 109 | 1481 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Baker's peel | G. J. Bohn | 754,042 | Mar. 8 | 1641 | 365 | 109 | 377 |
| Baking apparatus | C. J. T. Flygare | 755,123 | Mar. 22 | 3758 | 825 | 109 | 872 |
| Balance. Spring | S. R. Munson | 755,025 | Mar. 22 | 3591 | 788 | 109 | 836 |
| Bale or package cover | I. Schlichter | 754,811 | Mar. 15 | 3192 | 695 | 109 | 731 |
| Baling fibrous material | G. A. Lowry | 755,597 | Mar. 29 | 4615 | 1025 | 109 | 1057 |
| Baling-press | W. F. Jacobs | 753,402 | Mar. 1 | 325 | 75, 76 | 109 | 75 |
| Baling-press | G. W. Robburts | 754,093 | Mar. 8 | 1747 | 388 | 109 | 400 |
| Baling-press | T. F. Ormond | 754,498 | Mar. 15 | 2587 | {561 / 562} | 109 | 701 |
| Baling-press | J. J. York | 758,492 | Apr. 26 | 4356 | 979 | 109 | 2378 |
| Baling-press. Continuous | D. H. Linthicum | 755,896 | Mar. 29 | 5240 | 1150 | 109 | 1213 |
| Baling-press door-closer | E. Davis | 754,858 | Mar. 15 | 3296 | 716 | 109 | 752 |
| Ball: *See* Billiard or pool ball. Golf-ball. | | | | | | | |
| Ball-and-socket fastener | J. R. Smith | 753,525 | Mar. 1 | 591 | 134 | 109 | 129 |
| Ball catcher. Base | J. E. Bennett | 755,209 | Mar. 22 | 3915 | {865 / 866} | 109 | 905 |
| Ball-forming machine | A. C. Campbell | 756,212 | Apr. 5 | 35 | 8, 9 | 109 | 1350 |
| Balloting-machine | W. M. Dougherty | 756,602 | Apr. 5 | 780 | 170 | 109 | 1507 |
| Band-cutter and feeder | C. H. Hill | 755,661 | Mar. 29 | 4753 | 1058 | 109 | 1101 |
| Band-cutter and feeder knife | G. W. Parsons | 754,008 | Mar. 8 | 1577 | 352 | 109 | 364 |
| Band-fastener | F. Sedlmair | 754,714 | Mar. 15 | 3020 | 659 | 109 | 694 |
| Band or strap brake | P. C. Middleton and W. S. H. Smith | 757,480 | Apr. 19 | 2540 | {558 / 559} | 109 | 1914 |
| Bandage. Suspensory | E. R. Drake | 756,005 | Mar. 29 | 5460 | 1204 | 109 | 1261 |
| Bandage. Suspensory | W. A. Talnsh | 757,158 | Apr. 12 | 1887 | 412 | 109 | 1762 |
| Banjo | G. C. Furbershaw | 754,059 | Mar. 8 | 1675 | 372 | 109 | 385 |
| Bank | I. H. Terjesen | 755,257 | Mar. 22 | 3999 | 887 | 109 | 923 |
| Bank safety appliance | W. S. Kinsley | 754,078 | Mar. 8 | 1695 | {876 / 877} | 109 | 390 |
| Bank. Savings | I. D. Perry | 753,305 | Mar. 1 | 167 | 38 | 109 | 30 |
| Bank. Savings | R. J. Thompson | 758,340 | Apr. 26 | 4263 | {915 / 916} | 109 | 2312 |
| Barber's memorandum and cash-drawer | L. A. Bucklin | 756,825 | Apr. 12 | 1222 | 273 | 109 | 1621 |
| Barometer | C. H. Stoelting | 756,905 | Apr. 12 | 1377 | 307 | 109 | 1652 |
| Barrel | F. E. Gage | 754,923 | Mar. 15 | 3396 | 742 | 109 | 776 |
| Barrel-finishing machine | R. A. Lancey and C. W. Smith | 755,874 | Mar. 22 | 4228 | 935 | 109 | 974 |
| Barrel-head securer | S. A. Hunter | 757,309 | Apr. 12 | 2208 | 481 | 109 | 1828 |
| Barrel-holder | M. Derrig | 756,337 | Apr. 5 | 289 | 60 | 109 | 1405 |
| Barrel. Kraut-dispensing | T. W. McFarland | 757,951 | Apr. 19 | 3467 | 750 | 109 | 2119 |
| Barrel-soaking apparatus | B. Danner | 755,626 | Mar. 29 | 4695 | 1044 | 109 | 1088 |
| Basin. Lavatory | J. F. Kelly | 756,239 | Apr. 5 | 92 | 20 | 109 | 1362 |
| Basin. Lavatory | H. S. Maddock and J. F. Kelly | 756,257 | Apr. 5 | 128 | 26 | 109 | 1370 |
| Basin. Wash | P. J. Madden | 755,303 | Mar. 22 | 4080 | 908 | 109 | 940 |
| Basins, baths, &c. Waste mechanism for wash | S. W. Lewis | 756,663 | Apr. 5 | 892 | 195 | 109 | 1531 |
| Basket-making machine | A. Pohorzeleck | 757,344 | Apr. 12 | 2262 | 494 | 109 | 1841 |
| Baskets or cases. Apparatus for cleaning bottle | R. Knöllner | 753,500 | Mar. 1 | 521 | 121 | 109 | 114 |
| Bath: *See* Portable bath. Stiffener-bath. | | | | | | | |
| Bath adjustable frame. Combined automatic shower and vapor | O. J. Linendoll and A. T. Houghten | 757,933 | Apr. 19 | 3438 | 745 | 109 | 2112 |
| Bath apparatus | J. R. Hamilton | 758,207 | Apr. 26 | 3980 | 863 | 109 | 2250 |
| Bath-spray | V. C. Van't Woud | 757,791 | Apr. 19 | 3176 | 689 | 109 | 2055 |
| Bath-tub | O. Bussenius | 755,109 | Mar. 22 | 3730 | 820 | 109 | 868 |
| Bath-tub | H. P. Colle | 755,747 | Mar. 29 | 4939 | 1099 | 109 | 1144 |
| Bath tub. Electric | J. Zwiebel | 755,830 | Mar. 29 | 5112 | 1133 | 109 | 1183 |
| Bath-tub seat | G. W. Harbour | 754,369 | Mar. 8 | 2302 | 508 | 109 | 520 |
| Bath-tubs, &c. Leg-fastening for | T. W. Simcox | 757,974 | Apr. 19 | 3511 | 761 | 109 | 2129 |
| Batteries. Current-selector for charging secondary | M. R. Hutchison | 755,669 | Mar. 29 | 4768 | 1061 | 109 | 1105 |
| Battery: *See* Diffusion-battery. Dry battery. Galvanic battery. Gas-battery. Secondary battery. Storage battery. | | | | | | | |
| Battery-cell | E. Whitman | 757,164 | Apr. 12 | 1905 | 416 | 109 | 1766 |
| Battery construction. Storage | S. Lake | 755,142 | Mar. 22 | 3793 | 835 | 109 | 882 |
| Battery grid. Storage | G. W. Frost | 757,306 | Apr. 12 | 2370 | 516 | 109 | 1802 |
| Battery-plate grids. Apparatus for making secondary | A. F. Madden | 757,210 | Apr. 12 | 1986 | 433 | 109 | 1784 |
| Battery-plates. Apparatus for casting | J. Bijur | 757,719 | Apr. 19 | 3017 | 656 | 109 | 2020 |
| Battery plates. Making storage | J. Bijur | 757,718 | Apr. 19 | 3016 | 655 | 109 | 2020 |
| Battery plates. Protective sheath or envelop for storage | A. Meygret | 756,176 | Mar. 29 | 5756 | ..... | 109 | 1324 |
| Battery-stopper | A. Müller | 754,081 | Mar. 8 | 1710 | 381 | 109 | 392 |
| Battery tray. Storage | T. A. Edison | 754,858 | Mar. 15 | 3292 | 717 | 109 | 753 |
| Bead-loom | H. B. Mees | 758,376 | Apr. 26 | 4332 | 930 | 109 | 2326 |
| Beam, &c., and grillage therefor. Reinforced | W. N. Wight | 756,309 | Apr. 5 | 230 | 48 | 109 | 1398 |
| Beams. Securing strips of wood, &c., to iron | S. Davis | 754,855 | Mar. 15 | 3288 | 716 | 109 | 753 |
| Beaming mechanism | H. Van Winkle | 758,489 | Apr. 26 | 4548 | 978 | 109 | 2376 |
| Bean-huller | O. C. Gramling | 754,993 | Mar. 22 | 3533 | 774 | 109 | 828 |
| Bean-picking machine | G. F. Crippen | 753,870 | Mar. 1 | 272 | 62, 63 | 109 | 62 |
| Bearing | J. W. Bamford | 756,564 | Apr. 5 | 718 | 155 | 109 | 1494 |
| Bearing. Antifriction | W. W. O'Connor | 753,619 | Mar. 1 | 764 | 170 | 109 | 166 |
| Bearing. Antifriction | W. C. Baker | 753,820 | Mar. 1 | 1211 | 272 | 109 | 260 |
| Bearing. Antifriction | W. J. Weber, F. C. and W. M. Deyherle | 755,088 | Mar. 22 | 3700 | 812 | 109 | 861 |
| Bearing. Ball | T. H. Duncombe | 754,436 | Mar. 15 | 2472 | 538 | 109 | 575 |
| Bearing. Ball | O. C. Knipe | 753,871 | Mar. 22 | 4224 | 934 | 109 | 978 |
| Bearing. Conical roller | J. P. Cowing | 754,751 | Mar. 15 | 3078 | 672 | 109 | 708 |
| Bearing. Convertible roller | J. C. Hoshor | 757,115 | Apr. 12 | 1798 | 394 | 109 | 1741 |
| Bearing for balls rolling on two rails | F. Spengler | 755,406 | Mar. 22 | 4285 | 947 | 109 | 985 |
| Bearing. Roller | W. S. Sharpneck | 755,177 | Mar. 22 | 3857 | 852 | 109 | 894 |
| Bearing. Roller | R. F. Bower | 755,992 | Mar. 29 | 5428 | {1199 / 1200} | 109 | 1254 |
| Bearing spacer. Ball | A. P. Smith, Jr | 756,009 | Mar. 29 | 5567 | 1229 | 109 | 1284 |
| Bearing. Vertical-shaft | E. M. Sanger | 755,703 | Mar. 29 | 4848 | 1078 | 109 | 1125 |
| Bearing. Vertical-shaft | E. M. Sanger | 755,704 | Mar. 29 | 4850 | 1078 | 109 | 1125 |
| Bed | G. L. Marple | 757,827 | Apr. 12 | 2229 | 488 | 109 | 1833 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bed attachment | E. E. Robertson | 755,699 | Mar. 29 | 4841 | 1076 1077 | 109 | 1123 |
| Bed-bottom | W. Shannon | 754,097 | Mar. 8 | 1757 | 391 | 109 | 408 |
| Bed-bottom | T. Viens | 756,744 | Apr. 5 | 1057 | 235 | 109 | 1569 |
| Bed-bottom | J. G. Peace | 758,376 | Apr. 26 | 4124 | 891 | 109 | 2281 |
| Bed-bottom. Spring | C. D. Brouyette | 754,120 | Mar. 8 | 1798 | 399 | 109 | 412 |
| Bed-bottom. Spring | J. G. Venable, Sr | 754,260 | Mar. 8 | 2053 | 456 | 109 | 467 |
| Bed-bottom. Spring | S. H. Anderson | 755,987 | Mar. 29 | 5420 | 1197 | 109 | 1252 |
| Bed construction. Couch | F. M. Tinkham | 753,760 | Mar. 1 | 1040 | 236 | 109 | 223 |
| Bed-couch | G. M. Kim | 754,145 | Mar. 8 | 1883 | 408 409 | 109 | 421 |
| Bed-covering | E. W. Brown | 757,256 | Apr. 12 | 3067 | 452 | 109 | 1800 |
| Bed. Folding or cabinet | H. Faschian | 756,162 | Mar. 29 | 5732 | 1266 | 109 | 1319 |
| Bed or cushion | B. T. Milliken | 754,329 | Mar. 8 | 2174 | 482 | 109 | 492 |
| Bed-partition | J. E. and J. P. Smith | 754,353 | Mar. 8 | 2211 | 493 494 | 109 | 499 |
| Bed. Sofa | F. B. Wersel, Jr | 755,089 | Mar. 22 | 3701 | 812 813 | 109 | 861 |
| Bed. Sofa | F. B. Wersel, Jr | 755,090 | Mar. 22 | 3702 | 813 | 109 | 861 |
| Bed, sofa, and chair. Combination | H. Lehrer | 754,150 | Mar. 8 | 1840 | 410 411 | 109 | 423 |
| Bed. Spring | I. H. Haas | 753,698 | Mar. 1 | 932 | 211 | 109 | 201 |
| Bed. Spring | J. F. Sullivan | 754,255 | Mar. 8 | 2047 | 455 | 109 | 466 |
| Bed-spring | J. F. Dixon and T. J. Ridgway | 757,098 | Apr. 12 | 1766 | 383 384 | 109 | 1734 |
| Beds. Leaf-support for sofa | O. R. Hunt | 754,142 | Mar. 8 | 1829 | 407 | 109 | 420 |
| Bedclothes-holder | H. Crocker | 754,430 | Mar. 15 | 2449 | 534 | 109 | 570 |
| Bedclothes-holder | F. L. Germain | 757,451 | Apr. 19 | 2476 | 541 | 109 | 1901 |
| Bedstead | J. E. Stone | 755,071 | Mar. 22 | 3672 | 806 | 109 | 855 |
| Bedstead and chest. Folding | W. A. Arnold | 757,430 | Apr. 19 | 2437 | 532 | 109 | 1898 |
| Bedstead attachment | A. B. Shane | 754,615 | Mar. 15 | 2809 | 613 | 109 | 647 |
| Bedstead attachment | A. Wilcher | 755,264 | Mar. 22 | 4018 | 890 891 | 109 | 927 |
| Bedstead brace-clamp | F. H. Childs | 753,902 | Mar. 1 | 258 | 59 | 109 | 58 |
| Bedstead-fastener | H. A. Dunham | 755,285 | Mar. 22 | 4049 | 898 | 109 | 934 |
| Bedstead-fastener | H. H. Hirsch | 757,924 | Apr. 19 | 3416 | 739 | 109 | 2107 |
| Beehive | H. Davenes | 758,208 | Apr. 26 | 3971 | 861 | 109 | 2248 |
| Beer-cooler coils. Device for protecting | J. Thuemling | 753,450 | Mar. 1 | 430 | 101 | 109 | 93 |
| Beerwort-distributer | R. Mally | 755,901 | Mar. 29 | 5247 | 1160 | 109 | 1214 |
| Beet blocker and cultivator | C. H. Derham | 754,284 | Mar. 8 | 2096 | 465 | 109 | 475 |
| Beet-blocking machine | A. R. Mundt | 754,682 | Mar. 15 | 2944 | 642 643 | 109 | 675 |
| Beet-puller | C. A. Dysle | 755,118 | Mar. 22 | 3746 | 828 | 109 | 871 |
| Beet thinning and cultivating machine. Combined | A. Ireland | 755,298 | Mar. 22 | 4072 | 902 | 109 | 939 |
| Beets. Machine for blocking sugar | J. H. Uhl | 753,451 | Mar. 1 | 451 | 101 | 109 | 94 |
| Bell | N. W. Crandall | 753,360 | Mar. 1 | 271 | 62 | 109 | 61 |
| Bell | W. W. Dean | 755,630 | Mar. 29 | 4702 | 1045 | 109 | 1089 |
| Bell. Automatic winding door | V. B. Fuller | 755,568 | Mar. 22 | 4553 | 1015 | 109 | 1044 |
| Bells. Making | J. T. Duff | 753,948 | Mar. 1 | 62 | 15 | 109 | 16 |
| Belt. Apparel | J. A. Tessmer | 756,734 | Apr. 5 | 1089 | 230 231 | 109 | 1565 |
| Belt conveyer | J. M. Dodge | 756,600 | Apr. 5 | 777 | 169 | 109 | 1507 |
| Belt. Driving | A. Fritz | 758,356 | Apr. 26 | 4293 | 922 | 109 | 2318 |
| Belt-fastener | I. Jackson | 754,567 | Mar. 15 | 2720 | 591 | 109 | 628 |
| Belt-fastener | J. P. Junkin and A. Alexander | 757,662 | Apr. 19 | 2917 | 634 | 109 | 1999 |
| Belt-fastener. Lady's | H. H. Taylor | 755,811 | Mar. 29 | 5070 | 1126 | 109 | 1172 |
| Belt-fastening implement | W. W. Woodley | 757,589 | Apr. 19 | 2772 | 606 | 109 | 1967 |
| Belt-joint | J. W. Elstun | 756,220 | Apr. 5 | 56 | 13 | 109 | 1355 |
| Belt. Link | M. O. Reeves | 754,238 | Mar. 8 | 2018 | 449 | 109 | 460 |
| Belt-loop attachment for garments. Button | J. D. Burns | 758,350 | Apr. 26 | 4285 | 920 921 | 109 | 2316 |
| Belt or apron. Traveling | F. D. Mercer | 753,995 | Mar. 8 | 1556 | 347 348 | 109 | 359 |
| Belt or girdle. Extensible | G. Farrell | 758,240 | Apr. 26 | 4044 | 878 | 109 | 2262 |
| Belt-shifter | E. Kuthe | 755,678 | Mar. 29 | 4787 | 1065 | 109 | 1108 |
| Belt-shifter | H. J. Hoegh | 756,030 | Mar. 29 | 5488 | 1211 | 109 | 1261 |
| Belt-shipper for pulleys | E. Kottusch | 758,081 | Apr. 26 | 3743 | 813 814 | 109 | 2196 |
| Belt-stretcher | J. B. Conner | 757,272 | Apr. 12 | 2097 | 457 | 109 | 1806 |
| Belting and making same | L. P. Warner | 758,286 | Apr. 26 | 4145 | 895 896 | 109 | 2285 |
| Belting and making same. Machine | B. G. Harley | 757,919 | Apr. 19 | 3410 | 738 | 109 | 1967 |
| Bench: *See* Seating-bench. Washbench. Sewing-bench. | | | | | | | |
| Bench-dog | J. H. Belser | 758,407 | Apr. 26 | 4385 | 942 | 109 | 2338 |
| Bending device | T. Damm | 753,553 | Mar. 1 | 650 | 147 | 109 | 143 |
| Bending-machine | J. F. Martin | 753,801 | Mar. 1 | 1168 | 262 | 109 | 249 |
| Bending-machine | W. Vanderlinden | 755,588 | Mar. 22 | 4601 | 1022 1023 | 109 | 1053 |
| Bending-machine | J. J. Wood | 757,078 | Apr. 12 | 1717 | 373 | 109 | 1724 |
| Benzols and their homologues. Manufacture of the | A. Nikiforoff | 756,809 | Mar. 22 | 4096 | 905 | 109 | 943 |
| Bevel | W. V. Morrow | 753,419 | Mar. 1 | 379 | 86 | 109 | 85 |
| Bib or faucet | C. Peck | 754,889 | Mar. 15 | 3345 | 731 | 109 | 765 |
| Bicycle | C. N. Stilson | 754,720 | Mar. 15 | 3028 | 661 662 | 109 | 696 |
| Bicycle attachment | W. H. Bradley | 754,043 | Mar. 8 | 1642 | 365 | 109 | 378 |
| Bicycle-gearing | H. F. Maynes | 754,587 | Mar. 15 | 2761 | 602 | 109 | 636 |
| Bicycle-gearing | C. S. Thompson and H. F. Maynes | 754,621 | Mar. 15 | 2890 | 615 616 | 109 | 649 |
| Bicycle handle-bar support | R. H. Tate | 757,154 | Apr. 12 | 1868 | 412 | 109 | 1762 |
| Bicycle. Snow | J. E. Reed | 755,170 | Mar. 22 | 3843 | 848 | 109 | 891 |
| Bicycles, &c. Runner and propelling attachment for | J. H. Youngken | 756,767 | Apr. 5 | 1095 | 242 | 109 | 1577 |
| Billiard or pool ball | H. L. Haskell and C. F. Brigham | 758,302 | Mar. 1 | 319 | 72 | 109 | 72 |
| Bin: *See* Dust or refuse bin. Tilting bin. | | | | | | | |
| Binder | E. Herrmann | 755,002 | Mar. 22 | 3550 | 778 | 109 | 827 |



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|---|---|---|---|---|---|---|---|
| Binder | J. Montgomery | 755,380 | Mar. 22 | 4241 | 937 | 109 | 976 |
| Binder | J. O. Deckert | 756,159 | Mar. 29 | 5725 | 1264 | 109 | 1318 |
| Binder and file for pamphlets, books, ledgers, &c | F. B. Whitney | 754,628 | Mar. 15 | 2836 | 619 | 109 | 652 |
| Binder-frame | L. A. Jones | 754,070 | Mar. 8 | 1689 | 375 376 | 109 | 389 |
| Binder-frame. Loose-leaf | A. H. Lorenz | 754,324 | Mar. 8 | 2164 | 479 | 109 | 489 |
| Binder. Loose-leaf | A. Opalla | 753,805 | Mar. 1 | 1169 | 263 | 109 | 251 |
| Binder. Loose-leaf | J. L. Hanson | 754,766 | Mar. 15 | 3101 | 677 | 109 | 718 |
| Binder. Loose-leaf | J. L. McMillan | 757,336 | Apr. 12 | 2252 | 490 491 | 109 | 1888 |
| Binder. Loose-leaf | J. W. Husing | 757,560 | Apr. 19 | 2915 | 633 | 109 | 1998 |
| Binder. Temporary | J. P. Mentzer | 754,791 | Mar. 15 | 3160 | 688 | 109 | 724 |
| Binder. Temporary | M. P. Exline | 756,108 | Mar. 29 | 5649 | 1247 | 109 | 1301 |
| Binder. Temporary | G. A. Shoemaker | 756,901 | Apr. 12 | 1872 | 305 | 109 | 1651 |
| Binder. Temporary | W. J. Rile | 757,622 | Apr. 19 | 2963 | 645 | 109 | 2008 |
| Binder. Temporary | J. F. Cordes | 758,050 | Apr. 26 | 3677 | 797 | 109 | 2185 |
| Binding | A. S. Woodard | 757,990 | Apr. 19 | 3544 | 767 | 109 | 2136 |
| Binding-post | S. C. Houghton | 757,809 | Apr. 19 | 3204 | 696 | 109 | 2061 |
| Bird-cage | J. A. Quelch | 754,806 | Mar. 15 | 3188 | 694 | 109 | 730 |
| Bird-trap | C. W. Gillis | 755,762 | Mar. 29 | 4987 | 1109 | 109 | 1153 |
| Bit: *See* Bridle-bit. | | | | | | | |
| Bit-stock | J. Folt | 754,295 | Mar. 8 | 2121 | 470 | 109 | 481 |
| Bit-stock | D. E. Trumbull | 755,078 | Mar. 22 | 3684 | 808 | 109 | 858 |
| Blackboard-machine | W. T. Jordan | 753,829 | Mar. 1 | 1234 | 277 | 109 | 265 |
| Blacking stand. Shoe | J. H. Harper | 755,998 | Mar. 22 | 3543 | 776 | 109 | 825 |
| Blanks. Mechanism for feeding thin flat flexible | L. A. Mayall | 757,667 | Apr. 19 | 2930 | 637 | 109 | 2001 |
| Blast-furnace | J. W. Pack | 754,337 | Mar. 8 | 2188 | 486 | 109 | 495 |
| Blasting charges. Machine for preparing | F. J. Trayssac | 754,830 | Mar. 15 | 3226 | 702 703 | 109 | 740 |
| Blasting compound | J. Tollner | 757,693 | Apr. 19 | 2981 | | 109 | 2012 |
| Bleaching materials. Apparatus for electrically | A. A. Vogelsang | 756,745 | Apr. 5 | 1058 | 235 236 | 109 | 1569 |
| Blind clip. Venetian-window | F. Tenney | 757,155 | Apr. 12 | 1891 | 412 413 | 109 | 1762 |
| Blind-fastener | H. A. Schmidt | 755,052 | Mar. 22 | 3634 | 797 798 | 109 | 846 |
| Blinds, shutters, doors, &c. Fastener for | G. Darling | 755,627 | Mar. 29 | 4697 | 1045 | 109 | 1088 |
| Block: *See* Building-block. Paving-block. Chopping-block. Printing-block. Curtain-block. Tackle-block. Fireproof building-block. Toy block. | | | | | | | |
| Block and tackle | J. O. Walton | 756,746 | Apr. 5 | 1063 | 237 | 109 | 1570 |
| Block-system emergency apparatus | F. V. Thompson | 757,692 | Apr. 19 | 2978 | 648 | 109 | 2011 |
| Blotter attachment. Desk | J. I. Haycraft | 757,921 | Apr. 19 | 3412 | 739 | 109 | 2106 |
| Blower. Pressure | A. W. Case | 757,267 | Apr. 12 | 2089 | 455 | 109 | 1804 |
| Blowing-engine | E. Reynolds | 754,162 | Mar. 8 | 1863 | 415 416 | 109 | 428 |
| Blue-burner | H. Hurwitz and A. Schapiro | 756,369 | Apr. 5 | 362 | 74 | 109 | 1421 |
| Blue-red lake and making same | G. Gulbransson | 757,109 | Apr. 12 | 1786 | | 109 | 1738 |
| Board: *See* Game-board. Ironing-board. | | | | | | | |
| Board for building purposes | A. B. Keyes | 757,812 | Apr. 19 | 3210 | 697 | 109 | 2062 |
| Boards from structures. Implement for detaching | F. Guenther | 757,915 | Apr. 19 | 3408 | 737 | 109 | 2104 |
| Boat | J. C. Nichol | 757,882 | Apr. 19 | 3343 | 704 | 109 | 2060 |
| Boat-chock | I. A. Lemm | 756,661 | Apr. 5 | 989 | 195 | 109 | 1531 |
| Boat. Glass-bottom | L. Larson | 756,244 | Apr. 5 | 102 | 22 | 109 | 1363 |
| Boat-launching apparatus. Life | W. F. Powers | 755,941 | Mar. 22 | 3971 | 860 | 109 | 917 |
| Boat-lowering device. Life | J. F. Becker | 758,043 | Apr. 26 | 3667 | 793 | 109 | 2182 |
| Boat. Metal | S. D. Noel | 753,425 | Mar. 1 | 391 | 91 | 109 | 85 |
| Boat. Submarine | S. Lake | 756,080 | Mar. 29 | 5508 | 1214 | 109 | 1270 |
| Boats. Ballast-compartment for submarine | S. Lake | 754,222 | Mar. 8 | 1985 | 442 | 109 | 453 |
| Body-brace and corset. Combined | H. C. Rash | 755,547 | Mar. 22 | 4528 | 1007 1008 | 109 | 1086 |
| Boiler: *See* Domestic boiler. Smokeless boiler. Flash-boiler. Steam-boiler. Gas-fired boiler. Water-tube boiler. Locomotive-boiler. | | | | | | | |
| Boiler | H. W. White | 756,754 | Apr. 5 | 1073 | 239 | 109 | 1572 |
| Boiler and furnace. Combined | W. W. Bonson | 756,822 | Apr. 12 | 1210 | 270 271 | 109 | 1619 |
| Boiler circulating system. Steam | W. J. Macdonald | 753,991 | Mar. 8 | 1544 | 345 | 109 | 357 |
| Boiler drying attachment | W. B. Swartwout | 753,446 | Mar. 1 | 425 | 100 | 109 | 92 |
| Boiler-flue construction | T. A. Lee | 756,246 | Apr. 5 | 107 | 23 | 109 | 1364 |
| Boiler-furnace | S. R. Thompson | 755,076 | Mar. 22 | 3682 | 808 | 109 | 857 |
| Boiler-furnace | S. R. Thompson | 755,077 | Mar. 22 | 3683 | 808 | 109 | 858 |
| Boiler-furnace | J. F. Lester | 756,382 | Apr. 5 | 991 | 80 | 109 | 1427 |
| Boiler furnace. Steam | L. G. M. West | 755,972 | Mar. 29 | 5384 | 1191 | 109 | 1247 |
| Boiler glass water-gage. Steam | G. S. Neeley | 756,134 | Mar. 29 | 5629 | 1256 | 109 | 1310 |
| Boiler-headers. Forming | J. P. Sneddon | 755,718 | Mar. 29 | 4876 | 1084 | 109 | 1181 |
| Boiler purifier. Steam | N. W. and S. Yantis | 757,382 | Apr. 12 | 2342 | 510 | 109 | 1856 |
| Boiler-tube | T. W. Barber | 756,558 | Mar. 22 | 4545 | 1011 | 109 | 1040 |
| Boiler-tube heat-circulator | J. Philp | 754,342 | Mar. 8 | 2194 | 488 | 109 | 496 |
| Boiler-tube joint | F. Strattner | 756,420 | Apr. 5 | 481 | 100 | 109 | 1445 |
| Boiler water-column. Steam | G. H. Holland | 755,875 | Mar. 29 | 5205 | 1151 | 109 | 1205 |
| Boilers. Cleaning and restoring | A. R. Raymer | 757,839 | Apr. 19 | 3257 | 706 | 109 | 2072 |
| Boilers. Device for preventing incrustation of steam | J. M. Mathews | 755,027 | Mar. 22 | 3592 | 789 | 109 | 886 |
| Boll-weevil catcher | S. V. Ivey | 754,873 | Mar. 15 | 3314 | 722 723 | 109 | 759 |
| Bolt: *See* Expansion-bolt. Stay-bolt. Sash-bolt. | | | | | | | |
| Bolt | F. P. Pfleghar | 758,333 | Apr. 26 | 4255 | 914 | 109 | 2310 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bolt-heading machine | H. O. Olson | 757,409 | Apr. 12 | 2394 | 530 | 109 | 1867 |
| Bolt-holder | H. A. Parson | 757,142 | Apr. 12 | 1857 | 521<br>406 | 109 | 1755 |
| Bolt-threading head | W. Rievaldt | 75 ,739 | Mar. 1 | 1004 | 228<br>79 | 109 | 216 |
| Bolting-machine driving mechanism. Sieve- | J. Fraser and A. G. Mather | 756,960 | Apr. 12 | 1465 | 334 | 109 | 1670 |
| Bolting-mill | A. Renault and G. Cusson | 757,227 | Apr. 12 | 2016 | 428<br>439 | 109 | 1789 |
| Bolting-sieve cleaner | C. A. Shultz | 754,821 | Mar. 15 | 3211 | 700 | 100 | 730 |
| Bone-holding device | K. Wintsch, Jr | 757,166 | Apr. 12 | 1997 | 416 | 109 | 1766 |
| Book. Account- | H. Sixbey | 758,220 | Apr. 26 | 4000 | 866 | 109 | 2254 |
| Book and copy-holder. Stenographer's note- | E. Sexton | 756,147 | Mar. 29 | 5709 | 1260 | 109 | 1314 |
| Book. Blank- | F. W. Sinks | 756,421 | Apr. 5 | 466 | 96 | 109 | 1442 |
| Book-carriage | J. C. Goodman and F. J. Wurtele | 753,484 | Mar. 1 | 490 | 115 | 109 | 108 |
| Book-handle | G. Koch | 753,585 | Mar. 1 | 711 | 159 | 109 | 155 |
| Book-holder | R. L. Kinman | 757,302 | Apr. 12 | 1976 | 430 | 109 | 1781 |
| Book-leaf fastener | W. C. Goss | 753,976 | Mar. 8 | 1534 | 340 | 100 | 368 |
| Book-leaf raiser | C. E. Sebastian and H. Stoebe | 757,779 | Apr. 19 | 3156 | 685 | 109 | 2060 |
| Book. Manifold sales- | L. G. Whitney | 754,361 | Mar. 8 | 2223 | 496 | 109 | 508 |
| Book. Manifolding sales- | L. G. Whitney | 756,308 | Apr. 5 | 227 | 47, 48 | 109 | 1308 |
| Book. Manifolding sales-recording | F. M. Turck | 755,040 | Mar. 22 | 3687 | 809 | 109 | 860 |
| Book-marker and leaf-holder. Combined | C. L. Hrauda | 756,115 | Mar. 29 | 5664 | 1250 | 109 | 1304 |
| Book rounding, backing, and lining machine | C. W. Lovell | 753,413 | Mar. 1 | 357 | 82<br>83<br>84<br>85 | 109 | 79 |
| Book. Sample-card | E. W. Bredemeier | 757,389 | Apr. 12 | 2333 | 513 | 109 | 1869 |
| Book stand or support | C. Herbert | 756,631 | Apr. 5 | 882 | 180 | 109 | 1518 |
| Bookbinding | G. H. Day | 753,962 | Mar. 8 | 1508 | 335 | 109 | 347 |
| Booster apparatus | L. Lyndon | 757,405 | Apr. 12 | 2368 | 519 | 109 | 1866 |
| Booster apparatus | L. Lyndon | 757,406 | Apr. 12 | 2369 | 520 | 109 | 1866 |
| Boot or shoe | J. Keats | 753,495 | Mar. 1 | 515 | 119 | 109 | 113 |
| Boot or shoe for athletic purposes | P. A. Valle | 757,963 | Apr. 19 | 3535 | 765 | 109 | 2138 |
| Borer. Post-hole | M. P. Curlee | 753,239 | Mar. 1 | 47 | 12 | 109 | 13 |
| Boring and tapping. Combination-tool for | J. H. Allendorfer and M. Owens | 756,038 | Apr. 26 | 3656 | 791 | 109 | 2179 |
| Boring-machine | C. E. Gadfield | 757,734 | Apr. 19 | 3053 | 666 | 109 | 2027 |
| Boring-tool. Expansion | W. Pohlman | 757,494 | Apr. 19 | 2565 | 563 | 109 | 1919 |
| Bottle | A. Friedmann | 753,564 | Mar. 1 | 668 | 150 | 109 | 147 |
| Bottle | W. Conard | 756,989 | Apr. 12 | 1441 | 330 | 109 | 1665 |
| Bottle | P. J. Germain | 757,105 | Apr. 12 | 1782 | 390 | 109 | 1737 |
| Bottle | E. Blue and Q. Herndon | 757,647 | Apr. 19 | 2907 | 630 | 109 | 1994 |
| Bottle | J. Auld | 757,714 | Apr. 19 | 3011 | 654 | 109 | 2019 |
| Bottle-cap | E. Norton | 756,273 | Apr. 26 | 4115 | 900 | 109 | 2279 |
| Bottle-closing device | F. B. Cary | 754,198 | Mar. 8 | 1802 | 401 | 109 | 414 |
| Bottle-closure | A. Gaul, Jr | 753,354 | Mar. 1 | 72 | 18 | 109 | 18 |
| Bottle-closure | F. W. H. Clay | 755,375 | Mar. 22 | 4033 | 894 | 109 | 930 |
| Bottle-closure | F. W. H. Clay | 755,376 | Mar. 22 | 4035 | 895 | 109 | 930 |
| Bottle-closure | K. H. Cressman | 755,623 | Mar. 29 | 4691 | 1043 | 109 | 1067 |
| Bottle-closure | O. Eick | 756,343 | Apr. 5 | 302 | 62 | 109 | 1406 |
| Bottle-closure | B. Clemens | 756,586 | Apr. 5 | 760 | 165 | 109 | 1503 |
| Bottle-closure | E. E. Adams | 756,770 | Apr. 5 | 1100 | 243 | 109 | 1575 |
| Bottle-closure sprinkler-cap | E. A. McIlhenny | 757,216 | Apr. 12 | 1998 | 435 | 109 | 1795 |
| Bottle-filling apparatus | J. Anderson | 754,951 | Mar. 15 | 3463 | 758 | 109 | 792 |
| Bottle-filling device | C. A. Carlson | 755,690 | Mar. 22 | 4623 | 1006 | 109 | 1056 |
| Bottle-filling machine | P. J. Cawley | 753,236 | Mar. 1 | 38 | 10, 11 | 109 | 10 |
| Bottle-filling machine | E. H. Parker | 754,602 | Mar. 15 | 2784 | 607 | 109 | 642 |
| Bottle-filling machine | F. C. H. Strasburger | 756,428 | Apr. 5 | 478 | 99 | 109 | 1444 |
| Bottle holding and carrying device | A. F. Cramer | 756,501 | Apr. 5 | 765 | 166 | 109 | 1504 |
| Bottle. Non-refillable | J. M. Peterson and F. F. Hutchins | 753,306 | Mar. 1 | 109 | 23 | 109 | 30 |
| Bottle. Non-refillable | S. W. Ludlow | 753,894 | Mar. 8 | 1359 | 306 | 109 | 313 |
| Bottle. Non-refillable | M. G. Delaney | 754,365 | Mar. 8 | 2397 | 501 | 109 | 519 |
| Bottle. Non-refillable | J. Bailey | 756,300 | Apr. 5 | 6 | 1 | 109 | 1344 |
| Bottle. Non-refillable | H. Breunig | 756,324 | Apr. 5 | 257 | 54 | 109 | 1499 |
| Bottle. Non-refillable | C. D. Chase and E. P. Dole | 756,584 | Apr. 5 | 756 | 164 | 109 | 1503 |
| Bottle. Non-refillable | C. B. Hibbard | 756,696 | Apr. 5 | 937 | 181 | 109 | 1530 |
| Bottle. Non-refillable | W. C. Beal | 756,773 | Apr. 5 | 1105 | 244 | 109 | 1579 |
| Bottle. Non-refillable | S. E. George and J. R. Norris | 756,843 | Apr. 12 | 1255 | 279 | 109 | 1626 |
| Bottle. Non-refillable | W. A. Coke | 757,391 | Apr. 12 | 2354 | 513 | 109 | 1859 |
| Bottle. Non-refillable | T. M. Wood | 757,707 | Apr. 19 | 3001 | 652 | 109 | 2017 |
| Bottle. Non-refillable | A. Ouillé | 757,955 | Apr. 19 | 3473 | 751<br>752 | 109 | 2121 |
| Bottle. Non-refillable | D. S. Cooke | 758,298 | Apr. 26 | 4185 | 901 | 109 | 2296 |
| Bottle. Non-refillable | C. A. Taylor | 758,305 | Apr. 26 | 4359 | 937 | 109 | 2332 |
| Bottle. Non-refillable | G. W. Lovejoy | 758,543 | Apr. 26 | 4656 | 1003 | 109 | 2400 |
| Bottle opener and temporary closure. Capped- | C. Cady | 758,235 | Apr. 26 | 4067 | 877 | 109 | 2261 |
| Bottle-soaking apparatus | W. B. Wright | 757,535 | Apr. 19 | 3656 | 582<br>583 | 109 | 1939 |
| Bottle-stopper | J. Conde | 755,360 | Mar. 22 | 4197 | 928 | 109 | 966 |
| Bottle-stopper | W. D. Doremus | 756,601 | Apr. 5 | 778 | 169 | 109 | 1507 |
| Bottle-stopper | G. Kirkegaard | 758,319 | Apr. 26 | 4225 | 908 | 109 | 2304 |
| Bottle stopper and opener | F. Goodrich | 757,548 | Apr. 19 | 2987 | 588 | 109 | 1946 |
| Bottle-stopper. Non-refillable | J. G. Reddick | 754,607 | Mar. 15 | 2793 | 609 | 109 | 644 |
| Bottle-stopper. Non-refillable | J. G. Reddick | 754,608 | Mar. 15 | 2794 | 609 | 109 | 644 |
| Bottle-washing machine | P. D. Laible | 755,018 | Mar. 22 | 3580 | 785<br>786 | 109 | 833 |
| Bottle-washing machine | F. C. H. Strasburger | 756,427 | Apr. 5 | 475 | 98, 99 | 109 | 1444 |
| Bottles, &c. Means for packing | W. Ducart | 758,239 | Apr. 26 | 4043 | 878 | 109 | 2262 |
| Bottles. Stopper for preventing refilling | G. B. Okey | 754,685 | Mar. 15 | 2950 | 644 | 109 | 677 |
| Bottling-machine | H. W. Colby | 755,619 | Mar. 29 | 4680 | 1040<br>1041<br>1042 | 109 | 1065 |
| Bottling machine. Liquid- | A. Schneider | 754,017 | Mar. 8 | 1594 | 355<br>356 | 109 | 368 |
| Bow-spring | I. Fox | 755,194 | Mar. 22 | 3758 | 825 | 109 | 872 |
| Bowling-alley | A. Herbst | 757,922 | Apr. 19 | 3414 | 739 | 109 | 2107 |
| Bowling-alley dresser | E. F. Dreger | 756,780 | Apr. 5 | 1126 | 247 | 109 | 1584 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bowling-alley. Portable | F. Kary | 754,456 | Mar. 15 | 2501 | 544 | 109 | 582 |
| Bowling-alleys. Machine for use in constructing and repairing | J. F. Darrell | 758,424 | Apr. 26 | 4430 | 951 | 109 | 2349 |
| Box:<br>*See* Cigarette or cigar box. Coin-collecting box. Folding box. Fruit or berry box. Knockdown box. Letter-box. Mail-box. Mail-delivery box. Match-box. Metal box. Miter-box. Packing-box. Paper box. Plate-box. Powder-box. Salt-box. Seedbox. Stuffing-box. Turpentine-box. Waste-paper box. | | | | | | | |
| Box | B. vom Eigen | 753,381 | Mar. 1 | 296 | 67 | 109 | 67 |
| Box | M. F. Middleton | 757,827 | Apr. 19 | 3237 | 702 | 109 | 2067 |
| Box and cutter for goods in ribbon form. Combined | F. D. Scott | 757,844 | Apr. 19 | 3269 | 708 | 109 | 2074 |
| Box-covering machine | H. B. Smith | 753,524 | Mar. 1 | 589 | 134 | 109 | 128 |
| Box-covering machine | H. B. Blackinton | 758,502 | Apr. 26 | 4579 | 983<br>984 | 109 | 2384 |
| Box-fastener | H. L. Jones | 753,889 | Mar. 8 | 1347 | 304 | 109 | 311 |
| Box-fastener | F. Moellenbrock | 753,996 | Mar. 8 | 1557 | 348 | 109 | 359 |
| Box-fastener | C. W. Beehler | 757,172 | Apr. 12 | 1920 | 419 | 109 | 1769 |
| Box filling and assembling machine. Slide- | G. W. Perks | 755,312 | Mar. 22 | 4104 | 906<br>907 | 109 | 944 |
| Box-forming machine | S. Y. High | 757,870 | Apr. 19 | 3311 | 717<br>718 | 109 | 2063 |
| Box or container for bottled beverages | P. D. Laible | 758,369 | Apr. 26 | 4319 | 927 | 109 | 2324 |
| Box-pull | M. S. Rafield | 755,044 | Mar. 22 | 3622 | 795 | 109 | 843 |
| Brace:<br>*See* Body-brace. Extension-brace. | | | | | | | |
| Brace balance-weight | C. F. Keables | 757,815 | Apr. 12 | 2210 | 483 | 109 | 1830 |
| Bracelet. Expansive | M. S. Rodenberg | 757,772 | Apr. 19 | 3142 | 683 | 109 | 2047 |
| Bracket:<br>*See* Folding bracket. Pipe-supporting bracket. Shade-bracket. Shade-roller bracket. Sink-bracket. | | | | | | | |
| Bracket | P. M. Read | 755,581 | Mar. 22 | 4586 | 1020 | 109 | 1049 |
| Bracket | C. F. Kade | 756,648 | Apr. 5 | 856 | 186 | 109 | 1594 |
| Bracket for universal stands or supports | A. L. Robbins | 757,498 | Apr. 19 | 2572 | 564 | 109 | 1920 |
| Braid. Skirt- | J. W. Schloss | 758,564 | Apr. 26 | 4704 | 1015 | 109 | 2411 |
| Braiding-machine | W. Hill | 755,008 | Mar. 22 | 3551 | 778<br>779 | 109 | 827 |
| Braiding-machine | J. P. Swift | 757,423 | Apr. 12 | 2420 | 527<br>528 | 109 | 1874 |
| Brake:<br>*See* Air-brake. Automatic brake. Band or strap brake. Car-brake. Car emergency-brake. Emergency-brake. Fluid-pressure brake. Friction-brake. Magnetic brake. Rail-brake. Railway-brake. Vehicle-brake. Wagon-brake. Well-brake. | | | | | | | |
| Brake | J. A. and C. Mays | 753,898 | Mar. 8 | 1366 | 308 | 109 | 315 |
| Brake | F. Stoltzenburg | 756,188 | Mar. 29 | 5773 | 1275 | 109 | 1327 |
| Brake | M. A. Wodal | 757,006 | Apr. 12 | 1580 | 346 | 109 | 1694 |
| Brake-adjuster | F. E. Beatty | 756,092 | Mar. 29 | 5614 | 1239 | 109 | 1293 |
| Brake apparatus. Fluid-pressure | J. Reichmann. (Reissue) | 12,207 | Mar. 22 | 4629 | 1028<br>1029 | 109 | 1059 |
| Brake-beam | A. Lipschutz | 754,785 | Mar. 15 | 3149 | 686 | 109 | 729 |
| Brake-handle | C. J. Keplinger | 757,468 | Apr. 19 | 2518 | 552 | 109 | 1909 |
| Brake-lever attachment | R. W. Cooke | 753,549 | Mar. 1 | 645 | 146 | 109 | 142 |
| Brake-rigging | W. G. Price | 757,345 | Apr. 12 | 2264 | 494<br>495 | 109 | 1841 |
| Brake-shoe | J. D. Gallagher | 754,440 | Mar. 15 | 2479 | 539<br>540 | 109 | 576 |
| Brake-shoe and producing same | C. G. Ette | 754,921 | Mar. 15 | 3301 | 741 | 109 | 775 |
| Brake-shoe holder | A. M. Pennock | 754,604 | Mar. 15 | 2789 | 608 | 109 | 643 |
| Braking mechanism | J. B. Mahana | 754,327 | Mar. 8 | 2169 | 480<br>481 | 109 | 491 |
| Braking system | C. P. Steinmetz | 755,807 | Mar. 29 | 5063 | 1125 | 109 | 1171 |
| Branding implement. Oil-burning | G. Fuller | 754,862 | Mar. 15 | 3297 | 718 | 109 | 755 |
| Brazing cast-iron | J. E. Tichon | 756,079 | Mar. 29 | 5579 | ------ | 109 | 1287 |
| Brazing compound | J. E. Tichon | 756,080 | Mar. 29 | 5580 | ------ | 109 | 1287 |
| Bread and cake closet | H. W. Diers | 757,282 | Apr. 12 | 2118 | 462 | 109 | 1810 |
| Bread-cutting machine | O. Bernard | 754,040 | Mar. 8 | 1638 | 364<br>365 | 109 | 377 |
| Bread-slicer | G. Root | 756,413 | Apr. 5 | 450 | 93 | 109 | 1439 |
| Breastpin safety-catch | J. C. Nordt | 754,794 | Mar. 15 | 3163 | 689 | 109 | 725 |
| Brick-car. Elevating | A. J. Zilker, A. L. Tidmarsh, and C. J. Armstrong. | 757,710 | Apr. 19 | 3005 | 653 | 109 | 2018 |
| Brick for the construction of arches | S. H. Clarke | 758,417 | Apr. 26 | 4420 | 949 | 109 | 2347 |
| Brick-handling truck | W. Miller | 753,901 | Mar. 8 | 1372 | 309<br>310 | 109 | 316 |
| Brick-machine | H. A. Stouffer | 756,906 | Apr. 12 | 1379 | 308 | 109 | 1653 |
| Brick-machine | C. F. Randall and W. C. Vanneman | 757,961 | Apr. 19 | 3484 | 755 | 109 | 2128 |
| Brick-making machine | J. H. Venables | 755,818 | Mar. 29 | 5061 | 1128<br>1129 | 109 | 1175 |
| Brick. Making paving- | T. S. Pierce | 756,798 | Apr. 5 | 1165 | ------ | 109 | 1293 |
| Brick-mold | T. S. Crapp and R. C. Finch | 757,726 | Apr. 19 | 3040 | 661 | 109 | 2025 |
| Brick or building-block. Glass-faced | J. H. Leighton | 756,971 | Apr. 12 | 1511 | 333 | 109 | 1680 |
| Brick-pallet and truck | F. E. and E. A. Swift | 757,068 | Apr. 12 | 1705 | 370 | 109 | 1721 |
| Brick-stamping machine | F. W. Miles | 756,677 | Apr. 5 | 925 | 202 | 109 | 1540 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bridge | J. Tomlinson | 755,734 | Mar. 29 | 4896 | 1090 | 109 | 1134 |
| Bridge | E. L. and J. C. Dildine | 757,804 | Apr. 19 | 3196 | 694 | 109 | 2069 |
| Bridge and tailpiece. Combination | E. Reach | 754,988 | Mar. 15 | 3428 | 750 | 109 | 783 |
| Bridge construction | S. W. Hill | 757,552 | Apr. 19 | 3091 | 589 | 109 | 1947 |
| Bridge construction | W. R. Diehl | 758,428 | Apr. 26 | 4436 | 953 | 109 | 2350 |
| Bridge construction. Arch- | S. W. Hill | 757,553 | Apr. 19 | 3093 | 589 | 109 | 1948 |
| Bridge rail connection. Draw- | F. T. Kelly | 756,651 | Apr. 5 | 807 | 180 | 109 | 1527 |
| Bridle-bit | H. S. Anderson | 754,532 | Mar. 15 | 2842 | 620 | 109 | 654 |
| Bridle-bit | C. G. Olin | 757,954 | Apr. 19 | 3473 | 751 | 109 | 2120 |
| Brine. Purifying | W. Trantom | 755,415 | Mar. 22 | 4300 | ..... | 109 | 989 |
| Briquets. Producing | J. M. Davidson | 756,593 | Apr. 5 | 768 | ..... | 109 | 1505 |
| Broiler | J. Frye | 757,864 | Apr. 19 | 3303 | 715 | 109 | 2092 |
| Bronzing-machine | M. Fritsche | 756,786 | Apr. 5 | 1139 | 251<br>258 | 109 | 1588 |
| Brooder | M. A. Mills | 754,330 | Mar. 8 | 2175 | 482 | 109 | 492 |
| Broom | F. R. Lay | 757,818 | Apr. 19 | 3223 | 699 | 109 | 2065 |
| Broom-binding machine | S. P. Fraley | 757,108 | Apr. 12 | 1773 | 385<br>386<br>387<br>388<br>389 | 109 | 1736 |
| Broom-holder | W. T. Spillane | 756,294 | Apr. 5 | 304 | 43 | 109 | 1388 |
| Broom-moistener | W. S. Reynolds | 754,705 | Mar. 15 | 3005 | 656 | 109 | 691 |
| Brush | S. Zacsek | 755,985 | Mar. 29 | 5417 | 1196 | 109 | 1251 |
| Brush | W. W. Evans | 756,222 | Apr. 5 | 61 | 14 | 109 | 1336 |
| Brush | E. A. Laitner | 756,343 | Apr. 5 | 101 | 22 | 109 | 1363 |
| Brush | G. A. Vickery | 756,906 | Apr. 12 | 1563 | 343 | 109 | 1690 |
| Brush | C. Grüneberg | 758,063 | Apr. 26 | 3718 | 808 | 109 | 2190 |
| Brush and mop holder. Combined | H. G. Price | 755,540 | Mar. 22 | 4514 | 1005 | 109 | 1053 |
| Brush attachment. Tooth- | A. A. Petersen | 756,138 | Mar. 29 | 5698 | 1257 | 109 | 1312 |
| Brush. Floor or like | F. Neidenbach | 757,831 | Apr. 19 | 3242 | 703 | 109 | 2068 |
| Brush for screen-doors. Automatic fly- | C. E. Shoemaker | 756,420 | Apr. 5 | 466 | 96 | 109 | 1442 |
| Brush. Fountain- | H. A. Doten | 756,103 | Mar. 29 | 5646 | 1246 | 109 | 1300 |
| Brush. Fountain- | A. B. Landreth | 757,628 | Apr. 19 | 2859 | 625 | 109 | 1986 |
| Brush. Fountain- | D. E. Dunkle | 757,897 | Apr. 19 | 3307 | 727 | 109 | 2096 |
| Brush-holder | C. O. Bulock | 753,256 | Mar. 1 | 250 | 57 | 109 | 57 |
| Brush holder. Antiseptic tooth- | J. A. Cochrane | 757,885 | Apr. 19 | 3342 | 723 | 109 | 2091 |
| Brush-making apparatus. Hair- | W. W. Carpenter | 753,234 | Mar. 1 | 34 | 8 | 109 | 10 |
| Brush. Stove-polishing | B. Rausch | 754,237 | Mar. 8 | 2017 | 448 | 109 | 460 |
| Brush. Sweeping- | G. L. Lamb | 758,062 | Apr. 26 | 3744 | 814 | 109 | 2196 |
| Brush. Tooth- | H. E. Sandiford | 758,109 | Apr. 26 | 3796 | 894 | 109 | 2209 |
| Brush with washing device. Tooth- | F. Fritz | 757,907 | Apr. 19 | 3380 | 733<br>734 | 109 | 2101 |
| Bucket. Clam-shell | W. K. Monroe | 755,912 | Mar. 29 | 5282 | 1165<br>1166 | 109 | 1222 |
| Bucket-dumping device. Automatic | J. McKinnon | 758,371 | Apr. 26 | 4108 | 899 | 109 | 2277 |
| Bucket or pail fastener | R. Steidl | 757,548 | Apr. 19 | 3276 | 709 | 109 | 2075 |
| Bucket. Well- | O. Pierre | 755,335 | Mar. 22 | 4508 | 1002 | 109 | 1051 |
| Buckle | R. Scheuer | 753,320 | Mar. 1 | 196 | 44 | 109 | 45 |
| Buckle | A. Addington | 754,731 | Mar. 15 | 3048 | 665 | 109 | 700 |
| Buckle | E. A. Mainguet | 756,698 | Apr. 5 | 909 | 198 | 109 | 1537 |
| Buckle for connecting checkreins with driving-lines | J. F. Zufall | 753,306 | Mar. 22 | 3906 | 853 | 109 | 904 |
| Buckle. Suspender- | L. Neuberger | 753,494 | Mar. 1 | 390 | 90 | 109 | 85 |
| Buckle. Trace- | J. Mensen | 758,187 | Apr. 26 | 3940 | 855 | 109 | 2241 |
| Buffing-roll | M. Prevost | 755,398 | Mar. 22 | 4261 | 941 | 109 | 990 |
| Buggy-boot holder | S. Pearson | 753,498 | Mar. 1 | 396 | 92 | 109 | 86 |
| Buggy-top attachment | E. Walter | 757,161 | Apr. 12 | 1901 | 415 | 109 | 1765 |
| Building-block | J. D. Morrison | 753,396 | Mar. 1 | 133 | 32 | 109 | 33 |
| Building-block | A. F. Hoffman | 753,491 | Mar. 1 | 507 | 118 | 109 | 119 |
| Building-block | R. T. Frost | 757,033 | Apr. 12 | 1657 | 358 | 109 | 1711 |
| Building-block. Ventilating | R. L. Underwood | 756,300 | Apr. 5 | 216 | 44, 45 | 109 | 1391 |
| Building, &c., blocks. Apparatus for making | J. Brower | 754,639 | Mar. 15 | 2648 | 625<br>626 | 109 | 658 |
| Building, &c., blocks. Making | J. Brower | 754,640 | Mar. 15 | 2665 | 626 | 109 | 658 |
| Building blocks or stones. Machine for molding | W. L. Dow | 753,377 | Mar. 1 | 287 | 65, 66 | 109 | 65 |
| Building construction | G. F. Fisher | 756,122 | Mar. 22 | 3751 | 884 | 109 | 872 |
| Building construction | G. A. Behrnd | 758,500 | Apr. 26 | 4378 | 963 | 100 | 2383 |
| Buildings out of plastic material. Device for erecting | W. Harrison | 756,629 | Apr. 5 | 826 | 178<br>179 | 109 | 1517 |
| Bulkheads. Construction of | J. Truax | 757,368 | Apr. 12 | 2309 | 504<br>505 | 109 | 1851 |
| Bung for barrels, &c. Valved | J. E. Phillips | 753,308 | Mar. 1 | 172 | 39 | 109 | 40 |
| Bung-lock | H. Hubert | 757,118 | Apr. 12 | 1804 | 395 | 100 | 1742 |
| Bung-mallet | J. M. Dieterle | 755,683 | Mar. 29 | 4707 | 1046 | 109 | 1090 |
| Bunker, bin, &c. | W. D. Napier | 756,198 | Mar. 29 | 5691 | 1255<br>1256 | 109 | 1310 |
| Buoy | S. W. Roberts | 758,218 | Apr. 26 | 3998 | 868 | 109 | 2253 |
| Bureau and wall trunk. Combined | J. C. Lynch | 755,692 | Mar. 29 | 4792 | 1067 | 109 | 1109 |
| Burglar-alarm | C. H. De Voll | 753,344 | Mar. 1 | 54 | 14 | 109 | 14 |
| Burglar-alarm | F. C. Robinson and J. E. Green | 754,391 | Mar. 8 | 2341 | 511 | 109 | 527 |
| Burglar-alarm | N. A. Lyle | 754,470 | Mar. 15 | 2585 | 553 | 109 | 590 |
| Burglar-alarm | A. F. Schilling | 758,399 | Apr. 26 | 4351 | 964 | 109 | 2230 |
| Burglar and fire alarm | M. Nickels | 757,490 | Apr. 19 | 2558 | 562 | 109 | 1917 |
| Burner:<br>*See* Blue-burner. Hydrocarbon-burner.<br>Gas-burner. Oil-burner.<br>Gaseous-fuel burner. Self-igniting burner.<br>Vapor-burner. | | | | | | | |
| Burner | J. D. Green | 757,653 | Apr. 19 | 2904 | 638 | 109 | 1996 |
| Burner igniting attachment | G. Oberlaender | 757,219 | Apr. 12 | 2008 | 436 | 109 | 1787 |
| Burning liquid or gaseous fuels | C. E. Lucke | 755,377 | Mar. 22 | 4236 | 937 | 109 | 975 |
| Burnishing-wheel | G. W. Kimball | 753,497 | Mar. 1 | 517 | 120 | 109 | 114 |
| Bushing | G. and J. Strehl | 754,512 | Mar. 15 | 2627 | 570 | 109 | 610 |
| Bushing. Bung- | G. H. Ricke | 758,366 | Apr. 26 | 4347 | 933 | 109 | 2220 |
| Bushing for crank-bearings. Shifting segmental | L. T. Weiss | 758,397 | Apr. 26 | 4361 | 938 | 109 | 2232 |
| Bushing forming and setting machine | J. Jacobsen | 756,364 | Apr. 26 | 4307 | 935 | 109 | 2221 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bustle | E. Vaughn | 757,369 | Apr. 12 | 2311 | 505 | 109 | 1852 |
| Butter and making same. Milk product resembling | J. H. Campbell | 755,843 | Mar. 29 | 5144 | 1137 | 109 | 1199 |
| Butter-making means | C. M. Taylor, Jr | 755,256 | Mar. 22 | 3998 | 887 | 109 | 922 |
| Butter-mold | J. W. Easton | 754,056 | Mar. 8 | 1671 | 371 | 109 | 384 |
| Butter-separator | J. Meyrick, Jr | 754,981 | Mar. 15 | 3410 | 746 | 109 | 779 |
| Button and button-fastening. Combined | G. W. McGill | 753,612 | Mar. 1 | 751 | 168 | 109 | 168 |
| Button and tie. Collar- | H. L. Blais | 754,842 | Mar. 15 | 3264 | 710 | 109 | 747 |
| Button-attaching machine | H. Kerngood | 755,884 | Mar. 29 | 5219 | 1154<br>1155 | 109 | 1208 |
| Button. Combination collar and cuff | A. E. Strang | 757,978 | Apr. 19 | 3516 | 763 | 109 | 2130 |
| Button. Cuff- | J. Pejchar | 756,047 | Mar. 29 | 5527 | 1219 | 109 | 1275 |
| Button. Cuff- | J. Pejchar | 758,101 | Apr. 26 | 3781 | 821 | 109 | 2205 |
| Button. Detachable | A. H. Brownley | 758,602 | Apr. 26 | 4774 | 1027 | 109 | 2426 |
| Button-forming machine. Collar- | E. J. Yale | 757,080 | Apr. 12 | 1723 | 374<br>375 | 109 | 1725 |
| Button. Garment- | R. Steiner | 757,576 | Apr. 19 | 2751 | 601 | 109 | 1962 |
| Button. Lacing- | A. L. Cole | 757,025 | Apr. 12 | 1625 | 354 | 109 | 1708 |
| Button. Metallic | G. J. Capewell | 754,125 | Mar. 8 | 1801 | 401 | 109 | 414 |
| Button. Separable | H. Müller | 755,522 | Mar. 22 | 4468 | 996 | 109 | 1026 |
| Buttoner | E. B. Kleinsmith | 756,027 | Mar. 29 | 5499 | 1213 | 109 | 1269 |
| Buttonhole cutting and stitching machine | E. B. Allen | 758,037 | Apr. 26 | 3650 | 789<br>790 | 109 | 2177 |
| Buttonhole-cutting tool | C. L. Rogers | 756,803 | Apr. 5 | 1171 | 260 | 109 | 1594 |
| Cabinet | N. A. McDonald | 755,688 | Mar. 29 | 4803 | 1069 | 109 | 1112 |
| Cabinet | W. B. Altick | 756,555 | Apr. 5 | 705 | 152<br>153 | 109 | 1492 |
| Cabinet | C. F. Tholin | 756,911 | Apr. 12 | 1391 | 309 | 109 | 1655 |
| Cabinet | L. Pederson | 757,957 | Apr. 19 | 3477 | 752<br>753 | 109 | 2121 |
| Cabinet. Grocer's | S. E. Moore | 755,156 | Mar. 22 | 3812 | 842 | 109 | 886 |
| Cabinet. Kitchen- | C. F. Kade | 754,570 | Mar. 15 | 2727 | 598 | 109 | 630 |
| Cabinet. Kitchen- | E. Guelff | 757,400 | Apr. 12 | 2378 | 517<br>518 | 109 | 1864 |
| Cable-clip | J. McFarlane | 754,884 | Mar. 15 | 3334 | 729 | 109 | 763 |
| Cable-grip | T. J. Cook | 757,724 | Apr. 19 | 3037 | 660 | 109 | 2024 |
| Cable tension-reel | J. A. Moser | 756,683 | Apr. 5 | 985 | 204<br>205 | 109 | 1542 |
| Cable tension-regulator. Overhead- | J. F. and D. J. McKay | 757,952 | Apr. 19 | 3469 | 750<br>751 | 109 | 2119 |
| Cables or other flexible bodies with solid ends. Providing | G. G. M. Hardingham | 754,997 | Mar. 22 | 3542 | 776 | 109 | 825 |
| Cake-trimming machine. Layer- | C. F. Dietz | 754,548 | Mar. 15 | 2685 | 583 | 109 | 622 |
| Calculating and recording machine | C. D. Baird | 754,836 | Mar. 15 | 3237 | 705<br>706<br>707 | 109 | 742 |
| Calculating-machine | J. Vermehren | 755,084 | Mar. 22 | 3695 | 810 | 109 | 860 |
| Calculating-machine | A. C. Jackson | 756,168 | Mar. 29 | 5740 | 1268 | 109 | 1321 |
| Calendars and similar sheets. Machine for bordering | J. F. Ross | 754,941 | Mar. 15 | 3443 | 755 | 109 | 787 |
| Calendering-machine | C. E. Torrance | 758,761 | Mar. 1 | 1041 | 236<br>237<br>238<br>239 | 109 | 224 |
| Caliper attachment. Micrometer- | W. D. Turner | 754,106 | Mar. 8 | 1774 | 394 | 109 | 408 |
| Calipers | F. Shafer | 758,283 | Apr. 26 | 4138 | 894 | 109 | 2283 |
| Calipers. Micrometer- | H. O. Borduas | 756,461 | Apr. 5 | 543 | 114 | 109 | 1458 |
| Calking-tool. Pneumatic | J. J. Tynan and H. C. Mostiller | 754,175 | Mar. 8 | 1887 | 421 | 109 | 433 |
| Call or alarm device for hotels, &c | H. Reed | 756,406 | Apr. 5 | 440 | 91 | 109 | 1436 |
| Camera | G. C. Beidler | 753,351 | Mar. 1 | 244 | 55 | 109 | 55 |
| Camera | H. O'Donnell and W. C. South | 755,235 | Mar. 22 | 3956 | 876 | 109 | 914 |
| Camera | W. F. Folmer | 756,614 | Apr. 5 | 801 | 174 | 109 | 1512 |
| Camera-bed | H. W. Locke | 753,800 | Mar. 1 | 1160 | 262 | 109 | 249 |
| Camera focusing device | M. Schell | 757,968 | Apr. 19 | 3500 | 759<br>760 | 109 | 2126 |
| Camera. Photographic | H. P. Tattersall | 757,691 | Apr. 19 | 2976 | 647 | 109 | 2011 |
| Camera. Photographic | J. A. Pautasso | 757,836 | Apr. 19 | 3249 | 705 | 109 | 2070 |
| Camera-support | W. G. Geier | 755,649 | Mar. 29 | 4739 | 1053 | 109 | 1097 |
| Camera swing-back. Photographic- | H. W. Locke | 755,680 | Mar. 29 | 4789 | 1066 | 109 | 1109 |
| Cameras. Multiple-view back for | A. E. Lipp | 753,279 | Mar. 1 | 119 | 29 | 109 | 29 |
| Can:<br>*See* Key-can. Powder-can.<br>Oil-can. Sheet-metal can. | | | | | | | |
| Can | E. Eckart | 755,119 | Mar. 22 | 3747 | 883 | 109 | 871 |
| Can | C. B. Howell and A. C. De Yoe | 756,638 | Apr. 5 | 841 | 182 | 109 | 1530 |
| Can-bodies. Forming | F. D. Cleveland | 756,832 | Apr. 12 | 1236 | 276 | 109 | 1634 |
| Can breasts. Attaching hoops to milk- | A. T. Kates | 753,580 | Mar. 1 | 704 | 158 | 109 | 154 |
| Can-capping machine | F. Rogers | 757,842 | Apr. 19 | 3264 | 707 | 109 | 2073 |
| Can-capping machine | J. T. Wilmore | 758,034 | Apr. 19 | 3641 | 787<br>788 | 109 | 2156 |
| Can-closure | H. S. Brewington | 756,573 | Apr. 5 | 735 | 158 | 109 | 1497 |
| Can-fluxing apparatus | J. G. and M. O. Rehfuss | 754,702 | Mar. 15 | 2998 | 654<br>655 | 109 | 689 |
| Can-making machine | J. G. and M. O. Rehfuss | 754,701 | Mar. 15 | 2994 | 652<br>653<br>654 | 109 | 688 |
| Can-making machine | J. G. and M. O. Rehfuss | 754,940 | Mar. 15 | 3433 | 755 | 109 | 784 |
| Can-manufacturing machine | D. L. Eustice | 753,966 | Mar. 8 | 1509 | 336<br>337 | 109 | 348 |
| Can-opener | R. P. Norton | 755,789 | Mar. 29 | 5035 | 1118 | 109 | 1164 |
| Can or vessel opening attachment | S. L. Sheldon | 758,152 | Apr. 26 | 3876 | 841 | 109 | 2228 |
| Can tops and bottoms from forming-dies. Pneumatic means for removing | J. G. and M. O. Rehfuss | 754,704 | Mar. 15 | 3004 | 656 | 109 | 691 |
| Can valve attachment. Oil- | E. A. Young and L. C. Fuller | 757,170 | Apr. 12 | 1918 | 418 | 109 | 1768 |
| Cans. Apparatus for exhausting air from fruit- | R. C. Davis | 757,895 | Apr. 19 | 3364 | 727 | 109 | 2096 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cans. Machine for putting tops and bottoms on | J. G. and M. O. Rehfuss | 754,700 | Mar. 15 | 2990 | 651, 652 | 109 | 687 |
| Cans preparatory to being fluxed and soldered. Apparatus for heating | J. G. and M. O. Rehfuss | 754,708 | Mar. 15 | 3002 | 655 | 109 | 690 |
| Cans. Vent apparatus for oil or other | W. Joyce | 756,373 | Apr. 5 | 375 | 76 | 109 | 1424 |
| Canning apparatus. Food- | C. C. Hovey | 756,637 | Apr. 5 | 889 | 181, 182 | 109 | 1520 |
| Candle and shade holder | A. W. Hoffmann | 755,664 | Mar. 29 | 4760 | 1069 | 109 | 1108 |
| Candle-molding machine | S. H. Leavenworth | 755,898 | Mar. 29 | 5235 | 1157 | 109 | 1212 |
| Candy cutting and shaping machine | W. W. Turnbull | 756,741 | Apr. 5 | 1052 | 234 | 109 | 1568 |
| Candy-flatting machine | H. G. Lange | 757,472 | Apr. 19 | 2523 | 553 | 109 | 1910 |
| Candy kisses, &c. Machine for wrapping | S. M. Hamblin | 753,571 | Mar. 1 | 680 | 153 | 109 | 150 |
| Candy-pulling machine | J. G. Breckenridge | 753,353 | Mar. 1 | 247 | 56 | 109 | 56 |
| Candy rolling and cutting machine | E. W. Barratt | 755,343 | Mar. 22 | 4170 | 921, 922 | 109 | 950 |
| Cane crusher. Sugar- | H. Wilson and H. L. Crumbly | 757,988 | Apr. 19 | 3542 | 767 | 109 | 2134 |
| Cane cutting and stripping machine | A. C. A. Dupuy | 753,558 | Mar. 1 | 659 | 148 | 109 | 145 |
| Canopy. Adjustable | E. G. Burland | 757,175 | Apr. 12 | 1930 | 422 | 109 | 1772 |
| Canteen | T. J. Pratt | 753,516 | Mar. 1 | 570 | 131 | 109 | 124 |
| Capstan | G. Hartweg | 756,851 | Apr. 12 | 1273 | 283 | 109 | 1631 |
| Capstan. Double or compound | J. A. Curry | 754,974 | Mar. 22 | 3506 | 768 | 109 | 817 |
| Car air-cushion | M. Downer | 758,604 | Apr. 26 | 4780 | 1028, 1029 | 109 | 2427 |
| Car attachment | F. Freadreaza | 758,519 | Apr. 26 | 4607 | 992 | 109 | 2390 |
| Car body-bolster | G. G. Floyd and C. H. Howard | 755,289 | Mar. 22 | 4054 | 899 | 109 | 985 |
| Car body-bolster | G. G. Floyd and C. H. Howard | 755,290 | Mar. 22 | 4055 | 899 | 109 | 985 |
| Car-bolster | A. C. McCord | 753,289 | Mar. 1 | 137 | 33 | 109 | 34 |
| Car-bolster | C. A. Lindström | 756,542 | Apr. 26 | 4657 | 1002, 1003 | 109 | 2400 |
| Car-brake | H. T. Brown | 754,198 | Mar. 8 | 1917 | 427 | 109 | 439 |
| Car-brake | H. E. and M. L. Brown | 754,419 | Mar. 15 | 2413 | 528 | 109 | 562 |
| Car-brake | H. Jones | 755,868 | Mar. 29 | 5215 | 1154 | 109 | 1207 |
| Car-brake | W. Gossett | 757,910 | Apr. 19 | 3394 | 735 | 109 | 2102 |
| Car-brake | M. Mabrey | 758,186 | Apr. 26 | 3930 | 854, 855 | 109 | 2241 |
| Car brake and starter. Combined | H. E. Kellogg and G. F. Swain | 757,811 | Apr. 19 | 3208 | 697 | 109 | 2061 |
| Car-brake beams. Signal operated by | S. N. Wilcoxson | 758,398 | Apr. 26 | 4362 | 938 | 109 | 2332 |
| Car-brake. Emergency | M. Woltz | 754,181 | Mar. 8 | 1900 | 423 | 109 | 436 |
| Car-brake. Emergency | S. A. Duvall | 754,551 | Mar. 15 | 2689 | 584 | 109 | 623 |
| Car-brake head | J. H. Graham | 758,176 | Apr. 26 | 3922 | 851, 852 | 109 | 2237 |
| Car-brake mechanism | J. Shelton | 758,391 | Apr. 26 | 4354 | 935 | 109 | 2331 |
| Car-brake-operating mechanism | J. L. Peacock | 754,608 | Mar. 15 | 2787 | 608 | 109 | 642 |
| Car-brake. Passenger- | M. Toltz | 754,829 | Mar. 15 | 3224 | 702 | 109 | 739 |
| Car-brake slack-adjuster | E. E. Crowell | 758,423 | Apr. 26 | 4428 | 951 | 109 | 2349 |
| Car bumper and coupling. Mine- | J. M. Phillips | 753,623 | Mar. 1 | 769 | 171 | 109 | 167 |
| Car-coupling | V. Simecek | 754,352 | Mar. 8 | 2210 | 493 | 109 | 499 |
| Car-coupling | S. B. Price | 754,387 | Mar. 8 | 2333 | 510 | 109 | 526 |
| Car-coupling | W. F. Richards | 754,706 | Mar. 15 | 3007 | 656 | 109 | 691 |
| Car-coupling | G. E. Tomlinson | 755,414 | Mar. 22 | 4299 | 950, 951 | 109 | 988 |
| Car-coupling | J. Meehan | 756,174 | Mar. 29 | 5751 | 1270 | 109 | 1323 |
| Car-coupling | A. L. McGregor | 756,268 | Apr. 5 | 149 | 31 | 109 | 1375 |
| Car-coupling | W. H. Johnson, T. A. Savage, and A. T. Newell. | 756,645 | Apr. 5 | 850 | 184 | 109 | 1523 |
| Car-coupling | J. S. Henson | 758,855 | Apr. 12 | 1278 | 284, 285 | 109 | 1632 |
| Car-coupling | C. A. Tower | 757,366 | Apr. 12 | 2304 | 503 | 109 | 1850 |
| Car-coupling | A. A. Moss | 758,268 | Apr. 26 | 4108 | 898 | 109 | 2276 |
| Car-coupling attachment. Railway- | W. Thornburgh | 754,942 | Mar. 15 | 3449 | 750, 751, 752, 753, 754 | 109 | 789 |
| Car-coupling. Automatic | L. Bottenstein | 758,408 | Apr. 26 | 4385 | 943 | 109 | 2339 |
| Car-coupling. Auxiliary | J. W. Smith | 755,805 | Mar. 29 | 5061 | 1124 | 109 | 1171 |
| Car-coupling safety attachment | E. R. Trammell | 755,816 | Mar. 29 | 5079 | 1127 | 109 | 1174 |
| Car coupling stirrup and centering device. Railway- | W. G. Cory | 758,622 | Mar. 29 | 4689 | 1043 | 109 | 1087 |
| Car. Derrick- | M. Schmaltz | 757,235 | Apr. 12 | 2033 | 443 | 109 | 1798 |
| Car discharging device. Dump- | J. W. Seaver and G. H. Hulett | 754,899 | Mar. 15 | 3357 | 733, 734 | 109 | 767 |
| Car-door | G. W. Kellogg | 758,496 | Mar. 1 | 516 | 119, 120 | 109 | 118 |
| Car-door | T. W. Saling and J. McKiel | 755,049 | Mar. 22 | 3629 | 796 | 109 | 845 |
| Car-door | D. G. Brinser | 755,443 | Mar. 22 | 4350 | 964 | 109 | 998 |
| Car door. Grain- | J. G. Sanborn | 753,511 | Mar. 1 | 1190 | 266 | 109 | 256 |
| Car door. Grain- | J. G. King | 756,654 | Apr. 5 | 873 | 190 | 109 | 1528 |
| Car door. Grain- | W. L. Carson | 758,414 | Apr. 26 | 4414 | 948 | 109 | 2345 |
| Car door mechanism | J. F. Streib | 758,392 | Apr. 26 | 4355 | 935, 936 | 109 | 2331 |
| Car door mechanism | C. A. Lindström | 758,456 | Apr. 26 | 4485 | 964 | 109 | 2361 |
| Car doors. Locking-latch for coal- | A. T. Correll | 753,857 | Mar. 8 | 1291 | 290 | 109 | 298 |
| Car draft-coupling | E. C. Washburn | 756,918 | Apr. 12 | 1401 | 311, 312 | 109 | 1657 |
| Car draft-rigging | E. C. Washburn | 753,454 | Mar. 1 | 436 | 102, 103 | 109 | 95 |
| Car draft-rigging. Railway- | W. H. Miner | 758,144 | Apr. 26 | 3802 | 838 | 109 | 2225 |
| Car. Dump- | O. W. Meissner | 753,506 | Mar. 1 | 531 | 124 | 109 | 117 |
| Car. Dump- | J. Shelton | 754,351 | Mar. 8 | 2208 | 492, 493 | 109 | 499 |
| Car. Dump- | O. W. Meissner | 754,475 | Mar. 15 | 2549 | 554 | 109 | 593 |
| Car. Dump- | V. M. Summa | 755,413 | Mar. 22 | 4298 | 949, 950 | 109 | 967 |
| Car. Dump- | J. C. Depew | 757,279 | Apr. 12 | 2113 | 461 | 109 | 1809 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Car. Dump- | A. King | 757,753 | Apr. 19 | 3096 | 674, 675 | 109 | 2086 |
| Car. Dumping- | K. P. Astrom | 755,207 | Mar. 22 | 3912 | 864 | 109 | 904 |
| Car. Dumping- | A. D. Harrison | 758,135 | Apr. 26 | 3848 | 835 | 109 | 2221 |
| Car emergency-brake. Street- | P. Flood | 758,181 | Apr. 26 | 3842 | 834 | 109 | 2220 |
| Car engines. Apparatus for controlling the speed of motor- | A. Krebs | 757,815 | Apr. 19 | 3217 | 698, 699 | 109 | 2063 |
| Car-fender | G. and P. Linhard | 755,509 | Mar. 22 | 4458 | 990 | 109 | 1020 |
| Car-fender | A. E. McLean | 755,798 | Mar. 29 | 5082 | 1118 | 109 | 1163 |
| Car-fender | J. T. Heron and J. J. Crowley | 755,872 | Mar. 29 | 5199 | 1150 | 109 | 1204 |
| Car-fender | F. A. Schaaf | 756,060 | Mar. 29 | 5545 | 1225 | 109 | 1280 |
| Car-fender | A. G. Roberts | 756,411 | Apr. 5 | 446 | 92 | 109 | 1438 |
| Car-fender | H. Howe | 757,746 | Apr. 19 | 3064 | 672 | 109 | 2084 |
| Car-fender | E. Sherwood | 757,845 | Apr. 19 | 3271 | 708 | 109 | 2074 |
| Car-frame | G. M. Brill and W. H. Heulings, Jr. | 755,350 | Mar. 22 | 4189 | 924 | 109 | 962 |
| Car frame. Railway- | G. Gibbs | 756,353 | Apr. 5 | 325 | 67 | 109 | 1413 |
| Car friction and direct-acting spring draft-rigging combined. | F. B. Townsend | 757,579 | Apr. 19 | 2757 | 602 | 109 | 1963 |
| Car friction draft-gear. Railway- | T. L. McKeen | 754,593 | Mar. 15 | 2771 | 604 | 109 | 638 |
| Car friction draft-gear. Railway- | T. L. McKeen | 754,594 | Mar. 15 | 2773 | 604 | 109 | 639 |
| Car friction draft-gear. Railway- | P. N. Moore | 754,674 | Mar. 15 | 2926 | 639 | 109 | 671 |
| Car friction draft-gear. Railway- | P. N. Moore | 754,992 | Mar. 15 | 3412 | 746 | 109 | 780 |
| Car friction draft-rigging. Railway- | W. H. Miner | 754,670 | Mar. 15 | 2918 | 637 | 109 | 669 |
| Car friction draft-rigging. Railway- | P. N. Moore | 754,675 | Mar. 15 | 2929 | 639, 640 | 109 | 672 |
| Car friction-gear. Motor- | W. Seck | 758,118 | Apr. 26 | 3807 | 827 | 109 | 2211 |
| Car friction spring draft-gear. Railway- | P. N. Moore | 754,677 | Mar. 15 | 2935 | 640, 641 | 109 | 673 |
| Car friction spring draft-rigging. Railway- | P. N. Moore | 754,678 | Mar. 15 | 2937 | 641 | 109 | 674 |
| Car friction spring draft-rigging. Railway- | P. N. Moore | 754,679 | Mar. 15 | 2939 | 641, 642 | 109 | 674 |
| Car grain-door | J. B. MacLaughlin | 755,511 | Mar. 22 | 4461 | 991 | 109 | 1020 |
| Car-handling apparatus | L. L. Logan | 753,719 | Mar. 1 | 970 | 220 | 109 | 209 |
| Car-heating systems. Train-pipe terminal for | J. F. McElroy | 758,269 | Apr. 26 | 4106 | 888 | 109 | 2277 |
| Car. Hopper-bottom | J. M. Ames, J. P. Lyon, and G. E. Russell. | 753,653 | Mar. 1 | 831 | 186, 187 | 109 | 181 |
| Car hopper. Dump- | J. C. Depew | 757,278 | Apr. 12 | 2109 | 460 | 109 | 1808 |
| Car-loading apparatus | E. R. Abbey | 758,498 | Apr. 26 | 4557 | 979 | 109 | 2378 |
| Car. Mine or pit | J. H. Allen | 755,342 | Mar. 22 | 4169 | 921 | 109 | 959 |
| Car. Motor- | W. G. Wilson | 757,533 | Apr. 19 | 2651 | 581 | 109 | 1938 |
| Car-operating mechanism. Dumping- | S. J. Johnson | 755,671 | Mar. 29 | 4772 | 1062 | 109 | 1105 |
| Car or engine replacer | F. J. Fewings | 757,606 | Apr. 19 | 2804 | 613 | 109 | 1973 |
| Car. Ore- | C. Canclini | 757,860 | Apr. 19 | 3295 | 714 | 109 | 2080 |
| Car. Passenger- | F. H. Rapley | 756,707 | Apr. 5 | 973 | 214, 215 | 109 | 1552 |
| Car pipe-coupling. Railway- | E. Witzenmann | 755,904 | Mar. 22 | 3907 | 862, 863 | 109 | 903 |
| Car-platform | N. Paulson | 754,688 | Mar. 15 | 2956 | 645 | 109 | 678 |
| Car. Railway- | C. Vanderbilt | 758,988 | Mar. 8 | 1452 | 326 | 109 | 335 |
| Car. Railway- | C. E. Stewart | 757,427 | Apr. 12 | 2430 | 529 | 109 | 1876 |
| Car-register. Automatic | H. S. Butler | 755,592 | Mar. 22 | 4607 | 1034 | 109 | 1055 |
| Car-replacer | E. Best | 754,915 | Mar. 15 | 3383 | 740 | 109 | 773 |
| Car-replacer | H. Q. Hall | 757,299 | Apr. 12 | 2160 | 474 | 109 | 1820 |
| Car-replacer | C. A. Fischer | 757,902 | Apr. 19 | 3377 | 730 | 109 | 2096 |
| Car safety-guard. Electrical- | C. A. Willard | 753,341 | Mar. 1 | 225 | 51, 52 | 109 | 51 |
| Car-seat | E. Chamberlin | 753,545 | Mar. 1 | 632 | 143 | 109 | 138 |
| Car-seat. Emergency | M. H. Murch, Jr | 757,334 | Apr. 12 | 2247 | 489 | 109 | 1837 |
| Car-stake | A. H. Speir | 753,643 | Mar. 1 | 806 | 180 | 109 | 176 |
| Car-stake | J. E. Puckett | 756,705 | Apr. 5 | 970 | 213 | 109 | 1551 |
| Car. Steel | P. Wagner | 754,725 | Mar. 15 | 3088 | 663 | 109 | 696 |
| Car. Steel-frame box- | C. A. Lindström and A. Stucki | 755,022 | Mar. 22 | 3585 | 787, 788 | 109 | 835 |
| Car steering-gear. Motor- | W. J. Iden | 754,068 | Mar. 8 | 1696 | 874, 875 | 109 | 388 |
| Car. Stock- | J. L. Rouze | 757,349 | Apr. 12 | 2273 | 496, 497 | 109 | 1843 |
| Car. Street- | C. K. Pickles | 755,314 | Mar. 22 | 4110 | 907, 908 | 109 | 945 |
| Car structural beam. Railway- | A. W. Sullivan and W. Renshaw | 753,934 | Mar. 8 | 1448 | 325 | 109 | 334 |
| Car track-brake | J. A. Brader | 754,844 | Mar. 15 | 3265 | 710 | 109 | 747 |
| Car. Triple-hopper coke- | J. M. Hansen | 753,257 | Mar. 1 | 82 | 21, 22 | 109 | 20 |
| Car underframe. Railway- | J. M. Hansen | 757,110 | Apr. 12 | 1787 | 391, 392 | 109 | 1738 |
| Car underframing. Railway- | G. I. King | 753,588 | Mar. 1 | 708 | 159 | 109 | 155 |
| Car-ventilators. Hood or injector for | H. B. Rowland | 756,057 | Mar. 29 | 5543 | 1223 | 109 | 1279 |
| Car-wheels. Making | H. V. Loss | 757,819 | Apr. 19 | 3225 | 700 | 109 | 2065 |
| Car-window sash-lifter | A. R. Bell | 754,634 | Mar. 15 | 2845 | 621 | 109 | 654 |
| Car window. Street- | H. Witte | 755,982 | Mar. 29 | 5411 | 1195, 1196 | 109 | 1250 |
| Cars. Automatic blocking, releasing, and dumping system for tram- | C. J. Ringstrom | 753,917 | Mar. 8 | 1408 | 317, 318 | 109 | 325 |
| Cars. Automatic brake-coupling for railway or electric | K. Geucke | 758,059 | Apr. 26 | 3695 | 802, 803 | 109 | 2188 |
| Cars. Flexible metal pipe-coupling for connecting the air and steam pipes of railway- | G. D. Pettingell | 757,493 | Apr. 19 | 2563 | 563 | 109 | 1918 |
| Cars. Flexible metallic pipe-coupling for railway- | J. Joynt | 757,813 | Apr. 12 | 2206 | 482 | 109 | 1899 |
| Cars. Megaphone attachment for passenger- | W. H. Brunt | 754,918 | Mar. 15 | 3387 | 740 | 109 | 774 |
| Cars. Mounting hoppers for dump- | J. C. Depew | 757,277 | Apr. 12 | 2107 | 459, 460 | 109 | 1807 |
| Cars of all kinds. Safety apparatus for motor- | K. Schmidt | 753,496 | Mar. 1 | 412 | 96 | 109 | 89 |
| Cars on sidings. Means for holding | H. Smelser | 755,949 | Mar. 29 | 5358 | 1183 | 109 | 1239 |
| Cars. Stanchion and strip for loading lumber, poles, &c., upon flat- | H. D. Hunt | 755,877 | Mar. 29 | 5207 | 1152 | 109 | 1205 |
| Cars. Tandem friction spring draft-rigging for railway- | P. N. Moore | 754,676 | Mar. 15 | 2932 | 640 | 109 | 673 |
| Carbid. Producing | W. S. Horry | 757,617 | Apr. 19 | 2886 | 619 | 109 | 1979 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Carbon resistance and producing and adjusting same. | G. I. Leonard | 753,716 | Mar. 1 | 965 | 219 | 109 | 208 |
| Carbonated-liquid-dispensing apparatus | T. Hentgen | 754,316 | Mar. 8 | 1977 | 439 | 109 | 451 |
| Carbonating apparatus. Liquid- | J. F. and D. Youngblood | 758,408 | Apr. 26 | 4379 | 941 | 109 | 2337 |
| Carbonator | F. B. West | 757,375 | Apr. 12 | 2381 | 507 | 109 | 1853 |
| Carbureter | T. T. Weber | 754,178 | Mar. 8 | 1804 | 422 | 109 | 435 |
| Carbureter | F. Jas | 754,774 | Mar. 15 | 3112 | 679 | 109 | 715 |
| Carbureter | W. P. Phillips | 755,167 | Mar. 22 | 3835 | 847 | 109 | 980 |
| Carbureter | R. S. Lawrence | 756,381 | Apr. 5 | 388 | 79 | 109 | 1496 |
| Carbureter | S. A. Lockhart | 757,085 | Apr. 19 | 5441 | 745 | 109 | 2118 |
| Carbureter for explosive-engines. Double | T. L. and T. J. Sturtevant | 755,074 | Mar. 22 | 3678 | 807 | 109 | 857 |
| Carbureter. Gas-engine | G. F. Swain | 756,908 | Apr. 12 | 1383 | 308 | 109 | 1658 |
| Carbureter. Hydrocarbon-motor | E. Lenglez | 756,249 | Apr. 5 | 112 | 24 | 109 | 1365 |
| Carbureter. Internal-combustion-engine | G. McCadden | 756,879 | Apr. 12 | 1330 | 294 | 109 | 1640 |
| Card-feeding mechanism | E. V. Bates | 754,189 | Mar. 8 | 1909 | 425 | 109 | 438 |
| Card-holder | A. B. Clark | 755,274 | Mar. 22 | 4082 | 894 | 109 | 980 |
| Card-holding device | E. N. Heath | 753,982 | Mar. 8 | 1333 | 300 | 109 | 308 |
| Carding-machine attachment | G. W. Taylor and J. W. Scott | 754,514 | Mar. 15 | 2699 | 570<br>571 | 109 | 611 |
| Carding-machine feeding mechanism | P. L. McBride | 754,484 | Mar. 15 | 2561 | 556 | 109 | 596 |
| Carpet-beating machine | C. P. Carey | 754,540 | Mar. 15 | 2673 | 590 | 109 | 620 |
| Carpet-fastener | R. Reininger | 757,296 | Apr. 12 | 2014 | 438 | 109 | 1789 |
| Carpet rod and fastener. Stair- | C. Michael | 756,575 | Apr. 12 | 1315 | 296 | 109 | 1630 |
| Carpet-stretcher | E. J. Strader | 755,960 | Mar. 29 | 5381 | 1157 | 109 | 1944 |
| Carpet-stretcher | W. Reichle | 758,562 | Apr. 26 | 4692 | 1012 | 109 | 2408 |
| Carpet surface. Machine for trimming pile- | B. S. Smith | 755,808 | Mar. 29 | 5059 | 1122<br>1124 | 109 | 1170 |
| Carpet-sweeper | E. C. Murdick | 756,042 | Mar. 29 | 5323 | 1218 | 109 | 1274 |
| Carpet-sweeper | J. F. Hardy | 756,358 | Apr. 5 | 336 | 69 | 109 | 1415 |
| Carpet-sweeper | J. F. Hardy | 756,359 | Apr. 5 | 343 | 70 | 109 | 1417 |
| Carpet-winder | A. W. Munson and A. S. Dornblaser | 756,132 | Mar. 29 | 5690 | 1255 | 109 | 1309 |
| Carriage. Baby- | L. V. Thompson | 754,102 | Mar. 8 | 1762 | 392 | 109 | 404 |
| Carriage-curtain fastening | J. M. Yankie | 756,090 | Mar. 29 | 5611 | 1236 | 109 | 1298 |
| Carriage-top seat-iron | H. C. Swan | 757,363 | Apr. 12 | 2299 | 501<br>502 | 109 | 1849 |
| Carriages. Automatic brake-shoe for baby- | J. F. Snyder | 754,510 | Mar. 15 | 2694 | 589 | 109 | 610 |
| Carrier:<br>*See* Luggage-carrier. Postal money-carrier. Mail-carrier. Sample-carrier. Mail-box carrier. Traveling carrier. Pneumatic-tube carrier. Umbrella-carrier. | | | | | | | |
| Cart | H. A. Bienhoff | 758,126 | Apr. 26 | 3828 | 831 | 109 | 2216 |
| Cart. Dumping- | S. Gantz | 757,206 | Apr. 12 | 2146 | 469 | 109 | 1816 |
| Cart. Garbage- | R. D. Wirt | 758,543 | Apr. 26 | 4271 | 917 | 109 | 2313 |
| Cart. Self-loading | J. F. Clark | 753,669 | Mar. 1 | 869 | 196<br>197 | 109 | 188 |
| Carton-machine flap-folder | H. Bitner | 756,570 | Apr. 5 | 729 | 157<br>158 | 109 | 1496 |
| Carton. Sector-shaped | J. C. Graham | 756,494 | Apr. 5 | 608 | 130 | 109 | 1469 |
| Cartridge-belt | A. Mills | 756,178 | Mar. 29 | 5758 | 1271 | 109 | 1334 |
| Cartridge-belt-filling machines. Feed device for | J. Ramsay and T. E. Riddle | 754,345 | Mar. 8 | 2199 | 489 | 109 | 497 |
| Cartridge-belt. Seamless woven | A. Mills | 756,177 | Mar. 29 | 5757 | 1271 | 109 | 1334 |
| Carving-machine. Automatic | F. Streich | 757,151 | Apr. 12 | 1981 | 410<br>411 | 109 | 1760 |
| Carving-machine. Automatic | F. Streich and C. L. Ruehs | 757,152 | Apr. 12 | 1984 | 411 | 109 | 1761 |
| Carving-machine. Automatic | C. L. Ruehs and F. Streich | 757,220 | Apr. 12 | 2021 | 439<br>440 | 109 | 1790 |
| Carving-machine. Automatic | F. Streich | 757,243 | Apr. 12 | 2047 | 446<br>447 | 109 | 1796 |
| Case:<br>*See* Combination-case. Packing-case. Cracker-case. Photographic case. Dress-suit case. Sectional case. Extensible case. Show-case. Hat-case. Ticket-case. Mail-delivery case. Traveling-case. Match-case. | | | | | | | |
| Case | G. A. Schwanbeck | 754,957 | Mar. 15 | 3475 | 760 | 109 | 795 |
| Casein composition and producing same | W. A. Hall | 758,064 | Apr. 26 | 3719 | ..... | 109 | 2190 |
| Cash-carrier apparatus | J. H. D. Chamberlain and D. E. Chism. | 754,432 | Mar. 15 | 3417 | 589 | 109 | 563 |
| Cash-carrier apparatus | D. E. Chism | 754,434 | Mar. 15 | 3428 | 590 | 109 | 566 |
| Cash-carrier box | D. E. Chism | 754,433 | Mar. 15 | 3424 | 590 | 109 | 566 |
| Cash-indicator | G. Hiller | 756,018 | Mar. 29 | 5484 | 1210 | 109 | 1295 |
| Cash-register | W. H. Muzzy | 753,512 | Mar. 1 | 549 | 127<br>128<br>129 | 109 | 120 |
| Cash-register | W. H. Muzzy | 753,513 | Mar. 1 | 558 | 129<br>130 | 109 | 122 |
| Cash-register | T. Carroll | 754,049 | Mar. 8 | 1653 | 308<br>309 | 109 | 390 |
| Cash-register | W. H. Muzzy | 754,082 | Mar. 8 | 1711 | 381<br>382 | 109 | 398 |
| Cash-register | T. Carroll | 755,256 | Mar. 22 | 4191 | 939 | 109 | 965 |
| Cash-register | E. B. Parkhurst | 755,365 | Mar. 22 | 4250 | 939<br>940 | 109 | 978 |
| Cash-register | S. H. Pocock | 755,929 | Mar. 29 | 5311 | 1172<br>1173 | 109 | 1228 |
| Cash-register | J. C. Vahjen | 756,082 | Mar. 29 | 5584 | 1283<br>1284<br>1285 | 109 | 1298 |
| Cash-register | J. C. Vahjen | 756,083 | Mar. 29 | 5588 | 1283<br>1286 | 109 | 1299 |
| Cash-register | W. F. Davey | 756,318 | Apr. 5 | 50 | 12 | 109 | 1353 |
| Cash-register | W. G. Powell | 757,223 | Apr. 12 | 2009 | 437 | 109 | 1787 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cash registering and checking apparatus | J. M. Carson | 753,235 | Mar. 1 | 35 | 8<br>9<br>10 | 109 | 10 |
| Cashier. Mechanical | I. S. Dement | 755,279 | Mar. 22 | 4089 | 895<br>896 | 109 | 981 |
| Cashiers, registers, and recorders. Keyboard mechanism for mechanical | I. S. Dement and F. J. Hull | 757,601 | Apr. 19 | 2788 | 610 | 109 | 1970 |
| Casing-turner | W. Nesbitt | 754,597 | Mar. 15 | 2777 | 605 | 109 | 640 |
| Cask bush or liner and means for attaching same | J. Ross and A. W. MacKenzie | 754,708 | Mar. 15 | 3010 | 657 | 109 | 692 |
| Casket. Extension- | J. A. Tabor and J. L. Murphy | 756,297 | Apr. 5 | 211 | 43 | 109 | 1389 |
| Casting-machine | J. Bijur | 757,720 | Apr. 19 | 3019 | 656<br>657 | 109 | 2020 |
| Casting machine. Rod- | C. F. Brooker | 756,325 | Apr. 5 | 258 | 54 | 109 | 1399 |
| Casting metals in vacuums. Apparatus for | W. B. Burrow | 755,842 | Mar. 29 | 5142 | 1137 | 109 | 1192 |
| Casting open-work structures. Apparatus for | J. Bijur | 757,721 | Apr. 19 | 3023 | 657<br>658<br>659 | 109 | 2021 |
| Castings. Making metal | G. Stroh | 755,722 | Mar. 29 | 4893 | 1089 | 109 | 1134 |
| Catapult | L. G. Clark | 754,745 | Mar. 15 | 3066 | 669 | 109 | 705 |
| Cattle-guard | T. J. Baillie and S. Anderson | 753,230 | Mar. 1 | 7 | 2 | 109 | 4 |
| Ceiling constructions. Manufactured plate for | W. Gutzeit | 756,015 | Mar. 29 | 5477 | 1208 | 109 | 1265 |
| Ceiling-plate | J. R. Drozeski | 756,479 | Apr. 5 | 579 | 121 | 109 | 1464 |
| Celluloid compound | A. Schmidt | 758,835 | Apr. 26 | 4257 | ..... | 109 | 2311 |
| Cement. Apparatus for the manufacture of slag- | C. Gramm | 757,665 | Apr. 12 | 1659 | 359 | 109 | 1711 |
| Cement-block mold | W. G. Park | 753,803 | Mar. 1 | 164 | 37 | 109 | 38 |
| Cement composition. Magnesia | E. Bidtel | 757,252 | Apr. 12 | 2063 | ..... | 109 | 1799 |
| Cement floors or concrete. Bar for strengthening | J. F. Golding | 758,061 | Apr. 26 | 3716 | 807 | 109 | 2190 |
| Cement-furnace | J. Sheneman | 755,947 | Mar. 29 | 5362 | 1181<br>1182 | 109 | 1237 |
| Cement-kiln-cleaning machine | C. J. Van Doren | 757,522 | Apr. 19 | 2928 | 575<br>576 | 109 | 1933 |
| Cement-mold | R. B. Coltrin | 757,093 | Apr. 12 | 1754 | 381 | 109 | 1732 |
| Cement-molding apparatus | R. B. Coltrin | 757,094 | Apr. 12 | 1757 | 382 | 109 | 1732 |
| Cement-plate press | L. Streuli | 755,258 | Mar. 22 | 3992 | 895<br>896 | 109 | 921 |
| Cements. Maturing Portland or other hydraulic | H. A. Gerdes | 753,385 | Mar. 1 | 304 | ..... | 109 | 69 |
| Cementing-machine | W. A. Knipe | 754,074 | Mar. 8 | 1697 | 377 | 109 | 391 |
| Cementing material and making same | T. W. Cappon | 757,888 | Apr. 19 | 3338 | ..... | 109 | 2090 |
| Centrifugal elevator | J. K. Sharpe, Jr | 755,401 | Mar. 22 | 4277 | 945 | 109 | 984 |
| Centrifugal machine | J. H. Ostrander | 754,796 | Mar. 15 | 3166 | 689<br>690 | 109 | 725 |
| Centrifugal machine | J. W. Macfarlane | 758,457 | Apr. 26 | 4486 | 964 | 109 | 2362 |
| Centrifugal screen | C. E. Dulin | 756,342 | Apr. 5 | 299 | 62 | 109 | 1407 |
| Chain | J. Dupuis | 756,481 | Apr. 5 | 581 | 121<br>122 | 109 | 1464 |
| Chain. Belt- | E. Magaldi | 756,866 | Apr. 12 | 1299 | 290 | 109 | 1636 |
| Chain. Drive- | C. G. A. Schmidt, Jr | 755,707 | Mar. 29 | 4854 | 1079 | 109 | 1126 |
| Chain. Drive- | E. F. Morse | 757,762 | Apr. 19 | 3109 | 677<br>678 | 109 | 2039 |
| Chain-link | W. J. Ball and R. Cole | 756,563 | Apr. 5 | 717 | 155 | 109 | 1494 |
| Chain-links. Machine for cutting out sheet-metal blanks for | F. Egge | 757,028 | Apr. 12 | 1630 | 354<br>355 | 109 | 1704 |
| Chain. Machine for making sheet-metal | F. Egge | 757,029 | Apr. 12 | 1633 | 355<br>356 | 109 | 1705 |
| Chair:<br>*See* Coliseum-chair. Spring-back chair. Convertible chair. Surgical chair. Rocking-chair. Type-writer's chair. | | | | | | | |
| Chair fan or mirror attachment. Rocking- | J. F. Yoho | 757,857 | Apr. 19 | 3291 | 713 | 109 | 2079 |
| Chair-iron. Sheet-metal | H. W. Bolens and C. J. Travers | 755,560 | Mar. 22 | 4547 | 1012 | 109 | 1040 |
| Chair-seat sections, &c. Joint for | J. B. Hough | 754,067 | Mar. 8 | 1685 | 374 | 109 | 388 |
| Chair-seat spider | J. M. Germanson | 756,955 | Apr. 12 | 1472 | 325 | 109 | 1672 |
| Chalking device. Line- | J. F. McCormick | 754,157 | Mar. 8 | 1854 | 413 | 109 | 426 |
| Chalking device. Line- | F. M. Thompson | 754,827 | Mar. 15 | 3221 | 701 | 109 | 738 |
| Chandelier | E. Witzenmann | 758,163 | Apr. 26 | 3803 | 845 | 109 | 2232 |
| Chart. Dioptrical | W. W. Martin | 754,663 | Mar. 15 | 2908 | 635 | 109 | 667 |
| Chart. Skirt- | L. Davis | 753,690 | Mar. 1 | 890 | 202 | 109 | 198 |
| Chatelaine-bag | L. E. Edgar | 754,207 | Mar. 8 | 1953 | 435 | 109 | 447 |
| Check and release mechanism. Automatic | J. D. Wright | 757,381 | Apr. 12 | 2340 | 510 | 109 | 1856 |
| Check-controlled apparatus | Y. Q. Caldwell and L. M. Martin | 753,823 | Mar. 1 | 1215 | 273<br>274 | 109 | 261 |
| Check, draft, &c. Bank | D. D. Field | 756,611 | Apr. 5 | 797 | 173 | 109 | 1511 |
| Check-hook | C. Heilrath and S. M. Taber | 757,204 | Apr. 12 | 2174 | 476 | 109 | 1823 |
| Check. Voucher- | W. J. Fabian | 753,480 | Mar. 1 | 480 | 112 | 109 | 105 |
| Checkrein attachment | J. A. Clary | 757,092 | Apr. 12 | 1753 | 381 | 109 | 1732 |
| Cheese-cutter | L. Hulbregtse | 756,499 | Apr. 5 | 610 | 132 | 109 | 1471 |
| Cheese-cutting apparatus | P. S. McCroskey | 757,335 | Apr. 12 | 2249 | 490 | 109 | 1838 |
| Chemical compounds. Producing | J. J. Griffin | 757,086 | Apr. 12 | 1660 | 359 | 109 | 1711 |
| Child-carrying device | T. O. Turnbull | 755,554 | Mar. 22 | 4589 | 1010 | 109 | 1089 |
| Child's safety-harness | A. Weis | 758,128 | Apr. 26 | 3826 | 830 | 109 | 2216 |
| Chimney | P. Dickinson | 758,510 | Apr. 26 | 4592 | 987 | 109 | 2387 |
| Chloroform. Making | A. W. Smith | 753,325 | Mar. 1 | 203 | ..... | 109 | 47 |
| Chopper:<br>*See* Cotton-chopper. Meat-chopper. Food-chopper. Plant-chopper. | | | | | | | |
| Chopping-block. Butcher's | J. T. Nichols | 757,488 | Apr. 19 | 2556 | 561 | 109 | 1917 |
| Christmas-tree candle-holder | H. G. Hess | 757,809 | Apr. 19 | 3309 | 717 | 109 | 2063 |
| Chuck | O. S. Rockwell and S. E. Horton | 755,246 | Mar. 22 | 3980 | 868 | 109 | 919 |
| Chuck | C. R. Moon | 757,561 | Apr. 19 | 2710 | 592 | 109 | 1951 |
| Chuck. Disk | J. L. Johnson | 753,275 | Mar. 1 | 112 | 27 | 109 | 47 |
| Chuck. Drill- | E. R. Smith | 755,322 | Mar. 22 | 4126 | 912 | 109 | 948 |
| Chuck. Rock-drilling-machine | W. E. Kimber | 756,377 | Apr. 5 | 381 | 78 | 109 | 1425 |
| Chucking machinery | C. Prouty | 753,430 | Mar. 1 | 397 | 93, 94 | 109 | 87 |
| Churn-delivering apparatus | F. E. Forster | 758,434 | Apr. 26 | 4448 | 957 | 109 | 2353 |
| Churn | J. D. Metcalf | 754,663 | Mar. 15 | 3386 | 736 | 109 | 761 |
| Churn. Double-reciprocating-dasher | E. M. Kyle | 755,373 | Mar. 22 | 4226 | 934 | 109 | 973 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Chute. Portable and adjustable stock- | A. B. Copley | 753,888 | Mar. 1 | 1287 | 278 | 109 | 366 |
| Cigar-band | C. F. Zenker | 754,110 | Mar. 8 | 1779 | 395 | 109 | 409 |
| Cigar-butt former | C. Wessels | 756,732 | Apr. 5 | 1070 | 238 | 109 | 1572 |
| Cigar cutter and lighter | W. M. Coombs and C. C. O'Connell | 753,672 | Mar. 1 | 877 | 198 | 109 | 190 |
| Cigar displaying and vending device | G. H. Hagar | 753,827 | Mar. 1 | 1229 | 276 | 109 | 263 |
| Cigar-manufacturing machine | B. Wertheimer | 757,584 | Apr. 19 | 2764 | 604 | 109 | 1965 |
| Cigar-package. Commercial | C. P. Kratoville | 756,656 | Apr. 5 | 877 | 191 | 109 | 1589 |
| Cigar-tip cutter | E. Walker | 753,941 | Mar. 8 | 1456 | 327 / 328 | 109 | 396 |
| Cigars with smoke-improving portions. Providing | H. F. M. Thoms | 757,514 | Apr. 19 | 2610 | | 109 | 1929 |
| Cigarette | W. C. Doscher | 753,963 | Mar. 8 | 1506 | 336 | 109 | 347 |
| Cigarette-former | J. R. Green and J. A. Hill | 756,120 | Mar. 22 | 3761 | 836 | 109 | 875 |
| Cigarette or cigar box | A. G. Psiaki | 757,225 | Apr. 12 | 2013 | 437 | 109 | 1789 |
| Circuit-breaker | L. L. Elden | 756,344 | Apr. 5 | 904 | 63 | 109 | 1408 |
| Circuit-breaker | L. L. Elden | 756,782 | Apr. 5 | 1130 | 248 | 109 | 1585 |
| Circuit-breaker. Automatic | W. M. Scott | 754,505 | Mar. 15 | 2610 | 567 / 568 | 109 | 606 |
| Circuit-breaker. Automatic magnetic | F. O. Hartman | 753,704 | Mar. 1 | 940 | 213 / 214 | 109 | 908 |
| Circuit-closer. Automatic | J. L. Russell | 755,048 | Mar. 22 | 3027 | 706 | 109 | 844 |
| Circuit-controller | J. L. Schureman, Jr. | 756,584 | Apr. 5 | 675 | 145 | 109 | 1485 |
| Circuit-controller for induction-coils | R. Varley | 757,792 | Apr. 19 | 3177 | 690 | 109 | 2055 |
| Circuits of rotary converters. Means for closing field- | W. B. Potter | 755,791 | Mar. 29 | 5098 | 1119 | 109 | 1165 |
| Cistern | G. W. Boyer | 757,253 | Apr. 12 | 2065 | 451 | 109 | 1799 |
| Cistern-top | S. Pomroy | 754,801 | Mar. 15 | 3173 | 692 | 109 | 727 |
| Clamp: *See* Bedstead brace-clamp. Engine-base clamp. Hair-clamp. Hay-rack clamp. Line-wire clamp. Rail-clamp. Rope-clamp. Routing-machine clamp. Saw-clamp. Sewing-machine work-clamp. Ship-builder's clamp. Tobacco-clamp. Wire-rope clamp. Work-bench clamp. | | | | | | | |
| Clamp | W. B. Bennett | 754,962 | Mar. 22 | 3486 | 762 | 109 | 813 |
| Clamp | P. Lyden | 758,962 | Apr. 26 | 4098 | 895 | 109 | 2274 |
| Clamp | R. Rösler | 758,476 | Apr. 26 | 4517 | 970 | 109 | 2360 |
| Clamp for hoops, bands, &c | W. P. Rice | 758,365 | Apr. 26 | 4346 | 933 | 109 | 2259 |
| Clamp or stop-cock for flexible tubes | O. L. Jeralds | 758,449 | Apr. 26 | 4474 | 962 | 109 | 2259 |
| Clamping device | R. G. Siegel | 756,067 | Mar. 29 | 5564 | 1228 | 109 | 1268 |
| Clapboard-marking gage | C. W. Foust | 756,758 | Mar. 29 | 4976 | 1107 | 109 | 1150 |
| Clasp: *See* Envelop-clasp. Garment-clasp. Jewelry-clasp. Pin-clasp. | | | | | | | |
| Clasp | F. Charron and L. Girardot | 754,919 | Mar. 15 | 3389 | 741 | 109 | 774 |
| Clasp | M. L. Senderling | 756,585 | Apr. 5 | 676 | 145 | 109 | 1485 |
| Clasp-pin | H. W. Fishel | 757,089 | Apr. 12 | 1656 | 358 | 109 | 1710 |
| Clay, shale, &c., into various patterns or articles. Machine for stamping or shaping plastic | E. C. Hoelsche | 753,961 | Mar. 8 | 1539 | 341 | 109 | 353 |
| Cleaner: *See* Bolting-sieve cleaner. Comb-cleaner. Drill-cleaner. Eaves-trough cleaner. Fruit-cleaner. Knife or fork cleaner. Sidewalk-cleaner. Tube-cleaner. Welt-cleaner. Window-cleaner. | | | | | | | |
| Cleat | W. B. Thomas, Jr | 755,258 | Mar. 22 | 4001 | 887 / 888 | 109 | 923 |
| Clevis | B. W. Cook | 753,366 | Mar. 1 | 266 | 60 | 109 | 60 |
| Clip: *See* Blind-clip. Cable-clip. Furring-clip. Garter-clip. Paper-clip. Spring-clip. | | | | | | | |
| Clip | D. E. Mapother | 758,547 | Apr. 26 | 4662 | 1004 | 109 | 2401 |
| Clip-band fastener | C. L. Pope | 756,701 | Apr. 5 | 964 | 212 | 109 | 1549 |
| Clipper. Hair- | G. F. Stevens | 757,350 | Apr. 12 | 2290 | 499 | 109 | 1847 |
| Clock. Astronomical | J. C. Burke | 754,845 | Mar. 15 | 3967 | 711 / 712 / 713 | 109 | 748 |
| Clock-case | A. M. Lane | 758,454 | Apr. 26 | 4479 | 963 | 109 | 2260 |
| Clock-dial | S. P. Thrasher | 755,989 | Mar. 29 | 5390 | 1190 | 109 | 1946 |
| Clock dials. Marking watchmen's- | A. A. Newman | 753,615 | Mar. 1 | 756 | 168 | 109 | 164 |
| Clock. Electric | G. S. Tiffany | 754,597 | Mar. 8 | 2359 | 515 | 109 | 252 |
| Clock. Electric | D. W. Thompson | 754,622 | Mar. 15 | 2894 | 616 / 617 | 109 | 650 |
| Clock. Electric | F. Holden | 755,774 | Mar. 29 | 5008 | 1114 | 109 | 1158 |
| Clock. Electric alarm | L. H. Cushman | 753,940 | Mar. 1 | 48 | 12 | 109 | 13 |
| Clock-pendulum. Torsional | G. S. Tiffany | 754,598 | Mar. 8 | 2365 | 516 | 109 | 252 |
| Clock. Self-winding electric | F. T. Talcott and B. F. Kerr | 753,757 | Mar. 1 | 1035 | 235 | 109 | 222 |
| Clock striking mechanism | R. Tuerck | 755,260 | Mar. 22 | 4004 | 888 / 889 | 109 | 924 |
| Clock. Watchman's | A. Beyer | 755,100 | Mar. 22 | 3715 | 816 | 109 | 864 |
| Clock winding-indicator | H. Will | 756,446 | Apr. 5 | 519 | 108 | 109 | 1458 |
| Clock winding mechanism | W. E. Porter | 756,708 | Apr. 5 | 967 | 213 | 109 | 1550 |
| Closet: *See* Bread and cake closet. | | | | | | | |
| Closet-seat | L. O. Dobbs | 756,599 | Apr. 5 | 776 | 169 | 109 | 1506 |
| Cloth-cutter | S. R. Jacobs | 756,501 | Apr. 5 | 614 | 133 | 109 | 1471 |
| Cloth-holding device | E. Gessner | 754,649 | Mar. 15 | 2980 | 629 / 630 | 109 | 661 |
| Cloth-rerolling machine | C. Krause | 758,222 | Apr. 26 | 4228 | 909 | 109 | 2205 |
| Cloth-strip folder | A. L. Adams | 756,451 | Apr. 5 | 526 | 110 | 109 | 1455 |
| Clothes-drainer | M. N. Hall and L. D. Mohler | 756,112 | Mar. 29 | 5650 | 1249 | 109 | 1303 |
| Clothes-drier | P. A. Ringnell | 757,497 | Apr. 19 | 2971 | 564 | 109 | 1980 |



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| Invention. | Name. | No | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Clothes-drier | J. Judelson | 758,451 | Apr. 26 | 4476 | 962 | 109 | 2359 |
| Clothes-horse | W. Hargrove | 755,484 | Mar. 22 | 4419 | 979 | 109 | 1012 |
| Clothes-line hanger | R. Alpin | 753,218 | Mar. 1 | 3 | 1 | 109 | 3 |
| Clothes-pin | A. O. Craven | 755,218 | Mar. 22 | 3929 | 870 | 109 | 906 |
| Clothes-pounder | V. T. and E. W. Lynch | 754,879 | Mar. 15 | 3328 | 725 | 109 | 761 |
| Clothing-rack | J. A. Hockersmith | 758,072 | Apr. 26 | 3732 | 811 | 109 | 2198 |
| Cluster-socket | J. H. Dale | 757,441 | Apr. 19 | 2460 | 537 | 109 | 1868 |
| Clutch | C. M. Rhodes | 755,560 | Mar. 22 | 4588 | 1009 | 109 | 1057 |
| Clutch | C. R. Moon | 756,390 | Apr. 5 | 402 | 82, 83 | 109 | 1429 |
| Clutch for carriers. Automatic | D. M. Motherwell | 756,265 | Apr. 5 | 144 | 29, 30 | 109 | 1374 |
| Clutch. Friction | S. C. Schauer | 756,185 | Mar. 29 | 5768 | 1273 | 109 | 1326 |
| Clutch. Friction | C. Seybold | 757,230 | Apr. 12 | 2084 | 443 | 109 | 1794 |
| Clutch. Friction | M. C. Nixon | 758,272 | Apr. 26 | 4113 | 890 | 109 | 2278 |
| Clutch. Magnetic | A. C. Eastwood | 754,291 | Mar. 8 | 2108 | 468 | 109 | 278 |
| Clutch mechanism | C. F. Thoms | 754,826 | Mar. 15 | 3223 | 702 | 109 | 739 |
| Clutch mechanism | W. D. Ford-Smith and T. Coventry | 757,805 | Apr. 19 | 3198 | 695 | 109 | 2060 |
| Clutch mechanism. Friction | S. J. Davis | 754,644 | Mar. 15 | 2872 | 627 | 109 | 659 |
| Clutch. Speed-regulating magnetic | C. A. Pratt | 754,804 | Mar. 15 | 3177 | 692 / 693 | 109 | 728 |
| Coal and rock drilling machine | L. K. Koontz | 756,028 | Mar. 29 | 5499 | 1213 | 109 | 1269 |
| Coal-breaker | E. S. Decker | 758,302 | Apr. 26 | 4192 | 902 / 903 | 109 | 2297 |
| Coal-burning apparatus. Soft- | R. Baker | 753,896 | Mar. 8 | 1246 | 280 | 109 | 289 |
| Coal-elevator | J. Deady, Jr | 754 546 | Mar. 15 | 2661 | 582 | 109 | 621 |
| Coal, &c. Machinery for cutting | H. C. Penke and J. R. English | 755,238 | Mar. 22 | 3961 | 877 / 878 | 109 | 915 |
| Coal or coke briquets. Producing pit- | J. Lieb | 756,124 | Mar. 29 | 5679 | | 109 | 1307 |
| Coal-separating apparatus | C. H. Koyl | 755,016 | Mar. 22 | 3576 | 784 / 785 | 109 | 883 |
| Coal-separator | F. H. Emery | 755,472 | Mar. 22 | 4401 | 975 | 109 | 1008 |
| Coal separator and washer | H. M. Spencer | 753,440 | Mar. 1 | 418 | 97, 98 | 109 | 91 |
| Coal-tipple structure | T. W. Fitch, Jr | 757,732 | Apr. 19 | 3048 | 664 / 665 | 109 | 2096 |
| Coaling-station | W. Robertson | 758,191 | Apr. 26 | 3945 | 856 / 857 | 109 | 2242 |
| Coat. Rain- | B. E. Terwilleger | 758,487 | Apr. 26 | 4535 | 974 | 109 | 2373 |
| Coat Storm- | T. A. Jones | 758,182 | Apr. 26 | 3933 | 858 | 109 | 2240 |
| Cock. Automatic stop and waste | J. T. Hutton | 753,271 | Mar. 1 | 106 | 26 | 109 | 26 |
| Cock fastener. Basin- | J. H. Glauber | 753,974 | Mar. 8 | 1522 | 339 | 109 | 351 |
| Cock or faucet. Automatically-closing | C. Doušnne | 753,964 | Mar. 8 | 1507 | 336 | 109 | 347 |
| Cock safety attachment. Gas- | B. F. Edwards | 757,652 | Apr. 19 | 2903 | 632 | 109 | 1996 |
| Cock. Safety gas | H. P. Thiele | 755,331 | Mar. 22 | 4145 | 916 | 109 | 954 |
| Cock. Safety gas | H. P. Thiele | 755,332 | Mar. 22 | 4147 | 917 | 109 | 954 |
| Cock. Stop- | S. Resek | 756,596 | Apr. 5 | 657 | 141 | 109 | 1461 |
| Cock Stop and waste | J. M. Teahen | 754,515 | Mar. 15 | 2633 | 571 | 109 | 618 |
| Cock. Tank ball- | F. C. Smith | 756,588 | Apr. 5 | 679 | 146 | 109 | 1486 |
| Cocks Operating device for train-pipe | N. F. Niederlander | 755,918 | Mar. 29 | 5294 | 1169 | 109 | 1324 |
| Coffee extract. Preparing | F. J. Reichert | 758,284 | Apr. 26 | 4343 | 932 | 109 | 2260 |
| Coffee-roaster | J. E. Herriott | 757,743 | Apr. 19 | 3080 | 671 | 109 | 2083 |
| Coffee. Roasting | T. R. Timby | 754,943 | Mar. 15 | 3451 | 756 | 109 | 789 |
| Coffee-urn | B. Peterman | 755,041 | Mar. 22 | 3618 | 794 | 109 | 842 |
| Coffin | J. J. Schneider | 754,712 | Mar. 15 | 3015 | 658 | 109 | 693 |
| Coil for electromagnets, &c | F. Klingelfuss | 755,229 | Mar. 22 | 3946 | 873 | 109 | 912 |
| Coil. Radiating condensing | R. Jardine | 758,077 | Apr. 26 | 3738 | 812 | 109 | 2195 |
| Coin-collecting box or receptacle | J. C. Hansen-Ellehammer | 755,768 | Mar. 29 | 4998 | 1111 | 109 | 1156 |
| Coin-controlled apparatus | W. Webber | 757,530 | Apr. 19 | 2944 | 579 | 109 | 1986 |
| Coin-controlled dispensing apparatus | D. Sullivan | 757,690 | Apr. 19 | 2975 | 647 | 109 | 2011 |
| Coin-controlled-machine automatic register | C. S. Ellis and F. D. Powell | 754,553 | Mar. 15 | 2695 | 586 | 109 | 624 |
| Coin counting and delivery machine | L. Sumner | 757,362 | Apr. 12 | 2294 | 500 / 501 | 109 | 1847 |
| Coin counting and packaging machine | E. N. Gilfillan | 757,612 | Apr. 19 | 2821 | 616 | 109 | 1976 |
| Coin-detector | F. G Hartell | 757,741 | Apr. 19 | 3076 | 670 | 109 | 2082 |
| Coin-detector for coin-actuated devices | B. M. Davis | 753,961 | Mar. 8 | 1499 | 335 | 109 | 346 |
| Coin-holder | D. J. Cable | 756,326 | Apr. 5 | 261 | 55 | 109 | 1400 |
| Coin-operated apparatus | J. Heissenberger | 755,130 | Mar. 22 | 3762 | 826 / 827 | 109 | 875 |
| Coke-oven-charging machine | S. T. and C. H. Wellman, J. W. Seaver, and T. R. Morgan. | 754,263 | Mar. 8 | 2058 | 457 | 109 | 468 |
| Coke-oven-door hoist | C. S. Mason | 757,134 | Apr. 12 | 1848 | 404 | 109 | 1758 |
| Coke-oven. Retort | A. C. Kloman | 757,469 | Apr. 19 | 2518 | 552 / 553 | 109 | 1909 |
| Coke-oven. Retort | W. M. Scott | 757,509 | Apr. 19 | 2599 | 569 / 570 | 109 | 1927 |
| Coke-puller | A. J. Doss | 757,263 | Apr. 12 | 2119 | 462 | 109 | 1811 |
| Coke-puller | J. E. Jones | 757,312 | Apr. 12 | 2206 | 482 | 109 | 1899 |
| Coke. Quenching and bleaching | E. A. Moore | 755,155 | Mar. 22 | 3810 | 841 / 842 / 839 | 109 | 885 |
| Coke quenching and bleaching apparatus | E. A. Moore | 755,154 | Mar. 22 | 3807 | 840 / 841 | 109 | 884 |
| Cold-air chamber or refrigerator | L. Mantell and W. J. Prim | 754,328 | Mar. 8 | 2173 | 481 / 482 | 109 | 491 |
| Cold-storage apparatus | M. Cooper | 754,749 | Mar. 15 | 3074 | 671 / 672 | 109 | 707 |
| Coliseum-chair | M. C. Henley | 755,183 | Mar. 22 | 3767 | 859 | 109 | 876 |
| Collar | F. P. Sharp | 756,298 | Apr. 5 | 308 | 43 | 100 | 1393 |
| Collar and necktie retainer | O. F. Amburn | 753,784 | Mar. 1 | 1103 | 250 | 109 | 239 |
| Collar-blocking machine. Horse- | W. E. Penn | 755,229 | Mar. 22 | 3965 | 879 / 880 | 109 | 916 |
| Collar-blocking machine. Horse- | W. E. Penn | 755,534 | Mar. 22 | 4501 | 1001 / 1002 | 109 | 1080 |
| Collar. Dog- | F. H. Erb, Jr | 755,473 | Mar. 22 | 4403 | 975 | 109 | 1009 |
| Collar-fastener. Combination | M. Olsson | 755,108 | Mar. 22 | 3823 | 845 | 109 | 886 |
| Collar. Horse- | H. Sellon | 753,437 | Mar. 1 | 419 | 96 | 109 | 89 |
| Coloring-machine | A. C. Hough | 757,554 | Apr. 19 | 2995 | 589 | 109 | 1948 |
| Column. Metallic | E. Ohnstrand | 756,331 | Apr. 26 | 4252 | 913 | 109 | 2310 |

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|---|---|---|---|---|---|---|---|
| Comb: *See* Expansion-comb. Side-comb. | | | | | | | |
| Comb | L. E. Edgar | 754,206 | Mar. 8 | 1958 | 434 | 109 | 447 |
| Comb | C. H. Howe | 756,367 | Apr. 5 | 361 | 73 | 109 | 1490 |
| Comb | N. D. Ingram | 757,042 | Apr. 12 | 1669 | 361 | 109 | 1713 |
| Comb-cleaner | F. P. Björnerantz | 753,225 | Mar. 1 | 18 | 4 | 109 | 6 |
| Combination-case | W. E. Chatterton | 755,615 | Mar. 29 | 4666 | 1088 | 109 | 1092 |
| Combustion. Method of | C. E. Lucke | 756,376 | Mar. 29 | 4234 | 4087 | 109 | 975 |
| Combustion structure | G. C. Savage | 756,281 | Apr. 26 | 4136 | 893 | 109 | 2293 |
| Commutator. Automatic | J. H. Mercadier | 757,942 | Apr. 19 | 3458 | 747 | 109 | 2115 |
| Commutator-brushes. Means for preventing arcing between | E. Thomson | 756,157 | Apr. 26 | 3884 | 843 | 109 | 2280 |
| Commutator for telephonic or other circuits | C. H. Prött | 754,011 | Mar. 8 | 1582 | {353 354 | 109 | 905 |
| Compasses | G. Schoenner | 755,395 | Mar. 22 | 4271 | 943 | 109 | 992 |
| Compasses | G. Schoenner | 755,396 | Mar. 22 | 4272 | 944 | 109 | 992 |
| Compensating device | W. Y. Cruikshank | 758,584 | Apr. 26 | 4734 | {1020 1021 | 109 | 2117 |
| Compiling statistics. Apparatus for | C. F. Pidgin | 755,695 | Mar. 29 | 4898 | {1072 1073 | 109 | 1120 |
| Composing-machine justifying device | J. A. Watson | 753,396 | Mar. 1 | 217 | 49 | 109 | 50 |
| Composite drill | W. R. Down | 756,330 | Apr. 5 | 302 | 60 | 109 | 1406 |
| Composition of matter | W. A. Price | 753,310 | Mar. 1 | 176 | ..... | 109 | 41 |
| Composition of matter | W. Lenderoth | 753,407 | Mar. 1 | 342 | ..... | 109 | 76 |
| Composition of matter and producing same | H. Wolf | 756,750 | Apr. 5 | 1081 | ..... | 109 | 1574 |
| Compound engine | F. Lincoln | 755,508 | Mar. 22 | 4455 | 990 | 109 | 1019 |
| Compound engine | C. J. Meilin | 756,673 | Apr. 5 | 916 | 200 | 109 | 1589 |
| Compound engine | S. Rothschild | 757,965 | Apr. 19 | 3498 | {757 758 | 109 | 2125 |
| Compressing-dies | T. A. Edison | 754,755 | Mar. 15 | 3084 | 674 | 109 | 709 |
| Compressing mechanism | W. M. Holmes | 758,258 | Apr. 26 | 4075 | 892 | 109 | 2270 |
| Computing-machine | J. A. Scott and W. F. Taylor | 757,508 | Apr. 19 | 2597 | 569 | 109 | 1927 |
| Concentrator | J. Ruedy | 757,350 | Apr. 12 | 2275 | 497 | 109 | 1843 |
| Concentrator | W. L. and F. S. Card | 758,413 | Apr. 26 | 4406 | {946 947 | 109 | 2343 |
| Concentrator | L. C. Graupner | 758,436 | Apr. 26 | 4457 | 968 | 109 | 2356 |
| Concrete bricks, &c. Apparatus for the manufacture of | L. J. Dumm | 753,949 | Mar. 1 | 63 | 16, 17 | 109 | 16 |
| Concrete-construction mold. Metal- | C. Weber | 754,926 | Mar. 15 | 2932 | 618 | 109 | 651 |
| Concrete, &c. Machine for mixing | J. E. Kentsell | 754,927 | Mar. 15 | 3401 | 743 | 109 | 777 |
| Concrete piles. Apparatus for use in making | W. C. Lyon | 754,376 | Mar. 8 | 2313 | 505 | 109 | 523 |
| Concrete piles. Making | W. C. Lyon | 754,375 | Mar. 8 | 2312 | 505 | 109 | 522 |
| Concrete piles. Sectional core for making | G. H. Poor | 757,787 | Apr. 19 | 3121 | 680 | 109 | 2042 |
| Condenser | T. Douglas and G. L. Conroy | 753,555 | Mar. 1 | 652 | 147 | 109 | 143 |
| Condenser | O. H. Mueller | 756,090 | Apr. 26 | 3755 | 817 | 109 | 2199 |
| Condenser. Locomotive-tank | F. Burger and H. M. Williams | 753,357 | Mar. 1 | 252 | 57 | 109 | 57 |
| Condenser. Steam- | R. W. Knapp | 758,404 | Mar. 1 | 330 | 76, 77 | 109 | 76 |
| Condensing apparatus. Steam- | H. A. Duc, Jr. | 753,247 | Mar. 1 | 58 | 15 | 109 | 15 |
| Conduit outlet-box. Interior- | W. F. Bossert | 754,414 | Mar. 15 | 2406 | 527 | 109 | 560 |
| Confectionery-coating-machine delivery-apron | G. Carlson | 755,451 | Mar. 22 | 4368 | 967 | 109 | 1001 |
| Confections and making same. Cocoa | C. H. and M. M. Burckett | 755,562 | Mar. 22 | 4551 | ..... | 109 | 1041 |
| Connecting-rod or pitman | C. H. Howland-Sherman | 754,658 | Mar. 15 | 3891 | 632 | 109 | 864 |
| Contact-finger tip. Removable | F. E. Case | 755,743 | Mar. 29 | 4981 | 1096 | 109 | 1142 |
| Controller | F. E. Case | 755,744 | Mar. 29 | 4982 | 1096 | 109 | 1142 |
| Controlling device. Automatic | J. S. Cole | 755,563 | Mar. 22 | 4552 | 1013 | 109 | 1042 |
| Converter system. Rotary | E. M. Hewlett | 756,900 | Apr. 12 | 1485 | 327 | 109 | 1674 |
| Convertible chair | L. N. Shoemaker | 756,419 | Apr. 5 | 402 | 95, 96 | 109 | 1441 |
| Conveyer | M. Foshee | 753,482 | Mar. 1 | 482 | 113 | 109 | 106 |
| Conveyer | T. McDonald and W. McKee | 754,229 | Mar. 8 | 2001 | {444 445 | 109 | 457 |
| Conveyer | E. B. Nelson | 755,526 | Mar. 22 | 4469 | {997 998 | 109 | 1028 |
| Conveyer. Bucket | A. L. Le Grand | 756,510 | Apr. 5 | 626 | 136 | 109 | 1474 |
| Conveyer. Foldable | J. H. Torney | 755,333 | Mar. 22 | 4148 | {917 918 | 109 | 954 |
| Conveyer or chute for infilling material | T. Nicholson | 753,616 | Mar. 1 | 757 | 169 | 109 | 164 |
| Conveyer. Portable | W. L. McCabe | 754,334 | Mar. 8 | 2180 | 483 | 109 | 498 |
| Conveyer. Portable | W. L. McCabe | 754,335 | Mar. 8 | 2183 | {484 485 486 | 109 | 494 |
| Conveyer-spout coupling. Sectional- | C. F. Spencer | 757,573 | Apr. 19 | 2744 | 599 | 109 | 1900 |
| Conveyer. Stock-house | T. A. Edison | 758,432 | Apr. 26 | 4445 | {955 956 | 109 | 2352 |
| Conveyer system | C. Berghoefer | 755,606 | Mar. 29 | 4647 | {1082 1083 | 109 | 1076 |
| Conveyer system | D. A. Keating | 756,170 | Mar. 29 | 5745 | 1209 | 109 | 1322 |
| Conveyer terminal. Parcel- | L. Abraham | 756,551 | Apr. 5 | 606 | {150 151 | 109 | 1490 |
| Conveyers. Feeding attachment for pneumatic | E. T. Sonendriker | 753,908 | Mar. 8 | 1436 | 322 | 109 | 331 |
| Conveying apparatus. Material- | H. Marcus | 757,477 | Apr. 19 | 2534 | {556 557 | 109 | 1913 |
| Cooker. Steam- | P. J. Phillips | 755,042 | Mar. 22 | 3619 | 794 | 109 | 843 |
| Cooker. Steam- | P. S. Rumberg | 755,302 | Mar. 22 | 4266 | 942 | 109 | 981 |
| Cooking by superheated steam. Apparatus for | D. Harrington | 755,496 | Mar. 22 | 4421 | 980 | 109 | 1013 |
| Cooking machine. Dough- | C. Betz and P. Seibel | 754,276 | Mar. 8 | 2064 | 462 | 109 | 473 |
| Cooking retort or kettle | O. Hubbell | 757,555 | Apr. 19 | 2698 | 590 | 109 | 1949 |
| Cooking utensil | H. M. Horine | 754,310 | Mar. 8 | 2148 | 476 | 109 | 486 |
| Cooking utensil | A. H. Thiele | 755,967 | Mar. 29 | 5397 | 1189 | 109 | 1246 |
| Cooking-utensil support | J. W. Marshall | 754,528 | Mar. 15 | 2754 | 600 | 109 | 635 |
| Cooking vessel | H. M. De Sachet | 757,281 | Apr. 12 | 2117 | 462 | 109 | 1810 |
| Cooler: *See* Air-cooler. Water-cooler. Milk-cooler. | | | | | | | |
| Cooler | J. J. Stephenson | 755,408 | Mar. 22 | 4366 | 947 | 109 | 986 |
| Cooling apparatus | E. P. F. Magnien | 757,823 | Apr. 19 | 3227 | {700 701 | 109 | 2065 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cooling or refrigerating apparatus | B. Addy | 755,429 | Mar. 22 | 4326 | 956 | 109 | 998 |
| Cooling-rack for bars | G. G. McMurtry | 753,393 | Mar. 1 | 142 | 34, 35 | 109 | 35 |
| Cooling-tower | C. F. Hettinger | 753,573 | Mar. 1 | 688 | 154 | 109 | 151 |
| Coop. Chicken- | H. R. Bridgers | 753,228 | Mar. 1 | 22 | 5 | 109 | 7 |
| Copper and zinc from ores. Electrolytically extracting | S. Laszczynski | 757,817 | Apr. 19 | 3221 | 699 | 109 | 2064 |
| Copper from comminuted mineral mixtures. Extraction of | E. A. Le Sueur | 755,302 | Mar. 22 | 4078 | ..... | 109 | 940 |
| Copper-pouring spoon | B. H. Bennetts | 753,465 | Mar. 1 | 459 | 107 | 109 | 100 |
| Copy-holder | B. Hill | 753,490 | Mar. 1 | 505 | 117 | 109 | 111 |
| Copy-holder | K. R. Williams | 754,526 | Mar. 15 | 2648 | 575 | 109 | 615 |
| Copy-holder | A. C. Esson | 754,983 | Mar. 22 | 3521 | 771 | 109 | 820 |
| Copying machine. Letter- | W. E. Peck | 756,522 | Apr. 5 | 650 | 140 | 109 | 1478 |
| Copying machine. Letter- | W. E. Peck | 756,797 | Apr. 5 | 1102 | 258 | 109 | 1592 |
| Cord-knotter | E. M. Kellogg | 757,127 | Apr. 12 | 1825 | 401 | 109 | 1746 |
| Core-drying oven | W. J. Breen | 758,409 | Apr. 26 | 4387 | {943 944 | 109 | 2339 |
| Core-ramming device. Sand- | G. A. Conrath | 755,620 | Mar. 29 | 4687 | 1042 | 109 | 1086 |
| Corn-cutter | T. J. Love | 755,510 | Mar. 22 | 4459 | 991 | 109 | 1020 |
| Corn-husker | R. N. Thomas | 758,196 | Apr. 26 | 3957 | 858 | 109 | 2245 |
| Corn husker and shredder | G. F. Conner | 756,098 | Mar. 29 | 5026 | {1241 1242 | 109 | 1297 |
| Corn huskers and shredders. Spreading-roll for | J. H. Pitkin | 754,158 | Mar. 8 | 1855 | 414 | 109 | 427 |
| Corn-husking implement | H. Schuster | 753,689 | Mar. 1 | 798 | 178 | 109 | 174 |
| Corn-husking machine | A. F. Klampe | 756,655 | Apr. 5 | 875 | 191 | 109 | 1529 |
| Corn-husking-machine feeder | A. Yates | 753,846 | Mar. 1 | 295 | 54 | 109 | 53 |
| Corn. Mechanical sorter for seed- | L. P. Graham | 755,594 | Mar. 22 | 4610 | 1024 | 109 | 1055 |
| Corn-shock loader | E. T. Maxwell | 754,585 | Mar. 15 | 2757 | 601 | 109 | 636 |
| Corset | M. J. Elliott | 755,470 | Mar. 22 | 4399 | 974 | 109 | 1008 |
| Corset | B. Kull | 755,888 | Mar. 29 | 5228 | 1156 | 109 | 1211 |
| Corset | J. H. Thornton | 755,968 | Mar. 29 | 5389 | 1190 | 109 | 1246 |
| Corset | S. S. Gaylord | 756,111 | Mar. 29 | 5657 | 1249 | 109 | 1308 |
| Corset | D. Fogliano | 757,291 | Apr. 12 | 2143 | 468 | 109 | 1816 |
| Corset-attachment blouse-extender | J. Lindauer | 755,233 | Mar. 22 | 3953 | {875 876 | 109 | 913 |
| Corset-stay | L. I. Cassidy | 757,268 | Apr. 12 | 2090 | 450 | 109 | 1804 |
| Corset-stay | C. H. Cunningham | 758,585 | Apr. 26 | 4736 | 1021 | 109 | 2418 |
| Cot | P. D. Heather | 753,008 | Apr. 19 | 3583 | {775 776 | 109 | 2144 |
| Cot or bed. Folding and convertible | J. W. Jones | 758,211 | Apr. 26 | 3965 | 865 | 109 | 2251 |
| Cot or lounge. Reclining | A. E. White and W. Miller | 753,815 | Mar. 1 | 1201 | 270 | 109 | 268 |
| Cotton-chopper | T. J. Lowry | 754,787 | Mar. 15 | 3154 | {686 687 | 109 | 728 |
| Cotton-chopper | C. H. Walters | 755,337 | Mar. 22 | 4160 | 919 | 109 | 957 |
| Cotton chopper and cultivator. Combined | N. Langford | 753,890 | Mar. 8 | 1349 | {304 305 | 109 | 311 |
| Cotton chopper and weeder | J. H. Stewart | 756,186 | Mar. 29 | 5769 | 1274 | 109 | 1326 |
| Cotton distributer. Seed- | M. C. Brown | 756,776 | Apr. 5 | 1114 | {245 246 | 109 | 1582 |
| Cotton gin and condenser | E. W. Hays | 753,488 | Mar. 1 | 497 | {116 117 | 109 | 109 |
| Cotton-gin mote-board | C. G. Bodungen | 758,166 | Apr. 26 | 3996 | 846 | 100 | 2282 |
| Cotton-picker | J. T. McDonald | 756,394 | Apr. 5 | 408 | 84, 85 | 109 | 1431 |
| Cotton-picking machine | J. W. Shaw | 755,059 | Mar. 22 | 3645 | 800 | 109 | 849 |
| Cotton-separator | J. L. Rollins | 755,701 | Mar. 29 | 4844 | 1077 | 109 | 1124 |
| Couch-spring | E. A. Anderson | 754,885 | Mar. 15 | 3235 | 705 | 109 | 742 |
| Coupling: *See* Automatic coupling. Axle-coupling. Car-coupling. Car draft-coupling. Car pipe-coupling. Conveyer-spout coupling. Doubletree-coupling. Friction-coupling. Hose-coupling. Lamp-coupling. Pipe-coupling. Rail-joint coupling. Shaft-coupling. Thill-coupling. Whiffletree-coupling. | | | | | | | |
| Coupling | D. Greenbury | 755,652 | Mar. 29 | 4743 | {1054 1055 | 109 | 1096 |
| Coupling | J. L. Crisler | 755,850 | Mar. 29 | 5159 | 1141 | 109 | 1195 |
| Couplings. Lock mechanism for vertical-plane | H. C. Buhoup | 756,695 | Apr. 12 | 1223 | 278 | 109 | 1621 |
| Cover. Packing-vessel | C. C. Woods | 757,167 | Apr. 12 | 1908 | 416 | 109 | 1767 |
| Cow-tail holder | P. Young | 754,083 | Mar. 8 | 1628 | 362 | 109 | 374 |
| Cows. Antikicker for | J. Casey | 753,359 | Mar. 1 | 254 | 58 | 109 | 58 |
| Cracker-case | W. T. Magness | 754,326 | Mar. 8 | 2168 | 480 | 109 | 490 |
| Cradle | F. M. Goddard | 756,230 | Apr. 5 | 76 | 17 | 109 | 1359 |
| Crane | L. S. Fleckenstein | 757,290 | Apr. 12 | 2141 | 468 | 109 | 1815 |
| Crane | C. H. Howland-Sherman | 758,254 | Apr. 26 | 4080 | 883 | 109 | 2271 |
| Crane and supporting structure therefor | V. R. Browning | 756,982 | Apr. 12 | 1480 | 318 | 109 | 1663 |
| Cranes. Track or the like for | R. Wilke | 758,399 | Apr. 26 | 4363 | {938 939 940 | 109 | 2333 |
| Crate. Banana- | M. Lombardo | 753,410 | Mar. 1 | 350 | 80 | 109 | 78 |
| Crate. Banana- | J. A. Hadley | 754,444 | Mar. 15 | 2485 | 541 | 109 | 578 |
| Crate. Folding | W. Pond | 756,690 | Apr. 12 | 1349 | 300 | 109 | 1646 |
| Crate. Shipping- | G. Miller and W. Butler | 756,260 | Apr. 5 | 135 | 27 | 109 | 1372 |
| Crate. Shipping- | F. O. Miller | 756,877 | Apr. 12 | 1318 | 294 | 109 | 1640 |
| Cream-roll-forming machine | C. F. Diets | 754,549 | Mar. 15 | 2686 | 583 | 109 | 623 |
| Cream-separator | W. T. Oglesby | 756,278 | Apr. 5 | 158 | 32 | 109 | 1377 |
| Cream-separator | C. T. McCarroll | 757,669 | Apr. 19 | 2984 | 637 | 109 | 2002 |
| Cream-separator. Centrifugal | J. J. Berrigan | 756,320 | Apr. 5 | 251 | 52 | 109 | 1397 |
| Creasing-machine | C. R. Nelson | 756,882 | Apr. 12 | 1326 | 295 | 109 | 1641 |
| Creasing-press | E. A. Stimpson | 755,409 | Mar. 22 | 4368 | 948 | 109 | 986 |
| Crib | C. Hollis | 754,140 | Mar. 8 | 1826 | 407 | 109 | 419 |
| Cross-section tester | H. E. Smith | 758,221 | Apr. 26 | 4001 | 869 | 109 | 2254 |
| Cross-tie. Metallic | C. W. Platt | 754,093 | Mar. 15 | 2974 | 648 | 109 | 688 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Crusher: *See* Cane-crusher. | | | | | | | |
| Crusher and pulverizer | M. F. Williams | 758,268 | Apr. 26 | 4148 | 896 / 897 | 109 | 2285 |
| Cuff-holder | W. H. Page | 755,368 | Mar. 22 | 4948 | 986 | 109 | 977 |
| Cultivator | J. R. Jones | 753,988 | Mar. 8 | 1534 | 342 | 109 | 355 |
| Cultivator | W. L. Eddy | 754,130 | Mar. 8 | 1813 | 406 | 109 | 417 |
| Cultivator | U. H. Brown | 755,214 | Mar. 22 | 3921 | 867 / 868 | 109 | 907 |
| Cultivator | H. B. Porter | 755,536 | Mar. 22 | 4511 | 1004 | 109 | 1082 |
| Cultivator | E. Miller | 755,906 | Mar. 29 | 5206 | 1163 | 109 | 1219 |
| Cultivator | M. Pruyn | 755,982 | Mar. 29 | 5322 | 1174 | 109 | 1230 |
| Cultivator | T. E. Thompson | 756,077 | Mar. 29 | 5576 | 1231 | 109 | 1286 |
| Cultivator | A. L. Samuelson | 756,896 | Apr. 12 | 1396 | 304 | 109 | 1649 |
| Cultivator | S. F. Vance | 756,906 | Apr. 12 | 1560 | 342 | 109 | 1660 |
| Cultivator | G. W. and C. E. Goss | 757,396 | Apr. 12 | 2378 | 516 / 517 | 109 | 1863 |
| Cultivator | O. H. Cloyd | 757,862 | Apr. 19 | 3300 | 715 | 109 | 2061 |
| Cultivator and harrow spring-tooth | S. F. Vance | 756,996 | Apr. 12 | 1559 | 342 | 109 | 1659 |
| Cultivator attachment | E. N. Camp | 756,576 | Apr. 5 | 742 | 161 | 109 | 1499 |
| Cultivator attachment | A. Rodocker | 756,988 | Apr. 12 | 1537 | 338 | 109 | 1664 |
| Cultivator-disks. Dust-proof journal for | N. S. Barger | 758,562 | Apr. 26 | 4731 | 1030 | 109 | 2417 |
| Cultivator. Wheel- | F. L. Block | 755,737 | Mar. 29 | 4919 | 1095 / 1096 | 109 | 1139 |
| Cultivator-wheels. Dust-proof journal for | N. S. Barger | 758,561 | Apr. 26 | 4730 | 1019 | 109 | 2416 |
| Cup: *See* Heating-cup. Oil-cup. | | | | | | | |
| Curler. Hair- | N. B. Stone | 757,341 | Apr. 12 | 2044 | 446 | 109 | 1795 |
| Current-collector | J. E. Greenwood | 758,528 | Apr. 26 | 4629 | 997 | 109 | 2394 |
| Current distribution. System of alternating- | E. R. Gill | 754,133 | Mar. 8 | 1816 | 404 / 405 | 109 | 417 |
| Current-motor | F. H. Crago | 756,335 | Apr. 5 | 284 | 59 | 109 | 1304 |
| Current motor. Alternating- | R. McNeill | 758,378 | Apr. 26 | 4334 | 980 / 981 | 109 | 2327 |
| Current-regulator | E. Dysterud | 756,605 | Apr. 5 | 786 | 171 | 109 | 1509 |
| Current transformation. Alternating- | M. Hutin and M. Leblanc | 754,371 | Mar. 8 | 2304 | 508 | 109 | 580 |
| Current transformation. System of alternating- | M. Hutin and M. Leblanc | 754,372 | Mar. 8 | 2306 | 504 | 109 | 521 |
| Current ventilator. Double- | H. I. M. Ross | 757,348 | Apr. 12 | 2272 | 496 | 109 | 1843 |
| Curtain and shade holder. Window- | H. T. Andrew | 754,531 | Mar. 15 | 2659 | 577 | 109 | 617 |
| Curtain and shade-roller holder. Combined window- | A. F. Gilbert | 757,547 | Apr. 19 | 2665 | 587 | 109 | 1946 |
| Curtain attachment. Window- | O. A. Essig | 754,554 | Mar. 15 | 2698 | 586 | 109 | 625 |
| Curtain block. Drop- | L. J. Couch | 756,157 | Mar. 29 | 5723 | 1263 / 1264 | 109 | 1317 |
| Curtain drying and stretching frame. Lace- | G. F. Hullings | 757,980 | Apr. 19 | 3431 | 742 | 109 | 2111 |
| Curtain-fastener | F. P. Pfleghar | 757,898 | Apr. 19 | 3256 | 706 | 109 | 2071 |
| Curtain-fixture | J. W. Paterson | 754,404 | Mar. 8 | 2362 | 520 | 109 | 537 |
| Curtain-fixture | J. Kirby, Jr. | 755,675 | Mar. 29 | 4783 | 1064 | 109 | 1107 |
| Curtain-fixture | G. B. Hatter | 756,361 | Apr. 5 | 350 | 71 | 109 | 1418 |
| Curtain-fixture | C. Reiss and W. G. Bradbury | 758,216 | Apr. 26 | 3994 | 867 | 109 | 2253 |
| Curtain-holder | J. D. Tieken | 758,570 | Apr. 26 | 4713 | 1016 | 109 | 2413 |
| Curtain-pole | D. Brehm | 753,821 | Mar. 1 | 1212 | 273 | 109 | 260 |
| Curtain-pole | A. R. Harmany | 754,136 | Mar. 8 | 1821 | 406 | 109 | 418 |
| Curtain-pole | D. Brehm | 754,917 | Mar. 15 | 3365 | 740 | 109 | 773 |
| Curtain-pole | A. Miller | 757,048 | Apr. 12 | 1676 | 363 | 109 | 1715 |
| Curtain-ring | W. Durst | 756,482 | Apr. 5 | 581 | 122 | 109 | 1465 |
| Cushion: *See* Car air-cushion. | | | | | | | |
| Cuspidor | T. J. Burns and F. O. Casteel | 753,229 | Mar. 1 | 24 | 5 | 109 | 7 |
| Cut-off | A. Martin | 756,365 | Apr. 26 | 4099 | 887 | 109 | 2275 |
| Cut-off and alarm. Fluid-pressure | R. M. Hughes | 757,119 | Apr. 12 | 1805 | 395 | 109 | 1742 |
| Cut-off. Automatic water-gage | J. H. Cuningham | 754,300 | Mar. 8 | 1929 | 430 | 109 | 442 |
| Cut-off. Rain-water | J. J. Sandvig | 758,470 | Apr. 26 | 4521 | 971 | 109 | 2370 |
| Cut-out. Fusible | H. R. Sargent | 755,796 | Mar. 29 | 5047 | 1121 | 109 | 1167 |
| Cutter: *See* Band-cutter. Ice-cream cutter. Cheese-cutter. Linoleum, &c., cutter. Cigar-cutter. Pipe-cutter. Cigar-tip cutter. Pipe or bar cutter. Cloth-cutter. String-cutter. Corn-cutter. Wire-rope cutter. Feed-cutter. | | | | | | | |
| Cutter-bar alinement | G. Wilson | 753,459 | Mar. 1 | 446 | 104 | 109 | 97 |
| Cutter-head | F. Stutzman | 753,528 | Mar. 1 | 601 | 137 | 109 | 131 |
| Cutting and trimming machine | A. E. Roenigk | 757,288 | Apr. 12 | 2018 | 439 | 109 | 1790 |
| Cutting apparatus | J. N. Austin and M. D. Farnam | 755,431 | Mar. 22 | 4329 | 957 | 109 | 988 |
| Cutting irregular forms. Knife-carrier for machines for | A. M. Stickney | 758,444 | Mar. 1 | 423 | 99 | 109 | 92 |
| Cutting-machine | W. Dietmann | 754,055 | Mar. 8 | 1669 | 370 / 371 | 109 | 384 |
| Cutting-machine | C. J. Prankard, Jr. | 755,606 | Mar. 29 | 4882 | 1074 | 109 | 1121 |
| Cutting-shears | G. E. Benton | 756,818 | Apr. 12 | 1205 | 269 | 109 | 1618 |
| Cyanamid salts. Manufacture of | G. Erlwein | 757,185 | Apr. 12 | 1946 | 425 | 109 | 1776 |
| Cyanids and nitrates. Making | W. E. Everette | 754,647 | Mar. 15 | 2877 | 700 | 109 | 660 |
| Cycle. Automatic coasting- | E. A. Smith | 754,823 | Mar. 15 | 3213 | 700 / 701 | 109 | 796 |
| Cylinder-tooth wrench | W. H. George | 755,298 | Mar. 22 | 4068 | 901 | 109 | 987 |
| Dam. Portable power- | T. F. Gilliland | 757,909 | Apr. 19 | 3308 | 734 / 735 | 109 | 2102 |
| Damper | J. E. Frenning | 753,570 | Mar. 8 | 1311 | 295 | 109 | 308 |
| Damper mechanism. Time- | W. Hartzell | 754,446 | Mar. 15 | 2486 | 541 | 109 | 578 |
| Damper-regulator | E. A. Prahl | 758,471 | Apr. 26 | 4509 | 969 | 109 | 2367 |
| Dark room. Portable | W. H. Levey | 754,659 | Mar. 15 | 2900 | 634 | 109 | 666 |
| Dash foot and brace combined | H. C. Swan | 756,398 | Apr. 26 | 4356 | 937 | 109 | 2281 |
| Davenport and couch. Combination | A. L. and G. C. Hartshorn | 753,497 | Mar. 1 | 494 | 116 | 109 | 108 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Decorticating-machine | W. H. Allison | 753,652 | Mar. 1 | 329 | 186 | 109 | 181 |
| Demand-meter | R. S. White | 757,000 | Apr. 12 | 1567 | 343 | 109 | 1691 |
| Dental appliance | W. T. Lyon | 757,988 | Apr. 19 | 3445 | 746 | 109 | 2113 |
| Dental bite-taker holder | E. B. Marshall | 757,133 | Apr. 12 | 1846 | 408 | 109 | 1752 |
| Dental bridge | F. Teague | 758,529 | Mar. 1 | 603 | 137 | 109 | 131 |
| Dental handpiece | L. H. Crawford | 756,336 | Apr. 5 | 285 | 59, 60 | 109 | 1404 |
| Dental impression-cup. Adjustable | J. C. Davis | 758,679 | Mar. 1 | 389 | 201 | 109 | 193 |
| Dental impression-tray | C. Joannidi | 755,670 | Mar. 29 | 4769 | 1062 | 109 | 1105 |
| Dental-matrix retainer | W. Crenshaw | 758,422 | Apr. 26 | 4425 | 951 | 109 | 2348 |
| Dental plugger. Automatic | A. W. Wimmer | 755,425 | Mar. 22 | 4319 | 955 | 109 | 992 |
| Derrick | C. R. B. Claflin | 753,237 | Mar. 1 | 43 | 11 | 109 | 12 |
| Desk-cover | K. R. Moulton | 756,040 | Mar. 29 | 5519 | 1217 | 109 | 1273 |
| Desk. Hotel-register | J. I. Haycraft | 757,920 | Apr. 19 | 3411 | 738 | 109 | 2106 |
| Desk. Portable | T. Cram | 753,858 | Mar. 8 | 1292 | 291 | 109 | 298 |
| Detector: *See* Coin-detector. Gas-detector. Electrical-disturbance detector. | | | | | | | |
| Detonator | J. G. Raquett | 755,984 | Mar. 29 | 5326 | 1175 | 109 | 1231 |
| Dextrin. Manufacture of | G. Reynaud | 755,390 | Mar. 22 | 4264 | 942 | 109 | 981 |
| Diamonds for industrial purposes. Apparatus for setting | F. Krause | 757,518 | Apr. 12 | 2218 | 484 | 109 | 1831 |
| Die-opening mechanism | S. A. Maxwell | 755,028 | Mar. 22 | 3593 | 789 / 790 | 109 | 836 |
| Dies | G. S. Tiffany | 755,187 | Mar. 22 | 3872 | 855 | 109 | 896 |
| Diffusion-battery | A. Rak | 755,546 | Mar. 22 | 4525 | 1007 | 109 | 1085 |
| Digger: *See* Post-hole digger. Trench-digger. | | | | | | | |
| Digging and loading machine | D. McDonald | 754,592 | Mar. 15 | 2769 | 603 / 604 | 109 | 638 |
| Dish. Metallic | W. L. Martin | 755,786 | Mar. 29 | 5089 | 1117 | 109 | 1163 |
| Dish-washer | U. C. Anderson | 755,892 | Mar. 29 | 5115 | 1133 | 109 | 1164 |
| Disinfecting apparatus | A. Giersiepen | 757,806 | Apr. 19 | 3199 | 695 | 109 | 2060 |
| Disinfecting attachment. Telephone | C. Bravi-Bertini | 758,466 | Mar. 1 | 460 | 108 | 109 | 101 |
| Disintegrating-machine | W. A. Parry | 753,304 | Mar. 1 | 166 | 37, 38 | 109 | 39 |
| Disk-scraper | W. Fetzer | 756,107 | Mar. 29 | 5651 | 1247 | 109 | 1302 |
| Display-cabinet | E. A. Wilcox | 757,003 | Apr. 12 | 1575 | 345 | 109 | 1698 |
| Display device | W. B. Main | 755,900 | Mar. 29 | 5246 | 1160 | 109 | 1214 |
| Display-rack | W. J. McNab | 756,689 | Apr. 5 | 947 | 208 | 109 | 1545 |
| Display-rack for ribbons, &c | J. M. Bostwick | 756,462 | Apr. 5 | 546 | 114 | 109 | 1459 |
| Display rack or case | C. D. Allen | 757,643 | Apr. 19 | 2887 | 629 | 109 | 1992 |
| Display-stand | W. G. Winans | 756,758 | Apr. 5 | 1060 | 240 | 109 | 1574 |
| Display-tray | B. Lenzen | 755,021 | Mar. 22 | 3585 | 787 | 109 | 885 |
| Distillation apparatus. Wood- | C. M. Palmer | 754,232 | Mar. 8 | 2005 | 446 | 109 | 457 |
| Distillation of wood and production of charcoal. Apparatus for the | H. A. Mackie | 757,980 | Apr. 19 | 3447 | 746 | 109 | 2114 |
| Distillation of wood. Apparatus for the destructive | G. O. Gilmer. (Reissue) | 12,208 | Mar. 22 | 4634 | 1029 | 109 | 1060 |
| Distilling apparatus. Petroleum- | L. Gathmann | 755,760 | Mar. 29 | 4980 | 1108 / 1109 | 109 | 1151 |
| Distilling apparatus. Wood- | W. C. Douglas | 753,376 | Mar. 1 | 284 | 65 | 109 | 64 |
| Ditching and grading machine | R. Russell | 757,417 | Apr. 12 | 2412 | 526 | 109 | 1872 |
| Ditching machine. Tile- | E. and C. W. Jeschke | 755,012 | Mar. 22 | 3568 | 782 | 109 | 881 |
| Dividers | T. R. Skinner | 754,906 | Mar. 15 | 3369 | 736 | 109 | 770 |
| Dividers. Proportional | A. Basola | 753,221 | Mar. 1 | 10 | 2 | 109 | 4 |
| Dock. Floating | H. H. J. Dieckhoff | 755,854 | Mar. 29 | 5168 | 1143 | 109 | 1197 |
| Doll. Dancing | Y. F. Pinnick | 758,469 | Apr. 26 | 4507 | 968 | 109 | 2366 |
| Dolls or other toy figures going on rolls. Mechanism for walking | P. Fuchs | 754,861 | Mar. 15 | 3297 | 718 | 109 | 755 |
| Domestic boiler | H. A. Miller | 753,900 | Mar. 8 | 1370 | 309 | 109 | 316 |
| Domestic boiler | S. C. Shoup | 754,717 | Mar. 15 | 3024 | 660 | 109 | 695 |
| Door-check | J. C. Moore | 753,997 | Mar. 8 | 1559 | 348 | 109 | 360 |
| Door-check | E. J. Passino | 755,386 | Mar. 22 | 4259 | 940 / 941 | 109 | 979 |
| Door-check | D. D. Ryan | 755,795 | Mar. 29 | 5046 | 1121 | 109 | 1167 |
| Door check and closer | J. Bardsley | 753,898 | Mar. 8 | 1248 | 281 | 109 | 290 |
| Door check and closer | J. A. Young | 754,629 | Mar. 15 | 2887 | 619 / 620 | 109 | 658 |
| Door check and closer | W. Pelzer | 754,690 | Mar. 15 | 2961 | 646 / 647 | 109 | 679 |
| Door-fastening device | C. Cadwallader | 756,829 | Apr. 12 | 1230 | 274 / 275 | 109 | 1623 |
| Door. Folding | W. Richardson | 755,551 | Mar. 22 | 4535 | 1009 / 1010 | 109 | 1088 |
| Door frame. Screen- | J. Schnettler | 753,687 | Mar. 1 | 796 | 178 | 109 | 174 |
| Door-guard | B. D. Jones | 754,219 | Mar. 8 | 1961 | 440 | 109 | 452 |
| Door-handle shield | T. von Wobeser | 756,447 | Apr. 5 | 521 | 108 | 109 | 1454 |
| Door-hanger | F. F. Bischoff | 755,607 | Mar. 29 | 4649 | 1083 | 109 | 1077 |
| Door hanger. Barn- | W. S. Wilson | 756,089 | Mar. 29 | 5609 | 1238 | 109 | 1293 |
| Door-lock | J. Sliga | 753,642 | Mar. 1 | 804 | 179 | 109 | 176 |
| Door or like frame | E. Ohnstrand | 754,492 | Mar. 15 | 2586 | 561 | 109 | 601 |
| Door. Removable | J. R. Hussey | 753,578 | Mar. 1 | 697 | 156 | 109 | 153 |
| Door-securer | F. E. Wiesner | 754,267 | Mar. 8 | 2057 | 458 | 109 | 469 |
| Door-spring | J. C. Moore | 753,998 | Mar. 8 | 1559 | 348 | 109 | 360 |
| Door-stop | J. H. Shaw | 755,058 | Mar. 22 | 3644 | 800 | 109 | 848 |
| Door-stop | W. F. Nolan | 757,051 | Apr. 12 | 1681 | 364 | 109 | 1716 |
| Door. Vertically-moving | W. A. Cross | 757,178 | Apr. 12 | 1985 | 423 | 109 | 1772 |
| Door. Vertically-moving | W. A. Cross | 757,179 | Apr. 12 | 1986 | 423 | 109 | 1773 |
| Door. Warehouse- | J. Erwood | 756,609 | Apr. 5 | 798 | 172 | 109 | 1510 |
| Doors, &c. Sliding hanger for | J. C. Zumwalt and F. Stanton | 756,769 | Apr. 5 | 1098 | 243 | 109 | 1578 |
| Doubletree | F. L. Wolverton | 756,928 | Apr. 12 | 1411 | 314 | 109 | 1659 |
| Doubletree-coupling | J. E. Fillman and W. Davis | 755,475 | Mar. 22 | 4405 | 976 | 109 | 1009 |
| Doubling apparatus | J. M. B. Reis and J. H. Gill | 756,054 | Mar. 29 | 5540 | 1222 | 109 | 1278 |
| Douche-pan cushion | H. E. Felthousen | 756,007 | Mar. 29 | 5468 | 1205 | 109 | 1262 |
| Dough-break | W. H. Scott | 754,096 | Mar. 8 | 1751 | 389 / 390 | 109 | 401 |
| Dowel-machine | M. P. Stutsman | 755,255 | Mar. 22 | 3907 | 887 | 109 | 922 |
| Draft and buffing mechanism | F. W. Ritter, Jr | 757,841 | Apr. 19 | 3261 | 707 | 109 | 2072 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Draft device | C. R. Davis | 757,995 | Apr. 19 | 3553 | 770 | 109 | 2137 |
| Draft-equalizer | J. H. Emert | 753,392 | Mar. 1 | 297 | 67 | 109 | 97 |
| Draft-equalizer | L. A. Reep | 756,525 | Apr. 5 | 656 | 141 | 109 | 1480 |
| Draft-equalizer | A. K. Waters | 756,921 | Apr. 12 | 1407 | 313 | 109 | 1659 |
| Draft-equalizer | P. V. Schandoney | 757,232 | Apr. 19 | 3027 | 441 | 109 | 1792 |
| Draft-equalizer | P. V. Schandoney | 757,233 | Apr. 19 | 3029 | 441 | 109 | 1792 |
| Draft-equalizer | W. S. Emert | 757,266 | Apr. 12 | 2137 | 467 | 109 | 1814 |
| Draft-equalizer | E. F. Moran | 757,761 | Apr. 19 | 3108 | 677 | 109 | 2089 |
| Draft-evener | J. M. W. Long | 755,149 | Mar. 22 | 3801 | 857 | 109 | 948 |
| Draft-evener | C. T. Elliston | 756,841 | Apr. 12 | 1258 | 279 | 109 | 1637 |
| Draft-rigging | H. C. Williamson and H. Pries | 754,527 | Mar. 15 | 2651 | 575 | 109 | 615 |
| Draft-rigging | H. C. Williamson and H. Pries | 754,528 | Mar. 15 | 2653 | 575<br>576 | 109 | 616 |
| Draft-rigging | W. Thornburgh | 754,966 | Mar. 15 | 3477 | 761 | 109 | 795 |
| Draft-rigging | J. A. Hinson | 755,296 | Mar. 22 | 4067 | 901 | 109 | 988 |
| Draft-rigging | E. C. Washburn | 756,919 | Apr. 12 | 1408 | 312<br>313 | 109 | 1657 |
| Draft-rigging. Tandem-spring | W. H. Miner | 754,669 | Mar. 15 | 2917 | 637 | 109 | 669 |
| Draft-rigging. Tandem-spring friction | W. H. Miner | 754,671 | Mar. 15 | 2921 | 638 | 109 | 670 |
| Drafting implement | H. A. Swenson | 754,513 | Mar. 15 | 2638 | 570 | 109 | 610 |
| Draper | J. C. White | 756,548 | Apr. 5 | 694 | 149 | 109 | 1489 |
| Draw-knife | C. B. Simmons | 756,068 | Mar. 29 | 5066 | 1228 | 109 | 1294 |
| Drawing and designing apparatus | H. E. Ablett | 757,946 | Apr. 12 | 2063 | 448 | 109 | 1797 |
| Drawing-board | T. L. Austin | 753,463 | Mar. 1 | 455 | 106<br>107 | 109 | 99 |
| Drawing-frame for textile fibers | A. Bietenholz | 755,347 | Mar. 22 | 4178 | 923 | 109 | 961 |
| Dray-seat and truck. Combined | J. D. Stewart | 753,442 | Mar. 1 | 420 | 96 | 109 | 91 |
| Dredge | A. Boschke | 757,173 | Apr. 12 | 1921 | 419<br>420<br>421 | 109 | 1709 |
| Dredger or shaker. Powder | C. E. Grapewine | 757,912 | Apr. 19 | 3307 | 736 | 109 | 2108 |
| Dredging and sluicing device. Submarine | R. G. Riley | 754,611 | Mar. 15 | 2800 | 611 | 109 | 645 |
| Dress or corset spring | E. M. Dhale | 756,596 | Apr. 5 | 771 | 168 | 109 | 1506 |
| Dress-shield | C. A. Pienkowsky | 754,234 | Mar. 8 | 2009 | 446 | 109 | 458 |
| Dress-shield | J. H. Lee and N. B. Conkling | 754,877 | Mar. 15 | 3320 | 724 | 109 | 760 |
| Dress-suit case | J. D. Wood | 756,985 | Apr. 12 | 1413 | 315 | 109 | 1660 |
| Drier:<br>*See* Clothes-drier. Hair-drier.<br>Fruit-drier. Hose-drier. | | | | | | | |
| Drier | W. R. Macklind | 756,327 | Apr. 26 | 4342 | 911<br>912 | 109 | 2307 |
| Drier-rack | A. J. Zilker, A. L. Tidmarsh, and C. J. Armstrong. | 754,580 | Mar. 15 | 2656 | 576 | 109 | 615 |
| Dry-house | O. Heynsohn | 755,134 | Mar. 22 | 3769 | 829 | 109 | 876 |
| Drying and calcining kiln | C. E. Pickett | 753,684 | Mar. 1 | 770 | 171<br>172 | 109 | 167 |
| Drying-cylinder for textile machinery | C. C. Butterworth | 755,354 | Mar. 22 | 4189 | 906 | 109 | 964 |
| Drying-line holder | O. A. Pfleger | 754,089 | Mar. 8 | 1738 | 386 | 109 | 397 |
| Drill:<br>*See* Composite drill. Miner's drill.<br>Grain-drill. Ratchet-drill. | | | | | | | |
| Drill | J. M. Martin | 753,508 | Mar. 1 | 325 | 122 | 109 | 115 |
| Drill | W. N. Newton | 755,398 | Mar. 22 | 4492 | 998 | 109 | 1028 |
| Drill | A. Mill | 756,678 | Apr. 5 | 986 | 208 | 109 | 1541 |
| Drill attachment. Disk- | O. A. Poirier | 756,699 | Apr. 5 | 992 | 212 | 109 | 1549 |
| Drill bearing. Disk- | O. A. Poirier | 756,698 | Apr. 5 | 990 | 211 | 109 | 1548 |
| Drill bearing. Disk- | O. A. Poirier | 756,700 | Apr. 5 | 993 | 212 | 109 | 1549 |
| Drill-bits, &c. Fastening device for | C. P. Brintzinghoffer | 754,741 | Mar. 15 | 3061 | 668 | 109 | 704 |
| Drill cleaner. Disk- | O. A. Poirier | 756,697 | Apr. 5 | 989 | 211 | 109 | 1548 |
| Drill or pump rod grapple | J. Luke | 754,579 | Mar. 15 | 2751 | 599 | 109 | 634 |
| Drill pressure-regulating mechanism | W. A. Van Brunt | 753,432 | Mar. 1 | 433 | 102 | 109 | 94 |
| Drill-repairing machine | J. J. Brossoit | 755,351 | Mar. 22 | 4184 | 904<br>905 | 109 | 963 |
| Drilling and automatic centering device | J. J. McElwain and E. A. Young | 757,980 | Apr. 19 | 3465 | 750 | 109 | 2119 |
| Drilling-machine | W. F. Koeppen | 754,321 | Mar. 8 | 2160 | 478 | 109 | 488 |
| Drilling-machine | G. Smith | 757,339 | Apr. 12 | 2089 | 445 | 109 | 1794 |
| Drilling-machine. Automatic multiple | F. J. Nutting | 753,905 | Mar. 8 | 1380 | 311<br>312<br>313 | 109 | 318 |
| Drilling-machine shot-feed apparatus | W. S. Easton | 752,879 | Mar. 1 | 291 | 66 | 109 | 66 |
| Drilling-tool joint | H. J. Connolly and W. D. Montgomery. | 756,476 | Apr. 5 | 574 | 120 | 109 | 1468 |
| Drinking-fountain | D. J. Blenenstock | 755,436 | Mar. 22 | 4343 | 962 | 109 | 996 |
| Driving mechanism | H. M. Pope | 758,147 | Apr. 26 | 3867 | 840 | 109 | 2296 |
| Driving-wheel. Automatically-governed | V. G. Apple | 756,462 | Apr. 5 | 527 | 110 | 109 | 1455 |
| Drop-fixture. Automatic | H. M. Sturgis | 755,328 | Mar. 22 | 4137 | 914<br>915 | 109 | 962 |
| Drop-fixture. Automatic | H. M. Sturgis | 755,329 | Mar. 22 | 4140 | 915<br>916 | 109 | 962 |
| Dropper:<br>*See* Automatic dropper. | | | | | | | |
| Dropping-stopper | K. Rettig | 755,549 | Mar. 22 | 4532 | 1008 | 109 | 1037 |
| Drum | C. A. Stromberg | 754,101 | Mar. 8 | 1761 | 392 | 109 | 403 |
| Drum. Heat-radiating | E. J. and F. A. Langell | 756,970 | Apr. 12 | 1510 | 333 | 109 | 1679 |
| Drum-holder | W. H. Sipe | 755,408 | Mar. 22 | 4280 | 946 | 109 | 985 |
| Drum. Snare- | H. A. Bower | 755,610 | Mar. 29 | 4654 | 1084 | 109 | 1078 |
| Drum-snare brace | E. Boulanger | 756,980 | Apr. 12 | 1427 | 317 | 109 | 1662 |
| Drum snare-tightening device | C. A. Stromberg | 756,730 | Apr. 5 | 1033 | 229 | 109 | 1564 |
| Dry battery | A. F. Swan and A. W. Rose | 757,422 | Apr. 12 | 9419 | 527 | 109 | 1873 |
| Duplicating or counter-check appliance | E. Parker | 755,163 | Mar. 22 | 3694 | 845<br>846 | 109 | 898 |
| Dust-collector | J. H. Walsh | 755,902 | Mar. 22 | 4012 | 889<br>890 | 109 | 925 |
| Dust-collector | D. F. Hogan | 758,874 | Mar. 29 | 5908 | 1150<br>1151 | 109 | 1204 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Dust from dust-laden air. Separating | W. E. Allington | 755,430 | Mar. 22 | 4327 | 956<br>957 | 109 | 998 |
| Dust-guard | E. Jacquemin | 757,466 | Apr. 19 | 2513 | 551 | 109 | 1908 |
| Dust-laying composition | R. A. Chesebrough | 755,257 | Mar. 22 | 4193 | ..... | 109 | 965 |
| Dust or refuse bin. Portable | E. Lebach | 755,145 | Mar. 22 | 3797 | 836 | 109 | 882 |
| Dusting-frame. Portable | J. R. Mauran | 753,998 | Mar. 8 | 1551 | 346 | 109 | 359 |
| Dye and making same. Anthracene | O. Bally | 753,657 | Mar. 1 | 642 | ..... | 109 | 184 |
| Dye and making same. Anthracene | H. Weltz | 754,264 | Mar. 8 | 2061 | ..... | 109 | 469 |
| Dye and making same. Azo | P. Julius and E. Fussenegger | 754,315 | Mar. 8 | 2153 | ..... | 109 | 487 |
| Dye and making same. Black | R. Bohn | 756,571 | Apr. 5 | 732 | ..... | 109 | 1497 |
| Dye and making same. Blue-sulfur | J. Abel and A. Lüttringhaus | 755,428 | Mar. 22 | 4324 | ..... | 109 | 998 |
| Dye. Red-violet azo | A. Dorrer | 754,856 | Mar. 15 | 3289 | ..... | 109 | 753 |
| Dyes. Making anthraquinone | E. Hepp and E. Wolpert | 754,768 | Mar. 15 | 3104 | ..... | 109 | 718 |
| Dyeing apparatus | J. A. Willard | 755,422 | Mar. 22 | 4312 | 954 | 109 | 990 |
| Dyeing apparatus. Automatic | J. Marshall | 757,478 | Apr. 19 | 2537 | 557 | 109 | 1913 |
| Dyeing, &c. Apparatus for | P. Schirp | 755,050 | Mar. 22 | 3231 | 796 | 109 | 845 |
| Dyeing machine. Textile-fabric- | C. L. Rothwell-Jackson and E. W. Hunt. | 757,055 | Apr. 12 | 1686 | 366 | 109 | 1717 |
| Dyeing wood | J. Brenner | 755,993 | Mar. 29 | 5430 | ..... | 109 | 1255 |
| Dynamo brush-holder | W. Slee | 757,357 | Apr. 12 | 2287 | 499 | 109 | 1846 |
| Easel | J. Weber | 754,945 | Mar. 15 | 3454 | 756 | 109 | 790 |
| Easel | H. C. Cady | 758,351 | Apr. 26 | 4287 | 921 | 109 | 2317 |
| Easel-support | E. J. Trum | 756,740 | Apr. 5 | 1050 | 234 | 109 | 1567 |
| Eaves-trough cleaner | G. W. Boyer | 753,660 | Mar. 1 | 646 | 190 | 109 | 184 |
| Educational device | E. W. Barker | 755,837 | Mar. 29 | 5130 | 1135 | 109 | 1189 |
| Egg-drying apparatus | A. D. Robinson | 757,347 | Apr. 12 | 2270 | 495<br>496 | 109 | 1843 |
| Egg or fruit tray | W. Wilson and T. W. Baker | 753,343 | Mar. 1 | 229 | 52, 53 | 109 | 52 |
| Egg-poacher | J. A. Beury | 755,437 | Mar. 22 | 4342 | 962 | 109 | 996 |
| Egg-tray | H. R. Drake | 755,640 | Mar. 29 | 4719 | 1049 | 109 | 1093 |
| Eggs during transit. Means for holding | A. L. and O. L. Barstad | 755,484 | Mar. 22 | 4335 | 959 | 109 | 995 |
| Elastic band. Covered | J. and F. N. Ashworth | 754,959 | Mar. 22 | 3483 | 782 | 109 | 813 |
| Elastic fabric | H. J. Gaisman | 758,435 | Apr. 26 | 4450 | 957 | 109 | 2354 |
| Election-booth | G. W. Naylor, Sr., and J. Doran | 756,398 | Apr. 5 | 416 | 86 | 109 | 1432 |
| Electric accumulator-plate | C. P. Elleson | 755,642 | Mar. 29 | 4721 | 1050 | 109 | 1093 |
| Electric accumulator-plates. Making | C. P. Elleson | 755,643 | Mar. 29 | 4722 | 1050 | 109 | 1093 |
| Electric-arc-rupturing device | S. H. Short | 757,782 | Apr. 19 | 3161 | 686 | 109 | 2051 |
| Electric boosters. Controlling | E. M. Hewlett | 756,167 | Mar. 29 | 5738 | 1268 | 109 | 1320 |
| Electric-cable fault-locator | D. E. Wiseman | 754,402 | Mar. 8 | 2379 | 519<br>520 | 109 | 536 |
| Electric-circuit-breaker retarding device | A. R. Cheyney | 755,358 | Mar. 22 | 4193 | 927 | 109 | 965 |
| Electric-circuit-limiting device | C. W. Potter | 754,496 | Mar. 15 | 2594 | 564 | 109 | 602 |
| Electric condenser | M. O. Troy | 756,991 | Apr. 12 | 1552 | 341 | 109 | 1668 |
| Electric-conductor ground connection | F. P. Fuller and J. J. Walsh | 758,057 | Apr. 26 | 3692 | 802 | 109 | 2187 |
| Electric-conductor support | F. C. Locke | 758,324 | Apr. 26 | 4236 | 910 | 109 | 2306 |
| Electric conductors. Combination bracket and knob for | E. C. Hunt | 758,399 | Mar. 1 | 328 | 74 | 109 | 74 |
| Electric conductors. Mechanism for removing ice from | B. J. Jewett | 756,502 | Apr. 5 | 615 | 133 | 109 | 1472 |
| Electric connection | F. J. Russell | 755,393 | Mar. 22 | 4267 | 943 | 109 | 981 |
| Electric controller | A. C. Eastwood | 757,898 | Apr. 19 | 3369 | 728 | 109 | 2096 |
| Electric controller for alternating currents | R. P. Rukenbrod | 756,711 | Apr. 5 | 981 | 216<br>217 | 109 | 1553 |
| Electric-current regulator | N. Harrison | 757,302 | Apr. 12 | 2170 | 476 | 109 | 1822 |
| Electric-current-testing device | C. Oliver | 755,382 | Mar. 22 | 4246 | 938 | 109 | 977 |
| Electric cut-out. Automatic | G. Milburn | 756,516 | Apr. 5 | 640 | 138 | 109 | 1476 |
| Electric distribution. Panel-board for | G. H. Jones | 756,966 | Apr. 12 | 1501 | 331 | 109 | 1678 |
| Electric elevator | H. R. Wellman | 756,444 | Apr. 5 | 514 | 107 | 109 | 1452 |
| Electric furnace | C. A. Keller | 754,656 | Mar. 15 | 2897 | 633 | 109 | 665 |
| Electric furnace | W. S. Horry and E. F. Price | 757,621 | Apr. 19 | 2849 | 620<br>621 | 109 | 1968 |
| Electric heater | R. Kuhn | 756,242 | Apr. 5 | 100 | 21 | 109 | 1363 |
| Electric heater | E. Eckmann | 758,308 | Apr. 26 | 4196 | 908 | 109 | 2296 |
| Electric-light-circuit protector | S. Kalbach | 756,025 | Mar. 29 | 5496 | 1212 | 109 | 1268 |
| Electric lighting and power system | W. A. Turbayne | 757,695 | Apr. 19 | 2983 | 648 | 109 | 2013 |
| Electric lock | F. Lombardi | 755,897 | Mar. 29 | 5242 | 1159 | 109 | 1214 |
| Electric lock | J. Livingston | 756,864 | Apr. 12 | 1298 | 289 | 109 | 1635 |
| Electric machine | N. A. Christensen | 758,954 | Mar. 8 | 1484 | 332<br>333 | 109 | 342 |
| Electric-machine coil. Dynamo- | F. Porsche and L. Lohner | 755,587 | Mar. 22 | 4510 | 1004 | 109 | 1032 |
| Electric-machine shunt-controller | N. O. Nelson | 756,045 | Mar. 29 | 5525 | 1218 | 109 | 1275 |
| Electric machine. Static | E. E. Fewkes | 758,967 | Mar. 22 | 4209 | 932<br>933 | 109 | 969 |
| Electric machines. Means for starting alternating-current dynamo- | J. E. Woodbridge | 755,824 | Mar. 29 | 5090 | 1131 | 109 | 1177 |
| Electric meter | T. Duncan | 753,556 | Mar. 1 | 653 | 147 | 109 | 144 |
| Electric motor | D. P. Burdon | 754,124 | Mar. 8 | 1798 | 400<br>401 | 109 | 413 |
| Electric motor | R. E. Barker | 755,732 | Mar. 29 | 4910 | 1093 | 109 | 1138 |
| Electric motor | A. Vanderbeck | 758,225 | Apr. 26 | 4009 | 870 | 109 | 2256 |
| Electric-motor controller | M. W. Alexander | 755,731 | Mar. 29 | 4908 | 1092<br>1093 | 109 | 1137 |
| Electric motor. Reciprocating | A. F. Christmas | 757,991 | Apr. 19 | 3546 | 768 | 109 | 2136 |
| Electric motors. Coupling | D. P. Thomson | 755,814 | Mar. 29 | 5074 | 1126<br>1127 | 109 | 1173 |
| Electric motors. Means for variably operating and controlling | R. Eickemeyer | 757,304 | Apr. 12 | 2361 | 514<br>515 | 109 | 1861 |
| Electric-power-transmission system | M. Déri | 755,858 | Mar. 29 | 5165 | 1142<br>1143 | 109 | 1197 |
| Electric resistance | H. von Kramer | 756,119 | Mar. 29 | 5669 | 1251 | 109 | 1305 |
| Electric-resistance furnace | E. F. Price | 757,634 | Apr. 19 | 2870 | 625 | 109 | 1988 |
| Electric selective system | J. A. Géhrung | 755,127 | Mar. 22 | 3757 | 896 | 109 | 974 |
| Electric signal | J. E. Feller | 754,208 | Mar. 8 | 1954 | 435 | 109 | 447 |
| Electric snap-switch | G. W. Hart | 753,861 | Mar. 8 | 1331 | 300 | 109 | 307 |
| Electric-socket support | E. R. Gill | 754,762 | Mar. 15 | 3097 | 676 | 109 | 712 |
| Electric switch | G. W. Hart | 753,258 | Mar. 1 | 85 | 22 | 109 | 21 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Electric switch | N. Marshall | 754,378 | Mar. 8 | 2317 | 506 | 109 | 523 |
| Electric switch | N. Marshall | 754,379 | Mar. 8 | 2320 | 506 | 109 | 524 |
| Electric switch | N. Marshall | 754,380 | Mar. 8 | 2321 | 507 | 109 | 524 |
| Electric switch | A. P. Peck | 755,165 | Mar. 22 | 3828 | 846 | 109 | 889 |
| Electric switch | P. Sorensen | 756,541 | Apr. 5 | 684 | 147 | 109 | 1487 |
| Electric switch | G. H. Whittingham | 757,853 | Apr. 19 | 3288 | 711, 712 | 109 | 2077 |
| Electric switch | C. F. Hopewell | 757,925 | Apr. 19 | 3418 | 740 | 109 | 2107 |
| Electric switch | A. R. Fergusson | 758,306 | Apr. 26 | 4202 | 904 | 109 | 2299 |
| Electric switch | J. H. Rusby | 758,478 | Apr. 26 | 4520 | 971 | 109 | 2360 |
| Electric switch or circuit-breaker | E. M. Hewlett | 755,771 | Mar. 29 | 5001 | 1112, 1113 | 109 | 1157 |
| Electric switches or the like. Means for protecting live parts of | W. McDevitt | 757,830 | Apr. 19 | 3241 | 708 | 109 | 2068 |
| Electric time-alarm | E. M. Benesch | 754,410 | Mar. 15 | 2400 | 525 | 109 | 559 |
| Electric time-switch | J. Dilham and E. de Mersanne | 755,281 | Mar. 22 | 4042 | 896, 897 | 109 | 982 |
| Electric time-switch | F. W. Cherry and H. F. Radke | 755,845 | Mar. 29 | 5151 | 1138 | 109 | 1194 |
| Electric time-switch | H. C. Little | 758,084 | Apr. 26 | 3748 | 815 | 109 | 2197 |
| Electric tube-lighting | D. M. Moore | 755,306 | Mar. 22 | 4085 | 904 | 109 | 940 |
| Electric-wire tip or terminal | S. C. Houghton | 757,192 | Apr. 12 | 1960 | 428 | 109 | 1778 |
| Electric wires in buildings. Junction-box for | B. W. Allen | 754,111 | Mar. 8 | 1780 | 395 | 109 | 409 |
| Electric-wiring cleat | E. C. Hunt | 753,398 | Mar. 1 | 326 | 74 | 109 | 74 |
| Electrical conductor and coil | J. C. Anderson | 753,461 | Mar. 1 | 452 | 106 | 109 | 99 |
| Electrical-conductor conduit | H. Krantz | 753,714 | Mar. 1 | 961 | 217 | 109 | 207 |
| Electrical connection | E. G. Thomas | 753,759 | Mar. 1 | 1088 | 236 | 109 | 223 |
| Electrical contact device | J. Lindall | 755,782 | Mar. 29 | 5020 | 1116 | 109 | 1161 |
| Electrical-distribution means | J. L. Creveling | 754,429 | Mar. 15 | 2445 | 533 | 109 | 569 |
| Electrical-distribution system | H. W. Buck | 755,740 | Mar. 29 | 4926 | 1097 | 109 | 1141 |
| Electrical-distribution system | L. L. Holladay | 755,775 | Mar. 29 | 5011 | 1114 | 109 | 1159 |
| Electrical-disturbance detector | J. C. Bose | 755,840 | Mar. 29 | 5137 | 1136 | 109 | 1191 |
| Electrical generating system | W. A. Bole | 757,436 | Apr. 19 | 2451 | 535 | 109 | 1896 |
| Electrical impulses. Selecting | D. W. Troy | 758,586 | Mar. 22 | 4594 | 1022 | 109 | 1051 |
| Electrical impulses. Transmission of | J. S. Richmond | 758,106 | Apr. 26 | 3790 | 823 | 109 | 2206 |
| Electrical impulses. Transmission of | J. S. Richmond | 758,598 | Apr. 26 | 4766 | 1026 | 109 | 2425 |
| Electrical induction-machine | H. Lippelt | 756,798 | Apr. 5 | 1151 | 254, 255, 256 | 109 | 1590 |
| Electrical-machine brush-holder | W. H. Foot | 753,866 | Mar. 8 | 1305 | 293, 294 | 109 | 302 |
| Electrical machines. Winding for | F. J. Lindeman | 753,278 | Mar. 1 | 117 | 29 | 109 | 29 |
| Electrical plug and receptacle | G. W. Goodridge | 754,863 | Mar. 15 | 3299 | 719 | 109 | 756 |
| Electrical selective apparatus | F. D. Pearne and C. L. Krum | 754,689 | Mar. 15 | 2957 | 646 | 109 | 678 |
| Electrical-wire station | W. E. Hamilton | 756,850 | Apr. 12 | 1271 | 283 | 109 | 1630 |
| Electrician's tool | H. H. Hutchings | 756,857 | Apr. 12 | 1281 | 285 | 109 | 1632 |
| Electrode | G. J. Atkins | 753,619 | Mar. 1 | 1209 | 272 | 109 | 259 |
| Electrodes for storage-battery cells. Preparing | O. Frank | 753,363 | Mar. 1 | 290 | ..... | 109 | 66 |
| Electrodes. Preparing | G. J. Atkins | 754,114 | Mar. 8 | 1787 | ..... | 109 | 410 |
| Electrodynamic generator | G. M. Pelton | 753,429 | Mar. 1 | 396 | 92 | 109 | 86 |
| Electrogoniometer | A. Grammont | 756,846 | Apr. 12 | 1261 | 280, 281 | 109 | 1629 |
| Electrolytic deposition apparatus | W. J. and J. H. Jory | 757,557 | Apr. 19 | 2699 | 590 | 109 | 1949 |
| Electromagnet | W. D. Gregory | 753,879 | Mar. 8 | 1328 | 299 | 109 | 307 |
| Electromagnet | H. W. Chamberlain | 758,236 | Apr. 26 | 4088 | 877 | 109 | 2261 |
| Electromagnetic device | E. K. Müller | 754,681 | Mar. 15 | 2942 | 642 | 109 | 675 |
| Electromagnetic separator | M. Dings | 755,282 | Mar. 22 | 4046 | 897 | 109 | 983 |
| Electromagnetic signal | W. U. Colthar | 753,365 | Mar. 1 | 263 | 59, 60 | 109 | 59 |
| Electropneumatic system of driving | J. Sahulka | 755,173 | Mar. 22 | 3845 | 849, 850 | 109 | 892 |
| Electrotherapeutic device | C. K. Munns | 753,509 | Mar. 1 | 535 | 125 | 109 | 118 |
| Electrotype-plates. Mechanism for holding | C. W. Eberhard | 757,608 | Apr. 19 | 2794 | 611 | 109 | 1971 |
| Elevator: *See* Centrifugal elevator. Coal-elevator. Electric elevator. Harvester-elevator. | | | | | | | |
| Elevator | D. E. Condon | 755,361 | Mar. 22 | 4196 | 928, 929 | 109 | 967 |
| Elevator | G. Thalen | 756,735 | Apr. 5 | 1040 | 231 | 109 | 1565 |
| Elevator | M. Gigler | 757,108 | Apr. 12 | 1785 | 391 | 109 | 1738 |
| Elevator brake mechanism | A. Sundh | 757,789 | Apr. 19 | 3170 | 688, 689 | 109 | 2054 |
| Elevator-carriage roller-bearing | J. Barrett | 755,344 | Mar. 22 | 4173 | 922 | 109 | 960 |
| Elevator-door | H. Bitner | 756,321 | Apr. 5 | 252 | 52 | 109 | 1397 |
| Elevator door-locked controller | C. O. Harker | 753,572 | Mar. 1 | 684 | 153, 154 | 109 | 150 |
| Elevator-gate | C. C. Schreiber | 755,397 | Mar. 22 | 4273 | 944 | 109 | 988 |
| Elevator hoisting-gear | A. Sundh | 757,788 | Apr. 19 | 3169 | 688 | 109 | 2053 |
| Elevator-operating mechanism | M. J. Daly | 757,181 | Apr. 12 | 1989 | 424 | 109 | 1774 |
| Elevator-retarding device. Automatic | C. P. Hall | 753,569 | Mar. 1 | 675 | 152 | 109 | 149 |
| Elevator-retarding device. Automatic | C. P. Hall | 753,570 | Mar. 1 | 678 | 152 | 109 | 149 |
| Elevator safety apparatus | S. B. Trapp | 755,189 | Mar. 22 | 3874 | 855 | 109 | 897 |
| Elevator safety appliance | J. Cruickshank and C. S. Burnham | 754,432 | Mar. 15 | 2453 | 534, 535 | 109 | 571 |
| Elevator safety appliance | S. H. McCarroll | 756,685 | Apr. 5 | 987 | 205, 206 | 109 | 1543 |
| Elevator safety attachment | G. G. Little | 757,394 | Apr. 12 | 2226 | 487 | 109 | 1832 |
| Elevator safety device | F. Blanding | 755,736 | Mar. 29 | 4917 | 1095 | 109 | 1139 |
| Elevator safety device | C. W. Baldwin | 756,811 | Apr. 12 | 1190 | 264, 265 | 109 | 1615 |
| Elevator safety device | C. N. Pollock | 758,470 | Apr. 26 | 4507 | 969 | 109 | 2366 |
| Elevator signaling device. Electric | F. S. Payne | 756,275 | Apr. 5 | 160 | 33 | 109 | 1377 |
| Elevator-well door | J. Rashkin | 756,594 | Apr. 5 | 655 | 141 | 109 | 1480 |
| Elevators. Overflow-vent device for | C. Bradford | 756,207 | Apr. 5 | 24 | 5 | 109 | 1348 |
| Elevators. Separating-head for centrifugal or pneumatic | J. K. Sharpe, Jr | 755,714 | Mar. 29 | 4868 | 1081 | 109 | 1128 |
| Ellipsograph | J. F. Hanlon | 758,314 | Apr. 26 | 4216 | 906 | 109 | 2203 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Embossing-machine | H. S. Maidhof | 757,758 | Apr. 19 | 3104 | 676 | 109 | 2088 |
| Embossing-machine platens. Rotary support for | H. S. Maidhof | 757,759 | Apr. 19 | 3105 | 676 | 109 | 2088 |
| Embossing-machine supporting-roller | A. Bresemann | 753,668 | Mar. 1 | 855 | 193 | 109 | 185 |
| Embossing-punch | R. Woodman | 758,491 | Apr. 26 | 4555 | 978 | 109 | 2378 |
| Embroidery hoop or ring | W. N. Howden | 758,535 | Apr. 26 | 4644 | 1000 | 109 | 2397 |
| Emergency-brake | F. B. Corey | 755,750 | Mar. 29 | 4944 | 1100 | 109 | 1145 |
| Emergency-brake | G. E. Carnes | 756,579 | Apr. 5 | 747 | 163 | 109 | 1501 |
| Emergency-brake | F. B. Corey | 758,173 | Apr. 26 | 3912 | 850 | 109 | 2235 |
| Enameled ware. Manufacture of | T. M. Lunan | 758,325 | Apr. 26 | 4288 | ..... | 109 | 2307 |
| End-gate | O. B. Reynolds | 757,660 | Apr. 19 | 2959 | 644 | 109 | 2007 |
| End-play device for rotary machines | D. Miller | 755,787 | Mar. 29 | 5030 | 1118 | 109 | 1163 |
| Engine: *See* Blowing-engine. Compound engine. Explosion-engine. Explosive-engine. Gas-engine. Gas-motor engine. Gas or gasolene engine. Hydrocarbon-vapor engine. Internal-combustion engine. Mining-machine engine. Multicylinder expansion-engine. Oscillating-piston engine. Pulp-beating engine. Rotary engine. Rotary steam-engine. Steam-engine. Steam or gas engine. Traction-engine. Turbine-engine. Wind-engine. | | | | | | | |
| Engine | J. A. Becher | 754,277 | Mar. 8 | 2083 | 462 | 109 | 473 |
| Engine | C. F. Chandler | 754,744 | Mar. 15 | 3065 | 669 | 109 | 704 |
| Engine and compressor. Combined | S. A. Reeve | 757,410 | Apr. 12 | 2396 | 521 | 109 | 1868 |
| Engine and valve mechanism. Cut-off-operating | P. B. Clarke | 756,831 | Apr. 12 | 1233 | 275, 276 | 109 | 1624 |
| Engine-base clamp | C. P. Shertzer | 758,114 | Apr. 26 | 3808 | 827 | 109 | 2212 |
| Engine controlling mechanism. Explosive | R. Jardine | 758,076 | Apr. 26 | 3737 | 812 | 109 | 2194 |
| Engine cooler. Gas | C. E. Shambaugh | 755,399 | Mar. 22 | 4275 | 944 | 109 | 988 |
| Engine cooling device. Explosive | J. White | 754,728 | Mar. 15 | 3042 | 664 | 109 | 699 |
| Engine-cylinder | C. F. Hinrichs and J. C. Barker | 755,873 | Mar. 29 | 5201 | 1150 | 109 | 1204 |
| Engine cylinders. Means for cooling explosive | F. H. Marsh and C. W. Nichols | 758,373 | Apr. 26 | 4327 | 929 | 109 | 2325 |
| Engine driving mechanism. Traction | H. C. Cloyd | 753,670 | Mar. 1 | 872 | 197 | 109 | 189 |
| Engine fuel-injector. Oil | N. L. and W. W. Tuck | 755,079 | Mar. 22 | 3687 | 809 | 109 | 858 |
| Engine igniter. Explosive | A. A. Low | 753,280 | Mar. 1 | 121 | 29 | 109 | 30 |
| Engine igniter mechanism. Explosive | N. E. Hildreth | 756,961 | Apr. 12 | 1497 | 328 | 109 | 1675 |
| Engine igniting device. Explosive | B. Botkowski | 753,226 | Mar. 1 | 18 | 4 | 109 | 6 |
| Engine muffler. Gasolene | R. W. Brockway and F. J. Meckensturm. | 753,845 | Mar. 8 | 1267 | 284, 285 | 109 | 298 |
| Engine regulating device | M. Mutel | 754,001 | Mar. 8 | 1565 | 349, 350 | 109 | 361 |
| Engine sparking device. Gas | G. J. Murdock | 753,511 | Mar. 1 | 544 | 126, 127 | 109 | 119 |
| Engine vaporizer. Explosive | J. F. Denison | 756,834 | Apr. 12 | 1238 | 278 | 109 | 1624 |
| Engine vaporizer. Hydrocarbon | N. A. Wright | 755,093 | Mar. 22 | 3705 | 814 | 109 | 868 |
| Engine wheel. Traction | A. Harrold | 755,770 | Mar. 29 | 5000 | 1112 | 109 | 1156 |
| Engine whistle attachment. Gas | W. L. Paul | 757,673 | Apr. 19 | 2944 | 639 | 109 | 2003 |
| Engines. Electric igniter for gas | H. J. Smith | 757,064 | Apr. 12 | 1699 | 369 | 109 | 1720 |
| Engines. Electric sparking igniter for explosive | W. J. Hart | 753,795 | Mar. 1 | 1151 | 259 | 109 | 247 |
| Engines. Electrical igniting mechanism for explosive | D. M. Tuttle, W. H. Lindley, and W. H. Tuttle. | 755,817 | Mar. 29 | 5080 | 1128 | 109 | 1174 |
| Engines. Fly-wheel for quick-running internal-combustion | F. Reichenbach | 757,636 | Apr. 19 | 2873 | 626 | 109 | 1989 |
| Engines. Gas-engine attachment for steam | H. B. Nicodemus | 754,385 | Mar. 8 | 2328 | 509 | 109 | 525 |
| Engines. Means for attaching suction-tubes or inlet-valves to explosive or internal-combustion | L. B. Smyser | 753,814 | Mar. 1 | 1200 | 270 | 109 | 258 |
| Engines. Means for cylinder lubrication of internal-combustion | A. P. Brush | 754,121 | Mar. 8 | 1794 | 399, 400 | 109 | 412 |
| Engines. Water-cooler for internal-combustion | C. W. Carrier | 757,022 | Apr. 12 | 1621 | 352, 353 | 109 | 1708 |
| Envelop | L. C. Vanderlip | 753,333 | Mar. 1 | 214 | 48 | 109 | 49 |
| Envelop | J. A. Walsh | 753,943 | Mar. 8 | 1459 | 398 | 109 | 336 |
| Envelop | A. Bushnell, Jr | 754,048 | Mar. 8 | 1652 | 368 | 109 | 380 |
| Envelop | P. Dávalos | 754,301 | Mar. 8 | 1981 | 430 | 109 | 442 |
| Envelop | J. N. Dalzell | 756,002 | Mar. 29 | 5455 | 1204 | 109 | 1200 |
| Envelop and sheet of paper. Combined | R. N. Wilt | 757,801 | Apr. 19 | 3191 | 693 | 109 | 2056 |
| Envelop-clasp | A. de Saint Chamas | 756,712 | Apr. 5 | 982 | 217 | 109 | 1554 |
| Envelop-fastener | A. A. Rheutan | 754,239 | Mar. 8 | 2019 | 449 | 109 | 461 |
| Envelop-fastener | G. D. Barber | 757,716 | Apr. 19 | 3014 | 665 | 109 | 2020 |
| Envelop-machine | S. A. Grant | 758,256 | Mar. 1 | 75 | 19, 20 | 109 | 18 |
| Envelop-machine | W. L. Rinehart | 756,961 | Apr. 12 | 1531 | 336, 337 | 109 | 1688 |
| Envelop-opening machine | A. Hess | 758,315 | Apr. 26 | 4218 | 906, 907 | 109 | 2203 |
| Envelop or card feeding device | D. S. Dufur | 754,434 | Mar. 15 | 2463 | 536, 537 | 109 | 573 |
| Envelop or expanding wallet | A. Bushnell, Jr | 757,596 | Apr. 19 | 2782 | 609 | 109 | 1969 |
| Envelop. Safety | J. F. Irwin | 757,310 | Apr. 12 | 2204 | 482 | 109 | 1828 |
| Envelop. Twin | A. G. Jones | 754,373 | Mar. 8 | 2309 | 504 | 109 | 521 |
| Envelops, &c. Safety-fastener for | J. Noseworthy | 758,379 | Apr. 26 | 4337 | 931 | 109 | 2327 |
| Eraser. Blackboard | P. Seith and G. Kaphingst | 754,900 | Mar. 15 | 3358 | 734 | 109 | 767 |
| Erasers. Machine for cleaning blackboard | J. A. Jones | 754,220 | Mar. 8 | 1982 | 440, 441 | 109 | 452 |
| Evaporating apparatus. Multiple | W. Witkowicz | 753,777 | Mar. 1 | 1091 | 247, 248 | 109 | 235 |
| Evaporating apparatus. Vacuum | C. Ordway | 755,529 | Mar. 22 | 4498 | 998, 999 | 109 | 1086 |
| Evaporator. Sap | S. Wieringa | 756,549 | Apr. 5 | 696 | 150 | 109 | 1490 |
| Excavating and loading machine | D. H. Mahoney | 753,282 | Mar. 1 | 125 | 30 | 109 | 31 |
| Excavating-machine | J. D. Moran | 754,480 | Mar. 15 | 2558 | 556, 557 | 109 | 596 |
| Excavating machine. Rock | C. T. Drake | 753,477 | Mar. 1 | 474 | 111 | 109 | 103 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Excavating-shovel | J. W. Page | 758,380 | Apr. 26 | 4339 | 981 | 109 | 2328 |
| Excavator | O. P. Peach | 755,287 | Mar. 22 | 3960 | 877 | 109 | 915 |
| Excavators. Car-placing attachment for | H. H. George, Jr. | 757,450 | Apr. 19 | 3474 | 541 | 109 | 1901 |
| Excavators. Car-placing attachment for power- | H. H. George, Jr | 757,449 | Apr. 19 | 3473 | 541 | 109 | 1901 |
| Exercising apparatus | C. A. Grabner | 754,992 | Mar. 22 | 3532 | 774 | 109 | 823 |
| Exercising apparatus | G. Yoerger | 757,709 | Apr. 19 | 3004 | 632 | 109 | 2017 |
| Exercising device | W. R. Dunbar | 756,480 | Apr. 5 | 580 | 121 | 109 | 1464 |
| Exhibitor. Changeable | A. and A. C. Bechtold | 754,190 | Mar. 8 | 1912 | 426 | 109 | 438 |
| Exhibitor. Curtain- | P., Jr., and H. Roush | 758,149 | Apr. 26 | 3869 | 840 | 109 | 2226 |
| Expanding and spreading tool | A. Reschke | 756,142 | Mar. 29 | 5708 | 1258 | 109 | 1312 |
| Expansion-bolt | J. B. Gottshalk | 754,754 | Mar. 15 | 3099 | 677 | 109 | 712 |
| Expansion-comb for warping, beaming, or other machines. | A. E. Brooks | 755,738 | Mar. 29 | 4922 | 1096 | 109 | 1140 |
| Explosion-engine | K. J. McMillen and M. H. Robinson | 758,189 | Apr. 26 | 3942 | 855 | 109 | 2242 |
| Explosive compound | J. P. Arnold | 757,718 | Apr. 19 | 3010 | ..... | 109 | 2019 |
| Explosive-engine | S. S. and A. Lewis | 754,466 | Mar. 15 | 2521 | 550 | 109 | 585 |
| Explosive-engine | J. J. Murray | 757,215 | Apr. 12 | 1997 | 435 | 109 | 1785 |
| Explosive-engine | H. R. Palmer | 757,632 | Apr. 19 | 2965 | 624 | 109 | 1986 |
| Explosive-engine. Reversible | J. A. McGee | 756,687 | Apr. 5 | 941 | {206 207 | 109 | 1544 |
| Extensible case | E. G. Schriefer | 754,814 | Mar. 15 | 3196 | {096 097 | 109 | 732 |
| Extensible case | E. G. Schriefer | 754,815 | Mar. 15 | 3190 | 607 | 109 | 733 |
| Extension-brace | F. W. E. Heyssel | 757,306 | Apr. 12 | 2178 | 477 | 109 | 1824 |
| Extension-table | J. and F. Dobrodenka | 757,544 | Apr. 19 | 2660 | 586 | 109 | 1945 |
| Extractor: *See* Nail-extractor. Stump-extractor. Spike-extractor. | | | | | | | |
| Eye-shade | N. R. Wickersham | 757,854 | Apr. 19 | 3288 | 712 | 109 | 2078 |
| Eyeglass attachment for suspending supplemental eyeglasses. | W. Z. Searle | 756,984 | Apr. 12 | 1538 | 339 | 109 | 1684 |
| Eyeglass-mounting | E. Clark | 753,364 | Mar. 1 | 202 | 50 | 109 | 50 |
| Eyeglasses | H. E. Kirstein | 755,014 | Mar. 22 | 3573 | 783 | 109 | 832 |
| Eyeglasses | I. Fox | 756,228 | Apr. 5 | 72 | 16 | 109 | 1356 |
| Eyeglasses | L. F. Adt | 756,312 | Apr. 5 | 235 | 49 | 109 | 1394 |
| Eyeglasses | W. L. Bemis | 756,456 | Apr. 5 | 534 | 111 | 109 | 1456 |
| Eyeglasses | F. X. Gartland | 756,488 | Apr. 5 | 594 | 128 | 109 | 1467 |
| Eyelet | J. C. Engels | 757,605 | Apr. 19 | 2797 | 612 | 109 | 1972 |
| Fabric: *See* Elastic fabric. Wire fabric. Felted fabric. Woven fabric. Ornamental fabric. | | | | | | | |
| Fabric | W. S. Sillcocks | 754,098 | Mar. 8 | 1758 | 391 | 109 | 403 |
| Fabrics. Device for producing a silky luster on textile | J. Eck | 755,469 | Mar. 22 | 4397 | 974 | 109 | 1007 |
| Fabrics. Finishing | H. Bock | 754,843 | Mar. 15 | 3064 | 710 | 109 | 747 |
| Fabrics. Machine for uniting looped | G. O. and H. E. Harbaugh | 758,248 | Apr. 26 | 4068 | {879 880 | 109 | 2267 |
| Fan | S. D. Earl | 753,687 | Mar. 1 | 901 | 204 | 109 | 195 |
| Fan | F. N. Roehrich | 757,774 | Apr. 19 | 3146 | 684 | 109 | 2049 |
| Fan. Electric | F. N. Roehrich | 757,773 | Apr. 19 | 3143 | {683 684 | 109 | 2048 |
| Fan. Electric | A. R. Fergusson | 758,305 | Apr. 26 | 4300 | 903 | 109 | 2299 |
| Fan for disinfecting purposes | W. W. Rossiter | 757,684 | Apr. 19 | 2966 | 645 | 109 | 2009 |
| Fan-motor deflector | H. R. Wellman | 755,199 | Mar. 22 | 3902 | 861 | 109 | 902 |
| Fanning-mill for cleaning grain, &c | J. L. Doub | 758,511 | Apr. 26 | 4594 | 988 | 109 | 2387 |
| Fare-register | H. Tyler | 758,488 | Apr. 26 | 4536 | {974 975 976 977 | 109 | 2373 |
| Farm-gate | C. P. Emery | 754,758 | Mar. 15 | 3089 | 675 | 109 | 710 |
| Farm-gate | F. M. Conroy | 756,332 | Apr. 5 | 275 | 57 | 109 | 1402 |
| Fastener | C. G. Harger, Jr. | 756,496 | Apr. 5 | 605 | 131 | 109 | 1470 |
| Fastener. Safety- | A. Schaeffer | 755,174 | Mar. 22 | 3852 | 850 | 109 | 868 |
| Fastener socket member | W. S. Richardson | 756,184 | Mar. 29 | 5765 | 1273 | 109 | 1325 |
| Fastening and suspension device | E. M. Lewis | 754,823 | Mar. 8 | 2163 | 479 | 109 | 489 |
| Fastening device | R. M. Pancoast | 758,332 | Apr. 26 | 4253 | 914 | 109 | 2310 |
| Fastening device. Metal | G. C. Wyland | 753,950 | Mar. 8 | 1476 | 331 | 109 | 341 |
| Faucet | M. Farrell | 756,346 | Apr. 5 | 313 | 64 | 109 | 1410 |
| Faucet attachment | J. J. Tokheim | 757,072 | Apr. 12 | 1709 | 371 | 109 | 1721 |
| Faucet glass-protecting attachment | J. B. Tuor | 756,915 | Apr. 12 | 1397 | 310 | 109 | 1656 |
| Faucet. Lock- | B. R. Bacon | 753,849 | Mar. 1 | 239 | 55 | 109 | 54 |
| Faucet-spout. Sheet-metal | W. S. Stapley | 753,749 | Mar. 1 | 1023 | 232 | 109 | 220 |
| Faucet. Water- | M. Pitt | 754,344 | Mar. 8 | 2198 | 489 | 109 | 497 |
| Feed. Automatic steam-boiler | H. W. Fellows | 756,948 | Apr. 12 | 1460 | 323 | 109 | 1669 |
| Feed-bag | T. L. Hawkins | 754,305 | Mar. 8 | 2140 | 474 | 109 | 485 |
| Feed-bag. Horse | J. Ratzer | 754,696 | Mar. 15 | 2980 | 649 | 109 | 684 |
| Feed-cutter | F. Hamachek | 757,614 | Apr. 19 | 2925 | {617 618 | 109 | 1977 |
| Feed-trough. Knockdown | E. J. Ingwersen | 753,400 | Mar. 1 | 329 | 74 | 109 | 74 |
| Feed-water heater | W. Wright | 755,094 | Mar. 22 | 3707 | 814 | 109 | 863 |
| Feed-water heater | S. Elliott | 755,286 | Mar. 22 | 4060 | 898 | 109 | 984 |
| Feed-water heater | L. and I. Wismer | 755,981 | Mar. 29 | 5409 | 1195 | 109 | 1250 |
| Feed-water heater | E. H. Schwartz | 756,417 | Apr. 5 | 458 | 95 | 109 | 1440 |
| Feed-water heater | J. E. Lewis | 757,665 | Apr. 19 | 2986 | {635 636 | 109 | 2000 |
| Feed-water heater | S. W. Simpson | 757,846 | Apr. 19 | 3273 | 709 | 109 | 2075 |
| Feed-water heater | T. Y. Stewart | 758,484 | Apr. 26 | 4528 | 973 | 109 | 2371 |
| Feed-water purifier | J. M. Smith | 754,907 | Mar. 15 | 3370 | 737 | 109 | 770 |
| Feed-water. Purifying | J. B. L. Destombes | 753,860 | Mar. 8 | 1294 | 291 | 109 | 299 |
| Feed-water regulator | R. G. Brooke | 756,574 | Apr. 5 | 736 | {158 159 160 161 | 109 | 1497 |
| Feed-water regulator | J. B. Perkins | 757,837 | Apr. 19 | 3253 | {705 706 | 109 | 2071 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Feeder and band-cutter | J. A. Anderson | 758,290 | Apr. 26 | 4153 | {897 898 | 109 | 2286 |
| Feeding apparatus. Material- | W. M. Wheildon | 756,307 | Apr. 5 | 225 | 47 | 109 | 1398 |
| Feeding device and fixtures. Automatic | Z. Xevers | 756,765 | Apr. 5 | 1091 | 242 | 109 | 1575 |
| Feeding device. Mechanical | T. L. and T. J. Sturtevant | 758,119 | Apr. 26 | 3818 | {828 829 | 109 | 2214 |
| Feeding-hopper | C. R. Moon | 756,974 | Apr. 12 | 1520 | 334 | 109 | 1661 |
| Feeding mechanism | R. H. Dempcy | 755,632 | Mar. 29 | 4706 | 1046 | 109 | 1090 |
| Feeding mechanism for granular material | G. H. Tench | 756,298 | Apr. 5 | 213 | 44 | 109 | 1389 |
| Feeding neutralizing agents to steam-boilers. Apparatus for | J. Noey and T. A. McGuiggan | 757,426 | Apr. 12 | 2429 | 529 | 109 | 1875 |
| Felt-spreader | J. H. Ostrander | 754,797 | Mar. 15 | 3167 | 690 | 109 | 726 |
| Felted fabric and producing same | G. Davison, Jr | 755,219 | Mar. 22 | 3930 | 870 | 109 | 908 |
| Fence | P. M. Bounds | 753,227 | Mar. 1 | 21 | 5 | 109 | 7 |
| Fence | W. C. Reinmiller | 754,389 | Mar. 8 | 2337 | 510 | 109 | 527 |
| Fence | S. S. Knight | 756,969 | Apr. 12 | 1509 | 332 | 109 | 1679 |
| Fence | G. Bronson | 758,046 | Apr. 26 | 3673 | 796 | 109 | 2194 |
| Fence | I. Haws | 758,593 | Apr. 26 | 4756 | 1024 | 109 | 2422 |
| Fence-barb | J. H. Akin | 756,313 | Apr. 5 | 237 | 49 | 109 | 1395 |
| Fence-brace | A. W. Whaley | 755,576 | Apr. 26 | 4720 | 1018 | 109 | 2414 |
| Fence-building machine | J. R. Wethington | 755,821 | Mar. 29 | 5085 | 1130 | 109 | 1176 |
| Fence material | J. Stickley | 758,154 | Apr. 26 | 3879 | 842 | 109 | 2259 |
| Fence-post | A. Adam | 753,347 | Mar. 1 | 237 | 54 | 109 | 54 |
| Fence-post | W. R. Bordner | 753,467 | Mar. 1 | 461 | 108 | 109 | 101 |
| Fence-post | M. E. Lerch | 753,892 | Mar. 8 | 1354 | 305 | 109 | 312 |
| Fence-post | V. E. Randall | 753,913 | Mar. 8 | 1397 | 315 | 109 | 322 |
| Fence-post | J. Scheidler | 753,922 | Mar. 8 | 1422 | 320 | 109 | 326 |
| Fence-post | J. Scheidler | 753,923 | Mar. 8 | 1423 | 320 | 109 | 326 |
| Fence-post | C. H. Lewis and C. Book | 756,092 | Mar. 29 | 5506 | 1214 | 109 | 1270 |
| Fence-post | A. H. and C. R. Cook and W. H. Hood. | 757,026 | Apr. 12 | 1626 | 354 | 109 | 1703 |
| Fence-post | V. E. Randall | 757,992 | Apr. 19 | 3486 | 755 | 109 | 2123 |
| Fence-post | M. C. Wix | 757,989 | Apr. 19 | 3544 | 767 | 109 | 2135 |
| Fence-post | H. J. Donahoe | 758,002 | Apr. 19 | 3561 | 771 | 109 | 2139 |
| Fence-post | F. Hedrick | 758,178 | Apr. 26 | 3927 | 852 | 109 | 2238 |
| Fence-post | J. B. Goundry | 758,591 | Apr. 26 | 4753 | 1024 | 109 | 2422 |
| Fence-post-driving machine | R. M. Jones | 755,673 | Mar. 29 | 4777 | 1063 | 109 | 1106 |
| Fence-post. Plastic | J. C. Brooks | 754,119 | Mar. 8 | 1792 | 399 | 109 | 412 |
| Fence-reel heads. Machine for making wire | C. Johnson | 756,858 | Apr. 12 | 1282 | {286 287 | 109 | 1633 |
| Fence tool. Wire- | J. A. Miller | 757,213 | Apr. 12 | 1998 | 434 | 109 | 1785 |
| Fence-weaving machine | B. F. Bailey | 756,928 | Apr. 12 | 1417 | 316 | 109 | 1661 |
| Fence-weaving machine. Wire- | A. E. Blashill | 757,646 | Apr. 19 | 2990 | 630 | 109 | 1993 |
| Fence. Wire | W. M. Dillon | 755,697 | Mar. 29 | 4713 | 1048 | 109 | 1092 |
| Fence. Wire | W. B. Hughes | 757,928 | Apr. 19 | 3496 | 741 | 109 | 2110 |
| Fencing standard and batten. Wire- | J. Wright | 755,427 | Mar. 22 | 4323 | 956 | 109 | 992 |
| Fencing. Wire | J. W. Sommer | 756,540 | Apr. 5 | 683 | 146 | 109 | 1487 |
| Fencing. Wire | C. B. Baumgartner | 758,125 | Apr. 26 | 3828 | 881 | 109 | 2216 |
| Fender: *See* Automobile-fender. Wheel-fender. Car-fender. | | | | | | | |
| Fender | C. H. Root | 755,704 | Mar. 29 | 5045 | 1121 | 109 | 1167 |
| Ferrules, &c. Machine for contracting | M. C. Schweinert and H. P. Kraft | 758,195 | Apr. 26 | 3955 | 858 | 109 | 2244 |
| Fertilizer-distributer | M. L. Baker | 754,408 | Mar. 15 | 2395 | 524 | 109 | 557 |
| Fertilizer-distributer | M. McLeod | 755,160 | Mar. 22 | 3819 | 844 | 109 | 887 |
| Fertilizer-distributer | J. M. Butler | 757,020 | Apr. 12 | 1618 | 352 | 109 | 1702 |
| Fertilizer-distributer | J. S. Kemp | 758,537 | Apr. 26 | 4646 | 1000 | 109 | 2398 |
| Fiber-cleaning machine | M. Prieto | 753,628 | Mar. 1 | 779 | {173 174 | 109 | 169 |
| Fiber-cleaning machine | M. Prieto | 753,736 | Mar. 1 | 996 | {226 227 | 109 | 215 |
| Fibers together. Felting or matting | G. Goldman | 758,244 | Apr. 26 | 4052 | ..... | 109 | 2264 |
| Fibers together. Felting or matting | G. Goldman | 758,311 | Apr. 26 | 4309 | ..... | 109 | 2301 |
| Fibers together. Matting or felting | G. Goldman | 758,243 | Apr. 26 | 4048 | ..... | 109 | 2263 |
| Fibers together. Uniting or matting | G. Goldman | 758,245 | Apr. 26 | 4055 | ..... | 109 | 2265 |
| Fibers together. Uniting or matting | G. Goldman | 758,246 | Apr. 26 | 4057 | ..... | 109 | 2266 |
| Fibers together. Uniting or matting | G. Goldman | 758,247 | Apr. 26 | 4058 | ..... | 109 | 2266 |
| Fibrous materials. Machine for compressing | J. T. Cowley | 756,099 | Mar. 29 | 5031 | {1242 1243 1244 | 109 | 1298 |
| Fibrous plants. Machine for disintegrating | M. Prieto | 755,931 | Mar. 29 | 5319 | 1174 | 109 | 1229 |
| Fibrous plants. Machine for treating | W. B. Gray | 754,994 | Mar. 22 | 3534 | 774 | 109 | 823 |
| Fifth-wheel | H. N. and J. E. Weaver | 756,750 | Apr. 5 | 1068 | 238 | 109 | 1571 |
| Fifth-wheel construction | H. A. Lanman | 755,231 | Mar. 22 | 3951 | 875 | 109 | 913 |
| Fifth-wheel. Vehicle | H. Miller and G. L. Riedel | 755,516 | Mar. 22 | 4473 | 994 | 109 | 1024 |
| File. Bill- | G. L. Burgess | 753,849 | Mar. 8 | 1273 | 286 | 109 | 294 |
| Filing-cabinet | H. W. Andrews | 758,089 | Apr. 26 | 3660 | 791 | 109 | 2180 |
| Filing-cabinet. Sectional | H. J. Huening | 757,194 | Apr. 12 | 1902 | 428 | 109 | 1779 |
| Filter | L. F. Voindrot and L. F. Boillot | 753,453 | Mar. 1 | 435 | 102 | 109 | 95 |
| Filter | W. Kathol | 756,375 | Apr. 5 | 377 | 77 | 109 | 1424 |
| Filter | K. Abraham | 758,345 | Apr. 26 | 4274 | 918 | 109 | 2314 |
| Filter | O. Selg | 758,390 | Apr. 26 | 4353 | 935 | 109 | 2330 |
| Filter and purifier. Water | W. Woods | 753,780 | Mar. 1 | 1095 | 248 | 109 | 236 |
| Filter. Barrel- | J. D. Hawkins and G. E. Gannon | 756,852 | Apr. 12 | 1375 | 304 | 109 | 1631 |
| Filter. Water- | S. E. Foreman and R. T. Lightfoot | 754,296 | Mar. 8 | 2122 | 470 | 109 | 481 |
| Filtering apparatus | C. E. Geiger | 753,696 | Mar. 1 | 927 | 210 | 109 | 200 |
| Filtering material | S. G. Derham | 754,058 | Mar. 8 | 1667 | 370 | 109 | 384 |
| Filtering material. Apparatus for washing | C. H. Loew | 756,973 | Apr. 12 | 1518 | 334 | 109 | 1680 |
| Finger-nail buffer | C. E. Moser | 754,481 | Mar. 15 | 2559 | 557 | 109 | 595 |
| Finger-nail polisher | L. J. Smith | 756,071 | Mar. 29 | 5569 | 1229 | 109 | 1284 |
| Fire-alarm | F. McFadden | 756,686 | Apr. 5 | 940 | 206 | 109 | 1544 |
| Fire-alarm | T. F. Litaker | 757,984 | Apr. 19 | 3489 | 745 | 109 | 2112 |
| Fire-alarm. Automatic | M. K. Fred | 754,555 | Mar. 15 | 2701 | 587 | 109 | 625 |
| Fire-alarm. Electric | A. Lueckert | 755,783 | Mar. 29 | 5023 | 1116 | 109 | 1162 |
| Fire-alarm or temperature-annunciator | J. A. Olson | 754,005 | Mar. 8 | 1572 | 351 | 109 | 363 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Fire and water proof insulating-covering for metallic surfaces. | J. A. Heany | 754,868 | Mar. 15 | 3308 | 721 | 109 | 757 |
| Fire-barrier wall, partition, &c. | H. Root | 755,171 | Mar. 22 | 3843 | 848 | 109 | 891 |
| Fire-escape | J. E. Smith | 753,326 | Mar. 1 | 904 | 45,46 | 109 | 47 |
| Fire-escape | J. M. Stafford | 753,980 | Mar. 8 | 1440 | 323 | 109 | 332 |
| Fire-escape | N. Lanier | 755,501 | Mar. 22 | 4444 | 987 | 109 | 1017 |
| Fire-escape | W. G. Horton | 755,666 | Mar. 29 | 4763 | 1060 | 109 | 1168 |
| Fire-escape | E. W. Appelman | 755,832 | Mar. 29 | 5116 | 1133 | 109 | 1184 |
| Fire-escape | E. T. Marsh | 756,512 | Apr. 5 | 680 | 136 / 137 | 109 | 1475 |
| Fire-escape | C. L. Graves | 756,623 | Apr. 5 | 818 | 176 | 109 | 1516 |
| Fire-escape | J. B. Irving | 756,641 | Apr. 5 | 844 | 183 | 109 | 1521 |
| Fire-extinguisher | G. A. Anderson | 754,087 | Mar. 8 | 1634 | 364 | 109 | 376 |
| Fire-extinguisher automatic valve | J. H. Derby | 756,835 | Apr. 12 | 1240 | 277 | 109 | 1625 |
| Fire-extinguishing apparatus | E. W. Hicks | 758,362 | Apr. 26 | 4304 | 924 | 109 | 2330 |
| Fire-extinguishing apparatus. Automatic | H. F. Maxim | 753,807 | Mar. 8 | 1302 | 307 / 308 | 109 | 314 |
| Fire-kindler | R. Hager | 754,062 | Mar. 8 | 1679 | 373 | 109 | 386 |
| Firearm | A. Fyrberg | 754,210 | Mar. 8 | 1961 | 436 | 109 | 448 |
| Firearm | E. S. Hoerr | 755,773 | Mar. 29 | 5097 | 1113 | 109 | 1158 |
| Firearm. Automatic | C. R. S. J. Hallé | 753,700 | Mar. 1 | 984 | 211 / 212 | 109 | 201 |
| Firearm. Automatic | T. C. Johnson | 758,318 | Apr. 26 | 4222 | 907 | 109 | 2308 |
| Firearm. Breakdown | F. A. Hollenbeck | 753,492 | Mar. 1 | 508 | 118 | 109 | 112 |
| Firearm. Breech-loading | P. Frazier | 753,384 | Mar. 1 | 301 | 67, 68 | 109 | 68 |
| Firearm. Breech-loading | O. F. Mossberg | 756,009 | Mar. 29 | 5517 | 1217 | 109 | 1273 |
| Firearm. Magazine | W. F. Plympton | 756,880 | Apr. 12 | 1344 | 296 / 299 | 109 | 1645 |
| Firearm. Recoil-operated | C. R. S. J. Hallé | 755,482 | Mar. 22 | 4414 | 978 / 979 | 109 | 1011 |
| Firearm safety device | G. A. Horne | 754,564 | Mar. 15 | 2712 | 590 | 109 | 627 |
| Fireproof blind | E. H. McCloud | 754,002 | Mar. 8 | 1567 | 350 | 109 | 362 |
| Fireproof building block or slab | R. Illemann | 753,707 | Mar. 1 | 949 | 215 | 109 | 206 |
| Fireproof building construction | G. A. Turnbull | 757,519 | Apr. 19 | 3620 | 573 / 574 | 109 | 1981 |
| Fireproof building structure | G. B. Waite | 755,396 | Mar. 22 | 4158 | 919 | 109 | 957 |
| Fireproof construction | G. Liebau | 754,783 | Mar. 15 | 3143 | 685 | 109 | 721 |
| Fireproof covering for columns, &c. | A. L. A. Himmelwright | 754,064 | Mar. 8 | 1681 | 373 | 109 | 387 |
| Fireproof door | F. A. Howell | 758,316 | Apr. 26 | 4219 | 907 | 109 | 2308 |
| Fireproof floor construction | R. C. Kyle | 754,374 | Mar. 15 | 2734 | 595 | 109 | 631 |
| Fireproof window frame and sash | I. W. Emerson | 754,437 | Mar. 15 | 2873 | 538 / 539 | 109 | 576 |
| Fireproofing and insulating structure | O. F. Zahn | 754,109 | Mar. 8 | 1778 | 395 | 109 | 409 |
| Fish-cleaning machine | E. Manula and J. Carlson | 753,722 | Mar. 1 | 977 | 221 | 109 | 211 |
| Fish-culture tank | L. Mayhall | 757,407 | Apr. 12 | 2301 | 520 | 109 | 1867 |
| Fish-hook | B. S. Scott | 754,349 | Mar. 8 | 2295 | 491 | 109 | 498 |
| Fish-hook | C. P. Krus | 755,677 | Mar. 29 | 4786 | 1065 | 109 | 1168 |
| Fish-hook | M. Flegle | 756,009 | Mar. 29 | 5465 | 1205 | 109 | 1263 |
| Fish-line reel | E. D. Rockwell | 757,964 | Apr. 19 | 3491 | 757 | 109 | 2124 |
| Fish-mouth opener | J. E. Hill | 755,668 | Mar. 29 | 4750 | 1059 | 109 | 1168 |
| Fish. Net for holding live | W. B. Burroughs | 755,097 | Mar. 29 | 5685 | 1240 | 109 | 1297 |
| Fish. Preserving | F. Hamell | 756,626 | Apr. 5 | 822 | ..... | 109 | 1517 |
| Fishing apparatus | F. B. Whipple | 757,077 | Apr. 12 | 1716 | 372 | 109 | 1723 |
| Fishing-bait. Artificial | F. Burdett | 755,512 | Mar. 29 | 4659 | 1035 | 109 | 1079 |
| Fishing-float. Adjustable | C. F. Miller | 755,683 | Mar. 29 | 4798 | 1067 | 109 | 1110 |
| Fishing hook and gaff | C. H. Ward | 755,726 | Mar. 29 | 4900 | 1091 | 109 | 1135 |
| Fishing purposes. Illuminating-buoy for | W. L. Uhlenhart | 756,438 | Apr. 5 | 503 | 104 | 109 | 1449 |
| Fishing-reel | L. M. Hermance | 756,364 | Apr. 5 | 356 | 72, 73 | 109 | 1429 |
| Fishing-reel | H. H. Kiffe | 756,653 | Apr. 5 | 872 | 190 | 109 | 1528 |
| Fishing-tackle | S. Robbins | 754,992 | Mar. 15 | 3348 | 731 | 109 | 765 |
| Fishpole-keep | R. J. Cloherty | 754,971 | Mar. 22 | 3502 | 767 | 109 | 816 |
| Fishpole line-eye attachment | F. W. Roth | 754,094 | Mar. 8 | 1749 | 388 | 109 | 401 |
| Fitting | J. J. Lawler | 757,130 | Apr. 12 | 1842 | 402 | 109 | 1751 |
| Flagpole | H. G. Suhr | 756,989 | Apr. 12 | 1545 | 340 | 109 | 1686 |
| Flash-boiler | G. E. Whitney | 753,202 | Mar. 22 | 3904 | 861 / 862 | 109 | 908 |
| Flash-light apparatus | C. H. Nichols | 756,399 | Apr. 5 | 419 | 87 | 109 | 1433 |
| Flash-light apparatus. Photographic | I. G. McColl and M. Klaiber | 754,487 | Mar. 15 | 2573 | 550 | 109 | 597 |
| Flashing | J. H. Munro | 756,684 | Apr. 5 | 986 | 205 | 109 | 1543 |
| Flask: *See* Molder's flask. | | | | | | | |
| Flask | H. Struben | 758,339 | Apr. 26 | 4202 | 915 | 109 | 2312 |
| Flexible joint | T. W. Moran | 758,556 | Apr. 26 | 4677 | 1009 | 109 | 2404 |
| Flexible tube | S. Palmer | 754,936 | Mar. 15 | 3422 | 748 | 109 | 782 |
| Floor-boards. Making | E. J. Fulghum | 753,791 | Mar. 1 | 1145 | 258 | 109 | 246 |
| Floor-joist hanger | W. D. Dreyer | 755,116 | Mar. 22 | 3744 | 822 | 109 | 870 |
| Floor or ceiling | W. N. Wight | 758,577 | Apr. 26 | 4721 | 1018 | 109 | 2414 |
| Floors, &c. Appliance for cleansing | J. S. Stewart-Wallace | 754,254 | Mar. 8 | 2046 | 455 | 109 | 466 |
| Floors, ceilings, sidings, &c. Tool for removing | W. O. Harmon | 758,442 | Apr. 26 | 4463 | 959 | 109 | 2357 |
| Floors, partitions, &c. Construction of | V. Moeslein | 758,555 | Apr. 26 | 4676 | 1009 | 109 | 2404 |
| Flooring end joint | M. A. Hayward | 754,215 | Mar. 8 | 1976 | 439 | 109 | 451 |
| Flooring, roofing, &c. Structural arrangement applicable to | E. L. Pease | 754,898 | Mar. 15 | 3344 | 730 | 109 | 765 |
| Flour non-hygroscopic. Making | O. Avedyk | 758,346 | Apr. 26 | 4277 | 919 | 109 | 2314 |
| Flower-bulbs are grown. Fitting for vessels in which | A. Simpson | 754,348 | Mar. 8 | 2083 | 452 / 453 | 109 | 468 |
| Flower-pot support | W. D. Gridley | 753,485 | Mar. 1 | 492 | 115 | 109 | 108 |
| Flowers, vines, &c. Machine for manufacturing artificial | H. L. McKain | 754,084 | Mar. 8 | 1719 | 388 | 109 | 395 |
| Flue-cleaner cutter-head | J. P. Prentice | 755,989 | Mar. 29 | 5316 | 1173 | 109 | 1229 |
| Flue-cleaners. Rotary motor for | A. Lemke | 754,955 | Mar. 15 | 3471 | 760 | 109 | 798 |
| Fluid materials. Machine for filling vessels with | G. A. McAllister | 753,606 | Mar. 1 | 742 | 166 | 109 | 161 |
| Fluid-mixer | E. H. Yorke | 756,450 | Apr. 5 | 594 | 109 / 110 | 109 | 1454 |
| Fluid-motor. Rotary | K. P. Hangl | 757,300 | Apr. 12 | 2168 | 474 | 109 | 1890 |
| Fluid-press | A. M. O'Brien | 755,085 | Mar. 22 | 3809 | 792 | 109 | 840 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Fluid-pressure brake | G. M. Spencer and C. J. Grellner | 754,908 | Mar. 15 | 3371 | 737 | 109 | 770 |
| Fluid-pressure brake | J. W. Cloud | 758,049 | Apr. 26 | 3676 | 797 | 109 | 2184 |
| Fluids. Air or gas lift for | W. B. Harris | 758,360 | Apr. 26 | 4301 | 923 / 924 | 109 | 2320 |
| Fluids. Apparatus for regulating the flow of | J. J. Royle | 757,502 | Apr. 19 | 2582 | 567 | 109 | 1922 |
| Fluids in motion. Velocity-regulator for | J. B. F. Herreshoff | 757,039 | Apr. 12 | 1665 | 360 | 109 | 1718 |
| Fluids or solid materials. Apparatus for operating on finely-divided | J. Luhne | 757,757 | Apr. 19 | 3102 | 676 | 109 | 2087 |
| Fluorids and silicates. Making | W. Mills | 755,379 | Mar. 22 | 4240 | ..... | 109 | 976 |
| Flush-tank apparatus | J. H. Seager and J. J. Kelly | 754,247 | Mar. 8 | 2031 | 452 | 109 | 463 |
| Flushing-tank | C. H. Phillips | 755,166 | Mar. 22 | 3880 | 847 | 109 | 889 |
| Flushing-tank | F. Findeisen | 758,307 | Apr. 26 | 4204 | 904 | 109 | 2300 |
| Flushing-tank | B. Walker, Jr | 758,396 | Apr. 26 | 4350 | 937 | 109 | 2332 |
| Folding box | M. Hirsch | 756,019 | Mar. 29 | 5486 | 1210 / 1211 | 109 | 1266 |
| Folding bracket | L. W. Tucker | 754,105 | Mar. 8 | 1773 | 393 | 109 | 407 |
| Folding seat | W. H. and H. J. Spanjer | 755,183 | Mar. 22 | 3866 | 853 | 109 | 895 |
| Folding table | A. W. Brightwell | 758,563 | Mar. 1 | 857 | 194 | 109 | 186 |
| Folding table | W. R. Montgomery | 757,481 | Apr. 19 | 2541 | 559 | 109 | 1914 |
| Food-chopper | L. T. Snow and A. A. Warner | 754,249 | Mar. 8 | 2084 | 458 | 109 | 468 |
| Food composition | E. Dreiss | 758,685 | Mar. 1 | 809 | ..... | 109 | 195 |
| Food products. Apparatus for preparing cereal | J. H. Miller | 757,945 | Apr. 19 | 3457 | 748 | 109 | 2116 |
| Food products. Preparing rice or like cereal | J. W. Johnson and L. Lock. (Reissue.) | 12,211 | Apr. 5 | 1180 | ..... | 109 | 1596 |
| Foods. Apparatus for retaining heat in | E. C. Kirk | 758,009 | Apr. 19 | 3584 | 776 | 109 | 2144 |
| Forging apparatus | J. H. Baker | 755,433 | Mar. 22 | 4332 | 956 / 959 | 109 | 994 |
| Forging-machine combination-die | H. Jeffrey | 757,197 | Apr. 12 | 1967 | 429 | 109 | 1780 |
| Fork: *See* Loom filling-fork. | | | | | | | |
| Forking, elevating, and conveying machine | A. P. Tatterson | 756,910 | Apr. 12 | 1889 | 309 | 109 | 1654 |
| Form and stocking-supporter. Hip | G. Beeler | 756,456 | Apr. 5 | 532 | 111 | 109 | 1456 |
| Foundations, tunnels, &c. Constructing | C. Sooysmith | 755,955 | Mar. 29 | 5372 | 1185 | 109 | 1242 |
| Fountain: *See* Drinking-fountain. | | | | | | | |
| Fountain | F. C. Damm | 755,114 | Mar. 22 | 3741 | 822 | 109 | 870 |
| Fountains without water. Apparatus for producing artificial | C. H. Roedel | 756,528 | Apr. 5 | 659 | 142 | 109 | 1481 |
| Frame: *See* Adjustable protective frame. Binder-frame. Drawing-frame. Dusting-frame. Picture-frame. Roller-frame. Spinning and twisting frame. | | | | | | | |
| Freezing-tank | C. W. Vollmann | 754,582 | Mar. 15 | 2640 | 573 | 109 | 613 |
| Freight transfer. Warehouse or factory | J. Gilmour | 756,478 | Mar. 22 | 4409 | 977 | 109 | 1010 |
| Friction-brake | L. P. Valiquet | 757,150 | Apr. 12 | 1896 | 414 | 109 | 1763 |
| Friction-coupling | W. H. Smith | 755,953 | Mar. 29 | 5365 | 1184 | 109 | 1240 |
| Friction device | G. L. Harvey | 758,066 | Apr. 26 | 3721 | 808 / 809 | 109 | 2191 |
| Friction device | G. L. Harvey | 758,067 | Apr. 26 | 3724 | 809 | 109 | 2191 |
| Fruit-chute gate | A. Hamilton | 755,483 | Mar. 22 | 4418 | 979 | 109 | 1012 |
| Fruit cleaner and grader | E. H. Richardson and F. J. Kimball | 755,987 | Mar. 29 | 5331 | 1176 / 1177 | 109 | 1233 |
| Fruit-drier | A. A. Quarnberg | 753,737 | Mar. 1 | 999 | 227 / 228 | 109 | 215 |
| Fruit or berry box | J. E. Lynam | 757,558 | Apr. 19 | 2702 | 590 | 109 | 1949 |
| Fruit or vegetable eye extractor | R. Patterson | 757,885 | Apr. 19 | 3247 | 705 | 109 | 2070 |
| Fruit-picker | F. C. Howell | 753,885 | Mar. 8 | 1340 | 301 | 109 | 309 |
| Fruit-press | F. First | 755,126 | Mar. 22 | 3756 | 825 | 109 | 873 |
| Fruits and vegetables. Apparatus for scalding and washing | R. I. Fancher | 757,186 | Apr. 12 | 1948 | 425 / 426 | 109 | 1776 |
| Fruits. Treating | C. R. Wilson | 757,706 | Apr. 19 | 3000 | 652 | 109 | 2016 |
| Fuel | H. R. Dorr | 758,246 | Mar. 1 | 57 | ..... | 109 | 15 |
| Fuel and producing same. Artificial | W. B. Thomas | 756,189 | Mar. 29 | 5774 | ..... | 109 | 1327 |
| Fuel. Artificial | M. and C. Moscovitz | 756,682 | Apr. 5 | 984 | ..... | 109 | 1542 |
| Fuel atomizer. Liquid | E. G. Duisenberg | 757,100 | Apr. 12 | 1769 | 384 | 109 | 1735 |
| Fuel blocks. Manufacture of artificial | W. Y. Crutkshank | 755,278 | Mar. 22 | 4080 | ..... | 109 | 961 |
| Fuel. Composition | C. H. Carpenter | 756,986 | Apr. 12 | 1457 | ..... | 109 | 1665 |
| Fulling-mill stop-motion | J. P. Ryan | 758,107 | Apr. 26 | 3793 | 824 | 109 | 2206 |
| Fumigator | A. Van Winkle | 756,916 | Apr. 12 | 1898 | 311 | 109 | 1656 |
| Fur skins. Machine for removing hairs from | T. C. Mills | 754,381 | Mar. 8 | 2323 | 507 / 508 | 109 | 524 |
| Fur skins. Machine for removing hairs from | T. C. Mills | 754,382 | Mar. 8 | 2325 | 508 | 109 | 524 |
| Furnace: *See* Blast-furnace. Boiler-furnace. Cement-furnace. Electric furnace. Electric-resistance furnace. Glass-furnace. Glass-melting furnace. Glass-reheating furnace. Heating-furnace. Hot-air furnace. Metallurgical furnace. Roasting-furnace. Roasting or desulfurizing furnace. Smelting-furnace. Smoke-consuming furnace. Tube-furnace. Zinc-producing furnace. | | | | | | | |
| Furnace | D. A. Ebinger | 753,250 | Mar. 1 | 65 | 17 | 109 | 16 |
| Furnace | F. Gorman | 753,798 | Mar. 1 | 1147 | 258 / 259 | 109 | 247 |
| Furnace | D. J. McKenzie | 754,799 | Mar. 15 | 3161 | 688 | 109 | 725 |
| Furnace | J. Rahskopf | 755,045 | Mar. 22 | 3823 | 795 | 109 | 843 |
| Furnace | W. Summers | 755,186 | Mar. 22 | 3871 | 854 | 109 | 896 |
| Furnace | W. Clasper | 756,475 | Apr. 5 | 573 | 119 | 109 | 1463 |
| Furnace | S. O. Richardson, Jr | 756,894 | Apr. 12 | 1357 | 301 / 302 | 109 | 1648 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Furnace | S. C. Davidson | 757,442 | Apr. 19 | 2462 | 537, 538 | 109 | 1809 |
| Furnace | O. Wundrack | 757,536 | Apr. 19 | 2662 | 583 | 109 | 1940 |
| Furnace | A. H. Mylin and L. B. White | 757,949 | Apr. 19 | 3461 | 749, 750 | 109 | 2117 |
| Furnace air-feeding device | G. W. Brown | 753,664 | Mar. 1 | 858 | 194 | 109 | 186 |
| Furnace ash-chute | F. J. Blum | 757,435 | Apr. 19 | 2450 | 535 | 109 | 1896 |
| Furnace bells. Elevating and lowering device for blast- | W. I. Mann | 757,211 | Apr. 12 | 1989 | 433 | 109 | 1784 |
| Furnace charging apparatus. Blast- | K. Backlund and B. F. Burman | 758,498 | Apr. 26 | 4567 | 981, 982 | 109 | 2381 |
| Furnace combustion apparatus | V. Zanetti | 758,401 | Apr. 26 | 4381 | 941 | 109 | 2338 |
| Furnace-door | H. H. Huff | 755,007 | Mar. 22 | 3561 | 780 | 109 | 829 |
| Furnace feeding mechanism. Billet-heating- | V. E. Edwards | 756,946 | Apr. 12 | 1457 | 322 | 109 | 1669 |
| Furnace for burning dirt | A. P. Warren | 756,191 | Mar. 29 | 5775 | 1275, 1276 | 109 | 1327 |
| Furnace for burning tan or like fuel | D. M. Myers | 754,983 | Mar. 15 | 3414 | 746, 747 | 109 | 780 |
| Furnace-grate | F. H. E. C. Nehse | 753,298 | Mar. 1 | 156 | 36 | 109 | 37 |
| Furnace hearth. Smelting- | A. R. Partridge | 757,322 | Apr. 12 | 2008 | 436 | 109 | 1787 |
| Furnace valve. Regenerative- | J. M. Wight and H. Hyatt | 757,012 | Apr. 12 | 1573 | 344 | 109 | 1692 |
| Furnaces and converters. Extracting moisture from air for blast- | J. Gayley | 756,110 | Mar. 29 | 5655 | 1248 | 109 | 1302 |
| Furnaces. Apparatus for feeding fine fuel and air to | A. E. Creigh | 753,673 | Mar. 1 | 878 | 198, 199 | 109 | 191 |
| Furnaces. Device for aiding combustion in boiler- | E. R. Lewis | 754,151 | Mar. 8 | 1842 | 411 | 109 | 423 |
| Furnaces. Means for operating hydrocarbon-burners for metallurgical | H. W. Falk | 757,600 | Apr. 19 | 2798 | 612 | 109 | 1972 |
| Furnaces, &c. Reversing-valve for regenerative | C. G. Atha | 754,272 | Mar. 8 | 2075 | 460 | 109 | 471 |
| Furniture. Cushioned foot for metal | J. F. L. Ubl | 753,782 | Mar. 1 | 1046 | 229 | 109 | 225 |
| Furniture folding leg | W. C. Willets | 756,922 | Apr. 12 | 1409 | 314 | 109 | 1659 |
| Furniture-joints in position. Device for securing | D. E. Vanvactor | 754,997 | Apr. 12 | 1561 | 342 | 109 | 1690 |
| Furring-clip. Metallic | D. Ewart | 757,863 | Apr. 19 | 3302 | 715 | 109 | 2081 |
| Furring. Wall- | J. H. Nicholson | 757,490 | Apr. 19 | 2557 | 561 | 109 | 1917 |
| Fuse. Blow-out | F. B. Corey | 758,172 | Apr. 26 | 3910 | 849, 850 | 109 | 2235 |
| Fuse for exploding shells. Percussion- | K. Wieser | 757,165 | Apr. 12 | 1903 | 416 | 109 | 1766 |
| Fuse-making machine | G. Lispenard and E. C. Truyter | 757,580 | Apr. 19 | 2758 | 602, 603 | 109 | 1963 |
| Fusion. Treating matters in | P. L. Hulin | 754,566 | Mar. 15 | 2716 | 591 | 109 | 628 |
| Gage: *See* Boiler glass water-gage. Clapboard-marking gage. High and low pressure gage. Rain-gage. Sand-box gage. Saw-gage. Skirt-gage. Track-gage. Water-gage. | | | | | | | |
| Gage and marker | W. E. Lough | 757,132 | Apr. 12 | 1845 | 408 | 109 | 1752 |
| Gage-table and conveyer | C. W. Herman | 756,959 | Apr. 12 | 1482 | 327 | 109 | 1674 |
| Galvanic battery | C. B. Schoenmehl | 757,355 | Apr. 12 | 2288 | 498 | 109 | 1845 |
| Galvanic battery. Reversible | T. A. Edison | 754,859 | Mar. 15 | 3294 | 717 | 109 | 754 |
| Galvanizing plants. Cooling-rack for | W. Gibson | 753,255 | Mar. 1 | 73 | 18, 19 | 109 | 18 |
| Game | P. D. Bird | 757,434 | Apr. 19 | 2449 | 535 | 109 | 1896 |
| Game | J. R. Knapp | 757,470 | Apr. 19 | 2520 | 553 | 109 | 1900 |
| Game and amusement apparatus | A. Dufty | 754,341 | Apr. 5 | 298 | 62 | 109 | 1407 |
| Game apparatus | C. P. Edmunds | 753,561 | Mar. 1 | 666 | 149 | 109 | 147 |
| Game apparatus | S. E. Wharton | 753,946 | Mar. 8 | 1463 | 329, 330 | 109 | 337 |
| Game apparatus | C. W. Wing | 753,949 | Mar. 8 | 1474 | 331 | 109 | 340 |
| Game apparatus | G. W. Maxwell | 756,514 | Apr. 5 | 635 | 137 | 109 | 1476 |
| Game apparatus. Check-controlled | G. W. MacKenzie | 754,377 | Mar. 8 | 2315 | 505, 506 | 109 | 323 |
| Game-board | O. M. Morse | 755,576 | Mar. 22 | 4577 | 1018 | 109 | 1047 |
| Game-board | D. Stanger | 757,976 | Apr. 19 | 3513 | 762 | 109 | 2129 |
| Game. Card | R. L. Reed | 755,243 | Mar. 22 | 3976 | 882 | 109 | 918 |
| Game-counter. Combination | C. C. Nefzger | 754,008 | Mar. 8 | 1569 | 351 | 109 | 362 |
| Game-table | J. S. Croxford | 757,440 | Apr. 19 | 2458 | 537 | 109 | 1898 |
| Games may be played at night. System of illuminating fields so that | G. F. Cahill | 755,447 | Mar. 22 | 4355 | 965, 966 | 109 | 999 |
| Garbage-crematory | E. E. Hill | 755,662 | Mar. 29 | 4756 | 1059 | 109 | 1102 |
| Garbage-crematory | H. B. Smith | 757,149 | Apr. 12 | 1872 | 409 | 109 | 1758 |
| Garbage-removing device | E. O. Poppe | 754,890 | Mar. 15 | 3346 | 731 | 109 | 765 |
| Garment | J. A. Scriven | 758,322 | Mar. 1 | 198 | 45 | 109 | 46 |
| Garment adjuster or holder | J. Wilson-Haffenden | 753,775 | Mar. 1 | 1068 | 247 | 109 | 235 |
| Garment-clasp | A. J. Krienitz | 754,402 | Mar. 15 | 2513 | 548 | 109 | 584 |
| Garment-fastener | C. A. Bryant | 753,847 | Mar. 8 | 1270 | 285 | 109 | 294 |
| Garment-fastener | A. Cleves | 755,617 | Mar. 29 | 4673 | 1039 | 109 | 1068 |
| Garment-fastener | C. R. Bannihr | 756,201 | Apr. 5 | 5 | 2 | 109 | 1344 |
| Garment-fastener | B. M. Burr | 758,507 | Apr. 26 | 4590 | 987 | 109 | 2386 |
| Garment-fastening | P. Orleans | 755,087 | Mar. 22 | 3612 | 799 | 109 | 841 |
| Garment-hanger | N. C. Terry | 753,448 | Mar. 1 | 427 | 100 | 109 | 98 |
| Garment-hanger | J. D. Coney and W. H. Olmstead | 756,586 | Apr. 5 | 762 | 165 | 109 | 1504 |
| Garment-hanger | W. H. Olmstead and J. D. Coney | 756,978 | Apr. 12 | 1526 | 335 | 109 | 1681 |
| Garment-holder | M. M. Strauss | 756,074 | Mar. 29 | 5573 | 1230 | 109 | 1285 |
| Garment-hook | G. Stricker | 755,411 | Mar. 22 | 4291 | 949 | 109 | 987 |
| Garment-pressing machine | F. Lindsay | 753,596 | Mar. 1 | 731 | 163 | 109 | 159 |
| Garment-protector | D. W. Curtiss | 753,474 | Mar. 1 | 471 | 110 | 109 | 108 |
| Garment-stretcher | J. B. Miller | 754,478 | Mar. 15 | 2553 | 556 | 109 | 594 |
| Garment-supporter | J. J. Buchanan | 754,194 | Mar. 8 | 1919 | 427 | 109 | 439 |
| Garment-supporter | L. E. Schoch | 754,813 | Mar. 15 | 3195 | 696 | 109 | 782 |
| Garment-supporter | W. S. Hunkins | 756,237 | Apr. 5 | 90 | 19 | 109 | 1361 |
| Garment-supporter | M. H. Boyce | 756,464 | Apr. 5 | 550 | 115 | 109 | 1460 |
| Garment-supporter | T. M. Wheless | 757,701 | Apr. 19 | 2993 | 650 | 109 | 2015 |
| Garment-supporter | F. S. Boedefeld | 758,301 | Apr. 26 | 3968 | 861 | 109 | 2247 |
| Garment-supporter for men | W. A. Wright | 756,764 | Apr. 5 | 1089 | 241 | 109 | 1575 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Garter-clip | J. D. Woods | 756,192 | Mar. 29 | 5776 | 1276 | 109 | 1327 |
| Gas and coke. Retort for making | A. C. Kloman | 754,459 | Mar. 15 | 2506 | 545 | 109 | 582 |
| Gas. Apparatus for producing motive power from liquid | G. B. Fraley | 756,785 | Apr. 5 | 1137 | 250, 251 | 109 | 1587 |
| Gas battery | J. H. Reid | 757,637 | Apr. 19 | 2874 | 626 | 109 | 1989 |
| Gas-burner | C. T. Fuller | 753,871 | Mar. 8 | 1312 | 295 | 109 | 303 |
| Gas-burner | W. Kohn | 754,075 | Mar. 8 | 1699 | 377 | 109 | 391 |
| Gas-burner | H. Bryant | 756,155 | Mar. 29 | 5719 | 1263 | 109 | 1316 |
| Gas-burner | T. E. Charlton | 756,583 | Apr. 5 | 754 | 164 | 109 | 1502 |
| Gas-burner | O. D. Cornell | 757,651 | Apr. 19 | 2902 | 631 | 109 | 1995 |
| Gas-burner | C. A. Campbell | 758,411 | Apr. 26 | 4393 | 944 | 109 | 2340 |
| Gas burner. Acetylene- | G. M. Lauder | 755,508 | Mar. 22 | 4447 | 988 | 109 | 1018 |
| Gas burner. Acetylene- | H. Symonds | 755,965 | Mar. 29 | 5385 | 1189 | 109 | 1245 |
| Gas-burner. Atmospheric | A. E. Harris | 754,561 | Mar. 15 | 2708 | 589 | 109 | 626 |
| Gas-burner attachment | E. D. McCahill | 757,482 | Apr. 19 | 2544 | 559 | 109 | 1915 |
| Gas-burner for heating and incandescent gas-lighting. | V. A. Rettich | 756,898 | Apr. 12 | 1355 | 301 | 109 | 1647 |
| Gas-burner. Furnace | N. Côté | 758,420 | Apr. 26 | 4423 | 950 | 109 | 2348 |
| Gas-burner. Regenerative | J. W. McKnight | 754,595 | Mar. 15 | 2775 | 604 | 109 | 639 |
| Gas-burner. Self-igniting incandescent | J. Canellopoulos | 755,448 | Mar. 22 | 4361 | 966 | 109 | 999 |
| Gas-burning apparatus | W. H. Bradley | 758,204 | Apr. 26 | 4165 | 899 | 109 | 2288 |
| Gas-detecting means. Thermostatic | J. E. Baldwin | 754,534 | Mar. 15 | 2663 | 578, 579 | 109 | 618 |
| Gas-detector | G. A. Nelson | 754,596 | Mar. 15 | 2776 | 605 | 109 | 639 |
| Gas. Device for separating flue-dust from | W. A. and J. Riddell | 755,244 | Mar. 22 | 3977 | 882, 883 | 109 | 918 |
| Gas-engine | G. J. Murdock | 753,510 | Mar. 1 | 537 | 125, 126 | 109 | 118 |
| Gas-engine | J. M. Stadel | 753,527 | Mar. 1 | 596 | 135, 136, 137 | 109 | 130 |
| Gas-engine | D. Glasby | 753,875 | Mar. 8 | 1320 | 297, 298 | 109 | 305 |
| Gas-engine | H. Richter | 754,163 | Mar. 8 | 1866 | 416 | 109 | 428 |
| Gas-engine | P. H. Brennan | 754,418 | Mar. 15 | 2410 | 527, 528 | 109 | 561 |
| Gas-engine | H. C. Bergemann | 756,458 | Apr. 5 | 536 | 112, 113 | 109 | 1457 |
| Gas-fired boiler | A. Sahlin | 754,095 | Mar. 8 | 1750 | 389 | 109 | 401 |
| Gas fireplace-heater | A. B. Schofield | 758,111 | Apr. 26 | 3799 | 825 | 109 | 2209 |
| Gas-fixture | J. Wunder, Jr | 754,108 | Mar. 8 | 1777 | 394 | 109 | 408 |
| Gas-fixture | S. Bernheim | 755,346 | Mar. 22 | 4176 | 922 | 109 | 961 |
| Gas-fixture safety-lock | E. H. Shute | 756,066 | Mar. 29 | 5563 | 1228 | 109 | 1283 |
| Gas-generating apparatus. Acetylene- | G. J. Atkins | 753,818 | Mar. 1 | 1208 | 272 | 109 | 259 |
| Gas-generator | H. C. Hanson | 757,615 | Apr. 19 | 2884 | 618 | 109 | 1979 |
| Gas generator. Acetylene- | C. and J. Tatters | 753,447 | Mar. 1 | 426 | 100 | 109 | 92 |
| Gas generator. Acetylene- | E. M. Rosenbluth | 753,632 | Mar. 1 | 788 | 176 | 109 | 171 |
| Gas generator. Acetylene- | J. M. and P. M. Flugstad | 753,691 | Mar. 1 | 918 | 208 | 109 | 198 |
| Gas generator. Acetylene- | W. A. Robertson and D. P. Heap | 754,808 | Mar. 15 | 3187 | 695 | 109 | 730 |
| Gas generator. Acetylene- | M. J. Erk | 756,221 | Apr. 5 | 57 | 13 | 109 | 1355 |
| Gas generator. Acetylene- | G. Laporte | 757,402 | Apr. 12 | 2381 | 518 | 109 | 1865 |
| Gas generator. Acetylene- | W. J. Stinson | 757,577 | Apr. 19 | 2752 | 601 | 109 | 1962 |
| Gas generator. Acetylene- | G. A. Bidwell | 757,875 | Apr. 19 | 3822 | 719, 720 | 109 | 2086 |
| Gas generator. Acetylene- | F. E. Way | 758,159 | Apr. 26 | 3886 | 844 | 109 | 2230 |
| Gas generator and burner. Oil- | J. P. Tirrell | 757,980 | Apr. 19 | 3521 | 763, 764 | 109 | 2130 |
| Gas-heater | F. G. Freese | 756,108 | Mar. 29 | 5652 | 1247 | 109 | 1302 |
| Gas-holder | J. H. Coke | 757,887 | Apr. 19 | 3846 | 734 | 109 | 2092 |
| Gas igniting and extinguishing apparatus. Automatic | E. H. Stow | 757,242 | Apr. 12 | 2045 | 446 | 109 | 1796 |
| Gas-lighting. Atmospheric burner for incandescent | J. W. Bray | 755,213 | Mar. 22 | 3920 | 867 | 109 | 906 |
| Gas-lighting mechanism. Time | F. W. and E. Thielenhaus and C. Vollmann. | 753,330 | Mar. 1 | 209 | 47 | 109 | 48 |
| Gas-lighting mechanism. Time | N. H. Shaw | 755,060 | Mar. 22 | 3648 | 801 | 109 | 849 |
| Gas-machine carbid-feed | J. T. and T. C. Hays | 758,249 | Apr. 26 | 4066 | 880 | 109 | 2268 |
| Gas. Making | P. Naef | 753,295 | Mar. 1 | 149 | 35 | 109 | 36 |
| Gas-making apparatus | P. Naef | 753,296 | Mar. 1 | 152 | 35 | 109 | 36 |
| Gas-meter | R. J. Hoffman | 756,365 | Apr. 5 | 358 | 73 | 109 | 1420 |
| Gas-meter. Coin-freed | H. Aron | 755,206 | Mar. 22 | 3909 | 863, 864 | 109 | 904 |
| Gas-meter. Dry | S. Koźminski | 757,627 | Apr. 19 | 2858 | 623 | 109 | 1985 |
| Gas-mixer | A. A. Gohn | 753,975 | Mar. 8 | 1523 | 340 | 109 | 351 |
| Gas-mixer | A. M. Gummer | 757,916 | Apr. 19 | 3404 | 737 | 109 | 2105 |
| Gas-motor engine | A. Rollason | 757,415 | Apr. 12 | 2406 | 524, 525 | 109 | 1870 |
| Gas or gasolene engine | G. W. Fulkerson | 753,483 | Mar. 1 | 485 | 113, 114 | 109 | 106 |
| Gas or other fluid meters. Coin-freed mechanism for | B. R. Beale and A. E. Bagnall | 753,658 | Mar. 1 | 844 | 189, 190 | 109 | 184 |
| Gas-producer | J. M. Wight and H. Hyatt | 753,340 | Mar. 1 | 223 | 51 | 109 | 51 |
| Gas-producer | J. G. Sanderson | 755,702 | Mar. 29 | 4847 | 1077, 1078 | 109 | 1124 |
| Gas-producer | J. Reuleaux | 758,475 | Apr. 26 | 4515 | 970 | 109 | 2368 |
| Gas-producer feed device | V. E. Edwards | 756,945 | Apr. 12 | 1453 | 332 | 109 | 1668 |
| Gas. Producing | P. Naef | 753,294 | Mar. 1 | 146 | 35 | 109 | 36 |
| Gas purification. Apparatus for | F. Jas | 754,778 | Mar. 15 | 3111 | 679 | 109 | 715 |
| Gas-retort | C. H. Montgomerie y Agramonte | 756,518 | Apr. 5 | 648 | 188, 189 | 109 | 1477 |
| Gas-retort charger | J. Saltar, Jr | 756,059 | Mar. 29 | 5546 | 1224 | 109 | 1280 |
| Gas-retort charger and discharger | W. W. Fiddes | 756,225 | Apr. 5 | 67 | 15 | 109 | 1357 |
| Gas-retort-feeding apparatus | A. Feiffer | 756,606 | Apr. 5 | 958 | 211 | 109 | 1548 |
| Gas-separator | O. Gerlach | 757,084 | Apr. 12 | 1658 | 359 | 109 | 1711 |
| Gas-valve. Automatic | F. Wilke | 755,365 | Mar. 22 | 4019 | 891 | 109 | 987 |
| Gases. Apparatus for the filtration of | G. C. Stone | 758,222 | Apr. 26 | 4008 | 869 | 109 | 2254 |

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|---|---|---|---|---|---|---|---|
| Gases in liquids to keep alive aquatic animals and water-plants. Dissolving | F. Kaltenegger and N. L. von Libarnau. | 754,317 | Mar. 8 | 2156 | 477 | 109 | 488 |
| Gaseous-fuel burner | O. Falkenwalde | 757,395 | Apr. 12 | 2368 | 515 | 109 | 1602 |
| Gasolene-motor | J. L. Fitz Gerald | 756,011 | Mar. 29 | 5468 | 1206 | 109 | 1263 |
| Gate: *See* Automatic gate. Elevator-gate. End-gate. Farm-gate. Knockdown gate. Railway-gate. | | | | | | | |
| Gate | H. H. Bell | 754,535 | Mar. 15 | 2665 | 579 | 109 | 618 |
| Gate | J. F. Burkhardt | 755,371 | Mar. 22 | 4088 | 898 | 109 | 929 |
| Gate | M. M. Dungan | 755,856 | Mar. 29 | 5172 | {1144 {1145 | 109 | 1196 |
| Gate | C. T. Harris | 756,231 | Apr. 5 | 77 | 17 | 109 | 1359 |
| Gate | P. Oppenheim | 756,559 | Apr. 26 | 4685 | 1010 | 109 | 2406 |
| Gate-fastener | C. H. Spencer | 754,257 | Mar. 8 | 2216 | 496 | 109 | 500 |
| Gate-opener | G. C. Laney | 754,876 | Mar. 15 | 3318 | {723 {724 | 109 | 759 |
| Gear-cutting machine | W. A. Twining | 757,606 | Apr. 19 | 2665 | 649 | 109 | 2013 |
| Gear. Friction | D. L. Lindquist | 758,223 | Apr. 26 | 4234 | 910 | 109 | 2305 |
| Gear. Frictional reversing | A. Adamson | 758,494 | Apr. 26 | 4559 | 980 | 109 | 2379 |
| Gear-lock | C. Percy, Jr | 753,912 | Mar. 8 | 1396 | 315 | 109 | 321 |
| Gear-molding machine | F. Kepp | 754,777 | Mar. 15 | 3118 | {680 {681 | 109 | 717 |
| Gear. Power-transmission | W. O. Brown | 757,261 | Apr. 12 | 2075 | {453 {454 | 109 | 1602 |
| Gear. Reversing | E. G. Smith | 757,053 | Apr. 12 | 1606 | {368 {369 | 109 | 1719 |
| Gear. Transmission | P. H. Brennan | 754,638 | Mar. 15 | 2856 | {624 {625 | 109 | 656 |
| Gear. Transmission | L. A. Frayer | 756,349 | Apr. 5 | 316 | 65 | 109 | 1411 |
| Gear. Variable-speed and reversing | H. R. Bevier | 754,738 | Mar. 15 | 3057 | 667 | 109 | 708 |
| Gearing | M. J. Lawler | 755,505 | Mar. 22 | 4458 | 989 | 109 | 1019 |
| Gearing | J. Dietz | 755,684 | Mar. 29 | 4708 | 1047 | 109 | 1090 |
| Gearing | W. Thornton | 756,737 | Apr. 5 | 1045 | 232 | 109 | 1566 |
| Gearing. Differential | H. E. Bayley | 754,914 | Mar. 15 | 3380 | 739 | 109 | 773 |
| Gearing. Electromagnetic | E. M. Bentley | 758,293 | Apr. 26 | 4162 | 898 | 109 | 2287 |
| Gearing. Friction | O. R. P. Berglund and B. O. W. Hesselman. | 757,014 | Apr. 12 | 1602 | 349 | 109 | 1698 |
| Gearing. Radiohelical cam | H. J. Schmick | 755,051 | Mar. 22 | 3632 | 797 | 109 | 845 |
| Gearing. Variable-speed | A. B. Shultz, H. J. Haas, and C. Thorden. | 754,905 | Mar. 15 | 3364 | 736 | 109 | 769 |
| Gearing. Variable-speed transmission | T. C. Churchill | 753,856 | Mar. 8 | 1286 | 290 | 109 | 296 |
| Generator: *See* Electrodynamic generator. Gas-generator. Steam-generator. Steam and vapor generator. Vapor-generator. | | | | | | | |
| Geometrical figures. Instrument for the construction of equivalent | J. C. Willmon | 753,456 | Mar. 1 | 445 | 104 | 109 | 97 |
| Gilder's tool | W. H. Coe | 754,408 | Mar. 8 | 2382 | 520 | 109 | 537 |
| Glass articles. Manufacturing | S. O. Richardson, Jr | 756,895 | Apr. 12 | 1360 | {302 {303 | 109 | 1648 |
| Glass articles of circular cross-section. Manufacture of | D. A. Ripley | 754,165 | Mar. 8 | 1868 | 416 | 109 | 429 |
| Glass-blowing machine | H. Severin | 757,356 | Apr. 12 | 2285 | 499 | 109 | 1646 |
| Glass bulbs. Perforating | W. R. Burrows | 756,985 | Apr. 12 | 1435 | 319 | 109 | 1654 |
| Glass-drawing bait | J. H. Lubbers | 758,544 | Apr. 26 | 4650 | 1008 | 109 | 2400 |
| Glass-drawing bait | R. S. Pease | 758,580 | Apr. 26 | 4666 | 1010 | 109 | 2406 |
| Glass-furnace | S. O. Richardson, Jr | 756,409 | Apr. 5 | 441 | 91 | 109 | 1457 |
| Glass-gathering machine | L. Miller | 756,553 | Apr. 26 | 4671 | {1006 {1007 {1008 | 109 | 2403 |
| Glass jar | R. I. Sherman | 754,166 | Mar. 8 | 1876 | 418 | 109 | 430 |
| Glass machine. Sheet | S. Deeley | 754,732 | Mar. 15 | 3079 | 673 | 109 | 706 |
| Glass-melting furnace | M. M. Maher | 757,666 | Apr. 19 | 2998 | 636 | 109 | 2000 |
| Glass-mold-operating apparatus | L. Bucsko | 754,966 | Mar. 22 | 3492 | 764 | 109 | 815 |
| Glass pipes. Manufacture of cast | C. H. Jenkins | 756,022 | Mar. 29 | 5498 | 1212 | 109 | 1257 |
| Glass plates together. Corner-clamp for securing | H. Schielke | 754,945 | Mar. 8 | 2028 | 451 | 109 | 462 |
| Glass-reheating furnace | J. I., C. V., F. J., P. R., and F. L. Arbogast. | 756,537 | Apr. 5 | 709 | 153 | 109 | 1498 |
| Glass stone. Manufacture of | L. A. Garchey | 753,694 | Mar. 1 | 984 | ..... | 109 | 300 |
| Glass stone. Manufacture of | L. A. Garchey | 753,695 | Mar. 1 | 985 | 209 | 109 | 300 |
| Glass-working machine | I. W. Colburn | 754,426 | Mar. 15 | 3433 | {531 {532 | 109 | 567 |
| Glassware. Manufacturing | S. O. Richardson, Jr | 756,294 | Apr. 5 | 188 | 37 | 109 | 1393 |
| Glassware. Manufacturing | J. I., C. V., F. J., F. L., and P. R. Arbogast. | 756,558 | Apr. 5 | 711 | 154 | 109 | 1498 |
| Glove | G. E. Woodman | 753,779 | Mar. 1 | 1004 | 248 | 109 | 236 |
| Glove | R. G. Rate and M. Mattes | 754,160 | Mar. 8 | 1859 | {414 {415 | 109 | 427 |
| Glove. Reversible | H. S. Simpson | 756,266 | Apr. 12 | 1540 | 359 | 109 | 1665 |
| Glove-turner | G. Burr | 754,539 | Mar. 15 | 2971 | 580 | 109 | 619 |
| Glue and gelatin from bones. Making | H. Hilbert | 757,668 | Apr. 19 | 2918 | ..... | 109 | 1906 |
| Glue-press clamping device | A. E. Palmer | 755,384 | Mar. 22 | 4349 | {968 {969 | 109 | 978 |
| Gold and silver from cyanid solutions. Recovery of | S. B. Christy | 756,398 | Apr. 5 | 265 | 55, 56 | 109 | 1400 |
| Gold from rebellious ores. Extracting | E. C. Broadwell | 753,823 | Mar. 1 | 1214 | ..... | 109 | 260 |
| Gold-separator | A. C. La Bud and H. J. Barton | 754,657 | Mar. 15 | 2908 | 633 | 109 | 665 |
| Gold-separator | J. W. Korfhage | 757,205 | Apr. 12 | 1980 | 431 | 109 | 1762 |
| Golf-ball | T. C. Crawford | 757,600 | Apr. 19 | 2766 | 610 | 109 | 1970 |
| Golf-club | J. G. Curtiss | 758,677 | Mar. 1 | 888 | 200 | 109 | 198 |
| Golf-player's scoring device | W. H. Weissbrod | 753,457 | Mar. 1 | 444 | 104 | 109 | 97 |
| Gong. Electromechanical | F. W. Cole | 757,371 | Apr. 12 | 2004 | 456 | 109 | 1805 |
| Governing mechanism | P. D. Ball and C. L. Wakefield | 754,088 | Mar. 8 | 1638 | 364 | 109 | 377 |



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|---|---|---|---|---|---|---|---|
| Governor | N. Lombard | 754,469 | Mar. 15 | 2580 | {551 {552 {553 | 109 | 588 |
| Governor. Automatic friction | V. G. Apple | 754,185 | Mar. 8 | 1904 | 424 | 109 | 437 |
| Governor. Engine | H. Holzwarth | 754,563 | Mar. 15 | 2710 | {589 {590 | 109 | 627 |
| Governor. Engine | D. W. Cone and D. N. Perry | 755,564 | Mar. 22 | 4555 | 1012 | 109 | 1042 |
| Governor. Engine valve | C. Kuhlewind | 758,010 | Apr. 19 | 3585 | {776 {777 | 109 | 2144 |
| Governor. Engine valve | C. Kuhlewind | 758,011 | Apr. 19 | 3587 | {777 {778 | 109 | 2145 |
| Governor. Gas or internal-combustion engine | P. Jenness | 757,811 | Apr. 12 | 2205 | 492 | 109 | 1828 |
| Governor. Hydropneumatic-engine | E. A. Hornbostel, Jr | 756,791 | Apr. 5 | 1148 | 254 | 109 | 1589 |
| Governor. Speed | J. W. Macfarlane | 755,575 | Mar. 22 | 4576 | 1018 | 109 | 1047 |
| Governor. Speed | L. K. Hong | 755,776 | Mar. 29 | 5012 | {1114 {1115 | 109 | 1159 |
| Governor. Speed | J. G. Helfers | 756,963 | Apr. 5 | 354 | 72 | 109 | 1419 |
| Governor. Speed | C. Robinson | 758,020 | Apr. 19 | 3610 | 781 | 109 | 2150 |
| Governor. Variable-speed | G. W. Casteel | 757,269 | Apr. 12 | 2091 | 456 | 109 | 1805 |
| Grader. Road | H. L. Braly | 756,323 | Apr. 5 | 255 | 53 | 109 | 1398 |
| Grading and scraping machine. Road | J. H. Osten | 754,087 | Mar. 8 | 1729 | 385 | 109 | 396 |
| Grading machine. Road | A. L. Powlison and E. C. Erb | 758,148 | Apr. 26 | 3868 | 840 | 109 | 2226 |
| Grain-binder | C. Colahan | 755,748 | Mar. 29 | 4940 | {1099 {1100 | 109 | 1144 |
| Grain-binder attachment | J. H. Williams and G. B. Evans | 758,161 | Apr. 26 | 3891 | 845 | 109 | 2231 |
| Grain-binders. Mechanical movement adapted to | W. C. Duryea | 758,559 | Mar. 1 | 662 | 148 | 109 | 146 |
| Grain-blower | G. Merkel | 754,476 | Mar. 15 | 2551 | 555 | 109 | 594 |
| Grain-carrier | J. Coffman | 756,988 | Apr. 12 | 1440 | 319 | 109 | 1665 |
| Grain-drill | G. L. Roby | 754,167 | Mar. 8 | 1874 | {417 {418 | 109 | 430 |
| Grain-drill | F. P. Dill | 755,686 | Mar. 29 | 4712 | 1048 | 109 | 1091 |
| Grain-drill | R. D. Browning | 756,095 | Mar. 29 | 5619 | 1240 | 109 | 1294 |
| Grain-drill | E. C. Bain | 756,315 | Apr. 5 | 240 | 50 | 109 | 1395 |
| Grain-drill | L. E. Roby | 757,771 | Apr. 19 | 3138 | {682 {683 | 109 | 2046 |
| Grain-dump. Portable | J. E. Camp | 756,577 | Apr. 5 | 743 | {161 {162 | 109 | 1499 |
| Grain-dump. Portable | J. E. Camp | 756,578 | Apr. 5 | 745 | 162 | 109 | 1500 |
| Grain-elevator bagging attachment | C. Bradford | 756,931 | Apr. 12 | 1428 | 318 | 109 | 1663 |
| Grain-germinating apparatus | V. Lapp | 758,083 | Apr. 26 | 3745 | 814 | 109 | 2196 |
| Grain on wagons. Machine for loading bound | B. S. Kempton | 755,188 | Mar. 22 | 3788 | 833 | 109 | 879 |
| Grain, ore, &c. Transfer-spout for | P. O. Olson | 756,519 | Apr. 5 | 644 | 139 | 109 | 1477 |
| Grain-receptacle closure | A. L. Eliel | 755,859 | Mar. 29 | 5173 | 1145 | 109 | 1198 |
| Grain-screen | F. Fredeen | 757,905 | Apr. 19 | 3385 | {732 {733 | 109 | 2100 |
| Grain-separator | F. M. Smith | 754,617 | Mar. 15 | 2811 | 614 | 109 | 647 |
| Grain-separator | J. K. White | 754,729 | Mar. 15 | 3043 | 664 | 109 | 699 |
| Grain-separator | J. K. White and G. W. Pyle | 755,978 | Mar. 29 | 5405 | 1194 | 109 | 1249 |
| Grain-separator | J. R. Lazarus | 756,121 | Mar. 29 | 5671 | {1251 {1252 | 109 | 1306 |
| Grain-separator | G. W. Hill | 757,807 | Apr. 12 | 2178 | {477 {478 {479 {480 {481 | 109 | 1824 |
| Grain-separator straw-rack | J. Johanneck | 754,874 | Mar. 15 | 3315 | 728 | 109 | 759 |
| Grain-shocking attachment. Binder | J. C. McDougall | 758,098 | Apr. 26 | 3760 | {817 {818 {819 | 109 | 2200 |
| Grain. Steeping | V. Lapp | 755,144 | Mar. 22 | 3796 | 836 | 109 | 882 |
| Gramophone reproducer-support | E. R. Johnson. (Reissue) | 12,213 | Apr. 26 | 4791 | 1081 | 109 | 2430 |
| Graphophone, phonograph, &c | W. C. Runge | 756,289 | Apr. 5 | 192 | 39, 40 | 109 | 1385 |
| Grapple | T. Alexander | 758,199 | Apr. 26 | 3965 | 860 | 109 | 2247 |
| Grate | G. G. Griffin | 756,118 | Mar. 29 | 5668 | 1250 | 109 | 1305 |
| Grate and flue therefor | A. L. Houston | 758,268 | Mar. 1 | 95 | 24 | 109 | 94 |
| Grate attachment. Fire | M. A. Stewart | 757,067 | Apr. 12 | 1708 | 370 | 109 | 1720 |
| Grate or fireplace. Fire | F. J. Bostel | 757,595 | Apr. 19 | 2781 | 608 | 109 | 1968 |
| Grate. Smokeless self-cleaning | F. and A. Girtanner | 757,187 | Apr. 12 | 1951 | 426 | 109 | 1777 |
| Greenhouse or other glazed structure | C. B. Weathered | 757,986 | Apr. 19 | 3539 | 766 | 109 | 2134 |
| Grinder. Corn | M. H. Hatfield | 758,068 | Apr. 26 | 3727 | 810 | 109 | 2192 |
| Grinder. Harrow-disk | F. P. Burkhardt | 756,827 | Apr. 12 | 1226 | 274 | 109 | 1622 |
| Grinder. Sickle | F. P. Burkhardt | 756,828 | Apr. 12 | 1228 | 274 | 109 | 1622 |
| Grinding and polishing machine | J. B. Lobet | 754,878 | Mar. 15 | 3321 | 724 | 109 | 760 |
| Grinding attachment | M. Brown | 757,260 | Apr. 12 | 2074 | 453 | 109 | 1801 |
| Grinding harvester-knives, &c. Machine for | M. C. Nixon | 758,558 | Apr. 26 | 4682 | 1010 | 109 | 2405 |
| Grinding-machine | G. J. and H. G. Pelstring | 753,911 | Mar. 8 | 1393 | {314 {315 | 109 | 321 |
| Grinding-machine | O. S. Walker | 756,302 | Apr. 5 | 218 | 45 | 109 | 1391 |
| Grinding-mill | W. C. Deards, W. E. Copenhaver, and D. L. Adelsperger. | 757,097 | Apr. 12 | 1763 | 383 | 109 | 1734 |
| Grinding or crushing apparatus | T. Breakell | 758,537 | Mar. 1 | 620 | 140 | 109 | 135 |
| Grinding or sharpening device | I. M. Rose | 757,843 | Apr. 19 | 3268 | 706 | 109 | 2074 |
| Grip fastener. Multiple | H. A. Meyercord | 757,944 | Apr. 19 | 3455 | 748 | 109 | 2116 |
| Gripping device | F. H. Lamb | 758,260 | Apr. 26 | 4089 | 885 | 109 | 2273 |
| Grist-mill | S. L. Shelby | 754,908 | Mar. 15 | 3361 | 735 | 109 | 768 |
| Grooving-machine | O. Boehm | 757,064 | Apr. 12 | 1732 | {876 {877 {878 | 109 | 1727 |
| Ground joint | R. Whitaker | 757,876 | Apr. 12 | 2325 | 506 | 109 | 1854 |
| Guide-roller | W. H. Stobie | 753,753 | Mar. 1 | 1028 | 233 | 109 | 221 |
| Guide-wheel | A. H. Matheisius | 754,473 | Mar. 15 | 2539 | 554 | 109 | 591 |
| Gun | F. Novotny | 754,599 | Mar. 15 | 2781 | 606 | 109 | 641 |
| Gun. Automatic | C. Petersen | 754,691 | Mar. 15 | 2966 | {647 {648 | 109 | 681 |
| Gun-barrel sight | D. H. Holman | 755,665 | Mar. 29 | 4762 | 1060 | 109 | 1108 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Gun. Electromagnetic | K. Birkeland | 754,637 | Mar. 15 | 2850 | 623 | 109 | 655 |
| | | | | | 624 | | |
| Gun. Pivot- | J. Krone | 757,129 | Apr. 12 | 1840 | 402 | 109 | 1751 |
| Gun recoil-brake | K. Völler | 755,418 | Mar. 22 | 4304 | 951 | 109 | 980 |
| | | | | | 952 | | |
| Gun shell-ejector mechanism | F. Novotny | 754,598 | Mar. 15 | 2778 | 605 | 109 | 640 |
| | | | | | 606 | | |
| Gun-sight | J. F. Meigs and H. G. Jakobsson | 753,505 | Mar. 1 | 598 | 123 | 109 | 116 |
| | | | | | 124 | | |
| Gun sight. Shot- | P. O. Elterich | 754,980 | Mar. 15 | 3390 | 741 | 109 | 775 |
| Gun. Take-down | M. Hepburn | 755,660 | Mar. 29 | 4. 1 | 1058 | 109 | 1100 |
| Gun with special devices for protecting the slide-tracks from dust. Recoil- | O. Lauber | 756,120 | Mar. 29 | 5670 | 1251 | 109 | 1305 |
| Gun with special devices for protecting the slide-tracks from dust. Recoil- | O. Lauber | 756,173 | Mar. 29 | 5749 | 1270 | 109 | 1322 |
| Guns. Auxiliary barrel for breech-loading | V. C. Tasker | 757,790 | Apr. 19 | 3174 | 669 | 109 | 2055 |
| Guns. Cartridge-ejector for breakdown | O. W. Ringqvist | 754,092 | Mar. 8 | 1745 | 398 | 109 | 400 |
| Guns. Firing mechanism for breech-loading | J. F. Meigs and S. A. S. Hammar | 755,514 | Mar. 22 | 4465 | 992 | 109 | 1022 |
| | | | | | 993 | | |
| Guns. Fluid-brake for recoil- | E. K. Rothe | 754,806 | Mar. 15 | 3328 | 732 | 109 | 766 |
| Guns. Hinge-pin for breakdown | O. F. Mossberg | 754,080 | Mar. 8 | 1709 | 380 | 109 | 392 |
| Guns. Single-trigger mechanism for drop-down | J. Robertson | 756,806 | Apr. 12 | 1363 | 305 | 109 | 1649 |
| | | | | | 304 | | |
| Hair-clamp | W. J. Koenig | 757,304 | Apr. 12 | 1979 | 431 | 109 | 1782 |
| Hair-crimper | J. F. Martin | 753,416 | Mar. 1 | 374 | 86 | 109 | 82 |
| Hair-dressing device | J. T. Wilcox | 754,949 | Mar. 15 | 3461 | 758 | 109 | 791 |
| Hair-drier | F. S. Emmons | 756,842 | Apr. 12 | 1253 | 279 | 109 | 1628 |
| Hair-parting device | F. H. Wood | 754,182 | Mar. 8 | 1900 | 423 | 109 | 436 |
| Hair-pin | H. Stier | 756,426 | Apr. 5 | 474 | 98 | 109 | 1443 |
| Hair-pin | L. Ousey | 756,891 | Apr. 5 | 940 | 200 | 109 | 1545 |
| Hair-waver | A. Dreés | 756,888 | Apr. 12 | 1245 | 278 | 109 | 1626 |
| Hair-waving device | J. P. Bonnet | 754,864 | Mar. 8 | 2296 | 501 | 109 | 519 |
| Hame and trace connector | O. P. Letchworth | 755,804 | Mar. 29 | 5228 | 1158 | 109 | 1212 |
| Hammer | J. A. Thomas | 757,071 | Apr. 12 | 1708 | 371 | 109 | 1721 |
| Hammer or sledge | G. Carlsen | 755,355 | Mar. 22 | 4190 | 926 | 109 | 964 |
| Hammer. Pneumatic | C. H. Shaw | 753,438 | Mar. 1 | 413 | 97 | 109 | 90 |
| Hammer. Pneumatic | E. Gunnell | 756,857 | Apr. 5 | 332 | 69 | 109 | 1415 |
| Hammer. Pneumatic hand- | A. T. F. Nehls | 755,861 | Mar. 22 | 4243 | 936 | 109 | 976 |
| Hammer. Power- | J. H. Norquist | 753,618 | Mar. 1 | 788 | 169 | 109 | 165 |
| Hammer. Power- | H. W. Hathorn | 758,861 | Apr. 26 | 4808 | 984 | 109 | 2230 |
| Hammer. Steam- | C. E. Billin | 754,656 | Mar. 15 | 2848 | 622 | 109 | 655 |
| Hammock | I. E. Palmer | 756,590 | Apr. 5 | 646 | 139 | 109 | 1478 |
| Hammock-stand. Folding | G. F. Allen | 757,498 | Apr. 19 | 2435 | 531 | 109 | 1808 |
| Hammock-support | G. B. Meinvieser | 756,672 | Apr. 5 | 914 | 200 | 109 | 1539 |
| Handle: *See* Book-handle. Brake-handle. Non-conducting handle. Saw-handle. Switch-handle. Tool-handle. Vessel-handle. | | | | | | | |
| Handle | E. F. Smith | 758,482 | Apr. 26 | 4526 | 973 | 109 | 2271 |
| Handling material. Machine for | R. B. Friend | 756,951 | Apr. 12 | 1466 | 334 | 109 | 1671 |
| Hanger: *See* Clothes-line hanger. Door-hanger. Garment-hanger. Ladder-hanger. Lamp-hanger. Picture-hanger. Pipe-hanger. Screen-hanger. Shade-hanger. Skirt-hanger. Vehicle-body hanger. | | | | | | | |
| Hanger | E. Flagler | 754,267 | Mar. 8 | 2299 | 502 | 109 | 519 |
| Hanger and track therefor | H. L. Ferris | 753,481 | Mar. 1 | 481 | 112 | 109 | 105 |
| Hanging basket and pot. Combination | F. Neidl | 754,668 | Mar. 15 | 2947 | 643 | 109 | 676 |
| Harmonica-holder | O. T. Knode | 753,713 | Mar. 1 | 960 | 217 | 109 | 207 |
| Harness | F. J. Schenk | 757,642 | Apr. 19 | 3666 | 828 | 109 | 1992 |
| Harness draft attachment | J. Cruthers | 755,459 | Mar. 22 | 4381 | 970 | 109 | 1004 |
| Harness-fastener | E. Cornitius | 757,273 | Apr. 12 | 2098 | 457 | 109 | 1806 |
| Harness-hook | B. H. Wilson | 758,194 | Apr. 26 | 3827 | 831 | 109 | 2216 |
| Harness-rack | C. H. Mustgrove | 754,488 | Mar. 15 | 2560 | 557 | 109 | 595 |
| Harness-terret | J. G. Way | 754,177 | Mar. 8 | 1892 | 422 | 109 | 434 |
| Harness-tree | R. Miller | 755,304 | Mar. 22 | 4092 | 903 | 109 | 940 |
| Harp | T. J. Hissem | 757,462 | Apr. 19 | 2505 | 550 | 109 | 1906 |
| Harrow | J. W. and C. D. Kerr | 755,130 | Mar. 22 | 3786 | 834 | 109 | 880 |
| Harrow | H. M. Love | 756,254 | Apr. 5 | 119 | 25 | 109 | 1367 |
| Harrow | H. M. Love | 756,255 | Apr. 5 | 123 | 25 | 109 | 1369 |
| Harrow. Adjustable A- | E. H. Cheever | 756,195 | Mar. 29 | 5781 | 1277 | 109 | 1328 |
| Harrow-jack | N. W. Thompson | 754,174 | Mar. 8 | 1885 | 420 | 109 | 433 |
| Harrow. Rotary | J. N. Graves | 756,651 | Mar. 29 | 4741 | 1054 | 109 | 1098 |
| Harvester | B. Holthaus | 754,996 | Mar. 15 | 3390 | 743 | 109 | 777 |
| Harvester and binder | E. M. Kellogg | 757,198 | Apr. 12 | 1883 | 401 | 109 | 1749 |
| | | | | | 402 | | |
| Harvester. Beet- | H. M. Heilig and M. H. Reed | 757,190 | Apr. 12 | 1954 | 427 | 109 | 1778 |
| Harvester. Beet- | H. M. Heilig and M. H. Reed | 757,425 | Apr. 12 | 2495 | 528 | 109 | 1875 |
| | | | | | 529 | | |
| Harvester belt-adjuster | J. O. Qualley | 755,315 | Mar. 22 | 4112 | 908 | 109 | 945 |
| Harvester butt-adjuster | J. F. Steward | 754,719 | Mar. 15 | 3096 | 661 | 109 | 695 |
| Harvester. Corn- | A. Neer | 754,491 | Mar. 15 | 2580 | 560 | 109 | 599 |
| | | | | | 561 | | |
| Harvester. Corn- | T. Boggs | 755,210 | Mar. 22 | 3916 | 866 | 109 | 905 |
| Harvester. Corn- | N. Logan and I. I. Flo | 755,375 | Mar. 22 | 4222 | 986 | 109 | 974 |
| | | | | | 987 | | |
| Harvester. Corn- | H. L. Bennett | 755,591 | Mar. 22 | 4605 | 1083 | 109 | 1054 |
| | | | | | 1084 | | |
| | | | | | 1135 | | |
| | | | | | 1136 | | |
| Harvester elevator. Grain- | G. W. Beam | 756,888 | Mar. 29 | 5131 | 1189 | 109 | 1189 |
| Harvester. Grain- | E. M. Kellogg | 757,196 | Apr. 12 | 1883 | 400 | 109 | 1745 |



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|---|---|---|---|---|---|---|---|
| Harvester. Grain-binding | R. L. Parsons | 754,009 | Mar. 8 | 1578 | 352 | 109 | 364 |
| | | | | | 353 | | |
| Harvester grain-deck | A. Reinhardt | 754,609 | Mar. 15 | 2795 | 609 | 109 | 644 |
| | | | | | 610 | | |
| Harvester-headboard | J. F. Steward | 754,718 | Mar. 15 | 3025 | 661 | 109 | 695 |
| Harvester-reel | G. J. Friend and E. L. Bolton | 758,241 | Apr. 26 | 4045 | 878 | 109 | 2263 |
| Harvester tongue-truck | E. A. Johnston | 754,568 | Mar. 15 | 2723 | 592 | 109 | 629 |
| Harvester topper and stripper. Cane- | G. D. Luce | 754,786 | Mar. 15 | 3157 | 687 | 109 | 723 |
| Harvesting-machine | E. J. Wang | 753,768 | Mar. 1 | 1057 | 242 | 109 | 227 |
| Harvesting machine. Beet- | C. C. Irving | 755,010 | Mar. 22 | 3566 | 781 | 109 | 830 |
| | | | | | 782 | | |
| Harvesting-machine divider | G. Wilson | 757,587 | Apr. 19 | 2770 | 606 | 109 | 1966 |
| Harvesting machine. Grain- | W. N. Whitely | 757,001 | Apr. 12 | 1569 | 343 | 109 | 1692 |
| | | | | | 344 | | |
| Hat | E. M. Hacker | 754,213 | Mar. 8 | 1974 | 438 | 109 | 450 |
| Hat-case | P. M. Beard | 757,250 | Apr. 12 | 2061 | 450 | 109 | 1799 |
| Hat, coat, and umbrella rack. Combined | W. R. Clark | 758,509 | Apr. 26 | 4591 | 987 | 109 | 2287 |
| Hat-fastener | H. V. Rickard | 753,314 | Mar. 1 | 181 | 41 | 109 | 42 |
| Hat-fastener | J. Kaiser | 754,316 | Mar. 8 | 2154 | 477 | 109 | 487 |
| Hat-fastener | F. S. Boedefeld | 754,916 | Mar. 15 | 3385 | 740 | 109 | 773 |
| Hat-holder | C. I. Sterling | 755,184 | Mar. 22 | 3867 | 853 | 109 | 896 |
| | | | | | 854 | | |
| Hat-napping machine | M. H. Nein | 753,804 | Mar. 1 | 1167 | 263 | 109 | 251 |
| Hat-pin | W. Wittigschlager | 758,289 | Apr. 26 | 4152 | 897 | 109 | 2286 |
| Hat pin or fastener | S. L. Troupe and M. C. Brooks | 754,519 | Mar. 15 | 2687 | 572 | 109 | 612 |
| Hat-rack | C. W. Johnson and J. K. Olaison | 756,023 | Mar. 29 | 5493 | 1212 | 109 | 1267 |
| Hat-receptacle for auditoriums | J. T. Henderson | 757,305 | Apr. 12 | 2176 | 477 | 109 | 1824 |
| Hat-shaping machine | M. A. Cuming | 755,365 | Mar. 22 | 4206 | 931 | 109 | 969 |
| Hat-trimming machine | F. C. Craw | 757,542 | Apr. 19 | 2672 | 585 | 109 | 1943 |
| | | | | | 586 | | |
| Hay and shocked-grain loader | R. Hawkins | 757,308 | Apr. 12 | 2172 | 476 | 109 | 1822 |
| Hay-loader | A. W. Bailey | 753,219 | Mar. 1 | 4 | 1, 2 | 109 | 3 |
| Hay-loader | B. F. Kadel and H. F. Rodemeyer | 757,122 | Apr. 12 | 1816 | 398 | 109 | 1744 |
| | | | | | 399 | | |
| Hay-loader | J. H. Thomas | 757,156 | Apr. 12 | 1892 | 413 | 109 | 1768 |
| Hay-loader | E. C. McConvill | 758,557 | Apr. 26 | 4678 | 1009 | 109 | 2404 |
| | | | | | 1010 | | |
| Hay-rack clamp | P. Schmitt | 757,147 | Apr. 12 | 1870 | 408 | 109 | 1758 |
| Hay-rake attachment | J. Geery | 754,990 | Mar. 22 | 3530 | 773 | 109 | 822 |
| Hay-rake. Horse | W. A. and S. S. Cavett | 753,852 | Mar. 8 | 1279 | 287 | 109 | 296 |
| Hay-rake. Horse | L. Brown | 757,258 | Apr. 12 | 2071 | 452 | 109 | 1801 |
| Hay-rake. Horse | L. Brown | 757,259 | Apr. 12 | 2073 | 453 | 109 | 1801 |
| Hay-tedder | G. L. Roby | 754,166 | Mar. 8 | 1869 | 417 | 109 | 429 |
| Hay-tedder | C. W. Warner | 757,872 | Apr. 12 | 2314 | 506 | 109 | 1852 |
| Hay-tedder fork-head | W. W. Shaw | 756,062 | Mar 29 | 5552 | 1225 | 109 | 1281 |
| Header and stacker. Combined | J. H. Kindsvater | 754,780 | Mar. 15 | 3128 | 682 | 109 | 719 |
| | | | | | 683 | | |
| Headlight. Electric | W. H. Northall | 757,564 | Apr. 19 | 2718 | 594 | 109 | 1953 |
| | | | | | 595 | | |
| Heat-regulator | J. Peterson | 755,928 | Mar. 29 | 5310 | 1172 | 109 | 1228 |
| Heat-regulator. Automatic electric | D. N. Leib | 754,465 | Mar. 15 | 2519 | 549 | 109 | 586 |
| Heat-transmitting device | W. C. Clarke | 756,329 | Apr. 5 | 272 | 56 | 109 | 1401 |
| Heater: *See* Air-heater. Electric heater. Feed-water heater. Gas-heater. Gas fireplace-heater. Rotary heater. Self-filling heater. Tank-heater. Water-heater. | | | | | | | |
| Heater | J. Silverberg | 756,721 | Apr. 5 | 1014 | 224 | 109 | 1559 |
| Heater | W. W. Woods | 756,768 | Apr. 5 | 1087 | 241 | 109 | 1575 |
| Heater and purifier | R. M. Rose | 754,014 | Mar. 8 | 1590 | 355 | 109 | 366 |
| Heating and ventilating apparatus | W. M. Ferry | 754,298 | Mar. 8 | 2118 | 469 | 109 | 480 |
| Heating apparatus | E. H. Bennett | 755,269 | Mar. 22 | 4026 | 893 | 109 | 929 |
| Heating apparatus | C. Garlick | 756,351 | Apr. 5 | 321 | 66 | 109 | 1412 |
| Heating apparatus. Air- | W. K. Seelye | 755,320 | Mar. 22 | 4119 | 910 | 109 | 947 |
| Heating buildings or dwellings. System of | L. M. Gates | 753,253 | Mar. 1 | 70 | 18 | 109 | 17 |
| Heating-cup | E. Sorrentino | 756,405 | Mar. 22 | 4284 | 946 | 109 | 985 |
| Heating device | J. A. Edwards | 754,982 | Mar. 22 | 3520 | 770 | 109 | 820 |
| Heating. Electric | W. S. Horry | 757,618 | Apr. 19 | 2839 | 619 | 109 | 1980 |
| Heating. Electric | W. S. Horry | 757,619 | Apr. 19 | 2843 | 620 | 109 | 1982 |
| Heating. Electric | W. S. Horry | 757,620 | Apr. 19 | 2846 | 620 | 109 | 1982 |
| Heating. Electric | E. F. Price | 757,633 | Apr. 19 | 2867 | 625 | 109 | 1987 |
| Heating-furnace. Hot-air | E. A. Tuttle | 757,520 | Apr. 19 | 2623 | 574 | 109 | 1932 |
| Heating system | J. M. Seymour, Jr | 755,176 | Mar. 22 | 3854 | 851 | 109 | 898 |
| Heating system. Hot-water | G. L. Rankin | 756,282 | Apr. 5 | 180 | 37 | 109 | 1382 |
| Heating system. Low-pressure | E. H. Gold | 758,496 | Apr. 26 | 4451 | 957 | 109 | 2254 |
| Heating system. Steam- | J. R. Shanklin | 753,524 | Mar. 1 | 201 | 45 | 109 | 47 |
| Heating-tank | L. J. Grubitz | 754,135 | Mar. 8 | 1820 | 405 | 109 | 418 |
| Heddle-bar fastening | W. Fehr and J. Kaufmann | 754,860 | Mar. 15 | 2995 | 718 | 109 | 754 |
| Heddle bar or support clamping device | J. C. Edwards | 753,360 | Mar. 1 | 298 | 66, 67 | 109 | 66 |
| Heel. Adjustable shoe- | A. Westwood | 754,947 | Mar. 15 | 3458 | 757 | 109 | 791 |
| Heel for boots or shoes. Detachable | F. F. Anderson | 753,532 | Mar. 1 | 609 | 136 | 109 | 133 |
| Hide-splitting machine. Raw- | C. H. Pell | 754,341 | Mar. 8 | 2193 | 488 | 109 | 496 |
| Hide working and unhairing machine | R. F. Whitney | 754,595 | Mar. 15 | 2644 | 574 | 109 | 614 |
| | | | | | 575 | | |
| High and low pressure gage. Differential | G. M. Schubert | 755,175 | Mar. 22 | 3853 | 850 | 109 | 898 |
| | | | | | 851 | | |
| High or low pressure signal-alarm | F. H. Schmitz | 755,708 | Mar. 29 | 4955 | 1079 | 109 | 1138 |
| Hinge | T. T. Boring and F. Fritchey | 755,211 | Mar. 22 | 3918 | 877 | 109 | 906 |
| Hinge | J. W. Skilton | 757,784 | Apr. 19 | 3163 | 6- | 109 | 2062 |
| Hinge. Box-couch | C. W. Gross | 758,530 | Apr. 26 | 4636 | 998 | 109 | 2305 |
| Hinge. Card-table | H. F. Kell | 753,710 | Mar. 1 | 954 | 216 | 109 | 205 |
| Hinge. Frictional locking- | P. C. Palmer | 757,492 | Apr. 19 | 2502 | 532 | 109 | 1918 |
| Hinge. Self-locking | N. J. St. Hilaire | 753,443 | Mar. 1 | 431 | 99 | 109 | 81 |
| Hinge. Separable screen- | H. B. Higgins | 754,769 | Mar. 15 | 3105 | 678 | 109 | 714 |
| Hinge. Separable screen- | H. B. Higgins | 754,770 | Mar. 15 | 3106 | 678 | 109 | 714 |

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|---|---|---|---|---|---|---|---|
| Hinge. Separable screen- | C. Rowland | 754,809 | Mar. 15 | 3189 | 695 | 109 | 731 |
| Hinge. Separable screen- | C. Rowland | 754,810 | Mar. 15 | 3191 | 695 | 109 | 731 |
| Hinge. Spring- | H. L. Ferris | 757,607 | Apr. 19 | 2903 | 612 | 109 | 1973 |
| Hip-adjuster | E. B. Neffeler | 757,140 | Apr. 12 | 1855 | 406 | 109 | 1755 |
| Hitching-post | T. J. Fox | 753,971 | Mar. 8 | 1517 | 338 | 109 | 850 |
| Hitching-post | T. C. Butterworth | 757,898 | Apr. 19 | 3336 | 732 | 109 | 2090 |
| Hitching-weight holder | G. M. Albee | 753,885 | Mar. 8 | 1945 | 380 | 109 | 289 |
| Hoe and plant fender. Adjustable | H. Lemm | 753,880 | Mar. 1 | 1225 | 277 | 109 | 265 |
| Hog-ringer | G. A. Robinson | 757,054 | Apr. 12 | 1695 | 366 | 109 | 1717 |
| Hog-trough | J. C. Davis | 755,758 | Mar. 29 | 4956 | 1102 | 109 | 1147 |
| Hoist | E. Y. Moore | 757,388 | Apr. 12 | 2244 | 489 | 109 | 1896 |
| Hoisting and carrying machine | J. Melcher | 756,872 | Apr. 12 | 1310 | 292 / 293 | 109 | 1638 |
| Hoisting and conveying apparatus | T. Long | 755,681 | Mar. 29 | 4790 | 1066 / 1067 | 109 | 1109 |
| Hoisting equipment | G. W. Bollman | 756,821 | Apr. 12 | 1309 | 270 | 109 | 1619 |
| Hoisting mechanism | H. Aumund | 754,187 | Mar. 8 | 1907 | 425 | 109 | 437 |
| Honey. Fermenting | A. V. Kouba | 754,461 | Mar. 15 | 2512 | ------ | 109 | 584 |
| Hoof and shoe expander | G. Keller | 756,997 | Apr. 12 | 1504 | 331 | 109 | 1579 |
| Hoof-pad | G. H. Clark | 753,955 | Mar. 8 | 1487 | 334 | 109 | 843 |
| Hoof-pad | E. E. Lemon | 757,473 | Apr. 19 | 2596 | 554 | 109 | 1911 |
| Hook: *See* Check-hook. Fish-hook. Garment-hook. Harness-hook. Ladder-hook. Sister-hook. Snap-hook. Suspension-hook. Trolley-hook. Whiffletree-hook. | | | | | | | |
| Hook | M. M. Howland | 757,117 | Apr. 12 | 1808 | 394 / 395 | 109 | 1742 |
| Hook and eye | C. Andresen | 755,608 | Mar. 29 | 4643 | 1081 | 109 | 1075 |
| Hook and eye | C. Andresen | 755,609 | Mar. 29 | 4643 | 1081 | 109 | 1076 |
| Hook and eye | A. G. Miller | 756,876 | Apr. 12 | 1316 | 294 | 109 | 1639 |
| Hook for supporting tenting-cloth | S. Hartman | 755,658 | Mar. 29 | 4750 | 1057 | 109 | 1100 |
| Hook-rack | J. H. Rubicam and J. F. Baxter | 754,508 | Mar. 15 | 2907 | 566 | 109 | 605 |
| Hoop: *See* Embroidery-hoop. | | | | | | | |
| Hoops upon barrels. Machine for tightening the bilge- | T. Flanery and N. Whitehill | 756,783 | Apr. 5 | 1133 | 248 / 249 | 109 | 1585 |
| Hoops upon barrels. Machine for tightening the head- | T. Flanery and N. Whitehill | 756,784 | Apr. 5 | 1135 | 249 / 250 | 109 | 1586 |
| Horse-blanket | I. J. Fogiesong | 754,394 | Mar. 8 | 2120 | 470 | 109 | 481 |
| Horse-boot | J. D. Keller | 756,792 | Apr. 5 | 1149 | 254 | 109 | 1590 |
| Horse-breaking device | J. G. Bump | 753,848 | Mar. 8 | 1271 | 285 | 109 | 294 |
| Horse-detacher | J. Pearson | 753,910 | Mar. 8 | 1391 | 314 | 109 | 321 |
| Horse-power. Baling-press | J. M. and E. Valentine | 756,084 | Mar. 29 | 5598 | 1236 | 109 | 1290 |
| Horse-rake | J. H. Randolph | 754,499 | Mar. 15 | 2601 | 565 | 109 | 604 |
| Horseshoe | O. Schramm | 753,686 | Mar. 1 | 797 | 178 | 109 | 174 |
| Horseshoe | J. F. Clark | 753,668 | Mar. 1 | 868 | 196 | 109 | 188 |
| Horseshoe | J. A. Martin | 754,789 | Mar. 15 | 3158 | 697 | 109 | 724 |
| Horseshoe | J. Fisher and A. Corrodi | 757,445 | Apr. 19 | 2467 | 539 | 109 | 1900 |
| Horseshoe | J. Groenning | 758,358 | Apr. 26 | 4296 | 923 | 109 | 2319 |
| Horseshoe-calks. Machine for making | J. H. Vinton | 758,607 | Apr. 26 | 4787 | 1080 / 1081 | 109 | 9429 |
| Horseshoe-creeper | W. J. Stewart | 754,022 | Mar. 8 | 1607 | 358 | 109 | 370 |
| Horseshoe. Elastic-tread | H. E. Irwin | 755,779 | Mar. 29 | 5017 | 1115 | 109 | 1160 |
| Horseshoes. Making | J. Crowley | 757,375 | Apr. 12 | 2108 | 459 | 109 | 1807 |
| Horticultural implement | E. Haines | 757,739 | Apr. 19 | 3074 | 669 | 109 | 2081 |
| Hose | R. B. Calcutt | 753,250 | Mar. 1 | 25 | 6 | 109 | 8 |
| Hose | F. B. Bosch | 757,877 | Apr. 19 | 3328 | 721 | 109 | 2088 |
| Hose connection | F. H. Paradice | 758,099 | Apr. 26 | 3779 | 821 | 109 | 2305 |
| Hose-coupling | G. Soutar | 755,225 | Mar. 22 | 4130 | 913 | 109 | 949 |
| Hose-coupling | F. W. Killen | 757,752 | Apr. 19 | 3095 | 674 | 109 | 2086 |
| Hose-coupling | G. Stroh | 758,155 | Apr. 26 | 3980 | 842 | 109 | 2229 |
| Hose-drier | H. J. Schools | 756,717 | Apr. 5 | 1008 | 228 | 109 | 1557 |
| Hose-drier | C. M. Bowman | 758,168 | Apr. 26 | 3900 | 846 / 847 | 109 | 2233 |
| Hose-lining | W. E. Reid and W. H. Lau | 756,140 | Mar. 29 | 5701 | 1258 | 109 | 1312 |
| Hose-mender | F. A. Garbutt | 756,350 | Apr. 5 | 318 | 66 | 109 | 1411 |
| Hose-nozzle | C. L. Sankey | 753,634 | Mar. 1 | 792 | 177 | 109 | 173 |
| Hose-nozzle | G. A. Anderson | 755,601 | Mar. 29 | 4639 | 1081 | 109 | 1075 |
| Hose-nozzle holder | C. F. Brown | 755,995 | Mar. 29 | 5433 | 1201 | 109 | 1255 |
| Hose, rod, or pipe coupling | A. W. Huhsman | 757,989 | Apr. 19 | 3426 | 742 | 109 | 2110 |
| Hose-supporter | W. E. Rink | 754,347 | Mar. 8 | 2202 | 490 | 109 | 498 |
| Hose-supporter | E. C. Tooker | 755,188 | Mar. 22 | 3873 | 855 | 109 | 897 |
| Hose-supporter | A. M. Wilson | 755,979 | Mar. 29 | 5407 | 1195 | 109 | 1249 |
| Hot-air furnace | W. W. Bryan | 757,174 | Apr. 12 | 1928 | 421 / 422 | 109 | 1771 |
| Hot-air furnace | E. A. Tuttle | 757,521 | Apr. 19 | 2696 | 575 | 109 | 1983 |
| Hot-air register | J. Finnegan | 755,476 | Mar. 29 | 4407 | 976 | 109 | 1009 |
| Hot-blast air-feeding center tube | R. A. Culter | 758,237 | Apr. 26 | 4041 | 877 | 109 | 2262 |
| Hot-water furnace | S. Tache | 756,909 | Apr. 12 | 1368 | 308 | 109 | 1654 |
| House: *See* Apartment-house. Greenhouse. Dry-house. | | | | | | | |
| Household-tool | H. H. Tyrrell | 757,981 | Apr. 19 | 3323 | 764 | 109 | 2131 |
| Hub casing. Vehicle- | G. A. McKeel | 756,044 | Mar. 29 | 5524 | 1218 | 109 | 1274 |
| Hub guard. Wheel- | J. B. Howard | 753,364 | Mar. 1 | 96 | 25 | 109 | 94 |
| Hub. Metal-covered vehicle- | G. A. McKeel | 754,490 | Mar. 15 | 2579 | 560 | 109 | 599 |
| Hub. Vehicle- | E. Sendelbach. (Reissue) | 12,208 | Mar. 8 | 2388 | 521 / 522 | 109 | 586 |
| Hub. Vehicle-wheel | O. E. Johnston | 756,508 | Apr. 5 | 616 | 134 | 109 | 1472 |
| Huller: *See* Bean-huller. | | | | | | | |
| Hydraulic apparatus | W. Astfalck | 754,113 | Mar. 8 | 1788 | 396 / 397 / 398 | 109 | 409 |
| Hydraulic jack | F. H. Stillman | 757,512 | Apr. 19 | 2607 | 572 | 109 | 1980 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Hydraulic machine and valve therefor | W. H. Derbyshire | 756,595 | Apr. 5 | 770 | 167 / 168 | 109 | 1505 |
| Hydraulic main | E. N. Trump | 754,104 | Mar. 8 | 1767 | 398 | 109 | 405 |
| Hydraulic pressure-testing apparatus | A. N. Johnson | 756,644 | Apr. 5 | 847 | 184 | 109 | 1522 |
| Hydrocarbon-burner | L. E. Coleman | 753,825 | Mar. 1 | 1226 | 276 | 109 | 262 |
| Hydrocarbon-burner | W. H. Thornley | 754,108 | Mar. 8 | 1764 | 392 | 109 | 404 |
| Hydrocarbon-burner | G. W. Arper | 754,112 | Mar. 8 | 1781 | 395 | 109 | 409 |
| Hydrocarbon-burner | A. J. Smithson | 755,717 | Mar. 29 | 4873 | 1083 / 1084 | 109 | 1130 |
| Hydrocarbon-burner | C. H. Barton, H. E. Henrichsen, J. S. Cousins, and C. L. Matthews. | 756,317 | Apr. 5 | 246 | 51 | 109 | 1396 |
| Hydrocarbon-burner | J. Graham | 756,493 | Apr. 5 | 602 | 130 | 109 | 1469 |
| Hydrocarbon-burner | B. A. Moody | 756,796 | Apr. 5 | 1160 | 257 | 109 | 1592 |
| Hydrocarbon-burner | W. D. Tucker | 756,914 | Apr. 12 | 1396 | 310 | 109 | 1656 |
| Hydrocarbon-burner | T. H. Delaney | 757,027 | Apr. 12 | 1628 | 354 | 109 | 1704 |
| Hydrocarbon-lighting apparatus | F. E. Mavrogordato | 758,087 | Apr. 26 | 3752 | 816 | 109 | 2196 |
| Hydrocarbon. Sulfo-iodin compound of | F. T. F. Stephenson | 755,808 | Mar. 29 | 5066 | ------ | 109 | 1171 |
| Hydrocarbon-vapor engine | W. W. Tuck and A. Wassmann | 753,331 | Mar. 1 | 210 | 47, 48 | 109 | 48 |
| Hydrometer and syringe. Combined | R. Van Benthuysen | 756,546 | Apr. 5 | 691 | 149 | 109 | 1488 |
| Hydrometer-guard | A. B. Porter | 756,708 | Apr. 5 | 965 | 213 | 109 | 1550 |
| Ice-cream cabinet. Brick- | W. E. Brown | 756,094 | Mar. 29 | 5618 | 1239 | 109 | 1294 |
| Ice-cream cutter or scraper | W. C. Betts | 753,843 | Mar. 8 | 1265 | 283 | 109 | 293 |
| Ice-cream freezer | J. P. Perkins | 753,622 | Mar. 1 | 768 | 171 | 109 | 166 |
| Ice-cream freezer | J. W. Carrier | 755,216 | Mar. 22 | 3926 | 869 | 109 | 908 |
| Ice-cream freezer | J. Prade | 756,704 | Apr. 5 | 968 | 213 | 109 | 1550 |
| Ice-creeper | C. F. Recknagel | 754,500 | Mar. 15 | 2603 | 566 | 109 | 604 |
| Ice-cutting machine | H. Reinhold | 753,519 | Mar. 1 | 575 | 131 | 109 | 125 |
| Ice-machine gas-compressor | S. S. Rose | 756,529 | Apr. 5 | 661 | 142 | 109 | 1482 |
| Ice-table | J. Kanalz | 754,144 | Mar. 8 | 1853 | 408 | 109 | 421 |
| Ice-tank | J. I. Hopkins | 754,772 | Mar. 15 | 3109 | 679 | 109 | 714 |
| Igniter mechanism. Sparking- | C. C. and E. A. Riotte | 758,217 | Apr. 26 | 3995 | 868 | 109 | 2253 |
| Illuminated indicator | E. Kaye | 756,860 | Apr. 12 | 1286 | 287 | 109 | 1634 |
| Illuminating structure | F. L. O. Wadsworth | 755,196 | Mar. 22 | 3896 | 860 | 109 | 901 |
| Illuminating structure | F. L. O. Wadsworth | 755,197 | Mar. 22 | 3898 | 860 | 109 | 902 |
| Implement. Combination | B. F. Schubert | 758,282 | Apr. 26 | 4138 | 894 | 109 | 2283 |
| Incandescent light. Retort | O. A. Mygatt | 755,687 | Mar. 29 | 4801 | 1069 | 109 | 1112 |
| Incandescent mantles or illuminating-bodies. Manufacture of threads for | A. M. Plaissetty | 756,898 | Apr. 12 | 1342 | 298 | 109 | 1645 |
| Incubator | F. E. Dolph and S. R. Knapp | 755,639 | Mar. 29 | 4717 | 1048 / 1049 | 109 | 1092 |
| Incubator | E. W. Philo | 756,277 | Apr. 5 | 168 | 34 | 109 | 1379 |
| Incubator and brooder | E. T. Tolhurst and W. Wilson | 756,990 | Apr. 12 | 1546 | 340 | 109 | 1685 |
| Independently-rotating wheel | J. J. Weller | 756,096 | Mar. 29 | 5604 | 1237 | 109 | 1291 |
| Index | B. G. Chappee | 753,546 | Mar. 1 | 634 | 143 | 109 | 139 |
| Index | H. M. Rudasill | 758,477 | Apr. 26 | 4518 | 970 | 109 | 2369 |
| Index. Code- | C. G. Burke | 756,209 | Apr. 5 | 26 | 6 | 109 | 1348 |
| Index. Code- | C. G. Burke | 756,468 | Apr. 5 | 557 | 116 | 109 | 1461 |
| Index. Ledger- | G. C. Shepherd | 757,510 | Apr. 19 | 2601 | 570 | 109 | 1928 |
| Indexing-card holder | H. Scudder | 757,686 | Apr. 19 | 2969 | 646 | 109 | 2009 |
| Indicator: *See* Cash-indicator. Clock winding-indicator. Illuminated indicator. Laundry-tub water-indicator. Maximum-demand indicator. Pressure-indicator. Speed-indicator. Station-indicator. Street, station, program, or advertising indicator. | | | | | | | |
| Indicator | J. A. Kellogg and J. D. Brady | 753,798 | Mar. 1 | 1156 | 261 | 109 | 248 |
| Indoxyl and derivatives. Making | R. Knietsch, P. Seidel, and G. W. Meiser. | 756,171 | Mar. 29 | 5747 | ------ | 109 | 1322 |
| Induction-coil | R. Miller, Jr | 754,666 | Mar. 15 | 2914 | 636 | 109 | 668 |
| Induction-coil | R. Varley | 757,522 | Apr. 19 | 2630 | 576 | 109 | 1933 |
| Induction-coil | R. Varley | 757,524 | Apr. 19 | 2632 | 577 | 109 | 1934 |
| Induction-coil | R. Varley | 757,525 | Apr. 19 | 2634 | 577 | 109 | 1934 |
| Induction-coil vibrator | R. Varley | 757,527 | Apr. 19 | 2638 | 578 | 109 | 1935 |
| Induction-motor | P. G. Watmough, Jr | 755,819 | Mar. 29 | 5083 | 1129 | 109 | 1175 |
| Ingot. Compound metal | R. Rowley | 758,387 | Apr. 26 | 4348 | 933 | 109 | 2330 |
| Ingot-crane | C. L. Taylor | 754,910 | Mar. 15 | 3374 | 737 / 738 | 109 | 771 |
| Ingot-mold | C. A. Leibman | 757,908 | Apr. 12 | 1964 | 432 | 109 | 1783 |
| Ingot-perfecting apparatus | R. W. Hunt | 755,496 | Mar. 22 | 4436 | 965 | 109 | 1016 |
| Ingot-perfecting machine | R. W. Hunt | 755,368 | Mar. 22 | 4214 | 933 | 109 | 970 |
| Inhaler | S. O. Goldan | 756,254 | Apr. 5 | 328 | 68 | 109 | 1414 |
| Inhaler. Anesthetic-vapor | G. L. Bennett | 757,018 | Apr. 12 | 1601 | 348 | 109 | 1696 |
| Injector. Steam-boiler | T. J. Sweeny | 757,849 | Apr. 19 | 3277 | 709 | 109 | 2076 |
| Ink-distributer | M. E. Mott | 754,232 | Mar. 8 | 2179 | 483 | 109 | 498 |
| Ink-well | F. C. Luethy | 755,023 | Mar. 22 | 3588 | 788 | 109 | 835 |
| Inkstand | C. Keller | 758,257 | Apr. 26 | 4064 | 863 / 864 | 109 | 2272 |
| Inkstand | G. A. Griggs | 758,439 | Apr. 26 | 4450 | 959 | 109 | 2356 |
| Inkstand. Automatic | A. C. Burnham | 754,967 | Mar. 22 | 3493 | 764 | 109 | 815 |
| Insect-catcher | J. Samuels | 756,415 | Apr. 5 | 454 | 94 | 109 | 1439 |
| Insect-destroyer | N. Smith | 753,998 | Mar. 8 | 1430 | 328 | 109 | 330 |
| Insect-trap | J. Lump and M. F. Diffenderfer | 753,895 | Mar. 8 | 1360 | 306 | 109 | 313 |
| Insects on plants. Device for exterminating | T. H. Cottle | 755,363 | Mar. 22 | 4202 | 930 | 109 | 966 |
| Instruction-sheet | O. C. De Selms | 756,826 | Apr. 12 | 1243 | 277 | 109 | 1635 |
| Insulated pipe-joint | W. A. Learned | 753,595 | Mar. 1 | 720 | 163 | 109 | 166 |
| Insulating and suspending device | J. Sachs | 757,418 | Apr. 12 | 2412 | 536 | 109 | 1872 |
| Insulating-material-saturating machine | G. M. Gest | 758,132 | Apr. 26 | 3844 | 884 | 109 | 2230 |
| Insulation | E. E. Bechtold | 758,165 | Apr. 26 | 3894 | 846 | 109 | 2232 |
| Insulation of the coils of electromagnets. Apparatus for testing the | J. Livesey | 756,655 | Apr. 5 | 905 | 197 | 109 | 1536 |
| Insulator | W. S. Kinsley and S. S. Bell | 756,026 | Mar. 29 | 5498 | 1213 | 109 | 1268 |
| Insulator | L. McCarthy | 756,181 | Mar. 29 | 5702 | 1272 | 109 | 1285 |
| Insulator | J. A. Hanson and A. F. Lambert | 756,627 | Apr. 5 | 883 | 177 | 109 | 1517 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Insulator | J. C. Snodgrass | 756,724 | Apr. 5 | 1018 | 226 | 109 | 1559 |
| Insulator | J. W. Osborne | 757,765 | Apr. 19 | 3115 | 679 | 109 | 2040 |
| Insulator | S. C. Cutter | 758,175 | Apr. 26 | 3980 | 851 | 109 | 2237 |
| Insulator-pin | J. H. Bullard | 754,123 | Mar. 8 | 1797 | 400 | 109 | 413 |
| Insulator supporting-pin. Line- | J. D. Hilliard, Jr | 758,179 | Apr. 26 | 3928 | 853 | 109 | 2239 |
| Interest-table | P. E. Johannsen | 753,887 | Mar. 8 | 1343 | 302, 308 | 109 | 310 |
| Internal-combustion engine for cycles | H. Lepape | 754,929 | Mar. 15 | 3405 | 745 | 109 | 778 |
| Intestine wringer. Beef- | H. C. Ziprick | 754,630 | Mar. 15 | 2839 | 620 | 109 | 653 |
| Iron: *See* Pressing-iron. Soldering-iron. Sad-iron. | | | | | | | |
| Iron. Apparatus for the manufacture of sheet- | W. Clasper | 756,474 | Apr. 5 | 571 | 119 | 109 | 1463 |
| Iron into malleable iron or steel. Converting crude | J. J. Deemer | 757,276 | Apr. 12 | 2105 | 459 | 109 | 1807 |
| Iron. Manufacture of sheet- | W. Clasper | 756,473 | Apr. 5 | 568 | 118 | 109 | 1463 |
| Iron or steel. Cleansing and improving the quality of | F. C. Weber | 754,262 | Mar. 8 | 2055 | ..... | 109 | 468 |
| Iron pyrites for desulfurization. Preparing | U. Wedge | 757,531 | Apr. 19 | 2646 | ..... | 109 | 1987 |
| Iron pyrites from zinc-blende. Separating | K. Danziger | 754,643 | Mar. 15 | 2871 | ..... | 109 | 659 |
| Iron. Tempering or hardening cast- | W. Gilmour and A. Lindsay | 755,763 | Mar. 29 | 4068 | 1110 | 109 | 1153 |
| Ironing-board | S. L. Boyd | 756,108 | Mar. 22 | 3721 | 818 | 109 | 866 |
| Ironing-board attachment | F. K. Small | 755,065 | Mar. 22 | 3661 | 804 | 109 | 852 |
| Ironing-machine | R. D'Angelo | 755,752 | Mar. 29 | 4955 | 1102 | 109 | 1147 |
| Ironing-table | W. O. Schellhamer | 754,808 | Mar. 15 | 3356 | 733 | 109 | 767 |
| Jack: *See* Harrow-jack. Pumping-jack. Hydraulic jack. Screw-jack. Lifting-jack. | | | | | | | |
| Jackets of double-walled vessels. Fastening for | M. Missner | 755,664 | Mar. 29 | 4795 | 1068 | 109 | 1110 |
| Jacquard | W. A. Pardoe | 757,342 | Apr. 12 | 2260 | 498 | 109 | 1840 |
| Jacquard-machine | W. Cochran | 753,547 | Mar. 1 | 635 | 144 | 109 | 139 |
| Jar: *See* Glass jar. Preserve-jar. | | | | | | | |
| Jar and closure therefor | F. H. Gibson | 754,060 | Mar. 8 | 1677 | 372 | 109 | 386 |
| Jar-closure | F. E. Dopheide | 754,977 | Mar. 22 | 3509 | 769 | 109 | 818 |
| Jar-closure | G. T. Reed | 756,283 | Apr. 5 | 181 | 37 | 109 | 1383 |
| Jar-closure | W. B. Fenn | 758,515 | Apr. 26 | 4601 | 990 | 109 | 2389 |
| Jar-fastener | S. A. Roden | 757,683 | Apr. 19 | 2964 | 645 | 109 | 2008 |
| Jar-stoppers. Means for removing | M. J. Babbitt | 755,906 | Mar. 22 | 3914 | 865 | 109 | 905 |
| Jar wrench. Fruit- | W. A. Twining | 755,081 | Mar. 22 | 3690 | 810 | 109 | 859 |
| Jewel-setting | L. Guild | 755,654 | Mar. 29 | 4744 | 1054 | 109 | 1099 |
| Jewel-setting device. Pallet- | D. F. Staley | 755,070 | Mar. 22 | 3670 | 806 | 109 | 854 |
| Jewelry-clasp | C. E. Hansen | 753,486 | Mar. 1 | 498 | 115 | 109 | 108 |
| Jewelry-mounting | A. A. Boismaure | 758,167 | Apr. 26 | 3899 | 846 | 109 | 2233 |
| Jig-tank | G. T. Cooley | 755,749 | Mar. 29 | 4943 | 1100 | 109 | 1145 |
| Joint: *See* Belt-joint. Pipe-joint. Boiler-tube joint. Rail-joint. Drilling-tool joint. Railway-joint. Flexible joint. Railway-rail joint. Flooring end joint. Telescopic joint. Ground joint. Universal joint. Insulated pipe-joint. Wire-joint. Packed joint. | | | | | | | |
| Joists, girders, &c. Construction of | J. D. Carey | 756,471 | Apr. 5 | 565 | 117 | 109 | 1462 |
| Journal | W. P. Deppe | 753,942 | Mar. 1 | 50 | 13 | 109 | 14 |
| Journal-box | J. W. Stephenson | 754,170 | Mar. 8 | 1880 | 419 | 109 | 431 |
| Journal-box | I. E. Rogers and G. A. Fry | 757,145 | Apr. 12 | 1866 | 407 | 109 | 1757 |
| Journal-box-lid-locking device | L. R. Dewey | 753,682 | Mar. 1 | 804 | 208 | 109 | 194 |
| Kaleidoscope. Illuminated | T. R. Johnson | 754,143 | Mar. 8 | 1830 | 407, 408 | 109 | 421 |
| Kettle. Cement-plaster | C. H. Malone | 756,669 | Apr. 5 | 910 | 196 | 109 | 1538 |
| Kettles, &c. Attachment for jacket- | F. M. Kimball | 754,779 | Mar. 15 | 3126 | 681 | 109 | 718 |
| Key: *See* Adjustable key. | | | | | | | |
| Key | J. P. Clark | 756,585 | Apr. 5 | 759 | 165 | 109 | 1503 |
| Key-can | T. F. Whitmarsh | 758,287 | Apr. 26 | 4146 | 896 | 109 | 2295 |
| Key-holder | C. T. Sherman | 756,064 | Mar. 29 | 5557 | 1226 | 109 | 1282 |
| Keyhole-guard | D. D. Dorney | 756,115 | Mar. 22 | 3742 | 822 | 109 | 870 |
| Kiln: *See* Drying and calcining kiln. Pottery-kiln. Rotary kiln. | | | | | | | |
| Kiln | T. Hampton | 755,655 | Mar. 29 | 4745 | 1055, 1056, 1057 | 109 | 1099 |
| Kiln-door | H. H. Hackerd | 754,589 | Mar. 15 | 2706 | 589 | 109 | 626 |
| Kneading device | A. A. Stuart | 754,096 | Mar. 8 | 1614 | 359 | 109 | 372 |
| Knife: *See* Draw-knife. Surgical knife. Pocket or other knife. | | | | | | | |
| Knife or fork cleaner | E. F. McDonough | 753,609 | Mar. 1 | 747 | 167 | 109 | 162 |
| Knit fabrics. Mechanism for transversely severing webs of | F. G. Shelain | 753,812 | Mar. 1 | 1198 | 266, 269 | 109 | 257 |
| Knitting-machine | B. T. Steber | 753,645 | Mar. 1 | 810 | 181, 182 | 109 | 177 |
| Knitting-machine | I. W. Lamb | 753,715 | Mar. 1 | 961 | 218 | 109 | 207 |
| Knitting-machine needle | C. R. Woodward | 757,378 | Apr. 12 | 2333 | 509 | 109 | 1854 |
| Knitting-machine needle | S. Woodward | 757,708 | Apr. 19 | 3008 | 652 | 109 | 2017 |
| Knitting-machine pattern-switch | E. A. Hirner | 753,960 | Mar. 1 | 87 | 22 | 109 | 22 |
| Knitting machine. Straight- | H. A. Houseman | 755,135 | Mar. 22 | 3770 | 830, 831, 832 | 109 | 877 |
| Knitting-machine thread-presenting mechanism | C. H. Whitcher | 755,975 | Mar. 29 | 5309 | 1197, 1198 | 109 | 1248 |
| Knockdown box | H. A. Doten | 756,338 | Apr. 5 | 291 | 60 | 109 | 1406 |
| Knockdown box or crate | J. F. Reul | 758,105 | Apr. 26 | 3788 | 823 | 109 | 2207 |



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|---|---|---|---|---|---|---|---|
| Knockdown gate | C. G. Hunter | 758,181 | Apr. 26 | 3981 | 853 | 109 | 2239 |
| Knot-tying implement | H. D. Colman | 755,110 | Mar. 22 | 3731 | 820, 821 | 109 | 868 |
| Knuckle-duster and revolver. Combined | E. Novák | 756,162 | Mar. 29 | 5763 | 1272 | 109 | 1325 |
| Label | J. A. Dawson | 753,371 | Mar. 1 | 277 | 63 | 109 | 63 |
| Label-affixing machine | P. F. Cassidy and N. F. Doherty | 756,580 | Apr. 5 | 749 | 163 | 109 | 1501 |
| Labeling-machine | D. W. Kneisly | 754,460 | Mar. 15 | 2507 | 546, 547 | 109 | 583 |
| Lace-fastener | F. E. Stoke | 757,977 | Apr. 19 | 3515 | 762 | 109 | 2130 |
| Lace-fastener | C. O. Johnson | 758,366 | Apr. 26 | 4315 | 926 | 109 | 2323 |
| Lace fastener. Shoe- | C. F. Miers | 755,080 | Mar. 22 | 3599 | 790 | 109 | 888 |
| Lace fastener. Shoe- | C. A. Conger | 756,940 | Apr. 12 | 1443 | 320 | 109 | 1666 |
| Lace holder. Shoe- | N. Comp | 754,851 | Mar. 15 | 2284 | 715 | 109 | 752 |
| Lace or shoestring holder. Shoe- | B. E. R. Thomson | 754,517 | Mar. 15 | 2636 | 572 | 109 | 612 |
| Lacing device | E. T. Dixon, Sr | 758,001 | Apr. 19 | 3560 | 771 | 109 | 2139 |
| Lacing-loop | G. W. Prentice | 757,678 | Apr. 19 | 2957 | 643 | 109 | 2007 |
| Lacing-loop | G. W. Prentice | 757,679 | Apr. 19 | 2958 | 643 | 109 | 2007 |
| Lacing-string fastener | D. C. Nowels | 756,690 | Apr. 5 | 948 | 209 | 109 | 1545 |
| Ladder and scaffold support | T. Copeman | 754,427 | Mar. 15 | 2441 | 532 | 109 | 568 |
| Ladder-hanger | S. C. Johnson | 754,776 | Mar. 15 | 3117 | 680 | 109 | 716 |
| Ladder hook and holder. Extension- | J. S. Tripp | 755,190 | Mar. 22 | 3879 | 856 | 109 | 898 |
| Ladder raising or lowering machine | E. F. Dahill and J. R. Goddard | 754,282 | Mar. 8 | 2091 | 464 | 109 | 474 |
| Ladder. Step- | P. Herder, Jr | 757,616 | Apr. 19 | 2935 | 619 | 109 | 1979 |
| Ladder. Store-service | G. Lane | 755,499 | Mar. 22 | 4441 | 966, 967 | 109 | 1017 |
| Ladders, &c. Suction and friction foot for | P. Shanahan | 755,713 | Mar. 29 | 4862 | 1061 | 109 | 1128 |
| Ladle | J. M. Nyce | 753,728 | Mar. 1 | 986 | 223 | 109 | 213 |
| Ladle and mold | S. O. Richardson, Jr | 757,412 | Apr. 12 | 2401 | 522 | 109 | 1869 |
| Lamp | J. L. Creveling | 754,428 | Mar. 15 | 2442 | 533 | 109 | 568 |
| Lamp | L. Montel | 755,685 | Mar. 29 | 4796 | 1068 | 109 | 1110 |
| Lamp | J. P. Nagel | 756,977 | Apr. 12 | 1524 | 335 | 109 | 1681 |
| Lamp-adjusting means | W. G. Morse | 755,914 | Mar. 29 | 5285 | 1167 | 109 | 1223 |
| Lamp and socket. Electric | A. N. Soden | 755,954 | Mar. 29 | 5370 | 1185 | 109 | 1242 |
| Lamp and target. Combined switch | G. L. Mansfield | 755,785 | Mar. 29 | 5027 | 1117 | 109 | 1162 |
| Lamp-burner | H. L. Bowlin | 753,352 | Mar. 1 | 946 | 55 | 109 | 55 |
| Lamp-burner attachment | E. Krebs | 753,405 | Mar. 1 | 340 | 77 | 109 | 76 |
| Lamp burner. Coal-oil- | H. J. Pawling | 757,674 | Apr. 19 | 2945 | 639 | 109 | 2004 |
| Lamp-chimney | R. L. Valleen | 756,994 | Apr. 12 | 1558 | 342 | 109 | 1689 |
| Lamp. Coke-drawer's | J. S. Snyder | 753,748 | Mar. 1 | 1022 | 232 | 109 | 220 |
| Lamp coupling. Incandescent-electric hanging or suspension | C. M. Pitel | 756,050 | Mar. 29 | 5532 | 1219 | 109 | 1276 |
| Lamp. Electric | C. P. Steinmetz | 754,251 | Mar. 8 | 2038 | 454 | 109 | 464 |
| Lamp. Electric-arc | E. Thomson | 755,815 | Mar. 29 | 5077 | 1127 | 109 | 1174 |
| Lamp. Electric-arc | A. Blondel | 756,460 | Apr. 5 | 541 | 113, 114 | 109 | 1458 |
| Lamp. Electric-arc | J. J. Wood | 757,079 | Apr. 12 | 1720 | 373, 374 | 109 | 1724 |
| Lamp. Electric-arc | R. Hopfelt | 757,650 | Apr. 19 | 2914 | 633 | 109 | 1998 |
| Lamp. Electric-arc | F. Sindingchristensen | 757,847 | Apr. 19 | 3274 | 709 | 109 | 2075 |
| Lamp. Electric-arc | I. W. Percival | 757,958 | Apr. 19 | 3478 | 753 | 109 | 2122 |
| Lamp. Electric pocket- | A. E. Post | 754,694 | Mar. 15 | 2976 | 648 | 109 | 663 |
| Lamp. Electric tube- | D. M. Moore | 755,307 | Mar. 22 | 4089 | 904 | 109 | 941 |
| Lamp extension-fixture. Incandescent-electric | C. M. Pitel | 754,235 | Mar. 8 | 2010 | 447 | 109 | 459 |
| Lamp filaments to leading-in wires. Device for securing incandescent- | A. W. W. Miller and G. P. McDonnell | 758,328 | Apr. 26 | 4244 | 912 | 109 | 2306 |
| Lamp flame-regulator | F. A. Cortis | 758,299 | Apr. 26 | 4186 | 901 | 109 | 2296 |
| Lamp for canes, umbrella-sticks, &c | J. W. Allen | 754,631 | Mar. 15 | 2840 | 620 | 109 | 653 |
| Lamp. Gas- | A. E. Lovett | 758,261 | Apr. 26 | 4090 | 885 | 109 | 2273 |
| Lamp-globe | R. M. Dixon | 755,283 | Mar. 22 | 4048 | 897 | 109 | 933 |
| Lamp globe-holder. Arc- | S. E. Doane | 755,855 | Mar. 29 | 5169 | 1144 | 109 | 1197 |
| Lamp guard. Electric- | J. Kaufman | 757,314 | Apr. 12 | 2209 | 483 | 109 | 1830 |
| Lamp hanger. Arc- | H. R. Sargent | 755,797 | Mar. 29 | 5050 | 1121, 1122 | 109 | 1168 |
| Lamp-hanger. Extension | J. Bystrom | 753,850 | Mar. 8 | 1275 | 286 | 109 | 295 |
| Lamp-hanger. Extension | J. Bystrom | 753,851 | Mar. 8 | 1277 | 286 | 109 | 295 |
| Lamp. Incandescent electric | H. M. Taylor | 753,985 | Mar. 8 | 1449 | 325 | 109 | 334 |
| Lamp. Inverted incandescent gas- | T. B. Smith | 754,354 | Mar. 8 | 2212 | 494 | 109 | 500 |
| Lamp. Miner's | J. Anton | 756,151 | Mar. 29 | 5714 | 1261 | 109 | 1315 |
| Lamp. Miner's | J. A. Hadley and E. B. Putnam | 757,189 | Apr. 12 | 1953 | 427 | 109 | 1777 |
| Lamp. Safety oil- | A. E. Holdaway | 757,040 | Apr. 12 | 1667 | 361 | 109 | 1713 |
| Lamp-socket | D. A. Schutt | 753,321 | Mar. 1 | 197 | 44 | 109 | 46 |
| Lamp socket and plug | D. A. Kimbark | 753,276 | Mar. 1 | 113 | 28 | 109 | 28 |
| Lamp socket. Electric-incandescent- | G. H. Proctor and J. B. Daley | 755,697 | Mar. 29 | 4885 | 1075 | 109 | 1122 |
| Lamp. Street- | W. J. Fryer | 754,989 | Mar. 22 | 3529 | 772 | 109 | 822 |
| Lamp support for convertible signal-lanterns. Electric- | L. H. W. Kerber | 756,117 | Mar. 29 | 5066 | 1250 | 109 | 1304 |
| Lamp support. Incandescent-electric- | A. Romain and J. D'Aygnesvives | 756,412 | Apr. 5 | 448 | 92, 93 | 109 | 1438 |
| Lamp-suspender | A. S. Moore | 756,268 | Apr. 5 | 140 | 28 | 109 | 1373 |
| Lamp switch. Incandescent-electric- | C. M. Pitel | 756,049 | Mar. 29 | 5530 | 1219 | 109 | 1276 |
| Lamp-terminal | H. I. Wood and R. C. Robinson | 757,007 | Apr. 12 | 1581 | 346 | 109 | 1694 |
| Lamp. Vapor- | E. Seitz | 757,780 | Apr. 19 | 3157 | 686 | 109 | 2051 |
| Lamps and burners. Flexible drop-light tubing for gas | W. S. Edwards | 758,054 | Apr. 26 | 3988 | 801 | 109 | 2187 |
| Lamps. Portable testing and comparing instrument for electric incandescent | A. McCandlish | 756,976 | Apr. 12 | 1522 | 334 | 109 | 1681 |
| Lampblack-making machine | J. H. Mann | 754,471 | Mar. 15 | 2536 | 553 | 109 | 590 |
| Land-clearing machine | W. M. Seymour | 758,480 | Apr. 26 | 4523 | 972 | 109 | 2370 |
| Land-roller | R. V. Wallace | 757,583 | Apr. 19 | 2753 | 604 | 109 | 1965 |
| Lantern. Signal- | F. W. Dressel | 757,188 | Apr. 12 | 1941 | 424 | 109 | 1774 |
| Lapidist's facet-cutting instrument | F. A. Marcher | 753,992 | Mar. 8 | 1546 | 345, 346 | 109 | 357 |
| Larding or salting device | R. R. Reynolds | 754,501 | Mar. 15 | 2804 | 566 | 109 | 605 |
| Last | A. G. Fitz | 755,288 | Mar. 22 | 4052 | 899 | 109 | 934 |
| Last | L. Weston | 755,820 | Mar. 29 | 5085 | 1129 | 109 | 1176 |
| Last | C. Mack | 756,667 | Apr. 5 | 908 | 198 | 109 | 1537 |
| Last. Divided | E. S. Beach | 755,550 | Mar. 22 | 4545 | 1011 | 109 | 1040 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr's. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Last-support | E. O. Kreutler | 754,405 | Mar. 8 | 2984 | 880 | 109 | 537 |
| Lasting-jack | C. F. Pym | 755,544 | Mar. 22 | 4320 | 1006 | 109 | 1084 |
| Lasting uppers | N. G. Shaw | 755,583 | Mar. 22 | 4586 | 1021 | 109 | 1050 |
| Latch | H. F. Kell | 754,319 | Mar. 8 | 2156 | 478 | 109 | 488 |
| Latch | D. W. Tower | 754,721 | Mar. 15 | 3088 | 962 | 109 | 697 |
| Latch | T. O'Shaughnessy | 755,923 | Mar. 29 | 5308 | 1171 | 109 | 1227 |
| Latch | O. F. Immell | 757,464 | Apr. 19 | 2510 | 551 | 109 | 1907 |
| Latch | H. Harden | 758,441 | Apr. 26 | 4461 | 969 | 109 | 2357 |
| Latch. Gate | W. A. Sebring | 753,323 | Mar. 1 | 193 | 45 | 109 | 46 |
| Lathe. Combination | J. B. Ehrlich | 758,514 | Apr. 26 | 4599 | 989<br>990 | 109 | 2388 |
| Lathe-dog | C. E. Brown | 757,255 | Apr. 12 | 2006 | 451 | 109 | 1800 |
| Lathe-machine attachment | J. Denault | 758,298 | Apr. 26 | 4043 | 878 | 109 | 2262 |
| Lathe taper attachment. Turret | C. G. Richardson | 757,681 | Apr. 19 | 3962 | 844 | 109 | 2008 |
| Lathe. Turret | J. P. Lavigne | 756,859 | Apr. 5 | 882 | 193<br>194 | 109 | 1530 |
| Lathe turret mechanism. Automatic | J. P. Brophy | 756,467 | Apr. 5 | 554 | 115<br>116 | 109 | 1461 |
| Lathe. Wheel | J. R. Crowley | 758,675 | Mar. 1 | 882 | 900 | 109 | 191 |
| Lathing. Machine for making metallic | P. Kühne | 754,077 | Mar. 8 | 1702 | 378<br>379 | 109 | 391 |
| Lattice-work structure | R. C. Layton | 756,861 | Apr. 12 | 1287 | 297 | 109 | 1634 |
| Laundry apparatus | R. C. Coburn | 755,455 | Mar. 22 | 4373 | 998 | 109 | 1002 |
| Laundry-tub water-indicator | C. Jensen | 756,642 | Apr. 5 | 845 | 183 | 109 | 1522 |
| Lavatory or shampooing bowl | M. Housholder | 758,447 | Apr. 26 | 4472 | 961 | 109 | 2359 |
| Lawn-edge trimmer | A. E. Fuller | 758,310 | Apr. 26 | 4208 | 905 | 109 | 2301 |
| Lawn-rake | O. Kampfe | 757,123 | Apr. 12 | 1819 | 399 | 109 | 1745 |
| Lawn-shears | C. H. Fisk | 756,227 | Apr. 5 | 70 | 16 | 109 | 1337 |
| Lawn-sprinkler | E. Sutherland | 754,172 | Mar. 8 | 1881 | 419<br>420 | 109 | 431 |
| Lawn-sprinkler | A. Vandervoort | 757,160 | Apr. 12 | 1897 | 414 | 109 | 1764 |
| Lead ores. Desulfurizing | A. Savelsberg | 755,598 | Mar. 22 | 4619 | 1026 | 109 | 1057 |
| Lead salts. Making | W. Mills | 754,067 | Mar. 15 | 2915 | | 109 | 669 |
| Leather durable and waterproof. Rendering | F. Stoffer | 757,261 | Apr. 12 | 2298 | | 109 | 1847 |
| Leather-splitting-machine adjusting device | J. H. Gay and W. D. Quigley | 755,751 | Mar. 29 | 4995 | 1109 | 109 | 1153 |
| Ledger attachment. Bank | A. Stonehouse | 755,721 | Mar. 29 | 4891 | 1089 | 109 | 1133 |
| Ledger. Loose-leaf | H. W. Ayres | 758,292 | Apr. 26 | 4158 | 892 | 109 | 2297 |
| Leg. Artificial | L. Duggan | 757,397 | Apr. 12 | 2136 | 467 | 109 | 1814 |
| Legging | J. Peel | 753,694 | Mar. 29 | 4827 | 1072 | 109 | 1120 |
| Legging | J. M. Braun | 758,349 | Apr. 26 | 4283 | 920 | 109 | 2316 |
| Lens | U. Nehring | 756,881 | Apr. 12 | 1323 | 296 | 109 | 1641 |
| Lens-carriage-securing means | C. E. Hutchings | 754,672 | Mar. 15 | 3312 | 722 | 109 | 736 |
| Lens-grinding machine | C. L. Rameau | 757,053 | Apr. 12 | 1663 | 365 | 109 | 1716 |
| Letter and document distributer | F. Bristow | 753,538 | Mar. 1 | 621 | 141 | 109 | 136 |
| Letter-box | H. H. Warner | 757,608 | Apr. 19 | 2990 | 650 | 109 | 2014 |
| Letter-box, door-bell, and name-plate. Combination | H. Messersmith | 754,664 | Mar. 15 | 2910 | 636 | 109 | 668 |
| Letter-press | W. A. Rosenbaum | 756,530 | Apr. 5 | 662 | 142 | 109 | 1482 |
| Letter-sheet and envelop. Combined | E. L. Wilson | 757,006 | Apr. 12 | 1579 | 345 | 109 | 1694 |
| Level, plumb, and inclinometer | J. Happle | 756,628 | Apr. 5 | 824 | 177 | 109 | 1517 |
| Level. Spirit | R. B. Ferguson | 756,949 | Apr. 12 | 1463 | 323 | 109 | 1670 |
| Leveling instrument | G. G. Townsend | 754,723 | Mar. 15 | 3036 | 662 | 109 | 697 |
| Life-saving apparatus. Means for lowering loads applicable as | C. Klärle | 753,490 | Mar. 1 | 590 | 120 | 109 | 114 |
| Lifter:<br>*See* Plate-lifter. | | | | | | | |
| Lifting-jack. Screw | M. L. Gaskill | 756,489 | Apr. 5 | 595 | 128 | 109 | 1467 |
| Lifting-jack. Variable-power | E. M. Robinson | 756,992 | Apr. 12 | 1533 | 337<br>338 | 109 | 1683 |
| Light:<br>*See* Incandescent light. Night-light. | | | | | | | |
| Light-controlling system | H. Faltermayer | 758,599 | Apr. 26 | 4745 | 1023 | 109 | 2420 |
| Lighting and alarm device. Combined | J. Thorsen | 757,364 | Apr. 12 | 2301 | 502 | 109 | 1849 |
| Lighting attachment | J. H. Prosser | 753,517 | Mar. 1 | 571 | 131 | 109 | 124 |
| Lightning-arrester | H. N. Kelfer | 753,582 | Mar. 1 | 707 | 156 | 109 | 154 |
| Lightning-arrester | G. Babcock | 757,286 | Apr. 12 | 2250 | 512 | 109 | 1858 |
| Line-casting machine | W. S. Scudder | 754,614 | Mar. 15 | 2805 | 612<br>613 | 109 | 646 |
| Line-holder | C. Lykke | 757,320 | Apr. 19 | 3226 | 700 | 109 | 2065 |
| Line-wire clamp | H. C. Willitz | 755,092 | Mar. 22 | 3704 | 813 | 109 | 862 |
| Link. Fusible | F. Gray | 756,847 | Apr. 12 | 1266 | 281 | 109 | 1630 |
| Link. Separable | E. C. Vale | 754,521 | Mar. 15 | 2939 | 573 | 109 | 613 |
| Linoleum carpets. Manufacturing | F. K. Magnus af Ekström | 754,561 | Mar. 15 | 2753 | 599 | 109 | 634 |
| Linoleum, &c., cutter | E. Kinney | 757,317 | Apr. 12 | 2212 | 483 | 109 | 1830 |
| Linoleum floor-cloth, &c. Apparatus for the manufacture of mosaic | M. B. Nairn | 754,085 | Mar. 8 | 1790 | 383<br>384 | 109 | 395 |
| Linotype-machine | J. M. Cooney | 756,477 | Apr. 5 | 575 | 120 | 109 | 1464 |
| Linotype-machine | P. T. Dodge | 757,099 | Apr. 12 | 1768 | 384 | 109 | 1735 |
| Linotype-machine | S. J. Briden | 757,648 | Apr. 19 | 2996 | 630<br>631 | 109 | 1995 |
| Linotype-machine | D. D. Scott | 757,665 | Apr. 19 | 2967 | 645 | 109 | 2009 |
| Linotype-machine | W. H. Randall | 758,108 | Apr. 26 | 3783 | 822 | 109 | 2206 |
| Linotype-machine alarm attachment | G. L. Venable | 754,080 | Mar. 8 | 1620 | 361 | 109 | 373 |
| Linotype-machine attachment | E. B. Clark | 754,970 | Mar. 22 | 3499 | 766<br>767 | 109 | 816 |
| Linotype-machine attachment | P. Shea | 758,384 | Apr. 26 | 4140 | 894 | 109 | 2284 |
| Linotype-machine matrix | W. G. Middleton | 753,604 | Mar. 1 | 739 | 165 | 109 | 161 |
| Linotype-machines. Producing notches in linotypes or slugs as they are cast in | W. R. Speechley | 754,619 | Mar. 15 | 2816 | 615 | 109 | 648 |
| Liquid-dispensing apparatus | V. S. Taylor | 755,723 | Mar. 29 | 4894 | 1089<br>1090 | 109 | 1134 |
| Liquid-dispensing apparatus | C. A. Glidemeyer | 757,611 | Apr. 19 | 2819 | 615<br>616 | 109 | 1976 |
| Liquid-dispensing apparatus | W. B. Cochrane | 757,866 | Apr. 19 | 3343 | 728 | 109 | 2091 |
| Liquid-distributer | W. Peterson | 756,696 | Apr. 5 | 957 | 210 | 109 | 1547 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr's. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Liquid-distributing system | R. B. Williams, Jr., and E. B. Whitman. | 754,730 | Mar. 15 | 3045 | 665 | 109 | 699 |
| Liquid-distributing system | R. B. Williams, Jr., and E. B. Whitman. | 754,953 | Mar. 15 | 3467 | 759 | 109 | 798 |
| Liquid heating or cooling apparatus | G. Braselmann and F. Lünnemann | 758,045 | Apr. 26 | 3671 | 795<br>796 | 109 | 2183 |
| Liquid heating or sterilizing apparatus | J. Willmann | 756,310 | Apr. 5 | 233 | 48 | 109 | 1394 |
| Liquid-separator. Centrifugal | T. H. Springer | 754,909 | Mar. 15 | 3373 | 737 | 109 | 771 |
| Liquids in tanks. Apparatus for circulating | G. E. Dunton | 758,490 | Apr. 26 | 4440 | 954 | 109 | 2351 |
| Liquids in tanks. Apparatus for circulating | G. E. Dunton | 758,513 | Apr. 26 | 4597 | 988 | 109 | 2388 |
| Liquids. Means for storing | R. Jardine | 758,078 | Apr. 26 | 3740 | 819 | 109 | 2195 |
| Lister | C. R. Davis | 757,997 | Apr. 19 | 3555 | 770 | 109 | 2127 |
| Lister attachment | J. A. Herron | 754,449 | Mar. 15 | 2490 | 542 | 109 | 579 |
| Loading apparatus | E. T. Maxwell | 754,586 | Mar. 15 | 2759 | 601<br>602 | 109 | 636 |
| Loading apparatus for tramways | H. M. Sackett | 757,777 | Apr. 19 | 3151 | 665 | 109 | 2050 |
| Loading-machine | A. J. Doss | 757,264 | Apr. 12 | 2120 | 462<br>463<br>464<br>465 | 109 | 1811 |
| Lock:<br>*See* Alarm-lock. Padlock.<br>Bung-lock. Pin-lock.<br>Door-lock. Pin-tumbler lock.<br>Electric lock. Puzzle-lock.<br>Gas-fixture safety-lock. Sash-lock.<br>Gear-lock. Seal-lock.<br>Loom shuttle-lock. Seat-lock.<br>Nut-lock. Soap-lock.<br>Table-lock. | | | | | | | |
| Lock | H. Bryda | 753,667 | Mar. 1 | 867 | 196 | 109 | 188 |
| Lock | C. E. Long and J. C. Irvine | 754,296 | Mar. 8 | 1997 | 444 | 109 | 456 |
| Lock | G. W. Caswell | 754,280 | Mar. 8 | 2067 | 463 | 109 | 474 |
| Lock | H. G. Voight | 755,195 | Mar. 22 | 3894 | 859 | 109 | 901 |
| Lock | J. B. Miller | 755,907 | Mar. 29 | 5267 | 1163 | 109 | 1219 |
| Lock | J. B. Miller | 755,908 | Mar. 29 | 5269 | 1163<br>1164 | 109 | 1219 |
| Lock | J. B. Miller | 755,909 | Mar. 29 | 5272 | 1164 | 109 | 1220 |
| Lock | G. von Péchy | 756,276 | Apr. 5 | 167 | 34 | 109 | 1379 |
| Lock | P. Tropp | 756,434 | Apr. 5 | 489 | 102<br>103 | 109 | 1447 |
| Lock | P. Tropp | 756,435 | Apr. 5 | 491 | 103 | 109 | 1447 |
| Lock | J. D. Edmonds | 756,689 | Apr. 12 | 1247 | 278 | 109 | 1636 |
| Lock | W. E. Metzel | 756,874 | Apr. 12 | 1314 | 298 | 109 | 1639 |
| Lock | J. S. Campbell | 757,265 | Apr. 12 | 2083 | 455 | 109 | 1803 |
| Lock | S. Wisnewski | 757,588 | Apr. 19 | 2770 | 606 | 109 | 1966 |
| Lock | L. A. Frank | 757,733 | Apr. 19 | 3050 | 665 | 109 | 2027 |
| Lock | J. Szucs | 758,394 | Apr. 26 | 4357 | 937 | 109 | 2332 |
| Lock | V. B. Kerr | 758,452 | Apr. 26 | 4477 | 962 | 109 | 2360 |
| Lock and latch | H. G. Voight | 757,529 | Apr. 19 | 2641 | 578<br>579 | 109 | 1985 |
| Lock and latch. Combined | J. E. Young | 758,788 | Mar. 1 | 1100 | 249<br>250 | 109 | 238 |
| Locket | A. Y. Cunningham | 753,473 | Mar. 1 | 470 | 110 | 109 | 102 |
| Locomotive ash-pan | J. S. Whisenhunt | 755,974 | Mar. 29 | 5397 | 1192 | 109 | 1248 |
| Locomotive-boiler | S. F. Prince, Jr. | 754,497 | Mar. 15 | 2597 | 564 | 109 | 608 |
| Locomotive-crane | J. G. Fairbanks and G. L. Sauer | 755,644 | Mar. 29 | 4724 | 1051 | 109 | 1094 |
| Locomotive. Electric | W. Dalton and F. J. Cole | 755,460 | Mar. 22 | 4382 | 971 | 109 | 1004 |
| Locomotive fire-door | G. S. Edmonds | 757,545 | Apr. 19 | 2689 | 587 | 109 | 1945 |
| Locomotive weed-destroying attachment | E. M. McCoy | 753,606 | Mar. 1 | 746 | 167 | 109 | 162 |
| Log loading and skidding machine | M. Schmaltz | 757,234 | Apr. 12 | 2030 | 442 | 109 | 1798 |
| Loom | H. W. Smith | 755,715 | Mar. 29 | 4864 | 1061<br>1062 | 109 | 1128 |
| Loom | G. S. Cox | 756,334 | Apr. 5 | 260 | 58, 59 | 109 | 1308 |
| Loom beating-up motion | H. A. Bond | 754,192 | Mar. 8 | 1915 | 426 | 109 | 438 |
| Loom cut signal or indicator | W. Haynes | 753,980 | Mar. 8 | 1528 | 341 | 109 | 353 |
| Loom-dobby leno-motion | J. B. Bolton | 757,085 | Apr. 12 | 1736 | 378 | 109 | 1757 |
| Loom filling-feeder. Automatic | E. S. Stimpson | 755,252 | Mar. 22 | 3990 | 885 | 109 | 921 |
| Loom filling-fork | E. S. Stimpson | 754,023 | Mar. 8 | 1608 | 358 | 109 | 370 |
| Loom. Filling-replenishing | E. S. Stimpson | 754,024 | Mar. 8 | 1608 | 358<br>359 | 109 | 371 |
| Loom for weaving cartridge-belt fabrics | W. C. Fisher | 757,102 | Apr. 12 | 1772 | 385 | 109 | 1736 |
| Loom friction let-off mechanism | J. T. Meats | 753,890 | Mar. 8 | 1367 | 308<br>309 | 109 | 315 |
| Loom Haircloth | J. B. Gray | 755,571 | Mar. 22 | 4568 | 1016<br>1017 | 109 | 1045 |
| Loom heddle-movement. Hand-operated | A. S. Horlacher | 756,235 | Apr. 5 | 84 | 18, 19 | 109 | 1360 |
| Loom jacquard mechanism | L. Coin | 755,457 | Mar. 22 | 4375 | 969<br>970 | 109 | 1003 |
| Loom let-off | T. Brindle and M. O. Steere | 755,104 | Mar. 22 | 3723 | 818 | 109 | 866 |
| Loom let-off motion. Automatic | J. A. Jansson | 755,011 | Mar. 22 | 3567 | 788 | 109 | 881 |
| Loom picker-check | J. M. Peckham | 753,515 | Mar. 1 | 569 | 130 | 109 | 124 |
| Loom picker mechanism | G. Jolicoeur | 757,043 | Apr. 12 | 1669 | 361<br>362 | 109 | 1714 |
| Loom picker-motion | D. D. Miller | 757,828 | Apr. 19 | 3239 | 708 | 109 | 2008 |
| Loom picker-stick lug-strap | L. Pilling | 756,048 | Mar. 29 | 5528 | 1219 | 109 | 1275 |
| Loom power-shipping and brake mechanism | A. R. Patten | 753,807 | Mar. 1 | 1174 | 264 | 109 | 252 |
| Loom selvage-forming attachment | E. G. Roder | 754,240 | Mar. 8 | 2021 | 449 | 109 | 461 |
| Loom shedding apparatus | N. and J. Chaize | 754,846 | Mar. 15 | 3271 | 713 | 109 | 748 |
| Loom shedding mechanism | A. R. Patten | 753,808 | Mar. 1 | 1176 | 264<br>265 | 109 | 253 |
| Loom shedding mechanism | O. L. Owen | 757,141 | Apr. 12 | 1856 | 406 | 109 | 1755 |
| Loom-shuttle | C. B. Webster | 753,337 | Mar. 1 | 219 | 49 | 109 | 50 |
| Loom-shuttle | H. Côté | 753,957 | Mar. 8 | 1492 | 334 | 109 | 345 |
| Loom-shuttle | B. and P. Grosslaub | 756,164 | Mar. 29 | 5734 | 1266<br>1267 | 109 | 1330 |

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|---|---|---|---|---|---|---|---|
| Loom shuttle-lock | F. A. Mills | 755,910 | Mar. 29 | 5275 | {1164 {1165 | 109 | 1220 |
| Loom shuttle-lock | F. A. Mills | 755,911 | Mar. 29 | 5276 | 1165 | 109 | 1221 |
| Loom shuttle-lock | F. A. Mills | 756,086 | Mar. 29 | 5513 | 1216 | 109 | 1271 |
| Loom. Swivel- | C. Schoen | 753,521 | Mar. 1 | 578 | 132 | 109 | 126 |
| Loom. Swivel- | E. H. Ryon | 753,741 | Mar. 1 | 1007 | {220 {230 | 109 | 217 |
| Loom warp stop-motion | C. H. Draper | 754,200 | Mar. 8 | 2104 | 467 | 109 | 477 |
| Loom warp stop-motion | C. H. Warren | 756,443 | Apr. 5 | 510 | 105 | 109 | 1451 |
| Loom weft-replenishing mechanism | W. H. and H. H. Hacking | 754,560 | Mar. 15 | 2707 | {589 {590 | 109 | 926 |
| Loom weft-replenishing mechanism. Weaving- | R. Starkie | 755,720 | Mar. 29 | 4887 | {1088 {1089 | 109 | 1183 |
| Loom weft-stop-motion mechanism | A. D'Huyvetters | 755,464 | Mar. 22 | 4366 | 972 | 109 | 1005 |
| Looms. Means for guiding the jacks in Crompton dobby- | G. Schwabe | 758,219 | Apr. 26 | 3999 | 868 | 109 | 2253 |
| Looms. Spooler for moquette or other pile-fabric | J. F. Walker | 758,098 | Apr. 19 | 3895 | 784 | 109 | 2153 |
| Lubricant-vaporizing device | W. P. Maingault and J. C. Graham | 756,126 | Mar. 29 | 5061 | 1253 | 109 | 1307 |
| Lubricating device | F. L. Hawkins. (Reissue) | 12,909 | Mar. 22 | 4637 | 1080 | 109 | 1061 |
| Lubricating device | B. F. Campbell | 755,741 | Mar. 29 | 4987 | 1097 | 109 | 1141 |
| Lubrication. Apparatus for force-feed | J. F. McCanna | 754,486 | Mar. 15 | 2566 | 559 | 109 | 896 |
| Lubricator: *See* Axle-lubricator. Sight-feed lubricator. Needle-lubricator. | | | | | | | |
| Lubricator | J. J. Aull | 754,737 | Mar. 15 | 3056 | 667 | 109 | 702 |
| Lubricator | F. J. Collinson | 754,972 | Mar. 22 | 3503 | 767 | 109 | 817 |
| Lubricator | O. L. A. Riegels | 755,345 | Mar. 22 | 3978 | 883 | 109 | 918 |
| Lubricator | G. Schneider | 755,802 | Mar. 29 | 5057 | 1123 | 109 | 1170 |
| Lubricator | H. Ludendorff | 755,898 | Mar. 29 | 5243 | 1159 | 109 | 1214 |
| Lubricator | W. R. Malcolm | 756,867 | Apr. 12 | 1299 | 290 | 109 | 1636 |
| Lubricators. Automatic force sight-feed pump for | G. C. McCune | 758,460 | Apr. 26 | 4490 | 965 | 109 | 2362 |
| Lubricators. Auxiliary sight-feed for | F. W. Edwards | 755,120 | Mar. 22 | 3748 | {823 {824 | 109 | 871 |
| Luggage-carrier | F. Dales | 757,892 | Apr. 19 | 3359 | 725 | 109 | 2005 |
| Lumber-feeding machine | C. E. Cleveland | 755,745 | Mar. 29 | 4935 | {1098 {1099 | 109 | 1143 |
| Lumber-lorter's toe-cap | R. P. Adams | 756,198 | Apr. 5 | 1 | 1 | 109 | 1343 |
| Macaroni-press | J. F. Malone and S. Davidson | 756,259 | Apr. 5 | 133 | 26, 27 | 109 | 1371 |
| Magnet-coil spool | H. Geisenhöner | 756,954 | Apr. 12 | 1471 | 325 | 109 | 1672 |
| Magnet. Relay- | W. Palmer, Jr | 757,341 | Apr. 12 | 2256 | 492 | 109 | 1840 |
| Magnetic brake | J. D. Ihlder | 758,140 | Apr. 26 | 3865 | 837 | 109 | 2223 |
| Mail-bag catcher | W. D. McClellan | 753,788 | Mar. 1 | 136 | 32 | 109 | 33 |
| Mail-bag catcher | W. A. Horrall | 756,498 | Apr. 5 | 808 | 181 | 109 | 1470 |
| Mail-bag crane | M. Lally | 751,501 | Mar. 1 | 321 | 121 | 109 | 114 |
| Mail-bag for railway service | P. L. Nell | 756,135 | Mar. 29 | 5098 | 1256 | 109 | 1310 |
| Mail-box | M. L. Ogle | 753,308 | Mar. 1 | 169 | 37 | 109 | 98 |
| Mail-box | G. W. Smith | 753,563 | Mar. 1 | 588 | 134 | 109 | 128 |
| Mail-box | C. W. Palmer | 755,086 | Mar. 22 | 3613 | 792 | 109 | 841 |
| Mail-box | N. H. Sturgis and M. S. Allen | 757,513 | Apr. 19 | 2608 | 572 | 109 | 1929 |
| Mail-box | A. M. Hoes | 756,446 | Apr. 26 | 4470 | 961 | 109 | 2358 |
| Mail-box carrier | G. B. Okey | 754,696 | Mar. 15 | 2951 | 644 | 109 | 977 |
| Mail-carrier | F. P. O'Neill | 754,796 | Mar. 15 | 3165 | 689 | 109 | 725 |
| Mail-chute | J. W. Cutler | 758,128 | Apr. 26 | 3832 | {832 {833 | 109 | 2217 |
| Mail-delivery box | T. B. Gray | 754,441 | Mar. 15 | 2480 | 540 | 109 | 577 |
| Mail-delivery case. Rural | A. M. Kindwall | 758,358 | Apr. 26 | 4085 | 884 | 109 | 2272 |
| Mail-delivery system. Rural | W. A. Sumner, G. W. Brewer, and J. K. Gibson. | 757,787 | Apr. 19 | 3167 | {687 {688 {218 {219 | 109 | 2053 |
| Mail-matter-registering machine | D. di B. Savorgnan | 756,714 | Apr. 5 | 985 | {220 {221 {222 | 109 | 1554 |
| Mail-sack holder | W. M. Falen | 756,610 | Apr. 5 | 796 | 172 | 109 | 1511 |
| Mail-shears | H. Q. Hood | 755,498 | Mar. 22 | 4481 | 993 | 109 | 1014 |
| Mailing card. Coin- | O. Mussinan | 758,091 | Apr. 26 | 3757 | 817 | 109 | 2199 |
| Mailing-tube closure | H. Del Mar | 758,189 | Apr. 26 | 3889 | 833 | 109 | 2219 |
| Malt-turning-machine apron | D. D. Weechler | 758,237 | Apr. 26 | 4014 | 871 | 109 | 2257 |
| Mandrel. Pipe- | W. Aliderdice | 757,879 | Apr. 19 | 3316 | 718 | 109 | 2085 |
| Manholes. Bracket-block for conduit- | G. M. Gest | 756,844 | Apr. 12 | 1257 | 280 | 109 | 1628 |
| Manholes for conduits. Construction of | H. C. Baker, Jr. (Reissue) | 12,905 | Mar. 22 | 4626 | 1057 | 109 | 1059 |
| Manifolding device | J. H. Petroskey | 756,189 | Mar. 29 | 5099 | 1257 | 109 | 1312 |
| Manifolding device | I. H. Mallin | 756,958 | Apr. 5 | 130 | 26 | 109 | 1371 |
| Manifolding writing-sheet. Self-sealing | W. Morton | 755,159 | Mar. 22 | 3817 | {843 {844 | 109 | 887 |
| Mantle-support | T. Stites | 753,328 | Mar. 1 | 307 | 46 | 109 | 48 |
| Mantle-support | W. P. Johnson | 757,556 | Apr. 19 | 2696 | 590 | 109 | 1949 |
| Map | E. Heubach | 754,450 | Mar. 15 | 2492 | 542 | 109 | 580 |
| Mariners. Artificial horizon for use of | J. M. Stratton | 753,445 | Mar. 1 | 423 | {99 {100 | 109 | 98 |
| Marking device. Fountain- | J. E. Langill | 753,503 | Mar. 1 | 727 | 162 | 109 | 158 |
| Marking-machine | E. M. Schantz | 753,435 | Mar. 1 | 407 | 95, 96 | 109 | 89 |
| Martingale-ring | J. Fisher | 755,962 | Mar. 29 | 5179 | 1146 | 109 | 1199 |
| Massage apparatus | A. Ward | 756,441 | Apr. 5 | 507 | 105 | 109 | 1450 |
| Massage apparatus. Pneumatic | F. H. Crabtree | 757,177 | Apr. 12 | 1933 | 423 | 109 | 1773 |
| Massage device | O. Zar-Adusht-Hanish | 754,985 | Mar. 15 | 3398 | 743 | 109 | 776 |
| Massage-machine | P. J. Kroll | 754,463 | Mar. 15 | 2515 | 548 | 109 | 884 |
| Massage-machine | J. Graves | 758,205 | Apr. 26 | 3978 | {868 {869 | 109 | 2245 |
| Mat: *See* Oil-press mat. Stair-mat. | | | | | | | |
| Match-box | J. Long | 753,989 | Mar. 8 | 1542 | 344 | 109 | 357 |
| Match-box | P. F. Quinn and G. Soylian | 754,091 | Mar. 8 | 1744 | 387 | 109 | 398 |
| Match-box-filling machine | H. Beeg | 753,333 | Mar. 1 | 14 | 3, 4 | 109 | 5 |
| Match-box holder | E. A. Parker | 758,467 | Apr. 26 | 4503 | 966 | 109 | 2365 |
| Match-case | S. Robert | 754,707 | Mar. 15 | 3009 | 657 | 109 | 691 |



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|---|---|---|---|---|---|---|---|
| Match composition | J. A. Wendel | 754,265 | Mar. 8 | 2063 | | 109 | 469 |
| Match composition | F. E. Grimm | 755,653 | Mar. 29 | 4744 | | 109 | 1099 |
| Match-machine | M. A. Sheldon | 757,572 | Apr. 19 | 2738 | 599 | 109 | 1957 |
| Match-making machine | J. P. Wright | 756,198 | Mar. 29 | 5777 | {1276 {1277 | 109 | 1328 |
| Match-package | J. A. E. Criswell | 758,588 | Apr. 26 | 4782 | 1020 | 109 | 2417 |
| Match-receptacle | J. E. Neahr | 753,297 | Mar. 1 | 155 | 36 | 109 | 37 |
| Match-safe | D. S. Kissam | 754,221 | Mar. 8 | 1984 | 441 | 109 | 453 |
| Match-safe | S. Quee | 758,215 | Apr. 26 | 3994 | 867 | 109 | 2252 |
| Match-sticks. Appliance for isolating | F. Czerweny | 757,180 | Apr. 12 | 1937 | 428 | 109 | 1773 |
| Match-strip | C. A. Stolte and H. E. Smith | 756,806 | Apr. 5 | 1177 | 261 | 109 | 1596 |
| Mattes. Converting | R. H. Aiken | 755,557 | Mar. 22 | 4543 | | 109 | 1040 |
| Mattress. Woven-wire | W. J. Rimmington | 756,143 | Mar. 29 | 5704 | 1256 | 109 | 1313 |
| Maximum-demand indicator | H. W. Brown | 755,739 | Mar. 29 | 4924 | 1097 | 109 | 1140 |
| Measure. Line- | S. Kline | 758,330 | Apr. 26 | 4228 | 908 | 109 | 2304 |
| Measure. Liquid- | P. J. Doyle | 755,465 | Mar. 22 | 4390 | 972 | 109 | 1006 |
| Measure. Siphon-gaged liquid- | W. F. Vrooman | 757,439 | Apr. 5 | 505 | 104 | 109 | 1450 |
| Measure. Tailor's | S. M. Griffen | 754,765 | Mar. 15 | 3100 | 677 | 109 | 713 |
| Measuring and cutting-off machine | R. Thirak | 758,228 | Apr. 26 | 4004 | 869 | 109 | 2254 |
| Measuring and examining machine. Cloth | P. P. Schramek | 756,146 | Mar. 29 | 5707 | {1259 {1260 | 109 | 1313 |
| Measuring and recording intervals of time. Electric apparatus for | C. J. Springer | 754,020 | Mar. 8 | 1608 | 357 | 109 | 370 |
| Measuring and weighing mechanism | R. L. Patterson | 754,987 | Mar. 15 | 3423 | {748 {749 | 109 | 782 |
| Measuring apparatus | F. Blossom and W. A. Haller | 757,017 | Apr. 12 | 1608 | 350 | 109 | 1700 |
| Measuring apparatus | C. R. Hudson | 757,810 | Apr. 19 | 2206 | 696 | 109 | 2061 |
| Measuring apparatus. Liquid- | T. E. Mather | 753,283 | Mar. 1 | 127 | 31 | 109 | 31 |
| Measuring device | H. F. Leick and M. J. O'Donnell | 755,300 | Mar. 22 | 4075 | 903 | 109 | 989 |
| Measuring device | W. B. Martin | 755,902 | Mar. 29 | 5248 | 1161 | 109 | 1215 |
| Measuring instrument. Light- | T. Z. Millard and P. H. Palmer | 753,508 | Mar. 1 | 534 | 124 | 109 | 118 |
| Measuring instrument. Prepayment electrical | F. Conrad | 757,489 | Apr. 19 | 2455 | {536 {537 | 109 | 1897 |
| Measuring instruments. Inertia-damper for electric | W. H. Pratt | 755,792 | Mar. 29 | 5089 | 1119 | 109 | 1165 |
| Measuring instruments. Means for protecting electrical | M. C. Rypinski | 757,056 | Apr. 12 | 1687 | 367 | 109 | 1717 |
| Meat-chopper | J. A. Sander | 756,713 | Apr. 5 | 984 | {217 {218 | 109 | 1554 |
| Meat-press | G. Freyaleben | 754,297 | Mar. 8 | 2123 | 471 | 109 | 482 |
| Meat products. Mold for marking | J. Cunning | 755,112 | Mar. 22 | 3736 | 821 | 109 | 869 |
| Meat-slicing machine | J. L. Worrell | 756,449 | Apr. 5 | 522 | 109 | 109 | 1454 |
| Meat-tenderer | C. D. Gunn | 756,356 | Apr. 5 | 331 | 68 | 109 | 1414 |
| Mechanical movement | B. Hall | 753,299 | Mar. 1 | 313 | 71 | 109 | 71 |
| Mechanical movement | R. V. Collins | 754,050 | Mar. 8 | 1658 | 369 | 109 | 381 |
| Mechanical movement | G. H. Niles | 755,919 | Mar. 29 | 5295 | 1160 | 109 | 1295 |
| Mechanical movement | O. A. Morrow | 756,131 | Mar. 29 | 5689 | 1255 | 109 | 1309 |
| Mechanical movement | D. W. Shiek | 757,511 | Apr. 19 | 2604 | {570 {571 | 109 | 1928 |
| Mechanical movement | F. A. Yokoum | 758,578 | Apr. 26 | 4725 | 1019 | 109 | 2415 |
| Medical-compound diluent | J. M. Schutz | 757,419 | Apr. 12 | 2414 | | 109 | 1872 |
| Medicaments. Method of and apparatus for impregnating parts of the body with | J. Lütje | 753,990 | Mar. 8 | 1544 | 345 | 109 | 357 |
| Megaphone | F. E. Mitchell | 758,417 | Mar. 1 | 375 | 88 | 109 | 82 |
| Megaphone. Return-ball | G. F. Dunn | 755,117 | Mar. 22 | 3744 | 822 | 109 | 871 |
| Memorandum for household use. Permanent | A. R. Mensing | 753,601 | Mar. 1 | 737 | 165 | 109 | 160 |
| Mercerizing apparatus | R. P. Smith and G. E. Drum | 755,716 | Mar. 29 | 4869 | {1087 {1088 | 109 | 1129 |
| Mercerizing machine. Yarn- | P. Hahn | 755,765 | Mar. 29 | 4992 | {1110 {1111 | 109 | 1154 |
| Metal articles. Making hollow | E. Polte | 756,404 | Apr. 5 | 431 | 89 | 109 | 1435 |
| Metal-bar-cutting apparatus | V. E. Edwards | 757,604 | Apr. 19 | 2795 | 611 | 109 | 1971 |
| Metal bars into sheets. Reducing | T. V. Allis | 757,386 | Apr. 12 | 2347 | {511 {512 | 109 | 1857 |
| Metal bars or beams and structural work. Manufacture of flanged | H. Grey | 758,529 | Apr. 26 | 4631 | 997 | 109 | 2395 |
| Metal box. Hermetically-sealed | S. Jacoby | 758,255 | Apr. 26 | 4061 | 883 | 109 | 2271 |
| Metal canisters. Apparatus for the manufacture of | W. A. Read | 755,342 | Mar. 22 | 3974 | 881 | 109 | 917 |
| Metal-cutting shears | C. F. Deltrick | 758,681 | Mar. 1 | 892 | {202 {203 | 109 | 193 |
| Metal disk wheels. Manufacture of | F. Melaun | 757,135 | Apr. 12 | 1850 | 404 | 109 | 1753 |
| Metal-plate-doubling machine | B. H. Doll | 754,433 | Mar. 15 | 2461 | 535 | 109 | 572 |
| Metal post | G. F. Clingman | 754,196 | Mar. 8 | 1926 | 428 | 109 | 441 |
| Metal sheets. Machine for separating | G. Grove | 757,453 | Apr. 19 | 2478 | 543 | 100 | 1902 |
| Metal sheets. Separating | G. Grove | 757,454 | Apr. 19 | 2480 | 543 | 109 | 1902 |
| Metals by chemical process. Apparatus for extracting | T. B. Joseph | 758,367 | Apr. 26 | 4816 | 927 | 109 | 2323 |
| Metals from solutions. Precipitating | C. Butters | 756,211 | Apr. 5 | 34 | | 109 | 1350 |
| Metals. Protecting | P. J. Burns | 756,984 | Apr. 12 | 1485 | | 109 | 1664 |
| Metallic tie and rail fastener | J. F. Lever | 757,404 | Apr. 12 | 2286 | 519 | 109 | 1866 |
| Metallurgical apparatus | G. W. Gesner | 755,867 | Mar. 29 | 5187 | 1148 | 109 | 1301 |
| Metallurgical furnace | F. Kepp | 753,712 | Mar. 1 | 966 | 217 | 109 | 206 |
| Meter: *See* Demand-meter. Electric meter. Gas-meter. Multiple-rate meter. Velocity-meter. Water-meter. | | | | | | | |
| Meter | J. A. Tilden | 756,299 | Apr. 5 | 214 | 44 | 109 | 1390 |
| Meter | R. J. Hoffman | 756,366 | Apr. 5 | 359 | 73 | 109 | 1420 |
| Metronome | T. Weisser | 753,945 | Mar. 8 | 1462 | 329 | 109 | 337 |
| Microscopes. Fine adjustment for | C. F. Dieckmann | 754,954 | Mar. 15 | 3470 | 759 | 109 | 793 |
| Milk-cooler | J. and M. Hadaller | 753,699 | Mar. 1 | 963 | 211 | 109 | 201 |
| Milk-jar cap | W. E. Heath | 756,234 | Apr. 5 | 83 | 18 | 109 | 1360 |
| Milk. System for intimately mixing | A. Gaulin | 756,953 | Apr. 12 | 1469 | {324 {325 | 109 | 1671 |
| Milk, &c. Treating | A. Gaulin | 753,792 | Mar. 1 | 1146 | 258 | 109 | 246 |
| Milk-vat | G. H. Simon | 757,569 | Apr. 19 | 2781 | 597 | 109 | 1956 |
| Milking apparatus | W. H. Lawrence and R. Kennedy | 756,245 | Apr. 5 | 103 | 22, 23 | 109 | 1364 |

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|---|---|---|---|---|---|---|---|
| Milking-machine | J. L. Hulbert and I. L. Park | 754,458 | Mar. 15 | 3496 | 543 | 109 | 581 |
| Mill: *See* Bolting-mill. Reducing-mill. Fanning-mill. Rolling-mill. Grinding-mill. Stamp-mill. Grist-mill. Windmill. Ore-crushing mill. | | | | | | | |
| Milling-machine | W. Porteous | 756,405 | Apr. 5 | 433 | 89, 90 | 109 | 1435 |
| Millstones. Cleaning | J. A. Henkel | 755,132 | Mar. 22 | 3767 | 828 | 109 | 876 |
| Mine-curtain raiser | C. J. Diebold | 756,598 | Apr. 5 | 775 | 168, 169 | 109 | 1506 |
| Mine-door | A. H. Lewis | 756,863 | Apr. 12 | 1290 | 288, 289 | 109 | 1635 |
| Mine-shaft door | J. Wineland | 754,366 | Mar. 8 | 3066 | 458 | 109 | 470 |
| Miner's drill | W. D. Cox | 755,458 | Mar. 22 | 4379 | 970 | 109 | 1008 |
| Miners' pick-blades, &c. File or carrier for | J. Beeton and J. Wardall | 756,093 | Mar. 29 | 5618 | 1239 | 109 | 1294 |
| Mining machine. Coal- | W. Foglesong | 755,291 | Mar. 22 | 4067 | 900 | 109 | 985 |
| Mining-machine engine | J. Heenan | 758,533 | Apr. 26 | 4640 | 999 | 109 | 2397 |
| Mining purposes. Hydraulic press for | A. J. and J. Tonge, Jr., and E. Eaves | 756,738 | Apr. 5 | 1046 | 232, 233 | 109 | 1567 |
| Mineral-separator | H. L. Orr | 758,464 | Apr. 26 | 4498 | 966, 967 | 109 | 2364 |
| Mirror | L. B. Prahar | 758,382 | Apr. 26 | 4341 | 932 | 109 | 2328 |
| Mirror or other toilet article. Hand- | J. C. Dowd | 753,476 | Mar. 1 | 474 | 111 | 109 | 108 |
| Mirror-support | F. Mankey | 753,808 | Mar. 8 | 1361 | 307 | 109 | 314 |
| Mirror-support | J. H. Hurxthal | 755,669 | Mar. 29 | 4767 | 1061 | 109 | 1104 |
| Mirrors, pictures, &c., in metallic frames. Means for mounting | J. P. Eustis | 752,967 | Mar. 8 | 1512 | 337 | 109 | 349 |
| Miter-box | J. A. Traut | 754,624 | Mar. 15 | 2889 | 617 | 109 | 651 |
| Miter-box | J. A. Traut | 754,625 | Mar. 15 | 2890 | 617 | 109 | 651 |
| Miter-box | C. A. Anderson | 757,538 | Apr. 19 | 3067 | 584 | 109 | 1942 |
| Mixer: *See* Fluid-mixer. Oil-mixer. Gas-mixer. | | | | | | | |
| Mixing and kneading machine | E. W. Osburn | 753,621 | Mar. 1 | 766 | 170 | 109 | 166 |
| Mixing and kneading machine | L. A. Roberts | 756,144 | Mar. 29 | 5704 | 1259 | 109 | 1313 |
| Mixing-machine | W. G. Richardson | 757,144 | Apr. 12 | 1802 | 407 | 109 | 1756 |
| Moistening and sealing device for envelops, &c. Combined | L. Fritz and W. W. Dryden | 754,988 | Mar. 22 | 3528 | 772 | 109 | 821 |
| Moistening and sealing envelops. Machine for | A. Hess | 756,635 | Apr. 5 | 836 | 181 | 109 | 1519 |
| Mold: *See* Brick-mold. Concrete-construction mold. Butter-mold. Cement-mold. Ingot-mold. Cement-block mold. | | | | | | | |
| Molder's flask | M. A. Clapp | 753,471 | Mar. 1 | 467 | 110 | 109 | 102 |
| Molding apparatus | J. Anderson | 753,951 | Mar. 8 | 1477 | 331, 332 | 109 | 341 |
| Molding apparatus | R. A. Penrose | 754,495 | Mar. 15 | 2592 | 563 | 109 | 608 |
| Molding apparatus | P. Largie | 755,574 | Mar. 22 | 4574 | 1018 | 109 | 1046 |
| Molding-machine | R. E. Davis | 756,102 | Mar. 29 | 5644 | 1246 | 109 | 1300 |
| Molding-machine | F. W. Hall | 756,313 | Apr. 26 | 4212 | 905, 906 | 109 | 2302 |
| Monkey-wrench | E. F. Howard | 753,906 | Mar. 1 | 324 | 73 | 109 | 73 |
| Monkey-wrench | L. C. Barcus | 753,937 | Mar. 8 | 1247 | 281 | 109 | 290 |
| Monkey-wrench | E. A. Renouf | 754,346 | Mar. 8 | 2200 | 490 | 109 | 497 |
| Monobenzoyl arbutin. Making | C. Vilmar | 757,370 | Apr. 12 | 2812 | ..... | 109 | 1852 |
| Mop-holder | G. H. Crumb | 756,100 | Mar. 29 | 5640 | 1245 | 109 | 1299 |
| Mop or brush holder | J. C. Look | 756,385 | Apr. 5 | 396 | 81 | 109 | 1428 |
| Mop-wringer | C. E. Hill | 754,870 | Mar. 15 | 3310 | 721 | 109 | 758 |
| Mop-wringer | J. A. Hoyt | 755,778 | Mar. 29 | 5018 | 1115 | 109 | 1160 |
| Mortising chain cutter. Portable | G. A. D'Isepo | 754,753 | Mar. 15 | 3062 | 673 | 109 | 708 |
| Mortising-machine. Hollow-chisel | H. S. Spencer | 756,725 | Apr. 5 | 1019 | 226 | 109 | 1559 |
| Motion, and vice versa. Mechanism for converting reciprocating into rotary | C. Tuckfield | 755,416 | Mar. 22 | 4302 | 951 | 109 | 989 |
| Motion. Means for converting reciprocatory into rotary | W. B. May | 756,388 | Apr. 5 | 399 | 82 | 109 | 1429 |
| Motor: *See* Air-motor. Rotary motor. Current-motor. Sewing-machine motor. Electric motor. Spring-motor. Gasolene-motor. Water-motor. Induction-motor. Wave-motor. Multiple motor. Wind-motor. Railway-motor. | | | | | | | |
| Motor | I. H. Spencer | 753,644 | Mar. 1 | 807 | 180, 181 | 109 | 176 |
| Motor | T. Barrow | 755,733 | Mar. 29 | 4912 | 1094 | 109 | 1188 |
| Motor | J. T. McGrath | 757,495 | Apr. 19 | 2550 | 560 | 109 | 1916 |
| Motor | J. Vinson | 758,208 | Apr. 26 | 4013 | 870 | 109 | 2256 |
| Motor-control system | F. L. Butler | 757,019 | Apr. 12 | 1616 | 351 | 109 | 1701 |
| Motor-starting device. Induction- | H. G. Reist and A. W. Henshaw | 753,798 | Mar. 29 | 5041 | 1190 | 109 | 1165 |
| Motors. Controlling induction- | A. P. Zani | 755,829 | Mar. 29 | 5109 | 1132 | 109 | 1183 |
| Motors. Friction device for impulse- | W. J. B. Smith | 755,952 | Mar. 29 | 5364 | 1184 | 109 | 1239 |
| Mountain-climber. Reversible | N. Laub | 754,577 | Mar. 15 | 2747 | 598 | 109 | 683 |
| Mouse-trap | T. L. Ray | 754,801 | Mar. 15 | 3347 | 731 | 109 | 765 |
| Mower | G. J. Patton and S. A. Marsteller | 755,583 | Mar. 22 | 4498 | 1000 | 109 | 1030 |
| Mower attachment. Lawn- | W. G. Johnson | 758,080 | Apr. 26 | 3742 | 813 | 109 | 2196 |
| Mower. Lawn- | E. W. Sayre | 757,353 | Apr. 12 | 2281 | 498 | 109 | 1845 |
| Mowing-machine | J. T. Gillaspy | 753,697 | Mar. 1 | 981 | 210 | 109 | 201 |
| Mowing-machine | N. F. Graves | 755,236 | Mar. 22 | 3941 | 872 | 109 | 910 |
| Mowing-machine | J. A. Carter | 755,844 | Mar. 29 | 5147 | 1137, 1138 | 109 | 1198 |
| Mowing-machine attachment | C. Herman | 756,114 | Mar. 29 | 5662 | 1249 | 109 | 1304 |
| Mowing-machine attachment | H. F. Harrah and W. S. Flint | 756,360 | Apr. 5 | 349 | 70 | 109 | 1418 |
| Mowing-machine clutch mechanism | W. F. Reed | 756,965 | Mar. 29 | 5398 | 1175 | 109 | 1232 |



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|---|---|---|---|---|---|---|---|
| Mowing-machine cutting apparatus | J. H. Wiekamp | 757,586 | Apr. 19 | 2767 | 605 | 109 | 1966 |
| Mowing-machine harvester attachment | J. Macphail | 756,865 | Apr. 12 | 1296 | 289 | 109 | 1636 |
| Mowing-machine pitman connection | F. P. Burkhardt | 754,538 | Mar. 15 | 2669 | 580 | 109 | 619 |
| Mowing-machine swather attachment | J. Hoffman | 753,883 | Mar. 8 | 1335 | 300, 301 | 109 | 308 |
| Muffler | O. E. Barthel | 756,208 | Apr. 5 | 10 | 2 | 109 | 1345 |
| Muffler. Exhaust- | C. E. Yackel | 758,402 | Apr. 26 | 4378 | 941 | 109 | 2337 |
| Mule and twiner. Self-acting | J. T. Connelly | 754,973 | Mar. 22 | 3505 | 767 | 109 | 817 |
| Multicylinder expansion-engine | C. J. Williams | 757,532 | Apr. 19 | 2648 | 579, 580, 581 | 109 | 1987 |
| Multiple motor | H. W. Martin | 756,513 | Apr. 5 | 632 | 137 | 109 | 1475 |
| Multiple-rate meter | A. J. R. Fiego | 755,757 | Mar. 29 | 4974 | 1106, 1107 | 109 | 1150 |
| Muscle-developing finger-band | S. Hosfeld | 757,041 | Apr. 12 | 1667 | 361 | 109 | 1713 |
| Music-box carriage-feed device | G. A. Brachhausen | 757,018 | Apr. 12 | 1610 | 350, 351 | 109 | 1700 |
| Music-box gramophone attachment | J. L. Schureman, Jr. | 755,946 | Mar. 29 | 5350 | 1181 | 109 | 1237 |
| Music-controller roll | A. Anderson | 757,874 | Apr. 19 | 3319 | 719 | 109 | 2086 |
| Music-leaf turner | J. W. Taylor | 753,758 | Mar. 1 | 1087 | 236 | 109 | 223 |
| Music-leaf turner | F. Guth | 756,848 | Apr. 12 | 1268 | 282 | 109 | 1630 |
| Music-leaf turner | G. H. Edgington | 756,944 | Apr. 12 | 1451 | 322 | 109 | 1668 |
| Music-leaf turner | C. Thoma, Jr. | 757,979 | Apr. 19 | 3518 | 763 | 109 | 2130 |
| Music-rack. Folding | J. H. Rockwell | 754,502 | Mar. 15 | 2605 | 566 | 109 | 605 |
| Music-sheet | H. P. Ball | 757,010 | Apr. 12 | 1595 | 347 | 109 | 1697 |
| Music-stand | R. D. Noble | 757,408 | Apr. 12 | 2393 | 520 | 109 | 1867 |
| Musical apparatus. Pneumatic | F. Schippers | 755,944 | Mar. 29 | 5346 | 1179, 1180 | 109 | 1236 |
| Musical instrument | G. Verrecchio | 756,743 | Apr. 5 | 1055 | 235 | 109 | 1568 |
| Musical instrument | J. E. Berglund | 757,251 | Apr. 12 | 2062 | 450 | 109 | 1799 |
| Musical instrument | R. Scheller | 757,354 | Apr. 12 | 2282 | 498 | 109 | 1845 |
| Musical instrument and covering same | W. J. Voorhees | 755,096 | Mar. 22 | 3697 | 811 | 109 | 860 |
| Musical-instrument automatic playing apparatus | T. B. Powers and M. R. Jewell | 753,809 | Mar. 1 | 1178 | 265, 266, 267 | 109 | 253 |
| Musical instrument. Automatically-operated | H. E. Sharps. (Reissue) | 12,215 | Apr. 26 | 4794 | 1081 | 109 | 2431 |
| Musical-instrument exercising attachment | H. Wraith | 757,168 | Mar. 29 | 1909 | 417 | 109 | 1767 |
| Musical-instrument motors. Winding device for automatic | W. F. Cooper, Jr., and H. E. Sharps | 757,095 | Apr. 12 | 1760 | 382 | 109 | 1733 |
| Musical-instrument pick | J. A. Forney | 756,348 | Apr. 5 | 315 | 65 | 109 | 1410 |
| Musical-instrument players. Note-sheet feed mechanism for | J. D. Smith | 756,070 | Mar. 29 | 5568 | 1229 | 109 | 1284 |
| Musical-instrument self-playing attachment | J. Courville | 755,364 | Mar. 22 | 4204 | 980, 981 | 109 | 968 |
| Musical instruments. Means for regulating the expression of mechanical | R. W. Pain | 754,886 | Mar. 15 | 3337 | 729, 780 | 109 | 763 |
| Musical instruments. Pneumatic motor for automatic | C. S. Burton | 756,469 | Apr. 5 | 562 | 116, 117 | 109 | 1462 |
| Mustache-band | F. Oberdorfer | 753,906 | Mar. 8 | 1388 | 313 | 109 | 320 |
| Nail-blank feeding and sorting machine | E. E. Pierce and L. W. Newton | 757,676 | Apr. 19 | 2947 | 639, 640, 641, 642, 643 | 109 | 2004 |
| Nail-extractor | A. Dudly, Sr. | 754,754 | Mar. 15 | 3063 | 674 | 109 | 709 |
| Nail-puller | J. H. de Granada and R. Keene | 754,302 | Mar. 8 | 1932 | 430 | 109 | 442 |
| Nailing machine. Loose- | F. D. Hagar | 755,227 | Mar. 22 | 3942 | 873 | 109 | 911 |
| Nap-restoring device | A. W. Foster | 753,970 | Mar. 8 | 1516 | 338 | 109 | 349 |
| Napping-machine | M. La Fountain, Jr. | 756,029 | Mar. 29 | 5501 | 1213, 1214 | 109 | 1269 |
| Nasal shield | T. Carence | 758,080 | Apr. 19 | 3629 | 785 | 109 | 2154 |
| Necktie-band holder | G. G. Parsons | 754,007 | Mar. 8 | 1576 | 352 | 109 | 364 |
| Necktie-holder | L. Hodecker | 756,073 | Apr. 26 | 3733 | 811 | 109 | 2194 |
| Necktie-securing device | F. Ferguson | 757,730 | Apr. 19 | 3046 | 664 | 109 | 2026 |
| Neckwear | C. Babson | 754,188 | Mar. 8 | 1908 | 425 | 109 | 437 |
| Needle-lubricator | E. C. Reed | 758,473 | Apr. 26 | 4512 | 969 | 109 | 2368 |
| Negative-printing attachment. Gas-light | G. W. Harse | 758,444 | Apr. 26 | 4466 | 960 | 109 | 2357 |
| Newspaper or periodical | S. B. Hutchinson | 758,139 | Apr. 26 | 3854 | 837 | 109 | 2223 |
| Newspaper-rack | F. X. Krabach | 756,509 | Apr. 5 | 624 | 135 | 109 | 1473 |
| Night light or lamp | J. R. Bentote | 753,952 | Mar. 8 | 1482 | 332 | 109 | 342 |
| Nippers. Cutting- | E. Roraback | 756,056 | Mar. 29 | 5543 | 1223 | 109 | 1279 |
| Nitrogen compounds from atmospheric nitrogen. Making | H. Mehner | 754,474 | Mar. 15 | 2545 | 554 | 109 | 592 |
| Nitrogen or other compounds. Apparatus for electrical production of | J. von Kowalski and I. Moscicki | 754,147 | Mar. 8 | 1885 | 409 | 109 | 422 |
| Nitrogen. Preparing for distribution organisms which fix atmospheric | G. T. Moore | 755,519 | Mar. 22 | 4478 | ..... | 109 | 1026 |
| Non-conducting handle | C. M. Perkins | 756,401 | Apr. 5 | 423 | 87 | 109 | 1434 |
| Note-sheet guide mechanism. Automatic | J. D. Smith | 755,950 | Mar. 29 | 5361 | 1184 | 109 | 1239 |
| Nozzle. Exhaust- | W. S. Clarkson | 754,746 | Mar. 15 | 3068 | 670 | 109 | 705 |
| Numbering-machine | E. P. Sheldon | 756,063 | Mar. 29 | 5555 | 1226 | 109 | 1282 |
| Nursing appliance | A. S. Dixon | 753,688 | Mar. 1 | 896 | 204 | 109 | 194 |
| Nut. Axle- | C. Schneider, Sr. | 757,506 | Apr. 19 | 2593 | 568 | 109 | 1926 |
| Nut-lock | N. Jamison | 753,273 | Mar. 1 | 108 | 27 | 109 | 27 |
| Nut-lock | W. H. Mack | 753,415 | Mar. 1 | 373 | 87 | 109 | 81 |
| Nut-lock | W. L. Durden | 753,666 | Mar. 1 | 900 | 204 | 109 | 195 |
| Nut-lock | H. C. Holliday | 754,309 | Mar. 8 | 2147 | 475 | 109 | 486 |
| Nut-lock | J. C. Mitchell | 754,560 | Mar. 15 | 2766 | 603 | 109 | 637 |
| Nut-lock | J. E. Hedrick | 754,767 | Mar. 15 | 3108 | 678 | 109 | 713 |
| Nut-lock | A. I. Linsley | 755,146 | Mar. 22 | 3798 | 836 | 109 | 882 |
| Nut-lock | C. F. Spery | 755,806 | Mar. 29 | 5062 | 1124 | 109 | 1171 |
| Nut-lock | A. C. Fletcher | 756,010 | Mar. 29 | 5466 | 1206 | 109 | 1263 |
| Nut-lock | T. L. Russell | 756,145 | Mar. 29 | 5706 | 1259 | 109 | 1318 |
| Nut-lock | J. P. McMahon | 756,269 | Apr. 5 | 150 | 31 | 109 | 1375 |
| Nut-lock | W. Ghiglieri | 756,620 | Apr. 5 | 814 | 175 | 109 | 1515 |
| Nut-lock | J. F. Rienan | 756,709 | Apr. 5 | 978 | 216 | 109 | 1553 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Nut-lock | J. W. Hancock | 757,457 | Apr. 19 | 2489 | 545 | 109 | 1904 |
| Nut-lock | W. Rundle | 757,775 | Apr. 19 | 3148 | 684 | 109 | 2049 |
| Nut-lock | J. A. Douglas and J. Bartleson | 758,519 | Apr. 26 | 4506 | 968 | 109 | 2388 |
| Nut. Lock- | F. Obiols | 753,301 | Mar. 1 | 161 | 37 | 109 | 38 |
| Nut. Lock- | A. L. Mowry | 753,421 | Mar. 1 | 361 | 89 | 100 | 83 |
| Nut. Lock- | G. B. Evans and J. H. Williams | 754,438 | Mar. 15 | 2477 | 539 | 109 | 576 |
| Nut. Lock- | R. Varley | 757,596 | Apr. 19 | 2637 | 577 | 109 | 1984 |
| Nut-wrench | W. E. Gilliland | 757,613 | Apr. 19 | 2984 | 616 | 109 | 1977 |
| Oar-lock | E. F. McIntyre | 758,370 | Apr. 26 | 4107 | 868 | 109 | 2277 |
| Odor-proof bag | W. P. Flowers | 757,510 | Apr. 19 | 2817 | 615 | 109 | 1975 |
| Oil-burner | A. Maculen | 754,661 | Mar. 15 | 2908 | 635 | 109 | 666 |
| Oil-burner | J. M. Younger | 755,340 | Mar. 22 | 4164 | 980 | 109 | 968 |
| Oil-burner | A. Johnson | 755,880 | Mar. 29 | 5212 | 1153 | 109 | 1306 |
| Oil-burner | R. G. Speer | 757,421 | Apr. 19 | 2417 | 527 | 109 | 1873 |
| Oil burner. Crude- | C. L. Grundell and E. W. Tucker | 758,208 | Apr. 26 | 3979 | 863 | 109 | 2240 |
| Oil burner. Fuel- | W. H. Van Horn | 756,742 | Apr. 5 | 1054 | 234 | 109 | 1068 |
| Oil-burner superheater | J. M. Donahue | 757,182 | Apr. 12 | 1940 | 424 | 109 | 1774 |
| Oil-burning apparatus | E. Fraser and E. J. Hoyt | 758,865 | Mar. 29 | 5184 | 1147 | 109 | 1901 |
| Oil-burning system | E. W. Tucker and C. L. Grundell | 756,294 | Apr. 26 | 4006 | 869<br>870 | 109 | 2255 |
| Oil-cake-treating apparatus | A. B. Lawther | 754,576 | Mar. 15 | 2738 | 596<br>597<br>598 | 109 | 632 |
| Oil-can | J. Wilkinson | 755,336 | Mar. 22 | 4168 | 980 | 109 | 968 |
| Oil-can | F. B. Parker | 755,967 | Mar. 29 | 5309 | 1173 | 109 | 1226 |
| Oil-can fastener | W. Bainbridge | 755,432 | Mar. 22 | 4330 | 957 | 109 | 904 |
| Oil-can. Non-explosive | J. A. Gray and F. Lehmann. (Reissue.) | 12,301 | Mar. 1 | 1240 | 279 | 100 | 986 |
| Oil-cup. Self-regulating | M. Crowther | 758,859 | Mar. 8 | 1298 | 291 | 109 | 399 |
| Oil mixer and burner | W. S. Kengla | 756,116 | Mar. 29 | 5665 | 1250 | 109 | 1304 |
| Oil-press mat | R. F. Werk | 758,573 | Apr. 26 | 4715 | 1017 | 109 | 2413 |
| Oil-press mat | R. F. Werk | 758,573 | Apr. 26 | 4717 | 1017 | 109 | 2414 |
| Oil-press mat | R. F. Werk | 758,574 | Apr. 26 | 4718 | 1017 | 109 | 2414 |
| Oil-press mat | R. F. Werk | 758,575 | Apr. 26 | 4719 | 1018 | 109 | 2414 |
| Oil vaporizer and burner | G. S. Rider | 756,410 | Apr. 5 | 444 | 91, 92 | 109 | 1437 |
| Oiling device. Track- | A. M. Frazee | 756,617 | Apr. 5 | 810 | 175 | 109 | 1514 |
| Ophthalmoscope | C. McCormick | 754,082 | Apr. 26 | 3758 | 817 | 109 | 2190 |
| Optical appliance | J. Harrasee | 756,966 | Apr. 12 | 1460 | 326 | 109 | 1674 |
| Optical illusions. Apparatus for producing | F. J. Straub | 754,100 | Mar. 8 | 1760 | 391 | 109 | 408 |
| Optometer | W. J. Laughlin | 754,323 | Mar. 8 | 1987 | 442<br>443 | 109 | 453 |
| Ordnance automatic firing device | L. Obry | 754,995 | Mar. 15 | 3336 | 739 | 109 | 768 |
| Ordnance recoil-carriage | O. Behnke | 756,205 | Apr. 5 | 14 | 3, 4 | 109 | 1346 |
| Ore and pulp sampler. Automatic | C. Allen | 754,912 | Mar. 15 | 3379 | 739 | 109 | 772 |
| Ore and slime separator. Automatic | C. Allen | 754,911 | Mar. 15 | 3376 | 738 | 109 | 772 |
| Ore bricks. Manufacturing | J. Koeniger | 753,372 | Mar. 22 | 4325 | ..... | 109 | 973 |
| Ore-concentrator | C. G. Weller | 756,316 | Apr. 5 | 223 | 46 | 109 | 1302 |
| Ore-concentrator | G. E. Woodbury | 757,008 | Apr. 12 | 1563 | 346 | 109 | 1694 |
| Ore-concentrator | W. L. and F. S. Card | 758,412 | Apr. 26 | 4304 | 945<br>946 | 109 | 2240 |
| Ore-concentrator | J. Shier | 758,565 | Apr. 26 | 4705 | 1015 | 109 | 2411 |
| Ore-concentrator. Centrifugal | E. R. Week | 757,699 | Apr. 19 | 2991 | 650 | 109 | 2015 |
| Ore-crushing mill | E. A. Wall | 755,725 | Mar. 29 | 4897 | 1090 | 109 | 1135 |
| Ore-pulp to concentrating-tables. Apparatus for distributing | W. Carkeek | 756,327 | Apr. 5 | 264 | 55 | 109 | 1409 |
| Ore-pulverizer. Impact | J. Thame | 757,069 | Apr. 12 | 1706 | 370 | 109 | 1721 |
| Ore-separator. Dry | E. W. and W. H. Noakes | 758,007 | Apr. 26 | 3775 | 820 | 109 | 2204 |
| Ore-treating apparatus | T. A. Helm | 755,871 | Mar. 29 | 5198 | (1149.<br>1150 | 109 | 1304 |
| Ores and tailings by electrolysis. Treating low-grade | E. Fahrig | 756,223 | Apr. 5 | 62 | 14 | 109 | 1356 |
| Ores from magnetic gangue. Separating | T. A. Edison | 754,756 | Mar. 15 | 3086 | 674 | 109 | 709 |
| Ores, liquids, or gases. Apparatus for treating solids, such as | P. Naef | 756,371 | Apr. 5 | 153 | 33 | 109 | 1376 |
| Ores, mattes, &c. Treating | J. A. Potter | 754,159 | Mar. 8 | 1856 | 414 | 109 | 427 |
| Ores. Treating | J. Smith | 755,951 | Mar. 29 | 5363 | ..... | 109 | 1239 |
| Ores. Treating | W. F. Hannes | 758,588 | Apr. 26 | 4688 | 998 | 109 | 2396 |
| Ores. Treating plumbiferous | E. W. Engels | 756,222 | Mar. 29 | 3084 | ..... | 109 | 909 |
| Organ | D. Schustek | 754,713 | Mar. 15 | 3017 | 659 | 109 | 698 |
| Organ cell-board. Reed- | C. D'Estes and J. B. Kram | 755,468 | Mar. 22 | 4367 | 972 | 109 | 1005 |
| Organ-keyboards. Apparatus for warming | O. M. Waldenschlager | 757,075 | Apr. 12 | 1713 | 373 | 109 | 1723 |
| Organ wind-chest. Pipe- | T. Clausing | 758,048 | Apr. 26 | 3675 | 797 | 109 | 2184 |
| Ornament | P. Wundsch and F. Lange | 753,781 | Mar. 1 | 1097 | 249 | 109 | 237 |
| Ornamental articles. Holder for forming | A. A. von Renthe-Fink | 753,689 | Mar. 1 | 782 | 174 | 109 | 170 |
| Ornamental fabric | A. S. Waltzfelder | 757,851 | Apr. 19 | 3260 | 710 | 109 | 2076 |
| Oscillating-piston engine | F. H. Lindner | 756,664 | Apr. 5 | 894 | 195<br>196<br>197 | 109 | 1532 |
| Oven. Bake- | H. Heacker | 754,866 | Mar. 15 | 3304 | 720 | 109 | 737 |
| Oven. Baker's | W. Lemb | 756,507 | Mar. 22 | 4454 | 989 | 109 | 1019 |
| Oven-front | F. J. Albrecht | 754,085 | Mar. 8 | 1638 | 353 | 109 | 375 |
| Oven. Traveling | T. and J. Vicars, Jr | 756,194 | Mar. 22 | 3998 | 858<br>859 | 109 | 901 |
| Overalls | H. S. Lanier | 755,781 | Mar. 29 | 5019 | 1116 | 109 | 1160 |
| Overalls | W. C. McLaury | 756,306 | Apr. 5 | 412 | 86 | 109 | 1432 |
| Overflow-alarm | E. A. Reeves | 753,518 | Mar. 1 | 573 | 131 | 109 | 125 |
| Overflow-alarm | E. M. Weeks | 756,909 | Apr. 12 | 1565 | 343 | 109 | 1691 |
| Overshoe attachment | W. H. Tillson | 757,365 | Apr. 19 | 2308 | 508<br>509 | 109 | 1849 |
| Oxidizing and drying textile material. Apparatus for | J. W. Fries | 757,104 | Apr. 12 | 1780 | 390 | 109 | 1737 |
| Oxidizing organic compounds | M. Moest | 757,136 | Apr. 12 | 1851 | ..... | 109 | 1754 |
| Ozonizer | A. Vosmaer and A. Lebret | 754,361 | Mar. 8 | 2064 | 456 | 109 | 468 |
| Package and closure therefor | R. S. Case | 753,543 | Mar. 1 | 628 | 142 | 109 | 128 |
| Package-fastener | D. J. McLean | 753,737 | Mar. 1 | 994 | 223 | 109 | 312 |
| Package. Shipping- | J. A. Bower | 754,587 | Mar. 15 | 3068 | 679 | 109 | 619 |



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|---|---|---|---|---|---|---|---|
| Package. Shipping- | H. C. Finley | 756,613 | Apr. 5 | 799 | 173 | 109 | 1512 |
| Packed joint | F. B. Clark | 757,992 | Apr. 19 | 3548 | 768 | 109 | 2136 |
| Packing-box | M. O. Anthony | 757,591 | Apr. 19 | 2776 | 607 | 109 | 1967 |
| Packing-box | J. J. Hinde | 758,138 | Apr. 26 | 3853 | 836 | 109 | 2222 |
| Packing case or crate | W. Wilson and T. W. Baker | 753,342 | Mar. 1 | 227 | 52 | 109 | 52 |
| Packing-cup | R. Burnside | 758,410 | Apr. 26 | 4392 | 944 | 109 | 2340 |
| Packing for piston-rods. Metallic | F. E. Small | 757,062 | Apr. 12 | 1694 | 368 | 109 | 1719 |
| Packing-gland for throttle-stems | J. D. Sturtz | 756,731 | Apr. 5 | 1035 | 229<br>230 | 109 | 1564 |
| Packing. Metallic | E. James | 753,494 | Mar. 1 | 514 | 119 | 109 | 113 |
| Packing. Metallic | H. Roberts | 753,810 | Mar. 1 | 1189 | 267 | 109 | 256 |
| Packing. Metallic rod- | W. C. Eberhardt | 754,961 | Mar. 22 | 3518 | 770 | 109 | 819 |
| Packing. Plunger- | W. E. McIntire | 756,880 | Apr. 12 | 1322 | 295 | 109 | 1640 |
| Packing. Rod- | F. Pinch | 753,731 | Mar. 1 | 990 | 224 | 109 | 214 |
| Packing. Rod- | J. Hodge | 754,005 | Mar. 8 | 1692 | 374 | 109 | 387 |
| Packing. Rod- | J. Hodge | 754,139 | Mar. 8 | 1825 | 406 | 109 | 419 |
| Packing. Rod- | N. H. Albrecht | 754,884 | Mar. 15 | 3283 | 704 | 109 | 741 |
| Packing. Rod- | H. W. Goodall | 756,621 | Apr. 5 | 816 | 176 | 109 | 1515 |
| Pad: *See* Hoof-pad. | C. W. Caldwell | 757,597 | Apr. 19 | 2784 | 609 | 109 | 1969 |
| Pad | M. E. Buckley | 756,575 | Apr. 5 | 741 | 161 | 109 | 1499 |
| Pad-holder | L. W. French and C. E. Decker | 753,693 | Mar. 1 | 922 | 209 | 109 | 199 |
| Pad or tablet cutting machine | C. F. Taylor | 758,156 | Apr. 26 | 3882 | 842<br>843 | 109 | 2230 |
| Pad or tree-protector | G. E. Brown | 757,437 | Apr. 19 | 2452 | 536 | 109 | 1897 |
| Paddle-wheel | T. J. Campbell | 753,358 | Mar. 1 | 253 | 57, 58 | 109 | 57 |
| Paddle-wheel. Vessel | E. H. H. Gottlebe | 754,991 | Mar. 22 | 3531 | 773 | 109 | 822 |
| Padlock | J. B. Miller | 754,479 | Mar. 15 | 2555 | 556 | 109 | 595 |
| Pail | J. W. Nichols | 755,234 | Mar. 22 | 3955 | 876 | 109 | 914 |
| Pail | C. Puddefoot and B. Briscoe | 756,406 | Apr. 5 | 437 | 90 | 109 | 1436 |
| Pail. Milk- | J. H. King | 753,964 | Mar. 8 | 1536 | 342 | 109 | 355 |
| Pail. Milk- | E. J. Barton | 756,318 | Apr. 5 | 248 | 51 | 109 | 1396 |
| Paint-buckets in permanent position on the roofs of buildings. Device for holding | L. Wallace | 753,942 | Mar. 8 | 1458 | 328 | 109 | 336 |
| Paint-dipping machine | H. L. Bornman | 755,349 | Mar. 22 | 4180 | 923<br>924 | 109 | 926 |
| Pamphlet folding and wrapping apparatus | S. Elliott | 757,728 | Apr. 19 | 3041 | 661<br>662<br>663 | 109 | 2025 |
| Panel | C. Shepherd | 753,641 | Mar. 1 | 802 | 179 | 109 | 176 |
| Panel or front for furniture, &c. Flexible sliding | H. Romünder | 756,288 | Apr. 5 | 188 | 39 | 109 | 1384 |
| Paper-bag-feeding apparatus | W. Pippert | 756,279 | Apr. 5 | 172 | 35, 36 | 109 | 1381 |
| Paper-bag forming or making machinery | C. H. and A. Day | 755,754 | Mar. 29 | 4958 | (1103<br>1104 | 109 | 1147 |
| Paper-board-drying machine | T. W. McFarland | 753,904 | Mar. 8 | 1377 | 311 | 109 | 318 |
| Paper box | F. B. Davidson | 756,478 | Apr. 5 | 577 | 120<br>121 | 109 | 1464 |
| Paper box. Collapsible | F. R. Adams | 756,311 | Apr. 5 | 234 | 49 | 109 | 1394 |
| Paper-box-covering machine | J. Bardelli | 756,812 | Apr. 12 | 1192 | 266<br>267 | 109 | 1615 |
| Paper clip or holder | W. Lukes | 757,937 | Apr. 19 | 3444 | 746 | 109 | 2118 |
| Paper-coating machine | M. Cashin | 758,169 | Apr. 26 | 3902 | 847<br>848 | 109 | 2234 |
| Paper. Commercial | C. L. Pritchard | 754,010 | Mar. 8 | 1581 | 353 | 109 | 365 |
| Paper-feeding device | T. G. and J. B. McGirr | 757,484 | Apr. 19 | 2547 | 560 | 109 | 1915 |
| Paper-feeding machine | T. C. Dexter | 754,203 | Mar. 8 | 1933 | 430<br>431<br>432 | 109 | 443 |
| Paper-feeding machine | T. C. Dexter | 754,204 | Mar. 8 | 1939 | 432<br>433 | 109 | 444 |
| Paper-feeding machine | T. C. Dexter | 754,205 | Mar. 8 | 1945 | 433<br>434 | 109 | 445 |
| Paper-folding machine | E. D. Casterline. (Reissue) | 12,204 | Mar. 15 | 3480 | 761 | 109 | 796 |
| Paper-folding machine. Wrapping- | A. A. Deiser | 755,462 | Mar. 22 | 4386 | 971<br>972 | 109 | 1005 |
| Paper holder. Roll- | G. W. Webster | 757,373 | Apr. 12 | 2318 | 507 | 109 | 1833 |
| Paper holder. Toilet- | S. S. Harrington | 755,657 | Mar. 29 | 4749 | 1057 | 109 | 1100 |
| Paper holder. Toilet- | A. E. Sexton | 756,804 | Apr. 5 | 1173 | 260<br>261 | 109 | 1595 |
| Paper-machine | A. W. and L. W. Case | 758,127 | Apr. 26 | 3880 | 831<br>832 | 109 | 2216 |
| Paper, &c. Machinery for cutting and folding | E. H. Cottrell | 757,274 | Apr. 12 | 2099 | 457<br>458 | 109 | 1806 |
| Paper-making-machine suction-box | E. C. Andrews | 754,036 | Mar. 8 | 1631 | 363 | 109 | 375 |
| Paper objects, &c. Machine for producing cylindrical tubes and tube-like | R. Hornsteiner | 755,491 | Mar. 22 | 4433 | 983<br>984<br>985 | 109 | 1015 |
| Paper-pad holder | K. Franklin | 756,013 | Mar. 29 | 5471 | 1207 | 109 | 1264 |
| Paper. Photographic developing- | F. Günther | 758,312 | Apr. 26 | 4211 | 905 | 109 | 2302 |
| Paper. Producing platina copy- | A. Lurz | 758,086 | Apr. 26 | 3751 | 815 | 109 | 2198 |
| Paper-stock. Machine for working old | W. Burke | 753,540 | Mar. 1 | 624 | 141 | 109 | 137 |
| Paper. Utilizing waste products from the manufacture of | W. N. Cornell | 756,214 | Apr. 5 | 39 | 10 | 109 | 1351 |
| Paper-winding machine | G. S. Witham | 753,344 | Mar. 1 | 230 | 53 | 109 | 52 |
| Parcel-attaching device | H. F. Roll | 754,241 | Mar. 8 | 2022 | 449 | 109 | 461 |
| Paring implement | R. M. Babin | 755,604 | Mar. 29 | 4645 | 1032 | 109 | 1076 |
| Partition for buildings, &c | D. H. Watts, Jr | 756,749 | Apr. 5 | 1067 | 237<br>238 | 109 | 1571 |
| Pasteurizer | A. A. Busch, R. Gull, and T. J. Barry | 755,108 | Mar. 22 | 3728 | 819 | 109 | 868 |
| Pasteurizer | W. T. Fogal | 756,012 | Mar. 29 | 5469 | 1207 | 109 | 1263 |
| Pasteurizer. Continuous | T. L. Valerius | 755,191 | Mar. 22 | 3880 | 856<br>857 | 109 | 896 |
| Pastry or rolls. Contrivance for making hollow | C. Forcke | 754,131 | Mar. 8 | 1814 | 403<br>404 | 109 | 417 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Pavements. Machine for cutting trenches through asphaltic | G. Fernald | 755,645 | Mar. 29 | 4736 | 1051 | 109 | 1095 |
| Paving-block | F. E. Cooper | 756,338 | Apr. 5 | 279 | 58 | 109 | 1403 |
| Pe. immediately prior to compression. Treating | W. A. Milne | 756,129 | Mar. 29 | 5686 | 1254 | 109 | 1308 |
| Peat into blocks for fuel. Machine for manufacturing | R. A. Kellond and J. C. Morrison | 755,674 | Mar. 29 | 4778 | {1093 / 1064} | 109 | 1107 |
| Pedal-mounting | L. Lemieux | 755,301 | Mar. 22 | 4076 | 903 | 109 | 939 |
| Pedestal. Angular | C. H. Howland-Sherman | 754,871 | Mar. 15 | 3811 | {721 / 722} | 109 | 758 |
| Pedestal. Folding | C. H. Ashley | 756,927 | Apr. 12 | 1415 | {315 / 316} | 109 | 1660 |
| Pedometer | O. Bartel and E. Kuhn | 756,405 | Apr. 26 | 4383 | 942 | 109 | 2388 |
| Peeler. Fruit | J. C. Bell | 754,191 | Mar. 8 | 1914 | 426 | 109 | 438 |
| Peeler. Fruit or vegetable | T. M. Guest | 757,550 | Apr. 19 | 2689 | 588 | 109 | 1947 |
| Peeler. Fruit or vegetable | T. M. Guest | 757,551 | Apr. 19 | 2690 | 588 | 109 | 1947 |
| Pen | A. Hart | 757,868 | Apr. 19 | 3300 | 717 | 109 | 2068 |
| Pen-filling device. Fountain | H. Taylor | 756,076 | Mar. 29 | 5575 | 1231 | 109 | 1286 |
| Pen. Fountain | W. Bovill | 754,416 | Mar. 15 | 2408 | 527 | 109 | 561 |
| Pen. Fountain | F. M. Kegrize | 756,376 | Apr. 5 | 379 | 77 | 109 | 1425 |
| Pen. Fountain | W. R. Rothwell | 757,500 | Apr. 19 | 2575 | 565 | 109 | 1921 |
| Pen. Fountain | M. R. Crossman | 757,543 | Apr. 19 | 2679 | 586 | 109 | 1945 |
| Pen. Fountain | F. M. Kegrize | 757,664 | Apr. 19 | 2924 | 635 | 109 | 2000 |
| Pen. Fountain | O. Payzant | 758,381 | Apr. 26 | 4340 | 932 | 109 | 2328 |
| Pen. Fountain lettering | C. C. Clement | 757,094 | Apr. 12 | 1623 | 353 | 109 | 1708 |
| Pen. Marking and lettering | A. Munro | 754,000 | Mar. 8 | 1562 | 349 | 109 | 361 |
| Pen, &c. Reservoir | R. Conklin | 756,778 | Apr. 5 | 1122 | 246 | 109 | 1563 |
| Pen. Self-filling fountain | D. H. Haywood | 755,870 | Mar. 29 | 5196 | 1149 | 109 | 1208 |
| Pen-supporting device. Fountain | R. B. McBee | 753,607 | Mar. 1 | 745 | 167 | 109 | 162 |
| Penholder | J. A. Mulvey | 754,333 | Mar. 8 | 2179 | 483 | 109 | 492 |
| Pencil. Lead | H. E. Sharp | 755,400 | Mar. 22 | 4276 | 945 | 109 | 983 |
| Pencil. Pocket | E. M. Goldsmith | 755,480 | Mar. 22 | 4411 | 977 | 109 | 1010 |
| Pencil-sharpener, &c | E. L. McDivitt | 755,917 | Mar. 29 | 5293 | 1168 | 109 | 1224 |
| Pencil-sharpener | F. M. Robinson | 756,287 | Apr. 5 | 187 | 38 | 109 | 1384 |
| Pencil-sharpener | F. H. Chase | 757,090 | Apr. 12 | 1751 | 381 | 109 | 1731 |
| Pencil-sharpener | F. H. Chase | 757,091 | Apr. 12 | 1752 | 381 | 109 | 1731 |
| Pendulum | J. W. Daily | 758,475 | Mar. 1 | 472 | 111 | 109 | 106 |
| Perforator | J. Gell | 755,224 | Mar. 22 | 3937 | {871 / 872} | 109 | 910 |
| Perfumes, &c. Case for use with solidified | J. Bardin | 756,234 | Apr. 26 | 4086 | 877 | 109 | 2261 |
| Periodical-holder | W. G. Lloyd | 757,325 | Apr. 12 | 2227 | 487 | 109 | 1833 |
| Petroleum. Apparatus for refining crude | J. M. O'Neall | 754,667 | Mar. 15 | 2953 | 644 | 109 | 677 |
| Phase-angle-adjusting means | E. M. Tingley | 757,516 | Apr. 19 | 3015 | 573 | 109 | 1930 |
| Phase-angle adjustment | E. M. Tingley | 757,517 | Apr. 19 | 3016 | 573 | 109 | 1931 |
| Phase-angle adjustment | E. M. Tingley | 757,518 | Apr. 19 | 3019 | 573 | 109 | 1931 |
| Phase regulation | E. M. Tingley | 757,515 | Apr. 19 | 3012 | 572 | 109 | 1930 |
| Phonograph, &c | E. A. Ivatts | 754,313 | Mar. 8 | 2152 | 475 | 109 | 487 |
| Phonograph | T. Lhota | 757,322 | Apr. 12 | 2224 | 486 | 109 | 1832 |
| Phonograph | P. Gäbler | 758,521 | Apr. 26 | 4612 | 998 | 109 | 2391 |
| Phonograph time-controlling mechanism | J. E. Hett | 756,017 | Mar. 29 | 5488 | 1209 | 109 | 1265 |
| Phonographs, &c. Apparatus for casting cylinders for | A. Hamon | 757,867 | Apr. 19 | 3306 | {716 / 717} | 109 | 2092 |
| Phonographic apparatus | C. W. Skiff and S. A. Grant | 754,508 | Mar. 15 | 2620 | {568 / 569} | 109 | 609 |
| Phonographic records on mandrels. Means for sliding and holding | J. A. Manahan and S. Waldeck | 756,546 | Apr. 26 | 4661 | 1004 | 109 | 2401 |
| Phosphorus compound and making same. Organic | S. Posternak | 754,808 | Mar. 15 | 3175 | ..... | 109 | 728 |
| Photograph and making same. Color | R. W. Wood | 755,963 | Mar. 29 | 5412 | 1196 | 109 | 1250 |
| Photograph-machine | P. V. W. Welsh | 756,087 | Mar. 29 | 5605 | 1237 | 109 | 1291 |
| Photographs. Rocket apparatus for taking | A. Maul | 757,825 | Apr. 19 | 3283 | 702 | 109 | 2066 |
| Photographic apparatus | E. J. Ray | 756,706 | Apr. 5 | 976 | 215 | 109 | 1552 |
| Photographic apparatus. Automatic | J. Powers | 754,090 | Mar. 8 | 1734 | {386 / 387} | 109 | 397 |
| Photographic case for tombstones | J. W. M. Witt and Z. D. Laney | 754,269 | Mar. 8 | 2070 | 459 | 109 | 470 |
| Photographic developing apparatus | O. Lienekampf and W. Nauck | 757,323 | Apr. 12 | 2225 | 486 | 109 | 1832 |
| Photographic film | R. A. Anthony | 754,736 | Mar. 15 | 3055 | 667 | 109 | 702 |
| Photographic film. Flexible | F. A. Anthony | 754,735 | Mar. 15 | 3054 | 667 | 109 | 702 |
| Photographic half-tone for book-printing and lithography | J. Vilim and F. Hauser | 755,417 | Mar. 22 | 4308 | ..... | 109 | 980 |
| Photographic lens | T. R. Dallmeyer | 756,779 | Apr. 5 | 1123 | 247 | 109 | 1563 |
| Photographic plate | A. A. Gurtner | 753,977 | Mar. 8 | 1594 | 340 | 109 | 352 |
| Photographic-plate carrying and changing apparatus | W. A. Peters | 756,402 | Apr. 5 | 425 | 88 | 109 | 1434 |
| Photographic plates and prints. Apparatus for developing and fixing | W. A. Peters | 758,277 | Apr. 26 | 4126 | 892 | 109 | 2281 |
| Photographic-printing apparatus | H. C. White and A. H. Mallison | 753,455 | Mar. 1 | 438 | 103 | 109 | 96 |
| Photographic-printing apparatus | H. C. White and A. H. Mallison | 757,796 | Apr. 19 | 3183 | 691 | 109 | 2057 |
| Photographic-printing frame | C. Whetham | 754,266 | Mar. 8 | 2063 | {457 / 458} | 109 | 469 |
| Photographic-printing machine | H. H. McIntire | 754,068 | Mar. 8 | 1718 | 382 | 109 | 394 |
| Photographic-printing machine | F. P. Stevens | 754,269 | Mar. 8 | 2040 | 454 | 109 | 465 |
| Photographic view-finder | J. A. Robertson | 754,808 | Mar. 15 | 3349 | 732 | 109 | 766 |
| Photometric apparatus | J. W. Howell | 756,963 | Apr. 12 | 1490 | {328 / 329} | 109 | 1675 |
| Photoprints, &c. Apparatus for removing surplus moisture from | J. Halden | 757,456 | Apr. 19 | 2488 | 545 | 109 | 1904 |
| Physician's examining and treating couch or table | C. C. Hazard | 757,807 | Apr. 19 | 3300 | 695 | 109 | 2060 |
| Piano | W. C. Hamilton | 756,531 | Apr. 26 | 4637 | 998 | 109 | 2396 |
| Piano action. Upright | F. Hammerle | 757,657 | Apr. 19 | 2911 | 633 | 109 | 1998 |
| Piano actions. Pianissimo device for grand | A. T. Strauch | 757,660 | Apr. 19 | 2973 | 647 | 109 | 2010 |
| Piano attachment. Pneumatic | R. C. Pryor | 754,498 | Mar. 15 | 2598 | {564 / 565} | 109 | 603 |
| Piano construction | P. M. Zeidler | 755,841 | Mar. 22 | 4166 | {920 / 921} | 109 | 969 |
| Piano key attachment | H. S. Strauss | 753,756 | Mar. 1 | 1088 | 235 | 109 | 222 |
| Piano. Mechanical | P. Pomero | 757,566 | Apr. 19 | 2723 | {595 / 596} | 109 | 1954 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Piano pedal-action. Grand | W. C. Bosenbury | 755,102 | Mar. 22 | 3719 | 817 | 109 | 866 |
| Piano-player. Automatic | H. Meyer | 756,674 | Apr. 5 | 917 | {200 / 201} | 109 | 1539 |
| Piano-player. Mechanical | G. Barthel | 755,098 | Mar. 22 | 3713 | 815 | 109 | 864 |
| Piano-players. Adjustable pedal for mechanical | A. E. Whitehead | 756,755 | Apr. 5 | 1074 | 239 | 109 | 1573 |
| Piano-player's key-striker | J. Courville | 757,889 | Apr. 19 | 3355 | 725 | 109 | 2094 |
| Piano-players. Pedal-stop action for automatic | W. F. Cooper, Jr | 754,750 | Mar. 15 | 3077 | 672 | 109 | 707 |
| Piano-players' striking devices. Guard for | F. W. Hedgeland | 756,853 | Apr. 12 | 1276 | 284 | 109 | 1632 |
| Piano-protector | G. P. Bent | 755,345 | Mar. 22 | 4175 | 922 | 109 | 961 |
| Piano touch-regulating attachment | L. Harriss and W. H. Kendall | 756,016 | Mar. 29 | 5479 | 1209 | 109 | 1265 |
| Pick and point | L. and M. Kovács | 757,206 | Apr. 12 | 1961 | 432 | 109 | 1782 |
| Picker: *See* Cotton-picker. Fruit-picker. | | | | | | | |
| Picture-frame | M. Wiskott | 755,267 | Mar. 22 | 4022 | 891 | 109 | 928 |
| Picture-hanger | H. Minck | 753,605 | Mar. 1 | 741 | 166 | 109 | 161 |
| Picture-hanging device | J. Bryden | 757,262 | Apr. 12 | 2080 | 454 | 109 | 1808 |
| Picture-projecting apparatus. Slide-feeding device for | W. M. Green and J. R. Gent | 757,737 | Apr. 19 | 3061 | {667 / 668} | 109 | 2029 |
| Pictures, &c. Reproducing multicolor | A. von Beust | 758,501 | Apr. 26 | 4578 | 983 | 109 | 2384 |
| Pie-making machine | J. C. Hutchison | 756,689 | Apr. 5 | 842 | 182 | 109 | 1521 |
| Pile-driver | J. H. Hopkins | 757,926 | Apr. 19 | 3422 | 740 | 109 | 2109 |
| Pile-driving apparatus | H. W. Phillips | 757,960 | Apr. 19 | 3483 | {754 / 755} | 109 | 2123 |
| Pile for forming concrete piling. Removable | F. Shuman | 756,805 | Apr. 5 | 1176 | 261 | 109 | 1595 |
| Piling. Sheet | L. P. Friestedt | 756,618 | Apr. 5 | 811 | 175 | 109 | 1514 |
| Pin: *See* Clasp-pin. Safety-pin. Clothes-pin. Scarf-pin. Hair-pin. Surveyor's pin. Hat-pin. | | | | | | | |
| Pin | S. Dancyger | 757,096 | Apr. 12 | 1762 | 382 | 109 | 1734 |
| Pin-clasp | W. G. Shockey | 755,063 | Mar. 22 | 3657 | 803 | 109 | 851 |
| Pin-lock | W. H. Taylor | 758,026 | Apr. 19 | 3622 | 784 | 109 | 2152 |
| Pin-lock | W. H. Taylor | 758,027 | Apr. 19 | 3623 | 784 | 109 | 2153 |
| Pin-retainer | J. Evans | 757,729 | Apr. 19 | 3045 | 664 | 109 | 2027 |
| Pin-tumbler lock | W. H. Taylor | 758,024 | Apr. 19 | 3618 | 783 | 109 | 2152 |
| Pin-tumbler-lock key | W. H. Taylor | 758,025 | Apr. 19 | 3620 | 783 | 109 | 2152 |
| Pipe: *See* Tobacco-pipe. | | | | | | | |
| Pipe and nut wrench. Combined | J. C. Snider | 754,509 | Mar. 15 | 2623 | 569 | 109 | 600 |
| Pipe and nut wrench. Combined | G. E. Carnes | 757,861 | Apr. 19 | 3298 | 714 | 109 | 2061 |
| Pipe connections. Apparatus for tightening socket | H. Beinhauer | 753,464 | Mar. 1 | 456 | 107 | 109 | 100 |
| Pipe-coupling | J. E. Tinker | 754,258 | Mar. 8 | 2051 | 455 | 109 | 467 |
| Pipe-coupling | J. T. Seals | 755,240 | Mar. 22 | 3986 | 884 | 109 | 920 |
| Pipe-coupling | H. Broome | 755,994 | Mar. 29 | 5431 | 1200 | 109 | 1255 |
| Pipe-coupling. Automatic | S. H. Powers | 758,102 | Apr. 26 | 3782 | 822 | 109 | 2205 |
| Pipe-coupling. Flexible | C. O. Cole | 757,888 | Apr. 19 | 3349 | 724 | 109 | 2093 |
| Pipe coupling. Valved | J. J. Reilly | 757,148 | Apr. 12 | 1860 | {406 / 407} | 109 | 1756 |
| Pipe-covering | M. T. Quigley | 756,053 | Mar. 29 | 5538 | {1221 / 1222} | 109 | 1278 |
| Pipe-cutter | M. Sullivan | 754,256 | Mar. 8 | 2048 | 455 | 109 | 466 |
| Pipe fitting and testing apparatus | H. F. Renner | 758,334 | Apr. 26 | 4256 | 914 | 109 | 2310 |
| Pipe-hanger | W. Vanderman | 755,082 | Mar. 22 | 3691 | 810 | 109 | 859 |
| Pipe-hanger | T. Fee | 753,969 | Mar. 8 | 1515 | 337 | 109 | 349 |
| Pipe-joint | C. MacTaggart | 758,458 | Apr. 26 | 4488 | 965 | 109 | 2362 |
| Pipe joints. Machine for uniting sheet-metal | W. M. Rapp | 758,278 | Apr. 26 | 4132 | 892 | 109 | 2282 |
| Pipe or bar cutter | J. J. Mulvaney | 758,330 | Apr. 26 | 4250 | 918 | 109 | 2310 |
| Pipe or cigar-holder mouthpiece | W. T. Snell | 757,975 | Apr. 19 | 3512 | 762 | 109 | 2129 |
| Pipe-supporting bracket. Adjustable | C. Kessler | 755,370 | Mar. 22 | 4223 | 934 | 109 | 973 |
| Pipe-wrench | A. Clarkson | 755,847 | Mar. 29 | 5154 | 1139 | 109 | 1194 |
| Pipe-wrench | G. McKercher | 758,725 | Mar. 1 | 961 | 222 | 109 | 211 |
| Pipes. Adjustable joint for water and steam | K. Chickering | 755,846 | Mar. 29 | 5152 | 1139 | 109 | 1194 |
| Pipes. Cleaning and coating | A. L. Holmes | 757,112 | Apr. 12 | 1793 | 393 | 109 | 1740 |
| Piston-ring | J. G. McDowell | 753,610 | Mar. 1 | 748 | ..... | 109 | 163 |
| Piston-ring | W. C. Smith | 757,065 | Apr. 12 | 1701 | 369 | 109 | 1720 |
| Piston-rod | D. B. Morison | 757,214 | Apr. 12 | 1995 | 434 | 109 | 1785 |
| Pistons. Machine having rotating | H. A. J. Neumann | 754,793 | Mar. 15 | 3162 | 689 | 109 | 725 |
| Pitman | C. H. O. Hamann | 753,390 | Mar. 1 | 316 | 71,72 | 109 | 71 |
| Pitman connection | K. F. Seith | 754,506 | Mar. 15 | 2617 | 568 | 109 | 608 |
| Placket-closer | H. Pease | 755,164 | Mar. 22 | 3927 | 846 | 109 | 898 |
| Plane. Scraping | D. A. Moon | 758,459 | Apr. 26 | 4489 | 965 | 109 | 2362 |
| Planer | W. Ulses | 755,587 | Mar. 22 | 4600 | 1022 | 109 | 1053 |
| Planing or smoothing curved or irregular objects. Machine for | E. Rawson | 757,963 | Apr. 19 | 3487 | {756 / 757} | 109 | 2124 |
| Plant-chopper. Rotary | C. W. Smith | 755,321 | Mar. 22 | 4122 | {911 / 912} | 109 | 947 |
| Plant-protector | W. E. Lewis | 756,384 | Apr. 5 | 395 | 80 | 109 | 1428 |
| Plant-protector | C. Leigh | 754,322 | Mar. 8 | 2162 | 479 | 109 | 489 |
| Plant-protector | M. B. Lewis | 756,123 | Mar. 29 | 5677 | 1253 | 109 | 1307 |
| Plant support and holder. Adjustable | A. M. Lane | 757,045 | Apr. 12 | 1673 | 362 | 109 | 1714 |
| Planter and fertilizer-distributer. Seed | H. C. Chessman | 754,542 | Mar. 15 | 2674 | 581 | 109 | 620 |
| Planter and marker. Automatic corn | J. D. Kinney | 757,818 | Apr. 19 | 3212 | {697 / 698} | 109 | 2062 |
| Planter. Broadcast seed | G. S. Boyd | 756,153 | Mar. 29 | 5716 | 1262 | 109 | 1315 |
| Planter check-line button | S. B., C. G., and J. C. Abbott | 758,231 | Apr. 26 | 4022 | {873 / 874} | 109 | 2258 |
| Planter. Corn | W. Winkel | 758,162 | Apr. 26 | 3892 | 845 | 109 | 2231 |
| Planter. Corn or cotton | L. P. Graham | 757,399 | Apr. 12 | 2376 | 517 | 109 | 1864 |
| Planter drive-gear. Corn | G. B. Simmons and J. R. Whorton | 756,722 | Apr. 5 | 1016 | 225 | 109 | 1559 |
| Planter seeding attachment. Corn | W. S. Graham | 755,585 | Mar. 22 | 4612 | 1025 | 109 | 1056 |
| Plaster-board | G. P. Oates | 753,729 | Mar. 1 | 987 | {223 / 224} | 109 | 213 |
| Plaster-of-paris. Manufacture of | H. E. Sharp | 757,060 | Apr. 12 | 1691 | 367 | 109 | 1718 |
| Plate-box | W. Brothers | 757,649 | Apr. 19 | 2899 | ..... | 109 | 1995 |
| | H. D. and R. C. Bickford | 757,540 | Apr. 19 | 2669 | 585 | 109 | 1942 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Plate-holder | J. H. Smith and A. Brown | 756,422 | Apr. 5 | 467 | 97 | 109 | 1442 |
| Plate holder and adjuster | W. H. Golding | 756,242 | Apr. 26 | 4046 | 879 | 109 | 2263 |
| Plate-lifter | G. S. Solomon | 754,250 | Mar. 8 | 2037 | 453 | 109 | 464 |
| Pliers | W. A. Bernard | 753,224 | Mar. 1 | 17 | 4 | 109 | 6 |
| Pliers | H. E. Bonschur | 755,440 | Mar. 22 | 4345 | 993 | 109 | 996 |
| Pliers | H. F. Kellemen | 756,505 | Apr. 5 | 618 | 134 | 109 | 1472 |
| Pliers-jaws | W. G. G. Weldinger | 753,456 | Mar. 1 | 443 | 103 / 104 | 109 | 97 |
| Plow | G. L. Bradley | 753,468 | Mar. 1 | 462 | 108 | 109 | 101 |
| Plow | G. L. Edgerton | 753,478 | Mar. 1 | 477 | 112 | 109 | 104 |
| Plow | J. Khell | 754,572 | Mar. 15 | 2729 | 594 | 109 | 630 |
| Plow | G. W. Simmons | 755,178 | Mar. 22 | 3858 | 852 | 109 | 894 |
| Plow | W. H. Wilson | 755,424 | Mar. 22 | 4317 | 955 | 109 | 992 |
| Plow | B. C. Reese and G. W. Broome | 755,548 | Mar. 22 | 4529 | 1008 | 109 | 1036 |
| Plow | S. W. J. Stone | 755,969 | Mar. 29 | 5380 | 1187 | 109 | 1244 |
| Plow | L. Sack | 756,414 | Apr. 5 | 452 | 93, 94 | 109 | 1439 |
| Plow | J. B. Jarmin | 757,120 | Apr. 12 | 1807 | 395 / 396 / 397 | 109 | 1742 |
| Plow | F. Dinwiddie | 757,443 | Apr. 19 | 2464 | 538 / 539 | 109 | 1899 |
| Plow | O. C. Babcock | 757,539 | Apr. 19 | 2668 | 584 | 109 | 1942 |
| Plow | F. Wienke | 757,855 | Apr. 19 | 3289 | 712 | 109 | 2078 |
| Plow and planter. Lister | C. R. Davis | 757,998 | Apr. 19 | 3556 | 770 | 109 | 2136 |
| Plow and planter. Lister | C. R. Davis | 757,999 | Apr. 19 | 3557 | 771 | 109 | 2136 |
| Plow and planter. Sulky lister | C. R. Davis | 758,000 | Apr. 19 | 3557 | 771 | 109 | 2136 |
| Plow attachment | J. D. Heard | 755,295 | Mar. 22 | 4066 | 901 | 109 | 957 |
| Plow attachment | J. D. Crowe | 755,624 | Mar. 29 | 4692 | 1044 | 109 | 1087 |
| Plow. Disk | C. Wagner | 757,371 | Apr. 12 | 2313 | 505 / 506 | 109 | 1852 |
| Plow. Gang | W. L. Casaday | 755,614 | Mar. 29 | 4662 | 1036 / 1037 / 1038 | 109 | 1080 |
| Plow harrow attachment | J. Scherer | 753,635 | Mar. 1 | 793 | 177 | 109 | 173 |
| Plow. Listing | E. P. Currey | 755,113 | Mar. 22 | 3739 | 821 | 109 | 869 |
| Plow-point | G. B. Gwynes | 756,849 | Apr. 12 | 1270 | 282 | 109 | 1630 |
| Plow. Sulky | C. R. Davis | 757,996 | Apr. 19 | 3554 | 770 | 109 | 2137 |
| Plow. Sulky lister | C. R. Davis | 757,994 | Apr. 19 | 3551 | 769 | 109 | 2137 |
| Plumb and level | G. C. Brown | 753,354 | Mar. 1 | 248 | 56 | 109 | 56 |
| Plumb and level | C. H. Craven | 753,551 | Mar. 1 | 647 | 146 | 109 | 142 |
| Plumbing-fixtures. Waste control for | E. L. Angell | 756,040 | Apr. 26 | 3663 | 798 | 109 | 2182 |
| Pneumatic-despatch apparatus | C. F. Stoddard | 758,569 | Apr. 26 | 4711 | 1016 | 109 | 2412 |
| Pneumatic-tube carrier | D. H. Jackman | 755,878 | Mar. 29 | 5200 | 1152 | 109 | 1206 |
| Pocket | L. M. Brown | 757,879 | Apr. 19 | 3330 | 721 | 109 | 2088 |
| Pocket-book | O. A. Lehman | 757,755 | Apr. 19 | 3100 | 675 | 109 | 2037 |
| Pocket or other knife | I. Kinney | 758,142 | Apr. 26 | 3850 | 837 | 109 | 2224 |
| Pocket utensil | P. M. Ryan | 755,172 | Mar. 22 | 3844 | 848 | 109 | 891 |
| Poke. Animal | T. H. Ewing | 757,101 | Apr. 12 | 1770 | 384 | 109 | 1735 |
| Poke. Animal | J. P. Montgomery | 756,213 | Apr. 26 | 3990 | 866 | 109 | 2152 |
| Pole | S. J. Terry | 755,413 | Mar. 22 | 4208 | 950 | 109 | 988 |
| Pole. Carriage | J. McIntosh | 753,423 | Mar. 1 | 387 | 90 | 109 | 84 |
| Pole-climber | F. X. Schmucker | 754,016 | Mar. 8 | 1593 | 355 | 109 | 367 |
| Pole or post base | G. H. Jones | 753,709 | Mar. 1 | 932 | 216 | 109 | 205 |
| Pole tip. Vehicle | A. V. Swanson | 755,964 | Mar. 29 | 5384 | 1188 | 109 | 1245 |
| Polishing and buffing machine | L. E. Miller and C. J. Barry | 755,031 | Mar. 22 | 3600 | 790 / 791 | 109 | 838 |
| Polishing-machine | D. McCance | 757,763 | Apr. 19 | 3112 | 678 | 109 | 2039 |
| Portable bath or sack for washing or bathing purposes | A. Herz | 754,217 | Mar. 8 | 1979 | 440 | 109 | 452 |
| Post: *See* Binding-post. Fence-post. Hitching-post. Metal post. | | | | | | | |
| Post and lock. Combined sectional | A. D. Hulquist | 755,006 | Mar. 22 | 3562 | 781 | 109 | 829 |
| Post-hole digger | C. Butcher | 754,421 | Mar. 15 | 2416 | 529 | 109 | 563 |
| Post-office furniture | M. S. Field | 753,855 | Mar. 8 | 1303 | 293 | 109 | 301 |
| Postal money-carrier | W. G. Hough | 754,218 | Mar. 8 | 1980 | 440 | 109 | 452 |
| Pot: *See* Watering-pot. | | | | | | | |
| Potato-bug gatherer and destroyer | F. Keener | 756,650 | Apr. 5 | 864 | 188 / 189 | 109 | 1526 |
| Potato-bug machine | M. Harmon | 755,760 | Mar. 29 | 4999 | 1112 | 109 | 1156 |
| Potato-flour by means of rolls. Machinery for manufacturing | O. Reinle and H. Baumgarten | 755,389 | Mar. 22 | 4263 | 941 | 109 | 980 |
| Pottery-kiln | E. S. Bacon | 756,561 | Apr. 5 | 715 | 154 | 109 | 1494 |
| Powder-box | H. B. Kent | 755,299 | Mar. 22 | 4074 | 902 | 109 | 939 |
| Powder box. Tooth | M. H. Fletcher | 758,309 | Apr. 26 | 4207 | 905 | 109 | 2300 |
| Powder-can | E. S. Savage | 757,231 | Apr. 12 | 2026 | 441 | 109 | 1792 |
| Powder-container | J. M. McIntyre | 754,230 | Mar. 8 | 2002 | 445 | 109 | 457 |
| Powder rod or grain and making same. Smokeless | H. Maxim | 753,904 | Mar. 8 | 1532 | 346 / 347 | 109 | 359 |
| Power: *See* Horse-power. | | | | | | | |
| Power and motion. Mechanism for transmitting and controlling | W. H. Kessler | 757,751 | Apr. 19 | 3092 | 673 / 674 | 109 | 2035 |
| Power-generating apparatus | R. L. Everett | 757,289 | Apr. 12 | 2138 | 467 / 468 | 109 | 1814 |
| Power machine. Hand or foot | J. P. Cline | 754,849 | Mar. 15 | 3280 | 714 | 109 | 751 |
| Power mechanism. Interchangeable hand and motive | C. E. Ellicott and J. B. Norris | 754,757 | Mar. 15 | 3087 | 674 | 109 | 710 |
| Power-transmitter | J. Coates | 757,599 | Apr. 19 | 2786 | 609 | 109 | 1969 |
| Power-transmitter | W. H. Merritt and J. C. Wall | 758,550 | Apr. 26 | 4666 | 1005 | 109 | 2402 |
| Power-transmitting apparatus | M. L. Schlueter | 755,799 | Mar. 29 | 5093 | 1122 / 1123 | 109 | 1169 |
| Power-transmitting device | W. R. Smith | 755,066 | Mar. 22 | 3662 | 804 | 109 | 853 |
| Power-transmitting device | W. R. Smith | 755,067 | Mar. 22 | 3664 | 804 | 109 | 853 |
| Power-transmitting device. Frictional | W. O. and J. D. Worth | 757,379 | Apr. 12 | 2334 | 509 | 109 | 1855 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Power-transmitting machinery | E. Winans | 755,590 | Mar. 22 | 4604 | 1023 | 109 | 1054 |
| Preserve-jar and cap therefor | R. A. Gilchrist | 756,956 | Apr. 12 | 1475 | 325 | 109 | 1673 |
| Preserving fruit | F. Passarelli | 754,340 | Mar. 8 | 2192 | 488 | 109 | 496 |
| Press: *See* Baling-press. Cement-plate press. Creasing-press. Fluid-press. Fruit-press. Macaroni-press. Meat-press. Printing-press. | | | | | | | |
| Press | M. Brown | 753,539 | Mar. 1 | 623 | 141 | 109 | 136 |
| Press | G. B. Rowe | 757,501 | Apr. 19 | 2576 | 565 / 566 | 109 | 1921 |
| Press and butter-mold. Combination | W. N. Haring | 757,301 | Apr. 12 | 2164 | 475 | 109 | 1821 |
| Press-rack | A. Morrison and A. Morlock | 756,037 | Mar. 29 | 5515 | 1216 | 109 | 1272 |
| Press-rack | A. Morrison and A. Morlock | 756,038 | Mar. 29 | 5516 | 1216 | 109 | 1272 |
| Press safety device | W. M. Rockstroh | 756,801 | Apr. 5 | 1169 | 258 / 259 | 109 | 1594 |
| Presses or the like. Fluid system for | W. M. Holmes | 753,261 | Mar. 1 | 91 | 23 | 109 | 23 |
| Pressing-iron | R. Grant | 755,128 | Mar. 22 | 3760 | 826 | 109 | 874 |
| Pressure. Controlling device for maintaining steady | T. P. Ford | 757,903 | Apr. 19 | 3378 | 730 | 109 | 2099 |
| Pressure-indicator | A. de Dion and G. Bouton | 754,287 | Mar. 8 | 2100 | 466 | 109 | 476 |
| Pressure-regulator | B. Zindel | 757,590 | Apr. 19 | 2773 | 606 | 109 | 1967 |
| Printer's-chase attachment | L. G. Conly | 753,671 | Mar. 1 | 873 | 198 | 109 | 189 |
| Printer's galley | J. L. Lee | 758,540 | Apr. 26 | 4654 | 1002 | 109 | 2399 |
| Printer's plate catch or clutch | J. L. Lee | 758,370 | Apr. 26 | 4321 | 928 | 109 | 2324 |
| Printers' rollers. Machine for cleaning | S. Crump | 753,958 | Mar. 8 | 1493 | 334 | 109 | 345 |
| Printers' rollers. Machine for cleaning | S. Crump | 753,960 | Mar. 8 | 1498 | 335 | 109 | 346 |
| Printers' rollers. Making | S. Crump | 753,959 | Mar. 8 | 1496 | 335 | 109 | 345 |
| Printing | W. Thomas | 754,257 | Mar. 8 | 2050 | | 109 | 467 |
| Printing and folding machine | W. Scott | 753,640 | Mar. 1 | 799 | 178 / 179 | 109 | 174 |
| Printing apparatus | J. J. A. Jones | 758,210 | Apr. 26 | 3984 | 864 | 109 | 2251 |
| Printing apparatus. Rotary stencil | S. Brown | 753,469 | Mar. 1 | 464 | 109 | 109 | 101 |
| Printing-block | W. M. Rockstroh | 753,740 | Mar. 1 | 1006 | 229 | 109 | 216 |
| Printing curves. Typographically | V. A. Brusselet | 754,044 | Mar. 8 | 1643 | 366 | 109 | 378 |
| Printing-forms on cylindrical surfaces. Producing intaglio | G. F. and J. W. McIndoe | 753,290 | Mar. 1 | 138 | | 109 | 34 |
| Printing-forms on cylindrical surfaces. Producing intaglio | G. F. and J. W. McIndoe | 753,291 | Mar. 1 | 140 | | 109 | 34 |
| Printing-machine | G. F. Read | 753,914 | Mar. 8 | 1398 | 315 / 316 / 317 | 109 | 322 |
| Printing-machine | J. White | 753,947 | Mar. 8 | 1465 | 330 | 109 | 337 |
| Printing-machine. Electric | G. S. Gallagher | 753,872 | Mar. 8 | 1313 | 296 | 109 | 308 |
| Printing-machine envelop feeding and ejecting mechanism | C. A. Belknap | 758,044 | Apr. 26 | 3668 | 794 / 795 | 109 | 2183 |
| Printing-machine sheet-delivery mechanism | H. M. Barber | 757,248 | Apr. 12 | 2056 | 448 / 449 | 109 | 1798 |
| Printing on inflatable articles | E. C. White | 755,976 | Mar. 29 | 5402 | | 109 | 1248 |
| Printing. Photomechanical | E. Spitzer | 758,338 | Apr. 26 | 4261 | | 109 | 2311 |
| Printing. Planographic | G. R. Cornwall | 753,368 | Mar. 1 | 260 | 61, 62 | 109 | 61 |
| Printing. Planographic | R. J. Sachers | 758,108 | Apr. 26 | 3794 | 824 | 109 | 2208 |
| Printing-plate | R. J. Sachers | 758,590 | Apr. 26 | 4769 | 1026 | 109 | 2425 |
| Printing-plates. Making | B. Gisevius | 755,225 | Mar. 22 | 3989 | 872 | 109 | 910 |
| Printing. Preparing color-plates for | C. N. Smith | 753,746 | Mar. 1 | 1018 | 231 | 109 | 219 |
| Printing-press | W. O. Todd | 756,432 | Apr. 5 | 485 | 101 | 109 | 1446 |
| Printing-press | F. J. Herdle | 757,460 | Apr. 19 | 2496 | 547 / 548 / 549 / 550 | 109 | 1905 |
| Printing-press | D. H. Saunders | 757,967 | Apr. 19 | 3497 | 758 / 759 | 109 | 2126 |
| Printing-press | W. Scott | 758,112 | Apr. 26 | 3802 | 825 / 826 | 109 | 2210 |
| Printing-press delivery-track | G. P. Fenner | 756,008 | Mar. 29 | 5464 | 1205 / 1206 | 109 | 1262 |
| Printing-press grip-finger | H. D. Fleshutz | 755,863 | Mar. 29 | 5180 | 1147 | 109 | 1200 |
| Printing press. Multicolor and text | D. R. H. Sieberth | 755,948 | Mar. 29 | 5356 | 1182 / 1183 | 109 | 1238 |
| Printing-press. Platen | W. M. Rockstroh | 756,802 | Apr. 5 | 1170 | 259 / 260 | 109 | 1594 |
| Printing-press. Platen | J. Heim | 757,458 | Apr. 19 | 2490 | 545 / 546 | 109 | 1904 |
| Printing-press tympan feed-gage | I. H. Mills | 757,212 | Apr. 12 | 1991 | 484 | 109 | 1785 |
| Printing-presses. Means for attaching blankets to cylinders of | A. B. Stewart | 754,258 | Mar. 8 | 2044 | 454 | 109 | 465 |
| Printing process | M. Rudometoff | 758,192 | Apr. 26 | 3949 | | 109 | 2243 |
| Printing-roller | B. J. Such | 758,486 | Apr. 26 | 4533 | 974 | 109 | 2378 |
| Printing-rollers. Means for securing impression-surfaces to | F. J. Herdle | 757,461 | Apr. 19 | 2504 | 550 | 109 | 1906 |
| Printing-surfaces. Making | F. C. Whippey | 756,753 | Apr. 5 | 1071 | 239 | 109 | 1572 |
| Printing-wheel | J. J. A. Jones | 758,256 | Apr. 26 | 4062 | 883 | 109 | 2271 |
| Projectile | J. R. Jacobs | 753,272 | Mar. 1 | 107 | 27 | 109 | 26 |
| Projectile. Explosive | J. F. Meigs and E. Gathmann | 753,504 | Mar. 1 | 526 | 122 / 123 | 109 | 115 |
| Propeller | J. I. Wood | 755,426 | Mar. 22 | 4322 | 955 | 109 | 992 |
| Propeller. Fish-tail | Z. von Limbeck | 753,717 | Mar. 1 | 967 | 219 | 109 | 208 |
| Propeller. Self-clearing | C. H. Lee | 756,081 | Mar. 29 | 5504 | 1214 | 109 | 1270 |
| Propelling apparatus. Vessel | M. P. Schetzel | 754,710 | Mar. 15 | 3012 | 657 | 109 | 692 |
| Protractor and its accompaniments | J. H. Renshaw | 757,568 | Apr. 19 | 2728 | 597 | 109 | 1955 |
| Protractor-tape | G. I. Herrick | 756,632 | Apr. 5 | 833 | 180 | 109 | 1518 |
| Puller: *See* Beet-puller. Nail-puller. Spike-puller. | | | | | | | |
| Pulley | A. L. Moore and R. Deming | 756,391 | Apr. 5 | 404 | 83 | 109 | 1430 |
| Pulley. Belt | E. Bauer | 754,960 | Mar. 22 | 3484 | 762 | 109 | 813 |
| Pulley. Clutch | G. A. Medlin | 758,548 | Apr. 26 | 4664 | 1004 | 109 | 2401 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Pulley-driving mechanism | I. J. Daily | 757,891 | Apr. 19 | 3357 | 725 | 109 | 2004 |
| Pulley mechanism. Reversible | W. H. Kessler | 755,885 | Mar. 29 | 5223 | 1155 | 109 | 1200 |
| Pulley. Sheet-metal | C. A. Brinley | 757,088 | Apr. 12 | 1748 | 380 | 109 | 1730 |
| Pulp-beating engine | J. White | 757,585 | Apr. 19 | 2766 | 605 | 109 | 1965 |
| Pulp-grinder | M. O. Kasson | 754,071 | Mar. 8 | 1691 | 376 | 109 | 389 |
| Pulp grinder. Wood- | J. H. Baker, G. F. Shevlin, and F. H. Baker. | 755,980 | Mar. 29 | 5422 | 1198 | 109 | 1253 |
| Pulp-strainer. Horizontal | P. Reinicke | 754,161 | Mar. 8 | 1861 | 415 | 109 | 427 |
| Pulverizer and roller. Combined | M. G. Cameron | 753,953 | Mar. 8 | 1482 | 332 | 109 | 342 |
| Pulverizing-machine | S. Hughes | 756,964 | Apr. 12 | 1495 | 329 | 109 | 1677 |
| Pulverizing-machine | A. Schoellhorn and H. S. Albrecht. | 757,960 | Apr. 19 | 3508 | 760 | 109 | 2127 |
| Pump | A. J. Miksch | 753,507 | Mar. 1 | 533 | 124 | 109 | 117 |
| Pump | F. E. Ten Eyck | 753,530 | Mar. 1 | 604 | 138 | 109 | 131 |
| Pump | J. Hahn | 753,828 | Mar. 1 | 1231 | 277 | 109 | 263 |
| Pump | F. W. and C. A. Krogh | 753,986 | Mar. 8 | 1539 | 343 | 109 | 356 |
| Pump | J. M. Crowley | 754,431 | Mar. 15 | 2450 | 534 | 109 | 570 |
| Pump | H. C. Stouffer | 755,072 | Mar. 22 | 3673 | 806 | 109 | 855 |
| Pump | H. J. Park | 755,236 | Mar. 22 | 3958 | 877 | 109 | 914 |
| Pump | J. G. Kirksey | 756,968 | Apr. 12 | 1505 | 332 | 109 | 1679 |
| Pump | J. S. Hemenway | 756,630 | Apr. 5 | 829 | 179 | 109 | 1518 |
| Pump. Air- | J. E. Fisher | 758,516 | Apr. 26 | 4602 | 991 | 109 | 2389 |
| Pump. Air- | G. McKay and W. O. Hildreth | 755,690 | Mar. 29 | 4805 | 1070 | 109 | 1112 |
| Pump. Centrifugal | J. H. Miller | 758,577 | Apr. 26 | 4333 | 930 | 109 | 2327 |
| Pump-cylinder | E. J. Hannah | 756,113 | Mar. 29 | 5660 | 1249 | 109 | 1303 |
| Pump. Double-acting force- | J. C. Whitmer | 753,771 | Mar. 1 | 1064 | 244 | 109 | 229 |
| Pump driving mechanism | A. H. Spencer and J. W. Simpson. | 756,903 | Apr. 12 | 1373 | 306 | 109 | 1651 |
| Pump. Fluid- | H. M. Etter | 756,105 | Mar. 29 | 5648 | 1247 | 109 | 1301 |
| Pump-head | W. Tate | 754,826 | Mar. 15 | 3220 | 701 | 109 | 758 |
| Pump. Heating and condensing feed- | J. F. McCanna and J. R. Markle. | 754,485 | Mar. 15 | 2563 | 558 | 109 | 596 |
| Pump. Lubricating- | L. M. A. Butin | 755,353 | Mar. 22 | 4188 | 925 | 109 | 964 |
| Pump or motor | H. M. Chase | 753,361 | Mar. 1 | 256 | 58 | 109 | 58 |
| Pump. Power- | H. E. Deckeback | 755,631 | Mar. 29 | 4704 | {1045 {1046 | 109 | 1090 |
| Pump. Rotary | C. H. Sanborn and W. F. Runnells. | 758,022 | Apr. 19 | 3613 | {781 {782 | 109 | 2151 |
| Pump. Ship- | F. B. Corey | 753,367 | Mar. 1 | 267 | 60, 61 | 109 | 60 |
| Pump. Steam- | R. Richardson | 755,988 | Mar. 29 | 5335 | 1177 | 109 | 1233 |
| Pump. Steam-engine air- | O. Arendt | 754,186 | Mar. 8 | 1906 | 424 | 109 | 437 |
| Pump-valve | H. Unzicker | 756,993 | Apr. 12 | 1554 | 341 | 109 | 1688 |
| Pump valve mechanism | E. M. Coryell | 753,550 | Mar. 1 | 646 | 146 | 109 | 142 |
| Pump. Vertical-plunger sinking | A. Kryszat | 758,183 | Apr. 26 | 3934 | 854 | 109 | 2240 |
| Pumps. Concentric valve for compressor- | C. Robinson | 757,499 | Apr. 19 | 2574 | 565 | 109 | 1920 |
| Pumping apparatus. Oil- | E. A. Yocum and J. A. Swihart | 756,766 | Apr. 5 | 1094 | 242 | 109 | 1576 |
| Pumping-jack | R. M. and G. T. Tull | 753,986 | Mar. 8 | 1450 | 325 | 109 | 334 |
| Punch | T. K. Davison | 758,425 | Apr. 26 | 4431 | 962 | 109 | 2349 |
| Punch. Check- | H. Rhodes | 758,279 | Apr. 26 | 4133 | 898 | 109 | 2282 |
| Punching-bag | G. A. Shoemaker | 756,902 | Apr. 12 | 1372 | 306 | 109 | 1651 |
| Punching-machine | C. J. Klein | 757,308 | Apr. 12 | 1977 | 431 | 109 | 1782 |
| Push-button | W. A. Church | 757,541 | Apr. 19 | 2670 | 585 | 109 | 1943 |
| Push-button switch | O. D. and D. W. Shirk | 757,061 | Apr. 12 | 1692 | {367 {368 | 109 | 1718 |
| Push-rake | O. L. Hubbard | 753,366 | Mar. 1 | 99 | 25 | 109 | 25 |
| Puzzle | G. L. Mott | 753,430 | Mar. 1 | 380 | 89 | 109 | 83 |
| Puzzle | D. L. Munro | 753,851 | Mar. 1 | 1236 | 277 | 109 | 265 |
| Puzzle | L. Van Putten | 754,734 | Mar. 1 | 250 | 56 | 109 | 56 |
| Puzzle | H. Bruck | 753,355 | Mar. 1 | 250 | 56 | 109 | 56 |
| Puzzle-lock | A. S. Dietz | 754,129 | Mar. 8 | 1811 | 403 | 109 | 416 |
| Pyrographic apparatus | Z. N. Tyssowska | 754,944 | Mar. 15 | 3458 | 756 | 109 | 789 |
| Pyrographic work. Tool for | H. G. Nichols | 754,096 | Mar. 8 | 1725 | 385 | 109 | 396 |
| Quadrant. Traverse | G. Adsit | 757,081 | Apr. 12 | 1726 | 375 | 109 | 1725 |
| Quilling-machine | R. R. Logan | 758,148 | Mar. 22 | 3800 | 837 | 109 | 883 |
| Race-track appliance | C. E. Foulks | 754,996 | Mar. 22 | 3525 | 772 | 109 | 821 |
| Race-track barrier | | | | | | | |
| Rack: *See* Clothing-rack. Cooling-rack. Display-rack. Drier-rack. Harness-rack. Hat-rack. Hat, coat, and umbrella rack. Hook-rack. Music-rack. Newspaper-rack. Press-rack. Spool-rack. Towel-rack. Towel or other rack. | | | | | | | |
| Rack | C. D. Lyon | 758,396 | Mar. 1 | 733 | 164 | 109 | 159 |
| Racking apparatus. Beer- | H. W. Colby | 758,618 | Mar. 29 | 4674 | 1040 | 109 | 1083 |
| Radiating device. Heat- | J. H. Bullard | 754,195 | Mar. 8 | 1919 | 427 | 109 | 439 |
| Radiator | G. A. Mower | 754,156 | Mar. 8 | 1853 | 413 | 109 | 426 |
| Radiator | R. Barrett | 756,302 | Apr. 5 | 8 | 2, 3 | 109 | 1344 |
| Radiator-valve | F. W. Leuthesser | 756,393 | Apr. 5 | 398 | 90 | 109 | 1427 |
| Radiator-valve | A. L. Bower | 757,067 | Apr. 12 | 1747 | 380 | 109 | 1730 |
| Radiator-vent | W. W. Lower | 756,795 | Apr. 5 | 1159 | 257 | 109 | 1592 |
| Radiator vent. Steam- | W. W. Lower | 756,794 | Apr. 5 | 1157 | 257 | 109 | 1591 |
| Radiators or the like. Support for | G. H. Colton | 755,111 | Mar. 22 | 3736 | 821 | 109 | 869 |
| Rail | L. Steinberger | 755,326 | Mar. 22 | 4131 | 914 | 109 | 949 |
| Rail-bender | R. O. Hintz | 754,562 | Mar. 15 | 2709 | 599 | 109 | 627 |
| Rail-bond. Electric | J. Landsing | 755,880 | Mar. 29 | 5229 | 1156 | 109 | 1211 |
| Rail-bonding construction | E. G. Thomas | 757,070 | Apr. 12 | 1707 | 371 | 109 | 1721 |
| Rail-brake. Electromagnetic | K. A. Wilde | 755,208 | Mar. 22 | 3905 | 862 | 109 | 908 |
| Rail chair and joint | C. A. Carbaugh | 755,449 | Mar. 22 | 4302 | 966 | 109 | 1000 |
| Rail-clamp | O. D. Lent | 755,080 | Mar. 22 | 3584 | 787 | 109 | 834 |
| Rail clamp. Guard- | P. E. Kelly and J. W. Riordan | 758,536 | Apr. 26 | 4643 | 1000 | 109 | 2297 |
| Rail-clearer | H. C. King | 758,558 | Apr. 26 | 4648 | 1001 | 109 | 2298 |
| Rail-joint | P. Holbrook | 753,305 | Mar. 1 | 323 | 73 | 109 | 73 |
| Rail-joint | B. C. Rowell | 753,434 | Mar. 1 | 406 | 96 | 109 | 88 |
| Rail-joint | J. M. Staples | 753,441 | Mar. 1 | 419 | 98 | 109 | 91 |
| Rail-joint | W. C. Burgum | 753,470 | Mar. 1 | 466 | 109 | 109 | 102 |
| Rail-joint | A. Chrestensen | 753,854 | Mar. 8 | 1293 | 295 | 109 | 297 |
| Rail-joint | J. R. Gilbert | 753,874 | Mar. 8 | 1317 | 297 | 109 | 304 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Rail-joint | W. Watkins | 754,727 | Mar. 15 | 3041 | 664 | 109 | 699 |
| Rail-joint | R. O. Millard and T. L. Henry | 755,151 | Mar. 22 | 3908 | 838 | 109 | 884 |
| Rail-joint | J. B. Climo | 755,848 | Mar. 29 | 5155 | 1139 | 109 | 1194 |
| Rail-joint | O. L. Fisher and W. W. Holston | 756,226 | Apr. 5 | 69 | 15 | 109 | 1357 |
| Rail-joint | J. W. Smith | 756,423 | Apr. 5 | 469 | 97 | 109 | 1442 |
| Rail-joint | G. A. Weber | 756,443 | Apr. 5 | 513 | {106 {107 | 109 | 1452 |
| Rail-joint | C. F. Keener | 757,316 | Apr. 12 | 2211 | 488 | 109 | 1830 |
| Rail-joint | M. Löpprich | 757,936 | Apr. 19 | 3443 | 746 | 109 | 2113 |
| Rail-joint | M. Warner | 757,984 | Apr. 19 | 3536 | 766 | 109 | 2133 |
| Rail-joint | E. F. Evans and T. J. Strange | 758,055 | Apr. 26 | 3689 | 801 | 109 | 2187 |
| Rail-joint | G. W. Dickey | 758,586 | Apr. 26 | 4738 | 1021 | 109 | 2418 |
| Rail-joint bridge-piece | W. Goldie | 758,526 | Apr. 26 | 4624 | 996 | 109 | 2393 |
| Rail-joint coupling | J. W. Hafer | 755,764 | Mar. 29 | 4990 | 1110 | 109 | 1154 |
| Rail-joint splice-bar. Lock- | R. Lang | 756,380 | Apr. 5 | 866 | 79 | 109 | 1426 |
| Rail-loading machine | F. Thompson | 756,736 | Apr. 5 | 1043 | 232 | 109 | 1565 |
| Rail-support | J. Chappuis | 754,197 | Mar. 8 | 1924 | 428 | 109 | 441 |
| Rails. Renewing traction- | D. H. Lentz | 753,409 | Mar. 1 | 347 | 79, 80 | 109 | 77 |
| Railway-brake | H. A. Spiller | 753,929 | Mar. 8 | 1437 | 323 | 109 | 331 |
| Railway-brake | J. H. Graham | 758,177 | Apr. 26 | 3924 | 852 | 109 | 2288 |
| Railway-brake apparatus | G. T. and L. Woods | 755,825 | Mar. 29 | 5002 | 1135 | 109 | 1177 |
| Railway bridle-rod | A. H. F. Cottrall | 758,421 | Apr. 26 | 4424 | 950 | 109 | 2348 |
| Railway carriages, wagons, &c. Automatically coupling or uncoupling | J. Darling | 756,217 | Apr. 5 | 49 | 12 | 109 | 1353 |
| Railway-chair | F. W. Pool | 758,018 | Apr. 19 | 3607 | 780 | 109 | 2150 |
| Railway collisions. Device for preventing | C. Holtmann and J. F. Butler | 757,191 | Apr. 12 | 1956 | 427 | 109 | 1778 |
| Railway construction | L. and M. J. Beezer | 756,814 | Apr. 12 | 1201 | 268 | 109 | 1617 |
| Railway construction | L. and M. J. Beezer | 756,815 | Apr. 12 | 1202 | 268 | 109 | 1617 |
| Railway construction | L. and M. J. Beezer | 756,816 | Apr. 12 | 1203 | 268 | 109 | 1617 |
| Railway construction | L. and M. J. Beezer | 756,817 | Apr. 12 | 1204 | 268 | 109 | 1617 |
| Railway cross-tie | H. D. Leeking and J. K. Hartman | 753,502 | Mar. 1 | 523 | {121 {122 | 109 | 115 |
| Railway cross-tie | T. J. Kitto | 754,458 | Mar. 15 | 2504 | 545 | 109 | 582 |
| Railway cross-tie | E. S. Keefer | 758,368 | Apr. 26 | 4317 | 927 | 109 | 2323 |
| Railway-crossing | G. W. Willebrands | 755,730 | Mar. 29 | 4905 | 1092 | 109 | 1137 |
| Railway danger-signal. Electrical | W. E. Karns | 757,125 | Apr. 12 | 1820 | {399 {400 | 109 | 1745 |
| Railway danger-signals. Electrically-operated stopping means at | W. L. Adamson | 754,406 | Mar. 15 | 2391 | 523 | 109 | 557 |
| Railway. Electric | R. A. E. Huber and H. H. C. Behn-Eschenburg. | 754,565 | Mar. 15 | 2714 | 590 | 109 | 628 |
| Railway. Electric | T. D. Lovell | 756,511 | Apr. 5 | 628 | 136 | 109 | 1474 |
| Railway. Electric | W. B. Potter | 756,980 | Apr. 12 | 1529 | 336 | 109 | 1682 |
| Railway. Electric | D. J. Cable | 757,264 | Apr. 12 | 2082 | 454 | 109 | 1808 |
| Railway. Electric | G. H. Fretts | 757,906 | Apr. 19 | 3387 | 733 | 109 | 2101 |
| Railway electric safety system | J. Hanna and C. S. Gilman | 756,957 | Apr. 12 | 1477 | 326 | 109 | 1673 |
| Railway electric-traction system | A. Meuschel | 755,905 | Mar. 29 | 5254 | 1162 | 109 | 1216 |
| Railway-frog | A. A. Kimball and W. J. Conners. | 754,875 | Mar. 15 | 3316 | 723 | 109 | 759 |
| Railway-gate | T. S. White and M. M. Neal | 755,203 | Mar. 22 | 4015 | 890 | 109 | 926 |
| Railway-gate | L. Trebert | 757,367 | Apr. 12 | 2307 | 504 | 109 | 1850 |
| Railway-gate. Automatic | C. W. Curd | 753,676 | Mar. 1 | 888 | 200 | 109 | 192 |
| Railway-gate. Automatic | J. P. Fowler | 758,518 | Apr. 26 | 4605 | 991 | 109 | 2389 |
| Railway joint and chair | W. N. Hooper and T. J. Sunday | 756,962 | Apr. 12 | 1490 | 328 | 109 | 1675 |
| Railway-joint fastening | W. H. Case | 754,279 | Mar. 8 | 2086 | 463 | 109 | 473 |
| Railway-motor. Electric | R. Siegfried | 753,925 | Mar. 8 | 1427 | {321 {322 | 109 | 329 |
| Railway or tramway rolling-stock. Mounting of | C. T. M. V. de Bange | 758,283 | Apr. 26 | 4031 | {874 {875 {876 | 109 | 2260 |
| Railway plow. Electric | J. H. Akers | 754,832 | Mar. 15 | 3229 | 708 | 109 | 740 |
| Railway-rail connection | W. T. Brown and W. C. Watson | 755,444 | Mar. 22 | 4352 | 964 | 109 | 998 |
| Railway-rail joint | A. Barnes | 754,913 | Mar. 15 | 3380 | 739 | 109 | 773 |
| Railway-rail joint | L. A. Sheldon | 755,402 | Mar. 22 | 4279 | {945 {946 | 109 | 984 |
| Railway-rail stay | E. Laas and H. H. Sponenburg | 757,754 | Apr. 19 | 3099 | 675 | 109 | 2087 |
| Railway-rails. Device for preventing the creeping and wandering of | E. Masik | 754,881 | Mar. 15 | 3325 | 725 | 109 | 761 |
| Railway-rails from creeping. Means for preventing | J. D. Legge | 756,248 | Apr. 5 | 110 | 24 | 109 | 1365 |
| Railway-rails from spreading. Device for preventing | J. D. Legge | 756,247 | Apr. 5 | 108 | 23 | 109 | 1365 |
| Railway road-bed construction | W. H. Swigart | 755,810 | Mar. 29 | 5069 | 1125 | 109 | 1172 |
| Railway safety block-switch | C. E. Davis | 756,101 | Mar. 29 | 5640 | {1245 {1246 | 109 | 1299 |
| Railway. Scenic pleasure- | A. C. Morgan | 755,158 | Mar. 22 | 3814 | 843 | 109 | 886 |
| Railway semaphore-signal | M. D. Hanlon | 755,656 | Mar. 29 | 4748 | 1057 | 109 | 1099 |
| Railway shoe. Electric- | H. Rosenfeld | 755,391 | Mar. 22 | 4295 | 942 | 109 | 981 |
| Railway-signal | T. Brück | 758,666 | Mar. 1 | 865 | 196 | 109 | 187 |
| Railway-signal | W. C. Miner | 757,332 | Apr. 12 | 2242 | 488 | 109 | 1806 |
| Railway signal apparatus | C. W. Coleman | 758,297 | Apr. 26 | 4173 | 900 | 109 | 2291 |
| Railway signal apparatus. Trolley- | A. L. Cheatham | 756,156 | Mar. 29 | 5720 | 1268 | 109 | 1317 |
| Railway-signal. Electric | B. M. Kershner | 755,140 | Mar. 22 | 3787 | 834 | 109 | 880 |
| Railway-signal. Electric | W. B. Ramsay | 757,346 | Apr. 12 | 2267 | 495 | 109 | 1842 |
| Railway-signal. Electric | W. S. Jackson | 758,594 | Apr. 26 | 4757 | 1025 | 109 | 2428 |
| Railway signal or alarm | R. F. Stuart | 758,485 | Apr. 26 | 4531 | {973 {974 | 109 | 2372 |
| Railway signaling | F. B. de Chavannes | 758,853 | Mar. 8 | 1281 | {297 {298 | 109 | 296 |
| Railway signaling. Electric- | S. M. Young | 757,587 | Apr. 19 | 2664 | 584 | 109 | 1941 |
| Railway signaling system | H. Bezer | 754,362 | Mar. 8 | 2227 | {497 {498 {499 | 109 | 502 |
| Railway signaling system | H. Bezer | 754,363 | Mar. 8 | 2255 | {500 {501 | 109 | 503 |
| Railway-switch | F. Uhtbrock | 758,987 | Mar. 8 | 1451 | 325 | 109 | 334 |
| Railway-switch | T. E. Gummerson | 754,864 | Mar. 15 | 3300 | 719 | 109 | 756 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Railway-switch | T. J. Houghton | 755,495 | Mar. 22 | 4435 | 985 | 109 | 1015 |
| Railway-switch | W. Wharton, Jr., and V. Angerer | 756,068 | Mar. 29 | 5008 | 1238 | 109 | 1202 |
| Railway-switch. Automatic | W. C. Sayrs | 754,392 | Mar. 8 | 2342 | 512 | 109 | 528 |
| Railway-switch. Automatic | M. M. Whitfield | 754,627 | Mar. 15 | 2884 | 619 | 109 | 652 |
| Railway-switch. Automatic | U. A. Woodbury | 758,401 | Apr. 26 | 4373 | 940 | 109 | 2385 |
| Railway-switch. Automatic | U. A. Woodbury | 758,490 | Apr. 26 | 4550 | 978 | 109 | 2377 |
| Railway switch. Electric | M. A. Marks, Jr | 756,570 | Apr. 12 | 1304 | 291, 292 | 109 | 1637 |
| Railway-switch. Electromagnetic | R. A. Baldwin | 756,316 | Apr. 5 | 944 | 50 | 109 | 1396 |
| Railway system. Electric | T. Mahoney | 755,809 | Mar. 29 | 5244 | 1159, 1160 | 109 | 1214 |
| Railway-system safety device. Electric | G. Gibbs | 757,107 | Apr. 12 | 1788 | 391 | 109 | 1737 |
| Railway system. Third-rail electric | J. D. Wilkens | 756,757 | Apr. 5 | 1078 | 240 | 109 | 1573 |
| Railway third rail. Electric | P. T. McGowan | 757,136 | Apr. 12 | 1854 | 405 | 109 | 1754 |
| Railway-tie | G. Walberg | 754,176 | Mar. 8 | 1891 | 421, 422 | 109 | 434 |
| Railway-tie | W. W. Holston and O. L. Fisher | 755,004 | Mar. 22 | 3557 | 779 | 109 | 828 |
| Railway-tie | S. B. Hoover | 755,493 | Mar. 22 | 4432 | 983 | 109 | 1015 |
| Railway-tie | W. A. Nichols, Sr., and J. F. Neff | 755,692 | Mar. 29 | 4825 | 1071 | 109 | 1120 |
| Railway-tie | C. C. Grimes | 757,087 | Apr. 12 | 1662 | 360 | 109 | 1712 |
| Railway-tie | W. A. Nichols and J. F. Neff | 758,463 | Apr. 26 | 4497 | 966 | 109 | 2364 |
| Railway tie and chair | J. J. Phillips | 753,307 | Mar. 1 | 171 | 39 | 109 | 40 |
| Railway tie and fastening | J. F. Smith | 758,115 | Apr. 26 | 3809 | 827 | 109 | 2212 |
| Railway-tie and rail-fastening. Combined | J. Leightham | 756,660 | Apr. 5 | 868 | 194 | 109 | 1531 |
| Railway-tie. Metallic | F. L. Teel | 756,733 | Apr. 5 | 1088 | 230 | 109 | 1564 |
| Railway-tie. Metallic | J. M. Hansen | 757,111 | Apr. 12 | 1790 | 392 | 109 | 1739 |
| Railway tie-plate | W. S. Jones | 754,654 | Mar. 15 | 2893 | 633 | 109 | 664 |
| Railway-tie seats. Apparatus for forming | W. Goldie | 758,525 | Apr. 26 | 4621 | 995, 996 | 109 | 2393 |
| Railway-track | W. Goldie | 758,523 | Apr. 26 | 4616 | 994 | 109 | 2392 |
| Railway-track fastener | J. C. Hoshor | 757,116 | Apr. 12 | 1801 | 394 | 109 | 1741 |
| Railway-track securer | J. D. McGill | 756,267 | Apr. 5 | 149 | 31 | 109 | 1375 |
| Railway-tracks. Forming | W. Goldie | 758,524 | Apr. 26 | 4618 | 995 | 109 | 2392 |
| Railway-trains and for signaling purposes. Apparatus for stopping | B. A. J. Van der Hegge-Zijnen | 754,359 | Mar. 8 | 2218 | 495 | 109 | 501 |
| Railway-trains at danger-signals. Means for stopping | W. L. Adamson | 757,711 | Apr. 19 | 3008 | 653 | 109 | 2018 |
| Railway-trains. System for preventing collisions, accidents, &c., by | F. Schmitt | 753,696 | Mar. 1 | 795 | 177 | 109 | 173 |
| Railway-wagon | J. T. Jepson | 757,981 | Apr. 19 | 3432 | 742, 743, 744 | 109 | 2111 |
| Railways and switching systems embodying same. Combined third and traction rail for electric | E. C. Morgan | 753,802 | Mar. 1 | 1163 | 262 | 109 | 250 |
| Railways. Automatic brake-applying device for | A. Meyer and C. P. Geritz | 754,665 | Mar. 15 | 2911 | 636 | 109 | 668 |
| Railways. Automatic power cut-out for electric | H. F. Pieper | 756,521 | Apr. 5 | 653 | 140 | 109 | 1480 |
| Railways. Combined third and traction rail for electric | E. C. Morgan | 753,803 | Mar. 1 | 1165 | 263 | 109 | 250 |
| Railways. Contact device for electrically-propelled | H. Berthoud | 753,596 | Mar. 1 | 618 | 140 | 109 | 135 |
| Railways. Ice-cutter for third-rail electric | S. B. Stewart, Jr | 758,153 | Apr. 26 | 3877 | 842 | 109 | 2228 |
| Railways. Means for cleaning the third rails of electrical | W. Chausse | 757,650 | Apr. 19 | 2900 | 631 | 109 | 1995 |
| Rain-gage | J. P. Friez | 756,109 | Mar. 29 | 5053 | 1248 | 109 | 1302 |
| Rake: *See* Hay-rake. Horse-rake. Lawn-rake. Push-rake. Self-cleaning rake. | | | | | | | |
| Rake | O. M. Walker | 757,795 | Apr. 19 | 3181 | 690 | 109 | 2056 |
| Ram. Hydraulic | G. H. Earle, Jr., and G. B. Shainline | 753,560 | Mar. 1 | 664 | 149 | 109 | 147 |
| Ram. Hydraulic | G. H. Earle, Jr., and G. B. Shainline | 755,467 | Mar. 22 | 4393 | 973 | 109 | 1006 |
| Ram. Hydraulic | J. M. Kline | 758,259 | Apr. 26 | 4086 | 884, 885 | 109 | 2272 |
| Ratchet-drill | T. L. Pyburn | 755,983 | Mar. 29 | 5324 | 1174, 1175 | 109 | 1231 |
| Ratchet mechanism | C. E. Mitchell | 758,329 | Apr. 26 | 4248 | 912, 913 | 109 | 2309 |
| Ratchet-wrench | J. H. Dundon | 755,466 | Mar. 22 | 4391 | 973 | 109 | 1006 |
| Ratchet-wrench | G. Freeland | 755,599 | Mar. 22 | 4565 | 1015 | 109 | 1044 |
| Ratchet-wrench | G. Brauer | 757,878 | Apr. 19 | 3329 | 721 | 109 | 2088 |
| Razor | J. Guinan | 757,656 | Apr. 19 | 2909 | 633 | 109 | 1997 |
| Razor. Folding safety | A. Fornander | 756,615 | Apr. 5 | 806 | 174 | 109 | 1513 |
| Razor-guard | J. Guinan | 757,655 | Apr. 19 | 2907 | 632 | 109 | 1997 |
| Razor-strops. Composition for | M. Waddell | 755,589 | Mar. 22 | 4564 | ..... | 109 | 1054 |
| Reamer. Expansive | F. Cornelius | 756,590 | Apr. 5 | 764 | 166 | 109 | 1504 |
| Receptacle. Bracket-supported | H. F. Keil | 756,504 | Apr. 5 | 617 | 134 | 109 | 1472 |
| Receptacle. Delivery or shipping | H. C. Finley | 756,612 | Apr. 5 | 798 | 173 | 109 | 1511 |
| Receptacle. Folding | A. Greene | 754,995 | Mar. 22 | 3536 | 775 | 109 | 823 |
| Record. Unit- | D. Townsend | 756,739 | Apr. 5 | 1049 | 233 | 109 | 1567 |
| Recorder: *See* Sale-recorder. Time-recorder. | | | | | | | |
| Recording and adding machine | G. W. and A. L. Dudley | 756,340 | Apr. 5 | 294 | 61 | 109 | 1406 |
| Recording statistical data. Apparatus for | C. F. Pidgin | 755,168 | Mar. 22 | 3837 | 847 | 109 | 890 |
| Reducing-mill | H. W. Becht | 757,433 | Apr. 19 | 2447 | 534 | 109 | 1896 |
| Reed. Free | J. R. C. Gale | 756,952 | Apr. 12 | 1468 | 324 | 109 | 1671 |
| Reeding attachment for dresser-reels | A. Johnson and J. F. Geb | 758,079 | Apr. 26 | 3741 | 813 | 109 | 2195 |
| Reel: *See* Cable tension-reel. Fishing-reel. Fish-line reel. | | | | | | | |
| Reflector | E. L. Zalinski | 756,194 | Mar. 29 | 5780 | 1277 | 109 | 1328 |
| Refractory material. Basic | A. T. Macfarlane | 757,821 | Apr. 19 | 3226 | ..... | 109 | 2065 |
| Refrigerating-machine | J. C. Goosmann | 757,397 | Apr. 12 | 2157 | 473 | 109 | 1819 |
| Refrigeration system | C. J. Coleman | 757,398 | Apr. 12 | 2358 | 513 | 109 | 1860 |
| Refrigeration system and apparatus | C. J. Coleman | 757,399 | Apr. 12 | 2356 | 513 | 109 | 1859 |
| Refrigerator | F. M. Vanneman | 753,764 | Mar. 1 | 1051 | 240 | 109 | 226 |
| Refrigerator | J. F. Horn | 755,876 | Mar. 29 | 5206 | 1151 | 109 | 1205 |
| Refrigerator | J. M. Doppel | 756,004 | Mar 29 | 5458 | 1204 | 109 | 1261 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Refrigerator | R. R. Graf | 757,911 | Apr. 19 | 3395 | 736 | 109 | 2108 |
| Refrigerator-car | P. D. Ball | 754,039 | Mar. 8 | 1637 | 364 | 109 | 377 |
| Refrigerator-car | J. S. Bashaw | 758,406 | Apr. 26 | 4383 | 942 | 109 | 2338 |
| Refrigerator-car air-agitator | H. A. Turner | 757,581 | Apr. 19 | 2761 | 603, 604 | 109 | 1964 |
| Refrigerator drain-pipe attachment | M. McNamara | 756,897 | Apr. 5 | 413 | 86 | 109 | 1482 |
| Refrigerator drip-pan alarm | S. S. Lapointe | 753,799 | Mar. 1 | 1159 | 261, 262 | 109 | 249 |
| Register: *See* Account-register. Car-register. Cash-register. Fare-register. Hot-air register. Side-register. | | | | | | | |
| Register | J. O. Morris | 753,418 | Mar. 1 | 376 | 88 | 109 | 82 |
| Register | F. R. Beal | 753,535 | Mar. 1 | 612 | 139, 140 | 109 | 133 |
| Register | H. A. Niehoff | 754,684 | Mar. 15 | 2948 | 643 | 109 | 676 |
| Regulator: *See* Automatic supply-regulator. Cable tension-regulator. Current-regulator. Damper-regulator. Feed-water regulator. Heat-regulator. Pressure-regulator. | | | | | | | |
| Regulator | E. Honess | 757,113 | Apr. 12 | 1794 | 398 | 109 | 1740 |
| Relcing-platform | C. W. Surplus | 755,075 | Mar. 22 | 3681 | 807 | 109 | 857 |
| Rein-holder | T. F. B. Clagett | 755,273 | Mar. 22 | 4031 | 894 | 109 | 929 |
| Rein-holder | P. K. Barclay | 755,990 | Mar. 29 | 5425 | 1199 | 109 | 1254 |
| Rein-holder | C. E. Chamberlin | 756,581 | Apr. 5 | 753 | 164 | 109 | 1502 |
| Reins. Driving- | G. H. Carlin | 757,598 | Apr. 19 | 2785 | 609 | 109 | 1969 |
| Relay | H. P. Clausen | 753,956 | Mar. 8 | 1488 | 334 | 109 | 344 |
| Relay. Megaplex | R. A. Engler | 757,184 | Apr. 12 | 1943 | 425 | 109 | 1775 |
| Relay. Polarized | M. C. Rorty | 753,918 | Mar. 8 | 1413 | 319 | 109 | 326 |
| Resawing-machine | T. J. Mitchell | 757,946 | Apr. 19 | 3458 | 749 | 109 | 2117 |
| Resinous substances. Production of | G. Fry | 754,298 | Mar. 8 | 2124 | ..... | 109 | 483 |
| Resistance. Shunt | G. W. Richmond | 753,916 | Mar. 8 | 1406 | 317 | 109 | 324 |
| Reversing means for machine-tools, &c | W. C. Mitchell | 755,517 | Mar. 22 | 4474 | 994, 995 | 109 | 1024 |
| Reversing mechanism | A. Mead | 757,331 | Apr. 12 | 2241 | 488 | 109 | 1835 |
| Rewinding-machine | E. E. Bradley | 755,212 | Mar. 22 | 3919 | 867 | 109 | 906 |
| Rheostat | J. C. Barclay | 753,533 | Mar. 1 | 611 | 139 | 109 | 133 |
| Rheostat | L. Lyndon | 754,660 | Mar. 15 | 2901 | 634 | 109 | 666 |
| Rheostat | C. R. Pitrat | 754,692 | Mar. 15 | 2972 | 648 | 109 | 682 |
| Rheostat | A. C. Eastwood | 755,468 | Mar. 22 | 4395 | 973, 974 | 109 | 1007 |
| Rheostat | W. C. Yates and P. Zimmer | 755,827 | Mar. 29 | 5104 | 1132 | 109 | 1182 |
| Rheostat | W. C. Yates | 755,828 | Mar. 29 | 5107 | 1132 | 109 | 1182 |
| Rheostat | H. J. Wiegand | 756,445 | Apr. 5 | 516 | 107 | 109 | 1452 |
| Rheostat | I. E. Storey | 757,687 | Apr. 19 | 2969 | 646 | 109 | 2010 |
| Rheostat | W. C. Yates | 758,164 | Apr. 26 | 3893 | 845 | 109 | 2232 |
| Rheostat. Electric | R. W. Brown | 757,880 | Apr. 19 | 3331 | 721, 722 | 109 | 2088 |
| Ribbon-spool | J. A. Bedworth | 754,116 | Mar. 8 | 1788 | 398 | 109 | 411 |
| Rifle-holder for mounted troops | J. H. Patterson | 757,343 | Apr. 12 | 2269 | 493 | 109 | 1841 |
| Ring: *See* Curtain-ring. Martingale-ring. Piston-ring. | | | | | | | |
| Ringing and listening key | C. H. North | 754,935 | Mar. 15 | 3420 | 748 | 109 | 781 |
| Rivet-setting machine | A. T. Maenche | 753,281 | Mar. 1 | 123 | 29, 30 | 109 | 30 |
| Riveting-machine | M. C. Machado | 756,263 | Apr. 26 | 4004 | 886 | 109 | 2274 |
| Road making and repairing machine | A. Cameron | 753,231 | Mar. 1 | 27 | 6, 7 | 109 | 8 |
| Road making and repairing machine | J. Krohn | 753,277 | Mar. 1 | 116 | 28 | 109 | 28 |
| Roaster: *See* Coffee-roaster. | | | | | | | |
| Roasting-furnace | S. D. Craig, G. E. Kelly, and W. Turner. | 754,199 | Mar. 8 | 1927 | 429 | 109 | 441 |
| Roasting or desulfurizing furnace | F. J. Falding | 756,485 | Apr. 5 | 586 | 123, 124, 125, 126, 127 | 109 | 1466 |
| Rock and ore crusher | H. M. Sackett | 758,280 | Apr. 26 | 4184 | 893 | 109 | 2283 |
| Rock-breaker | W. E. Wild | 757,004 | Apr. 12 | 1577 | 345 | 109 | 1698 |
| Rock-cuttings from holes in rock while drilling them. Ejecting | J. G. Leyner | 756,972 | Apr. 12 | 1512 | 333 | 109 | 1680 |
| Rocker-shoe | C. A. Williamson | 755,423 | Mar. 22 | 4316 | 955 | 109 | 991 |
| Rocking-chair. Invalid | B. M. Owen | 754,088 | Mar. 8 | 1782 | 386 | 109 | 397 |
| Rocking-chair with air apparatus | M. Friedland | 757,447 | Apr. 19 | 2460 | 540 | 109 | 1900 |
| Rod: *See* Connecting-rod. Piston-rod. | | | | | | | |
| Rod-grasping arm or handle | H. H. Huff | 757,195 | Apr. 12 | 1964 | 428 | 109 | 1779 |
| Rodent-killing machine | G. R. Jack | 756,370 | Apr. 5 | 368 | 74 | 109 | 1421 |
| Roentgen-ray apparatus. Spark-gap for | J. T. H. Dempster | 756,941 | Apr. 12 | 1445 | 320 | 109 | 1666 |
| Roll-holder | J. Burry | 754,420 | Mar. 15 | 2414 | 628, 629 | 109 | 562 |
| Roller: *See* Guide-roller. Land-roller. Shade-roller. | | | | | | | |
| Roller-coaster | G. A. McLaughlin | 757,487 | Apr. 19 | 2555 | 560, 561 | 109 | 1916 |
| Roller-frame | A. L. Sessions | 755,055 | Mar. 22 | 3640 | 799 | 109 | 847 |
| Roller-frame | A. L. Sessions | 755,056 | Mar. 22 | 3641 | 799 | 109 | 847 |
| Rolling machine. Wheel- | F. P. Bates | 757,432 | Apr. 19 | 2444 | 533, 534 | 109 | 1895 |
| Rolling-mill | D. H. Lentz | 753,408 | Mar. 1 | 343 | 78, 79 | 109 | 77 |
| Roof. Building- | O. J. Wilder and H. Vanderveen | 756,756 | Apr. 5 | 1076 | 239 | 109 | 1573 |
| Roof-covering. Sheet for | W. H. Bache | 754,273 | Mar. 8 | 2077 | 460 | 109 | 472 |
| Roof slate or tile support | P. Duchemin | 757,285 | Apr. 12 | 2134 | 465 | 109 | 1818 |
| Roof snow-guard | W. W. Parry | 756,884 | Apr. 12 | 1898 | 296 | 109 | 1624 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Roof valleys. Means for covering tile- | W. Ludowici | 754,578 | Mar. 15 | 2749 | 599 | 109 | 633 |
| Roofs and sides of buildings. Device for attaching flexible materials to | F. S. Howard | 757,198 | Apr. 12 | 1960 | 428 | 109 | 1779 |
| Roofing | J. H. Munro | 756,180 | Mar. 29 | 5700 | 1272 | 109 | 1325 |
| Roofing. Prepared | S. R. Holland | 753,982 | Mar. 8 | 1334 | 341 | 109 | 354 |
| Rope-clamp | F. L. Doty | [illegible]104 | Mar. 29 | 5647 | 1246 | 109 | 1301 |
| Rope-clamping device | J. Leightham | 755,019 | Mar. 22 | 3588 | 787 | 109 | 834 |
| Rope-grab | J. Carney | 753,233 | Mar. 1 | 33 | 8 | 109 | 9 |
| Rope-haulage socket | G. W. Minto | 754,589 | Mar. 15 | 2765 | 602 | 109 | 637 |
| Rope-holding device | A. M. Seyster | 756,418 | Apr. 5 | 460 | 95 | 109 | 1441 |
| Rope or cable grip for haulage purposes | J. Aspinall | 758,496 | Apr. 26 | 4562 | 980 | 109 | 2380 |
| Rotary engine | J. J. Horan | 753,262 | Mar. 1 | 93 | 23, 24 | 109 | 23 |
| Rotary engine | A. Groves, Sr | 753,388 | Mar. 1 | 309 | 69, 70 | 109 | 70 |
| Rotary engine | T. D., J. C., and H. A. Prescott | 753,730 | Mar. 1 | 994 | 226 | 109 | 214 |
| Rotary engine | F. P. and B. F. Uhrig | 753,763 | Mar. 1 | 1048 | 239, 240 | 109 | 225 |
| Rotary engine | A. F. Ford | 753,790 | Mar. 1 | 1143 | 257 | 109 | 246 |
| Rotary engine | O. Williams | 754,081 | Mar. 8 | 1621 | 361, 362 | 109 | 373 |
| Rotary engine | C. MacArthur and F. Smith | 754,153 | Mar. 8 | 1844 | 411, 412 | 109 | 424 |
| Rotary engine | A. C. Ackerman | 754,188 | Mar. 8 | 1901 | 423 | 109 | 436 |
| Rotary engine | O. De Champ | 754,283 | Mar. 8 | 2092 | 464, 465 | 109 | 475 |
| Rotary engine | H. Berglund | 754,411 | Mar. 15 | 2401 | 525, 526 | 109 | 550 |
| Rotary engine | H. Nielsen | 755,161 | Mar. 22 | 3821 | 845 | 109 | 988 |
| Rotary engine | F. A. Frauzén | 755,759 | Mar. 29 | 4977 | 1107, 1108 | 109 | 1150 |
| Rotary engine | T. P. Butler | 756,210 | Apr. 5 | 30 | 7 | 109 | 1349 |
| Rotary engine | R. Hazelrigg | 756,362 | Apr. 5 | 351 | 71, 72 | 109 | 1419 |
| Rotary engine | H. A. Benson | 756,568 | Apr. 5 | 723 | 156 | 109 | 1495 |
| Rotary engine | C. H. Jolliffe and A. Coulthard | 756,640 | Apr. 5 | 853 | 184, 185, 186 | 109 | 1523 |
| Rotary engine | F. Stephan | 756,904 | Apr. 12 | 1376 | 307 | 109 | 1632 |
| Rotary engine | A. Guindon | 757,457 | Apr. 19 | 2481 | 543, 544 | 109 | 1902 |
| Rotary engine | J. S. Davis | 757,894 | Apr. 19 | 3263 | 726 | 109 | 2095 |
| Rotary engine | M. E. Knight | 758,321 | Apr. 26 | 4230 | 908, 909 | 109 | 2305 |
| Rotary heater or cooler | T. L. Valerius | 755,163 | Mar. 22 | 3880 | 857, 858 | 109 | 901 |
| Rotary kiln and drier. Combined | C. A. Matcham | 755,513 | Mar. 22 | 4464 | 991, 992 | 109 | 1021 |
| Rotary motor | T. Eastmoore | 756,606 | Apr. 5 | 788 | 171 | 109 | 1509 |
| Rotary motor | J. Nielsen | 758,214 | Apr. 26 | 3901 | 866, 867 | 109 | 2232 |
| Rotary steam-engine | H. C. Mitchell | 754,672 | Mar. 15 | 2924 | 638 | 109 | 671 |
| Routing-machine clamp | V. Royle | 756,058 | Mar. 29 | 5544 | 1223 | 109 | 1279 |
| Roving-can | E. Andrews | 757,092 | Apr. 12 | 1729 | 375, 376 | 109 | 1726 |
| Rubber or other sap-yielding trees. Device for grooving or tapping | C. A. Sanborn | 755,248 | Mar. 22 | 3983 | 864 | 109 | 920 |
| Rubber type. Means for making | B. F. Kern and W. J. O. Johnson | 756,652 | Apr. 5 | 869 | 189, 190 | 109 | 1527 |
| Rugs. Manufacturing weft for | A. S. Horlacher | 756,236 | Apr. 5 | 88 | 19 | 109 | 1361 |
| Rule | P. S. Hamrick | 754,445 | Mar. 15 | 2485 | 541 | 109 | 578 |
| Rule. Protractor- | L. B. Rhodes | 756,055 | Mar. 29 | 5541 | 1223 | 109 | 1279 |
| Rule. Slide- | C. G. Barth, H. L. Gantt, and F. W. Taylor. | 753,840 | Mar. 8 | 1258 | 282, 283 | 109 | 291 |
| Ruler | J. H. Jacobs | 753,886 | Mar. 8 | 1341 | 302 | 109 | 310 |
| Rulers. Manufacture of | H. E. Peucker | 757,675 | Apr. 19 | 2946 | 689 | 109 | 2004 |
| Running-gear. Pivotal | W. P. Henry | 756,497 | Apr. 5 | 607 | 131 | 109 | 1470 |
| Sad-iron | H. C. Fox | 754,987 | Mar. 22 | 3526 | 772 | 109 | 821 |
| Sad-iron | A. L. Eccles | 755,567 | Mar. 22 | 4561 | 1015 | 109 | 1044 |
| Sad-iron | M. McLaughlin | 757,139 | Apr. 12 | 1854 | 405 | 109 | 1734 |
| Sad-iron | M. Joyce | 757,198 | Apr. 12 | 1969 | 429 | 109 | 1780 |
| Sad-iron. Electric | G. J. Schneider | 754,018 | Mar. 8 | 1600 | 356 | 109 | 369 |
| Saddle | F. Mesinger | 755,204 | Mar. 29 | 5253 | 1161 | 109 | 1216 |
| Saddle. Riding- | P. R. Stern | 753,751 | Mar. 1 | 1025 | 222 | 109 | 221 |
| Safe | E. E. Thompson | 754,623 | Mar. 15 | 2868 | 617 | 109 | 650 |
| Safe. Sectional or knockdown kitchen- | V. T. Grabs | 756,355 | Apr. 5 | 320 | 68 | 109 | 1414 |
| Safety-pin | A. Buckelew | 754,743 | Mar. 15 | 3064 | 669 | 109 | 704 |
| Safety-pin | C. Andresen | 755,097 | Mar. 22 | 3711 | 815 | 109 | 864 |
| Safety-pin | C. Andresen | 756,809 | Apr. 12 | 1188 | 264 | 109 | 1614 |
| Safety-pin | C. Andresen | 756,810 | Apr. 12 | 1189 | 264 | 109 | 1614 |
| Safety-pin | E. L. Sands | 757,351 | Apr. 12 | 2379 | 498 | 109 | 1844 |
| Safety-pin | F. Westpfal | 757,700 | Apr. 19 | 2992 | 650 | 109 | 2015 |
| Safety-pin | G. A. Lowry | 757,474 | Apr. 19 | 2586 | 554 | 109 | 1911 |
| Sail. Spinnaker- | D. Griffith | 757,913 | Apr. 19 | 3397 | 736 | 109 | 2108 |
| Sale-recorder | A. F. W. Schröder | 756,416 | Apr. 5 | 455 | 94 | 109 | 1440 |
| Salt-box. Animal | C. E. Long | 753,597 | Mar. 1 | 733 | 163, 164 | 109 | 159 |
| Salt-receptacle | J. F. Huefner | 753,367 | Mar. 1 | 101 | ------ | 109 | 25 |
| Salve. Making a | P. H. Moog | 754,227 | Mar. 8 | 1908 | 444 | 109 | 456 |
| Sample carrier and display-rack. Combined | E. H. Allman | 753,217 | Mar. 1 | 1 | 1 | 109 | 8 |
| Sand-bars. Means for removing | F. Sticker | 758,119 | Apr. 26 | 3816 | 828 | 109 | 2214 |
| Sand-blast | T. E. Mooney | 757,947 | Apr. 19 | 3459 | 749 | 109 | 2117 |
| Sand-box gage | W. Schaake | 758,194 | Apr. 26 | 3952 | 856 | 109 | 2244 |
| Sanding system | L. E. W. Banks | 754,274 | Mar. 8 | 2078 | 461 | 109 | 473 |
| Sash attachment. Window- | G. W. Ogden | 753,908 | Mar. 8 | 1389 | 313 | 109 | 320 |
| Sash-balance | H. E. Rathbun and W. H. Lonergan. (Reissue.) | 12,302 | Mar. 8 | 2365 | 521 | 109 | 536 |
| Sash-balance | F. Lyster | 755,784 | Mar. 29 | 5025 | 1117 | 109 | 1162 |
| Sash-bar. Ventilating | A. Arens and E. L. Teich | 756,458 | Apr. 5 | 530 | 110 | 109 | 1455 |
| Sash-bolt | | | | | | | |



*Alphabetical list of inventions for March and April*—Continued.

| Ipvention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Sash-cord fastener | G. W. Howard | 755,136 | Mar. 22 | 3781 | 832 | 109 | 879 |
| Sash-fastener | A. Arens | 756,559 | Apr. 5 | 718 | 154 | 109 | 1493 |
| Sash-fastener | J. A. Long | 757,309 | Apr. 12 | 1985 | 432 | 109 | 1783 |
| Sash-fastener | F. B. Clapp | 758,416 | Apr. 26 | 4419 | 949 | 109 | 2347 |
| Sash. Fixture for hanging | J. Kirby, Jr | 753,985 | Mar. 8 | 1538 | 343 | 109 | 355 |
| Sash hinged support. Window- | F. D. Palmer | 755,311 | Mar. 22 | 4103 | 906 | 109 | 944 |
| Sash-holder | D. O. Hiatt | 755,490 | Mar. 22 | 4429 | 982 | 109 | 1014 |
| Sash holder and lock | O. E. Howe | 754,452 | Mar. 15 | 2495 | 543 | 109 | 580 |
| Sash-lock | A. M. and C. L. Southard | 754,355 | Mar. 8 | 2214 | 494 | 109 | 500 |
| Sash-lock | C. W. Randall | 756,799 | Apr. 5 | 1165 | 258 | 109 | 1498 |
| Sash-lock | D. Wilde | 757,856 | Apr. 19 | 3290 | 712 | 109 | 2079 |
| Sash-lock. Automatic | C. S. Barnard | 757,249 | Apr. 12 | 2060 | 450 | 109 | 1799 |
| Sash. Pivoted | G. Kabureck | 754,655 | Mar. 15 | 2895 | 632, 633 | 109 | 665 |
| Sash. Window- | G. H. Lawrence | 754,575 | Mar. 15 | 2737 | 595 | 109 | 632 |
| Sash. Window- | R. Adams | 756,552 | Apr. 5 | 700 | 151 | 109 | 1491 |
| Sashes. Antirattling device for window- | F. Huberti | 758,075 | Apr. 26 | 3796 | 811 | 109 | 2194 |
| Saw. Circular | O. Granberg | 754,134 | Mar. 8 | 1819 | 405 | 109 | 418 |
| Saw-clamp and file-guide | H. W. Merwine | 758,551 | Apr. 26 | 4667 | 1005 | 109 | 2402 |
| Saw-cover | W. C. Happe | 757,740 | Apr. 19 | 3075 | 669 | 109 | 2032 |
| Saw-filer | J. M. Holladay | 753,575 | Mar. 1 | 691 | 155 | 109 | 152 |
| Saw-filing machine | N. Kall | 757,663 | Apr. 19 | 2918 | 634, 635 | 109 | 1999 |
| Saw-gage. Raker | W. Stephens | 756,425 | Apr. 5 | 472 | 97 | 109 | 1443 |
| Saw-guide | H. P. Schofield | 755,318 | Mar. 22 | 4116 | 909 | 109 | 946 |
| Saw handle. Drag- | P. M. Irish | 754,312 | Mar. 8 | 2150 | 476 | 109 | 487 |
| Saw. Portable crosscut- | F. Richter | 757,770 | Apr. 19 | 3137 | 682 | 109 | 2046 |
| Saw-set | O. E. Stickler | 756,187 | Mar. 29 | 5772 | 1274 | 109 | 1327 |
| Saw-set | J. B. Lester | 756,662 | Apr. 5 | 891 | 195 | 109 | 1531 |
| Saw-sharpening device | H. P. Schofield | 755,319 | Mar. 22 | 4117 | 910 | 109 | 946 |
| Saw swaging and filing gage | S. J. Galloway | 753,565 | Mar. 1 | 669 | 150 | 109 | 148 |
| Saw-tooth for metal-saws. Insertible | C. C. Newton | 757,953 | Apr. 19 | 3472 | 751 | 109 | 2120 |
| Sawing apparatus. Wood- | W. R. Walker | 756,917 | Apr. 12 | 1400 | 311 | 109 | 1657 |
| Sawing appliance | V. Speigle | 754,356 | Mar. 8 | 2215 | 495 | 109 | 500 |
| Sawing logs, &c. Electrically-driven machine for | K. Kottmann | 757,626 | Apr. 19 | 2856 | 622, 623 | 109 | 1965 |
| Sawing-machine | T. C. McCormick | 755,916 | Mar. 29 | 5292 | 1168 | 109 | 1224 |
| Sawing-machine | E. H. Hoff | 756,789 | Apr. 5 | 1145 | 253 | 109 | 1588 |
| Sawing-machine | J. A. House | 757,745 | Apr. 19 | 3083 | 672 | 109 | 2083 |
| Sawing-machine work-holder | J. Piper | 754,343 | Mar. 8 | 2195 | 488, 489 | 109 | 497 |
| Sawing mining-timbers. Machine for | D. W. Edwards | 753,688 | Mar. 1 | 902 | 205, 206, 207 | 109 | 195 |
| Sawmill head-block shifter | J. T. Simpson | 758,337 | Apr. 26 | 4260 | 915 | 109 | 2311 |
| Sawmill set-works | D. C. Prescott | 757,224 | Apr. 12 | 2011 | 437 | 109 | 1788 |
| Sawmill set-works | W. E. Dillard | 758,429 | Apr. 26 | 4438 | 954 | 109 | 2351 |
| Scaffold. Portable | A. G. Maxey | 756,084 | Mar. 29 | 5509 | 1215 | 109 | 1271 |
| Scale. Automatic shifting-weight | C. Schenck | 758,388 | Apr. 26 | 4350 | 934 | 109 | 2330 |
| Scale. Computing- | H. C. Stilwell | 754,895 | Mar. 8 | 2350 | 513, 514 | 109 | 530 |
| Scale. Computing- | W. Gerhardt | 756,352 | Apr. 5 | 324 | 67 | 109 | 1412 |
| Scale. Ingredient- | R. W. Romig | 756,710 | Apr. 5 | 979 | 216 | 109 | 1553 |
| Scale. Pocket- | A. F. and W. Meisselbach, Jr | 756,175 | Mar. 29 | 5754 | 1271 | 109 | 1323 |
| Scale. Price or money weight- | A. R. Beal | 753,222 | Mar. 1 | 11 | 2, 3 | 109 | 5 |
| Scale. Spring-balance | O. O. Ozias | 756,274 | Apr. 5 | 159 | 33 | 109 | 1377 |
| Scalp. Device for applying liquids to the | A. J. Farmer | 753,968 | Mar. 8 | 1514 | 337 | 109 | 349 |
| Scarf-pin | G. W. Dover | 755,856 | Mar. 29 | 5170 | 1144 | 109 | 1198 |
| Scarf-pin | G. W. Dover | 755,857 | Mar. 29 | 5171 | 1144 | 109 | 1198 |
| Scenic effects. Apparatus for producing | E. O. Healy | 754,867 | Mar. 15 | 3306 | 720 | 109 | 757 |
| Scenographic apparatus | E. J. Austen and H. A. Bradwell | 754,532 | Mar. 15 | 2660 | 577 | 109 | 617 |
| Scenographic apparatus | E. J. Austen | 754,533 | Mar. 15 | 2661 | 578 | 109 | 618 |
| Scholar's companion | A. E. Greves | 754,558 | Mar. 15 | 2704 | 587 | 109 | 626 |
| School companion | T. Crawford | 754,852 | Mar. 15 | 3284 | 716 | 109 | 752 |
| Scissors or shears | J. N. Byington | 757,021 | Apr. 12 | 1620 | 352 | 109 | 1702 |
| Scissors-swage | R. Miller | 753,723 | Mar. 1 | 978 | 222 | 109 | 211 |
| Scoop and weighing apparatus. Combined | J. L. Taylor | 755,966 | Mar. 29 | 5396 | 1189 | 109 | 1245 |
| Scouring machine. Woven-fabric- | J. Schwelter | 757,148 | Apr. 12 | 1870 | 408 | 109 | 1758 |
| Screen: *See* Centrifugal screen. Vibrating screen. Grain-screen. Window-screen. Shaking-screen. | | | | | | | |
| Screen | D. D. Pinkham | 754,799 | Mar. 15 | 3170 | 691 | 109 | 726 |
| Screen | D. D. Pinkham | 754,800 | Mar. 15 | 3172 | 692 | 109 | 727 |
| Screen | T. L. and T. J. Sturtevant | 755,073 | Mar. 22 | 3675 | 806, 807 | 109 | 856 |
| Screen hanger. Half-sized- | H. B. Higgins | 754,771 | Mar. 15 | 3107 | 678 | 109 | 714 |
| Screens. Fly-exit for | E. E. Stover | 758,982 | Mar. 8 | 1443 | 324 | 109 | 338 |
| Screw for metal, wood, &c., and means for operating same. | G. C. Smith | 755,804 | Mar. 29 | 5060 | 1124 | 109 | 1171 |
| Screw-jack. Trestle | H. Edeline | 758,431 | Apr. 26 | 4443 | 955 | 109 | 2352 |
| Screw or bolt head lock | G. W. Kennard | 753,403 | Mar. 1 | 837 | 76 | 109 | 75 |
| Screw-thread-trimming tool | W. E. Corkrey | 753,896 | Mar. 1 | 1228 | 276 | 109 | 263 |
| Sculptor's copying-machine | R. T. Paine | 757,853 | Apr. 19 | 3244 | 704 | 109 | 2069 |
| Seal. Bottle- | W. S. Dorman | 753,245 | Mar. 1 | 55 | 15 | 109 | 15 |
| Seal. Bottle- | A. R. Robertson | 755,047 | Mar. 22 | 3826 | 796 | 109 | 844 |
| Seal. Bottle- | F. A. Hoops | 755,573 | Mar. 22 | 4573 | 1017 | 109 | 1046 |
| Seal. Bottle- | E. D. Schmitt | 756,715 | Apr. 5 | 1004 | 222 | 109 | 1556 |
| Seal for bags, &c | L. J. Simmons | 754,099 | Mar. 8 | 1759 | 391 | 109 | 408 |
| Seal-lock | J. D. C. Knapp | 757,814 | Apr. 19 | 3214 | 690 | 109 | 2063 |
| Sealing device | W. E. Heath | 756,232 | Apr. 5 | 78 | 17 | 109 | 1359 |
| Sealing device | W. E. Heath | 756,233 | Apr. 5 | 80 | 18 | 109 | 1360 |
| Sealing envelops and mailable matter and affixing stamps thereto. Machine for | J. N. Stacy | 757,574 | Apr. 19 | 2744 | 600 | 109 | 1960 |
| Sealing envelops. Machine for automatically | L. C. Babcock | 758,497 | Apr. 26 | 4563 | 980, 981 | 109 | 2380 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Sealing machine. Envelop- | J. L. Harrington and J. J. Schermack. | 758,359 | Apr. 26 | 4297 | 923 | 109 | 2319 |
| Seam-ripper | M. J. Bacon | 753,655 | Mar. 1 | 836 | 188 | 109 | 182 |
| Seams in sheet-metal cans. Machine for producing body- | A. Slaysman | 757,238 | Apr. 12 | 3087 | 444<br>445 | 109 | 1794 |
| Seat:<br>*See* Bath-tub seat. Dray-seat.<br>Car-seat. Folding seat. | | | | | | | |
| Seat foot-rest | T. Swan | 757,245 | Apr. 12 | 3061 | 447 | 109 | 1797 |
| Seat-lock | H. C. Swan | 754,173 | Mar. 8 | 1884 | 480 | 109 | 432 |
| Seat-shaping implement | J. P. Bolding | 758,504 | Apr. 26 | 4283 | 985 | 109 | 2285 |
| Seat-spider | H. W. Bolens | 754,413 | Mar. 15 | 2404 | 596 | 109 | 559 |
| Seating-bench | J. C. Wolf | 753,778 | Mar. 1 | 1093 | 348 | 109 | 236 |
| Secondary battery | L. H. Flanders | 757,446 | Apr. 19 | 3468 | 540 | 109 | 1900 |
| Sectional case | O. O. Buice | 758,506 | Apr. 26 | 4288 | 986 | 109 | 2286 |
| Seed-cleaning machine. Cotton- | J. Davidson | 758,300 | Apr. 26 | 4188 | 901<br>902 | 109 | 2297 |
| Seed delinter. Cotton- | R. Derdeyn | 753,373 | Mar. 1 | 279 | 63 | 109 | 63 |
| Seed-drill attachment | B. Mylor | 755,523 | Mar. 22 | 4484 | 996<br>997 | 109 | 1027 |
| Seed-linter feeding mechanism. Cotton- | J. S. Munro | 757,137 | Apr. 12 | 1858 | 405 | 109 | 1754 |
| Seedbox | R. Bassett | 757,645 | Apr. 19 | 2899 | 929 | 109 | 1998 |
| Seeder and planter | W. L. Casaday | 755,613 | Mar. 29 | 4659 | 1085<br>1086 | 109 | 1077 |
| Seeder for poultry-yards | W. H. Strathmann | 756,907 | Apr. 12 | 1381 | 308 | 109 | 1655 |
| Seeding-machine. Force-feed | H. C. Ham | 758,134 | Apr. 26 | 3946 | 835 | 109 | 2221 |
| Seine-hauling apparatus | H. C. Albee | 754,833 | Mar. 15 | 3231 | 704 | 109 | 741 |
| Self-adjusting wheel | E. A. Root and C. M. Wallace | 754,891 | Mar. 15 | 3351 | 732 | 109 | 766 |
| Self-clearing rake | J. Morrison, Jr | 758,267 | Apr. 26 | 4109 | 887 | 109 | 2276 |
| Self-filling heater or cooler | T. L. Valerius | 755,193 | Mar. 22 | 3887 | 857 | 109 | 900 |
| Self-igniting burner | G. Oberlaender | 757,218 | Apr. 12 | 2001 | 435 | 109 | 1786 |
| Semaphore. Electric | D. Boisvert | 757,722 | Apr. 19 | 3080 | 659<br>660 | 109 | 2022 |
| Semielliptic spring | T. A. Shea | 754,715 | Mar. 15 | 3021 | 660 | 109 | 694 |
| Separating impurities from granular or like substances. Machinery for | J. H. Roberti | 756,286 | Apr. 5 | 184 | 38 | 109 | 1389 |
| Separating lump material | A. Langerfeld | 753,591 | Mar. 1 | 720 | 161<br>162 | 109 | 137 |
| Separator:<br>*See* Butter-separator. Grain-separator.<br>Coal-separator. Liquid-separator.<br>Cotton-separator. Mineral-separator.<br>Cream-separator. Ore-separator.<br>Electromagnetic separator. Ore and slime separator.<br>Gas-separator. Silt and sand separator.<br>Gold-separator. Steam-separator. | | | | | | | |
| Separator | T. H. Ray | 753,813 | Mar. 1 | 179 | 40 | 109 | 42 |
| Separator | A. Langerfeld | 753,592 | Mar. 1 | 723 | 162 | 109 | 137 |
| Separator | H. J. Sillyis | 754,394 | Mar. 8 | 2340 | 513 | 109 | 529 |
| Serum storing and administering device | F. G. Ryan | 754,015 | Mar. 8 | 1591 | 355 | 109 | 367 |
| Set-works | J. J. Galway | 753,973 | Mar. 8 | 1580 | 339 | 109 | 351 |
| Setting-machine | E. L. Pupke | 753,431 | Mar. 1 | 402 | 94 | 109 | 87 |
| Sewage-ejector. Automatic | E. Yeomans | 757,169 | Apr. 12 | 1910 | 417<br>418 | 109 | 1767 |
| Sewer-inlet grating | L. H. Miner | 757,049 | Apr. 12 | 1678 | 364 | 109 | 1715 |
| Sewer-system ventilating-pipe | F. Struhs | 755,254 | Mar. 22 | 3906 | 886 | 109 | 922 |
| Sewer-trap | F. Osterle | 756,046 | Mar. 29 | 5506 | 1218 | 109 | 1275 |
| Sewed articles. Seam for | H. A. Webster | 757,374 | Apr. 12 | 2319 | 507 | 109 | 1773 |
| Sewing bench. Book- | H. S. MacGregor | 756,256 | Apr. 5 | 127 | 26 | 109 | 1370 |
| Sewing-machine attachment | R. H. Legg | 753,967 | Mar. 8 | 1540 | 344 | 109 | 356 |
| Sewing-machine attachment. Buttonhole- | L. Ecker | 756,483 | Apr. 5 | 582 | 122<br>123 | 109 | 1465 |
| Sewing-machine binder | W. R. Abercrombie | 753,834 | Mar. 8 | 1943 | 280 | 109 | 280 |
| Sewing machine. Button- | R. L. Lyons | 758,326 | Apr. 26 | 4239 | 911 | 109 | 2307 |
| Sewing-machine cabinet | W. C. Free | 755,292 | Mar. 22 | 4059 | 900 | 109 | 986 |
| Sewing machine. Corset- | S. Royle | 757,066 | Apr. 19 | 3496 | 758 | 109 | 2136 |
| Sewing-machine feeding mechanism | D. Noble | 754,984 | Mar. 15 | 3416 | 747<br>748 | 109 | 780 |
| Sewing machine. Filled-bag- | J. Bigelow | 756,569 | Apr. 5 | 736 | 157 | 109 | 1406 |
| Sewing-machine guide | O. Kiesewetter and L. H. Ehlers | 754,230 | Mar. 8 | 2159 | 478 | 109 | 488 |
| Sewing-machine hemmer attachment | A. Laubscher | 753,891 | Mar. 8 | 1853 | 305 | 109 | 312 |
| Sewing-machine hemmer-guide | H. Blaskopf | 755,348 | Mar. 22 | 4175 | 923 | 109 | 961 |
| Sewing-machine illuminator | P. Englund | 757,900 | Apr. 19 | 3373 | 729 | 109 | 2097 |
| Sewing-machine magnifying attachment | S. Jones | 756,094 | Mar. 29 | 5494 | 1212 | 109 | 1268 |
| Sewing-machine motor | J. H. Macon, Jr | 757,629 | Apr. 19 | 2860 | 624 | 109 | 1966 |
| Sewing-machine. Overseaming and welting | F. Malsch | 758,264 | Apr. 26 | 4097 | 886<br>887 | 109 | 2275 |
| Sewing-machine rotary fan attachment | H. W. C. von Castens | 757,728 | Apr. 19 | 3084 | 660 | 109 | 2023 |
| Sewing-machine ruffler | C. F. Goforth | 756,787 | Apr. 5 | 1142 | 252 | 109 | 1588 |
| Sewing-machine ruffling attachment | W. R. Parsons | 756,885 | Apr. 12 | 1329 | 296<br>297 | 109 | 1649 |
| Sewing-machine ruffling mechanism | A. Laubscher | 754,998 | Mar. 15 | 3402 | 744 | 109 | 778 |
| Sewing-machine shuttle-actuating mechanism | G. L. Corcoran | 757,725 | Apr. 19 | 3088 | 660<br>661 | 109 | 2024 |
| Sewing-machine spool-holder | A. Gorton | 756,163 | Mar. 29 | 5733 | 1266 | 109 | 1319 |
| Sewing-machine tension and thread controlling mechanism. | W. M. Ammerman | 756,314 | Apr. 5 | 239 | 49 | 109 | 1395 |
| Sewing-machine thread-controlling device | E. B. Allen | 757,171 | Apr. 12 | 1914 | 418<br>419 | 109 | 1768 |
| Sewing-machine thread-cutting device | J. T. Hogan | 757,463 | Apr. 19 | 2508 | 550 | 109 | 1907 |
| Sewing-machine thread-holding mechanism | J. H. and J. B. Ursbruck | 758,121 | Apr. 26 | 3821 | 829 | 109 | 2215 |
| Sewing-machine work-clamp. Buttonhole- | E. B. Allen | 758,086 | Apr. 26 | 3647 | 790 | 109 | 2177 |
| Shade adjuster. Window- | R. Aton | 755,835 | Mar. 29 | 5119 | 1134 | 109 | 1185 |
| Shade and curtain fixture bracket | P. Gallagher | 758,357 | Apr. 26 | 4295 | 922 | 109 | 2318 |
| Shade attachment. Window- | G. F. Dickinson, Jr. | 756,597 | Apr. 5 | 773 | 168 | 109 | 1536 |



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|---|---|---|---|---|---|---|---|
| Shade-bracket and curtain-rod holder. Combined | J. E. Verkler | 758,158 | Apr. 26 | 3885 | 844 | 109 | 2230 |
| Shade cabinet. Window- | A. E. Kretschmer | 755,017 | Mar. 22 | 3579 | 785 | 109 | 883 |
| Shade goods. Machine for trimming and applying | E. O. Engberg | 754,759 | Mar. 15 | 3091 | 675 | 109 | 711 |
| Shade hanger. Window- | J. C. Forsberg | 753,868 | Mar. 8 | 1309 | 294 | 109 | 303 |
| Shade-retaining device. Window- | H. Witte | 758,344 | Apr. 26 | 4273 | 917 | 109 | 2314 |
| Shade-roller | B. F. Jackson | 756,238 | Apr. 5 | 90 | 19 | 109 | 1361 |
| Shade-roller and curtain-pole holder. Combined | W. A. Nordling | 758,096 | Apr. 26 | 3778 | 821 | 109 | 2305 |
| Shade-roller bracket and curtain-pole support. Combined | D. J. Cooke | 758,419 | Apr. 26 | 4422 | 950 | 109 | 2347 |
| Shaft-carrier or thill-tug | D. B. Shirk | 758,566 | Apr. 26 | 4708 | 1015 | 109 | 2412 |
| Shaft-collar | C. H. Mellus | 758,549 | Apr. 26 | 4665 | 1004 | 109 | 2402 |
| Shaft-coupling | D. S. Sinclair | 753,439 | Mar. 1 | 416 | 97 | 109 | 90 |
| Shaft-coupling | C. N. Scott | 755,053 | Mar. 22 | 3695 | 798 | 109 | 846 |
| Shaft-coupling | J. R. George | 757,735 | Apr. 19 | 3055 | 666 | 109 | 2027 |
| Shaft draft appliance. Vehicle- | S. Gregory | 754,368 | Mar. 8 | 2300 | 503 | 109 | 520 |
| Shaft-fastener | W. A. Jones | 757,932 | Apr. 19 | 3437 | 744 | 109 | 2112 |
| Shaft. Pulley- | T. F. Cuddy | 754,052 | Mar. 8 | 1666 | 370 | 109 | 383 |
| Shaft-support and antirattler. Combined | J. C. Bridgman | 757,859 | Apr. 19 | 3294 | 714 | 109 | 2079 |
| Shaking-screen | T. L. and T. J. Sturtevant | 755,330 | Mar. 22 | 4141 | 916 | 109 | 953 |
| Shaper. Vertical | L. H. Colburn | 755,849 | Mar. 29 | 5156 | 1139<br>1140<br>1141 | 109 | 1195 |
| Sharpener. Disk- | W. J. Julian | 754,455 | Mar. 15 | 2500 | 544 | 109 | 581 |
| Sharpener. Knife- | F. H. Smith and D. C. Sasseman | 755,590 | Mar. 22 | 4622 | 1026 | 109 | 1058 |
| Sharpening attachment for band-cutters and feeders. | J. Manderson | 757,823 | Apr. 19 | 3230 | 701 | 109 | 2066 |
| Sharpening device | F. S. Rich | 753,630 | Mar. 1 | 784 | 175 | 109 | 170 |
| Shaving-mug | I. E. Foltz | 754,761 | Mar. 15 | 3096 | 676 | 109 | 712 |
| Shaving-paper holder | W. P. Nelson | 758,096 | Apr. 26 | 3774 | 819 | 109 | 2304 |
| Shearing and clipping device | J. K. Priest | 755,169 | Mar. 22 | 3840 | 847 | 109 | 890 |
| Shearing-tool | S. Arce | 757,429 | Apr. 19 | 2435 | 531<br>532 | 109 | 1893 |
| Shears:<br>*See* Cutting-shears. Mail-shears.<br>Lawn-shears. Metal-cutting shears. | | | | | | | |
| Shears | G. B. Rowe | 753,919 | Mar. 8 | 1416 | 319 | 109 | 326 |
| Sheet-cutting machine | M. Meriam | 757,560 | Apr. 19 | 2706 | 591<br>592 | 109 | 1950 |
| Sheet-delivery mechanism | W. Spalckhaver | 755,068 | Mar. 22 | 3666 | 805 | 109 | 853 |
| Sheet-feeder. Pneumatic | A. Lagerman | 758,453 | Apr. 26 | 4478 | 962 | 109 | 2360 |
| Sheet-folding machine | C. W. Bennett | 755,435 | Mar. 22 | 4336 | 959<br>960<br>961 | 109 | 995 |
| Sheet-metal balls. Machine for manufacturing | A. Johnston | 756,965 | Apr. 12 | 1497 | 330<br>331 | 109 | 1677 |
| Sheet-metal band for pipe-coverings, &c | B. H. Larkin | 755,679 | Mar. 29 | 4788 | 1035 | 109 | 1108 |
| Sheet-metal can | A. T. Kates | 753,581 | Mar. 1 | 706 | 158 | 109 | 154 |
| Sheet-metal-edging machine | E. F. Lockwood | 754,786 | Mar. 15 | 3150 | 686 | 109 | 722 |
| Sheet-metal vessels. Forming | H. G. Blevins and J. E. Whittaker | 758,503 | Apr. 26 | 4582 | 984 | 109 | 2285 |
| Sheet-mill adjusting mechanism | S. B. Ely, H. H. Anderson, and W. W. Slick. | 758,008 | Apr. 19 | 3502 | 772 | 109 | 2139 |
| Sheets. Means for facilitating interleaving | T. G. Hyde | 754,311 | Mar. 8 | 2149 | 476 | 109 | 486 |
| Shelf structure. Knockdown expansible | A. Dannenberg | 753,678 | Mar. 1 | 887 | 200<br>201 | 109 | 192 |
| Shelf-support. Adjustable | E. G. Schriefer | 754,816 | Mar. 15 | 3202 | 697<br>698 | 109 | 734 |
| Shelf-support. Adjustable | E. G. Schriefer | 754,817 | Mar. 15 | 3203 | 698 | 109 | 734 |
| Shelving | T. Hall | 753,979 | Mar. 8 | 1526 | 341 | 109 | 352 |
| Shell. Ammunition- | E. von Reichenau | 754,013 | Mar. 8 | 1589 | 354 | 109 | 366 |
| Shell grader and separator | G. W. Schreurs | 755,710 | Mar. 29 | 4858 | 1080 | 109 | 1127 |
| Shell-head-feeding apparatus | F. W. Olin | 755,920 | Mar. 29 | 5297 | 1169 | 109 | 1225 |
| Shingle-holder | I. D. Adams | 753,531 | Mar. 1 | 607 | 138 | 109 | 132 |
| Ship-builder's clamp | N. C. Bailey | 754,115 | Mar. 8 | 1788 | 398 | 109 | 411 |
| Ship construction | A. B. Wolvin | 754,107 | Mar. 8 | 1775 | 394 | 109 | 406 |
| Shipping device. Controlled | J. O. McKean | 753,794 | Mar. 1 | 979 | 222 | 109 | 211 |
| Shirt-waist | J. A. Kennedy | 756,240 | Apr. 5 | 93 | 20 | 109 | 1362 |
| Shirt-waist holder and skirt-supporter | A. Wiltsey | 754,179 | Mar. 8 | 1896 | 422 | 109 | 435 |
| Shock-compressor | G. A. Olson | 754,004 | Mar. 8 | 1570 | 351 | 109 | 382 |
| Shock-former | J. F. Wheeler | 753,770 | Mar. 1 | 1060 | 242<br>243<br>244 | 109 | 228 |
| Shock-squeezing device | W. I. Brown | 755,106 | Mar. 22 | 3726 | 818 | 109 | 867 |
| Shoe | C. K. Sharood | 753,745 | Mar. 1 | 1017 | 231 | 109 | 218 |
| Shoe | L. Vohl | 757,424 | Apr. 12 | 2494 | 528 | 109 | 1874 |
| Shoe. Ankle-supporting | G. Krieger | 757,816 | Apr. 19 | 3219 | 699 | 109 | 2064 |
| Shoe attachment. Athletic- | J. G. Mitchell | 754,673 | Mar. 15 | 2925 | 630 | 109 | 671 |
| Shoe. Electric-sole | A. Reed | 757,495 | Apr. 19 | 2567 | 563 | 109 | 1919 |
| Shoe-fastener | G. W. Wise | 753,776 | Mar. 1 | 1090 | 247 | 109 | 235 |
| Shoe-fastener | C. D. Brent | 755,370 | Mar. 22 | 4027 | 893 | 109 | 929 |
| Shoe-former | F. A. Heath | 755,488 | Mar. 22 | 4425 | 981 | 109 | 1013 |
| Shoe-holder | P. S. Kinsey and A. L. Anderson | 754,072 | Mar. 8 | 1693 | 376 | 109 | 389 |
| Shoe-holder | C. B. Kosters | 755,015 | Mar. 22 | 3574 | 784 | 109 | 832 |
| Shoe-nailing machine | W. Heaton | 755,489 | Mar. 22 | 4425 | 981 | 109 | 1014 |
| Shoe-polisher | J. H. Wilson | 755,980 | Mar. 29 | 5408 | 1195 | 109 | 1250 |
| Shoe-shield | C. N. Austin | 756,560 | Apr. 5 | 714 | 154 | 109 | 1494 |
| Shoe-top form | I. A. Minzy | 756,878 | Apr. 12 | 1319 | 291 | 109 | 1640 |
| Shoe-tree | J. H. Burt, A. L. Anderson, and R. C. Grossmann. | 754,047 | Mar. 8 | 1649 | 367 | 109 | 379 |
| Shovel:<br>*See* Excavating-shovel. | | | | | | | |
| Shovel and foot protector | J. Christiansen | 754,543 | Mar. 15 | 2676 | 581 | 109 | 620 |
| Shovels. Making | F. Skelton | 757,783 | Apr. 19 | 3162 | 696 | 109 | 2052 |
| Shoveling device | J. G. Westbrook | 754,946 | Mar. 15 | 3455 | 757 | 109 | 790 |
| Show-case | L. J. Baker and R. E. French | 753,656 | Mar. 1 | 887 | 188<br>189 | 109 | 183 |
| Show-case | J. Partheymueller | 754,233 | Mar. 8 | 2008 | 446 | 109 | 458 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Show-case | W. H. J. Guest | 754,443 | Mar. 15 | 2483 | 540 | 109 | 577 |
| Show-case | C. W. Selden | 754,507 | Mar. 15 | 2618 | 568 | 109 | 608 |
| Show-case | S. E. Parrish | 755,580 | Mar. 22 | 4585 | 1020 | 109 | 1049 |
| Show-case construction | O. Durr | 755,593 | Mar. 22 | 4608 | 1024 | 109 | 1055 |
| Shredding-machine or the like | M. F. Williams | 757,705 | Apr. 19 | 2998 | 651 | 109 | 2016 |
| Shutter-fastener | J. B. Halliday | 757,998 | Apr. 12 | 2159 | 473 | 109 | 1822 |
| Shutter. Rolling | W. B. Gervais | 757,106 | Apr. 12 | 1782 | 390 | 109 | 1737 |
| Shutter-worker | F. D. Marchand | 754,662 | Mar. 15 | 2906 | 635 | 109 | 667 |
| Shuttle. Float-detecting | E. Lamoureux | 754,658 | Mar. 15 | 2898 | 634 | 109 | 665 |
| Shuttle. Hand-threading | D. Brown | 755,561 | Mar. 22 | 4549 | 1012 | 109 | 1041 |
| Shuttle. Self-threading | J. B. Daudelin | 756,502 | Apr. 5 | 767 | 166 | 109 | 1505 |
| Side-comb | O. Vallendar | 756,545 | Apr. 5 | 690 | 148 | 109 | 1488 |
| Side-register for sheet-folding or other machines | C. A. Sturtevant | 753,983 | Mar. 8 | 1445 | 324 | 109 | 383 |
| Sidewalk | E. A. Langenbach | 758,184 | Apr. 26 | 3936 | 854 | 109 | 2240 |
| Sidewalk-cleaner | T. C. Hiles | 758,071 | Apr. 26 | 3732 | 810 | 109 | 2193 |
| Sidewalk on street-crossings | J. A. Rose | 754,895 | Mar. 15 | 3352 | 732 | 109 | 766 |
| Siding. Sheet-metal | E. G. Charlebois | 754,541 | Mar. 15 | 2673 | 580 | 109 | 620 |
| Sieve | F. W. Hasch | 754,865 | Mar. 15 | 3302 | 719 | 109 | 756 |
| Sifter. Ash- | J. P. Hill | 758,082 | Apr. 19 | 3035 | 786 | 109 | 2155 |
| Sifter. Gyrating | J. M. Schutz | 756,292 | Apr. 5 | 200 | 42 | 109 | 1387 |
| Sifting machine or screen | W. L. Burner | 755,445 | Mar. 22 | 4353 | 964 | 109 | 998 |
| Sight-feed lubricator. Pressure | D. H. Roberts | 756,286 | Apr. 5 | 185 | 38 | 109 | 1383 |
| Sight. Telescopic | E. M. Hewlett | 753,574 | Mar. 1 | 689 | 154, 155 | 109 | 151 |
| Sign and bird-house. Combined | I. Mason | 753,509 | Mar. 1 | 735 | 164 | 109 | 160 |
| Sign. Changeable | G. E. Burnham | 755,272 | Mar. 22 | 4029 | 894 | 109 | 929 |
| Sign-frame | C. G. Mixer | 758,068 | Apr. 26 | 3753 | 816 | 109 | 2198 |
| Sign switch mechanism. Electric- | F. S. Wahl | 758,342 | Apr. 26 | 4268 | 916, 917 | 109 | 2313 |
| Signal: *See* Electric signal. Electromagnetic signal. Loom cut signal. Railway-signal. Railway danger-signal. Train-signal. | | | | | | | |
| Signal apparatus | J. D. Price | 757,768 | Apr. 19 | 3125 | 680, 681 | 109 | 2043 |
| Signal-receiving apparatus. Alternating-current | G. W. Pickard | 758,468 | Apr. 26 | 4504 | 968 | 109 | 2366 |
| Signaling and operating system | H. C. W. Graham | 758,527 | Apr. 26 | 4626 | 996 | 109 | 2393 |
| Signaling apparatus | O. Lüddeckens | 754,152 | Mar. 8 | 1843 | 411 | 109 | 424 |
| Signaling apparatus | E. A. Faller | 757,090 | Apr. 12 | 1638 | 356, 357 | 109 | 1706 |
| Signaling apparatus. Block- | J. A. Lehr | 758,541 | Apr. 26 | 4655 | 1002 | 109 | 2399 |
| Signaling by electromagnetic waves | R. A. Fessenden | 753,864 | Mar. 8 | 1302 | 293 | 109 | 301 |
| Signaling by electromagnetic waves | R. A. Fessenden | 754,058 | Mar. 8 | 1673 | 372 | 109 | 385 |
| Signaling device. Electric | T. C. Laney and C. S. Longnecker | 755,990 | Mar. 29 | 5231 | 1156 | 109 | 1211 |
| Signaling system | H. Shoemaker | 756,719 | Apr. 5 | 1010 | 224 | 109 | 1558 |
| Signaling system. Wireless | H. Shoemaker | 754,904 | Mar. 15 | 3363 | 735 | 109 | 768 |
| Signaling system. Wireless | H. Shoemaker | 756,718 | Apr. 5 | 1009 | 224 | 109 | 1557 |
| Signaling system. Wireless | H. Shoemaker | 756,720 | Apr. 5 | 1011 | 224 | 109 | 1558 |
| Signaling. Wireless | R. A. Fessenden | 753,863 | Mar. 8 | 1300 | 292, 293 | 109 | 300 |
| Silt and sand separator. Automatic | C. Allen | 754,732 | Mar. 15 | 3049 | 665 | 109 | 700 |
| Sink-bracket | J. J. Mahoney | 758,545 | Apr. 26 | 4660 | 1003 | 109 | 2401 |
| Sink overflow device | E. C. Akers and R. Ross | 757,871 | Apr. 19 | 3315 | 718 | 109 | 2085 |
| Siphon | H. P. Roberts | 755,941 | Mar. 29 | 5342 | 1178 | 109 | 1235 |
| Siphon | C. Miller | 756,517 | Apr. 5 | 641 | 138 | 109 | 1477 |
| Sister-hook | T. H. Brady | 755,841 | Mar. 29 | 5141 | 1137 | 109 | 1192 |
| Sizing | A. Müller-Jacobs | 757,948 | Apr. 19 | 3460 | [illegible] | 109 | 2117 |
| Skate | T. Spacie | 757,240 | Apr. 12 | 2042 | 446 | 109 | 1795 |
| Skeining or winding cylinder | J. H. Young | 755,096 | Mar. 22 | 3709 | 814, 815 | 109 | 863 |
| Skirt-adjuster | H. Wetherby | 757,076 | Apr. 12 | 1714 | 372 | 109 | 1733 |
| Skirt and waist holder. Combined | M. Little-Fritzkow | 757,756 | Apr. 19 | 3101 | 675 | 109 | 2037 |
| Skirt-gage | M. M. McGowan | 756,043 | Mar. 29 | 5323 | 1218 | 109 | 1274 |
| Skirt-hanger | S. J. Goldsmith | 754,769 | Mar. 15 | 3098 | 677 | 109 | 712 |
| Skirt-holder | F. G. and R. O. Spear | 756,149 | Mar. 29 | 5719 | 1261 | 109 | 1314 |
| Skirt or garment supporter | W. G. Johnson | 755,881 | Mar. 29 | 5214 | 1153 | 109 | 1207 |
| Skirt-supporter | T. N. Schebler | 755,798 | Mar. 29 | 5051 | 1122 | 109 | 1169 |
| Skirt-supporter | A. M. Ott | 757,672 | Apr. 19 | 2942 | 638 | 109 | 2003 |
| Skirt-supporter and shirt-waist holder | C. B. Peterson | 758,146 | Apr. 26 | 3866 | 830 | 109 | 2226 |
| Skirts. Woven interlining for | G. S. Cox | 756,215 | Apr. 5 | 41 | 10 | 109 | 1351 |
| Sled. Bob- | J. H. Anderson | 753,854 | Mar. 1 | 883 | 186 | 109 | 192 |
| Sled. Coasting- | W. F. Parmelee | 754,967 | Mar. 15 | 3342 | 730 | 109 | 764 |
| Sled. Motor- | T. Halldorson | 754,996 | Mar. 22 | 3540 | 775 | 109 | 824 |
| Sleigh attachment. Bob- | A. Rockstad | 755,942 | Mar. 29 | 5343 | 1179 | 109 | 1235 |
| Sleigh-knee | P. S. Lockwood | 754,225 | Mar. 8 | 1906 | 443 | 109 | 456 |
| Sleigh. Steam- | J. R. Tibbits | 756,078 | Mar. 29 | 5578 | 1231, 1232 | 109 | 1286 |
| Slicer and grater. Combined potato | L. L. Stevens | 757,360 | Apr. 12 | 2291 | 500 | 109 | 1847 |
| Sling | F. L. Webster | 756,304 | Apr. 5 | 222 | 46 | 109 | 1392 |
| Slotting-machine | M. and H. E. Morton | 757,562 | Apr. 19 | 2713 | 592, 593, 594 | 109 | 1952 |
| Sluice-box. Concentrating | C. M. Carter | 757,176 | Apr. 12 | 1931 | 422 | 109 | 1772 |
| Small-arm. Recoil-loading | G. Luger | 753,414 | Mar. 1 | 366 | 85, 86, 87 | 109 | 89 |
| Smelting-furnace | A. R. Partridge | 757,221 | Apr. 12 | 2006 | 436 | 109 | 1787 |
| Smelting ores | A. R. Partridge | 757,220 | Apr. 12 | 2004 | 436 | 109 | 1787 |
| Smoke-consumer | R. R. Bryant | 756,983 | Apr. 12 | 1433 | 319 | 109 | 1664 |
| Smoke-consuming apparatus | G. A. Doebbel | 755,220 | Mar. 22 | 3982 | 870 | 109 | 909 |
| Smoke-consuming furnace | J. H. Hawke | 753,259 | Mar. 1 | 86 | 22 | 109 | 21 |
| Smoke-consuming furnace | J. B. Harris | 754,999 | Mar. 22 | 3544 | 776, 777 | 109 | 825 |
| Smoke-consuming furnace | P. J. Kraetsch | 756,379 | Apr. 5 | 384 | 78, 79 | 109 | 1426 |
| Smoke-conveyer | W. L. Gale | 757,546 | Apr. 19 | 2683 | 587 | 109 | 1946 |



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|---|---|---|---|---|---|---|---|
| Smoke-stack | P. Dickinson. (Reissue) | 12,210 | Apr. 5 | 1178 | 261, 262 | 109 | 1596 |
| Smoke-stack for locomotive-engine houses | H. A. Walden | 756,440 | Apr. 5 | 506 | 105 | 109 | 1450 |
| Smokeless boiler | E. Chaquette | 753,360 | Mar. 1 | 255 | 58 | 109 | 58 |
| Smokers' articles. Mouthpiece or stem for | J. A. Manahan | 757,760 | Apr. 19 | 3107 | 676 | 109 | 2088 |
| Snap-fastener | A. E. Plowman | 756,403 | Apr. 5 | 430 | 88 | 109 | 1435 |
| Snap-fastener | T. R. Hyde, Jr., and E. D. Simons | 757,196 | Apr. 12 | 1965 | 429 | 109 | 1779 |
| Snap-fastener | E. D. Simons | 757,237 | Apr. 12 | 2086 | 444 | 109 | 1794 |
| Snap-hook | R. C. Eldridge | 756,607 | Apr. 5 | 789 | 172 | 109 | 1509 |
| Snaps to leather lines. Clamp for fastening | W. W. Spohn | 754,358 | Mar. 8 | 2217 | 495 | 109 | 501 |
| Snow-plow | W. F. Wheeler | 757,163 | Apr. 12 | 1904 | 415 | 109 | 1766 |
| Soap and brush holder | M. E. Hearttagen | 754,806 | Mar. 8 | 2141 | 474 | 109 | 485 |
| Soap and making same | G. A. Schmidt | 755,945 | Mar. 29 | 5348 | [illegible] | 109 | 1236 |
| Soap and soap-holder | E. M. Goldsmith | 757,397 | Apr. 12 | 2371 | 516 | 109 | 1862 |
| Soap, &c. Apparatus for making chip- | W. M. Morse | 755,915 | Mar. 29 | 5287 | 1167, 1168 | 109 | 1223 |
| Soap cake | L. S. Samuel | 754,243 | Mar. 8 | 2027 | 450 | 109 | 462 |
| Soap-holder | J. S. Roake | 757,638 | Apr. 19 | 2876 | 626 | 109 | 1969 |
| Soap-lock | G. D. Snell | 755,553 | Mar. 22 | 4538 | 1010 | 109 | 1089 |
| Soap, &c. Machine for stamping | L. L. Conway | 755,362 | Mar. 22 | 4201 | 929, 930 | 109 | 968 |
| Soap-molding apparatus | F. C. Ihrer, J. W. Alexander, J. F. Barr, and J. M. Ochiltree. | 753,706 | Mar. 1 | 948 | 215 | 109 | 205 |
| Soap-receptacle | W. E. Robinson | 755,700 | Mar. 29 | 4843 | 1077 | 109 | 1123 |
| Socket member | P. H. Stein | 755,407 | Mar. 22 | 4285 | 947 | 109 | 986 |
| Socket member | W. S. Richardson | 755,582 | Mar. 22 | 4587 | 1020 | 109 | 1050 |
| Soda-water apparatus | C. A. Geddes | 753,566 | Mar. 1 | 671 | 151 | 109 | 148 |
| Soda-water apparatus | F. H. Lippincott | 753,718 | Mar. 1 | 968 | 219, 220 | 109 | 208 |
| Sodium sulfid. Manufacturing | J. F. White | 755,201 | Mar. 22 | 3903 | [illegible] | 109 | 908 |
| Solder-rolling machine. Wire- | A. Lotz | 754,325 | Mar. 8 | 2167 | 480 | 109 | 490 |
| Soldering apparatus. Can- | J. G. and M. O. Rehfuss | 754,939 | Mar. 15 | 3429 | 750 | 109 | 783 |
| Soldering-iron. Electrically-heated | A. C. McCloskey | 757,670 | Apr. 19 | 2986 | 638 | 109 | 2002 |
| Soldering machine. Can- | J. G. and M. O. Rehfuss | 754,699 | Mar. 15 | 2985 | 650, 651 | 109 | 785 |
| Solutions. Preparing highly-diluted | E. Joseph | 758,450 | Apr. 26 | 4475 | [illegible] | 109 | 2350 |
| Sorting-machine | J. Riddlebaugh | 754,390 | Mar. 8 | 2338 | 511 | 109 | 527 |
| Sorting-machine | E. Rettich and G. Berger | 758,104 | Apr. 26 | 3785 | 822, 823 | 109 | 2206 |
| Sound-producing-instrument diaphragm | Z. J. Le Fevre | 755,506 | Mar. 22 | 4453 | 989 | 109 | 1019 |
| Sound-records. Apparatus for electroplating | G. K. Cheney | 758,352 | Apr. 26 | 4286 | 921 | 109 | 2317 |
| Sounding apparatus | J. Philp | 756,887 | Apr. 12 | 1338 | 297, 298 | 109 | 1644 |
| Soundings. Instrument for taking | E. E. Wigzell | 758,948 | Mar. 8 | 1472 | 330, 331 | 109 | 340 |
| Spark and cinder arrester | W. S. Cavender | 757,270 | Apr. 12 | 2093 | 456 | 109 | 1805 |
| Sparker | F. Dickinson | 754,286 | Mar. 8 | 2099 | 466 | 109 | 476 |
| Speaking figure | G. W. Spencer and A. Lynde | 754,825 | Mar. 15 | 3218 | 701 | 109 | 737 |
| Spectacle-temple | O. Lavallée | 753,504 | Mar. 1 | 729 | 163 | 109 | 158 |
| Spectacles | S. G. Marshutz | 756,871 | Apr. 12 | 1307 | 292 | 109 | 1638 |
| Speed-changer | G. E. Greenleaf and H. R. Kennedy | 753,878 | Mar. 8 | 1326 | 298, 299 | 109 | 306 |
| Speed-changer hanger | E. J. Lees and E. L. Aiken | 758,406 | Mar. 1 | 341 | 77, 78 | 109 | 76 |
| Speed-changing mechanism | C. J. Reed | 758,474 | Apr. 26 | 4513 | 970 | 109 | 2368 |
| Speed-changing mechanism | C. J. Reed | 758,561 | Apr. 26 | 4687 | 1011 | 109 | 2406 |
| Speed-cone | J. Hearttagen | 754,807 | Mar. 8 | 2142 | 475 | 109 | 485 |
| Speed-differentiating device | F. H. Cheyne | 755,616 | Mar. 29 | 4671 | 1038, 1039 | 109 | 1082 |
| Speed-indicator | G. N. Moore and M. O'Neill | 758,596 | Apr. 26 | 4763 | 1025 | 109 | 2424 |
| Speed mechanism. Variable- | J. Parker | 754,389 | Mar. 8 | 2190 | 487 | 109 | 495 |
| Speed mechanism. Variable- | C. F. Laur and A. E. Robinson | 755,504 | Mar. 22 | 4448 | 988 | 109 | 1018 |
| Speed regulation for motor-driven machinery. System of | G. S. Dunn | 754,980 | Mar. 22 | 3513 | 769, 770 | 109 | 819 |
| Spike-extractor | E. E. Welsh | 757,102 | Apr. 12 | 1902 | 415 | 109 | 1765 |
| Spike-puller | F. W. and F. A. Gerlach and F. W. Moore. | 753,886 | Mar. 1 | 905 | 68 | 109 | 69 |
| Spindle-driving-band tension device | T. H. Greenwood | 754,061 | Mar. 8 | 1678 | 373 | 109 | 386 |
| Spindle-driving mechanism | E. E. Bradley | 756,465 | Apr. 5 | 551 | 115 | 109 | 1460 |
| Spinner | H. F. Stimps | 756,542 | Apr. 5 | 686 | 147, 148 | 109 | 1487 |
| Spinning and doubling apparatus | R. W. Moncrieff | 755,153 | Mar. 22 | 3805 | 838, 839 | 109 | 884 |
| Spinning and twisting frame doffer | D. E. Carey | 755,450 | Mar. 22 | 4363 | 966, 967 | 109 | 1000 |
| Spinning apparatus. Ring- | G. Paley | 758,275 | Apr. 26 | 4119 | 891 | 109 | 2280 |
| Spinning apparatus. Yarn- | J. Hayden | 756,166 | Mar. 29 | 5737 | 1267 | 109 | 1330 |
| Spinning or twisting machine thread-guide support | L. T. Houghton | 753,577 | Mar. 1 | 695 | 156 | 109 | 152 |
| Spinning-ring | H. B. Hoyle | 757,748 | Apr. 19 | 3087 | 672 | 109 | 2084 |
| Spirometer | A. E. Wells | 757,797 | Apr. 19 | 3183 | 691 | 109 | 2057 |
| Splicing-tool | A. B. Probasco | 755,542 | Mar. 22 | 4517 | 1005 | 109 | 1033 |
| Spoke-socket | G. W. Maloney | 757,047 | Apr. 12 | 1676 | 363 | 109 | 1715 |
| Spool-rack | A. S. Horlacher | 756,790 | Apr. 5 | 1146 | 254 | 109 | 1589 |
| Spout | E. C. Staudinger | 753,750 | Mar. 1 | 1024 | 232 | 109 | 220 |
| Spraying device | R. B. Williamson | 755,823 | Mar. 29 | 5090 | 1131 | 109 | 1176 |
| Spraying-spar | W. H. Owen | 753,790 | Mar. 1 | 989 | 224 | 109 | 213 |
| Spring: *See* Bed-spring. Bow-spring. Couch-spring. Door-spring. Dress or corset spring. Vehicle seat-spring. Wagon-spring. | | | | | | | |
| Spring | O. D. White | 755,729 | Mar. 29 | 4904 | 1092 | 109 | 1137 |
| Spring-back chair | J. Gilson | 758,133 | Apr. 26 | 3845 | 835 | 109 | 2220 |
| Spring-clip | G. W. McGill | 753,611 | Mar. 1 | 749 | 167 | 109 | 163 |
| Spring-clip | G. W. McGill | 753,613 | Mar. 1 | 752 | 168 | 109 | 163 |
| Spring-clip | G. W. McGill | 753,614 | Mar. 1 | 755 | 168 | 109 | 164 |
| Spring controller. Coil- | T. A. Shea | 757,781 | Apr. 19 | 3159 | 686 | 109 | 2051 |

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|---|---|---|---|---|---|---|---|
| Spring-dowel-forming machine | J. H. Ross | 756,582 | Apr. 5 | 666 | 143, 144 | 109 | 1483 |
| Spring-head-pinning machine | C. F. Shoemaker | 753,005 | Mar. 22 | 3558 | 780 | 109 | 899 |
| Spring-knotting machine | J. H. Ross | 756,581 | Apr. 5 | 664 | 143 | 109 | 1482 |
| Spring machine. Wire- | C. E. Booth | 756,823 | Apr. 12 | 1213 | 271, 272 | 109 | 1619 |
| Spring-motor | J. E. Gibbs | 753,873 | Mar. 8 | 1316 | 266 | 109 | 304 |
| Spring-motor | F. A. Richter | 755,980 | Mar. 29 | 5335 | 1177 | 109 | 1233 |
| Spring retaining-clip | E. E. and C. T. Wilt | 753,266 | Mar. 22 | 4021 | 891 | 109 | 927 |
| Spring-switch | H. C. Stiff | 756,729 | Apr. 5 | 1032 | 228 | 109 | 1563 |
| Spring work. Wire clip for cushion- | W. R. Smith | 757,430 | Apr. 19 | 2416 | 526 | 109 | 1873 |
| Sprinkler: *See* Automatic sprinkler. Lawn-sprinkler. | | | | | | | |
| Square. Hip-roof-framing | W. J. Davis | 756,594 | Apr. 5 | 769 | 167 | 109 | 1505 |
| Square. T- | F. E. Small | 756,967 | Apr. 12 | 1541 | 330 | 109 | 1665 |
| Stable-beam suspension device | J. Werner | 755,200 | Mar. 22 | 3903 | 861 | 109 | 902 |
| Stack-climber | C. Stoolfire | 755,809 | Mar. 29 | 5067 | 1125 | 109 | 1173 |
| Stacker. Hay- | J. C. Shafer | 755,057 | Mar. 22 | 3642 | 799 | 179 | 848 |
| Stacker. Hay- | J. W. Kenworthy | 757,624 | Apr. 19 | 2853 | 621, 622 | 109 | 1964 |
| Stacker hoisting mechanism | J. H. Kindsvater | 754,781 | Mar. 15 | 3138 | 683, 684 | 109 | 720 |
| Stacker. Pneumatic | J. Henry | 754,448 | Mar. 15 | 2489 | 542 | 109 | 579 |
| Stacker. Pneumatic | A. P. and W. M. Roberts | 755,940 | Mar. 29 | 5338 | 1178 | 109 | 1234 |
| Stacker. Pneumatic straw- | T. Goodale | 757,188 | Apr. 12 | 1952 | 426 | 109 | 1777 |
| Stacker. Pneumatic straw- | J. A. Walsh and E. Bretney | 758,606 | Apr. 26 | 4784 | 1079, 1080 | 109 | 2428 |
| Stacker. Straw- | J. C. Hendricks | 758,136 | Apr. 26 | 3849 | 835, 836 | 109 | 2221 |
| Stage and circus-ring. Combined | J. J. Jacobs | 755,879 | Mar. 29 | 5211 | 1152 | 109 | 1206 |
| Stair-mat | C. Knopf | 756,507 | Apr. 5 | 620 | 135 | 109 | 1473 |
| Stall. Horse- | J. F. Schmidt | 756,716 | Apr. 5 | 1006 | 223 | 109 | 1557 |
| Stamp-affixer and envelop-sealer | E. A. Emmerling | 753,963 | Mar. 8 | 1508 | 336 | 109 | 848 |
| Stamp and punch. Combined ticket | A. S. Martin | 756,887 | Apr. 5 | 898 | 81 | 109 | 1428 |
| Stamp-battery guide | W. S. McDonough | 755,525 | Mar. 22 | 4488 | 997 | 109 | 1027 |
| Stamp-mill | W. A. Merralls | 753,602 | Mar. 1 | 738 | 165 | 109 | 160 |
| Stamp-mill | M. P. Boss | 756,774 | Apr. 5 | 1107 | 245 | 109 | 1579 |
| Stamp-mill | W. A. Merralls | 756,873 | Apr. 12 | 1312 | 293 | 109 | 1639 |
| Stamp-mill mortar-box | D. B. Morison | 755,913 | Mar. 29 | 5284 | 1166 | 109 | 1222 |
| Stamping apparatus for crushing ores, &c | D. B. Morison | 755,696 | Mar. 29 | 4798 | 1068, 1069 | 109 | 1111 |
| Stand: *See* Blacking-stand. Book-stand. Display-stand. Hammock-stand. Music-stand. Washstand. | | | | | | | |
| Standard | A. M. Moylan | 758,080 | Apr. 26 | 3754 | 816 | 109 | 2198 |
| Staple-making machine | H. L. and W. Edge | 755,755 | Mar. 29 | 4963 | 1104, 1105 | 109 | 1148 |
| Starch by centrifugal action. Separating | R. Schrader | 757,778 | Apr. 19 | 3154 | 685 | 109 | 2050 |
| Starch. Manufacture of | R. Goldschmidt and J. Hasek | 755,479 | Mar. 22 | 4410 | | 109 | 1010 |
| Station-indicator | O. H. Bissell | 755,735 | Mar. 29 | 4915 | 1095 | 109 | 1139 |
| Station-indicator | H. G. Miller | 756,680 | Apr. 5 | 929 | 203, 204 | 109 | 1541 |
| Stave-column | J. S. Miller | 756,261 | Apr. 5 | 138 | 27 | 109 | 1372 |
| Stave-shaping machine | A. L. Shaw | 753,522 | Mar. 1 | 580 | 132, 133 | 109 | 126 |
| Stay-bolt | D. L. Shaffer | 757,973 | Apr. 19 | 3509 | 761 | 109 | 2129 |
| Stay-bolt. Flexible | J. B. Tate | 753,320 | Mar. 1 | 308 | 47 | 109 | 48 |
| Steam and vapor generator. Electric | T. W. Neely | 758,004 | Apr. 26 | 3769 | 819 | 109 | 2208 |
| Steam. Apparatus for supplying cities with | W. C. Andrews | 753,817 | Mar. 1 | 1305 | 270, 271, 272 | 109 | 259 |
| Steam-boiler | J. A. Mumford | 753,908 | Mar. 8 | 1373 | 310 | 109 | 317 |
| Steam-boiler | C. G. Curtis | 754,126 | Mar. 8 | 1806 | 402 | 109 | 415 |
| Steam-boiler | F. J. Rowan | 754,348 | Mar. 8 | 2208 | 490, 491 | 109 | 498 |
| Steam-boiler | J. Wehrle | 754,360 | Mar. 8 | 2220 | 496 | 109 | 501 |
| Steam-boiler | C. B. Rearick | 754,697 | Mar. 15 | 2982 | 649 | 109 | 684 |
| Steam-boiler | R. W. Barton | 754,837 | Mar. 15 | 3257 | 708 | 109 | 746 |
| Steam-boiler | D. W. Robb | 755,046 | Mar. 22 | 3624 | 795 | 109 | 844 |
| Steam-boiler | A. Parfitt | 755,330 | Mar. 22 | 4495 | 999 | 109 | 1029 |
| Steam-engine | W. H. Stohlmann | 755,410 | Mar. 22 | 4289 | 948 | 109 | 986 |
| Steam-engine | J. M. Clark | 755,453 | Mar. 22 | 4370 | 968 | 109 | 1008 |
| Steam-engine | F. Lane and O. E. Oakes | 756,657 | Apr. 5 | 878 | 193 | 109 | 1529 |
| Steam-engine | C. C. Worthington | 757,000 | Apr. 12 | 1586 | 347 | 109 | 1605 |
| Steam-engine | L. Goos, Jr | 757,432 | Apr. 19 | 2477 | 542 | 109 | 1902 |
| Steam-engine | F. P. Hummel | 757,750 | Apr. 19 | 3090 | 673 | 109 | 2085 |
| Steam. Generating | T. W. Neely | 758,005 | Apr. 26 | 3772 | 819 | 109 | 2208 |
| Steam-generator | M. H. Plunkett | 756,051 | Mar. 29 | 5333 | 1220, 1221 | 109 | 1277 |
| Steam-generator | M. H. Plunkett | 756,052 | Mar. 29 | 5336 | 1221 | 109 | 1277 |
| Steam-generator | S. Straker | 756,073 | Mar. 29 | 5371 | 1220 | 109 | 1285 |
| Steam-generator | H. E. Penney | 756,594 | Apr. 5 | 955 | 210 | 109 | 1547 |
| Steam-generator | R. A. Mitchell and L. L. Lewis | 757,050 | Apr. 12 | 1579 | 364 | 109 | 1716 |
| Steam-generator | H. E. Rider | 757,413 | Apr. 12 | 2403 | 523 | 109 | 1869 |
| Steam-generator | J. G. A. Kitchen and L. P. Perkins | 757,625 | Apr. 19 | 2855 | 629 | 109 | 1984 |
| Steam-generator | G. L. Rose | 757,689 | Apr. 19 | 2877 | 627 | 109 | 1990 |
| Steam-generator | E. A. Briner | 758,505 | Apr. 26 | 4585 | 965, 966 | 109 | 2385 |
| Steam-generators. Device for removing steam from the heating-surfaces of | S. M. Cockburn | 755,217 | Mar. 22 | 3927 | 869, 870 | 109 | 908 |
| Steam or gas engine | O. B. Thorson | 753,647 | Mar. 1 | 818 | 188 | 109 | 178 |
| Steam-separator | F. A. Simonds | 756,537 | Apr. 5 | 678 | 146 | 109 | 1486 |
| Steam-separator | J. G. Duck | 756,942 | Apr. 12 | 1446 | 321 | 109 | 1667 |
| Steam-separator | J. G. Duck | 756,943 | Apr. 12 | 1449 | 321 | 109 | 1667 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Steam. Superheating | S. A. Reeve | 753,738 | Mar. 1 | 1001 | 228 | 109 | 216 |
| Steam. System of economical production of superheated | A. Leclere | 755,893 | Mar. 29 | 5237 | 1158 | 109 | 1212 |
| Steam-trap | C. A. Dunham | 753,557 | Mar. 1 | 656 | 148 | 109 | 145 |
| Steam-trap | J. G. Duck | 753,861 | Mar. 8 | 1296 | 292 | 109 | 299 |
| Steam-trap | S. Steinmitz | 755,251 | Mar. 22 | 3968 | 885 | 109 | 920 |
| Steam-trap. Automatic | J. M. Towne | 757,694 | Apr. 19 | 2981 | 648 | 109 | 2012 |
| Steamer. Tank- | S. Holmes | 758,074 | Apr. 26 | 3784 | 811 | 109 | 2194 |
| Steel-concrete construction, &c | J. S. Metcalf | 753,608 | Mar. 1 | 738 | 165 | 109 | 161 |
| Steel, &c. Converter for making | W. B. Burrow | 755,215 | Mar. 22 | 3924 | 868, 869 | 109 | 907 |
| Steel. Manufacturing | O. Massenez | 754,154 | Mar. 8 | 1845 | ------ | 109 | 424 |
| Steel plates. Locally softening or annealing hardened | C. P. E Schneider | 755,709 | Mar. 29 | 4856 | 1079 | 109 | 1126 |
| Steel projectiles, &c. Manufacture of hardened | R. A. Hadfield | 754,301 | Mar. 8 | 2132 | ------ | 109 | 488 |
| Steel. Treating and manufacturing | W. B. Burrow | 757,808 | Apr. 19 | 3195 | 604 | 109 | 2059 |
| Steering and steadying mechanism. Boat | W. H. Young | 757,384 | Apr. 12 | 2345 | 511 | 109 | 1857 |
| Steering-gear | H. W. Hoover | 758,576 | Mar. 1 | 694 | 155 | 109 | 152 |
| Stencil | J. T. Commoss | 754,281 | Mar. 8 | 2090 | 464 | 109 | 474 |
| Stenciling | C. L. Burdick and H. Pervilhac | 757,488 | Apr. 19 | 2454 | 536 | 109 | 1897 |
| Stereoscope | C. L. Pappenhagen | 756,692 | Apr. 5 | 951 | 209 | 109 | 1545 |
| Stereoscope | C. L. Pappenhagen | 757,052 | Apr. 12 | 1682 | 365 | 109 | 1716 |
| Stereoscopic apparatus | H. C. Snook | 758,117 | Apr. 26 | 3814 | 828 | 109 | 2213 |
| Stereotype-casting machine | C. E. Hopkins | 757,114 | Apr. 12 | 1796 | 393, 394 | 109 | 1741 |
| Sterilizing, heating, and boiling liquids. Apparatus for | J. E. Siebel | 758,994 | Mar. 8 | 1425 | 320, 321 | 109 | 838 |
| Stiffener-bath | P. Belle | 756,319 | Apr. 5 | 248 | 51, 52 | 109 | 1397 |
| Still for crude bituminous material | H. W. Ash | 757,387 | Apr. 12 | 2349 | 512 | 109 | 1858 |
| Still. Water- | F. H. Smith | 755,179 | Mar. 22 | 3960 | 852 | 109 | 904 |
| Stirrup | G. E. McVey | 756,270 | Apr. 5 | 152 | 31 | 109 | 1375 |
| Stirrup. Safety- | E. L Parrish | 755,531 | Mar. 22 | 4496 | 999 | 109 | 1029 |
| Stitch separating and indenting machine | F. J. Thon and H. G. Wolf | 756,601 | Apr. 26 | 4773 | 1027 | 109 | 2426 |
| Stock. Hoisting device for live | L. W. Johnson | 754,775 | Mar. 15 | 3114 | 680 | 109 | 716 |
| Stock-loading device | W. Dawson | 758,426 | Apr. 26 | 4432 | 952 | 109 | 2349 |
| Stocking | L. Calkins | 757,390 | Apr. 12 | 2354 | 513 | 109 | 1859 |
| Stocking-supporter | T. P. Taylor | 755,812 | Mar. 29 | 5071 | 1126 | 109 | 1173 |
| Stoker. Mechanical | E. and H. R. Bretney | 755,611 | Mar. 29 | 4657 | 1084, 1085 | 109 | 1079 |
| Stone. Artificial | V Steger | 756,295 | Apr. 5 | 205 | ------ | 109 | 1388 |
| Stone-cleaning composition and making same | P. J. Brahen | 754,417 | Mar. 15 | 2409 | ------ | 109 | 561 |
| Stone. Manufacture of artificial | F. W. Dunn | 754,550 | Mar. 15 | 2687 | 583 | 109 | 623 |
| Stone. Manufacturing | J. C. McClenahan | 757,483 | Apr. 19 | 2545 | 559 | 109 | 1915 |
| Stone-sawing machine | G. D. Hunter | 753,268 | Mar. 1 | 101 | 25 | 109 | 25 |
| Stone-sawing machine | G. D. Hunter | 753,269 | Mar. 1 | 103 | 26 | 109 | 25 |
| Stone-sawing machine | G. D Hunter | 753,270 | Mar. 1 | 105 | 26 | 109 | 26 |
| Stool | G. D Hunter | 755,667 | Mar. 29 | 4765 | 1061 | 109 | 1104 |
| Stool. Folding | F. Schellenbach | 755,706 | Mar. 29 | 4852 | 1079 | 109 | 1126 |
| Stop-motion device | G W. Pike and F. M. Andrus | 755,043 | Mar. 22 | 3621 | 794 | 109 | 843 |
| Stopper: *See* Battery-stopper. Bottle-stopper. Dropping-stopper. | S. W. Wardwell | 756,808 | Apr. 5 | 221 | 46 | 109 | 1392 |
| Stopper for preventing the refilling of vessels | P Bonneteau | 755,439 | Mar. 22 | 4344 | 962 | 109 | 996 |
| Storage and display receptacle | C. A. Brewer | 756,466 | Apr. 5 | 552 | 115 | 109 | 1460 |
| Storage apparatus | J. M. Dodge | 755,566 | Mar. 22 | 4559 | 1014 | 109 | 1048 |
| Storage battery | M. C. Burt | 754,969 | Mar. 22 | 3497 | 765 | 109 | 816 |
| Storage battery | A. V. Meserole | 757,943 | Apr. 19 | 3453 | 748 | 109 | 2116 |
| Storage tank or receptacle | W. M. Fulton | 754,182 | Mar. 8 | 1815 | 404 | 109 | 417 |
| Store-service apparatus | E. R. Gill | 758,060 | Apr. 26 | 3699 | 803, 804, 805, 806, 807 | 109 | 2188 |
| Storing, displaying, and measuring goods. Means for | R. C. Miller | 756,128 | Mar. 29 | 5084 | 1254 | 109 | 1308 |
| Stove | O. P. Greene | 754,557 | Mar. 15 | 2703 | 587 | 109 | 626 |
| Stove | H. H. Brown | 755,105 | Mar. 22 | 3794 | 818 | 109 | 867 |
| Stove | A. A. Little | 757,046 | Apr. 12 | 1674 | 363 | 109 | 1715 |
| Stove attachment | C. H. Torrens | 754,028 | Mar. 8 | 1618 | 360 | 109 | 373 |
| Stove attachment | J. S. Van Buren | 754,259 | Mar. 8 | 2059 | 456 | 109 | 467 |
| Stove. Camp- | L. J. Clergy and H. Morrow | 756,330 | Apr. 5 | 273 | 56 | 109 | 1401 |
| Stove. Camp- | D. L. Miller | 758,015 | Apr. 19 | 3602 | 780 | 109 | 2149 |
| Stove. Cook- | J. J. Koch and J. Hümbell | 756,378 | Apr. 5 | 382 | 78 | 109 | 1425 |
| Stove fire-box. Cooking- | J. Mulvany | 754,482 | Mar. 15 | 2560 | 557 | 109 | 595 |
| Stove for heating irons, &c | A. V. Manlachi | 756,033 | Mar. 29 | 5508 | 1215 | 109 | 1270 |
| Stove for heating smoothing-irons, &c | W. Hegemann | 757,742 | Apr. 19 | 3079 | 670, 671 | 109 | 2082 |
| Stove frame. Vapor- | I. Kinsey | 753,496 | Mar. 1 | 519 | 120 | 109 | 114 |
| Stove. Gas- | A. C. Witman | 754,180 | Mar. 8 | 1898 | 423 | 109 | 435 |
| Stove. Gas- | H. A. Guignon | 754,651 | Mar. 15 | 2885 | 630 | 109 | 668 |
| Stove. Gas- | E. Flannigain | 758,483 | Apr. 26 | 4447 | 956 | 109 | 2358 |
| Stove. Heating- | T. M. Barbee | 754,275 | Mar. 8 | 2080 | 461 | 109 | 472 |
| Stove. Heating- | P. J. Coppens | 755,277 | Mar. 22 | 4087 | 895 | 109 | 980 |
| Stove. Heating- | J Cockrell | 756,587 | Apr. 5 | 761 | 165 | 109 | 1508 |
| Stove igniter. Oil- | W. H. Wilder | 757,708 | Apr. 19 | 2995 | 651 | 109 | 2015 |
| Stove-lid and cooking-utensil lifter. Combination | G. W. Stengel | 756,737 | Apr. 5 | 1024 | 227 | 109 | 1561 |
| Stove. Oil- | E. E Flora | 755,864 | Mar. 29 | 5181 | 1147 | 109 | 1200 |
| Stove or furnace | J. M. and S. R. Crowner | 758,051 | Apr. 26 | 3679 | 798 | 109 | 2185 |
| Stove or furnace. Heating | R. W. Dodge | 757,602 | Apr. 19 | 2791 | 611 | 109 | 1971 |
| Stove-top | W. C. Kneale | 754,146 | Mar. 8 | 1834 | 409 | 109 | 422 |
| Stove. Wickless blue-flame oil- | A. J. Blackford | 757,876 | Apr. 19 | 3324 | 720 | 109 | 2087 |
| Stovepipe-fastener | E. Hanmer | 753,701 | Mar. 1 | 986 | 212 | 109 | 202 |
| Stovepipe-fastener | C. T. McClarin | 756,266 | Apr. 5 | 147 | 30 | 109 | 1374 |
| Stovepipe-holder | C. W. Elderkin | 755,641 | Mar. 29 | 4721 | 1050 | 109 | 1098 |
| Strainer | M. H. Viner | 753,989 | Mar. 8 | 1454 | 327 | 109 | 335 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Strainer | F. G. Brown | 755,352 | Mar. 22 | 4187 | 925 | 109 | 964 |
| Strainer | J. C. Quinn | 756,892 | Apr. 12 | 1353 | 300 | 109 | 1647 |
| Strainer and filter | G. A. W. Schilling | 758,150 | Apr. 26 | 3871 | 841 | 109 | 2227 |
| Straining attachment. Milk-can | J. H. Blaney | 755,009 | Mar. 29 | 4053 | 1084 | 109 | 1073 |
| Straw. Artificial | J. H. White | 754,948 | Mar. 15 | 3459 | 757 | 109 | 791 |
| Street-indicating mechanism for vehicles | E. L. Nichols | 756,136 | Mar. 29 | 5604 | 1256<br>1257 | 109 | 1310 |
| Street, station, program, or advertising indicator | R. Bosshard | 757,066 | Apr. 12 | 1738 | 378<br>379<br>380 | 109 | 1727 |
| Stretcher | P., P. W., and J. W. Sommer | 756,539 | Apr. 5 | 681 | 146 | 109 | 1486 |
| Striking-bag support | G. McFadden | 755,669 | Mar. 29 | 4804 | 1070 | 109 | 1112 |
| String-cutter | G. R. Hannan and J. C. Rodehaver | 755,809 | Mar. 29 | 5198 | 1149 | 109 | 1302 |
| Stringed-instrument plectrum | D. W. Barnes | 753,534 | Mar. 1 | 612 | 139 | 109 | 183 |
| Stringed-instrument sostenuto device | S. A. Hunt | 757,308 | Apr. 12 | 2201 | 481 | 109 | 1868 |
| Stringed-instrument tuning attachment | E. Sprotte | 753,827 | Mar. 1 | 206 | 46 | 109 | 47 |
| Strip-delivering apparatus | G. Norwood | 757,565 | Apr. 19 | 2721 | 595 | 109 | 1954 |
| Studding. Sheet-metal | H. Wittekind and R. E. Bourke | 754,270 | Mar. 8 | 2071 | 459 | 109 | 470 |
| Stuffing-box | W. T. Giles | 753,567 | Mar. 1 | 673 | 151 | 109 | 148 |
| Stuffing-box | C. D. Shorts | 754,820 | Mar. 15 | 3210 | 700 | 109 | 736 |
| Stuffing-box | S. D. Wheeler and H. V. Whittle | 754,594 | Mar. 15 | 2643 | 574 | 109 | 613 |
| Stump-extractor | W. H. Bevans | 754,412 | Mar. 15 | 2408 | 526 | 109 | 559 |
| Subcaliber attachment | M. H. Devey | 754,054 | Mar. 8 | 1666 | ..... | 109 | 364 |
| Submarine preserving and antifouling composition | W. J. Gibbens and E. W. Christie | 757,296 | Apr. 12 | 2148 | 470<br>471<br>471<br>472<br>473 | 109 | 1817 |
| Sucrose. Extracting | W. J. Gibbens and E. W. Christie | 757,296 | Apr. 12 | 2152 | 472<br>473 | 109 | 1818 |
| Sucrose from sugar-cane. Apparatus for extracting | W. A. Hall | 758,065 | Apr. 26 | 3720 | 808 | 109 | 2191 |
| Sugar. Producing milk | G. W. St. Clair | 757,575 | Apr. 19 | 2749 | 600 | 109 | 1961 |
| Sulky | J. P. Sneddon | 757,570 | Apr. 19 | 2733 | 597<br>598 | 109 | 1956 |
| Superheater | W. S. Elliott | 756,840 | Apr. 12 | 1249 | 278<br>279 | 109 | 1697 |
| Superheating apparatus | S. A. Reeve | 753,433 | Mar. 1 | 404 | 95 | 109 | 88 |
| Superheating system | A. Fleming | 756,486 | Apr. 5 | 590 | 127 | 109 | 1466 |
| Support. Adjustable | E. G. Patten | 755,099 | Mar. 22 | 3614 | 793 | 109 | 842 |
| Support. Adjustable and collapsible | F. R. Bent | 756,457 | Apr. 5 | 535 | 111 | 109 | 1456 |
| Suppository-molding machine | A. McDannold | 754,398 | Mar. 8 | 2326 | 506 | 109 | 525 |
| Surgical chair | J. W. O'Neill | 755,921 | Mar. 29 | 5298 | 1169 | 109 | 1225 |
| Surgical instrument for hemorrhoids | S. A. Connell, Sr. | 756,213 | Apr. 5 | 88 | 9 | 109 | 1351 |
| Surgical knife | W. W. Townsend | 756,544 | Apr. 5 | 639 | 148 | 109 | 1488 |
| Surgical or obstetrical sheet | G. I. Herrick | 756,633 | Apr. 5 | 884 | 180 | 109 | 1519 |
| Surveyor's pin | J. L. Ubellar | 757,073 | Apr. 12 | 1712 | 371 | 109 | 1722 |
| Suspender attachment | J. W. Burgett | 754,641 | Mar. 15 | 2868 | 627 | 109 | 659 |
| Suspenders | H. G. Macwilliam | 755,324 | Mar. 22 | 3592 | 790 | 109 | 836 |
| Suspenders | W. O. McCurdy | 755,036 | Mar. 22 | 4487 | 997 | 109 | 1027 |
| Suspenders | J. Pusey | 755,543 | Mar. 22 | 4518 | 1005 | 109 | 1033 |
| Suspenders | A. Giesen | 756,490 | Apr. 5 | 597 | 128 | 109 | 1466 |
| Suspenders | G. W. Scott | 758,151 | Apr. 26 | 3874 | 841 | 109 | 2228 |
| Suspenders | S. L. Engel | 757,899 | Apr. 19 | 3372 | 729 | 109 | 2097 |
| Suspenders and belt. Combined | L. H. Torrey | 754,518 | Mar. 15 | 2696 | 572 | 109 | 612 |
| Suspension-hook | J. S. Reed | 755,698 | Mar. 29 | 4837 | 1075<br>1076 | 109 | 1126 |
| Swaging apparatus | E. L. Keyes | 755,506 | Mar. 22 | 4614 | 1025 | 109 | 1056 |
| Sweeping-machine | G. P. Armstrong | 758,579 | Apr. 26 | 4727 | 1019 | 109 | 2416 |
| Swing | D. W. Bash | 753,841 | Mar. 8 | 1263 | 283 | 109 | 292 |
| Swing and fan. Combined | J. E. Welin | 753,882 | Mar. 1 | 1226 | 278 | 109 | 265 |
| Swing fan attachment | C. G. and H. H. McLaughlin | 753,736 | Mar. 1 | 969 | 223 | 109 | 212 |
| Swing. Lawn | E. Halman | 757,856 | Apr. 19 | 3305 | 716 | 109 | 2062 |
| Swingletree or doubletree | | | | | | | |
| Switch:<br>*See* Automatic switch. Railway-switch.<br>Electric switch. Railway safety block-switch.<br>Electric snap-switch.<br>Electric time-switch. Spring-switch.<br>Lamp-switch. Trolley-track switch.<br>Push-button switch. | | | | | | | |
| Switch | E. M. Hewlett | 753,773 | Mar. 29 | 5006 | 1113 | 109 | 1158 |
| Switch | H. Trumbull | 758,130 | Apr. 26 | 3819 | 829 | 109 | 2215 |
| Switch and signal apparatus. Pneumatic | W. J. Becker | 756,929 | Apr. 12 | 1419 | 316<br>317 | 109 | 1661 |
| Switch connection | F. C. Anderson | 756,771 | Apr. 5 | 1102 | 244 | 109 | 1578 |
| Switch handle. Rotary snap-electric | C. G. Perkins | 756,979 | Apr. 12 | 1527 | 335 | 109 | 1668 |
| Switch mechanism. Electrical | H. Krantz | 755,141 | Mar. 22 | 3791 | 835 | 109 | 861 |
| Switch-operating mechanism | J. H. Miller | 758,552 | Apr. 26 | 4069 | 1005<br>1006 | 109 | 2403 |
| Switch-rod. Adjustable | H. Elliot, Jr. | 755,471 | Mar. 22 | 4400 | 975 | 109 | 1008 |
| Switch-shifter. Automatic | L. Blower | 756,820 | Apr. 12 | 1308 | 289 | 109 | 1618 |
| Switches. Automatic circuit-breaker for electric time or other | A. W. Hutchins | 755,397 | Mar. 22 | 4069 | 902 | 109 | 986 |
| Synchronizing device | N. E. Church | 756,987 | Apr. 12 | 1438 | 319 | 109 | 1665 |
| Syringe | E. Bartsch | 754,376 | Mar. 8 | 2081 | 461 | 109 | 472 |
| Syringe | H. M. Guild | 757,654 | Apr. 19 | 2906 | 632 | 109 | 1907 |
| Syringe. Vaginal | W. S. Locke | 756,252 | Apr. 5 | 115 | 25 | 109 | 1360 |
| Table:<br>*See* Extension-table. Ironing-table.<br>Folding table. Toilet-table.<br>Game-table. Voting-table.<br>Ice-table. | | | | | | | |
| Table and bed. Combined | L. C. Graessle | 754,212 | Mar. 8 | 1973 | 436 | 109 | 420 |
| Table and desk. Combined | J. M. Wood | 756,761 | Apr. 5 | 1084 | 241 | 109 | 1574 |
| Table and desk. Combined | W. H. O'Keefe | 756,883 | Apr. 12 | 1337 | 295 | 109 | 1649 |
| Table-leg attachment | J. F. Arnold | 757,712 | Apr. 19 | 3009 | 654 | 109 | 2019 |
| Table lock. Pedestal | C. S. Burton | 754,196 | Mar. 8 | 1921 | 427<br>428 | 109 | 440 |
| Table lock. Pedestal | E. Tyden | 754,309 | Mar. 8 | 2307 | 516 | 109 | 584 |



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|---|---|---|---|---|---|---|---|
| Tablet. Writing | D. F. Curtin | 755,625 | Mar. 29 | 4698 | 1044 | 109 | 1087 |
| Tableware. Inlaying blanks for flat-metal | W. A. Warner | 755,727 | Mar. 29 | 4901 | 1091 | 109 | 1136 |
| Tack-claw | G. C. Parish | 758,017 | Apr. 19 | 3605 | 780 | 109 | 2149 |
| Tacker. Hand | S. Beauregard | 755,839 | Mar. 29 | 5136 | 1136 | 109 | 1190 |
| Tackle-block. Self-locking | J. O. Walton | 756,747 | Apr. 5 | 1064 | 237 | 109 | 1571 |
| Tag or label holder | J. M. Wald | 756,301 | Apr. 5 | 218 | 45 | 109 | 1391 |
| Talking-machine | E. T. Palmer | 758,466 | Apr. 26 | 4501 | 967 | 109 | 2365 |
| Talking-machine motors. Multispeed device for | W. N. Dennison | 755,852 | Mar. 29 | 5163 | 1142 | 109 | 1196 |
| Talking-machine sound-box | E. R. Johnson | 753,274 | Mar. 1 | 110 | 27 | 109 | 27 |
| Talking-machines. Combined regulator and brake for | W. N. Dennison | 755,851 | Mar. 29 | 5161 | 1141<br>1142 | 109 | 1196 |
| Tally device | L. L. Frost | 757,908 | Apr. 19 | 3390 | 734 | 109 | 2101 |
| Tally. Progressive-score | I. W. Green | 754,442 | Mar. 15 | 2481 | 540 | 109 | 577 |
| Tank:<br>*See* Fish-culture tank. Ice-tank.<br>Flushing-tank. Jig-tank.<br>Freezing-tank. Storage-tank.<br>Heating-tank. Water-tank. | | | | | | | |
| Tank | J. W. Wallace | 755,971 | Mar. 29 | 5392 | 1191 | 109 | 1247 |
| Tank and heater | J. F. Bates | 754,838 | Mar. 15 | 3258 | 708 | 109 | 746 |
| Tank-filling alarm | C. Maul | 753,600 | Mar. 1 | 736 | 164 | 109 | 160 |
| Tank-float holder | G. A. Blake | 754,965 | Mar. 22 | 3491 | 764 | 109 | 814 |
| Tank-heater | H. D. Meyer | 758,143 | Apr. 26 | 3961 | 838 | 109 | 2224 |
| Tanning-drum | B. Allen, Jr. | 756,554 | Apr. 5 | 704 | 152 | 109 | 1491 |
| Tanning-wheel | B. Allen, Jr. | 756,553 | Apr. 5 | 701 | 152 | 109 | 1491 |
| Tap. Barrel | H. Fesenfeld | 754,760 | Mar. 15 | 3094 | 676 | 109 | 711 |
| Tap. Bottle | J. A. Sherrard. (Reissue) | 12,200 | Mar. 1 | 1238 | 278<br>279 | 109 | 266 |
| Tap. Bottle | E. Walker | 757,794 | Apr. 19 | 3180 | 690 | 109 | 2056 |
| Tapping device | N. A. Smith and C. H. Pelton | 754,618 | Mar. 15 | 2814 | 614 | 109 | 648 |
| Tape-holder | G. I. Herrick | 756,634 | Apr. 5 | 835 | 180 | 109 | 1519 |
| Taper. Sanctuary | J. H. Boersig | 756,322 | Apr. 5 | 254 | 53 | 109 | 1398 |
| Target | G. L. Tonnoffski | 756,433 | Apr. 5 | 487 | 102 | 109 | 1446 |
| Tea-kettle | W. B. Bulmer | 754,046 | Mar. 8 | 1649 | 367 | 109 | 379 |
| Teaching device. Penmanship | F. C. Young | 753,782 | Mar. 1 | 1099 | 249 | 109 | 237 |
| Teaching device. Penmanship | F. C. Young | 757,383 | Apr. 12 | 2344 | 511 | 109 | 1856 |
| Telegraph apparatus. Electric | A. Falcone | 753,690 | Mar. 1 | 916 | 207 | 109 | 198 |
| Telegraph. Printing | C. L. Healy | 758,250 | Apr. 26 | 4068 | 881 | 109 | 2268 |
| Telegraph-receiver | L. Cerebotani | 758,202 | Apr. 26 | 3970 | 861 | 109 | 2248 |
| Telegraph receiver. Printing | J. D. White | 757,877 | Apr. 12 | 2325 | 508 | 109 | 1854 |
| Telegraph receiving system. Wireless | E. Ducretet | 756,219 | Apr. 5 | 55 | 13 | 109 | 1354 |
| Telegraph-switchboard spring-jack | J. F. Skirrow | 757,785 | Apr. 19 | 3164 | 687 | 109 | 2052 |
| Telegraph system | H. O. Rugh | 757,503 | Apr. 19 | 2584 | 567 | 109 | 1922 |
| Telegraph system | H. O. Rugh | 757,504 | Apr. 19 | 2588 | 567 | 109 | 1924 |
| Telegraph system. Wireless | G. Marconi | 757,559 | Apr. 19 | 2704 | 591 | 109 | 1950 |
| Telegraph-transmitter | C. Adams-Randall | 758,232 | Apr. 26 | 4026 | 874 | 109 | 2259 |
| Telegraphy | H. O. Rugh | 757,505 | Apr. 19 | 2590 | 568 | 109 | 1925 |
| Telegraphy. Apparatus employed in wireless | J. A. Fleming | 758,005 | Apr. 19 | 3570 | 773 | 109 | 2141 |
| Telegraphy. Device for wireless | J. A. Fleming | 758,004 | Apr. 19 | 3564 | 772 | 109 | 2140 |
| Telegraphy. Multiplex | S. D. Field | 755,646 | Mar. 29 | 4728 | 1051<br>1052 | 109 | 1095 |
| Telegraphy. Multiplex | S. D. Field | 755,647 | Mar. 29 | 4734 | 1053 | 109 | 1096 |
| Telegraphy. Multiplex | J. J. Ghegan | 757,736 | Apr. 19 | 3056 | 666<br>667 | 109 | 2028 |
| Telegraphy. Wireless | F. J. Green | 758,006 | Apr. 19 | 3572 | 773<br>774 | 109 | 2142 |
| Telegraphy. Wireless | L. de Forest | 758,517 | Apr. 26 | 4604 | 991 | 109 | 2389 |
| Telephone | S. C. Houghton | 753,493 | Mar. 1 | 512 | 118 | 109 | 113 |
| Telephone | M. C. Burt | 754,968 | Mar. 22 | 3495 | 765 | 109 | 815 |
| Telephone | J. Trowbridge | 756,437 | Apr. 5 | 498 | 104 | 109 | 1448 |
| Telephone apparatus. Electrical | P. H. Fisk | 757,609 | Apr. 19 | 2807 | 613<br>614<br>615 | 109 | 1974 |
| Telephone attachment | J. Blum | 754,041 | Mar. 8 | 1640 | 365 | 109 | 377 |
| Telephone attachment | G. Königstein | 756,508 | Apr. 5 | 622 | 135 | 109 | 1473 |
| Telephone-cabinet | W. B. Altick | 756,091 | Mar. 29 | 5612 | 1239 | 109 | 1293 |
| Telephone call attachment | J. J. Nye | 756,183 | Mar. 29 | 5764 | 1273 | 109 | 1325 |
| Telephone-circuits. Selective signaling for polystation | B. Stryker | 756,296 | Apr. 5 | 206 | 43 | 109 | 1388 |
| Telephone-climber's seat | J. E. Bennett | 758,200 | Apr. 26 | 3967 | 860 | 109 | 2247 |
| Telephone counting system | J. H. Meyer | 755,515 | Mar. 22 | 4468 | 993<br>994 | 109 | 1022 |
| Telephone desk set | H. P. Clausen | 758,081 | Apr. 19 | 3631 | 785<br>786 | 109 | 2154 |
| Telephone-exchange. Semi-automatic | E. A. Faller | 757,031 | Apr. 12 | 1646 | 357<br>358 | 109 | 1708 |
| Telephone-exchange switching apparatus | E. H. Smythe | 758,927 | Mar. 8 | 1431 | 322 | 109 | 330 |
| Telephone-exchange toll apparatus | F. R. McBerty | 758,903 | Mar. 8 | 1375 | 310 | 109 | 317 |
| Telephone instrument | A. C. Christopher | 758,415 | Apr. 26 | 4415 | 948 | 109 | 2345 |
| Telephone instrument. Portable or table | L. M. Ericsson | 753,563 | Mar. 1 | 667 | 149<br>150 | 109 | 147 |
| Telephone jack-field | L. M. Ericsson | 753,562 | Mar. 1 | 667 | 149 | 109 | 147 |
| Telephone-line service-meter | C. E. Scribner and F. R. McBerty | 755,054 | Mar. 22 | 3636 | 798 | 109 | 846 |
| Telephone-line service-meter | F. R. McBerty | 755,308 | Mar. 22 | 4091 | 905 | 109 | 941 |
| Telephone memorandum-holder | O. G. Byers | 756,470 | Apr. 5 | 563 | 117 | 109 | 1462 |
| Telephone. Office-desk | A. R. Fergusson | 758,304 | Apr. 26 | 4197 | 903 | 109 | 2298 |
| Telephone or microphone casing | P. Hardegen | 753,391 | Mar. 1 | 318 | 72 | 109 | 72 |
| Telephone or telegraph system | T. W. Gleeson and R. Hamilton | 754,211 | Mar. 8 | 1963 | 437<br>438 | 109 | 449 |
| Telephone-receiver | M. R. Hutchison | 758,863 | Apr. 26 | 4306 | 924 | 109 | 2321 |
| Telephone-receiver support | H. L. Goodwin | 754,556 | Mar. 15 | 2702 | 587 | 109 | 625 |
| Telephone-repeater | J. A. Brown | 757,257 | Apr. 12 | 2070 | 452 | 109 | 1801 |
| Telephone repeater and system | M. Gally | 753,252 | Mar. 1 | 68 | 18 | 109 | 17 |
| Telephone sanitary attachment | S. P. Levenberg | 754,224 | Mar. 8 | 1992 | 443 | 109 | 455 |
| | H. L. Thompson | 756,543 | Apr. 5 | 688 | 148 | 109 | 1488 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Telephone selecting device | L. E. Brock | 756,824 | Apr. 12 | 1218 | 272<br>278 | 109 | 1021 |
| Telephone selective system | N. S. McKinsey and A. R. Nelson | 755,691 | Mar. 29 | 4809 | 1070<br>1071 | 109 | 1113 |
| Telephone-support | H. H. Oothoudt and W. F. Stahl | 757,340 | Apr. 12 | 2257 | 492 | 109 | 1840 |
| Telephone-switchboard secrecy system | E. H. Smythe | 756,434 | Apr. 5 | 470 | 97 | 109 | 1443 |
| Telephone-switchboard spring-jack | M. S. Conner | 756,331 | Apr. 5 | 274 | 57 | 109 | 1401 |
| Telephone-switchboards. Supervisory signal apparatus for | E. H. Smythe | 758,116 | Apr. 26 | 3811 | 827 | 109 | 2212 |
| Telephone system | R. Hamilton | 755,808 | Mar. 29 | 5189 | 1149 | 109 | 1202 |
| Telephone system. Long-distance | M. Beck | 756,813 | Apr. 12 | 1198 | 267 | 109 | 1616 |
| Telephone toll apparatus | G. A. Long | 753,411 | Mar. 1 | 351 | 80, 81 | 109 | 78 |
| Telephone toll apparatus | G. A. Long | 753,412 | Mar. 1 | 355 | 82 | 109 | 79 |
| Telephone-transmitter | J. A. Williams | 755,091 | Mar. 22 | 3703 | 813 | 109 | 862 |
| Telephone-transmitter | W. L. Wilhelm | 757,799 | Apr. 19 | 3185 | 692 | 109 | 2057 |
| Telephonic relay or repeater | I. Kitsee | 754,457 | Mar. 15 | 2502 | 545 | 109 | 582 |
| Telephony | J. Trowbridge | 756,436 | Apr. 5 | 492 | 108 | 109 | 1447 |
| Telephony | A. Melnema | 757,826 | Apr. 19 | 3235 | 702 | 109 | 2057 |
| Telescope. Low-power | A. König | 754,076 | Mar. 8 | 1701 | 378 | 109 | 391 |
| Telescopic joint for shafting, &c | E. G. Hoffmann | 754,066 | Mar. 8 | 1684 | 374 | 109 | 387 |
| Tellurian | T. P. Epes | 756,345 | Apr. 5 | 309 | 63, 64 | 109 | 1409 |
| Temperature and moisture regulating apparatus | W. A. Milne | 756,130 | Mar. 29 | 5687 | 1255 | 109 | 1309 |
| Tempering and coloring apparatus | E. Chambers | 755,908 | Mar. 29 | 5438 | 1201 | 109 | 1256 |
| Tennis. Table- | J. H. Ricau | 755,936 | Mar. 29 | 5330 | 1176 | 109 | 1232 |
| Tenoning and boring implement-handles. Machine for | G. S. Clow | 755,359 | Mar. 22 | 4195 | 927<br>928 | 109 | 966 |
| Tension device | F. W. Temple | 754,516 | Mar. 15 | 2634 | 572 | 109 | 612 |
| Tent | W. Y. Hunter | 755,369 | Mar. 22 | 4222 | 933<br>934 | 109 | 972 |
| Tent-cottage | A. M. Holmes | 758,033 | Apr. 19 | 3637 | 786<br>787 | 109 | 2156 |
| Testing-machine | W. R. Cock | 758,418 | Apr. 26 | 4421 | 949 | 109 | 2247 |
| Textile webs. Machinery for the production of | W. G. Stewart | 753,752 | Mar. 1 | 1026 | 233 | 109 | 221 |
| Theater building | A. Schlechter | 754,711 | Mar. 15 | 3013 | 658 | 109 | 692 |
| Therapeutic purposes. Electrical apparatus for | F. C. Fisher | 755,121 | Mar. 22 | 3750 | 824 | 109 | 872 |
| Therapeutic purposes. Spiral vacuum-tube for | R. Machlett | 754,079 | Mar. 8 | 1708 | 380 | 109 | 392 |
| Thermal cut-out | H. P. Clausen | 757,884 | Apr. 19 | 3340 | 723 | 109 | 2091 |
| Thermal cut-out | M. Setter | 757,971 | Apr. 19 | 3506 | 761 | 109 | 2127 |
| Thermal cut-out | M. Setter | 757,972 | Apr. 19 | 3508 | 761 | 109 | 2128 |
| Thermometer-case | P. C. Kellett | 753,711 | Mar. 1 | 955 | 216 | 109 | 205 |
| Thermometer holder. Clinical- | G. E. Nettleton | 754,231 | Mar. 8 | 2004 | 446 | 109 | 457 |
| Thermostat | D. H. Haywood | 755,487 | Mar. 22 | 4422 | 980 | 109 | 1013 |
| Thill attachment | M. D. Le Roy and G. P. Ross | 753,988 | Mar. 8 | 1541 | 344 | 109 | 356 |
| Thill-coupling | H. C. Ingraham. (Reissue) | 12,206 | Mar. 22 | 4628 | 1027 | 109 | 1059 |
| Thill-coupling | J. A. Steele | 756,726 | Apr. 5 | 1023 | 227 | 109 | 1561 |
| Thill-coupling | C. A. Sager | 758,193 | Apr. 26 | 3951 | 857 | 109 | 2244 |
| Thill-coupling | L. A. Scidmore | 753,742 | Mar. 1 | 1013 | 230 | 109 | 217 |
| Thill or tongue support | E. L. Buckingham | 755,997 | Mar. 29 | 5436 | 1201 | 109 | 1255 |
| Thill-support | C. D. White | 758,160 | Apr. 26 | 3889 | 844 | 109 | 2231 |
| Thill-support | G. A. Fredenburgh | 758,590 | Apr. 26 | 4609 | 998<br>998 | 109 | 2390 |
| Thread-dressing machine | P. Hofmann | 753,705 | Mar. 1 | 947 | 214 | 109 | 204 |
| Thresher and separator | F. Fredeen | 757,904 | Apr. 19 | 3381 | 731<br>732 | 109 | 2100 |
| Thresher and separator. Combined grain | J. E. Sanders | 755,943 | Mar. 29 | 5344 | 1179 | 109 | 1236 |
| Threshing and separating machine | C. McCollor | 754,488 | Mar. 15 | 2576 | 560 | 109 | 598 |
| Threshing-engine belt-removing device | J. A. Beam | 753,350 | Mar. 1 | 241 | 55 | 109 | 54 |
| Threshing-machine | A. W. Collis | 754,850 | Mar. 15 | 3282 | 715 | 109 | 751 |
| Threshing-machine | W. G. Stewart | 756,728 | Apr. 5 | 1025 | 227<br>228 | 109 | 1561 |
| Threshing-machine | W. Colwell | 758,608 | Apr. 26 | 4776 | 1028 | 109 | 2426 |
| Threshing-machine and machine used for analogous purposes | J. F. Sanderson | 753,921 | Mar. 8 | 1420 | 320 | 109 | 327 |
| Threshing-machine chaffer | W. E. Bradley | 755,441 | Mar. 22 | 4347 | 963 | 109 | 997 |
| Threshing-machine clover-hulling attachment | C. Saylor | 754,612 | Mar. 15 | 2902 | 611 | 109 | 646 |
| Threshing-machine concave | S. S. Mishler | 755,152 | Mar. 22 | 3804 | 836 | 109 | 884 |
| Ticket-case | A. H. Sellars | 756,965 | Apr. 12 | 1539 | 339 | 109 | 1664 |
| Ticket-holding device | J. J. McGuirk | 753,514 | Mar. 1 | 566 | 130 | 109 | 123 |
| Ticket-issuing machine | J. M. Siebler | 758,023 | Apr. 19 | 3615 | 782<br>783 | 109 | 2151 |
| Ticket system. Transportation- | P. C. Dockstader | 755,638 | Mar. 29 | 4714 | 1048 | 109 | 1092 |
| Tie:<br>*See* Metallic tie. Railway cross-tie. Railway-tie. | | | | | | | |
| Tie | E. F. Priddat | 754,605 | Mar. 15 | 2790 | 608 | 109 | 643 |
| Tie-fastener | E. F. Priddat | 754,606 | Mar. 15 | 2792 | 609 | 109 | 643 |
| Tie-plate | A. St. Pierre | 754,025 | Mar. 8 | 1613 | 359 | 109 | 372 |
| Tie-plate | W. S. Jones | 757,467 | Apr. 19 | 2515 | 552 | 109 | 1906 |
| Tile and tile-setting | J. H. Munro | 758,287 | Mar. 1 | 134 | 32 | 109 | 33 |
| Tile for wall-finish | W. K. Gore | 756,622 | Apr. 5 | 817 | 176 | 109 | 1515 |
| Tile-grinding apparatus | T. H. Mooney | 754,591 | Mar. 15 | 2767 | 603 | 109 | 688 |
| Tiles, mirrors, &c. Support for | J. P. Benjamin | 753,842 | Mar. 8 | 1264 | 283 | 109 | 308 |
| Tiling substitute | E. Reizenstein | 757,840 | Apr. 19 | 3260 | 706 | 109 | 2072 |
| Till. Cash- | F. W. Baynes | 754,961 | Mar. 22 | 3484 | 762 | 109 | 813 |
| Tilting bin | B. F. Barnes | 755,605 | Mar. 29 | 4646 | 1032 | 109 | 1076 |
| Tilting bin and sample-display device | A. J. West | 754,523 | Mar. 15 | 2641 | 573 | 109 | 613 |
| Timber-estimating device | C. L. Walker | 753,940 | Mar. 8 | 1455 | 327 | 109 | 335 |
| Time-recorder | G. White | 754,401 | Mar. 8 | 2371 | 517<br>518<br>519 | 109 | 535 |
| Time-recorder | A. E. Snow | 757,150 | Apr. 12 | 1874 | 409<br>410 | 109 | 1759 |
| Time-recorder. Workman's | J. J. Stockall, Jr | 755,968 | Mar. 29 | 5378 | 1186<br>1187 | 109 | 1244 |
| Timepiece holder. Illuminated | W. J. Shepherd | 755,584 | Mar. 22 | 4500 | 1021 | 109 | 1060 |
| Tin by electrolysis. Obtaining | E. Quintaine. (Reissue) | 12,214 | Apr. 26 | 4798 | | 109 | 2490 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Tins, pots, &c. Apparatus for cleaning | W. G. Mortimer | 755,521 | Mar. 22 | 4482 | 995 | 109 | 1026 |
| Tire | H. G. Fiske | 754,648 | Mar. 15 | 2878 | 628 | 109 | 661 |
| Tire | A. Hendey | 758,209 | Apr. 26 | 3983 | 864 | 109 | 2250 |
| Tire armor. Vehicle- | M. Miller | 756,127 | Mar. 29 | 5682 | 1254 | 109 | 1308 |
| Tire cover. Pneumatic- | G. T. Shilton and A. Schultze | 758,386 | Apr. 26 | 4259 | 915 | 109 | 2311 |
| Tire covers. Lever for manipulating pneumatic- | E. Michelin | 756,515 | Apr. 5 | 638 | 138 | 109 | 1476 |
| Tire. Cushion- | J. H. Toole | 755,259 | Mar. 22 | 4001 | 868 | 109 | 923 |
| Tire filler. Vehicle- | C. D. Nirdlinger | 757,631 | Apr. 19 | 2864 | ..... | 109 | 1986 |
| Tire-inflating apparatus | E. Girard | 753,568 | Mar. 1 | 674 | 151 | 109 | 149 |
| Tire-inflator | F. H. Geisler | 758,058 | Apr. 26 | 3693 | 802 | 109 | 2187 |
| Tire-making machine. Pneumatic- | U. P. Smith | 753,813 | Mar 1 | 1196 | 269<br>270 | 109 | 257 |
| Tire. Pneumatic | J. Dupont | 754,645 | Mar. 15 | 2874 | 627 | 109 | 660 |
| Tire-protector | J. L. Brown | 758,029 | Apr. 19 | 3628 | 785 | 109 | 2153 |
| Tire protector. Pneumatic- | L. Nioré | 755,310 | Mar. 22 | 4102 | 906 | 109 | 943 |
| Tire. Safety- | A. F. Sherwood | 756,536 | Apr. 5 | 677 | 145 | 109 | 1485 |
| Tire-tightener | C. T. Umsted | 757,697 | Apr. 19 | 2988 | 649 | 109 | 2014 |
| Tire. Vehicle- | H. E. Irwin | 753,401 | Mar. 1 | 331 | 75 | 109 | 74 |
| Tire. Vehicle- | M. V. Rush | 753,920 | Mar. 8 | 1419 | 319 | 109 | 327 |
| Tire. Vehicle- | P. W. Litchfield | 755,147 | Mar. 22 | 3799 | 837 | 109 | 883 |
| Tire. Vehicle- | W. H. Sewell | 755,711 | Mar. 29 | 4850 | 1060 | 109 | 1127 |
| Tire. Vehicle- | M. A. Kennedy | 757,199 | Apr. 12 | 1970 | 430 | 109 | 1780 |
| Tire. Vehicle- | A. C. Hills | 757,923 | Apr. 19 | 3415 | 739 | 109 | 2107 |
| Tire. Vehicle-wheel | H. A. Palmer | 753,426 | Mar. 1 | 392 | 91 | 109 | 86 |
| Tire. Vehicle-wheel | J. A. Swinehart | 753,646 | Mar. 1 | 817 | 183 | 109 | 177 |
| Tire. Vehicle-wheel | W. H. Sewell | 755,712 | Mar. 29 | 4861 | 1060 | 109 | 1128 |
| Tires. Apparatus for the manufacture of vehicle- | M. Nirdlinger | 753,800 | Mar. 1 | 158 | 36 | 109 | 37 |
| Tires in continuous lengths. Vulcanizing | G. A. Ludington | 754,078 | Mar. 8 | 1704 | 379<br>380 | 109 | 392 |
| Tires. Machine for equipping vehicle-wheels with rubber | G. E. Linn | 755,805 | Mar. 29 | 5239 | 1158 | 109 | 1213 |
| Tires. Machine for inserting transverse wires in solid-rubber | A. E. Ellinwood | 754,552 | Mar. 15 | 2690 | 584<br>585 | 109 | 624 |
| Tires to felllies. Mechanism for securing rubber | J. R. Place and N. A. Keys | 758,605 | Apr. 26 | 4782 | 1029 | 109 | 2428 |
| Toaster. Bread- | R. M. Reams | 758,472 | Apr. 26 | 4511 | 969 | 109 | 2367 |
| Tobacco-clamp | R. C. Dick | 754,285 | Mar. 8 | 2098 | 465 | 109 | 476 |
| Tobacco-pipe | J. Pareis | 754,338 | Mar. 8 | 2189 | 486 | 109 | 495 |
| Tobacco-pipe | J. Berchtold | 754,840 | Mar. 15 | 3261 | 709 | 109 | 747 |
| Tobacco-pipe | I. Neuberger | 755,527 | Mar. 22 | 4491 | 998 | 109 | 1028 |
| Toilet appliance | J. E. Smith | 755,181 | Mar. 22 | 3862 | 853 | 100 | 895 |
| Toilet kit | A. M. Schneider | 758,520 | Mar. 1 | 576 | 132 | 109 | 125 |
| Toilet-table and traveling-trunk combined. Lady's | A. L. Jacob | 757,661 | Apr. 19 | 2916 | 634 | 109 | 1998 |
| Tongs. Clinker- | C. Clear | 755,454 | Mar. 22 | 4371 | 968 | 109 | 1002 |
| Tongs. Metal- | J. R. Oakley | 757,339 | Apr. 12 | 2256 | 491<br>492 | 109 | 1839 |
| Tongs or clamp | P. A. Orth | 753,620 | Mar. 1 | 764 | 170 | 109 | 166 |
| Too-great-speed alarm | G. Roualx | 757,640 | Apr. 19 | 2881 | 627<br>628 | 109 | 1991 |
| Tool attachment | A. Jarvis and W. H. Lane | 756,197 | Mar. 29 | 5784 | 1278 | 109 | 1329 |
| Tool. Combination- | A. A. Blickle | 754,739 | Mar. 15 | 3059 | 668 | 109 | 703 |
| Tool. Combination- | H. Schmidt and V. Iskiyan | 754,812 | Mar. 15 | 3193 | 696 | 109 | 732 |
| Tool. Compound | W. W. Helle and R. Brockman | 756,854 | Apr. 12 | 1277 | 284 | 109 | 1632 |
| Tool. Compound | A. O. Highsmith | 758,070 | Apr. 26 | 3730 | 810 | 109 | 2193 |
| Tool-handle | I. S. Davidson | 753,241 | Mar. 1 | 49 | 13 | 109 | 13 |
| Tool-handle | D. Tappan | 756,732 | Apr. 5 | 1037 | 230 | 109 | 1564 |
| Tool handle. Pneumatic- | C. H. Peck | 758,100 | Apr. 26 | 3780 | 821 | 109 | 2205 |
| Tool-hanger | E. B. Wiles | 757,987 | Apr. 19 | 3541 | 766 | 109 | 2134 |
| Tool. Pneumatic | W. H. Soley | 754,019 | Mar. 8 | 1601 | 356<br>357 | 109 | 369 |
| Tool. Pneumatic | C. W. Peck | 754,956 | Mar. 15 | 3473 | 760 | 109 | 794 |
| Tool. Pneumatic | W. H. Soley | 755,324 | Mar. 22 | 4129 | 913 | 109 | 949 |
| Tool. Pneumatic | W. T. Sears | 757,970 | Apr. 19 | 3508 | 760 | 109 | 2127 |
| Tooth-cleaning implement | G. C. Bessonet | 754,841 | Mar. 15 | 3262 | 709 | 109 | 747 |
| Tooth-crown. Artificial | W. N. Kidder | 756,506 | Apr. 5 | 619 | 134 | 109 | 1472 |
| Top-roll saddle | E. Dixon | 754,288 | Mar. 8 | 2102 | 467 | 109 | 477 |
| Top-roll saddle | E. Dixon | 754,289 | Mar. 8 | 2103 | 467 | 109 | 477 |
| Top-roll saddle | E. Dixon | 757,727 | Apr. 19 | 3040 | 661 | 109 | 2025 |
| Top. Spinning- | J. M. Butcher | 755,446 | Mar. 22 | 4354 | 964 | 109 | 998 |
| Top. Spinning- | F. Ansley | 758,291 | Apr. 26 | 4157 | 898 | 109 | 2287 |
| Torch. Acetylene-gas | W. H. Marsh | 754,472 | Mar. 15 | 2538 | 554 | 109 | 591 |
| Torch. Vapor- | C. F. Warner | 756,748 | Apr. 5 | 1066 | 237 | 109 | 1571 |
| Torpedo-fork | E. H. Frank and H. E. Storer | 753,692 | Mar. 1 | 921 | 208 | 109 | 199 |
| Towel or other rack | C. G. Dolbier | 754,976 | Mar. 22 | 3508 | 768 | 109 | 818 |
| Towel-rack | S. A. A. Stenberg | 758,600 | Apr. 26 | 4770 | 1026<br>1027 | 109 | 2425 |
| Toy | A. P. Ward | 753,335 | Mar. 1 | 216 | 49 | 109 | 49 |
| Toy | C. A. Scadding | 754,709 | Mar. 15 | 3011 | 657 | 109 | 692 |
| Toy | I. D. Worcester | 755,380 | Mar. 22 | 4163 | 920 | 109 | 958 |
| Toy | I. D. Worcester | 755,984 | Mar. 29 | 5414 | 1196 | 109 | 1251 |
| Toy | W. G. Turrill | 757,158 | Apr. 12 | 1895 | 414 | 109 | 1763 |
| Toy | G. J. Altermatt | 757,247 | Apr. 12 | 2055 | 448 | 109 | 1797 |
| Toy | J. J. Quinlan | 757,567 | Apr. 19 | 2726 | 596<br>597 | 109 | 1955 |
| Toy | J. Chein | 758,047 | Apr. 26 | 3674 | 796 | 109 | 2184 |
| Toy | A. M. Siebelist | 758,567 | Apr. 26 | 4709 | 1016 | 109 | 2412 |
| Toy air-rifle | T. W. Craven | 754,051 | Mar. 8 | 1664 | 369<br>370 | 109 | 383 |
| Toy block | H. B. Haefele | 756,625 | Apr. 5 | 821 | 177 | 109 | 1516 |
| Toy elevated-railway track | H. C. Ives | 758,448 | Apr. 26 | 4472 | 961 | 109 | 2359 |
| Toy gun | J. B. Mason | 754,583 | Mar. 15 | 2753 | 600 | 109 | 635 |
| Toy gun | F. Gale | 757,292 | Apr. 12 | 2145 | 469 | 109 | 1816 |
| Toy gun | J. B. Mason | 758,374 | Apr. 26 | 4328 | 929 | 109 | 2325 |
| Toy. Hollow India-rubber article used as a | F. Kuhlemann | 754,148 | Mar. 8 | 1837 | 410 | 109 | 422 |
| Toy. Mechanical | L. D. Patten and D. Lippy | 757,834 | Apr. 19 | 3247 | 704 | 109 | 2069 |
| Toy pistol | E. J. Smith | 756,988 | Apr. 12 | 1543 | 340 | 109 | 1685 |
| Trace-end supporter | D. M. Allen | 758,495 | Apr. 26 | 4561 | 960 | 109 | 2380 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Trace-holder | C. A. Bertrand | 755,009 | Mar. 22 | 3714 | 815 | 109 | 864 |
| Track-claw | A. P. Nichols | 758,462 | Apr. 26 | 4495 | 966 | 109 | 2364 |
| Track-gage | A. P. Nichols | 758,461 | Apr. 26 | 4493 | 966 | 109 | 2363 |
| Track-sander | C. V. Rote | 757,416 | Apr. 12 | 2408 | 525 | 109 | 1871 |
| Track-sanding device | J. H. Hanlon | 753,794 | Mar. 1 | 1149 | 259 | 109 | 247 |
| Track-sanding device | W. H. Kilbourn | 758,141 | Apr. 26 | 3957 | 837 | 109 | 2223 |
| Track structure | L. Steinberger | 755,387 | Mar. 22 | 4134 | 914 | 109 | 951 |
| Track-switch opening or shifting device | W. D. Simpson | 754,169 | Mar. 8 | 1878 | 418<br>419 | 109 | 431 |
| Track system. Overhead- | G. F. Steedman | 754,396 | Mar. 8 | 2356 | 515 | 109 | 531 |
| Traction-engine | H. Beckwith | 754,409 | Mar. 15 | 2396 | 524<br>525 | 109 | 538 |
| Traction-engine | F. C. Watson | 757,985 | Apr. 19 | 3538 | 766 | 109 | 2133 |
| Traction-strap | H. P. Maxim | 753,285 | Mar. 1 | 132 | 32 | 109 | 33 |
| Traction-wheel | W. E. Harris | 754,214 | Mar. 8 | 1975 | 439 | 109 | 451 |
| Traction-wheel | J. P. McEwing | 756,305 | Apr. 5 | 410 | 85 | 109 | 1431 |
| Train-control system | G. P. Whittlesey | 758,823 | Mar. 29 | 5087 | 1130 | 109 | 1176 |
| Train-control system | H. E. White | 758,230 | Apr. 26 | 4017 | 872<br>873 | 109 | 2257 |
| Train order and signaling system. Electric | J. C. Gleason | 753,397 | Mar. 1 | 306 | 68, 69 | 109 | 69 |
| Train-signal | J. D. Landers | 755,143 | Mar. 22 | 3795 | 833 | 109 | 882 |
| Transfer-table power device | L. Bates | 756,772 | Apr. 5 | 1104 | 244 | 109 | 1579 |
| Transformer | W. A. Hall | 755,766 | Mar. 29 | 4995 | 1111 | 109 | 1155 |
| Transformer | L. M. Schmidt | 755,800 | Mar. 29 | 5055 | 1123 | 109 | 1169 |
| Transformer-case | W. L. Waters | 753,944 | Mar. 8 | 1460 | 328<br>329 | 109 | 337 |
| Transits. Slope-stake attachment for engineers' | W. G. Russell | 754,807 | Mar. 15 | 3354 | 733 | 109 | 766 |
| Transmission mechanism | G. and H. P. Dillig | 755,635 | Mar. 29 | 4710 | 1047 | 109 | 1091 |
| Transmission of energy. Apparatus for wireless | D. M. Moore | 755,082 | Mar. 22 | 3808 | 791 | 109 | 889 |
| Transmitter-fronts, &c. Machine for marking | W. Kaisling | 756,649 | Apr. 5 | 857 | 187<br>188 | 109 | 1504 |
| Transmitter. Reversible | S. T. Simmons and W. T. Moore | 754,822 | Mar. 15 | 3212 | 700 | 109 | 796 |
| Transom side bearing | M. Dorn | 754,979 | Mar. 22 | 3512 | 769 | 109 | 818 |
| Transplanter. Beet- | H. Hunter | 754,870 | Mar. 8 | 2303 | 503 | 109 | 520 |
| Trap:<br>*See* Animal-trap. Sewer-trap.<br>Bird-trap. Steam-trap.<br>Insect-trap. Wolf-trap.<br>Mouse-trap. | | | | | | | |
| Traveling carrier | D. M. Motherwell | 756,264 | Apr. 5 | 140 | 28, 29 | 109 | 1373 |
| Traveling-case | W. T. Richards | 758,019 | Apr. 19 | 3608 | 781 | 109 | 2150 |
| Traveling-case | W. D. Chase | 758,179 | Apr. 26 | 3904 | 848 | 109 | 2234 |
| Trench-digger | J. Helm | 757,459 | Apr. 19 | 2494 | 547 | 109 | 1904 |
| Trestle. Adjustable | W. A. Drummond | 758,130 | Apr. 26 | 3840 | 834 | 109 | 2219 |
| Trestle-frame | G. H. Smyth | 755,182 | Mar. 22 | 3863 | 853 | 109 | 895 |
| Tricycle propelling-gear | O. Heynsohn | 758,251 | Apr. 26 | 4070 | 881 | 109 | 2269 |
| Trimmer:<br>*See* Artichoke-trimmer. Lawn-edge trimmer. | | | | | | | |
| Trimming-machine | N. M. Schuster | 754,818 | Mar. 15 | 3206 | 606<br>609 | 109 | 735 |
| Tripod. Folding | R. P. Palmer | 757,766 | Apr. 19 | 3115 | 679 | 109 | 2040 |
| Trolley | A. C. Calderwood | 753,542 | Mar. 1 | 626 | 142 | 109 | 137 |
| Trolley | A. S. Deem | 753,554 | Mar. 1 | 651 | 147 | 109 | 143 |
| Trolley | C. M. Wilson | 756,550 | Apr. 5 | 697 | 150 | 109 | 1490 |
| Trolley | C. E. Smith | 757,796 | Apr. 19 | 3165 | 687 | 109 | 2053 |
| Trolley automatic releasing device. Safety- | A. C. Wolfe | 753,345 | Mar. 1 | 232 | 53 | 109 | 53 |
| Trolley-base | F. S. Martin | 757,824 | Apr. 19 | 3231 | 701 | 109 | 2066 |
| Trolley-catcher | M. H. Johnson | 756,860 | Apr. 12 | 1285 | 287 | 109 | 1633 |
| Trolley. Electric-car | W. A. Daggett | 753,552 | Mar. 1 | 648 | 146 | 109 | 142 |
| Trolley-head | P. D. Hean and J. J. Egan | 758,445 | Apr. 26 | 4467 | 960<br>961 | 109 | 2358 |
| Trolley head. Electric- | J. T. Cherry and E. H. Clive | 755,909 | Mar. 29 | 5440 | 1208 | 109 | 1256 |
| Trolley-hook for manipulating self-loading grabs | F. K. Hoover and A. J. Mason | 754,652 | Mar. 15 | 2686 | 630<br>631<br>632 | 109 | 663 |
| Trolley-pole | E. A. Wakefield and G. W. Morse | 756,547 | Apr. 5 | 602 | 149 | 109 | 1489 |
| Trolley-pole safety device | P. McCullough, T. Blaney, and R. Baron. | 757,630 | Apr. 19 | 2902 | 694 | 109 | 1986 |
| Trolley-replacer | F. A. Nolan | 753,617 | Mar. 1 | 760 | 169 | 109 | 165 |
| Trolley. Safety- | W. M. Gruner and W. C. Fink | 758,592 | Apr. 26 | 4755 | 1024 | 109 | 2422 |
| Trolley-track switch. Overhead- | W. L. Clark | 754,127 | Mar. 8 | 1808 | 402 | 109 | 414 |
| Trolley-wheel | J. S. Fletcher and D. H. Waters | 758,355 | Apr. 26 | 4292 | 922 | 109 | 2318 |
| Trolley-wheel retainer | J. A. Kilpatrick | 754,778 | Mar. 15 | 3125 | 681 | 109 | 718 |
| Trolley-wire finder | W. Barnhurst | 753,839 | Mar. 8 | 1251 | 281 | 109 | 290 |
| Trough:<br>*See* Feed-trough. Hog-trough. | | | | | | | |
| Truck | W. G. Price | 753,627 | Mar. 1 | 777 | 173 | 109 | 169 |
| Truck | C. E. Davis | 754,545 | Mar. 15 | 2679 | 582 | 109 | 621 |
| Truck | J. C. Depew | 757,280 | Apr. 12 | 2115 | 461 | 109 | 1810 |
| Truck-bolster center-bearing | C. T. Westlake | 758,228 | Apr. 26 | 4015 | 871<br>872 | 109 | 2257 |
| Truck-bolster. Metallic | E. C. Washburn | 756,980 | Apr. 12 | 1406 | 313 | 109 | 1658 |
| Truck. Car- | W. G. Price | 753,626 | Mar. 1 | 774 | 172 | 109 | 168 |
| Truck. Car- | H. Tesseyman | 754,027 | Mar. 8 | 1616 | 360 | 109 | 372 |
| Truck. Car- | H. C. Buhoup | 754,045 | Mar. 8 | 1644 | 366<br>367 | 109 | 378 |
| Truck. Car- | F. G. Koehler | 755,887 | Mar. 29 | 5227 | 1155 | 109 | 1210 |
| Truck for rolling-stock. Bogie- | H. A. Hoy | 757,927 | Apr. 19 | 3424 | 741 | 109 | 2109 |
| Truck-frame. Railway-car | C. T. Westlake | 758,229 | Apr. 26 | 4016 | 872 | 109 | 2257 |
| Truck frames. Device for lifting railway- | W. Schott | 757,507 | Apr. 19 | 2595 | 568 | 109 | 1926 |
| Truck. Hand- | E. J. Bryan | 756,096 | Mar. 29 | 5021 | 1240 | 109 | 1295 |
| Truck. Lateral-motion car- | E. C. Washburn | 757,852 | Apr. 19 | 3281 | 710<br>711 | 109 | 2076 |
| Truck. Rocker side-bearing | J. C. Wands | 753,766 | Mar. 1 | 1055 | 241 | 109 | 227 |
| Truck. Roller side-bearing | J. C. Wands | 753,767 | Mar. 1 | 1056 | 241 | 109 | 227 |
| Trucks. Adjustable hook for hand- | G. M. Vickers, Jr | 757,793 | Apr. 19 | 3179 | 690 | 109 | 2056 |



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|---|---|---|---|---|---|---|---|
| Trucks. Pneumatic sander for car- | C. A. Pratte | 755,589 | Mar. 22 | 4513 | 1004 | 109 | 1082 |
| Trunk | J. A. H. Villmow | 757,528 | Apr. 19 | 2639 | 578 | 109 | 1985 |
| Trunk dowel-pin and lift | O. Rangnow | 758,383 | Apr. 26 | 4342 | 932 | 109 | 2329 |
| Trunk-protector | J. Haigh | 754,302 | Mar. 8 | 2133 | 472 | 109 | 483 |
| Trunk. Wardrobe- | A. D. Seaman | 753,743 | Mar. 1 | 1014 | 230 | 109 | 218 |
| Trunk. Wardrobe- | A. D. Seaman | 753,744 | Mar. 1 | 1015 | 230 | 109 | 218 |
| Truss for ruptures | M. O. Hallowell | 758,440 | Apr. 26 | 4460 | 959 | 109 | 2356 |
| Truss. Hernia- | B. J. Douds | 753,684 | Mar. 1 | 898 | 204 | 109 | 195 |
| Truss-pad-fastening device | C. P. Norris | 754,396 | Mar. 8 | 2330 | 509 | 109 | 525 |
| Tub:<br>*See* Bath-tub. | J. E. Lee | 756,122 | Mar. 29 | 5676 | 1252 | 109 | 1306 |
| Tube:<br>*See* Flexible tube. | | | | | | | |
| Tube-bending machine | G. F. Atwood | 757,593 | Apr. 19 | 2778 | 607<br>608 | 109 | 1968 |
| Tube-cleaner | E. T. Davis | 754,854 | Mar. 15 | 3287 | 716 | 109 | 752 |
| Tube-coating machine | J. W. Howell | 755,777 | Mar. 29 | 5014 | 1115 | 109 | 1159 |
| Tube-furnace. Rotatory electric | H. N. Potter | 756,891 | Apr. 12 | 1350 | 300 | 109 | 1646 |
| Tube-making machine | H. Inman | 756,500 | Apr. 5 | 611 | 132<br>133 | 109 | 1471 |
| Tube-scraper | E. M. Smith, W. H. Carpenter, and E. B. Weidknecht. | 754,952 | Mar. 15 | 3465 | 759 | 109 | 792 |
| Tubes. Bending | G. F. Atwood | 757,592 | Apr. 19 | 2777 | 607 | 109 | 1967 |
| Tubes. Manufacturing | L. O. Bentel | 755,436 | Mar. 22 | 4389 | 961 | 109 | 995 |
| Tubes. Mechanism for flanging the ends of | A. F. Nordenskjöld | 758,145 | Apr. 26 | 3864 | 838<br>839 | 109 | 2225 |
| Tubing. Implement for truing the ends of | E. D. Webb | 755,198 | Mar. 22 | 3901 | 861 | 109 | 902 |
| Tubular or hollow body | J. A. Hurdle | 756,368 | Apr. 5 | 361 | 74 | 109 | 1420 |
| Tufted fabrics. Apparatus for the manufacture of | G. Morton | 754,883 | Mar. 15 | 3328 | 726<br>727<br>728 | 109 | 762 |
| Tug fastener. Hame- | A. G. Shields | 754,716 | Mar. 15 | 3023 | 660 | 109 | 694 |
| Tug. Thill- | J. S. Bean | 757,717 | Apr. 19 | 3015 | 655 | 109 | 2030 |
| Tumbling-machine | J. P. Bucklin | 754,122 | Mar. 8 | 1795 | 400 | 109 | 412 |
| Tunnel construction | J. W. Reno | 754,801 | Mar. 15 | 3183 | 694 | 109 | 730 |
| Tunnels, shafts, or other excavations. Constructing | C. Sooysmith | 755,956 | Mar. 29 | 5375 | 1185<br>1186 | 109 | 1243 |
| Turbine bucket-wheel. Steam- | B. H. Hamilton and W. E. Ver Planck. | 755,767 | Mar. 29 | 4997 | 1111 | 109 | 1156 |
| Turbine. Compound steam- | C. V. Kerr | 756,241 | Apr. 5 | 94 | 20, 21 | 109 | 1362 |
| Turbine. Elastic-fluid | W. L. R. Emmet | 754,292 | Mar. 8 | 2111 | 468<br>469 | 109 | 479 |
| Turbine. Elastic-fluid | W. L. R. Emmet | 755,756 | Mar. 29 | 4969 | 1105<br>1106 | 109 | 1149 |
| Turbine-engine. Rotary | G. Griesche | 755,481 | Mar. 22 | 4412 | 978 | 109 | 1011 |
| Turbine. Expansible-fluid | B. S. Church | 753,855 | Mar. 8 | 1284 | 289<br>290 | 109 | 297 |
| Turbine governing means. Elastic-fluid- | J. Wilkinson | 753,774 | Mar. 1 | 1082 | 246<br>247 | 109 | 238 |
| Turbine governing mechanism | J. Wilkinson | 753,772 | Mar. 1 | 1065 | 244<br>245 | 109 | 229 |
| Turbine governing mechanism | J. Wilkinson | 753,773 | Mar. 1 | 1076 | 246 | 109 | 232 |
| Turbine governing mechanism | J. Wilkinson | 758,400 | Apr. 26 | 4366 | 940 | 109 | 2333 |
| Turbine. Reversible | C. F. de Klerzkowski-Steuart | 758,595 | Apr. 26 | 4763 | 1025 | 109 | 2424 |
| Turbine. Steam- | E. E. F. Fagerström | 754,439 | Mar. 15 | 2478 | 539 | 109 | 576 |
| Turbine. Steam- | P. J. Hedlund | 754,447 | Mar. 15 | 2488 | 541 | 109 | 579 |
| Turbine. Steam- | F. D. Shepherd | 755,062 | Mar. 22 | 3653 | 802 | 109 | 851 |
| Turbine. Steam- | J. B. Evans | 755,474 | Mar. 22 | 4404 | 975 | 109 | 1009 |
| Turbine supply-nozzle | C. Welchelt | 753,769 | Mar. 1 | 1059 | 242 | 109 | 228 |
| Turbine. Vertical fluid-pressure | G. Westinghouse | 754,400 | Mar. 8 | 2368 | 516 | 109 | 534 |
| Turbines. Detachable blade for steam- | E. E. F. Fagerström | 754,984 | Mar. 22 | 3522 | 771 | 109 | 820 |
| Turn-button. Locking | G. W. Coulson | 758,353 | Apr. 26 | 4289 | 921 | 109 | 2317 |
| Turnbuckles. Making | W. E. Renner | 756,141 | Mar. 29 | 5702 | 1258 | 109 | 1312 |
| Turning-tool. Hand- | E. Leonard | 757,181 | Apr. 12 | 1843 | 403 | 109 | 1752 |
| Turpentine-box | R. L. Gaylord | 757,294 | Apr. 12 | 2148 | 469 | 109 | 1817 |
| Twine-feeding machine. Grass- | E. A. Lundgren and C. H. Johannesen. | 754,374 | Mar. 8 | 2309 | 504<br>505 | 109 | 521 |
| Twist-drills. Forming | R. L. Barclay | 756,041 | Apr. 26 | 3664 | 792 | 109 | 2182 |
| Twisting-frame stop-motion | C. Whitaker | 753,338 | Mar. 1 | 220 | 50 | 109 | 50 |
| Twisting-head for thread-dressing machines | G. A. Fredenburgh | 756,487 | Apr. 5 | 502 | 128 | 109 | 1467 |
| Twisting-machine. Belt-driven | J. E. Tynan | 755,261 | Mar. 22 | 4007 | 889 | 109 | 924 |
| Type-bar bearing | L. Myers | 755,083 | Mar. 22 | 3804 | 791 | 109 | 839 |
| Type-bar construction | F. X. Wagner | 758,197 | Apr. 26 | 3958 | 859 | 109 | 2245 |
| Type setting or composing machine | J. Lagarde | 757,319 | Apr. 12 | 2215 | 484<br>485 | 109 | 1831 |
| Type-writer | E. Runge | 758,563 | Apr. 26 | 4694 | 1012<br>1013<br>1014 | 109 | 2408 |
| Type-writer | C. Wasmuth | 758,571 | Apr. 26 | 4714 | 1017 | 109 | 2413 |
| Type-writer adding attachment | J. W. Magness | 758,371 | Apr. 26 | 4322 | 928 | 109 | 2324 |
| Type-writer aliner | J. Alexander | 753,651 | Mar. 1 | 827 | 186 | 109 | 180 |
| Type-writer alining mechanism | J. Alexander | 753,348 | Mar. 1 | 238 | 54 | 109 | 54 |
| Type-writer carriage-feeding mechanism | J. Alexander | 756,199 | Apr. 5 | 2 | 1 | 109 | 1343 |
| Type-writer feeding device | D. S. Dufur | 754,435 | Mar. 15 | 2467 | 537<br>538 | 109 | 574 |
| Type-writer indicator | J. N. D. La Touche | 755,502 | Mar. 22 | 4445 | 988 | 109 | 1017 |
| Type-writer line-spacing mechanism | J. Alexander | 755,831 | Mar. 29 | 5113 | 1183 | 109 | 1188 |
| Type-writer. Polychrome | C. A. Joerissen and H. R. Livingston. | 753,797 | Mar. 1 | 1154 | 260<br>261 | 109 | 248 |
| Type-writer type-bar segment | C. W. Howell, Jr | 753,397 | Mar. 1 | 825 | 74 | 109 | 73 |
| Type-writer with open-pipe system. Pneumatic | M. Soblik | 757,066 | Apr. 12 | 1702 | 370 | 109 | 1720 |
| Type-writer's chair, piano-stool, &c | H. W. Bolens | 755,991 | Mar. 29 | 5426 | 1199 | 109 | 1254 |
| Type-writers or analogous machines. Tabulating attachment for | G. L. Palmer | 755,926 | Mar. 29 | 5307 | 1171 | 109 | 1227 |
| Type-writing and tabulating machine | H. Jarvis and M. H. Blakeslee | 753,796 | Mar. 1 | 1152 | 259<br>260 | 109 | 247 |

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|---|---|---|---|---|---|---|---|
| Type-writing machine | H. S. Dukes and W. H. Clayton | 753,788 | Mar. 1 | 1108 | 252, 253, 254, 255, 256 | 109 | 239 |
| Type-writing machine | C. Gabrielson | 753,972 | Mar. 8 | 1518 | 338 | 109 | 350 |
| Type-writing machine | F. S. Rose | 754,242 | Mar. 8 | 2023 | 450 | 109 | 461 |
| Type-writing machine | H. Ellis | 754,366 | Mar. 8 | 2298 | 501, 502 | 109 | 519 |
| Type-writing machine | A. R. Jarman | 754,454 | Mar. 15 | 2498 | 544 | 109 | 581 |
| Type-writing machine | C. Gabrielson | 754,928 | Mar. 15 | 3303 | 741, 742 | 109 | 775 |
| Type-writing machine | H. Bettendorf and J. M. Bier | 754,964 | Mar. 22 | 3489 | 763, 764 | 109 | 814 |
| Type-writing machine | C. H. Shepard | 755,061 | Mar. 22 | 3650 | 801 | 109 | 850 |
| Type-writing machine | W. P. Quentell and F. Judge | 755,545 | Mar. 22 | 4522 | 1006, 1007 | 109 | 1084 |
| Type-writing machine | W. J. Barron | 757,431 | Apr. 19 | 2439 | 532, 533 | 109 | 1804 |
| Type-writing machine | R. W. Uhlig | 757,982 | Apr. 19 | 3524 | 784, 785 | 109 | 2131 |
| Type-writing machine | F. W. Hillard | 758,252 | Apr. 26 | 4071 | 881, 882 | 109 | 2269 |
| Type-writing-machine aliner | J. Alexander | 754,271 | Mar. 8 | 2073 | 459 | 109 | 471 |
| Type-writing-machine ribbon-feed mechanism | E. G. Latta | 758,435 | Apr. 26 | 4480 | 963 | 109 | 2260 |
| Type-writing-machine ribbon-movement | J. Alexander | 756,808 | Apr. 12 | 1184 | 262, 264 | 109 | 1613 |
| Type-writing-machine ribbon-spool | J. A. Bedworth | 754,117 | Mar. 8 | 1790 | 398 | 109 | 411 |
| Type-writing machine. Stenographic | A. B. Saliger | 753,318 | Mar. 1 | 186 | 42 | 109 | 43 |
| Type-writing-machine tabulating mechanism | M. H. Blakeslee | 755,608 | Mar. 29 | 4650 | 1033 | 109 | 1077 |
| Type-writing-machine type-arm bearing | J. A. Smith | 755,404 | Mar. 22 | 4282 | 946 | 109 | 985 |
| Type-writing machines. Work-handling mechanism for | H. S. Dukes and W. H. Clayton | 753,789 | Mar. 1 | 1135 | 256, 257 | 109 | 245 |
| Umbrella | J. L. Vaughn | 754,029 | Mar. 8 | 1619 | 360 | 109 | 373 |
| Umbrella and sunshade | H. B. Gra | 753,877 | Mar. 8 | 1324 | 296 | 109 | 305 |
| Umbrella-carrier | A. J. Igel | 755,009 | Mar. 22 | 3595 | 781 | 109 | 830 |
| Umbrella-gear | C. B. Baldwin | 756,562 | Apr. 5 | 717 | 155 | 109 | 1494 |
| Umbrella-rib connection | J. O. Larrabee | 755,500 | Mar. 22 | 4443 | 967 | 109 | 1017 |
| Undergarment | G. A. Mattern | 758,375 | Apr. 26 | 4331 | 930 | 109 | 2236 |
| Universal joint | E. J. Reece | 757,769 | Apr. 19 | 3136 | 681 | 109 | 2046 |
| Unloading device | F. G. Pace | 758,274 | Apr. 26 | 4117 | 890, 891 | 109 | 2279 |
| Upholstering. Casket | A. J. Cross | 753,674 | Mar. 1 | 881 | 190 | 109 | 191 |
| Upholstery | M. M. Rogers | 757,414 | Apr. 12 | 3405 | 523 | 109 | 1870 |
| Uterine supporter | J. T. Hall | 756,165 | Mar. 29 | 5735 | 1267 | 109 | 1330 |
| Vaccine-point | H. K. Mulford | 758,597 | Apr. 26 | 4765 | 1036 | 109 | 2424 |
| Valve | C. L. Turner | 753,332 | Mar. 1 | 212 | 48 | 109 | 49 |
| Valve | W. H. Stratton | 753,755 | Mar. 1 | 1032 | 235 | 109 | 222 |
| Valve | A. B. Wright | 754,032 | Mar. 8 | 1626 | 362 | 109 | 374 |
| Valve | L. L. Griffiths | 754,299 | Mar. 8 | 2128 | 471, 472 | 109 | 482 |
| Valve | F. F. Tunsberg | 755,334 | Mar. 22 | 4153 | 918 | 109 | 955 |
| Valve | W. A. Miller | 756,085 | Mar. 29 | 5511 | 1215 | 109 | 1271 |
| Valve | M. J. Chaplin | 756,582 | Apr. 5 | 754 | 164 | 109 | 1502 |
| Valve | A. K. Mansfield | 756,869 | Apr. 12 | 1308 | 291 | 109 | 1637 |
| Valve | E. P. Allen | 757,873 | Apr. 19 | 3317 | 719 | 109 | 2085 |
| Valve | J. A. Desmarteau | 758,053 | Apr. 26 | 3667 | 801 | 109 | 2186 |
| Valve-adjusting means. Engine | E. S. Newton | 757,217 | Apr. 12 | 3000 | 435 | 109 | 1786 |
| Valve. Air-brake controlling | F. B. Corey | 758,174 | Apr. 26 | 3917 | 851 | 109 | 2226 |
| Valve. Air-brake triple | J. H. Bleoo | 757,016 | Apr. 12 | 1605 | 349 | 109 | 1699 |
| Valve. Air-pipe-coupling pressure-relief | D. W. Elliott and J. B. Ruby | 756,484 | Apr. 5 | 585 | 128 | 109 | 1465 |
| Valve and valve-seat | S. R. Painter | 755,985 | Mar. 29 | 5305 | 1171 | 109 | 1227 |
| Valve. Automatic flushing | F. A. Schossow | 756,291 | Apr. 5 | 196 | 42 | 109 | 1396 |
| Valve. Automatic siphon | A. O'Brien | 755,084 | Mar. 22 | 3610 | 792 | 109 | 841 |
| Valve. Automatic stop | E. Gonzenbach | 756,845 | Apr. 12 | 1258 | 280 | 109 | 1629 |
| Valve. Back-pressure | H. J. Wessinger | 756,306 | Apr. 5 | 224 | 46, 47 | 109 | 1392 |
| Valve. Blow-off | C. B. Bosworth | 756,463 | Apr. 5 | 547 | 114 | 109 | 1459 |
| Valve cam-movement | C. Rogers | 753,631 | Mar. 1 | 786 | 175 | 109 | 171 |
| Valve. Combined steam and water | L. A. Parker and H. D. Castlebery | 753,427 | Mar. 1 | 394 | 91 | 109 | 86 |
| Valve. Compressor | S. A. Reeve | 755,317 | Mar. 22 | 4114 | 909 | 109 | 946 |
| Valve. Controlling | A. H. Mosher | 758,999 | Mar. 8 | 1560 | 349 | 109 | 360 |
| Valve device | C. C. Hedberg | 755,000 | Mar. 22 | 3546 | 777 | 109 | 826 |
| Valve. End train-pipe | R. M. Dixon | 755,284 | Mar. 22 | 4049 | 898 | 109 | 934 |
| Valve. Engine | J. H. Jones | 754,560 | Mar. 15 | 2736 | 598 | 109 | 629 |
| Valve. Faucet | F. F. Field | 757,731 | Apr. 19 | 3047 | 664 | 109 | 2026 |
| Valve. Flush | E. A. Marsh | 758,012 | Apr. 19 | 3500 | 778 | 109 | 2145 |
| Valve for air-brake control. Equilibrio intercepting | E. G. Shortt | 758,285 | Apr. 26 | 4141 | 894, 895 | 109 | 2284 |
| Valve for blowing-engines and air-compressors | A. K. Mansfield | 756,868 | Apr. 12 | 1301 | 290 | 109 | 1636 |
| Valve for locomotive-engine cylinders. Relief | R. P. C. Sanderson | 757,146 | Apr. 19 | 1868 | 408 | 109 | 1757 |
| Valve for safety train-stops. Air | H. G. Sedgwick | 757,571 | Apr. 19 | 3736 | 808 | 109 | 1967 |
| Valve for turbine-engines. Governor | J. H. K. McCollum | 754,480 | Mar. 15 | 2577 | 560 | 109 | 599 |
| Valve-gear | F. Williams | 754,950 | Mar. 15 | 3402 | 758 | 109 | 791 |
| Valve-gear | S. A. Reeve | 757,411 | Apr. 12 | 2396 | 521, 522 | 109 | 1808 |
| Valve-gear. Engine | O. Jackson | 758,317 | Apr. 26 | 4220 | 907 | 109 | 2203 |
| Valve-gear. Engine | O. Jackson | 758,365 | Apr. 26 | 4309 | 925, 926 | 109 | 2221 |
| Valve-gear. Explosive-engine | L. T and C. Hagan | 757,917 | Apr. 19 | 3406 | 737 | 109 | 2105 |
| Valve-gearing. Steam-engine | J. B. Stanwood | 754,620 | Mar. 15 | 2818 | 615 | 109 | 649 |
| Valve. Governor | D. J. Lyon | 754,880 | Mar. 15 | 3324 | 725 | 109 | 761 |
| Valve. Induction | P. B. Bosworth | 756,573 | Apr. 5 | 732 | 158 | 109 | 1497 |
| Valve mechanism | H. R. Mason | 757,479 | Apr. 19 | 2586 | 557, 558 | 109 | 1918 |
| Valve mechanism. Explosive-engine | A. Evensen | 756,160 | Mar. 29 | 5796 | 1265 | 109 | 1318 |
| Valve. Motorman's or engineer's | F. B. Corey | 755,751 | Mar. 29 | 4949 | 1101, 1109 | 109 | 1146 |



*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Valve-operating mechanism | T. Barrow | 755,734 | Mar. 29 | 4915 | 1095 | 109 | 1138 |
| Valve piston and connection. Triple | A. H. Geltz and L. L. Hosack | 755,570 | Mar. 22 | 4567 | 1016 | 109 | 1045 |
| Valve. Reducing | J. J. Burke | 757,881 | Apr. 19 | 3334 | 722 | 109 | 2069 |
| Valve. Relief | N. Lombard | 754,467 | Mar. 15 | 2522 | 550, 551 | 109 | 585 |
| Valve. Relief | S. O. Brune | 755,996 | Mar. 29 | 5434 | 1201 | 109 | 1255 |
| Valve-reseating machine. Gate | F. L. Smith | 753,747 | Mar. 1 | 1019 | 231 | 109 | 219 |
| Valve. Safety | N. Lombard | 754,468 | Mar. 15 | 2527 | 551 | 109 | 587 |
| Valve-seat planer. Portable | W. H. Bean | 753,786 | Mar. 1 | 1107 | 251 | 109 | 239 |
| Valve. Shut-off | L. Gschwind | 756,624 | Apr. 5 | 820 | 177 | 109 | 1516 |
| Valve. Steam | J. L. McJunkin | 756,688 | Apr. 5 | 945 | 208 | 109 | 1544 |
| Valve. Steam-engine cut-off | F. J. Waters | 758,122 | Apr. 26 | 3822 | 879, 880 | 109 | 2215 |
| Valve. Throttle | J. Desmond | 754,547 | Mar. 15 | 2682 | 582 | 109 | 622 |
| Valve. Throttle | R. A. McKee | 757,486 | Apr. 19 | 2552 | 560 | 109 | 1916 |
| Valve. Train-pipe steam | E. E. Gold | 756,491 | Apr. 5 | 598 | 129 | 109 | 1468 |
| Valve. Train-pipe steam | E. E. Gold | 756,492 | Apr. 5 | 600 | 129 | 109 | 1468 |
| Valve. Trap | C. W. Clewell | 754,747 | Mar. 15 | 3070 | 670 | 109 | 706 |
| Valves. Fluid-pressure coupling for air-brake | D. H. Staples | 754,021 | Mar. 8 | 1605 | 358 | 109 | 370 |
| Vanillin. Making | R. N. Riddle | 754,164 | Mar. 8 | 1867 | ..... | 109 | 429 |
| Vapor-absorber | J. Patten | 756,521 | Apr. 5 | 647 | 139, 140 | 109 | 1478 |
| Vapor-burner | F. F. Dow | 756,608 | Apr. 5 | 782 | 170 | 109 | 1508 |
| Vapor-generator | J. Andrews | 755,988 | Mar. 29 | 5420 | 1197, 1198 | 109 | 1252 |
| Variator | W. C. Andrews | 753,754 | Mar. 1 | 1029 | 233, 234 | 109 | 221 |
| Varnish | A. Muller-Jacobs | 756,975 | Apr. 12 | 1521 | ..... | 109 | 1681 |
| Vat: *See* Milk-vat. | | | | | | | |
| Vault. Burial | E. T. Allen | 755,986 | Mar. 29 | 5418 | 1197 | 109 | 1252 |
| Vault-cover. Illuminating | J. T. Harrop | 758,443 | Apr. 26 | 4464 | 960 | 109 | 2257 |
| Vault. Grave | J. W. Freeman | 755,866 | Mar. 29 | 5186 | 1148 | 109 | 1201 |
| Vault or safe | H. D. Hibbard and W. Gaston | 758,069 | Apr. 26 | 3727 | 810 | 109 | 2192 |
| Vegetable-washer | J. F. Fugazzi | 758,056 | Apr. 26 | 3690 | 801 | 109 | 2187 |
| Vehicle | L. Abraham | 756,807 | Apr. 12 | 1183 | 263 | 109 | 1613 |
| Vehicle-body hanger | C. La Dow | 754,149 | Mar. 8 | 1888 | 410 | 109 | 423 |
| Vehicle-body hanger | H. C. Swan | 756,075 | Mar. 29 | 5574 | 1230 | 109 | 1286 |
| Vehicle-body hanger | H. Jones | 757,623 | Apr. 19 | 2852 | 621 | 109 | 1964 |
| Vehicle-body loop | L. Crise | 758,472 | Mar. 1 | 468 | 110 | 109 | 102 |
| Vehicle-brake | W. H. Cooley | 756,000 | Mar. 29 | 5443 | 1202, 1203 | 109 | 1257 |
| Vehicle-brake | M. A. Schafer | 756,809 | Apr. 12 | 1367 | 305 | 109 | 1650 |
| Vehicle-brake | H. P. Maxim | 757,940 | Apr. 19 | 3448 | 747 | 109 | 2114 |
| Vehicle draft attachment | F. H. Sharp | 754,902 | Mar 15 | 3359 | 734, 735 | 109 | 767 |
| Vehicle driving and steering mechanism. Motor | E. L. Russell | 758,317 | Mar. 1 | 184 | 42 | 109 | 43 |
| Vehicle. Dumping | F. I. E. Akers | 755,268 | Mar. 22 | 4024 | 892 | 109 | 928 |
| Vehicle. Electrically-propelled | H. P. Maxim | 753,284 | Mar. 1 | 130 | 31 | 109 | 32 |
| Vehicle frame and spring construction | W. F. Richards | 754,610 | Mar. 15 | 2798 | 610, 611 | 109 | 645 |
| Vehicle-gear | T. H. Holman | 755,491 | Mar. 22 | 4480 | 962 | 109 | 1014 |
| Vehicle lamp-holder attachment | A. Groff | 757,914 | Apr. 19 | 3401 | 737 | 109 | 2104 |
| Vehicle leveling mechanism | J. A. Flyte | 754,985 | Mar. 22 | 3523 | 771 | 109 | 820 |
| Vehicle. Mechanically-propelled | D. M. Dearing | 754,975 | Mar. 22 | 3507 | 768 | 109 | 818 |
| Vehicle. Motor | W. J. and G. Lane | 753,589 | Mar. 1 | 717 | 161 | 109 | 156 |
| Vehicle. Motor | W. J. and G. Lane | 753,590 | Mar. 1 | 718 | 161 | 109 | 157 |
| Vehicle. Motor | H. S. Baldwin | 756,152 | Mar. 29 | 5714 | 1261 | 109 | 1315 |
| Vehicle. Motor | C. R. Twitchell | 756,992 | Apr. 12 | 1553 | 341 | 109 | 1688 |
| Vehicle. Motor | B. C. Hicks | 758,137 | Apr. 26 | 3850 | 836 | 109 | 2221 |
| Vehicle or machine. Wheeled | L. W. Towne | 754,722 | Mar. 15 | 3084 | 662 | 109 | 697 |
| Vehicle positioning apparatus | G. A. Ward | 755,087 | Mar. 22 | 3698 | 811, 812 | 109 | 861 |
| Vehicle running-gear | R. A. Moore | 754,680 | Mar. 15 | 2941 | 642 | 109 | 675 |
| Vehicle running-gear | V. Jeffries | 755,228 | Mar. 22 | 3944 | 878 | 109 | 911 |
| Vehicle running-gear | C. P. Malcolm | 757,476 | Apr. 19 | 2532 | 556 | 109 | 1912 |
| Vehicle running-gear. Motor | H. P. Maxim | 757,941 | Apr. 19 | 3450 | 747 | 109 | 2115 |
| Vehicle seat-spring | C. L. Thomas | 755,813 | Mar. 29 | 5072 | 1126 | 109 | 1178 |
| Vehicle. Self-propelled | J. C. Bérubé | 754,035 | Mar. 15 | 2846 | 621 | 109 | 655 |
| Vehicle shaft motion. Device for preventing | W. N. Cleveland | 754,642 | Mar. 15 | 2870 | 627 | 109 | 659 |
| Vehicle spring-wheel | A. G. Ramage and G. Macmillan | 753,432 | Mar. 1 | 404 | 94 | 109 | 88 |
| Vehicle. Steam-propelled | H. K. Hess | 757,808 | Apr. 19 | 3201 | 695, 696 | 109 | 2061 |
| Vehicle steering connection. Motor | E. L. Russell | 753,816 | Mar. 1 | 182 | 41 | 109 | 42 |
| Vehicle steering device. Motor | F. Porsche and L. Lohner | 754,802 | Mar. 15 | 3174 | 692 | 109 | 727 |
| Vehicle-step attachment | J. M. Vaughan | 753,334 | Mar. 1 | 215 | 48 | 109 | 49 |
| Vehicle storm-curtain | B. S. D. S. Martin | 754,980 | Mar. 15 | 3407 | 745 | 109 | 779 |
| Vehicle storm-shield | M. R. Hull | 756,021 | Mar. 29 | 5490 | 1211 | 109 | 1267 |
| Vehicle-top storm-curtain | D. C. Lawless | 758,185 | Apr. 26 | 3987 | 854 | 109 | 2241 |
| Vehicle-top support | G. Grogan | 754,650 | Mar. 15 | 2884 | 630 | 109 | 662 |
| Vehicle-wheel | G. W. Sanford | 754,244 | Mar. 8 | 2028 | 451 | 109 | 462 |
| Vehicle-wheel | P. A. Sanguinetti | 754,504 | Mar. 15 | 2808 | 567 | 109 | 606 |
| Vehicle-wheel | H. S. Hele-Shaw and R. B. Helliwell | 755,131 | Mar. 22 | 3765 | 827, 828 | 109 | 872 |
| Vehicle-wheel | B. B. Weaver | 755,421 | Mar. 22 | 4311 | 953, 954 | 109 | 990 |
| Vehicle-wheel | L. Lange | 756,658 | Apr. 5 | 880 | 192 | 109 | 1530 |
| Vehicles. Power installation for self-propelled | J. A. Polk | 757,677 | Apr. 19 | 2956 | 643 | 109 | 2006 |
| Velocipedes or road motor-vehicles. Variable gearing for | W. O. and J. D. Worth | 757,380 | Apr. 12 | 2338 | 510 | 109 | 1855 |
| Velocity-meter | J. Archer | 753,785 | Mar. 1 | 1104 | 250, 251 | 109 | 239 |
| Vending apparatus | G. Dettmar | 753,243 | Mar. 1 | 52 | 13, 14 | 109 | 14 |
| Vending-machine | R. E. Payne | 757,956 | Apr. 19 | 3475 | 752 | 109 | 2121 |
| Vending-machine | Y. Q. Caldwell and L. M. Martin | 753,824 | Mar. 1 | 1221 | 274, 275 | 109 | 261 |
| Vending-machine | G. W. Gates | 755,648 | Mar. 29 | 4736 | 1053 | 109 | 1097 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Vending-machine | R. Britton | 756,154 | Mar. 29 | 5717 | 1202 | 109 | 1316 |
| Vending-machine | J. G. Hendrickson | 756,788 | Apr. 5 | 1143 | 259 | 109 | 1588 |
| Vending-machine | C. H. Eggleston, C. F. Hardy, and V. Lepper. | 756,947 | Apr. 12 | 1450 | 323 | 109 | 1660 |
| Vending-machine | D. O. Coleman and A. Shepard | 757,998 | Apr. 19 | 3549 | 768 | 109 | 2136 |
| Vending-machine | F. G. Hartell | 758,007 | Apr. 19 | 3580 | 775 | 109 | 2144 |
| Vending-machine | T. M. Day | 758,301 | Apr. 26 | 4189 | 902 | 109 | 2297 |
| Vending-machine. Automatic | R. Schlemm | 758,110 | Apr. 26 | 3797 | 824 | 109 | 2209 |
| Vending machine. Cigar- | T. Erickson and J. J. Fagan | 758,588 | Apr. 26 | 4742 | 1022 | 109 | 2419 |
| Vending-machine. Coin-actuating | C. A. Smiley | 754,616 | Mar. 15 | 2810 | 613 | 109 | 647 |
| Vending-machine. Coin-controlled | F. E. Levanseler | 757,321 | Apr. 12 | 2222 | 485 | 109 | 1832 |
| Vending-machine. Coin-controlled | M. Hofheimer | 758,180 | Apr. 26 | 3929 | 853 | 109 | 2239 |
| Vending-machine. Coin-controlled | O. Kreter | 758,530 | Apr. 26 | 4651 | 1001 | 109 | 2390 |
| Vending-machine. Coin-controlled | W. T. Drew | 758,587 | Apr. 26 | 4739 | 1021 1022 | 109 | 2419 |
| Vending-machine coin-controlled mechanism. Cigar- | C. M. Dodson | 758,204 | Apr. 26 | 3972 | 861 862 | 109 | 2248 |
| Ventilating device | C. J. Harrington | 755,485 | Mar. 22 | 4420 | 980 | 109 | 1012 |
| Ventilator: *See* Current-ventilator. Window-ventilator. | | | | | | | |
| Ventilator | F. J. Prochaska | 754,806 | Mar. 15 | 3181 | 693 | 109 | 729 |
| Ventilator | F. G. Yawman | 755,096 | Mar. 22 | 3708 | 814 | 109 | 863 |
| Ventilator | W. P. Cosper | 755,565 | Mar. 22 | 4558 | 1014 | 109 | 1043 |
| Ventilator | R. S. West | 755,973 | Mar. 29 | 5096 | 1192 | 109 | 1248 |
| Ventilator | L. M. Wood | 756,762 | Apr. 5 | 1085 | 241 | 109 | 1574 |
| Ventilator | S. H. Jacobson | 757,465 | Apr. 19 | 2511 | 551 | 109 | 1907 |
| Ventilator | C. A. Withers | 757,534 | Apr. 19 | 2653 | 582 | 109 | 1938 |
| Vessel-handle | T. W. Forster | 758,500 | Apr. 26 | 4752 | 1023 | 109 | 2422 |
| Vessel retarding and steering means | A. Zerbe | 757,385 | Apr. 12 | 2346 | 511 | 109 | 1857 |
| Vessel rig. Sailing- | B. W. Collins | 758,171 | Apr. 26 | 3905 | 848 849 | 109 | 2234 |
| Vessel. Sectional molded | W. B. Fenn | 755,223 | Mar. 22 | 3935 | 871 | 109 | 909 |
| Vessel sighting or observing tube | S. Lake | 754,464 | Mar. 15 | 2517 | 548 549 | 109 | 584 |
| Vessels. Apparatus for discharging loose cargo from | H. Shoosmith | 755,064 | Mar. 22 | 3650 | 808 | 109 | 852 |
| Vessels. Apparatus for scraping ore from wings of | M. Andrews | 757,858 | Apr. 19 | 3298 | 713 | 109 | 2079 |
| Vessels in lock-chambers. Apparatus for raising or sinking | F. Pokorný | 755,536 | Mar. 22 | 4509 | 1008 | 109 | 1081 |
| Vessels. Self-grip and draw-off attachment for | L. E. Saunders | 757,641 | Apr. 19 | 2882 | 628 | 109 | 1991 |
| Vest and drawers holder | A. Lustig | 756,666 | Apr. 5 | 906 | 198 | 109 | 1537 |
| Vibrating screen | W. J. Bell | 754,809 | Mar. 15 | 3260 | 708 709 | 109 | 746 |
| Vibrator. Electric | W. MacMillan | 755,577 | Mar. 22 | 4580 | 1019 | 109 | 1048 |
| Violins, &c. Detachable shoulder-rest for | J. H. White | 755,977 | Mar. 29 | 5402 | 1198 | 109 | 1248 |
| Vise | H. S. Hanstine | 757,918 | Apr. 19 | 3408 | 738 | 109 | 2105 |
| Vise. Saw- | M. Laursen | 757,330 | Apr. 12 | 2221 | 485 | 109 | 1832 |
| Voting-machine | A. F. Bardwell | 755,896 | Mar. 29 | 5120 | 1134 1135 | 109 | 1185 |
| Voting-table and ballot-box | L. W. Sprague | 758,526 | Mar. 1 | 502 | 134 135 | 109 | 129 |
| Vulcanizer | H. W. Truitt | 756,913 | Apr. 12 | 1305 | 310 | 109 | 1656 |
| Wagon-body. Folding | F. B. McMurray | 758,292 | Mar. 1 | 141 | 33 | 109 | 34 |
| Wagon-bolster | J. W. Patterson | 755,532 | Mar. 22 | 4497 | 1000 | 109 | 1029 |
| Wagon-box | D. Clark | 757,023 | Apr. 12 | 1622 | 353 | 109 | 1708 |
| Wagon-box fastener | W. H. Dulaney | 753,378 | Mar. 1 | 290 | 66 | 109 | 66 |
| Wagon-brake | H. H. Piper | 753,732 | Mar. 1 | 991 | 225 | 109 | 214 |
| Wagon-brake | H. H. Piper | 753,733 | Mar. 1 | 992 | 225 | 109 | 214 |
| Wagon-brake | B. B. Barnett | 757,083 | Apr. 12 | 1730 | 376 | 109 | 1726 |
| Wagon-brake | N. Pfeffer | 757,959 | Apr. 19 | 3480 | 753 754 | 109 | 2122 |
| Wagon-brake | V. Fingoust | 758,308 | Apr. 26 | 4206 | 904 | 109 | 2300 |
| Wagon. Coal- | A. C. Pannepacker | 758,806 | Mar. 1 | 1172 | 263 264 | 109 | 232 |
| Wagon. Dump- | H. A. Moyer | 754,228 | Mar. 8 | 1909 | 444 | 109 | 456 |
| Wagon. Dump- | H. C. Tripp | 756,912 | Apr. 12 | 1393 | 309 310 | 109 | 1655 |
| Wagon. Dumping- | A. Cameron | 753,232 | Mar. 1 | 31 | 7, 8 | 109 | 9 |
| Wagon. Dumping- | A. F. Otto | 756,400 | Apr. 5 | 421 | 87 | 109 | 1433 |
| Wagon. Eight-wheeled | W. E. Jones | 756,647 | Apr. 5 | 854 | 186 | 109 | 1524 |
| Wagon. Hoisting- | A. E. Johnson | 758,888 | Mar. 8 | 1344 | 303 304 | 109 | 310 |
| Wagon. Lumber- | B. F. Padgett | 754,601 | Mar. 15 | 2783 | 607 | 109 | 641 |
| Wagon-reach | E. Keffer | 754,318 | Mar. 8 | 2157 | 477 | 109 | 488 |
| Wagon. Speed- | J. P. Faber | 753,689 | Mar. 1 | 916 | 207 | 109 | 198 |
| Wagon-spring | C. L. Thomas | 757,578 | Apr. 19 | 2755 | 602 | 100 | 1902 |
| Wagon stake or standard | F. R. A. MacKinnon | 755,024 | Mar. 22 | 3590 | 788 | 100 | 835 |
| Wagons. Device for unloading and distributing earth, manure, &c., from | W. von Chelmicki | 755,452 | Mar. 22 | 4369 | 907 | 109 | 1002 |
| Waist attachment and skirt-supporter. Combination | A. Buckelew | 754,742 | Mar. 15 | 3063 | 668 | 109 | 704 |
| Waistband | H. Beerwald | 756,566 | Apr. 5 | 721 | 156 | 109 | 1495 |
| Waistband | H. Beerwald | 756,567 | Apr. 5 | 722 | 156 | 109 | 1495 |
| Walking-stick and stool. Combination | N. F. Russell | 757,776 | Apr. 19 | 3150 | 685 | 109 | 2049 |
| Wall-facing for dampproofing | W. Zaisser | 756,926 | Apr. 12 | 1414 | 315 | 109 | 1660 |
| Wall. Non-conducting | H. H. Judson | 755,137 | Mar. 22 | 3782 | 833 | 109 | 879 |
| Wall structure | P. J. McGuire | 754,334 | Mar. 8 | 2327 | 509 | 109 | 525 |
| Wardrobe and bed. Combined | S. Austin | 753,462 | Mar. 1 | 453 | 106 | 109 | 99 |
| Wardrobe. Folding | J. F. Hayes | 753,393 | Mar. 1 | 320 | 72 | 109 | 72 |
| Wardrobe. Folding | H. H. Schuster | 754,614 | Mar. 15 | 2803 | 611 | 100 | 646 |
| Wardrobe. Portable | A. Magui and M. Cooper | 758,721 | Mar. 1 | 975 | 221 | 109 | 210 |
| Warp-drawing machine | M. F. Field | 755,861 | Mar. 29 | 5176 | 1145 1146 | 109 | 1199 |



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|---|---|---|---|---|---|---|---|
| Warping-machine | F. Ott | 757,491 | Apr. 19 | 2560 | 562 | 109 | 1918 |
| Warping-machine clock mechanism | A. E. Rhoades | 756,800 | Apr. 5 | 1167 | 258 | 109 | 1593 |
| Warping-machine electric stop-motion | J. Cocker and C. Denn | 754,748 | Mar. 15 | 3072 | 671 | 109 | 706 |
| Wash apparatus | C. F. V. Flint | 755,477 | Mar. 22 | 4408 | 977 | 109 | 1010 |
| Washer: *See* Dish-washer. Vegetable-washer. | | | | | | | |
| Washer | D. Kunkle | 758,588 | Mar. 1 | 716 | 160 | 109 | 156 |
| Washer-stapling machine | W. Maier and G. M. Howe | 758,212 | Apr. 26 | 3988 | 865 | 109 | 2251 |
| Washing and bleaching. Composition of matter for | T. Mellor | 754,588 | Mar. 15 | 2765 | ..... | 109 | 637 |
| Washing device. Clothes- | C. H. Gunn | 754,924 | Mar. 15 | 3397 | 742 | 109 | 776 |
| Washing, disinfecting, and drying apparatus | L. E. Barbe | 757,011 | Apr. 12 | 1597 | 348 | 109 | 1698 |
| Washing-machine | L. W. Smith | 755,323 | Mar. 22 | 4127 | 912 913 | 109 | 949 |
| Washing-machine | C. S. Page | 755,579 | Mar. 22 | 4584 | 1019 | 109 | 1049 |
| Washing-machine | H. E. Carstens | 755,742 | Mar. 29 | 4929 | 1097 | 109 | 1141 |
| Washing-machine | R. C. Beekman | 756,204 | Apr. 5 | 13 | 3 | 109 | 1345 |
| Washing-machine | W. C. Fawkes | 756,224 | Apr. 5 | 65 | 14 | 109 | 1356 |
| Washing-machine | W. C. Lott | 756,253 | Apr. 5 | 117 | 25 | 109 | 1367 |
| Washing-machine | S. M. Farwell | 756,347 | Apr. 5 | 313 | 64, 65 | 109 | 1410 |
| Washing-machine | J. G. Hoffken | 756,856 | Apr. 12 | 1279 | 285 | 109 | 1632 |
| Washing-machine | J. W. Montgomery | 757,820 | Apr. 19 | 3240 | 708 | 109 | 2068 |
| Washing-machine | C. Dietz | 757,896 | Apr. 19 | 3366 | 727 | 109 | 2096 |
| Washing machine. Clothes- | R. Loux and F. E. Butterfield | 758,085 | Apr. 26 | 3749 | 815 | 109 | 2197 |
| Washing-machine driving mechanism | E. L. Patterson | 753,909 | Mar. 8 | 1390 | 314 | 109 | 320 |
| Washing machine. Vessel or receptacle | W. B. Page | 754,494 | Mar. 15 | 2590 | 562 | 109 | 601 |
| Washbench | W. Copeland | 755,621 | Mar. 29 | 4688 | 1042 1043 | 109 | 1086 |
| Washboard | H. M. Haas | 754,300 | Mar. 8 | 2131 | 472 | 109 | 483 |
| Washboard | J. B. Jones | 755,672 | Mar. 29 | 4776 | 1063 | 109 | 1106 |
| Washboard | J. A. Faulkner | 755,860 | Mar. 29 | 5174 | 1145 | 109 | 1199 |
| Washboard attachment | N. Lyke | 756,386 | Apr. 5 | 397 | 81 | 109 | 1428 |
| Washboiler fountain attachment | W. A. Mayor | 754,790 | Mar. 15 | 3159 | 688 | 109 | 724 |
| Washbowl or spittoon | L. F. Lerchner | 756,250 | Apr. 5 | 113 | 24 | 109 | 1366 |
| Washstand | T. Widdop | 753,339 | Mar. 1 | 222 | 50, 51 | 109 | 51 |
| Waste-paper box. Street | G. C. J. Engelland | 758,354 | Apr. 26 | 4291 | 922 | 109 | 2317 |
| Watch-holder | A. M. and E. S. Church | 753,363 | Mar. 1 | 260 | 59 | 109 | 59 |
| Watch-mainspring | E. F. O. Klein | 753,584 | Mar. 1 | 710 | 159 | 109 | 155 |
| Watch-movement winding-wheels. Ornamentation of exposed | O. Ohlson | 754,600 | Mar. 15 | 2782 | 606 | 109 | 641 |
| Watch-protector | M. Sonnenfeld | 756,072 | Mar. 29 | 5570 | 1229 | 109 | 1285 |
| Watch-regulator | W. W. Conover | 756,589 | Apr. 5 | 763 | 166 | 109 | 1504 |
| Watch. Stem-winding | A. Anzelewitz | 754,407 | Mar. 15 | 2393 | 523 | 109 | 557 |
| Watch. Stem-winding | W. M. Matheson | 755,903 | Mar. 29 | 5251 | 1161 | 109 | 1215 |
| Watch. Stem winding and setting | A. Blanc | 756,459 | Apr. 5 | 540 | 113 | 109 | 1458 |
| Watch stem winding and setting mechanism | C. Rodé-Stucky | 754,171 | Mar. 8 | 1881 | 419 | 109 | 431 |
| Watch. Stop- | E. Philippe | 754,798 | Mar. 15 | 3168 | 690 691 | 109 | 726 |
| Watch. Stop- | S. Petrillo | 755,313 | Mar. 22 | 4108 | 907 | 109 | 945 |
| Water. Apparatus for separating oil and grease from | E. Friesdorf | 757,448 | Apr. 19 | 2471 | 540 | 109 | 1900 |
| Water-closet | H. O. Krakow | 754,573 | Mar. 15 | 2732 | 595 | 109 | 631 |
| Water-closet | P. A. Allen | 754,733 | Mar. 15 | 3051 | 666 | 109 | 701 |
| Water-closet | W. Kulow | 755,498 | Mar. 22 | 4440 | 996 | 109 | 1017 |
| Water-closet | W. H. Osborn | 755,922 | Mar. 29 | 5300 | 1170 | 109 | 1226 |
| Water-closet seat | M. Rutledge | 756,897 | Apr. 12 | 1365 | 304 | 109 | 1649 |
| Water-closet tank-valves. Mechanism for operating | P. J. Gross | 757,788 | Apr. 19 | 3072 | 669 | 109 | 2081 |
| Water-closet ventilating device | W. J. Powers | 754,695 | Mar. 15 | 2978 | 649 | 109 | 684 |
| Water cooler. Hot- | J. S. Scott | 756,061 | Mar. 29 | 5550 | 1225 | 109 | 1281 |
| Water-gage | J. Zoanetto | 754,084 | Mar. 8 | 1629 | 362 | 109 | 375 |
| Water-gage | L. A. Bertram | 754,963 | Mar. 22 | 3487 | 763 | 109 | 814 |
| Water-gages. Automatic cut-off for glass-tube | W. Coger | 755,456 | Mar. 22 | 4374 | 969 | 109 | 1002 |
| Water-heater | A. W. Ekström | 755,366 | Mar. 22 | 4207 | 931 932 | 109 | 969 |
| Water-heater | E. E. Murphy | 757,563 | Apr. 19 | 2716 | 594 | 109 | 1952 |
| Water-heater | S. Bernstein | 758,347 | Apr. 26 | 4278 | 919 | 109 | 2315 |
| Water-heater and steam-cooker. Portable | J. W. Staton | 757,358 | Apr. 12 | 2289 | 499 | 109 | 1847 |
| Water-heater. Electric | J. F. Hathaway | 755,659 | Mar. 29 | 4750 | 1058 | 109 | 1100 |
| Water-heater. Electrical | H. M. Hill | 754,451 | Mar. 15 | 2493 | 543 | 109 | 580 |
| Water-heating and steam-generating device | J. T. Burr | 757,263 | Apr. 12 | 2061 | 454 | 109 | 1803 |
| Water-heating apparatus | H. E. Penney | 756,886 | Apr. 12 | 1337 | 297 | 109 | 1643 |
| Water-meter | J. Thomson | 756,431 | Apr. 5 | 488 | 100 101 | 109 | 1445 |
| Water-motor | O. S. Noyes | 755,790 | Mar. 29 | 5036 | 1119 | 109 | 1164 |
| Water-purifying apparatus | J. C. W. Greth | 758,880 | Mar. 8 | 1330 | 299 | 109 | 307 |
| Water-softening apparatus | H. Breda | 758,295 | Apr. 26 | 4166 | 899 | 109 | 2288 |
| Water-supply | A. Major | 755,150 | Mar. 22 | 3802 | 838 | 109 | 894 |
| Water-tank | J. Miller | 758,188 | Apr. 26 | 3941 | 855 | 109 | 2241 |
| Water trunk or flood-gate. Tide- | J. C. Heidt | 754,308 | Mar. 8 | 2144 | 475 | 109 | 486 |
| Water-tube boiler | J. E. Bossingham and F. Emling | 754,415 | Mar. 15 | 2407 | 527 | 109 | 560 |
| Water-tube boiler | J. Miyabara | 756,179 | Mar. 29 | 5759 | 1271 1272 | 109 | 1324 |
| Water-wheel. Horizontal | E. Ortwein | 758,465 | Apr. 26 | 4500 | 967 | 109 | 2365 |
| Water-wheels. Antifriction-bearing for | R. W. O. Rehmenklau | 754,388 | Mar. 8 | 2335 | 510 | 109 | 527 |
| Watering apparatus. Ambulant | P. Nolting | 757,338 | Apr. 12 | 2255 | 491 | 109 | 1889 |
| Watering machine. Automatic stock- | S. C. Clark | 754,848 | Mar. 15 | 3274 | 714 | 109 | 749 |
| Watering-pot | J. Tracey | 756,190 | Mar. 29 | 5774 | 1275 | 109 | 1327 |
| Waterproofing tissues | T. Luthringer | 757,326 | Apr. 12 | 2229 | 487 | 109 | 1833 |
| Waterway. Pleasure- | A. Pusterla | 753,311 | Mar. 1 | 176 | 40 | 109 | 40 |
| Wave-motor | D. G. Weems | 755,728 | Mar. 29 | 4902 | 1091 | 109 | 1136 |
| Wave-motor | M. D. Compton | 756,833 | Apr. 12 | 1237 | 276 | 109 | 1624 |
| Wave-responsive device | F. W. Midgley | 756,676 | Apr. 5 | 923 | 202 | 109 | 1540 |
| Wave-responsive device | A. E. Woodward and H. Shoemaker | 757,802 | Apr. 19 | 3193 | 694 | 109 | 2059 |
| Wax-applying roll or brush | W. A. Reed | 757,496 | Apr. 19 | 2569 | 564 | 109 | 1920 |
| Weather-strip | J. S. Senglar | 754,819 | Mar. 15 | 3208 | 699 | 109 | 736 |
| Weather-strip | H. Eagon | 754,857 | Mar. 15 | 3291 | 717 | 109 | 753 |

*Alphabetical list of inventions for March and April*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Weather-strip. Window | J. T. Roberts | 753,552 | Mar. 22 | 4537 | 1010 | 109 | 1088 |
| Weeder-tooth | E. G. and A. E. Quickel | 753,312 | Mar. 1 | 178 | 40 | 109 | 41 |
| Weeder. Wheel- | C. Wear | 757,796 | Apr. 19 | 3182 | 691 | 109 | 2056 |
| Weeding-machine | W. D. Lloyd | 756,125 | Mar. 29 | 5679 | 1253 | 109 | 1307 |
| Weighing and sorting skeins of yarn. Apparatus for | A. Lehner | 756,802 | Apr. 12 | 1286 | 288 | 109 | 1634 |
| Weighing apparatus | F. W. Moldenhauer | 756,681 | Apr. 5 | 983 | 204 | 109 | 1542 |
| Weighing apparatus. Automatic | W. Northrop | 755,084 | Mar. 22 | 3606 | 791 | 109 | 939 |
| Weighing device | W. Bügler | 756,908 | Apr. 5 | 25 | 6 | 109 | 1348 |
| Weighing-machine | E. H. Cook | 753,548 | Mar. 1 | 637 | 144; 145 | 109 | 140 |
| Weighing-machine. Automatic | E. T. Pollard | 756,281 | Apr. 5 | 178 | 36, 37 | 109 | 1882 |
| Weighing wagons, &c. Machine for | W. Holzer | 753,884 | Mar. 8 | 1338 | 301 | 109 | 309 |
| Welding apparatus | H. Dicke | 753,375 | Mar. 1 | 282 | 64, 65 | 109 | 64 |
| Welding compound | R. S. Woodson | 755,826 | Mar. 29 | 5104 | ..... | 109 | 1182 |
| Welding steel plates, &c., to sheets of aluminium and aluminium-plated other metals. | H. Wachwitz | 757,582 | Apr. 19 | 2763 | ..... | 109 | 1965 |
| Well-brake | S. J. Wallace | 756,751 | Apr. 5 | 1069 | 238 | 109 | 1572 |
| Well-drilling machine | D. W. Saunders | 753,319 | Mar. 1 | 188 | 43, 44 | 109 | 44 |
| Well-drills. Crank-movement for | W. R. Vanderwerker | 755,093 | Mar. 22 | 3694 | 810 | 109 | 860 |
| Well packer. Oil- | C. M. Heeter | 754,138 | Mar. 8 | 1823 | 406 | 109 | 418 |
| Well packer. Oil- | H. Smith and W. Wright | 755,190 | Mar. 22 | 3961 | 852 | 109 | 894 |
| Well point. Driven- | O. Kampfe | 757,124 | Apr. 12 | 1819 | 399 | 109 | 1745 |
| Well strainer. Drive- | W. H. Broome | 753,846 | Mar. 8 | 1269 | 285 | 109 | 294 |
| Welt-cleaner and blacking-spreader | C. F. Ziegler | 756,768 | Apr. 5 | 1097 | 243 | 109 | 1577 |
| Wheat or other grain shredder | J. H. Stevenson | 753,931 | Mar. 8 | 1442 | 323; 324 | 109 | 332 |
| Wheel: *See* Burnishing-wheel. Driving-wheel. Engine-wheel. Fifth-wheel. Guide-wheel. Independently-rotating wheel. Paddle-wheel. Printing-wheel. Self-adjusting wheel. Tanning-wheel. Traction-wheel. Trolley-wheel. Turbine bucket-wheel. Vehicle-wheel. Water-wheel. | | | | | | | |
| Wheel | T. D. Stagg | 755,069 | Mar. 22 | 3668 | 805 | 109 | 854 |
| Wheel | J. G. Ranger, Jr | 755,316 | Mar. 22 | 4113 | 908 | 109 | 945 |
| Wheel | R. C. Sayer | 756,200 | Apr. 5 | 193 | 40, 41 | 109 | 1385 |
| Wheel | J. Carpenter | 756,472 | Apr. 5 | 566 | 117 | 109 | 1462 |
| Wheel | C. H. Bicalky | 756,819 | Apr. 12 | 1206 | 260 | 109 | 1618 |
| Wheel construction | W. Kirchman | 755,013 | Mar. 22 | 3571 | 783 | 109 | 832 |
| Wheel-fender | M. E. de los Monteros | 754,331 | Mar. 8 | 2177 | 483 | 109 | 492 |
| Wheel-flange. Adjustable | H. Fatic. (Reissue) | 12,212 | Apr. 19 | 2431 | 530 | 109 | 1876 |
| Wheel-guard | J. B. Howard | 753,265 | Mar. 1 | 97 | 25 | 109 | 24 |
| Wheel guard or fender | D. McCausland | 756,392 | Apr. 5 | 406 | 84 | 109 | 1430 |
| Wheel guard or fender | D. McCausland | 756,393 | Apr. 5 | 407 | 84 | 109 | 1430 |
| Wheel-rim | J. F. W. Rethmeyer | 758,190 | Apr. 26 | 3944 | 856 | 109 | 2242 |
| Wheel traction-band | L. Kniffen | 757,471 | Apr. 19 | 2522 | 553 | 109 | 1910 |
| Wheel tread. Traction- | J. W. Pridmore | 757,635 | Apr. 19 | 2872 | 625 | 109 | 1968 |
| Wheel-wrench | J. H. Chappell | 758,508 | Apr. 26 | 4590 | 987 | 109 | 2387 |
| Wheels. Manufacturing | T. D. Harris | 754,304 | Mar. 8 | 2138 | 473; 474 | 109 | 485 |
| Wheelbarrow | T. J. Montgomery | 756,262 | Apr. 5 | 138 | 27 | 109 | 1373 |
| Whiffletree-coupling | J. R. Pring | 755,541 | Mar. 22 | 4515 | 1005 | 109 | 1033 |
| Whiffletree-hook | C. E. Jones | 753,708 | Mar. 1 | 951 | 216 | 109 | 205 |
| Whiffletree-hook | C. E. Jones | 755,892 | Mar. 29 | 5215 | 1153 | 109 | 1207 |
| Whiffletree-hook | E. B. Wellies | 755,970 | Mar. 29 | 5391 | 1190 | 109 | 1246 |
| Whip. Drover's | H. Brown | 757,060 | Apr. 12 | 1750 | 380 | 109 | 1731 |
| Whip holder and stretcher | J. A. Weaver | 755,555 | Mar. 22 | 4540 | 1011 | 109 | 1039 |
| Whisky, gin, &c. Manufacture of | J. M. Sanguinetti | 757,352 | Apr. 12 | 2279 | ..... | 109 | 1844 |
| Whistle | F. L. Johnson | 754,314 | Mar. 8 | 2158 | 477 | 109 | 487 |
| Wick. Lamp- | A. H. Nelson | 753,299 | Mar. 1 | 158 | 36 | 109 | 37 |
| Wind-engine | C. F. Blackketter | 755,101 | Mar. 22 | 3718 | 816 | 109 | 865 |
| Wind-motor | D. Phronimos | 756,278 | Apr. 5 | 170 | 34 | 109 | 1380 |
| Wind-motor | J. J. Williams | 757,800 | Apr. 19 | 3187 | 692; 693 | 109 | 2058 |
| Windmill | C. A. Wright | 753,460 | Mar. 1 | 447 | 105; 106 | 109 | 98 |
| Windmill | W. A. Butler | 753,541 | Mar. 1 | 625 | 142 | 109 | 137 |
| Windmill | C. H. Mikkelsen | 754,477 | Mar. 15 | 2552 | 565 | 109 | 594 |
| Windmill | B. S. Hyatt | 755,497 | Mar. 22 | 4438 | 986 | 109 | 1016 |
| Windmill | J. D. Johnson | 756,372 | Apr. 5 | 373 | 76 | 109 | 1423 |
| Windmill | A. Fornander | 756,616 | Apr. 5 | 807 | 174 | 109 | 1513 |
| Windmill | C. J. Jones | 757,044 | Apr. 12 | 1671 | 362 | 109 | 1714 |
| Windmill | W. P. Brett | 758,296 | Apr. 26 | 4168 | 899; 900 | 109 | 2289 |
| Windmill-pitman and means for its automatic lubrication. | W. P. Brett | 756,775 | Apr. 5 | 1109 | 243 | 109 | 1580 |
| Winder. Bobbin- | C. Schwartz | 755,306 | Mar. 22 | 4275 | 944 | 109 | 983 |
| Winding-machine stop-motion | T. Cooper | 756,001 | Mar. 29 | 5452 | 1208 | 109 | 1260 |
| Winding machine. Yarn- | L. O. Goodwin | 756,014 | Mar. 29 | 5472 | 1207; 1208 | 109 | 1264 |
| Winding or hoisting drum | H. F. James | 757,622 | Apr. 19 | 2851 | 621 | 109 | 1964 |
| Windlass | G. W. Menefee | 757,668 | Apr. 19 | 2982 | 637 | 109 | 2001 |
| Window | G. Kabureck | 753,579 | Mar. 1 | 701 | 157 | 109 | 154 |
| Window | H. E. Brown | 753,665 | Mar. 1 | 859 | 195 | 109 | 186 |
| Window | O. E. Cluss | 754,425 | Mar. 15 | 2430 | 531 | 109 | 567 |
| Window | H. E. Essig | 756,006 | Mar. 29 | 5461 | 1205 | 109 | 1262 |
| Window | J. Frye | 757,805 | Apr. 19 | 3308 | 716 | 109 | 2062 |
| Window-adjusting device | A. F. Enquist | 753,479 | Mar. 1 | 479 | 112 | 109 | 105 |
| Window. Antiheat-radiating | F. Voigtmann and S. H. Pomeroy | 753,765 | Mar. 1 | 1052 | 240; 241 | 109 | 226 |
| Window attachment | L. K. Böhm | 758,348 | Apr. 26 | 4281 | 980 | 109 | 2315 |
| Window-cleaner | J. C. G. Fritz | 756,229 | Apr. 5 | 74 | 16 | 109 | 1358 |
| Window-frame | T. F. Ware | 755,419 | Mar. 22 | 4307 | 968 | 109 | 989 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Window frame and sash | A. K. Lovell | 753,898 | Mar. 8 | 1355 | 305; 306 | 109 | 312 |
| Window-frame. Metal | H. C. Smith | 755,585 | Mar. 22 | 4591 | 1021; 1022 | 109 | 1050 |
| Window frame or sash | H. Romünder | 753,315 | Mar. 1 | 181 | 41 | 109 | 42 |
| Window-screen | W. R. Cochran, Jr | 753,238 | Mar. 1 | 46 | 12 | 109 | 13 |
| Window-screen | W. A. Cassidy | 753,544 | Mar. 1 | 630 | 143 | 109 | 138 |
| Window-screen | L. Goetz | 755,294 | Mar. 22 | 4064 | 901 | 109 | 937 |
| Window-screen | M. G. Van Auken and J. J. Miller | 756,085 | Mar. 29 | 5602 | 1237 | 109 | 1291 |
| Window-screen | G. H. Stout and L. A. Turner | 757,688 | Apr. 19 | 2971 | 646 | 109 | 2010 |
| Window-screen. Adjustable | M. Kolf | 755,676 | Mar. 29 | 4784 | 1064; 1065 | 109 | 1108 |
| Window-screen. Extension | G. W. Rockwell | 758,021 | Apr. 19 | 3612 | 781 | 109 | 2151 |
| Window. Sheet-metal revolving | J. T. Leonard | 755,232 | Mar. 22 | 3952 | 875 | 109 | 913 |
| Window support and lock | G. E. Knowlton | 755,780 | Mar. 29 | 5018 | 1116 | 109 | 1160 |
| Window-ventilator | H. C. Kidwell | 757,201 | Apr. 12 | 1974 | 430 | 109 | 1781 |
| Window-weight | J. W. Bryant | 755,107 | Mar. 22 | 3727 | 818 | 109 | 868 |
| Windrower | H. M., L. A., and J. A. Mueller | 756,041 | Mar. 29 | 5521 | 1217 | 109 | 1273 |
| Wire-clamping device | G. L. Hoxie | 755,006 | Mar. 22 | 3559 | 780 | 109 | 829 |
| Wire-drawing apparatus | W. D. De Lamarter and J. A. Macdonald. | 756,008 | Mar. 29 | 5456 | 1204 | 109 | 1261 |
| Wire-drawing machine | D. J. McMahon | 757,671 | Apr. 19 | 2988 | 638 | 109 | 2008 |
| Wire fabric | T. Sutherland | 757,244 | Apr. 12 | 2050 | 447 | 109 | 1796 |
| Wire fabric | L. M. Brock | 757,254 | Apr. 12 | 2066 | 451 | 109 | 1800 |
| Wire-fabric loom | J. W. Snedeker | 755,719 | Mar. 29 | 4878 | 1084; 1085; 1086; 1087; 1088 | 109 | 1131 |
| Wire fabrics. Loom for weaving | F. Johnson | 757,121 | Apr. 12 | 1813 | 397; 398 | 109 | 1743 |
| Wire-joint | J. F. Leslie | 756,251 | Apr. 5 | 114 | 24 | 109 | 1366 |
| Wire-reeling apparatus | C. L. Packer | 754,006 | Mar. 8 | 1574 | 351 | 109 | 363 |
| Wire-reeling machine | T. Nighbert | 754,336 | Mar. 8 | 2186 | 486 | 109 | 495 |
| Wire-rod-cleaning machine | J. S. Ferguson | 754,209 | Mar. 8 | 1957 | 436 | 109 | 448 |
| Wire-rope clamp | L. J. Couch | 756,158 | Mar. 29 | 5724 | 1264 | 109 | 1317 |
| Wire-rope cutter | M. T. Wolf | 756,760 | Apr. 5 | 1083 | 240 | 109 | 1574 |
| Wire-stretcher | J. W. Montgomery | 756,389 | Apr. 5 | 401 | 82 | 109 | 1429 |
| Wire-stretcher | P. O. Daughters | 757,893 | Apr. 19 | 3361 | 726 | 109 | 2095 |
| Wire twister and splicer | L. W. Simpson | 756,148 | Mar. 29 | 5711 | 1260 | 109 | 1314 |
| Wire-weaving-machine coiler | W. Bills | 754,118 | Mar. 8 | 1791 | 399 | 109 | 412 |
| Wires. Combined guide and guard for overfeed | C. M. Zellers | 754,529 | Mar. 15 | 2654 | 576 | 109 | 616 |
| Wires. Dies for joining intersecting | O. S. Sturtevant | 755,961 | Mar. 29 | 5382 | 1188 | 109 | 1244 |
| Wires. Dies for tying intersecting | O. S. Sturtevant | 755,185 | Mar. 22 | 3869 | 854 | 109 | 896 |
| Wireless transmission. Peaked-wave | D. M. Moore | 755,305 | Mar. 22 | 4063 | 904 | 109 | 940 |
| Wolf-trap | J. W. Sprague | 754,511 | Mar. 15 | 2625 | 569 | 109 | 610 |
| Wood and preparing same. Preserved | I. P. Libme | 756,173 | Mar. 29 | 5749 | 1270 | 109 | 1322 |
| Wood and the product thereof. Preparing | M. Lichtenberger | 754,782 | Mar. 15 | 3142 | ..... | 109 | 721 |
| Wood and vulcanizing same. Vulcanized | W. Powell | 755,240 | Mar. 22 | 3970 | ..... | 109 | 917 |
| Wood-cutting machine | A. A. Bartlett | 758,042 | Apr. 26 | 3665 | 793 | 109 | 2182 |
| Wool burring and picking machine | G. Prouvot | 754,236 | Mar. 8 | 2013 | 447; 448 | 109 | 460 |
| Work-bench clamp | J. Peno | 756,187 | Mar. 29 | 5696 | 1257 | 109 | 1311 |
| Work-holding device | C. F. Skoog | 756,723 | Apr. 5 | 1017 | 225 | 109 | 1559 |
| Woven fabric | C. H. L. Hanson | 753,702 | Mar. 1 | 937 | 212 | 109 | 202 |
| Woven fabric | W. M. Stevenson | 756,150 | Mar. 29 | 5712 | 1261 | 109 | 1315 |
| Wrapping machine. Package | D. F. Bremner, Jr | 753,661 | Mar. 1 | 847 | 190; 191; 192; 193 | 109 | 184 |
| Wrench: *See* Adjustable wrench. Cylinder-tooth wrench. Jar-wrench. Monkey-wrench. Nut-wrench. Pipe-wrench. Pipe and nut wrench. Ratchet-wrench. Wheel-wrench. | | | | | | | |
| Wrench | A. De Vilbiss, Jr | 753,374 | Mar. 1 | 282 | 64 | 109 | 64 |
| Wrench | F. D. Harris | 753,708 | Mar. 1 | 989 | 213 | 109 | 203 |
| Wrench | A. Magnuson | 753,720 | Mar. 1 | 975 | 220 | 109 | 210 |
| Wrench | A. L. Eliel and J. La Burt | 753,862 | Mar. 8 | 1299 | 292 | 109 | 300 |
| Wrench | G. E. Fox | 753,869 | Mar. 8 | 1310 | 295 | 109 | 303 |
| Wrench | C. H. W. Relyea | 753,915 | Mar. 8 | 1405 | 317 | 109 | 324 |
| Wrench | J. M. Reams | 754,012 | Mar. 8 | 1587 | 354 | 109 | 366 |
| Wrench | C. E. Hawkins and F. Cary | 754,063 | Mar. 8 | 1680 | 373 | 109 | 387 |
| Wrench | W. R. Johnson | 754,069 | Mar. 8 | 1688 | 375 | 109 | 388 |
| Wrench | J. R. Harrison | 754,137 | Mar. 8 | 1822 | 406 | 109 | 418 |
| Wrench | L. Trudeau | 754,520 | Mar. 15 | 2538 | 573 | 109 | 612 |
| Wrench | L. Ash and H. B. Stewart | 754,633 | Mar. 15 | 2643 | 621 | 109 | 654 |
| Wrench | J. A. Abolt | 754,831 | Mar. 15 | 3228 | 708 | 109 | 740 |
| Wrench | G. Moore | 755,518 | Mar. 22 | 4477 | 995 | 109 | 1025 |
| Wrench | J. T. Morris | 755,520 | Mar. 22 | 4480 | 995 | 109 | 1026 |
| Wrench | A. Granger and W. Hilzinger | 755,650 | Mar. 29 | 4740 | 1054 | 109 | 1098 |
| Wrench | C. Heron | 756,196 | Mar. 29 | 5783 | 1277 | 109 | 1329 |
| Wrench | A. H. Rankin and C. Abrams | 756,407 | Apr. 5 | 436 | 90 | 109 | 1436 |
| Wrench | A. B. Green | 756,495 | Apr. 5 | 605 | 130 | 109 | 1469 |
| Wrench | T. H. Barry | 756,565 | Apr. 5 | 719 | 155 | 109 | 1495 |
| Wrench | E. C. Miller | 756,679 | Apr. 5 | 928 | 203 | 109 | 1541 |
| Wrench | J. Kuhn | 757,207 | Apr. 12 | 1983 | 432 | 109 | 1783 |
| Wrench | G. A. Andrus | 757,644 | Apr. 19 | 2988 | 629 | 109 | 1992 |
| Wrench | E. Howell | 757,747 | Apr. 19 | 3086 | 672 | 109 | 2084 |
| Wrench | J. N. Noyer | 757,764 | Apr. 19 | 3113 | 678; 679 | 109 | 2040 |
| Wrench | W. H. W. Beecher | 758,085 | Apr. 19 | 3644 | 788 | 109 | 2157 |
| Wrench | C. G. Molin | 758,266 | Apr. 26 | 4100 | 887 | 109 | 2275 |
| Wrench | C. F. Beach | 758,499 | Apr. 26 | 4574 | 982 | 109 | 2383 |
| Wrench | W. E. Snediker | 758,568 | Apr. 26 | 4710 | 1016 | 109 | 2412 |

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| | | | | Spec. | Dr'g. | Vol. | Page. |
| Wrench | J. S. Barclay | 758,580 | Apr. 26 | 4728 | 1019 | 109 | 2416 |
| Wrench and clamp combined | A. L. Nicholson | 755,578 | Mar. 22 | 4588 | 1019 | 109 | 1048 |
| Wrench attachment | T. O'Shaughnessy | 755,994 | Mar. 29 | 5305 | 1171 | 109 | 1227 |
| Wrest-plate | E. Hilger | 754,860 | Mar. 15 | 3309 | 721 | 109 | 758 |
| Wringer: *See* Mop-wringer. | | | | | | | |
| Writing-machine | A. Wayne | 755,420 | Mar. 22 | 4308 | 968 | 109 | 900 |
| Writing-machine carriage-spacing attachment | L. Maybaum | 754,155 | Mar. 8 | 1847 | 419<br>413 | 109 | 424 |
| Xanthin derivatives. Making | F. Ach | 757,329 | Apr. 12 | 2225 | ..... | 109 | 1833 |
| Xanthin derivatives. Preparing | F. Ach | 757,328 | Apr. 12 | 2220 | ..... | 109 | 1834 |
| Yardstick. Computing- | W. S. Cogburn | 755,746 | Mar. 29 | 4967 | 1099 | 109 | 1144 |
| Yarn-guide-holding mechanism | J. E. Prest | 753,625 | Mar. 1 | 772 | 172 | 109 | 167 |
| Yarn-skein-delivering apparatus | W. Matheslus | 754,584 | Mar. 15 | 2757 | 600<br>601 | 109 | 635 |
| Yarn-treating apparatus | H. Lindenberg | 754,784 | Mar. 15 | 3145 | 685 | 109 | 721 |
| Yoke center. Neck- | J. E. Beebe | 757,504 | Apr. 19 | 2780 | 608 | 109 | 1968 |
| Yoke. Neck- | C. Maples | 755,512 | Mar. 22 | 4462 | 991 | 109 | 1021 |
| Zinc. Obtaining | E. H. Hopkins | 754,141 | Mar. 8 | 1827 | 407 | 109 | 420 |
| Zinc. Portable machine capable of bending or molding sheet- | A. H. Bit | 753,844 | Mar. 8 | 1366 | 284 | 109 | 298 |
| Zinc-producing furnace | P. Schmieder | 757,050 | Apr. 12 | 1600 | 367 | 109 | 1718 |
| Zither | R. Gumz | 755,572 | Mar. 22 | 4572 | 1017 | 109 | 1046 |

# ALPHABETICAL LIST OF DESIGNS.

| Design. | Name. | No. | Date. | Official Gazette. | |
|---|---|---|---|---|---|
| | | | | Volume. | Page. |
| Badge | F. C. Fane | 36,890 | Apr. 26 | 109 | 2431 |
| Badge | N. M. Kirshner | 36,887 | Apr. 26 | 109 | 2431 |
| Badge or similar article | A. Schickerling | 36,888 | Apr. 26 | 109 | 2431 |
| Bath-tub | C. Weelans | 36,881 | Apr. 91 | 109 | 2158 |
| Book-cover | W. M. Rhoads | 36,850 | Mar. 15 | 109 | 797 |
| Braid | H. P. von Nostitz | 36,847 | Mar. 8 | 109 | 541 |
| Braid | J. Levi | 36,868 | Mar. 29 | 109 | 1330 |
| Candlestick | A. Steffin | 36,875 | Apr. 12 | 109 | 1877 |
| Card. Playing- | S. N. Barker | 36,844 | Mar. 8 | 109 | 541 |
| Card. Playing- | S. N. Barker | 36,845 | Mar. 8 | 109 | 541 |
| Cash-register cabinet or casing | E. Ringold | 36,881 | Mar. 1 | 109 | 267 |
| Chain. Watch- | J. Hama | 36,825 | Mar. 1 | 109 | 266 |
| Chair | D. W. Kendall | 36,870 | Apr. 5 | 109 | 1598 |
| Clock-case | L. V. Aronson | 36,856 | Mar. 22 | 109 | 1061 |
| Clock-case | L. V. Aronson | 36,864 | Apr. 5 | 109 | 1596 |
| Coffee-pot | A. Steffin | 36,877 | Apr. 12 | 109 | 1878 |
| Collar or similar article | A. Schweriner | 36,884 | Apr. 19 | 109 | 2158 |
| Cruet | W. B. Fenn | 36,876 | Apr. 12 | 109 | 1877 |
| Cup or similar article | C. J. Ahrenfeldt | 36,837 | Mar. 8 | 109 | 539 |
| Dental-tool handle | C. H. Seeger | 36,878 | Apr. 12 | 109 | 1878 |
| Dish | J. Maddock | 36,830 | Mar. 1 | 109 | 267 |
| Dish mounting. Metal- | S. H. Leavenworth | 36,859 | Mar. 29 | 109 | 1330 |
| Fishbone-tongs | J. Hawkins | 36,857 | Mar. 22 | 109 | 1061 |
| Gas-light globe | W. S. McLewee | 36,869 | Apr. 5 | 109 | 1598 |
| Glass dish. Cut- | T. Singleton | 36,866 | Apr. 5 | 109 | 1597 |
| Glass globe | M. W. Gleason | 36,868 | Apr. 5 | 109 | 1597 |
| Glass shade | M. W. Gleason | 36,867 | Apr. 5 | 109 | 1597 |
| Glass vessel. Cut- | W. C. Anderson | 36,836 | Mar. 8 | 109 | 539 |
| Glass vessel. Cut- | W. C. Anderson | 36,865 | Apr. 5 | 109 | 1597 |
| Grave marker or head-piece | W. Brooks | 36,862 | Mar. 29 | 109 | 1330 |
| Hammock-body | I. E. Palmer | 36,885 | Apr. 19 | 109 | 2158 |
| Jewel-casket or similar article | E. L. Brainard | 36,833 | Mar. 8 | 109 | 539 |
| Lamp base. Gas- | A. H. Humphrey | 36,860 | Mar. 29 | 109 | 1330 |
| Lamp. Gas- | A. H. Humphrey | 36,861 | Mar. 29 | 109 | 1330 |
| Lavatory | C. Weelans | 36,882 | Apr. 19 | 109 | 2158 |
| Mantel | F. A. Broadbent | 36,851 | Mar. 15 | 109 | 797 |
| Mirrors or similar articles. Back for hand- | Z. Freund | 36,871 | Apr. 12 | 109 | 1876 |
| Monument | E. M. Wolff | 36,832 | Mar. 1 | 109 | 268 |
| Mug | L. W. Rice | 36,853 | Mar. 15 | 109 | 798 |
| Paper-knife | L. W. Rice | 36,854 | Mar. 15 | 109 | 798 |
| Paper-weight | L. V. Aronson | 36,872 | Apr. 12 | 109 | 1877 |
| Paper-weight | L. V. Aronson | 36,873 | Apr. 12 | 109 | 1877 |
| Paper-weight | L. V. Aronson | 36,874 | Apr. 12 | 109 | 1877 |
| Picture-frame mat | C. A. Hartman | 36,846 | Mar. 8 | 109 | 541 |
| Pin head. Hat- | W. Turton | 36,848 | Mar. 15 | 109 | 797 |
| Pin head. Hat- | W. Turton | 36,855 | Mar. 22 | 109 | 1061 |
| Plate or similar article | C. J. Ahrenfeldt | 36,839 | Mar. 8 | 109 | 540 |
| Plate or similar article | C. J. Ahrenfeldt | 36,840 | Mar. 8 | 109 | 540 |
| Plate or similar article | C. J. Ahrenfeldt | 36,841 | Mar. 8 | 109 | 540 |
| Plate or similar article | C. J. Ahrenfeldt | 36,842 | Mar. 8 | 109 | 540 |
| Plate. Souvenir- | M. Tonnemann | 36,843 | Mar. 8 | 109 | 540 |
| Range or stove. Cooking | C. M. Liphart | 36,894 | Apr. 26 | 109 | 2432 |
| Spoons, forks, or similar articles. Handle for | E. Crees and C. S. Court | 36,826 | Mar. 1 | 109 | 267 |
| Spoons, forks, or similar articles. Handle for | E. Crees and C. S. Court | 36,827 | Mar. 1 | 109 | 267 |
| Spoons, forks, or similar articles. Handle for | E. Crees and C. S. Court | 36,828 | Mar. 1 | 109 | 267 |
| Spoons, forks, or similar articles. Handle for | J. Ciulee | 36,834 | Mar. 8 | 109 | 539 |
| Spoons, forks, or similar articles. Handle for | J. E. Straker, Jr | 36,852 | Mar. 15 | 109 | 798 |
| Spoons, forks, or similar articles. Handle for | G. P. Tilton | 36,879 | Apr. 19 | 109 | 2157 |
| Spoons, forks, or similar articles. Handle for | W. C. Codman | 36,889 | Apr. 26 | 109 | 2431 |
| Spoons, forks, or similar articles. Handle for | G. P. Ittig | 36,890 | Apr. 26 | 109 | 2432 |
| Spoons, forks, or similar articles. Handle for | G. P. Ittig | 36,891 | Apr. 26 | 109 | 2432 |
| Spoons, forks, or similar articles. Handle for | J. Rothlisberger | 36,892 | Apr. 26 | 109 | 2432 |
| Spoons, forks, or similar articles. Handle for | J. Rothlisberger | 36,893 | Apr. 26 | 109 | 2432 |
| Spoons or similar articles. Handle for | S. J. Large | 36,835 | Mar. 8 | 109 | 539 |
| Statuette | L. V Aronson | 36,858 | Mar. 29 | 109 | 1329 |
| Stock | F. Sollee | 36,896 | Apr. 26 | 109 | 2432 |
| Stove | P. H. Ficken | 36,883 | Apr. 19 | 109 | 2158 |
| Tableware. Metallic border for | A. Steffin | 36,849 | Mar. 15 | 109 | 797 |
| Tableware. Open-work border for metallic | A. Steffin | 36,829 | Mar. 1 | 109 | 267 |
| Teapot or similar article | C. J. Ahrenfeldt | 36,838 | Mar. 8 | 109 | 540 |
| Toy bank | A. C. Williams | 36,880 | Apr. 19 | 109 | 2157 |
| Trimming for ladies' underwear | T. Kerwin and J. McGinley | 36,895 | Apr. 26 | 109 | 2432 |

# ALPHABETICAL LIST OF TRADE-MARKS.

| Title. | Name. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|
| Absinthe | O. L. Pernod | 42,402 | Apr. 19 | 109 | 2160 |
| Ale. Hop- | Wheatley & Bates | 42,299 | Mar. 29 | 109 | 1332 |
| Almanacs | Gruber Almanack Co | 42,192 | Mar. 8 | 109 | 542 |
| Almanacs | Gruber Almanack Co | 42,193 | Mar. 8 | 109 | 542 |
| Anesthetic for the painless extraction of teeth. Local | H. L. Wheeler | 42,240 | Mar. 15 | 109 | 800 |
| Antiseptic and disinfecting preparations | Jeyes' Sanitary Compounds Company. | 42,485 | Apr. 26 | 109 | 2435 |
| Antiseptic emollient | Schaefer Chemical Company | 42,249 | Mar. 15 | 109 | 801 |
| Asphalts for certain named purposes. Refined | Barber Asphalt Paving Company | 42,307 | Mar. 29 | 109 | 1332 |
| Asthma. Compound for the cure of | Williams and Cole | 42,445 | Apr. 19 | 109 | 2164 |
| Axle-grease | W. N. Ley | 42,412 | Apr. 19 | 109 | 2161 |
| Baking-powder and soda | McCord-Stewart Company | 42,381 | Apr. 12 | 109 | 1882 |
| Bath-room and lavatory receptacles. Certain named | J. P. Eustis Manufacturing Co | 42,224 | Mar. 8 | 109 | 545 |
| Baths. Chemical preparations for sulfur- | Chemische Fabrik Vechelde A.-G. | 42,422 | Apr. 19 | 109 | 2162 |
| Bearings for machines. Journal and shaft | D. E. Kempster | 42,464 | Apr. 19 | 109 | 2166 |
| Bearings for sheaves | D. E. Kempster | 42,463 | Apr. 19 | 109 | 2166 |
| Beds. Spring- | National Wire Mattress Co | 42,342 | Apr. 5 | 109 | 1602 |
| Beef. Predigested | H. K. Mulford Co | 42,303 | Mar. 29 | 109 | 1332 |
| Beer. Lager- | Cumberland Brewing Co. of Allegany County. | 42,441 | Apr. 19 | 109 | 2164 |
| Belting | Jewell Belting Co | 42,163 | Mar. 1 | 109 | 270 |
| Belting. Leather | Graton and Knight Manufacturing Company. | 42,347 | Apr. 5 | 109 | 1602 |
| Beverage. Certain named | W. H. Hutchinson & Son | 42,233 | Mar. 15 | 109 | 800 |
| Blankets and like protective coverings | Smith, Hogg & Co | 42,359 | Apr. 12 | 109 | 1880 |
| Books made of textile fabric | H. S. Dean | 42,227 | Mar. 15 | 109 | 799 |
| Books made of textile fabric | H. S. Dean | 42,228 | Mar. 15 | 109 | 799 |
| Boots and shoes and leather for same. Leather | F. G. Jones | 42,366 | Apr. 12 | 109 | 1880 |
| Boots and shoes and leather for same. Leather | F. G. Jones | 42,367 | Apr. 12 | 109 | 1880 |
| Boots and shoes. Leather | Urfit Company | 42,205 | Mar. 8 | 109 | 543 |
| Boots and shoes. Leather | C. E. Green & Co | 42,264 | Mar. 22 | 109 | 1062 |
| Boots and shoes. Leather | C. E. Green & Co | 42,265 | Mar. 22 | 109 | 1062 |
| Boots and shoes. Leather | Alter & McCaffrey Co | 42,288 | Mar. 29 | 109 | 1331 |
| Boots and shoes. Leather | M. M. Baker | 42,364 | Apr. 12 | 109 | 1880 |
| Boots and shoes. Leather | P. W. Minor & Son | 42,395 | Apr. 19 | 109 | 2159 |
| Boots and shoes. Leather | George E. Keith Company | 42,436 | Apr. 19 | 109 | 2163 |
| Boots and shoes. Leather | Middlesex Shoe Co | 42,468 | Apr. 26 | 109 | 2433 |
| Boots and shoes. Leather | Moore-Shafer Shoe Manufacturing Co. | 42,469 | Apr. 26 | 109 | 2433 |
| Bottle-stoppers | A. Blumer | 42,223 | Mar. 8 | 109 | 545 |
| Bread | J. E. Blackburn | 42,408 | Apr. 19 | 109 | 2161 |
| Bread, biscuits, and cakes made from bananas | W. A. Jones | 42,409 | Apr. 19 | 109 | 2161 |
| Butter | P. H. Hofmann & Company | 42,349 | Apr. 5 | 109 | 1602 |
| Canned and bottled fruits and vegetables | S. Hamill Company | 42,180 | Mar. 1 | 109 | 271 |
| Canned vegetables and fruits | Acme Tea Co | 42,301 | Mar. 29 | 109 | 1332 |
| Canned vegetables and fruits | O. Shepard & Co | 42,317 | Apr. 5 | 109 | 1599 |
| Cards. Playing- | E. Puigdengolas | 42,292 | Mar. 29 | 109 | 1331 |
| Cards. Playing- | E. Puigdengolas | 42,293 | Mar. 29 | 109 | 1331 |
| Cards. Playing- | H. E. Gavitt | 42,353 | Apr. 12 | 109 | 1879 |
| Carpet-sweepers | National Sweeper Company | 42,253 | Mar. 15 | 109 | 802 |
| Carpet-sweepers | National Sweeper Company | 42,254 | Mar. 15 | 109 | 802 |
| Carriage-bolts | Russell, Burdsall & Ward Bolt & Nut Co. | 42,281 | Mar. 22 | 109 | 1064 |
| Cement. Portland | Virginia Portland Cement Co | 42,341 | Apr. 5 | 109 | 1602 |
| Cement. Portland | Empire Portland Cement Co | 42,453 | Apr. 19 | 109 | 2165 |
| Chemical. Certain named | Chemisch-Technisches und Hygienisches Institut, Dr. Popp & Dr. Becker. | 42,486 | Apr. 26 | 109 | 2435 |
| Chemical substances. Certain named | Knoll & Co | 42,487 | Apr. 26 | 109 | 2435 |
| Chemicals. Certain named | C. Jäger | 42,175 | Mar. 1 | 109 | 271 |
| Chocolates | Société Anonyme des Chocolats au Lait F. L. Cailler. | 42,179 | Mar. 1 | 109 | 279 |
| Cigars | A. P. Poladura | 42,384 | Apr. 12 | 109 | 1882 |
| Cigars | E. A. Kline & Co | 42,488 | Apr. 26 | 109 | 2435 |
| Cigars | E. A. Kline & Co | 42,489 | Apr. 26 | 109 | 2435 |
| Citron. Shredded | C. J. Claussen | 42,383 | Apr. 12 | 109 | 1882 |
| Clothing. Certain named | F. B. Q. Clothing Co | 42,262 | Mar. 22 | 109 | 1062 |
| Clothing. Certain named ready-made | F. B. Q. Clothing Co | 42,202 | Mar. 8 | 109 | 543 |
| Coffee | L. H. Costikyan | 42,206 | Mar. 8 | 109 | 543 |
| Coffee | G. Amsinck & Co | 42,325 | Apr. 5 | 109 | 1600 |
| Coffee | Direct Coffee Company | 42,403 | Apr. 19 | 109 | 2160 |
| Coffee | Direct Coffee Company | 42,492 | Apr. 26 | 109 | 2435 |
| Coffee and spice mills | Landers, Frary and Clark | 42,284 | Mar. 22 | 109 | 1064 |
| Colors for printing and painting. Prepared | L. D. Gardner | 42,339 | Apr. 5 | 109 | 1601 |
| Compound for prevention and cure of sweating of the axilla | N. D. Richards | 42,173 | Mar. 1 | 109 | 271 |
| Confectionery | Belle Mead Sweetsmakers | 42,490 | Apr. 26 | 109 | 2435 |
| Confectionery | D. Arnould | 42,491 | Apr. 26 | 109 | 2435 |
| Cooking utensils made of aluminium and aluminium alloys | Aluminum Cooking Utensil Company. | 42,501 | Apr. 26 | 109 | 2436 |
| Corset-bones | J. Janowitz | 42,480 | Apr. 19 | 109 | 2163 |

*Alphabetical list of trade-marks for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Corsets | J. A. Houston | 42,362 | Apr. 12 | 109 | 1880 |
| Corsets | Birdsey & Somers | 42,392 | Apr. 19 | 109 | 2150 |
| Costumes. Theatrical | L. D. Gardner | 42,465 | Apr. 26 | 109 | 2433 |
| Cotton and wool goods and linings | Bradford Dyers' Association | 42,360 | Apr. 12 | 109 | 1880 |
| Cotton piece goods | G. Willis & Co | 42,161 | Mar. 1 | 109 | [illegible] |
| Cotton piece goods | G. Willis & Co | 42,195 | Mar. 8 | 109 | 542 |
| Cotton piece goods | G. Willis & Co | 42,230 | Mar. 15 | 109 | 799 |
| Cotton piece goods | G. Willis & Co | 42,231 | Mar. 15 | 109 | 799 |
| Cotton piece goods | G. Willis & Co | 42,314 | Apr. 5 | 109 | 1599 |
| Cream. Toilet | E. M. Kane | 42,478 | Apr. 26 | 109 | 2434 |
| Cuff-holders | H. C. Frank | 42,426 | Apr. 19 | 109 | 2162 |
| Dandruff cure and hair-restorer | J. O. Whitener | 42,267 | Mar. 22 | 109 | 1062 |
| Darning and crochet cotton | Clark Mile-End Spool Cotton Co | 42,196 | Mar. 8 | 109 | 542 |
| Dentifrices | F. G. Plummer | 42,269 | Mar. 22 | 109 | 1063 |
| Disinfectant | C. Reinschild | 42,250 | Mar. 15 | 109 | 801 |
| Disinfectants and disease preventives | Immunene Mfg. Co | 42,163 | Mar. 1 | 109 | 270 |
| Disinfectants, germicides, and deodorizers | R. W. Carle | 42,164 | Mar. 1 | 109 | 270 |
| Dress goods. Certain named | Joy, Langdon & Co | 42,431 | Apr. 19 | 109 | 2163 |
| Dress-waists and suits. Ladies' | Frank Winch Company | 42,466 | Apr. 26 | 109 | 2433 |
| Extracts and essences | Iowa Medicine Co | 42,177 | Mar. 1 | 109 | 271 |
| Fabrics. Certain named woven | Hodges Fiber Carpet Co | 42,393 | Apr. 19 | 109 | 2159 |
| Fabrics. Cotton and partly-cotton | Smith, Hogg & Co | 42,311 | Apr. 5 | 109 | 1599 |
| Fiber composition. Certain named articles of | J. M. Grasser | 42,257 | Mar. 15 | 109 | 802 |
| Files and rasps | G. & H. Barnett Company | 42,256 | Mar. 15 | 109 | 802 |
| Fish-hooks and fishing-tackle | Henry Milward & Sons | 42,458 | Apr. 19 | 109 | 2165 |
| Flax-fiber products for certain named purposes | Union Fibre Co | 42,432 | Apr. 19 | 109 | 2163 |
| Flour. Wheat- | Washburn, Crosby Company | 42,181 | Mar. 1 | 109 | 271 |
| Flour. Wheat- | Washburn, Crosby Company | 42,182 | Mar. 1 | 109 | 271 |
| Flour. Wheat- | Kansas Milling & Export Co | 42,208 | Mar. 8 | 109 | 544 |
| Flour. Wheat- | Kansas Milling & Export Co | 42,209 | Mar. 8 | 109 | 544 |
| Flour. Wheat- | Royal Milling Company | 42,405 | Apr. 19 | 109 | 2160 |
| Flour. Wheat- | Rives Milling Company | 42,498 | Apr. 26 | 109 | 2435 |
| Food for animals | Shamrock Stock Food Co | 42,437 | Apr. 19 | 109 | 2163 |
| Food for stock and poultry. Prepared and mixed | G. M. Thomas | 42,494 | Apr. 26 | 109 | 2435 |
| Food preparations. Artificial- | Chemische Fabrik von Heyden, Aktiengesellschaft. | 42,410 | Apr. 19 | 109 | 2161 |
| Foods or condition-powders. Stock- | West Coast Stock Food Co | 42,238 | Mar. 15 | 109 | 800 |
| Foundry-facings | J. S. McCormick Co | 42,185 | Mar. 1 | 109 | 272 |
| Foundry-facings | J. S. McCormick Co | 42,186 | Mar. 1 | 109 | 272 |
| Fruits. Dried | Patterson & Cross | 42,302 | Mar. 29 | 109 | 1332 |
| Fur coats, jackets, robes, and wraps | Hansen's Empire Fur Factory | 42,316 | Apr. 5 | 109 | 1599 |
| Fur garments, muffs, fur scarfs, and fur trimming | Kohn & Baer | 42,299 | Mar. 29 | 109 | 1331 |
| Furniture. Certain named | Booklovers Library | 42,253 | Mar. 15 | 109 | 802 |
| Gages. Pressure and vacuum | Standard Gauge Manufacturing Company. | 42,396 | Apr. 19 | 109 | 2159 |
| Games played with cards | Parker Bros | 42,350 | Apr. 12 | 109 | 1879 |
| Games played with cards | Parker Bros | 42,351 | Apr. 12 | 109 | 1879 |
| Games played with cards | Parker Bros | 42,352 | Apr. 12 | 109 | 1879 |
| Gelatin for use in ice-cream, &c | American Glue Company | 42,207 | Mar. 8 | 109 | 544 |
| Gloves and mittens | Boss Mfg. Co | 42,198 | Mar. 8 | 109 | 543 |
| Gloves and mittens | Boss Mfg. Co | 42,199 | Mar. 8 | 109 | 543 |
| Gloves and mittens | Boss Mfg. Co | 42,200 | Mar. 8 | 109 | 543 |
| Gloves and mittens | Boss Mfg. Co | 42,201 | Mar. 8 | 109 | 543 |
| Grape-fruit juice | California Citrus Products Co | 42,324 | Apr. 5 | 109 | 1600 |
| Hair grower and restorer | Mount and Mount | 42,372 | Apr. 12 | 109 | 1881 |
| Hair pins, combs, and ornaments. Imitation tortoise-shell | E. & J. Bass | 42,259 | Mar. 22 | 109 | 1062 |
| Hair-tonic | A. Koppelberger | 42,441 | Apr. 19 | 109 | 2164 |
| Hammers | F. W. Whitcher | 42,387 | Apr. 12 | 109 | 1882 |
| Hammocks. Woven | National Hammock Co | 42,358 | Apr. 12 | 109 | 1879 |
| Hardware. Carriage-makers' | H. D. Smith & Co | 42,398 | Apr. 19 | 109 | 2159 |
| Heaters and parts accessory thereto. Certain named auxiliary | Novelty Manufacturing Company. | 42,388 | Apr. 12 | 109 | 1882 |
| Herb tea | R. F. Shimanovsky | 42,326 | Apr. 5 | 109 | 1600 |
| Horns. Sound-magnifying | E. A. & A. G. Schoettel | 42,355 | Apr. 12 | 109 | 1875 |
| Horse-nails | Capewell Horse Nail Co | 42,190 | Mar. 1 | 109 | 272 |
| Horse-nails. Blued | Capewell Horse Nail Co | 42,191 | Mar. 1 | 109 | 272 |
| Hosiery | J. Blood & Co | 42,363 | Apr. 12 | 109 | 1880 |
| Husking devices and implements | Boss Mfg. Co | 42,225 | Mar. 8 | 109 | 546 |
| Ink | Sanford Manufacturing Company | 42,278 | Mar. 22 | 109 | 1063 |
| Insect-powders and liquid vermin-exterminators | C. E. Woodruff | 42,239 | Mar. 15 | 109 | 800 |
| Jellies and preserves. Fruit | G. L. Harting | 42,231 | Mar. 15 | 109 | 800 |
| Knife-cleaning machines. Certain named | Landers, Frary and Clark | 42,285 | Mar. 22 | 109 | 1064 |
| Knitted overshirts and sweaters | M. S. Ely | 42,467 | Apr. 26 | 109 | 2433 |
| Knitting-machine appliances. Certain named | E. Beckert | 42,283 | Mar. 22 | 109 | 1064 |
| Lace constructors. Teneriffe- | C. Sander | 42,308 | Mar. 29 | 109 | 1332 |
| Laces. Shoe- | J. Einstein | 42,435 | Apr. 19 | 109 | 2163 |
| Lard | T. M. Sinclair & Co | 42,319 | Apr. 5 | 109 | 1600 |
| Lard and fruit press and sausage-stuffer. Combined | Landers, Frary and Clark | 42,343 | Apr. 5 | 109 | 1602 |
| Lard and lard compounds | Cudahy Packing Company | 42,304 | Mar. 29 | 109 | 1332 |
| Lead. White and red | United Lead Company | 42,305 | Mar. 29 | 109 | 1332 |
| Leather goods. Polishes for | Whittemore Bro's and Co | 42,378 | Apr 12 | 109 | 1881 |
| Leather goods. Polishes for | Whittemore Bro's and Co | 42,411 | Apr. 19 | 109 | 2161 |
| Leather-polish | Whittemore Bros. and Co | 42,183 | Mar. 1 | 109 | 272 |
| Leather-polishes | Whittemore Bro's and Co | 42,495 | Apr. 26 | 109 | 2436 |
| Leather. Upper- | Victor R. F. Walker Co | 42,394 | Apr. 19 | 109 | 2159 |
| Linens and other linen fabrics. Table and household | Ireland Bros | 42,313 | Apr. 5 | 109 | 1599 |
| Liniment | Hume & Freeman | 42,337 | Apr. 5 | 109 | 1601 |
| Liniment for external application | L. H. Wristen | 42,336 | Apr. 5 | 109 | 1601 |
| Liniment for external use | M. Spiegel | 42,370 | Apr. 12 | 109 | 1881 |
| Linings | Burton Bros. & Co | 42,159 | Mar. 1 | 109 | 269 |
| Linings | Burton Bros. & Co | 42,160 | Mar. 1 | 109 | 269 |
| Linings | Burton Bros. & Co | 42,290 | Mar. 29 | 109 | 1331 |
| Logging-tools. Certain named | Champion Tool & Handle Works | 42,517 | Apr. 26 | 109 | 2438 |
| Lotion for cure of certain named diseases | Brown & Allen | 42,172 | Mar. 1 | 109 | 270 |
| Lotions, creams, cosmetics, and pastes | A. F. Wood | 42,297 | Mar. 29 | 109 | 1331 |



*Alphabetical list of trade-marks for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Lozenges or throat-tablets. Bronchial | L. J. Gerson | 42,167 | Mar. 1 | 109 | 270 |
| Lubricants soluble in water | Fuller & Jones | 42,184 | Mar. 1 | 109 | 272 |
| Lubricating compounds. Certain named | O. F. Zurn Company | 42,496 | Apr. 26 | 109 | 2436 |
| Lubricating compounds. Certain named | O. F. Zurn Company | 42,497 | Apr. 26 | 109 | 2436 |
| Machines for certain named purposes | United Shoe Machinery Company | 42,286 | Mar. 22 | 109 | 1064 |
| Malt liquors. Certain named | Barclay Perkins & Co | 42,439 | Apr. 19 | 109 | 2163 |
| Malt liquors. Certain named | Barclay Perkins & Co | 42,440 | Apr. 19 | 109 | 2164 |
| Matches. Friction- | Ohio Match Company | 42,232 | Mar. 15 | 109 | 799 |
| Meats. Certain named | T. M. Sinclair & Co | 42,318 | Apr. 5 | 109 | 1599 |
| Medical compound for correction of foot troubles | Slack & Griggs | 42,216 | Mar. 8 | 109 | 545 |
| Medical pastes and salves | Wollwäscherei u. Kämmerei Döhren bei Hannover. | 42,421 | Apr. 19 | 109 | 2162 |
| Medical preparation for the treatment of certain named diseases. Liquid | Asmo Remedy Co | 42,417 | Apr. 19 | 109 | 2162 |
| Medicated adhesive plasters | G. Mortimer | 42,218 | Mar. 8 | 109 | 545 |
| Medicated salt | Bourland & Stevens Bros | 42,413 | Apr. 19 | 109 | 2161 |
| Medicated salt | Bourland & Stevens Bros | 42,414 | Apr. 19 | 109 | 2161 |
| Medicinal and food compounds. Certain named | C. F. Boehringer & Soehne | 42,452 | Apr. 19 | 109 | 2165 |
| Medicinal preparations. Certain named | L. D. Gardner | 42,450 | Apr. 19 | 109 | 2165 |
| Medicinal tablets for certain named diseases | A. Rogers | 42,266 | Mar. 22 | 109 | 1062 |
| Medicinal tonic | L. Dreyfus | 42,298 | Mar. 29 | 109 | 1331 |
| Medicinally-prepared tablets for certain named diseases | G. H. Fuller | 42,334 | Apr. 5 | 109 | 1601 |
| Medicine. Certain named | L. W. Leithhead Drug Co | 42,447 | Apr. 19 | 109 | 2164 |
| Medicine for certain named diseases. Liquid | S. R. Burford | 42,168 | Mar. 1 | 109 | 270 |
| Medicine for cure of certain named diseases | Alpoli Company | 42,248 | Mar. 15 | 109 | 801 |
| Medicine for diseases of the internal organs | G. Phipps | 42,245 | Mar. 15 | 109 | 801 |
| Medicine for the cure of certain named diseases | Duluth Medicine Company | 42,446 | Apr. 19 | 109 | 2164 |
| Medicine for the cure of certain named diseases | Sneezo Company | 42,482 | Apr. 26 | 109 | 2434 |
| Medicine put up in concrete form. Laxative | F. A. Weck Co | 42,214 | Mar. 8 | 109 | 544 |
| Medicine. Rheumatism | C. H. Platt | 42,348 | Apr. 5 | 109 | 1602 |
| Medicines. Catarrh and cough | L. Bodle | 42,215 | Mar. 8 | 109 | 544 |
| Medicines. Certain named | Greenville Medicine Company | 42,481 | Apr. 26 | 109 | 2434 |
| Medicines for cure of female complaints | Dr. Richards Dyspepsia Tablet Association. | 42,244 | Mar. 15 | 109 | 801 |
| Medicines for regulating or controlling the flow of blood | Abbott Alkaloidal Co | 42,333 | Apr. 5 | 109 | 1601 |
| Medicines. Liquid proprietary | P. D. Strickland | 42,328 | Apr. 5 | 109 | 1600 |
| Metal and stove polish | H. Pape | 42,210 | Mar. 8 | 109 | 544 |
| Metals. Antifriction and Babbitt | B. H. Seabury | 42,389 | Apr. 12 | 109 | 1882 |
| Metals. Liquid compound for use in cutting, boring, and drawing of | S. Bancroft | 42,379 | Apr. 12 | 109 | 1882 |
| Mineral water | H. F. Schnelker | 42,400 | Apr. 19 | 109 | 2160 |
| Napkins. Sanitary | Seabury & Johnson | 42,174 | Mar. 1 | 109 | 271 |
| Needles and pins, bodkins, and crochet-hooks. Certain named | Henry Milward & Sons | 42,459 | Apr. 19 | 109 | 2166 |
| Nut-crackers | J. E. Hamilton | 42,427 | Apr. 19 | 109 | 2162 |
| Oil. Antiseptic | L. M. Webb & Co | 42,335 | Apr. 5 | 109 | 1601 |
| Oil. Butter- | Kentucky Refining Co | 42,271 | Mar. 22 | 109 | 1063 |
| Oil. Butter- | Kentucky Refining Co | 42,272 | Mar. 22 | 109 | 1063 |
| Oil. Castor- | H. M. Swartley | 42,270 | Mar. 22 | 109 | 1063 |
| Oil. Cotton-seed | Kentucky Refining Co | 42,236 | Mar. 15 | 109 | 800 |
| Oil. Cotton-seed | Kentucky Refining Co | 42,237 | Mar. 15 | 109 | 800 |
| Oil. Cotton-seed | Kentucky Refining Co | 42,273 | Mar. 22 | 109 | 1063 |
| Oil. Cotton-seed | Kentucky Refining Co | 42,274 | Mar. 22 | 109 | 1063 |
| Oil. Cotton-seed | Kentucky Refining Co | 42,275 | Mar. 22 | 109 | 1063 |
| Oil. Cotton-seed | Kentucky Refining Co | 42,276 | Mar. 22 | 109 | 1063 |
| Oil. Olive- | F. Sanguinetti & Cie | 42,323 | Apr. 5 | 109 | 1600 |
| Oil. Olive- | F. Sanguinetti & Cie | 42,404 | Apr. 19 | 109 | 2160 |
| Oils and greases. Lubricating | O. F. Zurn Company | 42,498 | Apr. 26 | 109 | 2436 |
| Oils and greases. Lubricating | O. F. Zurn Company | 42,499 | Apr. 26 | 109 | 2436 |
| Oils. Olive- | Marchesini Brothers | 42,320 | Apr. 5 | 109 | 1600 |
| Oils. Olive- | Marchesini Brothers | 42,321 | Apr. 5 | 109 | 1600 |
| Oils. Olive- | Marchesini Brothers | 42,322 | Apr. 5 | 109 | 1600 |
| Ointments and ointment bases | Schering & Glatz | 42,451 | Apr. 19 | 109 | 2165 |
| Optical goods. Certain named | Vve. E. Colomont, Valette et Cie | 42,219 | Mar. 8 | 109 | 545 |
| Overcoats, ulsters, and raincoats | Blumenthal Bros. & Co | 42,204 | Mar. 8 | 109 | 543 |
| Overgaiters | A. E. Little & Co | 42,484 | Apr. 19 | 109 | 2163 |
| Oysters in canned and bulk form | Toke Point Oyster Co | 42,285 | Mar. 15 | 109 | 800 |
| Paint | Gilluly & Bard | 42,380 | Apr. 12 | 109 | 1882 |
| Paints and colors | Köhn & Pelinitz | 42,306 | Mar. 29 | 109 | 1332 |
| Paper and envelops. Writing- | F. J. Marshall | 42,164 | Mar. 1 | 109 | 270 |
| Paper. Bond- | W. E. Wroe & Company | 42,194 | Mar. 8 | 109 | 542 |
| Paper-clips | Cushman & Denison Manufacturing Company. | 42,425 | Apr. 19 | 109 | 2162 |
| Paper. Toilet- | Scott Paper Co | 42,479 | Apr. 26 | 109 | 2434 |
| Paper. Toilet- | Scott Paper Co | 42,480 | Apr. 26 | 109 | 2434 |
| Papers. Photographic | Farbenfabriken of Elberfeld Co | 42,312 | Apr. 5 | 109 | 1599 |
| Pencils and crayons. Certain named | G. Schwanhäusser | 42,291 | Mar. 29 | 109 | 1331 |
| Pencils. Lead- | L. & C. Hardtmuth | 42,354 | Apr. 12 | 109 | 1879 |
| Pens. Fountain- | F. C. Brown | 42,424 | Apr. 19 | 109 | 2162 |
| Perfumery | Colgate & Co | 42,374 | Apr. 12 | 109 | 1881 |
| Perfumery extracts and essences and toilet-waters | A. J. Hilbert & Co | 42,215 | Mar. 8 | 109 | 544 |
| Perfumes in solid, liquid, and powdered form | R. Hudnut | 42,442 | Apr. 19 | 109 | 2164 |
| Perfumes in solid, liquid, and powdered form | R. Hudnut | 42,443 | Apr. 19 | 109 | 2164 |
| Piano-players and self-playing pianos. Automatic | Kohler & Campbell | 42,428 | Apr. 19 | 109 | 2162 |
| Pianos and piano-players. Self-playing | Kohler & Campbell | 42,356 | Apr. 12 | 109 | 1879 |
| Pills | Lanman & Kemp | 42,241 | Mar. 15 | 109 | 800 |
| Pipe couplings or unions | F. Williams | 42,309 | Mar. 29 | 109 | 1332 |
| Pipe-wrenches and pipe-vises | J. H. Williams and Company | 42,226 | Mar. 8 | 109 | 546 |
| Pipes. Brier | E. Deguingand & Son | 42,476 | Apr. 26 | 109 | 2434 |
| Powder books. Paper- | A. S. Butler | 42,171 | Mar. 1 | 109 | 270 |
| Powders. Headache- | W. Gaus | 42,371 | Apr. 12 | 109 | 1881 |
| Power-transmitting machinery. Certain named | Dodge Manufacturing Company | 42,462 | Apr. 19 | 109 | 2166 |
| Printing purposes. Synthetic or anilin colors for | C. Jäger | 42,423 | Apr. 19 | 109 | 2162 |
| Razor-strops | Weiffenbach Mfg. Co | 42,189 | Mar. 1 | 109 | 272 |
| Razor-strops | P. L. Frost and G. R. Craw | 42,386 | Apr. 12 | 109 | 1882 |
| Razors | C. F. Ern | 42,426 | Apr. 19 | 109 | 2166 |

*Alphabetical list of trade-marks for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Razors | Kraut & Dohnal | 42,509 | Apr. 26 | 109 | 2436 |
| Razors. Safety | Reichard & Scheuber Mfg. Co | 42,187 | Mar. 1 | 109 | 272 |
| Razors. Safety | Reichard & Scheuber Mfg. Co | 42,188 | Mar. 1 | 109 | 272 |
| Receptacles. Certain named | Hartmann Trunk Company | 42,228 | Mar. 15 | 109 | 801 |
| Reflectors. Glass | National X-Ray Reflector Company | 42,221 | Mar. 8 | 109 | 545 |
| Remedies. Certain named | Iowa Medicine Co | 42,416 | Apr. 19 | 109 | 2161 |
| Remedies. Dyspepsia | Underwood & Judd | 42,489 | Apr. 26 | 109 | 2434 |
| Remedies for the cure of certain diseases | J. A. Monger | 42,448 | Apr. 19 | 109 | 2164 |
| Remedy for a certain named disease | J. Horsch | 42,415 | Apr. 19 | 109 | 2161 |
| Remedy for certain named diseases | R. W. Whitlatch | 42,242 | Mar. 15 | 109 | 801 |
| Remedy for certain named diseases | J. A. James | 42,320 | Apr. 5 | 109 | 1601 |
| Remedy for certain named diseases | Le Compte and Gayle Co | 42,330 | Apr. 5 | 109 | 1601 |
| Remedy for certain named diseases. Cones used as a | A. J. Shilling | 42,247 | Mar. 15 | 109 | 801 |
| Remedy for cutaneous diseases | F. Hoffmann-La Roche & Co | 42,295 | Mar. 29 | 109 | 1331 |
| Remedy for diseases of the blood and skin | C. E. Campbell | 42,331 | Apr. 5 | 109 | 1601 |
| Remedy for dyspepsia, indigestion, and other stomach troubles. | Tarrant Company | 42,296 | Mar. 29 | 109 | 1331 |
| Remedy for expelling worms from the system | Lanman & Kemp | 42,169 | Mar. 1 | 109 | 270 |
| Remedy for pneumonia | Gowan Medical Company | 42,484 | Apr. 26 | 109 | 2434 |
| Remedy for worms. Internal | Pratt Food Company | 42,449 | Apr. 19 | 109 | 2164 |
| Remedy. Pile | C. Mayne | 42,246 | Mar. 15 | 109 | 801 |
| Rice | Meinrath Brokerage Company | 42,407 | Apr. 19 | 109 | 2161 |
| Rock-drilling machinery and tools | Ingersoll-Sergeant Drill Co | 42,267 | Apr. 19 | 109 | 2159 |
| Roofing. Prepared | S. R. Holland | 42,279 | Mar. 22 | 109 | 1064 |
| Ropes, cords, twine fiber, twine, and binder-twine | International Harvester Company of America. | 42,258 | Mar. 15 | 109 | 802 |
| Rubber belting | Gorham Rubber Company | 42,471 | Apr. 26 | 109 | 2433 |
| Rubber boots and shoes | Goodyear Rubber Company | 42,365 | Apr. 12 | 109 | 1880 |
| Rubber boots, shoes, and sandals | Bentley & Olmsted Company | 42,470 | Apr. 26 | 109 | 2433 |
| Rubber hose and cotton hose | Bowers Rubber Company | 42,454 | Apr. 19 | 109 | 2165 |
| Rubber hose and cotton hose | Bowers Rubber Company | 42,455 | Apr. 19 | 109 | 2165 |
| Rubber hose and cotton hose | Bowers Rubber Company | 42,456 | Apr. 19 | 109 | 2165 |
| Rubber hose and cotton hose | Bowers Rubber Company | 42,457 | Apr. 19 | 109 | 2165 |
| Rubber nipples | Davidson Rubber Co | 42,222 | Mar. 8 | 109 | 543 |
| Rubber packing | Gorham Rubber Company | 42,472 | Apr. 26 | 109 | 2433 |
| Rubber packing | Gorham Rubber Company | 42,473 | Apr. 26 | 109 | 2433 |
| Rubber packing | Gorham Rubber Company | 42,474 | Apr. 26 | 109 | 2434 |
| Rye-meal, cornmeal, pearl and flaked hominy, and grits | Wells-Abbott-Nieman Company | 42,406 | Apr. 19 | 109 | 2160 |
| Salve | C. L. Buddenbohn | 42,248 | Mar. 15 | 109 | 801 |
| Salves used externally | A. V. Mentz | 42,420 | Apr. 19 | 109 | 2162 |
| Sawing machinery | American Wood Working Machinery Company. | 42,310 | Mar. 29 | 109 | 1332 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,503 | Apr. 26 | 109 | 2436 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,504 | Apr. 26 | 109 | 2436 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,505 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,506 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,507 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,508 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,509 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,510 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,511 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,512 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,513 | Apr. 26 | 109 | 2437 |
| Sewing-machines and attachments | Davis Sewing Machine Co | 42,514 | Apr. 26 | 109 | 2437 |
| Sewing-machines and parts thereof | Illinois Sewing Machine Company | 42,420 | Apr. 19 | 109 | 2163 |
| Sewing-machines, attachments, and parts thereof | Singer Manufacturing Co | 42,515 | Apr. 26 | 109 | 2437 |
| Shades and shade fabrics. Window | B. Price | 42,157 | Mar. 1 | 109 | 269 |
| Shaft-hangers | Standard Pressed Steel Co | 42,516 | Apr. 26 | 109 | 2437 |
| Shirts and drawers. Linen | Linen Underwear Company | 42,208 | Mar. 8 | 109 | 543 |
| Shirts, overalls, and coats. Workingmen's | Weum-Watt Company | 42,261 | Mar. 22 | 109 | 1062 |
| Shoes and leather goods. Polish for | Whittemore Bro's and Co | 42,377 | Apr. 12 | 109 | 1881 |
| Shoes for men and boys. Leather | Barker, Brown & Co | 42,268 | Mar. 22 | 109 | 1062 |
| Shoes. Infants' and children's leather | W. H. Schreier | 42,263 | Mar. 22 | 109 | 1062 |
| Silk dress pieces and linings | Bradford Dyers' Association | 42,361 | Apr. 12 | 109 | 1880 |
| Silks | Stewart Silk Company | 42,260 | Mar. 22 | 109 | 1062 |
| Skirts for women | Wearwell Skirt Co | 42,438 | Apr. 19 | 109 | 2163 |
| Sleeping-draft | M. A. Quee | 42,418 | Apr. 19 | 109 | 2162 |
| Soap. Laundry | Lenox Sprayer and Chemical Co | 42,477 | Apr. 26 | 109 | 2434 |
| Soap. Scouring | Standard Soap Company | 42,211 | Mar. 8 | 109 | 544 |
| Soap. Toilet | Colgate & Co | 42,375 | Apr. 12 | 109 | 1881 |
| Soaps. Certain named | Vinolia Co | 42,376 | Apr. 12 | 109 | 1881 |
| Soda-water fountains | L. A. Becker Company | 42,344 | Apr. 5 | 109 | 1602 |
| Soda-water fountains | L. A. Becker Company | 42,345 | Apr. 5 | 109 | 1602 |
| Specific for female complaints. Liquid | G. Mortimer | 42,217 | Mar. 8 | 109 | 545 |
| Stamps. Premium | Sperry and Hutchinson Company | 42,475 | Apr. 26 | 109 | 2434 |
| Stone-channelers | Ingersoll-Sergeant Drill Co | 42,287 | Mar. 22 | 109 | 1064 |
| Stoves and their parts | Shuster & Baer Aktiengesellschaft | 42,280 | Mar. 22 | 109 | 1064 |
| Suits for boys | Siegel Cooper Company | 42,390 | Apr. 19 | 109 | 2159 |
| Suspenders. Men's | L. Oppenheimer's Sons | 42,158 | Mar. 1 | 109 | 269 |
| Syrup of guaiacol | Davis Pharmaceutical Company | 42,419 | Apr. 19 | 109 | 2163 |
| Tables and appliances for playing certain named games | Knickerbocker Company | 42,251 | Mar. 15 | 109 | 801 |
| Talking-machines, parts and supplies therefor, and records | Victor Talking Machine Co | 42,220 | Mar. 8 | 109 | 545 |
| Talking-machines, parts and supplies therefor, and records | Universal Talking Machine Manufacturing Co. | 42,502 | Apr. 26 | 109 | 2436 |
| Tea | Dolan Mercantile Company | 42,300 | Mar. 29 | 109 | 1332 |
| Thread. Cotton | Clark Mile-End Spool Cotton Co | 42,197 | Mar. 8 | 109 | 543 |
| Thread. Sewing | Jonas Brook & Bros | 42,168 | Mar. 1 | 109 | 270 |
| Tobacco and cigarettes made therefrom. Smoking | J. & F. Bell, Ltd | 42,438 | Apr. 19 | 109 | 2163 |
| Tobacco. Smoking | Wells-Whitehead Tobacco Co | 42,399 | Apr. 19 | 109 | 2160 |
| Toilet preparation. Certain named | C. W. Heineken | 42,338 | Apr. 5 | 109 | 1601 |
| Tonic or remedy for fever and ague | Estorge Drug Co | 42,327 | Apr. 5 | 109 | 1600 |
| Tooth-paste, tooth-powder, and liquid mouth-wash | J. S. Roberts | 42,268 | Mar. 22 | 109 | 1062 |
| Tooth-wash and tooth-powder | R. Deutschberger | 42,373 | Apr. 12 | 109 | 1881 |
| Toy furniture | Rodemann & Dorn | 42,357 | Apr. 12 | 109 | 1879 |
| Trimmings and hardware for carriage-tops | Crandal Stone & Co | 42,518 | Apr. 26 | 109 | 2438 |
| Underwaists. Children's | H. & W. Company | 42,229 | Mar. 15 | 109 | 799 |



*Alphabetical list of trade-marks for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Underwear. Certain named | Conradi & Friedemann | 42,315 | Apr. 5 | 109 | 1599 |
| Valves and swing-joints | L. Schutte | 42,346 | Apr. 5 | 109 | 1602 |
| Veterinary medicines. Certain named | S. M. Fisk | 42,204 | Mar. 29 | 109 | 1331 |
| Veterinary remedy | L. D. King | 42,309 | Apr. 12 | 109 | 1881 |
| Washing fluid | Washaway Manufacturing Co | 42,212 | Mar. 8 | 109 | 544 |
| Weaners. Calf | Barbee Wire & Iron Works | 42,232 | Mar. 22 | 109 | 1064 |
| Welding compound. Chemical | Cortland Welding Compound Co | 42,340 | Apr. 5 | 109 | 1602 |
| Whisky | Geo. Ballantine & Son | 42,178 | Mar. 1 | 109 | 271 |
| Whisky | Hiram Walker & Sons | 42,385 | Apr. 12 | 109 | 1882 |
| Whisky | Belmont Distillery Co | 42,401 | Apr. 19 | 109 | 2160 |
| Whisky. Scotch | P. Dawson | 42,277 | Mar. 22 | 109 | 1063 |
| Witch-hazel or hamamelis. Extract of | Lanman & Kemp | 42,170 | Mar. 1 | 109 | 270 |
| Yeast | J. L. Rodney | 42,382 | Apr. 12 | 109 | 1882 |

# ALPHABETICAL LIST OF LABELS.

| Title. | Name. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|
| "Absorbine." (For a Veterinary Medicine) | W. F. Young | 10,986 | Apr. 19 | 109 | 2167 |
| "All Stone." (For Wall-Plaster) | Garden City Sand Company | 10,913 | Apr. 5 | 109 | 1608 |
| "'American Club' Brandy." (For Cognac) | G. Sayer & Co | 10,865 | Mar. 22 | 109 | 1065 |
| "Anti-Uric." (For Medicine) | Anti-Uric Co | 10,890 | Mar. 29 | 109 | 1333 |
| "Anti Whalebone." (For Whips) | C. H. Clark | 10,910 | Apr. 5 | 109 | 1608 |
| "Apex." (For Flour) | Lexington Roller Mills Co | 10,959 | Apr. 12 | 109 | 1883 |
| "Archon." (For Cigars) | F. V. Eshleman | 10,951 | Apr. 12 | 109 | 1883 |
| "Bald Eagle." (For Axes and Edge-Tools) | Mann Edge Tool Co | 10,797 | Mar. 1 | 109 | 273 |
| "Balm of Gilead." (For Ointment) | F. A. Williams | 10,987 | Apr. 19 | 109 | 2167 |
| "Bean's Condition Powders for Horses and Cattle." (For Condition-Powders.) | J. W. Bean | 10,815 | Mar. 8 | 109 | 547 |
| "Beech-Nut Sliced Bacon." (For Sliced Bacon) | Beech-Nut Packing Company | 10,908 | Mar. 29 | 109 | 1333 |
| "Beech-Nut Sliced Beef." (For Sliced Beef) | Beech-Nut Packing Company | 10,907 | Mar. 29 | 109 | 1333 |
| "Bluemont Whiskey." (For Whisky) | E. Quinn | 10,801 | Mar. 8 | 109 | 547 |
| "Bohemian." (For Lager-Beer) | Iroquois Brewing Company | 10,923 | Apr. 5 | 109 | 1608 |
| "Boneset and Wild Cherry Expectorant." (For Medicine) | R. Burkhardt | 10,788 | Mar. 1 | 109 | 273 |
| "Bu Ko." (For Tea) | A. Lubarsky | 10,922 | Apr. 5 | 109 | 1608 |
| "Buster Brown Legging." (For Leggings) | H. Jacob & Sons | 10,964 | Apr. 19 | 109 | 2167 |
| "Buster Brown's Ring." (For Rings) | E. & J. Bass | 10,965 | Apr. 19 | 109 | 2167 |
| "Butters." (For Crackers) | W. H. Faxon | 10,906 | Mar. 29 | 109 | 1333 |
| "By Industry We Thrive." (For Hats) | C. H. Merritt & Son | 10,931 | Apr. 12 | 109 | 1883 |
| "Chickasaw Plantation." (For Molasses) | C. E. Coe | 10,994 | Apr. 26 | 109 | 2439 |
| "Choco." (For Confectionery) | Choco Candy Company | 10,970 | Apr. 19 | 109 | 2167 |
| "Coan & Harbin's Koke." (For a Beverage) | Bluff City Bottling Co | 10,863 | Mar. 22 | 109 | 1065 |
| "Colonial." (For Axes and Edge-Tools) | Mann Edge Tool Co | 10,796 | Mar. 1 | 109 | 273 |
| "Colonial Jelly." (For a Jelly Powder) | Niagara Fruit Jelly Co | 10,957 | Apr. 12 | 109 | 1883 |
| "Commercial Seal." (For Cigars) | A. C. Henschel & Co | 10,999 | Apr. 26 | 109 | 2439 |
| "Congress Hotel Co. Annex Bourbon." (For Whisky) | Congress Hotel Company | 10,867 | Mar. 22 | 109 | 1065 |
| "Country Trade." (For Cigars) | Schmidt & Co | 10,873 | Mar. 22 | 109 | 1065 |
| "Crème Josephine." (For Toilet Preparation) | Josephine Crème Company | 10,938 | Apr. 12 | 109 | 1883 |
| "Crown." (For Creamery-Butter) | F. H. Arnsburger | 10,787 | Mar. 1 | 109 | 273 |
| "Cuban Gold." (For Cigars) | Schmidt & Co | 10,898 | Mar. 29 | 109 | 1333 |
| "Cuti Balm." (For a Lotion) | E. Reith | 10,825 | Mar. 15 | 109 | 808 |
| "Discount." (For Newspapers, Periodicals, Magazines, Pamphlets, &c.) | S. B. Hutchinson | 10,819 | Mar. 15 | 109 | 808 |
| "Dividend Payer." (For Cigars) | Schmidt & Co | 10,874 | Mar. 22 | 109 | 1065 |
| "Do-No." (For Medicine) | L. G. Denton | 10,809 | Mar. 8 | 109 | 547 |
| "Domestic Pets." (For Picture-Blocks) | National Novelty Corporation | 10,967 | Apr. 19 | 109 | 2167 |
| "Dr. Brooks' Faultless Tooth Powder." (For Tooth-Powder.) | D. L. Brooks | 10,969 | Apr. 19 | 109 | 2167 |
| "Dr. Grey's Almond Cream Toilet Soap." (For Toilet Soap) | Enterprise Soap Works | 10,940 | Apr. 12 | 109 | 1883 |
| "Dr. Grey's Almond Cream Toilet Soap." (For Toilet Soap) | Enterprise Soap Works | 10,941 | Apr. 12 | 109 | 1883 |
| "Dr. Hickox's Malarial Capsules." (For Medicine) | J. M. Hickox | 10,918 | Apr. 5 | 109 | 1608 |
| "Dr. Howland's Anti-Rheumatic." (For Medicine) | F. P. Howland | 10,808 | Mar. 8 | 109 | 547 |
| "Dr. White's Specialty for Diphtheria." (For Medicine) | W. White | 11,000 | Apr. 26 | 109 | 2439 |
| "E. & S. Brand of Pure California Olive Oil." (For Olive-Oil.) | Ekman-Stow Co | 10,925 | Apr. 5 | 109 | 1608 |
| "'Eagle Germantown' Lamp Black." (For Lampblacks and Colors.) | L. Martin Company | 10,846 | Mar. 22 | 109 | 1065 |
| "Egyptian Salve." (For Salve) | W. Wyman | 10,988 | Apr. 19 | 109 | 2167 |
| "Electric Cleansing Flux Paste." (For Flux Paste) | G. L. Leitze | 10,961 | Apr. 12 | 109 | 1883 |
| "Elixir of Radium." (For Medicine) | G. P. Gehring | 10,919 | Apr. 5 | 109 | 1608 |
| "English May Flower Lotion." (For Toilet Preparation) | Mae Mfg. Co | 10,899 | Mar. 29 | 109 | 1333 |
| "Exotic Balm." (For Liniment) | J. A. Wood | 10,810 | Mar. 8 | 109 | 547 |
| "Exquisitos Cigarros." (For Cigars) | Central Lithograph Co | 10,869 | Mar. 22 | 109 | 1065 |
| "Exquisitos Cigarros." (For Cigars) | Central Lithograph Company | 10,897 | Mar. 29 | 109 | 1333 |
| "'Extra Car Painters' Lamp Black." (For Lampblacks and Colors.) | L. Martin Company | 10,850 | Mar. 22 | 109 | 1065 |
| "'Extra Currier's Velvet' Lamp-Black." (For Lampblacks and Colors.) | L. Martin Company | 10,851 | Mar. 22 | 109 | 1065 |
| "'Extra Double Refined Superior Coach Painters' Lamp Black." (For Lampblacks and Colors.) | L. Martin Company | 10,847 | Mar. 22 | 109 | 1065 |
| "Extra Dry Ginger Ale." (For Carbonated Beverages) | American Soda Fountain Company. | 10,980 | Apr. 19 | 109 | 2167 |
| "Extra Fina Cigar." (For Cigars) | Central Lithograph Company | 10,947 | Apr. 12 | 109 | 1883 |
| "Factory Bunch." (For Cigars) | Schmidt & Co | 10,805 | Mar. 8 | 109 | 547 |
| "Fifteen Years Old Manassas 1861 Pure Rye Whiskey." (For Whisky.) | P. McIntyre | 10,791 | Mar. 1 | 109 | 273 |
| "Fino Cigar." (For Cigars) | Central Lithograph Co | 10,882 | Mar. 22 | 109 | 1065 |
| "Fino Cigar." (For Cigars) | Central Lithograph Co | 10,883 | Mar. 22 | 109 | 1065 |
| "Flor de Astor." (For Cigars) | Park & Tilford | 10,830 | Mar. 15 | 109 | 808 |
| "Flor Fina Cigarros." (For Cigars) | Central Lithograph Co | 10,878 | Mar. 22 | 109 | 1065 |
| "Flor Fina Cigarros." (For Cigars) | Central Lithograph Co | 10,884 | Mar. 22 | 109 | 1065 |
| "Flor Fina Cigarros." (For Cigars) | Central Lithograph Co | 10,896 | Mar. 29 | 109 | 1333 |
| "Flor Fina Cigarros." (For Cigars) | Central Lithograph Company | 10,945 | Apr. 12 | 109 | 1883 |
| "Flor Fina Cigars." (For Cigars) | Central Lithograph Co | 10,894 | Mar. 29 | 109 | 1333 |
| "Germantown Black." (For Lampblacks and Colors) | L. Martin Company | 10,844 | Mar. 22 | 109 | 1065 |
| "Gilt Edge Cereal." (For Cereal Coffee) | Gilt Edge Cereal Co | 10,902 | Mar. 29 | 109 | 1333 |
| "Gold Bond, Knox, Dust, Fill, Medal, Plate Shoes." (For Shoes.) | J. B. Hunter | 10,799 | Mar. 8 | 109 | 547 |
| "Gold Coin Cattle Fattener." (For Fattening-Foods for Cattle.) | Gold Coin Stock Food Company | 11,009 | Apr. 26 | 109 | 2439 |
| "Gold Coin Egg-a-Day Poultry Food." (For Poultry-Food) | Gold Coin Stock Food Company | 11,005 | Apr. 26 | 109 | 2439 |

*Alphabetical list of labels for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| "Gold Coin Foot Remedy." (For Live-Stock Medicine) | Gold Coin Stock Food Company | 11,001 | Apr. 26 | 109 | 2439 |
| "Gold Coin Germ Killer." (For Live-Stock Medicine) | Gold Coin Stock Food Company | 11,002 | Apr. 26 | 109 | 2439 |
| "Gold Coin Hog Fattener." (For Hog-Fattening Foods) | Gold Coin Stock Food Company | 11,008 | Apr. 26 | 109 | 2439 |
| "Gold Coin Quick Cure Condition Powder." (For Condition-Powders for Live Stock.) | Gold Coin Stock Food Company | 11,007 | Apr. 26 | 109 | 2439 |
| "Gold Coin Scientific Heave Cure." (For Live-Stock Medicine.) | Gold Coin Stock Food Company | 11,003 | Apr. 26 | 109 | 2439 |
| "Gold Coin Special Horse Tonic." (For Horse-Tonic) | Gold Coin Stock Food Company | 11,006 | Apr. 26 | 109 | 2439 |
| "Gold Coin Worm Powder." (For Live-Stock Medicine) | Gold Coin Stock Food Company | 11,004 | Apr. 26 | 109 | 2439 |
| "Gold Share." (For Cigars) | Schmidt & Co | 10,872 | Mar. 22 | 109 | 1065 |
| "Golden Star Spirit' Lamp Black." (For Lampblacks and Colors.) | L. Martin Company | 10,849 | Mar. 22 | 109 | 1065 |
| "Good Chairs." (For Chairs) | Buckeye Chair Co | 10,839 | Mar. 15 | 109 | 808 |
| "Graino." (For Cigars) | Schmidt & Co | 10,899 | Mar. 29 | 109 | 1333 |
| "Grape Nut Bread." (For Bread) | Kopp & Mordan | 10,991 | Apr. 26 | 109 | 2439 |
| "Green Trading Stamp Brand for Groceries." (For Groceries.) | Sperry & Hutchinson Co | 10,853 | Mar. 22 | 109 | 1065 |
| "Grippura (Germ-Destroyer)." (For a Medicine) | A. Crichton | 10,784 | Mar. 1 | 109 | 273 |
| "Grippura (Germ Destroyer)." (For Medicine) | A. Crichton | 10,916 | Apr. 5 | 109 | 1608 |
| "Guaisotol (Davis) The Only Permanent Sirup of Guaiacol." (For Medicine.) | Davis Pharmaceutical Company | 10,983 | Apr. 19 | 109 | 2167 |
| "Habana Cigarros." (For Cigars) | Central Lithograph Co | 10,879 | Mar. 22 | 109 | 1065 |
| "Habana Cigars." (For Cigars) | Central Lithograph Company | 10,946 | Apr. 12 | 109 | 1883 |
| "Hand United to Hand Labor Conquers All." (For Hats) | C. H. Merritt & Son | 10,936 | Apr. 12 | 109 | 1883 |
| "Harmony Brand." (For Canned Salmon) | R. D. Hume | 10,992 | Apr. 26 | 109 | 2439 |
| "Heath's Teluiah Headache Capsules." (For Headache-Capsules.) | Kamps & Sacksteder Drug Co | 10,898 | Mar. 29 | 109 | 1333 |
| "Hedeval." (For Hog-Cholera Cure) | American Hog Cholera Cure Co | 10,786 | Mar. 1 | 109 | 273 |
| "Hermits Friend Rheumatic Remedy." (For Medicine) | G. C. Smith | 10,917 | Apr. 5 | 109 | 1608 |
| "High Life." (For Smoking-Tobacco) | R. Harris & Bro | 10,971 | Apr. 19 | 109 | 2167 |
| "Hofmeister Placket." (For Ladies' Clothing) | F. Hofmeister | 10,937 | Apr. 12 | 109 | 1883 |
| "Home." (For Condensed Milk and Evaporated Cream) | American Condensed Milk Co | 10,888 | Mar. 22 | 109 | 1065 |
| "Honest Labor, Fair Honest Wages." (For Hats) | C. H. Merritt & Son | 10,933 | Apr. 19 | 109 | 2167 |
| "Honey Dew." (For Smoking-Tobacco) | R. Harris & Bro | 10,972 | Apr. 19 | 109 | 2167 |
| "Hot Cake." (For Cigars) | Schmidt & Co | 10,807 | Mar. 8 | 109 | 547 |
| "Ice Cups." (For Biscuit-Cups for Holding Ice-Cream) | I. Marchiony | 10,817 | Mar. 8 | 109 | 547 |
| "Idol." (For Flour) | Lexington Roller Mills Co | 10,956 | Apr. 12 | 109 | 1883 |
| "Ino." (For a Beverage) | Ino Company | 10,979 | Apr. 19 | 109 | 2167 |
| "Jackfull." (For Cigars) | Schmidt & Co | 10,804 | Mar. 8 | 109 | 547 |
| "Jersey Butters." (For Biscuits) | Ontario Biscuit Company | 10,856 | Mar. 22 | 109 | 1065 |
| "John Lord." (For Cigars) | Grand Rapids Cigar Box Co | 10,792 | Mar. 1 | 109 | 273 |
| "Johnny Mack Mahon's Rattle Snake Oil." (For Medicine) | J. M. Mahon | 10,867 | Mar. 22 | 109 | 1066 |
| "Jumbo Brazing Compound." (For Brazing Compound) | J. E. Arnold & Co | 10,962 | Apr. 12 | 109 | 1883 |
| "Just-as-Sure." (For Medicine) | L. G. Denton | 10,898 | Mar. 29 | 109 | 1333 |
| "Justice, Unity, Equity, Hand Made in America." (For Hats.) | C. H. Merritt & Son | 10,929 | Apr. 12 | 109 | 1883 |
| "Khedive." (For Tea) | Milliken, Tomlinson Co | 10,789 | Mar. 1 | 109 | 273 |
| "Ki-Ki." (For Medicine) | E. B. Clifford | 10,915 | Apr. 5 | 109 | 1608 |
| "King's Stop a Cough." (For Medicine) | California Chemical Co | 10,985 | Apr. 19 | 109 | 2167 |
| "Kosciuszko." (For Cigars) | J. Szymanski | 10,921 | Apr. 5 | 109 | 1608 |
| "La Fama Cubana De Tabacos." (For Cigars) | Schmidt & Co | 10,869 | Mar. 22 | 109 | 1065 |
| "Lafayette." (For Flour) | J. D. Warren's Sons | 10,926 | Apr. 5 | 109 | 1608 |
| "Life-Malt." (For Malt Extract) | N. Biever, Jr | 10,961 | Apr. 19 | 109 | 2167 |
| "Lochinvar Old Highland Scotch." (For Whisky) | New York Importation Co | 10,838 | Mar. 15 | 109 | 808 |
| "Louisiana Purchase Souvenir Puzzle." (For Puzzles) | L. F. Jordan | 11,010 | Apr. 26 | 109 | 2429 |
| "Luebert's Nox 'Em, Nox 'Em Quick." (For Insecticides) | A. G. Luebert | 10,814 | Mar. 8 | 109 | 547 |
| "Maltinatte." (For Beverages) | A. L. Saake | 10,997 | Apr. 26 | 109 | 2439 |
| "Mann's Superior." (For Axes) | J. H. Mann | 10,794 | Mar. 1 | 109 | 273 |
| "Mapo." (For Syrup) | D. P. Ingham | 10,831 | Mar. 15 | 109 | 808 |
| "March's Hair Health." (For Hair and Scalp Cleanser) | J. G. March | 10,823 | Mar. 15 | 109 | 808 |
| "Marsalina the 20th Century Hair & Skin Tonic." (For a Toilet Preparation.) | J. M. Abousseleman | 10,781 | Mar. 1 | 109 | 273 |
| "Mme La Forgue's Crème des Roses." (For Cold-Cream) | L. P. Hill | 10,930 | Apr. 12 | 109 | 1883 |
| "Moltozone." (For Medicine) | M. Carnot | 10,982 | Apr. 19 | 109 | 2167 |
| "Never Slip Rubberized Soles." (For Shoe-Soles) | Harrisburg Shoe Mfg. Co | 10,842 | Mar. 22 | 109 | 1065 |
| "Newton." (For Cigars) | J. A. Posada | 10,901 | Mar. 29 | 109 | 1333 |
| "Nigridine." (For Medicine) | F. C. Reighter | 10,785 | Mar. 1 | 109 | 273 |
| "Non Rustin." (For Sheet-Metal Ware) | Rochester Nonrust Tinware Co | 10,818 | Mar. 8 | 109 | 547 |
| "Not Made by a Trust." (For Hats) | C. H. Merritt & Son | 10,920 | Apr. 12 | 109 | 1883 |
| "Nu-Trex Flaked Wheat Food." (For Cereal Food) | American Fine Art Co | 10,837 | Mar. 15 | 109 | 808 |
| "Old Standard Germantown' Lamp-Black." (For Lampblacks and Colors.) | L. Martin Company | 10,843 | Mar. 22 | 109 | 1065 |
| "Ontario Soda Biscuit." (For Biscuits) | Ontario Biscuit Company | 10,857 | Mar. 22 | 109 | 1065 |
| "Orange Drip Syrup." (For Syrup) | S. C. Leonard | 10,976 | Apr. 19 | 109 | 2167 |
| "Our Dollies." (For Picture-Blocks) | National Novelty Corporation | 10,966 | Apr. 19 | 109 | 2167 |
| "P. B. Shoe Superior Quality Style." (For Shoes) | Paul Brothers | 10,841 | Mar. 22 | 109 | 1065 |
| "P M Best 10 Year Old Maryland Rye Whiskey." (For Whisky.) | P. Malkan | 10,866 | Mar. 22 | 109 | 1065 |
| "Paraiso Mineral Water." (For Mineral Water) | A. E. Scamell | 10,995 | Apr. 26 | 109 | 2439 |
| "Persian Rose Pomade." (For a Toilet Preparation) | J. M. Abousseleman | 10,782 | Mar. 1 | 109 | 273 |
| "Peters' Face Hardener." (For a Toilet Preparation) | A. D. Peters | 10,885 | Mar. 22 | 109 | 1066 |
| "Peter's The Original Milk-Chocolate." (For Milk Chocolate.) | D. Peter | 10,955 | Apr. 12 | 109 | 1883 |
| "Peter's The Original Milk-Chocolate." (For Milk Chocolate.) | D. Peter | 10,956 | Apr. 12 | 109 | 1883 |
| "Pineapple Soda." (For Carbonated Beverages) | American Soda Fountain Company | 10,996 | Apr. 26 | 109 | 2439 |
| "Plains Monarch." (For Cigars) | Schmidt & Co | 10,876 | Mar. 22 | 109 | 1065 |
| "Polaris Brand." (For Canned Salmon) | R. D. Hume | 10,960 | Apr. 12 | 109 | 1883 |
| "Prairie Blossom." (For Cigars) | Schmidt & Co | 10,868 | Mar. 22 | 109 | 1065 |
| "Preferred Ham." (For Ham) | Armour Packing Co | 10,854 | Mar. 22 | 109 | 1065 |
| "Premium Brand." (For Butter) | C. Schallinger | 10,858 | Mar. 22 | 109 | 1065 |
| "Premium Brand." (For Butter) | C. Schallinger | 10,859 | Mar. 22 | 109 | 1065 |
| "Premium Brand." (For Butter) | C. Schallinger | 10,860 | Mar. 22 | 109 | 1065 |
| "Pride of Reidsville." (For Smoking-Tobacco) | R. Harris & Bro | 10,973 | Apr. 19 | 109 | 2167 |
| "Primeros Cigars." (For Cigars) | Central Lithograph Co | 10,949 | Apr. 12 | 109 | 1883 |
| "Prosperity." (For Cigars) | Schmidt & Co | 10,806 | Mar. 8 | 109 | 547 |



*Alphabetical list of labels for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| "Protazote." (For Medicine) | A. L. Muirhead | 10,914 | Apr. 5 | 109 | 1608 |
| "Pure Sisal Twine." (For Twine) | International Harvester Company of America. | 10,912 | Apr. 5 | 109 | 1608 |
| "Purity Brand Condensed Milk." (For Condensed Milk) | United States Condensed Milk Co | 10,836 | Mar. 15 | 109 | 808 |
| "Puros Cigar." (For Cigars) | Central Lithograph Co | 10,895 | Mar. 29 | 109 | 1333 |
| "Puros Cigarros." (For Cigars) | Central Lithograph Company | 10,948 | Apr. 12 | 109 | 1883 |
| "Puros Cigarros." (For Cigars) | Central Lithograph Company | 10,950 | Apr. 12 | 109 | 1883 |
| "Puros Fino Cigarros." (For Cigars) | Central Lithograph Co | 10,881 | Mar. 22 | 109 | 1065 |
| "Race King." (For Cigars | Schmidt & Co | 10,870 | Mar. 22 | 109 | 1065 |
| "Radium." (For Soap) | Gerhard & Boehning | 10,928 | Apr. 5 | 109 | 1608 |
| "Radium Mantle." (For Gas-Manties) | H. A. Keefer | 10,963 | Apr. 12 | 109 | 1883 |
| "Red and White." (For Beer) | A. Wilmanns | 10,864 | Mar. 22 | 109 | 1065 |
| "Red Rose." (For Tea) | J. Whitehouse | 10,908 | Mar. 29 | 109 | 1333 |
| "Red Top." (For Axes and Edge-Tools) | Mann Edge Tool Co | 10,798 | Mar. 1 | 109 | 273 |
| "Regal Brand Condensed Milk." (For Condensed Milk) | United States Condensed Milk Co | 10,975 | Apr. 19 | 109 | 2167 |
| "Regina." (For Music-Boxes) | Regina Music Box Co | 11,011 | Apr. 26 | 109 | 2439 |
| "Reissmann's A. B. C. Ruler." (For Rulers) | F. Reissmann | 10,966 | Apr. 19 | 109 | 2167 |
| "Reissmann's Perfection Mitre Scale." (For Rulers) | F. Reissmann | 10,969 | Apr. 19 | 109 | 2167 |
| "Richardson's Tolu-Pine." (For Medicine) | W. S. Richardson | 10,944 | Apr. 12 | 109 | 1883 |
| "Roach Rest." (For Roach-Powder) | H. C. Fueller Drug Co | 10,920 | Apr. 5 | 109 | 1608 |
| "Roelofette." (For Hats) | H. I. Ireland | 10,780 | Mar. 1 | 109 | 273 |
| "Royal Iris." (For Cigars) | American Lithographic Co | 10,828 | Mar. 15 | 109 | 808 |
| "Royal Iris." (For Cigars) | American Lithographic Co | 10,829 | Mar. 15 | 109 | 808 |
| "Sail and Rail." (For Cigars) | Schmidt & Co | 10,875 | Mar. 22 | 109 | 1065 |
| "Salvator Salve." (For Salve) | G. Flanagan | 10,811 | Mar. 8 | 109 | 547 |
| "Scale Off Boiler Compound." (For Boiler-Compound Powder.) | Howard Chemical Company | 10,793 | Mar. 1 | 109 | 273 |
| "Scalpia." (For Dandruff Cure) | Westchester Drug Co | 10,886 | Mar. 22 | 109 | 1066 |
| "Schuster's Malt and Hop Tonic." (For Malt and Hop Tonics.) | A. Wilmanns | 10,904 | Mar. 29 | 109 | 1333 |
| "Setter." (For Whisky) | J. R. Stonebraker & Co | 10,977 | Apr. 19 | 109 | 2167 |
| "Shamrock." (For Tea) | Milliken, Tomlinson Co | 10,790 | Mar. 1 | 109 | 273 |
| "Shamrock Flaxette." (For Handkerchiefs) | Acheson Harden & Co | 10,821 | Mar. 15 | 109 | 808 |
| "Sign Painters' Spirit Lamp Black." (For Lampblacks and Colors.) | L. Martin Company | 10,848 | Mar. 22 | 109 | 1065 |
| "Simon Pure." (For Baking-Powder) | Gilliland Baking Powder Co | 10,816 | Mar. 8 | 109 | 547 |
| "Skilled Labor of America." (For Hats) | C. H. Merritt & Son | 10,935 | Apr. 12 | 109 | 1883 |
| "Slater's Lemon Lotion." (For Toilet Preparation) | Slater Manufacturing Company | 10,813 | Mar. 8 | 109 | 547 |
| "Sloat's Distemper Cure." (For Medicine) | G. V. Sloat, Jr | 10,888 | Mar. 22 | 109 | 1066 |
| "Smith's Tender Joint Shoe." (For Shoes) | C. G. Smith | 10,890 | Mar. 15 | 109 | 808 |
| "Smoker's Teeth Powder." (For Tooth-Powder) | Weaver Conger Company | 10,824 | Mar. 15 | 109 | 808 |
| "Staak's Sweet Clover Chocolates." (For Candy) | F. Staak, Jr | 10,405 | Mar. 29 | 109 | 1333 |
| "Startwell." (For Cigars) | Schmidt & Co | 10,877 | Mar. 22 | 109 | 1065 |
| "Stock Cigar." (For Cigars) | Schmidt & Co | 10,958 | Apr. 19 | 109 | 1883 |
| "Stricker's Paste." (For Paste) | H. H. Stricker & Co | 10,927 | Apr. 5 | 109 | 1608 |
| "Sugar Glen." (For Molasses) | C. E. Coe | 10,998 | Apr. 26 | 109 | 2439 |
| "Swanadown Prepared Table Salt." (For Table-Salt) | S. S. Pierce Co | 10,990 | Apr. 26 | 109 | 2439 |
| "Tarbelle Whiskey." (For Whisky) | P. McIntyre | 10,832 | Mar. 15 | 109 | 808 |
| "Tarpon Maryland Rye Whiskey." (For Whisky) | J. R. Stonebraker & Co | 10,954 | Apr. 12 | 109 | 1883 |
| "The Beer You Like." (For Lager-Beer) | N. Biever, Jr | 10,994 | Apr. 5 | 109 | 1608 |
| "The Famous Sunbury Creamery Butter." (For Butter) | Sunbury Co-operative Creamery Co. | 10,974 | Apr. 19 | 109 | 2167 |
| "The La Grange." (For Mineral Water) | W. H. Thomas | 10,978 | Apr. 19 | 109 | 2167 |
| "The Lightning Fire Extinguisher." (For Fire-Extinguishers.) | Suffolk Chemical Co | 10,840 | Mar. 15 | 109 | 808 |
| "The Magic Curler." (For Hair-Curlers) | J. B. Hall | 10,822 | Mar. 15 | 109 | 808 |
| "The Merchant Prince." (For Cigars) | A. J. Schmidt | 10,827 | Mar. 15 | 109 | 808 |
| "The Sentry Box." (For Newspaper Articles) | C. W. Post | 10,779 | Mar. 1 | 109 | 273 |
| "The Whistler." (For Cigars) | P. A. Gerke | 10,900 | Mar. 29 | 109 | 1333 |
| "The XX Axe." (For Axes and Edge-Tools) | Mann Edge Tool Co | 10,795 | Mar. 1 | 109 | 273 |
| "Three Minute Plum Pudding." (For a Food Preparation) | A. T. Knapp | 10,833 | Mar. 15 | 109 | 808 |
| "Toke Point Perfecto." (For Cigars) | C. H. Sonntag | 10,808 | Mar. 8 | 109 | 547 |
| "Torch Black or Commercial Black." (For Lampblacks and Colors.) | L. Martin Company | 10,845 | Mar. 22 | 109 | 1065 |
| "Triscuit." (For Bread) | Natural Food Co | 10,855 | Mar. 22 | 109 | 1065 |
| "Tufiber." (For Toilet-Paper) | Scott Paper Co | 10,942 | Apr. 12 | 109 | 1883 |
| "Underwood Sugar Cured Meats." (For Canned and Other Meats.) | Omaha Packing Co | 10,788 | Mar. 1 | 109 | 273 |
| "Union Gives Strength, America." (For Hats) | C. H. Merritt & Son | 10,934 | Apr. 12 | 109 | 1883 |
| "United We Hold, Divided We Fall." (For Hats) | C. H. Merritt & Son | 10,932 | Apr. 12 | 109 | 1883 |
| "Uric-Arthrin." (For Medicine) | Uric-Arthrin Mfg. Co | 10,891 | Mar. 29 | 109 | 1333 |
| "Violet Emollient Skin Tonic and Massage Cream." (For Emollient Preparation.) | C. Friedgen | 10,812 | Mar. 8 | 109 | 547 |
| "Virginia Chinquapin." (For Cigars) | C. B. Henschel Mfg. Co | 10,808 | Mar. 8 | 109 | 547 |
| "Vista Hermosa." (For Cigars) | Schmidt & Co | 10,871 | Mar. 22 | 109 | 1065 |
| "Weaver 'Quartettes.'" (For Butter) | C. H. Weaver & Co | 10,861 | Mar. 22 | 109 | 1065 |
| "Wedderburn Rye." (For Rye Whisky) | J. Wedderburn | 10,998 | Apr. 26 | 109 | 2439 |
| "Welsh's Embro." (For a Liniment) | Scotch Embrocation Co | 10,836 | Mar. 15 | 109 | 808 |
| "White Star." (For Gin) | H. Gravier | 10,831 | Mar. 15 | 109 | 808 |
| "Wonder Worker Remedies." (For Medicine) | L. Maelion | 10,943 | Apr. 12 | 109 | 1883 |
| "Wyaconda Mineral Springs." (For Mineral Water) | W. H. Thomas | 10,800 | Mar. 8 | 109 | 547 |
| "Wyoming Condensed Milk." (For Condensed Milk) | United States Condensed Milk Co | 10,835 | Mar. 15 | 109 | 808 |
| "X-o Quick Cure." (For Medicine) | A. Crichton | 10,984 | Apr. 19 | 109 | 2167 |
| "'XXX' Preservaline." (For a Preservative and Colorant) | Preservaline Manufacturing Company. | 10,852 | Mar. 22 | 109 | 1065 |
| "Yale." (For Apparel) | C. H. Masters & Co | 10,909 | Mar. 29 | 109 | 1333 |
| "Zatan." (For Toilet-Paper) | Scott Paper Co | 10,911 | Apr. 5 | 109 | 1608 |
| "Zembra." (For Cigars) | L. Golovine | 10,952 | Apr. 12 | 109 | 1883 |

# PRINTS.

| Title. | Name. | No. | Date. | Official Gazette. | |
|---|---|---|---|---|---|
| | | | | Volume. | Page. |
| "All Nations Use the Singer." (For Sewing-Machines) | Singer Manufacturing Co | 931 | Mar. 15 | 109 | 808 |
| "An Adler Serge Suit." (For Men's Apparel) | David Adler & Sons Clothing Co | 960 | Apr. 19 | 109 | 2167 |
| "Arabian Chocolates." (For Candy) | Gray Litho. Co | 965 | Apr. 19 | 109 | 2167 |
| "Arcadian Chocolates." (For Candy) | Gray Lithograph Co | 972 | Apr. 19 | 109 | 2168 |
| "Artistic Footwear for Women." (For Footwear) | O. McCormick | 937 | Mar. 22 | 109 | 1066 |
| "Athlophoros." (For Medicine) | Athlophoros Co | 913 | Mar. 1 | 109 | 273 |
| "Athlophoros." (For a Medicine) | Athlophoros Co | 927 | Mar. 15 | 109 | 803 |
| "Atlas Hosiery Mills." (For Hosiery) | Atlas Hosiery Mills | 915 | Mar. 8 | 109 | 547 |
| "Attractive Summer Footwear for Women." (For Shoes) | O. McCormick | 961 | Apr. 19 | 109 | 2167 |
| "Bacritine." (For Medicine) | Altine Chemical Co | 945 | Mar. 29 | 109 | 3313 |
| "Ball Bearing Garters." (For Garters) | C. A. Edgarton Mfg. Co. | 950 | Apr. 12 | 109 | 1883 |
| "Base Ball Card Game." (For a Game) | Allegheny Card Co | 948 | Apr. 5 | 109 | 1608 |
| "Bicycle Playing Cards, New Automobile Designs." (For Playing-Cards.) | United States Playing Card Company. | 908 | Mar. 1 | 109 | 273 |
| "Bicycle Playing Cards, New Automobile Designs." (For Playing-Cards.) | United States Playing Card Company. | 909 | Mar. 1 | 109 | 273 |
| "Birds of a Feather." (For Shoes) | O. McCormick | 952 | Apr. 12 | 109 | 1884 |
| "Blue Ribbon Shoes." (For Shoes) | Brown Shoe Co | 942 | Mar. 29 | 109 | 1333 |
| "Bromo-Seltzer." (For Bromo-Seltzer) | Emerson Drug Co | 926 | Mar. 15 | 109 | 808 |
| "C. D. & T." (For Electric Cars) | Cincinnati, Dayton, and Toledo Traction Co. | 932 | Mar. 15 | 109 | 808 |
| "Castoria." (For a Medicine) | Centaur Co | 954 | Apr. 12 | 109 | 1884 |
| "Dollar Brand." (For Coffee) | U. S. Coffee, Tea & Spice Co | 944 | Mar. 29 | 109 | 1333 |
| "Don't Suffer and Cuss Buy Your Shoes from Us." (For Shoes.) | O. McCormick | 981 | Apr. 26 | 109 | 2439 |
| "Duchess Chocolates." (For Candy) | Gray Lithograph Co | 974 | Apr. 19 | 109 | 2168 |
| "Egg Chocolates." (For Candy) | C. A. Roach | 939 | Mar. 22 | 109 | 1066 |
| "Extra Pale." (For Bottled Beer) | Wm. J. Lemp Brewing Co | 985 | Apr. 26 | 109 | 2439 |
| "Eyelene." (For Medicine) | G. W. Wise | 914 | Mar. 1 | 109 | 273 |
| "Faultless Day Shirts." (For Day-Shirts) | E. Rosenfeld & Co | 978 | Apr. 26 | 109 | 2439 |
| "Faultless Night Shirts." (For Night-Shirts) | E. Rosenfeld & Co | 979 | Apr. 26 | 109 | 2439 |
| "Faultless Pajamas." (For Pajamas) | E. Rosenfeld & Co | 980 | Apr. 26 | 109 | 2439 |
| "Finest Chocolates." (For Candy) | Gray Lithograph Co | 973 | Apr. 19 | 109 | 2168 |
| "Foxy Grandpa's Multiplier." (For a Multiplier) | F. J. Smith | 922 | Mar. 15 | 109 | 803 |
| "Globe Starch." (For Starch) | American Lithograph Company | 957 | Apr. 12 | 109 | 1884 |
| "Gold Band Ham and Bacon." (For Ham and Bacon) | Armour Packing Co | 911 | Mar. 1 | 109 | 273 |
| "Golden Rule Hair Restorative." (For a Hair-Restorative) | Citizens Wholesale Supply Co | 929 | Mar. 15 | 109 | 803 |
| "Harriet Hubbard Ayer's Face Cream." (For Face-Cream) | H. A. Seymour | 962 | Apr. 19 | 109 | 2167 |
| "Hunting Scenes." (For Wall-Paper) | Lawrence & Bullen | 921 | Mar. 8 | 109 | 547 |
| "In Every Man's Pocket." (For Cigars) | Selter & Kappes | 956 | Apr. 12 | 109 | 1884 |
| "It is Not Always the Man With the Balls Who Can Juggle Them." (For Shoes.) | O. McCormick | 916 | Mar. 8 | 109 | 547 |
| "It Stands at the Head." (For Sewing-Machines) | Gray Lithograph Co | 947 | Mar. 29 | 109 | 1333 |
| "Kleanwell Tingle Sponge." (For Rubber Sponges) | A. H. Smith | 964 | Apr. 19 | 109 | 2167 |
| "Ladies' Apparel." (For Ladies' Apparel) | Meyer-Both Co | 936 | Mar. 22 | 109 | 1066 |
| "Little Tingler." (For Rubber Sponges) | A. H. Smith | 963 | Apr. 19 | 109 | 2167 |
| "Men's Apparel." (For Men's Apparel) | W. C. Both | 934 | Mar. 22 | 109 | 1066 |
| "Men's Apparel." (For Men's Apparel) | Hays, Levi & Co | 935 | Mar. 22 | 109 | 1066 |
| "Natural Leaf." (For Tobacco) | Rucker & Witten Tobacco Co | 920 | Mar. 8 | 109 | 547 |
| "New Styles Always on Hand." (For Shoes) | O. McCormick | 982 | Apr. 26 | 109 | 2439 |
| "Non-Aqua." (For Shoes) | O. McCormick | 924 | Mar. 15 | 109 | 803 |
| "Ontostay." (For Hat-Pins) | J. Uhry | 977 | Apr. 26 | 109 | 2439 |
| "Our Customers Smile." (For Shoes) | O. McCormick | 983 | Apr. 26 | 109 | 2439 |
| "Our Easter Opening." (For Shoes) | O. McCormick | 918 | Mar. 8 | 109 | 547 |
| "Our Shoes Will Bear the Closest Scrutiny." (For Shoes) | O. McCormick | 953 | Apr. 12 | 109 | 1884 |
| "Our Spring Styles." (For Shoes) | O. McCormick | 951 | Apr. 12 | 109 | 1884 |
| "Outing Assorted Fine Chocolates." (For Candy) | Gray Lithograph Co | 976 | Apr. 19 | 109 | 2168 |
| "Overcoat Fashions for Spring." (For Men's Spring Apparel.) | David Adler & Sons Clothing Co | 910 | Mar. 1 | 109 | 273 |
| "Ozomulsion." (For Medicine) | Ozomulsion Co | 928 | Mar. 15 | 109 | 803 |
| "Plant of Modern Automatic Can Making Machinery." (For Can-Making Machinery.) | T. Wold | 907 | Mar. 1 | 109 | 273 |
| "Poole Pianos." (For Pianos) | W. H. Poole | 986 | Apr. 26 | 109 | 2439 |
| "Pride of Reidsville." (For Smoking-Tobacco) | R. Harris & Bro | 925 | Mar. 15 | 109 | 803 |
| "Princess Assortment Chocolates." (For Candy) | Gray Lithograph Co | 975 | Apr. 19 | 109 | 2168 |
| "Princess Chocolates." (For Candy) | Gray Litho. Co | 971 | Apr. 19 | 109 | 2168 |
| "Puritan Chocolates." (For Candy) | Gray Litho. Co | 968 | Apr. 19 | 109 | 2167 |
| "Purity Bon Bons and Chocolates." (For Candy) | Gray Litho. Co | 970 | Apr. 19 | 109 | 2167 |
| "Purity Health Chocolates." (For Candy) | Gray Litho. Co | 969 | Apr. 19 | 109 | 2167 |
| "Purity Italian Chocolates." (For Candy) | Gray Litho. Co | 966 | Apr. 19 | 109 | 2167 |
| "Radcliffe Shoe." (For Shoes) | Radcliffe Shoe Co | 938 | Mar. 22 | 109 | 1066 |
| "Reliance." (For Hat-Fasteners) | National Business Opportunities Co. | 949 | Apr. 12 | 109 | 1883 |
| "Russian Overland Tea Co." (For Teas) | G. Zalinoff | 958 | Apr. 12 | 109 | 1884 |
| "Shoes for the Children." (For Shoes) | O. McCormick | 917 | Mar. 8 | 109 | 547 |
| "Society Chocolates." (For Candy) | Gray Litho. Co | 967 | Apr. 19 | 109 | 2167 |
| "Taylor's Clinical Tubes." (For Clinical Thermometers) | Taylor Bros. Co | 946 | Mar. 29 | 109 | 1333 |
| "The American Girl." (For Candy) | C. A. Roach | 940 | Mar. 22 | 109 | 1066 |
| "The Beer to Which the South Points With Pride." (For Beer.) | Chattanooga Brewing Co | 984 | Apr. 26 | 109 | 2439 |
| "The Flour Barrel of the World." (For Flour) | D. M. McLean | 912 | Mar. 1 | 109 | 273 |
| "The Queen." (For Candy) | C. A. Roach | 943 | Mar. 29 | 109 | 1333 |

*Alphabetical list of prints for March and April*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| "The Romünder 'Comfort' Passenger Car." (For Passenger-Cars.) | H. Romünder | 933 | Mar. 15 | 109 | 808 |
| "The Romünder 'Comfort' Passenger-Car." (For Passenger-Cars.) | H. Romünder | 959 | Apr. 12 | 109 | 1884 |
| "The Touch of Time." (For Cold-Cream) | Daggett & Ramsdell | 955 | Apr. 12 | 109 | 1884 |
| "The Victor Jewel Premium Machine." (For Talking-Machines and Accessories.) | Victor Talking Machine Co | 930 | Mar. 15 | 109 | 808 |
| "'This is the Best' Topsy Hosiery." (For Hosiery) | Ely-Walker Dry Goods Company | 941 | Mar. 29 | 109 | 1333 |
| "We Hatch Out Our Own Ideas in Footwear." (For Shoes) | O. McCormick | 919 | Mar. 8 | 109 | 547 |

## DISCLAIMERS.

| Invention. | Patentee. | No. of patent. | Date of patent. | Disclaimer filed. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|---|
| Automatic weighing-scale | W. R. Smith | 373,102 | Dec. 20, 1887 | Apr. 9, 1904 | 109 | 1891 |
| Bosh-plate for furnaces | J. Scott | 452,618 | May 19, 1891 | Mar. 15, 1904 | 109 | 811 |

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